## **Request for marketing material**

email: "jlovato@eac.gov Jerome Lovato" Tuesday, January 7, 2020 at 6:24:11 PM Eastern Standard Time To: email: "smpearson@essvote.com Pearson, Steve" Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue"

Hi Steve,

We received a letter from Free Speech for People and the National Election Defense Coalition today regarding possible misrepresentation of ES&S EAC-certified voting systems. In particular, the letter included marketing material that appears as if the ES&S DS200 with modems has been certified by the EAC. In order to properly respond to this letter and ensure compliance with the EAC's Testing and Certification Program, I am requesting that ES&S submit all marketing material for all ES&S EAC-certified voting systems by COB this Friday, January 10th.

Please let me know if you have any questions.

Thank you,

Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission Ph. 202-805-4613

email: "smpearson@essvote.com Pearson, Steve" Tuesday, January 7, 2020 at 6:28:55 PM Eastern Standard Time To: email: "jlovato@eac.gov Jerome Lovato" Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

Jerome, we'll do that. Can you share with us which marketing piece they state to be misleading?

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email: "smpearson@essvote.com Pearson, Steve" Tuesday, January 7, 2020 at 6:33:58 PM Eastern Standard Time To: email: "jlovato@eac.gov Jerome Lovato" Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

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email: "kathy.rogers@essvote.com Rogers, Kathy" Tuesday, January 7, 2020 at 6:37:13 PM Eastern Standard Time To: email: "smpearson@essvote.com Pearson, Steve", email: "Jerome.Lovato@sos.state.co.us Jerome Lovato" Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "monica.tesi@essvote.com Tesi, Monica", email: "katina.granger@essvote.com Granger, Katina"

Jerome,

We have a plethora of marketing material. I agree with Steve, it would be helpful if you could narrow it down? My guess is that they are referring to something that may say that we use approved VSTL's for our modem test but I need to see it to confirm.

If anything incorrectly got released we will absolutely correct it.

Thank you,

Kathy

Ps. Most all of our materials are also readily available on our website.

Sent from my iPhone

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#### 12/14/2020

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Paul Aumayr" , email: "slmckay@essvote.com McKay, Sue" , email: "kathy.rogers@essvote.com Rogers, Kathy"

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## Attachments:

## EAC.ESS Letter re modems with Attachments 01.07.20.pdf 4.9M

email: "smpearson@essvote.com Pearson, Steve" Tuesday, January 7, 2020 at 6:48:00 PM Eastern Standard Time To: email: "jlovato@eac.gov Jerome Lovato"

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

Thanks Jerome. Browsing through at first glance I am confident we have a valid answer for their accusations. Please allow us to digest their letter and we'll try to have our answers for you soon.

From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 5:37 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

Subject: Re: Request for marketing material

No reason. It was actually on my mind but didn't translate to my fingers. Please see attached.

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Thank you Jerome. We will review!

From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 6:37 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

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email: "jlovato@eac.gov Jerome Lovato"

Tuesday, January 7, 2020 at 6:59:09 PM Eastern Standard Time

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Great, thank you.

Jerome

On Tue, Jan 7, 2020 at 6:51 PM Rogers, Kathy <<u>kathy.rogers@essvote.com</u>> wrote:

Thank you Jerome. We will review!

Kathy

From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 6:37 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

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#### email: "smpearson@essvote.com Pearson, Steve"

#### Wednesday, January 8, 2020 at 11:40:51 AM Eastern Standard Time

To: email: "jlovato@eac.gov Jerome Lovato"

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

Jerome,

Unfortunately, our Marketing manager is unavailable this week to assist with this request. Would it be possible to extend our deliverable to January 17<sup>th</sup>? This will allow us to better accommodate this request and ensure we've

done a thorough search of or material. Appreciate your consideration on this.

Thanks,

Steve

From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 5:37 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

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email: "jbowers@eac.gov Jessica Bowers" Wednesday, January 8, 2020 at 11:53:46 AM Eastern Standard Time To: email: "smpearson@essvote.com Pearson, Steve", email: "jlovato@eac.gov Jerome Lovato" Cc: email: "mharrington@eac.gov Mona Harrington", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

Hi Steve,

I'm not sure if Jerome has an out of office autoreply setup but he is traveling most of today. He should be able to respond this evening or tomorrow morning.

Thanks,

Jessica

From: Pearson, Steve <<u>smpearson@essvote.com</u>>
Sent: Wednesday, January 8, 2020 9:41 AM
To: Jerome Lovato <<u>jlovato@eac.gov</u>>
Cc: Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr
<<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy
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Subject: RE: Request for marketing material

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From: Jerome Lovato <<u>jlovato@eac.gov</u>
Sent: Tuesday, January 7, 2020 5:37 PM
To: Pearson, Steve <<u>smpearson@essvote.com</u>
Cc: Mona Harrington <<u>mharrington@eac.gov</u>
; Jessica Bowers <<u>jbowers@eac.gov</u>
; Paul Aumayr
<<u>paumayr@eac.gov</u>
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On Jan 7, 2020, at 6:28 PM, Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

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Please let me know if you have any questions.

Thank you,

Jerome Lovato

Director, Voting System Testing and Certification

U.S. Election Assistance Commission

Ph. 202-805-4613

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# email: "smpearson@essvote.com Pearson, Wednesday, January 8, 2020 at 12:08:58 PM Eastern Standard Time Steve"

To: email: "jbowers@eac.gov Jessica Bowers"

Cc: email: "mharrington@eac.gov Mona Harrington", email: "paumayr@eac.gov Paul Aumayr", email:

<sup>&</sup>quot;slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy", email: "jlovato@eac.gov Jerome Lovato"

Thank you Jessica.

Steve

From: Jessica Bowers <jbowers@eac.gov>

Sent: Wednesday, January 8, 2020 10:54 AM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>; Jerome Lovato <<u>jlovato@eac.gov</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

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12/14/2020

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U.S. Election Assistance Commission

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https://ediscovery.google.com/discovery/DisplayMessage?hl=en&m=940d4b69-54c7-4a68-9354-a82b08f6a377&at=ACD7onqDzyOnDpSOGQA6Dq... 39/69

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email: "jlovato@eac.gov Jerome Lovato" Wednesday, January 8, 2020 at 10:45:22 PM Eastern Standard Time To: email: "smpearson@essvote.com Pearson, Steve"

Cc: email: "jbowers@eac.gov Jessica Bowers", email: "mharrington@eac.gov Mona Harrington", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

Hi Steve,

Yes, the 17th will work.

Thank	you,
Jerom	е

On Wed, Jan 8, 2020 at 12:09 PM Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

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Steve

From: Jessica Bowers <jbowers@eac.gov>

Sent: Wednesday, January 8, 2020 10:54 AM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>; Jerome Lovato <<u>jlovato@eac.gov</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

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/1	4/2020 Google Vault - Request for marketing material
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Jerome,

Attached is our response to your request for ES&S marketing materials. Given the volume and size of the materials being provided, we are sending a thumb drive containing our corporate marketing materials to your attention for Tuesday delivery since Monday is a Federal holiday.

If you have any questions, please feel free to contact me directly at any time.

Thank you,

id:ima

**Steve Pearson** 

Sr. Vice President, Certification

Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com

www.essvote.com

From: Jerome Lovato <jlovato@eac.gov>

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https://ediscovery.google.com/discovery/DisplayMessage?hl=en&m=940d4b69-54c7-4a68-9354-a82b08f6a377&at=ACD7onqDzyOnDpSOGQA6Dq... 59/69

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Attachments:

image001.jpg 1.9k

EAC Marketing Material Response Letter 1.17.20.pdf 48k

 email: "jlovato@eac.gov Jerome Lovato"
 Friday, January 17, 2020 at 3:10:44 PM Eastern Standard Time

 To: email: "smpearson@essvote.com Pearson, Steve"
 C: email: "jbowers@eac.gov Jessica Bowers", email: "slmckay@essvote.com McKay, Sue", email: "mharrington@eac.gov

 Mona Harrington", email: "paumayr@eac.gov Paul Aumayr", email: "kathy.rogers@essvote.com Rogers, Kathy"

Thank you, Steve. I appreciate the timely response. We will review the material and set up a meeting for next steps.

Jerome

On Fri, Jan 17, 2020 at 12:43 PM Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

Jerome,

Attached is our response to your request for ES&S marketing materials. Given the volume and size of the materials being provided, we are sending a thumb drive containing our corporate marketing materials to your attention for Tuesday delivery since Monday is a Federal holiday.

If you have any questions, please feel free to contact me directly at any time.
Thank you,
cid:image0
Steve Pearson
Sr. Vice President, Certification
Election Systems & Software <u> 11208 John Galt Blvd   Omaha, NE 68137</u>
Direct: 402-970-1225   Cell: 402-212-4660   smpearson@essvote.com
www.essvote.com

From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 5:24 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>

Subject: Request for marketing material

Hi Steve,

We received a letter from Free Speech for People and the National Election Defense Coalition today regarding possible misrepresentation of ES&S EAC-certified voting systems. In particular, the letter included marketing material that appears

as if the ES&S DS200 with modems has been certified by the EAC. In order to properly respond to this letter and ensure compliance with the EAC's Testing and Certification Program, I am requesting that ES&S submit all marketing material for all ES&S EAC-certified voting systems by COB this Friday, January 10th.

Please let me know if you have any questions.

Thank you,

Jerome Lovato

Director, Voting System Testing and Certification

U.S. Election Assistance Commission

Ph. 202-805-4613

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Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission Ph. 202-805-4613

Attachments:

image001.jpg 1.9k

email: "paumayr@eac.gov Paul Aumayr" Wednesday, January 29, 2020 at 9:34:01 AM Eastern Standard Time To: email: "jlovato@eac.gov Jerome Lovato" , email: "jbowers@eac.gov Jessica Bowers"

I've uploaded the material to the T: drive: T:\TESTING AND CERTIFICATION\Test\_&\_Cert\_ Prog\Mfr\_Submitted\_Sys\ES&S\ES&S Marketing Material 01292020

Paul

On Fri, Jan 17, 2020 at 3:11 PM Jerome Lovato <jlovato@eac.gov> wrote:

Thank you, Steve. I appreciate the timely response. We will review the material and set up a meeting for next steps.

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Thank you,

cid:image0

**Steve Pearson** 

Sr. Vice President, Certification

Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com

www.essvote.com

From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 5:24 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>

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Please let me know if you have any questions.

Thank you,

Jerome Lovato

Director, Voting System Testing and Certification

U.S. Election Assistance Commission

Ph. 202-805-4613

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Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission Ph. 202-805-4613



### Paul Aumayr

Senior Election Technology Specialist

U.S. Election Assistance Commission

PAumayr@eac.gov

(202) 476-9051

Attachments: image001.jpg 1.9k January 17, 2020

VIA EMAIL AND OVERNIGHT DELIVERY

& Software

Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission 1335 East West Highway, Suite 4300 Silver Spring, Maryland 20910

#### RE: Request for Election Systems & Software, LLC ("ES&S") Marketing Material

Dear Mr. Lovato:

ES&S is in receipt of your request for ES&S' marketing materials associated with ES&S' United States Election Assistance Commission's ("EAC") certified voting systems. Due to the volume and size of the materials being provided, ES&S is sending to your attention by overnight mail today, a thumb drive which contains ES&S' corporate marketing materials for ES&S' EAC Certified EVS 5.2.0.0 version through ES&S' most recent EAC certified EVS 6.1.0.0 version. Although many of the materials being provided are public documents and have been provided to customers as well as displayed on our website, ES&S respectfully requests that the EAC not publicly disclose any information provided without first contacting ES&S to determine if such materials being requested contain ES&S proprietary and confidential information or links to such ES&S' proprietary and confidential information.

Please be advised that it was never the intent of ES&S to state or imply that ES&S' DS200 modeming capability was EAC certified. Further, ES&S makes those states which allow for modeming fully aware that the modeming configuration has not been approved by the EAC.

In all cases, ES&S' voting system releases capable of modeming unofficial results are separate releases that are tested by NVLAP/EAC accredited voting system testing laboratories on behalf of those jurisdictions which allow for moderning of unofficial election results. In no case has ES&S ever represented to these jurisdictions these releases to be EAC certified.

In order to avoid any confusion with respect to ES&S' EAC certified voting systems and ES&S' voting systems which allow for the modeming of unofficial results, ES&S has removed all references in its current corporate marketing materials related to the "optional use" of modems. Included please see updated ES&S corporate marketing materials for ES&S' products, including ES&S' DS200 marketing material as this is the only ES&S voting system unit which can allow for modeming of unofficial election results.

If you have any questions or need additional information, please do not hesitate to contact me directly.

Sincerely,

Steve Pearson Senior Vice President of Certification



January 7, 2020

Chairwoman Christy McCormick Vice Chair Benjamin Hovland U.S. Election Assistance Commission 1335 East West Highway, Suite 4300 Silver Spring, Maryland 20910 cmccormick@eac.gov bhovland@eac.gov

# **RE:** Request to investigate ES&S for misrepresentations regarding EAC certification of voting machines with modems

Dear Chairwoman McCormick,

We write to you to request that the Election Assistance Commission (EAC) initiate an inquiry and investigation into Elections Systems & Software (ES&S). ES&S may have violated, and likely continues to violate, Sections 5.14 and 5.15.1 of the EAC Testing and Certification Program Manual Version 2.0 (May 31, 2015) (TCPM)<sup>1</sup> by representing or implying that the DS200 with modem configuration is EAC certified when in fact only the DS200 *without* modem is EAC certified.<sup>2</sup> ES&S also may have violated Section 5.16 by failing to warn purchasers that adding an uncertified modem to the DS200 will void the EAC certification of the voting system in its entirety. The EAC should investigate this misconduct, require corrective action, and determine whether to suspend ES&S's manufacturer registration.

<sup>&</sup>lt;sup>1</sup> Election Assistance Commission, Testing & Certification Program Manual v.2 (May 31, 2015), *available at* <u>http://bit.ly/2tzHgQq</u>.

<sup>&</sup>lt;sup>2</sup> ES&S EVS 5.0.0.0 Certificate of Conformance, *available at* <u>http://bit.ly/352lkLq</u> (May 16, 2013). The ES&S EVS 5.0.0.0 Certificate of Conformance and all documents cited hereafter relating to the certification of the EVS 5.0.0.0 are available at <u>https://www.eac.gov/voting-</u>equipment/evs-5000/.

# 1. Background

ES&S manufactures the DS200, a precinct-based ballot scanner and vote tabulator. The EAC certified the DS200 without a modem in 2009, under the Voluntary Voting Systems Guidelines Version 1.0 (VVSG 1.0) as part of the certification of the ES&S Unity 3200 system.<sup>3</sup> In 2011, ES&S submitted a new voting system, the EVS 5.0.0.0, to the EAC for certification. As part of the EVS 5.0.0.0 system, ES&S sought certification of the DS200 as a stand-alone precinct scanner, as a precinct scanner with wired modem capability, and as a precinct scanner with wireless network capability. The testing agency subsequently developed a draft certification test plan to test all three versions of the DS200.<sup>4</sup> However, on August 13, 2012, ES&S withdrew both the wired modem and wireless transmission configurations of the DS200 from their application process.<sup>5</sup> Thereafter, the testing agency revised its test plan and tested the EVS 5.0.0.0 system, including the DS200 only as a stand-alone precinct scanner.<sup>6</sup> This version of the EVS 5.0.0.0 system—which does not include either a wired modem or wireless transmission configuration of the DS200-was certified by the EAC to VVSG 1.0 standards on May 13, 2013.<sup>7</sup> Since initial certification, it is our understanding that ES&S has not submitted a wired modem or wireless configuration of the DS200 for EAC testing or certification.

# 2. Misrepresentations

Despite withdrawing the wired modem and wireless configurations of the DS200 from the certification process, ES&S continues to offer the modem configuration as an optional add-on to the DS200. Through a "product one-sheet" currently available on the ES&S website and appended to this letter as Attachment A, ES&S identifies the DS200 "optional wireless modem results transfer with

<sup>&</sup>lt;sup>3</sup> iBeta Quality Assurance, "Election Systems & Software Unity 3.2.0.0 Voting System VSTL Certification Test Report (2009), *available at* <u>https://www.eac.gov/documents/2009/7/22/ess-unity-3200-test-report-ver-40-ibeta/</u>.

<sup>&</sup>lt;sup>4</sup> Wyle Laboratories, Certification Test Plan, Certification Test Plan No. T59087.01, Manufacturer System EVS 5.0.0.0 (March 22, 2012).

<sup>&</sup>lt;sup>5</sup> Steve Pearson, Vice President, Certification, ES&S, Letter to U.S. Election Assistance Commission Re: EVS 5.0.0.0 Scope Revision (August 13, 2012).

<sup>&</sup>lt;sup>6</sup> Wyle Laboratories, Certification Test Plan, Certification Test Plan No. T59087.01 REV D, Manufacturer System EVS 5.0.0.0 (March 22, 2012).

<sup>&</sup>lt;sup>7</sup> ES&S EVS 5.0.0.0 Certificate of Conformance; Alice P. Miller, U.S. Election Assistance Commission, Letter to Steve Pearson, Vice President, Certification, ES&S, Re: Agency Decision—Grant of Certification (May 16, 2013); Wyle Laboratories, Test Report, Report No. T59087.01-01 Rev A (May 1, 2013).
encryption" as an example of the scanner's "comprehensive" key features.<sup>8</sup> ES&S also distributes the one-sheet, past versions of the one-sheet, and similar materials to potential buyers, including Cuyahoga County, Ohio (2018),<sup>9</sup> South Dakota (2018),<sup>10</sup> Tioga County, Pennsylvania (2019),<sup>11</sup> North Carolina (2019),<sup>12</sup> and Boone County (2019).<sup>13</sup> ES&S also has produced and disseminated at least one other similar DS200 brochure, appended to this letter as Attachment B, including to Grand Traverse, Michigan.<sup>14</sup> It is our understanding that ES&S has produced and distributed these one-sheets and similar promotional materials, featuring both the "EAC certified" logo and the wireless modem as an available option, since approximately 2016, and possibly earlier.

#### 3. Violations of the Testing and Certification Program Manual

ES&S's advertisements violate Sections 5.14 and 5.15.1 of the TCPM by falsely stating or implying that the DS200, when purchased with the optional wireless modem, is certified to EAC standards. The EAC requires that manufacturers accurately display its mark of certification and avoid misleading potential buyers into believing that a system, or any component thereof, is certified when it is not.

https://dl.ncsbe.gov/index.html?prefix=State\_Board\_Meeting\_Docs/2019-07-28/Certification/Voting%20System%20Certification/ESS/.

<sup>&</sup>lt;sup>8</sup> See ES&S "DS200 Precinct Scanner & Tabulator" (2016), available at

https://www.essvote.com/wp-content/uploads/2019/07/DS200\_One-Sheet.pdf (last visited Dec. 11, 2019). As of December 11, 2019, the document can be found by visiting the DS200 product page on the ES&S website, *available at* https://www.essvote.com/products/ds200/, where ES&S provides the "product one-sheet" as a download.

<sup>&</sup>lt;sup>9</sup> ES&S, "Cuyahoga County, Ohio Tabulation Equipment Survey" p. 103-04 (Nov. 9, 2018), *available at* <u>http://bit.ly/33Wa6al</u>.

<sup>&</sup>lt;sup>10</sup> ES&S Information Sheets, DS200 Product One-Sheet at p.3-4, *available at* <u>http://bit.ly/33ScZJ9</u>.

<sup>&</sup>lt;sup>11</sup> ES&S DS200 Product One-Sheet, *available at* <u>http://bit.ly/2RJRdVo</u>.

<sup>&</sup>lt;sup>12</sup> ES&S DS200 Product One-Sheet, *available at* <u>http://bit.ly/362eJko</u>. The document can be found with other ES&S materials provided to the North Carolina State Board of Elections (NC SBE), which can be found and downloaded through the NC SBE, *at* 

<sup>&</sup>lt;sup>13</sup> ES&S DS200 Product One-Sheet, included in Boone County Commission proceedings at 300-01 (July 16, 2019), *available at* <u>http://bit.ly/34f58Fw</u>. *See id.* at pp. 99-342 (documents related to Boone County purchase of ES&S equipment)

<sup>&</sup>lt;sup>14</sup> DS200 Product Brochure, *available at* <u>http://bit.ly/36nZXVI</u>.

TCPM Section 5.14 provides that:

Manufacturers may not represent or imply a voting system is EAC certified unless it has received a Certificate of Conformance for the system. Statements regarding EAC certification in brochures, on websites, on displays, and in advertising/sales literature must be made solely in reference to specific systems. Any action by a Manufacturer to suggest EAC endorsement of its product or organization is strictly prohibited and may result in a Manufacturer's suspension or other action pursuant to Federal civil and criminal law. Manufacturers must provide a copy of the Certificate and Scope of Certification document (found at www.eac.gov) to any jurisdiction purchasing an EAC certified system.<sup>15</sup>

Under Section 5.15.1, the TCPM also provides that:

The Manufacturer may use only the Mark of Certification that accurately reflects the certification held by the voting system as a whole. The certification of individual components or modifications shall not be independently represented by a Mark of Certification. In the event a system has components or modifications tested to various (later) version of the VVSG, the system shall bear only the Mark of Certification of the standard to which the system (as a whole) was tested and certified (i.e. the lesser standard). Ultimately, a voting system shall only display the Mark of Certification of the oldest or least rigorous standard to which any of its components are certified.<sup>16</sup>

Pursuant to Section 5.16, the TCPM also requires that "[t]he user's manual or instruction manual for a certified voting system shall warn purchasers that any changes or modifications to the system not tested and certified by the EAC will void the EAC certification of the voting system."<sup>17</sup>

ES&S has not followed the standards set forth in the TCPM. It displays the mark of certification on its website page for the DS200 and on other advertising materials sent or otherwise made available to election officials. The advertisements

<sup>&</sup>lt;sup>15</sup> EAC Testing and Certification Program Manual Version 2.0 § 5.14 (May 31, 2015) (hereinafter "TCPM"). <sup>16</sup> TCPM § 5.15.1 (emphasis added).

<sup>&</sup>lt;sup>17</sup> TCPM § 5.16 (emphasis added).

clearly indicate to buyers that the DS200—alone or with its optional features, including the modem—is fully certified by the EAC. Election officials easily could be misled into purchasing the DS200 with a wireless modem configuration, not realizing that the modem is uncertified, and that under Section 5.15.1 and Section 5.16, the modem's addition to the DS200 would void its certification and indeed, would void the certification of the entire system.

ES&S may also be misrepresenting the modem as certified throughout the procurement process, which may qualify as an additional violation of the TCPM. In 2014, for example, in response to the Maryland State Board of Elections Request for Proposal (RFP) for an election system, ES&S submitted a proposal for its EVS 5.2.0.0, which Maryland accepted.<sup>18</sup> It is our understanding that during the procurement process, ES&S proposed the addition of a modem to the DS200 without indicating that its addition would void the system's EAC certification. Ultimately, after providing Maryland with a more expensive version of the EVS that included DS200 with modems, ES&S had to refund \$1.2 million to the state of Maryland and remove modems from the already distributed machines.<sup>19</sup> ES&S may well have violated Section 5.16 by failing to warn the Maryland State Board of Elections that installing the modems in the DS200 voided the system's certification.

In Rhode Island, ES&S submitted a proposal in response to the state's RFP for a new voting system.<sup>20</sup> In its proposal, ES&S repeatedly claimed that its voting system, the EVS 5.2.0.3, was EAC certified.<sup>21</sup> Although it acknowledged that modem transmissions were not part of the EAC certification process, ES&S did not

<sup>&</sup>lt;sup>18</sup> Maryland State Board of Elections Request for Proposals, No. D38B4400019 (July 22, 2014); State of Maryland State Board of Elections, Meeting Minutes—October 30, 2014, at p. 9, *available at* <u>http://bit.ly/2PAtaWj</u>.

<sup>&</sup>lt;sup>19</sup> State of Maryland State Board of Elections, Meeting Minutes—July 17, 2015, at p. 5-6, *available at* <u>http://bit.ly/36rGmUo</u>; State of Maryland State Board of Elections, Meeting Minutes—August 27, 2015, at p. 4, *available at* http://bit.ly/38DLkPM.

<sup>&</sup>lt;sup>20</sup> ES&S, "Enhancing the Election Process for the State of Rhode Island: Request for Proposal RFP #9549934 Voting Equipment System (Oct. 30, 2015) (hereinafter ES&S Rhode Island Proposal). Relevant excerpts are appended to this letter as Attachment C, and we have made the entire document available on the Free Speech For People website, at <a href="http://bit.ly/2LIMFLh">http://bit.ly/2LIMFLh</a>.

<sup>&</sup>lt;sup>21</sup> *Id.* at 9 ("Certified Proven Products—ES&S is bidding the proven DS200 precinct based scanner."); *id.* at 55 ("Designed and federally certified to meet the rigorous security standards of the 2005 Voluntary Voting Systems Guidelines, the operating system controls, limits, and detects unauthorized access to all critical system components."); *id.* at 117 ("The proposed version of the DS200 is the latest version of the DS200 which is certified to the U.S. EAC VVSG 2005 standard . . . .").

disclose that use of non-certified components will void the entire system's EAC certification.<sup>22</sup> ES&S also submitted a diagram that coded the DS200 with internal wireless modem as being part of the "EAC Certified Configuration."<sup>23</sup> Furthermore, though the diagram showed a system that integrated EAC-certified and non-certified components, ES&S did not clarify that under EAC guidelines, inclusion of <u>any</u> non-certified component in a voting system would void the entire system's certification. ES&S may well have violated Section 5.15.1, as well as 5.16 by failing to disclose to the Rhode Island Board of Elections that the EVS 5.2.0.3 may no longer be EAC certified if used with the DS200 with internal modems.

The TCPM correctly recognizes that an election technology manufacturer cannot be allowed to falsely claim certification that its systems have not earned. And ES&S's omissions in its advertisements and procurement-related communications do precisely this. Though the EVS 5.0.0.0 and its subsequent versions are certified, inclusion of the uncertified modem voids the entire system's certification. ES&S clearly violates the TCPM by omitting this information from its advertisements and its procurement communications.

Courts throughout the country have long recognized that omission of material facts may void contracts and give rise to cognizable claims for damages against the omitting party. As the Supreme Court recently confirmed, "[b]ecause common-law fraud has long encompassed certain misrepresentations by omission, 'false or fraudulent claims' include more than just claims containing express falsehoods . . . misrepresentations by omission can give rise to liability."<sup>24</sup> Omission of critical information about "statutory, regulatory, or contractual requirements" may well result in "misleading half-truths" that give rise to cognizable claims of fraudulent misrepresentation.<sup>25</sup>

But counties and states should not have to resort to contract disputes with election vendors. They must be able to trust the accuracy of vendor assurances about EAC certification.

 <sup>&</sup>lt;sup>22</sup> See id. at 49 (noting that modem transmissions were not part of the EAC certification process).
<sup>23</sup> Id. at 166-67.

<sup>&</sup>lt;sup>24</sup> Universal Health Servs., Inc. v. United States, 136 S. Ct. 1989, 1999 (2016).

<sup>&</sup>lt;sup>25</sup> *Id.* at 2001. Though federal contract law does not govern ES&S's fraudulent misrepresentations, omission of material fact is recognized as a form of fraud in states throughout the country, including those in which ES&S has contracted.

#### 4. Requested action

The EAC should rigorously apply its standards and protections, and take swift response where vendors make false and misleading claims. Section 5.15.4 of the Testing and Certification Program Manual provides a broad range of remedies for vendor misrepresentation of certification status, including requiring corrective action, decertification, and manufacturer suspension:<sup>26</sup>

If the EAC determines a voting system is not in compliance with the VVSG, and the system has already been sold or otherwise distributed bearing the Mark of Certification, the EAC shall provide written notice to the Manufacturer. If the Manufacturer fails to take corrective action within 15 days of receipt of such notice, the EAC shall have the right to announce publicly that the voting system may no longer comply with its original certification, and may choose to initiate decertification actions as outlined in Chapter 7 of the *Manual*, and/or suspension of Manufacturer Registration as outlined in Section 2.6 of the *Manual*. Corrective action may include modification of the voting system to bring it into compliance with the VVSG, or removal of the Mark of Certification from the product.

(Section 5.15.4)

For this reason, we strongly urge the EAC to investigate ES&S's alleged violations of Sections 5.14, 5.15.1, and 5.16. And if ES&S requests an opportunity to cure its violations, the EAC should require substantive action on the vendor's part. Simply removing the advertisements or adding curative language is necessary, but not sufficient. ES&S must take proactive steps to correct its error, including but not limited to negotiating with parties that have purchased the equipment to reach an appropriate settlement of damages; running public advertisements in all states that have, or are considering the purchase of the DS200, to acknowledge and correct the omissions; and conducting public forums for voters who have had to, or may have to, vote on modem-equipped DS200 machines. Furthermore, the EAC should subject ES&S to rigorous overview of its advertisements for such period of time as necessary to reassure voters throughout the country that ES&S has learned to accurately advertise its certifications. Finally,

<sup>&</sup>lt;sup>26</sup> Section 2.6 provides that "[w]hen Manufacturers violate the certification program's requirements by engaging in management activities inconsistent with this Manual or failing to cooperate with the EAC, their registration may be suspended until such time as the issue is remedied." Under Section 2.6.2, suspension of registration means that "[a] suspended Manufacturer may not submit a voting system for certification."

the EAC should reserve the right, based on information derived from its investigation or if ES&S is any way uncooperative, to suspend the company's registration indefinitely.

States and counties across the country rely upon the EAC certification process to guide their choice in voting systems and vendors. And the EAC correctly requires vendors to advertise certification only when *all* components of the advertised system has been thoroughly tested and certified by the EAC. Rules 5.14, 5.15.1, and 5.16 are important rules that protect purchasing states and counties, and through them, the voters, from having to cast votes on systems that have not been properly vetted by the EAC. ES&S has repeatedly advertised its DS200 with internal modem—a critical component to ES&S's voting systems—as being EAC certified when, in fact, it is not. We therefore again respectfully request that EAC investigate and take action to correct this serious issue.

Sincerely,

Courtney Hostetler, Counsel Ronald A. Fein, Legal Director John C. Bonifaz, President Ben T. Clements, Chair of the Board Free Speech For People 1320 Centre St. #405 Newton, MA 02459 (617) 249-3015 chostetler@freespeechforpeople.org

Susan Greenhalgh Vice President of Policy and Program National Election Defense Coalition ATTACHMENT A

# DS200® Precinct Scanner & Tabulator



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# DS200 Key Features

The DS200 is a precinct-based scanner and vote tabulator equipped with the latest in ES&S' patented technology. Fully certified and compliant with EAC guidelines, the DS200 enhances the voting experience for voters and election officials alike. Our patented IMR® and PTRAC® technology ensures even the most poorly marked ballots are read accurately and consistently — protecting voter intent. All of this is designed to make everyone's job easier.

## ACCURATE



The DS200 combines the ES&S-patented Intelligent Mark Recognition (IMR®) and patented Positive Target Recognition & Alignment Compensation (PTRAC®) systems to accurately track and pinpoint target locations. This technology accommodates ballots inserted at angles or with erroneous marks to uphold voter intent. This precision improves the reliability of elections.

### SECURE



Like all ES&S tabulation equipment, the DS200 includes physical security features such as locking panels and security seals to secure sensitive components and election files, and a key-locked case for transport and shipping. The DS200 operating system controls, limits and detects unauthorized access to all critical data. The system also includes safeguards, such as data encryption and digital signatures, that help protect sensitive data and verify authenticity, including certification of all firmware.

#### RELIABLE



Having both battery backup and thermal paper means you never have to worry about power outages or printer ink.

### COMPATIBLE



Works in conjunction with:

- ExpressVote<sup>®</sup> Universal Voting System
- DS450<sup>®</sup> High-Throughput Scanner & Tabulator
- DS850<sup>®</sup> High-Speed Scanner & Tabulator
- $\cdot$  Electionware  $^{\scriptscriptstyle (\! 8\!)}$  Election Management Software
- AutoMARK<sup>®</sup> Ballot Marking Device
  - · Election Reporting Manager®

## COMPREHENSIVE



- Optional wireless modem results transfer with encryption
- $\cdot$   $\,$  Primary data storage device

- Backup data storage
- Data sent via Secure File Transfer Protocol (SFTP) server

ATTACHMENT B

# PRECINCT SCANNER AND TABULATOR

# **DS200°**

# BECAUSE WHO WANTS TO BE STUCK INSIDE COUNTING BALLOTS?

The DS200 is a precinct-based scanner and vote tabulator equipped with the latest in ES&S' patented technology to make your job easier. Fully certified and compliant with EAC guidelines, the DS200 enhances the voting experience for voters and officials alike.

Our patented IMR<sup>™</sup> and PTRAC<sup>™</sup> technology ensures even the most poorly marked ballots are read accurately and consistently — protecting voter intent. This technology greatly reduces time spent manually adjudicating as it automatically verifies voter marks.

Intelligent, integrated, digital, patented, flexible, easy to use, reliable, secure, certified and accessible – the DS200 is the answer to your precinct-level election needs.





CERTIFIED

CERTIFIED

# Faster election results and greater voter confidence



# KEY FEATURES

Handles up to 9,900 precincts for early voting needs.

#### SPEED

Completely processes both sides of a ballot in six seconds or less. Handles bent or folded ballots with ease.

#### ACCURACY

DS200 combines the ES&S patented Positive Target Recognition & Alignment Compensation (PTRAC<sup>™</sup>) and patented Intelligent Mark Recognition (IMR<sup>™</sup>) systems to positively track and pinpoint target locations, accommodating for ballots inserted at irregular angles or with erroneous marks to create unparalleled accuracy in determining voter intent. This accuracy improves the reliability of elections.

#### ACCESSIBILITY

Compatible with the ES&S ExpressVote® Universal Voting System and AutoMARK® Americans with Disabilities Act (ADA)-compliant ballot-marking device.

#### RELIABILITY

Battery backup in case of a power outage and thermal paper means you never have to worry about power outages or running out of printer ink.

#### COMPATIBILITY

Works in conjunction with ES&S' Electionware® and Election Reporting Manager® software, ADA-compliant marking devices (AutoMARK® or ExpressVote®), the DS450<sup>™</sup> and DS850<sup>®</sup> central scanner and tabulators and plastic or metal ballot bins to provide a complete end-to-end election solution.

#### **AVAILABLE OPTIONS**

Wireless modem and capacity to send data via Secure File Transfer Protocol (SFTP) server; backup data storage in addition to being a primary data storage device. ATTACHMENT C



# ENHANCING THE ELECTION PROCESS FOR THE STATE OF RHODE **ISLAND**



#### **REQUEST FOR PROPOSAL RFP #9549934 VOTING EQUIPMENT SYSTEM**

October 30, 2015

State of Rhode Island and Providence Plantations Department of Administration Division of Purchases

#### **RIVIP BIDDER CERTIFICATION COVER FORM**

#### **SECTION 1 - BIDDER INFORMATION**

Bidder must be registered as a vendor on the RIVIP system at www.purchasing.ri.gov to submit a bid proposal.

Solicitation Number:	7549934		
Solicitation Title:	RFP-VOTING EQUIPMENT SYSTEM (81 pages)		
Bid Proposal Submission Deadline Date & Time:	10/30/2015	10:00 AM	
RIVIP Vendor ID #:	18999		
Bidder Name:	Election Systems And Software		
Address:	11208 John Galt Blvd.		
	Omaha , NE 68137 USA		
Telephone:	402-938-1440		
Fax:	402-970-1276		
Contact Name:	Tamara Kaup		
Contact Title:	Manager of Proposals		
Contact Email:	bids@essvote.com		

#### SECTION 2 — DISCLOSURES

## Bidders must respond to every statement. Bid proposals submitted without a complete response may be deemed nonresponsive.

Indicate "Y" (Yes) or "N" (No) for Disclosures 1-4, and if "Yes," provide details below. Complete Disclosure 5. If the Bidder is publicly held, the Bidder may provide owner information about only those stockholders, members, partners, or other owners that hold at least 10% of the record or beneficial equity interests of the Bidder.

- N 1. State whether the Bidder, or any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder or any parent, subsidiary, or affiliate has been subject to suspension or debarment by any federal, state, or municipal governmental authority, or the subject of criminal prosecution, or convicted of a criminal offense within the previous 5 years. If "Yes," provide details below.
- N 2. State whether the Bidder, or any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder or any parent, subsidiary, or affiliate has had any contracts with a federal, state, or municipal governmental authority terminated for any reason within the previous 5 years. If "Yes," provide details below.
- N 3. State whether the Bidder, or any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder or any parent, subsidiary, or affiliate has been fined more than \$5000 for violation(s) of any Rhode Island environmental law(s) by the Rhode Island Department of Environmental Management within the previous 5 years. If "Yes," provide details below.

- N 4. State whether any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder is serving or has served within the past two calendar years as either an appointed or elected official of any state governmental authority or quasipublic corporation, including without limitation, any entity created as a legislative body or public or state agency by the general assembly or constitution of this state.
  - 5. List each officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder, and each intermediate parent company and the ultimate parent company of the Bidder. For each individual, provide his or her name, business address, principal occupation, position with the Bidder, and the percentage of ownership, if any, he or she holds in the Bidder, and each intermediate parent company and the ultimate parent company of the Bidder.

#### Disclosure details (continue on additional sheet if necessary): Management Board

 Nanagement Board
\* Aldo Tesi - Chairman, Election Systems & Software, LLC, 11208 John Galt Boulevard, Omaha, NE 68137
\* Michael R. McCarthy - Board Member of ES&S, Chairman of McCarthy Group, LLC, 1601 Dodge Street, Suite 3800, Omaha, NE 68102
Officers (all located at Election Systems & Software, LLC, 11208 John Galt Boulevard, Omaha, NE 68137)
Thomas E. Burt - President and Chief Executive Officer; Thomas F. O'Brien - Executive Vice President, Finance, Treasurer and Chief Financial Officer; Kathy Rogers - Senior Vice President, Government Relations; Ken Carbullido - Senior Vice President, Innovations; Matthew Nelson - Senior Vice President, Sales; Jim Schmidt - Senior Vice President, Manufacturing; Richard Jablonski - Vice President, Finance and Secretary; Steve Bolton - Vice President, Intellectual Property; Gary Weber - Vice President, Software Development; Eric Anderson - Vice President/Ceneral Coursel; Steve Pearson - Vice President, Certification: Adam Carbullido - Vice President, Release Management: Michele Feichtinger-Ernst - Vice Counsel; Steve Pearson - Vice President, Certification; Adam Carbullido - Vice President, Release Management; Michele Feichtinger-Ernst - Vice President, Customer Service Parent Company to ES&S - Government Systems, Software & Services, Inc. (Owns 100% of ES&S)

#### **SECTION 3 — CERTIFICATIONS**

#### Bidders must respond to every statement. Bid proposals submitted without a complete response may be deemed nonresponsive.

Indicate "Y" (Yes) or "N" (No), and if "No," provide details below.

#### THE BIDDER CERTIFIES THAT:

- Y 1. The Bidder will immediately disclose, in writing, to the State Purchasing Agent any potential conflict of interest which may occur during the term of any contract awarded pursuant to this solicitation.
- 2. The Bidder possesses all licenses and anyone who will perform any work will possess all licenses required by applicable federal, Y state, and local law necessary to perform the requirements of any contract awarded pursuant to this solicitation and will maintain all required licenses during the term of any contract awarded pursuant to this solicitation. In the event that any required license shall lapse or be restricted or suspended, the Bidder shall immediately notify the State Purchasing Agent in writing.
- The Bidder will maintain all required insurance during the term of any contract pursuant to this solicitation. In the event that any required Y 3. insurance shall lapse or be canceled, the Bidder will immediately notify the State Purchasing Agent in writing.
- 4. The Bidder understands that falsification of any information in this bid proposal or failure to notify the State Purchasing Agent of any Y changes in any disclosures or certifications in this Bidder Certification may be grounds for suspension, debarment, and/or prosecution for fraud.
- The Bidder has not paid and will not pay any bonus, commission, fee, gratuity, or other remuneration to any employee or official of the State of Rhode Island or any subdivision of the State of Rhode Island or other governmental authority for the purpose of Y 5. obtaining an award of a contract pursuant to this solicitation. The Bidder further certifies that no bonus, commission, fee, gratuity, or other remuneration has been or will be received from any third party or paid to any third party contingent on the award of a contract pursuant to this solicitation.
- 6. This bid proposal is not a collusive bid proposal. Neither the Bidder, nor any of its owners, stockholders, members, partners, Y principals, directors, managers, officers, employees, or agents has in any way colluded, conspired, or agreed, directly or indirectly, with any other bidder or person to submit a collusive bid proposal in response to the solicitation or to refrain from submitting a bid proposal in response to the solicitation, or has in any manner, directly or indirectly, sought by agreement or collusion or other communication with any other bidder or person to fix the price or prices in the bid proposal or the bid proposal of any other bidder, or to fix any overhead, profit, or cost component of the bid price in the bid proposal or the bid proposal of any other bidder, or to secure through any collusion, conspiracy, or unlawful agreement any advantage against the State of Rhode Island or any person with an interest in the contract awarded pursuant to this solicitation. The bid price in the bid proposal is fair and proper and is not tainted by any collusion, conspiracy, or unlawful agreement on the part of the Bidder, its owners, stockholders, members, partners, principals, directors, managers, officers, employees, or agents.
- The Bidder: (i) is not identified on the General Treasurer's list created pursuant to R.I. Gen. Laws § 37-2.5-3 as a person or entity Y 7. engaging in investment activities in Iran described in § 37-2.5-2(b); and (ii) is not engaging in any such investment activities in Iran.
- Y 8. The Bidder will comply with all of the laws that are incorporated into and/or applicable to any contract with the State of Rhode Island.

Certification details (continue on additional sheet if necessary):

Submission by the Bidder of a bid proposal pursuant to this solicitation constitutes an offer to contract with the State of Rhode Island through the Division of Purchases on the terms and conditions contained in this solicitation and the bid proposal. The Bidder certifies that: (1) the Bidder has reviewed this solicitation and agrees to comply with its terms and conditions; (2) the bid proposal is based on this solicitation; and (3) the iformation submitted in the bid proposal (including this Bidder Certification Cover Form) is accurate and complete. The Bidder acknowledges that the terms and conditions of this solicitation and the bid proposal will be incorporated into any contract awarded to the Bidder pursuant to this solicitation and the bid proposal. The person signing below represents, under penalty of perjury, that he or she is fully informed regarding the proposal on behalf of the Bidder.

BIDDER

Date: 10/27

Election Systems & Software / LLC Name of Bidder A Signature in ink Richard J. Jablonski, Vice President, Finance

Printed name and title of person signing on behalf of Bidder

second to none and will provide invaluable during the implementation and first use of a new voting system.

Certified Proven Products – ES&S is bidding the proven DS200 precinct based scanner. With more than 25,000 DS200's in use in 16 states and successfully tabulating millions of votes in jurisdictions like New York City, Miami and Minneapolis not to mention the states of Maine and Maryland, Rhode Island will be utilizing the industry's number 1 digital precinct solution..

Today, not only do we work with many of the same customers we've s supported for more than three decades, but our business has grown to serve 41 states and includes more than 4,500 clients. From our humble beginnings supporting a handful of election administrators and voters in 1979, our election equipment and software is now utilized by approximately 60% of the registered voters in the United States (see the figure that follows; Jurisdictions Using ES&S Equipment and Software are shown in dark blue).



2. Vendor must provide the following information for verification of completion of VSTL certification:

- Name, address, and telephone number of VSTL performing certification test
- Date of certification

#### **ES&S RESPONSE**

The base system, EVS,5.2.0.3, was VSTL tested by:

National Technical Systems (NTS) 7800 Hwy 20 West Huntsville, AL 35806 256-837-4411

Date of VSTL Certification: July 22, 2015

Additional components not part of the Election Assistance Commission's certification process, including wireless transmission of election results were VSTL tested by NTS and certified August 21, 2015.

3. Provide a flow chart of the entire System and how each component integrates into it.

#### **ES&S RESPONSE**

Please see **Attachment B** for a flow chart of the system.

4. Describe any components of your system that are not part of the Elections Assistance Commission's certification process including but not limited to the wireless transmission of election results.

#### **ES&S RESPONSE**

The following components are not part of the EAC's certification process:

- Electionware Toolbox provides ballot test decks for L&A testing
- Modem transmission of results from the 9 towns with DS200's with wireless modems to the Central Tabulation Equipment (Voting System Test Lab (VSTL) Tested)
- The Firewall and Communications Server at the State Board of Elections that will receive the DS200 results transmissions from the DS200's with wireless modems at the 9 towns (VSTL Tested)
- The remote connection of Election Reporting Manager workstations at the 30 Regional Tabulation Equipment sites. The Election Reporting Manager application used at the Regional Tabulation Equipment sites is EAC certified.
- Ballot-on-demand Balotar printers
- Small and medium-sized font for printing on ExpressVote vote summary cards.

9. Describe if a voted ballot that contains a crease or other type of fold mark can be read by the precinct count unit and the central mail ballot counting unit. Attach individual ballots that can be read by a precinct count unit and central mail ballot counting unit containing a sample of creases and fold marks.

#### **ES&S RESPONSE**

Yes, a voted ballot that contains a crease or other type of fold mark can be read by the precinct count unit and the central mail ballot counting unit. Both the DS200 and DS850 have been uniquely designed to accept ballots that have been folded. The paper transports on both scanners safely guide previously folded ballots through the read heads to avoid paper jams or misreads and the scan speed approaches the processing speed for unfolded ballots. The DS850 uses a patented technology known as TruGrip<sup>TM</sup>, to provide constant contact with each ballot. By using 22 axled, double-rollers, full control of the ballot is ensured from start to finish. A close-up of the DS850 TruGrip rollers is shown below:



Sample ballots are attached as Attachment E.

10. Describe what security measures are available to protect the operating system, application programs and data on all System equipment from unauthorized change.

#### ES&S RESPONSE

From concept to construction, ES&S adheres to industry-leading standards for quality and security.

Designed and federally certified to meet the rigorous security standards of the 2005 Voluntary Voting System Guidelines, the operating system controls, limits, and detects unauthorized access to all critical system components. The system also implements state-of-the-art safeguards against losses of system integrity, availability, confidentiality and accountability.



#### PREVIOUS EXPERIENCE AND BACKGROUND

#### **PREVIOUS EXPERIENCE AND BACKGROUND – EQUIPMENT VENDOR**

1. Provide the history of the proposed System, including whether the System proposed is the latest version of the equipment available that has been fully tested and currently in distribution.

#### **ES&S RESPONSE**

The DS200 was first manufactured in April 2007. By November 2008, more than 4,500 DS200 digital precinct scanners were built and successfully used in the Florida Primary and General elections. ES&S utilized Ricoh Electronics Inc. as its prime contract manufacturer for the DS200 from 2007-2009.

In 2009, the EAC certified the DS200 under 2002 Voting System Standards. During 2009, more than 8,000 DS200 digital scanners were successfully used in the primary and general elections in Florida and Ohio. In 2009, ES&S shifted responsibility for contract manufacturing to Pivot International, Inc, headquartered out of Lenexa, Kansas. Pivot conducts manufacturing operations out of its ISO 9001 certified facility in Manila, Republic of the Philippines.

In 2010 New York City, selected ES&S to provide DS200 digital scanners to support its 4.6 million voters. Five other counties in New York also chose the DS200 as their primary voting system. In 2012, the State of New York certified the DS200 under the 2005 Voluntary Voting Systems Guidelines (VVSG) and New York election law requirements. Less than a year later, in May 2013, the U.S. Election Assistance Commission (EAC) approved the certification of the DS200 under the 2005 VVSG standards.

As of today, ES&S has manufactured more than 24,000 DS200 scanners. By the end of 2015, ES&S will manufacture an additional 4,000 DS200 units bringing the total produced since the first build to over 21,000.

Today, more than 50 million registered voters in the United States and Canada can now cast their ballots via this state-of-the-art ballot scanner.

The proposed version of the DS200 is the latest version of the DS200 which is certified to the U.S. EAC VVSG 2005 standard and includes many enhancements in the areas of security, ballot processing speed, ballot handling, and voter and poll worker graphical interfaces.

The DS850 was first manufactured in 2009. The DS850 was first used in Colorado Springs Colorado in May of 2010. ES&S utilized DATAWIN Inc. as its prime contract manufacturer for the DS850.

In 2012, the EAC certified the DS850 under 2002 Voting System Standards. From 2009 to 2015 170 DS850 have been manufactured by DATAWIN, and are in use over 20 states from coast to coast

The DS850 was design to span the EAC standards and was also certified to the U.S. EAC VVSG 2005 standard.

The ExpressVote was first manufactured in 2014. By September of 2015, more than 5000 ExpressVotes were built and successfully deployed to customers across the US. Pivot International, Inc, headquartered out of Lenexa, Kansas is the original and current manufacture for the ExpressVote. Pivot conducts manufacturing operations out of its ISO 9001 certified facility in Manila, Republic of the Philippines.

The current ExpressVote was certified to U.S. EAC VVSG 2005.



# Rhode Island EVS 5.2.0.3/5.3.0.3 Statewide Network System Configuration

October 23, 2015

Legend EAC Certified Configuration

**Extended Configuration** 





## State of Rhode Island EVS 5.2.0.3/5.3.0.3 DS200 Modeming System Configuration

October 23, 2015

Legend EAC Certified Configuration

Extended Configuration





**U. S. ELECTION ASSISTANCE COMMISSION** 

VOTING SYSTEM TESTING AND CERTIFICATION PROGRAM 1335 East West Highway, Suite 4300 Silver Spring, MD 20910

March 20, 2020

Sent via e-mail

Steve Pearson, Senior Vice President of Certification Election Systems & Software 11208 John Galt Blvd. Omaha, NE 69137

#### **Re: DS200 Misrepresentation**

Dear Mr. Pearson,

On January 7, 2020, the U.S. Election Assistance Commission (EAC) received a complaint from two organizations, Free Speech for People and National Election Defense Coalition, stating that:

- 1. ES&S may have violated Sections 5.14 and 5.15.1 of the EAC Testing and Certification Program Manual Version 2.0 by representing or implying that the DS200 with modem configuration is EAC certified when in fact only the DS200 without modem is EAC certified.
- 2. ES&S also may have violated Section 5.16 by failing to warn purchasers that adding a modem to the DS200 will void the EAC certification of the voting system in its entirety.

The complaint requested that the EAC conduct an investigation, require corrective action, and determine whether to suspend ES&S's manufacturer registration.

On the same day, I requested that ES&S submit all marketing material for all ES&S EAC-certified voting systems by COB on January 10, 2020. ES&S requested to extend the deadline to January 17<sup>th</sup> due to unavailability of ES&S's marketing manager. ES&S submitted the marketing material, including their response to the complaint, on January 17<sup>th</sup>. In their response, ES&S stated they have remedied the issue by removing all references in its current corporate marketing materials related to the "optional use" of modems.

I have reviewed the marketing material submitted by ES&S and confirm that ES&S has several documents that state that the DS200 is "fully certified and compliant with EAC guidelines" while also listing a modem as optional. This misrepresentation is in violation of the EAC's Testing and Certification Program. I am pleased that ES&S has taken prompt action to revise their marketing material. In order to be in compliance with our Program, ES&S must take the following corrective actions:

- Provide a plan to remove all misrepresented marketing material from circulation.
- Notify current and potential customers who received the misrepresented information that previous information was inaccurate.
- Distribute the revised information to those same customers.

In several other documents, ES&S states, "All ES&S tabulation systems are submitted to rigorous and extensive independent test campaigns as part of the Election Assistance Commission's (EAC) Voting System Certification Program." I find this statement to be a misrepresentation since ES&S has state-certified voting systems that have not been tested or certified under the EAC's Program. In order to be in compliance with our Program, ES&S must take the following corrective actions:

- Revise the marketing material to properly represent voting systems that have been certified by the EAC.
- Provide a plan to remove all misrepresented marketing material from circulation.
- Notify current and potential customers who received the misrepresented information that previous information was inaccurate.
- Distribute the revised information to those same customers.

As you are aware, the EAC has the authority to conduct reviews of fielded voting systems to ensure compliance with our Testing and Certification Program. We will conduct reviews of EAC-certified DS200s to ensure that they comply with our Program.

Finally, according to Section 5.15.4 of the Testing and Certification Program Manual, you have 15 days from receipt of this letter to comply with the recommended corrective actions. Failure to comply will result in the EAC publicly announcing that the voting system no longer complies with its original certification, and could include initiating decertification actions and/or suspension of manufacturer registration.

You are a valued stakeholder and I appreciate your proactive and prompt response.

Sincerely,

fun Chits

Jerome Lovato Director, Voting System Testing and Certification

cc: Mona Harrington, Acting Executive Director Amanda Joiner, Associate Counsel

# **DS200 Marketing Material**

#### email: "jlovato@eac.gov Jerome Lovato"

To: email: "smpearson@essvote.com Pearson, Steve"

#### Friday, March 20, 2020 at 12:54:25 PM Eastern Daylight Time

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "zshaw@eac.gov Zachary Shaw", email: "kathy.rogers@essvote.com Rogers, Kathy", email: "slmckay@essvote.com McKay, Sue", email: "ajoiner@eac.gov Amanda Joiner"

Hi Steve,

We have completed our review of ES&S's DS200 marketing material, and I have attached our findings and corrective actions. Please let me know if you have any questions.

Thank you,

Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission Ph. 202-805-4613

#### Attachments:

#### ESS DS200 Marketing Material 03-20-2020.pdf 72k

#### email: "smpearson@essvote.com Pearson, Steve"

Friday, March 20, 2020 at 3:03:49 PM Eastern Daylight Time

To: email: "jlovato@eac.gov Jerome Lovato"

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "zshaw@eac.gov Zachary Shaw", email: "kathy.rogers@essvote.com Rogers, Kathy", email: "slmckay@essvote.com McKay, Sue", email: "ajoiner@eac.gov Amanda Joiner"

Hi Jerome,

This to acknowledge we are in receipt of your request.

12/14/2020

Regards,

Steve

cid:ima

**Steve Pearson** 

Sr. Vice President, Certification

Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com

www.essvote.com

From: Jerome Lovato <jlovato@eac.gov>

Sent: Friday, March 20, 2020 11:54 AM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; Zachary Shaw <<u>zshaw@eac.gov</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Amanda Joiner <<u>ajoiner@eac.gov</u>>

Subject: DS200 Marketing Material

Hi Steve,

We have completed our review of ES&S's DS200 marketing material, and I have attached our findings and corrective actions. Please let me know if you have any questions.

Thank you,

Jerome Lovato

Director, Voting System Testing and Certification

U.S. Election Assistance Commission

Ph. 202-805-4613

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12/14/2020

Attachments:

image001.jpg 1.9k

# RE: DS200 Marketing MaterialRogers, Kathy <kathy.rogers@essvote.com>

#### email: "smpearson@essvote.com Pearson, Steve"

Friday, April 3, 2020 at 1:16:10 PM Eastern Daylight Time

To: email: "jlovato@eac.gov Jerome Lovato"

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "zshaw@eac.gov Zachary Shaw", email: "ajoiner@eac.gov Amanda Joiner", email: "kathy.rogers@essvote.com Rogers, Kathy"

Hi Jerome,

Attached is ES&S' response to your March 20, 2020 findings letter regarding ES&S' marketing materials for the DS200 tabulation system.

Please let me know if you have any questions.

Thank you,



#### **Steve Pearson**

Sr. Vice President, Certification

Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com

www.essvote.com

From: Jerome Lovato <jlovato@eac.gov>

Sent: Friday, March 20, 2020 11:54 AM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; Zachary Shaw <<u>zshaw@eac.gov</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Amanda Joiner <<u>ajoiner@eac.gov</u>>

Subject: DS200 Marketing Material

We have completed our review of ES&S's DS200 marketing material, and I have attached our findings and corrective actions. Please let me know if you have any questions.

Thank you,

Jerome Lovato

Director, Voting System Testing and Certification

U.S. Election Assistance Commission

#### Ph. 202-805-4613

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#### Attachments:

image002.jpg 1.9k EAC DS200 Response Letter 4.3.20.pdf 162k

#### email: "jlovato@eac.gov Jerome Lovato"

To: email: "smpearson@essvote.com Pearson, Steve"

#### Friday, April 3, 2020 at 4:57:40 PM Eastern Daylight Time

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "zshaw@eac.gov Zachary Shaw", email: "ajoiner@eac.gov Amanda Joiner", email: "kathy.rogers@essvote.com Rogers, Kathy"

Thank you, Steve. I am acknowledging receipt of your email.

Jerome

On Fri, Apr 3, 2020 at 1:16 PM Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

Hi Jerome,

Attached is ES&S' response to your March 20	, 2020 findings letter	regarding ES&S'	marketing
materials for the DS200 tabulation system.			

Please let me know if you have any questions.

Thank you,

id:ima

**Steve Pearson** 

Sr. Vice President, Certification

Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com

www.essvote.com

From: Jerome Lovato <jlovato@eac.gov>

Sent: Friday, March 20, 2020 11:54 AM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; Zachary Shaw <<u>zshaw@eac.gov</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Amanda Joiner <<u>ajoiner@eac.gov</u>>

Subject: DS200 Marketing Material

Hi Steve,

We have completed our review of ES&S's DS200 marketing material, and I have attached our findings and corrective actions. Please let me know if you have any questions.
Thank you,

Jerome Lovato

Director, Voting System Testing and Certification

U.S. Election Assistance Commission

Ph. 202-805-4613

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Attachments: image002.jpg 1.9k April 3, 2020

EXPERIENCE

RELIABILITY

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INNOVATION

# <u>VIA EMAIL</u> AND OVERNIGHT DELIVERY

Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission 1335 East West Highway, Suite 4300 Silver Spring, Maryland 20910

# RE: Election Systems & Software, LLC ("ES&S") DS200<sup>®</sup> Modem Marketing Material Complaint

Dear Mr. Lovato:

I am in receipt of your letter dated March 20, 2020, which sets forth certain findings by the Election Assistance Commission ("EAC") regarding ES&S' marketing materials for its DS200 precinct voting system tabulator ("DS200") and other ES&S voting tabulation systems. ES&S has reviewed your letter and provides the following response to the findings identified by the EAC.

The EAC alleges that ES&S made certain misrepresentations in its DS200 marketing materials with respect to the DS200 being "fully certified and compliant with EAC guidelines" while also listing the use of a modem in the DS200 as an option for customers. As previously communicated to the EAC with respect to the use of modems with the DS200, it was never the intent of ES&S to state or imply that ES&S' DS200 modeming capability was EAC certified. Further, ES&S makes those states which allow for modeming fully aware that the modeming configuration has not been approved by the EAC. Notwithstanding the foregoing and in order to avoid any confusion with respect to ES&S' EAC certified voting systems and ES&S' voting systems which allow for modeming, ES&S has and/or will take the following corrective actions as request by the EAC:

- ES&S has revised all of its DS200 marketing materials included on its website, as well as revised all print marketing materials for its DS200, to make it clear that the EAC has not certified the DS200 with the use of modeming;
- ES&S will send the enclosed letter to all of its DS200 customers who use the DS200 with modem, informing them that the DS200 with modem has not been certified by the EAC; and
- ES&S will post a notice to its customer portal advising all ES&S' customers that the DS200 with modem has not been certified by the EAC.

In addition to the above finding by the EAC, the EAC alleges that ES&S' also made certain representations in other ES&S marketing documents by stating that "All ES&S tabulation systems are submitted to rigorous and extensive independent test campaigns as part of the Election Assistance Commission's (EAC) Voting System Certification Program."

Jerome Lovato April 3, 2020 Page: 2

The EAC believes this statement is inaccurate since ES&S has state-certified voting systems that have not been tested or certified under the EAC's Certification and Testing Program. ES&S disagrees with the EAC's finding with respect to this statement, as all ES&S tabulation systems are submitted to independent test campaigns as part of the EAC Voting System Certification Program.

Please be advised that all ES&S tabulation systems are submitted for review and approval through the EAC Testing and Certification Program. This applies even to those ES&S tabulation systems which ES&S submits to states that do not require EAC certification and approval. All current ES&S tabulation systems which have been approved for use by those states which do not require EAC approval have been approved by the EAC. Therefore, ES&S' statement is factual and is not a misrepresentation as the EAC concluded in its findings. As such, ES&S does not believe that any corrective actions are necessary with respect to this statement.

As you are fully aware, the United States is currently involved with the unprecedented COVID-19 pandemic that has forced many employees of ES&S and its customers to take drastic actions through social distancing by working from home voluntarily or mandated through stay at home orders issued by a customer's state or local government. As a result of the COVID-19 pandemic, it may take ES&S additional time in notifying its customers as requested by the EAC. To that end, ES&S will make commercially reasonable efforts to provide its DS200 modem customers with the enclosed letter, as well as post its notice to ES&S' customer portal by no later than April 15, 2020.

If you have any questions or need additional information, please do not hesitate to contact me directly.

Sincerely,

Steve Pearson Senior Vice President of Certification

cc: Kathy Rogers – ES&S

# **DS200** discussion

email: "jlovato@eac.gov Jerome Lovato" Thursday, April 9, 2020 at 1:44:50 PM Eastern Daylight Time To: email: "smpearson@essvote.com Pearson, Steve" , email: "kathy.rogers@essvote.com Rogers, Kathy"

Hi Kathy and Steve,

Will you have time for a call tomorrow afternoon or any time on Monday to discuss the DS200 response? Shouldn't take more than a half hour.

Thank you, Jerome

email: "kathy.rogers@essvote.com Rogers, Kathy" To: email: "jlovato@eac.gov Jerome Lovato" Cc: email: "smpearson@essvote.com Pearson, Steve" Thursday, April 9, 2020 at 1:50:34 PM Eastern Daylight Time

Hi Jerome,

I'll let Steve weigh in as well, but I can talk early afternoon tomorrow or early afternoon on Monday. Whichever works for you and Steve.

Sent from my iPhone

On Apr 9, 2020, at 1:45 PM, Jerome Lovato <jlovato@eac.gov> wrote:

Hi Kathy and Steve,

Will you have time for a call tomorrow afternoon or any time on Monday to discuss the DS200 response? Shouldn't take more than a half hour.

Thank you,

Jerome

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email: "smpearson@essvote.com Pearson, Steve" To: email: "jlovato@eac.gov Jerome Lovato" Cc: email: "kathy.rogers@essvote.com Rogers, Kathy" Thursday, April 9, 2020 at 1:52:44 PM Eastern Daylight Time

Tomorrow any time after 1p central or Monday afternoon 2:30p central on works for me.

From: Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

Sent: Thursday, April 9, 2020 12:51 PM

To: Jerome Lovato <jlovato@eac.gov>

Cc: Pearson, Steve <<u>smpearson@essvote.com</u>>

Subject: Re: DS200 discussion

Hi Jerome,

I'll let Steve weigh in as well, but I can talk early afternoon tomorrow or early afternoon on Monday. Whichever works for you and Steve.

Sent from my iPhone

On Apr 9, 2020, at 1:45 PM, Jerome Lovato <<u>jlovato@eac.gov</u>> wrote:

Hi Kathy and Steve,

Will you have time for a call tomorrow afternoon or any time on Monday to discuss the DS200 response? Shouldn't take more than a half hour.

Thank you,

Jerome

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Google Vault - DS200 discussion

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email: "kathy.rogers@essvote.com Rogers, Kathy" To: email: "jlovato@eac.gov Jerome Lovato" Cc: email: "smpearson@essvote.com Pearson, Steve" Thursday, April 9, 2020 at 1:53:44 PM Eastern Daylight Time

Looks like Steve and I can do 2 eastern tomorrow or 3:30 eastern on Monday. Your pick.

Sent from my iPhone

On Apr 9, 2020, at 1:45 PM, Jerome Lovato <iovices/postcom/sec.gov

Hi Kathy and Steve,

Will you have time for a call tomorrow afternoon or any time on Monday to discuss the DS200 response? Shouldn't take more than a half hour.

Thank you,

Jerome

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email: "jlovato@eac.gov Jerome Lovato" To: email: "kathy.rogers@essvote.com Rogers, Kathy" Cc: email: "smpearson@essvote.com Pearson, Steve" Thursday, April 9, 2020 at 2:08:35 PM Eastern Daylight Time

Great, thank you! I will send the invitation for 2 tomorrow.

On Thu, Apr 9, 2020 at 1:54 PM Rogers, Kathy <<u>kathy.rogers@essvote.com</u>> wrote:

Looks like Steve and I can do 2 eastern tomorrow or 3:30 eastern on Monday. Your pick.

Sent from my iPhone

On Apr 9, 2020, at 1:45 PM, Jerome Lovato <jlovato@eac.gov > wrote:

Hi Kathy and Steve,

Will you have time for a call tomorrow afternoon or any time on Monday to discuss the DS200 response? Shouldn't take more than a half hour.

Thank you,

Jerome

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email: "jlovato@eac.gov Jerome Lovato" To: email: "smpearson@essvote.com Pearson, Steve" Cc: email: "kathy.rogers@essvote.com Rogers, Kathy" Friday, April 10, 2020 at 1:42:58 PM Eastern Daylight Time

Hi Steve,

The response letter references an enclosed letter that was submitted with the package that was sent to our office. Will you please send me the electronic version since we don't have any staff in our Silver Spring office?

Thank you, Jerome

On Thu, Apr 9, 2020 at 2:08 PM Jerome Lovato <<u>jlovato@eac.gov</u>> wrote: Great, thank you! I will send the invitation for 2 tomorrow.

On Thu, Apr 9, 2020 at 1:54 PM Rogers, Kathy <<u>kathy.rogers@essvote.com</u>> wrote:

Looks like Steve and I can do 2 eastern tomorrow or 3:30 eastern on Monday. Your pick.

Sent from my iPhone

On Apr 9, 2020, at 1:45 PM, Jerome Lovato <jlovato@eac.gov> wrote:

Hi Kathy and Steve,

Will you have time for a call tomorrow afternoon or any time on Monday to discuss the DS200 response? Shouldn't take more than a half hour.

Thank you,

Jerome

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email: "smpearson@essvote.com Pearson, Steve" To: email: "jlovato@eac.gov Jerome Lovato" Cc: email: "kathy.rogers@essvote.com Rogers, Kathy" Friday, April 10, 2020 at 1:58:38 PM Eastern Daylight Time

Here you go.

From: Jerome Lovato <jlovato@eac.gov>

Sent: Friday, April 10, 2020 12:43 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

Cc: Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

Subject: Re: DS200 discussion

Hi Steve,

The response letter references an enclosed letter that was submitted with the package that was sent to our office. Will you please send me the electronic version since we don't have any staff in our Silver Spring office?

Thank you,

Jerome

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Attachments:

EAC DS200 Modem Customer Letter 4.3.20.pdf 47k

EAC DS200 NON modem Customer Letter 4.3.20.pdf 46k

email: "jlovato@eac.gov Jerome Lovato" To: email: "paumayr@eac.gov Paul Aumayr" , email: "ajoiner@eac.gov Amanda Joiner" Cc: email: "zshaw@eac.gov Zachary Shaw"

FYI

------ Forwarded message ------From: **Pearson, Steve** <<u>smpearson@essvote.com</u>> Date: Fri, Apr 10, 2020 at 1:58 PM Subject: RE: DS200 discussion To: Jerome Lovato <<u>jlovato@eac.gov</u>> Cc: Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

Here you go.

From: Jerome Lovato <jlovato@eac.gov>

Sent: Friday, April 10, 2020 12:43 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

Cc: Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

Subject: Re: DS200 discussion

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Sent from my iPhone

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Thank you,

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## Attachments:

EAC DS200 Modem Customer Letter 4.3.20.pdf 47k

EAC DS200 NON modem Customer Letter 4.3.20.pdf 46k

email: "ajoiner@eac.gov Amanda Joiner" To: email: "jlovato@eac.gov Jerome Lovato" Friday, April 10, 2020 at 2:30:28 PM Eastern Daylight Time

Thanks!

On Fri, Apr 10, 2020 at 2:29 PM Jerome Lovato <<u>jlovato@eac.gov</u>> wrote: FYI

------ Forwarded message ------From: **Pearson, Steve** <<u>smpearson@essvote.com</u>> Date: Fri, Apr 10, 2020 at 1:58 PM Subject: RE: DS200 discussion To: Jerome Lovato <<u>jlovato@eac.gov</u>> Cc: Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

Here you go.

From: Jerome Lovato <jlovato@eac.gov>

Sent: Friday, April 10, 2020 12:43 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

Cc: Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

Subject: Re: DS200 discussion

Η	i S	te	ve,
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Amanda Joiner, Associate Counsel U.S. Election Assistance Commission 1335 East West Highway Suite 4300 Silver Spring, MD 20910 Desk: (301) 960-1253 12/14/2020 Cell: (202) 294-5227 April 3, 2020

EXPERIENCE

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SECURITY

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# VIA ELECTRONIC MAIL

CONTACT NAME STATE/CUSTOMER NAME ADDRESS ADDRESS

# RE: Election Systems & Software, LLC ("ES&S") DS200® Marketing Materials

Dear CONTACT NAME:

It has recently been brought to our attention that certain ES&S DS200 precinct scanner and tabulator (DS200) marketing materials may contain potential inaccuracies. In prior DS200 marketing materials you may have received from ES&S, ES&S states that the DS200 has been certified by the United States Election Assistance Commission (EAC), while also listing the use of modems as an option for the DS200. Please be advised that the DS200 has been fully certified by the EAC, however the certification does not include modem capability.

Please be advised that it was never the intent of ES&S to state or imply that DS200 modeming capability was EAC certified. Further, ES&S made known to states which allow modeming that the modeming configuration has not been approved by the EAC. As you know, the DS200 has been fully certified and approved by your state for use in your jurisdiction with the use of modems. Your jurisdiction may continue to use the DS200 with modem capability as certified by your state.

In order to avoid any confusion with respect to ES&S' EAC certified voting systems and ES&S' voting systems which allow for the moderning of unofficial results, ES&S has removed all references in its current corporate marketing materials related to the "optional use" of moderns. To view updated corporate marketing materials for the DS200, please visit www.essvote.com/products/ds200/.

In addition, your jurisdiction may have received DS200 units which include a sticker on the back of the unit stating that the DS200 has been certified by the EAC. In order to ensure compliance with the EAC Testing and Certification Program, ES&S requests that you remove all such stickers from those DS200s which include modem capability. If you would like ES&S to remove these stickers, please contact your Account Manager and arrangements will be made for ES&S to come on-site and remove such stickers.

We thank you for being a customer of ES&S. If you have any questions or need additional information, please contact your Account Manager and they will respond accordingly.

Sincerely,

Steve Pearson Senior Vice President of Certification



11208 John Galt Boulevard · Omaha, NE 68137 USA Phone: 402.593.0101 · Toll-Free: 1.800.247.8683 · Fax: 402.593.8107 www.essvote.com

April 3, 2020

EXPERIENCE

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SECURITY

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# VIA ELECTRONIC MAIL

CONTACT NAME STATE/CUSTOMER NAME ADDRESS ADDRESS

# RE: Election Systems & Software, LLC ("ES&S") DS200® Marketing Materials

Dear CONTACT NAME:

It has recently been brought to our attention that certain ES&S DS200 precinct scanner and tabulator (DS200) marketing materials may contain potential inaccuracies. In prior DS200 marketing materials you may have received from ES&S, ES&S states that the DS200 has been certified by the United States Election Assistance Commission (EAC), while also listing the use of modems as an option for the DS200. Please be advised that the DS200 has been fully certified by the EAC, however the certification does not include modem capability.

Please be advised that it was never the intent of ES&S to state or imply that DS200 moderning capability was EAC certified. Further, ES&S made known to states which allow moderning that the moderning configuration has not been approved by the EAC.

In order to avoid any confusion with respect to ES&S' EAC certified voting systems and ES&S' voting systems which allow for the modeming of unofficial results, ES&S has removed all references in its current corporate marketing materials related to the "optional use" of modems. To view updated corporate marketing materials for the DS200, please visit www.essvote.com/products/ds200/.

We thank you for being a customer of ES&S. If you have any questions or need additional information, please contact your Account Manager and they will respond accordingly.

Sincerely,

Steve Pearson Senior Vice President of Certification

# **DS200 Marketing Material**

## email: "smpearson@essvote.com Pearson, Steve"

To: email: "jlovato@eac.gov Jerome Lovato"

# Friday, April 17, 2020 at 10:06:55 AM Eastern Daylight Time

Cc: email: <sup>\*</sup>mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "zshaw@eac.gov Zachary Shaw", email: "ajoiner@eac.gov Amanda Joiner", email: "kathy.rogers@essvote.com Rogers, Kathy", email: "slmckay@essvote.com McKay, Sue"

Hi Jerome,

Following up to our call last week regarding the corrective actions for the DS200 marketing material matter, we've prepared the attached revised response letter pertaining to the question of whether or not all ES&S tabulation systems undergo EAC testing.

Please let me know if you have further questions.

Regards,

Steve

12/14/2020



**Steve Pearson** 

Sr. Vice President, Certification

Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com

www.essvote.com

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12/14/2020

# Attachments:

#### image001.jpg 1.9k

EAC DS200 Response Letter Revised 4.17.20.pdf 164k

#### email: "jlovato@eac.gov Jerome Lovato"

To: email: "smpearson@essvote.com Pearson, Steve"

## Friday, April 17, 2020 at 6:43:16 PM Eastern Daylight Time

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "zshaw@eac.gov Zachary Shaw", email: "ajoiner@eac.gov Amanda Joiner", email: "kathy.rogers@essvote.com Rogers, Kathy", email: "slmckay@essvote.com McKay, Sue"

Hi Steve,

Thank you for providing clarification in the revised letter. No further action is required other than what was previously stated in our correspondence.

Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission Ph. 202-805-4613

On Fri, Apr 17, 2020 at 10:07 AM Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

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#### 12/14/2020

Google Vault - DS200 Marketing Material

Regards, Steve ■ cid:ima **Steve Pearson** Sr. Vice President, Certification Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137 Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com www.essvote.com

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image001.jpg 1.9k

email: "smpearson@essvote.com Pearson, Steve" Saturday, April 18, 2020 at 9:50:11 PM Eastern Daylight Time To: email: "jlovato@eac.gov Jerome Lovato"

Cc: email: <sup>\*</sup>mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "zshaw@eac.gov Zachary Shaw", email: "ajoiner@eac.gov Amanda Joiner", email: "kathy.rogers@essvote.com Rogers, Kathy", email: "slmckay@essvote.com McKay, Sue"

Thank you Jerome. Have a nice weekend.

Steve

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<image001.jpg></image001.jpg>
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Sr. Vice President Cartification
Election Systems & Software 111208, John Galt Rivel   Omaha, NE 68137
Direct: 402.070.4225   Coll: 402.212.4660
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www.essvote.com

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# April 17, 2020

(This letter contains revisions to the original letter provided on April 3, 2020)

# VIA ELECTRONIC MAIL: jlovato@eac.gov AND OVERNIGHT DELIVERY

Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission 1335 East West Highway, Suite 4300 Silver Spring, Maryland 20910

# RE: Election Systems & Software, LLC ("ES&S") DS200<sup>®</sup> Modem Marketing Material Complaint

Dear Mr. Lovato:

I am in receipt of your letter dated March 20, 2020, which sets forth certain findings by the Election Assistance Commission ("EAC") regarding ES&S' marketing materials for its DS200 precinct voting system tabulator ("DS200") and other ES&S voting tabulation systems. ES&S has reviewed your letter and provides the following response to the findings identified by the EAC.

The EAC alleges that ES&S made certain misrepresentations in its DS200 marketing materials with respect to the DS200 being "fully certified and compliant with EAC guidelines" while also listing the use of a modem in the DS200 as an option for customers. As previously communicated to the EAC with respect to the use of modems with the DS200, it was never the intent of ES&S to state or imply that ES&S' DS200 modeming capability was EAC certified. Further, ES&S makes those states which allow for modeming fully aware that the modeming configuration has not been approved by the EAC. Notwithstanding the foregoing and in order to avoid any confusion with respect to ES&S' EAC certified voting systems and ES&S' voting systems which allow for modeming, ES&S has and/or will take the following corrective actions as request by the EAC:

- ES&S has revised all of its DS200 marketing materials included on its website, as well as revised all print marketing materials for its DS200, to make it clear that the EAC has not certified the DS200 with the use of modeming;
- ES&S will send the enclosed letter to all of its DS200 customers who use the DS200 with modem, informing them that the DS200 with modem has not been certified by the EAC; and
- ES&S will post a notice to its customer portal advising all ES&S' customers that the DS200 with modem has not been certified by the EAC.

In addition to the above finding by the EAC, the EAC alleges that ES&S' also made certain representations in other ES&S marketing documents by stating that "All ES&S tabulation systems are submitted to rigorous and extensive independent test campaigns as

Jerome Lovato April 17, 2020 Page: 2

part of the Election Assistance Commission's (EAC) Voting System Certification Program." The EAC believes this statement is inaccurate since ES&S has state-certified voting systems that have not been tested or certified under the EAC's Certification and Testing Program. ES&S respectfully disagrees with the EAC's finding as to this statement, as all ES&S tabulation systems are submitted to independent test campaigns as part of the EAC Voting System Certification Program. This applies even to those ES&S tabulation systems which ES&S submits to states that do not require EAC certification and approval.

All current ES&S DS200 tabulation systems which have been approved for use by those states which do not require EAC approval have successfully undergone EAC and VSTL testing. These same tabulation systems serve as the baseline for all ES&S tabulation systems which feature post-voting moderning. ES&S incorporates the modern capability onto these baseline EAC certified tabulation systems and creates a separate release for review and approval by those states which allow for the use of moderns. Therefore, ES&S' statement is factual as all of its baseline tabulation systems are submitted through the EAC Testing and Certification Program and such statement is not a misrepresentation as the EAC concluded in its findings. As such, ES&S does not believe that any corrective actions are necessary with respect to this statement.

As you are fully aware, the United States is currently involved with the unprecedented COVID-19 pandemic that has forced many employees of ES&S and its customers to take drastic actions through social distancing by working from home voluntarily or mandated through stay at home orders issued by a customer's state or local government. As a result of the COVID-19 pandemic, it may take ES&S additional time in notifying its customers as requested by the EAC. To that end, ES&S will make commercially reasonable efforts to provide its DS200 modem customers with the enclosed letter, as well as post its notice to ES&S' customer portal by no later than April 15, 2020.

If you have any questions or need additional information, please do not hesitate to contact me directly.

Sincerely,

Steve Pearson Sr. Vice President, Certification

Enclosure

cc: Kathy Rogers – ES&S

# **Request for marketing material**

email: "jlovato@eac.gov Jerome Lovato" Tuesday, January 7, 2020 at 6:24:11 PM Eastern Standard Time To: email: "smpearson@essvote.com Pearson, Steve" Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue"

Hi Steve,

We received a letter from Free Speech for People and the National Election Defense Coalition today regarding possible misrepresentation of ES&S EAC-certified voting systems. In particular, the letter included marketing material that appears as if the ES&S DS200 with modems has been certified by the EAC. In order to properly respond to this letter and ensure compliance with the EAC's Testing and Certification Program, I am requesting that ES&S submit all marketing material for all ES&S EAC-certified voting systems by COB this Friday, January 10th.

Please let me know if you have any questions.

Thank you,

Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission Ph. 202-805-4613

email: "smpearson@essvote.com Pearson, Steve" Tuesday, January 7, 2020 at 6:28:55 PM Eastern Standard Time To: email: "jlovato@eac.gov Jerome Lovato" Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

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email: "smpearson@essvote.com Pearson, Steve" Tuesday, January 7, 2020 at 6:33:58 PM Eastern Standard Time To: email: "jlovato@eac.gov Jerome Lovato" Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

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email: "jlovato@eac.gov Jerome Lovato" To: email: "smpearson@essvote.com Pearson, Steve" Tuesday, January 7, 2020 at 6:37:21 PM Eastern Standard Time

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

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#### Attachments:

EAC.ESS Letter re modems with Attachments 01.07.20.pdf 4.9M

email: "smpearson@essvote.com Pearson, Steve" Tuesday, January 7, 2020 at 6:48:00 PM Eastern Standard Time To: email: "jlovato@eac.gov Jerome Lovato"

https://ediscovery.google.com/discovery/DisplayMessage?hl=en&m=9567f8ea-8e6e-470c-a2ef-ff3e085f542b&at=ACD7onqb0RY4TxRHhtJ6s68FVt... 7/101

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Thanks Jerome. Browsing through at first glance I am confident we have a valid answer for their accusations. Please allow us to digest their letter and we'll try to have our answers for you soon.

Steve

From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 5:37 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

Subject: Re: Request for marketing material

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Thank you Jerome. We will review!

Kathy

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#### Google Vault - Request for marketing material

#### email: "jlovato@eac.gov Jerome Lovato"

Tuesday, January 7, 2020 at 6:59:09 PM Eastern Standard Time

To: email: "kathy.rogers@essvote.com Rogers, Kathy" Cc: email: "smpearson@essvote.com Pearson, Steve", email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue"

Great, thank you.

Jerome

On Tue, Jan 7, 2020 at 6:51 PM Rogers, Kathy <<u>kathy.rogers@essvote.com</u>> wrote:

Thank you Jerome. We will review!

Kathy

From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 6:37 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

Subject: Re: Request for marketing material

No reason. It was actually on my mind but didn't translate to my fingers. Please see attached.

On Tue, Jan 7, 2020 at 6:34 PM Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

Jerome, any reason why you can't share the letter with us?

Steve

On Jan 7, 2020, at 6:28 PM, Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

Jerome, we'll do that. Can you share with us which marketing piece they state to be misleading?

On Jan 7, 2020, at 6:24 PM, Jerome Lovato <jlovato@eac.gov > wrote:

Hi Steve,

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as if the ES&S DS200 with modems has been certified by the EAC. In order to properly respond to this letter and ensure compliance with the EAC's Testing and Certification Program, I am requesting that ES&S submit all marketing material for all ES&S EAC-certified voting systems by COB this Friday, January 10th. Please let me know if you have any questions.

Thank you,

Jerome Lovato

Director, Voting System Testing and Certification

U.S. Election Assistance Commission

Ph. 202-805-4613

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# email: "smpearson@essvote.com Pearson, Wednesday, January 8, 2020 at 11:40:51 AM Eastern Standard Time Steve"

To: email: "jlovato@eac.gov Jerome Lovato"

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

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From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 5:37 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

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Steve

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email: "jbowers@eac.gov Jessica Bowers"Wednesday, January 8, 2020 at 11:53:46 AM Eastern Standard TimeTo: email: "smpearson@essvote.com Pearson, Steve", email: "jlovato@eac.gov Jerome Lovato"Cc: email: "mharrington@eac.gov Mona Harrington", email: "paumayr@eac.gov Paul Aumayr", email:"slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

Hi Steve,

I'm not sure if Jerome has an out of office autoreply setup but he is traveling most of today. He should be able to respond this evening or tomorrow morning.

Thanks,

Jessica

From: Pearson, Steve <<u>smpearson@essvote.com</u>>
Sent: Wednesday, January 8, 2020 9:41 AM
To: Jerome Lovato <<u>jlovato@eac.gov</u>>
Cc: Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr

<<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>> **Subject:** RE: Request for marketing material

Jerome,

Unfortunately, our Marketing manager is unavailable this week to assist with this request. Would it be possible to extend our deliverable to January 17<sup>th</sup>? This will allow us to better accommodate this request and ensure we've done a thorough search of or material. Appreciate your consideration on this.

Thanks,

Steve

From: Jerome Lovato <<u>jlovato@eac.gov</u>>
Sent: Tuesday, January 7, 2020 5:37 PM
To: Pearson, Steve <<u>smpearson@essvote.com</u>>
Cc: Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr
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#### 10/27/2020

#### Google Vault - Request for marketing material

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email: "smpearson@essvote.com Pearson, Wednesday, January 8, 2020 at 12:08:58 PM Eastern Standard Time Steve"

To: email: "jbowers@eac.gov Jessica Bowers"

Cc: email: "mharrington@eac.gov Mona Harrington", email: "paumayr@eac.gov Paul Aumayr", email:

"slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy", email: "jlovato@eac.gov Jerome Lovato"

Thank you Jessica.

Steve

From: Jessica Bowers <jbowers@eac.gov>

Sent: Wednesday, January 8, 2020 10:54 AM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>; Jerome Lovato <<u>jlovato@eac.gov</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

# Subject: RE: Request for marketing material

https://ediscovery.google.com/discovery/DisplayMessage?hl=en&m=9567f8ea-8e6e-470c-a2ef-ff3e085f542b&at=ACD7onqb0RY4TxRHhtJ6s68FV... 31/101

Hi Steve,

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Thanks,

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Sent: Wednesday, January 8, 2020 9:41 AM

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email: "jlovato@eac.gov Jerome Lovato" Wednesday, January 8, 2020 at 10:45:22 PM Eastern Standard Time To: email: "smpearson@essvote.com Pearson, Steve" Cc: email: "jbowers@eac.gov Jessica Bowers", email: "mharrington@eac.gov Mona Harrington", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

Hi Steve,

Yes, the 17th will work.

Thank you, Jerome

On Wed, Jan 8, 2020 at 12:09 PM Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

Thank you Jessica.

Steve

From: Jessica Bowers <jbowers@eac.gov>

Sent: Wednesday, January 8, 2020 10:54 AM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>; Jerome Lovato <<u>jlovato@eac.gov</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>

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Sent: Tuesday, January 7, 2020 5:37 PM			
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Director, Voting System Testing and Certification

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# email: "smpearson@essvote.com Pearson, Wednesday, January 8, 2020 at 11:07:30 PM Eastern Standard Time Steve"

To: email: "jlovato@eac.gov Jerome Lovato"

Cc: email: "jbowers@eac.gov Jessica Bowers", email: "mharrington@eac.gov Mona Harrington", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

Thank you Jerome.

Steve

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McKay, Sue < <u>sImckay@essvote.com</u> >; Rogers, Kathy < <u>kathy.rogers@essvote.com</u> >
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<b>Cc:</b> Iviona Harrington < <u>mnarrington@eac.gov</u> >; Jessica Bowers < <u>Jbowers@eac.gov</u> >; Paul Aumayr < <u>paumayr@eac.gov</u> >;
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From: Jerome Lovato <j<u>lovato@eac.gov&gt;</j<u>
Sent: Tuesday, January 7, 2020 5:37 PM
<b>To:</b> Pearson, Steve < <u>smpearson@essvote.com</u> >
<b>Cc:</b> Mona Harrington < <u>mharrington@eac.gov</u> >; Jessica Bowers < <u>jbowers@eac.gov</u> >; Paul Aumayr < <u>paumayr@eac.gov</u> >; McKay, Sue < <u>slmckay@essvote.com</u> >; Rogers, Kathy < <u>kathy.rogers@essvote.com</u> >
Subject: Re: Request for marketing material

No reason.	It was	actually	on my	mind but	didn't	translate	to my f	ingers.	Please	see
attached.										

On Tue, Jan 7, 2020 at 6:34 PM Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

Jerome, any reason why you can't share the letter with us?

Steve

On Jan 7, 2020, at 6:28 PM, Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

Jerome, we'll do that. Can you share with us which marketing piece they state to be misleading?

Steve

On Jan 7, 2020, at 6:24 PM, Jerome Lovato <jlovato@eac.gov> wrote:

Hi Steve,

We received a letter from Free Speech for People and the National Election Defense Coalition today regarding possible misrepresentation of ES&S EAC-certified voting systems. In particular, the letter included marketing material that appears as if the ES&S DS200 with modems has been certified by the EAC. In order to properly respond to this letter and ensure compliance with the EAC's Testing and Certification Program, I am requesting that ES&S submit all marketing material for all ES&S EAC-certified

voting systems by COB this Friday, January 10th.

Please let me know if you have any questions.

Thank you,

Jerome Lovato

Director, Voting System Testing and Certification

U.S. Election Assistance Commission

Ph. 202-805-4613

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email: "smpearson@essvote.com Pearson, Steve" To: email: "jlovato@eac.gov Jerome Lovato" Friday, January 17, 2020 at 2:43:15 PM Eastern Standard Time

Cc: email: "mharrington@eac.gov Mona Harrington", email: "jbowers@eac.gov Jessica Bowers", email: "paumayr@eac.gov Paul Aumayr", email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy"

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Thank you,



**Steve Pearson** 

Sr. Vice President, Certification

Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com www.essvote.com

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Attachments:

image001.jpg 1.9k

EAC Marketing Material Response Letter 1.17.20.pdf 48k

#### email: "jlovato@eac.gov Jerome Lovato"

Friday, January 17, 2020 at 3:10:44 PM Eastern Standard Time

To: email: "smpearson@essvote.com Pearson, Steve"

Cc: email: "jbowers@eac.gov Jessica Bowers", email: "slmckay@essvote.com McKay, Sue", email: "mharrington@eac.gov Mona Harrington", email: "paumayr@eac.gov Paul Aumayr", email: "kathy.rogers@essvote.com Rogers, Kathy" Thank you, Steve. I appreciate the timely response. We will review the material and set up a meeting for next steps.

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Thank you,

cid:image0

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Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com

www.essvote.com

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Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission Ph. 202-805-4613

Attachments:

image001.jpg 1.9k

email: "paumayr@eac.gov Paul Aumayr" Wednesday, January 29, 2020 at 9:34:01 AM Eastern Standard Time To: email: "jlovato@eac.gov Jerome Lovato" , email: "jbowers@eac.gov Jessica Bowers"

I've uploaded the material to the T: drive: T:\TESTING AND CERTIFICATION\Test\_&\_Cert\_ Prog\Mfr\_Submitted\_Sys\ES&S\ES&S Marketing Material 01292020

Paul

On Fri, Jan 17, 2020 at 3:11 PM Jerome Lovato <jlovato@eac.gov > wrote:

Thank you, Steve. I appreciate the timely response. We will review the material and set up a meeting for next steps.

Jerome

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Google Vault - Request for marketing material

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Thank you,

cid:image0

**Steve Pearson** 

Sr. Vice President, Certification

Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com

www.essvote.com

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 Je D U P	erome Lovato irector, Voting System Testing and Certification .S. Election Assistance Commission h. 202-805-4613
Pau	Il Aumayr
Sen	ior Election Technology Specialist
U.S	. Election Assistance Commission

PAumayr@eac.gov

(202) 476-9051

Attachments:

image001.jpg 1.9k

email: "jlovato@eac.gov Jerome Lovato" To: email: "smpearson@essvote.com Pearson, Steve" Monday, August 3, 2020 at 4:37:28 PM Eastern Daylight Time

Cc: email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy", email: "krayburn@eac.gov Kevin Rayburn", email: "mharrington@eac.gov Mona Harrington"

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Thank you, Jerome

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Google Vault - Request for marketing material

Thonk you	Coogle value - request for marketing material
Thank you,	
cid:image0	
Steve Pearson	
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Election Systems & Coffman (44200, John Colf Blud	LOweke NE 00427
Election Systems & Software <u>11208 John Galt Bivo</u>	<u>  Omana, NE 68137</u>
Direct: 402-970-1225   Cell: 402-212-4660	
sinpearson@essvote.com	
www.essvote.com	
From: Jerome Lovato <jlovato@eac.g< td=""><td><u> 0V</u>&gt;</td></jlovato@eac.g<>	<u> 0V</u> >

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## Attachments:

image001.jpg 1.9k

email: "smpearson@essvote.com Pearson, Steve" Tuesday, August 4, 2020 at 11:02:25 AM Eastern Daylight Time To: email: "jlovato@eac.gov Jerome Lovato" Cc: email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy", email:

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#### image001.jpg 1.9k

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On Tue	Aua 4.	2020 at	11:02 AM	Pearson.	Steve	<smpea< th=""><th>irson@</th><th>essvote.</th><th>com&gt;</th><th>wrote:</th></smpea<>	irson@	essvote.	com>	wrote:
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			. oaroon,	0.010	0111000		<u>,0001010</u>	00111	

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Please let me know if you have any questions.

Thank you,

Jerome Lovato

Director, Voting System Testing and Certification

U.S. Election Assistance Commission

Ph. 202-805-4613

2020	Google Vault - Request for marketing material Confidential Notice: This message may contain Controlled Unclassified Information (CUI) that requires safeguarding or dissemination control under applicable law regulation or
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#### Attachments:

#### image001.jpg 1.9k

email: "smpearson@essvote.com Pearson, Steve" Wednesday, August 5, 2020 at 9:55:17 AM Eastern Daylight Time To: email: "jlovato@eac.gov Jerome Lovato"

Cc: email: "slmckay@essvote.com McKay, Sue", email: "kathy.rogers@essvote.com Rogers, Kathy", email: "krayburn@eac.gov Kevin Rayburn", email: "mharrington@eac.gov Mona Harrington"

#### 10/27/2020

Jerome, you are fine in releasing the material in question. Appreciate you checking with us. Have a great day.

Steve

From: Jerome Lovato <jlovato@eac.gov>

Sent: Monday, August 3, 2020 3:37 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** McKay, Sue <<u>slmckay@essvote.com</u>>; Rogers, Kathy <<u>kathy.rogers@essvote.com</u>>; Kevin Rayburn <<u>krayburn@eac.gov</u>>; Mona Harrington <<u>mharrington@eac.gov</u>>

Subject: Re: Request for marketing material

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Just following up on my voice message. We are preparing to place the documentation associated with this matter in our FOIA reading room. I have reviewed the documentation and did not identify any material that is proprietary. Will you please

let me know if that is accurate? If not, will you please identify specific documentation that ES&S deems to be proprietary? This is a time sensitive matter so please let me know as soon as you can.

Thank you,

Jerome

On Fri, Jan 17, 2020 at 3:10 PM Jerome Lovato <jlovato@eac.gov > wrote:

Thank you, Steve. I appreciate the timely response. We will review the material and set up a meeting for next steps.

Jerome

On Fri, Jan 17, 2020 at 12:43 PM Pearson, Steve <<u>smpearson@essvote.com</u>> wrote:

Jerome,

Attached is our response to your request for ES&S marketing materials. Given the volume and size of the materials being provided, we are sending a thumb drive containing our corporate marketing materials to your attention for Tuesday delivery since Monday is a Federal holiday.

If you have any questions, please feel free to contact me directly at any time.

Thank you,

cid:image0

**Steve Pearson** 

Sr. Vice President, Certification

Election Systems & Software |11208 John Galt Blvd | Omaha, NE 68137

Direct: 402-970-1225 | Cell: 402-212-4660 | smpearson@essvote.com

www.essvote.com

From: Jerome Lovato <jlovato@eac.gov>

Sent: Tuesday, January 7, 2020 5:24 PM

To: Pearson, Steve <<u>smpearson@essvote.com</u>>

**Cc:** Mona Harrington <<u>mharrington@eac.gov</u>>; Jessica Bowers <<u>jbowers@eac.gov</u>>; Paul Aumayr <<u>paumayr@eac.gov</u>>; McKay, Sue <<u>slmckay@essvote.com</u>>

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# Attachments: image001.jpg 1.9k

January 17, 2020

VIA EMAIL AND OVERNIGHT DELIVERY

& Software

Jerome Lovato Director, Voting System Testing and Certification U.S. Election Assistance Commission 1335 East West Highway, Suite 4300 Silver Spring, Maryland 20910

# RE: Request for Election Systems & Software, LLC ("ES&S") Marketing Material

Dear Mr. Lovato:

ES&S is in receipt of your request for ES&S' marketing materials associated with ES&S' United States Election Assistance Commission's ("EAC") certified voting systems. Due to the volume and size of the materials being provided, ES&S is sending to your attention by overnight mail today, a thumb drive which contains ES&S' corporate marketing materials for ES&S' EAC Certified EVS 5.2.0.0 version through ES&S' most recent EAC certified EVS 6.1.0.0 version. Although many of the materials being provided are public documents and have been provided to customers as well as displayed on our website, ES&S respectfully requests that the EAC not publicly disclose any information provided without first contacting ES&S to determine if such materials being requested contain ES&S proprietary and confidential information or links to such ES&S' proprietary and confidential information.

Please be advised that it was never the intent of ES&S to state or imply that ES&S' DS200 modeming capability was EAC certified. Further, ES&S makes those states which allow for modeming fully aware that the modeming configuration has not been approved by the EAC.

In all cases, ES&S' voting system releases capable of modeming unofficial results are separate releases that are tested by NVLAP/EAC accredited voting system testing laboratories on behalf of those jurisdictions which allow for moderning of unofficial election results. In no case has ES&S ever represented to these jurisdictions these releases to be EAC certified.

In order to avoid any confusion with respect to ES&S' EAC certified voting systems and ES&S' voting systems which allow for the modeming of unofficial results, ES&S has removed all references in its current corporate marketing materials related to the "optional use" of modems. Included please see updated ES&S corporate marketing materials for ES&S' products, including ES&S' DS200 marketing material as this is the only ES&S voting system unit which can allow for modeming of unofficial election results.

If you have any questions or need additional information, please do not hesitate to contact me directly.

Sincerely,

Steve Pearson Senior Vice President of Certification



January 7, 2020

Chairwoman Christy McCormick Vice Chair Benjamin Hovland U.S. Election Assistance Commission 1335 East West Highway, Suite 4300 Silver Spring, Maryland 20910 cmccormick@eac.gov bhovland@eac.gov

# **RE:** Request to investigate ES&S for misrepresentations regarding EAC certification of voting machines with modems

Dear Chairwoman McCormick,

We write to you to request that the Election Assistance Commission (EAC) initiate an inquiry and investigation into Elections Systems & Software (ES&S). ES&S may have violated, and likely continues to violate, Sections 5.14 and 5.15.1 of the EAC Testing and Certification Program Manual Version 2.0 (May 31, 2015) (TCPM)<sup>1</sup> by representing or implying that the DS200 with modem configuration is EAC certified when in fact only the DS200 *without* modem is EAC certified.<sup>2</sup> ES&S also may have violated Section 5.16 by failing to warn purchasers that adding an uncertified modem to the DS200 will void the EAC certification of the voting system in its entirety. The EAC should investigate this misconduct, require corrective action, and determine whether to suspend ES&S's manufacturer registration.

<sup>&</sup>lt;sup>1</sup> Election Assistance Commission, Testing & Certification Program Manual v.2 (May 31, 2015), *available at* <u>http://bit.ly/2tzHgQq</u>.

<sup>&</sup>lt;sup>2</sup> ES&S EVS 5.0.0.0 Certificate of Conformance, *available at* <u>http://bit.ly/352lkLq</u> (May 16, 2013). The ES&S EVS 5.0.0.0 Certificate of Conformance and all documents cited hereafter relating to the certification of the EVS 5.0.0.0 are available at <u>https://www.eac.gov/voting-</u>equipment/evs-5000/.

# 1. Background

ES&S manufactures the DS200, a precinct-based ballot scanner and vote tabulator. The EAC certified the DS200 without a modem in 2009, under the Voluntary Voting Systems Guidelines Version 1.0 (VVSG 1.0) as part of the certification of the ES&S Unity 3200 system.<sup>3</sup> In 2011, ES&S submitted a new voting system, the EVS 5.0.0.0, to the EAC for certification. As part of the EVS 5.0.0.0 system, ES&S sought certification of the DS200 as a stand-alone precinct scanner, as a precinct scanner with wired modem capability, and as a precinct scanner with wireless network capability. The testing agency subsequently developed a draft certification test plan to test all three versions of the DS200.<sup>4</sup> However, on August 13, 2012, ES&S withdrew both the wired modem and wireless transmission configurations of the DS200 from their application process.<sup>5</sup> Thereafter, the testing agency revised its test plan and tested the EVS 5.0.0.0 system, including the DS200 only as a stand-alone precinct scanner.<sup>6</sup> This version of the EVS 5.0.0.0 system—which does not include either a wired modem or wireless transmission configuration of the DS200-was certified by the EAC to VVSG 1.0 standards on May 13, 2013.<sup>7</sup> Since initial certification, it is our understanding that ES&S has not submitted a wired modem or wireless configuration of the DS200 for EAC testing or certification.

# 2. Misrepresentations

Despite withdrawing the wired modem and wireless configurations of the DS200 from the certification process, ES&S continues to offer the modem configuration as an optional add-on to the DS200. Through a "product one-sheet" currently available on the ES&S website and appended to this letter as Attachment A, ES&S identifies the DS200 "optional wireless modem results transfer with

<sup>&</sup>lt;sup>3</sup> iBeta Quality Assurance, "Election Systems & Software Unity 3.2.0.0 Voting System VSTL Certification Test Report (2009), *available at* <u>https://www.eac.gov/documents/2009/7/22/ess-unity-3200-test-report-ver-40-ibeta/</u>.

<sup>&</sup>lt;sup>4</sup> Wyle Laboratories, Certification Test Plan, Certification Test Plan No. T59087.01, Manufacturer System EVS 5.0.0.0 (March 22, 2012).

<sup>&</sup>lt;sup>5</sup> Steve Pearson, Vice President, Certification, ES&S, Letter to U.S. Election Assistance Commission Re: EVS 5.0.0.0 Scope Revision (August 13, 2012).

<sup>&</sup>lt;sup>6</sup> Wyle Laboratories, Certification Test Plan, Certification Test Plan No. T59087.01 REV D, Manufacturer System EVS 5.0.0.0 (March 22, 2012).

<sup>&</sup>lt;sup>7</sup> ES&S EVS 5.0.0.0 Certificate of Conformance; Alice P. Miller, U.S. Election Assistance Commission, Letter to Steve Pearson, Vice President, Certification, ES&S, Re: Agency Decision—Grant of Certification (May 16, 2013); Wyle Laboratories, Test Report, Report No. T59087.01-01 Rev A (May 1, 2013).
encryption" as an example of the scanner's "comprehensive" key features.<sup>8</sup> ES&S also distributes the one-sheet, past versions of the one-sheet, and similar materials to potential buyers, including Cuyahoga County, Ohio (2018),<sup>9</sup> South Dakota (2018),<sup>10</sup> Tioga County, Pennsylvania (2019),<sup>11</sup> North Carolina (2019),<sup>12</sup> and Boone County (2019).<sup>13</sup> ES&S also has produced and disseminated at least one other similar DS200 brochure, appended to this letter as Attachment B, including to Grand Traverse, Michigan.<sup>14</sup> It is our understanding that ES&S has produced and distributed these one-sheets and similar promotional materials, featuring both the "EAC certified" logo and the wireless modem as an available option, since approximately 2016, and possibly earlier.

#### 3. Violations of the Testing and Certification Program Manual

ES&S's advertisements violate Sections 5.14 and 5.15.1 of the TCPM by falsely stating or implying that the DS200, when purchased with the optional wireless modem, is certified to EAC standards. The EAC requires that manufacturers accurately display its mark of certification and avoid misleading potential buyers into believing that a system, or any component thereof, is certified when it is not.

https://dl.ncsbe.gov/index.html?prefix=State\_Board\_Meeting\_Docs/2019-07-28/Certification/Voting%20System%20Certification/ESS/.

<sup>&</sup>lt;sup>8</sup> See ES&S "DS200 Precinct Scanner & Tabulator" (2016), available at

https://www.essvote.com/wp-content/uploads/2019/07/DS200\_One-Sheet.pdf (last visited Dec. 11, 2019). As of December 11, 2019, the document can be found by visiting the DS200 product page on the ES&S website, *available at* https://www.essvote.com/products/ds200/, where ES&S provides the "product one-sheet" as a download.

<sup>&</sup>lt;sup>9</sup> ES&S, "Cuyahoga County, Ohio Tabulation Equipment Survey" p. 103-04 (Nov. 9, 2018), *available at* <u>http://bit.ly/33Wa6al</u>.

<sup>&</sup>lt;sup>10</sup> ES&S Information Sheets, DS200 Product One-Sheet at p.3-4, *available at* <u>http://bit.ly/33ScZJ9</u>.

<sup>&</sup>lt;sup>11</sup> ES&S DS200 Product One-Sheet, *available at* <u>http://bit.ly/2RJRdVo</u>.

<sup>&</sup>lt;sup>12</sup> ES&S DS200 Product One-Sheet, *available at* <u>http://bit.ly/362eJko</u>. The document can be found with other ES&S materials provided to the North Carolina State Board of Elections (NC SBE), which can be found and downloaded through the NC SBE, *at* 

<sup>&</sup>lt;sup>13</sup> ES&S DS200 Product One-Sheet, included in Boone County Commission proceedings at 300-01 (July 16, 2019), *available at* <u>http://bit.ly/34f58Fw</u>. *See id.* at pp. 99-342 (documents related to Boone County purchase of ES&S equipment)

<sup>&</sup>lt;sup>14</sup> DS200 Product Brochure, *available at* <u>http://bit.ly/36nZXVI</u>.

TCPM Section 5.14 provides that:

Manufacturers may not represent or imply a voting system is EAC certified unless it has received a Certificate of Conformance for the system. Statements regarding EAC certification in brochures, on websites, on displays, and in advertising/sales literature must be made solely in reference to specific systems. Any action by a Manufacturer to suggest EAC endorsement of its product or organization is strictly prohibited and may result in a Manufacturer's suspension or other action pursuant to Federal civil and criminal law. Manufacturers must provide a copy of the Certificate and Scope of Certification document (found at www.eac.gov) to any jurisdiction purchasing an EAC certified system.<sup>15</sup>

Under Section 5.15.1, the TCPM also provides that:

The Manufacturer may use only the Mark of Certification that accurately reflects the certification held by the voting system as a whole. The certification of individual components or modifications shall not be independently represented by a Mark of Certification. In the event a system has components or modifications tested to various (later) version of the VVSG, the system shall bear only the Mark of Certification of the standard to which the system (as a whole) was tested and certified (i.e. the lesser standard). Ultimately, a voting system shall only display the Mark of Certification of the oldest or least rigorous standard to which any of its components are certified.<sup>16</sup>

Pursuant to Section 5.16, the TCPM also requires that "[t]he user's manual or instruction manual for a certified voting system shall warn purchasers that any changes or modifications to the system not tested and certified by the EAC will void the EAC certification of the voting system."<sup>17</sup>

ES&S has not followed the standards set forth in the TCPM. It displays the mark of certification on its website page for the DS200 and on other advertising materials sent or otherwise made available to election officials. The advertisements

<sup>&</sup>lt;sup>15</sup> EAC Testing and Certification Program Manual Version 2.0 § 5.14 (May 31, 2015) (hereinafter "TCPM"). <sup>16</sup> TCPM § 5.15.1 (emphasis added).

<sup>&</sup>lt;sup>17</sup> TCPM § 5.16 (emphasis added).

clearly indicate to buyers that the DS200—alone or with its optional features, including the modem—is fully certified by the EAC. Election officials easily could be misled into purchasing the DS200 with a wireless modem configuration, not realizing that the modem is uncertified, and that under Section 5.15.1 and Section 5.16, the modem's addition to the DS200 would void its certification and indeed, would void the certification of the entire system.

ES&S may also be misrepresenting the modem as certified throughout the procurement process, which may qualify as an additional violation of the TCPM. In 2014, for example, in response to the Maryland State Board of Elections Request for Proposal (RFP) for an election system, ES&S submitted a proposal for its EVS 5.2.0.0, which Maryland accepted.<sup>18</sup> It is our understanding that during the procurement process, ES&S proposed the addition of a modem to the DS200 without indicating that its addition would void the system's EAC certification. Ultimately, after providing Maryland with a more expensive version of the EVS that included DS200 with modems, ES&S had to refund \$1.2 million to the state of Maryland and remove modems from the already distributed machines.<sup>19</sup> ES&S may well have violated Section 5.16 by failing to warn the Maryland State Board of Elections that installing the modems in the DS200 voided the system's certification.

In Rhode Island, ES&S submitted a proposal in response to the state's RFP for a new voting system.<sup>20</sup> In its proposal, ES&S repeatedly claimed that its voting system, the EVS 5.2.0.3, was EAC certified.<sup>21</sup> Although it acknowledged that modem transmissions were not part of the EAC certification process, ES&S did not

<sup>&</sup>lt;sup>18</sup> Maryland State Board of Elections Request for Proposals, No. D38B4400019 (July 22, 2014); State of Maryland State Board of Elections, Meeting Minutes—October 30, 2014, at p. 9, *available at* <u>http://bit.ly/2PAtaWj</u>.

<sup>&</sup>lt;sup>19</sup> State of Maryland State Board of Elections, Meeting Minutes—July 17, 2015, at p. 5-6, *available at* <u>http://bit.ly/36rGmUo</u>; State of Maryland State Board of Elections, Meeting Minutes—August 27, 2015, at p. 4, *available at* http://bit.ly/38DLkPM.

<sup>&</sup>lt;sup>20</sup> ES&S, "Enhancing the Election Process for the State of Rhode Island: Request for Proposal RFP #9549934 Voting Equipment System (Oct. 30, 2015) (hereinafter ES&S Rhode Island Proposal). Relevant excerpts are appended to this letter as Attachment C, and we have made the entire document available on the Free Speech For People website, at <a href="http://bit.ly/2LIMFLh">http://bit.ly/2LIMFLh</a>.

<sup>&</sup>lt;sup>21</sup> *Id.* at 9 ("Certified Proven Products—ES&S is bidding the proven DS200 precinct based scanner."); *id.* at 55 ("Designed and federally certified to meet the rigorous security standards of the 2005 Voluntary Voting Systems Guidelines, the operating system controls, limits, and detects unauthorized access to all critical system components."); *id.* at 117 ("The proposed version of the DS200 is the latest version of the DS200 which is certified to the U.S. EAC VVSG 2005 standard . . . .").

disclose that use of non-certified components will void the entire system's EAC certification.<sup>22</sup> ES&S also submitted a diagram that coded the DS200 with internal wireless modem as being part of the "EAC Certified Configuration."<sup>23</sup> Furthermore, though the diagram showed a system that integrated EAC-certified and non-certified components, ES&S did not clarify that under EAC guidelines, inclusion of <u>any</u> non-certified component in a voting system would void the entire system's certification. ES&S may well have violated Section 5.15.1, as well as 5.16 by failing to disclose to the Rhode Island Board of Elections that the EVS 5.2.0.3 may no longer be EAC certified if used with the DS200 with internal modems.

The TCPM correctly recognizes that an election technology manufacturer cannot be allowed to falsely claim certification that its systems have not earned. And ES&S's omissions in its advertisements and procurement-related communications do precisely this. Though the EVS 5.0.0.0 and its subsequent versions are certified, inclusion of the uncertified modem voids the entire system's certification. ES&S clearly violates the TCPM by omitting this information from its advertisements and its procurement communications.

Courts throughout the country have long recognized that omission of material facts may void contracts and give rise to cognizable claims for damages against the omitting party. As the Supreme Court recently confirmed, "[b]ecause common-law fraud has long encompassed certain misrepresentations by omission, 'false or fraudulent claims' include more than just claims containing express falsehoods . . . misrepresentations by omission can give rise to liability."<sup>24</sup> Omission of critical information about "statutory, regulatory, or contractual requirements" may well result in "misleading half-truths" that give rise to cognizable claims of fraudulent misrepresentation.<sup>25</sup>

But counties and states should not have to resort to contract disputes with election vendors. They must be able to trust the accuracy of vendor assurances about EAC certification.

 <sup>&</sup>lt;sup>22</sup> See id. at 49 (noting that modem transmissions were not part of the EAC certification process).
<sup>23</sup> Id. at 166-67.

<sup>&</sup>lt;sup>24</sup> Universal Health Servs., Inc. v. United States, 136 S. Ct. 1989, 1999 (2016).

<sup>&</sup>lt;sup>25</sup> *Id.* at 2001. Though federal contract law does not govern ES&S's fraudulent misrepresentations, omission of material fact is recognized as a form of fraud in states throughout the country, including those in which ES&S has contracted.

#### 4. Requested action

The EAC should rigorously apply its standards and protections, and take swift response where vendors make false and misleading claims. Section 5.15.4 of the Testing and Certification Program Manual provides a broad range of remedies for vendor misrepresentation of certification status, including requiring corrective action, decertification, and manufacturer suspension:<sup>26</sup>

If the EAC determines a voting system is not in compliance with the VVSG, and the system has already been sold or otherwise distributed bearing the Mark of Certification, the EAC shall provide written notice to the Manufacturer. If the Manufacturer fails to take corrective action within 15 days of receipt of such notice, the EAC shall have the right to announce publicly that the voting system may no longer comply with its original certification, and may choose to initiate decertification actions as outlined in Chapter 7 of the *Manual*, and/or suspension of Manufacturer Registration as outlined in Section 2.6 of the *Manual*. Corrective action may include modification of the voting system to bring it into compliance with the VVSG, or removal of the Mark of Certification from the product.

(Section 5.15.4)

For this reason, we strongly urge the EAC to investigate ES&S's alleged violations of Sections 5.14, 5.15.1, and 5.16. And if ES&S requests an opportunity to cure its violations, the EAC should require substantive action on the vendor's part. Simply removing the advertisements or adding curative language is necessary, but not sufficient. ES&S must take proactive steps to correct its error, including but not limited to negotiating with parties that have purchased the equipment to reach an appropriate settlement of damages; running public advertisements in all states that have, or are considering the purchase of the DS200, to acknowledge and correct the omissions; and conducting public forums for voters who have had to, or may have to, vote on modem-equipped DS200 machines. Furthermore, the EAC should subject ES&S to rigorous overview of its advertisements for such period of time as necessary to reassure voters throughout the country that ES&S has learned to accurately advertise its certifications. Finally,

<sup>&</sup>lt;sup>26</sup> Section 2.6 provides that "[w]hen Manufacturers violate the certification program's requirements by engaging in management activities inconsistent with this Manual or failing to cooperate with the EAC, their registration may be suspended until such time as the issue is remedied." Under Section 2.6.2, suspension of registration means that "[a] suspended Manufacturer may not submit a voting system for certification."

the EAC should reserve the right, based on information derived from its investigation or if ES&S is any way uncooperative, to suspend the company's registration indefinitely.

States and counties across the country rely upon the EAC certification process to guide their choice in voting systems and vendors. And the EAC correctly requires vendors to advertise certification only when *all* components of the advertised system has been thoroughly tested and certified by the EAC. Rules 5.14, 5.15.1, and 5.16 are important rules that protect purchasing states and counties, and through them, the voters, from having to cast votes on systems that have not been properly vetted by the EAC. ES&S has repeatedly advertised its DS200 with internal modem—a critical component to ES&S's voting systems—as being EAC certified when, in fact, it is not. We therefore again respectfully request that EAC investigate and take action to correct this serious issue.

Sincerely,

Courtney Hostetler, Counsel Ronald A. Fein, Legal Director John C. Bonifaz, President Ben T. Clements, Chair of the Board Free Speech For People 1320 Centre St. #405 Newton, MA 02459 (617) 249-3015 chostetler@freespeechforpeople.org

Susan Greenhalgh Vice President of Policy and Program National Election Defense Coalition ATTACHMENT A

# DS200® Precinct Scanner & Tabulator



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# DS200 Key Features

The DS200 is a precinct-based scanner and vote tabulator equipped with the latest in ES&S' patented technology. Fully certified and compliant with EAC guidelines, the DS200 enhances the voting experience for voters and election officials alike. Our patented IMR® and PTRAC® technology ensures even the most poorly marked ballots are read accurately and consistently — protecting voter intent. All of this is designed to make everyone's job easier.

## ACCURATE



The DS200 combines the ES&S-patented Intelligent Mark Recognition (IMR®) and patented Positive Target Recognition & Alignment Compensation (PTRAC®) systems to accurately track and pinpoint target locations. This technology accommodates ballots inserted at angles or with erroneous marks to uphold voter intent. This precision improves the reliability of elections.

## SECURE



Like all ES&S tabulation equipment, the DS200 includes physical security features such as locking panels and security seals to secure sensitive components and election files, and a key-locked case for transport and shipping. The DS200 operating system controls, limits and detects unauthorized access to all critical data. The system also includes safeguards, such as data encryption and digital signatures, that help protect sensitive data and verify authenticity, including certification of all firmware.

### RELIABLE



Having both battery backup and thermal paper means you never have to worry about power outages or printer ink.

### COMPATIBLE



Works in conjunction with:

- ExpressVote<sup>®</sup> Universal Voting System
- DS450<sup>®</sup> High-Throughput Scanner & Tabulator
- DS850<sup>®</sup> High-Speed Scanner & Tabulator
- $\cdot$  Electionware  $^{\scriptscriptstyle (\! 8\!)}$  Election Management Software
- AutoMARK<sup>®</sup> Ballot Marking Device
  - · Election Reporting Manager®

## COMPREHENSIVE



- Optional wireless modem results transfer with encryption
- $\cdot$   $\,$  Primary data storage device

- Backup data storage
- Data sent via Secure File Transfer Protocol (SFTP) server

ATTACHMENT B

# PRECINCT SCANNER AND TABULATOR

# **DS200°**

# BECAUSE WHO WANTS TO BE STUCK INSIDE COUNTING BALLOTS?

The DS200 is a precinct-based scanner and vote tabulator equipped with the latest in ES&S' patented technology to make your job easier. Fully certified and compliant with EAC guidelines, the DS200 enhances the voting experience for voters and officials alike.

Our patented IMR<sup>™</sup> and PTRAC<sup>™</sup> technology ensures even the most poorly marked ballots are read accurately and consistently — protecting voter intent. This technology greatly reduces time spent manually adjudicating as it automatically verifies voter marks.

Intelligent, integrated, digital, patented, flexible, easy to use, reliable, secure, certified and accessible – the DS200 is the answer to your precinct-level election needs.





CERTIFIED

CERTIFIED

# Faster election results and greater voter confidence



# KEY FEATURES

Handles up to 9,900 precincts for early voting needs.

#### SPEED

Completely processes both sides of a ballot in six seconds or less. Handles bent or folded ballots with ease.

#### ACCURACY

DS200 combines the ES&S patented Positive Target Recognition & Alignment Compensation (PTRAC<sup>™</sup>) and patented Intelligent Mark Recognition (IMR<sup>™</sup>) systems to positively track and pinpoint target locations, accommodating for ballots inserted at irregular angles or with erroneous marks to create unparalleled accuracy in determining voter intent. This accuracy improves the reliability of elections.

#### ACCESSIBILITY

Compatible with the ES&S ExpressVote® Universal Voting System and AutoMARK® Americans with Disabilities Act (ADA)-compliant ballot-marking device.

#### RELIABILITY

Battery backup in case of a power outage and thermal paper means you never have to worry about power outages or running out of printer ink.

#### COMPATIBILITY

Works in conjunction with ES&S' Electionware® and Election Reporting Manager® software, ADA-compliant marking devices (AutoMARK® or ExpressVote®), the DS450<sup>™</sup> and DS850<sup>®</sup> central scanner and tabulators and plastic or metal ballot bins to provide a complete end-to-end election solution.

#### **AVAILABLE OPTIONS**

Wireless modem and capacity to send data via Secure File Transfer Protocol (SFTP) server; backup data storage in addition to being a primary data storage device. ATTACHMENT C



# ENHANCING THE ELECTION PROCESS FOR THE STATE OF RHODE **ISLAND**



#### **REQUEST FOR PROPOSAL RFP #9549934 VOTING EQUIPMENT SYSTEM**

October 30, 2015

State of Rhode Island and Providence Plantations Department of Administration Division of Purchases

#### **RIVIP BIDDER CERTIFICATION COVER FORM**

#### **SECTION 1 - BIDDER INFORMATION**

Bidder must be registered as a vendor on the RIVIP system at www.purchasing.ri.gov to submit a bid proposal.

