# Florida
# Voting System Standards



## Florida Department of State

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Secretary of State

# Contents

# INTRODUCTION

## Scope

This document is intended to serve as:
- a guide to applicants seeking certification or provisional certification of voting systems.
- a source of information on Florida's requirements and evaluation methods for voting system certification and provisional certification.

Section 101.015, Florida Statutes requires the Department of State, Division of Elections to establish minimum standards for the certification or provisional certification of hardware and software for electronic and electromechanical voting systems.

This document sets forth the required minimum standards, and:
- provides procedures for testing to determine if those standards have been met,
- provides procedures for certifying compliance with the minimum standards; and
- is intended to complement the provisions of Sections 101.015, 101.017, 101.56042, 101.5605, 101.5606, 101.56062, 101.5607, and 101.5608, Florida Statutes

No electronic or electromechanical voting system may be used by any county or municipality in Florida unless the Division of Elections has issued a certification or provisional certification of the voting system's compliance with Florida's requirements pursuant to the application and evaluation processes described in this document.

## Definition of a Voting System

Section 97.021(39), Florida Statutes, states:

> "Voting system" means, a method of casting and processing votes that functions wholly or partly by use of electromechanical, or electronic apparatus or by use of paper ballots and includes, but is not limited to, the procedures for casting and processing votes and the programs, operating manuals, tabulating cards, printouts and other software necessary for the system's operation.

A voting system consists of a configuration of specific hardware and software components, procedures and expendable supplies; configured into a system which allows votes to be cast and tabulated. No single component of a voting system, such as a precinct tabulation device, meets the definition of a voting system. Sufficient components must be assembled to create a configuration,

which will allow the system as a whole to meet all the requirements described for a voting system in this publication.

## History of Voting System Certification in Florida

The 1989 Florida Legislature, in Chapter 89-348, Laws of Florida, passed groundbreaking legislation requiring:
- the Department to establish standards for electronic and electromechanical voting systems,
- all voting systems purchased on or after January 1, 1990, to comply with these standards, and
- all voting systems used on or after July 1, 1993, to comply with these standards

In response, the Department of State:
- began staffing the Voting System Section in January 1990,
- promulgated rules on Certification of Electronic or Electromechanical Voting Systems, Chapter 1S-5, Florida Administrative Code, effective March 28, 1990, and
- issued the first certification under the new law on April 19, 1990

The 1990 Florida Legislature, in Chapter 90-315, Laws of Florida, effective January 1, 1991, passed additional legislation requiring:
- the Department to establish standards for provisional approval of voting systems for innovative use,
- limitation of provisional approval to no more than two years,
- specific authorization by the Department for provisional use of a system in any election,
- contracts for use of provisionally certified systems to be approved by the Department, and
- a prohibition of Florida Counties and Municipalities entering into contracts for title to provisionally certified systems

In response, the Department of State:
- promulgated rules on provisional approval of Electronic or Electromechanical Voting Systems, Chapter 1S-7, Florida Administrative Code, effective February 1, 1993, and
- Issued the first provisional certification of a voting system on January 28, 1994.

In June 1998, the Division of Elections, Voting System Section, published the "Florida Voting Systems Standards" in an attempt to make the requirements for, and process of, certification and provisional certification easier to understand.

In November 2001 the Florida Voting Systems Standards were revised in compliance with Chapter 2001-40, Laws of Florida, the "Florida Election Reform Act of 2001."

In May of 2004, the Florida Voting Systems Standards were again revised to include accessibility requirements as provided in section 101.56062, Florida Statutes.

## Federal Election Commission Voting Systems Standards

In January 1990, the Federal Election Commission published "Performance and Test Standards for Punch card, Marksense, and Direct Recording Electronic Voting Systems", also known as the "FEC Voting Systems Standards". Mr. Robert Naegele developed the FEC standards, under contract to the Federal Election Commission. In addition, Mr. Naegele also consulted with the Florida Department of State in the development of Rule Chapter 1S-5, Florida Administrative Code. For this reason there are numerous similarities between the FEC Voting Systems Standards and the Florida Voting Systems Standards.

A major rewrite of the Federal Election Commission Voting Systems Standards was published April 30, 2002.

As of this revision to the Florida Voting Systems Standards, the National Institute of Standards and Technology, NIST has begun work under the Help America Vote Act (HAVA) on the next generation of Federal Voting Systems Standards.

Applicants for Florida Certification and for Provisional Certification are cautioned. Compliance with the FEC Voting Systems Standards does not establish compliance with the Florida Voting Systems Standards. Some of the work product necessary to establish compliance with the FEC standards can be used to establish compliance with some of the Florida requirements. The staff of the Division of Elections, Voting Systems Section is available to assist you with any questions on application of the standards.

## Independent Test Authorities

In May 1992, the National Association of State Election Directors, (NASED) published criteria for the accreditation of Independent Testing Authorities (ITAs) for voting system qualification testing.

NASED then seated an ITA Accreditation Committee charged with identifying and certifying ITA's capable of performing testing for compliance with the FEC Voting Systems Standards.

At publication of this document there are three NASED certified ITA's. They are CIBER, Inc., Systest, and Wyle Laboratories.

Wyle Laboratories and Systest conduct qualification testing for compliance with the standards in hardware and firmware components.

CIBER, Inc. and Systest conduct qualification testing for compliance with the standards in software components.

The United States Election Assistance Commission (EAC) administers the ITA testing program.  Applicants desiring ITA qualification may contact any of the ITAs or the EAC to apply.  Applicants for Florida Certification are cautioned; ITA qualification will not satisfy requirements for Florida Certification.  It is imperative that applicants for Florida Certification notify the ITAs that the ITA test plans are to include specifications for the Florida Voting Systems Standards.  The staff of the Department's voting system section is available to assist in the design of test plans to meet these standards.

Addresses for the EAC and the ITAs are:

U.S. Election Assistance Commission
1225 New York Avenue, NW, Ste. 1100
Washington, DC 20005
Telephone (202) 566-3100                          www.eac.gov

CIBER, Inc.
7501 South Memorial Parkway, Suite 107
Huntsville, AL 35802
Telephone (256) 882-6900

Systest
1630 Welton St., Suite 500
Denver, CO 80202
Telephone (303) 575-6881

Wyle Laboratories
7800 Highway 20 West
Huntsville, Alabama 35807-7777
Telephone (256) 837-4411

## Florida Certification is Required

No governing body in this state shall use an electronic or electromechanical voting system until the Division has issued it a certificate of certification or provisional certification.

No governing body in this state may purchase or otherwise take title to any electronic or electromechanical voting system until the Division has issued it a certificate of certification.

No governing body in this state may use a provisionally certified system in any election, including any municipal election, without the authorization of the Division, pursuant to section 101.015(5)(c), Florida Statutes.

## Release Control

Certifications and Provisional Certifications are issued for a specific configuration of components. The Division is required to be able to examine any system in any county and determine if it is a Florida Certified Voting System. In order to meet this requirement, copies of all source code, object code and hardware identification characteristics are retained by the Division for all certified and provisionally certified systems.

Any change to any component or to the configuration of the components creates a revised or new system, which must be again certified or provisionally certified before it can be used in any election. Where changes to certified systems are well documented and easily identifiable, it is much easier (and therefore less expensive for the applicant) to evaluate the resulting revised or new system.

## Bureau of Voting Systems Certification

The Florida Voting System Certification program is administered by the Bureau of Voting System Certification, in the Division of Elections.

Address:  Bureau of Voting System Certification
Division of Elections
Room 231, The Collins Building
Tallahassee, Florida 32399-0250
Telephone 850 245-6220; Fax 850 245- 6236
E-Mail: Votesys@mail.dos.state.fl.us
Website: http://election.dos.state.fl.us

## Application for Certification or Provisional Certification

An applicant for certification or provisional certification must complete the Division's "Application for Certification or Provisional Certification of Voting System" Form: DS DE 71 (7-98). A copy may be found on the last page of this document. Additional copies are available from the Voting System Section. The applicant or the applicant's authorized representative shall sign each application, which will be accompanied by the following material:

- A schedule detailing the cost of acquisition and operation of the system includes, but is not limited to, the following component level information:

  1. Make, model number, and description of each major subsystem or component comprising the voting system submitted for certification, and stipulation to whether this is a required or optional subsystem or component.

  2. Specification as to whether items are new, used, or refurbished.

  3. Unit purchase price for each item listed including any quantity discounts that may be offered.

  4. Types of all available maintenance programs and cost for each type.

  5. Names and addresses of maintenance providers for all system components.

  6. Training costs including all on-site and off-site courses offered.

  7. Commercially available ballot card readers, printers, processors, and software.

  8. Supplies, services, and any other items of expense.

  (NOTE: Applicants for provisional certification are not required to provide the information in items 3 through 6 above.)

- A statement of the current and future interchangeability of all sub-components.

- Technical data package, or TDP, which includes:

  1. System operator's manual

  2. Environmental requirements for storage, transportation, and operation, including temperature range, humidity range and electrical supply requirements

     (If the applicant is requesting certification of a system, which includes components manufactured by others, environmental requirements as specified by the original equipment manufacturer must be included.)

3. User manuals detailing system functionality

4. Identification of all Independent Test Authority (ITA) qualification testing of the voting system or its components

5. Although it is not necessary for ITA tests to be conducted prior to filing an application for certification or provisional certification, all ITA qualification testing completed or in process at the time of application must be identified

6. Copy of a letter from the applicant, to each ITA, which;

   a. Directs the ITA to send a copy of the completed ITA qualification report to the Division,

   b. Authorizes the ITA to discuss their procedures and findings with the Division, and

   c. Authorizes the ITA to allow the Division to review all records of any qualification testing conducted on the voting system or its components

7. The Approved Parts List (APL) for all elements of the system

8. Software and firmware documentation, information, and materials, including the following:

   a. A copy of the release software, firmware, utilities, hardware, and instructions required to install, operate and test the voting system.

   b. Diskettes, tapes, or compact disks containing copies of all source code files required to develop the system object code and firmware; with any utilities, hardware, and instructions required for the Division to read the source code on a personal computer with a MS-DOS or Microsoft Windows operating system;

   c. System flow chart describing information flow; entry and exit points; and the relationship of programs, device drivers, data files, and other program components;

   d. Identification of version, release, and modification levels of all software and firmware components;

   e. Identification of the steps and procedures required to generate all program modules providing system functions for which certification or provisional certification is requested

   f. Identification of all compilers, assemblers, development libraries, device drivers, operating systems, and monitors required to generate and operate the executable programs

g. Identification of all program elements which are static and not subject to change in either content or use when distributed for sale, during testing, or during operation;

h. Identification of all program elements which are not static and therefore are subject to change in content or use when distributed for sale, during testing, or during operation; and

i. Procedures, hardware, and software required to compare program codes, pursuant to section 101.5607(1)(a), Florida Statutes, and, for purposes of verification, pursuant to section 102.141(5)(b), Florida Statutes.

j. Description of all major subsystem interfaces between the election management system, voter interface devices, the absentee ballot subsystem, the results accumulation system, and the results reporting subsystem. This information must be in a format, which may be disclosed and available to the public.

k. A complete revision history for all software and firmware modules.

l. Entity Relationship (ER) diagrams and data dictionaries for all databases included in the system.

Materials enumerated above which have been filed for a previously certified version of a system, if identical for the system configuration in a current application may be specifically referenced in the technical data package in lieu of being filed again.

## Review of Application

Upon receipt of a signed application form, and the required supporting material, for certification or provisional certification, the Division shall review the filing to determine if the application is complete. If the application is not complete, the applicant shall be notified, within 10 workdays of receipt of the filing with a letter of additional materials or information that must be included for the application to be considered complete.

Applicants have 30 days from receipt of the Division's notification to remedy any deficiencies in their application. If the application is not complete at the end of that time, the Division will deny certification. Such denial will be without prejudice toward future applications.

When the application is complete, the applicant will be notified of completion within 10 workdays of receipt of the last filing.

## Examination of the Voting System

The Division shall examine all documentation and other material accompanying the application or provided by an ITA, to determine whether the voting system complies with the requirements the Florida Voting Systems Standards. If this examination cannot determine compliance with the Florida Voting Systems Standards, the Division will

request additional documentation from the applicant, or an ITA, or will require qualification testing to demonstrate the voting system's compliance with the standards.

## Qualification Test Plans

If it determines that additional qualification testing is required, the Division shall prepare and present to the applicant a Phase One Qualification Test Plan, which will encompass:

- All tests and procedures to be conducted by the Division to determine compliance with the Florida Voting Systems Standards,
- All tests and procedures to be conducted by an ITA to determine compliance with the Florida Voting Systems Standards,
- An estimate of the costs of certification for which the applicant will be required to reimburse the Division, and
- Suggested times and locations for individual tests.

