



United States Election Assistance Commission



Certificate of Conformance

Unisyn OpenElect 1.1
(Modification)

The voting system identified on this certificate has been evaluated at an accredited voting system testing laboratory for conformance to the 2005 *Voluntary Voting System Guidelines (2005 VVSG)*. Components evaluated for this certification are detailed in the attached Scope of Certification document. This certificate applies only to the specific version and release of the product in its evaluated configuration. The evaluation has been verified by the EAC in accordance with the provisions of the *EAC Voting System Testing and Certification Program Manual* and the conclusions of the testing laboratory in the test report are consistent with the evidence adduced. This certificate is not an endorsement of the product by any agency of the U.S. Government and no warranty of the product is either expressed or implied.

Product Name: OpenElect

Model or Version: Version 1.1 (Modification)

Name of VSTL: Wyle Laboratories

EAC Certification Number: UNS10121966-OE-1.1

Date Issued: April 09, 2012

*General Counsel and Acting Executive Director
U.S. Election Assistance Commission*

Scope of Certification Attached

Manufacturer: Unisyn Voting Solutions
System Name: OpenElect 1.1
Certificate: UNS10121966-OE-1.1

Laboratory: Wyle Laboratories
Standard: 2005 VVSG
Date: 04/09/2012



Scope of Certification

This document describes the scope of the validation and certification of the system defined above. Any use, configuration changes, revision changes, additions or subtractions from the described system are not included in this evaluation.

Significance of EAC Certification

An EAC certification is an official recognition that a voting system (in a specific configuration or configurations) has been tested to and has met an identified set of Federal voting system standards. An EAC certification is **not**:

- An endorsement of a Manufacturer, voting system, or any of the system's components.
- A Federal warranty of the voting system or any of its components.
- A determination that a voting system, when fielded, will be operated in a manner that meets all HAVA requirements.
- A substitute for State or local certification and testing.
- A determination that the system is ready for use in an election.
- A determination that any particular component of a certified system is itself certified for use outside the certified configuration.

Representation of EAC Certification

Manufacturers may not represent or imply that a voting system is certified unless it has received a Certificate of Conformance for that system. Statements regarding EAC certification in brochures, on Web sites, 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.

System Overview:

The Unisyn OpenElect 1.1 modification is an end-to-end optical scan, paper based, precinct voting system that uses touch screen and scan technology to scan, validate and tabulate ballots. It provides second chance voting, assistance for a wide variety of special needs voters, tabulates precinct results, and accumulates all results into a central reporting system. Additional functionality includes central scan, election definition and ballot generation, as well as full electronic adjudication.

Certified System before Modification:

Unisyn Voting Solutions OpenElect 1.0

Certificate ID: UNS10121966-OE

Unisyn Voting Solutions OpenElect 1.0.1

Certificate ID: UNS10121966-OE-WI

Anomalies and/or Additions addressed in OpenElect 1.1:

The Unisyn OpenElect 1.1 modification provides enhancements to the Ballot Layout Manager, including expansion to support ballots lengths of 11, 14, 17, 19 & 21 inches; support for single sided ballots; ballot measures can extend the full width of the ballot page; creation of sample ballots; and other ballot formatting enhancements.

Unisyn OpenElect 1.1 enhancements were also made to the OpenElect Central Suite applications in the following areas: Tabulator, Election Manager, and OpenElect Voting Central Scan applications. Supporting changes were also made to the OVI (OpenElect Voting Interface) and OVO (OpenElect Voting Optical) firmware. Security enhancements were also added to continue to extend the system's security features and capabilities.

The OpenElect Central Suite of applications was expanded with the addition of a new application: the Adjudicator. This new application allows a jurisdiction to evaluate ballots with questionable markings and change them if need, in accordance with the perceived intent of the voter.

Unisyn also introduced a 15" LCD touchscreen as an option for OVI units.

Mark definition:

The Unisyn Open Elect 1.1 system will consistently recognize a contiguous mark that is placed fully within the designated target area and fills 20% of the total target, or alternatively, a 1mm wide line across the full length of the target area. Both types of marks must be made with a marking device with sufficiently low reflectance in the visible red band and is of sufficient density/color such that the scanner registers it as black. Most blue, black and green ballpoint pens and markers also meet necessary reflectance requirements and may be used.