Solicitation Number:	7549934	
Solicitation Title:	RFP-VOTING EQUIPMENT SYSTEM (81 pages)	
Bid Proposal Submission Deadline Date & Time:	10/30/2015	10:00 AM
RIVIP Vendor ID #:	18999	
Bidder Name:	Election Systems And Software	
Address:	11208 John Galt Blvd.	
	Omaha , NE 68137 USA	
Telephone:	402-938-1440	
Fax:	402-970-1276	
Contact Name:	Tamara Kaup	
Contact Title:	Manager of Proposals	
Contact Email:	bids@essvote.com	

#### SECTION 2 — DISCLOSURES

## Bidders must respond to every statement. Bid proposals submitted without a complete response may be deemed nonresponsive.

Indicate "Y" (Yes) or "N" (No) for Disclosures 1-4, and if "Yes," provide details below. Complete Disclosure 5. If the Bidder is publicly held, the Bidder may provide owner information about only those stockholders, members, partners, or other owners that hold at least 10% of the record or beneficial equity interests of the Bidder.

- N 1. State whether the Bidder, or any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder or any parent, subsidiary, or affiliate has been subject to suspension or debarment by any federal, state, or municipal governmental authority, or the subject of criminal prosecution, or convicted of a criminal offense within the previous 5 years. If "Yes," provide details below.
- N 2. State whether the Bidder, or any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder or any parent, subsidiary, or affiliate has had any contracts with a federal, state, or municipal governmental authority terminated for any reason within the previous 5 years. If "Yes," provide details below.
- N 3. State whether the Bidder, or any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder or any parent, subsidiary, or affiliate has been fined more than \$5000 for violation(s) of any Rhode Island environmental law(s) by the Rhode Island Department of Environmental Management within the previous 5 years. If "Yes," provide details below.

- N 4. State whether any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder is serving or has served within the past two calendar years as either an appointed or elected official of any state governmental authority or quasipublic corporation, including without limitation, any entity created as a legislative body or public or state agency by the general assembly or constitution of this state.
  - 5. List each officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder, and each intermediate parent company and the ultimate parent company of the Bidder. For each individual, provide his or her name, business address, principal occupation, position with the Bidder, and the percentage of ownership, if any, he or she holds in the Bidder, and each intermediate parent company and the ultimate parent company of the Bidder.

#### Disclosure details (continue on additional sheet if necessary): Management Board

 Nanagement Board
\* Aldo Tesi - Chairman, Election Systems & Software, LLC, 11208 John Galt Boulevard, Omaha, NE 68137
\* Michael R. McCarthy - Board Member of ES&S, Chairman of McCarthy Group, LLC, 1601 Dodge Street, Suite 3800, Omaha, NE 68102
Officers (all located at Election Systems & Software, LLC, 11208 John Galt Boulevard, Omaha, NE 68137)
Thomas E. Burt - President and Chief Executive Officer; Thomas F. O'Brien - Executive Vice President, Finance, Treasurer and Chief Financial Officer; Kathy Rogers - Senior Vice President, Government Relations; Ken Carbullido - Senior Vice President, Innovations; Matthew Nelson - Senior Vice President, Sales; Jim Schmidt - Senior Vice President, Manufacturing; Richard Jablonski - Vice President, Finance and Secretary; Steve Bolton - Vice President, Intellectual Property; Gary Weber - Vice President, Software Development; Eric Anderson - Vice President/Ceneral Coursel; Steve Pearson - Vice President, Certification: Adam Carbullido - Vice President, Release Management: Michele Feichtinger-Ernst - Vice Counsel; Steve Pearson - Vice President, Certification; Adam Carbullido - Vice President, Release Management; Michele Feichtinger-Ernst - Vice President, Customer Service Parent Company to ES&S - Government Systems, Software & Services, Inc. (Owns 100% of ES&S)

#### **SECTION 3 — CERTIFICATIONS**

#### Bidders must respond to every statement. Bid proposals submitted without a complete response may be deemed nonresponsive.

Indicate "Y" (Yes) or "N" (No), and if "No," provide details below.

#### THE BIDDER CERTIFIES THAT:

- Y 1. The Bidder will immediately disclose, in writing, to the State Purchasing Agent any potential conflict of interest which may occur during the term of any contract awarded pursuant to this solicitation.
- 2. The Bidder possesses all licenses and anyone who will perform any work will possess all licenses required by applicable federal, Y state, and local law necessary to perform the requirements of any contract awarded pursuant to this solicitation and will maintain all required licenses during the term of any contract awarded pursuant to this solicitation. In the event that any required license shall lapse or be restricted or suspended, the Bidder shall immediately notify the State Purchasing Agent in writing.
- The Bidder will maintain all required insurance during the term of any contract pursuant to this solicitation. In the event that any required Y 3. insurance shall lapse or be canceled, the Bidder will immediately notify the State Purchasing Agent in writing.
- 4. The Bidder understands that falsification of any information in this bid proposal or failure to notify the State Purchasing Agent of any Y changes in any disclosures or certifications in this Bidder Certification may be grounds for suspension, debarment, and/or prosecution for fraud.
- The Bidder has not paid and will not pay any bonus, commission, fee, gratuity, or other remuneration to any employee or official of the State of Rhode Island or any subdivision of the State of Rhode Island or other governmental authority for the purpose of Y 5. obtaining an award of a contract pursuant to this solicitation. The Bidder further certifies that no bonus, commission, fee, gratuity, or other remuneration has been or will be received from any third party or paid to any third party contingent on the award of a contract pursuant to this solicitation.
- 6. This bid proposal is not a collusive bid proposal. Neither the Bidder, nor any of its owners, stockholders, members, partners, Y principals, directors, managers, officers, employees, or agents has in any way colluded, conspired, or agreed, directly or indirectly, with any other bidder or person to submit a collusive bid proposal in response to the solicitation or to refrain from submitting a bid proposal in response to the solicitation, or has in any manner, directly or indirectly, sought by agreement or collusion or other communication with any other bidder or person to fix the price or prices in the bid proposal or the bid proposal of any other bidder, or to fix any overhead, profit, or cost component of the bid price in the bid proposal or the bid proposal of any other bidder, or to secure through any collusion, conspiracy, or unlawful agreement any advantage against the State of Rhode Island or any person with an interest in the contract awarded pursuant to this solicitation. The bid price in the bid proposal is fair and proper and is not tainted by any collusion, conspiracy, or unlawful agreement on the part of the Bidder, its owners, stockholders, members, partners, principals, directors, managers, officers, employees, or agents.
- The Bidder: (i) is not identified on the General Treasurer's list created pursuant to R.I. Gen. Laws § 37-2.5-3 as a person or entity Y 7. engaging in investment activities in Iran described in § 37-2.5-2(b); and (ii) is not engaging in any such investment activities in Iran.
- Y 8. The Bidder will comply with all of the laws that are incorporated into and/or applicable to any contract with the State of Rhode Island.

Certification details (continue on additional sheet if necessary):

Submission by the Bidder of a bid proposal pursuant to this solicitation constitutes an offer to contract with the State of Rhode Island through the Division of Purchases on the terms and conditions contained in this solicitation and the bid proposal. The Bidder certifies that: (1) the Bidder has reviewed this solicitation and agrees to comply with its terms and conditions; (2) the bid proposal is based on this solicitation; and (3) the iformation submitted in the bid proposal (including this Bidder Certification Cover Form) is accurate and complete. The Bidder acknowledges that the terms and conditions of this solicitation and the bid proposal will be incorporated into any contract awarded to the Bidder pursuant to this solicitation and the bid proposal. The person signing below represents, under penalty of perjury, that he or she is fully informed regarding the proposal on behalf of the Bidder.

BIDDER

Date: 10/27

Election Systems & Software / LLC Name of Bidder A Signature in ink Richard J. Jablonski, Vice President, Finance

Printed name and title of person signing on behalf of Bidder

second to none and will provide invaluable during the implementation and first use of a new voting system.

Certified Proven Products – ES&S is bidding the proven DS200 precinct based scanner. With more than 25,000 DS200's in use in 16 states and successfully tabulating millions of votes in jurisdictions like New York City, Miami and Minneapolis not to mention the states of Maine and Maryland, Rhode Island will be utilizing the industry's number 1 digital precinct solution..

Today, not only do we work with many of the same customers we've s supported for more than three decades, but our business has grown to serve 41 states and includes more than 4,500 clients. From our humble beginnings supporting a handful of election administrators and voters in 1979, our election equipment and software is now utilized by approximately 60% of the registered voters in the United States (see the figure that follows; Jurisdictions Using ES&S Equipment and Software are shown in dark blue).



2. Vendor must provide the following information for verification of completion of VSTL certification:

- Name, address, and telephone number of VSTL performing certification test
- Date of certification

#### **ES&S RESPONSE**

The base system, EVS,5.2.0.3, was VSTL tested by:

National Technical Systems (NTS) 7800 Hwy 20 West Huntsville, AL 35806 256-837-4411

Date of VSTL Certification: July 22, 2015

Additional components not part of the Election Assistance Commission's certification process, including wireless transmission of election results were VSTL tested by NTS and certified August 21, 2015.

3. Provide a flow chart of the entire System and how each component integrates into it.

#### **ES&S RESPONSE**

Please see **Attachment B** for a flow chart of the system.

4. Describe any components of your system that are not part of the Elections Assistance Commission's certification process including but not limited to the wireless transmission of election results.

#### **ES&S RESPONSE**

The following components are not part of the EAC's certification process:

- Electionware Toolbox provides ballot test decks for L&A testing
- Modem transmission of results from the 9 towns with DS200's with wireless modems to the Central Tabulation Equipment (Voting System Test Lab (VSTL) Tested)
- The Firewall and Communications Server at the State Board of Elections that will receive the DS200 results transmissions from the DS200's with wireless modems at the 9 towns (VSTL Tested)
- The remote connection of Election Reporting Manager workstations at the 30 Regional Tabulation Equipment sites. The Election Reporting Manager application used at the Regional Tabulation Equipment sites is EAC certified.
- Ballot-on-demand Balotar printers
- Small and medium-sized font for printing on ExpressVote vote summary cards.

9. Describe if a voted ballot that contains a crease or other type of fold mark can be read by the precinct count unit and the central mail ballot counting unit. Attach individual ballots that can be read by a precinct count unit and central mail ballot counting unit containing a sample of creases and fold marks.

#### **ES&S RESPONSE**

Yes, a voted ballot that contains a crease or other type of fold mark can be read by the precinct count unit and the central mail ballot counting unit. Both the DS200 and DS850 have been uniquely designed to accept ballots that have been folded. The paper transports on both scanners safely guide previously folded ballots through the read heads to avoid paper jams or misreads and the scan speed approaches the processing speed for unfolded ballots. The DS850 uses a patented technology known as TruGrip<sup>TM</sup>, to provide constant contact with each ballot. By using 22 axled, double-rollers, full control of the ballot is ensured from start to finish. A close-up of the DS850 TruGrip rollers is shown below:



Sample ballots are attached as Attachment E.

10. Describe what security measures are available to protect the operating system, application programs and data on all System equipment from unauthorized change.

#### ES&S RESPONSE

From concept to construction, ES&S adheres to industry-leading standards for quality and security.

Designed and federally certified to meet the rigorous security standards of the 2005 Voluntary Voting System Guidelines, the operating system controls, limits, and detects unauthorized access to all critical system components. The system also implements state-of-the-art safeguards against losses of system integrity, availability, confidentiality and accountability.



#### PREVIOUS EXPERIENCE AND BACKGROUND

#### PREVIOUS EXPERIENCE AND BACKGROUND – EQUIPMENT VENDOR

1. Provide the history of the proposed System, including whether the System proposed is the latest version of the equipment available that has been fully tested and currently in distribution.

#### **ES&S RESPONSE**

The DS200 was first manufactured in April 2007. By November 2008, more than 4,500 DS200 digital precinct scanners were built and successfully used in the Florida Primary and General elections. ES&S utilized Ricoh Electronics Inc. as its prime contract manufacturer for the DS200 from 2007-2009.

In 2009, the EAC certified the DS200 under 2002 Voting System Standards. During 2009, more than 8,000 DS200 digital scanners were successfully used in the primary and general elections in Florida and Ohio. In 2009, ES&S shifted responsibility for contract manufacturing to Pivot International, Inc, headquartered out of Lenexa, Kansas. Pivot conducts manufacturing operations out of its ISO 9001 certified facility in Manila, Republic of the Philippines.

In 2010 New York City, selected ES&S to provide DS200 digital scanners to support its 4.6 million voters. Five other counties in New York also chose the DS200 as their primary voting system. In 2012, the State of New York certified the DS200 under the 2005 Voluntary Voting Systems Guidelines (VVSG) and New York election law requirements. Less than a year later, in May 2013, the U.S. Election Assistance Commission (EAC) approved the certification of the DS200 under the 2005 VVSG standards.

As of today, ES&S has manufactured more than 24,000 DS200 scanners. By the end of 2015, ES&S will manufacture an additional 4,000 DS200 units bringing the total produced since the first build to over 21,000.

Today, more than 50 million registered voters in the United States and Canada can now cast their ballots via this state-of-the-art ballot scanner.

The proposed version of the DS200 is the latest version of the DS200 which is certified to the U.S. EAC VVSG 2005 standard and includes many enhancements in the areas of security, ballot processing speed, ballot handling, and voter and poll worker graphical interfaces.

The DS850 was first manufactured in 2009. The DS850 was first used in Colorado Springs Colorado in May of 2010. ES&S utilized DATAWIN Inc. as its prime contract manufacturer for the DS850.

In 2012, the EAC certified the DS850 under 2002 Voting System Standards. From 2009 to 2015 170 DS850 have been manufactured by DATAWIN, and are in use over 20 states from coast to coast

The DS850 was design to span the EAC standards and was also certified to the U.S. EAC VVSG 2005 standard.

The ExpressVote was first manufactured in 2014. By September of 2015, more than 5000 ExpressVotes were built and successfully deployed to customers across the US. Pivot International, Inc, headquartered out of Lenexa, Kansas is the original and current manufacture for the ExpressVote. Pivot conducts manufacturing operations out of its ISO 9001 certified facility in Manila, Republic of the Philippines.

The current ExpressVote was certified to U.S. EAC VVSG 2005.



## Rhode Island EVS 5.2.0.3/5.3.0.3 Statewide Network System Configuration

October 23, 2015

Legend EAC Certified Configuration

**Extended Configuration** 





## State of Rhode Island EVS 5.2.0.3/5.3.0.3 DS200 Modeming System Configuration

October 23, 2015

Legend EAC Certified Configuration

Extended Configuration



# **RE: Final Number on Certification**

email: "noreply@eac.gov Paul CraftPaul Craft" Thursday, August 17, 2006 at 5:38:00 AM Eastern Daylight Time To: email: "smpearson@essvote.com", email: "kdcarbullido@essvote.com", email: "JNilius@systest.com" Cc: email: "sandy@sos.state.ia.us", email: "bhancock@eac.gov", email: "britw@bellsouth.net"

Gentlemen,

I am available all day today to work with someone on resolving these issues.

Call me after 8:00AM EDT,

Paul

From: Paul Craft [mailto:craft@paulcraft.net]

Sent: Wednesday, August 16, 2006 9:19 PM

To: 'Steinbach, Sandy [SOS]'; '<u>BHancock@eac.gov</u>'; '<u>britw@bellsouth.net</u>'; '<u>mcgregor@paulcraft.net</u>'; '<u>tapernew@earthlink.net</u>'; '<u>ChristopherT@michigan.gov</u>'; '<u>twilkey@eac.gov</u>'

Subject: RE: Final Number on Certification

Ok,

This will be the fourth of a chain of versions of ES&S Systems. While this one does not include the AutoMark it does give us an M100 that reads a PEB and an M100 with a wireless modem.

I have reviewed SysTest Labs' report titled:

**Qualification Report Amendment** 

Amendment B:

M100 with iVotronic PEB Reader

M100 Wirless modem

**Elections Systems and Software** 

ES&S Unity 3.0.1.0 Voting System

**Revision 1.0** 

July 26, 2006.

The report recommends certification of a system described as:

ES&S Unity 3.0.1.0 Voting System as previously certified under NASED Number N-2-02-22-22-005.

Ammended to include an M100 with an iVotronic PEB Reader and an M100 with a wireless modem.

I find the report insufficiently specific to support a recommendation for certification.

Although the Cover and the introduction discuss two new versions of the M-100, The system identification section includes a new version of iVotronic Firmware.

In section 3.2, the PEB is shown as having "no version". In my experience the PEB's do have version numbers. They also have firmware and some of the older versions of the firmware should not be used in elections.

Then in the Recommendations section there is no mention of the iVotronic.

Finally in Appendix C, there are mention of three different configurations of the new iVotronic.

These changes appear to be a little extreme for a simple modification of the configuration of an existing certified system. Additionally until a report is

issued that clearly describes and defines the system for which certification is sought, and explains how the entire system was tested, I cannot recommend certification.

Paul

Paul

# FW: Wireless voting machines may be vulnerable to hackers | Myrtle Beach Sun News

email: "smpearson@essvote.com Pearson, Steve" Tuesday, October 9, 2018 at 5:19:30 PM Eastern Daylight Time To: email: "bhancock@eac.gov Brian Hancock (bhancock@eac.gov)"

Brian, when you have a few minutes I'd like to brief you on some of the things we're doing with modeming and regional reporting. Let me know when you're have maybe 20-30 minutes. Thanks.

Steve

From: Rogers, Kathy

**Sent:** Monday, October 8, 2018 7:59 AM

To: \*TB Staff Meeting; Beeson, Mac; Seets, Gene

Subject: Wireless voting machines may be vulnerable to hackers | Myrtle Beach Sun News

It's nice to see the states stepping up to defend the process.

https://www.myrtlebeachonline.com/news/politics-government/election/article219508945.html

# Are wireless voting machines vulnerable? Florida, other states say they're safe enough

By Tim Johnson

tjohnson@mcclatchydc.com

Washington

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Barely a month before midterm elections, voting integrity advocates and electronic voting experts want the federal government to issue an official warning to states that use voting machines with integrated cellular modems that the machines are vulnerable to hacks, potentially interfering with the ballot counting.

Once seen as a useful tool to provide quick election results, voting machines with cellular modems are now subject to fierce debate over how easy it would be to break into them and change the results.

Such machines are certified for use in Florida, Illinois, Michigan and Wisconsin.

A spokeswoman for the Florida Department of State, Sarah Revell, defended the certification of such machines.

"Voting machines are not connected to the internet," Revell said in an email to <u>McClatchy</u>, adding that "it is important to note that when transmitting election data everything is encrypted and authenticated."

But a number of voting machine researchers take issue with such assertions, saying that cellular networks increasingly overlap with the internet and open avenues for hackers to interfere with unofficial early results even when there are paper ballots that can be tallied for a slower official count. They say interfering with unofficial early results, even when corrected later, could increase mistrust among voters and add uncertainty immediately after elections conclude.

"The voting machine vendors like to say, well, the voting machine modem is only used for transmitting the unofficial results when you close

the polls back through the internet to county central where the clerk can post them," said Andrew W. Appel, a computer scientist at Princeton University.

"The problem is, that modem talking through the cell phone network really is more connected to the internet than they like to think."

Appel said hackers could intercept signals

<u>using a portable cell phone tower</u>, commonly called a Stingray, and even introduce malicious code through internet-linked cellular networks.

"If you can talk to that modem, and if there are any security flaws in the voting machine software that talk through that modem, then the voting machine could be confused into installing new software that changes the vote," Appel said.

Appel was among 30 researchers, activists and scientists who signed a letter this week urging the federal government to caution states from

the use of such voting machines, citing their "grave concerns" that manipulation through cellular networks could "wreak havoc on an election."

"The convenience of transmitting vote totals online does not outweigh the need of the American people to be assured their votes will be accurately transmitted and counted," said the letter, which was also endorsed by five citizen and digital rights groups, including <u>Common Cause</u> and the <u>Electronic Frontier Foundation</u>.

How many cellular-enabled voting machines will be in use for Nov. 6 midterm elections is not known. There is no national registry for the 10,000 or so election jurisdictions in the United States, so an exact number could not be determined readily.

An official with the Election Assistance Commission, an independent federal agency that is a clearinghouse for election information, said there

are "probably" more than 1,000 of the cellular-enabled machines deployed in different parts of the country.

"They are out there," said

Brian Hancock, director of testing and certification for the Election Assistance Commission. "As you know, it's up to the states to decide which systems they use."

In the wake of

<u>Russian interference in the 2016 U.S. elections</u> and warnings that such meddling may be recurring this year, voting officials say they are seeking a balance between security, accuracy, and convenience for voters – as well as speed in disseminating vote results.

A spokesman for the Wisconsin Elections Commission, Reid Magney, said his agency does not believe cellular-enabled machines are vulnerable.

"It is not a large concern at this point," Magney said. "The results are encrypted and use security keys, so the receiving computer knows that the data is authentic. ... I know people have theorized about man-in-the-middle attacks. I've never seen people intercept (cellular signals), change them, re-encrypt them and send them on."

An Illinois board of elections spokesman, Matt Dietrich, said cellular-enabled voting machines are used in his state "but they are only allowed to transmit unofficial results."

Revell, the Florida spokeswoman, said all Florida voting is on paper ballots "so we can always refer to the original record" in case of confusion.

While some counties may have the cellular-enabled machines, she said, "that does not mean counties utilize it."

Voting security advocates say election officials underestimate the determination and sophistication of

foreign adversaries that want to interfere in U.S. elections.

"We have a big bullseye painted on our election systems. We have to prioritize security over the demand to have elections results right now," said Susan Greenhalgh, policy director at the <u>National Election Defense Coalition</u>, a New York-based election integrity network.

In most wireless voting machines, the results transmitted to central computers at the end of election day are unofficial. Verified balloting totals are delivered through other means, including by hand delivering removable memory cards or flash drives to tabulators.

"The press is the main reason why those (wireless) systems are there. The media wants to know the results immediately," said Hancock of the Election Assistance Commission.

One of the top three vendors of voting machines in the United States, <u>Hart Intercivic</u>, an Austin, Texas, based company, offers one voting machine model that is wirelessly enabled. The company's vice president of operations, Peter Lichtenheld, said elections officials in various states demand such an option.

"People say they want secure and fast, but in reality people want fast," Lichtenheld said. "It's a state and local choice ... There's a market for it. There are customers who want it."

Some states have only recently moved away from wirelessly enabled machines. North Carolina

<u>enacted a law in June</u> barring the 100 counties in that state from using any wireless communication.

Even if the machines have wireless capability, "they cannot be connected," said Patrick Gannon, a spokesman for the state board of elections.

"We have never allowed any wireless machines," said Kansas Deputy Secretary of State Bryan Caskey.

A spokesman for South Carolina's Election Commission, Chris Whitmire, said, "No voting machines in (South Carolina) have any wireless capability."

But a computer scientist at the University of South Carolina, Duncan Buell, said logs from the June 12 primary in the state show 23 voting machines communicating data electronically.

"There certainly seems to have been some modem connections, yes," Buell said.

I hacked an election. So can the Russians.

It's time America's leaders got serious about voting security.

By New York Times

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Kathy Rogers

404-432-4485

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January 7, 2020

Chairwoman Christy McCormick Vice Chair Benjamin Hovland U.S. Election Assistance Commission 1335 East West Highway, Suite 4300 Silver Spring, Maryland 20910 cmccormick@eac.gov bhovland@eac.gov

## **RE:** Request to investigate ES&S for misrepresentations regarding EAC certification of voting machines with modems

Dear Chairwoman McCormick,

We write to you to request that the Election Assistance Commission (EAC) initiate an inquiry and investigation into Elections Systems & Software (ES&S). ES&S may have violated, and likely continues to violate, Sections 5.14 and 5.15.1 of the EAC Testing and Certification Program Manual Version 2.0 (May 31, 2015) (TCPM)<sup>1</sup> by representing or implying that the DS200 with modem configuration is EAC certified when in fact only the DS200 *without* modem is EAC certified.<sup>2</sup> ES&S also may have violated Section 5.16 by failing to warn purchasers that adding an uncertified modem to the DS200 will void the EAC certification of the voting system in its entirety. The EAC should investigate this misconduct, require corrective action, and determine whether to suspend ES&S's manufacturer registration.

<sup>&</sup>lt;sup>1</sup> Election Assistance Commission, Testing & Certification Program Manual v.2 (May 31, 2015), *available at* <u>http://bit.ly/2tzHgQq</u>.

<sup>&</sup>lt;sup>2</sup> ES&S EVS 5.0.0.0 Certificate of Conformance, *available at* <u>http://bit.ly/352lkLq</u> (May 16, 2013). The ES&S EVS 5.0.0.0 Certificate of Conformance and all documents cited hereafter relating to the certification of the EVS 5.0.0.0 are available at <u>https://www.eac.gov/voting-</u>equipment/evs-5000/.

### 1. Background

ES&S manufactures the DS200, a precinct-based ballot scanner and vote tabulator. The EAC certified the DS200 without a modem in 2009, under the Voluntary Voting Systems Guidelines Version 1.0 (VVSG 1.0) as part of the certification of the ES&S Unity 3200 system.<sup>3</sup> In 2011, ES&S submitted a new voting system, the EVS 5.0.0.0, to the EAC for certification. As part of the EVS 5.0.0.0 system, ES&S sought certification of the DS200 as a stand-alone precinct scanner, as a precinct scanner with wired modem capability, and as a precinct scanner with wireless network capability. The testing agency subsequently developed a draft certification test plan to test all three versions of the DS200.<sup>4</sup> However, on August 13, 2012, ES&S withdrew both the wired modem and wireless transmission configurations of the DS200 from their application process.<sup>5</sup> Thereafter, the testing agency revised its test plan and tested the EVS 5.0.0.0 system, including the DS200 only as a stand-alone precinct scanner.<sup>6</sup> This version of the EVS 5.0.0.0 system—which does not include either a wired modem or wireless transmission configuration of the DS200-was certified by the EAC to VVSG 1.0 standards on May 13, 2013.<sup>7</sup> Since initial certification, it is our understanding that ES&S has not submitted a wired modem or wireless configuration of the DS200 for EAC testing or certification.

### 2. Misrepresentations

Despite withdrawing the wired modem and wireless configurations of the DS200 from the certification process, ES&S continues to offer the modem configuration as an optional add-on to the DS200. Through a "product one-sheet" currently available on the ES&S website and appended to this letter as Attachment A, ES&S identifies the DS200 "optional wireless modem results transfer with

<sup>&</sup>lt;sup>3</sup> iBeta Quality Assurance, "Election Systems & Software Unity 3.2.0.0 Voting System VSTL Certification Test Report (2009), *available at* <u>https://www.eac.gov/documents/2009/7/22/ess-unity-3200-test-report-ver-40-ibeta/</u>.

<sup>&</sup>lt;sup>4</sup> Wyle Laboratories, Certification Test Plan, Certification Test Plan No. T59087.01, Manufacturer System EVS 5.0.0.0 (March 22, 2012).

<sup>&</sup>lt;sup>5</sup> Steve Pearson, Vice President, Certification, ES&S, Letter to U.S. Election Assistance Commission Re: EVS 5.0.0.0 Scope Revision (August 13, 2012).

<sup>&</sup>lt;sup>6</sup> Wyle Laboratories, Certification Test Plan, Certification Test Plan No. T59087.01 REV D, Manufacturer System EVS 5.0.0.0 (March 22, 2012).

<sup>&</sup>lt;sup>7</sup> ES&S EVS 5.0.0.0 Certificate of Conformance; Alice P. Miller, U.S. Election Assistance Commission, Letter to Steve Pearson, Vice President, Certification, ES&S, Re: Agency Decision—Grant of Certification (May 16, 2013); Wyle Laboratories, Test Report, Report No. T59087.01-01 Rev A (May 1, 2013).

encryption" as an example of the scanner's "comprehensive" key features.<sup>8</sup> ES&S also distributes the one-sheet, past versions of the one-sheet, and similar materials to potential buyers, including Cuyahoga County, Ohio (2018),<sup>9</sup> South Dakota (2018),<sup>10</sup> Tioga County, Pennsylvania (2019),<sup>11</sup> North Carolina (2019),<sup>12</sup> and Boone County (2019).<sup>13</sup> ES&S also has produced and disseminated at least one other similar DS200 brochure, appended to this letter as Attachment B, including to Grand Traverse, Michigan.<sup>14</sup> It is our understanding that ES&S has produced and distributed these one-sheets and similar promotional materials, featuring both the "EAC certified" logo and the wireless modem as an available option, since approximately 2016, and possibly earlier.

### 3. Violations of the Testing and Certification Program Manual

ES&S's advertisements violate Sections 5.14 and 5.15.1 of the TCPM by falsely stating or implying that the DS200, when purchased with the optional wireless modem, is certified to EAC standards. The EAC requires that manufacturers accurately display its mark of certification and avoid misleading potential buyers into believing that a system, or any component thereof, is certified when it is not.

https://dl.ncsbe.gov/index.html?prefix=State\_Board\_Meeting\_Docs/2019-07-28/Certification/Voting%20System%20Certification/ESS/.

<sup>&</sup>lt;sup>8</sup> See ES&S "DS200 Precinct Scanner & Tabulator" (2016), available at

https://www.essvote.com/wp-content/uploads/2019/07/DS200\_One-Sheet.pdf (last visited Dec. 11, 2019). As of December 11, 2019, the document can be found by visiting the DS200 product page on the ES&S website, *available at* https://www.essvote.com/products/ds200/, where ES&S provides the "product one-sheet" as a download.

<sup>&</sup>lt;sup>9</sup> ES&S, "Cuyahoga County, Ohio Tabulation Equipment Survey" p. 103-04 (Nov. 9, 2018), *available at* <u>http://bit.ly/33Wa6al</u>.

<sup>&</sup>lt;sup>10</sup> ES&S Information Sheets, DS200 Product One-Sheet at p.3-4, *available at* <u>http://bit.ly/33ScZJ9</u>.

<sup>&</sup>lt;sup>11</sup> ES&S DS200 Product One-Sheet, *available at* <u>http://bit.ly/2RJRdVo</u>.

<sup>&</sup>lt;sup>12</sup> ES&S DS200 Product One-Sheet, *available at* <u>http://bit.ly/362eJko</u>. The document can be found with other ES&S materials provided to the North Carolina State Board of Elections (NC SBE), which can be found and downloaded through the NC SBE, *at* 

<sup>&</sup>lt;sup>13</sup> ES&S DS200 Product One-Sheet, included in Boone County Commission proceedings at 300-01 (July 16, 2019), *available at* <u>http://bit.ly/34f58Fw</u>. *See id.* at pp. 99-342 (documents related to Boone County purchase of ES&S equipment)

<sup>&</sup>lt;sup>14</sup> DS200 Product Brochure, *available at* <u>http://bit.ly/36nZXVI</u>.

TCPM Section 5.14 provides that:

Manufacturers may not represent or imply a voting system is EAC certified unless it has received a Certificate of Conformance for the system. Statements regarding EAC certification in brochures, on websites, on displays, and in advertising/sales literature must be made solely in reference to specific systems. Any action by a Manufacturer to suggest EAC endorsement of its product or organization is strictly prohibited and may result in a Manufacturer's suspension or other action pursuant to Federal civil and criminal law. Manufacturers must provide a copy of the Certificate and Scope of Certification document (found at www.eac.gov) to any jurisdiction purchasing an EAC certified system.<sup>15</sup>

Under Section 5.15.1, the TCPM also provides that:

The Manufacturer may use only the Mark of Certification that accurately reflects the certification held by the voting system as a whole. The certification of individual components or modifications shall not be independently represented by a Mark of Certification. In the event a system has components or modifications tested to various (later) version of the VVSG, the system shall bear only the Mark of Certification of the standard to which the system (as a whole) was tested and certified (i.e. the lesser standard). Ultimately, a voting system shall only display the Mark of Certification of the oldest or least rigorous standard to which any of its components are certified.<sup>16</sup>

Pursuant to Section 5.16, the TCPM also requires that "[t]he user's manual or instruction manual for a certified voting system shall warn purchasers that any changes or modifications to the system not tested and certified by the EAC will void the EAC certification of the voting system."<sup>17</sup>

ES&S has not followed the standards set forth in the TCPM. It displays the mark of certification on its website page for the DS200 and on other advertising materials sent or otherwise made available to election officials. The advertisements

<sup>&</sup>lt;sup>15</sup> EAC Testing and Certification Program Manual Version 2.0 § 5.14 (May 31, 2015) (hereinafter "TCPM"). <sup>16</sup> TCPM § 5.15.1 (emphasis added).

<sup>&</sup>lt;sup>17</sup> TCPM § 5.16 (emphasis added).

clearly indicate to buyers that the DS200—alone or with its optional features, including the modem—is fully certified by the EAC. Election officials easily could be misled into purchasing the DS200 with a wireless modem configuration, not realizing that the modem is uncertified, and that under Section 5.15.1 and Section 5.16, the modem's addition to the DS200 would void its certification and indeed, would void the certification of the entire system.

ES&S may also be misrepresenting the modem as certified throughout the procurement process, which may qualify as an additional violation of the TCPM. In 2014, for example, in response to the Maryland State Board of Elections Request for Proposal (RFP) for an election system, ES&S submitted a proposal for its EVS 5.2.0.0, which Maryland accepted.<sup>18</sup> It is our understanding that during the procurement process, ES&S proposed the addition of a modem to the DS200 without indicating that its addition would void the system's EAC certification. Ultimately, after providing Maryland with a more expensive version of the EVS that included DS200 with modems, ES&S had to refund \$1.2 million to the state of Maryland and remove modems from the already distributed machines.<sup>19</sup> ES&S may well have violated Section 5.16 by failing to warn the Maryland State Board of Elections that installing the modems in the DS200 voided the system's certification.

In Rhode Island, ES&S submitted a proposal in response to the state's RFP for a new voting system.<sup>20</sup> In its proposal, ES&S repeatedly claimed that its voting system, the EVS 5.2.0.3, was EAC certified.<sup>21</sup> Although it acknowledged that modem transmissions were not part of the EAC certification process, ES&S did not

<sup>&</sup>lt;sup>18</sup> Maryland State Board of Elections Request for Proposals, No. D38B4400019 (July 22, 2014); State of Maryland State Board of Elections, Meeting Minutes—October 30, 2014, at p. 9, *available at* <u>http://bit.ly/2PAtaWj</u>.

<sup>&</sup>lt;sup>19</sup> State of Maryland State Board of Elections, Meeting Minutes—July 17, 2015, at p. 5-6, *available at* <u>http://bit.ly/36rGmUo</u>; State of Maryland State Board of Elections, Meeting Minutes—August 27, 2015, at p. 4, *available at* http://bit.ly/38DLkPM.

<sup>&</sup>lt;sup>20</sup> ES&S, "Enhancing the Election Process for the State of Rhode Island: Request for Proposal RFP #9549934 Voting Equipment System (Oct. 30, 2015) (hereinafter ES&S Rhode Island Proposal). Relevant excerpts are appended to this letter as Attachment C, and we have made the entire document available on the Free Speech For People website, at <a href="http://bit.ly/2LIMFLh">http://bit.ly/2LIMFLh</a>.

<sup>&</sup>lt;sup>21</sup> *Id.* at 9 ("Certified Proven Products—ES&S is bidding the proven DS200 precinct based scanner."); *id.* at 55 ("Designed and federally certified to meet the rigorous security standards of the 2005 Voluntary Voting Systems Guidelines, the operating system controls, limits, and detects unauthorized access to all critical system components."); *id.* at 117 ("The proposed version of the DS200 is the latest version of the DS200 which is certified to the U.S. EAC VVSG 2005 standard . . . .").

disclose that use of non-certified components will void the entire system's EAC certification.<sup>22</sup> ES&S also submitted a diagram that coded the DS200 with internal wireless modem as being part of the "EAC Certified Configuration."<sup>23</sup> Furthermore, though the diagram showed a system that integrated EAC-certified and non-certified components, ES&S did not clarify that under EAC guidelines, inclusion of <u>any</u> non-certified component in a voting system would void the entire system's certification. ES&S may well have violated Section 5.15.1, as well as 5.16 by failing to disclose to the Rhode Island Board of Elections that the EVS 5.2.0.3 may no longer be EAC certified if used with the DS200 with internal modems.

The TCPM correctly recognizes that an election technology manufacturer cannot be allowed to falsely claim certification that its systems have not earned. And ES&S's omissions in its advertisements and procurement-related communications do precisely this. Though the EVS 5.0.0.0 and its subsequent versions are certified, inclusion of the uncertified modem voids the entire system's certification. ES&S clearly violates the TCPM by omitting this information from its advertisements and its procurement communications.

Courts throughout the country have long recognized that omission of material facts may void contracts and give rise to cognizable claims for damages against the omitting party. As the Supreme Court recently confirmed, "[b]ecause common-law fraud has long encompassed certain misrepresentations by omission, 'false or fraudulent claims' include more than just claims containing express falsehoods . . . misrepresentations by omission can give rise to liability."<sup>24</sup> Omission of critical information about "statutory, regulatory, or contractual requirements" may well result in "misleading half-truths" that give rise to cognizable claims of fraudulent misrepresentation.<sup>25</sup>

But counties and states should not have to resort to contract disputes with election vendors. They must be able to trust the accuracy of vendor assurances about EAC certification.

 <sup>&</sup>lt;sup>22</sup> See id. at 49 (noting that modem transmissions were not part of the EAC certification process).
 <sup>23</sup> Id. at 166-67.

<sup>&</sup>lt;sup>24</sup> Universal Health Servs., Inc. v. United States, 136 S. Ct. 1989, 1999 (2016).

<sup>&</sup>lt;sup>25</sup> *Id.* at 2001. Though federal contract law does not govern ES&S's fraudulent misrepresentations, omission of material fact is recognized as a form of fraud in states throughout the country, including those in which ES&S has contracted.

### 4. Requested action

The EAC should rigorously apply its standards and protections, and take swift response where vendors make false and misleading claims. Section 5.15.4 of the Testing and Certification Program Manual provides a broad range of remedies for vendor misrepresentation of certification status, including requiring corrective action, decertification, and manufacturer suspension:<sup>26</sup>

If the EAC determines a voting system is not in compliance with the VVSG, and the system has already been sold or otherwise distributed bearing the Mark of Certification, the EAC shall provide written notice to the Manufacturer. If the Manufacturer fails to take corrective action within 15 days of receipt of such notice, the EAC shall have the right to announce publicly that the voting system may no longer comply with its original certification, and may choose to initiate decertification actions as outlined in Chapter 7 of the *Manual*, and/or suspension of Manufacturer Registration as outlined in Section 2.6 of the *Manual*. Corrective action may include modification of the voting system to bring it into compliance with the VVSG, or removal of the Mark of Certification from the product.

(Section 5.15.4)

For this reason, we strongly urge the EAC to investigate ES&S's alleged violations of Sections 5.14, 5.15.1, and 5.16. And if ES&S requests an opportunity to cure its violations, the EAC should require substantive action on the vendor's part. Simply removing the advertisements or adding curative language is necessary, but not sufficient. ES&S must take proactive steps to correct its error, including but not limited to negotiating with parties that have purchased the equipment to reach an appropriate settlement of damages; running public advertisements in all states that have, or are considering the purchase of the DS200, to acknowledge and correct the omissions; and conducting public forums for voters who have had to, or may have to, vote on modem-equipped DS200 machines. Furthermore, the EAC should subject ES&S to rigorous overview of its advertisements for such period of time as necessary to reassure voters throughout the country that ES&S has learned to accurately advertise its certifications. Finally,

<sup>&</sup>lt;sup>26</sup> Section 2.6 provides that "[w]hen Manufacturers violate the certification program's requirements by engaging in management activities inconsistent with this Manual or failing to cooperate with the EAC, their registration may be suspended until such time as the issue is remedied." Under Section 2.6.2, suspension of registration means that "[a] suspended Manufacturer may not submit a voting system for certification."

the EAC should reserve the right, based on information derived from its investigation or if ES&S is any way uncooperative, to suspend the company's registration indefinitely.

States and counties across the country rely upon the EAC certification process to guide their choice in voting systems and vendors. And the EAC correctly requires vendors to advertise certification only when *all* components of the advertised system has been thoroughly tested and certified by the EAC. Rules 5.14, 5.15.1, and 5.16 are important rules that protect purchasing states and counties, and through them, the voters, from having to cast votes on systems that have not been properly vetted by the EAC. ES&S has repeatedly advertised its DS200 with internal modem—a critical component to ES&S's voting systems—as being EAC certified when, in fact, it is not. We therefore again respectfully request that EAC investigate and take action to correct this serious issue.

Sincerely,

Courtney Hostetler, Counsel Ronald A. Fein, Legal Director John C. Bonifaz, President Ben T. Clements, Chair of the Board Free Speech For People 1320 Centre St. #405 Newton, MA 02459 (617) 249-3015 chostetler@freespeechforpeople.org

Susan Greenhalgh Vice President of Policy and Program National Election Defense Coalition ATTACHMENT A

# DS200® Precinct Scanner & Tabulator



Copyright © 2016 Election Systems & Software, LLC. All rights reserved. All images Copyright © 2014 - 2018 Election Systems & Software, LLC.

# DS200 Key Features

The DS200 is a precinct-based scanner and vote tabulator equipped with the latest in ES&S' patented technology. Fully certified and compliant with EAC guidelines, the DS200 enhances the voting experience for voters and election officials alike. Our patented IMR® and PTRAC® technology ensures even the most poorly marked ballots are read accurately and consistently — protecting voter intent. All of this is designed to make everyone's job easier.

### ACCURATE



The DS200 combines the ES&S-patented Intelligent Mark Recognition (IMR®) and patented Positive Target Recognition & Alignment Compensation (PTRAC®) systems to accurately track and pinpoint target locations. This technology accommodates ballots inserted at angles or with erroneous marks to uphold voter intent. This precision improves the reliability of elections.

### SECURE



Like all ES&S tabulation equipment, the DS200 includes physical security features such as locking panels and security seals to secure sensitive components and election files, and a key-locked case for transport and shipping. The DS200 operating system controls, limits and detects unauthorized access to all critical data. The system also includes safeguards, such as data encryption and digital signatures, that help protect sensitive data and verify authenticity, including certification of all firmware.

### RELIABLE



Having both battery backup and thermal paper means you never have to worry about power outages or printer ink.

### COMPATIBLE



Works in conjunction with:

- ExpressVote<sup>®</sup> Universal Voting System
- DS450<sup>®</sup> High-Throughput Scanner & Tabulator
- DS850<sup>®</sup> High-Speed Scanner & Tabulator
- $\cdot$  Electionware  $^{\scriptscriptstyle (\! 8\!)}$  Election Management Software
- AutoMARK<sup>®</sup> Ballot Marking Device
  - · Election Reporting Manager®

### COMPREHENSIVE



- Optional wireless modem results transfer with encryption
- $\cdot$   $\,$  Primary data storage device

- Backup data storage
- Data sent via Secure File Transfer Protocol (SFTP) server

ATTACHMENT B

### PRECINCT SCANNER AND TABULATOR

# **DS200°**

## BECAUSE WHO WANTS TO BE STUCK INSIDE COUNTING BALLOTS?

The DS200 is a precinct-based scanner and vote tabulator equipped with the latest in ES&S' patented technology to make your job easier. Fully certified and compliant with EAC guidelines, the DS200 enhances the voting experience for voters and officials alike.

Our patented IMR<sup>™</sup> and PTRAC<sup>™</sup> technology ensures even the most poorly marked ballots are read accurately and consistently — protecting voter intent. This technology greatly reduces time spent manually adjudicating as it automatically verifies voter marks.

Intelligent, integrated, digital, patented, flexible, easy to use, reliable, secure, certified and accessible – the DS200 is the answer to your precinct-level election needs.





CERTIFIED

CERTIFIED

# Faster election results and greater voter confidence



# KEY FEATURES

Handles up to 9,900 precincts for early voting needs.

### SPEED

Completely processes both sides of a ballot in six seconds or less. Handles bent or folded ballots with ease.

### ACCURACY

DS200 combines the ES&S patented Positive Target Recognition & Alignment Compensation (PTRAC™) and patented Intelligent Mark Recognition (IMR™) systems to positively track and pinpoint target locations, accommodating for ballots inserted at irregular angles or with erroneous marks to create unparalleled accuracy in determining voter intent. This accuracy improves the reliability of elections.

### ACCESSIBILITY

Compatible with the ES&S ExpressVote® Universal Voting System and AutoMARK® Americans with Disabilities Act (ADA)-compliant ballot-marking device.

### RELIABILITY

Battery backup in case of a power outage and thermal paper means you never have to worry about power outages or running out of printer ink.

### COMPATIBILITY

Works in conjunction with ES&S' Electionware® and Election Reporting Manager® software, ADA-compliant marking devices (AutoMARK® or ExpressVote®), the DS450<sup>™</sup> and DS850<sup>®</sup> central scanner and tabulators and plastic or metal ballot bins to provide a complete end-to-end election solution.

### **AVAILABLE OPTIONS**

Wireless modem and capacity to send data via Secure File Transfer Protocol (SFTP) server; backup data storage in addition to being a primary data storage device. ATTACHMENT C



### ENHANCING THE ELECTION PROCESS FOR THE STATE OF RHODE **ISLAND**



### **REQUEST FOR PROPOSAL RFP #9549934 VOTING EQUIPMENT SYSTEM**

October 30, 2015

State of Rhode Island and Providence Plantations Department of Administration Division of Purchases

### **RIVIP BIDDER CERTIFICATION COVER FORM**

### **SECTION 1 - BIDDER INFORMATION**

Bidder must be registered as a vendor on the RIVIP system at www.purchasing.ri.gov to submit a bid proposal.

Solicitation Number:	7549934	
Solicitation Title:	RFP-VOTING EQUIPMENT SYSTEM (81 pages)	
Bid Proposal Submission Deadline Date & Time:	10/30/2015	10:00 AM
RIVIP Vendor ID #:	18999	
Bidder Name:	Election Systems And Software	
Address:	11208 John Galt Blvd.	
	Omaha , NE 68137 USA	
Telephone:	402-938-1440	
Fax:	402-970-1276	
Contact Name:	Tamara Kaup	
Contact Title:	Manager of Proposals	
Contact Email:	bids@essvote.com	

### SECTION 2 — DISCLOSURES

### Bidders must respond to every statement. Bid proposals submitted without a complete response may be deemed nonresponsive.

Indicate "Y" (Yes) or "N" (No) for Disclosures 1-4, and if "Yes," provide details below. Complete Disclosure 5. If the Bidder is publicly held, the Bidder may provide owner information about only those stockholders, members, partners, or other owners that hold at least 10% of the record or beneficial equity interests of the Bidder.

- N 1. State whether the Bidder, or any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder or any parent, subsidiary, or affiliate has been subject to suspension or debarment by any federal, state, or municipal governmental authority, or the subject of criminal prosecution, or convicted of a criminal offense within the previous 5 years. If "Yes," provide details below.
- N 2. State whether the Bidder, or any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder or any parent, subsidiary, or affiliate has had any contracts with a federal, state, or municipal governmental authority terminated for any reason within the previous 5 years. If "Yes," provide details below.
- N 3. State whether the Bidder, or any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder or any parent, subsidiary, or affiliate has been fined more than \$5000 for violation(s) of any Rhode Island environmental law(s) by the Rhode Island Department of Environmental Management within the previous 5 years. If "Yes," provide details below.

- N 4. State whether any officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder is serving or has served within the past two calendar years as either an appointed or elected official of any state governmental authority or quasipublic corporation, including without limitation, any entity created as a legislative body or public or state agency by the general assembly or constitution of this state.
  - 5. List each officer, director, manager, stockholder, member, partner, or other owner or principal of the Bidder, and each intermediate parent company and the ultimate parent company of the Bidder. For each individual, provide his or her name, business address, principal occupation, position with the Bidder, and the percentage of ownership, if any, he or she holds in the Bidder, and each intermediate parent company and the ultimate parent company of the Bidder.

### Disclosure details (continue on additional sheet if necessary): Management Board

 Nanagement Board
 \* Aldo Tesi - Chairman, Election Systems & Software, LLC, 11208 John Galt Boulevard, Omaha, NE 68137
 \* Michael R. McCarthy - Board Member of ES&S, Chairman of McCarthy Group, LLC, 1601 Dodge Street, Suite 3800, Omaha, NE 68102
 Officers (all located at Election Systems & Software, LLC, 11208 John Galt Boulevard, Omaha, NE 68137)
 Thomas E. Burt - President and Chief Executive Officer; Thomas F. O'Brien - Executive Vice President, Finance, Treasurer and Chief Financial Officer; Kathy Rogers - Senior Vice President, Government Relations; Ken Carbullido - Senior Vice President, Innovations; Matthew Nelson - Senior Vice President, Sales; Jim Schmidt - Senior Vice President, Manufacturing; Richard Jablonski - Vice President, Finance and Secretary; Steve Bolton - Vice President, Intellectual Property; Gary Weber - Vice President, Software Development; Eric Anderson - Vice President/Ceneral Coursel; Steve Pearson - Vice President, Certification: Adam Carbullido - Vice President, Release Management: Michele Feichtinger-Ernst - Vice Counsel; Steve Pearson - Vice President, Certification; Adam Carbullido - Vice President, Release Management; Michele Feichtinger-Ernst - Vice President, Customer Service Parent Company to ES&S - Government Systems, Software & Services, Inc. (Owns 100% of ES&S)

### **SECTION 3 — CERTIFICATIONS**

### Bidders must respond to every statement. Bid proposals submitted without a complete response may be deemed nonresponsive.

Indicate "Y" (Yes) or "N" (No), and if "No," provide details below.

### THE BIDDER CERTIFIES THAT:

- Y 1. The Bidder will immediately disclose, in writing, to the State Purchasing Agent any potential conflict of interest which may occur during the term of any contract awarded pursuant to this solicitation.
- 2. The Bidder possesses all licenses and anyone who will perform any work will possess all licenses required by applicable federal, Y state, and local law necessary to perform the requirements of any contract awarded pursuant to this solicitation and will maintain all required licenses during the term of any contract awarded pursuant to this solicitation. In the event that any required license shall lapse or be restricted or suspended, the Bidder shall immediately notify the State Purchasing Agent in writing.
- The Bidder will maintain all required insurance during the term of any contract pursuant to this solicitation. In the event that any required Y 3. insurance shall lapse or be canceled, the Bidder will immediately notify the State Purchasing Agent in writing.
- 4. The Bidder understands that falsification of any information in this bid proposal or failure to notify the State Purchasing Agent of any Y changes in any disclosures or certifications in this Bidder Certification may be grounds for suspension, debarment, and/or prosecution for fraud.
- The Bidder has not paid and will not pay any bonus, commission, fee, gratuity, or other remuneration to any employee or official of the State of Rhode Island or any subdivision of the State of Rhode Island or other governmental authority for the purpose of Y 5. obtaining an award of a contract pursuant to this solicitation. The Bidder further certifies that no bonus, commission, fee, gratuity, or other remuneration has been or will be received from any third party or paid to any third party contingent on the award of a contract pursuant to this solicitation.
- 6. This bid proposal is not a collusive bid proposal. Neither the Bidder, nor any of its owners, stockholders, members, partners, Y principals, directors, managers, officers, employees, or agents has in any way colluded, conspired, or agreed, directly or indirectly, with any other bidder or person to submit a collusive bid proposal in response to the solicitation or to refrain from submitting a bid proposal in response to the solicitation, or has in any manner, directly or indirectly, sought by agreement or collusion or other communication with any other bidder or person to fix the price or prices in the bid proposal or the bid proposal of any other bidder, or to fix any overhead, profit, or cost component of the bid price in the bid proposal or the bid proposal of any other bidder, or to secure through any collusion, conspiracy, or unlawful agreement any advantage against the State of Rhode Island or any person with an interest in the contract awarded pursuant to this solicitation. The bid price in the bid proposal is fair and proper and is not tainted by any collusion, conspiracy, or unlawful agreement on the part of the Bidder, its owners, stockholders, members, partners, principals, directors, managers, officers, employees, or agents.
- The Bidder: (i) is not identified on the General Treasurer's list created pursuant to R.I. Gen. Laws § 37-2.5-3 as a person or entity Y 7. engaging in investment activities in Iran described in § 37-2.5-2(b); and (ii) is not engaging in any such investment activities in Iran.
- Y 8. The Bidder will comply with all of the laws that are incorporated into and/or applicable to any contract with the State of Rhode Island.

Certification details (continue on additional sheet if necessary):

Submission by the Bidder of a bid proposal pursuant to this solicitation constitutes an offer to contract with the State of Rhode Island through the Division of Purchases on the terms and conditions contained in this solicitation and the bid proposal. The Bidder certifies that: (1) the Bidder has reviewed this solicitation and agrees to comply with its terms and conditions; (2) the bid proposal is based on this solicitation; and (3) the iformation submitted in the bid proposal (including this Bidder Certification Cover Form) is accurate and complete. The Bidder acknowledges that the terms and conditions of this solicitation and the bid proposal will be incorporated into any contract awarded to the Bidder pursuant to this solicitation and the bid proposal. The person signing below represents, under penalty of perjury, that he or she is fully informed regarding the proposal on behalf of the Bidder.

BIDDER

Date: 10/27

Election Systems & Software / LLC Name of Bidder A Signature in ink Richard J. Jablonski, Vice President, Finance

Printed name and title of person signing on behalf of Bidder

second to none and will provide invaluable during the implementation and first use of a new voting system.

Certified Proven Products – ES&S is bidding the proven DS200 precinct based scanner. With more than 25,000 DS200's in use in 16 states and successfully tabulating millions of votes in jurisdictions like New York City, Miami and Minneapolis not to mention the states of Maine and Maryland, Rhode Island will be utilizing the industry's number 1 digital precinct solution..

Today, not only do we work with many of the same customers we've s supported for more than three decades, but our business has grown to serve 41 states and includes more than 4,500 clients. From our humble beginnings supporting a handful of election administrators and voters in 1979, our election equipment and software is now utilized by approximately 60% of the registered voters in the United States (see the figure that follows; Jurisdictions Using ES&S Equipment and Software are shown in dark blue).



2. Vendor must provide the following information for verification of completion of VSTL certification:

- Name, address, and telephone number of VSTL performing certification test
- Date of certification

### **ES&S RESPONSE**

The base system, EVS,5.2.0.3, was VSTL tested by:

National Technical Systems (NTS) 7800 Hwy 20 West Huntsville, AL 35806 256-837-4411

Date of VSTL Certification: July 22, 2015

Additional components not part of the Election Assistance Commission's certification process, including wireless transmission of election results were VSTL tested by NTS and certified August 21, 2015.

3. Provide a flow chart of the entire System and how each component integrates into it.

### **ES&S RESPONSE**

Please see **Attachment B** for a flow chart of the system.

4. Describe any components of your system that are not part of the Elections Assistance Commission's certification process including but not limited to the wireless transmission of election results.

### **ES&S RESPONSE**

The following components are not part of the EAC's certification process:

- Electionware Toolbox provides ballot test decks for L&A testing
- Modem transmission of results from the 9 towns with DS200's with wireless modems to the Central Tabulation Equipment (Voting System Test Lab (VSTL) Tested)
- The Firewall and Communications Server at the State Board of Elections that will receive the DS200 results transmissions from the DS200's with wireless modems at the 9 towns (VSTL Tested)
- The remote connection of Election Reporting Manager workstations at the 30 Regional Tabulation Equipment sites. The Election Reporting Manager application used at the Regional Tabulation Equipment sites is EAC certified.
- Ballot-on-demand Balotar printers
- Small and medium-sized font for printing on ExpressVote vote summary cards.

9. Describe if a voted ballot that contains a crease or other type of fold mark can be read by the precinct count unit and the central mail ballot counting unit. Attach individual ballots that can be read by a precinct count unit and central mail ballot counting unit containing a sample of creases and fold marks.

### **ES&S RESPONSE**

Yes, a voted ballot that contains a crease or other type of fold mark can be read by the precinct count unit and the central mail ballot counting unit. Both the DS200 and DS850 have been uniquely designed to accept ballots that have been folded. The paper transports on both scanners safely guide previously folded ballots through the read heads to avoid paper jams or misreads and the scan speed approaches the processing speed for unfolded ballots. The DS850 uses a patented technology known as TruGrip<sup>TM</sup>, to provide constant contact with each ballot. By using 22 axled, double-rollers, full control of the ballot is ensured from start to finish. A close-up of the DS850 TruGrip rollers is shown below:



Sample ballots are attached as Attachment E.

10. Describe what security measures are available to protect the operating system, application programs and data on all System equipment from unauthorized change.

### ES&S RESPONSE

From concept to construction, ES&S adheres to industry-leading standards for quality and security.

Designed and federally certified to meet the rigorous security standards of the 2005 Voluntary Voting System Guidelines, the operating system controls, limits, and detects unauthorized access to all critical system components. The system also implements state-of-the-art safeguards against losses of system integrity, availability, confidentiality and accountability.



### PREVIOUS EXPERIENCE AND BACKGROUND

### **PREVIOUS EXPERIENCE AND BACKGROUND – EQUIPMENT VENDOR**

1. Provide the history of the proposed System, including whether the System proposed is the latest version of the equipment available that has been fully tested and currently in distribution.

### **ES&S RESPONSE**

The DS200 was first manufactured in April 2007. By November 2008, more than 4,500 DS200 digital precinct scanners were built and successfully used in the Florida Primary and General elections. ES&S utilized Ricoh Electronics Inc. as its prime contract manufacturer for the DS200 from 2007-2009.

In 2009, the EAC certified the DS200 under 2002 Voting System Standards. During 2009, more than 8,000 DS200 digital scanners were successfully used in the primary and general elections in Florida and Ohio. In 2009, ES&S shifted responsibility for contract manufacturing to Pivot International, Inc, headquartered out of Lenexa, Kansas. Pivot conducts manufacturing operations out of its ISO 9001 certified facility in Manila, Republic of the Philippines.

In 2010 New York City, selected ES&S to provide DS200 digital scanners to support its 4.6 million voters. Five other counties in New York also chose the DS200 as their primary voting system. In 2012, the State of New York certified the DS200 under the 2005 Voluntary Voting Systems Guidelines (VVSG) and New York election law requirements. Less than a year later, in May 2013, the U.S. Election Assistance Commission (EAC) approved the certification of the DS200 under the 2005 VVSG standards.

As of today, ES&S has manufactured more than 24,000 DS200 scanners. By the end of 2015, ES&S will manufacture an additional 4,000 DS200 units bringing the total produced since the first build to over 21,000.

Today, more than 50 million registered voters in the United States and Canada can now cast their ballots via this state-of-the-art ballot scanner.

The proposed version of the DS200 is the latest version of the DS200 which is certified to the U.S. EAC VVSG 2005 standard and includes many enhancements in the areas of security, ballot processing speed, ballot handling, and voter and poll worker graphical interfaces.

The DS850 was first manufactured in 2009. The DS850 was first used in Colorado Springs Colorado in May of 2010. ES&S utilized DATAWIN Inc. as its prime contract manufacturer for the DS850.

In 2012, the EAC certified the DS850 under 2002 Voting System Standards. From 2009 to 2015 170 DS850 have been manufactured by DATAWIN, and are in use over 20 states from coast to coast

The DS850 was design to span the EAC standards and was also certified to the U.S. EAC VVSG 2005 standard.

The ExpressVote was first manufactured in 2014. By September of 2015, more than 5000 ExpressVotes were built and successfully deployed to customers across the US. Pivot International, Inc, headquartered out of Lenexa, Kansas is the original and current manufacture for the ExpressVote. Pivot conducts manufacturing operations out of its ISO 9001 certified facility in Manila, Republic of the Philippines.

The current ExpressVote was certified to U.S. EAC VVSG 2005.



### Rhode Island EVS 5.2.0.3/5.3.0.3 Statewide Network System Configuration

October 23, 2015

Legend EAC Certified Configuration

**Extended Configuration** 





### State of Rhode Island EVS 5.2.0.3/5.3.0.3 DS200 Modeming System Configuration

October 23, 2015

Legend EAC Certified Configuration

Extended Configuration





Wyle Laboratories, Inc. 7800 Highway 20 West Huntsville, Alabama 35806 Phone (256) 837-4411 • Fax (256) 721-0144 www.wyle.com

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**TEST REPORT** 

### NATIONAL CERTIFICATION TEST REPORT FOR CERTIFICATION TESTING OF THE ELECTION SYSTEMS & SOFTWARE EVS 5.0.1.0 VOTING SYSTEM

for

Election Systems & Software, LLC. 11208 John Galt Boulevard Omaha, NE 68137

STATE OF ALABAMA COUNTY OF MADISON	Wyle shall have no liability for damages of any kind to person or property, including special or consequential damages, resulting from Wyle's providing the services covered by this report.
Robert D. Hardy, Department Manager, being duly sworn, deposes and says: The information contained in this report is the result of complete and carefully conducted testing and is to the best of his knowledge true and correct in all	PREPARED BY: <u>Staple How</u> 1/13/14 For James Long, Project Engineer Date
Rabat A and	APPROVED BY: <u>Ful Paulo 1/13/14</u> Frank Padilla, Voting Systems Manager Date
SUBSCRIBED and sworn to before me this <u>13</u> day of <u>20</u> <u>14</u>	WYLE Q. A .: Rick Daris 1/13/14
Sandra A. Daniel	*Rick Davis, Q. A. Manager / L Date
Notary Public in and for the State of Alabama at Large My Commission expires June 2, 2015	
SEAL	NVLAP LAB CODE 200771-0 EAC Lab Code 0704

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### Page No. i Test Report No. T71352.01-01

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### **1.0 INTRODUCTION**

### 1.1 Testing Scope

This report presents the procedures followed and the results obtained during certification testing of the Election Systems & Software (ES&S) EVS 5.0.1.0 Voting System. ES&S submitted the EVS 5.0.1.0 Voting System to Wyle Laboratories, Inc. for compliance to the United States Election Assistance Commission (EAC) 2005 Voluntary Voting Systems Guidelines (VVSG). The EVS 5.0.1.0 Voting System is a modification to the EAC certified EVS 5.0.0.0 Voting System documented by Wyle Laboratories' Test Report Number T59087.01-01, dated May 16, 2013. All testing on the modifications to the voting system was tested to the EAC 2005 VVSG.

The focus of this test campaign was to test all additions and modifications made to both the system's software and hardware, since the last certification. Wyle Laboratories performed functionality testing on the reporting enhancements to the DS200 and DS850, as listed in the TDP. Wyle Laboratories performed system integration testing and accuracy testing to verify the hardware and software changes to the DS200.

The changes to the DS200 hardware for version 1.3 include:

- New Motherboard VT6070 Mini-ITX (Replace EOL, 'End-of-Life')
- New System RAM DDR3 Ram Module (Replaced to fit new motherboard)
- New Scanner Board (Replace EOL)
- Removal of the ATX power supply (now incorporated in the motherboard)
- ECO 1281 DS200 Transport Assembly
  - Redesign spring plate (improve handling of damaged ballots)
  - o Redesign beveled Contact Image Sensor (improve handling of damaged ballots)
  - o Add the ultrasonic detect shield and grommet
  - o Redesign closing linkage
  - o Revise fit and tolerance on five sheet metal parts (improve manufacturing tolerances)
    - Right side of the transport assembly change round holes to slots to allow horizontal adjustability in stainless steel guide plates
    - Bottom front stainless steel platen add additional clearance around bushing openings to allow horizontal adjustability in stainless steel guide plates
    - Drive belt cover on the left side of transport added access holes for CIS mounting hardware
    - Bottom rear stainless steel platen add additional clearance around bushing openings to allow horizontal adjustability in stainless steel guide plates
    - Top front stainless steel platen add additional clearance around bushing openings to allow horizontal adjustability in stainless steel guide plates
- Replace CFL backlight with LED backlight (Replace EOL)
- Removable rails for attachment to ballot box (Replace built in feet)
- Battery access door
- Improve power/close switch fit
- Plastic housing change to update company logo

The changes to the DS200 hardware for version 1.2.3.0 include ECO 1281 (described above).

The changes to the DS200 2.7.0.0 software include:

- Print scanner board hardware type on tape
- Implemented the use of the 8-bit "Scanner ID" field to report the scanner board firmware
- Integrated ability to read and report Power Management Board firmware version
- Report motherboard version on configuration report and in log
- Modify HAL for new VIA motherboard

### **1.0 INTRODUCTION (Continued)**

### **1.1 Testing Scope (Continued)**

Datawin issued updates to their COTS firmware on the DS850. There were no proposed changes or modifications to the proprietary firmware on the DS850. The Datawin firmware change increased the rising and lowering speed of the input and output trays.

There were no proposed changes or modifications to the AutoMARK or the EMS software in this test campaign; therefore, no component level testing was included for this equipment.

### 1.2 Objective

The objective of this system modification test program was to ensure that EVS 5.0.1.0 complied with the hardware and software requirements of the EAC 2005 VVSG. The scope and detail of the requirements tested in the certification were selected to correspond to the scope of the system detailed in the application submitted by ES&S. An in-depth examination of the system further confirmed the applicable requirements selected for compliance testing. This included the inspection and evaluation of system documentation, and the execution of functional tests to verify system performance and function under normal/abnormal conditions.

### **1.3** Test Report Overview

This test report consists of five main sections (including appendices):

- **Introduction:** Provides the architecture of the National Certification Test Report (hereafter referred to as Test Report); a brief overview of the testing scope of the Test Report; a list of documentation, customer information, and references applicable to the voting system hardware, software, and this test report.
- **System Identification and Overview:** Provides information about the system tested that includes the system under test, test support hardware, and specific documentation provided by the vendor used to support testing.
- **Certification Test Background**: Contains information about the certification test process and the system tested.
- **Test Findings and Recommendation:** Provides a summary of the results of the testing process. **Appendices:** Information and data supporting testing of the voting system and hardware analysis are included as appendices to this report. This includes: System Modifications, Notices of Anomaly, Test Setup Photographs, Hardware Test Results, Deficiency Report, and the "As Run" Test Plan.

### 1.4 Customer

Election Systems & Software, LLC 11208 John Galt Boulevard Omaha, NE 68137

### 1.0 INTRODUCTION (Continued)

### 1.5 References

The documents listed were utilized to perform certification testing.

- Wyle Laboratories' "National Certification Test Report for the Certification Testing of the Election Systems & Software EVS 5.0.0.0 Voting System Revision B", Test Report Number T59087.01-01, dated May 16, 2013
- Wyle Laboratories' "Hardware Compliance of the Election Systems & Software FL EVS 4.5.0.0 Voting System DS200 Hardware Version 1.3," Test Report Number T71013.01-01, dated September 18, 2013.
- Election Assistance Commission 2005 Voluntary Voting System Guidelines, Volume I, Version 1.0, "Voting System Performance Guidelines," and Volume II, Version 1.0, "National Certification Testing Guidelines," dated December 2005
- United States Federal Election Commission Voting System Standards Volume I, "Performance Standards" and Volume II, "Test Standards," dated April 2002
- Election Assistance Commission Testing and Certification Program Manual, Version 1.0, effective date January 1, 2007
- Election Assistance Commission Voting System Test Laboratory Program Manual, Version 1.0, effective date July 2008
- National Voluntary Laboratory Accreditation Program NIST Handbook 150, 2006 Edition, "NVLAP Procedures and General Requirements (NIST Handbook 150)," dated February 2006
- National Voluntary Laboratory Accreditation Program NIST Handbook 150-22, 2008 Edition, "Voting System Testing (NIST Handbook 150-22)," dated May 2008
- United States 107<sup>th</sup> Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002
- Wyle Laboratories' Test Guidelines Documents: EMI-001A, "Wyle Laboratories' Test Guidelines for Performing Electromagnetic Interference (EMI) Testing," and EMI-002A, "Test Procedure for Testing and Documentation of Radiated and Conducted Emissions Performed on Commercial Products"
- Wyle Laboratories' Quality Assurance Program Manual, Current Revision
- Wyle Laboratories' Quality Program Manual, Current Revision
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- EAC Requests for Interpretation (listed on <u>www.eac.gov</u>)
- EAC Notices of Clarification (listed on <u>www.eac.gov</u>)

### 2.0 SYSTEM IDENTIFICATION AND OVERVIEW

### 2.1 System Overview

The ES&S EVS 5.0.1.0 Voting System is a modification EVS 5.0.0.0 Voting System. The full EVS 5.0.1.0 Voting System description can be found in Section 2.0 of Wyle Laboratories' ES&S EVS 5.0.0.0 Test Report No. T59087.01-01, dated May 16, 2013. For the ES&S EVS 5.0.1.0 Voting System, Wyle Laboratories only tested the modifications to the DS200, DS850 and their interface with the EMS. Therefore, Wyle Laboratories only documented the configuration used during testing conducted at Wyle Laboratories.

### 2.2 System Identification

The materials required for testing of the EVS 5.0.1.0 Voting System included software, hardware, test materials, and deliverable materials shipped directly to Wyle Laboratories by ES&S. The materials documented in the following sections are the materials used during Wyle Laboratories' testing of only the DS200 and its interface with the EMS and are not a complete list of materials used in the previously-certified EVS 5.0.0.0 Voting System.

### 2.2.1 Hardware

This subsection categorizes the equipment the manufacturer submitted for testing listed in Table 2-1. Each test element is included in the list of the equipment required for testing of that element, including system hardware, general purpose data processing and communications equipment, and any required test instrumentation.

Equipment	Manufactur er	Specifications	Serial Number	COTS/ Non-COTS
EMS Client Laptop	Dell Latitude E6410	Intel Core i5 CPU M580 @ 2.67 GHz 4.00 GB Installed RAM / Hard Drive Capacity 250 GB	2FD65Q1	COTS
EMS Server	Dell T710	Intel Xeon CPU E5645 @ 2.40 GHz (2 processors) 12.0 GB Installed RAM / Hard Drive Capacity 320 GB	JPZ6VR1	COTS
EMS Client Desktop	Dell OptiPlex 980	Intel Core i5 CPU 650 @ 3.20 GHz 4.0 GB Installed RAM / Hard Drive Capacity 320 GB	3TZJFQ1	COTS
Communications Server	Dell T410	Intel Xeon CPU E5504 @ 2.00 GHz 4.0 GB Installed RAM / Hard Drive Capacity 300 GB	4D6BQM1	COTS

Table 2-1 EVS 5.0.1.0	Voting System	<b>Equipment</b>	Description

### Page No. 5 of 23 Test Report No. T71352.01-01

### 2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

### 2.2 System Identification (Continued)

### 2.2.1 Hardware (Continued)

Table 2-2 Ex 5 5.0.1.0 Dunu Machine Description
---

Equipment	Manufacturer	Specifications	Serial Number	COTS/ Non-COTS
Build 1	Dell OptiPlex 760	Processor: Intel Duo Core E8400 Wolfdale Memory: 4x1 GB, 800 MHz Ram Hard Drive Capacity: 80 GB	6D7DJG1	COTS
Build 2	Dell OptiPlex 760	Processor: Intel Duo Core E8400 Wolfdale Memory: 4.0 GB Installed Ram Hard Drive Capacity: 80 GB	6DCKJG1	COTS
Build 3	Dell Precision T3500	Processor: Intel X5650 2.66/6.4 12 MB Xeon Westmere Memory: 2.0 GB Installed Ram Hard Drive Capacity: 160 GB	15TMMN1	COTS
Build 4	Dell Precision T3500	Processor: Intel X5650 2.66/6.4 12 MB Xeon Westmere Memory: 2.0 GB Installed Ram Hard Drive Capacity: 160 GB	15TNMN1	COTS

### Table 2-3 EVS 5.0.1.0 Voting System Equipment

Equipment	Description	Serial Number
AutoMARK	Voting Assist Terminal (A200)	AM0308421809
DS200 Hardware Version 1.3	Precinct Count Digital Scanner	DS0313350010
DS200 Hardware Version 1.3	Precinct Count Digital Scanner	DS0313350002
DS200 Hardware Version 1.2.3.0	Precinct Count Digital Scanner	DS0113360186
DS200 Hardware Version 1.2.1.0	Precinct Count Digital Scanner	DS0313340087
DS200 Hardware Version 1.2.1.0	Precinct Count Digital Scanner	ES0108340026
DS850 Hardware Version 1.0	Central Count Digital Scanner	DS8511090075
Ballot Box Hardware Version 1.2; 1.3	Plastic Box	002, 003, 004, 005
Ballot Box Hardware Version 1.2	Metal Box with Diverter	001

### 2.2.2 Software

The software evaluated was limited to ElectionWare, Election Reporting Manager (ERM), and the firmware build for the DS200. Only the changes incorporated since the EVS 5.0.0.0 test campaign were evaluated by Wyle Laboratories. Wyle Laboratories utilized an EMS setup with new versions of ElectionWare and ERM to load election information onto transport media and to upload election data from the DS200 to the EMS via the transport media. Wyle Laboratories did not test the EMS for any other functionality.

### 2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

### 2.2 System Identification (Continued)

### 2.2.2 Software (Continued)

### Table 2-4 EVS 5.0.1.0 EMS Software Platform Component Descriptions

Software Required For Testing	Software Version
ElectionWare	4.1.0.0
Election Reporting Manager (ERM)	8.6.0.0
Event Logging Service (ELS)	1.5.0.0
VAT Previewer	1.8.1.0
Removable Media Service (RMS)	1.4.0.0
DS200 Firmware	2.7.1.0
DS850 Firmware	2.4.0.0

### Table 2-5 EVS 5.0.1.0 EMS COTS Software Platform Component Descriptions

Software Required For Testing	Description	
Windows 7 Professional, with SP1	Original Disk	
Windows Server 2008 R2, with SP1	Original Disk	
Adobe Acrobat Standard version 9.0 or better	Original Disk	
RM/Cobol	12.06	
Microsoft Office Excel 2007 or better	Original Disk	
Adobe Acrobat Standard 9.0	Original Disk	
AVG AntiVirus Business Edition 2012	on 2012 Original Disk & virus definition updates	

### 2.3 System Limits

No system limits were impacted by this modification.

### 2.4 Test Support Materials

This subsection enumerates any and all test materials needed to perform voting system testing. The scope of testing determines the quantity of a specific material required.

### 2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

### 2.4 Test Support Materials (Continued)

The following test materials were required to support the EVS 5.0.1.0 test campaign:

### Table 2-6 Test Support Equipment

Test Material	Quantity	
Paper Rolls	25 rolls total	
COTS Printer	1	
Security Seals	50	
ES&S Pens	20	
Security Sleeves	3	
Security Locks	5	
Transport Media		
(USB Flash Drives)	20	
Delkin 1 GB	20	
Delkin 4 GB		
Delkin Devices 1 GB Compact Flash	3	

### 2.5 Deliverable Materials

The materials listed in Table 2-7 are to be delivered as part of the EVS 5.0.1.0 Voting System to the users.

Table 2-7 Deliverable Materials for	EVS 5.0.1.0 Voting System
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Deliverable Material	Version	Description
ElectionWare	4.1.0.0	EMS
ERM	8.6.0.0	EMS
Event Logging Service (ELS)	1.5.0.0	EMS
VAT Previewer	1.8.1.0	EMS
Removable Media Service (RMS)	1.4.0.0	EMS
DS200	Firmware 2.7.1.0; Hardware 1.2.1.0, 1.2.3.0 and 1.3	Precinct ballot scanner
AutoMARK <sup>TM</sup>	Firmware 1.8.1.0; Hardware 1.0, 1.1 and 1.3	Voter Assist Terminal
DS850	Firmware 2.4.0.0; Hardware 1.0	Central ballot scanner
OKI Printer	B430dn or B431dn	Laser Report Printer
OKI Printer	Microline 420	Dot Matrix Printer
Headphones	Avid FV 60	Stereo headphones
Router/Firewall	Cisco ASA 5505	Router/Firewall
Voting System Overview EVS 5.0.1.0	19.0	TDP Document
ES&S DS200 System Operations Procedures Hardware version 1.2	10.1	TDP Document
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# 2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

# 2.5 Deliverable Materials (Continued)

## Table 2-7 Deliverable Materials for EVS 5.0.1.0 Voting System (Continued)

Deliverable Material	Version	Description	
ES&S DS200 System Operations	1.0	TDP Document	
Procedures Hardware version 1.3	1.0		
ES&S DS850 System Operations	11.1	TDP Document	
Procedures	11.1	TDF Document	
ES&S AutoMARK <sup>TM</sup> System	5.0	TDP Document	
<b>Operations Procedures</b>	5.0	i Dr Document	
ES&S ElectionWare 4.1 Vol II: Admin	18	TDP Document	
User's Guide	4.0	TDI Document	
ES&S ElectionWare 4.1 Vol II: Define	4.0	TDP Document	
User's Guide	4.0	I DP Document	
ES&S ElectionWare 4.1 Vol III:	3.2	TDP Document	
Design User's Guide	5.2		
ES&S ElectionWare 4.1 Vol IV:	5.6	TDP Document	
Deliver User's Guide	5.0		
ES&S ElectionWare 4.1 Vol V: Results	15	TDP Document	
User's Guide	1.5	TDT Document	
EVS Event Logging Service System	1.0	TDP Document	
Operations Procedures	1.0		
ES&S ERM System Operations	13.1	TDP Document	
Procedures	15.1	TDF Document	
ES&S Voting System Security	3.1	TDP Document	
Specification	5.1	TDI Document	
ES&S Voting System Security: Best		TDP Document	
Practices for Physically Securing ES&S	2.0		
Equipment			
ES&S Hardening Procedures	4.3	TDP Document	

# 2.6 Vendor Technical Data Package

The Technical Data Package (TDP) contains information about requirements, design, configuration management, quality assurance, and system operations. The EAC 2005 VVSG requirements state that, at a minimum, the TDP shall contain the following documentation: system configuration overview; system functionality description; system hardware specifications; software design and specifications; system test and verification specifications; system security specifications; user/system operations procedures; system maintenance procedures; personnel deployment and training requirements; configuration management plan; quality assurance program; and system change notes.

Since the EVS 5.0.1.0 Voting System is a modification to the previously certified EVS 5.0.0.0 Voting System, Table 2-8 only lists the documents in the TDP that were modified for the EVS 5.0.1.0 Voting System. For a complete list of all documents, please refer to the EVS 5.0.0.0 Voting System documented by test report number T59087.01-01 dated May 16, 2013.

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# 2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

# 2.6 Vendor Technical Data Package (Continued)

# Table 2-8 ES&S EVS 5.0.1.0 Voting System TDP

EVS 5.0.1.0 TDP Documents	Version	Doc. No.	Document Code		
Voting System Overview	19.0	01-01	EVS5010_OVR00		
System Func	tionality De	scription			
System Functionality Description	9.0	02-01	EVS5010_SFD00		
System Har	dware Speci	fication			
System Hardware Specification – DS200 hardware V 1.2	1.0	03-02	DS200HW_M_SPC_0312_HWSpec		
System Hardware Specification – DS200 hardware V 1.3	3.0	03-02	DS200HW_M_SPC_0313_HWSpec		
Software Design and Specification					
Software Design and Specification – ERM	1.0	04-03	EVS5010_SDS00_ERM		
Software Design and Specification – DS200	1.0	04-04	EVS5010_SDS00_DS200		
Software Design and Specification – DS850	1.0	04-04	EVS5010_SDS00_DS850		
System Ope	erations Proc	cedures			
System Operations Procedures – DS200	1.0	07-09	EVS5010_SOP00_DS200		
System Maintenance Manuals					
System Maintenance Manual – DS200	1.0	08-02	EVS5010_SMM00_DS200		
System	Change No	tes			
EVS 5.0.1.0 System Change Notes	2.0	12-01	EVS5010_DOC_D_1200_ ChangeNotes		

# 3.0 TEST BACKGROUND

Wyle Laboratories is an independent testing laboratory for systems and components under harsh environments, including dynamic and climatic extremes as well as the testing of electronic voting systems. Wyle Laboratories holds the following accreditations:

- ISO-9001:2000
- NVLAP Accredited ISO 17025:2005
- EAC Accredited VSTL, NIST 150,150-22
- A2LA Accredited (Certification No.'s 845.01, 845.02, and 845.03)
- FCC Approved Contractor Test Site (Part 15, 18, 68)

# 3.1 General Information about the Test Process

All testing performed as part of the test effort was performed at Wyle Laboratories' Huntsville, AL, facility. Testing was limited to EVS 5.0.1.0 which includes items listed in Section 2.0 of this test report.

The strategy for evaluation of the EVS 5.0.1.0 was to review the change log, source code, and the engineering changes submitted for the modified system. Wyle Laboratories also evaluated test results from previous test campaigns performed by EAC accredited VSTL's as well as test cases and results of any developmental testing conducted by ES&S during the pre-certification process that were provided by ES&S in their TDP. The purpose of this evaluation was to determine the scope of testing required for system certification.

# 3.2 Testing Scope

To evaluate the system test requirements and the scope of the test campaign, each section of the EAC 2005 VVSG was analyzed to determine the applicable tests. The EAC 2005 VVSG, Volume I Sections, along with the strategy for evaluation, are described below:

- Section 2: Functional Requirements The requirements in this section were tested during the FCA, utilizing test cases specially designed for the ES&S EVS 5.0.1.0 Voting System.
- Section 3: Usability and Accessibility The requirements in this section were not tested during this test campaign.
- Section 4: Hardware Requirements The requirements in this section were tested during the FL EVS 4.5.0.0 test campaign. The FL EVS 4.5.0.0 test campaign tested the hardware modifications to the DS200. The FL EVS 4.5.0.0 Hardware Test Report Number T71013.01-01 is presented in Appendix B.
- Section 5: Software Requirements The requirements in this section were tested during source code review, TDP review, and FCA. A combination of review and functional testing was performed to insure these requirements are met.
- Section 6: Telecommunication The requirements in this section were not tested during this test campaign.
- Section 7: Security Requirements The requirements in this section were tested during source code review, FCA, and Security Tests.

# 3.0 TEST BACKGROUND (Continued)

# **3.2** Testing Scope (Continued)

- Section 8: Quality Assurance (QA) Requirements The requirements in this section were tested throughout the test campaign via various methods. The TDP review was performed on the EVS 5.0.1.0 QA documentation to determine compliance to EAC 2005 VVSG requirements and the requirements stated in the ES&S QA Program document. All source code was checked to ensure that proper QA documentation had been completed. All equipment received for initial testing and follow up testing was checked against ES&S documentation to ensure their QA process is being followed.
- Section 9: Configuration Management (CM) Requirements The requirements in this section were tested throughout the test campaign. The TDP review was performed on the ES&S configuration management documentation to determine EAC 2005 VVSG compliance and to further determine whether ES&S is following its documented CM requirements within the TDP. Any anomalies were formally reported to ES&S. During source code review, Wyle Laboratories-qualified personnel verified that ES&S was following EAC 2005 VVSG CM requirements as well as ES&S CM requirements. Any anomalies were formally reported to ES&S. All equipment received for initial testing and follow-up testing was checked against ES&S documentation to ensure their CM process is being followed.

The EVS 5.0.1.0 Voting System is a paper-based precinct counting system; therefore, all EAC 2005 VVSG requirements pertaining to DRE's were excluded from this test campaign. Additionally, the following requirements were also excluded from the campaign:

- Volume I Section 6 (Telecommunication Requirements)
- Volume I Section 7.5.2-7.5.4 (Telecommunications and Data Transmission)
- Volume I Section 7.6 (Use of Public Communication Networks)
- Volume I Section 7.7 (Wireless Communications)
- Volume I Section 7.9 (Voter Verifiable Paper Audit Trail Requirements)

The rationale for not evaluating the EVS 5.0.1.0 Voting System to the requirements contained in the indicated sections of the EAC 2005 VVSG is described in Table 3-1.

EAC 2005 VVSG Volume I Section	Rationale for 'Not Applicable'		
6, 7.5.2-7.5.4	These requirements are written for use on public networks. The EVS 5.0.1.0		
	voting System as configured for this certification does not use public networks.		
	This section pertains to "Voting systems that transmit data over public		
7.6	telecommunications" The EVS 5.0.1.0 Voting System as configured for this		
	certification does not permit transmission over public networks.		
7.7	No wireless technology is present in the EVS 5.0.1.0 Voting System.		
7.9	The EVS 5.0.1.0 Voting System is a paper based system.		

# **Table 3-1 Not Applicable Requirements**

# 3.0 TEST BACKGROUND (Continued)

# **3.3** Wyle Quality Assurance

All work performed on this program was in accordance with Wyle Laboratories' Quality Assurance Program and Wyle Laboratories' Quality Program Manual, which conforms to the applicable portions of International Standard Organization (ISO) Guide 17025.

The Wyle Laboratories, Huntsville Facility, Quality Management System is registered in compliance with the ISO-9001 International Quality Standard. Registration has been completed by Quality Management Institute (QMI), a Division of Canadian Standards Association (CSA).

# **3.4** Test Equipment and Instrumentation

All instrumentation, measuring, and test equipment used in the performance of this test program was calibrated in accordance with Wyle Laboratories' Quality Assurance Program, which complies with the requirements of ANSI/NCSL 2540-1, ISO 10012-1, and ISO/IEC 17025. Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST) by report number and date. When no national standards exist, the standards are traceable to international standards, or the basis for calibration is otherwise documented.

# 3.0 TEST BACKGROUND (Continued)

# 3.5 Terms and Abbreviations

Table 3-2 in this subsection defines all terms and abbreviations applicable to this Test Report.

# **Table 3-2 Terms and Abbreviations**

Term	Abbr.	Definition
Americans with Disabilities Act of 1990	ADA	ADA is a wide-ranging civil rights law that prohibits, under certain
Configuration Management	СМ	
Commercial Off the Shelf	COTS	Commercial, readily available hardware or software.
Direct Record Electronic	DRE	An electronic voting system that utilizes electronic components for the functions of ballot presentation, vote capture, vote recording, and tabulation which are logically and physically integrated into a single unit. A DRE produces a tabulation of the voting data stored in a removable memory component and in printed hardcopy.
United States Election Assistance Commission	EAC	Commission created per the Help America Vote Act of 2002, assigned the responsibility for setting voting system standards and providing for the voluntary testing and certification of voting systems.
Election Management System	EMS	Within the EVS system, the EMS is ElectionWare in addition with ERM.
Election Results Manager	ERM	A component of the EMS that is used for results gathering and reporting.
Equipment Under Test	EUT	
Help America Vote Act	HAVA	Act created by United States Congress in 2002.
National Institute of Standards and Technology	NIST	Government organization created to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhances economic security and improves our quality of life.
Personal Computer	PC	Computer component of the OpenElect Voting System
Physical Configuration Audit	PCA	Review by accredited test laboratory to compare voting system components submitted for certification testing to the manufacturer's technical documentation, and confirmation the documentation meets national certification requirements. A witnessed build of the executable system is performed to ensure the certified release is built from tested components.
Quality Assurance	QA	
Specimen Under Test	SUT	
Technical Data Package	TDP	Manufacturer documentation related to the voting system required to be submitted as a precondition of certification testing.
Uninterruptible Power Supply	UPS	
Voluntary Voting System Guidelines	EAC 2005 VVSG	Published by the EAC, the third iteration of national level voting system standards.
Wyle Operating Procedure	WoP	Wyle Test Method or Test Procedure
Functional Configuration Audit	FCA	Exhaustive verification of every system function and combination of functions cited in the manufacturer's documentation.
Secure File Transfer Protocol	SFTP	A network protocol that provides file access, files transfer, and file management functionality over any reliable data stream.

# 4.0 TEST PROCEDURES AND RESULTS

## 4.1 Source Code Review

As part of the testing activities, the ES&S EVS 5.0.1.0 Voting System received a 100% source code review to the EAC 2005 VVSG coding standards and the manufacturer supplied coding standards. The manufacturer supplied coding standards (ESSSYS\_D\_D\_0100\_Coding Standards) can be found within the vendor provided TDP. The review was conducted per the guideline described in the following paragraph.

As the updated source code was received, a SHA1 hash value was created for each source code file. The source code team then conducted a visual scan of every line of modified source code. This was done to identify any violation of EAC 2005 VVSG coding standards or manufacturer supplied coding standards. The COTS tools utilized by the source code group were Beyond Compare and Crimson Editor. Each identified violation was then recorded by making notes of the standards violation along with directory name, file name, and line number.

# **Summary Findings**

Two header revision history standards violations were identified and sent to ES&S for resolution. ES&S then corrected the standards violations and re-submitted the source code for re-review. No additional standards violations were identified during the re-review. The Notice of Anomaly (NOA No. 2) documenting that source code discrepancies were found is included in Appendix C of this report.

# 4.2 Trusted Build

A Trusted Build of the software was created using ES&S's trusted build documents. The "Trusted Builds" were performed by completing the following tasks in the order listed:

- Clear hard drive of existing data
- Retrieve the compliant source code
- Retrieve the installation media for OS, compilers, and build software
- Construct the build environment
- Create digital signatures of the pre-source build environment
- Create a disk image of the pre-source build environment
- Load the compliant source code into the build environment
- Create a digital signature of the post-source build environment
- Create a disk image of the post-source build environment
- Build the executable code
- Create the installation media
- Create a digital signature of the final build environment
- Create a disk image of the final build environment
- Create a digital signature of the installation media
- Install executable code onto the hardware and validate the software/firmware
- Deliver source code with digital signature, disk image of pre-build environment with digital signatures, disk image of post-build environment with digital signatures, executable code with digital signatures, and installation media to the EAC Repository

# 4.2 Trusted Build (Continued)

The "Trusted Builds" for the ES&S EVS 5.0.1.0 include source code, data, and script files, in clear text form. The builds also include COTS software on commercially available media, COTS software downloaded by the VSTL, COTS software verified by SHA1 from the software supplier, and picture and sound files in binary format provided by ES&S. The first step of the process was to clean the hard drives by writing data to every sector of the hard drive, so the drive is cleared of existing data. The designated operating system was then loaded and the applications from the VSTL-reviewed source along with the VSTL verified COTS software was built. The final step was installing the applications on the hardware.

# **Summary Findings**

Wyle Laboratories performed Trusted Builds for each system component of EVS 5.0.1.0 on December 20, 2013. A Technical Representative was present for each of the Witnessed Builds. The outputs from the Witness Builds have been supplied to the EAC as part of the certification effort.

# 4.3 Technical Data Package (TDP) Review

The ES&S, EVS 5.0.1.0 Technical Data Package was reviewed to the 2005 VVSG. This review was performed as part of the pre-testing activities.

The TDP contains information about requirements, design, configuration management, quality assurance, and system operations. The EAC requirements state that, at a minimum, the TDP shall contain the following documentation: system configuration overview; system functionality description; system hardware specifications; software design and specifications; system test and verification specifications; system security specifications; user/system operations procedures; system maintenance procedures; personnel deployment and training requirements; configuration management plan; quality assurance program; and system change notes.

The TDP documents were reviewed for accuracy, completeness, and compliance to the VVSG. The TDP documentation served as the basis for design and development of the functional tests. Functional testing also identified text in the TDP that conflicted with the actual operation of the system. These discrepancies were reported to ES&S and tracked as test exceptions until verified that the applicable documents had been corrected.

# Summary Findings

The TDP review results were recorded in a worksheet and sent to ES&S. ES&S corrected all issues and resubmitted the associated documents for review. This process continued until the TDP accurately described the modifications to the system and complied with all TDP Standards. All noted TDP issues were resolved prior to the conclusion of the review process. Notice of Anomaly (NOA No. 1) documenting that TDP discrepancies were found is included in Appendix C of this report.

A summary of the TDP issues encountered is provided below:

- Some descriptive information included was inaccurate.
- Some documents included functionality that was not supported in the voting system.

# 4.4 Hardware Testing

EVS 5.0.1.0 is a paper-ballot based optical scan voting system. EVS 5.0.1.0 system consists of four major components: ElectionWare, ERM, DS200 precinct scanner, and DS850 central count scanner. EVS 5.0.1.0 is comprised of two proprietary pieces of hardware; DS200 and DS850. Wyle Laboratories determined that the COTS PCs and laptops are not subject to hardware testing per the EAC 2005 VVSG. The provided PCs and laptops documented in Section 3 Materials Required For Testing all contained CE, UL, and FCC labeling.

DS200 hardware 1.3 – Wyle Laboratories previously performed testing to the EAC 2005 VVSG during the state testing campaign for FL EVS 4.5.0.0 (Wyle Test Report No. T71013.01-01). All hardware testing as noted in table 4-1 was accepted for reuse based on the findings of the evaluation.

Test/EAC 2005 VVSG Section	Procedure/Description	EVS 5.0.1.0 Voting System Component
	×	DS200 1.3
Electromagnetic Radiation/4.1.2.9	FCC Part 15 Class B for both radiated and conducted emissions	Accept EVS 4.5.0.0
Low Temperature/4.1.2.14	MIL-STD-810D minimum temperature shall be -4°F	Accept EVS 4.5.0.0
Vibration/4.1.2.14	MIL-STD-810D, Method 514.3 physical shock and vibration during handling and transport	Accept EVS 4.5.0.0
Lightning Surge/4.1.2.7	IEC 61000-4-5 (1995-02)	Accept EVS 4.5.0.0
High Temperature/4.1.2.14	MIL-STD-810D, Method 501.2 maximum temperature shall be 140°F	Accept EVS 4.5.0.0
Bench Handling	MIL-STD-810D, Method 516.3 Procedure VI six 4" drops on each edge totaling 24 drops	Accept EVS 4.5.0.0
Electrical Fast Transient/4.1.2.6	IEC 61000-4-4 (2004)	Accept EVS 4.5.0.0
Humidity Test/4.1.2.14	MIL-STD-810D, Method 501.2 ten 24 hour humidity cycles	Accept EVS 4.5.0.0
Electrostatic Disruption/4.1.2.8	IEC 61000-4-2 (1995-01) 15kV air discharge and 8kV contact discharge	Accept EVS 4.5.0.0
Electromagnetic Susceptibility/4.1.2.10	IEC 61000-4-3 (2006) electromagnetic field of 10V/m modulated by a 1kHZ, 80% AM modulation at 80MHz to 1000MHz frequency	Accept EVS 4.5.0.0
Conducted RF Immunity/4.1.2.11	IEC 61000-4-6 (1996-04) conducted radio frequency energy	Accept EVS 4.5.0.0
Magnetic Fields Immunity/4.1.2.12	IEC 61000-4-8 (1993-06) AC magnetic fields of 30 A/m at 60Hz	Accept EVS 4.5.0.0
Electrical Power Disturbance/4.1.2.5	IEC 61000-4-11 (1994-06) power surges and dips	Accept EVS 4.5.0.0
Temperature/Power Variation/4.1.2.13	MIL-STD-810D, Method 502.2 and Method 501.2 163 hours at 50°F to 95°F	Accept EVS 4.5.0.0
Safety/4.3.8	UL 60950-1 product safety review	Accept EVS 4.5.0.0

## Table 4-1 Hardware Test Examination Results

# 4.4.1 Electrical Supply Testing

Electrical Supply Testing was performed in accordance with Section 4.1.2.4 of Volume I of the VVSG. This test was performed to ensure that the DS200 will continue to provide the capability for any voter who is voting at the time of a failure of the main power supply external to the voting system to complete the casting of a ballot. Additionally, it is required that the voting system perform a successful shutdown without loss or degradation of the voting and audit data, and allow voters to resume voting once the voting system has reverted to back-up power.

To perform the test, the EUT was configured as for normal operation. The EUT was then operated as designed for fifteen minutes prior to the removal of the AC input power. Once AC power was interrupted, the DS200 was continuously operated for a minimum period of two hours until backup power was exhausted. Following the exhaustion of backup power, the AC power was restored and the system was operated for an additional fifteen minutes.

# **Summary Findings**

The DS200 successfully completed the requirements of the Electrical Supply Test.

# 4.4.2 Maintainability

Maintainability Testing was performed in accordance with Section 4.7.2 of Volume II of the VVSG. This test was performed to evaluate the ease with which preventive and corrective maintenance actions can be performed based on the design characteristics of equipment and software and the processes the vendor and election officials have in place for preventing failures and for reacting to failures. It includes the ability of equipment and software to self-diagnose problems and make non-technical election workers aware of a problem and addresses all scheduled and unscheduled events which are performed to determine operational status and make component adjustments or repairs. The DS200 was evaluated with the appropriate vendor documentation, and maintainability was determined based on the presence of specific physical attributes that aid system maintenance activities, and the ease with which system maintenance tasks were able to be performed.

# **Summary Findings**

The DS200 successfully completed the requirements of the Maintainability Test.

# 4.5 System Level Testing

System Level Testing was performed to evaluate the integrated operation of the voting system hardware and software. The suite of tests that comprise the System level Testing includes: System Integration Test, Security Test, Usability and Accessibility Tests, Data Accuracy, as well as the Physical and Functional Configuration Audits.

# 4.5 System Level Testing (Continued)

# 4.5.1 System Integration Test

An overview of the suite of tests performed during System Level Testing is provided in the following paragraphs, along with the summary findings of each test.

System Integration Testing was performed to test all system hardware, software, and peripherals. System Integration Testing focused on the complete system including all proprietary software, proprietary hardware, proprietary peripherals, COTS software, COTS hardware, and COTS peripherals configured as a precinct count unit as described in the ES&S-submitted TDP for the EVS 5.0.1.0 Voting System. To perform the System Integration Testing, Wyle Laboratories developed specific procedures and test cases designed to test the system as a whole. These procedures demonstrated compliance of the EVS 5.0.1.0 Voting System, to Sections 2, 3, 4, 5, and 6 of Volume I of the VVSG.

The six election definitions exercised during the System Integration Testing are listed below:

- GEN-01
- GEN-02
- GEN-03
- PRIM-01
- PRIM-02
- PRIM-03

# **Summary Findings**

Through System Integration Testing, it was demonstrated that the system performed as documented with all components performing their intended functions.

# 4.5.2 Security

EVS 5.0.1.0 was subjected to Security Testing in accordance with the requirements of Section 7.0 of Volume I and Section 6.4 of Volume II of the VVSG. The purpose of the Security Test was to verify that the modifications to the EVS 5.0.1.0 did not compromise the security of the DS200 or the ballot box. All other previously certified components of the EVS 5.0.1.0 system were unmodified and therefore accepted for the current test campaign.

# **Summary Findings**

The security tie straps/tamper evident seals and their documented installation were analyzed and found to be adequate. Wyle has determined the EVS 5.0.1.0 Voting System to be compliant with the security requirements of the EAC 2005 VVSG.

# 4.5 System Level Testing (Continued)

# 4.5.3 Accuracy Test

Per the VVSG, data accuracy is defined in terms of ballot position error rate. This rate applies to the voting functions and supporting equipment that capture, record, store, consolidate, and report the selections (or absence thereof) made by the voter for each ballot position. To meet the requirements of this test, the voting system must be subjected to the casting of a large number of ballots to verify vote recording accuracy, i.e. at least 1,549,703 ballot positions correctly read and recorded.

ES&S-provided ballots that were machine marked and hand marked. The machine marked ballots made up 30% of the ballots, and the hand marked ballots made up 70% of the ballots for the accuracy test. The ballots were used to achieve 1,574,400 ballot positions accurately during this test. The DS200 achieved the necessary ballot positions of 1,549,703 by casting ballots on three DS200. Three machines were utilized for this test and all four ballot orientations were processed during the execution. In addition to the scanning, all results were transmitted to EMS via the wireless and landline modems with all results being verified and determined to be accurate.

Table 4-2 shows the breakdown of how many ballots of the specified ballot size were scanned during the accuracy test.

Ballot size	No. of Ballots	No. of Machine Marked	No. of Hand Marked	No. Ballot Positions per Ballot	No. of Machines in Test	No. of times Voted per machine	Total Ballot Positions
11 inch	100	30	70	392	3	2	235,200
14 inch	100	30	70	512	3	2	307,200
17 inch	100	30	70	640	3	2	384,000
19 inch	100	30	70	720	3	3	648,000
Total	400	120	280	N/A	3	N/A	1,574,400

Table 4-2 EVS 5.0.1.0 Accuracy Test DS200

# Summary Findings

The DS200 successfully met the requirements of the Data Accuracy Test by scanning and processing at least 1,549,703 ballot positions. Wyle Laboratories also transmitted and imported the results successfully to the EMS. No anomalies were noted during the performance of the Accuracy test.

# 4.5 System Level Testing (Continued)

# 4.5.4 Physical Configuration Audit

A Physical Configuration Audit (PCA) of the EVS 5.0.1.0 Voting System was performed in accordance with Section 6.6 of Volume II of the VVSG. The PCA compares the voting system components submitted for certification with the vendor's technical documentation and confirms that the documentation submitted meets the requirements of the Guidelines. The PCA included the following activities:

- Establishing a configuration baseline of software and hardware to be tested; confirm whether manufacturer's documentation is sufficient for the user to install, validate, operate, and maintain the voting system,
- Verifying software conforms to the manufacturer's specifications; inspect all records of manufacturer's release control system; if changes have been made to the baseline version, verify manufacturer's engineering and test data are for the software version submitted for certification,
- Reviewing drawings, specifications, technical data, and test data associated with system hardware, and to establish system baseline,
- Reviewing manufacturer's documents of user acceptance test procedures and data against system's functional specifications; resolve any discrepancy or inadequacy in manufacturer's plan or data prior to beginning system integration functional and performance tests,
- Subsequent changes to baseline software configuration made during testing, as well as system hardware changes that may produce a change in software operation are subject to re-examination

The PCA performed on EVS 5.0.1.0 consisted of inspecting the following:

- DS200 Hardware Revision 1.2.3.0
- DS200 Hardware Revision 1.3

The PCA performed on the EVS 5.0.1.0 Voting System consisted of inspecting the DS200 scanner, firmware/software, and the TDP used in the EVS 5.0.1.0 Voting System. The PCA for DS200 hardware revision 1.3 was performed during the FL EVS 4.5.0.0 test campaign. Please refer to Appendix C (FL EVS 4.5.0.0 Hardware Test Report T71013.01-01) for additional information. DS200 Hardware revision 1.2.3.0 was examined as part of this campaign.

# Summary Findings

A focused PCA was performed to baseline the system's hardware and software components that were used during the test campaign. No discrepancies were noted during the PCA.

# 4.5 System Level Testing (Continued)

# 4.5.5 Functional Configuration Audit

An abbreviated Functional Configuration Audit (FCA) was performed on the ES&S EVS 5.0.1.0 Voting System in accordance with Section 6.7 of Volume II of the VVSG. The purpose of the FCA was to verify the modifications to the DS200 and the EMS performed as documented in the ES&S-supplied technical documentation and validate that the modifications meet the requirements of the EAC 2005 VVSG.

To perform the FCA, the EVS 5.0.1.0 Voting System was subjected to a series of tests to test all modifications to the certified system and retest areas around the modification to ensure that those areas continued to function properly. The modification included:

- Functional change to update print results report candidates in rotation order to match ballot layout.
- Print scanner board hardware type on tape
- Implemented the use of the 8-bit "Scanner ID" field to report the scanner board firmware
- Integrated ability to read and report Power Management Board firmware version
- Report motherboard version on configuration report and in log

Testing was performed on the DS200 for hardware Version 1.2.3 (ECO 1281) to verify the modifications functioned properly.

Testing was also performed on the DS850 for the Datawin COTS firmware updates to verify the modifications functioned properly.

# Summary Findings

A Functional Configuration Audit of the DS200, DS850, and the EMS was performed to verify that the modification and added functionality operated as described in the system's technical documentation. The voting system successfully met the requirements of the 2005 VVSG.

# 4.5.6 Usability and Accessibility

The EVS 5.0.1.0 Voting System was subjected to Usability and Accessibility Tests in accordance with Volume I, Section 3 of the EAC 2005 VVSG. The purpose of this testing was to assess the modified DS200 conforms to the usability and accessibility requirements in the EAC 2005 VVSG. Conformance to these requirements should result in quality interaction between the voter and the voting system and the effectiveness with which the system provides a comfortable and efficient voting session that provides confidence to the voter that their votes are cast correctly.

The Usability and Accessibility requirements set forth by the VVSG and the Help America Vote Act (HAVA) ensure that all eligible voters are provided the ability to vote without discrimination regardless of any disabilities. As stated in the VVSG, to meet the requirements of the Usability and Accessibility Test, the voting system shall: conform to the specified usability requirements of Volume I, Section 3.1; provide the capabilities required by Volume I, Section 3.2; and operate consistently with vendor specifications and documentation.

# 4.5 System Level Testing (Continued)

# 4.5.6 Usability and Accessibility (Continued)

## **Summary Findings**

The DS200 successfully completed the requirements of the Usability and Accessibility Test.

## 4.5.7 Quality Assurance and Configuration Management

A limited QA/CM review was performed on all applicable system components to verify that the submitted modifications follow ES&S documented QA/CM process. This review concentrated on Functional Configuration Audit, Configuration Identification, Release Process and Quality Conformance Inspection as these are the areas impacted by modifications.

## **Summary Findings**

EVS 5.0.1.0 successfully met the requirements of the Quality Assurance and Configuration Management review.

## 4.6 Anomalies and Resolutions

A total of two Notices of Anomaly were issued throughout the test campaign upon occurrence of a verified failure, an unexpected test result, or any significant unsatisfactory condition. All anomalies encountered during testing were successfully resolved prior to test completion. The Notices of Anomaly generated during testing are presented in their entirety in Appendix C and are summarized below along with their resolution.

## Notice of Anomaly No. 1: TDP Review

Review of the submitted documentation revealed discrepancies between the TDP and the EAC 2005 VVSG requirements. Each noted discrepancy was documented in detail in the Wyle Laboratories generated TDP issues matrix that is on file as raw data.

## Resolution to Anomaly No. 1:

EVS 5.0.1.0 is a Modification of a previously certified system. As such the TDP was only reviewed where modified or where impacted by system modification. ES&S corrected each nonconformance observation and resubmitted the associated documents for review. This process continued until the TDP complied with all applicable requirements.

## Notice of Anomaly No. 2: Source Code Review

Review of the submitted source code comprising the EVS 5.0.1.0 Voting System revealed deviations from the 2005 VVSG.

## Resolution to Anomaly No. 2:

Upon completion of the review for each source code submission, a technical summary report of all identified standards violations was sent to ES&S for resolution. ES&S then corrected the reported discrepancies and re-submitted the source code for re-review. All discrepancies were resolved by ES&S before the conclusion of the test campaign.

# 4.5 System Level Testing (Continued)

# 4.7 Recommendation for Certification

Wyle Laboratories concludes that EVS 5.0.1.0, submitted by ES&S, meets all applicable requirements for certification as set forth in the Election Assistance Commission (EAC) 2005 Voluntary Voting Systems Guidelines, Version 1.0, as well as passes all additional tests performed at Wyle Laboratories' discretion. As such, Wyle Laboratories recommends that the EAC grant the ES&S EVS 5.0.1.0, certification to the VVSG.

This test report is valid only for the system identified in Section 2.0 of this report. Any changes, revisions, or corrections made to the system after this evaluation shall be submitted to the EAC to determine if the modified system requires a new application, or can be submitted as a modified system. The scope of testing required will be determined based upon the degree of modification.

Due to the varying requirements of individual jurisdictions, it is recommended by the EAC 2005 VVSG that local jurisdictions perform pre-election logic and accuracy tests on all systems prior to their use in an election within their jurisdiction.

# APPENDIX A

# PHOTOGRAPHS



Photograph No. 1 ES&S EVS 5.0.1.0 Functional Test Setup



Photograph No. 2 ES&S EVS 5.0.1.0 Accuracy Test Setup

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Photograph No. 3 ES&S EVS 5.0.1.0 System Integration Test Setup



Photograph No. 4 ES&S EVS 5.0.1.0 System Integration Test Setup



Photograph No. 5 ES&S EVS 5.0.1.0 System Integration Test Setup



Photograph No. 6 ES&S EVS 5.0.1.0 System Integration Test Setup



Photograph No. 7 ES&S EVS 5.0.1.0 System Integration Test Setup



Photograph No. 8 ES&S EVS 5.0.1.0 Electrical Supply Test

# **APPENDIX B**

# FL EVS 4.5.0.0 HARDWARE TEST REPORT T71013.01-01



Wyle Laboratorses, Inc. 7800 Highway 20 Wess Huntsville, Alabarta 35806 Phone (256) 837-4411 • Fax (256) 721-0144 www.wyle.com

REPORT NO .:	T71013.01-01

WYLE JOB NO .: T71013.01

CLIENT P.O. NO .: ES&S-MSA-TA029

CONTRACT:

TOTAL PAGES (INCLUDING COVER): 125

**TEST REPORT** 

DATE: September 18, 2013

N/A

## HARDWARE COMPLIANCE TESTING OF THE ELECTION SYSTEMS & SOFTWARE FL EVS 4.5.0.0 VOTING SYSTEM DS200 HARDWARE VERSION 1.3

for

Election Systems & Software, LLC 11208 John Galt Boulevard Omaha, NE 68137

STATE OF ALABAMA COUNTY OF MADISON       }         Robert R. Bridges, Director       being duly sworn, deposes and says; The information contained in this report is the result of complete and carefully conducted testing and is in the best of his knowledge true out correct in all respects.	Wyle shall lave no lisbility for damages of any kind to person or property, including special or consequential damages, reading from Wyle's providing the services covored by this report.  PREPARED BY:
hobe h the	APPROVED BY: Jul and 1/18/13
0	Frank Padilla, Voting Systems Manager Date
SUBSCRIBED and swom to before me this 18 day of SOA 20 18	WYLEQ.A.: Burgha Merro alelis
Notalie Vucor,	Fig. Raul Toromo, Q. A. Manager Date
Notary Public in and for the State of Alabama in Large	RIVIAD
My Commission expires	VSIL
	NVLAP LAIS CODE 200771-0 RAC Las Case 6784
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## Page No. TOC 1 of 2 Test Report No. T71013.01-01

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	1577.P		REPORT NO
W	<b>de</b>		DATE September 18, 2013
REV	DATE	PAGE OR PARAGRAPH AFFECTED	DESCRIPTION OF CHANGES
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## 1.0 INTRODUCTION

## 1.1 Scope

This report documents the test procedures followed and the results obtained from the Environmental and Electrical Testing performed on the Florida Election Voting System (FL EVS) 4.5.0.0 for Election Systems & Software (ES&S). Upon receipt by Wyle Laboratories, the systems were inspected and subjected to a Physical Configuration Audit (PCA). All testing was performed at Wyle Laboratories' Huntsville, Alabama, Test Facility.

## 1.2 Objective

The ES&S FL EVS 4.5.0.0 Voting System was tested in reference to the United States Federal Election Commission (FEC) 2002 Voting System Standards (VSS) and all applicable EAC 2005 Voluntary Voting Systems Guidelines (VVSG).

## 1.3. Test Report Overview

This test report consists of four main sections and attachments:

- 1.0 Introduction Provides the architecture of the National Certification Test Report (hereafter referred to
  as Test Report); a brief overview of the testing scope of the Test Report; a list of documentation, customer
  information, and references applicable to the voting system hardware, software, and this test report.
- 2.0 System Identification and Overview Provides information about the equipment tested.
- 3.0 Test Background Contains information about the certification test process and a list of terms and nomenclature pertinent to the Test Report and system tested.
- 4.0 Test Procedures and Results Provides a summary of the results of the testing process.
- Attachments Information supporting reviews and testing of the voting system are included as attachments to this report.

## 1.4 Customer

Election Systems & Software, LLC 11208 John Galt Boulevard Omaha, NE 68137

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## 1.0 INTRODUCTION (Continued)

### 1.5 References

The documents listed were utilized to perform certification testing.

- Election Assistance Commission 2005 Voluntary Voting System Guidelines, Volume I, Version 1.0, "Voting System Performance Guidelines," and Volume II, Version 1.0, "National Certification Testing Guidelines," dated December 2005
- United States Federal Election Commission Voting System Standards Volume I, "Performance Standards" and Volume II, "Test Standards" dated April 2002
- Election Assistance Commission Testing and Certification Program Manual, Version 1.0, effective date January 1, 2007
- Election Assistance Commission Voting System Test Laboratory Program Manual, Version 1.0, effective date July 2008
- Florida Voting System Standards, Form DS-DE 101, 1-12-05
- National Voluntary Laboratory Accreditation Program NIST Handbook 150, 2006 Edition, "NVLAP Procedures and General Requirements (NIST Handbook 150)," dated February 2006
- National Voluntary Laboratory Accreditation Program NIST Handbook 150-22, 2008 Edition, "Voting System Testing (NIST Handbook 150-22)," dated May 2008
- United States 107<sup>th</sup> Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002
- Wyle Laboratories' Test Guidelines Documents: EMI-001A, "Wyle Laboratories' Test Guidelines for Performing Electromagnetic Interference (EMI) Testing," and EMI-002A, "Test Procedure for Testing and Documentation of Radiated and Conducted Emissions Performed on Commercial Products"
- Wyle Laboratories' Quality Assurance Program Manual, Revision 5
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- EAC Requests for Interpretation (listed on <u>www.eac.gov</u>)
- EAC Notices of Clarification (listed on www.eac.gov)

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## 2.0 SYSTEM IDENTIFICATION AND OVERVIEW

### 2.1 System Overview

The ES&S FL EVS 4.5.0.0 Voting System is a new system that contains a newly configured DS200 hardware version 1.3. The new DS200 tabulator configuration consists of a new mother board, scanner board, redesigned transport path, and a removable battery access panel. Based on the upgrades and modifications to the DS200 a full hardware testing suite was performed at Wyle. For the ES&S FL EVS 4.5.0.0 Voting System, Wyle subjected the DS200 to: non-operating environmental tests, operating environmental tests and Electromagnetic Compatibility (EMC) tests. The ElectionWare EMS was only utilized to generate election media and verify results. Wyle only documented the configuration used during testing conducted at Wyle.

### 2.2 System Identification

The materials required for testing of the ES&S FL EVS 4.5.0.0 Voting System included software, hardware, test materials, and deliverable materials shipped directly to Wyle by ES&S. The materials documented in the following sections are the materials used during Wyle's testing of only the DS200 and the interface with the EMS.

## 2.2.1 Hardware

This subsection categorizes the equipment the manufacturer submitted for testing and is listed in Table 2-1. Each test element is included in the list of the equipment required for testing of that element, including system hardware, general purpose data processing and communications equipment, and any required test instrumentation.

Equipment	Description	Serial Numbers
DS200 (Hardware Revision 1.3)	Precinct Count Digital Scanner	DS0313350006 (ENV) DS0313350010 (ENV) DS0313350009 (EMI)
Ballot Box	Plastic Ballot Box/Plastic Transport Case	T71013-BB-002
Ballot Box	Hard Vinyl Transport Case	T71013-BB-003
Ballot Box	Metal Box with Electromechanical Diverter	T71013-BB-001
Dell Latitude Laptop	CPU: Intel Core i5-2540M 2.60Ghz RAM: 4.00 GB HDD: 250 GB – ST250LT007-9ZV14C OS: Windows 7 Professional SP1 – 64 bit	39CMJS1
Transport Media/ Memory Device/ USB Flash Drive	Approved Manufacturer List: Kingston SanDisk Delkin Approved Capacity List: 512 MB 1 GB 2 GB 4 GB 8GB	Wyle-assigned: TM-XXX*
Compact Flash Card/ CF Card	Approved Manufacturer List: Delkin Approved Capacity List: 1 GB	Wyle-assigned: CF-XXX*

Table 2-1 ES&S FL EVS 4.5.0.0 Test Equipment

\*Wyle uniquely labels each media device with the information (election, results, test utilized for) loaded on the device.

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## 2.0 SYSTEM IDENTIFICATION AND OVERVIEW (Continued)

### 2.2 System Identification (Continued)

## 2.2.2 Software

The software evaluated was limited to ElectionWare, Election Reporting Manager (ERM), and the firmware build for the DS200. Only the changes incorporated since the EVS 5.0.0.0 test campaign were evaluated by Wyle. Wyle utilized an EMS setup with new versions of ElectionWare and ERM to load election information onto transport media. Wyle did not test the EMS for any other functionality.

1 able 2-2 Software Required for Testi	able 2-2 Software Require	d for	Testing
--	---------------------------	-------	---------

Software Identification	Version		
DS200 Firmware	2.11.0.01		
DS200 Scanner Board Firmware	3.0.0.0b		
DS200 Power Management Board	1.2.10.0a		

## 2.3 Test Support Materials

This subsection enumerates any and all test materials needed to perform voting system testing. The scope of testing determines the quantity of a specific material required.

The following test materials were required to support the ES&S FL EVS 4.5.0.0 test campaign:

## **Table 2-3 Test Support Equipment**

Test Material	Quantity		
Paper Rolls	25 rolls total		
Pre Printed Ballots	1,200 total (14" size)		

## 2.4 Vendor Technical Data Package

The Technical Data Package (TDP) contains information about requirements, design, configuration management, quality assurance, and system operations. A scaled version of the TDP was submitted for this campaign due to only Hardware Testing being performed. The table below provides the TDP documents submitted and reviewed for the ES&S FL EVS 4.5.0.0 campaign.

## Table 2-5 ES&S FL EVS 4.5.0.0 Voting System TDP

ES&S FL EVS 4.5.0.0 TDP Documents	Version	Doc No.	Document Code
System Ha	ardware Specific	ation	
System Hardware Specification - DS200	1.0	03-01	DS200HW_M_SPC_0313_HWSpec
System Test/V	'erification Spec	ification	
System Operations Procedures - DS200	1.0	07-06	FLEVS4500_SOP_DS200
System M	aintenance Man	uals	
System Maintenance Manual - DS200	1.0	08-01	FLEVS4500_SMM_DS200

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## 3.0 TEST BACKGROUND

Wyle Laboratories is an independent testing laboratory for systems and components under harsh environments, including dynamic and climatic extremes as well as the testing of electronic voting systems. Wyle holds the following accreditations:

- ISO-9001:2000
- NVLAP Accredited ISO 17025:2005
- EAC Accredited VSTL, NIST 150,150-22
- A2LA Accredited (Certification No.'s 845.01, 845.02, and 845.03)
- FCC Approved Contractor Test Site (Part 15, 18, 68)

## 3.1 General Information about the Test Process

All testing performed as part of the test effort was performed at the Wyle Labs Huntsville, AL facility. Conformance testing was limited to the ES&S FL EVS 4.5.0.0 Voting System component previously identified in this report.

All hardware used during testing for this test campaign was configured "As Used" for voting. Each tabulator was placed on a ballot box and loaded with the proper firmware. The ES&S FL EVS 4.5.0.0 EMS suite was loaded on a COTS PC. All media used during testing was loaded from this EMS PC. All hardware used to build the DS200 firmware was configured by Wyle.

### 3.2 Wyle Quality Assurance

All work performed on this program was in accordance with Wyle Laboratories' Quality Assurance Program and Wyle Laboratories' Quality Program Manual, which conforms to the applicable portions of International Standard Organization (ISO) Guide 17025.

The Wyle Laboratories, Huntsville Facility, Quality Management System is registered in compliance with the ISO-9001 International Quality Standard. Registration has been completed by Quality Management Institute (QMI), a Division of Canadian Standards Association (CSA).

## 3.3 Test Equipment and Instrumentation

All instrumentation, measuring, and test equipment used in the performance of this test program was calibrated in accordance with Wyle Laboratories' Quality Assurance Program, which complies with the requirements of ANSI/NCSL 2540-1, ISO 10012-1, and ISO/IEC 17025. Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST) by report number and date. When no national standards exist, the standards are traceable to international standards, or the basis for calibration is otherwise documented.

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## 3.0 TEST BACKGROUND (Continued)

## 3.4 Terms and Abbreviations

Table 3-1 in this subsection defines all terms and abbreviations applicable to this Test Report.

