

National Technical Systems Test Report for Electromagnetic Interference (EMI) Testing of the ClearAccess ELO, Printer, & UPS Units

Prepared For

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Performed By

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Revision History

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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 Specification: See Table 5.0
- Pro V&V, Inc Purchase Order(s) 2021-019, dated 12/01/2021
- National Technical Systems (NTS) Quote(s) OP0602148, dated 11/29/2021
- 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 following test sample(s) to be used as the Equipment Under Test:

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

Item	Qty.	Name/Description	Part Number	Serial Number
1	2	ClearAccess, ELO	N/A	193022853
				193022854
2	1	Printer	N/A	460012341W822
3	2	UPS	N/A	AS2126193035
				AS21282906644

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 ISO 17025:2017. Certification of calibration is on file subject to inspection by authorized personnel.



5.0 Test Descriptions and Results

Table 5.0-1: Summary of Test Information & Results

Section	Test	Specification	Test Facility	Test Date	Part #	Part Name	Serial #	Test Result
5.1	Electrostatic Discharge	IEC 61000-4-2	Longmont	01/07/2022 - 01/07/2022	N/A	ClearAccess, ELO	193022854	No Anomalies
						Printer	460012341W822	
						UPS	AS21282906644	
5.2	Radiated RF Immunity	IEC 61000-4-3	Longmont	02/18/2022 - 02/18/2022	N/A	ClearAccess, ELO	193022853	No Anomalies
						Printer	460012341W822	
						UPS	AS2126193035	
5.3	Electrical Fast Transient / Burst	IEC 61000-4-4	Longmont	01/10/2022 - 01/10/2022	N/A	ClearAccess, ELO	193022854	No Anomalies
						Printer	460012341W822	
						UPS	AS21282906644	
5.4	Surge Immunity	IEC 61000-4-5	Longmont	02/22/2022 - 02/22/2022	N/A	ClearAccess, ELO	193022853	No Anomalies
						Printer	460012341W822	
						UPS	AS2126193035	
5.5	Conducted RF Immunity	IEC 61000-4-6	Longmont	02/24/2022 - 02/24/2022	N/A	ClearAccess, ELO	193022853	No Anomalies
						Printer	460012341W822	
						UPS	AS2126193035	
5.6	Power Frequency H-Field Immunity	IEC 61000-4-8	Longmont	02/24/2022 - 02/24/2022	N/A	ClearAccess, ELO	193022853	No Anomalies
						Printer	460012341W822	
						UPS	AS2126193035	
5.7	Voltage Dips and Interruptions	IEC 61000-4-11	Longmont	02/23/2022 - 02/23/2022	N/A	ClearAccess, ELO	193022853	No Anomalies
						Printer	460012341W822	
						UPS	AS2126193035	

The decision rule for Test Results was based on the Test Specification used for testing.



5.1 Electrostatic Discharge

5.1.1 Test Procedure

The ClearAccess, ELO, Printer and UPS were subjected to the Electrostatic Discharge test in accordance with IEC 61000-4-2.

5.1.2 Test Result

No anomalies were noted during or at the completion of the Electrostatic Discharge procedure.

5.1.3 Test Datasheets

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
Temperature:	21.3°C	Humidity:	32.7%
Input Voltage:	120vac/60Hz	Pressure:	851 mb
Configuration of Unit:	Marking and printing ballots.		
Test Engineer:	Casey Lockhart		

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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
HCP	8	x	x	10	1	Edge of HCP at Front of UUT	N/A	N/A
Contact Discharge Points - RED Arrows.								
Figure A2	8	x	x	10	1	No discharge points were found.	---	---
Figure A3	8	x	x	10	1	No discharge points were found.	---	---
Figure A4	8	x	x	10	1	No discharge points were found.	---	---
Figure A5	8	x	x	10	1	No discharge points were found.	---	---
Figure A6	8	x	x	10	1	No discharge points were found.	---	---
Figure A7	8	x	x	10	1	No discharge points were found.	A	Pass
Figure A8	8	x	x	10	1	No discharge points were found.	---	---
Figure A9	8	x	x	10	1	No discharge points were found.	---	---
Figure A10	8	x	x	10	1	No discharge points were found.	A	Pass
Air Discharge Points - BLUE Arrows.								
Figure A2	2, 4, 8, 15	x	x	10	1	No discharge points were found.	---	---
Figure A3	2, 4, 8, 15	x	x	10	1	No discharge points were found.	A	Pass
Figure A4	2, 4, 8, 15	x	x	10	1	No discharge points were found.	---	---
Figure A5	2, 4, 8, 15	x	x	10	1	No discharge points were found.	---	---
Figure A6	2, 4, 8, 15	x	x	10	1	No discharge points were found.	---	---
Figure A7	2, 4, 8, 15	x	x	10	1	No discharge points were found.	---	---
Figure A8	2, 4, 8, 15	x	x	10	1	No discharge points were found.	---	---
Figure A9	2, 4, 8, 15	x	x	10	1	No discharge points were found.	A	Pass
Figure A10	2, 4, 8, 15	x	x	10	1	No discharge points were found.	A	Pass

