Certification Test Report - Modification

Report Number HRT-25002-CTR-04

Hart InterCivic Verity Voting 2.7.8

v4.0

Prepared for:

Vendor Name	*Hart InterCivic Inc. (Hart)*
Vendor System	*Verity Voting 2.7.8*
EAC Application No.	*HRT-Verity-2.7.8*
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Accredited by the National Institute of Standards and Technology (NIST) National Voluntary Lab Accreditation Program (NVLAP) and accredited by the Election Assistance Commission (EAC) for VSTL status.

Revision History

Date	Release	Author	Revision Summary
Sept 25, 2025	1.0	M. Santos	Initial release
Nov. 25, 2025	2.0	M. Santos	Updates for EAC comments
Nov. 26, 2025	3.0	M. Santos	Updates for EAC comments
Nov. 30, 2025	4.0	M. Santos	Updates for EAC comments

Disclaimer

The Certification Test results reported herein must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.Results herein relate only to the items tested.

The tests referenced in this document were performed in a controlled environment using specific systems and data sets, and results are related to the specific items tested. Actual results in other environments may vary.

Opinions and Interpretations

There are no opinions or interpretations included in this report, except as noted under Recommendations.

List of Tables

1 Introduction and Document Overview

SLI Compliance is submitting this report as a summary of the certification testing efforts for the **Hart Verity Voting 2.7.8** voting system, as detailed in the section System Identification, against the Election Assistance Commission Voluntary Voting System Guidelines v1.0 (EAC VVSG v1.0).

Verity Voting 2.7.8 is a modification of **Verity Voting 2.7** (which was certified by the EAC on June 7, 2022), with limited changes. The **Verity Voting 2.7.8** system was tested based on the modified system requirements, as set forth in section 4.6.2.3 of the EAC Voting System Testing and Certification Program Manual, v 3.0. The purpose of this document is to provide an overview of the certification testing effort and the findings from the testing effort for this voting system.

This effort included a review of updates made to the Technical Data Package documentation, a review of all modified source code, and testing of the **Hart Verity Voting 2.7.8** voting system. Testing consisted of the development of a test plan, managing system configurations, executing test suites of functional and system levels tests based on the system's functionality, and analysis of results.

The review and testing were performed at SLI Compliance's Wheat Ridge, Colorado facility, from August 4th through September 17th, 2025.

1.1 References

1. Election Assistance Commission Voluntary Voting System Guidelines (EACVVSG v 1.0), Version 1.0, 2005.
2. NIST Handbook 150: 2020.
3. NIST Handbook and 150-22: 2021.
4. EAC Voting System Testing and Certification Program Manual, United States Election Assistance Commission, v 3.0.
5. SLI Compliance VSTL Quality System Manual, v4.4, prepared by SLI Compliance, dated July 21, 2025.

1.2 Document Overview

This document contains the following sections:

- System Identification identifies hardware and software for the **Verity Voting 2.7.8** system.
- System Overview discusses the functionality of **Verity Voting 2.7.8 system software** and firmware.
- The Certification Test Background discusses the testing process.

- Certification Test Results Summary contains the results and analysis of the testing effort.
- Attachments:
  - Attachment A - Warrant of Change Control for Verity Voting 2.7.8
  - Attachment B - Attestation of Durability for Verity Voting 2.7.8
  - Attachment C - Attestation of Integrity for Verity Voting 2.7.8
  - Attachment D - Attestation of Production Hardware and Software for Verity Voting 2.7.8
  - Attachment E - Trusted Build Record for Verity Voting 2.7.8
  - Attachment F - Verity Voting 2.7.8 Source Code Review Summary (Proprietary)
  - Attachment G - Hart Verity Voting 2.7.8 Modification Test Plan - As Run

1.3 Terms and Abbreviations

The following terms and abbreviations may be used in this document:

Table 1 – Terms and Abbreviations

Term	Abbreviation	Description
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.
Compact Flash card	CF	This is a type of flash memory card in a standardized enclosure often used in voting systems to store ballotand/or vote results data.
Commercial Off the Shelf	COTS	Term used to designate computer software, hardwareor accessories that are ready-made and available for sale, lease, or license to the general public
Election Assistance Commission	EAC	An independent, bipartisan commission created bythe 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 layout the ballots, download the election data to the voting devices, upload the results and produce the final results reports.
Functional Configuration Audit	FCA	The testing activities associated with the functional testing of the system.