Phase Two tests and procedures are dependent on the outcome and experience gained in Phase One testing. Within 10 workdays of the successful conclusion of Phase One testing the Division shall prepare and present to the applicant a Phase Two Qualification Test Plan, which will include:

- All tests and procedures to be conducted by the Division to determine compliance with the Florida Voting Systems Standards,
- All tests and procedures to be conducted by an ITA to determine compliance with the Florida Voting Systems Standards,
- An estimate of the costs of certification for which the applicant will be required to reimburse the Division, and
- Suggested times and locations for individual tests.

A more comprehensive description of Phase One and Phase Two testing can be found beginning on page 65.

## Qualification Test of the System

Upon receipt of the applicant's written agreement to the provisions of the Qualification Test Plan, the Division will conduct or arrange for examinations in accordance with the requirements of sections 101.5605 and 101.5606, Florida Statutes, and the Qualification Test Plan. Applicants for certification are expected to test their systems prior to the Division testing in order to avoid delays in the issuance of certifications.

## Qualification Test Report

Within 10 workdays of the conclusion of each round of testing, the Division will issue a report stating whether the system has passed or was unsuccessful in the qualification testing, and detailing the specifics of any deficiencies. Should there be deficiencies, applicants have 60 days to file an amended certification application, which must

disclose the reasons for the insufficiencies, and detail the changes necessary to remedy them.

Within 10 workdays after completion of all successful qualification testing the Division shall issue a Qualification Test Report which documents the conduct of tests, results of tests and the Division's findings of compliance.

Upon receipt of the Qualification Test Report the applicant will file, with the Division, a copy of the entire voting software and firmware program in the format and type of media which will be released to the end-users of the system in the State of Florida.

## Issuance of Certificates

Upon determining that the voting system complies with the requirements of the Florida Voting Systems Standards and that all required filings have been received in good order, the Division shall issue to the applicant a certificate of certification or provisional certification which attests that the electronic or electromechanical voting system complies with The Florida Election Code and Florida Voting Systems Standards.

The certificate shall include the name and release level of the voting system and shall identify the name and release level of the major components included in the voting system configuration for which certification or provisional certification is granted.

If the Division is unable to determine that the electronic or electromechanical voting system meets the requirements of The Florida Election Code and Florida Voting Systems Standards, it shall not issue a certificate of certification or provisional certification. The system will be removed from the Division's lists of certifications in progress. If the applicant requests a written report of the facts and law supporting the Division's conclusion, the Division shall provide such a report within 30 days of receipt of the applicant's written request.

## Retention of Materials

All materials and equipment submitted to the Division pursuant to the certification procedures will be retained by the Division until:

- A minimum of 24 months after an applicant files written notification with the Division that it is abandoning efforts to seek certification or provisional certification of a voting system, or
- A minimum of 24 months after the last use of a system in the state of Florida, and upon notification by the system vendor and all end-users, that the system will no longer be utilized. At such time, the Division may cancel the certification if the materials are not needed to support certification of later versions of the system.

# THE STANDARDS

## Applicability

The Florida Voting Systems Standards are applicable to all voting systems which are submitted to the Division for certification or for provisional certification.

Because provisional certification is designed to allow for the approval of hardware and software for innovative use as well as new systems for actual election use, voting systems submitted to the Division for provisional certification are not required to have undergone the Hardware Qualification Tests prescribed in these standards.

Voting systems which have previously been issued provisional certification and which are submitted to the Division for certification must meet all applicable requirements of the Florida Voting Systems Standards.

Any modification made to any component or the configuration of a voting system which has already completed the qualification testing and met the requirements for certification or provisional certification will constitute a new release of the system and require a new certification or provisional certification.

If any personal computer, operating system, monitor, or other hardware and software products, that are available to the general public, are shown to be compatible with the operational and administrative requirements of the election programming, polling place or central counting environment, then they will be acceptable for election use. Such products are not required to have undergone the Hardware Qualification Tests prescribed in these standards.

Special purpose or limited-use products, including software and firmware monitors and operating systems that are developed solely for elections use, are required to undergo the testing prescribed in these standards.

## Acceptance of Independent Test Authority Reports

All ITA (Independent Test Authority) qualification reports which are material to the Division's determination that a voting system may be certified will be evaluated to determine if the test procedures, records of testing, and reporting of results meet the requirements of the Florida Voting Systems Standards.

The evaluation process may include reviews of the ITA's records and interviews with the personnel of the ITA who designed, conducted, monitored or reported on the systems qualification testing.

If the Division cannot determine that the testing and reporting of an ITA meets the requirements of the Florida Voting Systems Standards, then the ITA qualification report shall not be used in determining whether a voting system can  be certified by the State of Florida.

Within 10 workdays of determining that the testing and reporting of an ITA do not meet the requirements of the Florida Voting Systems Standards, the Division shall give written notification to the applicant and to the ITA.  This notification shall state which requirements of the Florida Voting Systems Standards have not been satisfied, and describe the facts supporting the conclusion.

## General Functional Requirements

Voting system functional requirements include all of the operations necessary to prepare the system for an election, to conduct an election, and to preserve the system for future election use. For the purpose of Florida Certification, the sequence of operations is divided into three phases:

1.  "**Pre-Voting**"  (operations which precede an election)
2.  "**Voting Functions**"   (election day and follow-up operations)
3.  "**Maintenance & Storage**"

The functional requirements of a voting system shall begin with the definition and description of political subdivisions and offices within the jurisdiction. The requirements will conclude with the production of reports, which describe all system setups, configuration parameters, operational events, and tabulation results in hard copy, all of which should be secured in a  transportable data storage medium.

The voting system shall include the capability to produce records, generated by the system components, or in some cases, by the system operators, from which all operations may be audited. Except for the storage of vote images, which shall be maintained in a random sequence, the records shall be created and maintained in the sequence in which the operations were performed.

## Pre-Voting Functions

### Ballot Definition
The system shall allow the user to produce or define ballots that conform to the specifications set forth in the sections 101.141 through 101.191, Florida Statutes.

Ballots generated by the system must contain identifying codes or marks, which are uniquely associated with their formats.

Audit record requirements of the ballot definition function shall be generated by the system.  As a minimum, the records shall include, a record of the offices, the candidates, the measures provided for each ballot, valid responses, which voters are entitled to make, and a report, which identifies each of the ballot formats generated.

### Ballot Installation
Provisions shall be made to assure that a ballot display format is properly selected for the polling place where it will be used and that it is matched to the programming device required to correctly interpret it.

Audit record requirements of the ballot installation function shall include, as a minimum, an acknowledgment or verification that the ballot display corresponds with the device required to interpret it.

### Programming and Software Installation

A voting system shall provide a means of programming each piece of precinct count or central count equipment in accordance with the ballot requirements of the election and the jurisdiction in which the equipment will be used.

The programming must include a means for validating the correctness of the program and the correctness of its installation in the equipment or in a programmable memory device.

The system must provide a means to assure that non-resident or resident software installed for any election was properly selected and installed and that it correctly matches the ballot formats that it is intended to process.

The system shall support the use of test ballots to verify the correct interpretation of the ballot formats that it is programmed to process and to verify that voting data processing is accurate and reliable.

Provision shall be made, either procedurally or by hardware/software features, to assure that test data are segregated from actual voting data.

Audit records for this function shall be generated by the system and shall include the number of test ballots cast, the results generated from the test ballots, and a report, which identifies the version, modification, or release number of the resident and non-resident software.

### Equipment Readiness Tests

Each component of the voting system shall contain provisions for verifying it is functioning correctly and, where operation of the component is dependent upon instructions specific to that election
Provisions for these tests shall include either manual or automatic execution of test and diagnostic procedures.

Audit records for this function shall be generated by the system and shall include an identification of the component or components, which produced unacceptable test results.

### Consolidation and Verification of Precinct Results

Precinct count systems must include equipment for the consolidation of precinct polling place data at one or more central counting places and must make provisions for tests to verify the correct extraction of voting data from transportable memory devices or for the acquisition of such data over a communications link.

Verification shall include the use of manual security procedures and communications security devices, which will be used with the consolidation of actual voting data. In

addition, other tests may be necessary to assure the readiness of the equipment to accommodate administrative reporting requirements.

All systems shall generate, upon verification of the authenticity of the commands, a printed record of the following election identification data:

- The ballot format identification,
- The contents of each active candidate register by office and of each active measure register,
- An identification of all ballot fields which can be used to invoke special voting options such as write-in candidates, and
- Any other information as may be necessary to assure the readiness of the equipment and to accommodate administrative reporting requirements

All systems shall support the use of test ballots or other test devices to verify the correct interpretation of the ballot formats, which will be processed, and to verify the voting data processing is accurate and reliable.

Provisions shall be made, either procedurally or by hardware/software features, to assure that test data are segregated from actual voting data.

All documents related to or produced by this function shall become part of the audit record.

### *Verification at the Polling Place*

Precinct count systems shall generate, upon verification of the authenticity of the commands:

- A printed record of the election identification data,
- The equipment unit identification,
- The ballot format identification,
- The contents of each active candidate register by office and of each active measure register,
- An identification of all ballot fields which can be used to invoke special voting options, and
- Any other information as may be necessary to assure the readiness of the equipment and to accommodate administrative reporting requirements

The documents relating to or produced by this function shall become part of the audit record.

# Voting Functions

### *Polling Place Verification*

Precinct count systems shall provide a means of verifying that:

- equipment has been installed at the correct polling place,

- equipment is in its initialized state, and
- equipment is ready for the casting of ballots or the processing of voted ballots

The proper execution of these functions shall be verified by means of an equipment-generated record, which must be retained as part of the audit record.

### Party Selection

All voting systems shall provide a means, in a primary election, of enabling a voter to cast a ballot containing votes for the candidate of the party of his choice and for any and all non-partisan candidates and measures, while preventing the voter from voting for a candidate of another party.

The system shall provide a means in a general election of enabling the voter to select any candidate for any office, in the number allowed for the office, and to select any measure on the ballot.

### Ballot Subsetting

In the event that the ballot contains candidates or measures for whom or upon which not all voters will be entitled to vote, the system shall provide a means of disabling that portion of the ballot for which the voter is not entitled to vote.

### Enabling the Ballot

Upon the proper selection of the ballot to which a voter is entitled, the system shall provide a means of enabling the recording of votes.

### Candidate and Measure Selection

All systems shall provide a method of voting, which complies with section 101.5606, Florida Statutes.

### Standards For Electronic Voter Interfaces

The standard requires that system configurations must support installation of electronic voter interfaces at all precincts and central locations. All electronic voter interfaces provide the following voter functionalities:

- The audio ballot and video ballot must be able to work both separately and simultaneously. During such simultaneous operation, the audio ballot must clearly notify the voter that the video ballot is enabled.
- After the initial instructions, which the system requires election officials to provide to each voter, the voter should be able to independently operate the voter interface through the final step of casting a ballot without assistance.
- The voter must be able to determine the races, which he or she is allowed to vote in and to determine which candidates are available in each race.
- The voter must be able to determine how many candidates may be selected in each race.
- The voter must be able to determine whether the physical or vocal inputs given to the system have selected the candidates, which he or she intended to select.
- The voter must be able to review the candidate selections, which he or she has made.

- Prior to the act of casting the ballot the voter must be able to change any selection previously made and confirm the new selection.
- The system must communicate to the voter the fact that the voter has failed to vote in a race (under vote) or has failed to vote the number of allowable candidates in any race (under vote) and require the voter to confirm his intent to under vote before casting the ballot.
- The system must prevent the voter from over voting any race.
- The voter must be able to write in a candidate name in races, which allow write-in candidates.
- The voter must be able to review their write-in input to the interface, edit that input, and confirm that the edits meet their intent.
- There must be a clear, identifiable action, which the voter takes to "cast" the ballot.  The system must make clear to the voter how to take this action, such that the voter has minimal risk of taking the action accidentally, but when the voter intends to cast the ballot, the action can be easily performed.
- Once the ballot is cast, the system must confirm to the voter that the action has occurred and that the voter's process of voting is complete.
- To ensure wheelchair accessibility, the voting booth will be a minimum of 30" wide and 19" deep.  Inside the voting booth, voter operable controls will rest at a minimum height of 36" above the finished floor with a minimum knee clearance of 27" above the floor, or the voter interface device must be designed so as to allow their use on top of a table.  Tabletop installations must include adequate privacy.
- Voter operable controls must be operable with one hand, including a closed fist.  The force required to operate these controls will be no greater than 5 pounds and will not require and pinching or twisting of the wrist.
- Once the ballot is cast, the system must preclude the voter from modifying the ballot cast or voting or casting another ballot.

### Audio Ballots

Electronic voter interfaces, which provide the voter with an audio presentation of the ballot and which allow the voter to communicate his or her intent to the voting system through vocalization or physical actions will hereafter be known as audio ballots. The standards, which apply to electronic voter interfaces, shall also apply to audio ballots. Voter operable controls on the audio ballot interfaces shall be discernable tactilely without actuating the controls. All audio ballot voter interfaces shall provide a voter-operated volume control that provides an amplitude of at least 97 dB SPL.  If the volume control can exceed 120 dB SPL, the volume control will automatically reset to less than 120 dB SPL after every use.

