

# TEST REPORT

Applicant Name: Grandstream Networks, Inc.  
Address: 126 Brookline Ave., 3rd Floor Boston, MA 02215, USA  
Report Number: 2401W66020E-EM-00  
FCC ID: YZZGRP2611G

## Test Standard (s)

FCC Part 15, Subpart B (Class B)

## Sample Description

Product Type: IP Phone  
Model No.: GRP2611G  
Multiple Model(s) No.: N/A  
Trade Mark: GRANDSTREAM  
Date Received: 2024/08/15  
Issue Date: 2024/09/30

Test Result:	Pass <sup>▲</sup>
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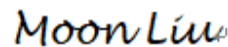
▲ In the configuration tested, the EUT complied with the standards above.

## Prepared and Checked By:



Ethan Bu  
EMC Engineer

## Approved By:



Moon Liu  
EMC Supervisor

Note: The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

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**DOCUMENT REVISION HISTORY**

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401W66020E-EM-00	Original Report	2024/09/30

## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

Product	IP Phone
Tested Model	GRP2611G
Multiple Model(s)	N/A
Voltage Range	DC 44-57V by POE or DC 5V by adapter
Highest operating frequency <sup>#</sup>	1 GHz (Provided by the applicant)
Equipment Class	Class B
Sample number	2Q21-1 (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	<p>Adapter1 Model: A318-050060W-US1 Input: AC 100-240V, 50-60Hz, 0.15A Output: DC 5.0V, 0.6A</p> <p>Adapter2 Model: DCT06W050060US-D0 Input: AC 100-240V, 50/60Hz, 200mA Output: DC 5.0V, 0.6A</p> <p>Adapter3 Model: GQ06-050060-ZU Input: AC 100-240V, 50/60Hz, 0.3A Max Output: DC 5.0V, 0.6A</p> <p>Adapter4 Model: TS-A003-050060A4 Input: AC 100-240V, 50/60Hz, 0.2A Output: DC 5.0V, 0.6A, 3.0W</p>

## Objective

This test report is in accordance with Part 2-Subpart J, Part 15B Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of the EUT with FCC Part 15B.

## Measurement Uncertainty

Item	Frequency Range		Expanded Measurement uncertainty
Conducted Emissions	AC Mains	150 kHz ~30MHz	3.84dB(k=2, 95% level of confidence)
Radiated Disturbance	30MHz~200MHz	Horizontal	4.48dB(k=2, 95% level of confidence)
	30MHz~200MHz	Vertical	4.55dB(k=2, 95% level of confidence)
	200MHz~1000MHz	Horizontal	4.85dB(k=2, 95% level of confidence)
	200MHz~1000MHz	Vertical	5.05dB(k=2, 95% level of confidence)
	1GHz~6GHz	/	5.35dB(k=2, 95% level of confidence)
	6GHz~18GHz	/	5.44dB(k=2, 95% level of confidence)
	18GHz~40GHz	/	5.16dB(k=2, 95% level of confidence)

*Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 715558, the FCC Designation No. : CN5045.

Each test item follows test standards and with no deviation.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in worst case condition.

Test Mode: Talking

Note: For POE test, the power supply voltage is DC 48V.

### EUT exercise software

No exercise software was used.

### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

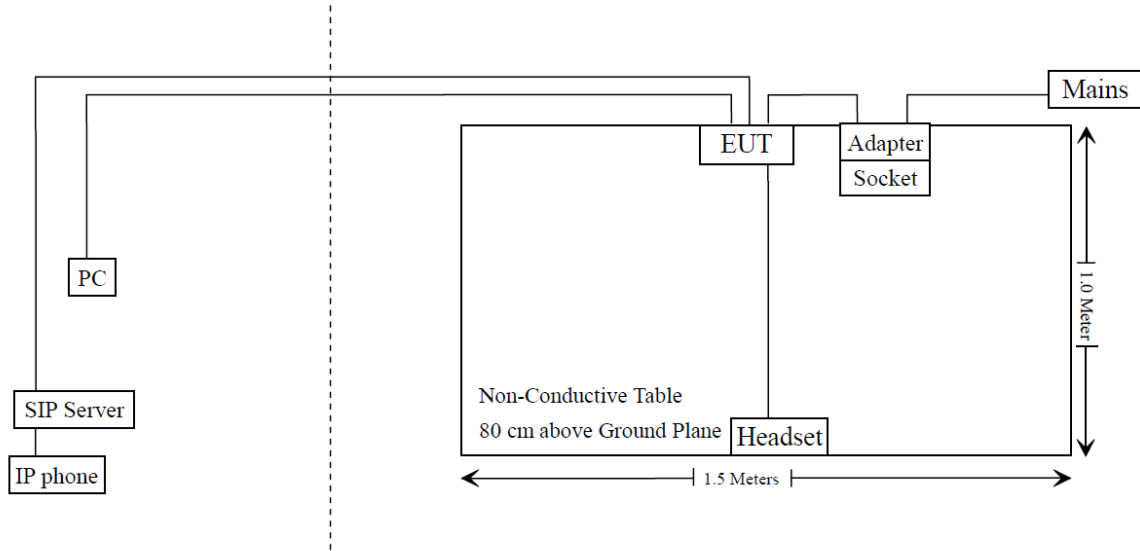
Manufacturer	Description	Model	Serial Number
DELL	PC	Latitude E7270	1JH13G2
TP-Link	POE	TL-POE4824G	Unknown
AIO100	SIP Server	1S1O	DD12-0106-2014-0109
Grandstream	IP phone	GRP2610P	Unknown
SNOM	Headset	A310D	Unknown

### External I/O Cable

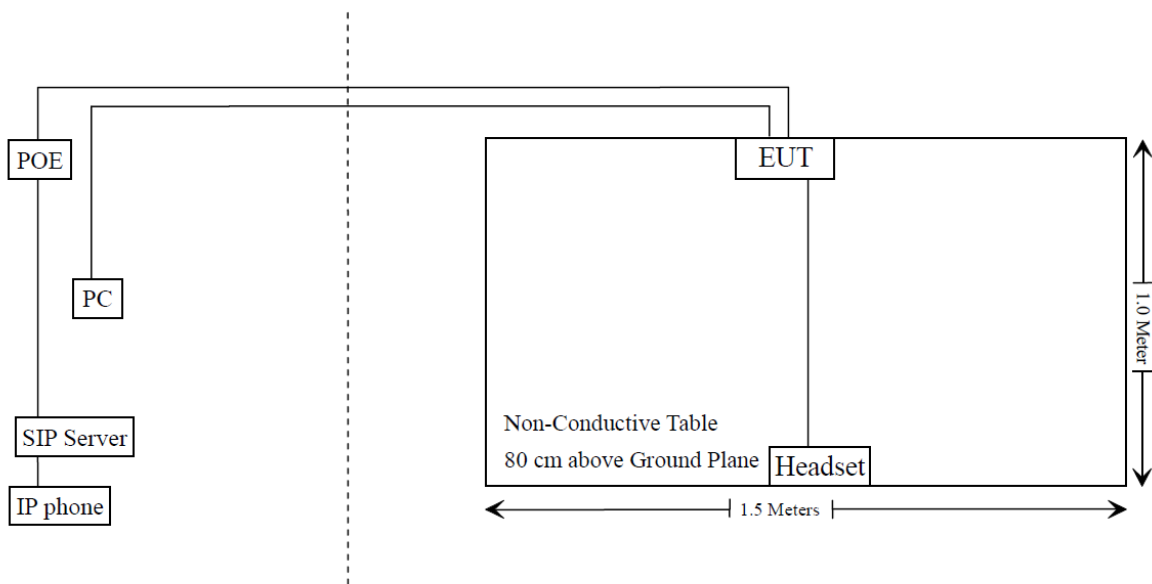
Cable Description	Length (m)	From/Port	To
Unshielded detachable RJ45 cable	8.0	EUT	POE
Unshielded detachable RJ45 cable	1.5	POE	SIP Server
Unshielded detachable RJ45 cable	1.5	SIP Server	IP phone
Unshielded detachable RJ45 cable	8.0	EUT	PC
Unshielded Un-detachable headset cable	1.2	EUT	Headset
Unshielded Un-detachable DC cable	1.8	EUT	Adapter
Unshielded Un-detachable AC cable	1.6	Socket	Mains
Unshielded Un-detachable AC cable	1.0	Socket	LISN
Unshielded detachable AC cable	1.0	POE	LISN
Unshielded detachable RJ45 cable	1.2	EUT	POE

### Block Diagram of Test Setup

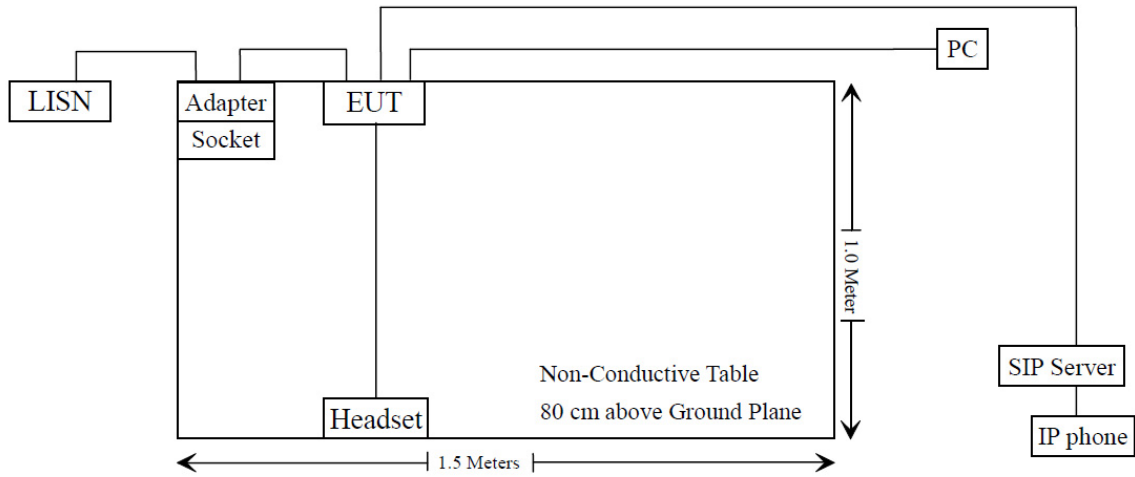
Radiated emission  
Powered by adapter



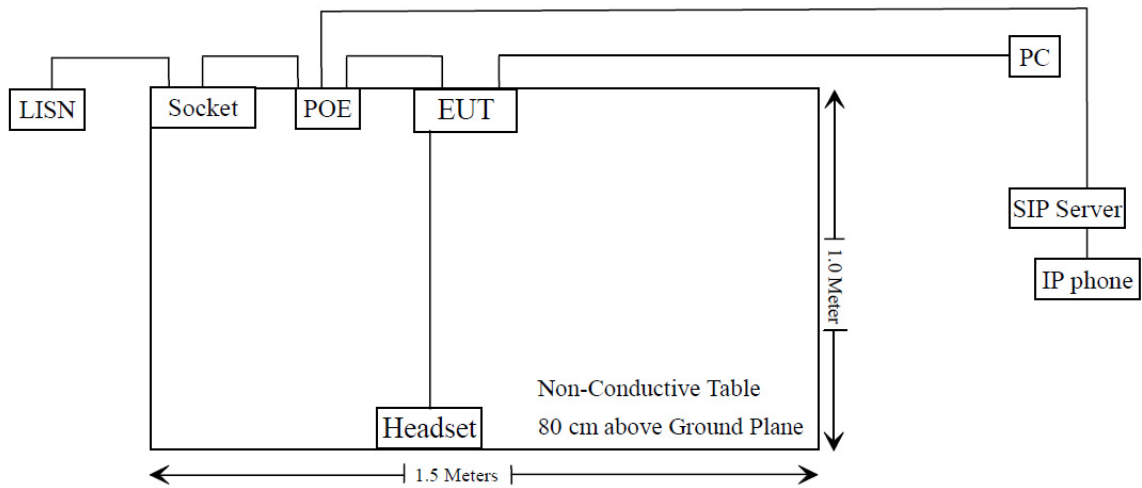
Powered by POE



Conduction emission  
Powered by adapter



Powered by POE





### **SUMMARY OF TEST RESULTS**

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<b>FCC Rules</b>	<b>Description of Test</b>	<b>Results</b>
§15.107	AC Line Conducted Emissions	Compliant
§15.109	Radiated Emissions	Compliant

**TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
<b>AC Line Conducted Emission Test</b>					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2024/01/16	2025/01/15
Rohde & Schwarz	LISN	ENV216	101613	2024/01/16	2025/01/15
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2024/05/21	2025/05/20
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2024/05/21	2025/05/20
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
<b>Radiated Emission Test</b>					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/01/16	2025/01/15
Sonoma instrument	Pre-amplifier	310 N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Cable	Chamber A Cable 1	N/A	2024/06/18	2025/06/17
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
Unknown	Cable	2Y194	0735	2024/05/21	2025/05/20
Unknown	Cable	PNG214	1354	2024/05/21	2025/05/20
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
COM-POWER	Pre-amplifier	PA-122	181919	2024/06/18	2025/06/17
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	735	2024/06/18	2025/06/17
Unknown	RF Cable	UFA147	219661	2024/06/18	2025/06/17
Unknown	RF Cable	XH750A-N	J-10M	2024/06/18	2025/06/17
Agilent	Signal Generator	N5183A	MY50140588	2023/12/18	2024/12/17
JD	Multiplex Switch Test Control Set	DT7220FSU	DQ77926	2024/06/18	2025/06/17

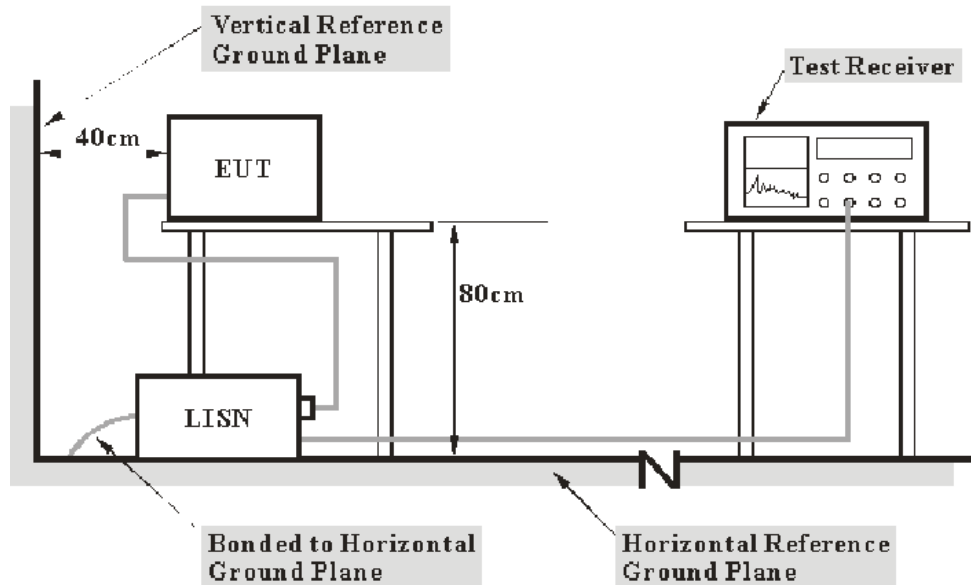
\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

## FCC §15.107 - AC LINE CONDUCTED EMISSIONS

### Applicable Standard

According to FCC§15.107

### EUT Setup



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with ANSI C63.4-2014. The related limit was specified in FCC Part 15.107.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

### EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

**Test Procedure**

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

**Level & Over Limit Calculation**

The Level is calculated by adding the LISN Factor, Cable Loss and the Read Level. The basic equation is as follows:

$$\text{Level (dBuV)} = \text{Read Level (dBuV)} + \text{LISN Factor} + \text{Cable Loss}$$

The “**Over limit**” column of the following data tables indicates the degree of compliance with the applicable limit.

$$\text{Over Limit (dB)} = \text{Level (dBuV)} - \text{Limit Line (dBuV)}$$

Note: The term "cable loss" refers to the combination of a cable and a 10dB transient limiter (attenuator).

**Test Data**

**Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	62 %
<b>ATM Pressure:</b>	101 kPa

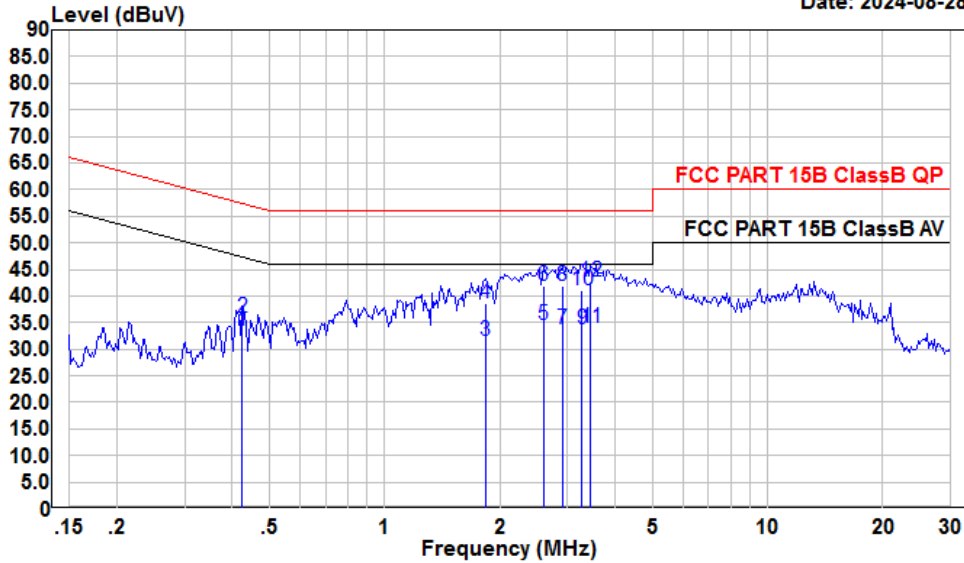
*The testing was performed by Macy Shi on 2024-08-28 and 2024-09-18.*

Test Mode: Talking

For Adapter 1

AC 120V/60 Hz, Line

Date: 2024-08-28

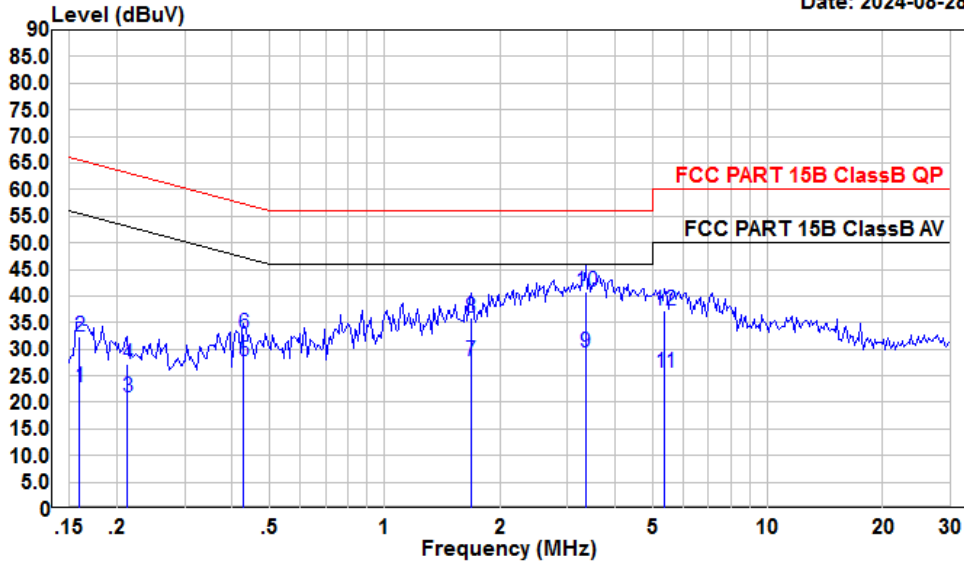


Condition: Line  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.424	12.83	33.49	10.55	10.11	47.37	-13.88	Average
2	0.424	15.36	36.02	10.55	10.11	57.37	-21.35	QP
3	1.829	10.72	31.47	10.57	10.18	46.00	-14.53	Average
4	1.829	17.98	38.73	10.57	10.18	56.00	-17.27	QP
5	2.594	13.80	34.46	10.49	10.17	46.00	-11.54	Average
6	2.594	21.20	41.86	10.49	10.17	56.00	-14.14	QP
7	2.915	13.10	33.72	10.44	10.18	46.00	-12.28	Average
8	2.915	21.30	41.92	10.44	10.18	56.00	-14.08	QP
9	3.276	13.22	33.80	10.39	10.19	46.00	-12.20	Average
10	3.276	20.57	41.15	10.39	10.19	56.00	-14.85	QP
11	3.454	13.41	33.96	10.36	10.19	46.00	-12.04	Average
12	3.454	22.11	42.66	10.36	10.19	56.00	-13.34	QP

AC 120V/60 Hz, Neutral

Date: 2024-08-28

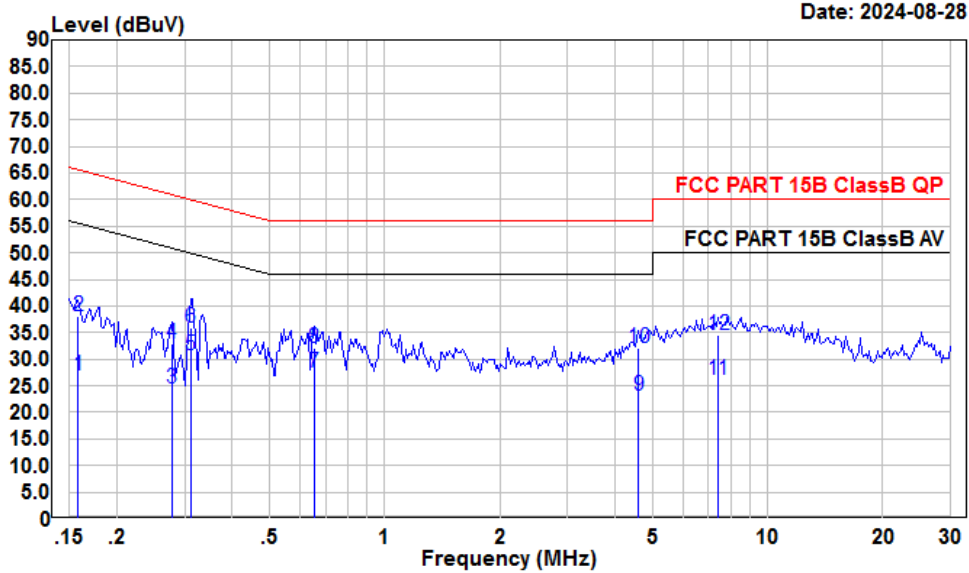


Condition: Neutral  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.160	2.12	22.80	10.56	10.12	55.47	-32.67	Average
2	0.160	11.59	32.27	10.56	10.12	65.47	-33.20	QP
3	0.213	0.45	20.96	10.42	10.09	53.10	-32.14	Average
4	0.213	6.73	27.24	10.42	10.09	63.10	-35.86	QP
5	0.428	7.01	27.77	10.65	10.11	47.29	-19.52	Average
6	0.428	12.07	32.83	10.65	10.11	57.29	-24.46	QP
7	1.680	6.95	27.65	10.53	10.17	46.00	-18.35	Average
8	1.680	15.10	35.80	10.53	10.17	56.00	-20.20	QP
9	3.346	8.71	29.30	10.40	10.19	46.00	-16.70	Average
10	3.346	20.24	40.83	10.40	10.19	56.00	-15.17	QP
11	5.390	4.82	25.56	10.56	10.18	50.00	-24.44	Average
12	5.390	16.62	37.36	10.56	10.18	60.00	-22.64	QP