5.1.4 Test Photographs

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
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Figure A1. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
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Figure A2. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO	S/N:	193022854
	Printer		460012341W822
	UPS		AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
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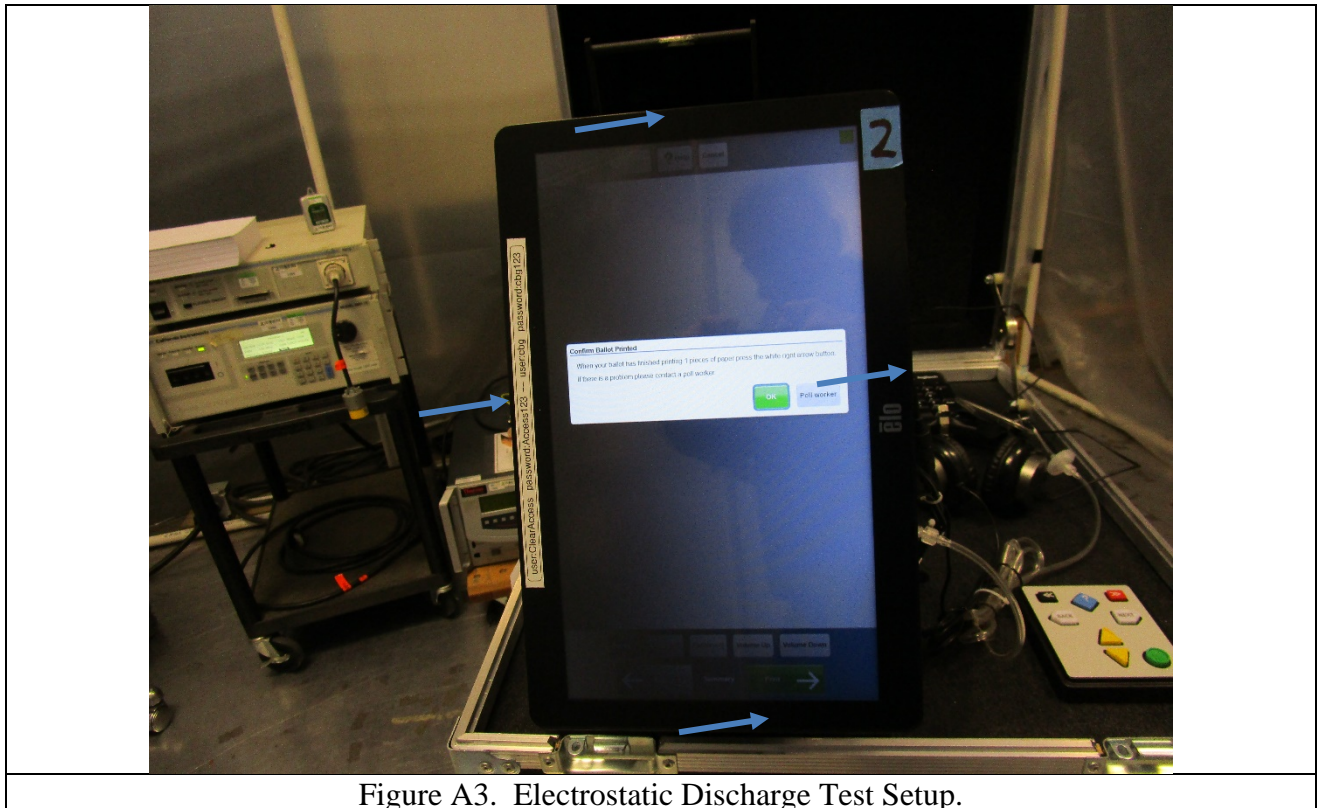


Figure A3. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
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Figure A4. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
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Figure A5. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
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Figure A6. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
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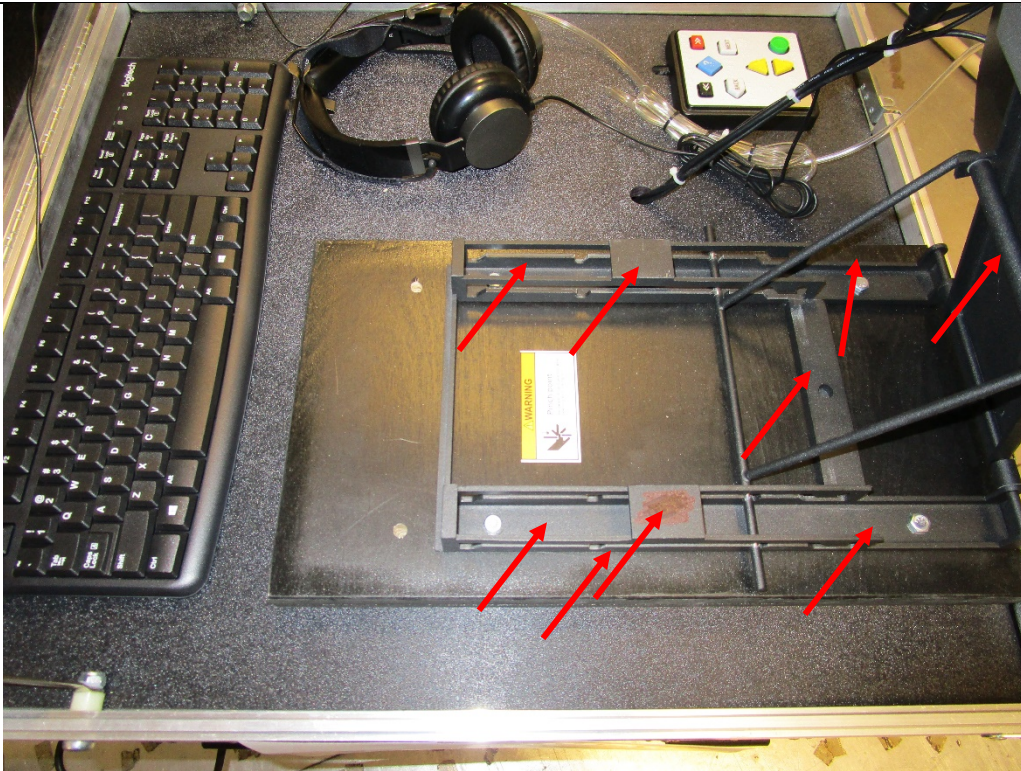


