

Certification Test Plan – Modification As Run

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v5.0

Prepared for:

Vendor Name	<i>Hart InterCivic (Hart)</i>
Vendor System	<i>Verity Voting 2.8</i>
EAC Application No.	HRT-Verity-2.8
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1 INTRODUCTION

This Modification Test Plan outlines the test approach SLI Compliance will follow when performing system modification testing on the **Hart Verity Voting 2.8** voting system against the Election Assistance Commission Voluntary Voting System Guidelines (EAC VVSG) version 1.0. **Verity Voting 2.8** is a modification of **Verity Voting 2.7.8**, certified by the EAC on March 9th, 2026, with limited changes. The voting system will be tested based on the “maintenance release” requirements, as set forth in section 3.3.5, “Updating and Adding New Components to be Evaluated Against the Current VVSG Standard” of the “EAC VVSG Lifecycle Policy (April 8th, 2024)”. The purpose of this document is to provide a clear understanding of the work SLI Compliance will conduct and a detailed plan outlining the test effort. When the testing is complete, SLI Compliance will submit a Certification Test Report that details all test results and findings from the Certification Test effort, as well as a recommendation to the EAC.

1.1 Description and Overview of the Certified System

This section contains a description of the previously certified **Verity Voting 2.7.8** voting system, the specific modifications to the current system version, and the impact of those modifications on the system and certification testing.

1.1.1 Definition of the Baseline Verity Voting 2.7.8 Certified System

This modification project builds upon the foundation established in **Verity Voting 2.7.8**, which contains the applications for **Verity Data**, **Verity Build**, **Verity Central**, **Verity Count**, and **Verity Relay Receiving Station**, **Verity Transmit Receiving Station** as well as the polling place devices **Verity Controller**, **Verity Scan**, **Verity Scan with Relay**, **Verity Print**, **Verity Touch Writer**, **Verity Touch Writer Duo**, **Verity Transmit** and **Verity Touch Writer Duo Standalone**.

1.1.2 Modifications

Verity Voting 2.8 is a modification of the EAC certified **Verity Voting 2.7.8** system.

The modifications to **Verity Voting 2.8** address a single aspect of the system, as well as associated documentation updates.

This release adds the Verity Vanguard 1.0 **Vault** precinct scanner device to **Verity Voting 2.8**. Vault was previously certified to the VVSG 2.0 standards as a part of the Verity Vanguard 1.0 system.



The Verity Voting 2.8 Vault device software will be built as version 2.8.0. The remainder of the system components will be unchanged from the Verity Voting 2.7.8 release and will retain the 2.7.8 versioning.

1.1.3 Initial Assessment of Impact of the Modifications

Review of the modifications listed in section “1.1.2 Modifications”, indicates the need for limited Physical and Functional Configuration Audits to verify that the system continues to meet VVSG 1.0 requirements. All software, firmware and hardware modification will be verified by execution of elections that incorporate steps to verify the modifications, or via test suites designed to specifically focus on the functional changes made to the applicable devices and applications.

1.1.4 Regression Testing

The limited FCA will consider functions that have not changed but may be impacted by the modification. Only the newly introduced Verity Voting Vault component of the system will require a new build. This will be subjected to FCA review at an appropriate level of scrutiny.

All components of **Verity Voting 2.8** will be tested in order to verify continued compliance to VVSG 1.0, an end-to-end system level general elections will be performed to verify proper system operation.

1.2 References

The following key documents were used in preparing this test plan.

1. Election Assistance Commission Voluntary Voting System Guidelines (EAC VVSG 1.0), Version 1.0, 2005
2. NIST Handbook 150: 2020
3. NIST Handbook 150-22: 2021
4. EAC Voting System Testing and Certification Program Manual, United States Election Assistance Commission, v 3.0
5. EAC VVSG Lifecycle Policy: April 8, 2024
6. SLI Compliance VSTL Quality System Manual, Rev 4.4, July 21, 2025



1.3 Terms and Abbreviations

The following terms and abbreviations will be used throughout this document:

Table 1 – Terms and Abbreviations

Term	Abbreviation	Description
American Association for Laboratory Accreditation	A2LA	A nonprofit, non-governmental, public service, membership society whose mission is to provide comprehensive services in laboratory accreditation and laboratory-related training.
Ballot Marking Device	BMD	An accessible computer-based voting system that produces a marked ballot (usually paper) that is the result of voter interaction with visual or audio prompts.
Central Count Scanner	CCS	A mark sense-based ballot and vote counting device typically located at a central count facility and is operated by an automated multi-sheet feeding capability.
Compact Flash card	CF	This is a type of flash memory card in a standardized enclosure often used in voting systems to store ballot and/or vote results data.
Commercial Off the Shelf	COTS	Term used to designate computer software, hardware or accessories that are ready-made and available for sale, lease, or license to the general public
Direct Recording Electronic	DRE	Voting systems that, using touch screen or other user interfaces, directly record the voter's selections in each race or contest on the ballot in electronic form.
Election Assistance Commission	EAC	An independent, bipartisan commission created by the Help America Vote Act (HAVA) of 2002 that operates the federal government's voting system certification program.
Election Management System	EMS	Typically a database management system used to enter jurisdiction information (district, precincts, languages, etc.) as well as election specific information (races, candidates, voter groups (parties), etc.). In addition, the EMS is also used to lay out the ballots, download the election data to the voting devices, upload the results and produce the final results reports.
Electromagnetic Compatibility	EMC/EMI	The goal of EMC is to validate the correct functioning of different equipment in the same environment and the avoidance of any interference effects between them.
Functional Configuration Audit	FCA	The testing activities associated with the functional testing of the system.



Term	Abbreviation	Description
Institute of Electrical and Electronics Engineers	IEEE	A non-profit professional association for the advancement of technology.
National Institute of Standards and Technology	NIST	A non-regulatory federal agency within the U.S. Dept. of Commerce. Its mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve quality of life.
National Voluntary Laboratory Accreditation Program	NVLAP	A division of NIST that provides third-party accreditation to testing and calibration laboratories.
Physical Configuration Audit	PCA	The testing activities associated with the physical aspects of the system (hardware, documentation, builds, source code, etc.).
Precinct Count Scanner	PCS	A precinct-count optical scanner is a mark sense-based ballot and vote counting device located at a precinct and is typically operated by scanning one ballot at a time.
Request For Interpretation	RFI	A means used by testing laboratories and manufacturers to request that the EAC provide an interpretation of a technical issue related to testing of voting systems.
Requirements Matrix	N/A	A matrix that traces the VVSG requirements to the various test modules and test methods.
Technical Data Package	TDP	The data package supplied by the vendor, which includes Functional Requirements, Specifications, End-user documentation, Procedures, System Overview, Configuration Management Plan, Quality Assurance Program, and manuals for each of the required hardware, software, firmware components of a voting system.
Voluntary Voting System Guidelines	VVSG	A set of specifications and requirements against which voting systems can be tested to determine if the systems provide all of the basic functionality, accessibility and security capabilities required for EAC certification.
Voting System Test Lab	VSTL	An independent testing organization accredited by NVLAP and the EAC to conduct voting system testing for EAC certification.



