

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

Prepared For

Pro V&V, Inc | 6705 Odyssey Dr NW Ste C | Huntsville, AL 35806

Performed By

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



Chase Cunningham

Chase Cunningham
Preparer



Eugene Devito
Program Manager



Revision History

| Rev. | Description | Issue Date |
|------|-----------------|------------|
| 0 | Initial Release | 03/03/2022 |

Table of Contents

| | | |
|------------|---|-----------|
| 1.0 | Introduction | 5 |
| 2.0 | References | 5 |
| 3.0 | Product Selection and Description..... | 5 |
| 3.1 | Security Classification | 5 |
| 4.0 | General Test Requirements..... | 5 |
| 4.1 | Test Equipment | 5 |
| 5.0 | Test Descriptions and Results..... | 6 |
| 5.1 | Electrostatic Discharge | 7 |
| 5.1.1 | Test Procedure | 7 |
| 5.1.2 | Test Result | 7 |
| 5.1.3 | Test Datasheets | 7 |
| 5.1.4 | Test Photographs | 8 |
| 5.1.5 | Test Equipment List..... | 18 |
| 5.2 | Radiated RF Immunity | 19 |
| 5.2.1 | Test Procedure | 19 |
| 5.2.2 | Test Result | 19 |
| 5.2.3 | Test Datasheets | 19 |
| 5.2.4 | Test Photographs | 20 |
| 5.2.5 | Test Equipment List..... | 24 |
| 5.3 | Electrical Fast Transient / Burst..... | 25 |
| 5.3.1 | Test Procedure | 25 |
| 5.3.2 | Test Result | 25 |
| 5.3.3 | Test Datasheets | 25 |
| 5.3.4 | Test Photographs | 26 |
| 5.3.5 | Test Equipment List..... | 28 |
| 5.4 | Surge Immunity | 29 |
| 5.4.1 | Test Procedure | 29 |
| 5.4.2 | Test Result | 29 |
| 5.4.3 | Test Datasheets | 29 |
| 5.4.4 | Test Photographs | 31 |
| 5.4.5 | Test Equipment List..... | 33 |
| 5.5 | Conducted RF Immunity..... | 34 |
| 5.5.1 | Test Procedure | 34 |
| 5.5.2 | Test Result | 34 |
| 5.5.3 | Test Datasheets | 34 |
| 5.5.4 | Test Photographs | 35 |
| 5.5.5 | Test Equipment List..... | 37 |
| 5.6 | Power Frequency H-Field Immunity..... | 38 |
| 5.6.1 | Test Procedure | 38 |
| 5.6.2 | Test Result | 38 |
| 5.6.3 | Test Datasheets | 38 |
| 5.6.4 | Test Photographs | 39 |
| 5.6.5 | Test Equipment List..... | 42 |
| 5.7 | Voltage Dips and Interruptions | 43 |
| 5.7.1 | Test Procedure | 43 |
| 5.7.2 | Test Result | 43 |
| 5.7.3 | Test Datasheets | 43 |
| 5.7.4 | Test Photographs | 44 |
| 5.7.5 | Test Equipment List..... | 47 |
| 6.0 | Test Log..... | 48 |

List of Tables

| | |
|---|----|
| Table 3.0-1: Product Identification - Equipment Under Test (EUT) | 5 |
| Table 5.0-1: Summary of Test Information & Results | 6 |
| Table 5.1-1: Electrostatic Discharge Test Equipment List | 18 |
| Table 5.2-1: Radiated RF Immunity Test Equipment List..... | 24 |
| Table 5.3-1: Electrical Fast Transient / Burst Test Equipment List..... | 28 |
| Table 5.4-1: Surge Immunity Test Equipment List | 33 |
| Table 5.5-1: Conducted RF Immunity Test Equipment List | 37 |
| Table 5.6-1: Power Frequency H-Field Immunity Test Equipment List | 42 |
| Table 5.7-1: Voltage Dips and Interrupts Test Equipment List..... | 47 |

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 | | |

B90101-4-2.doc

FR0100

| 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 |
| 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 | | 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 | | 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 | | 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 | | A | Pass |
| Figure A10 | 2, 4, 8, 15 | x x | 10 | 1 | | 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 |
| B90101-4-2.doc | | | FR0100 |

