



Certificate #4312.01

# FCC & ISED TEST REPORT

**Product Name:** 16-Port Unmanaged Gigabit Switch  
**Trade Mark:** GRANDSTREAM  
**Model No. / HVIN:** GWN7702  
**Add. Model No. / HVIN:** N/A  
**Report Number:** 2305045028EMC-1  
**Test Standards:** FCC 47 CFR Part 15 Subpart B  
 ICES-003 Issue 7  
**FCC ID:** YZZGWN7702  
**Test Result:** PASS  
**Date of Issue:** June 26, 2023

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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UTTR-EMC-ICES003-V1.2

**Version**

Version No.	Date	Description
V1.0	June 26, 2023	Original



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## 1. GENERAL INFORMATION

### 1.1 CLIENT INFORMATION

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

### 1.2 EUT INFORMATION

#### 1.2.1 General Description of EUT

<b>Product Name:</b>	16-Port Unmanaged Gigabit Switch
<b>Model No. / HVIN:</b>	GWN7702
<b>Add. Model No. / HVIN:</b>	N/A
<b>Trade Mark:</b>	GRANDSTREAM
<b>DUT Stage:</b>	Production Unit
<b>Rated Voltage:</b>	100-240V~ 50/60Hz 1.5A
<b>Classification of digital devices:</b>	Class A
<b>Highest Internal Frequency:</b>	500 MHz
<b>Software Version:</b>	N/A (Provided by the customer)
<b>Hardware Version:</b>	V1.0 (Provided by the customer)
<b>Sample Received Date:</b>	May 4, 2023
<b>Sample Tested Date:</b>	May 12, 2023 to May 18, 2023
<b>Note:</b> This product can configure with three different power modules: <b>Build-in Power 1:</b> GQ18-120150-OP; <b>Build-in Power 2:</b> R0099 <b>Build-in Power 3:</b> B18P1200150A	
<b>Remark:</b> 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

Cable	
<b>Description:</b>	AC Power Cable
<b>Cable Type:</b>	Unshielded without ferrite
<b>Length:</b>	1.2 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	PF-0EQBE3 15/11	UnionTrust
Notebook	LENOVO	E450	PF-09ELQF 15/06	UnionTrust
Mouse	Lenovo	N/A	SZDH-OP303-305-P-800D PI-200701	UnionTrust
Mouse	DELL	MS111-T	CN-0KW2YH-71616-5AH-0 SV7	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length	Supplied by
1~14	Ethernet Cable	RJ45	1 meter Unshielded without ferrite	UnionTrust
15~16	Ethernet Cable	RJ45	3.0 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.

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

### 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**

<b>FCC 47 CFR Part 15 Subpart B Test Cases</b>			
<b>Test Item</b>	<b>Test Requirement</b>	<b>Test Method</b>	<b>Result</b>
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 - 3M Chamber						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
<input checked="" type="checkbox"/>	3m Chamber & Accessory Equipment	ETS-Lindgren	3m	Euroshiedpn-CT 001270-1317	22-Jan-2021	21-Jan-2024
<input checked="" type="checkbox"/>	Broadband Antenna	ETS-Lindgren	3142E	00201566	13-Dec-2022	12-Dec-2023
<input checked="" type="checkbox"/>	6dB Attenuator	Talent	RA6A5-N-18	18103001	13-Dec-2022	12-Dec-2023
<input checked="" type="checkbox"/>	Pre-amplifier	HP	8447F	2805A02960	1-Nov-2022	31-Oct-2023
<input checked="" type="checkbox"/>	Receiver	ROHDE & SCHWARZ	ESIB26	100114	3-Nov-2022	2-Nov-2023
<input checked="" type="checkbox"/>	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	16- Apr-2022	15- Apr-2024
<input checked="" type="checkbox"/>	Pre-amplifier	ETS-Lindgren	00118385	00201874	1-Nov-2022	31-Oct-2023
<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						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
<input checked="" type="checkbox"/>	LISN	R&S	ESH2-Z5	860014/024	1-Nov-2022	31-Oct-2023
<input checked="" type="checkbox"/>	LISN	ETS-Lindgren	3816/2SH	00201088	1-Nov-2022	31-Oct-2023
<input checked="" type="checkbox"/>	Receiver	R&S	ESR7	101181	1-Nov-2022	31-Oct-2023
<input checked="" type="checkbox"/>	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	1-Nov-2022	31-Oct-2023
<input checked="" type="checkbox"/>	Shielding room	ETS-Lindgren	843	Euroshiedpn-CT001270-1246	5-Nov-2021	4-Nov-2024
<input checked="" type="checkbox"/>	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 (%)
NT/NV	+15 to +35	1: AC 120V/60Hz 2: AC 240V/50Hz	20 to 75
<b>Remark:</b> 1) NV: Normal Voltage; NT: Normal Temperature			

#### 4.1.2 Record of Normal Environment and Test Sample

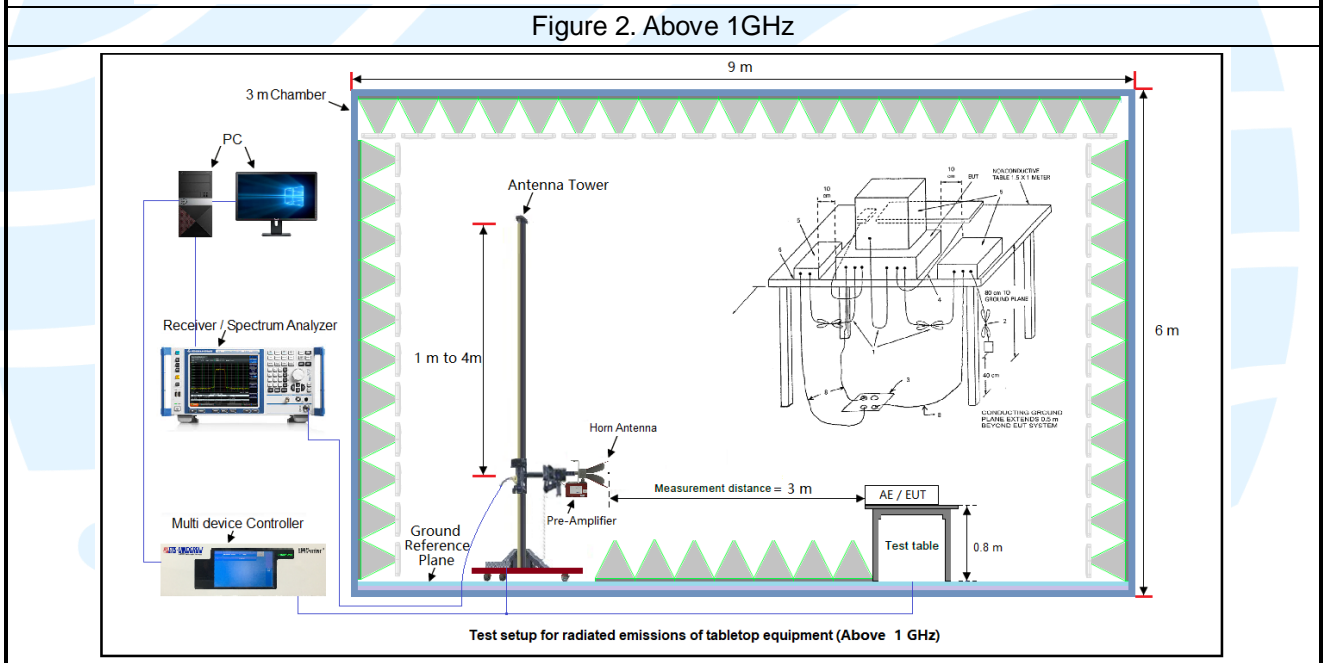
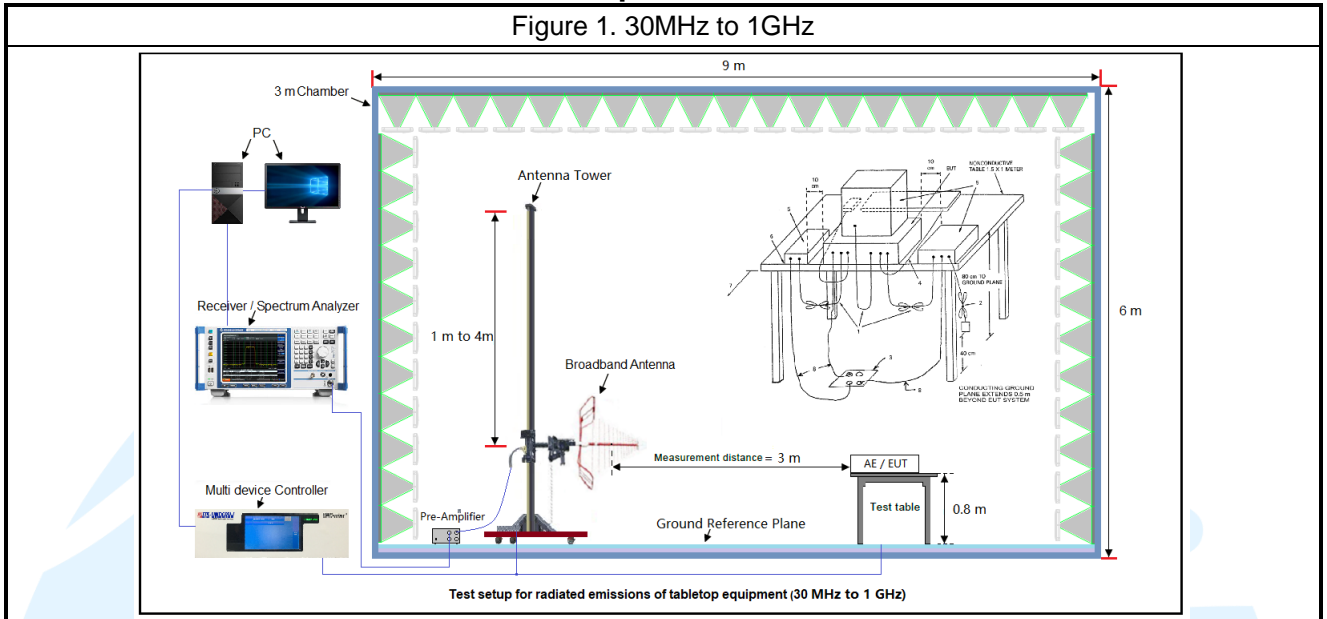
Test Item	Temperature (°C)	Relative Humidity (%)	Pressure (Kpa)	Sample No.	Tested by
Conducted Emission	25.2	64.0	100.0	S202304131 350-ZJB04/4	Lucas Ouyang
Radiated Emission	22.5	56.2	99.2		Yana Zeng