1.4 Testing Responsibilities

The following project schedule contains owner assignments and identifies test procedure (module) development, test case (suite) development, 3rd party tests, and EAC and Hart dependencies.

1.4.1 Project Schedule

The subsections below describe the project schedule.

1.4.1.1 Project Timeline

The following schedule outlines the expected timeline for this project

Task Name	Start	Finish
Review - Source Code (EAC)	11/20/25	11/28/25
Trusted Build	12/1/25	12/5/25
Test Readiness Review (PenTest, TRR)	12/4/25	12/18/25
Initiation of EAC Certification Project	12/19/25	12/19/25
Project Initiation	12/19/25	12/19/25
TDP Deliver/Receive Hart Package	12/19/25	12/19/25
FCA Assessment	12/19/25	12/19/25
Test Plan Development	12/19/25	1/14/26
Preparation	12/19/25	12/19/25
Test Suite Development	12/19/25	12/19/25
Hart Specific Module and Suite Creation/Validation	12/19/25	12/26/25
Vanguard Vault	12/19/25	1/5/26
General Election	12/19/25	1/5/26
Regression Testing	12/19/25	1/5/26
TDP Review	12/19/25	1/5/26
Official Execution	1/14/26	1/20/26
Execute Test Suites	1/14/26	1/20/26
Final Documentation Updates	1/21/26	1/21/26
Certification Test Report to EAC	1/21/26	1/21/26
Delivery of Artifacts to EAC Repository	1/26/26	1/26/26



1.4.1.2 Owner Assignments

Test Manager M. Santos is responsible for oversight and approvals for this test campaign. Work is conducted by SLI's trained and authorized Test Engineers.

- System Analysis and Review will be conducted by Source Code Review, Security and Voting Test Engineers, with oversight by the Test Manager.
- Source code review will be conducted by Voting Test Engineers (Source Code Review Specialists), with oversight by the Test Manager.
- Documentation review will be conducted by Security and Voting Test Engineers, with oversight by the Test Manager.
- Test Module Development will be conducted by Security and Voting Test Engineers, with oversight by the Test Manager.
- Test Suite Development will be conducted by Security and Voting Test Engineers, with oversight by the Test Manager.
- Formal Test Execution will be conducted by Security and Voting Test Engineers, with oversight by the Test Manager.

1.4.1.3 Test Module Development

Test Modules will be developed and/or modified to provide repeatable detailed test steps. The Modules are defined at a basic level in SLI Compliance's formal Test Methods and are designed for use in any suite that employs their functionality. This re-usability reduces the development time associated with creating Modules.

The Modules will be validated prior to formal test execution to ensure accurate testing of the voting system.

Additionally, the Test Modules will provide traceability to SLI Compliance's formal Test Methods, as well as the VVSG 1.0 requirements.

1.4.1.4 Test Suite Development

Test suites will be developed to help group and focus testing around key areas of the voting system. The test suites will contain multiple test modules providing clear and traceable test scripts and key information. As needed for the system under test, various configurations will be identified within the suites. Potentially, variations of the same suite may be run multiple times in order to verify different configurations.

1.4.1.5 Trusted Build

A Trusted Build was performed, producing the firmware component for **Vanguard Vault**.

1.4.1.6 Formal Test Execution

Formal execution of the approved test suites and modules will be conducted to verify the system's compliance with the VVSG requirements.



1.4.1.7 3rd Party Hardware Testing

No hardware testing will be conducted in this test campaign.

1.4.1.8 EAC & Hart Dependencies

The Test Plan will require EAC approval prior to finalization.

Hart will be required to provide all source code, documentation, equipment and supporting materials identified as part of the voting system.

The source code must have all discrepancies resolved, be successfully built and the outputs installed, and the components must pass operational status checks prior to formal test execution.

In addition, **Hart** is required to provide training on the voting system and support throughout the life of the project.