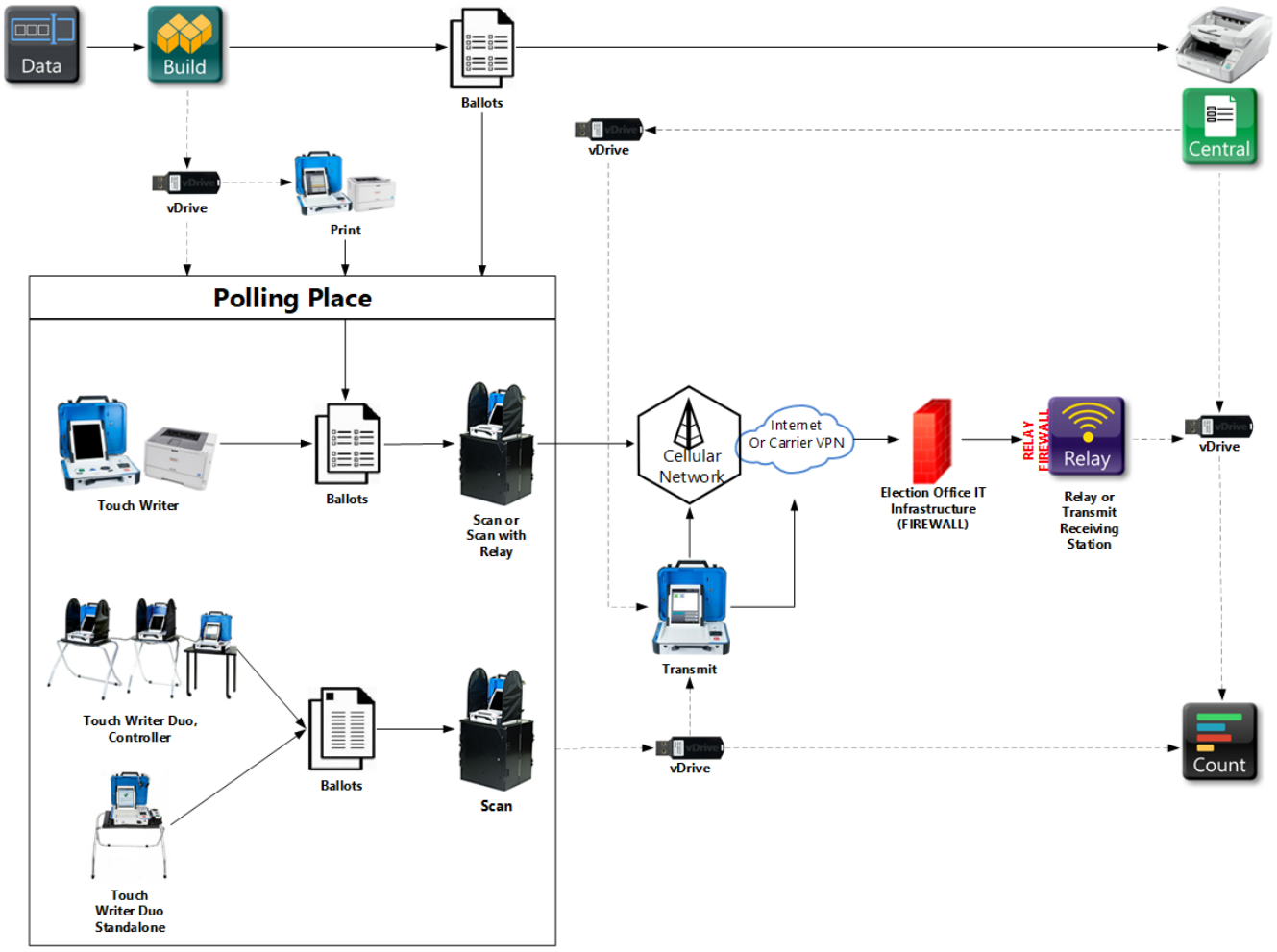
National Instituteof Standards and Technology	NIST	A non-regulatory federal agency within the U.S. Dept.of Commerce. Its mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our 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.).
Request For Information	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.
Requirement Matrix	N/A	A matrix that traces the VVSG requirements to the various test modules and test methods.
Technical DataPackage	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 ofa 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 SystemTest Lab	VSTL	An independent testing organization accredited by NVLAP and the EAC to conduct voting system testing for EAC certification.

2 System Identification

This section details the scope of the **Verity Voting 2.7.8** voting system and associated components.

The **Verity Voting 2.7.8** system is composed of software applications, central count location devices and polling place devices with accompanying firmware, and COTS hardware and software.

2.1 System 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 and Scan may be installed in polling places to support paper-based voting.
- Verity Controller, Touch Writer Duo, Touch Writer Duo Standalone, and Scan may be installed inpolling places to support paper-based voting. Verity 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 VerityCentral 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 useraccounts.

2.1.1 Software and Firmware

The software and firmware employed by **Hart Verity Voting 2.7.8** consists of two types: custom and commercial off the shelf (COTS). COTS applications were verified to be pristine or were subjected to source code review for analysis of any modifications and verification of meeting the pertinent standards.

The tables below detail each application employed by the **Hart Verity Voting 2.7.8** voting system. Hashes for each **Verity Voting 2.7.8** component are located in "Appendix C – Verity Voting 2.7.8 System Hashes"

Table 2 – Verity Voting 2.7.8 Software and Firmware

Software	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 with Relay	Optical Scanner Firmware with Optional Support for Verity Relay accessory	2.7.8
Verity Scan	Optical Scanner Firmware	2.7.8
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

Table 3 – Verity Voting 2.7.8 Workstation COTS Software and Firmware

Websupergoo	ABCpdf	12.3.0.0
Open Source	Automapper	2.2.0.0
Neodynamic ARL	Barcode Professional	4.0.3500.19
BioPDF ApS	BioPDF	4.0.1000.16
Intel	Integrated Performance Primitives	v5.0
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
empira Software GmbH	PDFSharp	1.50.5147.0
Prism Software, LLC	Prism	4.1.0.0
Telerik	Reporting	7.1.13.612
Open Source	SoundTouch	1.7.1.0
Telerik	UI for WPF	2024.4.1111.462
Microsoft	Unity	2.1.505.2
Open Source	Zxing.NET	0.16.4.0
Microsoft	Windows 10 Enterprise 2019 LTSC	10.0.17763
Canon	DR-G1100 Driver	1.0.4900
Canon	DR-G1130 Driver	1.0.4954
Canon	DR-G2000 Series Driver	1.1.11807.24001 SP2
Kodak	ISIS Driver – KODAK i5200, i5600, i5800	1.0.2633