## **Table 3-1 Terms and Abbreviations**

Term	Abbreviation	Definition		
Americans with Disabilities Act of 1990	ADA	ADA is a wide-ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability		
Configuration Management	CM			
Commercial Off the Shelf	COTS	Commercial, readily available hardware or software		
Direct Record Electronic	DRE			
United States Election Assistance Commission	EAC	Commission created per the Help America Vote Act of 2002, assigned the responsibility for setting voting system standards and providing for the voluntary testing and certification of voting systems.		
Election Management System	EMS	(mene)		
Equipment Under Test	EUT			
Help America Vote Act	HAVA	Act created by United States Congress in 2002.		
National Institute of Standards and Technology	NIST	Government organization created to promote U.S. innovation a industrial competitiveness by advancing measurement scien standards, and technology in ways that enhances economic secur and improves our quality of life.		
Physical Configuration Audit	PCA	Review by accredited test laboratory to compare voting system components submitted for certification testing to the manufacturer's technical documentation, and confirmation the documentation meets national certification requirements. A witnessed build of the executable system is performed to ensure the certified release is built from tested components.		
Quality Assurance	QA			
Technical Data Package	TDP	Manufacturer documentation related to the voting system required to be submitted as a precondition of certification testing.		
Voting System Standards	VSS	Published by the FEC, second iteration of national level voting system standards.		
Voluntary Voting System Guidelines	2005 VVSG	Published by the EAC, the third iteration of national level voting system standards.		
Wyle Operating Procedure	WOP	Wyle Test Method or Test Procedure		

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## 4.0 TEST FINDINGS AND RECOMMENDATIONS

The ES&S FL EVS 4.5.0.0 Voting System component, as listed in Section 2.0, were subjected to the tests described in Section 3.2 of this report. The results of those tests are summarized in the sections below. All hard copy data generated by the performance of these tests is retained by Wyle as raw data.

## 4.1 System Level Baseline

A System Level Baseline was performed to evaluate the system being submitted for testing in comparison to the system TDP. A Physical Configuration Audit was performed on the ES&S FL EVS 4.5.0.0 submitted for Hardware Testing.

#### 4.1.1 Physical Configuration Audit

A focused Physical Configuration Audit (PCA) of the ES&S FL EVS 4.5.0.0 Voting System was performed in accordance with Section 6.6 of Volume II of the VVSG. The PCA compares the voting system components submitted for certification with the vendor's technical documentation and confirms that the documentation submitted meets the requirements of the Guidelines. The purpose of the PCA is to: establish a configuration baseline (both hardware and software) of the system to be tested; verify that the reviewed source code conforms to the vendor's specification; and assess the adequacy of user acceptance test procedures and data.

The PCA performed on the ES&S FL EVS 4.5.0.0 Voting System consisted of inspecting the DS200 scanner, firmware/software, and the TDP used in the ES&S FL EVS 4.5.0.0 Voting System.

**Summary Findings:** A focused PCA was performed to baseline the system's hardware and software components prior to commencement of the test campaign. No discrepancies were noted during the PCA.

#### 4.2 Technical Data Package Review

The ES&S FL EVS 4.5.0.0 Voting System Technical Data Package (TDP) was not reviewed to the 2005 VVSG. The supplied TDP documents were only utilized as reference material for EUT configuration and test set-up.

Summary Findings: TDP was not performed.

### 4.3 Hardware Testing

Hardware testing included: the inspection and evaluation of voting system documentation; tests of voting system under conditions simulating the intended storage, operation, and transportation; and operational tests verifying system performance and function under normal and abnormal conditions. Hardware testing was limited to the ES&S FL EVS 4.5.0.0 Voting System. Hardware Testing Data can be located in Attachments A - G of this document for additional information

The DS200 was subjected to hardware tests as summarized in Table 4-1.

## **Table 4-1 Test Program Requirements**

REPORT SECTION	VVSG VOL. I SECTION	VVSG VOL. II SECTION	TEST DESCRIPTION		
4.5.1	N/A	4.6.4	Low Temperature Test		
4.5.1	N/A	4.6.5	High Temperature Test		
4.5.1	N/A	4.6.3	Vibration Test		

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## 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

## 4.3 Hardware Testing (Continued)

## Table 4-1 Test Program Requirements (Continued)

REPORT SECTION	VVSG VOL. I SECTION	VVSG VOL. II SECTION	TEST DESCRIPTION	
4.5.1	N/A	4.6.2	Bench Handling Test	
4.5.1	N/A	4.6.6	Humidity Test	
4.5.2	N/A	4.7.1	Temperature/Power Variation Test	
4.6.1	4.1.2.5	4.8A	Electrical Power Disturbance Test	
4.6.2	4.1.2.9	4.8B	Electromagnetic Radiation Test	
4.6.3	4.1.2.8	4.8C	Electrostatic Disruption Test	
4.6.4	4.1.2.10	4.8D	Electromagnetic Susceptibility Test	
4.6.5	4.1.2.6 (a)	4.8E	Electrical Fast Transient Test	
4.6.6	4.1.2.7 (a) (b)	4.8F	Lightning Surge Test	
4.6.7	4.1.2.11 (a)	4.8G	Conducted RF Immunity Test	
4.6.8	4.1.2.12	4.8H	Magnetic Fields Immunity Test	
4.6.9	4.3.8	N/A	Product Safety Review, UL60950-1	

#### 4.4 Environmental Tests

Environmental tests were performed to ensure that the EUT and associated machine resident firmware were in compliance with the VVSG.

During test performance, the EUT was configured as it would be for use in an election precinct.

## 4.4.1 Non-Operating Environmental Tests

The EUT was subjected to various Non-Operating Environmental Tests. Prior to and immediately following each test environment, the EUT was powered on and subjected to operability functional checks to verify continued proper operation. The EUT was not powered on during the performance of any of the non-operating tests.

#### Low Temperature Test

The EUT was subjected to a Low Temperature Test in accordance with section 4.6.4 of Volume II of the VVSG. The purpose of this test is to simulate stresses associated with the storage of voting machines and ballot counters. This test is equivalent to the procedure of MIL-STD-810D, Method 502.2, Procedure I-Storage, with a minimum temperature of  $-4^{\circ}F$ .

Prior to test initiation, the EUT was subjected to a baseline operability checkout to verify system readiness. The EUT was then placed in an environmental test chamber and the chamber temperature was lowered to  $-4^{\circ}F$  and allowed to stabilize. Upon temperature stabilization, the temperature was maintained for an additional four hours. The temperature was then returned to standard laboratory ambient conditions at a rate not exceeding  $10^{\circ}F$  per minute.

During the Low Temperature Test there was one anomaly encountered (reference Notice of Anomaly No. 7 in Attachment A for further reference). This anomaly required testing to be repeated.

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## 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

#### 4.4.1 Non-Operating Environmental Tests (Continued)

Upon completion of the second attempt the EUT was removed from the chamber and inspected for any obvious signs of degradation and/or damage. None were observed. The EUT was successfully subjected to a post-test operability checkout.

The EUT successfully completed the requirements of the Low Temperature Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, C, and G of this report.

## **High Temperature Test**

The EUT was subjected to a High Temperature Test in accordance with section 4.6.5 of Volume II of the VVSG. The purpose of this test is to simulate stresses associated with the storage of voting machines and ballot counters. This test is equivalent to the procedure of MIL-STD-810D, Method 501.2, Procedure I-Storage, with a maximum temperature of  $140^{\circ}$ F.

Prior to test initiation, the EUT was subjected to a baseline operability checkout to verify system readiness. The EUT was then placed in an environmental test chamber and the chamber temperature was raised to 140°F and allowed to stabilize. Upon temperature stabilization, the temperature was maintained for an additional four hours. The temperature was then returned to standard laboratory ambient conditions at a rate not exceeding 10°F per minute.

The EUT was removed from the chamber and inspected for any obvious signs of degradation and/or damage. None were observed. The EUT was successfully subjected to a post-test operability checkout.

The EUT successfully completed the requirements of the High Temperature Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, C, and G of this report.

## Vibration Test

The EUT was subjected to a Vibration Test in accordance with section 4.6.3 of Volume II of the VVSG. The purpose of this test is to simulate stresses faced during transport of voting machines and ballot counters between storage locations and polling places. This test is equivalent to the procedure of MIL- STD-810D, Method 514.3, Category 1- Basic Transportation, Common Carrier.

Prior to test initiation, the EUT was subjected to a baseline operability checkout to verify system readiness. Upon completion, the EUT was secured to an electro dynamics shaker. One control accelerometer was affixed to the shaker table. The EUT was subjected to the Basic Transportation, Common Carrier profile as depicted in Mil-Std-810D, Method 514.3, Category I, with a frequency range from 10 to 500 Hz and an overall rms level of 1.04, 0.74, and 0.20 G for durations of 30 minutes in each orthogonal axis.

The DS200 successfully completed the requirements of the Vibration Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, C, and G of this report.

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## 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

### 4.4 Environmental Tests (Continued)

## 4.4.1 Non-Operating Environmental Tests (Continued)

### **Bench Handling Test**

The EUT was subjected to a Bench Handling Test in accordance with section 4.6.2 of Volume II of the VVSG. The purpose of this test is to simulate stresses faced during maintenance and repair of voting machines and ballot counters. This test is equivalent to the procedure of MIL-STD-810D, Method 516.3, Procedure VI.

Prior to performance of the test, the EUT was subjected to a baseline operability checkout. Following the checkout, each edge of the base of the machine was raised to a height of four inches above the surface and allowed to drop freely. This was performed six times per edge, for a total of 24 drops.

Upon test completion, the EUT was inspected for any obvious signs of degradation and/or damage. None were

observed. The EUT was subjected to a post-test operability checkout and continued operability verified.

The EUT successfully completed the requirements of the Bench Handling Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, C, and G of this report.

#### **Humidity Test**

The EUT was subjected to a Humidity Test in accordance with section 4.6.6 of Volume II of the VVSG. The purpose of the test was to simulate stresses encountered during storage of voting machines and ballot counters. This test is similar to the procedure of MIL-STD-810D, Method 507.2, Procedure I-Natural Hot-Humid.

The EUT was subjected to a baseline operability checkout to verify system readiness. Upon completion, the EUT was placed in an environmental test chamber and was subjected to a 10-day humidity cycle in accordance with the 24-hour cycle values as shown in Table 4-2.

Upon test completion, the EUT was inspected for any obvious signs of degradation and/or damage. The DS200 successfully completed the requirements of the Humidity Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, C, and G of this report.

	Hot	Hot-Humid (Cycle 1)		Time	Hot-Humid (Cycle 1)		
Time	Time Temper °F	rature RH	Temperature		RH		
		°C	°C %		°F	°C	%
0000	88	31	88	1200	104	40	62
0100	88	31	88	1300	105	41	59
0200	88	31	88	1400	105	41	59
0300	88	31	88	1500	105	41	59
0400	88	31	88	1600	105	41	59
0500	88	31	88	1700	102	39	65
0600	90	32	85	1800	99	37	69
0700	93	34	80	1900	97	36	73
0800	96	36	76	2000	94	34	76
0900	98	37	73	2100	97	33	85
1000	100	38	69	2200	90	32	85
1100	102	39	65	2300	89	32	88

Table 4-2 Humidity Test Cycle Values
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#### 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

4.4 Environmental Tests

#### 4.4.2 Operating Environmental Tests

#### **Temperature/Power Variation Test**

The DS200 was subjected to a Temperature and Power Variation Test in accordance with section 4.7.1 of Volume II of the VVSG. The purpose of this test was to evaluate system operation under various environmental conditions. The cumulative duration of at least 163 hours was achieved by utilizing three units for a period of 64 hours based on the (EAC RFI 2008-01), with 48 hours in the environmental test chamber. For the remaining hours, the equipment was operated at room temperature. This test is similar to the low temperature and high temperature tests of MIL-STD-810-D, Method 502.2 and Method 501.2.

To perform the test, the EUTs were placed inside an environmental walk-in test chamber and connected to a variable voltage power source. The temperature inside the chamber and the voltage supplied to the hardware varied from 50°F to 95°F and from 105 VAC to 129 VAC (as depicted in Figures 4-1 through 4-4). During test performance, the operational functions were continuously exercised by the scanning of ballots. A minimum of 100 ballots per hour were scanned.



Figure 4-1 Temperature/Power Variation Profile Hours 0-12

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# 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

# 4.4.2 Operating Environmental Tests (Continued)









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## 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

# 4.4.2 Operating Environmental Tests (Continued)



Figure 4-4 Temperature/Power Variation Profile Hours 36-48

# Summary Findings

The DS200 successfully completed the requirements of the Temperature/Power Variation Test on the first attempt without issue.

#### 4.5 Electrical Tests

Electrical tests were performed to ensure that the EUT and associated machine resident firmware were in compliance with the VVSG.

During test performance, the EUT was configured as it would be for use in an election precinct.

The EUT was subjected to various electrical tests to ensure continued system operation and reliability in the presence of abnormal electrical events. The EUT was powered and actively counting ballots during all electrical tests. Prior to and immediately following each electrical test, an operational status check was performed. The Test Data Sheets, Photographs, and Instrumentation Equipment Sheets are contained in Attachments B, D, and G of this report.

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#### 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

## 4.5.1 Electrical Power Disturbance

Electrical Power Disturbance testing was performed in accordance with sections 4.1.2.5 of Volume I and 4.8 of Volume II of the VVSG. This testing was performed to ensure that the EUT was able to withstand electrical power line disturbances (dips/surges) without disruption of normal operation or loss of data.

The EUT was configured to run in an automated ballot count test mode, where continual ballot processing would occur during the testing, and subjected to the voltage dips and surges over periods ranging from 20ms to four hours.

The EUT successfully met the requirements of the Electrical Power Disturbance Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, D, and G of this report.

## 4.5.2 Electromagnetic Radiation Test (FCC Part 15 Emissions)

Electromagnetic Radiation emissions measurements were performed in accordance with sections 4.1.2.9 of Volume I and 4.8 of Volume II of the VVSG. This testing was performed to ensure that emissions emanating from the unit do not exceed the limits of 47 CFR Part 15, Subpart B, Class B Limits.

The EUT was configured to run in an automated ballot count test mode, where continual ballot processing would occur during the testing. The DS200 was subjected to the test requirements detailed in Table 4-3.

Conduc	cted Emissions		Radiated	l Emissions
Frequency Range	Lim (dBµ	its V)	Frequency Range	3 Meter Test Limit
(MHZ)	Quasi-peak	Average	(MHZ)	(dBh A)
0.15 to 0.50	66 to 56	56 to 46	30 to 88	40.0
0.50 to 5.0	56	46	88 to 216	43.5
5.0 to 30.0	60	50	216 to 960	46.0
			960 to 1000	54.0

Table 4-3 Conducted and Radiated Emissions Requirements

Testing was performed at the Wyle Laboratories' Open Air Test Site 2 (OATS-2) located on the Intergraph Complex in Huntsville, AL. The OATS-2 is fully described in reports provided to the Federal Communication Commission (FCC) (FCC Reference 98597). The site was tested and complies with the requirements of ANSI C63.4-2003.

To perform the Conducted Emissions portion of the test, the DS200 was set up as depicted in Figure 4-5.

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#### 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

4.5.2 Electromagnetic Radiation Test (FCC Part 15 Emissions) (Continued)



Figure 4-5 Conducted Emissions Test Setup

The DS200 was then subjected to the following test procedure:

- 1. The DS200 was placed on a non-metallic table 0.8 meters above the turntable and reference ground plane at the Open-Area Test Site.
- The DS200 AC/DC Power Adapter was connected to the power mains through a Line Impedance Stabilization Network (L.I.S.N.). Other support units were connected to the power mains through another L.I.S.N. The L.I.S.Ns provided 50 ohm/50 µH of coupling impedance for the measuring instrument.
- 3. The DS200 was placed in an active state and monitored for functionality throughout testing.
- 4. Both Line and Neutral of the power mains connected to the DS200 were checked for maximum conducted interference.
- 5. The frequency range from 150 kHz to 30 MHz was evaluated and recorded. Emissions levels below 20 dB were not recorded.

To perform the Radiated Emissions portion of the test, the DS200 was set up as depicted in Figure 4-6.

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#### 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

## 4.5.2 Electromagnetic Radiation Test (FCC Part 15 Emissions) (Continued)



Figure 4-6 Radiated Emissions Test Setup

The DS200 was then subjected to the following test procedure:

1. The DS200 was placed on a non-metallic turn-table 0.8 meters above the reference ground plane at the Open-Area Test Site.

2. The DS200 was placed 3 meters away from the interference-receiving antenna, which was mounted on a variable-height antenna tower. The interference-receiving antenna used was a broadband antenna.

3. For each suspected emissions point, the DS200 was arranged in a worst case configuration. The table was rotated from 0 to 360 degrees and the antenna height was varied from one (1) to four (4) meters to identify the maximum reading.

4. All emissions points identified within 20 dB of the specified limit were tested individually using the quasipeak method as specified and then reported in the tabular data.

The EUT was found to comply with the required emissions limits. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, D, and G of this report.

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#### 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

## 4.5 Electrical Tests (Continued)

#### 4.5.3 Electrostatic Disruption

Electrostatic Disruption testing was performed in accordance with sections 4.1.2.8 of Volume I and 4.8 of Volume II of the VVSG to ensure that should an electrostatic discharge event occur during equipment setup and/or ballot counting, that the EUT would continue to operate normally. A momentary interruption is allowed so long as normal operation is resumed without human intervention or loss of data.

The EUT was configured to run in an automated ballot count test mode, where continual ballot processing would occur during the testing without operator intervention. The EUT was then subjected to electrostatic discharges of  $\pm$  8 kV contact and  $\pm$  15 kV air as shown in Table 4-4. Discharges were performed at areas typical of those which might be touched during normal operation, including the touch screen, user buttons, and other likely points of contact. The DS200 was then setup per the following conditions:

- 1. Power lines and power line returns were configured as required by the system configuration.
- 2. The EUT was raised approximately 10 cm from the ground using isolated stand-offs.
- 3. Signal/control test cables were positioned approximately 5 cm (2 in.) above the ground.

		Requirements	
Characteristic	Capacitance	Resistance	Value
Pulse Wave Shape (RC Network)	150	330	pf/Ω
	Dischar	ge Types	Value
Test Levels	Air Gap	Direct Contact	value
	±15	±8	KV
Rise Time		<u>≤</u> 1	nanosecond
Pulse Decay Time	≈30 at 5	0% height	nanosecond
Pulse Repetition		≥1	per second
Total Injected Pulse at each Test		10	per polarity (±)
Point			
Temperature	≥15	to ≤35	°C
Relative Humidity	≥30	to ≤60	%

#### Table 4-4 Electrostatic Discharge Transients

During the ESD Test there was one anomaly encountered (reference Notice of Anomaly No. 8 in Attachment A for further reference).

During the second attempt the EUT successfully met the requirements of the ESD Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, D, and G of this report.

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# 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

#### 4.5 Electrical Tests (Continued)

# 4.5.4 Electromagnetic Susceptibility

Electromagnetic Susceptibility testing was performed in accordance with sections 4.1.2.10 of Volume I and 4.8 of Volume II of the 2005 VVSG. This testing was performed to ensure that the EUT was able to withstand a moderate level of ambient electromagnetic fields without disruption of normal operation or loss of data.

The EUT was configured to run in an automated ballot count test mode, where continual ballot processing would occur during the testing without operator intervention. The DS200 was then subjected to ambient electromagnetic fields at 10 V/m over a range of 80 MHz to 1000 MHz, as shown in Figure 4-7. Testing was conducted utilizing both horizontally and vertically polarized waves. The limits were measured with a maximum scan rate of 1% of the fundamental frequency and the dwell duration was three seconds.



Figure 4-7 Radiated Susceptibility Limit

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# 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

#### 4.5 Electrical Tests (Continued)

#### 4.5.4 Electromagnetic Susceptibility

During the Susceptibility Test there were three anomalies encountered (reference Notice of Anomaly Nos. 4, 5 and 6 in Attachment A). During the fourth attempt there was no loss of normal operation or loss of data as a result of the applied electromagnetic fields.

On the fourth attempt the EUT successfully met the requirements of the Electromagnetic Susceptibility Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, D, and G of this report.

#### 4.5.5 Electrical Fast Transients

Electrical Fast Transients (EFT) testing was performed in accordance with sections 4.1.2.6 (a) of Volume I and 4.8 of Volume II of the 2005 VVSG to ensure that, should an electrical fast transient event occur on a power line, the EUT would continue to operate without disruption of normal operation of loss of data. Section 4.1.2.6 (b) of Volume I is not applicable because there are no I/O lines greater than three meters.

The EUT was configured to run in an automated ballot count test mode, where continual ballot processing would occur during the testing without operator intervention. The EUT was then subjected to electrostatic fast transients of 2 kV applied to its AC power lines. The pulse characteristics are listed in Table 4-5.

Pulse Description	Requirements	Units
Pulse Amplitude	+/-2.0	kV peak to peak
Pulse Rise Time	5 ±30%	nanoseconds
Pulse Width	50 ±30%	nanoseconds
Pulse Repetition Rate	100	kHz
Pulse Shape	Double exponential	N/A
Burst Duration	15	milliseconds
Burst Period	300	milliseconds
Test Duration	60	seconds

Table 4-5 EFT Pulse Characteristics

There was no loss of normal operation or loss of data as a result of the applied transients. The EUT successfully met the requirements of the Electrical Fast Transients Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, D, and G of this report.

#### 4.5.6 Lightning Surge

Lightning Surge testing was performed in accordance with sections 4.1.2.7 (a), (b) of Volume I and 4.8 of Volume II of the 2005 VVSG to ensure that, should a surge event occur on a power line due to a lightning strike, the EUT will continue to operate without disruption of normal operation or loss of data. Sections 4.1.2.7 (c), (d), and (e) are not applicable because there are no DC lines greater than 10 meters and no I/O lines greater than 30 meters.

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# 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

#### 4.5 Electrical Tests (Continued)

## 4.5.6 Lightning Surge (Continued)

The EUT was configured to run in an automated ballot count test mode, where continual ballot processing would occur during the testing. The EUT power input lines were then subjected to lightning surge testing at a level of 2 kV applied to its AC power line per the surge characteristics listed in Table 4-6.

Test I.D.	Cable Type	Number of Interfacing Cables	Description	Injection Signals Summary Characteristics
	Line (L) to Neutral (N)	1		Injection at Power Input
	Line (L) to Ground (G)	1	120 VAC	Sinewave: 0°, 90°, and 270°
Surge	Neutral (N) to Ground (G)	1	Power Lines	Combination Wave Test Levels: ±2.0 kV
	Line (L) & Neutral (N) to Ground (G)	1		and Ring Wave Test Level = ±2.0 kV

Table 4-6	Surge	Charact	teristics
	0		

During the Lightning Surge Test there were two anomalies encountered (reference Notice of Anomaly Nos. 1 and 2 in Attachment A).

During the third attempt the EUT successfully met the requirements of the Lightning Surge Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, D, and G of this report.

# 4.5.7 Conducted RF Immunity

Conducted RF Immunity testing was performed in accordance with sections 4.1.2.11 (a) of Volume I and 4.8 of Volume II of the 2005 VVSG. Section 4.1.2.11 (b) of Volume I is not applicable because there are no signal/control lines greater than three meters. This testing was performed to ensure that the EUT was able to withstand conducted RF energy onto its power lines without disruption of normal operation or loss of data.

#### Page No. 21 of 23 Test Report No. T71013.01-01

# 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

#### 4.5 Electrical Tests (Continued)

## 4.5.7 Conducted RF Immunity

The EUT was configured to run in an automated ballot count test mode, where continual ballot processing would occur during the testing without operator intervention. The EUT was then subjected to conducted RF energy of 10 V rms applied to its power lines over a frequency range of 150 kHz to 80 MHz.

There was no loss of normal operation or loss of data as a result of the applied conducted RF energy. The EUT successfully met the requirements of the Conducted RF Immunity Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, D, and G of this report.

#### 4.5.8 Magnetic Fields Immunity

Magnetic Fields Immunity testing was performed in accordance with sections 4.1.2.12 of Volume I and 4.8 of Volume II of the 2005 VVSG. This testing was performed to ensure that the EUT was able to withstand AC magnetic fields without disruption of normal operation of loss of data.

The EUT was configured to run in an automated ballot count test mode, where continual ballot processing would occur during the testing. The EUT was then subjected to AC magnetic fields of 30 A/m at a 60 Hz power line frequency.

There was no loss of normal operation or loss of data as a result of the applied magnetic field.

The EUT successfully met the requirements of the Magnetic Fields Immunity Test. The Test Data Sheet, Photographs, and Instrumentation Equipment Sheet are contained in Attachments B, D, and G of this report.

#### 4.5.9 Product Safety Review

The VVSG states that all voting systems shall meet the following requirements for safety:

All voting systems and their components shall be designed to eliminate hazards to personnel or to the equipment itself.

Defects in design and construction that can result in personal injury or equipment damage must be detected and corrected before voting systems and components are placed into service.

Equipment design for personnel safety shall be equal to or better than the appropriate requirements of the Occupational Safety and Health Act, Code of Federal Regulations, Title 29, Part 1910.

To satisfy these requirements, the voting system was subjected to a Product Safety Review in accordance with UL 60950-1, "Safety of Information Technology Equipment".

Attachment F of this report contains the Product Safety Certificate of Conformance.

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#### 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

#### 4.6 Anomalies and Resolutions

Eight Notices of Anomalies were issued during the test campaign. A Notice of Anomaly (NOA) is generated upon occurrence of a verified failure, an unexpected test result, or any significant unsatisfactory condition. The Notices of Anomaly generated during testing are presented in their entirety in ATTACHMENT A and are summarized below.

#### Notice of Anomaly No. 1: Lightning Surge Test

After being subjected to the Lightning Surge Test, the AC Power Adapter ceased to function. As a result, the FL EVS 4500 system did not successfully pass the Lighting Surge Test.

<u>Resolution to Notice of Anomaly No. 1</u> ES&S acknowledged the nonconformance observation and resubmitted a replacement AC Power Adapter for testing as part of the DS200.

#### Notice of Anomaly No. 2: Lightning Surge Test

After being subjected to the Lightning Surge Test, the AC Power Adapter ceased to function. As a result, the FL EVS 4500 system did not successfully pass the Lighting Surge Test.

Resolution to Notice of Anomaly No. 2 ES&S modified the FL EVS 4500 system to include an in-line COTS surge suppressor and resubmitted a replacement AC Power Adapter for testing as part of the DS200.

#### Notice of Anomaly No. 4: Electromagnetic Susceptibility Test

After being subjected to the Electromagnetic Susceptibility Test, the DS200 suffered disruption of normal operation. As a result, the FL EVS 4500 system did not successfully pass the Electromagnetic Susceptibility Test.

<u>Resolution to Notice of Anomaly No. 4</u> ES&S acknowledged the nonconformance observation and provided a root cause analysis.

#### Notice of Anomaly No. 5: Electromagnetic Susceptibility Review

After being subjected to the Electromagnetic Susceptibility Test, the DS200 suffered disruption of normal operation. As a result, the FL EVS 4500 system did not successfully pass the Electromagnetic Susceptibility Test.

<u>Resolution to Notice of Anomaly No. 5</u> ES&S acknowledged the nonconformance observation and provided a root cause analysis.

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#### 4.0 TEST FINDINGS AND RECOMMENDATIONS (Continued)

#### 4.6 Anomalies and Resolutions (Continued)

Notice of Anomaly No. 6: Electromagnetic Susceptibility Review

After being subjected to the Electromagnetic Susceptibility Test, the DS200 suffered disruption of normal operation. As a result, the FL EVS 4500 system did not successfully pass the Electromagnetic Susceptibility Test.

<u>Resolution to Notice of Anomaly No. 6</u> ES&S acknowledged the nonconformance observation and provided a root cause analysis.

#### Notice of Anomaly No. 7: Low Temperature Test

After being subjected to the Low Temperature Test, the DS200 was damaged due to human error during testing. As a result, the FL EVS 4500 system did not successfully pass the Low Temperature Test.

Resolution to Notice of Anomaly No. 7

Wyle counseled and retrained all technicians on the associated Wyle Operating Procedure and performed the test correctly, at which time the DS200 successfully completed the Low Temperature Test.

# Notice of Anomaly No. 8: Electrostatic Disruption Test (ESD)

After being subjected to the Electrostatic Disruption, the DS200 ceased to function and required human intervention in the form of a power cycle, during testing. As a result, the FL EVS 4500 system did not successfully pass the Electrostatic Disruption.

Resolution to Notice of Anomaly No. 8

ES&S acknowledged the nonconformance observation; Wyle performed the Electrostatic Disruption Test a second time and the EUT successfully passed.

### 4.7 Test Summary and Conclusion

Wyle performed conformance testing on all modifications submitted for the ES&S FL EVS 4.5.0.0 Voting System. Wyle only tested the DS200 for the modifications. Modifications of the DS200 met all applicable requirements in the EAC 2005 VVSG.

This report is valid only for the system identified in Section 2 of this report. Any changes, revisions, or corrections made to the system after this evaluation shall be submitted to Wyle to determine the scope of testing for the modified system. The scope of testing required will be determined based upon the degree of modification.

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ATTACHMENT A

NOTICES OF ANOMALY

Page No. A-2 of 10 Test Report No. T71013.01-01

NOTICE NO. 1	OTICE OF ANOMALY	D	ATE: 07/11/2013
NOTICE NO: 1	P.O. NUMBER: ES&S-MSA-TA029	CONTRACT NO:	N/A
CUSTOMER:	ES&S	WYLE JOB NO	: T71013.01
NOTIFICATION MADE TO:	Paul Huffman	NOTIFICATIO	N DATE: 07/11/2013
NOTIFICATION MADE BY:	Ryan Chambers	VIA: 1	n person
CATEGORY: [X] SPECIMEN PART NAME: DS200 TEST: Lightning Surge Te: SPECIFICATION: VVSG Vol PARA. NO. Section 4.1.2.7	PROCEDURE   TEST EQUIPMENT PART NO. <u>DS200</u> st (LST) ume 1	DATE OF ANOMALY: LD. NO. <u>DS03</u>	07/11/2013
REOUIREMENTS: 2005	VVSG Volume I: Section 4.1.2.4		
*e. + or - 0.5 kV DC 1 *d. + or - 0.5 kV DC 1 *e. +1 kV I/O sig/cont *Indicates requirements th not contain DC lines in ex-	ine to fine >10m ine to earth >10m rol >30m at do not apply to the Unit Under Te cess of 10 Meters, nor does it contain a	st (UUT), due any I/O lines gr	to the fact that UUT does eater than 30 meters.
DESCRIPTION OF ANO	DMALY:		
DESCRIPTION OF AND After the being subjected Power Adapter ceased to The AC Power Adapter ce 7 Sync: 0°/60Hz between	DMALY: to the Lightning Surge Test (LST) be function and as a result, the DS200 so ased to function, during application of the Path L1N. Photographs were tak	eing performed uffered a disruj 2 kV. The fai en of the testin	on July 11, 2013 the AC otion of normal operation lure occurred at pulse 3 o g site.
DESCRIPTION OF AND After the being subjected Power Adapter ceased to The AC Power Adapter ce 7 Sync: 0°/60Hz between 1 Component Description: A Manufacturer: Power-Win Model: PW-080A2-1Y24/	JMALY: to the Lightning Surge Test (LST) be function and as a result, the DS200 si ased to function, during application of the Path L1N. Photographs were tak AC Power Adapter Technology Corp. AP	eing performed affered a disrup [2 kV. The fai en of the testin;	on July 11, 2013 the AC otion of normal operation lure occurred at pulse 3 o g site.
DESCRIPTION OF ANO After the being subjected Power Adapter ceased to The AC Power Adapter ce 7 Sync: 0°/60Hz between 1 Component Description: A Manufacturer: Power-Win Model: PW-080A2-1Y24/	JMALY: to the Lightning Surge Test (LST) be function and as a result, the DS200 si ased to function, during application of the Path L1N. Photographs were tak AC Power Adapter Technology Corp. AP (The remainder of this page inter	eing performed affered a disrup 2 kV. The fai en of the testin, tionally left bla	on July 11, 2013 the AC otion of normal operation lure occurred at pulse 3 o g site.

Page No. A-3 of 10 Test Report No. T71013.01-01

wyle		
NOTICE (	<b>DF ANOMALY</b>	
DISPOSITION • COMMENTS • RECON The final disposition is pending a root cause	MMENDATIONS: analysis to be presented by the client.	
Potential 10 CEP Port 21 D VES MNO		
Potential 10 CFR Part 21	MPLY WITH 10 CFR PART 21: 🛛 CUSTOMER	WYLE
Potential 10 CFR Part 21	APLY WITH 10 CFR PART 21: CUSTOMER CAR No.	U WYLE

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WH-1066, Rev. MAR '09

Page \_\_\_\_\_ of \_\_\_\_\_

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Dang Bap	iortad		7/11/2011
ieport 0	tate		9/6/2013
Vito is P	aporting the issue?		Ryan Disentiers
Inief Des	cription of the base		Power supply demograting test (NOA #1.8.47)
	What lecation is rep	orting the issue!	Wyle Lates
	Equipment Affected	(Model & How Haw)	D5.800, 1.3
1.	What Version of Self Running	tware are They	FLEYSASON
india i	Has this issue Been I Diglicated	Confirmed a	740
6.0	By When		Paul Huffman
X .S	How		Lightning Surge Test
-	5	Implement A	tion Plan
Berlin	Eath Icous Tracking Mr.	million .	
. Note	Boe Ares Mer. Cost Sur	Mer Cent	Loss Medical
A Annual	Wardhouts Interation	in consideral	son wester.
. nates	Software	I North far	
2	DOLLOW Z	Submult BCR	
2	Marchanara	North The	
	manqueare	Identity Product	Paul Huttman
4	1.000	In situation trivial?	90
-	What are the	Short Term	61
	instanting importations?	Long Term	
5	Immediate customer	action	
11	h info gathered suffi	cient to resolve?	+ C
5 5	Engineering Ator	muit remarred?	Terr
14	Arrange returns at	f equipment?	DU
	Westmaning? Wear/Hanaling?	Haw to fac?	Auld Tripp-Lide Spike Cube
Cause	Design? Differ?_Faulty Cappeitur	What prevents fature okcumences?	Add to QC checkfor
7. Cunt	Irmi Solution	Beactibe how fia	Retein at Wyle was successful
		How does this solution impact the certified	Official testing sitesedy complete
		What additional castooled testing	në

WYLE LABORATORIES, MC. Runtovie Facility Page No. A-5 of 10 Test Report No. T71013.01-01

P	NOTICE OF ANOMALY	DATE: 07/12/2013
NOTICE NO: 2	P.O. NUMBER: ES&S-MSA-TA029	CONTRACT NO: N/A
CUSTOMER:	ES&S	WYLE JOB NO:
NOTIFICATION MADE TO:	Paul Huffman	NOTIFICATION DATE: 07/12/2013
NOTIFICATION MADE BY:	Ryan Chambers	VIA: In person
CATEGORY: [X] SPECIME PART NAME: DS200	N    PROCEDURE    TEST EQUIPMENT PART NO. DS200	DATE OF ANOMALY: 07/12/2013
TEST: Lightning Surge T	Test (LST)	I.D. NO. DS0313350009
SPECIFICATION: VVSG V	olume I	
PARA. NO. Section 4.1.2.	2	
REQUIREMENTS: 20	05 VVSG Volume I: Section 4.1.2.4	
a. +2 kV AC line to b. +2 kV AC line to *c. + or - 0.5 kV DC *d. + or - 0.5 kV DC *e. +1 kV 1/O sig/co	line earth 2 line to line >10m 2 line to earth >10m ntrol >30m	
*Indicates requirements not contain DC lines in e	that do not apply to the Unit Under Te excess of 10 Meters, nor does it contain a	est (UUT), due to the fact that UUT does any I/O lines greater than 30 meters.
*Indicates requirements not contain DC lines in e DESCRIPTION OF A!	that do not apply to the Unit Under Te excess of 10 Meters, nor does it contain : NOMALY:	est (UUT), due to the fact that UUT does any I/O lines greater than 30 meters.
*Indicates requirements not contain DC lines in e DESCRIPTION OF A! After the being subjecte Power Adapter ceased to The AC Power Adapter 7 Sync: 0°/60Hz between Component Description: Manufacturer: Power-W	that do not apply to the Unit Under Te excess of 10 Meters, nor does it contain a <b>NOMALY:</b> d to the Lightning Surge Test (LST) be o function and as a result, the DS200 s ceased to function, during application of n the Path L1N. Photographs were tak AC Power Adapter in Technology Corp.	est (UUT), due to the fact that UUT does any I/O lines greater than 30 meters. eing performed on July 12, 2013 the AO uffered a disruption of normal operation f 2 kV. The failure occurred at pulse 4 o en of the testing site.
*Indicates requirements not contain DC lines in e DESCRIPTION OF A! After the being subjecte Power Adapter ceased to The AC Power Adapter 7 Sync: 0°/60Hz between Component Description: Manufacturer: Power-W Model: PW-080A2-1Y2	that do not apply to the Unit Under Te excess of 10 Meters, nor does it contain a <b>NOMALY:</b> d to the Lightning Surge Test (LST) be o function and as a result, the DS200 s ceased to function, during application of n the Path L1N. Photographs were tak AC Power Adapter in Technology Corp. 4AP	est (UUT), due to the fact that UUT does any I/O lines greater than 30 meters. eing performed on July 12, 2013 the AO uffered a disruption of normal operation f 2 kV. The failure occurred at pulse 4 o ten of the testing site.
*Indicates requirements not contain DC lines in e DESCRIPTION OF A! After the being subjecte Power Adapter ceased to The AC Power Adapter 7 Sync: 0°/60Hz between Component Description: Manufacturer: Power-W Model: PW-080A2-1Y2	that do not apply to the Unit Under Te excess of 10 Meters, nor does it contain a NOMALY: d to the Lightning Surge Test (LST) be o function and as a result, the DS200 s ceased to function, during application of n the Path L1N. Photographs were tak AC Power Adapter in Technology Corp. 4AP (The remainder of this page inter	est (UUT), due to the fact that UUT does any I/O lines greater than 30 meters. eing performed on July 12, 2013 the AO uffered a disruption of normal operation f 2 kV. The failure occurred at pulse 4 o ten of the testing site.
*Indicates requirements not contain DC lines in e DESCRIPTION OF AN After the being subjecte Power Adapter ceased to The AC Power Adapter 7 Sync: 0°/60Hz between Component Description: Manufacturer: Power-W Model: PW-080A2-1Y2	that do not apply to the Unit Under Te excess of 10 Meters, nor does it contain a NOMALY: d to the Lightning Surge Test (LST) be o function and as a result, the DS200 s ceased to function, during application of n the Path L1N. Photographs were tak AC Power Adapter in Technology Corp. 4AP (The remainder of this page inter	est (UUT), due to the fact that UUT does any I/O lines greater than 30 meters. eing performed on July 12, 2013 the AO uffered a disruption of normal operation f 2 kV. The failure occurred at pulse 4 o ten of the testing site.

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laborat	tories
	NOTICE OF ANOMALY
DISPOSITION • COM The final disposition is p	IMENTS • RECOMMENDATIONS: pending a root cause analysis to be presented by the client.
Potential 10 CFR Part 21	□YES ⊠NO
CAR Responsibility to ANALYZ	ZE ANOMALIES AND COMPLY WITH 10 CER PART 21: SCUSTOMER UNVEL
VERIFICATION: TEST WITNESS:	PROJECT ENGINEER: ALS 7/1
REPRESENTING:	ES&S COORDINATION:N/A
QUALITY ASSURANCE	: Buryda Mara Thields
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	(The remainder of this page intentionally left blank)

Huntsville Facility

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Dame Pro-	instant.		2/11/0051
General (	hale .		\$(00)3/0
When in T	and the incom?		Bion Domines
net De	cription of the lawe		Power supply demographic during test (NOA #1 & #2)
	What location is nee	orting the issue!	Wyle Labs
	Equipmont Affected	(Model & How Key)	DSHOULT I
ā .	What Version of Self Running	tauro are They	FLEVSASOO
nucles in	Has this issue Been O Duplicated	Confirmed en	7+0
10	By When		Paul Huffman
6.5	Here		Lightning Surge Text
-		Implement A	tion Plan
Rede	Field Icoue Traching Mr.	andiat	
Nestad	Bon Aret Mer, Curt Sur	Mer. Cent	Line Median
E Annua	Warehouse freestory	as constitued	na.
	Softwate	I Notice Or	m /
2	- and the second	Submult BCR	5.4
-	Marchanara	North The	
		Identity Product	Paul Huttman
3		In situation trivial?	NO
-	What are the	Short Term	63
	incomer expectations?	Long Term	
5	Immediate customer	action	
B	h info gathered suffi	cient to resolve?	-
46	Engineering Ata-	mult required?	Yeu
AN.	Arrange returns at	f equipment?	DE:
	Weeknumbin? Wear/Hanuting?	Haw to fac?	Auld Tripp-Lize Spike Cube
Game	Design? Diher?_Faulty Capocitue	What prevents fature okcumences?	Add to QC checkfor
7. Cutt	Irmi Solution	Describe how fia	Reteat at Wyle was successful
		How dost this solution impact the certified	Official fatting already complete
		What additional control website	na

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NOTICE OF ANOMALY	DATE: 08/28/2013
NOTICE NO: 4 (A P.O. NUMBER: ES&S-MSA-T	A029 CONTRACT NO: N/A
CUSTOMER: Election Systems and Software (ES&S)	WYLE JOB NO:
NOTIFICATION MADE TO: Paul Huffman	NOTIFICATION DATE: 08/13/2013
NOTIFICATION MADE BY: Ryan Chambers	VIA: In person
CATEGORY IN TORECIMEN IT BROCEDURE IT TEST FOUND	DATE OF
PART NAME: EVS 4 5 0.0 FL	PART NO DS200
TEST: Electromagnetic Susceptibility Test (EST)	LD. NO. DS0313350009
SPECIFICATION: EAC 2005 VVSG, Volume I	PARA. NO. Section 4.1.2.10
over the frequency range of 80 MHz to 1000 MHz, with data.	hout disruption of normal operation or loss of
over the frequency range of 80 MHz to 1000 MHz, with data. <b>DESCRIPTION OF ANOMALY:</b> The EUT was oriented at 180 degrees, with the back of was oriented in the Vertical position. Upon expose modulated by a 1kHz 80% AM modulation over the fr DS200 suffered disruption of normal operation. The display and the shoeshine ballot was hanging from the fr <b>DISPOSITION • COMMENTS • RECOMMENDATION</b> The final disposition is pending a root cause analysis to b	hout disruption of normal operation or loss of the EUT facing the Anntenna. The Anntennu ure to an electromagnetic field of 10 V/n requency range of 80 MHz to 1000 MHz, th shoeshine setup menu was available on the ront of the DS200 paper path. NS: be presented by ES&S.
over the frequency range of 80 MHz to 1000 MHz, with data. DESCRIPTION OF ANOMALY: The EUT was oriented at 180 degrees, with the back of was oriented in the Vertical position. Upon expose modulated by a 1kHz 80% AM modulation over the fr DS200 suffered disruption of normal operation. The display and the shoeshine ballot was hanging from the fr DISPOSITION • COMMENTS • RECOMMENDATION The final disposition is pending a root cause analysis to b Safety Related □ YES ⊠ NO Potential 10	the EUT facing the Anntenna. The Anntenna ure to an electromagnetic field of 10 V/n requency range of 80 MHz to 1000 MHz, th shoeshine setup menu was available on th ront of the DS200 paper path. NS: be presented by ES&S. 0 CFR Part 21 □ YES □ NO ⊠ N/A
over the frequency range of 80 MHz to 1000 MHz, with data.  DESCRIPTION OF ANOMALY:  The EUT was oriented at 180 degrees, with the back of was oriented in the Vertical position. Upon exposs modulated by a 1kHz 80% AM modulation over the fr DS200 suffered disruption of normal operation. The display and the shoeshine ballot was hanging from the fit DISPOSITION • COMMENTS • RECOMMENDATION The final disposition is pending a root cause analysis to 1 Safety Related □ YES ⊠ NO Potential 10 RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR P/	hout disruption of normal operation or loss of the EUT facing the Anntenna. The Anntenna ure to an electromagnetic field of 10 V/n requency range of 80 MHz to 1000 MHz, th shoeshine setup menu was available on th ront of the DS200 paper path. NS: be presented by ES&S. 0 CFR Part 21 YES NO N/A ART 21: CUSTOMER WYLE
over the frequency range of 80 MHz to 1000 MHz, with data.         DESCRIPTION OF ANOMALY:         The EUT was oriented at 180 degrees, with the back of was oriented in the Vertical position. Upon expose modulated by a 1kHz 80% AM modulation over the fr DS200 suffered disruption of normal operation. The display and the shoeshine ballot was hanging from the fit         DISPOSITION • COMMENTS • RECOMMENDATION         The final disposition is pending a root cause analysis to 1         Safety Related       YES       NO       Potential 10         RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR P/         CAR Required:       YES       NO       CAF	hout disruption of normal operation or loss of the EUT facing the Anntenna. The Anntenna ure to an electromagnetic field of 10 V/n requency range of 80 MHz to 1000 MHz, th shoeshine setup menu was available on th ront of the DS200 paper path. NS: be presented by ES&S. 0 CFR Part 21YESNON/A ART 21:CUSTOMERWYLE R No.
over the frequency range of 80 MHz to 1000 MHz, with data.  DESCRIPTION OF ANOMALY:  The EUT was oriented at 180 degrees, with the back of was oriented in the Vertical position. Upon exposs modulated by a 1kHz 80% AM modulation over the fr DS200 suffered disruption of normal operation. The display and the shoeshine ballot was hanging from the fr DISPOSITION • COMMENTS • RECOMMENDATION The final disposition is pending a root cause analysis to 1 Safety Related □ YES ⊠ NO Potential 10 RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR P/ CAR Required: □ YES ⊠ NO CAF VERIFICATION: PROJE	hout disruption of normal operation or loss of the EUT facing the Anntenna. The Anntenna ure to an electromagnetic field of 10 V/n requency range of 80 MHz to 1000 MHz, th shoeshine setup menu was available on th ront of the DS200 paper path. NS: be presented by ES&S. 0 CFR Part 21 YES NO $\boxtimes$ N/A ART 21: CUSTOMER $\square$ WYLE R NO. ECT ENGINEER: Mark Obj30/20
over the frequency range of 80 MHz to 1000 MHz, with data.  DESCRIPTION OF ANOMALY:  The EUT was oriented at 180 degrees, with the back of was oriented in the Vertical position. Upon exposs modulated by a 1kHz 80% AM modulation over the fr DS200 suffered disruption of normal operation. The display and the shoeshine ballot was hanging from the fr DISPOSITION • COMMENTS • RECOMMENDATION The final disposition is pending a root cause analysis to 1 Safety Related □ YES ⊠ NO Potential 10 RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR P/ CAR Required: □ YES ⊠ NO CAF VERIFICATION: PROJE TEST WITHERS: $\sqrt{2}$	hout disruption of normal operation or loss of the EUT facing the Anntenna. The Anntenna ure to an electromagnetic field of 10 V/n requency range of 80 MHz to 1000 MHz, th shoeshine setup menu was available on th ront of the DS200 paper path. NS: be presented by ES&S. 0 CFR Part 21 YES NO $\boxtimes$ N/A ART 21: CUSTOMER WYLE R NO. ECT ENGINEER: $M_{22}$ A. $Mant = 00/30/20$ CO T MANAGER: $M_{23}$ B. $M_{24}$ Collard for $\sqrt{3}/20$
over the frequency range of 80 MHz to 1000 MHz, with data.         DESCRIPTION OF ANOMALY:         The EUT was oriented at 180 degrees, with the back of was oriented in the Vertical position. Upon exposis modulated by a 1kHz 80% AM modulation over the fr DS200 suffered disruption of normal operation. The display and the shoeshine ballot was hanging from the fr         DISPOSITION • COMMENTS • RECOMMENDATION         The final disposition is pending a root cause analysis to 0         Safety Related □ YES ⊠ NO       Potential 10         RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR P/         CAR Required: □ YES ⊠ NO       CAF         VERIFICATION:       PROJE         TEST WITNESS:	hout disruption of normal operation or loss of the EUT facing the Anntenna. The Anntenna ure to an electromagnetic field of 10 V/n requency range of 80 MHz to 1000 MHz, th shoeshine setup menu was available on th ront of the DS200 paper path. NS: be presented by ES&S. 0 CFR Part 21 YES NO $\boxtimes$ N/A ART 21: CUSTOMER WYLE R NO. ECT ENGINEER: My A. Mart Ogl30/20 ECT MANAGER: Mark Ogl30/20 ECT MANAGER: Mark Ogl30/20
over the frequency range of 80 MHz to 1000 MHz, with data.         DESCRIPTION OF ANOMALY:         The EUT was oriented at 180 degrees, with the back of was oriented in the Vertical position. Upon exposis modulated by a 1kHz 80% AM modulation over the fr DS200 suffered disruption of normal operation. The display and the shoeshine ballot was hanging from the friend display and the shoeshine ballot was hanging from the friend display and the shoeshine ballot was hanging from the friend disposition is pending a root cause analysis to I         Safety Related □ YES ⊠ NO       Potential 10         RESPONSIBILITY TO ANALYZE ANOMALIES AND COMPLY WITH 10 CFR P/       CAR Required: □ YES ⊠ NO       CAF         VERIFICATION:       PROJE       TEST WITNESS:	hout disruption of normal operation or loss of the EUT facing the Anntenna. The Anntenna ure to an electromagnetic field of 10 V/n requency range of 80 MHz to 1000 MHz, th shoeshine setup menu was available on th ront of the DS200 paper path. NS: be presented by ES&S. 0 CFR Part 21 $\square$ YES $\square$ NO $\boxtimes$ N/A ART 21: $\square$ CUSTOMER $\square$ WYLE R NO. ECT ENGINEER: $Max A. Claut A. Og/30/20 ECT MANAGER: Max A. Claut A. Og/30/20 ECT MANAGER: Max A. Claut A. Og/30/20 ECT MANAGER: Max A. Claut A. Og/30/20$

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	100	eni opue nesana	OUT THOUGS
	1020	_	VIII III
Outs Buy	leafed .		B/2R/2013
Report 0	latie		3/6/2013
Who is R	eporting the issue?		Ryan Chembers
finer Des	cription of the later		Shore shine mode stope: [NDA #4a]
	What societion is reporting the house?		Wyle Labe
Equipment Affected [Me		Andel & Hitw llev)	05200, 1.5
	What Version of Softwa Banning	are are They	FLEV34500
11	Has this focus Been Cos Duplicated	alimed or	Tes
100	By Wilko		Paul-Huffman
11 1	Hinte		Electromagnetic Susceptibility Text
		Implement Ad	ction Plan
L. BANK	Field issue Tracking Name	Aler .	
Z. Notik	Reg Acct Mer. Cast Sec M	lat. Cert	Sua McRay
3. Atura	Watehning bowellisty at	required	10
	Software	Natity Dir	104
		Sabmit RCN	fin /
3	Hardware	Nonlify Dis	
tinday.		Identify Product	Paul Huttman
4		is situation Unite?	NG
2	What are the	Short Term	114
8	customer supoctationsT	Long Tarm	C
5	immediate metomer at	tinni	
11	is into gathered sufficie	nt to resolve?	2.84
3 A	Engineering site visi	it requires?	Yes
-	Arrange roturn of e	quipment?	00
	Workmanship? Wear/Handling?	Have to first	Double wrap seriors cable faction near iconne board
Cause	Design? Other?_Faulty Cospocition	What prevents future occurrunces?	
7. Conflien Solution		Gescribe toter fis was verified.	Referit at Wyle was successful
		How does this solution impact the certified configuration?	Official testing already complete-
		What additional customer lesting required!	
	- Release Planning	What's planned for this	Change manufarturing process document

WYLE LABORATORIES, BIC. Buntavis Facility Page No. A-10 of 10 Test Report No. T71013.01-01

# wyle ORIGINAL

		DAIL.	08/28/2013
NOTICE NO: 5 P.O. NUMBER: ES&S-MSA-TA029	CONTRACT	NO:	N/A
CUSTOMER: Election Systems and Software (ES&S)	WYLE JOB	NO:	T71013.01
NOTIFICATION MADE TO: Paul Huffman	NOTIFICAT	ION DATE:	08/16/2013
NOTIFICATION MADE BY: Ryan Chambers	VIA:	In person	n
CATEGORY: [x] SPECIMEN [] PROCEDURE [] TEST EQUIPMENT	DATE OF ANOMALY:	08/16/201	3
PART NAME: EVS 4.5.0.0 FL	PART NO.	DS2	200
TEST: Electromagnetic Susceptibility Test (EST)	I.D. NO.	DSU	tion 4.1.2.10
SPECIFICATION: EAC 2003 VVSG, Volume I	PARA. NO.	Sect	uon 4.1.2.10
The EUT was oriented at 0 degrees, with the front of the EUT	facing the	Anntenna.	The Anntenna wa
oriented in the Vertical position. Upon exposure to an electromag 80% AM modulation over the frequency range of 80 MHz to 10 normal operation. The following error was displayed on the DS2 the shoeshine ballot was hanging from the front of the DS200 p from AC to be removed from the test chamber, the EUT unexpec back on when only being supplied with DC power. When the outside of the chamber, the EUT successfully powered on. After AC outlet, the EUT successfully switched to DC and displayed 7 minutes the EUT displayed 100% power. Within 1 minute the EU the EUT displayed 100% power. DISPOSITION • COMMENTS • RECOMMENDATIONS: The final disposition is pending a root cause analysis to be present	metic field o 00 MHz, the 00 "1003059 tedly shut o EUT was p 5 minutes to 5% power f JT displayed	of 10 V/m m e DS200 su P: Event Lo When the F ff. The EL lugged back the plug wa or the batte d 50% powe	nodulated by a 1kH affered disruption of g Write Failed" an EUT was unplugge JT would not powe k into an AC outle as removed from th ery status. Within er. Within 1 minut
oriented in the Vertical position. Upon exposure to an electromag 80% AM modulation over the frequency range of 80 MHz to 10 normal operation. The following error was displayed on the DS2 the shoeshine ballot was hanging from the front of the DS200 p from AC to be removed from the test chamber, the EUT unexpect back on when only being supplied with DC power. When the outside of the chamber, the EUT successfully powered on. After AC outlet, the EUT successfully switched to DC and displayed 7 minutes the EUT displayed 100% power. Within 1 minute the EUT the EUT displayed 100% power. Within 1 minute the EUT the EUT displayed 100% power. DISPOSITION • COMMENTS • RECOMMENDATIONS: The final disposition is pending a root cause analysis to be presented Stefety Related TYES FINO Potential 10 CER Part	aper path of the second	of 10 V/m m e DS200 su S: Event Lo When the F ff. The EL lugged back the plug wa for the batte d 50% power	nodulated by a 1kH affered disruption o og Write Failed" an EUT was unplugge JT would not powe k into an AC outle as removed from th ery status. Within er. Within 1 minut
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WYLE LABORATORIES, BIC. Runtavis Facility Page No. A-12 of 10 Test Report No. T71013.01-01

# wyle ORIGINAL

NOTICE		DATE: 08/28/2013	
NOTICE NO: <u>6</u> P.C CUSTOMER: <u>Election Systems and</u> NOTIFICATION MADE TO: <u>Paul I</u> NOTIFICATION MADE BY: <u>Ryan</u>	D. NUMBER: ES&S-MSA-TA029 Software (ES&S) Huffman Chambers	CONTRACT	NO: N/A IO: T71013.01 DN DATE: 08/19/2013 In person
CATEGORY: [x] SPECIMEN [] PRO PART NAME: EVS 4.	DCEDURE [] TEST EQUIPMENT 5.0.0 FL	DATE OF ANOMALY: ( PART NO.	08/17/2013 DS200
TEST: Electromagnetic Susce SPECIFICATION: EAC 2005 VVSG	eptibility Test (EST)	I.D. NO	DS0313350009 Section 4.1.2.10

#### **REQUIREMENTS:**

Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand an electromagnetic field of 10 V/m modulated by a 1 kHz 80% AM modulation over the frequency range of 80 MHz to 1000 MHz, without disruption of normal operation or loss of data.

## DESCRIPTION OF ANOMALY:

The EUT was oriented at 0 degrees, with the back of the EUT facing the Anntenna. The Anntenna was oriented in the Vertical position. Upon exposure to an electromagnetic field of 10 V/m modulated by a 1kHz 80% AM modulation over the frequency range of 80 MHz to 1000 MHz, the DS200 suffered disruption of normal operation. The shoeshine setup menu was available on the display and the shoeshine ballot was hanging from the front of the DS200 paper path. When the EUT was unplugged from AC to be removed from the test chamber for ES&S representative, the EUT unexpectedly shut off. The EUT would not power back on when only being supplied with DC power. When the EUT was plugged back into an AC outlet outside of the chamber, the EUT successfully powered on. After 5 minutes the plug was removed from the AC outlet, the EUT successfully switched to DC and displayed 75% power for the battery status.

#### DISPOSITION • COMMENTS • RECOMMENDATIONS:

Safety Related D YES NO	Potential 10 CFR Part 21 🗌 YES 🗌 NO 🛛 N/A
RESPONSIBILITY TO ANALYZE ANOMALIES AND	COMPLY WITH 10 CFR PART 21: CUSTOMER WYLE
CAR Required: 🗆 YES 🛛 NO	CAR No.
VERIFICATION: TEST WITNESS: N/A	PROJECT ENGINEER: Jun A. UM 08/30/2013 PROJECT MANAGER: Michael & Walker 8/30/
1 8 1	ALA NA

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WYLE LABORATORIES, MC. Puntovie Facility Page No. A-14 of 10 Test Report No. T71013.01-01

IRIGINAL NOTICE OF ANOMALY		DATE: 09/16/2013
NOTICE NO: 7 (Rev A) P.O. NUMBER: ES&S-MSA-TA	029 CONTRACT N	NO: N/A
CUSTOMER: Election Systems and Software (ES&S)	WYLE JOB N	0: 171013.01
NOTIFICATION MADE TO: Paul Huffman	NOTIFICATIO	N DATE: 08/20/2013
NOTIFICATION MADE BY: Rvan Chambers	VIA:	In person
CATEGORY: ITSPECIMEN DI PROCEDURE LITEST FOUR	DATE OF	8/20/2012
PART NAME: EVS 4.5.0.0 FL	PART NO	ar_0(2013
TEST: Low Temperature	LD. NO.	DS0313350009
SPECIFICATION: EAC 2005 VVSG, Volume II	PARA. NO.	Section 4,6,4
The low temperature test simulates stresses faced durin counters. All system components, regardless of type, shal test is equivalent to the procedure of MIL-STD-810D, b minimum temperature shall be -4 degrees F. As outly following procedure is identified in Step 5: Allow the stabilize at faboratory conditions before removing h from the stabilize at faboratory conditions before removing h from the	g storage of vo Il meet the requi Method 502.2, F hed in the VVS internal tempera he chumber.	ting machines and bullof rements of this test. This Procedure I-Storage. The G 4.6.4.2 Procedure, the ature of the equipment to
The technician removed the EUT from the environmenta interal temperature of the thermal chamber was returned technician did not allow the internal temperature of conditions before removing it from the chamber. As a res- board of the scanner assembly module caused a short circ anomaly was directly caused by human error in follow Operating Proceedures. DISPOSITION • COMMENTS • RECOMMENDATIONS: The final disposition was to council and retrain all of the Operating Procedure.	d chamber appro d to standard la the equipment alt the accumula ant when the ITI wing the VVSC r Wyle technician	eximately 1 hour after the borntory conditions. The to stabilize at laboratory ted moisture on the circui IT was powered on. This i standard and the Wyle as on the associated Wyle
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# wyle ORIGINAL

NOTICE OF ANOMALY	DATE: 08/30/2013
NOTICE NO: 8 P.O. NUMBER: ES&S-MSA-TA029 CUSTOMER: Election Systems and Software (ES&S) NOTIFICATION MADE TO: Paul Huffman NOTIFICATION MADE BY: Ryan Chambers	CONTRACT NO:         N/A           WYLE JOB NO:         T71013.01           NOTIFICATION DATE:         07/31/2013           VIA:         In person
CATEGORY: [x] SPECIMEN [] PROCEDURE [] TEST EQUIPMENT PART NAME: EVS 4.5.0.0 FL	DATE OF ANOMALY: <u>07/31/2013</u> PART NO
TEST: Electrostatic Disruption (ESD)	I.D. NO. DS0313350009

#### **REQUIREMENTS:**

Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand  $\pm 15$  kV air discharge and  $\pm 8$  kV contact discharge without damage or loss of data. The equipment may reset or have momentary interruption so long as normal operation is resumed without human intervention or loss of data. Loss of data means votes that have been completed and confirmed to the voter.

# DESCRIPTION OF ANOMALY:

Upon application of +15 kV air discharge to the top-right corner of the black plastic ballot tray cover, located closest to the front right of the DS200 screen. It was observed that the DS200 had become completely unresponsive and required human intervention, by means of a system reboot, to regain normal operation of the DS200. A clicking sound was observed during operation of the EUT, thus the shoeshine ballot was replaced with a new ballot and the clicking sound was resolved. After rebooting the EUT, the same test point was subjected to  $\pm 2,4,8,15$  kV air discharge, at which time the EUT continued normal operation throughout the remainder of the test.

#### **DISPOSITION • COMMENTS • RECOMMENDATIONS:**

To ensure testing results where accumulated in accordance with the VVSG, the Electrostatic Disruption (ESD) was reperformed on 08/29/2013, for which there were no anomalies. The final disposition is that the original observance could not be replicated.

Safety Related  VES  NO	Potential 10 CFR Part 21
RESPONSIBILITY TO ANALYZE ANOMALIES AND COMP	LY WITH 10 CFR PART 21: CUSTOMER WYLE
CAR Required:   YES  NO	CAR No.
VERIFICATION:	PROJECT ENGINEER: Jun A. Unit 08/30/2013 PROJECT MANAGER: Michael & Walker 8/39
QUALITY ASSURANCE:	STOLD NA

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ATTACHMENT B

PHOTOGRAPHS

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Photograph 1: ES&S FL EVS 4.5.0.0 PCA



Photograph 2: ES&S FL EVS 4.5.0.0 PCA

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Photograph 3: ES&S FL EVS 4.5.0.0 PCA



Photograph 4: ES&S FL EVS 4.5.0.0 PCA

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Photograph 5: ES&S FL EVS 4.5.0.0 PCA



Photograph 6: ES&S FL EVS 4.5.0.0 PCA

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Photograph 7: ES&S FL EVS 4.5.0.0 PCA



Photograph 8: ES&S FL EVS 4.5.0.0 PCA

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Photograph 9: ES&S FL EVS 4.5.0.0 PCA



Photograph 10: ES&S FL EVS 4.5.0.0 PCA

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Photograph 11: ES&S FL EVS 4.5.0.0 Lightning Surge



Photograph 12: ES&S FL EVS 4.5.0.0 Lightning Surge

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Photograph 13: ES&S FL EVS 4.5.0.0 Magnetic Fields Immunity



Photograph 14: ES&S FL EVS 4.5.0.0 Magnetic Fields Immunity
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Photograph 15: ES&S FL EVS 4.5.0.0 Electromagnetic Emissions



Photograph 16: ES&S FL EVS 4.5.0.0 Electromagnetic Emissions

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Photograph 17: ES&S FL EVS 4.5.0.0 Electrostatic Disruption



Photograph 18: ES&S FL EVS 4.5.0.0 Electrostatic Disruption

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Photograph 19: ES&S FL EVS 4.5.0.0 Electrical Power Disturbance



Photograph 20: ES&S FL EVS 4.5.0.0 Electrical Power Disturbance

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Photograph 21: ES&S FL EVS 4.5.0.0 Electromagnetic Susceptibility



Photograph 22: ES&S FL EVS 4.5.0.0 Electromagnetic Susceptibility

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Photograph 23: ES&S FL EVS 4.5.0.0 Temperature and Power Variation



Photograph 24: ES&S FL EVS 4.5.0.0 Temperature and Power Variation

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Photograph 25: ES&S FL EVS 4.5.0.0 Bench Handling



Photograph 26: ES&S FL EVS 4.5.0.0 Bench Handling

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Photograph 27: ES&S FL EVS 4.5.0.0 Humidity



Photograph 28: ES&S FL EVS 4.5.0.0 Humidity

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Photograph 29: ES&S FL EVS 4.5.0.0 Low Temperature



Photograph 30: ES&S FL EVS 4.5.0.0 Low Temperature

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Photograph 31: ES&S FL EVS 4.5.0.0 High Temperature



Photograph 32: ES&S FL EVS 4.5.0.0 High Temperature

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ATTACHMENT C

NON-OPERATING ENVIRONMENTAL TEST DATA

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LOW TEMPERATURE TEST DATA

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HIGH TEMPERATURE TEST DATA

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VIBRATION TEST DATA

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														Freq (cps)	051	×		
-				T	T					1	1	1	t	Disp. ("da)	NUSCHOAL	Procedur	Method	Spec.
														Accel (±g)		10	1	
		906	340	240	121-200	120	10-20	500	79-120	推	30-36	10		Freq. (cps)				
		00015	00003	00190	00000	.00025	.00850	00001	81000	00002	00065	.00013	T	(g2/Hz)	RANDOM			
														Slope (dB/Oct)		SIN	Part No	Specin
		749						205						Accel (grms)	TOTAL		ļ	nen [
		8						30						Time (min)	Tast			0S200 H
						Common Carrier Vibration	Run#2 Basic Transportation				Common Carrier Vibration	Run#1 Basic Transportation	TEST REQUIREMENT	COMMENTS		Photo Yes X	Specimen Temp.	lardshell & DS200 Plastic Case
1111	4 5 413	08/50	ON LIO	deg neg		Ter					de la			NAME		No	Ambient	

#### Page No. C-8 of 25 Test Report No. T71013.01-01



# Page No. B-69 of 126 Test Report No. T71352.01-01

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## Page No. B-70 of 126 Test Report No. T71352.01-01

Page No. C-10 of 25 Test Report No. T71013.01-01



# Page No. B-71 of 126 Test Report No. T71352.01-01

Page No. C-11 of 25 Test Report No. T71013.01-01



Page No. C-12 of 25 Test Report No. T71013.01-01

BENCH HANDLING TEST DATA

Page No. C-13 of 25 Test Report No. T71013.01-01

	ries			1977 F 1		
Customer ES&S	1					
Specimen EVS 4500	)					
Part No. D	\$200		Amb. Temp.	-75°F	Job No	T71013
Spec. EAC 2	005 VVSG		Photo Yes	N/4	Report No.	771013-01
Para. 4.6.2	0 8 0503133	50006	Specimen Ter	nn Ambient	Start Date _	8-20-13
C	<u>, a 1000100</u>		opeonienten	mps	-	
Test TitleE	Bench Handl	ing				
Drop Height 4*						
	EUTI	EUT2				
Edge 1: Drops 1-6		1				
Edge 1: Drops 7-12	1	1				
Edwa di Disana da 11	. /	1				
Edge 1: Drops 13-16	8 V					
Edge 1: Drops 13-16	8					
Edge 1: Drops 19-24 Post-Test Inspection	8 <u>v</u> 4 <u>v</u> : Pos	st-op	Status	s check	Comple	etecl
Edge 1: Drops 19-24 Post-Test Inspection	$4  \checkmark$ : Pos	st of oth Test	Status Units u Bassed	s check nder fes af Comp	comple st with etect 8	etec( ioutissue 1/26/13 10:23
Edge 1: Drops 19-24 Post-Test Inspection	8 <u>√</u> 4 <u>√</u> : Pos	J otop Test	Status Units u Bassed	t comp	comple st with etcal &	etec( iout issue 5/26/13 10:23 Date <u>8/26/13</u>
Edge 1: Drops 19-24 Post-Test Inspection	$A = \sqrt{2}$	J st of eth Test	Status Units u Bassed	Tested By Are Sheet No.	Comple st with efect 8	etec( iout issue i/26/13 10:23 Date 8/26/13

Page No. C-14 of 25 Test Report No. T71013.01-01

HUMIDITY TEST DATA

# Page No. B-75 of 126 Test Report No. T71352.01-01

Page No. C-15 of 25 Test Report No. T71013.01-01



Page No. C-16 of 25 Test Report No. T71013.01-01



Page No. C-17 of 25 Test Report No. T71013.01-01



Page No. C-18 of 25 Test Report No. T71013.01-01



Page No. C-19 of 25 Test Report No. T71013.01-01



Page No. C-20 of 25 Test Report No. T71013.01-01



Page No. C-21 of 25 Test Report No. T71013.01-01



Page No. C-22 of 25 Test Report No. T71013.01-01



Page No. C-23 of 25 Test Report No. T71013.01-01



Page No. C-24 of 25 Test Report No. T71013.01-01



Page No. C-25 of 25 Test Report No. T71013.01-01



Page No. D-1 of **20** Test Report No. T71013.01-01

ATTACHMENT D

ELECTRICAL TEST DATA

Page No. D-2 of 20 Test Report No. T71013.01-01

ELECTROSTATIC DISRUPTION
Page No. D-3 of 20 Test Report No. T71013.01-01

Customer: ES&S (page )	l of 2)		Temperatur		22.4°F	Humidity: 56%
EUT: 4500			Measureme	nt Point:	See Test Poir	ats Below
Model No.: DS200			Interference	Signal:	See Applied :	Signal
Serial No.:			Frequency I	Range:	N/A	
Test Title Electrostatic D	hisruption	1		-		
	Meets	Limit	Applied Level	Dischare	Times	
Test Points	Yes	No	(kV)	Type	Tested	Comments
TP001: Virtical Coupling Plane	1		#2, 4, 8	Contact	10	Fach Side of EUT
TP002 175200 U575 Well keyhole	1		+2,4,8	Counct	10	Engineers Log tool classifis
TP900 DS200 From keyhole	1		=2, 4, 8	Contist	10	TROPE NA TROOL
TP004: Metal Ballot Box From Upper Right Keybole	V		*2, 4, 8	Contact	10	
TP005: Metal Ballot Box From Lower Right Keyholy	1		+2,4,1	Clintaci	(10)	
TP006: Mend Ballet Bea Top Right-Rear Keybole	2		+2, 4, 8	Contact	10	
19007: Metal Stallot Des Right Ballot Box Door Keyhala	V		π2, 4, 8	Сопция	30	
TP008: Metal Ballet Box Above Right Ballot Deor	1		+2,4,8	Contaca	10	
TP009: Matal Ballot Box Front Above the Austiliary Sian	V		+2, 4, 8	Contact	10	
TP010: Menil Ballot Bes Back Upper Center	V		+2, 4, 8	Contact	30	
TP011: Metal Ballot Bos Above Laft Ballot Box Door	2	4	22,4,8	Coonat	10	
Balkit Box Dien Liphole	1		92, 4, 8	Contact	10	
Keybeie	1		#2,4,3	Contact	10	and the second second
TP014: D5200 Track Cover Left Raar	V		=2, 4, 8, 15	Air	10	
109015: DS200 Trick Cover Lati Frieu	V		=2,4,8,15	Ait	10	
TP016: DS200 Track Cover Hight Front	V		=2, 4, 8, 15	Air	10	
Rear	V		机机机	94K	10	
Contra Contraction Contraction	V		+2, 4, 8, 15	Air	40	
19919: DS200 Screen Franz Erand- face Laft Tap Corner Interior	V		42, 4, 8, 15	Air	10	
lotice of Anomaly:	0	_		Tested	By: fige	22 Date: 08/29/
Vitness:		_		Appro	ved: Lera	Allent man celosto
61-1431, Rev. Dec. 2004				a second	/ Pro	fort Engineen

Page No. D-4 of 20 Test Report No. T71013.01-01

3	laboratories			DAIA	UTIL			Start Date:	8-29-2013
Customer:	ES&S (Page	2 of 2)		Temperatur	÷:	22.4F		Humidity:	56%
EUT:	4500			Measuremen	at Point:	See Test Points Below			
Model No.:	15200			Interference	See Appaca Signal				
Serial No.: Test Title	Electrostatic D	isruption	1	Frequency I	Range:	N/A			-
-		Meets	Limit			1	Tr.		
Test	Points	Yes	No	(kV)	Type	Times Tested		Commo	ints
TP920: DS200 5 face Left Top Co	Screen Franke From-	V		+2, 4, 8, 15	Ait	10			
TP021: DS2003 face Top-Span	Scroon Franse Prom-	V		±2, 4, 8, 15	Air	10			
TP022: DS200 S face Top Right C	Screen Franc From- orner	V		-2, 4, 8, 15	Air	10			
119023: D52003 Comer	Gran Top Right	1		+2, 4, 8, 15	Air	10			
mota: 06260 9 Center	creek Top Maght-	1		12.4.10.15	(Air.	3.0			
10025: 1052003 Center	ioreen Top Leff-	1		12, 4, 8, 15	Air	10			
TP026: IIS206.5 Comm	iarean Trip Laff	1		42, 4, 8, 15	Air	10			
779027; 205200/5 Sida	icreen Midalle Left	1	-11	=2, 4, 8, 15	Ar	40			
Those: \$18200.5 Center	creet Middle Juff-	1		#2, 4, 8, 15	Air	10			
19629: 135200-5 Right-Canter	utoun Middle	1		#2, 4, 8, 15	Air	10			
TINDO: DS200 S Side	crean Midule Right	1		12, 4, 8, 15	A#	10	1		
Comer Comer	erene Lonetz Right	1		+2. 4, 8, 15	Arr	40			
TP012 El6200 S Middle-Rogla	creen Lowar	V		+2, 4, 8, 17	AB/	10			
Comprission Comprissi Comprission Comprission Comprission Comprission Compriss	ereen Lawer Left	V		#3,4,8,15	Air	20			
1P004C 125200 1	SO DOOR REAR	~	-	42, 4, 8, 15	Air	10			
face DS200 S	croup Frame Left-	1		=2, 4, 8, 15	Air	10			
17036: DS200 N	lodietti I.Nisir Hatir	1		12;4;8;13	Aur	10			
TP037, DS200 II Contar	unt Coviet Front	V		=2, 4, 8, 15	Air	10			
TP038: US200 R	ahr Cover Right	1		+2, 4, 8, 15	Air	10			
19039: 105200 R	car Cover Back	V		12, 4, 8, 15	Air	TO			
votice of Anon	uty	Ø	_	1	Teste	d By: Lep	sil-	Dat	e: 05/21/201
Vitness:						. I	Sectinician		odial

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#### ELECTRICAL POWER DISTURBANCE TEST DATA

# Page No. B-91 of 126 Test Report No. T71352.01-01

Page No. D-6 of 20 Test Report No. T71013.01-01

aliforr	via Instrumente Co		
	na instruments Co	rp.	
No.	Type	Time (s)	Volt
1	V Step	60.000	120.0
2	V Step	0.020	84.0
3	V Step	60.000	120.0
4	V Step	0.100	48.0
5	V Step	60.000	120.0
6	V Step	1.000	48.0
7	V Step	60.000	120.0
8	V Step	5.000	6.0
9	V Step	60.000	120.0
10	V Step	1.000	102.0
11	V Step	60.000	120.0
12	V Step	1.000	138.0
13	V Step	60.000	120.0
14	V Step	14400.000	129.0
15	V Step	60.000	120.0
16	V Step	14400.000	105.0
17	V Step	60.000	120.0
	Empty		

Transient List: <NEW> Printed on: Friday, July 26, 2013 9:50:02 AM Page #1

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#### ELECTROMAGNETIC EMISSIONS: RADIATED EMISSIONS TEST DATA

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Page No. D-9 of **20** Test Report No. T71013.01-01

#### ELECTROMAGNETIC EMISSIONS: CONDUCTED EMISSIONS TEST DATA

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Page No. D-11 of 20 Test Report No. T71013.01-01

# ELECTROMAGNETIC SUSCEPTIBILITY TEST DATA

Page No. D- 12 of 20 Test Report No. T71013.01-01

Customer:		ES&	S Tem	nerstara	21.7º C Humidity:	49.0%		
EUT:		DS20	0 Mea	surement Point:	EUT @ All Four Sides			
Model No.:		DS20	0 Inter	rference Signal:	1Khz @ 80% AM	1Khz @ 80% AM		
Serial No.1	D	\$031335	50009 Freq	sency Range:	80Mltz to 1Ghz			
Test Title <u>EN</u>	61000-	4-3 (Ele	ctromagnetic Suscepti	bility)		_		
Test Frequency	Meets	Limit	Susceptibility Threshold Level	Maximum Signal Applied	Comments			
()kHz (X)MHz ()GHz	Yes	No	()A ()V ()kV ()dBµA ()dBµV	(X)V/m ()Vrms ()dBµV/m ()dBpT				
80	x		>10	10	Vertical and Horizonta	u -		
+	4		. 1	4	4			
1,000	~		>19	10	Vertical and Horizonta	d		
_	_					_		
						_		
	_							
		-						
-								
						_		
otice of Anomaly: /itness:				Tested By:, Approved:	Jechnician Dute: Law All Dute: 1 Project Engineer Page	\$ (23) 08/23/20		

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#### ELECTRICAL FAST TRANSIENT TEST DATA

Page No. D- 14 of 20 Test Report No. T71013.01-01

Customer:		ESA	s Te	mperature:	21.7° C	Humidity:	50,1%	
EUT:		DS20	d Mo	asurement Point:	Sec	Comments Below		
Model No.:		DS20	6 Int	erference Signal:	Test Sij	Test Signal Applied @ 5/50nS See Test Frequencies Below		
Serial No.:	D	5031336	50009 Fre	quency Range:	See Te			
est Title EN	61000-	4-4 (Ele	etrical Fast Transien	00				
Test Frequency	Meets	Limit	Susceptibility Threshold Level	Maximum Signal Applied		Comments		
X)kHz (jMHz ()GHz	Ves	No	()A ()V (X)4 ()dBµA ()dBµV	V ()V/m ()Vrms / ()dBμV/m ()dBpT				
.060	x		>1	1		Line to Neutral		
.060	+	_	÷	-		Line to Ground		
.060	X	-	21	1		Neutral to Ground		
		_	_					
							_	
	-							
		-		1				
			-					
		-					_	
-								
	-							
tice of Anomaly:		_		Tested By:	also.	Date:	7/2/1/13	
menet				transition	J. B.M.	dum	solaul .	

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LIGHTNING SURGE TEST DATA

Page No. D- 16 of 20 Test Report No. T71013.01-01

Customer:		ESAS	Tem	nerature	21.9° C	Humidity:	53.6%
EUT:		DS20	0 Mea	sarement Point:	See Comments Below		
Model No.:		DS20	0 Inte	rference Signal:	Test Sig	nal Applied @ 1.2/	50uS
Serial No.:	D	\$031335	50009 Freq	jucncy Range:	See Te	st Frequencies Bel	ow
est Title EN	61000-	4-5 (1.ig	htning Surge Test)				
Test Frequency	Meets	Limit	Susceptibility Threshold Level	Maximum Signal			
(X)kHz ()MHz ()GHz	Yes	No	()A ()V (X)k ()dBµA ()dBµV	V ()V/m ()Vrms ()dBµV/m ()dBpT		Comments	
-060	x		≥_5	.5	Line to Ne	utral @ 0°, 90°, 180	9°, and 270*
.060	4		4	1	Line to Gro	sind @ 0", 90", 180	)", and 270"
.060	x	_	>5	.5	Neutral to G	roand @ 0°, 90°, 11	80", and 270"
.060	x		>1	1	Line to Net	utral @ 0°, 90", 180	", and 270°
.060	+		4	4	Line to Gro	und @ 0°, 90°, 180	P, and 270°
.060	x		≯I	I.	Neutral to G	round @ 0*, 90*, 18	80°, and 270°
.060	x		>2	2	Line to Nex	itral 62 0°, 90°, 180	", and 270"
.060	4	1	4	4	Line to Gro	und @ 0°, 90°, 180	", and 270"
.060	x		>2	2	Neutral to Gr	ound @ 0", 90", 18	0°, and 270°
tice of Anomaly: iness: <u>Repts Z</u>	Nuy	DA:	1 1 2 27/22/2013	Tested By-	Ryan J Uli Project En	Date: Beer Page	07/22 07/22/201

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#### CONDUCTED RF IMMUNITY TEST DATA

Page No. D-18 of 20 Test Report No. T71013.01-01

Customer:	_	ES&	S Ter	nperature;	22.4° C Humidity:	44.5%		
EUT:		DS20	0 Me	asurement Point:	See Comments Below			
Model No.:	0	503133	e Int	erference Signal:				
Test Title EN	61000	-4-6 (Co	nducted RF Immunit	mni(y)				
Test Frequency	Meet	s Limit	Susceptibility	Maximum Signal				
()kHz (X)MHz ()GHz	Yes	No	()A (X)V ()k ()dBµA ()dBµV	V ()V/m ()Vrms ()dBµV/m ()dBpT	Comments			
.150	x		>10	10	AC Input			
+	÷		1	4	÷			
50	x		>10	10	AC Input			
_	-							
		-	_					
						-		
	-			(				
votice of Anomaly:		0		10 Marca 10	ANOT Al-	nalad		
Vitness:	(IA			Approved:	Grand Overthe Date:	17/24/20		
					J Project Englacer	I ut 1		
H-1412, Rick Dec 2008					rage	- 01 <u>- 1</u>		

Page No. D-19 of 20 Test Report No. T71013.01-01

# MAGNETIC FIELDS IMMUNITY TEST DATA

Page No. D-20 of 20 Test Report No. T71013.01-01

Customers		ESA	s Ter	nperature:	22.1° C	C Humidity:		
EUT:		DS20	0 Me	asurement Point:	See	See Comments Below		
Model No.:		DS20	0 Int	erference Signal:	CW for a Period of 5 Minutes			
Serial No.:	D	\$03133	50009 Fre	quency Range:	See Te	st Frequencies Bel	OW	
fest Title EN	61000	4-8 (Ma	gnetic Field Immuni	y).				
Test Frequency	Meet	Limit	Susceptibility Threshold Level	Maximum Signal Applied		Comments		
(X)kHz ()MHz ()GHz	Yes	No	(Х)А ()V ()В ()dBµA ()dBµV	V ()V/m ()Vrms ()dBµV/m ()dBpT		, constant		
.060	x		>30 A/m	30 A/m	Et	/T on X, Y, and Z /	wis	
		-			-		_	
1								
	-	-						
-	-	-	-					
	-	-	-					
		-						
		-						
				-			-	
		-	-					
otice of Anomaly:	_	ø		Tested By	All	2 Date	97/29	
litness:	N	1A		Approved	Ly- Ach	oun Date	07/25/20	
					1/ Project E	agiacer.		

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ATTACHMENT E

OPERATING ENVIRONMENTAL TEST DATA

Page No. E-2 of 5 Test Report No. T71013.01-01

#### TEMPERATURE/POWER VARIATION TEST DATA

# Page No. B-108 of 126 Test Report No. T71352.01-01

Page No. E-3 of 5 Test Report No. T71013.01-01



# Page No. B-109 of 126 Test Report No. T71352.01-01

Page No. E-4 of 5 Test Report No. T71013.01-01



# Page No. B-110 of 126 Test Report No. T71352.01-01

Page No. E-5 of 5 Test Report No. T71013.01-01



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ATTACHMENT F

PRODUCT SAFETY CERTIFICATE OF CONFORMANCE

Page No. F-2 of 3 Test Report No. T71013.01-01



#### CERTIFICATE OF CONFORMANCE

7800 Highway 20 West Huntsville, Alabama 35806 Phone (256) 837-4411 Fax (256) 721-0144 www.wyleiabs.com

Product Safety Review

Wyle Project No.T71013-05Customer POES&S-MSA-TA029Issue Date17 September 2013

The device exhibited below has been reviewed in accordance with the particular requirements of applicable sections of UL60950-1, Standard for Safety for Information Technology Equipment, Second Edition, and the Recommended Practice for Unlabeled Electrical Equipment Evaluation, First Edition, (developed by the American Council for Electrical Safety), and has been found to be in compliance.

Pi	roduct Identification	1
Device Description	Voting Scanner/Tabulator	
Manufacturer	Election Systems & Software	
Device Model No.	DS200	
Device Serial No.	DS0313350009	
Electrical Ratings	Input 24 VDC - 2A - 80W Max.	
Hardware Revision	1.3	
	Power Supply	
Power Supply Description	ITE Power Supply	
Manufacturer	Power-Win Technology Corporation	
Model No.	PW080A2-1Y24AP	
Input	100-240 VAC - 2A	
Output	24 VDC - 3.34A (80W max)	
UL Listed ITE PS	UI, File No. E156513	

This report is valid for the equipment model and serial indicated in the product identification table above. Wyle makes no endorsement of the equipment reviewed, nor does this evaluation constitute approval of similar equipment. This evaluation does not constitute an product listing.

9/17/13

INARTE Certified Product Safety Technician No. PS-06438-NCT

C 9/17/13 laus Robert D. Hardy

EMI/EMC/FCC, Product Safety, Election Systems, & Packaging



DE VIULE LARGEA VOIELE. THE BUILT TO REPORTED AND ADDRESS OF OTHER VIEWE UTLUES ANY OF THE MATERIAL CONTANTIONE HERDE I EXTENSISTERIO A MEMORISON OF VILLE LARGEATORISES SUMMERITE. THE ACCEPTANCE OF A DRESS OF ADDRESS OF AVELLARGEA CONTANTIONE HERDE EXTENSISTERIO A MEMORISON OF VILLE LARGEATORISES SUMMERITE. THE ACCEPTANCE OF A DRESS OF ADDRESS OF AVEL AND DRESS ADDRESS OF ADDRESS OF ADDRESS STRADE RESSENSE. VILLE BALL HAVE NO LIMITITY FOR DAMAGINE AND ADDRESS OF ADDRESS OF ADDRESS ADDRESS OF ADDRESS AD

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ATTACHMENT G

INSTRUMENTATION EQUIPMENT SHEETS

Page No. G-2 of 14 Test Report No. T71013.01-01

٦	wy	Le boratories	INSTRU	JMENTA	TION E	QUIPMEN	NT SHEET	r	
	DATE:	7/31/2013	JOB NUME	ER: T71013		TYPE	OF TEST VVS	G 4.1.2.11 C	RFI
	1.001/11/0	aran Andrewson	00010000		and the second	120	Thurst Lini	GININDER.	
NO.	Description	Montifacturer	Model	Serial #	WYLE#	RANGE	ACCURACY	Cal Date	Cal Duc
	AMPLIFIER	AR	2500A225	0342861	03485	MEG	NCR	7/24/2013	7/24/202
	ATTEN	BIRD	25-T-MN	0129	03142	50 OHMS 25 W.	MEG	6/24/2013	6/24/2014
	ATTENUATOR	NARDA	769-6	03180	04860	DC to 6GHz	MFG	3/25/2013	3/25/201-
	DATALOOGER	EXTECH	42280	9051859	04926	-4°F to 144°F/0-	±1%F/±3%RH	5/14/2013	5/14/201
	DIR COUPLER	AMP RESEARCH	DC3010	304032	117208	.01-1000MHz	±0.8dB	5/15/2013	5/15/201-
	DMM	FLUKE	87V	18290045	01474	4VDC	±0.1%+1	12/6/2012	12/6/201
	PASS IMP ADAPT	FISHER CC	FCC-801-150-50-CD1	9784	116854	150KHz-230MH	MFG	6/24/2013	6/24/201
	PASSIVE	FISHER CC	FCC-801-150-50-CD1	04049/04050	110405	150KHZ - 230M	MFG	7/20/2012	7/20/201
	and the second se	MARCONI	2023	112224/092	L12224	9kHz-1.2GHz	±0.8dB	2/11/2013	2/11/201
	SIG GEN	51.41 MARINE 1915 18				A 4007	1/2/2	2010/2012	enopol
	SPEC ANAL	AGILENT	E446A/H70	US44020335	03123	INSPCS	MARG	5/10/2013	2/19/201
1	SPEC ANAL SPEC ANAL	AGILENT	E446A/H70 E4446a	US44020335 US44020311	03123	44GHz	MFG	8/6/2012	8/6/2013

its were calibrated using state-of-the-art techni	iques with standards whose calibration is	
dards and Technology.	0 011	
CHECKED & RECEIV	VED BY: Rund 1405 07/31/2	2013
7/3/1/3 4	/	1
11 - 11 OA: Mehrel	7/31/13	_
	nts were calibrated using stato-of-the-art techn Idards and Technology, CHECKED & RECEI 7/3/12 3A.:	ats were calibrated using stato-of-the-art techniques with standards whose calibration is relards and Technology. CHECKED & RECEIVED BY: <u>human limbor 07/31/</u> 7/3(1) 3A: <u>mathefrager</u> 7/31/13

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wy	.e
2.100	

#### INSTRUMENTATION EQUIPMENT SHEET

DATE: 7/30/2013 TECHNICIAN: J.GALEONE

JOB NUMBER: T71013 CUSTOMER: ES&S TYPE OF TEST VVSG 4.1.2.8 ESD TEST AREA: ESD TEST LAB

No.	Description	Manufacturer	Model	Serial #	WYLE#	RANGE	ACCURACY	Cal Date	Cal Due
1	DISCHARGE	EMC-PARTNER	ESD3000DM1	049	03229 *	150pF	MFG	7/30/2013	7/30/2014
2	DMM	FLUKE	87V	18290046	01474 #	4VDC	+0.1%+1	12/6/2012	12/6/2013
3	ESD GUN	EMC-PARTNER	ESD3000	059	04446 1	16.5 KV	=10%	10/1/2012	10/1/2013
4	ESD TARGET	HAEFELY TRENCI	2520311	152461	110794 #	ISKV	+5%	12/6/2011	12/6/2013
5	OSCILLOSCOPE	TEKTRONIX	DPO5104	C012091	01737 #	MFG	MEG	10/23/2012	10/23/2013
6	TAPE MEASURER	LUFKIN	HV1048CME	NSN	02708 #	Smeters	±1mm	4/24/2012	4/24/2014
7	TEMP/HUM/BAR	EXTECH	SD700	Q590477	01539 .	MULTI	MFG	2/27/2013	2/27/2014

traccable to the National I	nstitute of Stan	dards and Technole	<b>8</b> 7-		Dall	
STRUMENTATION:	della h	1100	CHECK	ED & RECEIVED BY:	KyndUs	07/30/2013
	20	7/30/13	0.4.	Roll A	115h 7/3	30/13
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Page No. G-4 of 14 Test Report No. T71013.01-01

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	DATE: TECHNIC	7/24/2013 IAN: R.CHAMBE	JOB NU RS CUSTO	MBER: T71013 MER: ES&S		TY TI	E OF TEST VVS	G SECTION	4.1.2.6 ABER 3
Ne	Description	Manufacturer	Model	Serial #	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
	ATTEN DMM EFT JUNIOR TSTR OSCILLOSCOPE TAPE MEASURER	HAEFELY TRENCI FLUKE HAEFELY TRENCI TEKTRONIX LUFKIN	2520111/00 87V 093204,1 DPO5104 HV1048CME	153823 15380 18290046 83762-14 C012091 NSN	04590 , 01474 / 112575 1 01737 1 02708 /	MFG 4VDC 5NS/50NS MFG 8meters	MFG ±0.1%+1 30% MFG ±1mm	3/14/2012 12/6/2012 12/28/2012 10/23/2012 4/24/2012	3/14/2014 12/6/2013 12/28/2014 10/23/2013 4/24/2014

This is to certify that the traceable to the Nationa	above instrument I Institute of Stand	s were calibrated us lards and Technolog	ing state-of-the-art ( y	echniques with stand	ards whose calibration	Ìs
NSTRUMENTATION:	MA	Del	CHECKED & RE	CEIVEDBY	- Kim & Clio	07/24/2013
	00	7/24/13	Q.A.: /	ali 1	eurt :	7/24/13

Page No. G-5 of 14 Test Report No. T71013.01-01

	wy	Le boratories	INSTR	UMENTA	TION I	EQUIPMI	ENT SHEE	т	
	DATE: TECHNIC	7/30/2013 21AN: J.SMJTH	JOB NUM CUSTOM	BER: 171013 ER: ES&S		TYI	PE OF TEST FCC	PART 15 TS 2	
N	lo. Description	Manufactures	Model	Serial #	WYLE#	RANGE	ACCURACY	Cal Date	Cal Due
1	ATTENUATOR	NARDA	766-20	740582	01444	DC-4 GHz	MEG	3/25/2012	3/25/2014
2	DMM	FLUKE	87	64440152	112518	MULTI	#0.156+1	6/14/2013	6/14/2014
3	EMI TEST RCVR	ROHDE SCHWARG	ESCI	100386	117803	MULTI	MFG	4/1/2013	4/1/2014
4	LISN	SOLAR	21107-50-TS-50-N	1125266	01686	MEG	MEG	8/7/2012	8/7/2014
5	LISN	SOLAR	21107-50-TS-50-N	1125267	01687	MFG	MFG	8/7/2012	8/7/2014
6	TAPE MEASURER	LUFKIN	EL15SI	116893	116893	15meter	±1mm	7/12/2011	7/12/2014

7/12/2011 7/12/2014

1111 - 112.12.1	2 CHERTER & DECEMPTOR DATE	1 9 4 MIZ
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)	QA: Marine	7/20/13
		the laft
	gralle 1/30/201	QA: Mile Carpe

Page No. G-6 of 14 Test Report No. T71013.01-01

wyle
• labolatories

#### INSTRUMENTATION EQUIPMENT SHEET

DATE: 7/29/2013 TECHNICIAN: J.GALEONE

JOB NUMBER: T71013 CUSTOMER: ES&S TYPE OF TEST VVSG 4.1.2.12 MFI TEST AREA: CHAMBER 3

No	Description	Manufacturer	Model	Scrial #	WYLE#	RANGE	ACCURACY	Cal Date	Cal Due
1	AMPLIFIER	TECHRON	7550	015075	04566	600W	NCR	7/8/2008	7/8/2020
2	DMM	FLUKE	87V	18290046	01474	4VDC	±0.1%+1	12/6/2012	12/6/2013
3	METER	HOLADAY	HOL-HI3604	76285	117549	30-2KHz	MFG	2/24/2012	2/24/2014
4	STOP WATCH	HANHART	STRATOSI	110131	110131	IOHR	5 sec/day	6/24/2013	6/24/2014
5	TAPE MEASURER	LUFKIN	HV1048CME	NSN	02708	Smeters	#8 mm	4/24/2012	4/24/2014
6	WAVE GEN	AGILENT	33250A	SG40007026	014181	MULTI	CERT	12/18/2012	12/28/2013

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		7/29/130	A. Bionda	marsh	elipdir	
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Page No. G-7 of 14 Test Report No. T71013.01-01

	DATE:	7/25/2013	JOB NU	MBER: T71013		TYPE	OF TEST VVS	G SEC.4.1.2.	5 EPD
No: Desc	ription	Menufactorer	Model	Serial #	WYLE#	RANGE	ACCURACY	Cal Date	ABER 3
DATA DMM POWE TAPE	LOGGER R SOURCE MEASURER	EXTECH FLUKE CALIFORNIA INST LUFKIN	42280 87V 1251RP/IF IIV1048CME	9051859 (8290046 L06361 NSN	04926 01474 117347 02708	-4*F to 144*F/D- 4VDC 0-270VAC RMS 8motors	±1°F/±3%RH ±0,1%+1 1% ±1mm	5/14/2013 12/6/2012 2/20/2013 4/24/2012	5/14/2014 12/6/2013 2/20/2014 4/24/2014

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STRUMENTATION:	AZAT	ci ci	HECKED & RECEIVED	BY:	Kind Ult	07/25/2013
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		· / · · / · Q.	A.: Kaonda	101000	TIGIB	
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# Page No. B-120 of 126 Test Report No. T71352.01-01

Page No. G-8 of 14 Test Report No. T71013.01-01

Wyle laboratories

#### INSTRUMENTATION EQUIPMENT SHEET

TYPE OF TEST\_VVSGL2.10 EST WOP11 TEST AREA: EMI CHAMBERGI

Na	Description	Manufacturer	Madel	Serial #	WYLE#	RANGE	ACCURACY	Cal Date	Cat Due
1	AMPLIFIER	AMP RESEARCH	.500W1000A	25061	(03)41	ROMEL IN TOPIC	NCK	8/22/2011	1/22/2013
2	DATALOGGER	EXTECH	42280	4051859	04926	-#*E to 144*FRH	11111111111	5/14/2013	3/14/2014
3	DBR COUPLER	AMPHESEARCH	IAC3010	304022	117208	01-1000MEtz	10.805	5/15/2013	5/45/2014
4	SOTIOPICPROBE	AMP RESEARCH	FP2080	1.19.67	L1%657	10KHz-1-01Hz	40.746	11/8/2012	11/8/2013
3	\$ND GEN	AEROFLEX	2023A	202306/068	123/1230	9KH6-1.20Hz	ANO O	10/23/2012	10/23/2013
6	SPEC ANAL	AGREENT	E4445A	1/542030108	110948	44-6582	CERT	238/2013	108/2014
7	TAPE MEASURER	LATERIN	HV1048CME	N574	02706	firopters	+ Sarana	1/24/2012	4/24/2014

IOB NUMBER: 171013

TECHNICIAN: R.CHAMBERS CUSTOMER. ES&S

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Page No. G-9 of 14 Test Report No. T71013.01-01

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DATE.	7/22/2012

#### INSTRUMENTATION EQUIPMENT SHEET

JOB NUMBER: T71013 TYPE OF TEST VVSG SECTION 4.1.2.7 DATE: 7/22/2013 TECHNICIAN: J.GALEONE CUSTOMER: ES&S TEST AREA: EMI LAB - CHAMBER 3 WYLE # RANGE ACCURACY Cal Date No. Description Manufacturer Model Serial # Cal Due MFG ±1°F/±3%RH 1 COUPL NETWK HAEFELY TRENCT PCD100 149869 R90540 MFG 7/10/2013 7/10/2015 DATALOGGER 42280 9051859 04926 -4"F to 144"F/0-5/14/2013 5/14/2014 2 EXTECH IMPULSE MODULE HAEFELY TRENCI PIMIOO 1103 890538 6kV MFG 7/10/2013 7/10/2015 3 OSCILLOSCOPE STOP WATCH TEKTRONIX HANHART DPO5104 STRATOSI C012091 01737 110131 MFG 10HR 10/23/2012 10/23/2013 6/24/2013 6/24/2014 MFG 4 110131 5 sec/day 5 SURGE TSTR HAEFELY TRENCI PSURGES000 150270 890537 MULTI MFG 7/10/2013 7/10/2015 6

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STRUMENTATION:	Att li	CHECKE	D & RECEIVED BY:	P	Stall	7/22/13
	1	7/22/13 QA:	Bianda	mae	ElfEGIT	
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# Page No. B-122 of 126 Test Report No. T71352.01-01

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wyle
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#### INSTRUMENTATION EQUIPMENT SHEET

 DATE:
 & 23/2013
 JOB NUMBER:
 T71013
 TYPE OF TEST
 VIBRATION

 TECHNICIAN:
 D. MEDLEY
 CUSTOMER:
 ES&S VOTING SYSTEMS
 TEST AREA:
 DYNAMICS

N	o. Description	Manufacturer	Model	Serisi#	WYLE #	RANGE	ACCURACY	Cal Date	Cal Due
1	ACCELEROMETER	ENDEVCO	7704A-50	13073	02660	50 pC/g / 20-5kt	#3%4	8/14/2013	2/14/2014
2	ACCELEROMETER.	ENDEVCO	7704A-50	12605	04867	S0pC/g	=5%	8/14/2013	2/14/2014
3	CHARGE	ENDEVCO	2775A	EE24	112652	GAIN	1.5%	8/20/2013	2/16/2014
4	CHARGE	ENDEVCO	2775A	ED75	112653	GAIN	1.5%	8/20/2013	2/16/2014
8.	DMM	FLUKE	45	5095170	114297	MULTI	CERT	6/25/2013	6/25/2014
6	DYN SIG	DATA PHYSICS CU	70499	10004048	02760	MULTI	MEG	9/12/2012	9/12/2013

This is to certify that the all traceable to the National In	boy'e instruments were call natitute of Standayds and T	brated using state-of-t schnology.	the-art techniques with	standards whose calib	ration is
INSTRUMENTATION:	Malso	2/23/13 CHECKER	D & RECEIVED BY:	Mahal	Lunekar 8/23/13
	/	0.4.5	Enercles	Mar	Ell Fal Q

Page No. G-11 of 14 Test Report No. T71013.01-01

	e la	Boratories	S IOR NUS	INER: 171013		TVP	OFTEST TE	ap	
	TECHNIC	IAN: TTURNEI	R CUSTOM	ER ESAS		TE	STAREA: CIL	AMBER 16	
No Des	ription	Manufacturer	Model	Serial #	WYLE#	RANGE	ACCURACY	Cal Date	Cal Due
CHAR TEMP	T RECORDER ALARM	HONEYWELL THERMOTRON THERMOTRON	DRT45AT-1111 THERM-ALARM 4800	0549¥368906i 1891 1858	110980 03379 03378	32 TO 131*F TYPE T -123-375*F	0.5% ES =1°C 25%	8/8/2013 8/8/2013 8/8/2013	8/8/2014 8/8/2014 - 8/8/2014 -
Page No. G-12 of 14 Test Report No. T71013.01-01

	DATE	8/21/2013	JOB NUM	BER: 171013.0		TYP	LOFTEST CO	D TEMP	
	TECHNIC	AN LIPARCI	US CUSTOM	ER: ES&S		TE	STAREA: CH	AMBER#16	
No. Des	cription	Manufacturer	Model	Serial #	WYLE#	RANGE	ACCURACY	Cal Date	Cal Due
CUAI TEM	ET RECORDER *ALARM	HONEYWELL THERMOTRON THERMOTRON	DRT45AT-1111 THERM-ALARM 4800	054975689064 Jon aun	110980 03379 03378	32 TO 1319 TYPE T -125-373%	0.5% FS +1°C 25%	8/8/2013 8/8/2013 8/8/2013	8/8/2014 8/8/2014 8/8/2014
This is	to certify that it	te above instrument	is were calibrated usis	ng state-of-the-art	techniques w	ifh standards who	use calibration is		

WYLE LABORATORIES, INC. Huntsville Facility Page No. G-13 of 14 Test Report No. T71013.01-01

TECHNIC	8/7/2013 CIAN: T.J.PARC	JOB N US CUST	UMBER: T71013 OMER: ES&S		TYP	E OF TEST TER STAREA: CR	MP-HUM AMBER#2
No. Description	Manufacturer	Model	Serial #	WYLER	RANGE	ACCURACY	Cal Date Cal Due
HUMIDITY/TEMP TEMP TEMP RECORDER	VAISALA THERMOTRON HONEYWELL	HMT315 SE12005 DR4500A	111410905 28417 9829¥8369621	01610 114758 114837	MULTI -70-180°C -184-371°C	MFG 0.3°C 35%	3/4/2013 9/4/2013 3/13/2013 3/13/2014 3/13/2013 3/13/2014
				_			

WYLE LABORATORIES, INC. Huntsville Facility

#### Page No. B-126 of 126 Test Report No. T71352.01-01

Page No. G-14 of 14 Test Report No. T71013.01-01

wy	e
DATE:	8/26/2013

#### INSTRUMENTATION EQUIPMENT SHEET

JOB NUMBER: 171013 TECHNICIAN: LARRY IVEY CUSTOMER: ES&S

TYPE OF TEST TEMP POWER TEST AREA: ENV CHAMBER 51A

No.	Description	Manufacturer	Model	Serial #	WYLE#	RANCE	ACCURACY	Cal Date	Cal Die
1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	POWER SOURCE TEMP TEMP IND TEMP RECORDER	CALIFORNIA INST MICRISTAR NEWPORT HONEYWELL	1251RP/IF 828-911 Q2001TC DR450T	L06361 10033 N/A 924488505000	117347 108416 116533 109830	0-270VAC RMS -400-709"F TYPE T -200-600"F	1% 1%ES ±1.5%	2/20/2013 12/5/2012 12/5/2012 12/5/2012	2/20/2014 - 12/5/2013 - 12/5/2013 - 12/5/2013 -

traccable to the Mational Institute of Standards and Technolog	83		1.	
INSTRUMENTATION: Lang may 8/24/1	7 CHECKE	D & RECEIVED BY	Milung Lulalker	8/24/13
	Q.A.:	1110	Plauliz	

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Page 1 of 1

WYLE LABORATORIES, INC. Huntsville Facility

## APPENDIX C

#### NOTICES OF ANOMALY



NOTICE OF A	NOMALY	DATE: 12/	10/2013		
Notice No: 1	P.O. Number:	ES&S-MSA-T	A-TA036 Contact No: N/A		
Customer: Election Systems & Software W			Wyle Job Number: T71352.01		
Notification Made To:	Sue McKay	N	Notification Date: 12/10/13		
Notification Made By: Alan Simmons V			Via: Email		
Category: Specimen	Procedure D	Fest Equipment	Date of	Anomaly: 12/10/2013	
Part Name: EVS 5.0.1.0	)		Part Nu	mber: N/A	
Test: TDP Review		Serial/ID Number: N/A			
Specification: 2005 VV	SG Volume 1		Paragraph/Section Number: Section 2		

#### **REQUIREMENTS:**

The ES&S EVS 5.0.1.0 Voting System Technical Data Package (TDP) shall be reviewed for accuracy, completeness, and compliance to the EAC 2005 VVSG.

#### DESCRIPTION OF ANOMALY:

Review of the summited documentation revealed discrepancies between the TDP and the EAC 2005 VVSG requirements. Functional testing also identified text in the TDP that conflicted with the actual operations of the system. Each noted discrepancy was documented in detail in the Wyle generated TDP issues matrix that is on file as raw data.

#### DISPOSITION \* COMMENTS \* RECOMMENDATIONS:

EVS 5.0.1.0 is a Modification of a previously certified system. As such the TDP was only reviewed where modified or where impacted by system modification. ES&S corrected each nonconformance observation and resubmitted the associated documents for review. This process continued until it appeared that the TDP complied with all applicable requirements.

 Potential 10 CFR Part 21
 Image: Yes
 Image: No

 Responsibility to analyze anomalies and comply with 10 CFR PART 21
 Image: Image: CAR Required:
 Image: Who

 CAR Required:
 Image: Image: Image: Mode: Image: Image:

VERFICATION		
Test Witness: None	Project Engineer:	0-13
Representing: N/A	Project Manager:	har
Quality Assurance: Michael Ca	mare 12/10/2013	0-15
WH-1066, Rev. MAR '09	Pane 1	of 1



NOTICE OF ANO	OMALY	DATE: 12	/10/2013		
Notice No: 2	P.O. Number:	ES&S-MSA-1	&S-MSA-TA036 Contact No: N/A		
Customer: ES&S			Wyle Job N	lumber: T71352.01	
Notification Made To: Sue McKay			Notification Date: 12/10/13		
Notification Made By: Jim	Falwell		/ia: Ema	U	
Category: ⊠Specimen □Procedure □Test Equipm			nent Date of Anomaly: 12/10/13		
Part Name: DS200			Part Nur	nber: N/A	
Test: Source Code Review			Serial/ID Number: N/A		
Specification: 2005 VVSG	Volume 1		Paragraph/Section Number: Section 5		

#### **REQUIREMENTS:**

Software used in voting systems shall meet the essential design and performance characteristics detailed in Section 5 of the EAC 2005 VVSG.

#### DESCRIPTION OF ANOMALY:

Review of the submitted source code modules comprising the EVS 5.0.1.0 system revealed deviations from the standard as well as issues with the commenting. These anomalies are documented in detail in the Wyle generated review reports on file as raw data.

#### **DISPOSITION \* COMMENTS \* RECOMMENDATIONS:**

Upon completion of the review for each source code submission, a technical summary report of all identified standards violations was sent to ES&S for resolution. ES&S then corrected the reported violations and re-submitted the source code for re-review. This process was repeated as many times as necessary until all identified standards violations were corrected.

Responsibility to analyze anomalies and comply with 10 CFR PART 21 Customer Wyle CAR Required: Yes No CAR Number:

⊠No

VERFICATION	
Test Witness: None	Project Engineer: Jehn The 12/10/2013
Representing: N/A	Project Manager: Trathe 12/11/13
Quality Assurance: Michael Cer	12/10/2013
WH-1066, Rev. MAR '09	Bass F. at 1



# MicroVote General Corporation Election Management System (EMS) Voting System v. 4.0 VSTL Certification Test Report

EAC Application # MVT0701 Prepared for MicroVote General Corporation 6366 Guilford Ave. Indianapolis IN 46220 Version 4.0

(V)2008-25JUN-001(D)

This report has been submitted to the EAC for review and is pending their acceptance. No certification number has been issued. When iBeta receives notification that the report is accepted, a revised version of the report will be issued. The Certification number will appear here, in page headers and in Appendix F. Any other revisions will be noted in the version history.

	Trace to Standards						
	NIST Handbook 150-22						
	Section 5.5, 5.10.1 through 5.10.3, 5.10.5, 5.10.6						
VVS VVSG							
Vol.	Section(s) #	Vol.	Section(s) #				
#	#						
1	1.6.1	1	1.4.1				
1	2, 3, 4, 5, & 6	1	2, 3, 4, 5, 6, & 7				
1	9.6.3	2	1.8.3				
2	2, 3, 4, 5, & 6	2	2, 3, 4, 5, & 6				
2	7.4 & 7.5.	2	7.4 & 7.5.				
2	Appendix B	2	Appendix B				

Test Results in this report apply to the voting system configuration tested. Testing of voting systems that have been modified may or may not produce the same test results. This report shall not be reproduced, except in full.

U.S. Election Assistance Commission



NVLAP Lab Code 200749-0

EAC Lab Code: 0702 Effective thru 2/28/2009

(V)2008-25JUN-001(D)

This report was provided to Bernie Hirsch of MicroVote to confirm that the report accurately describes the system submitted under EAC Application MVT0701. Additionally Mr. Hirsch has provided instruction on sections of the report that MicroVote's wishes to be marked as protected information under section 10 of the United States Election Assistance Commission Testing and Certification Program Manual v.1.0.

	Version Hist	ory		
Ver #	Description of Change	Author	Approved by	lssue Date
v.1.0	(V)2008-25JUN-001(A) Initial report -released	Gail Audette Carolyn Coggins Debra Harwood	Carolyn Coggins QA Director Voting	6/25/2008
v.2.0	<ul> <li>(V)2008-25JUN-001(B) Response to EAC Review. newly release applicable interpretations and VSTL Program Manual Report Requirements</li> <li>Requirements trace to the EAC Certification Matrix Section 1: <ul> <li>Exclusions clarification language identifies <i>The Election Management System software is an application installed on a standalone COTS PC or laptop. Connection of these platforms to a network (LAN or WAN) or connection of the voting system configuration submitted for certification testing for.vi.14.1.2.15</i></li> <li>Exclusions added "Independent Verification System" for v.1: 7.8:</li> <li>VSTL Program Manual Appx B: <ul> <li>Exclusions added "Independent Verification system" for v.1: 7.8:</li> <li>VSTL Program Manual Appx B:</li> <li>Exclusions added VSTL Program Manual Format Trace</li> <li>1.4: Added listings for Appx H, I &amp; J</li> <li>1.4: Added VSTL Program Manual Format Trace</li> <li>Table 1: Update date of General 2 Test Case</li> <li>Table 2: Added applicable EAC Interpretations</li> </ul> </li> <li>Section 3: <ul> <li>Table 6 &amp; 8: Update EMS build v.4.0.21.0</li> <li>Table 9: Update version &amp; date for Section 2.5, 2.6 &amp; 2.11, Appx. AA, V &amp; Y; added Implementation Statement</li> <li>Table 10: Added ComUtil109</li> </ul> </li> <li>Section 5: <ul> <li>S.5. Infinity Voting Panel DRE added detail clarifying simulator tool validation</li> <li>S.6. Added 2.10.5.3 VSTL Attestation content per the VSTL Program Manual</li> </ul> </li> <li>YNTL 2.1.4: added reference to code review <ul> <li>Y.1: 7.2.1 to 7.2.1.2: added "Appx C 2.6"</li> <li>Y.1: 7.4.6: changed to "No network connection"</li> <li>Y.1: 7.4.6: changed terference to "Appx C 2.6 &amp; F 7.6.3"; added "#125 to 129"</li> <li>Y.1: 7.4.6: changed terference of "Appx C 2.6"</li> <li>Y.1: 7.4.6: changed reference of "Appx C 2.6" is a top and an appreciation and an appreciation and an appreciation and an appreciation and appreciation and appreciation and an appreciation and appreciation and appreciation and appreciation and appreciation and apprecia</li></ul></li></ul></li></ul>	Carolyn Coggins Kevin Wilson	Carolyn Coggins QA Director Voting	9/26/2008

	Version History					
Ver #	Description of Change	Author	Approved by	lssue Date		
	<ul> <li><i>Telecommunications</i></li> <li>v.1: 7.5.4: changed to "Not a shared environment"</li> <li>v.1: 7.5.5: added section 7.5.5</li> <li>v.1: 7.5.5: added "<i>EMS</i> has no external access or query capability."</li> <li>v.1: 7.5.5.b.i &amp; ii: traced to "G, S"</li> <li>v.1: 7.5.6: removed duplication of 7.5.5</li> <li>v.1: 7.5.6: removed duplication of 7.5.5</li> <li>v.1: 7.6.1: added "#130 to 134 &amp; 137"</li> <li>Appendix B</li> <li>v.1: 7.5.6: added "<i>at 2.2</i> &amp; 7.2.3 v. 4.0.21.0 &amp; date updated Appendix C</li> <li>v.1: 7.4.6: document review of Appx AA update</li> <li>v.2: 2.6.4 - correct reference to "7.4"</li> <li>Appendix D</li> <li>v.1: 2.1.1.a: Added clarifying language regarding how security testing was performed to the General 1 Test Method; added more detail to the validations in the Security Test Method.</li> <li>v.1: 7.3: General 1 Test Method added clarification: <i>While the polls are open but before Tally confirm the panel cannot be put into pretest or reset mode by action of the buttons or the poll worker card.</i></li> <li>v.1: 7.3.1: Security Test Method - References: added 7.3.</li> <li>v.1: 7.4.1: a thru e: added validations to Security Test Method</li> <li>v.1: 7.5.5.b.i &amp; ii: General 1 &amp; Security Test Method - Voting: Ballot Activation and Casting Verifications "No data transmission prior to ballot casting" &amp; Added Source Code Review for #135 checksum validation</li> <li>v.1: 7.5.5.b.i &amp; ii: General 1 &amp; Security Test Method added: "The Infinity voting panel utilizes 2-factor authentication, possession of a token and knowledge of a password to access results after the polls are closed"</li> <li>General 1 &amp; Security Test Methods added clarification: "For the identified user entity confirm access and use to only the permitted functions and data "</li> <li>General 2 Test Method added EMS v.4.21.0 regression Appendix E</li> <li>v.1: 7.4.6: added #136</li> <li>v.1: 7.6.1: added #136 to 129 install documentation</li> <li>v.1: 7.6.1: added #136 thecksum validation of transmitted data</li> <li>v.1: 7.6.1: adde</li></ul>					
v.3.0	<ul> <li>(V)2008-25JUN-001(C) Response to EAC Review.</li> <li>Section 3:</li> <li>Table 8: Support of Windows 2000 references removed</li> <li>Table 9: updated version and dates for the Appx B doc, Section 2.6 Security Specification, Section 2 System Overview, Appendix Y – Build and Installation Instructions</li> </ul>	Carolyn Coggins Kevin Wilson	Carolyn Coggins QA Director Voting	12/15/08		

	Version Hist	ory		
Ver #	Description of Change	Author	Approved by	Issue Date
	<ul> <li>and Specification.</li> <li>Table 9: added docs for Appx B-5, Sharp LCD Specification (6:1), EMS v.4.0 System Limitation (w/ maximum field observations)</li> <li>Appendix A: <ul> <li>3.1.1.3.2.2.1.a, 3.2.2.2.a, 3.2.3 changed trace to Appx E #23 and added comment: Interpretation 2007-03 #23 Closed Document review; test results delivered to the EAC</li> <li>3.2.2.1.d added a comment "Not a color display"</li> <li>3.2.2.2.c.ii &amp; iii added a comment "EAC confirmed with US Accessibility Board that there have been no reports of issues with standard headphones"</li> <li>Addendum to Appendix B</li> <li>Added detail for "Comment" related discrepancies</li> <li>Appendix C</li> <li>v.2: 2.6: document review of Appx B-5 new submission</li> <li>Appendix D</li> <li>Added to General 2 &amp; Primary 1 Test Method:</li> <li>VVSG 2005 Trace: 3.1, 3.1.2, 3.1.3</li> <li>Voting: Casting Verifications: Accessible ballots can be voted securely, privately and independently &amp; Accessible ballots can be changed or correct errors prior to casting environment for General 1 and Environmental Test Methods</li> </ul> </li> </ul>			
v.4.0	<ul> <li>(V)2008-25JUN-001(D) Response to EAC Review.</li> <li>Title Page <ul> <li>Added EAC logo</li> </ul> </li> <li>Section 3: <ul> <li>Table 9: Deleted EMS Installation Instructions Election Management System (document superseded by Appendix Y)</li> <li>Table 10: Added identification tool</li> </ul> </li> <li>Addendum to Appendix B <ul> <li>Added detail for 5.2.7.b &amp; c "Comment" related discrepancies</li> </ul> </li> <li>Added to Z 6.2 applicmention of identification tool functionality.</li> </ul>	Carolyn Coggins	Carolyn Coggins QA Director Voting	12/19/08

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# 1 Introduction

This report is submitted to the US Election Assistance Commission (EAC) and MicroVote General Corporation (MicroVote) by iBeta Quality Assurance (iBeta) summarizing the federal voting system certification testing to the *US Election Assistance Commission Voluntary Voting System Guidelines* December 2005 (VVSG 2005) of the MicroVote Election Management System voting system v.4.0 (EMS voting system), including: the Election Management System ballot preparation and central count software (EMS software), the Infinity Voting Panel Direct Recording Electronic (DRE) push button polling place device with an audio ballot mode, the Infinity Voting Panel firmware and a dual sided COTS paper ballot optical mark reader (scanner). The Election Management System ballot preparation and central count software are developed by MicroVote General Corporation (MicroVote). The Infinity Voting Panel and the Infinity firmware are manufactured/developed by Carson Manufacturing Company, Inc. The Chatsworth ACP2200 dual-sided Optical Mark Reader (OMR) is manufactured by Chatsworth Data Corporation. The purpose of this document is to provide an overview of the certification testing and findings.

#### Exclusions:

- The MicroVote EMS voting system does not support ballot rotation; it is not a non-standard voting device provided by a local jurisdiction; it does not contain wireless technology nor use of the public networks; it does not provide for broadcasting of results or contain a bar code reader.
- The Election Management System software is an application installed on a standalone COTS PC or laptop. Connection of these platforms to a network (LAN or WAN) or connection of multiple OMR or Gemplus card readers to the EMS is outside the voting system configuration submitted for certification testing.
- The Infinity Voting Panel does not include an independent verification system, voter verified paper audit trail or electronic dexterity equipment.
- The Chatsworth OMR is not a precinct based paper counter.
- No state testing was performed by iBeta on the MicroVote EMS voting system.

Any activities in these areas are limited to documentation that the functions are not applicable to this voting system.

Testing was conducted at iBeta in Aurora, Colorado and Wyle Laboratories in Huntsville, AL. Testing was completed June 6, 2008.

The MicroVote EMS voting system was submitted to iBeta for Voting System Test Lab (VSTL) certification testing to the VVSG 2005. This testing supports MicroVote's Application #MVT0701 to the US Election Assistance Commission (EAC) for initial certification of the MicroVote EMS voting system to the VVSG 2005. Delivery of a VSTL test report is required as part of the voting system application process (see EAC Voting System Certification and Testing Program Manual section 4.2).

