



TEST REPORT

Applicant Name: PO FUNG ELECTRONIC (HK) INTERNATIONAL GROUP COMPANY LIMITED
Address: Room 1508, 15/F, Office Tower II, Grand Plaza, 625 Nathan Road, Kowloon, Hong Kong
Report Number: XMTN1220221-05216E-EM
FCC ID: 2AJGM-MP1

Test Standard (s)

FCC PART 15B

Sample Description

Product Type: TWO WAY RADIO
Model No.: MP1
Multiple Model: MP-1S; MP-1X; MP-1D; GA-2S; FR-S1; FR-88TP; TP-777; SED-8; PX-999X
Trade Mark: BAOFENG, POFUNG
Date Received: 2022-02-21
Date of Test: 2022-03-05 to 2022-03-10
Report Date: 2022-03-24

Test Result:

Pass*

* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Black Ding

Black Ding
EMC Engineer

Approved By:

Candy Li

Candy Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "*".

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	TWO WAY RADIO
Tested Model	MP1
Multiple Model	MP-1S; MP-1X; MP-1D; GA-2S; FR-S1; FR-88TP; TP-777; SED-8; PX-999X
Model difference	Please refer to DOS letter
Trade Mark	BAOFENG, POFUNG
Highest Operation Frequency	462.725MHz
Voltage Range	DC 3.7V from battery or DC 5V from USB port or DC 5V from charging box
Sample number	XMTN1220221-05216E-EM-S1 (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter Information	Model: DSA-5PF07-05 FUS 050100 Input: 100-240V~, 50/60Hz, Max 0.2A Output: DC 5V, 1A

Objective

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

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

Test Methodology

All measurements contained in this report were conducted with 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.

All radiated and conducted emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz - 26.5GHz	5.06dB
Temperature		1℃
Humidity		6%
Supply voltages		0.4%

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 Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

Test mode 1: Charging for Charging base + Receiving (462.6375MHz)

Test mode 2: Charging for USB port + Receiving (462.6375MHz)

EUT Exercise Software

No exercise software.

Special Accessories

No special accessory was used.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Unknown	Earphone	Unknown	Unknown

