National Technical Systems Test Report for Electromagnetic Interference (EMI) Testing of the Clear Access, Ballot Box, UPS, ATI, OKI & ELO

Prepared For
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Revision History

Rev.	Description	Issue Date
1	Initial Release	02/08/2021

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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 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.

- Pro V&V, Inc. Purchase Order(s) 2020-009, dated 11/03/2020
- National Technical Systems (NTS) Quote(s) OP0565149, dated 10/15/2020
- NTS Corporate Quality Policy Manual, Revision 9, dated 9/20/2018
- ISO/IEC 17025:2017(E) *General Requirements for the Competence of Testing and Calibration Laboratories,* dated 11/1/2017
- Test Specification: EAC 2005 VVSG

3.0 Product Selection and Description

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

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

Item	Qty.	Name/Description	Part Number	Serial Number
1	1	ClearAccess	ClearVote 2.2	N/A
2	1	Ballot Box	Ballot Box	I193022853
3	1	OKI	OKI	BW01017752C0
4	1	UPS	UPS	PY3H22003015
5	1	ELO	ELO	I193922848, I193922854
6	1	ATI	ATI	20011265, 20011271

3.1 Security Classification

Non-classified

4.0 General Test Requirements

4.1 Test Equipment

NTS-provided equipment is calibrated according to ISO/IEC 17025:2017(E) and calibration is traceable to the National Institute of Standards and Technology (NIST). Calibration records are maintained on file at NTS.

4.2 Measurement Uncertainties

Measurement uncertainty data is available upon request.

4.3 Notice of Deviation

In accordance with NTS' quality procedures, when the EUT is observed to exceed or display susceptibility, a Notice of Deviation (NOD) document is generated by the technician performing the test. This NOD documents the requirement, how the EUT deviated from the requirement, and allows room for resolution of the deviation.

This document is reviewed and approved by the NTS Program Manager or Engineer and the NTS Quality Assurance Representative, and then forwarded to the customer contact. Once mitigated (or passed over), the steps taken to correct the deviation (or simply instruction from the customer to continue testing) are recorded in the NOD and a copy of the NOD is integrated into the body of the report, in the appropriate location.

5.0 Test Descriptions and Results

Table 5.0-1: Summary of Test Information & Results

Section	Test	Specification	Test Facility	Test Date	Part #	Serial #	*Test Result
5.1	Voltage Dips and Interruptions	EAC 2005 VVSG	Longmont	12/02/2020 - 12/02/2020	ClearVote 2.2 (Clear Access), Ballot Box, OKI, UPS, ELO, ATI	N/A, I193022853, BW01017752C0, PY3H22003015, I193922848, 20011271	Pass
5.2	Electrical Fast Transient / Burst	EAC 2005 VVSG	Longmont	12/07/2020 - 12/07/2020	ClearVote 2.2 (Clear Access), Ballot Box, OKI, ELO, ATI	N/A, I193022853, BW01017752C0, I193922848, 20011271	Pass
5.3	Surge Immunity	EAC 2005 VVSG	Longmont	12/03/2020 - 12/03/2020	ClearVote 2.2 (Clear Access), Ballot Box, OKI, ELO, ATI	N/A, I193022853, BW01017752C0, I193922848, 20011271	Pass
5.4	Electrostatic Discharge	EAC 2005 VVSG	Longmont	12/09/2020 - 12/09/2020	ClearVote 2.2 (Clear Access), Ballot Box, OKI, ELO, ATI	N/A, I193022853, BW01017752C0, I193922848, 20011271	Pass
5.5	Radiated RF Immunity	EAC 2005 VVSG	Longmont	01/08/2021 - 01/08/2021	ClearVote 2.2 (Clear Access), Ballot Box, OKI, ELO, ATI	N/A, I193022853, BW01017752C0, I193922848, 20011271	Pass
5.6	Conducted RF Immunity	EAC 2005 VVSG	Longmont	12/09/2020 - 12/09/2020	ClearVote 2.2 (Clear Access), Ballot Box, OKI, ELO, ATI	N/A, I193022853, BW01017752C0, I193922848, 20011271	Pass
5.7	Power Frequency H-Field Immunity	EAC 2005 VVSG	Longmont	12/07/2020 - 12/07/2020	ClearVote 2.2 (Clear Access), Ballot Box, OKI, UPS, ELO, ATI	N/A, I193022853, BW01017752C0, PY3H22003015, I193922848, 20011271	Pass

*The decision rule used to state compliance is in accordance with the test specification used for testing. Unless otherwise noted, testing was performed in accordance with the latest published version of test specification at time of test.

5.1 Voltage Dips and Interruptions

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

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 2, 2020
Temperature:	24˚C Humidity: 31%	Pressure:	848 mb
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Normal operating mode		
Test Engineer:	T. Wittig		

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% Nominal	No. of Cycles	Phase Angle (deg) 0	90	180	270	Time between dropouts (sec)	Number of tests	Comments	Criteria Met	Pass / Fail
70%	0.6	x				10	3		A	Pass
70%	0.6		x			10	3		A	Pass
70%	0.6			x		10	3		A	Pass
70%	0.5				x	10	3		A	Pass
40%	6.0	x				10	3		A	Pass
40%	6.0		x			10	3		A	Pass
40%	6.0			x		10	3		A	Pass
40%	6.0				x	10	3		A	Pass
40%	60.0	x				10	3		A	Pass
40%	60.0		x			10	3		A	Pass
40%	60.0			x		10	3		A	Pass
40%	60.0				x	10	3		A	Pass
0%	300	x				10	3		A	Pass
0%	300			x		10	3		A	Pass
Line Voltage Variation Testing										
129Vac Line Voltage Variations (+7.5% of nominal 120V) 2hrs.									A	Pass
105Vac Line Voltage Variations (-12.5% of nominal 120V) 2 Hrs.									A	Pass
Surges of +15% line variations of nominal voltage (138V) 2 Hrs.									A	Pass
Surges of -15% line variations of nominal voltage (102V) 2 Hrs.									A	Pass

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

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 2, 2020

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Figure G1. Voltage Dips and Interruptions Test Setup

5.1.1 Test Equipment List

Table 5.1-1: Voltage Dips and Interruptions Test Equipment List

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

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 2, 2020

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Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1013	KeyTek	EMC Pro	0008347	Advanced EMC Immunity Tester	10/22/2020	10/22/2021
1371	Tektronix	TDS2002B	C103483	Oscilloscope, 60 MHz, 2-channel	02/24/2020	02/24/2021
1901	EXTECH	445703	0617	Hygrometer-Thermometer (WC059899)	06/29/2020	06/29/2021
1038	Fluke	85	66180455	Multimeter/Frequency Meter	05/26/2020	05/26/2021
1184	KeyTek	CE Ware	4.0	KeyTek EMC Pro Control Software for EFT, Surge, H-F	NCR	NCR
1520	California Instruments (AMETEK)	5001IX-CTS	1341A03198	5kVA AC Power Source	NCR	NCR

Calibration Abbreviations
CAL: Calibration
NCR: No Calibration Required

5.2 Electrical Fast Transient / Burst

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

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 7, 2020
Temperature:	19˚C Humidity: 37%	Pressure:	846 mb
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Normal operating mode		
Test Engineer:	Mike Tidquist		

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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					5kHz	AC	A	Pass
2.0		x	60	CDN	x					5kHz		A	Pass
2.0	x		60	CDN		x				5kHz		A	Pass
2.0		x	60	CDN		x				5kHz		A	Pass
2.0	x		60	CDN					x	5kHz		A	Pass
2.0		x	60	CDN					x	5kHz		A	Pass
2.0	x		60	CDN	x	x			x	5kHz		A	Pass
2.0		x	60	CDN	x	x			x	5kHz		A	Pass

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

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 7, 2020

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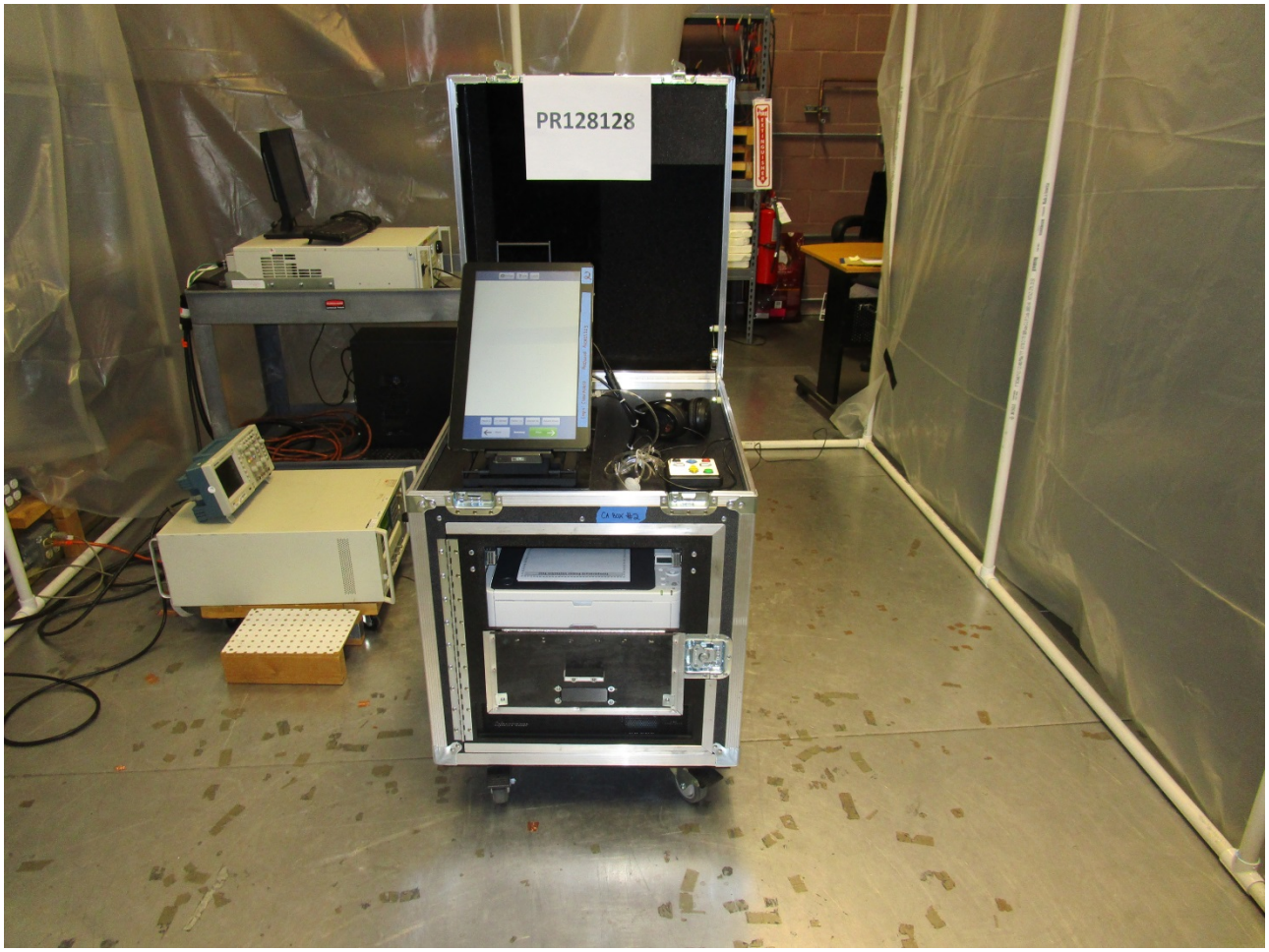

