



Certificate #4312.01

TEST REPORT

Product Name: High-End Smart Video Phone for Android™
Trade Mark: GRANDSTREAM
Model No. / HVIN: GXV3470
Report Number: 220421012EMC-1
Test Standards: FCC 47 CFR Part 15 Subpart B
ICES-003 Issue 7
FCC ID: YZZGXV3470
Test Result: PASS
Date of Issue: June 28, 2022

Prepared for:

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

Prepared by:

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June 28, 2022

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Version

Version No.	Date	Description
V1.0	June 28, 2022	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:	High-End Smart Video Phone for Android™
Model No. / HVIN:	GXV3470
Trade Mark:	GRANDSTREAM
DUT Stage:	Identical Prototype
Rated Voltage:	☒ 100-240V~50/60Hz ☒ Powered by POE port
Classification of digital devices:	Class B
Highest Internal Frequency:	5825 MHz
Sample Received Date:	May 10, 2022
Sample Tested Date:	May 20, 2022 to May 28, 2022

Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

1.2.2 Description of Accessories

Adapter(1)	
Model No.:	H18US1200150A
Input:	100-240 V~50/60 Hz 0.8 A max
Output:	12.0 V $\Rightarrow$ 1.5 A
DC Cable:	2.5 Meter, Unshielded without ferrite

Adapter(2)	
Model No.:	F18W8-120150SPAUY
Input:	100-240 V~50/60 Hz 0.6 A
Output:	12.0 V $\Rightarrow$ 1.5 A
DC Cable:	2.5 Meter, Unshielded without ferrite

Adapter(3)	
Model No.:	DSA-18PFR-09 FUS 120150
Input:	100-240 V~50/60 Hz 0.6 A
Output:	12.0 V $\Rightarrow$ 1.5 A 18.0W
DC Cable:	2.5 Meter, Unshielded without ferrite

Cable(1)	
Connector:	Ethernet Cable
Cable Type:	Unshielded without ferrite
Length:	1.5 Meter

Cable(2)	
Connector:	Phone Cord
Cable Type:	Unshielded without ferrite
Length:	3.5 Meter

Others	
1x Handset	

Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

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	Lenovo B40-80	MP12NEQ6	UnionTrust
USB disk	Kingston	DTSE9	N/A	UnionTrust
Mouse	DELL	MS111	CN-011D3V-73826-6 2N-OLK	UnionTrust
Wireless Router	ASUA	RT-AC2200	2019AJ4850	UnionTrust
Headset	YEE	VE120-MV	N/A	UnionTrust
POE	Social	N/A	N/A	UnionTrust
POE	TP-LINK	TL-POE160S	11939610023	UnionTrust
IP Phone	GRANDSTREAM	GRP2614	N/A	Applicant
Flat Panel Monitor	DELL	SE2018HL	CN-0DDDDMM-FCC 00-141-C5EU-A00	UnionTrust
Monitor	DELL	E1916HVI	CN-01MRJV-72872-6 1D-CRJU-A00	UnionTrust

Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Ethernet Cable	RJ45	1.5 Unshielded without ferrite	UnionTrust
2	Ethernet Cable	RJ45	2.0 Unshielded without ferrite	UnionTrust
3	Ethernet Cable	RJ45	5.0 Unshielded without ferrite	UnionTrust
4	HDMI Cable	HDMI	1.5 Shielded with two ferrite	UnionTrust

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1.4 TEST LOCATION

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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 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 General 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 ICES-003 Issue 7 Section 3.2.1	ANSI C63.4-2014	PASS
Radiated Emission	FCC 47 CFR Part 15.109 ICES-003 Issue 7 Section 3.2.2	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)
☒	3m SAC	ETS-LINDGREN	3m	Euroshiedpn-CT001270-1317	Jan. 22, 2021	Jan. 21, 2024
☒	Receiver	R&S	ESIB26	100114	Nov. 05, 2021	Nov. 04, 2022
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Nov. 11, 2021	Nov. 10, 2023
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	Nov. 11, 2021	Nov. 10, 2023
☒	Preamplifier	HP	8447F	2805A02960	Nov. 05, 2021	Nov. 04, 2022
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	Apr. 30, 2021	Apr. 29, 2023
☒	Pre-amplifier	ETS-Lindgren	00118385	00201874	Nov. 06, 2021	Nov. 05, 2022
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3116C-PA	00202652	Nov. 14, 2020	Nov. 13, 2023
☒	Pre-amplifier	ETS-Lindgren	00118384	00202652	Nov. 17, 2020	Nov. 16, 2022
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	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)
☒	Receiver	R&S	ESR7	1316.3003K07-101181-K3	Nov. 05, 2021	Nov. 04, 2022
☒	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	Nov. 05, 2021	Nov. 04, 2022
☒	LISN	R&S	ESH2-Z5	860014/024	Nov. 05, 2021	Nov. 04, 2022
☒	LISN	ETS-Lindgren	3816/2SH	00201088	Nov. 05, 2021	Nov. 04, 2022
☒	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 (%)
NV/NT	+15 to +35	Powered by POE Port or Powered by DC 12V/1.5A	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

4.1.2 Record of Normal Environment and Test sample

Test Item	Temperature (°C)	Relative Humidity (%)	Pressure (kPa)	Sample No.	Tested by
Conducted Emission	24.8	48	101.1	220421012-B01/4	Davin Zhang
Radiated Emission	24.1	52	100.2		Lucas Ouyang

4.2 TEST MODES

Test Item	EMI Test Modes
Radiated Emission	Test Mode1: AC120V/60Hz (Adaptor1) + Monitor (HDMI) + USB + Hands Free Test Mode2: AC120V/60Hz (Adaptor1) + Monitor (HDMI) + USB + Ringing Test Mode3: AC120V/60Hz (Adaptor1) + Monitor (HDMI) + USB + Handset Test Mode4: AC120V/60Hz (Adaptor1) + Monitor (HDMI) + USB + Headset Test Mode5: AC240V/50Hz (Adaptor1) + Worse from mode 1~4 Test Mode6: Worse from mode 1~5 (Adaptor2) Test Mode7: Worse from mode 1~5 (Adaptor3) Test Mode8: AC120V/60Hz (POE) +Worse from mode 1~4
Conducted Emission	Test Mode1: AC120V/60Hz (Adaptor1) + Monitor (HDMI) + USB + Hands Free Test Mode2: AC120V/60Hz (Adaptor1) + Monitor (HDMI) + USB + Ringing Test Mode3: AC120V/60Hz (Adaptor1) + Monitor (HDMI) + USB + Handset Test Mode4: AC120V/60Hz (Adaptor1) + Monitor (HDMI) + USB + Headset Test Mode5: AC240V/50Hz (Adaptor1) + Worse from mode 1~4 Test Mode6: Worse from mode 1~5 (Adaptor2) Test Mode7: Worse from mode 1~5 (Adaptor3) Test Mode8: AC120V/60Hz (POE) +Worse from mode 1~4
Remark: The above test modes in boldface were the worst cases.	

4.3 TEST SETUP

4.3.1 For Radiated Emissions test setup

Figure 1. 30MHz to 1GHz

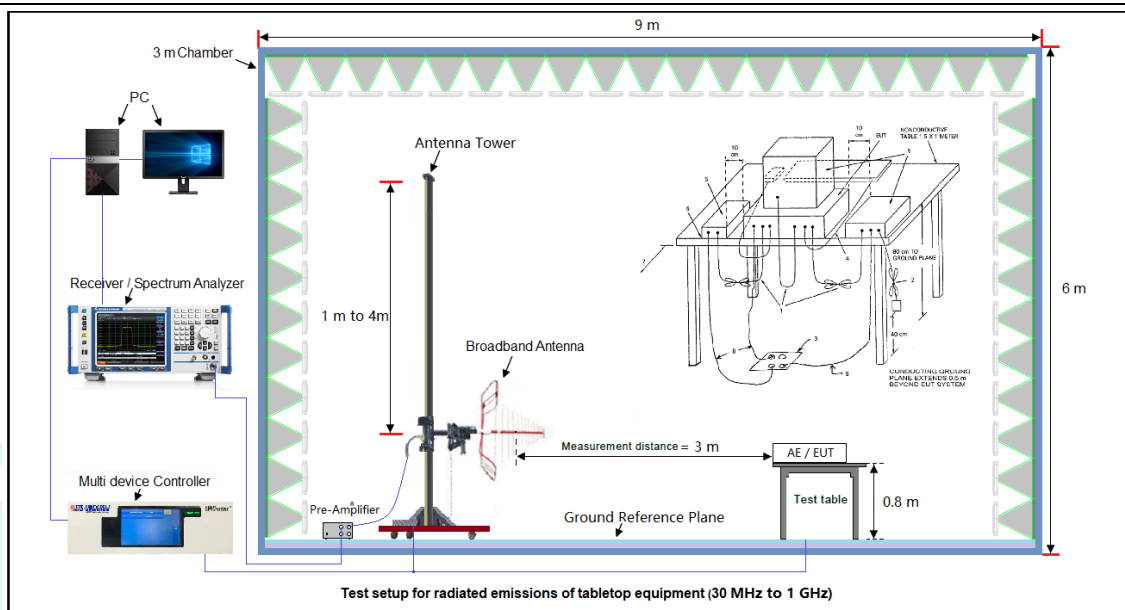
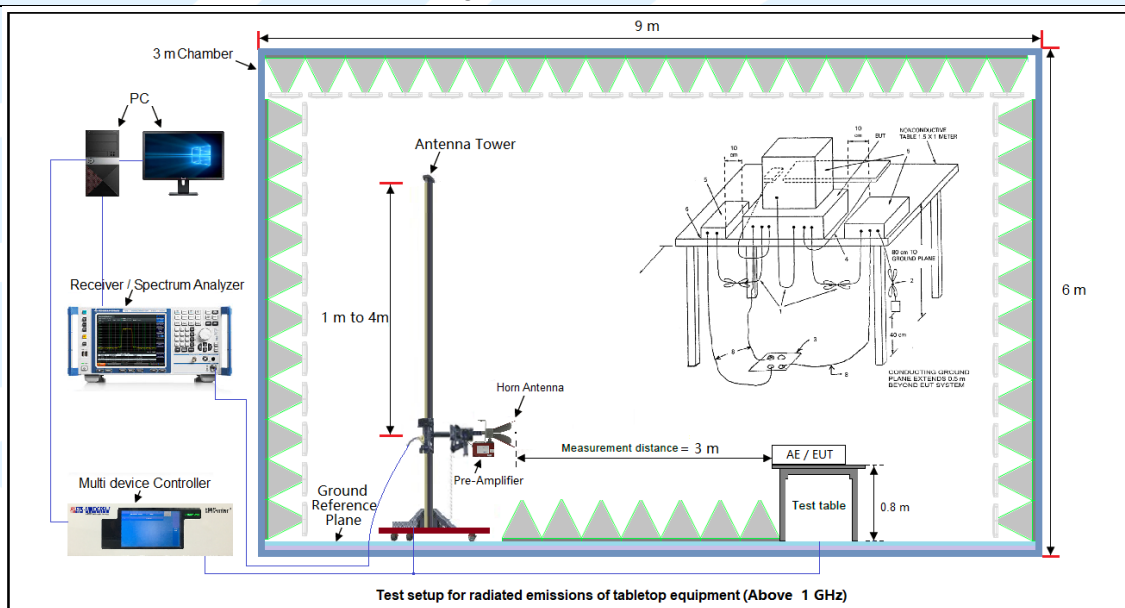


