


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

Prepared For

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Performed By

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Revision History

Rev.	Description	Issue Date
0	Initial Release	05/17/2022

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3.0 Introduction

This document presents the test procedures used and the results obtained during the performance of an Electromagnetic Interference (EMI) test program. The test program was conducted to assess the ability of the specified Equipment Under Test (EUT) to successfully satisfy the requirements listed in Section 2.0.

2.0 References

The following references listed below form a part of this document to the extent specified herein.

- Test Specification: FCC Part 15
- Pro V&V, Inc. Purchase Order(s) 2022-008, dated 03/15/2022
- National Technical Systems (NTS) Quote(s) OP0594543, dated 09/07/2021
- ISO/IEC 17025:2017€ *General Requirements for the Competence of Testing and Calibration Laboratories*, dated 11/1/2017

3.0 Product Selection and Description

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

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

Item	Qty.	Name/Description	Serial Number
1	1	DS950	DS9521060541
2	1	DS450	DS4521063686

3.1 Security Classification

Non-classified

4.0 General Test Requirements

4.1 Test Equipment

The instrumentation used in the performance of these tests is periodically calibrated and standardized within manufacturer's rated accuracies and are traceable to the National Institute of Standards and Technology. The calibration procedures and practices are in accordance with ANSI/NCSL Z540-1 and ISO 17025:2017. Certification of calibration is on file subject to inspection by authorized personnel.

4.2 Measurement Uncertainties

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

Table 4.2-1: Measurement Uncertainties

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



5.0 Test Descriptions and Results

Table 5.0-1: Summary of Test Information & Results

Section	Test	Specification	Test Facility	Test Date	Model #	Serial #	Test Result
5.1	Radiated Emissions	FCC Part 15	Longmont	02/07/2022 - 02/28/2022	DS950 DS450	DS9521060541 DS4521063686	Anomalies Noted NOD Config#1
5.2	Conducted Emissions	FCC Part 15	Longmont	02/15/2022 - 02/28/2022	DS950 DS450	DS9521060541 DS4521063686	Complies

5.1 Radiated Emissions

5.1.1 Test Procedure

FCC Part 15

5.1.2 Test Result

The DS950 and DS450 were subjected to the Radiated Emissions Test per FCC Part 15. Anomalies were noted on Configuration 1 (DS950 only), a replacement test item was brought in, S/N DS9521060541 and the test item met the specification requirements for Radiated Emissions (Ref. NOD Config #1)

5.1.3 Test Datasheets

Radiated Emissions, FCC Part 15

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	10 Meter #2
Model:	DS950	S/N:	DS9521060541
	Printer		U64185F1N343092
	UPS		CXXLU2000319DS4
Standard Referenced:	EAC 2005 VVSG	Date:	February 2, 2022
Temperature:	17°C	Humidity:	15%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		

RE PR145960.doc

FR0100

Radiated Emissions-Quasi-Peak Data Table					
Vertical					
Frequency (MHz)	Amplitude (dBµV/m)	Quasi-peak Limit (dBµV/m)	Delta to Limit (dB)	EUT Azimuth (degrees)	Antenna Height (cm)
64.92	21.9	30	-8.1	289	325
324.88	28.8	37	-8.2	251	304
328.437	14.4	37	-22.6	71	400
368.853	15.2	37	-21.8	0	400
455.83	24	37	-13	210	174
518.557	28.8	37	-8.2	208	400
558.65	18.5	37	-18.5	0	195

Radiated Emissions, FCC Part 15

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	10 Meter #2
Model:	DS950	S/N:	DS9521060541
	Printer		U64185F1N343092
	UPS		CXXLU2000319DS4
Standard Referenced:	EAC 2005 VVSG	Date:	February 2, 2022
Temperature:	17°C	Humidity:	15%
Input Voltage:	120Vac/60Hz	Pressure:	837 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		

RE PR145960.doc

FR0100

Radiated Emissions-Quasi-Peak Data Table					
Horizontal					
Frequency (MHz)	Amplitude (dB μ V/m)	Quasi-peak Limit (dB μ V/m)	Delta to Limit (dB)	EUT Azimuth (degrees)	Antenna Height (cm)
413.15	15.2	37	-21.8	0	100
450.01	32.3	37	-4.7	115	100
776.9	20.5	37	-16.5	345	100
827.663	21.1	37	-15.9	344	174
844.477	27.7	37	-9.3	165	194
974.457	30	43.5	-13.5	73	274

The highest emission measured was at 450.01MHz, which was 4.7dB 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: $49.6 \text{ dB}\mu\text{V} + 11.4 \text{ dB/m} - 28.8 \text{ dB (CF/AG)} = 32.2 \text{ dB}\mu\text{V/m}$. **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	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	10 Meter #2
Model:	DS450	S/N:	DS4521063686
	Printer		CXXLT2001791
	UPS		CP1500
Standard Referenced:	EAC 2005 VVSG	Date:	January 31, 2022
Temperature:	19°C	Humidity:	14%
Input Voltage:	120Vac/60Hz	Pressure:	829 mb
Configuration of Unit:	Tabulating Ballots (Configuration #2)		
Test Engineer:	T. Wittig		

RE PR145960.doc

FR0100

Radiated Emissions-Quasi-Peak Data Table					
Vertical					
Frequency (MHz)	Amplitude (dB μ V/m)	Quasi-peak Limit (dB μ V/m)	Delta to Limit (dB)	EUT Azimuth (degrees)	Antenna Height (cm)
95.992	28.9	35.5	-6.6	265	100
111.965	28	35.5	-7.5	282	99
151.573	26.2	35.5	-9.3	236	124
173.237	33.4	35.5	-2.1	116	100
240.005	28.5	37	-8.5	157	99
241.072	28.2	37	-8.8	0	98
453.664	36.9	37	-0.1	0	225
513.513	18.5	37	-18.5	192	277
518.977	27.5	37	-9.5	202	204
519.139	27.9	37	-9.1	185	185
519.85	28.3	37	-8.7	168	172
519.947	27.9	37	-9.1	163	172
520.82	30	37	-7	168	171
568.576	19.6	37	-17.4	30	286

Radiated Emissions, FCC Part 15

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	10 Meter #2
Model:	DS450	S/N:	DS4521063686
	Printer		CXXLT2001791
	UPS		CP1500
Standard Referenced:	EAC 2005 VVSG	Date:	January 31, 2022
Temperature:	19°C	Humidity:	14%
Input Voltage:	120Vac/60Hz	Pressure:	829 mb
Configuration of Unit:	Tabulating Ballots (Configuration #2)		
Test Engineer:	T. Wittig		