Figure C1. Electrical Fast Transient Test Setup.

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

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 7, 2020

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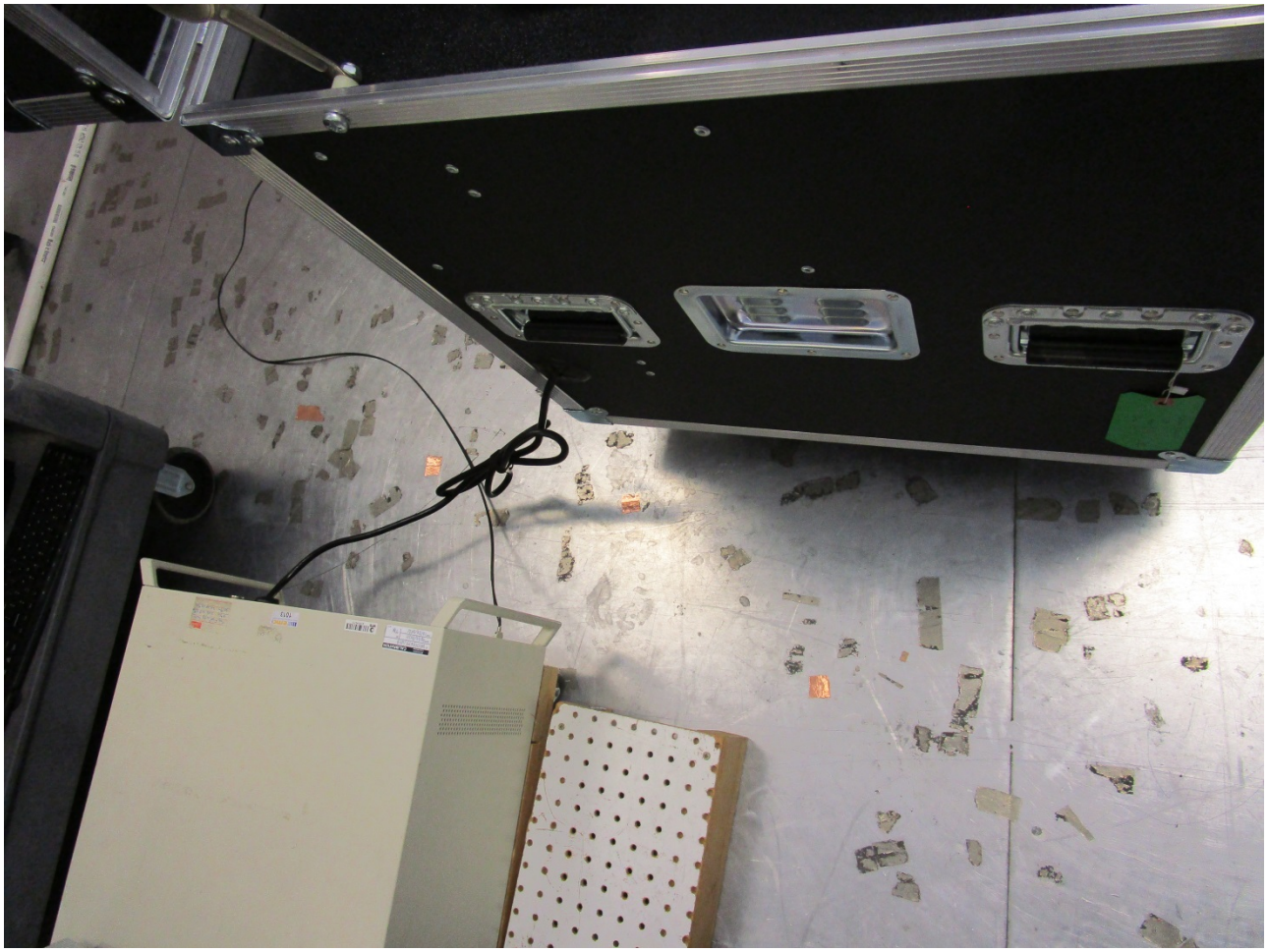

Figure C1. Electrical Fast Transient Test Setup – AC Mains.

5.2.1 Test Equipment List

Table 5.2-1: Electrical Fast Transient / Burst Test Equipment List

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

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 7, 2020

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Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1013	KeyTek	EMC Pro	0008347	Advanced EMC Immunity Tester	10/22/2020	10/22/2021
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter (WC059669)	08/24/2020	08/24/2021
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)	06/29/2020	06/29/2021
1377	Tektronix	P5100	NA	100X 2500 V 250 MHz Oscilloscope Probe	08/24/2020	08/24/2021
1520	California Instruments (AMETEK)	5001IX-CTS	1341A03198	5kVA AC Power Source	NCR	NCR
1901	EXTECH	445703	0617	Hygrometer-Thermometer (WC059899)	06/29/2020	06/29/2021

Calibration Abbreviations
CAL: Calibration
NCR: No Calibration Required

5.3 Surge Immunity

Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 3, 2020
Temperature:	22˚C Humidity: 32%	Pressure:	841 mb
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Normal operating mode		
Test Engineer:	T. Wittig		

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Voltage (kV)	Polarity +	Polarity -	L 1	L 2	L 3	N	P E	Phase (deg)	Number of Pulses	Delay (sec)	Comments	Criteria Met	Pass / Fail
0.5	x		x			x		0	5	30	Differential Mode	A	Pass
0.5		x	x			x		0	5	30		A	Pass
0.5	x		x			x		90	5	30		A	Pass
0.5		x	x			x		90	5	30		A	Pass
0.5	x		x			x		180	5	30		A	Pass
0.5		x	x			x		180	5	30		A	Pass
0.5	x		x			x		270	5	30		A	Pass
0.5		x	x			x		270	5	30		A	Pass
0.5	x		x				x	0	5	30	Common Mode Line	A	Pass
0.5		x	x				x	0	5	30		A	Pass
0.5	x		x				x	90	5	30		A	Pass
0.5		x	x				x	90	5	30		A	Pass
0.5	x		x				x	180	5	30		A	Pass
0.5		x	x				x	180	5	30		A	Pass
0.5	x		x				x	270	5	30		A	Pass
0.5		x	x				x	270	5	30		A	Pass
0.5	x					x	x	0	5	30	Common Mode Neutral	A	Pass
0.5		x				x	x	0	5	30		A	Pass
0.5	x					x	x	90	5	30		A	Pass
0.5		x				x	x	90	5	30		A	Pass
0.5	x					x	x	180	5	30		A	Pass
0.5		x				x	x	180	5	30		A	Pass
0.5	x					x	x	270	5	30		A	Pass
0.5		x				x	x	270	5	30		A	Pass
1.0	x		x			x		0	5	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	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

Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 3, 2020
Temperature:	22˚C Humidity: 32%	Pressure:	841 mb
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Normal operating mode		
Test Engineer:	T. Wittig		

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Voltage (kV)	Polarity +	Polarity -	L 1	L 2	L 3	N	PE	Phase (deg)	Number of Pulses	Delay (sec)	Comments	Criteria Met	Pass / Fail
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

Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 3, 2020

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Figure D1. Surge Immunity Test Setup – AC Mains

5.3.1 Test Equipment List

Table 5.3-1: Surge Immunity Test Equipment List

Surge Immunity per IEC / EN 61000-4-5

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 3, 2020

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Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1013	KeyTek	EMC Pro	0008347	Advanced EMC Immunity Tester	10/22/2020	10/22/2021
1371	Tektronix	TDS2002B	C103483	Oscilloscope, 60 MHz, 2-channel	02/24/2020	02/24/2021
1901	EXTECH	445703	0617	Hygrometer-Thermometer (WC059899)	06/29/2020	06/29/2021
1038	Fluke	85	66180455	Multimeter/Frequency Meter	05/26/2020	05/26/2021
1184	KeyTek	CE Ware	4.0	KeyTek EMC Pro Control Software for EFT, Surge, H-F	NCR	NCR
1520	California Instruments (AMETEK)	5001IX-CTS	1341A03198	5kVA AC Power Source	NCR	NCR

Calibration Abbreviations
CAL: Calibration
NCR: No Calibration Required

5.4 Electrostatic Discharge

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020
Temperature:	21˚C Humidity: 37%	Pressure:	841 mb
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Normal operating mode		
Test Engineer:	Mike Tidquist		

