

National Technical Systems Test Report for Electromagnetic Interference (EMI) Testing of the Central Count Scanners (DS950, DS450)

Prepared For

Pro V&V, Inc. | 6705 Odyssey Drive, Suite C | Huntsville, AL 35806

Performed By

National Technical Systems | 1736 Vista View Drive | Longmont, CO 80504-5242 | 303-776-7249 | www.nts.com


Karen Norton
Preparer
Eugene Devito
EMI Project Engineer

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Revision History

Rev.	Description	Issue Date
0	Initial Release	05/17/2022
1	Section 6.0: Deleted log entries in accordance with Pro V&V e-mail dated 05/19/2022.	05/19/2022

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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			DS950	DS9521060544
2	2	Central Count Scanners	DS450	DS4521063682

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
	Voltage	N/A
EFT	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	IEC/EN 61000-4-2	Longmont	02/21/2022 - 02/28/2022	DS950 DS450	DS9521060544 DS4521063682	Complies
5.2	Radiated RF Immunity	IEC/EN 61000-4-3	Longmont	02/01/2022 - 02/04/2022	DS950 DS450	DS9521060544 DS4521063682	Complies
5.3	Electrical Fast Transient / Burst	IEC/EN 61000-4-4	Longmont	02/07/2022 - 02/19/2022	DS950 DS450	DS9521060544 DS4521063682	Complies
5.4	Surge Immunity	IEC/EN 61000-4-5	Longmont	02/07/2022 - 02/19/2022	DS950 DS450	DS9521060544 DS4521063682	Complies
5.5	Conducted RF Immunity	IEC/EN 61000-4-6	Longmont	02/07/2022 - 02/19/2022	DS950 DS450	DS9521060544 DS4521063682	Complies
5.6	Power Frequency H-Field Immunity	IEC/EN 61000-4-8	Longmont	02/07/2022 - 02/19/2022	DS950 DS450	DS9521060544 DS4521063682	Complies
5.7	Voltage Dips and Interruptions	IEC/EN 61000-4-11	Longmont	04/04/2022 - 04/08/2022	DS950 DS450	DS9521060544 DS4521063682	Complies

5.1 Electrostatic Discharge

5.1.1 Test Procedure

IEC/EN 61000-4-2

5.1.2 Test Result

The DS950 and DS450 were subjected to the Electrostatic Discharge Test per IEC/EN 61000-4-2. No anomalies were noted as a result of the testing.

5.1.3 Test Datasheets

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS950	S/N:	DS9521060544
	Printer 1		U64185F1N343098
	UPS		CXXLU2000322
Standard Referenced:	EAC 2005 VVSG	Date:	February 10, 2022
Temperature:	17°C	Humidity:	31%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		

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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	10	1	Front Side	A	Pass
VCP	8	x x	10	1	Left Side	A	Pass
VCP	8	x x	10	1	Right Side	A	Pass
VCP	8	x x	10	1	Back Side	A	Pass
Contact Discharge Points - RED Arrows.							
Figure 1 (Config #1)	8	x x	10	1		A	Pass
Figure 2 (Config #1)	2, 4	x x	---	---	Bottom of EUT is floating – no contact discharges found	---	---
Figure 3 (Config #1)	2, 4	x x	10	1		A	Pass
Figure 4 (Config #1)	2, 4	x x	10	1		A	Pass
Figure 5 (Config #1)	2, 4	x x	10	1		A	Pass
Figure 6 (Config #1)	2, 4	x x	10	1		A	Pass
Air Discharge Points - BLUE Arrows.							
Figure 3 (Config #1)	2, 4, 8, 15	x x	10	1		A	Pass
Figure 4 (Config #1)	2, 4, 8, 15	x x	---	---	No air discharges found	---	---
Figure 5 (Config #1)	2, 4, 8, 15	x x	---	---	No air discharges found	---	---
Figure 6 (Config #1)	2, 4, 8, 15	x x	---	---	No air discharges found	---	---

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS450	S/N:	DS4521063682
	Printer 1		U64185F1N343282
	Printer 2		AKSB019674E0
	UPS		CXXLT2001799
Standard Referenced:	EAC 2005 VVSG	Date:	February 11, 2022
Temperature:	19°C	Humidity:	31%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #2)		
Test Engineer:	T. Wittig		

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Test Location	Voltage Level (kV)	Polarity +	Polarity -	Number of Pulses	Pulses Per Second	Comments	Criteria Met	Pass / Fail
Indirect Discharge Points								
VCP	8	x	x	10	1	Front Side	A	Pass
VCP	8	x	x	10	1	Left Side	A	Pass
VCP	8	x	x	10	1	Right Side	A	Pass
VCP	8	x	x	10	1	Back Side	A	Pass
Contact Discharge Points - RED Arrows.								
Figure 1 (Config #2)	8	x	x	10	1		A	Pass
Figure 2 (Config #2)	2, 4	x	x	---	---	Bottom of EUT is floating – no contact discharges found	---	---
Figure 3 (Config #2)	2, 4	x	x	10	1		A	Pass
Figure 4 (Config #2)	2, 4	x	x	10	1		A	Pass
Figure 5 (Config #2)	2, 4	x	x	10	1		A	Pass
Figure 6 (Config #2)	2, 4	x	x	10	1		A	Pass
Air Discharge Points - BLUE Arrows.								
Figure 3 (Config #2)	2, 4, 8, 15	x	x	10	1		A	Pass
Figure 4 (Config #2)	2, 4, 8, 15	x	x	---	---	No air discharges found	---	---
Figure 5 (Config #2)	2, 4, 8, 15	x	x	---	---	No air discharges found	---	---
Figure 6 (Config #2)	2, 4, 8, 15	x	x	---	---	No air discharges found	---	---

5.1.4 Test Photographs



Figure 1: Electrostatic Discharge Test Setup (Config #1)



Figure 2. Electrostatic Discharge Test Setup (Config #1)

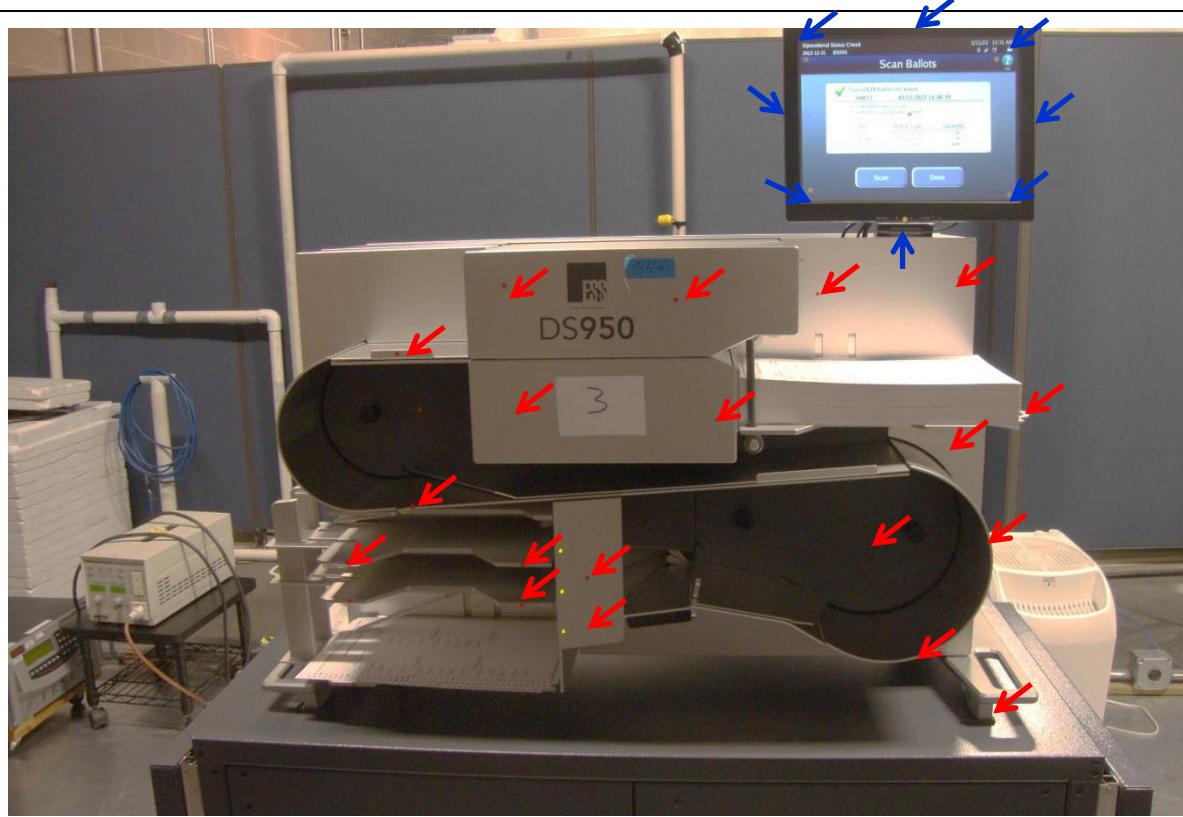


Figure 3. Electrostatic Discharge Test Points (Config #1)

