Certificate #4312.01

FCC & ISED TEST REPORT

Product Name:	16-Port Unmanaged Gigabit Switch with 8 PoE+
Trade Mark:	GRANDSTREAM
Model No. / HVIN:	GWN7702P
Add. Model No. / HVIN:	N/A
Report Number:	2304064722EMC-1
Test Standards:	FCC 47 CFR Part 15 Subpart B ICES-003 Issue 7
FCC ID:	YZZGWN7702P
Test Result:	PASS
Date of Issue:	May 18, 2023

Prepared for:

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

Prepared by:

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Version

Version No.	Date	Description
V1.0	May 18, 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:	16-Port Unmanaged Gigabit Switch with 8 PoE+
Model No. / HVIN:	GWN7702P
Add. Model No. / HVIN:	N/A
Trade Mark:	GRANDSTREAM
DUT Stage:	Production Unit
Rated Voltage:	100-240V~ 50/60Hz 2.5A
Classification of digital devices:	Class A
Highest Internal Frequency:	500 MHz
Software Version:	N/A (Provided by the customer)
Hardware Version:	V1.0 (Provided by the customer)
Sample Received Date:	April 6, 2023
Sample Tested Date:	April 20, 2023 to May 18, 2023
Note: This product can configure with two different power modules: **Build-in Power 1:** BOF-150S52-N; **Build-in Power 2:** R0066A.	
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

Cable	
Description:	AC Power Cable
Cable Type:	Unhielded without ferrite
Length:	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
AE (POE Load)	N/A	N/A	N/A	Applicant

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.

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 - 3M Chamber						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	3m Chamber & Accessory Equipment	ETS-Lindgren	3m	Euroshiedpn-CT 001270-1317	22-Jan-2021	21-Jan-2024
☒	Broadband Antenna	ETS-Lindgren	3142E	00201566	13-Dec-2022	12-Dec-2023
☒	6dB Attenuator	Talent	RA6A5-N-18	18103001	13-Dec-2022	12-Dec-2023
☒	Pre-amplifier	HP	8447F	2805A02960	1-Nov-2022	31-Oct-2023
☒	Receiver	ROHDE & SCHWARZ	ESIB26	100114	3-Nov-2022	2-Nov-2023
☒	Double-Ridged Waveguide Horn Antenna (Pre-amplifier)	ETS-LINDGREN	3117-PA	00201541	17- Apr-2023	16- Apr-2024
☒	Pre-amplifier	ETS-Lindgren	00118385	00201874	1-Nov-2022	31-Oct-2023
☒	Multi device Controller	ETS-Lindgren	7006-001	00160105	N/A	N/A
☒	Test Software	Audix	e3	Software Version: 9.160323		

Conducted Emission Test						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	LISN	R&S	ESH2-Z5	860014/024	1-Nov-2022	31-Oct-2023
☒	LISN	ETS-Lindgren	3816/2SH	00201088	1-Nov-2022	31-Oct-2023
☒	Receiver	R&S	ESR7	101181	1-Nov-2022	31-Oct-2023
☒	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	1-Nov-2022	31-Oct-2023
☒	Shielding room	ETS-Lindgren	843	Euroshiedpn-CT001270-1246	5-Nov-2021	4-Nov-2024
☒	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
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	23.2	56.0	98.8	S202304061290-ZJA01/2	Lucas Ouyang
Radiated Emission	25.2	58.9	99.0	S202304061290-ZJA01/2	Yana Zeng

4.2 TEST MODES

Test Item	EMI Test Modes
Radiated Emission	**Test Mode 1: AC120V/60Hz (Build-in Power 1) + LAN Port Loop transmission + POE out** Test Mode 2: AC240V/50Hz (Build-in Power 1) + LAN Port Loop transmission + POE out Test Mode 3: AC120V/60Hz (Build-in Power 2) + LAN Port Loop transmission + POE out **Test Mode 4: AC240V/50Hz (Build-in Power 2) + LAN Port Loop transmission + POE out**
Conducted Emission	**Test Mode 1: AC120V/60Hz (Build-in Power 1) + LAN Port Loop transmission + POE out** Test Mode 2: AC240V/50Hz (Build-in Power 1) + LAN Port Loop transmission + POE out Test Mode 3: AC120V/60Hz (Build-in Power 2) + LAN Port Loop transmission + POE out **Test Mode 4: AC240V/50Hz (Build-in Power 2) + LAN Port Loop transmission + POE out**

4.3 TEST SETUP

4.3.1 For Radiated Emissions test setup

Figure 1. 30MHz to 1GHz

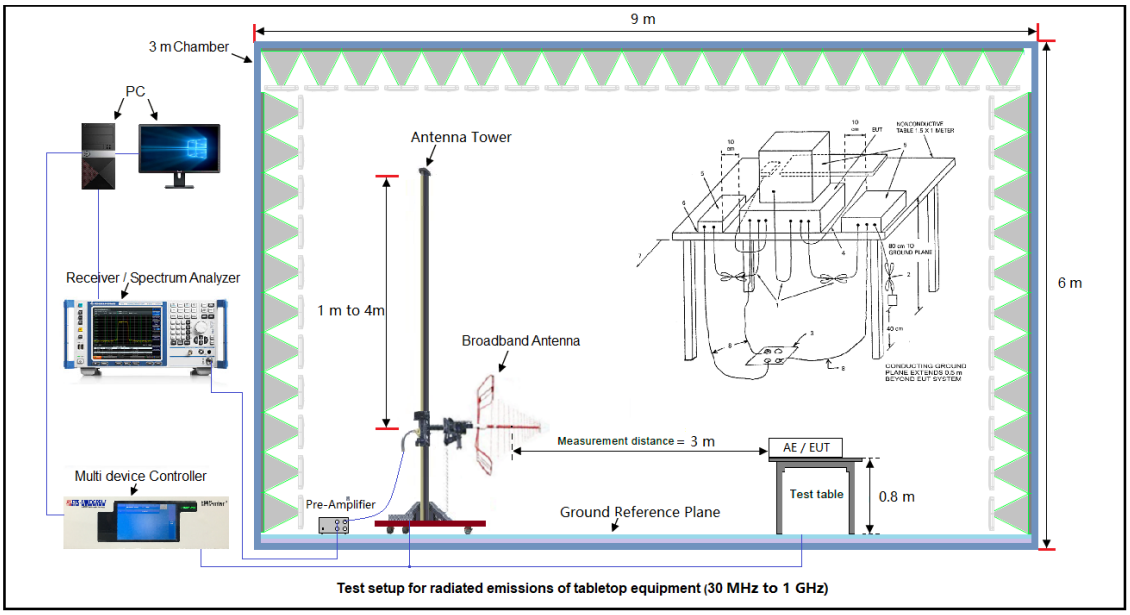
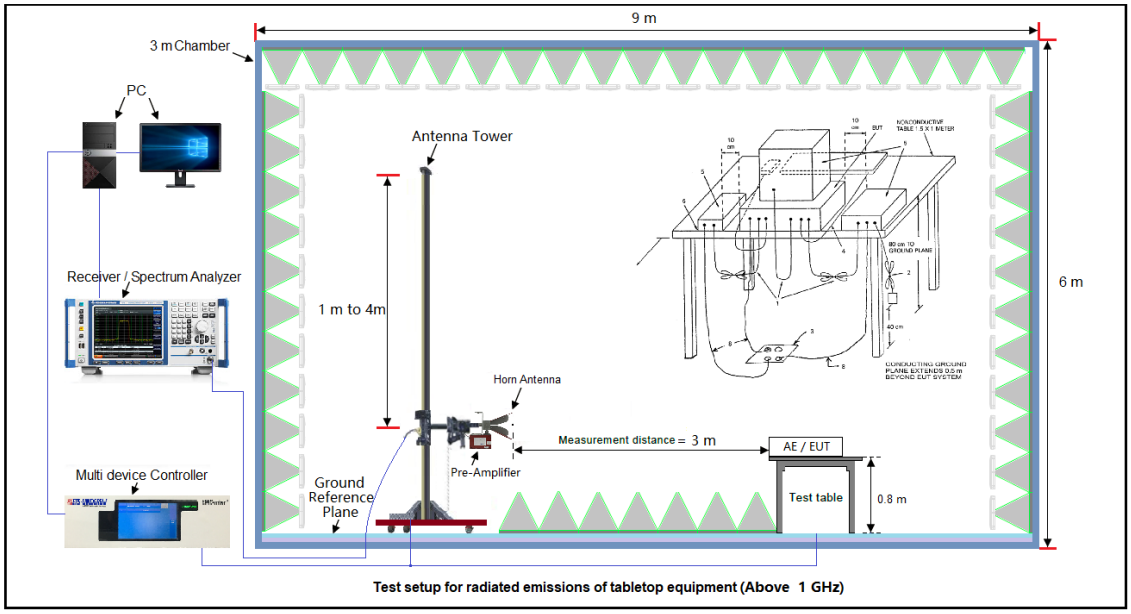


