



Certificate #4312.01

TEST REPORT

Product Name: 5 Unmanaged 2.5G Multi-Gigabit Port and 1 SFP+ Port Switch
Trade Mark: GRANDSTREAM
Model No. / HVIN: GWN7700M
Add. Model No. / HVIN: N/A
Report Number: 2303154443EMC-1
Test Standards: FCC 47 CFR Part 15 Subpart B
ICES-003 Issue 7
FCC ID: YZZGWN7700M
Test Result: PASS
Date of Issue: April 3, 2023

Prepared for:

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

Prepared by:

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April 3, 2023

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UTTR-EMC-ICES003-V1.2

Version

Version No.	Date	Description
V1.0	April 3, 2023	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:	5 Unmanaged 2.5G Multi-Gigabit Port and 1 SFP+ Port Switch
Model No. / HVIN:	GWN7700M
Add. Model No. / HVIN:	N/A
Trade Mark:	GRANDSTREAM
DUT Stage:	Identical Prototype
Rated Voltage:	12V $\Rightarrow$ 1 A
Classification of digital devices:	Class B
Highest Internal Frequency:	10.3125 GHz
Sample Received Date:	March 15, 2023
Sample Tested Date:	March 18, 2023 to March 21, 2023

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.:	GQ12-120100-AU
Input:	100-240 V~50/60 Hz 0.4 A Max
Output:	12V $\Rightarrow$ 1.0 A
DC Cable:	2.5 Meter, Unshielded without ferrite

Adapter (2)	
Model No.:	UES12LU-120100SPA
Input:	100-240 V~50/60 Hz 0.5 A
Output:	12.0 V $\Rightarrow$ 1.0 A 12.0W
DC Cable:	1.5 Meter, Unshielded without ferrite

Adapter (3)	
Model No.:	F12US1200100A
Input:	AC100-240 V 50/60 Hz 0.5 A max
Output:	12V $\Rightarrow$ 1.0 A
DC Cable:	2.5 Meter, Unshielded without ferrite

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 Computer	Lenovo	E450	SL10G10780	UnionTrust
Network Analyst	Xtramus	nustreams-600	OJNS600C0013	UnionTrust
USB Mouse	Founder	20-1AN03Y105	MA0KZA39	UnionTrust
Photoelectric conversion module	10Gtek	ASF-10G2-T	N/A	UnionTrust

2).Support Cable

Cable No.	Description	Connector	Length	Supplied by
1	Ethernet Cable*6	RJ45	1.5 Unshielded without ferrite	UnionTrust
2	Ethernet Cable*1	RJ45	2.0 Unshielded without ferrite	UnionTrust

1.4 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

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 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. 3, 2022	Nov. 2, 2023
☒	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Dec.13, 2021	Dec.12, 2023
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	Dec.13, 2021	Dec.12, 2023
☒	Preamplifier	HP	8447F	2805A02960	Nov. 1, 2022	Oct. 31, 2023
☒	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	Apr. 17, 2022	Apr. 16, 2024
☒	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	3116C	00200180	Apr. 17, 2022	Apr. 16, 2024
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-Lindgren	3116C-PA	00202652	Nov. 21, 2022	Nov. 20, 2023
☒	Pre-amplifier	ETS-Lindgren	00118385	00201874	Nov. 01, 2022	Oct. 31, 2023
☒	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. 1, 2022	Oct. 31, 2023
☒	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	Nov. 1, 2022	Oct. 31, 2023
☒	LISN	R&S	ESH2-Z5	860014/024	Nov. 1, 2022	Oct. 31, 2023
☒	LISN	ETS-Lindgren	3816/2SH	00201088	Nov. 1, 2022	Oct. 31, 2023
☒	Test Software	Audix	e3	Software Version: 9.20151119i		

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	1: AC 120V/60Hz 2: AC 240V/50Hz	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	23.8	60.0	100.2	S202303151209-ZJA01/2	Lucas Ouyang
Radiated Emission	19.9	51.2	99.9		Andy Lin

4.2 TEST MODES

Test Item	EMI Test Modes
Radiated Emission	Test Mode 1: AC120V/60Hz (Adaptor1) + Ethernet Ports Loop transmission+ SFP+ port Transmission Test Mode 2: AC240V/50Hz (Adaptor1) + Ethernet Ports Loop transmission+ SFP+ port Transmission Test Mode 3: worse from TM1~TM2& Adapter 2 Test Mode 4: worse from TM1~TM2& Adapter 3
Conducted Emission	Test Mode 1: AC120V/60Hz (Adaptor1) + Ethernet Ports Loop transmission+ SFP+ port Transmission Test Mode 2: AC240V/50Hz (Adaptor1) + Ethernet Ports Loop transmission+ SFP+ port Transmission Test Mode 3: worse from TM1~TM2& Adapter 2 Test Mode 4: worse from TM1~TM2& Adapter 3
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

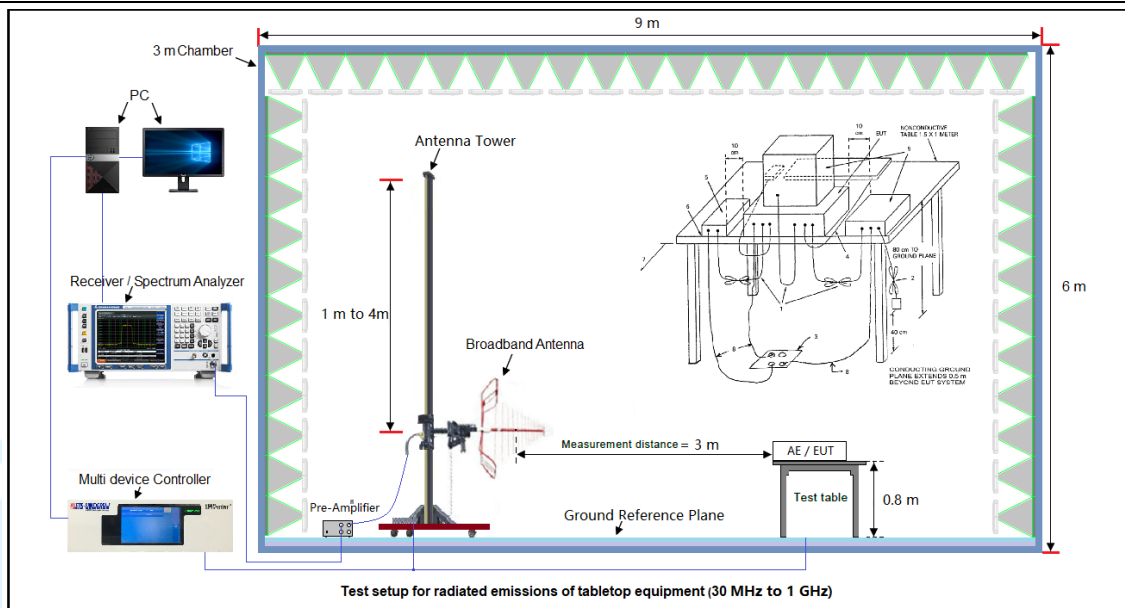
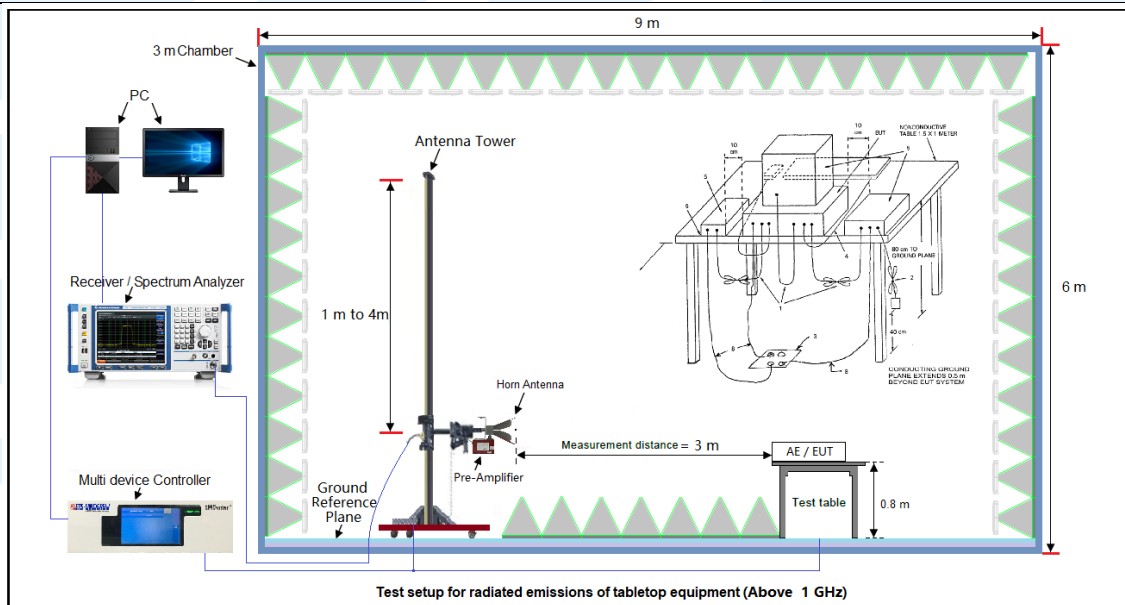
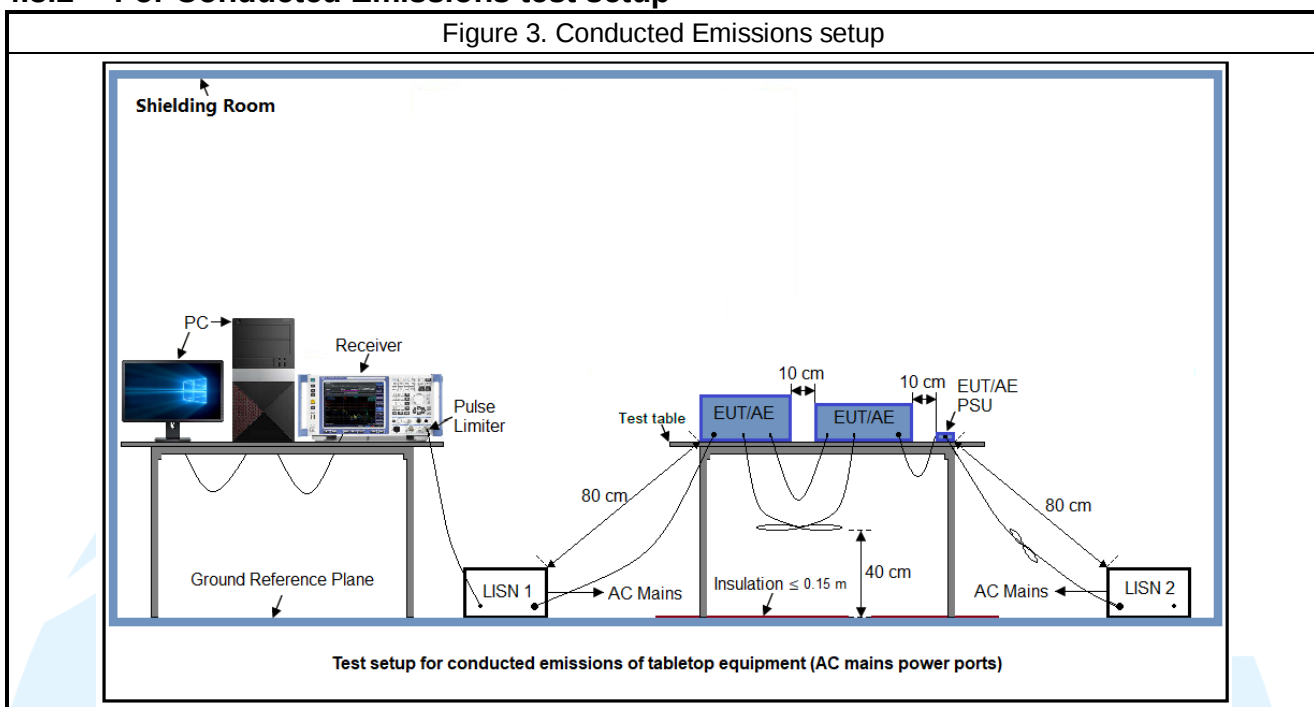