Figure A7. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
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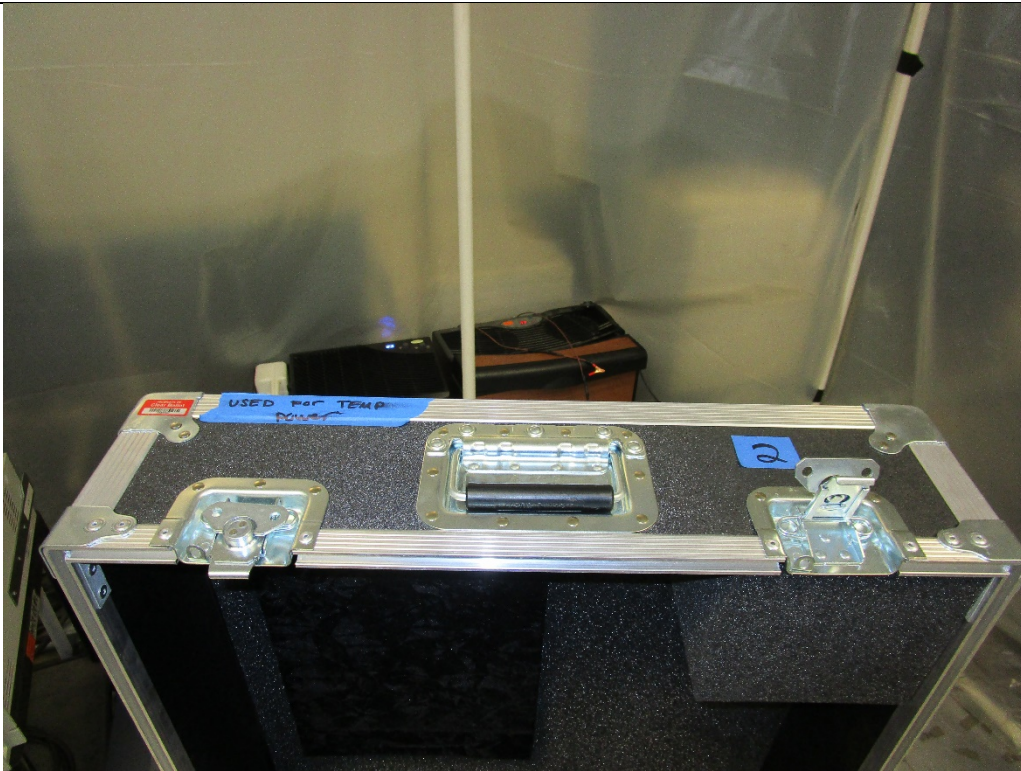


Figure A8. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
B90101-4-2.doc			FR0100



Figure A9. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer: Pro V&V, Inc.
Customer Representative: Michael Walker
Model: ClearAccess, ELO
Printer
UPS

Standard Referenced: IEC 61000-4-2 Ed. 2.0
B90101-4-2.doc

Project Number: PR150950
Test Area: GP1
S/N: 193022854
460012341W822
AS21282906644
Date: January 7, 2022
FR0100

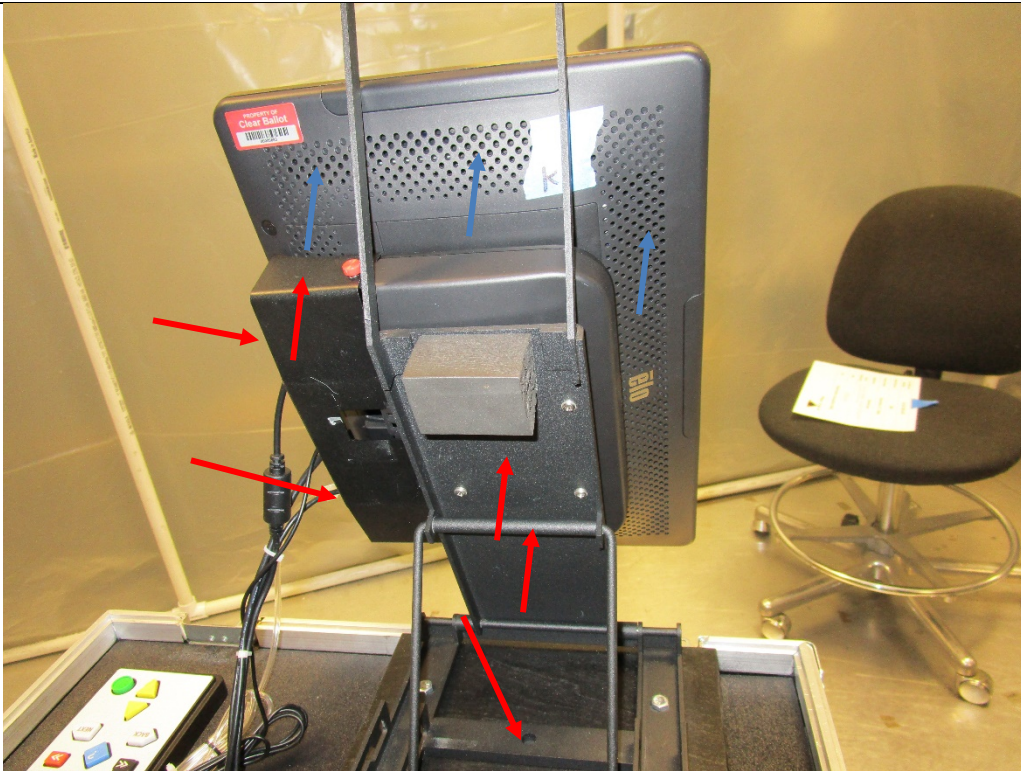


Figure A10. Electrostatic Discharge Test Setup.



5.1.5 Test Equipment List

Table 5.1-1: Electrostatic Discharge Test Equipment List

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-2 Ed. 2.0	Date:	January 7, 2022
B90101-4-2.doc			FR0100

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
1962	EXTECH Instruments	Datalogger 42270	1026960	Temperature and Humidity Meter	06/14/2021	06/14/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.2 Radiated RF Immunity

5.2.1 Test Procedure

The ClearAccess, ELO, Printer and UPS were subjected to the Radiated RF Immunity test in accordance with IEC 61000-4-3.