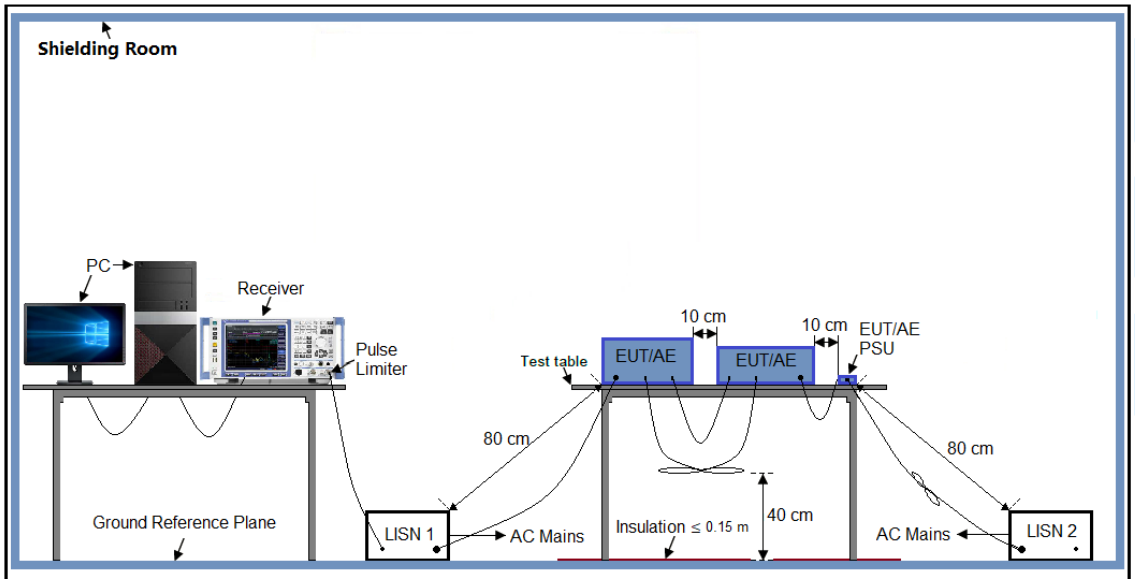
Figure 2. Above 1GHz



Test setup for radiated emissions of tabletop equipment (Above 1 GHz)

4.3.2 For Conducted Emissions test setup

Figure 3. Conducted Emissions setup



Test setup for conducted emissions of tabletop equipment (AC mains power ports)

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:

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

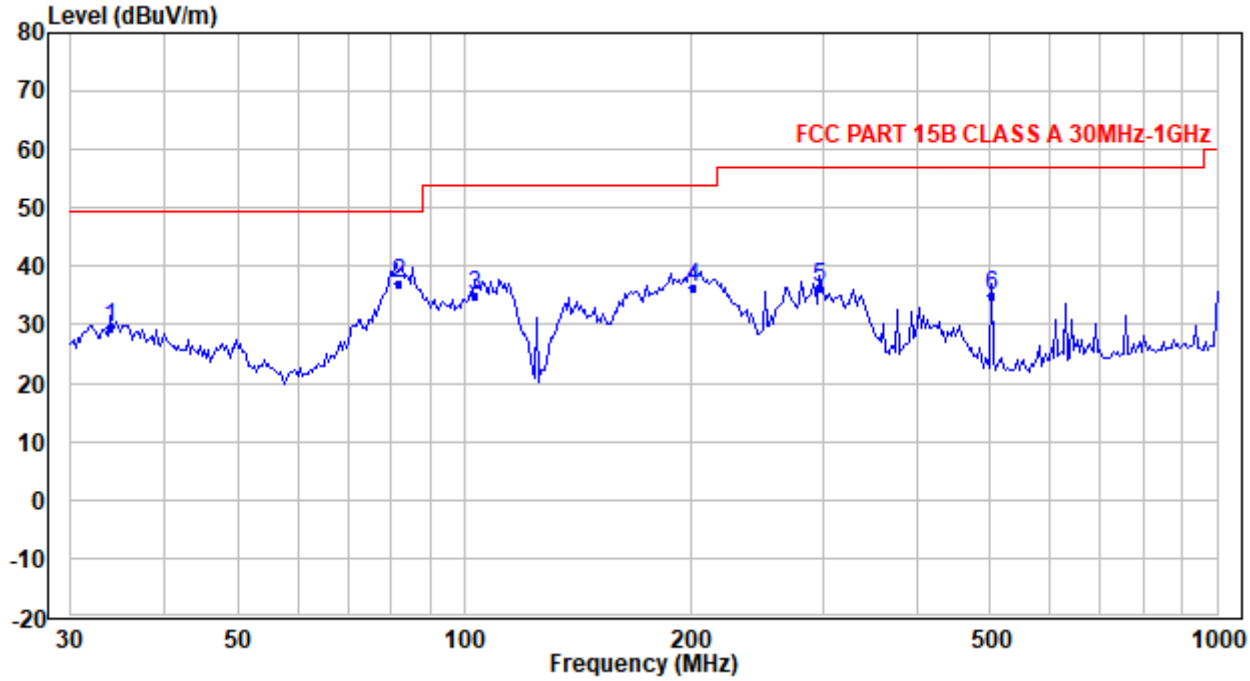
Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:

