Test Plan for EAC 2005 VVSG Certification Testing Dominion Voting Systems Democracy Suite (D-Suite) Version 5.5-C Voting System

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SIGNATURES

Approved by: *Michael L. Walker*   04/13/2020

Michael Walker, VSTL Project Manager   Date

Approved by: *Wendy Owens*   04/13/2020

Wendy Owens, VSTL Program Manager   Date

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REVISIONS

Revision	Description	Date
00	Initial Release	04/02/2020
01	Updated per EAC comments. Added Smart Card information to Table 3.3. Added information to Section 1.1.2, Section 4.2, and Section 4.10.	04/13/2020

TABLE OF CONTENTS

1.0   INTRODUCTION

The purpose of this Test Plan is to document the procedures that Pro V&V, Inc. will follow to perform certification testing during a system modification campaign for the Dominion Voting Systems Democracy Suite (D-Suite) 5.5-C Voting System to the requirements set forth for voting systems in the U.S. Election Assistance Commission (EAC) 2005 Voluntary Voting System Guidelines (VVSG), Version 1.0. Prior to submitting the voting system for testing, Dominion Voting Systems submitted an application package to the EAC for certification of the D-Suite 5.5-C Voting System. The application was accepted by the EAC and the project was assigned the unique Project Number of DVS-DemSuite5.5-C.

At test conclusion, the results of all testing performed as part of this test campaign will be submitted to the EAC in the form of a national certification test report.

1.1   Description and Overview of EAC Certified System Being Modified

The EAC Certified System that is the baseline for the submitted modification is described in the following subsections. All information presented was derived from the previous Certification Test Report, the EAC Certificate of Conformance and/or the System Overview.

The D-Suite 5.5-C Voting System is a paper-based optical scan voting system. The D-Suite 5.5-C consists of the following major components: The Election Management System (EMS), the ImageCast Central (ICC), the ImageCast Precinct (ICP and ICP2), the ImageCast X (ICX) DRE w/ Reports Printer, ImageCast X (ICX) DRE w/VVPAT, the ImageCast Evolution (ICE), and the ImageCast X (ICX) BMD. The D-Suite 5.5-C Voting System configuration is a modification from the EAC approved D-Suite 5.5-B system configuration.

1.1.1   Baseline Certified System

The baseline system for this modification is the D-Suite 5.5-B Voting System. The D-Suite 5.5-B Voting System is a paper-based optical scan voting system with a hybrid paper/DRE option consisting of the following major components: The Election Management System (EMS), the ImageCast Central (ICC), the ImageCast Precinct (ICP and ICP2), the ImageCast Evolution (ICE), the ImageCast X (ICX) DRE w/ Reports Printer, ImageCast X (ICX) DRE w/ voter-verifiable paper audit trail (VVPAT), and the ImageCast X ballot marking device (BMD).

Detailed descriptions of the D-Suite 5.5-B test campaign are contained in Pro V&V Report No.TR-01-01-DVS-2019-01.02 Rev. 02, which is available for viewing on the EAC's website at www.eac.gov.

The following subsections describe the baselined D-Suite 5.5-B Voting System.

Election Management System (EMS)

The D-Suite 5.5-B EMS consists of various components running as either a front-end/client application or as a back-end/server application. A listing of the applications and a brief description of each is presented below.

Front-end/Client applications:

- EMS Adjudication: Represents the client component responsible for adjudication, including reporting and generation of adjudicated result files from ImageCast Central tabulators and adjudication of write-in selections from ImageCast Precinct and ImageCast Central tabulators. This client component is installed on both the server and the client machines.

- EMS Audio Studio: A client application that represents an end-user helper application used to record audio files for a given election project. As such, it is utilized during the pre-voting phase of the election cycle.

- EMS Election Data Translator: End-user application used to export election data from election project and import election data into election project.

- EMS Election Event Designer: A client application that integrates election definition functionality together with ballot styling capabilities and represents a main pre-voting phase end-user application

- ImageCast Voter Activation: An application, installed on a workstation or laptop at the polling place, which allows the poll workers to program smart cards for voters. The smart cards are used to activate voting sessions on ImageCast X.

- EMS Results Tally and Reporting: A client application that integrates election results acquisition, validation, tabulation, reporting, and publishing capabilities and represents the main post-voting phase end-user application.

Back-end/Server applications:

- EMS Adjudication Service: Represents a server side application which provides ballot information such as contests, candidates and their coordinates from EMS to the Adjudication application.

- EMS Application Server: Represents a server side application responsible for executing long running processes, such as rendering ballots, generating audio files and election files, etc.

- EMS Database Server: Represents a server side RDBMS repository of the election project database which holds all the election project data, including pre-voting and post-voting data.

- EMS Data Center Manager: A server application that represents a system level configuration application used in EMS back-end data center configuration.

- EMS File System Service: A back-end application that acts as a stand-alone service that runs on client machines, enabling access to low level operating system API for partitioning CF cards, reading raw partition on ICP CF card, etc.

- **EMS NAS Server:** Represents a server side file repository of the election project file based artifacts, such as ballots, audio files, reports, log files, election files, etc.

- **Smart Card Helper Service:** A service that is installed on a workstation or laptop at the polling place, and provides required data format for programming smart cards for ImageCast devices, or, for jurisdiction's voting registration system in case of integration.

ImageCast Precinct (ICP)

The ImageCast Precinct (ICP) device is a precinct optical scan ballot counter designed to provide three major functionalities: ballot scanning and tabulation, accessible voting, and ballot review and second chance voting. The ICP is used in conjunction with ImageCast compatible ballot storage boxes. The system is designed to scan marked paper ballots printed on standard or secure paper stock, interpret voter marks on the paper ballot, and safely store and tabulate each vote from each paper ballot. The ICP also supports enhanced accessibility voting through optional accessories connected to the ImageCast unit.

ImageCast Precinct (ICP2)

The ImageCast Precinct (ICP2) device is a precinct-based optical scan ballot counter designed to provide two major functionalities: ballot scanning and tabulation and ballot review and second chance voting. The ICP2 is used in conjunction with ImageCast compatible ballot storage boxes. The system is designed to scan marked paper ballots printed on standard or secure paper stock, interpret voter marks on the paper ballot, and safely store and tabulate each vote from each paper ballot.

ImageCast Evolution (ICE)

The ICE device is a precinct-level optical scan ballot counter designed to perform three major functions: ballot scanning and tabulation, ballot review and second chance voting, and accessible voting and ballot marking.

ImageCast Central (ICC) Count Scanner

The ImageCast Central (ICC) is a high-speed, central ballot optical scan tabulator based on Commercial off the Shelf (COTS) hardware, coupled with the custom-made ballot processing application software. It is used for high speed scanning and counting of paper ballots.

ImageCast X (ICX)

The Democracy Suite ImageCast X (ICX) consists exclusively of COTS available hardware and operating system, while the applications installed on top customize its behavior to turn it into a Ballot Marking Device (BMD) or a Direct-Recording Electronic (DRE) device with or without a Voter Verifiable Paper Audit Trail (VVPAT). ICX application is the application that verifies voter's session eligibility, using the smart card and then presents the appropriate ballot to the voter. When a voter is satisfied with choices selected, ICX application verifies them and produces an Electronic Mobile Ballot or stores the votes onto a memory device. The ICX is designed to perform the following functions:

- Ballot marking and printing of electronic mobile ballots (in BMD mode)

- Ballot review and second chance voting

- Accessible voting and ballot marking

- Saving voting results (in DRE mode)

- Printing votes on a voter verifiable paper audit trail device (when VVPAT is in use)

The tables below describe the certified equipment and firmware versions.

This subsection lists the proprietary and COTS software to be provided by the manufacturer as part of the test campaign.

Table 1-1. Democracy Suite 5.5-B EMS Software Component Descriptions

Software	Version	Filename	Configuration	
			Standard	**Express**
EMS Election Event Designer (EED)	5.5.32.4	setup.exe: EED_FED_CERT_Setup_x64.msi	X	X
EMS Results Tally and Reporting (RTR)	5.5.32.4	setup.exe: RTR_FED_CERT_Setup_x64.msi	X	X
EMS Application Server	5.5.32.4	setup.exe: APPS_FED_CERT_Setup_x64.msi	X	X
EMS File System Service (FSS)	5.5.32.4	setup.exe: FSSSetup.msi	X	X
EMS Audio Studio (AS)	5.5.32.4	setup.exe: EMSAudioStudioSetup.msi	X	X
EMS Data Center Manager (DCM)	5.5.32.4	DemocracySuiteEMS_DCM.exe	X	X
EMS Election Data Translator (EDT)	5.5.32.4	setup.exe: EDTSetup_x86.msi EDTSetup_x64.msi	X	X
ImageCast Voter Activation (ICVA)	5.5.32.4	setup.exe: ICVASetup.msi	X	X
EMS Adjudication (Adj.)	5.5.32.1	DVS ImageCast Adjudication Client Setup.msi	X	X
EMS Adjudication Service	5.5.32.1	DVS Adjudication Services Setup.msi	X	X
Smart Card Helper Service	5.5.32.4	setup.exe: SmartCardServiceSetup.msi	X	X

Table 1-2. Democracy Suite 5.5-B ImageCast Precinct Software Component Descriptions

Firmware/Software	Version	Filename
Election Firmware	5.5.31.1	cf2xx.sig
Firmware Updater	5.5.31.1	firmUp.enc

Table 1-2. Democracy Suite 5.5-B ImageCast Precinct Software Component Descriptions
(continued)

Firmware/Software	Version	Filename
Firmware Extractor	5.5.31.1	FirmwareExtract.enc
Kernel (uClinux)	5.5.31.1	image.bin.gz
Boot Loader (COLILO)	20040221	colilo.bin
Asymmetric Key Generator	5.5.31.1	Keygen.enc
Asymmetric Key Exchange Utility	5.5.31.1	KeyExchange.enc
Firmware Extractor (Uses Technician Key)	5.5.31.1	TechExtract.enc

Table 1-3. Democracy Suite 5.5-B ImageCast Central Software Component Descriptions

Firmware/Software	Version	Filename
ImageCast Central Application	5.5.32.5	ICCSetup.exe

Table 1-4. Democracy Suite 5.5-B ImageCast X Software Component Descriptions

Firmware/Software	Version	Filename
ICX Application	5.5.13.2	ICX.apk

Table 1-5. Democracy Suite 5.5-B ImageCast Precinct 2 Software Component Descriptions

Firmware/Software	Version	Filename
ICP2 Application	5.5.1.8	dvs-release-image-icp2-5.5.1.8.vhd.7z
ICP2 Application (for units with 2 GB RAM)	5.5.1.8	dvs-release-image-icp2-2G-5.5.1.8.vhd.7z
ICP2 Update Card	5.5.1.8	icp2-update-5.5.1.8

Table 1-6. Democracy Suite 5.5-B ImageCast Evolution Software Component Descriptions

Firmware/Software	Version	Filename
Voting Machine	5.5.6.5	GApplication-5.5.6.5.vhd.7z
Election Application	5.5.6.5	dvs
Linux Kernel	2.6.30.9-dvs-36	uImage
Linux Device File	1.6	mpc8347dvs.dtb
Root File System	5.0.31	rfs
Ram Disk	1.0.2	initrd.img
Motherboard FPGA	1.1.5	ice2_mc_p1.bit
Scanner Board FPGA	1.1.2	ice2_scb_p2.bit
Logger Controller	2.0.2	logger.bin

Table 1-6. Democracy Suite 5.5-B ImageCast Evolution Software Component Descriptions
(continued)

Firmware/Software	Version	Filename
Power Controller	3.0.5	power.bin
Boot Loader	1.3.4.63	u-boot.bin
Integrated Printer	4.1.6	integratedPrinter.hex, printerFont.hex
Boot Startup Logo	6.0.0	logo_platform.bmp
Linux Startup Logo	6.0.0	logo_os.bmp
Application Startup Logo	6.0.0	application_startup_logo.bmp
Application Verification Logo	6.0.0	logo_application_verification.bmp
Ram Disk Verification Logo	6.0.0	logo_ramdisk_verification.bmp
Linux Tree Verification Logo	6.0.0	logo_os_tree_verification.bmp
Linux Verification Logo	6.0.0	logo_os_verification.bmp
RFS Verification Logo	6.0.0	logo_rfs_verification.bmp

Table 1-7. Democracy Suite 5.5-B EMS Client/Server Software Component Descriptions

Firmware/Software	Version	Filename	Configuration Standard	Express
Microsoft Windows Server	2012 R2 Standard	Physical Media from Microsoft	X	
Microsoft Windows	10 Professional	Physical Media from Microsoft	X	X
.NET Framework	3.5	Physical Media from Microsoft	X	X
Microsoft Visual J#	2.0	vjredist64.exe vjredist.exe	X	X
Microsoft Visual C++ 2013 Redistributable	2013	vcredist_x64.exe vcredist_x86.exe	X	X
Microsoft Visual C++ 2015 Redistributable	2015	vc_redist.x64.exe vc_redist.x86.exe	X	X
Java Runtime Environment	7u80	jre-7u80-windows-x64.exe jre-7u80-windows-i586.exe	X	X
Java Runtime Environment	8u144	jre-8u144-windows-x64.exe jre-8u144-windows-i586.exe	X	X
Microsoft SQL Server 2016 Standard	2016 Standard	Physical Media from Microsoft	X	
Microsoft SQL Server 2016 Service Pack 1	2016 SP1	SQLServer2016SP1-KB3182545-x64-ENU.exe	X	
Microsoft SQL Server 2016 SP1 Express	2016 SP1	SQLEXPRADV_x64_ENU.exe		X

