

National Technical Systems Test Report for Electromagnetic Interference (EMI) Testing of the Infinity Panel

Prepared For

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Prepared By

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

Greg Gagne
Technical Writer

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

John Tate
EMI Department Manager



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Revision History

Rev.	Description	Issue Date
0	ETR-PR108417	03/26/2020

Table of Contents

1.0	Introduction	4
2.0	References	4
3.0	Product Selection and Description	4
3.1	Security Classification	4
4.0	General Test Requirements	4
4.1	Test Equipment	4
4.2	Measurement Uncertainties	4
4.3	Notice of Deviation	4
5.0	Test Descriptions and Results.....	5
5.1	Radiated Emissions, 30 MHz - 1 GHz Two Units for Test	6
5.1.1	Rev D.....	6
5.1.2	Rev E	13
5.1.3	Rev E (New UPS).....	20
5.2	Conducted Emissions, 150 kHz - 30 MHz Two Units for Test	27
5.2.1	Rev D.....	27
5.2.2	Rev E	36
5.2.3	Rev E (New UPS).....	45
6.0	Test Log	54

List of Tables

Table 3.0-1: Product Identification - Equipment Under Test (EUT)	4
Table 5.0-1: Summary of Test Information & Results	5

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) 2019-013 rev.2, dated 10/30/2019
- National Technical Systems (NTS) Quote(s) OP0534692, dated 10/28/2019
- 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: FCC Part 15 Class B (VVSG 4.1.2.9)

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	EMS 4.4	Infinity Panel (Rev E)	14008
2	1	EMS 4.4	Infinity Panel (Rev D)	11752

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

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

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
Conducted Emissions	dBuV or dBuA	150 kHz – 30 MHz	± 2.8 dB
Radiated Electric Field	dBuV/m	30-1,000 MHz	± 4.2 dB
		1,000-6,000 MHz	± 4.2 dB

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	Radiated Emissions, 30 MHz - 1 GHz Two Units for Test	FCC Part 15 Class B (VVSG 4.1.2.9)	Longmont	11/11/2019 - 11/19/2019	Infinity Panel (Rev E), Infinity Panel (Rev D)	14008, 11752	Complies
5.2	Conducted Emissions, 150 kHz - 30 MHz Two Units for Test	FCC Part 15 Class B (VVSG 4.1.2.9)	Longmont	11/11/2019 - 11/19/2019	Infinity Panel (Rev E), Infinity Panel (Rev D)	14008, 11752	Complies

*The decision rule used to state compliance is in accordance with the test specification used for testing.

5.1 Radiated Emissions, 30 MHz - 1 GHz Two Units for Test

5.1.1 Rev D

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	Infinity Panel Rev. D Microvote VVPAT Printer UPS	S/N:	Rev. D: 11752 Printer: 001101 UPS: AK11190890014
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 13, 2019
Temperature:	25°C	Humidity:	24%
Input Voltage:	120Vac/60Hz	Pressure:	834 mb
Configuration of Unit:	Casting Votes, Printing Ballots, Audio Playing		
Test Engineer:	Mike Tidquist		

PR108417-22-RE.doc

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Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class B QP (dB)
QP	51.594	44.5	11.6	-31.1	25.0	20/V-Pole/2.00	4.57
QP	60.489	43.6	11.4	-31.2	23.9	225/V-Pole/2.04	5.65
QP	85.022	42.5	11.5	-31.1	22.9	135/V-Pole/4.00	6.69
QP	499.991	42.9	22.0	-29.6	35.3	25/V-Pole/3.12	0.24
QP	566.643	39.0	22.8	-29.5	32.4	42/H-Pole/1.30	3.19
QP	633.324	34.4	24.2	-29.2	29.4	40/H-Pole/1.12	6.15
QP	784.630	34.9	25.8	-28.4	32.3	22/V-Pole/2.06	3.26
QP	941.538	33.1	27.2	-27.7	32.7	319/V-Pole/1.87	2.88

The highest emission measured was at **499.991 MHz**, which was **0.24 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 120kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 120kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 1 MHz, VBW is 10 Hz
- The “field strength” (FS) emissions level is attained by adding the received amplitude measured (RA), Antenna factor (AF), and cable factor (CF) minus the amplifier gain (AG). $FS = RA + AF + CF - AG$. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: $49.6 \text{ dBuV} + 11.4 \text{ dB/m} - 28.8 \text{ dB (CF/AG)} = 32.2 \text{ dBuV/m}$. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “Azm/Pol/Hgt” indicates the turn-table *azimuth*, the antenna *polarity*, and the antenna *height* where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 120 kHz, VBW set to 3 MHz (30 MHz to 1 GHz), and the RBW set to 1 MHz, VBW set to 100 kHz (> 1 GHz)

Radiated Emissions

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. D
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #1
 S/N: Rev. D: 11752
 Printer: 001101
 UPS: AK11190890014
 Date: November 13, 2019

PR108417-22-RE.doc

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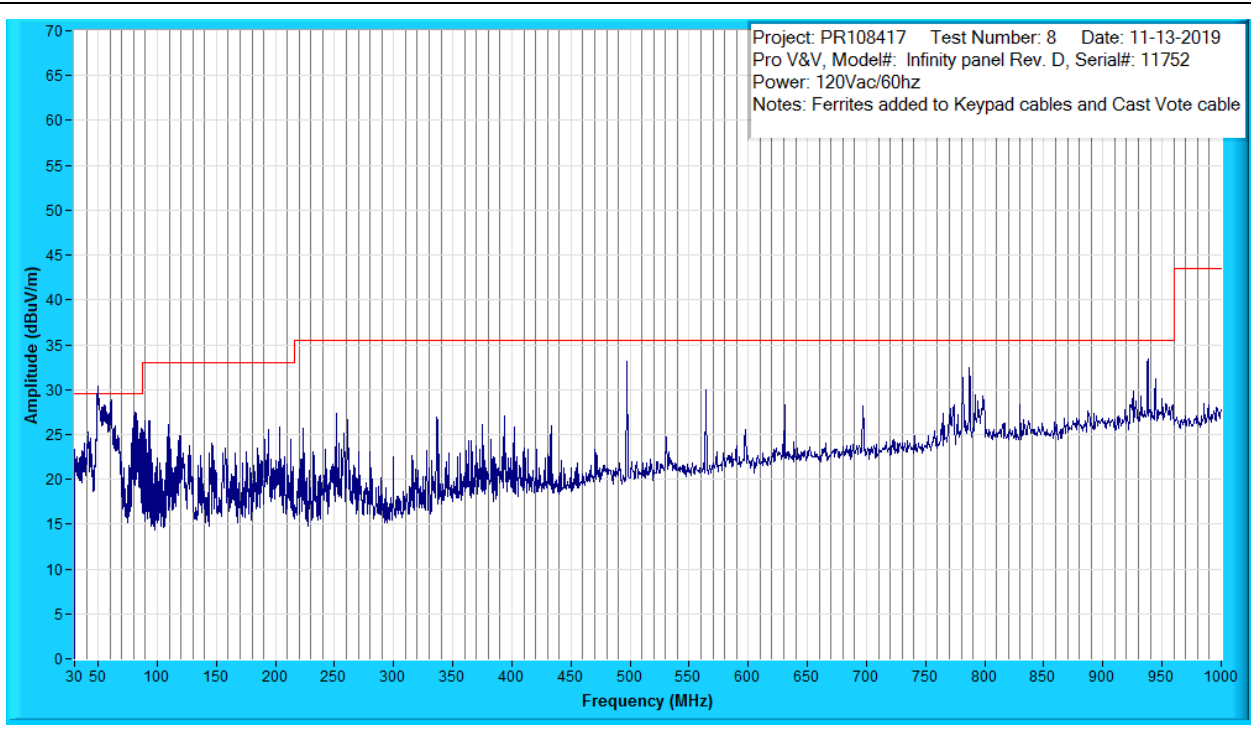


Figure A1: Radiated Emissions Prescan, 30MHz to 1000MHz, Peak Measurements at 10m Distance

Radiated Emissions

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	Infinity Panel Rev. D Microvote VVPAT Printer UPS	S/N:	Rev. D: 11752 Printer: 001101 UPS: AK11190890014
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 13, 2019

PR108417-22-RE.doc FR0100



Figure A2: Radiated Emissions Test Setup – Front Side

Radiated Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. D
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. D: 11752
Printer: 001101
UPS:
AK11190890014
Date: November 13, 2019

PR108417-22-RE.doc

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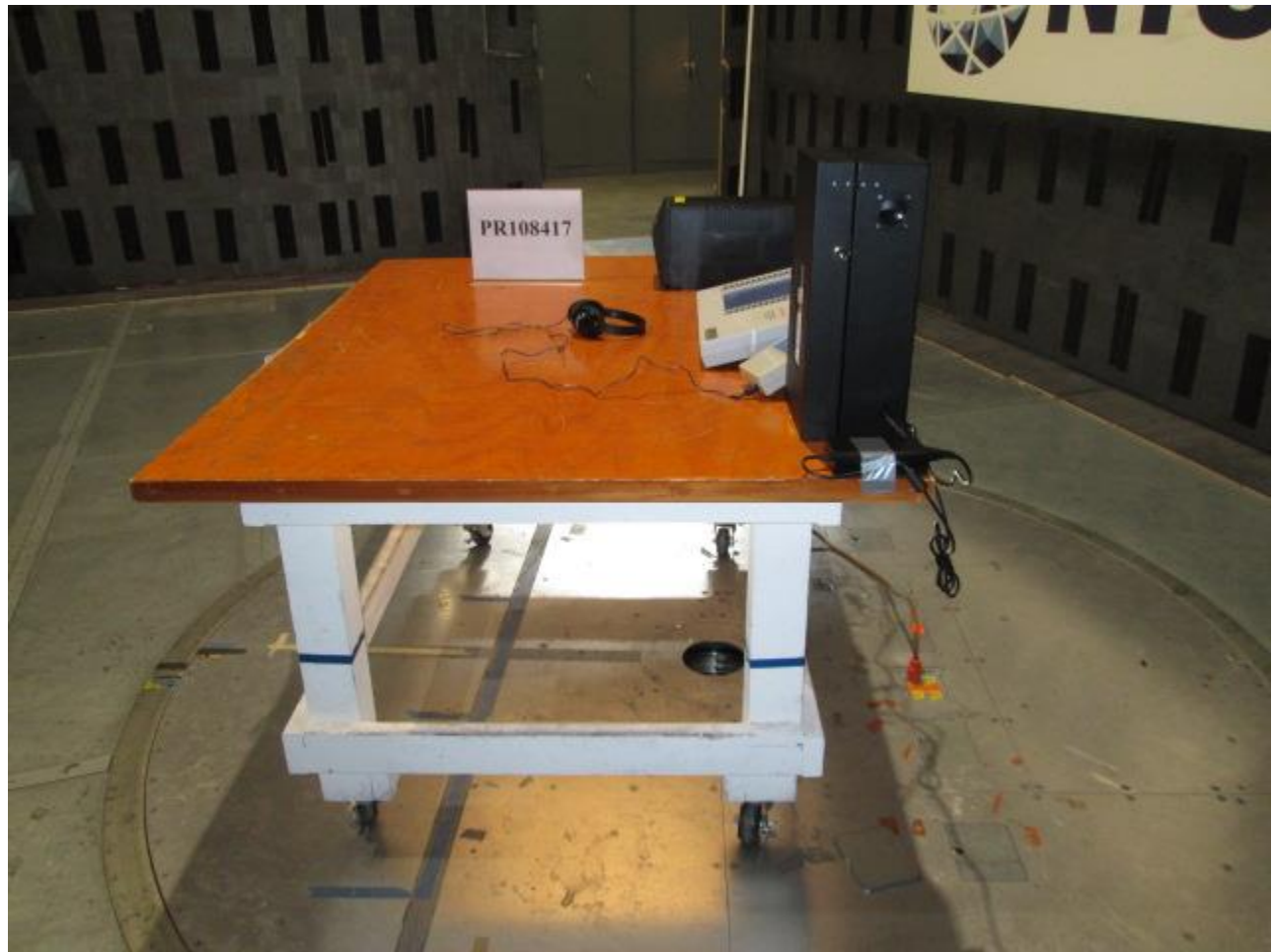


