



# TEST REPORT

**Applicant:** Grandstream Networks, Inc.

Address: 126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

**FCC ID:** YZZGWN7813

**Product Name:** Enterprise Layer 3 Managed Network Switch

**Model Number:** GWN7813

**Standard(s):** 47 CFR Part 15 Subpart B  
ANSI C63.4-2014

The above equipment has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

**Report Number:** CR230311181-00A

**Date Of Issue:** 2023/4/6

**Reviewed By:** Sun Zhong

Title: Manager

**Test Laboratory:** China Certification ICT Co., Ltd (Dongguan)

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## Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, 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. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

## Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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**DOCUMENT REVISION HISTORY**

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230311181-00A	Original Report	2023/4/6

## 1. GENERAL INFORMATION

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

<b>EUT Name:</b>	Enterprise Layer 3 Managed Network Switch
<b>EUT Model:</b>	GWN7813
<b>Highest Operation Frequency:</b>	800 MHz
<b>Rated Input Voltage:</b>	AC 120V or 12Vdc from adapter
<b>Serial Number:</b>	22YR_1
<b>EUT Received Date:</b>	2023/3/15
<b>EUT Received Status:</b>	Good

Note: EUT can configure with two different AC power modules, power #1 R0001B(RB030W05-1302300) and power #2 UES30-130230SPA-OP1

### Accessory Information:

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

## 1.2 Description of Test Configuration

### 1.2.1 EUT Operation Condition:

<b>EUT Operation Mode:</b>	The system was configured for testing in Typical Use Mode, which was provided by the manufacturer. Test Mode: M1: Operation from power #1 R0001B(RB030W05-1302300) M2: Operation from power #2 UES30-130230SPA-OP1 M3: Operation from adapter(UES65-120500SPA2)
<b>Equipment Modifications:</b>	No
<b>EUT Exercise Software:</b>	No

### 1.2.2 Support Equipment List and Details

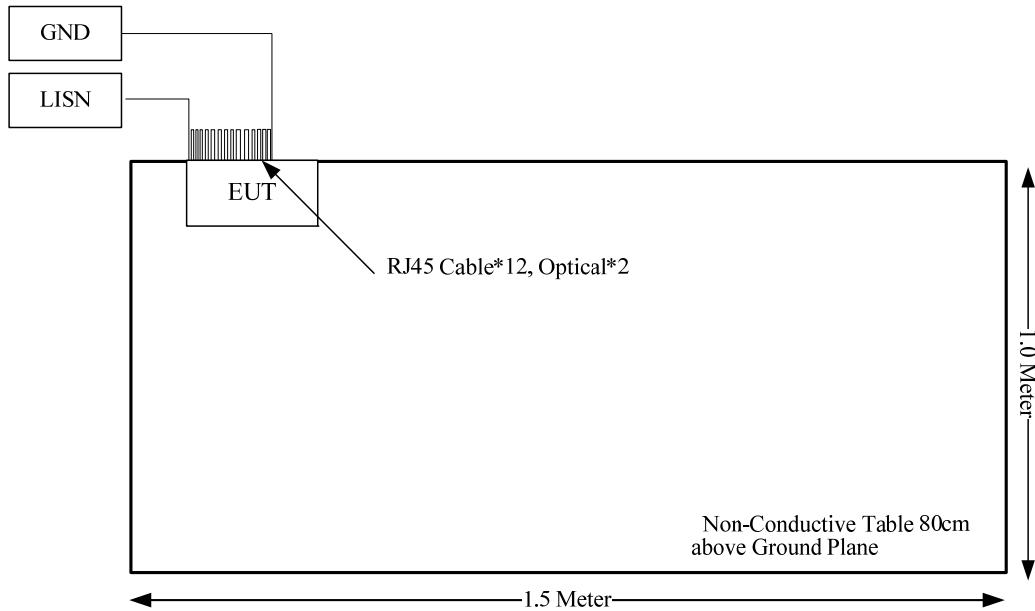
Manufacturer	Description	Model	Serial Number
Unknown	Adapter	UES65-120500SPA2	N/A

### 1.2.3 Support Cable List and Details

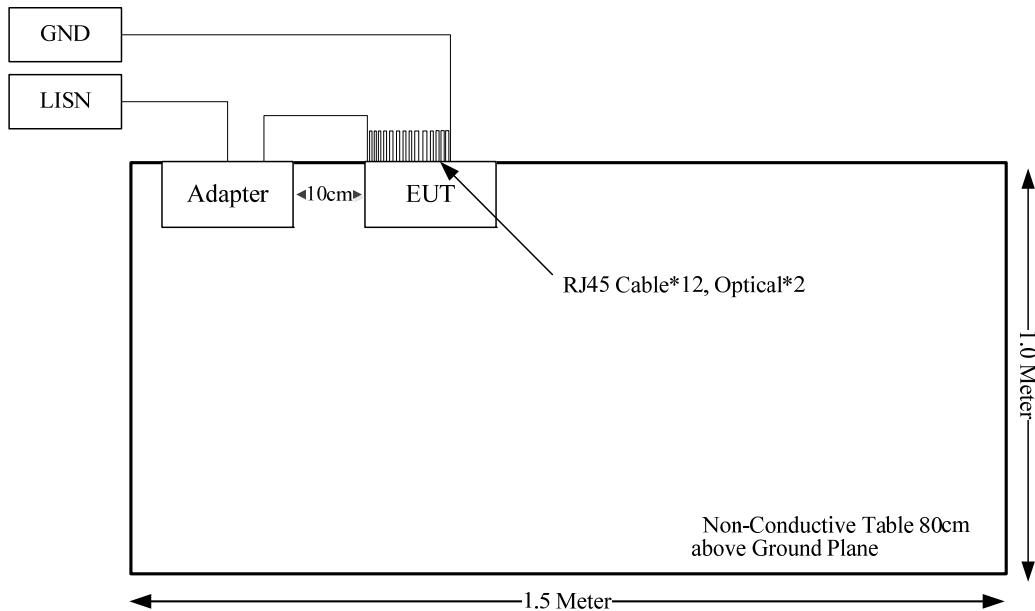
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable*12	No	No	0.3	EUT	EUT
Optical*2	No	No	4	EUT	EUT
Earth Line	No	No	1	EUT	GND

### 1.2.4 Block Diagram of Test Setup

AC line conducted emissions:  
M1/M2

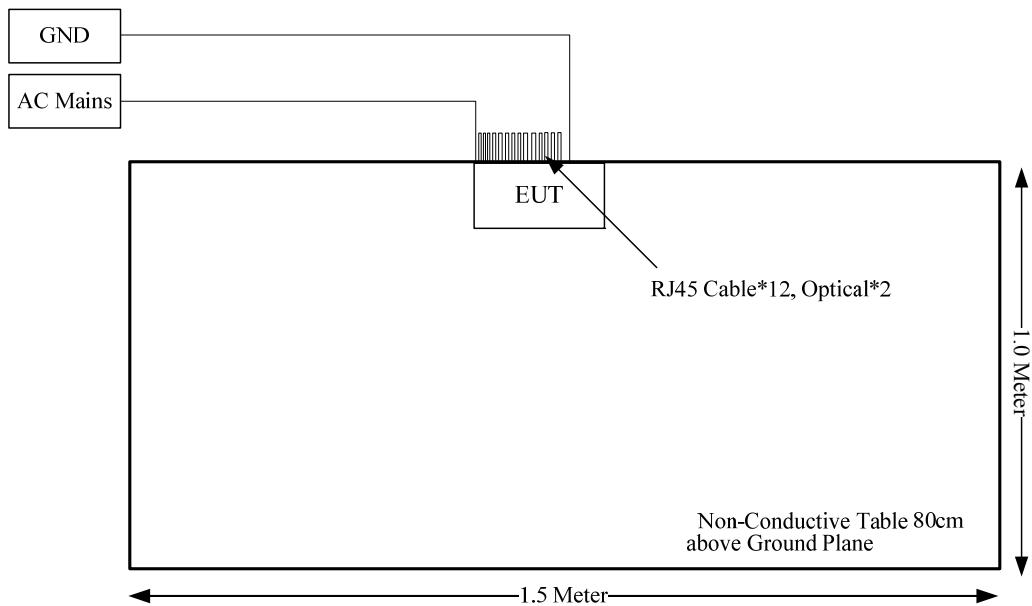


M3:

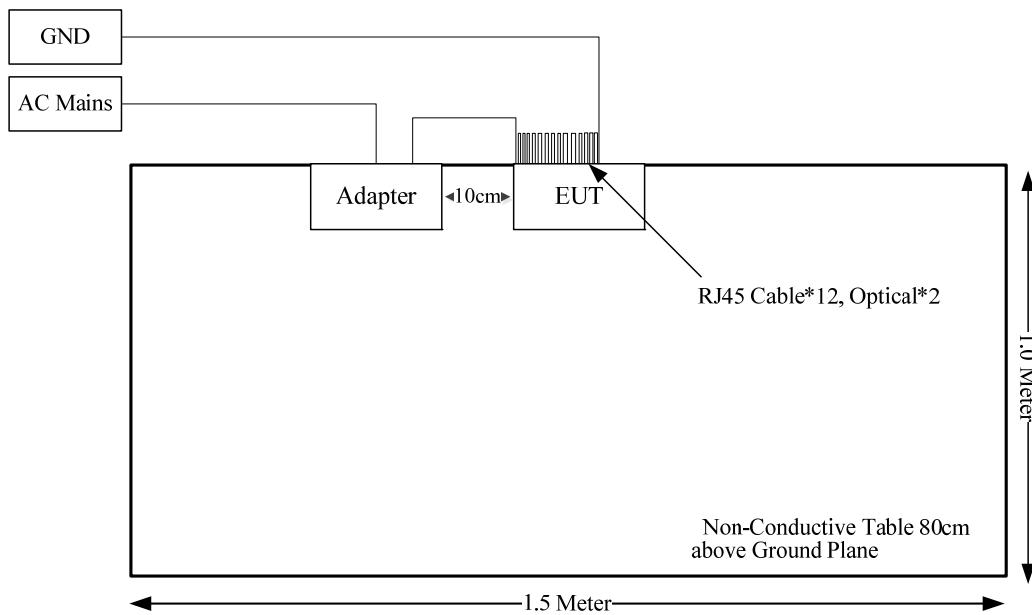


Radiated emissions:

M1/M2:



M3:



### 1.3 Measurement Uncertainty

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

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.15 dB, 200M~1GHz: 5.61 dB, 1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Temperature	±1°C
Humidity	±5%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

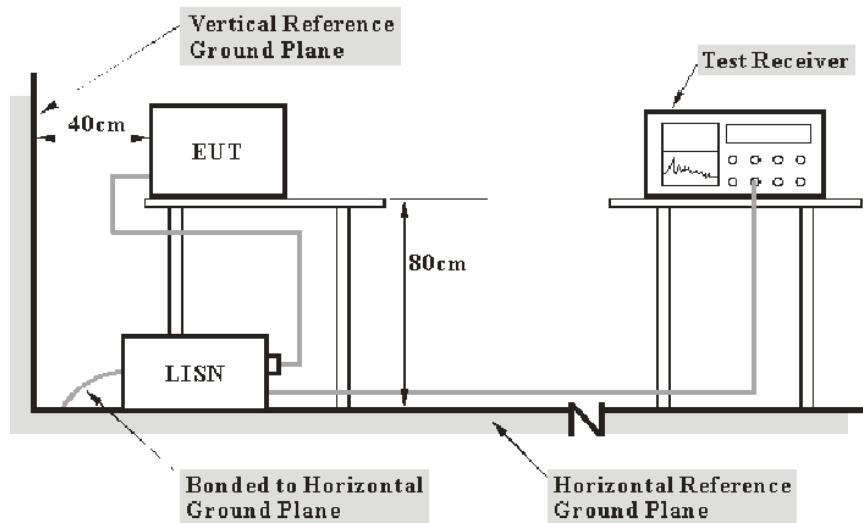
## 2. SUMMARY OF TEST RESULTS

Standard Clause	Description of Test	Test Result
§15.107	Conducted emissions	Compliant
§15.109	Radiated emissions	Compliant

### 3. REQUIREMENTS AND TEST PROCEDURES

#### 3.1 AC Line Conducted Emissions

##### 3.1.1 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 setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class A limits.

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

The adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

##### 3.1.2 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

### 3.1.3 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT, the report shall list the six emissions with the smallest margin relative to the limit, unless the margin is greater than 20 dB.

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

The report shall list the six emissions with the smallest margin relative to the limit, unless the margin is greater than 20 dB.

### 3.1.4 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

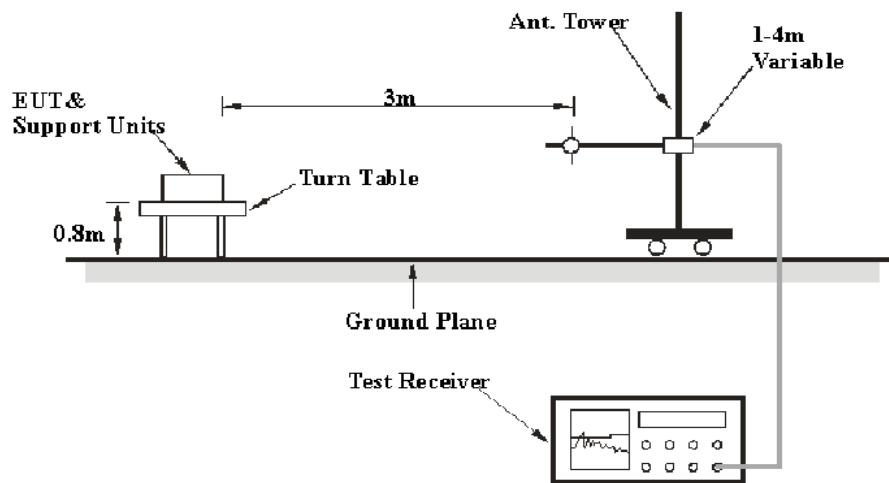
The “Margin” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

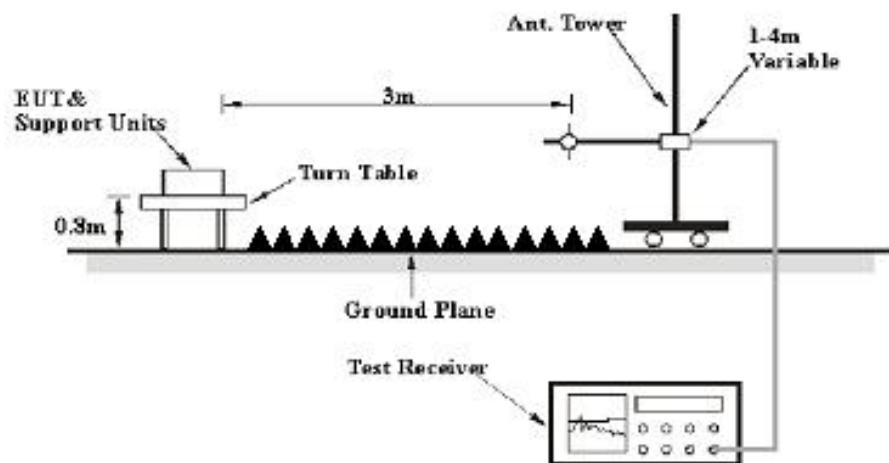
### 3.2 Radiation Spurious Emissions

#### 3.2.1 EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was with the FCC Part 15 B Class A limits.

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

### 3.2.2 EMI Test Receiver Setup

The system was investigated from 30 MHz to 5 GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10Hz	/	AVG

If the maximized peak measured value complies with under the limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

### 3.2.3 Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

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

The data was recorded in the Quasi-peak detection mode for below 1 GHz.

All emissions under the average limit and under the noise floor have not recorded in the report.

### 3.2.4 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = Antenna Factor + Cable Loss- Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

## 4. TEST DATA AND RESULTS

### 4.1 AC Line Conducted Emissions

Serial Number:	22YR_1	Test Date:	2023/3/18
Test Site:	CE	Test Mode:	M1, M2, M3
Tester:	Vic Du	Test Result:	Pass