1.5 Scope of Testing

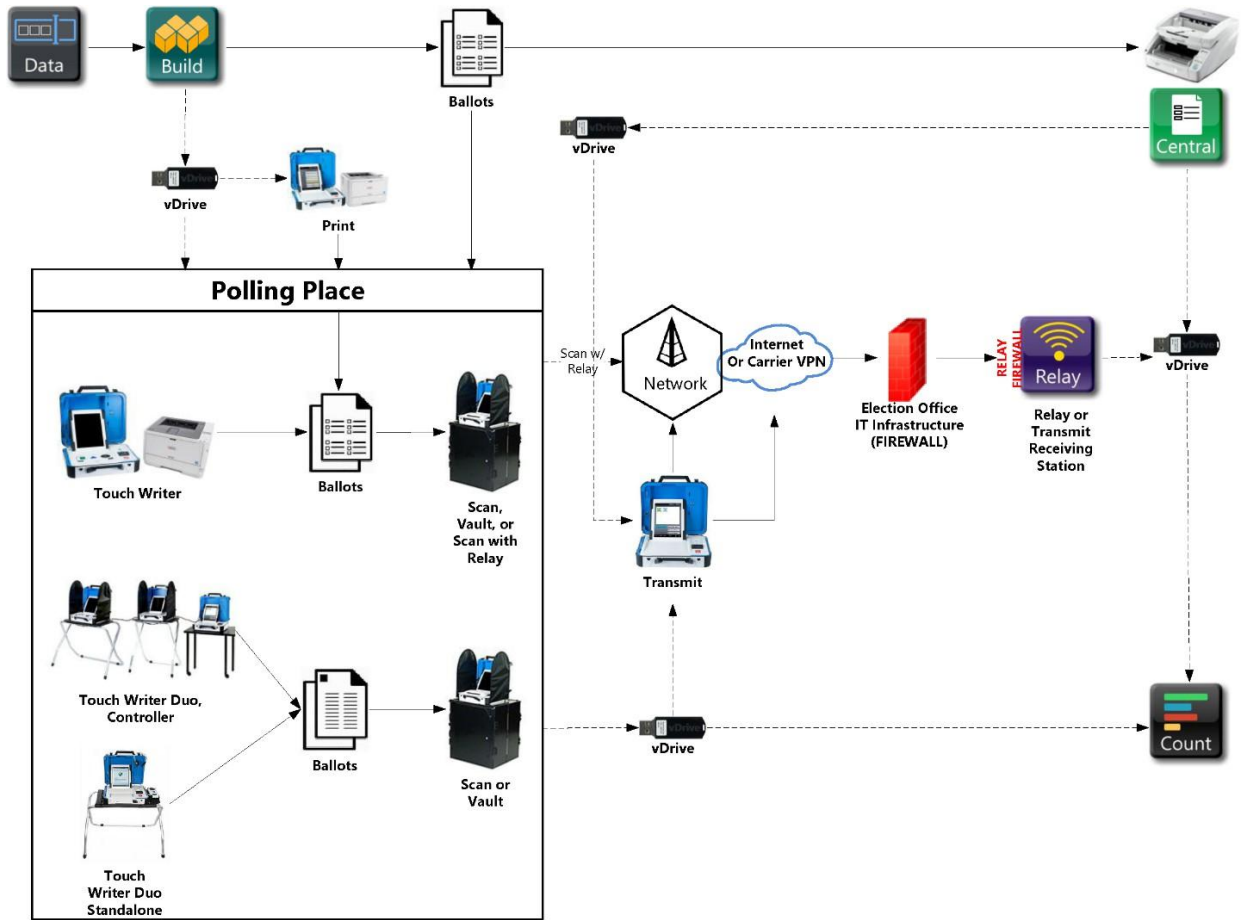
1.5.1 EAC Interpretations - RFI

This Certification Test Plan and the execution of tests for the voting system identified in this plan do not include any additional EAC interpretations

1.5.2 EAC Notices of Clarification - NOC

This Certification Test Plan and the execution of tests for the voting system identified in this plan do not include any additional EAC Notices of Clarification (NOC).

1.5.3 Block Diagram



Overview of the diagram:

- The components are displayed as touch points of data access, transfers, and verification.
- Dotted lines show the flow of data and air gaps using vDrives.
- Verity Print is a ballot production device that provides unmarked printed ballots.
- Verity Touch Writer, Scan and Vault may be installed in polling places to support paper-based voting.
- Verity Controller, Touch Writer Duo, Touch Writer Duo Standalone, Scan, and Vault may be installed in polling places to support paper-based voting. Scan may be used with the Scan with Relay kit to remotely transmit vDrive data from that device only to a Relay Receiving Station.
- Verity Transmit is used to remotely transmit vDrive data from polling place devices or Verity Central to a Transmit receiving station.
- Verity Key (not shown) is required for user access into components to load elections, to use critical features, and to generate reports. Feature access depends on the roles applied to user accounts.



2 PRE-CERTIFICATION TESTING AND ISSUES

2.1 Evaluation of prior VSTL testing

Prior VSTL testing has been performed on predecessor versions of the **Hart Verity Voting 2.8** voting system. The **Verity Voting 2.7.8** release, which was EAC certified, constitutes the code base used for the **Verity Voting 2.8** release.

2.2 Evaluation of prior non-VSTL testing

No prior state or non-VSTL lab testing has been performed on the **Hart Verity Voting 2.8** voting system. Review of Hart's internal testing will be performed during the FCA review.

2.3 Known Field Issues

Review of the "Known Vulnerabilities" database, maintained by SLI Compliance, has provided no known vulnerabilities that relate to the modification implemented in **Verity Voting 2.8**.

3 MATERIALS REQUIRED FOR TESTING

Any materials used in an election cycle must be provided to SLI Compliance to facilitate testing of the voting system. This section outlines these materials that are required.

3.1 Software/Firmware

All software and firmware used by the declared **Verity Voting 2.8** voting system, whether directly or indirectly, in a production environment must be validated during the certification process.

The following software/firmware is required for the execution of hardware, software, telecommunications, and security tests. This includes all supporting software such as operating systems, compilers, assemblers, application software, firmware, any applications used for burning of media, transmission of data or creation/management of databases.



3.1.1 Verity Voting Custom Software/Firmware

The **Hart Verity Voting 2.8** voting system consists of the following software and firmware components:

Table 2 – Verity Voting 2.8 Custom Software/Firmware

Software/Firmware	Application	Version
Verity Data	EMS Software	2.7.8
Verity Build	EMS Software	2.7.8
Verity Central	High-Speed Optical Scanner Software	2.7.8
Verity Count	Central Count Location Tabulation and Report Software	2.7.8
Verity Relay Receiving Station	Data Transmission Software	2.7.8
Verity Scan	Precinct Optical Scanner Firmware	2.7.8
Verity Scan with Relay	Precinct Optical Scanner Firmware	2.7.8
Vanguard Vault	Precinct Optical Scanner Firmware	2.8.0
Verity Touch Writer	BMD Firmware	2.7.8
Verity Touch Writer Duo	BMD Firmware	2.7.8
Verity Touch Writer Duo Standalone	BMD Firmware	2.7.8
Verity Controller	Firmware	2.7.8
Verity Print	BMD Firmware	2.7.8
Verity Transmit	Data Transmission Software	2.7.8
Verity Transmit Receiving Station	Data Transmission Software	2.7.8

3.1.2 COTS Software/Firmware

This section details the Commercial Off The Shelf software and firmware utilized by the **Verity Voting 2.8** voting system

Table 3 – Verity Voting 2.8 COTS Software and Firmware

Workstations		
Manufacturer	Application	Version
BioPDF ApS	BioPDF	4.0.1000.16
Brother	HL-6400DWVS Driver	1.8.168.8
Canon	DR-G1100 Driver	1.0.4900
Canon	DR-G1130 Driver	1.0.4954
Canon	DR-G2000 Series Driver	1.1.11807.24001 SP2
empira Software GmbH	PDFSharp	1.50.5147.0



HP	HP LaserJet Pro 4001 4002 4002 4004 PCL 6	8.00.2101.9302
Intel	Integrated Performance Primitives	v5.0
Intel	Intel Graphics Driver	31.0.101.5522T
IntoPrint	SP1360(PCL6) Driver	1.0.0.0
Kodak	ISIS Driver – KODAK i5200, i5600, i5800	1.0.2633
Kodak	KODAK i5000 scanner	1.23
Maxim	1-Wire Driver	4.0.5
McAfee	Application Control for Devices (“Solidifier”)	8.2.1-143
Microsoft	Help Viewer	2.3.28107
Microsoft	Microsoft SQL Server Standard 2019	15.0.2000.5
Microsoft	Unity	2.1.505.2
Microsoft	Visual Studio C++ 2008 Redistributablex86	9.0.30729
Microsoft	Visual Studio C++ 2010 Redistributable x64	10.0.30319
Microsoft	Visual Studio C++ 2010 Redistributable x86	10.0.30319
Microsoft	Visual Studio C++ 2013 Redistributable x64	12.0.40664
Microsoft	Visual Studio C++ 2013 Redistributable x86	12.0.30501
Microsoft	Visual Studio C++ 2015-2019 Redistributable x64	14.24.28127
Microsoft	Visual Studio C++ 2015-2019 Redistributable x86	14.24.28127
Microsoft	Windows 10 Enterprise 2019 LTSC	10.0.17763
Neodynamic ARL	Barcode Professional	4.0.3500.19
Nuance	Nuance Western OCR, Desktop, OEM	V20
NVIDIA	NVIDIA Quadro P400 drivers	26.21.14.4112
NVIDIA	NVIDIA Quadro T400 drivers	472.47
OKIDATA	OKI USBDevice	1.0.0.0
OKIDATA	OKI USBDevice	1.0.2.0
Open Source	Automapper	2.2.0.0
Open Source	Math.NET Numerics	2.6.1.30
Open Source	MVVMLight	4.0.23.37706



