

# National Technical Systems Test Report for Electromagnetic Interference (EMI) Testing of the Poll Place Scanner (DS300)

**Prepared For**

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**Performed By**

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Karen Norton  
Preparer

A handwritten signature in black ink, appearing to read "Eugene Devito", written over a horizontal line.

Eugene Devito  
EMI Project Engineer

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### Revision History

Rev.	Description	Issue Date
0	Initial Release	05/17/2022
1	Test data corrected with testing performed in April 2022.	05/17/2022
2	Table 3.0-1: Added S/Ns DS3021420007, DS3021420011, and DS3021420008.  Table 5.0-1: Corrected S/Ns for Sections 5.1, 5.5, 5.6, and 5.7.  Section 5.1.2: Corrected test results to indicate that the test item met the specified requirements.  Section 5.1.3: Corrected S/N.  Section 5.2.3: Corrected S/N.  Section 5.5.3: Corrected S/N.  Section 5.6.3: Corrected S/N.  Section 5.7.3: Corrected S/Ns.  Section 6.0 removed.	05/19/2022

**Table of Contents**

<b>1.0</b>	<b>Introduction .....</b>	<b>5</b>
<b>2.0</b>	<b>References .....</b>	<b>5</b>
<b>3.0</b>	<b>Product Selection and Description.....</b>	<b>5</b>
3.1	Security Classification .....	5
<b>4.0</b>	<b>General Test Requirements.....</b>	<b>5</b>
4.1	Test Equipment .....	5
4.2	Measurement Uncertainties.....	5
<b>5.0</b>	<b>Test Descriptions and Results.....</b>	<b>6</b>
5.1	Electrostatic Discharge .....	7
5.1.1	Test Procedure .....	7
5.1.2	Test Result .....	7
5.1.3	Test Datasheet .....	7
5.1.4	Test Photographs .....	8
5.1.6	Test Equipment List .....	10
5.2	Radiated RF Immunity.....	11
5.2.1	Test Procedure .....	11
5.2.2	Test Result .....	11
5.2.3	Test Datasheets .....	11
5.2.4	Test Photographs .....	12
5.2.5	Test Equipment List .....	14
5.3	Electrical Fast Transient / Burst.....	15
5.3.1	Test Procedure .....	15
5.3.2	Test Result .....	15
5.3.3	Test Datasheets .....	15
5.3.4	Test Photographs .....	16
5.3.5	Test Equipment List .....	17
5.4	Surge Immunity .....	18
5.4.1	Test Procedure .....	18
5.4.2	Test Result .....	18
5.4.3	Test Datasheets .....	18
5.4.4	Test Photographs .....	21
5.4.5	Test Equipment List .....	22
5.5	Conducted RF Immunity.....	23
5.5.1	Test Procedure .....	23
5.5.2	Test Result .....	23
5.5.3	Test Datasheets .....	23
5.5.4	Test Photographs .....	24
5.5.5	Test Equipment List .....	25
5.6	Power Frequency H-Field Immunity.....	26
5.6.1	Test Procedure .....	26
5.6.2	Test Result .....	26
5.6.3	Test Datasheets .....	26
5.6.4	Test Photographs .....	27
5.6.5	Test Equipment List .....	29
5.7	Voltage Dips and Interruptions .....	30
5.7.1	Test Procedure .....	30
5.7.2	Test Result .....	30
5.7.3	Test Datasheets .....	30
5.7.4	Test Photographs .....	31
5.7.5	Test Equipment List .....	32
<b>6.0</b>	<b>Test Logs .....</b>	<b>Error! Bookmark not defined.</b>

### List of Tables

Table 3.0-1: Product Identification - Equipment Under Test (EUT) .....	5
Table 4.2-1: Measurement Uncertainties .....	5
Table 5.0-1: Summary of Test Information & Results .....	6
Table 5.1-1: Electrostatic Discharge Test Equipment List .....	10
Table 5.2-1: Radiated RF Immunity Test Equipment List.....	14
Table 5.3-1: Electrical Fast Transient / Burst Test Equipment List.....	17
Table 5.4-1: Surge Immunity Test Equipment List .....	22
Table 5.5-1: Conducted RF Immunity Test Equipment List .....	25
Table 5.6-1: Power Frequency H-Field Immunity Test Equipment List .....	29
Table 5.7-1: Voltage Dips and Interruptions Test Equipment List.....	32

### 1.0 Introduction

This document presents the test procedures used and the results obtained during the performance of an Electromagnetic Interference (EMI) test program. The test program was conducted to assess the ability of the specified Equipment Under Test (EUT) to successfully satisfy the requirements listed in Section 2.0.

### 2.0 References

The following references listed below form a part of this document to the extent specified herein.

- Test Specifications: EAC 2005 VVSG
- IEC/EN 61000-4-2
- IEC/EN 61000-4-3
- IEC/EN 61000-4-4
- IEC/EN 61000-4-5
- IEC/EN 61000-4-6
- IEC/EN 61000-4-8
- IEC/EN 61000-4-11
- Pro V&V, Inc. Purchase Order(s) 2022-008, dated 03/15/2022
- National Technical Systems (NTS) Quote(s) OP0594543, dated 09/07/2021
- ISO/IEC 17025:2017(E) *General Requirements for the Competence of Testing and Calibration Laboratories*, dated 11/1/2017

### 3.0 Product Selection and Description

Pro V&V, Inc. selected and provided the test sample(s) to be used as the Equipment Under Test. Details below:

**Table 3.0-1: Product Identification - Equipment Under Test (EUT)**

Item	Qty.	Name/Description	Model Number	Serial Number
1	4	Poll Place Scanner	DS300	DS3021420004, DS3021420007, DS3021420011, DS3021420008

### 3.1 Security Classification

Non-classified

### 4.0 General Test Requirements

#### 4.1 Test Equipment

The instrumentation used in the performance of these tests is periodically calibrated and standardized within manufacturer's rated accuracies and are traceable to the National Institute of Standards and Technology. The calibration procedures and practices are in accordance with ANSI/NCSL Z540-1 and ISO 17025:2017. Certification of calibration is on file subject to inspection by authorized personnel.