Figure 2. Above 1GHz



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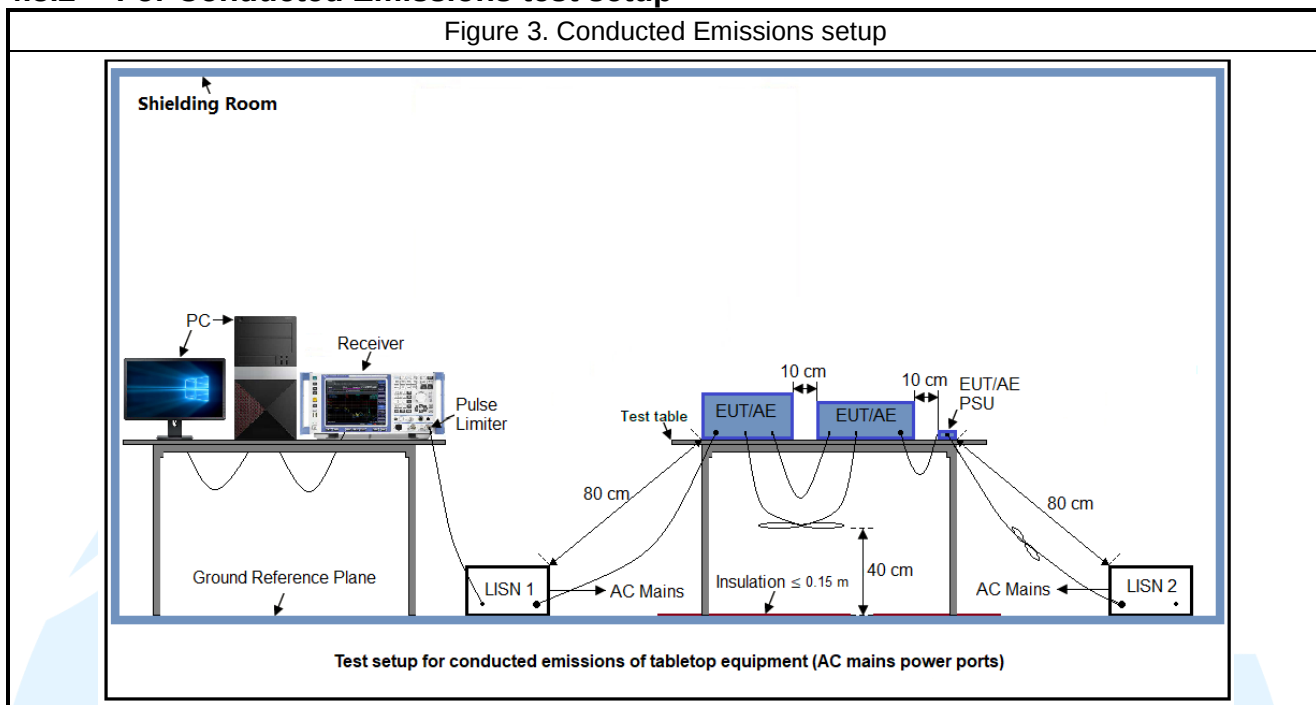
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4.3.2 For Conducted Emissions test setup

Figure 3. Conducted Emissions 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	ICES-003 Issue 7	Information Technology Equipment (Including Digital Apparatus)
3	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
4	KDB 174176 D01 Line Conducted FAQ v01r01	AC power-line conducted emission frequency asked questions
5	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
ICES-003 Issue 7 Clause 3.2.2

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

FCC 47 CFR Part 15 Subpart B

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 – 1000	54.0	--	--
Above 1000	--	74.0	54.0

ICES-003 Issue 7

Frequency (MHz)	limits at 3m (dB μ V/m)		
	QP Detector	PK Detector	AV Detector
30 – 88	40.0	--	--
88 – 216	43.5	--	--
216 – 230	46.0		

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230 – 960	47.0	--	--
960 – 1000	54.0	--	--
Above 1000	--	74.0	54.0

Remark:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB μ V/m) = 20 log Emission level (μ V/m).
3. 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:

1. From 30 MHz to 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 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

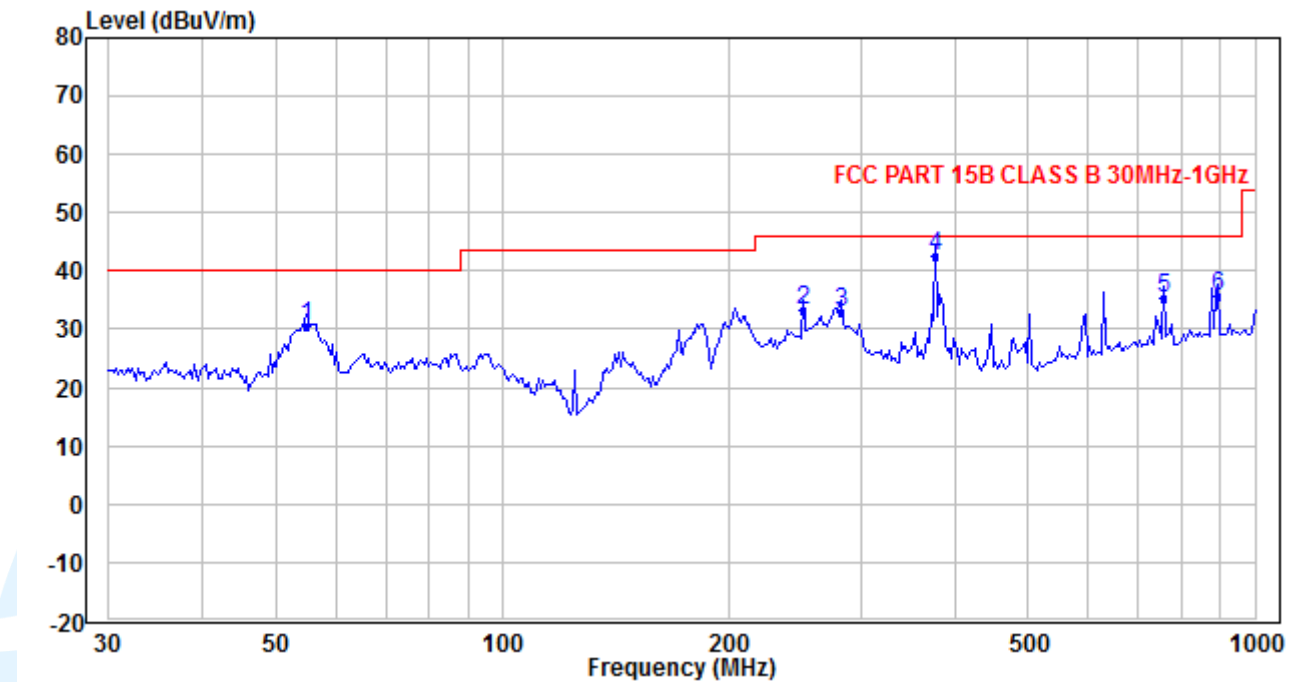
The measurement data as follows:

The measurement data for FCC 47 CFR Part 15 Subpart B as follows:

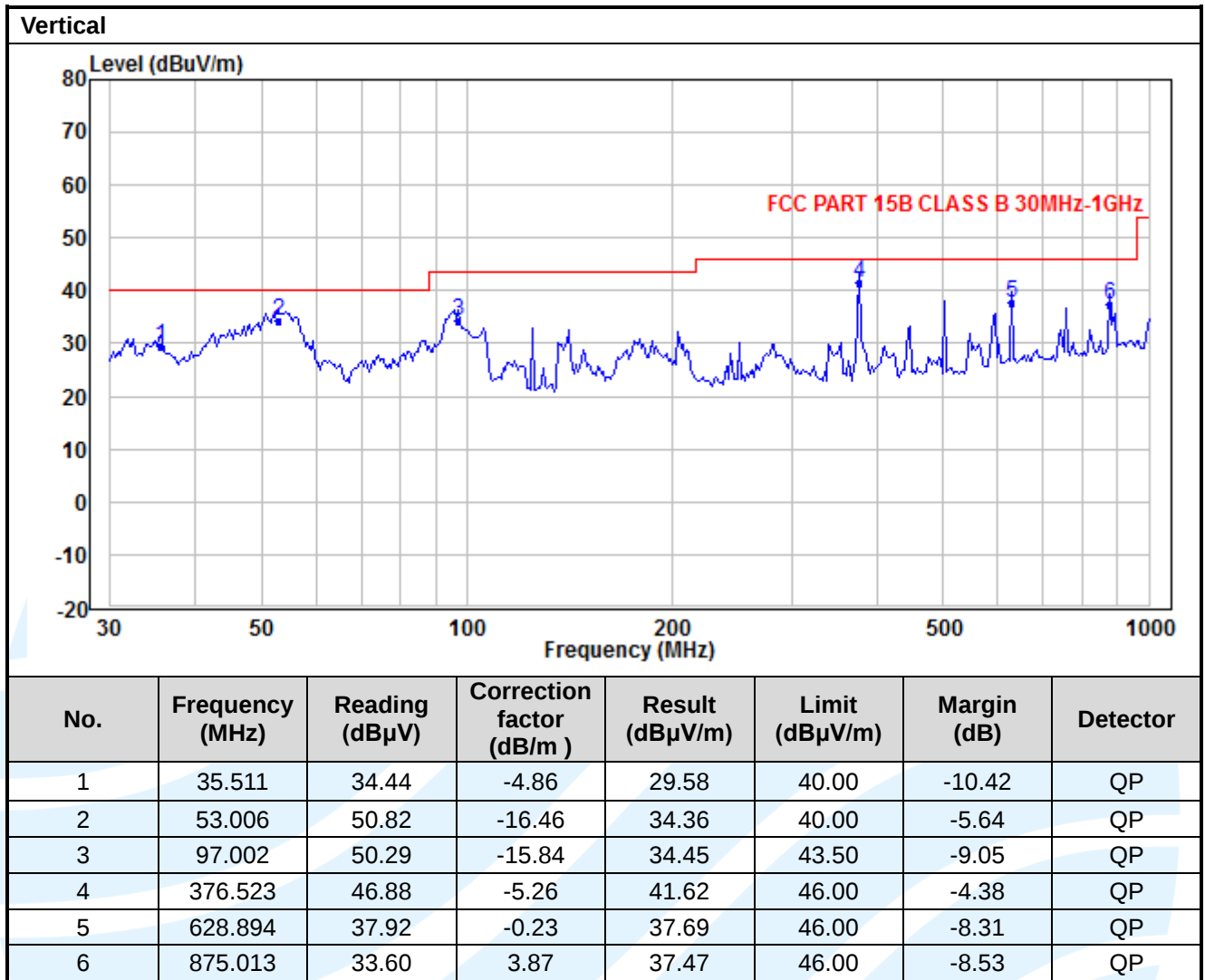
Below 1GHz(Quasi Peak):