Figure 2. Above 1GHz



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 (dBμV/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 (dBμV/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:

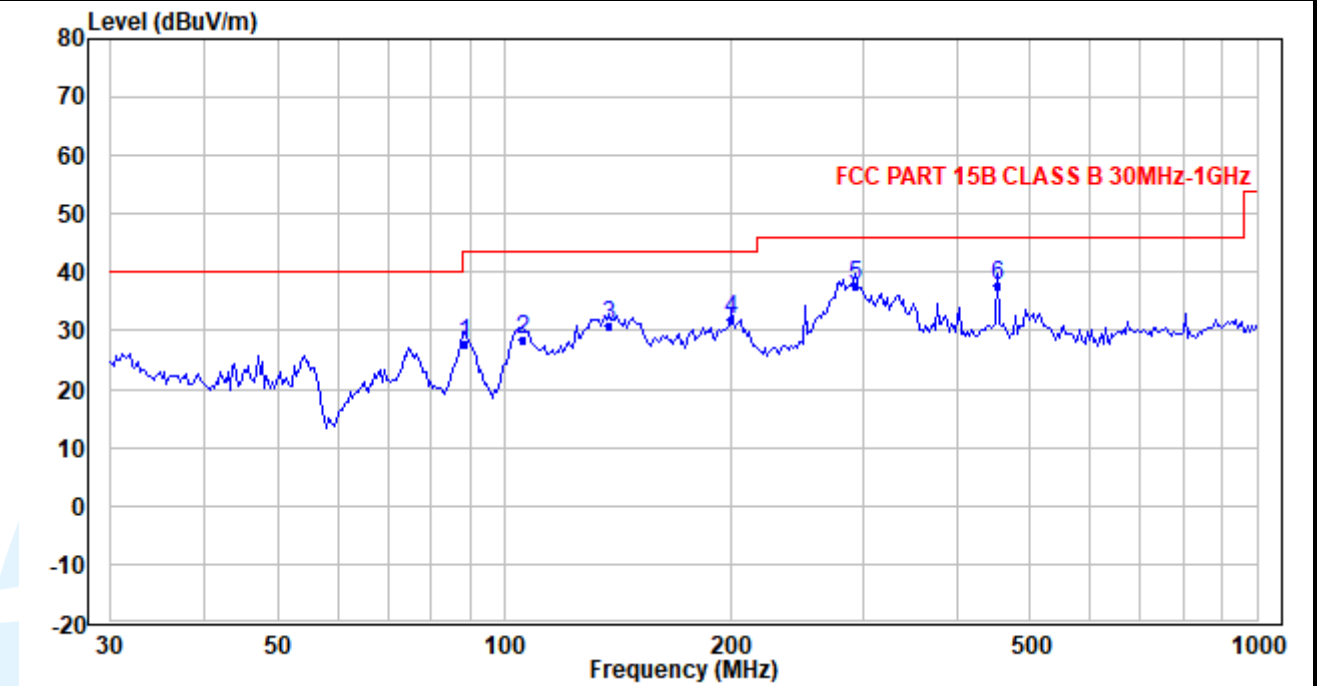
The measurement data for FCC 47 CFR Part 15 Subpart B as follows:

Below 1GHz(Quasi Peak):