### 4.2 TEST MODES

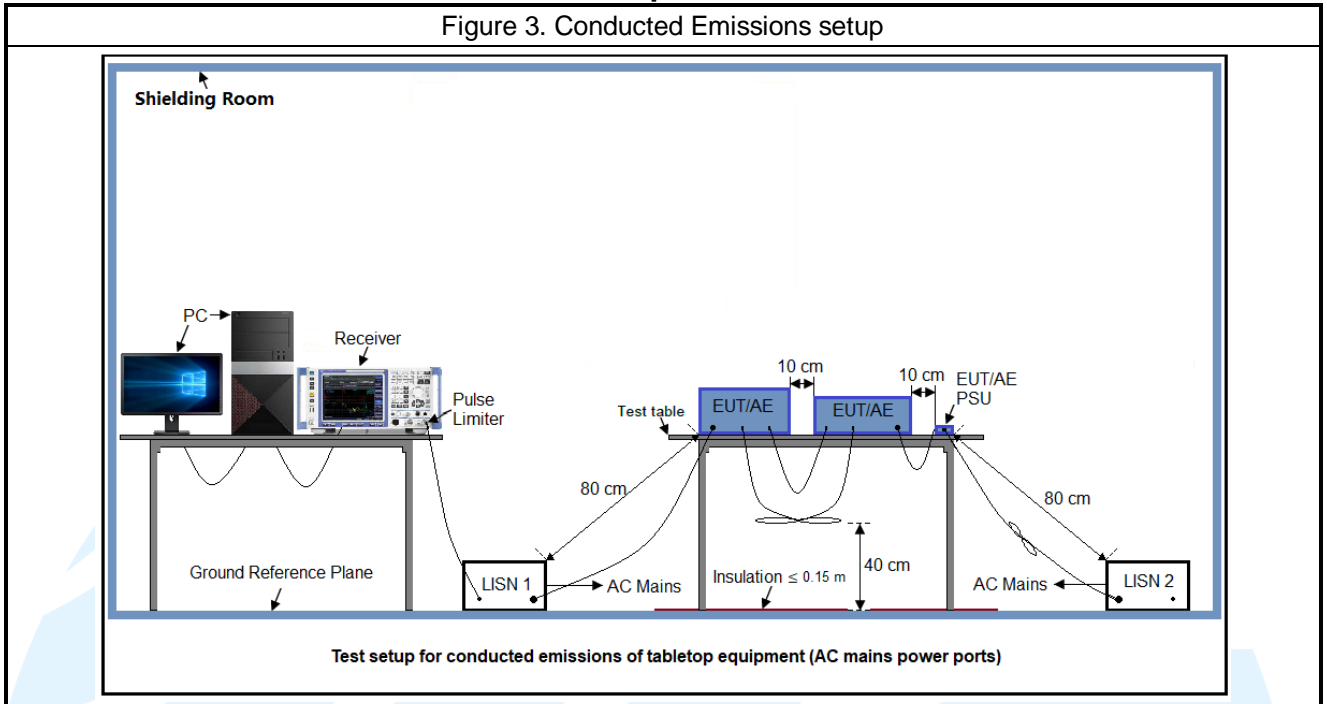
Test Item	EMI Test Modes
Radiated Emission	<b>Test Mode 1: AC120V/60Hz (Build-in Power 1) + LAN Port Loop transmission</b> Test Mode 2: AC240V/50Hz (Build-in Power 1) + LAN Port Loop transmission <b>Test Mode 3: AC120V/60Hz (Build-in Power 2) + LAN Port Loop transmission</b> Test Mode 4: AC240V/50Hz (Build-in Power 2) + LAN Port Loop transmission <b>Test Mode 5: AC120V/60Hz (Build-in Power 3) + LAN Port Loop transmission</b> Test Mode 6: AC240V/50Hz (Build-in Power 3) + LAN Port Loop transmission
Conducted Emission	Test Mode 1: AC120V/60Hz (Build-in Power 1) + LAN Port Loop transmission <b>Test Mode 2: AC240V/50Hz (Build-in Power 1) + LAN Port Loop transmission</b> Test Mode 3: AC120V/60Hz (Build-in Power 2) + LAN Port Loop transmission <b>Test Mode 4: AC240V/50Hz (Build-in Power 2) + LAN Port Loop transmission</b> Test Mode 5: AC120V/60Hz (Build-in Power 3) + LAN Port Loop transmission <b>Test Mode 6: AC240V/50Hz (Build-in Power 3) + LAN Port Loop transmission</b>

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	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 ≤ f ≤ 1 000	Quasi Peak	120 kHz	300 kHz
f ≥ 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 A devices

**FCC 47 CFR Part 15 Subpart B**

Frequency (MHz)	limits at 3 m (dBµV/m)		
	QP Detector	PK Detector	AV Detector
30-88	49.5	--	--
88-216	54.0	--	--
216-960	56.9	--	--
960 to 1000	60.0	--	--
Above 1000	--	80.0	60.0

**ICES-003 Issue 7**

Frequency (MHz)	limits at 3 m (dBµV/m)		
	QP Detector	PK Detector	AV Detector
30 – 88	50.0	--	--
88 – 216	54.0	--	--
216 – 230	56.9	--	--
230 – 960	57.0	--	--
960 – 1000	60.0	--	--
Above 1000	--	80	60

**Remark:**

- The lower limit shall apply at the transition frequencies.
- Emission level (dBµV/m) = 20 log Emission level (µV/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.

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**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.

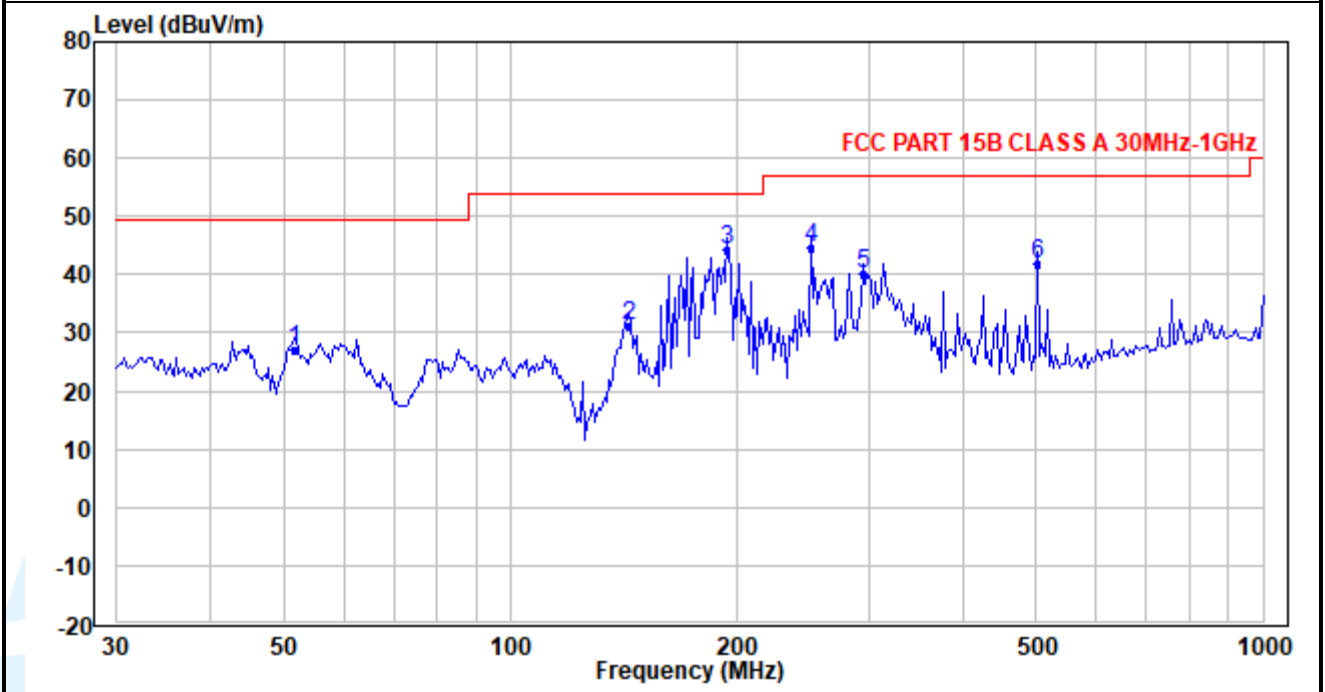
**Equipment Used:** Refer to section 3 for details.