Open Source	NAudio	1.7.3.0
Open Source	NHibernate	3.3.1.4000
Open Source	OTP-Sharp	1.0.0
Open Source	OWdotNET	0.9.0.0
Open Source	SoundTouch	1.7.1.0
Open Source	Zxing.NET	0.16.4.0
Prism Software, LLC	Prism	4.1.0.0
Realtek	Realtek High Definition Audio Driver	6.0.9394.1
Telerik	Reporting	7.1.13.612
Telerik	UI for WPF	2024.4.1111.462
TWAIN Working Group	Twacker 32	2.0.1
Websupergoo	ABCpdf	12.3.0.0
Devices except Vault		
Manufacturer	Application	Version
ADLINK	SIO Driver	1.2.0.0
ADLINK	SMBUS Driver	1.3.0.0
BioPDF ApS	BioPDF	4.0.1000.16
Brother	Brother HL-L6400DWVS Printer Driver	1.8.168.8
Brother	Brother PJ-723 Thermal Printer Driver	1.8.663.1
Brother	Brother Printer Setting Tool	1.6.0075
Empira Software GmbH	PDFSharp	1.50.5147.0
Intel	Integrated Performance Primitives	v5.0
Intel	Intel Graphics Driver	10.18.10.5069
Maxim	1-Wire Driver	4.0.5
McAfee	Application Control for Devices (“Solidifier”)	8.2.1-143
Microsoft	SQLite	3.36.0
Microsoft	Unity	2.1.505.2
Microsoft	Visual Studio C++ 2010 Redistributable x86	10.0.40219
Microsoft	Visual Studio C++ 2012 Redistributable x86	11.0.61033.0
Microsoft	Visual Studio C++ 2013 Redistributable x86	12.0.40660.0
Microsoft	Visual Studio C++ 2015-2019 Redistributable x86	14.29.30133.0
Microsoft	Windows 10 Enterprise 2019 LTSC	10.0.17763
Neodynamic ARL	Barcode Professional	4.0.3500.19
Nuance	Nuance Western OCR, Desktop, OEM	V20
OKIDATA	OKI USBDevice	1.0.0.0
OKIDATA	OKI USBDevice	1.0.2.0



Open Source	Automapper	2.2.0.0
Open Source	Math.NET Numerics	2.6.1.30
Open Source	MVVMLight	4.0.23.37706
Open Source	NAudio	1.7.3.0
Open Source	NHibernate	3.3.1.4000
Open Source	OTP-Sharp	1.0.0
Open Source	OWdotNET	0.9.0.0
Open Source	SoundTouch	1.7.1.0
Open Source	Zxing.NET	0.16.4.0
PDI	PageScan Scanner Driver	7.1.0.7
PDI	PageScan USB Scanner Driver	4.0.0301.13
PenMount Touch Solutions	PenMount Windows Universal Driver	2.4.6.387
Prism Software, LLC	Prism	4.1.0.0
Seiko Instruments	SII IFD50x Driver	2.5.0.0
Telerik	Reporting	7.1.13.612
Telerik	UI for WPF	2024.4.1111.462
Vault		
Manufacturer	Application	Version
Brother	Brother HL-L6400DWVS Printer Driver	1.8.168.8
Brother	brUSBMon Printer Interface, x64	1.0.0.0
Brother	brUSBMon Printer Interface, x86	1.0.1.0
Empira Software GmbH	PDFSharp	1.50.5147.0
HP	HP LaserJet Pro 4001 4002 4002 4004 PCL 6	8.00.2101.9302
HP	HP OfficeJet 200 Mobile Series	20.79.1.6738
Intel	Integrated Performance Primitives	2021.5.3.585
Intel	Intel Graphics Driver	31.0.101.2115
Maxim	1-Wire Driver	4.1.0
McAfee	McAfee Application Control for Devices ("Solidifier")	8.3.5.126
Microsoft	.NET Framework Runtime	4.8.1
Microsoft	Brother Ports Driver	01.02.00.00
Microsoft	Devcon	6.1.7600.16385
Microsoft	SQLite	3.45.3
Microsoft	Unity	2.1.505.2
Microsoft	Visual Studio C++ 2015-2022 Redistributable x64	14.36.32532.0
Microsoft	Visual Studio C++ 2015-2022 Redistributable x86	14.36.32532.0
Microsoft	Windows 10 Enterprise 2021 LTSC	10.0.19044



Neodynamic ARL	Barcode Professional	11.0.23.223
OKI Data	OKI C844 (PCL)	1.0.0.0
Okidata	OKIWinIO	1.8.2.2
Open Source	Automapper	2.2.0.0
Open Source	Math.NET Numerics	2.6.1.30
Open Source	MVVMLight	4.0.23.37706
Open Source	Naudio	1.7.3.0
Open Source	Nhibernate	3.3.1.4000
Open Source	OTP-Sharp	1.0.0
Open Source	OWdotNET	0.9.0.0
Open Source	SoundTouch	1.7.1.0
Open Source	Tesseract Open Source OCR Engine	4.5.2.411
Open Source	Zxcvbn C#/.NET	7.0.92
Open Source	Zxing.NET	0.16.4.0
PDI	PageScan Scanner SDK	7.2.17
PDI	PageScan USB Scanner Driver	4.0.0301.13
PDI	PDIPrintScanCut Driver for TPH850 Printer	4.1.0.0
Prism Software, LLC	Prism	4.1.0.0
SECO	Chipset Device	10.1.19222.8341
SECO	CSME_SW_2306.4.10.0_Consumer	2306.4.10.0
SECO	HID Event Filter	2.2.2.1
SECO	Programmable Services Engine Windows Drivers	1.0.10099.968
SECO	Serial IO	5.123.1.1025
SECO	Smart Sound Technology	10.30.00.7090
Seiko Instruments	SII IFD50x Driver	2.5.0.0
Telerik	Reporting	18.1.24.709

3.1.3 Additional Supporting Test Software

This section outlines all test software that will be used in the test campaign.