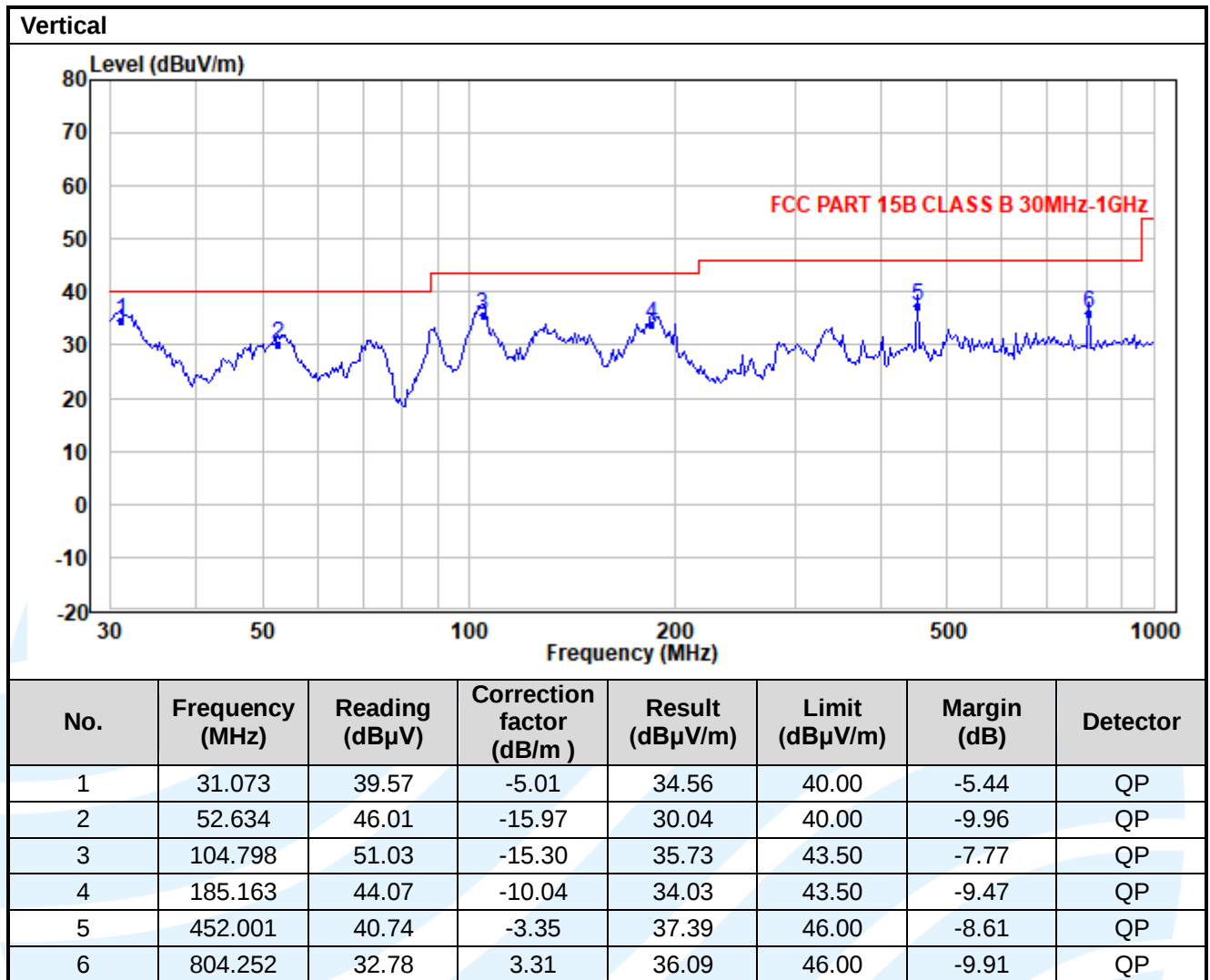
Test Mode1

Adapter 1

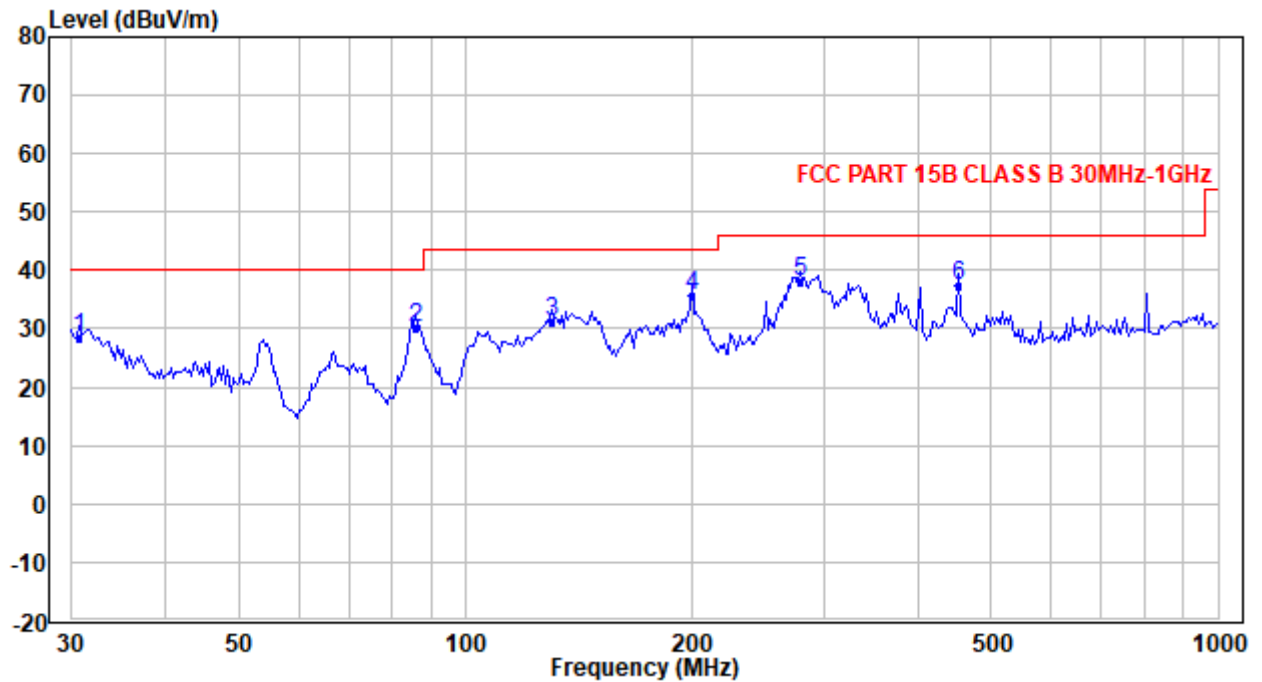
Horizontal



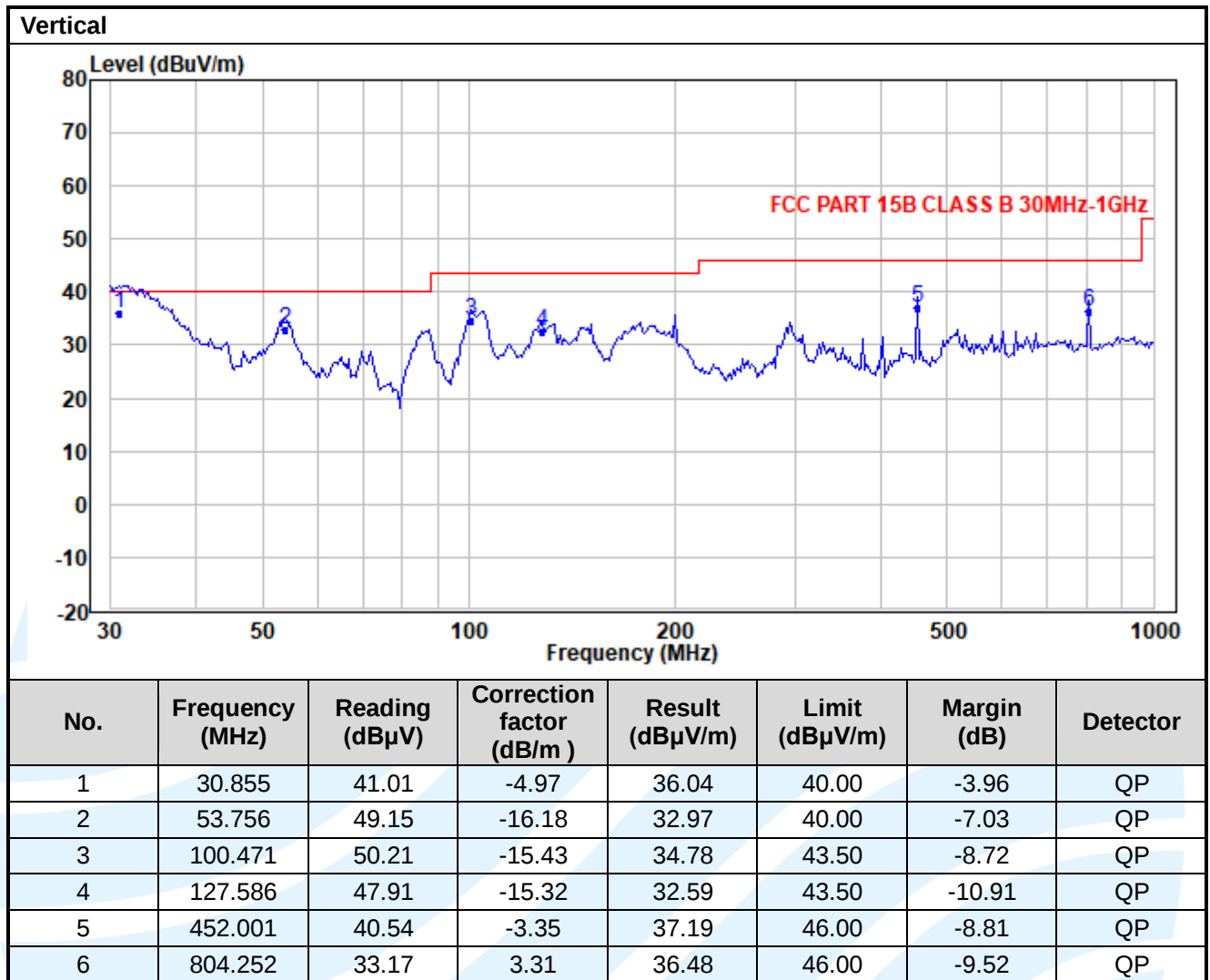
No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	88.534	43.94	-16.18	27.76	43.50	-15.74	QP
2	105.537	43.84	-15.39	28.45	43.50	-15.05	QP
3	137.840	46.18	-15.23	30.95	43.50	-12.55	QP
4	200.043	42.19	-10.14	32.05	43.50	-11.45	QP
5	292.364	44.63	-6.93	37.70	46.00	-8.30	QP
6	452.001	41.24	-3.35	37.89	46.00	-8.11	QP



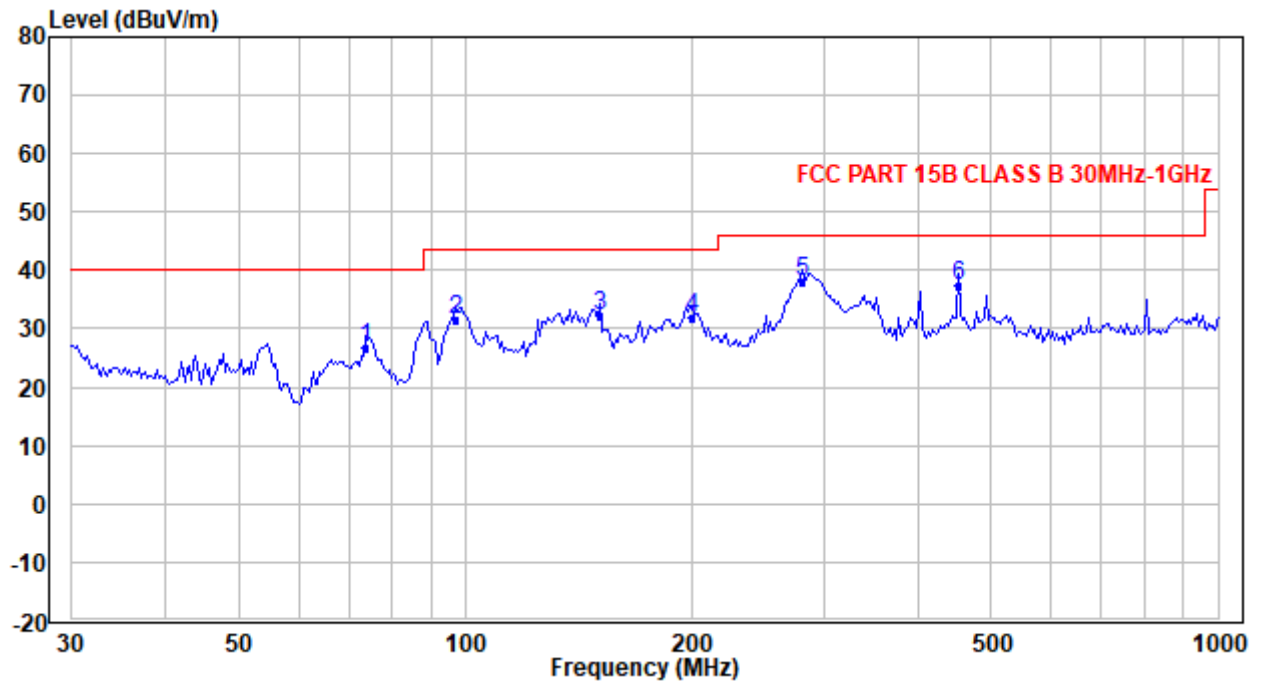
Below 1GHz(Quasi Peak):
Test Mode3
Adapter 2
Horizontal