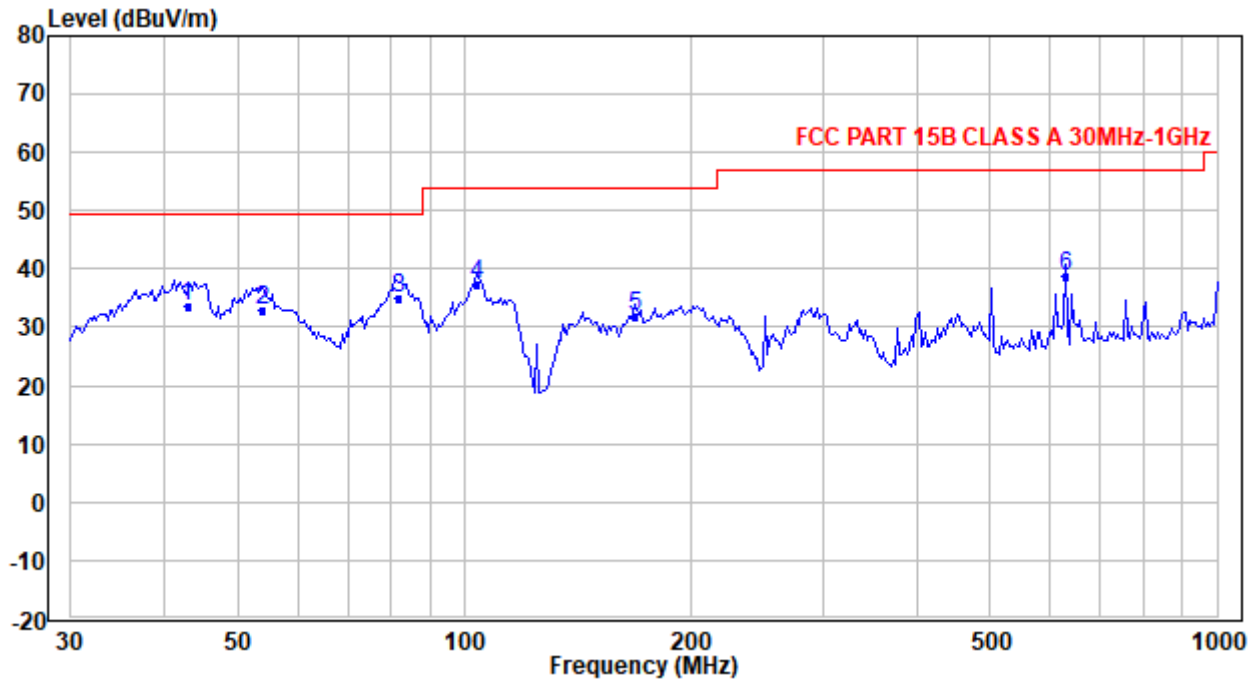
The measurement data for FCC 47 CFR Part 15 Subpart B as follows:

Below 1GHz (Quasi Peak):
Test Mode 1: AC120V/60Hz (Build-in Power 1) + LAN Port Loop transmission + POE out
Horizontal



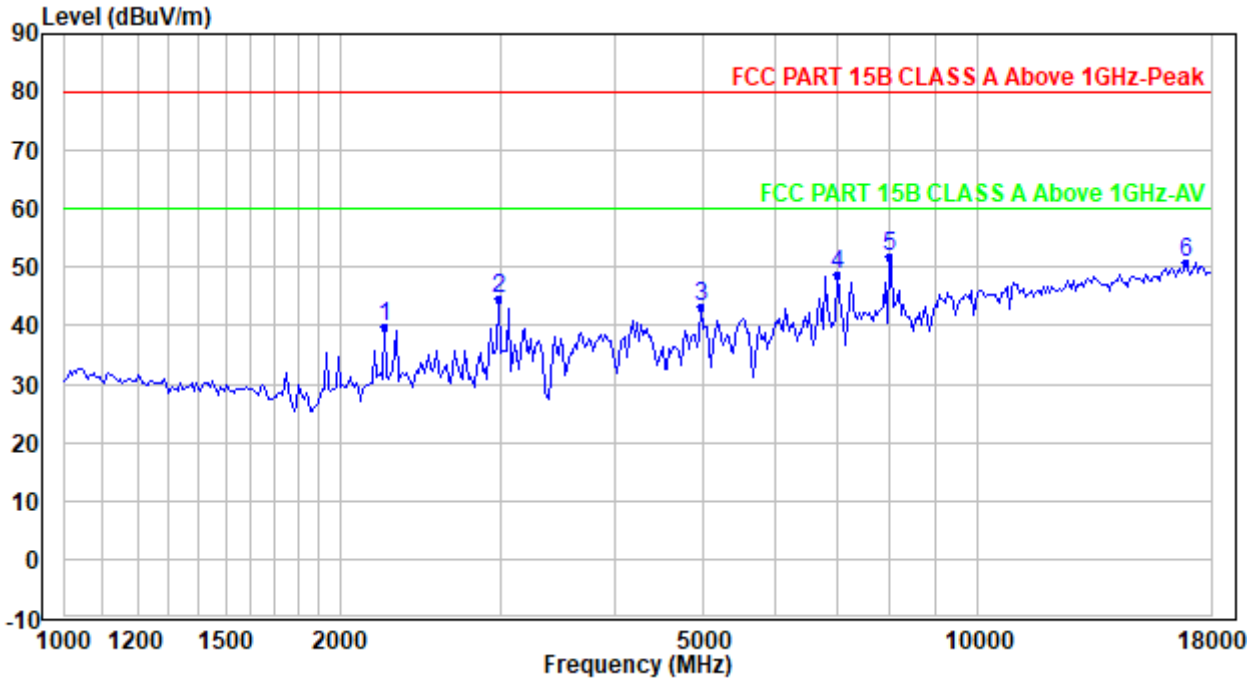
No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	33.807	34.91	-5.37	29.54	49.50	-19.96	QP
2	81.990	54.14	-17.14	37.00	49.50	-12.50	QP
3	103.335	50.46	-15.56	34.90	54.00	-19.10	QP
4	201.454	46.81	-10.45	36.36	54.00	-17.64	QP
5	296.502	43.58	-7.06	36.52	56.90	-20.38	QP
6	502.247	37.28	-2.35	34.93	56.90	-21.97	QP