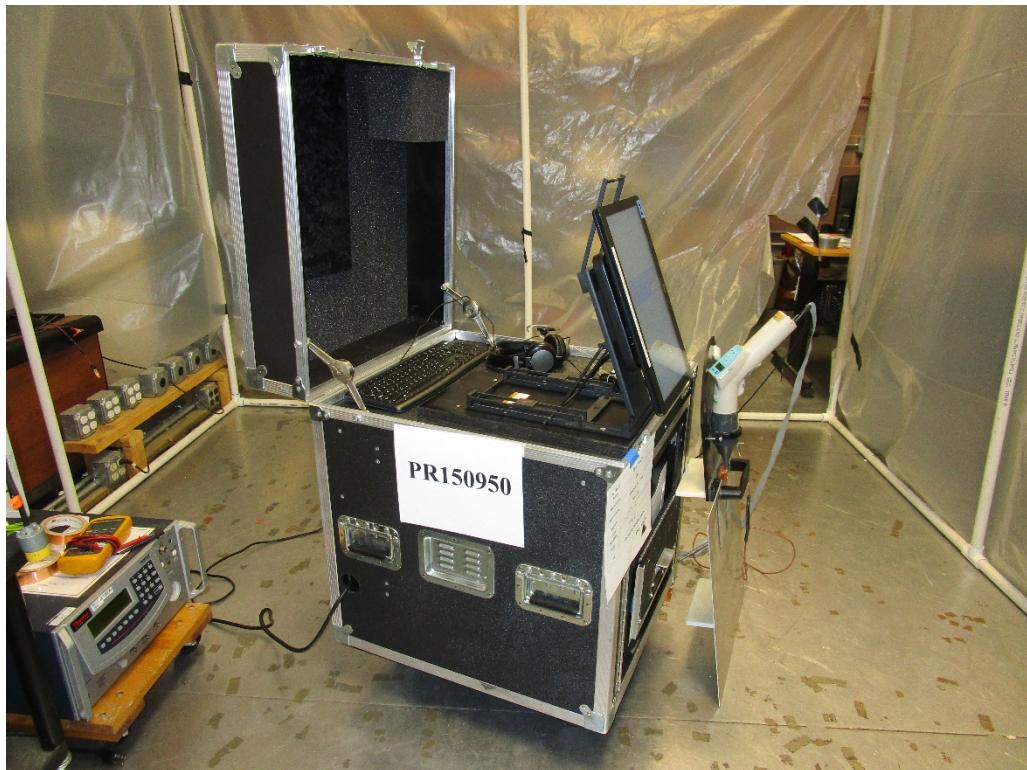


Figure A1. Electrostatic Discharge Test Setup.

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: B90101-4-2.doc | IEC 61000-4-2 Ed. 2.0 | | |
| | | Date: | January 7, 2022 |
| | | | FR0100 |



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 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 |

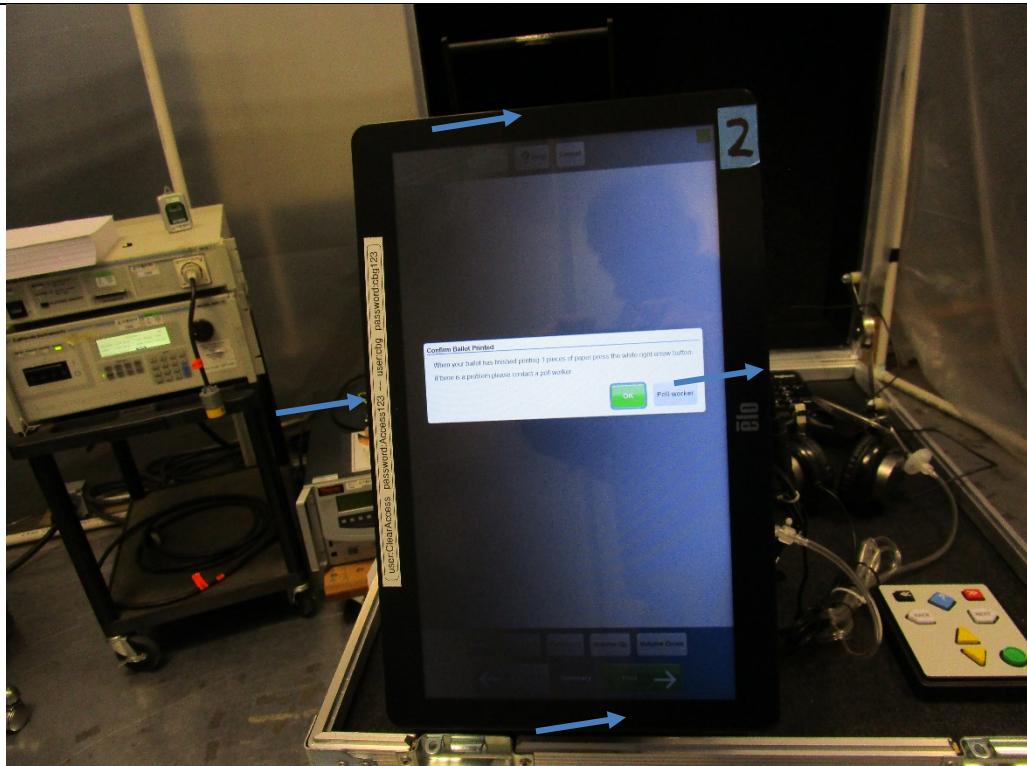


Figure A3. Electrostatic Discharge Test Setup.