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Test Location	Voltage Level (kV)	Polarity +	Polarity -	Number of Pulses	Pulses Per Second	Comments	Criteria Met	Pass / Fail
Vertical Coupling plane will be performed in 2 locations all 4 sides								
Indirect Discharge Points								
VCP	8	x	x	10	1	Front Side	A	Pass
VCP	8	x	x	10	1	Left Side	A	Pass
VCP	8	x	x	10	1	Right Side	A	Pass
VCP	8	x	x	10	1	Back Side	A	Pass
Contact Discharge Points - **RED** Arrows.								
Figure A2	8	x	x	10	1		A	Pass
Figure A3	8	x	x	10	1		A	Pass
Figure A4	8	x	x	---	---	No Contact Points	---	---
Figure A5	8	x	x	10	1		A	Pass
Figure A6	8	x	x	10	1		A	Pass
Figure A7	8	x	x	---	---	No Contact Points	---	---
Figure A8	8	x	x	10	1		A	Pass
Air Discharge Points - **BLUE** Arrows.								
Figure A2	2, 4, 8, 15	x	x	---	---	No Air Discharges Occurred	---	---
Figure A3	2, 4, 8, 15	x	x	---	---	No Air Discharges Occurred	---	---
Figure A4	2, 4, 8, 15	x	x	---	---	No Air Discharges Occurred	---	---
Figure A5	2, 4, 8, 15	x	x	10	1	At +/-8,15kV Discharges occurred, No disruption in operation	A	Pass
Figure A6	2, 4, 8, 15	x	x	10	1	At +/-8,15kV Discharges occurred, No disruption in operation	A	Pass
Figure A7	2, 4, 8, 15	x	x	10	1	At +/-15kV Discharges occurred, No disruption in operation	A	Pass
Figure A8	2, 4, 8, 15	x	x	---	---	No Air Discharge Points	---	---

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

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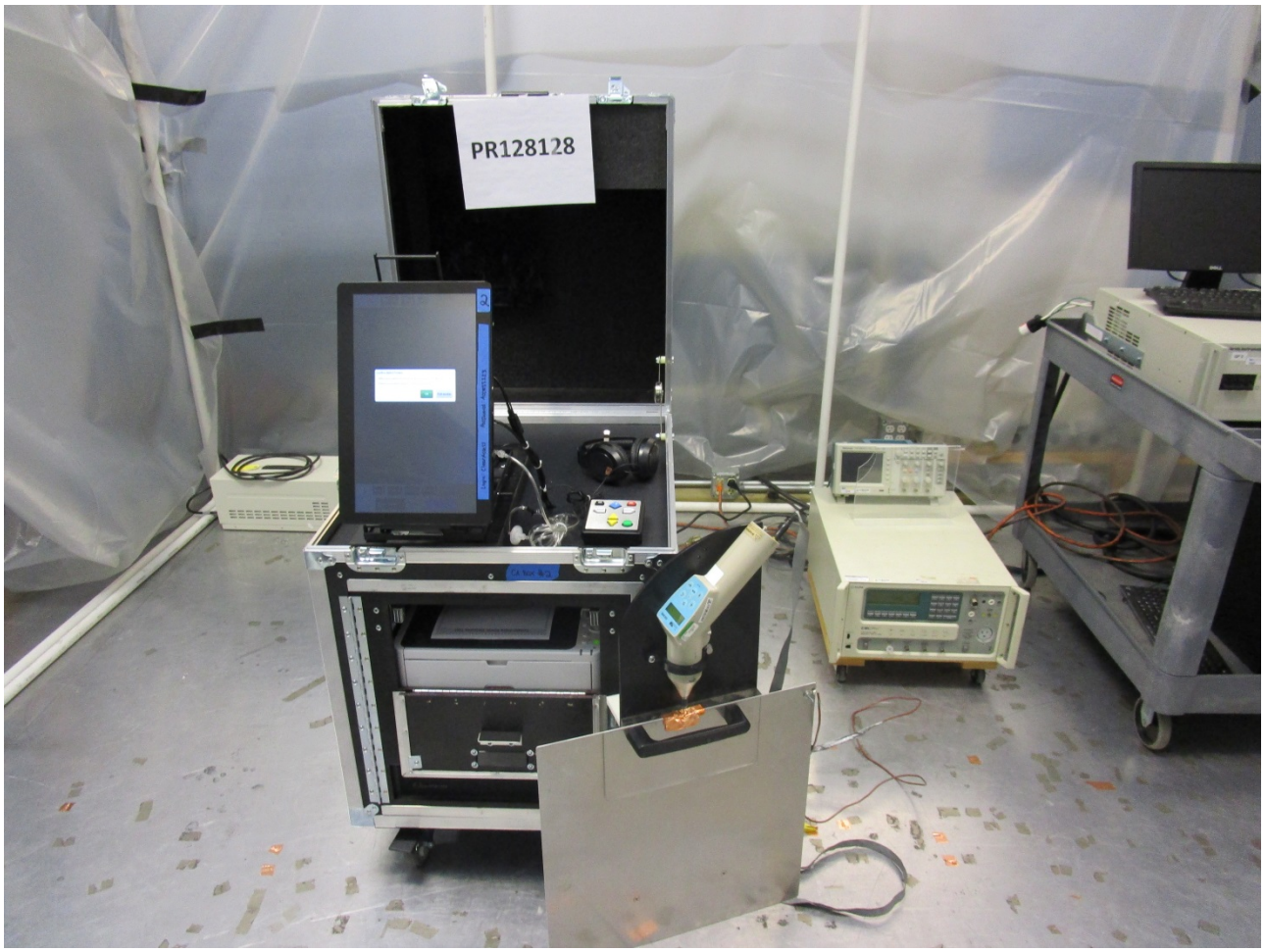