#### 4.2 Measurement Uncertainties

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below were calculated using the approach described in CISPR 16-4-2:2003 using a coverage factor of k=2, which gives a level of confidence of approximately 95%. The levels were found to be below levels of CISPR and therefore no adjustment of the data for measurement uncertainty is required.

**Table 4.2-1: Measurement Uncertainties**

Measurement Type	Measurement Unit	Frequency Range
Radiated Immunity	V/m	80-2,700 MHz
ESD	kV	N/A
EFT	Voltage	N/A
	Timing	N/A
Surge	Voltage	N/A
RF Common Mode (CDN Method)	Vrms	N/A
RF Common Mode (BCI Method)	Vrms	N/A



## 5.0 Test Descriptions and Results

**Table 5.0-1: Summary of Test Information & Results**

Section	Test	Specification	Test Facility	Test Date	Model #	Serial #	Test Result
5.1	Electrostatic Discharge - Retest	IEC/EN 61000-4-2	Longmont	04/01/2022	DS300	DS3021420007	Complies
5.2	Radiated RF Immunity	IEC/EN 61000-4-3	Longmont	04/03/2022	DS300	DS3021420004	Complies
5.3	Electrical Fast Transient / Burst	IEC/EN 61000-4-4	Longmont	04/03/2022	DS300	DS3021420004	Complies
5.4	Surge Immunity	IEC/EN 61000-4-5	Longmont	04/02/2022	DS300	DS3021420004	Complies
5.5	Conducted RF Immunity	IEC/EN 61000-4-6	Longmont	04/02/2022	DS300	DS3021420008	Complies
5.6	Power Frequency H-Field Immunity	IEC/EN 61000-4-8	Longmont	04/02/2022	DS300	DS3021420008	Complies
5.7	Voltage Dips and Interruptions	IEC/EN 61000-4-11	Longmont	04/02/2022	DS300	DS3021420007 DS3021420011 DS3021420004	Complies

## 5.1 Electrostatic Discharge

### 5.1.1 Test Procedure

IEC/EN 61000-4-2

### 5.1.2 Test Result

The DS300 was subjected to the Electrostatic Discharge Test per IEC/EN 61000-4-2. The test item met the specification requirements for Electrostatic Discharge.

### 5.1.3 Test Datasheet

#### Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	DS300	S/N:	DS3021420007
Standard Referenced:	EAC 2005 VVSG	Date:	April 1, 2022
Temperature:	18°C	Humidity:	45%
Input Voltage:	120Vac/60Hz	Pressure:	838 mb
Configuration of Unit:	Processing Ballots (Configuration #3)		
Test Engineer:	T. Wittig/W. Koenig		

PR145960-4-2.doc

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Test Location	Voltage Level (kV)	Polarity		Number of Pulses	Pulses Per Second	Comments	Criteria Met	Pass / Fail
		+	-					
Indirect Discharge Points								
VCP	8	x	x	15/20	1	Front Side	A	Pass
VCP	8	x	x	15/20	1	Left Side	A	Pass
VCP	8	x	x	15/20	1	Right Side	A	Pass
VCP	8	x	x	15/20	1	Back Side	A	Pass
HCP	2, 4	x	x	10	1	Edge of HCP at Front of UUT	NA	NA
Contact Discharge Points - <b>RED</b> Arrows.								
Figure 1	2, 4	x	x	---	---	No contact discharge points found	---	---
Air Discharge Points - <b>BLUE</b> Arrows.								
Figure 1	2, 4, 8, 15	x	x	10	1	Discharges found at Display	A	Pass

### 5.1.4 Test Photographs



**Electrostatic Discharge Test Setup**





**Figure 1. Electrostatic Discharge Test Points**



### 5.1.6 Test Equipment List

**Table 5.1-1: Electrostatic Discharge Test Equipment List**

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter (WC059669)	09/23/2021	09/23/2022
WC080746	ONYX16	HAEF-ONYX16	188607	Gun (ESD Simulator)	01/03/2022	01/03/2023
1964	EXTECH	Datalogger 42270	1026959	Temperature and Humidity Meter	01/19/2022	01/19/2023



**5.2 Radiated RF Immunity**

**5.2.1 Test Procedure**

IEC/EN 61000-4-3

**5.2.2 Test Result**

The DS300 was subjected to the Radiated RF Immunity Test per IEC/EN 61000-4-3. No anomalies were noted as a result of the testing.

**5.2.3 Test Datasheets**

**Radiated RF Immunity per IEC / EN 61000-4-3**

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP0
Model:	DS300	S/N:	DS3021420004
Standard Referenced:	EAC 2005 VVSG	Date:	April 3, 2022
Temperature:	20.6°C	Humidity:	18%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing ballots Config#3		
Test Engineer:	Casey Lockhart		