For Adapter 2

AC 120V/60 Hz, Line

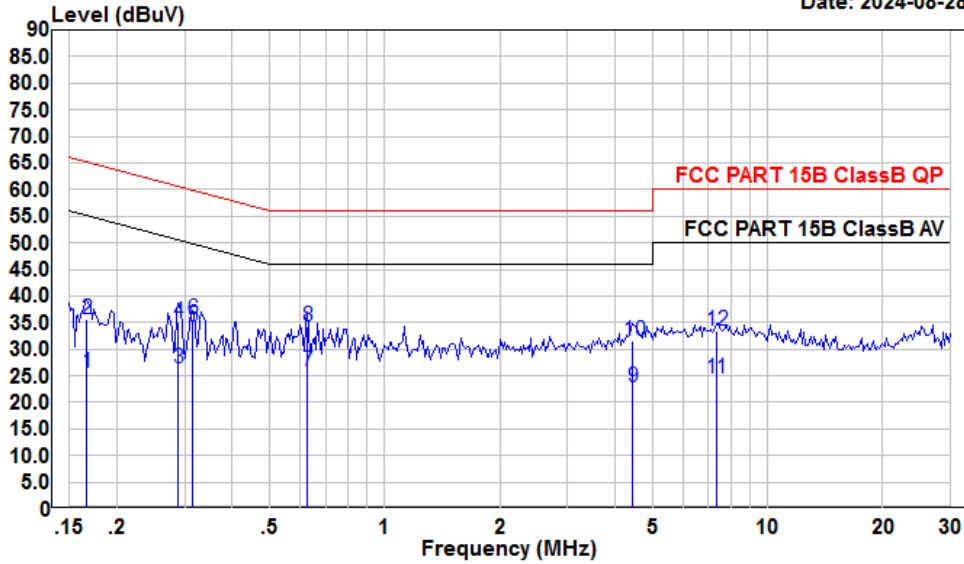


Condition: Line  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.158	5.86	26.86	10.88	10.12	55.56	-28.70	Average
2	0.158	17.00	38.00	10.88	10.12	65.56	-27.56	QP
3	0.277	3.66	24.45	10.69	10.10	50.90	-26.45	Average
4	0.277	12.07	32.86	10.69	10.10	60.90	-28.04	QP
5	0.312	10.07	30.83	10.65	10.11	49.93	-19.10	Average
6	0.312	15.12	35.88	10.65	10.11	59.93	-24.05	QP
7	0.654	6.73	27.37	10.50	10.14	46.00	-18.63	Average
8	0.654	11.47	32.11	10.50	10.14	56.00	-23.89	QP
9	4.598	2.57	23.11	10.35	10.19	46.00	-22.89	Average
10	4.598	11.49	32.03	10.35	10.19	56.00	-23.97	QP
11	7.407	5.39	26.10	10.52	10.19	50.00	-23.90	Average
12	7.407	13.71	34.42	10.52	10.19	60.00	-25.58	QP

AC 120V/60 Hz, Neutral

Date: 2024-08-28



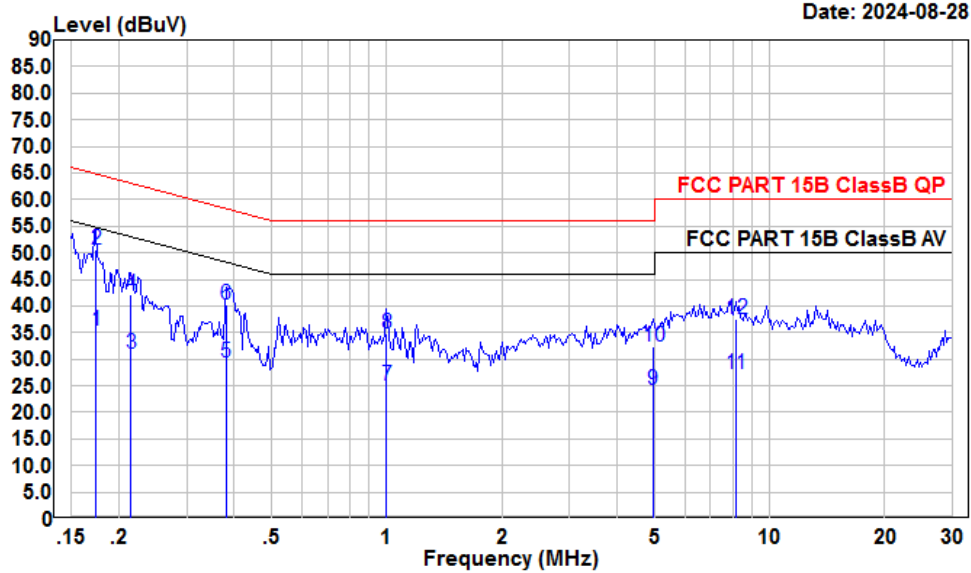
Condition: Neutral  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.167	4.83	25.46	10.53	10.10	55.12	-29.66	Average
2	0.167	15.09	35.72	10.53	10.10	65.12	-29.40	QP
3	0.289	5.86	26.48	10.52	10.10	50.54	-24.06	Average
4	0.289	14.41	35.03	10.52	10.10	60.54	-25.51	QP
5	0.315	13.56	34.22	10.55	10.11	49.84	-15.62	Average
6	0.315	14.88	35.54	10.55	10.11	59.84	-24.30	QP
7	0.627	5.12	25.95	10.70	10.13	46.00	-20.05	Average
8	0.627	13.40	34.23	10.70	10.13	56.00	-21.77	QP
9	4.454	2.23	22.89	10.46	10.20	46.00	-23.11	Average
10	4.454	10.96	31.62	10.46	10.20	56.00	-24.38	QP
11	7.329	3.55	24.45	10.71	10.19	50.00	-25.55	Average
12	7.329	12.63	33.53	10.71	10.19	60.00	-26.47	QP



For Adapter 3

AC 120V/60 Hz, Line

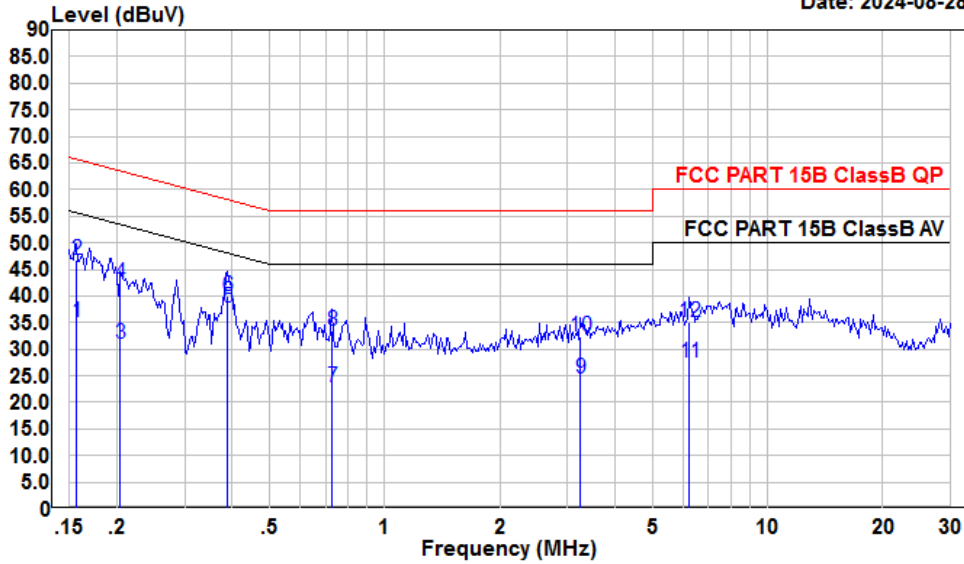


Condition: Line  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.174	14.43	35.38	10.85	10.10	54.77	-19.39	Average
2	0.174	29.53	50.48	10.85	10.10	64.77	-14.29	QP
3	0.215	10.22	31.09	10.78	10.09	53.01	-21.92	Average
4	0.215	21.27	42.14	10.78	10.09	63.01	-20.87	QP
5	0.381	8.69	29.39	10.59	10.11	48.25	-18.86	Average
6	0.381	19.53	40.23	10.59	10.11	58.25	-18.02	QP
7	1.000	4.53	25.04	10.40	10.11	46.00	-20.96	Average
8	1.000	14.32	34.83	10.40	10.11	56.00	-21.17	QP
9	4.952	3.73	24.29	10.38	10.18	46.00	-21.71	Average
10	4.952	11.80	32.36	10.38	10.18	56.00	-23.64	QP
11	8.148	6.34	27.08	10.54	10.20	50.00	-22.92	Average
12	8.148	16.92	37.66	10.54	10.20	60.00	-22.34	QP

AC 120V/60 Hz, Neutral

Date: 2024-08-28

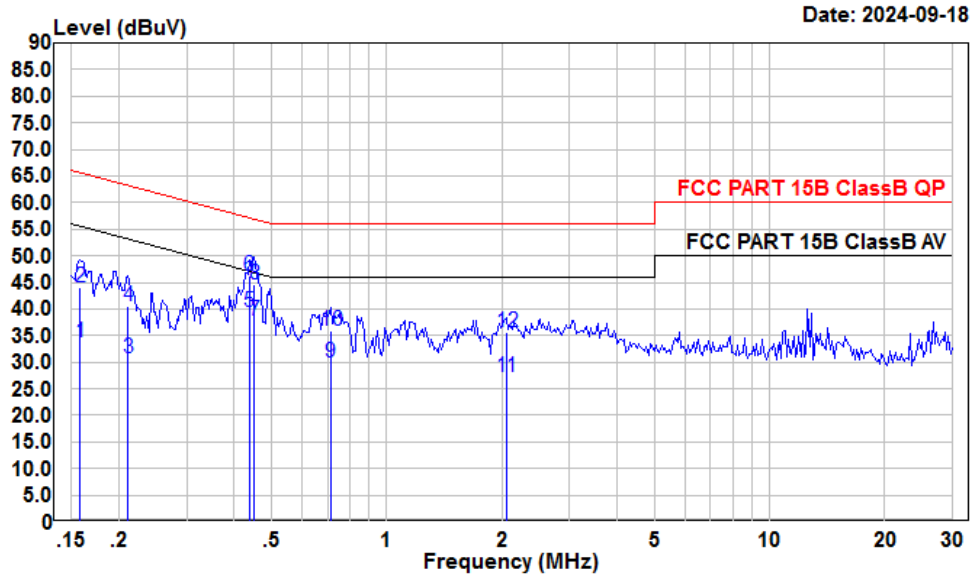


Condition: Neutral  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.156	14.34	35.03	10.57	10.12	55.65	-20.62	Average
2	0.156	26.17	46.86	10.57	10.12	65.65	-18.79	QP
3	0.204	10.54	31.04	10.41	10.09	53.45	-22.41	Average
4	0.204	21.97	42.47	10.41	10.09	63.45	-20.98	QP
5	0.389	17.10	37.82	10.62	10.10	48.08	-10.26	Average
6	0.389	19.20	39.92	10.62	10.10	58.08	-18.16	QP
7	0.727	1.96	22.82	10.72	10.14	46.00	-23.18	Average
8	0.727	12.64	33.50	10.72	10.14	56.00	-22.50	QP
9	3.241	3.91	24.50	10.40	10.19	46.00	-21.50	Average
10	3.241	11.78	32.37	10.40	10.19	56.00	-23.63	QP
11	6.252	6.59	27.42	10.64	10.19	50.00	-22.58	Average
12	6.252	14.33	35.16	10.64	10.19	60.00	-24.84	QP