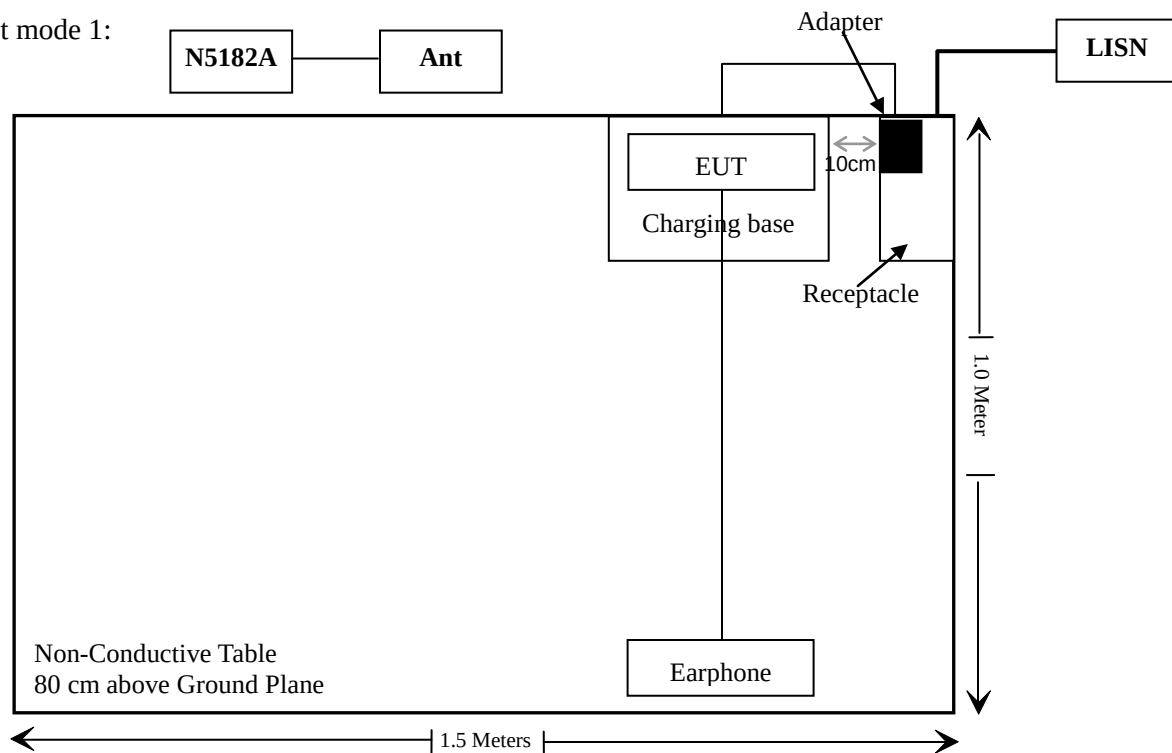
External I/O Cable

Cable Description	Length (m)	From Port	To Port
Un-shielding Detachable USB Cable	1.0	EUT	Adapter
Un-shielding Detachable DC Cable	1.0	Charging base	Adapter
Un-shielding Detachable Earphone Cable	1.0	EUT	Earphone

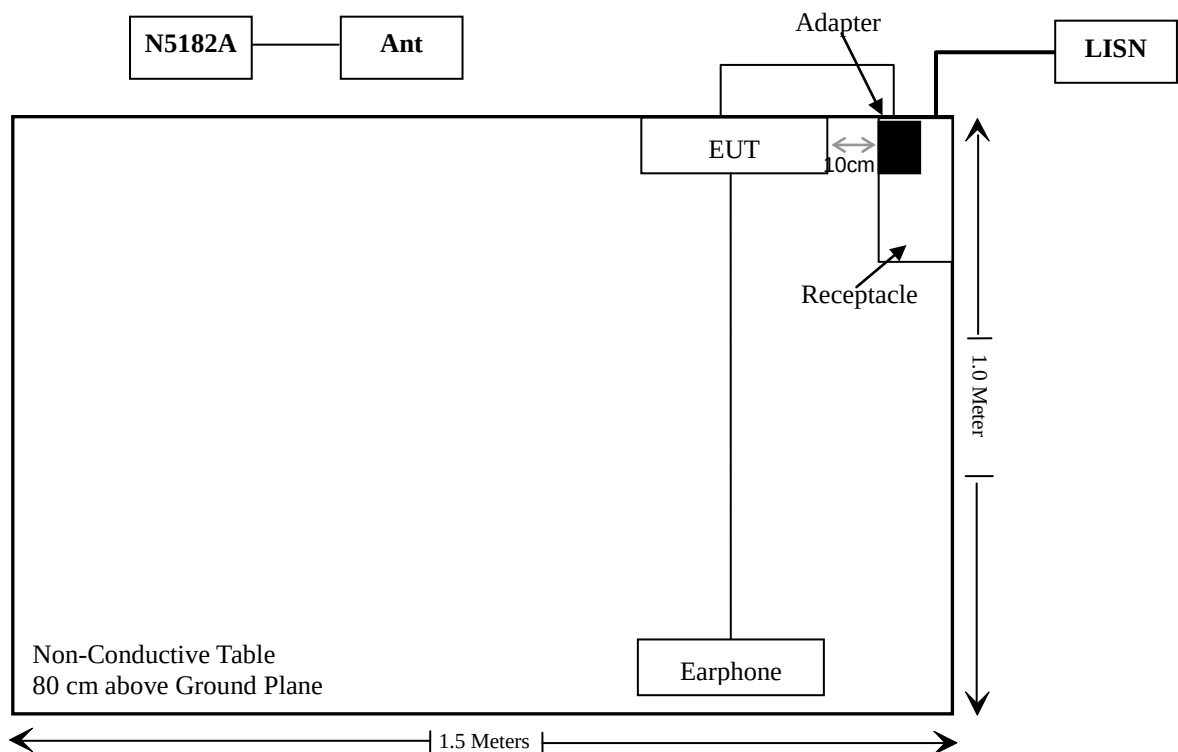
Block Diagram of Test Setup

For conducted emission:

Test mode 1:

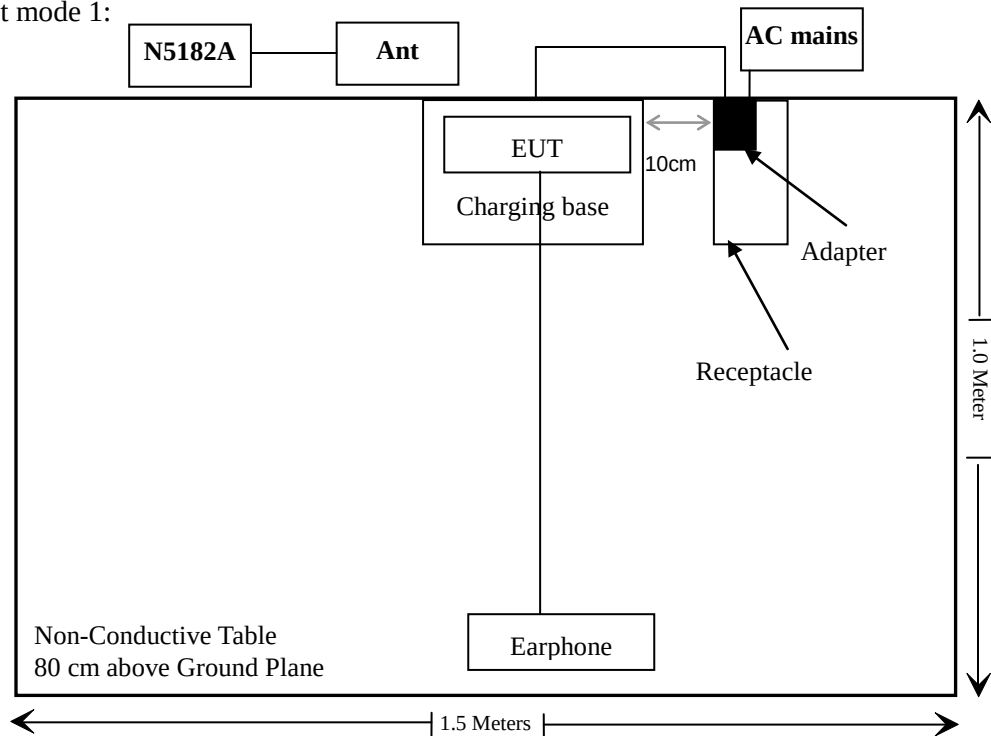


Test mode 2:

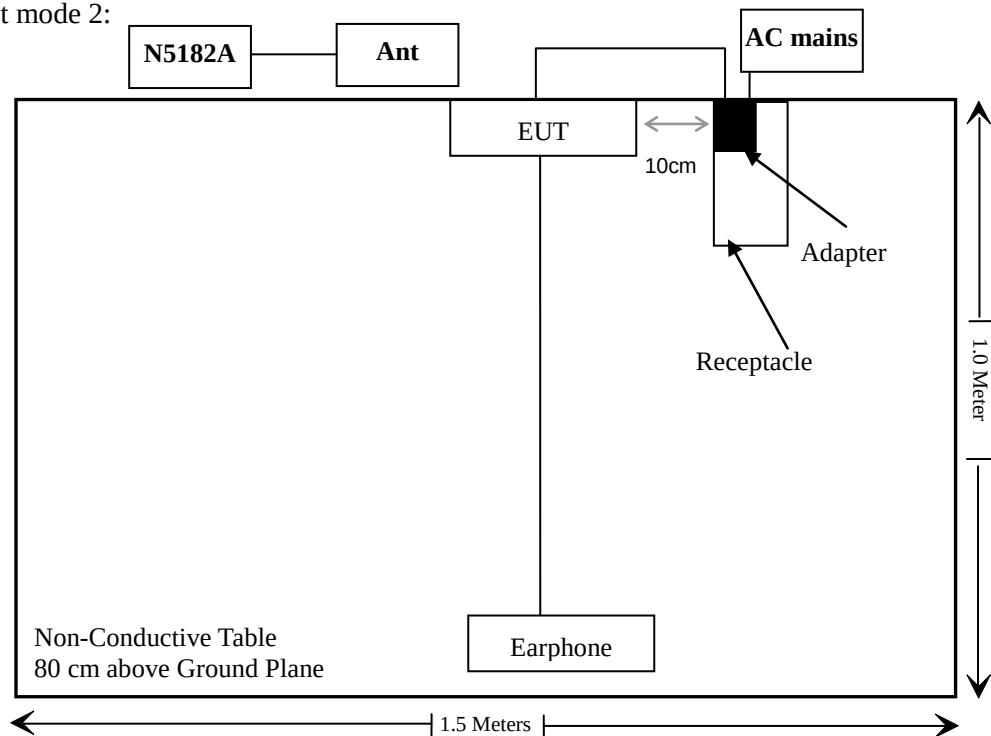


For radiated emission:

Test mode 1:



Test mode 2:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	Conducted Emissions	Compliant
§15.109	Radiated Emissions	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	100784	2021/12/13	2022/12/12
R & S	L.I.S.N.	ENV216	101314	2021/12/13	2022/12/12
Anritsu Corp	50Ω Coaxial Switch	MP59B	6200506474	2021/12/13	2022/12/12
Unknown	RF Coaxial Cable	No.17	N0350	2021/12/14	2022/12/13
Conducted Emission Test Software: e3 19821b(V9)					
Radiated Emissions Test					
Rohde & Schwarz	Test Receiver	ESR	102725	2021/12/13	2022/12/12
Rohde & Schwarz	Spectrum Analyzer	FSV40	101949	2021/12/13	2022/12/12
SONOMA INSTRUMENT	Amplifier	310 N	186131	2021/12/13	2022/12/12
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/11/09	2022/11/08
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Unknown	RF Coaxial Cable	No.10	N050	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.11	N1000	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.12	N040	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.13	N300	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.14	N800	2021/12/14	2022/12/13
AGILENT	Vector Signal Generator	N5182A	MY50143401	2021/12/13	2022/12/12
Radiated Emission Test Software: e3 19821b(V9)					

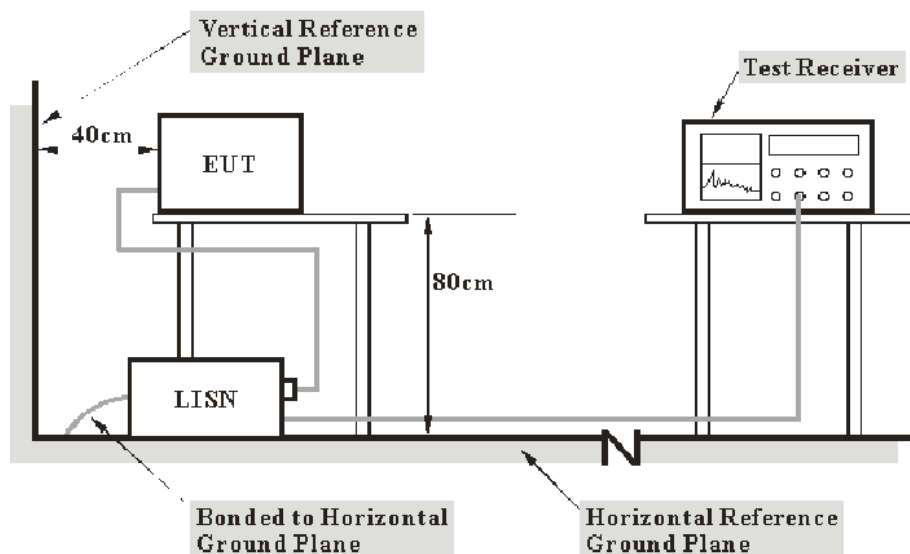
*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.107 – 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 Class B.

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.