5.2.2 Test Result

No anomalies were noted during or at the completion of the Radiated RF Immunity procedure.

5.2.3 Test Datasheets

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP0
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012341W822 AS2126193035
Standard Referenced:	IEC 61000-4-3	Date:	February 18, 2022
Temperature:	21.0°C	Humidity:	14.6%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Marking and printing ballots.		
Test Engineer:	Casey Lockhart		

PR150950-4-3.doc

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Frequency (MHz)	Type	Modulation %	Freq	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 per IEC / EN 61000-4-3

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP0
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012341W822 AS2126193035
Standard Referenced:	IEC 61000-4-3	Date:	February 18, 2022
PR150950-4-3.doc		FR0100	

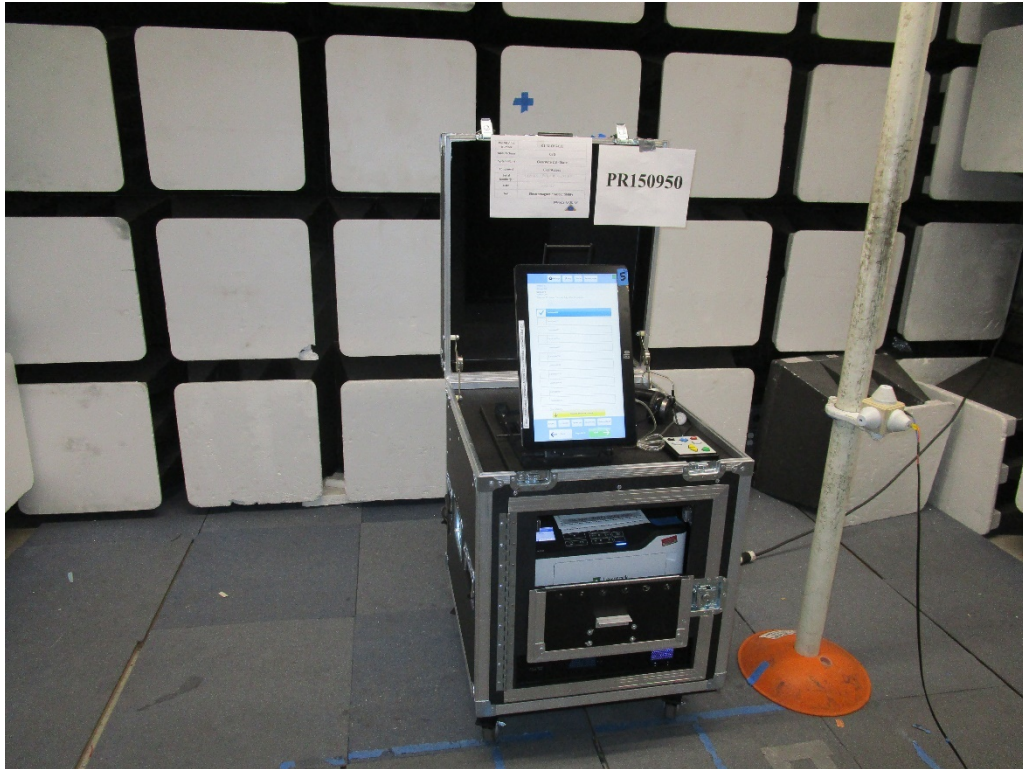


Figure B1. Radiated RF Immunity Test Setup – Front Side.

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP0
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012341W822 AS2126193035
Standard Referenced:	IEC 61000-4-3	Date:	February 18, 2022
PR150950-4-3.doc			FR0100

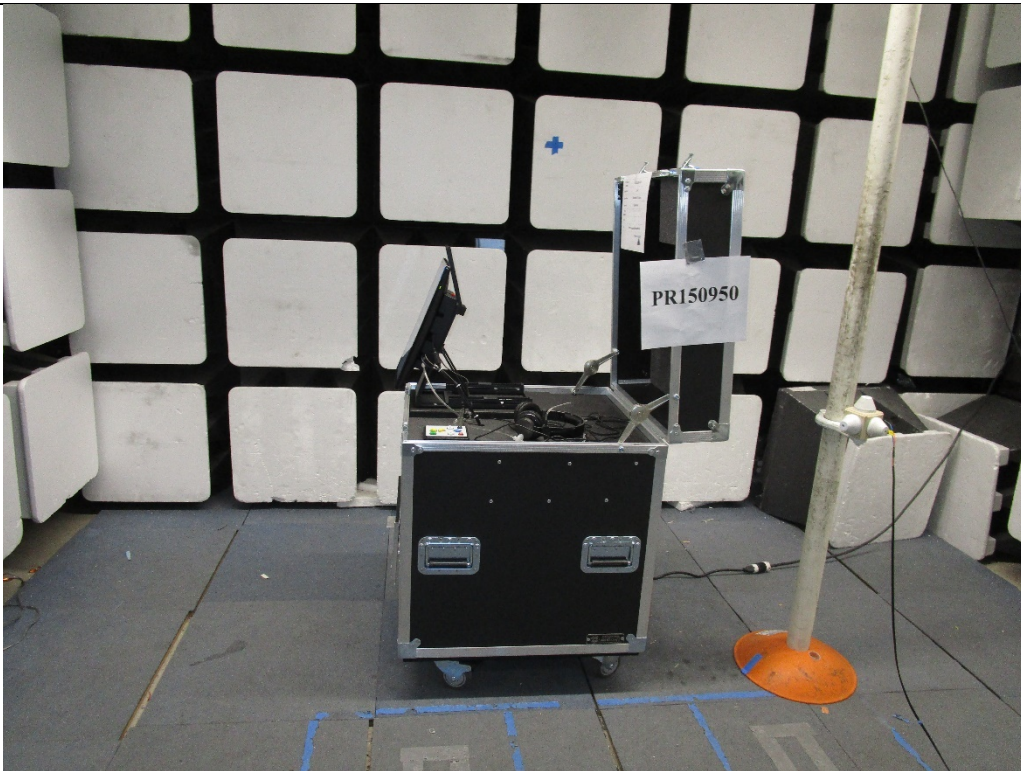


Figure B2. Radiated RF Immunity Test Setup – Right Side.