**Test Result:** Pass

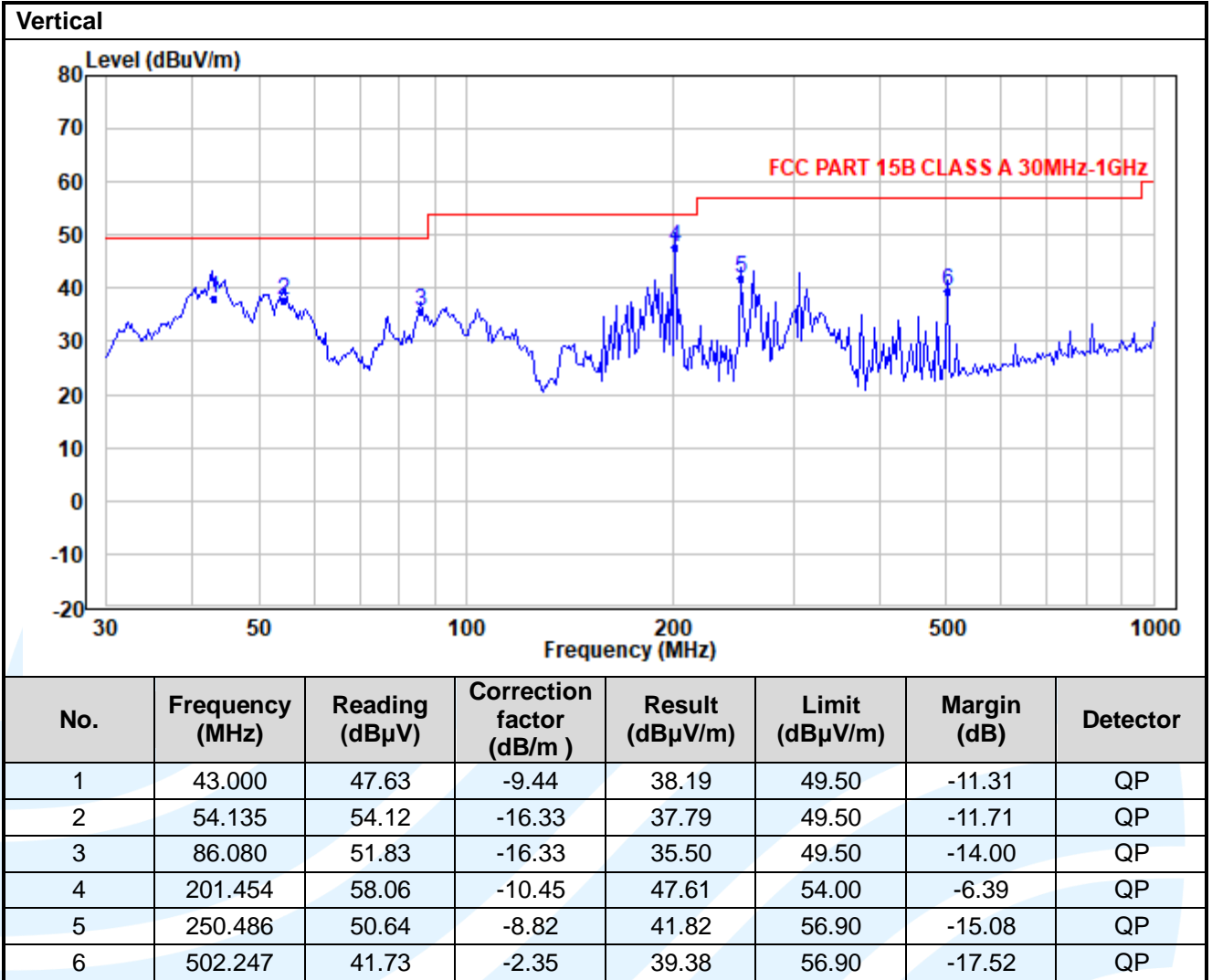
**The measurement data as follows:**

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

Below 1GHz (Quasi Peak):  
 Test Mode 2: AC240V/50Hz (Build-in Power 1) + LAN Port Loop transmission  
 Horizontal



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	51.536	42.38	-15.36	27.02	49.50	-22.48	QP
2	143.776	46.69	-15.35	31.34	54.00	-22.66	QP
3	194.499	54.88	-10.53	44.35	54.00	-9.65	QP
4	250.486	53.32	-8.82	44.50	56.90	-12.40	QP
5	294.426	47.16	-7.17	39.99	56.90	-16.91	QP
6	502.247	44.28	-2.35	41.93	56.90	-14.97	QP



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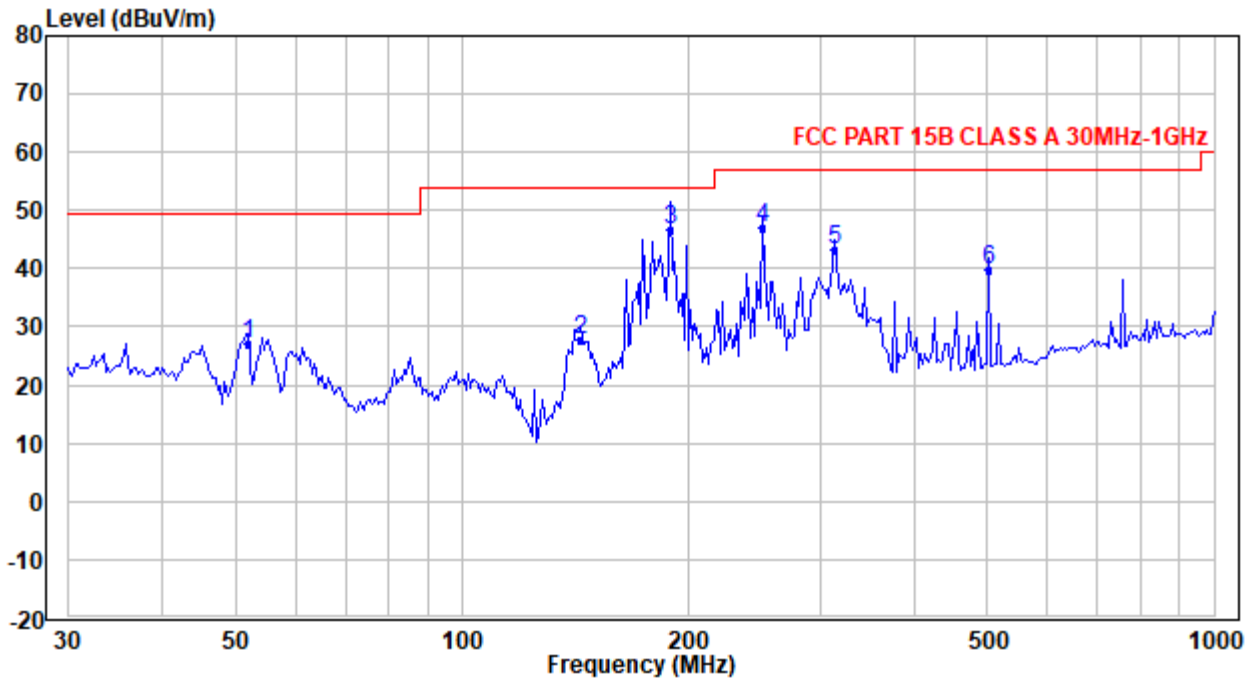
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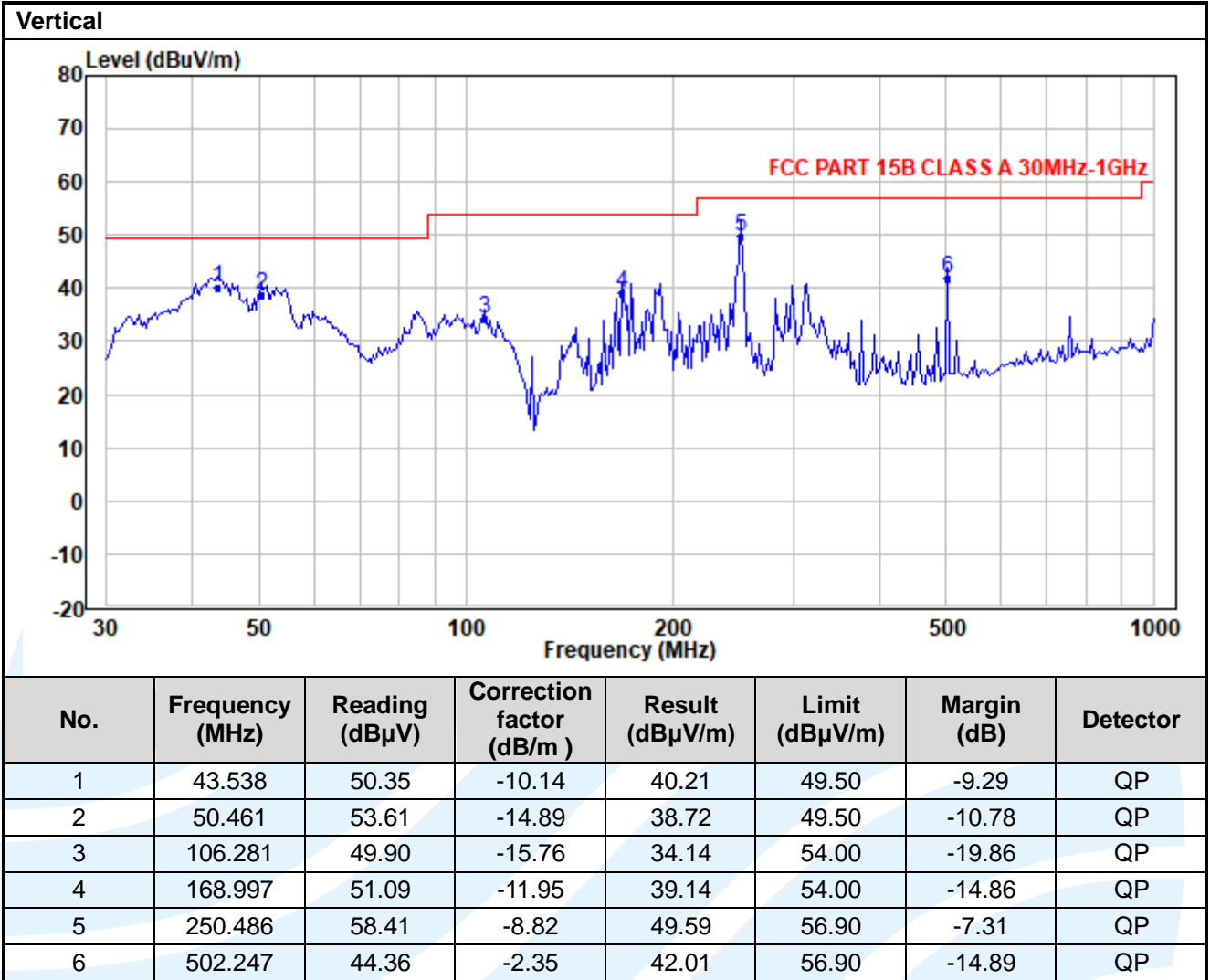
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Below 1GHz (Quasi Peak):  
 Test Mode 4: AC240V/50Hz (Build-in Power 2) + LAN Port Loop transmission  
 Horizontal



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Correction factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	51.900	42.61	-15.69	26.92	49.50	-22.58	QP
2	143.776	43.13	-15.35	27.78	54.00	-26.22	QP
3	189.108	57.14	-10.50	46.64	54.00	-7.36	QP
4	250.486	55.74	-8.82	46.92	56.90	-9.98	QP
5	313.648	49.18	-6.07	43.11	56.90	-13.79	QP
6	502.247	42.12	-2.35	39.77	56.90	-17.13	QP





