



United States Election Assistance Commission

Certificate of Conformance

Unisyn OpenElect 2.0



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 2.0

Name of VSTL: Pro V&V

EAC Certification Number: UNS10121966-2.0

Date Issued: 10/17/2017

Executive Director
U.S. Election Assistance Commission

Scope of Certification Attached

Manufacturer: Unisyn Voting Solutions, Inc.
System Name: OpenElect Voting System 2.0
Certificate: UNS10121966-2.0

Laboratory: Pro V&V
Standard: VVSG 1.0 (2005)
Date: 10/17/2017



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

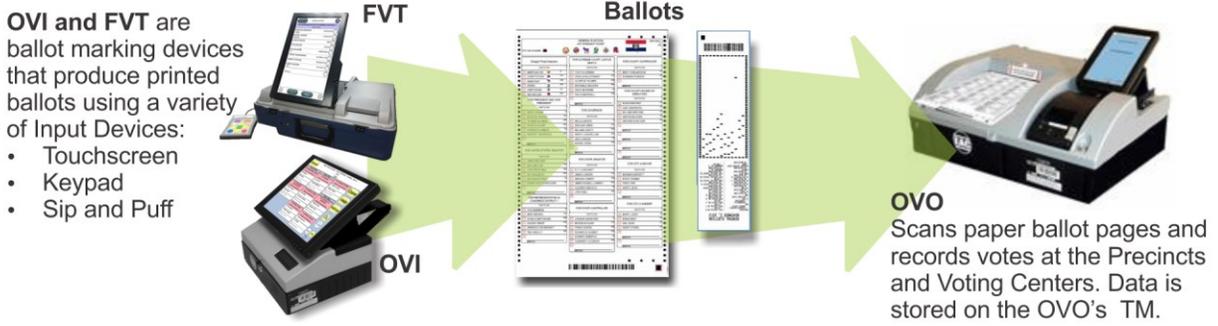
1. OpenElect Central Suite (OCS)
2. OpenElect Voting Optical (OVO)
3. OpenElect Voting Interface (OVI-VC)
4. OpenElect Voting Central Scan (OVCS)
5. Freedom Vote Tablet (FVT)

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

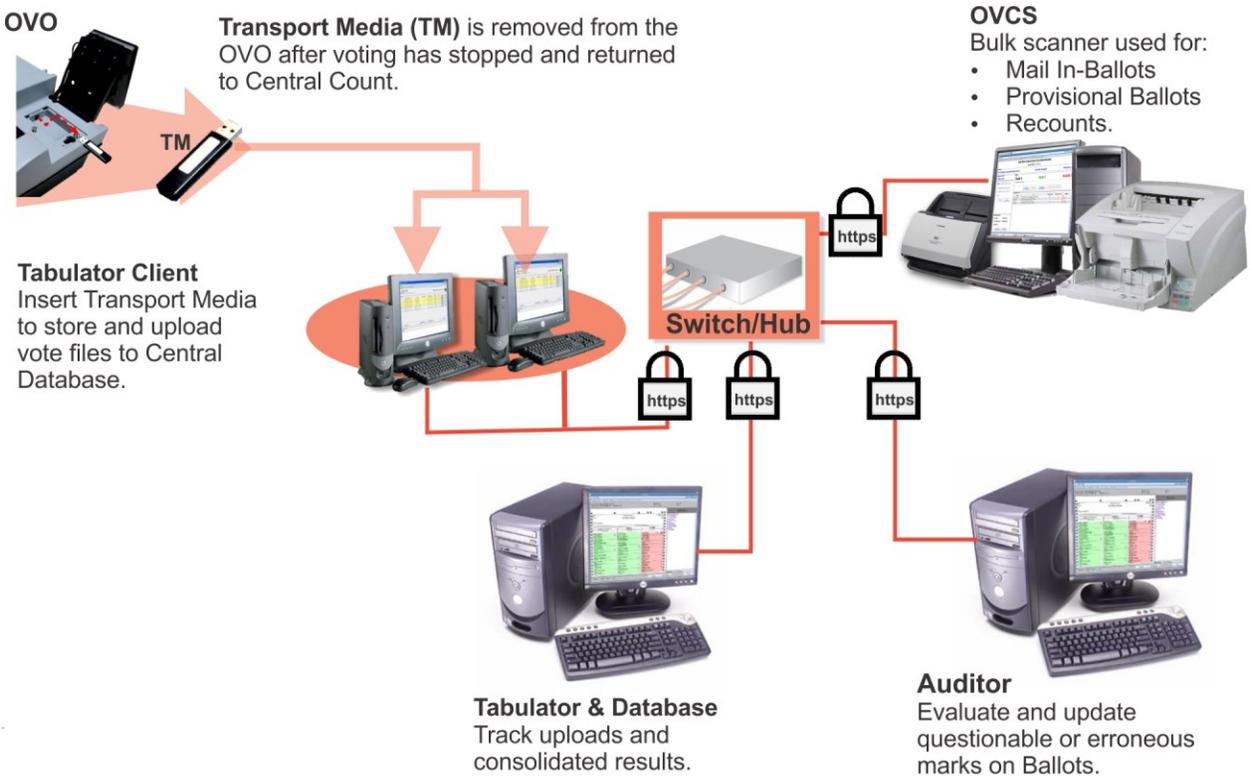
Pre-Voting - Election Center/Central Count