Vertical



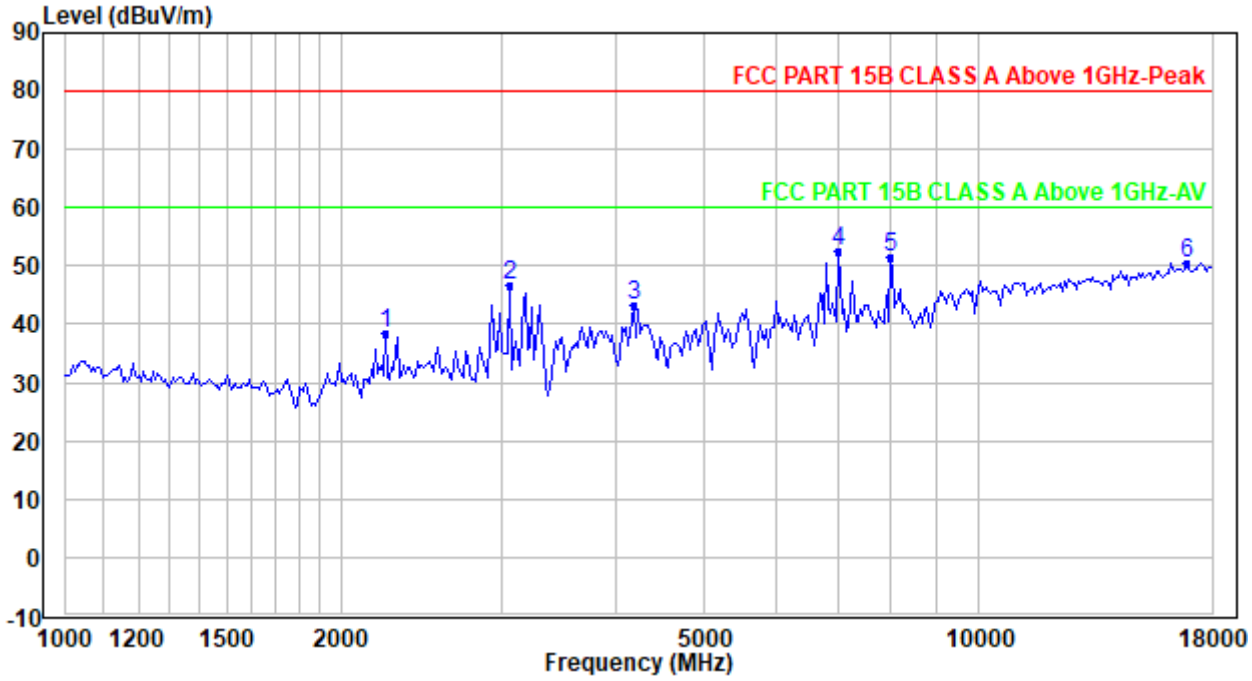
No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	42.830	43.09	-9.34	33.75	49.50	-15.75	QP
2	53.756	49.29	-16.24	33.05	49.50	-16.45	QP
3	81.575	52.32	-17.24	35.08	49.50	-14.42	QP
4	104.064	52.96	-15.48	37.48	54.00	-16.52	QP
5	168.997	43.82	-11.95	31.87	54.00	-22.13	QP
6	628.894	38.42	0.33	38.75	56.90	-18.15	QP

Above 1GHz (Peak & Average)
Test Mode 1: AC120V/60Hz (Build-in Power 1) + LAN Port Loop transmission + POE out
Horizontal



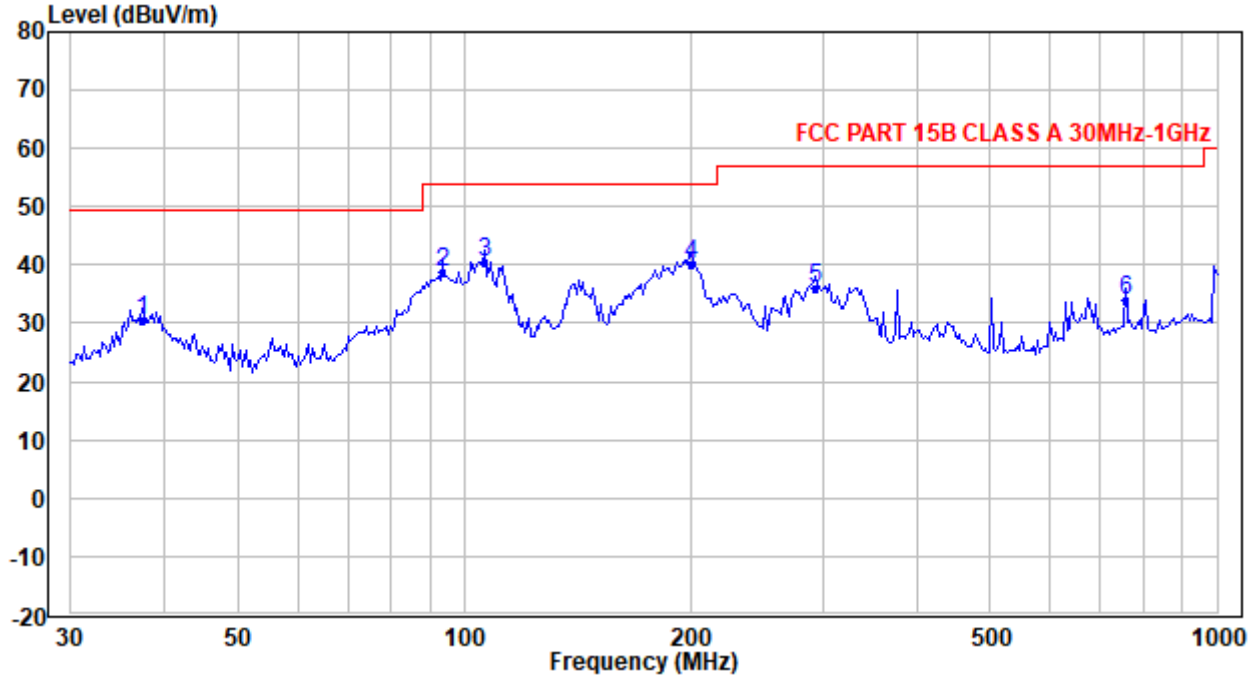
No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	2236.995	48.99	-9.00	39.99	80.00	-40.01	Peak
2	2988.436	51.30	-6.76	44.54	80.00	-35.46	Peak
3	4975.247	45.64	-2.25	43.39	80.00	-36.61	Peak
4	7002.185	47.53	1.09	48.62	80.00	-31.38	Peak
5	8000.034	49.31	2.51	51.82	80.00	-28.18	Peak
6	16888.890	38.01	12.68	50.69	80.00	-29.31	Peak