Figure A3: Radiated Emissions Test Setup – Right Side

Radiated Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. D
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. D: 11752
Printer: 001101
UPS: AK11190890014
Date: November 13, 2019

PR108417-22-RE.doc

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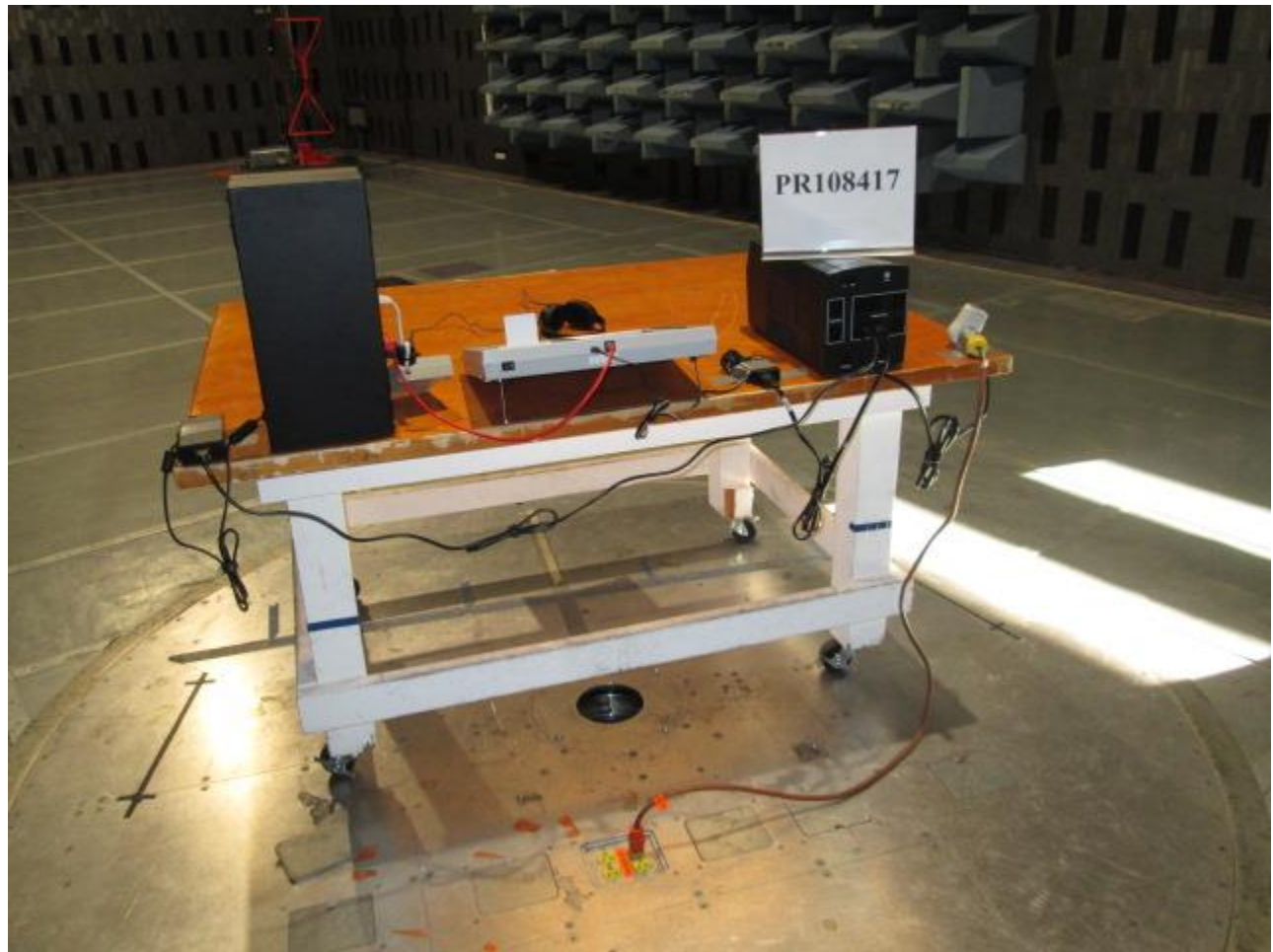


Figure A4: Radiated Emissions Test Setup – Back Side

Radiated Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. D
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. D: 11752
Printer: 001101
UPS: AK11190890014
Date: November 13, 2019

PR108417-22-RE.doc

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Figure A5: Radiated Emissions Test Setup – Left Side



Radiated Emissions

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	Infinity Panel Rev. D Microvote VVPAT Printer UPS	S/N:	Rev. D: 11752 Printer: 001101 UPS: AK11190890014
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 13, 2019

PR108417-22-RE.doc FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1039	Fluke	83-3	69811227	Multimeter/Frequency Meter	02/14/2019	02/14/2020
1219	Mini-Circuits	ZKL-2	062905	Preamp, 10 - 2000 MHz, 30 dB	03/11/2019	03/11/2020
1231	Sunol Sciences	JB1	A071605-1	Bilog Antenna, 30 MHz to 2.0 GHz	02/15/2018	02/15/2020
1233	Sunol Sciences	SC104V	110305-1	Positioning Controller	NA	NA
1234	CIR Enterprises	10m Chamber	001	10m Chamber with 2.5m turntable	05/28/2019	05/28/2020
1238	Sunol Sciences	TWR95-4	110305-3	Antenna Mast	NA	NA
1239	Sunol Sciences	FM2522VS	110305-2	Turn Table, 2.5m Diameter	05/28/2019	05/28/2020
1266	California Instruments	MX15-1	57961	AC Power Source, 0 - 300 VAC / 16 - 819 Hz / 15kVA	NA	NA
1341	Hewlett Packard	85650A	2811A01351	Quasi-Peak Adapter	01/08/2019	01/08/2020
1343	Hewlett Packard	8566B	2403A08410	Spectrum Analyzer Display	03/22/2019	03/22/2020
1344	Hewlett Packard	8566B	2611A02676	Spectrum Analyzer with 2403A08410	03/22/2019	03/22/2020
1345	Hewlett Packard	85685A	2901A00865	RF Preselector	01/08/2019	01/08/2020
1555	Com-Power	CGO - 505	301314	5 MHz Step Comb Generator	10/30/2018	10/30/2020
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA
1903	EXTECH	445703	1218-2	Hygrometer-Thermometer	06/10/2019	06/10/2020

5.1.2 Rev E

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	Infinity Panel Rev. E Microvote VVPAT Printer UPS	S/N:	Rev. E:14008 Printer: 001100 UPS: SZ1904500003
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 11, 2019
Temperature:	25°C	Humidity:	24%
Input Voltage:	120Vac/60Hz	Pressure:	850 mb
Configuration of Unit:	Casting Votes, Printing Ballots, Audio Playing		
Test Engineer:	Mike Tidquist		

PR108417-22-RE.doc

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Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class B QP (dB)
QP	39.379	37.0	18.7	-30.9	24.8	96/V-Pole/1.00	4.75
QP	64.044	44.8	11.9	-31.2	25.5	230/V-Pole/1.60	4.09
QP	144.010	42.3	17.0	-30.7	28.6	206/V-Pole/1.02	4.42
QP	225.613	47.7	15.1	-30.4	32.4	154/H-Pole/4.00	3.19
QP	379.357	42.1	19.3	-30.0	31.4	10/H-Pole/2.93	4.10
QP	411.696	35.3	20.3	-29.9	25.6	147/H-Pole/2.33	9.91
QP	466.133	36.5	21.6	-29.7	28.4	276/H-Pole/2.08	7.14
QP	564.034	39.0	22.7	-29.5	32.3	269/H-Pole/1.86	3.28

The highest emission measured was at **225.613 MHz**, which was **3.19 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 120kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 120kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 1 MHz, VBW is 10 Hz
- The “field strength” (FS) emissions level is attained by adding the received amplitude measured (RA), Antenna factor (AF), and cable factor (CF) minus the amplifier gain (AG). $FS = RA + AF + CF - AG$. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: $49.6 \text{ dBuV} + 11.4 \text{ dB/m} - 28.8 \text{ dB (CF/AG)} = 32.2 \text{ dBuV/m}$. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “Azm/Pol/Hgt” indicates the turn-table *azimuth*, the antenna *polarity*, and the antenna *height* where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 120 kHz, VBW set to 3 MHz (30 MHz to 1 GHz), and the RBW set to 1 MHz, VBW set to 100 kHz (> 1 GHz)

Radiated Emissions

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. E
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #1
 S/N: Rev. E:14008
 Printer: 001100
 UPS: SZ1904500003
 Date: November 11, 2019

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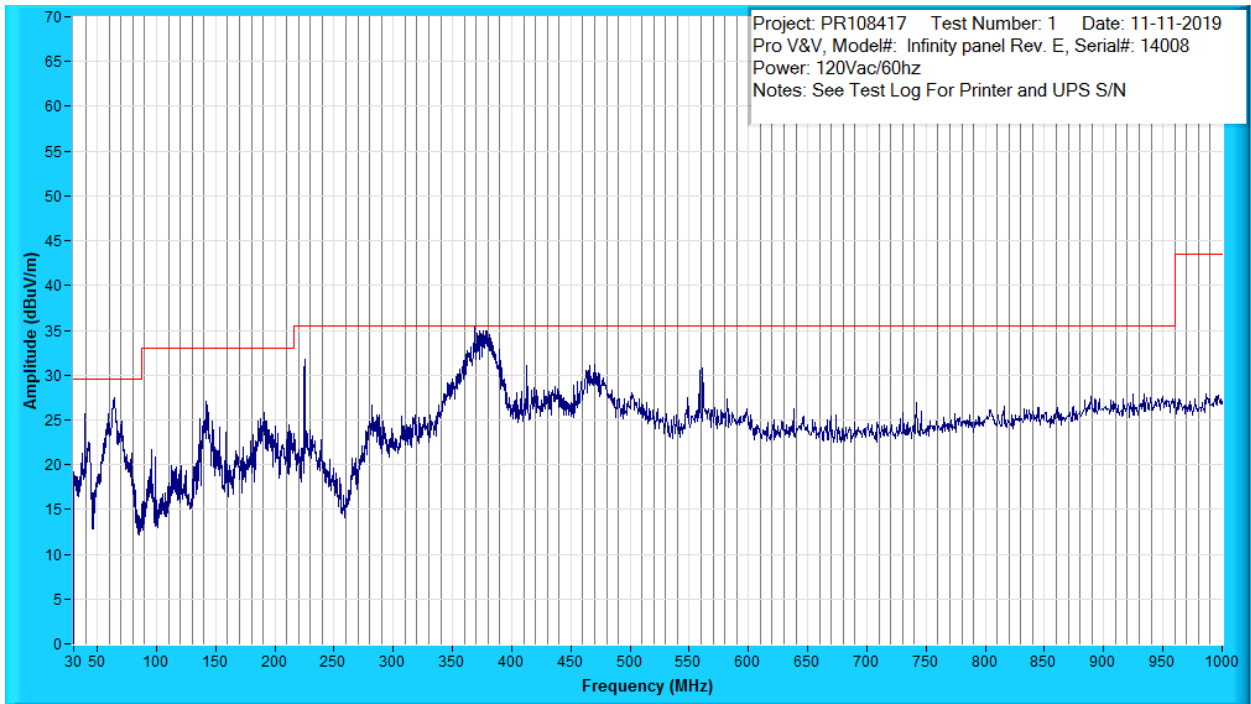