Figure A1. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

B80802-4-2.doc FR0100

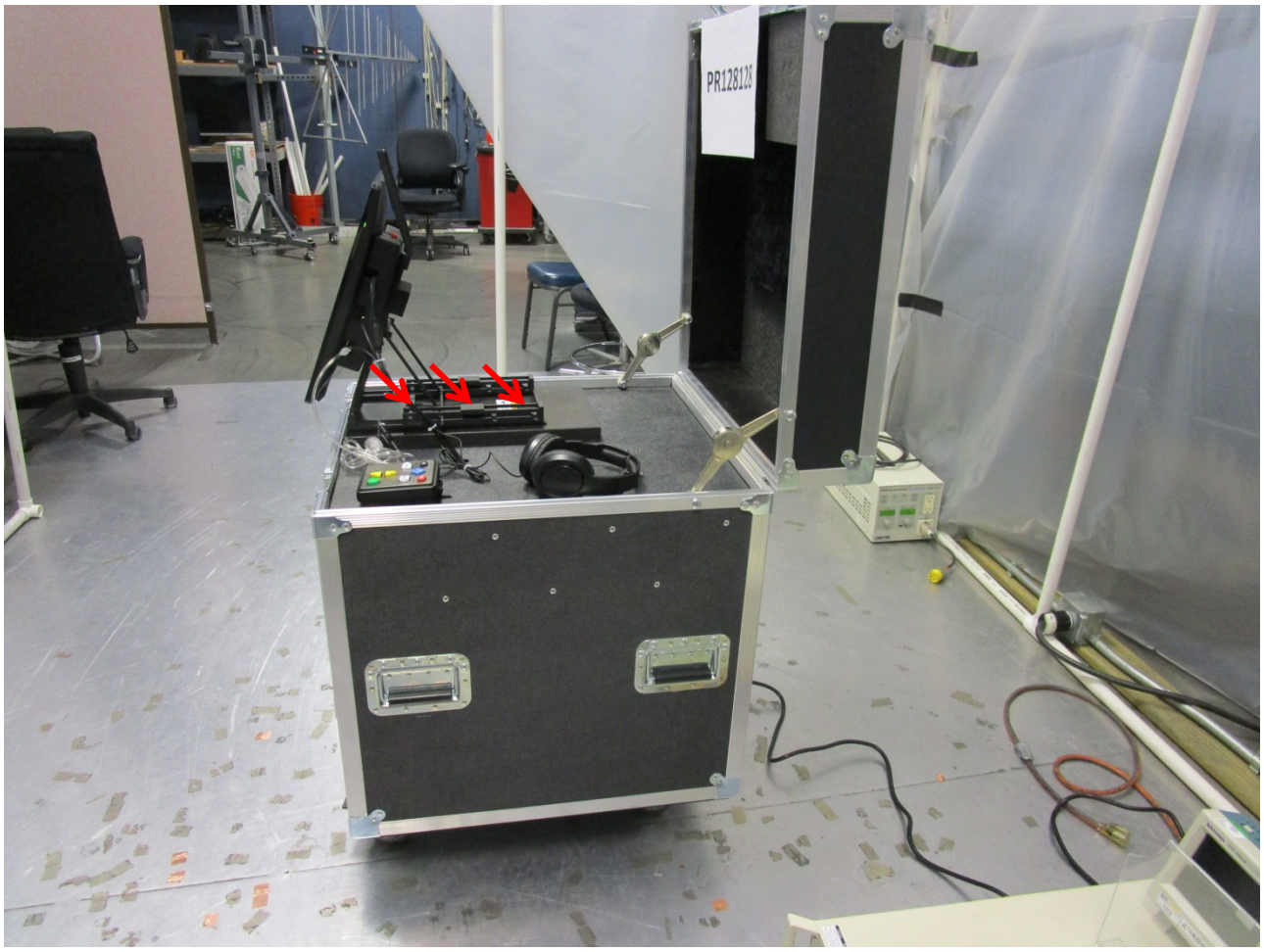

Figure A2. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

B80802-4-2.doc FR0100

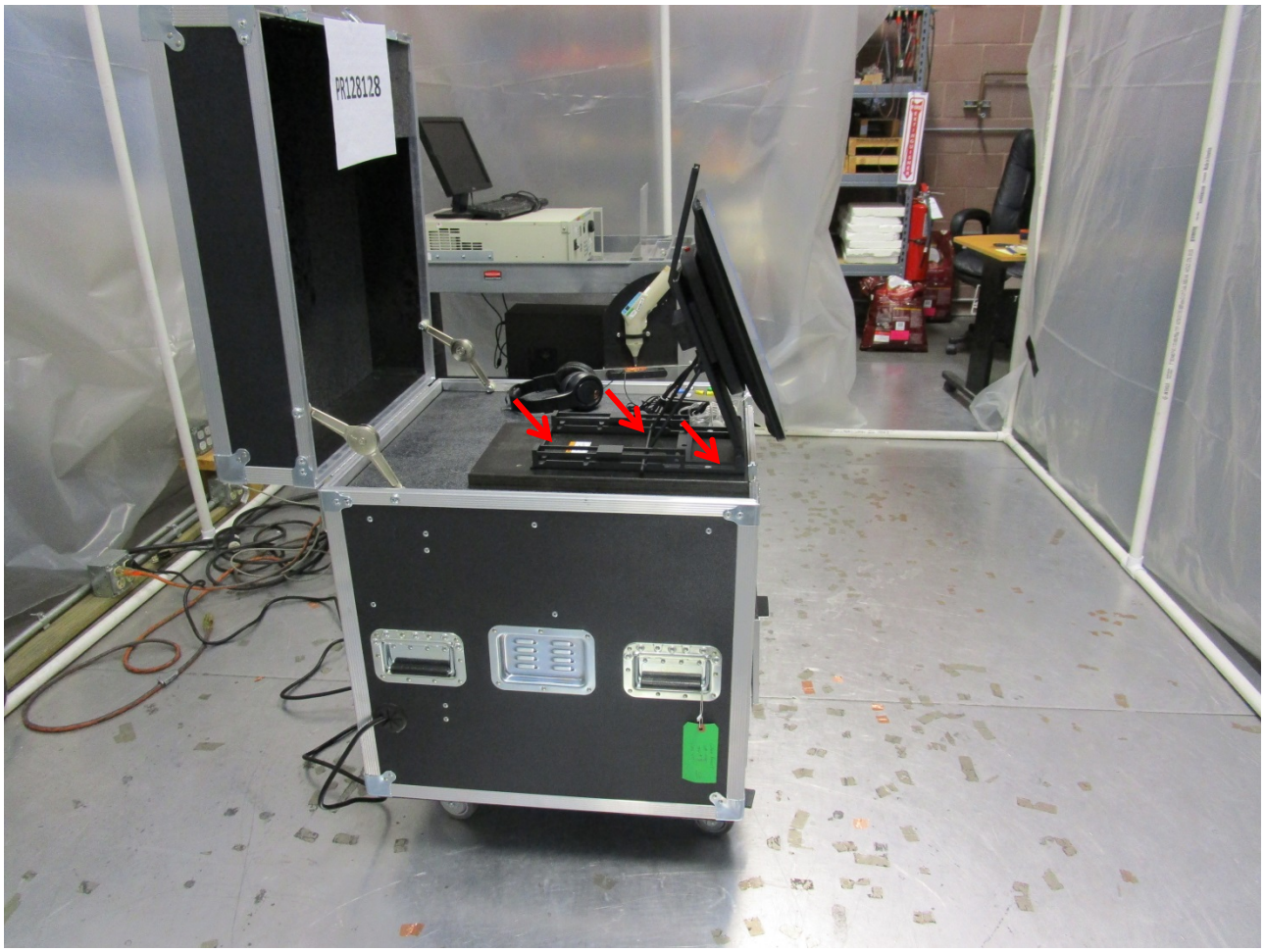

Figure A3. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

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Figure A4. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

B80802-4-2.doc FR0100

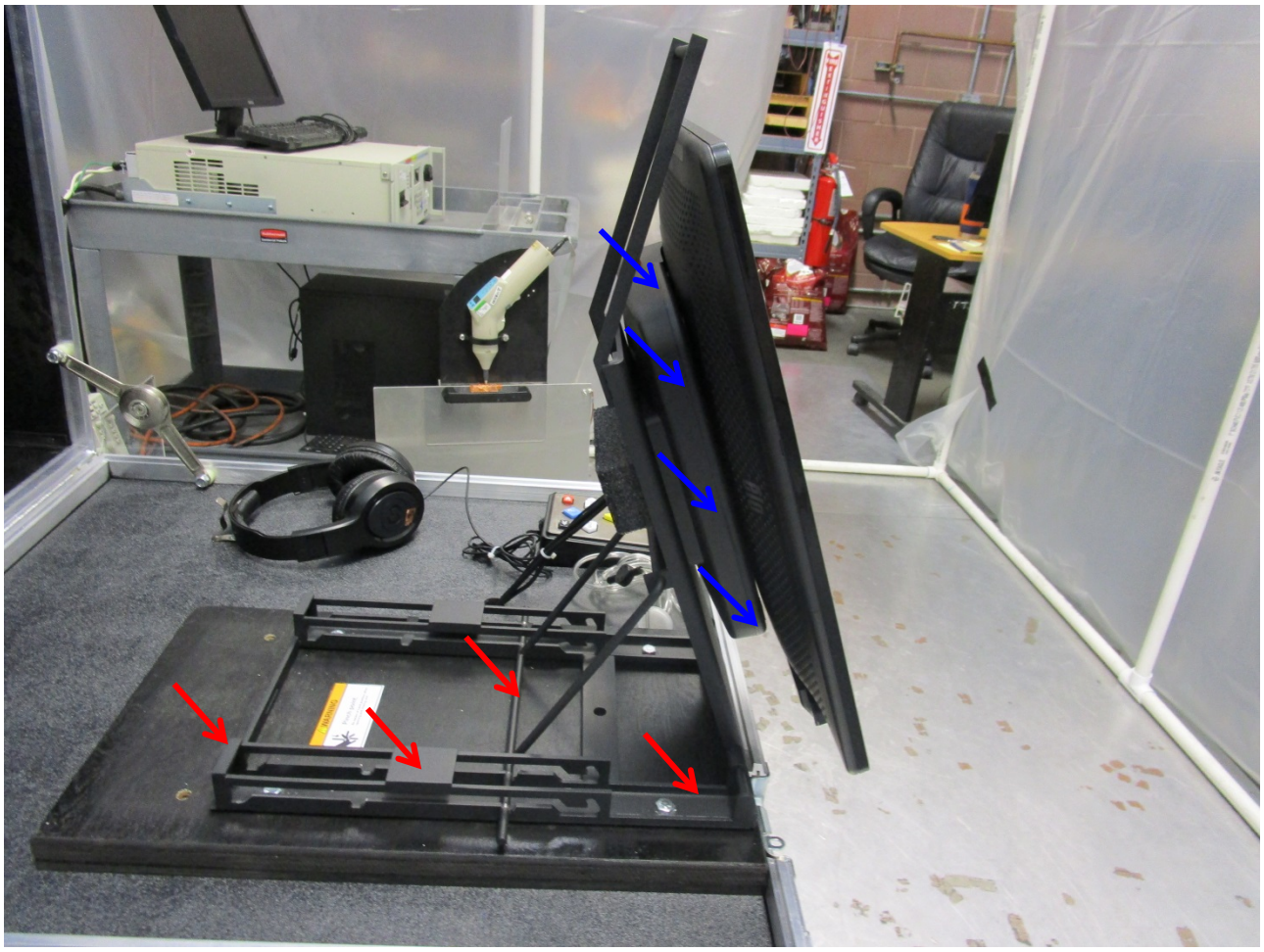

Figure A5. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

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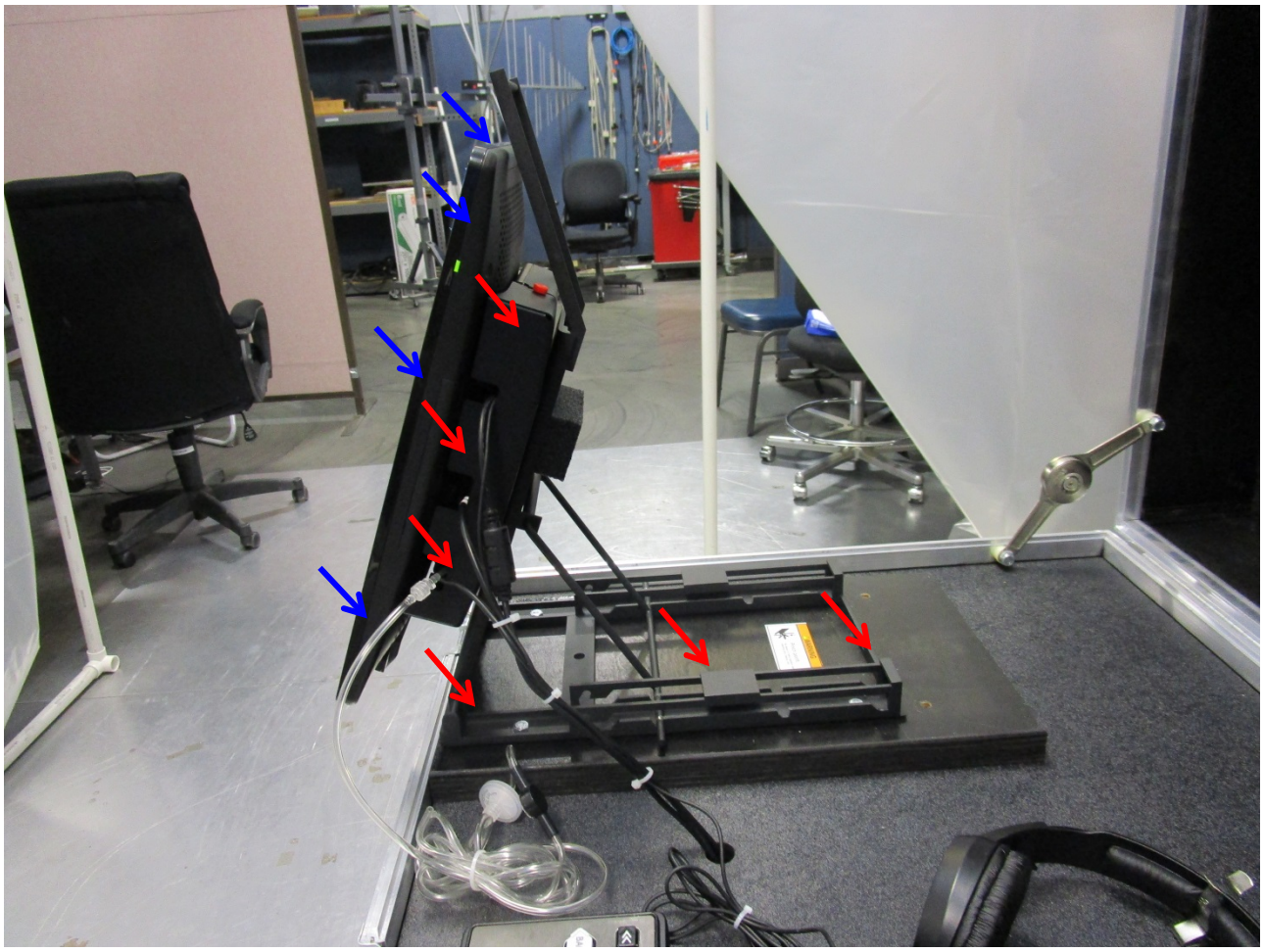