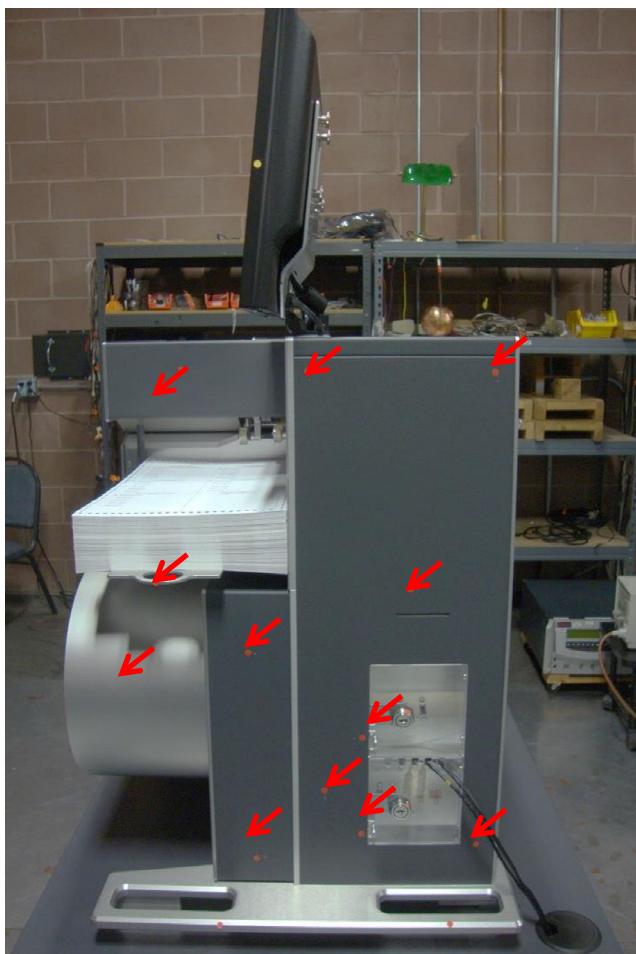


Figure 4. Electrostatic Discharge Test Points (Config #1)

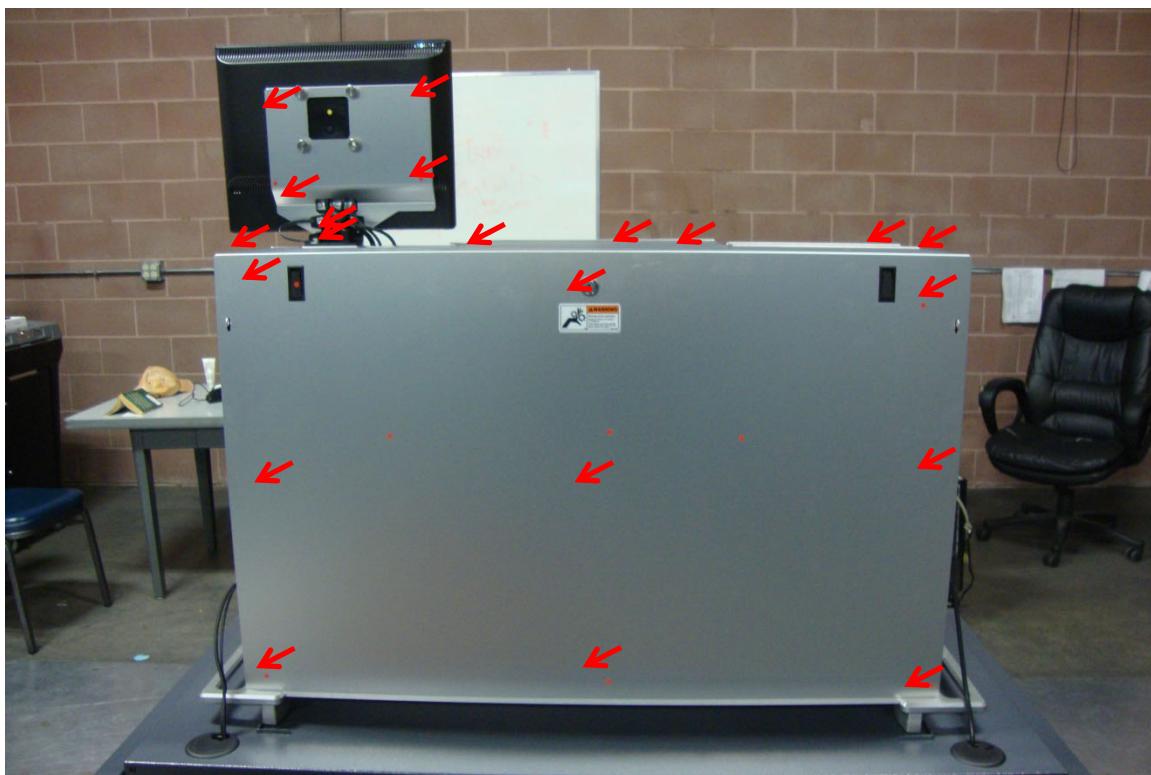


Figure 5. Electrostatic Discharge Test Points (Config #1)

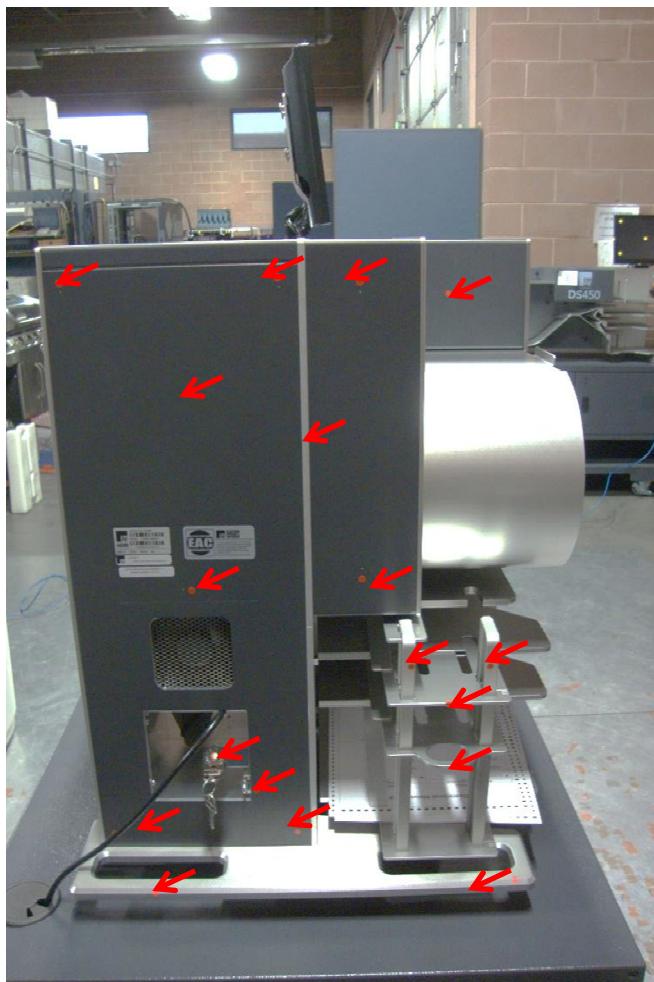


Figure 6. Electrostatic Discharge Test Points



Figure 1. Electrostatic Discharge Test Setup (Config #2)



Figure 2. Electrostatic Discharge Test Setup (Config #2)

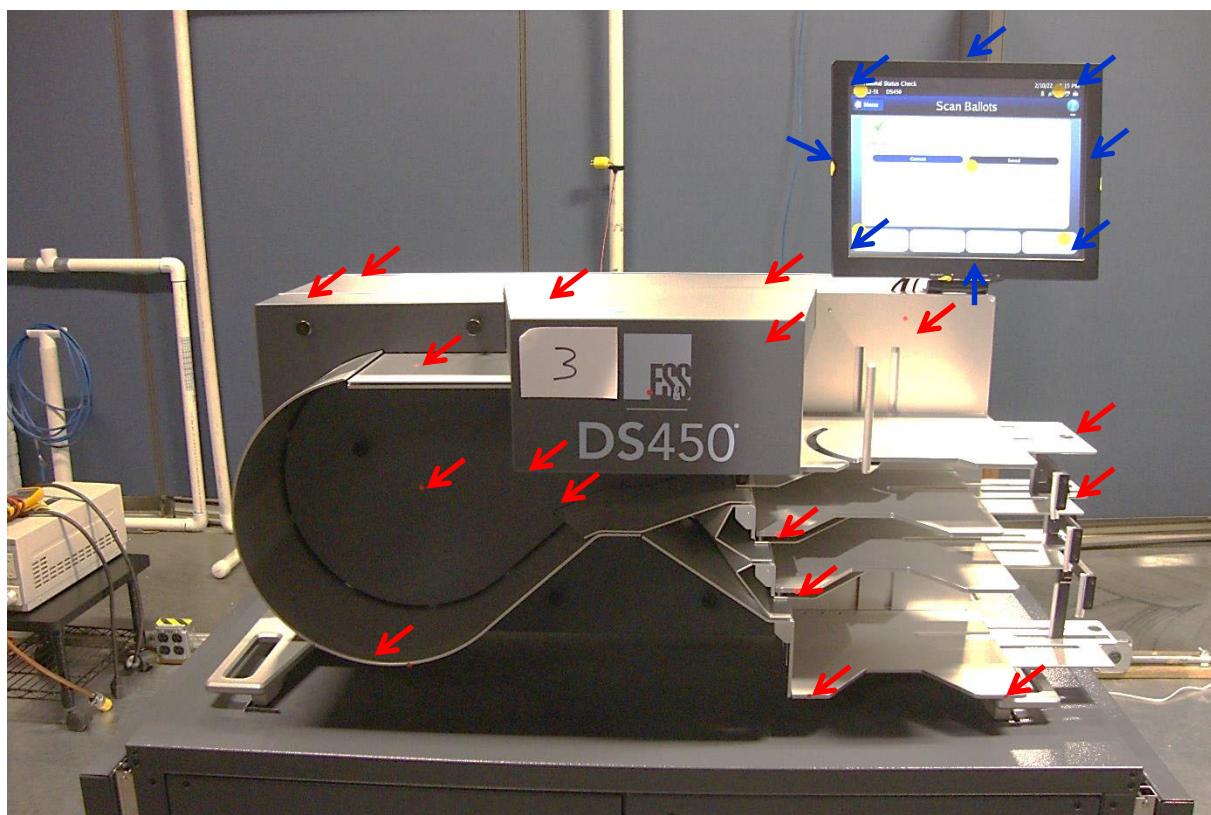


Figure 3. Electrostatic Discharge Test Points (Config #2)