For Adapter 4

AC 120V/60 Hz, Line

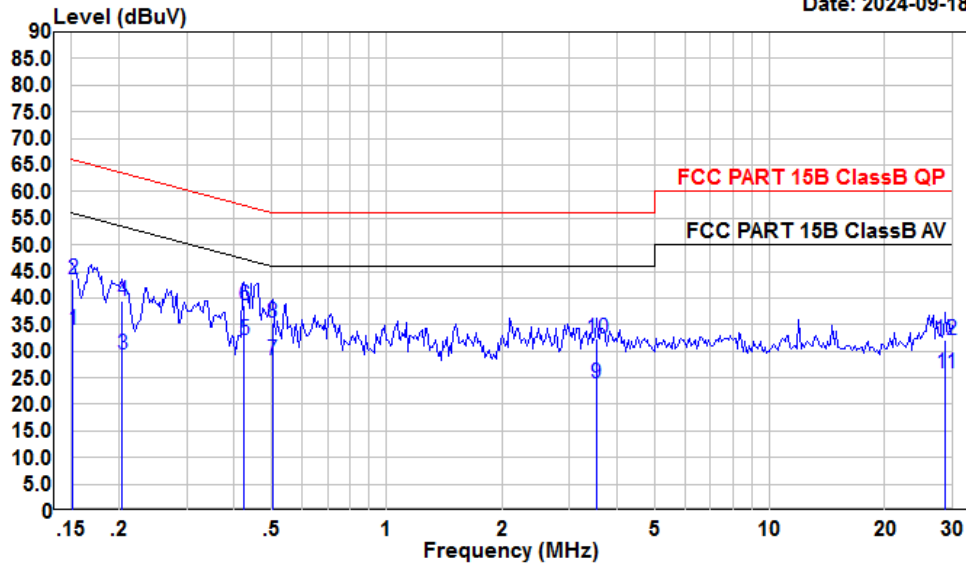


Condition: Line  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.158	12.79	33.79	10.88	10.12	55.56	-21.77	Average
2	0.158	23.09	44.09	10.88	10.12	65.56	-21.47	QP
3	0.211	9.91	30.78	10.78	10.09	53.18	-22.40	Average
4	0.211	19.59	40.46	10.78	10.09	63.18	-22.72	QP
5	0.437	18.71	39.36	10.54	10.11	47.11	-7.75	Average
6	0.437	25.51	46.16	10.54	10.11	57.11	-10.95	QP
7	0.452	17.23	37.88	10.53	10.12	46.85	-8.97	Average
8	0.452	23.92	44.57	10.53	10.12	56.85	-12.28	QP
9	0.712	9.17	29.82	10.50	10.15	46.00	-16.18	Average
10	0.712	15.16	35.81	10.50	10.15	56.00	-20.19	QP
11	2.055	6.47	27.25	10.59	10.19	46.00	-18.75	Average
12	2.055	14.76	35.54	10.59	10.19	56.00	-20.46	QP

AC 120V/60 Hz, Neutral

Date: 2024-09-18

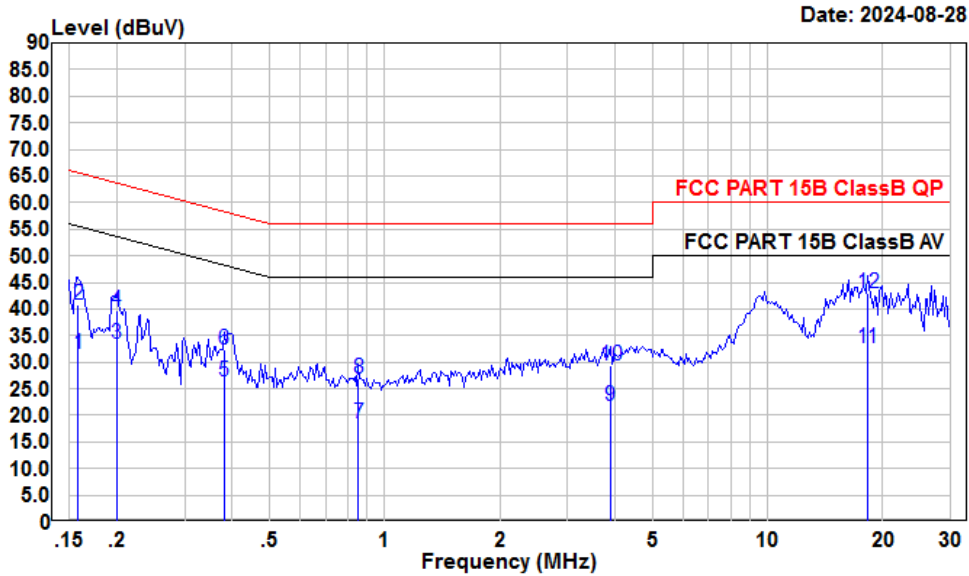


Condition: Neutral  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.152	13.40	34.12	10.59	10.13	55.91	-21.79	Average
2	0.152	22.79	43.51	10.59	10.13	65.91	-22.40	QP
3	0.204	9.00	29.50	10.41	10.09	53.45	-23.95	Average
4	0.204	19.07	39.57	10.41	10.09	63.45	-23.88	QP
5	0.424	11.32	32.08	10.65	10.11	47.37	-15.29	Average
6	0.424	17.89	38.65	10.65	10.11	57.37	-18.72	QP
7	0.502	7.35	28.19	10.70	10.14	46.00	-17.81	Average
8	0.502	14.53	35.37	10.70	10.14	56.00	-20.63	QP
9	3.528	3.23	23.83	10.40	10.20	46.00	-22.17	Average
10	3.528	11.64	32.24	10.40	10.20	56.00	-23.76	QP
11	28.755	5.02	25.75	10.52	10.21	50.00	-24.25	Average
12	28.755	11.38	32.11	10.52	10.21	60.00	-27.89	QP

For POE

AC 120V/60 Hz, Line

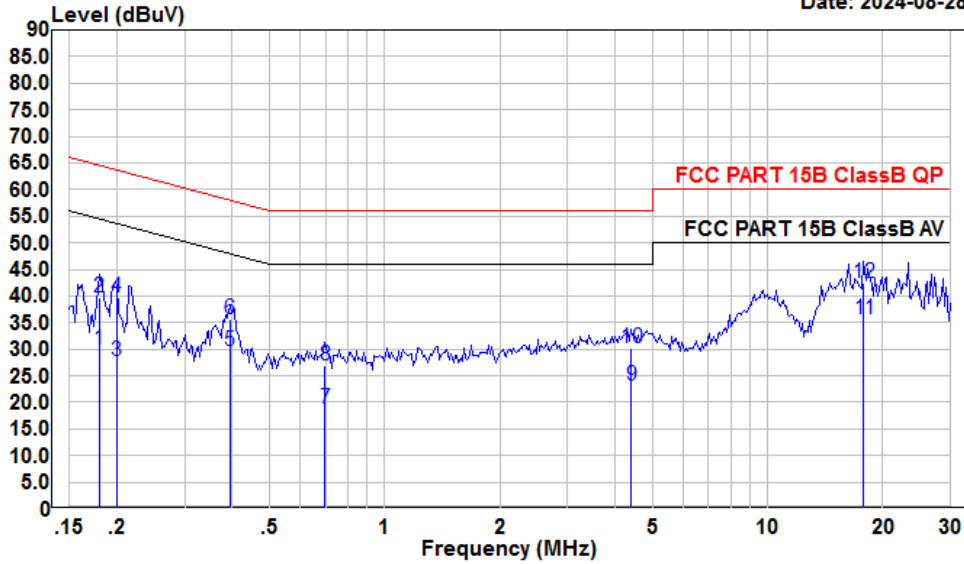


Condition: Line  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.158	10.50	31.50	10.88	10.12	55.56	-24.06	Average
2	0.158	19.75	40.75	10.88	10.12	65.56	-24.81	QP
3	0.200	12.53	33.42	10.80	10.09	53.62	-20.20	Average
4	0.200	18.90	39.79	10.80	10.09	63.62	-23.83	QP
5	0.381	5.67	26.37	10.59	10.11	48.25	-21.88	Average
6	0.381	11.57	32.27	10.59	10.11	58.25	-25.98	QP
7	0.853	-2.17	18.38	10.44	10.11	46.00	-27.62	Average
8	0.853	6.48	27.03	10.44	10.11	56.00	-28.97	QP
9	3.881	1.25	21.77	10.31	10.21	46.00	-24.23	Average
10	3.881	8.81	29.33	10.31	10.21	56.00	-26.67	QP
11	18.232	11.61	32.60	10.80	10.19	50.00	-17.40	Average
12	18.232	22.06	43.05	10.80	10.19	60.00	-16.95	QP

AC 120V/60 Hz, Neutral

Date: 2024-08-28



Condition: Neutral  
 Project : 2401W66020E-EM  
 test Mode: Talking  
 tester : Macy.shi

	Read Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.180	9.32	29.89	10.47	10.10	54.50	-24.61	Average
2	0.180	19.02	39.59	10.47	10.10	64.50	-24.91	QP
3	0.200	7.14	27.63	10.40	10.09	53.62	-25.99	Average
4	0.200	19.27	39.76	10.40	10.09	63.62	-23.86	QP
5	0.393	8.88	29.60	10.62	10.10	47.99	-18.39	Average
6	0.393	14.96	35.68	10.62	10.10	57.99	-22.31	QP
7	0.697	-2.07	18.78	10.70	10.15	46.00	-27.22	Average
8	0.697	6.15	27.00	10.70	10.15	56.00	-29.00	QP
9	4.407	2.43	23.08	10.45	10.20	46.00	-22.92	Average
10	4.407	9.63	30.28	10.45	10.20	56.00	-25.72	QP
11	17.849	14.82	35.75	10.74	10.19	50.00	-14.25	Average
12	17.849	21.63	42.56	10.74	10.19	60.00	-17.44	QP