Figure A1: Radiated Emissions Prescan, 30MHz to 1000MHz, Peak Measurements at 10m Distance

Radiated Emissions

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. E
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #1
 S/N: Rev. E:14008
 Printer: 001100
 UPS: SZ1904500003
 Date: November 11, 2019

PR108417-22-RE.doc

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Figure A2: Radiated Emissions Test Setup – Front Side

Radiated Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. E:14008
Printer: 001100
UPS: SZ1904500003
Date: November 11, 2019

PR108417-22-RE.doc

FR0100



Figure A3: Radiated Emissions Test Setup – Right Side

Radiated Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. E:14008
Printer: 001100
UPS: SZ1904500003
Date: November 11, 2019

PR108417-22-RE.doc

FR0100



Figure A4: Radiated Emissions Test Setup – Back Side

Radiated Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. E:14008
Printer: 001100
UPS: SZ1904500003
Date: November 11, 2019

PR108417-22-RE.doc

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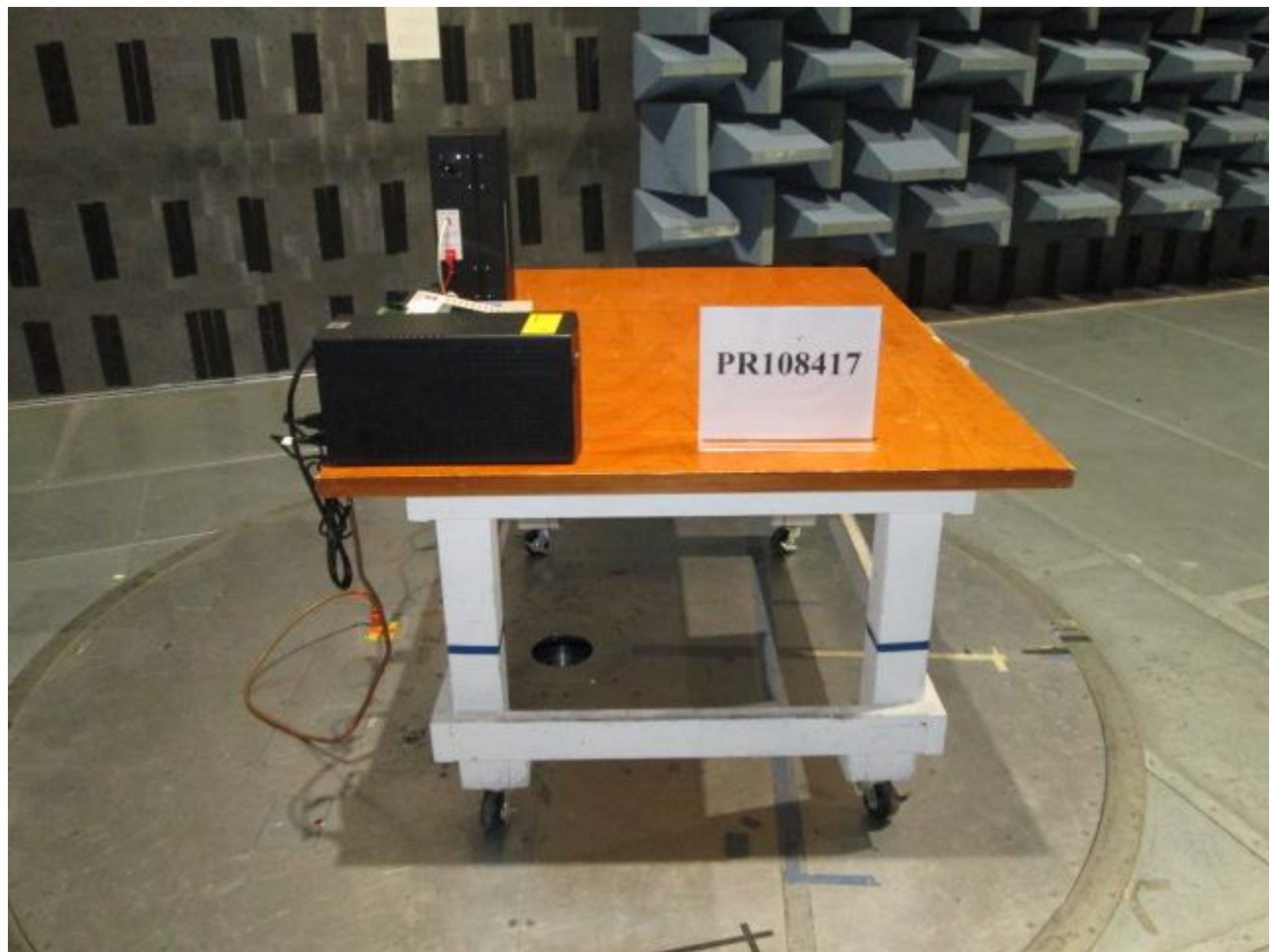


Figure A5: Radiated Emissions Test Setup – Left Side



Radiated Emissions

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	Infinity Panel Rev. E Microvote VVPAT Printer UPS	S/N:	Rev. E:14008 Printer: 001100 UPS: SZ1904500003
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 11, 2019

PR108417-22-RE.doc FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1039	Fluke	83-3	69811227	Multimeter/Frequency Meter	02/14/2019	02/14/2020
1219	Mini-Circuits	ZKL-2	062905	Preamplifier, 10 - 2000 MHz, 30 dB	03/11/2019	03/11/2020
1231	Sunol Sciences	JB1	A071605-1	Bilog Antenna, 30 MHz to 2.0 GHz	02/15/2018	02/15/2020
1233	Sunol Sciences	SC104V	110305-1	Positioning Controller	NA	NA
1234	CIR Enterprises	10m Chamber	001	10m Chamber with 2.5m turntable	05/28/2019	05/28/2020
1238	Sunol Sciences	TWR95-4	110305-3	Antenna Mast	NA	NA
1239	Sunol Sciences	FM2522VS	110305-2	Turn Table, 2.5m Diameter	05/28/2019	05/28/2020
1266	California Instruments	MX15-1	57961	AC Power Source, 0 - 300 VAC / 16 - 819 Hz / 15kVA	NA	NA
1341	Hewlett Packard	85650A	2811A01351	Quasi-Peak Adapter	01/08/2019	01/08/2020
1343	Hewlett Packard	8566B	2403A08410	Spectrum Analyzer Display	03/22/2019	03/22/2020
1344	Hewlett Packard	8566B	2611A02676	Spectrum Analyzer with 2403A08410	03/22/2019	03/22/2020
1345	Hewlett Packard	85685A	2901A00865	RF Preselector	01/08/2019	01/08/2020
1555	Com-Power	CGO - 505	301314	5 MHz Step Comb Generator	10/30/2018	10/30/2020
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA
1903	EXTECH	445703	1218-2	Hygrometer-Thermometer	06/10/2019	06/10/2020

5.1.3 Rev E (New UPS)

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #2
Model:	Infinity Panel Rev. E Microvote VVPAT Printer UPS	S/N:	Rev. E:14008 Printer: 001100 UPS: 3B1925X63265
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 19, 2019
Temperature:	25°C	Humidity:	24%
Input Voltage:	120Vac/60Hz	Pressure:	832 mb
Configuration of Unit:	Casting Votes, Printing Ballots, Audio Playing		
Test Engineer:	Kevin Johnson		

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Type	Frequency (MHz)	Level (dBuV)	Transducer (dB/m)	Gain / Loss (dB)	Final (dBuV/m)	Azm(deg)/Pol/Hgt(m)	Margin: FCC Class B QP (dB)
QP	80.002	33.2	11.7	-28.8	16.2	350/H-Pole/3.91	13.39
QP	96.004	43.4	13.2	-28.5	28.0	290/V-Pole/1.10	5.04
QP	192.004	40.5	15.5	-28.5	27.5	171/V-Pole/1.02	5.59
QP	225.614	48.3	15.0	-28.3	35.0	134/H-Pole/3.94	0.54
QP	288.013	42.6	17.3	-28.5	31.4	307/V-Pole/1.06	4.18
QP	369.576	42.0	19.1	-28.1	33.0	355/H-Pole/2.59	2.54
QP	710.303	23.4	24.4	-27.3	20.6	135/H-Pole/4.00	14.98
QP	831.241	23.4	25.8	-27.3	21.9	12/V-Pole/1.00	13.64

The highest emission measured was at **225.614 MHz**, which was **0.54 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 120kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 120kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 1 MHz, VBW is 10 Hz
- The “field strength” (FS) emissions level is attained by adding the received amplitude measured (RA), Antenna factor (AF), and cable factor (CF) minus the amplifier gain (AG). $FS = RA + AF + CF - AG$. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: $49.6 \text{ dBuV} + 11.4 \text{ dB/m} - 28.8 \text{ dB (CF/AG)} = 32.2 \text{ dBuV/m}$. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “Azm/Pol/Hgt” indicates the turn-table *azimuth*, the antenna *polarity*, and the antenna *height* where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 120 kHz, VBW set to 3 MHz (30 MHz to 1 GHz), and the RBW set to 1 MHz, VBW set to 100 kHz (> 1 GHz)

Radiated Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. E
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #2
 S/N: Rev. E:14008
 Printer: 001100
 UPS: 3B1925X63265
 Date: November 19, 2019

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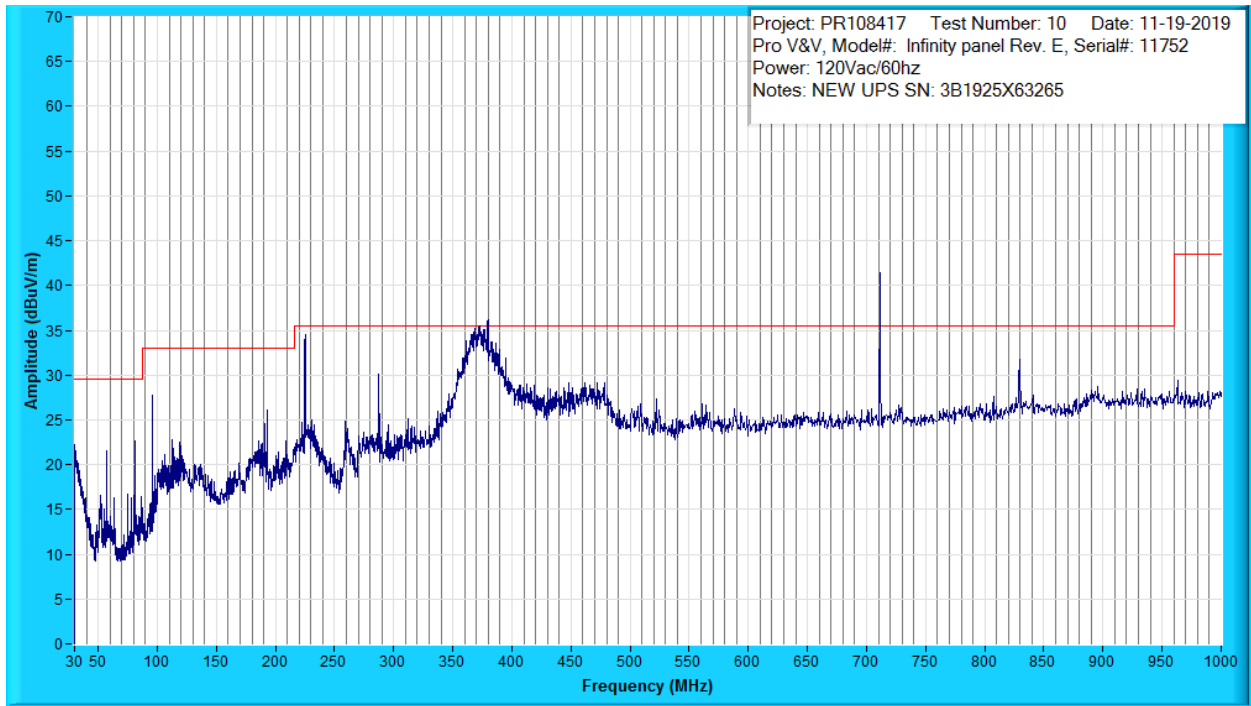