Kodak	KODAK i5000 scanner	1.23
NVIDIA	NVIDIA Quadro P400 drivers	26.21.14.4112
NVIDIA	NVIDIA Quadro T400 drivers	472.47
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	15.0.4153.1
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
OKIDATA	OKI USBDevice	1.0.0.0
OKIDATA	OKI USBDevice	1.0.2.0
IntoPrint	SP1360(PCL6) Driver	1.0.0.0
Brother	HL-6400DWVS Driver	1.8.168.8
TWAIN Working Group	Twacker 32	2.0.1
Nuance	Nuance Western OCR, Desktop, OEM	V20
Intel	Intel Graphics Driver	31.0.101.5522T
HP	HP LaserJet Pro 4001 4002 4002 4004 PCL 6	8.00.2101.9302
Realtek	Realtek High Definition Audio Driver	6.0.9394.1

Table 4 – Verity Voting 2.7.8 Device COTS Software and Firmware

Open Source	Automapper	2.2.0.0
Neodynamic ARL	Barcode Professional	4.0.3500.19
Bipod ApS	BioPDF	4.0.1000.16
Intel	Integrated Performance Primitives	v5.0
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
empira Software GmbH	PDFSharp	1.50.5147.0
Prism Software, LLC	Prism	4.1.0.0
Telerik	Reporting	7.1.13.612
Open Source	SoundTouch	1.7.1.0
Microsoft	SQLite	3.36.0
Microsoft	Unity	2.1.505.2
Open Source	Zxing.NET	0.16.4.0
Microsoft	Windows 10 Enterprise 2019 LTSC	10.0.17763
ADLINK	SIO Driver	1.2.0.0
ADLINK	SMBUS Driver	1.3.0.0
Maxim	1-Wire Driver	4.0.5
McAfee	Application Control for Devices (“Solidifier”)	8.2.1-143
SQLite	SQLite	3.36.0
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
PenMount Touch Solutions	PenMount Windows Universal Driver	2.4.6.387
OKIDATA	OKI USBDevice	1.0.0.0
OKIDATA	OKI USBDevice	1.0.2.0
Seiko Instruments	SII IFD50x Driver	2.5.0.0
Nuance	Nuance Western OCR, Desktop, OEM	V20
Brother	Brother Printer Setting Tool	1.6.0075
Brother	Brother PJ-723 Thermal Printer Driver	1.8.663.1
Brother	Brother HL-L6400DWVS Printer Driver	1.8.168.8
Intel	Intel Graphics Driver	10.18.10.5069
PDI	PageScan Scanner Driver	7.1.0.7
PDI	PageScan USB Scanner Driver	4.0.0301.13

2.1.2 Verity Voting 2.7.8 Equipment (Hardware)

The hardware employed by **Hart Verity Voting 2.7.8** consists of two types: custom and commercial off the shelf (COTS). COTS hardware was verified to be pristine or was subjected to review for analysis of any modifications and verification of meeting the pertinent standards.

The tables below detail each device employed by the **Hart Verity Voting 2.7.8** voting system.

Table 5 – Hart Verity Voting 2.7.8 Equipment

Hardware	Model
Verity Controller	3005825 / 3006085
Verity Print	3005356 / 3005856 / 3006095
Verity Scan (digital scanner)	3005350 / 3005800 / 3006080
Verity Ballot Box	3005357
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

Table 6 – Verity Voting 2.7.8 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
Motorola/Zebra	Optional AutoBallot barcode scanner kit. Includes the Motorola/Zebra 2d barcode scanner:	DS4308 DS4608

2.1.3 Modifications

Verity Voting 2.7.8 is a modification of the EAC certified **Verity Voting 2.7** system.

The modifications to **Verity Voting 2.7.8** address multiple aspects of the system, including features for all devices and workstations, as well as associated documentation updates.

Please see the full listing of Modifications, and the requirements that each was verified against, in "Appendix A – Requirements to Modifications."

2.1.4 Materials

The following test materials were required for the performance of testing including, as applicable, test ballot layout and generation materials, test ballot sheets, and any other materials used in testing:

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

2.1.5 TDP Documents Used to Support Testing

The **Hart** documents used to support testing of the **Verity Voting 2.7.8** system are listed in "Appendix B – TDP Listing" of this document.

2.2 System Overview

2.2.1 Scope of the Hart Verity Voting 2.7.8 Voting System

This section provides a description of the scope of **Verity Voting 2.7.8** voting system components.

The **Verity Voting 2.7.8** system represents a set of software applications for pre-voting, voting and post-voting election project activities for jurisdictions of various sizes and political division complexities.

Verity Voting 2.7.8 functions include:

- Defining the political divisions of the jurisdiction and organizing the election with its hierarchical structure, attributes, and associations.
- Defining the election events with their attributes such as the election name, date, and type, as well as contests, candidates, referendum questions, voting locations and their attributes.
- Preparing and producing ballots for polling place and absentee voting or by-mail voting.