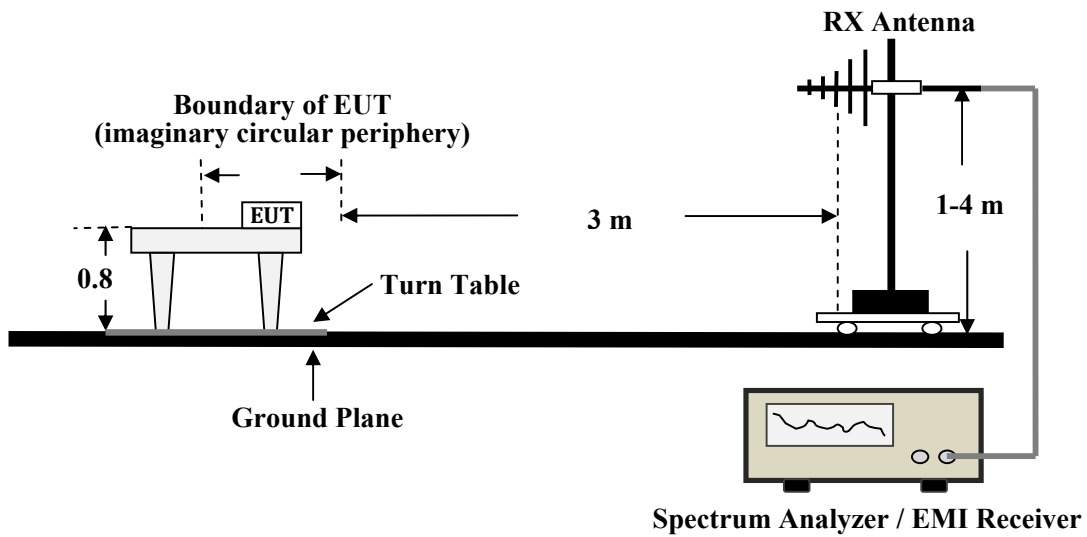
## FCC §15.109 - RADIATED EMISSIONS

### Applicable Standard

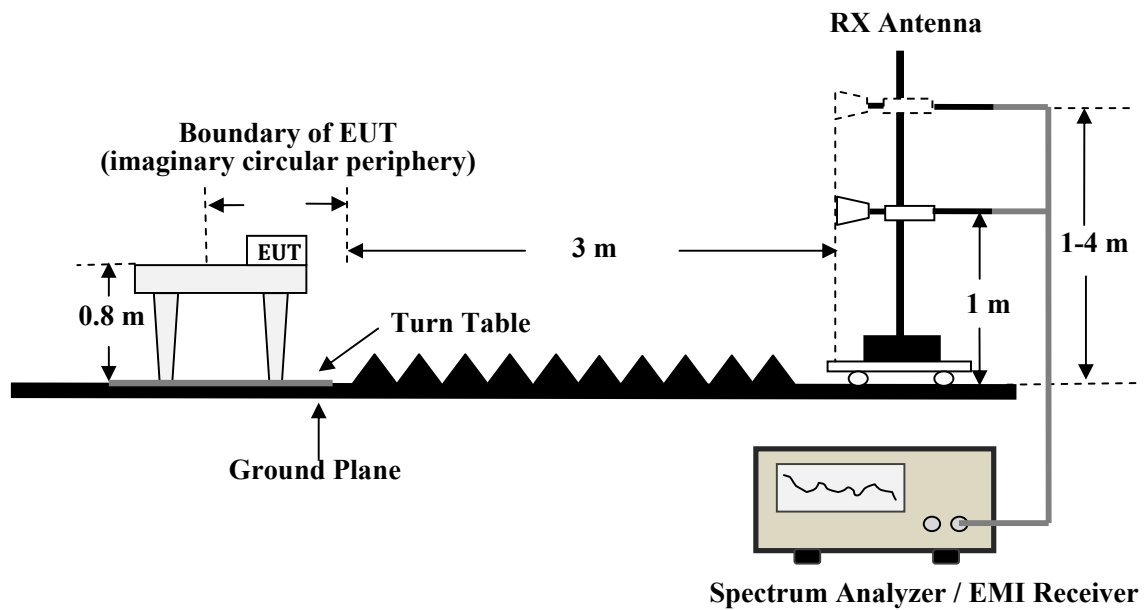
FCC §15.109

### EUT Setup

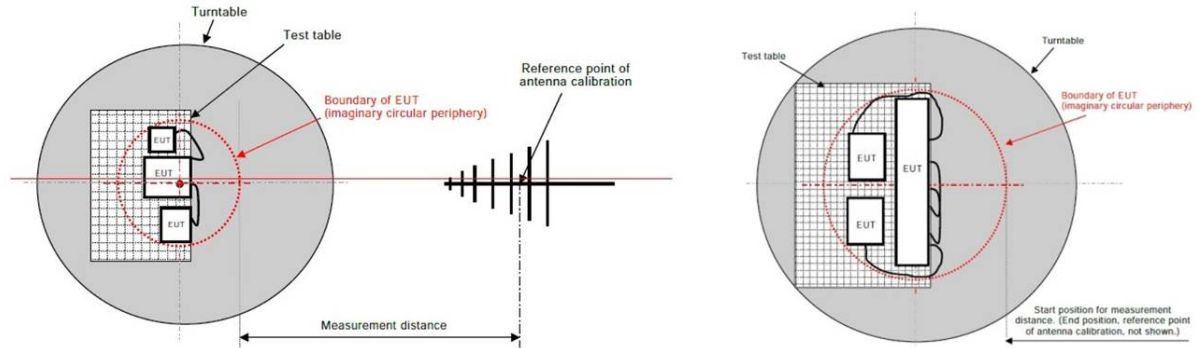
Below 1GHz for Radiated Emissions



Above 1GHz for Radiated Emissions



**Radiated Emissions Setup Configuration**



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The related limit was specified in FCC Part 15B.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

**EMI Test Receiver and Spectrum analyzer Setup**

During the radiated emission test, the EMI test receiver and spectrum analyzer setup was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

**Test Procedure**

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

If emission level of the EUT in Peak measurement mode is 20dB lower than peak limit line (that means the emission level in Peak measurement mode complies with both Peak and average limit lines) then only Peak measurement result is reported .Otherwise, Emission in average measurement mode shall be measured, and reported for frequency range above 1GHz.



## Level & Over Limit Calculation

The Level is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Read Level. The basic equation is as follows:

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

$$\text{Level} = \text{Read Level} + \text{Factor}$$

The “Over limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -6 dB means the emission is 6dB below the limit for Class B. The equation for Over Limit calculation is as follows:

$$\text{Over limit} = \text{Level} - \text{Limit}$$

## Test Data

### Environmental Conditions

<b>Temperature:</b>	23~26 °C
<b>Relative Humidity:</b>	51~53 %
<b>ATM Pressure:</b>	101~101.2 kPa

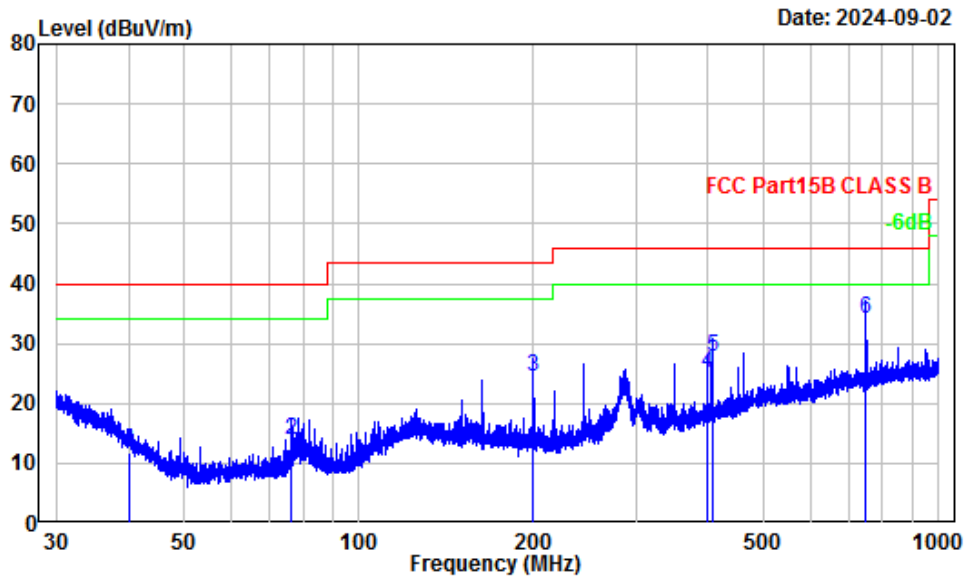
*The testing was performed by Jack Liu on 2024-09-02 and 2024-09-23 for below 1GHz and Dylan Yang on 2024-09-03 and 2024-09-23 for above 1GHz.*

Test Mode: Talking

For Adapter 1

30 MHz~1 GHz

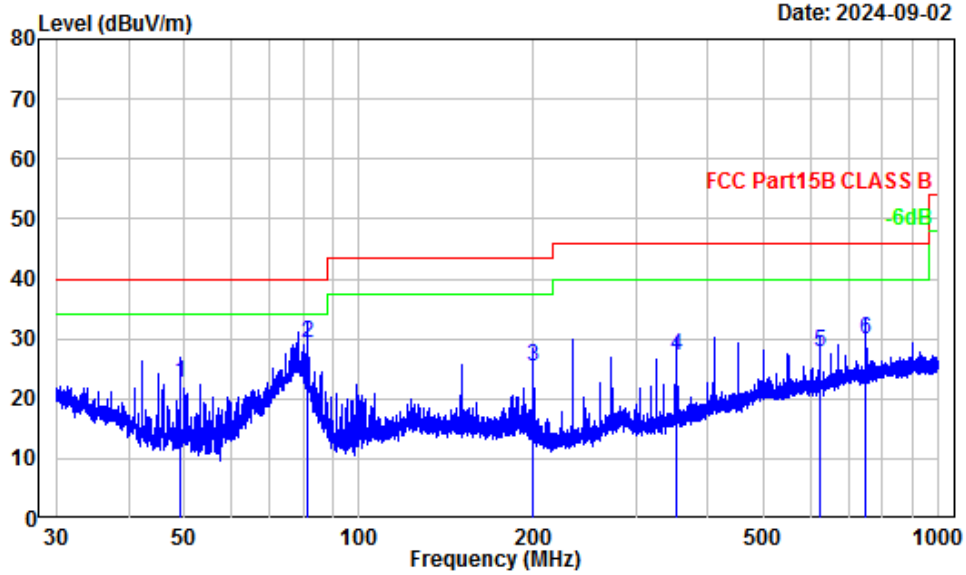
Horizontal



Site : Chamber A  
 Condition : 3m Horizontal  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Jack Liu

	Freq		Read		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	Line	Limit	
1	40.17	-12.49	24.12	11.63	40.00	-28.37	QP
2	76.58	-17.82	31.82	14.00	40.00	-26.00	QP
3	199.99	-13.06	37.53	24.47	43.50	-19.03	QP
4	400.08	-8.41	33.47	25.06	46.00	-20.94	QP
5	406.44	-8.22	36.12	27.90	46.00	-18.10	QP
6	750.11	-2.88	36.92	34.04	46.00	-11.96	QP

**Vertical**

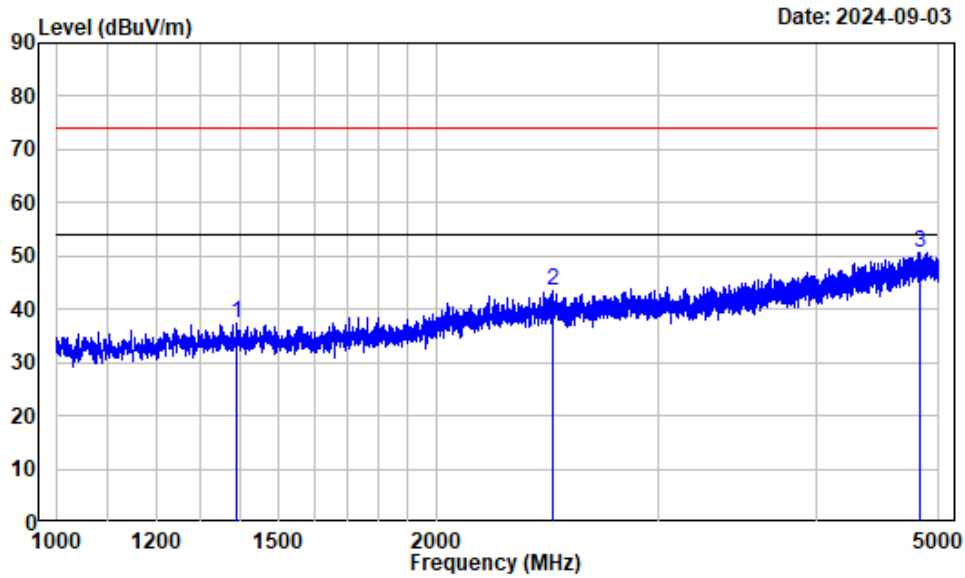


Site : Chamber A  
 Condition : 3m Vertical  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	49.14	-17.76	40.47	22.71	40.00	-17.29	QP
2	81.25	-18.00	47.30	29.30	40.00	-10.70	QP
3	199.99	-13.06	38.35	25.29	43.50	-18.21	QP
4	352.17	-10.11	37.34	27.23	46.00	-18.77	QP
5	622.89	-4.74	32.45	27.71	46.00	-18.29	QP
6	750.11	-2.88	32.92	30.04	46.00	-15.96	QP

1~5 GHz

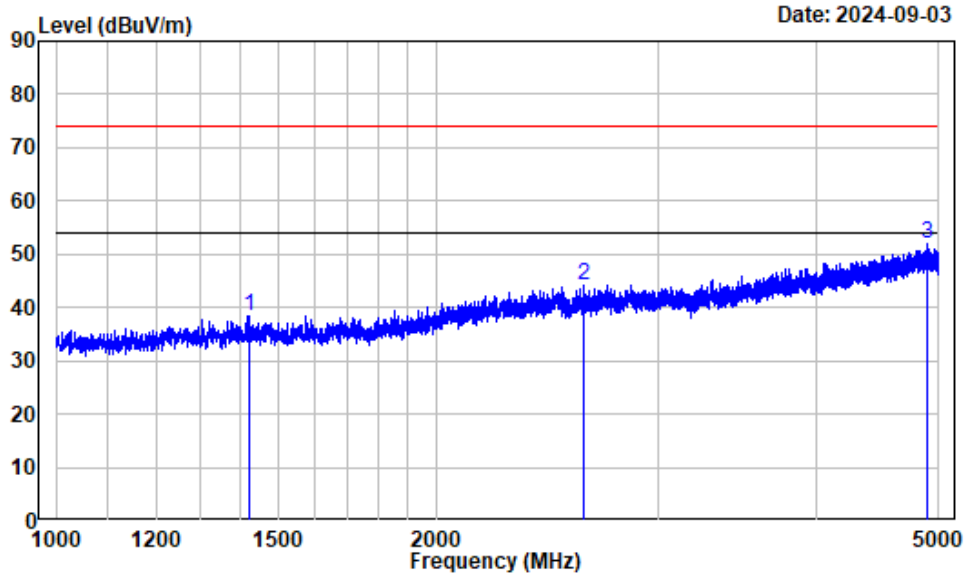
Horizontal



Site : chamber B  
 Condition : Horizontal  
 Project No.: 2401W66020E-EM  
 Tester : Dylan.Yang  
 Test Mode : Talking

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1391.250	-7.00	44.26	37.26	74.00	-36.74	Peak
2	2477.500	-3.17	46.60	43.43	74.00	-30.57	Peak
3	4825.625	2.45	48.19	50.64	74.00	-23.36	Peak

