United States Election Assistance Commission

VVSG 2005 VER. I

EAC

CERTIFIED

Certificate of Conformance

OpenElect 2.0.A

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: 2.0.A

Name of VSTL: Pro V&V

EAC Certification Number: UNS10121966-2.0.A

Date Issued: June 5, 2018

Executive Director
U.S. Election Assistance Commission

Scope of Certification Attached

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 Voting System 2.0.A, herein referred to as OVS 2.0.A, is a new system based on the earlier certified OVS releases. The OVS 2.0.A Voting System is a paper-ballot based optical scan voting system consisting of five major components:

1. OpenElect Central Suite (OCS)
2. OpenElect Voting Optical (OVO)
3. OpenElect Voting Interface (OVI-VC)
4. OpenElect Voting Central Scan (OVCS)
5. Freedom Vote Tablet (FVT)

The Unisyn OVS 2.0.A voting system Technical Data Package (TDP) was the source for much of the information in this document.

Pre-Voting - Election Center/Central Count

OCS

Ballot Layout Manager (BLM)
- Defines Election
- Produces Ballots

Election USB TM
Loads the Election
directly on Voting Devices

OVI-VC

Election Manager (EM)
- Sets Election Options
- Creates Election Files

OVO

FVT

Voting - Poll Locations

OVI-VC and FVT are
ballot marking devices
that produce printed
ballots using a variety
of Input Devices:
- Touchscreen
- Keypad
- Sip and Puff

FVT

Ballots

OVI-VC

OVO
Scans paper ballot pages and
records votes at the Precincts
and Voting Centers. Data is
stored on the OVO's TM.
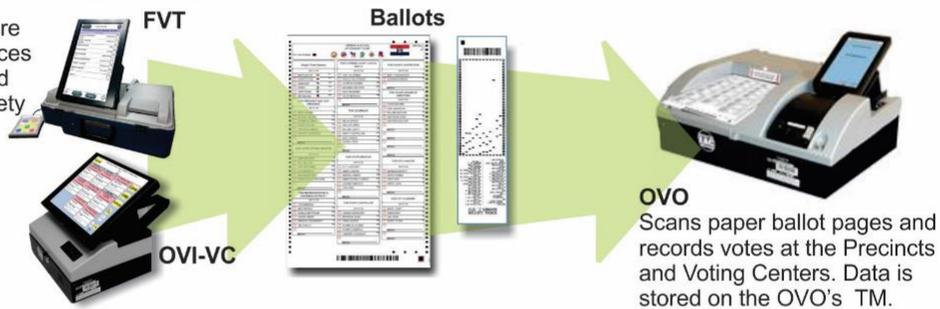
Post-Voting - Election Center/Central Count

OVO

Transport Media (TM) is removed from the
OVO after voting has stopped and returned
to Central Count.

TM

OVCS
Bulk scanner used for:
- Mail In-Ballots
- Provisional Ballots
- Recounts.

Tabulator Client
Insert Transport Media
to store and upload
vote files to Central
Database.

Switch/Hub

**Election
USB TM**

**Election
USB TM**

Tabulator Reports
Report consolidated
results.
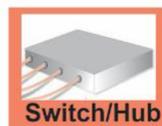
Tabulator & Database
Track uploads and
consolidated results.
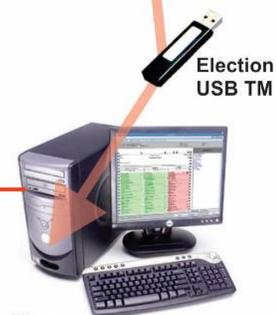
Auditor
Evaluate and update
questionable or erroneous
marks on Ballots.

OpenElect Central Suite (OCS)

The OCS consists of the eight components running as either a front-end/client application or as a back-end/server application: Ballot Layout Manager (BLM), Election Manager (EM), Election Server (ES), Tabulator Client (TC), Tabulator, Adjudicator, Tabulator Reports (TR) and Software Server (SS).

OpenElect Voting Optical (OVO)

The OVO device is a precinct-level optical scan ballot counter (tabulator) designed to perform the following major functions: ballot scanning, tabulation, and second chance voting.

The OVO is a full-page, dual-sided optical scan ballot system which scans and validates voter ballots and provides a summary of all ballots cast. The election is loaded from the OVS Election Server over a secure local network or via a USB thumb drive. On Election Day, an OVO at each polling location scans and validates voters' ballots, and provides precinct tabulation and reporting. The OVO unit is also paired with the OVI for early voting to scan and tabulate early voting ballots. OVO units can also be used at election headquarters to read absentee, provisional, or recount ballots in smaller jurisdictions.