Test Mode1

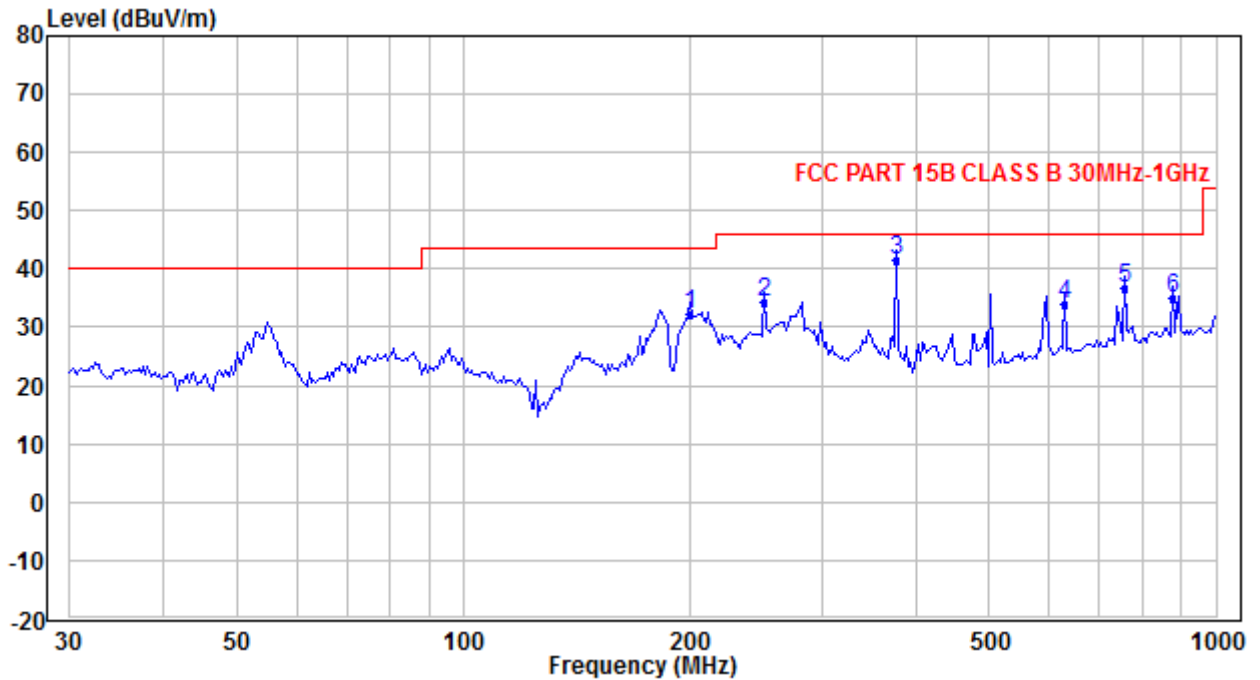
Horizontal



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	54.901	47.62	-17.01	30.61	40.00	-9.39	QP
2	250.486	41.96	-8.82	33.14	46.00	-12.86	QP
3	282.270	40.32	-7.26	33.06	46.00	-12.94	QP
4	376.523	47.78	-5.26	42.52	46.00	-3.48	QP
5	754.963	33.53	1.71	35.24	46.00	-10.76	QP
6	893.656	31.56	4.26	35.82	46.00	-10.18	QP



Below 1GHz(Quasi Peak):
Test Mode6
Horizontal



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	200.043	43.00	-10.69	32.31	43.50	-11.19	QP
2	250.486	42.96	-8.82	34.14	46.00	-11.86	QP
3	376.523	46.64	-5.26	41.38	46.00	-4.62	QP
4	628.894	34.09	-0.23	33.86	46.00	-12.14	QP
5	754.963	34.98	1.71	36.69	46.00	-9.31	QP
6	875.013	31.15	3.87	35.02	46.00	-10.98	QP

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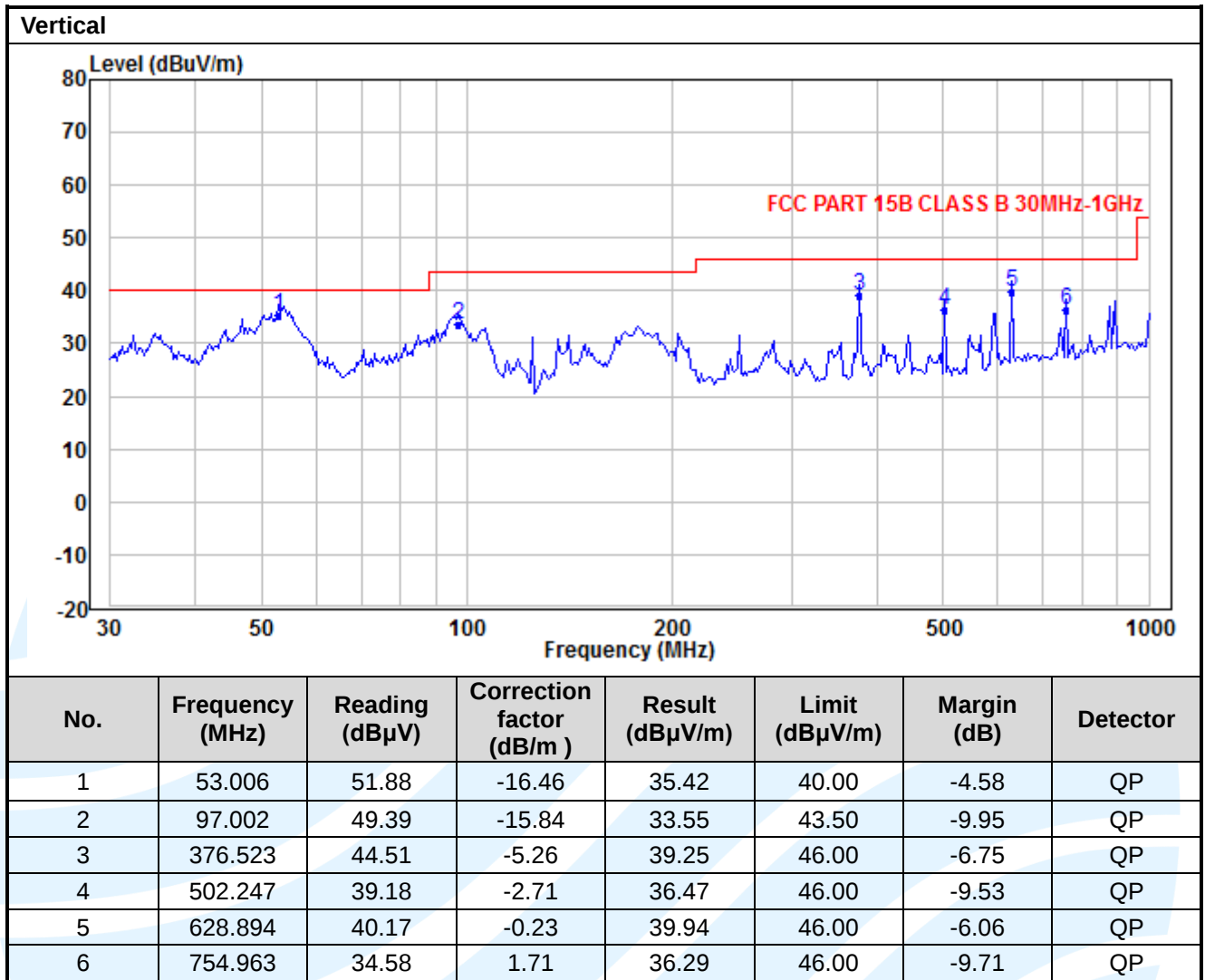
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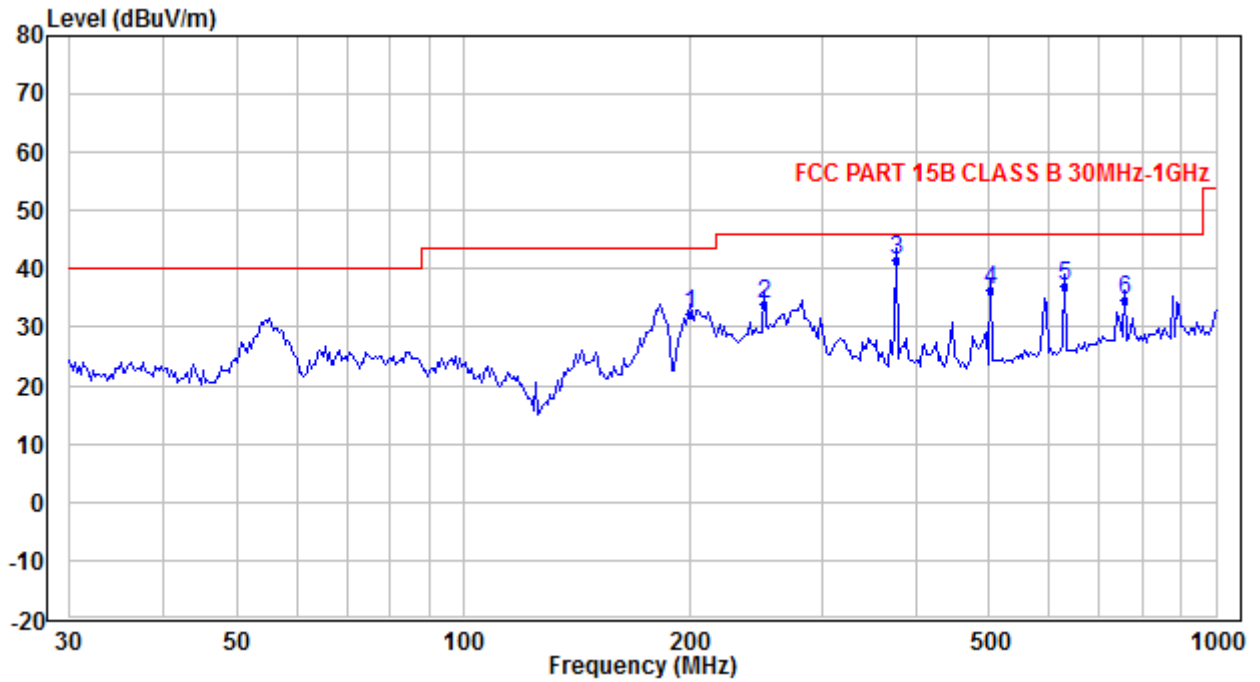
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Below 1GHz(Quasi Peak):
Test Mode7
Horizontal