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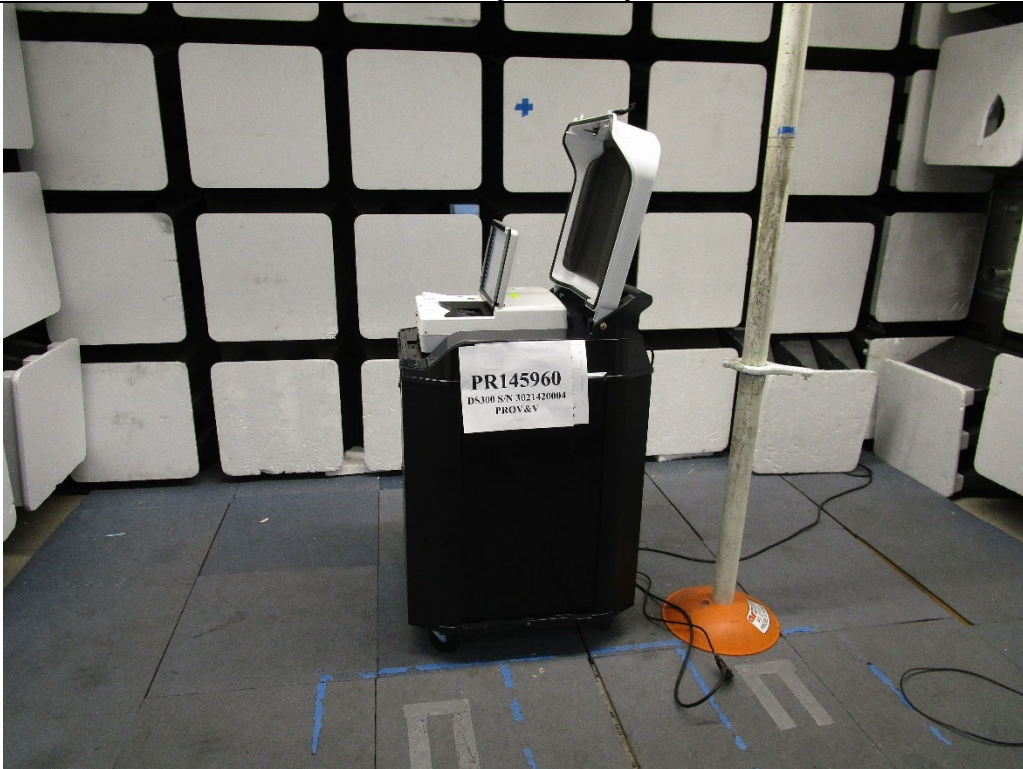
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Frequency (MHz)	Modulation			Step Size (%)	Field (V/m)	Polarity (V or H)	Dwell (sec)	Comments	Criteria Met	Pass / Fail	
	Type	%	Freq								
80 - 1000	AM	80	1kHz	Sine	1	10	V	3	<b>Front</b>	A	Pass
80 - 1000	AM	80	1kHz	Sine	1	10	H	3		A	Pass
80 - 1000	AM	80	1kHz	Sine	1	10	V	3	<b>Right</b>	A	Pass
P80 - 1000	AM	80	1kHz	Sine	1	10	H	3		A	Pass
80 - 1000	AM	80	1kHz	Sine	1	10	V	3	<b>Back</b>	A	Pass
80 - 1000	AM	80	1kHz	Sine	1	10	H	3		A	Pass
80 - 1000	AM	80	1kHz	Sine	1	10	V	3	<b>Left</b>	A	Pass
80 - 1000	AM	80	1kHz	Sine	1	10	H	3		A	Pass