Figure A1: Radiated Emissions Prescan, 30MHz to 1000MHz, Peak Measurements at 10m Distance

Radiated Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #2
S/N: Rev. E:14008
Printer: 001100
UPS: 3B1925X63265
Date: November 19, 2019

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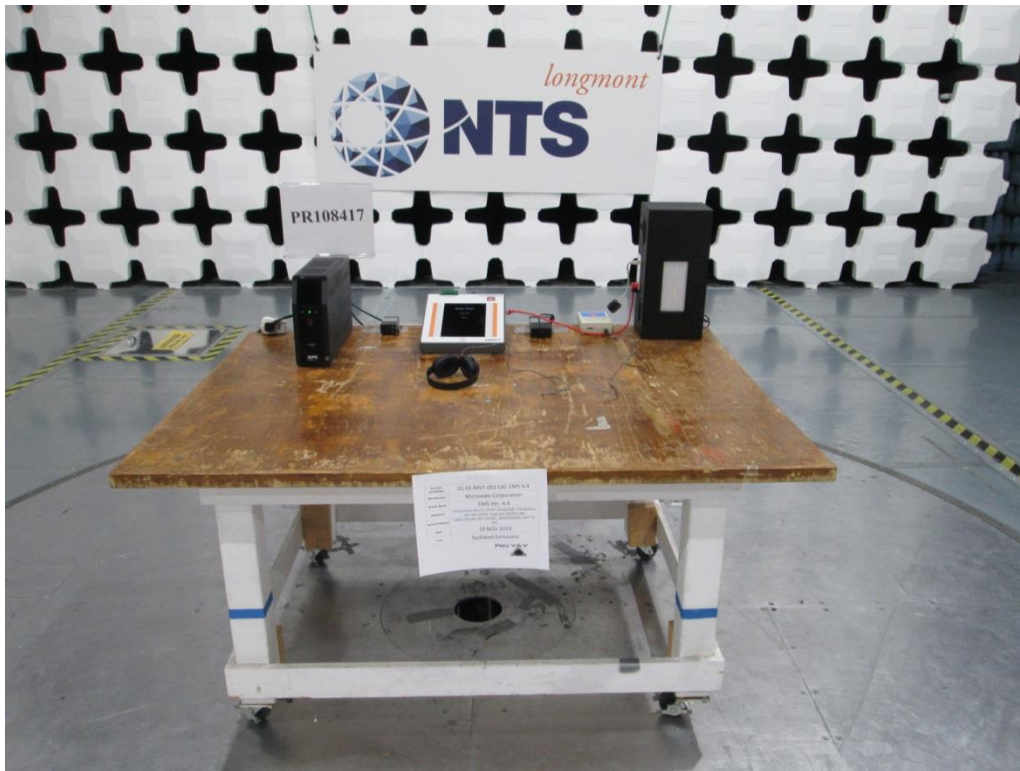


Figure A2: Radiated Emissions Test Setup – Front Side

Radiated Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #2
S/N: Rev. E:14008
Printer: 001100
UPS: 3B1925X63265
Date: November 19, 2019

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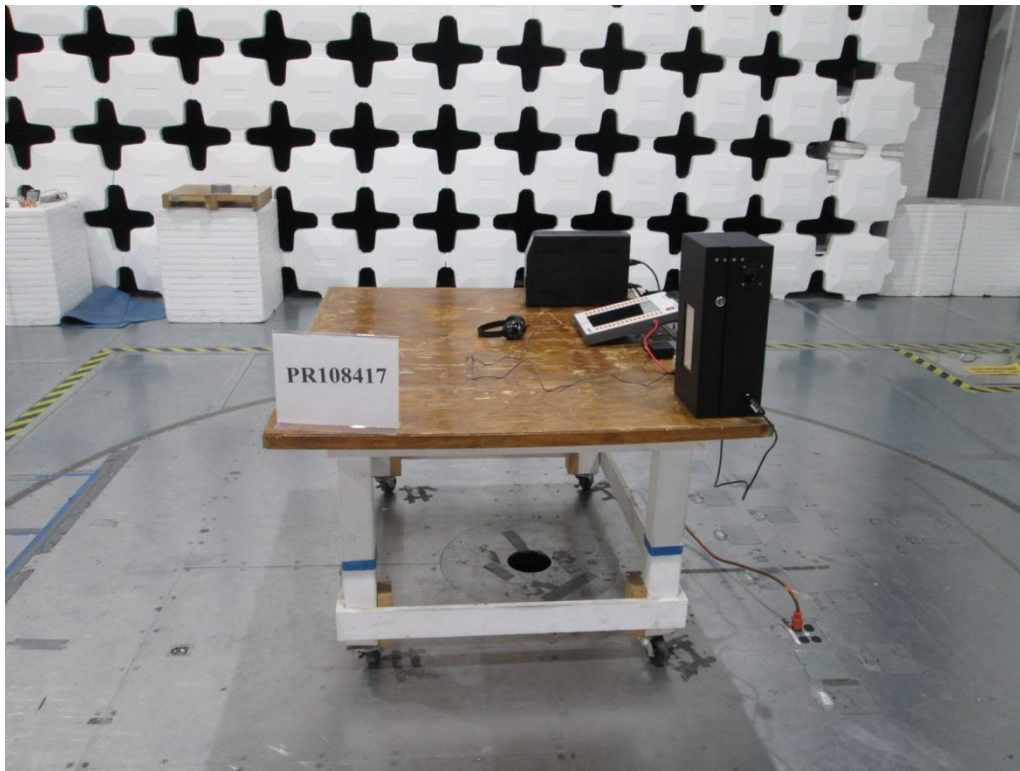


Figure A3: Radiated Emissions Test Setup – Right Side

Radiated Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #2
S/N: Rev. E:14008
Printer: 001100
UPS: 3B1925X63265
Date: November 19, 2019

PR108417-22-RE.doc

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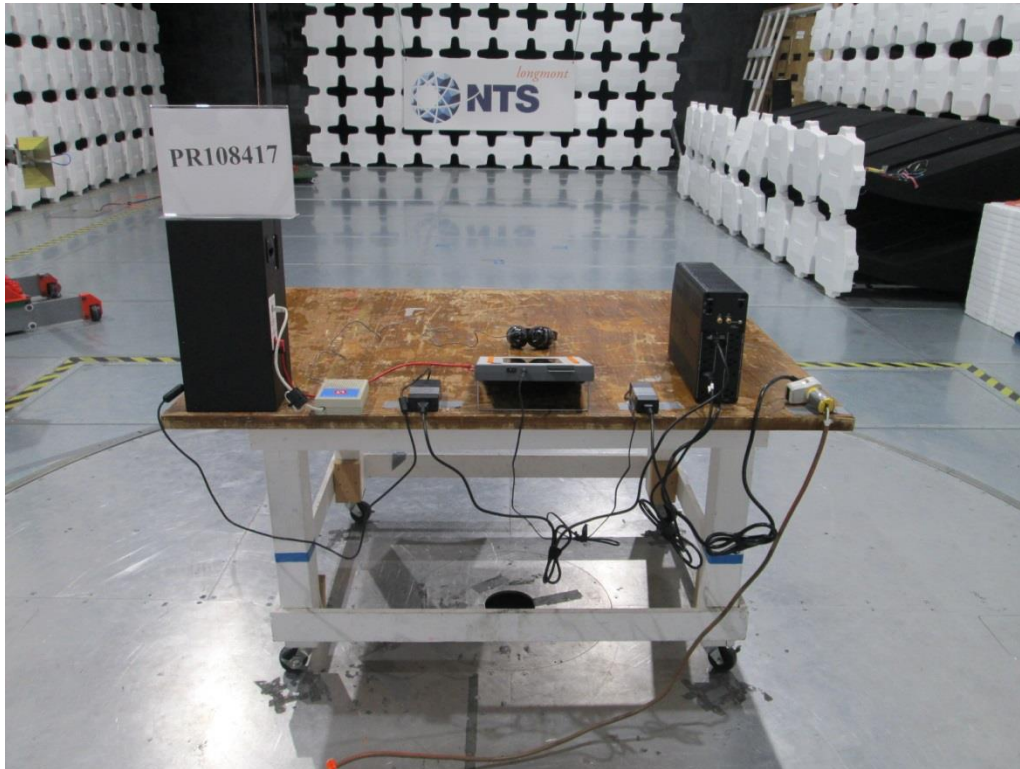


Figure A4: Radiated Emissions Test Setup – Back Side

Radiated Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #2
S/N: Rev. E:14008
Printer: 001100
UPS: 3B1925X63265
Date: November 19, 2019

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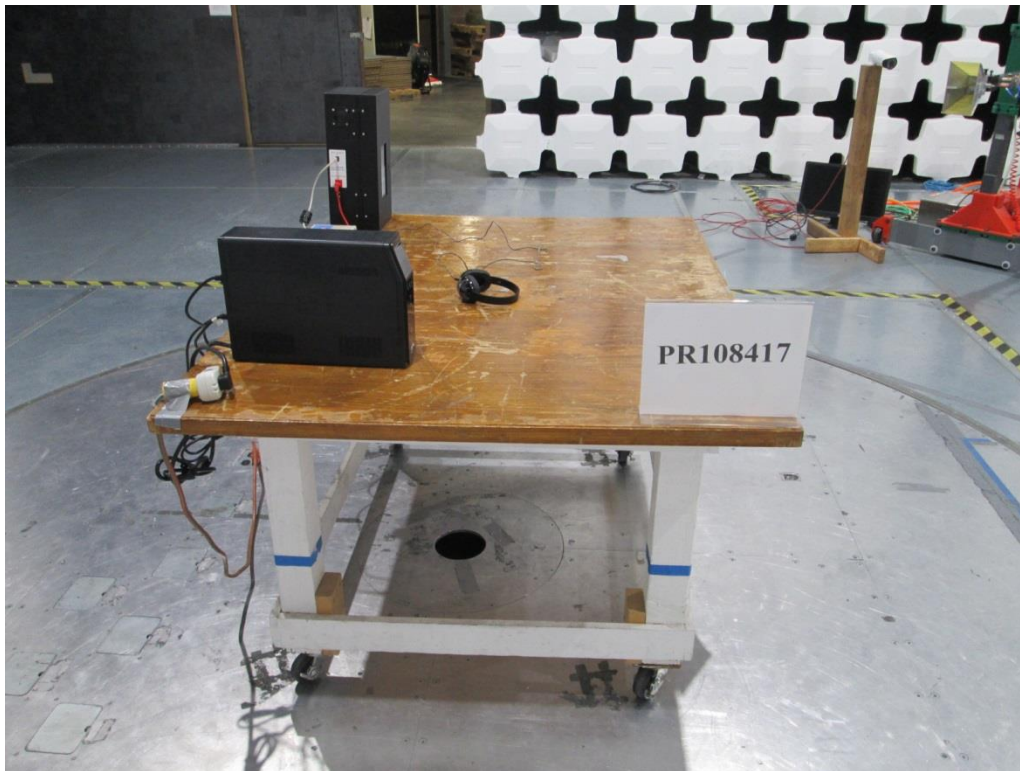


Figure A5: Radiated Emissions Test Setup – Left Side



Radiated Emissions, FCC Part 15

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #2
Model:	Infinity Panel Rev. E Microvote VVPAT Printer UPS	S/N:	Rev. E:14008 Printer: 001100 UPS: 3B1925X63265
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 19, 2019