This certification test effort included a Physical Configuration Audit (PCA) of:

- The Technical Data Package (TDP) consisting of the voting system document and the voting system source code;
- Witness of all tested builds from the reviewed source code;
- Preparation of a trusted build with the final reviewed version of source code; and
- Examination and recording of the voting system configuration, including model and serial number, of each test environment.

Additionally a Functional Configuration Audit (FCA) to the requirements of the 2005 VVSG and the MicroVote EMS voting system test requirements included:

- A review of the test documentation submitted by MicroVote General Corporation (MicroVote) for the Election Management System voting system;
- Development of a test plan detailing all testing;
- Managing and recording the voting system configurations, including model and serial number, of each test environment,
- Development and execution of test cases incorporating recording all test data, report outputs, test observations of performance and equipment condition for:

- o A set of functional system level test methods;
- Security review and test scenarios;
- o Reliability and accuracy test methods, incorporating availability, and volume testing;
- Characteristics test methods, incorporating the accessibility, usability and maintainability of the Infinity Vote Panel; and
- Environmental hardware test methods, assessment of a COTS optical scanner, subcontractor test management, assessment and execution by Wyle Laboratories of the Infinity Vote Panel;
- And, an analysis of all test results.

Certification testing was performed in compliance with the requirements of VVSG 2005, Volume II *National Certification Testing Guidelines.* The test record included all test executions and reviews. All test executions and reviews included the record of requirements that were satisfactorily and unsatisfactorily completed, deficiencies noted, reports to MicroVote, software and manufacturing resolutions, validations of resolutions and documentation of incorporation of resolutions into the voting system.

During all phases of the certification testing iBeta provide MicroVote with status reports.

iBeta is a full service software testing laboratory providing quality assurance and software testing for the business and interactive entertainment communities. iBeta accreditations for the testing of voting systems include:

- National Voluntary Lab Accreditation Program (NVLAP) Voting System Testing Certificate of Accreditation to ISO/IEC 17025:2005, Voting System Testing scope of accreditation (NVLAP Lab Code 200749-0 assessment of conformance to the criteria set forth in NIST Handbooks 150 and 150-22)
- United States Election Assistance Commission Voting Systems Test Lab (VSTL) Certification of Accreditation recognized for the testing of voting systems to the 2002 Voting System Standards 2005 Voluntary Voting System Guidelines (EAC Lab Code 0702)

Non-core hardware environmental testing is outside iBeta's test accreditation scope as a VSTL. Noncore hardware environmental assessments and testing were subcontracted to Wyle Laboratories, 7800 Highway 20 West, Huntsville, AL, 35806. iBeta verified Wyle's qualifications. They are accredited to perform all VVSG 2005 identified environmental test methods by the American Association of Laboratory Accreditation under Certificate Numbers 845.01 (Electrical) and 845.02 (Acoustics and Vibration). The accredited test methods are traced to the applicable VVSG 2005 requirement for:

Accredited Test Method	VVSG 2005 Vol.2 Requirement
A2LA No. 845.01, expiration date: 12/31/09	
MIL-Std 810 M 516 Transportation Shock	4.6.2 Bench Handling Test
MIL-Std 810 M 514 Road Transport	4.6.3 Vibration Test
(Bounce- Loose Cargo)	
MIL-Std 810 M 502 Low Temperature	4.6.4 Low Temperature Test
	4.7.1 Temperature & Power Variation Test
MIL-Std 810 M 501 High Temperature	4.6.5 High Temperature Test
	4.7.1 Temperature & Power Variation Test
MIL-Std 810 M 507 Humidity	4.6.6 Humidity Test
(Temperature /Humidity)	

Accredited Test Method	VVSG 2005 Vol.2 Requirement
A2LA No. 845.02, expiration date: 12/31/09	
EN 61000-4-11 Testing and Measurement	4.8.a Power Disturbance Disruption
Techniques-Section 11: Voltage Dips, Short	
Interruptions and Voltage Variations Immunity Test	
FCC Class B Requirements	4.8.b Electromagnetic Radiation
per ANSI C63.4	
EN 61000-4-2 Electrostatic Discharge	4.8.c Electrostatic Disruption
Susceptibility	
EN 61000-4-3 Radiated Susceptibility, 80 MHz to 1	4.8.d Electromagnetic Susceptibility

Accredited Test Method	VVSG 2005 Vol.2 Requirement
A2LA No. 845.02, expiration date: 12/31/09	
GHz, Electric Field	
EN 61000-4-4 Conducted Susceptibility, Electrical	4.8.e Electrical Fast Transient Protection
Fast/Burst Transients, Signal and Power lines and	
Cables	
EN 61000-4-5 Testing and Measurement	4.8.f Lightning Sure Protection
Techniques-Section 5: Surge	
Immunity Test	
EN 61000-4-6 Conducted Susceptibility, Common	4.8.g Conducted RF Immunity
Mode Cable Injection, 150 kHz to 80 MHz	
EN 61000-4-8 Testing and Measurement	4.8.h AC Magnetic Fields RF Immunity
Techniques-Section 18: Power Frequency	
Magnetic Field Immunity Test	

During the test effort Wyle Laboratories gained accreditation for the testing of voting systems, which expands their qualifications to incorporate core voting system testing. The accreditations are:

- National Voluntary Lab Accreditation Program (NVLAP) Voting System Testing Certificate of Accreditation to ISO/IEC 17025:2005, Voting System Testing scope of accreditation (NVLAP Lab Code 200771- 0 assessment of conformance to the criteria set forth in NIST Handbooks 150 and 150-22)
- United States Election Assistance Commission Voting Systems Test Lab (VSTL) Certification of Accreditation recognized for the testing of voting systems to the 2002 Voting System Standards 2005 Voluntary Voting System Guidelines (EAC Lab Code 0704)

## 1.1 Internal Documentation

The documents identified below are iBeta internal documents used in certification testing Table 1 Internal Documents

Version #	Title	Abbreviation	Date	Author (Org.)
v.1.0	Voting Certification Master Services Agreement- MicroVote	MSA contract		iBeta Quality Assurance
	FCA Test Document Review_EMSv.4_0_0		6/1/07	iBeta Quality Assurance
	PCA Document Review- EMSv_4_0_0		7/17/07	iBeta Quality Assurance
v.1.0	PCA Source Code Review Procedure		11/13/07	iBeta Quality Assurance
v.2.0	SQL Review Criteria		6/19/07	iBeta Quality Assurance
v.2.0	VB.NET Review Criteria		6/19/07	iBeta Quality Assurance
v.2.0	Visual Basic Review Criteria		6/19/07	iBeta Quality Assurance
v.3.0	C and C++ Review Criteria		6/19/07	iBeta Quality Assurance
v.1.0	Witness Build Procedure		4/7/08	iBeta Quality Assurance
v.3.0	MicroVote General Corporation Election Management System (EMS) Voting System v. 4.0.0 VSTL Certification Test Plan			iBeta Quality Assurance
v.4.0	MicroVote General Corporation Election Management System (EMS) Voting System v. 4.0.0 VSTL Certification Test Plan			iBeta Quality Assurance
	FCA Accuracy Test Case_EMSv4_0_0-Infinity	Accuracy – DRE	6/12/08	iBeta Quality Assurance
	FCA Accuracy Test	Accuracy –	4/28/08	iBeta Quality Assurance

Version #	Title	Abbreviation	Date	Author (Org.)
	Case_EMSv4_0_0-OMR	OMR		
	FCA Characteristic Test Case EMSv4.0.0	Characteristics, C	9/21/07	iBeta Quality Assurance
	FCA Environmental Test Case EMSv4.0.0	Environ- mental, E	5/2/2008	iBeta Quality Assurance
	FCA Security Review_EMSv4_0_0	Security Review, S	9/21/07	iBeta Quality Assurance
	FCA Telephony and_ Cryptographic_EMSv4_0_0- Infinity	Т	9/14/07	iBeta Quality Assurance
	FCA Primary 1_EMSv4_0_0	Primary 1, P1	10\22\07	iBeta Quality Assurance
	General 1 System TC_ EMSv4_0_0	General 1, G1	10/3/07	iBeta Quality Assurance
	General 2 System TC_ EMSv4_0_0	General 2, G2	9/25/08	iBeta Quality Assurance
	PCA Configuration_ EMSv.4_0_0		6/2/08	iBeta Quality Assurance
	PCA and FCA Discrepancy Report_EMS_4_0_0	Discrepancy Report	6/6/08	iBeta Quality Assurance
	83107 MicroVote Status – ComUtil 109 Validation		8/31/07	iBeta Quality Assurance

# 1.2 External Documentation

The documents identified below are external resources used to in certification testing. **Table 2 External Documents** 

Version #	Title	Abbreviation	Date	Author (Org.)
	Test Plan Approval Letter		1/22/08	Election Assistance
				Commission
	Help America Vote Act	HAVA	10/29/02	107 <sup>th</sup> Congress
NIST	NVLAP Voting System Testing	NIST 150	February	National Voluntary Lab
Handbook			2006	Accreditation Program
150 2006				Ū.
Edition				
NIST	NVLAP Voting System Testing	NIST 150-22	December	National Voluntary Lab
Handbook	5, 5		2005	Accreditation Program
150-22				
	Withdrawal of OMR 9002 and		2/26/08	MicroVote General
	request for waiver			Corporation
v.1.1	Implementation Statement		2/20/08	MicroVote General
				Corporation
	Voluntary Voting System	VVSG	December	Election Assistance
	Guidelines		2005	Commission
	Testing and Certification		1/1/07	Election Assistance
	Program Manual			Commission
	EAC Decision on Request for	Interpretation	9/5/07	Election Assistance
	Interpretation 2007-03,	2007-03		Commission
	2005 VVSG Vol. 1 Section			
	3.1.1			
	EAC Decision on Request for	Interpretation	10/29/07	Election Assistance
	Interpretation 2007-04,	2007-04		Commission
	2005 VVSG Vol. 1 Section			
	3.1.3			
	EAC Decision on Request for	Interpretation	11/6/07	Election Assistance
	Interpretation 2007-05,	2007-05		Commission
	2005 VVSG Vol. 1 Section			

Version #	Title	Abbreviation	Date	Author (Org.)
	4.2.1 (Testing Focus and			
	EAC Decision on Request for Interpretation 2007-06, 2005 VVSG Vol. 1 Section 4.1.1, 2.1.2c &f, 2.3.3.3o & 2.4.3c&d. (Recording and reporting undervotes)	Interpretation 2007-06	11/7/07	Election Assistance Commission
	EAC Decision on Request for Interpretation 2008-01, 2002 VSS Vol. II, 2005 VVSG Vol. II, Section 4.7.1 & Appendix C	Interpretation 2008-01	2/6/08	Election Assistance Commission
	EAC Decision on Request for Interpretation 2008-02, Battery Backup for Optical Scan Voting machines	Interpretation 2008-02	2/19/08	Election Assistance Commission
	EAC Decision on Request for Interpretation 2008-04, 2002 VSS Vol. I, Section 2.3.1.3.1a 2005 VVSG Vol. II, Section 2.2.1.3a Ballot Production	Interpretation 2008-04	5/19/08	Election Assistance Commission
	EAC Decision on Request for Interpretation 2008-05, 2002 VSS Vol. I, Section 3.4.2, 2005 VVSG Vol. I, Section 4.3.2, Durability	Interpretation 2008-05	5/19/08	Election Assistance Commission
	EAC Decision on Request for Interpretation 2008-06, 2002 VSS Vol. I, Sections 3.2.2.4c, 3.2.2.5 2005 VVSG Vol. I, V. 1.0, Sections 4.1.2.4c (Electrical Supply), 4.1.2.5 (Electrical Power Disturbance)	Interpretation 2008-06	8/29/2008	Election Assistance Commission
	EAC Decision on Request for Interpretation 2008-08 2002 VSS Vol. I, Glossary 2005 VVSG Vol. I, Glossary	Interpretation 2008-08	8/1/2008	Election Assistance Commission
	EAC Decision on Request for Interpretation 2008-09 (Safety Testing) 2002 VSS Vol. I, Section, 3.4.8 2005 VVSG Vol. I, Section 4.3.8	Interpretation 2008-09	8/25/2008	Election Assistance Commission
	EAC Decision on Request for Interpretation 2008-10 (Electrical Fast Transient) 2005 VVSG Vol. I, Sect.4.1.2.6 2005 VVSG Vol. II, Section 4.8	Interpretation 2008-10	8/28/2008	Election Assistance Commission
	NOC 07-05: Voting System Test Laboratory (VSTL) responsibilities in the management and oversight of third party testing.		9/7/07	Election Assistance Commission

Version #	Title	Abbreviation	Date	Author (Org.)
	Wyle Letter No. 54578.02B-	Environmental	7/13/07	Wyle Laboratories
	001R1	Assessment		
	Hardware Testing and	Wyle report	6/10/2008	Wyle Laboratories
	Evaluation of the MicroVote			
	Infinity DRE Voting System			
	(Report NO: T54578.02-01)			

# 1.3 Technical Data Package Documents

The Technical Data Package Documents submitted for this certification test effort are listed in Section 3 System Identification.

## 1.4 Test Report Contents

The contents of this Test Report include:

- Section 1: The Introduction- identifies the scope of certification testing.
- Section 2: The Certification Test Background identifies the process for the Physical and Functional Configuration Audits.
- Section 3: The Voting System Identification identifies the system configuration including hardware, software and the Technical Data Package documentation.
- Section 4: The Voting System Overview identifies the overall design and functionality of voting system.
- Section 5: The Certification Review and Test Results are the methods and results of the testing effort.
- Section 6: The Opinions & Recommendations of the acceptability of the voting system.

Test Operations, Findings and Data Analysis are in the appendices. Additionally MicroVote documents required for submission in the *Voting System Test Laboratory Program Manual v.1.0* Appendix B are referenced in the appendices.

- Appendix A: Certification Test Requirements (matrix identifying conformance to the applicable standard with a trace to the Test Method and issues encountered in testing).
- Appendix B: PCA Source Code Reviews
- Appendix C: PCA TDP Document Reviews
- Appendix D: Test Results (Functional, Security, Environmental, Accuracy etc.)
- Appendix E: PCA and FCA Discrepancy Report
- Appendix F: Trusted Build and Validation Tools
- Appendix G: EAC Certification Number
- Appendix H: Warrant of Accepting Change Control Responsibility
- Appendix I: Test Plan
- Appendix J: MicroVote Implementation Statement

#### 1.4.1 VSTL Program Manual Format Trace

Release of the *Voting System Test Laboratory Program Manual v.1.0* occurred subsequent to completion of all testing and preparation of v.1.0 of this test report. Appendix B of the manual identifies content in a specific format. The current format of this report follows the recommended outline stipulated in the VVSG 2005 vol. 2 Appendix B. This VVSG stipulated test report format was reviewed and approved by NVLAP in our Voting System Testing accreditation audit. A trace is provided below to clarify the location of the VSTL Program Manual specified content in this report. 1. System Identification and Overview is found in:

- Section 1 Introduction
- Section 3 Voting System Identification
- Section 4 Voting System Overview
- 2. Certification Test Background is found in:

- Section 2 Certification Test Background
  - 2.2 Revision History is found in:
    - Section 1 Introduction
  - 2.3 Implementation Statement is referenced in:
  - Appendix I Implementation Statement
- 3. Test Findings and Recommendations
  - 3.1 Summary Finding and Recommendation is found in:
    - Section 5 Certification Review and Test Results
    - Section 6 Opinions and Recommendations
  - 3.2 Reasons for Recommendation of Rejection is:
    - Not applicable, see Section 6 Opinions and Recommendations
  - 3.3 Anomalies may also be identified as discrepancies, issues or defects are found in:
    - Section 5.1 to 5.8 provides a general description of how anomalies were encountered and reported during testing.
    - Appendix A traces the VVSG requirements to the specific anomalies.
    - Addendum to Appendix B contains software related source code discrepancy detail.
    - Appendix D Sections 7.4.1 to 7.4.6 "Issues Opened" traces the specific anomalies to the relevant software build.
    - Appendix E, PCA and FCA Discrepancy Report, provides the discrepancy number, date, tester, location, description, and VVSG requirement information about anomalies encountered during document reviews and testing.

3.4 Correction of Deficiencies is found in:

- Section 5.1 to 5.8 provides a general description of how deficiency corrections were confirmed.
- Appendix A traces the VVSG requirements to the specific closed anomalies.
- Appendix B reflects pass criteria for all reviewed source code.
- Appendix D Sections 7.4.1 to 7.4.6 "Issues Closed" traces the specific anomaly resolutions to the build
- Appendix E, PCA and FCA Discrepancy Report, provides the vendor responses and resolution validations for anomalies encountered during document reviews and testing.

Appendix A: Additional Finding is found in:

- Appendix A: Certification Test Requirements contains "should" and "not applicable" requirements. Comments provide rationale and references to relevant EAC Interpretations or Notices of Clarification.
- Appendix D: Section 7.4.1 Supported Voting Variations of the VVSG 2005 Section 2.1.7.2 identify "unsupported" optional functionality.

Appendix B: Warrant of Accepting Change Control Responsibility is found in:

- Appendix H: Warrant of Accepting Change Control Responsibility
- Appendix C: Witness Build is found in:
  - Appendix F: Witness of the Trusted Build

Appendix D: Test Plan

• Appendix J: Test Plan contains a reference to the final revised test plan submitted as a separate document

Appendix E: State Test Reports

• No state testing was performed by iBeta on the MicroVote EMS Voting System v.4.0. This is documented in the Section 1 Exclusions.

# 2 Certification Test Background

Certification testing of the MicroVote EMS voting system included a Physical Configuration Audit and a Functional Configuration Audit. Daily status reports were sent to MicroVote's certification management staff and iBeta project test staff. These reports included project activity status, issues, and other relevant information.

# 2.1 Terms and Definitions

The Terms and Definitions identified below are used in this test report.

### Table 3 Terms and Definitions

Term	Abbreviation	Definition
Activations		The method by which ballot displays are
		programmed for precincts, precinct splits or
		party.
Ballot Cards or Official Ballot	C312, C402, C256	Paper ballot cards read with the OMR and
Cards	or 312, 402, 256	ACP scanners. The digits refer to the number
	OMR Ballot Cards	of locations on the card.
Ballot Objects		Ballot objects group items that will go on the
,		ballot, including: ballot text, offices, and
		straight party locations on the ballot.
Candidate Sorting – By Name		A candidate name sort, alphabetically by last
		name
Candidate Sorting – By Name		A candidate name sort, alphabetically by last
within Party		name within each party
Candidate Sorting – None		Candidate names are listed in the order they
		are filed.
Candidate Stacking – Always		Ballot formatting option: Stacks all names on
3 .,.		the entire ballot regardless of candidate name
		length.
Candidate Stacking – On entire		Ballot formatting option: Stacks the names on
ballot when required		the entire ballot if one of the candidates'
		names is too long to fit on one line.
Candidate Stacking – Only		Ballot formatting option: Stacks the names
within race when required		within a race if one of the candidate's names
		is too long to fit on one line.
Carson Manufacturing	Carson	The manufacturer of the Infinity Voting Panel
Company, Inc.		and developer of the Infinity firmware
Certified Information System	CISSP	A certification for information systems security
Security Profession		practitioners, indicating successful completion
		of the CISSP examination administered by the
		International Information Systems Security
		Certification Consortium
Chatsworth ACP2200 dual-	OMR or ACP	Optical scanner for reading and transferring
sided optical mark reader	scanner	votes from both sides of a paper ballot card to
		the EMS
Direct Recording Electronic	DRE	A voting system that records votes by means
		of a ballot display provided with mechanical or
		electro-optical components that can be
		actuated by the voter: that process the data
		by means of a computer program; and that
		records voting data and ballot images in
		internal and/or external memory components
		It produces a tabulation of the voting data
		stored in a removable memory component
		and in printed copy.
Doubletalk (Audio Ballot)	Doubletalk	Required for an audio ballot: a voice

Term	Abbreviation	Definition
		synthesis/sound system, connected to the
		infinity voting Panel, used to convert text to
Flastian Databasa		speech
Election Database		A mode of the EIVIS that limits changes to the
		current open election; changes made appear
		in only the current opened election. Default
		settings of the Installation Mode are not
		changed
Election Management System	EMS software	The ballot preparation and central count
software		software of the Election Management
		Software voting system. It is used to program
		an election on the Infinity Voting Panel and
		paper ballots; and to consolidate and report
		results from the voted ballots.
Election Management System v	EMS v.4.0	The release version of MicroVote Election
4.0		Management System voting system.
Election Management System	EMS voting system	The MicroVote voting system integrating the
voting system		hardware and software of the EMS ballot
		preparation and central count software, the
		Infinity Voting Panel, the Infinity firmware, and
		the OMR ballot reader.
Executable Lines of Code	eLOC	Lines of code that execute functionality.
		Comments and blank lines are excluded from
		counts of executable lines of code.
Escrow Agency		EAC identified repository that retains the file
		signature of the trusted build.
Full or New Code Review		First time submission submitted for
		certification review or previously certified code
		with changes to the code so significant that a
		full review is warranted.
GEMPLUS Smart Card	GEMPLUS	COTS hardware for reading and writing the
Reader/Writer		Start. Vote and Tally Smartcards
Help America Vote Act	HAVA	Legislation enacted in 2002 which includes
		creation of the EAC, federal voting standards
		and accreditation of test labs
Infinity Voting Panel	Infinity	Direct Recording Electronic (DRE) polling
		place device of the MicroVote Election
		Management System voting system
Infinity Voting Panel firmware	Infinity firmware	The software that runs the Infinity Voting
		Panel
Installation Database		A mode of the EMS for definition of default
		settings that are present in every new election
		created.
Manual Vote Entry – in central		Method to enter votes that are not recorded
count reports		on Tally Cards or optical scan cards. Votes
		may be entered as a single vote, by selected
		precinct, or by machine serial number.
MicroVote General Corporation	MicroVote	The manufacture submitting the Election
		Management System voting system.
National Standard Reference	NSRL	Part of NIST that provides software escrow.
Library	-	
National Voluntary Laboratory	NVLAP	Part of NIST that provides third-party
Accreditation Program		accreditation to testing and calibration
		laboratories.
Secondary Vote Limit		A voting variation outside the VVSG, which is
		supported by an additional vote limit that can

Term	Abbreviation	Definition
		be placed on grouped contests, so that
		multiple limits are placed on the vote.
Start Card (Green)	Start card	For initializing the Infinity Voting Panel
Tally Card (Red)	Tally card	For transferring votes from the Infinity Voting
		Panel to the Tally card, to the EMS voting
		system.
Technical Data Package	TDP	The documentation and code relating to the
		voting system, submitted by the manufacturer
		for review.
U.S. Election Assistance	EAC	U.S. agency established by the Help America
Commission		Vote Act of 2002 for administration of Federal
		elections.
Voluntary Voting System	VVSG	Federal voting system test standards created
Guidelines		by the EAC. Eventually these will replace the
		VSS.
Vote Card (Blue)	Vote card	For ballot selection and activation of ballot
Vote N Card		Vote N cards are used only by Election
		Administrators in early voting situations. Vote
		N Cards facilitates retraction of challenged
		ballots.
Voting System Standards	VSS	Federal voting system test standards, VVSG
		predecessor
Voting System Test and	VSTCA	If used it should be read as VSTL. This is a
Certification Authority		term used in the NIST Handbook 150-22 that
		was not implemented by the EAC
Voting System Test Lab	VSTL	Lab accredited by the EAC to perform
		certification testing of voting systems.
Voting Variations		Significant variations among state election
		laws incorporating permissible ballot content,
		voting options and associated ballot counting
		logic

# 2.2 Physical Configuration Audit

The Physical Configuration Audit (PCA) deals with the physical elements of the voting system, including the source code, documentation and system configuration reviews, in addition to the witness of the build and installation of the reviewed source code.

#### 2.2.1 PCA TDP Source Code Review

The PCA TDP Source Code Review of the MicroVote EMS voting system was performed to verify conformance to VVSG 2005 Vol. 1 Sect 5.2 and Vol. 2 Sect. 5. Reviewed results were recorded on Source Code Review sheets. Issues were identified in the review and logged on a separate source code review discrepancy report, after completion of peer review. The source code review discrepancies were forwarded to MicroVote for correction.

## 2.2.2 PCA TDP Document Review

The PCA TDP Document Review of MicroVote EMS voting system performed to verify conformance to Vol. 2 Sect. 2 of the VVSG 2005. Reviewed results are recorded on *PCA TDP Document Review* sheets. Issues were identified in the review and logged on the *PCA and FCA Discrepancy Report*, after completion of peer review. The *PCA and FCA Discrepancy Report* was forwarded to MicroVote for correction.

## 2.2.3 PCA System Configuration Review

The PCA System Configuration Review of MicroVote EMS voting system was performed to verify conformance to VVSG Vol. 1 Sect 9.7.1. Reviewed results are recorded on *PCA System Configuration* 

*Review* sheets. Issues were identified in the review and logged on the *PCA* and *FCA Discrepancy Report*, after completion of peer review. The *PCA* and *FCA Discrepancy Report* was forwarded to MicroVote for correction.

#### 2.2.4 Witness (Trusted) Build and Installation

The Witness Build and Installation of the executable code for the MicroVote EMS voting system was performed using the reviewed source code per VVSG Vol. 2 Sect 1.8.2.4. All builds performed by iBeta during testing were documented. iBeta documented performance of the final Trusted Build in accordance with the Witness Build Procedure and documented the *Witness of the Final Build Template* (Word Document) and is provided as Appendix F to this report.

## 2.3 Functional Configuration Audit

The Functional Configuration Audit was an examination of the functional aspects of the voting system. This included review of the MicroVote EMS voting system submitted test documentation, user manuals and execution of all required tests. A test method description of each test case is documented in Appendix D.

#### 2.3.1 FCA Test Documentation Review

The FCA Test Documentation Review assessed the level of vendor testing of the voting system to the Vol. 1 Sect. 2, 3, 4, 5, 6, 7 and 9 requirements. This assessment was used to define the extent of functional testing.

#### 2.3.2 FCA Functional and System Level Tests

Functional and system level tests were conducted, in accordance with Vol. 2 Sect. 6. End-to-end mock elections were conducted to demonstrate the integrated functionality and processes of the MicroVote EMS voting system incorporating shared state requirements and those specifically supported by MicroVote. The system configuration, test objective, test steps, and expected results were identified in each test case. Acceptance and rejection results were recorded for each test step. Issues encountered during testing were identified in the test record and logged on the *PCA and FCA Discrepancy Report*, after completion of peer review. MicroVote resolved all discrepancies which did not meet the requirements of the VVSG 2005. Regression tests were rerun to validate all submitted fixes. These validations were recorded in the *PCA and FCA Discrepancy Report*.

## 2.3.3 FCA Security Review and Tests

Review and testing of voting system security was incorporated into the *PCA Source Code Review, PCA Document Review, FCA Functional and System Level Test Cases*, and unique MicroVote specific security tests, source code and document reviews. The review/test acceptance and rejection criteria for each security requirement were documented in the *FCA Security Review and Tests* with the location of the review/test and the review/test result recorded. Issues encountered during testing were recorded in the identified test record and logged on the *PCA and FCA Discrepancy Report*, after completion of peer review. MicroVote resolved all discrepancies which did not meet the requirements of the VVSG 2005. Regression tests were rerun to validate all submitted fixes. These validations were recorded in the *PCA and FCA Discrepancy Report*.

## 2.3.4 FCA Accuracy Test (Accuracy, Reliability, Availability, & Volume)

Accuracy testing is not limited to this test case. Testing of the accuracy requirements of the VVSG is included in the *FCA Functional and System Level Test Cases* and *FCA Security Review and Tests*. Separate comprehensive tests incorporating Data Accuracy and Reliability (Vol.2 Section 4.7.1, 4.7.1.1 and 4.7.3) were performed on the Infinity Voting Panel and the ACP2200 OMR. Execution of the test on the non-COTS hardware was under temperature and power variations. Data Accuracy validated the correct recording and reporting of the individual ballot positions, not to exceed a specified maximum error rate, while processing a specified number of ballot positions. Maximization of ballot positions and large numbers of votes incorporated ballot stress and volume test conditions. Issues encountered during testing were identified in the test record and logged on the *PCA and FCA Discrepancy Report,* after completion of peer review. MicroVote resolved all discrepancies which did not meet the

requirements of the VVSG 2005. Regression tests were rerun to validate all submitted fixes. These validations were recorded in the *PCA and FCA Discrepancy Report.* 

# 2.3.5 FCA Characteristics Tests (Recovery, Accessibility, Usability & Maintainability)

Review and testing of the Infinity Voting Panel characteristics, usability, accessibility, and maintainability were incorporated into a single test case in accordance with VVSG Vol. 1 Sect. 3, 4.1.2.4.c (2 hour battery back-up), 4.2, 4.3 and Interpretation 2007-03. Interpretation 2008-02 stipulates that the 2 hour battery back-up is applicable to central count scanners. The ACP2200 OMR, a central count optical scanner, was added to the *FCA Characteristics Test Case* for this one requirement. A mock election incorporating audio, visual and multi-lingual ballots was installed to assess the usability and functional performance of the accessible, usability, recovery and maintenance features of the voting system. (Note: Testing of the accurate presentation, recording and reporting of accessible ballots was incorporated into *FCA Functional and System Level Test Cases*.) The system configuration, test objective, test steps, and expected results were identified. Acceptance and rejection results were recorded for each test step. Issues encountered during testing were identified in the test record and logged on the *PCA and FCA Discrepancy Report*, after completion of peer review. MicroVote resolved all discrepancies which did not meet the requirements of the VVSG 2005. Regression tests were rerun to validate all submitted fixes. These validations were recorded in the *PCA and FCA Discrepancy Report*.

#### 2.3.6 FCA Hardware Environmental Tests

FCA Hardware Environmental Tests are non-core tests which must be performed by a laboratory accredited in the hardware environmental test methods identified in VVSG 2005 vol.1, 4.6 and 4.7. Non-core tests may be performed by subcontractor laboratories, under the supervision of the VSTL, if the VSTL does not hold these accreditations. iBeta validated Wyle Laboratories accreditation to perform all required hardware environmental tests and engaged them as iBeta's subcontractor to perform the tests.

Prior to initiating an assessment of the MicroVote EMS voting system hardware iBeta contacted the EAC and received confirmation that as the hardware environmental testing requirements of the VVSG 2005 were essentially unchanged from the FEC Voting System Standards 2002, environmental hardware testing performed by Wyle Laboratories to the 2002 standards in a prior qualification effort would be valid for reuse if the following conditions were met:

- The hardware was unchanged and Wyle verified in an independent assessment that the equipment they tested was essentially the same as the system tendered for certification to the VVSG 2005;
- Wyle agreed to issue a report for the environmental tests as a subcontractor to iBeta; and
- iBeta confirmed that Wyle was accredited by A2LA to perform all the VVSG 2005 required test
  methods accredited in the test methods they performed on the date of test execution.

A detailed test case with test instructions was provided to Wyle to review, assess and test the Infinity Voting Panel. iBeta created test election databases for all operating tests and to validate the operational status of the voting panel before and after each environmental test. The system configuration, test objective, test steps, and expected results were identified. Acceptance and rejection results were recorded for each test step. Issues encountered during testing were documented in the test record. In addition to the iBeta test record, Wyle provided iBeta with anomaly and test reports following their internal processes. iBeta logged anomaly reports as issues on the *PCA and FCA Discrepancy Report*. MicroVote resolved all discrepancies which did not meet the requirements of the VVSG 2005.

EAC Interpretation 2007-05 provided that there is no merit to the interpretation that requires FCA Hardware Environmental testing of unmodified COTS equipment. Instead the interpretation requires the confirmation of FCC Class 15B and CE marks affixed to each unit indicating that the COTS product has been certified to meet those standards and a copy of the COTS manufacturer's Declaration of

Conformity confirming the manufacturer's compliance claim. iBeta followed the interpretation for the ACP2200 OMR COTS scanner.

#### 2.3.7 FCA Telephony and Cryptographic Review and Tests

An examination of the MicroVote EMS voting system was conducted to confirm that it does not contain wireless technology or use of the public networks. The results of this review were recorded in the *FCA Telephony and Cryptographic Test Case*. As a result of this review it was determined that the voting system is exempted from the Telephony and Cryptographic requirements of VVSG Vol.1 Sect. 6 & 7.

It should be noted that connection of the COTS EMS PC or laptop to a network (LAN or WAN) is outside the system configuration submitted for certification.

# 3 Voting System Identification

The System Identification stipulates the configuration of the MicroVote EMS voting system v.4.0 hardware, software and the Technical Data Package documentation submitted for testing to the VVSG 2005.

# 3.1 Submitted Voting System Identification

**Table 4 Voting System Name and Version** 

Voting System Name	Release Version
MicroVote Election Management System	4.0

The MicroVote Election Management System Voting System release version includes the following:

Hardware	Firmware & Version	Description
Ballot Prep & Central Count		
Dell computer desktop with	Windows XP Professional 2002	COTS Personal computer for
monitor, keyboard and mouse	Service Pack 2	
Dell laptop	Windows XP Professional 2002	COTS Laptop
	Service Pack 2	
GemPlus card reader	ISO7816-3 standard interface	COTS Card reader
Report printer		COTS Printer
DRE		
Infinity Voting Panel Model VP-	Infinity Voting Panel Firmware v 4.0	Push button DRE with an audio
1 Rev: C		ballot mode
ELPAC Power Systems Power	Model FW3012	Infinity COTS Power supply: Input
Supply		100–240 VAC 47–63Hz Output
		12VDC, 2.5A
Infinity storage case	Regular and Accessible	Polling booth (regular and
		accessible) and storage case
Seiko Instruments Printer	Model DPU-414 or DPU-3445	COTS Report printers, varied
		speeds
DoubleTalk LT	DoubleTalk v.1.0 RC8650 BIOS0212	COTS Text-to-speech portable voice
		synthesizer
Headphones		COTS headphones for audio ballots
Smart Cards		COTS smart cards for Start, Vote,
		Vote N and Tally functions
Optical Scanner		
Chatsworth ACP-2200 Dual-	Model 605000-190	COTS Dual-Sided Optical Mark
Sided Optical Mark Reader		Reader for scanning paper ballots
		into the EMS software.
UPS Backup	Unit capable of sustaining 100 watts	COTS Central count universal power
	output at 120 volts for a minimum of 2	supply
	hours according to manufacturer	
	specifications	

#### Table 5 Voting System Polling Place and Central Count Hardware

#### Table 6 Voting System EMS Software

Software Applications	Version	EMS Function Description		
Ballot Prep & Central Count				
Election Management System	4.0	Ballot preparation and central count software; reporting		
(EMS)	4.0.21.0	software for the OMR optical scanner		
Microsoft Windows XP Professional	XP svc	COTS personal computer operating system		
	pack 2			
Microsoft Desktop Engine	MS SQL	COTS personal computer desktop engine		
	Server			
	2000			

DRE		
Infinity Voting Panel Firmware	v.4.0	DRE software programmed in C
	(Dulla	
	9. 68)	
Encrypt.exe	v.2.14	Non-distributed executable used in the Infinity build
		process
InfUpdater.exe	v.1.01	Software for loading Infinity executable onto Infinity panel
GetUpdt.exe	v.2.16	Distributed executable used in the update process

# 3.2 Voting System Test Environment

The Voting System Test Environment identifies the specific hardware and software that was used in the test environment. The Test Methods in Appendix D identify a specific MicroVote EMS voting system software and firmware build installed for each test iteration.

Table / Voling System na	aluwale		
Hardware or Equipment (#)	Manufacturer	Version/ Model	Description (identify COTS)
Infinity Voting Panel (9)	Carson Manufacturing Company, Inc.	Model VP-1 Rev: C SN: 2213, 3627, 3628, 3629, 3630, 10402, 10403, 10404, 10405	Description (identity COTS) DRE 16¼ "X 13 " X 2½"; 6 Lbs. w/ power supply & cord -Power Input: Standard ¼" miniature power jack, 12VDC ± 10% @ 2.5A max -Interface: RJ45 connector with RS-232 levels and special pin assignments for use with adapters connected to printer or –PC, automatic baud rate selection for PC or printer Communication: 1 start bit, 8 data bits, no parity, baud rate = 38K for PC and 9600 for printer, hardware handshake (DTR/DSR) -Computer: AAEON PC/104 SBC with X386 processor -Memory: CompactFlash 8Mb primary, Disk-On-Chip 8Mb backup -Display: Sanyo 9¼ in. LCD, 640 x 480 resolution B/W transflective -Indicators: (2) Red LED Cast Vote indicators -Keyboards: Custom conductive rubber over gold
Batteries (8) cells		Alkaline "C"	COTS: Back up power supply for the Infinity Voting Panel
DoubleTalk LT (3)	RC Systems, Inc.	LT RC8650 chipset BIOS 0212	COTS: Text-to-speech portable voice synthesizer
Power Supply: ELPAC Power Systems model FW3012 Power Supply Input 100–240 VAC 47– 63Hz Output 12VDC, 2.5A UL CE	ELPAC	ELPAC Model FW3012	Power supply for the Infinity Voting Panel.

#### Table 7 Voting System Hardware

Hardware or Equipment (#)	Manufacturer	Version/ Model	Description (identify COTS)
Dell computer desktop (1)	Dell, Inc.	Model DHM* SN: SDBFL61	COTS. Personal computer Intel Pentium R processor 2.80GHz, 2.79GHz, 512 MB RAM Windows XP Professional 2002 Svc Pack 2
Dell Laptop (1)	Dell, Inc.	Model PP17L* SN: CN-06G834- 48643-65R-3140	COTS Personal computer Intel Pentium M processor 1.73GHz, 795MHz, 504 MB RAM Windows XP Professional 2002 Svc Pack 2
PS/2 to USB Adapter (1)	Adesso	Model ADP-PU21	COTS Connect keyboard and mouse to USB port
Seiko Printer (1)	Seiko Instruments	Model DPU-414	COTS report printer
Seiko Printer (1)	Seiko Instruments	Model DPU-3445	COTS high speed report printer
GemPlus with ISO7816-3 standard interface (2)	GEMPLUS	SN: R04304113302427, R02A0109759	COTS. Card Reader
Chatsworth ACP-2200 Dual- Sided Optical Mark Reader (3)	Chatsworth Data Corporation	Model 605000-190 SN:CDT03600288, CDT09600346, CDT09600335	COTS. Dual-Sided Optical Mark Reader for scanning paper ballots into the EMS software.
Seiko Printer Cable	Seiko Instruments		COTS. Cable to connect the printer and the Infinity
EMS Cable			COTS: Standard modular plug-8 positions
Smart Cards			COTS: Start card, Vote card, Vote N card and Tally card.
Keyboard*	Dell, Inc.		COTS: USB Keyboard
Mouse*	Dell, Inc.		COTS: USB 2-Button
Speakers	Dell, Inc.	A215*	COTS: Two Piece Stereo Speaker System
APC Smart-UPS Backup (1)	APC	Model SUA2200* SN: JS0743009644	COTS: Backup Power Supply
Dell Monitor (1)	Dell Inc	Model E153FPb* CN-0D5421-46633- 55U-0E2L	COTS: 15 Inch Flat Panel
Audio headphones (1)	Radio Shack		COTS: headphones
Dell Laser Jet Printer (1)	Dell, Inc.		COTS: Report printer
Infinity Storage/Shipping Case	(4)		Polling booth & shipping case
Infinity Storage/Shipping Case (Handicap accessible)	(1)		Wheelchair accessible polling booth & shipping case

\* Model or version identifies the one used in testing. For this equipment the MicroVote specifications do not identify a specific version.

Application	Manufacturer	Version	Description (identify COTS)
Election Management System (EMS)	MicroVote General Corp.	4.0 (Build 4.0.21.0)	Ballot preparation and central count software programmed in VB.Net and SQL
Infinity Voting Panel Firmware	Carson Manufacturing Company, Inc.	v.4.0 (Build 9. 68)	DRE software programmed in C
Encrypt.exe	Carson Manufacturing Company, Inc.	v.2.14	Non-distributed executable used in the Infinity build process
InfUpdater.exe	Carson Manufacturing Company, Inc.	v.1.01	Software for loading Infinity executable onto Infinity panel
GetUpdt.exe	Carson Manufacturing Company, Inc.	v.2.16	Distributed executable used in the update process
Microsoft Windows XP Professional	Microsoft	XP svc pack 2	COTS personal computer operating system
Microsoft Desktop Engine	Microsoft		COTS database software
DOUBLETALK LT	RC Systems	1.0	COTS: Text-to-speech voice synthesizer software

#### Table 8 Voting System Software

#### Table 9 Voting System Technical Data Package Documents

Title	Version	Date	Author (Org.)
Appendices Table of Contents Election Management System	1.4	9/19/2007	MicroVote General Corp.
Appendix AA MicroVote System Identification Tool User Manual	1.5	9/5/2008	MicroVote General Corp.
Appendix A TEST PLANS Election Management System	0.4	7/23/2007	MicroVote General Corp.
Appendix A0 Test Execution Plan for Logon	1.0	2/15/2007	MicroVote General Corp.
Appendix A1 Test Execution Plan for Menu Bar	1.1	3/3/2006	MicroVote General Corp.
Appendix A10 Test Execution Plan for Election Data (Form Actions (FR-GUI-SP-0012400))	1.0	2/6/2006	MicroVote General Corp.
Appendix A11 Test Execution Plan for Security	1.1	3/23/2007	MicroVote General Corp.
Appendix A12 Test Execution Plan for Office Entry	1.1	3/3/2006	MicroVote General Corp.
Appendix A13 Test Execution Plan for Candidate Filing	1.2	1/9/2007	MicroVote General Corp.
Appendix A14 Test Execution Plan for Secondary Vote Limit	1.1	3/3/2006	MicroVote General Corp.
Appendix A15 Test Execution Plan for Create and Edit Ballots	1.1	3/3/2006	MicroVote General Corp.
Appendix A16 Test Execution Plan for Build Activations	1.0	2/6/2006	MicroVote General Corp.
Appendix A17 Test Execution Plan for Assign Ballots	1.0	2/6/2006	MicroVote General Corp.
Appendix A18 Test Execution Plan for Ballot Printing	1.0	2/6/2006	MicroVote General Corp.
Appendix A19 Test Execution Plan for EMS – INFINITY PROGRAMMING EMS – VOTE CARD ACTIVATION INFINITY FIRMWARE – ELECTION FUNCTIONS	1.0	2/10/2006	MicroVote General Corp.
Appendix A2 Test Execution Plan for Preferences	1.2	2/14/2007	MicroVote General Corp.
Appendix A20 Test Execution Plan for Clear Votes	0.2	3/3/2006	MicroVote General Corp.
Appendix A21 Test Execution Plan for OMR Ballot Cards	0.2	3/20/2006	MicroVote General Corp.
Appendix A22 Test Execution Plan for Tally Cards	0.2	3/3/2006	MicroVote General Corp.
Appendix A23 Test Execution Plan for Manual Vote Entry	0.1	3/7/2006	MicroVote General Corp.
Appendix A24 Test Execution Plan for Overall System Functionality	0.1	5/10/2006	MicroVote General Corp.
Appendix A26 Test Execution Plan for Election Data	0.1	6/1/2006	MicroVote General Corp.
Appendix A27 Test Execution Plan for Election Data	0.1	6/1/2006	MicroVote General Corp.
Appendix A28 Test Execution Plan for Election Data	0.1	6/1/2006	MicroVote General Corp.
Appendix A29 Test Execution Plan for Infinity Programming – Defect #146	0.1	7/24/2006	MicroVote General Corp.
Appendix A3 Test Execution Plan for Political Parties	2.0	8/9/2006	MicroVote General Corp.
Appendix A30 Test Execution Plan for Infinity Programming	0.2	4/13/2006	MicroVote General Corp.

Title	Version	Date	Author (Org.)
- Voter Control Page			
Appendix A31 Test Execution Plan for Infinity Programming – Defect #151 with Button Tags	0.1	7/24/2006	MicroVote General Corp.
Appendix A32 Test Execution Plan for Election Data – Straight Party Report	0.1	6/1/2006	MicroVote General Corp.
Appendix A33 Test Execution Plan for Election Data	0.1	6/1/2006	MicroVote General Corp.
Appendix A33 Test Execution Plan for Election Data –	0.3	4/27/2007	MicroVote General Corp.
Office Detail Report		.,,	······
Appendix A34 Test Execution Plan for Infinity Programming	0.1	6/6/2006	MicroVote General Corp.
Appendix A35 Test Execution Plan for Election Data	0.1	6/1/2006	MicroVote General Corp.
Appendix A36 Test Execution Plan for Infinity Programming	0.1	6/6/2006	MicroVote General Corp.
Appendix A37 Test Execution Plan for Infinity Programming	0.1	6/6/2006	MicroVote General Corp
- Tally & Accumulate Card Functions- Defect #167	0.1	0/0/2000	
Appendix A38 Test Execution Plan for Election Data	0.1	8/8/2006	MicroVote General Corp.
Appendix A39 Test Execution Plan for Election Data – Early Vote Extraction	0.1	8/1/2006	MicroVote General Corp.
Appendix A4 Test Execution Plan for Vote Type	1.0	2/6/2006	MicroVote General Corp.
Appendix A40 Test Execution Plan for Election Data	0.1	6/1/2006	MicroVote General Corp.
Appendix A41 Test Execution Plan for Election (Data Network OMR Ballot Cards)	0.1	8/1/2006	MicroVote General Corp.
Appendix A42 Test Execution Plan for Election Data (Network Tally Cards)	0.1	8/1/2006	MicroVote General Corp.
Appendix A43 Test Execution Plan for OMR Straight Party	1.0	8/15/2006	MicroVote General Corp.
Appendix A44 Test Execution Plan for General Election #1	1.0	3/19/2007	MicroVote General Corp.
Appendix A45 Test Execution Plan for General/Primary Election #3	1.0	3/19/2007	MicroVote General Corp.
Appendix A46 Test Execution Plan for Primary Election System Test	0.1	3/16/2007	MicroVote General Corp.
Appendix A47 Test Execution Plan for Tally Card/Advanced Voting Volume Testing	0.1	2/14/2007	MicroVote General Corp.
Appendix A48 Test Execution Plan for Election Summary	0.1	3/16/2007	MicroVote General Corp.
Appendix A49 Test Execution Plan for Precinct Summary	0.1	3/8/2007	MicroVote General Corp.
Appendix A5 Test Execution Plan for Precincts	1.0	2/6/2006	MicroVote General Corp.
Appendix A50 Test Execution Plan for Tally Card Detail	0.1	2/14/2007	MicroVote General Corp.
Report			······
Appendix A51 Test Execution Plan for Undervotes and Overvotes Report	0.1	3/15/2007	MicroVote General Corp.
Appendix A52 Test Execution Plan for Insert, Update and Delete Office, Candidate, Text Messages	1.0	3/21/2007	MicroVote General Corp.
Appendix A53 Test Execution Plan for OMR Ballot Card	0.1	4/2/2007	MicroVote General Corp.
Appendix A54 Test Execution Plan and Test Popert	0.2	8/2/2006	MicroVoto Conoral Corp
Common Industry Format Usability Testing of the Infinity	0.2	8/3/2000	Microvole General Colp.
Appendix A54 Test Execution Plan for Common Industry	0.2	8/3/2006	MicroVote General Corp
Format Dexterity Testing of the Infinity Voting Panel	0.2	0/3/2000	
Appendix A6 – Test Execution Plan for Ballot Text	1.2	1/9/2007	MicroVote General Corp.
Appendix A7 Test Execution Plan for Ballot Graphics	1.0	2/6/2006	MicroVote General Corp.
Appendix A8 Test Execution Plan for Equipment	1.0	2/6/2006	MicroVote General Corp.
Appendix A9 Test Execution Plan for Assign Equipment	1.1	3/3/2006	MicroVote General Corp.
Appendix B Carson Manufacturing Documents Election Management System	0.4	10/10/2008	MicroVote General Corp.
Appendix B-1 INFINITY VOTING PANEL Technical Reference Manual	0.8	5/9/08	MicroVote General Corp.
Appendix B-2 CARSON MANUFACTURING QUALITY ASSURANCE PROCEDURES Election Management	0.1	5/28/2006	MicroVote General Corp.
Appendix B3 – Infinity Firmware Functional Specifications	0.6	12/18/2007	MicroVote General Corp

Title	Version	Date	Author (Org.)
(cover) – Election Management System			
Appendix B-4 INFINITY COMMUNICATIONS	0.1	8/3/2007	MicroVote General Corp.
Appendix B-5 Infinity Encryption Algorithm Election	0.1	10/10/2008	MicroVote General Corp.
	1 /	5/0/08	MicroVote General Corp
Appendix C COTS SPECIFICATIONS EMS	1.4	0/9/00 0/15/2007	MicroVote General Corp.
System	1.1	0/10/2007	Microvole General Corp.
Appendix E Completed COTS Testing Forms	1.0	1/12/2007	MicroVote General Corp.
Appendix E COMPLETED COTS TESTING FORMS	1.0	1/12/2007	MicroVote General Corp.
Appendix E VOTING VARIATIONS Floation Management	1 5	0/22/2007	Miara/(ata Canaral Carp
System	1.5	0/23/2007	Microvole General Colp.
Appendix G COTS INVOICES AND CERTIFICATIONS	1.0	1/12/2007	MicroVote General Corp.
		0/45/0007	
Election Management System	1.1	8/15/2007	Microvote General Corp.
Appendix H ACP-20 OPTICAL SCANNER QUICK START	1.1	9/7/2007	MicroVote General Corp.
GUIDE Election Management System			
Appendix I ACP-20 OPTICAL SCANNER USER'S	1.1	9/7/2007	MicroVote General Corp.
MANUAL Election Management System			•
Appendix J SEIKO DPU-3445-20 PRINTER USER'S	1.1	9/7/2007	MicroVote General Corp.
MANUAL Election Management System			•
Appendix K SEIKO DPU-414 PRINTER USER'S MANUAL	1.1	9/7/2007	MicroVote General Corp.
Election Management System			
Appendix L GEMPLUS CARD READER/WRITER USER'S	1.1	9/7/2007	MicroVote General Corp.
Appendix N DOUBLETALK PC/LTUSER'S MANUAL	1 1	9/7/2007	MicroVote General Corp
Election Management System	1.1	3/1/2007	Microvole General Colp.
Appendix 0.3.5" BAY 7-IN-1 Flash Card Reader LISB 2.0	1 1	9/7/2007	MicroVote General Corp
Appendix O1 3 5" BAY 7-IN-1 Flash Card Reader USB 2.0	1.1	9/7/2007	MicroVote General Corp.
	1.1	3/1/2001	Microvote General Corp.
System			
Appendix O2 3 5" BAY 7-IN-1 Flash Card Reader USB 2 0	11	9/7/2007	MicroVote General Corp
USER'S MANUAL Election Management System		0/1/2001	
Appendix P INSTALLATION CHECKLISTS AND	1.1	9/7/2007	MicroVote General Corp.
SCHEDULES Election Management System			
Appendix P-1 INSTALLATION CHECKLIST Election	1.1	9/7/2007	MicroVote General Corp.
Management System			•
Appendix P-2 DATABASE CREATION CHECKLIST	1.1	9/7/2007	MicroVote General Corp.
Election Management System			
Appendix P-3 INFINITY PROGRAMMING CHECKLIST	1.1	9/7/2007	MicroVote General Corp.
Election Management System			
Appendix P-4 DELIVERABLE SCHEDULE Election	1.1	9/7/2007	MicroVote General Corp.
Management System		0/7/0007	
Appendix Q DEFECT TRACKING SYSTEM Election	0.3	9/7/2007	MicroVote General Corp.
Management System	4.0	0/00/0007	Misus)/sta Osus sus! Osus
System	1.6	8/26/2007	Microvote General Corp.
Appendix T PROGRAM SPECIFICATIONS Election	12	8/15/2007	MicroVote General Corp
Management System	1.2	0,10,2001	
Appendix U EMS Poll Worker's Manual	1.9	6/20/2008	MicroVote General Corp.
Appendix V Election Management System User Manual	2.6	11/21/2008	MicroVote General Corp.
Appendix W SAMPLE COUNTY INVOICE Election	1.1	9/7/2007	MicroVote General Corp.
Management System			1
Appendix X SOURCE CODE FILES LIST Election	1.1	9/7/2007	MicroVote General Corp.
Management System			
Appendix Y – Build and Installation Instructions – Election	2.3	12/1/2008	MicroVote General Corp.
Management System	<u> </u>		
Appendix Z Machine Technical Manual – Election	0.2	12/18/2007	MicroVote General Corp.
Management System	<u> </u>		
Appendix Z OMR-9002 Card Reader USER'S MANUAL	1.0	3/29/2007	MicroVote General Corp.

Title	Version	Date	Author (Org.)
Election Management System			
CERTIFICATION OF: VOTING MACHINE	no version	no date	MicroVote General Corp.
PROGRAMMER			
ECR/ECN 101 Part Number 0431164951	no version	4/21/2008	MicroVote General Corp.
EMS v.4.0 System Limitations	no version	12/1/2008	MicroVote General Corp.
File Name of Unit Compliance Status Comments	1.0	4/16/2007	MicroVote General Corp.
Implementation Statement Election Management System	1.1	2/20/2008	MicroVote General Corp.
INFINITY FIRMWARE TEST VERSION 9.56 RELEASE	no version	4/12/2007	MicroVote General Corp.
NOTES 4/12/07 WHC		.,,	
loginlog	no version	10/19/2007	MicroVote General Corp.
MicroVote General Corp.	1.0	1/12/2007	MicroVote General Corp.
Quality Assurance Procedures	0.1	5/28/2006	MicroVote General Corp.
Section 2.1 SCOPE Election Management System	1.1	8/15/2007	MicroVote General Corp.
Section 2.10 PERSONNEL DEPLOYMENT AND	1.1	8/15/2007	MicroVote General Corp.
TRAINING REQUIREMENTS Election Management			
System			
Section 2.11 CONFIGURATION MANAGEMENT PLAN	1.5	9/5/2008	MicroVote General Corp.
Election Management System			•
Section 2.12 QUALITY ASSURANCE PROGRAM Election	1.2	8/15/2007	MicroVote General Corp.
Management System			
Section 2.13 SYSTEM CHANGE NOTES Election	1.1	8/15/2007	MicroVote General Corp.
Management System			•
Section 2.2 System Overview – Election Management	1.9	11/21/2008	MicroVote General Corp
System			
Section 2.3 SYSTEM FUNCTIONALITY DESCRIPTION	1.2	8/15/2007	MicroVote General Corp.
Election Management System			
Section 2.4 SYSTEM HARDWARE SPECIFICATION	1.3	8/15/2007	MicroVote General Corp.
Election Management System			•
Section 2.5 SOFTWARE DESIGN AND SPECIFICATION	2.7	12/1/2008	MicroVote General Corp.
Election Management System			
Section 2.6 SYSTEM SECURITY SPECIFICATION	1.6	11/21/2008	MicroVote General Corp.
Election Management System			
Section 2.7 SYSTEM TEST AND VERIFICATION	1.1	8/15/2007	MicroVote General Corp.
SPECIFICATION Election Management System			
Section 2.8 SYSTEM OPERATIONS PROCEDURES	1.3	8/15/2007	MicroVote General Corp.
Election Management System			
Section 2.9 SYSTEM MAINTENANCE PROCEDURES	1.2	8/15/2007	MicroVote General Corp.
Election Management System			
Technical Data Package (TDP) TABLE OF CONTENTS	1.1	8/15/2007	MicroVote General Corp.
Election Management System			
Appendix B1 – INFINITY VOTING PANEL Technical	0.7	5/9/2008	Carson Manufacturing Co. Inc.
Reference Manual			
Appendix B3 – Infinity Firmware Functional Specifications –	0.5	12/18/2007	Carson Manufacturing Co. Inc.
Election Management System			
Infinity Encryption Algorithms	1.01	10/10/2008	Carson Manufacturing Co. Inc.
Carson Manufacturing Company, Inc. Proprietary and	no version	no date	Carson Manufacturing Co. Inc.
Confidential Notice			
ECN Request	no version	4/13/2008	Carson Manufacturing Co. Inc.
Engineering Change Notice 1330	no version	4/16/2001	Carson Manufacturing Co. Inc.
Engineering Change Notice 1408	no version	6/7/2005	Carson Manufacturing Co. Inc.
Engineering Change Notice 1413	no version	10/10/2005	Carson Manufacturing Co. Inc.
Engineering Change Notice 1420	no version	3/14/2006	Carson Manufacturing Co. Inc.
Engineering Change Notice 1424	no version	5/12/2006	Carson Manufacturing Co. Inc.
Engineering Change Notice 1437	no version	8/22/2007	Carson Manufacturing Co. Inc.
Engineering Change Notice 1438	no version	9/19/2007	Carson Manufacturing Co. Inc.
Engineering Change Notice 1449	no version	4/13/2008	Carson Manufacturing Co. Inc.
Engineering Change Notice 1450	no version	5/15/2008	Carson Manufacturing Co. Inc.
Getupdt Build Instructions	no version	9/19/2007	Carson Manufacturing Co. Inc.
Infinity Communication Specification	1.06	8/3/2007	Carson Manufacturing Co. Inc.
Infinity Firmware Design Specification	3.01	2/23/2006	Carson Manufacturing Co. Inc.
Infinity Revision C Engineering Change Notice Declaration	no version	1/23/2008	Carson Manufacturing Co. Inc.
InfUpdater 101 Build Instructions	no version	9/11/2007	Carson Manufacturing Co. Inc.

Title	Version	Date	Author (Org.)
ACP -20 Dual Sided Optical Mark Reader	1.1	4/15/2004	Chatsworth Data Corp.
Assy TOP-ACP20 RS Red FCC/CE 1 of 2	no version	3/13/08	Chatsworth Data Corporation
Assy TOP-ACP20 RS Red FCC/CE 2 of 2	no version	3/13/08	Chatsworth Data Corporation
Declaration of Conformity Regarding European directive	no version	2/12/2008	Chatsworth Data Corporation
204/18/EC			
Declaration of Conformity Regarding FCC Part15 subpart B	no version	3/10/2008	Chatsworth Data Corporation
READ ME FIRST (OMR ACP 20)	no version	no date	Chatsworth Data Corporation
Regulatory Datasheet OptiPlex GX520, OptiPlex GX520n	no version	3/14/2008	Dell, Inc.
Regulatory Datasheet Latitude D510	no version	3/7/2008	Dell, Inc.
Fair-Rite Part Data Sheet	no version	4/1/2008	Fair-Rite Products Corp
Part Number: 0431164951 (31 Round Cable Core	no version	4/1/2008	Fair-Rite Products Corp
Assembly)			
GemCore V1.21-Based Reader Reference Manual	1.0	1/12/2007	Gemplus
Chatsworth Data Corporation ACP-20 Dual Sided Optical	2.4	12/19/2007	Nemko USA, Inc.
Mark Reader EMC Test Report			
Engineering Change Notice (ECN) # 1023	no version	5/28/2008	RC Systems
Engineering Change Notice (ECN) # 1024	no version	5/28/2008	RC Systems
Engineering Change Notice (ECN) # 1025	no version	5/28/2008	RC Systems
Engineering Change Notice (ECN) # 1026	no version	6/5/2008	RC Systems
RC Systems DoubleTalk RC8650 Voice Synthesizer	no version	4/18/2007	RC Systems
Sharp Liquid Crystal Display Spec No. LC02Y20A Model	no version	11/24/92	Sharp Corporation
LM64K83			
DPU-414 Operation Manual	3 <sup>ra</sup> ed.	Dec 1998	Seiko Instruments, Inc.
User's Guide Thermal Printer DPU-3445-20	11 <sup>th</sup> ed.	Dec 2004	Seiko Instruments, Inc.
StarTech.com Spec Sheet (StarTech ID: 35FCREADBK)	no version	no date	StarTech
USB 2.0 Flash Card Reader	no version	9/12/2006	StarTech

#### Table 10 Other Software, Hardware and Materials

Testing Software, Hardware & Material	Description	Description of use in testing
Paper ballots or ballot cards	COTS Pre-printed data cards 256 position: 2615–STB 7/99 312 position: LP 2628 9/98 402 position: LP 2443-B, &	Paper ballot cards to record votes for the OMR
Pens and pencils	COTS Pencils and black, blue, red and green ink pens	Marking votes on paper data cards
Paper (81/2 x 11)	COTS Paper, Inkjet Printer	Central tally reports
Paper rolls	COTS Paper, Thermal Printer	Infinity open and close poll reports
ComUtil109	Vote simulation tool	Environmental operation simulating the casting of ballots
Multiple desktop and laptop PCs	A variety of PCs running Microsoft operating systems	Supplied by iBeta: Preparation, management and recording of test plans, test cases, reviews and results
Repository servers	Separate servers for storage of test documents and source code, running industry standards operating systems, security and back up utilities	Supplied by iBeta: Documents are maintained on a secure network server. Source code is maintained on a separate data disk on a restricted server
Microsoft Office 2003	Excel and Word software and document templates	Supplied by iBeta: The software used to create and record test plans, test cases, reviews and results
SharePoint 2003	TDP and test documentation repository	Supplied by iBeta: TDP and test documentation repository and configuration management tool

Testing Software, Hardware & Material	Description	Description of use in testing
Other standard business application	Internet browsers, PDF viewers	Supplied by iBeta: Industry
software	email	standard tools to support testing,
		business and project
		implementation
Center 325 Mini Sound Level Meter	IEC 651 Type 2 handheld sound level meter	Supplied by iBeta: Measure decibel level
Visual Studio 2003 v.7.1.3808	Build and source code review	Supplied by iBeta: View source
(Microsoft)	Integrated Development	code review
	Environment	
RSM v.6.92	C, C++, Java & C# static analysis	Supplied by iBeta: identify line
(M Squared Technologies)	tool	counts and cyclomatic
		complexity
Beyond Compare 2 v.2.4.3 (Scooter	Comparison utility	Supplied by iBeta: used to
Software)		compare file/folder differences
	Comparison utility	compare file/folder differences
Hash.exe v.7.08.10.07.12 (Maresware)	Hash creation utility	Supplied by iBeta: used to
		generate hash signatures for
		Trusted Builds
Trusted Build Software	Description	Description of use in testing
Secure Erase (CMRR) HDDErase v3.3	(NIST 800-88) Secure Erase	Supplied by iBeta: used to clean
Microsoft NET Framework v1 1	Development framework and	COTS: used to compile the EMS
NET 1 1 SP1 for above (KB867460)	compiler	COTO. daed to complie the Lino
Visual Studio 2003 SP1	Development framework and	COTS: used to compile the EMS
	compiler	
Franson Serial Tools SDK v2.01g	3 <sup>rd</sup> party libraries	COTS: used to compile the EMS
ComponentOne Studio Enterprise	3 <sup>rd</sup> party libraries	COTS: used to compile the EMS
C1 C1Pdf dll v1 1 20053 42	3 <sup>rd</sup> party DLI	COTS: used to compile the EMS
C1.C1PrintDocument.dll	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
v1.0.20053.287		
C1.Win.C1Command.dll	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
v1.0.20052.128		
C1.Win.C1FlexGrid.dll v2.5.20053.220	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
C1.Win.C1Input.dll v1.0.20052.99	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
C1.Win.C1List.dll v1.1.20052.78	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
C1.Win.C1PrintPreview.dll	3 <sup>ra</sup> party DLL	COTS: used to compile the EMS
v1.0.20053.287		
C1.Win.C1Report.dll v2.5.20053.188	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
C1CommandConverter.dll	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
V1.0.20023.2		
C1.Common.dll v1.0.20052.118	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
		COTS: used to compile the EMS
v1.0.0.0	3 party DLL	COTS: used to complie the EMS
Interop.lasHelperLib.dll v1.0.0.0	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
Interop.SpeechLib.dll v1.0.0.0	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
Microsoft.mshtml.dll v7.0.3300.0	3 <sup>rd</sup> party DLL	COTS: used to compile the EMS
SerialNET.dll v2.0.0.1	3 <sup>ra</sup> party DLL	COTS: used to compile the EMS
Borland C++ Development Suite v.	Development framework and	COTS: used to compile Infinity
5.02	compiler	
Visual Studio 6 Professional Edition	Development framework and	COTS: used to compile Infinity
SP 6 (VB6)	compiler	
Lgb1.chr, Lgb2.chr, Lgn1.chr, Lgn2.chr	Borland COTS font files	COTS: used to compile Infinity

Testing Software, Hardware & Material	Description	Description of use in testing
Smb1.chr, Smb2.chr, Smn1.chr,		
Smn2.chr		
Greenleaf CommLibTM v. 5.1	3 <sup>rd</sup> party libraries	COTS: used to compile Infinity
DataLight Rom-DOS v6.22	3 <sup>rd</sup> party libraries	COTS: used to compile Infinity
Pkzip v2.04g	3 <sup>rd</sup> party libraries	COTS: used to compile Infinity
OROS Low Level Interface Library	3 <sup>rd</sup> party libraries	COTS: used to compile Infinity
v1.0		
WGCRANSI.DLL	3 <sup>rd</sup> party DLL	COTS: used to compile Infinity
DataLight Rom-DOS v6.22		
System Identification	Description	Description of use in testing
MicroVote System ID Tool CD	MicroVote system identification	Confirm system identification
	tool CD	tool functions as described in
		the Appendix AA
MediaGear Allcards II memory card	Memory card reader	COTS: used to read the flash
reader		card for system identification

# 4 Voting System Overview

The MicroVote EMS voting system v.4.0 is a voting system consisting of the:

- EMS software (EMS software), a ballot preparation and central count software application developed by MicroVote General Corporation;
- Infinity Voting Panel, a DRE polling place device manufactured by Carson Manufacturing with audio ballot capabilities provided by the DoubleTalk, a COTS text-to-speech audio device manufactured by RC Systems; and
- Chatsworth ACP2200 OMR, a COTS scanner, manufactured by Chatsworth Data Corporation.

The EMS software Ballot Preparation functionality includes the Installation Database and the Election Database. In order to modify these databases the user selects either the Installation or Election mode. Election Databases can be created from either mode. The Installation Database contains standard data that is unlikely to change from election-to-election. The Election Database contains data for one specific election. The standard default data is generated by the Installation Database. These standard defaults can be used or overwritten for a specific election in the Election Database.

The Infinity Voting Panel is a DRE voting device that presents a visual ballot on an LCD panel with a text-to-speech voice synthesized audio ballot option. Non-electronic methods, such as mouth sticks, head sticks or use of the foot provide non-manual vote entry. Voters record a candidate or referendum selection by pushing a button mapped to a selection location. Access to poll worker administrative functions is controlled by smart card insertion (Start and Tally cards) and password entry. Access to a voting session is performed by the poll worker via smart card insertion (Vote and N Vote cards).

The EMS software Central Count functionality supports vote capture and tabulation of paper ballots (standard data cards) read by the Chatsworth COTS central count dual sided ACP2200 OMR. This software consolidates and reports Infinity Voting Panel and optical scan election results. Election Summary, Precinct Summary and Audit Log reports can be displayed and printed.


# 4.1 Election Management System- Pre Voting Capabilities

## 4.1.1 MicroVote Election Management System

The EMS software pre-voting capabilities include the system security, administration, management of the Installation and Election Databases, preparation of absentee and Infinity ballots, and preparation of election materials and Infinity programming.

Administrative capabilities include.

- Managing EMS Administrative Security
  - o Create, modify and delete EMS users
  - Assign Elections and Security Access Levels
  - Reset passwords

Security capabilities include.

- Accessing the EMS software
  - Restriction of access based on Security Access Levels
- Audit logging
  - EMS software access
    - o Changes to the Installation and Election Databases
    - Writing of election materials and election installation

Installation checksum validation of data transfer to the Infinity via the interface connector
 Ballet Preparation canabilities include:

Ballot Preparation capabilities include:

- Create, modify and delete Installation Database, standard data, including:
  - o Jurisdiction and county information;
  - Political parties (maximum 10), precincts (with optional voter registration), vote types (machine, absentee and provisional);
  - o Standard ballot text including instructions, headers and footers;
  - o Equipment use/assignment (tracked by serial number to precinct/polling location); and
  - Entry of English and Spanish versions for visual and audio ballots
  - Create, modify and delete Election Database, election specific data, including:
    - Use or overwrite standard data from the Installation Database;
    - Election details (election type, date, report naming, straight party voting);
    - o Offices (vote for # and secondary vote limits) and referendums;
    - o Candidates, running mates, and associated descriptive text;
    - Election access controls and election reports;
    - Infinity ballots and ballot styles (maximum of 600 selection locations)
    - Absentee ballots and ballot styles (standard data cards containing 256, 312, and 402 selection locations);
    - Activations for the assignment of Infinity and Absentee ballots and ballot styles for General and Primary Elections;
    - o Election reports, ballot, and ballot report viewing and printing; and
    - Entry of English and Spanish versions for visual and audio ballots;
- Writing and installation of election specific materials:
  - o Smart cards written for early voting, provisional and Election Day voter access, and;
  - Election Database is installation on the Infinity Voting Panel.

# 4.2 Polling Place- Voting Capabilities

## 4.2.1 MicroVote Infinity Vote Panel

The Infinity Voting Panel consists of a monochrome LCD display, with selection buttons for 32 locations. In voting mode the display is organized as a two-column ballot with 15 selection locations (buttons) on each side of the display. A 16<sup>th</sup> location button, at the bottom of each column, is used for backwards and forward page navigation. After a voter has completed and reviewed all selections, they submit their vote by selecting the "Cast Vote" button. Lights associated with this button identify when it is active. Capabilities include the system security, system readiness, poll opening, voting, poll closing, report printing and extraction of results.



Security capabilities include.

- Accessing the Infinity:
  - Pre and post vote administration requires smart cards (Start and Tally) and password
     Voting session access requires smart cards (Vote and N Vote)
- Ballot checksum validation;
- Multiple stored copies of cast vote records and tabulations;
- Displays of current status, public and protective counter, memory capacity and battery capacity;
- Audit logging:
  - Administrative tasks performed by the poll worker; and
  - Events between power on and power off, except voter selections.

Administrative capabilities include.

- Pre-vote validation of system readiness:
  - Test of card reader, selection buttons, lights and display;
  - Ballot review; and
    - View/print a zero proof report;
- Opening the polls;
- Ballot access and selection for presentation in an visual and audio format;
- Closing the polls; and
- Printing and extracting the tally, vote record (ballot image) and audit reports.

Voting capabilities include:

- Presentation of ballots for supported voting variations;
- Voter selection of candidates and contest options;
- Voter ballot casting; and
- Vote recording.

# 4.3 Election Management System- Post Voting Capabilities

## 4.3.1 MicroVote Election Management System

The Election Management System software consolidates and reports Infinity and optical scan election results. The software supports the vote capture and tabulation of paper ballots (ballot data cards) manually fed, one at a time, into the Chatsworth COTS central count dual sided ACP2200 OMR optical scanner. Central count capabilities include the system security, system readiness for optical scanning of absentee ballots, tabulation/reporting of scanned absentee ballots, importation of Infinity tally results, and presentation/printing of summary and audit log reports.



Security capabilities include.

- Accessing the EMS software
  - Restriction of access based on Security Access Levels
- Infinity serial number check to prevent duplication
- Prohibition of changes to Tally Card, Infinity direct or OMR direct vote inputs
- Audit logging
  - EMS software access
  - Reading of results into the election database

Administrative capabilities include.

- Pre-scanning validation of system readiness to read absentee ballots;
- Initialization validation and printing a zero proof;

Capabilities for consolidation and reporting of votes from various sources include:

- Election Day precinct counts from the Infinity panels
  - o Read results from the Tally Cards or direct connection to the Infinity panel
  - o Reporting of read status by Infinity serial number
- Absentee ballot cards hand-fed through the COTS optical scanners
  - Conversion and reporting of marks read by the scanner
- Early voting counts extracted directly from the Infinity panels
- Backup manual vote entry from Infinity paper tally reports, hand counts or other appropriate vote tabulation sources
- Tabulation and reporting of votes by precinct
- Election and precinct report summaries provide:
  - Office detail and reporting by vote type (machine, absentee, provisional);
  - Tracking of the number of precincts reported and unreported;
  - Tracking of voter turnout; and
  - Ballots submitting straight party votes
- Consolidated reporting of under and over votes

# 5 Certification Review and Test Results

The results and evaluations of the PCA and FCA reviews tests are identified below. Detailed data regarding the Acceptance/Rejection criteria, reviews and tests are found in the appendices.

- Appendix A identifies all certification test requirements traced to specific Test Cases
- Appendix B identified the PCA Source Code Review Acceptance/Rejection criteria
- Appendix C identifies the PCA TDP Document Review Acceptance/Rejection criteria
- Appendix D identifies all FCA Testing Acceptance/Rejection criteria
- Appendix E identifies the PCA and FCA Discrepancies reported during review and testing

iBeta followed their standard review and test methodology in executing the test cases. A trace of the voting variations and system functions supported by the MicroVote EMS voting system v.4.0 is found in Appendix D.

# 5.1 PCA Source Code Review

iBeta Quality Assurance reviewed the MicroVote internally developed coding standards for the software submitted in section 3 in certification of the MicroVote EMS version 4.0 and Infinity version 4.0. Review criteria were customized to incorporate the requirements of *VVSG 2005* Vol. 1 Sect 5.2 and Vol. 2 Sect. 5, language specific conventions (C, VB.net, VB 6, and SQL) and the internally developed coding standards as referenced. The specific review criteria for this test effort and the documentation of the building of the executable code from the reviewed source code (Witness Build) are identified in Appendix B.

iBeta tracked a number of metrics obtained from the results of the source code review during this certification test effort:

- The number of comment related discrepancies (considered to have a higher impact on software maintainability but a lower impact on system function),
- The number of discrepancies that may impact software function, and
- An overall discrepancy-to-eLOC (executable Lines of Code) percentage.

Discrepancies are written against a module which may be defined as either a file or a function within a file and, as such, each discrepancy may represent one or more instances of non-compliance with a *VVSG 2005* requirement.

## 5.1.1 Infinity 4.0 – C and Visual Basic 6.0 Source Code Review Results

Infinity 4.0 consists of a Visual Basic 6.0 InfUpdated version 1.0.1 and the following minor versions of Borland C source code:

- Infinity Panel v.9.67
- Infinity Encrypt v.2.14
- Infinity GetUpdtr v.2.16

A total of 596 files/functions were reviewed and all instances of non-conformance to the *VVSG 2005* were validated to be closed. A total of 238 discrepancies were identified and validated to be resolved. Those 238 discrepancies encompassed 371 instances of *VVSG 2005 requirements* identified as not being met at the initial source code review.

#### **Comment Related Instances/Discrepancies**

Each iBeta source code review requires source code adherence to 43 *VVSG 2005* requirements. Of those, 14 requirements address formatting and comments. Of the total 371 *VVSG 2005* requirement non-compliances, 287 or 77.4% were rejected against these 14 comment-related requirements. All instances were noted in discrepancies; the comments were addressed by MicroVote, reviewed by iBeta, and validated to be closed.

#### **Software Related Instances/Discrepancies**

In reviewing the source code for the remaining 29 software related requirements, iBeta identified 84 non-compliance or 22.6% of identified issues. All instances were noted in discrepancies, addressed by MicroVote, reviewed by iBeta, and validated to be closed.

#### **File Function Line Counts/Discrepancies**

The file function line count results identified 14 files or functions that exceeded 240 eLOCs with the justification provided that these files/functions contained only variable initialization and had a cyclomatic complexity (number of execution paths within the file/function) of only 1.

#### Discrepancy-to-eLOC Percentage

At the file/function and discrepancy level, the discrepancy-to-eLOC (executable Lines of Code) percentage was calculated as 238 discrepancies in 29,754 eLOCs as 0.8%. This is well within the expected target benchmark of 1%.

The source code was found to meet the requirements of the *VVSG 2005.* The data supporting this review are found in Appendix B.

## 5.1.2 EMS 4.0 VB.Net Source Code Review Results

EMS 4.0 consists of a VB.Net and SQL (see next section for SQL results). A total of 1976 files/functions were reviewed and all instances of non-conformance to the *VVSG 2005* were validated to be closed. A total of 540 discrepancies were identified and validated to be resolved. Those 540 discrepancies encompassed 1102 instances of *VVSG 2005* requirements identified as not being met at the initial source code review.

## **Comment Related Instances/Discrepancies**

Of the total 1121 VVSG 2005 requirement non-compliances, 852 or 76% were rejected against the 14 comment-related requirements. All instances were noted in discrepancies; the comments were addressed by MicroVote, reviewed by iBeta, and validated to be closed.

#### Software Related Instances/Discrepancies

In reviewing the source code for the remaining 29 software related requirements, Ibeta identified 269 non-compliances or 24% of identified issues. All instances were noted in discrepancies, addressed by MicroVote, reviewed by iBeta, and validated to be closed.

#### File Function Line Counts/Discrepancies

The file function line count results identified 14 files or functions that exceeded 240 eLOCs with the justification provided that these files/functions contained only variable initialization and had a cyclomatic complexity (number of execution paths within the file/function) of only 1.

#### Discrepancy-to-eLOC Percentage

At the file/function and discrepancy level, the discrepancy-to-eLOC (executable Lines of Code) percentage was calculated as 540 discrepancies in 42,496 eLOCs as 1.27%. This slightly exceeds the expected target benchmark of 1%. The entire voting system combined does meet the target benchmark.

The source code was found to meet the requirements of the *VVSG 2005.* The data supporting this review are found in Appendix B.

## 5.1.3 EMS 4.0 SQL Source Code Review Results

EMS 4.0 consists of a VB.Net and SQL (see previous section for VB.Net results). A total of 213 files/functions were reviewed and all instances of non-conformance to the *VVSG 2005* were validated to be closed. A total of 98 discrepancies were identified and validated to be resolved. Those 98 discrepancies encompassed 336 instances of *VVSG 2005* requirements identified as not being met at the initial source code review.

#### **Comment Related Instances/Discrepancies**

Of the total 336 VVSG 2005 requirement non-compliances, 322 or 95.8% were rejected against the 14 comment-related requirements. All instances were noted in discrepancies; the comments were addressed by MicroVote, reviewed by iBeta, and validated to be closed.

#### Software Related Instances/Discrepancies

In reviewing the source code for the remaining 29 software related requirements, Ibeta identified 14 non-compliances or 4.2 of identified issues. All instances were noted in discrepancies, addressed by MicroVote, reviewed by iBeta, and validated to be closed..

### File Function Line Counts/Discrepancies

The file function line count results identified no functions that exceeded 240 eLOCs.

### Discrepancy-to-eLOC Percentage

At the file/function and discrepancy level, the discrepancy-to-eLOC (executable Lines of Code) percentage was calculated as 98 discrepancies in 13,835 eLOCs as 0.71%. This is well within the expected target benchmark of less than 1%.

The source code was found to meet the requirements of the *VVSG 2005.* The data supporting this review are found in Appendix B.

## 5.2 PCA TDP Document Review

iBeta reviewed all MicroVote submitted TDP documents of the Election Management System voting system against the Vol. 2 Sect. 2 requirements of the VVSG 2005. (See Section 7.3.2 for a list of the reviewed documents.) Each submitted document was reviewed against the specific section of the VVSG applicable to that category of document. If the required content was present in one or more submitted documents results were summarized and the requirement was accepted. If it was not present the requirement was rejected. On the initial review 23 document defects and 3 informational issues were noted. MicroVote submitted updated documents addressing these.

The MicroVote Configuration and Quality Policies were reviewed per the requirements of VVSG 2005 Vol.2 Sect. 2.11, 2.12 and Vol.1 Section 8.3 through 8.7 and 9.2 through 9.6, and recorded in the *PCA TDP Document Review* sheets. Instances where the MicroVote test deliverables did not conform to their state policies were noted in the *PCA and FCA Discrepancy Report* as Informational issues.

Appendix C contains the specific PCA Document Review criteria for the TDP.

## 5.2.1 PCA TDP Document Review Results

The documents of the MicroVote Technical Data Package have been found to meet the requirements of Vol.2 Sect. 2 of the VVSG 2005. The data supporting these review results are found in Appendix C. The defects and issues encountered during the review, their resolution and validations are identified in Appendix E.

# 5.3 FCA Functional and System Integration Testing

iBeta executed a review of the MicroVote EMS voting system v.4.0 functionality to the requirements of the VVSG 2005. (See Appendix A) Tests covering system functional requirements were incorporated into three standard system level integration test cases of end-to-end mock elections. Two of the tests were General Elections and one was a Primary. (In the EMS voting system a Closed Primary and an Open Primary with public choice function in exactly the same manner.) Election databases and ballots were prepared, installed, voted and reported exercising the input controls, error content, and audit message content of the voting system. The elections were programmed, voted and tallied to ensure ballot formats were accurately displayed, votes are accurately and reliably cast for the voting variations and functionality supported by the voting system. Effectiveness of security access controls, system integrity, availability, confidentiality and audit accountability were examined. The content and clarity of user instructions and processes was reviewed for usability. A General and a Primary election included

visual and audio Spanish and English ballots. Votes were cast by testers with correctable visual disabilities to confirm that ballots can be accessed visually, aurally or with non-electronic dexterity aids in Spanish and English. Testing verified availability of screen contrast settings, ballot display settings, and required audio ballot controls. Content and accuracy of the Spanish translation was not tested. States and jurisdictions need to validate the content and accuracy of all translations.

The specific voting variations and system functions tested in the General 1, 2 and Primary 1 Test Cases are identified in the Appendix D Test Methods. During the FCA Functional and System Level Testing numerous documentation and functional defects were noted. The functional discrepancies opened and closed in each test case are identified in the Appendix D Test Method. MicroVote resolved all identified defects. As appropriate, iBeta performed a document review and/or functional regression test. All regression testing was executed as an end-to-end system level test.

The testing was conducted on the system configuration identified in Section 3. The individual test iterations include identification of the specific software and firmware build versions in the Appendix D Test Methods.

After all hardware and software testing was completed a final trusted build was performed with the release versions of the software and firmware (See Appendix F). This build was installed on the hardware configuration that had completed environmental, accuracy and reliability testing. A full system integration test was performed on this final system configuration (See Section 7.2.1.4 General 2 Test Method).

## 5.3.1 Evaluation of Functional and System Integration Testing

Upon completion of all iterations of the Functional and System Level test cases, the MicroVote EMS voting system was found to meet the Functional and System Integration requirements of the VVSG 2005. Appendices A and D provide specific information on the FCA Functional and System Integration Testing. The defects encountered, their resolution and validations are listed in Appendix E

# 5.4 FCA Security Review and Testing

iBeta's security specialist, a Certified Information System Security Profession, executed a security analysis of the applicable TDP documents of the MicroVote EMS voting system v.4.0 to identify the threat model. First the analysis identified VVSG 2005 security requirements that were currently addressed in the standard testing, source code and document reviews. The analysis next identified any unique voting system specific tests, source code and document reviews that were needed. The tests, source code or documents reviews were traced to the VVSG 2005 requirement in the FCA Security Review and Testing table. The results of the standard tests and reviews were recorded in the applicable FCA Functional and System Integration Testing, PCA Source Code Review or the PCA Document Review. The unique tests and reviews were documented in the FCA Security Review and Testing table. This documentation included the steps, acceptance and rejection criteria, and results. Appendix D contains the FCA Security Review and Testing table and the specific Test Methodology. During the FCA Security Review and Testing 2 documentation and 2 functional defects were noted. The specific discrepancy numbers are identified in the Appendix D Security Review and Testing Method.

In order to comply with the security test requirements identified in Vol.2 Sect. 6.4 of the VVSG 2005, iBeta approached security testing of the MicroVote EMS voting system by first creating test scenarios which discounted the exposure to risk and excluded physical security procedures. However, in establishing acceptance and rejection criteria, iBeta assessed the potential exposure to risk and included physical security procedures as an acceptable security control, per the requirements of Vol. 1 Sect. 7.3 of the VVSG 2005. To assess if an access control was effective iBeta considered the degree to which one or more of the following security controls was present: physical security procedures, password protection, detection in an audit, technical expertise required, obfuscation of sensitive material, and encryption of sensitive material. In determining potential exposure to risk the security specialist considered access from the user and if the exposure was from a trusted user or non-trusted

user. Systems were accepted as meeting the security requirements of the VVSG 2005 if the security controls present were deemed effective to address the identified risk.

Testing was conducted on the system configuration identified in Section 3. The individual test iterations include identification of the specific software and firmware build versions in the Appendix D Test Methods.

## 5.4.1 FCA Security Review and Tests

The MicroVote EMS voting system was found to meet the requirements of the VVSG 2005. Appendices A, B, C, and D provide specific information on the results of the FCA Security Review and Testing. The defects encountered during the review, their resolution and validations are listed in Appendix E.

# 5.5 FCA Accuracy Testing (Accuracy, Reliability, Volume, & Stress)

The accuracy requirements of the VVSG 2005 are addressed in all test cases. Any time a test required an election to be created, installed, voted, and/or reported the accuracy of the MicroVote EMS voting system v.4.0 was being tested.

The FCA Accuracy Testing is specifically the Data Accuracy testing called out in vol.2 section 4.7.1.1. This is a test performed in conjunction with the Temperature and Power Variations Test (v.2 section 4.7.1) and Reliability testing (v.2. section 4.7.3).

## **Data Accuracy Testing**

The VVSG 2005 stipulates that a voting system fails if one error occurs before recording/reading 26,997 consecutive ballot positions correctly. A voting system must record/read 1,549,703 (or more) consecutive ballot positions correctly. If there's one error with more than 26,997 ballot positions but less than 1,549,703 correctly read, the test can be continued, with testing until another 1,576,701 consecutive ballot positions are counted without error (i.e. 3,126,404 with one error).

#### **Temperature and Power Variations Testing & Reliability Testing**

The VVSG 2005 stipulates that non-COTS precinct and central count systems must execute Data Accuracy testing in a chamber while operating for 48 hours in temperatures between 50° F and 95° F at varying voltage (see Appendix D Test Method). Reliability required a minimum operation of 163 hours. February 6, 2008 Interpretation 2008-01 was issued. It identified the number of hours multiple voting systems must accumulate. In the case of MicroVote this was 4 units run for 48 hours through Temperature and Power variations cycles and 16 hour ambient. Operation included panel programming, readiness, automated ballot generation, and reporting. The panels remained powered during test administration.

#### Infinity Voting Panel DRE

Testing incorporated manual voting and an automated vote simulation on four Infinity Voting Panels. MicroVote provided two versions of code. Both versions were source code reviewed and built by iBeta. A comparison of the code confirmed the only difference was to permit use of the simulator. The second version of code was only used for VSTL testing to permit running of a script that simulates the card activation and pressing of the buttons. In the code review iBeta confirmed that from this point forward the paths were identical. The simulation tool was verified to confirm it addressed precinct and ballot selection, ballot display, vote selection and casting the ballot. The tool was also validated for accuracy against a predicted result. Manual testing of the buttons and card activator is still a prerequisite for prevote setup and testing for the election used with the simulator. Some volume and stress variables were incorporated into the test, including ballot sizes near system maximums, maximum number of parties, and the number of ballots cast exceeding the typical election levels. The manual votes incorporated 10% of the required ballot positions. There were five separate voting sessions. Session 1 and 5 encompassed manual votes only. Sessions 2 through 4 included both manual and simulated votes. Each manual vote session incorporated 2% of the required ballot positions. The simulation was an external script run on a laptop that was connect to the Com Port of a panel. The simulator incremented each time it sent the vote script instruction to the panel. Tallies were run at the end of the first and fifth session. The independent record of script sends was recorded in the test case. Tallies for each panel were transferred to the central count and compared to the predicted results identified in the test case

(i.e. the manually entered votes combined with the simulation votes). The tally for sessions 1 through 4 matched the predicted results of the 4,248,720 ballot positions without error (10,116 ballots). The tally for session 5 correctly reported the votes but one vote on panel s/n 3630 was reported in precinct 16 instead of precinct 14. The manual tester stated that she may have made an error in her selection of the precinct on one vote. Given the accuracy of the test up through session 4 it is likely that the vote cast in the incorrect precinct was due to human error in the manually entered votes, but this could not be verified. Without verification of tester error, the one error in session 5 remains in the test record. The Data Accuracy results were accepted, because the total of 4,265,520 ballot positions exceeded the requirement of 3,126,404 ballot positions with one error.

While all units completed the test, panel s/n 3628 failed the post-test Operational Status Check. (Details are identified in Appendix E #106 and #107.) Diagnosis of the failures revealed that the four panels submitted for testing were older demonstration models that did not include six Engineering Change Notices (ECN) incorporated in current production. MicroVote immediately submitted the ECNs (see section 8 of the *MicroVote General Corporation Election Management System (EMS) Voting System v. 4.0.0 VSTL Certification Test Plan, v.4.0*). Failure to complete the Operation Status Check resulted in rejection of the Reliability test. iBeta, in consultation with Wyle engineers, concluded that the changes did not effect the Data Accuracy results.

The initial run of this test occurred prior to issuance of Interpretation 2008-01. The Reliability regression test was run after. This resulted in a test plan change. (See the Accuracy DRE Test Method of the *MicroVote General Corporation Election Management System (EMS) Voting System v. 4.0.0 VSTL Certification Test Plan, v.4.0*) MicroVote provided four current production models for the regression Reliability test. In order to assess reliable operation an automated vote simulation was run using the same test election database and the automated vote simulation on four current production Infinity Voting Panels. Session 1 through 4 were executed in the chamber under temperature and power variations for 48 hours. Session 5 ran an additional 16 hours at ambient. The Infinity Voting Panel successfully completed the test and the operational status check. Tallies were run and transferred to the central count. A total of 15,610 ballots were cast, including 6,556,200 ballot position with no errors.

#### Chatsworth ACP2200 OMR Scanner

A separate accuracy test was conducted for the central count ACP220 OMR scanner. As the ACP220 OMR is COTS hardware it was exempted from the Temperature and Power Variations Test (v.2 section 1.7.1.1) the Accuracy and Reliability testing was conducted at ambient office temperature. The test variables included a maximum size ballot card (402 ovals) with 11 contests and 35 candidates per contest (385 Ballot Positions per Ballot). A total of 4026 ballots were supplied by MicroVote. These had been marked by hand in pencil. Ballots were inserted two times in different orientations. The test was executed three times. The initial test was halted due to a failure to record scanned cards into the EMS. (Details are identified in Appendix E #114.) A new version of the EMS software was submitted and after resolution of the issue was validated, a second test was halted upon multiple random ballot misreads occurred. (Details are identified in Appendix E #115). The ACP2200 OMR hardware was returned to the Chatsworth for diagnosis. No problems were identified except for a bent pin. The scanner was returned to Beta with two additional scanners. The ballot batch that had been identified as problematic was scanned on all three units. All three reported random misreads. The problem ballot batch was forwarded to MicroVote. The result of this examination was for MicroVote to retest and revise their specification for ballot marking devices. New ballots were tendered by MicroVote which complied with the specification for black ink. iBeta marked 10% of the cards with BIC 0.7mm #2 lead pencils. All ballots were successfully read.

The testing was conducted on the system configuration identified in Section 3. The individual test iterations include identification of the specific software and firmware build versions in the Appendix D Test Methods.

## 5.5.1 FCA Accuracy Tests

The MicroVote EMS voting system was found to meet the VVSG Vol. 1 Sect. 2.1.2, 4.1.1, 4.1.2.13, and 4.3.3 requirements. Appendices A and D provide specific information on the Accuracy Testing. The issues encountered during testing are identified in Appendix E.

# 5.6 FCA Characteristics Testing (Recovery, Accessibility, Usability & Maintainability)

iBeta created a test election that included audio, visual, English and Spanish ballots. Testing was executed using manual and non-manual input. Usability testing examined the functional capabilities addressing alternative languages and cognitive, perceptual, interaction, and privacy issues identified in VVSG Vol.1 Sect. 3.1. Accessibility testing examined the functional capabilities addressing visual, audio, dexterity, and mobility to confirm that manual and non-manual audio, visual, English and Spanish ballots could be cast privately and independently on the Infinity Voting Panel as identified in VVSG Vol.1 Sect. 3.2. Testing verified the functionality of screen contrast settings, ballot display settings, and required audio ballot controls. All test conditions were in an ambient office environment. The Maintenance procedures outlined in the TDP were executed in conjunction with an examination of the physical characteristics and attributes of the Infinity Voting Panel to confirm that they conformed to the requirements identified in VVSG Vol.1 Sect. 4.2 and 4.3. A document review of the MicroVote submitted usability testing was performed to confirm it complied with Interpretation 2007-03 of VVSG Vol. 1 Sect. 3.1.1. During Accessibility Testing 2 functional defects were noted. MicroVote resolved all identified defects.

It should be noted that Interpretation 2008-06 was released subsequent to completion of certification testing. This effectively removed the requirement for a central count scanner two hour back-up power supply in favor of requirements for a graceful shut down. The COTS back-up power supply specified and tested conformed to the more rigid Interpretation 2008-02, which far exceeds the requirements of Interpretation 2008-06.

The testing was conducted on the system configuration identified in Section 3. The individual test iterations include identification of the specific software and firmware build versions in the Appendix D Test Methods.

# 5.6.1 FCA Characteristics Tests (Recovery, Accessibility, Usability & Maintainability)

The MicroVote EMS voting system was found to meet the Recovery, Usability, Accessibility, Maintainability and Characteristics requirements of the VVSG 2005. Appendices A and D provide specific information on the Characteristics (Maintainability, Usability and Accessibility) Testing. The defects encountered during the review, their resolution and validations are identified in Appendix E

# 5.7 FCA Hardware Environmental Testing

The Infinity Voting Panel, Chatsworth ACP2200 Dual-Sided OMR COTS scanner and the EMS Dell PC and Laptop incorporate the vote scanning, counting and DRE voting equipment of the MicroVote EMS voting system.

iBeta performed an examination of the Chatsworth ACP2200 Dual-Sided OMR and EMS Dell PC and Laptop against the system specifications to confirm documented evidence of COTS equipment and operation per *VVSG 2005* Vol.1 Sect. 4.1.2 and Interpretation 2007-05. iBeta confirmed that they had FCC Class 15B and CE Marks affixed to each unit indicating that the product has been certified to meet these requirements and the COTS manufacturer's Declaration of Conformity confirming the manufacturer compliance claims.

As the *VVSG 2005* requires DRE's to include audio functionality the environmental tests which require performance while the unit is operating must include audio operations. The Environmental Operating Tests must therefore include both visual and audio ballot operations. As the DoubleTalk audio unit and visual vote simulator required use of the same external port on the Infinity Voting Panel it was not possible to use the vote simulator for simultaneous audio operation. Operating tests necessitated execution in a vote simulation mode and execution in an audio operating mode. Vote simulation was provided by the method described in the Accuracy Test using a ballot with two contests. Audio operation was generated by inclusion of a ballot referendum that would playback for 10 minutes (Interpretation 2007-05).

Wyle Laboratories' personnel reviewed and assessed all past test results and provided iBeta with the following recommendation for testing:

- Test WSG 2005 V.1: 4.3.8 Safety as the Safety Standard the unit was previously tested to is obsolete;
- Test WSG 2005 V.1: 4.1.2.9 Electromagnetic Emissions –in audio and visual modes as the FCC test standard had been updated since 2006;
- Test all EMC in the Environmental Operating Audio mode, the EMC engineers assess that the execution of tests in audio mode provided sufficient validation for reuse of the results of EMC Environmental Operating Visual mode 2006 testing, including:
  - VVSG V.1: 4.1.2.4.a & b Electrical Supply
  - VVSG V.1: 4.1.2.5 Electrical Power Disturbance
  - o VVSG V.1: 4.1.2.6 Electrical Fast Transit
  - VVSG V.1: 4.1.2.7 Lightning Surge
  - VVSG V.1: 4.1.2.8 Electrostatic Disruption
  - VVSG V.1: 4.1.2.10 Electromagnetic Susceptibility
  - VVSG V.1: 4.1.2.11 Conducted RF Immunity
  - VVSG V.1: 4.1.2.12 Magnetic Fields Immunity
- For the VVSG V.1: 4.1.2.14 Environmental Control Transit and Storage tests:
  - Test Vibration MIL-STD-810D, Methods 501.2 and 502.2 Procedure I-Storage execution to validate a minor change (ECN 1408) to the spacers on the card reader.
  - Reuse Bench Handling MIL-STD-810D, Methods 516.3 Procedure VI, as a Pass on the Vibration test was sufficient validation for Wyle to reissue results based upon 2002 testing
  - Reuse High/Low Temperature Storage Non-Operating MIL-STD-810D, Methods 514.3 Category 1-Basifc Transportation Common Carrier
  - Reuse Humidity Storage Non-Operating MIL-STD-810D, Methods 507.2 Procedure I-Natural Hot Humid
- Test VVSG V.1: 4.1.2.13 Environmental Control Operating Environment (Temperature and Power Variation V2: 4.7.1) in conjunction with the Accuracy Test.

iBeta accepted Wyle's recommendation for testing and use of earlier valid test data and test results.

iBeta provided an operational status check that was performed by both on-site iBeta test staff and iBeta trained Wyle test staff. Detail of this check is provided the Appendix D Test Method.

Hardware failures were encountered during the Electrostatic Disruption and FCC Part 15 Class B tests. Wyle's notices of anomaly were documented in Discrepancies #116, 117, and 119. Utilization of a test chamber was needed for MicroVote to troubleshoot and initiate appropriate remedies. A request was sent to the EAC to authorize MicroVote to initiate this work on-site at Wyle. A qualified Wyle chamber engineer was provided for operation of the chamber, observation and communication of the results of the remedial actions performed by Carson Manufacturing on MicroVote's behalf. Wyle's notices of anomaly and the mitigation work performed are provided in their report. A link to this report is contained in Appendix D.

The testing was conducted on the system configuration identified in Section 3. The individual test iterations include identification of the specific software and firmware build versions in the Appendix D Test Methods.

## 5.7.1 FCA Hardware Environmental Tests

Wyle Laboratories provided iBeta with a test report validating that the Infinity Voting Panel had passed all VVSG Vol.1 Sect, 4.6 and 4.7 environmental hardware tested. iBeta reviewed and accepted the Wyle report. iBeta accepted the documented record of COTS equipment performance for the Chatsworth ACP2200 OMR scanner and Dell PC/Laptop per Interpretation 2007-05. Appendix D details specific information on the Hardware Environmental Testing. Any issues encountered during testing are identified in Appendix E.

# 5.8 FCA Telephony and Cryptographic Testing

iBeta inspected the MicroVote EMS voting system to confirm that it did not contain wireless technology or use of the public networks. The review was conducted on the system configuration identified in Section 3. Appendix D details the specific Test Methodology of the Telephony and Cryptographic Review.

## 5.8.1 FCA Telephony and Cryptographic Tests

The review confirmed that MicroVote EMS voting system is exempt from Telephony and Cryptographic Testing per the requirements of the VVSG Vol. 1 Sect. 6 & 7. Appendix D details the results of the Telephony and Cryptographic Review. No issues were encountered.

# 6 Opinions & Recommendations

iBeta Quality Assurance has completed the testing of MicroVote Election Management System voting system v.4.0. All testing prescribed by the test plan or amended test plan was performed as identified. Documentation of any divergence from the test plan was included in the test report. All identified voting system anomalies or failures were reported and resolved. The information provided in this report is an accurate representation of the certification test effort of the MicroVote Election Management System voting system v.4.0. It is our opinion that the report is complete.

Based upon the findings identified in Section 5 it is our opinion the acceptance requirements of Election Assistance Commission Voluntary Voting System Guidelines December 2005 and the MicroVote manufacture specifications have been met for the hardware, software and user documentation of the system configuration submitted for certification testing.

iBeta Quality Assurance recommends that the Election Assistance Commission certifies MicroVote Election Management System voting system v.4.0.

Carolyn E.

Carolyn E. Coggins QA Director – Voting iBeta Quality Assurance

# 7 APPENDICES: TEST OPERATION, FINDINGS & DATA ANALYSIS

Release of the *Voting System Test Laboratory Program Manual v.1.0* occurred subsequent to completion of all testing and preparation of v.1.0 of the test report. Appendix B of the manual identifies content in specific appendices. A trace is provided in section 1.4 to clarify the location of this specified content.

## 7.1 Appendix A: Certification Test Requirements

Appendix A identifies the test results to the Certification Test Requirement of the VVSG 2005. Requirements marked:

- Accept: met the VVSG 2005 requirement
- Reject: did not meet the VVSG 2005 requirement
- NA: the requirement is not applicable to the voting system type submitted for Certification Testing
- Pending: VVSG 2005 requirements that cannot be completed by the VSTL until after Certification
- Out of Scope: VVSG 2005 requirements which are performed by entities other than the VSTL

Optional requirements which apply to the voting system type but are not supported by the MicroVote EMS voting system are marked "Accept", with an explanatory comment. The reason for this is to provide a positive identification that iBeta reviewed the voting system for all applicable requirements, including this optional functionality and confirmed non-support. (Example: The Infinity Voting Panel does not have a VVPAT. The requirements are marked "Accept" and the "DRE does not have a VVPAT".)

The test case trace corresponds to the Test Methods identified in the Test Plan & Appendix D: G1 = General 1, G2 = General 2, P1 = Primary 1, A-OMR = Accuracy OMR, A-In = Accuracy Infinity, S = Security, T=Telephony & Cryptographic, C=Characteristics, E=Environmental. Many functional requirements were exercised in multiple test cases. These instances are noted in the Function Exercised column. The actually test case or test method might not contain a requirement trace in these instances. Issues identified during testing are cross-referenced to the Appendix E- Discrepancy Report.

EAC Decisions on Requests for Interpretation which were applicable to the voting system submitted for certification testing are noted in the comments.

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test Issues
Vol. 1	Vendor, Voting System & Version	Scope	Trace		Prior Certification
	MicroVote General Corporation Election Management System v.4.0.0	Full 2005 VVSG			Initial EAC Certification
2.1	Overall System Capabilities				
2.1.1	<b>Security</b> System security is achieved through a combination of technical capabilities and sound administrative practices. Te ensure security all systems shall:				
a.	Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability, confidentiality, and accountability.	Accept	S, G1, G2		#42 – closed
b.	Provide system functions that are executable only in the intended manner and order, and only under the intended conditions.	Accept	S, G1, G2	P1	
С.	Use the system's control logic to prevent a system function from executing, if any preconditions to the function have not been met.	Accept	S, G1, G2	P1	
d.	Provide safeguards to protect against tampering during system repair, or interventions in system operations, in response to system failure.	Accept	S		
e.	Provide security provisions that are compatible with the procedures and administrative tasks involved in equipment preparation, testing, and operation.	Accept	S		
f.	If access to a system function is to be restricted or controlled the system shall incorporate the means of implementing this capability.	Accept	S, G1, G2		
g.	Provide documentation of mandatory administrative	Accept	S		

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
					Issues
0.4.0	procedures for effective system security.				
2.1.2	Accuracy				
a.	Records the election contests, candidates, and issues	Accept	G1, G2	P1, A-In	
b.	Records the appropriate options for casting and	Accept	G1, G2	P1, A-In, A-OMR	#84 – closed
C	Records each vote precisely as indicated by the voter	Accept	G1 G2	P1 A-In	#89 closed
0.	and have the ability to produce an accurate report of all votes cast.	1000001	01, 02	A-OMR	Interpretation 2007-06
d.	Control logic and data processing methods incorporation parity and check sums (or equivalent error detection and correction methods) to demonstrate the system has been designed for accuracy.	Accept	S		
e.	The software monitors the overall quality of data read-	Accept	S		
	write and transfer quality status, checks the number and types of errors that occur in any of the relevant operations on data and how they were corrected				
	DRE System Standards				
f	As an additional means of ensuring accuracy in DRE	Accent	G1 G2	P1	#89 closed
1.	systems, voting devices record and retain redundant copies of the original ballot image. A ballot image electronic record of all votes cast by the voter, including undervotes.	Ассерг	01, 02		Interpretation 2007-06
2.1.3	Error Recovery				
	To recover from a non-catastrophic failure of a device, or from any error or malfunction that is within the operator's ability to correct, the system shall provide the following capabilities:				
a.	Restoration of the device to the operating condition	Accept	G1, G2	P1	
	existing immediately prior to an error or failure, without loss or corruption of voting data previously stored in the device				
b.	Resumption of normal operation following the correction of a failure in a memory component, or in a data processing component, including the central processing unit	Accept	G1, G2	P1	
C.	Recovery from any other external condition that causes equipment to become inoperable, provided that catastrophic electrical or mechanical damage due to external phenomena has not occurred.	Accept	G1, G2	P1	
2.1.4	Integrity Integrity measures ensure the physical stability and function of the vote recording and counting processes. To ensure system integrity, all systems shall:				
a.	Protect against a single point of failure that would prevent further voting at the polling place.	Accept	G1		
b.	Protects against the interruption of electronic power.	Accept	С	1	
С.	Protects against electromagnetic radiation.	Accept	E		
d.	Protects against the ambient temperature and humidity fluctuations.	Accept	E		
e.	Protects against failure of any data input or storage device.	Accept	S		
f.	Protects against any attempt at improper data entry or retrieval	Accept	S, G1, G2		#32, 38 & 104 – closed
g.	Records and reports of any normal or abnormal events.	Accept	S, G1, G2	P1, C	#54 – closed
h.	Maintain a permanent record of all original audit data that cannot be modified or overridden but may be augmented by designated authorized officials in order to adjust for errors or omissions (e.g., during the canvassing process)	Accept	S, G1	G2, P1	Source Code Deviews
1.	of an error condition that the system cannot overcome.	Ассерт	3, 61	G2, P1	v.1:5.2.3.e all errors or

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	and time-dependent or programmed events that occur without the intervention of the voter or a polling place operator				exceptions are reported to the user, recorded in the audit log, or handled at the time of execution such that corrective action is achieved & v.2:5.4.2.p Audit records log errors & events
j.	Include built-in measurement, self-test, and diagnostic software and hardware for detecting and reporting the system's status and degree of operability	Accept	S, G1	G2, P1	
	In addition to the common requirements, DRE systems shall:				
k.	Maintain a record of each ballot cast using a process and storage location that differs from the main vote detection, interpretation, processing, and reporting path	Accept	S, G1	G2, P1	
.  .	Provide a capability to retrieve ballot images in a form readable by humans	Accept	S, G1	G2, P1	
2.1.5	System Audit See the requirement for context of these requirements.				
2.1.5. 1		A = = = = 1	01	00.04	//00 alagad
	Audit records shall be prepared for all phases of election operations performed using devices controlled by the jurisdiction or its contractors. These records rely upon automated audit data acquisition and machine- generated reports, with manual input of some information. These records shall address the ballot preparation and election definition phase, system readiness tests, and voting and ballot-counting operations. The software shall activate the logging and reporting of audit data as described below.	Accept	G1	G2, P1, A-OMR, A-In	#68 – Closed
a.	Time, Sequence, and Preservation of Audit Records The timing and sequence of audit record entries is as important as the data contained in the record. All voting systems shall meet the requirements for time, sequence and preservation of audit records outlined below.		G1	G2, P1, A-OMR, A-In	
i.	Except where noted, systems shall provide the capability to create and maintain a real-time audit record. This capability records and provides the operator or precinct official with continuous updates on machine status. This information allows effective operator identification of an error condition requiring intervention, and contributes to the reconstruction of election-related events necessary for recounts or litigation.	Accept	G1	G2, P1, A-OMR, A-In	
ii.	All systems shall include a real-time clock as part of the system's hardware. The system shall maintain an absolute record of the time and date or a record relative to some event whose time and data are known and recorded.	Accept	G1	G2, P1, A-OMR, A-In	
iii.	All audit record entries shall include the time-and-date stamp.	Accept	G1	G2, P1, A-OMR, A-In	
iv.	The audit record shall be active whenever the system is in an operating mode. This record shall be available at all times, though it need not be continually visible.	Accept	G1	G2, P1, A-OMR, A-In	
V.	The generation of audit record entries shall not be terminated or altered by program control, or by the intervention of any person. The physical security and integrity of the record shall be maintained at all times.	Accept	S, G1	G2	
vi.	Once the system has been activated for any function, the system shall preserve the contents of the audit record during any interruption of power to the system until processing and data reporting have been	Accept	G1	A-OMR	

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	appropriated				Issues
vii.	<ul> <li>completed.</li> <li>The system shall be capable of printing a copy of the audit record. A separate printer is not required for the audit record, and the record may be produced on the standard system printer if all the following conditions are met:</li> <li>The generation of audit trail records does not interfere with the production of output reports</li> <li>The entries can be identified so as to facilitate their recognition, segregation, and retention</li> </ul>	Accept	G1	G2, P1, A-OMR, A-In	
b.	Error messages All voting systems shall meet the requirements for error messages below				
i.	The voting system shall generate, store, and report to the user all error messages as they occur.	Accept	G1	G2, P1, A-OMR, A-In	#36, 55 – closed
ii.	All error messages requiring intervention by an operator or precinct official shall be displayed or printed clearly in easily understood language text, or by means of other suitable visual indicators.	Accept	G1	G2, P1, A-OMR, A-In	
iii.	When the voting system uses numerical error codes for trained technician maintenance or repair, the text corresponding to the code shall be self-contained or affixed inside the voting machine. This is intended to reduce inappropriate reactions to error conditions, and to allow for ready and effective problem correction.	Accept	G1	G2, P1, A-OMR, A-In	
iv.	All error messages for which correction impacts vote recording or vote processing shall be written in a manner that is understandable to an election official who possesses training on system use and operation, but does not possess technical training on system servicing and repair.	Accept	G1	G2, P1, A-OMR, A-In	
v.	The message cue for all voting systems shall clearly state the action to be performed in the event that voter or operator response is required.	Accept	G1	G2, P1, A-OMR, A-In	# 36 – closed
vi.	Voting system design shall ensure that erroneous responses will not lead to irreversible error.	Accept	G1	G2, P1, A-OMR, A-In	
vii.	Nested error conditions are corrected in a controlled sequence such that voting system status shall be restored to the initial state existing before the first error occurred.	Accept	G1	G2, P1, A-OMR, A-In	
С.	Status Messages The Standards/Guidelines provide latitude in software design so that vendors can consider various user processing and reporting needs. The jurisdiction may require some status and information messages to be displayed and reported in real-time. Messages that do not require operator intervention may be stored in memory to be recovered after ballot processing has been completed.				
	The voting system shall display and report critical status messages using clear indicators or English language text. The voting system need not display non-critical status messages at the time of occurrence. Voting systems may display non-critical status messages (i.e., those that do not require operator intervention) by means of numerical codes for subsequent interpretation and reporting as unambiguous text.	Accept	G1	G2, P1, A-OMR, A-In	#56 – closed
	Voting systems shall provide a capability for the status messages to become part of the real-time audit record.	Accept	G1	G2, P1, A-OMR, A-In	
	The voting system shall provide a capability for a	Accept	G1	G2, P1,	

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test Issues
	jurisdiction to designate critical status messages.			A-OMR, A-In	
2.1.5.	Use of Shared Computing Platforms				
2	See the guidelines for the context of these				
	requirements Three operating system protections are				
	required on all such systems on which election software				
	Authentication shall be configured on the local terminal	Accept	G1	G2, P1,	
	(display screen and keyboard) and on all external	•		A-OMR,	
	connection devices ("network cards" and "ports"). This			A-In	
	ensures that only authorized and identified users affect				
	Operating system audit shall be enabled for all session	Accept	G1	G2 P1	
	openings and closings, for all connection openings and	rocopt	0.	A-OMR,	
	closings, for all process executions and terminations,			A-In	
	and for the alteration or deletion of any memory or file				
	object. This ensures the accuracy and completeness of				
	existence of an audit record of any person or process				
	altering or deleting system data or election data.				
	The system shall be configured to execute only intended	Accept	G1	G2, P1,	
	and necessary processes during the execution of			A-OMR,	
	election software. The system shall also be conligured to halt election software processes upon the termination of			A-In	
	any critical system process (such as system audit)				
	during the execution of election software.				
2.1.6	Election Management System		0.1	00 D1	
	The Election Management System (EMS) is used to	Accept	G1	G2, P1,	#82, 83 – closed
	counting votes and to consolidate report and display			A-OMR, A-In	
	election results. An EMS shall generate and maintain a				
	database, or one or more interactive databases, that				
	enables election officials or their designees to perform				
	Define political subdivision boundaries and multiple				
	election districts as indicated in the system				
	documentation				
	Identify contests, candidates, and issues				
	Generate ballots and election-specific programs for				
	voting equipment				
	<ul> <li>Install ballots and election-specific programs</li> </ul>				
	Test that ballots and programs have been properly				
	Accumulate vote totals at multiple reporting levels as				
	indicated in the system documentation				
	<ul> <li>Generate the post-voting reports required by</li> </ul>				
	Subsection 2.4				
	• Process and produce audit reports of the data as indicated in Subsection 5.5				
a.	Define of the political subdivision boundaries and	Accept	G1	G2, P1,	
	multiple election districts, as indicated in the system			A-OMR,	
h	documentation.	Accent	G1	A-In	
υ.	identity of contests, candidates, and issues.	Accept		A-OMR	
				A-In	
C.	Define of ballot formats and appropriate voting options.	Accept	G1	G2, P1,	
				A-OMR,	
d	Generate hallots and election-specific programs for vote	Accent	G1	A-IN G2 P1	
u.	recording and vote counting equipment.	nocept		A-OMR.	
				A-In	
e.	Install ballots and election-specific programs.	Accept	G1	G2, P1,	
				A-OMR, A-In	
1			1		

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
f.	Test that ballots and programs have been properly prepared and installed.	Accept	G1	G2, P1, A-OMR, A-In	155405
g.	Accumulate vote totals at multiple reporting levels as indicated in the system documentation.	Accept	G1	G2, P1, A-OMR, A-In	
h.	Generation of post-voting reports per Section 2.5.	Accept	G1	G2, P1, A-OMR, A-In	
i.	Process and produce audit reports of the data indicated in Section 4.5.	Accept	G1	G2, P1, A-OMR, A-In	
2.1.7	Vote Tabulating Program				
2.1.7. 1	Functions The vote tabulating program software resident in each voting machine, vote count server, or other devices shall include all software modules required to:				
a.	Monitor of system status and generating machine-level audit reports	Accept	G1	G2, P1, A-OMR, A-In	
b.	Accommodate device control functions performed by polling place officials and maintenance personnel	Accept	G1	G2, P1, A-OMR, A-In	
с.	Register and accumulating votes	Accept	G1	G2, P1, A-OMR, A-In	
d.	Accommodate variations in ballot counting logic	Accept	G1	G2, P1, A-OMR, A-In	
2.1.7. 2	Voting Variation The Technical Data Package accompanying the system shall specifically identify which of the following items can and cannot be supported by the voting system, as well as how the voting system can implement the items support. • Closed primaries • Open primaries • Partisan offices • Non-partisan offices • Write-in voting • Primary presidential delegation nominations • Ballot rotation • Straight party voting • Cross-party endorsement • Split precincts • Vote for N of M • Recall issues, with options • Cumulative voting • Provisional or challenged ballots • Partice Counter	Accept	PCA Documen t Review		<ul> <li># 5, 18 –closed See Appendix D for supported voting variations.</li> <li>Test execution of G1, G2 &amp; P1 included walking through the user manuals to confirm that supported voting variations were addressed.</li> </ul>
2.1.8	<b>Ballot Counter</b> For all voting systems, each device that tabulates ballots shall provide a counter that:.				
a.	Can be set to zero before any ballots are submitted for tally	Accept	G1, G2	P1	
b.	Records the number of ballots cast during a particular test cycle or election	Accept	G1, G2	P1, A- OMR, A-In	
C.	Increases the count only by the input of a ballot	Accept	G1, G2	P1, A- OMR, A-In	
d.	Prevents or disables the resetting of the counter by any person other than authorized persons at authorized points	Accept	G1, G2	P1	
e.	Is visible to designated election officials	Accept	G1, G2	P1	
2.1.9	For all voting systems that use telecommunications for				

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
	the transmission of data during pre-voting, voting or				ISSUES
	post-voting activities shall include capabilities to ensure				
	data are transmitted with no alternation or unauthorized				
	disclosure during transmission for:	A 1	<b>-</b>		Dublic
	voter Authentication: Coded Information that confirms	Accept	1		PUDIIC Telecommunications not
	that transmit votes individually over a public network				used
	Ballot Definition: Information that describes to voting	Accept	Т		Public
	equipment the content and appearance of the ballots to				Telecommunications not
	be used in an election	Accort	<u>т</u>		USED
	that transmit votes individually over a public network, the	Accept	1		Telecommunications not
	transmission of a single vote to the county (or				used
	contractor) for consolidation with other county vote data		_		
	Vote Count: Information representing the tabulation of	Accept	Т		Public Talagammunications not
	precinct, or central count				used
	List of Voters: A listing of the individual voters who have	Accept	Т		Public
	cast ballots in a specific election				Telecommunications not
2 1 10	Data Batantian				used
2.1.10	See standard/guideline for context.				
	All voting systems shall provide for maintaining the	Accept	G1, G2	P1, A-	Assumes specified
	integrity of voting and audit data during an election and	•		OMR, A-In	media is sufficient for
2.2	for a period of at least 22 months thereafter.				office storage
2.2	Ballot Preparation				
2.2.1.	General Capabilities				
1					
	All systems shall provide the general capability for ballot	Accept	G1, G2	P1, A-	
	preparation, ballot formatting and ballot production. All			OMR, A-In	
a.	Enable the automatic formatting of ballots in accordance	Accept	G1, G2	P1, A-	
	with the requirements for offices, candidates, and		,	OMR, A-In	
	measures qualified to be placed on the ballot for each				
h	political subdivision and election district.	Accent	G1 G2	Ρ1 Δ-	#50_51 - closed
i.	Offices with labels/instructions	Лосорг	01, 02	OMR, A-In	#00, 01 01030u
ii.	Candidate names with labels				
lii.	Issues or measures with their text	A	04.00	<b>D</b> 4 A	
с.	Supporting the maximum number of potentially active voting positions as indicated in the system	Accept	G1, G2	P1, A-	
	documentation.			Owny, A-m	
d.	For a primary election, generating ballots that segregate	Accept	G1, G2	P1, A-	
	the choices in partisan races by party affiliation			OMR, A-In	
e.	Generating ballots that contain identifying codes or marks uniquely associated with each format	Accept	G1, G2	P1, A-	
f.	Ensuring voter response fields, selection buttons, or	Accept	G1. G2	P1. A-	
	switches properly align with the specific candidate			OMR, A-In	
	names and/or issues printed on the ballot display, ballot				
	card or sheet, or separate ballot pages.				
	Paper-based voting systems shall also meet the				
	following requirements applicable to the technology				
	used.				
G,	Enable voters to make selections by punching a hole or	Accept	G2	P1, A-	
	upon each ballot card or sheet.				
h	For marksense systems, the timing marks align properly	Accept	G2	P1, A-	
	with the vote response fields.			OMR	
2.2.1.	Ballot Formatting				
2 a.	Creation of newly defined elections	Accept	G1. G2	P1. A-	
			.,	OMR, A-In	
b.	Rapid and error-free definition of elections and their	Accept	G1, G2	P1, A-	#71, 72, 113 - closed

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VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
	associated ballot layouts			OMR, A-In	100000
C.	Uniform allocation of space and fonts used for each	Accept	G1	G2, P1	
	office, candidate, and contest such that the voter				
	other.				
d.	Simultaneous display of the maximum number of	Accept	G1	G2, P1	
	choices for a single contest as indicated by the vendor in				
e	Retention of previously defined formats for an election	Accept	G1 G2	P1 A-	
0.		, tooopt	01, 02	OMR, A-In	
f.	Prevention of unauthorized modification of any ballot	Accept	G1,		
a.	Modification by authorized persons of a previously	Accept	G1. G2	P1	
	defined ballot format for use in a subsequent election				
2.2.1.	Ballot Production				
3	other wise generating a ballot display that can be				
	installed in all system voting devices for which it is				
	intended: All Systems shall provide a capability to				
a.	The electronic display or printed document on which the	Accept	C, G2	G1, P1	Interpretation 2008-04
	user views the ballot is capable of rendering an image of		,		default –English,
	the ballot in any of the languages required by The Voting				secondary Western
b.	The electronic display or printed document where the	Accept	G1. C	G2. P1	European-Spanish
	user views the ballot does not show any advertising or		- , -	,	
	commercial logos of any kind, whether public service,				
	in State law. Electronic displays do not provide				
	connection through hyperlink.				
C.	The ballot conforms to vendor specifications for type of	Accept	G2, A-		
	punch or mark field used to record votes, folding, bleed		UNR		
	through, and ink for printing if paper ballot documents or				
	paper displays are part of the system	Assant	<u></u>		Dellatio a data aard
	include specifications for ballot materials to ensure that	Accept	GZ	OMR	associated with a
	vote selections are read from only a single ballot at a				separate document
	time, without detection of marks from multiple ballots				containing candidate
	ballots)				text
2.2.2	Election Programming				
	Process by which election officials or their designees				
	logically define the voter choices associated with the				
	contents of the ballots. All systems shall provide for:				
a.	Logical definition of the ballot, including the definition of	Accept	G1, G2	P1, A-	
	contest				
b.	Logical definition of political and administrative	Accept	G1, G2	P1, A-	
	subdivisions, where the list of candidates or contests			OMR, A-In	
C.	Exclusion of any contest on the ballot in which the voter	Accept	G1. G2	P1, A-	
0.	is prohibited from casting a ballot because of place of	rooopt	01, 02	OMR, A-In	
	residence, or other such administrative or geographical				
d	Criteria Ability to select from a range of voting options to	Accent	G1 G2	P1 Δ-	
u.	conform to the laws of the jurisdiction in which the	ποτερι	01, 02	OMR, A-In	
	system will be used				
e.	Generation of all required master and distributed copies	Accept	G1, G2	P1, A-	# 33 – closed
	of the ballots for each voting device and polling place.				
	and for each tabulating device				
2.2.3	Ballot and Program Installation and Control				

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	hallet and presses installation.				Issues
	All systems provide a means of installing ballots and programs on each piece of polling place or central count equipment according to the ballot requirements of the election and the jurisdiction.	Accept	G1, G2	P1, A- OMR, A-In	
а.	A detailed work plan or other documentation providing a schedule and steps for the software and ballot installation, including a table outlining the key dates, events and deliverables.	Accept	PCA Documen t Review		v.2: 2.8.5.g
b.	A capability for automatically verifying that the software has been properly selected and installed in the equipment or in programmable memory devices and for indicating errors.	Accept	G1, G2	P1, A-In, C, E	
с.	A capability for automatically validating that software correctly matches the ballot formats that it is intended to process, for detecting errors, and for immediately notifying an election official of detected errors.	Accept	G1, G2	P1, A- OMR, A- In, C, E	
2.2.4	<b>Readiness Testing</b> Election personnel conduct voting equipment and voting system readiness tests prior to the start of an election to ensure that the voting system functions properly, to confirm that voting equipment has been properly integrated, and to obtain equipment status reports. All voting systems shall provide the capabilities to				
a.	Verify the voting equipment and data processing equipment, precinct count equipment are properly prepared for an election, and collect data that verifies equipment readiness	Accept	G1, G2	P1, A- OMR, A- In, E	
b.	Obtains status and data reports from each set of equipment	Accept	G1, G2	P1, A- OMR, A- In, E	
с.	Verify the correct installation and interface of all system equipment	Accept	G1, G2	P1, A- OMR, A- In, E	
d.	Verify that hardware and software function correctly	Accept	G1, G2	P1, A- OMR, A- In, E	
e.	Generate consolidated data reports at the polling place and higher jurisdictional levels	Accept	G1, G2	P1, A- OMR, A- In, E	
f.	Segregate test data from actual voting data, either procedurally or by hardware/software features	Accept	G1, G2	P1, A- OMR, A- In, E	
	Resident test software, external devices, and special purpose test software connected to or installed in voting devices to simulate operator and voter functions used for these tests meeting the following standards:				
g.	These elements are capable of being tested separately, and are proven to be reliable verification tools prior to their use	Accept	G1, G2	P1, A- OMR, A- In, E	
h	These elements are incapable of altering or introducing any residual effect on the intended operation of the voting device during any succeeding test and operational phase.	Accept	G1, G2	P1, A- OMR, A- In, E	
i	Paper-Based Systems Paper-based systems shall:	Accept			
i.	positions as active positions Supports conversion testing of ballots with active	Accept	A-OMR		
J.	position density for systems without pre-designated ballot positions				
2.2.5	Verification at the Polling Place All systems shall provide a formal record of the following, in any media, upon verification of the authenticity of the command source:				

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
					Issues
a.	The election's identification data;	Accept	G1	G2, P1,	
				A-OMR,	
				A-In, E	
b.	The identification of all equipment units;	Accept	G1	G2, P1,	
				A-OMR,	
				A-In, E	
с.	The identification of the polling place;	Accept	G1	G2, P1,	
				A-OMR,	
				A-In, E	
d.	The identification of all ballot formats;	Accept	G1	G2, P1,	
				A-OMR,	
				A-In, E	
e.	The contents of each active candidate register by office	Accept	G1	G2, P1,	
	and of each active measure register at all storage			A-OMR,	
	locations (showing that they contain only zeros):			A-In, E	
f.	A list of all ballot fields that can be used to invoke	Accept	G1	G2, P1,	
	special voting options	recept	•	A-OMR.	
				A-In F	
a	Other information needed to confirm the readiness of the	Accept	G1	G2 P1	
g.	equipment and to accommodate administrative	Лосорт		A-OMR	
	reporting requirements			A-In F	
	To propare voting devices to accept voted ballets, all			∧-ııı, ∟	
	voting avetome shall provide the conshility to test cash				
	device prior to opening to verify that each is operating				
	device prior to opening to verify that each is operating				
h	Confectly. At a minimum the tests shall include.	Accent	C1	C2 D1	#70 alogged
n.	Confirmation that there are no hardware or software	Accept	GI	GZ, P1,	#79 – ciosea.
	failures.			A-OMR,	
				A-In, E	
i.	Confirmation that the device is ready to be activated for	Accept	G1	G2, P1,	#79 – closed.
	accepting votes.			A-OMR,	
		-	-	A-In, E	
	If a precinct count system includes equipment for the	Accept	G1	G2, P1,	
	consolidation of polling place data at one or more central			A-OMR,	
	counting locations, it shall have means to verify the			A-In, E	
	correct extraction of voting data from transportable				
	memory devices, or to verify the transmission of secure				
	data over secure communication links.				
2.2.6	Verification at Central Location				
	Election officials perform verification at the central				
	location to ensure that vote counting and vote				
	consolidation equipment and software function properly				
	before and after an election. Upon verification of the				
	authenticity of the command source, any system used in				
	a central count environment shall provide a printed				
	record of the following:				
a.	The election's identification data	Accept	G1	G2, P1,	
		-		A-OMR,	
				A-In, E	
b.	The contents of each active candidate register by office	Accept	G1	G2. P1.	
-	and of each active measure register at all storage		_	A-OMR.	
	locations (showing that they contain only zeros):			A-In. E	
С	Other information needed to confirm the readiness of the	Accept	G1	G2 P1	
	equipment, and to accommodate administrative		<u> </u>	A-OMR	
	reporting requirements			A-In F	
23	Voting Canabilities			7. m, E	
231	Opening the Polls				
2.0.1.	At a minimum, the systems shall provide the functional				
	capabilities indicated below				
2.2.4	Dragingt Count Systems				
2.3.1.	To allow visiting devices to be activated for visiting of				
	ro allow voting devices to be activated for voting, all				
	precinct count systems shall provide:		04.02	D4 A	//70
a.	An internal test or diagnostic capability to verify that all	Accept	G1, G2	P1, A-	#19 - Closed.
	or the poiling place tests specified in 2.2.5 have been				
<u> </u>	successfully completed.			In, E	
b.	Automatic disabling any device that has not been tested	Accept	G1, G2	P1, A-	#79 – closed

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test Issues
	until it has been tested.			OMR, A- In, F	
2.3.1. 2	Paper-Based System Requirements To facilitate opening the polls, all paper-based systems shall include:				
а.	A means of verifying ballot punching or marking devices are prepared and ready to used;	N/A			Not a Precinct Based Paper Ballot System
b.	A voting booth or similar facility, in which the voter may punch or mark the ballot in privacy	N/A			Not a Precinct Based Paper Ballot System
с.	Secure receptacles for holding voted ballots. Ballot boxes.	N/A			Not a Precinct Based Paper Ballot System
	Precinct Count Paper-Based Systems In addition to the above requirements, all paper-based precinct count equipment shall include a means of:				
d.	Activating the ballot counting device.	N/A			Not a precinct count system for paper-based ballots
e.	Verifying that the device has been correctly activated and is functioning properly	N/A			Not a precinct count system for paper-based ballots
f.	Identifying device failure and corrective action needed.	N/A			Not a precinct count system for paper-based ballots
2.3.1. 3	DRE System Requirements To facilitate opening the polls, all DRE systems shall include:				
a.	A security seal, a password, or a data code recognition capability to prevent the inadvertent or unauthorized actuation of the poll-opening function	Accept	G1	G2, P1, A-In, E	
b.	A means of enforcing the execution of steps in the proper sequence if more than one step is required	Accept	G1	G2, P1, A-In, E	
с.	A means of verifying the system has been activated correctly	Accept	G1	G2, P1, A-In, E	
d.	A means of identifying system failure and any corrective action needed	Accept	G1	G2, P1, A-In, E	
2.3.2	Activating the Ballot (DRE Systems) To activate the ballot, all DRE systems shall:				
a.	Enable election officials to control the content of the ballot presented to the voter, whether presented in printed form or electronic display, such that each voter is permitted to record votes only in contests in which that voter is authorized to vote	Accept	G1	G2, P1, A-In, E	
b.	Allow each eligible voter to cast a ballot	Accept	G1	G2, P1, A-In, E	
С.	Prevent a voter from voting on a ballot to which he or she is not entitled	Accept	G1	G2, P1, A-In, E	
d.	Prevent a voter from casting more than one ballot in the same election	Accept	G1	G2, P1, A-In, E	
е.	Activate the casting of a ballot in a general election	Accept	G1	G2, P1, A-In, E	
f.	Enable the selection of the ballot that is appropriate to the party affiliation declared by the voter in a primary election	Accept	G1	G2, P1, A-In, E	
g.	Activate all parts of the ballot upon which the voter is entitled to vote	Accept	G1	G2, P1, A-In, E	
h.	Disable of all parts of the ballot upon which the voter is not entitled to vote	Accept	G1	G2, P1, A-In, E	
2.3.3	Casting a Ballot				
2.3.3. 1	Common Requirements To facilitate casting a ballot. All systems shall:				
а.	Provide test that is at least 3 millimeters high and provide the capability to adjust or magnify the text to an apparent size of 6.3 millimeters	Accept	C		
b.	Protect the secrecy of the vote such that the system	Accept	С	G1. G2.	