**Vertical**



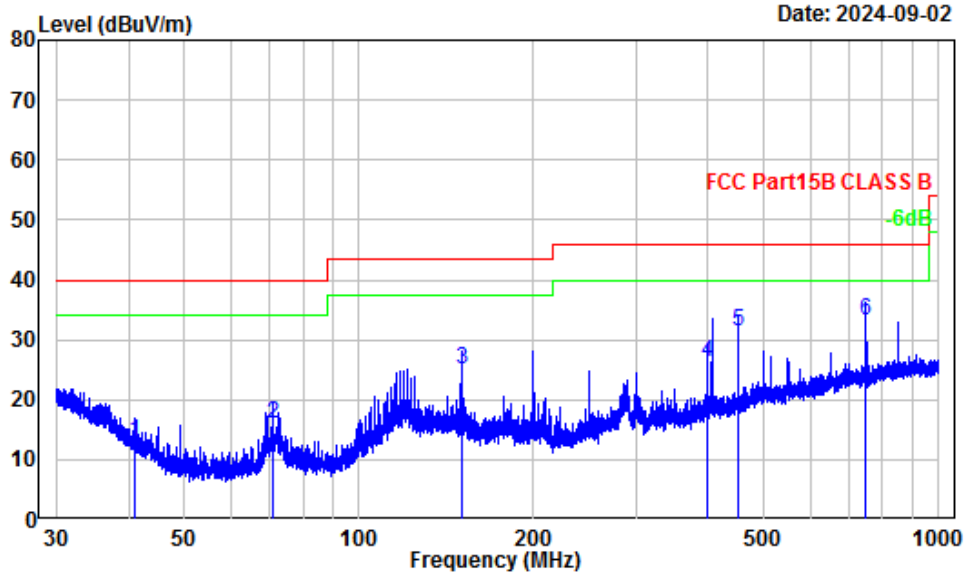
Site : chamber B  
 Condition : Vertical  
 Project No.: 2401W66020E-EM  
 Tester : Dylan.Yang  
 Test Mode : Talking

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1421.500	-6.98	45.31	38.33	74.00	-35.67	Peak
2	2617.500	-3.02	47.05	44.03	74.00	-29.97	Peak
3	4904.500	2.64	49.36	52.00	74.00	-22.00	Peak

For Adapter 2

30 MHz~1 GHz

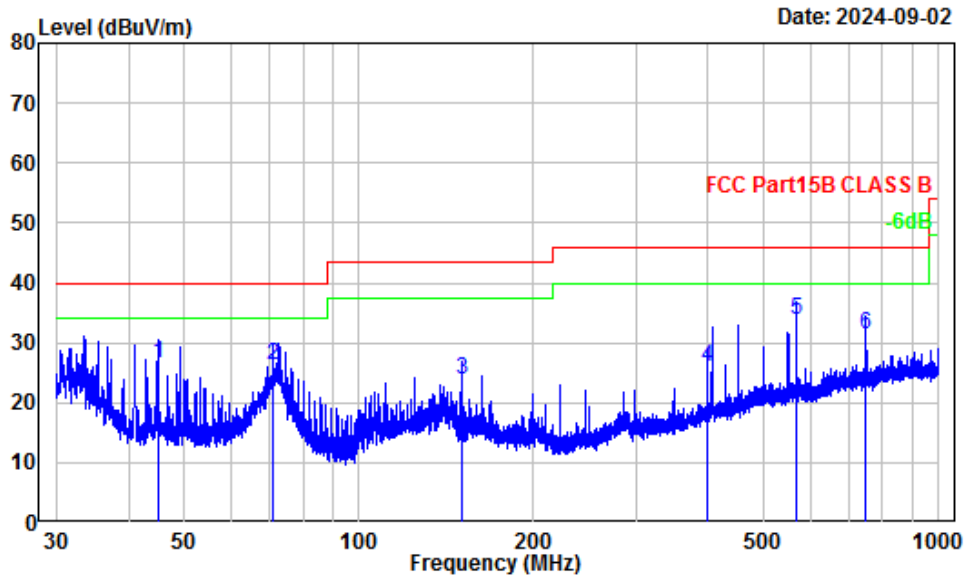
Horizontal



Site : Chamber A  
 Condition : 3m Horizontal  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Anson Su

	Freq Factor		Read Level		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	40.97	-13.06	25.91	12.85	40.00	-27.15	QP
2	70.92	-17.87	33.90	16.03	40.00	-23.97	QP
3	150.01	-12.46	37.38	24.92	43.50	-18.58	QP
4	400.08	-8.41	34.61	26.20	46.00	-19.80	QP
5	450.15	-7.53	38.80	31.27	46.00	-14.73	QP
6	750.11	-2.88	35.97	33.09	46.00	-12.91	QP

Vertical

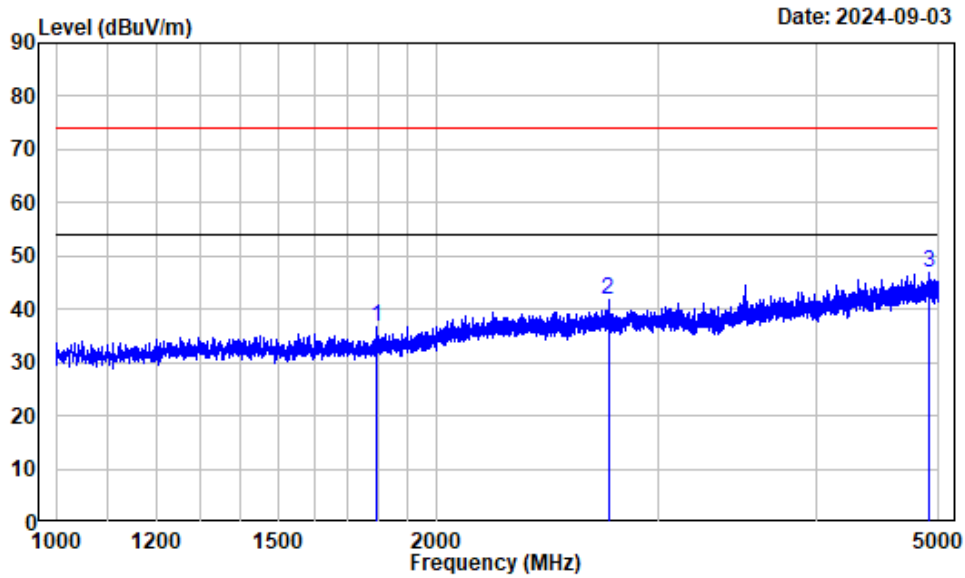


Site : Chamber A  
 Condition : 3m Vertical  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	45.06	-15.92	42.35	26.43	40.00	-13.57	QP
2	70.92	-17.87	44.13	26.26	40.00	-13.74	QP
3	150.01	-12.46	36.32	23.86	43.50	-19.64	QP
4	400.08	-8.41	34.28	25.87	46.00	-20.13	QP
5	568.86	-5.25	39.16	33.91	46.00	-12.09	QP
6	750.11	-2.88	34.25	31.37	46.00	-14.63	QP

1~5 GHz

Horizontal

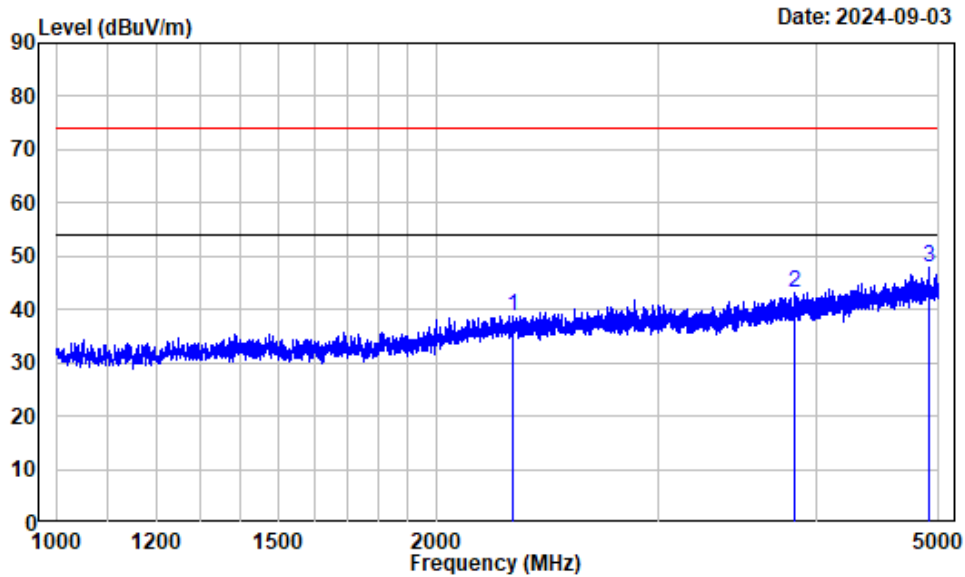


Site : chamber B  
 Condition : Horizontal  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Dylan.Yang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1796.250	-6.38	42.94	36.56	74.00	-37.44	Peak
2	2737.500	-2.78	44.49	41.71	74.00	-32.29	Peak
3	4913.750	2.63	44.20	46.83	74.00	-27.17	Peak



**Vertical**



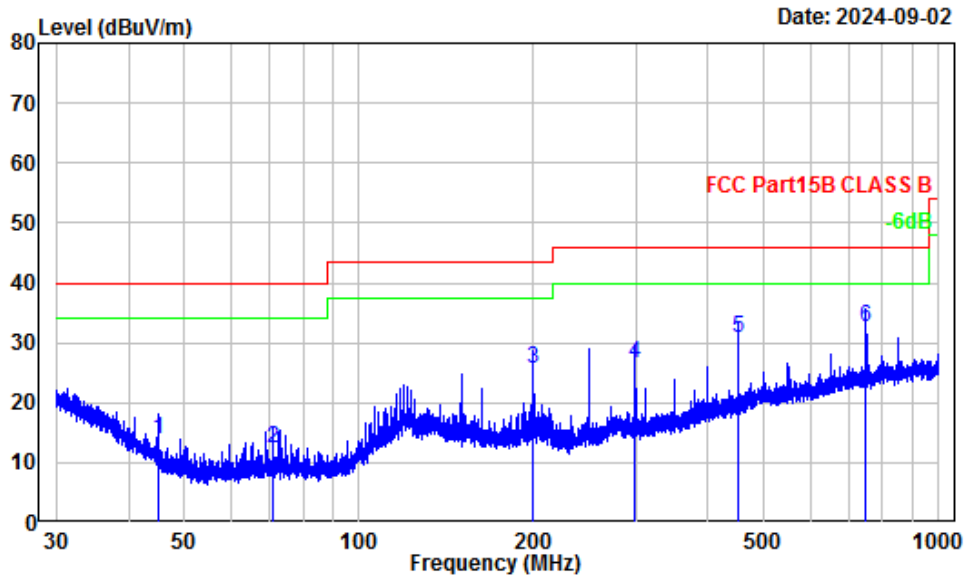
Site : chamber B  
 Condition : Vertical  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Dylan.Yang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2301.250	-3.09	41.96	38.87	74.00	-35.13	Peak
2	3848.750	-0.79	43.82	43.03	74.00	-30.97	Peak
3	4909.375	2.64	45.38	48.02	74.00	-25.98	Peak

For Adapter 3

30 MHz~1 GHz

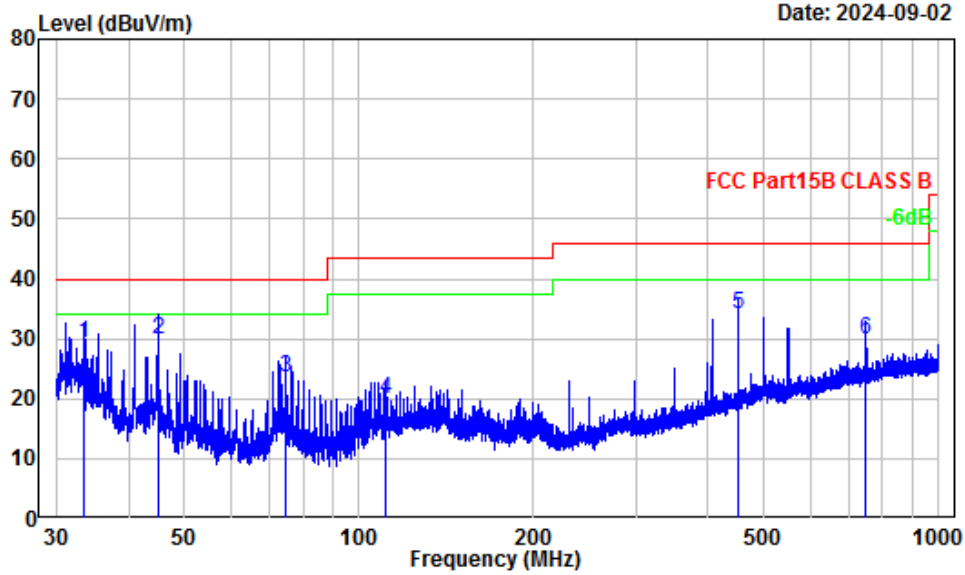
Horizontal



Site : Chamber A  
 Condition : 3m Horizontal  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Anson Su

