

FCC TEST REPORT

Product Name: IP Phone
Trade Mark: GRANDSTREAM
Model No.: GRP2612P
Add. Model No.: GRP2612
Report Number: 200326008EMC-1
Test Standards: FCC 47 CFR Part 15 Subpart B
FCC ID: YZZGRP2612PV2
Test Result: PASS
Date of Issue: April 29, 2020

Prepared for:

Grandstream Networks, Inc.
126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
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Date: April 29, 2020

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Version

Version No.	Date	Description
V1.0	April 29, 2020	Original



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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Grandstream Networks, Inc.
Address of Applicant:	126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
Manufacturer:	Grandstream Networks, Inc.
Address of Manufacturer:	126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	IP Phone
Model No.:	GRP2612P
Add. Model No.:	GRP2612
Trade Mark:	GRANDSTREAM
DUT Stage:	Production Unit
Rated Voltage:	<input checked="" type="checkbox"/> Powered by POE Port or Powered by DC 5V/0.6A
Classification of digital devices:	Class B
Highest Internal Frequency:	1.3 GHz
Sample Received Date:	March 27, 2020
Sample Tested Date:	March 27, 2020 to April 28, 2020
Note:	The test data is gathered from a production sample, provided by the manufacturer. The POE circuit of others models listed in the report is different from main-test model GRP2612P, Does not support POE function, but the others circuit and the electronic construction do not change, declared by the manufacturer.

1.2.2 Description of Accessories

Adapter(1)	
Model No.:	F06US0500060A
Input:	100-240 V~50/60 Hz 0.2 A
Output:	5.0 V \equiv 0.6 A
DC Cable:	1.80 Meter, Unshielded without ferrite

Adapter(2)	
Model No.:	GQ06-050060-ZU
Input:	100-240 V~50/60 Hz 0.3 A
Output:	5.0 V \equiv 0.6 A
DC Cable:	1.80 Meter, Unshielded without ferrite

Adapter(3)	
Model No.:	PS05L050K0600UD
Input:	100-240 V~50/60 Hz 0.25 A
Output:	5.0 V \equiv 0.6 A
DC Cable:	1.80 Meter, Unshielded without ferrite

Cable(1)	
Description:	Ethernet Cable
Cable Type:	Unshielded without ferrite
Length:	1.50 Meter

Cable(2)	
Description:	Phone Cord
Cable Type:	Unshielded without ferrite
Length:	3.50 Meter

1.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
Notebook	Lenovo	E450	SL10G10780	UnionTrust
Mouse	DELL	MS111	CN-011D3V-738	UnionTrust
Headset	YEY	VE120-MV	N/A	UnionTrust
POE Adapter	TP-LINK	TL-POE160S	N/A	UnionTrust
POE Adapter	GOSPELL	G0720-480-050	N/A	Applicant
IP Phone	Grandstream Networks, Inc.	GRP2612W	N/A	Applicant

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	LAN	RJ-45	1.5 Meter	UnionTrust

1.4 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109
 Telephone: +86 (0) 755 2823 0888
 Fax: +86 (0) 755 2823 0886

1.5 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General

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Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories

CAB identifier: CN0032

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.9 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.2 dB
2	Conducted emission 150KHz-30MHz	±2.7 dB
3	Radiated emission 9KHz-30MHz	± 4.7 dB
4	Radiated emission 30MHz-1GHz	± 4.6 dB
5	Radiated emission 1GHz-18GHz	± 4.4 dB
6	Radiated emission 18GHz-26GHz	± 4.6 dB
7	Radiated emission 26GHz-40GHz	± 4.6 dB

2. TEST SUMMARY

FCC 47 CFR Part 15 Subpart B Test Cases			
Test Item	Test Requirement	Test Method	Result
Conducted Emission	FCC 47 CFR Part 15.107	ANSI C63.4-2014	PASS
Radiated Emission	FCC 47 CFR Part 15.109	ANSI C63.4-2014	PASS



3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
<input checked="" type="checkbox"/>	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 03, 2018	Dec. 03, 2021
<input checked="" type="checkbox"/>	Receiver	R&S	ESIB26	100114	Nov. 24, 2019	Nov. 23, 2020
<input type="checkbox"/>	Loop Antenna	ETS-LINDGREN	6502	00202525	Nov. 24, 2019	Nov. 23, 2020
<input checked="" type="checkbox"/>	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Nov. 16, 2019	Nov. 15, 2020
<input checked="" type="checkbox"/>	6dB Attenuator	Talent	RA6A5-N-18	18103001	Nov. 16, 2019	Nov. 15, 2020
<input checked="" type="checkbox"/>	Preamplifier	HP	8447F	2805A02960	Nov. 16, 2019	Nov. 15, 2020
<input type="checkbox"/>	Broadband Antenna (Pre-amplifier)	ETS-LINDGREN	3142E-PA	00201891	Nov. 24, 2019	Nov. 23, 2020
<input type="checkbox"/>	6dB Attenuator	Talent	RA6A5-N-18	18103002	Nov. 24, 2019	Nov. 23, 2020
<input type="checkbox"/>	Horn Antenna	ETS-LINDGREN	3117	00164202	Nov. 24, 2019	Nov. 23, 2020
<input checked="" type="checkbox"/>	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201874	Nov. 16, 2019	Nov. 15, 2020
<input type="checkbox"/>	Horn Antenna	ETS-LINDGREN	3116C	00200180	May 18, 2019	May 18, 2020
<input checked="" type="checkbox"/>	Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Jun. 23, 2019	Jun. 23, 2020
<input checked="" type="checkbox"/>	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
<input checked="" type="checkbox"/>	Test Software	Audix	e3	Software Version: 9.160323		

Conducted Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm dd, yyyy)	Cal. Due date (mm dd, yyyy)
<input checked="" type="checkbox"/>	Receiver	R&S	ESR7	1316.3003K07-101181-K3	Nov. 24, 2019	Nov. 23, 2020
<input checked="" type="checkbox"/>	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	Nov. 24, 2019	Nov. 23, 2020
<input checked="" type="checkbox"/>	LISN	R&S	ESH2-Z5	860014/024	Nov. 24, 2019	Nov. 23, 2020
<input type="checkbox"/>	LISN	ETS-Lindgren	3816/2SH	00201088	Nov. 24, 2019	Nov. 23, 2020
<input checked="" type="checkbox"/>	Test Software	Audix	e3	Software Version: 9.160323		

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
NT/NV	+15 to +35	Powered by POE Port or Powered by DC 5V/0.6A	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

4.1.2 Record of Normal Environment

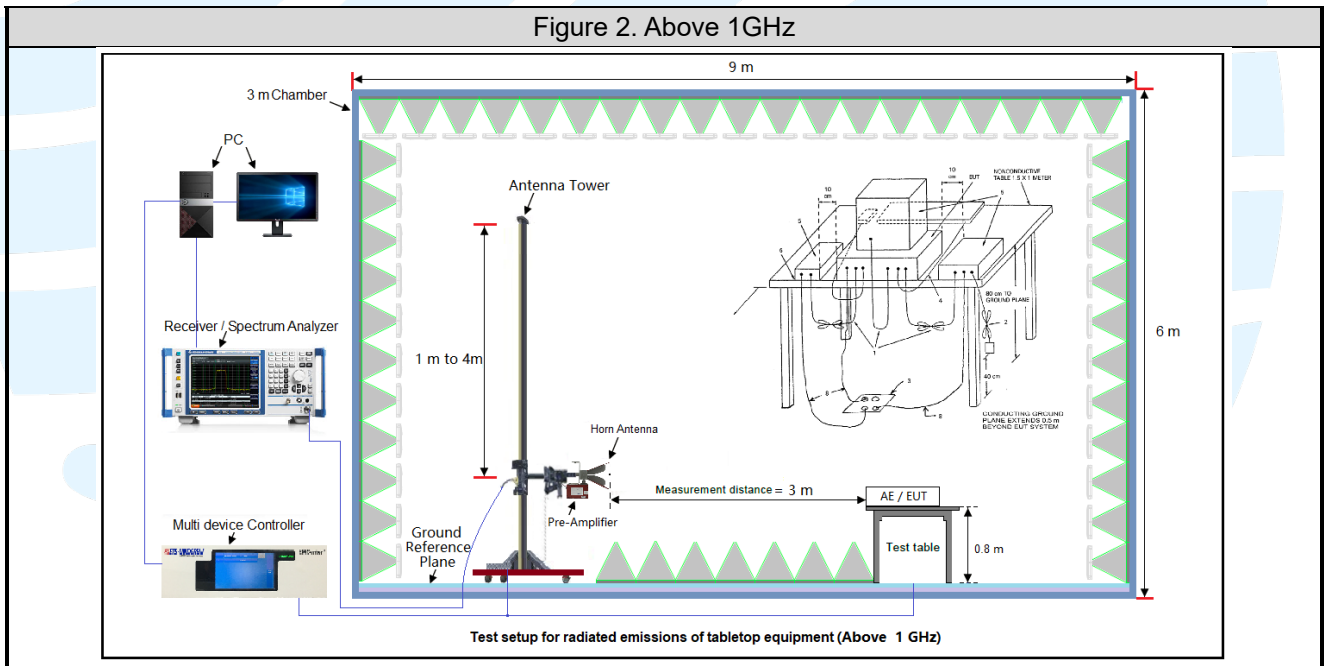
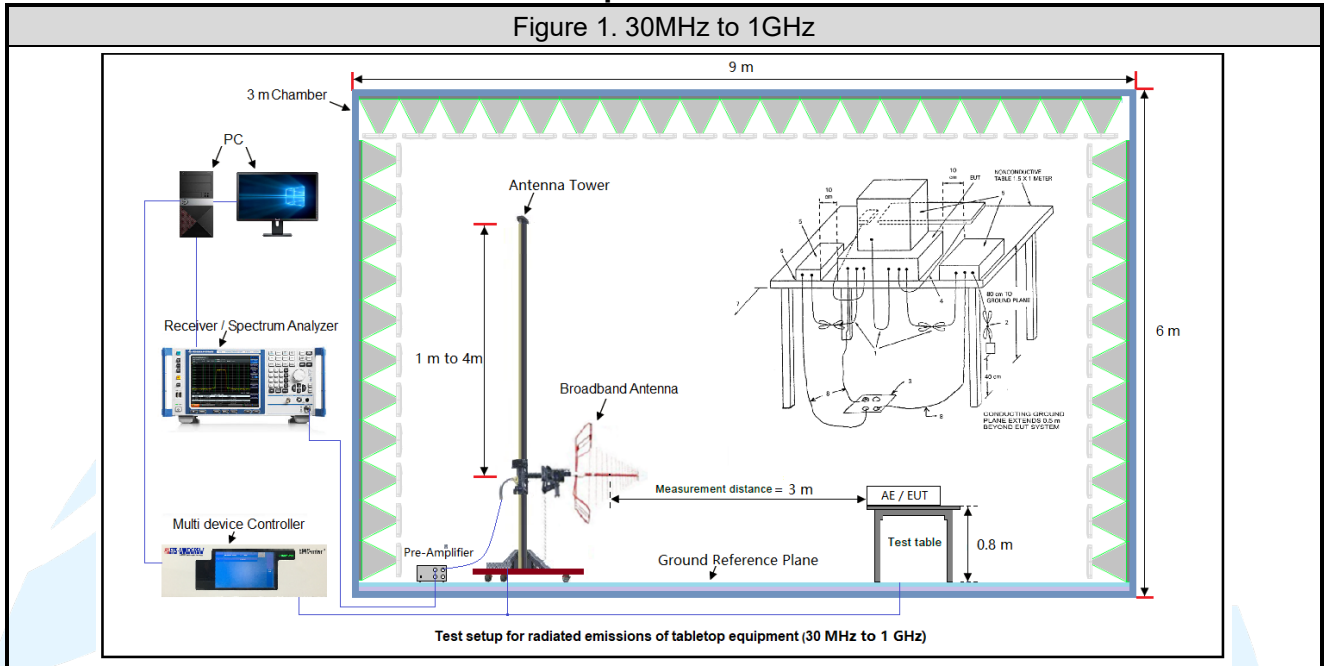
Test Item	Temperature (°C)	Relative Humidity (%)	Pressure (kPa)	Tested by
Conducted Emission	25.1	46	100.57	Bert Xiong
Radiated Emission	25.4	57	100.62	Asia Yan