OpenElect Voting Interface (OVI)

The OVI supports both ADA and Early Voting requirements. The OVI enables voters during early voting to cast regional ballots and voters with special needs to prepare their ballots independently and privately on Election Day. The OVI unit features a 15-inch full-color touch-screen display. The OVI will present each contest on the correct ballot to the voter in visual and (optionally) audio formats. The voter with limited vision navigates through the ballot using the audio ballot and the ADA keypad or touchscreen input to make their selections. The voter validates his or her selections by listening to the audio summary, printing the ballot, and inserting it into the OVO.

The OVI facilitates special needs voters through a variety of methods including wheelchair access, sip & puff, zoom-in ballot function, and audio assistance for the visually impaired. The OVI provides for write-in candidates when authorized by the jurisdiction. Voters input candidates' names via the ADA keypad, touchscreen or sip & puff device. Each OVI can support multiple languages for both visual and audio ballots, allowing the voter to choose their preferred language.

OpenElect Voting Central Scanner (OVCS)

The OVCS resides at election headquarters designated to read absentee, provisional, or recount ballots in large jurisdictions, or read the entire election's ballots at a central count location in smaller jurisdictions. The OVCS also captures write-in data images and produces a write-in

image report for manual processing upon request. The OVCS system consists of the following components: OVCS Workstation and Canon DR-X10C Scanner or a Canon M-160II Scanner.

Freedom Vote Tablet (FVT)

The FVT is a tablet ballot marking device that enables voters make their vote selections and to print their voted ballot. It can be used on Election Day or during an early voting period. Like the OVI-VC, the FVT is ADA compliant. It assists voters, with varying levels of ability, through the voting process, ballot review, and printing functions. The FVT presents each contest on the ballot style to the voter in visual and/or audio formats. It facilitates special needs voters through a variety of methods including wheelchair access, sip and puff, zoom-in ballot function and audio assistance for the visually impaired. The voter with limited vision can navigate through the ballot using an audio ballot and the ADA keypad or touchscreen to input their selections. Once the ballot is printed, it is taken to the OVO to be cast. Each FVT can support multiple languages for both visual and audio ballots, allowing the voter to choose their preferred language.

Certified System before Modification (if applicable):
OpenElect 2.0

Anomalies and/or Additions addressed in OpenElect 2.0.A:

Ballot Layout Manager (BLM)
- Add Sequential Page Numbers to All Multipage Reports

- Support for MP3 sound files on FVT

- Tennessee: uniquely identifiable stub on FVT print. (On cancel or timeout, print cancel stub)

- Add export/import function for Translations text

Election Manager (EM)
- Add Sequential Page Numbers to All Multipage Reports

- Configuration switch for Pennsylvania rule for "override" straight-party ticket

- Support for MP3 sound files on FVT

Tabulator
- Add Sequential Page Numbers to All Multipage Reports

Tabulator Reports (TR)
- Add Sequential Page Numbers to All Multipage Reports

Validator
- Allow OVO and OVI-VC application software to be loaded from the USB

- Add System Verifier function from Validator (output validation signatures to file if signed profile exists on USB)

OpenElect Central Suite (OCS)
- Add OpenVPN (FIPS Cert) to secure all OCS network traffic

FreedomVote Tablet (FVT)
- Support for MP3 sound files on FVT

- Stub: A uniquely identifiable stub can be printed for each voting session. (On cancel or timeout, print cancel stub)

- Add log export, machine info report to the Customer Acceptance menu

- Show on Barcode Reader Test scanned data in easy to read format

- Allow reprint of the Open Report, which contains machine information and verification that no ballots have been printed

- Add FVT application version to Diagnostics > Auto Test printout

- Display low battery warning message

- Add voter confirm screen after the last ballot page

Linux
- VPN files are installed as part of the OCSInstaller

- Remove Election Server (ES) and Software Server (SS) files from the system and icons from the desktop as part of the VPN install using the OCSInstaller

Mark Definition:
The Unisyn Open Elect system will consistently recognize a 1mm wide line across the full length of the target area. 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:
- BIC Grip Roller
- EF Felt Tip Pen

Language Capability:
System supports Armenian, Cambodian, Chinese, English, Japanese, Korean, Russian, Spanish, Tagalog, Vietnamese, and Navajo.