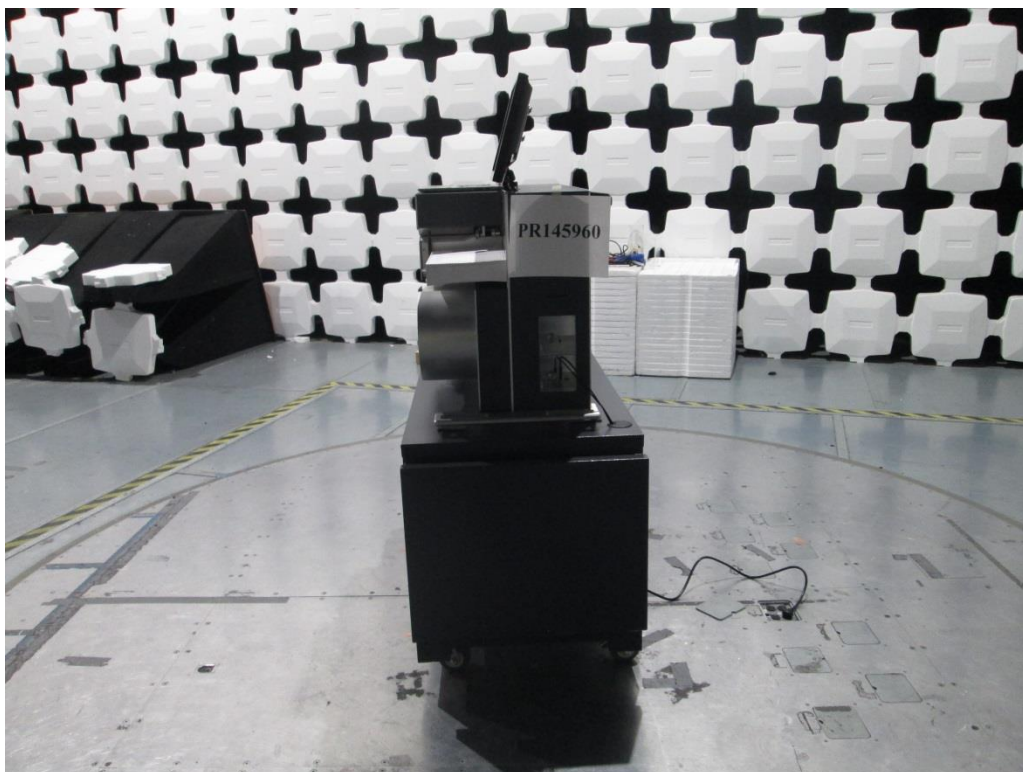
RE PR145960.doc

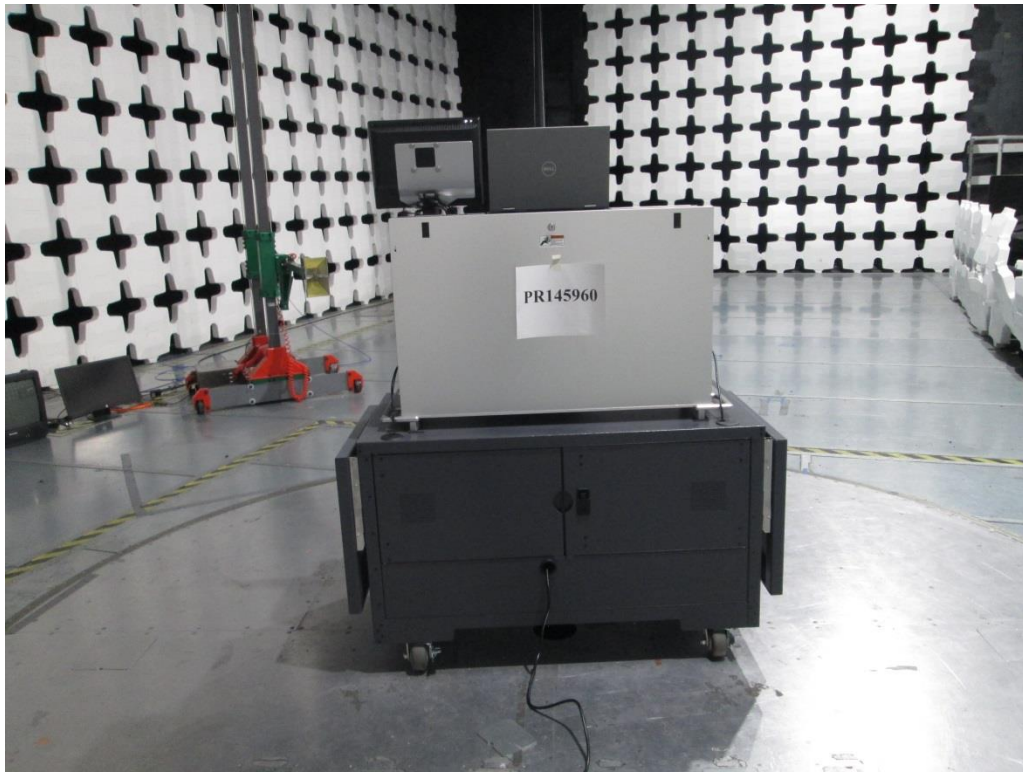
FR0100

Frequency (MHz)	Amplitude (dBμV/m)	Quasi-peak Limit (dBμV/m)	Delta to Limit (dB)	EUT Azimuth (degrees)	Antenna Height (cm)
168.936	22.9	35.5	-12.6	330	347
173.204	31.6	35.5	-3.9	334	340
399.99	19.8	37	-17.2	52	199
424.984	26	37	-11	0	399
453.663	29.9	37	-7.1	79	110
454.763	29.3	37	-7.7	0	124
498.154	18.7	37	-18.3	28	157
529.97	35.3	37	-1.7	321	123
530.293	35	37	-2	325	116
781.265	31.5	37	-5.5	142	376
906.298	29.6	37	-7.4	118	209

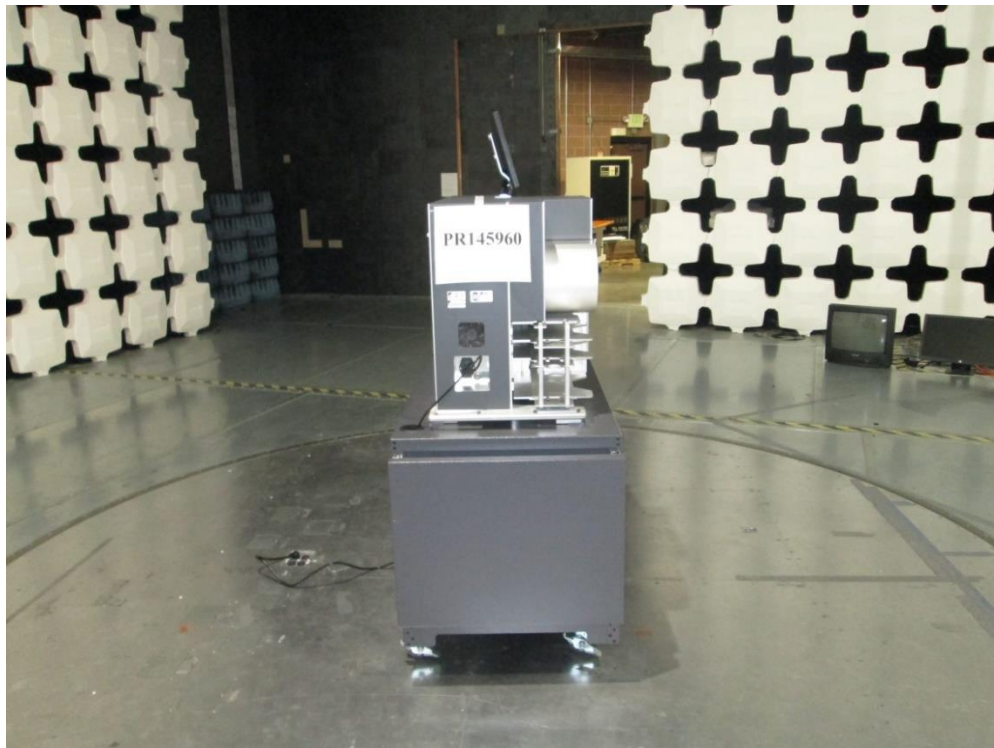
The highest emission measured was at 453.664 MHz, which was 0.1dB below the limit.

- “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)

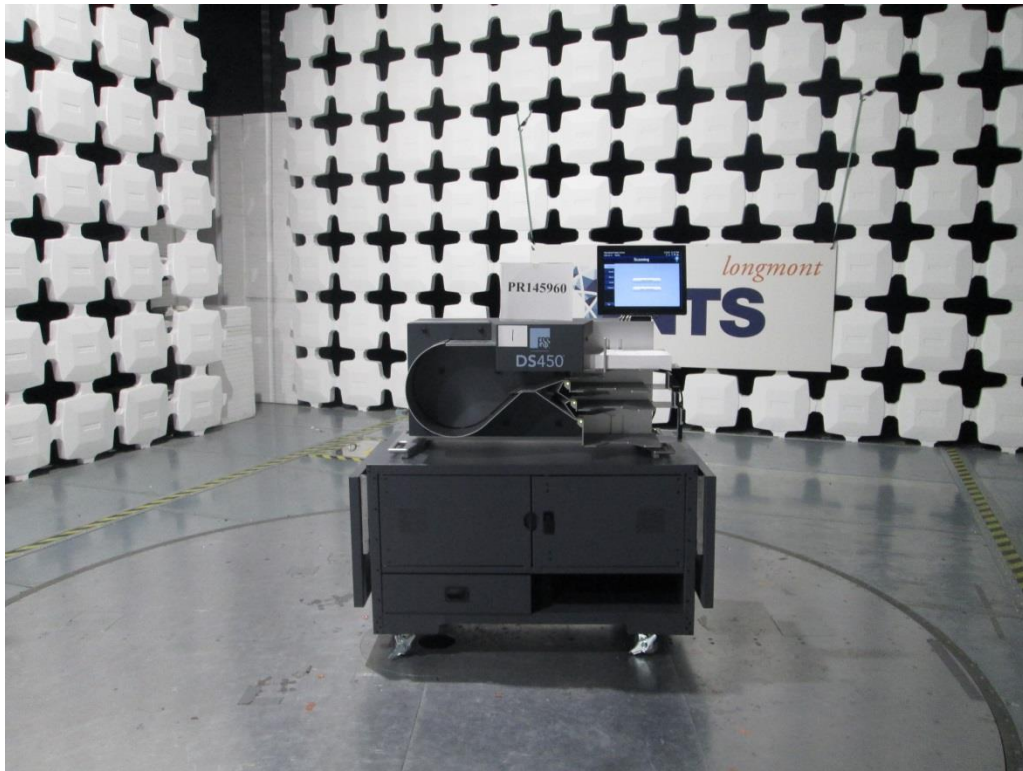
5.1.4 Test Photographs**Radiated Emissions Test Setup – Front Side (Config #1)****Radiated Emissions Test Setup –Right Side (Config #1)**