Vertical



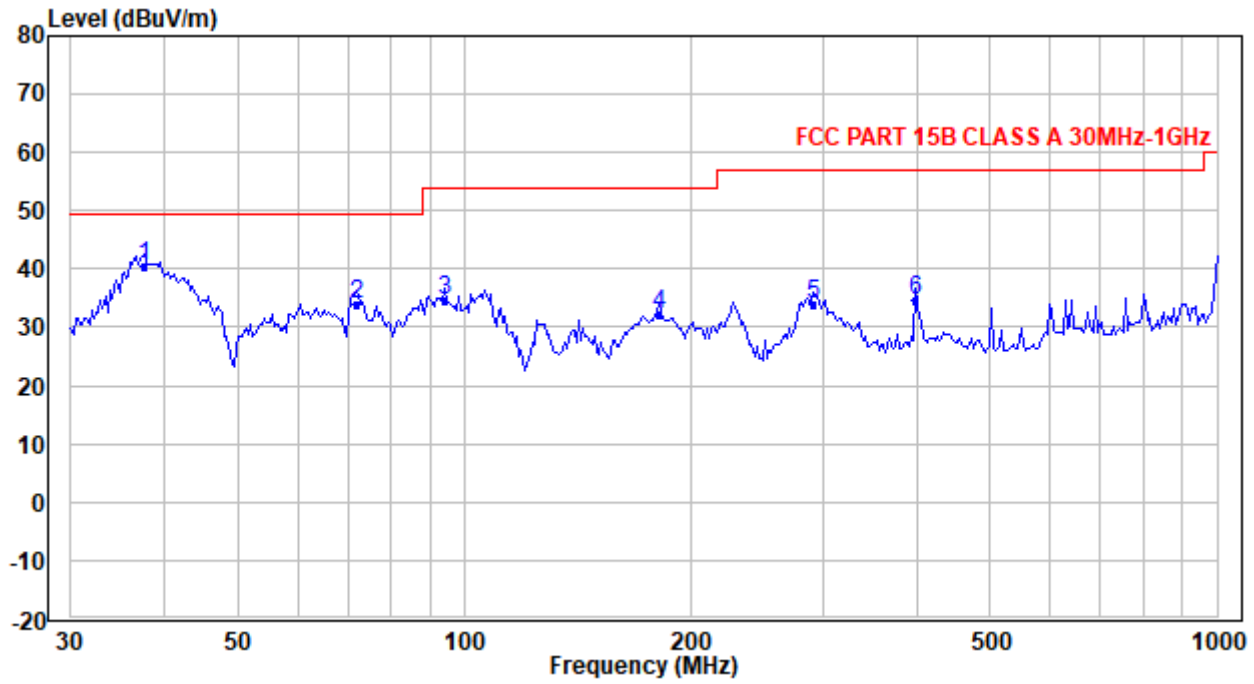
No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	2236.995	47.54	-9.00	38.54	80.00	-41.46	Peak
2	3058.484	53.34	-6.49	46.85	80.00	-33.15	Peak
3	4181.646	46.02	-2.83	43.19	80.00	-36.81	Peak
4	7002.185	51.51	1.09	52.60	80.00	-27.40	Peak
5	8000.034	49.08	2.51	51.59	80.00	-28.41	Peak
6	16888.890	37.95	12.68	50.63	80.00	-29.37	Peak

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



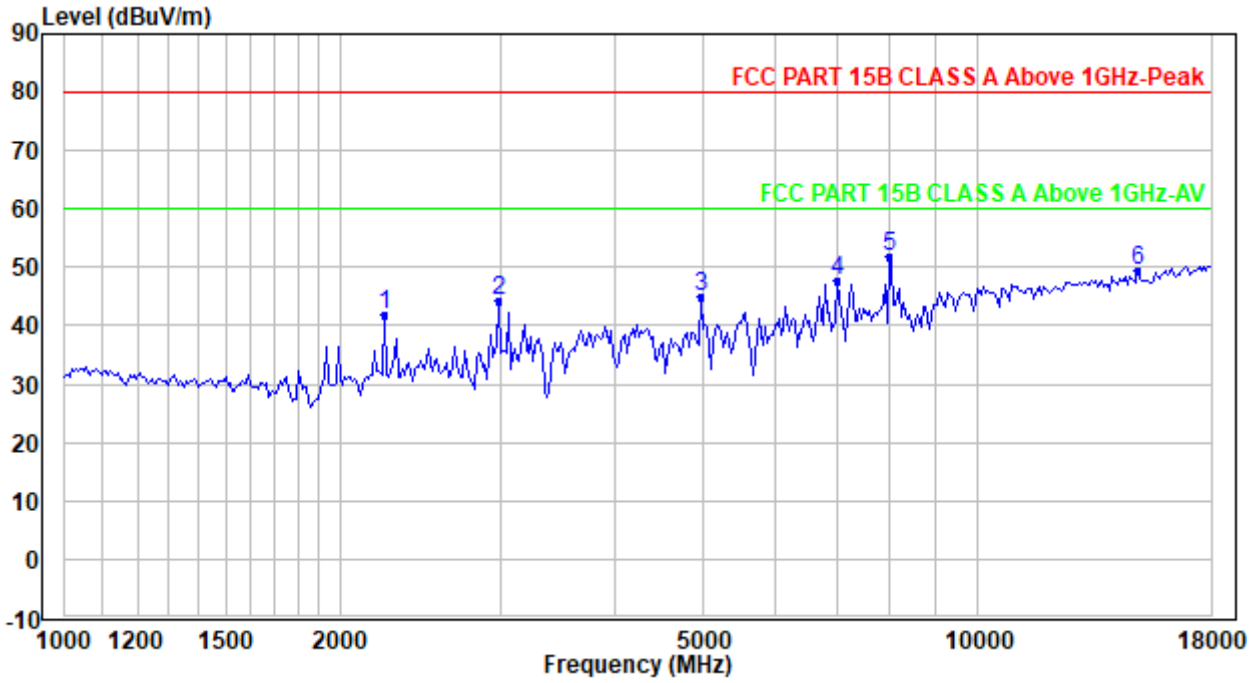
No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	37.302	36.92	-6.28	30.64	49.50	-18.86	QP
2	93.653	54.54	-15.79	38.75	54.00	-15.25	QP
3	106.281	56.26	-15.76	40.50	54.00	-13.50	QP
4	200.043	50.60	-10.39	40.21	54.00	-13.79	QP
5	292.364	43.28	-7.28	36.00	56.90	-20.90	QP
6	754.963	31.90	2.01	33.91	56.90	-22.99	QP