4.2 TEST MODES

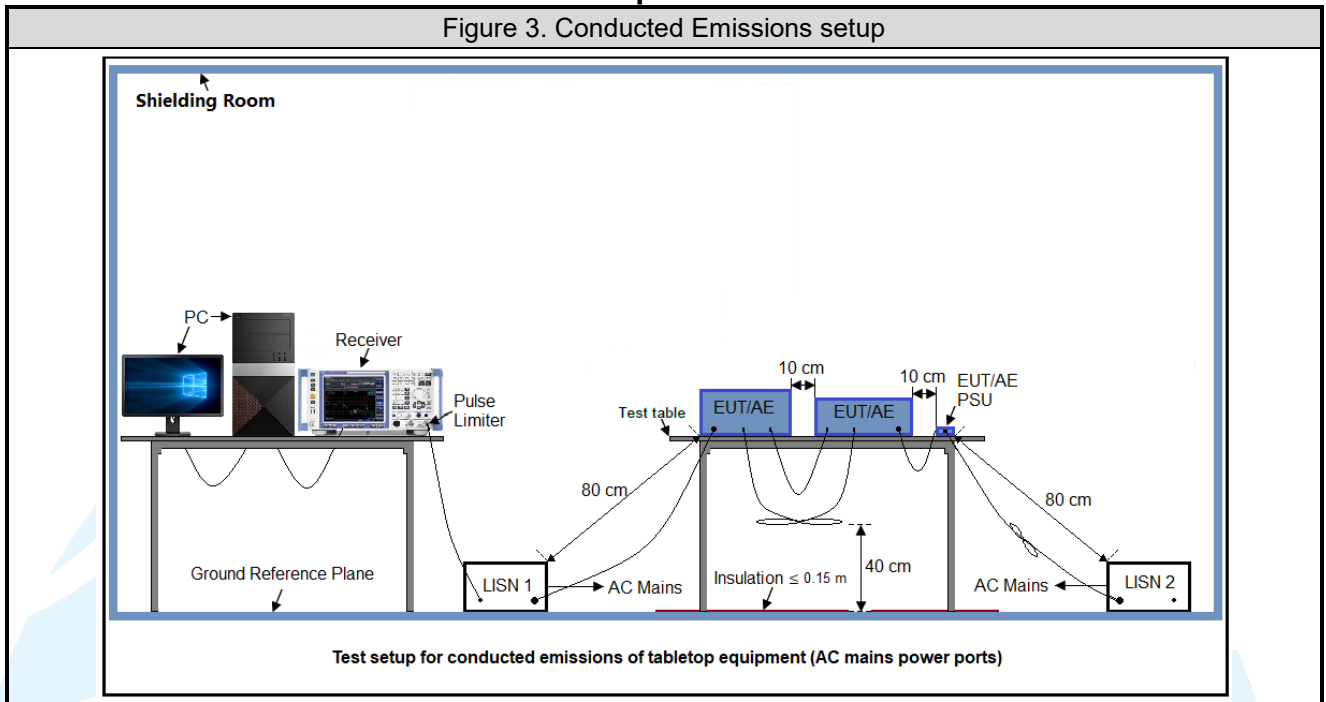
Test Item	EMI Test Modes
Radiated Emission	Mode 1: AC120V/60Hz (Adaptor1) + Hands Free Mode 2: AC120V/60Hz (Adaptor1) + Ringing Mode 3: AC120V/60Hz (Adaptor1) + Handset Mode 4: AC120V/60Hz (Adaptor1) + Headset Mode 5: AC240V/50Hz (Adaptor1) + Worse from mode 1~4 (The worst mode is mode 1) Mode 6: Worse from mode 1~5 (Adaptor2) Mode 7: Worse from mode 1~5 (Adaptor3) Mode 8: AC120V/60Hz (POE) +Worse from mode 1~4 Mode 9: Worse from mode 1-7(Add. Model No.: GRP2612)
Conducted Emission	Mode 1: AC120V/60Hz (Adaptor1) + Hands Free Mode 2: AC120V/60Hz (Adaptor1) + Ringing Mode 3: AC120V/60Hz (Adaptor1) + Handset Mode 4: AC120V/60Hz (Adaptor1) + Headset Mode 5: AC240V/50Hz (Adaptor1) + Worse from mode 1~4 Mode 6: Worse from mode 1~5 (Adaptor2) Mode 7: Worse from mode 1~5 (Adaptor3) Mode 8: AC120V/60Hz (POE) +Worse from mode 1~4 Mode 9: Worse from mode 1-7(Add. Model No.: GRP2612)
Remark: The above test modes in boldface were the worst cases, only the test data of these modes were reported.	

4.3 TEST SETUP

4.3.1 For Radiated Emissions test setup



4.3.2 For Conducted Emissions test setup



4.4 SYSTEM TEST CONFIGURATION

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic (according to KDB 896810 D02 SDoC FAQ v01r01) of the highest fundamental frequency or to 40 GHz, whichever is lower.

5. REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part15 Subpart B	Unintentional Radiators
2	ANSI C63.4-2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
3	KDB 174176 D01 Line Conducted FAQ v01r01	AC power-line conducted emission frequency asked questions
4	KDB 896810 D02 SDoC FAQ v01r02	Supplier's Declaration of Conformity frequency asked questions

6. EMC REQUIREMENTS SPECIFICATION

6.1 RADIATED EMISSION

Test Requirement: FCC 47 CFR Part 15.109

Test Method: ANSI C63.4-2014

Receiver Setup:

Frequency: (f) (MHz)	Detector type	Measurement receiver bandwidth	
		RBW	VBW
$30 \leq f \leq 1\,000$	Quasi Peak	120 kHz	300 kHz
$f \geq 1000$	Peak	1 MHz	3 MHz
	Average	1 MHz	3 MHz

Measured frequency range

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705-108	1000.
108-500	2000.
500-1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

Limits:

Limits for Class B devices

Frequency (MHz)	limits at 3m (dB μ V/m)		
	QP Detector	PK Detector	AV Detector
30-88	40.0	--	--
88-216	43.5	--	--
216-960	46.0	--	--
960 to 1000	54.0	--	--
Above 1000	--	74.0	54.0

Remark:

- The lower limit shall apply at the transition frequencies.
- Emission level (dB μ V/m) = 20 log Emission level (μ V/m).
- For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Test Setup: Refer to section 4.3.1 for details.

Test Procedures:

- From 30 MHz to 1GHz test procedure as below:

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- 1) The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
- 2) Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- 3) For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

2. Above 1GHz test procedure as below:

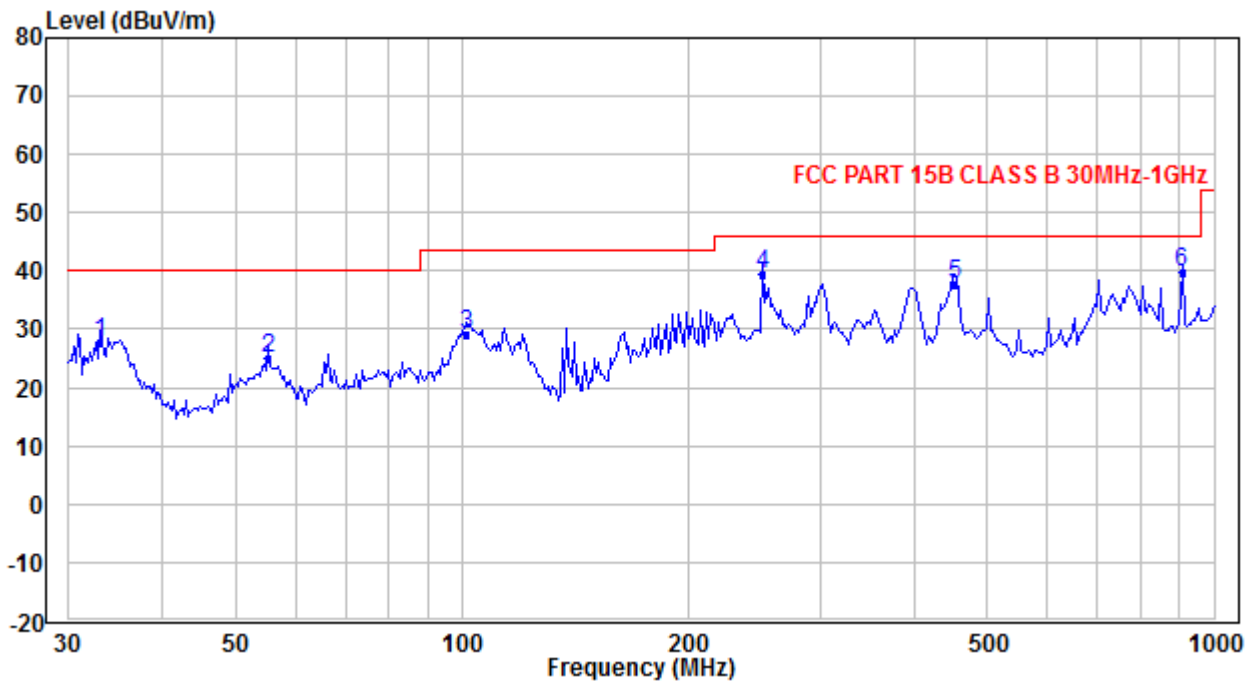
- 1) The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
- 2) Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- 3) For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:

**Below 1GHz(Quasi Peak):
Mode5
Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.101	35.17	-7.28	27.89	40.00	-12.11	QP
2	55.288	40.08	-14.98	25.10	40.00	-14.90	QP
3	101.180	41.63	-12.37	29.26	43.50	-14.24	QP
4	250.486	46.82	-7.49	39.33	46.00	-6.67	QP
5	452.001	40.45	-2.85	37.60	46.00	-8.40	QP
6	906.304	35.10	4.68	39.78	46.00	-6.22	QP