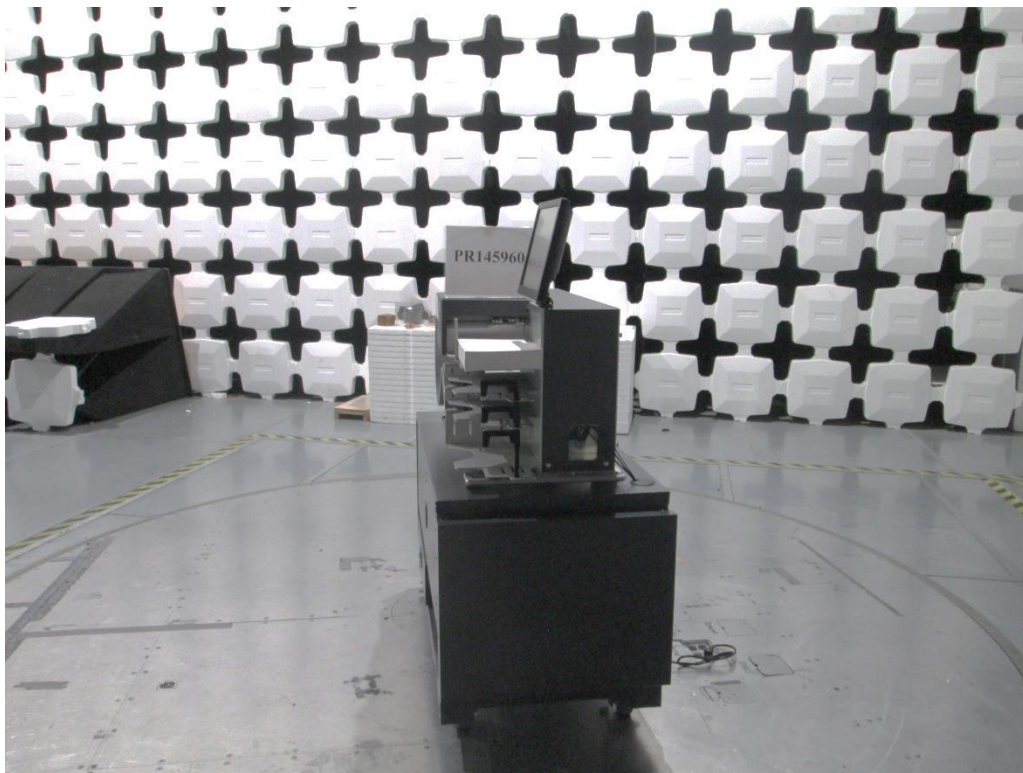
Radiated Emissions Test Setup – Back Side (Config #1)



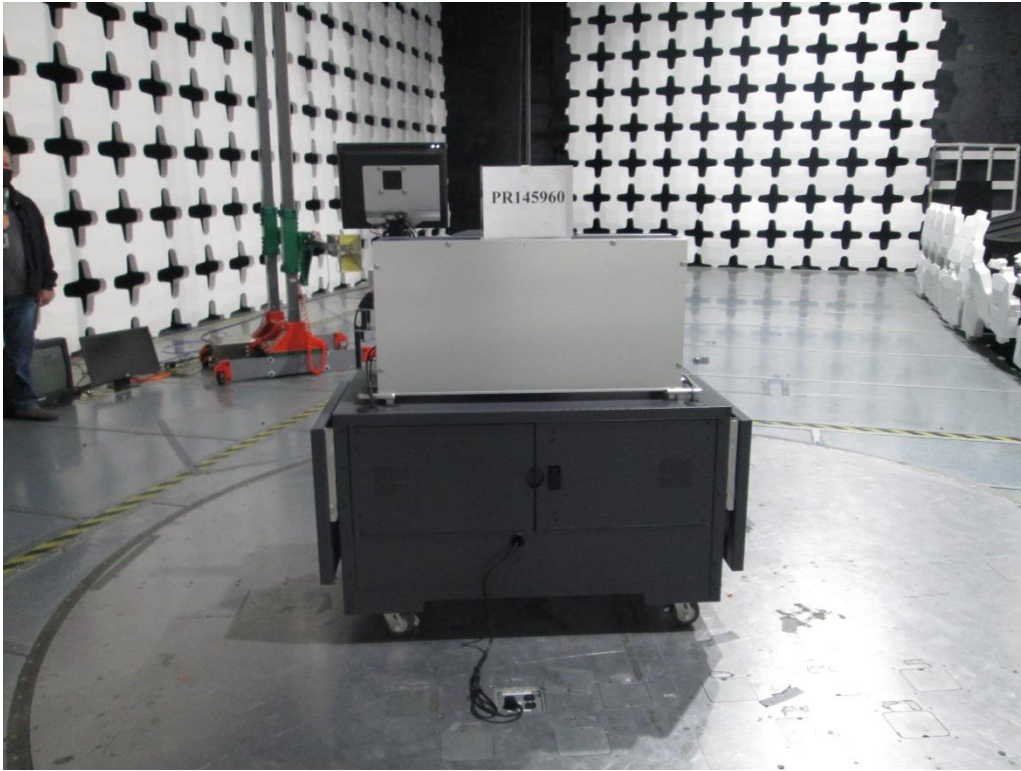
Radiated Emissions Test Setup – Left Side (Config #1)



Radiated Emissions Test Setup – Front Side (Config #2)



Radiated Emissions Test Setup –Right Side (Config #2)