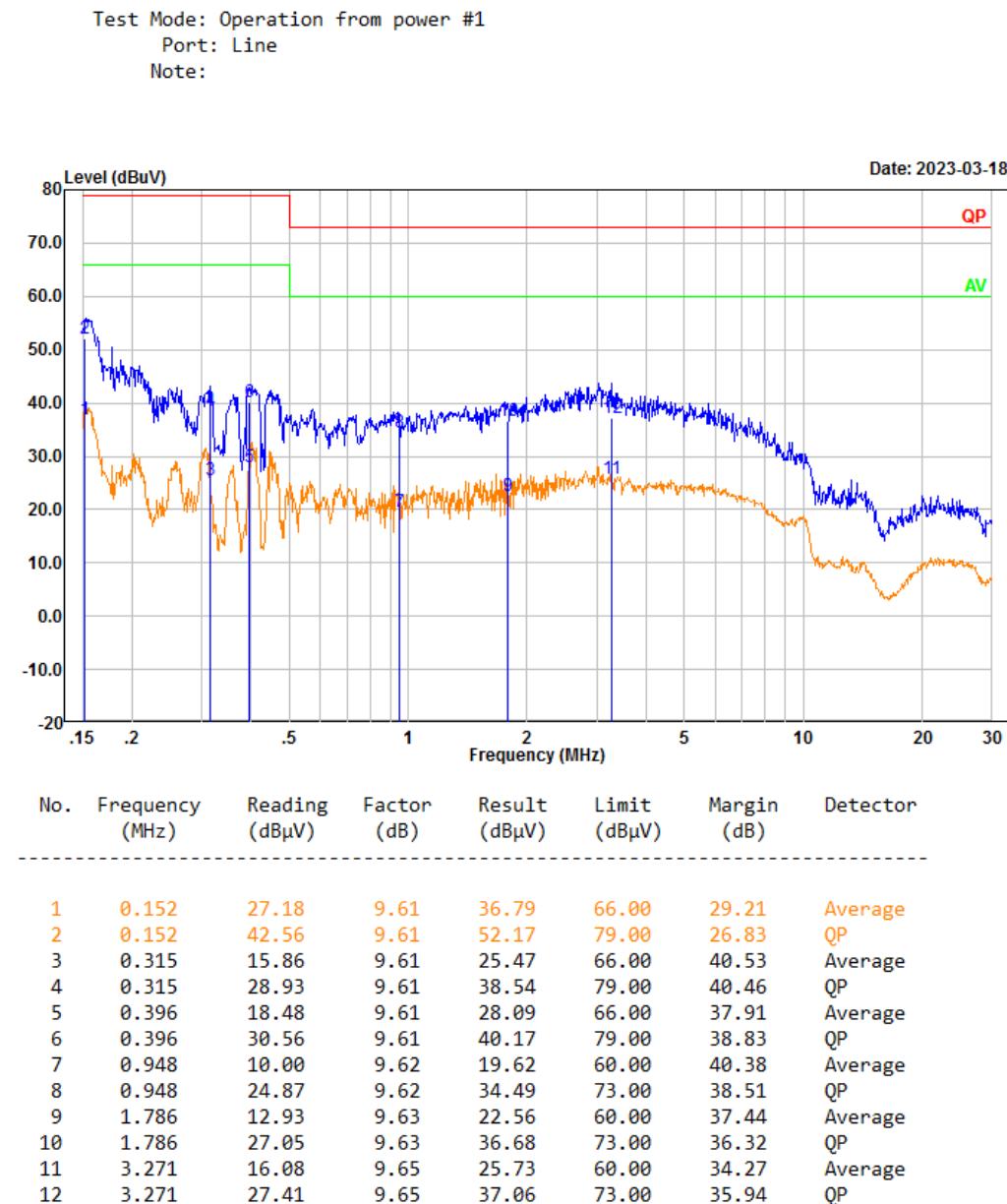
Environmental Conditions:					
Temperature: (°C)	24.4	Relative Humidity: (%)	65	ATM Pressure: (kPa)	101.1

### Test Equipment List and Details:

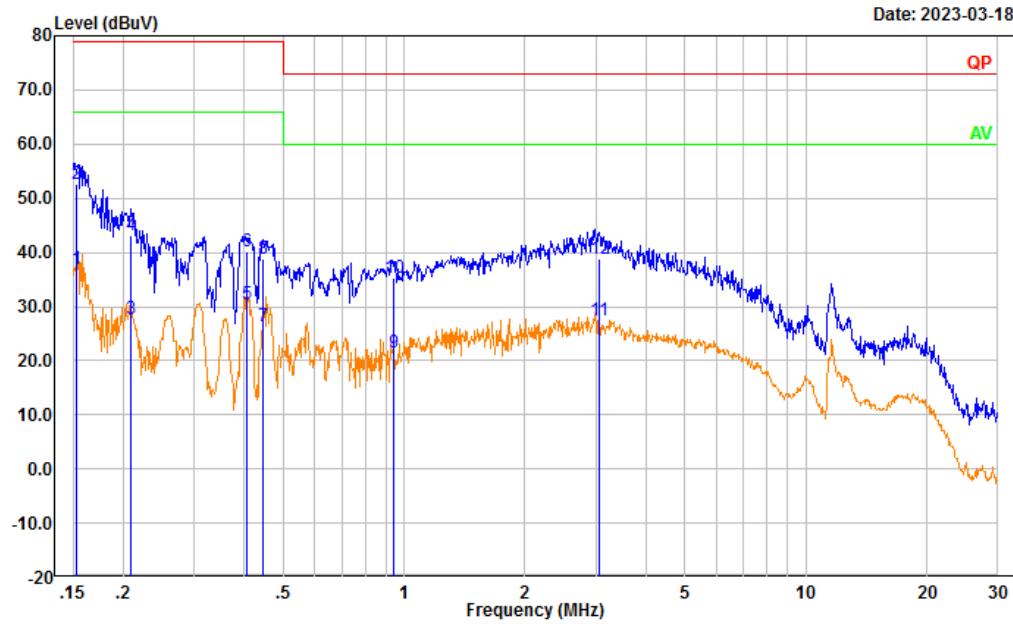
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2022/04/01	2023/03/31
R&S	EMI Test Receiver	ESR3	102726	2022/07/15	2023/07/14
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2022/08/07	2023/08/06
Audix	Test Software	E3	190306 (V9)	N/A	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

M1:

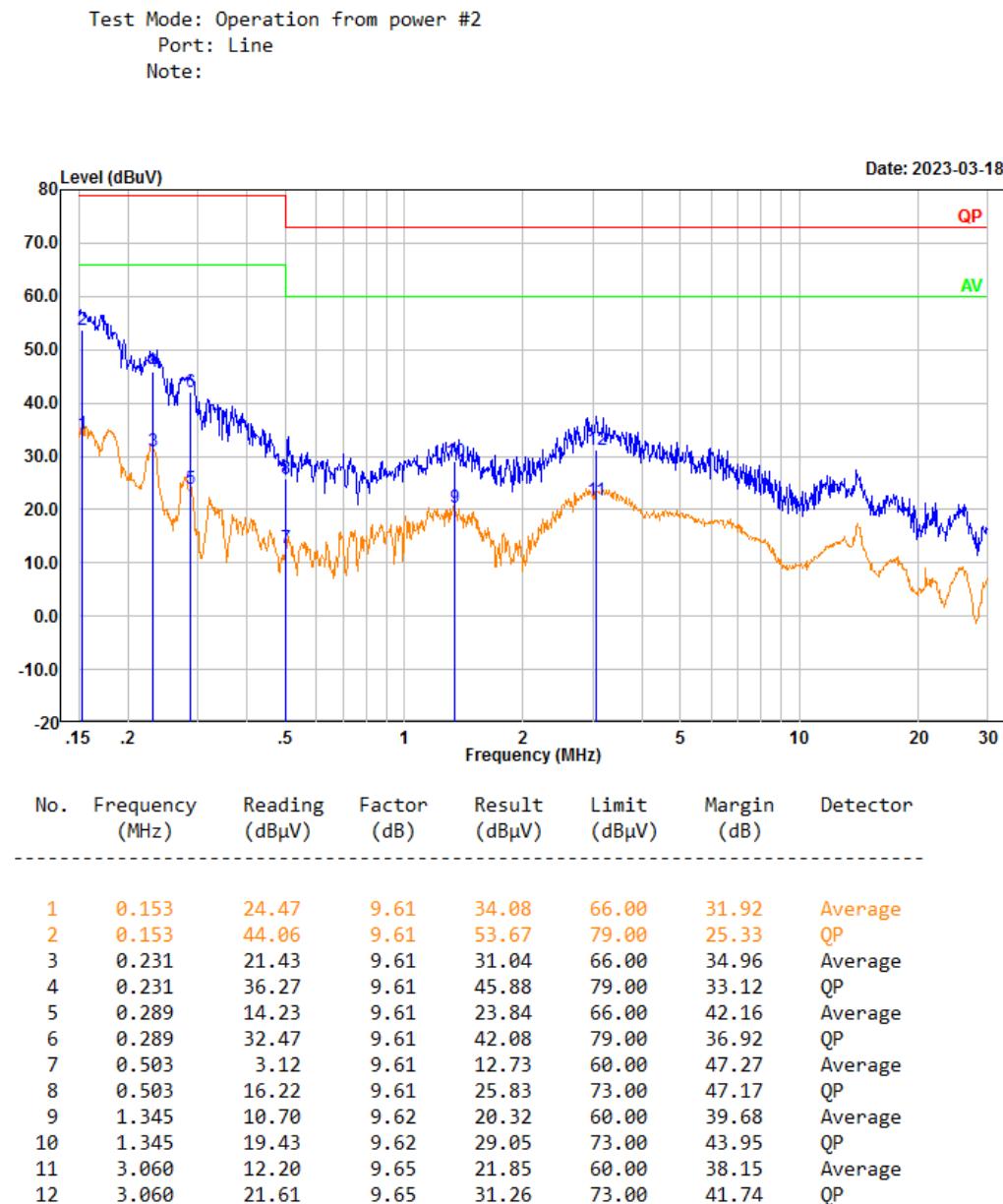


Test Mode: Operation from power #1  
Port: neutral  
Note:

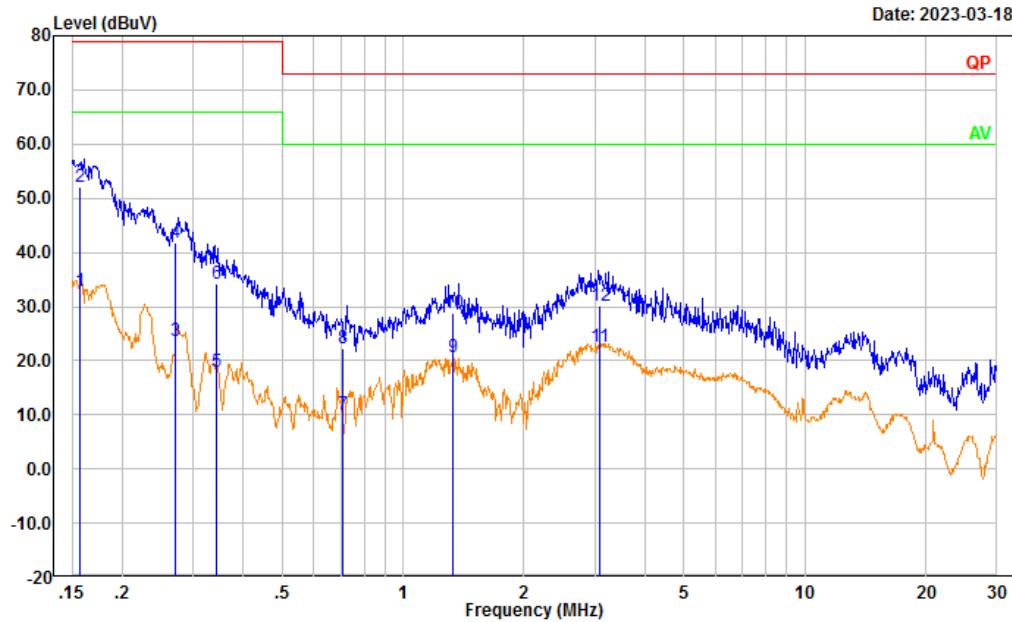


No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB)	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Detector
<hr/>							
1	0.153	27.40	9.61	37.01	66.00	28.99	Average
2	0.153	43.13	9.61	52.74	79.00	26.26	QP
3	0.209	18.18	9.61	27.79	66.00	38.21	Average
4	0.209	33.55	9.61	43.16	79.00	35.84	QP
5	0.406	20.89	9.61	30.50	66.00	35.50	Average
6	0.406	30.51	9.61	40.12	79.00	38.88	QP
7	0.446	16.84	9.61	26.45	66.00	39.55	Average
8	0.446	29.23	9.61	38.84	79.00	40.16	QP
9	0.942	11.78	9.62	21.40	60.00	38.60	Average
10	0.942	25.61	9.62	35.23	73.00	37.77	QP
11	3.059	17.66	9.65	27.31	60.00	32.69	Average
12	3.059	29.06	9.65	38.71	73.00	34.29	QP

M2:

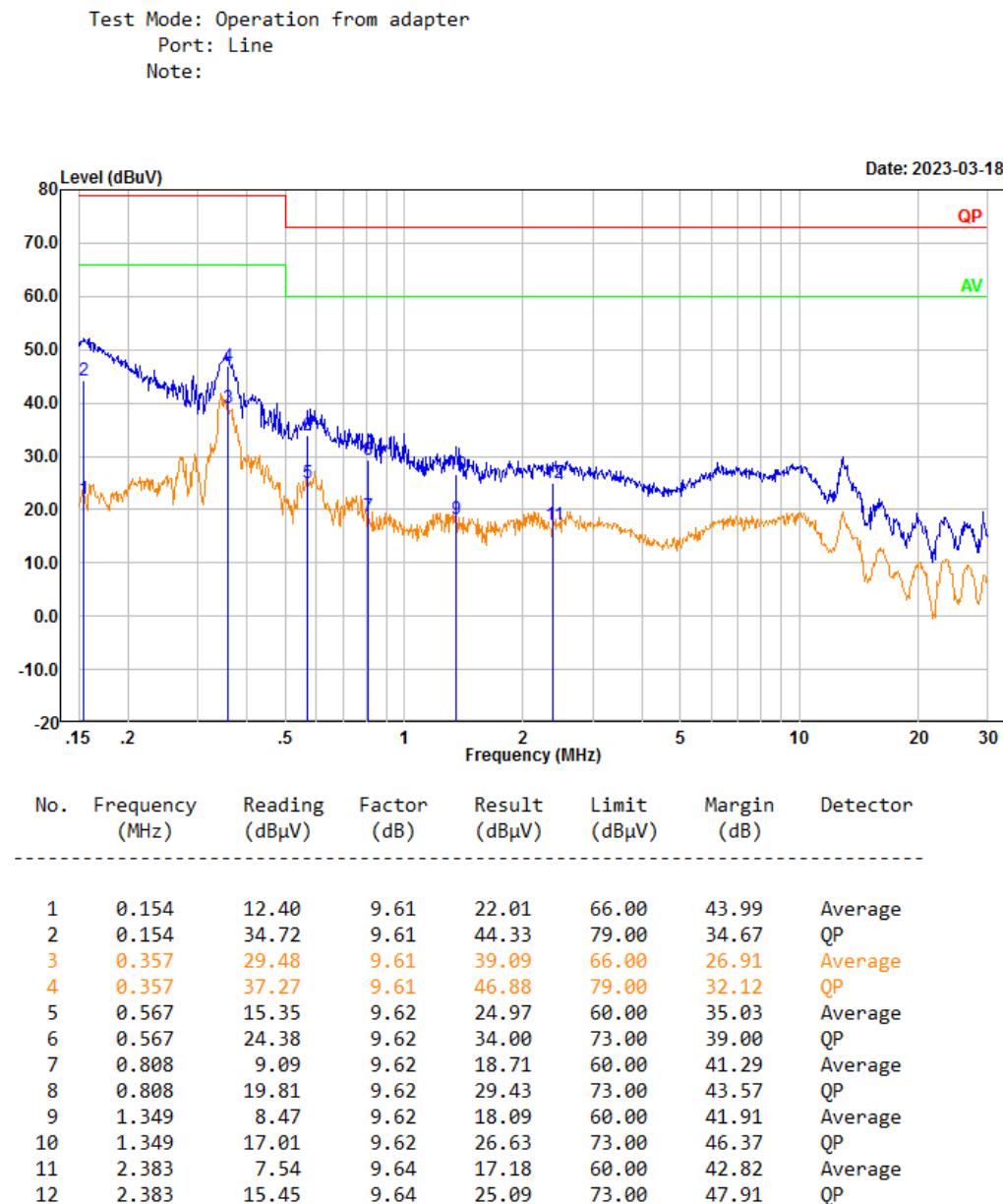


Test Mode: Operation from power #2  
Port: neutral  
Note:

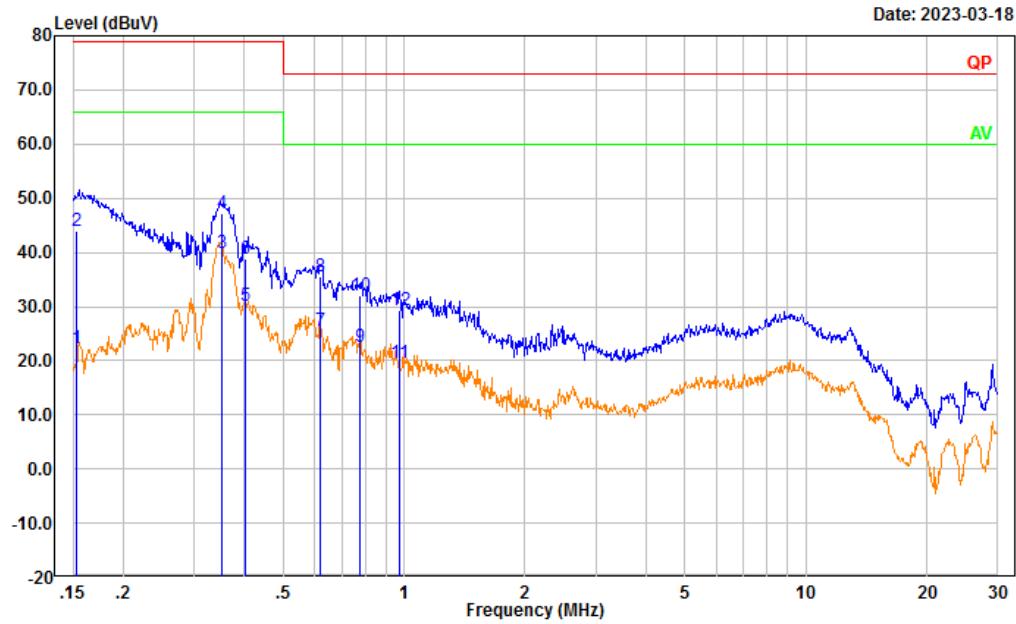


No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB)	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Detector
<hr/>							
1	0.157	23.30	9.61	32.91	66.00	33.09	Average
2	0.157	42.54	9.61	52.15	79.00	26.85	QP
3	0.272	14.02	9.61	23.63	66.00	42.37	Average
4	0.272	32.07	9.61	41.68	79.00	37.32	QP
5	0.344	8.30	9.61	17.91	66.00	48.09	Average
6	0.344	24.51	9.61	34.12	79.00	44.88	QP
7	0.706	0.39	9.62	10.01	60.00	49.99	Average
8	0.706	12.60	9.62	22.22	73.00	50.78	QP
9	1.332	11.00	9.62	20.62	60.00	39.38	Average
10	1.332	19.25	9.62	28.87	73.00	44.13	QP
11	3.082	12.96	9.65	22.61	60.00	37.39	Average
12	3.082	20.49	9.65	30.14	73.00	42.86	QP

M3:



Test Mode: Operation from adapter  
Port: neutral  
Note:



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB)	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Detector
<hr/>							
1	0.153	12.67	9.61	22.28	66.00	43.72	Average
2	0.153	34.46	9.61	44.07	79.00	34.93	QP
3	0.353	30.35	9.61	39.96	66.00	26.04	Average
4	0.353	37.67	9.61	47.28	79.00	31.72	QP
5	0.401	20.52	9.61	30.13	66.00	35.87	Average
6	0.401	29.13	9.61	38.74	79.00	40.26	QP
7	0.620	15.93	9.62	25.55	60.00	34.45	Average
8	0.620	25.95	9.62	35.57	73.00	37.43	QP
9	0.777	12.91	9.62	22.53	60.00	37.47	Average
10	0.777	22.41	9.62	32.03	73.00	40.97	QP
11	0.975	9.98	9.62	19.60	60.00	40.40	Average
12	0.975	19.80	9.62	29.42	73.00	43.58	QP

## 4.2 Radiation Spurious Emissions

Serial Number:	22YR_1	Test Date:	2023/3/17~2023/3/22
Test Site:	966-1, 966-2	Test Mode:	M1~M3
Tester:	Carl Xue, coco Tian	Test Result:	Pass

Environmental Conditions:					
Temperature: (°C)	22.8~25.8	Relative Humidity: (%)	46~48	ATM Pressure: (kPa)	100.7~101.1

### Test Equipment List and Details:

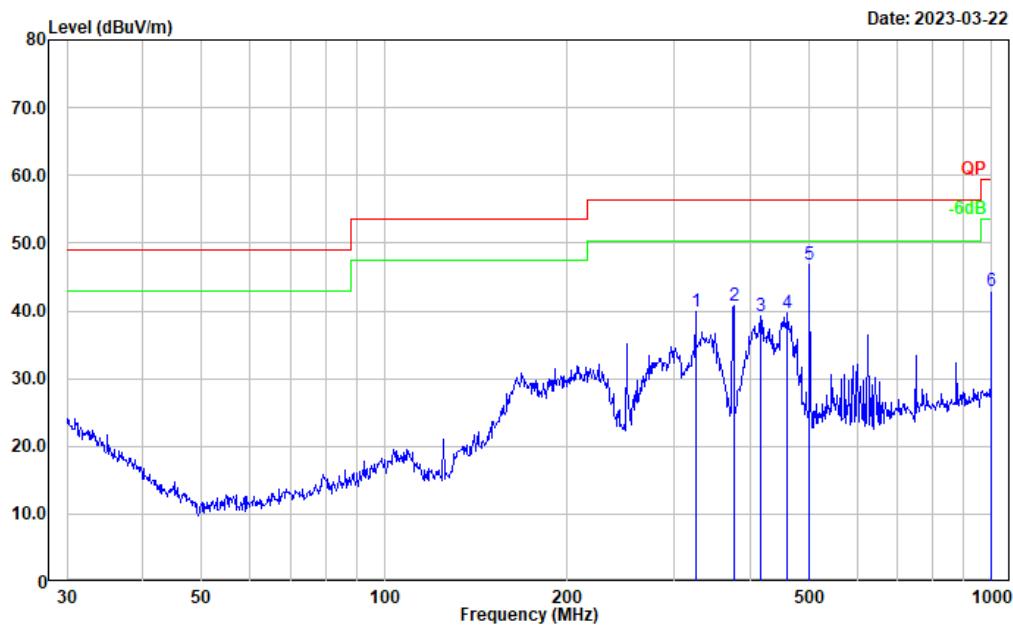
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
R&S	EMI Test Receiver	ESR3	102724	2022/07/15	2023/07/14
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2022/07/17	2023/07/16
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2022/07/17	2023/07/16
Sonoma	Amplifier	310N	186165	2022/07/17	2023/07/16
Audix	Test Software	E3	201021 (V9)	N/A	N/A
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020/10/13	2023/10/12
R&S	Spectrum Analyzer	FSV40	101591	2022/07/15	2023/07/14
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2022/08/07	2023/08/06
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2022/08/07	2023/08/06
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2022/11/09	2023/11/08

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

1) 30MHz-1GHz:

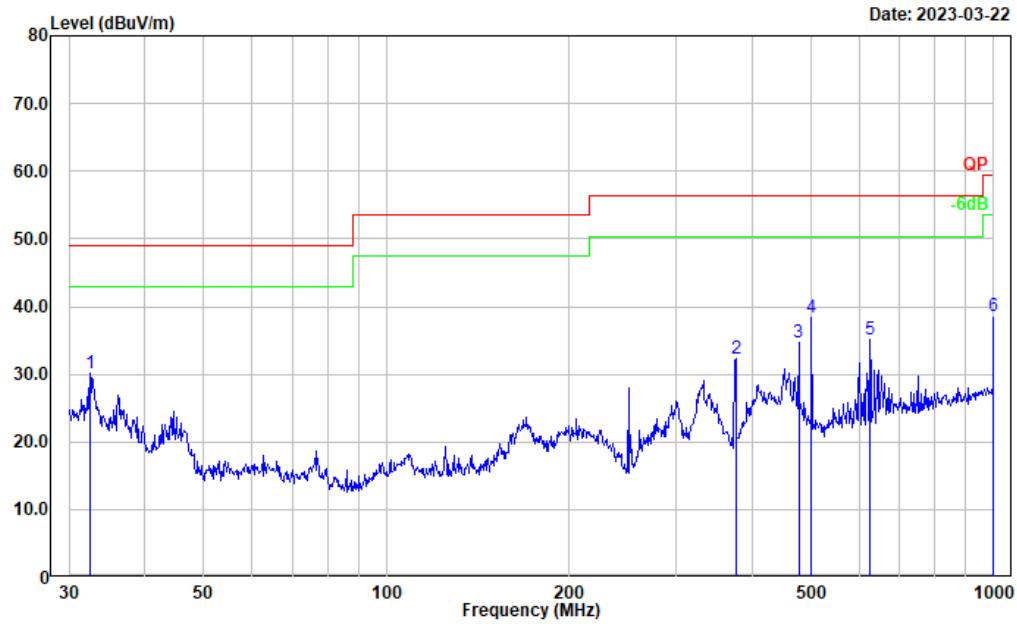
**M1:**

Test Mode: Operation from power #1  
Polarization: horizontal  
Note:



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	325.596	50.23	-10.36	39.87	56.40	16.53	Peak
2	375.939	49.95	-9.29	40.66	56.40	15.74	Peak
3	416.179	47.29	-8.10	39.19	56.40	17.21	Peak
4	460.727	46.23	-6.66	39.57	56.40	16.83	Peak
5	501.179	52.85	-5.99	46.86	56.40	9.54	Peak
6	1000.000	41.99	1.03	43.02	59.50	16.48	Peak