Tested Marking Devices:

Various commercially available marking implements were tested on the Unisyn OpenElect 1.1 scanner to determine their acceptability and readability when used with the Visible Spectrum scanners used. Forty-six pens and pencils were tested, based on the following criteria:

- A. A prior indication of mixed results regarding scanning success using older technology (with either PDI or competitive scanners).
- B. Writing implements reported as problem markers by several State Lotteries.
- C. Common writing instruments used throughout the U.S. and Canada.

- D. Background colors (primarily red and yellow tones) were excluded, based on their usage as background colors (See Appendix E of the TDP).

The following 46 implements achieved 100% read reliability, regardless of the type of mark made, or its size. The following is a list of the type of writing instruments tested:

No.	Color	Mfg. Brand Name	Description
1	Black	Uniball	Ballpoint medium
2	Black	Zebra	Felt-tip medium
3	Black	Scripto Easy Roller	Ballpoint fine
4	Black	Paper Mate (Write Bros.)	Ballpoint fine
5	Black	Spectra	Ballpoint fine
6	Black	Magic Marker	Liquid Caryon Felt-tip medium
7	Black	Flair	Felt-tip medium
8	Black	Wearever Laundry	Ballpoint fine
9	Black	Uniball	Ballpoint fine
10	Blue	Magic Marker	Liquid Crayon Felt-tip medium
11	Blue	Scripto	Easy Roller Ballpoint
12	Blue	Flair	Felt-tip
13	Blue	Magic Marker	Super Hard Felt-tip very fine
14	Blue	Paper Mate (Write Bros.)	Ballpoint
15	Blue	Magic Marker	Liquid Crayon Felt-tip
16	Blue	Blue/White Pen	Ballpoint
17	Blue	Flair	Felt-tip
18	Blue	Flash	Felt-tip
19	Blue	Flash	Felt-tip
20	Blue	Buffalo Artist #10	Felt-tip large
21	Blue	Big Office Market	Felt-tip
22	Black	Berol Eagle	Felt-tip large
23	Black	Flash	Felt-tip
24	Black	Flash	Felt-tip
25	Blue	Superiter	Felt-tip
26	Blue	Bic Biro	Ballpoint fine
27	Blue	Berol Roller	Roller Liner 5900 Ballpoint
28	Black	Bic Biro	Biro Ballpoint medium
29	Blue	Wonderiter	Ballpoint
30	Black	Pinpoint Faber-Castell	Ballpoint
31	Blue	Bic	Ballpoint fine
32	Black	Bic	Ballpoint
33	Black	Paper Mate	Ballpoint
34	Green	Superiter	Felt-tip
35	Blue	Dixon	Pencil