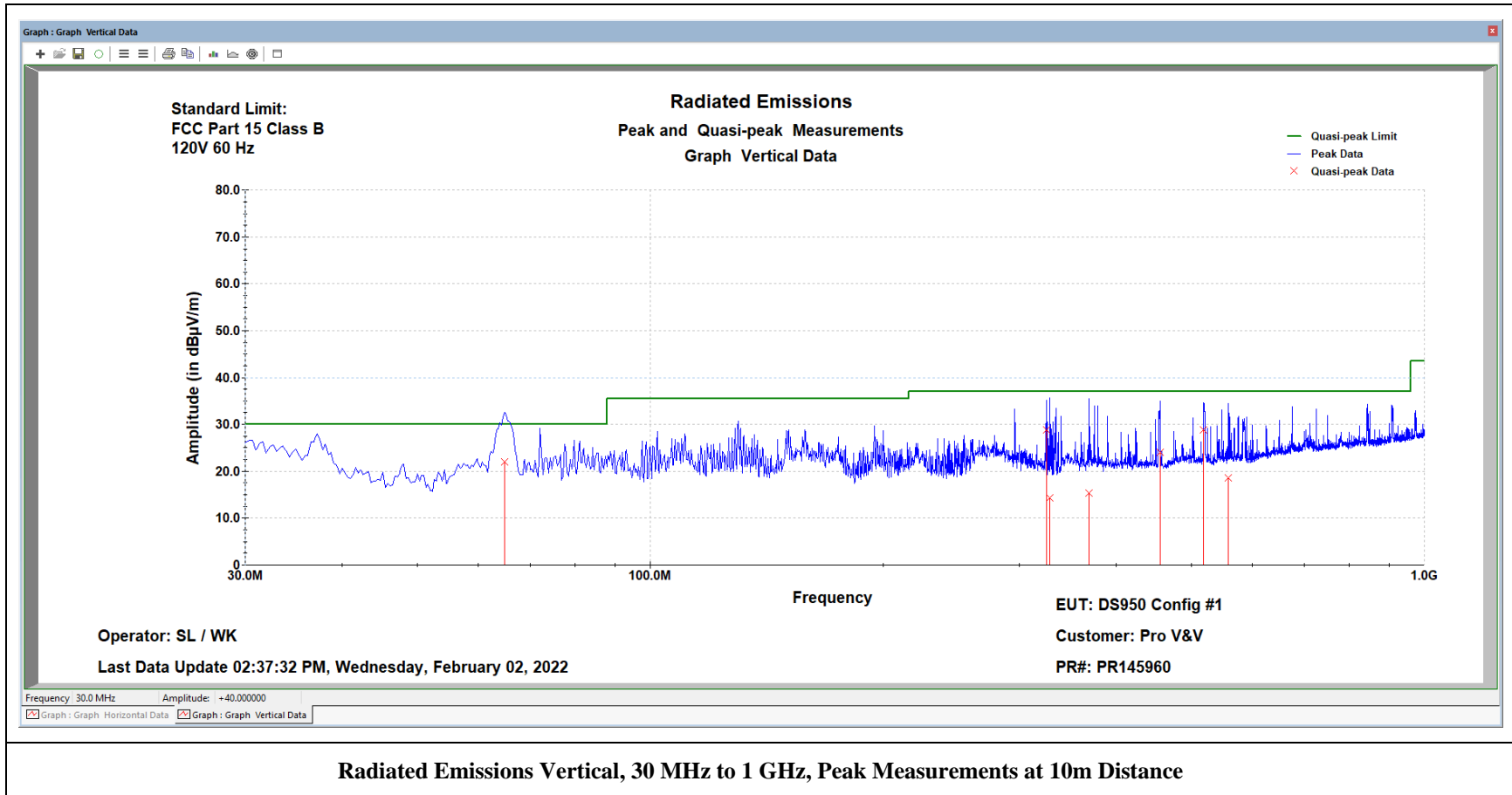


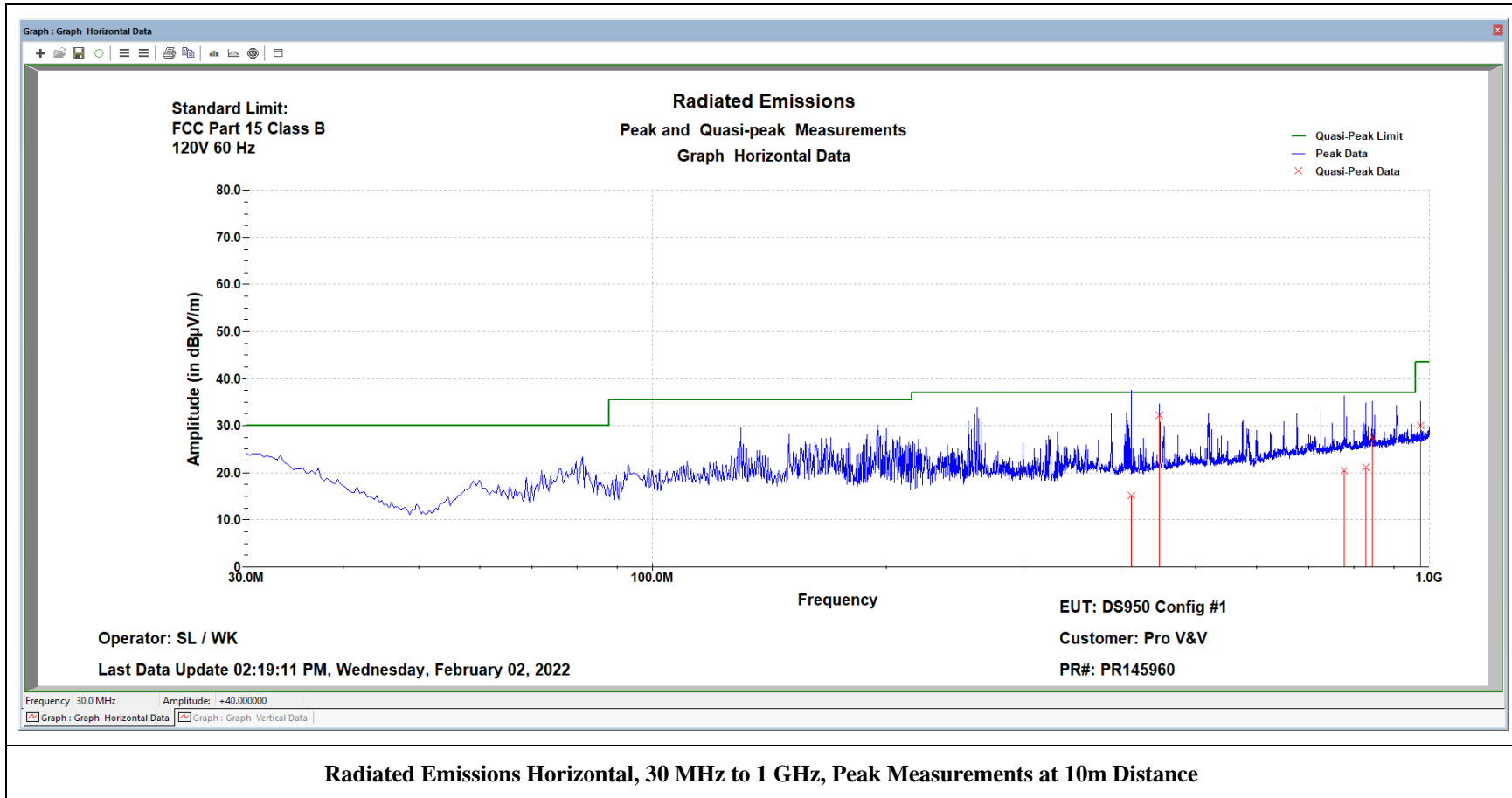
Radiated Emissions Test Setup – Back Side (Config #2)

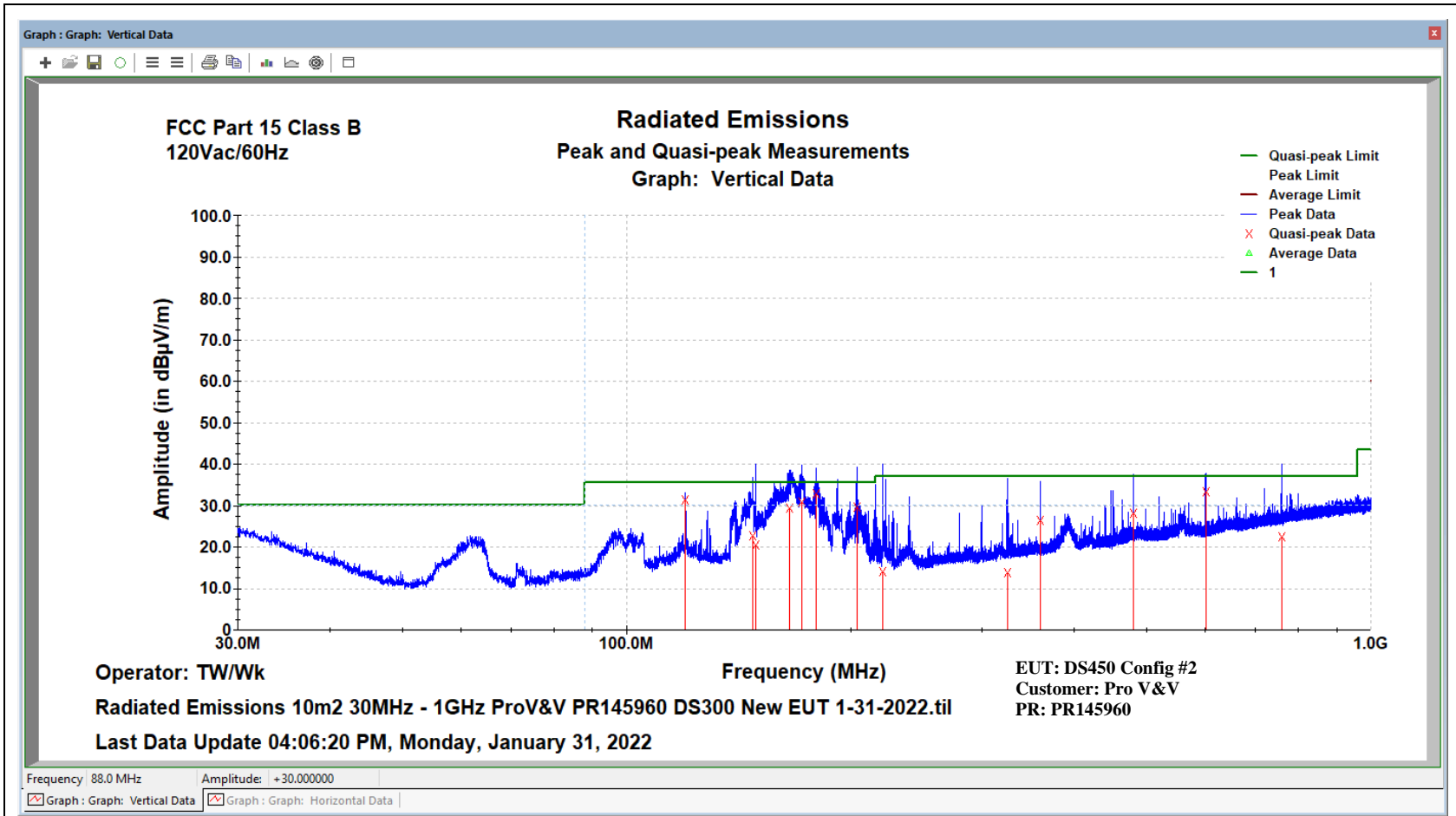


Radiated Emissions Test Setup – Left Side (Config #2)