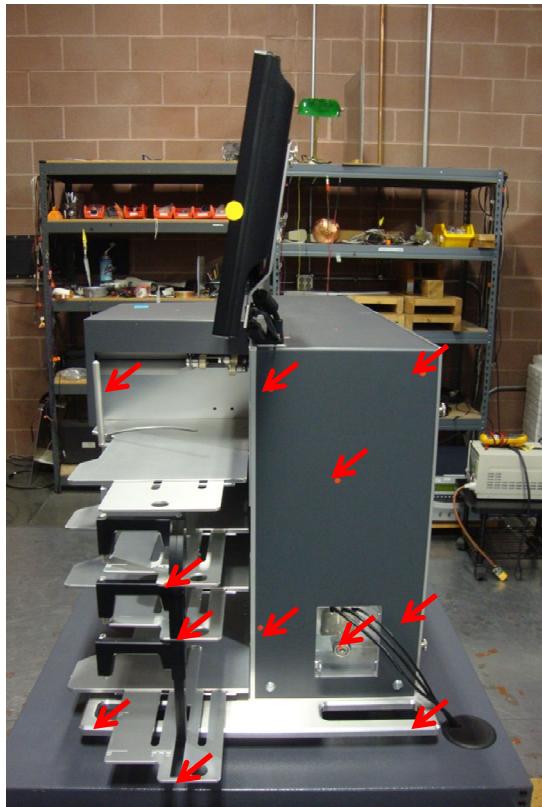


Figure 4. Electrostatic Discharge Test Points (Config #2)

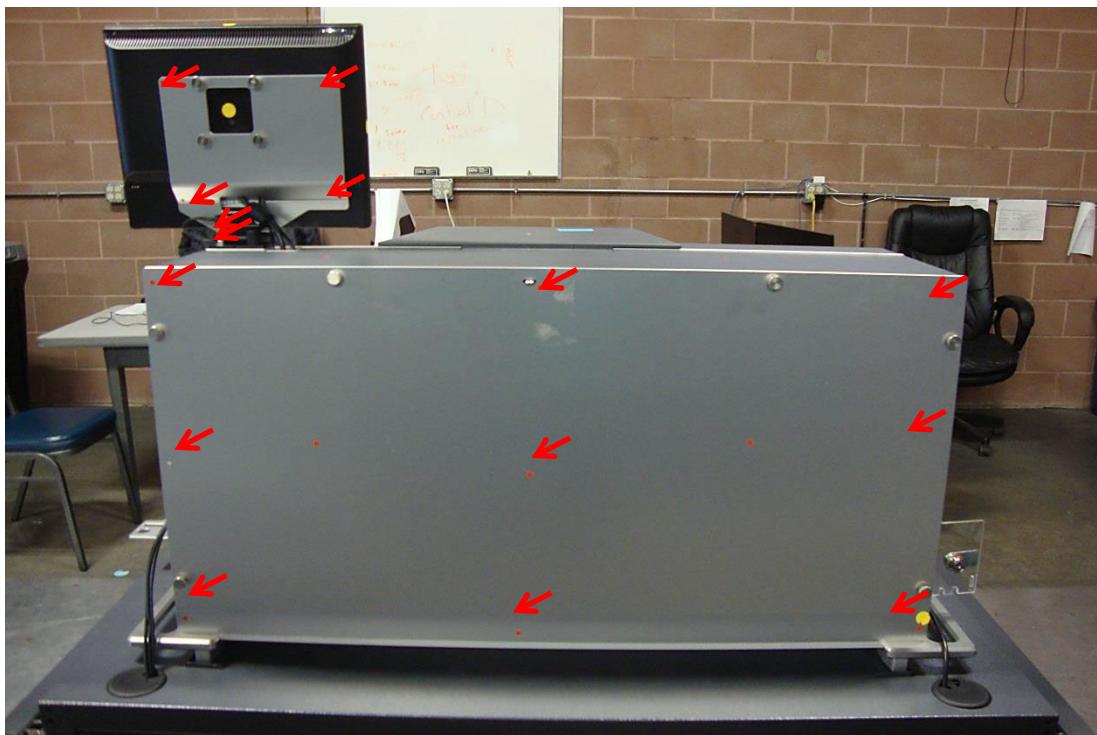


Figure 5. Electrostatic Discharge Test Points (Config #2)

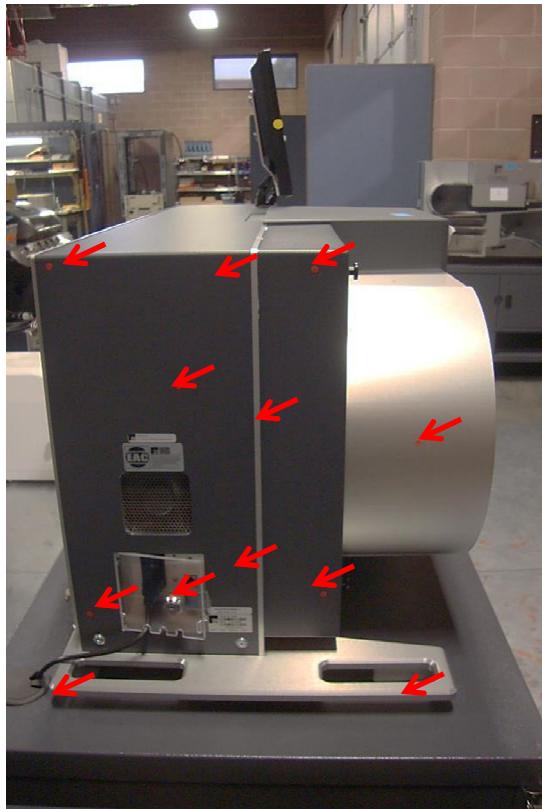


Figure 6. Electrostatic Discharge Test Points (Config #2)

5.1.5 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
1281	EMC Partner	ESD3000	284	ESD Test System (WC059688)	02/10/2021	03/10/2022
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 DS950 and DS450 were 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:	DS950 Printer 1 UPS	S/N:	DS9521060544 U64185F1N343098 CXXLU2000322
Standard Referenced:	EAC 2005 VVSG	Date:	February 3, 2022
Temperature:	23.7°C	Humidity:	9.0%
Input Voltage:	120Vac/60Hz	Pressure:	839 mb
Configuration of Unit:	Processing ballots Config#1		
Test Engineer:	Casey Lockhart		

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

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

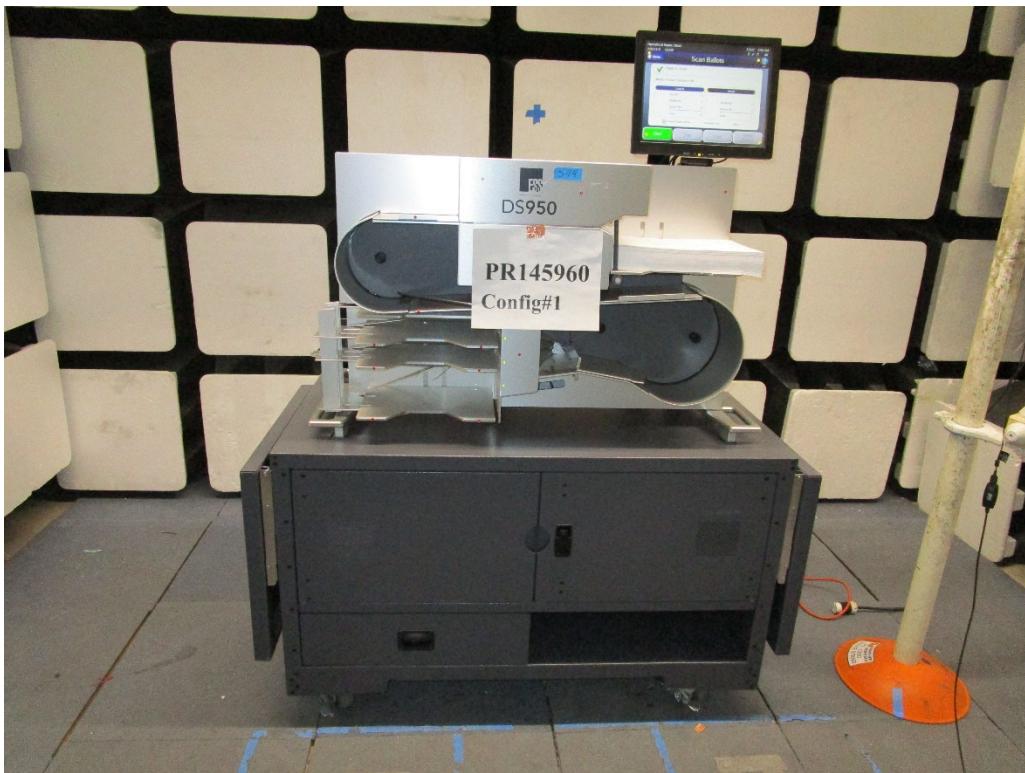
Manufacturer:	Pro V&V				Project Number:	PR145960		
Customer Representative:	Michael Walker				Test Area:	GP0		
Model:	DS450 Printer 1 Printer 2 UPS				S/N:	DS4521063682 U64185F1N343282 AKSB019674E0 CXXLT2001799		
Standard Referenced:	EAC 2005 VVSG				Date:	February 2, 2022		
Temperature:	23.7°C		Humidity:	9.0%		Pressure: 837 mb		
Input Voltage:	120Vac/60Hz							
Configuration of Unit:	Processing ballots Config#2							
Test Engineer:	Casey Lockhart							