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP0
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012341W822 AS2126193035
Standard Referenced:	IEC 61000-4-3	Date:	February 18, 2022
PR150950-4-3.doc			FR0100

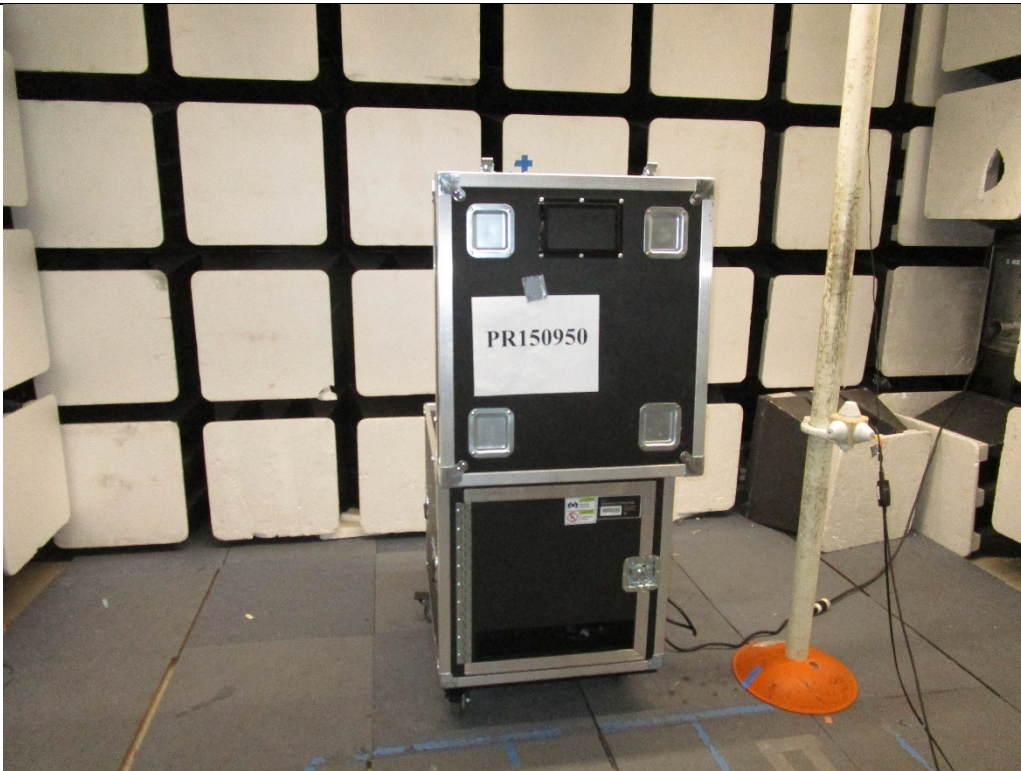


Figure B3. Radiated RF Immunity Test Setup – Back Side.

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP0
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012341W822 AS2126193035
Standard Referenced:	IEC 61000-4-3	Date:	February 18, 2022
PR150950-4-3.doc			FR0100



Figure B4. Radiated RF Immunity Test Setup – Left Side.



5.2.5 Test Equipment List

Table 5.2-1: Radiated RF Immunity Test Equipment List

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP0
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012341W822 AS2126193035
Standard Referenced:	IEC 61000-4-3	Date:	February 18, 2022
PR150950-4-3.doc			FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1018	Pacific Power	TMX-125	207	2.5 kVA, 50 Hz Power Source	NCR	NCR
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter (WC059669)	09/23/2021	09/23/2022
1181	EMCI	RFS	V2.5.8	Initial Release 02 July 2004	NCR	NCR
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	NCR	NCR
1722	ETS -Lindgren	3142B	1624	Antenna	NCR	NCR
1954	Amplifier Research	FP5000	20644	Isotropic Field Probe 10kHz to 1 GHz	06/08/2021	06/08/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.3 Electrical Fast Transient / Burst

5.3.1 Test Procedure

The ClearAccess, ELO, Printer and UPS were subjected to the Electrical Fast Transient / Burst test in accordance with IEC 61000-4-4.

5.3.2 Test Result

No anomalies were noted during or at the completion of the Electrical Fast Transient / Burst procedure.

5.3.3 Test Datasheets

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GPI
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-4 Ed. 2.0	Date:	January 10, 2022
Temperature:	21.4°C	Humidity:	32.1%
Input Voltage:	120Vac/60Hz	Pressure:	851mb
Configuration of Unit:	Marking and printing ballots.		
Test Engineer:	Casey Lockhart		

B90101-4-4.doc

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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	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/Burst per IEC / EN 61000-4-4

Manufacturer:	Pro V&V, Inc.	Project Number:	B90101
Customer Representative:	Michael Walker	Test Area:	GPI
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-4 Ed. 2.0	Date:	January 10, 2022
B90101-4-4.doc			FR0100

