



United States Election Assistance Commission

## Certificate of Conformance

**ES&S EVS 5.2.1.0**



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: EVS

Model or Version: 5.2.1.0

Name of VSTL: NTS Laboratories

EAC Certification Number: ESSEVS5210

Date Issued: December 18, 2015

*Executive Director*  
*U.S. Election Assistance Commission*

**Scope of Certification Attached**

**Manufacturer:** Election Systems & Software  
**System Name:** EVS 5.2.1.0  
**Certificate:** ESSEVS5210

**Laboratory:** NTS Huntsville  
**Standard:** VVSG 1.0(2005)  
**Date:** December 17, 2015



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## Scope of Certification

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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:

ES&S EVS 5.2.1.0 is comprised of the ExpressVote, AutoMARK Voter Assist Terminal (AutoMARK A100, A200 & A300), DS200 Precinct Digital Scanner (DS200), DS850 high-speed Central Count Digital Scanner, ElectionWare, Election Reporting Manager (ERM), ES&S Event Log Service, Removable Media Service (RMS), ExpressVote Previewer and VAT Previewer.

- The ExpressVote is a universal vote capture device designed for all voters, with independent voter-verifiable paper record that is digitally scanned for tabulation. This system combines paper-based voting with touch screen technology. The ExpressVote includes a mandatory vote summary screen that requires voters to confirm or revise selections prior to printing the summary of ballot selections using the internal thermal

printer. Once printed, ES&S ballot scanners process the vote summary card. The ExpressVote can serve all voters, including those with special needs, allowing voters to cast ballots autonomously. ES&S has fully integrated the ExpressVote with the existing suite of ES&S voting system products.

- AutoMARK Voter Assist Terminal enables voters who are visually or physically impaired and voters more comfortable reading or hearing instructions and choices in an alternative language to privately mark optical scan ballots. The AutoMARK supports navigation through touchscreen, physical keypad or ADA support peripheral such as a sip and puff device or two position switch.
- DS200 digital scanner is a paper ballot tabulator designed for use as a polling place scanner. After the voter makes their selections on their paper ballot, their ballot is inserted into the unit for immediate tabulation. Both sides of the ballot are scanned at the same time using a high-resolution image-scanning device that produces ballot images.
- The DS850 is a high-speed, digital scan central ballot counter that uses cameras and imaging algorithms to capture voter selections on the front and back of a ballot, evaluate results and then sort ballots into discrete bins without interrupting scanning. A dedicated audit printer generates a continuous event log. Machine level reports are produced from a second, laser printer. The scanner saves voter selections and ballot images to an internal hard disk and exports results to a USB Memory stick for processing with Election Reporting Manager.
- ElectionWare integrates the election administration functionality into a unified application. Its intended use is to define an election and create the resultant media files used by the ExpressVote, DS200 tabulator, AutoMARK™ Voter Assist Terminal (VAT), the DS850 Central Ballot Scanner, and Election Reporting Manager (ERM). An integrated ballot viewer allows election officials to view the scanned ballot and captured ballot data side-by-side and produce ballot reports.
- ES&S Event Log Service is a Windows Service that runs in the background of any active ES&S Election Management software application to monitor the proper functioning of the Windows Event Viewer. The ES&S Event Log Service closes any active ES&S software application if the system detects the improper deactivation of the Windows Event Viewer.
- The ExpressVote Previewer is an application within the EMS program that allows the user to preview audio text and screen layout prior to burning Election Day media for the ExpressVote.
- The VAT Previewer is an application within the EMS program that allows the user to preview audio text and screen layout prior to burning Election Day media for the AutoMARK™.
- Removable Media Service (RMS) is an application that runs in the background of the EMS client workstation and supports the installation and removal of election and results media.
- Election Reporting Manager (ERM) generates paper and electronic reports for election workers, candidates, and the media. Jurisdictions can use a separate ERM installation to display updated election totals on a monitor as ballot data is tabulated, and send the results' reports directly to the media outlets.

ERM supports accumulation and combination of ballot results data from all ES&S tabulators. Precinct and accumulated total reports provide a means to accommodate candidate and media requests for totals and are available upon demand. High-speed printers are configured as part of the system accumulation/reporting stations PC and related software.