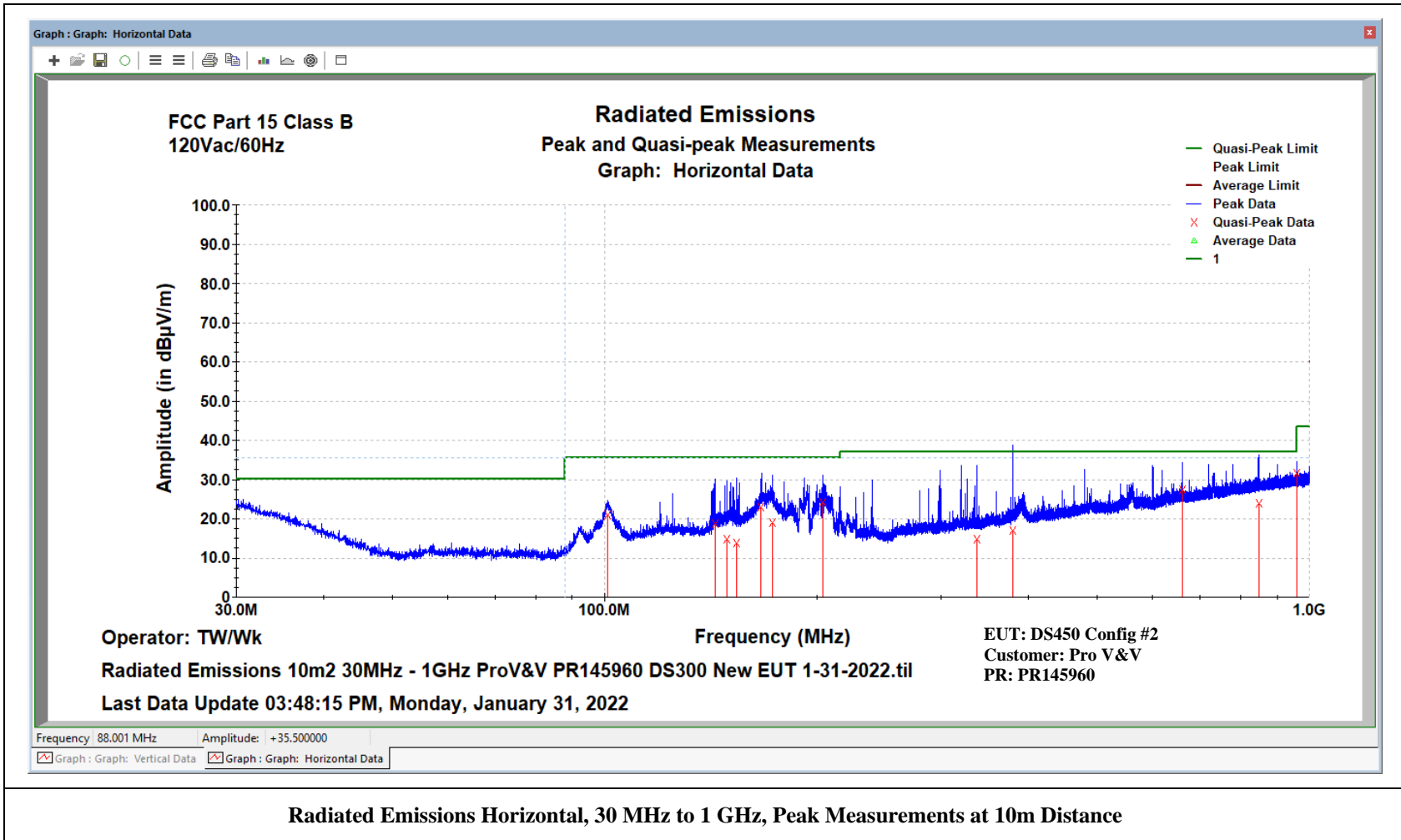
5.1.5 Test Data







Radiated Emissions Vertical, 30 MHz to 1 GHz, Peak Measurements at 10m Distance





5.1.6 Test Equipment List

Table 5.1-1: Radiated Emissions Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC059421	Chamber (EMI, Anechoic)OTA	CIR Enterprises	CH 2	04/26/2022	04/26/2024
WC059737	Door (Chamber)	Universal Shielding	NA	10/10/2018	NCR
WC059822	Receiver	Keysight Technologies	N9038A	10/08/2021	10/08/2022
WC070276	Antenna (Biconical)	Sunol Sciences	JB1	09/21/2021	09/21/2023
WC078465	Amplifier (Pre/RF/Low Noise)	Pasternack Enterprises	PE15A1013	06/02/2021	06/02/2022
WC078489	TBD	Extech Instruments	Datalogger 42270	06/14/2021	06/14/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.2 Conducted Emissions

5.2.1 Test Procedure

FCC Part 15

5.2.2 Test Result

The DS950 and DS450 were subjected to the Conducted Emissions Test per FCC Part 15. No anomalies were noted as a result of the testing.

5.2.3 Test Datasheets

Conducted Emissions, FCC Part 15

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS950	S/N:	DS9521060541
	Printer 1		U64185F1N343098
	UPS		CXXLU2000322
Standard Reference:	EAC 2005 VVSG	Date:	February 7, 2022
Temperature:	23°C	Humidity:	18%
Input Voltage:	120Vac/60Hz	Pressure:	844 mb
Configuration of Unit:	Processing Ballots (Configuration #1)		
Test Engineer:	T. Wittig		



Conducted Emissions, FCC Part 15

Manufacturer:	Pro V&V	Project Number:	PR145960
Customer Representative:	Michael Walker	Test Area:	GP #2
Model:	DS450	S/N:	DS4521063686
	Printer 1		U64185FIN343282
	Printer 2		AKSB019674E0
	UPS		CXXLT2001799
Standard Reference:	EAC 2005 VVSG	Date:	February 1, 2022
Temperature:	20°C	Humidity:	19%
Input Voltage:	120Vac/60Hz	Pressure:	834 mb
Configuration of Unit:	Tabulating Ballots (Configuration #2)		
Test Engineer:	T. Wittig		

5.2.4 Test Photographs



Conducted Emissions Test Setup – Front Side (Config #1)



Conducted Emissions Test Setup – Right Side (Config #1)



Conducted Emissions Test Setup – Back Side (Config #1)



Conducted Emissions Test Setup – Left Side (Config #1)



Conducted Emissions Test Setup – Front Side (Config #2)



Conducted Emissions Test Setup – Right Side (Config #2)



Conducted Emissions Test Setup – Back Side (Config #2)



Conducted Emissions Test Setup – Left Side (Config #2)