	Freq Factor		Read Level		Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	45.06	-15.92	29.87	13.95	40.00	-26.05	QP
2	70.89	-17.87	30.22	12.35	40.00	-27.65	QP
3	199.99	-13.06	38.59	25.53	43.50	-17.97	QP
4	298.01	-11.21	37.74	26.53	46.00	-19.47	QP
5	450.15	-7.53	38.32	30.79	46.00	-15.21	QP
6	750.11	-2.88	35.49	32.61	46.00	-13.39	QP

Vertical

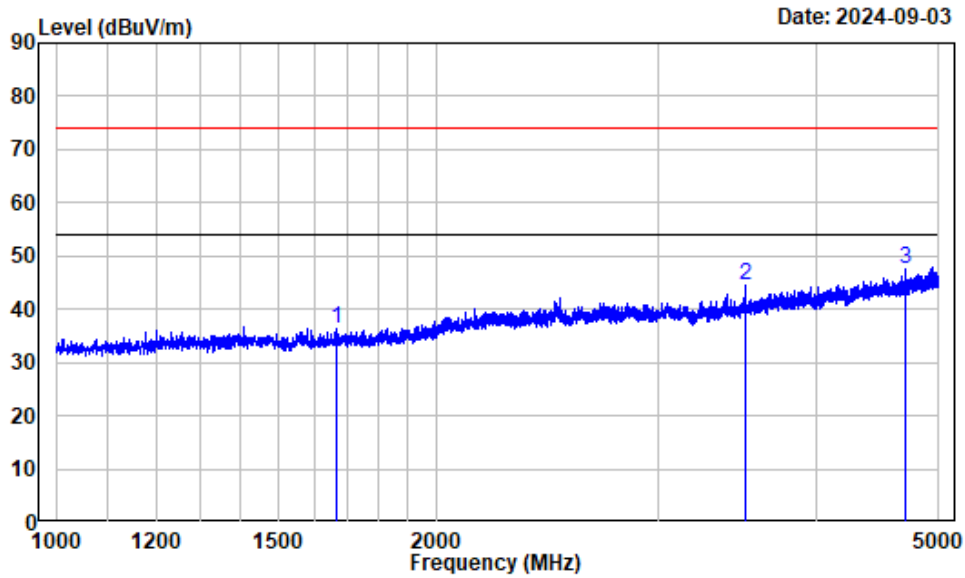


Site : Chamber A  
 Condition : 3m Vertical  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	33.56	-7.98	37.31	29.33	40.00	-10.67	QP
2	45.04	-15.90	45.84	29.94	40.00	-10.06	QP
3	74.66	-17.84	41.25	23.41	40.00	-16.59	QP
4	111.10	-12.86	32.70	19.84	43.50	-23.66	QP
5	450.15	-7.53	41.58	34.05	46.00	-11.95	QP
6	750.11	-2.88	32.66	29.78	46.00	-16.22	QP

1~5 GHz

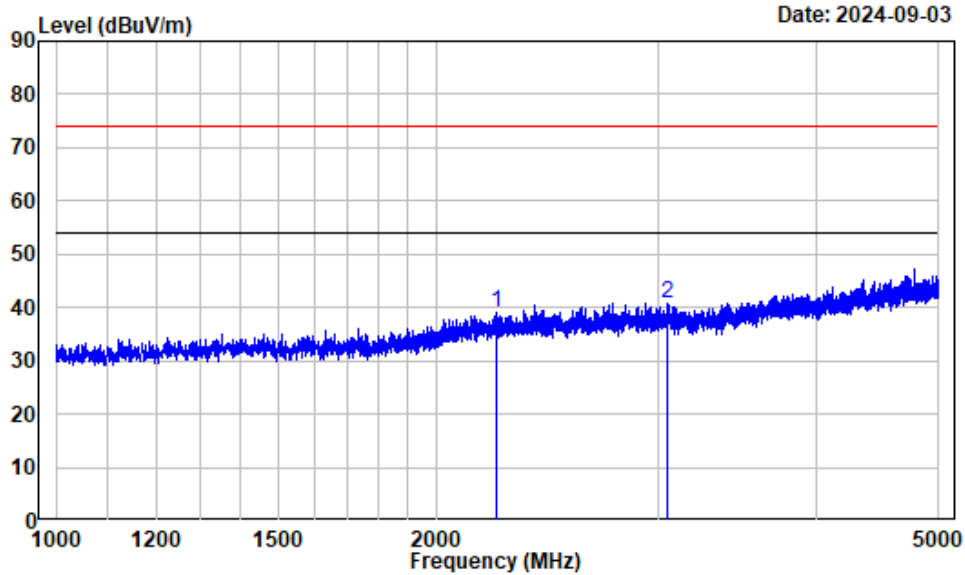
Horizontal



Site : chamber B  
 Condition : Horizontal  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Dylan.Yang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1665.625	-6.75	43.18	36.43	74.00	-37.57	Peak
2	3518.750	-1.69	46.10	44.41	74.00	-29.59	Peak
3	4706.250	2.05	45.59	47.64	74.00	-26.36	Peak

**Vertical**



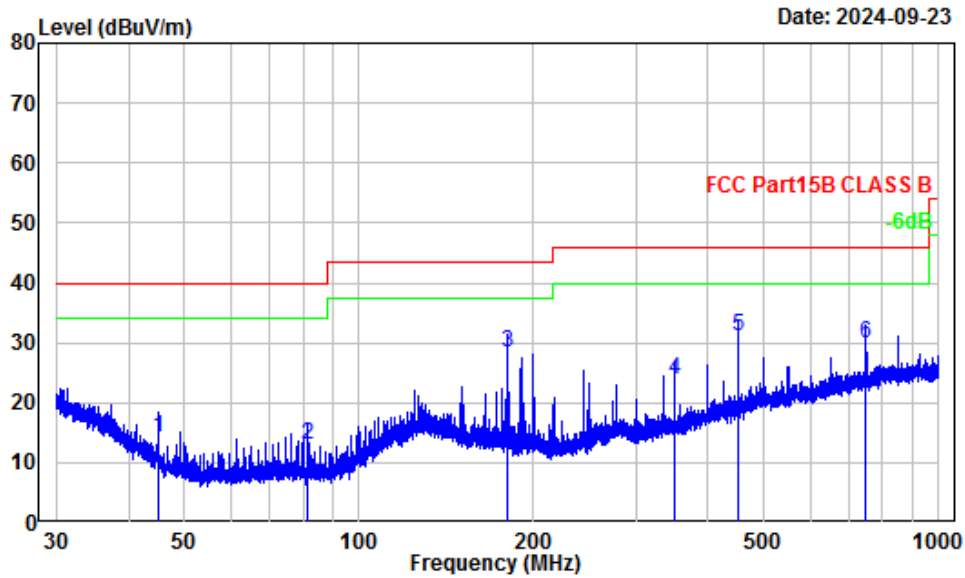
Site : chamber B  
 Condition : Vertical  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Dylan.Yang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2235.000	-3.35	42.32	38.97	74.00	-35.03	Peak
2	3045.000	-2.32	43.11	40.79	74.00	-33.21	Peak
3	5073.125	2.85	43.41	46.26	74.00	-27.74	Peak

For Adapter 4

30 MHz~1 GHz

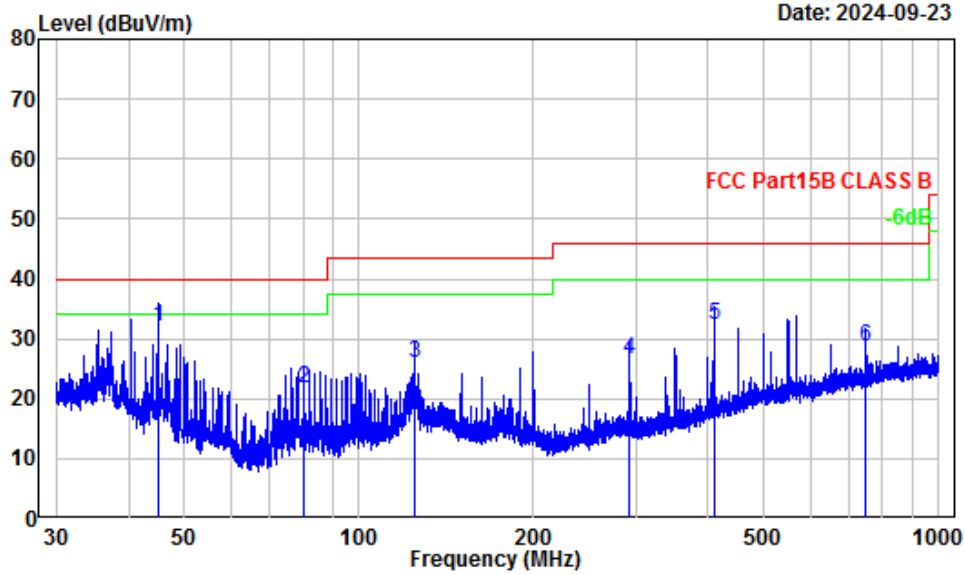
Horizontal



Site : Chamber A  
 Condition : 3m Horizontal  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Jack Liu

	Freq Factor		Read Level		Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	45.04	-15.90	30.14	14.24	40.00	-25.76	QP
2	81.25	-18.00	30.94	12.94	40.00	-27.06	QP
3	180.02	-13.65	41.98	28.33	43.50	-15.17	QP
4	350.02	-10.16	33.88	23.72	46.00	-22.28	QP
5	450.15	-7.53	38.56	31.03	46.00	-14.97	QP
6	750.11	-2.88	32.63	29.75	46.00	-16.25	QP

Vertical

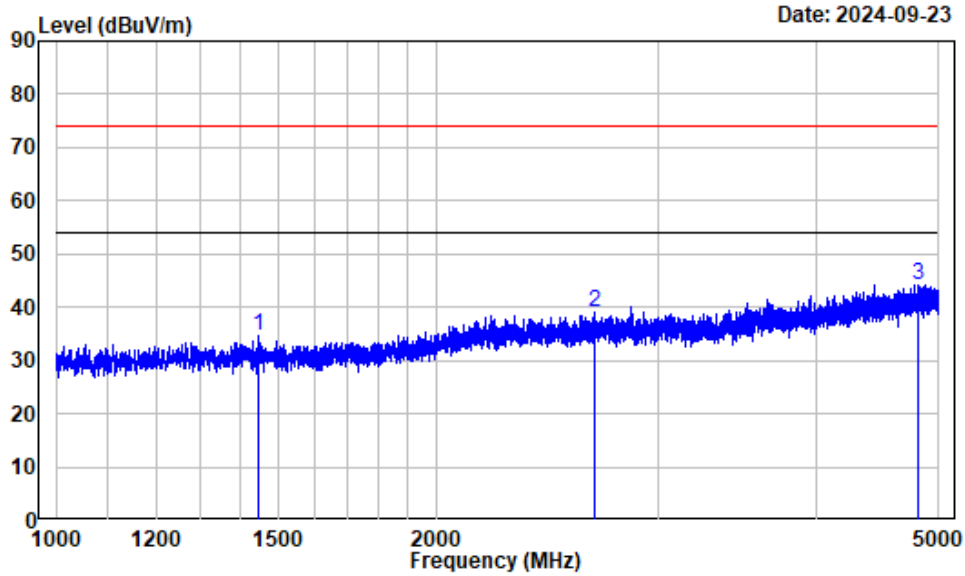


Site : Chamber A  
 Condition : 3m Vertical  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Jack Liu

	Read	Limit	Over				
Freq	Level	Level	Line	Limit Remark			
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB		
1	45.04	-15.90	47.85	31.95	40.00	-8.05	QP
2	80.19	-17.92	39.60	21.68	40.00	-18.32	QP
3	125.01	-11.12	37.19	26.07	43.50	-17.43	QP
4	293.34	-11.21	37.76	26.55	46.00	-19.45	QP
5	410.02	-8.18	40.52	32.34	46.00	-13.66	QP
6	750.11	-2.88	31.53	28.65	46.00	-17.35	QP