PR145960-4-3.doc

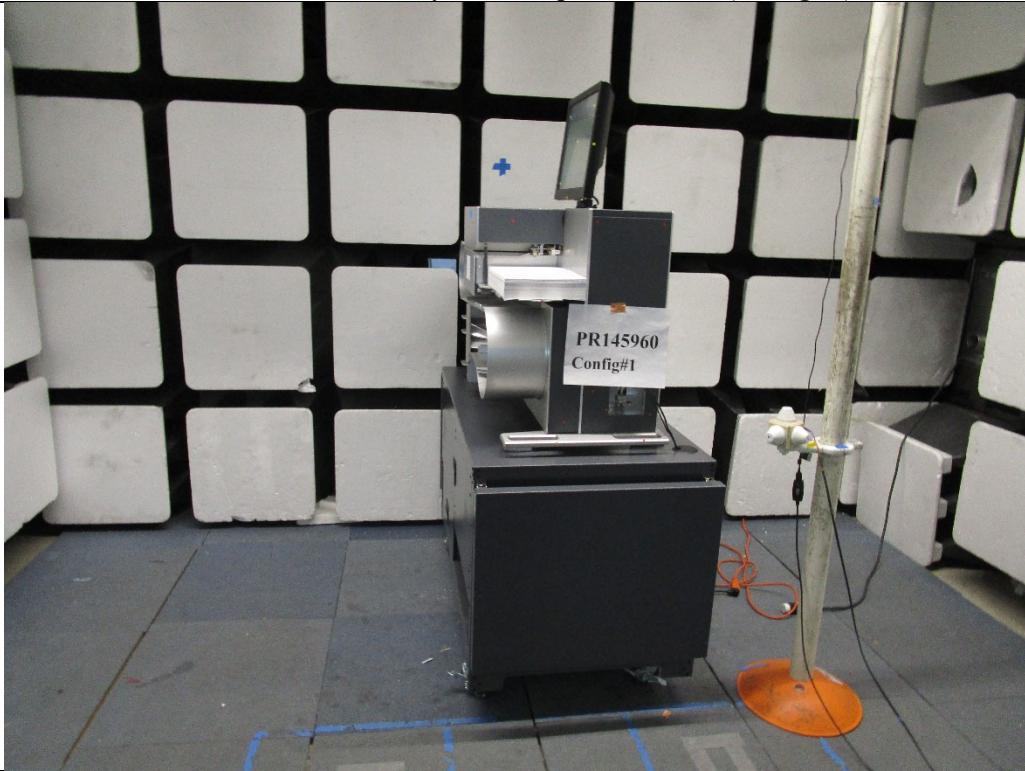
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Frequency (MHz)	Type	Modulation		Form	Step Size (%)	Field (V/m)	Polarity (V or H)	Dwell (sec)	Comments	Criteria Met	Pass / Fail
80 - 1000	AM	80	1kHz	Sine	1	10	V	3	Front	A	Pass
80 - 1000	AM	80	1kHz	Sine	1	10	H	3		A	Pass
80 - 1000	AM	80	1kHz	Sine	1	10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

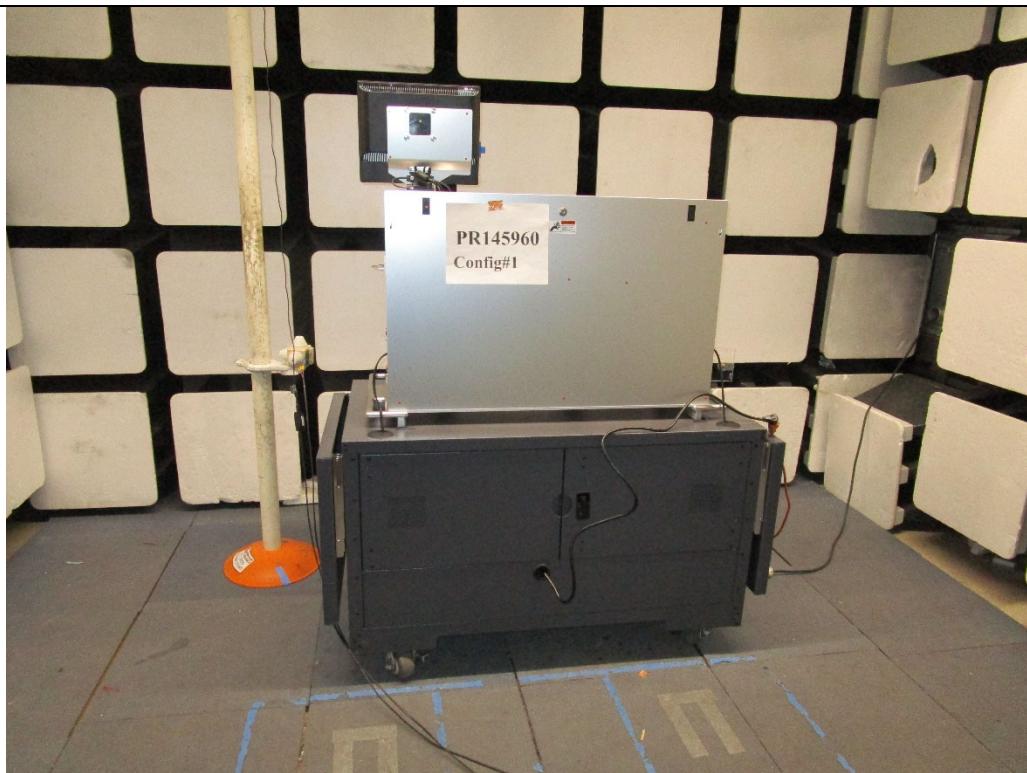
5.2.4 Test Photographs



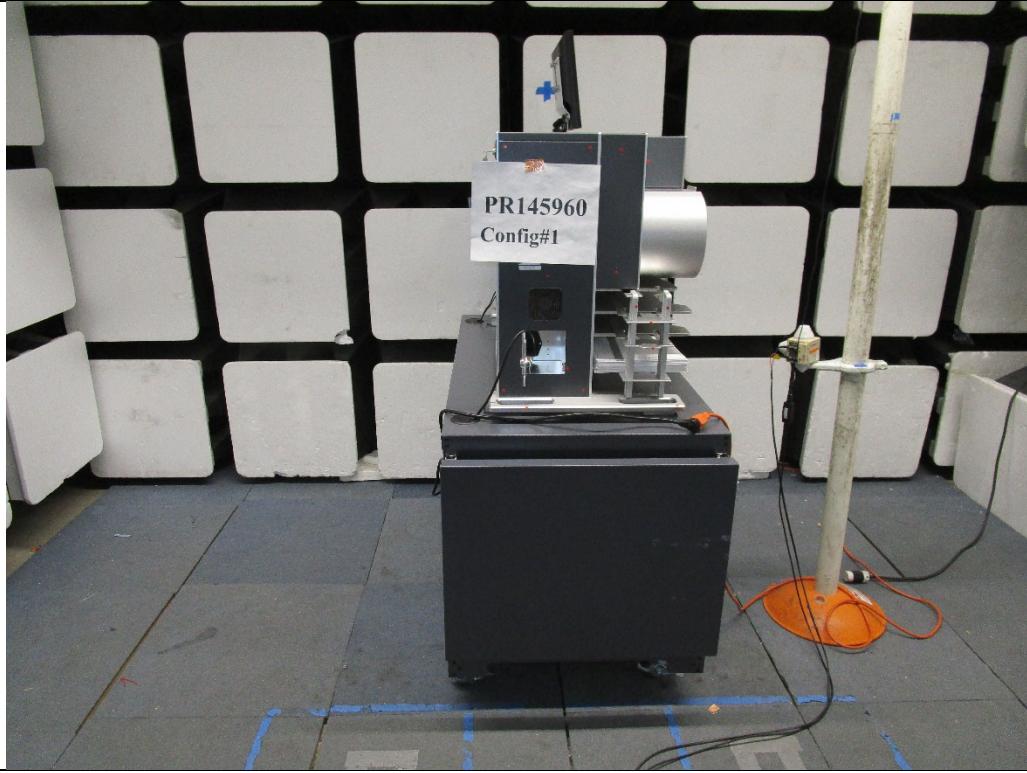
Radiated RF Immunity Test Setup – Front Side (Config #1)



Radiated RF Immunity Test Setup – Right Side (Config #1)



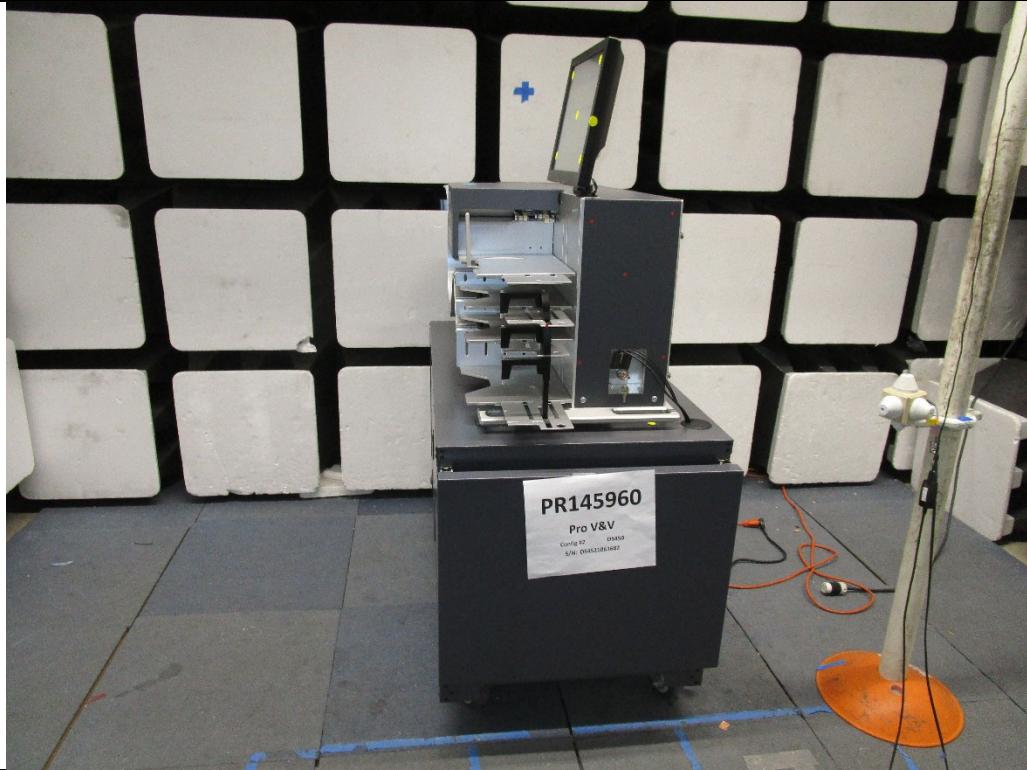
Radiated RF Immunity Test Setup – Back Side (Config #1)