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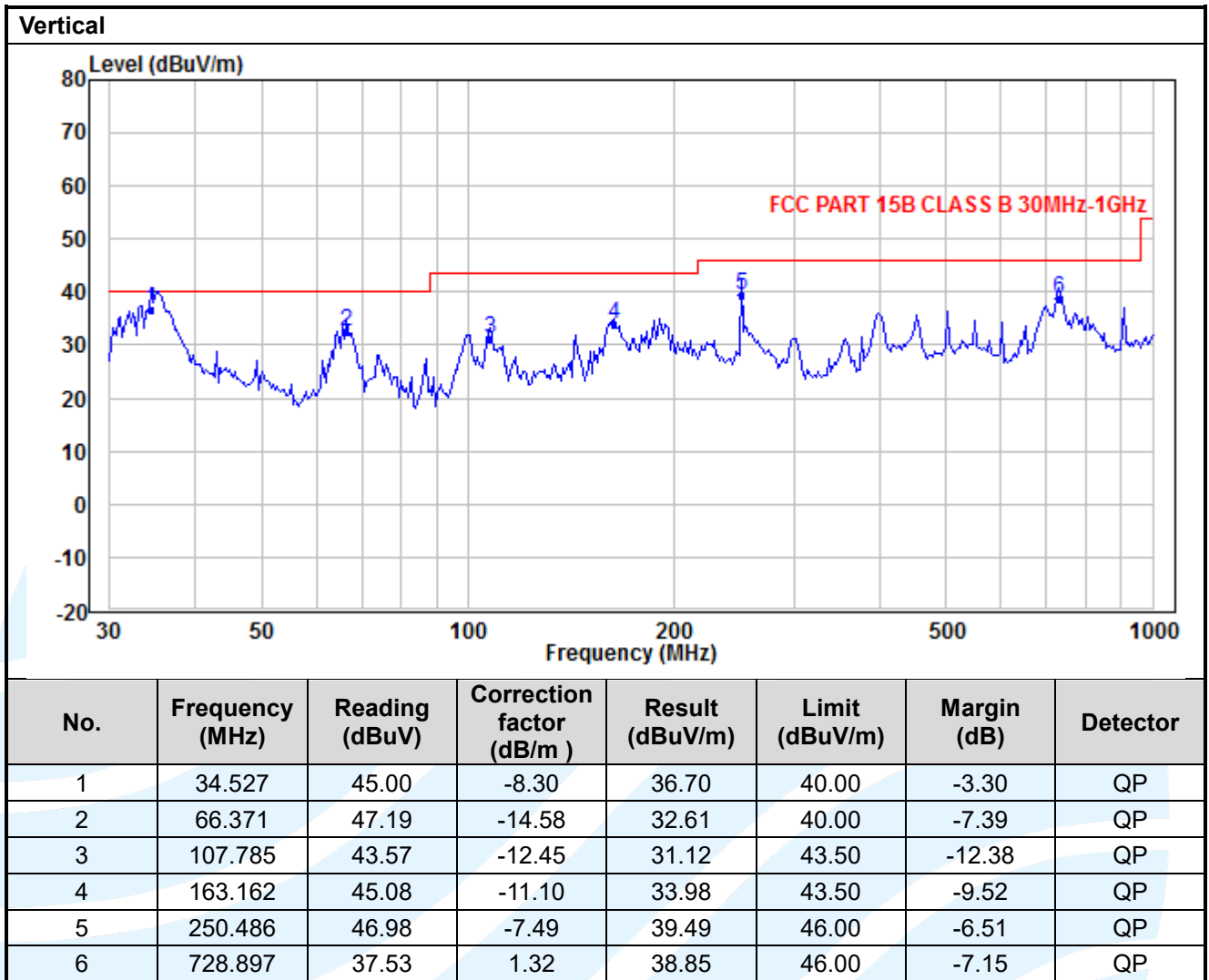
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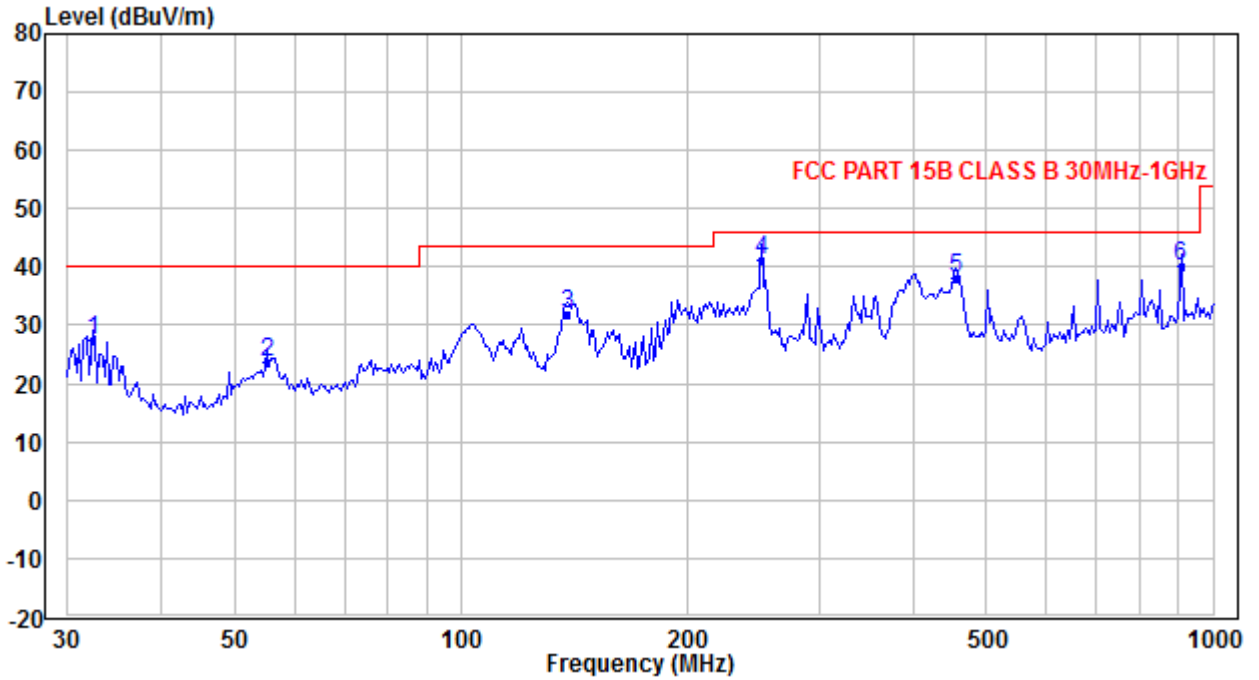
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Below 1GHz(Quasi Peak):
 Mode6
 Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	32.411	34.22	-6.92	27.30	40.00	-12.70	QP
2	55.288	38.66	-14.98	23.68	40.00	-16.32	QP
3	138.812	44.34	-12.36	31.98	43.50	-11.52	QP
4	250.486	48.58	-7.49	41.09	46.00	-4.91	QP
5	455.189	40.67	-2.76	37.91	46.00	-8.09	QP
6	906.304	35.48	4.68	40.16	46.00	-5.84	QP

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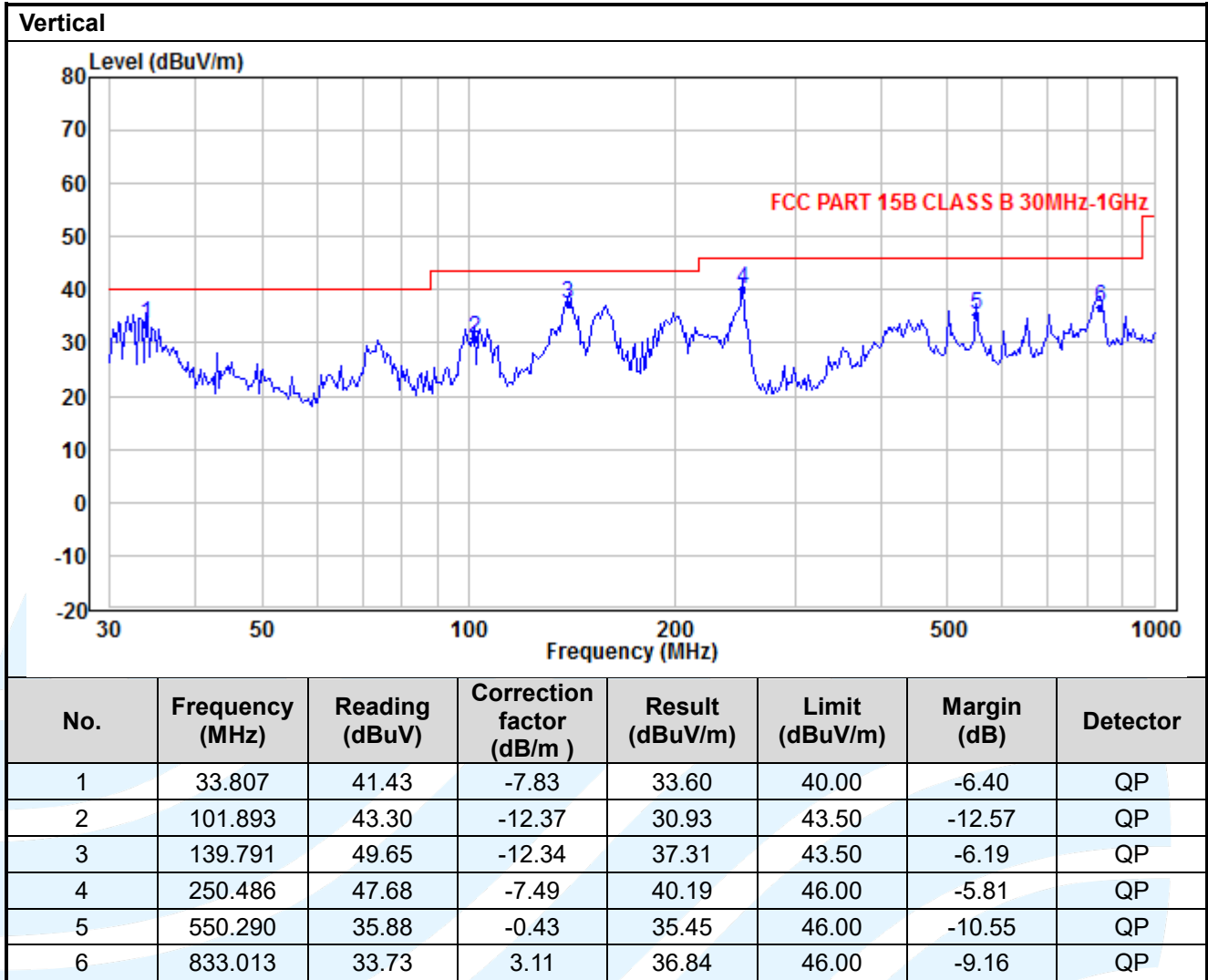
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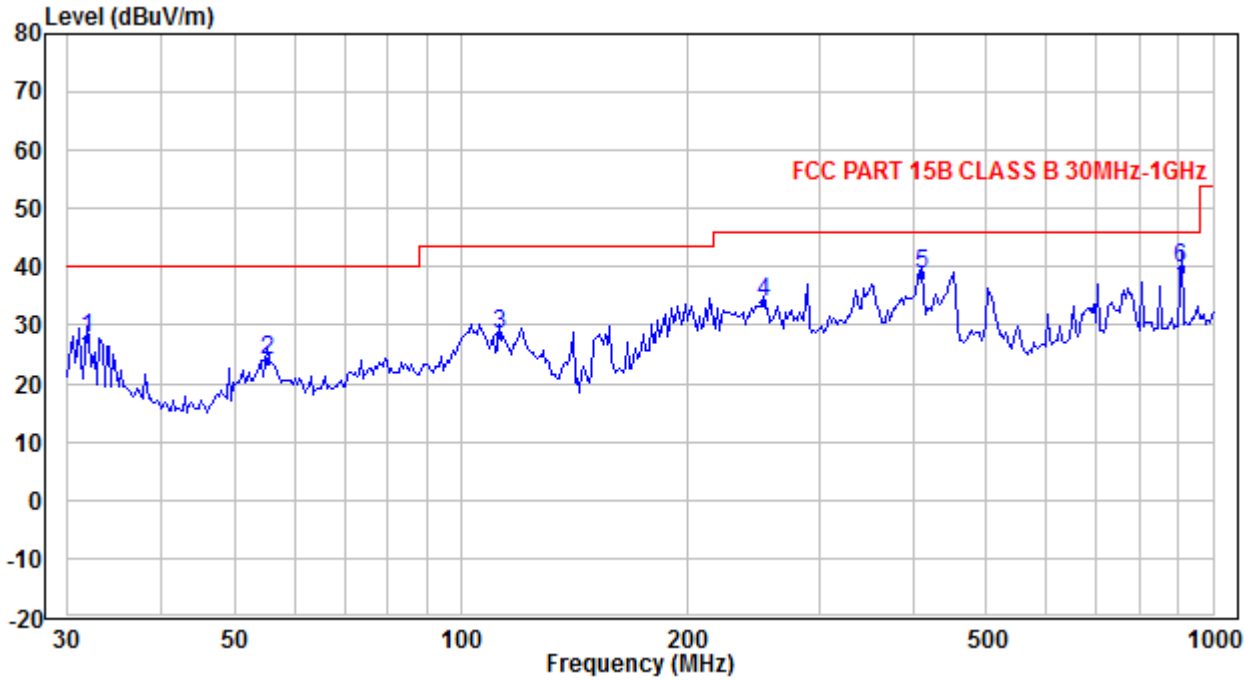
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Below 1GHz(Quasi Peak):
Mode7
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	31.735	34.34	-6.58	27.76	40.00	-12.24	QP
2	55.288	38.97	-14.98	23.99	40.00	-16.01	QP
3	112.427	40.83	-12.53	28.30	43.50	-15.20	QP
4	252.252	41.48	-7.44	34.04	46.00	-11.96	QP
5	409.651	41.81	-2.93	38.88	46.00	-7.12	QP
6	906.304	35.26	4.68	39.94	46.00	-6.06	QP