1~5 GHz

Horizontal

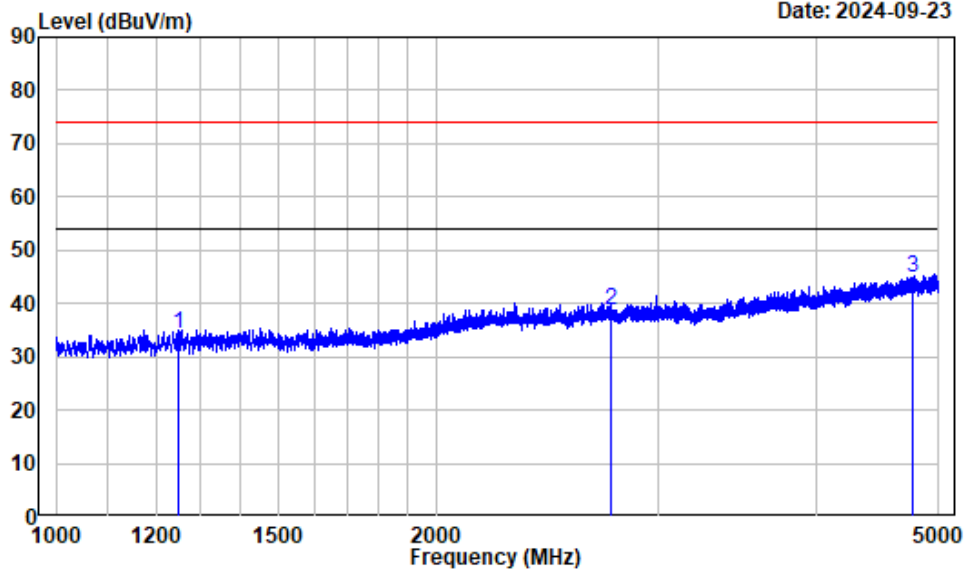


Site : chamber B  
 Condition : Horizontal  
 Project No.: 2401W66020E-EM  
 Tester : Dylan.Yang  
 Test Mode : Talking

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1446.000	-7.01	41.79	34.78	74.00	-39.22	Peak
2	2670.000	-3.00	41.95	38.95	74.00	-35.05	Peak
3	4815.000	2.44	41.75	44.19	74.00	-29.81	Peak



**Vertical**



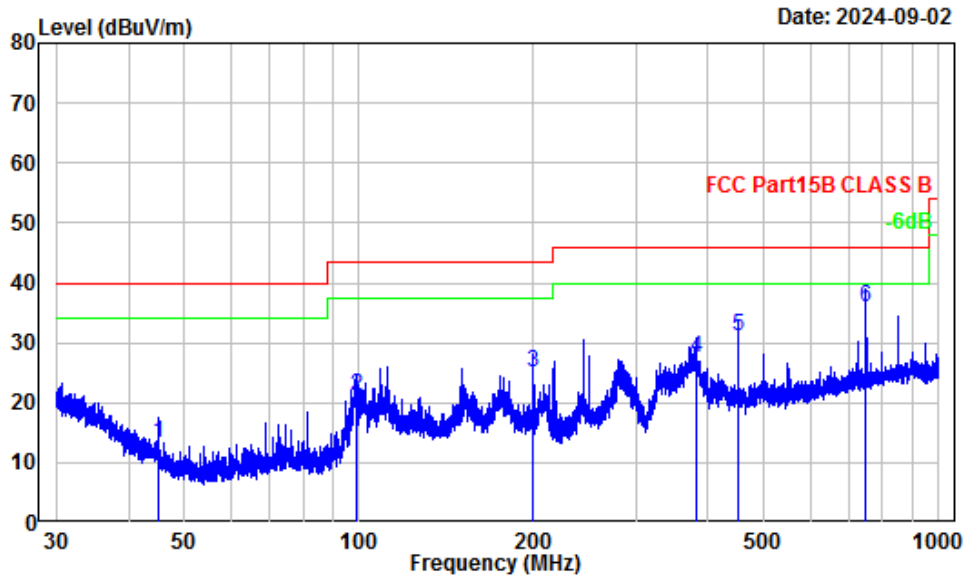
Site : chamber B  
 Condition : Vertical  
 Project No.: 2401W66020E-EM  
 Tester : Dylan.Yang  
 Test Mode : Talking

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1249.000	-7.55	41.76	34.21	74.00	-39.79	Peak
2	2754.500	-2.82	41.61	38.79	74.00	-35.21	Peak
3	4765.500	2.45	42.55	45.00	74.00	-29.00	Peak

For POE

30 MHz~1 GHz

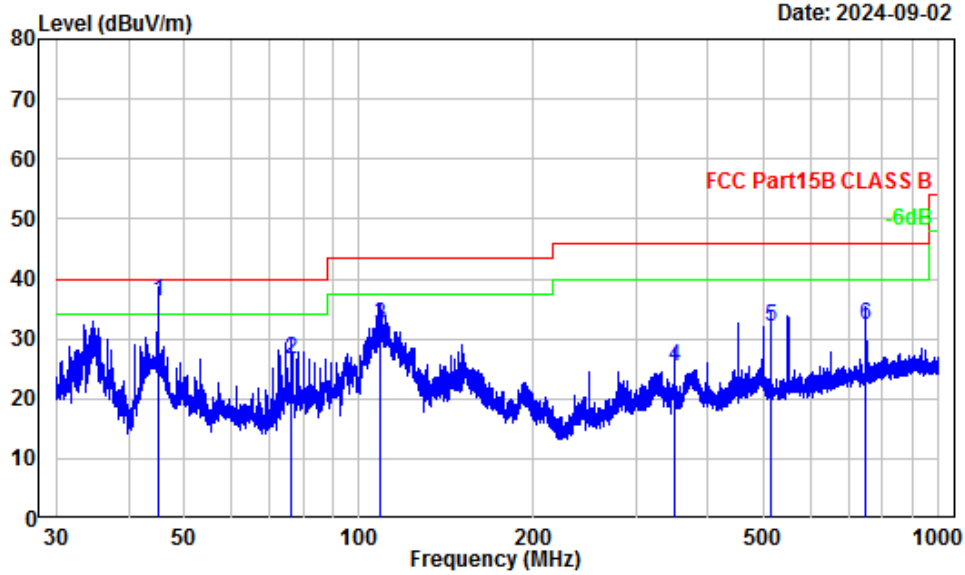
Horizontal



Site : Chamber A  
 Condition : 3m Horizontal  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	45.06	-15.92	29.33	13.41	40.00	-26.59	QP
2	98.88	-16.24	37.26	21.02	43.50	-22.48	QP
3	199.99	-13.06	38.06	25.00	43.50	-18.50	QP
4	382.25	-9.09	36.71	27.62	46.00	-18.38	QP
5	450.15	-7.53	38.54	31.01	46.00	-14.99	QP
6	750.11	-2.88	38.71	35.83	46.00	-10.17	QP

Vertical

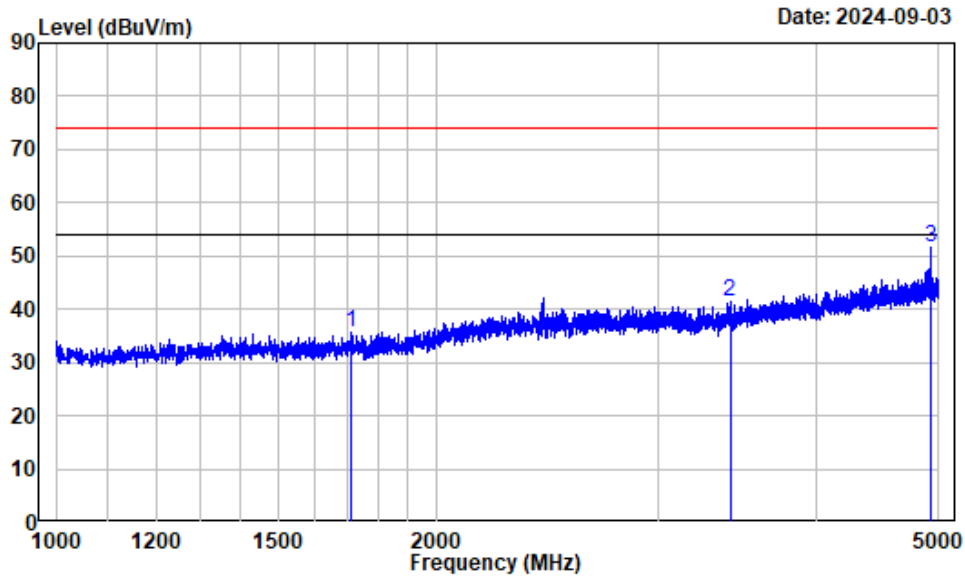


Site : Chamber A  
 Condition : 3m Vertical  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Anson Su

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	45.06	-15.92	52.21	36.29	40.00	-3.71	QP
2	76.51	-17.82	44.40	26.58	40.00	-13.42	QP
3	108.69	-13.46	45.85	32.39	43.50	-11.11	QP
4	350.02	-10.16	35.49	25.33	46.00	-20.67	QP
5	514.76	-5.88	37.88	32.00	46.00	-14.00	QP
6	750.11	-2.88	35.20	32.32	46.00	-13.68	QP

1~5 GHz

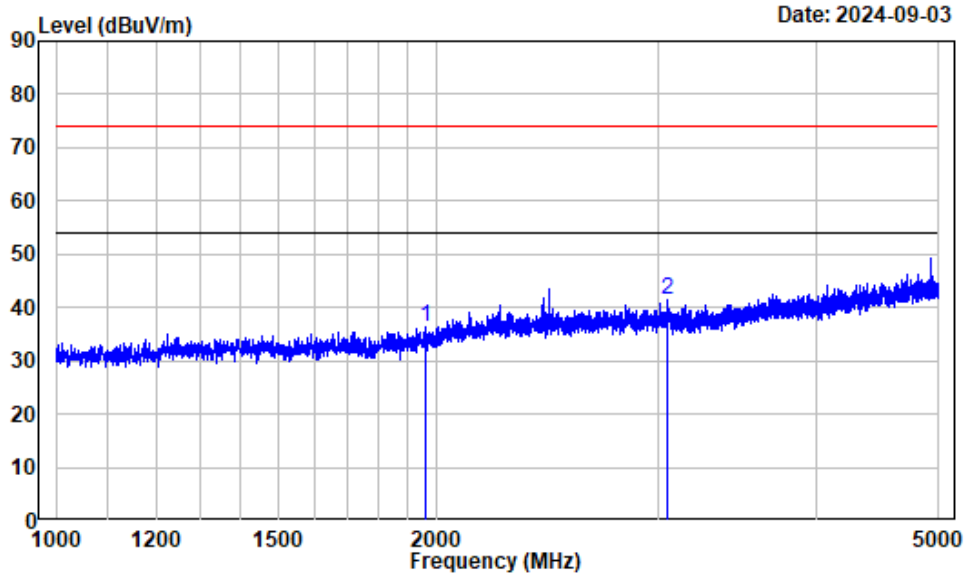
Horizontal



Site : chamber B  
 Condition : Horizontal  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Dylan.Yang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1714.375	-6.61	42.18	35.57	74.00	-38.43	Peak
2	3418.125	-2.38	43.91	41.53	74.00	-32.47	Peak
3	4924.375	2.63	49.07	51.70	74.00	-22.30	Peak

**Vertical**



Site : chamber B  
 Condition : Vertical  
 Project Number: 2401W66020E-EM  
 Test Mode : Talking  
 Tester : Dylan.Yang

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1960.000	-5.59	42.00	36.41	74.00	-37.59	Peak
2	3052.500	-2.31	43.71	41.40	74.00	-32.60	Peak
3	5615.625	3.00	43.81	46.81	74.00	-27.19	Peak

## **EUT PHOTOGRAPHS**

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Please refer to the attachment 2401W66020E-EM External photo and 2401W66020E-EM Internal photo.

## **TEST SETUP PHOTOGRAPHS**

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Please refer to the attachment 2401W66020E-EM Test Setup photo.

**\*\*\*\*\* END OF REPORT \*\*\*\*\***