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	cannot reveal any information about how a particular voter voted, except as otherwise required by individual State law			P1	1350155
C.	Record the selection and non-selection (undervote) of individual vote choices for each contest and ballot measure	Accept	С	G1, G2, P1, A-In, A-OMR	
d.	Record the voter's selection of candidates whose names do not appear on the ballot, if permitted under State law, and record as many write-in votes as the number of candidates the voter is allowed to select	Accept	С	G1, G2, P1	
e.	In the event of a failure of the main power supply external to the voting system, provide the capability for any voter who is voting at the time to complete casting a ballot, allow for the successful shutdown of the voting system without loss or degradation of the voting and audit data, and allow voters to resume voting once the voting system has reverted to back-up power	Accept	C		
f.	Provide the capability for voters to continue cast ballots in the event of a failure of a telecommunications connection within the polling place or between the polling place and any other location	N/A			Telecommunications Not Used
2.3.3.	Paper-based System Requirement				
a.	Allow the voter to easily identify the voting field that is associated with each candidate or ballot measure response	Accept	G2	P1, A- OMR	
b.	Allow the voter to punch or mark the ballot to register a	Accept	G2	P1, A-	
С.	Allow either the voter or the appropriate election official to place the voted ballot into the ballot counting device (precinct count systems) or a secure receptacle (central count systems)	Accept	G2		
d.	Protect the secrecy of the vote throughout the process	Accept	G2	P1, A- OMR	
	Precinct Count Paper-Based Systems In addition to the above requirements, all paper-based precinct count equipment shall include a means of:				
е.	Provide feedback to the voter identifies specific contests or ballot issues for which an overvote or undervote is detected	N/A			Not a Precinct Count Paper based system
f.	Notify the voter if he or she has made more than the allowable number of selections for any contest (e.g., overvotes)	N/A			Not a Precinct Count Paper based system
g.	Notify the voter before the ballot is cast and counted of the effect of making more than the allowable number of selections for a contest	N/A			Not a Precinct Count Paper based system
h.	Provide the voter opportunity to correct the ballot for either an undervote or overvote before the ballot is cast and counted	N/A			Not a Precinct Count Paper based system
2.3.3. 3	DRE Systems Standards				
а.	Prohibit the voter from accessing or viewing any information on the display screen that has not been authorized by election officials and preprogrammed into the voting system (i.e., no potential for display of external information or linking to other information sources)	Accept	G1, G2, P1		
b.	Enable the voter to easily identify the selection button or switch, or the active area of the ballot display that is associated with each candidate or ballot measure response	Accept	G1, G2, P1		
C.	Allow the voter to select his or her preferences on the ballot in any legal number and combination	Accept	G1, G2, P1		
d.	Indicate that a selection has been made or canceled	Accept	G1, G2, P1		

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
e.	Indicate to the voter when no selection, or an insufficient	Accept	G1. G2.		ISSUES
	number of selections, has been made in a contest (e.g. undervotes)		P1		
f.	Notify the voter if he or she has made more than the	Accept	G1, G2,		
	allowable number of selections for any contest (e.g., overvotes)		P1		
g.	Notify the voter before the ballot is cast and counted of	Accept	G1, G2,		
	selections for a contest		PI		
h.	Provide the voter opportunity to correct the ballot for	Accept	G1, G2,		
	either an undervote or overvote before the ballot is cast and counted		P1		
i.	Notify the voter when the selection of candidates and measures is completed	Accept	G1, G2, P1		
j.	Allow the voter, before the ballot is cast, to review his or	Accept	G1, G2,		
	his or her choices before the ballot is cast				
k.	For electronic image displays, prompt the voter to	Accept	G1, G2,		
	ballot, signifying to the voter that casting the ballot is		PI		
	irrevocable and directing the voter to confirm the voter's				
	Intention to cast the ballot	Accent	G1 G2		
1.	successfully that the ballot has been cast	Αυτορι	P1		
m.	Notify the voter that the ballot has not been cast	Accept	G1, G2,		
	successfully if it is not stored successfully, including storage of the ballot image, and provide clear instruction		P1		
	as to the steps the voter should take to cast his or her				
	ballot should this event occur	Accept	C1 C2		
n.	responses back to each voter entry in no more than	Accept	P1		
	three seconds				
0.	Ensure that the votes stored accurately represent the actual votes cast	Accept	G1, G2, P1	A-In, A- OMR	Interpretation 2007-06
р.	Prevent modification of the voter's vote after the ballot is cast	Accept	G1	G2, P1	
q.	Provide a capability to retrieve ballot images in a form	Accept	G1	G2, P1	
	requirements of Subsections 2.1.2 (f) and 2.1.4 (k) and				
	(1)]				
r.	Increment the proper ballot position registers or counters	Accept	G1 G1	G2, P1	
5.	process	ЛССЕРГ	01	02,11	
t.	Prohibit access to voted ballots until after the close of polls	Accept	G1	G2, P1	
u.	Provide the ability for election officials to submit test	Accept	G1	G2, P1	
	ballots for use in verifying the end-to-end integrity of the voting system				
V.	Isolate test ballots such that they are accounted for	Accept	G1	G2, P1	
	accurately in vote counts and are not reflected in official				
2.4	Post-Voting Capabilities				
2.4.1	Closing the Polls				
	These requirements for closing the polls and locking				
	precinct count systems. The voting system shall provide				
	the means for:				
a.	Preventing the further casting of ballots once the polls has closed	Accept	G1	G2, P1	
b.	Provides an internal test that verifies that the prescribed	Accept	G1	G2, P1	
	device status is normal				
C.	Incorporating a visible indication of system status	Accept	G1	G2, P1	
d.	Producing a diagnostic test record that verifies the sequence of events, and indicates that the extraction of	Accept	G1	G2, P1	

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	voting data has been activated				155065
е.	Precluding the unauthorized reopening of the polls once the poll closing has been completed for that election	Accept	G1	G2, P1	
2.4.2	Consolidating Vote Data				
	All systems provide a means to consolidate and report vote data from all polling places, and optionally from other sources such as absentee ballots, provisional ballots, and voted ballots requiring human review (e.g., write-in votes).	Accept	G1	G2, P1, A-OMR, A-In	
2.4.3	Producing Reports				
	All systems shall be able to create reports summarizing the data on multiple levels.	Accept	G1	G2, P1, A-OMR, A-In	
	Common Standards All systems shall provide capabilities to:				
a.	Support of geographic reporting, which requires the reporting of all results for each contest at the precinct level and additional jurisdictional levels	Accept	G1	G2, P1, A-OMR, A-In	#88 – closed
b.	Produce a printed report of the number of ballots counted by each tabulator	Accept	G1	G2, P1, A-OMR, A-In	#80 – closed.
C.	Produce a printed report for each tabulator of the results of each contest that includes the votes cast for each selection, the count of undervotes, and the count of overvotes	Accept	G1	G2, P1, A-OMR, A-In	#89 – closed
d.	Produce a consolidated printed report of the results for each contest of all votes cast (including the count of ballots from other sources supported by the system as specified by the vendor) that includes the votes cast for each selection, the count of undervotes, and the count of overvotes	Accept	G1	G2, P1, A-OMR, A-In	#89 closed Interpretation 2007-06
e.	Be capable of producing a consolidated printed report of the combination of overvotes for any contest that is selected by an authorized official (e.g.; the number of overvotes in a given contest combining candidate A and candidate B, combining candidate A and candidate C, etc.)	Accept	G1	G2, P1, A-OMR, A-In	
f.	Produce all system audit information required in Section 5.4 in the form of printed reports, or in electronic memory for printing centrally	Accept	G1	G2, P1, A-OMR, A-In	
g.	Prevent data from being altered or destroyed by report generation, or by the transmission of results over telecommunications lines	Accept	G1	G2, P1, A-OMR, A-In	
	Precinct Count Systems In addition, all precinct count voting systems shall:				
a.	Prevent the printing of reports and the unauthorized extraction of data prior to the official close of the polling place	Accept	G1	G2, P1	
b.	Provide a means to extract information from a transportable programmable memory device or data storage medium for vote consolidation	Accept	G1	G2	
С.	Consolidate the data contained in each unit into a single report for the polling place when more than one voting machine or precinct tabulator is used	Accept	G1	G2, P1, A-In	
d.	Prevent data in transportable memory from being altered or destroyed by report generation, or by the transmission of results over telecommunications lines	Accept	G1	G2, P1, A-In	
2.4.4	Broadcasting Results				
a.	Provide only aggregated results, and not data from individual ballots	Accept			Results are not broadcast
b.	Provide no access path from unofficial electronic reports or files to the storage devices for official data	Accept			Results are not broadcast
С.	Clearly indicate on each report or file that the results it contains are unofficial	Accept			Results are not broadcast
2.5	Maintenance, Transportation and Storage				

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	All systems shall be designed and manufactured to facilitate preventive and corrective maintenance, conforming to the hardware standards described in Subsection 4.1. All vote casting and tally equipment designated for storage between elections shall: a. Function without degradation in capabilities after transit to and from the place of use, as demonstrated by meeting the performance standards described in Subsection 4.1 b. Function without degradation in capabilities after storage between elections, as demonstrated by meeting the performance standards described in Subsection 4.1 (See subsection 4.1)				
3	<b>Usability and Accessibility Requirements</b> Note: Only testable Discussion text that provides significant clarification is included. Consult the VVSG for the full text.				
3.1	<b>Usability Requirements</b> The voting process shall provide a high level of usability for voters. Accordingly, voters shall be able to negotiate the process effectively, efficiently, and comfortably. The mandatory voting system standards mandated in HAVA Section 301 relate to the interaction between the voter and the voting system. Except as provided in subparagraph (B), the voting system (including any lever voting system, optical scanning voting system, or direct recording electronic system) shall				
	• Permit the voter to verify (in a private and independent manner) the votes selected by the voter on the ballot before the ballot is cast and counted.	Accept	G2, C		
	• Provide the voter with the opportunity (in a private and independent manner) to change the ballot or correct any error before the ballot is cast and counted (including the opportunity to correct the error through the issuance of a replacement ballot if the voter was otherwise unable to change the ballot or correct any error)	Accept	G2, C		
	If the voter selects votes for more than one candidate in a single office: • Notify the voter that the voter has selected more than one candidate for a single office on the ballot.	Accept	G2, C		
	<ul> <li>Notify the voter before the ballot is cast and counted of the effect of casting multiple votes for the office.</li> </ul>	Accept	G2, C		
	<ul> <li>Provide the voter with the opportunity to correct the ballot before the ballot is cast and counted.</li> </ul>	Accept	G2, C		
	The voting system shall ensure that any notification required under this paragraph preserves the privacy of the voter and the confidentiality of the ballot.	Accept	G2, C		
244	Additional requirements for task performance are independence and privacy: the voter should normally be able to complete the voting task without assistance from others, and the voter selection should be private.	Accept	G2, C		
3.1.1	The vendor shall conduct summative usability tests on	Accept	Аррх Е		Interpretation 2007-03
	the voting system using individuals representative of the general population. The vendor shall document the		#23		#23 Closed Document review: test

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	testing performed and report the test results using the Common Industry Format. This documentation shall be included in the Technical Data Package submitted to the EAC for national certification.				Issues results delivered to the EAC
3.1.2	Usability Testing The voting process shall provide certain functional capabilities to support voter usability.				
a.	The voting system shall provide feedback to the voter that identifies specific contests or ballot issues for which he or she has made no selection or fewer than the allowable number of selections (a.g., undervotes)	Accept	G1	G2, P1	
b.	The voting system shall notify the voter if he or she has made more than the allowable number of selections for any contest (e.g., overvotes)	Accept	G1	G2, P1	
с.	The voting system shall notify the voter before the ballot is cast and counted of the effect of making more than the allowable number of selections for a contest	Accept	G1	G2, P1	
d.	The voting system shall provide the voter the opportunity to correct the ballot for either an undervote or overvote before the ballot is cast and counted. <i>Discussion:</i> <i>Certain differences in presentation are mandated by</i> <i>state law, such as the order in which candidates are</i> <i>listed and provisions for voting for write-in candidates.</i> <i>But comparable characteristics such as font size or</i> <i>voice volume and speed must be the same for all</i> <i>choices.</i>	Accept	G1	G2, P1	
e.	choice, to submit an undervoted ballot without correction	Accept	G1	G2, P1	
f.	DRE voting machines shall allow the voter to change a vote within a contest before advancing to the next contest.	Accept	G1	G2, P1	
g.	DRE voting machines should provide navigation controls that allow the voter to advance to the next contest or go back to the previous contest before completing a vote on the contest currently being presented (whether visually or aurally).	Accept	G1	G2, P1	
3.1.3	Alternative Languages				
	The voting equipment shall be capable of presenting the ballot, ballot selections, review screens and instructions in any language required by state or federal law.	Accept	G2	C, P1	#87 – closed Interpretation 2007-04
3.1.4	<b>Cognitive Issues</b> The voting process shall be designed to minimize cognitive difficulties for the voter.				
a.	Consistent with election law, the voting system should support a process that does not introduce any bias for or against any of the selections to be made by the voter. In both visual and aural formats, contest choices shall be presented in an equivalent manner.	Accept	С	G1, G2	
b.	The voting machine or related materials shall provide clear instructions and assistance to allow voters to successfully execute and cast their ballots independently.	Accept	С	G1, G2	
i	Voting machines or related materials shall provide a means for the voter to get help at any time during the voting session.	Accept	G1	G2	
ii.	The voting machine shall provide instructions for all its valid operations. <i>Discussion: If an operation is available to the voter, it must be documented.</i>	Accept	G1	G2	
C.	The voting system shall provide the capability to design a ballot for maximum clarity and comprehension.	Accept	G1	G2	
i.	The voting equipment should not visually present a single contest spread over two pages or two columns. Discussion: Such a visual separation poses the risk that the voter may perceive one contest as two. If a contest has a large number of candidates, it may be infeasible to	Accept	С	G1, G2	

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	observe this guideline				155005
ii.	The ballot shall clearly indicate the maximum number of candidates for which one can vote within a single contest.	Accept	С	G1, G2	
iii.	There shall be a consistent relationship between the name of a candidate and the mechanism used to vote for that candidate.	Accept	G1	G2	
d.	Warnings and alerts issued by the voting system should clearly state the nature of the problem and the set of responses available to the voter. The warning should clearly state whether the voter has performed or attempted an invalid operation or whether the voting equipment itself has malfunctioned in some way.	Accept	G1	G2	
е.	The use of color by the voting system should agree with common conventions:	Accept	С	G1, G2	
(a)	green, blue or white is used for general information or as a normal status indicator;	Accept	С		System does not use color
(b)	amber or yellow is used to indicate warnings or a marginal status;	Accept	С		System does not use color
c)	red is used to indicate error conditions or a problem requiring immediate attention.	Accept	С		System does not use color
3.1.5	Perceptual Issues The voting process shall be designed to minimize perceptual difficulties for the voter.				
a.	No voting machine display screen shall flicker with a frequency between 2 Hz and 55 Hz	Accept	С		
b.	Any aspect of the voting machine that is adjustable by the voter or poll worker, including font size, color, contrast, and audio volume, shall automatically reset to a standard default value upon completion of that voter's session. <i>Discussion: The voting machine must present</i> the same initial appearance to even voter.	Accept	С		
С.	If any aspect of a voting machine is adjustable by the voter or poll worker, there shall be a mechanism to reset	Accept	С		
d.	All electronic voting machines shall provide a minimum font size of 3.0 mm (measured as the height of a capital letter) for all text.	Accept	С		
e.	All voting machines using paper ballots should make provisions for voters with poor reading vision.	Accept	С		
f.	The default color coding shall maximize correct perception by voters with color blindness.	Accept	С		
g.	Color coding shall not be used as the sole means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.	Accept	С		
h.	All text intended for the voter should be presented in a sans serif font.	Accept	С		
i.	The minimum figure-to-ground ambient contrast ratio for all text and informational graphics (including icons) intended for the voter shall be 3:1.	Accept	С		
3.1.6	Interaction Issues The voting process shall be designed to minimize interaction difficulties for the voter.				
a.	Voting machines with electronic image displays shall not require page scrolling by the voter.	Accept	С	G2	
b.	The voting machine shall provide unambiguous feedback regarding the voter's selection, such as displaying a checkmark beside the selected option or conspicuously changing its appearance.	Accept	С	G2	
С.	If the voting machine requires a response by a voter within a specific period of time, it shall issue an alert at least 20 seconds before this time period has expired and provide a means by which the voter may receive additional time.	Accept	С		There are no time out function
d.	Input mechanisms shall be designed to minimize	Accept	С	G2	

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	accidental activation				155005
i.	On touch screens, the sensitive touch areas shall have a minimum height of 0.5 inches and minimum width of 0.7 inches. The vertical distance between the centers of adjacent areas shall be at least 0.6 inches, and the horizontal distance at least 0.8 inches.	Accept	С		Not a touch screen DRE
ii.	No key or control on a voting machine shall have a repetitive effect as a result of being held in its active position.	Accept	С		
3.1.7	Privacy	A = = = = 1	0	01	
	The voting process shall preclude anyone else from determining the content of a voter's ballot, without the voter's cooperation. Discussion: Privacy ensures that the voter can make selections based solely on his or her own preferences without intimidation or inhibition. Among other practices, this forbids the issuance of a receipt to the voter that would provide proof of how he or she voted.	Accept	C	G1	
3.1.7. 1	Privacy at the Polls When deployed according to the installation instructions				
	others from observing the contents of a voter's ballot				
a.	The ballot and any input controls shall be visible only to the voter during the voting session and ballot submission.	Accept	С		
b.	The audio interface shall be audible only to the voter.	Accept	С		
С.	As mandated by HAVA 301 (a)(1)(C), the voting system shall notify the voter of an attempted overvote in a way that preserves the privacy of the voter and the confidentiality of the ballot.	Accept	G1	G2, P1	
3.1.7. 2	No Recording of Alternate Format Usage Voter anonymity shall be maintained for alternative format ballot presentation.				
a.	No information shall be kept within an electronic cast vote record that identifies any alternative language feature(s) used by a voter.	Accept	G2		
b.	No information shall be kept within an electronic cast vote record that identifies any accessibility feature(s) used by a voter.	Accept	G2		
3.2	Accessibility Requirements The voting process shall be accessible to voters with disabilities. As a minimum, every polling place shall have at least one voting station equipped for individuals with disabilities, as provided in HAVA 301 (a)(3)(B). A machine so equipped is referred to herein as an accessible voting station. (See HAVA for complete text.)				
3.2.1	General The voting process shall incorporate the following features that are applicable to all types of disabilities:				
а.	When the provision of accessibility involves an alternative format for ballot presentation, then all information presented to voters including instructions, warnings, error and other messages, and ballot choices shall be presented in that alternative format.	Accept	С	G2	#87, 108 – closed
b.	The support provided to voters with disabilities shall be intrinsic to the accessible voting station. It shall not be necessary for the accessible voting station to be connected to any personal assistive device of the voter in order for the voter to operate it correctly.	Accept	С		
C.	When the primary means of voter identification or authentication uses biometric measures that require a voter to possess particular biological characteristics, the voting process shall provide a secondary means that does not depend on those characteristics.	Accept	C		System does not use biometric measures
3.2.2	Vision				

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test Issues
	The voting process shall accessible to voters with visual disabilities				
	Discussion: Note that all aspects of the voting process are to be accessible, not just the voting machine.				
3.2.2.	Partial Vision				
1	The accessible voting station shall be accessible to voters with partial vision.				
a.	The vendor shall conduct summative usability tests on the voting system using partially sighted individuals. The	Accept	Appx E #23		Interpretation 2007-03
	vendor shall document the testing performed and report		#25		Document review; test
	the test results using the Common Industry Format.				results delivered to the
	Data Package submitted to the EAC for national				EAC
	certification.		-		
b.	I he accessible voting station with an electronic image display shall be capable of showing all information in at	Accept	С		
	least two font sizes, (a) 3.0-4.0 mm and (b) 6.3-9.0 mm,				
6	under control of the voter.	Accent	C		
0.	electronic image display shall be capable of showing all	Лосері	U		
	information in high contrast either by default or under the				
	figure-to-ground ambient contrast ratio for text and				
4	informational graphics of at least 6:1.	Accept	0		Not a color diaplay
u.	image display shall allow the voter to adjust the color or	Accept			Not a color display
	the figure-to-ground ambient contrast ratio. <i>Discussion:</i>				
	See Technical Guide for Color, Contrast and Text Size in Appendix D for examples of how a voting station may				
	meet this requirement by offering a limited number of				
	discrete choices. In particular, it is not required that the station offer a continuous range of color or contrast				
	values.				
e.	Buttons and controls on accessible voting stations shall be distinguishable by both shape and color.	Accept	С		
f.	An accessible voting station using an electronic image	Accept	С	G2	
	convey the same information as that which is displayed				
2.2.2	on the screen.				
3.2.2. 2	The accessible voting station shall be accessible to				
	voters who are blind.				
a.	The vendor shall conduct summative usability tests on the voting system using individuals who are blind. The	Accept	Appx E #23		Interpretation 2007-03 #23 Closed
	vendor shall document the testing performed and report		"20		Document review; test
	the test results using the Common Industry Format. This documentation shall be included in the Technical Data				results delivered to the
	Package submitted to the EAC for national certification.				
b.	The accessible voting station shall provide an audio-	Accept	С		
	of the visual ballot interface, as specified in Subsection				
	2.3.3.				
	tactilely discernible controls for voter input. Full				
	functionality includes at least:				
	<ul> <li>Instructions and reedback on initial activation of the ballot (such as insertion of a smart card). if this is</li> </ul>				
	normally performed by the voter on comparable voting				
	stations <ul> <li>Instructions and feedback to the voter on how to</li> </ul>				
	operate the accessible voting station, including settings				
	and options (e.g., volume control, repetition)				
	<ul> <li>Instructions and feedback for navigation of the ballot</li> <li>Instructions and feedback for contest choices, including</li> </ul>				
	write-in candidates				

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
	· Instructions and foodbook on confirming and obonging				Issues
	selections				
	<ul> <li>Instructions and feedback on final submission of ballot</li> </ul>				
i.	The ATI of the accessible voting station shall provide the	Accept	С	G2	
	same capabilities to vote and cast a ballot as are				
	provided by other voting machines or by the visual				
ii	The ATI shall allow the voter to have any information	Accent	C	62	
	provided by the voting system repeated.	Лссері	C	02	
iii.,	The ATI shall allow the voter to pause and resume the	Accept	С	G2	# 76 & 121 – Closed
	audio presentation.	•			
iv.	The ATI shall allow the voter to skip to the next contest	Accept	С	G2	
	or return to previous contests.	Assant		00	
v.	a referendum so as to be able to vote on it immediately	Accept	C	GZ	
C.	All voting stations that provide audio presentation of the		С		
	ballot shall conform to the following requirements:		•		
	Discussion: These requirements apply to all voting				
	machine audio output, not just to the ATI of an				
	accessible voting station.	Accont	C		
1.	industry standard connector for private listening using a	Accept	C		
	3.5mm stereo headphone jack to allow voters to use				
	their own audio assistive devices.				
ii.	When a voting machine utilizes a telephone style	Accept	С		EAC confirmed with US
	handset or headphone to provide audio information, it				Accessibility Board that
	shall provide a wireless 1-Coll coupling for assistive				there have been no
	information for voters with partial hearing. That coupling				standard headphones
	shall achieve at least a category T4 rating as defined by				
	American National Standard for Methods of				
	Measurement of Compatibility between Wireless				
	Communications Devices and Hearing Aids, ANSI				
iii	No voting equipment shall cause electromagnetic	Accept	С		Not a wireless device
,	interference with assistive hearing devices that would		•		and EAC confirmed with
	substantially degrade the performance of those devices.				US Accessibility Board
	The voting equipment, considered as a wireless device,				that there have been no
	shall achieve at least a category 14 rating as defined by				reports of issues with
	Measurement of Compatibility between Wireless				standard headphones
	Communications Devices and Hearing Aids, ANSI				
	C63.19				
iv.	A sanitized headphone or handset shall be made	Accept	С		#77 – closed.
	available to each voter.	A			#75 70 also al
V.	I ne voting machine shall set the initial volume for each voter between 40 and 50 dB SPI	Accept	C		#75, 76 – Closed.
vi.	The voting machine shall provide a volume control with	Accept	С		
	an adjustable volume from a minimum of 20dB SPL up		•		
	to a maximum of 100 dB SPL, in increments no greater				
	than 10 dB.				
VII.	The audio system shall be able to reproduce frequencies	Accept	С		
Viii	The audio presentation of verbal information should be	Accept	С	G2	
•	readily comprehensible by voters who have normal	, 1000pt	U	02	
	hearing and are proficient in the language. This includes				
	such characteristics as proper enunciation, normal				
	Intonation, appropriate rate of speech, and low				
	pronounced as the candidate intends				
ix.	The audio system shall allow voters to control the rate of	Accept	С		
	speech. The range of speeds supported should be at				
L	least 75% to 200% of the nominal rate.				
d.	It the normal procedure is to have voters initialize the	Accept	С		Ballot activation is

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	provide features that enable voters who are blind to perform this activation.				worker.
е.	If the normal procedure is for voters to submit their own ballots, then the accessible voting station shall provide features that enable voters who are blind to perform this submission.	Accept	С	G2	
f.	All mechanically operated controls or keys on an accessible voting station shall be tactilely discernible without activating those controls or keys.	Accept	С		
g.	On an accessible voting station, the status of all locking or toggle controls or keys (such as the "shift" key) shall be visually discernible, and discernible either through touch or sound.	Accept	С		Shift or locking control keys are not used
3.2.3	<b>Dexterity</b> The voting process shall be accessible to voters who lack fine motor control or use of their hands.				
a.	The vendor shall conduct summative usability tests on the voting system using individuals lacking fine motor control. The vendor shall document the testing performed and report the test results using the Common Industry Format. This documentation shall be included in the Technical Data Package submitted to the EAC for national certification.	Accept	Appx E #23		Interpretation 2007-03 #23 Closed Document review; test results delivered to the EAC
b.	All keys and controls on the accessible voting station shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls and keys shall be no greater 5 lbs. (22.2 N).	Accept	С		
C.	The accessible voting station controls shall not require direct bodily contact or for the body to be part of any electrical circuit.	Accept	С		
d.	The accessible voting station shall provide a mechanism to enable non-manual input that is functionally equivalent to tactile input. <i>Discussion: All the</i> <i>functionality of the accessible voting station (e.g.,</i> <i>straight party voting, write-in candidates) that is available</i> <i>through the other forms of input, such as tactile, must</i> <i>also be available through a non-manual input</i> <i>mechanism if it is provided by the accessible voting</i> <i>station.</i>	Accept	C		
e.	If the normal procedure is for voters to submit their own ballots, then the accessible voting station shall provide features that enable voters who lack fine motor control or the use of their hands to perform this submission.	Accept	С		
3.2.4	<b>Mobility</b> The voting process shall be accessible to voters who use mobility aids, including wheelchairs.				
a.	The accessible voting station shall provide a clear floor space of 30 inches (760 mm) minimum by 48 inches (1220 mm) minimum for a stationary mobility aid. The clear floor space shall be level with no slope exceeding 1:48 and positioned for a forward approach or a parallel approach.	Accept	С		
b.	All controls, keys, audio jacks and any other part of the accessible voting station necessary for the voter to operate the voting machine shall be within reach as specified under the following sub-requirements: Discussion: Note that these requirements have meaningful application mainly to controls in a fixed location. A hand-held tethered control panel is another acceptable way of providing reachable controls.	Accept	C		
i.	If the accessible voting station has a forward approach with no forward reach obstruction then the high reach shall be 48 inches maximum and the low reach shall be 15 inches minimum. (See Figure 1. in the VVSG)	Accept	c		

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
					Issues
п.	If the accessible voting station has a forward approach	Accept	С		
	with a forward reach obstruction, the following				
	requirements apply (See Figure 2):				
	• The forward obstruction shall be no greater than 25 inches in depth, no higher than 24 inches and its better				
	surface no lower than 27				
	• If the obstruction is no more than 20 inches in denth				
	then the maximum high reach shall be 48 inches				
	otherwise it shall be 44 inches.				
iii.	Space under the obstruction between the finish floor or	Accept	С		
,	ground and 9 inches (230 mm) above the finish floor or		-		
	ground shall be considered toe clearance and shall				
	comply with the following provisions:				
	<ul> <li>Toe clearance shall extend 25 inches (635 mm)</li> </ul>				
	maximum under the obstruction				
	<ul> <li>The minimum toe clearance under the obstruction shall</li> </ul>				
	be either 17 inches (430 mm) or the depth required to				
	reach over the obstruction to operate the accessible				
	voting station, whichever is greater				
	• Loe clearance shall be 30 inches (760 mm) wide				
	minimum	Assant	0		
IV.	space under the obstruction between 9 inches (230 mm)	Accept	C		
	shall be considered knee clearance and shall comply				
	with the following provisions:				
	Knee clearance shall extend 25 inches (635 mm)				
	maximum under the obstruction at 9 inches (230 mm)				
	above the finish floor or ground.				
	• The minimum knee clearance at 9 inches (230 mm)				
	above the finish floor or ground shall be either 11 inches				
	(280 mm) or 6 inches less than the toe clearance,				
	whichever is greater.				
	<ul> <li>Between 9 inches (230 mm) and 27 inches (685 mm)</li> </ul>				
	above the finish floor or ground, the knee clearance shall				
	be permitted to reduce at a rate of 1 inch (25 mm) in				
	depth for each 6 inches (150 mm) in height. Discussion:				
	It follows that the minimum knee clearance at 27 inches				
	above the finish noor of ground shall be 3 inches less				
	floor				
	• Knee clearance shall be 30 inches (760 mm) wide				
	minimum				
V.	If the accessible voting station has a parallel approach	Accept	С		
••	with no side reach obstruction then the maximum high	, 1000pt	U		
	reach shall be 48 inches and the minimum low reach				
	shall be 15 inches. (See Figure 3 in the VVSG)				
vi.	If the accessible voting station has a parallel approach	Accept	С		
	with a side reach obstruction, the following sub-				
	requirements apply. See Figure 4.				
	The side obstruction shall be no greater than 24 inches				
	in depth and its top no higher than 34 inches.				
	• If the obstruction is no more than 10 inches in depth,				
	then the maximum high reach shall be 48 inches,				
	otherwise it shall be 46 inches. Discussion: Since this is				
	a parallel approach, no clearance under the obstruction				
<u> </u>	All labels displays controls have audio jocks and any	Accont	C	+	
U.	other part of the accessible voting station pecessary for	Ассері			
	the voter to operate the voting machine shall be easily				
	legible and visible to a voter in a wheelchair with normal				
	evesight (no worse than 20/40, corrected) who is in an				
	appropriate position and orientation with respect to the				
	accessible voting station. <i>Discussion: There are a</i>				
	number of factors that could make relevant parts of the				
	accessible voting station difficult to see such as: small				

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
					Issues
	lettering, controls and labels tilted at an awkward angle				
	from the voter's viewpoint, and glare from overnead				
325	Hearing				
5.2.5	The voting process shall be accessible to voters with				
	hearing disabilities.				
a.	The accessible voting station shall incorporate the	Accept	С		#75 – closed.
	features listed under requirement 3.2.2.2 I for voting	•			
	equipment that provides audio presentation of the ballot				
	to provide accessibility to voters with hearing disabilities.		-		
b.	If voting equipment provides sound cues as a method to	Accept	С		
	alert the voter, the tone shall be accompanied by a				
326	Speech				
5.2.0	The voting process shall be accessible to voters with				
	speech disabilities.				
a.	No voting equipment shall require voter speech for its	Accept	С		
	operation.	·			
3.2.7	English Proficiency				
a.	For voters who lack proficiency in reading English, or	Accept	С	G2	
	whose primary language is unwritten, the voting				
	equipment shall provide spoken instructions and ballots				
	In the preferred language of the voter, consistent with				
	apply to this mode of interaction				
3.2.8	Cognition				
	The voting process shall be accessible to voters with				
	cognitive disabilities.				
	Discussion: At present there are no design features				
	specifically aimed at helping those with cognitive				
	of				
	audio with the screen in a DRF is helpful for some				
	cognitive disabilities such as dyslexia. Requirements in				
	Subsection 3.1.4 also address cognitive issues relative				
	to voting system usability.				
4	Hardware Standards				
4.1	Performance Requirements				
	Performance requirements address a broad range of				
411	parameters (see below)				
4.1.1	Voting system accuracy addresses the accuracy of data				
	for each of the individual ballot positions that could be				
	selected by a voter, including the positions that are not				
	selected. For a voting system, accuracy is defined as the				
	ability of the system to capture, record, store,				
	consolidate and report the specific selections and				
	absence of selections, made by the voter for each ballot				
	terms of an error rate that for testing purposes				
	represents the maximum number of errors allowed while				
	processing a specified volume of data.				
a.	For all paper-based voting systems:	Accept	G2, A-		
i.	Scanning ballot positions on paper ballots to detect		OMR		
	selections for individual candidates and contests				
".	digital data				
b	For all DRF voting systems:	Accent	G1	G2 P1 4-	
i.	Recording the voter selections of candidates and	/ coopi		In	
ii.	contests into voting data storage				
	Recording voter selections of candidates and contests				
	into ballot image storage independently from voting data				
	storage				
C.	For precinct-count voting systems (paper-based and	Accept	G1	G2, P1, A-	
_ I.	DREJ.			111	
VVSG	Certification Test Requirements	Test	Test	Function	Comments &
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	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
	Consolidation of vote selection data from multiple precinct-based voting machines to generate jurisdiction- wide vote counts, including storage and reporting of the consolidated vote data				Issues
d. i.	For central-count voting systems (paper-based and DRE): Consolidation of vote selection data from multiple counting devices to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data	Accept	G1	G2,P1 A- In, A-OMR	#89 (Undervotes) closed. Interpretation 2007-06
	For testing purposes, the acceptable error rate is defined using two parameters: the desired error rate to be achieved, and the maximum error rate that should be Accept by the test process. For each processing function indicated above, the voting system shall achieve a target error rate of no more than one in 10,000,000 ballot positions, with a maximum acceptable error rate in the test process of one in 500,000 ballot positions.	Accept	A-OMR		#115 – closed
4.1.2	Environmental Requirements All voting systems shall be designed to withstand the environmental conditions contained in the appropriate test procedures of the Standards/Guidelines. These procedures will be applied to all devices for casting, scanning and counting ballots, except those that constitute COTS devices that have not been modified in any manner to support their use as part of a voting system and that have a documented record of performance under conditions defined in the Standards/Guidelines.				Interpretation 2007-05
	The Technical Data Package supplied by the vendor shall include a statement of all requirements and restrictions regarding environmental protection, electrical service, recommended auxiliary power, telecommunications service, and any other facility or resource required for the proper installation and operation of the system.	Accept	E		
4.1.2.	Shelter Requirements				
	Precinct count systems are designed for storage and operation in any enclosed facility ordinarily used as a warehouse or polling place, with prominent instructions as to any special storage requirements	Accept	E		
4.1.2.	Space Requirements				
4.1.2.	The arrangement of the voting system does not impede performance of their duties by polling place officials, the orderly flow of voters through the polling place, or the ability for the voter to vote in private Furnishings and Fixtures	Accept	E		
3	Any furnishings or fixtures provided as a part of voting systems, and any components provided by the vendor that are not a part of the system but that are used to support its storage, transportation, or operation, comply with the design and safety requirements of Subsection 4.3.8.	Accept	E		
4.1.2. 4	Electrical Supply Components of voting systems that require an electrical supply shall meet the following standards:		_		
a.	Precinct count systems operate with the electrical supply ordinarily found in polling places (Nominal 120 Vac/60Hz/1 phase)	Accept	E		
b.	For components of voting systems that require an electrical supply, central count systems operate with the electrical supply ordinarily found in central tabulation	Accept			

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
					Issues
	facilities or computer room facilities (120vac/60hz/1, 208vac/60hz/3, or 240vac/60hz/2);				
C.	All voting machines shall also be capable of operating	Accept	С		Interpretation 2008-02
	for a period of at least 2 hours on backup power, such				Interpretation 2008-06
	that no voting data is lost or corrupted nor normal				·
	operations interrupted. When backup power is				
	exhausted the voting machine shall retain the contents				
	of all memories intact. The backup power capability is				
440	not required to provide lighting of the voting area.				lateraretation 2000.02
4.1.Z.	Electrical Power Disturbance				Interpretation 2008-02
5	systems and all DRF equipment shall be able to				
	withstand, without disruption of normal operation or loss				
	of data:				
a.	Voltage dip of 30% of nominal @10 ms;	Accept	E		
b.	Voltage dip of 60% of nominal @100 ms & 1 sec	Accept	E		
с.	Surges of >95% interrupt @5Sec;	Accept	E		
d.	Surges of + or – 15% line variations of nominal line	Accept	E		
e.	Electric power increases of 7.5% and reductions of	Accept	E		
	12.5% of nominal specified power supply for a period of		_		
	up to four hours at each power level.				
4.1.2.	Electrical Fast Transient				
6	Vote scanning and counting equipment for paper-based				
	systems, and all DRE equipment, shall be able to				
	withstand, without disruption of normal operation or loss				
<u> </u>	of data, electrical last transients of. (2 k)/(2 k)	Accont			
a.	+2 kV and $-2$ kV on External Power lines (both AC and DC)	Ассері			
b.	+ 1 kV and – 1 kV on Input/Output lines (signal, data.	Accept	E		
	and control lines) longer than 3 meters				
С.	Repetition Rate for all transient pulses will be 100 kHz	Accept	E		Interpretation 2008-10
4.1.2.	Lighting Surge				
7	Vote scanning and counting equipment for paper-based				
	systems, and all DRE equipment, shall be able to				
	of data, surges of:				
а	+ or $-2 \text{ kV}$ AC line to line	Accept	F		
b.	+ or $-2$ kV AC line to earth	Accept	E		
с.	+ or $-0.5$ kV DC line to line >10m	Accept	E		
d.	+ or – 0.5 kV DC line to earth >10m	Accept	E		
e.	+ or – 1 kV I/O sig/control >30m	Accept	E		
4.1.2.	Electrostatic Disruption				
8			_		
	The vote scanning and counting equipment for paper-	Accept	E		#116 & 117 closed
	based systems, and all DRE equipment, is able to				
	discharge without damage or loss of data. The				
	equipment may reset or have momentary interruption so				
	long as normal operation is resumed without human				
	intervention or loss of data. Loss of data means votes				
	that have been completed and confirmed to the voter.				
4.1.2.	Electromagnetic Emissions				
9					
	vote scanning and counting equipment for paper-based	Accept	E		
	Systems, and an DRE equipment, complies with the Rederal Communications				
	Commission, Part 15. Class B requirements for both				
	radiated and conducted emissions				
4.1.2.	Electromagnetic Susceptibility				
10					
	Vote scanning and counting equipment for paper-based	Accept	E		
	systems, and all DRE equipment, is able to withstand an				
	80% AM modulation over the frequency range of 80				

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	MHz to 1000 MHz, without disruption of normal				1350055
4.1.2. 11	Conducted RF Immunity Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand, without disruption of normal operation or loss of data, conducted RF energy of:				
a.	10V rms over the frequency range 150 KHz to 80 MHz with an 80% amplitude modulation with a 1 KHz sine wave AC & DC power	Accept	E		
b.	10V sig/control >3 m over the frequency range 150 KHz to 80 MHz with an 80% amplitude modulation with a 1 KHz sine wave	Accept	E		
4.1.2. 12	Magnetic Fields Immunity				
	Vote scanning and counting equipment for paper-based systems, and all DRE equipment, shall be able to withstand, without disruption of normal operation or loss of data, AC magnetic fields of 30 A/m at 60 Hz	Accept	E		
4.1.2. 13	Environmental Control – Operating Environment				
	Equipment used for election management activities or vote counting (including both precinct and central count systems) shall be capable of operation in temperatures ranging from 50 to 95 degrees Fahrenheit.	Accept	E		
4.1.2. 14	Environmental Control – Transit and Storage Equipment used for vote casting or for counting votes in a precinct count system, shall meet these specific minimum performance standards that simulate exposure to physical shock and vibration associated with handling and transportation by surface and air common carriers, and to temperature conditions associated with delivery and storage in an uncontrolled warehouse environment:				
a.	High and low storage temperatures ranging from -4 to +140 degrees Fahrenheit, equivalent to MIL-STD-810D, Methods 501.2 and 502.2, Procedure I-Storage;	Accept	E		
b.	Bench handling equivalent to the procedure of MIL-STD- 810D, Method 516.3, Procedure VI;	Accept	E		
C.	Vibration equivalent to the procedure of MIL-STD-810D, Method 514.3, Category 1- Basic Transportation, Common Carrier	Accept	E		
d.	Uncontrolled humidity equivalent to the procedure of MIL-STD-810D, Method 507.2, Procedure I-Natural Hot-Humid.	Accept	E		
4.1.2. 15	Data Network Requirements				
	Voting systems may use a local or remote data network. If such a network is used, then all components of the network shall comply with the telecommunications requirements described in Section 6 and the Security requirements described in Section 7.	Accept	G1		No network connection
4.1.3	Election Management System (EMS) Requirements The Election Management System (EMS) requirements address electronic hardware and software used to conduct the pre-voting functions defined in Section 2 with regard to ballot preparation, election programming, ballot and program installation, readiness testing, verification at the polling place, and verification at the central location.				
4.1. <del>3</del> . 1	Recording Requirements Voting systems shall accurately record all election management data entered by the user, including election officials or their designees.				
a.	Record every entry made by the user;	Accept	G1	G2, P1	
b.	Add permissible voter selections correctly to the memory	Accept	G1	G2, P1	

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	components of the dovice:				Issues
C.	Verify the correctness of detection of the user selections and the addition of the selections correctly to memory	Accept	G1	G2, P1	
d.	Add various forms of data entered directly by the election official or designee, such as text, line art, logos, and images	Accept	G1	G2, P1	
е.	Verify the correctness of detection of data entered directly by the user and the addition of the selections correctly to memory	Accept	G1	G2, P1	
f.	Preserve the integrity of election management data stored in memory against corruption by stray electromagnetic emissions, and internally generated spurious electrical signals	Accept	G1	G2, P1	
a.	Log corrected data errors by the system.	Accept	G1	G2. P1	
4.1.3. 2	Memory Stability Memory devices used to retain election management data shall have demonstrated error-free data retention for a period of 22 months.	Accept	G1	G2, P1	
4.1.4	Vote Recording Requirements				
4.1.4. 1	Common Requirements All voting systems shall provide voting booths or enclosures for poll site use. Such booths or enclosures may be integral to the voting system or supplied as components of the voting system, and shall:				
a.	Be integral to, or make provisions for installation of the voting device;	Accept	G1		
b.	Ensure by its structure stability against movement or overturning during entry, occupancy, and exit by the voter	Accept	С		
C.	Provide privacy for the voter, and be designed in such a way as to prevent observation of the ballot by any person other than the voter	Accept	С		
d.	Capable of meeting the accessibility requirements of Section 2.2.7.1.	Accept	С		
4.1.4. 2	<ul> <li>Paper-based Recording Requirements</li> <li>The paper-based recording requirements govern:</li> <li>Ballot cards or sheets, and pages or assemblies of pages containing ballot field identification data</li> <li>Ballot marking devices</li> <li>Frames or fixtures to hold the ballot while it is being marked</li> <li>Compartments or booths where voters record selections</li> <li>Secure containers for the collection of voted ballots</li> </ul>				
a.	Paper ballots used by paper-based voting systems shall	Accept	G2		
i.	meet the following standards: Marks that identify the unique ballot format shall be outside the area in which votes are recorded, so as to minimize the likelihood that these marks will be mistaken for vote responses and the likelihood that recorded votes will obliterate these marks				
ii.	If printed alignment marks are used to locate the vote response fields on the ballot, these marks shall be outside the area in which votes are recorded, so as to minimize the likelihood that these marks will be mistaken for vote responses and the likelihood that recorded votes will obliterate these marks	Accept	G2		
.	The Technical Data Package shall specify the required paper stock, size, shape, opacity, color, watermarks, field layout, orientation, size and style of printing, size and location of mark fields used for vote response fields and to identify unique ballot formats, placement of alignment marks, ink for printing, and folding and bleed- through limitations for preparation of ballots that are compatible with the system	Accept	G2		

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
b.	The Technical Data Package shall specify marking devices, which, if used to make the prescribed form of mark, produce readable marked ballots such that the system meets the performance requirements for accuracy in Subsection 4.1.1. Marking devices can be either manual (such as pens or pencils) or electronic. These specifications shall identify:	Accept	G2, A- OMR		100000
i.	Specific characteristics of marking devices that affect readability of marked ballots	Accept	G2		
ii.	Performance capabilities with regard to each characteristic	Accept	A-OMR		
iii.	For marking devices manufactured by multiple external sources, a listing of sources and model numbers that are compatible with the system.	Accept	A-OMR		#115 – closed
a.	A frame or fixture for printed ballot cards is optional. If such a device is provided, it shall:	Accept	N/A		System does not use a frame or fixture for printed ballot cards
i.	Be of any size and shape consistent with its intended use;	Accept	N/A		System does not use a frame or fixture for printed ballot cards
ii.	Position the card properly;	Accept	N/A		System does not use a frame or fixture for printed ballot cards
iii.	Hold the ballot card securely in its proper location and orientation for voting	Accept	N/A		System does not use a frame or fixture for printed ballot cards
iv.	Comply with the design and construction requirements in Section 3.4.	Accept	N/A		System does not use a frame or fixture for printed ballot cards
a.	Ballot boxes and ballot transfer boxes which serve as secure containers for the storage and transportation of voted ballots, shall:	Accept	N/A		System does not use ballot boxes
i.	Be of any size, shape, and weight commensurate with their intended use	Accept	N/A		System does not use ballot boxes
ii.	Incorporate locks or seals, and specifications in the system documentation	Accept	N/A		System does not use ballot boxes
iii.	Provide specific points where ballots are inserted, with all other points on the box constructed in a manner that prevents ballot insertion	Accept	N/A		System does not use ballot boxes
iv.	For precinct count systems, contain separate compartments for segregating unread ballots, ballots with write-in votes, or irregularities that may require special handling or processing. In lieu of compartments, conversion processing may mark such ballots with an identifying spot or stripe to facilitate manual segregation	N/A			Not a precinct count system
3	DRE Systems Recording Requirements				
a.	DRE systems shall include an audible or visible activity indicator providing the status of each voting device. This indicator shall:	Accept	G1	G2, P1	
i.	Indicate whether the device has been activated for voting	Accept	G1	G2, P1	
ii.	Indicate whether the device is in use.	Accept	G1	G2, P1	
b.	To ensure vote recording accuracy and integrity while protecting the anonymity of the voter, all DRE systems shall:	Accept			
i.	Contain all mechanical, electromechanical, and electronic components; software; and controls required to detect and record the activation of selections made by the voter in the process of voting and casting a ballot	Accept	G1	G2, P1	
ii.	Incorporate redundant memories to detect and allow correction of errors caused by the failure of any of the individual memories	Accept	G1	G2, P1	
iii.	Provide at least two processes that record the voter's selections that:	Accept	G1	G2, P1	

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
					Issues
	<ul> <li>To the extent possible, are isolated from each other</li> </ul>				
	<ul> <li>Designate one process and associated storage</li> </ul>				
	location as the main vote				
	detection, interpretation, processing and reporting path				
iv.	Use a different process to store ballot images, for which	Accept	G1	G2, P1	
	the method of recording may include any appropriate				
	encoding or data compression procedure consistent with				
	the regeneration of an unequivocal record of the ballot				
	as cast by the voter.				
V.	Provide a capability to retrieve ballot images in a form	Accept	G1	G2, P1	
	readable by humans.	·			
vi.	Ensure that all processing and storage protects the	Accept	G1	G2, P1	
	anonymity of the voter.	·			
C.	DRE systems meet the following requirements for	Accept	G1	G2. P1. A-	
-	recording accurately each vote and ballot cast:		-	In	
i.	Detect every selection made by the voter	Accept	G1	G2, P1, A-	
		riccopt	•	In	
ii	Correctly add permissible selections to the memory	Accent	G1	G2 P1 A-	
	components of the device	, 1000pt	Ŭ.	In	
iii	Verify the correctness of the detection of the voter	Accent	G1	G2 P1 A-	
	selections and the addition of the selections to memory	/ ccepi		In	
iv	Achieve an error rate not to exceed the requirement	Accent	A-In		
1.	indicated in Section 1.4.1	Accept			
	Breaching the integrity of voting date and hellet images	Accept	E		
v.	(for DPE machines) stored in momenty for the official	Accept	E		
	(IOF DRE machines) stored in memory for the original				
	stray electromagnetic emissions, and internally				
	deperated spurious electrical signals				
vi	Maintain a log of corrected data	Accont	G1	G2 D1 A	
vi.	Maintain a log of corrected data	Accept	GI	G2, F1, A-	
	Performing reliability refers to the ability of the DPE	Accont	A In		
	system to record votes accurately at its maximum rated	Лосері	A-111		
	processing volume for a specified period of time. The				
	DRE system shall record votes reliably in accordance				
	with the requirements of Subsection 4.3.3				
415	Paper-based Conversion Requirements				
415	Ballot Handling : Ballot handling consists of a ballot				
1	card's acceptance, movement through the read station				
1	and transfer into a collection station or recentacle				
2	The canacity to convert the marks on individual ballots	Accent	62	Ρ1 Δ_	
a.	into signals is uniquely important to control count	Лосері	02		
	systems. The canacity for a central count system shall			OWIN	
	be documented by the vendor. This documentation shall				
	include capacity for individual components that impact				
	the overall capacity				
h	When ballots are unreadable or some condition is	Accent	62	<b>Ρ1</b> Δ_	
ы.	detected requiring that the cards be segregated from	Лосері	02		
	pormally processed ballots for human review (e.g. write-			OWIN	
	ins) all central count paper-based systems shall do one				
i	of the following:				
и. Ш	Outstack the ballot				
lii	Stop the ballot reader and display a message promoting				
	the election official or				
	designee to remove the ballot				
	Mark the hallot with an identifying mark to facilitate ite				
	later identification				
C	Additionally, the system shall provide a capability that	Accent	G2	Ρ1 Δ-	
0.	can be activated by an authorized election official to	, 1000pr		OMR	
	identify hallots containing overvotes blank hallots and				
	hallots containing undervotes in a designated race. If				
	enabled these canabilities shall perform one of the				
	above actions in response to the indicated condition				
d.	When ballots are unreadable or when some condition is	N/A	1		Not a precinct count
<u>.</u>	detected requiring that the cards be segregated from	13/73			system
	normally processed ballots for human review (e.g. write-				-,

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	in votos) all procinct count systems shall:				issues
i.	In response to an unreadable or blank ballot, return the ballot and provide a message prompting the voter to examine the ballot	N/A			Not a precinct count system
ii.	In response to a ballot with a write-in vote, segregate the ballot or mark the ballot with an identifying mark to facilitate its later identification	N/A			Not a precinct count system
lii.	In response to a ballot with an overvote the system shall: • Provide a capability to identify an overvoted ballot • Return the ballot • Provide an indication prompting the voter to examine the ballot • Allow the voter to correct the ballot • Provide a means for an authorized election official to deactivate this capability entirely and by contest	N/A			Not a precinct count system
iv.	In response to a ballot with an undervote, the system shall: • Provide a capability to identify an undervoted ballot • Return the ballot • Provide an indication prompting the voter to examine the ballot • Allow the voter to correct the ballot • Allow the voter to submit the ballot with the undervote • Provide a means for an authorized election official to deactivate this capability	N/A			Not a precinct count system
е.	Ballot readers shall prevent multiple feed or detect and provide an alarm indicating multiple feed. Multiple feed occurs when a ballot reader attempts to read more than one ballot at a time.	Accept	G2	P1, A- OMR	
i.	If multiple feed is detected, the card reader shall halt in a manner that permits the operator to remove the unread cards causing the error, and reinsert them in the card input hopper	Accept	G2	P1, A- OMR	
ii.	The frequency of multiple feeds with ballots intended for use with the system shall not exceed 1 in 10,000	Accept	A-OMR		
4.1.5. 2	Ballot Reading Accuracy This paper-based system requirement governs the conversion of the physical ballot into electronic data. Reading accuracy for ballot conversion refers to the				
a. b.	ability to: a. Recognize vote punches or marks, or the absence thereof, for each possible selection on the ballot b. Discriminate between valid punches or marks and				
с.	extraneous perforations, smudges, and folds c. Convert the vote punches or marks, or the absence thereof, for each possible selection on the ballot into digital signals To ensure accuracy, paper-based systems shall:				
d.	Detect punches or marks that conform to vendor specifications with an error rate not exceeding the requirement indicated in Subsection 4.1.1	Accept	A-OMR		#115 – closed
е.	Ignore, and not record, extraneous perforations, smudges, and folds;	Accept	A-OMR		
f.	Reject ballots that meet all vendor specifications at a rate not to exceed 2 percent.	Accept	A-OMR		
4.1.6	Processing Requirements				
4.1.6. 1	Paper-based Processing Requirements				
a.	Processing accuracy refers to the ability of the system to receive electronic signals produced by punches for punch card systems and vote marks and timing information for marksense systems; perform logical and numerical operations upon these data; and reproduce the contents of memory when required without error				

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
					Issues
i.	Specific requirements are detailed below: Processing accuracy shall be measured by vote selection error rate, the ratio of uncorrected vote selection errors to the total number of ballot positions that could be recorded across all ballots when the system is operated at its nominal or design rate of processing	Accept	A-OMR		#115 – closed
ii.	The vote selection error rate shall include data that denotes ballot style or precinct as well as data denoting a vote in a specific contest or ballot proposition	Accept	A-OMR		
iii.	The vote selection error rate shall include all errors from any source	Accept	A-OMR		#115 - closed
iv.	The vote selection error rate shall not exceed the requirement indicated in Subsection 4.1.1	Accept	A-OMR		#115 – closed
b.	Paper-based system memory devices, used to retain control programs and data, shall have demonstrated error-free data retention for a period of 22 months, under the environmental conditions for operation and non- operation (i.e., storage).	Accept	A-OMR		
4.1.6. 2 a.	DRE Voting Systems The DRE voting systems processing requirements address all mechanical devices, electromechanical devices, electronic devices, and software required to process voting data after the polls are closed. DRE voting systems shall meet the following requirements for processing speed:				
i.	Operate at a speed sufficient to respond to any operator and voter input without perceptible delay (no more than three seconds)	Accept	G1	G2	
ii.	if the consolidation of polling place data is done locally, perform this consolidation in a time not to exceed five minutes for each device in the polling place	Accept	G1	G2	
4.1.6. 2.2 b.	Processing Accuracy Processing accuracy is defined as the ability of the system to process voting data stored in DRE voting devices or in removable memory modules installed in such devices. Processing includes all operations to consolidate voting data after the polls have been closed. DRE voting systems shall:				
i.	Produce reports that are completely consistent, with no discrepancy among reports of voting device data produced at any level	Accept	G1	G2	
ii.	Produce consolidated reports containing absentee, provisional or other voting data that are similarly error- free. Any discrepancy, regardless of source, is resolvable to a procedural error, to the failure of a non- memory device or to an external cause	Accept	G1	G2	
С.	DRE system memory devices used to retain control programs and data shall have demonstrated error-free data retention for a period of 22 months. Error-free retention may be achieved by the use of redundant memory elements, provided that the capability for conflict resolution or correction among elements is included.	Accept	G1	G2	
4.1.7	Reporting Requirements				
4.1.7. 1	Removable Storage Memory				
	All storage media that can be removed from the voting system and transported to another location for readout and report generation, these media shall use devices with demonstrated error-free retention for a period of 22 months under the environmental conditions for operation and non-operation contained in Subsection 4.1.2. Examples of removable storage media include:	Accept	G1	G2	

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	programmable read-only memory (PROM), random				Issues
	access memory (RAM) with battery backup, magnetic media or optical media.				
4.1.7. 2	Printers All printers used to produce reports of the vote count shall be capable of producing:				
a.	Alphanumeric headers	Accept	G1	G2	
b.	Election, office and issue labels	Accept	G1	G2	
C.	Alphanumeric entries generated as part of the audit record.	Accept	G1	G2	
4.1.8	Vote Data Management Requirements				
	The vote data management requirements for all systems				
	address capabilities that manage, process, and report				
	polling place or other jurisdictional levels. These				
	capabilities allow the system to:				
	Consolidate voting data from polling place data	Accept	G1	G2	
	memory or transfer devices				
	Report polling place summaries				
	Process absentee ballots, data entered manually, and				
	administrative ballot definition data				
	required to deperate output reports in the various				
	formats required by the using jurisdiction.				
4.1.8.	Data File Management				
1	All voting systems shall provide the capability to:				
a.	Integrate voting data files with ballot definition files	Accept	G1	G2	
b.	Verify file compatibility.	Accept	G1	G2	
C.	Edit and update files as required.:	Accept	G1	G2	
4.1.8. 2	All voting systems shall include:				
	Report generators for producing output reports at the	Accept	G2, A-		The OMR 'device'
	device, polling place, and summary level, with provisions		OMR		consists of the OMR
	for administrative and judicial subdivisions as required				Reader and the Election
1.0	by the using jurisdiction.				Management System.
4.2	Physical Characteristics				
4.2.1	There is no numerical limitation on the size of any voting	Accent	C		
	equipment, but the size of each voting machine should	Лосері	C		
	be compatible with its intended use and the location at				
	which the equipment is to be used.				
4.2.2	Weight				
	There is no numerical limitation on the weight of any	Accept	С		
	voting equipment, but the weight of each voting machine				
	should be compatible with its intended use and the				
423	Transport and Storage of Precinct Systems				
4.2.0	All precinct voting systems shall:				
a.	Provide a means to safely and easily handle, transport,	Accept	С		
	and install voting equipment, such as wheels or a handle				
	or handles				
b.	Be capable of using, or be provided with, a protective	Accept	С		#94 – closed
	enciosure rendering the equipment capable of				
<sup>1.</sup>	ministanuling.				
ii.	surface and air transportation				
	Stacking loads associated with storage				
4.3	Design, Construction, and Maintenance				
	Characteristics				
4.3.1	Materials Process and Parts				
	ine approach to system design is unrestricted, and may				
	meeting the voting systems requirements and standards				
	Precinct count systems shall be designed in accordance				

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
	with best commercial practice for microcomputers, process controllers, and their peripheral components. Central count voting systems and equipment used in a central tabulating environment shall be designed in accordance with best commercial and industrial practice. All voting systems shall:				1350125
а.	Be designed and constructed so that the frequency of equipment malfunctions and maintenance requirements are reduced to the lowest level consistent with cost constraints.	Accept	С		
b.	Include, as part of the accompanying TDP, an approved parts list	Accept	С		
с.	Exclude parts or components not included in the approved parts list.	Accept	С		#98 – closed
4.3.2	Durability				
	All voting systems shall be designed to withstand normal use without deterioration and without excessive maintenance cost for a period of ten years.	Accept	С		Interpretation 2008-05
4.3.3	Reliability				
	There was no degradation of performance such that the device was unable to perform its intended function for longer than 10 seconds. The reliability of voting system devices shall be measured as Mean Time Between Failure (MTBF) for the system submitted for testing. MBTF is defined as the value of the ratio of operating time to the number of failures which have occurred in the specified time interval. A typical system operations scenario consists of approximately 45 hours of equipment operation, consisting of 30 hours of equipment set-up and readiness testing and 15 hours of elections operations. For the purpose of demonstrating compliance with this requirement, a failure is defined as any event which results in either the: • Loss of one or more functions • Degradation of performance such that the device is unable to perform its intended function for longer than 10 seconds The MTBF demonstrated during certification testing shall be at least 163 hours.	Accept	A-OMR, A-In		#114 - closed
4.3.4	Maintainability				
	See the requirement for detail about Maintainability				
4.3.4. 1	Physical Attributes The following physical attributes will be examined to assess reliability:				
a.	Presence of labels and the identification of test points	Accept	С		
b.	Provision of built-in test and diagnostic circuitry or physical indicators of condition	Accept	С		
С.	Presence of labels and alarms related to failures	Accept	С		
d.	Presence of features that allow non-technicians to perform routine maintenance tasks (such as update of the system database)	Accept			
4.3.4. 2	Additional Attributes The following additional attributes will be examined to assess maintainability:		С		
a.	Ease of detecting that equipment has failed by a non- technician	Accept	С		
b.	Ease of diagnosing problems by a trained technician	Accept	С		
C.	Low false alarm rates (i.e., indications of problems that do not exist)	Accept	C		
d.	Ease of access to components for replacement	Accept	С		
е.	Ease with which adjustment and alignment can be performed	Accept	С		
f.	Ease with which database updates can be performed by	Accept	С		

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
g.	Adjust, align, tune or service components	Accept	С		#95, #96 – closed
4.3.5	Availability- The availability of a voting system is defined as the probability that the equipment (and supporting software) needed to perform designated voting functions will respond to operational commands and accomplish the function. The voting system shall meet the availability standard for each of the following voting functions:				
a.	For all paper-based voting systems:	Accept	G2	A-OMR	
1	Recording voter selections (such as by ballot marking or punch)	Accept	G2	A-OMR	
2	Scanning the punches or marks on paper ballots and converting them into digital data	Accept	G2	A-OMR	
b.	For all DRE systems, recording and storing voter ballot selections	Accept	G1,	G2, A-In	
C.	For precinct count systems (paper-based and DRE), consolidation of vote selection data from multiple precinct based systems to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data	Accept	G1,	G2, A-In	
d.	For central-count systems (paper-based and DRE), consolidation of vote selection data from multiple counting devices to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data	Accept	G1,	G2, A-In	
	System availability is measured as the ratio of the time during which the system is operational (up time) to the total time period of operation (up time plus down time). Inherent availability (Ai) is the fraction of time a system is functional, based upon Mean Time Between Failure (MTBF) and Mean Time To Repair (MTTR), that is: Ai = (MTBF)/(MTBF + MTTR) MTTR is the average time required to perform a corrective maintenance task during periods of system operation. Corrective maintenance task time is active repair time, plus the time attributable to other factors that could lead to logistic or administrative delays, such as travel notification of qualified maintenance personnel and travel time for such personnel to arrive at the appropriate site. Corrective maintenance may consist of substitution of the complete device or one of its components, as in the case of precinct count and some central count systems, or it may consist of on-site repair. The voting system shall achieve at least 99 percent availability during normal operation for the functions indicated above. This standard encompasses for each function the combination of all devices and components that support the function, including their MTTR and MTBF attributes.	Accept	A-In, A- OMR		
	Vendors shall specify the typical system configuration that is to be used to assess availability, and any assumptions made with regard to any parameters that impact the MTTR. These factors shall include at a minimum:	Accept	PCA Documen t Review		
e.	Recommended number and locations of spare devices or components to be kept on hand for repair purposes during periods of system operation	Accept	PCA Documen t Review		
f. g.	Recommended number and locations of qualified maintenance personnel who need to be available to support repair calls during system operation Organizational affiliation (i.e., jurisdiction, vendor) of qualified maintenance personnel Organizational affiliation (i.e., jurisdiction, vendor) of qualified maintenance personnel	Accept	PCA Documen t Review PCA		

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
			t Review		Issues
4.3.6	Product Marking				
	All voting systems shall:				
a.	Identify all devices with a permanently affixed nameplate	Accept	С		
	or label containing the name of the manufacturer or				
	number, its revision letter, its serial number, and if				
	applicable, its power requirements				
b.	Display on each device a separate data plate containing	Accept	С		#97 – closed
	or to perform preventive maintenance				
С.	Display advisory caution and warning instructions to	Accept	С		
	ensure safe operation of the equipment and to avoid				
	exposure to hazardous electrical voltages and moving				
	occur				
4.3.7	Workmanship				
	To help ensure proper workmanship, all manufacturers				
	of voting systems shall:	Assent	6		
a.	their products are free from damage or defect that could	Accept	C		
	make them unsatisfactory for their intended purpose				
b.	Ensure components provided by external suppliers are	Accept	С		
	free from damage or defect that could make them				
128	unsatisfactory for their intended purpose.				
4.3.0	All voting systems shall meet the following requirements				
	for safety:				
a.	All voting system and their components shall be	Accept	E		
	designed to eliminate hazards to personnel or the				
h	equipment itself.	Accent	F		
<i>D</i> .	personal injury or equipment damage must be detected	Лосері			
	and corrected before voting systems and components				
	are placed into service.		-		
с.	Equipment design for personnel safety is equal to or	Accept	E		Interpretation 2008-09
	Occupational Safety and Health Act, Code of Federal				
	Regulations, as identified in Title 29, part 1910				
5.	Software Standards				
5.3	Data and Document Retention All systems shall:				
a.	Maintain the integrity of voting and audit data during an	Accept	G1		
	election, and for at least 22 months thereafter, a time				
	sufficient to resolve most contested elections and				
	investigation of a contested election				
b.	Protect against the failure of any data input or storage	Accept	G1		
	device at a location controlled by the jurisdiction or its				
	contractors, and against any attempt at improper data				
5.4	Audit Record Data				
	Audit trails are essential to ensure the integrity of a				
	voting system. Operational requirements for audit trails				
	are generated by these procedures. The audit record				
	data in the following subsections are essential to the				
	complete recording of election operations and reporting				
	of the vote tally. This list of audit records may not reflect				
	vendors shall supplement it with information relevant to				
	the operation of their specific systems.				
5.4.1	Pre-election Audit Records				
	During election definition and ballot preparation, the	Accept	G1	G2	

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
	system shall audit the preparation of the baseline ballot				Issues
	formats and modifications to them, a description of these				
	modifications, and corresponding dates. The log shall				
	include:				
a.	The allowable number of selections for an office or	Accept	G1	G2	
	issue;				
b.	The combinations of voting patterns permitted or	Accept	G1	G2	
	required by the jurisdiction	-			
C.	The inclusion or exclusion of offices or issues as the	Accept	G1	G2	
	result of multiple districting within the polling place	Assest	01	00	
u.	Any other characteristics that may be peculiar to the	Accept	GI	GZ	
<u>م</u>	Manual data maintained by election personnel	Accent	G1	62	
f	Samples of all final ballot formats	Accept	G1	G2	
n.	Ballot preparation edits listings	Accept	G1	G2	
5.4.2	System Readiness Audit Records	1.000p1			
-	The following minimum requirements apply to system				
	readiness audit records:				
a.	Prior to the start of ballot counting, a system process	Accept	G1	G2	
	shall verify hardware and software status and generate a				
	readiness audit record. This record shall include the				
	identification of the software release, the identification of				
	the election to be processed, and the results of software				
h	In the case of systems used at the polling place, the	Accept	G1	62	#99_closed
D.	record shall include polling place identification	Ассері	01	02	#33 -00300
C.	The ballot interpretation logic shall test and record the	Accept	G1	G2	
	correct installation of ballot formats on voting devices				
d.	The software shall check and record the status of all	Accept	G1	G2	
	data paths and memory locations to be used in vote				
	recording to protect against contamination of voting data				
e.	Upon the conclusion of the tests, the software shall	Accept	G1	G2	
	provide evidence in the audit record that the test data				
f	If required and provided, the ballet reader and	Accont			
1.	arithmetic-logic unit shall be evaluated for accuracy and	Ассері	A-OWIX, A-In		
	the system shall record the results. It shall allow the		<i>/ ( i i i i i i i i i i</i>		
	processing or simulated processing of sufficient test				
	ballots to provide a statistical estimate of processing				
	accuracy				
g.	For systems that use a public network, provide a report	Accept			Public Network Not Used
i.	of test ballots that includes:				
II. ;;;	Number of ballots sent				
iv.	Machine from which each ballot was sent				
10.	specific votes or selections contained in the ballot				
5.4.3	In-Process Audit Records				
	In-process audit records document system operations				
	during diagnostic routines and the casting and tallying of				
	ballots. At a minimum, the in-process audit records shall				
	contain:	•			
a.	Machine generated error and exception messages to	Accept	G1	G2	
	demonstrate successful recovery. Examples include, but				
i	The source and disposition of system interrupts resulting	Accent	G1	62	
	in entry into exception handling routines	/ coepi			
ii.	All messages generated by exception handlers	Accept	G1	G2	
iii.	The identification code and number of occurrences for	Accept	G1	G2	
	each hardware and software error or failure				
iv.	Notification of system login or access errors, file access	Accept	G1	G2	
	errors, and physical violations of security as they occur,				
	and a summary record of these events after processing	L .			
V.	Other exception events such as power failures, failure of	Accept	G1	G2	
	critical naroware components, data transmission effors				
		1	1	1	

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
b.	Critical system status messages other than informational messages displayed by the system during the course of normal operations. These items include, but are not limited to:	Accept	G1	G2	Issues
i.	Diagnostic and status messages upon startup	Accept	G1	G2	
ii.	The "zero totals" check conducted before opening the polling place or counting a precinct centrally	Accept	G1	G2, P1, A- OMR, A-In	
iii.	For paper-based systems, the initiation or termination of card reader and communications equipment operation	Accept	G1	G2	
iv.	For DRE machines at controlled voting locations, the event (and time, if available) of activating and casting each ballot (i.e., each voter's transaction as an event). This data can be compared with the public counter for reconciliation purposes	Accept	G1	G2	
C.	Non-critical status messages that are generated by the machine's data quality monitor or by software and hardware condition monitors	Accept	G1	G2	
d.	System generated log of all normal process activity and system events that require operator intervention, so that each operator access can be monitored and access sequence can be constructed	Accept	G1	G2	
5.4.4	Vote Tally Data In addition to the audit requirements described above, other election-related data is essential for reporting results to interested parties, the press, and the voting public, and is vital to verifying an accurate count. Voting systems shall meet these reporting requirements by providing software capable of obtaining data concerning various aspects of vote counting and producing printed reports. At a minimum, vote tally data shall include:				
a.	Number of ballots cast, using each ballot configuration, by tabulator, by precinct, and by political subdivision	Accept	G1	G2	
b.	Candidate and measure vote totals for each contest, by tabulator	Accept	G1	G2	#85 – closed
C.	The number of ballots read within each precinct and for additional jurisdictional levels, by configuration, including separate totals for each party in primary elections	Accept	G1	G2	
d.	Separate accumulation of overvotes and undervotes for each contest, by tabulator, precinct and for additional jurisdictional levels (no overvotes would be indicated for DRE voting devices)	Accept	G1	G2	
e.	For paper-based systems only, the total number of ballots both able to be processed and unable to be processed; and if there are multiple card ballots, the total number of cards read	Accept	G1	G2	#88 – closed
f.	For systems that produce an electronic file containing vote tally data, the contents of the file shall include the same minimum data cited above for printed vote tally reports.	Accept	G1	G2	
5.5	Voter Secrecy on DRE Systems All DRE systems shall ensure vote secrecy by:				
a.	Immediately after the voter chooses to cast his or her ballot, record the voter's selections in the memory to be used for vote counting and audit data (including ballot images), and erase the selections from the display, memory, and all other storage, including all forms of temporary storage	Accept	G1	G2	
b.	Immediately after the voter chooses to cancel his or her ballot, erase the selections from the display and all other storage, including buffers and other temporary storage	Accept	G1	G2	
6.2	Design, Construction, and Maintenance				
	Design, construction, and maintenance requirements for telecommunications represent the operational capability	Accept	N/A		System does not use Telecommunications

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	of both system hardware and software. These capabilities shall be considered basic to all data transmissions.				
6.2.1	Accuracy				
	The telecommunications components of all voting systems shall meet the accuracy requirements of 4.1.1.	Accept	N/A		System does not use Telecommunications
6.2.2	Durability The tale communications communicate of all waters	A			Questern de constance
600	systems shall meet the Durability requirements of 4.1.2.	Ассерт	N/A		Telecommunications
0.2.3	The telecommunications components of all veting	Accent	NI/A		System doos not use
	systems shall meet the Reliability requirements of 4.1.3	Accept	IN/A		Telecommunications
6.2.4	Maintainability				
	The telecommunications components of all voting	Accept	N/A		System does not use
	systems shall meet the maintainability requirements of 4.1.4.				Telecommunications
6.2.5	Availability				
	The telecommunications components of all voting systems shall meet the availability requirements of 4.1.5.	Accept	N/A		System does not use Telecommunications
6.2.6	Integrity For WANs using public telecommunications, boundary definition and implementation shall meet the requirements below.				
a.	Outside service providers and subscribers of such providers shall not be given direct access or control of any resource inside the boundary.	Accept	N/A		System does not use Public Telecommunications
-		A			Networks
b.	Voting system administrators shall not require any type of control of resources outside this boundary. Typically, an end point of a telecommunications circuit will be a subscriber termination on a Digital Service Unit/Customer Service Unit although the specific technology configuration may vary. Regardless of the technology used, the boundary point must ensure that everything on the voting system side is locally configured and controlled by the election jurisdiction while everything on the public network side is controlled by an outside service provider.	Accept	N/A		System does not use Public Telecommunications Networks
С.	The system shall be designed and configured such that it is not vulnerable to a single point of failure in the connection to the public network which could cause total	Accept	N/A		System does not use Public Telecommunications
	loss of voting capabilities at any polling place.				Networks
6.2.7	<b>Confirmation</b> Confirmation occurs when the system notifies the user of the successful or unsuccessful completion of the data transmission, where successful completion is defined as accurate receipt of the transmitted data. To provide confirmation, the telecommunications components of a voting system shall				
	Notify the user of the successful or unsuccessful completion of the data transmission; and	Accept	N/A		System does not use Telecommunications
	In the event of unsuccessful transmission, notify the user of the action to be taken.	Accept	N/A		System does not use Telecommunications
7	Security Standards				
7.2	Access Controls				
7.2.1	General Access Control Policy	A	A	0.01.00	
	capabilities of the access control policy recommended to provide effective voting system security	Accept	Аррх С 2.6	S, G1, G2,	
	Although the jurisdiction in which the voting system is operated is responsible for determining the access policies for each election, the vendor shall provide a description of recommended policies for:	Accept	Appx C 2.6	S, G1, G2,	
a.	Software access controls;	Accept	Appx C	S, G1, G2,	

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b.	Hardware access controls;	Accept	Appx C 2.6	S, G1, G2,	155005
C.	Communications;	Accept	Appx C 2.6	S, G1, G2,	
d.	Effective password management;	Accept	Appx C 2.6	S, G1, G2,	
e.	Protection abilities of a particular operating system;	Accept	Appx C 2.6	S, G1, G2,	
f.	General characteristics of supervisory access privileges;	Accept	Appx C 2.6	S, G1, G2,	
g.	Segregation of duties; and	Accept	Appx C 2.6	S, G1, G2,	
h.	Any additional relevant characteristics.	Accept	Appx C 2.6	S, G1, G2,	
7.2.1. 1	Individual Access Privileges Voting system vendors shall:				
а.	Identify each person to whom access is granted, and the specific functions and data to which each person holds authorized access	Accept	Appx C 2.6	S, G1, G2,	
b.	Specify whether an individual's authorization is limited to a specific time, time interval or phase of the voting or counting operations	Accept	Appx C 2.6	S, G1, G2,	
С.	Permit the voter to cast a ballot expeditiously, but preclude voter access to all aspects of the vote counting processes	Accept	Appx C 2.6	S, G1, G2,	
7.2.1. 2	Access Control Measures Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access, such as:				
a.	Use of data and user authorization	Accept	Appx C 2.6	S, G1, G2,	
b.	Program unit ownership and other regional boundaries	Accept	Appx C 2.6	S, G1, G2,	
С.	One-end or two-end port protection devices	Accept	Appx C 2.6	S	
d.	Security kernels	Accept	Appx C 2.6	S	
е.	Computer-generated password keys	Accept	Appx C 2.6	S	
f.	Special protocols	Accept	Appx C 2.6	S	#28 – closed
g.	Message encryption and	Accept	Appx C 2.6	S	
g.	Controlled access security.	Accept	Appx C 2.6	S, G1, G2,	
	Vendors also shall define and provide a detailed description of the methods used to prevent unauthorized access to the access control capabilities of the system itself.	Accept	Appx C 2.6	S, G1, G2,	
7.3	Physical Security Measures				
	A voting system's sensitivity to disruption or corruption of data depends, in part, on the physical location of equipment and data media, and on the establishment of secure telecommunications among various locations. Most often, the disruption of voting and vote counting results from a physical violation of one or more areas of the system thought to be protected. Therefore, security procedures shall address physical threats and the corresponding means to defeat them.	Accept	S		Includes testing, document and code review
7.3.1	Polling Place Security	A		01	Desument
	For polling place operations, vendors shall develop and provide detailed documentation of measures to enable poll workers to physically protect and perform orderly	Accept	5	GI	Document review

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	shutdown of voting equipment to counteract vandalism,				issues
	The measures shall allow the immediate detection of tampering with vote casting devices and precinct ballot counters. They also shall control physical access to a telecommunications link if such a link is used	Accept	S		System does not use Telecommunications
7.3.2	Central Count Location Security	<b>A</b> (			Descurses the states
	Vendors shall develop and document in detail measures to be taken in a central counting environment. These measures shall include physical and procedural controls related to the Handling of ballot boxes Preparing of ballots for counting Counting operations and Reporting data	Accept	2.6	5	#130 to 134 & 137 closed
7.4	Software Security		-		
7.4.1	The system shall meet the following requirements for installation of software, including hardware with embedded firmware.				
a.	If software is resident in the system as firmware, the vendor shall require and state in the system documentation that every device is to be retested to validate each ROM prior to the start of elections operations.	Accept	S		
b.	To prevent alteration of executable code, no software shall be permanently installed or resident in the voting system unless the system documentation states that the jurisdiction must provide a secure physical and procedural environment for the storage, handling, preparation, and transportation of the system hardware.	Accept	S		
C.	The voting system bootstrap, monitor, and device- controller software may be resident permanently as firmware, provided that this firmware has been shown to be inaccessible to activation or control by any means other than by the authorized initiation and execution of the vote counting program, and its associated exception handlers.	Accept	S		
d.	The election-specific programming may be installed and resident as firmware, provided that such firmware is installed on a component (such as a computer chip) other than the component on which the operating system resides.	Accept	S		
е.	After initiation of election day testing, no source code or compliers or assemblers shall be resident or accessible.	Accept	S		
7.4.2	Protection Against Malicious Software Voting systems shall deploy protection against the many forms of threats to which they may be exposed such as file and macro viruses, worms, Trojan horses, and logic bombs				
	Vendors shall develop and document the procedures to be followed to ensure that such protection is maintained in a current status.	Accept	S		
7.4.3	Software Distribution and Setup Validation				
	Subsections 7.4.4, 7.4.5 and 7.4.6 specify requirements for the distribution of voting system software and the setup validation performed on voting system equipment. These requirements are applicable to voting systems that have completed certification testing. (see the Guidelines for the full text)				
7.4.4	Software Distribution	•			
a.	I ne vendor shall document all software including voting system software, third party software (such as operating systems and drivers) to be installed on the certified voting system, and installation programs.	Accept	Appx B & F		

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i.	The documentation shall have a unique identifier (such as a serial number or part number) for the following set of information: documentation, software vendor name, product name, version, the certification application number of the voting system, file names and paths or other location information (such as storage addresses) of the software.	Pending			Pending certification & direction from the EAC
ii.	The documentation shall designate all software files as static, semi-static or dynamic. Discussion: Static voting system software such as executable code does not change based on the election being conducted or the voting equipment upon which it is installed. Semi-static voting system software contains configuration information for the voting system based on the voting equipment that is installed and the election being conducted. Semi-static software is only modified during the installation of (a) the voting system software on voting equipment or (b) the election-specific software such as ballot formats. Dynamic voting system software changes over time once installed on voting equipment. However, the specific time or value of the change in the dynamic software is usually unknown in advance, making it impossible to create reference information to verify the software.	Accept	Appx B & F		
b.	The EAC accredited testing lab shall witness the final build of the executable version of the certified voting	Accept	Аррх F		
i.	The testing lab shall create a complete record of the build that includes: a unique identifier (such as a serial number) for the complete record; a list of unique identifiers of unalterable storage media associated with the record; the time, date, location, names and signatures of all people present; the source code and resulting executable file names; the version of voting system software; the certification application number of the voting system; the name and versions of all (including third party) libraries; and the name, version, and configuration files of the development environment used for the build.	Accept	Appx F		
ii. iii.	The record of the source code and executable files shall be made on unalterable storage media. Each piece of media shall have a unique identifier. Discussion: Unalterable storage media includes technology such as a CD-R, but not CD-RW. The unique identifiers appear on indelibly printed labels and in a digitally signed file on the unalterable storage media. The testing lab shall retain this record until notified by	Accept	Appx F Appx F		
C.	the EAC that it can be archived. After EAC certification has been granted, the testing lab shall create a subset of the complete record of the build that includes a unique identifier (such as a serial number) of the subset, the unique identifier of the complete record, a list of unique identifiers of unalterable storage media associated with the subset, the vendor and product name, the version of voting system software, the certification number of the voting system, and all the files that resulted from the build and binary images of all installation programs.	Pending	Appx F		Pending certification and direction from the EAC
	The record of the software shall be made on unalterable storage media. Each piece of media shall have a unique identifier.	Pending	Appx F		Pending certification and direction from the EAC
	The testing lab shall retain a copy, send a copy to the vendor, and send a copy to the NIST National Software	Pending	Appx F		Pending certification and direction from the EAC

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	Reference Library (NSRL)2 and/or to any repository designated by a State.				
	The NSRL shall retain this software until notified by the EAC that it can be archived	Out of			
d.	The vendor shall provide the NSRL and any repository	Out of			
	designated by a state with a copy of the software	scope			
	purchasers-including the executable binary images of all				
i	All voting system software, installation programs and	Out of			
	third party software (such as operating systems and	scope			
	drivers) used to install or to be installed on voting system equipment shall be distributed using unalterable storage media.				
ii.	The vendor shall document that the process used to	Out of			
	verify the software distributed on unalterable storage	scope			
	information provided by the NSRL or other designated				
	repository before installing the software.				
e.	I he voting system equipment shall be designed to allow the voting system administrator to verify that the	Out of			
	software is the certified software by comparing it to	30000			
	reference information produced by the NSRL or other				
f.	The vendors and testing labs shall document to whom	Accept			iBeta Voting Project
	they provide voting system software.				Mgmt Procedure Task
					6.3.3
					#136 Closed
7.4.5	Software Reference Information	Out of			
	election office shall generate reference information using	Scope			
	the binary images of the (a) certified voting system				
	software received on unalterable storage media from				
	on unalterable storage media from jurisdictions.				
- 1 0	See Guidelines for complete text				
7.4.6	Software Setup Validation	Out of Scope			EAC Certification Program Manual 5.8
a.	Setup validation methods shall verify that no	Accept	Appx C	Appx F	Document Review only #125 closed
	voting equipment		2.0	7.0.0	#120 00000
b.	The vendor shall have a process to verify that the	Accept	Appx C	Appx F	Document Review only
	correct software is loaded, that there		2.6	7.6.3	
	is no unauthorized software, and that voting				
	not been modified, using the reference information				
	from the NSRL or from a State				
	designated repository.				
	I. The process used to verify software should be				
	using software installed on the voting system.				
	ii. The vendor shall document the process used to				
	verify software on voting				
	equipment.				
	software on the voting system				
	during the verification process				
C.	The vendor shall provide a method to	Accept	Appx C	Appx F	Document Review only
	comprehensively list all software files that are		2.6	7.6.3	#126 CIOSED
d.	The verification process should be able to be	Accept	A xaaA	Appx F	Document Review only
			2.6	7.6.3	#127 closed

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	performed using COTS software and hardware available from sources other than the voting system vendor. i. If the process uses hashes or digital signatures, then the verification software shall use a FIPS 140- 2 level 1 or higher validated cryptographic module. ii. The verification process shall either (a) use reference information on unalterable storage media received from the repository or (b) verify the digital signature of the reference information on any other media.				Issues
е.	Voting system equipment shall provide a means to ensure that the system software can be verified through a trusted external interface, such as a read-only external interface, or by other means. i. The external interface shall be protected using tamper evident techniques ii. The external interface shall have a physical indicator showing when the interface is enabled and disabled iii. The external interface shall be disabled during voting iv. The external interface should provide a direct read-only access to the location of the voting system software without the use of installed software	Accept	Appx C 2.6	Appx F 7.6.3	Document Review only #128 closed
f.	Setup validation methods shall verify that registers and variables of the voting system equipment contain the proper static and initial values. i. The vendor should provide a method to query the voting system to determine the values of all static and dynamic registers and variables including the values that jurisdictions are required to modify to conduct a specific election. ii. The vendor shall document the values of all static registers and variables, and the initial starting values of all dynamic registers and variables listed for voting system software, except for the values set to conduct a specific election.	Accept	Appx C 2.6	Appx F 7.6.3	Document Review only #129 closed
7.5	Telecommunications and Data Transmission				
7.5.1	Maintaining Data Integrity Voting systems that use telecommunications to communicate between system components and locations are subject to the same security requirements governing access to any other system hardware, software, and data function.	Accept	Т		System does not use Telecommunications and Data Transmission
а.	Voting systems that use electrical or optical transmission of data shall ensure the receipt of valid vote records is verified at the receiving station. This should include standard transmission error detection and correction methods such as checksums or message digest hashes. Verification of correct transmission shall occur at the voting system application level and ensure that the correct data is recorded on all relevant components consolidated within the polling place prior to the voter completing casting of his or her ballot.	Accept	Τ, S		System does not use Telecommunications and Data Transmission nor does it use Telecommunications and Audio Transmission, but it does use Data Transmission in the absence of Telecommunications. See 2.1.2.d There is no transmission of data prior to the voter casting a ballot.

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					#135 closed
	Data Interception Prevention Voting systems that use telecommunications to communicate between system components and locations before the polling place is officially closed shall:				
a.	Implement an encryption standard currently documented and validated for use by an agency of the U.S. Federal Government and	Accept			System does not use Telecommunications and Data Transmission
b.	Provide a means to detect the presence of an intrusive process, such as an Intrusion Detection System.	Accept			System does not use Telecommunications and Data Transmission
7.5.2	Protection Against External Threats	-			
a.	Voting systems that use public telecommunications networks shall implement protections against external threats to which commercial products used in the system may be susceptible.	Accept			System does not use Telecommunications and Data Transmission
b.	Voting systems that use public telecommunications networks shall provide system documentation that clearly identifies all COTS hardware and software products and communications services used in the development and/or operation of the voting system, including operating systems, communications routers, modem drivers and dial-up networking software.	Accept			System does not use Telecommunications and Data Transmission
i.	Such documentation shall identify the name, vendor, and version used for each such component.	Accept			System does not use Telecommunications and Data Transmission
C.	Voting systems that use public telecommunications networks shall use protective software at the receiving- end of all communications paths to:	Accept			System does not use Telecommunications and Data Transmission
i.	Detect the presence of a threat in a transmission	Accept			System does not use Telecommunications and Data Transmission
ii.	Remove the threat from infected files/data	Accept			System does not use Telecommunications and Data Transmission
iii.	Prevent against storage of the threat anywhere on the receiving device	Accept			System does not use Telecommunications and Data Transmission
iv.	Provide the capability to confirm that no threats are stored in system memory and in connected storage media	Accept			System does not use Telecommunications and Data Transmission
v.	Provide data to the system audit log indicating the detection of a threat and the processing performed	Accept			System does not use Telecommunications and Data Transmission
d.	Vendors shall use multiple forms of protective software as needed to provide capabilities for the full range of products used by the voting system.	Accept			System does not use Telecommunications and Data Transmission
7.5.4. 3	Monitoring and Responding to External Threats				
2	Voting system that use public telecommunications networks may become vulnerable, by virtue of their system components, to external threats to the accuracy and integrity of vote recording, vote counting, and vote consolidation and reporting processes. Therefore, vendors of such systems shall document how they plan to monitor and respond to known threats to which their voting systems are vulnerable. This documentation shall provide a detailed description, including scheduling information, of the procedures the vendor will use to:	Accept			System does not use Telecommunications and Data Transmission
a.	womon threats, such as through the review of	ACCEPT		1	System does not use

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	assessments, advisories, and alerts for COTS				Telecommunications and
	components issued by the Computer Emergency				Data Transmission
	Response Team (CERT), for which a current listing can				
	be found at http://www.cert.org, the National				
	Computer Incident Response Canability (FedCIRC) for				
	which additional information can be found at				
	www.uscert.gov				
b.	Evaluate the threats and, if any, proposed responses	Accept			System does not use
					Telecommunications and
					Data Transmission
C.	Develop responsive updates to the system and/or	Accept			System does not use
					Data Transmission
d.	Submit the proposed response to the test labs and	Accept			System does not use
	appropriate states for approval, identifying the exact	, locopt			Telecommunications and
	changes and whether or not they are temporary or				Data Transmission
	permanent				
e.	After implementation of the proposed response is	Accept			System does not use
	approved by the state, assist clients, either directly or				Lelecommunications and
	systems and/or to implement the corrective procedures				Data Transmission
	within the timeframe established by the state				
f.	Address threats emerging too late to correct the system	Accept			System does not use
	by:				Telecommunications and
					Data Transmission
i.	Providing prompt, emergency notification to the	Accept			System does not use
	accredited test labs and the affected states and user				Deta Transmission
ii	Assisting client jurisdictions directly or advising them	Accent			System does not use
	through detailed written procedures to disable the public	Лосері			Telecommunications and
	telecommunications mode of the system				Data Transmission
iii.	Modifying the system after the election to address the	Accept			System does not use
	threat, submitting the modified system to an accredited				Telecommunications and
	test lab and the EAC or state certification authority for				Data Transmission
	advising them through detailed written procedures to				
	update their systems and/or to implement the corrective				
	procedures after approval				
7.5.4	Shared Operating Environment				
	Ballot recording and vote counting can be performed in				
	either a dedicated or non-dedicated environment. If				
	performed in an environment that is shared with other				
	data processing functions, both hardware and software				
	features shall be present to protect the integrity of vote				
	counting and of vote data.				
_	Systems that use a shared operating environment shall:	A			Net a shawad
a.	Use security procedures and logging records to control	Accept			Not a shared
h	Partition or compartmentalize voting system functions	Accent			Not a shared
0.	from other concurrent functions at least logically, and	Лесерг			environment
	preferably physically as well				
C.	Control system access by means of passwords, and	Accept			Not a shared
L	restrict account access to necessary functions only				environment
d.	Have capabilities in place to control the flow of	Accept			Not a shared
	iniormation, precluding data leakage through shared				environment
7.5.5	Access to Incomplete Election Returns and				
	Interactive Queries				
	If the voting system provides access to incomplete				
	election returns and interactive inquiries before the				
	completion of the official count, the system shall:	A			
а.	For equipment that operates in a central counting environment, be designed to provide external access to	Accept			EIVIS Has no external

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	incomplete election returns only if that access for these purposes is authorized by the statutes and regulations of the using agency. This requirement applies as well to polling place equipment that contains a removable memory module, or that may be removed in its entirety to a central place for the consolidation of polling place returns.				capability.
b. i.	Design voting system software and its security environment designed such that data accessible to interactive queries resides in an external file or database created and maintained by the elections software under the restrictions applying to any other output report, namely, that: Design voting system software and its security environment designed such that data accessible to interactive queries resides in an external file or database created and maintained by the elections software under the restrictions applying to any other output report, namely, that: The output file or database has no provision for write- access back to the system.	Accept	G1, S		
ii.	Persons whose only authorized access is to the file or database are denied write-access, both to the file or database, and to the system.	Accept	G1, S		
7.6	Use of Public Communications Networks				
7.6.1	<b>Data Transmission</b> All systems that transmit data over public telecommunications networks shall:				
a.	Preserve the secrecy of voter ballot selections and prevent anyone from violating ballot privacy	Accept			System does not use Public Telecommunications Networks
b.	Employ digital signatures for all communications between the vote server and other devices that communicate with the server over the network	Accept			System does not use Public Telecommunications Networks
c.	Require that at least two authorized election officials activate any critical operation regarding the processing of ballots transmitted over a public communications network, i.e. the passwords or cryptographic keys of at least two employees are required to perform processing of vote	Accept			System does not use Public Telecommunications Networks
7.6.2	Casting Individual Ballots				
	Systems designed for transmission of telecommunications over public networks shall meet security standards that address the security risks attendant with the casting of ballots from polling places controlled by election officials using voting devices configured and installed by election officials and/or their vendor or contractor, and using in-person authentication of individual voters.	Accept			System does not use Public Telecommunications Networks
7.6.2. 1	Documentation of Mandatory Security Activities Vendors of voting systems that cast individual ballots over a public telecommunications network shall provide detailed descriptions of:				
а.	All activities mandatory to ensuring effective voting system security to be performed in setting up the system for operation, including testing of security before an election	Accept			System does not use Public Telecommunications Networks
b.	All activities that should be prohibited during voting equipment setup and during the timeframe for voting operations, including both the hours when polls are open and when polls are closed	Accept			System does not use Public Telecommunications Networks
7.6.2. 2	Ability to Operate During Interruption of Service These systems shall provide the following capabilities to provide resistance to interruptions of				

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	telecommunications service that prevent voting devices at the polling place from communicating with external components via telecommunications:				1551155
a.	Detect the occurrence of a telecommunications interruption at the polling place and switch to an alternative mode of operation that is not dependent on the connection between polling place voting devices and external system components	Accept			System does not use Public Telecommunications Networks
b.	Provide an alternate mode of operation that includes the functionality of a conventional electronic voting system without losing any single vote	Accept			System does not use Public Telecommunications Networks
С.	Create and preserve an audit trail of every vote cast during the period of interrupted communication and system operation in conventional electronic voting system mode	Accept			System does not use Public Telecommunications Networks
d.	Upon reestablishment of communications, transmit and process votes accumulated while operating in conventional electronic voting system mode with all security safeguards in effect	Accept			System does not use Public Telecommunications Networks
е.	Ensure that all safeguards related to voter identification and authentication are not affected by the procedures employed by the system to counteract potential interruptions of telecommunications capabilities	Accept			System does not use Public Telecommunications Networks
7.7	Wireless Communication		_		
7.7.1	Controlling Usage	A			Our term da esta a staras
a.	If wireless communications are used in a voting system, then the vendor shall supply documentation describing how to use all aspects of wireless communications in a secure manner. This documentation shall include:	Accept			System does not use Wireless Communication
i.	A complete description of the uses of wireless in the voting system including descriptions of the data elements and signals that are to be carried by the wireless mechanism	Accept			System does not use Wireless Communication
ii.	A complete description of the vulnerabilities associated with this proposed use of wireless, including vulnerabilities deriving from the insertion, deletion, modification, capture or suppression of wireless messages	Accept			System does not use Wireless Communication
iii.	A complete description of the techniques used to mitigate the risks associated with the described vulnerabilities including techniques used by the vendor to ensure that wireless cannot send or receive messages other than those situations specified in the documentation. Cryptographic techniques shall be carefully and fully described, including a description of cryptographic key generation, management, use, certification, and destruction	Accept			System does not use Wireless Communication
iv.	A rationale for the inclusion of wireless in the proposed voting system, based on a careful and complete description of the perceived advantages and disadvantages of using wireless for the documented uses compared to using non-wireless approaches Discussion: In general, convenience is not a sufficiently compelling reason, on its own, to justify the inclusion of wireless communications in a voting system. Convenience must be balanced against the difficulty of working with cryptographic keys.	Accept			System does not use Wireless Communication
b.	The details of all cryptographic protocols used for wireless communications, including the specific features and data, shall be documented.	Accept			System does not use Wireless Communication
С.	The wireless documentation shall be closely reviewed for accuracy, completeness, and correctness.	Accept			System does not use Wireless Communication
d.	There shall be no undocumented use of the wireless capability, nor any use of the wireless capability that is	Accept			System does not use Wireless Communication

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	not entirely controlled by an election official. Discussion:				
	This can be tested by reviewing all of the software,				
	hardware, and documentation, and by testing the status				
-	of wireless activity during all phases of testing.	Assant			Queters de ceretures
e.	voting system includes whereas capabilities, then the	Accept			Wireless Communication
	function if wireless capabilities are not available due to				Wheless Communication
	an error or no service.				
i.	The vendor shall provide documentation how to	Accept			System does not use
	accomplish these functions when wireless is not				Wireless Communication
4	available.	Assant			Queters de ceretures
1.	The system shall be designed and conligured so it is not vulnerable to a single point of failure using wireless	Accept			Wireless Communication
	communications that causes a total loss of any voting				Whereas communication
	capabilities.				
g.	If a voting system includes wireless capabilities, then the	Accept			System does not use
	system shall have the ability to turn on the wireless				Wireless Communication
	capability when it is to be used and to turn off the				
h.	If a voting system includes wireless capabilities, then the	Accept			System does not use
	system shall not activate the wireless capabilities without				Wireless Communication
	confirmation from an elections official.				
7.7.2	Identifying Usage				
	Since there are a wide variety of wireless technologies				
	properties of wireless signals, it is important to identify				
	some of the characteristics of the wireless technologies				
	used in the voting system.				
a.	If a voting system provides wireless communications	Accept			System does not use
	capabilities, then there shall be a method for determining				Wireless Communication
	the existence of the wireless communications				
h	If a voting system provides wireless communications	Accept			System does not use
2.	capabilities, then there shall be an indication that allows	, locopt			Wireless Communication
	one to determine when the wireless communications				
	(such as radio frequencies) capability is active.				
C.	The indication shall be visual.	Accept			System does not use
d	If a voting system provides wireless communications	Accont			System does not use
u.	capabilities, then the type of wireless communications	Accept			Wireless Communication
	used (such as radio frequencies) shall be identified				
	either via a label or via the voting system				
	documentation.				
7.7.3	Protecting Transmitted Data	Accent			System doos not uso
a.	shall be encrypted and authenticated—with the exception	лосері			Wireless Communication
	of wireless T-coil coupling-to protect against				
	eavesdropping and data manipulation including				
-	modification, insertion, and deletion.				
i.	The encryption shall be as defined in Federal	Accept			System does not use
	Information Processing Standards (FIPS) 197, "Advanced Encryption Standard (AES)."				Wireless Communication
ii.	The cryptographic modules used shall comply with FIPS	Accept			System does not use
	140-2, Security	, locopt			Wireless Communication
	Requirements for Cryptographic Modules.				
b.	The capability to transmit non-encrypted and non-	Accept			System does not use
	authenticated information via wireless communications			1	Wireless Communication
	SNAIL NOT EXIST.	Accort			System doos not uso
C.	receiver of the wireless transmission is the human ear	Accept			Wireless Communication
	then the information shall not be encrypted. <i>Discussion:</i>			1	
	This specifically covers wireless T-Coil coupling for				
	assistive devices used by people who are hard of			1	
1	hearing.		1	1	

VVSG	Certification Test Requirements	Test Result	Test Case	Function Exercised	Comments & References to Test
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7.7.4	Protecting the Wireless Path				
	If wireless communications are used, then the following				
	denial of service (DoS) attack:				
a.	The voting system shall be able to function properly	Accept			System does not use
	throughout a DoS attack, since the DoS attack may				Wireless Communication
h	continue throughout the voting period.	Accort			System dags not use
D.	wireless capability were never available for use.	Accept			Wireless Communication
C.	Alternative procedures or capabilities shall exist to	Accept			System does not use
	accomplish the same functions that the wireless				Wireless Communication
d	communications capability would have done.	Accent			System does not use
u.	enough to prevent escape of the voting system signal,	лосері			Wireless Communication
	as well as strong enough to prevent infrared saturation				
	jamming. Discussion: Since infrared has the line-of-sight				
	property, securing the wireless path can be accomplished by shielding the path between the				
	communicating devices with an opaque enclosure.				
	However, this is only practical for short distances. This				
	shielding would also help prevent accidental eye				
7.7.5	Protecting the Voting System				
	Physical security measures to prevent access to a voting				
	system are not possible when using a wireless				
	communications interface because there is no discrete				
а	The security requirements in Subsection 2.1.1 shall be	Accept			System does not use
u.	applicable to systems with wireless communications.	7,00001			Wireless Communication
b.	The accuracy requirements in Subsection 2.1.2 shall be	Accept			System does not use
	applicable to systems with wireless communications.	<b>A</b> (			Wireless Communication
с.	The use of wireless communications that may cause impact to the system accuracy through electromagnetic	Accept			System does not use Wireless Communication
	stresses is prohibited.				
d.	The error recovery requirements in Subsection 2.1.3	Accept			System does not use
	shall be applicable to systems with wireless				Wireless Communication
e.	All wireless communications actions shall be logged.	Accept			System does not use
-					Wireless Communication
i.	The log shall contain at least the following entries: times	Accept			System does not use
	when the wireless is activated and deactivated, services				wireless Communication
	transmitted to or received from, identification of				
	authorized user, and successful and unsuccessful				
	attempts to access wireless communications or service.				
	frames or packets transmitted or received at various				
	logical layers may be useful, but is dependent on the				
	wireless technology used.				
f.	Device authentication shall occur before any access to,	Accept			System does not use
	wireless communications. Discussion: Authentication is				
	an important element to protect the security of wireless				
	communications. Authentication verifies the identity and				
;	legitimacy of users, devices, and services.	Accort			System doos not use
1.	Special Publication 800-63 Version 1.0.1 Electronic	Accept			Wireless Communication
	Authentication Guideline.				
7.8	Independent Verification Systems				
704	(See the guidelines for the complete text.)				
7.8.1	(See the guidelines for the complete text)				
7.8.2	Basic Characteristics of IV Systems				
	An independent verification system produces at least	Accept			Not an IV System
	two independent cast vote records of ballot selections				

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
					Issues
	via interactions with the voter, such that one record can be compared against the other to check their equality of content. Discussion: This is the fundamental characteristic of IV systems. The records can be checked against one another to determine whether or not the voter selections are correctly recorded.				
	The voter verifies the content of each cast vote record and either (a) verifies at least one of the records directly or (b) verifies both records indirectly if the records are each under the control of independent processes. Discussion: Direct verification involves using human senses; for example, directly reading a paper record via one's eyesight. Indirect verification involves using an intermediary to perform the verification; for example, verifying an electronic ballot image on the voting machine.	Accept			Not an IV System
	The creation, storage and handling of the cast vote records are sufficiently separate that the failure or compromise of one record does not cause the failure or compromise of another. <i>Discussion: The records must</i> <i>be stored on different media and handled independently</i> <i>of each other so that no one process could compromise</i> <i>all records. If an attack can alter one record, it should</i> <i>still be very difficult to alter the other record.</i>	Accept			Not an IV System
	Both cast vote records are highly resistant to damage or alteration and capable of long-term storage. <i>Discussion:</i> <i>The records should be difficult to alter or damage so that</i> <i>they could be used in case the counted records are</i> <i>damaged or lost.</i>	Accept			Not an IV System
	The processes of verification for the cast vote records do not all depend on the same device, software module, or system for their integrity, and are sufficiently separate that each record provides evidence of the voter's selections independently of its corresponding record. <i>Discussion: For example, the verification of the summary</i> <i>screen (electronic record) of a DRE is sufficiently</i> <i>separate from the verification of a paper record printed</i> <i>by a VVPAT component or a copy of the electronic</i> <i>record stored on a separate system.</i>	Accept			Not an IV System
	The multiple cast vote records are linked to their corresponding audit records by including a unique identifier within each record. <i>Discussion: The identifier</i> <i>serves the purpose of uniquely identifying and linking the</i> <i>records for cross-checking.</i>	Accept			Not an IV System
	<ul> <li>Each cast vote record includes information identifying the following:</li> <li>An identification of the polling place and precinct</li> <li>Whether the balloting is provisional, early, or on election day</li> <li>Ballot style</li> <li>A timestamp generated when the voting machine is enabled to begin a voting session that can be used to correctly group the cast vote records</li> <li>A unique identifier associated with the voting machine <i>Discussion: The identifier could be a serial number or other unique ID.</i></li> </ul>	Accept			Not an IV System
	The cryptographic software used in IV systems is approved by the U.S. Government's Cryptographic Module Validation Program, as applicable. Discussion: IV voting systems may use cryptographic software for a number of different purposes, including calculating checksums, encrypting records, authentication, generating random numbers, and for digital signatures. This software should	Accept			Not an IV System

VVSG	Certification Test Requirements	Test Result	Test Case	Function Exercised	Comments & References to Test
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	be reviewed and approved by the Cryptographic Module Validation Program (CMVP). There may by cryptographic voting schemes where the cryptographic algorithms used are necessarily different from any algorithms that have approved CMVP implementations, thus CMVP-approved software shall be used where feasible. The CMVP website is http://csrc.nist.gov/cryptal				
7.9	Voter Verifiable Paper Audit Trail Requirements This section contains requirements for DREs with a Voter Verifiable Paper Audit Trail (VVPAT) component. VVPAT capability is not required for national certification. However, these requirements will be applied for certification testing of DRE systems that are intended for use in states that require DREs to provide this capability. The vendor's certification testing application to the EAC must indicate whether the system being presented for testing includes this capability, as provided under Subsection 1.6.2.5 extensions.				
7.9.1	Display and Print a Paper Record.				
a.	The voting system shall print and display a paper record of the voter ballot selections prior to the voter making his or her selections final by casting the ballot. <i>Discussion:</i> <i>This is the basic requirement for VVPAT capability. It</i> <i>requires the paper record to be created as a distinct</i> <i>representation of the voter ballot selections. It requires</i> <i>the paper record to contain the same information as the</i> <i>electronic record and be suitable for use in verifications</i> <i>of the voting machine's electronic records.</i>	Accept			DRE does not have a VVPAT
b.	The paper record shall constitute a complete record of ballot selections that can be used to assess the accuracy of the voting machine's electronic record, to verify the election results, and, if required by state law, in full recounts. <i>Discussion: This requirement exists to make clear that it is possible to use the paper record for checks of the voting machine's accuracy in recording voter ballot selections, as well as usable for election audits (such as mandatory 1% recounts). The paper record shall also be suitable for use in full recounts of the election if required by state law.</i>	Accept			DRE does not have a VVPAT
C.	The paper record shall contain all voter selection information stored in the electronic (ballot image) record. Discussion: The electronic ballot image record cannot hide any information related to ballot selections; all information relating to voter selections must be equally present in both records. The electronic record may contain other items that don't necessarily need to be on the paper record, such as digital signature information.	Accept			DRE does not have a VVPAT
<u>7.9.2</u> a.	<ul> <li>Approve or void the Paper Record</li> <li>The voting equipment shall allow the voter to approve or void the paper record. Discussion: There are three possible scenarios regarding the voter's disposition of the paper record:</li> <li>The voter can verify that the ballot selections displayed on the DRE summary screen and those printed on the paper record are the same. If they are, and the voter is satisfied with these selections, the voter can proceed to cast his or her ballot, thereby approving the paper record.</li> <li>If the selections match, but the voter wishes to change one or more selections, the paper record must be voided so a new paper record can be created to compare to the new summary screen displayed after the voter changes</li> </ul>	Accept			DRE does not have a VVPAT