Table 1-7. Democracy Suite 5.5-B EMS Client/Server Software Component Descriptions
(continued)

Firmware/Software	Version	Filename	Configuration Standard	Configuration Express
Cepstral Voices	6.2.3.801	Allison (English): Cepstral_Allison_windows_6.2.3.801.exe Alejandra (Spanish): Cepstral_Alejandra_windows_6.2.3.801.exe	X	X
Arial Narrow Fonts	2.37a	ARIALN.TTF ARIALNB.TTF ARIALNBI.TTF ARIALNI.TTF	X	X
Maxim iButton Driver	4.05	install_1_wire_drivers_x86_v405.msi install_1_wire_drivers_x64_v405.msi	X	X
Adobe Reader DC	AcrobatDC	AcroRdrDC1501020060_en_US.exe	X	X
Microsoft Access Database Engine	2010	AccessDatabaseEngine.exe AccessDatabaseEngine_x64.exe	X	X
Open XML SDK 2.0 for Microsoft Office	2.0	OpenXMLSDKv2.msi	X	X

Table 1-8. Democracy Suite 5.5-B EMS Software Platform Unmodified COTS Component Descriptions

Firmware/Software	Version	Filename
Infragistics NetAdvantage Win Forms 2011.1	2011 Vol.1	NetAdvantage_WinForms_20111.msi
Infragistics NetAdvantage WPF 2012.1	2012 Vol.1	NetAdvantage_WPF_20121.msi
TX Text Control Library for .NET	16.0	TXText Control.NET for Windows Forms 16.0.exe
SOX	14.3.1	sox.exe , libgomp-1.dll, pthreadgc2.dll, zlib1.dll
NLog	1.0.0.505	NLog.dll
iTextSharp	5.0.5	itextsharp.dll
OpenSSL	1.0.2k & 2.0.14 FIPS	openssl.exe, libeay32.dll, ssleay32.dll
SQLite	1.0.103.0	System.Data.SQLite.DLL (32-bit and 64-bit)
Lame	3.99.4	lame.exe
Speex	1.0.4	speexdec.exe and speexenc.exe
Ghostscript	9.04	gsdll32.dll (32-bit and 64-bit)

Table 1-8. Democracy Suite 5.5-B EMS Software Platform Unmodified COTS Component Descriptions *(continued)*

Firmware/Software	Version	Filename
One Wire API for .NET	4.0.2.0	OneWireAPI.NET.dll
Avalon-framework-cvs-20020806	20020806	avalon-framework-cvs-20020806.jar
Batik	0.20-5	batik.jar
Fop	0.20-5	fop.jar
Microsoft Visual J# 2.0 Redistributable Package-Second Edition(x64)	2.0	vjc.dll , vjsjbc.dll, vjslibcw.dll, vjsnativ.dll , vjssupuilib.dll , vjsvwaux.dll
Entity framework	6.1.3	EntityFramework.dll
Spreadsheetlight	3.4.3	SpreadsheetLight.dll, SpreadsheetLight.xml
Open XML SDK 2.0 For Microsoft Office	2.0.5022.0	DocumentFormat.OpenXml.dll, DocumentFormat.OpenXml.xml

Table 1-9. Democracy Suite 5.5-B ImageCast Precinct Unmodified COTS Component Descriptions

Firmware/Software	Version	Filename
OpenSSL 1.0.2k	1.0.2k	openssl-1.0.2k.tar.gz
OpenSSL FIPS 2.0.10	2.0.10	openssl-fips-2.0.10.tar.gz
Zlib	1.2.3	Zlib-1.2.3.tar.gz

Table 1-10. Democracy Suite 5.5-B ImageCast Precinct 2 Unmodified COTS Component Descriptions

Firmware/Software	Version	Filename
acl	2.2.52	acl-2.2.52.src.tar.gz
attr	2.4.47	attr-2.4.47.src.tar.gz
avahi	0.6.32	avahi-0.6.32.tar.gz
bash	4.3.30	bash-4.3.30.tar.gz
bash-completion	2.4	bash-completion-2.4.tar.xz
busybox	1.24.1	busybox-1.24.1.tar.bz2
bzip2	1.0.6	bzip2-1.0.6.tar.gz
coreutils	8.25	coreutils-8.25.tar.xz
cryptodev-linux	1.8	cryptodev-linux-1.8.tar.gz
cups	2.1.4	cups-2.1.4-source.tar.gz
db	6.0.35	db-6.0.35.tar.gz

Table 1-10. Democracy Suite 5.5-B ImageCast Precinct 2 Unmodified COTS Component Descriptions *(continued)*

Firmware/Software	Version	Filename
dbus	1.10.10	dbus-1.10.10.tar.gz
dbus-glib	0.106	dbus-glib-0.106.tar.gz
dbus-test	1.10.10	dbus-1.10.10.tar.gz
depmodwrapper-cross	1	morty.tar.gz
e2fsprogs	1.43	e2fsprogs.git.tar.gz
expat	2.2.0	expat-2.2.0.tar.bz2
fontconfig	2.12.1	fontconfig-2.12.1.tar.gz
freetype	2.6.5	freetype-2.6.5.tar.bz2
gawk	4.1.3	gawk-4.1.3.tar.gz
gcc-runtime	6.2.0	gcc-6.2.0.tar.bz2
gettext	0.19.8.1	gettext-0.19.8.1.tar.gz
glib-2.0	2.48.2	glib-2.48.2.tar.xz
glibc	2.24	git2_sourceware.org.git.glibc.git.tar.gz
glibc-initial	2.24	git2_sourceware.org.git.glibc.git.tar.gz
glibc-locale	2.24	git2_sourceware.org.git.glibc.git.tar.gz
gmp	6.1.1	gmp-6.1.1.tar.bz2
gnutls	3.5.3	gnutls-3.5.3.tar.xz
gobject-introspection	1.48.0	gobject-introspection-1.48.0.tar.xz
grep	2.25	grep-2.25.tar.xz
icu	57.1	icu4c-57_1-src.tgz
imx-gpu-viv	6.2.2.p0-aarch32	imx-gpu-viv-6.2.2.p0-aarch32.bin
kbd	2.0.3	kbd-2.0.3.tar.xz
kernel-module-imx-gpu-viv	6.2.2.p0	kernel-module-imx-gpu-viv-6.2.2.p0.tar.gz
kmod	23+gitAUTOINC+65a885df5f	git2_git.kernel.org.pub.scm.utils.kernel.kmod.kmod.git.tar.gz
libcap	2.25	libcap-2.25.tar.xz
libcgroup	0.41	libcgroup-0.41.tar.bz2
libcheck	0.10.0	check-0.10.0.tar.gz
libdaemon	0.14	libdaemon-0.14.tar.gz
libdrm	2.4.70	libdrm-2.4.70.tar.bz2
libevdev	1.5.2	libevdev-1.5.2.tar.xz

Firmware/Software	Version	Filename
libffi	3.2.1	libffi-3.2.1.tar.gz
libgcc	6.2.0	libgcc-5-dev_5.4.0-6ubuntu1~16.04.10_amd64.deb
libgcc-initial	6.2.0	libgcc-5-dev_5.4.0-6ubuntu1~16.04.10_amd64.deb
libidn	1.33	libidn-1.33.tar.gz
libinput	1.8.4	libinput-1.8.4.tar.xz
libjpeg-turbo	1.5.0	libjpeg-turbo-1.5.0.tar.gz
libnss-mdns	0.1	nss-mdns-0.10.tar.gz
libpcap	1.7.4	libpcap-1.7.4.tar.gz
libpciaccess	0.13.4	libpciaccess-0.13.4.tar.bz2
libpcre	8.39	libpcre32-3_2%3a8.38-3.1_amd64.deb
libpng	1.6.24	libpng-1.6.24.tar.xz
libpthread-stubs	0.3	libpthread-stubs-0.3.tar.bz2
libtool-cross	2.4.6	libtool-2.4.6.tar.gz
libusb1	1.0.20	libusb-1.0.20.tar.bz2
libusb-compat	0.1.5	libusb-compat-0.1.5.tar.bz2
libxkbcommon	0.6.1	libxkbcommon-0.6.1.tar.xz
libxml2	2.9.4	libxml2-2.9.4.tar.gz
linux-libc-headers	4.9	linux-4.9.tar.xz
log4cplus	1.2.0	log4cplus-1.2.0.tar.gz
m4	1.4.17	m4-1.4.17.tar.gz
mesa	12.0.1	mesa-12.0.1.tar.xz
mtdev	1.1.5	mtdev-1.1.5.tar.bz2
nettle	3.2	nettle-3.2.tar.gz
openssl	1.0.2k	openssl-1.0.2k.tar.gz
openssl-fips	2.0.10	openssl-fips-2.0.10.tar.gz
opkg-utils	0.3.2+gitAUTOINC+3ffe ce9bf1	opkg-0.3.3.tar.gz
pkgconfig	0.29.1+gitAUTOINC+87152c05be	git2_anongit.freedesktop.org.pkg-config.tar.gz
ppp	2.4.7	ppp-2.4.7.tar.gz
procps	3.3.12	procps-ng-3.3.12.tar.xz

Table 1-10. Democracy Suite 5.5-B ImageCast Precinct 2 Unmodified COTS Component Descriptions *(continued)*

Firmware/Software	Version	Filename
qtbase	5.9.6+gitAUTOINC+f4c2fcc052	qtbase-5.9.6+gitAUTOINC+9c50112304.tar.gz
qtdeclarative	5.9.6+gitAUTOINC+dfb e918537	qtdeclarative-5.9.6+gitAUTOINC+283a900c4e.tar.gz
qtgraphicaleffects	5.9.6+gitAUTOINC+3d317f1bb0	qtgraphicaleffects-5.9.6+gitAUTOINC+f61dcaa5e5.tar.gz
qtquickcontrols2	5.9.6+gitAUTOINC+c51 eea8870	qtquickcontrols2-5.9.6+gitAUTOINC+c48b314ede.tar.gz
qtquickcontrols	5.9.6+gitAUTOINC+f050a32a43	qtquickcontrols-5.9.6+gitAUTOINC+ca6bba7163.tar.gz
qtsvg	5.9.6+gitAUTOINC+dec74295e8	qtsvg-5.9.6+gitAUTOINC+7a28db8f5b.tar.gz
qtxmlpatterns	5.9.6+gitAUTOINC+c7c5681004	qtxmlpatterns-5.9.6+gitAUTOINC+4dcae15a5a.tar.gz
quazip	0.7.3	quazip-0.7.3.tar.gz
readline	6.3	readline-6.3.tar.gz
run-postinsts	1	morty.tar.gz
sed	4.2.2	sed-4.2.2.tar.gz
shadow	4.2.1	shadow-4.2.1.tar.xz
shadow-securetty	4.2.1	shadow-4.2.1.tar.xz
sqlite3	3.14.1	sqlite-autoconf-3140100.tar.gz
systemd	230+gitAUTOINC+3a74d4fc90	git2_github.com.systemd.systemd.git.tar.gz
tcl	8.6.6	tcl8.6.6-src.tar.gz
tslib	1.1	tslib-1.1.tar.xz
tzdata	2017a	tzdata2017a.tar.gz
usb-modeswitch	2.2.0	usb-modeswitch-2.2.0.tar.bz2
usb-modeswitch- data	20140529	usb-modeswitch-data-20140529.tar.bz2
util-linux	2.28.1	util-linux-2.28.1.tar.xz
util-macros	1.19.0	util-macros-1.19.0.tar.gz
xz	5.2.2	xz-5.2.2.tar.gz
zbar	0.1	zbar-0.10.tar.bz2
zlib	1.2.8	zlib-1.2.8.tar.xz
flac	1.3.1	flac-1.3.1.tar.xz
gst-plugins-base	1.10.4	gst-plugins-base-1.10.4.tar.xz
gst-plugins-good	1.10.4	gst-plugins-good-1.10.4.tar.xz

Table 1-10. Democracy Suite 5.5-B ImageCast Precinct 2 Unmodified COTS Component Descriptions *(continued)*

Firmware/Software	Version	Filename
gstreamer	1.10.4	gstreamer-1.10.4.tar.xz
harfbuzz	1.3.0	harfbuzz-1.3.0.tar.bz2
libgudev	230	libgudev-230.tar.xz
libical	2.0.0	libical-2.0.0.tar.gz
libogg	1.3.2	libogg-1.3.2.tar.xz
libsamplerate	0.1.8	libsamplerate-0.1.8.tar.gz
libsndfile	1.0.27	libsndfile-1.0.27.tar.gz
libvorbis	1.3.5	libvorbis-1.3.5.tar.xz
speex	1.2rc2	speex-1.2rc2.tar.gz
speexdsp	1.2rc3	speexdsp-1.2rc3.tar.gz
taglib	1.9.1	taglib-1.9.1.tar.gz
qtmultimedia	5.9.6+gitAUTOINC+52f5785cfa	qtmultimedia-5.9.6+gitAUTOINC+52f5785cfa.tar.gz