Radiated RF Immunity Test Setup – Left Side (Config #1)



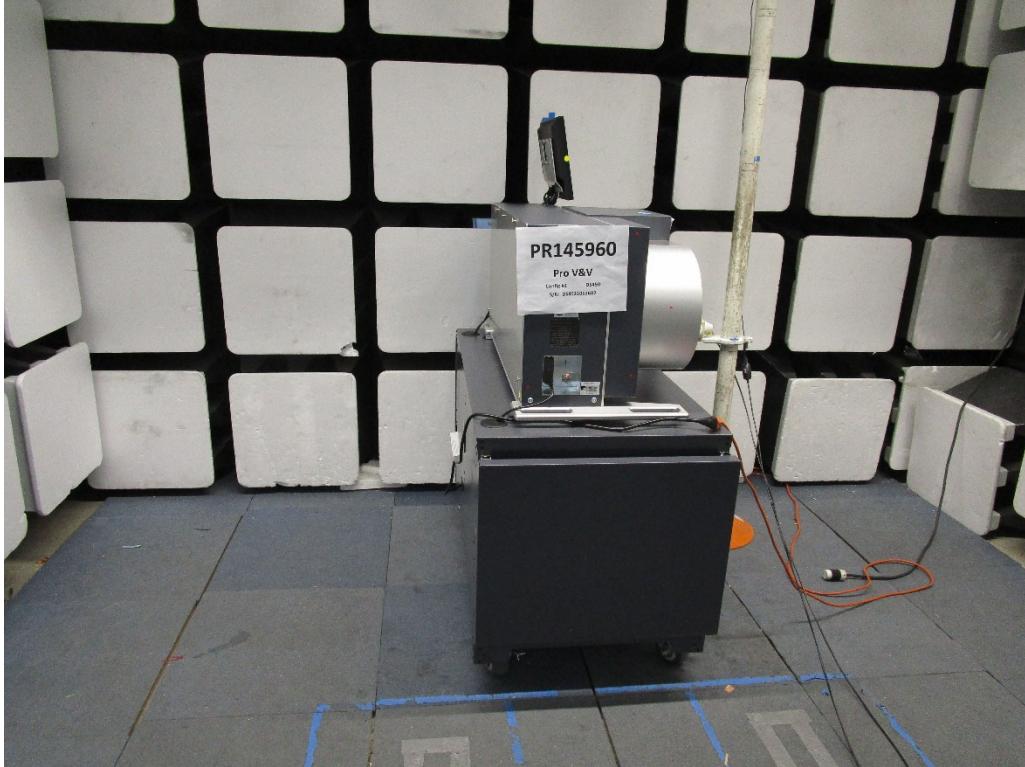
Radiated RF Immunity Test Setup – Front Side (Config #2)



Radiated RF Immunity Test Setup – Right Side (Config #2)



Radiated RF Immunity Test Setup – Back Side (Config #2)



Radiated RF Immunity Test Setup – Left Side (Config #2)

5.2.5 Test Equipment List

Table 5.2-1: Radiated RF Immunity Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC059916	Ground Plane (Fixed)	National Technical Systems	GP #0	NCR	NCR
WC059710	Amplifier (Pre/RF/Low Noise)	Ophir RF	S127F	09/17/2012	NCR
WC059712	Coupler (Bi-Directional)	Werlatone	C3908-10	06/14/2021	06/14/2022
WC059797	Generator (Signal)	Wiltron	68369B	05/17/2021	05/17/2022
WC059805	Antenna (Log Periodic)	ETS-Lindgren	3142B	NCR	NCR
WC070468	Meter (Power)	Giga-Tronics	GT-8888A	07/27/2021	07/27/2022
WC070507	Software	EMC Integrity	RFS	NCR	NCR
WC078463	Probe (E-Field/Near Field)	ETS-Lindgren	FP5000	06/08/2021	06/08/2022
WC078486	Meter (Hydrometer)	Extech Instruments	Datalogger 42270	06/14/2021	06/14/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required

5.3 Electrical Fast Transient / Burst

5.3.1 Test Procedure

IEC/EN 61000-4-4

5.3.2 Test Result

The DS950 and DS450 were 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:	DS950 Printer 1 UPS				S/N:	DS9521060544 U64185F1N343098 CXXLU2000322			
Standard Referenced:	EAC 2005 VVSG				Date:	February 9, 2022			
Temperature:	20°C		Humidity: 18%		Pressure:	838 mb			
Input Voltage:	120Vac/60Hz								
Configuration of Unit:	Processing Ballots (Configuration #1)								
Test Engineer:	T. Wittig								

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Voltage (kV)	Polarity +	Polarity -	Time (sec)	Injection Type	L1	L2	L3	N	P	E	Rep Freq.	Comments	Criteria Met	Pass / Fail
2.0	x		60	CDN	x						100kHz	AC Mains	A	Pass
2.0		x	60	CDN	x						100kHz		A	Pass
2.0	x		60	CDN		x					100kHz		A	Pass
2.0		x	60	CDN		x					100kHz		A	Pass
2.0	x		60	CDN				x			100kHz		A	Pass
2.0		x	60	CDN				x			100kHz		A	Pass
2.0	x		60	CDN	x	x			x		100kHz		A	Pass
2.0		x	60	CDN	x	x			x		100kHz		A	Pass

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:	DS450	S/N:	DS4521063682
	Printer 1		U64185F1N343282
	Printer 2		AKSB019674E0
	UPS		CXXLT2001799
Standard Referenced:	EAC 2005 VVSG	Date:	February 9, 2022
Temperature:	19°C	Humidity:	19%
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Processing ballots (Configuration #2)		
Test Engineer:	T. Wittig		

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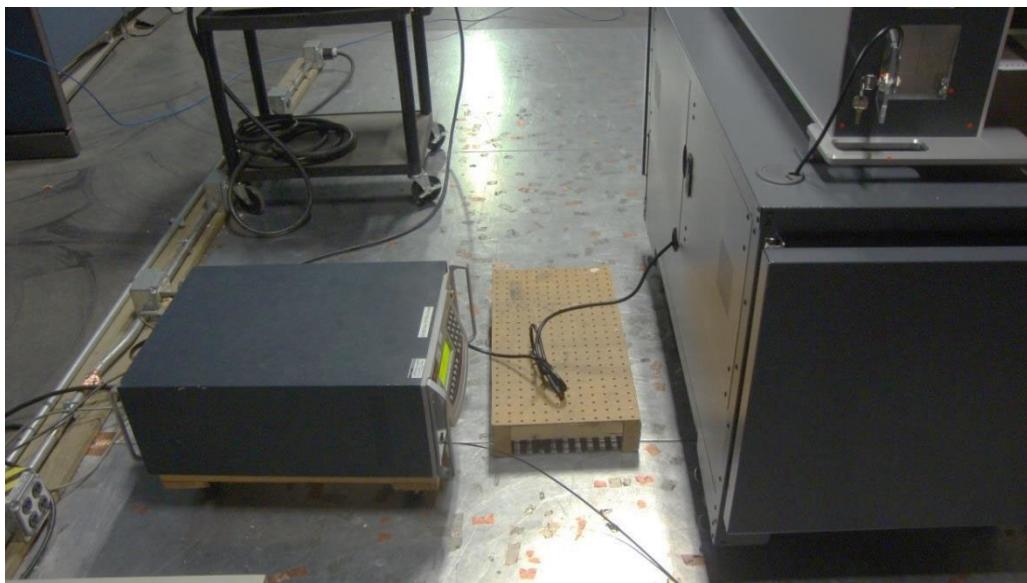
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Voltage (kV)	Polarity		Time (sec)	Injection Type	L 1	L 2	L 3	N	P E	Rep Freq.	Comments	Criteria Met	Pass / Fail
2.0	x		60	CDN	x					100kHz	AC Mains	A	Pass
2.0	x		60	CDN	x					100kHz		A	Pass
2.0	x		60	CDN		x				100kHz		A	Pass
2.0	x		60	CDN		x				100kHz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

5.3.4 Test Photographs



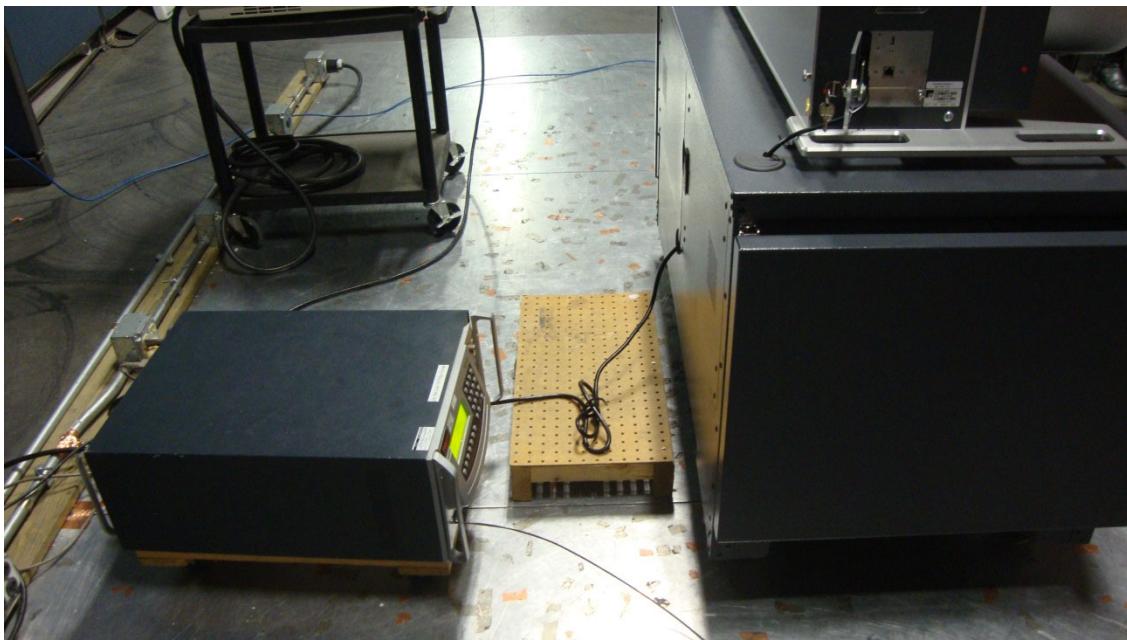
Electrical Fast Transient Test Setup (Config #1)