EAC Voluntary Voling System Guidelines 2005         Result         Case         Exercised         References to Test Issues           • In the event the selections do not match between the summary screen and the apper record, the voter shall immediately request assistance from a poil works, normatic match induces a potential voling maturezion.         Normatic Voltage (Second Matches e appendent) voltage (Second Matches) request as being approved by the voltar if the balant selections are Accept; or voltage (Second Matches e approved by the voltar) is the space record and shall provide a mark and preserve the paper record and shall provide a mark and preserve the paper record and shall provide a mark and preserve the paper record and shall provide a mark and preserve the paper record and shall provide a mark and preserve the paper record and shall provide a mark and preserve the paper record and shall provide a mark and preserve the paper record as being approved by the voltar.         Accept         DRE does not have a VVPAT           d.         Vendor documentation abla include procedures to emable the election dirical to return a voling machine to correct operation after a voltar maxing machine to correct operation after a voltar as voltary matches and paper records. Including Calculation (Calculator Program) as applicable. Model voltaria and preserved and approved by the voltar.         Accept         VVPAT           7.9.3         Exercise and the voltary mark and preserved and approved by the voltary interved and approved by the voltary. The voltary apper tecords and the voltary apper tecords and the voltary apper tecords.         Accept         V	VVSG	Certification Test Requirements	Test	Test	Function	Comments &
Image: Instruction of the event the selections do not match between the summary screen and the paper record. In voter shall immediately request assistance from a poly worker, A non-match could middle a potential voter, and the paper record as being approved by the voter if the ballot selections are Accept or voided or if the voter decides to change one or more selections.         Accept         DRE does not have a VVPAT           b.         The voting exploment shall, in the presence of the voter decides to change one or more selections.         Accept         DRE does not have a VVPAT           c.         If the records do not match, the voting exploment shall movide a mass to preserve the paper record and shall provide a mass to preserve the paper record and shall provide a mass to preserve the corresponding electronic record and the paper record as be analyzed.         Accept         DRE does not have a VVPAT           e.         Viencin documentation shall not record the electronic record and the paper record as be analyzed.         Accept         DRE does not have a VVPAT           e.         vention documentation shall include procedures to crace correct one shall not cause discrepances between the tailies of the electronic cause approved by the voter if the belocito onicing massing in the voting system shall be approved by the voter is all of cause dor a number of life paper Record Structure         Accept         VVPAT           e.         Ventor documentation shall not cause dispressions. Thus, graphing status and the paper record as being approved by the voter is all of cause dispressions. Thus, graphing status and the paper record as being approved by the voter is all of cause dispressions. Thus, graphing status and p		EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
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immediately (equest assistance from a politic working machine or printer         Presential could indicate a potential working machine or printer           b.         The interview of the second indicate a potential working machine or printer         Presential could indicate a potential working machine or printer           b.         The interview of the second or or more selections.         Accept         VPAT           c.         If the records do not match, the vorting equipment shall, and preserve the paper record and shall provide a means to preserve the corresponding electronic record.         Accept         DRE does not have a VVPAT           c.         If the records do not match, the vorting electronic record.         Accept         DRE does not have a VVPAT           c.         The vorting machine shall include procedures to enable the electron official to return a vorting machine shall be correct, the paper record has been approved by the vorting machine to correct, the procedure shall not clusse in mompletely of mocreting. The proceedure shall not clusse in a paper records.         Accept         DRE does not have a VVPAT           7.93         Electronic and Paper Record Structure         Accept         DRE does not have a VVPAT           8.         All cryptographic software in the voling system shall be approved by the U.S. Coverments Cryptographic software may be used for a number of different purposes. Including calcularing deferent purposes. Including calcularing deferent purposes. Including calcularing deferent purposes. This software should be reviewed and approved of whare should be reviewed and approved of whare should		summary screen and the paper record, the voter shall				
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haddnike or pointer     mailurulation       mailurulation     mailurulation       b.     The voting approved to the presence of the voter     Accept       b.     The voting approved to the presence of the voter     Accept       c.     If the records do not match, the voting equipment shall mark and preserve the paper record and shall provide a means to preserve the corresponding electronic record     Accept     DRE does not have a VVPAT       c.     If the records do not match, the voting equipment shall so the source of error or mailuncition can be analyzed.     Accept     DRE does not have a VVPAT       d.     The voting machine shall in the cord the electronic record until the paper record has been approved by the voter.     Accept     DRE does not have a VVPAT       e.     Vendor documentation shall include procedures to carect operation after a voter has used it incompletely or incorrectly. This procedure shall not cuse dare paparotic.     DRE does not have a VVPAT       7.93     Electronic and Paper Record Structure     DRE does not have a VVPAT       a.     All cryptographic software in the voting system shall be approved by the U.S. Coverment 5 Cryptographic mumber of differint purposes, including calculating chacksum, encrypting records, authonication, generating random numbers, and digital signatures. This software should be reviewed and approved by the Cryptographic key displation frogram, calculating calculating chacksum, encrypting records, authonication, generating records upwored by the Cryptographic key displation required. The colling indicatind the pation required. The colling seaston indentifier muther wo		worker. A non-match could indicate a potential voting				
Dr.         The voting equipment shall, in the presence of the voter, mark the paper record as being approved by the voter if decision change one more solutions.         Accept         VPRAT           C.         If the records do not match, the voting equipment shall means to preserve the corresponding electronic record so the source of error or malfunction can be analyzed.         Accept         VPRAT           d.         The voting machine shall not dee paper record and shall provide a means to preserve the corresponding electronic record unlit the paper record has been approved by the voter.         Accept         VPRAT           e.         Vendor documentation shall include procedures to enable the electron finial to return a voting machine to correct operation after a voter has used in incompletely or incorrectly. This procedure shall not cause discrepances between the talles of the electronic and paper records.         Accept         VPRAT           7.9.3         Electronic and Paper Record Structure a.         Accept         VPRAT           a.         All cryptographic software in the voting system shall be approved by the U.S. Government S- cryptographic chocksume, encrypting records, suthanication generating random numbers, and reging chockaling chocksume, surphicability enclose software solution of different papers including records shall include information as approved by the cryptographic double volation Program, as approved by the cryptographic double volation program (CMVP). There may be cryptographic woldware and paper records shall         Accept         VPRAT           b.         The electronic ballot image and paper records shall include information		machine or printer				
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generated from a random number generator.       Composition       DRE does not have a         c.       The electronic ballot image and paper records shall be linked by including a unique identifier within each record that can be used to identify each record uniquely and each record's corresponding record. Discussion: The identifier serves the purpose of uniquely identifying and linking the records for cross-checking.       Accept       DRE does not have a         d.       The voting machine should generate and store a digital signature for each electronic record       Accept       DRE does not have a		session identifiers must be different. They should be				
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<ul> <li>Inked by including a unique identifier within each record that can be used to identify each record uniquely and each record's corresponding record. Discussion: The identifier serves the purpose of uniquely identifying and linking the records for cross-checking.</li> <li>The voting machine should generate and store a digital signature for each electronic record</li> </ul>	С.	The electronic ballot image and paper records shall be	Accept			DRE does not have a
that can be used to identify each record uniquely and each record's corresponding record. Discussion: The identifier serves the purpose of uniquely identifying and linking the records for cross-checking.       Image: Construction of the construct		linked by including a unique identifier within each record				VVPAT
each record s corresponding record. Discussion: The identifier serves the purpose of uniquely identifying and linking the records for cross-checking.       Initial contract of the purpose of uniquely identifying and linking the records for cross-checking.         d.       The voting machine should generate and store a digital signature for each electronic record       Accept       DRE does not have a		that can be used to identify each record uniquely and				
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d.     The voting machine should generate and store a digital     Accept     DRE does not have a       signature for each electronic record     V//PAT		linking the records for cross checking				
signature for each electronic record	d	The voting machine should generate and store a digital	Accent			DRE does not have a
	ч.	signature for each electronic record.	/1006pt			VVPAT

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test
e.	The electronic ballot image records shall be able to be exported for auditing or analysis on standards-based and /or COTS information technology computing platforms.	Accept			Issues DRE does not have a VVPAT
i.	The exported electronic ballot image records shall be in a publicly available, non-proprietary format. Discussion: It is advantageous when all electronic records, regardless of manufacturer, use the same format or can easily be converted to a publicly available, non- proprietary format; for example, the OASIS Election Markup Language (EML) Standard.	Accept			DRE does not have a VVPAT
ii.	The records should be exported with a digital signature, which shall be calculated on the entire set of electronic records and their associated digital signatures. Discussion: This is necessary to determine if records are missing or substituted.	Accept			DRE does not have a VVPAT
iii.	The voting system vendor shall provide documentation as to the structure of the exported ballot image records and how they shall be read and processed by software.	Accept			DRE does not have a VVPAT
iv.	The voting system vendor shall provide a software program that will display the exported ballot image records and that may include other capabilities such as providing vote tallies and indications of undervotes.	Accept			DRE does not have a VVPAT
V.	The voting system vendor shall provide full documentation of procedures for exporting electronic ballot image records and reconciling those records with the paper audit records.	Accept			DRE does not have a VVPAT
f.	The paper record should be created in a format that may be made available across different manufacturers of electronic voting systems. Discussion: There may be a future requirement for some commonality in the format of paper records.	Accept			DRE does not have a VVPAT
g,	The paper record shall be created such that its contents are machine readable. <i>Discussion: This can be done by using specific OCR fonts or barcodes.</i>	Accept			DRE does not have a VVPAT
i.	The paper record shall contain error correcting codes for the purpose of detecting read errors and for preventing other markings on the paper record from being misinterpreted when machine reading the paper record. <i>Discussion: This requirement is not mandatory if a state</i> <i>prohibits the paper record from containing any</i> <i>information that cannot be read and understood by the</i> <i>voter. This requirement serves the purpose of detecting</i> <i>scanning errors and preventing stray or deliberate</i> <i>markings on the paper from being interpreted as valid</i> <i>data.</i>	Accept			DRE does not have a VVPAT
h.	If barcode is used, the voting equipment shall be able to print a barcode with each paper record that contains the human-readable contents of the paper record. Discussion: This requirement is not mandatory if a state prohibits the paper record from containing any information that cannot be read and understood by the voter.	Accept			DRE does not have a VVPAT
i.	The barcode shall use an industry standard format and shall be able to be read using readily available commercial technology. <i>Discussion: Examples of such</i> <i>codes are Maxi Code or PDF417.</i>	Accept			DRE does not have a VVPAT
ii.	If the corresponding electronic record contains a digital signature, the digital signature shall be included in the barcode on the paper record.	Accept			DRE does not have a VVPAT
iii. 7,9.4	The barcode shall not contain any information other than the paper record's human-readable content, error correcting codes, and digital signature information.	Accept			DRE does not have a VVPAT
a.	The voting machine shall provide a standard, publicly	Accept			DRE does not have a

VVSG	Certification Test Requirements	Test	Test	Function	Comments &
	EAC Voluntary Voting System Guidelines 2005	Result	Case	Exercised	References to Test
	documented printer port (or the equivalent) using a standard communication protocol. <i>Discussion: Using a standard, publicly documented printer protocol assists in security evaluations of system software.</i>				VVPAT
b.	Tamper-evident seals or physical security measures shall protect the connection between the printer and the voting machine.	Accept			DRE does not have a VVPAT
с.	If the connection between the voting machine and the printer has been broken, the voting machine shall detect this event and record it in the DRE internal audit log.	Accept			DRE does not have a VVPAT
d.	The paper path between the printing, viewing and storage of the paper record shall be protected and sealed from access except by authorized election officials.	Accept			DRE does not have a VVPAT
e.	The printer shall not be permitted to communicate with any system or machine other than the voting machine to which it is connected.	Accept			DRE does not have a VVPAT
f.	The printer shall only be able to function as a printer; it shall not contain any other services (e.g., provide copier or fax functions) or network capability.	Accept			DRE does not have a VVPAT
g.	The voting machine shall detect errors and malfunctions such as paper jams or low supplies of consumables such as paper and ink that may prevent paper records from being correctly displayed, printed or stored. <i>Discussion: This could be accomplished in a variety of</i> <i>different ways; for example, a printer that is out of paper</i> <i>or jammed could issue a different audible alarm for each</i> <i>condition.</i>	Accept			DRE does not have a VVPAT
h.	If an error or malfunction occurs, the voting machine shall suspend voting operations and should present a clear indication to the voter and election officials of the malfunction.	Accept			DRE does not have a VVPAT
i.	The voting machine shall not record votes if an error or malfunction occurs.	Accept			DRE does not have a VVPAT
j.	Printing devices should contain sufficient supplies of paper and ink to avoid reloading or opening equipment covers or enclosures and thus potential circumvention of security features; or be able to reload paper and ink with minimal disruption to voting and without circumvention of security features such as seals.	Accept			DRE does not have a VVPAT
k.	Vendor documentation shall include procedures for investigating and resolving printer malfunctions including, but not limited to; printer operations, misreporting of votes, unreadable paper records, and power failures.	Accept			DRE does not have a VVPAT
Ι.	I. Vendor documentation shall include printer reliability specifications including Mean Time Between Failure estimates, and shall include recommendations for appropriate quantities of backup printers and supplies.	Accept			DRE does not have a VVPAT
	Protective coverings intended to be transparent on voting equipment shall be maintainable via a predefined cleaning process. If the coverings become damaged such that they obscure the paper record, they shall be replaceable.	Accept			DRE does not have a VVPAT
	n. The paper record shall be sturdy, clean, and of sufficient durability to be used for verifications, reconciliations, and recounts conducted manually or by automated processing.	Accept			DRE does not have a VVPAT
7.9.5	<ul> <li>Preserving Voter Privacy</li> <li>VVPAT records can be printed and stored by two different methods:</li> <li>Printed and stored on a continuous spool-to-spool paper roll where the voter views the paper record in a window</li> <li>Printed on separate pieces of paper, which are</li> </ul>				

VVSG	Certification Test Requirements	Test	Test	Function	Comments & References to Test
	EAC voluntary voting System Guidennes 2005	Result	Case	Exercised	Issues
	deposited in a secure Receptacle. If a requirement applies to only one method, that will be specified. Otherwise, the requirement applies to both.				
a.	Voter privacy shall be preserved during the process of recording, verifying and auditing his or her ballot selections. Discussion: The privacy requirements from Section 3 also apply to voting equipment with VVPAT.	Accept			DRE does not have a VVPAT
b.	When a VVPAT with a spool-to-spool continuous paper record is used, a means shall be provided to preserve the secrecy of the paper record of voter selections.	Accept			DRE does not have a VVPAT
С.	When a VVPAT with a spool-to-spool continuous paper record is used, no record shall be maintained of which voters used which voting machine or the order in which they voted.	Accept			DRE does not have a VVPAT
d.	The electronic and paper records shall be created and stored in ways that preserve the privacy of the voter. <i>Discussion: For VVPAT systems that use separate</i> <i>pieces of paper for the record, this can be accomplished</i> <i>in various ways including shuffling the order of the</i> <i>records or other methods to separate the order of stored</i> <i>records.</i>	Accept			DRE does not have a VVPAT
е.	The privacy of voters whose paper records contain an alternative language shall be maintained.	Accept			DRE does not have a VVPAT
f.	Unique identifiers shall not be displayed in a way that is easily memorable by the voter. Discussion: Unique identifiers on the paper record are displayed or formatted in such a way that they are not memorable to voters, such as by obscuring them in other characters.	Accept			DRE does not have a VVPAT
g.	Both paper rolls and paper record secure receptacles shall be controlled, protected, and preserved with the same security as a ballot box.	Accept			DRE does not have a VVPAT
7.9.6	VVPAT Usability				
a.	All usability requirements from Subsection 3.1 shall apply to voting machines with VVPAT. Discussion: The requirements in this section are in addition to those in Subsection 3.1.	Accept			DRE does not have a VVPAT
b.	The voting equipment shall be capable of showing the information on the paper in a font size of at least 3.0 mm and should be capable of showing the information in at least two font ranges; 3.0-4.0 mm, and 6.3-9.0 mm, under control of the voter or poll worker. Discussion: In keeping with requirements in Subsection 3.1, the paper record should use the same font sizes as displayed by the voting machine, but at least be capable of 3.0 mm. While larger font sizes may assist voters with poor vision, certain disabilities such as tunnel vision are best addressed by smaller font sizes.	Accept			DRE does not have a VVPAT
С.	The voting equipment shall display, print and store the paper record in any of the written alternative languages chosen for the ballot.	Accept			DRE does not have a VVPAT
i.	To assist with manual auditing, candidate names on the paper record shall be presented in the same language as used on the DRE summary screen.	Accept			DRE does not have a VVPAT
ii,	Information on the paper record not needed by the voter to perform verification shall be in English. Discussion: In addition to the voter ballot selections, the marking of the paper record as Accept or void, and the indication of the ballot page number need to be printed in the alternative language. Other information, such as precinct and election identifiers, shall be in English to facilitate use of the paper record for auditing.	Accept			DRE does not have a VVPAT
d.	The paper and electronic records shall be presented to allow the voter to read and compare the records without the voter having to shift his or her position.	Accept			DRE does not have a VVPAT
e	If the paper record cannot be displayed in its entirety on	Accent			DRE does not have a

VVSG	Certification Test Requirements EAC Voluntary Voting System Guidelines 2005	Test Result	Test Case	Function Exercised	Comments & References to Test Issues
	a single page, a means shall be provided to allow the voter to view the entire record. Discussion: Possible solutions include scrolling the paper or printing a new sheet of paper. The voter should be notified if it is not possible to scroll in reverse, so they will know to complete verification in one pass.				VVPAT
f.	If the paper record cannot be displayed in its entirety on a single page, each page of the record shall be numbered and shall include the total count of pages for the record. Discussion: Possible numbering schemes include "Page X of Y."	Accept			DRE does not have a VVPAT
g.	The instructions for performing the verification process shall be made available to the voter in a location on the voting machine. Discussion: All instructions must meet the usability requirements contained in Subsection 3.1	Accept			DRE does not have a VVPAT
7.9.7	VVPAT Accessibility				
a.	All accessibility requirements from Subsection 3.2 shall apply to voting machines with VVPAT.	Accept			DRE does not have a VVPAT

## 7.2 Appendix B: PCA Source Code Review

## 7.2.1 Infinity 4.0 C and Visual Basic 6.0 Source Code Review Data

Voting System:Election Management SystemComponent:InfinityProgramming Language:

 Report Date:
 6/4/2008

 Version:
 4.00

 C (Borland C++ 5.02 compiler)

VVSG	<u>Requirement</u>	Definition	
Vol. 1 Section	on 5.2.2-Software Integrity		Instances
v.1: 5.2.2	Self-modifying code	Self-modifying, dynamically loaded, or modification of compiled	0
		or interpreted code is prohibited	
Vol. 1 Section	on 5.2.3- Software Modular	ity and Programming	Instances
v.1: 5.2.3.a	Specific function	Module performs a specific function	0
v.1: 5.2.3.b	Module has unique	Uniquely and mnemonically named using names that differ by	1
	name	more than a single character	-
v.1: 5.2.3.b	Module has header	Header describes purpose, other units needed, inputs, outputs,	132
5.2.7 (a.		files read or written, globals, revision records (for modules	102
a.1-a.6)		greater than 10 lines)	
		Header comments shall provide the following information:	
		1) The purpose of the unit and how it works;	
		2) Other units called and the calling sequence	
		3) A description of input parameters and outputs	
		4) File references by name and method of access	
		5) Global variables used	
		6) Date of creation and a revision record	
v.1: 5.2.3.c	Required resources	All required resources, such as data accessed by the module,	1
	-	should either be contained within the module or explicitly	
		identified	
v.1: 5.2.3.e	Single Entry Point	Module has a single entry point	0
v.1: 5.2.3.e	Single Exit Point	Module has a single exit point	1
v.1: 5.2.3.f	Control structures	Support the modular concept and apply to any language feature	0
		where program control passes from one activity to the next.	
Vol. 1 Section	on 5.2.4-Control Constructs	S S	Instances
v.1: 5.2.4.a	Acceptable Constructs	Acceptable constructs are Sequence, If-Then-Else, Do-While,	0
		Do-Until, Case, and the General loop (including the special case	
		for loop);	
v.1: 5.2.4.b	Vendor Defined	If the programming language used does not provide these	0
	Constructs with	control constructs, the vendor shall provide them (that is,	
	Justification	comparable control structure logic). The constructs shall be used	
		consistently throughout the code. No other constructs shall be	
		used to control program logic and execution	
v.1: 5.2.4.c	Execution through	While some programming languages do not create programs as	0
	Control Constructs	linear processes, stepping from an initial condition, through	
		changes, to a conclusion, the program components nonetheless	
		contain procedures (such as "methods" in object-oriented	
		languages). Even in these programming languages, the	
		procedures must execute through these control constructs.	
v.1: 5.2.4.d	Program re-direction	Logic that evaluates received or stored data shall not re-direct	U
Vol 1 Socti	n 5 2 5 Noming Convertie		Instances
	Namo Boadahility	Names shall be selected so that their parts of aposch represent	
vi. 5.2.5.d	Name Reaudulity	their use	۷
v 1.525h	Class function and	Consistent names are used. Names shall be unique within an	0
5250	variable names	application and differ by more than a single character	0
v 1:525d	Keyword	Keywords shall not be used as names of objects functions	0
v. r. 0.2.0.u		nrocedures or variables	U
Vol. 1 Section	on 5.2.6-Codina Conventio	ns	Instances
v.2: 5.4.2.a	Uniform calling	Uses uniform calling sequences.	2
	sequences		_
v.2: 5.4.2.a	Parameters type and	All parameters shall either be validated for type and range on	0
	range validation	entry into each unit or the unit comments shall explicitly identify	Ţ
		the types and ranges	
v.2: 5.4.2.b	Explicit return values	The return is explicitly defined for functions and explicitly	0
	······································	assigned	-
J	1		

(V)2008-25JUN-001(D)

VVSG	Requirement	Definition	
v.2: 5.4.2.c	Macros	Does not use macros that contain returns or pass control beyond	0
		the next statement	
v.2: 5.4.2.d	Unbound arrays	Provides controls to prevent writing beyond the array, string, or	25
		buffer boundaries	
v.2: 5.4.2.e	Pointers	Provides controls that prevent pointers from being used to	0
		overwrite executable instructions or to access areas where vote	
		counts or audit records are stored	
v.2: 5.4.2.f	Case statements	Default choice explicitly defined	0
v.2: 5.4.2.g	Vote counter overflowing	Provides controls to prevent any vote counter from overflowing	0
v.2: 5.4.2.h	Indentation	Code is indented consistently and clearly	2
v.2: 5.4.2.j	Code generator	Generated code should be marked as such with comments defining the logic invoked	0
v.2: 5.4.2.k	Line length	No line of code exceeding 80 columns in width without justification	37
v.2: 5.4.2.I	Executable statement	One executable statement for each line of source code	8
v.2:	Embedded executable	The single embedded statement may be considered a part of the	0
5.4.2.m	statement	conditional expression. Any additional executable statements	
		should be split out to the other lines.	
v.2: 5.4.2.n	Mixed-mode operations	Avoids mixed-mode operations. Comment if mixed-mode usage	10
		is necessary.	
v.2: 5.4.2.o	Exit() message	Upon exit() at any point, presents a message to the user	0
		indicating the reason for the exit ().	
v.2: 5.4.2.p	Format of messages	Separate and consistent formats to distinguish between normal	21
		status and error or exception messages	
v.2: 5.4.2.q	References variables	References variables by fewer than five levels of indirection (i.e.	0
0.540		a.b.c.d or a[b].c->d)	
v.2: 5.4.2.r	Levels of indented	Functions with fewer than six levels of indented scope	3
v 2:542s	Variable initialization	Initializes every variable upon declaration where permitted	0
v 2: 5 4 2 t	Constant Definitions	All constants other than "0" and "1" defined or enumerated	82
v 2: 5 4 2 II	Ternary Operator	Only contains the minimum implementation of the "a = $h^2 c \cdot d$ "	02
1.2. 0. <del>4</del> .2.0		syntax. Expansions such as "i=a?(b?c:d):e:" are prohibited	5
v.2: 5.4.2.v	Assert() statement	All assert() statements coded such that they are absent from a	0
		production compilation	Ū
Vol. 1 Section	on 5.2.7 –Comment Conver	ntions	Instances
v.1: 5.2.7.b	Variables	All variables shall have comments at the point of declaration	2
v.1: 5.2.7.c	In-Line Comments	In-line comments shall be provided to facilitate interpretation of	26
		functional operations, tests, and branching	
v.1: 5.2.7.d	Assembly code	Assembly code shall contain descriptive and informative	0
		comments	
v.1: 5.2.7.e	Comments in uniform	All comments formatted in a uniform manner	0
	format		
Vol. 1 Section	on 7.4.2 – Protection Agains	st Malicious Software	Instances
v.1: 7.4.2	Malicious Software	Susceptibility to file or macro viruses, worms, Trojan horses,	2
		logic bombs, or hardcoded passwords	

Software related source code discrepancy detail is in the Addendum to Appendix B.

## File Function Line Counts

v.1: 5.2.3.d v.2: 5.4.2.i	File's functions' line count	On the Application level, no more than 50% exceeding 60 lines, no more than 5% exceeding 120 lines, and none exceeding240 lines without justification.	< 60	60 to 120	120 to 240	> 240	Total
Infinity	4.00	C (Borland C++ 5.02 compiler)	483 81.04%	74 12.42%	25 4.19%	14 2.35%	596 100.00%

## 7.2.2 EMS 4.0 VB.Net Source Code Review Data

Voting System:
Component:
Programming Language:

Election Management System EMS

Report Date: Version: VB.Net 9/10/2008 4.0.21.0

VVSG	Requirement	Definition	
Vol. 1 Section 5.2.2-Software Integrity			
v.1: 5.2.2	Self-modifying code	Self-modifying, dynamically loaded, or modification of compiled	0
	, ,	or interpreted code is prohibited	
Vol. 1 Section 5.2.3- Software Modularity and Programming			
v.1: 5.2.3.a	Specific function	Module performs a specific function	2
v.1: 5.2.3.b	Module has unique	Uniquely and mnemonically named using names that differ by	0
	name	more than a single character	
v.1: 5.2.3.b	Module has header	Header describes purpose, other units needed, inputs, outputs,	189
5.2.7 (a,		files read or written, globals, revision records (for modules	
a.1-a.6)		greater than 10 lines)	
		Header comments shall provide the following information:	
		1) The purpose of the unit and how it works;	
		2) Other units called and the calling sequence	
		3) A description of input parameters and outputs	
		<ol> <li>File references by name and method of access</li> <li>Clobal variables used</li> </ol>	
		5) Global variables used	
v 1.522c	Required resources	All required resources, such as data accessed by the module	2
v.1. 5.2.5.C	Required resources	All required resources, such as data accessed by the module,	Z
		identified	
v 1:523e	Single Entry Point	Module has a single entry point	1
v1:523e	Single Exit Point	Module has a single exit point	.38
v 1:523f	Control structures	Support the modular concept and apply to any language feature	1
V.1. 0.2.0.1		where program control passes from one activity to the next.	·
Vol. 1 Section 5.2.4-Control Constructs			
v.1: 5.2.4.a	Acceptable Constructs	Acceptable constructs are Sequence. If-Then-Else. Do-While.	8
	•	Do-Until, Case, and the General loop (including the special case	
		for loop);	
v.1:	Vendor Defined	If the programming language used does not provide these	0
5.2.4.a.i	Constructs with	control constructs, the vendor shall provide them (that is,	
	Justification	comparable control structure logic). The constructs shall be used	
		consistently throughout the code. No other constructs shall be	
		used to control program logic and execution	
v.1:	Execution through	While some programming languages do not create programs as	1
5.2.4.a.ii	Control Constructs	linear processes, stepping from an initial condition, through	
		changes, to a conclusion, the program components nonetheless	
		contain procedures (such as "methods" in object-oriented	
		languages). Even in these programming languages, the	
	Dreaman to direction	procedures must execute through these control constructs.	0
v. I. 521 a iii	Frogram re-direction	Logic mat evaluates received or stored data shall not re-difect	U
Vol 1 Section 5 2 5-Naming Conventions			
v1: 5.2.5.a	Name Readability	Names shall be selected so that their parts of speech represent	5
		their use. See Naming and Other Conventions table.	5
v.1: 5.2.5.b	Class, function and	Consistent names are used. Names shall be unique within an	396
5.2.5.c	variable names	application and differ by more than a single character. See	
		Naming and Other Conventions table.	
v.1: 5.2.5.d	Keyword	Keywords shall not be used as names of objects, functions,	1
		procedures, or variables	
Vol. 1 Section 5.2.6-Coding Conventions			
v.2: 5.4.2.a	Uniform calling	Uses uniform calling sequences.	1
	sequences		
v.2: 5.4.2.a	Parameters type and	All parameters shall either be validated for type and range on	18
	range validation	entry into each unit or the unit comments shall explicitly identify	
0 = 1 = 1	Free Balt and	the types and ranges	
v.2: 5.4.2.b	Explicit return values	I ne return is explicitly defined for functions and explicitly	18
	Maaraa	assigned	<u>^</u>
v.z: 5.4.2.C	wacros	uoes not use macros that contain returns or pass control beyond	U
VVSG	Requirement	Definition	
----------------	------------------------------	--	-----------
		the next statement	
v.2: 5.4.2.d	Unbound arrays	Provides controls to prevent writing beyond the array, string, or	31
		buffer boundaries	
v.2: 5.4.2.e	Pointers	Provides controls that prevent pointers from being used to	0
		overwrite executable instructions or to access areas where vote	
		counts or audit records are stored	
v.2: 5.4.2.f	Case statements	Default choice explicitly defined	2
v.2: 5.4.2.g	Vote counter	Provides controls to prevent any vote counter from overflowing	3
	overflowing		
v.2: 5.4.2.h	Indentation	Code is indented consistently and clearly	16
v.2: 5.4.2.j	Code generator	Generated code should be marked as such with comments	1
		defining the logic invoked	
v.2: 5.4.2.k	Line length	No line of code exceeding 80 columns in width without	12
		justification	
v.2: 5.4.2.l	Executable statement	One executable statement for each line of source code	0
v.2:	Embedded executable	The single embedded statement may be considered a part of the	0
5.4.2.m	statement	conditional expression. Any additional executable statements	
		should be split out to the other lines.	
v.2: 5.4.2.n	Mixed-mode operations	Avoids mixed-mode operations. Comment if mixed-mode usage	10
		is necessary.	
v.2: 5.4.2.0	Exit() message	Upon exit() at any point, presents a message to the user	1
0.540		indicating the reason for the exit ().	
v.2: 5.4.2.p	Format of messages	Separate and consistent formats to distinguish between normal	82
		status and error or exception messages	407
v.2: 5.4.2.q	References variables	References variables by fewer than five levels of indirection (i.e.	127
V 0 5 4 0 r	Lovala of indepted	a.b.c.u of a[b].c->u)	0
V.Z. 5.4.Z.I		Functions with rewer than six revers of indented scope	0
V 2: 5 4 2 a	Variable initialization	Initialized over everyclobe upon deeleration where permitted	0
V.2. 5.4.2.5	Constant Definitions	All constants other than "0" and "1" defined or enumerated	66
V.2. 5.4.2.1	Tornary Operator	All constants of the minimum implementation of the " $a = b 2 c : d$ "	00
v.z. 5.4.z.u	Ternary Operator	Subtract Expansions such as " $i=a^2(b^2c;d)$ ;e:" are prohibited	0
V 2: 5 4 2 V	Assert() statement	All assert() statements coded such that they are absent from a	0
V.Z. J.4.Z.V	Assert() statement	noduction compilation	0
Vol 1 Section	on 5 2 7 –Comment Conver	ntions	Instances
v 1:527h	Variables	All variables shall have comments at the point of declaration	22
v.1:527c	In-Line Comments	In-line comments shall be provided to facilitate interpretation of	45
1.1.0.2.7.0		functional operations, tests, and branching	ro
v 1.527d	Assembly code	Assembly code shall contain descriptive and informative	0
		comments	Ŭ
v.1: 5.2.7.e	Comments in uniform	All comments formatted in a uniform manner	3
	format		Ŭ
Vol. 1 Section	on 7.4.2 – Protection Agains	st Malicious Software	Instances
v.1: 7.4.2	Malicious Software	Susceptibility to file or macro viruses, worms. Troian horses	5
		logic bombs, or hardcoded passwords	-

Software related source code discrepancy detail is in the Addendum to Appendix B.

#### File Function Line Counts

v.1: 5.2.3.d v.2: 5.4.2.i	File's functions' line count	On the Application level, no more than 50% exceeding 60 lines, no more than 5% exceeding 120 lines, and none is exceeds 240 lines without justification.	< 60	60 to 120	120 to 240	> 240	Total
EMS	4.00 (4.0.21.0 minor)	VB.Net	1859 94.08%	80 4.05%	23 1.16%	14 0.71%	1976 100.00%

## 7.2.3 EMS 4.0 SQL Source Code Review Data

Voting System:	Election Management System	Report Date:	9/23/2008
Programming Language:		SQL	4.0.21.0

<u>VVSG</u>	<u>Requirement</u>	Definition	
Vol. 1 Section	on 5.2.2-Software Integrity	• •	Instances
v.1: 5.2.2	Self-modifying code	Self-modifying, dynamically loaded, or modification of compiled	0
		or interpreted code is prohibited	
Vol. 1 Section	on 5.2.3- Software Modula	rity and Programming	Instances
v.1: 5.2.3.a	Specific function	Module performs a specific function	0
v.1: 5.2.3.b	Module has unique name	Uniquely and mnemonically named using names that differ by more than a single character	0
v.1: 5.2.3.b	Module has header	Header describes purpose, other units needed, inputs, outputs,	134
5.2.7 (a,		files read or written, globals, revision records (for modules	-
a.1-a.6)		greater than 10 lines)	
		Header comments shall provide the following information:	
		<ol> <li>The purpose of the unit and how it works;</li> </ol>	
		2) Other units called and the calling sequence	
		3) A description of input parameters and outputs	
		4) File references by name and method of access	
		6) Date of creation and a revision record	
v.1: 5.2.3.c	Required resources	All required resources, such as data accessed by the module.	0
		should either be contained within the module or explicitly	-
		identified	
v.1: 5.2.3.e	Single Entry Point	Module has a single entry point	0
v.1: 5.2.3.e	Single Exit Point	Module has a single exit point	11
v.1: 5.2.3.f	Control structures	Support the modular concept and apply to any language	0
		feature where program control passes from one activity to the	
Vol 1 Sooti	on F.2.4 Control Construct		Instances
v01. 1 Sector	Acceptable Constructs	Acceptable constructs are Sequence. If Then-Else. Do-While	
v.1. 5.2.4.a	Acceptable Constructs	Do-Until Case, and the General loop (including the special	0
		case for loop):	
v.1:	Vendor Defined	If the programming language used does not provide these	0
5.2.4.a.i	Constructs with	control constructs, the vendor shall provide them (that is,	
	Justification	comparable control structure logic). The constructs shall be	
		used consistently throughout the code. No other constructs	
	Evenution through	shall be used to control program logic and execution	0
V.1: 524aii	Execution through	while some programming languages do not create programs	0
J.Z.4.a.II	Control Constructs	changes to a conclusion the program components	
		nonetheless contain procedures (such as "methods" in object-	
		oriented languages). Even in these programming languages,	
		the procedures must execute through these control constructs.	
v.1:	Program re-direction	Logic that evaluates received or stored data shall not re-direct	0
5.2.4.a.iii		program control	la ete
voi. 1 Section	Nomo Boodebility	Dris	instances
6.6.2.G . I V	Name Reauability	their use. See Naming and Other Conventions table.	Ö
v.1: 5.2.5.b	Class, function and	Consistent names are used. Names shall be unique within an	5
5.2.5.c	variable names	application and differ by more than a single character. See	
		Naming and Other Conventions table.	
v.1: 5.2.5.d	neyword	Keywords shall not be used as names of objects, functions,	0
Vol 1 Section	on 5 2 6-Coding Conventio		Instances
v.2:542a	Uniform calling	Uses uniform calling sequences	0
1.2. 0. 1.2.0	sequences		J J
v.2: 5.4.2.a	Parameters type and	All parameters shall either be validated for type and range on	0
	range validation	entry into each unit or the unit comments shall explicitly identify	
		the types and ranges	
v.2: 5.4.2.b	Explicit return values	The return is explicitly defined for functions and explicitly	0
	Maaraa	assigned	0
v.2: 5.4.2.c	wacros	Does not use macros that contain returns or pass control	0

VVSG	Requirement	Definition	
		beyond the next statement	
v.2: 5.4.2.d	Unbound arrays	Provides controls to prevent writing beyond the array, string, or	0
	_	buffer boundaries	
v.2: 5.4.2.e	Pointers	Provides controls that prevent pointers from being used to	0
		overwrite executable instructions or to access areas where	
		vote counts or audit records are stored	
v.2: 5.4.2.f	Case statements	Default choice explicitly defined	1
v.2: 5.4.2.g	Vote counter	Provides controls to prevent any vote counter from overflowing	0
	overflowing		
v.2: 5.4.2.h	Indentation	Code is indented consistently and clearly	33
v.2: 5.4.2.j	Code generator	Generated code should be marked as such with comments	0
		defining the logic invoked	
v.2: 5.4.2.k	Line length	No line of code exceeding 80 columns in width without	47
		justification	
v.2: 5.4.2.I	Executable statement	One executable statement for each line of source code	0
v.2:	Embedded executable	The single embedded statement may be considered a part of	0
5.4.2.m	statement	the conditional expression. Any additional executable	
		statements should be split out to the other lines.	
v.2: 5.4.2.n	Mixed-mode	Avoids mixed-mode operations. Comment if mixed-mode	1
	operations	usage is necessary.	
v.2: 5.4.2.o	Exit() message	Upon exit() at any point, presents a message to the user	0
		indicating the reason for the exit ().	
v.2: 5.4.2.p	Format of messages	Separate and consistent formats to distinguish between normal	0
		status and error or exception messages	
v.2: 5.4.2.q	References variables	References variables by fewer than five levels of indirection	0
		(i.e. a.b.c.d or a[b].c->d)	
v.2: 5.4.2.r	Levels of indented	Functions with fewer than six levels of indented scope	0
	scope		
v.2: 5.4.2.s	Variable initialization	Initializes every variable upon declaration where permitted.	1
v.2: 5.4.2.t	Constant Definitions	All constants other than "0" and "1" defined or enumerated	8
v.2: 5.4.2.u	Ternary Operator	Only contains the minimum implementation of the "a = b ? c :	0
		d" syntax. Expansions such as "j=a?(b?c:d):e;" are prohibited.	
v.2: 5.4.2.v	Assert() statement	All assert() statements coded such that they are absent from a	0
		production compilation	
Vol. 1 Section	on 5.2.7 –Comment Conve	ntions	Instances
v.1: 5.2.7.b	Variables	All variables shall have comments at the point of declaration	63
v.1: 5.2.7.c	In-Line Comments	In-line comments shall be provided to facilitate interpretation of	25
		functional operations, tests, and branching	
v.1: 5.2.7.d	Assembly code	Assembly code shall contain descriptive and informative	0
		comments	
v.1: 5.2.7.e	Comments in uniform	All comments formatted in a uniform manner	0
	format		
Vol. 1 Section	on 7.4.2 – Protection Again	est Malicious Software	Instances
v.1: 7.4.2	Malicious Software	Susceptibility to file or macro viruses, worms, Trojan horses,	1
		logic bombs, or hardcoded passwords	

Software related source code discrepancy detail is in the Addendum to Appendix B.

#### File Function Line Counts

v.1: 5.2.3.d v.2: 5.4.2.i	File's functions' line count	On the Application level, no more than 50% exceeding 60 lines, no more than 5% exceeding 120 lines, and none exceeding 240 lines without justification.	< 60	60 to 120	120 to 240	> 240	Total
EMS	4.00 (4.0.21.0 minor)	SQL	192 90.14%	18 8.45%	3 1.41%	0 0.00%	213 100.00%

# 7.3 Appendix C: PCA TDP Documentation Review

#### 7.3.1 Technical Data Package Configuration and Quality Assurance Practices

Information listed below identifies the results of the review of the TDP Configuration and Quality Assurance practices to the requirements of the VVSG 2005. During the certification testing iBeta tracked all materials provided by MicroVote. Any instances where the delivered materials did not conform to the MicroVote identified Configuration and Quality Assurance practices were noted in the *PCA and FCA Discrepancy Report* (see Appendix E) as Informational issues.

	PCA Document Review TDP Configuration & QA Practices		
Vendor	MicroVote General Corporation	***	Out of scope for this document
Voting System	Election Management System (EMS) v. 4.0	Accept	Meets the requirement
Scope of Review	2005 Voluntary Voting System Guidelines Full Certification	Reject	Does not meet the requirement
			#
Reviewer	Mary Ricketts		
Review Date	April 30, 2007		
VVSG Req. #	Volume 1 Performance Standards		Note & Discrepancy #
8.3	Components from Third Parties		
	A vendor who does not manufacture all the components of its voting system, but instead procures components as standard commercial items for assembly and integration into a voting system verifies that the supplier vendors follow documented quality assurance procedures that are at least as stringent as those used internally by the voting system vendor	Accept	
8.5	Parts and Materials Special Test and Examinations	-	
b.	In order to ensure that voting system part and materials function properly, vendors shall maintain the resulting test data as part of the quality assurance program documentation.	Accept	
8.6	Quality Conformance Inspections		
b.	To meet the conformance inspection requirement the vendor or manufacturer shall deliver a record of tests, or a certificate of satisfactory completion, with each system or component.	Accept	
8.7	Documentation		
9.2	This documentation shall be sufficient to serve the needs of the test lab, election officials, and maintenance technicians. It shall be prepared and published in accordance with standard industrial practices for information technology and electronic and mechanical equipment. It shall include, at a minimum, the following: System overview; System functionality description; System hardware specification; Software design and specifications; System security specification; System test and verification specification; System operations procedures; System maintenance procedures; Personnel deployment and training requirements; Configuration management plan; Quality assurance program; and System Change Note Configuration Management Policy	Accept	
	The vendor shall describe its policies for configuration management in the	Accept	
9.3	Technical Data Package. This description shall address the following elements: Scope and nature of configuration management program activities; and Breadth of application of the vendor's policies and practices to the voting system (i.e., extent to which policies and practices of suppliers apply to particular components, subsystems, or other defined system elements.) Configuration Identification		
9.3.1	Classification and Naming Configuration Items		
	The vendor shall describe the procedures and conventions used to	Accept	

	PCA Document Review TDP Configuration & QA Practices		
	classify configuration items into categories and subcategories, uniquely		
	number or otherwise identify configuration items and name configuration		
	items.		
9.3.2	Versioning Conventions		
	When a system component is part of a higher level system element such	Accept	
	as a subsystem, the vendor shall describe the conventions used to:		
	a. Identify the specific versions of individual configuration items and sets		
	of items that are incorporated in higher level system elements such as		
	subsystems		
	b. Uniquely number or otherwise identify versions		
	c. Name versions		
9.4	Baseline, Promotion and Demotion Procedures		
	The vendor shall establish formal procedures and conventions for	Accept	
	establishing and providing a complete description of the procedures and		
	related conventions used to:		
	a. Establish a particular instance of a component as the starting baseline		
	b. Promote subsequent instances of a component to baseline status as		
	development progresses through to completion of the initial completed		
	version released to the accredited test lab for testing		
	c. Promote subsequent instances of a component to baseline status as		
	the component is maintained throughout its life cycle until system		
9.5	Configuration Control Procedures	• •	
	Configuration control is the process of approving and implementing	Accept	
	changes to a configuration item to prevent unauthorized additions,		
	changes or deletions. The vendor shall establish such procedures and		
	related conventions, providing a complete description of those procedures		
	used to:		
	a. Develop and maintain internally developed items		
	D. Acquire and maintain third-party items		
	c. Resolve internally identified and reported defects (i.e., by systematic		
	d. Resolve externally identified and reported defects (i.e., by customers		
0.6	Release Breeses		
9.0	The release process	Accort	
a. & D	or migrates the system to the accredited test lab and eventually to its	Accept	
	of migrates the system to the accredited test lab and, eventually, to its		
	customers. The vehicle shall establish such procedures and related		
	Perform a first release of the system to an accredited test lab		
	h Perform a subsequent maintenance or upgrade release of the system		
	or particular components to an accredited test lab		
	c. Perform the initial delivery and installation of the system to a customer		
	including confirmation that the installed version of the system matches		
	exactly the certified system version		
	d. Perform a subsequent maintenance or upgrade release of the system		
	or a particular component to a customer, including confirmation that the		
	installed version of the system matches exactly the certified system		
	version		
Req. #	VSS Volume 2 Testing Requirement		Note &
			Discrepancy #
2.1	Scope		
2.1.1	Content & Format		
	The vendor has listed all documents controlling the design, construction,	Accept	
	operation and maintenance of the system.	•	
2.1.1.3	The TDP shall include a detailed table of contents for the required	Accept	
	documents, an abstract of each document, and a list of each of the	•	
	informational sections and appendices presented. A cross index shall be		
	provided indicating the portions of the documents that responsive to the		
	documentation requirements for any item presented.		

### 7.3.2 PCA TDP Document Review

Information listed summarizes the TDP documents reviewed and the results of their review to the requirements of the VVSG 2005 Section 2.

Section 2.11 CONFIGURATION MANAGEMENT PLAN Election Management System
Section 2.12 QUALITY ASSURANCE PROGRAM Election Management System
Section 2.13 SYSTEM CHANGE NOTES Election Management System
Section 2.2 System Overview – Election Management System
Section 2.3 SYSTEM FUNCTIONALITY DESCRIPTION Election Management System
Section 2.4 SYSTEM HARDWARE SPECIFICATION Election Management System
Section 2.5 SOFTWARE DESIGN AND SPECIFICATION Election Management System
Section 2.6 SYSTEM SECURITY SPECIFICATION Election Management System
Section 2.7 SYSTEM TEST AND VERIFICATION SPECIFICATION Election Management System
Section 2.8 SYSTEM OPERATIONS PROCEDURES Election Management System
Section 2.9 SYSTEM MAINTENANCE PROCEDURES Election Management System

	PCA Document Review Summary
Manufacturer	MicroVote General Corp.
Voting System	Election Management System (EMS) v4.0
Review Scope	Full certification to the 2005 VVSG

Section Trace	Document Name & Version #	Review Date	Reviewer	Revw. Ver.#
2.2 A:	Section 2.2 System Overview v1.2	6/11/07	dharwood	2
2.2 B:	Appendix B1 Infinity Voting Panel Technical Reference Manual v0.2	4/30/07	dharwood	1
2.2 C:	Appendix B3 Infinity Firmware Functional Specification v0.2	4/30/07	dharwood	1
2.2 D:	Appendix C – COTS Specifications v1.0	4/30/07	dharwood	1
2.2 E:	Appendix H ACP-2200 OPTICAL SCANNER QUICK START GUIDE EMS v1.0	4/30/07	dharwood	1
2.2 F:	Appendix I ACP 2200 Dual Sided Optical Mark Reader v1.0	5/1/07	dharwood	1
2.2 G:	Appendix J User's Guide Thermal Printer DPU-3445-20 v1.0	5/1/07	dharwood	1
2.2 H	Appendix K DPU-414 Operation Manual v1.0	5/1/07	dharwood	1
2.2 l:	Appendix L GemCore V1.21-Based Reader Reference Manual v1.0	5/1/07	dharwood	1
2.2 J:	Appendix N DoubleTalk PC/LT Users Manual (no version)	10/15/07	M Ricketts	2
2.2 K:	Appendix O1 3.5_BAY 7 in 1 USB 2.0 Flash card reader specification (no version)	5/1/07	dharwood	1
2.2 L:	Appendix W Sample County Invoice v1.1	5/1/07	dharwood	1
2.2 M:	Appendix X Source Code Files List v1.1	5/9/07	dharwood	1
2.3 A:	Section 2.3 System Functionality Description v1.1	4/24/07	M Ricketts	1
2.3 B:	Appendix F VOTING VARIATIONS Election Management System, Ver 1.3	7/12/07	M Ricketts	2
2.4 A:	Section 2.4 System Hardware Specification for EMS v1.1	6/11/07	dharwood	2
2.4 B:	Appendix B1 Infinity Voting Panel Technical Reference Manual v0.2	4/26/07	dharwood	1
2.4 C:	Section 2.2 System Overview v1.2	6/11/07	dharwood	1
2.4 D:	Section 2.3 System Functionality Description v1.2	6/11/07	dharwood	1
2.4 E:	Appendix C – COTS Specifications v1.0	6/11/07	dharwood	1
2.4 F:	Appendix E – Completed COTS Testing Forms v1.0	6/11/07	dharwood	1
2.4 G:	Appendix G COTS linvoices and Certifications v1.0	6/11/07	dharwood	1
2.5 A:	Section 2.5 SOFTWARE DESIGN AND SPECIFICATION, v2.1	8/14/07	G. Audette	5
2.5 B:	Appendix T Program Specifications, v1.1	4/26/07	K.Wilson	1
2.5 C:	Appendix R GUI Specifications, v1.2	4/26/07	K.Wilson	1

Section Trace	Document Name & Version #	Review Date	Reviewer	Revw. Ver.#
2.5 D:	Appendix B-1 Infinity Voting Panel Technical Reference, v0.2	4/26/07	K.Wilson	1
2.5 E:	Appendix A11 Test Execution Plan for Security. V1.1	5/9/07	G. Audette	1
2.6 A:	Section 2.6 System Security Specification for Election Management System v1.5	8/8/07	M Ricketts	2
2.6 B:	Appendix AA MicroVote System Identification Tool Users Manual v1.0	4/24/07	dharwood	1
2.6 C:	Infinity Communication Specification Version 1.06 v0.1	8/13/07	K wilson	1
2.6 D:	Appendix U -MicroVote Infinity Poll Worker's Manual Version 4.0.0.0, v1.9	9/23/08	K. Wilson	4
2.6 E:	Infinity Encryption Algorithms v.1.01	10/10/08	K.Wilson	1
2.7 A:	Section 2.7 System Test and Verification Specifications – v1.0	4/26/07	dharwood	1
2.7 B:	Appendix A Test Cases	4/26/07	dharwood	1
2.7 C:	Appendix Q – MS Access database – v0.2	4/26/07	dharwood	1
2.8 A:	Section 2.8 SYSTEM OPERATIONS PROCEDURES Election Management System, v1.2	8/8/07	M Ricketts	3
2.8 B:	Appendix U – MicroVote Infinity Poll Worker's Manual Version 4.0.0.0, v1.3	8/8/07	M Ricketts	3
2.8 C:	Appendix V – Microvote General Corporation Election Management System User Manual, v1.5	8/8/07	M Ricketts	4
2.8 D:	Appendix A Test Cases	5/3/07	dharwood	1
2.8 E:	App. B1-Infinity Voting Panel Technical Reference Manual, v0.2	5/3/07	dharwood	1
2.8 F:	Appendix D – Glossary of Terms EMS v1.0	5/3/07	dharwood	1
2.8 G:	Section 2.6 System Security Specification EMS v1.0	5/3/07	dharwood	1
2.8 H:	Section 2.7 System Test and Verification Specification EMS D01.0TDP-2.7 v1.0	5/3/07	dharwood	1
2.8 l:	Section 2.11 CONFIGURATION MANAGEMENT PLAN, v1.2	6/14/07	M Ricketts	1
2.8 J:	Appendix Z – Machine Technician Manual Election Management System v0.1	10/11/07	M Ricketts	1
2.9 A:	Section 2.9 System Maintenance Procedures EMS v1.1	6/11/07	dharwood	2
2.9 B:	Appendix B1 Infinity Voting Panel Technical Reference Manual v0.2	4/25/07	dharwood	1
2.9 C:	Appendix H ACP-2200 OPTICAL SCANNER QUICK START GUIDE EMS v1.0	4/25/07	dharwood	1
2.9 D:	Appendix I ACP 2200 Dual Sided Optical Mark Reader v1.0	4/25/07	dharwood	1
2.9 E:	Appendix J User's Guide Thermal Printer DPU-3445-20 v1.0	4/25/07	dharwood	1
2.9 F:	Appendix K DPU-414 Operation Manual DO1.0TDP-K v1.0	4/25/07	dharwood	1
2.9 G:	Appendix Z Screen 1 v1.0	4/25/07	dharwood	1
2.10 A:	Personnel Deployment and Training Requirements v.1.0	4/23/07	dharwood	1
2.11 A:	Section 2.11 CONFIGURATION MANAGEMENT PLAN Election Management System, v.1.2	6/15/07	M Ricketts	2
2.11 B:	Appendix A Test Cases	4/30/07	M Ricketts	1
2.11 C:	Appendix P-1 INSTALLATION CHECKLIST Election Management System, v.1.0	4/30/07	M Ricketts	1
2.11 D:	Appendix P-2 DATABASE CREATION CHECKLIST Election Management System, v.1.0	4/30/07	M Ricketts	1
2.11 E:	Appendix P-3 INFINITY PROGRAMMING CHECKLIST, v1.0	4/30/07	M Ricketts	1
2.11 F:	Appendix Q DEFECT TRACKING SYSTEM Election Management System, v0.2	4/30/07	M Ricketts	1
2.12 A:	Section 2.12 QUALITY ASSURANCE PROGRAM. V.1.1	4/27/07	dharwood	1
2.12 B:	Appendix A Test Cases	4/27/07	dharwood	1
2.12 C:	Appendix B1 Infinity Voting Panel Technical Reference Manual v0.2	4/27/07	dharwood	1
2.12 D:	Appendix C – COTS Specifications v1.0	4/27/07	dharwood	1
2.12 E:	Appendix E – Completed COTS Testing Forms v1.0	4/27/07	dharwood	1
2.13 A:	Section 2.13 System Change Notes v1.0	4/23/07	dharwood	1

VVSG	Volume II Testing Requirement- Section 2	Section											
		2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13
2.1	Scope												
2.1.1.2	Required Content for System Changes and Re-												
	qualification												
	If the scope of this certification is a change verify	Accept											
	that the vendor has submitted appropriate System												

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
	Change Notes covering this document. If this is												
	not a change, no change notes are required.												
2.1.1.3	Format												
	The TDP shall include a detailed table of contents for the required documents.	Accept	Accept	Accept	Accept								
2.1.3	Protection of Proprietary Information												
	Verify that if the vendor considers this document	Accept	Accept	Accept	Accept								
	proprietary, they have marked it as such.												
	public release do not need to be marked												
212	System Overview												
2.1.3	In the system overview, the vendor shall provide	Accept	***	***	***	***	***	***	***	***	***	***	*
	information that enables the accredited test lab to	hoopt											
	identify the functional and physical components of												
	the system, how the components are structured.												
	and the interfaces between them.												
2.2.1	System Description -												
	The system description shall include written												
	descriptions, drawings and diagrams that present:												
а	A description of the functional components (or	Accept	***	***	***	***	***	***	***	***	***	***	*
	subsystems) as defined by the vendor (e.g.,												
	environment, election management and control,												
	vote recording, vote conversion, reporting, and												
	their interconnection)	-											
b.	A description of the operational environment of	Accept	***	***	***	***	***	***	***	***	***	***	*
	the system that provides an overview of the												
	hardware, software, and communications												
	structure	A	***	444 4	444	***	***	***	***	***	***	444	*
C.	A concept of operations that explains each	Accept											Ŷ
	system function, and now the function is achieved												
	In the design	Accont	***	***	***	***	***	***	***	***	***	***	*
a.	bescriptions of the functional and physical	Accept											
	components												
•	Identification of all COTS bardware and software	Accept	***	***	***	***	***	***	***	***	***	***	*
С.	products and communications												
	services used in the development and/or												
	operation of the voting system, identifying												
	the name, vendor, and version used for each such												
	component, including:												
i.	Operating Systems	Accept	***	***	***	***	***	***	***	***	***	***	*
ii.	Database software	Accept	***	***	***	***	***	***	***	***	***	***	*
iii.	Communications routers	Accept	***	***	***	***	***	***	***	***	***	***	*
iv.	Modem drivers	Accept	***	***	***	***	***	***	***	***	***	***	*
۷.	Dial-up networking software	Accept	***	***	***	***	***	***	***	***	***	***	*
f.	Interfaces among internal components, and	Accept	***	***	***	***	***	***	***	***	***	***	*
	interfaces with external systems. For components												
	that interface with other components for which												
	multiple products may be used, the TDP shall												

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
	provide an identification of:												
i.	File specifications, data objects, or other means	Accept	***	***	***	***	***	***	***	***	***	***	*
	used for information exchange	_											
ii.	The public standard used for such file specifications, data objects, or other means	Accept	***	***	***	***	***	***	***	***	***	***	*
g.	Benchmark directory listings for all software	Accept	***	***	***	***	***	***	***	***	***	***	*
	(including firmware elements) and associated												
	documentation included in the vendor's release in												
	order of how each piece of software would												
	normally be installed upon setup and installation.												
2.2.2	System Performance -												
	I ne vendor snall provide system performance												
-	The performance characteristics of each	Accent	***	***	***	***	***	***	***	***	***	***	*
a	operating mode and function in terms of expected	лесері											
	and maximum speed, throughout canacity												
	maximum volume (maximum number of voting												
	positions and maximum number of ballot styles												
	supported), and processing frequency												
b.	Quality attributes such as reliability,	Accept	***	***	***	***	***	***	***	***	***	***	*
	maintainability, availability, usability, and												
	portability												
C.	Provisions for safety, security, privacy, and	Accept	***	***	***	***	***	***	***	***	***	***	*
	continuity of operation		4.4.4	بلد بلد بلد	ىلەرلەرلەر مەربەرلەر	4.4.4	ىلەرلەرلەر مەربەرلەر	بلار بلار بلد	يار بار بار		ىلەرلەر يە	ية بالديار	*
d.	Design constraints, applicable standards, and	Accept	***	***	***	***	***	***	***	***	***	***	^
2.2	Compatibility requirements												
2.3	The vender shall dealars the search of the	***	Accent	***	***	***	***	***	***	***	***	***	*
	system's functional canabilities thereby		лосері										
	establishing the performance design test												
	manufacture, and acceptance context for the												
	system.												
	The vendor shall provide a listing of the system's	***	Accept	***	***	***	***	***	***	***	***	***	*
	functional processing capabilities,												
	encompassing capabilities required by the												
	Guidelines and any additional capabilities												
	provided by the system. This listing shall provide												
	a simple description of each capability.												
	decumentation required for the TDP												
а	The vendor shall organize the presentation of	***	Accept	***	***	***	***	***	***	***	***	***	*
а.	required capabilities in a manner that corresponds		, looopt										
	to the structure and sequence of functional												
	capabilities indicated in Volume I, Section 2. The												
	contents of Volume I, Section 2 may be used as												
	the basis for a checklist to indicate the specific												
	functions provided and those not provided by the												
L	system.			def 1		4.11		duć 1	4.4.4	4.4.1	dut t	4.2.1	
b.	Additional capabilities shall be clearly indicated.	***	Accept	***	***	***	***	***	***	***	***	***	*

VVSG	Volume II Testing Requirement- Section 2	Section	Section 2.10	Section 2.11	Section	Section							
С.	Required capabilities that may be bypassed or deactivated during installation or operation by the user shall be clearly indicated	***	Accept	***	***	***	***	***	***	***	***	***	*
d.	Additional capabilities that function only when activated during installation or operation by the user shall be clearly indicated	***	Accept	***	***	***	***	***	***	***	***	***	*
е.	Additional capabilities that normally are active but may be bypassed or deactivated during installation or operation by the user shall be clearly indicated.	***	Accept	***	***	***	***	***	***	***	***	***	*
2.4	System Hardware Specifications												
	The vendor shall expand on the system overview by providing detailed specifications of the hardware components of the system, including specifications of hardware used to support the telecommunications capabilities of the system, if applicable.	***	***	Accept	***	***	***	***	***	***	***	***	*
2.4.1	System Hardware Characteristics												
	The vendor shall provide a detailed discussion of the characteristics of the system, indicating how the hardware meets individual requirements defined in Volume I, Section 4, including	***	***	Accept	***	***	***	***	***	***	***	***	*
	<b>Performance Characteristics:</b> This discussion addresses basic system performance attributes and operational scenarios that describe the manner in which system functions are invoked, describes environmental capabilities, describes life expectancy, and describes any other essential aspects of system performance	***	***	Accept	***	***	***	***	***	***	***	***	*
	<b>Physical Characteristics:</b> This discussion addresses suitability for intended use, requirements for transportation and storage, health and safety criteria, security criteria, and vulnerability to adverse environmental factors	***	***	Accept	***	***	***	***	***	***	***	***	*
	<b>Reliability:</b> This discussion addresses system and component reliability stated in terms of the systems operating functions, and identification of items that require special handling or operation to sustain system reliability	***	***	Accept	***	***	***	***	***	***	***	***	*
	<b>Maintainability:</b> The discussion addresses maintainability. Maintainability represents the ease with which maintenance actions can be performed based on the design characteristics of equipment and software and the processes the vendor and election officials have in place for preventing failures and for reacting to failures. Maintainability includes the ability of equipment and software to self-diagnose problems and to make non-technical election workers aware of a	***	***	Accept	***	***	***	***	***	***	***	***	*

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
	problem. Maintainability also addresses a range												
	of scheduled and unscheduled events												
	Environmental Conditions: This discussion	***	***	Accept	***	***	***	***	***	***	***	***	*
	addresses the ability of the system to withstand												
	natural environments, and operational constraints												
	in normal and test environments, including all												
	service telecommunications services												
	environmental protection, and any additional												
	facilities or resources required to install and												
	operate the system												
2.4.2	Design and Construction												
	The vendor shall provide sufficient data, or	***	***	Accept	***	***	***	***	***	***	***	***	*
	references to data, to identify unequivocally the												
	details of the system configuration submitted for												
	testing.	***	***	Accont	***	***	***	***	***	***	***	***	*
	components used in the system a description of			Ассері									
	their assembly into major system components and												
	the system as a whole. Paragraphs and diagrams												
	shall be provided that describe:												
a.	Materials, processes, and parts used in the	***	***	Accept	***	***	***	***	***	***	***	***	*
	system, their assembly, and the configuration												
	control measures to ensure compliance with the												
	system specification	4.4.4	باد باد باد		ىلەرلەر يە	ىلى بىلى بىلە	4.4.4	1. J. J.	يار بار بار		بالد بالد بالد	ية بالديار	*
b.	The electromagnetic environment generated by	~~~		Accept									Ŷ
<u> </u>	Operator and voter safety considerations, and any	***	***	Accept	***	***	***	***	***	***	***	***	*
0.	constraints on system operations or the use			7.000pt									
	environment												
d.	Human engineering considerations, including	***	***	Accept	***	***	***	***	***	***	***	***	*
	provisions for access by disabled voters												
2.5	Software Design and Specification												
	The vendor shall expand on the system overview	***	***	***	Accept	***	***	***	***	***	***	***	*
	by providing detailed specifications of the												
	software components of the system, including												
	canabilities of the system if applicable												
2.5.1	Purpose and Scope												
	The vendor shall describe the function or	***	***	***	Accept	***	***	***	***	***	***	***	*
	functions that are performed by the software												
	programs that comprise the system, including												
	software used to support the telecommunications												
0.5.0	capabilities of the system, if applicable.												
2.5.2	Applicable Documents	***	***	***	Accont	***	***	***	***	***	***	***	*
	the development of the software and its				лосері								
	specifications. Documents shall be listed in order												
	of precedence.												

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
2.5.3	Software Overview												
2.0.0	The vendor shall provide an overview of the software that includes the following items:												
a.	A description of the software system concept, including specific software design objectives, and the logic structure and algorithms used to accomplish these objectives	***	***	***	Accept	***	***	***	***	***	***	***	*
b.	The general design, operational considerations, and constraints influencing the design of the software	***	***	***	Accept	***	***	***	***	***	***	***	*
с. i. ii. iii.	Identification of all software items, indicating items that were: - Written in-house - Procured and not modified - Procured and modified, including descriptions of the modifications to the software and to the default configuration options	***	***	***	Accept	***	***	***	***	***	***	***	*
d. i. ii. iii. iv.	Additional information for each item that includes: - Item identification - General description - Software requirements performed by the item - Identification of interfaces with other items that provide data to, or receive data from, the item - Concept of execution for the item	***	***	***	Accept	***	***	***	***	***	***	***	*
254	The vendor shall also include a certification that procured software items were obtained directly from the manufacturer or a licensed dealer or distributor.	***	***	***	Accept	***	***	***	***	***	***	***	*
2.3.4	Software Standards and Conventions	***	***	***	Accort	***	***	***	***	***	***	***	*
	The vendor shall provide information that can be used by an accredited test lab or state certification board to support software analysis and test design. The information addresses standards and conventions developed internally by the vendor as well as published industry standards applied by the vendor. The vendor shall provide information addressing standards and conventions for:				Accept								
a.	Software system development methodology	***	***	***	Accept	***	***	***	***	***	***	***	*
b.	Software design standards, including internal vendor procedures	***	***	***	Accept	***	***	***	***	***	***	***	*
C.	Software specification standards, including internal vendor procedures	***	***	***	Accept	***	***	***	***	***	***	***	*
d.	Software coding standards, including internal vendor procedures	***	***	***	Accept	***	***	***	***	***	***	***	*
e. f.	Testing and verification standards, including internal vendor procedures, that can assist in determining the program's correctness and ACCEPT/REJECT criteria Quality assurance standards or other documents	***	***	***	Accept Accept	***	***	***	***	***	***	***	*

that can be used to examine and test the software. These documents include standards for	2.15
software. These documents include standards for	
Soltware. These documents include statual us for	
program flow and control charts, program	
documentation test planning and for test data	
acquisition and reporting	
2.5.5 Software Operating Environment	
This section shall describe or makes reference to *** *** *** Accept *** *** *** *** *** *** ***	*
all operating environment factors that influence	
the software design.	
2.5.5.1 Hardware Environment and Constraints	
The vendor shall identify and describe the	
hardware characteristics that influence the design	
of the software, such as	
a. The logic and arithmetic capability of the *** *** *** Accept *** *** *** *** *** *** *** *** *** *	*
processor	
b. Memory read-write characteristics	*
c. External memory device characteristics *** *** *** Accept *** *** *** *** *** *** *** *** *** *	*
d. Peripheral device interface hardware *** *** *** Accept *** *** *** *** *** *** *** *** *** *	*
e. Data input/output device protocols	*
f. Operator controls, indicators, and displays *** *** *** Accept *** *** *** *** *** *** *** *** *** *	*
2.5.5.2 Software Environment	
The vendor shall identify the compilers or *** *** *** Accept *** *** *** *** *** *** *** *** *** *	*
assemblers used in the generation of executable	
code, and described the operating system or	
system monitor.	
2.5.6 Software Functional Specification	
The vendor shall provide a description of the *** *** *** *** Accept *** *** *** *** *** *** *** *** *** *	*
operating modes of the system and of software	
capabilities to perform specific functions.	
2.5.6.1 Configurations and Operating Modes	
The vendor shall describe all software         ***         ***         Accept         ***	*
configurations and operating modes of the	
system, such as ballot preparation, election	
programming, preparation for opening the polling	
place, recording votes and/or counting ballots,	
closing the polling place, and generating reports.	
For each software function or operating mode, the	
vendor shall provide:	*
a. A definition of the inputs to the function or mode	•
(with characteristics, tolerances or acceptable	
ranges, as applicable)	*
D. An explanation of now the inputs are processed and and Accept and and Accept and	*
C. A definition of the outputs produced (again, with Accept Accep	
characteristics, tolerances, or acceptable ranges	
as applicable).	
2.3.0.2 Software runcholls	
capabilities or methods for detecting or	
handling	

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
a.	Exception conditions	***	***	***	Accept	***	***	***	***	***	***	***	*
b.	system failures	***	***	***	Accept	***	***	***	***	***	***	***	*
C.	Data input/output errors	***	***	***	Accept	***	***	***	***	***	***	***	*
d.	Error logging for audit record generation	***	***	***	Accept	***	***	***	***	***	***	***	*
e.	Production of statistical ballot data	***	***	***	Accept	***	***	***	***	***	***	***	*
f.	Data quality assessment	***	***	***	Accept	***	***	***	***	***	***	***	*
a.	Security monitoring and control.	***	***	***	Accept	***	***	***	***	***	***	***	*
2.5.7	Programming Specifications												
	The vendor shall provide in this section an	***	***	***	Accept	***	***	***	***	***	***	***	*
	overview of the software design, its structure, and												
	implementation algorithms and detailed												
	specifications for individual software modules.												
2.5.7.1	Programming Specifications Overview												
	The overview shall include such items as	***	***	***	Accept	***	***	***	***	***	***	***	*
	flowcharts, data flow diagrams, and other												
	graphical techniques that facilitate understanding												
	of the programming specifications. This section												
	shall be prepared to facilitate understanding of the												
	internal functioning of the individual software												
	modules. Implementation of the functions shall be												
	described in terms of the software architecture,												
2572	algorithms, and data structures.												
2.5.7.2	The programming specifications shall describe												
	individual software modules and their component												
	units, if applicable and for each module and unit												
	the vendor shall provide.												
a.	Module and unit design decisions, if any, such as	***	***	***	Accept	***	***	***	***	***	***	***	*
<b>.</b>	algorithms used				•								
b.	Any constraints, limitations, or unusual features in	***	***	***	Accept	***	***	***	***	***	***	***	*
	the design of the software module or unit				-								
С.	The programming language to be used and	***	***	***	Accept	***	***	***	***	***	***	***	*
	rationale for its use if other than the specified												
	module or unit language												
d.	If the software module or unit consists of or	***	***	***	Accept	***	***	***	***	***	***	***	*
	contains procedural commands, (such as menu												
	selections in a database management system												
	(DBMS) for defining forms and reports, on-line												
	DBMS queries for database access and												
	manipulation, input to a graphical user interface												
	(GUI) builder for automated code generation,												
	commands to the operating system, or shell												
	reference to user manuals or other decuments												
	that explain them												
	If the software module or unit contains, receives	***	***	***	Accept	***	***	***	***	***	***	***	*
С.	or outputs data a description of its inputs				7.000001								
	outputs and other data elements as applicable												
	(Section 2.5.9 describes the requirements for												

VVSG	Volume II Testing Requirement- Section 2	Section											
		2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13
	documenting system interfaces.) Data local to the												
	software module or unit shall be described												
	separately from data input to or output from the												
	software module or unit	***	***	***	Accent	***	***	***	***	***	***	***	*
t.	If the software module or unit contains logic, verify		~~~		Accept							~~~	Ŷ
	the logic to be used by the software unit,												
:	Including, as applicable:	***	***	***	Accort	***	***	***	***	***	***	***	*
1.	Conditions in effect within the software module of				Ассері								
	Conditions under which control is passed to other	***	***	***	Accent	***	***	***	***	***	***	***	*
	software modules or units				лосорі								
iii	Response and response time to each input	***	***	***	Accept	***	***	***	***	***	***	***	*
	including data conversion, renaming, and data				hoopt								
	transfer operation												
iv	Sequence of operations and dynamically	***	***	***	Accept	***	***	***	***	***	***	***	*
	controlled sequencing during the software												
	module's or unit's operation, including:												
٧.	The method for sequence control	***	***	***	Accept	***	***	***	***	***	***	***	*
vi.	The logic and input conditions of that method,	***	***	***	Accept	***	***	***	***	***	***	***	*
	such as timing variations, priority assignments												
vi.	Data transfer in and out of memory	***	***	***	Accept	***	***	***	***	***	***	***	*
vi.	The sensing of discrete input signals, and timing	***	***	***	Accept	***	***	***	***	***	***	***	*
	relationships between interrupt operations within												
	the software module or unit												
g.	Exception and error handling	***	***	***	Accept	***	***	***	***	***	***	***	*
h	If the software module is a database, the vendor	***	***	***	Accept	***	***	***	***	***	***	***	*
	provides the information described in subsection												
	2.5.8.												
2.5.8	System Database				-								
	The vendor shall identify and provide a diagram	***	***	***	Accept	***	***	***	***	***	***	***	*
	and narrative description of the system's												
	databases, and any external files used for data												
	input or output. The information provided shall												
2	The number of levels of design and the names of	***	***	***	Accent	***	***	***	***	***	***	***	*
a	those levels (such as concentual internal logical				Accept								
	and physical)												
b	Design conventions and standards (which may be	***	***	***	Accept	***	***	***	***	***	***	***	*
<i>b</i> .	incorporated by references) needed to understand												
	the design												
C.	Identification and description of all database	***	***	***	Accept	***	***	***	***	***	***	***	*
-	entities and how they are implemented physically												
	(e.g., tables, files)												
d.	Entity relationship diagram and description of	***	***	***	Accept	***	***	***	***	***	***	***	*
	relationships												
e.	Details of table, record or file contents (as	***	***	***	Accept	***	***	***	***	***	***	***	*
	applicable) to include individual data elements												
	and their specifications, including:				_								
i.	Names/identifiers	***	***	***	Accept	***	***	***	***	***	***	***	*

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
ii.	Data type (alphanumeric, integer, etc.)	***	***	***	Accept	***	***	***	***	***	***	***	*
iii.	Size and format (such as length and punctuation	***	***	***	Accept	***	***	***	***	***	***	***	*
	of a character string)				•								
iv.	Units of measurement (such as meters, dollars,	***	***	***	Accept	***	***	***	***	***	***	***	*
	nanoseconds)				-								
V.	Range or enumeration of possible values (such as 0-99)	***	***	***	Accept	***	***	***	***	***	***	***	*
vi.	Accuracy (how correct) and precision (number of significant digits)	***	***	***	Accept	***	***	***	***	***	***	***	*
vii.	Priority, timing, frequency, volume, sequencing,	***	***	***	Accept	***	***	***	***	***	***	***	*
	and other constraints, such as whether the data												
	element may be updated and whether business												
	rules apply	***	***	***	Accont	***	***	***	***	***	***	***	*
VIII.	Security and privacy constraints	***	***	***	Accept	***	***	***	***	***	***	***	*
IX	(using/receiving entities).				Accept								
f.	For external files, a description of the procedures	***	***	***	Accept	***	***	***	***	***	***	***	*
	for file maintenance, management of access												
250	privileges, and security.												
2.5.9	The vender shall identify and provides a complete	***	***	***	Accent	***	***	***	***	***	***	***	*
	description of all internal and external interfaces				Лосори								
	using a combination of text and diagrams												
2.5.9.1	Interface Identification												
	For each interface identified in the system												
	overview, the vendor shall:												
a.	Provide a unique identifier assigned to the	***	***	***	Accept	***	***	***	***	***	***	***	*
	interface												
b.	Identify the interfacing entities (systems,	***	***	***	Accept	***	***	***	***	***	***	***	*
	configuration items, users, etc.) by name, number,												
	version, and documentation references, as												
	applicable	***	***	***	Accort	***	***	***	***	***	***	***	*
C.	Identify which entities have fixed interface				Accept								
	requirements on interfacing entities) and which												
	are being developed or modified (thus having												
	interface requirements imposed on them)												
2.5.9.2	Interface Description												
	For each interface identified in the system												
	overview, the vendor shall provide information												
	that describes:												
a.	The type of interface (such as real-time data	***	***	***	Accept	***	***	***	***	***	***	***	*
	transfer, storage-and-retrieval of data, etc.) to be												
	implemented				-								
b.	Characteristics of individual data elements that	***	***	***	Accept	***	***	***	***	***	***	***	*
	the interfacing entity(ies) will provide, store, send,												
<u> </u>	access, receive, etc., such as:	***	***	***	A	***	***	***	***	***	***	***	*
.  ;	Names/Identifiers	***	***	***	Accept	***	***	***	***	***	***	***	*
п.	Data type (alphanumeric, Integer, etc.)				Accept								

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
iii.	Size and format (such as length and punctuation	***	***	***	Accept	***	***	***	***	***	***	***	*
iv.	Units of measurement (such as meters, dollars, nanoseconds)	***	***	***	Accept	***	***	***	***	***	***	***	*
۷.	Range or enumeration of possible values (such as	***	***	***	Accept	***	***	***	***	***	***	***	*
vi.	Accuracy (how correct) and precision (number of significant digits)	***	***	***	Accept	***	***	***	***	***	***	***	*
vii.	Priority, timing, frequency, volume, sequencing, and other constraints, such as whether the data element may be updated and whether business rules apply	***	***	***	Accept	***	***	***	***	***	***	***	*
viii.	Security and privacy constraints and	***	***	***	Accept	***	***	***	***	***	***	***	*
іх	Sources (setting/sending entities) and recipients (using/receiving entities)	***	***	***	Accept	***	***	***	***	***	***	***	*
C.	Characteristics of communication methods that the interfacing entity(ies) will use for the interface, such as:	***	***	***	Accept	***	***	***	***	***	***	***	*
i.	Communication links/bands/frequencies/media and their characteristics	***	***	***	Accept	***	***	***	***	***	***	***	*
ii.	Message formatting	***	***	***	Accept	***	***	***	***	***	***	***	*
iii.	Flow control (such as sequence numbering and buffer allocation)	***	***	***	Accept	***	***	***	***	***	***	***	*
iv.	Data transfer rate, whether periodic/aperiodic, and interval between transfers	***	***	***	Accept	***	***	***	***	***	***	***	*
ν.	Routing, addressing, and naming conventions	***	***	***	Accept	***	***	***	***	***	***	***	*
vi.	Transmission services, including priority and grade and	***	***	***	Accept	***	***	***	***	***	***	***	*
vii.	Safety/security/privacy considerations, such as encryption, user authentication, compartmentalization, and auditing	***	***	***	Accept	***	***	***	***	***	***	***	*
d.	Characteristics of protocols the interfacing entity(ies) will use for the interface, such as:	***	***	***	Accept	***	***	***	***	***	***	***	*
i.	Priority/layer of the protocol	***	***	***	Accept	***	***	***	***	***	***	***	*
ii.	Packeting, including fragmentation and reassembly, routing, and addressing	***	***	***	Accept	***	***	***	***	***	***	***	*
iii.	Legality checks, error control, and recovery	***	***	***	Accept	***	***	***	***	***	***	***	*
iv.	Synchronization, including connection establishment, maintenance, termination	***	***	***	Accept	***	***	***	***	***	***	***	*
۷.	Status, identification, and any other reporting features	***	***	***	Accept	***	***	***	***	***	***	***	*
e. 2.5.10	Other characteristics, such as physical compatibility of the interfacing entity(ies) (dimensions, tolerances, loads, voltages, plug compatibility, etc.). Appendices	***	***	***	Accept	***	***	***	***	***	***	***	*
	The vendor may provide descriptive material and												

VVSG	Volume II Testing Requirement- Section 2	Section	Section 2 11	Section	Section								
	data supplementing the various sections of the body of the Software Specifications. The content and arrangement of appendices shall be at the discretion of the vendor. Topics recommended for amplification or treatment in appendix form includes: Glossary: A listing and brief definition of all software module names and variable names, with reference to their locations in the software structure. Abbreviations, acronyms, and terms should be included, if they are either uncommon in data processing and software development or are used in an unorthodox semantic References: A list of references to all related vendor documents, data, standards, and technical sources used in software development and testing Program Analysis: The results of software configuration analysis algorithm analysis and selection, timing studies, and hardware interface studies that are reflected in the final software design and coding												
2.6	System Security Specification												
	The vendor shall submit a system security specification that addresses the security requirements of Volume I, Section 7This specification shall describes the level of security provided by the system in terms of the specific security risks addressed by the system, the means by which each risk is addressed, the process used to test and verify the effective operation of security capabilities and, for systems that use public telecommunications networks as defined in Volume I, Section 6, the means used to keep the security capabilities of the system current to respond to the evolving threats against these systems.	***	***	***	***	Accept	***	***	***	***	***	***	*
2.6.1	Access Control Policy		***		***				444			***	
	I he vendor shall specify the features and capabilities of the access control policy recommended to purchasing jurisdictions to provide effective voting system security. The access control policy shall address the general features and capabilities and individual access privileges indicated in Volume I, Subsection.7.2.					Accept							~
2.6.2	Access Control Measures	***	***	***	***	Accent	***	***	***	***	***	***	*
	all system access control measures and mandatory procedures designed to permit access to system states in accordance with the access					Accept							

VVSG	Volume II Testing Requirement- Section 2	Section											
		2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13
	policy, and to prevent all other types of access to												
	meet the specific requirements of Vol. I,												
-	Subsection 7.2.	***	***	***	***	Accort	***	***	***	***	***	***	*
	I ne vendor shall also define and provide a					Accept							
	detailed description of the methods used to												
	preclude unauthorized access to the access												
262	Control capabilities of the system liseli.												
2.0.3	Equipment and Data Security	***	***	***	***	Accort	***	***	***	***	***	***	*
	The vendor shall provide a detailed description of					Ассері							
	system capabilities and manualory procedures for												
	the voting process and corruption of voting data to												
	meet the specific requirements of Vol 1												
	Subsection 7.3. This information shall address												
	measures for polling place security and central												
	count location security												
264	Software Installation												
2.0.4	The vendor shall provide a detailed description of	***	***	***	***	Accept	***	***	***	***	***	***	*
	the system capabilities and mandatory												
	procedures for purchasing jurisdictions to ensure												
	secure software (including firmware) installation to												
	meet the specific requirements of Vol. I.												
	Subsection 7.4. This information shall address												
	software installation for all system components.												
2.6.5	Telecommunications and Data Transmission												
	Security												
	The vendor shall provide a detailed description of	***	***	***	***	Accept	***	***	***	***	***	***	*
	the system capabilities and mandatory												
	procedures for purchasing jurisdictions to ensure												
	secure data transmission to meet the specific												
	requirements of Vol. I, Subsection 7.5:					-							
a.	For all systems, this information shall address	***	***	***	***	Accept	***	***	***	***	***	***	*
	access control, and prevention of data												
	interception	4.4.4	datat	datat	datat		d.d.d.	4.4.4	d.d.d.	datat	datat	datat	
b.	For systems that use public communications	***	***	***	***	Accept	***	***	***	***	***	***	*
	networks as defined in Volume I, Section 6, this												
	information shall also include:	***	***	***	***	A 1	***	***	***	***	***	***	*
۱.	Capabilities used to provide protection against					Accept							Ŷ
	threats to third party products and services	***	***	***	***	A 1	***	***	***	***	***	***	*
11.	Policies and processes used by the vendor to					Accept							Ŷ
	ensure that such protection is updated to remain												
	Paliaian and procedures used by the words to	***	***	***	***	Accont	***	***	***	***	***	***	*
	Policies and procedures used by the vendor to					Accept							
	ensure that current versions of such capabilities												
	are distributed to user jurisdictions and are												
	A detailed department of the system establishes	***	***	***	***	Accort	***	***	***	***	***	***	*
IV.	A detailed description of the system capabilities					Ассері							
	to diagnose the occurrence of a depial of service												
	to diagnose the occurrence of a defilial of service												

VVSG	Volume II Testing Requirement- Section 2	Section	Section	Section	Section	Section	Section	Section	Section	Section	Section	Section	Section
		2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13
	attack, to use an alternate method of voting, to												
	over the petwork, and to consolidate votes cast												
	using the alternate method												
M	A detailed description of all activities to be	***	***	***	***	Accent	***	***	***	***	***	***	*
v.	performed in setting up the system for operation					Aucht							
	that are mandatory to ensure effective system												
	security including testing of security before an												
	election and												
vi.	A detailed description of all activities that should	***	***	***	***	Accept	***	***	***	***	***	***	*
	be prohibited during system setup and during the					•							
	timeframe for voting operations, including both the												
	hours when polls are open and when polls are												
	closed.												
2.6.6	Other Elements of an Effective Security												
	Program												
	The vendor shall provide a detailed description of	***	***	***	***	Accept	***	***	***	***	***	***	*
	additional procedures required for use by the												
	purchasing jurisdiction including:	***	***	<b>444</b>	<b>444</b>		***	***	<b>444</b>	444	***	<b>444</b>	4
a.	Administrative and management controls for the	***	***	***	***	Accept	***	***	***	***	***	***	ŕ
	voting system and election management,												
h	Including access controls	***	***	***	***	Accont	***	***	***	***	***	***	*
D.	procedures for maintaining the security of the					Ассері							
	software for each system function and operating												
	mode												
C	Adherence to and enforcement of operational	***	***	***	***	Accept	***	***	***	***	***	***	*
0.	procedures (e.g., effective password												
	management)												
d.	Physical facilities and arrangements	***	***	***	***	Accept	***	***	***	***	***	***	*
e.	Organizational responsibilities and personnel	***	***	***	***	Accept	***	***	***	***	***	***	*
	screening.												
2.7	System Test and Verification Specification												
	The vendor shall provide test and verification												
	specifications for:												
a.	Development test specifications	***	***	***	***	***	Accept	***	***	***	***	***	*
b.	National certification test specifications.	***	***	***	***	***	Accept	***	***	***	***	***	*
2.7.1	Development Test Specifications	4.4.4	بلد بلد بل	ية بة ية		بلد بلد بلد		بلد بلد بلد	4.4.4	بلد بلد بلد	بلد بلد بلد		*
	The vendor shall describe the plans, procedures,	***	***	***	***	***	Accept	***	***	***	***	***	^
	and data used during software development and												
	system integration to verify system logic												
	correctness, data quality, and security. This description shall include:												
2	Test identification and design including:	***	***	***	***	***	Accent	***	***	***	***	***	*
a. i	Test structure	***	***	***	***	***	Accent	***	***	***	***	***	*
ii	Test sequence or progression	***	***	***	***	***	Accept	***	***	***	***	***	*
iii	Test conditions	***	***	***	***	***	Accept	***	***	***	***	***	*
b.	Standard test procedures including any	***	***	***	***	***	Accept	***	***	***	***	***	*
	assumptions or constraints												

VVSG	Volume II Testing Requirement- Section 2	Section	Section	Section	Section	Section	Section	Section	Section	Section	Section	Section	Section
•	Encoid number test presedures including any	***	<b>2.3</b> ***	<b>2.4</b> ***	<b>2.</b> 3 ***	<b>2.0</b> ***	Z./	<b>2.0</b> ***	<b>2.9</b> ***	<b>2.10</b> ***	<b>Z.</b> ]] ***	<b>Z.   Z</b> ***	<b>2.13</b> *
с.	special purpose test procedures including any assumptions or constraints						Ассері						
d	Test data test data source whether it is real or	***	***	***	***	***	Accept	***	***	***	***	***	*
u.	simulated and control of test data												
e	Expected test results	***	***	***	***	***	Accept	***	***	***	***	***	*
f.	Criteria for evaluating test results	***	***	***	***	***	Accept	***	***	***	***	***	*
	Additional details for these requirements are												
	provided by MIL-STD-498. Software Test Plan												
	and Software Test description. In the event that												
	test data are not available, the accredited test lab												
	shall design test cases and procedures equivalent												
	to those ordinarily used during product												
	verification.												
2.7.2	Qualification Test Specifications												
	The vendor shall provide specifications for	***	***	***	***	***	Accept	***	***	***	***	***	*
	verification and validation of overall software												
	performance. The specifications shall cover:	4.4.4	dadada	datat	datat	dadada		dadada	dadada	dadada	datat	4.4.4	
а	Control and data input/output	***	***	***	***	***	Accept	***	***	***	***	***	*
b.	Acceptance criteria	***	***	***	***	***	Accept	***	***	***	***	***	* *
C.	Processing accuracy	***	***	***	***	***	Accept	***	***	***	***	***	*
d.	Data quality assessment and maintenance	***	***	***	***	***	Accept	***	***	***	***	***	*
е.	Ballot interpretation logic	***	***	***	***	***	Accept	***	***	***	***	***	*
t.	Exception handling	***	***	***	***	***	Accept	***	***	***	***	***	*
g.	Security	***	***	***	***	***	Accept	***	***	***	***	***	*
n.	Production of audit trails and statistical data.	***	***	***	***	***	Accept	***	***	***	***	***	*
	I ne specifications shall identify procedures for						Accept						
	assessing and demonstrating the suitability of the												
20	Sustam Operations Procedures												
2.0	This documentation shall provide all information	***	***	***	***	***	***	Accent	***	***	***	***	*
	necessary for system use by all personnel who							7.000001					
	support pre-election and election preparation												
	polling place activities and central counting												
	activities, as applicable, with regard to all system												
	functions and operations identified in Section 2.3												
	above. The nature of instructions for operating												
	personnel will depend upon the overall system												
	design and required skill level of system												
	operations support personnel.							-					
	The system operations procedures shall contain	***	***	***	***	***	***	Accept	***	***	***	***	*
	all information that is required for the preparation												
	of detailed system operating procedures, and for												
204	operator training, as described below:												
2.8.1	The vender shall provide a summary of system	***	***	***	***	***	***	Accont	***	***	***	***	*
	operating functions and medae, in sufficient detail							Ассері					
	to permit understanding of the system's												
	canabilities and constraints. The roles of												
	operating personnel shall be identified and related												
	eperating percention on an be identified and feldled												

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	to the operating modes of the system Decision	2.2	2.3	2.4	2.3	2.0	2.1	2.0	2.9	2.10	2.11	2.12	2.13
	criteria and conditional operator functions (such												
	as error and failure recovery actions) shall be												
	described.												
	The vendor shall also list all reference and	***	***	***	***	***	***	Accept	***	***	***	***	*
	supporting documents pertaining to the use of the												
	system during elections operations.												
2.8.2	Operational Environment												
	The vendor shall describe the system	***	***	***	***	***	***	Accept	***	***	***	***	*
	environment, and the interface between the user												
	or operator and the system.	***	***	***	***	***	***		***	444	***	***	*
a.	The vendor shall identify all facilities, furnishings,	~~~						Accept					Ŷ
	fixtures, and utilities that will be required, including												
h	Control count facility	***	***	***	***	***	***	Accont	***	***	***	***	*
D.	Other leastions	***	***	***	***	***	***	Accept	***	***	***	***	*
0. 292	System Installation and Test Specification							лосері					
2.0.3	The vendor shall provide specifications for	***	***	***	***	***	***	Accent	***	***	***	***	*
	validation of system installation accentance and							Accept					
	readiness. These specifications address all												
	components of the system, all locations of												
	installation (e.g., polling place central count												
	facility), and all elements of system functionality												
	and operations identified in Section 2.3 above,												
	including:												
a.	Pre-voting functions	***	***	***	***	***	***	Accept	***	***	***	***	*
b.	Voting functions	***	***	***	***	***	***	Accept	***	***	***	***	*
С.	Post-voting functions	***	***	***	***	***	***	Accept	***	***	***	***	*
d.	General capabilities	***	***	***	***	***	***	Accept	***	***	***	***	*
2.8.4	Operational Features												
	The vendor shall provide the documentation of												
	system operating features that meets the												
_	following requirements:	***	***	***	***	***	***	Accort	***	***	***	***	*
a.	A detailed description of all input, output, control,							Accept					
	voter												
h	Examples of simulated interactions in order to	***	***	***	***	***	***	Accept	***	***	***	***	*
ы.	facilitate understanding of the system and its							hoopt					
	capabilities												
C.	Sample data formats and output reports	***	***	***	***	***	***	Accept	***	***	***	***	*
d.	Illustrate and describe all status indicators and	***	***	***	***	***	***	Accept	***	***	***	***	*
	information messages.							•					
2.8.5	Operating Procedures												
	The vendor shall provide the documentation of												
	system operating procedures that meets the												
	following requirements:												
a.	Provides a detailed description of procedures	***	***	***	***	***	***	Accept	***	***	***	***	*
	required to initiate, control, and verify proper												
	system operation												

VVSG	Volume II Testing Requirement- Section 2	Section											
h	Provides procedures that clearly enable the	***	***	***	***	***	***	Accept	***	***	***	***	*
ы.	operator to assess the correct flow of system							nooopt					
	functions (as evidenced by system-generated												
	status and information messages)												
С	Provides procedures that clearly enable the	***	***	***	***	***	***	Accept	***	***	***	***	*
0.	operator to intervene the system operations to												
	recover from an abnormal system state												
d.	Defines and illustrates the procedures and system	***	***	***	***	***	***	Accept	***	***	***	***	*
	prompts for situations where operator intervention												
	is required to load, initialize, and start the system												
e.	Defines and illustrates procedures to enable and	***	***	***	***	***	***	Accept	***	***	***	***	*
-	control the external interface to the system							-					
	operating environment if supporting hardware and												
	software are involved (such information shall be												
	provided for the interaction of the system with												
	other data processing systems or data												
	interchange protocols as well)												
f.	Provides administrative procedures and off-line	***	***	***	***	***	***	Accept	***	***	***	***	*
	operator duties (if any) if they relate to the												
	initiation or termination of system operations, to												
	the assessment of system status, or to the												
	development of an audit trail												
g.	Supports successful ballot and program	***	***	***	***	***	***	Accept	***	***	***	***	*
	installation and control by election officials,												
	provide a detailed work plan or other form of												
	documentation providing a schedule and steps for												
	the software and ballot installation, which includes												
	a table outlining the key dates, events and												
_	deliverables	***	***	***	***	***	***	Assaut	***	***	***	***	*
n.	Supports diagnostic testing, specify diagnostic							Accept					
	tests that may be employed to identify problems in												
	the system verify the correction of maintenance												
	problems and isolate and diagnose faults from												
286	Operations Support												
2.0.0	The vendor shall provide the documentation of												
	system operating procedures that meets the												
	following requirements:												
a.	Defines the procedures required to support	***	***	***	***	***	***	Accept	***	***	***	***	*
<u>.</u> .	system acquisition, installation, and readiness												
	testing. These procedures may be provided by												
	reference, if they are contained either in the												
	system hardware specifications, or in other												
	vendor documentation												
b.	Describes procedures for providing technical	***	***	***	***	***	***	Accept	***	***	***	***	*
	support, system maintenance and correction of												
	defects, and for incorporating hardware upgrades												
	and new software releases.												
2.8.7	Appendices												

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
	The vendor may provide descriptive material and data supplementing the various sections of the body of the System Operations Manual. The content and arrangement of appendices shall be at the discretion of the vendor. Topics recommended for amplification or treatment in appendix form include: Glossary: A listing and brief definition of all terms that may be unfamiliar to persons not trained in either voting systems or computer operations. References: A list of references to all vendor documents and to other sources related to the operation of the system Detailed Examples: Detailed scenarios that outline correct system responses to faulty operator input; Alternative procedures may be specified depending on the system state Manufacturer's Recommended Security Procedures: This appendix shall contain the security procedures that are to be executed by the system operator.												
2.9	System Maintenance Procedures												
	The system maintenance procedures shall provide information in sufficient detail to support election workers, information systems personnel, or maintenance personnel in the adjustment or removal and replacement of components or modules in the field. Technical documentation needed solely to support the repair of defective components or modules ordinarily done by the manufacturer or software developer is not required.	***	***	***	***	***	***	***	Accept	***	***	***	*
	Recommended service actions to correct malfunctions or problems shall be discussed, along with personnel and expertise required to repair and maintain the system; and equipment, materials, and facilities needed for proper maintenance. This manual shall include the sections listed below.	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.1	Introduction												
	The vendor shall describe the structure and function of the equipment (and related software) for election preparation, programming, vote recording, tabulation, and reporting in sufficient detail to provide an overview of the system for maintenance, and for identification of faulty hardware or software. The description includes a concept of operations that fully describes such items as:	***	***	***	***	***	***	***	Accept	***	***	***	*

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
а	The electrical and mechanical functions of the	***	***	***	***	***	***	***	Accept	***	***	***	*
b.	How the processes of ballot handling and reading are performed (paper-based systems)	***	***	***	***	***	***	***	Accept	***	***	***	*
С.	How vote selection and casting of the ballot (DRE systems)	***	***	***	***	***	***	***	Accept	***	***	***	*
d.	How transmission of data over a network (DRE systems, where applicable)	***	***	***	***	***	***	***	Accept	***	***	***	*
е.	How data handling in the processor and memory units	***	***	***	***	***	***	***	Accept	***	***	***	*
f.	How data outputs are initiated and controlled	***	***	***	***	***	***	***	Accept	***	***	***	*
g.	How power is converted or conditioned	***	***	***	***	***	***	***	Accept	***	***	***	*
h.	How test and diagnostic information is acquired and used	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.2	Maintenance Procedures												
	The vendor shall describe preventative and corrective, maintenance procedures for hardware and software.	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.2.1	Preventative Maintenance Procedures The vendor shall identify and describe:												
a.	All required and recommended preventive maintenance tasks, including software tasks such as software backup, database performance analysis, and database tuning	***	***	***	***	***	***	***	Accept	***	***	***	*
b.	Number and skill levels of personnel required for each task	***	***	***	***	***	***	***	Accept	***	***	***	*
С.	Parts, supplies, special maintenance equipment, software tools, or other resources needed for maintenance	***	***	***	***	***	***	***	Accept	***	***	***	*
d.	Any maintenance tasks that must be coordinated with the vendor or a third party (such as coordination that may be needed for off-the-shelf items used in the system).	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.2.2	Corrective Maintenance Procedures												
	The vendor shall provide fault detection, fault isolation, correction procedures, and logic diagrams for all operational abnormalities identified by design analysis and operating experience.	***	***	***	***	***	***	***	Accept	***	***	***	*
	The vendor shall identify specific procedures to be used in diagnosing and correcting problems in the system hardware (or user-controlled software). Descriptions shall include:	***	***	***	***	***	***	***	Accept	***	***	***	*
а	Steps to replace failed or deficient equipment	***	***	***	***	***	***	***	Accept	***	***	***	*
b.	Steps to correct deficiencies or faulty operations in software	***	***	***	***	***	***	***	Accept	***	***	***	*
C.	Modifications that are necessary to coordinate any modified or upgraded software with other software modules	***	***	***	***	***	***	***	Accept	***	***	***	*

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
d.	The number and skill levels of personnel needed	***	***	***	***	***	***	***	Accept	***	***	***	*
e.	Special maintenance equipment, parts, supplies, or other resources needed to accomplish each procedure	***	***	***	***	***	***	***	Accept	***	***	***	*
f.	Any coordination required with the vendor, or other party for off the shelf items.	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.3	Maintenance Equipment												
	The vendor shall identify and describe any special purpose tests or maintenance equipment recommended for fault isolation and diagnostic purposes.	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.4	Parts and Materials												
	The vendor shall provide detailed documentation of parts and materials needed to operate and maintain the system. Additional requirements apply for paper based systems.	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.4.1	Common Standards												
	The vendor shall provide a complete list of approved parts and materials needed for maintenance. This list shall contain sufficient descriptive information to identify all parts by:	***	***	***	***	***	***	***	Accept	***	***	***	*
а	Туре	***	***	***	***	***	***	***	Accept	***	***	***	*
b.	Size	***	***	***	***	***	***	***	Accept	***	***	***	*
С.	Value or range	***	***	***	***	***	***	***	Accept	***	***	***	*
d.	Manufacturer's designation	***	***	***	***	***	***	***	Accept	***	***	***	*
e.	Individual quantities needed	***	***	***	***	***	***	***	Accept	***	***	***	*
f.	Source from which they may be obtained	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.4.2	Paper-Based Systems												
	For marking devices manufactured by multiple external sources, the vendor shall provide a listing of sources and model numbers that are compatible with the system.	***	***	***	***	***	***	***	Accept	***	***	***	*
	The TDP shall specify the required paper stock, size, shape, opacity, color, watermarks, field layout, orientation, size and style of printing, size and location of punch or mark fields used for vote response fields and to identify unique ballot formats, placement of alignment marks, ink for printing, and folding and bleed-through limitations for preparation of ballots that are compatible with the system	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.5	Maintenance Facilities and Support												
	The vendor shall identify all facilities, furnishings, fixtures, and utilities that will be required for equipment maintenance. In addition, vendors shall specify the assumptions made with regard to any parameters that impact the mean time to repair.	***	***	***	***	***	***	***	Accept	***	***	***	*

VVSG	Volume II Testing Requirement- Section 2	Section											
		2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13
a.	Recommended number and locations of spare devices or components to be kept on hand for repair purposes during periods of system operation	***	***	***	***	***	***	***	Accept	***	***	***	*
b.	Recommended number and locations of qualified maintenance personnel who need to be available to support repair calls during system operation	***	***	***	***	***	***	***	Accept	***	***	***	*
С.	Organizational affiliation (i.e., jurisdiction, vendor) of qualified maintenance personnel.	***	***	***	***	***	***	***	Accept	***	***	***	*
2.9.6	Appendices The vendor may provide descriptive material and data supplementing the various sections of the body of the System Maintenance Manual. The content and arrangement of appendices shall be at the discretion of the vendor. Topics recommended for amplification or treatment in appendices include: Glossary: A listing and brief definition of all terms that may be unfamiliar to persons not trained in either voting systems or computer maintenance. References: A list of references to all vendor documents and to other sources related to the maintenance of the system Detailed Examples: Detailed scenarios that outline correct system responses to every conceivable faulty operator input; alternative procedures may be specified depending on the system state Maintenance and Security Procedures: This appendix shall contain technical illustrations and schematic representations of electronic circuits unique to the system.												
2.10	Personnel Deployment and Training Requirements												
	Verify that the vendor has described the personnel resources and training required for a jurisdiction to operate and maintain the system.	***	***	***	***	***	***	***	***	Accept	***	***	*
2.10.1	<b>Personnel</b> The vendor shall specify the number of personnel and skill levels required to perform each of the following functions:												
a.	Pre-election or election preparation functions	***	***	***	***	***	***	***	***	Accept	***	***	*
b.	System operations for voting system functions performed at the polling place	***	***	***	***	***	***	***	***	Accept	***	***	*
C.	System operations for voting system functions performed at the central count facility	***	***	***	***	***	***	***	***	Accept	***	***	*
d.	Preventive maintenance tasks	***	***	***	***	***	***	***	***	Accept	***	***	*
6	Diagnosis of faulty hardware or software	***	***	***	***	***	***	***	***	Accent	***	***	*
f.	Corrective maintenance tasks	***	***	***	***	***	***	***	***	Accept	***	***	*
_ ···				1	1	1	1	1	1		1		

VVSG	Volume II Testing Requirement- Section 2	Section											
		2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13
g.	Test corrected problems.	***	***	***	***	***	***	***	***	Accept	***	***	*
	A description identifies functions that may be	***	***	***	***	***	***	***	***	Accept	***	***	*
	carried out by user personnel, and those that												
	must be performed by vendor personnel.												
2.10.2	Training												
	The vendor shall specify the requirements for												
	orientation and training of the following personnel:												
a.	Poll workers supporting polling place operations	***	***	***	***	***	***	***	***	Accept	***	***	*
b.	System support personnel involved in election	***	***	***	***	***	***	***	***	Accept	***	***	*
	programming												
С.	User system maintenance technicians	***	***	***	***	***	***	***	***	Accept	***	***	*
d.	Network/system administration personnel (if a	***	***	***	***	***	***	***	***	Accept	***	***	*
	network is used)												
e.	Data personnel	***	***	***	***	***	***	***	***	Accept	***	***	*
f.	Vendor personnel.	***	***	***	***	***	***	***	***	Accept	***	***	*
2.11	Configuration Management Plan												
	Vendors shall submit a Configuration	***	***	***	***	***	***	***	***	***	Accept	***	*
	Management Plan that addresses the												
	configuration management requirements of												
	Volume L Section 9 This plan shall describe all												
	policies processes and procedures employed by												
	the vendor to carry out these requirements. The												
	Configuration Management Plan shall contain the												
	sections identified below												
2111	Configuration Management Policy												
2	The vendor shall provide a description of its	***	***	***	***	***	***	***	***	***	Accept	***	*
	organizational policies for configuration												
	management per Vol I Subsection 9.2 These												
	requirements pertain to:												
2	Scope and nature of configuration management	***	***	***	***	***	***	***	***	***	Accent	***	*
a.	program activities										Accept		
h	Program activities Proadth of application of vander's policy and	***	***	***	***	***	***	***	***	***	Accent	***	*
D.	practices to the voting system										лосорі		
2112	Configuration Identification												
2.11.2	The vender shell provide a description of the	***	***	***	***	***	***	***	***	***	Accont	***	*
	ne venuor shall provide a description of the										Accept		
	procedures and naming conventions used to												
	Subsection 0.2. These requirements of Vol. I,												
-	Subsection 9.5. These requirements pertain to.	***	***	***	***	***	***	***	***	***	Accont	***	*
a.											Ассері		
h	Subcategolies	***	***	***	***	***	***	***	***	***	Accort	***	*
D.	Uniquely numbering or otherwise identifying										Ассері		
	configuration items	***	***	***	***	***	***	***	***	***	A	***	*
C.	inaming configuration items.		L								Accept		
2.11.3	Baseline, Promotion, and Demotion												
	Procedures	dadada	4.4.4	dadada	dadada	datat	dadada	didid	d.d.d.	4.4.4		4.4.4	
	The vendor shall provide a description of the	***	***	***	***	***	***	***	***	***	Accept	***	*
	procedures and naming conventions used to												
	address the specific requirements of Vol. I,												
	Subsection 9.4. These requirements pertain to:												

VVSG	Volume II Testing Requirement- Section 2	Section	Section	Section	Section	Section	Section	Section	Section	Section	Section	Section	Section
		2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	2.11	2.12	2.13
a.	Establishing a particular instance of a system component as the starting baseline	***	***	***	***	***	***	***	***	***	Accept	***	*
b.	Promoting subsequent instances of a component	***	***	***	***	***	***	***	***	***	Accept	***	*
	to baseline throughout the system development												
	process for the first complete version of the												
	system submitted for testing												
С.	Promoting subsequent instances of a component	***	***	***	***	***	***	***	***	***	Accept	***	*
	to baseline status as the component is maintained												
	throughout its life cycle until system retirement												
	(i.e., the system is no longer sold or maintained)												
2.11.4	Configuration Control Procedures												
	The vendor shall provide a description of the	***	***	***	***	***	***	***	***	***	Accept	***	*
	procedures used by the vendor to approve and												
	implement changes to a configuration item to												
	prevent unauthorized additions, changes, or												
	deletions to address the specific requirements of												
	Vol. I, Subsection 9.5. These requirements pertain												
	to:	***	***	***	***	***	444	***	***	***	A 1	***	*
a.	Developing and maintaining internally developed	***	***	***	***	***	***	***	***	***	Accept	***	*
	items	***	***	***	***	***	***	***	***	***	Accent	***	*
D.	Developing and maintaining third-party items	***	***	***	***	***	***	***	***	***	Accept	***	*
C.	Resolving internally identified detects	***	***	***	***	***	***	***	***	***	Accept	***	*
a.	Resolving externally identified and reported										Accept		
0 4 4 E	Delects.												
2.11.3	The wonder shall provide a description of the	***	***	***	***	***	***	***	***	***	Accont	***	*
	The vendor shall provide a description of the										Accept		
	related expressions by which the vender installe												
	transfers, or migrates the system to accredited												
	voting system testing laboratories and customers												
	to address the specific requirements of Vol. I												
	Subsection 9.6. These requirements pertain to:												
a.	A first release of the system to an accredited test	***	***	***	***	***	***	***	***	***	Accept	***	*
<u>.</u>	lab										•		
b.	A subsequent maintenance or upgrade releases	***	***	***	***	***	***	***	***	***	Accept	***	*
	of a system or component to an accredited test										-		
	lab												
С.	The initial delivery and installation of the system	***	***	***	***	***	***	***	***	***	Accept	***	*
	to a customer												
d.	The subsequent maintenance or upgrade release	***	***	***	***	***	***	***	***	***	Accept	***	*
	of a system or component to a customer.												
2.11.6	Configuration Audits												
	The vendor shall provide a description of the	***	***	***	***	***	***	***	***	***	Accept	***	*
	procedures and related conventions for the two												
	audits required by Vol. I, Subsection 9.7. These												
	requirements pertain to:	d. d. d.	dadada	4.4.4	dadada	d. d. d.	4.4.4	d. d. d.	dadada	dadada		dadada	
a.	Physical configuration audit that verifies the voting	***	***	***	***	***	***	***	***	***	Accept	***	*
	system components submitted for qualification to												
	the vendor's technical documentation												

VVSG	Volume II Testing Requirement- Section 2	Section	Section										
h	Functional configuration audit that verifies the	***	***	***	***	***	***	***	***	***	Accent	***	*
Ь.	system performs all the functions described in the										/ coopt		
	system documentation												
2.11.7	Configuration Management Resources												
	The vendor shall provide a description of the	***	***	***	***	***	***	***	***	***	Accept	***	*
	procedures and related conventions for										-		
	maintaining information about configuration												
	management tools required by Vol. I, Sect. 8.9.												
	These requirements pertain to:												
a.	Specific tools used, current version, and operating	***	***	***	***	***	***	***	***	***	Accept	***	*
	environment												
b.	Physical location of the tools, including	***	***	***	***	***	***	***	***	***	Accept	***	*
	designation of computer directories and files												
С.	Procedures and training materials for using the	***	***	***	***	***	***	***	***	***	Accept	***	*
	tools.												
2.12	Quality Assurance Program	datat	dadada	datat	did di	data	data	data	datat	data	data		
	The vendor shall submit a Quality Assurance	***	***	***	***	***	***	***	***	***	***	Accept	*
	Program that addresses the quality assurance												
	requirements of Volume I, Section 8. This plan												
	describes all policies, processes and procedures												
	employed by the vendor to ensure the overall												
	quality of the system for its initial development,												
	releases. The Quality Assurance Program shall												
	at a minimum address the tonics indicated below												
2.12.1	Quality Assurance Policy												
	The vendor shall provide a description of its	***	***	***	***	***	***	***	***	***	***	Accept	*
	organizational policies for guality assurance.												
	including:												
a.	Scope and nature of QA activities	***	***	***	***	***	***	***	***	***	***	Accept	*
b.	Breadth of application of vendor's policy and	***	***	***	***	***	***	***	***	***	***	Accept	*
	practices to the voting system.												
2.12.2	Parts & Materials Special Tests and												
	Examinations												
	The vendor shall provide a description of its	***	***	***	***	***	***	***	***	***	***	Accept	*
	practices for parts and materials tests and												
	examinations that meet the requirements of Vol. I,												
	Subsection 8.5.												
2.12.3	Quality Conformance Inspections	***	***	***	***	***	***	***	***	***	***	<b>A</b>	÷
	I ne vendor shall provide a description of its											Accept	*
	practices for quality conformance inspections that												
	need the requirements of volume 1, Subsection												
	o.o. For each lest performed, the record of tests												
-	Test location	***	***	***	***	***	***	***	***	***	***	Accent	*
a. h		***	***	***	***	***	***	***	***	***	***	Accent	*
<u>с</u>	Tester name	***	***	***	***	***	***	***	***	***	***	Accept	*
d.	Test outcomes	***	***	***	***	***	***	***	***	***	***	Accept	*
2124	Documentation											, locopi	
2.12.7	Dooumontation												

VVSG	Volume II Testing Requirement- Section 2	Section 2.2	Section 2.3	Section 2.4	Section 2.5	Section 2.6	Section 2.7	Section 2.8	Section 2.9	Section 2.10	Section 2.11	Section 2.12	Section 2.13
	The vendor shall provide a description of its practices for documentation of the system and system development process that meet the requirements of Vol. I, Subsection 8.7	***	***	***	***	***	***	***	***	***	***	Accept	*
2.13	System Change Notes												
	Vendors submitting modifications for a system that has been tested previously and received national certification shall submit system change notes. The system change notes shall include the following information:	***	***	***	***	***	***	***	***	***	***	***	Accept
a.	A summary description of the nature, scope and reasons for each change	***	***	***	***	***	***	***	***	***	***	***	Accept
b.	A listing of the specific changes made, citing the specific system configuration items changed and providing detailed references to the sections of documentation changed	***	***	***	***	***	***	***	***	***	***	***	Accept
C.	The specific sections of the documentation that are changed (or complete revised documents, if more suitable to address a large number of changes)	***	***	***	***	***	***	***	***	***	***	***	Accept
d.	Documentation of the test plan and procedures executed by the vendor for testing the individual changes and the system as a whole, and records of test results.	***	***	***	***	***	***	***	***	***	***	***	Accept

# 7.4 Appendix D: FCA Testing

This appendix contains the detail of the Functional Configuration Audit. It encompasses the testing detail for the Functional/System Level, Environmental, Accuracy, Security, Accessibility and Usability tests. System functions describe the MicroVote EMS voting system functionality required by the VVSG 2005. These functions are traced to one or more Test Cases. A description of the identified Test Case is found in the corresponding Test Method found in this appendix. The detailed test steps, test data and test results were recorded in the individual Test Cases. These are maintained separate documents that are part of the comprehensive test record.

Sy	stem Function	Test Case
a. I	Ballot Preparation Subsystem	
1)	Creation of an Installation and Election database; set administrative	General 1 & 2, Primary 1,
	preferences, parties, vote types, precincts, ballot text/graphics,	Accuracy, Security
	equipment, access security levels and election reports	
2)	Setting up an election; enter election data: offices, candidates,	
ŕ	secondary vote limits and reports	
3)	Setting up a ballot; enter, lay out and edit ballots and ballot styles;	
	activate and assign ballots; view ballots for proofing	
4)	Programming and printing election media and ballots; installing ballots	
	on the Infinity Voting Panel; process paper ballot cards	
b. <sup>-</sup>	Fest operations performed prior to , during and after processing of ballots,	
inc	luding:	
1)	Logic Test – Interpretation of Ballot Styles & recognition of precincts;	General 1 & 2, Primary 1
	displaying ballot styles correctly by election type, precinct, precinct splits	
	and party	
2)	Accuracy Tests- Clearly identifiable voting fields associated with	General 1 & 2, Primary 1,
	candidates and measures; correctly mark, record and report an Infinity	Accuracy
	ballot in visual and audio modes; correctly read and report a voted	
	paper ballot card	
3)	Status Tests- Initialize the Infinity; confirm operational status of the	General 1 & 2, Primary 1,
	Infinity and Ready mode; check buttons, display and ballot	Accuracy
4)	Report Generation – Produce, view and print Infinity precinct reports;	General 1 & 2, Primary 1,
	produce consolidated Infinity and optical mark reader central count	Accuracy
	reports	
5)	Report Generation- Produce, view and print ballot preparation, Infinity	General 1 & 2, Primary 1,
	and central count audit reports	Accuracy
с. I	Procedures applicable to equipment used in a Polling Place for:	
1)	Opening the polls, confirm security code; print zero proof report; enable	General 1 & 2, Primary 1,
	voting; activate voter sessions; display, vote and cast ballots	Accuracy, Security
2)	Monitoring equipment status ready and non-ready modes; voting booths	General 1 & 2, Primary 1,
	provide privacy;	Accuracy, Characteristics
3)	Equipment response to commands; confirm voting enabled; audio and	General 1 & 2, Primary 1,
	visual ballots activated; adjust ballot visual and audio display (contrast,	Accuracy, Characteristics
	magnification, alternative language, volume, speed); write-in, review of	
	votes, casting the ballot; activation of authorized ballot content (election	
	information, election type, precinct, precinct split, party, supported voting	
	variations); usable and accessible generation/display of all voter facing	
	messages and notifications;	
4)	Generating real-time audit messages for election installation, equipment	General 1 & 2, Primary 1,
	status checks, polls open, vote activations, power recovery, poll	Accuracy, Characteristics
	closings; report processing	
5)	Polls are closed; ballot activation is disabled; visible indication of system	General 1 & 2, Primary 1,
	status	Accuracy, Security
6)	Infinity election data reports are generated	General 1 & 2, Primary 1,
1		Accuracy

Sy	stem Function	Test Case
7)	Transfer ballot count to central counting location via smart card and	General 1 & 2, Primary 1,
	direct download from the Infinity	Accuracy, Security
8)	Electronic network transmission is not available, no wireless capabilities	Telephony and Cryptographic
d. I	Procedures applicable to equipment used in a Central Count Place	
1)	Read and process paper ballot cards for >1 precinct with the optical	General 1 & 2, Primary 1,
	mark reader	Accuracy
2)	Monitoring equipment status; optical mark reader is correctly connected	General 1 & 2, Primary 1,
	to the EMS and ready to process cards	Accuracy
3)	Equipment response to commands; optical mark readers transfer votes	General 1 & 2, Primary 1,
	to the EMS software; write-in identified; unreadable cards are Reject	Accuracy
4)	Integration with peripherals equipment or other data processing	General 1 & 2, Primary 1,
	systems;	Accuracy
5)	Generating real-time audit messages; election installation; reader	General 1 & 2, Primary 1,
	activation; equipment status checks, power recovery, report processing	Accuracy
6)	Generating precinct-level election data reports; view and print reports	General 1 & 2, Primary 1,
	with partial and complete precinct votes	Accuracy
7)	Generating summary election data reports; view and print zero proof	General 1 & 2, Primary 1,
	reports; view and print vote summary reports with partial and complete	Accuracy
	votes	

### 7.4.1 FCA Functional and System Level Testing

Items identified as voting variations are either VVSG 2005 optional functionality or MicroVote specific supported functions outside the scope of the VVSG. Two General and One Primary end-to-end mock elections were created to test the supported voting variations. The table below provides a description of the voting variation, whether it is supported and where it is tested. Detail for the Test Cases is found in the Test Methods 7.4.1.1 through 7.4.1.3.

Supported Voting Variations of the VVSG 2005 Section 2.1.7.2		Test Cases & Comments
Closed Primary		
Primary: Closed	Supported	Primary 1
Open Primary		
Primary: Open – Public Selection: A primary election in which voters, regardless of political affiliation, may choose in which party's primary they will vote. Voters publicly declare their choice of party ballot to the poll worker who provides or activates the appropriate ballot. Voters also are permitted to vote on non-partisan offices and ballot issues that are presented at the same election.	Supported	Primary 1
Primary: Open – Private Selection: A primary election in which voters, regardless of political affiliation, may choose in which party's primary they will vote. The voter makes their choice of party ballot within the privacy of the voting booth. Voters also are permitted to vote on non-partisan offices and ballot issues that are presented at the same election.	Unsupported	
Partisan Offices v		
Handles vote for 1 races	Supported	General 1, 2 & Primary 1
Handles N of M races	Supported	General 1, 2 & Primary 1
Handles partisan contests in a primary election	Supported	Primary 1
Handles partisan contests in a general election	Supported	General 1, 2
Non-partisan Offices		
Handles vote for 1 races	Supported	General 1, 2 & Primary 1
Handles N of M races	Supported	General 1, 2 & Primary 1
Handles non-partisan contests in a primary election	Supported	Primary 1
Handles non-partisan contests in a general election	Supported	General 1, 2
Write-In Voting:		
A separate voting position is identified for write-ins.	Supported	General 1
Write-in for an N of M contest has M write-in positions.	Supported	General 1
Write-in for a contest with no candidates (partisan & non-partisan contests)	Supported	General 1

Supported Voting Variations of the VVSG 2005 Section 2.1.7.2		Test Cases & Comments
Method to flag write-ins for resolution at central count	Supported	General 1
Primary Presidential Delegation Nominations		
Slates of delegates are displayed for each presidential primary candidate	Supported	Primary 1 Create the slate using the Ballot Text feature
Slates of delegates are chosen with one selection.	Supported	Primary 1
Ballot Rotation:		
Names of candidates rotate.	Unsupported	
Straight Party Voting:	0 1 1	
Make one selection to vote for all candidates of one party in a general election	Supported	General 2
Undervote the straight party selection and choose each candidate individually	Supported	General 2
Vote straight party and then change votes to cross over to another party's candidate.	Supported	General 2
Vote straight party for a party without a candidate in one of the races.	Supported	General 2
Votes straight party in an: N of M contest (N>1)	Supported	General 2
Cross-Party Endorsement:		
One candidate is endorsed by multiple parties.	Supported	General & Primary 1
Cross Party Endorsement is supported in straight party contests	Supported	General 2
Snlit Precincte:	Cappontoa	General 2
Split Fredincis. Bregingte splite with multiple hellet styles	Supported	Concrol 1.8 Drimony 1
The number of victors is identified for the number of the	Supported	General 1 & Primary 1
The number of voters is identified for the precinct split.	Supported	General 1 & Primary 1
The vote totals are not reported for the precinct split.	Supported	General 1 & Primary 1
Ballot faces match the correct contests and ballot identification for each split.	Supported	General 1 & Primary 1
The correct contests are presented for the appropriate ballot split.	Supported	General 1 & Primary 1
Vote N of M:		
Counts each selected candidate, if less than or equal to "M" candidates are selected. (Overvote if >M)	Supported	
Identifies an undervote if less than "M" candidates are selected.	Supported	
Recall Issues, with options:		
The recall vote is a Yes or No question.	Supported	General 1 – Tested a Y/N guestion
The recall is a vote for 1 of M vote with the Retain one choice and each replacement candidate a separate choice.	Supported	General 1 – Tested a vote for 1 of M
Two contests are on the ballot. The voter must vote "Yes" in order to cast a vote in the replacement candidate contest. A "No", undervote or overvote will not allow a vote in the second contest to be counted.	Unsupported	
Two contests are on the ballot. If a voter votes "Yes" or "No" they may vote in the contest for the replacement candidate. An undervote or overvote will not allow a vote in the second contest to be counted.	Unsupported	
Cumulative Voting		
Voting method exclusive to multi-member boards. Each voter may cast as many votes as there are seats to be filled and may cast two or more of those votes for a single candidate	Unsupported	
Ranked Order Voting		
Voters rank candidates in a contest in order of choice (1.2.3, etc.)	Unsupported	
A write in vote can be ranked	Unsupported	
Tabulation of Ranked Order Votes	Onsupported	
Ballots are sorted according to the 1 <sup>st</sup> ranked choice. If no candidate		
receives a majority of first ranked choice the candidate with the least 1 <sup>st</sup>	onsupported	
ranks is eliminated. Votes are recounted and are distributed to the		
remaining candidates according to the 2 <sup>nd</sup> ranked choice. If still no		
candidate has a majority the candidate with the process repeats to payt		
rank choice s until a candidate has obtained a majority		
A ballot is not longer counted if all ranked choices have been aliminated	Ungunnariad	
A ballot is not longer counted if all ranked choices have been eliminated	Unsupported	
Ballots being recounted which identify an eliminated candidate go to the	Unsupported	
next ranked candidate.		
IT A FARK IS SKIPPED THE VOTE FOR THE NEXT FARK IS COUNTED.	Unsupported	

Supported Voting Variations of the VVSG 2005 Section 2.1.7.2		Test Cases & Comments
Provisional or Challenged Ballots		Requires a dedicated DRE
Provisional ballots maintain the secrecy of the ballot.	Supported	General 2 & Primary 1
A voted provisional ballot that is not included in the poll close report can be identified for determination.	Unsupported	
Valid provisional votes can be added in the central count report.	Supported	General 2 & Primary 1
A voted provisional ballot included in the poll close report can be identified and subtracted in the central count.	Supported	General 2 & Primary 1 Challenged votes are retracted before central count consolidation

MicroVote Requirements – Outside the VVSG		
Secondary Vote Limit		
An additional vote limit that can be placed on grouped contests, so that multiple limits are placed on the vote.	Supported	General 2
If contests are grouped with a Secondary Vote Limit, a voter may select no more than the maximum of the secondary limit from among all the grouped contests, additionally they may select no more than the individual contest limit from any single contest.	Supported	General 2

### 7.4.1.1 General 1 Test Method

Testing was conducted on the system configuration identified in section 3. Specific software and firmware builds are identified for each test iteration.