- Preparing media for precinct voting devices and central count devices.
- Configuring and programming the **Verity Scan** digital scanners for marked paper ballots and Verity Touch Writer printed vote records.
- Configuring and programming the **Verity Touch Writer** BMD devices.
- Configuring and programming the **Verity Touch Writer Duo Standalone** BMD devices.
- Configuring and programming the **Verity Controller** with **Verity Touch Writer Duo** BMD devices.
- Configuring and programming the **Verity Print** on-demand ballot production device.
- Transmission of the election results via **Verity Relay**.
- Transmission of the elections results via **Verity Transmit**.
- Producing the election definition and auditing reports.
- Providing administrative management functions for user, database, networking, and system management.
- Import of the Cast Vote Records from **Verity Scan** devices and **Verity Central**.
- Preview and validation of the election results.
- Producing election results tally according to voting variations and election system rules.
- Producing a variety of reports of the election results in the desired format.
- Publishing of the official election results. Auditing of election results including ballot images and log files.

- **Verity Scan** is a digital scan precinct ballot counter (tabulator) that is used in conjunction with an external ballot box. The unit is designed to scan marked paper ballots or Verity Touch Writer Duo printed vote records, interpret and record voter marks on the marked paper ballot or record voter selections on the printed vote records, and deposit the ballots into the secure ballot box.
- **Verity Relay** provides remote transmission capability. Utilizing an optional modem with **Verity Scan**, at close of polls, results are transmitted from the polling place device to the **Verity Relay Receiving Station** workstation.
- **Verity Transmit** provides remote transmission capability. Utilizing an optional modem, Wi-Fi, or Ethernet accessory kit. Results from the **Verity Scan** and **Verity Central** are transmitted to the **Verity Transmit Receiving Station** workstation.
- The **Verity Touch Writer** is a standalone precinct level Ballot Marking Device (BMD) which also includes an Audio Tactile Interface (ATI), which allows voters who cannot complete a paper ballot to generate a machine-readable and human readable paper ballot, based on vote selections made, using the ATI.

- The **Verity Touch Writer Duo** is a daisy chained configuration with a **Verity Controller** device configured with up to twelve **Verity Touch Writer Duo** BMD devices, which allows voters to utilize the touchscreen or optional Audio Tactile Interface to generate a machine-readable and human readable printed vote record, based on vote selections made.
- The **Verity Touch Writer Duo Standalone** is a standalone BMD device, which allows voters to utilize the touchscreen or optional Audio Tactile Interface to generate a machine-readable and human readable printed vote record, based on vote selections made.
- **Verity Print** is an on-demand ballot production device for unmarked paper ballots.
- **Verity Election Management** allows users with the Administrator role to import and manage election definitions. Imported election definitions are available through the Elections chevron in Build. Users can also delete, archive, and manage the election definitions.
- **Verity User Manager** enables users with the correct role and permissions to create and manage user accounts within the **Verity Voting** system for the local workstation in a standalone configuration, or in a networked configuration.
- **Verity Desktop** enables users with the correct roles to set the workstations' date and time, gather **Verity** application hash codes (in order to validate the correctness of the installed applications), and access to Windows desktop.

  Verity Data provides the user with controls for entering and proofing data and audio. **Verity Data** also performs validation on the exported information to ensure that it will successfully import into **Verity Build**.
- **Verity Build** opens the election to proof data, view reports, and print ballots, and allows for configuring and programming the **Verity Scan** digital scanners, and **Verity Touch Writer** and **Controller/Touch Writer Duo** BMD devices, **Verity Print**, as well as producing the election definition and auditing reports.
- **Verity Central** is a high-speed, central digital ballot scanning system used for high-volume processing of ballots (such as vote by mail). The unit is based on COTS scanning hardware coupled with custom **Hart-**developed ballot processing application software which resides on an attached workstation.
- **Verity Count** is an application that tabulates election results and generates reports. **Verity Count** can be used to collect and store all election logs from every **Verity** component/device used in the election, allowing for complete election audit log reviews.
- **Verity Relay Receiving Station** is a remote transmission software application that receives election data transmissions sent by Verity Scan devices 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 devices.

- **Verity Controller** is a polling place device designed for use by poll workers. Controller allows poll workers to initiate and manage voting sessions during a voting event. Voters will never use the Controller. Controller communicates with attached Verity Touch or Touch Writer Duo voting devices through a local network, which allows it to deliver electronic ballots to the device(s), spoil a ballot loaded on a device, and monitor the status of all connected devices. The devices are attached in a daisy-chain arrangement using USB cables. Up to 12 devices can be connected to one Controller.

3 Certification Test Background

3.1 Revision History

Please see the Revision History on page 2.

3.2 Implementation Statement

Verity Voting 2.7.8 is a modification of Verity Voting 2.7 designed to conform to VVSG 1.0.

The **Verity Voting 2.7.8** modified voting system was tested to the following requirements:

- 2.1.1-a
- 2.2.1.2-b
- 2.2.4-d
- 2.4.3-a
- 4.1.7.2
- 5.4.3-d
- 7.9.4

3.3 PCA - Document and Source Code Reviews

The Physical Configuration Audit (PCA) review of the **Verity Voting 2.7.8** modified documentation submitted in the Technical Data Package (TDP) was performed in order to verify conformance with the Election Assistance Commission Voluntary Voting System Guidelines 1.0 (EAC VVSG 1.0).

Source code was reviewed for each modified software and firmware application declared within the voting system.

All PCA document reviews were conducted in accordance with Vol. 2 Section 2 of the EAC VVSG v1.0, to demonstrate that the modified documentation continues to meet the requirements.

All source code reviews were conducted in accordance with Vol. 1 Section 5.2 and Vol. 2 Section 5 of the EAC VVSG v1.0, to verify that the modified source code continues to meet the requirements.