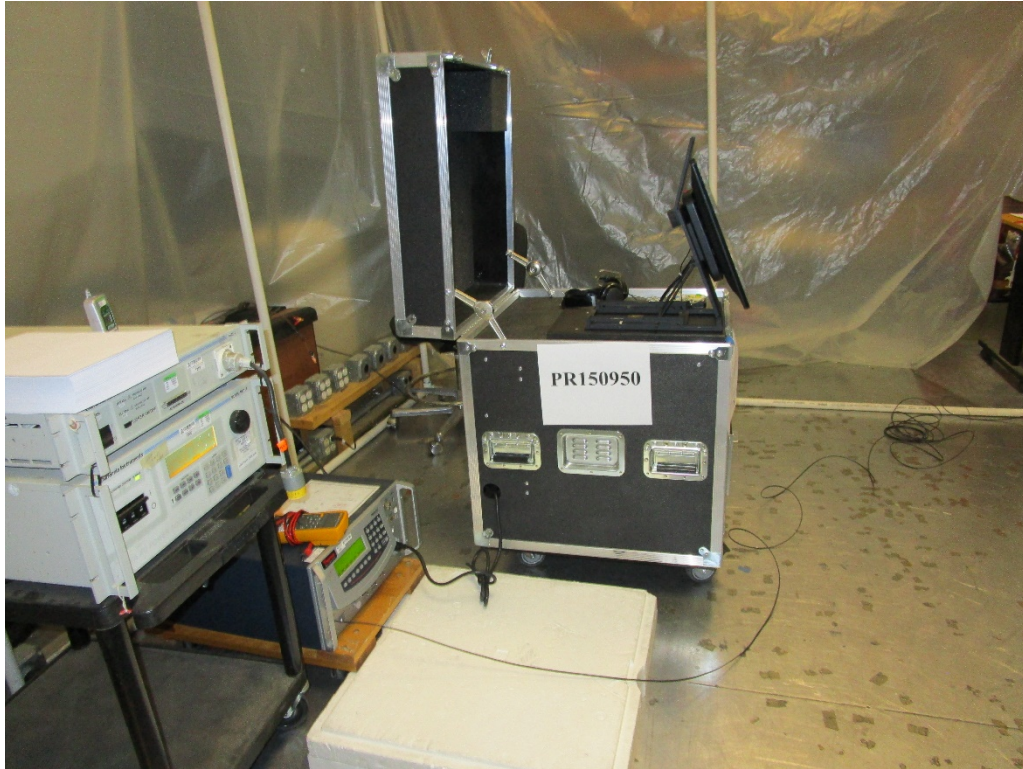


Figure C1. Electrical Fast Transient Test Setup.

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

Manufacturer:	Pro V&V, Inc.	Project Number:	B90101
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-4 Ed. 2.0	Date:	January 10, 2022
B90101-4-4.doc			FR0100



Figure C2. Electrical Fast Transient Test Setup – AC Mains.



5.3.5 Test Equipment List

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

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP1
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 460012341W822 AS21282906644
Standard Referenced:	IEC 61000-4-4 Ed. 2.0	Date:	January 10, 2022
B90101-4-4.doc			FR0100

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	CEWare	4.0	KeyTek EMCPro Control Software for EFT, Surge, H-F	NCR	NCR
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

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.4 Surge Immunity

5.4.1 Test Procedure

The ClearAccess, ELO, Printer and UPS were subjected to the Surge Immunity test in accordance with IEC 61000-4-5.

5.4.2 Test Result

No anomalies were noted during or at the completion of the Surge Immunity procedure.

5.4.3 Test Datasheets

Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-5	Date:	February 22, 2022
Temperature:	20.1 °C	Humidity:	14.7%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots		
Test Engineer:	Casey Lockhart		

PR150950-4-5.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
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
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



Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-5	Date:	February 22, 2022
Temperature:	20.1°C	Humidity:	14.7%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots		
Test Engineer:	Casey Lockhart		

PR150950-4-5.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	0	5	60	Common Mode Line	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	0	5	60	Common Mode Neutral	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
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	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 per IEC / EN 61000-4-5

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-3	Date:	February 22, 2022
PR150950-4-5.doc		FR0100	



Figure D1. Surge Immunity Test Setup.

Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-3	Date:	February 22, 2022
PR150950-4-5.doc			FR0100



Figure D2. Surge Immunity Test Setup – AC Mains.



5.4.5 Test Equipment List

Table 5.4-1: Surge Immunity Test Equipment List

Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-3	Date:	February 22, 2022
PR150950-4-5.doc			FR0100

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	CEWare	4.0	KeyTek EMCPro Control Software for EFT, Surge, H-F	NCR	NCR
1372	Tektronix	TDS2002B	C103489	Oscilloscope, 60 MHz, 2-channel (WC059683)	07/02/2021	07/02/2022
1962	EXTECH Instruments	Datalogger 42270	1026960	Temperature and Humidity Meter	06/14/2021	06/14/2022
1983	Keytek	EMC Pro	102381	EFT, Surge, H-field & PQF Immunity Test Generator	11/09/2021	11/09/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.5 Conducted RF Immunity

5.5.1 Test Procedure

The ClearAccess, ELO, Printer and UPS were subjected to the Conducted RF Immunity test in accordance with IEC 61000-4-6.

5.5.2 Test Result

No anomalies were noted during or at the completion of the Conducted RF Immunity procedure.

5.5.3 Test Datasheets

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-6	Date:	February 24, 2022
Temperature:	19.8°C	Humidity:	12.7%
Input Voltage:	120Vac/60Hz	Pressure:	833 mb
Configuration of Unit:	Processing ballots		
Test Engineer:	Casey Lockhart		

B90101-4-6.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 per IEC / EN 61000-4-6

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-6	Date:	February 24, 2022
B90101-4-6.doc			FR0100



Figure E1. Conducted RF Immunity Test Setup – AC Mains _ I/O Cable.