Components Included:

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

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comments
OVO	2.0.A	Rev A, E	Linux CentOS 6.3	
OVI-VC	2.0.A	Rev A, B	Linux CentOS 6.3	
OVCS	2.0.A	ImageFORMULA DR-X10C & M160	Linux CentOS 6.5, 6.8	
FVT	2.0.A	Rev A	Android 4.4.4	
Adjudicator	2.0.A			
Ballot Layout Manager	2.0.A			
Common (Library)	2.0.A			
Election Manager	2.0.A			
OCS Installer	2.0.A			
Regkey Builder	2.0.A			
Tabulator	2.0.A			
Tabulator Client	2.0.A			
Tabulator Reports	2.0.A			
OVCS Application	2.0.A			
OVI Firmware	2.0.A			
OVO Firmware	2.0.A			
Scripter	2.0.A			
Validator	2.0.A			
Logger (Library)	2.0.A			
UnisynSecure (Library)	2.0.A			
COTS Components				
CentOS Linux	6.3, 6.5, 6.8			
Java JRE + Unlimited Cryptographic Extension	1.6.0_02			
Apache Tomcat Application Server	6.0.13			
MySQL Database	5.0.45-7, 5.1.71-1			
JasperReports	2.0.5	JasperReports		

System Component	Software or Firmware Version	Hardware Version	Operating System or COTS	Comments
Android	4.4.4	Android		
OpenSSL	1.01f-fips			
OpenVPN	2.4.4			
Desktop for non-redundant solutions	Dell OptiPlex	Desktop for non-redundant solutions		
Desktop for redundant solutions	Dell Precision	Desktop for redundant solutions		
Canon Scanner	Canon DR-X10C or DR-M160II	Canon Scanner		
Transport Media		STEC- Industrial Grade		
Laptop		Dell Latitude	COTS	

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	BLM	2000	
Maximum Splits per Precinct	BLM	9	
Maximum Districts	BLM	400	
Maximum Contests per District	BLM	20	
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	15	
Maximum Ballot styles per Election	BLM	400	
Maximum Contests per Election	BLM	150	
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 Ballot Pages	BLM	3	
Maximum Votes for N of M	BLM	25	
Maximum Ranks in RCV	BLM	3	
Maximum Ballot sheets per OVO	BLM	5000	
Maximum Units simultaneously loading	BLM	20	
Maximum Precincts initialized per OVO on Election Day	BLM	30	

Characteristic	Limiting Component	Limit	Comment
Maximum Precincts initialized per OVI-VC/FVT on Election Day	BLM	2000	
Maximum Precincts initialized per OVO/ /OVI-VC/FVT in early voting	BLM	2000	
Maximum 11″ Ballot positions	BLM	38 x 6	Limit (Double Sided)
Maximum 14″ Ballot positions	BLM	50 x 6	Limit (Double Sided)
Maximum 17″ Ballot positions	BLM	62 x 6	Limit (Double Sided)
Maximum 19″ Ballot positions	BLM	70 x 6	Limit (Double Sided)

Functionality

2005 VVSG Supported Functionality Declaration

Feature/Characteristic	Yes/No	Comment
Voter Verified Paper Audit Trails		
VVPAT	No	Not applicable
Accessibility		
Forward Approach	No	
Parallel (Side) Approach	No	
Closed Primary		
Primary: Closed	Yes	
Open Primary		
Primary: Open Standard (provide definition of how supported)	Yes	A registered voter may vote in any *party primary* regardless of his own party affiliation
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	

Feature/Characteristic	Yes/No	Comment
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	
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 by Precinct grouping
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	
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)	Yes	
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 2nd 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 2nd 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.	Yes	
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	
Provisional/Challenged Ballots: A voted provisional ballots is included in the tabulation, but is identified and can be subtracted in the central count	No	
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	Supported. Overvotes are tabulated for each office as an Over / Under Vote report in Vote Tabulation
Overvotes: DRE: Prevented from or requires correction of overvoting.	No	

Feature/Characteristic	Yes/No	Comment
Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted.	No	
Overvotes: DRE systems that provide a method to data enter absentee votes must account for overvotes.	No	
Undervotes		
Undervotes: System counts undervotes cast for accounting purposes	Yes	Supported. Undervotes are tabulated for each office as an Over / Under Vote report in Vote Tabulation
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	
Display/Printing Multi-Lingual Ballots		
Spanish	Yes	
Armenian	Yes	
Alaska Native (Other Group specified)	No	
Aleut	No	
Athabascan	No	
Eskimo	No	
Native (Other Group Specified)	No	
Cambodian	Yes	
Chinese (Cantonese and Mandarin)	Yes	
Filipino (Tagalog)	Yes	
Japanese	Yes	
Korean	Yes	
Russian	Yes	
Vietnamese	Yes	
Apache	No	
Cent/So American	No	
Cheyenne	No	
Chickasaw	No	
Choctaw	No	
Navajo	No	
Other Tribe-Specified	No	
Paiute	No	
Pueblo	No	

Feature/Characteristic	Yes/No	Comment
Seminole	No	
Shoshone	No	
Sioux	No	
Tohono O'Odham	No	
Tribe not specified	No	
Ute	No	
Yaqui	No	
Yuman	No	
Demonstrates the voting system capability to handle the designated language groups		
Default language (English)	Yes	
Secondary language using a Western European font	Yes	
Ideographic language (such as Chinese or Korean),	Yes	
Non-written languages requiring audio support	Yes	