3.4 FCA - Functional & System Testing

The Functional Configuration Audit (FCA) review of the test documentation submitted by **Hart** in the TDP was conducted according to the VVSG v1.0 Vol. 2 Section 6.7.

SLI Compliance's standard Test Suites were customized for the **Hart Verity Voting 2.7.8** voting system and conducted in accordance with VVSG v1.0 Vol. 2 Section 6, in conjunction with the functional testing of the implemented modifications.

Simulations of elections were conducted to demonstrate a beginning-to-end business use case process for the **Hart Verity Voting 2.7.8** voting system.

4 Certification Test Results Summary

4.1 Source Code Review Summary

SLI Compliance has reviewed the modified software source code for each application in the **Verity Voting 2.7.8** voting system to determine the code's compliance with the EAC VVSG 1.0, *Volume 1 Sections 5, 9* and *Volume 2 Section 5.4* and for compliance with **HART**'s internally developed coding standards. **Verity Voting 2.7.8** is implemented with the C, C++, and C# languages.

4.1.1 Evaluation of Source Code

As a modification project, the **Verity Voting 2.7.8** code base was reviewed using the final **Verity Voting 2.7** code as the baseline, to which the initial **Verity Voting 2.7.8** code base was compared. The differences found between those two code bases served as the starting point of the code review.

The modified source code is written adequately in terms of the VVSG 1.0. The code is modular and there is sufficient error handling. Readability is sufficient and supports maintainability. The source code was found to be compliant to the VVSG 1.0 and **Hart** declared industry standards.

4.2 Technical Data Package Review Summary

As this is a modification project, SLI Compliance reviewed the **Verity Voting 2.7.8** TDP against the final TDP for **Verity Voting 2.7**. The differences between the two TDPs were reviewed for compliance with the EAC VVSG 1.0 according to *Volume 2 Section 2*. The documents that are a part of the **Verity Voting 2.7.8** system are detailed in "Appendix B – TDP Listing" of this document.

4.2.1 Evaluation of TDP

The modified documentation within the Technical Data Package for the **Verity Voting 2.7.8** voting system was found to comply with all applicable standards.

4.3 Functional Testing Summary

4.3.1 Test Suites Utilized

SLI Compliance performed tests designed to functionally verify the modifications listed in "Appendix A – Requirements to Modifications" of this report, as well as additional regression testing to verify the continued robustness of the overall voting system. The testing incorporated component specific as well as end-to-end election scenarios, testing the functionality supported by **Verity Voting 2.7.8**.

The following sections detail the test suites that were executed.

4.3.1.1 Modifications

The Modification test suite examined each modification introduced into **Verity Voting 2.7.8** in order to verify that the modifications implemented, and the subsequent Trusted Build of the software/firmware, did not adversely affect operations.

4.3.1.2 Security

The Security test suite was executed to verify the security posture of the **Verity Voting 2.7.8** system has remained unchanged from the baseline system.

4.3.1.3 General Election

General Election test suites were executed in order to verify proper integration of the full **Verity Voting 2.7.8** system, and that all components continue to work as expected.

4.3.2 Evaluation of Functional Testing

In this test campaign, the **Verity Voting 2.7.8** voting system was subjected to examination for modifications made from the previously certified system, **Verity Voting 2.7**, against applicable requirements within the EAC VVSG 1.0.

All components of the **Verity Voting 2.7.8** voting system have successfully passed all tests.

5 Recommendation

SLI Compliance has successfully completed the testing of the **Hart Verity Voting 2.7.8** voting system. It has been determined that the system meets the required acceptance criteria of the Election Assistance Commission's Voluntary Voting System Guidelines 1.0.

This recommendation reflects the opinion of SLI Compliance based on testing scope and results. It is SLI Compliance's recommendation based on this testing effort that the EAC grant certification of the **Hart Verity Voting 2.7.8** voting system.

Signature

Michael Santos

Michael Santos
Director, VSTL
SLI Compliance
November 30, 2025

Appendix A – Requirements to Modifications

Change	Data/ Build	Central	Count	Scan	Duo Go	TW	Print	Pertinent requirements
Support for the HP-4001 DN Printer – The HP-4001DN Printer is a new printer that can be used as a report printer with Verity Workstations, or in the polling place with Verity Print and Verity Touch Writer products. This printer is included as an alternative printer option due to the Brother 6400 going end of life.	x	x	x			x	x	EAC Life Cycle Policy, 3.3.3. COTS Replacement: 4.1.7.2 7.9.4 2.1.1-a
Support for the HP Z2 SFF G9 Workstation – The HP Z2 SFF G9 is a new workstation that can be used with Verity Voting software applications. This workstation is included due to the existing Z4 G4 workstations going end of life.	x	x	x					EAC Life Cycle Policy, 3.3.3. COTS Replacement: 2.1.1-a
Addition of the HPE R8R45A unmanaged Ethernet switch to the supported COTS list for locally interconnected workstations. This unmanaged Ethernet switch replaces the HP 1405-8G, which is end of life.	x	x	x					EAC Life Cycle Policy, 3.3.3. COTS Replacement: 2.1.1-a
Verity Software Workstation improvements/defect fixes								
Support for additional special characters Ö, ö, Ê, and ê.	x	x	x	x		x	x	2.2.4-d
Update to Default Print Settings – Changed default setting for report printing on the Brother HL-L6400DWVS from Duplex (flip on long edge) to Simplex.	x		x					2.2.4-d
Language Pack Update – Fixed an issue with loading more than two fonts from a single Language Pack.	x	x	x	x		x	x	2.2.4-d