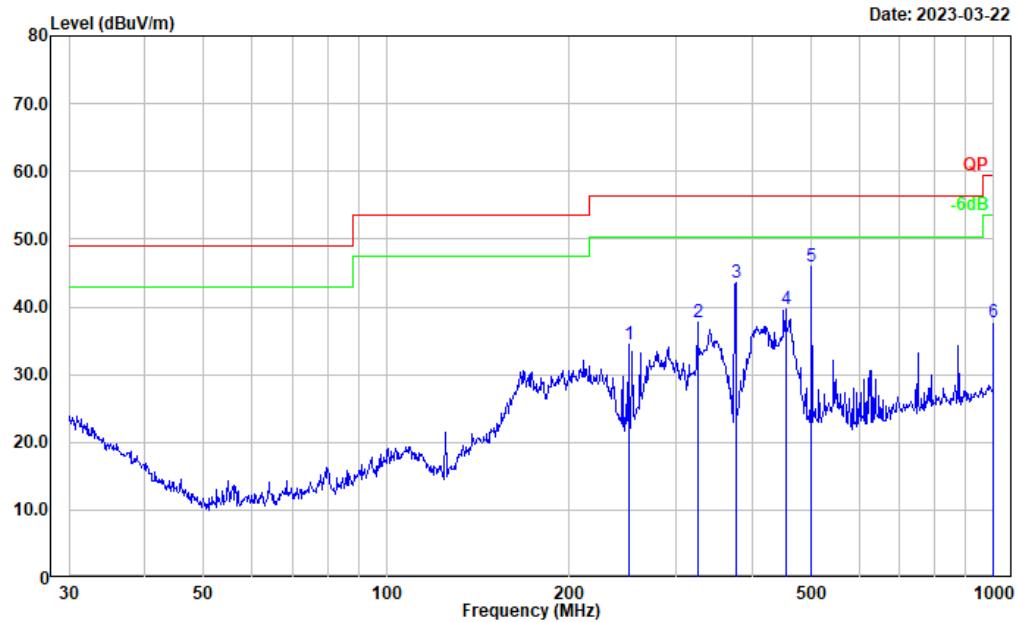
Test Mode: Operation from power #1  
Polarization: vertical  
Note:



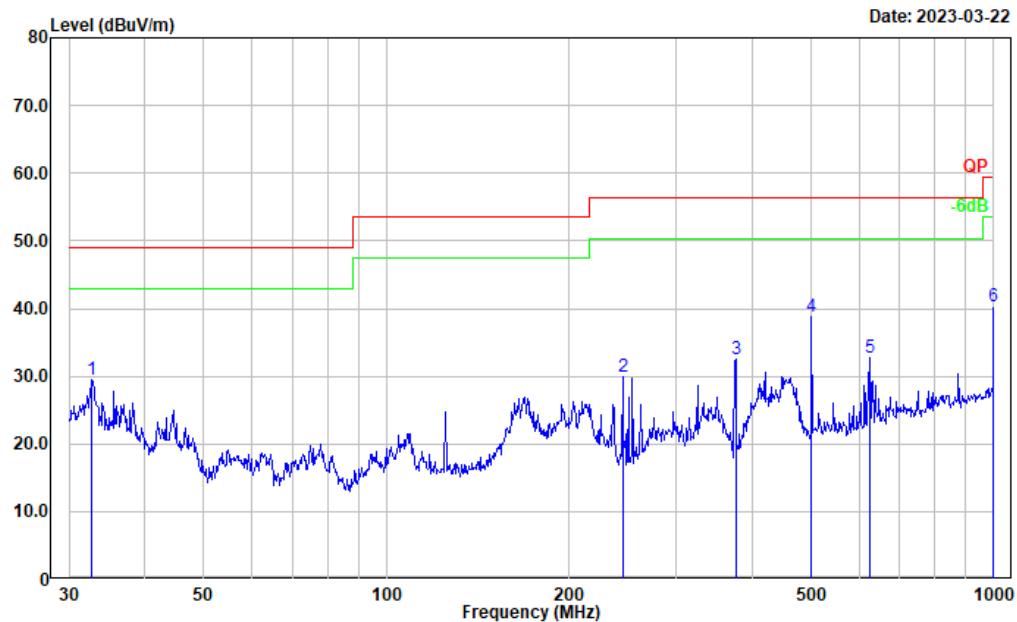
No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
<hr/>							
1	32.520	35.73	-5.54	30.19	49.00	18.81	Peak
2	375.939	41.52	-9.29	32.23	56.40	24.17	Peak
3	477.169	41.01	-6.27	34.74	56.40	21.66	Peak
4	501.179	44.32	-5.99	38.33	56.40	18.07	Peak
5	625.078	39.76	-4.60	35.16	56.40	21.24	Peak
6	1000.000	37.60	1.03	38.63	59.50	20.87	Peak

M2:

Test Mode: Operation from power #2  
Polarization: horizontal  
Note:



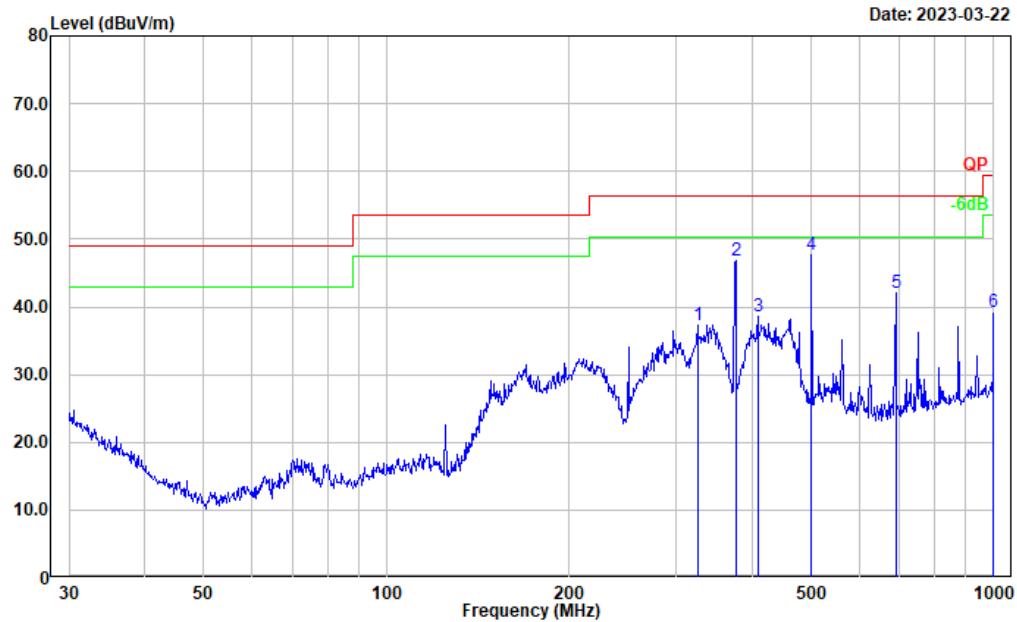
Test Mode: Operation from power #2  
Polarization: vertical  
Note:



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	32.749	35.19	-5.71	29.48	49.00	19.52	Peak
2	245.090	42.98	-12.97	30.01	56.40	26.39	Peak
3	375.939	41.89	-9.29	32.60	56.40	23.80	Peak
4	501.179	44.83	-5.99	38.84	56.40	17.56	Peak
5	625.078	37.31	-4.60	32.71	56.40	23.69	Peak
6	1000.000	39.26	1.03	40.29	59.50	19.21	Peak

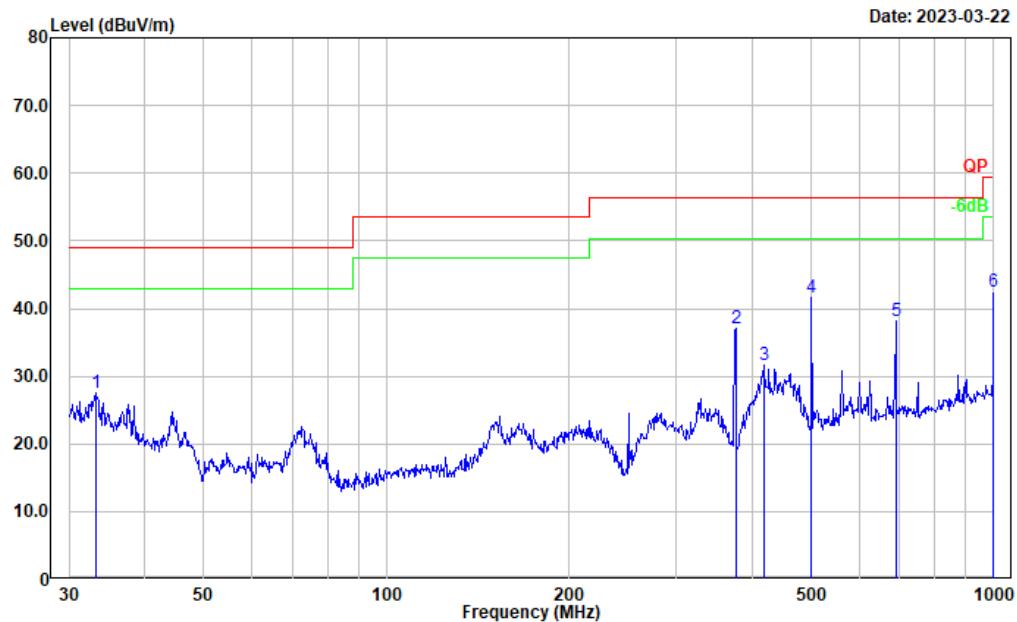
M3:

Test Mode: Operation from adapter  
Polarization: horizontal  
Note:



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	325.596	47.74	-10.36	37.38	56.40	19.02	Peak
2	375.939	56.06	-9.29	46.77	56.40	9.63	Peak
3	408.946	47.05	-8.42	38.63	56.40	17.77	Peak
4	501.179	53.76	-5.99	47.77	56.40	8.63	Peak
5	689.565	45.60	-3.50	42.10	56.40	14.30	Peak
6	1000.000	38.19	1.03	39.22	59.50	20.28	Peak

Test Mode: Operation from adapter  
Polarization: vertical  
Note:

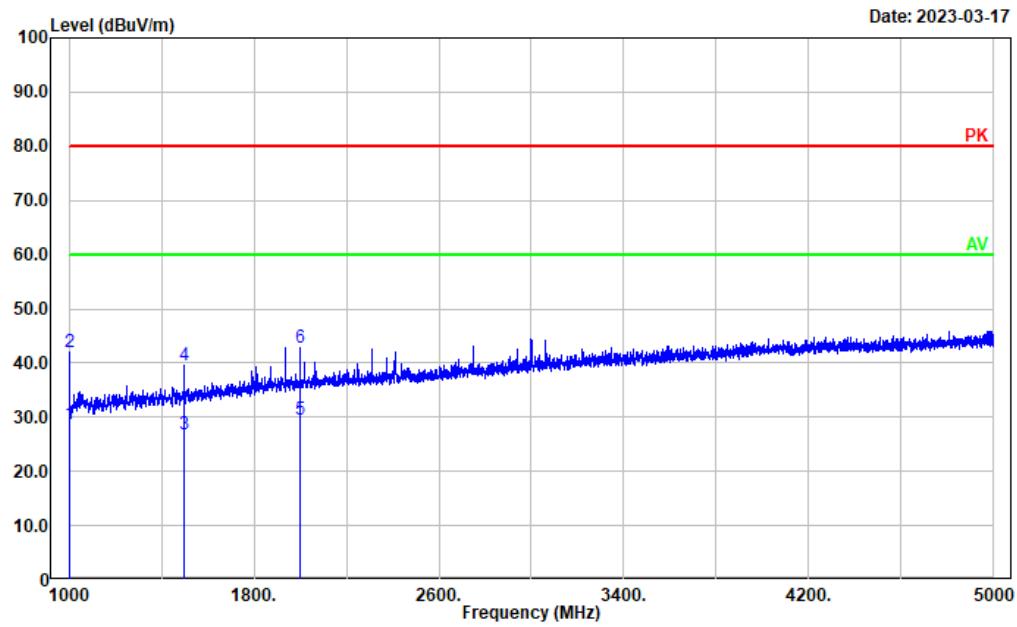


No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	33.211	33.56	-6.07	27.49	49.00	21.51	Peak
2	375.939	46.47	-9.29	37.18	56.40	19.22	Peak
3	417.641	39.61	-8.02	31.59	56.40	24.81	Peak
4	501.179	47.58	-5.99	41.59	56.40	14.81	Peak
5	689.565	41.68	-3.50	38.18	56.40	18.22	Peak
6	1000.000	41.50	1.03	42.53	59.50	16.97	Peak

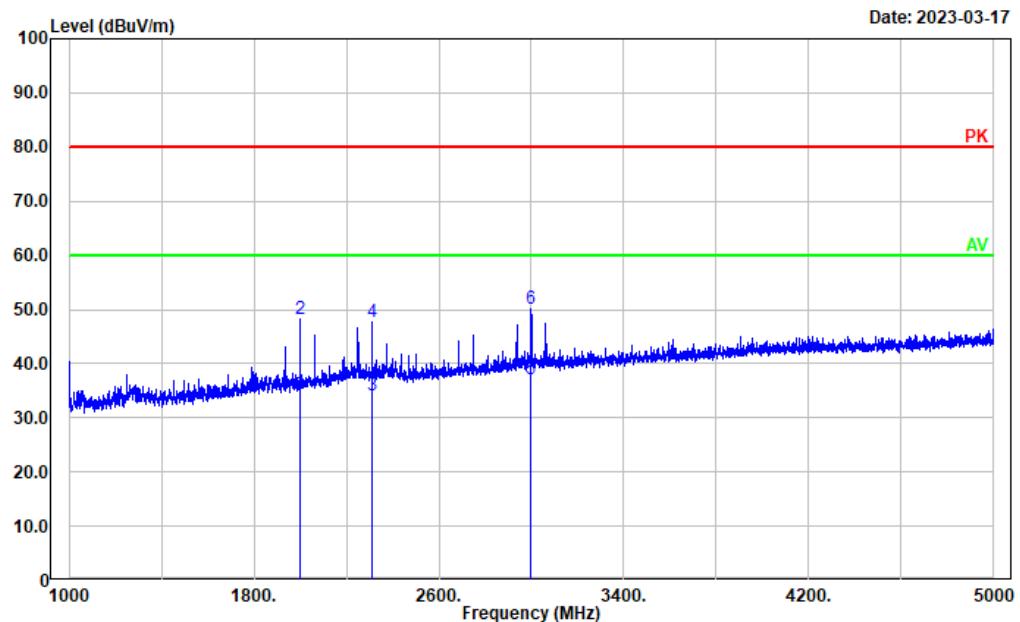
## 2) 1GHz-5GHz:

M1:

Test Mode: M1 Operation from power #1  
Polarization: horizontal  
Note:



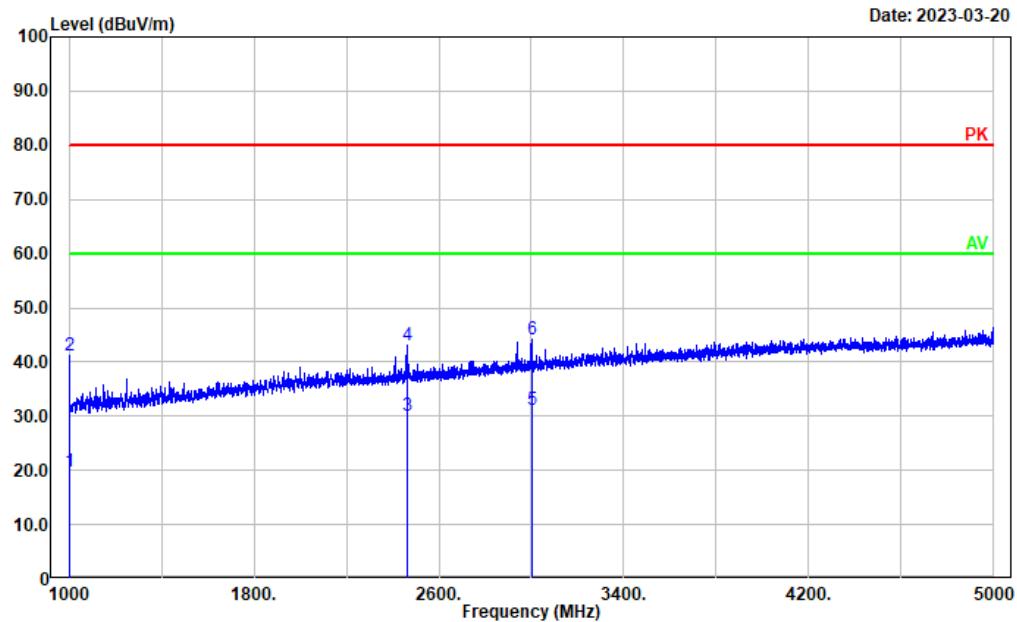
Test Mode: M1 Operation from power #1  
Polarization: vertical  
Note:



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	2000.200	32.47	2.32	34.79	60.00	25.21	Average
2	2000.200	45.85	2.32	48.17	80.00	31.83	Peak
3	2312.262	31.11	3.17	34.28	60.00	25.72	Average
4	2312.262	44.40	3.17	47.57	80.00	32.43	Peak
5	2999.600	31.02	6.10	37.12	60.00	22.88	Average
6	2999.600	43.98	6.10	50.08	80.00	29.92	Peak