Table 1-11. Democracy Suite 5.5-B ImageCast Evolution Unmodified COTS Component Descriptions

Firmware/Software	Version	Filename
BusyBox	1.20.2	busybox-1.20.2.tar.bz2
e2fsprogs	1.42.4	e2fsprogs-1.42.4.tar.gz
Expat XML Parser	2.1.0	expat-2.1.0.tar.gz
fontconfig	2.9.0	fontconfig-2.9.0.tar.gz
Freetype	2.4.9	freetype-2.4.9.tar.bz2
I2C Tools for Linux	3.1.0	i2c-tools-3.1.0.tar.bz2
JPEG library	8d	jpegsrc.v8d.tar.gz
libogg	1.3.0	libogg-1.3.0.tar.gz
libPNG	1.5.10	libpng-1.5.10.tar.gz
libusb	1.0.8	libusb-1.0.8.tar.bz2
libusb-compat	0.1.3	libusb-compat-0.1.3.tar.bz2
log4cplus	1.0.4.1	log4cplus-1.0.4.1.tar.bz2
openssl	1.0.2k	openssl-1.0.2k.tar.gz
openssl-fips	2.0.10	openssl-fips-2.0.10.tar.gz
PPP	2.4.5	ppp-2.4.5.tar.gz

Table 1-11. Democracy Suite 5.5-B ImageCast Evolution Unmodified COTS Component Descriptions *(continued)*

Firmware/Software	Version	Filename
quazip	0.5	quazip-0.5.tar.gz
Qt Everywhere Linux	4.7.3	qt-everywhere-opensource-src-4.7.3.tar.gz
skell	1.19	skell-1.19.tar.gz
SoundTouch	1.6.0	soundtouch-1.6.0.tar.gz
speex	1.2rc1	speex-1.2rc1.tar.gz
SQLite	3.7.13	sqlite-autoconf-3071300.tar.gz
Sysfs Utilities	2.1.0	sysfsutils-2.1.0.tar.gz
TIFF library	4.0.1	tiff-4.0.1.tar.gz
timezone	2012b	tzcode2012b.tar.gz
USB ModeSwitch	1.2.4	usb-modeswitch-1.2.4.tar.bz2
zlib	1.2.7	zlib-1.2.7.tar.bz2

Table 1-12. Democracy Suite 5.5-B ImageCast X Unmodified COTS Component Descriptions

Firmware/Software	Version	Filename
Google Text-to-Speech Engine	3.11.12	ARM: com.google.android.tts_3.11.12-210311121_minAPI19(armeabi-v7a)(nodpi).apk x86: com.google.android.tts_3.11.12-210311123_minAPI15(x86)(nodpi).apk
ICX Prime Android 5.1.1 Image	0405	0405_5.1.1-01.12_user_android_x86.iso
ICX Classic Android 4.4.4 Image	0.0.98	byt_t_crv2_64-ota-BCX18-V0.0.98.zip

Table 1-13. Democracy Suite 5.5-B ImageCast Central Software Build Library Source Code (Unmodified COTS)

Firmware/Software	Version	Filename
OpenSSL 1.0.2k	1.0.2k	openssl-1.0.2k.tar.gz
OpenSSL FIPS 2.0.10	2.0.10	openssl-fips-2.0.10.tar.gz

Table 1-14. Democracy Suite 5.5-B ImageCast Central Runtime Software Components (Unmodified COTS)

Firmware/Software	Version	Filename
1-Wire Driver (x86)	4.05	install_1_wire_drivers_x86_v405.msi
1-Wire Driver (x64)	4.05	install_1_wire_drivers_x64_v405.msi

**Table 1-14. Democracy Suite 5.5-B ImageCast Central Runtime Software Components
(Unmodified COTS)** *(continued)*

Firmware/Software	Version	Filename
Canon DR-G1130 TWAIN Driver	1.2 SP6	G1130_DRIT_V12SP6.exe
Canon DR-M160II TWAIN Driver	1.2 SP6	M160II_DRIT_V12SP6.exe
Visual C++ 2013 Redistributable (x86)	12.0.30501	vcredist_x86.exe
InoTec HiPro 821 TWAIN Driver	1.2.3.17	TwainSetup-ScamaxUSB3.exe
Canon DR-M260 TWAIN Driver	1.1 SP2	M260_DRIT_V11SP2.zip

**Table 1-15. Democracy Suite 5.5-B ImageCast Precinct Modified COTS Software
Component Descriptions**

Firmware/Software	Version	Filename
uClinux	20070130	uClinux-dist-20070130.tar.gz
COLILO Bootloader	20040221	Colilo20040221.tar.gz

**Table 1-16. Democracy Suite 5.5-B ImageCast Precinct 2 Modified COTS Software
Component Descriptions**

Firmware/Software	Version	Filename
Kernel	4.9.11	zImage
U-BOOT	2017.03	u-boot.bin

**Table 1-17. Democracy Suite 5.5-B ImageCast Evolution Modified COTS Software
Component Descriptions**

Firmware/Software	Version	Filename
Kernel	2.6.30	uImage
U-BOOT	1.3.4	u-boot.bin

**Table 1-18. Democracy Suite 5.5-B ImageCast X Modified COTS Software Component
Descriptions**

Firmware/Software	Version	Filename
Zxing Barcode Scanner	4.7.5	BS-4.7.5.zip
SoundTouch	1.9.2	Soundtouch-1.9.2.tar.gz

Table 1-19. Democracy Suite 5.5-B EMS Software Build Environment Component Descriptions

Firmware/Software	Version	Filename
Windows 10 Professional	10 Professional	Physical Media from Microsoft
.NET Framework 3.5	3.5	Physical Media from Microsoft
Internet Information Server (IIS)	10.0	Physical Media from Microsoft
7-Zip	9.20 (64 Bit)	7z920-x64.msi
Visual Studio 2015 Professional with Update 3	2015 Update 3	en_visual_studio_professional_2015_with_update_3_x86_x64_web_installer_8922978.exe
.NetDiscUtils	0.10	DiscUtilsBin-0.10.zip
Infragistics NetAdvantage Win Forms 2011.1	2011.1	NetAdvantage_WinForms_20111.msi
Infragistics Net Advantage – WPF 2012.1	2012.1	NetAdvantage_WPF_20121.msi
TX Text Control 16.0.NET	16	TX Text Control.NET for Windows Forms 16.0.exe
Speex	1.0.4	speex_win32_1.0.4_setup.exe
Microsoft Visual J#	2.0	vjredist64.exe
iTextSharp	5.0.5	itextsharp-5.0.5-dll.zip
Ghostscript	9.0.4	gs904w32.exe, gs904w64.exe
Nlog	1.0.0.505	NLog-1.0-Refresh-bin.zip
OneWireAPI.NET	4.0	1-wiresdkver400_beta2.zip
Lame	3.99.4	lame3.99.4-20120130.zip
Sox	14.3.1	sox-14.3.1-win32.zip
Avalon Framework	20020806	avalon-framework-cvs-20020806.jar.zip
Fop	0.20-5	fop-0.20.5.jar
Batik	0.20-5	batik-1.5-fop-0.20-5.jar
SQLite	1.0.103.0	sqlite-netFx46-setup-bundle-x64-2015-1.0.103.0.exe
OpenSSL 1.0.2k	1.0.2k	openssl-1.0.2k.tar.gz
OpenSSL FIPS 2.0.10	2.0.10	openssl-fips-2.0.10.tar.gz
Strawberry Perl	5.24.1.1	strawberry-perl-5.24.1.1-64bit.msi
Patch	2.5.9-7	patch-2.5.9-7-bin.zip
ISOnewspaper	30.4	ISOnewspaper30v4_gr.icc.zip
Ogg Vorbis Encoder	2.88	oggenc2.88-1.3.5-generic.zip
Ogg Vorbis Encoder	1.10.1	oggdecV1.10.1.zip

Table 1-19. Democracy Suite 5.5-B EMS Software Build Environment Component Descriptions *(continued)*

Firmware/Software	Version	Filename
Prism Mvvm	1.1.1	prism.mvvm.1.1.1.nupkg
Bitmiracle.libtiff.net	2.4.560	Bitmiracle.libtiff.net.2.4.560.nupkg
Prism	4.0.0	prism.4.0.0.nupkg
Prism.UnityExtensions	4.0.0	prism.unityextensions.4.0.0.nupkg
PDF Printing	2.9.5.2	PDFPrinting.zip
Entity Framework	6.1.3.net45	entityframework.6.1.3.nupkg
WiX	3.10	Wix310.exe
Spreadsheet Light	3.4.3	spreadsheetlight.3.4.3.nupkg
Open XML SDK 2.0 for Microsoft Office	2.0	OpenXMLSDKv2.msi
Adobe Reader DC	AcrobatDC	AcroRdrDC1501020060_en_US.exe
Arial Narrow Fonts	2.37a	ArialNarrowFonts.zip
SSH.NET	2016.1.0	SSH.NET-2016.1.0-bin.zip
SSMS	14.0.17119.0	SSMS-Setup-ENU.exe
TwainDSM	2.3.0	Twaindsm-2.3.0.win.bin

Table 1-20. Democracy Suite 5.5-B ICC Software Build Environment Component Descriptions

Firmware/Software	Version	Filename
NASM Assembler	2.12.02	nasm-2.12.02-win32.zip
OpenSSL 1.0.2k	1.0.2k	openssl-1.0.2k.tar.gz
OpenSSL FIPS 2.0.10	2.0.10	openssl-fips-2.0.10.tar.gz
CSC3-2010	N/A	CSC3-2010.crl
tss-ca-g2	N/A	tss-ca-g2.crl

Table 1-21. Democracy Suite 5.5-B Adjudication Software Build Environment Component Descriptions

Firmware/Software	Version	Filename
Microsoft Enterprise Library	5.0	Enterprise Library 5.0.msi
Microsoft Prism	4.0.0	Prism.4.0.0.nupkg
Microsoft Identity Foundation SDK	4.0	WindowsIdentityFoundation-SDK-4.0.msi
Toggle Switch Control Library	1.1.1	ToggleSwitch 1.1.1.zip

Table 1-21. Democracy Suite 5.5-B Adjudication Software Build Environment Component Descriptions *(continued)*

Firmware/Software	Version	Filename
Infragistics NetAdvantage Ultimate 2013.1	2013.1	NetAdvantage_20131_PlatformInstaller.zip
iTextSharp	5.5.1	itextsharp-all-5.5.1.zip
CLR Security	June 2010	clrsecurity_june10.zip
OpenSSL 1.0.2k	1.0.2k	openssl-1.0.2k.tar.gz
OpenSSL FIPS 2.0.10	2.0.10	openssl-fips-2.0.10.tar.gz
Community MSI Extensions	1.4	msiext-1.4.zip
TreeViewEx	3.0.0.0	TreeViewEx.dll

Table 1-22. Democracy Suite 5.5-B ImageCast Precinct Election Firmware Compiler Descriptions

Firmware/Software	Version	Filename
g++ (GNU C++ compiler)	gcc3.4.0-20040603	m68k-uclinux-tools-c++-gcc3.4.0-20040603.sh

Table 1-23. Democracy Suite 5.5-B ImageCast Precinct Firmware Build Environment Component Descriptions

Firmware/Software	Version	Filename
Ubuntu 16.04.1	16.04.1	ubuntu-16.04.1-desktop-i386.iso
Toolchain Installation Script	N/A	Toolchain.sh
m68k uClinux tools base gcc	3.4.0-20040603	m68k-uclinux-tools-base-gcc3.4.0-20040603.sh
m68k uClinux tools c++ gcc	3.4.0-20040603	m68k-uclinux-tools-c++-gcc3.4.0-20040603.sh
m68k uClinux tools gdb	20040603	m68k-uclinux-tools-gdb-20040603.sh
OpenSSL 1.0.2k	1.0.2k	openssl-1.0.2k.tar.gz
OpenSSL FIPS 2.0.10	2.0.10	openssl-fips-2.0.10.tar.gz

Table 1-24. Democracy Suite 5.5-B ImageCast Precinct 2 Firmware Build Environment Component Descriptions

Firmware/Software	Version	Filename
Ubuntu	16.04 LTS	ubuntu-16.04.5-desktop-amd64.iso
Yocto	imx-morty	morty.tar.gz
asciidoc	8.6.9	asciidoc_8.6.9-3_all.deb
autoconf	2.69	autoconf_2.69-9_all.deb

Table 1-24. Democracy Suite 5.5-B ImageCast Precinct 2 Firmware Build Environment Component Descriptions *(continued)*