Vertical



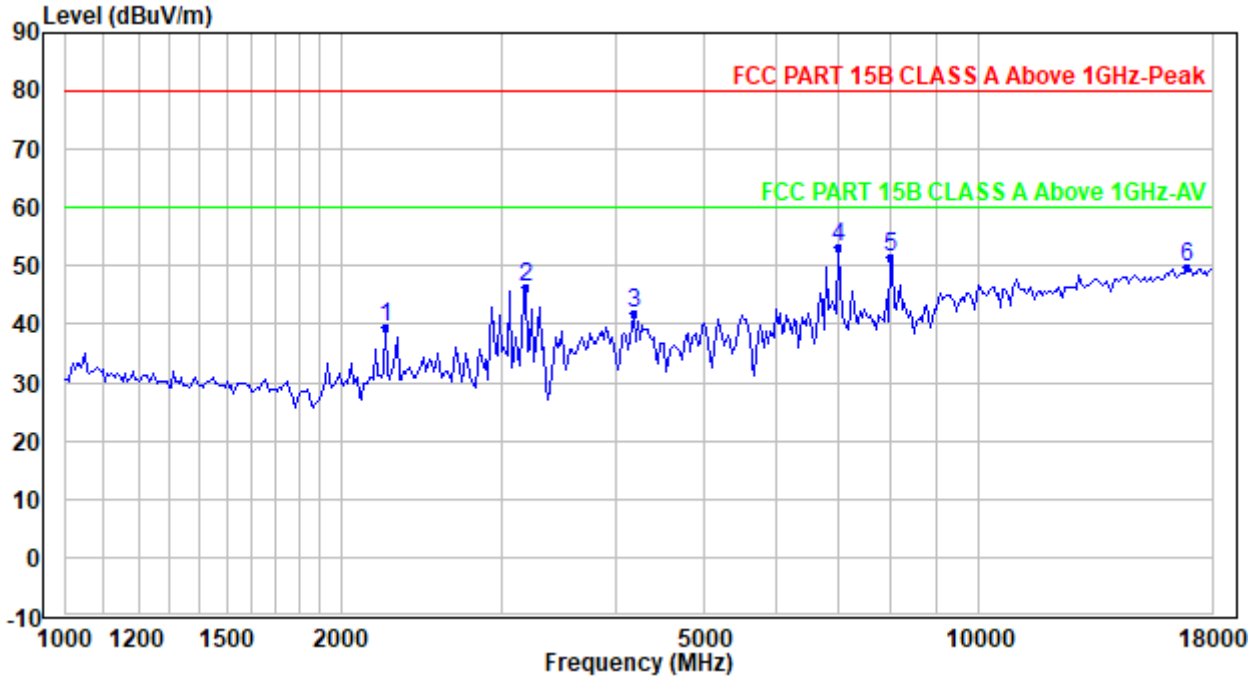
No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	37.565	46.91	-6.35	40.56	49.50	-8.94	QP
2	71.705	51.31	-17.20	34.11	49.50	-15.39	QP
3	94.314	50.29	-15.72	34.57	54.00	-19.43	QP
4	181.300	42.39	-10.11	32.28	54.00	-21.72	QP
5	290.317	41.22	-7.36	33.86	56.90	-23.04	QP
6	398.296	38.66	-4.06	34.60	56.90	-22.30	QP

Above 1GHz (Peak & Average)
Test Mode 4: AC240V/50Hz (Build-in Power 2) + LAN Port Loop transmission + POE out
Horizontal



No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	2236.995	50.84	-9.00	41.84	80.00	-38.16	Peak
2	2988.436	50.93	-6.76	44.17	80.00	-35.83	Peak
3	4975.247	47.26	-2.25	45.01	80.00	-34.99	Peak
4	7002.185	46.64	1.09	47.73	80.00	-32.27	Peak
5	8000.034	49.20	2.51	51.71	80.00	-28.29	Peak
6	14954.580	37.68	11.81	49.49	80.00	-30.51	Peak

Vertical



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	2236.995	48.34	-9.00	39.34	80.00	-40.66	Peak
2	3185.042	52.47	-6.05	46.42	80.00	-33.58	Peak
3	4181.646	44.69	-2.83	41.86	80.00	-38.14	Peak
4	7002.185	52.01	1.09	53.10	80.00	-26.90	Peak
5	8000.034	49.07	2.51	51.58	80.00	-28.42	Peak
6	16888.890	37.14	12.68	49.82	80.00	-30.18	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. 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:

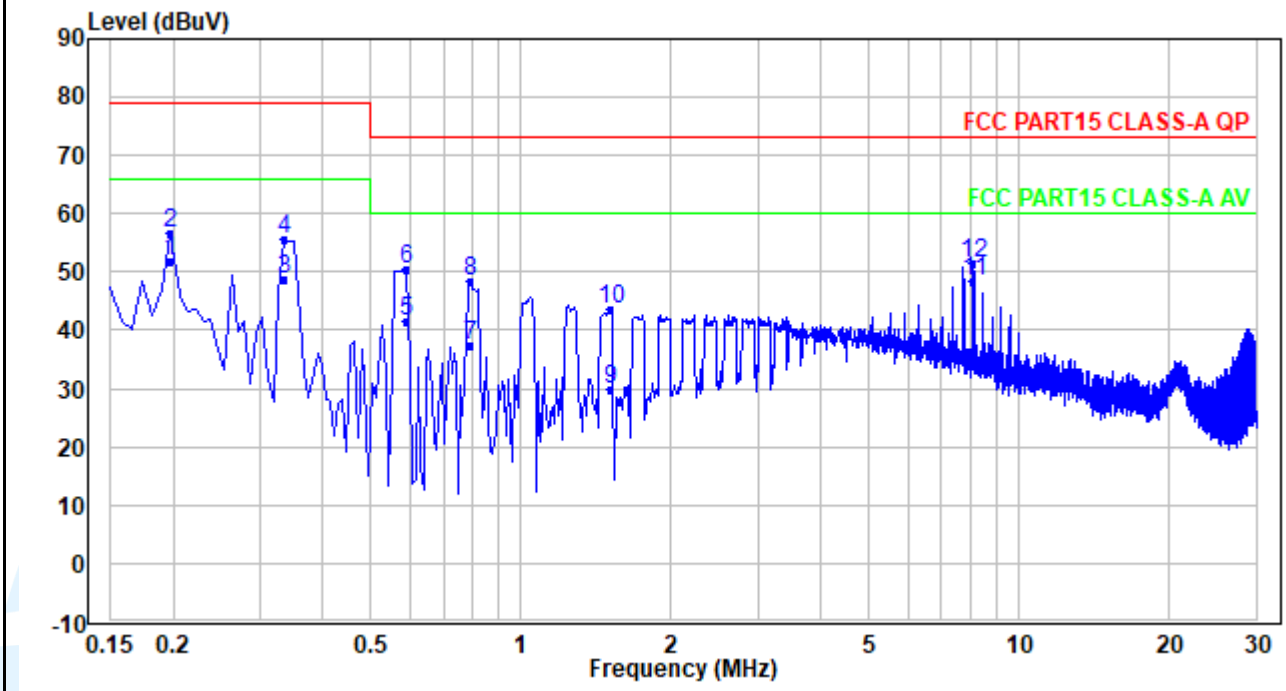
1) The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
2) The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak 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