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 |
| B90101-4-2.doc | | | FR0100 |



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: B90101-4-2.doc | IEC 61000-4-2 Ed. 2.0 | | |
| | | Date: | January 7, 2022 |
| | | | FR0100 |



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: B90101-4-2.doc | IEC 61000-4-2 Ed. 2.0 | | |
| | | Date: | January 7, 2022 |
| | | | FR0100 |



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 | | |
| B90101-4-2.doc | Date: January 7, 2022 | | |
| | FR0100 | | |

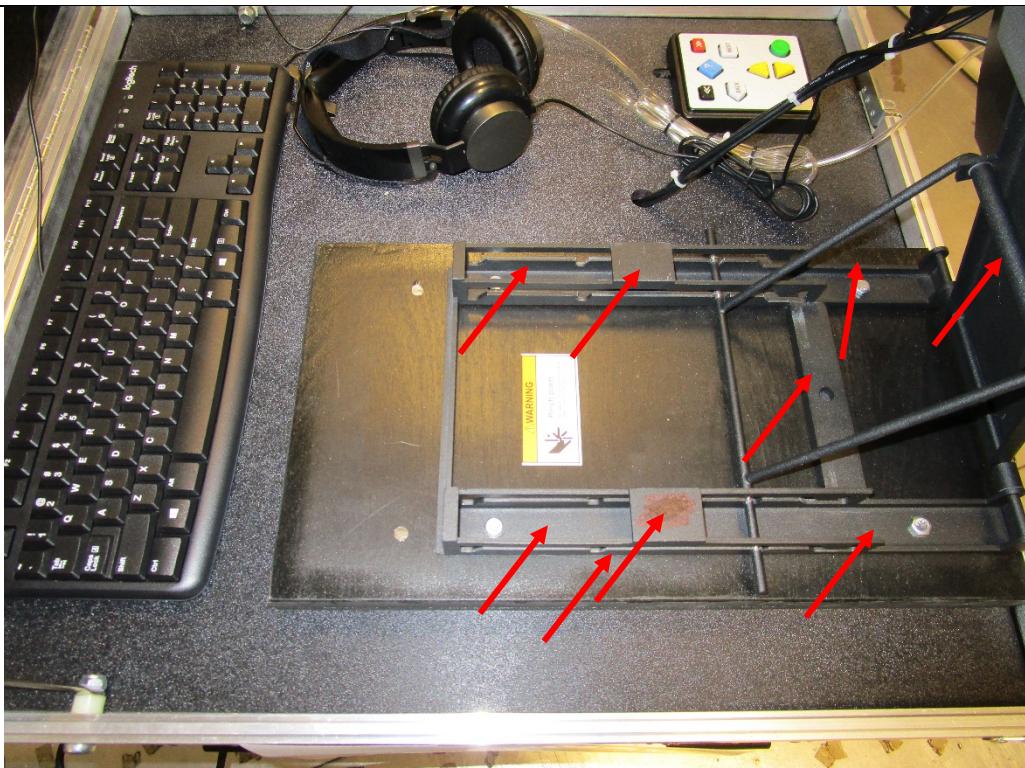


Figure A7. Electrostatic Discharge Test Setup.

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: B90101-4-2.doc | IEC 61000-4-2 Ed. 2.0 | | |
| | | Date: | January 7, 2022 |
| | | | FR0100 |