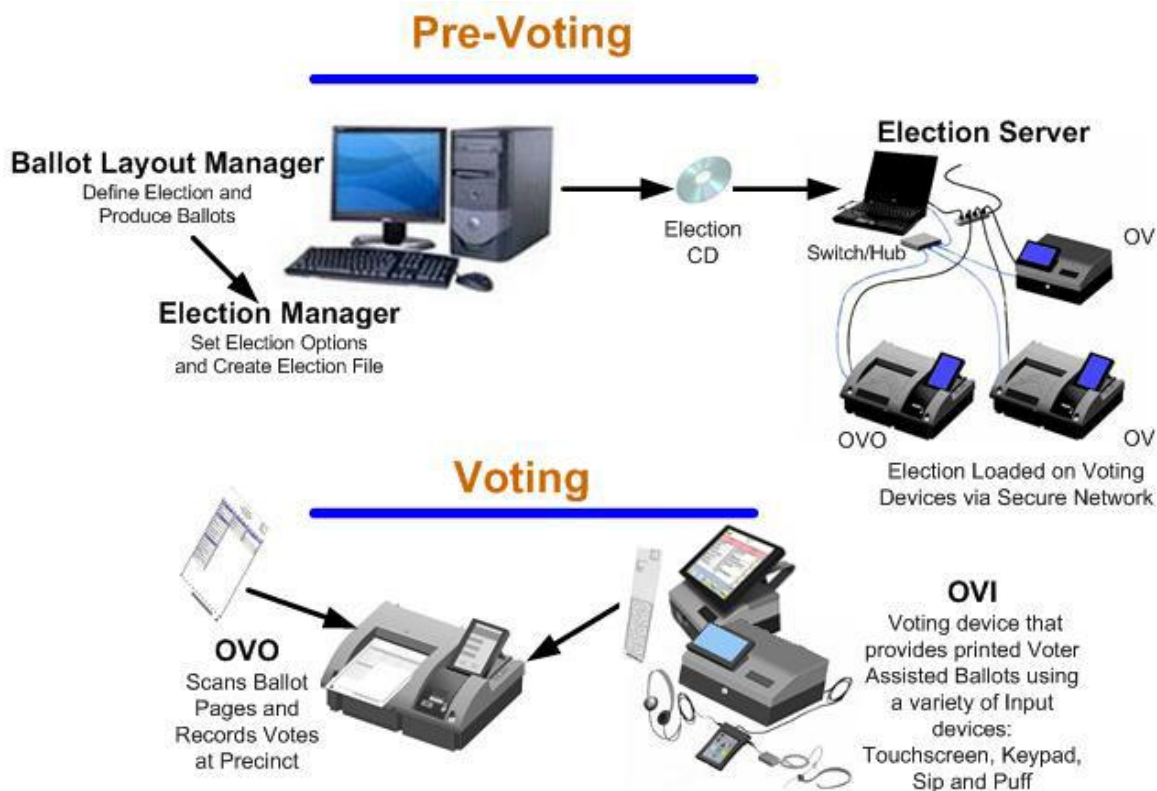
36	Green	Magic Marker	Liquid Crayon Felt-tip
37	Black	Pilot	Ballpoint
38	Green	Berol	Felt-tip
39	Green	Color Brite	Pencil
40	Brown	Buffalo	Felt-tip large
41	Brown	Magic Marker	Felt-tip large
42	Brown	Pentel	Felt-tip large
43	Green	Pentel	Felt-tip large
44	Purple	Pentel	Felt-tip large
45	Purple	Magic Marker	Felt-tip large
46	Purple	Pentel	Felt-tip large

Language capability:

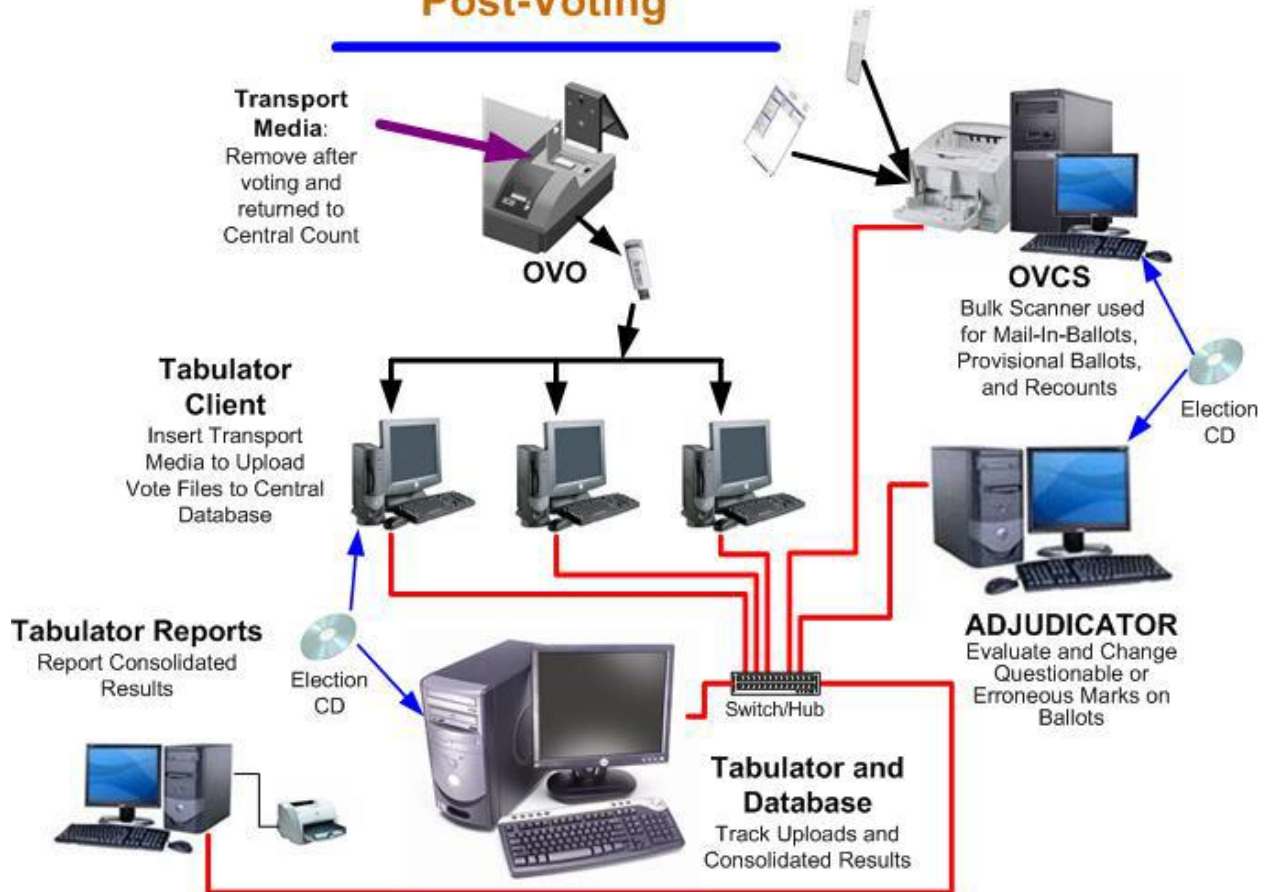
System supports English (default), Armenian, Cambodian, Cantonese, Chinese, Japanese, Korean, Mandarin, Russian, Spanish, Tagalog, and Vietnamese. Any language not explicitly listed here is not supported.

Components Included:

This section provides information describing the components and revision level of the primary components included in this Certification.



Post-Voting



System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comments
OVO	1.1.0	Rev. E	Linux CentOS 5.0	
OVI – 7’ Screen	1.1.0	Rev. F	Linux CentOS 5.0	
OVI – 15’ Screen	1.1.0	Rev. A	Linux CentOS 5.0	
OVCS	1.1.0	Hardware v. 1.0	Linux CentOS 5.2	
Ballot Layout Manager (BLM)	1.1.0	--	--	+ Database amendment for font size – see EAC CCR0001
Election Manager(EM)	1.1.0	--	--	
Software Server(SS)	1.1.0	--	--	
Election Server(ES)	1.1.0	--	--	
Tabulator Client(TC)	1.1.0	--	--	
Tabulator(Tab)	1.1.0	--	--	
Tabulator Reports(TR)	1.1.0	--	--	

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comments
Adjudicator	1.1.0	--	--	
Scripter	1.1.0	--	--	
Validator	1.1.0	--	--	
Logger (Library)	1.1.0	--	--	
COTS Components				
Desktop	--	Dell Precision T3500	Dell	PC, Intel Core2Duo 2.4 GHZ or faster processor, 300GB Hard Drive, 4GB 1333 MHZ Memory.
Desktop	--	Dell Optiplex 755	Dell	PC, Intel Core2Duo 2.53 GHZ or faster processor, 4 GB RAM. 250 GB hard drive (Mirrored) 16x DVD-RW +/- drive, 3.5 inch drive, Super VGA or higher resolution video adapter and monitor, appropriatedrivers
Laptop	--	Latitude E5500	Dell	Intel Core2Duo T7250 2.0 GHz , 800 MHz 2.00 GB Ram
Linux	CentOS 5.0/5.7	--	Sun Microsystems	
MySQL Database	5.0.45-7	--	Sun Microsystems	
MySQL connector	5.1.7	--	Sun Microsystems	
Java JRE	6.0 update 2	--	Sun Microsystems	
Java SE Development Kit	6.0 update 2	--	Sun Microsystems	
JavaHelp	2.0_05	--	Sun Microsystems	
Java Cryptography	Jurisdiction Policy Files 6	--	Sun Microsystems	