Electrical Fast Transient Test Setup – AC Mains (Config #1)



Electrical Fast Transient Test Setup (Config #2)



Electrical Fast Transient Test Setup – AC Mains (Config #2)

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
1284	ThermoFischer Scientific	EMC Pro Plus - USA	0705276	EFT, Surge, H-field & PQF Immunity Test Generator	11/11/2021	11/11/2022
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
1964	EXTECH	Datalogger 42270	1026959	Temperature and Humidity Meter	01/19/2022	01/19/2023

5.4 Surge Immunity

5.4.1 Test Procedure

IEC/EN 61000-4-5

5.4.2 Test Result

The DS950 and DS450 were 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:	DS950 Printer 1 UPS	S/N:	DS9521060544 U64185F1N343098 CXXLU2000322
Standard Referenced:	EAC 2005 VVSG	Date:	February 7, 2022
Temperature:	23°C	Humidity:	18%
Input Voltage:	120Vac/60Hz	Pressure:	844 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		

PR145960-4-5.doc

FR0100

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	30	Differential Mode	A	Pass
0.5		x	x			x		0	5	30		A	Pass
0.5	x		x			x		90	5	30		A	Pass
0.5		x	x			x		90	5	30		A	Pass
0.5	x		x			x		180	5	30		A	Pass
0.5		x	x			x		180	5	30		A	Pass
0.5	x		x			x		270	5	30		A	Pass
0.5		x	x			x		270	5	30		A	Pass
0.5	x		x			x		0	5	30	Common Mode Line	A	Pass
0.5		x	x			x		0	5	30		A	Pass
0.5	x		x			x		90	5	30		A	Pass
0.5		x	x			x		90	5	30		A	Pass
0.5	x		x			x		180	5	30		A	Pass
0.5		x	x			x		180	5	30		A	Pass
0.5	x		x			x		270	5	30		A	Pass
0.5		x	x			x		270	5	30		A	Pass
0.5	x					x	x	0	5	30	Common Mode Neutral	A	Pass
0.5		x				x	x	0	5	30		A	Pass
0.5	x					x	x	90	5	30		A	Pass
0.5		x				x	x	90	5	30		A	Pass
0.5	x					x	x	180	5	30		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:	DS950	S/N:	DS9521060544
	Printer 1		U64185F1N343098
	UPS		CXXLU2000322
Standard Referenced:	EAC 2005 VVSG	Date:	February 7, 2022
Temperature:	23°C	Humidity:	18%
Input Voltage:	120Vac/60Hz	Pressure:	844 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		

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FR0100

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	180	5	30		A	Pass
0.5	x					x	x	270	5	30		A	Pass
0.5		x				x	x	270	5	30		A	Pass
1.0	x		x			x		0	5	45	Differential Mode	A	Pass
1.0		x	x			x		0	5	45		A	Pass
1.0	x		x			x		90	5	45		A	Pass
1.0		x	x			x		90	5	45		A	Pass
1.0	x		x			x		180	5	45		A	Pass
1.0		x	x			x		180	5	45		A	Pass
1.0	x		x			x		270	5	45		A	Pass
1.0		x	x			x		270	5	45		A	Pass
1.0	x		x			x		0	5	45	Common Mode Line	A	Pass
1.0		x	x			x		0	5	45		A	Pass
1.0	x		x			x		90	5	45		A	Pass
1.0		x	x			x		90	5	45		A	Pass
1.0	x		x			x		180	5	45		A	Pass
1.0		x	x			x		180	5	45		A	Pass
1.0	x		x			x		270	5	45		A	Pass
1.0		x	x			x		270	5	45		A	Pass
1.0	x					x	x	0	5	45	Common Mode Neutral	A	Pass
1.0		x				x	x	0	5	45		A	Pass
1.0	x					x	x	90	5	45		A	Pass
1.0		x				x	x	90	5	45		A	Pass
1.0	x					x	x	180	5	45		A	Pass
1.0		x				x	x	180	5	45		A	Pass
1.0	x					x	x	270	5	45		A	Pass
1.0		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:	DS950	S/N:	DS9521060544
	Printer 1		U64185F1N343098
	UPS		CXXLU2000322
Standard Referenced:	EAC 2005 VVSG	Date:	February 7, 2022
Temperature:	23°C	Humidity:	18%
Input Voltage:	120Vac/60Hz	Pressure:	844 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		

PR145960-4-5.doc

FR0100

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		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
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	x	0	5	60	Common Mode Neutral	A	Pass
2.0		x		x	x	x	0	5	60		A	Pass
2.0	x			x	x	x	90	5	60		A	Pass
2.0		x		x	x	x	90	5	60		A	Pass
2.0	x			x	x	x	180	5	60		A	Pass
2.0		x		x	x	x	180	5	60		A	Pass
2.0	x			x	x	x	270	5	60		A	Pass
2.0		x		x	x	x	270	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:	DS450							S/N:	DS4521063682					
	Printer 1								U64185F1N343282					
	Printer 2								AKSB019674E0					
	UPS								CXXLT2001799					
Standard Referenced:	EAC 2005 VVSG							Date:	February 8, 2022					
Temperature:	19°C			Humidity: 19%				Pressure:	838 mb					
Input Voltage:	120Vac/60Hz													
Configuration of Unit:	Tabulating Ballots (Configuration #2)													
Test Engineer:	T. Wittig													

PR145960-4-5.doc

FR0100

Voltage (kV)	Polarity +	Polarity -	L1	L2	L3	N	P E	Phase (deg)	Number of Pulses	Delay (sec)	Comments	Criteria Met	Pass / Fail
0.5	x		x			x		0	5	30	Differential Mode	A	Pass
0.5		x	x			x		0	5	30		A	Pass
0.5	x		x			x		90	5	30		A	Pass
0.5		x	x			x		90	5	30		A	Pass
0.5	x		x			x		180	5	30		A	Pass
0.5		x	x			x		180	5	30		A	Pass
0.5	x		x			x		270	5	30		A	Pass
0.5		x	x			x		270	5	30		A	Pass
0.5	x		x			x		0	5	30	Common Mode Line	A	Pass
0.5		x	x			x		0	5	30		A	Pass
0.5	x		x			x		90	5	30		A	Pass
0.5		x	x			x		90	5	30		A	Pass
0.5	x		x			x		180	5	30		A	Pass
0.5		x	x			x		180	5	30		A	Pass
0.5	x		x			x		270	5	30		A	Pass
0.5		x	x			x		270	5	30		A	Pass
0.5	x				x	x		0	5	30	Common Mode Neutral	A	Pass
0.5		x			x	x		0	5	30		A	Pass
0.5	x				x	x		90	5	30		A	Pass
0.5		x			x	x		90	5	30		A	Pass
0.5	x				x	x		180	5	30		A	Pass
0.5		x			x	x		180	5	30		A	Pass
0.5	x				x	x		270	5	30		A	Pass
0.5		x			x	x		270	5	30		A	Pass
1.0	x		x		x			0	5	45	Differential Mode	A	Pass
1.0		x	x		x			0	5	45		A	Pass
1.0	x		x		x			90	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:	DS450	S/N:	DS4521063682
	Printer 1		U64185F1N343282
	Printer 2		AKSB019674E0
	UPS		CXXLT2001799
Standard Referenced:	EAC 2005 VVSG	Date:	February 8, 2022
Temperature:	19°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	838 mb
Configuration of Unit:	Tabulating Ballots (Configuration #2)		
Test Engineer:	T. Wittig		

PR145960-4-5.doc

FR0100

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



Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS450	S/N:	DS4521063682
	Printer 1		U64185F1N343282
	Printer 2		AKSB019674E0
	UPS		CXXLT2001799
Standard Referenced:	EAC 2005 VVSG	Date:	February 8, 2022
Temperature:	19°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	838 mb
Configuration of Unit:	Tabulating Ballots (Configuration #2)		
Test Engineer:	T. Wittig		

PR145960-4-5.doc

FR0100

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		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 – AC Mains (Config #1)



Surge Immunity Test Setup – AC Mains (Config #2)

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
1284	ThermoFischer Scientific	EMC Pro Plus - USA	0705276	EFT, Surge, H-field & PQF Immunity Test Generator	11/11/2021	11/11/2022
1372	Tektronix	TDS2002B	C103489	Oscilloscope, 60 MHz, 2-channel (WC059683)	07/02/2021	07/02/2022
1964	EXTECH	Datalogger 42270	1026959	Temperature and Humidity Meter	01/19/2022	01/19/2023

5.5 Conducted RF Immunity

5.5.1 Test Procedure

IEC/EN 61000-4-6

5.4.2 Test Result

The DS950 and DS450 were 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

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

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS950 Printer 1 UPS	S/N:	DS9521060544 U64185F1N343098 CXXLU2000322
Standard Referenced:	EAC 2005 VVSG	Date:	February 9, 2022
Temperature:	19°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	838 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		

PR145960-4-6.doc

FR0100

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 Mains using M3 CDN	A	Pass

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

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS450	S/N:	DS4521063682
	Printer 1		U64185F1N343282
	Printer 2		AKSB019674E0
	UPS		CXXLT2001799
Standard Referenced:	EAC 2005 VVSG	Date:	February 9, 2022
Temperature:	19°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	838 mb
Configuration of Unit:	Tabulating Ballots (Configuration #2)		
Test Engineer:	T. Wittig		