### Video Ballots

Electronic voter interfaces, which provide the voter with a video display and which allow the voter to communicate his or her intent to the voting system through vocalization or physical actions will hereafter be known as video ballots. The standards, which apply to electronic voter interfaces, shall also apply to video ballots. All video ballot voter interfaces must offer the election official who programs the system, prior to its being sent to the polling place, the capability to set the font size, as it appears to the voter, from a minimum of 14 points to a maximum of 24 points. Video ballots shall be designed

so as to not require color perception. All text and graphics shall be in black or dark colors on a white or light-colored background.

### Multilingual Capabilities
All system configurations must support all voter interface functions in at least the following languages English, Spanish, and Haitian Creole.

### Undervotes and Overvotes
Marksense systems shall reject blank ballots and ballots with overvoted races. Electronic voter interfaces shall prevent a voter from over voting a race, and shall provide a means of indicating, to the voter, any races that may have been under voted before the last step necessary to cast the ballot.

### Casting a Ballot
All systems shall provide a means for the voter to signify that the selection of candidates and measures has been completed.

The voter shall place the voted ballot into the ballot counting equipment or into a secure receptacle, or the system shall record an image of the completed ballot and signify to the voter that the ballot has been cast, in which case the system shall disable any further attempt to vote until it has been reset.

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# Post-Voting Functions

### Closing the Polling Place
Precinct count systems shall provide a means for disabling further voting or counting of ballots at the time voting is no longer permitted.

The system shall produce a machine-generated record of the time the voting system was closed.

If counters are incorporated in the voting system, the readings of the public counter and the protective counter shall become a part of the audit record upon disabling of the equipment to prevent further voting.

### Obtaining Polling Place Reports
Precinct count systems shall provide a means for obtaining a printed report of the votes counted on each voting device, and they shall provide a means for extracting this information to a transportable programmable memory device or data storage medium.

The printing of a report or the extraction of data shall be disabled until the proper sequence of events associated with closing the polling place is completed.

The system must incorporate provisions for telecommunicating the results of each precinct's tabulation to other data processing, reporting, or display equipment either locally or at a remote location.

The printed report shall contain the device audit log, which shall contain all exception conditions encountered while the voting device is enabled for voting or for counting ballots.

In the event that more than one voting device is used in a polling place, the system shall provide a means for consolidating the data contained in each voting device into one report for the polling place.

The generation of reports by the system shall be performed in a manner, which does not erase or destroy any ballot image, parameter, tabulation or audit log data. The system shall provide a means for assuring the maintenance of data integrity and security for a period of at least 22 months after closing of the polls.

### *Obtaining Precinct Reports*

The system shall provide a means for centrally obtaining a printed report of the votes counted for each precinct.

The printed report may contain all information generated by the system audit log.

The generation of reports by the system shall be performed in a manner, which does not erase or destroy any ballot image, parameter, tabulation or audit log data. The system shall provide a means for assuring the maintenance of data integrity and security for a period of at least 22 months after closing of the polls.

### *Obtaining Consolidated Reports*

The system shall provide a means for consolidating the data of all-polling places and absentee voter ballots into one report. This may include consolidation at one or more regional or remote sites.

Intermediate consolidation shall comply with the same security and procedural requirements as apply to the system as a whole and to the individual voting devices.

### *System Audit Log*

The system audit log shall contain sufficient information to allow the auditing of all operations related to central site ballot tabulation, results consolidation, and report generation.  It shall include:

- an identification of the program and version being run
- an identification of the election file being used
- a record of all options entered by the operator
- a record of all actions performed by the subsystem
- a record of all tabulation and consolidation input

The system audit log must be created and maintained by the system in the sequence in which operations were performed.

### *Access to Election Data*

Provisions shall be made for authorized access to election results after closing of the polls and prior to the publication of the official canvass of the vote.

All systems must be capable of generating an export file to communicate results from the election jurisdiction to the Division of Elections on election night both during the accumulation of results and after all results have been accumulated.

The system may be designed so that results may be transferred to an alternate database or device. Access to the alternate file shall in no way affect the control, processing, and integrity of the primary file or allow the primary file to be affected in any way.

### *Early Processing of Absentee Ballots*

If the voting system includes the facility for the early processing of absentee ballots as described in section, 101.68(2)(a), Florida Statutes, then the system must include restrictive controls which prevent the accidental or intentional release of results prior to 7:00 p.m. on election day.

The phrase "restrictive controls" refers to any of those features of a voting system, which when properly configured and used, will allow the canvassing board of elections to prevent any one person, acting alone, from reporting election result data in any form or medium which could be read by any person before 7:00 P.M.

Examples of such controls are passwords, keys, and specially coded ballots such as end cards which when withheld from the system and the console operator will make it impossible to output results.

## Security

All voting system functions shall prevent unauthorized access to them and preclude the execution of authorized functions in an improper sequence.

System functions shall be executable only in the intended manner and order of events and under the intended conditions.

Preconditions to a system function shall be logically related to the function so as to preclude its execution if the preconditions have not been met.

## Accuracy

A voting system must be capable of accurately recording and reporting votes cast.

Accuracy provisions shall be evidenced by the inclusion of control logic and data processing methods, which incorporate parity, and checksums or other equivalent error detection and correction methods.

Techniques employed for determining, from ballot images, whether a vote response is counted as valid shall be specified. Where a method is employed to interpret a valid

vote response from a range of sensed values, valid ranges or procedures for determining valid ranges shall be specified.

## Data Integrity

A voting system shall contain provisions for maintaining the integrity of voting and audit data during an election and for a period of at least 22 months thereafter.

These provisions shall include protection against:

- the interruption of electrical power, generated or induced electromagnetic radiation
- ambient temperature and humidity
- the failure of any data input or storage device
- any attempt at an improper data entry or retrieval procedure

All voting systems shall be capable of re-tabulating voted ballots, which have been maintained as required above.

Software used in all voting systems shall monitor overall data read-write and transfer quality status, such as the number and types of errors which occur in any of the relevant operations on data.

Any uncorrectable error shall cause device operation to halt in a condition from which all previously stored data and system status are recoverable and shall provide an appropriate message to the voter and polling place official or device operator.

If an error causes device operation to halt in a condition from which previously stored data and system status cannot be recovered, then the operation of the device shall be suspended until the condition generating the errors is corrected.

## Performance Characteristics

### *General Characteristics*
Performance shall be specified by means of a single value or by two values. When a single value is specified, it shall be interpreted as an upper or lower single-sided 90% confidence limit, depending upon whether it is a lower bound on acceptable performance or an upper bound on unacceptable performance. When two values are specified, they shall consist of a Nominal Specification Value (NSV) which is the desired value of the characteristic, and the Minimum or Maximum Acceptable Value (MAV), and these values shall be interpreted as a two-sided 90% confidence interval.

| | 1. Environmental |
|---|---|

| For the purposes of Florida Voting Systems Standards the following **SUBSYSTEMS** will be examined: | 2. Ballot Definition<br>3. Control<br>4. Recording<br>5. Conversion<br>6. Processing<br>7. Reporting |
|---|---|

## Environment Subsystem

The Environment Subsystem includes shelter, space, furnishings and fixtures, supplied energy, environmental control equipment, and external telecommunications services.

The material supplied by the applicant shall include a statement of all requirements and restrictions regarding environmental protection, electrical service, telecommunications service, and any other facility or resource required for the installation, operation, and storage of the voting system.

- *Shelter***:** All precinct count systems shall be capable of being stored in any enclosed facility ordinarily used as a warehouse and operated in any facility ordinarily used as a polling place.

- *Space***:** There is no restriction on space allowed for the installation or erection of a voting system, except that the arrangement of the system shall not impede performance of the duties by polling place officials or the orderly flow of voters through the polling place.

- *Furnishings and Fixtures:* Any furnishings or fixtures provided for use with the voting system, and any components which are not a part of the system, but which are used to support its storage, transportation, or operation, shall comply with the Safety and Human Engineering requirements of the Florida Voting Systems Standards.

- *Electrical Supply:* Precinct Count systems shall operate with the electrical supply ordinarily found in polling places (120vac/60hz/1 phase). Central Count systems shall operate with the electrical supply ordinarily found in central tabulation facilities or computer room facilities (120vac/60hz/1 phase, 208vac/60hz/3 phase or 240vac/60hz/2 phase).

- *Environmental Control:* All voting systems shall be capable of being stored and of operation in the temperature ranges specified in the Environmental Conditions section of Florida Voting Systems Standards.

- *Data Networks:* Any voting system may utilize a local or remote data network. If a data network is used, all components of the network must comply with the environmental requirements for the voting system.

## *Ballot Definition Subsystem*

The Ballot Definition Subsystem consists of hardware and software required to accomplish the functions outlined below.

System databases contained in the Ballot Definition Subsystem may be constructed individually, or they may be integrated into one database. These databases are treated as separate databases to identify the necessary types of data which must be handled and to specify, where appropriate, those attributes that can be measured or assessed for determining compliance with the requirements of this standard.

## *Administrative Database*

The subsystem shall allow the user to generate and maintain an administrative database containing the definitions and descriptions of political subdivisions and offices within the jurisdiction. The environment in which all databases in the subsystem are maintained shall include all necessary provisions for security and access control.

The subsystem shall provide for the definition of political and administrative subdivisions where the list of candidates or contests may vary within the polling place and for the activation or exclusion of any portion of the ballot upon which the entitlement of a voter to vote may vary by reason of place of residence or other such administrative or geographical criteria.

Any database may be generated and maintained in any file structure suitable to the requirements of the jurisdiction. It is the intent of the database hierarchy described herein to ensure that data entry, updating, and retrieval be effectively integrated and controlled. Any structure, which provides the required functional capability, security, and privacy, is acceptable.

For each election, the subsystem shall allow the user to generate and maintain a candidate and contest database and provide for the production or definition of properly formatted ballots and software. This database shall be used by the system with the administrative database to format ballots or edit formatted ballots within the jurisdiction.

## Ballot Generation

The subsystem shall provide a software capability for the creation of newly defined elections, for the retention of previously defined formats in that election, and for the modification of a previously defined ballot format.

- Such systems shall be designed so as to facilitate error-free definition of elections and their associated ballot layouts.
- The subsystem shall be capable of handling at least 500 potentially active voting positions, arranged to identify party affiliations in a primary election, offices and their associated labels and instructions, candidate names and their associated labels and instructions, and issues or measures and their associated text and instructions.
- The ballot display may consist of a matrix of rows or columns assigned to political parties or non-partisan candidates and columns or row assigned to offices and contests. The display may consist of a contiguous matrix of the entire ballot, or it may be segmented to present portions of the ballot in succession.

## Election Programming

The subsystem shall provide a facility for the definition of the ballot, including the definition of the number of allowable choices for each office and contest, and for special voting options such as write-in candidates.  It shall provide for all voting options and specifications as provided for in Chapter 101, Florida Statutes.

The subsystem shall generate all required masters and distributed copies of the voting program in conformance with the definition of the ballot for each voting device and polling place.

The distributed copies, resident or installed in each voting device, shall include all software modules required to monitor system status and generate machine-level audit reports, to accommodate device control functions performed by polling place officials and maintenance personnel, and to register and accumulate votes.

## Ballot Validation

The subsystem shall provide a facility for executing test procedures which validate the correctness of election programming for each voting device and polling place and insure that the ballot display corresponds with the installed election program.

## Control Subsystem

The Control Subsystem consists of the physical devices and software, which accomplish and validate the following operations.

*Equipment Preparation -* The Control Subsystem shall encompass the hardware and software required to prepare precinct voting devices and memory devices for election use.  Precinct election preparation includes all operations necessary to install ballot displays, software, and memory devices in each voting device.

The Control Subsystem shall be designed in such a manner as to facilitate the automated validation of ballot and software installation and to detect errors arising from their incorrect selection or improper installation.

*Predelivery Testing -* Prior to delivery to the polling place or at any location where diagnostic and maintenance support are available, voting devices prepared as in the foregoing paragraph shall be subjected to a series of tests.

The Control Subsystem for all precinct count systems shall include hardware and software required to support these tests and the collection of data that verifies device readiness.

Resident test software, external devices, and special purpose test software connected to or installed in voting devices to simulate operator and voter functions may be used for these tests, provided that they have been separately tested and have proven to be reliable verification tools. They must be incapable of altering or introducing any residual effect on the intended operation of the voting device during any succeeding test and operational phase.

***Tests at the Polling Place -*** The Control Subsystem includes hardware and software required to enable opening of the polling place, which includes preparing precinct count voting devices to accept voted ballots.