PR108417-22-RE.doc FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1220	Mini-Circuits	ZKL-2	NA	Preamp, 10 - 2000 MHz, 30 dB	12/18/2018	12/18/2019
1341	Hewlett Packard	85650A	2811A01351	Quasi-Peak Adapter	01/08/2019	01/08/2020
1343	Hewlett Packard	8566B	2403A08410	Spectrum Analyzer Display	03/22/2019	03/22/2020
1344	Hewlett Packard	8566B	2611A02676	Spectrum Analyzer with 2403A08410	03/22/2019	03/22/2020
1345	Hewlett Packard	85685A	2901A00865	RF Preselector	01/08/2019	01/08/2020
1381	Sunol	JB1	A010411	0.03-2 GHz Broadband Hybrid Antenna	08/27/2019	08/27/2020
1396	CIR Enterprises	10m Chamber #2	002	10m Chamber with 4m turntable	03/29/2018	03/29/2020
1410	Sunol Sciences	SC110V	021611-1	System Controller 10meter #2	NA	NA
1592	EMCI	CEAS	V4.1.2	Commercial Emissions Automation Software - 10M # 2	NA	NA
1900	EXTECH	445703	1218	Hygrometer-Thermometer	06/10/2019	06/10/2020



5.2 Conducted Emissions, 150 kHz - 30 MHz Two Units for Test

5.2.1 Rev D

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	Infinity Panel Rev. D Microvote VVPAT Printer UPS	S/N:	Rev. D: 11752 Printer: 001101 UPS: AK11190890014
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 13, 2019
Temperature:	25°C	Humidity:	24%
Input Voltage:	120Vac/60Hz	Pressure:	834 mb
Configuration of Unit:	Casting Votes, Printing Ballots, Audio Playing		
Test Engineer:	Mike Tidquist		

PR108417-22-CE.doc

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Type	Frequency (MHz)	Level (dBuV)	Transducer (dB)	Gain / Loss (dB)	Final (dBuV)	Test Point	Margin: FCC Class B AV (dB)	Margin: FCC Class B QP (dB)
AV	0.157	23.6	-1.3	16.0	38.3	Line 1	17.45	-
QP	0.157	36.0	-1.3	16.0	50.7	Line 1	-	15.05
AV	0.224	29.3	-0.9	16.1	44.5	Line 1	9.39	-
QP	0.224	35.3	-0.9	16.1	50.5	Line 1	-	13.38
AV	0.313	25.6	-0.7	16.1	41.1	Line 1	10.29	-
QP	0.313	33.2	-0.7	16.1	48.7	Line 1	-	12.69
AV	0.364	21.6	-0.6	16.1	37.1	Line 1	12.78	-
QP	0.364	38.0	-0.6	16.1	53.6	Line 1	-	6.33
AV	0.416	24.6	-0.5	16.1	40.2	Line 1	8.25	-
QP	0.416	39.6	-0.5	16.1	55.1	Line 1	-	3.26
AV	0.468	28.1	-0.5	16.1	43.8	Line 1	3.17	-
QP	0.468	39.1	-0.5	16.1	54.7	Line 1	-	2.24
AV	14.355	18.4	-0.3	15.7	33.8	Line 1	16.24	-
QP	14.355	22.0	-0.3	15.7	37.4	Line 1	-	22.62
AV	0.156	22.9	-1.3	16.0	37.6	Neutral	18.25	-
QP	0.156	36.3	-1.3	16.0	51.0	Neutral	-	14.85
AV	0.223	29.0	-0.9	16.1	44.2	Neutral	9.72	-
QP	0.223	35.0	-0.9	16.1	50.2	Neutral	-	13.73
AV	0.313	24.9	-0.7	16.1	40.4	Neutral	10.99	-
QP	0.313	32.7	-0.7	16.1	48.1	Neutral	-	13.26
AV	0.363	21.8	-0.6	16.1	37.3	Neutral	12.61	-
QP	0.363	38.0	-0.6	16.1	53.5	Neutral	-	6.45
AV	0.416	26.4	-0.5	16.1	42.0	Neutral	6.38	-
QP	0.416	40.5	-0.5	16.1	56.1	Neutral	-	2.28
AV	0.468	27.6	-0.5	16.1	43.2	Neutral	3.76	-
QP	0.468	35.2	-0.5	16.1	50.8	Neutral	-	6.11
AV	15.442	6.4	-0.3	15.7	21.8	Neutral	28.25	-
QP	15.442	19.5	-0.3	15.7	34.8	Neutral	-	25.17

The highest emission measured was at **0.468 MHz**, which was **2.24 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 9 kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 9 kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 9 kHz, VBW is 10 Hz
- The “field strength” (FS) emissions level is attained by adding the received amplitude measured (RA), Antenna factor (AF), and cable factor (CF) minus the amplifier gain (AG). $FS = RA + AF + CF - AG$. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: $49.6 \text{ dBuV} + 11.4 \text{ dB/m} - 28.8 \text{ dB (CF/AG)} = 32.2 \text{ dBuV/m}$. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “TestPoint” indicates which AC or DC input power line or which I/O cable the measurement was made on.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 9 kHz, and the VBW set to 3 MHz

Conducted Emissions

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. D
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #1
 S/N: Rev. D: 11752
 Printer: 001101
 UPS:
 AK11190890014
 Date: November 13, 2019

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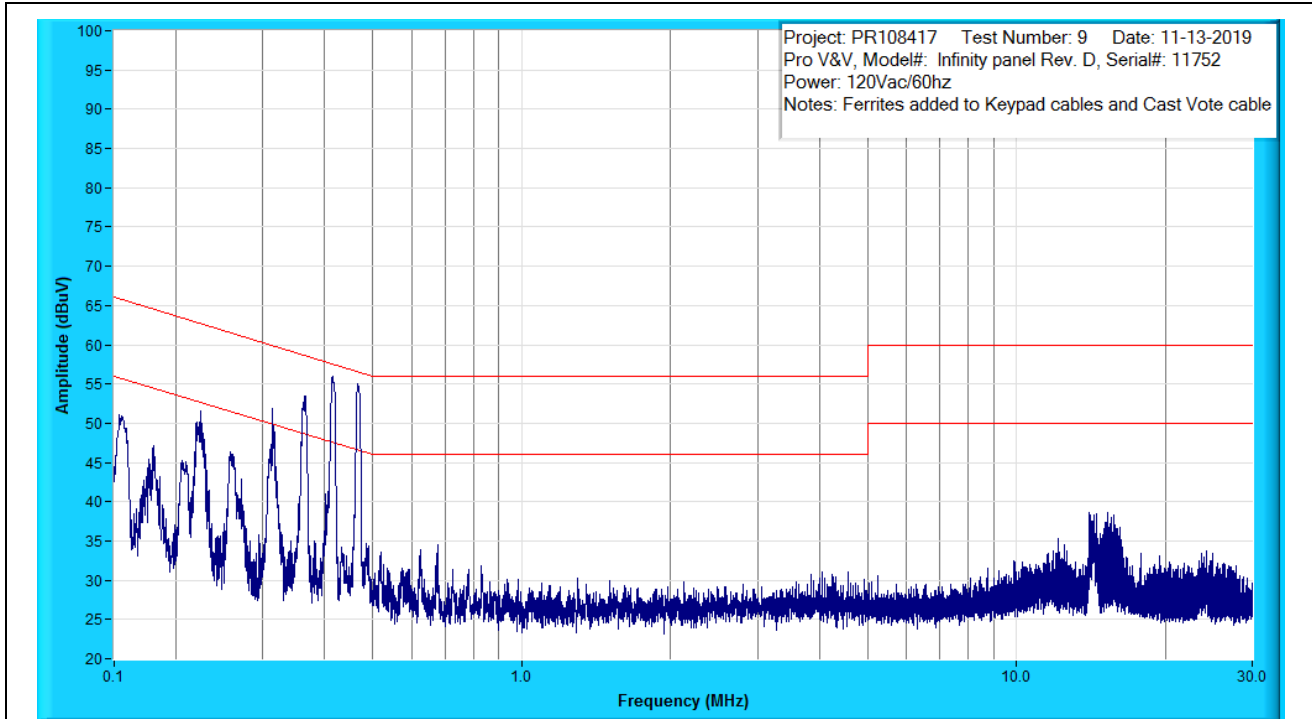


Figure B1: Conducted Emissions Prescan, Line 1, 0.150MHz to 30MHz, Peak Measurements

Conducted Emissions

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. D
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #1
 S/N: Rev. D: 11752
 Printer: 001101
 UPS:
 AK11190890014
 Date: November 13, 2019

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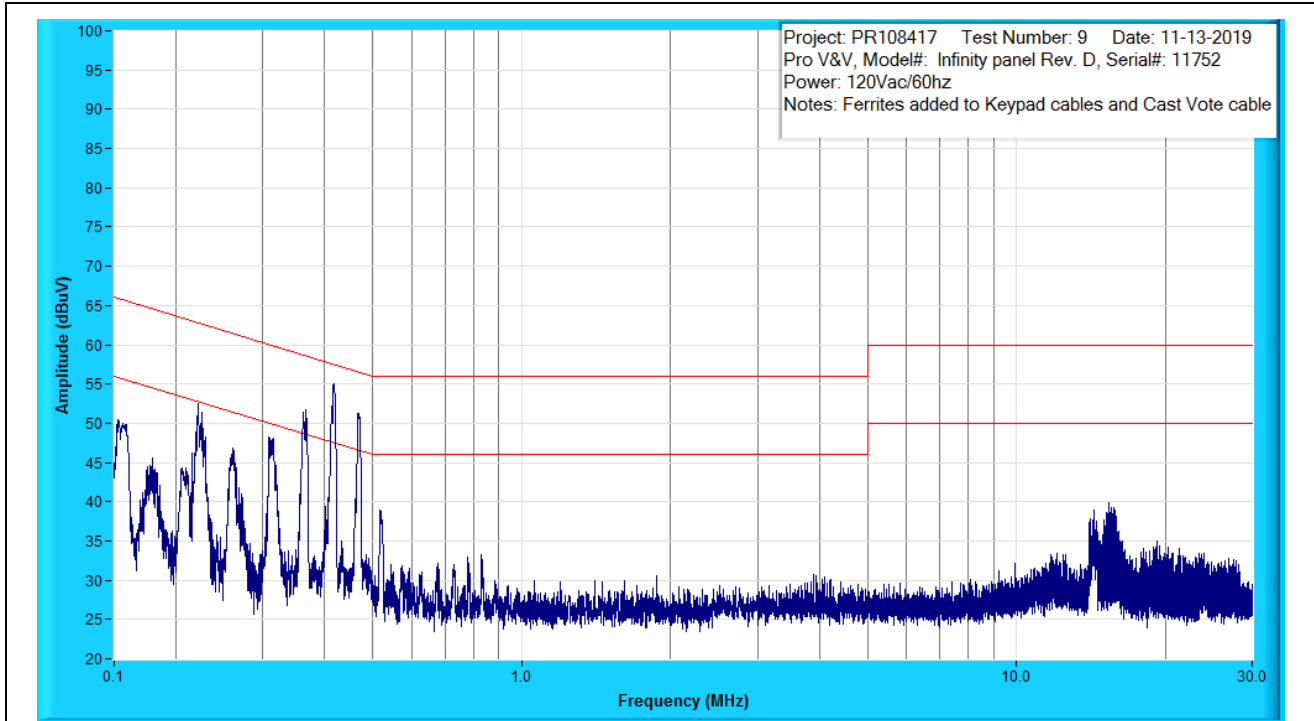


Figure B2: Conducted Emissions Prescan, Neutral, 0.150MHz to 30MHz, Peak Measurements

Conducted Emissions

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. D
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #1
 S/N: Rev. D: 11752
 Printer: 001101
 UPS:
 AK11190890014
 Date: November 13, 2019

PR108417-22-CE.doc

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Figure B3: Conducted Emissions Test Setup – Front Side

Conducted Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. D
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. D: 11752
Printer: 001101
UPS: AK11190890014
Date: November 13, 2019