PR145960-4-6.doc

FR0100

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 – AC Mains (Config #1)



Conducted RF Immunity Test Setup – AC Mains (Config #2)

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
1479	EMCI	EMCI-CDN_M3-16	EMCI014	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
1520	California Instruments (AMETEK)	5001IX-CTS	1341A03198	5kVA AC Power Source	NA	NA
1528	Aeroflex/Weinschel	40-6-34	SB031	Hi power atten 6 dB	02/03/2022	02/03/2023
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
1594	EMCI	CI	V2.5.0	Conducted Immunity Software	NA	NA

5.6 Power Frequency H-Field Immunity

5.6.1 Test Procedure

IEC/EN 61000-4-8

5.6.2 Test Result

The DS950 and DS450 were 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

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

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS950 Printer 1 UPS	S/N:	DS9521060544 U64185F1N343098 CXXLU2000322
Standard Referenced:	EAC 2005 VVSG	Date:	February 10, 2022
Temperature:	17°C	Humidity:	27%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		

PR145960-4-8.doc

FR0100

Frequency (Hz) 50	Field Strength (A/m) 60	EUT Axis Location	Dwell Time (sec)	Comments	Criteria Met	Pass / Fail
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
x	30	Z1	60		A	Pass
	x	30	Z1	60	A	Pass

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

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS450	S/N:	DS4521063682
	Printer 1		U64185F1N343282
	Printer 2		AKSB019674E0
	UPS		CXXLT2001799
Standard Referenced:	EAC 2005 VVSG	Date:	February 10, 2022
Temperature:	17°C	Humidity:	27%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #2)		
Test Engineer:	T. Wittig		

PR145960-4-8.doc

FR0100

Frequency (Hz) 50	Field Strength (A/m) 60	EUT Axis Location	Dwell Time (sec)	Comments	Criteria Met	Pass / Fail
x	30	X	60		A	Pass
	x	X	60		A	Pass
x	30	Y	60		A	Pass
	x	Y	60		A	Pass
x	30	Z	60		A	Pass
	x	Z	60		A	Pass
x	30	Z1	60		A	Pass
	x	Z1	60		A	Pass

5.6.4 Test Photographs



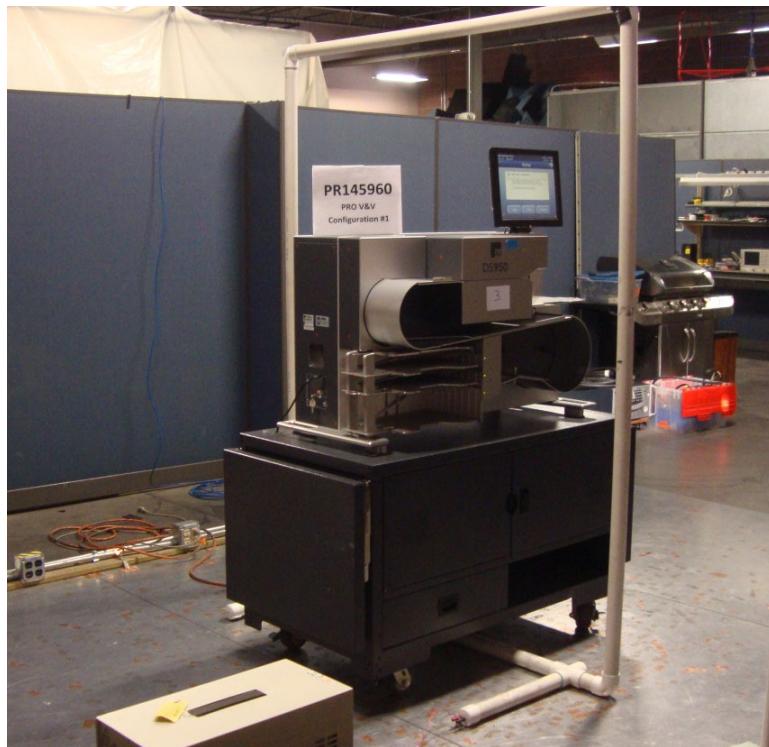
Power Frequency H-field Immunity Test Setup (Config #1)



Power Frequency H-field Immunity Test Setup (Config #1)



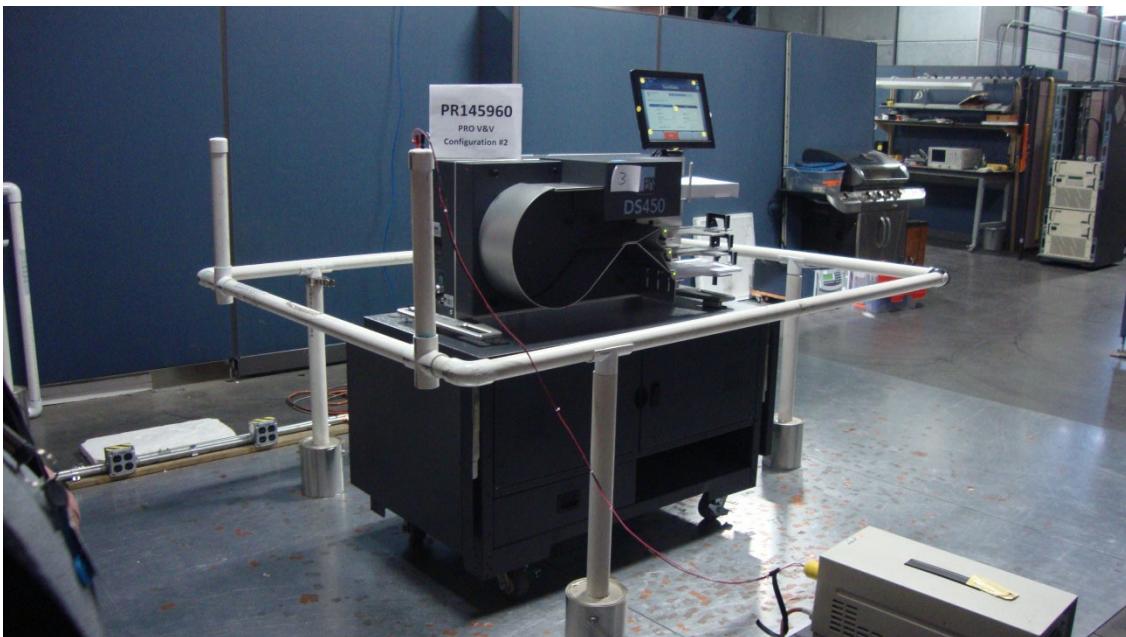
Power Frequency H-field Immunity Test Setup (Config #1)



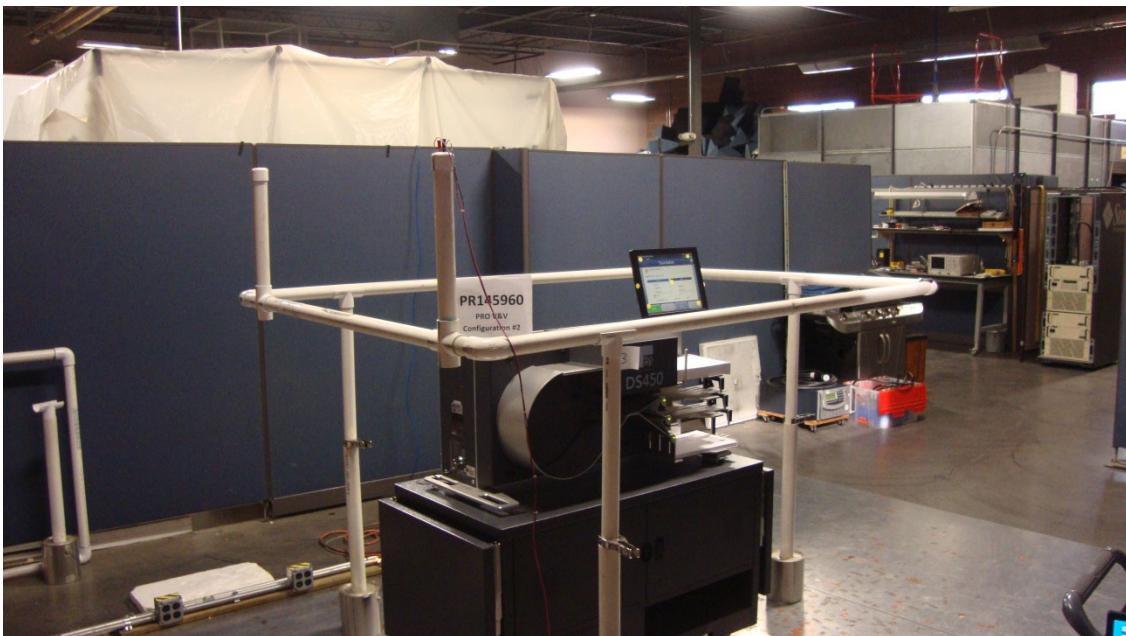
Power Frequency H-field Immunity Test Setup (Config #1)



Power Frequency H-field Immunity Test Setup (Config #2)



Power Frequency H-field Immunity Test Setup (Config #2)



Power Frequency H-field Immunity Test Setup (Config #2)



Power Frequency H-field Immunity Test Setup (Config #2)

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
1964	EXTECH	Datalogger 42270	1026959	Temperature and Humidity Meter	01/19/2022	01/19/2023

5.7 Voltage Dips and Interruptions

5.7.1 Test Procedure

IEC/EN 61000-4-11

5.7.2 Test Result

The DS950 and DS450 were 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:	DS950	S/N:	DS9521060544
	Printer 1		U64185F1N343098
	UPS		CXXLU2000322
Standard Referenced:	EAC 2005 VVSG	Date:	February 2, 2022
Temperature:	23°C	Humidity:	18%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		