This modification includes the following updates to the EVS 5.2.0.0 system:

#### Electionware

- RSACRYPTO update
- Write-in Snippet report flag
- State of Maryland specific export
- Support for Bengali
- Straight Party handling for U.S Virgin Islands

#### ERM

- General bug fixes

#### DS200

- Write-in Snippet report flag
- Support for Bengali
- Straight Party handling for U.S Virgin Islands

#### DS850

- Straight Party handling for U.S Virgin Islands

#### ExpressVote

- Support for Bengali
- Security checks for fonts
- General bug fixes

#### Hardware

- ExpressVote Rolling Kiosk
- Delkin CF card reader

### Mark definition:

ES&S' declared level mark recognition for the DS200 and DS850 is a mark across the oval that is 0.2" long x 0.03" wide at any direction.

### Tested Marking Devices:

Bic Grip Roller Pen

## Language capability:

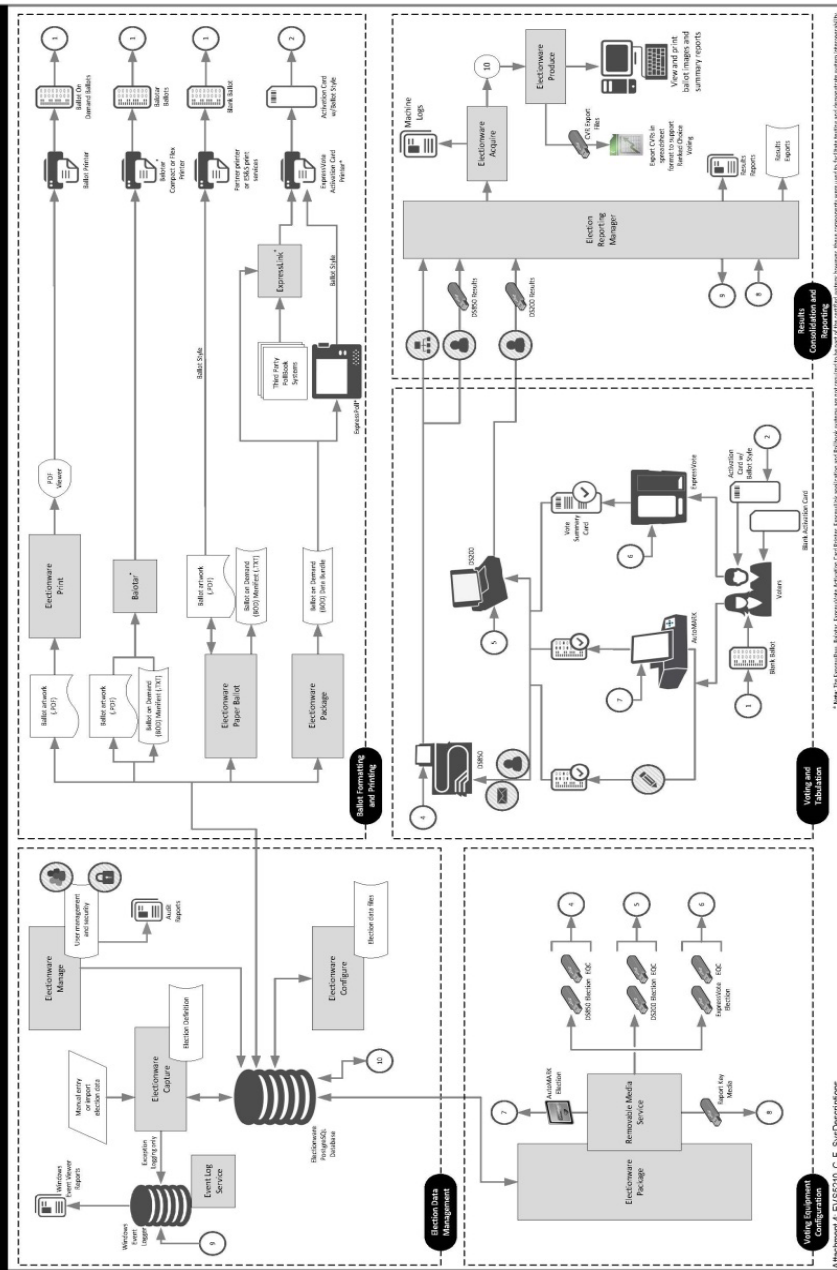
EVS 5.2.1.0 supports English, Spanish, Chinese, Korean, Japanese and Bengali.