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-6	Date:	February 24, 2022
B90101-4-6.doc			FR0100

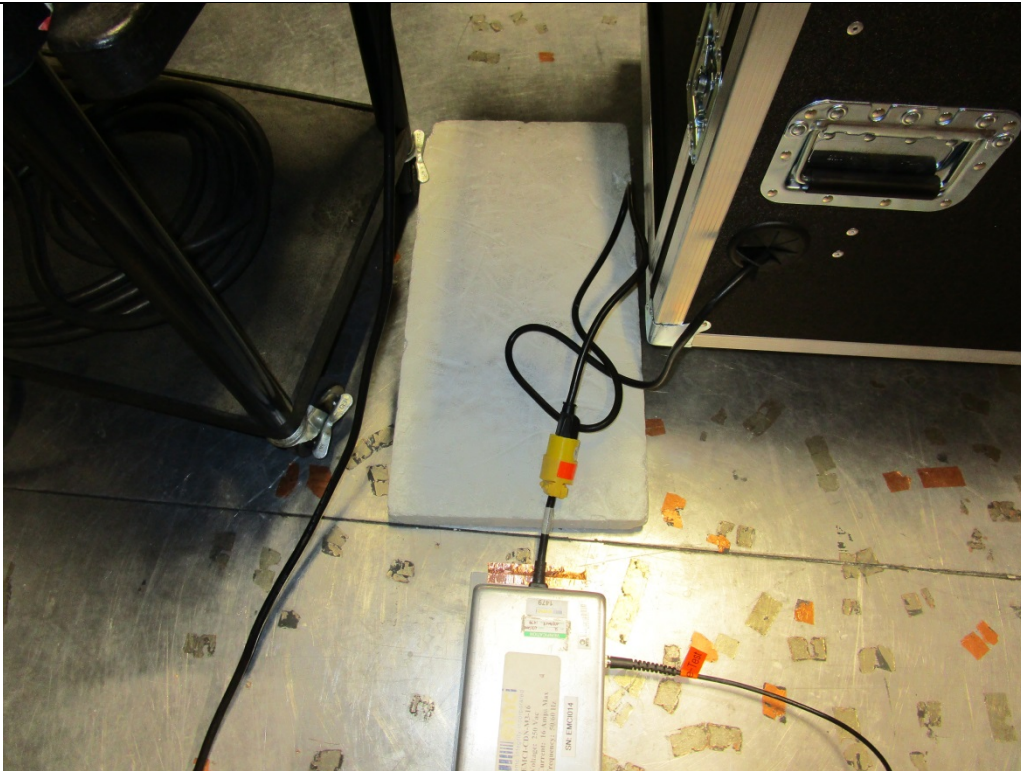


Figure E2. Conducted RF Immunity Test Setup – AC Mains _ I/O Cable.



5.5.5 Test Equipment List

Table 5.5-1: Conducted RF Immunity Test Equipment List

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-6	Date:	February 24, 2022
B90101-4-6.doc			FR0100

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
1296	California Instruments Corporation	5001IX208-150/300	S59159	5k VA AC Power Source (WCO95675)	07/08/2021	07/08/2022
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
1528	Aero-flex/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)	NCR	NCR
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	NCR	NCR
1962	EXTECH Instruments	Datalogger 42270	1026960	Temperature and Humidity Meter	06/14/2021	06/14/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.6 Power Frequency H-Field Immunity

5.6.1 Test Procedure

The ClearAccess, ELO, Printer and UPS were subjected to the Power Frequency H-Field Immunity test in accordance with IEC 61000-4-8.

5.6.2 Test Result

No anomalies were noted during or at the completion of the Power Frequency H-Field Immunity procedure.

5.6.3 Test Datasheets

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-8	Date:	February 24, 2022
Temperature:	20.9°C	Humidity:	12.5%
Input Voltage:	120Vac/60Hz	Pressure:	833 mb
Configuration of Unit:	Processing Ballots		
Test Engineer:	Casey Lockhart		

PR150950-4-8.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 per IEC / EN 61000-4-8

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-8	Date:	February 24, 2022
PR150950-4-8.doc		FR0100	



Figure F1. Power Frequency H-field Immunity Test Setup X axis.

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-8	Date:	February 24, 2022
PR150950-4-8.doc			FR0100



Figure F2. Power Frequency H-field Immunity Test Setup Y axis.

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-8	Date:	February 24, 2022
PR150950-4-8.doc			FR0100

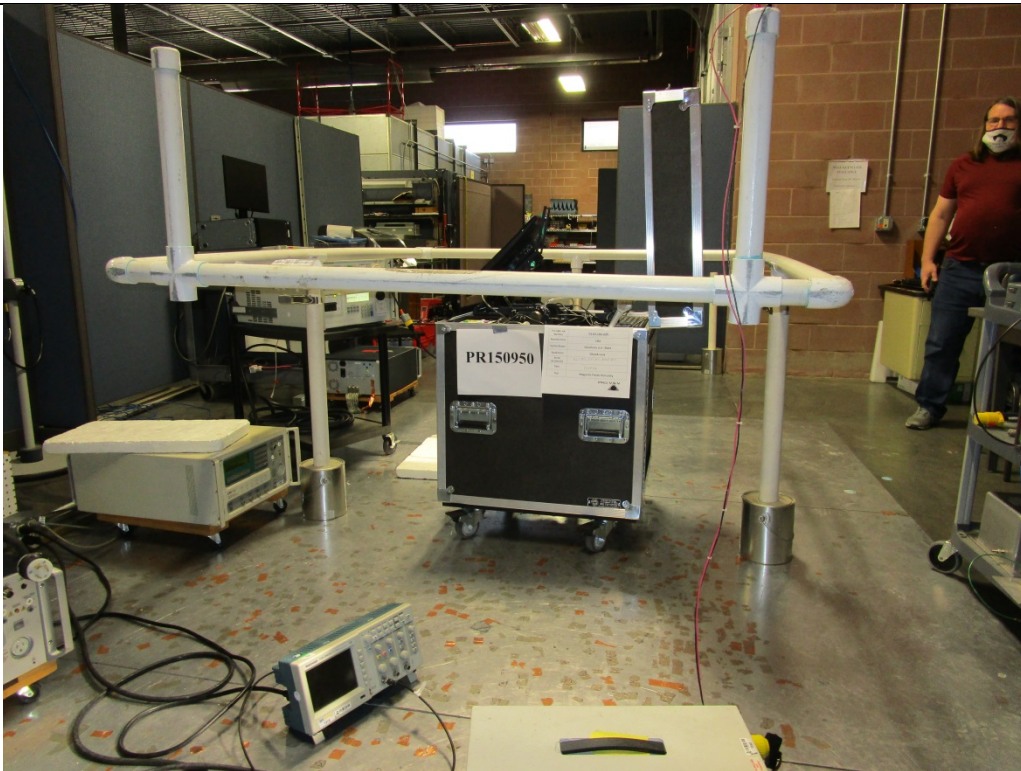


Figure F3. Power Frequency H-field Immunity Test Setup Z axis.