Firmware/Software	Version	Filename
automake	1.15	automake_1%3a1.15-4ubuntu1_all.deb
p7zip- full	9.20.1~dfsg.1	p7zip-full_9.20.1~dfsg.1-4.2_amd64.deb
avr-libc	1.8.0+Atmel3.5.0	avr-libc_1%3a1.8.0+Atmel3.5.0-1_all.deb
binutils-avr_	2.25+Atmel3.5.0	binutils-avr_2.25+Atmel3.5.0-2_amd64.deb
python-dev	2.7.12	python-dev_2.7.12-1~16.04_amd64.deb
python3	3.5.1	python3-dev_3.5.1-3_amd64.deb
python3-pip	8.1.1	python3-pip_8.1.1-2ubuntu0.4_all.deb
python-pysqlite2	2.7.0	python-pysqlite2_2.7.0-1_amd64.deb
chrpath	0.16	chrpath_0.16-1_amd64.deb
socat	1.7.3.1	socat_1.7.3.1-1_amd64.deb
cvs	1.12.13	cvs_2%3a1.12.13+real-15ubuntu0.1_amd64.deb
desktop-file-utils	0.22	desktop-file-utils_0.22-1ubuntu5.2_amd64.deb
psutils	1.17.dfsg	psutils_1.17.dfsg-2_amd64.deb
docbook-utils	0.6.14	docbook-utils_0.6.14-3ubuntu1_all.deb
libsdl1.2-dev	1.2.15+dfsg1	libsdl1.2-dev_1.2.15+dfsg1-3_amd64.deb
help2man	1.47.3	help2man_1.47.3_amd64.deb
texi2html	1.82+dfsg1	texi2html_1.82+dfsg1-5_all.deb
libgl1-mesa-dev	18.0.5	libgl1-mesa-dev_18.0.5-0ubuntu0~16.04.1_amd64.deb
libglu1-mesa-dev	9.0.0	libglu1-mesa-dev_9.0.0-2.1_amd64.deb
mercurial	3.7.3	mercurial_3.7.3-1ubuntu1_amd64.deb
g++-5	5.4.0	g++-5_5.4.0-6ubuntu1~16.04.10_amd64.deb
gawk	4.1.3	gawk_1%3a4.1.3+dfsg-0.1_amd64.deb
lzop	1.03	lzop_1.03-3.2_amd64.deb
gcc	5.4.0	gcc-5_5.4.0-6ubuntu1~16.04.10_amd64.deb
gcc-5-multilib	5.4.0	gcc-5-multilib_5.4.0-6ubuntu1~16.04.10_amd64.deb
gcc-avr	4.9.2+Atmel3.5.3	gcc-avr_1%3a4.9.2+Atmel3.5.0-1_amd64.deb
git	2.7.4	git_1%3a2.7.4-0ubuntu1.4_amd64.deb

Table 1-24. Democracy Suite 5.5-B ImageCast Precinct 2 Firmware Build Environment Component Descriptions *(continued)*

Firmware/Software	Version	Filename
zlib	1.2.8	zlib1g-dev_1%3a1.2.8.dfsg-2ubuntu4.1_amd64.deb
texinfo	6.1.0.dfsg.1	texinfo_6.1.0.dfsg.1-5_amd64.deb
groff	1.22.3	groff_1.22.3-7_amd64.deb

Table 1-25. Democracy Suite 5.5-B ImageCast Evolution Firmware Build Environment Component Descriptions

Firmware/Software	Version	Filename
Ubuntu	10.04 LTS	ubuntu-10.04.4-desktop-i386.iso
LTIB	10.1.1a	ltib-10-1-1a-sv.tar.gz
g++ (GNU C++ compiler)	gcc-4.5.38-eglibc-2.11.38	freescale-powerpc-linux-gnu-2011.03-38.i686.rpm
autoconf	2.57	autoconf-2.57.tar.bz2
bison	2.3	bison-2.3.tar.bz2
ccache	2.4	ccache-2.4.tar.gz
cksum	19990607	cksum-19990607.tar.gz
cramfs	20081121	cramfs-20081121.tar.gz
distcc	2.18.3	distcc-2.18.3.tar.bz2
dtc	1.2.0	dtc-1.2.0.tar.gz
flex	2.5.33	flex-2.5.33.tar.gz
genext2fs	1.4.1	genext2fs-1.4.1.tar.gz
gen_init_cpio	2.6.25-rc7	gen_init_cpio-2.6.25-rc7.tar.gz
genromfs	0.5.1	genromfs-0.5.1.tar.gz
git	1.5.6.5	git-1.5.6.5.tar.gz
libtool	1.5	libtool-1.5.tar.gz
lkc	1.4	lkc-1.4.tar.gz
mkspooflinks	3.4	mkspooflinks-3.4.tar.gz
mtd-utils	20060302	mtd-utils-20060302.tar.bz2
mux_server	1.0	mux_server.c
pkg-config	0.21	pkg-config-0.21.tar.gz
sparse	0.4	sparse-0.4.tar.gz
texinfo	4.8	texinfo-4.8.tar.bz2
tunctl	1.5	tunctl-1.5.tar.gz
u-boot-tools	1.1.6	u-boot-tools-1.1.6.tar.bz2
unifdef	1.0	unifdef-1.0.tar.gz

Table 1-25. Democracy Suite 5.5-B ImageCast Evolution Firmware Build Environment Component Descriptions *(continued)*

Firmware/Software	Version	Filename
wget	1.9.1	wget-1.9.1.tar.gz
yaffs_utils	20060418	yaffs_utils-20060418.tar.gz
rpm	4.0.4	rpm-4.0.4.tar.gz

Table 1-26. Democracy Suite 5.5-B ImageCast X Firmware Build Environment Component Descriptions

Firmware/Software	Version	Filename
Ubuntu 14.04.4	14.04.4	ubuntu-14.04.4-desktop-amd64.iso

Table 1-27. D-Suite 5.5-B Configuration Files

Configuration File	Version	Filename
ICX Machine Configuration File (MCF)	5.5.12.1_20190510	MCF_5.5.12.1_20190510.mcf
ICP/ICC Device Configuration File (DCF)	5.5.31_20190423	DCF_5.5.31_20190423.dcf
ICE Machine Behavior Settings	5.5.6.3 20190512	behaviorsettings_ICE_5.5.6.3_EAC_20190512.mbs
ICP2 Machine Behavior Settings	5.5.1.4 20190510	behaviorsettings_ICP2_5.5.1.4_EAC_20190510.mbs

Table 1-28. D-Suite 5.5-B Voting System Equipment

Component	Serial Number
Proprietary Hardware	
ImageCast Precinct Optical Scanner PCOS-320C	AAFAJFM0061, AAFAJFN0030, AAFAJGI6764, AAFAJEL0352
ImageCast Precinct Optical Scanner PCOS-320A	AANAGCP0347, AANAGCP0002
ImageCast Precinct 2 Optical Scanner PCOS-330A	FAL18480494, FAL18480510
ImageCast Evolution Optical Scanner PCOS-410A	AAFEBIK1847, AAFEBCN0012
ICP Ballot Box BOX-330A	AAUCCFX0083, AAUCCGI0011
ICE Ballot Box	---
ICX Inline EMI Filter	[DVS-EMIFILTER-001] thru [DVS-EMIFILTER-003]
ICP2 Ballot Box BOX-350A	**---**
COTS Hardware	
ICX aValue 15" Tablet (SID-15V)	0E14AF00014, B03G005400006, B033G00540008, 9E274118, 1D274118, Baytrail98D750C0, Baytrail12034DCC, Baytrail9A6550C8

Table 1-28. D-Suite 5.5-B Voting System Equipment *(continued)*

Component	Serial Number
ICX aValue 21" Tablet (SID-21V)	0E14AF00027, B03G005500019, 03G005500009, 0039BZ2D, 0039B209, Baytrail0039B22D, BaytrailF1B2587F, BaytrailF1B25983
A Value 21" ICX DRE (Prime)	1707101522, 1707101789, 1707101730, 1707101887, 1707101710, 1707101725, 1707101731, 1708100916, 1708100876, 1708100915, 1707101845, 1707101778, 1717101720, 1707101845, 1707101722, 1707202552, 1711300282, 1707100089, 1707101795, 1707101793, 17101793
SII Thermal Printer	1115271A, 1115273A, 115270A, 1115275A
KFI VRP3 Thermal Printer (VVPAT)	KPR000000715, KPR0000078339, KPR0000078377, KRP000000711, KPR000000712, KPR170900010119, KPR0000078337, KPR0000078364, KPR170900008115, KPR0000078339, KPR170900008116, KPR170900010347, KPR170900009733, KPR170900010120, KPR170900010119, KPR170900010337, KPR170900010338, KPR170900010348
Dell OptiPlex 7440 All In One	HVNRFB2, HVNQFB2, HVNPFB2
Dell PowerEdge R630	4Z07T52
Dell PowerEdge R640	JMP9CM2
Canon imageFormula DR-G1130 Scanner	GF301092, GF304418
Canon DR-M160II Scanner	GX333569, GX333573, GX324846, GX326272, GX319353
Canon DR-M260 Scanner	HG306013, HG306012
InoTec HiPro 821 Scanner	0078K28, 0080K28
Dell Precision T3420 PC	HS0VFB2, HS0TFB2, HS0RFB2, HS0SFB2, 4TB3MN2, F575HH2
HP LaserJet Pro Printer M402dn	PHBQF20342, PHBQF20345, PHBQC12619, PHBQC19613, PHBQC12519, PHBQD18790, PHBQC12616, PHBQG09329
HP LaserJet Pro Printer M402dne	PHB5D00782, PHB5D04714, PHB5F04770, PHB5B18304, PHB5D04713
Dell OptiPlex 9030 All-In-One	CF73S52
Dell Ultrasharp 24" Monitor U2414H	1PVZ152, 62VZ152
Dell OptiPlex 3050 All-In-One	19YWWK2
Smart Card Reader ACR39	RR374-010362

Table 1-29. D-Suite 5.5-B Voting System Support Equipment

Component	Serial Number
Dell Monitor KM632	FYNTY12, CKX6Y12, CN-0524N3-72461-59H-6U5U
Dell Monitor P2414Hb	CN-0524N3-74261-5AH-2DNU, CN-0524N3-74261-5AH-2DAU
Dell DVD Multi Recorder GP60NB60	[DVS-Dell-001]
Dell Latitude E7450 Laptop	30GFH72, 369FH72
Dell Latitude e3480 Laptop	1VD3NJ2
Maxim iButton Programmer DS9490R# with DS1402	[DVS-Maxim-001] thru [DVS-Maxim-006]
APC Smart-UPS SMT1500	3S1536X06436, 3S1536X06475, 3S1536X06461, 3S1536X06485, 3S1536X06484, 3S1536X06322, 3S1536X07467, 3S1536X06485, 3S1536X06272, 3S1536X06201, 3S1536X07305, 3S1504X00395, 3S1504X00396, 351716X02289, W51530180004, 3S171X06059
Dell X1008 Network Switch	4R8XX42, 26SXX42
Dell X1018 Network Switch	6TN7Y42, 63SXX42
Enabling Devices Sip and Puff	[DVS-enabling devices-001] - [DVS-enabling devices-002]
Cyber Acoustics Headphones ACM-70	[DVS-cyber acoustics-001] - [DVS-cyber acoustics-005]
4-Way Joystick Controller S26	PME QC 1550 12, [DVS-JOY-001], [DVS-JOY-002]
Enablemart # 88906 Rocker (Paddle) Switch	[DVS-paddle-001]
Dell PowerConnect 2808 Network Switch	3S2P0Z1
IOGEAR SDHC/microSDHC 0U51USC410 Card Reader	8632, 8633
Lexar USB 3.0 Dual-Slot Reader	24020845007435
Hoodman Steel USB 3.0 UDMA Reader 102015	[DVS-hoodman-001]
ATI Handset	98862010101-035, 98862010103-075, 00659010100-046, 98862010100-232, 093015-1-1, 00659010100-035
ATI-USB Handset	02440010100-011, [DVS-ATIUSB-001], [DVS-ATIUSB-002], B104326-1-4-040, B104326-1-4-035
ACS PC-Linked Smart Card Reader ACR39U	RR374-006272, RR374-010356, RR374-010365
Lexar Professional CF Card Reader Workflow CFR1	24050361400108, 24050361401994, 24050361401991, 24050361401990
CORCOM Filter P/N#: 15EMC1	[DVS-CorcomEMIFilter-001]
Delta Filter P/N#: 16PDCG5C	[DVS-DeltaEMIFILTER-001]
Kingston Card Reader FCR-HS4	08738174208132

1.1.2   Description of Modification

The Dominion Democracy Suite 5.5-C Voting System is a modified voting system configuration The primary purpose of this modification is to add the Canon DR-G2140 central count scanner, the HP M501dn printer for the ICX BMD configuration, and the Microsoft Windows 10 Patch (Jan. 14, 2020). The list below includes changes between this system and the baseline of the Democracy Suite 5.5-B Voting System:

GENERAL MODIFICATIONS

- Added the Canon DR-G2140 central count scanner.

- Added the HP M501dn printer for the ICX BMD configuration.

- Added Microsoft Windows 10 Patch (Jan. 14, 2020).

EMS

- Election Summary Report to show party totals for voter turnout and voter registration when ballot rotation and Summary Results files are used.

ADJ

- Added functionality to export the Adjudication Activity Report to CSV format.

ICC

- Corrected issue where certain batches were omitted from ICC Summary Report.

- Corrected functionality to allow discarding of batches after 999.

ICP

- Corrected AuditMark content to show all contests and choices when using multi-card ballots that have multiple instructional contests within an ICX ballot.

ICX

- Corrected audio to play the contest title when entering the Straight Party contest.

- Corrected issue where a Non-Partisan option appears on the ballot, even if it's not defined.

- Updated Android OS to remove access to safe mode.

- Added ability to change font for ICX produced ballot.

- Corrected audio instruction on Cast Ballot dialog.