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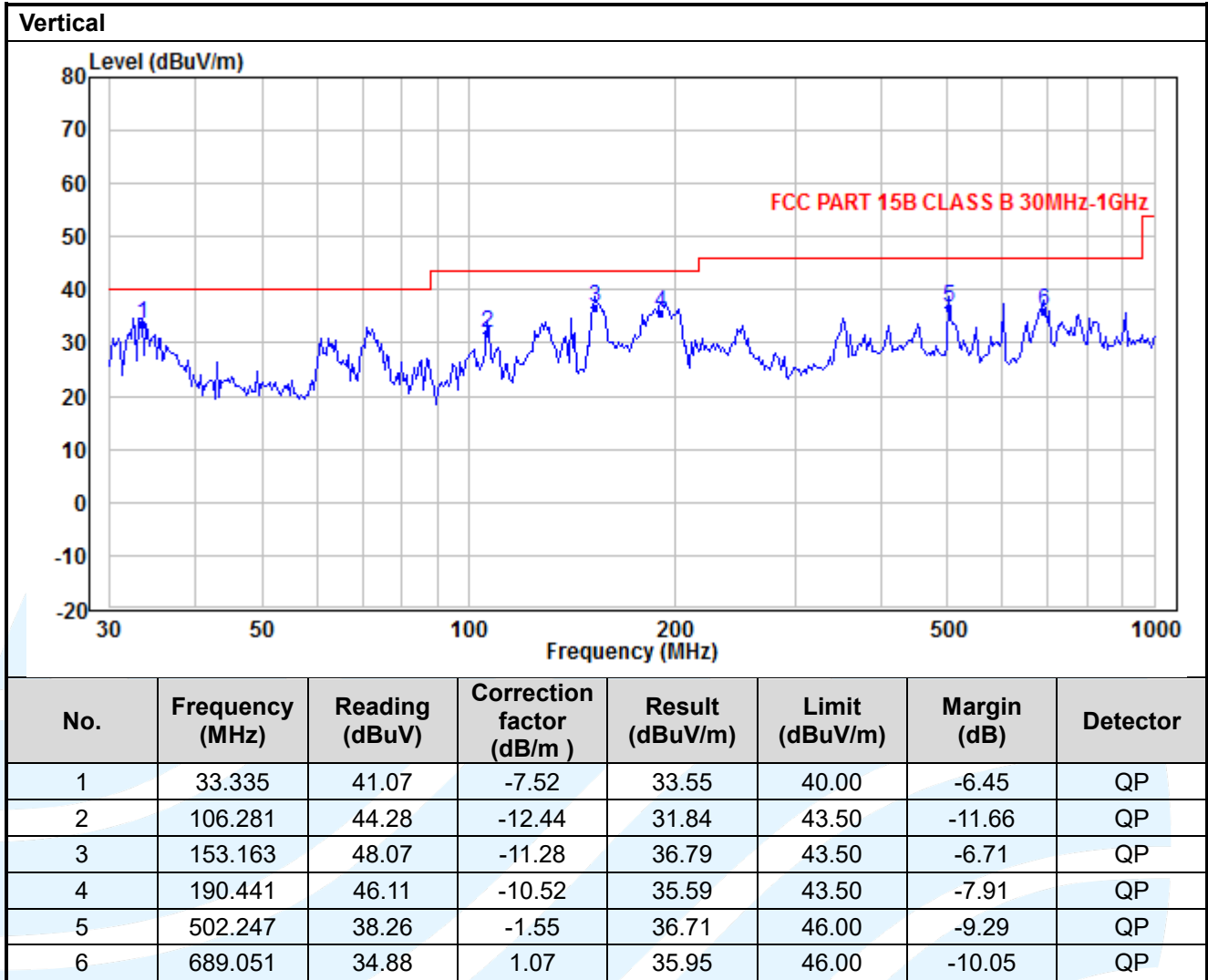
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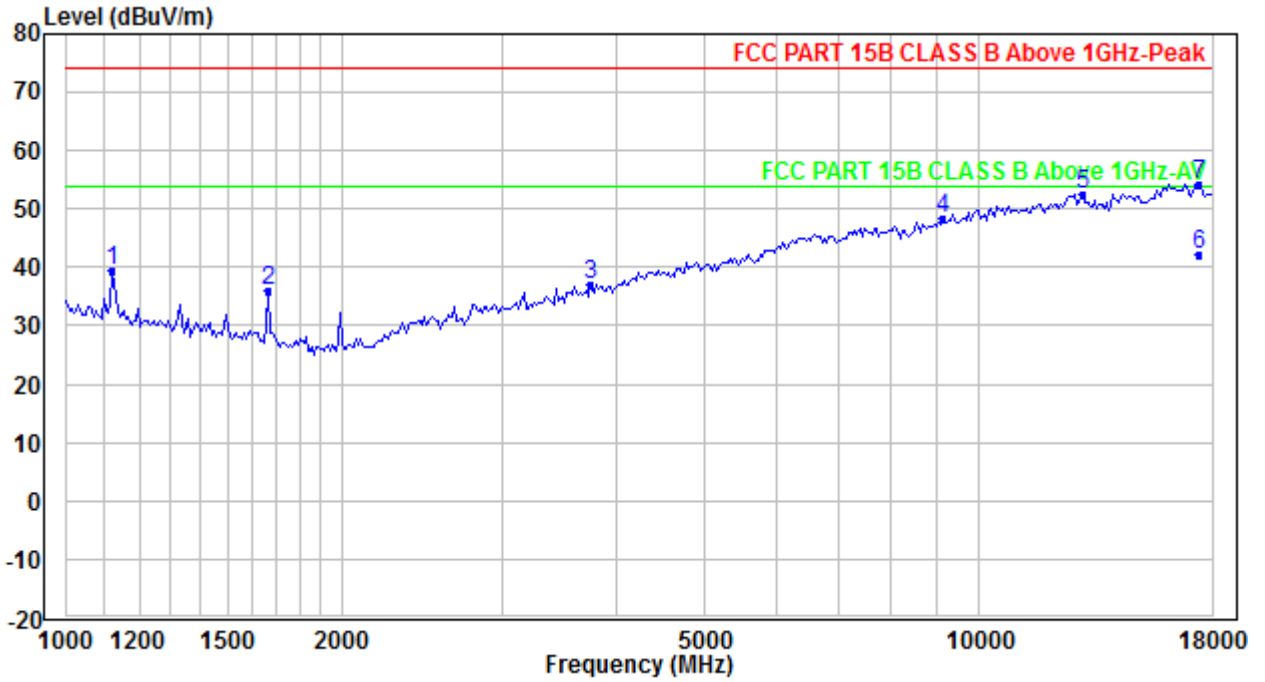
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Above 1GHz(Peak & Average)
 Mode5
 Horizontal



No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	1122.824	50.73	-11.24	39.49	74.00	-34.51	Peak
2	1664.833	44.33	-8.42	35.91	74.00	-38.09	Peak
3	3745.858	33.25	3.73	36.98	74.00	-37.02	Peak
4	9140.082	39.90	8.61	48.51	74.00	-25.49	Peak
5	13013.680	39.99	12.45	52.44	74.00	-21.56	Peak
6	17385.170	28.22	14.15	42.37	54.00	-11.63	AV
7	17385.170	40.22	14.15	54.37	74.00	-19.63	Peak