Prior to opening the polling place, the Control Subsystem shall test each device to verify its operational status. This test shall include, at a minimum:
- the production of a diagnostic test record indicating the number of hardware or software failures,
- the identification of the device and its designated polling place location,
- a record of the data stored in memory locations reserved for voting data,
- an indication that all tests were completed successfully or whether errors were encountered, and
- an indication that the device is ready to be activated for voting

***Opening the Polling Place -*** The Control Subsystem includes hardware and software required to open the polling place by allowing voting devices to be enabled for voting. This hardware and software shall include an internal test or diagnostic capability to verify that all of the polling place tests specified in the preceding section have been successfully completed and, if they have not, to disable the device from voting until it has been tested and all tests successfully completed.

***Enabling a Ballot -*** The Control Subsystem includes hardware and software required to enable the casting of a ballot in a general election and, in a primary election, to select the party affiliation declared by the voter, to enable all portions of the ballot upon which the voter is entitled to vote, and to disable all portions of the ballot upon which the voter is not entitled to vote.

***Error Recovery -*** The Control Subsystem includes the hardware and software to enable recovery from a non-catastrophic failure of a device or any error or malfunction that is within the operator's ability to correct. Recovery shall mean the restoration of the device to the operating condition existing prior to the error or failure without loss or corruption of voting data previously stored in the device.

- This capability shall permit resumption of normal operation following the correction of a failure in a memory component or in a data processing component including the central processing unit.

- For systems other than DRE equipment, check pointing may be acceptable provided it occurs frequently enough to minimize the amount of reprocessing needed to recover from an error condition.

- This capability shall include recovery from any other external condition, which causes a voting device to become inoperable provided that catastrophic electrical or mechanical damage due to an external phenomenon has not occurred.

***Closing the Polling Place -*** The Control Subsystem shall include hardware and software required to enable closing of the voting system, which includes disabling the casting of additional ballots and enabling the production of voting data reports. After closing, each device shall be tested to verify that the prescribed closing procedure was followed and that the device status is normal. This test, which may be automated, shall

include the production of a diagnostic test record that verifies the sequence of events and indicates that the extraction of voting data has been enabled.

***Polling Place Reports -*** If a report of voting data for the polling place is required, the Control Subsystem shall include hardware and software required to produce a report of consolidated data from all devices in the polling place.

## Recording Subsystem

For marksense precinct and absentee voter interfaces  the Recording Subsystem consists of ballot cards or sheets and marking devices and electronic ballot interfaces.

It includes compartments or booths in which ballots may be conveniently voted and which screen the ballot from the view of others. It also includes secure containers for the collection of voted ballots.

For electronic voter interfaces, the Recording Subsystem consists of the video ballot display, audio ballot or tactile ballot and the mechanical, electro-optical, or electronic devices which are used to present the voter with the ballot and which can be actuated by the voter.

***Marking Devices -*** Marking devices shall be capable of producing the geometrical or spectral properties required by the Conversion Subsystem, which interprets them.

***Voting Booths -*** Voting booths, whether integral with the voting system or supplied as components of the voting system, shall comply with the following requirements:

- The booth shall be an enclosure which is integral with or which makes provision for the installation of the ballot  marking or other interface device.
- The structure of the booth shall ensure its stability against movement or overturning during entry, occupancy, and egress by the voter.
- The booth shall provide privacy while it is occupied, and it shall be designed in such a way as to prevent observation of the ballot by any person other than the voter.
- The booth shall provide interior space and lighting sufficient to make the process of vote recording convenient and accessible to voters with or without physical handicap.

***Ballot Boxes*** *(and Ballot Transfer Boxes)* - Secure containers shall be provided for the storage and transportation of voted marksense ballots. These containers shall be of a size, shape, and weight commensurate with their intended use. They shall provide for locks and seals as required by section 101.24, Florida Statutes.
Ballot boxes for precinct count systems may contain separate compartments for the segregation of unread ballots and ballots containing write-in votes or any irregularity which may require special handling or processing.

In lieu of compartments, the conversion subsystem may cause such ballots to be marked to facilitate manual segregation.

## Conversion Subsystem

The Conversion Subsystem shall contain all mechanical, electromechanical, and electronic devices required to read or accept marks, or signals used to signify a voted

ballot and create input for the Processing Subsystem. This subsystem performs two major functions, ballot handling and ballot reading as follows:

***Ballot Handling -*** This function consists of the acceptance of a ballot and its movement through the read station and into a collection station or receptacle. The applicant must cite ballot handling speed and capacity capabilities.

The ballot handling function must be able to detect conditions, which prevent the ballot from being read, such as misfeed, multiple feed, or a damaged ballot. When conditions are detected that prevent reading of the ballot, the system shall provide a warning message that indicates the error detected and how the error has affected the count.

If an error is detected, the reader shall halt in a condition, which permits the ballot causing the error to be removed or to be processed manually. The tabulation may then be continued or canceled and restarted.

As an alternative to halting the system, the system may use outstack handling which refers to the ability of the ballot reader to divert ballots when they are not read or when some condition is detected which requires that the ballots be segregated from normally processed ballots and given special handling according to the operating procedure for the system.

When detected, such ballots may be marked to facilitate their identification and removal. If multiple feed is detected, the ballot reader shall halt in a condition, which permits the operator to remove the unread ballots causing the error, and reinsert them in the input hopper. Frequency of multiple feed shall not exceed 1 per 5,000 feed cycles.

***Ballot Reading*** - This function is limited to the conversion of the physical ballot image into an analogous electronic image; the interpretation of the electronic image is the function of the processing subsystem. Requirements for the ballot reading function include accuracy and reliability as defined below.

- *Accuracy*
  "Accuracy" refers to the inherent capability of the read heads to respond to marks and to distinguish between valid marks and extraneous marks, smudges, folds, etc.

  It includes the conversion of the output of the read head electronic circuitry (in response to the presence or absence of a valid voting punch or mark and not to the presence of signals which fail to meet the detection criteria of a valid punch or mark) into digital signals which are transmitted to the processing subsystem.

  Accuracy requirements apply both to the presence and to the absence of a punch or mark in any active ballot field.

  Valid punches or marks shall be detected, invalid punches or marks shall be rejected, and no detection signal shall be accepted in the absence of a valid punch or mark.

  The error rate measured by this criterion shall not exceed one part in 1,000,000.

- *Reliability*

  "Reliability" of this subsystem refers to its ability to sustain accuracy during the required operating period.

  The conversion subsystem shall reliably read ballots which meet the printing tolerances specified for the system and which contain vote marks meeting the system's criteria for placement, size, and intensity. The rate of rejection of voted ballots, which meet these criteria, shall not exceed 3 percent.

## Processing Subsystem

The processing subsystem contains all mechanical, electromechanical, and electronic devices required to perform the logical and numerical functions of interpreting the electronic image of the voted ballot and assigning votes to the proper memory registers.

Attributes of the processing subsystem, which affect its suitability for use in a voting system, are accuracy, speed, reliability, and maintainability. Subsystem reliability and maintainability requirements are contained in the Design, Construction and Maintenance Characteristics section of the Florida Voting Systems Standards.

*Accuracy -* Processing accuracy refers to the ability of the subsystem to receive electronic signals produced by vote marks and timing information, to perform logical and numerical operations upon these data, and to reproduce the contents of memory when required without error. Processing subsystem accuracy shall be measured as bit error rate, the ratio of uncorrected data bit errors to the number of total data bits processed when the system is operated at its nominal or design rate of processing in a time interval of 4 hours. The bit error rate shall include all errors from any source in the processing subsystem.

For all types of systems, the Maximum Acceptable Value (MAV) for this error rate shall be 1 part in 1,000,000, and the Nominal Specification Value (NSV) shall be 1 part in 100,000,000.

*Memory Stability -* Memory devices which are used to retain control programs and data shall have demonstrated at least a 99.5 percent probability of error-free data retention for a period of six months under the environmental conditions for operation and non-operation contained in the Environmental Conditions section of the Florida Voting Systems Standards.

## Reporting Subsystem

The reporting subsystem contains all mechanical, electromechanical, and electronic devices required to print reports of the tabulation.

The subsystem also may include data storage media and communications devices for transportation or transmission of data to other sites.

*Removable Storage Media -* Storage media such as:

- programmable read only memory (PROM)

- random access memory (RAM) with battery backup
- magnetic tape or disk media which can be removed from the system and transported to another location for readout and report generation
- PCMCIA Cards

Such removable storage media shall utilize devices with demonstrated memory stability equal to at least a 99.95 percent probability of error-free retention for a period of six months under the environmental conditions for operation and non-operation contained in the Environmental Conditions section of the Florida Voting Systems Standards.

***Communications Devices -*** Devices which may be incorporated in or attached to components of the system for the purpose of transmitting tabulation data to another data processing system, printing system, or display device shall not be used for the preparation or printing of an official canvass of the vote unless they conform to a data interchange and interface structure and protocol which incorporates some form of error checking.

***Printers -*** All printers used to produce reports of the vote count shall be capable of producing alphanumeric characters and election, office, and measure substance, as well as alphanumeric entries generated as part of the audit log.

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# Design, Construction, and Maintenance Characteristics

## Materials, Processes, and Parts

The approach to design shall be unrestricted, and it may incorporate any form or variant of technology, which is capable of meeting the performance requirements, and other attributes specified herein.

***Precinct count voting systems -*** shall be designed in accordance with best commercial practice for microcomputers, process controllers, and their peripheral components.

***Central count voting systems -*** and equipment used in a central tabulating environment shall be designed in accordance with best commercial and industrial practices.

The frequency of equipment malfunctions and maintenance requirements shall be reduced to the lowest level consistent with cost constraints. Applicants are encouraged but not required to use MIL-STD-454, "Standard General Requirements for Electronic Equipment," which is hereby adopted and incorporated by reference, as a guide in the selection and application of materials and parts.

Applicants shall prepare an Approved Parts List (APL) for submission as part of the technical data package. No unit submitted for qualification testing or any production units submitted for sale, shall contain parts or components not included in the APL.

***Ballots -*** Ballots may be of any material and configuration consistent with the requirements of the system which can be used to prepare ballots meeting the requirements of the Florida Election Code.

## Durability

Precinct count systems, their components, and associated vote recorders shall have a useful life of at least 8 years.

Central count sub-systems and their components shall have a useful life of at least 12 years.

## Reliability

Reliability refers to the ability of the voting system and its components to operate correctly over a period of time. The measurement applied to this value is the Mean Time between Failure (MTBF) and is defined as the value of the ratio of operating time to the number of failures, which have occurred. A failure is defined as any event, which results in the loss or unacceptable degradation of one or more of the system functions.

The MTBF demonstrated during qualification testing, should be at least 163 hours. An event shall not be counted as a failure provided that the function can be fully restored within one-half hour for precinct count systems or one-quarter hour for central count systems. Restoration of function may be accomplished either by repair or by replacement of the defective components.

## Maintainability

The design and physical characteristics of equipment determine the ease with which maintenance actions can be performed.   Maintenance actions include all scheduled and unscheduled events, which are performed to:
- determine the operational status of the system and its elements
- adjust, align, or service circuits and components
- replace a circuit or component having a specified operating life or replacement interval
- repair or replace a circuit or component which exhibits a predetermined physical condition or performance degradation
- repair or replace a circuit or component which has failed and verify the restoration of the circuit, a component or the system to operational status

Qualitative measures of maintainability include:
- the ease of access to internal components
- the presence of labels
- the identification of test points,
- the provision of built-in test and diagnostic circuitry or physical indicators of condition
- the ease with which adjustment and alignment can be performed

- the ease with which electrical and mechanical interfaces may be disconnected to facilitate the removal and replacement of circuits and components

Quantitative measures of maintainability include the following indices:

***Mean Time to Repair   (MTTR) -*** MTTR is the average time required to perform a corrective maintenance task. Corrective maintenance task time is actual repair time, *excluding* logistic or administrative delays.

Corrective maintenance may also consist of substitution of the complete device or component, or it may consist of on site repair.

MTTR attributes of systems and components shall be sufficient to achieve, in combination with their MTBF, the required reliability and availability.

***Maximum Repair Time   (MAX) -*** The frequency distribution of active repair times for precinct count systems must demonstrate less than a 1 percent probability, and for central count systems less than a 5 percent probability, that an unscheduled maintenance action shall require more than 1.0 hour to complete.

In the event that this requirement is not met for any component or for the complete system, then an equivalent component or system shall be provided and placed in a ready standby state throughout the operating period.

***Maintenance Ratio   (MR) -*** Maintenance ratio is the ratio of total maintenance man-hours (MMH) to total operating hours (OH).

MMH shall equal the sum of the scheduled and unscheduled maintenance man-hours spent on all units of equipment in the system, and OH shall include the nominal time of system operation, including the time required to prepare the system for an election and the time required to conduct post-election operations.

The maintenance ratio for any type of system shall not exceed 0.25 MMH/OH.