5.2.5 Test Data

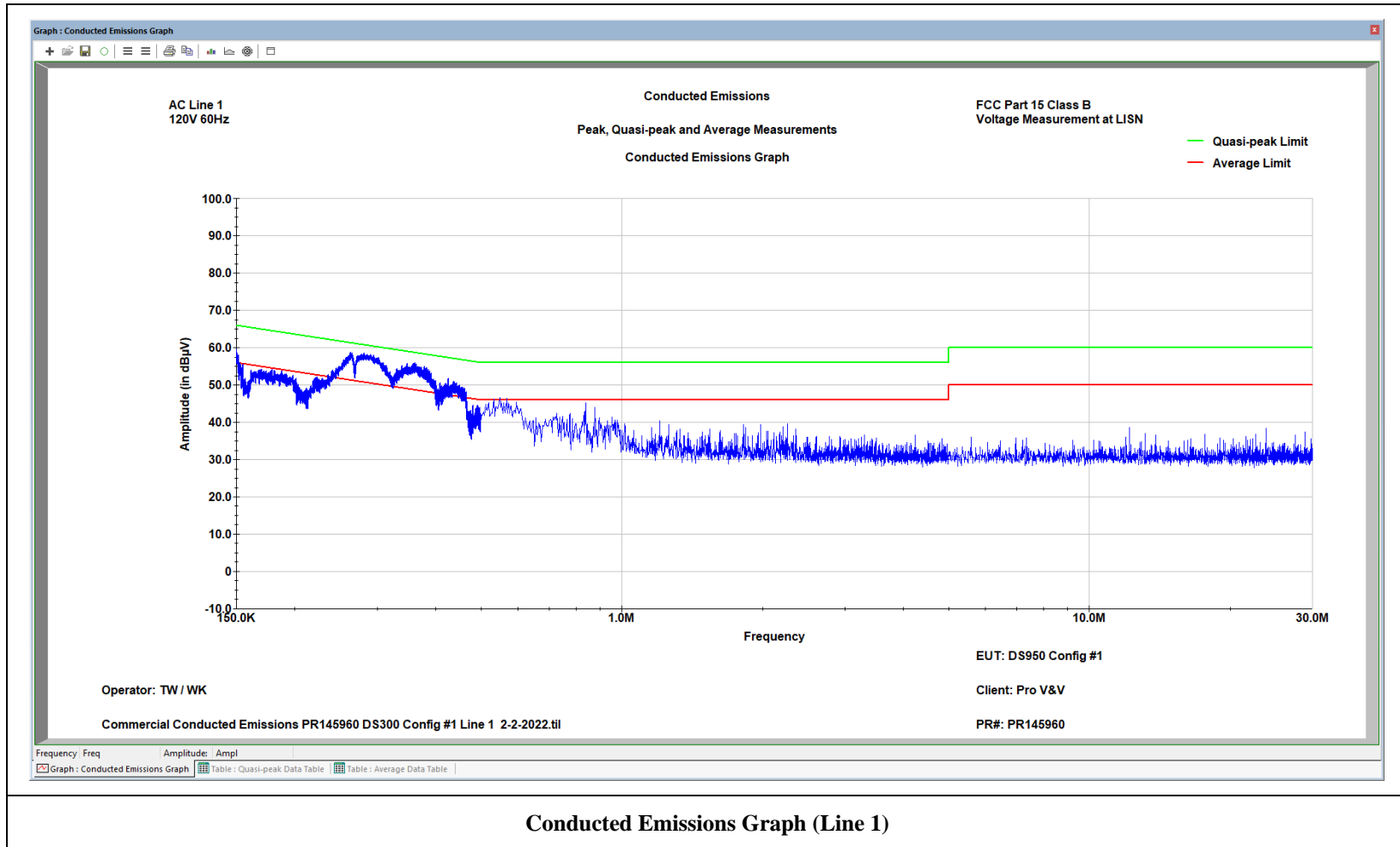




Table: Quasi-peak Data Table

Operator: TW / WK
04:18:23 PM, Wednesday, February 02, 2022

Conducted Emissions
Quasi-peak Data
Quasi-peak Data Table

EUT: DS950 Config #1
PR#: PR145960
Client: Pro V&V

Frequency (MHz)	Amplitude (in dBuV)	Quasi-peak Limit (in dBuV)	Delta to Quasi-peak Limit (in dB)	Average Limit (in dBuV)	Delta to Average Limit (in dB)
150.00 KHz	55.27	66.00	-10.73	56.00	-0.73
150.02 KHz	55.30	66.00	-10.70	56.00	-0.70
150.03 KHz	55.34	66.00	-10.66	56.00	-0.66
150.04 KHz	55.27	66.00	-10.72	56.00	-0.72
150.08 KHz	55.23	66.00	-10.77	56.00	-0.77
177.74 KHz	49.72	65.21	-15.49	55.21	-5.49
276.57 KHz	56.25	62.38	-6.13	52.38	3.87
285.98 KHz	56.89	62.11	-5.22	52.11	4.78
361.40 KHz	51.37	59.96	-8.59	49.96	1.41
AC Line 1 120V 60Hz					

100% : Loaded

Graph : Conducted Emissions Graph | Table : Quasi-peak Data Table | Table : Average Data Table

Conducted Emissions Quasi-Peak Table (Line 1)



Table : Average Data Table					
Conducted Emissions Average Measurements Average Data Table					
Operator: TW / WK 04:24:59 PM, Wednesday, February 02, 2022				EUT: DS950 Config #1 PR#: PR145960 Client: Pro V&V	
Frequency (MHz)	Amplitude (in dBuV)	Quasi-peak Limit (in dBuV)	Delta to Quasi-peak Limit (in dB)	Average Limit (in dBuV)	Delta to Average Limit (in dB)
150.10 KHz	44.10	66.00	-21.89	56.00	-11.89
150.25 KHz	43.94	65.99	-22.05	55.99	-12.05
150.25 KHz	44.02	65.99	-21.97	55.99	-11.97
150.29 KHz	43.98	65.99	-22.02	55.99	-12.02
150.50 KHz	43.79	65.99	-22.19	55.99	-12.19
166.54 KHz	40.63	65.53	-24.90	55.53	-14.90
274.70 KHz	41.73	62.44	-20.70	52.44	-10.70
285.84 KHz	43.55	62.12	-18.57	52.12	-8.57
365.27 KHz	39.40	59.85	-20.45	49.85	-10.45
AC Line 1 120V 60Hz					

100% : Loaded

Graph : Conducted Emissions Graph | Table : Quasi-peak Data Table | Table : Average Data Table

Conducted Emissions Average Data Table (Line 1)

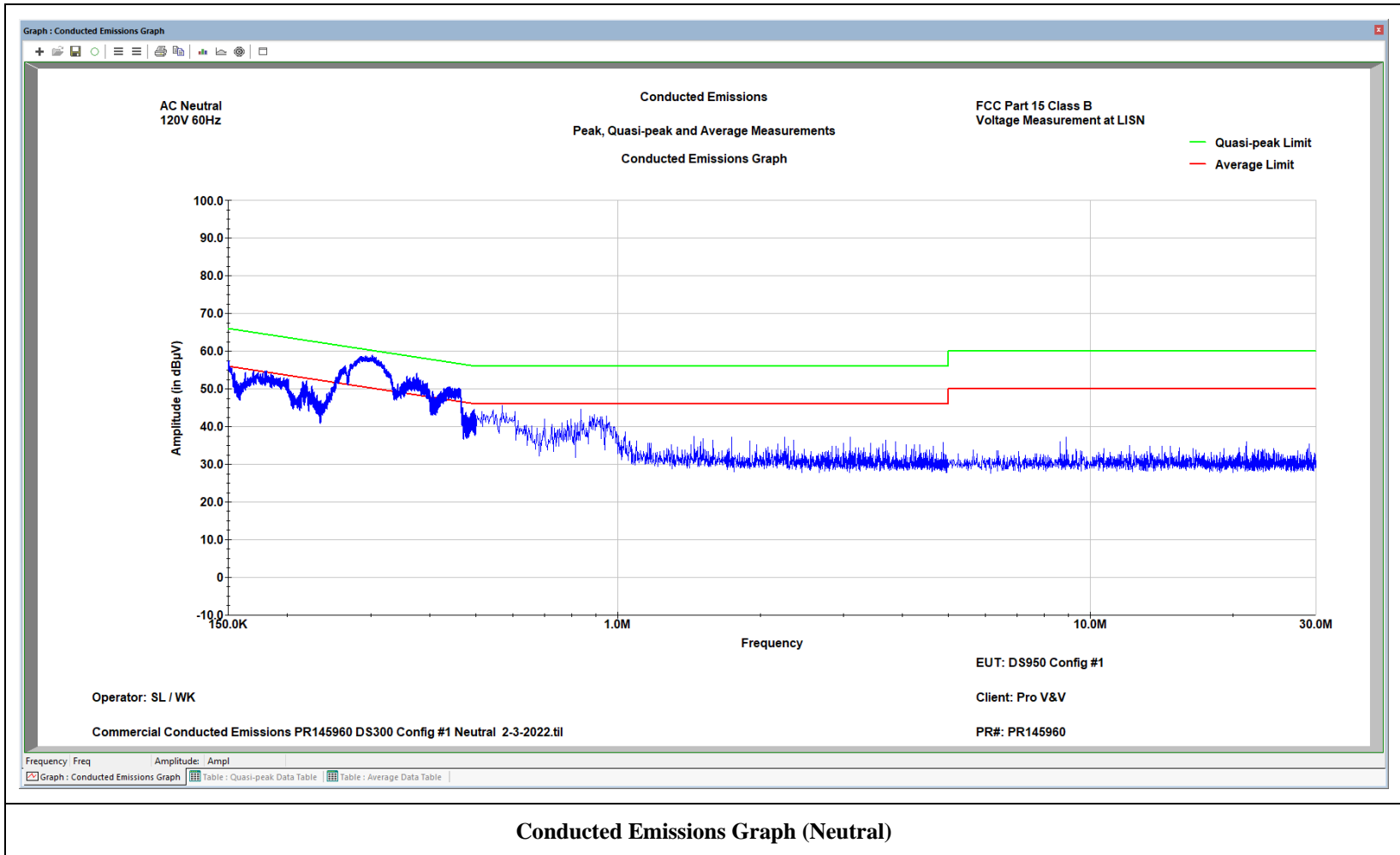


Table : Quasi-peak Data Table					
Conducted Emissions Quasi-peak Data Quasi-peak Data Table					
Operator: SL / WK 08:19:34 AM, Thursday, February 03, 2022				EUT: DS950 Config #1 PR#: PR145960 Client: Pro V&V	
Frequency (MHz)	Amplitude (in dBµV)	Quasi-peak Limit (in dBµV)	Delta to Quasi-peak Limit (in dB)	Average Limit (in dBµV)	Delta to Average Limit (in dB)
150.01 KHz	54.23	66.00	-11.77	56.00	-1.77
171.15 KHz	49.70	65.40	-15.69	55.40	-5.69
178.45 KHz	49.57	65.19	-15.61	55.19	-5.61
206.13 KHz	42.29	64.40	-22.11	54.40	-12.11
206.40 KHz	42.20	64.39	-22.18	54.39	-12.18
208.50 KHz	42.09	64.33	-22.24	54.33	-12.24
278.59 KHz	55.80	62.33	-6.53	52.33	3.47
302.15 KHz	57.17	61.65	-4.49	51.65	5.51
362.03 KHz	47.93	59.94	-12.02	49.94	-2.02
AC Neutral 120V 60Hz					

100% : Loaded |
 Graph : Conducted Emissions Graph |
 Table : Quasi-peak Data Table |
 Table : Average Data Table

Conducted Emissions Quasi-Peak (Neutral)