5.2.4 Test Photographs

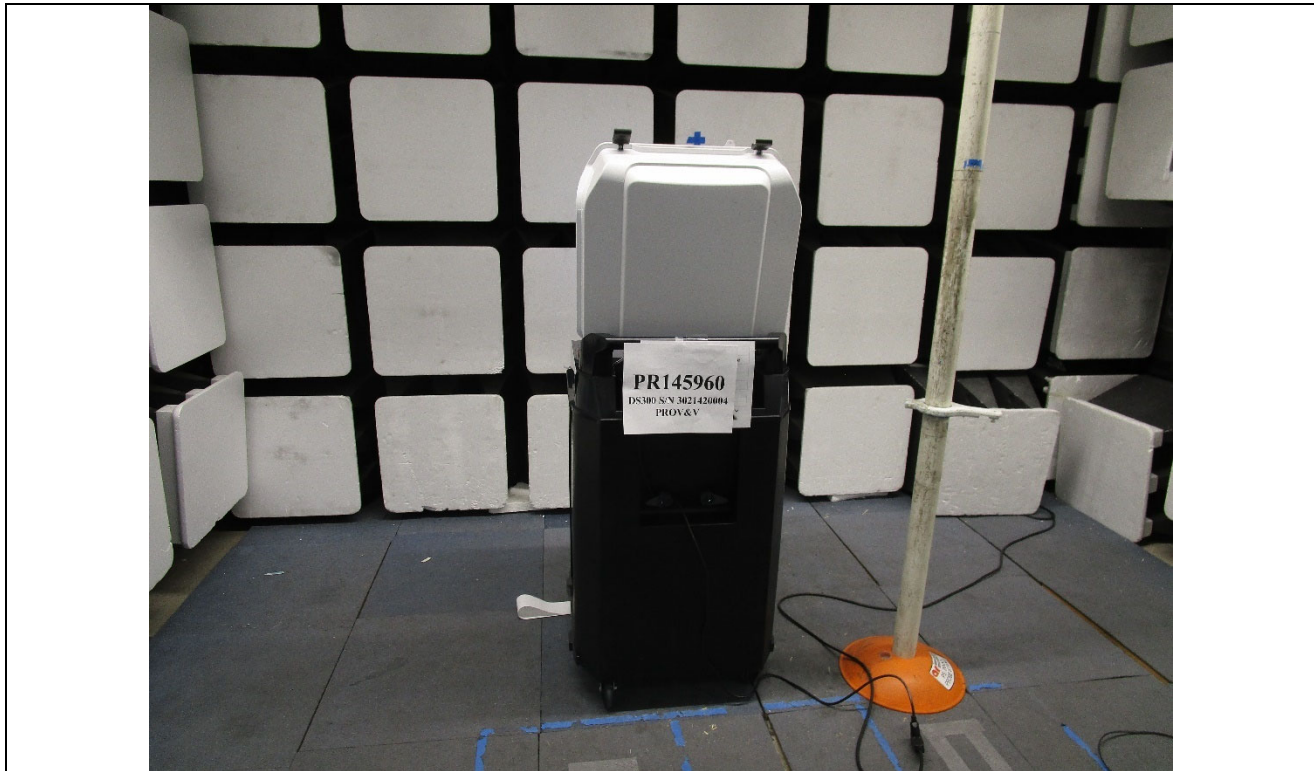


Radiated RF Immunity Test Setup – Front Side

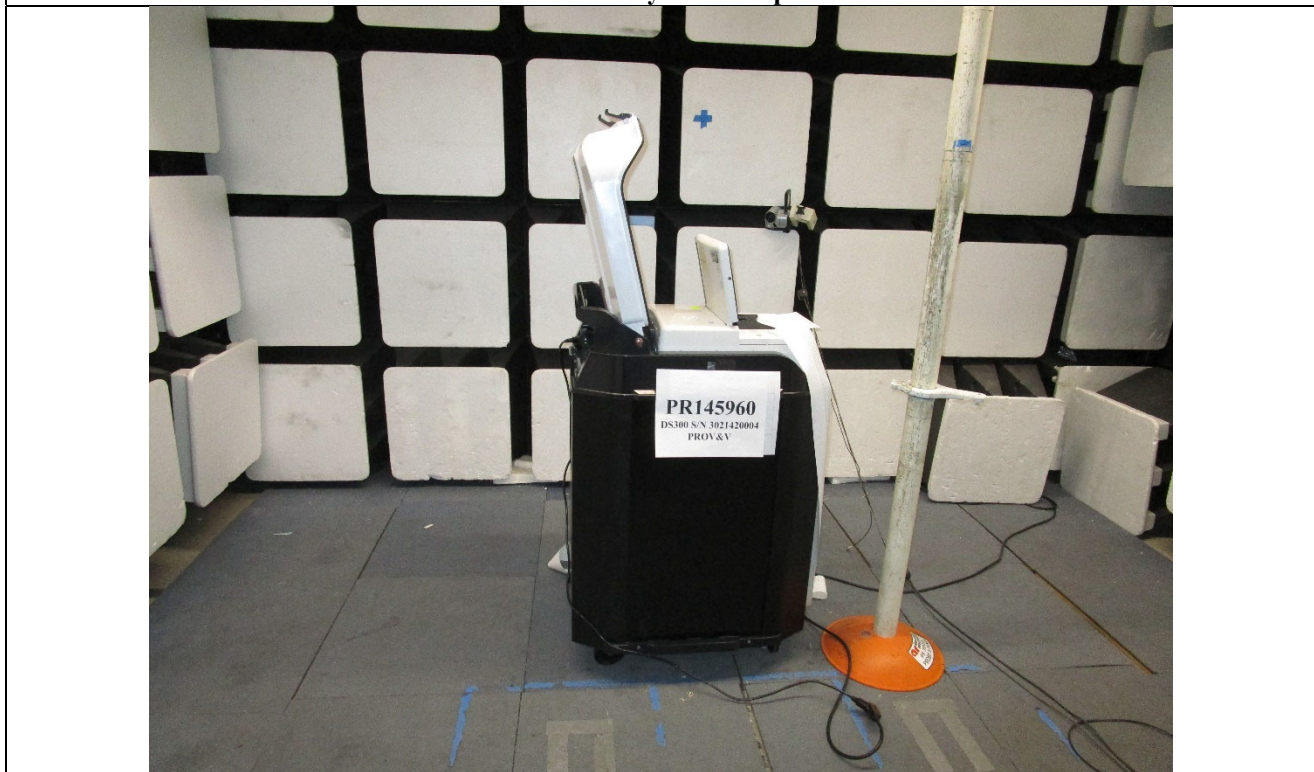


Radiated RF Immunity Test Setup – Right Side





**Radiated RF Immunity Test Setup – Back Side**



**Radiated RF Immunity Test Setup – Left Side**



### 5.2.5 Test Equipment List

**Table 5.2-1: Radiated RF Immunity Test Equipment List**

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1139	Wiltron	68369B	675016	Synthesized Signal Generator, 10 MHz - 40 GHz	05/17/2021	05/17/2022
1181	EMCI	RFS	V2.5.8	Initial Release 02 July 2004	NA	NA
1453	Giga-tronics	GT-8888A	8888A0336	10 MHz to 8 GHz, +20 dBm, 25 Vdc Power Meter (WC07)	07/27/2021	07/27/2022
1456	Werlatone	C3908-10	98095	1500 Watts, 50 dB Dual Directional Coupler (WC0597)	06/14/2021	06/14/2022
1478	Ophir	5127F	1100	RF Amplifier, 200 Watt, 20 - 1000 MHz	NA	NA
1722	ETS -Lindgren	3142B	1624	Antenna	NA	NA
1761	Braden Shielding Systems	RF Shield Room	N/A	GP0	06/14/2021	06/14/2022
1954	Amplifier Research	FP5000	20644	Isotropic Field Probe 10kHz to 1 GHz	06/08/2021	06/08/2022
1962	EXTECH Instruments	Datalogger 42270	1026960	Temperature and Humidity Meter	06/14/2021	06/14/2022

**5.3 Electrical Fast Transient / Burst**

**5.3.1 Test Procedure**

IEC/EN 61000-4-4

**5.3.2 Test Result**

The DS300 was subjected to the Electrical Fast Transient/Burst Test per IEC/EN 61000-4-4. No anomalies were noted as a result of the testing.

**5.3.3 Test Datasheets**

**Electrical Fast Transient/Burst per IEC / EN 61000-4-4**

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS300	S/N:	DS3021420004
Standard Referenced:	EAC 2005 VVSG	Date:	April 3, 2022
Temperature:	18.2°C	Humidity:	21%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #3)		
Test Engineer:	Casey Lockhart		

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Voltage (kV)	Polarity		Time (sec)	Injection Type	L 1	L 2	L 3	N	P E	Rep Freq.	Comments	Criteria Met	Pass / Fail
	+	-											
2.0	x		60	CDN	x					100k Hz	AC	A	Pass
2.0		x	60	CDN	x					100k Hz		A	Pass
2.0	x		60	CDN		x				100k Hz		A	Pass
2.0		x	60	CDN		x				100k Hz		A	Pass
2.0	x		60	CDN					x	100k Hz		A	Pass
2.0		x	60	CDN					x	100k Hz		A	Pass
2.0	x		60	CDN	x	x			x	100k Hz		A	Pass
2.0		x	60	CDN	x	x			x	100k Hz		A	Pass



**5.3.4 Test Photographs****Electrical Fast Transient Test Setup****Electrical Fast Transient Test Setup – AC Mains**





### 5.3.5 Test Equipment List

**Table 5.3-1: Electrical Fast Transient / Burst Test Equipment List**

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter (WC059669)	09/23/2021	09/23/2022
1184	KeyTek	CE Ware	4.0	KeyTek EMC Pro Control Software for EFT, Surge, H-F	NA	NA
1372	Tektronix	TDS2002B	C103489	Oscilloscope, 60 MHz, 2-channel (WC059683)	07/02/2021	07/02/2022
1566	Thermo Fisher Scientific	EMC Pro Plus	1502199	Advanced EMC Immunity Tester	11/11/2021	11/11/2022
1962	EXTECH Instruments	Datalogger 42270	1026960	Temperature and Humidity Meter	06/14/2021	06/14/2022



**5.4 Surge Immunity**

**5.4.1 Test Procedure**

IEC/EN 61000-4-5

**5.4.2 Test Result**

The DS300 was subjected to the Surge Immunity Test per IEC/EN 61000-4-5. No anomalies were noted as a result of the testing.