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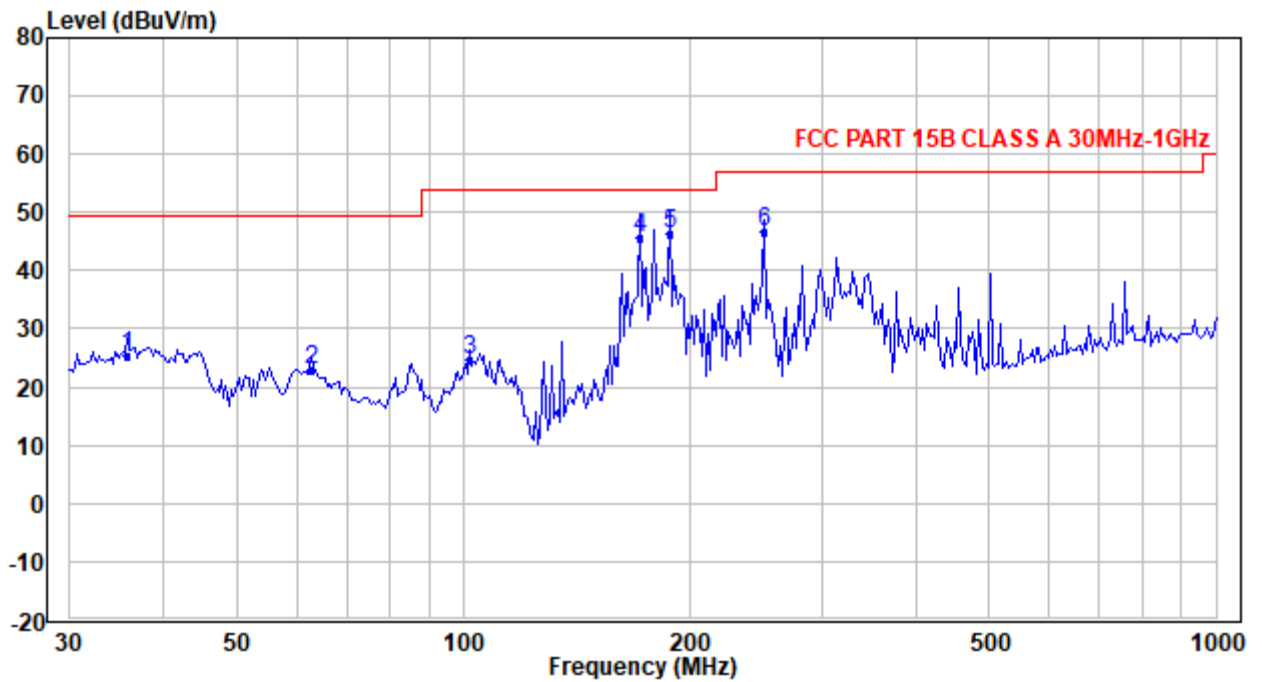
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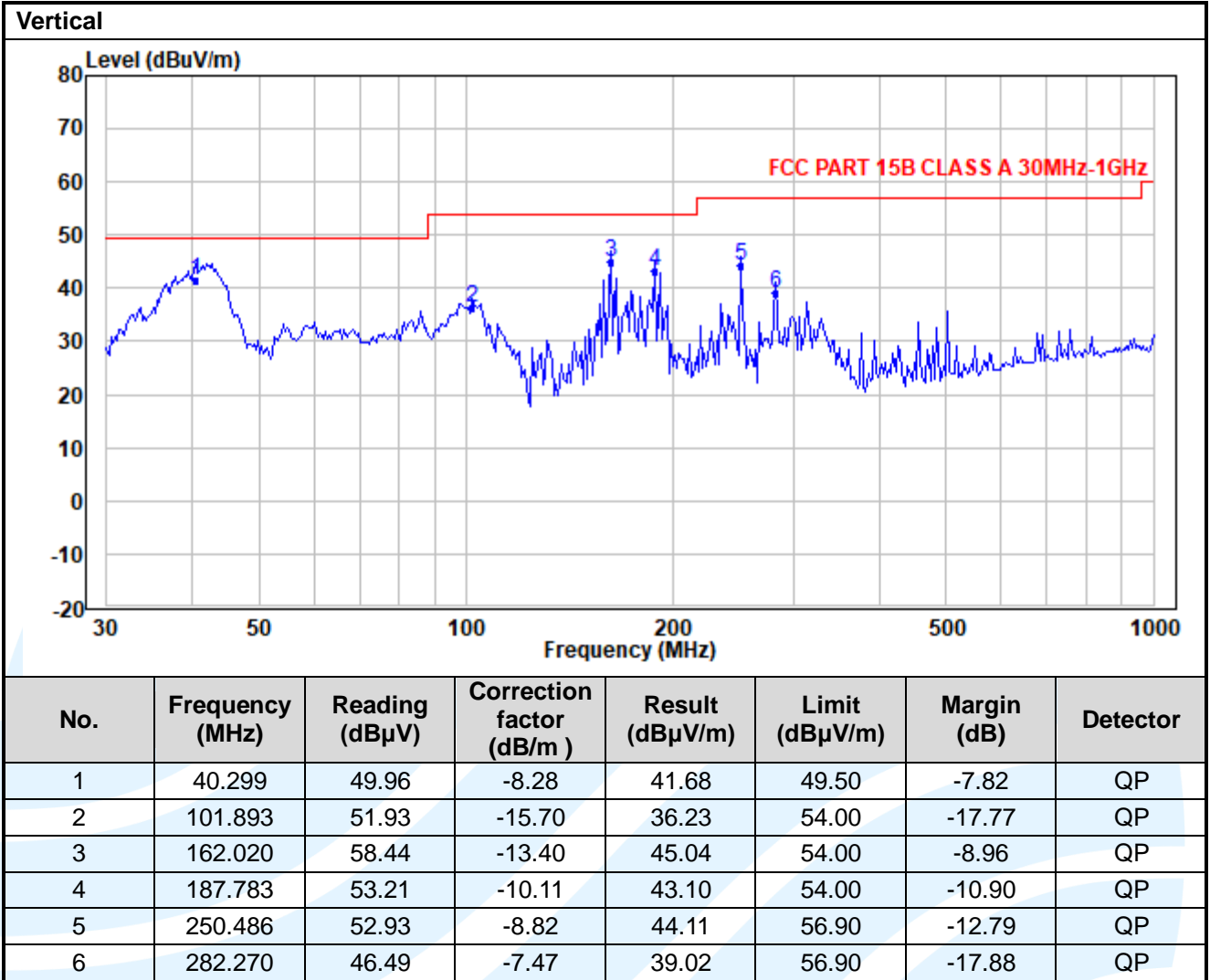
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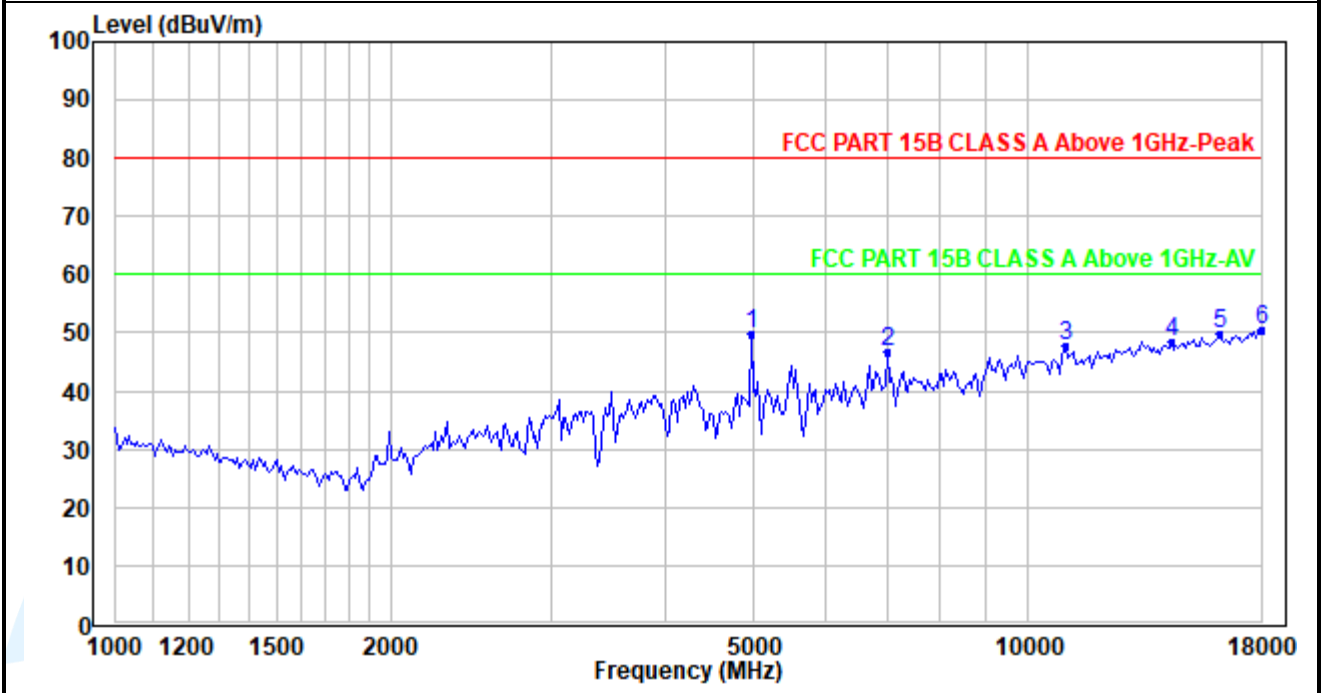
Below 1GHz (Quasi Peak):  
 Test Mode 6: AC240V/50Hz (Build-in Power 3) + LAN Port Loop transmission  
 Horizontal



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Correction factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	35.762	30.97	-5.68	25.29	49.50	-24.21	QP
2	62.743	40.40	-17.52	22.88	49.50	-26.62	QP
3	101.893	40.24	-15.70	24.54	54.00	-29.46	QP
4	171.389	57.00	-11.35	45.65	54.00	-8.35	QP
5	187.783	56.46	-10.11	46.35	54.00	-7.65	QP
6	250.486	55.46	-8.82	46.64	56.90	-10.26	QP



Above 1GHz (Peak & Average)  
 Test Mode 2: AC240V/50Hz (Build-in Power 1) + LAN Port Loop transmission  
 Horizontal



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Correction factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	4975.247	52.16	-2.26	49.90	80.00	-30.10	Peak
2	7002.185	45.32	1.49	46.81	80.00	-33.19	Peak
3	11001.420	40.17	7.52	47.69	80.00	-32.31	Peak
4	14360.350	36.38	12.10	48.48	80.00	-31.52	Peak
5	16217.810	37.98	12.02	50.00	80.00	-30.00	Peak
6	18000.000	35.25	15.41	50.66	80.00	-29.34	Peak