Update to Daylight Savings Time – Fixed an issue where the daylight savings time offset was not being applied to client workstations when synchronizing clocks with the server, causing client clocks to be an off from the server clock.	x	x	x					2.2.4-d
Verity Data defect fixes								
Text Update to Template Selection Screen – Fixed "billingual" typo on the Data Template Selection screen	x							2.2.4-d
Ballot Layout Fix – Fixed a ballot layout issue where a contest is not included in the ballot layout in a very unique and specific set of conditions.	x							2.2.4-d 2.2.1.2-b
Verity Build defect fixes								
Update to Ballot Export Exception – Resolved an issue that could cause an "export completed" message to appear when a ballot export from Build actually failed.	x							2.2.4-d
Verity Central defect fixes								
Update to Central Batch Search – Fixed an issue where entering a Central batch number larger than 32,767 into the Batch Search UI gave a non-informative error message of "Error Converting data type int to smallint."		x						2.2.4-d
Verity Count defect fixes								
Update to New Line Character in Exports – Restores functionality where new lines in election definition fields are correctly represented in exports (DVT, NY Comprehensive Export)			x					2.2.4-d
Update to Assignment Validation – Fixed a validation that was blocking a write-in assignment in the following scenario: Contest with more than one write-in line, CVR that has more than 1 write-in vote for this contest.			x					2.2.4-d

Updates to Voting Type Issue – Fixed an issue where running a Count report in Election A and then editing the voting types in Election B could cause Count reports run later in Election B to fail or have incomplete data.			x					2.2.4-d
DVT Export Update – Fixed an issue that prevented the DVT from being exported when no parties are defined in a General Election.			x					2.2.4-d
DVT Header Format Update – Fixed an issue where the comment symbol (#) appeared after the first word in the header row of the DVT, instead of before. ("Format#" instead of "#Format")			x					2.2.4-d
Update Ballots Cast on District Results – Fixed an issue where the District Results report shows incorrect ballots cast values when precinct groups are defined and at least two of those precinct groups have the same number of actual ballots cast.			x					2.2.4-d 2.4.3-a
Update to Custom DVT – Fixed an issue where a custom DVT export could show results from a different task within the same election.			x					2.2.4-d
Verity Print defect fixes								
Update to Log Generation – Removed excessive log generation in the printer event watcher which could cause a device to run out of disk space.							x	2.2.4-d 5.4.3-d
Verity Touch Writer defect fixes								
Update to Log Generation – Removed excessive log generation in the printer event watcher which could cause a device to run out of disk space.						x		2.2.4-d 5.4.3-d
Update to Idle Behavior – Fixed an issue where Touch Writer fails to load an election if powered on and left idle for an extended period (8+ hours) prior to initiating the election load.						x		2.2.4-d

Update to Printer Messaging – Prevents an unexpected message sent by the Brother 6400 from causing an "unexpected error" system alert during ballot printing on Touch Writer.						x		2.2.4-d
Verity Duo Go defect fixes								
Update to Duo Go Communication – Fixed a timing issue in Duo Go that resulted in the device falsely reporting that there is "Insufficient charge to complete vote session."					X			2.2.4-d

Appendix B – TDP Listing

TDP Listing:

- 462785-1.1 Hart InterCivic CofC
- 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
- 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
- All-In-One Code Framework Coding Standards.pdf
- 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
- Device OS Creation and Configuration Process Document Verity 2.7 4005696 A01.pdf
- Factory TUV SUD inspection 2021 December report.pdf
- Hardware 2005713-CFAST Door Security Kit Design.pdf
- Hardware 3005018-ATI Kit Design.pdf
- Hardware 3005174-AutoBallot Kit Design.pdf
- Hardware 3005350-Scan Design.pdf
- Hardware 3005352-Touch Writer Design.pdf
- Hardware 3005356-Print Design.pdf
- Hardware 3005357-Ballot Box Design.pdf
- Hardware 3005358-Standard Booth Design.pdf
- Hardware 3005359-Accessible Booth Design.pdf
- Hardware 3005700-Touch Writer Duo Design.pdf
- Hardware 3005730-Touch Writer Duo Standalone Design.pdf