***Availability   (Ai) -*** Availability is the probability that the system will respond to an operational demand.

It is the ratio of the time during which the system is operational (up time) to the total time period (up time plus down time).

System availability as here defined shall be at least 0.99, calculated based on the following formula: $Ai = (MTBF)/(MTBF + MTTR)$

# Environmental Conditions

The environmental conditions applicable to the design and operation of voting systems consist of three categories:

1. The **NATURAL** environment
   It includes the effects of temperature, humidity, and atmospheric pressure.

2. The **INDUCED** environment
   It includes both the effects of use, such as the proper and improper operation and handling of the system and its components during the election processes, and the effects of transportation and storage.

3. The **ELECTROMAGNETIC SIGNAL** environment
   It includes the exposure to and the generation of radio frequency energy.

## Temperature

Voting systems of all types shall withstand exposure to the following temperature conditions during operation and non-operation.

| Ambient Temperature Ranges | | | |
|---|---|---|---|
| (Degrees Fahrenheit) | | | |
| Operating | | Non-Operating | |
| Maximum | Minimum | Maximum | Minimum |
| 100 | 40 | 130 | -15 |

## Vibration

Voting systems shall withstand the vibration environment accompanying handling and transportation. The equipment shall have, or be provided with, a protective container enabling it to withstand, the conditions specified in the Vibration Test Procedure of this document.

## Shock

Voting systems shall be capable of withstanding the conditions specified in the Test Procedure for Transit Drop and Bench Handling in this document.

## Electromagnetic Radiation

Voting systems shall comply with the Rules and Regulations of the Federal Communications Commission Title 47, Part 15, Subpart J of the Code of Federal Regulations, incorporated herein by reference.

As defined therein, Precinct count voting systems shall be considered a "Class B" and Central count systems shall be considered a "Class A" computing device.

[Code of Federal Regulations, Title 47, Parts 0 through 19, is available from the Superintendent of Documents, U. S. Government printing office, Washington, D. C. 20402.  Telephone (202) 512-1800]

## Product Marking

Components of voting systems shall be identified by means of a permanently affixed nameplate or label containing the name of the manufacturer or applicant, the name of

the device, its part or model number, its revision letter, and its serial number. Power requirements, if any, shall also be specified.

A separate data plate shall be similarly affixed which contains a schedule for and list of operations required to service or to perform preventive maintenance on the component, if there are any such requirements. Caution and warning advisory instructions required to assure safe operation of the equipment and to avoid exposure of the voter or operating and maintenance personnel to hazardous electrical voltages and moving parts shall be provided.

## Workmanship
Workmanship standards for voting systems shall meet or exceed standard commercial and industrial practice.

# Interchangeability

Applicants for certification or provisional certification of voting systems and components shall utilize design and construction features, which maximize interchangeability and thereby facilitate maintenance and the incorporation of product revisions or improvements.

# Safety and Human Engineering

Voting systems and components shall be designed so as to eliminate physical hazard to personnel or to the equipment itself.

Equipment design for personnel safety shall equal or exceed the appropriate requirements of the Occupational Safety and Health Act (OSHA) as identified in Title 29, part 1910 of the Code of Federal Regulations, incorporated herein by reference

> (Code of Federal Regulations, Title 29, Parts 1900-1910.999, Revised July 1, 1997, Stock Number 869-004-00108-8, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Telephone (202) 512-1800)

Voting systems and components shall be designed and constructed to simplify and to facilitate the functions required and to eliminate the likelihood of erroneous stimuli and responses on the part of the voter or operator.

## Controls and Displays
All controls used by the voter or equipment operator shall:
- be conveniently located,
- utilize designs which are consistent with their functions, and
- be clearly labeled

Instruction plates shall be provided if they are necessary to avoid ambiguity or incorrect actuation.

Information or data displays other than video ballot electronic voter interfaces shall be large enough to be readable by a person with normal eyesight from a normal operating distance with the level of ambient lighting suitable for equipment operation.

Status displays shall meet the same requirements as data displays, and they shall also follow conventional industrial practice with respect to color:

*Color*          *Indication*

| Color | Indication |
|---|---|
| • **Green** <br> • **Blue** <br> • **White** | Normal status |
| • **Amber** | Warnings or marginal status |
| • **Red** | Error conditions or equipment states which may result in damage to equipment or in hazard to personnel. |

Unless the equipment is designed to halt under conditions of incipient damage or hazard, an audible alarm shall also be provided.

# Documentation

Product documentation shall be provided with voting systems or components. This documentation shall be sufficient to serve the needs of the VOTER and the USER for purposes of defining elections, voting, and operating and maintaining the system.

### Voter Information

This documentation shall include instructions for voting.

### User Information

This documentation shall include a description of all steps taken to install the system.

This documentation shall include a description of all steps taken to operate the system; including, at minimum:
- instructions for energizing the equipment
- verifying operational status
- identifying all abnormal equipment states,
- defining and verifying election programming
- processing and tabulating ballots
- controlling the tabulation process
- monitoring system status
- recovering from any error conditions that might arise in the process
- preparing the reports from the system

### User Maintenance Information

This documentation shall contain:
- a complete physical and functional description of the equipment; how the processes of ballot handling and reading are performed, and how test and diagnostic information is acquired and used;

- a complete parts and materials list shall be provided which contains sufficient descriptive information to identify all parts by type, size, value, or range, and manufacturer's designation; and
- technical illustrations and schematic representations of electronic circuits shall be provided with indications of all test and adjustment points, fault detection, isolation, diagnostic, and correction procedures for commonly occurring operational abnormalities shall be provided.

## Logistics

The applicant shall identify all operating and support requirements of the system or component. These requirements include material, facilities, and personnel.

## Maintenance

The applicant shall identify all corrective and preventive maintenance tasks and the level at which they shall be performed.

Levels of maintenance shall include OPERATOR tasks, MAINTENANCE personnel tasks, and FACTORY repair.

### Operator Tasks

Operator tasks shall be limited to the activation of controls to identify irrecoverable error conditions and to the replenishment of consumables such as printer ribbons, paper, and the like.

### Maintenance Personnel Tasks

Maintenance personnel tasks shall include all field maintenance actions, which require access to internal portions of the equipment. They shall include the conduct of tests to localize the source of a malfunction; the adjustment, repair, or replacement of malfunctioning circuits or components; and the conduct of tests to verify restoration to service.

### Factory Repair Tasks

Factory repair tasks shall be minimized. They shall only include complex and infrequent maintenance functions that require access to proprietary or to specialized facilities and equipment that cannot be obtained by the user. They shall not number more than 2 percent of all maintenance tasks, and their frequency shall not exceed 5 percent of the total frequency for all corrective maintenance tasks.

## Supplies

The applicant shall recommend a standard complement of supplies, spares, and repair parts that will be required to support system operation. This list shall include the identification of these materials and their individual quantities, as well as sources from which they may be obtained. Supplies that are only available from the system vendor should be clearly identified.

## Facilities

The applicant shall identify and specify all facilities, furnishings, fixtures, and utilities that will be required to support system operation, maintenance, and storage.

## Personnel & Training

The applicant shall identify by function all personnel required to operate and support the system.

For each functional category, the number of personnel and their skills and skill levels shall be specified.

The applicant shall specify requirements for training of each category of operating and support personnel.

The applicant shall prepare and provide all proprietary materials required in the training activity and shall provide or otherwise arrange for the provision of qualified instructors on proprietary topics.

## Subsystem Interfaces

In order to facilitate the use of components from various suppliers into voting system configurations, the system user documentation shall include documentation of all interfaces between the system's major subsystems. This documentation will include at minimum, the interfaces between the:

- election management system and voter interface devices,
- election management system and the absentee ballot subsystem,
- election management system and the results accumulation system,
- voter interface devices and the results accumulation system,
- absentee ballot subsystem and the results accumulation system

## FLORIDA QUALIFICATION TESTS
### (TYPE, CRITERIA, EVALUATION & CONDITIONS)

☆ *Each Qualification Test is performed to evaluate the degree to which a system complies with the requirements of the Florida Voting Systems Standards*

☆ *The scope of each Qualification Test encompasses the entire range of environmental and operational factors that constitute the intended operating domain.*

☆ *Successful completion of each Qualification Test implies that the system or its components has met all applicable standards.*

**Physical Configuration Examination (PCE)** this is a prerequisite to all testing.

The Physical Configuration Examination is an examination of the voting system configuration and the applicant's specifications for configuration.   It is intended to verify that the voting system presented for testing is consistent with the configurations and support characteristics documented in the certification application.

**Functional Configuration Examination  (FCE)** this is a prerequisite to all testing.

A Functional Configuration Examination is an examination to verify that the software complies with the applicant's documentation and the functional requirements of the Florida Voting Systems Standards.  It is conducted so as to identify, inventory and document all elements of system functionality.

There are two categories of Qualification Tests.  The order or sequence in which the individual tests within those categories are conducted is arbitrary, provided that the requisite preconditions of each test have been accomplished before it is begun.

The two categories are non-operating and operating:

- **Non-Operating Tests**
  These tests require the use of an environmental test facility.  These tests are intended to evaluate the ability of the system hardware to withstand exposure to the various environmental conditions incidental to voting system storage, maintenance, and transportation. The procedures are based on test methods contained in Military Standard MIL STD 810D.

- **Operating Tests**

  These tests are performed partly in an environmental facility and partly in a nominal test laboratory or shop environment.   They involve operation for an extended period of time under various environmental conditions. The period of operation is sufficient to assure with confidence that the hardware meets or exceeds the minimum requirements for reliability and data accuracy contained in the Florida Voting Systems Standards. The procedure emphasizes equipment operability and data accuracy.

## Testing Criteria

All equipment and computer programs used in a voting system shall be examined to determine their suitability for elections use and tested according to the procedures contained in the Florida Voting Systems Standards.

Equipment to be tested shall be equivalent in form and function with production units.

Engineering or developmental prototypes are not acceptable unless the applicant can show that the equipment to be tested will perform in all respects the same as, and are constructed in a manner representative of, standard production units.

**Qualification tests shall not be required** for the following types of equipment, and their suitability for election use shall be determined by functional tests that integrate them with the remainder of the system:

> Standard production models of general purpose data processing equipment previously qualified with respect to the relevant requirements of the Florida Voting Systems Standards, or otherwise shown to be compatible with these requirements and with the voting system.

> Any ancillary components which do not perform or interact with the performance of voting system programming, ballot reading, data processing, or the production of voting system output.

**Qualification tests shall be used** to determine compliance with applicable performance standards for the system and its components.  The general procedure for these tests shall:

- **Verify**, by means of applicant's standard operating procedure, that the equipment is in a normal condition and status.
- **Establish** the standard test environment or the special environment required to perform the test.
- **Invoke** all operating modes or conditions necessary to initiate or to establish the performance characteristic to be tested.
- **Measure & Record** the value or the range of values of the performance characteristic to be tested.
- **Verify**  all required measurements have been obtained, and that the equipment is still in a normal condition and status

## Performance Evaluation

Test data shall be evaluated to determine compliance with the requirements of this standard. No system or component shall be judged acceptable unless it meets or exceeds all performance criteria specified in the Florida Voting Systems Standards and successfully completes the procedures contained in the remainder of this section.

If any malfunction or data error is detected that would be classified as a relevant failure defined by the test procedure, its occurrence and the duration of operating time preceding it shall be recorded for inclusion in the analysis and the test shall be interrupted. If corrective action is taken to restore the equipment to a fully operational condition within 8 hours, then the test may be resumed at the point of suspension.

If the test must be suspended for an extended period of time, a record of the procedures that have been satisfactorily completed shall be prepared. When testing is resumed at a later date, repetition of the successfully completed procedures shall not be required if:
- there has been no design or manufacturing change that would invalidate the applicability of the earlier test results,
- there has been no discovery of new or additional information about the system that would invalidate the earlier test plan or results, and
- data and records from the first test exist and can be used to restore the system to the state which it was in when testing was suspended so that the test may be continued from the point where testing was suspended

If a deficiency is apparent during testing, all failures which occurred as a result of the deficiency shall be classified as purged, and the test results shall be evaluated as though the failure or failures had not occurred, if the following are done:

- The applicant submits a design, manufacturing, or packaging change notice to correct a deficiency together with test data to verify the adequacy of the change;
- The examiner of the equipment agrees that the proposed change will correct the deficiency; and
- The applicant certifies that the change will be incorporated in all existing and future production units.

If corrective action cannot be successfully taken as outlined, the test shall be terminated, and the equipment shall be rejected.

## Test Conditions
Qualification tests may be performed in any facility capable of supporting the test environment.

When a test is to be performed at "standard" or "ambient" conditions, this requirement refers to a nominal laboratory or office environment, with a temperature in the range of 68 to 75 degrees Fahrenheit, and prevailing atmospheric pressure and relative humidity.

