Election Supporting Technology Test Plan

KNOWiNK Poll Pad v3.6

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Prepared for:

Manufacturer Name	*KNOWiNK*
Product Tested	*Poll Pad v3.6*
EAC Application No.	*KNO-EPB-PP-3.6*
Manufacturer Address	*KNOWiNK, LLC* *460 N Lindbergh Blvd* *St. Louis, MO 63141*

Prepared by:

4720 Independence St.
Wheat Ridge, CO 80033
303-422-1566
www.SLICompliance.com

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Accredited by the Election Assistance Commission (EAC) for Selected Voting System Test Methods or Services

Revision History

Date	Release	Author	Revision Summary
7/12/2024	1.0	*M. Santos*	Initial Release
9/4/2024	2.0	*M. Santos*	Updates for EAC comments and KNOWiNK updates to test matrix
1/15/2025	3.0	*M. Santos*	Updates for actual test campaign
2/5/2025	4.0	*M. Santos*	Updates for EAC comments

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1 INTRODUCTION

This Election Supporting Technology Evaluation Program (ESTEP) Test Plan outlines the test approach SLI Compliance will follow when performing testing on the ***KNOWiNK Poll Pad v3.6*** against the Election Assistance Commission Voluntary Electronic Poll Book Certification Requirements (VEPBCR) v1.0. 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 test report that details all test results and findings from the test effort, as well as a recommendation to the EAC.

1.1 References

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

1. Election Assistance Commission Voluntary Electronic Poll Book Certification Requirements (VEPBCR) v1.0, April 8, 2024
2. NIST Handbook 150: 2020
3. NIST Handbook 150-22: 2021
4. Election Supporting Technology Evaluation Program Manual Version 1.0, April 8, 2024
5. SLI Compliance VSTL Quality System Manual, v 3.3, prepared by SLI Compliance, dated December 17, 2020

1.2 Terms and Abbreviations

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

Table 1 – Terms and Abbreviations

Term	Abbreviation	Description
Build Environment	N/A	The disk or other media that holds the source code, compiler, linker, integrated development environments (IDE), and/or other necessary files for the compilation and on which the compiler stores the resulting executable code.
Commercial Off the Shelf	COTS	Any software, firmware, device, or component that is used in the United States by many different people or organizations for many different applications other than certified election-supporting technologies and that is incorporated into the election-supporting technology with no specific modification.

Term	Abbreviation	Description
Election Assistance Commission	EAC	An independent, bipartisan commission created by the Help America Vote Act (HAVA) of 2002 that operates the US government's voluntary voting system certification program.
Electronic Poll Book	EPB	The total combination of mechanical, electromechanical, and electronic equipment (including the software, firmware, cloud-based storage systems, and documentation required to program, control, and support the equipment) used to store and retrieve voter registration information, verify voter eligibility, and record voter activity at polls. EPBs may also allow voter registration records to be created and updated, assign voters to ballot styles, redirect voters to correct voting locations, provide voter turnout information to election officials, produce reports for election observers, and perform other tasks as permitted or required by local law.
Election Supporting Technology	EST	Any electronic machine, piece of equipment, or software package, other than a voting system, designed to streamline the voting experience. Includes electronic poll books, voter registration systems, election night reporting databases, and electronic ballot delivery systems. May also include emerging systems not previously evaluated or certified by an accredited Voting System Test Laboratory.
Hash Algorithm	Hash	An algorithm that maps a bit string of arbitrary length to a shorter, fixed-length bit string. The hash algorithm used for the EAC Program is the Secure Hash Algorithm (SHA-2) specified in Federal Information Processing Standard (FIPS) 180-4.
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.
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 and election support products.

Term	Abbreviation	Description
Requirements Matrix	N/A	A matrix that traces the applicable requirements to the various test modules and test methods.
Technical Data Package	TDP	The data package supplied by the vendor, which includes List of accessibility capabilities, Device capacities and limits, Coding convention, Functional diagrams, List of client jurisdictions, and Training materials.
Voting System Test Lab	VSTL	An independent testing organization accredited by NVLAP and the EAC to conduct voting system testing for EAC certification.
Voting Test Engineer	VTE	An SLI Compliance employee who has been qualified to perform EAC voting system testing.

1.3 Project Schedule/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 Manufacturer dependencies.

1.3.1 Project Schedule

The subsections below describe the project schedule.