Factor & Over Limit Calculation

The factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss}$$

The “**Over limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

$$\begin{aligned}\text{Over Limit} &= \text{Level} - \text{Limit} \\ \text{Level} &= \text{Read Level} + \text{Factor}\end{aligned}$$

Test Data

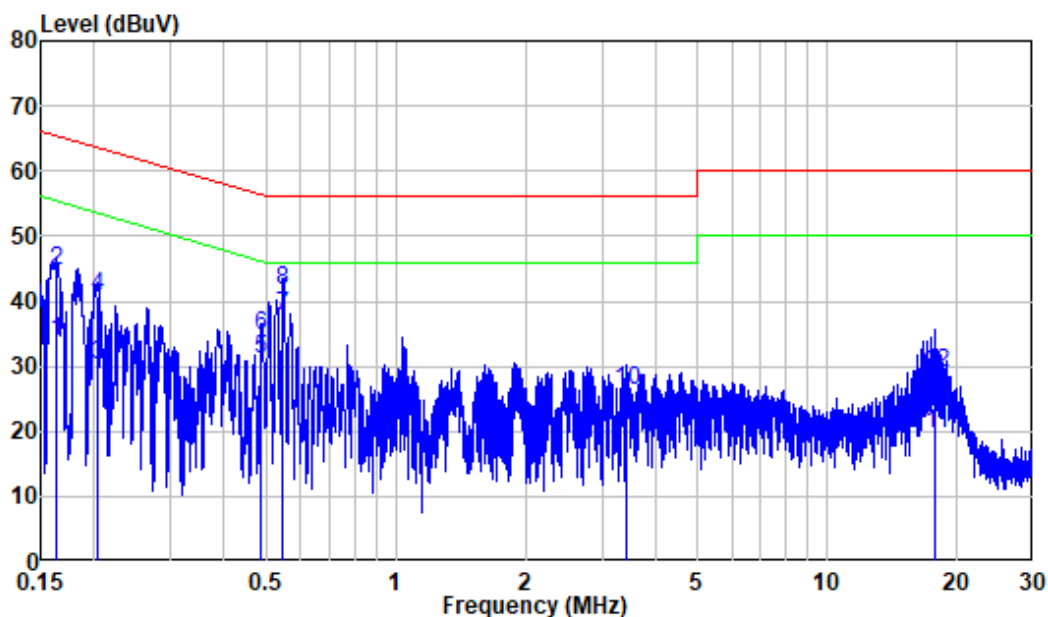
Environmental Conditions

Temperature:	23 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Caro Hu on 2022-03-10.

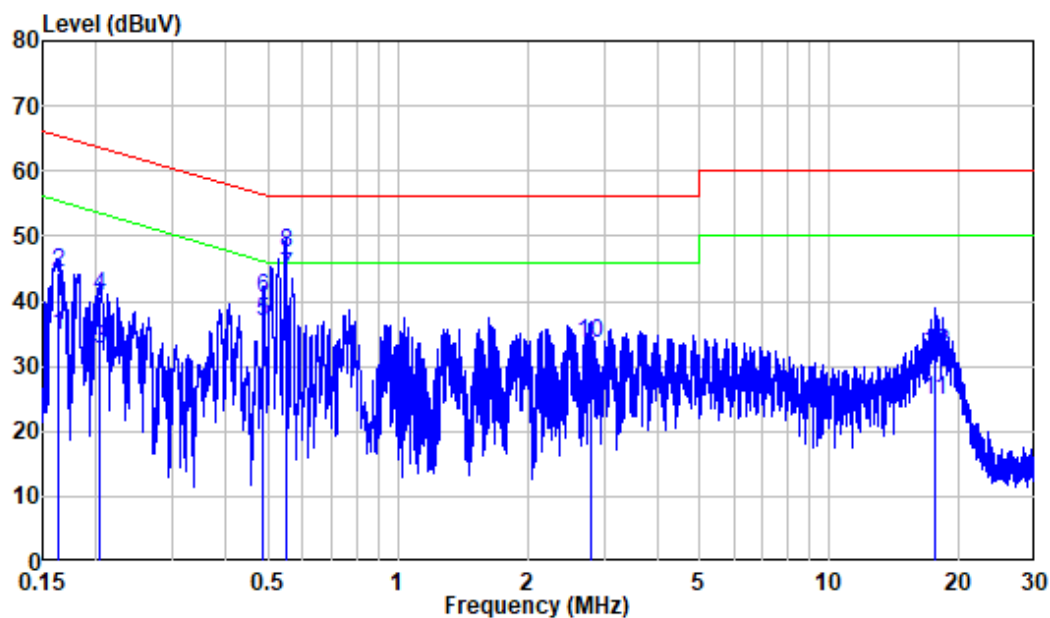
Test mode 1:

AC 120V/60Hz, Line:



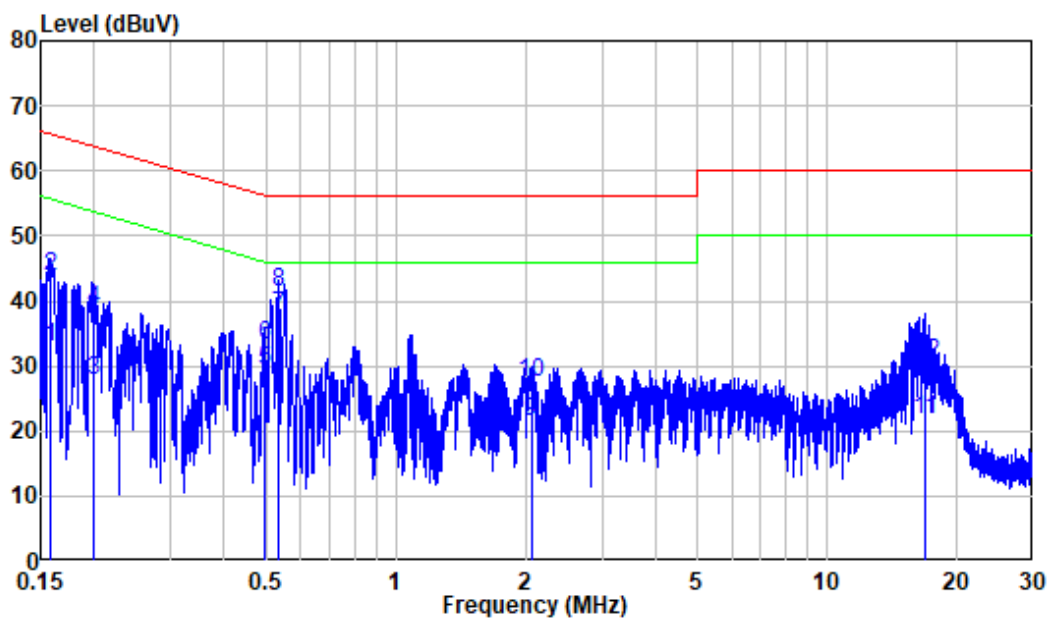
Site : Shielding Room
 Condition: Line
 Mode : Charging for charging base+receiving
 Model : MP1
 Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.163	9.80	24.02	33.82	55.32	-21.50	Average
2	0.163	9.80	35.01	44.81	65.32	-20.51	QP
3	0.204	9.80	20.31	30.11	53.44	-23.33	Average
4	0.204	9.80	30.98	40.78	63.44	-22.66	QP
5	0.488	9.80	21.21	31.01	46.20	-15.19	Average
6	0.488	9.80	24.97	34.77	56.20	-21.43	QP
7	0.548	9.81	27.78	37.59	46.00	-8.41	Average
8	0.548	9.81	31.89	41.70	56.00	-14.30	QP
9	3.415	9.83	11.12	20.95	46.00	-25.05	Average
10	3.415	9.83	16.54	26.37	56.00	-29.63	QP
11	17.790	9.98	9.71	19.69	50.00	-30.31	Average
12	17.790	9.98	18.85	28.83	60.00	-31.17	QP

AC 120V/60Hz, Neutral:

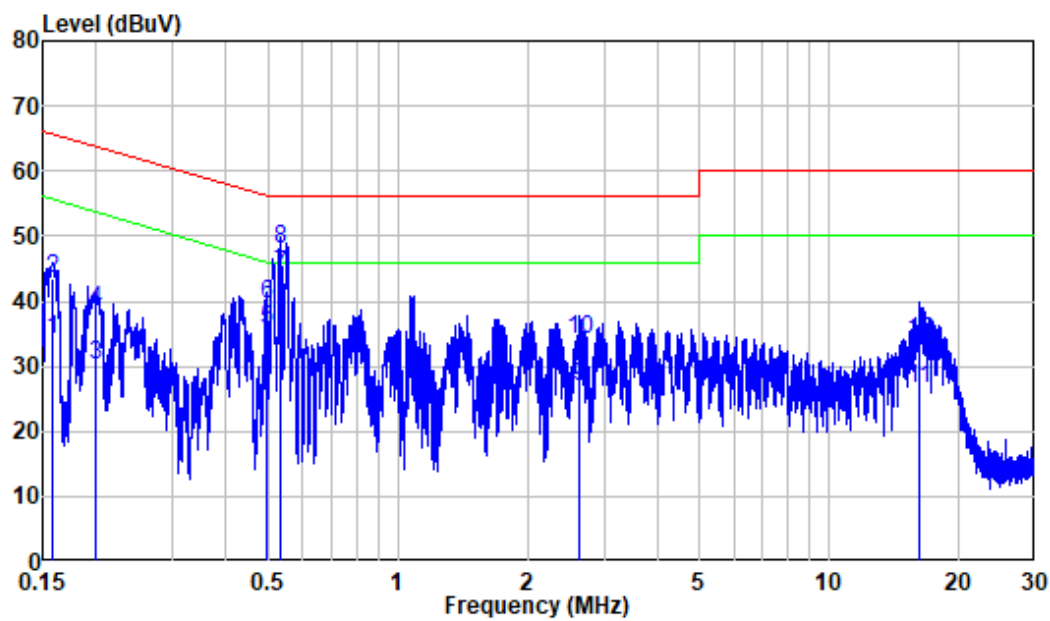
Site : Shielding Room
 Condition: Neutral
 Mode : Charging for charging base+receiving
 Model : MP1
 Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.163	9.80	25.03	34.83	55.33	-20.50	Average
2	0.163	9.80	34.72	44.52	65.33	-20.81	QP
3	0.203	9.80	22.81	32.61	53.48	-20.87	Average
4	0.203	9.80	30.89	40.69	63.48	-22.79	QP
5	0.488	9.80	27.02	36.82	46.21	-9.39	Average
6	0.488	9.80	30.61	40.41	56.21	-15.80	QP
7	0.549	9.81	33.87	43.68	46.00	-2.32	Average
8	0.549	9.81	37.72	47.53	56.00	-8.47	QP
9	2.787	9.83	18.66	28.49	46.00	-17.51	Average
10	2.787	9.83	23.63	33.46	56.00	-22.54	QP
11	17.545	10.08	14.81	24.89	50.00	-25.11	Average
12	17.545	10.08	22.04	32.12	60.00	-27.88	QP

Test mode 2:**AC 120V/60Hz, Line:**

Site : Shielding Room
 Condition: Line
 Mode : Charging+receiving
 Model : MP1
 Power : AC 120V 60Hz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.158	9.80	23.08	32.88	55.57	-22.69	Average
2	0.158	9.80	34.02	43.82	65.57	-21.75	QP
3	0.200	9.80	18.02	27.82	53.61	-25.79	Average
4	0.200	9.80	28.89	38.69	63.61	-24.92	QP
5	0.495	9.80	19.41	29.21	46.08	-16.87	Average
6	0.495	9.80	23.46	33.26	56.08	-22.82	QP
7	0.533	9.81	27.86	37.67	46.00	-8.33	Average
8	0.533	9.81	31.62	41.43	56.00	-14.57	QP
9	2.056	9.82	11.67	21.49	46.00	-24.51	Average
10	2.056	9.82	17.53	27.35	56.00	-28.65	QP
11	16.861	9.97	11.83	21.80	50.00	-28.20	Average
12	16.861	9.97	20.55	30.52	60.00	-29.48	QP

AC 120V/60Hz, Neutral:

Site : Shielding Room
 Condition: Neutral
 Mode : Charging+receiving
 Model : MP1
 Power : AC 120V 60Hz