Table 4 – Additional Supporting Test Software

Manufacturer	Application
CLOC	<u>Count Lines of Code</u> : an open source application used to determine the counts of executable and comment lines.
SLI Compliance	<u>Module Finder</u> : an SLI Compliance proprietary application used to parse module names from source code.
CheckMarx	CheckMarx is an integrated development environment (IDE) that enables static code analysis.



3.2 Equipment

The following equipment is required for the execution of the hardware, software, telecommunications, and security tests. This includes system hardware, general purpose data processing and communications equipment, and any test instrumentation required.

3.2.1 Verity Voting 2.8 Equipment

The following **Hart Verity Voting 2.8** equipment will be used in testing:

Table 5 – Hart Verity Voting 2.8 Equipment

Hardware	Model
Verity Controller	3005825 / 3006085
Verity Print	3005356 / 3005856 / 3006095
Verity Scan (digital scanner)	3005350 / 3005800 / 3006080
Vanguard Vault (digital scanner)	3007030
Verity Ballot Box	3005357
Vanguard Vault Ballot Box	3007060
Verity Touch Writer (BMD)	3005352 / 3005852 / 3006090
Verity Touch Writer Duo (BMD)	3005700 / 3006070
Verity Touch Writer Duo Standalone (BMD)	3005730 / 3006075
Verity Touch Writer Duo Go	3005905
Verity Transmit	3006065
Relay Accessory kit	3005251
Verity vDrive	2005535
Verity Key	2005361
Accessible Voting Booth with ATI Tray A	3005801
Standard Voting Booth D	3005358
Optional detachable ATI Kit A	3005018
Accessible Voting Booth / D	3005359



3.2.2 COTS Equipment

The following Commercial Off-the-Shelf equipment will be used in testing:

Table 6 – COTS Equipment

Manufacturer	Hardware	Model
OKIDATA (for Verity Data, Verity Build, Verity Central, Verity Count, Verity Relay Receiving Station, Verity Transmit Receiving Station, Verity Print, and Verity Touch Writer)	Ballot and Report Printer	B431d, B432dn
Brother (for Verity Data, Verity Build, Verity Central, Verity Count, Verity Relay Receiving Station, Verity Transmit Receiving Station, Verity Print, and Verity Touch Writer)	Ballot and Report Printer	HL-L6400DWVS, HL-EX415DWVS
Hewlett-Packard (for Verity Data, Verity Build, Verity Central, Verity Count, Verity Relay Receiving Station, Verity Transmit Receiving Station, Verity Print, and Verity Touch Writer)	Ballot and Report Printer	Laser Jet Pro 4001dn
OKIDATA (for Verity Data, Verity Build, and Verity Print)	Ballot Printer	C831dn, C844dn
OKIDATA (for Verity Data and Verity Build)	Ballot Printer	C911dn, C931e
IntoPrint (for Verity Data and Verity Build)	Ballot Printer	SP1360
Hewlett-Packard (for Verity Data, Verity Build, Verity Central, Verity Count, Verity Relay Receiving Station, and Verity Transmit Receiving Station)	Verity Workstation	Z240, Z4 G4, Z2 SFF G9
Hewlett-Packard (for Z240 workstation deployments)	Verity Workstation Display	P231, P232
Hewlett-Packard (for Z4 G4 and Z2 SFF G9 workstation deployments)	Verity Workstation Display	P244, P24 G4 24, P24 G5
Canon (for Verity Central)	Ballot Scanner	DR-G1100, DR-G1130, DR-G2110, DR-G2140
Hewlett Packard (for locally interconnected workstations)	Ethernet switch	1405-8GV3



Hewlett-Packard Enterprises (for locally interconnected workstations)	Ethernet switch	R8R45A
Duracell UPS	Uninterruptible Power Supply	DR660PSS
VinPower	Digital 7-target USB Duplicator	USBShark-7T-BK
VinPower	Digital 23-target USB Duplicator	USBShark-23-BK USBDepeBoxES-23T
Motorola/Zebra	Optional AutoBallot barcode scanner kit. Includes the Motorola/Zebra 2d barcode scanner:	DS4308 DS4608
Brother	PJ700 Series Thermal Printer	PJ723-C149
Brother	PJ700 Series Thermal Printer	PJ723-C149-F
Brother	PJ800 Series Thermal Printer	PJ823-C149
MultiTech System	Optional Modem Accessory Kit (4G LTE Cat-M1) Note: Includes the following COTS modem: Hart P/N: 1005248 Hart Part Number:3005250	MTD-MNA1-2.0 A
MultiTech System	Optional Relay Accessory Kit (4G LTE Cat-M1) Note: Includes the following COTS modem: Hart P/N: 1005248 Hart Part Number:3005251	MTD-MNA1-2.0 A
StarTech	Optional 802.11 WiFi Accessory kit	USB433ACD1X1 A



StarTech	Optional RJ-45 Ethernet Accessory Kit	USB31000SW A
Eaton	UPS (for use with OKI Data B431d and B432dn printers)	SP1500

3.2.3 Verity Voting Equipment Not Utilized in this Modification

Table 7 below lists equipment that is part of the certified Verity Voting 2.8 system but are not utilized, as they are not affected by any newly implemented modifications within the Verity Voting 2.8 system

Table 7 – Verity Voting Equipment Not Utilized

Manufacturer/Item	Hardware	Hart Part Number
VinPower Digital 7-target USB Duplicator	USBShark-7T-BK	3005510
VinPower Digital 23-target USB Duplicator	USBShark-23-BK, USBDupeBoxES-23T	3005520
Motorola/Zebra AutoBallot barcode scanner kit.	DS4308, DS4608	1003672
Hart Accessible Voting Booth	D	3005359
Hart Accessible Voting Booth with ATI Tray	A	3005801
Hart Standard Voting Booth	D	3005358
Brother PJ700 Series Thermal Printer	PJ723-C149	1005714
Brother PJ700 Series Thermal Printer	PJ723-C149-F	1005851
Brother PJ800 Series Thermal Printer	PJ823-C149	1005852
Hart Optional detachable ATI Kit	A	3005018
V7 Optional headphones for ATI Kit	HA300-2NP, HA310-2NP	2005230
StarTech Optional 802.11 WiFi Accessory kit	USB433ACD1X1 A 5P1500	3005985
StarTech Optional RJ-45 Ethernet Accessory kit	USB31000SW	3005964



Bausch & Lomb Optional Full Page Magnifier manufactured	819007	1006092
Inclusion Solutions Optional Full Page Magnifier manufactured	436	1006094
AbleNet Optional ATI dual button switch	Dual Jelly Bean Switch	1001-364
Eaton UPS	5P1500	3005362

3.3 Test Materials

The following test materials are required for the performance of testing including, as applicable, test ballot layout and generation materials, test ballot sheets, test ballot cards and control cards, standard and optional output data report formats, and any other materials used in testing.