1.3.1.1 Owner Assignments

Test Manager Michael 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
- The Trusted Build will be conducted by Voting Test Engineers trained in the trusted build process
- 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, utilizing SLI Compliance's formal test methods, with oversight by the Test Manager

- Formal test execution will be conducted by Security and Voting Test Engineers, with oversight by the Test Manager

1.3.1.2 Test Module Development

Test modules will be developed to provide 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 reusability reduces the development time associated with creating test procedures. The test modules will provide traceability to SLI Compliance's formal test methods, as well as the EAC requirements. This is done by listing the test method name, and each requirement addressed, in the module.

1.3.1.3 Test Suite Development

The test suites will contain multiple test modules providing clear and traceable test scripts and key information. As needed for the product 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.

1.3.1.4 Formal Test Execution

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

1.3.1.5 EAC & Manufacturer Dependencies

The Test Plan will require EAC approval prior to finalization.

KNOWiNK will be required to provide all source code, documentation, equipment and supporting materials identified as part of the product under test.

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, **KNOWiNK** is required to provide training on the product and support throughout the life of the project.

1.4 Scope of Testing

1.4.1 Product Overview

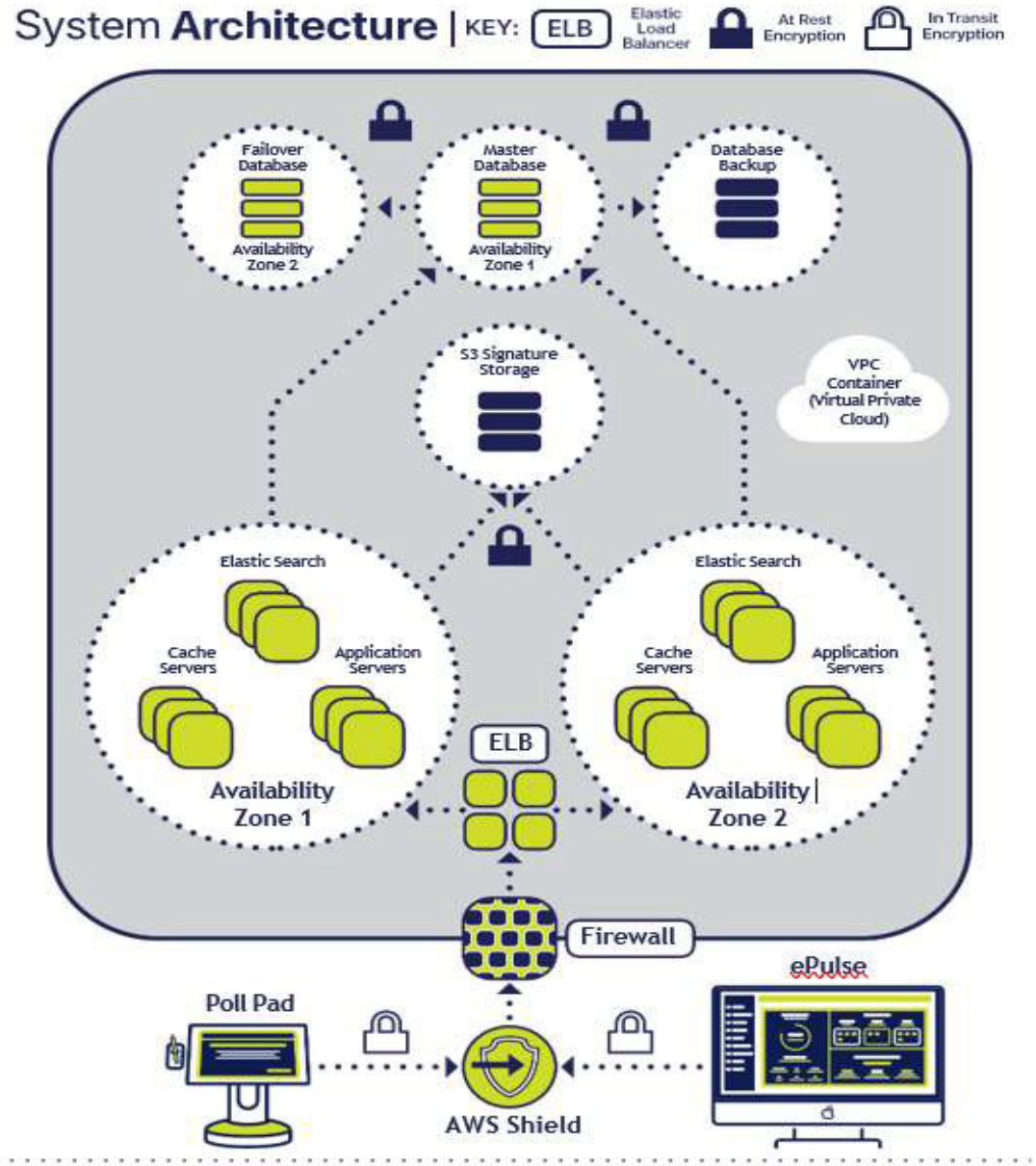
The **KNOWiNK Poll Pad v3.6** ePB system consists of ePulse, an election management suite designed to give administrators real-time access to monitor their election as a whole, and Poll Pad, a solution that provides electronic voter check-in and verification processes for election authorities