Voting - Poll Locations



Post-Voting - Election Center/Central Count



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.

Previous OVS Certified Systems:

Unisyn Voting Solutions OpenElect 1.0
Certificate ID: UNS10121966-OE

Unisyn Voting Solutions OpenElect 1.0.1
Certificate ID: UNS10121966-OE-WI

Unisyn Voting Solutions OpenElect 1.1
Certificate ID: UNS10121966-OE-1.1

Unisyn Voting Solutions OpenElect 1.2
Certificate ID: UNS10121966-OE-1.2

Unisyn Voting Solutions OpenElect 1.3
Certificate ID: UNS04211950-1.3

Unisyn Voting Solutions OpenElect 1.3.0.2
Certificate ID: UNS04211950-1.3.0.2

Anomalies and/or Additions addressed in OpenElect 2.0:

The OVS 2.0 is a new voting system that has not previously been tested in the EAC Program. The previous Unisyn OVS system, release 1.3 was certified by the EAC. The report is available

for viewing on the EAC’s website at www.eac.gov (Reference NTS Report No. TPR030407-01 Rev. B). The OVS 2.0 System contains many of the same components, however, in some instances; these components have been modified for performance enhancement.

Testing determined that the system and components used are not fully compliant to VVSG 1.0, Section 7 and RFI 2012-05. Java utilizes the Java Cryptographic Architecture (JCA) to define an open API for cryptographic functions. This is a provider-based architecture. The Service Provider Interface (SPI) is responsible for the implementing the cryptographic functions outlined in the JCA API. From the build scripts, it was determined that the cryptographic library utilized by Unisyn was BouncyCastle 1.5.4 which currently is not considered to be validated in the NIST CMVP. *The Unisyn 2.0 system shall be modified to bring it into compliance with the requirements of VVSG 1.0, Section 7 and RFI 2012-05. Unisyn has **30 days from the date of Certification** of the OpenElect 2.0 system to submit a modification to make these changes*

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 (Cantonese and Mandarin dialects), English, Japanese, Korean, Russian, Spanish, Tagalog, and Vietnamese.