PR108417-22-CE.doc

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Figure B4: Conducted Emissions Test Setup – Right Side

Conducted Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. D
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSF 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. D: 11752
Printer: 001101
UPS: AK11190890014
Date: November 13, 2019

PR108417-22-CE.doc

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Figure B5: Conducted Emissions Test Setup – Back Side

Conducted Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. D
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. D: 11752
Printer: 001101
UPS:
AK11190890014
Date: November 13, 2019

PR108417-22-CE.doc

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Figure B6: Conducted Emissions Test Setup – Left Side

Conducted Emissions

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	Infinity Panel Rev. D Microvote VVPAT Printer UPS	S/N:	Rev. D: 11752 Printer: 001101 UPS: AK11190890014
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 13, 2019

PR108417-22-CE.doc FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1017	Pacific Power	TMX 140	0256	4 kVA, 50 Hz Power Source	NA	NA
1039	Fluke	83-3	69811227	Multimeter/Frequency Meter	02/14/2019	02/14/2020
1200	Agilent Technology	11947A	3107A03807	Transient Limiter, 9 kHz to 200 MHz	02/14/2019	02/14/2020
1213	Solar	7930-100	885210	High Pass Filter, fc: 100kHz, -100dB @ 33kHz	02/22/2019	02/22/2020
1332	Com-Power	CGC-510	311636	Conducted Comb Generator	NA	NA
1341	Hewlett Packard	85650A	2811A01351	Quasi-Peak Adapter	01/08/2019	01/08/2020
1343	Hewlett Packard	8566B	2403A08410	Spectrum Analyzer Display	03/22/2019	03/22/2020
1344	Hewlett Packard	8566B	2611A02676	Spectrum Analyzer with 2403A08410	03/22/2019	03/22/2020
1345	Hewlett Packard	85685A	2901A00865	RF Preselector	01/08/2019	01/08/2020
1559	EMCI	EMCI, 2 Phase LISN	13	150 kHz to 30 MHz, 277 Vac/400 Vdc, 50/60 Hz, 16 A	04/12/2019	04/12/2020
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA
1903	EXTECH	445703	1218-2	Hygrometer-Thermometer	06/10/2019	06/10/2020



5.2.2 Rev E

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	Infinity Panel Rev. E Microvote VVPAT Printer UPS	S/N:	Rev. E:14008 Printer: 001100 UPS: SZ1904500003
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 11, 2019
Temperature:	27°C	Humidity:	22%
Input Voltage:	120Vac/60Hz	Pressure:	850 mb
Configuration of Unit:	Casting Votes, Printing Ballots, Audio Playing		
Test Engineer:	Mike Tidquist		

PR108417-22-CE.doc

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Type	Frequency (MHz)	Level (dBuV)	Transducer (dB)	Gain / Loss (dB)	Final (dBuV)	Test Point	Margin: FCC Class B AV (dB)	Margin: FCC Class B QP (dB)
AV	0.235	26.1	-0.9	16.1	41.3	Line 1	12.31	-
QP	0.235	31.3	-0.9	16.1	46.5	Line 1	-	17.09
AV	0.295	25.8	-0.7	16.1	41.1	Line 1	10.75	-
QP	0.295	30.6	-0.7	16.1	46.0	Line 1	-	15.91
AV	0.353	27.5	-0.6	16.1	43.0	Line 1	7.21	-
QP	0.353	33.0	-0.6	16.1	48.5	Line 1	-	11.66
AV	0.394	31.0	-0.6	16.1	46.5	Line 1	2.50	-
QP	0.394	35.8	-0.6	16.1	51.4	Line 1	-	7.66
AV	0.412	29.4	-0.5	16.1	44.9	Line 1	3.62	-
QP	0.412	34.9	-0.5	16.1	50.4	Line 1	-	8.08
AV	1.349	22.8	-0.3	16.1	38.6	Line 1	7.44	-
QP	1.349	26.0	-0.3	16.1	41.8	Line 1	-	14.22
AV	8.841	11.1	-0.3	16.1	26.8	Line 1	23.15	-
QP	8.841	30.9	-0.3	16.1	46.6	Line 1	-	13.35
AV	0.237	22.5	-0.9	16.1	37.7	Neutral	15.78	-
QP	0.237	28.2	-0.9	16.1	43.5	Neutral	-	20.03
AV	0.355	24.1	-0.6	16.1	39.6	Neutral	10.51	-
QP	0.355	30.1	-0.6	16.1	45.6	Neutral	-	14.51
AV	0.379	28.4	-0.6	16.1	44.0	Neutral	5.49	-
QP	0.379	33.9	-0.6	16.1	49.4	Neutral	-	10.09
AV	0.398	29.2	-0.6	16.1	44.8	Neutral	4.13	-
QP	0.398	34.2	-0.6	16.1	49.8	Neutral	-	9.16
AV	1.411	20.4	-0.3	16.1	36.2	Neutral	9.83	-
QP	1.411	25.7	-0.3	16.1	41.5	Neutral	-	14.48
AV	8.903	10.2	-0.3	16.1	25.9	Neutral	24.05	-
QP	8.903	27.9	-0.3	16.1	43.7	Neutral	-	16.26
AV	29.030	7.0	-0.5	16.3	22.8	Neutral	27.16	-
QP	29.030	15.0	-0.5	16.3	30.9	Neutral	-	29.14

The highest emission measured was at **0.394 MHz**, which was **2.50 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 9 kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 9 kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 9 kHz, VBW is 10 Hz
- The “field strength” (FS) emissions level is attained by adding the received amplitude measured (RA), Antenna factor (AF), and cable factor (CF) minus the amplifier gain (AG). $FS = RA + AF + CF - AG$. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: $49.6 \text{ dBuV} + 11.4 \text{ dB/m} - 28.8 \text{ dB (CF/AG)} = 32.2 \text{ dBuV/m}$. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “TestPoint” indicates which AC or DC input power line or which I/O cable the measurement was made on.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 9 kHz, and the VBW set to 3 MHz

Conducted Emissions

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. E
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #1
 S/N: Rev. E:14008
 Printer: 001100
 UPS: SZ1904500003
 Date: November 11, 2019

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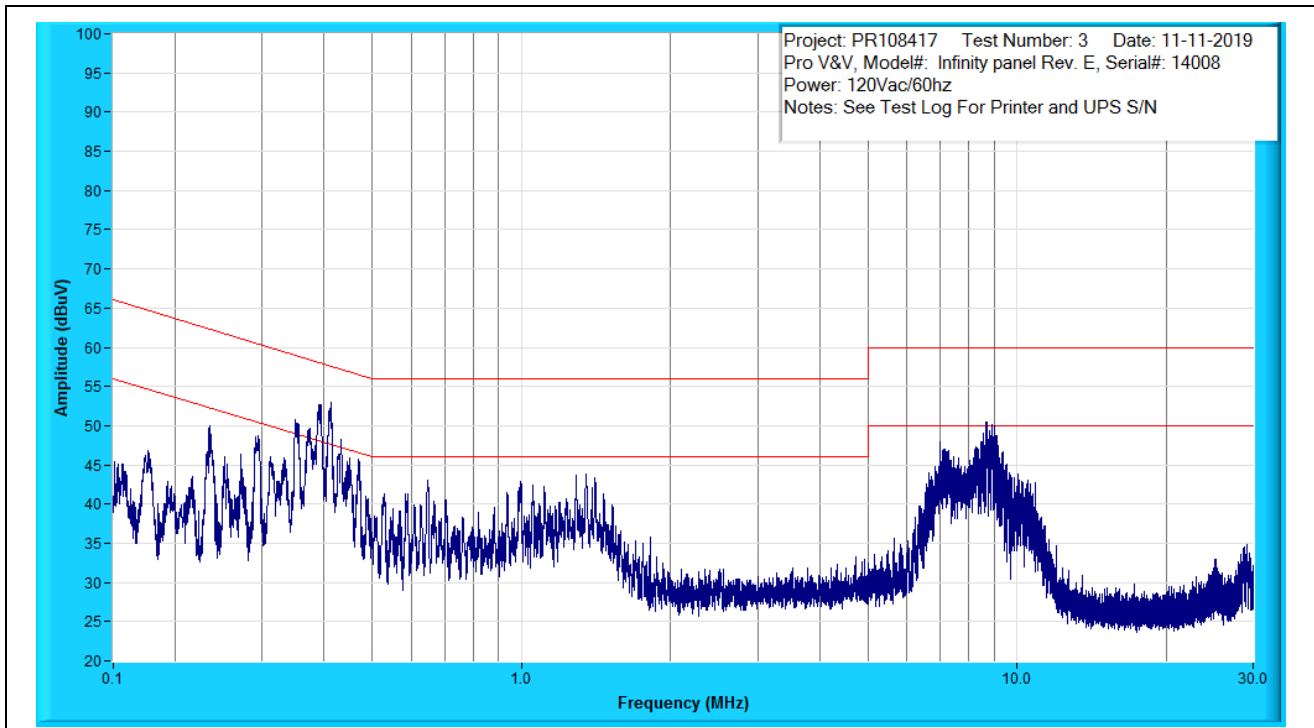


Figure B1: Conducted Emissions Prescan, Line 1, 0.150MHz to 30MHz, Peak Measurements

Conducted Emissions

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. E
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #1
 S/N: Rev. E:14008
 Printer: 001100
 UPS: SZ1904500003
 Date: November 11, 2019

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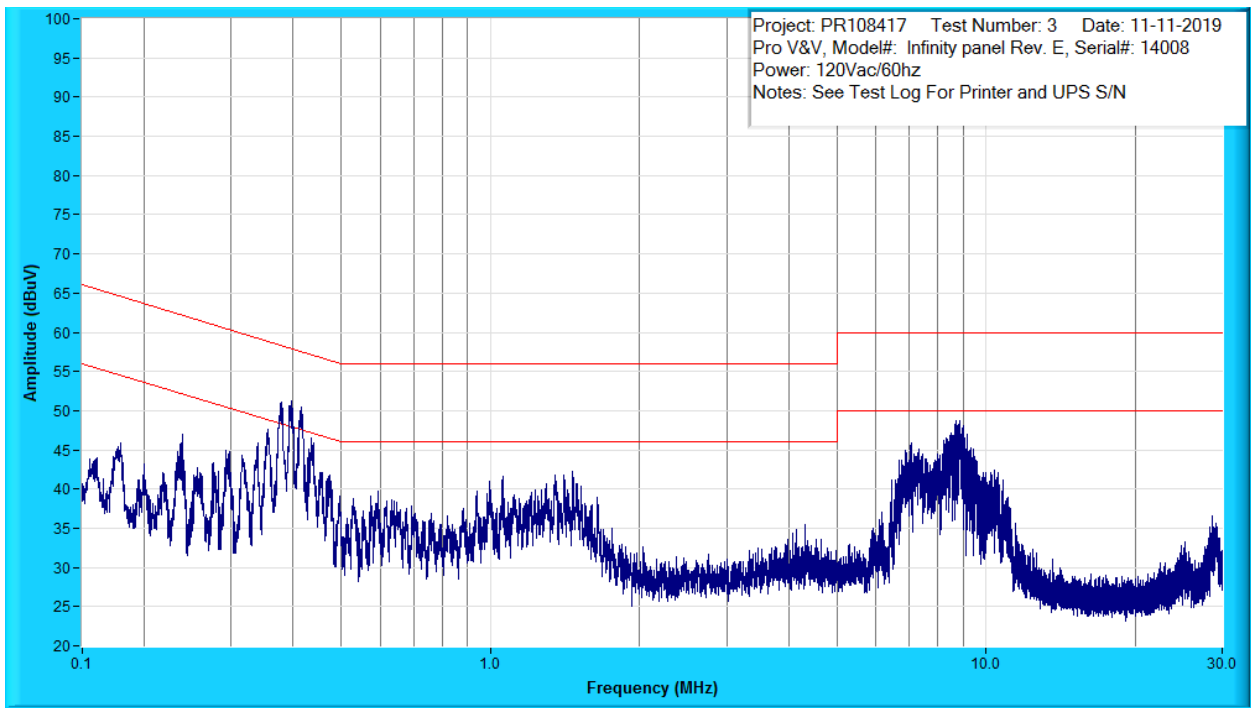