Run	Builds	Test Result	Issues Opened	Issues Closed	Notes
9/4/07	EMS v.4.0.8.0 Infinity v.9.61	Reject	# 38, 41, 42, 44, 45, 49, 50, 51, 54, 55, 56, 60, 62, 64, 68, 78	#38	# 38 closed per vendor clarification and # 78 was opened.
10/3/07	EMS v.4.0.9.0 Infinity v.9.61	Accept	#79,80	#41, 44, 49, 50, 51, 54, 55, 56, 62, 68	Discrepancies # 42, 45, 60, 64, 79, & 80 were not specific to General 1 and were moved to General 2 for regression testing.

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E.

Method Detail	General Election 1 Test Method
Test Case Name	General 1
Scope – identifies the type of test	A system level test incorporating validations of the 2005 Voluntary Voting System Guidelines required functionality. Testing includes validation of measurable performance including accuracy, processing rate, and ballot format handling capability. Functional aspects include error recovery, security, and usability of the hardware, software and procedures in the prevote, voting, and post-voting operations of a voting system.
Test Objective	Validate the ability to accurately and securely create, install, vote, count and report the results of a general election including the identified voting variations.
Test Variables: Voting Variations	Create New Election:
(as supported by the voting	General elections
system)	Partisan/non-partisan offices
	<ul> <li>Contest Write-in votes (Not Candidate level)</li> </ul>
	Cross –party endorsement
	Vote for N of M
	Provisional ballots
	Party Logos
	<ul> <li>2 Precincts; 1 with 2 splits</li> </ul>
	<ul> <li>Candidate Sorting – By name within Party</li> </ul>
	<ul> <li>Candidate Stacking – Always</li> </ul>
	<ul> <li>Ballot Style – Absentee and Infinity (DRE)</li> </ul>
	<ul> <li>Manual Vote Entry – in central count reports</li> </ul>

Method Detail	General Election 1 Test Method
A description of the voting system type and the operational environment	<ul> <li>MicroVote Election Management System voting system includes:</li> <li>Ballot preparation &amp; central count software (EMS) installed on a Windows OS PC running XP Professional</li> <li>The DRE Infinity Voting Panel running the Infinity Voting Panel Firmware</li> <li>A COTS scanner for absentee ballots</li> <li>Smart cards for ballot installation, poll management, voter access, and transfer of results</li> <li>COTS smart card reader/writer connected to central count (see below for test configuration detail)</li> </ul>
VVSG 2005 vol.1	2.1 thru 2.4.3, 2.5
VVSG 2005 vol.2	6.2 thru 6.4.1, 6.6 & 6.7
Hardware, Software voting system configuration and test location	<ul> <li>Election Management System (EMS v4.0) voting system</li> <li>Ballot Prep/Central Count SW: Election Management System (see above)</li> <li>DRE HW: Infinity Voting Panel Model VP-1 Rev: C</li> <li>DRE SW: Infinity Voting Panel Firmware v 3.1x,</li> <li>COTS Smart Card Reader/Writer: GEMPLUS</li> <li>COTS Optical Scanner: ACP2200 OMR</li> <li>Test Location: iBeta, Aurora, CO</li> </ul>
Pre-requisites and preparation for execution of the test case.	<ul> <li>Prior to execution of testing the following prerequisites must be completed.</li> <li>Record the testers &amp; date</li> <li>System has been set up as identified in the user documentation</li> <li>Install a witnessed build from the EMS software and Infinity firmware source code submitted for review</li> <li>Reference the system configuration recorded in the PCA Configuration</li> <li>Document versions of the EMS User, Infinity Poll Worker's, &amp; Infinity Voting Panel Technical Reference Manuals</li> <li>Ensure customization of the test case template is complete</li> <li>Create a supervisory level access user and password</li> <li>Obtain Green Start and Blue Vote Cards</li> </ul>
O a title er Ota eta al Ola a alua	Obtain Green Start and Due Vole Cards
Getting Started Checks	<ul> <li>Verify the test environment and system configuration is documented in the PCA Configuration and matches the system used in the 48 hr. temp &amp; power variation test and manufacturer described configuration.</li> <li>Validate installation of the witnessed build</li> <li>Testers understand that no change shall occur to the test environment without documentation in the test record and the authorization of the project manager.</li> <li>During testing an operational readiness test will be performed.</li> </ul>
Documentation of Test Data &	Test Data:
Test Results	<ul> <li>Record all programmed &amp; observed election, ballot &amp; vote data fields and field contents on the corresponding tabs to provide a method to repeat the test</li> <li>Preserve all tabs for each instance the test is run.</li> <li>Test Results:</li> <li>Enter Accept/Reject on the Test Steps (see "Expected Results are observed" for definitions)</li> <li>In Comments enter deviations, discrepancies, or notable observations</li> <li>Log discrepancies on the Discrepancy Report and insert the number in the Comments</li> </ul>
Pre-vote: Ballot Preparation procedures verifications	<ul> <li>Ballot Prep:</li> <li>Installation and Election databases can be accurately/securely defined &amp; formatted.</li> <li>A ballot (candidates &amp; propositions) can be accurately/securely defined &amp; generated.</li> <li>A ballot can be accurately/securely programmed &amp; installed onto the Vote card via the GEMPLUS card reader/writer.</li> </ul>
Pre-vote: Ballot Preparation Security	<ul> <li>Note: While execution of some security testing occurs in the General 1 test case the detail of all security testing is compiled in the Security Test Method.</li> <li>Ballot Prep: For the identified user entity confirm access and use to only the permitted functions and data</li> <li>COTS <ul> <li>Authentication is configured on the local terminal &amp; external connection devices,</li> <li>Operating systems are enabled for all session &amp; connection openings, &amp; closings, all process executions &amp; terminations &amp; for the alteration or detection of any memory or file</li> </ul> </li> </ul>
Method Detail	General Election 1 Test Method
----------------------------------	---
	object
	Configure the system to only execute intended & needed processes during the execution
	election software. Processes are halted until termination of critical system processes
	(such as audit).
Readiness Testing and Poll	Voting system is ready for the election:
Verification	Status & data reports are generated
	The election is correctly installed
	<ul> <li>Start Card Functions Screen validates voting system functions correctly</li> </ul>
	<ul> <li>Test data is segregated from voting data, with no residual effect'</li> </ul>
	The polling place voting system functions properly including a formal record of:
	<ul> <li>Election, polling place, voting system &amp; ballot format identification (Show Ballot)</li> </ul>
	Zero count report (Print Zero Proof)
	A list of all ballot fields
	• Lest confirmation that there are:
	<ul> <li>No hardware/software failures</li> </ul>
	I he device is ready to be activated to accept votes
Pre- vote: Opening the Polls	
Verification	<ul> <li>Green Start Card and Security Password prevent inadvertent or unauthorized poli enemine</li> </ul>
	opening Start Card Eurotians across anforces the preper acqueres of stops to open the palls
	<ul> <li>Start Card Functions screen enforces the proper sequence of steps to open the poils</li> <li>Display of Start Election Confirmation and Status Screen varifies correct activities</li> </ul>
	<ul> <li>Display of Start Election Committation and Status Screen vehilles correct activation</li> <li>Identification of any failures &amp; corrective action</li> </ul>
Veting Dellet Activation and	
Casting Verifications	Protects secrecy of Dallot/vote — Records calestian/non-calestian for each context. Denor based (Absorted & Dravisional)
	<ul> <li>Records Selection/non-selection for each contest. Faper-based (Absence &amp; Frovisional)</li> <li>Allow votor to identify 8 mark condidates.</li> </ul>
	<ul> <li>Allow voter to identify a mark candidates</li> <li>Cives feedback &amp; an opportunity to correct before the ballot is counted</li> </ul>
	(under/overvotes)
	DRE
	<ul> <li>Voter can make selections based on ballot programming &amp; indicate selection/non-</li> </ul>
	selection (undervotes) & cancellation
	<ul> <li>Alert overvotes; permit review &amp; change before casting</li> </ul>
	<ul> <li>Alert selection's complete; prompt confirmation as casting is irrevocable,</li> </ul>
	<ul> <li>Alert successful/unsuccessful storage of cast ballot; give instruction to resolve</li> </ul>
	unsuccessful casting
	Prevent vote modification & access until polls close
	Increment the ballot counter
Voting: Voting System Integrity,	System audit provides a time stamped always available, report of normal / abnormal events
System Audit, Errors & Status	that can't be turned off when the system is in operating mode.
Indicators	<ul> <li>Status message are part of the real time audit record.</li> <li>Critical status messages requiring operator intervention, use clear indicators or taxt.</li> </ul>
	Childa status messages requiring operator intervention use clear indicators of text  Error messages are:
	Generated stored & reported as they occur
	<ul> <li>Errors requiring intervention by voter or poll worker clearly display issues &amp; action</li> </ul>
	instructions in easily understood text language or with indicators
	<ul> <li>The text for any numeric codes is contained in the error or affixed to the inside of the</li> </ul>
	voting system
	<ul> <li>Incorrect responses will not lead to irreversible errors.</li> </ul>
	<ul> <li>Nested conditions are corrected in the sequence to restore the system to the state</li> </ul>
	before the error occurred
	Note: While execution of some security testing occurs in the General 1 test case the detail of
	all security testing is complied in the Security Test Method.
Post-vote: Closing the Polls	<ul> <li>While the polls are open but before I ally confirm the panel cannot be put into</li> </ul>
	prefest of reset mode by action of the buttons of the poll worker card.
	Once the polls are closed the voting system
	<ul> <li>prevents further casting of ballots or reopening of the polls</li> </ul>
	• internally tests and verifies that the closing procedures has been followed and the device
	status is normal
	visibly displays the status
	produces a test record that verifies the sequence of events and indicates the extraction
	of vote data is activated

Method Detail	General Election 1 Test Method
Post-vote: Central Count	<ul> <li>Paper Based:</li> <li>The central count voting system includes:</li> <li>Election identification</li> <li>Zero count report</li> <li>Information to confirm readiness &amp; accommodate administrative reporting requirements</li> <li>Vote Consolidation:</li> <li>Consolidated reported votes match predicted votes from polling places, &amp; optionally other sources (absentee, provisional, etc) Reports include:</li> <li>Geographic reports of votes; each contest by precinct &amp; other jurisdictional levels</li> <li>Printed reports of ballots counted by tabulator, with votes, undervotes &amp; overvotes</li> <li>Report of system audit information printed or in electronic memory</li> <li>Report identifying the combination of candidates receiving overvotes</li> <li>Prevent data from being altered or destroyed by report generation, transmission over telecommunication lines or extraction from portable media</li> <li>Permit extraction &amp; consolidate votes from programmable memory services or data storage medium</li> <li>Consolidate the votes from multiple voting systems into a single polling place report DRE</li> <li>Electronic ballot images of votes cast by each voter, extracted from a separate process</li> </ul>
	& storage location, is reported in a human readable form
Post-vote: Security	<ul> <li>Note: While execution of some security testing occurs in the General 1 test case the detail of all security testing is compiled in the Security Test Method.</li> <li>The Infinity voting panel utilizes 2-factor authentication, possession of a token and knowledge of a password to access results after the polls are closed.</li> <li>The central count:</li> <li>COTS systems</li> <li>Authentication is configured on the local terminal and external connection devices,</li> <li>Operating system audit logs are enabled for all session and connection openings, and closings, all process executions and terminations and for the alteration or detection of any memory or file object</li> <li>Configure the system to only execute the intended and necessary processes during the execution of the election software. Election software process are halted until the termination of any critical system process. such as system audit.</li> </ul>
Post-vote: System Audit	The system audit provides a central count time stamped always available, report of normal and abnormal events that cannot be turned off when the system is in operating mode. Status message are part of the real time audit record.
Expected Results are observed	<ul> <li>Review the test result against the expected result:</li> <li>Accept: expected result is observed</li> <li>Reject: expected result of the test case is not observed</li> <li>Not Testable (NT): rejection of a previous test step prevents execution of this step, or tested in another TC.</li> <li>Not Applicable (NA): not applicable to test scope</li> </ul>
input/outputs for each election;	<ul> <li>An inputs, outputs, observations, deviations and any other information impacting the integrity of the test results are recorded in the test case.</li> <li>Any failure against the requirements of the EAC guidelines means the failure of the system and is reported.</li> <li>Failures are reported to the manufacturer as Defect Issues in the Discrepancy Report.</li> <li>The manufacturer has the opportunity to cure all discrepancies prior to issuance of the Certification Report.</li> <li>If cures are submitted the applicable test is rerun. Complete retest information is preserved in the test case. Retest cure and results are noted in the – Discrepancy Report and as an appendix of the Certification Report.</li> <li>Operations which do not fail the requirements but could be deemed defects or inconsistent with standard software practices or election practices are logged as Informational Issues on the Discrepancy Report. It is the manufacturer's option to address these issues. Open items are identified in the report.</li> </ul>

#### 7.4.1.2 General 2 Test Method

Testing was conducted on the system configuration identified in section 3. Specific software and firmware builds are identified for each test. General 2 was used as a standard functional regression test when any new build was received.

Run	Builds	Test	Issues Opened	Issues Closed	Notes
9/19/2007	EMS v.4.0.8.0 Infinity v.9.61	Reject	# 71 & 72	None	
10/8/2007	EMS v.4.0.9.0 Infinity v.9.61	Reject	#81, 82, 83, 84, 85, 86, 87, 88, & 89	#64	
11/06/2007	EMS v.4.0.11.0 Infinity v.9.62	Reject		#42,45,60, 71, 72 75, 76, 79, 81, 80 82, 83, 84, 85, 86, 87	#88 & 89 remains open
12/5/2007	EMS v.4.0.12.0 Infinity v.9.63	Reject	103,104 &105	#88	#89 remains open
12/12/2007	EMS v.4.0.14.0 Infinity v.9.64	Accept		#89, 103, 104, &105	
2/29/2007	EMS v.4.0.16.0 Infinity v.9.66	Reject	#113		Functional regression for changes submitted
3/11/2007	EMS v.4.0.17.0 Infinity v.9.67	Accept		#109, 113	Current production inspected against ECNs, #109 closed
3/24/2007	EMS v.4.0.18.0 Infinity v.9.67	Reject	#121		Functional regression for changes submitted
6/2/08	EMS v.4.0.20 Infinity v.4.0	Accept		#121	
9/25/08	EMS v.4.0.21 Infinity v.4.0	Accept			Functional regression for a submitted change

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E

Method Detail	General Election 2 Test Method
Test Case Name	General 2
Scope – identifies the type of test	A system level test incorporating validations of the 2005 Voluntary Voting System Guidelines required and manufacturer identified functionality. Testing includes validation of measurable performance including accuracy; processing rate, and ballot format handling capability, Functional aspects include error recovery, security, and usability of the hardware, software and procedures in the pre-vote, voting, and post-voting operations of a voting system. Functional accessibility (audio, mobility and dexterity) in the voting mode is included.
Test Objective	Validation of the ability to accurately and securely create visual and audio ballots, install, vote with mobility and non-mobility restrictions, count and report the results of a general election including the identified voting variations.
Test Variables: Voting Variations (as supported by the voting system)	Create New Election <ul> <li>General elections</li> <li>Straight party voting</li> </ul>

Method Detail General Election 2 Test Method				
	Partisan/non-partisan offices			
	Write-in votes – Contest and Candidate level			
	Audio ballots			
	Multi-lingual visual and audio ballots			
	Secondary Vote Limit			
	2 Precincts			
	Candidate Sorting – By Name			
	<ul> <li>Candidate Stacking – Only within race when required</li> </ul>			
	Auto Straight Party Crossover			
	Ballot Graphics (verify not available)			
	Dexterity Assistive Device Ballots – non-electronic mouth stick and toe entry			
A description of the voting	Same as General 1 except:			
system type and the operational	<ul> <li>-COTS Smart Card Reader/Writer is not used</li> </ul>			
environment	Tally results are directly transferred to the central count software via a port on the			
	panel			
	<ul> <li>A COTS voice synthesis/sound system (text-to-speech converter) for Audio ballots</li> </ul>			
	Audio: Headphones			
	Mobility: Accessible voting booth			
	-Dexterity: non-electronic entry mouth stick and toe			
VVSG 2005 vol.1	2.1 thru 2.4.3, 2.5, 3.1, 3.1.2, 3.1.3, 3.2			
	HAVA a thru c2			
VVSG 2005 vol.2	6.2 thru 6.4.1, 6.5 thru 6.7			
Hardware, Software voting	Same as General 1 except:			
system configuration and test	COTS Smart Card Reader/Writer is not used			
location	<ul> <li>COTS voice synthesis/sound system (text-to-speech converter): DoubleTalk LT</li> </ul>			
	Radioshack Headphones			
	MicroVote Accessible voting booth			
	Mouth and head stick (non-manual voting)			
Pre-requisites and preparation	Same as General 1, plus:			
for execution of the test case.	Use the "Preferences" settings from General 1			
Getting Started Checks	Same as General 1			
Documentation of Test Data & Test Results	Same as General 1			
Pre-vote: Ballot Preparation	Same as General 1except:			
procedures verifications	A ballot can be accurately/securely programmed & installed onto the Infinity Voting			
	Panel via a port on the panel.			
Pre-vote: Ballot Preparation	Same as General 1			
Security				
Readiness Testing and Poll	Same as General 1			
Verification				
Pre- vote: Opening the Polls	Same as General 1			
Verification				
Voting: Ballot Activation and	Same as General 1			
Casting Verifications	Accessible Spanish ballots can be accessed			
	<ul> <li>English or Spanish accessible ballots can be audibly accessed</li> </ul>			
	Accessible ballots contain all visual ballot content			
	<ul> <li>Instructions, status and error messages display in the accessible manner</li> </ul>			
	<ul> <li>Accessible ballots can be voted securely, privately and independently</li> </ul>			
	<ul> <li>Accessible ballots can be changed or correct errors prior to casting</li> </ul>			
	Ballots can be voted with non-manual input			
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	Same as General 1			
Post-vote: Closing the Polls	Same as General 1			
	Votes are not identifiable as being cast via accessible means			
Post-vote: Central Count	Same as General 1			
	<ul> <li>Votes are not identifiable as being cast via accessible means</li> </ul>			
Post-vote: Security	Same as General 1			
Post-vote: System Audit	Same as General 1			

Method Detail	General Election 2 Test Method
Expected Results are observed	Same as General 1
Record observations and all input/outputs for each election;	Same as General 1

### 7.4.1.3 Primary 1 Test Method

Testing was conducted on the system configuration identified in section 3. The specific software and firmware builds are identified.

Run	Builds	Test Result	Issues Opened	Issues Closed	Notes
10/22/2008	EMS v.4.0.9.0 Infinity v.9.61	Accept	#79, 81, 82, 83, 84	#41, 44, 48, 50, 51, 54	Discrepancies #79, 81, 82, 83, 84 were not specific to primary functions and were consolidated in General 2 for Regression testing

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E

Method Detail	Primary Election 1 Test Method			
Test Case Name	Primary 1			
Scope – identifies the type of test	A system level test incorporating validations of the VVSG 2005 required functionality. Testing includes validation of measurable performance including accuracy; processing rate, and ballot format handling capability, Functional aspects include error recovery, security, and usability of the hardware, software and procedures in the pre-vote, voting, and post- voting operations of a voting system. Functional aspects include error recovery, security, and usability of the hardware, software and procedures in the pre-vote, voting, and post- voting operations of a voting system. Functional accessibility (audio, mobility and dexterity) in the voting mode is included.			
Test Objective	Validate the ability to accurately and securely create, install, vote, count and report the results of a closed primary election or an open primary election with public party declaration including the identified voting variations. Validate that the Primary ballot operates in the identical mode as a General ballot. Validate that Primary ballots are separate static ballots individually configured in the EMS. Validate that the selection of a Primary ballot is performed by the poll worker and requires no private or independent action by the voter so that specific "Primary only" accessible functionality is required			
Test Variables: Voting Variations (as supported by the voting system)	Closed/open primaries public declaration Partisan/non-partisan offices Write-in votes Primary presidential delegation nominations Ballot rotation is not supported Cross – party endorsement Multiple and Split precincts Vote for N of M Provisional or challenged ballots Candidate Sorting – None Candidate Stacking – On entire ballot when required Audio ballots Multi-lingual visual and audio ballots Dexterity Assistive Device Ballots – non-electronic mouth stick and toe entry			
A description of the voting system type and the operational environment	Same as General 1			
VVSG 2005 vol.1	2.1 thru 2.4.3, 2.5, 3.1, 3.1.2, 3.1.3			
VVSG 2005 vol.2	6.2 thru 6.4.1, 6.6 & 6.7			
Hardware, Software voting system configuration and test location	<ul> <li>Same as General 1</li> <li>A COTS voice synthesis/sound system (text-to-speech converter) for Audio ballots</li> <li>Audio: Headphones</li> </ul>			

Method Detail	Primary Election 1 Test Method
	Mobility: Accessible voting booth
	Dexterity: non-electronic entry mouth stick and toe
Pre-requisites and preparation for execution of the test case.	Same as General 1
Getting Started Checks	Same as General 1
Documentation of Test Data & Test Results	Same as General 1
Pre-vote: Ballot Preparation procedures verifications	Same as General 1
Pre-vote: Ballot Preparation Security	Same as General 1
Readiness Testing and Poll Verification	Same as General 1
Pre- vote: Opening the Polls Verification	Same as General 1
Voting: Ballot Activation and Casting Verifications	<ul> <li>Same as General 1</li> <li>Accessible Spanish ballots can be accessed</li> <li>English or Spanish accessible ballots can be audibly accessed</li> <li>Accessible ballots contain all visual ballot content</li> <li>Instructions, status and error messages display in the accessible manner</li> <li>Accessible ballots can be voted securely, privately and independently</li> <li>Accessible ballots can be changed or correct errors prior to casting</li> <li>Ballots can be voted with non-manual input</li> </ul>
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	Same as General 1
Post-vote: Closing the Polls	Same as General 1
Post-vote: Central Count	Same as General 1
Post-vote: Security	Same as General 1
Post-vote: System Audit	Same as General 1
Expected Results are observed	Same as General 1
Record observations and all input/outputs for each election;	Same as General 1

### 7.4.2 FCA Security Test Method

Detail for the security testing was incorporated into iBeta standards testing, source code review and document reviews. See Appendix B and C for these source code and document reviews and Appendix D General 1, General 2, Primary 1 and Telephony and Cryptographic Test Methods for these test results.

Run	Builds	Result	Issues Opened	Issues Closed	Notes
9/21/07	NA-document review	Accept			v.1: 2.1.4.g Document Review to only install
					specified software
9/21/07	NA-document review	Accept			v.1: 2.1.4.i Document Review instructs how to confirm correct configuration
9/21/07	NA-document review	Reject	#74		v.1: 7.4.2 Document Review configuration to avoid network attack
10/11/07	NA-document review	Accept		#74	v.1: 7.4.2 Document Review configuration to avoid network attacks
10/15/07	EMS 4.0.9.0 Infinity 9.61	Accept			v.1: 2.1.4. f & 7.4.1.c Vote data cannot be retrieved from the com

Run	Builds	Result	Issues Opened	Issues Closed	Notes
					ports
10/15/07	EMS 4.0.9.0	Accept			v.1: 7.3 Source Code
	Infinity 9.61	•			Review: Replacement of
					Infinity software is
					restricted to expert
					technicians
10/15/07	EMS 4.0.9.0	Accept			v.1: 7.3 Non-system
	Infinity 9.61	•			administrators are
					blocked from installing a
					virus
10/15/07	EMS 4.0.9.0	Accept			v.1: 2.1.2 d Source code
	Infinity 9.61				review to verify
	-				checksum validation
10/18/08	EMS 4.0.9.0	Accept			v.1: 2.1.4.f & 7.3.1The
	Infinity 9.61				vote table
					(tblPrecinctVote) cannot
					be accessed
10/19/07	EMS 4.0.9.0	Reject	#92		v.1: 2.1.1.f & 7.3.1Tally
	Infinity 9.61	-			card results can be
					modified without
					detection
10/19/07	EMS 4.0.9.0	Accept			v.1: 2.1.1.f & 7.3.1
	Infinity 9.61				Unable to alter Vote card
10/22/07	EMS 4.0.9.0	Accept			v.1: 7.3.1 Tamper
	Infinity 9.61				evidence in seal removal
11/14/07	NA – Document	Accept		#92	v.1:2.1.1.f Assessment
	Review				of risk and document
					review of Tally card
					chain of evidence
					procedures
6/13/08	NA- Document	Accept			v.1: 7.4.1.a Review the
	Review				System Identification
					User manual and
					validate procedures to
					retest ROM prior to
					elections documented.
6/13/08	EMS 4.0.20.0	Accept			v.1: 7.4.1.b Inspect the
	Infinity 4.0				chip and confirm all
					election specific
					executable code is only
					present on non-
0/40/00	<b>EMO</b> 4 0 00 0	A			permanent memory.
6/13/08	EIVIS 4.0.20.0	Accept			v.1: 7.4.1.d Review and
	Infinity 4.0				confirm separate
					memory chips are
					the chip with the
					firmware Boot up the
					Infinity papel and confirm
					the BIOS runs but no
					election is accessible
6/13/09	EMS 4 0 20 0	Accept			y 1: 7 4 1 a lappost the
0/15/08	Infinity 4.0.20.0	Accept			chip and confirm that no
	1.1111111 <b>4</b> .0				
					or assemblers are
					resident or accessible
8/19/08	FMS 4 0 20 0	Reject	#135		v1:751a Source Code
0,10,00		1.0000		i i i i i i i i i i i i i i i i i i i	

Run	Builds	Result	Issues Opened	Issues Closed	Notes
	Infinity 4.0				Review based upon EAC interpretation that this requirement is not restricted to telecommunications data transmission.
9/11/08	EMS 4.0.21.0 Infinity 4.0	Accept		#135	v.1: 7.5.1.a Source Code Review confirmed that all transmissions verify checksums at the application level.

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. It should be noted that a functional issue may be resolved with documentation of a procedure.

Method Detail	Security Test Method	
Test Case Name	Security	
Scope - identifies the type of test	<ul> <li>Security testing crosses into several areas of voting system testing.</li> <li>Integrated system level test cases General 1, 2 and Primary 1 are customized to test the security elements incorporated in the pre-vote, voting and post voting functions.</li> <li>A review of the security documentation addresses the Access Controls, Physical Security and Software Security.</li> <li>A source code review confirms: single exit points, no unbound arrays, no vote counter overflows, audit logging of errors &amp; events, separate &amp; redundant ballot image, vote and audit recording; halt of execution at the loss of critical systems, no computer-generated passwords</li> </ul>	
Test Objective	The objective of security testing is to minimize the risk of accidents, inadvertent mistakes and errors; protect from intentional manipulation, fraud or malicious mischief;	
Test Variables:	In general & primary elections validate the effectiveness of the pre-vote, voting, & post voting functions and security policies & procedures, including: Entry of election data that exceeds boundaries & field limits; exercises errors & status messages; confirms correct operations & prevention of incorrect operations. Confirms secrecy in the voting process, including: Ballot formatting, Casting & recording votes, Calculating & reporting vote totals consistent with defined ballot formats, Confirms prevention and detection of: Interruption of the recording of votes Introduction of data not cast by authorized voters Alteration of audit & vote data; Access to votes & totals by unauthorized individuals; Access to voter identification data so that content of a specific vote can be linked to the voter Attempts to circumvent controls, bypass & defeat security Poll worker & voter attacks Effectiveness of the documented security polices and procedures	
A description of the voting system type and the operational environment	Same as General 1	
VVSG 2005 vol.1	2.1.1, 2.1.3, 2.1.4 e thru j, thru 2.1.5.2, 5.2.3.e, 7.2 thru 7.4	
VVSG 2005 vol.2	2.6, 5.4.2.d, g, & p, 6.4 thru 6.4.2	
Hardware, Software voting system configuration and test location	Same as General 1 In the Security Review and Test: Non-election smart cards cannot be used External "Non-trusted user" accessing the PC and smart card reader/writer.	
Pre-requisites and preparation for execution of the test case.	The System Level and Telephony and Cryptographic Test Cases are reviewed to ensure that they incorporate the validation that no results are transmitted on public networks.	

Method Detail	Security Test Method
	Source code review for security is completed with no outstanding issues
Getting Started Checks	Same as General 1
Getting Started Checks	Follow steps in the System Level and Telephony and Cryptographic Test Cases.
	The vendor supplied security documentation is reviewed against the requirements for
	Access Controls, Physical Security and Software Security.
	Complete the prerequisites;
	- Record the reviewer & date
Documentation of Test Data &	Record the results of the security & source code reviews
Test Results	<ul> <li>Enter Accept/Reject against each review requirement.</li> </ul>
	<ul> <li>Log discrepancies on the appropriate Discrepancy Report</li> </ul>
	Same as General 1
Pre-vote: Ballot Preparation	Follow the test steps in the General 1test case to validate:
procedures verifications	<ul> <li>Users are forced to change the initial hard-coded username and password</li> <li>User Manual identifies the system configuration for only executing election software</li> </ul>
Dre vote: Pollet Proparation	Oser Manual Identities the system comiguration for only executing election software     Follow the test stops in the Constal 1, 2,8 Primary 1 coses to validate:
Security	<ul> <li>Security access controls limit or detect access to critical systems &amp; the loss of system</li> </ul>
	integrity, availability, confidentiality & accountability
	Power can be interrupted & restored without loss of election data
	Audit logs contain entries for failed attempts, normal & abnormal events.
	<ul> <li>Functions don't execute if preconditions are not met</li> </ul>
	Functions are only executable in the intended manner, order & under intended
	conditions outlined in the user manual, test steps, & test data
	<ul> <li>System access controls are implemented for ballot preparation, for the identified entity confirm access and use to only the permitted functions and data</li> </ul>
	<ul> <li>Security provisions are implemented for ballot preparation</li> </ul>
	<ul> <li>Pre-vote communication errors are reported to the user &amp; require corrective action to</li> </ul>
	continue operation
	<ul> <li>Pre-vote errors restore the system to the prior condition without losing data</li> </ul>
	There is no use of public networks to transfer data
	<ul> <li>Provided documentation of mandatory administrative procedures.</li> <li>Verify that a view or other maliaisus actives connect he installed on the EMC computer.</li> </ul>
	verify that a virus of other mancious software cannot be installed on the ENIS computer     without Administrator privileges
	•
Readiness Testing and Poll	Follow test steps in the General 1, 2 & Primary 1 test cases to validate for the Ballot
Verification	Installation functions:
	Security access controls limit or detect access to critical systems & the loss of system
	integrity, availability, confidentiality & accountability
	<ul> <li>Audit logs contain entries for failed attempts, normal &amp; abnormal events.</li> </ul>
	<ul> <li>Ballot installation, readiness testing and poll vehication functions don't execute if preconditions are not met and are only executable in the intended manner, order &amp;</li> </ul>
	under intended conditions outlined in the user manual, test steps, & test data
	• System access controls are implemented for ballot installation, readiness testing and
	poll verification; for the identified entity confirm access and use to only the permitted
	functions and data
	<ul> <li>Security provisions are implemented for ballot installation, readiness and poll varification</li> </ul>
	Readiness and noll verification communication errors are reported to the user & require
	corrective action to continue operation
	• Readiness and poll verification errors restore the system to the prior condition without
	losing data
	• There is no use of public networks to transfer data during installation and readiness
	Security
Pre-vote: Opening the Polls	Follow test steps in the General 1, 2 & Primary 1 test cases to validate for the Poll Opening
Verification	functions
	• Prior to opening polls, confirm Vote, Tally and non-election smart cards do not open
	polls

Method Detail	Security Test Method
	<ul> <li>Security access controls limit or detect access to critical systems &amp; the loss of system integrity, availability, confidentiality &amp; accountability</li> <li>Audit logs contain entries for normal &amp; abnormal events.</li> <li>Functions for opening the polls don't execute if preconditions are not met and are only executable in the intended manner, order &amp; under intended conditions outlined in the user manual, test steps, &amp; test data</li> <li>System access controls are implemented for opening the polls; for the identified entity confirm access and use to only the permitted functions and data</li> <li>Security provisions are implemented for opening the polls</li> <li>Opening the polls communication errors are reported to the user &amp; require corrective action to continue operation</li> <li>Opening the polls errors restore the system to the prior condition without losing data</li> </ul>
Voting, Ballet Activation and	There is no use of public networks to transfer data when opening the poils
Casting Verifications	<ul> <li>Vote errors &amp; communication errors are displayed with action to resolve</li> <li>Correct ballot &amp; voting function activation functions don't execute if preconditions are not met and are only executable in the intended manner, order &amp; under intended conditions outlined in the user manual, test steps, &amp; test data</li> <li>Precinct counts cannot be printed or viewed prior to the close of the polls</li> <li>Confirm user or security documentation identifies measures to enable poll workers to physically protect and perform orderly shutdown of voting equipment to counteract vandalism, civil disobedience, and similar occurrences.</li> <li>Power can be interrupted &amp; restored without loss of election data</li> <li>There is no data transmission prior to the voter casting a ballot</li> </ul>
	<ul> <li>Additional Security Review and Testing:</li> <li>"Non-trusted user" with a Vote card, a PC and smart card reader/writer. In 6 hours attempt to duplicate the card to permit multiple voter sessions.</li> <li>"Non-trusted user"- attempt to access the COM 1 and COM 2 ports during the election; retrieve vote data or introduce malicious content</li> <li>Gemplus Vote and Tally cards: Attempt to use a non-vote smart card to vote. Verify that all such attempts are refused and logged.</li> <li>Verify that two-factor authentication is required to upgrade or replace the software on the Infinity panel via the serial port.</li> </ul>
Voting: Voting System Integrity,	Follow test steps in the General 1, 2 & Primary 1 test cases to validate:
System Audit, Errors & Status	<ul> <li>System audit detects access to critical systems &amp; the loss of system integrity, availability, confidentiality &amp; accountability</li> <li>Power can be interrupted &amp; restored without loss of election data</li> <li>Audit logs contain entries for failed attempts, normal &amp; abnormal voting events.</li> <li>Voting functions don't execute if preconditions are not met and are only executable in the intended manner, order &amp; under intended conditions outlined in the user manual, test steps, &amp; test data</li> </ul>
Post-vote: Closing the Polls	Follow steps in the General 1, 2 & Primary 1 test cases to validate:
	<ul> <li>Security access controls limit or detect access to critical systems &amp; the loss of system integrity, availability, confidentiality &amp; accountability</li> <li>Audit logs contain entries for failed attempts, normal &amp; abnormal events.</li> <li>Poll closing functions don't execute if preconditions are not met and are only executable in the intended manner, order &amp; under intended conditions outlined in the user manual, test steps, &amp; test data</li> <li>System access controls are implemented for closing the polls; for the identified entity confirm access and use to only the permitted functions and data</li> <li>Security provisions are implemented for closing the polls and transfer of results</li> <li>Poll closing errors &amp; communication errors are reported to the user &amp; require corrective action to continue operation</li> <li>Poll closing errors restore the system to the prior condition without losing data</li> <li>There is no use of public networks to transfer data</li> <li>Precinct counts cannot be printed or viewed prior to the close of the polls</li> </ul>
Post-vote: Central Count	Follow steps in the General 1, 2 & Primary 1test cases to validate
	<ul> <li>Security access controls limit or detect access to critical systems &amp; the loss of system integrity, availability, confidentiality &amp; accountability</li> <li>Audit logs contain entries for failed attempts, normal &amp; abnormal events.</li> </ul>

Method Detail	Security Test Method
	<ul> <li>Central count and reporting functions don't execute if preconditions are not met and are only executable in the intended manner, order &amp; under intended conditions outlined in the user manual, test steps, &amp; test data</li> <li>System access controls are implemented for central count and reporting for the identified entity confirm access and use to only the permitted functions and data</li> <li>Security provisions are implemented for central count and reporting</li> <li>Post vote central count and reporting errors &amp; communication errors are reported to the user &amp; require corrective action to continue operation</li> <li>Post vote errors restore the system to the prior condition without losing data</li> <li>There is no use of public networks to transfer data</li> <li>The Infinity voting panel utilizes 2-factor authentication, possession of a token and knowledge of a password to access results after the polls are closed.</li> <li>Central count post vote errors &amp; communication errors</li> <li>Transfer, calculating and reporting functions</li> <li>Power can be interrupted &amp; rectored without loss of aloction data</li> </ul>
Post-vote: Security	<ul> <li>Security Test and Review</li> <li>The vote table (database) can be accessed from the EMS server</li> <li>GEMPLUS Voter and Tally cards;</li> <li>"Trusted user" with access to a Tally card &amp; EMS; In 45 minutes attempt to modify vote tally data; Verify data is not impacted &amp; the attempt is logged</li> <li>Virus or other malicious software cannot be installed on the EMS computer without Administrator privileges.</li> </ul>
Post-vote: System Audit	<ul> <li>Follow steps in the General 1, 2 &amp; Primary 1test cases to validate:</li> <li>System audit detects access to critical systems &amp; the loss of system integrity, availability, confidentiality &amp; accountability</li> <li>Power can be interrupted &amp; restored without loss of election data</li> <li>Audit logs contain entries for failed attempts, normal &amp; abnormal events.</li> <li>Functions don't execute if preconditions are not met</li> <li>Functions are only executable in the intended manner, order &amp; under intended conditions outlined in the user manual, test steps, &amp; test data</li> <li>Additional Security Review &amp; Test</li> <li>Incorrect user of smart cards are logged</li> <li>Detection of changes on smart cards</li> <li>Attempts to access vote tables are identified</li> </ul>
Expected Results are observed	Same as General 1 Security and Source Code Review Criteria: • Accept meets the guideline • Reject does not meet the guideline • NA the guideline does not apply
Record observations and all input/outputs for each election;	All inputs, outputs, observations, deviations and any other information impacting the integrity of the test results will be recorded in the General 1, 2 or Primary 1 Test Case. Additional security tests shall be recorded in the Security Review and Test table. The results and findings of these additional tests are in the preceding table, traced to the specific vol. 1 section 7 requirement.

### 7.4.3 FCA Accuracy Testing

## **7.4.3.1** Accuracy DRE (Accuracy, Reliability, Availability, Volume, & Stress) Testing was conducted on the system configuration identified in section 3. The specific software and

firmware builds are identified for each test iteration.

Run	Builds	Test Result	Issues Opened	Issues Closed	Notes
12/17/07	EMS v.4.0.14.1 Infinity 9.64	Reject - Reliability	#106 & 107		Hardware failures in the operational status check #109 added after diagnosis
12/17/07	EMS v.4.0.14.1	Accept-			The operational status

	Infinity 9.64	Accuracy		check failure did not impact the accuracy of the Infinity Voting Panel
4/29/08	EMS v.4.0.18.1 Infinity 9.67	Accept - Reliability	#106 & 107	Operation included validation of the accuracy of votes cast

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E.

iBeta Definition	Accuracy DRE(Accuracy, Reliability, Availability, Volume, and Stress)
Test Case Name	Accuracy- (DRE) Infinity Voting Panel
Scope - identifies the type of test	Accuracy testing validates the individual ballot positions in terms of a maximum error rate while processing a specified volume of date. Maximization of ballot positions and large numbers of votes incorporate stress and volume test conditions. Reliability and availability is measured in the results of the Accuracy Test.
Test Objective	Validation of the ability to capture, record, store consolidate and report a predicted total of vote selections and the absence of vote selection for a minimum of 1,549.703 ballot positions without error or with an acceptable level of error.
Test Variables: Accuracy Reliability Volume Stress	Ballot Preparation Variable: Test ballot using more than 80% of ballot location capacity with the system maximum of 10 Parties. Configure: 10 Contests (8 @ Vote for 5, 2@ Vote for 1) = 420 ballot positions/ballots. Contest headers and ballot text a ballot layout to 502 Infinity ballot locations (83.7%)
	Ballots shall be voted manually and using an automated script. 10% of the required ballot positions are entered manually. Manual entry occurs in approximately 2% blocks (each exceeding the 26,997 Go/No Go minimum) in each of the 5 intervals (beginning, intervals 2 through 4, and end). During 3 cycles an automated script is run to exceed the minimum of 1,549,703 ballot positions. The VVSG permits a simulation for the purpose of eliminating human error in casting test ballots. During testing ballots are cast in up to 20 precincts (
	Vote Consolidation and Reporting Variables: Interval 1 will incorporate the Go/No Go minimum. Interval 5 will incorporate all results. Consolidate and validate tallies meet the predicted result.
	Chamber operation: Four units will run 48 hours through two Temperature and Power variation cycles, exceeding the minimum 163 hours <b>Test Plan Change:</b> The regression test will include 4 units run for 48 hours through Temperature and Power variations cycles and 16 hour ambient. Operation will include panel programming, readiness, automated ballot generation, reporting. The panels shall remain powered during test administration. (Interpretation 2008-01)
A description of the voting system type and the operational environment	<ul> <li>MicroVote Election Management System voting system includes:</li> <li>Ballot preparation &amp; central count software (EMS) installed on a Windows OS PC running XP Professional</li> <li>The DRE Infinity Voting Panel running the Infinity Voting Panel Firmware</li> <li>Smart cards for ballot installation, poll management, voter access, and transfer of results</li> <li>COTS smart card reader/writer connected to central count</li> </ul>
VVSG 2005 vol.1	2.1.2, 2.1.5. 4.1.1.a thru d.i, 4.1.5.2.a thru 4.1.6.1.a, 4.3.3, 4.3.5.a thru d Interpretation 2008- 01
VVSG 2005 vol.2	1.7.1.1, 1.8.2.2, 1.8.2.3, 4.7.1.1, 4.7.3 thru 4.7.4.d.i, 6.1, 6.2.3
Hardware, Software voting system configuration and test location	Election Management System (EMS v4.0) voting system Ballot Prep/Central Count SW: Election Management System v.4.0 DRE HW: Infinity Voting Panel Model VP-1 Rev: C DRE SW: Infinity Voting Panel Firmware v 3.1x, Test Location: Temperature and Power variation- environmental HW lab
Pre-requisites and preparation for execution of the test case.	Test Variables Confirm Wyle can provide a chamber to permit initiation of ballot counting cycles in the chamber by a method that ensures the integrity of the test temperature environment. Complete the prerequisites:

iBeta Definition	Accuracy DRE(Accuracy, Reliability, Availability, Volume, and Stress)
	• Record the testers, subcontractor accreditation, environmental test method, chamber
	calibration date & date
	<ul> <li>System has been set up as identified in the user manual</li> </ul>
	Use the Environmental Test Case for instructions on the Temperature and Power
	Variations test method (MIL-STD 810D Method 502.2 and 501.2).
	<ul> <li>Ensure customization of the test case template is complete</li> <li>Include confirmation that even logging and cudit reports are enabled.</li> </ul>
O atting to Ota stand. Oh a alva	<ul> <li>Include confirmation that error logging and audit reports are enabled.</li> </ul>
Getting Started Checks	accessed externally or by a method that will ensure the integrity of the temperature
	environment.
	Check the voting system to :
	Verify the test environment and system configuration is documented in the PCA     Configuration and matches the worder decumented configuration
	Validate installation of the witnessed, build
	Testers understand that no change shall occur to the test environment without
	documentation in the test record and the authorization of the project manager.
	<ul> <li>Initiate an operational status to confirm the correct function of the voting system prior to</li> </ul>
	initiation of Accuracy testing.
	Record start time.
Documentation of Test Data &	Same as General 1
Test Results	Total time of operation shall be recorded and compiled
Accuracy: Paper-based voting systems Processing	Verify the Infinity is not a paper based system
Accuracy: DRE Voting Systems	DRE voting systems, verify:
Processing	<ul> <li>Recording of candidate and contest voter selections into voting data storage</li> </ul>
	<ul> <li>Recording of candidate and contest voter selections into ballot image storage</li> </ul>
	independently from the voting data storage
	<ul> <li>Vote selection data from multiple precinct-based voting machines generate jurisdiction-</li> </ul>
	wide vote counts
	Consolidated vote data is stored
Acouroov: Error Poto	Consolidated reports are accurate against a predicted vote total
Accuracy. Endi Rate	rate of one in 500,000 ballot positions in the test process. Errors are from any source while
	testing a specific processing function and its related equipment
	The error rate determines the accuracy test vote position processing volume:
	<ul> <li>Reject: one error before counting 26,997 consecutive ballot positions correctly</li> </ul>
	<ul> <li>Accept: 1,549,703 (or more) consecutive ballot positions are read correctly</li> </ul>
	<ul> <li>If there's one error with more than 26,997 ballot positions but less than 1,549,703</li> </ul>
	correctly read, continue testing until another 1,576,701 consecutive ballot positions are
	counted without error (i.e. Accept: 3,126,404 with one error)
Reliability	Reliability shall be identified by determination of the Mean Time Between Failure (MTBF)
	during the minimum test period of 163 hours. The MTBF is the value of the ratio of operating
	time to the number of failures. A failure is defined as any event which results in either the: Loss of one or more functions:
	Degradation of performance such that the device is unable to perform its intended function
	for longer than 10 seconds.
	Verify that the system does not include a VVPAT, and exempt from VVSG vol. 1 sect. 7.9.4
Availability	Voting system availability (Ai) for the function of all combined devices and components must
	be equal or greater than 99%.
	Ai = (MTBF)/(MTBF + MTTR) MTTR.
	Innerent availability (AI) = % system is functional
	Mean Time Detween Failule (MTDF) = total operation time Mean Time To Repair (MTTR) – average time required to perform a corrective maintenance
	task during periods of system operation
	Corrective maintenance = on-site repair or substitution of the device or a component
	Corrective maintenance task time = active repair time + logistic /administrative time
	(notification and travel time of qualified maintenance personnel)
Expected Results are observed	Same as General 1
Record observations and all	Same as General 1
input/outputs for each election;	System failures will be logged with the MTTR. The log will be used to determine

iBeta Definition	Accuracy DRE(Accuracy, Reliability, Availability, Volume, and Stress)
	Availability.

### 7.4.3.2 Accuracy OMR (Accuracy, Reliability, Availability, Volume, & Stress)

Testing was conducted on the system configuration identified in section 3. The specific software and firmware builds are identified for each test iteration.

Run	Builds	Test Result	Issues Opened	Issues Closed	Notes
3/19/08	EMS v.4.0.17.0	Reject	#114		
4/8/08	EMS v.4.0.18.0	Reject	#115	#114	
4/28/08	EMS v.4.0.18.0	Accept			Ballots were marked in ink & #2 pencil per MicroVote's modified marking specifications; On 3 ballots (2-42, 4-10 & 22-30) unexpected overvotes were reported. Visual inspection of the ballots confirmed small stray ink marks in valid election ovals. These overvotes were accepted as valid reads and documented in the test record.

Only functional issues are identified. While documentation discrepancies may be encountered in testing they do not result in the rejection of a functional test. All issues are documented in Appendix E. It should be noted that a functional issue may be resolved with documentation of a procedure and/or specification.

iBeta Definition	Accuracy OMR (Accuracy, Reliability, Availability, Volume, and Stress)
Test Case Name	Accuracy - COTS Optical Mark Reader
Scope - identifies the type of test	Same as Accuracy - Infinity Voting Panel
Test Objective	Same as Accuracy - Infinity Voting Panel
Test Variables: Accuracy Reliability Volume Stress	Ballot Preparation Variable: A ballot will be prepared using the maximum number of ballot positions supported by the OMR (LP443-B ballot cards, 402 ovals). 11 contests with 35 candidates and a Vote for 6 will be programmed on 385 ovals (ballot positions). One oval per contest (11) will be programmed with contest text and the remaining 6 ovals will not be programmed. A total of 4026 ballots will be cast to reach the 1,549,703 minimum ballot positions. One OMR reader shall be connected to an EMS central count workstation. 71 ballots will be cast to reach the 26,997 Go/No Go minimum. All ballots will be cast in a single precinct in 42 separate batches. All ballot positions, contest ovals and non-programmed ovals will be tested to verify that programmed ovals are accurately read and marks in contest or non- programmed ovals are not read. A ballot shall be marked in pencil and read in two orientations. <b>Test Plan Change:</b> Ballots shall be hand marked with 90% in black ink and 10% #2 pencil. Ink ballots shall be used 8 times. #2 pencil ballots shall be used 2 times. All
	<ul> <li>ballots shall be inserted in a minimum of 2 orientations. (Top/front, bottom/front, top/back, or bottom/back)</li> <li>Vote Consolidation and Reporting Variables:</li> <li>Read an initial set of 71 ballots. Consolidate the results in the EMS to validate the 26,997</li> <li>Go/No Go minimum. The remaining ballots shall be read in batches of no more than 100. At the end of each batch, consolidate the results in the EMS to confirm that it meets the predicted results.</li> <li>Non-chamber operation:</li> <li>The OMR is exempt. VVSG 2005 exempts COTS equipment from the 48-hour</li> </ul>

iBeta Definition	Accuracy OMR (Accuracy, Reliability, Availability, Volume, and Stress)
	environmental chamber hardware operating test.
A description of the voting	MicroVote Election Management System voting system includes:
system type and the operational	Ballot preparation & central count software (EMS) installed on a Windows OS PC
environment	running XP Professional
V//SC 2005 vol 1	• COTS scanner for absentee/provisional ballots
VVSG 2005 vol 2	1711 1822 4711 473 thru 474 di 61 623
Hardware, Software voting	Election Management System (EMS v/ 0) voting system
system configuration and test	Ballot Prep/Central Count SW: Election Management System v.4.0.0.0
location	COTS Optical Scanner: OMR /ACP2200
	Test Location:
	Test will be run an confirmed COTS equipment (see b. Description of Broadure
	preparation of items) at room temperature
Pre-requisites and preparation	Confirm the equipment meets the COTS exemption by reviewing:
for execution of the test case.	• the device and product specifications to confirm that it has not been modified in any
	manner to support use as a voting system
	• the documentation to confirm a record of performance under the conditions defined in
	the VVSG (V.1:4.1.2)
	Complete the prerequisites:
	Record the testers
	<ul> <li>System has been set up as identified in the user manual</li> </ul>
	Ensure customization of the test case template is complete
Getting Started Checks	Check the voting system to :
	<ul> <li>Verify the test environment and system configuration is documented in the PCA Configuration and matches the vendor documented configuration</li> </ul>
	<ul> <li>Validate installation of the witnessed, build</li> </ul>
	<ul> <li>Testers understand that no change shall occur to the test environment without</li> </ul>
	documentation in the test record and the authorization of the project manager.
	• Initiate an operational status to confirm the correct function of the voting system prior to
	initiation of Accuracy testing.
Desumentation of Test Date 8	Record start time.
Test Results	Total time of operation shall be recorded and compiled
Accuracy: Paper-based voting	Paper-based voting systems, verify:
systems Processing	All ballot positions on paper ballots can be scanned and detect selections for individual
	candidates and contests, converting them to digital data. (Receive electronic signals
	produced by punches, vote marks and timing information; perform logical and numerical
	operations upon the data; and reproduce the contents of memory without error (including ballot style/precipit a vote for a specific candidate/contest or other source.)
	<ul> <li>The voting system does not record extraneous marks, smudges or folds. (Extraneous</li> </ul>
	marks are outside programmed ovals.)
	• The voting system rejects more than 2% of ballots that meet the vendor's specifications
	for marking.
	<ul> <li>Vote selection data from multiple precinct-based voting machines is stored with the generated jurisdiction-wide vote counts.</li> </ul>
	<ul> <li>Consolidated reports are accurate against a predicted vote total</li> </ul>
Accuracy: DRE Voting Systems	Verify the Optical Mark Readers are not a DRE
Processing	
Accuracy: Error Rate	Same as Accuracy - Infinity Voting Panel
Reliability	Same as Accuracy - Infinity Voting Panel
	Verify that the system is not a DRF with a VVPAT and exempt from VVSG vol 1 sect 7.9.4
Availability	Same as Accuracy - Infinity Voting Panel
Expected Results are observed	Same as General 1
Record observations and all	Same as General 1
input/outputs for each election;	• System failures will be logged with the MTTR. The log will be used to determine
	Availability.

# 7.4.4 FCA Characteristics (Recovery, Accessibility, Usability & Maintainability) Testing

Testing was conducted on the system configuration identified in section 3. The specific software and firmware builds are identified for each test iteration.

Run	Builds	Test Result	Issues Opened	Issues Closed	Notes
9/20/2007	EMS 4.0.8.0	Accept-			
	Infinity 9.61	Usability			
9/20/2007	EMS 4.0.8.0	Reject -	#75, 76, 77, 94,		
	Infinity 9.61	Accessibility/	95, 96, 97		
		Maintainability			
11/12/2007	EMS 4.0.11.0	Accept		#75, 76	#75 & 76 results are
	Infinity 9.62	Accessibility			recorded in General 2
5/1/2008	EMS 4.0.18.0	Accept -			Optical scanner back-
		Recovery			up
5/2/2008	EMS 4.0.18.0	Accept -			DRE back up
	Infinity 9.67	Recovery			
Various	NA- Document	Accept -		#77, 94, 95, 96	See Appendix E for
dates	Review	Maintainability		& 97	regression validations &
					dates

All issues are documented in Appendix E.

Method Detail	Characteristics Test Method			
Test Case Name	FCA Voting System Characteristics Test Case (Recovery, Accessibility, Usability & Maintainability)			
Scope - identifies the type of test	Accessibility, usability, maintainability and recovery are characteristics of the voting system. These characteristics are performed as a single combined functional test during a mock election. Validation of the integration of security and accuracy functions of the usability and accessibility features are tested in the system level tests.			
Test Objective	The objective of characteristics testing is to verify the accessibility, usability, maintainability and recovery requirements of the VVSG 2005 guidelines and HAVA are met.			
Test Variables: Voting Variations (as supported by the voting system)	<ul> <li>An audio/visual straight party ballot with multi-lingual capabilities will be used.</li> <li>One contest shall have a write-in vote.</li> <li>One contest shall have more candidates or text than can be displayed on the screen.</li> <li>Restricting visual access will be handled by blindfolding the tester</li> </ul>			
A description of the voting system type and the operational environment	Same as General 2			
VVSG 2005 vol.1	2.1.5.1.a.vi & vii, 2.3.3.1.a & e, 2.3.3.3, 3.1.4 thru 3.1.7.2.b, 3.2.1 thru 3.2.6, 4.1.2.4.c, 4.2.1 thru 4.2.3.b. ii, 4.3.1 thru 4.3.2, 4.3.4.1 thru 4.3.4.2. g, 4.3.6 a thru c & 7.9.6.a thru 7.9.7 b. HAVA 301a.3 & 4			
VVSG 2005 vol.2	4.7.2, 6.5, 6.7			
Hardware, Software voting system configuration and test location	Same as General 2			
Pre-requisites and preparation for execution of the test case.	<ul> <li>A test election (including parameters listed in section d) is prepared and installed on the polling place device</li> <li>During installation of the election confirm the operational readiness of the voting system.</li> <li>System has been set up as identified in the user manual</li> <li>Record the testers &amp; date</li> <li>Gather any necessary materials including accessibility equipment, and manuals</li> <li>Ensure customization of the test case template is complete</li> </ul>			
Getting Started Checks	Check the voting system to : • Verify the test environment and system configuration is documented in the PCA			

Method Detail	Characteristics Test Method
	Configuration and matches the vendor described configuration.
	<ul> <li>Validate installation of the witnessed build</li> </ul>
	<ul> <li>Testers understand that no change shall occur to the test environment without</li> </ul>
	documentation in the test record and the authorization of the project manager.
	<ul> <li>Install the Election and Installation databases, and open the polls using the process</li> </ul>
	defined on the Test Data tab.
Documentation of Test Data &	Test Data:
Test Results	<ul> <li>Record all programmed &amp; observed election &amp; ballot data fields and field contents on</li> </ul>
	the corresponding tabs to provide a method to repeat the test
	Preserve all tabs for each instance the test is run.  Teet Deputter
	Fater Accort/Paiect on the Test Stope
	<ul> <li>In Comments enter any deviations, discremancies, or notable observations.</li> </ul>
	<ul> <li>Log discrepancies on the Discrepancy Report and insert the number in the Comments.</li> </ul>
Polling Place Hardware &	Validations of operations in the voting mode:
Recovery	<ul> <li>DRE operates for a minimum of 2 hours on backup power</li> </ul>
	Adjust or magnify the font size, color, contrast, and audio volume
	<ul> <li>Power supply interruption without corruption of data</li> </ul>
	Telecommunications interruption without corruption of data
	Three second response time
	Review the transportation and storage features for safe and easy handling
	• Examine the voting system devices for caution and warning labels (exposure to
	electrical voltages and moving parts)
Usability- Cognitive & Perceptual	Cognitive Issues:
	<ul> <li>Presentation of Contest Choice does not introduce any bias in both visual and aural</li> </ul>
	formats.
	<ul> <li>Instruction presentation provides clear instructions and assistance: to allow voters to independently even to and east obtain help and instruction for all voter available</li> </ul>
	independently execute and cast, obtain help and instruction for all voter available
	<ul> <li>Color use agrees with common conventions for operational status, warnings and</li> </ul>
	errors.
	Perceptual Issues-
	<ul> <li>Flicker display frequency is between 2 Hz and 55 Hz</li> </ul>
	<ul> <li>Reset for each voter any voter adjustable feature</li> </ul>
	<ul> <li>Reset to default any voter adjustable feature</li> </ul>
	Text font size is a minimum of 3.0 mm
	<ul> <li>Poor Reading Vision is addressed in the voting system</li> </ul>
	<ul> <li>Contrast and Use of Color adjustment for color blindness</li> </ul>
	<ul> <li>Multiple Methods for conveying action instructions (color, shape or text.)</li> </ul>
	Sans serif font is used for voter presented text
	I ext to Graphics Ratio (including icons) intended for the voter is 3:1.
Usability-Interaction, Privacy and	Interaction issues
Identification	<ul> <li>No page scrolling shall be required by the voter (move to the next or prior page.)</li> <li>A marked yets selection is uperhisticated.</li> </ul>
	<ul> <li>A marked vote selection is unambiguously displayed</li> <li>Any time out functionality issues an elect at least 20 seconds before the time evolves</li> </ul>
	<ul> <li>Any time out functionality issues an alert at least 20 seconds before the time expires and provides a means by which the voter may receive additional time</li> </ul>
	<ul> <li>Touch screen and key mechanisms are designed to minimize accidental activation</li> </ul>
	Privacy
	• Visual access to the ballot and input controls are visible only to the voter during the
	voting session and ballot submission.
	<ul> <li>Audio access is audible only to the voter</li> </ul>
	Overvote warnings preserves the privacy of the voter and the confidentiality of the
	ballot.
	Alternative language information used by the voter is not kept within an electronic
	cast vote record
	<ul> <li>Accessible reatures are not identified in the electronic cast vote record.</li> </ul>
	Diometric roter authentication uses biometric measures requiring particular biological
	characteristics a secondary means that does not depend on those characteristics
	must be provided.
Accessibility- Partial Vision	Partial Vision

Method Detail	Characteristics Test Method			
	• Font size of an electronic image display is voter adjustable, between 3.0-4.0 & 6.3-9.0			
	mm.			
	Contrast of a monochrome-only electronic image display shows information in high			
	contrast either by default or under the control of the voter/poll worker (figure-to-ground			
	Contrast adjustments of a color electronic image display allows the voter to adjust the			
	color or the figure-to-ground ambient contrast ratio			
	<ul> <li>Controls are distinguished by both shape and color controls</li> </ul>			
	<ul> <li>-Audio output is synchronized to the visual display</li> </ul>			
Accessibility- Blindness	Blindness			
	<ul> <li>Audio headphone jacks support standard 3.5 mm stereo connectors.</li> </ul>			
	Audio/tactile operational support is provided for all instructions and functionality			
	<ul> <li>Voting system does not use a telephone handset (Wireless interference - 14 rating aball be achieved (ANSI C62 10)</li> </ul>			
	Methods to sanitized headnhones are available to each voter			
	<ul> <li>Default volume is set between 40 and 50 dB SPI</li> </ul>			
	<ul> <li>The controllable volume range is 20dB SPL to 100 dB SPL, in increments less than</li> </ul>			
	10 dB.			
	• Speech frequencies produced are in the audible speech range of 315 Hz to 10 KHz.			
	Audio presentation is comprehensible by language proficient voters with normal			
	hearing			
	<ul> <li>Rate of speed supported ranges are 75% to 200% of the nominal rate.</li> <li>Voting systems with hollet initialization by sighted voters provide this feature to blind</li> </ul>			
	<ul> <li>voting systems with ballot initialization by signed voters provide this realure to billio voters</li> </ul>			
	<ul> <li>Voting systems with ballot submission by sighted voters provide this feature to blind</li> </ul>			
	voters.			
	All mechanically operated controls or keys are tactilely discernible without activating			
	the control or key.			
	<ul> <li>Sound or tactile controls identify any voting system shift/lock and non-shift/unlocked</li> </ul>			
Accessibility - Dexterity	positions.			
Accessibility - Devicinty	All keys and controls are operable with one hand and do not require tight grasping			
	pinching, or twisting of the wrist. The force required to activate controls and keys is no			
	greater 5 lbs. (22.2 N).			
	<ul> <li>Direct body contact is not required to operate the voting system.</li> </ul>			
	<ul> <li>Non-manual input is required to be functionally equivalent to tactile input.</li> </ul>			
	A voter who lacks fine motor control or the use of their hands can submit their ballot			
Accessibility- Mobility	Mobility: The voting station provides			
	<ul> <li>Level clear hoor space of so in min × 46 in min with no slope exceeding 1.46, positioned for a forward or parallel approach</li> </ul>			
	All controls necessary for voter operation are within reach			
	<ul> <li>Forward reach w/ no obstruction: max high reach 48 in, min low reach 15 in.</li> </ul>			
	• Forward approach w/ a forward obstruction less than 25 in depth, 34 in height and			
	bottom surface no lower than 27 in.			
	• Max high reach for obstructions less than 20 in deep: 48 in, all others 44 in.			
	<ul> <li>Loe clearance is space under the obstruction between the floor and 9 in above the floor, extending may 25 in under the obstruction and min 20 in wide. Min too</li> </ul>			
	clearance under the obstruction is the greater of: 17 in or the depth required to reach			
	over the obstruction to operate the voting station.			
	• Knee clearance is the space under the obstruction between 9 & 27 in above the floor:			
	extending max 25 in under the obstruction at 9 in above the floor. Knee clearance is			
	min 30 in wide. Min knee clearance at 9 in above the floor is the greater of: 11in or 6			
	In less than the toe clearance. Knee clearance may reduce at a rate of 1 inch in depth for 6 inches in height between 9 & 27 in above the floor			
	<ul> <li>Parallel Approach w/ no side reach obstruction: max high reach is 48 in: min low</li> </ul>			
	<ul> <li>Parallel Approach w/ no side reach obstruction: max high reach is 48 in; min low reach is 15 in</li> </ul>			
	<ul> <li>Parallel Approach w/ no side reach obstruction: max high reach is 48 in; min low reach is 15 in</li> <li>Parallel Approach w/ a side reach obstruction: max high reach is less than 24 in in-</li> </ul>			
	<ul> <li>Parallel Approach w/ no side reach obstruction: max high reach is 48 in; min low reach is 15 in</li> <li>Parallel Approach w/ a side reach obstruction: max high reach is less than 24 in indepth and its top is less then 34 in high. Max high reach for obstructions less than 10</li> </ul>			
	<ul> <li>Parallel Approach w/ no side reach obstruction: max high reach is 48 in; min low reach is 15 in</li> <li>Parallel Approach w/ a side reach obstruction: max high reach is less than 24 in indepth and its top is less then 34 in high. Max high reach for obstructions less than 10 in deep is 48 in, otherwise 46 in.</li> </ul>			

Method Detail	Characteristics Test Method
	legible and visible.
Accessibility -Hearing & Speech	<ul> <li>Hearing</li> <li>Sound cues as a method to alert the voter are accompanied by a visual cue, unless the station is in audio-only mode.</li> <li>Speech</li> </ul>
	<ul> <li>No voting equipment shall require voter speech for its operation.</li> </ul>
Physical Characteristics	<ul> <li>Physical Characteristics</li> <li>The size of each voting machine should be compatible with its intended use and the location at which the equipment is to be used.</li> <li>The weight of each voting machine should be compatible with its intended use and the location at which the equipment is to be used.</li> </ul>
Transport Storage Materials &	Transport & Storage of Precipit Systems
Durability	<ul> <li>A means to safely handle, transport, and install voting equipment is provided.</li> <li>The voting system provides a protective enclosure to withstand: impact, shock and vibration loads associated with surface and air transportation; stacking loads associated with storage</li> <li>Durability</li> </ul>
	<ul> <li>The voting system is designed to withstand normal use without deterioration and without excessive maintenance cost for a period of ten years.</li> <li>Materials</li> <li>The voting system is designed and constructed so that the frequency of equipment malfunctions and maintenance requirements are reduced to the lowest level consistent with cost constraints.</li> <li>TDP includes an approved parts lists</li> </ul>
Maintainability	<ul> <li>Maintainability- The voting system and maintenance documentation include the:</li> <li>Presence of labels and the identification of test points</li> <li>Provision of built-in test and diagnostic circuitry or physical indicators of condition</li> <li>Presence of labels and alarms related to failures</li> <li>Presence of features that allow non-technicians to perform routine maintenance tasks (such as update of the system database)</li> <li>Initiation of the maintenance procedures, following the maintenance documentation resulting in an assessment of the system maintenance attributes to confirm maintainability at an acceptable level for:</li> <li>Ease of detecting that equipment has failed by a non-technician</li> <li>Low false alarm rates (i.e., indications of problems that do not exist)</li> <li>Ease with which adjustment and alignment can be performed</li> <li>Ease with which database updates can be performed by a non-technician</li> </ul>
Availability	<ul> <li>Availability- The vendor specifies the typical system configuration to be used to assess availability, and any assumptions made with regard to any parameters that impact the MTTR. The factors include at a minimum:</li> <li>Recommended number and locations of spare devices or components to be kept on hand for repair purposes during periods of system operation</li> <li>Recommended number and locations of qualified maintenance personnel who need to be available to support repair calls during system operation</li> <li>Organizational affiliation (i.e., jurisdiction, vendor) of qualified maintenance personnel</li> </ul>
VVPAT- Usability (insert if a	VVPAT Usability
VVPAT is part of the voting system)	Verify the voting system does not contain VVPAT
VVPAT- Accessibility (insert if a VVPAT is part of the voting system)	<ul> <li>VVPAT Accessibility Requirements</li> <li>Verify the voting system does not contain VVPAT</li> </ul>
Expected Results are observed	Same as General 1
Record observations and all input/outputs for each election;	Same as General 1

### 7.4.5 FCA Hardware Environmental Testing

### 7.4.5.1 Environmental Test Method (DRE)

Testing was conducted on the system configuration identified in section 3. The specific software and firmware builds are identified.

Run	Builds	Test Result	Issues Opened	Issues Closed	Notes
3/27/08	Infinity 9.67	Accept	#116, 117, &	#116, 117, &	See Wyle Test Report
	EMS 4.0.18.0	-	119	119	

Environmental testing of the Infinity Voting Panel is submitted in a separate Wyle Laboratories' report. Anomalies reported by Wyle are contained in their report and are documented in Appendix E.



HAROWARE TESTING AND EVALUATION OF THE MICROVOIT INFINITY DRE VOTING SYSTEM



 Method Detail
 Environmental Test Method (DRE)

 Test Case Name
 Environmental Test – (DRE) Infinity

 Scope - identifies the type of test
 Execution and provision of test results identified in the VVSG 2005 hardware operating and non-operating environmental tests. Environmental hardware testing is outside the scope of iBeta's VSTL accreditation. It is performed by Wyle Laboratories, Huntsville, AL under their A2LA accreditations Certificate Numbers 845.01 (Electrical) and 845.02 (Acoustics and Vibration).

 •
 iBeta coordinate and oversee subcontractor testing.

 •
 iBeta shall review the test records, results and reports to confirm testing was performed under an appropriate mode as a voting system and to determine

Method Detail	Environmentatl Test Method (DRE)				
	acceptance or rejection of some or all testing.				
Test Objective	Validation of the polling place hardware to meet the Non-Operating/Operating				
	Environmental test standards of the EAC VVSG 2005.				
Test Variables: Voting Variations	Tests conducted in compliance with the identified standard :				
(as supported by the voting	Power disturbance disruption - IEC 61000-4-11 (1994-06).				
system)	Electromagnetic radiation - FCC Part 15 Class B requirements - ANSI C63.4.				
	Electrostatic disruption - IEC 61000-4-2 (1995-01).				
	Electromagnetic susceptibility - IEC 61000-4-3 (1996).				
	Electrical last transient protection - IEC 61000-4-4 (1995-01).				
	PE immunity = IEC 61000-4-6 (1996-04)				
	AC magnetic fields RE immunity - IEC 61000-4-8 (1993-06)				
	MU -STD810-D				
	High temperature method 501.2 Procedures I-Storage maximum 140 F degrees				
	Low temperature - method 502.2, Procedure I-Storage minimum -4 F degrees				
	Temperature & power variations - method 501.2 & 502.2				
	Humidity - method 507.2				
	Vibration - method 514.3-1 Category 1 - Basic Transportation Common Carrier				
	Bench handling - method 516.3 procedure VI				
	Satety - OSHA CFR Title 29, part 1910				
A departmention of the watting	DEF LIW/Linfinity/Voting Danel Medel V/D 4 Days C				
A description of the voting	DRE RW: Infinity Voting Panel Model VP-1 Rev: C				
environment	COTS voice synthesis/sound system (text-to-speech converter): DoubleTalk I T				
	Radioshack Headphones				
	MicroVote Accessible voting booth				
VVSG 2005 vol.1	4.3.8, 4.1.2 thru 4.1.2.14 (see Characteristics for 4.1.2.4.c)				
VVSG 2005 vol.2	4.6.1.5 thru 4.7.1 & 4.8				
Hardware, Software voting	DRE HW: Infinity Voting Panel Model VP-1 Rev: C				
system configuration and test	DRE SW: Infinity Voting Panel Firmware v.3.1x				
location	COTS voice synthesis/sound system (text-to-speech converter): DoubleTalk LT				
	Radioshack Headphones				
	MicroVote Accessible voting booth				
	Test Location: Wyle Laboratories, Huntsville AL				
	<ul> <li>iBeta provides Wyle with the environmental hardware test case outlining methods.</li> </ul>				
	instructions to document the configuration, test environment, lab accreditations, tester				
	qualifications, and operational status check performance.				
	<ul> <li>iBeta personnel execute the accuracy testing in conjunction with the Temperature and</li> </ul>				
	Power Variations provide and oversee the operational status checks. Wyle VSTL				
	qualified test staff are trained on voting system operation and the operational status				
	check.				
Pre-requisites and preparation	Complete the prerequisites:				
for execution of the test case.	Record the testers & date     Sustain has been act up as identified in the upper manual				
	System has been set up as identified in the user manual     Cathor any pocossary materials or manuals				
	Ensure customization of the test case template is complete				
	The iBeta approved Operational Status Check script is provided that includes:				
	Setup of Infinity Vote Panel and Attach Printer				
	<ul> <li>Install a test election with two contests: candidate and referendum</li> </ul>				
	Verify Online/Offline printer operation				
	Pre-vote Polling Place Verification				
	<ul> <li>Panel Starting Message displays after 10 seconds</li> </ul>				
	<ul> <li>Status Screen displays: current date, time; current panel mode; jurisdiction; election</li> </ul>				
	name, date; precinct name; panel serial number and firmware version; votes recorded				
	in current election, protective count and security id and memory used.				
	Security code required for entry				
	Panel displays 'start card functions'				
	Check Button - all buttons function correctly				
	Check Display - no gaps in the black areas				
	<ul> <li>Snow Ballot- view the ballot; ballot can't be voted in this mode</li> <li>Brief Zers Breef, might tell uter</li> </ul>				
	<ul> <li>Print Zero Proof- print tally tape with zeros; completion of print system alert (beep)</li> </ul>				

Method Detail	Environmentatl Test Method (DRE)
	Open the polls
	Vote Process - Voter #1 - Visual ballot checks
	<ul> <li>Insertion of vote card activates precinct/ballot selection</li> </ul>
	Selected ballot is presented
	Perform visual checks: lighten/darken display, change contrast, magnification on/off
	Perform ballot functions: next/previous page, candidate vote, referendum vote, confirm
	ballot, cast vote
	View vote successfully submitted
	Vote Process - Voter #2 Audio ballot checks
	Double talk unit is attached and activated
	Poll worker insertion of vote card activates precinct/ballot selection     Selected bellet is presented
	<ul> <li>Perform audio playback checks: louder/softer, faster/slower, contest, candidate,</li> </ul>
	referendum, yes/no
	<ul> <li>Initial playback voting options does not select voting options; subsequent playback(s) selects/deselects voting options</li> </ul>
	<ul> <li>Perform ballot functions contain appropriate audio playback: next/previous page, candidate vote, referendum vote, undervote, confirm ballot, cast vote</li> </ul>
	Hear vote successfully submitted
	Visual and audio presentation are synchronized
	Post Vote
	Insertion of Tally card prompts Security Code entry
	Entry of security presents the Close and Tally screen
	Selection of Tally presents Tally Review     Selection of Brint generates Tally Review
	<ul> <li>Selection of Print generates Tally Report, matches votes cast</li> <li>Write Tally card: Tally card results read in EMS match printed Tally Pepert</li> </ul>
Cotting Storted Checks	Check the vetting evetem to :
Getting Started Checks	Varify the test environment and system configuration is documented in the PCA
	Configuration and matches the manufacturer described configuration
	<ul> <li>Validate installation of the witnessed build</li> </ul>
	Testers understand that no change shall occur to the test environment without
	documentation in the test record and the authorization of the project manager.
	<ul> <li>Confirm the tester understands the recording requirements of the iBeta test case.</li> </ul>
	Operational status check procedures are available and successfully run.
	An automated script for use during the EMC operational tests exercises necessary
	functionality.
Documentation of Test Data &	Test Results:
Test Results	Enter Accept/Reject on the Test Steps
	<ul> <li>In Comments enter any deviations, discrepancies, or notable observations</li> </ul>
	Log discrepancies on the Discrepancy Report and insert the number in the Comments
Standard Environmental Tests	Follow test method in the identified international standard. The operating modes shall
	include both visual and audio ballot operations.
Expected Results are observed	Review the test result against the expected result:
	Pass: meets the requirements
	• Fail: does not meet the requirements; document the failure in the comments
	• Not lestable (NT): not testable; provide a reason in the comments
Record observations and all	All test results will be recorded in the test case.
input/outputs for each election;	<ul> <li>Any failure against the requirements will mean the failure of the system and shall be reported as such</li> </ul>
	Tepolieu as such.
	Paliules will be reported to the manufacturer as Delect issues in the Discrepancy Report
	The manufacturer shall have the opportunity to cure all discrepancies prior to issuance
	of the Certification Report.
	<ul> <li>If cures are submitted the applicable test will be rerun. Complete information about the</li> </ul>
	rerun test will be preserved in the test case. The cure and results of the refest will be
	noted in the - Discrepancy Report and submitted as an appendix of the Certification
	Operations which do not fail the requirements but could be deemed defects or
	inconsistent with standard software practices or election practices will be longed as
	Informational Issues on the Discrepancy Report. It is the manufacturer's option to
	address these issues. Open items will be identified in the report.

Hardware tests that required system operation were

### 7.4.5.2 Environmental Test Method (COTS OMR)

An inspection and document review was conducted on the system configuration identified in section 3.

Document Review	COTS	Result	Issues Opened	Issues Closed	Notes
6/21/07	OMR ACP2200	Reject	#26		
2/26/08	OMR ACP2200	Reject	#111 & 112	#26	
3/25/08	OMR ACP2200	Accept		#112	
5/3/08	OMR ACP2200	Accept		#111	

All issues are documented in Appendix E.

Method Detail	Environmental Test Method (COTS OMR)			
Test Case Name	Environmental Test – COTS Optical Mark Reader			
Scope - identifies the type of test	Confirm that the COTS equipment shall have FCC Class B and CE Marks affixed to each unit indicating that the product has been certified to meet these requirements and a copy o the COTS manufacturer's Declaration of Conformity confirming that the manufacturer is claiming compliance with the standards stated.			
Test Objective	Validation of the COTS central count optical mark reader hardware provides evidence CE and FCC marks and declaration of conformance.			
Test Variables: Voting Variations (as supported by the voting system)	COTS equipment tendered for certification testing bears CE and FCC marks and provides documentation of conformance.			
A description of the voting system type and the operational environment	<ul> <li>MicroVote Election Management System voting system includes:</li> <li>Ballot preparation &amp; central count software (EMS) installed on a Windows OS PC running XP Professional</li> <li>COTS scanner for absentee/provisional ballots</li> </ul>			
VVSG 2005 vol.1	4.3.8, 4.1.2 thru 4.1.2.14, Interpretation 2007-05			
VVSG 2005 vol.2	4.6.1.5 thru 4.7.1 & 4.8			
Hardware, Software voting system configuration and test location	Election Management System (EMS v4.0.0.0) voting system Ballot Prep/Central Count SW: Election Management System v.4.0.0.0 COTS Optical Scanner: OMR ACP2200			
Pre-requisites and preparation	Complete the prerequisites:			
for execution of the test case.	<ul> <li>Record the reviewer &amp; date</li> <li>System matches the Chatsworth COTS specification</li> <li>Gather any necessary materials or manuals.</li> <li>Ensure customization of the assessment template is complete</li> </ul>			
Getting Started Checks	<ul> <li>Check the COTS hardware to :</li> <li>Verify the system configuration is documented in the PCA Configuration and matches the COTS manufacturer's described configuration.</li> </ul>			
Documentation of Test Data & Test Results	<ul> <li>Review the hardware marks and documentation of compliance:</li> <li>Enter Accept/Reject on the Environmental Assessment tab</li> <li>In Comments enter any deviations, discrepancies, or notable observations</li> <li>Log discrepancies on the Discrepancy Report and insert the number in the Comments</li> </ul>			
Standard Environmental Tests	Verify the test method is under the conditions identified in Interpretation 2007-05			
Expected Results are observed	<ul> <li>Review the test result against the expected result:</li> <li>Accept meets the guideline</li> <li>Reject does not meet the guideline</li> <li>NA the guideline does not apply</li> </ul>			
Record observations and all input/outputs for each election;	<ul> <li>All review results will be recorded in the Environmental Assessment tab.</li> <li>Any gaps or deficiencies in the record of performance per Interpretation 2007-05 will be identified as a deficiency.</li> <li>Deficiencies will be reported to the vendor as Defect Issues in the Discrepancy Report.</li> <li>The vendor shall have the opportunity to cure all discrepancies prior to issuance of the</li> </ul>			

Method Detail	Environmental Test Method (COTS OMR)
	<ul> <li>Certification Report.</li> <li>If cures are submitted the applicable review will be repeated. Complete information about the re-review will be preserved in the Environmental Assessment. The cure and results of the re-review will be noted in the - Discrepancy Report and submitted as an appendix of the Certification Report.</li> </ul>

### 7.4.6 FCA Telephony and Cryptographic Review and Testing

Testing was conducted on the system configuration identified in section 3. The specific software and firmware builds are identified for each test iteration.

Run	Builds	Test Result	Issues Opened	Issues Closed	Notes
9/14/07	EMS v.4.0.8.0	Accept			
	Infinity v.9.61				
No issues were identified					

No issues were identified.

Method Detail	Telephony and Cryptographic Test Method
Test Case Name	Telephony and Cryptographic
Scope - identifies the type of test	Validation that there is no use of the public networks and the voting system is exempt
Test Objective	Validation that there is no use of the public networks
Test Variables: Voting Variations	Based upon security document reviews and inspection during General 1 confirm that the
(as supported by the voting system)	system does not use the public networks
A description of the voting system type and the operational environment	Same as General 1
VVSG 2005 vol.1	6.1.3 thru 6.2.7, 7.4.5.1, 7.7 thru 7.7.4
VVSG 2005 vol.2	6.4.2
Hardware, Software voting system configuration and test location	Same as General 1 Wireless technology is not present
Pre-requisites and preparation for execution of the test case.	Same as General 1
Getting Started Checks	Same as General 1
Documentation of Test Data & Test Results	Same as General 1
Pre-vote: Ballot Preparation procedures verifications	Not applicable, no use of the public networks
Pre-vote: Ballot Preparation Security	Not applicable, no use of the public networks
Readiness Testing and Poll Verification	Not applicable, no use of the public networks
Pre- vote: Opening the Polls Verification	Not applicable, no use of the public networks
Voting: Ballot Activation and Casting Verifications	Not applicable, no use of the public networks
Voting: Voting System Integrity, System Audit, Errors & Status Indicators	Not applicable, no use of the public networks
Post-vote: Closing the Polls	Not applicable, no use of the public networks
Post-vote: Central Count	Not applicable, no use of the public networks
Post-vote: Security	Not applicable, no use of the public networks
Post-vote: System Audit	Not applicable, no use of the public networks
Expected Results are observed	Same as General 1
Record observations and all input/outputs for each election;	Same as General 1

### 7.5 Appendix E: Discrepancy Report

MicroVote General Corporation Election Management System (EMS) voting system v.4.0.

Applicable Standards: 2005 VVSG (Voluntary Voting System Guidelines) and United States Election Assistance Commission Testing & Certification Program Manual v. 1.0

Issues identified in testing or reviews are logged on the Discrepancy Report. Issue Types include:

- **Document Defects:** a documentation element of the voting system did not meet the applicable standard. Resolution of the defect is required for certification.
- Functional Defects: a hardware or software element of the voting system did not meet the applicable standard. Resolution of the defect is required for certification.
- Informational: an element of the voting system which meets the applicable standard but may be significant to either the vendor or the jurisdiction. Resolution of Informational issues is optional. Open issues are identified for purpose of disclosure.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
1	5/8/07	D Harwood	Doc Defect	Closed	Section 2.4 SYSTEM HARDWAR E SPECIFICA TION Election Manageme nt System v.1.1	The hardware specification and referenced documents address the Infinity Voting Panel only. The identified documentation does not specify the other required voting system hardware, including the EMS Ballot Preparation and Central Count, OMR or Gemsplus hardware	v2: 2.4.1 The vendor shall provide a detailed discussion of the characteristics of the system, indicating how the hardware meets individual requirements defined in Volume I, Section 4.	Updated Section 2.4 to version 1.2 to fix the discrepancy. Referenced other sections and appendices per v2 2.4.1: EMS • Section 2.2 (System Overview) • Section 2.3 (System Functionality Description) • Appendix C (COTS Specifications) • Appendix E (Completed COTS Testing Forms) • Appendix G (COTS Invoices and Certifications)	Accepted D Harwood 6/11/2007 Verified v.1.2 (Sect 2.4) refers to: Sect 2.2 Sys Overview v1.2, Sect 2.3 Sys Func Desc v1.1, Appx C COTS Spec v1.0. Docs address EMS Ballot Prep & Central Count, OMR or Gemsplus HW spec. Appx G (COTS Invoices &Cert v1.0 & Appx E v1.0 are not relevant to this discrepancy.
2	5/9/07	M Ricketts	Inform ational	Closed	Various TDP Documents	The title page of several MicroVote documents contains a dynamic date field which inserts the current date when viewed. While the correct document date is identified in the Revision History table, the dynamic date field adds a level of confusion to the documentation.		The title page contains the current date using a dynamic date field. The revision history contains the actual date the document was revised. 8/15/07: Modified various TDP documents. Removed dynamic date and replaced with static date of last revision on both title page and in footer where appropriate. (BDH) ***Note changes to Appendix A will be included in the future.	Accepted M Ricketts 10/11/2007 Verified TDP documents have been updated to replace the dynamic date field with the static document date.
3	5/9/07	M Ricketts	Doc Defect	Closed	Section 2.11 CONFIGUR ATION MANAGEM ENT PLAN	MicroVote utilizes a scheme of cataloging the Appendices into folders with individual or multiple files, making up a document. A description of this scheme is not contained in the Configuration Management Plan or the referenced appendices.	v2:2.11.2 a The vendor shall provide a description of the procedures and naming conventions used to address the specific requirements of Volume I, Subsection 9.3. These	Updated Section 2.11 to version 1.2 to reflect changes to fix the discrepancy. Added description of the scheme we used to catalog	Accepted M Ricketts 6/12/2007 Verified v.1.2(Section 2.11) includes a description of the scheme to catalog

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					EMS v.1.1		requirements pertain to: Classifying configuration items into categories and subcategories	appendices in section called: Appendices Cataloging	appendices.
4	5/9/07	M Ricketts	Doc Defect	Closed	Section 2.11 Con- figuration Mgmt Plan EMS v.1.1	MicroVote employs a versioning scheme for draft and release documents. This scheme is not detailed in Configuration Management Plan or the referenced appendices.	v2:2.11.2 b The vendor shall provide a description of the procedures and naming conventions used to address the specific requirements of Vol. I, Sub-section 9.3. These requirements pertain to: Uniquely numbering or otherwise identifying configuration items	Updated Section 2.11 to version 1.2 to fix the discrepancy. Added description of versioning scheme we use on documents in section called: Versioning Scheme	Accepted M Ricketts 6/12/2007 Verified v.1.2 (Section 2.11) includes a description of the versioning scheme for documents.
5	5/9/07	M Ricketts	Doc Defect	Closed	Appendix F VOTING VARIATION S Election Manageme nt System v.1.2 & MicroVote General Corporation EMS User Manual v1.1	The TDP does not clearly identify if straight party voting is supported in EMS v4.0.0.0. Appendix F states: "The following variations are supported by MicroVote Election Management System (EMS): • Straight Party Voting" The EMS user manual states: "Table 2.1.1 Definitions of General Preference screen fields. Auto Straight Party Crossover (Required in Some states):The Straight Party function is not available in this release. Table 2.2.1 Definitions of Political Party screen fields Straight Party Button Tag: Straight Party Button option is not available for this release." Accepted M Ricketts 6-14-07 Confirmed that MicroVote supports Straight Party voting. Verified updated vendor documentation v.1.2 (EMS User Manual) changed reference to the Auto Straight Party Crossover, making it clear that it is a specific type of Straight Party functionality. Rejected M Rickets 6-14-07 The issue in Table 2.2.1, v.1.2 (EMS User Manual) regarding the Straight Party Button Tag has not been addressed.	V1:2.1.7.2 The Technical Data Package accompanying the system shall specifically identify which of the following items can and cannot be supported by the voting systemstraight party voting.	Explained to iBeta that WE DO SUPPORT STRAIGHT PARTY VOTING. WE DO NOT SUPPORT a specific type of straight party used in North Carolina that is called "Auto Straight Party Cross-over" that is on the general preferences screen. This is detailed in the user manual section 2.1.1 Viewing Preferences /Table 2.1.1 "Auto Straight Party Crossover (Required in Some states) This option allows the voter to vote a straight party ticket and then, with a single button push, switch their vote in any given contest by selecting a candidate from the opposing party. The Straight Party function is not available in this release." I've also changed the User Manual to state: "This specific type of Straight Party functionality is not available in this release." to not create confusion that we don't support straight party voting. 7/11/07 Updated user manual to version DO1.3TDP-V and table to note that Straight Party Button Tag is not supported in this	Rejected M Rickets 6- 14-07 (Incomplete) Accepted M Ricketts 6-14-07 Confirmed that MicroVote supports Straight Party voting. Verified updated vendor documentation v.1.2 (EMS User Manual) changed reference to the Auto Straight Party Crossover, making it clear that it is a specific type of Straight Party functionality. M Ricketts 7/12/2007 Verified table 2.2.1 in v.1.3 of Appendix V indicates that the Straight Party Button Tag option is not available for this release.
6	5/9/07	M Ricketts	Doc Defect	Closed	Section 2.8 SYSTEM OPERATIO	The System Operations Procedures and referenced appendices do not include a reference to the location of the ballot	v2:2.8.3 a - The vendor shall provide specifications for validation of system installation,	Updated Section 2.8 to version 1.1 to fix the discrepancy. Added	Accepted M Ricketts 6/14/2007 Verified v.1.1 (Section

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					NS PROCEDU RES Election Manageme nt System, v1.0	preparation installation and release information. (This information is contained in the Section 2.11 Configuration Management Plan document.)	acceptance, and readiness. These specifications address all components of the system including: Pre-voting functions v2:2.8.6 a - Defines the procedures required to support system acquisition, installation, and readiness testing v2:2.8.6 b Describes procedures for providing technical support, system maintenance and correction of defects, and for incorporating hardware upgrades and new software releases.	reference to: Configuration Management Plan: See section 2.11, Configuration Management Plan	2.8) includes the reference to the Configuration Management Plan, Section 2.11.
7	5/9/07	D Harwood	Doc Defect	Closed	Section 2.4 SYSTEM HARDWAR E SPECIFICA TION Election Manageme nt System v.1.1	The documentation does not address the OMR (absentee ballot reader) in the system configuration, the electromagnetic environment generated or any constraints on system operations.	v2:2.4.2 The vendor shall provide sufficient data, or references to data, to identify unequivocally the details of the system configuration submitted for testingprovide a list of materials and components used in the systema) materials, processes and partsb) the electromagnetic environment	Updated Section 2.5 to version 1.4 to fix the discrepancy. Added text to section 5 Vote Tabulation Mode(5.2 OMR Ballot Cards and 5.3 Tally Cards) to clarify quality of database records. The text describes what to do if a OMR Ballot Card is read in twice or what happens when a Tally Card is read in twice.	Accepted D Harwood 6/11/2007 Verified Section 2.4 (SysHW Spec),v.1.2, Section 2.2 (Sys Over- view) v1.2, Section 2.3 Sys Func Desc v1.1 and Appx C (COTS Spec)v1.0 include references to all required voting system hardware. Referenced documents address the OMR (absentee ballot reader) in the system configuration, the electromagnetic environment generated or any constraints on system operations in regards to v2:2.4.2. Appx E v1.0 & Appx G v1.0 are not relevant to this requirement.
8	5/9/07	D Harwood	Doc Defect	Closed	Section 2.2 SYSTEM OVERVIEW EMS v.1.1	On pg 2 the statement 'The EMS software does not interface with external systems." is contradicted by the subsequent pg 2 statement "Several off-the-shelf hardware items, software and certain communication services are used with the EMS software".	v2.2.1 The system description shall include written descriptions, drawings and diagrams that present Interfaces among internal components, and inter-faces with external systems	Updated Section 2.2 to version 1.2 to fix the discrepancy. Updated sentence to not contradict previous statement.	Accepted D Harwood 6/11/2007 Verified v.1.2 (Section 2.2) i clarifies the interfacing of EMS w/ external systems.
9	5/9/07	D Harwood	Doc Defect	Closed	Section 2.2 SYSTEM OVERVIEW EMS v.1.1	On pg 6, in describing performance characteristics, the user is referred to Appendices H thru O. Appendix M was not delivered in the TDP	v2:2.1vendor documentation relating to the voting system shall be submitted with the system as a precondition of national certification testing.	Updated Section 2.2 to version 1.2 to fix the discrepancy. Updated reference to Appendices H,I,J,K,L,N and O since we do not have an appendix M.	Accepted D Harwood 6/11/2007 Verified v.1.2 (Section 2.2) includes updated reference to exclude Appendix M.
10	5/9/07	D Harwood	Doc Defect	Closed	Section 2.2 SYSTEM OVERVIEW	The Figure 1 diagram does not address the USB flash card reader specified in "Appendix O1 3.5_BAY 7 Flash Card	v2.2.1.i The system description shall include written descriptions, drawings and	Explained to iBeta that the Flash Card Reader is not part of the normal	Accepted D Harwood 6/11/2007 As the USB flash card

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					Election Manageme nt System v.1.1	Reader USB 2.0".	diagrams that presentFile specifications, data objects, or other means used for information exchange	operation of EMS. It is used to verify the system per our System Identification Tool. We felt it would complicate the diagram. It's purpose is explained in appendix D01.0TDP-AA.doc	reader is not part of the EMS functional system, it was removed from the fig. 1 diagram in v.1.2 Sect. 2.2 System Overview. Verified doc refers to Appendix AA. Appendix AA explains the USB flash card reader and its use as a verification tool for the software of the EMS.
11	5/10/0 7	D Harwood	Doc Defect	Closed	Section 2.9 SYSTEM MAINTENA NCE MANUAL Election Manageme nt System v.1.1 6/19/07: Correction - the version discrepancy was written against v1.0. It was erroneously noted as v1.1	System Maintenance Manual and referenced documentation only address the Infinity Voting Panel. The EMS and the PC it runs on, the printers , card readers and optical mark reader are not addressed. In the case of COTS equipment, there is no reference to COTS manuals or other technical.	v2: 2.9.2.2 Corrective maintenance procedures: The vendor shall provide fault detection, fault isolation, correction procedures, and logic diagrams for all operational abnormalities identified by design analysis and operating experience b) Steps to correct deficiencies or faulty operations in software e) Special maintenance equipment, parts, supplies, or other resources needed to accomplish each procedure and v2: 2.9.4. 1The vendor shall provide a complete list of approved parts and materials needed for maintenance. This list shall contain sufficient descriptive information to identify all parts by: a) type b) size c) value or range d) manufacturers design e) indivi- dual quantities needed f) source in which they may be obtained	Updated Section 2.9 to version 1.1 to fix the discrepancy. Added references to appendices where maintenance information is located: Refer to the following for maintenance instructions: • ACP-2200 Optical Scanner Quick Start Guide (Appendix H) – Section OMR Maintenance • Seiko DPU-3445-20 Printer User's Manual (Appendix J) – Section 10 Thermal header Maintenance • Seiko DPU-414 Printer User's Manual (Appendix K) – Section 8 Caring for the DPU-414 Printer • OMR-9002 Card Reader (Appendix Z) – Section 4 Maintenance v1.0	Accepted D Harwood 6/8/2007 Verified Section 2.9 v1.1 System Maint Manual references documentation addressing the EMS, the PC, printers, card readers and optical mark reader: • ACP-2200 Optical Scanner Quick Start Guide (Appx H) Sect OMR Main v1.0 • Seiko DPU-3445-20 Printer User's Manual (Appx J) Sect 10 Ther- mal header Main v1.0 • Seiko DPU-414 Printer User Manual Appx K Sect 8 v1.0 • OMR-9002 Card Reader (Appendix Z) – Sect 4 Main. v1.0 Verified doc addresses v2: 29.2.2 & 2.9.4
12	5/10/0 7	D Harwood	Doc Defect	Closed	Section 2.9 SYSTEM MAINTENA NCE MANUAL Election Manageme nt System v.1.1 6/19/07: Correction - version was v1.0. It was erroneously noted as v1.1	System Maintenance Manual and referenced documentation does not address the recommended spare devices or components to be kept "on hand"	v2: 2.9.5 a. Recommended number and locations of spare devices or components to be kept on hand for repair purposes during periods of system operation	Updated Section 2.9 to version 1.1 to fix the discrepancy. Added our suggested spares that customers keep "on hand" for components. Spare Devices MicroVote sells spare devices to customers as part of the initial sale. • GEMSPLUS Universal Card Reader(1 + Backup) • Optical Mark Reader(1 + Backup) MicroVote suggests Customers have: • Five extra Infinity panels per 100 panels.	Accepted D Harwood 6/8/2007 Verified Section 2.9 v 1.1 contains suggested spares that customers keep "on hand" for components

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
								• Two extra Seiko Instruments Printers per 50 precincts.	
13	5/17/0 7	K Wilson	Doc Defect	Closed	Section 2.5 SOFTWAR E DESIGN AND SPECIFICA TIONS v1.3	Processor memory protection is not addressed in the documentation.	v2:2.5.5.1b : Hardware Environment and Constraints - The vendor shall identify and describe the hardware characteristics that influence the design of the software, such as b. Memory read-write characteristics	Updated Section 2.5 to version 1.4 to fix the discrepancy. Added text to explain "Operating systems supported by EMS are Microsoft Windows 2000 and Microsoft Windows XP Professional Editions. Processor memory protection is handled by the operating systems."	Accepted M Ricketts 6/18/2007 Verified v.1.4 (Section 2.5) added text to address processor memory protection.
14	5/17/0 7	K Wilson	Doc Defect	Closed	Section 2.5 SOFTWAR E DESIGN AND SPECIFICA TIONS v1.3	The document addresses the quality of the database records, but does not detail the quality of the data placed in the database. Quality of data examples: Descriptions of what happens if a Tally card or OMB card is read twice or a Tally card is read during voting and then again at vote completion time. If and how data on the tally card is verified for integrity.	v.2: 2.5.6.2f - Software Functions - The vendor shall describe the software's capabilities or methods for detecting or handling - f. Data quality assessment	Updated Section 2.5 to version 1.4 to fix the discrepancy. Added text to section 5 Vote Tabulation Mode(5.2 OMR Ballot Cards and 5.3 Tally Cards) to clarify quality of data- base records. The text describes what to do if a OMR Ballot Card is read in twice or what happens when a Tally Card is read in twice.	Accepted M Ricketts 6/18/2007 Verified v.1.4 (Sect 2.5) added text to section 5- Vote Tabulation Mode (5.2 OMR Ballot Cards and 5.3 Tally Cards) to address quality of the data placed in the database. Addresses OMR Ballot & Tally Card read twice.
15	5/17/0 7	K Wilson	Doc Defect	Closed	Section 2.5 SOFTWAR E DESIGN AND SPECIFICA TIONS v1.3	Database stored procedures and triggers are discussed but no design documentation concerning this code is included or referenced. A description of the trigger function is insufficient because the event causing the trigger is not described. Information on stored procedures is needed to adequately determine source code review scope.	v2: 2.5.7.2d - Programming Specifications Details- The programming specifications shall describe individual software modules and their component units, if applicable and for each module and unit, the vendor shall provide: If the software module or unit consists of or contains procedural commands, (such as menu selections in a database management system (DBMS) for defining forms and reports, on-line DBMS queries for database access and manipulation, input to a graphical user interface (GUI) builder for automated code generation, commands to the operating system, or shell scripts) a list of the procedural commands and reference to user manuals or other documents that explain them.	Updated Section 2.5 to version 1.4 to fix the discrepancy. Added a column "Trigger Event Raised" to section 15.0 Triggers to describe what event occurs to execute the trigger.	Accepted M Ricketts 6/18/2007 Verified v.1.4 (Section 2.5) includes the column "Trigger Even Raised" in Section 15.0
16	5/17/0 7	K Wilson	Doc Defect	Closed	Section 2.5 SOFTWAR E DESIGN AND	Identification of entities with fixed Interface characteristics or interfaces which are developed or modified were not in evidence in the submitted documentation.	v2: 2.5.9.1c - Interface Identification For each interface identified in the system overview, the vendor shall:	A fixed interface is an interface we don't have control over. Examples are the Infinity and the	Accepted M Ricketts 6/18/2007 Verified v.1.4 (Section

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					SPECIFICA TIONS v1.3		Identify which entities have fixed interface characteristics (and therefore impose interface requirements on interfacing entities) and which are being developed or modified (thus having interface requirements imposed on them).	Gemsplus card reader. Updated 2.5 to have a column of Interface Type in the table 25.0 Hardware Interfaces.	2.5) added column of Interface Type in table 25.0 Hardware Interfaces.
17	5/17/0 7	K Wilson	Doc Defect	Closed	Section 2.5 SOFTWAR E DESIGN AND SPECIFICA TIONS v1.3	The interface information: ii. Doesn't clarify 'Data Type' in tables 1.0-24.0 marked N/A iii. Doesn't provide string length of fields having N/A in the DB Field column; vii. Doesn't address sequence, frequency or timing of interfaces K Wilson 6/19/07 v.1.4: (Sect. 2.5) Partial Accepted: ii:"N/A" to updated to the correct data types. vii: "Trigger Event Raised" (see #15) satisfies "timing, frequency, etc." for trigger type interfaces. Other GUI type interfaces are satisfied in Appx R. Rejected - iii: While some string lengths appear in Appx R, they don't provide lengths related to interfaces. 24.0 Manual Vote Entry RqtID is FR-GUI-SP-0028204. No length appears in the only instance of this ID in the document. RqtID ending in 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1211, 1212,, 28204 contain no string lengths. C Coggins 7/16/07 Verified v.1.8 (Sect. 2.5) Partial Accepted Tables 1-9, 11, 13-19, 21 thru 23 String lengths are identified for existing & date fields Rejected: Lengths or field x-reference to lengths set by a control weren't identified for Tables 10, 11, 12, 20, and 24	v2: 2.5.9.2 - Interface Description For each interface identified in the system overview, the vendor shall provide information that describes: ii. Data type (alphanumeric, integer, etc.) iii. Size and format (such as length and punctuation of a character string) vii. Priority, timing, frequency, volume, sequencing, and other constraints, such as whether the data element may be updated and whether business rules apply	Updated Section 2.5 to version 1.4 to fix the discrepancy. Updated data types of "Iv/A" to correct data types. String Lengths etc are in Appendix R (GUI Specifications) 7/11/07 Updated D01.8TDP-2.5 Software Design and Spec document with interface lengths.	Rejected (Incomplete) M Ricketts 6/19/2007 Rejected (Incomplete) C Coggins 7/16/07 Accepted C Coggins 8/7/07 Verified applicable fields were updated. Changes to the document included deletion of information that was identified as not being used.
18	6/6/07	C Coggins	Doc Defect	Closed	Election Manageme nt System User Manual v.4.0.0.0	Election set up of Open and Closed Primaries is the same. The method by which a voter makes a private selection of a party ballot is handled procedurally. The user manual does not have a definition of how Closed and Open Primaries with ballot selection by the poll worker or Open Primary with ballot selection by the voter are supported.	v1:2.1.7.2 The Technical Data Package accompanying the system shall specifically identify which of the following items can and cannot be supported by the voting system, as well as how the voting system can implement the items supported: Open primaries	Updated Table 3.2.1 Definitions of the Election Data screen fields. • Open, Closed and Secret Primary elections are setup the same in EMS. Their differences are handled procedurally by poll workers. Example: in an Open Primary, In some states a voter has to declare their party affiliation and the poll worker has to pick the activation belonging to that party on the infinity panel for the voter.	Accepted M Ricketts 6/18/2007 Verified v.1.4 (EMS User Manual) includes definitions of Open, Closed and Secret Primary elections.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
19	6/6/07	C Coggins	Doc Defect	Closed	Infinity Poll Workers Manual v.4.0.00	Ballot Selection and Activation Step 3: The method and sequence for polling place selection of parties on primary ballots is not clearly identified. The difference in the handling of Closed and Open Primaries with ballot selection by the poll worker or Open Primary with ballot selection by the voter is not referenced.	v2:2.8.4 The vendor shall provide documentation of system operating features that provide examples of simulated interactions in order to facilitate understanding of the system and its capabilities	Updated Poll worker manual to version D01.2 TDP-U to describe the differences in primaries: • Open, Closed, Secret and Presidential Primary elections all have an election type of "P - Primary Election" in EMS. Their differences are mostly handled procedurally by poll workers. For example in an Open Primary, In some states a voter has to declare their party affiliation and the poll worker has to pick the activation belonging to that party on the infinity panel for the voter. In Closed primaries only registered party members can vote. In Secret primaries the voter not the poll worker chooses the activation in private. In Presidential Primaries it is simply a vote for one for President of an ele+J30cted party in one office and a vote for N for delegates for that President in another office.	Accepted M Ricketts 6/18/2007 Verified v.1.2 (Infinity Poll Worker's Manual) describes the differences in Open, Closed, Secret, and Presidential primaries.
20	6/6/07	C Coggins	Doc Defect	Closed	Election Manageme nt System User Manual v.4.0.0.0	Absentee and provisional paper ballots must be prepared by the election official for the purpose of controlling precincts, splits or partisan ballots. The user documentation does not contain a reference to this step in the process or information about how the jurisdiction acquires information about this process.	v2:2.8 The system operations procedures shall contain all information that is required for the preparation of detailed system operating procedures, and for operator training V2:2.8.5.f The vendor shall provide documentation of system operating proceduresTo support successful ballotcontrol by election officials	Updated Section 6.2 of the User Manual to reflect how you mark the absentee and provisional ballot cards.	Accepted M Ricketts 6/18/2007 Verified v.1.2 (EMS User Manual) includes information for the jurisdiction to manually identify precincts, splits & partisan ballots. The updated 6.2 section of the manual provides further detail about printing & marking the OMR/Absentee ballots.
21	6/6/07	C Coggins	Doc Defect	Closed	Appx F Voting Variations EMS v.1.2 EMS User Manual v.4.0.0.0	Secondary Vote Limit functionality is not fully documented in the TDP. Appendix F addresses the VVSG identified voting variations but does not address Secondary Vote Limits as a supported function. The user manual includes the operation for setting up secondary vote limits but does not provide a definition of when this functionality is used or a reference to a definition elsewhere in the TDP.	v2:2.8 This documentation shall provide all information necessary for system use by all personnel who support pre- election and election preparation with regard to all system functions and operations	Updated Section 3.5 Secondary Vote Limit to describe a situation where a secondary vote limit is used.	Accepted M Ricketts 6/18/2007 Verified v.1.2 (EMS User Manual) includes definition and situation where a secondary vote limit is used.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
22	6/6/07	C Coggins	Doc Defect	Closed	Infinity Poll Workers Manual v.4.0.0.0	Appendix 1 addresses the mobility and the audio ballot mode. It does not address manual dexterity.	v2:2.8.4 The vendor shall provide documentation of system operating features that provide examples of simulated interactions in order to facilitate understanding of the system and its capabilities	Updated poll worker manual to version 1.3 and added information on how to use the infinity panel to address manual dexterity.	Accepted M Ricketts 8/7/2007 Verified v1.3 Infinity Poll Worker's Manual (App U) includes use of the panel with the manual dexterity voting features.
23	6/6/07	C Coggins	Inform ational	Closed	TDP Test Documentat ion	Usability testing performed and test results were not submitted to iBeta in the TDP. The VVSG only requires this information be submitted in the TDP sent to the EAC. There are similar requirements for blindness and dexterity usability testing.	v1:3.2.2.1.a The vendor shall provide conduct summative usability testing on the voting system using partially sighted individuals. The vendor shall document the testing performed and report the test results using the Common Industry Format. This documentation shall be included in the TDP submitted to the EAC for national certification.	Updated test plan to include all test results instead of just dexterity voters. DO0.2TDP-A54 and executed test plan results to DO0.2TDP-A54- E	Accepted M Ricketts 8/7/2007 Vendor submitted a test plan (v0.2 Appendix A54) & executed test plan results (v0.2 Appendix A54-E) addressing dexterity, blind and partially sighted individuals
24	6/6/07	C Coggins	Doc Defect	Closed	Election Manageme nt System User Manual v.4.0.00	The user manual does not specify how a primary presidential delegate nomination should be set up.	v1:2.1.7.2 The Technical Data Package accompanying the system shall specifically identify which of the following items can and cannot be supported by the voting system, as well as how the voting system can implement the items supported: Primary presidential delegate nominations	Updated user manual to describe the differences in primaries: • Open, Closed, Secret and Presidential Primary elections all have an election type of "P - Primary Election" in EMS. Their differences are mostly handled procedurally by poll workers. For example in an Open Primary, In some states a voter has to declare their party affiliation and the poll worker has to pick the activation belonging to that party on the infinity panel for the voter. In Closed primaries only registered party members can vote. In Secret primaries the voter not the poll worker chooses the activation in private. In Presidential Primaries it is simply a vote for one for President of an ele+J30cted party in one office and a vote for N for delegates for that President in another office.	Accepted M Ricketts 6/18/2007 Verified v.1.2 (EMS User Manual) includes description of the differences in primaries, to include information about presidential delegate nominations (Presidential Primaries).
25	5/9/07	M Ricketts	Inform ational	Closed	Section 2.8 System Op Procedures Election	A reference to document 2.11 was added to document 2.8. The trace of the reference is incorrect/unclear as it is listed. The reference addresses Vol. 2, Section 2.8.3.a		Updated document DO1.2TDP-2.8 TO reference the correct vol.2:2.8.3a, 2.8.6a & b.	Accepted M Ricketts 8/7/2007 Verified v1.2 Section 2.8 document updated

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					Manageme nt System, v.1.1	and 2.8.6a & b, but is instead listed under "The following corresponds with Volume II, Section 2.8.7 – Appendices, of the Technical Data Package"			the trace reference of document 2.11 to Vol.2: 2.8.3a & b.
26	6/21/0 7	D Harwood	Doc Defect	Closed	Appendix C COTS SPECIFICA TIONS Election Manageme nt System v.1.0	The Chatsworth Data Corporation central count optical scanners ACP 2200 and the OMR 9002, we're verified as unmodified COTS hardware. In order to exempt unmodified COTS equipment specifications/evidence of equivalent testing to the VVSG must be provided. The COTS manufacturer documentation submitted as part of the TDP did not address VVSG v.1: 4.1.2.5 Electrical Power Disturbance 4.1.2.6 Electrical Fast Transit 4.1.2.7 Lightening Surge 4.1.2.8 Electrostatic Disruption 4.1.2.9 Electromagnetic Emission 4.1.2.10 Electromagnetic Susceptibility 4.1.2.11 Conducted RF Immunity 4.1.2.12 Magnetic Fields Immunity	v2: 4.2.1 Unmodified COTS hardware will not be subject to all tests. Generally such equipment has been designed to rigorous industrial standards and has been in wide use, permitting an evaluation of its performance history. To enable reduced testing of such equipment, vendors shall provide the manufacturer specifications and evidence that the equipment has been tested to the equivalent of these Guidelines.		Accepted D Harwood 3/7/2008 Declaration of Conformity (dated 2/21/2008) was delivered by MicroVote as part of their TDP.
27	7/23/0 7	K Wilson	Doc Defect	Closed	Section 2.6 SYSTEM SECURITY SPECIFICA TION Election Manageme nt System v.1.0	Page 8 "To ensure that the machines have not been tampered with, two types of tamper proof seals are used. A sticker seal is usually present on the Infinity machine itself." The use of the word "usually" contradicts the requirement in the first sentence that two types of seals are needed to prevent tampering.	v1: 2.1.1.d System security is achieved through a combination of technical capabilities and sound administrative practices. To ensure security, all systems shall: Provide safeguards to protect against tampering during system repair, or interventions in system operations, in response to system failure.	Updated document to version DO1.1TDP-2.6 and removed "Usually" from the sentence to not contradict the requirement.	Accepted M Ricketts 8/7/2007 Verified v1.1 Section 2.6 eliminated the contradiction by removing "usually"
28	7/23/0 7	K Wilson	Doc Defect	Closed	Section 2.6 SYSTEM SECURITY SPECIFICA TION Election Manageme nt System v.1.0	The protocol between the EMS and Infinity over the serial port to load ballots into the Infinity is not identified.	v.1: 7.2.2.f Vendors shall provide a detailed description of all system access control measures designed to permit authorized access to the system and prevent unauthorized access, such as: Special Protocols	Updated document to version DO1.1TDP-2.6 and added the below information to describe the protocol between EMS and Infinity: The protocol of this serial port connection between EMS and the Infinity Voting Panel is described as follows: • Interface: RJ45 connector with RS-232 levels and special pin assignments for use with adapters connected to printer or PC, automatic baud rate selection for PC or printer Communication: 1 start bit, 8 data bits, no parity, baud rate = 38K for PC and 9600 for printer, hardware handshake (DTR/DSR) Added documents (directory AppB4_	Accepted K. Wilson 8/13/2007 The vendor submitted as a part of the TDP the document "Infinity Communication Specification Version 1.06" referred to in the document titled "Section 2.6 System Security Specification Election Management System v. 1.0" and "Section 2.5 Software Design and Specification Election Management System v.2.1" which details the special protocol providing authorized access to ballot and tally information between the EMS and the Infinity Voting Panel.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
								Communications_Spec) to Appx B (Carson) to detail communications protocol.	
29	7/23/0 7	K Wilson	Doc Defect	Closed	Section 2.6 SYSTEM SECURITY SPECIFICA TION Election Manageme nt System v.1.0 or EMS User Manual v.4.0.0.0	Neither the EMS specification or user manual address the halt of the system software process upon termination of any critical system process such as system audit	v.1.:2.1.5.2 The system shall also be configured to halt election software processes upon the termination of any critical system process (such as system audit) during the execution of election software	Updated user manual to version D01.5TDP-V to describe procedure in Appendix A "Troubleshooting, Keyboard, Shortcuts (Alt Keys) and pop up messages" to reflect what to do when a database error occurs. Updated section 2.6 to version D01.1TDP-2.6 also with the same procedure.	Accepted M Ricketts 8/7/2007 Verified v1.1 of Section 2.6 included statement indicating the EMS was designed to halt any election processes if a database error occurs. Verified v1.5 EMS User Manual (App V) was updated to include instructions for the user when a database error occurs.
30	7/23/0 7	K Wilson	Doc Defect	Closed	INFINITY FW Func- tional Spec v.3.11 or MicroVote Infinity Poll Worker's Manual v.4.0.0.0	Polling Place manuals do not address measures to enable poll workers to physically protect and perform orderly shutdown of voting equipment to counteract vandalism, civil disobedience, and similar occurrences.	v.1:7.3.1 For polling place operations, vendors shall develop and provide detailed documentation of measures to enable poll workers to physically protect and perform orderly shutdown of voting equipment to counteract vandalism, civil disobedience, and similar occurrences.	Updated poll worker manual to version DO1.3TDP-U with new section to describe emergency procedures in case of civil disobedience, vandalism etc	Accepted M Ricketts 8/7/2007 Verified v1.3 Infinity Poll Worker's Manual (App U) addresses poll workers to protection and orderly shutdown of voting equipment in emergency situations.
31	7/28/0 7	C Coggins	Doc Defect	Closed	Appendix C COTS SPECIFICA TIONS EMS v.1.1	The optional Data Switch COTS Hardware is not identified in the EMS COTS specification. While it is optional hardware, it was used in the test configuration.	v.2: 2.4 The vendor shall expand on the system overview by providing detailed specifications of the hardware components of the system.	Updated Appendix C to version 1.2 and added Serial Switch Box as COTS Hardware.	Accepted D Harwood 10/10/2007 Verified v.1.2 has serial Switch Box added as COTS HW.
32	7/28/0 7	C Coggins	Func Defect	Closed	EMS v.4.0.6.0 Political Parties screen	While the "Straight Party Button Tag" functionality is not available in this release, the field remains active. Users can enter data but it will not initiate functionality.	v.1: 2.1.4.f To ensure system integrity, all systems shall: Protect against any attempt at improper data entry or retrieval.	09/25/2007 Disabled field. (bh)	Accepted D Harwood 10/10/2007 v.4.0.9.0 Verified the Straight Party Button Tag field(s) has been disabled and is no longer an active field.
33	7/28/0 7	C Coggins	Func Defect	Closed	EMS v.4.0.6.0 Activating Vote Cards	When attempting to write a machine only election to the Vote Card an unhandled exception error occurred. Selected "Activate Vote Card" from the menu, during initiation of the screen the following unhandled exception appeared: Specified arrangement was out of the range of valid values. Parameter Name: '1' is not a valid value for index.	v.1: 2.2.2.e "All systems shall provide for the: generation of all required master and distributed copies of the voting program in conformance with the definition of the ballots for each voting device	09/25/2007 Fixed. (bh)	Accepted D Harwood 10/8/07 v.4.0.9.0 Verified vote cards are written for a machine only election.
34	8/29/0 7	gaudette	Func Defect	Closed	Build Witness of Infinity	During the build witness, the "encrypt.exe" was executed but no source code for this executable was delivered for review. 9/10/07 gaudette: Closed by receipt and review of version 2.14 of the C code file. No discrepancies were noted.	v2: 1.8.2.4: The accredited test labshall witness the final system build, encompassing hardware, software, and communications, and the version of associated records		Accepted G. Audette The vendor submitted the source file on 9/6/07 for review. The review was completed

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
							and documentation. v2:6.2.2the certified executable release of the system is built from tested components.		on 9/7/07 with no discrepancies.
35	8/29/0 7	gaudette	Func Defect	Closed	Build Witness of Infinity	During the build witness, "nfupdater100.exe" was executed but no source code for this executable was delivered for review. 9/10/07 gaudette: Closed by receipt and review of version 1.0.0 of the VB 6.0 code files. No discrepancies were noted.	v2: 1.8.2.4: The accredited test labshall witness the final system build, encompassing hardware, software, and communications, and the version of associated records and documentation. v2: 6.2.2the certified executable release of the system is built from tested components.		Accepted G. Audette 9/7/07 The vendor submitted the source file on 9/6/07 for review. The review was completed on 9/7/07 with no discrepancies.
36	8/31/0 7	C Coggins	Func Defect	Closed	EMS v.4.0.8.1 Utilities: Copying an Election Database	EMS does not permit the user to make a copy of the database from a database copy. An error message appears stating that a database error has been detected and to call Technical Support. A window provides detail of the error but it does not clearly state the action the operator needs to perform to resolve the error.	v1: 2.1.5.1.b.i All error messages requiring intervention by an operator shall be displayed in easily understood language text v1: 2.1.5.1.b.v The message cue for all voting systems shall clearly state the action to be performed in the event that voter or operator response is required.	09/25/2007 Fixed. (bh)	Accepted D Harwood 10/02/2007 v4.0.9.0 Verified the ability to copy an election database and then make copy of the copied database; the database opens and functions as expected.
37	9/4/07	D Harwood	Inform ational	Closed	EMS v.4.0.8.1 Utilities: Copying an Election Database	The "Copy To" dialogue box generated from the "Database Utilities- Copy" tab does not permit the user to cancel or exit the copy operation. The user is forced to make a copy. That copy can then be deleted.		09/25/2007 Added Cancel. (bh)	Accepted D Harwood 10/02/2007 v4.0.9.0 Verified the cancel button was added.
38	9/5/07	C Coggins	Func Defect	Closed	EMS v.4.0.8.0 Installation Database- Administrati on: General Preferences screen	While the "Straight Party Button Crossover" functionality is not available in this release, the field remains active. Users can enter data but it will not initiate functionality.	v.1: 2.1.4.f To ensure system integrity, all systems shall: Protect against any attempt at improper data entry or retrieval.	009/25/2007 Straight Party Button Crossover is available in this release and functions properly. (bh)	Accepted D Harwood 9/28/2007 Straight Party Cross Over Functionality is active within the current release, opened #78 documentation states that this functionality is not active in the current release.
39	9/5/07	C Coggins	Doc Defect	Closed	Appendix V Election Manageme nt System User Manual v1.6	<i>Pg</i> 19 Table 2.1.1 The Jurisdiction field accepts a maximum of 32 characters, the manual states 50.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Updated User Manual (Appendix V) to version 1.7 and corrected that Jurisdiction accepts maximum of 32 characters.	Accept D Harwood 10/10/2007 Verified v.1.7 table 2.11 indicates that the jurisdiction field has been updated to a max of 32 characters.
40	9/5/07	C Coggins	Doc Defect	Closed	Appendix V EMS User Manual v1.6	Pg 19 Table 2.1.1 - No Vote text is supported in 4.0.8.0 . The manual states "Not supported in our current release".	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.		Accepted D Harwood 10/26/2007 Verified v.1.7 table 2.11 indicates that the No Vote text is supported.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
41	9/5/07	C Coggins	Inform ational	Closed	EMS v.4.0.8.0 Installation Database- Administrati on: Political Parties screen	The display of the parties could not be resequenced. Tester attempted to drag and drop a selected party to a new sequence location. The following warning was generated. "Resequence failed" Selection of OK displayed the following "@seqOne is not a parameter for procedure sp_sequence_ party". (This does not impact ballot layout.)		Fixed. (dr)	Accepted D Harwood 10/3/2007 v4.0.9.0 Verified Party resequence permits drag and drop to desired locations.
42	9/5/07	C Coggins	Func Defect	Closed	EMS v.4.0.8.0 Security - Password Change	Non-supervisor users must enter the EMS with a blank password. Testers created an "Open Other Elections" user. Signed on as the new user and attempted to set the password. Testers entered matched password. (a minimum of 6 characters with at least 1 number) - Warning dialogue generated: "A database error was detected while attempting to log error message. Please call MicroVote Tech Support". - Click OK: EMS dialogue: "Only member of the SysAdmin Role can use the loginname option. The password was not changed" - Click OK: Successful dialogue: "Password changed. Application must be restarted before changes." - Restarted EMS & login with the matched password; EMS dialogue: "Login to EMS failed. Please try again." - Click OK; login with blank password: user gained access to EMS with all permitted functions. Testers verified this was repeated with "Modify Ballot" role but not the "Supervisory" role. (Initial instance of the error occurred after entering 3 password mismatches followed by a valid password.) Rejected D Harwood/M Ricketts 10/02/2007 v4.0.9.0 Behavior outlined above is still observed. A non supervisory user is unable to set a password and is forced to use a blank password.	v.1: 2.1.1.a To ensure security all systems shall: Provide security access controls that limit or detect access to critical system components to guard against loss of system integrity	09/25/2007 Fixed. (bh), 10/31 Was not able to duplicate issue description on our system. (TWB)	Rejected D Harwood/M Ricketts 10/02/2007 v4.0.9.0 Accepted D Harwood 11/6/2007 v.4.0.11.0 Verified that a user without supervisor privileges can create a password and log into EMS with the created password.
43	9/6/07	gaudette	Doc Defect	Closed	Appendix Y - Build and Installation Instructions Election Manageme nt System v.1.3	In Section 2.0 Step 5, the instruction to 'Execute SQL scripts. [EMS400.sql, model400.sql] was followed during the witness build but the step does not indicate where or how to execute the SQL. In addition, the model400.sql file has been replaced by six files so the reference is now incorrect.	v2: 9.7.1.b For the PCA, a vendor shall provide: a. Identification of all items that are to be a part of the software release Specification of compiler (or choice of compilers) to be used to generate executable programs.		Accepted G. Audette 10/29/07 v.1.6 verified corrected in 'Setup EMS Databases' on page 28 of 49
44	9/7/07	C Coggins	Func Defect	Closed	EMS v.4.0.8.0 Installation	The audit log is not available to view in the Installation Database mode.	v.1: 2.1.5.1.a.iv The audit record shall be active whenever the system is in an operating mode.	09/25/2007 Audit log now functions in Installation Database mode. (bh)	Accepted D Harwood/M Ricketts 10/02/2007 v4.0.9.0
#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
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					Database		This record shall be available at all times, though it need not be continually visible.		Verified the Audit Log can be viewed in the Installation and Election Modes.
45	9/7/07	C Coggins	Func Defect	Closed	EMS v.4.0.8.0 System Audit - Recording Login	The successful and unsuccessful attempts to log into the EMS and operating system are not recorded in the system audit. D Harwood 10/02/2007 v4.0.9.0 Rejected - Failed login attempts are not recorded or are recorded as successful logins. K Wilson 10/29/07 v.4.0.9.0 Rejected Re-tested with TurnOnAudit.reg set. Unsuccessful attempts are logged but the procedure to run TurnOnAudit.reg precedes the installation of the database. When the database installation is performed it overwrites or ignores the setting done with the .reg file.	v.1: 2.1.5.2operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations and for the alteration or deletion of any memory or file object.	Completed. (dr) bhirsch 10/31/07 v.4.0.10.0 When TurnOnAudit.reg is executed in correct order according to current instructions failed login attempts are recorded in the Windows Application Event log. Updated Installation Instructions to Version 1.8.	Accepted D Harwood 11/6/2007 v.4.0.11.0 Verified unsuccessful EMS application logins are logged in the system Event Viewer.
46	9/7/07	C Coggins	Doc Defect	Closed	Appendix V EMS User Manual v1.6	Pg 59 Table 3.2.1 The Election Title field accepts alpha-numeric and spaces. It does not accept special characters, as stated in the manual.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Updated User Manual (Appendix V) to version 1.7. Updated Election Title description to show that special characters are not allowed.	Accepted D Harwood 10/10/2007 Verified v1.7 table 3.2.1 shows that special characters are not allowed.
47	9/7/07	C Coggins	Doc Defect	Closed	Appendix V EMS User Manual v1.6	Pg 66 Table 3.3.2 The manual states the Non-Partisan option is automatically selected on a General Election. The application does not show Non-partisan automatically selected in a General Election. D Harwood 10/02/2007 v4.0.9.0 Rejected as this is a Doc Defect. Removing the check box from the application form does not address the defect.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Non-Partisan checkbox removed. Not used. (dr)	Accepted - C Coggins 10/29/07 v.1.7 Table 3.3.2 verified reference to Non-Partisan is removed. Rejected-D Harwood 10/02/2007 v4.0.9.0
48	9/8/07	C Coggins	Doc Defect	Closed	Appendix V Election Manageme nt System User Manual v1.6	Pg 66 Table 3.3.2 Selecting 'Build Defaults' populates the "Phonetic" field with the "Office Title, Subtitle 1 & 2". The manual indicates that only "Office Title" data is used to populate this field. Additionally the manual indicates the "Phonetic" field has a maximum of 80 characters which is less than the 3 field maximums. (Validated maximum populated data appears correctly. The "Phonetic" field limit exceeds 180 characters.)	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Updated Appendix V (User Manual) to version 1.7 to say Clicking this button automatically populate the Report Name, Tally Name, and Phonetics to be the same as the Office Title, Sub Title 1 and Sub Title 2. Also corrected the field limit on the Phonetic field to be 256.	Accepted D Harwood 10/11/2007 Verified v1.7 table 3.3.2, states "Clicking this button automa- tically populates Report Name, Tally Name, & Phonetics to be the same as Office Title, Sub Title 1 & Sub Title 2". Phonetic field - 256 character limit
49	9/8/07	C Coggins	Inform ational	Closed	EMS v.4.0.8.0 Office - Office Report Sequence	Users cannot properly resequence the Office Report. Resequencing the list moves two offices instead of one. When attempting to select a single office to drag and drop, the application grabs 2 offices. When the action is to move the office up in the list, the office above the		09/25/2007 Fixed. (bh)	Accepted D Harwood 10/03/2007 v4.0.9.0 Verified Office resequence permits drag and drop to desired locations.

Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					selected office is also moved. If the action is to move down the list, the office below the selected office is moved.			
9/8/07	C Coggins	Func Defect	Closed	EMS v.4.0.8.0 Office Add New Record- Nonpartisan field	The "Non-partisan" setting is incorrectly saved on the "Office Add New Record". On the "Office Add New Record" if the "Non-partisan" field is unchecked and "Build Defaults" is selected, the "Non- partisan" field is checked at the save.	v.1: 2.2.1.1.b.i All systems shall be capable of: collecting and maintaining offices and their associated labels and instructions.	Non-Partisan checkbox removed. Not used. (dr)	Accepted D Harwood 10/02/2007 v4.0.9.0 Verified the Non Partisan Check box has been removed from the 'Office Add New Record'.
9/8/07	C Coggins	Func Defect	Closed	EMS v.4.0.8.0 Office Modify Record- Non- partisan field	The "Non-partisan" setting is incorrectly saved on the "Office Modify Record". On the "Office Modify Record" if a previously saved record with the "Non- partisan" field checked is edited with a change to the "Report Name", "Tally Name" or "Phonetic" fields (manually or through "Build Defaults") the "Non-partisan" field is unchecked at the save.	v.1: 2.2.1.1.b.i All systems shall be capable of: collecting and maintaining offices and their associated labels and instructions.	Non-Partisan checkbox removed. Not used. (dr)	Accepted D Harwood/ 10/02/2007 v4.0.9.0 Verified that the Non Partisan Check box has been removed from the 'Office Modify Record'.
9/10/07	M Ricketts	Doc Defect	Closed	Appendix V EMS User Manual v1.6	Programming Vote Cards and Reading Vote Cards pg 98 and 99 screenshot text for the Activation field (01 All Voters) does not match the text in the application (00-All Activations)	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Updated User Manual (Appendix V) to version 1.7 with correct screen shot.	Accepted D Harwood 10/11/2007 verified v1.7 screen shots match the Activate Vote Cards screen on the application.
9/10/07	M Ricketts	Doc Defect	Closed	Appendix V EMS User Manual v1.6	Table 5.1.1 ( pg 100) Definitions Table of Activate Vote Card Screen. The description does not provide complete definitions of the "00-All Precincts" and "00-All Activations" and how selection of these settings impacts the information written to the cards.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Updated User Manual (Appendix V) to version 1.7 with correct screen shot.	Accepted D Harwood 10/11/2007 verified v1.7 Activate Vote Cards Definitions Table 5.1.1a correctly describes 00-All- Precincts & 00-All- Activations.
9/10/07	M Ricketts	Func Defect	Closed	EMS v.4.0.8.0 System Audit Log	The following activities were not recorded in the audit log: - Successful login and log off to the EMS - An abnormal shut down or relaunch after an abnormal shut down or relaunch after an abnormal shut down of EMS - Successful and unsuccessful writing or reading of vote cards in the Programming mode including Card errors such as unknown error from the card reader, check connection and card type is not supported from the utility on 9/12/2007 D Harwood added: - Successful reading and read errors of the Absentee Ballot with the OMR - Manual Vote entry procedures (documenting results that cannot be entered via the OMR, Tally Card or Infinity connection.) - All Report Generation -Audit Log did not log "Clear Votes"	v.1:2.1.4.g To ensure system integrity, all systems shall: Record and report the date and time of normal and abnormal events	Fixed. (bh)	Accepted D Harwood/M Ricketts 10/8/2007 v4.0.9.0 Verified in regression test of General 1 that all identified audit items were logged
	9/8/07 9/8/07 9/8/07 9/10/07 9/10/07 9/10/07	DateTester9/8/07C Coggins9/8/07C Coggins9/10/07M Ricketts9/10/07M Ricketts9/10/07M Ricketts9/10/07M Ricketts	DateTesterType9/8/07C CogginsFunc Defect9/8/07C CogginsFunc Defect9/10/07M RickettsDoc Defect9/10/07M RickettsDoc Defect9/10/07M RickettsDoc Defect9/10/07M RickettsDoc Defect9/10/07M RickettsDoc Defect9/10/07M RickettsDoc Defect9/10/07M RickettsDoc Defect	DateTesterTypeStatus9/8/07C CogginsFunc DefectClosed9/8/07C CogginsFunc DefectClosed9/10/07M RickettsDoc DefectClosed9/10/07M RickettsDoc DefectClosed9/10/07M RickettsDoc DefectClosed9/10/07M RickettsDoc DefectClosed9/10/07M RickettsDoc DefectClosed9/10/07M RickettsFunc DefectClosed	DateTesterTypeStatusLocation9/8/07C CogginsFunc DefectClosed ClosedEMS v.4.0.8.0 Office Add New Record- Nonpartisan field9/8/07C CogginsFunc DefectClosed DefectEMS v.4.0.8.0 Office Modify Record- Non- partisan field9/8/07C CogginsFunc DefectClosed ClosedEMS v.4.0.8.0 Office Modify Record- Non- partisan field9/10/07M RickettsDoc DefectClosed ClosedAppendix V EMS User Manual v1.69/10/07M RickettsDoc DefectClosed ClosedAppendix V EMS User Manual v1.69/10/07M RickettsFunc DefectClosed Appendix V EMS User Manual v1.69/10/07M RickettsFunc DefectClosed Closed9/10/07M RickettsFunc DefectClosed Appendix V EMS User Manual v1.6	Date         Lester         Type         Status         Location         Issue Description           9/8/07         C         Func         Closed         EMS         selected office is also moved. If the action is to move down the ist. the office below the selected office is moved.           9/8/07         C         Defect         Closed         EMS         The "Non-partisan" field is checked and "Build Defaults" is selected, the "Non-partisan" field is checked at the save.           9/8/07         C         Coggins         Func         Closed         EMS         On the "Office Add New Record".           9/8/07         C         Goggins         Func         Closed         EMS         On the "Office Add New Record".           9/8/07         C         Goggins         Func         Closed         EMS         On the "Office Add New Record".           9/8/07         C         Goggins         Func         Closed         Modity         Saved on the "Office Modify Record".           9/8/07         M         Defect         Closed         Appendix V         The "Non-partisan" field is unchecked at the save.           9/10/07         M         Ricketts         Doc         Closed         Appendix V         Providuation field (D14) Voters) does not provide cards and Readity of the texts in the application (00-All Activation)         Providuatiton f	Date         Tester         Type         Status         Location         teste Description         Statusd- Requirement           9807         C         Func         Closed         EMS         selected office is also moved if the action is to move down the list, the office below         v1:2.2.1.1.b.1 All systems shall be capable of collecting and massociated labels and instructions.           9/807         C         Euro         Closed         EMS         The "Non-partisan" field is unchecked and "Non-partisan" field is checked at the save.         v1:2.2.1.1.b.1 All systems shall be capable of collecting and massociated labels and instructions.           9/807         C         Func         Closed         EMS         The "Non-partisan" field is unchecked at the save on the "Office hod/ly Record" if a previously saved record with the "Non- partisan" field is elected with a save.         v1:2.2.1.1.b.1 All systems shall be capable of collecting and mastructions.           9/10/07         M         Doc Rickets         Doc Defect         Closed         Appendix V Portomity The Cards and Reading v1.6         v2:0.7.b The functional confloce and power partisan" field is unchecked at the save.         v2:0.7.b The functional confloce and power partisan" field is unchecked at the save.           9/10/07         M Ricketts         Doc Ricketts         Closed         Appendix V Portomark the text in the application (00-All v1.6         v2:0.7.b The functional configuration	Date         Tester         Type         Status         Cocardon         Tester         Type         Status         Cocardon         Tester         Status         Cocardon         Cocardon

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
						operation			
55	9/10/07	M Ricketts	Func Defect	Closed	EMS v.4.0.8.0 Activate Vote Cards	In the "Activate Vote Cards" no error message is generated when a user attempts to write to a "Start" or "Tally" card instead of the "Vote" card. If a users attempts to write to a "Start" or "Tally" card the system status refreshes and displays "Ready", the same status that appears when a "Vote" card is successfully written.	v.1:2.1.5.1.b.i All voting systems shall meet the requirements for error messages below. The voting system shall generate, store, and report to the user all error messages as they occur.	Fixed. (bh)	Accepted D Harwood/M Ricketts 10/4/2007 v4.0.9.0 Verified an error message is generated when a user attempts to write to a "Start" or "Tally" card instead of the "Vote" card.
56	9/10/07	C Coggins	Func Defect	Closed	EMS v.4.0.8.0 Writing to Vote Cards	Status for the successful writing of a "Vote" cards is unclear. The system ready to write and successful completion of the write function are the same status ("Ready"). While the systems goes through other statuses during the write process they cannot be read by the user and there is no clear indicator of the "card successfully written" status.	v.1:2.1.5.1.c The voting system shall display and report critical status messages using clear indicators or English language text.	Fixed. (dr)	Accepted D Harwood/M Ricketts 10/4/2007 v4.0.9.0 Verified the status for the successful writing of a "Vote" card is clear. Observed: "Writing Data to card", "Data Written to Card", & "Ready".
57	9/10/07	C Coggins	Doc Defect	Closed	Appendix V Election Manageme nt System User Manual v1.6	Programming Vote N Card pg 100 &102 screenshots & pg 102 Table 5.1.1 do not address the Vote Type field which is displayed on the Vote Card Screen (Card Type: Vote N Card) in the application	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Updated User Manual (Appendix V) to version 1.7 updated table 5.1.1 with Vote Type and screenshot to have Vote Type.	Accepted D Harwood 10/11/07 verified v1.7 Activate Vote Cards Definitions Table 5.1.1b and the Note below describes the Vote N card and it's purpose.
58	9/10/07	C Coggins	Inform ational	Closed	Appendix V EMS User Manual v1.6	Pg 100 & 102 The name and number of the tables are duplicated.		Updated User Manual (Appendix V) to version 1.7 and changed names of table so they are not duplicated to: 5.1.1a Definitions Table of Activate Vote Cards Screen and 5.1.1b Definitions Table of Activate Vote N Cards Screen	Accepted D Harwood 10/11/2007 verified v1.7 Activate Vote Cards Definitions Tables are now named 5.1.1a and 5.1.1b.
59	9/10/07	C Coggins	Doc Defect	Closed	Appendix V EMS User Manual v1.6	Infinity Programming pg 109 step 8 states " A check mark appears on the connect button. The Reset and Begin buttons are inactive until connection is complete. " The check mark is displayed and the Begin button remains inactive but the Reset button becomes active.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	The statement is accurate. The Reset and Begin buttons are inactive until connection is complete. Once the connection is complete, as indicated by a check mark appearing on the connect button, the button states of one of the controls changes (the Reset button becomes active). The statement never claimed the condition of the other two buttons once connection was complete, only their condition prior to the	Accepted D Harwood/M Ricketts 10/02/2007 v4.0.9.0 Tester error; verified functions as designed.
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#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
								connection being complete. (bh)	
60	9/10/07	C Coggins	Func Defect	Closed	EMS v.4.0.8.0 Security- Deleting the Election Database	Users, with read only permissions in the EMS application can delete an election database through the operating system file structure. D Harwood 10/16/07 Rejected Verified all users can delete an election database through the operating system file structure. C Coggins10/29/07 Clarification note: When the file was deleted the election database could not be accessed.	v.1: 2.1.1.a To ensure security, all systems shall: provide security access controls that limit or detect access to critical system components to guard against loss of system integrity, availability	Fixed. (bh) bhirsch 10/31/07 v4.0.10.0 Instructions have been modified to prevent delete permissions from being added to the C:\EMS\DATA subdirectory.	Accepted D Harwood/ M Ricketts 11/6/2007 v.4.0.11.0 Verified users with EMS read only permissions can't delete an election database through the operating system file structure. Users receive an "access denied" error message.
61	9/11/07	M Ricketts	Doc Defect	Closed	Appendix V EMS User Manual v1.6	Pg 53-54, the Precinct Report does not identify the function of the Ballots Generated column.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Fixed. (dr)	Accepted - C Coggins 10/29/07 v.1.7 verified Precinct Report identifies the Ballots Generated column
62	9/11/07	M Ricketts	Func Defect	Closed	EMS v.4.0.8.0 Equipment screen and Infinity Panel Firmware version	The Infinity Panel EMS Equipment record can list a firmware version that is inconsistent with the version loaded on the panel. The version of the Infinity firmware is a required field on the Equipment page but there does not appear to be a validation of the integrity of this data. The firmware version listed in the EMS and the panel remains inconsistent after the election installation process of connecting the panel to the EMS. In this process the Equipment Assignment page updates to reflect the correct panel serial number and programming of the election.	v.1: 2.1.4.f To ensure system integrity, all systems shall: Protect against any attempt at improper data entry	Fixed. (dr) 10/4/07 Damon: After connecting and resetting an Infinity Panel but before actually programming the panel with the election, the system extracts the connected panel's firmware version as well as the serial number and 1) Looks at the equipment table to see if the serial numbers and firmware versions match. 2) If there is no equipment listed, it checks all listed firmware versions in the firmware table'.	AcceptedD Harwood/ M Ricketts 10/4/2007 EMS v.4.0.9.0 1) Verified an Infinity Voting Panel with a firmware version listed in the firmware table successfully updated the EMS Equipment & Assigned Equipment Screens Installation of the ballot was permitted. (s/n 3627 build 9.41 v.3.11) 2) Verified an Infinity Voting Panel with a firmware version not listed in firmware table generated a mismatch error and did not permit installation of the ballot (s/n 3630, v. 3.10)
63	9/11/07	M Ricketts	Doc Defect	Closed	Appendix V Election Manageme nt System User Manual v1.6	The fields and outputs of the General Preferences and Vote Type report screenshots in the EMS User Manual do not match the reports Pg 47-General Preferences Report, the screenshot is missing the Time Zone, Allow Blank Ballot and Card Type (OMR). The screen shot displays Running mate Stacking. This is not displayed on the report. Pg 50-Vote Type Report, the screenshot displays an "X" in the required to complete column, the report displays "True or False". Verbiage in the manual is does reflect the actual report detail.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Updated User Manual (Appendix V) to version 1.7 to reflect the correct screen shots for the General Preferences Report and the Vote Type Report.	Rejected D Harwood 10/11/07 (incomplete) Accepted D Harwood - 10/24/2007 verified v.1.7 all items have been corrected in screen shot

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
						D Harwood 10/11/2007 Partial Accepted - verified v1.7 correctly lists Time Zone, Blank Ballots and OMR Card Type in the General Preferences Report screenshot; verified vote Type Report screenshot displays "True or False". Rejected - The screen shot of the report still displays Running Mate Stacking.			
64	9/11/07	M Ricketts	Func Defect	Closed	Infinity v.9.61 Cast a Blank Ballot	A Blank Ballot cannot be cast. In order to cast a ballot the red "Cast Vote Button" must be active. The button is not active until at least one candidate is selected.	v.1: 2.3.3.3.c DRE systems shall: Allow the voter to select his or her preferences on the ballot in any legal number and combination		Accepted D Harwood 10/11/2007 v.9.62 Verified a blank ballot can be cast
65	9/12/07	D Harwood	Doc Defect	Closed	Appendix V Election Manageme nt System User Manual v1.6	Pg 118, Section 6.2.1 (Reading OMR Ballot Cards) and Pg 120, section 6.3.1 (Reading Tally Cards) do not advise the user to print the Election Summary or provide a reference to section 6.6 (Election Summary), to show evidence of "Zero" votes in the EMS system prior to inputting vote data.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Added section to User Manual (Appendix V) to version 1.7 to describe Suggested Election Day Procedures that detail times to print out reports etc	Accepted D Harwood 10/11/2007 Verified in v.1.7 "Operating Procedures with Suggested Elec- tion Day Procedures" address verifying zero totals.
66	9/13/07	D Harwood	Doc Defect	Closed	Appendix U MicroVote Infinity Poll workers Manual v1.3	The manual provides no information about access or decoding the "Vote Record Report" (Ballot Image report).	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	I have removed info about the 9002 in appendix Z and have changed Appendix Z to "Machine Technician Manual. I have updated Appendix C to reflect this change also. The 9002 is no longer part of our equipment. This manual has steps on decoding the vote records report. I've also referenced this manual in the User Manual.	Accepted M Ricketts 10/11/07 Verified information about accessing or decoding the "Vote Record Report" was included in the new document Appendix Z v.0.1. Verified Appendix Z is referenced in the EMS User Manual v.1.7 (Appendix V)
67	9/13/07	D Harwood	Doc Defect	Closed	Appendix B1 Infinity Voting Panel Technical Reference Manual v.3.11 DO0.2TDP- B1	The manual identifies the "Vote Record Report" (Ballot Image report) but provides no information about decoding the report or a reference to the location of this information.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Now Appendix Z, See above.	Accepted M Ricketts 10/11/07 Verified information about decoding the "Vote Record Report" was included in the new document Appendix Z v.0.1 Verified Appendix Z is referenced in the EMS User Manual v.1.7 (Appendix V).
68	9/13/07	C Coggins	Func Defect	Closed	EMS v.4.0.8.0 Audit Log Detail Report	The Audit Log Detail Report is cumbersome and difficult to read. Entries are written in programming language and do not provide information in a format that would support use in the event of litigation.	v.1: 2.1.5 Election audit trails provide the supporting documentation for verifying the accuracy of reported election results. Theyare essential for public confidence in the accuracy of the tally, for	Fixed. (bh)	Accepted C Coggins 10/8/07 v.4.0.9.0 Verified audit log entries are written in language more accessible to non-
raye	17901211						(V)2000-20JUN-001(D)		

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
							recounts, and for evidence in the event of criminal or civil litigation.		technical staff.
69	9/14/07	M Ricketts	Doc Defect	Closed	TDP: Appendix Y - Build and Installation Instructions Election Manageme nt System v.1.3	An update to Section 3 (Infinity Build Instructions) of Appendix Y was provide on the build platform. This document contains additional information regarding the build process that is not in version 1.3 submitted by MicroVote General Corp.	v. 1: 9.1.3 Requirements of configuration management apply to all components of voting systems These components include: documentation	Added EMS Installation Instructions to Appendix Y version 1.4	Accepted M Ricketts 10/11/07 Verified the update to Section 3, Appendix Y v.1.3 (Infinity Build instructions) provided on the build platform was added to v.1.4 Appendix Y.
70	9/20/07	M Ricketts	Inform ational	Closed	EMS v.4.0.8.0 Create and Edit Ballots	<ul> <li>A Referendum can be placed on the ballot without having referendum text attached.</li> <li>A Referendum (Office) can be created without attaching the referendum text. EMS does not issue an error when the user places this Referendum on the ballot.</li> <li>10/8/07 C Coggins - The reference to v.1: 2.2.1.2.b is removed. The issue is being restated as an Informational issue.</li> <li>A Referendum (Office) can be created without attaching referendum text. EMS does not issue a warning when the user places this Referendum to the ballot.</li> </ul>		Blank referendum text can be used as a placeholder on the ballot and is allowed by design. (bh)	Accepted C Coggins 10/8/07 v.4.0.9.0 Verified functions as designed. Changed Type to Informational from Functional Defect as it is appropriate to permit a user to have a place holder.
71	9/20/07	M Ricketts	Func Defect	Closed	EMS v.4.0.8.0 Create and Edit Ballots- Infinity	When the Office Title and Referendum text exceeds a single Infinity ballot page, page 2 text is not displayed. An Infinity Referendum where the Office Title and referendum text exceeds a single page (30 button positions), the Referendum text is not displayed on the second page. The second page allots space for the (blank button positions) before inserting the Yes/No voting positions.	v.1:2.2.1.2.b All voting systems shall provide a capability for: rapid and error-free definition of elections and their associated ballot layouts	bhirsch 10/31/07 v4.0.10.0 Referendum and Ballot Text exceeding a single page will correctly format and display on successive pages.	Accepted M Ricketts/D Harwood 11/8/07 v.4.0.11.0 Confirmed Office Title and Referendum text exceeding a single page display correctly In the EMS and on the Infinity Panel.
72	9/20/07	M Ricketts	Func Defect	Closed	EMS v.4.0.8.0 Create and Edit Ballots- Absentee	When the Office Title and Referendum text exceeds a single Absentee ballot column (20 rows), row 21-23 text is repeated after the Yes/No voting positions On an Absentee Referendum where the Office Title and referendum text exceeds a single column (20 rows), the text spreads across the two columns, but the complete text is not displayed. It is unclear if the full referendum text is being cut off or if the Yes/No voting positions are laid over the text. After the Yes/No voting positions text from row 21 to 23 is repeated.	v.1: 2.2.1.2.b All voting systems shall provide a capability for: rapid and error-free definition of elections and their associated ballot layouts	bhirsch 10/31/07 v4.0.10.0 Referendum and Ballot Text exceeding a single page will correctly format and display on successive pages.	Accepted M Ricketts/D Harwood 11/8/07 v.4.0.11.0 Confirmed when the Office Title and Referendum text exceeds a single Absentee ballot column (20 rows), the complete text is displayed.
73	9/20/07	M Ricketts	Doc Defect	Closed	Appendix V EMS User Manual	Section 3.3.4 Creating a Referendum: The EMS User Manual does not indicate any limitations for the size of the ballot text for a	v.2: 6.7.b The functional configurationshall use and verify the accuracy and	Tbehler 10/31/2007 Ballot Text Size is limited by other restrictions in the	Accepted M Ricketts 11/13/200 This documentation

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					v1.6	referendum.	completeness of the systems operations manuals.	system such as the maximum number of positions on a ballot that can occur.	discrepancy was written due to Func- tional Defect #72. Regression testing of #72 confirmed that there is no limit on ballot text for a referendum.
74	9/21/07	C Coggins	Doc Defect	Closed	Section 2.2 SYSTEM OVERVIEW Election Manageme nt System v.1.3	The Security Specification identifies the EMS ballot preparation and central count hardware using a central EMS computer or networked to an EMS server. The EMS hardware specification indicates the system configuration is identified in the System Overview. The description of the hardware configuration can be interpreted as a stand alone system or network but it does not clearly indicate the recommended configuration of the system to protect against network or Internet attacks.	v.1: 7.4.2 Voting systems shall deploy protection against the many forms of threats to which they may be exposed such as file and macro viruses, worms, Trojan horses, and logic bombs. Vendors shall develop and document the procedures to be followed to ensure that such protection is maintained in a current status.	Changed the System Overview 2.2 to version 1.4 to say :The EMS software does not interface with external systems. The computer EMS is installed on should not be connected to the internet or used for any purposes other than running the EMS software."	Accepted M Ricketts 10/11/07 Verified document Section 2.2 v. 1.4 was updated to include language which clearly indicates the recommended configuration of the system, to protect against network or Internet attacks.
75	9/25/07	D Harwood	Func Defect	Closed	Infinity v.9.61 Polling Place Infinity/Dou bleTalk/Hea dphones	The voting machine shall set the initial volume for each voter between 40 and 50 dB SPL. Although the Infinity Voting Panel resets to a default value after each voter, the DoubleTalk Unit and the Adjustable headphones do not. This allows the Voting system as a whole not to default to a value between 40 and 50 dbl SPL. With the DoubleTalk volume set to it's highest level and with the adjustable headphones set to their highest level, the 'system' resets at 57 dbl as defined in the 'step 38' tab within the Characteristics test case.	v.1 3.2.2.2.c.v - The accessible voting station shall be accessible to voters who are blind c. All voting stations that provide audio presentation of the ballot shall conform to the following requirements: v. The voting machine shall set the initial volume for each voter between 40 and 50 dB SPL.	bhirsch 10/31/07 v4.0.10.0 The unmodified COTS DoubleTalk unit's dynamic range has been increased to allow for a wider number of volume settings through software commands alone.	Accepted M Ricketts and D Harwood 11/12/2007 v.9.62 Verified the voting machine resents within the acceptable range
76	9/25/07	D Harwood	Func Defect	Closed	Infinity v.9.61 Polling Place Infinity/Dou bleTalk	The System does not allow the voter using the DoubleTalk to pause and resume the audio presentation.	<ul> <li>v.1 3.2.2.2.c.v - The accessible voting station shall be accessible to voters who are blind</li> <li>b. The accessible voting station shall provide an audio-tactile interface (ATI) that supports the full functionality of the visual ballot interface, as specified in Subsection 2.3.3.</li> <li>iii. The ATI shall allow the voter to pause and resume the audio presentation.</li> </ul>	bhirsch 10/31/07 v4.0.10.0 The system now will pause and resume the audio presentation. Instead of going back to the beginning of the text, when resumed the system will begin speaking at the beginning of the current sentence.	Accepted M Ricketts/D Harwood 11/8/07 v.9.62 Confirmed that the voting system permits the voter to pause and resume the audio presentation.
77 Расе	9/25/07	D Harwood	Doc Defect	Closed	Appendix U MicroVote Infinity Poll workers Manual v1.3	The Voting system documentation provides no information on a procedure to provide sanitized headphones to voters.	v.1 3.2.2.2.c.iv - The accessible voting station shall be accessible to voters who are blind C. All voting stations that provide audio presentation of the ballot shall conform to the following requirements: iv. A sanitized headphone or handset shall be made available	Update Appendix U to version 1.5. Added the following to instructions on using the double talk device: "Next we recommend that you use a common generic disposable ear covers on the headphones for each voter. This will provide	Accepted M Ricketts 10/11/2007 Verified Appendix U v.1.4 was updated to provide information on providing sanitized headphones to voters.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
							to each voter.	sanitized headphones for each voter."	
78	9/28/07	D Harwood	Doc Defect	Closed	Appendix V EMS User Manual v1.6	Per discrepancy #38 - Auto Straight Party Cross Over functionality is active in the current release. Page 20 table 2.1.1 of The Election Management System User Manual states "this specific type of straight party functionality is not available in this release".	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.		Accepted D Harwood 10/25/2007 Verified v.1.7 correctly describes available functionality.
79	10/4/07	C Coggins	Func Defect	Closed	EMS v. 4.0.9.0 DRE Opening the Polls - Internal Test	An election can be opened on the Infinity Voting Panel without the running of the zero count report and the readiness of the equipment test to confirm that the device is ready to be activated The Infinity Voting Panel does not require a poll worker to verify the readiness of the equipment or that there are no votes on the system prior to permitting the polls to be opened.	v.1: 2.3.1.1 To allow voting devices to be activated for voting, all precinct count systems shall provide: a. An internal test to verify that all of the polling place tests specified in Subsection 2.2.5 have been successfully completed b. Automatic disabling of any device that has not been tested until it has been tested v.1: 2.2.5 To prepare voting devices to accept voted ballots, all voting systems shall provide the capability to test each device prior to opening to verify that each is operating correctly. At a minimum, the tests shall include: h. Confirmation that there are no hardware or software failures i. Confirmation that the device is ready to be activated for accepting votes	bhirsch 10/31/07 The Infinity Voting Panel runs a series of software & hardware tests during boot. If any of these tests fail the panel will display an error. If they succeed the panel will display a READY status screen. At this point the poll worker can run any of the optional diagnostic tests which include the Check Buttons, Check Display, and Show Ballot tests. If the poll worker attempts to then start the election prior to printing a mandatory zero proof report the system will prompt them to do so and not allow the election to be started. Once the system has passed the startup diagnostics and the zero proof report is successfully run and the worker has confirmed its validity, the system will allow the poll worker to begin the process of starting the election by pressing the Start Election button. An election start confirmation page will then be displayed to the worker. When the poll worker presses the key to then start the election a final status page is displayed showing the panel in the Voting Enabled mode, along with the words "Election Started" and the date and time. At any time during the election the poll worker can repeat the Check Buttons, Check Display, or Show	Accepted M Ricketts/D Harwood 11/8/07 v.4.0.11.0 Verified an election cannot be opened on the Infinity Voting Panel without running the zero count report and the readiness of the equipment test to confirm the device is ready to be activated.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
								Ballot tests.	
80	10/5/07	D Harwood	Func Defect	Closed	EMS v. 4.0.9.0 Post Voting - Consolidati ng and Reporting Votes	Precinct Summary Report displays the incorrect vote type data. On the Precinct Summary Report the Absentee generated votes are displayed under the Machine header and the Machine (DRE) generated votes are displayed under the Absentee header. (The votes are correctly tallied for each vote type. The Election Summary Report displays the votes under the correct vote type header.)	V.1:2.4.3 Producing Reports All systems shall be able to create reports summarizing the vote data on multiple levels. All systems shall provide capabilities to: b. Produce a printed report for each tabulator of the results of each contest that includes the votes cast for each selection	bhirsch 10/31/07 v4.0.10.0 Headers have been corrected to match the vote type in the Precinct Summary Report.	Accepted M Ricketts/D Harwood 11/8/07 v.4.0.11.0 Confirmed the Precinct Summary Report displays the correct vote type data. Absentee generated votes display under the Absentee header and Machine generated votes display under the Machine header.
81	10/8/07	M Ricketts	Doc Defect	Closed	Appendix V Election Manageme nt System User Manual v1.6	Pg 32: Table 2.5.1 Ballot Text Screen. The manual states there is a Max of 500 alphanumeric characters in the Phonetic field. The field accepts over 500 alphanumeric characters.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Tbehler 10/31/2007 Ballot Text Size of characters allowed in the phonetic field is limited by other restrictions in the system such as the maximum number of positions on a ballot that can occur Tbehler 11/08/2007 Added clarification that "EMS has a limit of 600 ballot locations. Locations include ballot text, offices, candidates etc. If the Allow Blank Ballot option is selected in General Preferences the limit is 599, This takes into account the location that will have the No Vote Text selection at the end of the ballot. "	Accepted M Ricketts 11/13/2007 Verified v.2.0 EMS User Manual the reference to Max of 500 alphanumeric characters in the Phonetic field has been removed.
82	10/9/07	M Ricketts	Func Defect	Closed	EMS v. 4.0.9.0 Ballot Report	"No Vote" ballot object is not displayed on the Ballot Report. When the "No Vote" ballot object is inserted on an Infinity ballot it does not appear on the Infinity Ballot Report. The report displays all other ballot objects, ballot text, offices and referendums with their correct position number.	v.1: 2.1.6 An EMS shall generate and maintain a database, or one or more interactive databases, that enables election officials or their designees to perform the following functions: Test that ballots and programs have been properly prepared	bhirsch 10/31/07 v4.0.10.0 "No Vote" is no longer a ballot object, and is instead an optional Infinity Panel setting, similar to the Autovote or Crossover settings. It is enabled in the Preferences section by checking the Allow Blank Ballot option. When this option is checked during ballot design and Infinity Panel programming, the No Vote location will automatically appear at the end of all ballot activations before the confirmation page, allowing the panel to accept a completely blank ballot when selected by the voter. If voting locations	Accepted M Ricketts/D Harwood 11/8/07 v.4.0.11.0 Confirmed that as the "No Vote" is not a Ballot Object but is instead a Preference "Allow Blank Ballot", that provides the voter with the option to cast a blank ballot, it is not required to appear on the Ballot Report.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
								have already been selected, the button will prompt the voter to deselect votes first.	
83	10/9/07	M Ricketts	Func Defect	Closed	EMS v. 4.0.9.0 Ballot Printing	The printed copy of the Infinity Ballot does not display the "No Vote" ballot object. When the "No Vote" ballot object is inserted on an Infinity ballot the printed ballot (Ballot Printing option) includes all ballot objects, except the "No Vote" All ballot text, offices and referendum are correctly printed.	v.1: 2.1.6 An EMS shall generate and maintain a database, or one or more interactive databases, that enables election officials or their designees to perform the following functions: Test that ballots and programs have been properly prepared	bhirsch 10/31/07 v4.0.10.0 "No Vote" is no longer a ballot object, and is instead an optional Infinity Panel setting, similar to the Autovote or Crossover settings. It is enabled in the Preferences section by checking the Allow Blank Ballot option. When this option is checked during ballot design and Infinity Panel programming, the No Vote location will automatically appear at the end of all ballot activations before the confirmation page, allowing the panel to accept a completely blank ballot when selected by the voter. If voting locations have already been selected, the button will prompt the voter to deselect votes first.	Accepted M Ricketts/D Harwood 11/8/07 v.4.0.11.0 Confirmed that as the "No Vote" is not a Ballot Object but is instead a Preference "Allow Blank Ballot", that provides the voter with the option to cast a blank ballot, it is not required to appear on the Ballot.
84	10/9/07	M Ricketts	Func Defect	Closed	EMS v.4.0.9.0 & Infinity v.9.61 Ballot Display	When the "No Vote" ballot object is inserted on the ballot, ballot objects and contest content was repeated at the end of the ballot on the Infinity Voting Panel. The "No Vote" ballot object was inserted after the "Straight Party" ballot object. On a ballot that should have ended on page 3 of the Infinity, the header text repeated at the bottom of page 3 and top of page 4. The "Voter Control" ballot text, "Straight Party" ballot object, "No Vote" ballot object and the 1st Office (President) repeated on the 4th page after the header. (When the ballot was recreated with the "No Vote" ballot object removed it correctly displayed on the Infinity.)	v.1: 2.1.2.b To ensure vote accuracy, all systems shall: record the appropriate options for casting and recording votes.	bhirsch 10/31/07 v4.0.10.0 "No Vote" is no longer a ballot object, and will always appear on the last page of all activations prior to the confirmation page when the option is set in Preferences during programming.	Accepted M Ricketts/D Harwood 11/8/07 v.4.0.11.0 Confirmed that with the "Allot Blank Ballot" preference checked, the ballot objects and contest content do not at the end of the ballot on the Infinity Voting Panel.
85	10/16/0 7	D Harwood	Func Defect	Closed	EMS v.4.0.9.0 OMR Card Reading - Straight Party Overvote	Votes in non-partisan contests are not reported on ballots with a "Straight Party Overvote". A paper ballot containing a straight party overvote and a vote in a non-partisan contest is not counted or reported as unprocessed in the EMS. The "Recorded Marks" field displays the reading of the non- partisan selection, while "Error: Straight	v.1: 5.4.4.e At a minimum, vote tally data shall include: for paper-based systems only , the total number of ballots both able to be processed and unable to be processed	bhirsch 10/31/07 v4.0.10.0 The straight party overvoted paper ballots will now display an OK - Straight Party Overvote message to the operator, display all accepted and undervoted locations, and will correctly log and record the vote for non-partisan	Accepted - M Ricketts/D Harwood 11/8/07 v.4.0.11.0 Confirmed that an over- vote in a straight party selection reports as an error in all partisan contests unless there is a straight party cross- over vote. Nonpartisan

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
						Party Overvote" is displayed in the status. It is not clear from the information displayed in the "Status" field that the entire card is unprocessed. The Election Summary and Precinct Reports identifies the number of processed ballots but not the number of unprocessed ballots.		contests.	& referendum votes are correctly reported. Status displays "OK - Straight Party Over- vote". "OK" indicates the card is successfully processed. "Straight Party Overvote" identifies an error in the straight party selection.
86	10/16/0 7	C Coggins	Doc Defect	Closed	Appendix V Election Manageme nt System User Manual v1.7	Table 6.2 Definitions of OMR Ballot Card Screen fields: The manual states the "Status" field displays the status of the last card read and identifies if the card was successfully counted. The status displayed is inconsistent and the manual does not define what each status means. Observed status displays included "OK", Straight Party selections, "Error: Card Orientation" and "Error: Straight Party Overvote". It was not clear from the display what each status meant in terms of the ballot card being successfully counted.	v.2: 6.7.b The functional configurationshall use and verify the accuracy and completeness of the systems operations manuals.	Tbehler 11/08/2007 Added descriptions of statuses to the User Manual DO2.0TDP-V	Accepted M Ricketts 11/12/2007 Verified v.2.0 EMS User Manual contains descriptions of the OMR Ballot Card Screen Status field status messages and, which status messages indicate the ballot card was not counted.
87	10/16/0 7	C Coggins	Func Defect	Closed	EMS v. 4.0.9.0 Spanish Ballot Translation s	The language accessible ballot demonstrated the capability to present both English and an alternative language in audio and visual presentation, except for the office title, contest name and party name. Capability to support all ballot content in an alternative language (Spanish) was not demonstrated. The office title and party names are fields that do not contain a translation option or permit direct entry of the special characters needed to support accents on vowels or the ñ. The candidate name fields do not contain a translation option but there is functionality to enter candidate names as free form ballot text. The ballot text feature provides a translation option; however when text was entered into the Spanish translation field of the ballot text and used for a candidate name, the English candidate name text was displayed on the Spanish ballot. For all other ballot content the system is capable of entering English and an alternative language.	<ul> <li>v. 1: 3.1.3 The voting equipment shall be capable of presenting the ballot, ballot selections, review screens and instructions in any language required by state or federal law.</li> <li>EAC Decision on Request for Interpretation 2007-04, 2005 VVSG Vol. 1 Section 3.1.3</li> <li>v. 1: 3.2.1.a When the provision of accessibility involves an alternative format for ballot presentation, then all information presented to voters including instructions, warnings, error and other messages, and ballot choices shall be presented in that alternative format.</li> </ul>	bhirsch 10/31/07 v4.0.10.0 Our system has been modified to allow the proper name of a unique candidate, contest title or party name to be identified by characters which include the extended character ASCII set. The new capability will allow any part of the ballot to be displayed using characters such as an Ñ or É, at the discretion of the local jurisdiction.	Accepted M Ricketts 11/7/2007 v.4.0.11.0 11/7/07 Confirmed creation of Contest & Party names with "Spanish" characters and, correctly displays on the ballot.
88	10/17/0 7	C Coggins	Func Defect	Closed	EMS v.4.0.9.0 Undervote & Overvote Report Totals	The Undervote & Overvote Report does not provide an accumulation for each contest, for the full election (by "additional jurisdictional level") The Undervote & Overvote Report provides a list of undervotes and overvotes for each contest with the total grouped by vote type	v.1: 2.4.3.a All systems shall provide capabilities to: support geographic reporting, which require the report of all results for each contest at the precinct level and additional jurisdiction levels v.1: 5.4.4.e At a minimum, vote	bhirsch 11/25/07 v4.0.12.0 Modified the Undervote & Overvote Report to accumulate contest votes at both the precinct and election levels. Tbehler Updated Appendix V with the latest screen print of	Accepted D Harwood 12/6/07 Verified v.4.0.12.0 provided contest accumulation by precinct and by election.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
						(machine, absentee and provisional) and precinct; a lump-sum total of all undervote and overvotes in the election is reported. The report does not provide: - a contest accumulation by precinct - a contest accumulation for the election. (The election-wide is interpreted to be an "Additional Jurisdictional level".)	tally data shall include: separate accumulation of overvotes and undervotes for each contest, by tabulator, precinct and for additional jurisdictional levels	the undervote and overvote report.	
89	10/18/0 7	C Coggins	Func Defect	Closed	EMS v.4.0.9.0 Undervote Recording & Reporting	The recording and reporting of undervotes in the Tally Report, Undervote & Overvote Report and the Infinity Vote Record Report only account for a single undervote in an N of M contest (Vote for 2) If a voter submits a vote with no candidate selections in a contest with a "Vote for 2", the Infinity records a single undervote. The Tally Report, Infinity Vote Record Report (ballot image) and the Undervote & Overvote Report reflect a single undervote. Rejected D Harwood 12/06/07 (v.1:2.1.2.f) v.9.63 Infinity Vote Record Report (ballot image) does not identify each undervote. The report reflects undervotes as omitted selection rather than reporting each undervote as a separate entity.	<ul> <li>v1:2.1.2.c: all systems shall: record each vote precisely as indicated by the voter and produce an accurate report of all votes cast;</li> <li>v1:2.1.2.f: In addition, DRE systems shall: record and retain redundant copies of the original ballot image. A ballot image is an electronic record of all votes cast by the voter, including undervotes.</li> <li>v.1:2.4.3.c: Produce a printed report for each tabulator of the results of each contest that includes the votes cast for each selection, the count of undervotes</li> <li>v.1:2.4.3.d: Produce a consolidated printed report of the results for each contest of all votes cast (including the count of ballots from other sources supported by the system as specified by the vendor) that includes the votes cast for each selection, the count of undervotes</li> <li>v.1: 4.1.1: For a voting system, accuracy is defined as the ability of the system to capture, record, store, consolidate and report the specific selections and absence of selections, made by the voter for each ballot position without error</li> </ul>	bhirsch 11/25/07 v4.0.12.0 Undervotes are now reported in compliance with the latest EAC interpretation defining undervote as the difference between the vote limit and the total votes cast for a contest. The Tally Report, Infinity Vote Record Report and the Undervote and Overvote reports have all been modified.	Accepted D Harwood 12/12/2007 v 4.0.14.0 Verified all DRE undervotes are correctly reported in all reports, including the Vote Record Report (ballot image). Accepted D Harwood 3/10/2009 v.4.0.16.0 Verified through the Under/Overvote reports that the undervotes are correctly reflected and reported for the OMR when they occur for a N of M (vote for 2) contest.
90	10/18/0 7	C Coggins	Inform ational	Closed	EMS v.4.0.9.0 Straight Party Voting	The first 2 of 3 candidate matches were selected in a straight party contest where the number of straight party selections exceeded the "Vote for 2" limit. While this test is a valid boundary test for software, this condition is outside accepted practices for a General Election. This condition would only occur under an extraordinary circumstance such as an order from a court. A partisan contest with a Vote for 2 contained a party with 3		bhirsch 11/25/07 v4.0.12.0 Because it is outside of accepted practices for a general election, the EMS software now prevents over filing of candidates within a general election. If the user attempts to exceed the vote limit or secondary vote limit when editing candidates, offices, or secondary vote limit	Accepted C Coggins 12/12/07 Verified in v.4.0.14.0 a contest cannot be set up with more candidates for a single party than the "Vote for" limit.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
						candidates. A straight party vote was issued for the party. The first two candidates were selected, the third was not. While the system did not overvote, the expected results for this test were that the system would not overvote nor make a partial selection.		groupings the save is cancelled and an informational message is displayed.	
91	10/22/ 07	M Ricketts	Doc Defect	Closed	Appendix V EMS User Manual v1.7	Provisional Voting functionality and/or the procedure for handling provisional ballots is not documented in the EMS User Manual. Appendix F (Voting Variations) states that MicroVote supports Provisional Ballots. The EMS User Manual indicates there is a Provision Vote Type, but it provides no information regarding handling of provisional voting.	v2:2.8 This documentation shall provide all information necessary for system use by all personnel who support pre- election and election preparation with regard to all system functions and operations 	Tbehler 11/08/2007 Added more clarification to how provisional voting is handled by EMS by describing it in advanced voting and the use of the vote n card. In the user manual DO2.0TDP-V	Accepted M Ricketts 11/12/2007 Verified v.2.0 EMS User Manual provides information regarding the handling of provisional voting.
92	10/2 <i>3/</i> 07	C Coggins	Doc Defect	Closed	Section 2.6 SYSTEM SECURITY SPECIFICA TION EMS v.1.2	<ul> <li>Physical security procedures do not address chain of evidence, witness handling or other smart card physical security procedures.</li> <li>A security test scenario included a tester defined as an election insider with: <ul> <li>uncontrolled access to the prior voted election smart cards and reports;</li> <li>programming and smart card expertise or abetted by a conspirator with these skills;</li> <li>45 minutes of uncontrolled access to voted smart cards during election night central counting.</li> </ul> </li> <li>The tester was able to switch votes from one candidate to another without detection by the EMS. The change would be detected in an audit of the smart card results and the paper Infinity Tally Report. This scenario is assessed by the VSTL to be a very low risk (v.2: 6.4) if there are physical security procedures to address the uncontrolled access, because an election insider without expertise could neither see nor switch votes.</li> </ul>	v.1: 7.3 A voting system's sensitivity to disruption or corruption of data depends, in part, on the physical location of equipment and data media, and on the establishment of secure telecommunications among various locations. Most often, the disruption of voting and vote counting results from a physical violation of one or more areas of the system thought to be protected. Therefore, security procedures shall address physical threats and the corresponding means to defeat them.	Tbehler 11/08/2007 added instructions in the pollworker manual and the security specification to handle infinity card handling. D01.3TDP-2.6 and D01.7TDP-U. "5. All cards (Start, Vote, Vote N and Tally) must be stored in proper envelopes for returning to election office. It is recommended that you seal tally cards and tapes in their respective envelopes before you transport them to the election office. It is also recommended that at least one poll worker from each party transport the tally cards and tapes to the election office together. The sealing of the envelopes and transportation of the cards and tapes by at least two partisan poll workers ensures a high level of security between the poll site and the election."	Accepted <i>M</i> Ricketts 11/14/2006 Confirmed that Smart Card physical security procedures were added to v1.3 Section 2.6 document and v1.7 Infinity Poll Worker Manual (Appendix U).
93	10/25/ 07	C Coggins	Doc Defect	Closed	Infinity Voting Panel Technical Reference Manual v.3.11 DO0.2TDP- B1 & Appx C COTS SPECIFICA TIONS	The COTS hardware DoubleTalk must be configured with BIOS 0212 to support the required volume controls. No method has been identified for the jurisdiction to validate that the fielded DoubleTalk is configured with the correct BIOS Rejected - C Coggins 12/5/07 No procedure or method has been submitted addressing identification of the certified system configuration for fielded hardware.	v.2:6.6.a: The audit shall establish a configuration baseline of the software and hardware to be tested. Testing & Certification Program Manual section 5.8 The manufacturer shall provide tools through which a fielded voting system may be identified and demonstrated to be unmodified from the system that was	Tbehler 10/31/2007 The manufacturer will supply the double talk devices with a non removable sticker with the version of bios installed as COTS.	Accepted D Harwood 12/19/2007 Verified Appendix AA v.1.2 addresses the issue and fulfills the requirement.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					EMS v.1.2		certified.		
94	10/25/ 07	C Coggins	Doc Defect	Closed	Infinity Voting Panel Technical Reference Manual v.3.11 DO0.2TDP- B1	The Infinity Voting Panel protective enclosure is designed to be stored on it's end like a suitcase. The maintenance procedures do not describe the storage method with respect to not stacking or the maximum number of panels that can be stacked without damage. Section 9.5.4 only addresses storage in a secure place. Rejected - This issue is not addressed in v.DO 0.3TDP-B1 sec. 9.5.4 nor is it found elsewhere in the document.	<ul> <li>v.1: 4.2.3.b.ii All precinct voting systems shall: be capable of using or be provided with, a protective enclosure rendering the equipment capable of withstanding: Stacking loads associated with storage</li> <li>v.1: 8.7 documentation shall be sufficient to serve the needs of the test lab, election officials, and maintenance technicians.</li> </ul>	Tbehler 10/31/2007 Updates coming from Carson Manufacturing. Tbehler 11/08/2007 Updates submitted to FTP site from Carson Manufacturing.	Accepted - D Harwood 12/4/07 DO0.4TDP-B1 States that panels should lie flat in storage case for storage and that there is a stacking limit of 6 cases.
95	10/25/ 07	C Coggins	Doc Defect	Closed	Infinity Voting Panel Technical Reference Manual v.3.11 DO0.2TDP- B1	To replace the PC/104 SBC the documentation says to pry it up using your fingers to release the locking standoff tabs, without using any tools. This was attempted and no techs were able to pull the part, as doing so risked damaging the unit. It did not seem that the locking standoffs had anything to do with the issue, as they were easily pinched and released, but the actual connecters appear too tight. Further explanation is necessary to define the method for safe removal. Rejected 12/19/07 jpatterson DO0.4TDP-B1 The method described in section 11.5.11, pops the right side against the edge of the case as expected. The other side seems too likely to damage the unit to use the force required to pry it off. The manual says to use the CompactFlash as leverage, but neither the part nor the board its mounted on are strong enough to withstand the procedure. The last pin has no points for leverage. It is surrounded by surface mounted parts. The prying described in the manual risks damage to the unit. The manual says to use "the padded handle of long-nosed pliers" to pry the part up. No pliers were supplied or described. Differences between types and materials used in various pliers could make a difference when trying to remove the part. Pliers a bit smaller than a standard needle nose were used and the rubber handle padding was damage in prying.	<ul> <li>v.1: 4.3.4.2.g. The following additional attributes will be considered to assess system maintainability: Adjust, align, tune or service components</li> <li>v.1: 8.7 documentation shall be sufficient to serve the needs of the test lab, election officials, and maintenance technicians.</li> </ul>	Tbehler 10/31/2007 Updates coming from Carson Manufacturing. Tbehler 11/08/2007 Updates submitted to FTP site from Carson Manufacturing. bhirsch 3/14/08 The Infinity Manual contained in DO0.5TDP- B1.doc section 11.5.1 states that the Infinity voting panel should only be disassembled by factory trained personnel. Removal of the Compact Flash memory referenced in Section 11.5.12 is a continuation of this section and is a procedure that requires disassembly of the panel and therefore should only be performed by properly trained personnel. JPatterson with iBeta has not received this training and is therefore not qualified to perform the procedure. Instructions contained in 11.5.12 are correct and will result in removal of the Compact Flash memory as stated when performed by someone having received the correct factory training.	Rejected 12/19/07 Jpatterson DO0.4TDP-B1 Accepted jpatterson & C Coggins 3/17/08 Verified that DO0.5TDP.B1 stipulates these operations are to be performed by factory trained technicians. It is accepted that the description in section 11.5.12 is acceptable if augmented with training
96	10/25/	С	Doc	Closed	Infinity	The instructions for replacing the memory	v.1: 4.3.4.2.g. The following	Tbehler(10/31/2007)There	Accepted
	07	Coggins	Defect		Voting Panel Technical Reference Manual v.3.11	are insufficiently detailed. The locking pin holding the memory in place is very tight and may not be reusable. The pin can be easily damaged when using pliers or by prying and pulling on the pin. A more detailed explanation as to how the pin is	additional attributes will be considered to assess system maintainability: Adjust, align, tune or service components v.1: 8.7 documentation shall be sufficient to serve the needs	are no maintenance operations for the infinity voting panel as communicated to me by Carson Manufacturing and in their technical	D Harwood & jpatterson 12/19/07 Verified DO0.3TDP-B1 instructions were sufficient to complete the operation.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					DO0.2TDP- B1	removed would lessen the chance of damage during routine maintenance.	of the test lab, election officials, and maintenance technicians.	specifications.	
97	10/25/ 07	C Coggins	Func Defect	Closed	Infinity Voting Panel Product Marking	The Infinity Voting Panel did not include a data plate containing a schedule for and list of operations required to service or perform preventive maintenance. Rejected 11/12/07 D Harwood - In the event that there is no scheduled maintenance or service operations, this needs to be stipulated on the data plate Rejected 12/5/07 C Coggins - No procedure or method has been submitted addressing identification or upgrade of the certified system configuration for fielded hardware.	v.1: 4.3.6.b All voting systems shall: display on each device a separate data plate containing a schedule for and list of operations required to service or to perform preventive maintenance	Tbehler(10/31/2007) There are no maintenance operations for the infinity voting panel as communicated to me by Carson Manufacturing. Tbehler(11/30/2007) There will be a data plate added to the infinity voting machine to stating the EAC Certification Number and "No Routine Service or Maintenance Required"	Accepted D Harwood 12/19/2007 Verified Appendix AA v.1.2 addresses the issue and fulfills the requirement.
98	10/26/ 07	C Coggins	Doc Defect	Closed	Infinity Voting Panel Technical Reference Manual v.3.11 DO0.2TDP- B1	The part numbers of the approved parts list, section 12, does not match the part numbers on the Infinity Voting Panel submitted for testing. A review of the test documentation used by Wyle during environmental test revealed a 2001 Engineering Change Order (ECO). The submitted approved parts list does not reflect the updates made in the ECO. Rejected 12/19/07 jpatterson DO0.4TDP-B1 Where part numbers could be found, the list of parts and inspected Infinity Voting Panel were generally consistent, except for the keyboard. The part was marked CP4279, the documentation shows a part number of ED1220.	<ul> <li>v.1:4.3.1.b A voting system shall: included as part of the accompanying Technical Data Package, an approved parts list.</li> <li>v.1: 8.7 documentation shall be sufficient to serve the needs of the test lab, election officials, and maintenance technicians.</li> </ul>	Tbehler(10/31/2007) Carson is checking into this issue with information provided by Carolyn. 05/09/2008 Carson updated the parts list in technical specificiation DO0.7TDP-B1.doc to correctly name the keyboard part as CP4279.	Rejected JPatterson 12/19/07 DO0.4TDP-B1 Accepted C Coggins 5/22/08 Verified DO0.7TDP-B1 identifies keyboard part CP4279
99	11/1/07	D Harwood	Doc Defect	Closed	Election Manageme nt System User Manual v.1.7	The EMS User Manual does not specify how the audit records identify systems used at the polling place or how to include polling place identification. The manual does not describe the relationship of the polling place to the precinct.	v1:5.4.2 System Readiness Audit Records The following minimum requirements apply to system readiness audit records: b. In the case of systems used at the polling place, the record shall include polling place identification	Tbehler 11/08/2007 Precinct = Polling Place in our system. A machine is programmed with a precinct and it's assigned ballot style. Poll workers audit that ballot style by doing a show ballot and checking that the zero proof and the machine have the correct precinct on them.	Accepted D Harwood 12/4/2007 Election Management System User Manual v.2.2 Accepted vendor response as clarification.
100	11/5/07	K Wilson	Func Defect	Closed	Trusted Build	The project for msi has not been provided for installation of the Trusted Build. The project (*.sln) should be comprised of configuration files. These files are not expected to require source code review but the VSTL requires submission of this project in order to complete the Trusted Build installation.	EAC Testing & Certification Program Manual section 5.6.3.4 The VSTL shall install the executable code onto the system submitted for testing and certification before completion of system testing.	11/7/2007 project submitted	Accepted K Wilson 3/13/08 project for msi has been provided for installation and verified functions correctly
101	11/8/07	K Wilson	Doc Defect	Closed	Appendix Y - Build and Installation	The Trusted Build instructions do not address the project for the msi process and installation.	v.1: 8.7 documentation shall be sufficient to serve the needs of the test lab, election officials,		Accepted K Wilson 3/13/08 verified v.2.1 address the project for
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#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					Instructions EMS v.1.6		and maintenance technicians.		msi process and installation
102	12/5/07	K Wilson	Doc Defect	Closed	Appendix Y - Build and Installation Instructions EMS v.2.0	The EMS is identified by MicroVote as a stand alone system that is not to be networked. The installation instructions do not address the disabling the wireless modem on the laptop.	v.1: 8.7 documentation shall be sufficient to serve the needs of the test lab, election officials, and maintenance technicians.		Accepted K Wilson 3/13/08 verified v.2.1 address disabling the wireless modem on the laptop
103	12/6/07	D Harwood	Func Defect	Closed	EMS v.4.0.12.0 Provisional Ballot Extract	Precinct identification was not extracted from DRE to the EMS for all provisional ballots; resulting in inaccurate reporting. When two provisional ballots from separate precincts were extracted from the Infinity, only precinct ID from one precinct was extracted with the record. When the two provisional ballots were posted only the ballot with the precinct ID was posted to the Election Summary Report and the Precinct Report. (There was no problem with the reporting of precinct ID for Machine Vote Types)	v1:2.1.2.c: all systems shall: record each vote precisely as indicated by the voter and produce an accurate report of all votes cast; v.1:2.4.3.d: Produce a consolidated printed report of the results for each contest of all votes cast (including the count of ballots from other sources sup- ported by the system as specified by the vendor) that includes the votes cast for each selection, the count of undervotes		Accepted D Harwood 12/13/2007 v 4.0.14 Verified that Precinct ID is displayed consistently in reports for all vote types
104	12/6/07	D Harwood	Func Defect	Closed	EMS v.4.0.12.0 Provisional Ballot Extract	Provisional Votes can be extracted, posted and counted multiple times. During extraction of the provisional ballots an error with the extraction of the Precinct ID was noted. The ballots (Vote Type of Provisional) were cleared from the election results and the posted votes were reset. The Provisional votes were extracted again in order to confirm the missing Precinct ID. The original extracted vote records were not cleared or overridden. Nor did the EMS prevent extraction of the same votes. The Provisional votes were duplicated in the second extraction. Both sets of votes were able to be posted to the election results and reported.	v1:2.1.4 Integrity measures insure the physical stability and function of the vote recording and counting processes. To ensure system integrity all systems shall: Protect against any attempt at improper data entry or retrieval.		Accepted D Harwood 12/13/2007 v 4.0.14 Verified that votes extracted directly from the panel were prevented from duplication and counting more than once. An error was generated that votes were already extracted.
105	12/6/07	D Harwood	Inform ational	Closed	EMS v.4.0.12.0 Infinity programme d for Vote Type- Provisional permits a Machine type vote to be entered	Infinity Panels programmed as Provisional Vote Types permit the use of "Vote" cards and panels programmed as Machine Vote Types permit the use of "Vote N" cards. Infinity Panels are programmed as either Machine or Provisional Vote Types. MicroVote procedures indicate that provisional voters should use the "Vote N" card on a dedicated Provisional Vote Type panel. "Vote" cards are used for Non- provisional voters. Panels programmed with either Vote Type permit voting with either card. When the votes are imported to the EMS they are reported in the column that corresponds to the panel Vote Type. Hence a vote from a Non-provisional voter is reported in the Provisional column. The		1/23/08 bhirsch v4.0.15.0 Actually our system allows the jurisdiction to define their own vote types (not just "machine" or "provisional." The Infinity Panel will correctly report whatever vote type it has been programmed to contain, as defined by the jurisdiction. We publish the method used by our system to cast a "provisional" vote. The method states that in order to cast a provisional vote the voter must vote on a dedicated provisional vote type panel using a VoteN	Accepted C Coggins 1/23/08 Informational notations are for the purpose of disclosure; the system functions as designed

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
						votes are otherwise correctly reported.		card. Any other combination of panel or card would not accomplish the task as defined by our system. The fact that our system accommodates other combinations of vote types and vote cards is irrelevant to whether or not our system correctly accommodates provisional voting as defined. If a jurisdiction decides to use a different combination to accom- modate their individual needs we would not want to limit their choices.	
106	1/21/07	C Coggins	Func Defect	Closed	Infinity Panel and DoubleTalk audio ballot connection	Upon completion of the Reliability test (Temperature and Power Variations), on Infinity Panel S/N3628, the DoubleTalk assistive device failed to receive the audio ballot output from the panel. During the post test operational status check the DoubleTalk connection to the panel was not functioning. An audio ballot could not be played and voted. Examination of the unit found that a resistor had been burned out. Carson Manufacturing ECN 1424 addresses replacement of this resistor with a thermal fuse, which resets when it cools. (Note: All votes were accurately cast and reported during test execution; audio votes were able to be cast on Infinity Panels S/N 3627, 3629, & 3630 during the post-test operational status check.)	v.2: 4.6.1.6system hardware shall be subject to functional testing to verify continued operability. If any portion of the voting machine or precinct counter hardware fails to remain fully functional, the testing will be suspended until the failure is identified and corrected by the vendor. The system will then be subject to a retest.	05/09/2008 Carson stated #106 and #107 resolved with current production samples incorporating ECN's to remedy these issues previously discovered.	Accepted D Harwood 6/4/2008 Testing was repeated with current production models (SN's 10402, 10403, 10404 and 10405) . Per section 5.2.1.1 of Wyle's test report, no anomalies were reported.
107	1/21/07	C Coggins	Func Defect	Closed	Infinity Panel Card Reader (Vote, Start and Tally cards)	Upon completion of the Reliability test (Temperature and Power Variations), on Infinity Panel S/N3628, the card reader failed to read any of the smartcards. During the pos-test operational status check the card reader stopped reading due to misalignment of the smartcards (Vote, Start, and Tally). Examination of the unit found that the number of spacers on the card reader did not match Carson Manufacturing ECN 1408 which addressed proper alignment of the card reader. (Note: All ballots votes were accurately cast and reported during test execution; cards were successfully read on Infinity Panels S/N 3627, 3629, & 3630 during the post-test operational status check.) Ballot text for a long referendum will not	v.2: 4.6.1.6system hardware shall be subject to functional testing to verify continued operability. If any portion of the voting machine or precinct counter hardware fails to remain fully functional, the testing will be suspended until the failure is identified and corrected by the vendor. The system will then be subject to a retest.	05/09/2008 Carson stated #106 and #107 resolved with current production samples incorporating ECN's to remedy these issues previously discovered.	Accepted D Harwood 6/4/2008 Testing was repeated with current production models (SN's 10402, 10403, 10404 and 10405). Per section 5.2.1.1 of Wyle's test report, no anomalies were reported.
,00		Coggins	Defect	0.0000	Panel audio	play completely on the Infinity Panel.	of accessibility involves an	Long ballot text will now	C Coggins 3/11/08

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#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					ballot text playback	A long ballot referendum can be created in EMS (visual and phonetic text) and installed on the Infinity Panel. While the visual ballot correctly displays, the audio ballot will not play the complete phonetic text. After approximately 1000 characters the audio playback jumps to the end of the phonetic text.	alternative format for ballot presentation, then all information presented to voters shall be presented in that alternative format.	correctly playback in audio mode.	Verified in v. 14.0.16 and v.9.66 audio playback of a long referendum (exceeded five minutes)
109	1/21/07	C Coggins	Func Defect	Closed	Infinity Panel submission of current production	The Infinity Panels S/N3627 through S/N3630 submitted for testing pre-date engineering changes ECN1408 & 1424. As changes were deemed deminimus by MicroVote, they pulled Infinity Panels from available demonstration stock instead of recent production. ECN examination by Wyle & iBeta assess: - The Reliability test (Temperature & Power Variations) failed and must be repeated with 4 current production units; - Changes to the card reader spacers only warrant Vibration Testing; - Accuracy testing is accepted due to successful completion of all requirements; no component failures touched accuracy. (As an automated script must run during the reliability test, accuracy is validated on current production); - EMC testing in 2006 to the VSS 2002 did not include operation of the voting system in an audio mode. Testing in this mode is a gap in acceptance of the 2006 test results. Although the fuse change does not warrant retesting, its covered by this testing; - Functional testing need not be repeated; the unit used in this testing did not fail reliability; and reliability testing will include regression testing of all functions associated with the changes to current production units.	v.2:1.6.a The system submitted for testing shall meet the following requirements: The hardware submitted for certification testing shall be equivalent, in form and function, to the actual production version of the hardware units		Accepted J Patterson 3/15/08 Inspected Infinity Panels SN 10402, 10403, 10404 & 10405 ; compared to SN2213 to confirm ECN 1408 &1424 were incorporated.
110	2/25/08	C Coggins	Inform ational	Closed	Infinity Panel Voter Controls	The Infinity Panel has an English/Spanish toggle in Voter Controls, which is programmed into the firmware. All firmware voter instructions, "vote for" text, vote limit text, and error messages are presented to the voter in the selected language. This is a standard option that cannot be turned off. If no Spanish election ballot translations is provided the panel displays the firmware instructions in Spanish and the ballot in English. If a Spanish election ballot translations is provided the panel displays both the firmware instructions and ballot in Spanish .		06/06/2008 Bhirsch Our system's support of alternative languages, specifically Spanish, meets all applicable VVSG 2005 requirements. The English/Spanish toggle functions correctly and is allowed by design. The voter would correctly view all firmware instructions, "vote for" text, vote limit text, and error messages in the selected language (English or Spanish). The button also gives the jurisdiction the	Accept C Coggins 6/24/2008 Informational issues are for the purpose of disclosure, verified that the Poll Worker's Manual (Appendix U v. 1.9 - Voting section 2.4) provides a disclosure that instructions appear in Spanish and the ballot appears in English if a Spanish ballot has not been programmed.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
								enhanced capability to toggle the display between two alternate language ballot texts if desired during the voting session. We feel this is an appropriate method of meeting and exceeding the VVSG 2005 requirements, and it is our opinion that this informational only disclosure should now be resolved and closed similar to informa- tional issue number 70 contained in this document.	
111	2/26/08	C Coggins	Doc Defect	Closed	Chatsworth ACP-2200 FCC & CE Marks	The ACP-2200 COTS optical scanner does not contain a CE or FCC mark . Neither the marks nor FCC Part 15B were addressed in the submitted documentation. While a recently dated Declaration of Conformity for European Directive 2004/108/EC was submitted for the ACP-2200 it did not reference the FCC Part 15B standard. The hardware does not have a CE or FCC mark and no documentation reflecting addition of the mark by the manufacturer was submitted.	EAC Decision on Request for Interpretation 2007-05 2005 VVSG V.1: 4.2.1 Conclusion 2 COTS products falling under this interpretation used as part of a voting system shall have FCC Class B and CE marks affixed to the unit indicating that the product has been certified to meet these requirements. The VSTL shall receive, as part of the Technical Data Package, a copy of the COTS manufacturer's Declaration of Conformity confirming that the manufacturer is claiming compliance with the standards stated.	5/8/2008 TWB Forwarded documents from Chatsworth that state "This device complies with the requirements in Part 15 subpart B of FCC rules for a Class B computing device." Updated Appendix C D01.4TDP- C.doc to reference this compliance.	Accepted C Coggins 5/8/08 Verified FCC and CE mark affixed on a label located on the underside of the unit and Declaration of Conformity for FCC Part 15 Subpart B
112	2/26/08	C Coggins	Doc Defect	Closed	Dell model DHM (desktop) Dell Latitude D510 (laptop) Declaration of Compliance	While the Dell COTS laptop and desktop, used to record and report paper ballots, have CE and FCC marks, the appropriate Declarations of Conformity were not submitted as part of the TDP.	EAC Decision on Request for Interpretation 2007-05 2005 VVSG V.1: 4.2.1 Conclusion 2 The VSTL shall receive, as part of the Technical Data Package, a copy of the COTS manufacturer's Declaration of Conformity confirming that the manufacturer is claiming compliance with the standards stated.		Accepted C Coggins 3/25/2008 Verified the submitted Dell Regulatory Datasheets provide a CE and FCC declaration of conformance.
113	3/11/08	C Coggins	Func Defect	Closed	Ballot Display on the Infinity Panelv.4.0. 16.0 v.9.66	The ballot preparation EMS permits the ballot preparer to make an error in laying out the ballot which causes a portion of the ballot to display twice on the Infinity. The Voter Confirmation Ballot Object is automatically inserted on the ballot by the application. If the ballot preparer inserts this object by mistake it causes the Infinity to display portions of the ballot twice.	v.1: 2.2.1.2.b All voting systems shall provide a capability for: rapid and error-free definition of elections and their associated ballot layouts		Accepted D Harwood 3/11/2008 v4.0.17.0 verified that if the ballot preparer inserts the voter confirmation ballot object onto the ballot during ballot layout no error is generates and correctly ballot displays
Page 1	3/19/08	D Harwood	Func Defect	Closed	COTS - Chatsworth ACP 2200 Optical	The EMS temporarily stopped recording ballot cards read by the Chatsworth ACP2200 OMR COTS scanner.	v1: 4.3.3 The reliability of voting system devices shall be measured as Mean Time Between Failure (MTBF) for the		Accepted D Harwood 4/18/2008 EMS v.4.0.18. 0 Verified if the OMR is

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
					Mark Reader Running on EMS ver.4.017.0	Reliability MTBF is being assessed during test operation including multiple election set up and operations. At execution of the EMS Accuracy Test for the ACP2200 OMR COTS scanner, batch 7 card 27 was inserted, the read confirmation did not display, the count did not increment and no error message displayed. The card was reinserted. The read confirmation appeared and the counter incremented by one. This was noted and testing continued. The device stopped reading ballot data on batch 22 card 25. The ballot card fed through the OMR, but no read confirmation data displayed, the count did not increment and no error message was displayed. The device was unable to perform its intended function for several hours as we checked the system. The connection from the EMS to the switchbox was confirmed by writing and reading a Vote Card by the Gemsplus to the EMS. Connections from the OMR to the switchbox were checked and reconnected. Approved maintenance cleaning of the OMR was performed. A restart of the EMS and the EMS PC were initiated. None of these actions resulted in an election card being recorded by the EMS or an error message being generated. A Chatsworth diagnostic tool was loaded on a second PC. The EMS was powered off. The OMR was connected to the second PC through the switchbox. It was confirmed that the OMR was reading the card. During disconnection and reconnection the EMS was powered off and on. An election card was now able to be recorded in the EMS.	system submitted for testing For the purpose of demonstrating compliance with this requirement, a failure is defined as any event which results in either the: • Loss of one or more functions • Degradation of performance such that the device is unable to perform its intended function for longer than 10 seconds		not connected correctly to the EMS an error is now displayed and the user is prevented from scanning cards.
115	4/17/08	C Coggins	Func Defect	Closed	COTS - Chatsworth ACP 2200 Optical Mark Reader Running on EMS ver.4.018.0	More than two read errors were recorded prior to reaching 3, 126, 404 ballot positions. MicroVote submitted 2076 ballots marked in pencil in voting patterns identified by iBeta. The OMR is a dual side reader that is designed to read ballots in all four orientations. Test ballots were in 42 batches. The first batch contained 71 ballots containing 27,335 ballot positions. These were fed once in a single orientation. The OMR and EMS successfully read 26,997 ballot positions without error. Subsequent batches of 50 ballots were fed into the OMR two times. The first read was one orientation; the second was reversed. Prior to reading 388,850 ballot positions, a ballot position was misread. Prior to reading 430,045 ballot positions a second	v2: 4.7.1.1.c If the system correctly reads more than 26,997 ballot positions but less than 1,549,703 when the first error occurs, the testing will have to be continued until another 1,576,701 consecutive ballot positions are counted without error (a total of 3,126,404 with one error)	5/9/2008 TWB Updated user manual DO2.3TDP- V.doc to update absentee card marking and inspection instructions. 5/13/2008 D02.4TDP-v.doc	Accepted C Coggins 5/23/2008 Accuracy-OMR Regression 3 read all cards without errors using the marking devices (#2 pencil and black ink) defined in the revised specification Appendix-V v.2.4

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
						ballot position was misread.			
116	4/18/08	C Coggins	Func Defect	Closed	Infinity Voting Panel - power supply	The Ault power supply was damaged during the Electrostatic Disruption Test During the ESD test the Ault PW128RA1203F01 power supply failed when 15kV air discharge was applied to the vote card slot. (0 VDC) The failure was repeated on a second Ault power supply. Normal operation could not be resumed.	v.1: 4.1.2.8all DRE equipment, shall be able to withstand +/-15kV air discharge without damage or loss of data. The equipment may resent or have momentary interruption so long as normal operation is resumed without human intervention	Updated approved power supply in Appendix C DO1.4TDP-C.doc. To • ELPAC Power Systems Model FW3012 Power Supply. Carson removed power supply specifications from his technical specificiation DO0.7TDP-B1.doc.	Accepted C Coggins 6/5/2008 ESD was repeated incorporating Carson ECN 1449/ 1450 & ELPAC power supply with the power cord ferrite, (Wyle Test Report section 5.3.3); no anomalies were reported. Verified Appx C COTS Specification v. 1.4 identifies ELPAC Power Supply; Micro- Vote ECR/ECN 101 addresses addition of ferrite.
117	4/18/08	C Coggins	Func Defect	Closed	Infinity Voting Panel -#17 button	The #17 button (bottom left) on the Infinity Voting Panel ceased to function after the Electrostatic Disruption. During the Electrostatic Disruption (ESD) a shock was applied to the #17 button of the Infinity Voting Panel. The button did not function in the Operational Status Check following the test. Normal operation could not be resumed.	v.1: 4.1.2.8all DRE equipment, shall be able to withstand +/-15kV air discharge and +/- 8 kV contact discharge without damage or loss of data. The equipment may resent or have momentary interruption so long as normal operation is resumed without human intervention		Accepted D Harwood 6/4/2008 ESD was repeated incorporating Carson ECN 1449/ 1450, and the ELPAC power supply with the ferrite; no anomalies were reported per Wyle Test Report Section 5.3.3 and Appendix E
118	4/18/08	C Coggins	Doc Defect	Closed	Appendix B1- Infinity Technical Reference Manual DO0.5TDP- B1	The model number of the power supply submitted for testing does not match the documented approved power supply. The approved power supply identified in the Technical References the Ault model PW101MA1203F01; the submitted power supply is the Ault model PW128RA1203F01.	v.2:2.1.1 The content of the Technical Data Package is intended to provide clear, complete description of the following information about the system: equipment requirements for system operation	Updated approved power supply in Appendix C DO1.4TDP-C.doc. To • ELPAC Power Systems Model FW3012 Power Supply. Carson removed power supply specifications from his technical specificiation DO0.7TDP-B1.doc.	Accepted D Harwood 5/12/2008 Verified that Appendix B1 v.0.7 no longer references the power supply and Appendix C v.1.3 now references the ELPAC power supply to be used with the Infinity Voting Panel.
119	4/18/08	C Coggins	Docu mentat ion Defect	Closed	Infinity Voting Panel - Emissions Engineering Change Notice	The Infinity Panel exceeded the radiated emissions of FCC Part 15B (55.97 MHz test frequency) per Wyle Notice of Anomaly No. 2 dated 4/10/08. Mitigation was performed by the manufacture with Wyle Engineers observing. Wyle observations documented: Three ferrites were added to the device to obtain compliance: #1 AC input line #2 Audio module input line #3 inside on the main board. The front data interface jack was disabled by removal of an internal cable. An engineering change notice must be submitted documenting mitigation requirements.	v.2: 4.8.2 The test for electromagnetic radiation shall be conducted in compliance with the FCC Part 15 Class B requirements by testing per ANSI C63.4		Accepted D Harwood 6/4/2008 verified Carson ECN 1449
120	5/1/08	M Libman	Doc Defect	Closed	Section 2.2 System Overview	The use and configuration of the Universal Power Supply identified in Appendix C COTS Specification EMS for the power	v.2: 2.2.1.b The system description shall include written descriptions, drawings and	5/8/2008 TWB Updated Appendix C DO1.4TDP- C.doc, System Overview	Rejected M Libman 5/9/2008

	#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
						Election Manageme nt System v.1.3 MicroVote EMS User Manual v.2.2	backup of the OMR/EMS is not identified or referenced in either the System Overview or the EMS User Manual. Rejected: M Libman 5/9/2008 The update identifies the use of the UPS unit, but doesn't provide the configuration. The UPS is not contained in figure 1 of the System Overview .	diagrams that present: a description of the operational environment of the system that provides an overview of the hardware and communications structure v.2: 2.8.2 .b The vendor shall identify all facilities, furnishings, fixtures, and utilities that will be required for equipment operations, including equipment that operates at the: central count facility	DO1.5TDP-2.2.doc and User Manual DO2.3TDP- V.doc to describe suggested Uninterruptible Power Supply specifications. 5/13/2008 SystemOverview DO1.6TDP-22.doc	Accepted C Coggins 5/22/2008 Verified figure 1 of System Overview references UPS and configuration per Appendix C, which identifies hardware to connected to the UPS.
12	21 5	5/6/08	D Harwood	Func Defect	Closed	EMS v.4.0.18.0 Pause & Resume a long proposition Infinity Voting Panel v.9.67	Audio pause/resume does not resume at the point of pause with longer referendum text When proposition text exceeded (+/-) a minute, and the pause was initiated before the minute, the resume was at the point of pause. However if the audio pause was attempted in the playback after a minute, the resume was at the beginning of the proposition text, instead of the point of pause.	v.1: 3.2.2.2.b.iii. The ATI shall allow the voter to pause and resume the audio presentation.	05/09/2008 Carson replied that discrepancy #121 was addressed with test firmware version 9.68	Accepted D Harwood 6/6/2008 Retested in Gentwo regression 8 with Infinity ver 4.0 and verified that the audio pause and resumes as expected even with extended text.
12	22 6	6/5/08		Doc Defect	Closed	Appendix U: Election Manageme nt System Poll Worker's Manual v. 1.7	The Initialization Procedures section does not address readiness testing (prior to opening the polls) of the audio device (DoubleTalk confirmation of the activation and volume level status) or the Infinity Voting Panel transition to audio mode.	V.2:2.8.6 Operations Support The vendor shall provide documentation of system operating procedures that meets the following requirements: Defines the procedures required to support system acquisition, installation, and readiness testing. These procedures may be provided by reference, if they are contained either in the system hardware specifications, or in other vendor documentation.	06/06/2008 TWB Updated Pollworker Manual Appendix U to version 1.8 to Test the readiness of the double talk in step 6.3 show ballot.	Accepted D Harwood 6/6/2008 v1.8 of the Pollworkers Manual addresses readiness testing of the audio mode and capabilities.
1.	23 6	6/5/08	C Coggins	Doc Defect	Closed	RC Systems ECN 1025 and Appendix AA MicroVote System Identificatio n Tool User Manual v.1.2	The COTS verification procedure for validation of the correct Doubletalk model conflicts with the volume control RC Systems ECN 1025.	v.2: 2.12.2 The vendor shall provide a description of its practices for part and materials tests and examinations that meet the requirements of vol.1 subsection 8.5. v.1: 8.5.a In order to ensure that voting system parts and materials function properly, vendors shall: select parts and materials to be used in voting systems and components according to their suitability for the intended application. Suitability may be determined by means of special tests.	06/06/2008 TWB Updated Appendix AA to version 1.3 to update the verification of the double talk device has a piece of tape applied to the volume control as stated in ECN1025.	Accepted D Harwood 6/6/2008 Verified that ver 1.3 coincides with ECN1025 regarding the volume control.
1) Pa	24 6 de 196	6/5/08 6 of 211	С	Doc	Closed	Appendix AA	An RC Systems engineering change notice	v.2: 2.12.2 The vendor shall		Accepted

Image: Coggine         Defect         Monitoring         Monitoring         Provide a discessing violation of the correct Doubleable information is the meet admittation         Provide a discessing of the information that information is the meet admittation         Defect         Defect <thdefect< th=""> <thd< th=""><th>I</th><th>#</th><th>Date</th><th>Tester</th><th>Туре</th><th>Status</th><th>Location</th><th>Issue Description</th><th>Standard- Requirement</th><th>Vendor Response</th><th>Resolution Validation</th></thd<></thdefect<>	I	#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
125       8/15/08       K Wilson       Doc Defect       Closed Appendix AA Intervote System       The manual dodes not address unauthorized software.       v: 2: 4.6. The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure provide a detailed description for all system components.       9/18/08 bhirsch       Accepted K. Wilson autourized software.         126       8/15/08       K Wilson       Doc Defect       Closed Appendix AA MicroVote System       The manual does not address producing a tail software installation of near mathorized software installation on the voting equipment.       9/18/08 bhirsch       Accepted K. Wilson autourized software.         126       8/15/08       K Wilson       Doc Defect       Closed Appendix AA MicroVote Systems.       The manual does not address producing a testing of all software fins installed on the voting systems.       9/18/08 bhirsch       Accepted K. Wilson autourized software installed on the voting equipment.         127       8/15/08       K Wilson       Doc Defect       Closed Appendix AA MicroVote System       The manual does not address producing a testing of all software fins installed on the voting system.       9/18/08 bhirsch       Accepted K. Wilson The manual on verificiant installed on the voting system, and to all address software (including fimware) jurisdictions to ensu				Coggins	Defect		MicroVote System Identification Tool User Manualv.1.2	addressing validation of the correct Doubletalk firmware version has not been submitted for the process outlined in the Identification Tool User Manual.	provide a description of its practices for part and materials tests and examinations that meet the requirements of vol. 1 sub- section 8.5. v. 1: 8.5.a In order to ensure that voting system parts and materials function properly, vendors shall: select parts and materials to be used in voting systems and components according to their suitability for the intended application. Suitability may be determined by means of special tests.		D Harwood 6/5/2008 RC Systems ECN 1026 addresses Doubletalk model identification
126       8/15/08       K Wilson       Doc Defect       Closed MicroVote System Identification rool Users Manual v1.3       The manual does not address producing a listing of all software files installed on the voing systems.       v.2: 2.46. The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdicitons to ensure secure software (including firmware) installation to meet the specific requirements of Vol. I, Subsect. 7.4. This information shall address software installed on voing systems.       9/18/08 bhirsch The manual and verification of these files is serified, modified to list all software installed on voing system.       Accepted K. Wilson         127       8/15/08       K Wilson       Doc Defect       Closed Appendix AA MicroVote System Identification process in sufficient detail to address the Identification process in sufficient detail to address the FIPS 140-2 requirement.       The manual does not address the V.2: 2.46. The vendor shall provide a method to compre- hensively ist all software files hat are installed on voing systems.       9/18/08 bhirsch The manual now contains a statement of complexet the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software including firmware) installation to meet the system capabilities and manual v1.3       9/18/08 bhirsch The manual now contains a statement of complexet the System capabilities and manual v1.3       Accepted K. Wilson		125	8/15/08	K Wilson	Doc Defect	Closed	Appendix AA MicroVote System Identification Tool Users Manual v1.3	The manual does not address unauthorized software.	v.2: 2.4.6. The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Vol. I, Subsect. 7.4. This information shall address software installation for all system components. v.1: 7.4.6.a Setup validation methods shall verify that no unauthorized software is present on the voting equipment.	9/18/08 bhirsch The manual and verification tool software has been modified to identify unauthorized software.	Accepted K. Wilson 9/22/2008 Appendix AA v1.5, tool addresses all authorized and unauthorized software.
127       8/15/08       K Wilson       Doc Defect       Closed       Appendix AA MicroVote System Identification Tool Users Manual v1.3       The manual does not address the verification process in sufficient detail to address the FIPS 140-2 requirement.       v.2: 2.4.6. The vendor shall provide a detailed description of the system capabilities and madatory procedures for purchasing jurisdictions to ensure secure software installation to rall system components.       9/18/08 bhirsch       Accepted K. Wilson		126	8/15/08	K Wilson	Doc Defect	Closed	Appendix AA MicroVote System Identification Tool Users Manual v1.3	The manual does not address producing a listing of all software files installed on the voting systems.	v.2: 2.4.6. The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Vol. I, Subsect. 7.4. This information shall address software installation for all system components. v. 1.7.4.6.c: The vendor shall provide a method to compre- hensively list all software files that are installed on voting systems.	9/18/08 bhirsch The manual and verficiation tool software has been modified to list all software files installed on the voting system, and to comprehensively list which of these files is verified, modified, or new.	Accepted K. Wilson 9/22/2008 Appendix AA v1.5, tool addresses all installed software files.
		127	8/15/08	K Wilson	Doc Defect	Closed	Appendix AA MicroVote System Identification Tool Users Manual v1.3	The manual does not address the verification process in sufficient detail to address the FIPS 140-2 requirement.	v.2: 2.4.6. The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Vol. I, Subsect. 7.4. This information shall address software installation for all system components.	9/18/08 bhirsch The manual now contains a statement of compliance to the FIPS 140-2 requirement.	Accepted K. Wilson 9/22/2008 Appendix AA v1.5 addresses usage of a FIPS 140-2 certified cryptographic provider.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
							v.1: 7.4.6.d: The verification process should be able to be performed using COTS software and hardware available from sources other than the voting system vendor. i. If the process uses hashes or digital signatures, then the verification software shall use a FIPS 140-2 level 1 or higher validated cryptographic module. ii. The verification process shall either (a) use reference informa- tion on unalterable storage media received from the repository or (b) verify the digital signature of the reference information on any other media.		
128	8/15/08	K Wilson	Doc Defect	Closed	Appendix AA MicroVote System Identification Tool Users Manual v1.3	The manual does not describe that a password is required to boot to the CD or that the CD is otherwise protected with a tamper evident technique. It does not describe an enabled/disabled indicator or that the CD is disabled during voting.	<ul> <li>v.2: 2.4.6. The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Vol. I, Subsect. 7.4. This information shall address software installation for all system components.</li> <li>v.1: 7.4.6.d.i, ii &amp; iii Voting system equipment shall provide a means to ensure that the system software can be verified through a trusted external interface, such as a read-only external interface shall be protected using tamper evident techniques</li> <li>ii. The external interface shall have a physical indicator showing when the interface is enabled and disabled</li> <li>iii. The external interface shall be disabled during voting</li> </ul>	9/18/08 bhirsch The manual now describes the process of using the CD, which includes using a password to access the system. It also describes that the CD is tamper resistant because it's read- only (unlike CD-RW media). The manual now indicates that the CD is used on the EMS computer system which is designed to allow the design of ballots, programming of voting panels, retrieval and tally of results. The EMS computer is not directly involved with the casting of votes, which is handled by the Infinity voting panel and absentee paper ballots.	Accepted K. Wilson 9/22/2008 Appendix AA v1.5 describes usage of a password to boot to the CD drive containing the verification tool.
129	8/15/08	K Wilson	Doc Defect	Closed	Appendix AA MicroVote System Identification Tool Users Manual v1.3	The manual does not describe the verification of all registers and variables. Additionally it does not identify the values of the static registers and variables or the initial starting values of all dynamic registers and variables listed, excluding the values set to conduct a specific election.	v.2: 2.4.6. The vendor shall provide a detailed description of the system capabilities and mandatory procedures for purchasing jurisdictions to ensure secure software (including firmware) installation to meet the specific requirements of Vol. I, Subsect. 7.4. This information shall address software installation for all system components.	9/18/08 bhirsch The manual now describes the method to identify the values of the static registers and variables, as well as the starting values of all dynamic registers.	Accepted K. Wilson 9/22/2008 Appendix AA v1.5 addresses verification of the state of the EMS system (with reference to the EMS User Manual). Appendix AA also addresses verification of the software on the Infinity DRE. Appendix

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
							<ul> <li>v.1:7.4.6.e Setup validation methods shall verify that registers and variables of the voting system equipment contain the proper static and initial values.</li> <li>i. The vendor should provide a method to query the voting system to determine the values of all static and dynamic registers and variables including the values that jurisdictions are required to modify to conduct a specific election.</li> <li>ii. The vendor shall document the values of all static registers and variables, and the initial starting values of all dynamic registers and variables listed for voting system software, except for the values set to conduct a specific election.</li> </ul>		U v1.9 addresses verification of the state of the registers in the Infinity DRE.
130	8/15/08	K Wilson	Doc Defect	Closed	Appendix Y - Build and Installation Instructions - EMS v.2.1	The procedures for set up and EMS installation on a COTS laptop do not address methods to ensure any modem hardware is disabled.	v.1: 7.3.2 Vendor develops and documents in detail the measures to be taken in a central counting environment. These measures shall include physical and procedural controls related to the: Reporting data.		Accept 9/8/08 CCoggins - v.2.2 verified instructions address disabling the modem on a COTS laptop
131	8/15/08	K Wilson	Doc Defect	Closed	Sect 2.6 System Security Spec EMS v.1.4	The EMS system configuration submitted for certification specifies installation of the EMS on a stand alone platform. The following contain conflicting EMS network connection references: Pg 3 describes the possibility that EMS is networked; Pg 4 "whenever possible" does not exclude a LAN connected to jurisdiction wide LAN or subnet; Pg 10: "EMS communicates with the MSDE 2000 data engine employing TCP/IP protocol, even if the EMS application and MSDE 2000 exist on the same physical computer. By default, the listening port is set to "1433", but this can be modified for each installation to provide the jurisdiction the ability to enable firewall security of the EMS TCP/IP traffic. This firewall should prohibit other nodes of the same network or sub-network from accessing EMS network traffic" Pg 10: EMS_Installation_Instructions describe network setup capability to achieve database connectivity on the same box. pg 11: "Data interception is prevented since communication is done via LAN" & "The results database extract can be placed by	v.1: 7.3.2: The vendor shall develop and document in detail the measures to be taken in a central counting environment. These measures shall include physical and procedural controls related to the handling of counting operation and reporting data.		Accept 9/8/08 CCoggins - v. 1.5 verified specification updates consistent with a stand alone platform

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
						EMS in a secure location on the juris- diction's local area network (LAN)"			
132	8/15/08	K Wilson	Doc Defect	Closed	Sect 2.11 Config Mgmt Plan EMS v.1.3	The EMS system configuration submitted for certification specifies installation of the EMS on a stand alone platform. The following contain conflicting EMS network connection references: pg 7: Userids and Passwords will be created and maintained on the LAN" pg 8 "EMS software shall be scalable so that it will run on systems from a single computer in a small county to a large network of distributed workstations in a large metropolitan county"	v.1: 7.3.2: The vendor shall develop and document in detail the measures to be taken in a central counting environment. These measures shall include physical and procedural controls related to the handling of counting operation and reporting data.	09/05/08 bhirsch Reference used on pg 7 (Userids and Passwords) refers to the development environment (which is networked), not the end user environment. Could not find reference on pg 8 applicable to scalability.	Accept 9/8/08 CCoggins - Tester error. The specific context of the pg. 7LAN reference was not noted. Discrepancy reporting error: pg 8 quote was under the wrong document. See #137
133	8/15/08	K Wilson	Doc Defect	Closed	Sect 2.5 SW Design & Spec EMS v.2.4	The EMS system configuration submitted for certification specifies installation of the EMS on a stand alone platform. The following contain conflicting EMS network connection references: pg 15 "The physical location of the MSDE 2000 installation may be on the same computer as the EMS application is installed, or it may be located on another computer/server on the customer's Local Area Network (LAN). EMS requires access to a laser printer a node on the customer's LAN. If the printer is attached via a LAN Although file sharing is not a requirement of EMS, files can be stored on the customer's LAN, "	v.1: 7.3.2: The vendor shall develop and document in detail the measures to be taken in a central counting environment. These measures shall include physical and procedural controls related to the handling of counting operation and reporting data.	09/05/08 bhirsch Removed reference to operation on a LAN	Accept 9/8/08 CCoggins - v.2.5 verified specification updates consistent with a stand alone platform
134	8/15/08	K Wilson	Doc Defect	Closed	Appx V EMS User Manual v.2.4	The EMS system configuration submitted for certification specifies installation of the EMS on a stand alone platform. The following contain conflicting EMS network connection references: pg 160: "EMS supports the option of setting up multiple OMR and Gemplus card readers in a local area network	v.1: 7.3.2: The vendor shall develop and document in detail the measures to be taken in a central counting environment. These measures shall include physical and procedural controls related to the handling of counting operation and reporting data.	9/5/08 bhirsch Removed reference to operation over a LAN	Accept 9/8/08 CCoggins - v.2.5 verified manual identifies this version of EMS does not support networking of multiple OMR & Gemplus readers
135 Page	8/19/08	K Wilson	Func Defect	Closed	Logging a checksum validation	Checksums are generated for vote records by the Infinity. When transferred by serial port, an error in the checksum is not logged or reported to user.	v.1: 7.5.1.a Voting systems that use electrical or optical transmission of data shall ensure the receipt of valid vote records is verified at the receiving station. This should include standard transmission error detection and correction methods such as checksums or message digest hashes. Verification of correct transmission shall occur at the voting system application level and ensure that the correct data is recorded on all relevant components consolidated within the polling place prior to the voter completing casting of his or her	09/05/08 bhirsch Modified EMS source code to calculate checksum of received vote record data over serial connection and compare it to received checksum value. Checksum mismatch will generate user warning and audit log entry.	Accept 9/11/08 KWilson - By review of v4.0.21 of EMS Source Code. 4 additional lines of code not in the error path added to ICS_Controller.vb and frmVExt.vb to verify checksum. All other additional lines of code (6 lines) are used to report the error, log the error and join with previously existing error path code at that point.

#	Date	Tester	Туре	Status	Location	Issue Description	Standard- Requirement	Vendor Response	Resolution Validation
							ballot.		
136	8/25/08	C Coggins	Doc Defect	Closed	Sect 2.11 Config Mgmt Plan EMS v.1.3	The report or method by which the MicroVote tracks to whom they deliver voting system software is not identified.	v.1: 7.4.4. f. The vendors and testing labs shall document to whom they provide voting system software.	9/5/08 bhirsch Added reference to the COTS Atrex accounting program for tracking of voting system software deliveries.	Accepted 9/8/08 C Coggins v. 1.4 references the tracking of software deliveries
137	9/8/08	K Wilson	Doc Defect	Closed	Sect 2.5 SW Design & Spec EMS v.2.5	The EMS system configuration submitted for certification specifies installation of the EMS on a stand alone platform. The following contain conflicting EMS network connection references: pg 7 "EMS software shall be scalable so that it will run on systems from a single computer in a small county to a large network of distributed workstations in a large metropolitan county"	v.1: 7.3.2: The vendor shall develop and document in detail the measures to be taken in a central counting environment. These measures shall include physical and procedural controls related to the handling of counting operation and reporting data.	9/17/08 bhirsch Removed reference to scalability involving network connectivity for large metropolitan counties.	Accepted 9/19/08 C Coggins v.2.6 verified removal of reference

## 7.6 Appendix F: Trusted Build & Validation Tools EMS v.4.0 voting system

The MicroVote Election Management Voting System (EMS) v.4.0 voting system is composed of the hardware, software, and documents identified in section 3.

IBeta uses a COTS hash program (Maresware) to obtain File Size, MD5 and SHA1 hashes during witness and trusted builds. Both algorithms have been validated using the test data from the NIST NSRL website

(<u>http://www.nsrl.nist.gov/testdata/</u>). This program is widely used in forensic analysis of systems and also used by some states to verify their voting software. The MD5 and SHA1 hashes are taken to be consistent with the currently distributed NSRL data files which contain the hash resulting from each of those two algorithms.

#### 7.6.1 Witness of the Trusted Build EMS 4.0.21

	Voting Witness Trusted Build	Issue Date:	Version:
	iBeta Quality Assurance	9/23//2008	<b>2.0</b>
Document Title:	Witness of the Trusted Build – EMS 4.0.21		Page #: 1 of 4

Trace: NIST Hdbk 150-22: 4.2.3, 4.13.2, 4.13.4, 5.10.4; VSS: vol.1 9.6.2.4; VVSG: vol. 1:7.4.4, vol.2 18.2.4

Listed below are the Source Code Applications reviewed by iBeta for the Final Build and Witness: Voting System: Election Management System (EMS) v 4.0 Client: MicroVote General Corporation

Application/ Component	Version	Language	File Signature
EMS	4.0.21.x	VB.Net	20080923.ems4021.src.hash.txt
EMS	4.0.21.x	SQL	20080923.ems4021.src.hash.txt

Document Prior to the Build Witness:	
Vendor Name	Microvote General Corporation
Vendor Consultant(s)	Bernie Hirsch
Witness Name	Kevin Wilson (primary)
	Bill Miller (IT OS clean/install) (see 4.0.19)
	Lich Le (Recorder for 4.0.19)
Witness Title	Sr. Security Lead
iBeta COTS used to clean the build environment disk	Secure Erase (CMRR) HDDErase v3.3
(name and version)	
Verify (by signature) that the build environment is isolated	20080529.mvems.os.hash.txt (see 4.0.19)
and controlled by iBeta	in custody since 4.0.19, 4.0.20
	20080923.mvems4.0.21.preall.hash.txt
Witness attests to verifying that the source code being	Yes
built is the source code provided by iBeta	
Vendor CM Tool and version	N/A
Build tool(s) and version(s)	Microsoft .NET Framework v1.1
	.NET 1.1 SP1 for above (KB867460)
	Visual Studio 2003 SP1
	Franson Serial Tools SDK v2.01g
	ComponentOne Studio Enterprise 2005
Additional file(s) loaded and version(s)	N/A
Record the build environment file signature	1) 20080529.mvems.tls.hash.txt
	2) 20080530.mvems.tls.hash.txt
	3) 20080923.mvems4.0.21.prebuild.hash.txt
	4) 20080923.mvems4.0.21.prebuild.hash.ems.txt
	contains only the ems folder of drive
Verify (by signature) the build environment file signature	Yes
Verify (by signature) that each file signature of the source	Yes
code loaded matches as documented above	
Method of Build Witness	Visual Studio .NET 2003 IDE
3 <sup>°°</sup> Party Libraries and Version	Franson Serial Tools

	ComponentOne
3 <sup>rd</sup> Party Source Code (COTS) and Version	
3 <sup>rd</sup> Party DLLs, Drivers, etc. and Version(s)	C1.C1Pdf.dll v1.1.20053.42 C1.C1PrintDocument.dll v1.0.20053.287 C1.Win.C1Command.dll v1.0.20052.128 C1.Win.C1FlexGrid.dll v2.5.20053.220 C1.Win.C1Input.dll v1.0.20052.99 C1.Win.C1List.dll v1.1.20052.78 C1.Win.C1PrintPreview.dll v1.0.20053.287 C1.Win.C1Report.dll v2.5.20053.188 C1CommandConverter.dll v1.0.20023.2 C1.Common.dll v1.0.20052.118 7Adodb.dll v7.0.9466.0 Interop.ACTIVEVOICEPROJECTLib.dll v1.0.0.0 Interop.lasHelperLib.dll v1.0.0.0 Interop.SpeechLib.dll v1.0.0.0 Microsoft.mshtml.dll v7.0.3300.0 SerialNET.dll v2.0.0.1
Record the combined source code and build environment file signature	<ol> <li>20080529.mvems.prebuild.hash.txt</li> <li>20080530.mvems.prebuild.hash.txt</li> <li>20080923.mvems4.0.21.prebuild.hash.txt</li> </ol>
Record the Final Build Version – Unique Identifier	4.0.21.0
Certification Application Number (if applicable)	MVT0701
Document during the Build Witness:	
Date / Time Build Initiated	9/23/2008 1050 MDT (1650 GMT)
Compiler and Version	Visual Studio .NET 2003 IDE as above
Application Name	Election Management System consisting of EMS.exe, EMSMeasurements.dll with installation utilities EMSInstall (msi Setup) and EMSCustomerInstall (msi Setup)
Application Version Order	4.0.21
Obtain Names and Signatures of all persons present during build (record below)	see Notes
Issue(s) and Resolution(s)	see Notes, no fatal issues
Document at Completion of the Build Witness:	
Record file signature of the final build	20080923.mvems4.0.21.postbuild1.hash.txt – ems folder 20080923.mvems4.0.21.postbuild2.hash.txt – c drive 20080923.mvems4.0.21.built.hash.txt – of built items transferred to USB e: drive
(i.e., CD)	
Record each piece of media that is part of the build (each must have a unique identifier)         Explanation of any significant differences observed	20080923MVEMS Microvote Trusted Build Election Management System SEP-23-2008 EMS4.0.21 9/23/2008 Copy 1, Copy 2, Copy 3 Insignificant notes given below.

Notes:

1. See DO2.1TDP-Y.doc "Appendix Y Build and Installation Instructions Election Management System v 2.1 12/5/2007" for procedures followed to generate the build.

2. Following trusted build of 4.0.19.0, it was discovered that there was a defect in the vb.net code that was not allowing communications between EMS and the Infinity panel with the Infinity panel set to the 4.00 version. This code was fixed after full release of the 4.0.19.0 Trusted Build. The EMS code was removed from the Trusted Build box, a fresh 20080530.mvems.tls.hash.txt was taken and a comparison indicated that the only changes were in the OS and a few crumbs of the Microsoft IDE. So we reloaded the code and did another Trusted Build from there. Because Bernie Hirsch had to catch a plane, we only kept the notes of the hashes in the file 20080530.mvems.notes.txt and Bernie Hirsch and Kevin Wilson signed the printed version of that document. This document was filled out on 6/2/2008 and sent to Mr.

Hirsch for signature. The CD contains all hashes from both the 4.0.19 and 4.0.20 builds since the 4.0.20 build relies on the installation from the 4.0.19 build.

3. As with the previous 4.0.19 trusted build, it was late and the full hash of the box was begun, everyone went home or caught their flight and the file obtained by K. Wilson on 6/2/2008. The created filename was inadvertently left to 20080530.mvems.postbuild1.hash.txt, but this error was discovered on 6/2/2008 and the resulting hash file was renamed 20080530.mvems.postbuild2.hash.txt.

4. Trusted Build Hardware configuration:

- Dell Dimension 4100; Pentium III 930MHz; 512MB RAM; DVD-Rom Model XJ-HD166S; 3.5" Floppy Drive; 75G Hard Drive
- Windows XP with Service Pack 2 v2002

5. Trusted Build continued following EAC review and changes to code delivered on 9/5/2008. Same machine, hardware and COTS software. When first invited to logon during preparation on 9/22/2008, the OS needed to be registered so K. Wilson registered the XP with Microsoft. 20080922.preall.hash.txt was taken after that, and compared to the final hash of the 4.0.20.0 build, 20080530.postbuild2.hash.txt. No significant differences were observed.

20080923.mvems4.0.21.preall.hash.txt taken after prior version of source code was removed. This build utilized DO2.2TDP-Y.doc "Appendix Y Build and Installation Instructions Election Management System v 2.2 9/5/2008," which had no differences in the build portion of the document from the previous version.

Build witness signatures are on file at iBeta for the 9/23/2008 Trusted Build include: MicroVote: Bernie Hirsch iBeta: Kevin Wilson, Bill Miller, Lich Li

### 7.6.2 Witness of the Trusted Build - Infinity v.4.0

Peta	Voting Witness Trusted Build	Issue Date: 6/12/2008	Version:
GUALITY ASSURANCE	iBeta Quality Assurance		1.0
Document Title:			Page #:
	Witness of the Trusted Build - Infinity 4.0		1 of 4

Trace: NIST Hdbk 150-22: 4.2.3, 4.13.2, 4.13.4, 5.10.4; VSS: vol.1 9.6.2.4; VVSG: vol. 1:7.4.4, vol.2 18.2.4

Listed below are the Source Code Applications reviewed by iBeta for the Final Build and Witness: Voting System: Election Management System (EMS) v 4.0 Client: MicroVote General Corporation

Application/ Component	Version	Language	File Signature
Infinity	4.0	С	080529.src.hash.txt
Encrypt.exe – not distributable, used	2.14	С	080529.src2.hash.txt
only for build process			
InfUpdater.exe – used only for loading	1.0.1	VB6	080529.src2.hash.txt
Infinity executable onto Infinity panel			
GetUpdt.exe	2.16	С	080529.src2.hash.txt

Document Prior to the Trusted Build:	
Document Prior to the Build Witness:	
Vendor Name	Microvote General Corporation
Vendor Consultant(s)	Bernie Hirsch
Witness Name	Kevin Wilson (primary)
Witness Title	Sr. Security Lead
iBeta COTS used to clean the build environment disk (name and version)	Secure Erase (CMRR) HDDErase v3.3 see Note 1,2
Verify (by signature) that the build environment is isolated and controlled by iBeta	20080529.mvinf.os.hash.txt in custody of iBeta in a locked lab since 5/29/2008 20080612.mvinf.os.hash.txt
Witness attests to verifying that the source code being built is the source code provided by iBeta.	Initials: KW
Consultant attests to verifying that the source code being built and provided by iBeta is the source code provided to iBeta for review.	Initials: BH
Vendor CM Tool and version	N/A
Build tool(s) and version(s)	Borland C++ Development Suite v. 5.02
Additional file(s) loaded and version(s)	Lgb1.chr, Lgb2.chr, Lgn1.chr, Lgn2.chr Smb1.chr, Smb2.chr, Smn1.chr, Smn2.chr (Borland COTS font files)
Record the build environment file signature	20080529.mvinf.tls.hash.txt
Verify (by signature) the build environment file signature	ok
Verify (by signature) that each file signature of the source code loaded matches as documented above	ok
Method of Build Witness	Infinity.exe from the previous trusted build (sha1: 93656F6E1FA5D40AAA054066C6FC927EF33659F9) Borland IDE to build getupdt.exe scripts to create updtxxxx.\$\$\$, manual renaming of updtxxxx.\$\$\$ to updt0400B.\$\$\$
3 <sup>rd</sup> Party Libraries and Version	DataLight Rom-DOS v6.22 PKzip v2.04g
3 <sup>rd</sup> Party Source Code (COTS) and Version	N/A
3 <sup>rd</sup> Party DLLs, Drivers, etc. and Version(s)	DataLight Rom-DOS v6.22
Record the combined source code and build environment	see 20080612.postbuild.hash.txt

file signatures	
Record the Final Build Version – Unique Identifier	Infinity 4.00
Certification Application Number (if applicable)	MVT0701
Document during the Build Witness:	
Date / Time Build Initiated	11:15 MDT 6/12/2008
Compiler and Version	as above
Application Name	Infinity Voting Panel consisting of Infinity.exe, (executable), updt0400B\$\$\$ (distributable container consisting of infinity.exe, go.bat, getupdt.exe, chkdsk.exe, lgb1.chr, lgb2.chr, lgn1.chr, lgn2.chr, smb1.chr, smb2.chr, smn1.chr, smn2.chr)
Application Version Order	4.00
Obtain Names and Signatures of all persons present during build (record below)	ok
Issue(s) and Resolution(s)	see Notes
Document at Completion of the Build Witness:	
Record file signature of the final build	20080529.mvinf.postbuild.hash.txt, contains up to infinity.exe 20080612.mvinf.postbuild.hash.txt, contains production of updt0400B\$\$\$
Record the type of unalterable storage media being used (i.e., CD)	CD

Note:

- 1. We observed on 6/9/2008 that the version of GetUpdt.c used to build GetUpdt.exe was 2.13 not 2.16. This file is distributed during the update process to perform updates. It affects only the contents of the update package, and not the contents of Infinity.exe. Following this observation, we determined that the only changes to the code between the 2.13 version and the 2.16 version are that in the 2.13 version there were 2 lines of obsolete code that deleted obsolete and non-existent files, cardio.exe and status.cfg, but in the 2.16 version those 2 lines were removed. Version 2.13 with those lines of code was used to generate tested Infinity panels using the Witness Build of 8/27/2007 9.61 and EMS 4.0.6.0. Had we ever received these files, they would have been deleted from our functional test panels at that time. So all functional testing was done without these files present.
- 2. Procedure to build the installation files of the Infinity panel
  - The repository CD will consist of
    - i. the GetUpdt.c source code
    - ii. the GetUpdt.exe executable
    - iii. the UPDT0400B.\$\$\$ distributable file
    - iv. the contents of the original trusted build contained in a subfolder 080529INF400
  - Verify the hash of the build system matches the original post build hash within the files not affected by the operation of the OS. That includes the hash and location of Infinity.exe in the C:\My Documents\Infinity 300\Update Prep folder.
  - Remove the files
    - i. GetUpdt.c (2.13)
    - ii. GetUpdt.exe (2.13)
    - iii. UPDATE.\$\$\$, UPDATE.EXE, UPDATE.ZIP
    - iv. C:\WINDOWS\Desktop\updt0400.\$\$\$
    - v. and hash the C:\My Documents, C:\Windows\Desktop subfolders
    - Replace the GetUpdt.c file (2.16) and hash the C:\My Documents subfolders
  - Build GetUpdt.exe (2.16)
  - Run the PrepareUpdate.bat script in C:\My Documents\Infinity 300\Update Prep\ [this is step 6 of Appendix Y]
  - As described in the Appendix Y document, rename C:\WINDOWS\Desktop\updtxxxx.\$\$\$ to be updt0400B.\$\$\$
  - Add the Infinity.exe and Updt0400B.\$\$\$ to the built folder of the repository for the CD
  - Hash the entire box.
- 3. To avoid any confusion, the following files were removed from the 080529INF400 subfolder of the CD: \Built\Infinity\infBuildTools\GetUpdt.exe, \Build\Infinity\Infinity 400\updt0400.\$\$\$

4. After the compilation and linking of the Infinity.exe and GetUpdt.exe programs, the programs and configuration files are combined into a zipped package. That package is encrypted using encrypt.exe. That program has no other use or capability and utilizes a proprietary encryption algorithm.

Build witness signatures are on file at iBeta for the 5/30/2008 Trusted Build with install file GetUpdt.c v.2.13: MicroVote: Bernie Hirsch iBeta: Kevin Wilson, Bill Miller, Lich Li

Build witness signatures are on file at iBeta for the 6/12/2008 Trusted Build with install file GetUpdt.c v.2.16: MicroVote: Bernie Hirsch iBeta: Kevin Wilson, Bill Miller, Lich Li

### 7.6.3 MicroVote System Identification Tools

As identified in Section 5.8 and 5.9 of the US Election Assistance Commission Test and Certification Program Manual delivery of the System Identification Tools to the EAC is the responsibility of MicroVote. Review of the System Identification Tools is the responsibility of the EAC. iBeta reviewed the installation documentation to the requirements of v.2: 2.6.4 (See Appendix C) and confirms that MicroVote provided the following validations tools at the end of the certification test effort:

- Appendix AA MicroVote System Identification Tool User Manual v.1.5; and
- VerificationTools400CD.iso.

iBeta confirmed that the functionality of the tool was consistent with the operations identified in the User Manual.

## 7.7 Appendix G: EAC Certification Number & Voting System Configuration

This report was submitted to the Election Assistance Commission on 9/26/2008. It is pending their acceptance. No certification number has been issued. When iBeta receives notification that the report is accepted, a revised version of the report will be issued. The Certification number will appear on the Title page and in the report page header. Any other revisions will be noted in the version history

This Certification is for the Voting System Hardware and Software configuration(s) listed in section 3.1.



# Warrant of Accepting Change Control Responsibility

The MicroVote EMS V4.0 voting system has been meticulously tested to the EAC 2005 Voluntary Voting System Guidelines. During testing, it was determined that the following engineering changes were required:

Description	<u>Date</u>	<u>Manufacturer</u>
Engineering Change Notice 1330 Engineering Change Notice 1408 Engineering Change Notice 1413 Engineering Change Notice 1420 Engineering Change Notice 1424 Engineering Change Notice 1437 Engineering Change Notice 1438 Engineering Change Notice 1449 Engineering Change Notice (ECN) # 1023 Engineering Change Notice (ECN) # 1024 Engineering Change Notice (ECN) # 1025 Engineering Change Notice (ECN) # 1025 Engineering Change Notice (ECN) # 1026 RC Systems DoubleTalk RC8650 Voice Synthesizer ECR/ECN 101 Part Number 0431164951	4/16/2001 6/7/2005 10/10/2005 3/14/2006 8/22/2007 9/19/2007 4/13/2008 5/15/2008 5/28/2008 5/28/2008 6/5/2008 6/5/2008 4/18/2007 4/21/2008	Carson Manufacturing Co. Inc. Carson Manufacturing Co. Inc. RC Systems RC Systems
many revision o Engineering Change Notice Declaration	1/23/2008	Carson Manufacturing Co. Inc.

I hereby warrant that these engineering changes will be included in the final certified product that is delivered to customers.

Attested by: MICROVOTE GENERAL CORPORATION

Signed: (ARied OF Date: 9-26-28 Printed: James MRies Title: President

6366 Guilford Avenue 🔳 Indianapolis, IN 46220-1750 🔳 317/257-4900 🔳 Fax 317/254-3269

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## 7.9 Appendix J: MicroVote EMS Voting System v.4.0 Implementation Statement

A copy of the MicroVote Implementation statement is submitted as a separate document, *Implementation Statement Election Management System v.1.1.*
## 7.10 Appendix I: Amended Test Plan

The <u>MicroVote General Corporation Election Management System (EMS) Voting System v. 4.0.0 VSTL</u> <u>Certification Test Plan v.3.0</u> and the <u>EAC Approval Letter</u> are found on the EAC website.

This test plan was amended during test execution. This amended test plan is submitted as a separate document, *MicroVote General Corporation Election Management System (EMS) Voting System v. 4.0.0 VSTL Certification Test Plan v.4.0.* Changes are provided in red text for easy identification.