ePulse is an election management suite designed to give administrators real-time access to monitor their election as a whole. All Poll Pads connect to this central hub where voter check-in data is securely transferred via WiFi or cellular networks in near

real time. This tool allows for administrators to oversee the operation of individual precincts and Poll Pads including battery life of the device, average check-in times, number of ballots issued or spoiled; all the while ensuring the election authority can directly contact poll workers via video or text message for speedy trouble resolution.

The Poll Pad solution provides a seamless electronic voter check-in and verification process. All Poll Pads connect to the ePulse central hub where voter check-in data is securely transferred via Wi-Fi or cellular networks in near real time.

1.4.2 Block Diagram



1.4.3 Supported Functionality

The following functionality is included in the product under test:

ePulse

- Creating an Election
  - Voter Data
  - Ballot Styles
  - Polling Places
  - Assigning Poll Pads
  - Poll Pad configuration
  - Importing Supplemental Voter Data
- Election Monitoring
  - Ballot Inventory
  - Poll Pad Alerts
  - Ballot Alerts
  - Issue Tracking
  - Messages
  - Managing Poll Pads
  - Managing Poll Workers
  - Generating Voter History
  - Reports
  - Exporting SDR Data

Poll Pad

- Opening Poll Pad
  - Printer setup/connection
  - Multi-peer
  - Cloud sync
- Voter Lookup
  - Search by Manual Entry
  - Confirm ID
  - Affidavit Ballot
  - Inactive Voter
  - Absentee/Mail Ballot Sent
  - Absentee/Mail Ballot Received
  - Voter Assistance Required
  - Wrong Location
  - Voter Not Found

2 PRE-CERTIFICATION TESTING AND ISSUES

As an initial certification, EAC ESTEP has deemed that a full test of the Poll Pad v3.6 ePB be implemented, as such evaluation of any prior testing is not relevant to the current test effort.

2.1 Evaluation of prior VSTL testing

As an initial certification, EAC ESTEP has deemed that a full test of the Poll Pad v3.6 ePB be implemented, as such evaluation of any prior testing is not relevant to the current test effort.

2.2 Evaluation of prior non-VSTL testing

As an initial certification, EAC ESTEP has deemed that a full test of the Poll Pad v3.6 ePB be implemented, as such evaluation of any prior testing is not relevant to the current test effort.

2.3 Known Field Issues

No Known Field Issues have been reported for previous Poll Pad versions.

3 MATERIALS REQUIRED FOR TESTING

Any materials used in an election cycle must be provided to SLI Compliance to facilitate testing. This section outlines such materials.

3.1 Software/Firmware

All software and firmware used in the election to support Poll Pad v3.6, whether directly or indirectly, in a production environment must be validated during the testing process.

The following software/firmware is required for the execution of hardware, software, security, accessibility, and usability 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 Poll Pad Software/Firmware

The following software/firmware is required for execution of the system.