Figure B2: Conducted Emissions Prescan, Neutral, 0.150MHz to 30MHz, Peak Measurements

Conducted Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. E:14008
Printer: 001100
UPS: SZ1904500003
Date: November 11, 2019

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Figure B3: Conducted Emissions Test Setup – Front Side

Conducted Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. E:14008
Printer: 001100
UPS: SZ1904500003
Date: November 11, 2019

PR108417-22-CE.doc

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Figure B4: Conducted Emissions Test Setup – Right Side

Conducted Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. E:14008
Printer: 001100
UPS: SZ1904500003
Date: November 11, 2019

PR108417-22-CE.doc

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Figure B5: Conducted Emissions Test Setup – Back Side

Conducted Emissions

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #1
S/N: Rev. E:14008
Printer: 001100
UPS: SZ1904500003
Date: November 11, 2019

PR108417-22-CE.doc

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Figure B6: Conducted Emissions Test Setup – Left Side



Conducted Emissions

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #1
Model:	Infinity Panel Rev. E Microvote VVPAT Printer UPS	S/N:	Rev. E:14008 Printer: 001100 UPS: SZ1904500003
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 11, 2019
PR108417-22-CE.doc			FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1017	Pacific Power	TMX 140	0256	4 kVA, 50 Hz Power Source	NA	NA
1039	Fluke	83-3	69811227	Multimeter/Frequency Meter	02/14/2019	02/14/2020
1200	Agilent Technology	11947A	3107A03807	Transient Limiter, 9 kHz to 200 MHz	02/14/2019	02/14/2020
1213	Solar	7930-100	885210	High Pass Filter, fc: 100kHz, -100dB @ 33kHz	02/22/2019	02/22/2020
1332	Com-Power	CGC-510	311636	Conducted Comb Generator	NA	NA
1341	Hewlett Packard	85650A	2811A01351	Quasi-Peak Adapter	01/08/2019	01/08/2020
1343	Hewlett Packard	8566B	2403A08410	Spectrum Analyzer Display	03/22/2019	03/22/2020
1344	Hewlett Packard	8566B	2611A02676	Spectrum Analyzer with 2403A08410	03/22/2019	03/22/2020
1345	Hewlett Packard	85685A	2901A00865	RF Preselector	01/08/2019	01/08/2020
1559	EMCI	EMCI, 2 Phase LISN	13	150 kHz to 30 MHz, 277 Vac/400 Vdc, 50/60 Hz, 16 A	04/12/2019	04/12/2020
1591	EMCI	CEAS	V4.1.1	Commercial Emissions Automation Software - 10 M#1	NA	NA
1903	EXTECH	445703	1218-2	Hygrometer-Thermometer	06/10/2019	06/10/2020



5.2.3 Rev E (New UPS)

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #2
Model:	Infinity Panel Rev. E Microvote VVPAT Printer UPS	S/N:	Rev. E:14008 Printer: 001100 UPS: 3B1925X63265
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 19, 2019
Temperature:	27°C	Humidity:	22%
Input Voltage:	120Vac/60Hz	Pressure:	832 mb
Configuration of Unit:	Casting Votes, Printing Ballots, Audio Playing		
Test Engineer:	Kevin Johnson		

PR108417-22-CE.doc

FR0100

Type	Frequency (MHz)	Level (dBuV)	Transducer (dB)	Gain / Loss (dB)	Final (dBuV)	Test Point	Margin: FCC Class B AV (dB)	Margin: FCC Class B QP (dB)
AV	0.274	5.0	0.0	16.1	21.2	Line 1	31.29	-
QP	0.274	11.1	0.0	16.1	27.3	Line 1	-	35.21
AV	0.341	4.5	0.0	16.1	20.6	Line 1	29.90	-
QP	0.341	9.8	0.0	16.1	26.0	Line 1	-	34.58
AV	0.407	6.3	0.0	16.1	22.4	Line 1	26.24	-
QP	0.407	13.1	0.0	16.1	29.2	Line 1	-	29.48
AV	0.439	6.7	0.0	16.1	22.8	Line 1	24.98	-
QP	0.439	11.8	0.0	16.1	27.9	Line 1	-	29.84
AV	0.460	5.5	0.0	16.1	21.6	Line 1	25.50	-
QP	0.460	12.0	0.0	16.1	28.2	Line 1	-	28.96
AV	2.588	3.0	0.1	16.3	19.3	Line 1	26.68	-
QP	2.588	7.7	0.1	16.3	24.0	Line 1	-	32.00
AV	0.341	5.2	0.0	16.1	21.3	Neutral	29.25	-
QP	0.341	10.6	0.0	16.1	26.7	Neutral	-	33.80
AV	0.409	7.2	0.0	16.1	23.3	Neutral	25.27	-
QP	0.409	13.9	0.0	16.1	30.0	Neutral	-	28.61
AV	0.439	6.7	0.0	16.1	22.8	Neutral	24.91	-
QP	0.439	12.0	0.0	16.1	28.2	Neutral	-	29.58
AV	0.450	7.5	0.0	16.1	23.6	Neutral	23.81	-
QP	0.450	11.6	0.0	16.1	27.8	Neutral	-	29.68
AV	0.460	7.3	0.0	16.1	23.5	Neutral	23.67	-
QP	0.460	13.0	0.0	16.1	29.1	Neutral	-	28.02
AV	0.474	6.0	0.0	16.1	22.2	Neutral	24.55	-
QP	0.474	11.9	0.0	16.1	28.0	Neutral	-	28.72

The highest emission measured was at **0.460 MHz**, which was **23.67 dB** below the limit.

- “Type” refers to the type of measurement performed. The type of measurement made is based on the requirements of the particular standard:
 - PK = Peak Measurement: RBW is 9 kHz, VBW is 3 MHz
 - QP = Quasi-Peak Measurement: RBW is 9 kHz, VBW is 3 MHz, and QP Detection is ENABLED
 - AV = Video Average Measurement: RBW is 9 kHz, VBW is 10 Hz
- The “field strength” (FS) emissions level is attained by adding the received amplitude measured (RA), Antenna factor (AF), and cable factor (CF) minus the amplifier gain (AG). $FS = RA + AF + CF - AG$. Final measurements are made with the Azimuth, Polarity, Height, and EUT Cables positioned for maximum radiation. If applicable, cables positions are noted in the test log. (Sample Calculation: $49.6 \text{ dBuV} + 11.4 \text{ dB/m} - 28.8 \text{ dB (CF/AG)} = 32.2 \text{ dBuV/m}$. **Important Note:** This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.)
- The “TestPoint” indicates which AC or DC input power line or which I/O cable the measurement was made on.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The PRESCAN is a peak measurement and is performed with the RBW set to 9 kHz, and the VBW set to 3 MHz

Conducted Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. E
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #2
 S/N: Rev. E:14008
 Printer: 001100
 UPS: 3B1925X63265
 Date: November 19, 2019

PR108417-22-CE.doc

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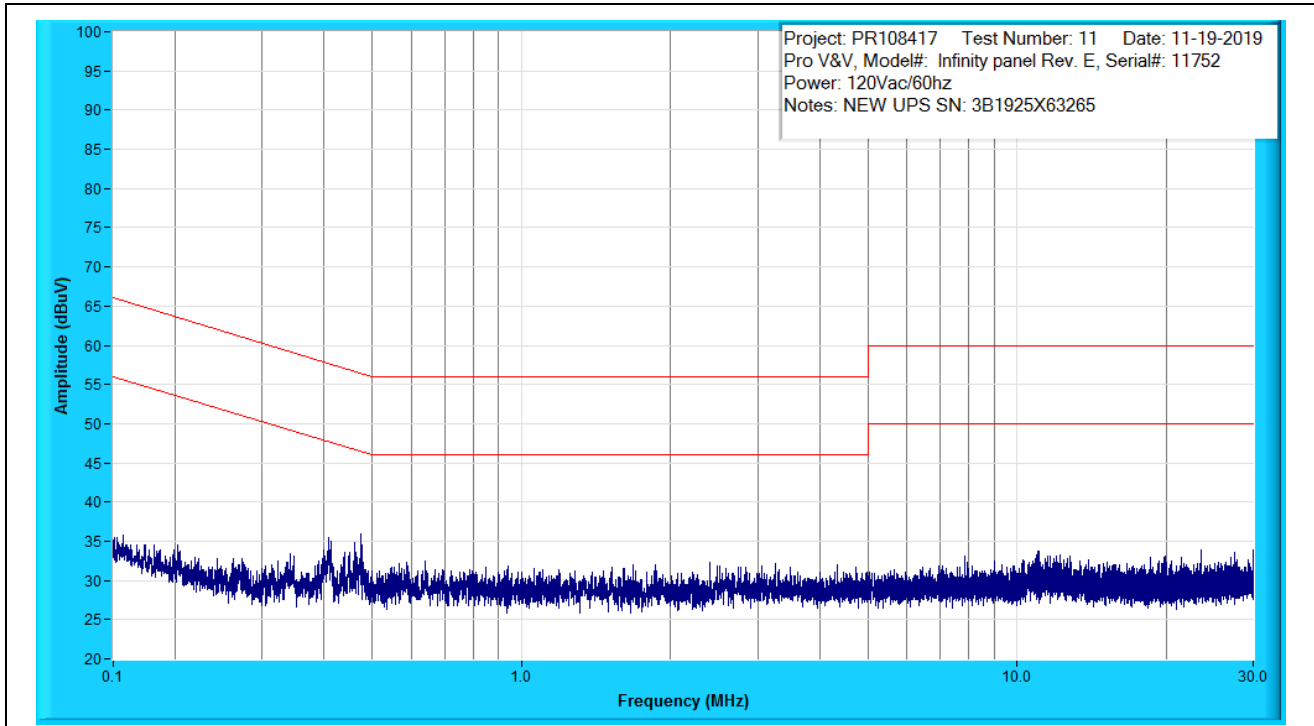


Figure B1: Conducted Emissions Prescan, Line 1, 0.150MHz to 30MHz, Peak Measurements

Conducted Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
 Customer Representative: Michael Walker
 Model: Infinity Panel Rev. E
 Microvote VVPAT Printer
 UPS
 Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
 Test Area: 10M #2
 S/N: Rev. E:14008
 Printer: 001100
 UPS: 3B1925X63265
 Date: November 19, 2019