**5.4.3 Test Datasheets**

**Surge Immunity per IEC / EN 61000-4-5**

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS300	S/N:	DS3021420004
Standard Referenced:	EAC 2005 VVSG	Date:	April 2, 2022
Temperature:	17.9°C	Humidity:	20%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #3)		
Test Engineer:	Casey Lockhart		

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Voltage (kV)	Polarity +	Polarity -	L 1	L 2	L 3	N	P E	Phase (deg)	Number of Pulses	Delay (sec)	Comments	Criteria Met	Pass / Fail
0.5	x		x			x		0	5	45	Differential Mode	A	Pass
0.5		x	x			x		0	5	45		A	Pass
0.5	x		x			x		90	5	45		A	Pass
0.5		x	x			x		90	5	45		A	Pass
0.5	x		x			x		180	5	45		A	Pass
0.5		x	x			x		180	5	45		A	Pass
0.5	x		x			x		270	5	45		A	Pass
0.5		x	x			x		270	5	45		A	Pass
0.5	x		x			x		0	5	45	Common Mode Line	A	Pass
0.5		x	x			x		0	5	45		A	Pass
0.5	x		x			x		90	5	45		A	Pass
0.5		x	x			x		90	5	45		A	Pass
0.5	x		x			x		180	5	45		A	Pass
0.5		x	x			x		180	5	45		A	Pass
0.5	x		x			x		270	5	45		A	Pass
0.5		x	x			x		270	5	45		A	Pass
0.5	x					x	x	0	5	45	Common Mode Neutral	A	Pass
0.5		x				x	x	0	5	45		A	Pass
0.5	x					x	x	90	5	45		A	Pass
0.5		x				x	x	90	5	45		A	Pass
0.5	x					x	x	180	5	45		A	Pass
0.5		x				x	x	180	5	45		A	Pass
0.5	x					x	x	270	5	45		A	Pass



### Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS300	S/N:	DS3021420004
Standard Referenced:	EAC 2005 VVSG	Date:	April 2, 2022
Temperature:	17.9°C	Humidity:	20%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #3)		
Test Engineer:	Casey Lockhart		

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Voltage (kV)	Polarity		L 1	L 2	L 3	N	P E	Phase (deg)	Number of Pulses	Delay (sec)	Comments	Criteria Met	Pass / Fail
	+	-											
0.5		x				x	x	270	5	45		A	Pass
1.0	x		x			x		0	5	60	Differential Mode	A	Pass
1.0		x	x			x		0	5	60		A	Pass
1.0	x		x			x		90	5	60		A	Pass
1.0		x	x			x		90	5	60		A	Pass
1.0	x		x			x		180	5	60		A	Pass
1.0		x	x			x		180	5	60		A	Pass
1.0	x		x			x		270	5	60		A	Pass
1.0		x	x			x		270	5	60		A	Pass
1.0	x		x			x	x	0	5	60	Common Mode Line	A	Pass
1.0		x	x			x	x	0	5	60		A	Pass
1.0	x		x			x	x	90	5	60		A	Pass
1.0		x	x			x	x	90	5	60		A	Pass
1.0	x		x			x	x	180	5	60		A	Pass
1.0		x	x			x	x	180	5	60		A	Pass
1.0	x		x			x	x	270	5	60		A	Pass
1.0		x	x			x	x	270	5	60		A	Pass
2.0	x		x			x		0	5	60	Differential Mode	A	Pass
2.0		x	x			x		0	5	60		A	Pass
2.0	x		x			x		90	5	60		A	Pass



### Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS300	S/N:	DS3021420004
Standard Referenced:	EAC 2005 VVSG	Date:	April 2, 2022
Temperature:	17.9°C	Humidity:	20%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #3)		
Test Engineer:	Casey Lockhart		

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Voltage (kV)	Polarity		L 1	L 2	L 3	N	P E	Phase (deg)	Number of Pulses	Delay (sec)	Comments	Criteria Met	Pass / Fail
	+	-											
2.0		x	x			x		90	5	60		A	Pass
2.0	x		x			x		180	5	60		A	Pass
2.0		x	x			x		180	5	60		A	Pass
2.0	x		x			x		270	5	60		A	Pass
2.0		x	x			x		270	5	60		A	Pass
2.0	x		x				x	0	5	60	Common Mode Line	A	Pass
2.0		x	x				x	0	5	60		A	Pass
2.0	x		x				x	90	5	60		A	Pass
2.0		x	x				x	90	5	60		A	Pass
2.0	x		x				x	180	5	60		A	Pass
2.0		x	x				x	180	5	60		A	Pass
2.0	x		x				x	270	5	60		A	Pass
2.0		x	x				x	270	5	60		A	Pass
2.0	x					x	x	0	5	60	Common Mode Neutral	A	Pass
2.0		x				x	x	0	5	60		A	Pass
2.0	x					x	x	90	5	60		A	Pass
2.0		x				x	x	90	5	60		A	Pass
2.0	x					x	x	180	5	60		A	Pass
2.0		x				x	x	180	5	60		A	Pass
2.0	x					x	x	270	5	60		A	Pass
2.0		x				x	x	270	5	60		A	Pass

5.4.4 Test Photographs



Surge Immunity Test Setup



Surge Immunity Test Setup – AC Mains



#### 5.4.5 Test Equipment List

**Table 5.4-1: Surge Immunity Test Equipment List**

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter (WC059669)	09/23/2021	09/23/2022
1184	KeyTek	CE Ware	4.0	KeyTek EMC Pro Control Software for EFT, Surge, H-F	NA	NA
1372	Tektronix	TDS2002B	C103489	Oscilloscope, 60 MHz, 2-channel (WC059683)	07/02/2021	07/02/2022
1566	Thermo Fisher Scientific	EMC Pro Plus	1502199	Advanced EMC Immunity Tester	11/11/2021	11/11/2022
1962	EXTECH Instruments	Datalogger 42270	1026960	Temperature and Humidity Meter	06/14/2021	06/14/2022

**5.5 Conducted RF Immunity**

**5.5.1 Test Procedure**

IEC/EN 61000-4-6

**5.4.2 Test Result**

The DS300 was subjected to the Conducted RF Immunity Test per IEC/EN 61000-4-6. No anomalies were noted as a result of the testing.