Figure A6. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

B80802-4-2.doc FR0100

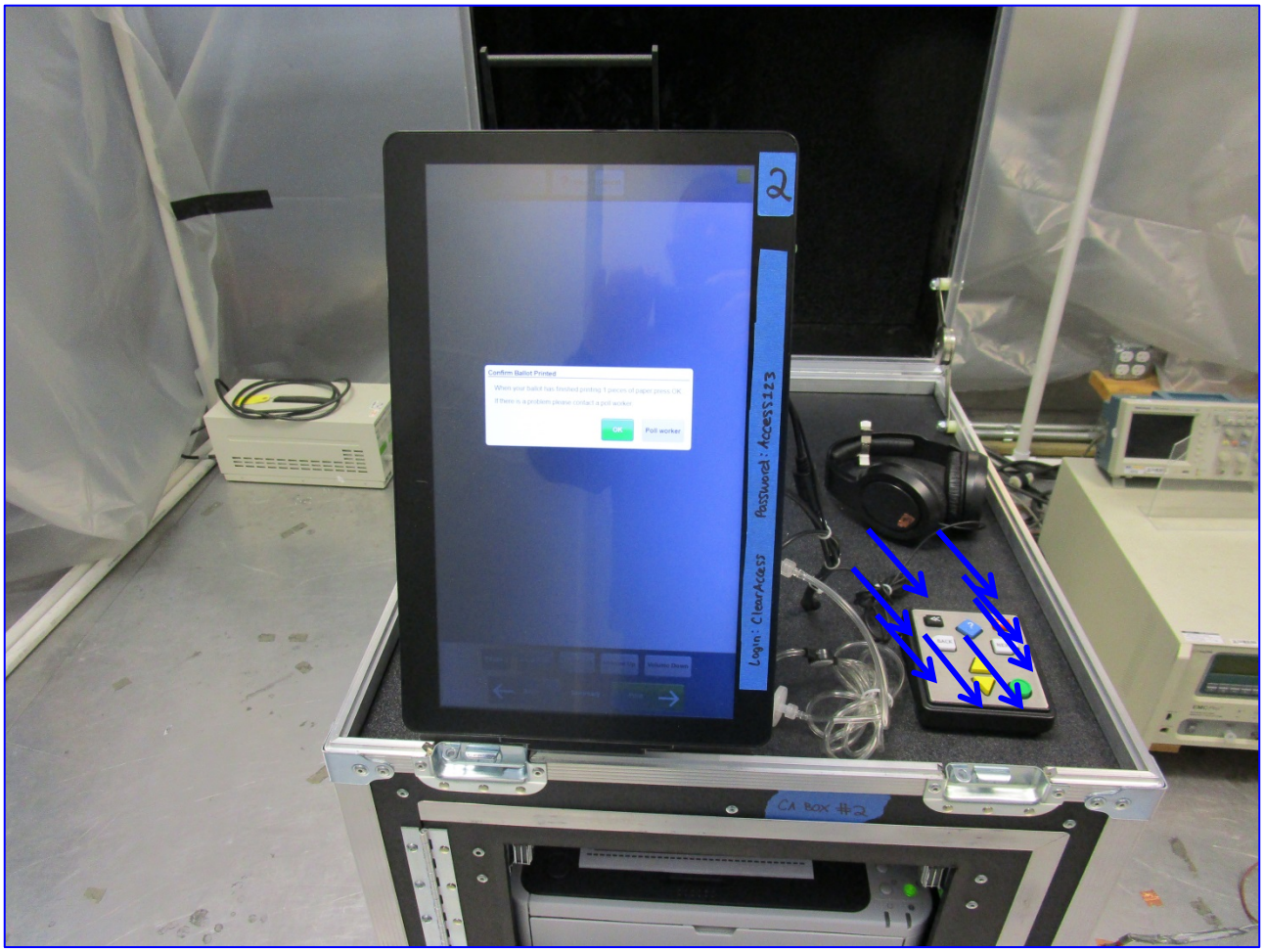

Figure A7. Electrostatic Discharge Test Setup.

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

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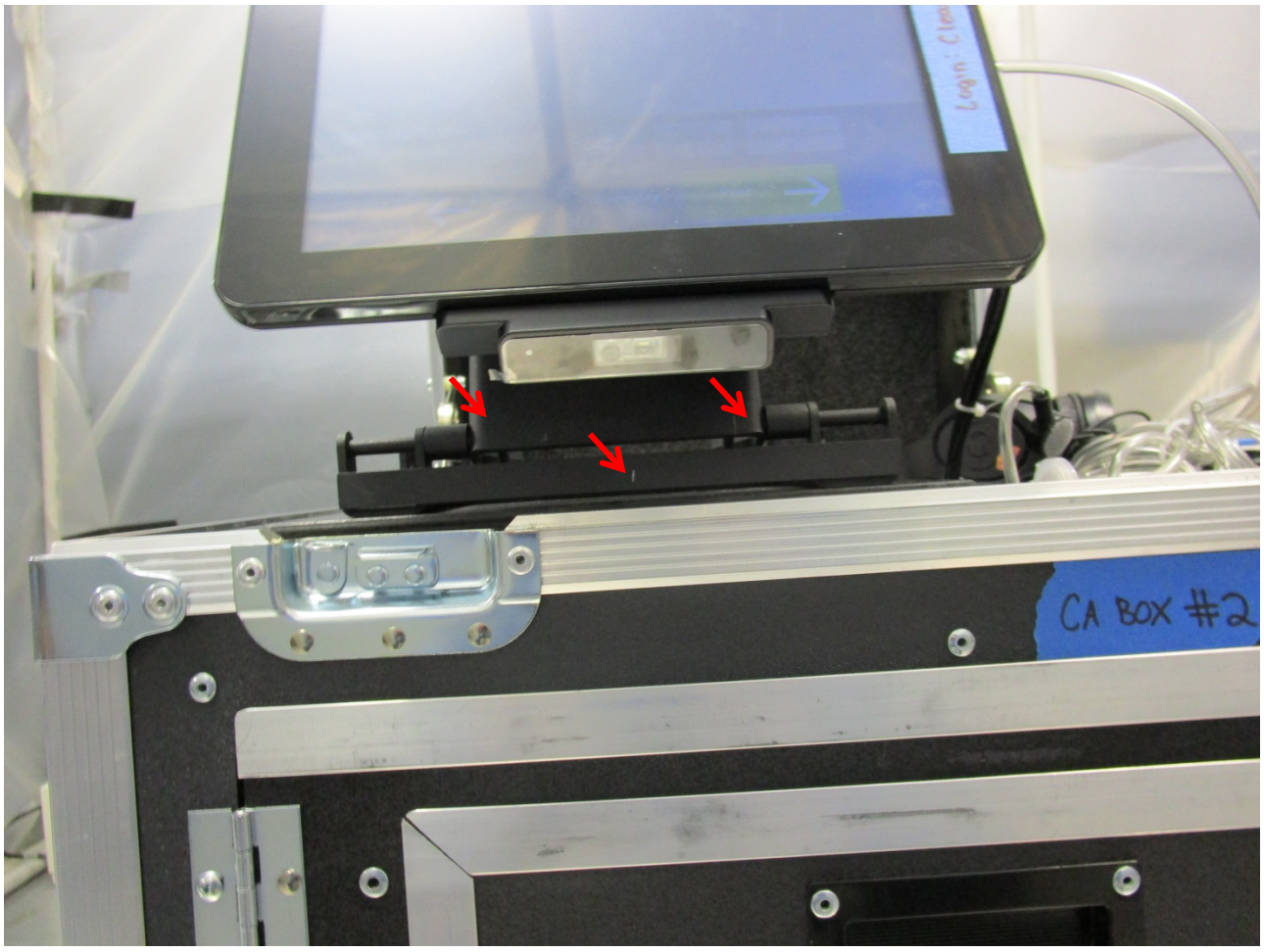

Figure A8. Electrostatic Discharge Test Setup.