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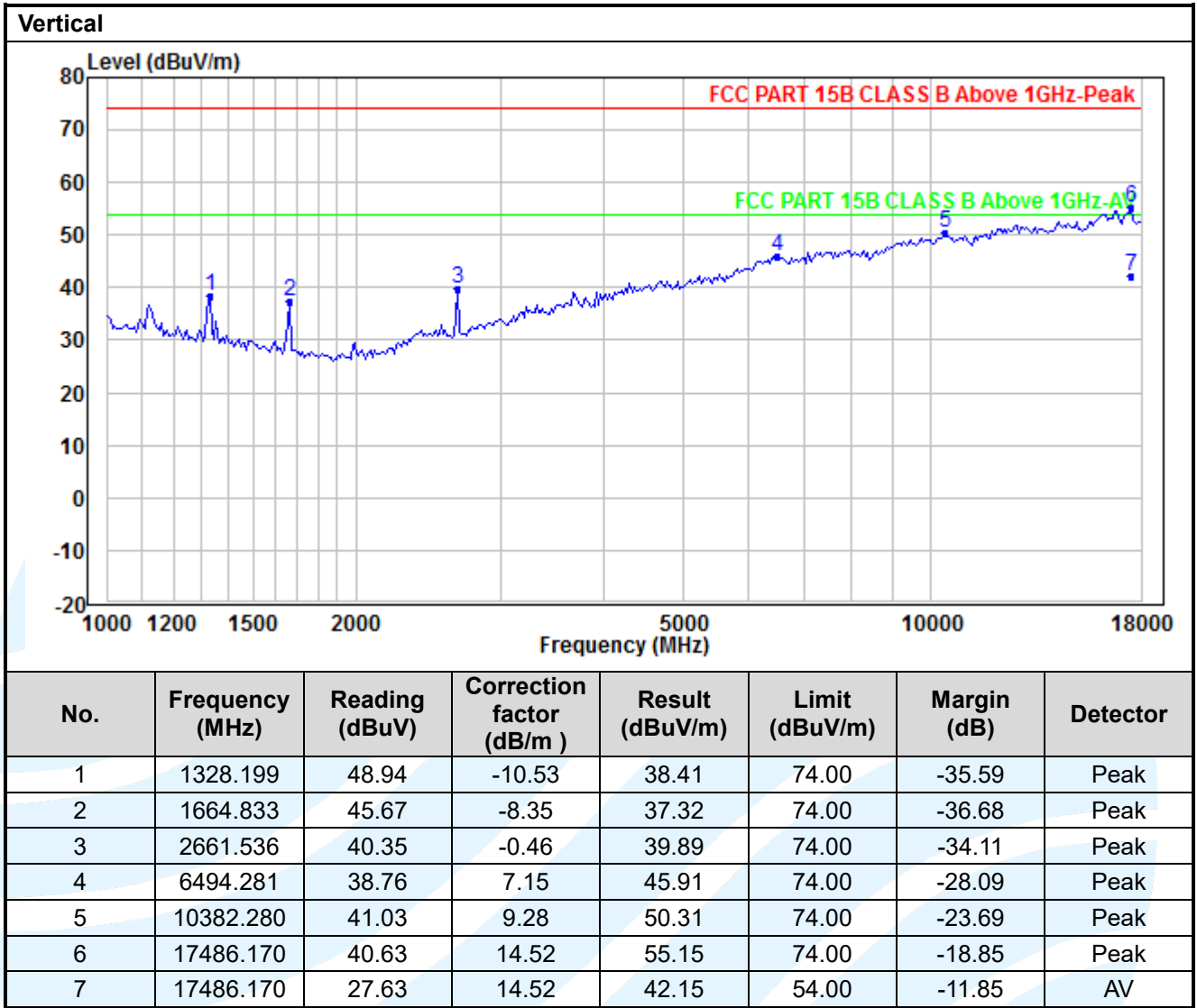
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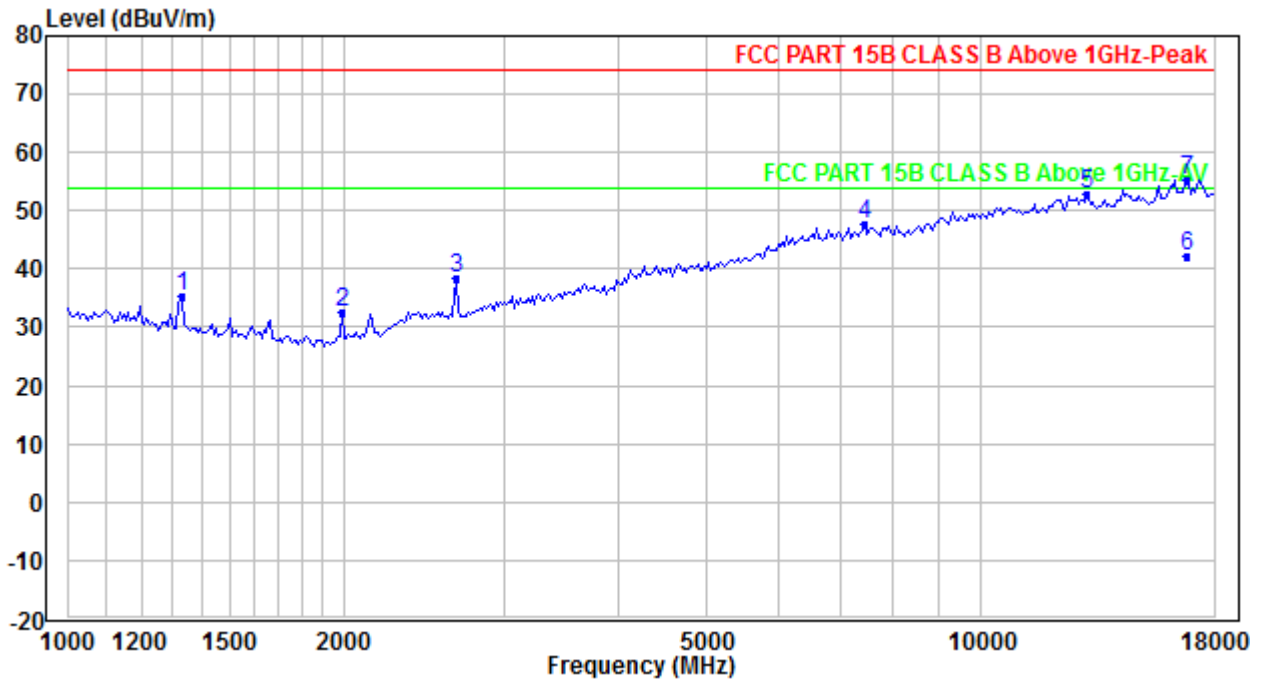
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Above 1GHz(Peak & Average)
 Mode6
 Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1328.199	46.16	-10.70	35.46	74.00	-38.54	Peak
2	1992.295	37.44	-4.75	32.69	74.00	-41.31	Peak
3	2661.536	38.59	-0.23	38.36	74.00	-35.64	Peak
4	7462.854	40.75	6.88	47.63	74.00	-26.37	Peak
5	13089.280	40.55	12.41	52.96	74.00	-21.04	Peak
6	16791.350	29.12	13.14	42.26	54.00	-11.74	AV
7	16791.350	42.12	13.14	55.26	74.00	-18.74	Peak

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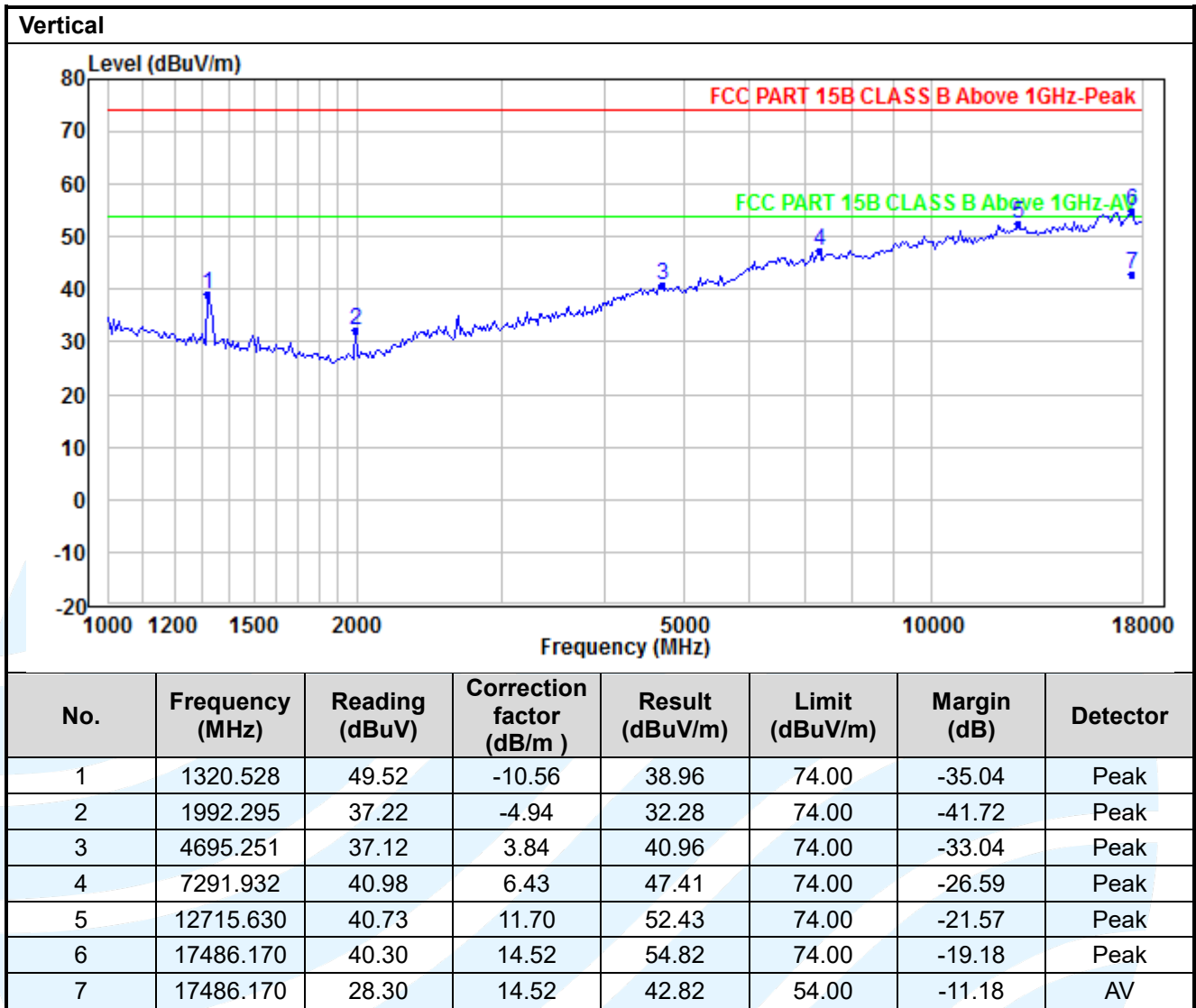
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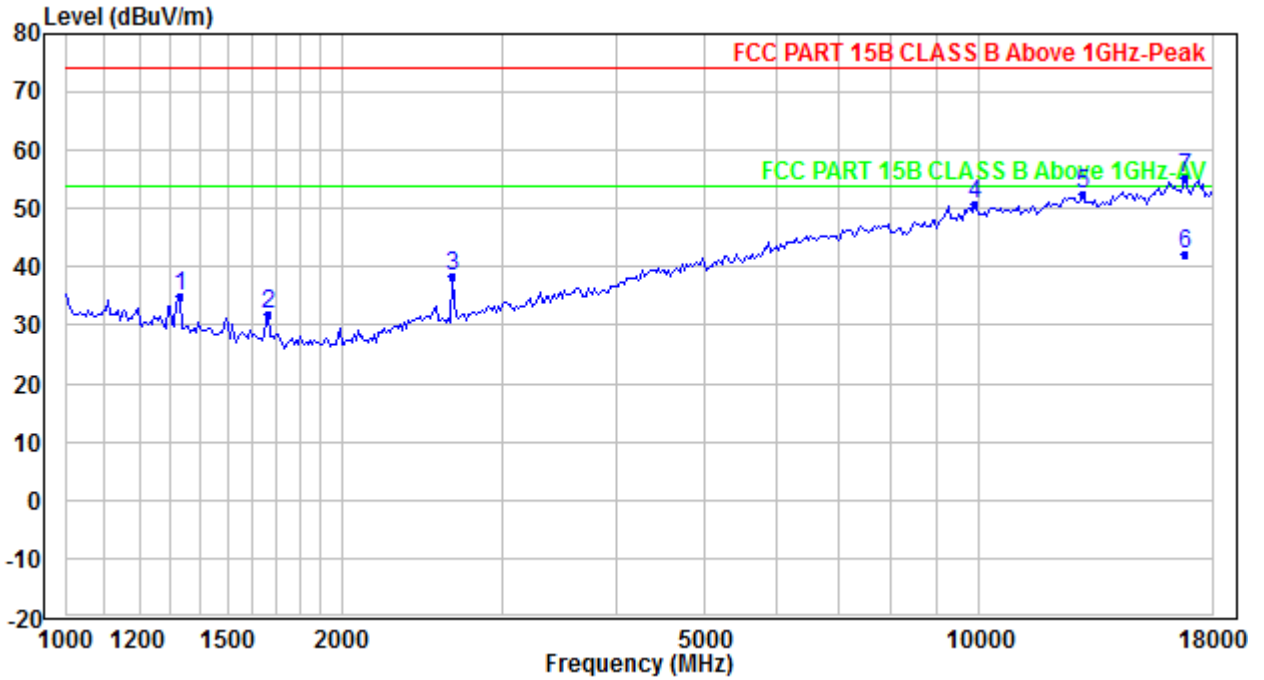
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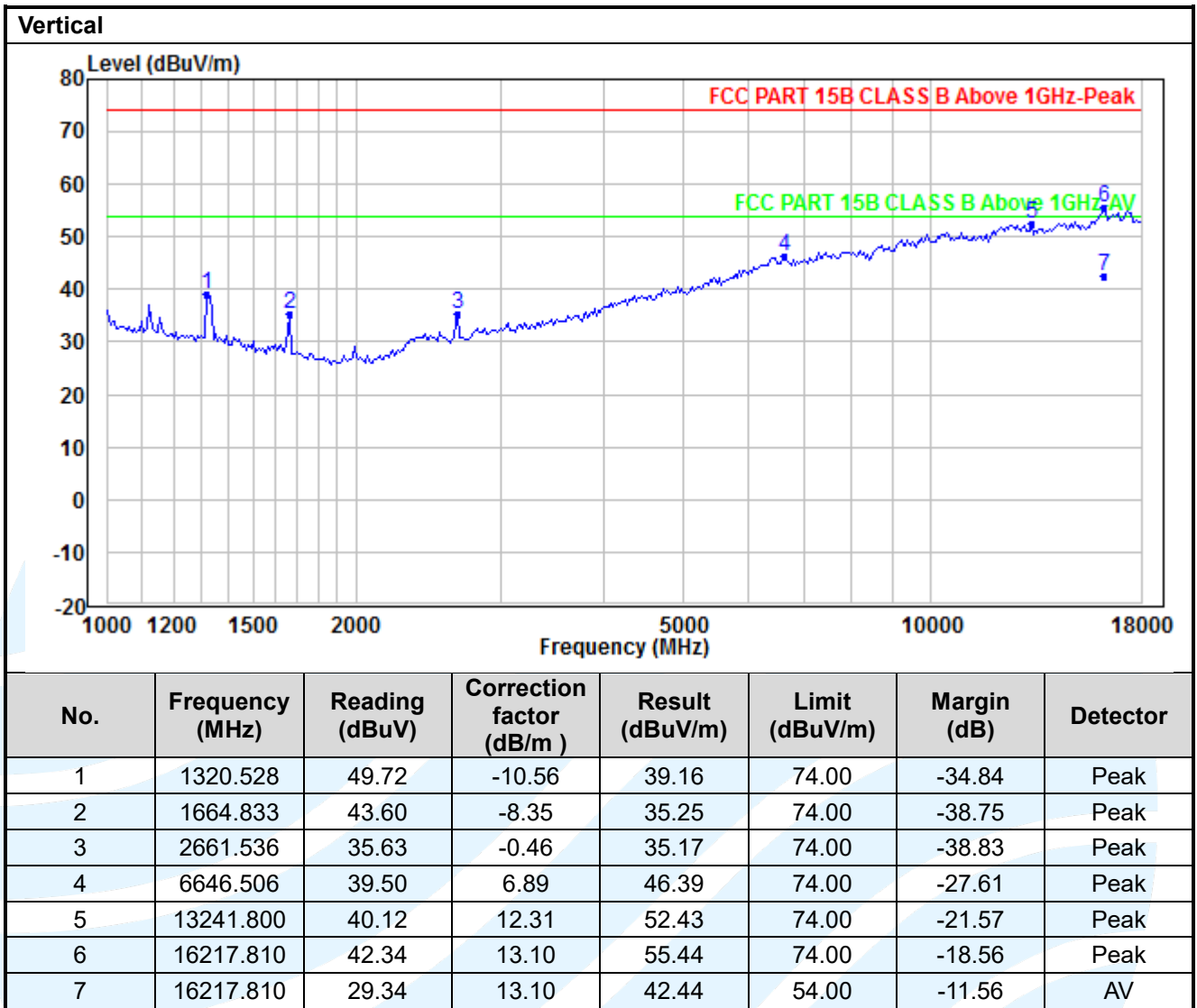
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Above 1GHz(Peak & Average)
 Mode7
 Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1328.199	45.57	-10.70	34.87	74.00	-39.13	Peak
2	1664.833	40.32	-8.42	31.90	74.00	-42.10	Peak
3	2646.164	38.82	-0.25	38.57	74.00	-35.43	Peak
4	9912.156	41.56	9.12	50.68	74.00	-23.32	Peak
5	13013.680	40.19	12.45	52.64	74.00	-21.36	Peak
6	16791.350	29.00	13.14	42.14	54.00	-11.86	AV
7	16791.350	42.00	13.14	55.14	74.00	-18.86	Peak



Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result – Limit
4. All possible modes of operation were investigated, and testing at two nominal voltages of 240V/50Hz and 120V/60Hz, only the worst case emissions reported.
5. For Radiated Emission above 18GHz, there was not any unwanted emission detected.
6. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

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6.2 CONDUCTED EMISSION

Test Requirement: FCC 47 CFR Part 15.107

Test Method: ANSI C63.4-2014

Limits:

Limits for Class B devices

Frequency range (MHz)	Limits (dB(μV))	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Test Setup: Refer to section 4.3.2 for details.

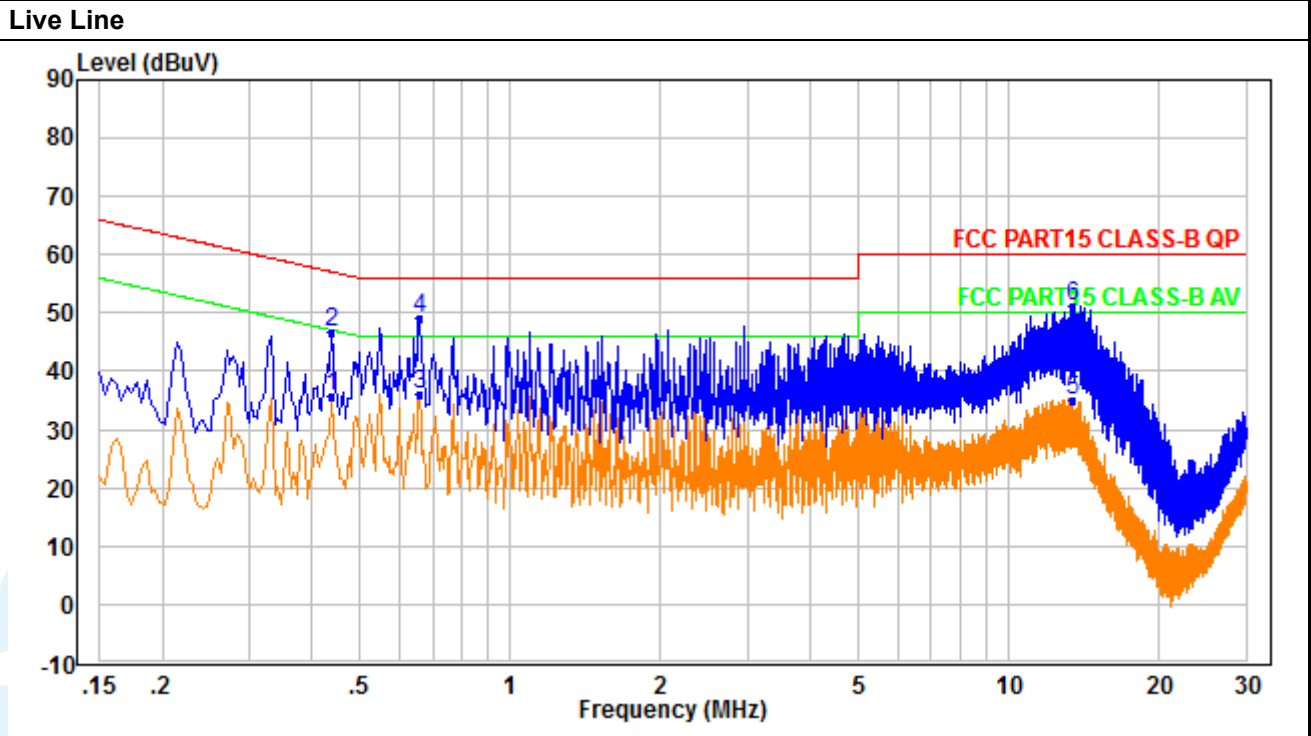
Test Procedures:

- 1) The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- 2) The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- 3) For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

Equipment Used: Refer to section 3 for details.

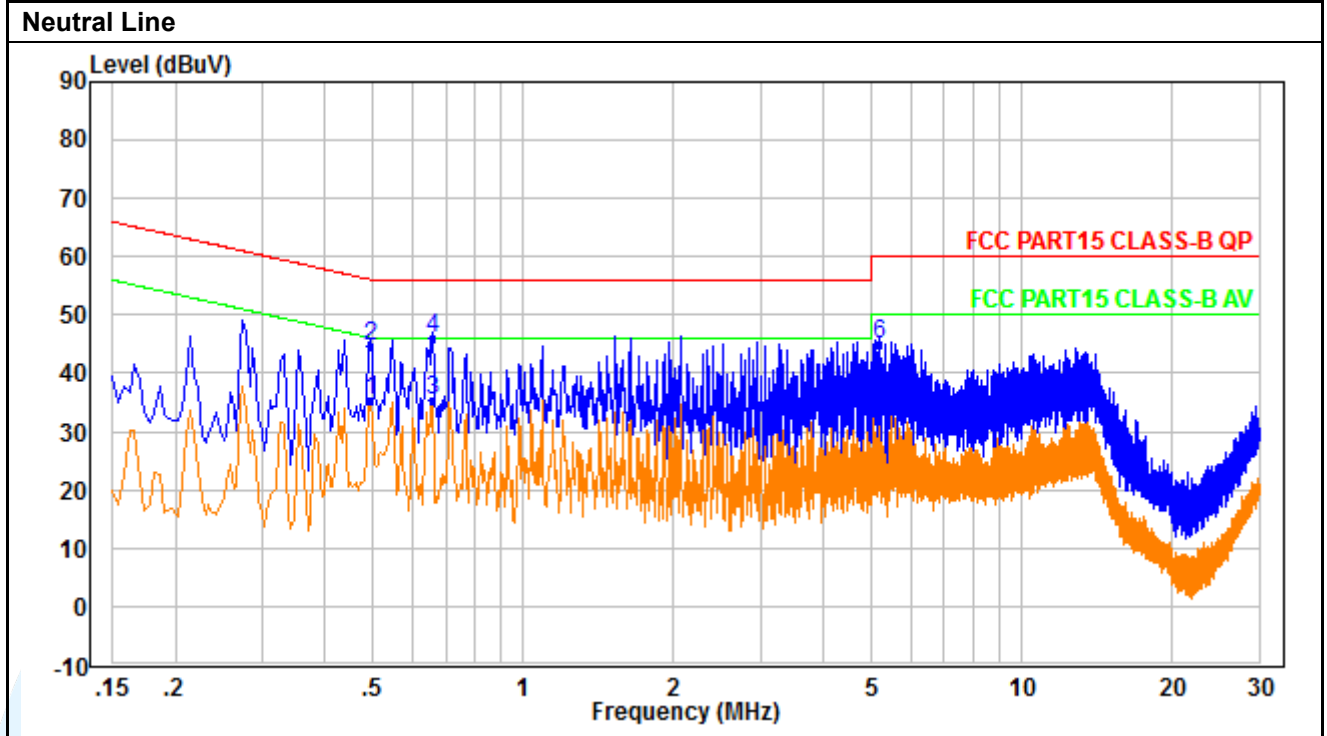
Test Result: Pass

The measurement data as follows:
 Quasi Peak and Average:
 Mode 3



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.438	26.44	9.25	35.69	47.10	-11.41	Average
2	0.438	37.55	9.25	46.80	57.10	-10.30	QP
3	0.658	26.59	9.38	35.97	46.00	-10.03	Average
4	0.658	39.64	9.38	49.02	56.00	-6.98	QP
5	13.433	25.18	9.82	35.00	50.00	-15.00	Average
6	13.433	41.33	9.82	51.15	60.00	-8.85	QP