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	200.043	42.76	-10.69	32.07	43.50	-11.43	QP
2	250.486	42.77	-8.82	33.95	46.00	-12.05	QP
3	376.523	46.91	-5.26	41.65	46.00	-4.35	QP
4	502.247	38.92	-2.71	36.21	46.00	-9.79	QP
5	628.894	37.30	-0.23	37.07	46.00	-8.93	QP
6	754.963	32.77	1.71	34.48	46.00	-11.52	QP

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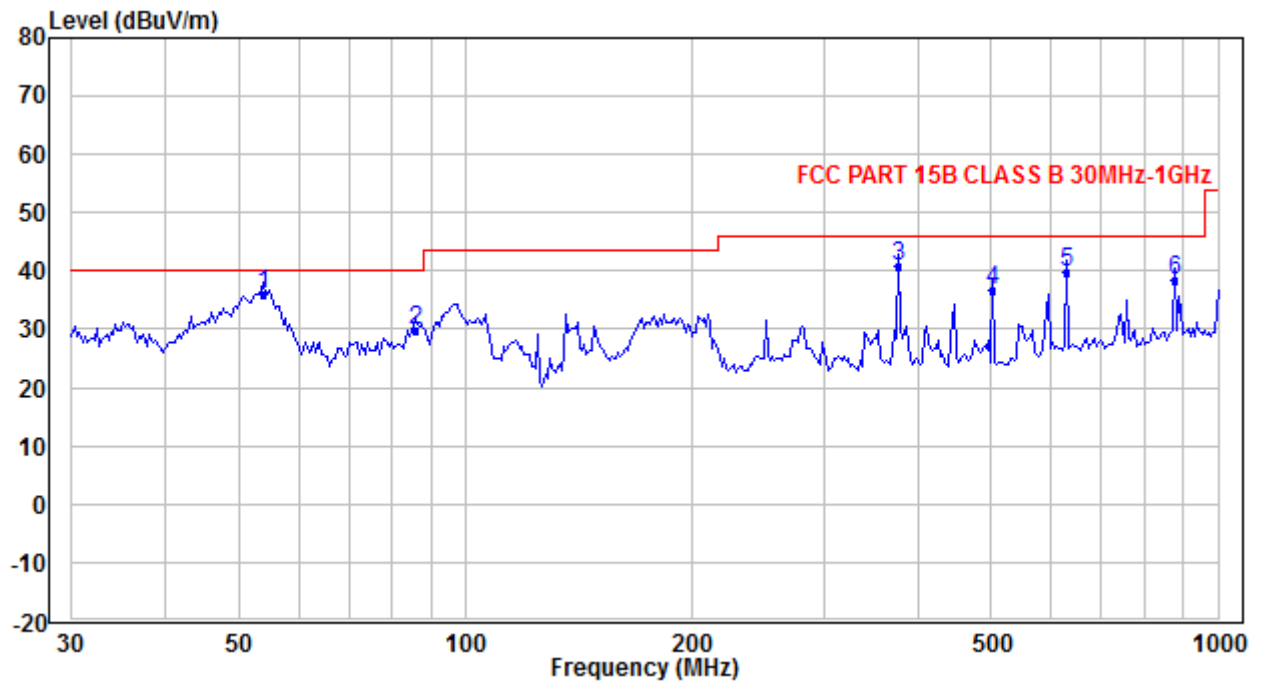
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Vertical



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	53.756	52.53	-16.61	35.92	40.00	-4.08	QP
2	86.080	46.31	-16.33	29.98	40.00	-10.02	QP
3	376.523	46.03	-5.26	40.77	46.00	-5.23	QP
4	502.247	39.56	-2.71	36.85	46.00	-9.15	QP
5	628.894	40.09	-0.23	39.86	46.00	-6.14	QP
6	875.013	34.66	3.87	38.53	46.00	-7.47	QP

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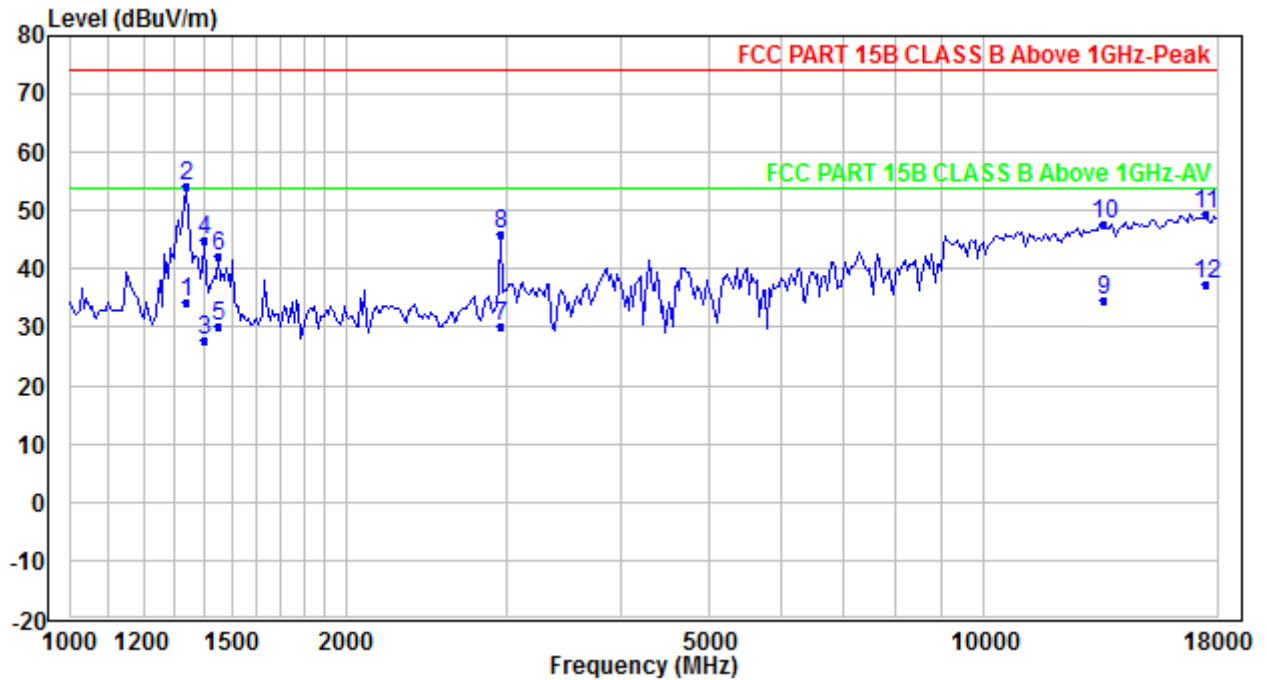
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Above 1GHz(Peak & Average)
Test Mode1
Horizontal



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1335.915	46.99	-12.84	34.15	54.00	-19.85	AV
2	1335.915	66.99	-12.84	54.15	74.00	-19.85	Peak
3	1399.276	40.48	-12.64	27.84	54.00	-26.16	AV
4	1399.276	57.48	-12.64	44.84	74.00	-29.16	Peak
5	1448.761	42.81	-12.49	30.32	54.00	-23.68	AV
6	1448.761	54.81	-12.49	42.32	74.00	-31.68	Peak
7	2954.015	36.94	-6.88	30.06	54.00	-23.94	AV
8	2954.015	52.94	-6.88	46.06	74.00	-27.94	Peak
9	13552.180	23.12	11.52	34.64	54.00	-19.36	AV
10	13552.180	36.12	11.52	47.64	74.00	-26.36	Peak
11	17486.170	35.96	13.48	49.44	74.00	-24.56	AV
12	17486.170	23.96	13.48	37.44	54.00	-16.56	Peak

