United States Election Assistance Commission

## Certificate of Conformance

## Dominion Voting Systems
## Democracy Suite 5.5

**VVSG 2005 VER. I**

**EAC CERTIFIED**

The voting system identified on this certificate has been evaluated at an accredited voting system testing laboratory for conformance to the *Voluntary Voting System Guidelines Version 1.0 (VVSG 1.0)* . 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:** Democracy Suite

**Model or Version:** 5.5

**Name of VSTL:** Pro V&V

**EAC Certification Number:** DVS-DemSuite5.5

**Date Issued:** September 14, 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.
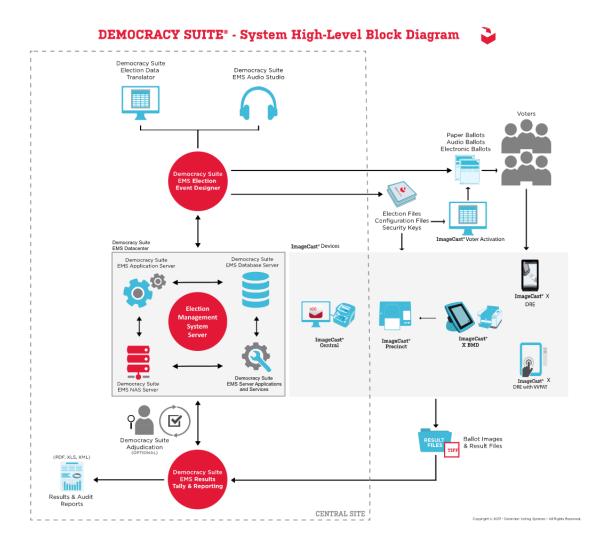
## System Overview:

The D-Suite 5.5 Voting System is a paper-based optical scan voting system with a hybrid paper/DRE option consisting of the following major components: The Election Management System (EMS), the ImageCast Central (ICC), the ImageCast Precinct (ICP), the ImageCast X (ICX) DRE w/ Reports Printer, ImageCast X (ICX) DRE w/ voter-verifiable paper audit trail (VVPAT), and the ImageCast X ballot marking device (BMD). The D-Suite 5.5 Voting System configuration is a modification from the EAC approved D-Suite 5.0 system configuration.

## Language capability:

System supports Alaska Native, Apache, Bengali, Chinese, English, Eskimo, Filipino, French, Hindi, Japanese, Jicarilla, Keres, Khmer, Korean, Navajo, Seminole, Spanish, Thai, Towa, Ute, Vietnamese, and Yuman.

## Democracy Suite 5.5 System Diagram



**DEMOCRACY SUITE® - System High-Level Block Diagram**

# Components Included:

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

## Voting System Software Components:

| System Component | Software or Firmware Version | Operating System or COTS | Comments |
|---|---|---|---|
| EMS Election Event Designer (EED) | 5.5.12.1 | Windows 10 Pro | EMS |
| EMS Results Tally and Reporting (RTR) | 5.5.12.1 | Windows 10 Pro | EMS |
| EMS Application Server | 5.5.12.1 | Windows Server 2012 R2 Windows 10 Pro | EMS |
| EMS File System Service (FSS) | 5.5.12.1 | Window 10 Pro | EMS |
| EMS Audio Studio (AS) | 5.5.12.1 | Windows 10 Pro | EMS |
| EMS Data Center Manager (DCM) | 5.5.12.1 | Windows Server 2012 R2 Windows 10 Pro | EMS |
| EMS Election Data Translator (EDT) | 5.5.12.1 | Windows 10 Pro | EMS |
| ImageCast Voter Activation (ICVA) | 5.5.12.1 | Windows 10 Pro | EMS |
| EMS Adjudication (ADJ) | 5.5.8.1 | Windows 10 Pro | EMS |
| EMS Adjudication Services | 5.5.8.1 | Windows 10 Pro | EMS |
| Smart Card Helper Service (SCHS) | 5.5.12.1 | Windows 10 Pro | EMS |
| Election Firmware | 5.5.3-0002 | uClinux | ICP |
| Firmware Updater | 5.5.3-0002 | uClinux | ICP |
| Firmware Extractor | 5.5.3-0002 | uClinux | ICP |
| Kernel (uClinux) | 5.5.3-0002 | Modified COTS | ICP |
| Boot Loader (COLILO) | 20040221 | Modified COTS | ICP |
| Asymmetric Key Generator | 5.5.3-0002 | uClinux | ICP |
| Asymmetric Key Exchange Utility | 5.5.3-0002 | uClinux | ICP |
| Firmware Extractor (Technician Key) | 5.5.3-0002 | uClinux | ICP |
| ImageCast Central Application | 5.5.3.0002 | Windows 10 Pro | ICC |
| ICX Application | 5.5.10.25 | Android 5.1 (ICX Prime) Android 4.4 (ICX Classic) | ICX |