- Ballots & blank ballot grade paper
- Thumb drives
- USB dongle
- Ballot marking pens
- Printer paper rolls

3.4 Deliverable Documents

See “Appendix A – TDP Listing”, for documents to be delivered as a part of the **Hart Verity Voting 2.8** system.

4 TEST SPECIFICATIONS

The following are the specifications for testing to be conducted on the **Hart Verity Voting 2.8** system. The specifications contain details on the focus of testing, configuration(s), and the functions to be tested.

4.1 Requirements

The **Verity Voting 2.8** voting system's newly introduced component, **Vanguard Vault**, will be tested to the VVSG 1.0 requirements as listed below:

2.1.4.j	2.3.b	4.1.5.1.d.iii
2.1.5.1.a.ii	2.3.c	4.1.5.1.d.iv
2.1.7.1.a	2.3.d	4.1.5.1.d.iv.b
2.1.7.1.b	2.3.e	4.1.5.1.d.iv.c
2.1.8.c	2.4.1.b	4.1.5.1.d.iv.d
2.2.4.a	2.4.1.d	4.1.5.1.d.iv.e



2.2.4.d	2.4.3.d	4.1.7.2.a
2.3.1	2.4.3.i	4.1.7.2.b
2.3.1.2.b	3.1.5.b	4.1.7.2.c
2.3.1.2.d	3.1.6.d.i	4.1.8.2
2.3.1.2.e	4.1.3.1.b	4.3.4.1.d
2.3.3.1.b	4.1.3.1.c	4.3.4.2.e
2.3.3.1.e	4.1.4.2.d	4.3.4.2.g
2.3.a	4.1.4.2.d.iii	5.4.4.a

Vanguard Vault will be examined against the following VVSG 2.0 requirements:

1.1.1-E	1.1.5-F	1.1.8-J.1	6.1-B	7.2-G.1-4	7.3-M.1-2	10.2.1-C
1.1.1-F	1.1.5-F.1-3	1.1.8-J.2	6.1-C	7.2-H	7.3-N	10.2.1-D
1.1.1-G	1.1.5-G	1.1.8-L	6.1-D	7.2-I	7.3-N.1	10.2.1-E
1.1.2-A	1.1.5-G.1-7	1.1.8-M	6.2-A	7.2-I.1-3	7.3-N.3	10.2.2-C
1.1.2-B	1.1.5-H	1.1.9-A	6.2-A.1	7.2-K	7.3-O.1.a	10.2.2-D
1.1.2-C	1.1.6-A	1.1.9-B	7.1-A	7.2-L	7.3-O.1.b	10.2.2-D.1-2
1.1.2-D	1.1.6-B	1.1.9-B.1-5	7.1-B	7.2-M	7.3-O.2.a	10.2.3-A
1.1.2-E	1.1.6-B.1	1.1.9-C.1-5	7.1-C	7.2-N	7.3-O.2.b	10.2.3-B
1.1.2-F	1.1.6-B.2	1.1.9-D	7.1-C.1	7.2-N.1.a-b	7.3-O.2.c	10.2.4-B
1.1.2-G	1.1.6-D	1.1.9-E	7.1-D	7.2-N.3	7.3-P	11.2.1-A
1.1.2-H.1-5	1.1.6-D.1-4	1.1.9-F	7.1-D.1	7.2-O	8.1-A	11.2.1-C
1.1.2-I.1-4	1.1.6-E	1.1.9-G	7.1-D.2	7.2-O.1-4	8.1-A.1.a-b	11.2.1-C.1-4
1.1.2-K.1-3	1.1.6-E.1	1.1.9-H	7.1-D.2.a-c	7.2-P	8.1-A.1-3	12.1-B
1.1.2-L.1-7	1.1.6-E.2	1.1.9-I	7.1-D.3	7.2-P.1-2	8.1-A.2.a-b	12.1-C
1.1.3-A	1.1.6-G	1.1.9-J	7.1-E	7.2-Q	8.1-A.3.a-b	12.1-D
1.1.3-B.1	1.1.6-H	1.1.9-K, L	7.1-E.1-3	7.2-R	8.1-B	12.1-G
1.1.3-B.2	1.1.6-H.1-3	1.1.9-M	7.1-F	7.2-R.1	8.1-C	12.1-G.1-3
1.1.4-A	1.1.6-I	1.2-F	7.1-G	7.2-R.2	8.1-E	15.1-A
1.1.4-C	1.1.6-J	1.2-G	7.1-G.1-2	7.3-A	8.1-F	15.1-B
1.1.4-D	1.1.6-K	1.2-H	7.1-G.2.a-d	7.3-E	8.1-G	15.1-C
1.1.4-G	1.1.7-A	2.5.4-L	7.1-H	7.3-F	8.1-H	15.1-C.1-2
1.1.4-G.2	1.1.7-B	2.5.4-L.1-2	7.1-H.1	7.3-F.2	8.1-I	15.1-D.1.a
1.1.4-H	1.1.7-C	2.5.4-M	7.1-H.2	7.3-G	8.1-I.1-3	5.1-D.1.b
1.1.4-I	1.1.7-D	2.6-A	7.1-J	7.3-G.1.a-c	8.1-J	15.1-D.1.c
1.1.4-J	1.1.7-E	2.6-A.1-3	7.1-M	7.3-G.2-4	8.1-J.1-2	15.1-D.1.d
1.1.4-K	1.1.8-A	2.6-B	7.1-M.1-3	7.3-H.1	8.2-A	15.1-D.1.e
1.1.4-L	1.1.8-A.1	2.6-C	7.1-N	7.3-H.2	9.1.2-A	15.1-D.1.f
1.1.4-M	1.1.8-A.2	3.1.2-D.2	7.1-N.1-3	7.3-I	9.1.2-A.1-2	15.1-D.1.g
1.1.4-N	1.1.8-A.3	3.3-C-D	7.1-O	7.3-I.1	9.1.3-B	15.1-D.1.h