Otherwise, all tests shall be performed at the required temperature and electrical supply voltage regulated within the following tolerances:

| Temperature | ±4 degrees F |
|---|---|

| Electrical supply voltage | ±2 vac |
|---|---|

## Data Requirements

A test log of the procedure shall be maintained. This log shall identify the system and equipment by model and serial number. All test environment conditions shall be noted.

All operating steps, the identity and quantity of simulated ballots, annotations of output reports, the elapsed time for each procedure step, and observations of performance shall be recorded.

In the event that a deviation to requirements pertaining to the test environment, equipment arrangement and method of operation, the specified test procedure, or the provision of test instrumentation and facilities is required, this deviation shall be recorded in the test log together with a discussion of the reason for the deviation and a statement of the effect of the deviation on the validity of the test procedure.

# Hardware Qualification Tests

## Environmental Tests
### *(Non-Operating)*

A suite to include the following sequences....
**Transit Drop, Bench Handling, Vibration, Low Temperature,
High Temperature, Humidity, Rain Exposure,
and Sand & Dust Exposure**

Environmental tests of non-operating equipment are intended to simulate exposure to shock and vibration associated with handling and transportation by surface and air common carriers and to temperature conditions associated with storage in an uncontrolled warehouse environment.

The procedures and conditions of these tests correspond generally to those of MIL STD 810D, "Environmental Test Methods and Engineering Guidelines," 19 July 1983, which is hereby adopted and incorporated by reference; however, the severity of the test conditions has, in most cases, been reduced to reflect commercial and industrial, rather than military and aerospace, practice.

(MIL-STD-810D is available from the Standardization Documents Order Desk, Building 4, Section D, 700 Robbins Avenue, Philadelphia, Pennsylvania 19111.)

All equipment shall be operated in a manner and environment that simulates election use to verify the initial functional status of the system. Prior to conducting each of the environmental and extended operational tests defined below, a test shall be made to determine that the operational state of the equipment is within acceptable performance limits.

The equipment may then be prepared as if for actual transportation or storage and subjected to one or more of the following procedures, as required. After each procedure has been completed, the equipment status shall again be operated in a manner and environment that simulates election use to verify the initial functional status of the system.

The following requirements for equipment preparation, functional tests, inspections, and data acquisition shall apply to each of the non-operating test procedures:

### Pretest Data

The test technician shall verify that the equipment is capable of normal operation by means of the procedure described above in the Functional Tests section of the Florida Voting Systems Standards.

Equipment identification, environmental conditions, equipment configuration, tests instrumentation, operator tasks, time-of-day or tests time, and test results shall be recorded.

### Preparation for Test

The equipment shall be prepared as for shipping or storage and shall include any protective enclosures or internal restraints normally used for transportation and handling.

### Mechanical Inspection & Repair

After the test has been completed, the devices shall be removed from their containers, and internal restraints, if any, shall be removed. The exterior and interior of the devices shall be inspected for evidence of mechanical damage, failure, or dislocation of internal components. Devices shall be adjusted or repaired, if necessary.

### Electrical Inspection & Adjustment

After completion of the mechanical inspection and repair, routine electrical maintenance and adjustment may be performed according to the manufacturer's standard procedure.

### Test Data

A test log of the procedure shall be maintained. This log shall identify the system and equipment by model and serial number. All operating steps and observations of equipment condition and performance shall be recorded.

# Transit Drop Test

All systems and components that are designed to be transported from place to place within a normal cycle of use, such as precinct tabulation equipment, shall meet the requirements of this test.

This test is equivalent to the Transit Drop Test for equipment weighing between 100 and 1000 pounds (corner drop), MIL STD 810D, Method 516.3, Procedure IV, except that the drop height specified in Table 516.3-II therein is reduced to 12 inches. Drops shall be made from a quick-release hook or drop tester.

### *Procedure*

| Step #1 | Arrange the system for normal operation. |
|---|---|
| Step #2 | Turn on power, and allow the system to reach design-operating temperature. |
| Step #3 | Perform any servicing and make any adjustments necessary to achieve operational status. |
| Step #4 | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| Step #5 | Verify that all system functions have been correctly executed. |
| Step #6 | Install each piece of equipment on the drop test fixture, positioned so that the point of impact will be a corner of the container, and so that a vertical line through the point of impact will pass through the center of gravity. |
| Step #7 | Perform the drop from a height of 12 inches. |
| Step #8 | Inspect the container. Record any evidence of damage. |
| Step #9 | Reposition the equipment and repeat steps 6 through 8, until a drop has been performed on each corner, a total of eight drops. |
| Step #10 | Arrange the system for normal operation. |
| Step #11 | Turn on power, and allow the system to reach design-operating temperature. |
| Step #12 | Perform any servicing and make any adjustments necessary to achieve operational status. |
| Step #13 | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| Step #14 | Verify that all system functions have been correctly executed. |

# Bench Handling Test

All systems and components shall meet the requirements of this test. This test is equivalent to the procedure of MIL STD 810D, Method 516.3, Procedure VI.

### *Procedure*

| | |
|---|---|
| **Step #1** | Arrange the system for normal operation. |
| **Step #2** | Turn on power, and allow the system to reach design-operating temperature. |
| **Step #3** | Perform any servicing and make any adjustments necessary to achieve operational status. |
| **Step #4** | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| **Step #5** | Verify that all system functions have been correctly executed. |
| **Step #6** | Place each piece of equipment on a level floor or table as for normal operation or servicing. |
| **Step #7** | Make provision, if necessary, to restrain lateral movement of the equipment or its supports at one edge of the device. Vertical rotation about that edge shall not be restrained. |
| **Step #8** | Using that edge as a pivot, raise the opposite edge to an angle of 45 degrees and to a height of four inches above the surface or until the point of balance has reached, whichever occurs first. |
| **Step #9** | Release the elevated edge so that it may drop to the test surface without restraint. |
| **Step #10** | Repeat steps 7, 8,  and 9  for a total of six events. |
| **Step #11** | Repeat steps 6, 7, 8, 9, and 10 for the other base edges, for a total of 24 drops for each device. |
| **Step #12** | Arrange the system for normal operation. |
| **Step #13** | Turn on power, and allow the system to reach design-operating temperature. |
| **Step #14** | Perform any servicing and make any adjustments necessary to achieve operational status. |
| **Step #15** | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| **Step #16** | Verify that all system functions have been correctly executed. |

# Vibration Test

All systems and components shall meet the requirements of this test. This test is equivalent to the procedure of MIL STD 810D, Method 514.3, Category 1 -- Basic Transportation.

### *Procedure*

| | |
|---|---|
| **Step #1** | Arrange the system for normal operation. |
| **Step #2** | Turn on power, and allow the system to reach design-operating temperature. |
| **Step #3** | Perform any servicing and make any adjustments necessary to achieve operational status. |
| **Step #4** | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| **Step #5** | Verify that all system functions have been correctly executed. |
| **Step #6** | Attach instrumentation as required to measure the applied excitation. |
| **Step #7** | Mount the equipment on a vibration table with the axis of excitation along the vertical axis of the equipment. |
| **Step #8** | Apply excitation as shown in MIL-STD810D, Method 514.3, Figure 514.3-1, "Basic transportation, common carrier, vertical axis," with low frequency excitation cutoff at 10 Hz., for a period of 30 minutes. |
| **Step #9** | Repeat steps 7 and 8 for the transverse and longitudinal axes of the equipment with the excitation profiles shown in Figures 514.3-2 and 514.3-3, respectively. Note: The total excitation period equals 90 minutes with 30 minutes excitation along each axis. |
| **Step #10** | Arrange the system for normal operation. |
| **Step #11** | Turn on power, and allow the system to reach design-operating temperature. |
| **Step #12** | Perform any servicing and make any adjustments necessary to achieve operational status. |
| **Step #13** | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| **Step #14** | Verify that all system functions have been correctly executed. |

# Low Temperature Test

All systems and components shall meet the requirements of this test. This test is equivalent to the procedure of MIL-STD-810D, Method 502.2, Procedure I Storage. The minimum temperature shall be -15 degrees F.

### *Procedure*

| Step #1 | Arrange the system for normal operation. |
|---------|------------------------------------------|
| Step #2 | Turn on power, and allow the system to reach design-operating temperature. |
| Step #3 | Perform any servicing and make any adjustments necessary to achieve operational status. |
| Step #4 | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| Step #5 | Verify that all system functions have been correctly executed. |
| Step #6 | Arrange the equipment as for storage. Install it in the test chamber. |
| Step #7 | Lower the internal temperature of the chamber at any convenient rate but not so rapidly as to cause condensation in the chamber and in any case no more rapidly than 10 degrees F. per minute until an internal temperature of -15 degrees F. has been reached. |
| Step #8 | Allow the chamber temperature to stabilize. Maintain this temperature for a period of 4 hours after stabilization. |
| Step #9 | Allow the internal temperature of the chamber to return to standard laboratory conditions at a rate not exceeding 10 degrees F. per minute. |
| Step #10 | Allow the internal temperature of the equipment to stabilize at laboratory conditions before removing it from the chamber. |
| Step #11 | Remove the equipment from the chamber and from its containers, and inspect the equipment for evidence of damage. |
| Step #12 | Arrange the system for normal operation. |
| Step #13 | Turn on power, and allow the system to reach design-operating temperature. |
| Step #14 | Perform any servicing and make any adjustments necessary to achieve operational status. |
| Step #15 | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| Step #16 | Verify that all system functions have been correctly executed. |

# High Temperature Test

All systems and components shall meet the requirements of this test. This test is equivalent to the procedure of MIL STD 810D, Method 501.2, Procedure I Storage. The maximum temperature shall be 130 degrees F.

### *Procedure*

| Step #1 | Arrange the system for normal operation. |
|---|---|
| Step #2 | Turn on power, and allow the system to reach design-operating temperature. |
| Step #3 | Perform any servicing and make any adjustments necessary to achieve operational status. |
| Step #4 | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| Step #5 | Verify that all system functions have been correctly executed. |
| Step #6 | Arrange the equipment as for storage. Install it in the test chamber. |
| Step #7 | Raise the internal temperature of the chamber at any convenient rate, but in any case no more rapidly than 10 degrees F. per minute, until an internal temperature of 130 degrees F. Has been reached. |
| Step #8 | Allow the chamber temperature to stabilize. Maintain this temperature for a period of 4 hours after stabilization. |
| Step #9 | Allow the internal temperature of the chamber to return to standard laboratory conditions, at a rate not exceeding 10 degrees F. per minute. |
| Step #10 | Allow the internal temperature of the equipment to stabilize at laboratory conditions before removing it from the chamber. |
| Step #11 | Remove the equipment from the chamber and from its containers, and inspect the equipment for evidence of damage. |
| Step #12 | Arrange the system for normal operation. |
| Step #13 | Turn on power, and allow the system to reach design-operating temperature. |
| Step #14 | Perform any servicing and make any adjustments necessary to achieve operational status. |
| Step #15 | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| Step #16 | Verify that all system functions have been correctly executed. |

# Humidity Test

All systems and components shall meet the requirements of this test to evaluate the ability of the equipment to survive exposure to an uncontrolled temperature and humidity environment during storage.

This test is similar to the procedure of MIL STD 810D, Method 507.2, Procedure I -- Natural. The equipment shall be in a non-operating storage configuration, and a protective cover or enclosure shall be in place if the system configuration includes one.

### *Procedure*

| Step #1 | Arrange the system for normal operation. |
|---|---|
| Step #2 | Turn on power, and allow the system to reach design-operating temperature. |
| Step #3 | Perform any servicing and make any adjustments necessary to achieve operational status. |
| Step #4 | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| Step #5 | Verify that all system functions have been correctly executed. |
| Step #6 | Install the equipment in the test chamber. Adjust the chamber conditions to those given in MIL-STD-810D, Table 507.2-I for the time 0000 of the Hot-Humid cycle (Cycle 1). |
| Step #7 | Perform a 24-hour cycle with the time and temperature-humidity values specified in Figure 507.2-1, Cycle 1. |
| Step #8 | Repeat Step 7 until 5 24-hour cycles have been completed. |
| Step #9 | Continue with the test commencing with the conditions specified for time = 0000 hours. |
| Step #10 | At any convenient time in the interval between time = 120 hours and time = 124 hours, place the equipment in an operational configuration, and perform a complete functional test. |
| Step #11 | If the equipment satisfactorily completes the functional test, continue with the sixth 24-hour cycle. |
| Step #12 | Perform 4 additional 24-hour cycles, terminating the test at time = 240 hours. |
| Step #13 | Remove the equipment from the test chamber and inspect it for any evidence of damage. |
| Step #14 | Arrange the system for normal operation. |
| Step #15 | Turn on power, and allow the system to reach design-operating temperature. |
| Step #16 | Perform any servicing and make any adjustments necessary to achieve operational status. |
| Step #17 | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| Step #18 | Verify that all system functions have been correctly executed. |

# Rain Exposure Test

All systems and components which are designed to be transported from place to place within a normal cycle of use, such as precinct tabulation equipment, shall meet the requirements of this test to evaluate the ability of the equipment to survive exposure to falling water from condensation, to leakage from upper surfaces, and to rain for a brief period of time incidental to transportation between a storage facility or polling place and a covered vehicle.