5.6.5 Test Equipment List

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

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-8	Date:	February 24, 2022
PR150950-4-8.doc			FR0100

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
1296	California Instruments Corporation	5001IX208-150/300	S59159	5k VA AC Power Source (WCO95675)	07/08/2021	07/08/2022
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	NCR	NCR
1548	California Instruments/Ametek	1251P	1423A06347	AC Power supply	NCR	NCR

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-11	Date:	February 23, 2022
PR150950-4-11.doc		FR0100	



Figure G1. Voltage Dips and Interrupts Test Setup.

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-11	Date:	February 23, 2022
PR150950-4-11.doc			FR0100



Figure G2. Voltage Dips and Interrupts Test Setup AC Mains.

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-11	Date:	February 23, 2022
PR150950-4-11.doc			FR0100



Figure G3. Voltage Dips and Interrupts Test Setup Voltage Variation.



5.7.5 Test Equipment List

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

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

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Customer Representative:	Michael Walker	Test Area:	GP2
Model:	ClearAccess, ELO Printer UPS	S/N:	I193022853 460012141VXML AS2126193035
Standard Referenced:	IEC 61000-4-11	Date:	February 23, 2022
PR150950-4-11.doc			FR0100

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	CEWare	4.0	KeyTek EMCPro Control Software for EFT, Surge, H-F	NCR	NCR
1296	California Instruments Corporation	5001IX208-150/300	S59159	5k VA AC Power Source (WCO95675)	07/08/2021	07/08/2022
1372	Tektronix	TDS2002B	C103489	Oscilloscope, 60 MHz, 2-channel (WC059683)	07/02/2021	07/02/2022
1962	EXTECH Instruments	Datalogger 42270	1026960	Temperature and Humidity Meter	06/14/2021	06/14/2022
1983	Keytek	EMC Pro	102381	EFT, Surge, H-field & PQF Immunity Test Generator	11/09/2021	11/09/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



6.0 Test Log

EMI Test Log

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 1193022853 460012341W822 AS21282906644 AS2126193039 AS2126193035
Customer Representative:	Michael Walker		
Standard Referenced:	FCC Part 15 Class B		

FR0105

Ground Planes / CALC

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
4-2	---	January 10, 2022 1100 - 1400	Electrostatic Discharge. +/- 8kV Contact, +/-2, 4, 8, 15kV Air. 120 VAC / 60 Hz (4.1.2.8)		3.0	Pass	CL
4-4	---	1400 - 1500	Electrical Fast Transient / Burst. Mains: +/- 2kV, I/O: +/- 1kV. 120 VAC / 60 Hz (4.1.2.6)		1.0	Pass	CL
4-3	---	February 18, 2022 1200 - 1530	Pre-test and UUT setup. Radiated RF Immunity 10V/m, 80 - 1000 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120 VAC / 60 Hz (4.1.2.10)		3.5	---	CL
4-3	---	February 21, 2022 0730 - 0930	Radiated RF Immunity 10V/m, 80 - 1000 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120 VAC / 60 Hz (4.1.2.10)		2.0	Pass	CL
4-5	---	February 22, 2022 0730 - 0930	Swap UUT's on GR2, waiting for test to finish up to move UUT out and new one in.		2.0	---	CL
---	---	0930 - 1530	Surge Immunity. Mains: +/- 2kV CM, +/- 2kV DM, (0, 90, 180, 270) 120 VAC / 60 Hz (4.1.2.7) Output files under 05B91114		6.0	Pass	CL
4-11	---	February 23, 2022 0730 - 0830	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) Output files under 11B91114		1.0	Pass	CL
4-11	---	0843 - 1043	129Vac Line Voltage Variations (+7.5% of nominal 120V) 2hrs.		2.0	Pass	CL
4-11	---	1044 - 1244	105Vac Line Voltage Variations (-12.5% of nominal 120V) 2 Hrs.		2.0	Pass	CL
4-11	---	1245 - 1445	Surges of +15% line variations of nominal voltage (138V) 2 Hrs.		2.0	Pass	CL
4-11	---	February 24, 2022 0800 - 1000	Surges of -15% line variations of nominal voltage (102V) 2 Hrs.		2.0	Pass	CL



EMI Test Log

Manufacturer:	Pro V&V, Inc.	Project Number:	PR150950
Model:	ClearAccess, ELO Printer UPS	S/N:	193022854 I193022853 460012341W822 AS21282906644 AS2126193039 AS2126193035
Customer Representative:	Michael Walker		
Standard Referenced:	FCC Part 15 Class B		

FR0105

Ground Planes / CALC

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
4-6	----	1000 - 1130	Conducted RF Immunity. 10Vrms, 0.15 - 80 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell. 120 VAC / 60 Hz (4.1.2.11)		1.5	Pass	CL
4-8	---	1130 - 1200	Power Frequency H-Field Immunity. 30A/m, 50 / 60 Hz, 3 axes. 120 VAC / 60 Hz (4.1.2.12)		.5	Pass	CL

Regular hours:
Overtime/Prem hours:
Total hours:



End of Test Report