Table: Average Data Table

Conducted Emissions
Average Measurements
Average Data Table

Operator: SL / WK
08:28:48 AM, Thursday, February 03, 2022

EUT: DS950 Config #1
PR#: PR145960
Client: Pro V&V

Frequency (MHz)	Amplitude (in dBµV)	Quasi-peak Limit (in dBµV)	Delta to Quasi-peak Limit (in dB)	Average Limit (in dBµV)	Delta to Average Limit (in dB)
150.04 KHz	44.05	66.00	-21.95	56.00	-11.95
156.01 KHz	36.11	65.83	-29.71	55.83	-19.71
174.71 KHz	40.60	65.29	-24.70	55.29	-14.70
218.35 KHz	32.01	64.05	-32.04	54.05	-22.04
218.51 KHz	32.15	64.04	-31.89	54.04	-21.89
218.52 KHz	32.18	64.04	-31.86	54.04	-21.86
278.09 KHz	42.08	62.34	-20.26	52.34	-10.26
289.48 KHz	39.39	62.01	-22.62	52.01	-12.62
371.20 KHz	34.78	59.68	-24.90	49.68	-14.90
AC Neutral 120V 60Hz					

100% : Loaded

Graph : Conducted Emissions Graph | Table : Quasi-peak Data Table | Table : Average Data Table

Conducted Emissions Average Data Table (Neutral)

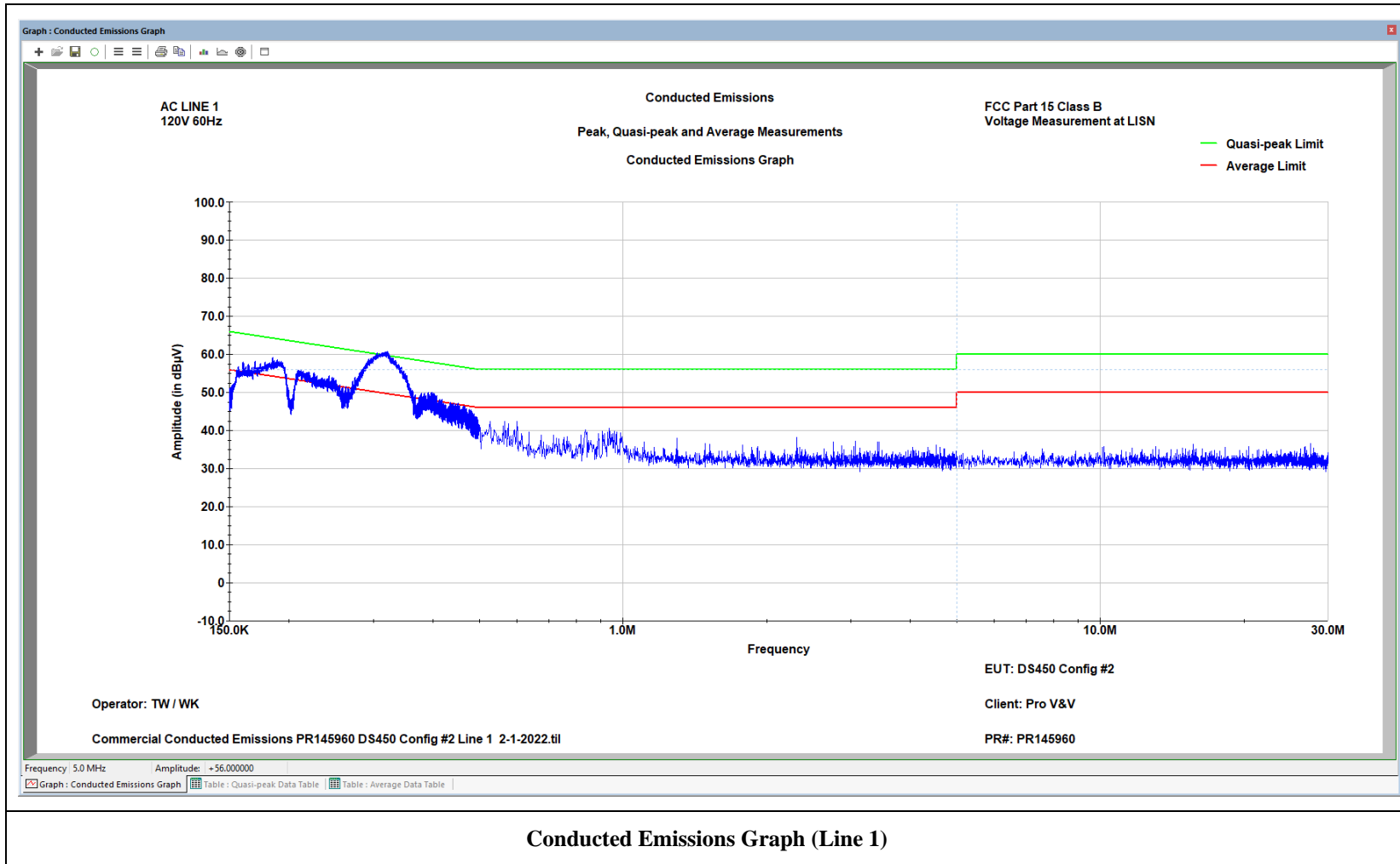




Table : Quasi-peak Data Table					
				Conducted Emissions Quasi-peak Data Quasi-peak Data Table	
Operation: TW / WK 10:02:21 AM, Tuesday, February 01, 2022					EUT: DS450 Config #2 PR#: PR145960 Client: Pro V&V
Frequency (MHz)	Amplitude (in dBµV)	Quasi-peak Limit (in dBµV)	Delta to Quasi-peak Limit (in dB)	Average Limit (in dBµV)	Delta to Average Limit (in dB)
178.45 KHz	54.59	65.19	-10.60	55.19	-0.60
184.15 KHz	42.02	65.02	-23.00	55.02	-13.00
216.10 KHz	52.41	64.11	-11.71	54.11	-1.71
216.38 KHz	52.42	64.10	-11.69	54.10	-1.69
231.05 KHz	49.57	63.68	-14.11	53.68	-4.11
317.64 KHz	58.91	61.21	-2.30	51.21	7.70
372.44 KHz	41.74	59.64	-17.90	49.64	-7.90
414.92 KHz	41.56	58.43	-16.87	48.43	-6.87
AC LINE 1 120V 60Hz					
100% - Loaded					
Graph : Conducted Emissions Graph Table : Quasi-peak Data Table Table : Average Data Table					

Conducted Emissions Quasi-Peak Table (Line 1)