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No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.494	26.18	9.35	35.53	46.10	-10.57	Average
2	0.494	35.28	9.35	44.63	56.10	-11.47	QP
3	0.658	26.08	9.39	35.47	46.00	-10.53	Average
4	0.658	36.57	9.39	45.96	56.00	-10.04	QP
5	5.194	22.35	9.59	31.94	50.00	-18.06	Average
6	5.194	35.55	9.59	45.14	60.00	-14.86	QP

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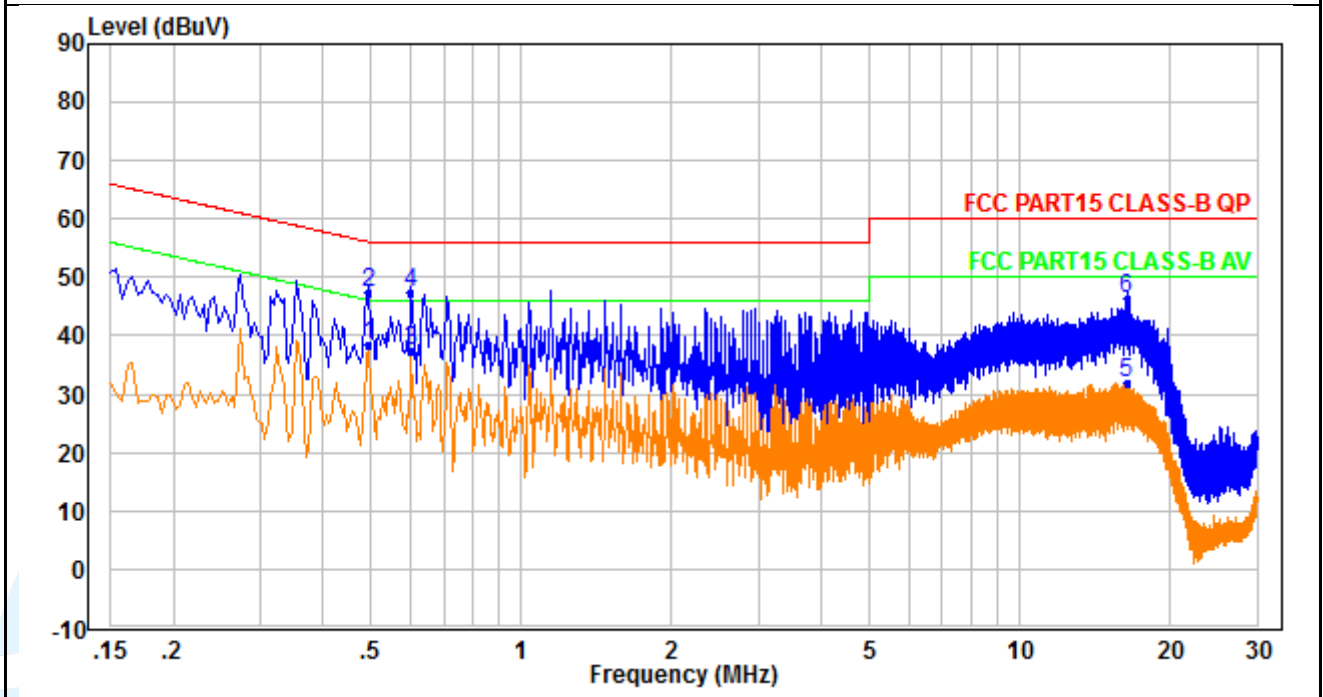
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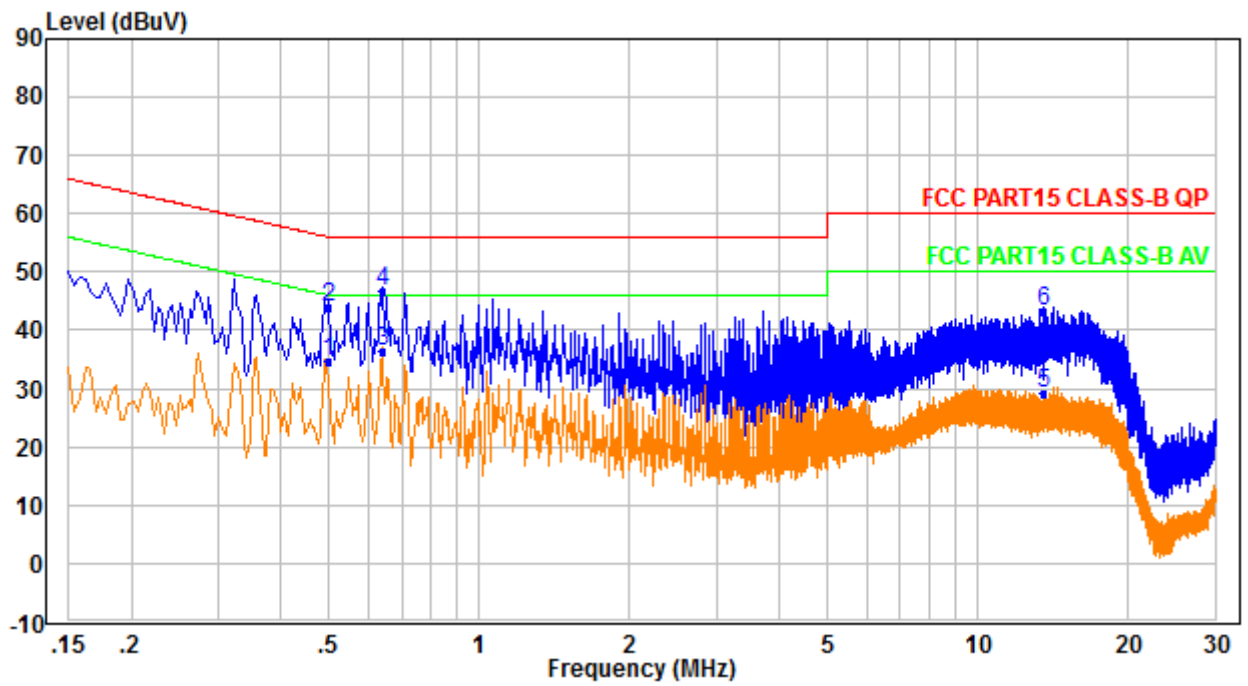
Quasi Peak and Average:
Mode 6

Live Line



No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.494	29.01	9.32	38.33	46.10	-7.77	Average
2	0.494	38.16	9.32	47.48	56.10	-8.62	QP
3	0.602	28.03	9.33	37.36	46.00	-8.64	Average
4	0.602	38.17	9.33	47.50	56.00	-8.50	QP
5	16.429	22.07	9.93	32.00	50.00	-18.00	Average
6	16.429	36.38	9.93	46.31	60.00	-13.69	QP

Neutral Line



No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.498	25.36	9.36	34.72	46.03	-11.31	Average
2	0.498	34.73	9.36	44.09	56.03	-11.94	QP
3	0.638	27.06	9.37	36.43	46.00	-9.57	Average
4	0.638	37.19	9.37	46.56	56.00	-9.44	QP
5	13.541	19.20	9.83	29.03	50.00	-20.97	Average
6	13.541	33.28	9.83	43.11	60.00	-16.89	QP

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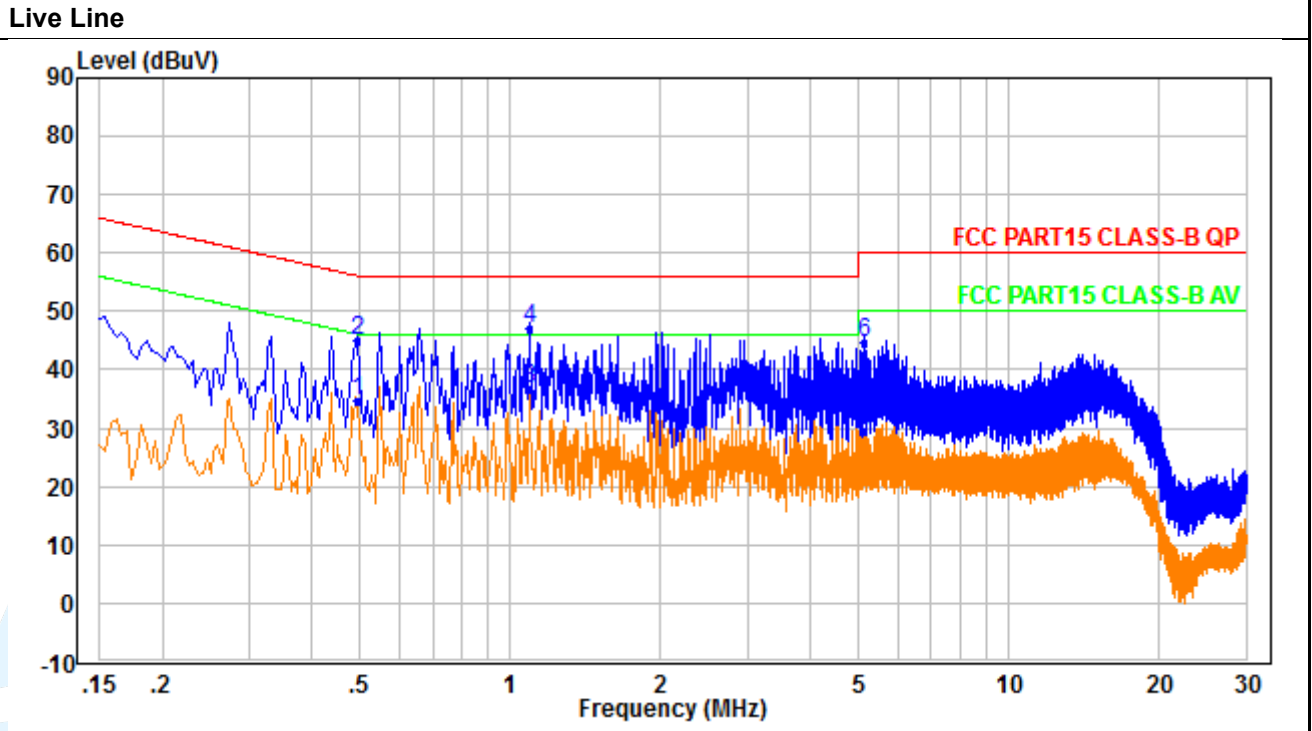
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Quasi Peak and Average:
Mode 7