1.1.3 Initial Assessment

Testing from the previous test campaign was used to establish the baseline. The focus of this test campaign is the addition of the Canon DR-G2140 central count scanner and the HP M501dn printer for the ICX BMD configuration, as well as the Microsoft Windows 10 Patch (Jan. 14, 2020). It was determined the following tasks would be required to verify compliance of the modifications:

- Source Code Review, Compliance Build, Trusted Build, and Build Document Review

- System Integration Testing

- Technical Documentation Package (TDP) Review

- Functional Configuration Audit (FCA)

- System Loads & Hardening

- Physical Configuration Audit (PCA)

- Hardware Testing

- Usability & Accessibility Testing

- Volume & Stress Testing

- Accuracy Testing

1.1.4 Regression Test

Regression testing for this test campaign will consist of the execution of the System Integration Testing.

1.2 References

- Election Assistance Commission 2005 Voluntary Voting System Guidelines (VVSG) Version 1.0, Volume I, "Voting System Performance Guidelines", and Volume II, "National Certification Testing Guidelines"

- Election Assistance Commission Testing and Certification Program Manual, Version 2.0

- Election Assistance Commission Voting System Test Laboratory Program Manual, Version 2.0

- National Voluntary Laboratory Accreditation Program NIST Handbook 150, 2016 Edition, "NVLAP Procedures and General Requirements (NIST HB 150-2016)", dated July 2016

- National Voluntary Laboratory Accreditation Program NIST Handbook 150-22, 2008 Edition, "Voting System Testing (NIST Handbook 150-22)", dated May 2008

- United States 107th Congress Help America Vote Act (HAVA) of 2002 (Public Law 107-252), dated October 2002

- Pro V&V, Inc. Quality Assurance Manual, Revision 1.0

- Election Assistance Commission "Approval of Voting System Testing Application Package" letter dated May 6, 2016

- EAC Requests for Interpretation (RFI) (listed on www.eac.gov)

- EAC Notices of Clarification (NOC) (listed on www.eac.gov)

- Dominion Voting Systems Technical Data Package *(A listing of the D-Suite 5.5-C documents submitted for this test campaign is listed in Section 4.6 of this Test Plan)*

1.3   Terms and Abbreviations

This subsection lists terms and abbreviations relevant to the hardware, the software, or this Test Plan.

"ADA" – Americans with Disabilities Act 1990

"BMD" – Ballot Marking Device

"CM" – Configuration Management

"COTS" – Commercial Off-The-Shelf

"DRE" – Direct Record Electronic

"EAC" – United States Election Assistance Commission

"EMS" – Election Management System

"FCA" – Functional Configuration Audit

"HAVA" – Help America Vote Act

"ICC" – ImageCast Central

"ICE" – ImageCast Evolution

"ICP" – ImageCast Precinct

"ICX" – ImageCast X

"ISO" – International Organization for Standardization

"NOC" – Notice of Clarification

"PCA" – Physical Configuration Audit

"QA" – Quality Assurance

"RFI" – Request for Interpretation

"TDP" – Technical Data Package

"UPS" – Uninterruptible Power Supply

"VSTL" – Voting System Test Laboratory

"VVPAT" – Voter Verifiable Paper Audit Trail

"VVSG" – Voluntary Voting System Guidelines

1.4 Project Schedule

The Project Schedule for the test campaign is located in Appendix A. The dates on the schedule are not firm dates but planned estimates based on the anticipated project work flow.

1.5 Scope of Testing

The scope of testing focused on the addition of the Canon DR-G2140 central count scanner and the HP M501dn printer for the ICX BMD configuration, as well as the Microsoft Windows 10 Patch (Jan. 14, 2020). To evaluate the D-Suite 5.5-C test requirements, the submitted modifications were evaluated against each section of the EAC 2005 VVSG to determine the applicable tests to be performed.

Based on this assessment, it was determined that multiple areas within the EAC 2005 VVSG would be evaluated to encompass the required tests. A breakdown of the areas and associated tests is listed below:

- EAC 2005 VVSG Volume 1, Section 2: Functional Requirements
    - System Integration Testing
    - Functional Configuration Audit (FCA)
    - Physical Configuration Audit (PCA), including System Loads & Hardening
    - Technical Documentation Package (TDP) Review
    - Volume & Stress Testing
    - Accuracy Testing

- EAC 2005 VVSG Volume 1, Section 3: Usability & Accessibility
    - Usability & Accessibility Testing
    - Technical Documentation Package (TDP) Review

- EAC 2005 VVSG Volume 1, Section 4: Hardware Requirements

    — Hardware Testing

    — Technical Documentation Package (TDP) Review

- EAC 2005 VVSG Volume 1, Section 5: Software Requirements

    — Source Code Review, Compliance Build, Trusted Build, and Build Document Review

    — Technical Documentation Package (TDP) Review

    — Functional Configuration Audit (FCA)

1.5.1   Block Diagram
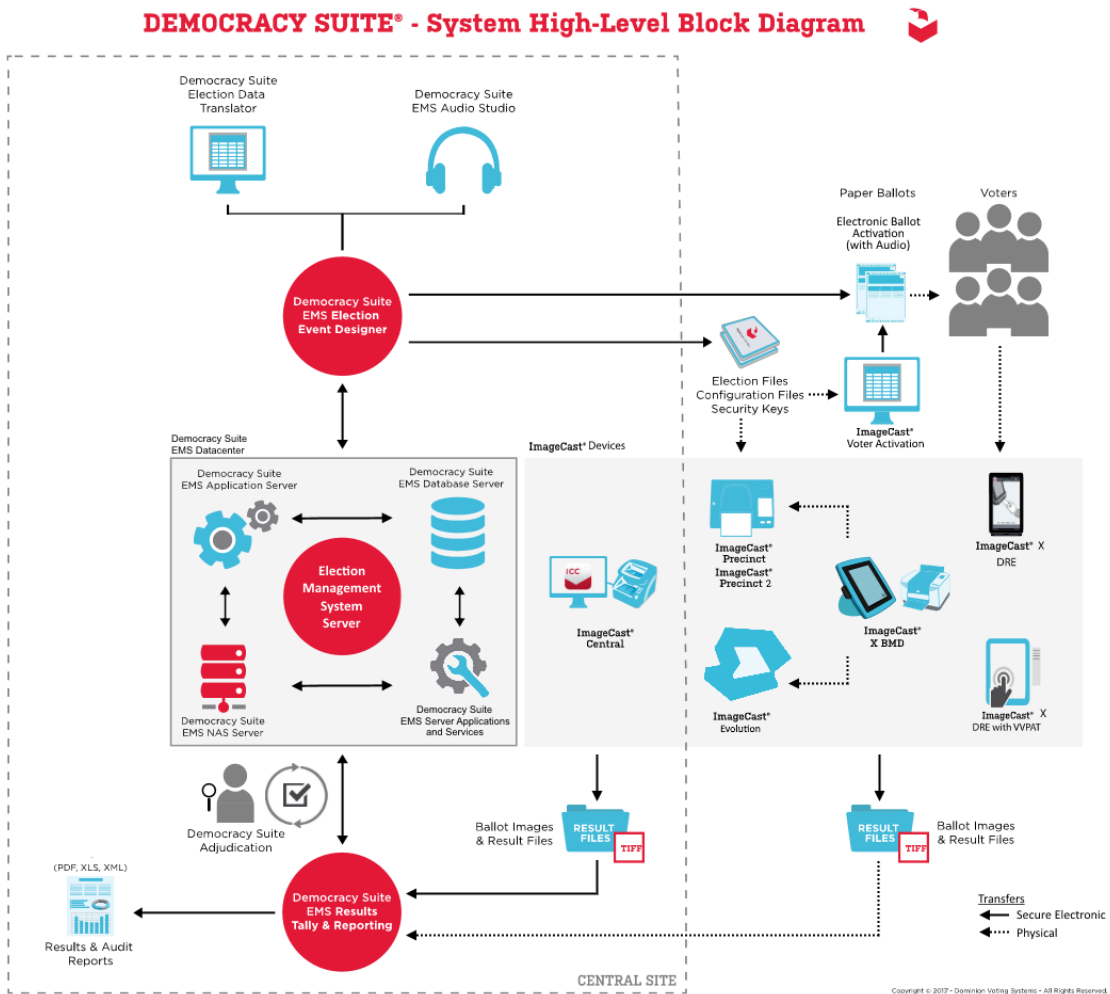
Figure 1-1. D-Suite 5.5-C System Overview

1.5.2 System Limits

The system limits that Dominion Voting Systems has stated to be supported by the D-Suite 5.5-C are provided in the table below.

Table 1-30. D-Suite 5.5-B System Limits

Characteristic	Limiting Component	Limit	Component
Ballot positions	Ballot	462**/292*	22 in. Ballot
Precincts in an election	EMS	1000; 250	Memory, Standard; Express
Contests in an election	EMS	1000; 250	Memory, Standard; Express
Candidates/Counters in an election	EMS	10000; 2500	Memory, Standard; Express
Candidates/Counters in a precinct	Ballot	462**/240*	22 in. Ballot
Candidates/Counters in a tabulator	Tabulators	10000; 2500	Memory, Standard; Express
Ballot Styles in an election	Tabulators	3000; 750	Memory, Standard; Express
Ballot IDs in a tabulator	ICP	200	Memory, Both EMS
Contests in a ballot style	ICX BMD Ballot	156**/38*	14 in. Ballot, Both EMS
Candidates in a contest	Ballot	231**/240*	22 in. Ballot, Both EMS
Ballot styles in a precinct	Tabulators	5	Memory, Both EMS
Number of political parties	Tabulators	30	Memory, Both EMS
"Vote for" in a contest	Ballot	30**/24*	22 in. Ballot, Both EMS
Supported languages in an election	Tabulators	5	Memory, Both EMS
Number of write-ins	Ballot	462**/24*	22 in. Ballot, Both EMS

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

1.5.3 Supported Languages

The following languages are supported by the D-Suite 5.5-C System:

Table 1-31. D-Suite 5.5-C Supported Languages

Language	ICE	ICP	ICX
Alaska Native	Yes, if using Latin alphabet	Yes	No
Apache	Audio only	Audio only	No
Bengali	Yes	Yes	Yes
Chinese	Yes	Yes	Yes
English	Yes	Yes	Yes
Eskimo	Yes, if using Latin alphabet	Yes	No
Filipino	Yes, if using Latin alphabet	Yes	No

Table 1-31. D-Suite 5.5-C Supported Languages *(continued)*

Language	ICE	ICP	ICX
French	Yes	Yes	Yes
Hindi	Yes	Audio only	Yes
Japanese	Yes	Yes	Yes
Jicarilla	Audio only	Audio only	No
Keres	Audio only	Audio only	No
Khmer	Yes	Audio only	No
Korean	Yes	Yes	Yes
Navajo	Audio only	Audio only	No
Seminole	Audio only	Audio only	No
Spanish	Yes	Yes	Yes
Tagalog	No	No	Yes
Thai	Yes	Audio only	Yes
Towa	Audio only	Audio only	No
Ute	Audio only	Audio only	No
Vietnamese	Yes	Yes	Yes
Yuman	Audio only	Audio only	No

Support for all stated languages will be verified; however, only English and Spanish language ballots will be cast during the performance of functional testing. Additionally, one character based language (Chinese) will be tested during System Integration Testing.

For the character based language, the ballot will be created by Pro V&V and voted utilizing both paper ballots and ADA voting devices along with all applicable peripherals. The Chinese Language for the ballot will be created using a readily available online translation tool. The translated language text will be entered into the Election Event Designer Application. A ballot preview will be generated in the EED application. The Chinese characters displayed in the ballot preview will be compared to the characters generated by the online translation tool, to ensure that the characters match. The ballots will then be generated and printed, and the election loaded onto the tabulators and the BMD units. The Chinese characters displayed on both the printed ballots and displayed on the BMD units will be compared to the original Chinese Characters generated by the online translation tool to verify that the characters match.

1.5.4   Supported Functionality

The D-Suite 5.5-C is designed to support the following voting variations:

- General Election
- Closed Primary
- Open Primary
- Early Voting
- Partisan/Non-Partisan Offices
- Write-In Voting

- Primary Presidential Delegation Nominations

- Split Precincts

- Vote for N of M

- Ballot Rotation

- Provisional or Challenged Ballots

1.5.5 VVSG

The D-Suite 5.5-C Voting System shall be evaluated against the relevant requirements contained in the EAC 2005 VVSG, Version 1.0.

1.5.6 RFIs

There are no RFIs released by the EAC as of the date of this Test Plan that pertain to this test campaign that were not in effect at the time of the baseline system certification.

1.5.7 NOCs

There are no NOCs released by the EAC as of the date of this Test Plan that pertain to this test campaign that were not in effect at the time of the baseline system certification.

2.0 PRE-CERTIFICATION TESTING AND ISSUES

This section describes previous testing performed prior to submitting the voting system to the EAC.

2.1 Evaluation of Prior VSTL Testing

Pro V&V evaluated to the published Final Test Report for the D-Suite 5.5-B System in order to baseline the current system under test. It was determined that Volume/Stress testing performed on the Canon DR-G2140 central count scanner as part of a previous ECO evaluation would be re-used to satisfy requirements for this test campaign. Additionally, Volume/Stress testing on the ICP component performed as part of the D-Suite 5.5 EAC test campaign would be re-used to satisfy requirements for this test campaign.

2.2 Evaluation of Prior Non-VSTL Testing

No prior non-VSTL testing of the D-Suite 5.5-B modifications were considered for this test campaign.