Table 2 – Manufacturer Software/Firmware

Component	Version
Poll Pad 3	3.6.0
ePulse	3.6
iOS 17	17.6.1

3.2 Poll Pad Hardware and Equipment

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

Table 3 – KNOWiNK Poll Pad Hardware

ITEM	MAKE	MODEL	DESCRIPTION
iPad / iPad	Apple	iPad 6th Gen iPad Gen 7 iPad Gen 8 iPad Gen 9 iPad Gen 10	The iPad has a touchscreen/keyboard and a shockproof clear case. The iPad has a battery life of approx. 10 hours.
Encoder/iOS Reader	FEITAN	iR301	The Mfi certified lightning port contact card reader connects securely to the iPad lightning
Stand for iPad	AI Data	i360	The iPad stand is durable and user friendly.
Flip Stand for iPad	KNOWiNK	65101	Flip Stand for Poll Pad and Star mC-Print3 printer
Scanning tray	KNOWiNK	ISP103B- KN2-1	KNOWINK'S patented scanning trade scans barcodes on voter ID cards or state identification cards.
Styluses	AI Data	ISP-1010- KNO	Poll workers and voters may use the styluses or their finger for the iPad's capacitive touch screen.
Carrying case	Nanuk	910	Shockproof weatherproof foam-fitted case.
Carrying case	Nanuk	920	Shockproof weatherproof foam-fitted case.

Thermal printer	Star Micronics	TSP650ii	The Star Micronics printer is the original printer used with KNOWiNK's system. This printer requires AC power.
Thermal Label printer	Star Micronics	TSP700II	The Star Micronics thermal label printer is used to generate labels. This printer requires AC power.
Thermal Printer	Star Micronics	mC-Print3	New Star Micronics Thermal Receipt printer for printing voter receipt tickets
Poll Pair cord	KNOWiNK	PPCCv1	KNOWiNK's proprietary connector to the ES&S ExpressVote activation printer.
Printer	Brother PocketJet	PJ-763MFi	Brother Thermal printer for printing voter receipt tickets
Router	Cradlepoint	IBR600-LPE	WAN router with an embedded modem designed for critical business and enterprise applications.

3.3 Test Materials

The following test materials are required for the performance of testing including:

- Printer paper

4 TEST SPECIFICATIONS

The following are the specifications for testing to be conducted on the **KNOWiNK Poll Pad v3.6**. The specifications contain details on the focus of testing, configuration(s), and the functions to be tested.

4.1 Applicable Requirements

The **KNOWiNK Poll Pad v3.6** will be tested for compliance to applicable EAC ESTEP VEPBCR requirements.

Applicable requirements applied to this testing effort are verified against **KNOWiNK Poll Pad v3.6** as noted in the Sections below.

4.2 Hardware Configuration

The **KNOWiNK Poll Pad v3.6,** as declared in the application for certification submitted to the EAC consists of the components listed in Table 3 – KNOWiNK Poll Pad Hardware, in section 3.2 above. Configurations tested will include each of the supported iPads, as listed.

4.3 Software System Functions

The **KNOWiNK Poll Pad v3.6** system operations documentation has been reviewed. Based on this review, the applicable system functions have been identified for testing, please see section "1.4.3 – Supported Functionality".

4.4 Test Case (Suite) Design

SLI Compliance will prepare functional test modules using the operator/user procedures contained within **KNOWiNK**'s TDP. Functionality of the **KNOWiNK Poll Pad v3.6** is exercised in order to verify that each functional component performs as expected. Accept/reject criteria are based on EAC requirements, and the product specification documents provided in the TDP.

4.5 TDP Evaluation

The TDP will be evaluated to determine conformance to the applicable requirements within the VEPBCR, including:
SLI Compliance will complete an assessment of the deliveries of the Technical Data Package for the **KNOWiNK Poll Pad v3.6**. Each document included in the delivery of the TDP will be reviewed for compliance to applicable EAC ESTEP VEPBCR requirements, including:

- 1.1.1 – User-centered design process
- 1.1.2 – Instructions for election workers
- 1.1.3 – Plain language
- 1.1.4 – Usability testing with voters
- 1.1.5 – Usability testing with election workers
- 1.1.6 – Physical manipulation
- 1.2.1 – Check-in procedures
- 1.2.2 – Maintain voter registration records
- 1.2.3 – Maintain digital signatures
- 1.2.4 – Record and display election information
- 1.2.5 – Printing capabilities
- 1.3.1 – Compatibility with hardware
- 1.3.2 – Compatibility with software