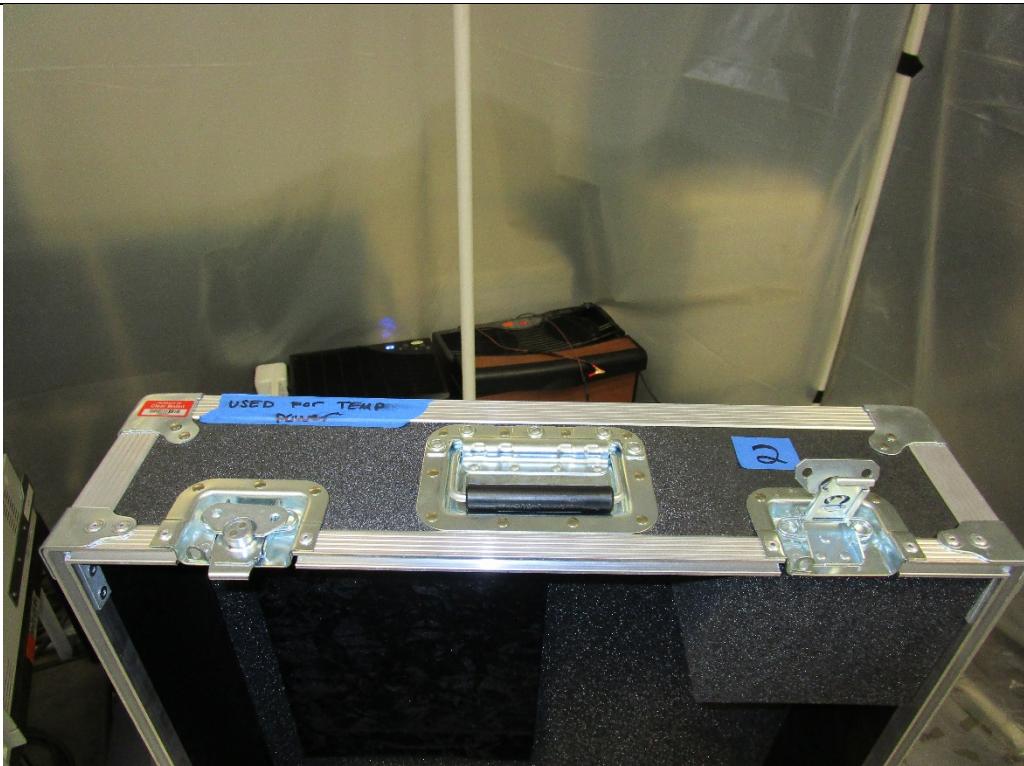


Figure A8. Electrostatic Discharge Test Setup.