## Voting System Platform:

| System Component | Version | Operating System or COTS | Comments |
|---|---|---|---|
| Microsoft Windows Server | 2012 R2 Standard | Unmodified COTS | EMS Server SW Component |
| Microsoft Windows | 10 Professional | Unmodified COTS | EMS Client/Server SW Component |
| .NET Framework | 3.5 | Unmodified COTS | EMS Client/Server SW Component |
| Microsoft Visual J# | 2.0 | Unmodified COTS | EMS Client/Server SW Component |
| Microsoft Visual C++ 2013 Redistributable | 2013 | Unmodified COTS | EMS Client/Server SW Component |
| Microsoft Visual C++ 2015 Redistributable | 2015 | Unmodified COTS | EMS Client/Server SW Component |
| Java Runtime Environment | 7u80 | Unmodified COTS | EMS Client/Server SW Component |
| Java Runtime Environment | 8u144 | Unmodified COTS | EMS Client/Server SW Component |

| System Component | Version | Operating System or COTS | Comments |
|---|---|---|---|
| Microsoft SQL Server 2016Standard | 2016 Standard | Unmodified COTS | EMS Client/Server SW Component |
| Microsoft SQL Server 201 Service Pack 2 | 2016 SP1 | Unmodified COTS | EMS Client/Server SW Component |
| Microsoft SQL Server 2016 SP1 Express | 2016 SP1 | Unmodified COTS | EMS Client/Server SW Component |
| Cepstral Voices | 6.2.3.801 | Unmodified COTS | EMS Client/Server SW Component |
| Arial Narrow Fonts | 2.37a | Unmodified COTS | EMS Client/Server SW Component |
| Maxim iButton Driver | 4.05 | Unmodified COTS | EMS Client/Server SW Component |
| Adobe Reader DC | AcrobatDC | Unmodified COTS | EMS Client/Server SW Component |
| Microsoft Access Database Engine | 2010 | Unmodified COTS | EMS Client/Server SW Component |
| Open XML SDK 2.0 for Microsoft Office | 2.0 | Unmodified COTS | EMS Client/Server SW Component |
| Infragistics NetAdvantage Win Forms 2011.1 | 2011 Vol. 1 | Unmodified COTS | EMS SW Platform |
| Infragistics NetAdvantage WPF 2012.1 | 2012 Vol. 1 | Unmodified COTS | EMS SW Platform |
| TX Text Control Library for .NET | 16.0 | Unmodified COTS | EMS SW Platform |
| SOX | 14.3.1 | Unmodified COTS | EMS SW Platform |
| NLog | 1.0.0.505 | Unmodified COTS | EMS SW Platform |
| iTextSharp | 5.0.5 | Unmodified COTS | EMS SW Platform |
| OpenSSL | 1.0.2K | Unmodified COTS | EMS SW Platform |
| OpenSSL FIPS Object Module | 2.0.14 (Cert 1747) | Unmodified COTS | EMS SW Platform |
| SQLite | 1.0.103.0 | Unmodified COTS | EMS SW Platform |
| Lame | 3.99.4 | Unmodified COTS | EMS SW Platform |
| Speex | 1.0.4 | Unmodified COTS | EMS SW Platform |
| Ghostscript | 9.04 | Unmodified COTS | EMS SW Platform |
| One Wire API for .NET | 4.0.2.0 | Unmodified COTS | EMS SW Platform |
| Avalon-framework-cvs-20020806 | 20020806 | Unmodified COTS | EMS SW Platform |
| Batik | 0.20-5 | Unmodified COTS | EMS SW Platform |
| Fop | 0.20-5 | Unmodified COTS | EMS SW Platform |
| Microsoft Visual J# 2.0 Redistributable Package – Second Edition (x64) | 2.0 | Unmodified COTS | EMS SW Platform |
| Entity framework | 6.1.3 | Unmodified COTS | EMS SW Platform |
| Spreadsheetlight | 3.4.3 | Unmodified COTS | EMS SW Platform |
| Open XML SDK 2.0 for Microsoft Office | 2.0.5022.0 | Unmodified COTS | EMS SW Platform |
| Open SSL | 1.0.2K | Unmodified COTS | ICP |
| OpenSSL FIPS Object Module | 2.0.10 (Cert 1747) | Unmodified COTS | ICP |
| Zlib | 1.2.3 | Unmodified COTS | ICP |
| uClinux | 20070130 | Modified COTS | ICP |
| Google Text-to-Speech Engine | 3.11.12 | Unmodified COTS | ICX SW |
| Zxing Barcode Scanner | 4.7.5 | Modified COTS | ICX SW |
| SoundTouch | 1.9.2 | Modified COTS | ICX SW |
| ICX Prime Android 5.1.1 Image | 0405 | Modified COTS | ICX SW |
| ICX Classic Android 4.4.4 Image | 0.0.98 | Modified COTS | ICX SW |
| OpenSSL FIPS Object Module | 2.0.10 (Cert 2473) | Unmodified COTS | ICX SW Build Library |
| OpenSSL | 1.0.2K | Unmodified COTS | ICC SW Build |