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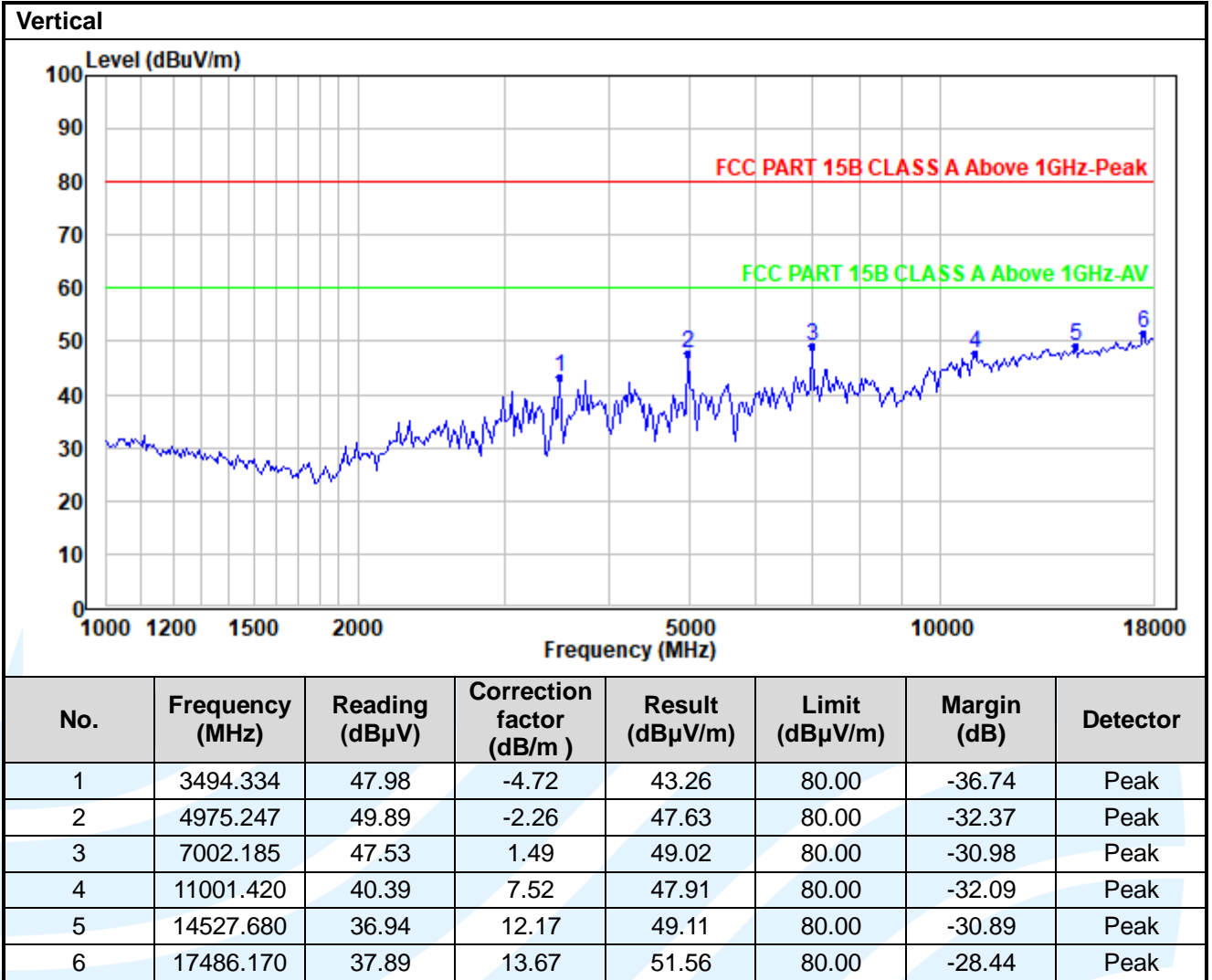
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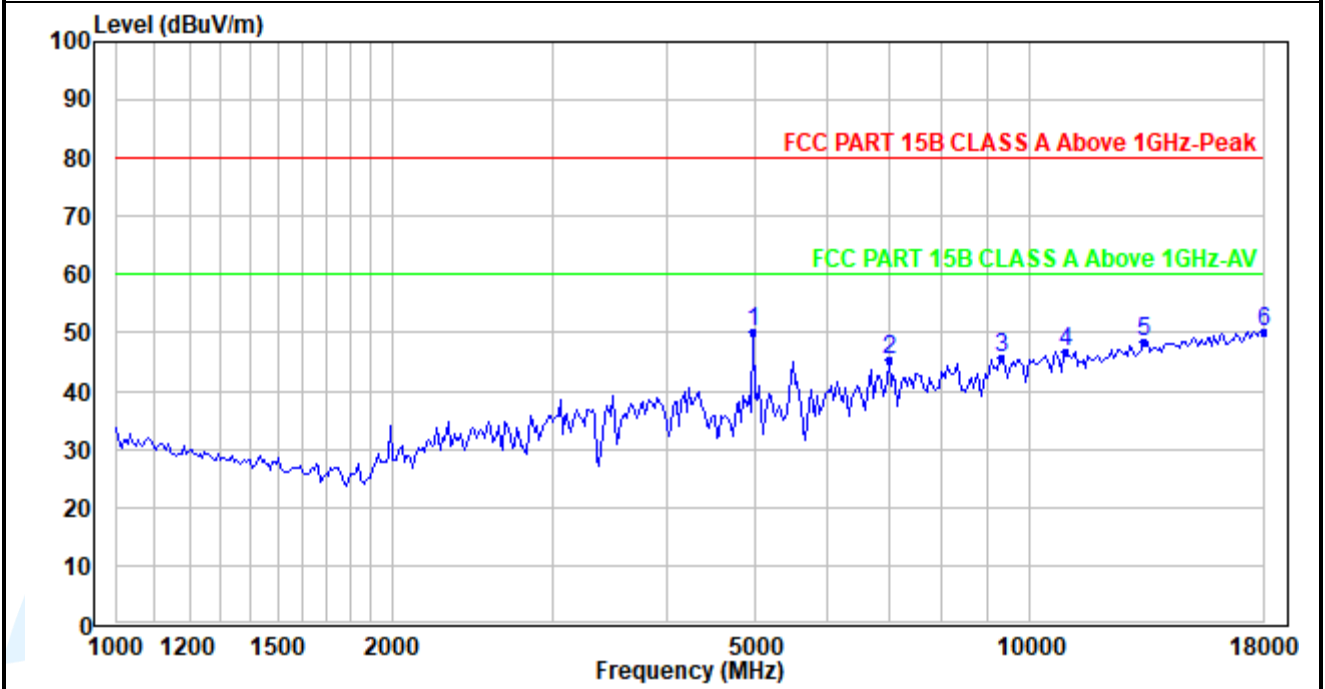
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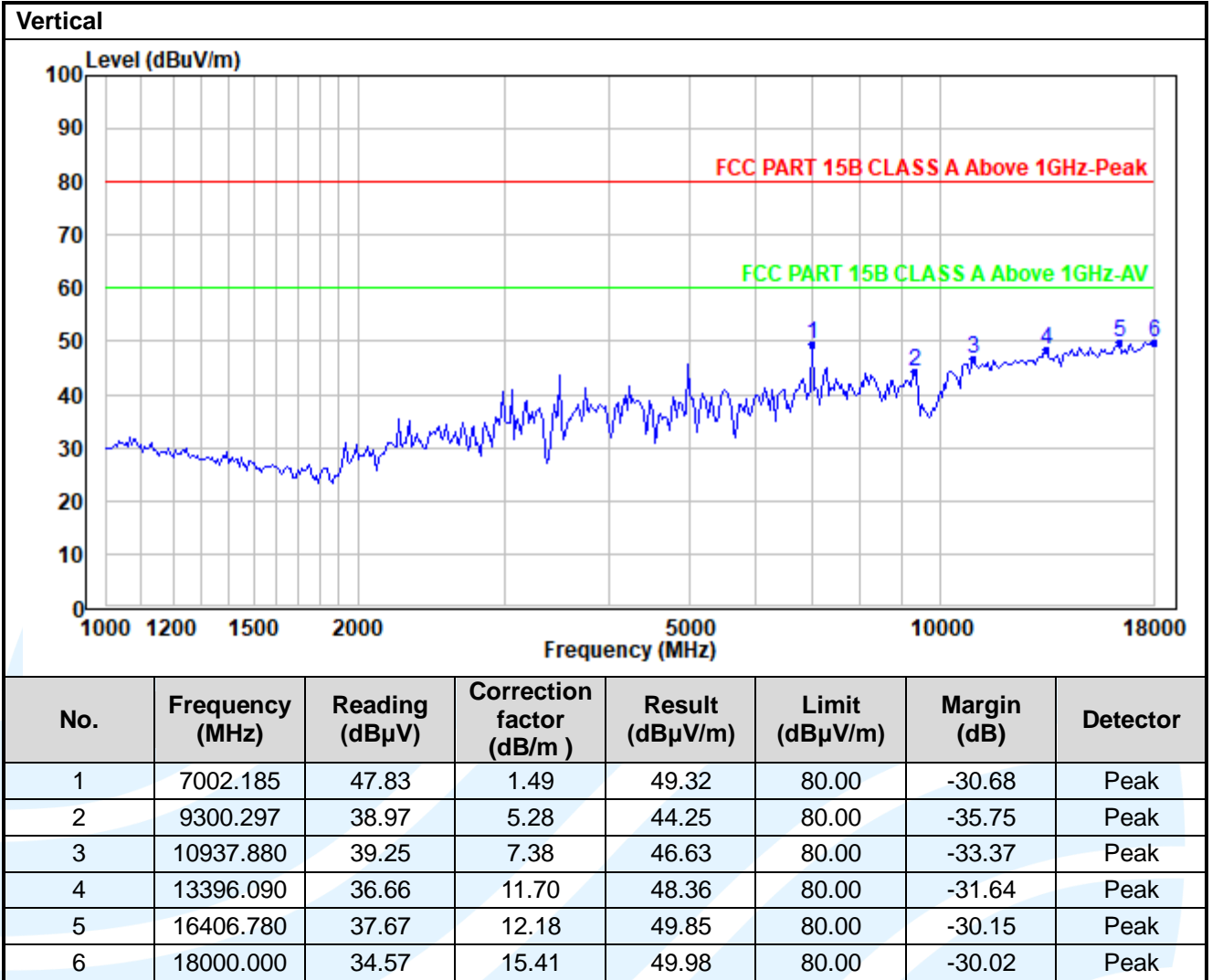
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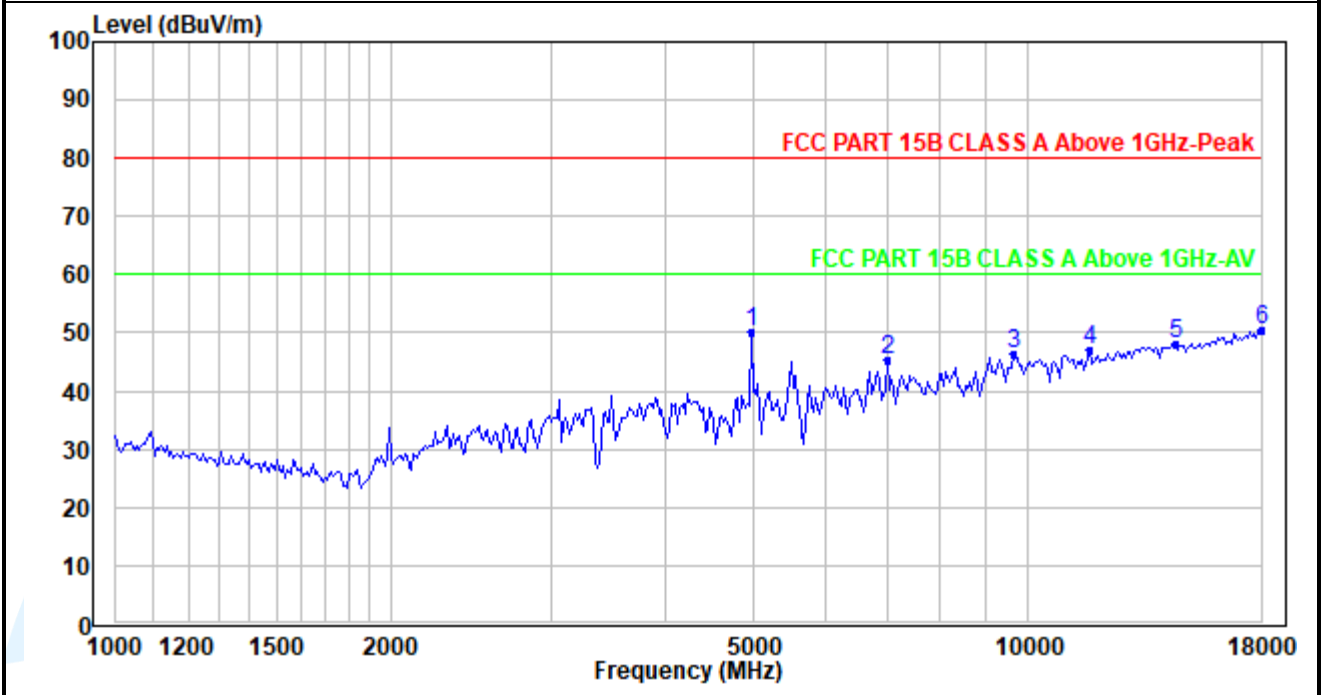
**Below 1GHz (Quasi Peak):**  
**Test Mode 4: AC240V/50Hz (Build-in Power 2) + LAN Port Loop transmission**  
**Horizontal**