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 |

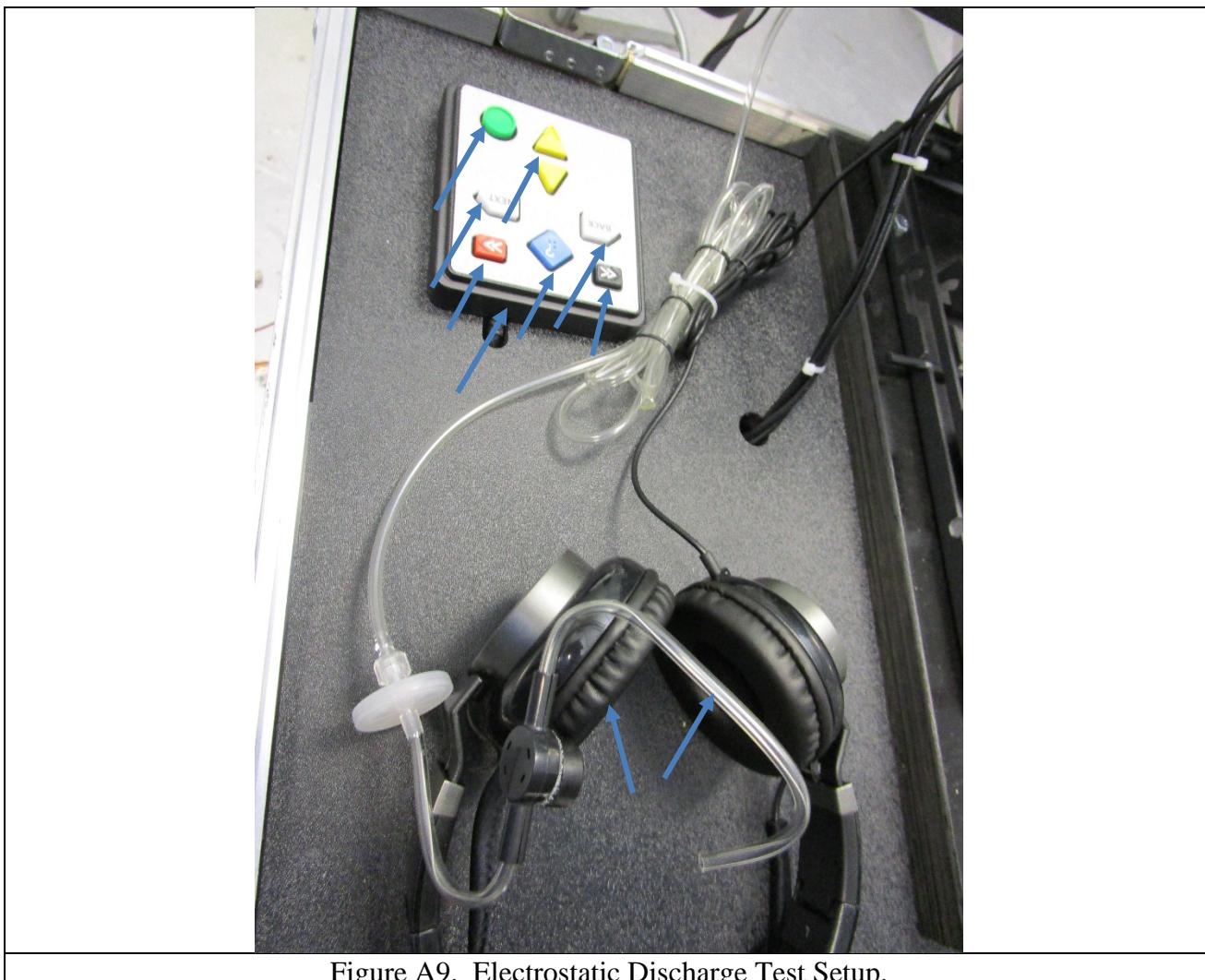


Figure A9. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

| | | | |
|--------------------------|------------------------------------|-----------------|---|
| Manufacturer: | Pro V&V, Inc. | 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 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 | Pressure: | 837 mb |
| Input Voltage: | 120Vac/60Hz | | |
| Configuration of Unit: | Marking and printing ballots. | | |
| Test Engineer: | Casey Lockhart | | |

PR150950-4-3.doc

FR0100

| 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 per IEC / EN 61000-4-3

| | | | |
|--------------------------|------------------------------------|-----------------|---|
| Manufacturer: | Pro V&V, Inc. | Project Number: | PR150950 |
| Customer Representative: | Michael Walker | Test Area: | GPO |
| 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 |

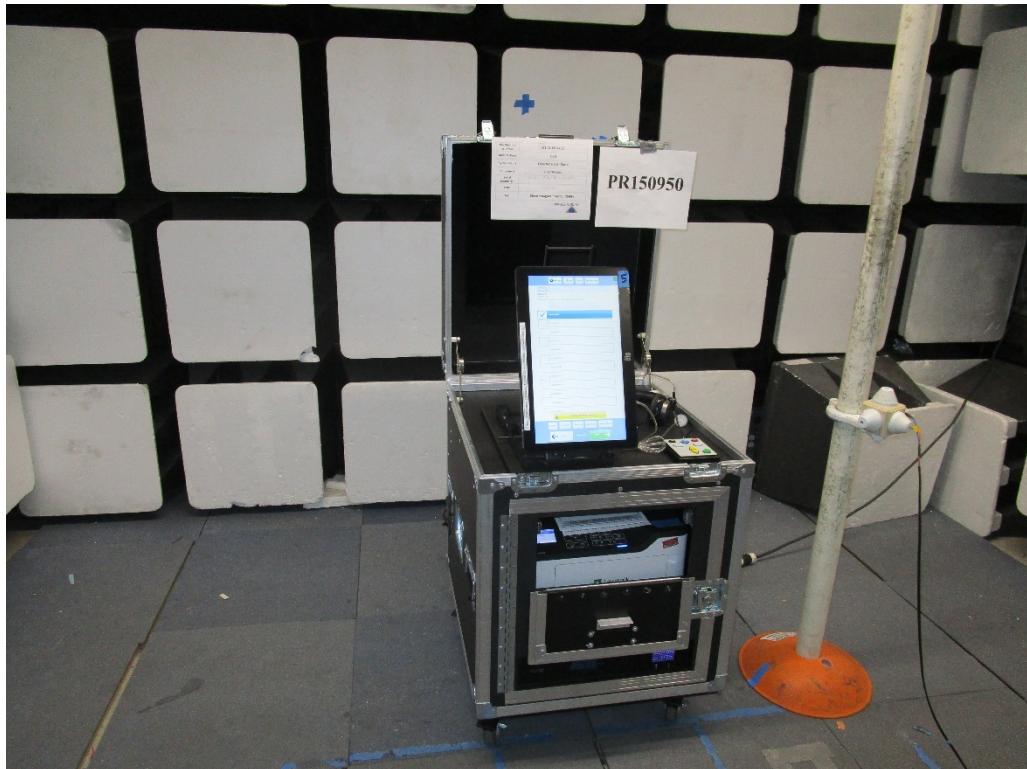


Figure B1. Radiated RF Immunity Test Setup – Front Side.