PR108417-22-CE.doc

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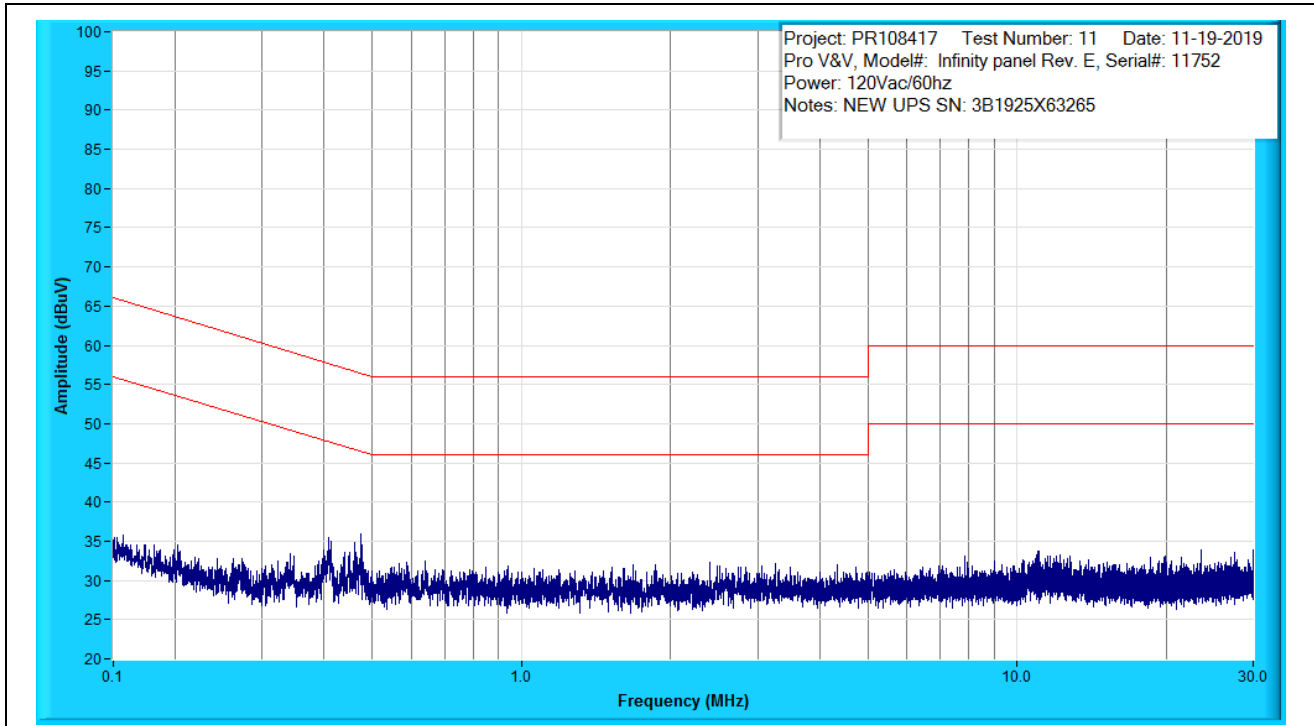


Figure B2: Conducted Emissions Prescan, Neutral, 0.150MHz to 30MHz, Peak Measurements

Conducted Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #2
S/N: Rev. E:14008
Printer: 001100
UPS: 3B1925X63265
Date: November 19, 2019

PR108417-22-CE.doc

FR0100



Figure B3: Conducted Emissions Test Setup – Front Side

Conducted Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #2
S/N: Rev. E:14008
Printer: 001100
UPS: 3B1925X63265
Date: November 19, 2019

PR108417-22-CE.doc

FR0100



Figure B4: Conducted Emissions Test Setup – Right Side

Conducted Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #2
S/N: Rev. E:14008
Printer: 001100
UPS: 3B1925X63265
Date: November 19, 2019

PR108417-22-CE.doc

FR0100



Figure B5: Conducted Emissions Test Setup – Back Side

Conducted Emissions, FCC Part 15

Manufacturer: Pro V&V/Microvote
Customer Representative: Michael Walker
Model: Infinity Panel Rev. E
Microvote VVPAT Printer
UPS
Standard Referenced: FCC Part 15 Class B (VVSG 4.1.2.9)

Project Number: PR108417
Test Area: 10M #2
S/N: Rev. E:14008
Printer: 001100
UPS: 3B1925X63265
Date: November 19, 2019

PR108417-22-CE.doc

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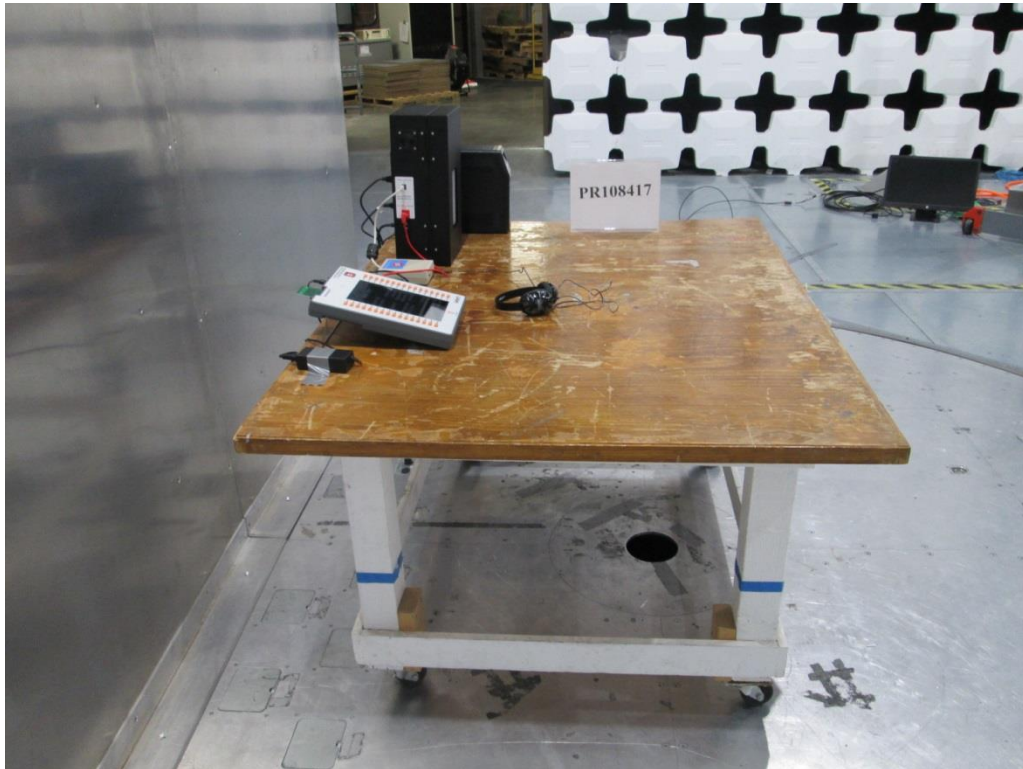


Figure B6: Conducted Emissions Test Setup – Left Side

Conducted Emissions, FCC Part 15

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Customer Representative:	Michael Walker	Test Area:	10M #2
Model:	Infinity Panel Rev. E Microvote VVPAT Printer UPS	S/N:	Rev. E:14008 Printer: 001100 UPS: 3B1925X63265
Standard Referenced:	FCC Part 15 Class B (VVSG 4.1.2.9)	Date:	November 19, 2019

PR108417-22-CE.doc FR0100

Test Equipment List

ID Number	Manufacturer	Model #	Serial #	Description	Cal Date	Cal Due
1396	CIR Enterprises	10m Chamber #2	002	10m Chamber with 4m turntable	03/29/2018	03/29/2020
1556	EMCI	EMCI, 2 Phase LISN	10	150 kHz to 30 MHz, 277 Vac/400 Vdc, 50/60 Hz, 16 A	03/05/2019	03/05/2020
1590	Solor Electronics Company	7930-100	7930160101	High Pass Filter	03/29/2019	03/29/2020
1201	Agilent Technology	11947A	3107A03805	Transient Limiter, 9 kHz to 200 MHz	03/29/2019	03/29/2020
1341	Hewlett Packard	85650A	2811A01351	Quasi-Peak Adapter	01/08/2019	01/08/2020
1343	Hewlett Packard	8566B	2403A08410	Spectrum Analyzer Display	03/22/2019	03/22/2020
1344	Hewlett Packard	8566B	2611A02676	Spectrum Analyzer with 2403A08410	03/22/2019	03/22/2020
1345	Hewlett Packard	85685A	2901A00865	RF Preselector	01/08/2019	01/08/2020
1592	EMCI	CEAS	V4.1.2	Commercial Emissions Automation Software - 10M # 2	NA	NA
1900	EXTECH	445703	1218	Hygrometer-Thermometer	06/10/2019	06/10/2020



6.0 Test Log

Manufacturer:	Pro V&V/Microvote	Project Number:	PR108417
Model:	Infinity Panel Rev. D Microvote VVPAT Printer UPS Infinity Panel Rev. E Microvote VVPAT Printer UPS	S/N:	Rev. D: 11752 Printer: 001101 UPS: AK11190890014 Rev. E:14008 Printer: 001100 UPS: SZ1904500003
Customer Representative:	Michael Walker		
Standard Referenced:	FCC Part 15,		

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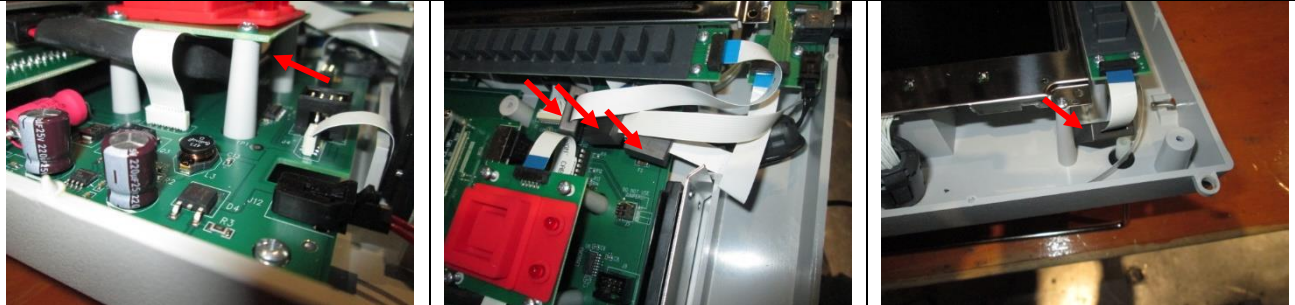
10m Emissions

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
---	6002	November 11, 2019 0800-1000	Initial Product Setup Time		2.0	Complete	MT
RE	1344	1000	Test #1: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz Rev. E		---	Pass	MT
RE		1230	Test #2: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz Rev. D		2.5	Fail	MT
		1230-1300	Lunch		---	---	MT
CE	2342	1300	Test #3: Conducted Emissions, 150 kHz - 30 MHz (4.1.2.9) 120 VAC / 60 Hz Rev. E		---	Pass	MT
CE		1430	Test #4: : Conducted Emissions, 150 kHz - 30 MHz (4.1.2.9) 120 VAC / 60 Hz Rev. D		1.5	Fail	MT
Time below will be COS 1, RE/CE trouble shooting							
RE	6004	November 13, 2019 0800	Test #5: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz Rev. D Remove Front Panel Serial Port ribbon cable Failed @ 566.619 MHz, continue trouble shooting		---	Fail	MT
RE			Replace ribbon cable, add ferrite to Keyboard Ribbon cable Measure 566MHz Fails Add 2 nd ferrite to another cable Remeasure fail Add 3 rd Ferrite to Cast Vote cable, Remeasure Pass Remove 2 ferrites from keyboard cables. Measure pass		---	---	MT

10m Emissions

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
RE			Test #6: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz Rev. D Ferrite added to Cast Vote Ribbon cable Failed @ 500 MHz		--	---	MT
RE		1200	Test #7: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz Rev. D Ferrites added to all 4 Keypad ribbon cables and cast vote cable		4.0	Complete	MT

**Modification For Compliance:
Ferrites added to Keypad Ribbon Cables, And Cast Vote cable**



RE	6004	1230-1400	Test #7: Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz Rev. D		1.5	Pass	MT
CE		1400-1500	Test #8: Conducted Emissions, 150 kHz - 30 MHz (4.1.2.9) 120 VAC / 60 Hz Rev. D		1.0	Pass	MT
RE	COS	November 19, 2019 1330-1530	Test #9: Conducted Emissions, 150 kHz - 30 MHz Radiated Emissions, 30 MHz - 1 GHz, 8 Rads, 4 Heights, 3 sec. dwell, ref. level = 80 dBuV, 10 meter distance (4.1.2.9) 120 VAC / 60 Hz		2.0	Pass	KJ
CE	COS	1530-1630	Test #10: Conducted Emissions, 150 kHz - 30 MHz (4.1.2.9) 120 VAC / 60 Hz		1.0	Pass	KJ



End of Report