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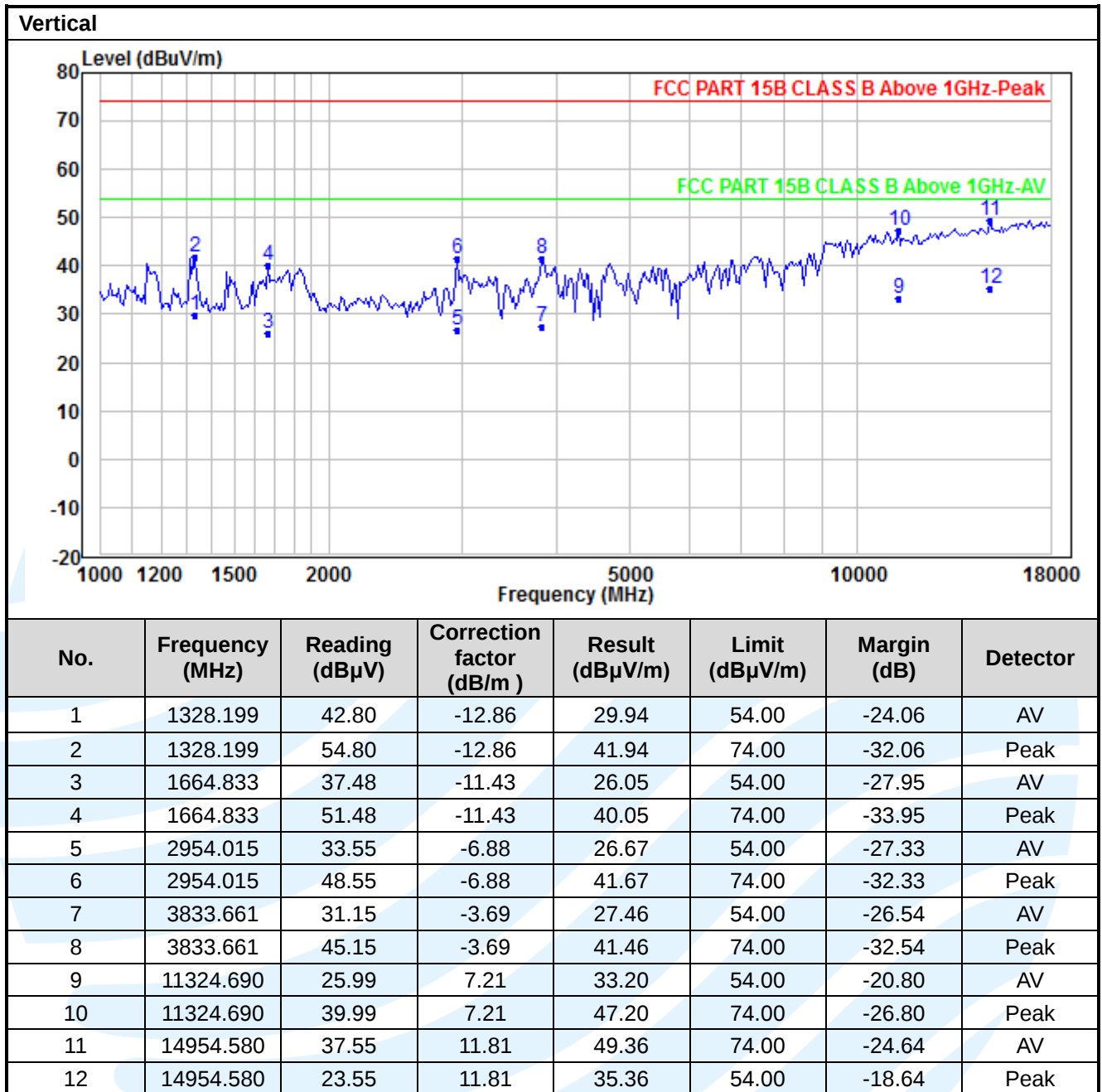
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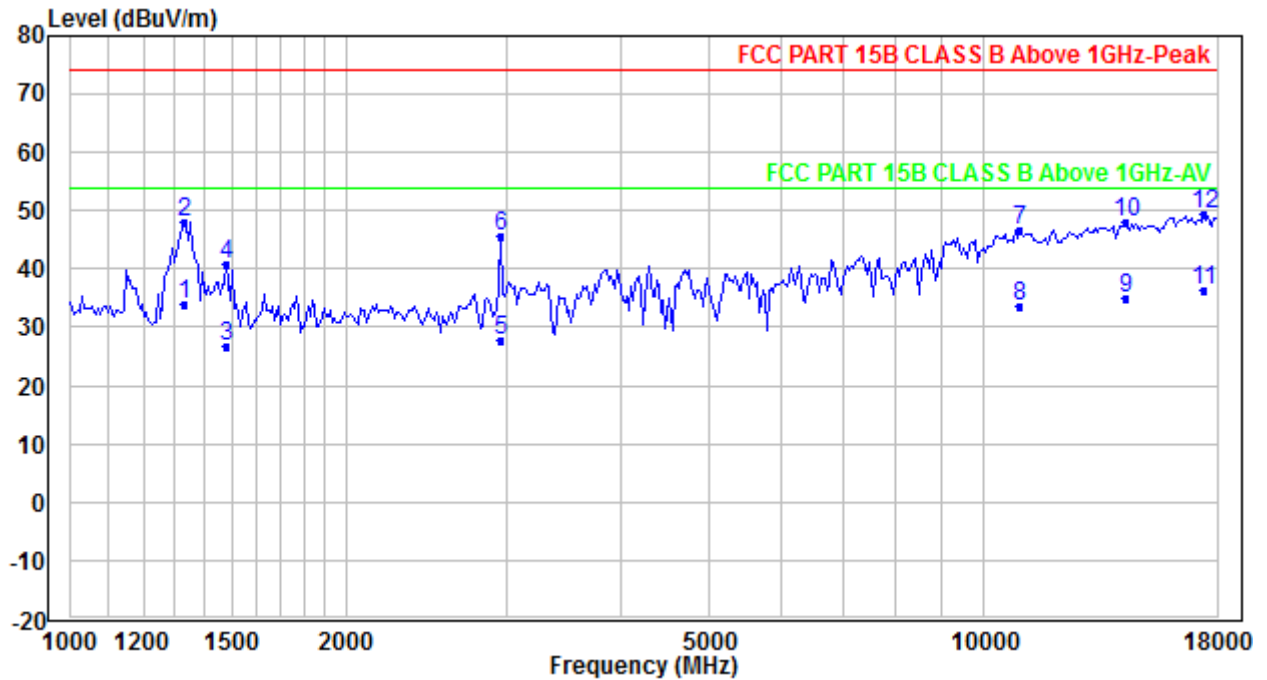
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Above 1GHz(Peak & Average)
Test Mode6
Horizontal



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1328.199	46.96	-12.86	34.10	54.00	-19.90	AV
2	1328.199	60.96	-12.86	48.10	74.00	-25.90	Peak
3	1482.720	39.24	-12.37	26.87	54.00	-27.13	AV
4	1482.720	53.24	-12.37	40.87	74.00	-33.13	Peak
5	2954.015	34.66	-6.88	27.78	54.00	-26.22	AV
6	2954.015	52.66	-6.88	45.78	74.00	-28.22	Peak
7	10937.880	39.27	7.29	46.56	74.00	-27.44	AV
8	10937.880	26.27	7.29	33.56	54.00	-20.44	Peak
9	14277.410	23.24	11.80	35.04	54.00	-18.96	AV
10	14277.410	36.24	11.80	48.04	74.00	-25.96	Peak
11	17385.170	23.14	13.33	36.47	54.00	-17.53	AV
12	17385.170	36.14	13.33	49.47	74.00	-24.53	Peak