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 |

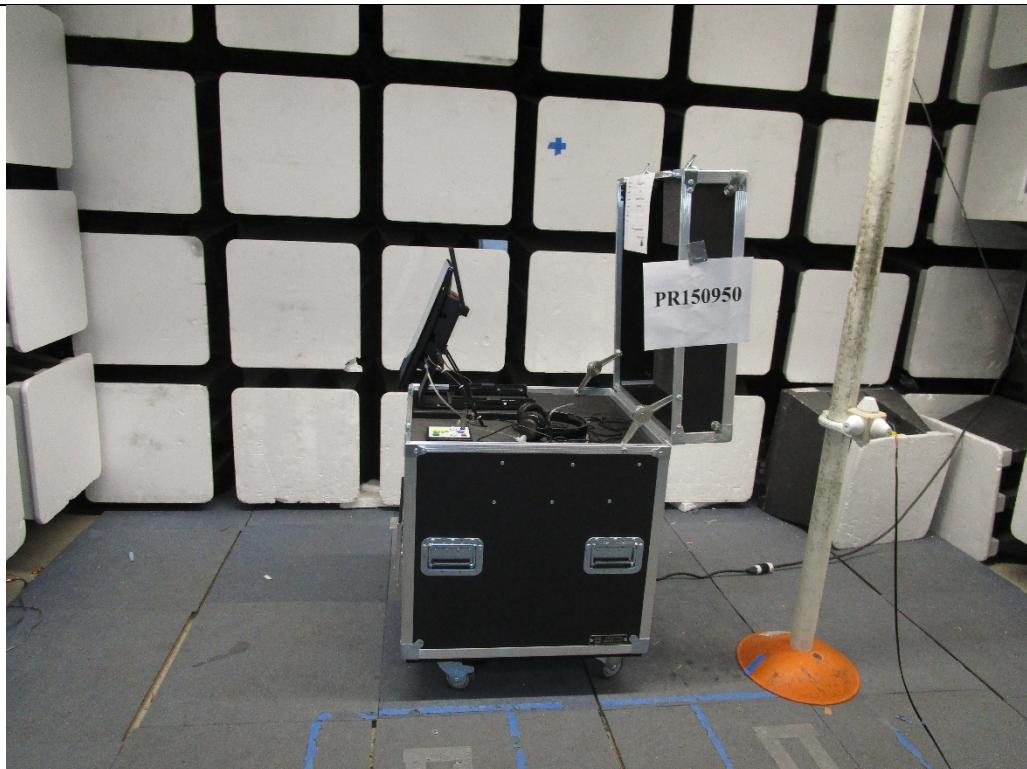


Figure B2. Radiated RF Immunity Test Setup – Right Side.