PR145960-4-11.doc

FR0100

% 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

Line Voltage Variation Tests

129Vac Line Voltage Variations (+7.5% of nominal 120V) 2hrs.	A	Pass
105Vac Line Voltage Variations (-12.5% of nominal 120V) 2 Hrs.	A	Pass
Surges of +15% line variations of nominal voltage (138V) 2 Hrs.	A	Pass
Surges of -15% line variations of nominal voltage (102V) 2 Hrs.	A	Pass

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:	DS450				S/N:	DS4521063682					
	Printer 1					U64185F1N343282					
	Printer 2					AKSB019674E0					
	UPS					CXXLT2001799					
Standard Referenced:	EAC 2005 VVSG				Date:	February 1, 2022					
Temperature:	19°C		Humidity: 21%		Pressure:	834 mb					
Input Voltage:	120Vac/60Hz										
Configuration of Unit:	Processing ballots (Configuration #2)										
Test Engineer:	T. Wittig										

PR145960-4-11.doc

FR0100

% 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

Line Voltage Variation tests

129Vac Line Voltage Variations (+7.5% of nominal 120V) 2hrs.	A	Pass
105Vac Line Voltage Variations (-12.5% of nominal 120V) 2 Hrs.	A	Pass
Surges of +15% line variations of nominal voltage (138V) 2 Hrs.	A	Pass
Surges of -15% line variations of nominal voltage (102V) 2 Hrs.	A	Pass

5.7.4 Test Photographs



Voltage Dips and Interruptions Test Setup (Config #1)



Voltage Dips and Interruptions Test Setup (Config #2)

5.7.5 Test Equipment List

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

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC059736	Chamber (EMI, Semi-Anechoic)	CIR Enterprises	CH 1	04/03/2022	04/03/2024
WC059916	Ground Plane (Fixed)	National Technical Systems	GP #0	NCR	NCR
WC059918	Ground Plane (Fixed)	National Technical Systems	GP #2	NCR	NCR
WC059669	Meter (Digital Multimeter)	Fluke	83-3	09/23/2021	09/23/2022
WC059683	Oscilloscope (Digital)	Tektronix	TDS2002B	07/02/2021	07/02/2022
WC059768	Generator (Spike/Transient)	Thermo Fisher Scientific	EMC Pro Plus	11/09/2021	11/09/2022
WC059770	Power Supply (AC)	California Instruments	5001IX-CTS	03/30/2018	NCR
WC070508	Software	Keytek	CEWare	NCR	NCR
WC078488	TBD	Extech Instruments	Datalogger 42270	06/14/2021	01/19/2023

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



6.0 Test Logs

EMI Test Log

Manufacturer:	Pro V&V, Inc.	Project Number:	PR145960/B91114
Model:	1 st EUT DS950 UPS Printer	S/N:	DS9521060544 U64185F1N343320 CXXLU2000357
	2 nd EUT DS450 Printer UPS		DS4521063682 U64185F1N343092 CXXLU2000319
Customer Representative:	Michael Walker		
Standard Referenced:	VVSG/FCC Part 15 Class B		

FR0105

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
4-11		February 1, 2022 1245	Voltage Dips and Interruptions (Inc./Red. of Nom. Voltage) (4.1.2.5) (Config. #2)		6.0	Pass	TW
4-3	---	February 2, 2022 0800 -	Radiated RF Immunity 10V/m, 80 - 1000 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell. 120 VAC / 60 Hz (4.1.2.10) (Config. #3) UUT had errors at 328.6435 Front side Vertical. See Photo of fix.		---	---	CL
4-3	---	1300 - 1630	Radiated RF Immunity 10V/m, 80 - 1000 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell. 120 VAC / 60 Hz (4.1.2.10) (Config. #2)		3.0	---	CL
---	---	February 3, 2022 0800 - 1300	Radiated RF Immunity 10V/m, 80 - 1000 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell. 120 VAC / 60 Hz (4.1.2.10) (Config. #1)		5.0	Pass	CL
4-11		February 2-4, 2022	Voltage Dips and Interruptions. Surge of +/- 15% line variation of nominal line voltage. 120 VAC / 60 Hz (Surge of +/- 15%) (4.1.2.5) (Config. #1)		2.0	Pass	TW
4-11		February 2-4, 2022	Voltage Dips and Interruptions. Surge of +/- 15% line variation of nominal line voltage. 120 VAC / 60 Hz (Surge of +/- 15%) (4.1.2.5) (Config. #1)		2.0	Pass	TW
4-11		February 2-4, 2022	Voltage Dips and Interruptions. 70% nom, 0.6 cycles / 40% nom, 6 cycles & 1 sec. / 0% nom, 300 cycles. 120 VAC / 60 Hz (4.1.2.5) (Config. #1)		2.0	Pass	TW
4-11		February 2-4, 2022	Voltage Dips and Interruptions. Surge of +/- 15% line variation of nominal line voltage. 120 VAC / 60 Hz (Surge of +/- 15%) (4.1.2.5) (Config. #2)		2.0	Pass	TW
4-11		February 2-4, 2022	Voltage Dips and Interruptions. Surge of +/- 15% line variation of nominal line voltage. 120 VAC / 60 Hz (Surge of +/- 15%) (4.1.2.5) (Config. #2)		2.0	Pass	TW
4-11		February 2-4, 2022	Voltage Dips and Interruptions. 70% nom, 0.6 cycles / 40% nom, 6 cycles & 1 sec. / 0% nom, 300 cycles. 120 VAC / 60 Hz (4.1.2.5) (Config. #2)		2.0	Pass	TW
4-11		February 2-4, 2022	Voltage Dips and Interruptions. Surge of +/- 15% line variation of nominal line voltage. 120 VAC / 60 Hz (Surge of +/- 15%) (4.1.2.5) (Config. #3)		2.0	Pass	TW
4-11		February 2-4, 2022	Voltage Dips and Interruptions. Surge of +/- 15% line variation of nominal line voltage. 120 VAC / 60 Hz (Surge of +/- 15%) (4.1.2.5) (Config. #3)		2.0	Pass	TW



EMI Test Log

Manufacturer:	Pro V&V, Inc.	Project Number:	PR145960/B91114
Model:	1 st EUT DS950 UPS Printer	S/N:	DS9521060544 U64185F1N343320 CXXLU2000357
	2 nd EUT DS450 Printer UPS		DS4521063682 U64185F1N343092 CXXLU2000319
Customer Representative:	Michael Walker		
Standard Referenced:	VVSG/FCC Part 15 Class B		

FR0105

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
4-11		February 2-4, 2022	Voltage Dips and Interruptions. 70% nom, 0.6 cycles / 40% nom, 6 cycles & 1 sec. / 0% nom, 300 cycles. 120 VAC / 60 Hz (4.1.2.5) (Config. #3)		2.0	Pass	TW
4-5		February 4, 2022 1000	Surge Immunity (4.1.2.7) (Config. #3) Mains: +/- 2kV CM, +/- 2kV DM, (0, 90, 180, 270) 120 VAC / 60 Hz (4.1.2.7) (Config. #3) 120Vac/60Hz		6.0	Pass	TW
4-5		February 7, 2022 0800	Surge Immunity (4.1.2.7) (Config. #3) Mains: +/- 2kV CM, +/- 2kV DM, (0, 90, 180, 270) 120 VAC / 60 Hz (4.1.2.7) (Config. #1) 120Vac/60Hz		6.0	Pass	TW
4-5		February 8, 2022 0800	Surge Immunity (4.1.2.7) (Config. #3) Mains: +/- 2kV CM, +/- 2kV DM, (0, 90, 180, 270) 120 VAC / 60 Hz (4.1.2.7) (Config. #2) 120Vac/60Hz		6.0	Pass	TW
4-4		February 9, 2022 0800	Electrical Fast Transient / Burst Mains: +/- 2kV, I/O: +/- 1kV 120/60 VAC Configuration #2		1.0	Pass	TW
4-4		0900	Electrical Fast Transient / Burst Mains: +/- 2kV, I/O: +/- 1kV 120/60 VAC Configuration #1		05	Pass	TW
4-4		0930	Electrical Fast Transient / Burst Mains: +/- 2kV, I/O: +/- 1kV 120/60 VAC Configuration #3		05	Pass	TW
4-6		1000	Conducted RF Immunity 10Vrms, 0.15 - 80 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120/60 VAC Configuration #3		2.0	Pass	TW
4-6		1200	Conducted RF Immunity 10Vrms, 0.15 - 80 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120/60 VAC Configuration #1		2.0	Pass	TW
4-6		1400	Conducted RF Immunity 10Vrms, 0.15 - 80 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120/60 VAC Configuration #3		2.0	Pass	TW



EMI Test Log

Manufacturer:	Pro V&V, Inc.	Project Number:	PR145960/B91114
Model:	1 st EUT DS950 UPS Printer	S/N:	DS9521060544 U64185F1N343320 CXXLU2000357
	2 nd EUT DS450 Printer UPS		DS4521063682 U64185F1N343092 CXXLU2000319
Customer Representative:	Michael Walker		
Standard Referenced:	VVSG/FCC Part 15 Class B		

FR0105

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
4-8		1530	Power Frequency H-Field Immunity 30A/m, 50 / 60 Hz, 3 axes 120/60 VAC Configuration #3		---	Pass	TW
4-8		1600	Power Frequency H-Field Immunity 30A/m, 50 / 60 Hz, 3 axes 120/60 VAC Configuration #1		---	Pass	TW
		1630	Done for the day				
4-8		February 11, 2022 0900	Power Frequency H-Field Immunity 30A/m, 50 / 60 Hz, 3 axes 120/60 VAC Configuration #2		---	Pass	TW
4-2		1000	Setup and performed ESD pre-test verification prior to testing, bleed-off cable 938k ohms		---	---	---
4-2		1030	Electrostatic Discharge. +/- 8kV Contact, +/- 2, 4, 8, 15kV Air. 120Vac/60Hz (4.1.2.8) Configuration #2		---	Pass	TW
4-2		1330	Electrostatic Discharge. +/- 8kV Contact, +/- 2, 4, 8, 15kV Air. 120Vac/60Hz (4.1.2.8) Configuration #1		---	Pass	TW

End of Test Report