- Hardware 3005800-Scan Design.pdf
- Hardware 3005801-Accessible Booth With ATI Tray Design.pdf
- Hardware 3005825-Controller Design.pdf
- Hardware 3005852-Touch Writer Design.pdf
- Hardware 3005856-Print Design.pdf
- Hardware 3005905-Duo Go Design.pdf
- Hardware 3006065-Transmit Design.pdf
- Hardware 3006070-Touch Writer Duo Design.pdf
- Hardware 3006075-Touch Writer Duo Standalone Design.pdf
- Hardware 3006080-Scan Design.pdf
- Hardware 3006085-Controller Design.pdf
- Hardware 3006090-Touch Writer Design.pdf
- Hardware 3006095-Print Design.pdf
- Hardware Design Development Procedure 1000513 D01.pdf
- Hardware PCB Photos.pdf
- Hardware Verification and Validation Process 1000514 D01.pdf
- Hart Safety Certificate U8 090917 0006.pdf
- Hart Safety Certificate U8 090917 0008 Rev. 00.pdf
- Hart Safety Certificate U8 17 10 90917 004.pdf
- Hart Secure Ballot Stock Specification 4005526 A01.pdf
- HartLogo.jpg
- HP Z2 SFF G9 Verity Win 10 Workstation Manufacturing 4005687 A00.pdf
- HP Z240 Verity Win10 Workstation Manufacturing 4005673 A05.pdf
- HP Z4 G4 Verity on Win 10 Workstation Manufacturing 4005670 A05.pdf
- HPQC Test Cases.pdf
- Quality Manual 1000490 D04.pdf
- Record Retention Matrix 1000510 E02.pdf
- Sinatra Modifications Electronics Specification 4005701 A00.pdf
- Software Design Development Procedure 1000566 D02.pdf
- Software Production 1000551 E01.pdf
- Software Test Design Development 1000508 D02.pdf
- Software Verification and Validation Process 1000560 D02.pdf
- Software Versioning Procedure 1001070 C05.pdf
- SQA Requirements Management Process 1000540 A02.pdf
- Supplier Qualification and Management 1000563 C02.pdf
- Tally Tape Thermal Printer Controller Firmware Build and Flash Procedure 4005719 A00.pdf
- The Creation and Configuration of the Access Build Environment 4005517 A01.pdf
- The Creation and Configuration of the Automated Deployment Environment 4005723 A01.pdf

- The Creation and Configuration of the MCU Build Environment 4005519 A02.pdf
- The Creation and Configuration of the Trusted Build Environment 4005518 A06.pdf
- Verity 2.7 (Sinatra) Modification TRD 4005691 A01.pdf
- Verity 2.7 Notice of Protected Information 1000786 A04.pdf
- Verity 2.7 NY Cross-endorsement Modification TRD 4005714 A00.pdf
- Verity 2.7 Add Z2 SFF G9 Process Document 4005744 A00
- Verity 2.7 TDP Abstract 1000785 A05.pdf
- Verity 2.7 Test Cases.pdf
- Verity 2.7.8 COTS List.pdf
- Verity 2.7.8 Implementation Statement 4005709 A01.pdf
- Verity Airgap Interface Technical Reference 4005512 A02.pdf
- Verity Application Framework TRD 4005634 A00.pdf
- Verity Application Installer Build Process Document Verity 2.7 4005695 A01.pdf
- Verity Application Programming Interface Specification 4005604 A04.pdf
- Verity Ballot Creation TRD 4005636 A00.pdf
- Verity Base Station Microcontroller Specification 4005462 A01.pdf
- Verity Build TRD 4005628 A00.pdf
- Verity Central TRD 4005632 A01.pdf
- Verity Coding Standard 4005498 A14.pdf
- Verity Controller TRD 4005624 A01.pdf
- Verity Count TRD 4005629 A01.pdf
- Verity Cuyahoga (Verity 2.6) Modification TRD 4005683 A00.pdf
- Verity Data TRD 4005627 A00.pdf
- Verity Database Attributes 4005543 C06.pdf
- Verity Device Suite TRD 4005621 A01.pdf
- Verity Election Definition Data TRD 4005639 A01.pdf
- Verity Election Management TRD 4005631 A00.pdf
- Verity Electronics Specification 4005461 A21.pdf
- Verity Entity Relationship Diagram Database - Devices.pdf
- Verity Entity Relationship Diagram Database - Servers (Count Only).pdf
- Verity Entity Relationship Diagram Database - Servers (No Count).pdf
- Verity Key Design 4005514 A02.pdf
- Verity Logging TRD 4005635 A00.pdf
- Verity Omni Modification TRD 4005655 A01.pdf
- Verity Operational Environment 4005515 C20.pdf
- Verity PC Application Framework User Interface Design Document.pdf
- Verity Performance Characteristics 4005497 C06.pdf
- Verity Print TRD 4005626 A00.pdf
- Verity Redstone Modification TRD 4005671 A01.pdf
- Verity Relay Theory of Operations 4005571 A06.pdf

- Verity Risk and Threat Assessment 4005513 C05.pdf
- Verity Scan TRD 4005623 A00.pdf
- Verity Security Requirements 4005464 A07.pdf
- Verity Shared Device User Interface Design Document.pdf
- Verity Software Architecture-Design 4005463 B03.pdf
- Verity Summative Usability Report 4005496 A00.pdf
- Verity Summative Usability Test Plan 4005495 A01.pdf
- Verity Supply Chain PRD 4005302 C01.pdf
- Verity Touch Writer Duo Base Station Microcontroller Specification 4005638 A00.pdf
- Verity Touch Writer Duo TRD 4005625 A00.pdf
- Verity Touch Writer TRD 4005622 A00.pdf
- Verity User Management TRD 4005630 A00.pdf
- Verity Vote Counting and Cast Vote Records TRD 4005640 A00.pdf
- Verity Voting 2.7 Change Notes 4005722 A02.pdf
- Verity Voting 2.7.8 Change Notes 4005735 A02.pdf
- Verity Voting 2.7.8 Source Documentation.zip
- Verity Voting 2.7.8 Usability Impact Statement.pdf
- Verity Voting National Certification Test Specification 4005527 B07.pdf
- VerityLogo.jpg
- VirTex Q01 Quality Manual Rev R.pdf
- Voting System Implementation and Maintenance 1000745 C02.pdf
- VSTL Product Submission Procedure 1000565 D02.pdf
- Workstation OS Creation and Configuration Process Document Verity 2.7 4005697 A01.pdf
- _TDPindex.htm