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 |

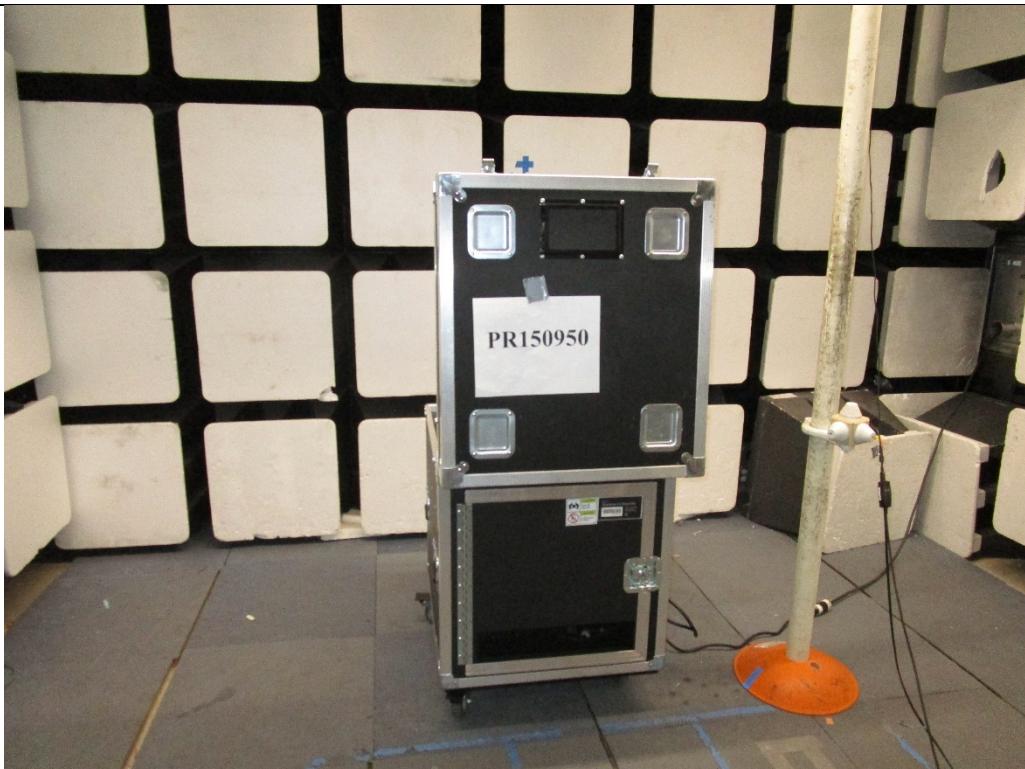


Figure B3. Radiated RF Immunity Test Setup – Back Side.

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: | GP1 |
| 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

FR0100

| Voltage (kV) | Polarity + | 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: | 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 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 | Pressure: | 837 mb |
| Input Voltage: | 120Vac/60Hz | | |
| Configuration of Unit: | Processing Ballots | | |
| Test Engineer: | Casey Lockhart | | |

PR150950-4-5.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 | 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 |
| 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 + | Polarity - | L1 | L2 | L3 | N | P | 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 | | | | | | | | | | | | | |
| 1.0 | x | | | | x | x | x | 0 | 5 | 60 | Common Mode Neutral | 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 | | x | 0 | 5 | 60 | Differential Mode | 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 |
| 2.0 | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | |
| 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 |

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) | Type | % | Freq | Level (Vrms) | Dwell (sec) | Comments | Criteria Met | Pass / Fail |
|-----------------|------|----|-------|--------------|-------------|-----------------|--------------|-------------|
| 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 |

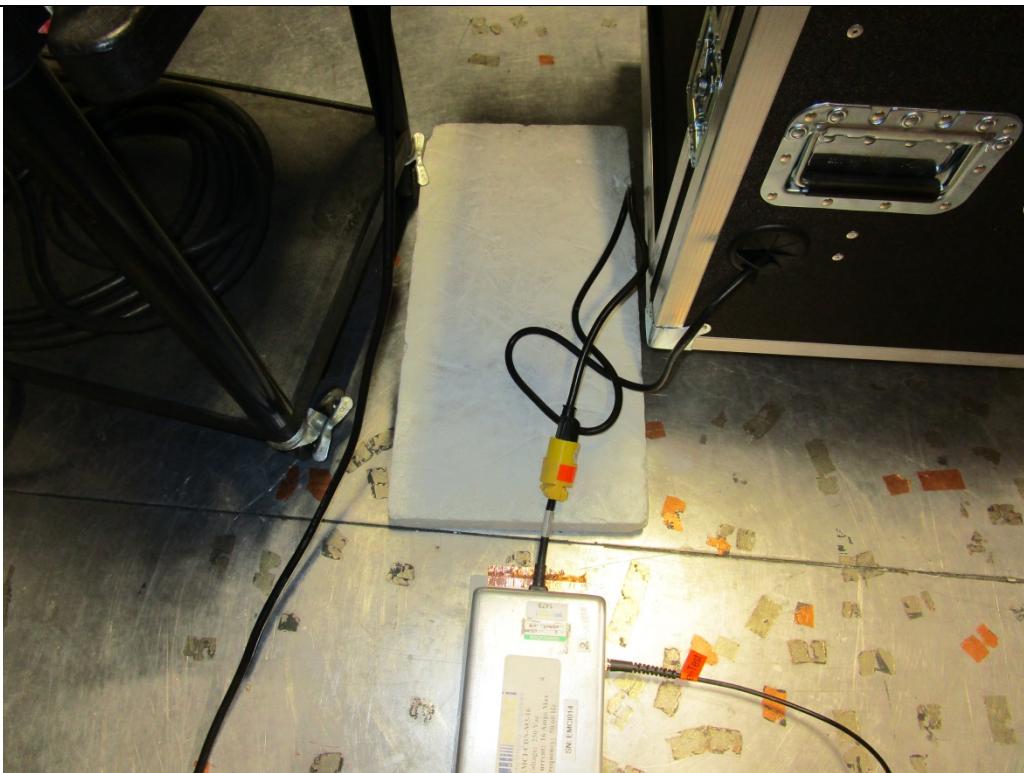


Figure E2. Conducted RF Immunity Test Setup – AC Mains _ I/O Cable.