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Correction factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	4975.247	52.28	-2.26	50.02	80.00	-29.98	Peak
2	7002.185	44.00	1.49	45.49	80.00	-34.51	Peak
3	9300.297	40.33	5.28	45.61	80.00	-34.39	Peak
4	10937.880	39.37	7.38	46.75	80.00	-33.25	Peak
5	13318.720	37.14	11.47	48.61	80.00	-31.39	Peak
6	18000.000	34.89	15.41	50.30	80.00	-29.70	Peak



Above 1GHz (Peak & Average)  
 Test Mode 6: AC240V/50Hz (Build-in Power 3) + LAN Port Loop transmission  
 Horizontal



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Correction factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	4975.247	52.57	-2.26	50.31	80.00	-29.69	Peak
2	7002.185	43.86	1.49	45.35	80.00	-34.65	Peak
3	9629.201	40.86	5.50	46.36	80.00	-33.64	Peak
4	11657.470	39.74	7.32	47.06	80.00	-32.94	Peak
5	14527.680	35.94	12.17	48.11	80.00	-31.89	Peak
6	18000.000	34.95	15.41	50.36	80.00	-29.64	Peak

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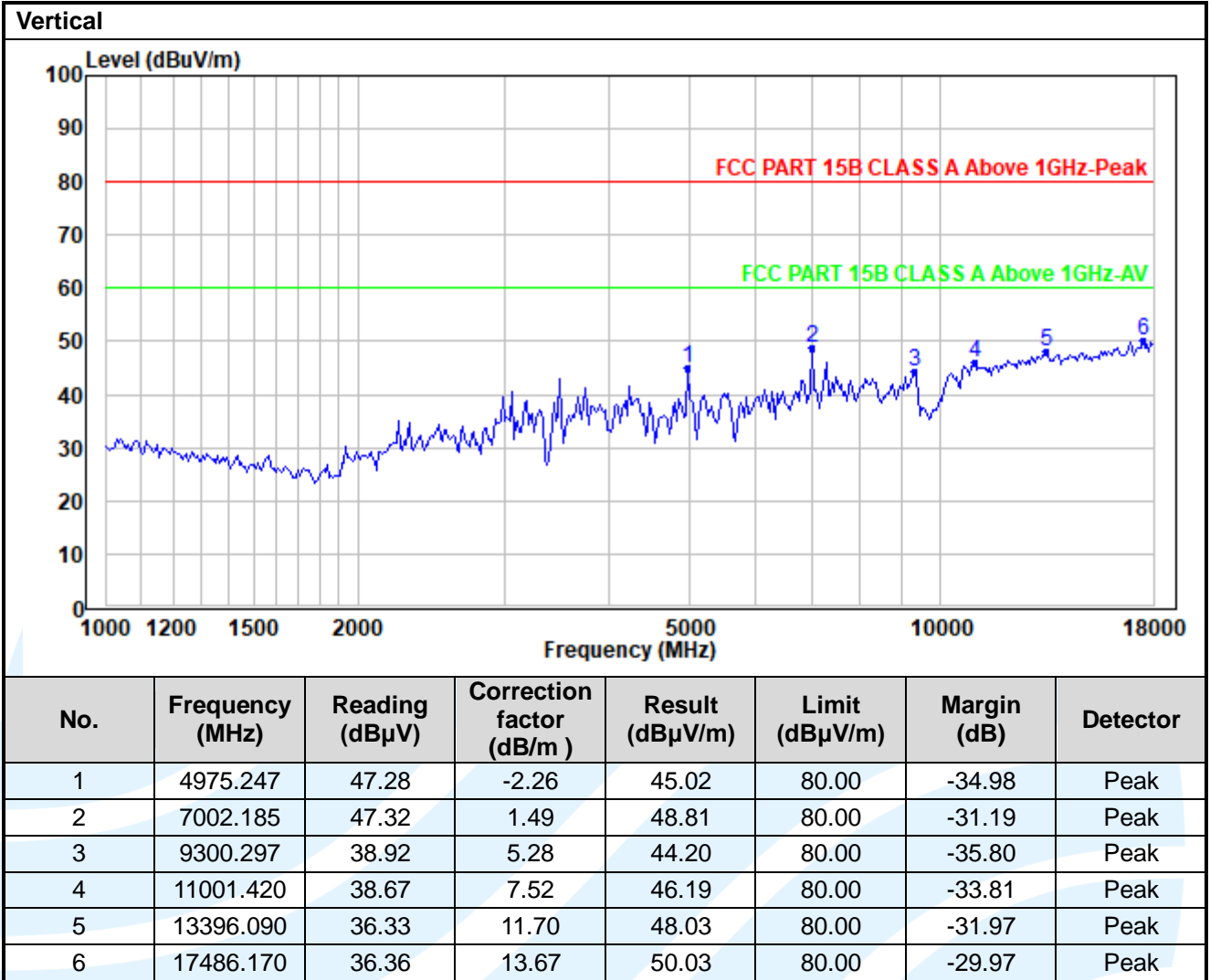
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Remark:

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 240VAC/50Hz and 120VAC/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.

## 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 A devices

Frequency range (MHz)	Limits (dB(μV))	
	Quasi-peak	Average
0,15 to 0,50	79	66
0,50 to 30	73	60

**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.

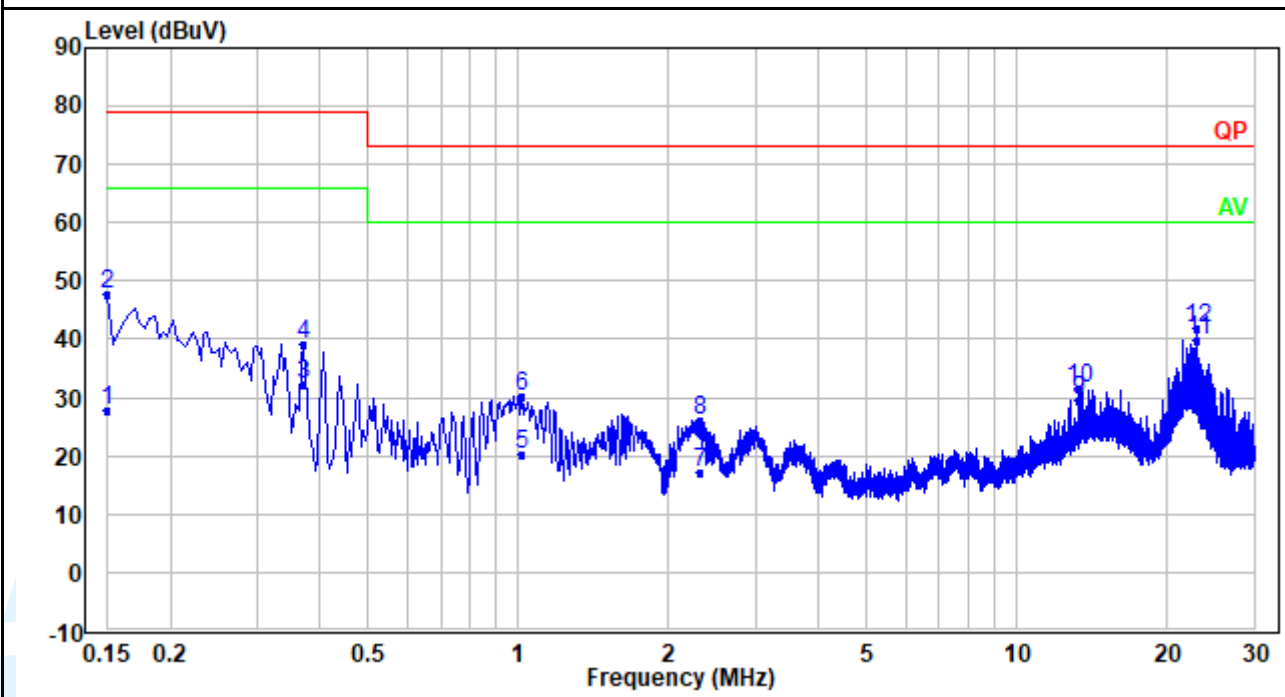
**Test Result:** Pass

The worst measurement data as follows:

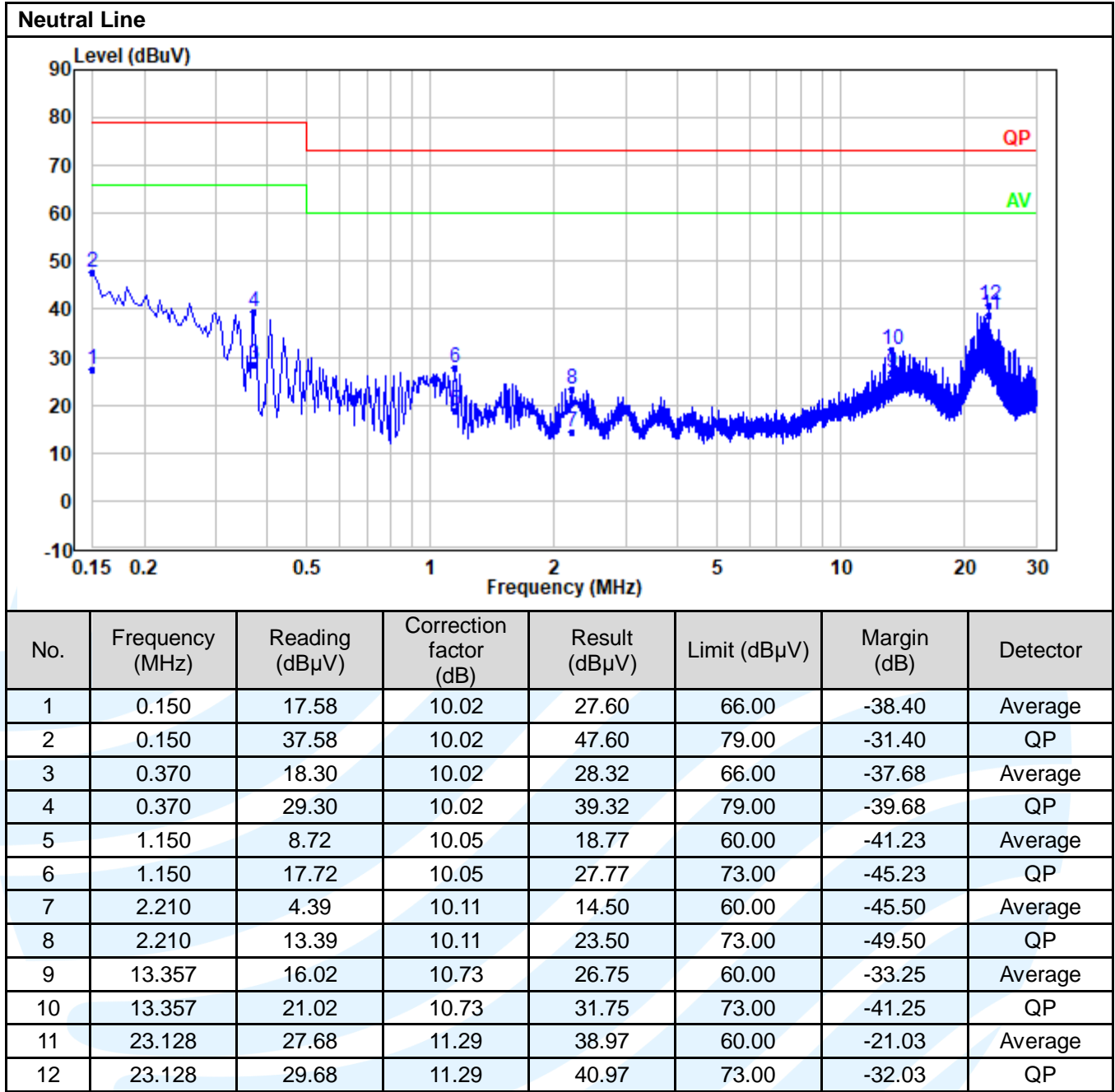
Quasi Peak and Average:

Test Mode 1: AC120V/60Hz (Build-in Power 1) + LAN Port Loop transmission

Live Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	17.63	10.03	27.66	66.00	-38.34	Average
2	0.150	37.63	10.03	47.66	79.00	-31.34	QP
3	0.370	22.06	10.04	32.10	66.00	-33.90	Average
4	0.370	29.06	10.04	39.10	79.00	-39.90	QP
5	1.014	10.15	10.06	20.21	60.00	-39.79	Average
6	1.014	20.15	10.06	30.21	73.00	-42.79	QP
7	2.322	7.05	10.16	17.21	60.00	-42.79	Average
8	2.322	16.05	10.16	26.21	73.00	-46.79	QP
9	13.357	18.83	10.73	29.56	60.00	-30.44	Average
10	13.357	20.83	10.73	31.56	73.00	-41.44	QP
11	23.128	28.38	11.38	39.76	60.00	-20.24	Average
12	23.128	30.38	11.38	41.76	73.00	-31.24	QP



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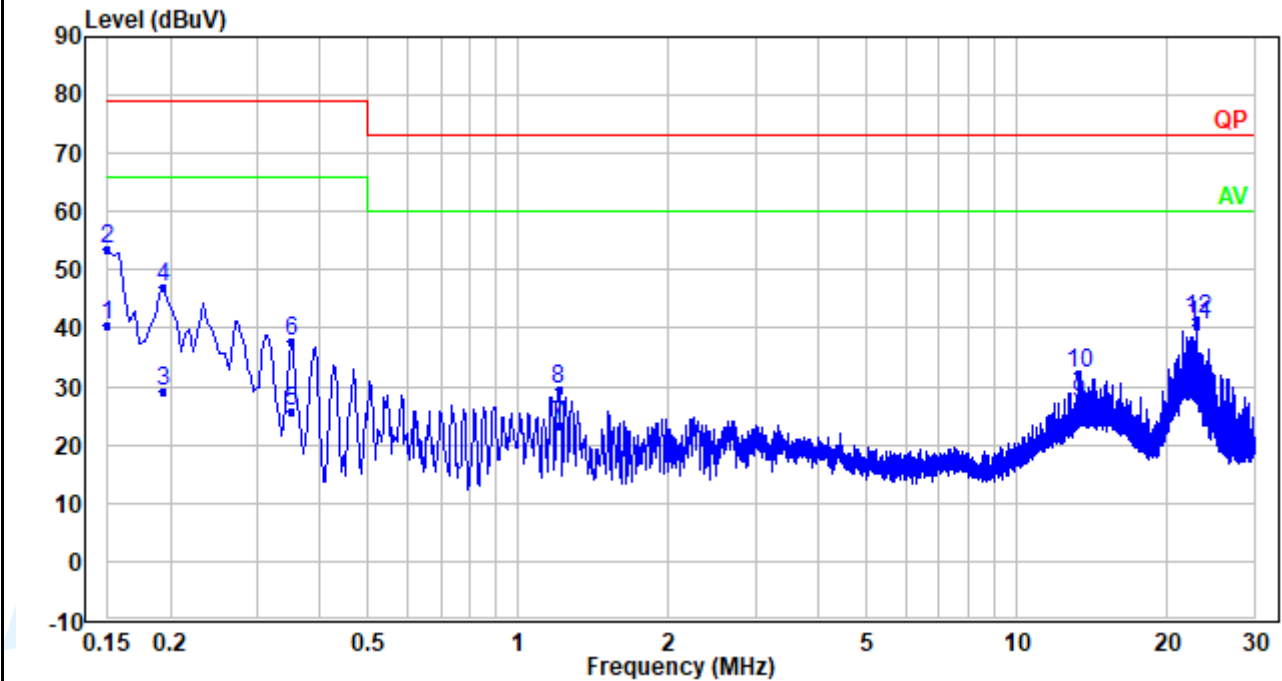
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**Quasi Peak and Average:**  
**Test Mode 3: AC120V/60Hz (Build-in Power 2) + LAN Port Loop transmission**

Live Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	30.44	10.03	40.47	66.00	-25.53	Average
2	0.150	43.44	10.03	53.47	79.00	-25.53	QP
3	0.194	19.18	10.02	29.20	66.00	-36.80	Average
4	0.194	37.18	10.02	47.20	79.00	-31.80	QP
5	0.350	15.73	10.03	25.76	66.00	-40.24	Average
6	0.350	27.73	10.03	37.76	79.00	-41.24	QP
7	1.206	13.39	10.08	23.47	60.00	-36.53	Average
8	1.206	19.39	10.08	29.47	73.00	-43.53	QP
9	13.357	16.50	10.73	27.23	60.00	-32.77	Average
10	13.357	21.50	10.73	32.23	73.00	-40.77	QP
11	23.128	29.30	11.38	40.68	60.00	-19.32	Average
12	23.128	30.30	11.38	41.68	73.00	-31.32	QP