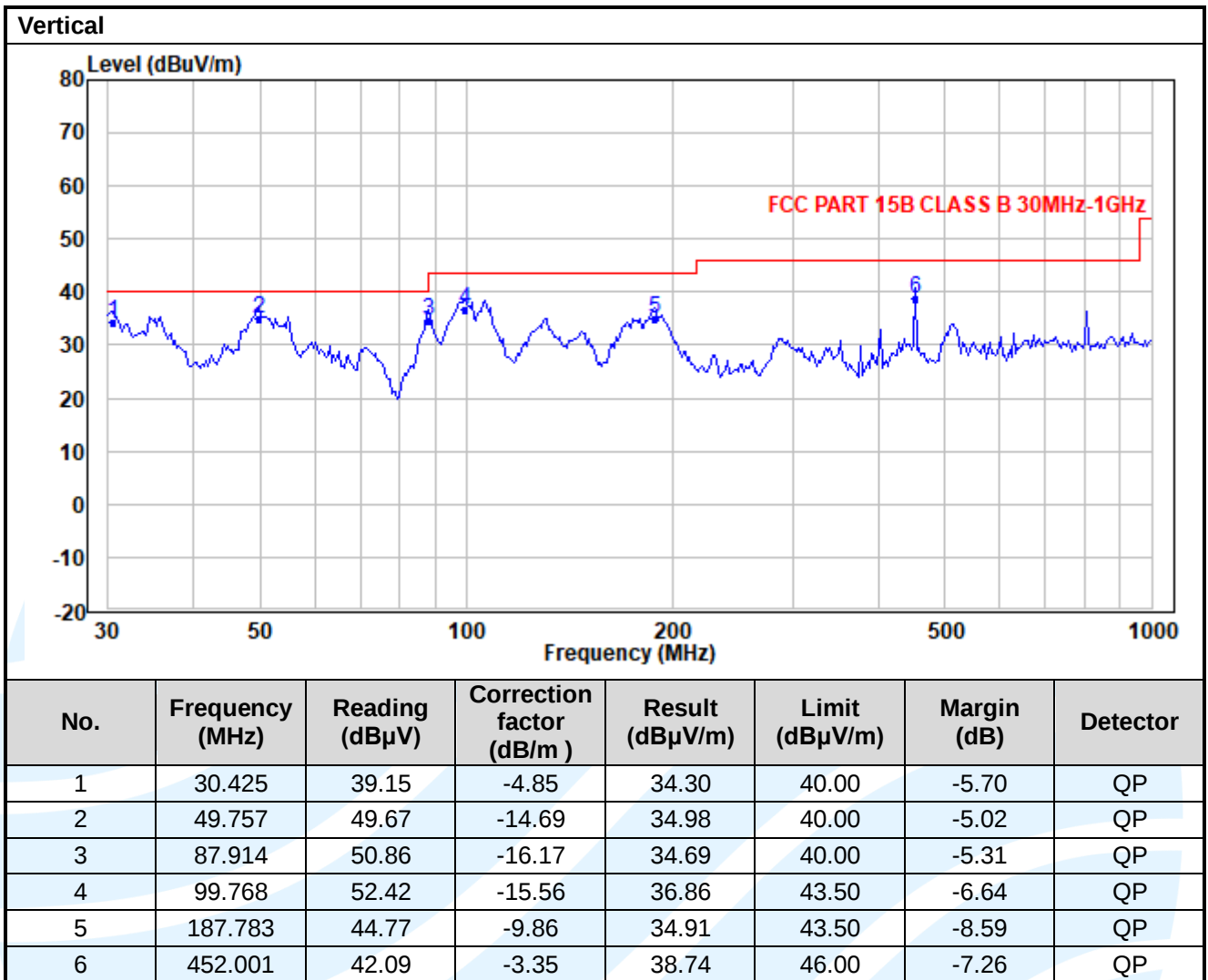
No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	30.639	33.36	-4.90	28.46	40.00	-11.54	QP
2	86.080	46.28	-16.18	30.10	40.00	-9.90	QP
3	130.305	46.49	-15.15	31.34	43.50	-12.16	QP
4	200.043	45.92	-10.14	35.78	43.50	-7.72	QP
5	278.331	45.33	-7.37	37.96	46.00	-8.04	QP
6	452.001	40.72	-3.35	37.37	46.00	-8.63	QP



Below 1GHz(Quasi Peak):
Test Mode4
Adapter 3
Horizontal



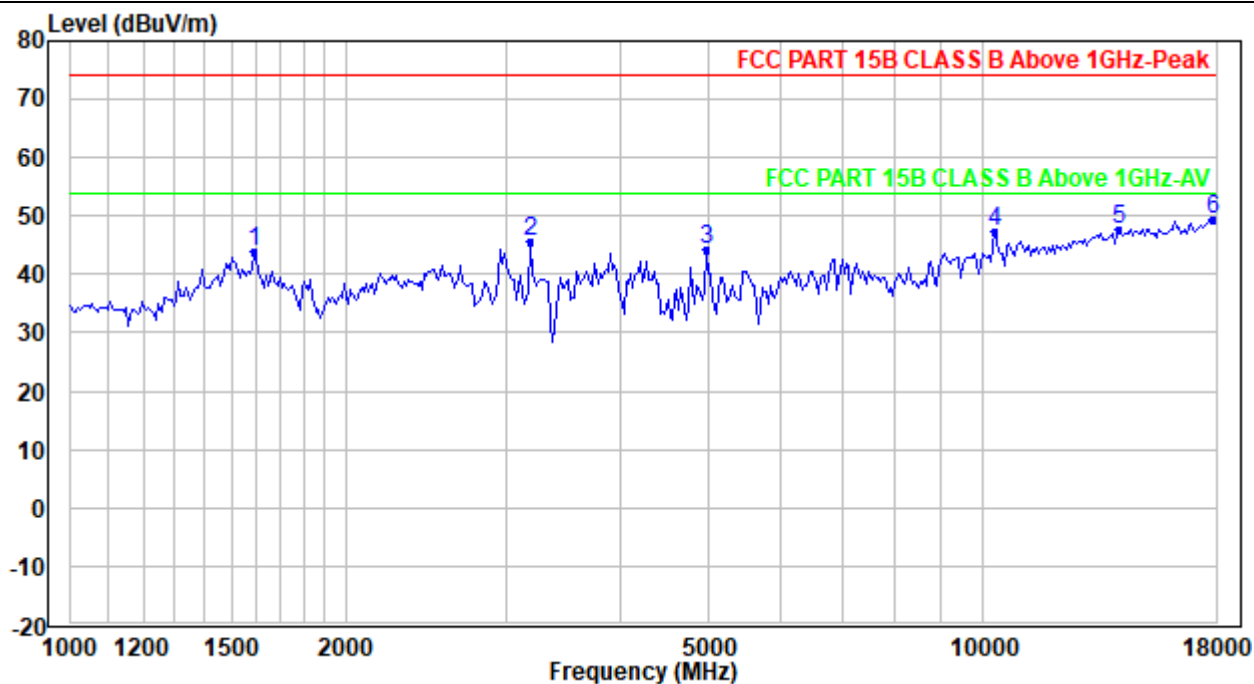
No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	73.750	44.13	-17.36	26.77	40.00	-13.23	QP
2	97.002	47.65	-15.95	31.70	43.50	-11.80	QP
3	151.025	46.67	-14.42	32.25	43.50	-11.25	QP
4	200.043	42.03	-10.14	31.89	43.50	-11.61	QP
5	280.294	45.50	-7.26	38.24	46.00	-7.76	QP
6	452.001	40.83	-3.35	37.48	46.00	-8.52	QP



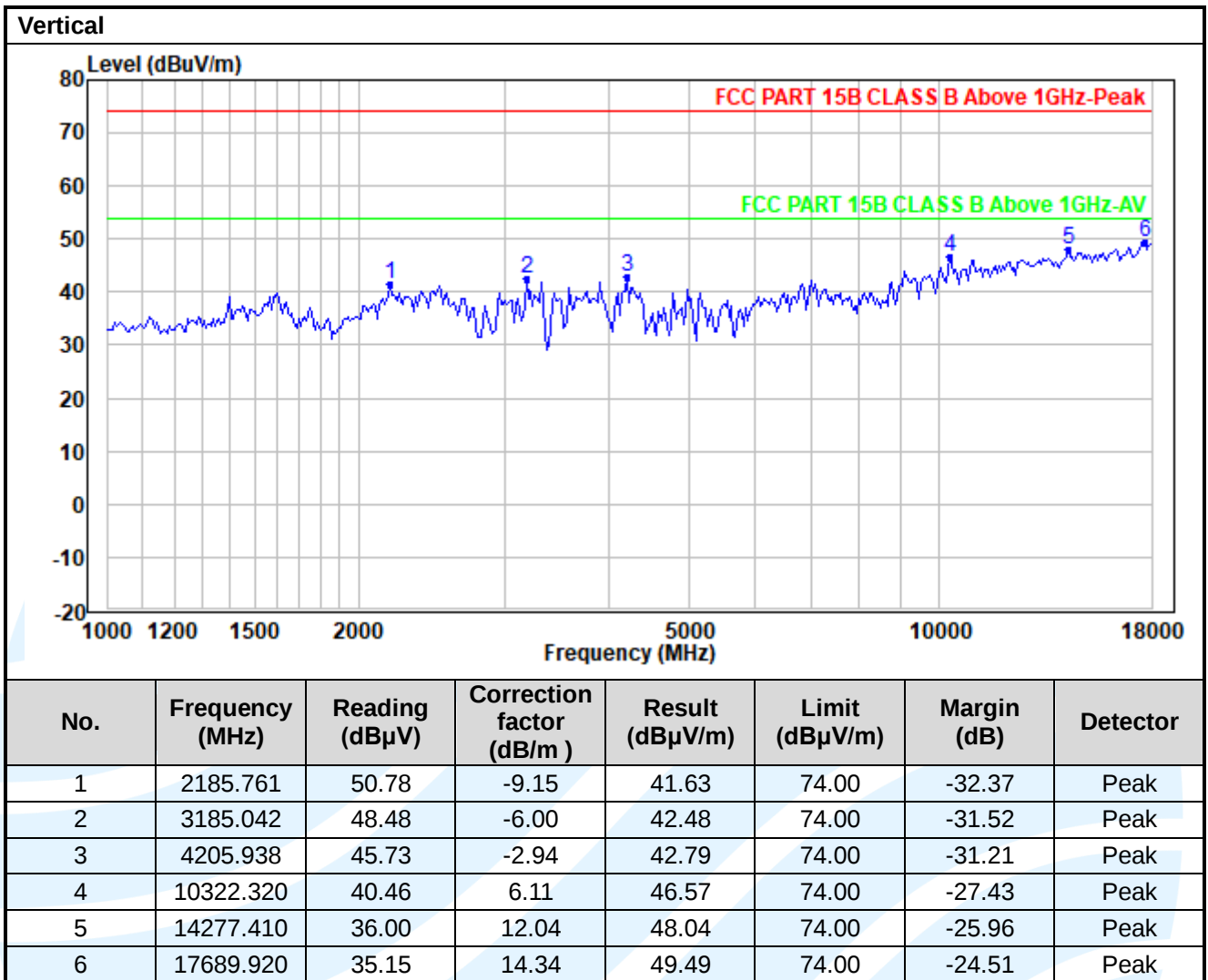
Remark:

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. 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.

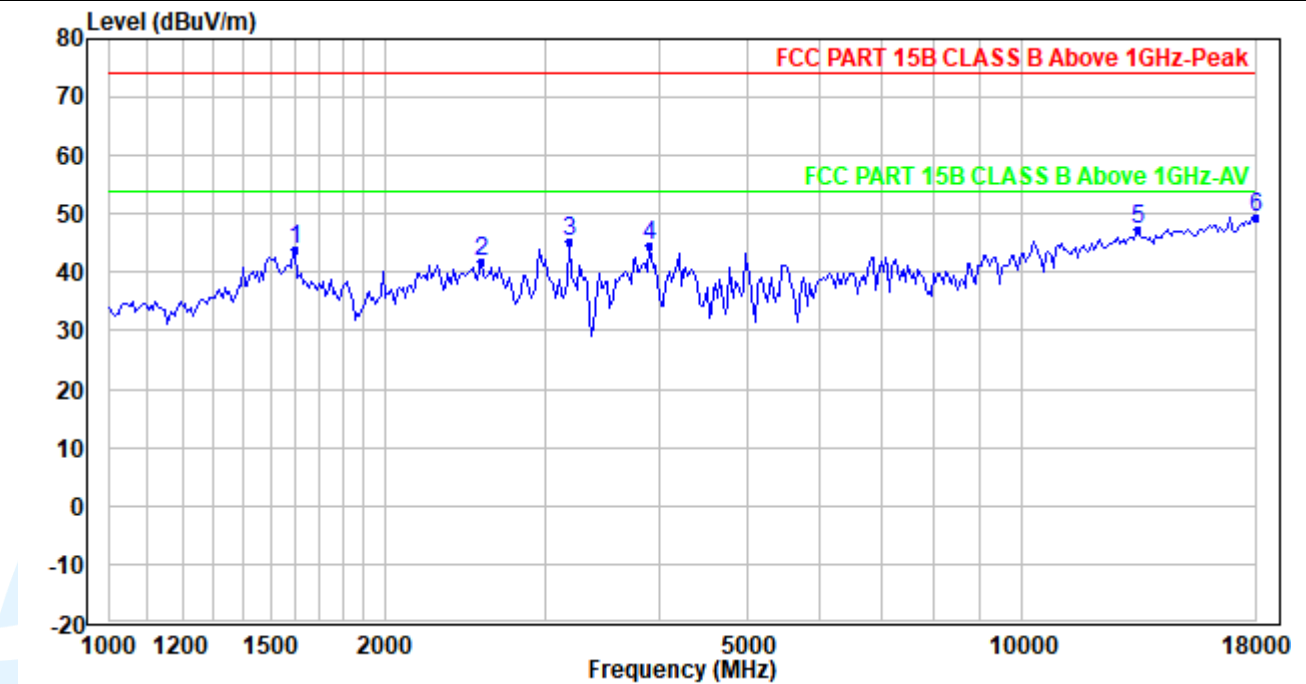
Above 1GHz(Peak & Average)
Test Mode1
Adapter1
Horizontal



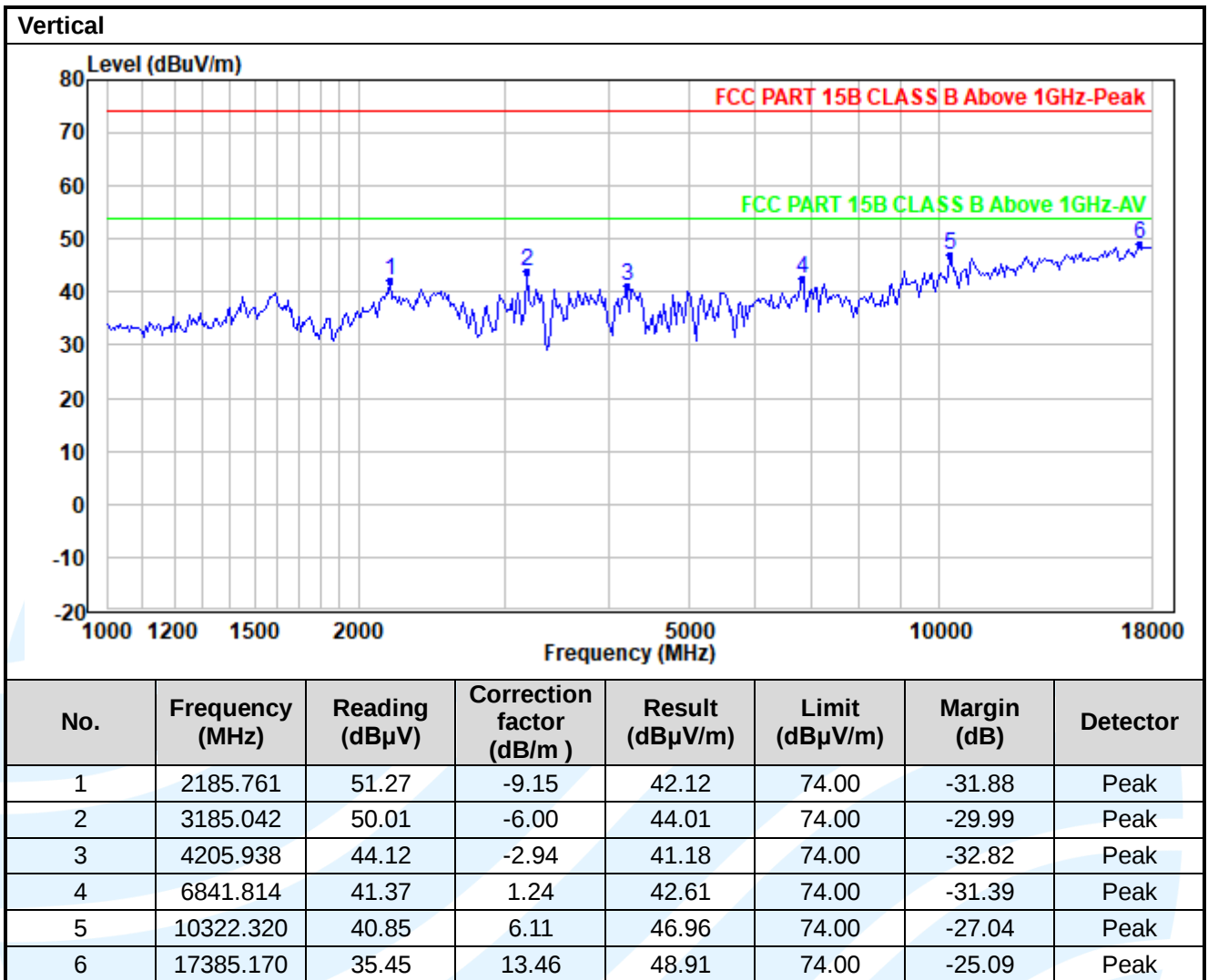
No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1589.447	55.93	-12.00	43.93	74.00	-30.07	Peak
2	3185.042	51.69	-6.00	45.69	74.00	-28.31	Peak
3	4975.247	46.39	-2.26	44.13	74.00	-29.87	Peak
4	10322.320	41.36	6.11	47.47	74.00	-26.53	Peak
5	14112.970	35.81	11.95	47.76	74.00	-26.24	Peak
6	17896.040	34.40	15.05	49.45	74.00	-24.55	Peak