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comments
Extension				
JasperReports (and supporting libraries)	2.0.5	--	JasperSoft	
Apache Tomcat	6.0.13	--	Apache	
PDI Scanner Driver and Libraries for OVCS	libvbscore.so.1.3.0 libpdiproc.so.1.2.1 libomrcore.so.1.2.4 libimgcore.so.1.3.0 libPDIScan.so.2.1.3 libusb-1.0.so.0.0.0 libxml2.so.2.6.30	--	Peripheral Dynamic Inc.	Eight files in library
Citizen Printer for OVO	1.0.0.6	--	Citizen Mico Human Tech	
openChrome Video Driver	0.2.900-7.e15	--	openChrome	
eGalax Touchscreen Driver	2.03.1712 (32 bit) Kernel 2.6	--	eGalax	
PDI Scanner Driver and Libraries for OVO	libvbscore.so.1.3.0 libpdiproc.so.1.2.1 libomrcore.so.1.2.4 libimgcore.so.1.3.0 libPDIScan.so.6.3.14 pdi_ps3_drv_scanner.ko	--	Peripheral Dynamic Inc.	Five files in library
FVWM Desktop Window Manager	2.4.19	--	FVWM	
RXTX - Library and Jar for serial printer	2.1-7r2	--	RXTX	

System Limitations

This table depicts the limits the system has been tested and certified to meet.

Characteristic	Limiting Component	Limit	Comment
Maximum Elections	BLM	8	
Maximum Precincts in Election	BLM	2000	
Maximum Splits per Precinct	BLM	9	
Maximum Districts	BLM	400	
Maximum Contest per District	BLM	20	

Characteristic	Limiting Component	Limit	Comment
Maximum Parties	BLM	24	
Maximum Parties in Primary	BLM	12	
Maximum Parties w/ Straight Ticket	BLM	12	
Maximum District Types	BLM	25	
Maximum Languages	BLM	10	
Maximum Ballot Styles per Election	BLM	400	
Maximum Contest per Election	BLM	150	There are 150 possible places for contest. However due to ballot constraints a maximum of 81 will fit with single candidates for each.
Maximum Measures per Election	BLM	30	
Maximum Instruction Blocks per Election	BLM	5	
Maximum Headers per Election	BLM	50	
Maximum Candidates per Contest	BLM	120	
Maximum Vote for N of M	BLM	25	
Maximum Ballots per OVO	BLM	5000	
Maximum Card Stock Size	BLM	8.5 x 11, 14, 17, 19 & 21 (Simplex & Duplex)	
Maximum Ballot positions (8.5 x 11) without Rank Choice Voting	BLM	228	Limit
Maximum Ballot positions (8.5 x 14) without Rank Choice Voting	BLM	300	Limit
Maximum Ballot positions (8.5 x 17) without Rank Choice Voting	BLM	372	Limit
Maximum Ballot positions (8.5 x 19) without Rank Choice Voting	BLM	420	Limit
Maximum Ballot positions (8.5 x 21) without Rank Choice Voting	BLM	468	Limit
Maximum Ballot positions (8.5 x 11) with Rank Choice Voting	BLM	456	Limit
Maximum Ballot positions (8.5 x 14) with Rank Choice Voting	BLM	600	Limit
Maximum Ballot positions (8.5 x 17) with Rank Choice Voting	BLM	744	Limit
Maximum Ballot positions (8.5 x 19) with Rank Choice Voting	BLM	840	Limit
Maximum Ballot positions (8.5 x 21) with Rank Choice Voting	BLM	936	Limit
Maximum Ballot Style per OVO	BLM	30/9/10	

Characteristic	Limiting Component	Limit	Comment
Maximum Ballots Processed (Ballot Box)	Ballot Box	2500	
Maximum Units Simultaneously Loading	Election Server	20	
Maximum Precincts initialized per OVO	OVO	30	
Maximum Precincts initialized per OVO in Early Voting	OVO	All	