Table : Average Data Table

Conducted Emissions
Average Measurements
Average Data Table

Operation: TW / WK
10:08:38 AM, Tuesday, February 01, 2022

EUT: DS450 Config #2
PR#: PR145960
Client: Pro V&V

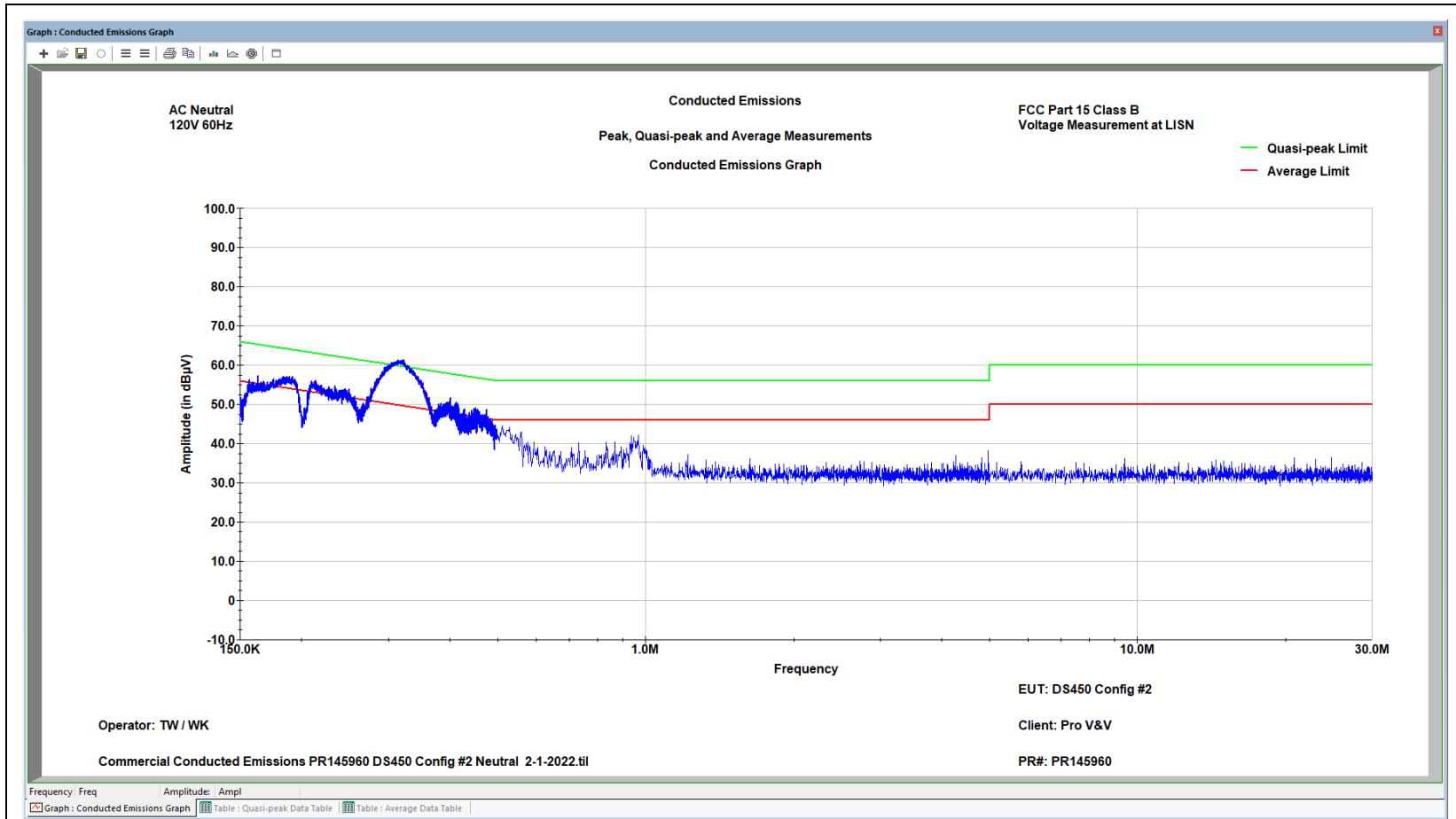
Frequency (MHz)	Amplitude (in dBµV)	Quasi-peak Limit (in dBµV)	Delta to Quasi-peak Limit (in dB)	Average Limit (in dBµV)	Delta to Average Limit (in dB)
175.35 KHz	44.36	65.28	-20.92	55.28	-10.92
192.60 KHz	42.90	64.78	-21.89	54.78	-11.89
211.37 KHz	40.49	64.25	-23.75	54.25	-13.75
217.28 KHz	41.38	64.08	-22.70	54.08	-12.70
242.10 KHz	39.57	63.37	-23.80	53.37	-13.80
321.92 KHz	47.72	61.09	-13.37	51.09	-3.37
393.79 KHz	33.17	59.03	-25.87	49.03	-15.87
450.48 KHz	31.30	57.41	-26.12	47.41	-16.12

AC LINE 1
120V 60Hz

100% - Loaded

Graph : Conducted Emissions Graph | Table : Quasi-peak Data Table | **Table : Average Data Table**

Conducted Emissions Average Data Table (Line 1)



Conducted Emissions Graph (Neutral)



Table : Quasi-peak Data Table

Conducted Emissions
Quasi-peak Data
Quasi-peak Data Table

Operation: TW / WK
10:44:42 AM, Tuesday, February 01, 2022

EUT: D5450 Config #2
PR#: PR145960
Client: Pro V&V

Frequency (MHz)	Amplitude (in dBµV)	Quasi-peak Limit (in dBµV)	Delta to Quasi-peak Limit (in dB)	Average Limit (in dBµV)	Delta to Average Limit (in dB)
157.82 KHz	51.42	65.78	-14.35	55.78	-4.35
171.42 KHz	52.30	65.39	-13.09	55.39	-3.09
183.93 KHz	53.20	65.03	-11.83	55.03	-1.83
217.10 KHz	51.75	64.08	-12.33	54.08	-2.33
237.67 KHz	49.75	63.50	-13.74	53.50	-3.74
317.46 KHz	59.46	61.22	-1.75	51.22	8.25
386.24 KHz	45.14	59.25	-14.11	49.25	-4.11
452.51 KHz	42.65	57.36	-14.71	47.36	-4.71
AC Neutral 120V 60Hz					

100% : Loaded

Graph : Conducted Emissions Graph | Table : Quasi-peak Data Table | Table : Average Data Table

Conducted Emissions Quasi-Peak (Neutral)



Table: Average Data Table

Conducted Emissions
Average Measurements
Average Data Table

Operator: TW / WK
10:50:33 AM, Tuesday, February 01, 2022

EUT: DS450 Config #2
PR#: PR145960
Client: Pro V&V

Frequency (MHz)	Amplitude (in dBµV)	Quasi-peak Limit (in dBµV)	Delta to Quasi-peak Limit (in dB)	Average Limit (in dBµV)	Delta to Average Limit (in dB)
156.39 KHz	38.63	65.82	-27.18	55.82	-17.18
157.30 KHz	38.22	65.79	-27.57	55.79	-17.57
191.20 KHz	41.03	64.82	-23.80	54.82	-13.80
210.47 KHz	39.35	64.27	-24.92	54.27	-14.92
244.95 KHz	38.42	63.29	-24.87	53.29	-14.87
306.80 KHz	44.55	61.52	-16.97	51.52	-6.97
402.41 KHz	33.54	58.79	-25.25	48.79	-15.25
457.84 KHz	32.37	57.20	-24.83	47.20	-14.83
AC Neutral 120V 60Hz					

100% : Loaded

Graph : Conducted Emissions Graph Table : Quasi-peak Data Table Table : Average Data Table

Conducted Emissions Average Data Table (Neutral)



5.2.6 Test Equipment List

Table 5.2-1: Conducted Emissions Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC059421	Chamber (EMI, Anechoic)OTA	CIR Enterprises	CH 2	04/26/2022	04/26/2024
WC059439	Meter (Digital Multimeter)	Fluke	85	07/30/2021	07/30/2022
WC059822	Receiver	Keysight Technologies	N9038A	10/08/2021	10/08/2022
WC076847	Network (LISN)	Solar Electronics	8012-50-R-25-BNC	11/04/2021	11/04/2022
WC078488	TBD	Extech Instruments	Datalogger 42270	06/14/2021	01/19/2023

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



6.0 Test Log

EMI Test Log

Manufacturer:	Pro V&V, Inc.	Project Number:	PR145960/B91114
Model:	1 st EUT DS950 UPS Printer	S/N:	DS9521060541 U64185F1N343320 CXXLU2000357
	2 nd EUT DS950 Printer UPS		DS9521060542 U64185F1N343092 CXXLU2000319
Customer Representative:	Michael Walker		
Standard Referenced:	VVSG/FCC Part 15 Class B		

FR0105

10m Emissions

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
---		January 28, 2022 1230-1300	Initial Product Setup Time		0.5	Complete	MT
RE		1300-1430	Radiated Emissions, 30MHz – 1GHz 120Vac/60Hz DS950 Client is switching to backup EUT		1.5	Fail	MT
RE		1430-1600	New EUT Radiated Emissions, 30MHz – 1GHz 120Vac/60Hz DS950		1.5	Fail	MT
RE		January 31, 2022 1210-1240	Radiated Emissions, 30MHz – 1GHz 120Vac/60Hz Verification and EUT setup. Config #2, DS450, S/N: DS4521063686		.5	Complete	TW / WK
RE		1240-1430	Radiated Emissions, 30MHz – 1GHz 120Vac/60Hz Config #2, DS450, S/N: DS4521063686		2.0	Pass	TW / WK
RE		February 1, 2022 0800-0900	Radiated Emissions 30MHz – 1GHz 120Vac/60Hz DS950 Gasket material applied to monitor		1.0	Complete	MT
RE		0900-1200	Radiated Emissions 30MHz – 1GHz 120Vac/60Hz DS950 New Monitor S/N: 20C150XAFE001 Forgot the ferrite put back on rescan		3.0	Fail	MT
CE		February 1, 2022 0800-0830	Conducted Emissions. FCC Part 15, Class B, 120Vac/60Hz. Config #2. Model DS450 S/N: DS4521063686 EUT Setup		.5	Complete	TW / WK



EMI Test Log

Manufacturer:	<u>Pro V&V, Inc.</u>	Project Number:	<u>PR145960/B91114</u>
Model:	<u>1st EUT DS950</u>	S/N:	<u>DS9521060541</u>
	<u>UPS</u>		<u>U64185F1N343320</u>
	<u>Printer</u>		<u>CXXLU2000357</u>
	<u>2nd EUT DS950</u>		<u>DS9521060542</u>
	<u>Printer</u>		<u>U64185F1N343092</u>
	<u>UPS</u>		<u>CXXLU2000319</u>
Customer Representative:	<u>Michael Walker</u>		
Standard Referenced:	<u>VVSG/FCC Part 15 Class B</u>		

FR0105

10m Emissions

Test	Test Code	Date	Event	O T	Time (hrs)	Result	Initials
CE		0830-1030	Conducted Emissions. FCC Part 15, Class B, 120Vac/60Hz. Config #2. Model DS450 S/N: DS4521063686		2.0	Pass	TW / WK



End of Test Report