**5.5.3 Test Datasheets**

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**Conducted RF Immunity per IEC / EN 61000-4-6**

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Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	DS300	S/N:	DS3021420008
Standard Referenced:	EAC 2005 VVSG	Date:	April 2, 2022
Temperature:	17.9°C	Humidity:	20%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #3)		
Test Engineer:	Casey Lockhart		

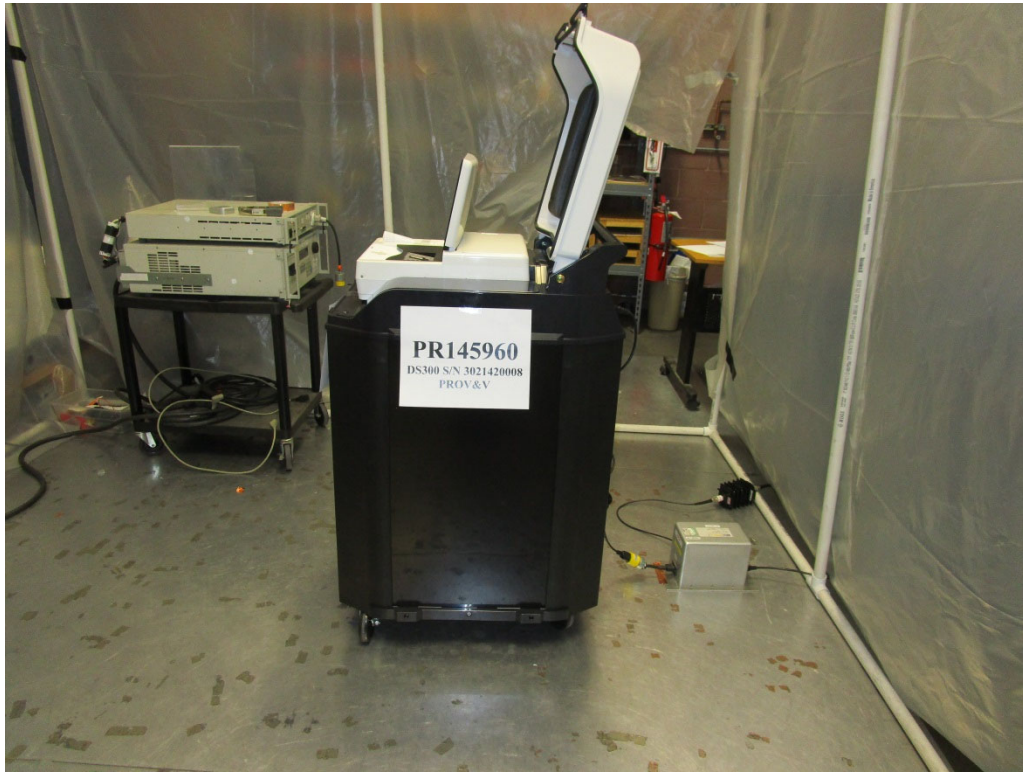
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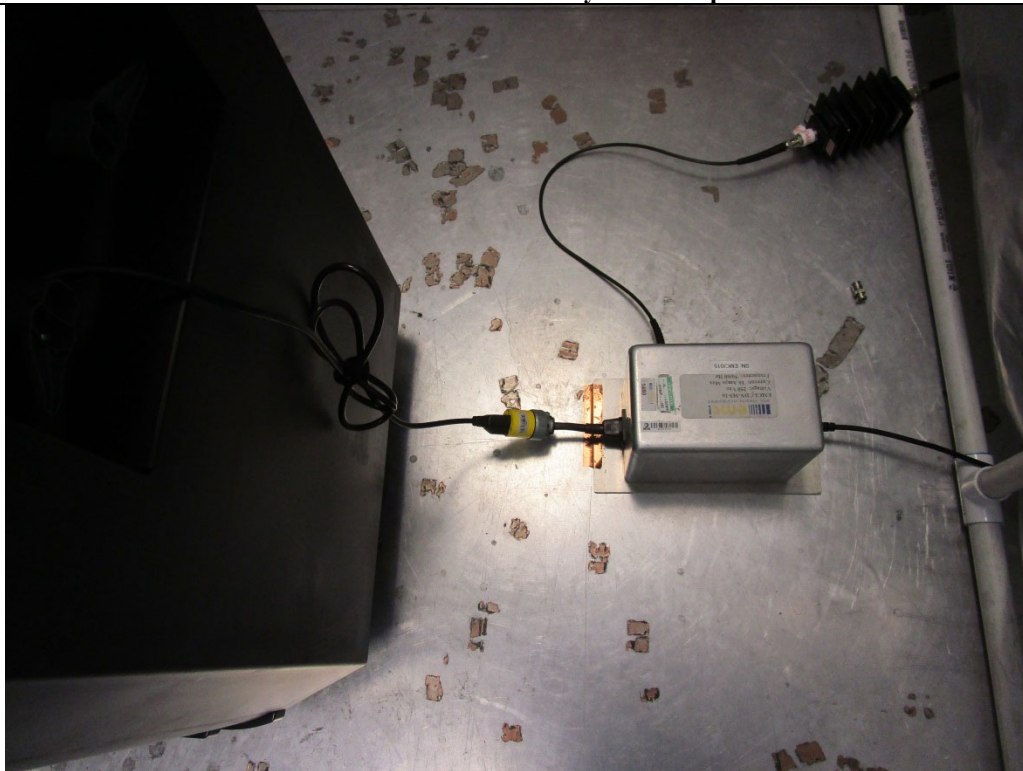
Frequency (MHz)	Modulation			Level (Vrms)	Dwell (sec)	Comments	Criteria Met	Pass / Fail
	Type	%	Freq					
0.150 – 80.0	AM	80	1 kHz	10	3	AC using M3 CDN	A	Pass