- 1.3.3 – Compatibility with voter registration systems
- 1.4.1 – Communication with voter registration systems
- 1.4.2 – Communication with other e-poll books
- 1.5.1 – Batteries or power supply
- 1.5.2 – Memory storage
- 1.5.3 – Loss of connectivity
- 1.5.6 – System failure
- 2.1.2 – Access control policies and procedures
- 2.2.1 – Documentation of asset management features
- 2.2.2 – Device disk encryption
- 2.2.4 – Document the application of tamper-evident sealing
- 2.2.5 – Document anti-theft controls, and emergency system decommissioning
- 2.3.1 – Endpoint detection and response (EDR) tool
- 2.3.2 – Antivirus tool
- 2.3.4 – Verification of voter information
- 2.3.7 – Cryptographic key management documentation
- 2.4.2 - Disallow connections to unapproved external networks
- 2.4.3 – Disallow connections to unapproved external devices
- 2.4.6 – Documentation of the network and communications architecture
- 2.4.7 – Secure network configuration documentation
- 2.5.3 – Utilized recognized software standards
- 2.5.8 – Third-party code and libraries
- 2.5.9 – Application allowlisting
- 2.5.11 – Documentation of media sanitization procedures
- 2.6.3 – Application errors
- 2.7.1 – List of approved suppliers
- 2.7.2 – Authenticity of components
- 2.7.3 – Provenance of devices
- 3.1.2 – Accessibility documentation

4.6 Functional Testing

SLI Compliance will prepare functional test modules using the operator/user procedures contained within **KNOWiNK**'s TDP. Functionality of the **KNOWiNK Poll Pad v3.6** is exercised in order to verify that each functional component performs as expected. Accept/reject criteria are based on EAC requirements, and the product specification documents provided in the TDP.

Functionality of the **Poll Pad v3.6** system will be examined to verify proper function, as well as verification for compliance to applicable EAC ESTEP VEPBCR requirements, including:

- 1.1.2 Instructions for election workers
- 1.1.3 Plain language
- 1.1.4 Usability testing with voters
- 1.1.5 Usability testing with election workers
- 1.1.6 Physical manipulation
- 1.1.7 Vote records
- 1.2.1 Check-in procedures
- 1.2.2 Maintain voter registration records
- 1.2.3 Maintain digital signatures
- 1.2.4 Record and display election information
- 1.2.5 Printing capabilities
- 1.3.1 Compatibility with hardware
- 1.3.2 Compatibility with software
- 1.3.3 Compatibility with voter registration systems
- 1.4.1 Communication with voter registration systems
- 1.4.2 Communication with other e-poll books
- 1.5.1 Batteries or power supply
- 1.5.2 Memory storage
- 1.5.3 Loss of connectivity
- 1.5.4 System response time
- 1.5.5 System-related errors
- 1.5.6 System failure
- 1.5.7 Feedback
- 1.5.8 Warnings, alerts and instructions
- 1.5.9 Icon Labels

4.7 Accessibility Testing

SLI Compliance will prepare accessibility test modules. Accessibility of the **KNOWiNK Poll Pad v3.6** is exercised in order to verify that each component performs as expected. Accept/reject criteria are based on EAC.
Accessibility of the **Poll Pad v3.6** system will be examined to verify proper function, as well as verification for compliance to applicable EAC ESTEP VEPBCR requirements, including:

- 3.1.2 Accessibility documentation
- 3.2.1 Reset to default settings
- 3.2.2 Reset by election worker

- 3.2.3 Default contrast
- 3.2.4 Contrast options
- 3.2.5 Color conventions
- 3.2.6 Using color
- 3.2.7 Text size (electronic display)
- 3.2.8 Text size (paper)
- 3.2.9 Scaling and zooming
- 3.2.10 Toggle keys
- 3.2.11 Identifying controls
- 3.2.12 Display and interaction options
- 3.2.13 Electronic display screens
- 3.2.14 Flashing
- 3.3.1 Scrolling
- 3.3.2 Touch screen gestures
- 3.3.3 Accidental activation
- 3.3.4 Touch area size
- 3.3.5 Key operability
- 3.3.6 Bodily contact
- 3.3.7 No repetitive action
- 3.3.8 Secondary ID and biometrics
- 3.3.9 Eliminating hazards Testing
- 3.4.1 Sound cues
- 3.4.2 Information in all modes
- 3.4.3 Audio synchronized
- 3.4.4 Audio settings
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- 3.4.6 Audio comprehension
- 3.4.7 Audio control
- 3.4.8 Standard audio connectors
- 3.5.1 Languages
- 3.5.2 Presenting content in all languages
- 3.5.3 Language selections