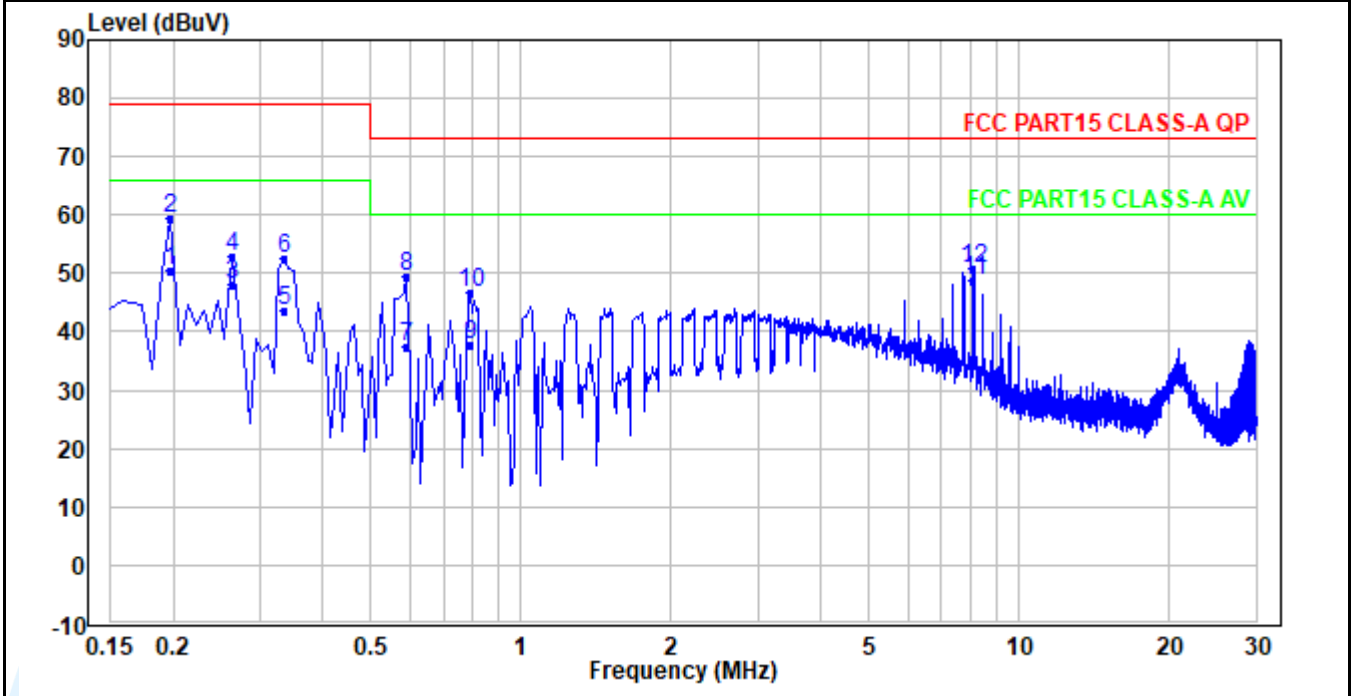
The worst measurement data as follows:
Quasi Peak and Average:
Test Mode 1: AC120V/60Hz (Build-in Power 1) + LAN Port Loop transmission + POE out

Live Line



No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.198	41.82	10.02	51.84	66.00	-14.16	Average
2	0.198	46.82	10.02	56.84	79.00	-22.16	QP
3	0.334	38.74	10.03	48.77	66.00	-17.23	Average
4	0.334	45.74	10.03	55.77	79.00	-23.23	QP
5	0.590	31.33	10.05	41.38	60.00	-18.62	Average
6	0.590	40.33	10.05	50.38	73.00	-22.62	QP
7	0.790	27.36	10.05	37.41	60.00	-22.59	Average
8	0.790	38.36	10.05	48.41	73.00	-24.59	QP
9	1.510	19.62	10.09	29.71	60.00	-30.29	Average
10	1.510	33.62	10.09	43.71	73.00	-29.29	QP
11	8.124	38.08	10.47	48.55	60.00	-11.45	Average
12	8.124	41.08	10.47	51.55	73.00	-21.45	QP

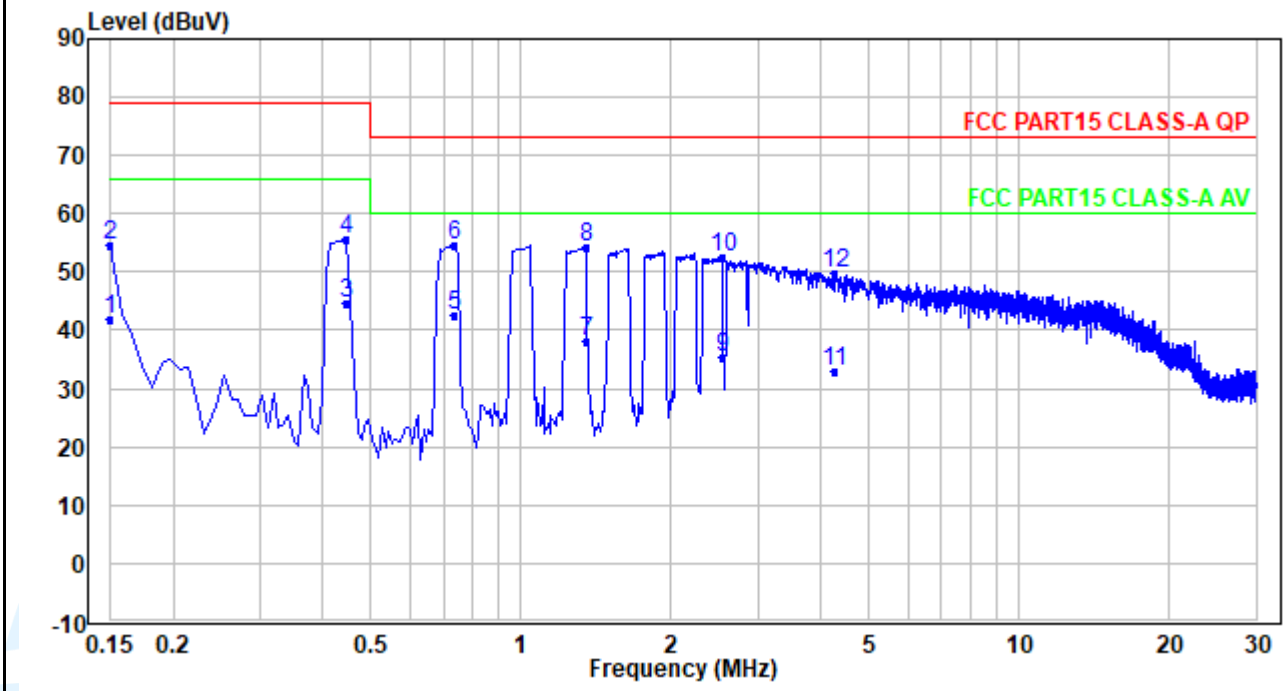
Neutral Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.198	40.39	10.00	50.39	66.00	-15.61	Average
2	0.198	49.39	10.00	59.39	79.00	-19.61	QP
3	0.262	37.97	10.01	47.98	66.00	-18.02	Average
4	0.262	42.97	10.01	52.98	79.00	-26.02	QP
5	0.334	33.46	10.02	43.48	66.00	-22.52	Average
6	0.334	42.46	10.02	52.48	79.00	-26.52	QP
7	0.590	27.45	10.03	37.48	60.00	-22.52	Average
8	0.590	39.45	10.03	49.48	73.00	-23.52	QP
9	0.790	27.66	10.04	37.70	60.00	-22.30	Average
10	0.790	36.66	10.04	46.70	73.00	-26.30	QP
11	8.124	38.37	10.43	48.80	60.00	-11.20	Average
12	8.124	40.37	10.43	50.80	73.00	-22.20	QP