5.5.4 Test Photographs



**Conducted RF Immunity Test Setup**



**Conducted RF Immunity Test Setup – AC Mains**





5.5.5 Test Equipment List

Table 5.5-1: Conducted RF Immunity Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter (WC059669)	09/23/2021	09/23/2022
1480	EMCI	EMCI-CDN-M3-16	EMCI015	M3 CDN, 16A, 250 VAC	02/03/2022	02/03/2023
1499	Rigol Technologies, Inc.	DSA815	DSA8B150300053	9 kHz to 1.5 GHz Spectrum Analyzer (WC059693)	10/04/2021	10/04/2022
1532	Werlatone	C9475-13	102545	100 Watt Dual Directional Coupler, 10 kHz to 250 M	02/03/2022	02/03/2023
1541	Amplifier Research	75A250A	0445076	75 Watt Amplifier (10kHz - 250MHz)	NA	NA
1544	IFR	2023A	202305/809	9 kHz - 1.2 GHz Signal Generator (WC059591)	05/06/2021	05/06/2022
1959	ETS-LINDGREN	C47213	10176987-1	TILE! Software License Key	NA	NA
1962	EXTECH Instruments	Datalogger 42270	1026960	Temperature and Humidity Meter	06/14/2021	06/14/2022

**5.6 Power Frequency H-Field Immunity**

**5.6.1 Test Procedure**

IEC/EN 61000-4-8

**5.6.2 Test Result**

The DS300 was subjected to the Power Frequency H-Field Immunity Test per IEC/EN 61000-4-8. No anomalies were noted as a result of the testing.

**5.6.3 Test Datasheets**

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**Power Frequency H-field Immunity per IEC / EN 61000-4-8**

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Manufacturer:	<u>Pro V&amp;V</u>	Project Number:	<u>PR145960</u>
Customer Representative:	<u>Michael Walker</u>	Test Area:	<u>GP1</u>
Model:	<u>DS300</u>	S/N:	<u>DS3021420008</u>
Standard Referenced:	<u>EAC 2005 VVSG</u>	Date:	<u>April 2, 2022</u>
Temperature:	<u>20.9°C</u>	Humidity:	<u>19%</u>
Input Voltage:	<u>120Vac/60Hz</u>	Pressure:	<u>837 mb</u>
Configuration of Unit:	<u>Processing Ballots (Configuration #3)</u>		
Test Engineer:	<u>Casey Lockhart</u>		

PR145960-4-8.doc

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Frequency (Hz)		Field Strength (A/m)	EUT Axis Location	Dwell Time (sec)	Comments	Criteria Met	Pass / Fail
50	60						
x		30	X	60		A	Pass
	x	30	X	60		A	Pass
x		30	Y	60		A	Pass
	x	30	Y	60		A	Pass
x		30	Z	60		A	Pass
	x	30	Z	60		A	Pass

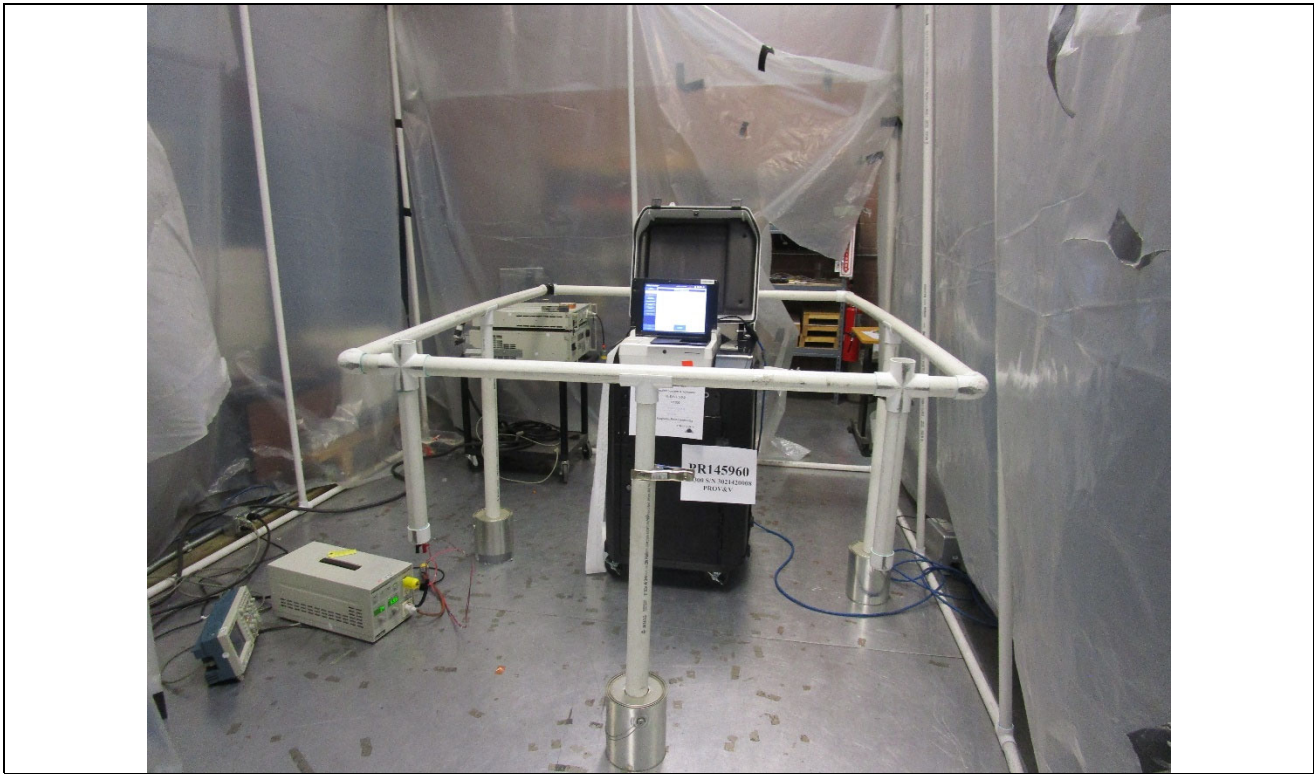
5.6.4 Test Photographs



Power Frequency H-field Immunity Test Setup X axis



Power Frequency H-field Immunity Test Setup Y axis



**Power Frequency H-field Immunity Test Setup Z axis**



### 5.6.5 Test Equipment List

**Table 5.6-1: Power Frequency H-Field Immunity Test Equipment List**

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter (WC059669)	09/23/2021	09/23/2022
1372	Tektronix	TDS2002B	C103489	Oscilloscope, 60 MHz, 2-channel (WC059683)	07/02/2021	07/02/2022
1484	Pearson Electronics	110A	88593	Current Monitor, 1 Hz to 20 MHz (WC070471)	07/12/2020	07/12/2022
1505	EMCI	EMCI-4-8-2m-1.5m	0002	HField Loop, 2m x 1.5m	NA	NA
1548	California Instruments/Ametek	1251P	1423A06347	AC Power supply	NA	NA
1962	EXTECH Instruments	Datalogger 42270	1026960	Temperature and Humidity Meter	06/14/2021	06/14/2022





**5.7 Voltage Dips and Interruptions**

**5.7.1 Test Procedure**

IEC/EN 61000-4-11

**5.7.2 Test Result**

The DS300 was subjected to the Voltage Dips and Interruptions Test per IEC/EN 61000-4-11. No anomalies were noted as a result of the testing.