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 | DSA8B150300 053 | 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

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 |

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 | | |
| PR150950-4-8.doc | Date: February 24, 2022 | | |
| 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 | | |
| PR150950-4-8.doc | Date: February 24, 2022 FR0100 | | |

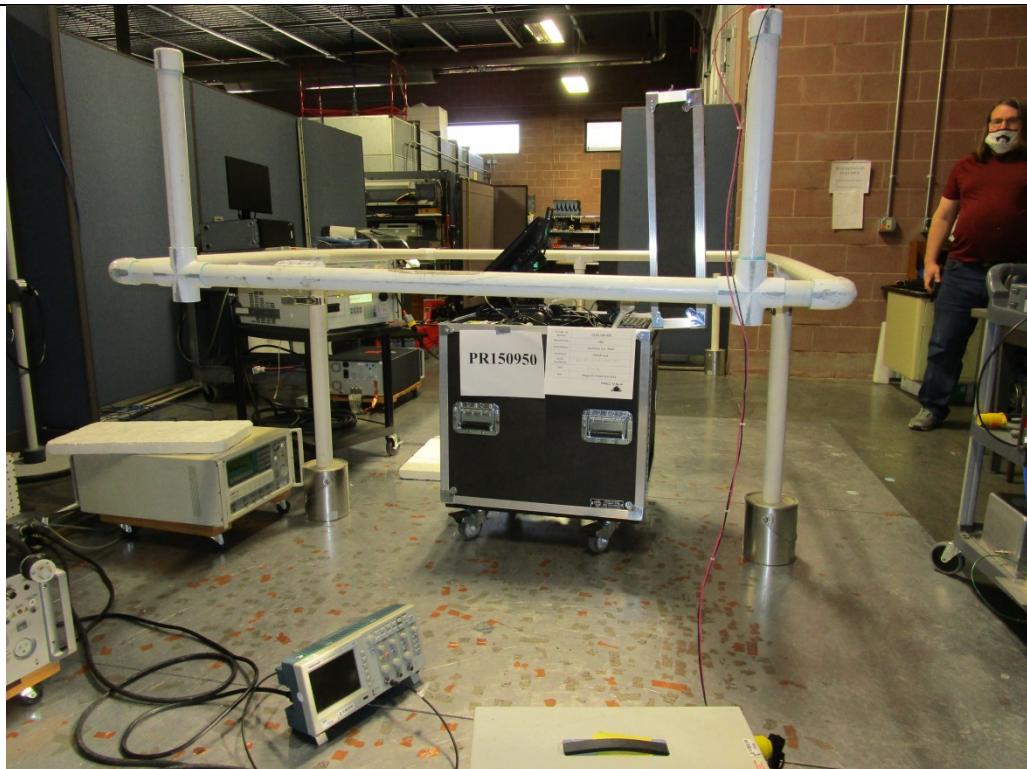


Figure F3. Power Frequency H-field Immunity Test Setup Z axis.

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 Voltage Dips and Interruptions

5.7.1 Test Procedure

The ClearAccess, ELO, Printer and UPS were subjected to the Voltage Dips and Interrupts test in accordance with IEC 61000-4-11.

5.7.2 Test Result

No anomalies were noted during or at the completion of the Voltage Dips and Interrupts procedure.

5.7.3 Test Datasheets

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 |
| Temperature: | 17.4°C | Pressure: | 839 mb |
| Input Voltage: | 120Vac/60Hz | | |
| Configuration of Unit: | Processing Ballots | | |
| Test Engineer: | Casey Lockhart | | |

PR150950-4-11.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% | 0.6 | | | | x | 10 | 3 | | A | Pass |
| | | | | | | | | | | |
| 40% | 6 | x | | | | 10 | 3 | | A | Pass |
| 40% | 6 | | x | | | 10 | 3 | | A | Pass |
| 40% | 6 | | | x | | 10 | 3 | | A | Pass |
| 40% | 6 | | | | 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. 0842 - 1042 | A | Pass |
| 105Vac Line Voltage Variations (-12.5% of nominal 120V) 2 Hrs. 1044 - 1244 | A | Pass |
| Surges of +15% line variations of nominal voltage (138V) 2 Hrs. 1245 - 1445 | A | Pass |
| Surges of -15% line variations of nominal voltage (102V) 2 Hrs. | | |

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 | | |
| PR150950-4-11.doc | Date: February 23, 2022 | | |
| | | | FR0100 |



Figure G1. Voltage Dips and Interruptions 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 | | |
| PR150950-4-11.doc | Date: February 23, 2022 | | |
| | | | FR0100 |



Figure G2. Voltage Dips and Interruptions 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 | | |
| PR150950-4-11.doc | Date: February 23, 2022 | | |
| | | | FR0100 |



Figure G3. Voltage Dips and Interruptions 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 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 |
|------|-----------|----------------------------------|--|-----|------------|--------|----------|
| 4-2 | --- | 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