## 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                               |
|----------------------------------|------------------------------|-------------------------|--------------------------|--|
| ExpressVote                      | 1.4.1.0                      | 1.0                     |                          | Accessible Voting Station              |
| ExpressVote                      |                              | 1.0                     |                          | Rolling Kiosk                          |
| DS200                            | 2.12.1.0                     | 1.2.1, 1.2.3, 1.3       |                          | Precinct Digital Scanner               |
| AutoMARK A100                    | 1.8.6.0                      | 1.0                     |                          | ADA Ballot Marking Device              |
| AutoMARK A200                    | 1.8.6.0                      | 1.1                     |                          | ADA Ballot Marking Device              |
| AutoMARK A300                    | 1.8.6.0                      | 1.3                     |                          | ADA Ballot Marking Device              |
| DS850                            | 2.10.1.0                     | 1.0                     |                          | Central Count Scanner, high-speed      |
| Ballot Box Hardware              |                              | 1.2, 1.3                |                          | Plastic ballot box                     |
| Ballot Box Hardware              |                              | 1.0, 1.1, 1.2           |                          | Metal ballot box with/without diverter |
| Election Ware                    | 4.7.1.0                      |                         |                          |  |
| Election Reporting Manager (ERM) | 8.12.1.0                     |                         |                          |  |
| ES&S Event Log Service           | 1.5.5.0                      |                         |                          |  |
| VAT Previewer                    | 1.8.6.0                      |                         |                          |  |
| Removable Media Service          | 1.4.5.0                      |                         |                          |  |
| EMS Reporting Workstation        |                              | Dell Optiplex 980       |                          |  |
| EMS Server                       |                              | Dell PowerEdge T710     |                          |  |
| EMS reporting Laptop             |                              | Dell Latitude E6410     |                          |  |
| Ballot on Demand Printer         |                              | C9650                   |                          |  |
| DS850 Report Printer             |                              | OKI B430dn & Oki B431dn |                          | Laser report printer                   |
| DS850 Audit Printer              |                              | Oki Microline 420       |                          | Dot Matrix Printer                     |
| Headphones                       |                              | Avid 86002              |                          |  |
| USB Flash Drive                  |                              | Delkin 512MB            |                          |  |
| USB Flash Drive                  |                              | Delkin 4GB              |                          |  |
| USB Flash Drive                  |                              | Delkin 8 GB             |                          |  |
| USB Flash Drive                  |                              | Delkin 1 GB             |                          |  |

| System Component                                | Software or Firmware Version | Hardware Version                  | Operating System or COTS | Comments |
|---|------------------------------|-----------------------------------|--------------------------|----------|
| USB Flash Drive                                 |                              | Delkin 2 GB                       |                          |          |
| Compact Flash                                   |                              | Delkin Devices<br>1.0 GB capacity |                          |          |
| Motorola QR code scanner                        |                              | DS9208                            | COTS                     |          |
| Zebra QR code scanner                           |                              | DS457-SR20009                     | COTS                     |          |
| Adobe Acrobat Standard                          | 11                           |                                   | COTS                     |          |
| Cerberus FTP                                    | 6.0.7.1                      |                                   | COTS                     |          |
| Microsoft Server 2008                           | R2 w/ SP1                    |                                   | COTS                     |          |
| Microsoft Windows 7                             | 5.1 w/ SP1                   |                                   | COTS                     |          |
| Microsoft Visual C++ 2008 Redistributable – x64 | 9.0.30729                    |                                   | COTS                     |          |
| Microsoft Visual C++ 2010 Redistributable – x64 | 10.0.40219                   |                                   | COTS                     |          |
| Microsoft Visual C++ 2010 Redistributable – x86 | 10.0.40219                   |                                   | COTS                     |          |
| Microsoft .net Framework                        | 4.5.1                        |                                   | COTS                     |          |
| Micro Focus RM/COBOL Runtime                    | 12.06                        |                                   | COTS                     |          |
| Symantec Endpoint Protection                    | 12.1.4                       |                                   | COTS                     |          |
| SanDisk CF Card Reader                          |                              | 018-6305                          |                          |          |
| Delkin CF card reader                           |                              | 6381                              |                          |          |