No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.494	25.21	9.32	34.53	46.10	-11.57	Average
2	0.494	35.52	9.32	44.84	56.10	-11.26	QP
3	1.090	27.23	9.44	36.67	46.00	-9.33	Average
4	1.090	37.48	9.44	46.92	56.00	-9.08	QP
5	5.142	20.01	9.58	29.59	50.00	-20.41	Average
6	5.142	35.07	9.58	44.65	60.00	-15.35	QP

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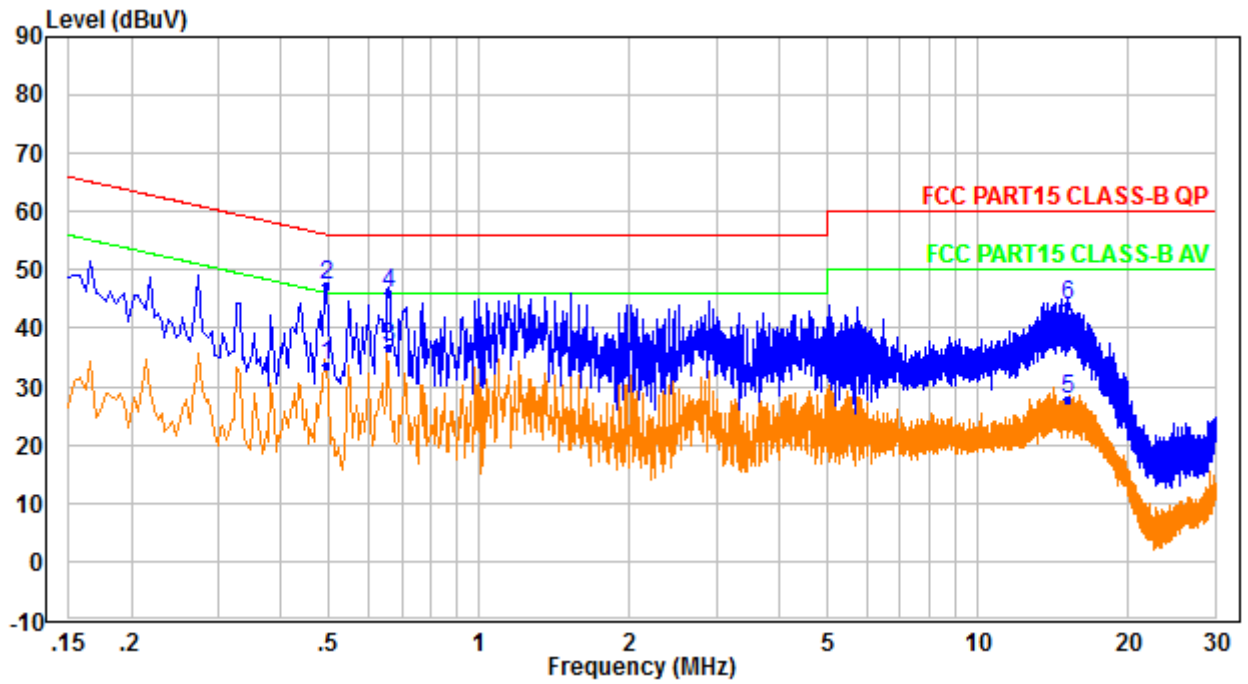
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Neutral Line



No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.494	24.17	9.35	33.52	46.10	-12.58	Average
2	0.494	37.89	9.35	47.24	56.10	-8.86	QP
3	0.658	27.18	9.39	36.57	46.00	-9.43	Average
4	0.658	36.72	9.39	46.11	56.00	-9.89	QP
5	15.181	18.07	9.89	27.96	50.00	-22.04	Average
6	15.181	34.17	9.89	44.06	60.00	-15.94	QP

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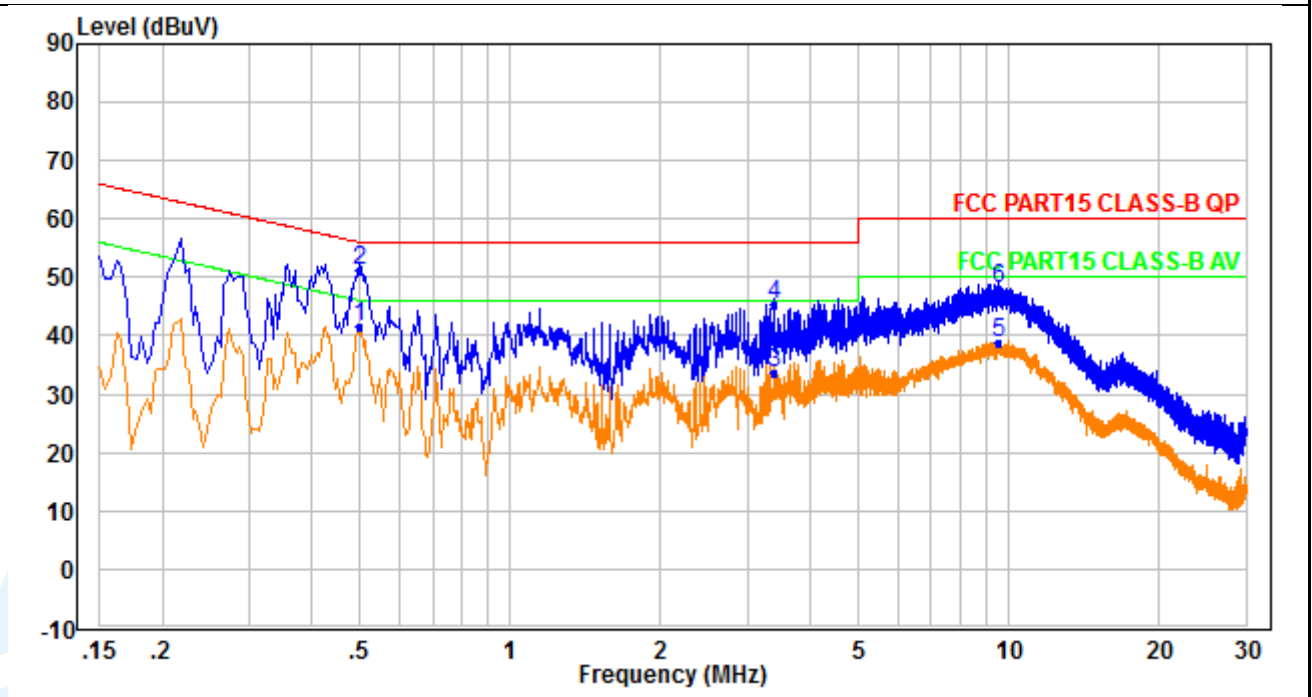
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**Quasi Peak and Average:
Mode 8**

Live Line



No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.498	32.18	9.33	41.51	46.03	-4.52	Average
2	0.498	41.86	9.33	51.19	56.03	-4.84	QP
3	3.390	24.15	9.60	33.75	46.00	-12.25	Average
4	3.390	35.81	9.60	45.41	56.00	-10.59	QP
5	9.541	29.23	9.67	38.90	50.00	-11.10	Average
6	9.541	38.34	9.67	48.01	60.00	-11.99	QP

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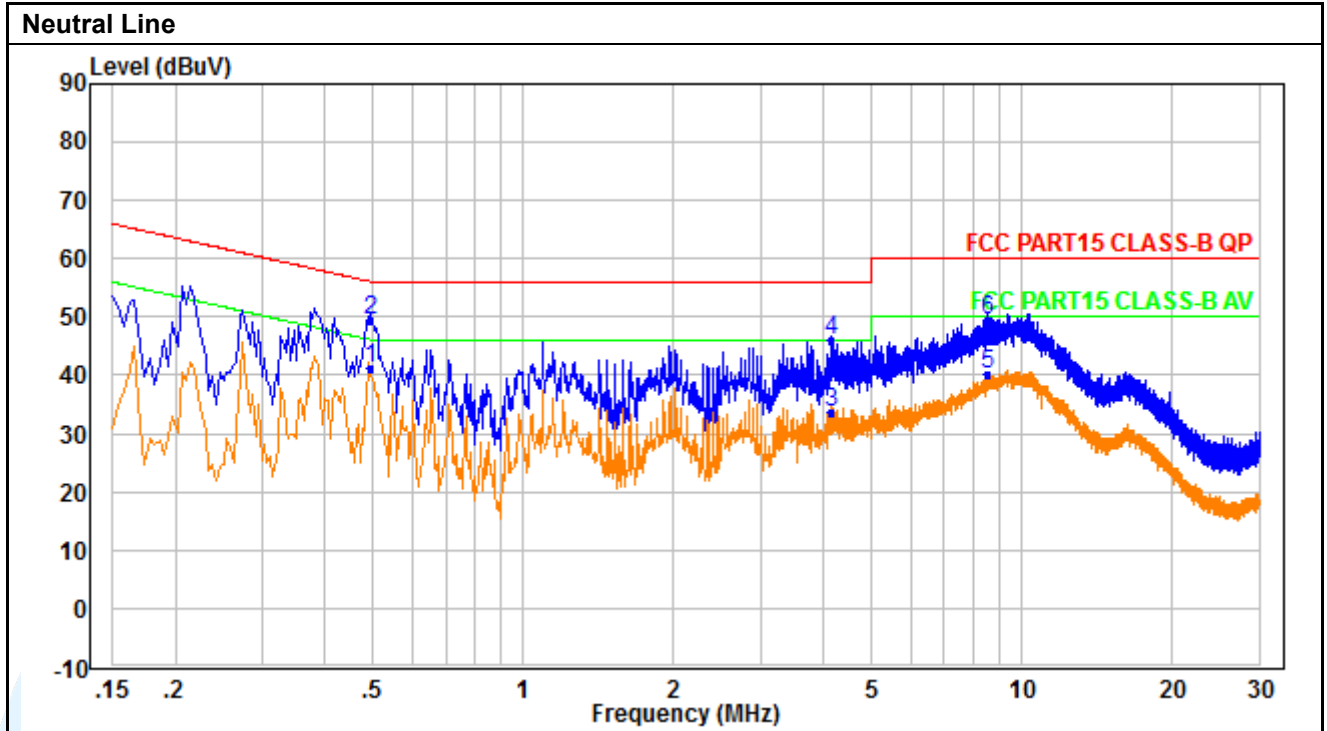
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No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.494	32.01	9.35	41.36	46.10	-4.74	Average
2	0.494	40.04	9.35	49.39	56.10	-6.71	QP
3	4.154	24.13	9.60	33.73	46.00	-12.27	Average
4	4.154	36.25	9.60	45.85	56.00	-10.15	QP
5	8.533	30.52	9.66	40.18	50.00	-9.82	Average
6	8.533	39.77	9.66	49.43	60.00	-10.57	QP

Remark:

1. Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Factor, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result - Limit
4. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.
5. All possible modes of operation were investigated, and testing at two nominal voltages of 240V/50Hz and 120V/60Hz, only the worst case emissions reported.

APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

***** End of Report *****

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