| System Component | Version | Operating System or COTS | Comments |
|---|---|---|---|
| | | | Library |
| OpenSSL FIPS Object Module | 2.0.10 (Cert 1747) | Unmodified COTS | ICC SW Build Library |
| 1-Wire Driver (x86) | 4.05 | Unmodified COTS | ICC Runtime SW |
| 1-Wire Driver (x64) | 4.05 | Unmodified COTS | ICC Runtime SW |
| Canon DR-G1130 Driver | 1.2 SP6 | Unmodified COTS | ICC Runtime SW |
| Canon DR-G1130 TWAIN Driver | 1.2 SP6 | Unmodified COTS | ICC Runtime SW |
| Visual C++ 2013 Redistributable (x86) | 12.0.30501 | Unmodified COTS | ICC Runtime SW |
| Machine Configuration File (MCF) | 5.5.10.20_20180806 | Proprietary | ICX Configuration File |
| Device Configuration File (DCF) | 5.4.01_20170521 | Proprietary | ICP and ICC Configuration File |

## Hardware Components:

| System Component | Hardware Version | Proprietary or COTS | Comments |
|---|---|---|---|
| ImageCast Precinct (ICP) | PCOS-320C | Proprietary | Precinct Scanner |
| ImageCast Precinct (ICP) | PCOS-320A | Proprietary | Precinct Scanner |
| ICP Ballot Box | BOX-330A | Proprietary | Ballot Box |
| ICP Ballot Box | BOX-340C | Proprietary | Ballot Box |
| ICP Ballot Box | BOX-341C | Proprietary | Ballot Box |
| ICX UPS Inline EMI Filter | 1.0 | Proprietary | EMI Filter |
| ICX Tablet (Classic) | aValue 15" Tablet (SID-15V) | COTS | Ballot Marking Device |
| ICX Tablet (Classic) | aValue 21" Tablet (SID-21V) | COTS | Ballot Marking Device |
| ICX Tablet (Prime) | aValue 21" Tablet (HID-21V) | COTS | Ballot Marking Device or Direct Recording Electronic |
| Thermal Printer | SII RP-D10 | COTS | Report Printer |
| Thermal Printer | KFI VRP3 | COTS | Voter-verifiable paper audit trail (VVPAT) |
| Server | Dell PowerEdge R630 | COTS | Standard Server |
| Server | Dell PowerEdge R640 | COTS | Standard Server |
| Server | Dell Precision T3420 | COTS | Express Server |
| ICC Workstation HW | Dell OptiPlex 7440 All in One | COTS | |
| ICC Workstation HW | Dell OptiPlex 9030 All In One | COTS | |
| ICC Workstation HW | Dell OptiPlex 3050 All In One | COTS | |
| ICC Scanner | Canon imageFormula DR-G1130 | COTS | Central Count Scanner |
| ICC Scanner | Canon imageFormula DR-M160II | COTS | Central Count Scanner |
| Client Workstation HW | Dell Precision T3420 | COTS | |
| Client Workstation HW | Dell Latitude E7450 | COTS | |
| Client Workstation HW | Dell Latitude e3480 | COTS | |
| ICX Printer | HP LaserJet Pro Printer M402dn | COTS | |
| ICX Printer | HP LaserJet Pro Printer M402dne | COTS | |
| Monitor | Dell Monitor KM632 | COTS | |
| Monitor | Dell Monitor P2414Hb | COTS | |
| Monitor | Dell Ultrasharp 24" Monitor U2414H | COTS | |
| CD/DVD Reader | Dell DVD Multi Recorder GP60NB60 | COTS | |
| iButton Programmer | Maxim iButton Programmer DS9490R# with DS1402 | COTS | |
| UPS | APC Smart-UPS SMT1500 | COTS | |
| Network Switch | Dell X1008 | COTS | |

| System Component | Hardware Version | Proprietary or COTS | Comments |
|---|---|---|---|
| Network Switch | Dell X1018 | COTS | |
| Network Switch | Dell X1026 | COTS | |
| Network Switch | Dell PowerConnect 2808 | COTS | |
| Sip and Puff | Enabling Devices Sip and Puff | COTS | |
| Headphones | Cyber Acoustics ACM-70 | COTS | |
| 4-way Joystick Controller | S26 | Modified COTS | |
| Rocker (Paddle) Switch | Enablemart #88906 | COTS | |
| Footswitches | ABLENET Jelly Bean Twist 10033400 | COTS | |
| CF Card Reader | IOGEAR SDHC/microSDHC 0U51USC410 | COTS | |
| CF Card Dual-Slot Reader | Lexar USB 3.0 | COTS | |
| CF Card Reader | Hoodman Steel USB 3.0 102015 | COTS | |
| CF Card Reader | Lexar Professional CFR1 | COTS | |
| CF Card Reader | Kingston FCR-HS4 | COTS | |
| ATI | ATI handset | Proprietary | |
| ATI | ATI-USB handset | Proprietary | |
| ACS PC-Linked Smart Card Reader | ACR39U | COTS | |