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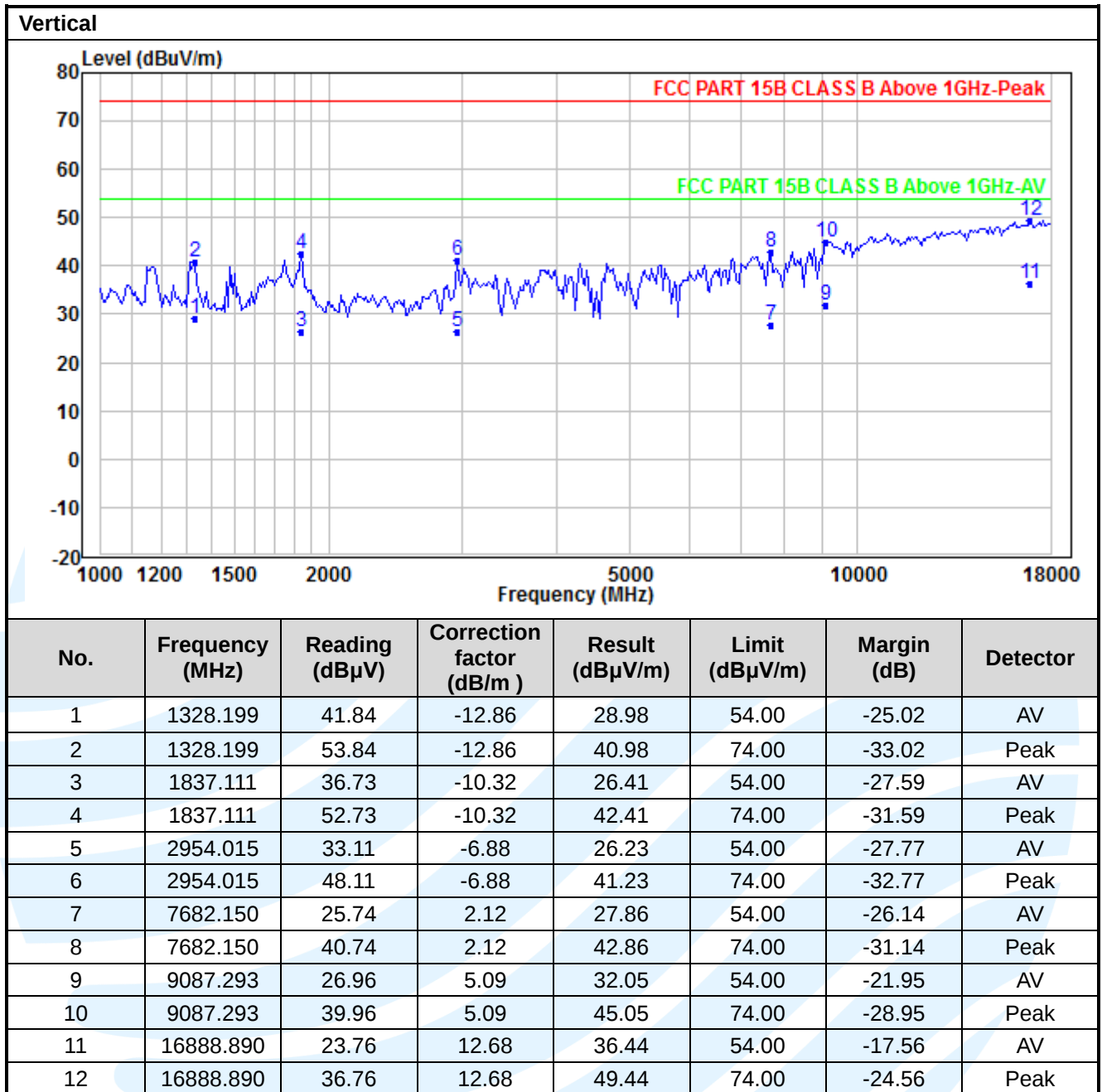
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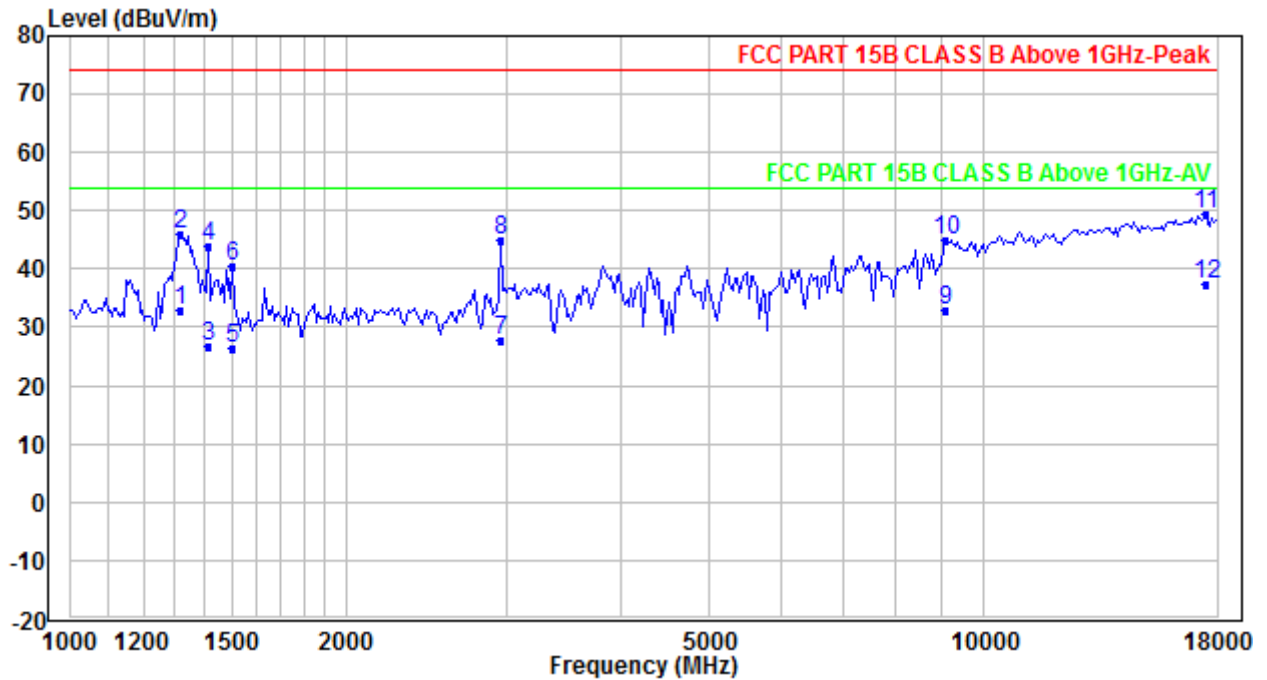
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Above 1GHz(Peak & Average)
Test Mode7
Horizontal



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1320.528	45.89	-12.89	33.00	54.00	-21.00	AV
2	1320.528	58.89	-12.89	46.00	74.00	-28.00	Peak
3	1415.580	39.38	-12.58	26.80	54.00	-27.20	AV
4	1415.580	56.38	-12.58	43.80	74.00	-30.20	Peak
5	1499.997	38.81	-12.32	26.49	54.00	-27.51	AV
6	1499.997	52.81	-12.32	40.49	74.00	-33.51	Peak
7	2954.015	34.70	-6.88	27.82	54.00	-26.18	AV
8	2954.015	51.70	-6.88	44.82	74.00	-29.18	Peak
9	9087.293	27.95	5.09	33.04	54.00	-20.96	AV
10	9087.293	39.95	5.09	45.04	74.00	-28.96	Peak
11	17486.170	35.86	13.48	49.34	74.00	-24.66	AV
12	17486.170	23.86	13.48	37.34	54.00	-16.66	Peak

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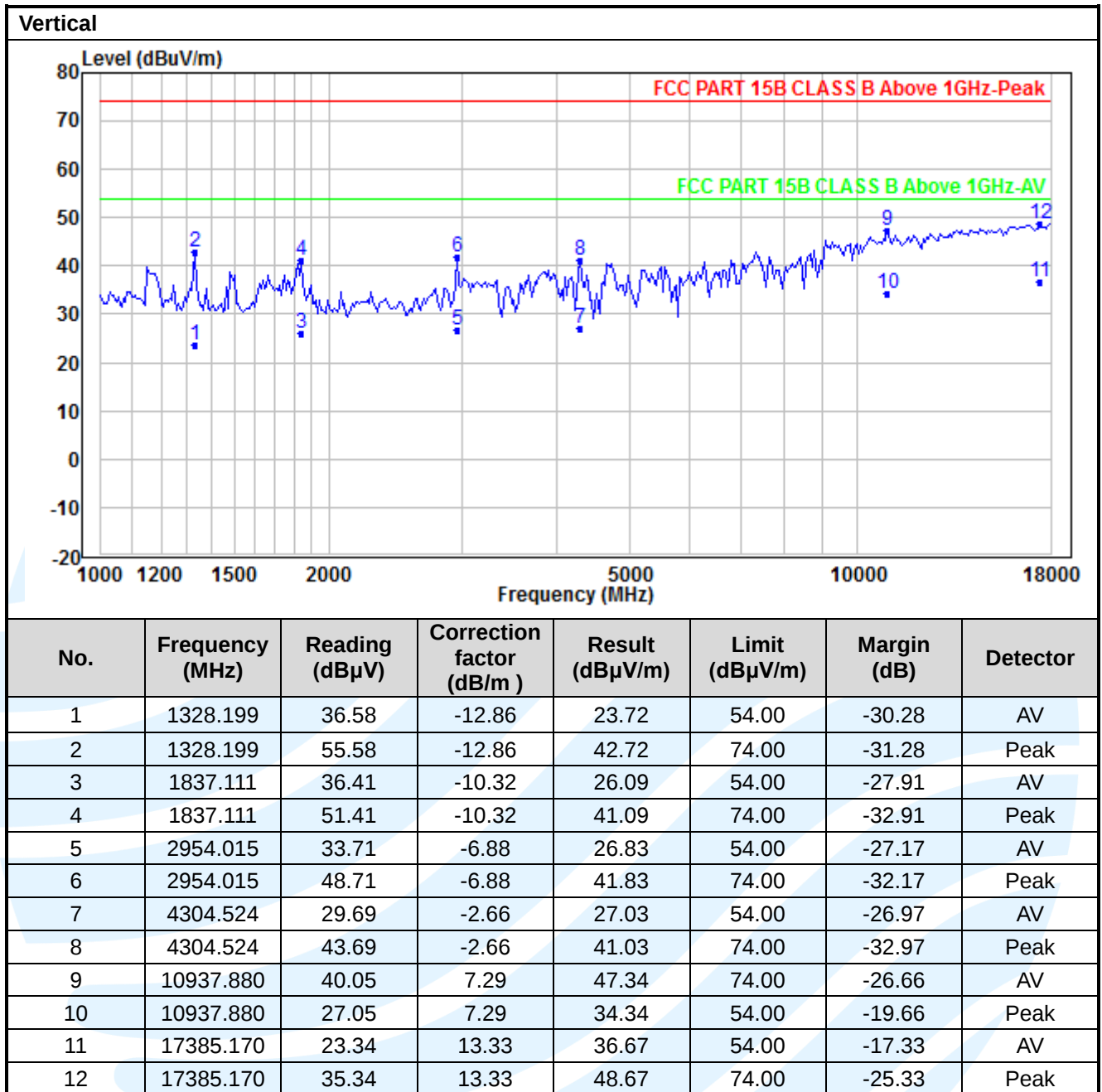
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Remark:

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.
7. The limit of ICES-003 in the 230MHz to 960MHz band is higher than that of FCC Part 15B, so the radiation emission test data conform to the limit of ICES-003.

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6.2 CONDUCTED EMISSION

Test Requirement: FCC 47 CFR Part 15.107
ICES-003 Issue 7 Section 3.2.1

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.

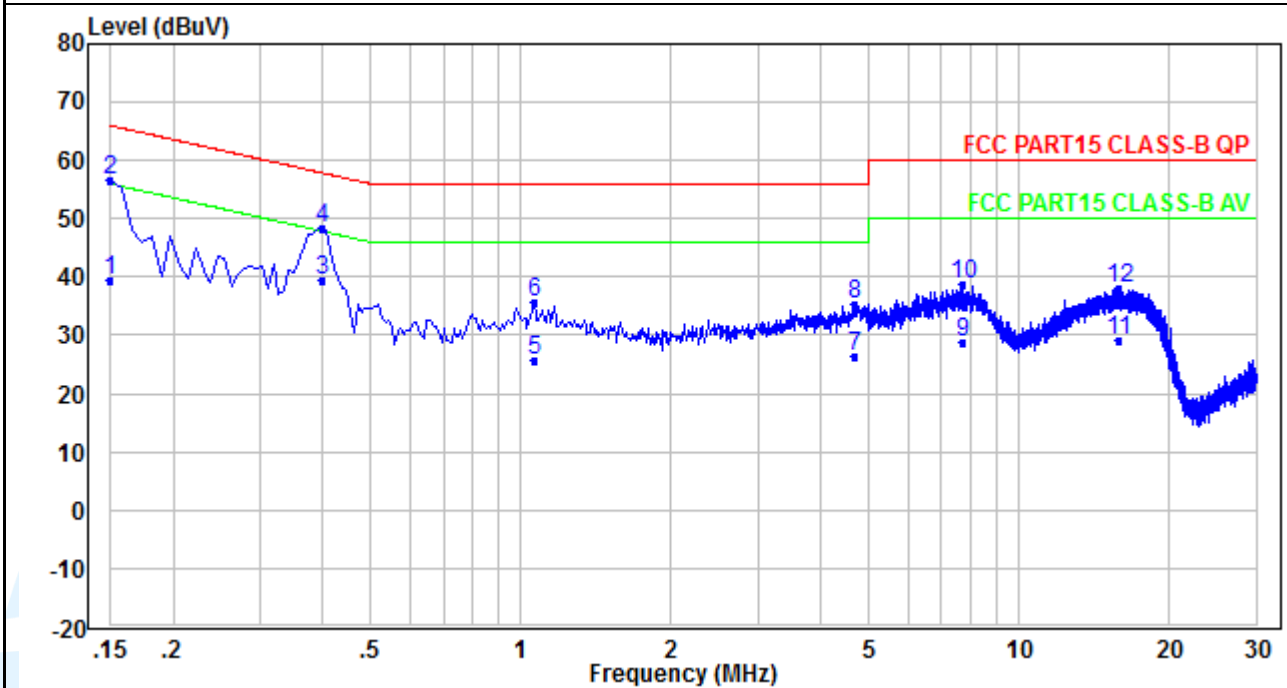
Test Result: Pass

The measurement data as follows:

Quasi Peak and Average:

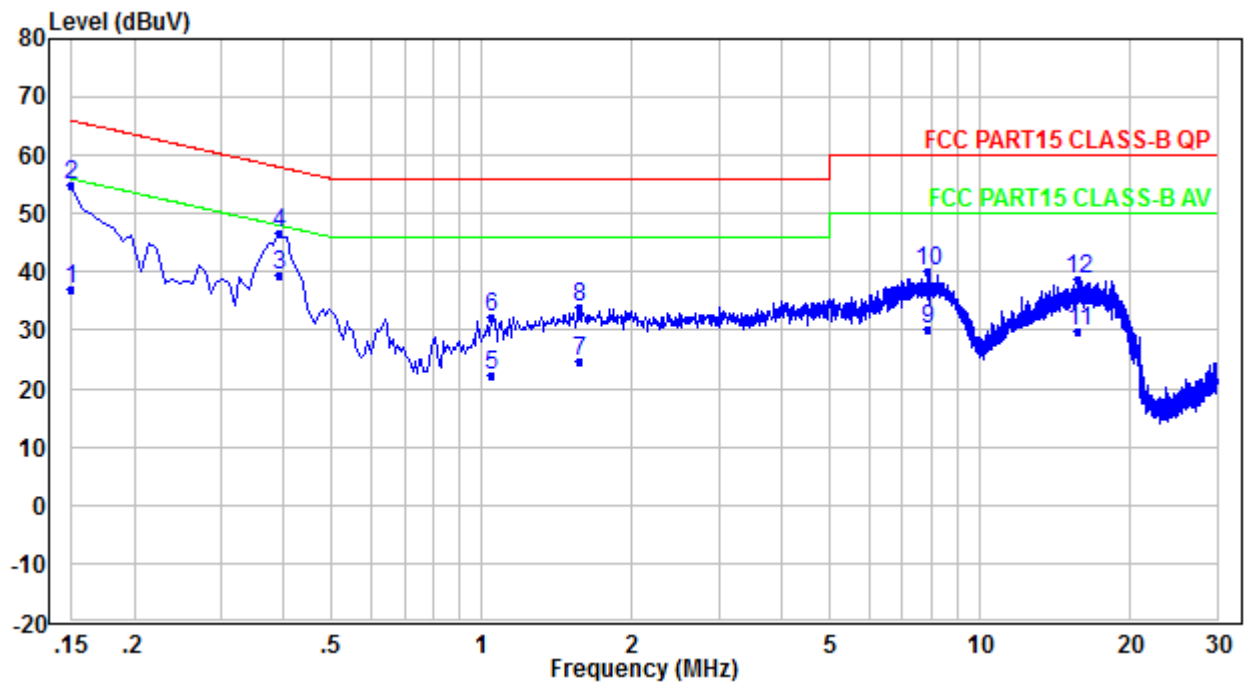
Test Mode7

Live Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	29.47	10.12	39.59	56.00	-16.41	Average
2	0.150	46.47	10.12	56.59	66.00	-9.41	QP
3	0.398	29.29	10.12	39.41	47.90	-8.49	Average
4	0.398	38.29	10.12	48.41	57.90	-9.49	QP
5	1.062	15.61	10.22	25.83	46.00	-20.17	Average
6	1.062	25.61	10.22	35.83	56.00	-20.17	QP
7	4.693	15.98	10.31	26.29	46.00	-19.71	Average
8	4.693	24.98	10.31	35.29	56.00	-20.71	QP
9	7.748	18.24	10.49	28.73	50.00	-21.27	Average
10	7.748	28.24	10.49	38.73	60.00	-21.27	QP
11	15.867	18.21	10.89	29.10	50.00	-20.90	Average
12	15.867	27.21	10.89	38.10	60.00	-21.90	QP

Neutral Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	26.83	10.11	36.94	56.00	-19.06	Average
2	0.150	44.83	10.11	54.94	66.00	-11.06	QP
3	0.390	29.50	10.12	39.62	48.06	-8.44	Average
4	0.390	36.50	10.12	46.62	58.06	-11.44	QP
5	1.046	12.24	10.15	22.39	46.00	-23.61	Average
6	1.046	22.24	10.15	32.39	56.00	-23.61	QP
7	1.574	14.66	10.17	24.83	46.00	-21.17	Average
8	1.574	23.66	10.17	33.83	56.00	-22.17	QP
9	7.836	19.58	10.51	30.09	50.00	-19.91	Average
10	7.836	29.58	10.51	40.09	60.00	-19.91	QP
11	15.779	18.84	10.85	29.69	50.00	-20.31	Average
12	15.779	27.84	10.85	38.69	60.00	-21.31	QP

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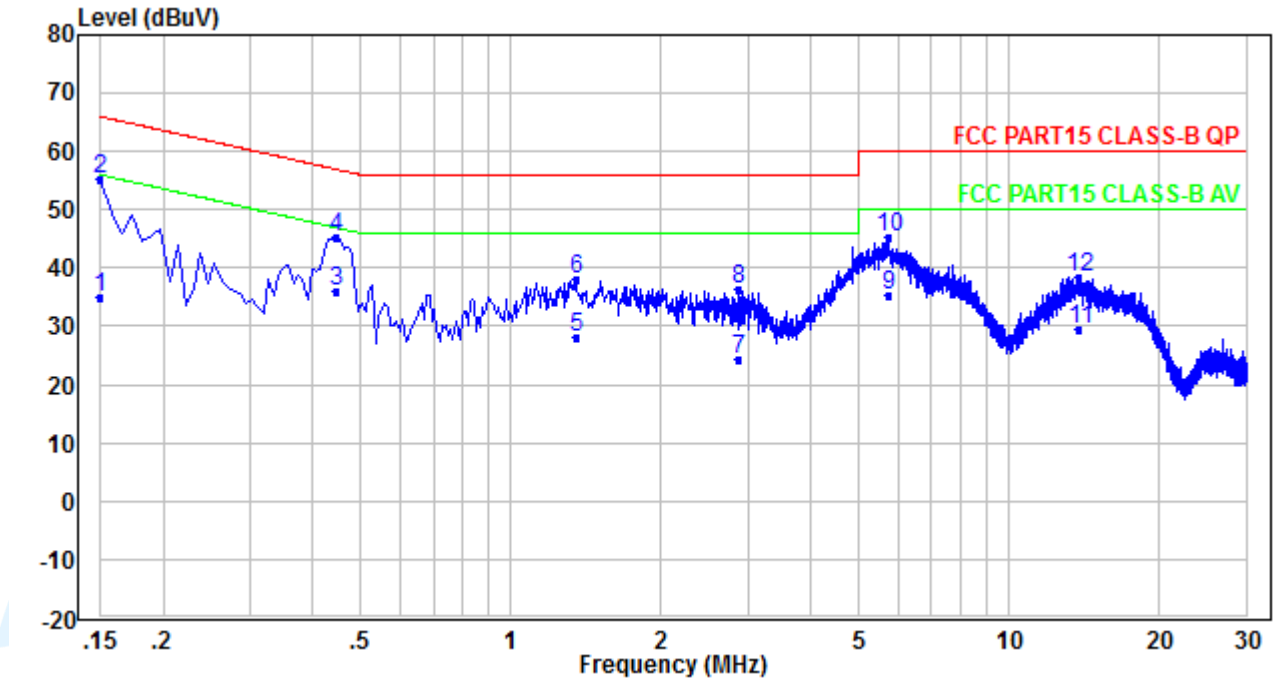
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Quasi Peak and Average: Test Mode1

Live Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.150	24.97	10.12	35.09	56.00	-20.91	Average
2	0.150	44.97	10.12	55.09	66.00	-10.91	QP
3	0.446	26.00	10.14	36.14	46.95	-10.81	Average
4	0.446	35.00	10.14	45.14	56.95	-11.81	QP
5	1.350	17.96	10.22	28.18	46.00	-17.82	Average
6	1.350	27.96	10.22	38.18	56.00	-17.82	QP
7	2.861	14.20	10.26	24.46	46.00	-21.54	Average
8	2.861	26.20	10.26	36.46	56.00	-19.54	QP
9	5.725	24.79	10.37	35.16	50.00	-14.84	Average
10	5.725	34.79	10.37	45.16	60.00	-14.84	QP
11	13.867	18.63	10.82	29.45	50.00	-20.55	Average
12	13.867	27.63	10.82	38.45	60.00	-21.55	QP