5.4.1 Test Equipment List

Table 5.4-1: Electrostatic Discharge Test Equipment List

Electrostatic Discharge per IEC / EN 61000-4-2

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/ B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

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Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1041	Fluke	83-3	70130434	Multimeter/Frequency Meter (WC059692)	08/24/2020	08/24/2021
1333	EMC Partner	ESD3000	395	ESD Test System, including ESD3000DN1-1540 30kV Ad	12/19/2019	12/19/2020
1901	EXTECH	445703	0617	Hygrometer-Thermometer (WC059899)	06/29/2020	06/29/2021

Calibration Abbreviations
CAL: Calibration
NCR: No Calibration Required

5.5 Radiated RF Immunity

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

Manufacturer:	ProV&V/CBG	Project Number:	B80802/PR128128
Customer Representative:	Michael Walker	Test Area:	GP #0
Model:	ClearVote 2.2 (Clear Access)	S/N:	J193011870
Standard Referenced:	EAC 2005 VVSG	Date:	January 8, 2021
Temperature:	24.4˚C Humidity: 22%	Pressure:	834mb
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Normal operating mode		
Test Engineer:	Son La		

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

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

Manufacturer:	ProV&V/CBG	Project Number:	B80802/PR128128
Customer Representative:	Michael Walker	Test Area:	GP #0
Model:	ClearVote 2.2 (Clear Access)	S/N:	J193011870
Standard Referenced:	EAC 2005 VVSG	Date:	January 8, 2021

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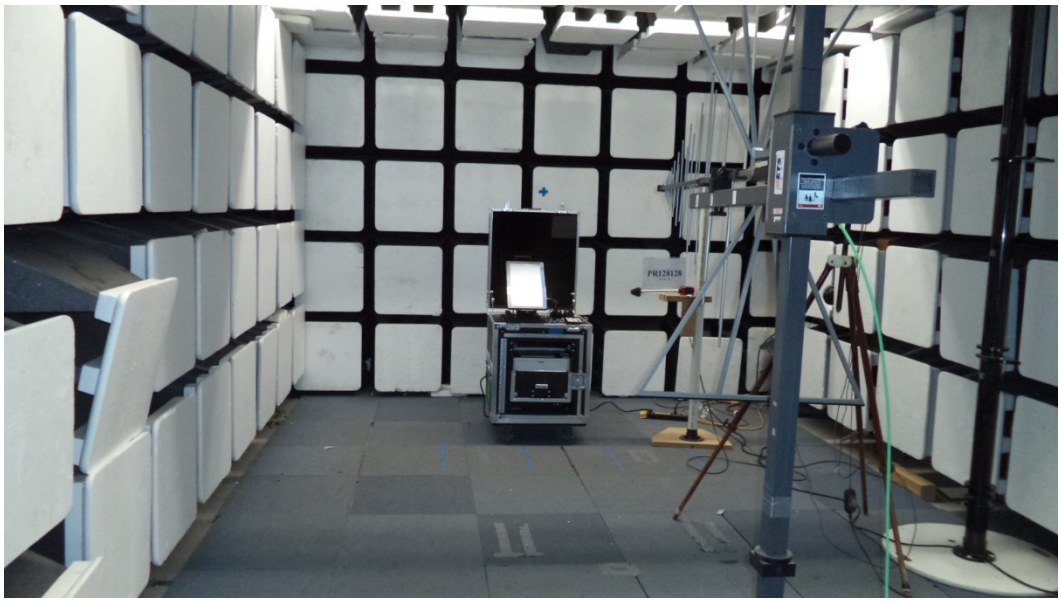

Figure B1. Radiated RF Immunity Test Setup – Front Side.

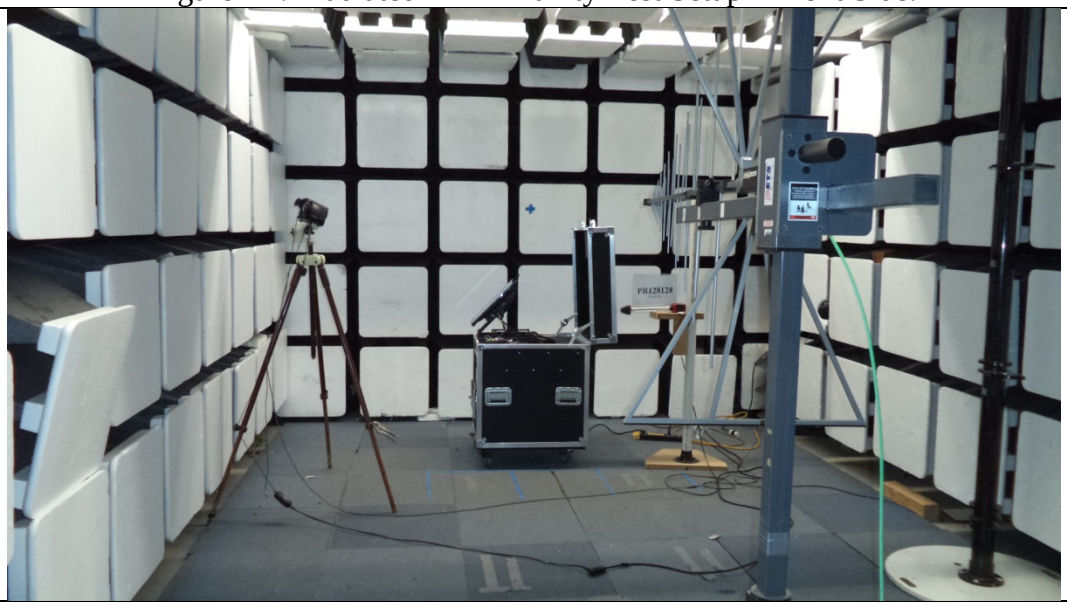

Figure B2. Radiated RF Immunity Test Setup – Right Side.

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

Manufacturer:	ProV&V/CBG	Project Number:	B80802/PR128128
Customer Representative:	Michael Walker	Test Area:	GP #0
Model:	ClearVote 2.2 (Clear Access)	S/N:	J193011870
Standard Referenced:	EAC 2005 VVSG	Date:	January 8, 2021

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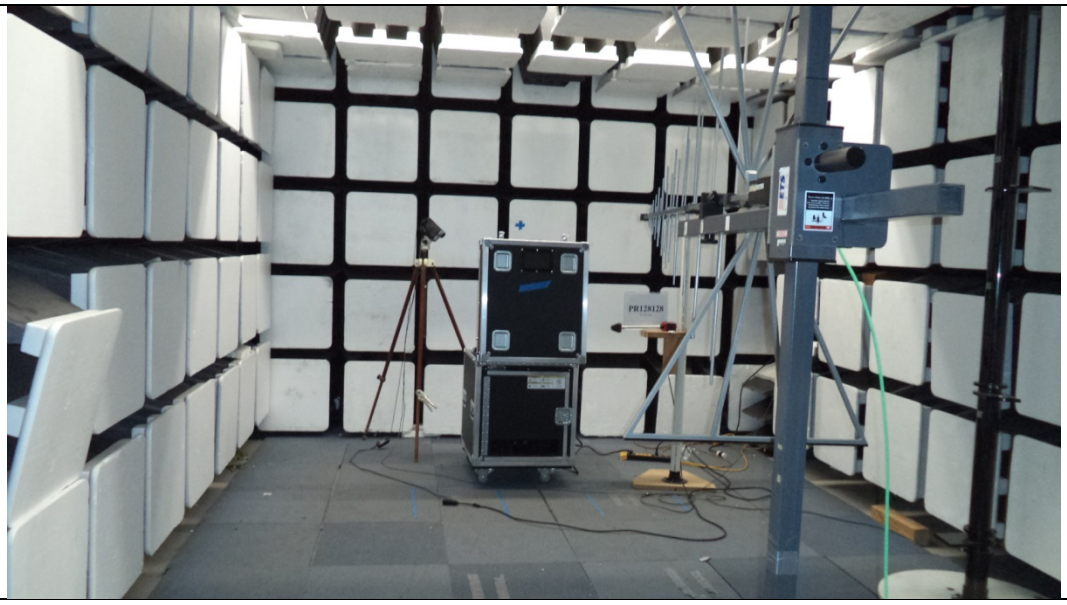

Figure B3. Radiated RF Immunity Test Setup – Back Side.

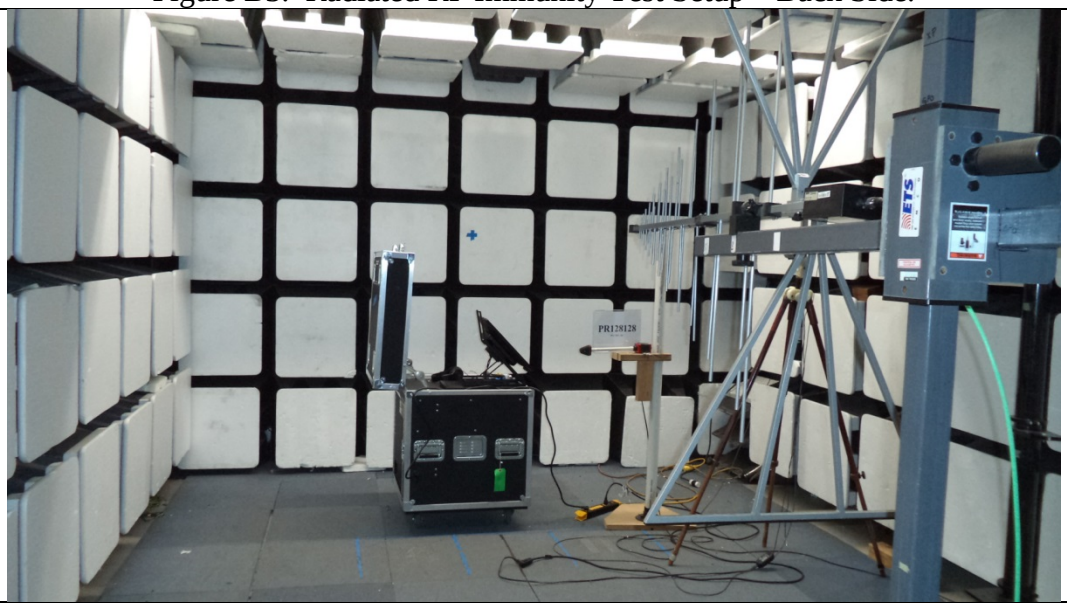

Figure B4. Radiated RF Immunity Test Setup – Left Side.