1.1.4-O	1.1.8-B.1-2	5.1-A	7.1-P	7.3-I.2	9.1.5-A	15.1-D.1.i
1.1.4-P	1.1.8-B.3	5.1-B	7.2-A	7.3-J	9.1.5-B	15.1-D.1.j
1.1.4-Q	1.1.8-C.1	5.1-C	7.2-A.1	7.3-J.1-2	9.1.5-C	15.1-D.1.k
1.1.5-A	1.1.8-C.2	5.1-D	7.2-A.2	7.3-K	9.1.5-D	15.1-D.2.a
1.1.5-B.2	1.1.8-D	5.1-E	7.2-A.3	7.3-K.1	9.1.5-E	15.1-D.3.a
1.1.5-C.1	1.1.8-E	5.2-A	7.2-A.4	7.3-K.1.a-c	9.1.5-F	15.1-D.4.a
1.1.5-C.2	1.1.8-F	5.2-B	7.2-A.5	7.3-K.2	9.1.5-G	15.1-D.4.c
1.1.5-D	1.1.8-G	5.2-C	7.2-E.1-6	7.3-K.2.a	9.4-D	15.1-D.5.b
1.1.5-D.1-4	1.1.8-H	5.2-D	7.2-F	7.3-K.2.b	10.1-A	15.2-A
1.1.5-E	1.1.8-I	5.2-F	7.2-F.1-2	7.3-L	10.2.1-A	15.2-C
1.1.5-E.1-4	1.1.8-J	6.1-A	7.2-G	7.3-M	10.2.1-B	15.2-D

4.2 Hardware Configuration and Design

The **Hart Verity Voting 2.8** system, as declared in the application for certification submitted to the EAC, consists of:

- A **Verity Data/Build** workstation to create all election information and election media.
- **Verity Print** is a pre-voting ballot production device that is paired with a COTS printer to produce unmarked paper ballots.
- At the precinct level, **Vanguard Vault** optical scanners, **Verity Scan** optical scanners, **Verity Touch Writer BMD**, **Verity Touch Writer Duo BMD**, and **Verity Touch Writer DuoStandalone BMD** configurations are employed. **Verity Controller** is used by poll workers to initiate and manage voting sessions. Additionally, **Verity Scan** may be equipped with an optional accessory modem for wireless transmission. **Verity Transmit** is used to remotely transmit vDrive data.
- The central count location employs a workstation that utilizes the **Verity Central** software in combination with a high-speed COTS scanner, for tabulation of paper ballots.
- The consolidation, tally and reporting location employs a workstation with **Verity Count** software as well as a printer.
- **Verity Relay Receiving Station** is a remote transmission software application that receives selection data transmissions sent by Verity Scandevices equipped with an optional Relay modem accessory.
- **Verity Transmit Receiving Station** is a remote transmission software application that receives election data transmissions sent by Verity Transmit device.



4.3 Software System Functions

4.3.1 Software Functional Test Design and Data

SLI Compliance will prepare functional test modules using the operator/user procedures specified in the TDP. Functionality provided by the **Verity Voting 2.8** voting system is exercised in order to verify that each functional component performs as expected. Accept/reject criteria are based on requirements of the VVSG and the system specification documents provided within the TDP.

The following test suites will be utilized in the testing of Verity Voting 2.8:

Closed Primary Election – The full **Verity Voting 2.8** voting system will be reviewed in order to verify proper integration of the voting system and that all components continue to work as expected when executing a Closed primary election.

General Election – The full **Verity Voting 2.8** voting system will be reviewed in order to verify proper integration of the voting system and that all components continue to work as expected when executing a general election.

Vanguard Vault – The modifications to each component and software application will be given focused testing in order to verify that the modifications implemented do not adversely affect operations. Elections will be designed and utilized, in some instances repeated.

4.4 TDP Evaluation

SLI Compliance is completing an assessment of the deliveries in the Technical Data Package for **Verity Voting 2.8** against the **Verity Voting 2.7.8** TDP. Any modifications to previously reviewed documentation will be evaluated.

SLI Compliance will conduct a PCA review of all new or modified Hart traced documents submitted for review in the delivery of the **Verity Voting 2.8** TDP. Documents are verified for compliance to VVSG 1.0, Volume 2, Sections 2.2 through 2.13 and Volume 2, Section 6.6.

Any subsequent re-deliveries of the TDP items will be solely the result of fixes to discrepancies identified in the remaining FCA or PCA activities.

4.5 Source Code Review

The certification campaign for the **Hart Verity Voting 2.8** voting system includes modified software and firmware that have been created as proprietary to **Hart**, as well as review of any commercial off the shelf products. SLI Compliance has



conducted a source code review of all modified proprietary source code, and modified COTS products, submitted in the delivery of the voting system TDP for compliance to the EAC VVSG v 1.0, Volume 2, Section 6.6.

The coding languages involved in Hart's applications include:

- C
- C++
- C#

Source code review Tools utilized by SLI Compliance include:

- CLOC Count Lines of Code: a commercial application used to determine the counts of executable and comment lines.
- Module Finder: an SLI Compliance proprietary application used to parse module names from code and populate the identified module names into the review documents.
- CheckMarx: a customizable integrated development environment used for static code analysis.

Any subsequent re-reviews of source code will be the result of fixes to discrepancies identified in the FCA activities.

COTS operating systems and software used in the voting system have been verified as authentic and unmodified in the **Verity Voting 2.8** test campaign

4.6 Trusted Build

The Trusted Build process for **Hart Verity Voting 2.8** was devised to allow for the build to be performed by and under the supervision of an SLI Compliance Voting System Test Engineer, to preserve the security of the Hart Trusted Build process, and to maintain SLI Compliance's chain of custody. The steps for this process included the following:

- Preparation for the Trusted Build – Obtaining and reviewing Hart's procedure for constructing the build platform, verifying the target build platform, and verifying the proper contents of the source code package were extracted to the target build platform via hash codes.
- Execution of the Trusted Build – SLI Compliance performed the Trusted Build by using the step-by-step build procedure, as provided by Hart to create a pristine build environment. SLI Compliance observed the following items throughout the build process:
 - Build environment images at various key points
 - Build environment and file hashes at various key points
 - Build environment hardware characteristics
 - Build results from code compilation and file hashes



- Final software install files and file hashes
 - Build virtual machine files
- Deliverables to Testing – Upon completion of the Trusted Build, the product installs were created and installed on equipment at Hart’s facility. Each device had a unique serialized security seal applied that was verified by SLI Compliance upon receipt. In addition, certain items were sent to the SLI Compliance test group:
 - Final software install files
 - Workstation base OS images
 - Workstation product images
 - Build output hash values to validate install files
 - Workstation and device hash files
 - Tamper seal application evidence
 - Build server artifacts
- Final Record Keeping and Archiving Procedures – At the conclusion of the Trusted Build process, SLI Compliance completed all final record keeping and archiving procedures at SLI Compliance’s facility. This record keeping includes any unique identifiers, results of the build with version numbers and dates, and descriptions of all hashes and images in the repository. Hash files of the build outputs were verified against the hash files obtained from the devices to ensure the contents of the installed images. Tamper seals codes were verified and confirmed to be intact

4.7 Standard VSTL Test Methods and Uncertainty of Test Data Measurement

This test campaign utilizes Standard VSTL test methods and nominal type test data only.