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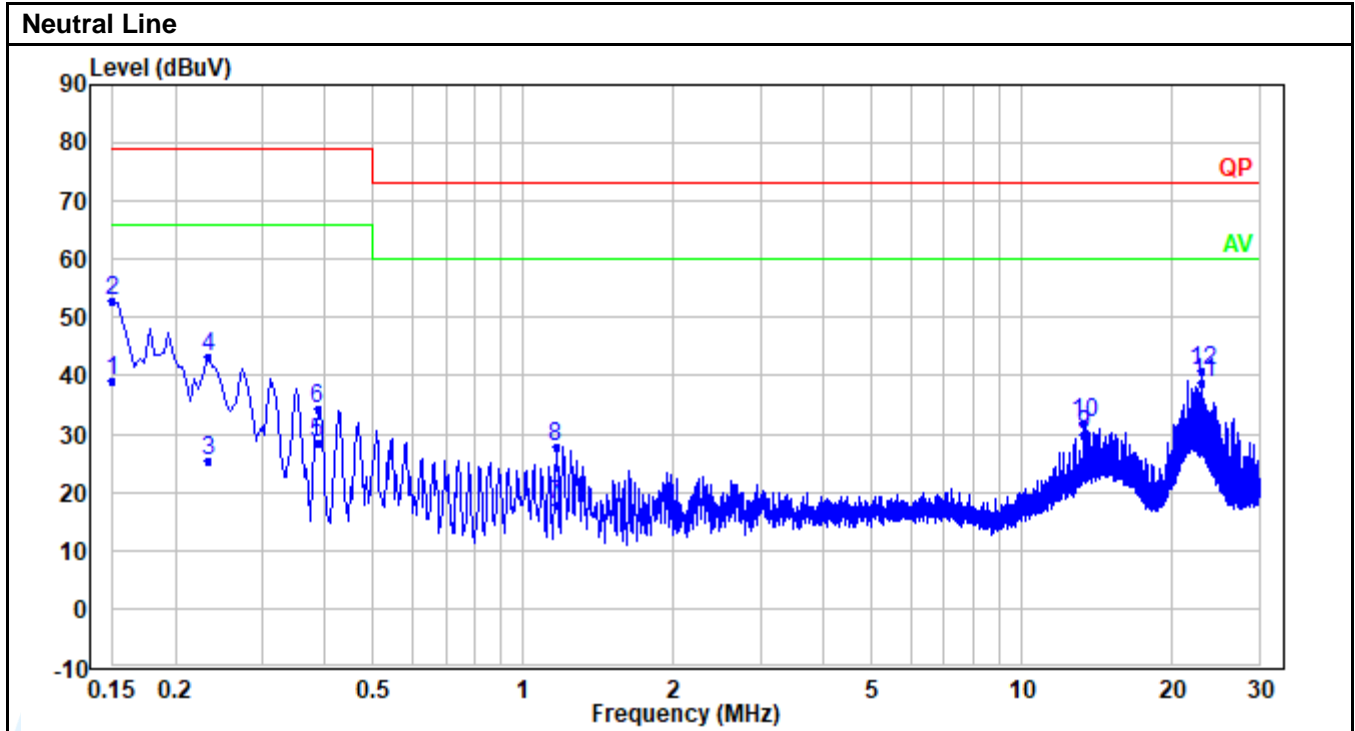
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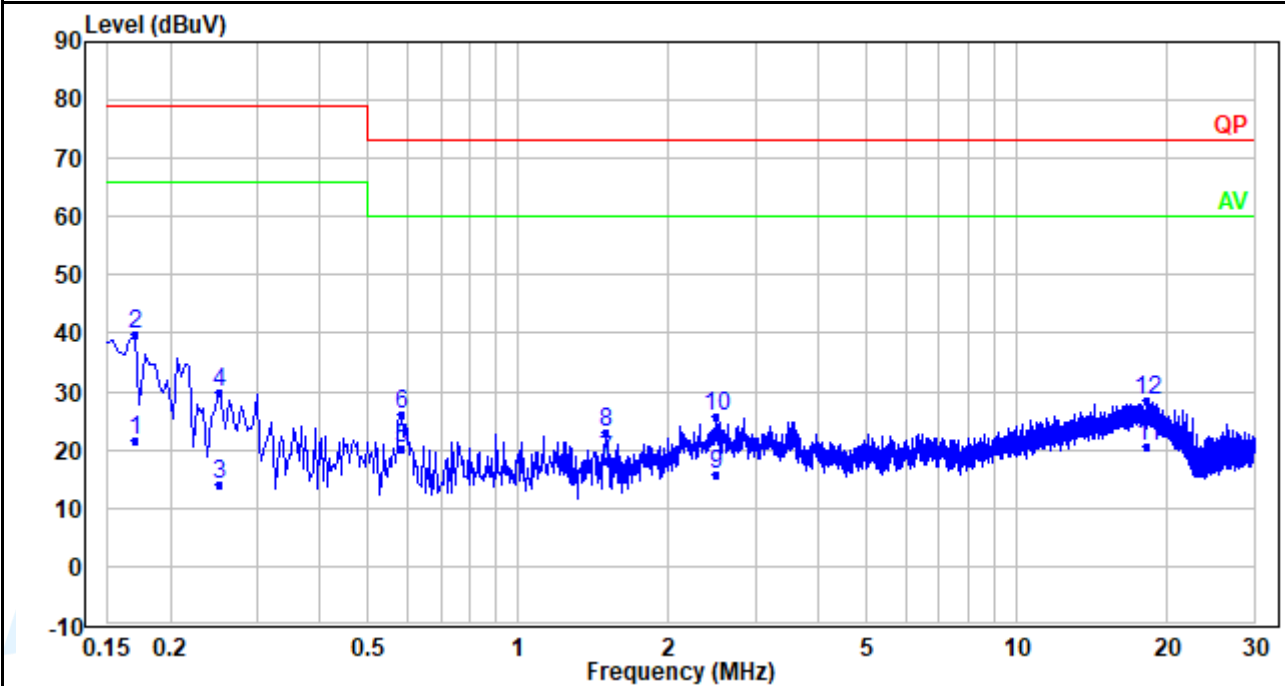
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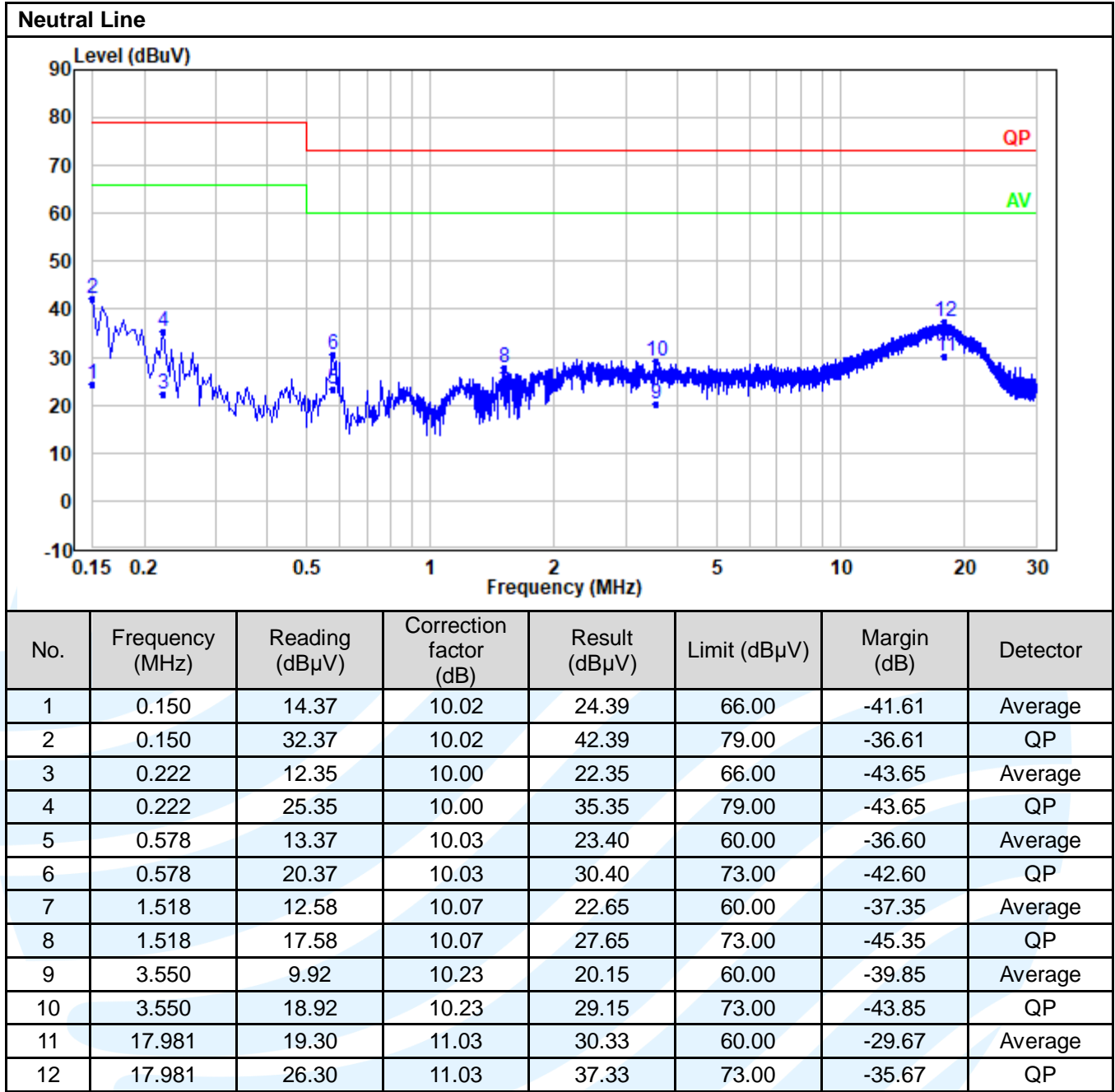
No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	29.04	10.02	39.06	66.00	-26.94	Average
2	0.150	43.04	10.02	53.06	79.00	-25.94	QP
3	0.234	15.43	10.00	25.43	66.00	-40.57	Average
4	0.234	33.43	10.00	43.43	79.00	-35.57	QP
5	0.386	18.41	10.02	28.43	66.00	-37.57	Average
6	0.386	24.41	10.02	34.43	79.00	-44.57	QP
7	1.162	7.86	10.05	17.91	60.00	-42.09	Average
8	1.162	17.86	10.05	27.91	73.00	-45.09	QP
9	13.357	19.15	10.73	29.88	60.00	-30.12	Average
10	13.357	21.15	10.73	31.88	73.00	-41.12	QP
11	23.128	27.65	11.29	38.94	60.00	-21.06	Average
12	23.128	29.65	11.29	40.94	73.00	-32.06	QP

**Quasi Peak and Average:**  
**Test Mode 5: AC120V/60Hz (Build-in Power 3) + LAN Port Loop transmission**

Live Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.170	11.75	10.03	21.78	66.00	-44.22	Average
2	0.170	29.75	10.03	39.78	79.00	-39.22	QP
3	0.250	3.87	10.03	13.90	66.00	-52.10	Average
4	0.250	19.87	10.03	29.90	79.00	-49.10	QP
5	0.582	10.20	10.05	20.25	60.00	-39.75	Average
6	0.582	16.20	10.05	26.25	73.00	-46.75	QP
7	1.494	7.99	10.09	18.08	60.00	-41.92	Average
8	1.494	12.99	10.09	23.08	73.00	-49.92	QP
9	2.490	5.60	10.16	15.76	60.00	-44.24	Average
10	2.490	15.60	10.16	25.76	73.00	-47.24	QP
11	18.349	9.29	11.14	20.43	60.00	-39.57	Average
12	18.349	17.29	11.14	28.43	73.00	-44.57	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 240VAC/50Hz and 120VAC/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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