2.3 Known Field Issues

D-Suite 5.5-C is a modification to a previously certified system and has not been fielded.

3.0   MATERIALS REQUIRED FOR TESTING

The following sections list all materials needed to enable the test engagement to occur.

The materials required for testing of the D-Suite 5.5-C System include all materials to enable the test campaign to occur. This includes the applicable hardware and software as well as the TDP, test support materials, and deliverable materials, as described in the following subsections.

3.1   Software

This subsection lists the proprietary and COTS software to be provided by the manufacturer as part of the test campaign.

In addition to the baseline system software identified in Section 1.1.1 of this Test Plan, the following software is required for test performance:

Table 3-1. Software

System Component	Software or Firmware Version
ImageCast Precinct	5.5.41.2
ImageCast Precinct 2	5.5.1.8
ImageCast Evolution	5.5.6.5
ImageCast X (BMD and DRE)	5.5.15.2
ImageCast Voter Activation	5.5.40.2
ImageCast Central	5.5.41.0002
Democracy Suite Election Management System	5.5.40.2
Democracy Suite EMS Adjudication	5.5.40.1
Democracy Suite EMS Adjudication Services	5.5.40.2

Pro V&V will perform a comparison on the submitted source code against the previously certified versions. Regression testing will be performed to verify successful implementation of changes.

3.2   Equipment

This subsection lists the proprietary and COTS equipment to be provided by the manufacturer as part of the test campaign.

In addition to the baseline system hardware identified in Section 1.1.1 of this Test Plan, the following hardware is required for test performance:

Table 3-2. Hardware

System Component	Hardware Version
ImageCast Precinct	320A, 320C
ImageCast Precinct 2	330A
ImageCast Evolution	410A

Table 3-2. Hardware *(continued)*

System Component	Hardware Version
ImageCast X (BMD)	Avalue SID-15V-Z37 Avalue SID-21V-Z37 Avalue HID-21V-BTX HP M402dn HP M402dne HP M501dn
ImageCast X (DRE)	Avalue HID-21V-BTX KFI 702-7520014A (V1) KFI 702-7520017C (V1-C) Seiko RP-D10-K27J1-U1C3
ImageCast Central	Canon DR-G1130 Canon DR-M160 II Canon DR-M260 InoTec HiPro 821 Canon DR-G2140

For COTS equipment, every effort will be made to verify that the COTS equipment has not been modified for use. This will be accomplished by performing research using the COTS equipment manufacturer's websites based on the serial numbers and service tag numbers for each piece of equipment. Assigned test personnel will evaluate COTS hardware, system software and communications components for proven performance in commercial applications other than voting. For PCs, laptops, and servers, the service tag information will be compared to the system information found on each machine. Physical external and internal examination will also be performed when the equipment is easily accessible without the possibility of damage. Hard drives, RAM memory, and other components will be examined to verify that the components match the information found on the COTS equipment manufacturer's websites.

3.3   Test Materials

This subsection lists the test materials required to execute the required tests throughout the test campaign.

Table 3-3. Required Test Materials

Material	Description(s)
Tamper Proof Security Seals	Adhesive tamper proof security seal, Novavision Part# XSG21-08RESN
Printer Cartridges	HP LaserJet CF226X
Smart Cards	Programmable Smart Cards for voters, poll workers, and technicians for the ICX System
ImageCast Precinct Cleaning Sheets	Cleaning Sheets for ImageCast Precinct tabulator Part# CSHT-100B
Stereo Breakout Cable	3.5mm stereo male plug to dual 3.5mm mono female plugs
3.5mm Stereo Cable	3.5mm stereo male plug to 3.5mm stereo female plug

Table 3-3. Required Test Materials *(continued)*

Material	Description(s)
Compact Flash Cards	SanDisk Ultra 4Gb and Centon 16GB Compact Flash Cards
iButton Security Tokens	iButton Security Token with lanyards
Permanent Markers	Fine Tip Sharpie Permanent Markers
Ethernet Cables	Cat5e Ethernet Cables
ICE Paper Rolls	Replacement Thermal Paper Rolls for the ImageCast Evolution tabulator
ICP Paper Rolls	Replacement Thermal Paper Rolls for the ImageCast Precinct tabulator
Sip & Puff Disposable Straws	Disposable straws for use with the Sip & Puff input device
Ballot Stock	Ballot Paper Stock for printing ballots
A/C Power Cables	3-Prong A/C Power Cables
USB Thumb drives	4 GB, 8 GB, and 16 GB USB Thumb drives

3.4   Proprietary Data

All data and documentation considered by the manufacturer to be proprietary will be identified and documented in an independent submission along with a Notice of Protected Information.

4.0   TEST SPECIFICATIONS

Certification testing of the Dominion D-Suite 5.5-C Voting System submitted for evaluation will be performed to ensure the applicable requirements of the EAC 2005 VVSG and the EAC Testing and Certification Program Manual, Version 2.0 are met. Additionally, all EAC Request for Interpretations (RFI) and Notices of Clarification (NOC) relevant to the system under test will be incorporated in the test campaign. A complete listing of the EAC RFIs and NOCs is available on the EAC website.

4.1   Requirements (Strategy of Evaluation)

To evaluate the D-Suite 5.5-C test requirements, the submitted modifications were evaluated against each section of the EAC 2005 VVSG to determine the applicable tests to be performed. Based on this assessment, it was determined the following evaluations would be required to verify compliance of the modifications:

Technical Documentation Package (TDP) Review

A TDP Review will be performed to ensure that all submitted modifications are accurately documented and that the documents meet the requirements of the EAC 2005 VVSG. The preliminary TDP is performed to gather information concerning the system under test and its capabilities or design intentions. Additionally, a TDP review will be performed throughout the test campaign. The TDP Review includes the Initial Review, the Regulatory/Compliance Review,

and the Final Review. This review is conducted to determine if the submitted technical documentation meets the regulatory, customer-stated, or end-user requirements and includes reviewing the documents for stated functionality review and verification.

Section 2: Functional Requirements

The requirements in this section shall be tested during the FCA and System Integration Test. This evaluation will utilize baseline test cases as well as specifically designed test cases and will include predefined election definitions for the input data.

The FCA targets the specific functionality claimed by the manufacturer to ensure the product functions as documented. This testing uses both positive and negative test data to test the robustness of the system. The FCA encompasses an examination of manufacturer tests, and the conduct of additional tests, to verify that the system hardware and software perform all the functions described in the manufacturer's documentation submitted in the TDP (such as system operations, voter manual, maintenance, and diagnostic testing manuals). It includes a test of system operations in the sequence in which they would normally be performed. These system operations and functional capabilities are categorized as follows by the phase of election activity in which they are required:

- Overall System Capabilities: These functional capabilities apply throughout the election process. They include security, accuracy, integrity, system audit ability, election management system, vote tabulation, ballot counters, telecommunications, and data retention.

- Pre-voting Capabilities: These functional capabilities are used to prepare the voting system for voting. They include ballot preparation, the preparation of election-specific software (including firmware), the production of ballots, the installation of ballots and ballot counting software (including firmware), and system and equipment tests.

- Voting System Capabilities: These functional capabilities include all operations conducted at the polling place by voters and officials including the generation of status messages.

- Post-voting Capabilities: These functional capabilities apply after all votes have been cast. They include closing the polling place; obtaining reports by voting machine, polling place, and precinct; obtaining consolidated reports; and obtaining reports of audit trails.

- Maintenance, Transportation and Storage Capabilities: These capabilities are necessary to maintain, transport, and store voting system equipment.

The system integration testing addresses the integration of the hardware and software. This testing focuses on the compatibility of the voting system software components and subsystems with one another and with other components of the voting system. During test performance, the system is configured as would be for normal field use.

Section 3: Usability and Accessibility Requirements

The requirements in this section shall be tested during the Usability and Accessibility Testing. This evaluation will utilize baseline test cases as well as specifically designed test cases and will include predefined election definitions for the input data.

The usability testing focuses on the usability of the system being tested. Usability is defined generally as a measure of the effectiveness, efficiency, and satisfaction achieved by a specified set of users with a given product in the performance of specified tasks. In the context of voting, the primary user is the voter, the product is the voting system, and the task is the correct recording of the voter ballot selections. Additional requirements for task performance are independence and privacy: the voter should normally be able to complete the voting task without assistance from others, and the voter selections should be private. Accessibility evaluates the requirements for accessibility. These requirements are intended to address HAVA 301 (a) (3) (B).

Section 4: Hardware Requirements

The hardware tests specified in the VVSG are divided into two categories: non-operating and operating. The non-operating tests apply to the elements of the system that are intended for use at poll site locations and are intended to simulate the storage and transport of equipment between the storage facility and the polling location. The Operating tests apply to the entire system, including hardware components that are used as part of the voting system telecommunications capability, and are intended to simulate conditions that the voting system may encounter during operation. Prior to and immediately following each required non-operating and operating test, the system shall be subjected to an operational status check.

The requirements in this section shall be tested and/or evaluated by personnel verified by Pro V&V to be qualified to perform the testing.

Section 5: Software Requirements

The requirements in this section shall be tested utilizing a combination of review and functional testing during the source code review, TDP review, and FCA. Trusted builds from previously certified versions will be used as the baseline for testing.

To perform the source code review, Pro V&V will review the submitted source code to the EAC 2005 VVSG and the manufacturer-submitted coding standards. Prior to initiating the software review, Pro V&V shall verify that the submitted documentation is sufficient to enable: (1) a review of the source code and (2) Pro V&V to design and conduct tests at every level of the software structure to verify that design specifications and performance guidelines are met. The source code review includes a compliance build and a trusted build of the submitted source code.

4.1.1 Rationale for 'Not Applicable' Requirements

All requirements that were excluded from the previous test campaign (D-Suite 5.5-B) were also deemed not applicable to this test campaign due to the submitted modifications not impacting the specific requirements. These requirements are identified below:

- Volume I, Section 6.2.6 (Telecommunications Requirements: Integrity)

- Volume I, Section 7.5.2-7.5.4 (Security: Protection Against External Threats, Monitoring and Responding to External Threats, and Shared Operating Environment)

- Volume I, Section 7.6 (Use of Public Communications Networks)

- Volume I, Section 7.7 (Wireless Communications)

The rationale for not evaluating the D-Suite 5.5-C to the indicated sections is described in following table. Specific requirements that are excluded from this test campaign are identified in the EAC spreadsheet.

Table 4-1. Not Applicable Requirements

EAC 2005 VVSG Version 1 Volume I, Section	Rationale for 'Not Applicable'
6.2.6	These requirements are written for use of public networks. The D-Suite 5.5-C does not utilize public networks.
7.5.2-7.5.4	These requirements are written for use of public networks. The D-Suite 5.5-C does not utilize public networks.
7.6	D-Suite 5.5-C does not support transmission over public networks.
7.7	No wireless technology is utilized in this system.

4.2 Hardware Configuration and Design

The hardware configuration and design for the modification has changed from the baseline system. The Canon DR-G2140 central count scanner has been added to the ICC and the HP M501dn printer has been added to the ICX BMD configuration.

4.3 Software System Functions

The software system functions for the previously certified voting system (D-Suite 5.5-B) remain unchanged for the submitted modifications; however, the Microsoft Windows 10 Patch (Jan. 14, 2020) has been added.

4.4 Test Case Design

Test cases are designed based on the manufacturer's design specifications and the relevant technical requirements set forth by the VVSG. Test cases shall be based on the following aspects of the voting system:

- Hardware qualitative examination design
- Hardware environmental test case design
- Software module test case design and data
- Software functional test case design
- System level test case design

Test cases shall provide information regarding the sequence of actions to be performed for the execution of a test, the requirements being met, the test objective, test configuration, equipment needed, special requirements, assumptions, and pass/fail criteria. Once the test cases are finalized, they will be validated and published for use in the test campaign. The validation of the test case will be accomplished by technical review and approval.

This validation will include the following: confirmation of adequate test coverage of all requirements; confirmation that test case results are not ambiguous and gave objective pass/fail criteria; and confirmation that any automated test suites will produce valid results.

4.4.1 Hardware Qualitative Design

Previous hardware examinations were performed on the certified baseline system (D-Suite 5.5-B). The hardware testing will be requested for re-use from the previous certification test campaign (D-Suite 5.5-B). The Canon DR-G2140 central scanner will be subjected to Temperature-Power Variation Testing. The ICX BMD will be subjected to Electrical Supply testing.

4.4.2 Hardware Environmental Test Case Design

The voting system hardware shall be subjected to the tests specified in Section 4.4.1. Testing will be performed by personnel verified by Pro V&V to be qualified to perform the test. Pro V&V will utilize third-party test facilities for performance of the environmental test. Environmental will be performed at the NTS Longmont facility located in Longmont, Colorado. Electrical supply will be performed at the Pro V&V lab. All pre and post operational status checks shall be conducted by Pro V&V personnel.

4.4.3 Software Module Test Case Design and Data

Pro V&V shall review the manufacturer's program analysis, documentation, and module test case design and shall evaluate the test cases for each module with respect to flow control parameters and entry/exit data. As needed, Pro V&V shall design additional test cases to satisfy the coverage criteria specified in Volume II, Section 7.2.1.