**5.7.3 Test Datasheets**

**Voltage Dips and Interrupts per IEC / EN 61000-4-11**

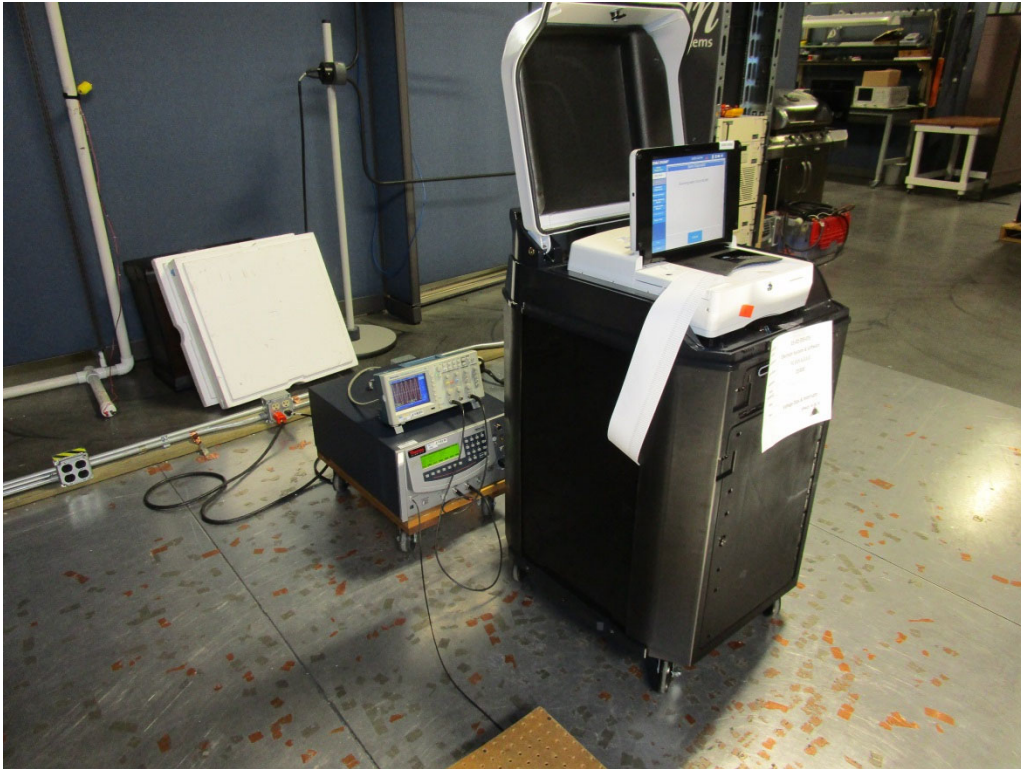
Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS300	S/N:	DS3021420007 DS3021420011 DS3021420004
Standard Referenced:	EAC 2005 VVSG	Date:	April 2, 2022
Temperature:	19°C	Humidity:	21%
Input Voltage:	120Vac/60Hz	Pressure:	834 mb
Configuration of Unit:	Tabulating Ballots (Configuration #3)		
Test Engineer:	Casey Lockhart		

PR145960-4-11.doc

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% Nominal	No. of Cycles	Phase Angle (deg)				Time between dropouts (sec)	Number of tests	Comments	Criteria Met	Pass / Fail
		0	90	180	270					
70%	0.6	x				10	3		A	Pass
70%	0.6		x			10	3		A	Pass
70%	0.6			x		10	3		A	Pass
70%	0.5				x	10	3		A	Pass
40%	6.0	x				10	3		A	Pass
40%	6.0		x			10	3		A	Pass
40%	6.0			x		10	3		A	Pass
40%	6.0				x	10	3		A	Pass
0%	300	x				10	3		A	Pass
0%	300			x		10	3		A	Pass
<b>Line Voltage Variation Tests</b>										
129Vac Line Voltage Variations (+7.5% of nominal 120V) 2hrs. S/N DS3021420007									A	Pass
105Vac Line Voltage Variations (-12.5% of nominal 120V) 2 Hrs. S/N DS3021420011									A	Pass
Surges of +15% line variations of nominal voltage (138V) 2 Hrs. S/N DS3021420007									A	Pass
Surges of -15% line variations of nominal voltage (102V) 2 Hrs. S/N DS3021420011									A	Pass

5.7.4 Test Photographs



**Voltage Dips and Interruptions Test Setup**



**Voltage Dips and Interruptions Test Setup**



### 5.7.5 Test Equipment List

**Table 5.7-1: Voltage Dips and Interruptions Test Equipment List**

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter (WC059669)	09/23/2021	09/23/2022
1184	KeyTek	CE Ware	4.0	KeyTek EMC Pro Control Software for EFT, Surge, H-F	NA	NA
1372	Tektronix	TDS2002B	C103489	Oscilloscope, 60 MHz, 2-channel (WC059683)	07/02/2021	07/02/2022
1520	California Instruments (AMETEK)	5001IX-CTS	1341A03198	5kVA AC Power Source	NA	NA
1566	Thermo Fisher Scientific	EMC Pro Plus	1502199	Advanced EMC Immunity Tester	11/11/2021	11/11/2022
1964	EXTECH	Datalogger 42270	1026959	Temperature and Humidity Meter	01/19/2022	01/19/2023





**End of Test Report**