## System Limitations

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

| System Characteristic                                | Boundary or Limitation   | Limiting Component              |
|--|--|---------------------------------|
| Max. precincts allowed in an election                | 9900   | ERM                             |
| Max. count for any precinct element                  | 500,000 (65,500 from any tabulator media)  | ERM report (ERM results import) |
| Max. candidates allowed per election                 | Depends on election content (limited by 21,000 maximum counters) <sup>1</sup>                        | ERM                             |
| Max. contests allowed in an election                 | Depends on election content (limited by 21,000 maximum counters) <sup>2</sup>                        | ERM                             |
| Max. counters allowed per precinct                   | Limits candidates and contests assigned to a precinct to 1,000 <sup>3</sup>                          | ERM                             |
| Max. contests allowed per ballot style               | 200 or number of positions on ballot   | N/A                             |
| Max. candidates (ballot choices) allowed per contest | 175  | ERM (database create)           |
| Max. number of parties allowed                       | General election: 75<br>Primary election: 20 (including nonpartisan party)                           | ERM (database create)           |
| Max. 'vote for' per contest                          | 98   | ERM (database create)           |
| Ballot formats                                       | All paper ballots used in an election must be the same size and contain the number of response rows. | Ballot scanning equipment       |
| Max. Ballot Styles                                   | 9900   | ERM                             |
| Max. District Types/Groups                           | 20   | ERM                             |
| Max. districts of a given type <sup>4</sup>          | 40   | ERM                             |

<sup>1</sup> Calculation of the number of counters must include a minimum of 4 counters for each contest, 3 overhead (overvote, undervote, precincts counted) and at least 1 candidate. Additional contest candidates each add a counter. If some precincts are defined as Absentee, a fourth overhead counter (absentee precincts counted) must be added to each contest. The number of statistical counters (Ballots Cast, Registered voters) must be added to the contest counters to determine the total counters.

<sup>2</sup> Example of maximum contest calculation if all contests had 2 candidates (5 counters each, 3 overhead counters + 2 candidates) and there were 10 statistical counters (i.e. Ballots Cast-Total, Republican, Democratic, Libertarian, Nonpartisan and Registered Voters-Total, Republican, Democratic, Libertarian, Nonpartisan.  $(21000-20)/5 = 4196$  or  $(\text{counter limit} - \text{statistics} \times 2)/\text{number of counters/contest} = \text{number of contests}$ .

<sup>3</sup> Contest counters are calculated as indicated in footnote 1, but two counters must be added for each statistical counter defined for the precinct. There are a minimum of 3 statistic counters assigned to each precinct (six added counters), "Ballots Cast," "Registered Voters" and "Ballots Cast Blank."



| System Characteristic | Boundary or Limitation  |   | Limiting Component   |
|-----------------------|---|---|----------------------|
| Supported Languages   | <ul style="list-style-type: none"> <li>English</li> <li>Spanish</li> <li>Chinese</li> </ul> | <ul style="list-style-type: none"> <li>Korean</li> <li>Japanese</li> <li>Bengali</li> </ul> | System Configuration |

## Component Limitations:

### Paper Ballot Limitations

1. The paper ballot code channel, which is the series of black boxes that appear between the timing track and ballot contents, limits the number of available ballot variations depending on how a jurisdiction uses this code to differentiate ballots. The code can be used to differentiate ballots using three different fields defined as: Sequence (available codes 1-26,839), Type (available codes 1-30) or Split (available codes 1-40).
2. If Sequence is used as a ballot style ID, it must be unique election-wide and the Split code will always be 1. In this case the practical style limit would be 26,000.

### DS200

1. The ES&S DS200 configured for an early vote station does not support precinct level results reporting. An election summary report of tabulated vote totals is supported.

### AUTOMARK Voter Assist Terminal

1. ES&S AutoMARK capacities exceed all documented limitations for the ES&S election management, vote tabulation and reporting system. For this reason, Election Management System and ballot tabulator limitations define the boundaries and capabilities of the AutoMARK system as the maximum capacities of the ES&S AutoMARK are never approached during testing

### ElectionWare

1. ElectionWare capacities exceed the boundaries and limitations documented for ES&S voting equipment and election reporting software. For this reason, ERM and ballot tabulator limitations define the boundaries and capabilities of ElectionWare system.