Component Level Testing will be implemented during the FCA for each component and subcomponent. During the Source Code Review, Compliance Builds, and Security Testing, Pro V&V will utilize limited structural-based techniques (white-box testing). Additionally, specification-based techniques (black-box testing) will be utilized for the individual software components.

Pro V&V shall define the expected result for each test and the ACCEPT/REJECT criteria for certification. If the system performs as expected, the results will be accepted.

If the system does not perform as expected, an analysis will be performed to determine the cause. The test will be repeated in an attempt to reproduce the results. If the failure can be reproduced and the expected results are not met, the system will have failed the test. If the results cannot be

reproduced, the test will continue. All errors encountered will be documented and tracked through resolution.

4.4.4 Software Functional Test Case Design and Data

Pro V&V shall review the manufacturer-submitted test plans and data to verify that the individual performance requirements specified in the EAC 2005 VVSG and the TDP are reflected in the software. As part of this process, Pro V&V shall review the manufacturer's test case design and prepare a detailed matrix of system functions and the test cases that exercise them. Pro V&V shall also prepare a test procedure describing all test ballots, operator procedures, and the data content of output reports. Pro V&V shall define abnormal input data and operator actions and then design test cases to verify that the system is able to handle and recover from these abnormal conditions. During this review, emphasis shall be placed on those functions where the manufacturer data on module development, such as the system release notes and comments within the source code, reflects significant debugging problems, and on functional tests that resulted in high error rates.

Pro V&V shall define the expected result for each test and the ACCEPT/REJECT criteria for certification. If the system performs as expected, the results will be accepted. If the system does not perform as expected, an analysis will be performed to determine the cause. The test will be repeated in an attempt to reproduce the results. If the failure can be reproduced and the expected results are not met, the system will have failed the test. If the results cannot be reproduced, the test will continue. All errors encountered will be documented and tracked through resolution.

4.4.5 System-Level Test Case Design

System Level testing will be implemented to evaluate the complete system. This testing will include all proprietary components and COTS components (software, hardware, and peripherals) in a configuration of the system's intended use. For software system tests, the tests shall be designed according to the stated design objective without consideration of its functional specification. The system level hardware and software test cases shall be prepared independently to assess the response of the hardware and software to a range of conditions.

4.5 TDP Evaluation

In order to determine compliance of the modified TDP documents with the EAC 2005 VVSG, a limited TDP review shall be conducted. This review will focus on TDP documents that have been modified since the certification of the baseline system. The review will consist of a compliance review to determine if each regulatory, state, or manufacturer-stated requirement has been met based on the context of each requirement. Results of the review of each document will be entered on the TDP Review Checklist and reported to the manufacturer for disposition of any anomalies. This process will be ongoing until all anomalies are resolved.

Any revised documents during the TDP review process will be compared with the previous document revision to determine changes made, and the document will be re-reviewed to determine whether subject requirements have been met. A listing of all documents contained in the D-Suite 5.5-C TDP is provided in Table 4-2.

Table 4-2. TDP Documents

Document Number	Description	Version
	Adjudication Documents	
2.05	Democracy Suite Adjudication Software Design and Specification	5.5-C::138
2.08	Democracy Suite Adjudication System Operation Procedures	5.5-C::185
2.09	Democracy Suite Adjudication System Maintenance Manual	5.5-C::119
	D-Suite Documents	
2.02	Democracy Suite System Overview	5.5-C::196
2.06	Democracy Suite System Security Specification	5.5-C::586
2.07	Democracy Suite System Test and Verification	5.5-C::209
2.10	Democracy Suite Personnel Deployment and Training Requirements	5.5-C::145
2.11	Democracy Suite Configuration Management Process	5.5-C::435
2.12	Democracy Suite Quality Assurance Program	5.5-C::173
2.13	Democracy Suite System Change Notes	5.5-C::191
	EMS Documents	
2.03	Democracy Suite EMS Functional Description	5.5-C::396
2.05	Democracy Suite EMS Software Design and Specification	5.5-C::344
2.08	Democracy Suite EMS System Operations Procedures	5.5-C::744
2.09	Democracy Suite EMS System Maintenance Manual	5.5-C::163
---	Democracy Suite EMS System Installation and Configuration Procedure	5.5-C::385
	ImageCast Central Documents	
2.03	Democracy Suite ImageCast Central Functionality Description	5.5-C::209
2.05	Democracy Suite ImageCast Central Software Design and Specification	5.5-C::137
2.08	Democracy Suite ImageCast Central System Operation Procedures	5.5-C::226
---	Democracy Suite ImageCast Central Installation and Configuration Procedure	5.5-C::254
	ImageCast Evolution Documents	
2.03	Democracy Suite ImageCast Evolution Functionality Description	5.5-C::129
2.04	Democracy Suite ImageCast Evolution System Hardware Specifications	5.5-C::338
2.05	Democracy Suite ImageCast Evolution Software Design and Specifications	5.5-C::183
2.08	Democracy Suite ImageCast Evolution System Operation Procedures	5.5-C::251
2.09	Democracy Suite ImageCast Evolution System Maintenance Manual	5.5-C::171

Table 4-2. TDP Documents *(continued)*

Document Number	Description	Version
ImageCast Precinct Documents		
2.03	Democracy Suite ImageCast Precinct Functionality Description	5.5-C::197
2.04	Democracy Suite ImageCast Precinct System Hardware Specification	5.5-C::167
2.04.1	Democracy suite ImageCast Precinct System Hardware Characteristics	5.5-C::112
2.05	Democracy Suite ImageCast Precinct Software Design and Specification	5.5-C::169
2.08	Democracy Suite ImageCast Precinct System Operation Procedures	5.5-C::296
2.09	Democracy Suite ImageCast Precinct System Maintenance Manual	5.5-C::140
ImageCast Precinct2 Documents		
2.03	Democracy Suite ImageCast Precinct 2 Functionality Description	5.5-C::14
2.04	Democracy Suite ImageCast Precinct 2 System Hardware Specifications	5.5-C::15
2.05	Democracy Suite ImageCast Precinct 2 Software Design and Specifications	5.5-C::20
2.08	Democracy Suite ImageCast Precinct 2 System Operation Procedures	5.5-C::22
2.09	Democracy Suite ImageCast Precinct 2 System Maintenance Manual	5.5-C::16
ImageCast X Documents		
2.03	Democracy Suite ImageCast X Functionality Description	5.5-C::97
2.05	Democracy Suite ImageCast X Software Design and Specification	5.5-C::100
2.08	Democracy Suite ImageCast X System Operation Procedures	5.5-C::88
---	Democracy Suite ImageCast X System Installation and Configuration	5.5-C::94
2.09	Democracy Suite ImageCast X System Maintenance Manual	5.5-C::79
User Guides		
---	Democracy Suite ImageCast Adjudication User Guide	5.5-C::142
---	Democracy Suite Election Data Translator User Guide	5.5-C::90
---	Democracy Suite EMS Audio Studio User Guide	5.5-C::39
	Democracy Suite EMS Automated Test Deck User Guide	5.5-C::8
---	Democracy Suite EMS Election Event Designer User Guide	5.5-C::355
---	Democracy Suite EMS Results Tally and Reporting User Guide	5.5-C::146
---	Democracy Suite ImageCast Central User Guide	5.5-C::138
---	Democracy Suite ImageCast Precinct User Guide	5.5-C::58
---	Democracy Suite ImageCast Voter Activation User Guide	5.5-C::54

Table 4-2. TDP Documents *(continued)*

Document Number	Description	Version
---	Democracy Suite ImageCast X User Guide	5.5-C::253
---	Democracy Suite ImageCast Precinct 2 User Guide	5.5-C::7
DVS Supplementary Documents		
---	Democracy Suite ImageCast C++ Coding Standard	5.5-C::73
---	Democracy Suite C# Automated Code Review Process	5.5-C::68
---	Google Java Style Dominion XML	---
---	Dominion Voting Systems Java Coding Standards	1.0
---	Dominion Voting Systems JavaScript Coding Standards	1.0
---	Democracy Suite ImageCast Evolution Firmware Installation Procedure	5.5-C::106
---	Democracy Suite ImageCast Device Configuration Files	5.5-C::117
---	Democracy Suite ImageCast Evolution Level One (L1) Maintenance Manual	5.5-C::140
---	Democracy Suite ImageCast Election Definition Files	5.5-C::98
---	Democracy Suite ImageCast Evolution Machine Behavior Settings	5.5-C::104
---	Usability Study of Dominion Voting Systems ImageCast Evolution Versions 4.1.1.1 and 4.6.1.1	1.0.0::37
---	Democracy Suite ImageCast Precinct Extracting Firmware Contents	5.5-C::54
---	Democracy Suite ImageCast Precinct Firmware Update Procedure	5.5-C::85
---	Democracy Suite ImageCast Precinct Level One (L1) Maintenance Manual	5.5-C::80
---	Democracy Suite ImageCast Precinct Technical Guide	5.5-C::67
---	Usability Test Report of ImageCast Precinct 5.0 with 36 Participants for VVSG 1.0	5.0::10
---	Usability Test Report of ImageCast X 5.0 with 36 Participants for VVSG 1.0	5.0::13
---	Democracy Suite ImageCast Precinct 2 Level One (L1) Maintenance Manual	5.5-C:22
---	Democracy Suite ImageCast Precinct 2 Machine Behavior Settings	5.5-C::15
---	ICX Machine Configuration File (MCF) Parameters Settings	5.5-C::32
---	Common Industry Format for Usability Test Report ImageCast X 5.2 with VVPAT	5.5::1
---	Democracy Suite System Identification Guide	5.5-C::377
---	Democracy Suite ImageCast Total Results File Format	5.5-C::74
---	Democracy Suite ImageCast Printing and Finishing Specification	5.5-C::118
COTS Supplemental		

Table 4-2. TDP Documents *(continued)*

Document Number	Description	Version
---	Dell OptiPlex 9030 AIO Regulatory Compliance Sheet	Rev. A09
---	Dell Networking X-Series Specification Sheet	Ver. 1.9
---	Dell OptiPlex 9020 All-in-One Technical Specification Sheet	---
---	Dell OptiPlex 9030 All-in-One Technical Specification Sheet	---
---	Dell OptiPlex 3050 All-in-One Technical Specification Sheet	---
---	Canon DR-M160II User Manual	CE-IM-0953-E1.00
---	Canon DR-M260 User Manual	CE-IM-0991-E1.00
---	Canon DR-G1130 User Guide	CE-IM-910-E1.00
---	Canon DR-G2140 DR-G2110 DR-2090 User Guide	6T3-0034-E1.10
---	HiPro User Manual	1.2
---	SID-15V-Z37-A1R User Manual	Rev. 1.0
---	SID-21V-Z37-A1R User Manual	Rev. 1.0
---	Cyber Acoustics ACM-70B Stereo Headphones Product Sheet	---
---	YEDU.E95462 Uninterruptible Power-supply Equipment Sheet	---
---	Dell Latitude E7440 Regulatory Compliance Sheet	Rev. A09
---	Dell Latitude 3480 Regulatory Compliance Sheet	Rev. A11
---	Dell PowerEdge R630 Regulatory Compliance Sheet	Rev. A10
---	Dell Precision T1700 MT Regulatory Compliance Sheet	Rev. A09
---	Dell PowerConnect 2808 Product Safety. EMC, and Environmental Datasheet	---
---	Dell PowerConnect 2816 Product Safety. EMC, and Environmental Datasheet	---
---	Smart Pro SM1500 Datasheet	---
---	APC Smart-UPS 230V Product Information Sheet	---
---	HP M402dn Datasheet	Rev. 2
---	HP M402dne Datasheet	May 2017
---	Dell Latitude 3480 Owner's Manual	Rev. A00
---	Dell Latitude 3470 Owner's Manual	Rev. A00
---	Dell Precision T3420 Owner's Manual	Rev. A00
---	aValue HID-21V-BTX-A1R User Manual	Rev. 2.0

Table 4-2. TDP Documents *(continued)*

Document Number	Description	Version
---	aValue SID-15V-Z37-A1R Data Sheet	---
---	aValue SID-21V-Z37-A1R Data Sheet	---
---	APC Installation and Operation Back-UPS Pro BR1000G	10/2014
---	APC Smart-UPS SMT1500 Operation Manual	03/2013
---	Dell OptiPlex 7440 All-In-One Owner's Manual	Rev. A01
---	Dell OptiPlex 3050 All-In-One Owner's Manual	Rev. A01
---	Dell P2417H Monitor User's Guide	Rev. A01
---	Dell PowerEdge R630 Owner Manual	Rev. A03
---	Lexar Pro USB 3 Dual Slot Reader	---
---	Dell Latitude E7450/Latitude 7450 Regulatory Compliance Sheet	Rev. A09
---	Dell OptiPlex 9020 AIO Regulatory Compliance Sheet	Rev. A09
---	Seiko SII RP-D10 Series User's Guide	Jan. 2018
---	Dell EMC PowerEdge R640 Installation and Service Manual	Rev. A01
---	Dell OptiPlex 7060 Small Form Factor Service Manual	Rev. A00
---	Dell Latitude E7470 Owner's Manual	Rev. A02
---	APC Operation Manual Smart-UPS 750/1000/1500/2200/3000 VA	---
---	ACR38x CCID Smart Card Reader Reference Manual	V6.05
---	ACR39 Series PC-linked Smart Card Readers Reference Manual	V1.04
---	Ablenet Single Switch Quickstart Guide	B
---	The Programing Group High-Integrity C++Coding Standard Manual	Ver. 2.2
---	HIC++ Standards Model for C++	9.5.4
---	Dominion Voting Voter-verified paper audit trail (VVPAT) Model: VRP3 User Manual Safety Precautions	07 2018
---	APC Smart-UPS 1500 Specification Sheet	---
---	Democracy Suite ImageCast Precinct 2 Extracting Firmware Contents and Verifying SHA256 Values	5.5-B::18
---	APC Back-UPS BE600M1 User Manual	09/2015
---	APC Back-UPS SMT1500C Operation Manual	01/2017
---	Avalue HID-21V-BTX FactSheet (---)	---
---	Avalue SID 21V Quick Reference	Feb 2018
---	Dell Latitude 3490 Owner's Manual	Rev. A01
---	Dell OptiPlex 3050 AIO EMC Emissions Compliance Sheet	Rev. A11