5.5.1 Test Equipment List

Table 5.5-1: Radiated RF Immunity Test Equipment List

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

Manufacturer:	ProV&V/CBG	Project Number:	B80802/PR128128
Customer Representative:	Michael Walker	Test Area:	GP #0
Model:	ClearVote 2.2 (Clear Access)	S/N:	J193011870
Standard Referenced:	EAC 2005 VVSG	Date:	January 8, 2021

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Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1278	Ophir RF	5163F	1049	RF Amplifier, 0.8 - 4.2 GHz, 50W	NA	NA
1453	Giga-tronics	GT-8888A	8888A0336	10 MHz to 8 GHz, +20 dBm, 25 Vdc Power Meter (WC07	07/20/2020	07/20/2021
1476	ETS Lindgren	HI-6053	00144805	10 MHz to 40 GHz Isotropic Electric Field Probe	04/27/2020	04/27/2021
1722	ETS -Lindgren	3142B	1624	Antenna	NCR	NCR
1762	Braden Shielding Systems	-	-	GP0 Door	NCR	NCR
1764	Narda	3022	75369	Bi directional coupler	05/15/2020	05/15/2021
1853	EXTECH Instruments	445715	Z362286	Hydro-thermometer (WC059827)	08/21/2020	08/21/2021
1947	Anritsu	68369B	990510	10 MHz to 40 GHz Signal Generator	08/26/2019	08/26/2021

Calibration Abbreviations
CAL: Calibration
NCR: No Calibration Required

5.6 Conducted RF Immunity

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

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		1
	UPS		PY3JU2000210
	ATI		20011265
	OKI		BW01017757C0
	ELO		J193011870
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020
Temperature:	19˚C Humidity: 27%	Pressure:	841 mb
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Normal operating mode		
Test Engineer:	T. Wittig		

PR128128-4-6.doc FR0100

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

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

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		1
	UPS		PY3JU2000210
	ATI		20011265
	OKI		BW01017757C0
	ELO		J193011870
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

PR128128-4-6.doc FR0100

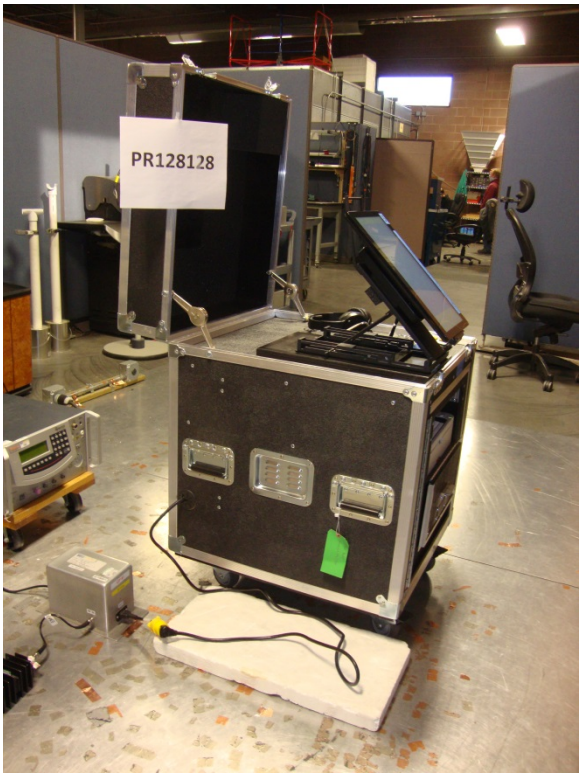

Figure E1. Conducted RF Immunity Test Setup

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

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		1
	UPS		PY3JU2000210
	ATI		20011265
	OKI		BW01017757C0
	ELO		J193011870
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

PR128128-4-6.doc FR0100

Figure E1. Conducted RF Immunity Test Setup – AC Mains

5.6.1 Test Equipment List

Table 5.6-1: Conducted RF Immunity Test Equipment List

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

Manufacturer:	CBG	Project Number:	PR128128
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		1
	UPS		PY3JU2000210
	ATI		20011265
	OKI		BW01017757C0
	ELO		J193011870
Standard Referenced:	EAC 2005 VVSG	Date:	December 9, 2020

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Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1023	Amplifier Research	75A250	28844	75 Watt Amplifier (10 kHz - 250 MHz)	NCR	NCR
1038	Fluke	85	66180455	Multimeter/Frequency Meter	05/26/2020	05/26/2021
1055	Marconi	2024	112113/027	Signal Generator (10 kHz - 2.4 GHz) WC059595	05/27/2020	05/27/2021
1296	California Instruments Corporation	5001IX208-150/300	S59159	5k VA AC Power Source (WCO95675)	08/20/2020	08/20/2021
1479	EMCI	EMCI-CDN_M3-16	EMCI014	M3 CDN, 16A, 250 VAC	02/11/2020	02/11/2021
1496	Rigol Technologies, Inc.	DSA815	DSA8B150500096	9 kHz to 1.5 GHz Spectrum Analyzer (WC059772)	05/09/2020	05/09/2021
1532	Werlatone	C9475-13	102545	100 Watt Dual Directional Coupler, 10 kHz to 250 M	02/11/2020	02/11/2021
1594	EMCI	CI	V2.5.0	Conducted Immunity Software	NCR	NCR
1901	EXTECH	445703	0617	Hygrometer-Thermometer (WC059899)	06/29/2020	06/29/2021

Calibration Abbreviations
CAL: Calibration
NCR: No Calibration Required

5.7 Power Frequency H-Field Immunity

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

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 7, 2020
Temperature:	20˚C Humidity: 36%	Pressure:	846 mb
Input Voltage:	120Vac/60Hz		
Configuration of Unit:	Normal operating mode		
Test Engineer:	Mike Tidquist		

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

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

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 7, 2020

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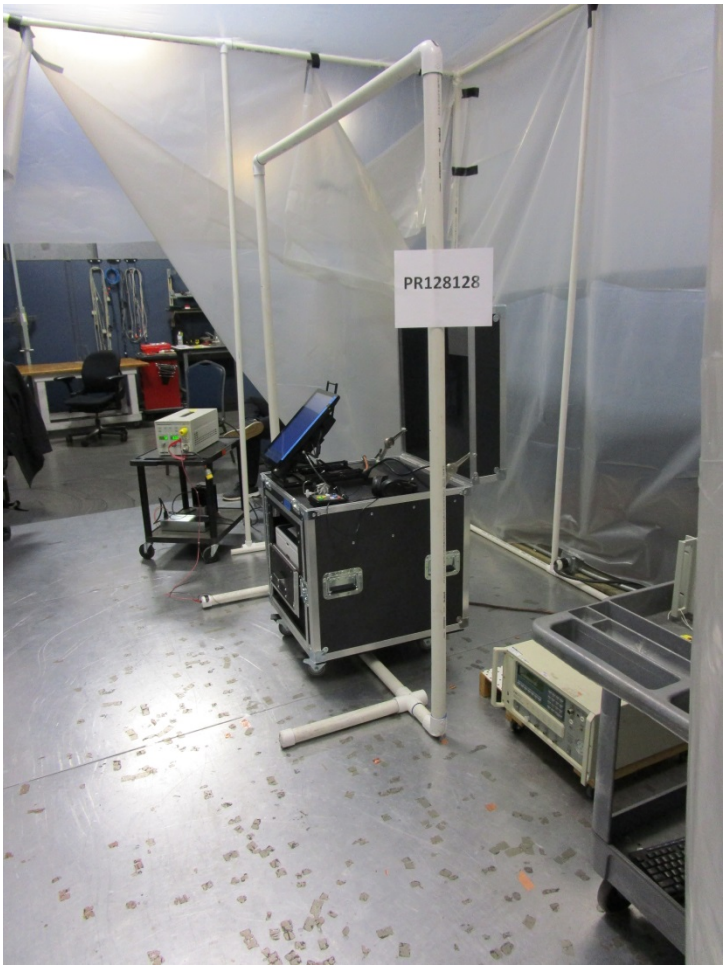