## System Limitations

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

| Characteristic | Limiting Component | Limit | Comment |
|---|---|---|---|
| Ballot positions | Ballot | 292*/462** | Both |
| Precincts in an election | EMS | 1000; 250 | Standard; Express |
| Contests in an election | EMS | 1000; 250 | Standard; Express |
| Candidates/Counters in an election | EMS | 10000; 2500 | Standard; Express |
| Candidates/Counters in a precinct | Ballot | 240*/462** | Both |
| Candidates/Counters in a tabulator | Tabulator | 10000; 2500 | Standard; Express |
| Ballot Styles in an election | Tabulator | 3000; 750 | Standard; Express |
| Ballot IDs in a tabulator | Tabulator | 200 | Both |
| Contests in a ballot style | Ballot | 38*/156** | Both |
| Candidates in a contest | Ballot | 240*/231** | Both |
| Ballot styles in a precinct | Tabulator | 5 | Both |
| Number of political parties | Tabulator | 30 | Both |
| "vote for" in a contest | Ballot | 24*/30** | Both |
| Supported languages in an election | Tabulator | 5 | Both |
| Number of write-ins | Ballot | 24*/462** | Both |

\*   Reflects the system limit for a ballot printed in landscape.

\*\* Reflects the system limit for a ballot printed in portrait.

# Functionality

## 2005 VVSG Supported Functionality Declaration

| Feature/Characteristic | Yes/No | Comment |
|---|---|---|
| Voter Verified Paper Audit Trails | | |
| VVPAT | YES | |
| 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) | YES | |
| 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. | YES | |
| Ballot Rotation: | | |
| Rotation of Names within an Office; define all supported rotation methods for location on the ballot and vote tabulation/reporting | YES | Equal time rotation |
| 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. | 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. | YES | |

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

| Feature/Characteristic | Yes/No | Comment |
|---|---|---|
| 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 | Overvotes cause a warning to the voter and can be configured to allow voter to override. |
| Overvotes: DRE: Prevented from or requires correction of overvoting. | YES | |
| Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted. | YES | If allowed via voter override, overvotes are tallied separately. |
| Overvotes: DRE systems that provide a method to data enter absentee votes must account for overvotes. | N/A | |
| Undervotes | | |
| Undervotes: System counts undervotes cast for accounting purposes | YES | |
| Blank Ballots | | |
| Totally Blank Ballots: Any blank ballot alert is tested. | YES | Precinct voters receive a warning; both precinct and central scanners will warn on blank ballots. |
| Totally Blank Ballots: If blank ballots are not immediately processed, there must be a provision to recognize and accept them | YES | Blank ballots are flagged. These ballots can be manually examined and then be scanned and accepted as blank; or precinct voter can override and accept. |
| Totally Blank Ballots: If operators can access a blank ballot, there must be a provision for resolution. | YES | Operators can examine a blank ballot, re-mark if needed and allowed, and then re-scan it. |
| Networking | | |
| Wide Area Network – Use of Modems | NO | |
| Wide Area Network – Use of Wireless | NO | |
| Local Area Network  – Use of TCP/IP | YES | Client/server only |
| Local Area Network  – Use of Infrared | NO | |
| Local Area Network  – Use of Wireless | NO | |
| FIPS 140-2 validated cryptographic module | YES | |

| Feature/Characteristic | Yes/No | Comment |
|---|---|---|
| Used as (if applicable): | | |
| Precinct counting device | YES | ImageCast Precinct |
| Central counting device | YES | ImageCast Central |

## Baseline Certification Engineering Change Orders (ECO)

| ECO # | Component | Description |
|---|---|---|
| 100306 | ICP PCOS-320C & ICP PCOS-321C | Adjusted footprint of L1 surface mount inductor to improve fit of part. |
| 100316 | ICP PCOS-320C & ICP PCOS-321C | Added clip to hold the DSD cable in place to prevent pinching the cable during assembly and to improve the speed of the assembly process. |
| 100323 | ICP PCOS-320C & ICP PCOS-321C | Replaced side door hinge to eliminate pre-installation prep work that was required and reduce the cost of assembly. |
| COTS-1015 | ICX Tablet (Classic) | New BIOS from manufacturer to provide power up when AC applied. |