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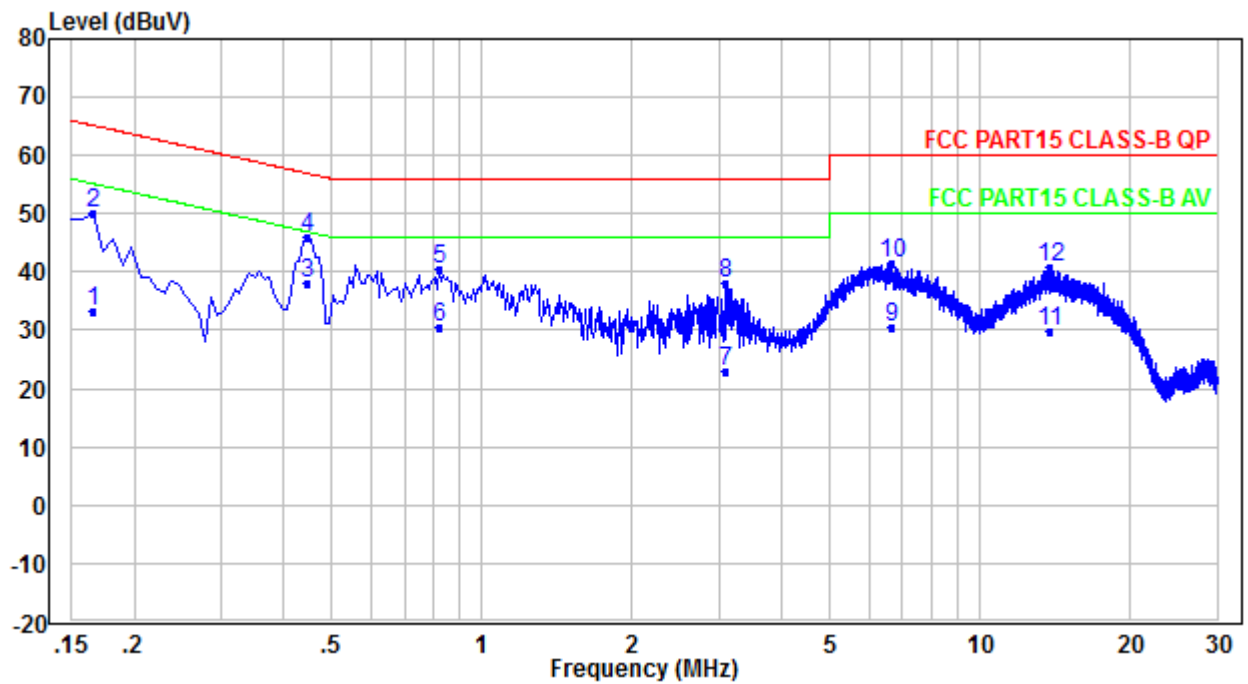
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Neutral Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.166	23.04	10.12	33.16	55.16	-22.00	Average
2	0.166	40.04	10.12	50.16	65.16	-15.00	QP
3	0.446	27.93	10.12	38.05	46.95	-8.90	Average
4	0.446	35.93	10.12	46.05	56.95	-10.90	QP
5	0.822	30.30	10.14	40.44	56.00	-15.56	Average
6	0.822	20.30	10.14	30.44	46.00	-15.56	QP
7	3.077	12.79	10.28	23.07	46.00	-22.93	Average
8	3.077	27.79	10.28	38.07	56.00	-17.93	QP
9	6.653	20.17	10.45	30.62	50.00	-19.38	Average
10	6.653	31.17	10.45	41.62	60.00	-18.38	QP
11	13.795	19.19	10.78	29.97	50.00	-20.03	Average
12	13.795	30.19	10.78	40.97	60.00	-19.03	QP

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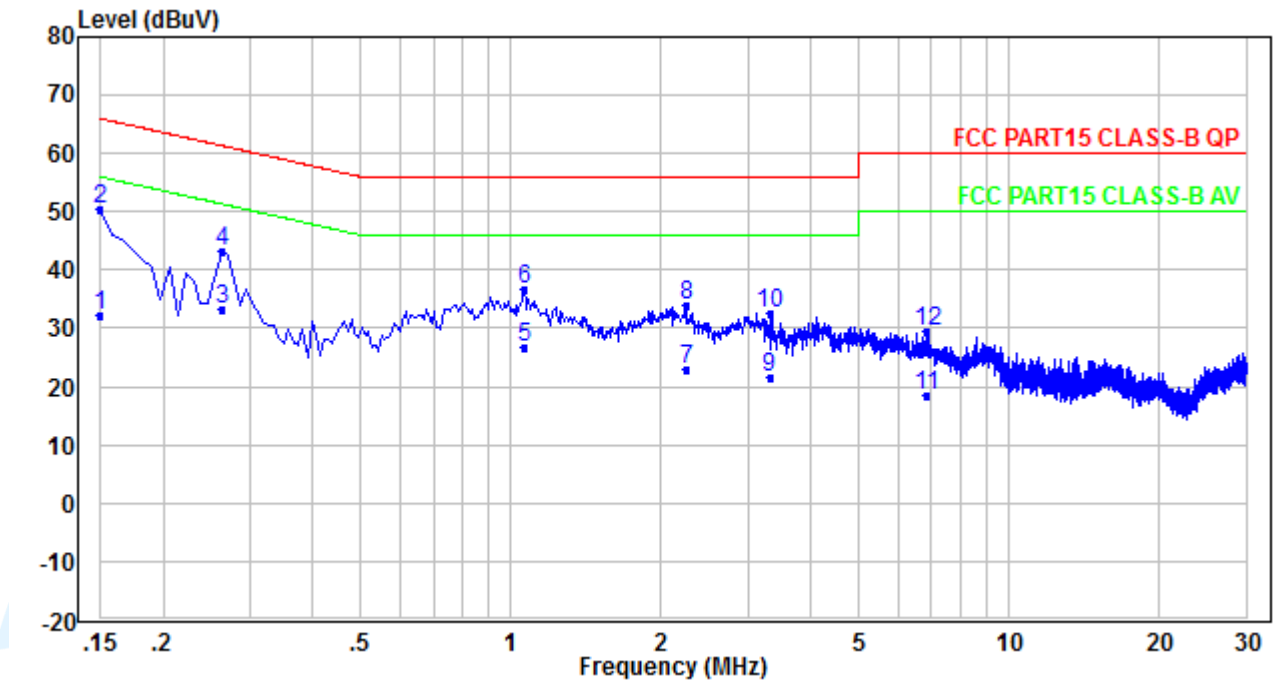
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Quasi Peak and Average: Test Mode6

Live Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	22.16	10.12	32.28	56.00	-23.72	Average
2	0.150	40.16	10.12	50.28	66.00	-15.72	QP
3	0.262	23.04	10.13	33.17	51.37	-18.20	Average
4	0.262	33.04	10.13	43.17	61.37	-18.20	QP
5	1.062	16.38	10.22	26.60	46.00	-19.40	Average
6	1.062	26.38	10.22	36.60	56.00	-19.40	QP
7	2.254	12.66	10.24	22.90	46.00	-23.10	Average
8	2.254	23.66	10.24	33.90	56.00	-22.10	QP
9	3.309	11.30	10.27	21.57	46.00	-24.43	Average
10	3.309	22.30	10.27	32.57	56.00	-23.43	QP
11	6.837	8.16	10.44	18.60	50.00	-31.40	Average
12	6.837	19.16	10.44	29.60	60.00	-30.40	QP

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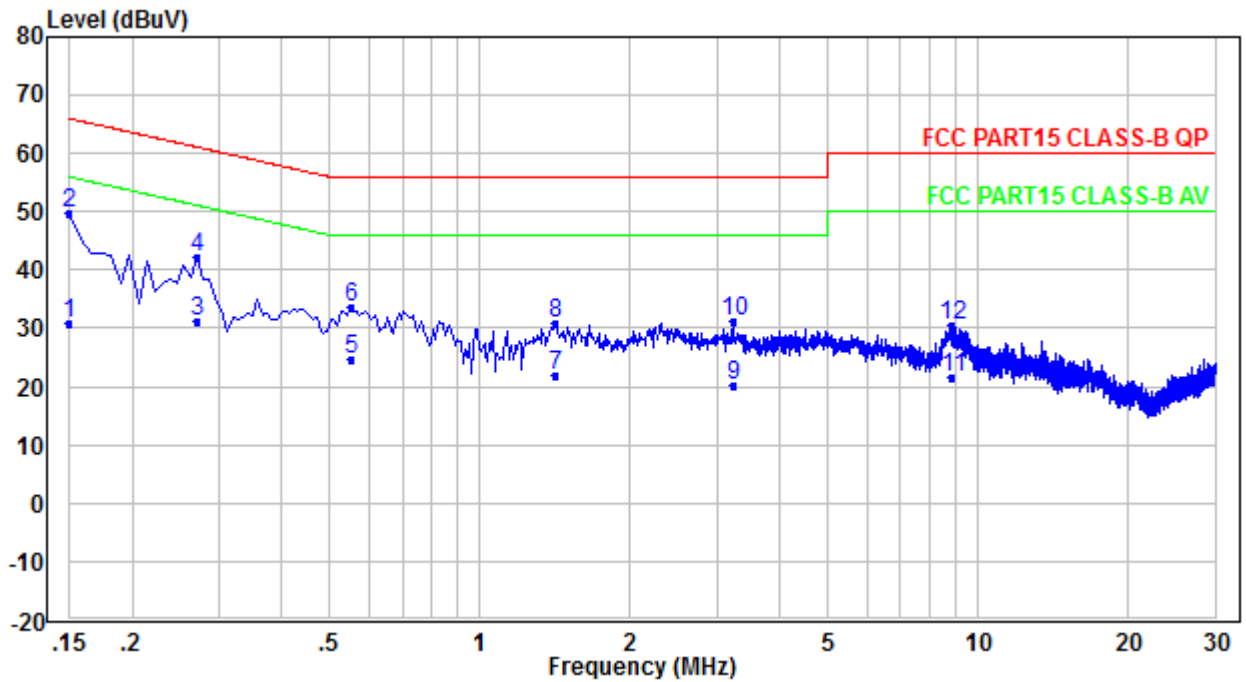
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Neutral Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	20.75	10.11	30.86	56.00	-25.14	Average
2	0.150	39.75	10.11	49.86	66.00	-16.14	QP
3	0.270	21.08	10.11	31.19	51.12	-19.93	Average
4	0.270	32.08	10.11	42.19	61.12	-18.93	QP
5	0.550	14.62	10.13	24.75	46.00	-21.25	Average
6	0.550	23.62	10.13	33.75	56.00	-22.25	QP
7	1.422	11.82	10.16	21.98	46.00	-24.02	Average
8	1.422	20.82	10.16	30.98	56.00	-25.02	QP
9	3.237	9.92	10.28	20.20	46.00	-25.80	Average
10	3.237	20.92	10.28	31.20	56.00	-24.80	QP
11	8.892	10.96	10.57	21.53	50.00	-28.47	Average
12	8.892	19.96	10.57	30.53	60.00	-29.47	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.

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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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