Table 4-2. TDP Documents *(continued)*

Document Number	Description	Version
---	Dell Latitude 3400 Setup and Specification Guide	Rev. A00
---	Dell PowerEdge R640 Technical Guide	Rev. A00
---	Dell Networking X Series User Guide	Rev. A06
---	Dell P2419H Monitor User's Guide	Rev. A05
---	DisplayLink DL 125 Product Brief	---
---	HIC Coding Standard	2.2
---	Kingston USB 3.0 High-Speed Media Reader Datasheet	---
---	Lenovo ThinkCentre TIO24Gen3Touch Monitor User Guide	May 2017
---	Dell OptiPlex 7050 Tower Owner's Manual (A01)	Rev. A01
---	Dell OptiPlex 7060 Small Form Factor Service Manual	Rev. A00
---	Dell OptiPlex 7060 Tower Setup and Specifications Guide	Rev. A01
---	Dell Precision 3430 Small Form Factor Service Manual	Rev. A00
---	Dell Precision 3430 Small Form Factor Setup and Specifications Guide	Rev. A00
---	Scamax 8x1 Scanner Brochure	---
---	Tripp Lite SmartPro SM1500RMXL2UTAA Datasheet	---
Build Documents		
---	Democracy Suite ImageCast Evolution Firmware Build, Prerequisite Setup and Installation	5.5-C::102
---	Democracy Suite ImageCast Precinct Firmware Build and Install	5.5-C::111
---	Democracy Suite ImageCast X Build	5.5-B::56
---	Democracy Suite Windows Build Document	5.5-C::48
---	Democracy Suite ImageCast Precinct 2 Build Environment and Prerequisite Setup, Firmware Build and Installation	5.5-C::28

4.6   Source Code Review

Pro V&V will review the submitted source code to the EAC 2005 VVSG and the manufacturer-submitted coding standards. Prior to initiating the software review, Pro V&V shall verify that the submitted documentation is sufficient to enable: (1) a review of the source code and (2) Pro V&V to design and conduct tests at every level of the software structure to verify that design specifications and performance guidelines are met.

For the ICE software, a combination of Automated Source Code Review and Manual Source Code Review methods will be used to review the source code. For all other components, the submitted source code will be compared to the previously certified Democracy Suite 5.5 voting

system versions to determine the changes, if any. A combination of Automated Source Code Review and Manual Source Code Review methods will then be used to review the changes in the source code. In addition, 10% of the source code comments will be manually reviewed.

4.7   QA and CM System Review

The Dominion Voting Systems Quality and Configuration Management Manuals shall be reviewed for their fulfillment of Volume I, Sections 8 and 9, and the requirements specified in Volume II, Section 2. The requirements for these sections establish the quality assurance and configuration standards for voting systems to which manufacturers must conform and require voting system manufacturers to implement a quality assurance and configuration management program that is conformant with recognized ISO standards. As part of the review process, the Dominion TDP documents will be reviewed to determine if the stated policies are being followed.

4.8   Physical Configuration Audit (PCA)

The Physical Configuration Audit (PCA) compares the voting system components submitted for qualification to the manufacturer's technical documentation, and shall include the following activities:

- Establish a configuration baseline of software and hardware to be tested; confirm whether manufacturer's documentation is sufficient for the user to install, validate, operate, and maintain the voting system

- Verify software conforms to the manufacturer's specifications; inspect all records of manufacturer's release control system; if changes have been made to the baseline version, verify manufacturer's engineering and test data are for the software version submitted for certification

- If the hardware is non-COTS, Pro V&V shall review drawings, specifications, technical data, and test data associated with system hardware to establish system hardware baseline associated with software baseline

- Review manufacturer's documents of user acceptance test procedures and data against system's functional specifications; resolve any discrepancy or inadequacy in manufacturer's plan or data prior to beginning system integration functional and performance tests

- Subsequent changes to baseline software configuration made during testing, as well as system hardware changes that may produce a change in software operation are subject to re-examination

4.9   Functional Configuration Audit (FCA)

The Functional Configuration Audit (FCA) encompasses an examination of manufacturer's tests, and the conduct of additional tests, to verify that the system hardware and software perform all the functions described in the manufacturer's documentation submitted in the TDP. In addition to

functioning according to the manufacturer's documentation tests will be conducted to ensure all applicable EAC 2005 VVSG requirements are met.

4.10   Accuracy

The accuracy test ensures that each component of the voting system can each process 1,549,703 consecutive ballot positions correctly within the allowable target error rate. The Accuracy test is designed to test the ability of the system to "capture, record, store, consolidate and report" specific selections and absences of a selection. The required accuracy is defined as an error rate. This rate is the maximum number of errors allowed while processing a specified volume of data.

In an effort to achieve this and to verify the proper functionality of the units under test, the following methods will be used to test components of the voting system:

For paper-based voting systems the ballot positions on a paper ballot must be scanned to detect selections for individual candidates and contests and the conversion of those selections detected on the paper ballot converted into digital data. The accuracy requirements for the ICP and the ICC units will be met by the execution of the standard accuracy test utilizing pre-marked and hand-marked ballots of each ballot length supported by the system, and ballots produced by the ICX BMD.

The ICC and ICP units will be tested by utilizing a combination of hand marked (70%) and pre-marked (30%) ballots to achieve an accuracy rate greater than 1,549,703 correct ballot positions.

The ICX BMD, ICX DRE, ICP 2, ICE, and the ICX DRE with VVPAT Accuracy test will be reused from the Dominion 5.5 EAC Campaign

4.11   Volume & Stress

Tests to investigate the system's response to conditions that tend to overload the system's capacity to process, store, and report data. The test parameters will focus on the system's stated limits and the ballot logic for areas such as the maximum number of active voting positions, maximum number of ballot styles, maximum candidates, maximum contests, and stated limits within the EMS. This test will be utilized to ensure the system can achieve the manufacturer's TDP claims of what the system can support. Testing will be performed by exercising an election definition and test cases developed specifically to test for volume and stress conditions of the system being tested.

4.12   System Integration

System Integration is a system level test for the integrated operation of both hardware and software. It evaluates the compatibility of the voting system software components or subsystems with one another, and with other components of the voting system environment. This is determined through functional tests integrating the voting system software with the remainder of the system. During this area of testing, the system shall be configured exactly as it would for normal field use. This includes connecting all supporting equipment and peripherals including

ballot boxes, voting booths (regular and accessible), and any physical security equipment such as locks and ties.

Pro V&V personnel shall properly configure and test the system by following the procedures detailed in the D-Suite 5.5-C voting system technical documentation.

5.0   TEST DATA

The following subsections provide information concerning test data recording, criteria, and reduction.

5.1   Test Data Recording

All equipment utilized for test data recording shall be identified in the test data package. The output test data shall be recorded in an appropriate manner as to allow for data analysis.

For source code and TDP reviews, results shall be compiled in reports and submitted to Dominion for resolution.

5.2   Test Data Criteria

The D-Suite 5.5-C Voting System shall be evaluated against all applicable requirements contained in the EAC 2005 VVSG. The acceptable range for system performance and the expected results for each test case shall be derived from the manufacturer-submitted technical documentation and the EAC 2005 VVSG.

6.0   TEST PROCEDURE AND CONDITIONS

The following subsections detail the facility requirements, test setup conditions, and sequence of testing.

6.1   Facility Requirements

Unless otherwise annotated, all testing shall be conducted at the Pro V&V test facility located in Huntsville, AL, by personnel verified by Pro V&V to be qualified to perform the test.
Unless otherwise specified herein, testing shall be performed at the following standard ambient conditions and tolerances:

- Temperature: 68-75∘ F (±3.6∘F)

- Relative Humidity: Local Site Humidity

- Atmospheric Pressure: Local Site Pressure

- Time Allowable Tolerance: ±5%

Testing performed at third-party laboratories will be subjected to the test parameters and tolerances defined by the test facility and will be reported in the final Test Report.

6.2   Test Set-up

All voting system equipment shall be received and documented using Pro V&V proper QA procedures. Upon receipt of all hardware, an inspection will be performed to verify that the equipment received is free from obvious signs of damage and/or degradation that may have occurred during transit. If present, this damage shall be recorded, photographed, and reported to the Dominion Representative. Additionally, a comparison shall be made between the recorded serial numbers/part numbers and those listed on shipper's manifest and any discrepancies shall be reported to the Dominion Representative. TDP items and all source code received shall be inventoried and maintained by Pro V&V during the test campaign.

During test performance, the system shall be configured as it would be for normal field use. This includes connecting all supporting equipment and peripherals.

6.3   Test Sequence

The D-Suite 5.5-C Voting System will be evaluated against all applicable requirements in the EAC 2005 VVSG. There is no required sequence for test performance.

6.4   Test Operations Procedure

Pro V&V will identify PASS/FAIL criteria for each executed test case. The PASS/FAIL criteria will be based on the specific expected results of the system. In the case of an unexpected result that deviates from what is considered standard, normal, or expected, a root cause analysis will be performed.

Pro V&V will evaluate every EAC 2005 VVSG requirement applicable to the Democracy Suite 5.5-C voting system. Any deficiencies noted will be reported to the EAC and the manufacturer. If it is determined that there is insufficient data to determine compliance, this test plan will be altered and additional testing will be performed.

APPENDIX A

PROJECT SCHEDULE

Task Name	Start Date	End Date	Assigned To	Duration	Predecessors
TDP	**03/02/20**	**05/20/20**		**58d**	
Initial Review	03/02/20	03/03/20	Alan	2d	
Compliance Review	03/04/20	04/14/20	Alan	30d	2
Final review	04/15/20	04/16/20	Alan	2d	3
TRR	03/16/20	03/20/20	Hunter	5d	
Test Plan	**03/23/20**	**05/20/20**		**43d**	
Test Plan Creation	03/23/20	04/01/20	Wendy	8d	
Vendor Review & Comments	04/02/20	04/02/20	Wendy	1d	7
EAC Submission & Review	04/03/20	04/30/20	Wendy	20d	8
EAC Comment Review & Update	05/01/20	05/04/20	Wendy	2d	9
EAC Submission & Review of Revision	05/05/20	05/18/20	Wendy	10d	10
EAC Approved Test Plan	05/19/20	05/20/20	Wendy	2d	11
Source Code	**03/16/20**	**03/23/20**		**6d**	
Automated Review	03/16/20	03/16/20	Hunter	1d	
Source Code Review	03/16/20	03/17/20	Hunter	2d	
Source Code Re-Review	03/18/20	03/18/20	Hunter	1d	15
Document Review	03/19/20	03/19/20	Hunter	1d	16
Compliance Build	03/19/20	03/23/20	Hunter	3d	16
System Delivery & Setup	**02/19/20**	**03/25/20**		**26d**	
PCA	02/19/20	03/17/20	Hunter	20d	
System Setup	03/18/20	03/19/20	Hunter	2d	20
System Loads & Hardening	03/24/20	03/25/20	Hunter	2d	18
Hardware Testing	**03/09/20**	**03/27/20**		**15d**	
Temp Power	03/09/20	03/13/20	Walker	5d	
Maintainability	03/25/20	03/25/20	Hunter	1d	
Electrical Supply (ICX)	03/27/20	03/27/20	Hunter	1d	
Acoustic Test	03/27/20	03/27/20	Hunter	1d	
System Level Testing	**03/26/20**	**04/14/20**		**14d**	
FCA	03/26/20	03/27/20	Hunter	2d	22
Security	03/30/20	03/30/20	Hunter	1d	29
Usability	03/31/20	03/31/20	Hunter	1d	30
Accessibility	03/31/20	03/31/20	Hunter	1d	30
Accuracy	04/01/20	04/03/20	Hunter	3d	32
Regression Testing	04/06/20	04/06/20	Hunter	1d	33
Trusted Build	04/07/20	04/09/20	Hunter	3d	34
System Integration	04/10/20	04/14/20	Hunter	3d	35
Test Report	**04/07/20**	**07/07/20**		**66d**	

Test Report Creation	04/07/20	04/20/20	Wendy	10d	34
Vendor Review & Comments	04/21/20	04/22/20	Wendy	2d	38
EAC Submission & Review	05/21/20	06/17/20	Wendy	20d	12
EAC Comment Review & Update	06/18/20	06/19/20	Wendy	2d	40
EAC Submission & Review of Revision	06/22/20	07/03/20	Wendy	10d	41
EAC Approved Test Report	07/06/20	07/07/20	Wendy	2d	42