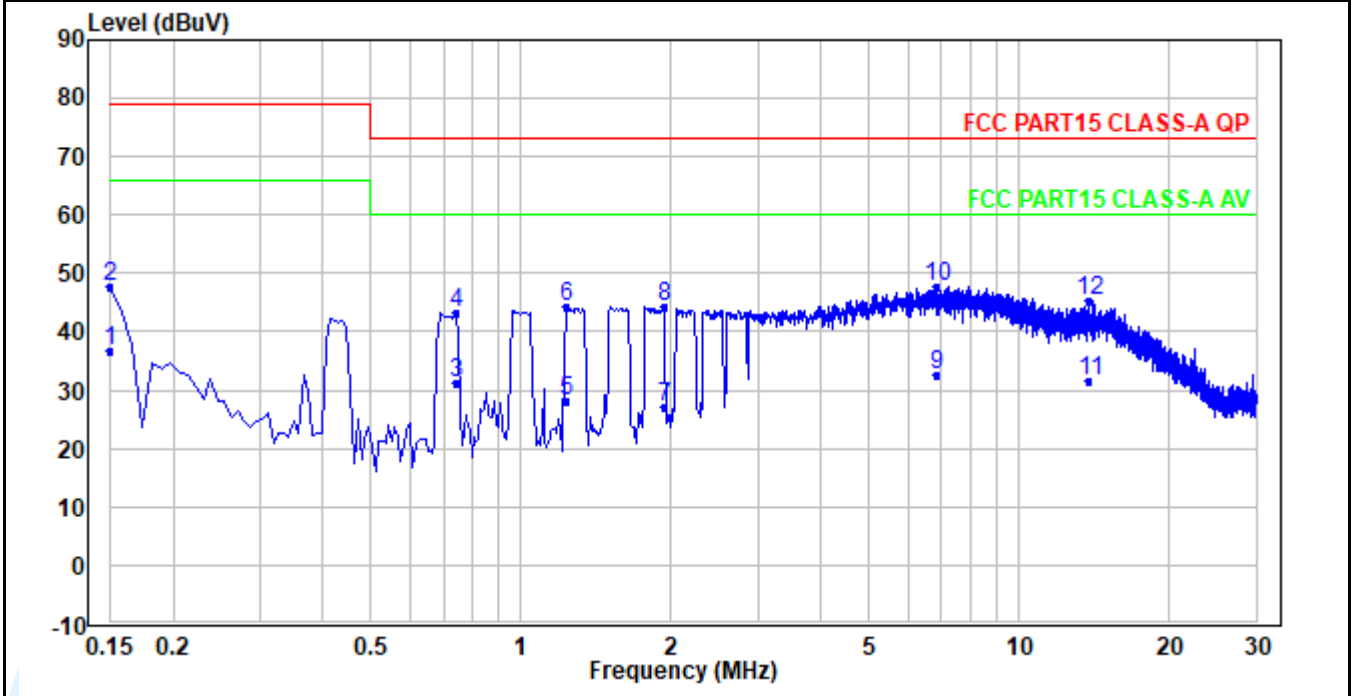
Quasi Peak and Average:
Test Mode 4: AC240V/50Hz (Build-in Power 2) + LAN Port Loop transmission + POE out

Live Line



No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.150	31.73	10.03	41.76	66.00	-24.24	Average
2	0.150	44.73	10.03	54.76	79.00	-24.24	QP
3	0.446	34.48	10.04	44.52	66.00	-21.48	Average
4	0.446	45.48	10.04	55.52	79.00	-23.48	QP
5	0.734	32.64	10.05	42.69	60.00	-17.31	Average
6	0.734	44.64	10.05	54.69	73.00	-18.31	QP
7	1.350	28.17	10.09	38.26	60.00	-21.74	Average
8	1.350	44.17	10.09	54.26	73.00	-18.74	QP
9	2.534	25.29	10.17	35.46	60.00	-24.54	Average
10	2.534	42.29	10.17	52.46	73.00	-20.54	QP
11	4.261	22.61	10.28	32.89	60.00	-27.11	Average
12	4.261	39.61	10.28	49.89	73.00	-23.11	QP

Neutral Line



No.	Frequency (MHz)	Reading (dBμV)	Correction factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	26.56	10.02	36.58	66.00	-29.42	Average
2	0.150	37.56	10.02	47.58	79.00	-31.42	QP
3	0.742	21.26	10.04	31.30	60.00	-28.70	Average
4	0.742	33.26	10.04	43.30	73.00	-29.70	QP
5	1.230	18.21	10.07	28.28	60.00	-31.72	Average
6	1.230	34.21	10.07	44.28	73.00	-28.72	QP
7	1.942	17.17	10.10	27.27	60.00	-32.73	Average
8	1.942	34.17	10.10	44.27	73.00	-28.73	QP
9	6.837	22.31	10.39	32.70	60.00	-27.30	Average
10	6.837	37.31	10.39	47.70	73.00	-25.30	QP
11	13.899	20.67	10.77	31.44	60.00	-28.56	Average
12	13.899	34.67	10.77	45.44	73.00	-27.56	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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