Appendix C – Verity Voting 2.7.8 System Hashes

Executable Files	sha2 (256)
Devices:	
Verity_Controller_v2.7.8-Kiosk-2025-06-09_09-57-19.exe	0c2be7bf9a860c6f5762453059ec8f87ec8a7dd224c88126b26c4851c09d9b34
Verity_Print_v2.7.8-Kiosk-2025-06-09_09-58-01.exe	980daaef04167aee24ee63ba9c5b29120bac5160683cb382d0992a3ebf94a145
Verity_Scan_v2.7.8-Kiosk-2025-06-09_09-56-27.exe	8aed8e2bb5644468bf48c23e5bf9c61b264c8332bc1922344641cda186859a9a
Verity_ScanWithRelay_v2.7.8-Kiosk-2025-06-09_09-56-45.exe	391b2ddf389b66e1121e32906f21e679e25f1e9bd64f6ad7457d083c1b466c98
Verity_TouchDuo_v2.7.8-Kiosk-2025-06-09_09-57-25.exe	20813b6c4c697225ee285ea11ff2d6853edb5dbf076cd025d8023139b76e3027
Verity_TouchDuoIndie_v2.7.8-Kiosk-2025-06-09_09-57-40.exe	cd1cae6b5ddb84476064e1fe0ec5b13907d0837dc166c3065796269baa4d6c0e
Verity_Transmit_v2.7.8-Kiosk-2025-06-09_09-57-54.exe	65b9425c5faaeac4005f740beea51b9b2006ce6f6f72f5c7f5843fb1012ef899
Verity_Writer_v2.7.8-Kiosk-2025-06-09_09-56-57.exe	dc5673d9cb08bd5fe1fa3a0a3ce334df33b63d2e48cafb363ee29153203214f7
Workstations:	
Verity_CentralClient_v2.7.8-Kiosk-64GB-2025-06-09_09-53-57.exe	d9da181acd47c82113085cdcdda377638796d2fd3e372362b99664788481873a
Verity_CentralDatabaseServer_v2.7.8-Kiosk-64GB-2025-06-09_09-54-39.exe	45002ea28a5942b6e8d38140bbcaac87ab5a8930826a1f916b50840072300933
Verity_CentralServer_v2.7.8-Kiosk-64GB-2025-06-09_09-54-54.exe	241a0aca4a9ff4ab89e75618cd4bbacdcf8feef265ff212cf2f4f8213e08f2db
Verity_CountClient_v2.7.8-Kiosk-64GB-2025-06-09_09-54-17.exe	8234affc838b638a4de9c28e9d8b3bad2ca6024e9dc1b03c65125bba02b7a773

Verity_CountServer_v2.7.8-Kiosk-64GB-2025-06-09_09-55-14.exe	dc7d8637778e78acd2dc549db9a56ae298825572d0c8bbe9538309669b323af7
Verity_CountStandalone_v2.7.8-Kiosk-64GB-2025-06-09_09-55-23.exe	8331e8037b0d7d08a22264cc9b04eb0d68b389d5f0ca82ac51889e1e0bbc15d7
Verity_Database_v2.7.8-Kiosk-GB-2025-06-09_09-56-26.exe	97476cfd31664e1ccb403ea5ed7bb66e638bf8ec7aa3210076129aa42768d550
Verity_DataBuildClient_v2.7.8-Kiosk-64GB-2025-06-09_09-54-25.exe	d08ca7d94d5d5739c0f3790fdde0e2a4fc0929ee6964d772b4529bc54f8a475a
Verity_DataBuildCountStandalone_v2.7.8-Kiosk-64GB-2025-06-09_09-55-31.exe	8f23286d5431c768bacbceb65e9e7eed2e4e101dad966912320ff873bcf2133a
Verity_DataBuildServer_v2.7.8-Kiosk-64GB-2025-06-09_09-55-45.exe	a70a934513034c864ea9bbd3f5e03e3253dc68dffdc651f4774e9d5c13b52b06
Verity_DataBuildStandalone_v2.7.8-Kiosk-64GB-2025-06-09_09-55-55.exe	277a3c43a7fbe597436ea4ceaea264a06dc865cb1961372b7ea423e3360160b6
Verity_Relay_v2.7.8-Kiosk-64GB-2025-06-09_09-56-09.exe	5a1913301751869a7f518f09525d6c809767046bb1606532503041d823c8420c
Verity_RelayTransmit_v2.7.8-Kiosk-64GB-2025-06-09_09-56-17.exe	24a779875222b837543b80ca545e306b77d82cc18fcee4f029f09d5c0d7156d3

Appendix D – Ancillary Products

Ancillary systems represent products and utilities that are not part of the EAC certified system configuration; however, they may be used to facilitate testing.

Ancillary systems include:

- Optional Verity Duo Go - a carrier for use with **Verity Touch Writer Duo** and **Verity Touch Writer Duo Standalone** to allow for "curbside" voting.
- Optional Full Page Magnifier
  Manufacturer: by Bausch & Lomb
  Model: 819007
- Optional Full Page Framed Magnifier
  Manufacturer: Inclusion Solutions
  Model: 436
- Optional ATI Device
  Manufacturer: AbleNet
  Device: Dual Jelly Bean Switch
- **Verity Workstation Configurator** – Software used only on initial deployment of Verity workstation software to apply a unique workstation ID and client configuration, however the software itself is not included on deployed systems.

End of Certification Test Report