Functionality

2005 VVSG Supported Functionality Declaration

Feature/Characteristic	Yes/No	Comment
Voter Verified Paper Audit Trails		
VVPAT	No	Not Applicable
Accessibility		
Forward Approach	Yes	
Parallel (Side) Approach	Yes	
Closed Primary		
Primary: Closed	Yes	
Open Primary		
Primary: Open Standard (provide definition of how supported)	Yes	Separate ballotstyles for each party
Primary: Open Blanket (provide definition of how supported)	No	
Partisan & Non-Partisan:		
Partisan & Non-Partisan: Vote for 1 of N race	Yes	
Partisan & Non-Partisan: Multi-member ("vote for N of M") board races	Yes	
Partisan & Non-Partisan: "vote for 1" race with a single candidate and write-in voting	Yes	
Partisan & Non-Partisan "vote for 1" race with no declared candidates and write-in voting	Yes	
Write-In Voting:		
Write-in Voting: System default is a voting position identified for write-ins.	Yes	
Write-in Voting: Without selecting a write in position.	No	
Write-in: With No Declared Candidates	Yes	
Write-in: Identification of write-ins for resolution at central count	Yes	
Primary Presidential Delegation Nominations & Slates:		
Primary Presidential Delegation Nominations: Displayed delegate slates for each presidential party	Yes	
Slate & Group Voting: one selection votes the slate.	No	

Feature/Characteristic	Yes/No	Comment
Ballot Rotation:		
Rotation of Names within an Office; define all supported rotation methods for location on the ballot and vote tabulation/reporting	Yes	Top to Bottom, Bottom to Top rotation. Either for whole contest or within party in contest.
Straight Party Voting:		
Straight Party: A single selection for partisan races in a general election	Yes	
Straight Party: Vote for each candidate individually	Yes	
Straight Party: Modify straight party selections with crossover votes	Yes	
Straight Party: A race without a candidate for one party	Yes	
Straight Party: "N of M race (where "N">1)	Yes	
Straight Party: Excludes a partisan contest from the straight party selection	Yes	
Cross-Party Endorsement:		
Cross party endorsements, multiple parties endorse one candidate.	No	
Split Precincts:		
Split Precincts: Multiple ballot styles	Yes	
Split Precincts: P & M system support splits with correct contests and ballot identification of each split	Yes	
Split Precincts: DRE matches voter to all applicable races.	No	Not Applicable
Split Precincts: Reporting of voter counts (# of voters) to the precinct split level; Reporting of vote totals is to the precinct level	Yes	
Vote N of M:		
Vote for N of M: Counts each selected candidate, if the maximum is not exceeded.	Yes	
Vote for N of M: Invalidates all candidates in an overvote (paper)	Yes	
Recall Issues, with options:		
Recall Issues with Options: Simple Yes/No with separate race/election. (Vote Yes or No Question)	Yes	
Recall Issues with Options: Retain is the first option, Replacement candidate for the second or more options (Vote 1 of M)	No	
Recall Issues with Options: Two contests with access to a second contest conditional upon a specific vote in contest one. (Must vote Yes to vote in 2 nd contest.)	No	
Recall Issues with Options: Two contests with access to a second contest conditional upon any vote in contest one. (Must vote Yes to vote in 2 nd contest.)	No	
Cumulative Voting		