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 | Rev A, E | Linux CentOS 5.0, 6.3 | |
| OVI-VC | 2.0 | Rev A, B | Linux CentOS 5.0, 6.3 | |
| OVCS | 2.0 | ImageFORMULA DR-X10C | Linux CentOS 5.7, 6.5 | |

| System Component | Software or Firmware Version | Hardware Version | Operating System or COTS | Comments |
|--|------------------------------|----------------------------|--------------------------|----------|
| FVT | 2.0 | Rev A | Android 4.4.4 | |
| Adjudicator | 2.0 | | | |
| Ballot Layout Manager | 2.0 | | | |
| Common (Library) | 2.0 | | | |
| Election Manager | 2.0 | | | |
| Election Server | 2.0 | | | |
| OCS Installer | 2.0 | | | |
| Regkey Builder | 2.0 | | | |
| Software Server | 2.0 | | | |
| Tabulator | 2.0 | | | |
| Tabulator Client | 2.0 | | | |
| Tabulator Reports | 2.0 | | | |
| OVCS Application | 2.0 | | | |
| OVI Firmware | 2.0 | | | |
| OVO Firmware | 2.0 | | | |
| Scripter | 2.0 | | | |
| Validator | 2.0 | | | |
| Logger (Library) | 2.0 | | | |
| UnisynSecure (Library) | 2.0 | | | |
| 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 | | | |
| Android | 4.4.4 | | | |
| Desktop for non-redundant solutions | | Dell OptiPlex | | |
| Desktop for redundant solutions | | Dell Precision | | |
| Canon Scanner | | Canon DR-X10C or DR-M160II | | |
| Transport Media | | STEC- Industrial | | |

| System Component | Software or Firmware Version | Hardware Version | Operating System or COTS | Comments |
|------------------|------------------------------|------------------|--------------------------|----------|
| | | 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 | |
| Maximum Precincts initialized per OVI-7/OVI-VC on Election Day | BLM | 2000 | |
| Maximum Precincts initialized per OVO/OVI-7/OVI-VC 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 <i>party primary</i> 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 | |
| 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 | |

| Feature/Characteristic | Yes/No | Comment |
|--|--------|---------|
| 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 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 | | |
| 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 | |

| Feature/Characteristic | Yes/No | Comment |
|--|--------|---|
| 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 | |
| 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 |

| Feature/Characteristic | Yes/No | Comment |
|---|--------|---------|
| 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 | |
| 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 | |

| Feature/Characteristic | Yes/No | Comment |
|---|--------|---------|
| Secondary language using a Western European font | Yes | |
| Ideographic language (such as Chinese or Korean), | Yes | |
| Non-written languages requiring audio support | 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 |
|-----------------------|--------------------|------------|---|-----------|
| 16942 | 3-27-17 | OVO | New Mount for Gate Add Ferrite to Scanner | Optional |
| 16939 | 11-19-15 | OVO | Brass Insert for scanner threads | Optional |
| 16942 | 3-27-17 | OVO | Hole in Plate(s) to access scanner screw | Optional |
| 16953 | 3-23-17 | OVO | Citizen Power Supply, Federal Level VI efficiency compliant AC/DC adapter | Optional |
| EAC 1020 | 3-23-17 | OVO | Scanner Power Supply, Federal Level VI efficiency compliant AC/DC adapter | Optional |
| EAC 1021 | 3-23-17 | OVO | PC Power Supply, Federal Level VI efficiency compliant AC/DC adapter | Optional |
| EAC 1021 | 3-23-17 | OVI | PC Power Supply, Federal Level VI efficiency compliant AC/DC adapter | Optional |
| EAC 1017 | 11-17-15 | OVI | Star Printer Power Supply, Federal Level VI efficiency compliant AC/DC adapter | Optional |
| ECO-16938 | 11-19-15 | OVI | G Vision Power Supply, Federal Level VI efficiency compliant AC/DC adapter | Optional |
| ECO 16938 | 11-19-15 | OVI | G Vision LCD update | Optional |
| ECO 16951 | 3-23-17 | OVI | OVI Reset Button | Optional |
| ECO 16952 | 3-27-17 | OVO/OVI | Motherboard Version Update | Optional |
| EAC 1022 | 3-27-17 | OVI/OVI | Disk Version Update | Optional |
| IR 00560 ECO 16921 | 8-5-14 10-22-14 | OVO OVI | Updated AC Power Cable on Rev. A OVO-2 Rev. B OVI-3 | Optional |