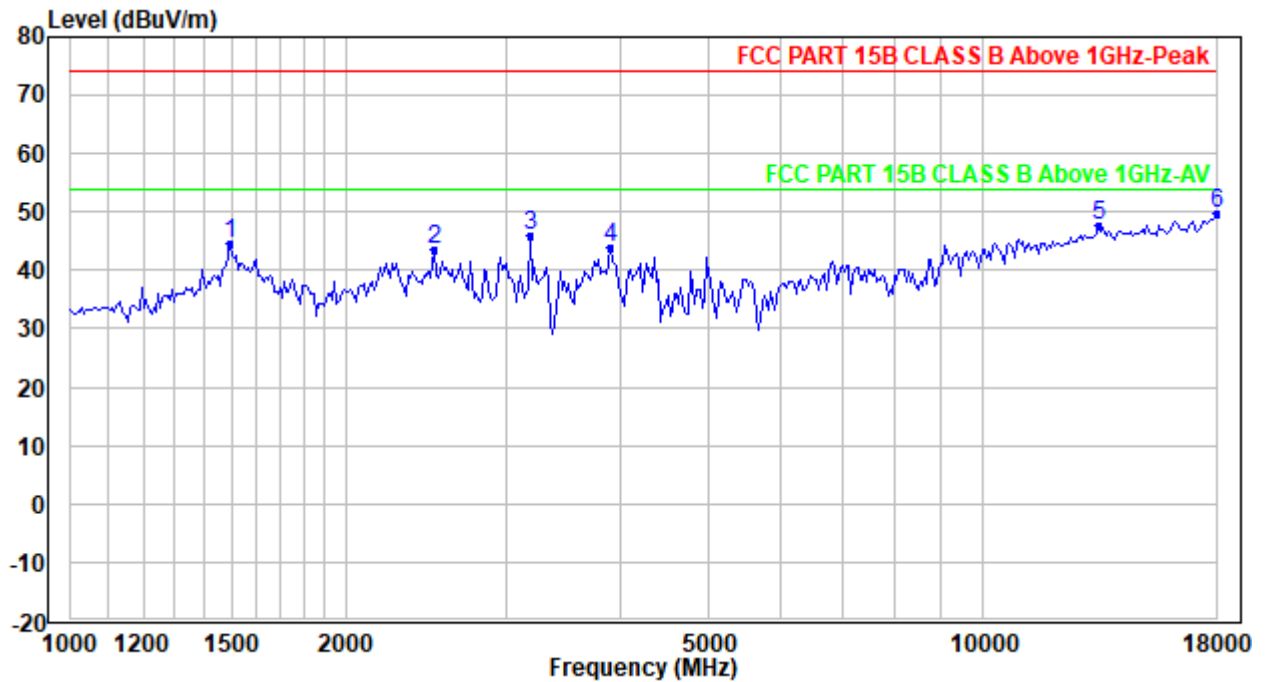
Above 1GHz(Peak & Average)
Test Mode3
Adapter2
Horizontal



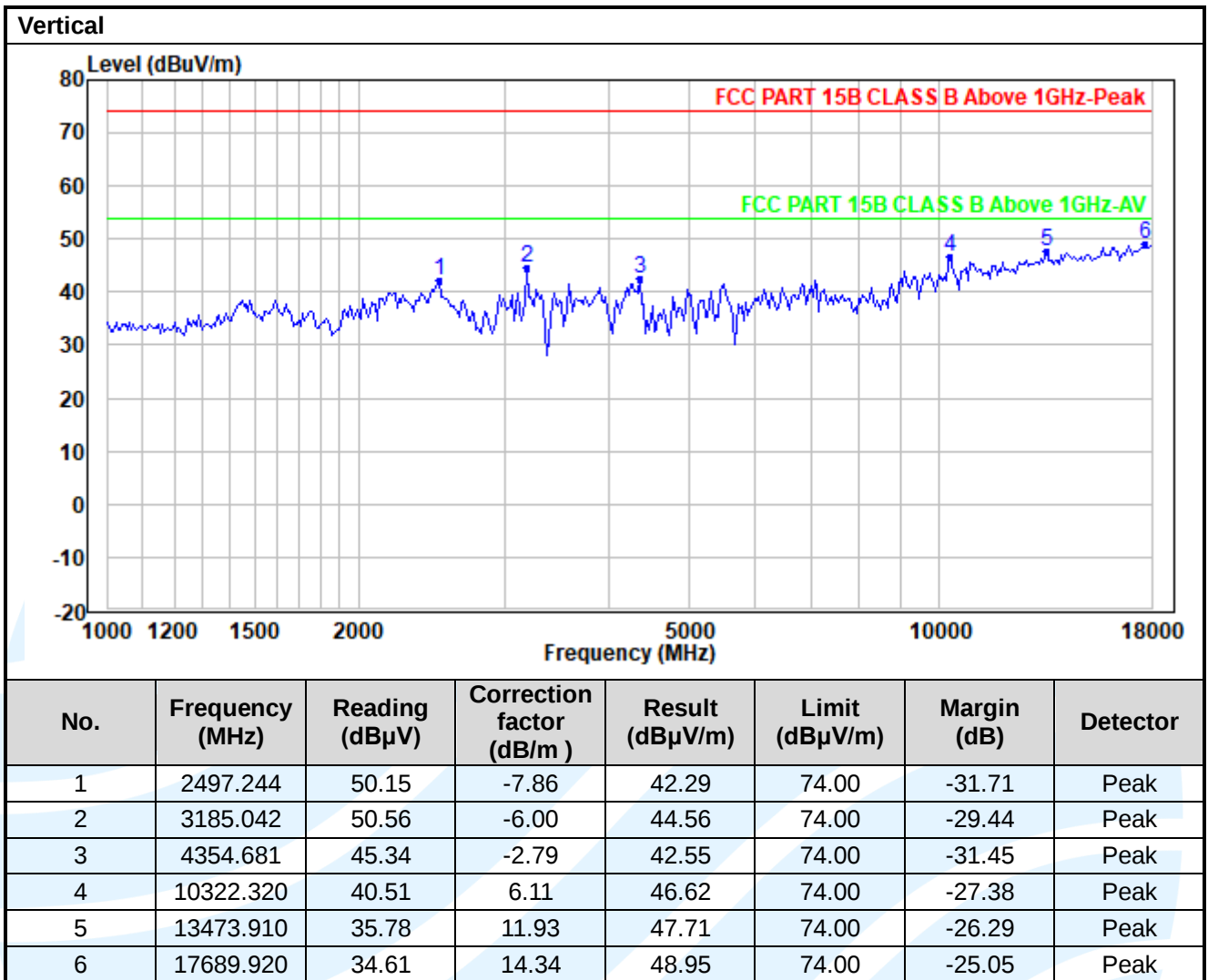
No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1598.680	55.77	-11.95	43.82	74.00	-30.18	Peak
2	2555.779	49.64	-7.76	41.88	74.00	-32.12	Peak
3	3185.042	51.33	-6.00	45.33	74.00	-28.67	Peak
4	3900.860	48.22	-3.47	44.75	74.00	-29.25	Peak
5	13396.090	35.58	11.70	47.28	74.00	-26.72	Peak
6	18000.000	33.95	15.41	49.36	74.00	-24.64	Peak



Above 1GHz(Peak & Average)
Test Mode4
Adapter3
Horizontal



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1491.333	56.89	-12.45	44.44	74.00	-29.56	Peak
2	2497.244	51.46	-7.86	43.60	74.00	-30.40	Peak
3	3185.042	52.01	-6.00	46.01	74.00	-27.99	Peak
4	3900.860	47.40	-3.47	43.93	74.00	-30.07	Peak
5	13396.090	35.97	11.70	47.67	74.00	-26.33	Peak
6	18000.000	34.19	15.41	49.60	74.00	-24.40	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.

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

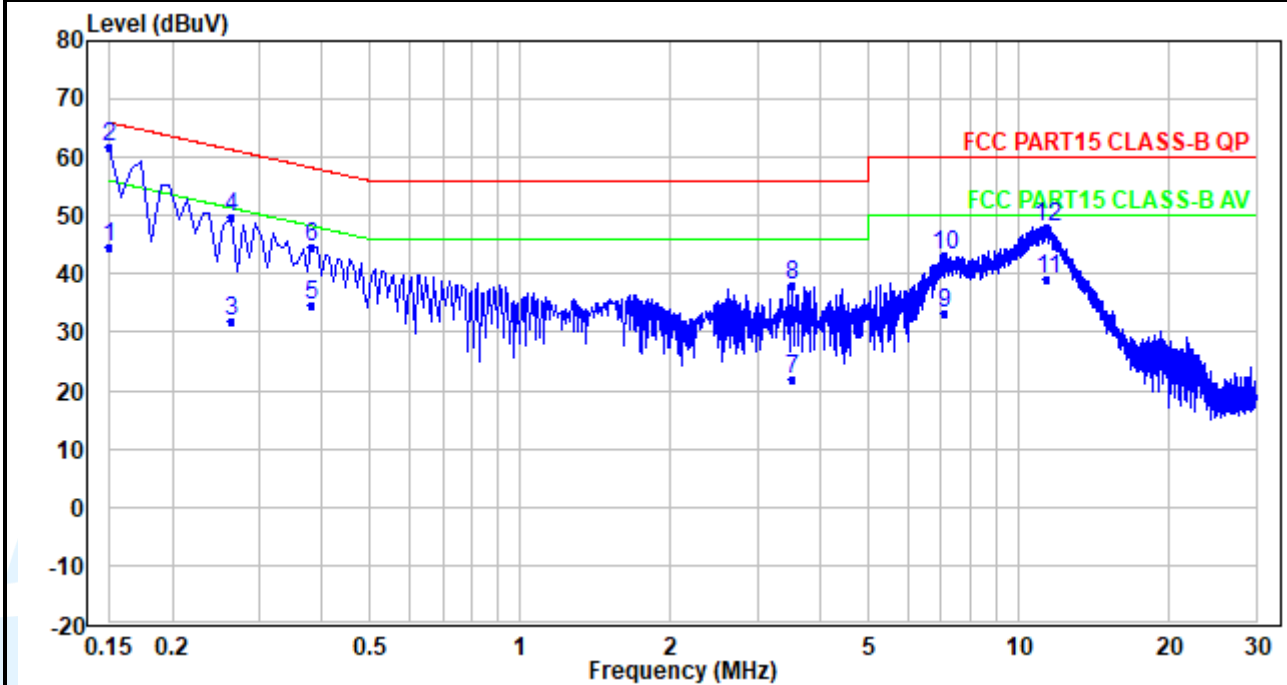
The measurement data as follows:

Quasi Peak and Average:

Adapter 1

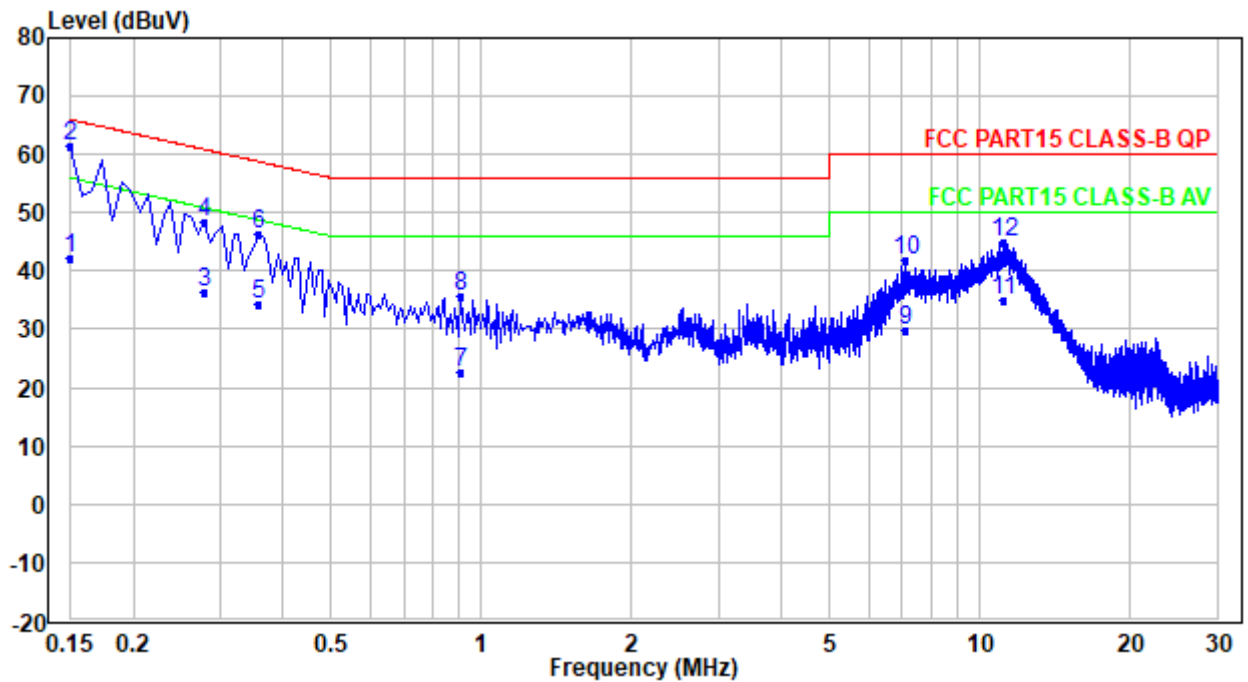
Test Mode2

Live Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	34.67	10.03	44.70	56.00	-11.30	Average
2	0.150	51.67	10.03	61.70	66.00	-4.30	QP
3	0.262	21.71	10.03	31.74	51.37	-19.63	Average
4	0.262	39.71	10.03	49.74	61.37	-11.63	QP
5	0.382	24.64	10.04	34.68	48.24	-13.56	Average
6	0.382	34.64	10.04	44.68	58.24	-13.56	QP
7	3.509	11.71	10.24	21.95	46.00	-24.05	Average
8	3.509	27.71	10.24	37.95	56.00	-18.05	QP
9	7.093	22.73	10.43	33.16	50.00	-16.84	Average
10	7.093	32.73	10.43	43.16	60.00	-16.84	QP
11	11.444	28.53	10.63	39.16	50.00	-10.84	Average
12	11.444	37.53	10.63	48.16	60.00	-11.84	QP

Neutral Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	32.29	10.02	42.31	56.00	-13.69	Average
2	0.150	51.29	10.02	61.31	66.00	-4.69	QP
3	0.278	26.41	10.01	36.42	50.88	-14.46	Average
4	0.278	38.41	10.01	48.42	60.88	-12.46	QP
5	0.358	24.39	10.02	34.41	48.78	-14.37	Average
6	0.358	36.39	10.02	46.41	58.78	-12.37	QP
7	0.910	12.56	10.05	22.61	46.00	-23.39	Average
8	0.910	25.56	10.05	35.61	56.00	-20.39	QP
9	7.093	19.55	10.40	29.95	50.00	-20.05	Average
10	7.093	31.55	10.40	41.95	60.00	-18.05	QP
11	11.180	24.52	10.58	35.10	50.00	-14.90	Average
12	11.180	34.52	10.58	45.10	60.00	-14.90	QP

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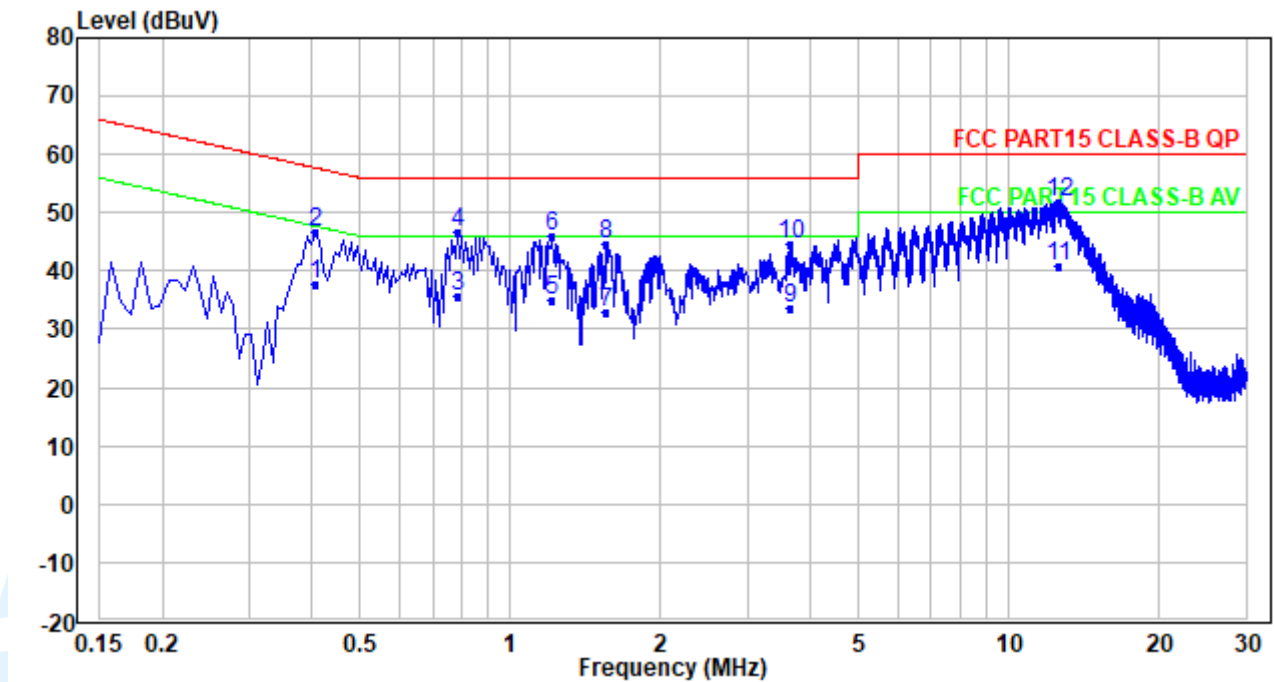
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Quasi Peak and Average:
Adapter 2
Test Mode3

Live Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.406	27.56	10.04	37.60	47.73	-10.13	Average
2	0.406	36.56	10.04	46.60	57.73	-11.13	QP
3	0.782	25.46	10.05	35.51	46.00	-10.49	Average
4	0.782	36.46	10.05	46.51	56.00	-9.49	QP
5	1.214	24.79	10.08	34.87	46.00	-11.13	Average
6	1.214	35.79	10.08	45.87	56.00	-10.13	QP
7	1.550	22.66	10.11	32.77	46.00	-13.23	Average
8	1.550	34.66	10.11	44.77	56.00	-11.23	QP
9	3.645	23.37	10.25	33.62	46.00	-12.38	Average
10	3.645	34.37	10.25	44.62	56.00	-11.38	QP
11	12.595	30.06	10.69	40.75	50.00	-9.25	Average
12	12.595	41.06	10.69	51.75	60.00	-8.25	QP