Feature/Characteristic	Yes/No	Comment
Cumulative Voting: Voters are permitted to cast, as many votes as there are seats to be filled for one or more candidates. Voters are not limited to giving only one vote to a candidate. Instead, they can put multiple votes on one or more candidate.	No	
Ranked Order Voting		
Ranked Order Voting: Voters can write in a ranked vote.	Yes	
Ranked Order Voting: A ballot stops being counting when all ranked choices have been eliminated	Yes	
Ranked Order Voting: A ballot with a skipped rank counts the vote for the next rank.	Yes	
Ranked Order Voting: Voters rank candidates in a contest in order of choice. A candidate receiving a majority of the first choice votes wins. If no candidate receives a majority of first choice votes, the last place candidate is deleted, each ballot cast for the deleted candidate counts for the second choice candidate listed on the ballot. The process of eliminating the last place candidate and recounting the ballots continues until one candidate receives a majority of the vote	Yes	
Ranked Order Voting: A ballot with two choices ranked the same, stops being counted at the point of two similarly ranked choices.	Yes	
Ranked Order Voting: The total number of votes for two or more candidates with the least votes is less than the votes of the candidate with the next highest number of votes, the candidates with the least votes are eliminated simultaneously and their votes transferred to the next-ranked continuing candidate.	No	Support simultaneous elimination of two candidates, but votes transferred to next rank.
Provisional or Challenged Ballots		
Provisional/Challenged Ballots: A voted provisional ballots is identified but not included in the tabulation, but can be added in the central count.	Yes	Manually
Provisional/Challenged Ballots: A voted provisional ballots is included in the tabulation, but is identified and can be subtracted in the central count	Yes	Manual Adjustment
Provisional/Challenged Ballots: Provisional ballots maintain the secrecy of the ballot.	Yes	
Overvotes (must support for specific type of voting system)		
Overvotes: P & M: Overvote invalidates the vote. Define how overvotes are counted.	Yes	
Overvotes: DRE: Prevented from or requires correction of overvoting.	No	Not Applicable

Feature/Characteristic	Yes/No	Comment
Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted.	Yes	Votes are invalidated but overvotes are recorded and available in over/under report
Overvotes: DRE systems that provide a method to data enter absentee votes must account for overvotes.	No	Not Applicable
Undervotes		
Undervotes: System counts undervotes cast for accounting purposes	Yes	
Blank Ballots		
Totally Blank Ballots: Any blank ballot alert is tested.	Yes	
Totally Blank Ballots: If blank ballots are not immediately processed, there must be a provision to recognize and accept them	Yes	
Totally Blank Ballots: If operators can access a blank ballot, there must be a provision for resolution.	Yes	
Networking		
Wide Area Network – Use of Modems	No	
Wide Area Network – Use of Wireless	No	
Local Area Network – Use of TCP/IP	Yes	For election loading, results upload to central tabulation
Local Area Network – Use of Infrared	No	
Local Area Network – Use of Wireless	No	
FIPS 140-2 validated cryptographic module	No	
Used as (if applicable):		
Precinct counting device	Yes	
Central counting device	Yes	

Baseline Certification Engineering Change Order's (ECO)

This table depicts the ECO's certified with the voting system:

Change ID	Date	Component	Description	Inclusion
EAC# 1002	8/29/2011	OVO/OVI	Change in AC/DC part number	Mandatory
EAC# 1004	10/13/2011	OVO/OVI	Add Power Supply	Optional
EAC# 1005	8/29/2011	OVI	Changes to the thermal head and the cutter unit for the TSP700II	Optional
EAC# 1006	8/29/2011	OVI	Update the part number for the TSP700II thermal printer cutter unit	Optional

Change ID	Date	Component	Description	Inclusion
EAC# 1007	9/29/2011	OVO/OVI	Added an additional flash drive to the approved list. STEC Industrial Grade USB Flash Drive, 1GB, P/N SLUFD1GU2TU	Optional
EAC# 1008	10/13/2011	OVO/OVI	Added an alternate power supply	Optional
EAC# 1009	9/9/2009	OVO/OVI	Western Digital 3200AAKX 320GB SATA added	Optional
ECO#16865	8/29/2011	OVO/OVO	Updates to the build of materials	Mandatory
ECO#16869	7/16/2011	OVO/OVI	Jetway J7F2WE1G5S-OC-LF motherboard added	Optional
ECO#16870	9/29/2011	OVO	Multiple changes to drawings	Mandatory
ECO#16871	9/29/2011	OVI	Spacer removed between motherboard and PC case	Mandatory
ECO#16877	12/13/2011	OVO	Additional ballot box	Optional
IR 00515	9/29/2011	OVI	Changes made to PC box	Optional
IR 00552	12/9/2009	OVI	15 inch screen added to OVI	Optional
CFAC 1001	9/26/2011	OVO/OVI	Modified configuration file xorg.conf to set screen resolution to enforced appropriate resolution	Mandatory