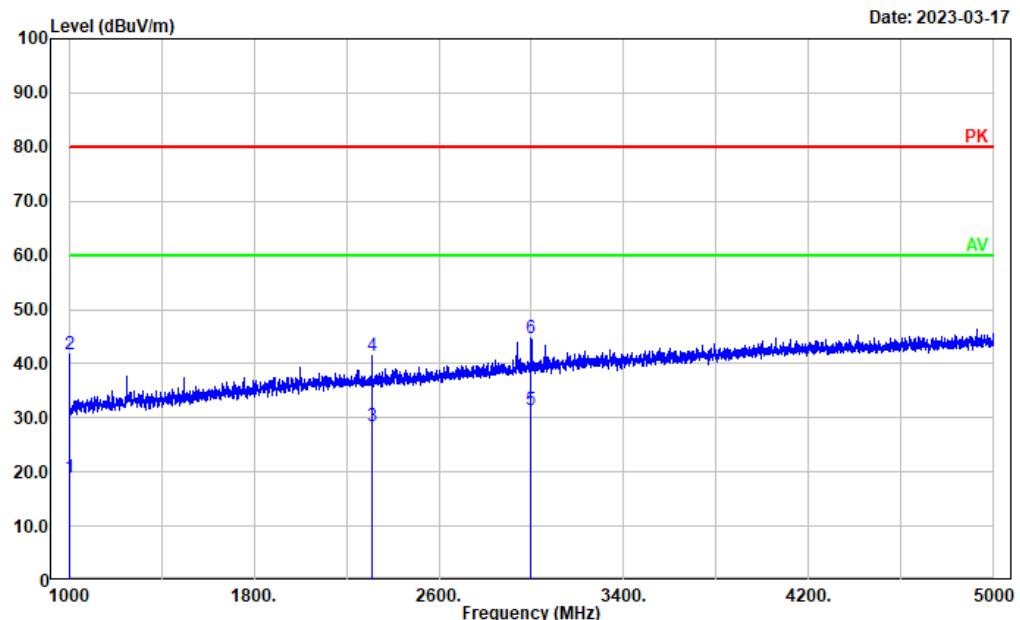
M2:

Test Mode: M2 Operation from power #2  
Polarization: horizontal  
Note:



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	1000.000	22.54	-2.72	19.82	60.00	40.18	Average
2	1000.000	44.04	-2.72	41.32	80.00	38.68	Peak
3	2464.293	26.39	3.63	30.02	60.00	29.98	Average
4	2464.293	39.59	3.63	43.22	80.00	36.78	Peak
5	3000.400	25.02	6.10	31.12	60.00	28.88	Average
6	3000.400	37.99	6.10	44.09	80.00	35.91	Peak

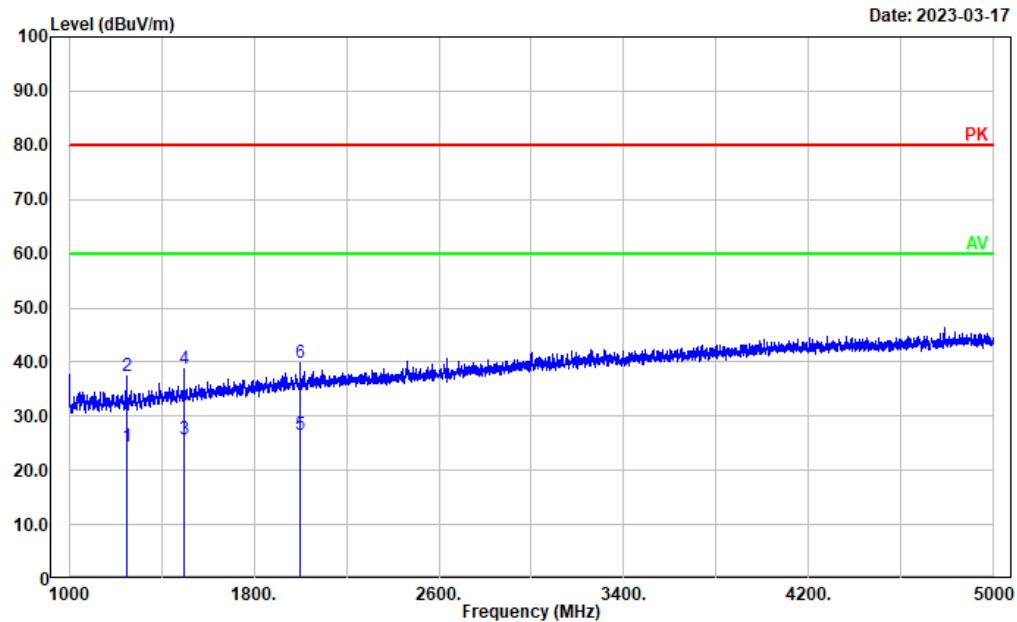
Test Mode: M2 Operation from power #2  
Polarization: vertical  
Note:



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	1000.000	21.67	-2.72	18.95	60.00	41.05	Average
2	1000.000	44.43	-2.72	41.71	80.00	38.29	Peak
3	2312.262	25.37	3.17	28.54	60.00	31.46	Average
4	2312.262	38.42	3.17	41.59	80.00	38.41	Peak
5	2999.600	25.34	6.10	31.44	60.00	28.56	Average
6	2999.600	38.53	6.10	44.63	80.00	35.37	Peak

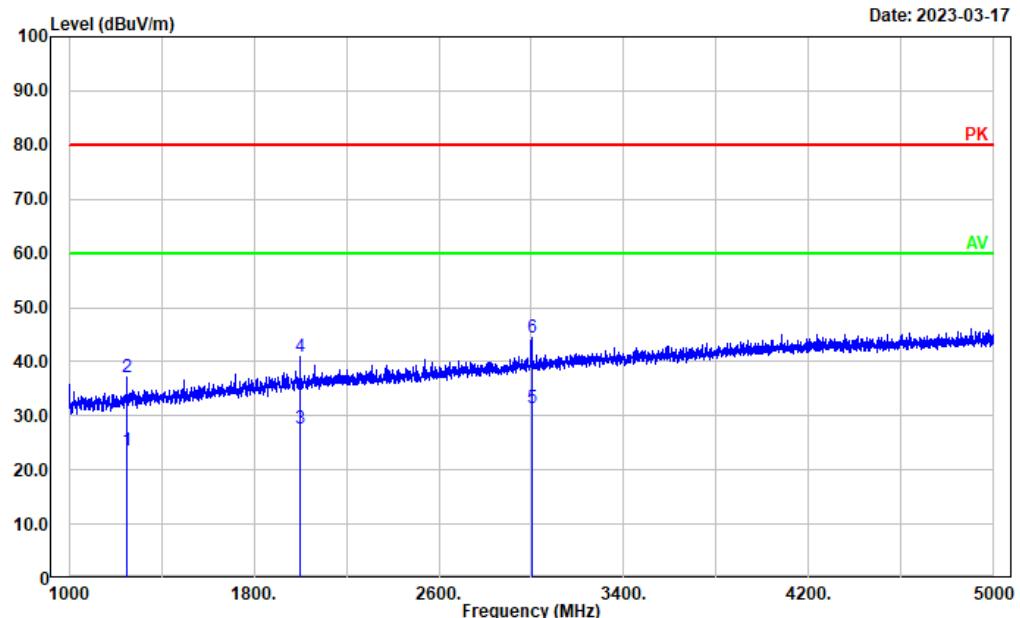
M3:

Test Mode: M3 Operation from adapter  
Polarization: horizontal  
Note:



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	1249.650	26.00	-1.69	24.31	60.00	35.69	Average
2	1249.650	38.97	-1.69	37.28	80.00	42.72	Peak
3	1500.100	26.34	-0.47	25.87	60.00	34.13	Average
4	1500.100	39.29	-0.47	38.82	80.00	41.18	Peak
5	1999.400	24.37	2.32	26.69	60.00	33.31	Average
6	1999.400	37.58	2.32	39.90	80.00	40.10	Peak

Test Mode: M3 Operation from adapter  
Polarization: vertical  
Note:



No.	Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector
1	1249.650	25.33	-1.69	23.64	60.00	36.36	Average
2	1249.650	38.70	-1.69	37.01	80.00	42.99	Peak
3	1999.400	25.34	2.32	27.66	60.00	32.34	Average
4	1999.400	38.47	2.32	40.79	80.00	39.21	Peak
5	3000.400	25.37	6.10	31.47	60.00	28.53	Average
6	3000.400	38.25	6.10	44.35	80.00	35.65	Peak

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