This test is similar to the procedure of MIL STD 810D, Method 506.2, Procedure II -- Drip. The equipment shall be in a non-operating, transportable configuration, and a protective cover shall be in place if the system configuration includes one.

### *Procedure*

| | |
|---|---|
| **Step #1** | Arrange the system for normal operation. |
| **Step #2** | Turn on power, and allow the system to reach design-operating temperature. |
| **Step #3** | Perform any servicing and make any adjustments necessary to achieve operational status. |
| **Step #4** | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| **Step #5** | Verify that all system functions have been correctly executed. |
| **Step #6** | Install the equipment in the test facility. Provide a means of dispensing water at a rate of 7 gallons per square foot per hour, as illustrated in MIL-STD-810D, Figure 506.2-1. |
| **Step #7** | Subject the equipment to water falling from a height of approximately 3 feet for a period of 15 minutes. |
| **Step #8** | At the conclusion of the 15-minute exposure, remove the equipment from the test facility. Open or remove panels as necessary to allow the interior to be inspected. |
| **Step #9** | Inspect the test item for evidence of water intrusion. |
| **Step #10** | Arrange the system for normal operation. |
| **Step #11** | Turn on power, and allow the system to reach design-operating temperature. |
| **Step #12** | Perform any servicing and make any adjustments necessary to achieve operational status. |
| **Step #13** | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| **Step #14** | Verify that all system functions have been correctly executed. |

## Sand & Dust Exposure Test

All systems and components that are to be transported from place to place within a normal cycle of use, such as precinct tabulation equipment, shall meet the requirements of this test.

This test is similar to the procedure of MIL STD 810D, Method 510.2, Procedure I Blowing Dust. This test is intended to evaluate the ability of the equipment to survive exposure to dust and fine sand that may penetrate into cracks crevices, switches, display surfaces, and electromechanical parts. The equipment shall be in a non-operating, stowed configuration, and a protective cover shall be in place if the system configuration includes one.

### *Procedure*

| | |
|---|---|
| **Step #1** | Arrange the system for normal operation. |
| **Step #2** | Turn on power, and allow the system to reach design-operating temperature. |
| **Step #3** | Perform any servicing and make any adjustments necessary to achieve operational status. |
| **Step #4** | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| **Step #5** | Verify that all system functions have been correctly executed. |
| **Step #6** | Install the equipment in a test facility that meets the requirements of MIL-STD-810D, Method 510.2, Section II, and Subsection II-1.1.1. |
| **Step #7** | Adjust the test section temperature to 23 degrees C. (73 degrees F.) and the relative humidity to less than 30 percent. Maintain this relative humidity throughout the remainder of the test. |
| **Step #8** | Adjust the air velocity to 1.5 meters per second (300 feet per minute). |
| **Step #9** | Adjust the dust feed control for a dust concentration of 10.6 ± 7 grams per cubic meter (0.3 ± 0.2 grams per cubic foot). |
| **Step #10** | Maintain the conditions of Steps 2 through 4 for at least 6 hours. |
| **Step #11** | Stop the dust feed and increase the test section air temperature to 32 degrees C. (90 degrees F.). Maintain this condition until the internal temperature of the equipment has stabilized. |
| **Step #12** | Adjust the air velocity as in Step 3. Restart the dust feed to maintain the dust concentration as in Step 4. |
| **Step #13** | Continue the exposure for at least 6 hours. |
| **Step #14** | Turn off all chamber controls and allow the equipment to return to room temperature. |
| **Step #15** | Remove accumulated dust from the equipment by brushing, wiping, or shaking, taking care to avoid introducing additional dust into the equipment. Do not remove dust by air blast or vacuum cleaning. |
| **Step #16** | Inspect the interior of the equipment for evidence of dust intrusion and damage. |
| **Step #17** | Arrange the system for normal operation. |
| **Step #18** | Turn on power, and allow the system to reach design-operating temperature. |
| **Step #19** | Perform any servicing and make any adjustments necessary to achieve operational status. |
| **Step #20** | Operate the equipment in all modes, demonstrating all functions and features that would be utilized during election operations. |
| **Step #21** | Verify that all system functions have been correctly executed. |

# Environmental Tests

# *(Operating)*

## Applicability
All systems and components shall meet the requirements of this test.

## Test Design
This test is similar to the low temperature and high temperature tests of MIL STD 810D, Method 502.2 and Method 501.2, with test conditions that correspond to the requirements of the Performance Standard.

The temperature range for equipment operation

| Ambient Temperature Ranges | |
|---|---|
| (Degrees Fahrenheit) | |
| **Minimum** | **Maximum** |
| 40 | 100 |

This test procedure is a Probability Ratio Sequential Test (PRST). The test design does not assess the specific values of test parameters. It provides decision criteria for accepting or rejecting one of two test hypotheses; namely, that the equipment demonstrates performance at least as good as the Nominal Specification Value (NSV) for the parameter or that it fails to demonstrate performance equal to or better than the Minimum Acceptable Value (MAV).

The probability ratio is derived from the exponential probability distribution. This distribution implies a constant hazard rate. Therefore, two or more systems may be tested simultaneously to accumulate the required number of test hours, and the validity of the data is not affected by the number of operating hours on a particular unit of equipment. However, no unit shall be subjected to less than two complete 24-hour test cycles.

## Decision Risks
There are two decision risks associated with the PRST. One of these is called the "producer's risk"; it is the probability that a system will be rejected when, in fact, it is acceptable. The other is the "consumer's risk"; it is the probability that a system will be accepted when, in fact, it is unacceptable.  In this procedure, values of 0.10 are used for both risks. Consequently, there is at least a 90 percent probability that the system will be accepted if its MTBF is as great as or greater than the NSV, and there is at least a 90 percent probability that the system will be rejected if its MTBF is as low as or lower than the MAV.

**Test Materials**

This test shall be performed with test ballots and a counting program which are sufficient to accomplish the procedural steps listed below and to demonstrate the data accuracy required by the acceptance criteria of this section.

**Test Ballots**

Test ballots shall be punched or marked so that a statistically significant number of votes will be obtained. A pattern of votes chosen to facilitate visual recognition of the reported totals is recommended, and this pattern need not exercise all possible voting locations and all ballot interpretation logic features.

Test decks should include at least 100 ballots, each with a minimum of 10 votes. A test deck will be read ten or more times per vote counting cycle, as specified below.

**Counting Program**

The ballot counting program for this test may be a simplified one, sufficient to process the test deck described above. However, the test ballot counting program shall enable system features such as data quality tests, error logging, and procedure tracking audit reports.

**Procedure**

This procedure involves system operation under various environmental conditions. Operation will consist of ballot counting cycles that vary with system type. The generation of an output report after each counting cycle is optional; however, the interval between reports is to be no more than 4 hours in order to keep the time between the occurrence of a failure or data error and its detection at a practical minimum.

| Test Ballots per Counting Cycle | |
|---|---|
| Precinct Count Systems | 100 |
| Central Count Systems | 300 |

The system shall be energized for the entire period of this test, and power may be disconnected only if necessary when the system is removed from the test chamber.

During each 12-hour segment of the following procedure, the equipment will be operated for at least 12 ballot-counting cycles, and it is recommended that the interval between successive operations not exceed 2 hours.

Each operation shall consist of the processing of the number of ballots indicated above for a ballot counting cycle. The performance shall be observed and recorded in detail and quantity sufficient to permit determination of the achieved level of performance for each characteristic.

| Step #1 | Arrange the equipment in the test chamber. Connect as required and provide for power, control, and data service through enclosure wall. |
|---|---|
| Step #2 | Set supply voltage at 117 vac. |
| Step #3 | Energize the equipment and perform functional tests. |
| Step #4 | Set the chamber temperature at the low operating limit, observing precautions against thermal shock and condensation. |
| Step #5 | Begin 24-hour cycle. |
| Step #6 | At T = 4 hrs, lower the supply voltage to 105 vac. |
| Step #7 | At T = 8 hrs, raise the supply voltage to 129 vac. |
| Step #8 | At T = 11:30 hrs, return supply voltage to 117 vac. and return chamber temperature to lab ambient, observing precautions as in Step 4. |
| Step #9 | At T = 12:00 hrs, set the chamber temperature at the high operating limit. |
| Step #10 | Repeat Steps 5 thru 8, with temperature at the high operating limit, complete at T=24 hrs. |
| Step #11 | Set the chamber temperature at the low operating limit as in Step 4. |
| Step #12 | Repeat the 24-hour cycle as in Steps 5-10, complete at T = 48 hrs. |
| Step #13 | After completing the second 24-hour cycle, disconnect power from the system and remove it from the chamber. |
| Step #14 | Reconnect the system as in Step 2, and continue testing until the ACCEPT/REJECT criteria of this section have been met. |

Successful completion of the "Environmental, Operating" test shall be determined by two criteria.... The NUMBER OF FAILURES and the ACCURACY OF VOTE COUNTING

## Failure Criteria
System acceptance or rejection on failures is determined by observing the number of relevant failures that occur during equipment operation.

| Failure Acceptance Criteria | | |
|---|---|---|
| Number of FAILURES | ACCEPT (if time greater than) | REJECT (if time less than) |
| 0 | 163 Hours | --- |
| 1 | 245 Hours | --- |
| 2 | 327 Hours | --- |
| 3 | 409 Hours**(a)** | 84 Hours**(b)** |
| (a) truncate and ACCEPT | (b) truncate and REJECT | |

The test is terminated and an ACCEPT decision is reached when the cumulative number of equipment hours in the second column has been reached and the number of failures is equal to or less than the number shown in the first column.

The test is terminated and a REJECT decision is reached when the number of failures occurs in less than the number of hours tabulated in the third column.

In the event that no decision has been reached by the times shown in the last table entries, the test shall be terminated and the decision shall be declared as indicated therein.

## Data Accuracy Criteria

Data accuracy criteria demonstrate that the accuracy requirements of these standards were achieved by the system under test. Test ballots for this test may be of any format which is capable of generating a large number of voting marks in each counting cycle. Ballot reading logic capability is not exhaustively tested by the procedure.

## Procedure

In the event of discrepancy among the totals for any ballot position obtained on each of the ballot counting cycles or among the sums of the totals for all of the ballot positions, the following procedure shall apply.

| | |
|---|---|
| **Step #1** | For each ballot position, compute the difference between the largest and the smallest totals. |
| **Step #2** | Sum the differences for all ballot positions. |
| **Step #3** | Sum the totals for all ballot positions on each counting cycle. |
| **Step #4** | Compute the sum of all ballot positions on all counting cycles. |
| **Step #5** | Compute the ratio of the sum of the differences from Step 2 to the sum of all votes from Step 4. |
| **Step #6** | If the ratio from Step 5 is less than 1/300,000, accept the system and terminate the test; otherwise proceed to Step 7. |
| **Step #7** | If the ratio from Step 5 is equal to or greater than 1/167,000, reject the system; otherwise proceed to Step 8. |
| **Step #8** | If the Division and the applicant agree that the cause of the discrepancy can be identified and corrected and if this corrective action is taken, repeat the test in its entirety; otherwise, reject the system. |

# System Qualification Tests

The applicant's source code and documentation shall be reviewed to verify that the software conforms to the documentation and that the documentation is sufficient to enable the Division to design and conduct all tests at any level of the software structure to verify that the software meets the requirements and objectives of its design specification.

Either the division staff or the ITA, which will conduct software qualification tests, shall witness compilation of the source code into baseline object code.  The baseline object code and the object code tested must be identical.  The object code tested and certified must be identical to the object code released.   A copy of the baseline object code will be retained by the Division and used to verify that the baseline code, tested code, and the release code are identical.

Once the Division has conducted a review of system software and documentation, test plans shall be designed to exercise all system functions controlled by software under nominal load and data conditions and throughout the range of conditions for which performance is claimed.

The first phase of Florida System Qualification Testing is designed to evaluate the system software's functionality, and to establish baselines for the system being tested. Phase One testing typically consists of the following types of activities:

## Audit of software and hardware configurations
- Audit object code against software to be used in testing, and verify installation CD's to be used in test against ITA final installs
- perform system configuration audits on all equipment
- delete software from test PC
- install system software
- print a directory of all software on test PC

## Database construction
- enter election specifications for primary, and general elections
- enter jurisdiction, party, precinct, and polling place descriptions
- create ballot styles, and design a ballot face which incorporates all  voting positions
- load election definitions onto PCMCIA cards
- test ballots on marksense or DRE system

At the conclusion of Phase One testing, copies of all program, and data files will be made and kept by the Division. These files will serve as a baseline for Phase II testing. Upon successful completion of all Phase I testing requirements, applicants may make arrangements for Phase II testing. Should anomalies arise during Phase I testing, any remedial measures undertaken by an applicant will be reviewed, and tested as a part of Phase II testing.