5 TEST DATA

Test data for the **Hart Verity Voting 2.8** voting system will be compiled such that all functionality declared will be tested to determine conformance to the standards.

5.1 Data Recording

SLI Compliance will evaluate the modified system functionality, in particular to the **Vanguard Vault** precinct scanner, as described by **Verity Voting 2.8** technical documentation, as well as requirements as listed in the EAC VVSG v1.0, and make determinations as to expected results of all data inputs into the **Hart Verity Voting 2.8** voting system. This includes:



- Election type
- Precincts of all types
- Districts
- Offices
- Contests
- Candidates
- Parties
- Devices used
- Voting variations employed
- Issues/Referendums
- Votes cast for each candidate/issue/referendum
- Vote consolidation data from one device/level to the next

The data is contained in one master data record, including each input and expected output. This data is incorporated into the appropriate test suite, populating test modules with exact expected data for the function being tested.

Testing information is recorded in the test suites and test notebooks, which are utilized according to SLI Compliance's relevant standard lab procedures.

6 TEST PROCEDURE AND CONDITIONS

This section describes the test conditions and procedures for execution of test suites. If a particular sequence is mandatory for the execution of suites, a rationale will be given. Additionally, this section is used to describe procedures for setting up equipment to be used in the test suite execution.

6.1 Facility Requirements

Testing will be performed on site at SLI Compliance in Colorado.

Secure labs are available with appropriate power supply and space to accommodate the various configurations defined within this test plan. Temperature/humidity gauges will be employed to determine whether the appropriate conditions exist during testing.

Unless otherwise specified herein, all remaining tests, including system level functional testing, shall be performed at standard ambient conditions:

- Temperature: 64°F - 79°F (17.7°C - 26.1°C)
- Relative Humidity: 20 to 90%
- Atmospheric Pressure: Local Site Pressure



All TDP and test documentation is stored on site at SLI Compliance's facility in a secure project directory on SLI Compliance's secure Voting server.

6.2 Test Setup

Configurations of **Verity Voting 2.8** will be deployed that conform to each specific test suite's needs. In all instances **Verity Voting 2.8** documentation will be followed in the setup of the configurations.

6.3 Test Sequence

While there is no required sequence for performing voting system certification testing and audits, there are prerequisite tasks for some testing. Tasks and any applicable predecessor tasks are identified within each suite for the test cases.

6.4 Test Operations Procedures

An inventory has been performed to verify the voting equipment received contains hardware and software elements as defined in the TDP prior to commencement of testing.

Throughout the testing effort, test suites and modules will be marked as follows:

- **Accept** – Test is accepted as successful.
- **Reject** – Test is rejected as unsuccessful.
- **NT** – Not Testable is used for test modules that cannot be completed. For example, if failure of one test modules failure precludes attempting subsequent test modules, the latter will be marked as NT.

Test results **Reject** and **NT** will include comments by the test engineer explaining the reason for the result.

Issues encountered during review and testing will be documented on the Discrepancy Report. Test findings showing that an aspect of the voting system does not conform to the requirements of the identified test standard will be marked as Documentation Discrepancies, Source Code Review Discrepancies, Hardware Discrepancies, or Functional Discrepancies.

Issues that are encountered during testing or documentation review but are not addressed by the applicable standard will be added to the Discrepancy Report and noted as Informational. **Hart** has the option whether to address Informational issues. All responses provided by **Hart** are noted in the Discrepancy Report attachment to the Voting System Test Report.



7 Approval Signature

Michael Santos

Michael Santos
Director – VSTL,
SLI Compliance
January 15th, 2026



8 Appendix A – TDP Listing

- _TDPindex.html
- _TDPindexHistory
- 6641-056 G_Verity_2.7_Administrators Guide_Data.pdf
- 6641-057 F_Verity_2.7_Administrators Guide_Build.pdf
- 6641-058 E_Verity_2.7_Administrators Guide_Central.pdf
- 6641-059 F_Verity_2.7_Administrators Guide_Count.pdf
- 6641-060 E_Verity_2.7_Remote Transmission Administrators Guide.pdf
- 6641-061 G_Verity_2.7_System Administrators Guide.pdf
- 6643-011 J_Verity_2.7_Support Procedures Guide.pdf
- 6651-053 F_Verity_2.7_Polling Place Field Guide - CDS.pdf
- 6651-054 G_Verity_2.7_Polling Place Field Guide - DS.pdf
- 6651-055 F_Verity_2.7_Polling Place Field Guide - SW.pdf
- 6651-056 F_Verity_2.7_Polling Place Field Guide - SRW.pdf
- 6651-058 D_Verity_2.7_Verity Print Field Guide.pdf
- 6651-061 D_Verity_2.7_Verity Transmit Field Guide.pdf
- 6651-081 A00_Verity_2.8_Vault Polling Place Guide.pdf
- 6651-082 A00_Verity_2.8_Vault Device Support Guide.pdf
- 6653-011 F_Verity_2.7_Device Troubleshooting Field Guide.pdf
- 6673-010 E_Verity_Relay Implementation Process.pdf
- 6675-011 A_Verity_OKI B432 Tray Extension Kit Installation.pdf
- 6675-042 A_Verity_HL-L6400DWVS Tray Extension Kit.pdf
- 462785-1.1 Hart InterCivic CofC.pdf
- 4007030 Vault Hardware Pack.pdf
- 4007060 Ballot Box Hardware Pack.pdf
- All-In-One Code Framework Coding Standards.pdf
- CER213737--NA202512309-Hart Intercivic
- Change Notes Verity Voting 2.7.0 to 2.7.1 4005724 A00.pdf
- Configuration Management Process 1001074 D01.pdf
- Continual Improvement Process 1000550 E02.pdf
- Control of Nonconforming Product Procedure 1000657 B02.pdf
- Device Configuration Process Document 4005523 B00.pdf
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- Verity 2.8 COTS List.pdf
- Verity 2.8 Implementation Statement 4005751 A01.pdf
- Verity 2.8 Notice of Protected Information 4005753 B01
- Verity 2.8 TDP Abstract 4005752 B01
- Verity Airgap Interface Technical Reference 4005512 A02.pdf
- Verity Application Framework TRD 4005634 A00.pdf
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End of Verity Voting 2.8 Modification Test Plan