Figure F1. Power Frequency H-field Immunity Test Setup. X Axis

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

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 7, 2020

B80802-4-8.doc FR0100

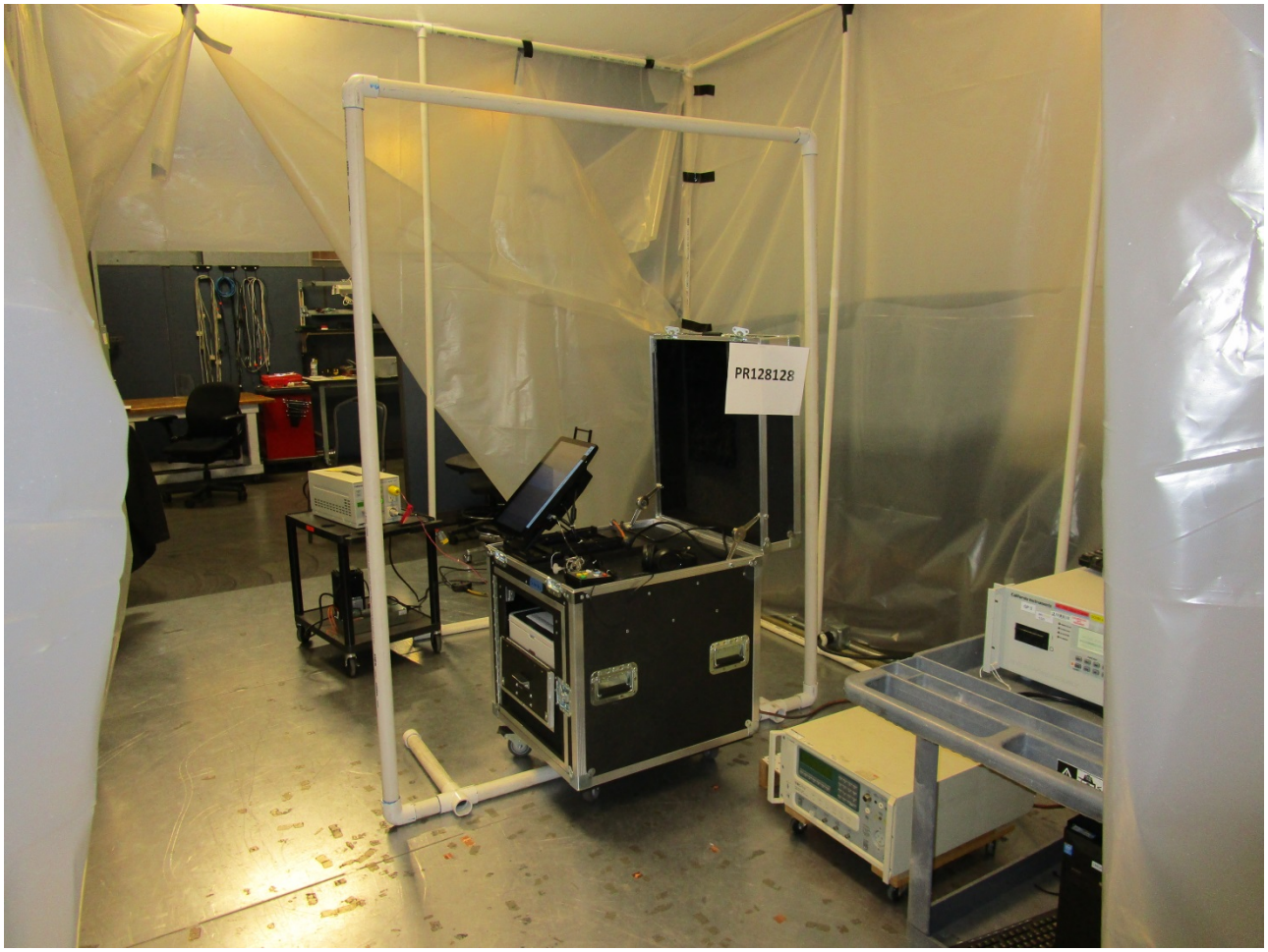

Figure F2. Power Frequency H-field Immunity Test Setup. Y Axis

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

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 7, 2020

B80802-4-8.doc FR0100

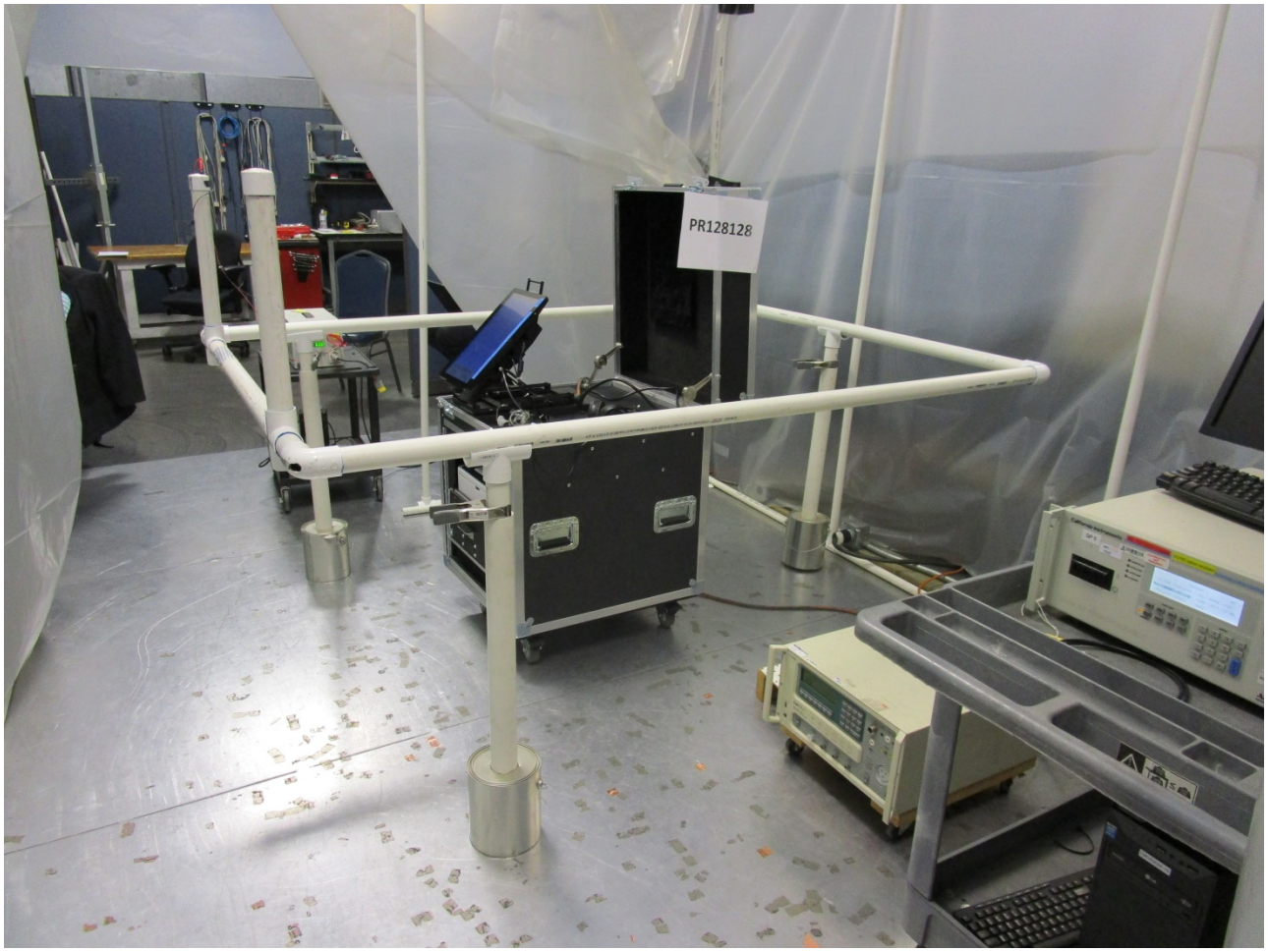

Figure F3. Power Frequency H-field Immunity Test Setup. Z Axis

5.7.1 Test Equipment List

Table 5.7-1: Power Frequency H-Field Immunity Test Equipment List

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

Manufacturer:	ProV&V/CBG	Project Number:	PR128128/B80802
Customer Representative:	Michael Walker	Test Area:	GP #1
Model:	ClearVote 2.2 (Clear Access)		---
	Ballot Box		2
	UPS		PY3JU2000210
	ATI		20011271
	OKI		BW01017754C0
	ELO		I193022848
Standard Referenced:	EAC 2005 VVSG	Date:	December 7, 2020

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Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1040	Fluke	83-3	69811230	Multimeter/Frequency Meter (WC059669)	08/24/2020	08/24/2021
1262	EMCI	EMCI-4-8-2m-1.5m	0001	HField Loop, 2m x 1.5m	NCR	NCR
1372	Tektronix	TDS2002B	C103489	Oscilloscope, 60 MHz, 2-channel (WC059683)	06/29/2020	06/29/2021
1484	Pearson Electronics	110A	88593	Current Monitor, 1 Hz to 20 MHz (WC070471)	07/12/2020	07/12/2021
1520	California Instruments (AMETEK)	5001IX-CTS	1341A03198	5kVA AC Power Source	NCR	NCR
1549	California Instruments/Ametek	1251P	1423A05348	AC power supply	NCR	NCR
1901	EXTECH	445703	0617	Hygrometer-Thermometer (WC059899)	06/29/2020	06/29/2021

Calibration Abbreviations
CAL: Calibration
NCR: No Calibration Required

6.0 Test Logs

EMI Test Log

Manufacturer:	CBG	PR128128/ B80802
Model:	ClearVote 2.2 (Clear Access)	---
	Ballot Box	2
	UPS	PY3JU2000210
	ATI	PY3JU2000066
	OKI	20011271
	ELO	BW01017754C0
		BW02001275C0
		I193022848
		J193011870 (CI)
Customer Representative:	Michael Walker	
Standard Referenced:	EAC 2005 VVSG	

FR0105

Ground Planes / CALC

Test	Test Code	Date	Event	OT	Time (hrs)	Result	Initials
		December 2, 2020	Setup		1.0	Complete	TW
4-11	---		Voltage Dips and Interruptions (Inc./Red. of Nom. Voltage) Electric power increases of 7.5% and reductions of 12.5% of nominal specified power, 120/60 Vac/60Hz		4.0	Pass	TW
4-11	---		Voltage Dips and Interruptions (Surge of +/- 15%) Surge of +/- 15% line variation of nominal line voltage, 120Vac/60 Hz		2.0	Pass	TW
4-11			Note: Need to complete Surges of -15% line variations of nominal voltage (102V) 2 Hrs.		---	---	TW
		1630	Done for the day		---	---	TW
		December 3, 2020 0800	Setup		---	---	TW
4-11		0820	Begin Surges of -15% line variations of nominal voltage (102V) 2 Hrs.		2.0	Pass	TW
4-5		1030	Surge Immunity Mains: +/- 2kV CM, +/- 2kV DM, (0, 90, 180, 270) 120Vac/60Hz		5.0	Pass	TW
4-11		1600	Voltage Dips and Interruptions 70% nom, 0.6 cycles / 40% nom, 6 cycles & 1 sec. / 0% nom, 300 cycles 120Vac/60Hz		0.5	Pass	TW
		1630	Done for the day		---	---	TW
4-4		December 7, 2020 0930-1000	Electrical Fast Transient / Burst Mains: +/2kV 120Vac/60Hz		0.5	Pass	MT
		1000-1030	Power Frequency H Field Immunity 30A/m, 50 / 60 Hz, 3 axes 120Vac/60Hz		0.5	Pass	MT
4-6		December 9, 2020 1400	Conducted RF Immunity 10Vrms, 0.15 - 80 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120Vac/60Hz SN: J193011870		2.0	Pass	TW

Ground Planes / CALC

Test	Test Code	Date	Event	OT	Time (hrs)	Result	Initials
4-2		1400-1530	Electrostatic Discharge +/- 8kV Contact, +/-2, 4, 8, 15kV Air 120/60 VAC ClearVote 2.2 (Clear Access)		1.5	Pass	MT
4-3		January 8, 2021 8:00 1:00	Radiated RF Immunity 10V/m, 80 - 1000 MHz, 1% Step, 80% AM, 1kHz sine, 3s dwell 120/60 VAC. ClearVote 2.2 (Clear Access)/ SN: J193011870 F-V/H, R-V/H, B-V/H, L-V/H		5.0	Pass	SL

Regular hours:	
Overtime/Prem hours:	
Total hours:	

End of Report