EAC ESTEP VEPBCR requirements not applicable to this campaign include:

- 3.1.1 Federal standards for accessibility

4.8 Security Testing

SLI Compliance will prepare Security test modules for the **KNOWiNK Poll Pad v3.6** in order to verify that each component contains appropriate security protocols as expected, per applicable EAC ESTEP VEPBCR requirements.
Accept/reject criteria are based on EAC.
Security of the **Poll Pad v3.6** system will be examined to verify proper function, as well as verification for compliance to applicable EAC ESTEP VEPBCR requirements, including:

- 2.1.1 Account management
- 2.1.2 Access control policies and procedures
- 2.1.3 Role-based access
- 2.1.4 Multi-factor authentication
- 2.1.5 Separation of duties
- 2.1.6 Least privilege
- 2.1.7 Session termination, device lock, and reauthentication
- 2.1.8 Unsuccessful logon attempts
- 2.1.10 Information and data flow
- 2.2.1 Documentation of asset management features
- 2.2.2 Device disk encryption
- 2.2.3 Device BIOS or other firmware interface access
- 2.2.4 Document the application of tamper evident sealing
- 2.2.5 Document anti theft controls, and emergency system decommissioning
- 2.3.1 Endpoint detection and response (EDR) tool
- 2.3.2 Antivirus tool
- 2.3.3 Authentication to access configuration file
- 2.3.5 Cryptographic module validation
- 2.3.6 Cryptographic strength
- 2.3.7 Cryptographic key management documentation
- 2.4.1 Network encryption
- 2.4.2 Disallow connections to unapproved external networks
- 2.4.3 Disallow connections to unapproved external devices
- 2.4.4 Network firewall
- 2.4.5 Confidentiality and integrity of transmitted data
- 2.4.6 Documentation of the network and communications architecture
- 2.4.7 Secure network configuration documentation
- 2.5.1 Execute on a supported operating system
- 2.5.2 Support updates and patching
- 2.5.3 Utilize recognized software standards
- 2.5.4 Input validation and error defense
- 2.5.5 Escaping and encoding output
- 2.5.6 Sanitize output
- 2.5.7 Stored injection
- 2.5.8 Third-party code and libraries
- 2.5.9 Application allowlisting
- 2.5.10 Integrity protection for software allowlists
- 2.5.11 Documentation of media sanitization procedures
- 2.6.1 General system usage

- 2.6.2 Operational maintenance activity
- 2.6.3 Application errors
- 2.6.4 System Integrity
- 2.6.4.4 (Test if applicable)
- 2.6.5 Report generation
- 2.7.1 List of Approved Suppliers
- 2.7.2 Authenticity of Components
- 2.7.3 Provenance of Devices

EAC ESTEP VEPBCR requirements not applicable to this campaign include:

- 2.1.9 System use notification
- 2.3.4 Verification of voter information

4.9 Source Code Review

4.9.1.1 Source Code Review

The test campaign for the **KNOWiNK Poll Pad v3.6** includes software and firmware that have been created as proprietary to **KNOWiNK** as well as review of any commercial off the shelf products. SLI Compliance will conduct a source code review of all proprietary source code, and modified COTS products, delivered in the TDP for compliance to EAC ESTEP VEPBCR requirements, including:

- 2.5.3 Utilize recognized software standards
- 2.5.4 Input validation and error defense
- 2.5.5 Escaping and encoding output
- 2.5.6 Sanitize output
- 2.5.7 Stored injection
- 2.5.8 Third-party code and libraries

The coding languages involved in the vendor's applications include:

- Ruby
- Swift

Source code review tools used by SLI Compliance include:

- Cloc Line Counter: 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 C/C++ and VB code and populate the identified module names into the review documents;

- ExamDiff Pro: a commercial application used to compare revised code to previously reviewed code; and
- KEdit: a commercial text editor application running an SLI Compliance proprietary macro used to parse module names from Cobol code and populate the identified module names into the review document.

4.10 EAC Interpretations

The test engagement described in this Test Plan utilizes only standard VSTL test methods that conform to the EAC Election Supporting Technology Evaluation Program Manual and the identified relevant standard.

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

5 Approval Signatures

Traci Mapps

Traci Mapps
SLI Compliance Vice President
Date: February 5, 2025

End of KNOWiNK Poll Pad v3.6 EAC ESTEP Test Plan