### ExpressVote

1. ExpressVote capacities exceed all documented limitations for the ES&S election management, vote tabulation and reporting system. For this reason, Election Management System and ballot tabulator limitations define the boundaries and capabilities of the ExpressVote system as the maximum capacities of the ES&S ExpressVote are never approached during testing.

### Election Reporting Manager (ERM)

1. Election Reporting Manager requires a minimum monitor screen resolution of 800x600.

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<sup>4</sup> Excludes the Precinct Group which contains all precincts.

2. ERM Database Create allows 1600 Precincts per Ballot Style.
3. There is a limit of 3510 precincts in the precincts counted/not counted display.
4. There is a limit of 3000 precincts in the precincts counted/not counted scrolling display.
5. Contest/Precinct selection pop up display limited to 3000 contests/precincts.
6. Non-English characters are not supported in ERM. This has to do with the creation of the XML results file out of ERM.
7. ERM's maximum page size for reports is 5,000 pages.

## Functionality

### 2005 VVSG Supported Functionality Declaration

| Feature/Characteristic   | Yes/No | Comment |
|--|--------|---------|
| Voter Verified Paper Audit Trails  |        |         |
| VVPAT  | No     |         |
| Accessibility  |        |         |
| Forward Approach   | Yes    |         |
| Parallel (Side) Approach   | Yes    |         |
| Closed Primary   |        |         |
| Primary: Closed  | Yes    |         |
| Open Primary   |        |         |
| Primary: Open Standard (provide definition of how supported)   | Yes    |         |
| 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.  | Yes    |         |
| 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                                 | No     |         |
| 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    |         |
| Straight Party Voting:   |        |         |
| Straight Party: A single selection for partisan races in a general election  | Yes    |         |
| Straight Party: Vote for each candidate individually   | Yes    |         |

| Feature/Characteristic   | Yes/No | Comment  |
|--|--------|--|
| 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.  | Yes    |  |
| 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    | It is possible to list the number of voters.                         |
| Vote N of M:   | Yes    |  |
| Vote for N of M: Counts each selected candidate, if the maximum is not exceeded.   | No     |  |
| Vote for N of M: Invalidates all candidates in an overvote (paper)   | No     |  |
| 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 <sup>nd</sup> 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 <sup>nd</sup> contest.)   | No     | Overturned - US District Court 7/29/03: CA Election Code sect. 11383 |
| 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.  | No     |  |
| Ranked Order Voting: A ballot stops being counting when all ranked choices have been eliminated  | No     |  |
| Ranked Order Voting: A ballot with a skipped rank counts the vote for the next rank.   | No     |  |

| 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 | No     |         |
| Ranked Order Voting: A ballot with two choices ranked the same, stops being counted at the point of two similarly ranked choices.  | No     |         |
| 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     |         |
| 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  | Yes    |         |
| 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     |         |
| Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted.   | Yes    |         |
| 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    |         |
| 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   | No     |         |
| 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):   |        |         |

| Feature/Characteristic   | Yes/No | Comment |
|--------------------------|--------|---------|
| Precinct counting device | Yes    | DS200   |
| Central counting device  | Yes    | DS850   |

## Baseline Certification Engineering Change Order's (ECO)

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

| Change ID | Date     | Component                | Description  | Inclusion                   |
|-----------|----------|--------------------------|--|-----------------------------|
| ECO 911   | 7/29/15  | DS850                    | Second source for LED on camera circuit board                          | Non-DeMinimis<br>Optional   |
| ECO 917   | 7/29/15  | DS850                    | Second source LG display   | Non – DeMinimis<br>Optional |
| ECO 919   | 7/29/15  | ExpressVote              | Second source LG display   | Non – DeMinimis<br>Optional |
| ECO 921   | 10/27/15 | DS200 Plastic Ballot Box | Adding Block of security foam underneath the slot of the emergency bin | DeMinimis<br>Optional       |
| ECO 1741  | 7/29/15  | ExpressVote              | Add additional labels, Velcro patch for keypad                         | DeMinimis<br>Optional       |
| ECO 1880  | 8/5/15   | DS200                    | Additional second source and end of life replacement                   | Non-DeMinimis<br>Optional   |
| ECO 2018  | 10/9/15  | ExpressVote              | Remove English from text on ExpressVote instruction label              | DeMinimis<br>Optional       |