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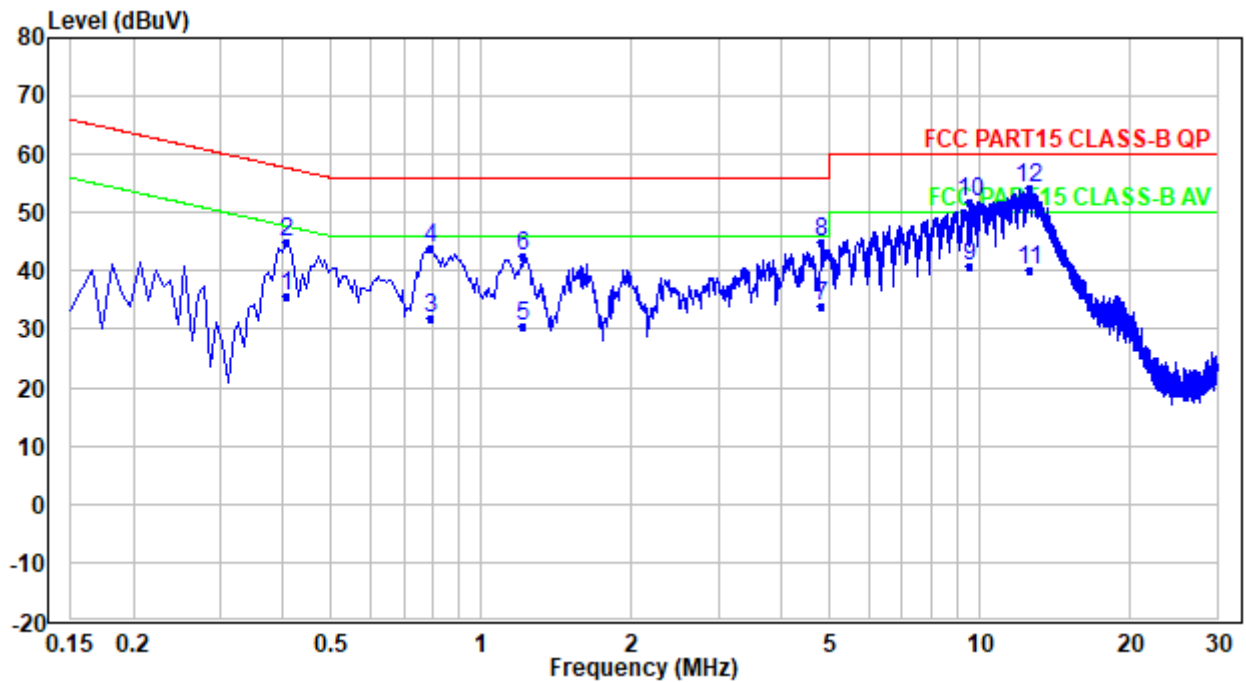
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Neutral Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.406	25.79	10.02	35.81	47.73	-11.92	Average
2	0.406	34.79	10.02	44.81	57.73	-12.92	QP
3	0.790	21.92	10.04	31.96	46.00	-14.04	Average
4	0.790	33.92	10.04	43.96	56.00	-12.04	QP
5	1.214	20.48	10.07	30.55	46.00	-15.45	Average
6	1.214	32.48	10.07	42.55	56.00	-13.45	QP
7	4.821	23.78	10.31	34.09	46.00	-11.91	Average
8	4.821	34.78	10.31	45.09	56.00	-10.91	QP
9	9.596	30.23	10.47	40.70	50.00	-9.30	Average
10	9.596	41.23	10.47	51.70	60.00	-8.30	QP
11	12.564	29.46	10.68	40.14	50.00	-9.86	Average
12	12.564	43.46	10.68	54.14	60.00	-5.86	QP

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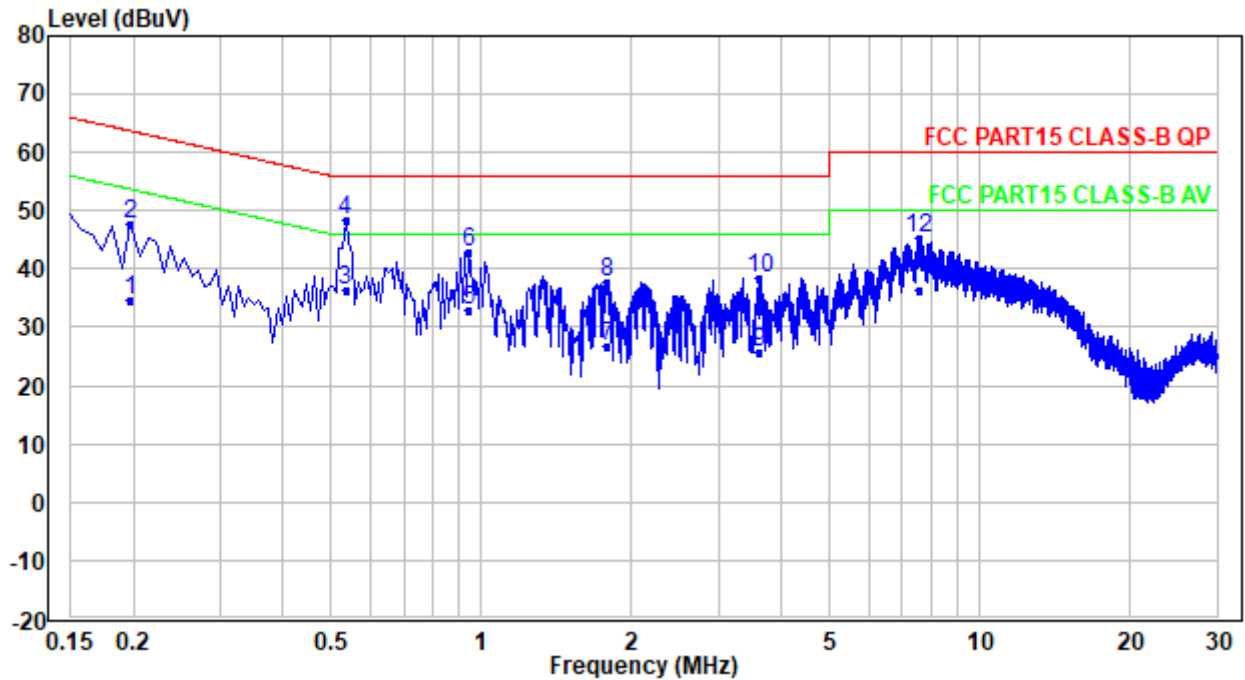
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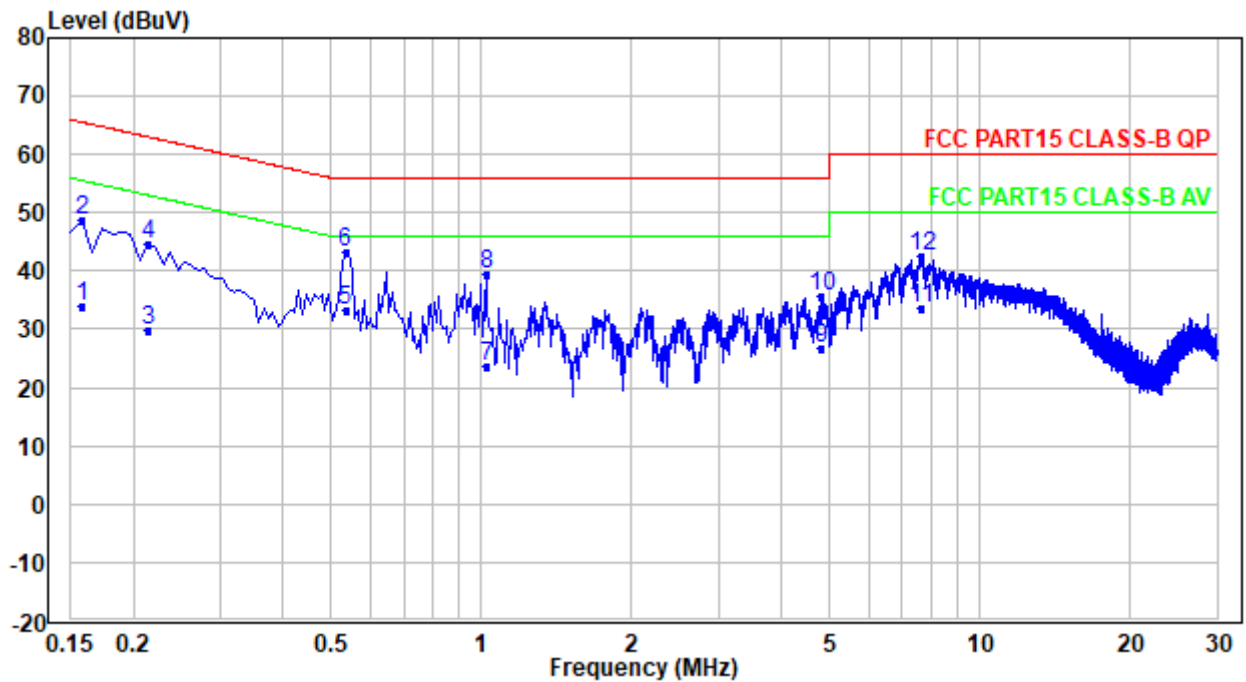
Quasi Peak and Average:
Adapter 3
Test Mode4

Live Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.198	24.70	10.02	34.72	53.69	-18.97	Average
2	0.198	37.70	10.02	47.72	63.69	-15.97	QP
3	0.534	26.46	10.04	36.50	46.00	-9.50	Average
4	0.534	38.46	10.04	48.50	56.00	-7.50	QP
5	0.942	22.76	10.06	32.82	46.00	-13.18	Average
6	0.942	32.76	10.06	42.82	56.00	-13.18	QP
7	1.790	16.52	10.11	26.63	46.00	-19.37	Average
8	1.790	27.52	10.11	37.63	56.00	-18.37	QP
9	3.613	15.30	10.24	25.54	46.00	-20.46	Average
10	3.613	28.30	10.24	38.54	56.00	-17.46	QP
11	7.549	25.89	10.45	36.34	50.00	-13.66	Average
12	7.549	34.89	10.45	45.34	60.00	-14.66	QP

Neutral Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.158	23.86	10.02	33.88	55.57	-21.69	Average
2	0.158	38.86	10.02	48.88	65.57	-16.69	QP
3	0.214	19.69	10.00	29.69	53.05	-23.36	Average
4	0.214	34.69	10.00	44.69	63.05	-18.36	QP
5	0.534	23.22	10.03	33.25	46.00	-12.75	Average
6	0.534	33.22	10.03	43.25	56.00	-12.75	QP
7	1.022	13.53	10.05	23.58	46.00	-22.42	Average
8	1.022	29.53	10.05	39.58	56.00	-16.42	QP
9	4.805	16.36	10.30	26.66	46.00	-19.34	Average
10	4.805	25.36	10.30	35.66	56.00	-20.34	QP
11	7.636	23.19	10.42	33.61	50.00	-16.39	Average
12	7.636	32.19	10.42	42.61	60.00	-17.39	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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