Phase II testing is designed to test for total system functionality. The following are among the functions which will normally be tested during Phase II of Florida's Qualification testing:

- casting the primary and general election ballots which were generated during Phase I testing
- voting absentee ballots
- tabulation of votes cast
- precinct closing
- results accumulation and consolidation
- transmission of results over communications link
- error recovery techniques
- manual editing of results, audit log production
- election night reporting
- high volume ballot processing test (if required)

Detailed information regarding specific tests, which may be required as a part of Florida System Qualification Testing, is provided to assist applicants in preparing for Qualification Testing ahead of time.

## Precinct Count System Software

Qualification tests for **PRECINCT COUNT SYSTEM** software shall verify proper performance of all system functions and ballot counting logic.  The number of test ballots processed by each precinct tabulator shall be at least 9,900.

Ballots counted during hardware test procedures may serve to satisfy all or part of this requirement provided that the ballots were marked and counted by procedures equivalent to one or more of the procedures listed below.

| Type | Testing Objectives | Procedures to be followed |
|---|---|---|
| **Precinct Count Systems** | **To prepare election programs** | (a) Validate resident firmware, if any.<br>(b) Prepare software or firmware to simulate all ballot format and logic options for which the system will be used.<br>(c) Validate program memory device content.<br>(d) Procure test ballots with formats and voting patterns sufficient to verify performance of the test election programs. |
| | **To program ballot counters** | (a) Install program and data memory devices, or verify presence if resident.<br>(b) Verify functional status of hardware. |
| | **To simulate opening of the polls.** | (a) Perform procedures required to prepare hardware for election operations.<br>(b) Obtain "zero" printout or other evidence that data memory has been cleared.<br>(c) Verify audit record of pre-election operations.<br>(d) Perform procedure required to open the polling place and enable ballot counting. |
| | **To simulate counting ballots** | (a) Cast test ballots in a number sufficient to demonstrate proper processing, error handling and audit log entry generation. |
| | **To simulate the closing of the polls** | (a) Perform hardware operations required to disable ballot counting and close the polls.<br>(b) Obtain data reports and verify correctness.<br>(c) Obtain audit log and verify correctness. |

## Central Count System Software

Qualification tests for central count system software shall verify proper performance of all system functions and ballot counting logic. The number of test ballots processed by each central count system shall be at least 192,000 ballots. Ballots counted during hardware test procedures may serve to satisfy all or part of this requirement provided that the ballots were marked and counted by procedures equivalent to one or more of the procedures listed below.

| Type | Testing Objectives | Procedures to be followed |
|------|-------------------|---------------------------|
| **Central Count Systems** | **To prepare election programs** | (a) Validate resident firmware, if any.<br>(b) Prepare software or firmware to simulate ballot format and logic options sufficient to demonstrate proper processing, error handling, and audit log entry generation from at least 10 polling places or precincts.<br>(c) Validate program memory device content.<br>(d) Procure test ballots with formats, voting patterns, and format identifications sufficient to verify performance of the test election counting programs. |
| | **To prepare for ballot counting** | (a) Install program and data memory devices, or verify presence if resident.<br>(b) Verify functional status of hardware. |
| | **To simulate counting ballots** | (a) Count test ballots in a number sufficient to demonstrate proper processing, error handling, and audit log entry generation. |
| | **To simulate election reports** | (a) Obtain reports at polling place or precinct level.<br>(b) Obtain consolidated reports, if this is a feature of the system.<br>(c) Provide query access, if this is a feature of the system.<br>(d) Verify correctness of all reports and queries.<br>(e) Obtain audit log and verify correctness. |

# System-Level Tests

System level qualification tests require the integrated operation of both hardware and software. They include two examinations: an examination of the **PHYSICAL** attributes of the system and an examination of the **FUNCTIONAL** attributes.

## Physical Configuration Examination

The Physical Configuration Examination (PCE) is an examination of the voting system configuration and the applicant's specifications for configuration to establish a configuration baseline for approval.

If the software is to be run on any equipment other than a standard data processing system mainframe, minicomputer, or microcomputer, the PCE shall include an examination of all drawings, specifications, technical data, and test data associated with the system hardware.

All subsequent changes to the system, which may result in a change in its operation, shall also be subject to re-examination.

### *Support*
The applicant shall provide a list of all documentation and data to be examined, and applicant technical personnel shall be available to assist in the performance of the PCE.

### *Technical Data*
The applicant shall provide the following technical data:

| #1 | Identification of all items which are to be parts of the software release. |
|---|---|
| #2 | Identification of all hardware which interfaces with the software. |
| #3 | Configuration baseline data for all hardware. |
| #4 | Copies of all software documentation which is intended for users, including program listings, specifications, operator manuals, user manuals, and software maintenance manual. |
| #5 | User acceptance test procedure and acceptance criteria. |
| #6 | An identification of any changes between the physical configuration of the submittal and the configuration submitted for the FCE and a statement that these differences do not degrade the functional characteristics. |
| #7 | In the event that changes are being submitted to previously qualified systems, a description of all changes and the results of all tests performed to verify the proper function of the changes. |

### *Examination Procedure*

The source code and documentation shall be reviewed to verify that the software conforms to the documentation and that the documentation is sufficient to enable the user to install, validate, operate, and maintain the voting system.

The review shall also include an inspection of all records of the baseline version against the release control system to establish that the configuration being qualified conforms to the engineering and test data.

Acceptance test procedures and data shall be reviewed to assess their adequacy against the system's functional specifications. These procedures shall be executed during the qualification test and any discrepancy or inadequacy in the applicant's plan or data shall be resolved prior to the initiation of the qualification test.

## Functional Configuration Examination  (FCE)

A Functional Configuration Examination shall be performed to verify that the software complies with the applicant's documentation and the functional requirements of the Florida Voting Systems Standards.

Test data may be used in partial fulfillment of this requirement; however, the Division or a representative of the Division shall perform or supervise the performance of additional tests to verify nominal system performance in all operating modes and to validate the applicant's test data reports.

### *Developer Support*

The software developer shall provide a list of all documentation and data to be examined, and applicant technical personnel shall be available to assist in the performance of the FCE.

### *Technical Data*

The software developer shall provide the following technical data:

| #1 | Copies of all procedures used for module or unit testing, integration testing, and system testing. |
| #2 | Copies of all test cases generated for each module and test, sample ballot formats, or other test cases used for system tests. |

### *Examination Procedure*

The software developers test procedures and test results shall be reviewed to verify that all functional requirements contained in the Florida Voting Systems Standards have been adequately tested.

This review shall include an assessment of the adequacy of test cases and input data to exercise all system functions and to detect program logic and data processing errors if such be present, and shall also include an examination of all test data which is to be used as a basis for qualification, and all test data obtained from any procedure which is intended to be used as a basis for acceptance.

# Appendix- Definitions

The following words and phrases shall be construed as follows when used in the Florida Voting Systems Standards:

- "*Acceptance Test*." The examination of a voting system and its components by the purchasing authority to determine if delivered units perform in accordance with procurement requirements.

- "*Audio Ballot*" A voter interface which provides the voter with audio stimuli and allows the voter to communicate intent to the voting system through vocalization or physical actions.

- "*Audit Log*." A system-generated record, in either machine readable or printed format, providing a record of activities and events relevant to initialization of election software and hardware, identification of files containing election parameters, initialization of the tabulation process, processing of voted ballots, and termination of the tabulation process.

- "*Ballot Definition Subsystem*." This subsystem consists of hardware and software required to define ballot layouts for an election and to prepare election-specific software and firmware.

- *"Ballot Image*." A corresponding representation in electronic form of the marks, or vote positions of a ballot.

- "*Baseline."* The software configuration at the time of certification under this rule chapter. Future configurations of the software may be identified in terms of the baseline and the approved changes thereto.

- "*Bit Error Rate*." The number of errors divided by the total bits that are processed, which is the gauge of system accuracy.

- "*Central Count System*." A voting system which tabulates marksense absentee ballots at a regional consolidation or central counting place.

- "*Certification*." Means the certification of the Division attesting that the voting system complies with the requirements of Sections 101.5605 and 101.5606, FS, rule chapter 1S-5. Florida Administrative Code and this document.

- "*Checkpointing*." A recovery method designed with the system, which saves all information necessary to define the state of the system at some specified point in time.

- "*Computer Program."* A collection of instructions coded in a specific sequence according to specific rules that a computer can execute directly or that can be translated into object code that the computer can execute.

- "*Control Subsystem.*" This subsystem is resident in the voting or ballot counting device. It controls the readying of equipment and software for election use, pre-election validation testing, and readiness testing prior to opening the polling place.

- "*Conversion Subsystem.*" This subsystem is applicable only to marksense systems and consists of all devices and circuitry that are required to convert voting punches or marks into electronic signals.

- "*Data Accuracy.*" A term that refers to the system's ability to process voting data free of internal system generated errors.

- "*Data Integrity*." A term that refers to the invulnerability of the system to incidental or deliberate manipulation that would induce processing errors.

- *"DRE" or "Direct Recording Equipment Voting System."* A DRE voting system is one that record votes by means of a ballot display provided with mechanical or electro-optical devices which can be actuated by the voter.

- "*Division.*" The Department of State, Division of Elections.

- *"Driver."* A program or subprogram designed to control the operation of a specific piece of peripheral hardware, such as a card reader, printer, or disk drive. The driver takes into account the specific characteristics unique to the device.

- "*Electronic Voter Interface.*" A subsystem within a direct recording equipment voting system which communicates ballot information to a voter in Video, Audio, or Braille form and which allows the voter to select candidates and issues by means of vocalization or physical actions.

- "*Functional Test.*" A test performed to verify or validate the accomplishment of a function or a series of functions.

- "*ITA" or "Independent Test Authority*." A provider of engineering, testing, or evaluation services, certified by the National Association of State Election Directors as qualified to conduct qualification testing on voting systems, or providers of engineering, testing, or evaluation services who can demonstrate to the Division that they have adequate facilities, personnel, experience, and quality control systems, to conduct qualification tests and report test results in compliance with the requirements of this rule.

- "*Marksense Voting System.*" A system where votes are recorded by filling in designated response fields on a paper ballot with pen or pencil.

- "*Modified System.*" Voting system which was previously certified or otherwise met the requirements of sections 101.5605 and 101.5606, Florida Statutes, but due to modifications of the system, must be reviewed to determine continued compliance.

- "*Monitor.*" A computer program that detects, interprets, and executes a function designated by closure of a switch or by keyboard input. An operating system is a more elaborate program (including a monitor) that also performs or controls other system functions.

- "*Object Code.*" The binary code produced by a compiler or assembler that can be executed directly by a computer without further simplification. A machine-language program is written in object code.

- *"Precinct Count System."* A voting system which tabulates ballots at the polling place. Typically, this system is used to process ballots after they are voted and programmed to print the results of the tabulation after the close of polling.

- "*Processing Subsystem.*" This subsystem consists of hardware and software required to accumulate voting data for all candidates and measures at the machine and polling place levels, to consolidate the voting data at a central level or levels, to generate and maintain audit records, to detect and disable improper use or operation of the system, and to monitor overall system status.

- "*Qualification Testing.*" The examination and testing of a voting system by the Division, a representative of the Division, or an ITA to determine if the system complies with applicable standards.

- "*Register.*" An internal memory location dedicated for use as a mathematical accumulator or storage of critical system values.

- "*Source Code.*" A computer program written in a programming language and used to generate machine instructions through the use of assemblers or compilers.

- "*Validation.*" A test to find errors in hardware or software. The test is executed in a real environment, i.e., during acceptance tests.

- "*Verification.*" A test to find errors in hardware or software. The test is executed in a simulated environment, i.e., during system qualification.

- *"Video Ballot."* An electronic voter interface which presents ballot information and voting instructions as video images.

| Name of Applicant |  |  |
|---|---|---|
| Address |  |  |
| Address |  |  |
| City | State | Zip Code |
| Person to Contact |  |  |
| Telephone | FAX | E-Mail |

| Name and Release Level of Voting System |
|---|
|  |

| Brief Description of Voting System |
|---|
|  |

| Name and Release Level of Major Hardware, Firmware and Software Components of the Voting System Configuration |
|---|
|  |

This application is for (check one):
    Certification of a voting system
    Certification of modification to a previously certified voting system
    Provisional certification of a voting system

In making application for certification of the voting system listed above, I assert that the system meets the requirements of the Florida Election Code and the Florida Voting Systems Standards.  I agree to reimburse the Department of State an amount equal to the actual costs incurred in examining the system.

_____  _____-
_____
Name (Print or Type)                           Title

_____
_____
Signature                                       Date

FORM: DS DE 71 (7-98)