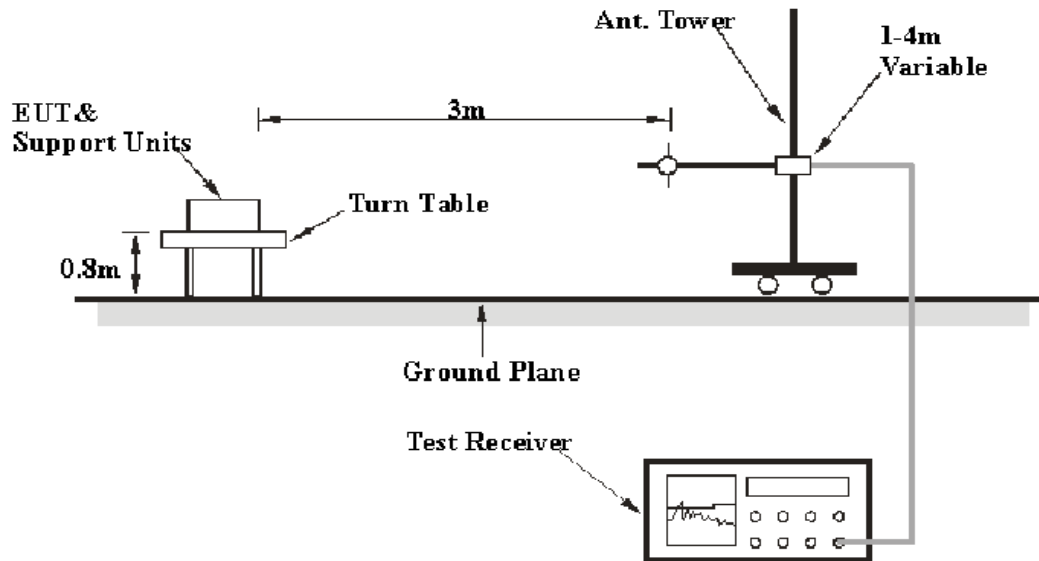
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.158	9.80	24.37	34.17	55.57	-21.40	Average
2	0.158	9.80	33.62	43.42	65.57	-22.15	QP
3	0.200	9.80	20.36	30.16	53.61	-23.45	Average
4	0.200	9.80	28.71	38.51	63.61	-25.10	QP
5	0.495	9.80	25.97	35.77	46.09	-10.32	Average
6	0.495	9.80	29.74	39.54	56.09	-16.55	QP
7	0.532	9.81	34.23	44.04	46.00	-1.96	Average
8	0.532	9.81	38.05	47.86	56.00	-8.14	QP
9	2.641	9.83	17.12	26.95	46.00	-19.05	Average
10	2.641	9.83	24.18	34.01	56.00	-21.99	QP
11	16.087	10.06	16.57	26.63	50.00	-23.37	Average
12	16.087	10.06	23.68	33.74	60.00	-26.26	QP

FCC §15.109 - RADIATED EMISSIONS**Applicable Standard**

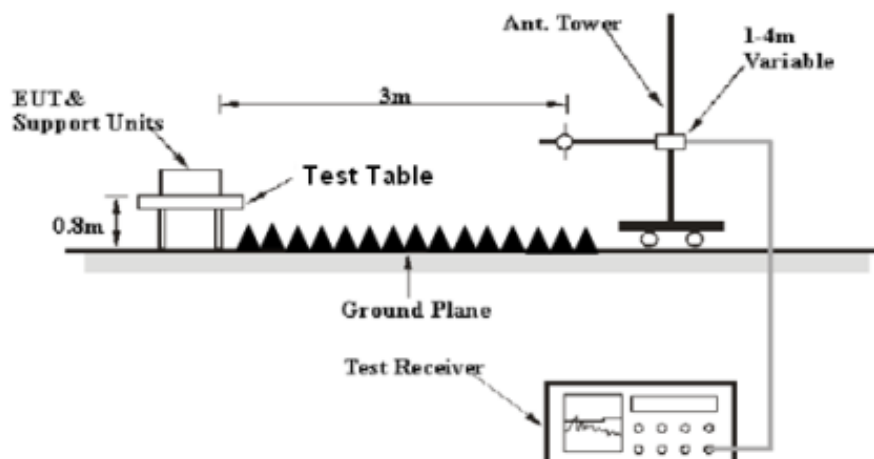
FCC §15.109

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B 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 spacing between the peripherals was 10 cm.

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	Detector
30MHz – 1000 MHz	120 kHz	300 kHz	120kHz	QP
Above 1 GHz	1MHz	3 MHz	/	Peak
	1MHz	3 MHz	1MHz	AVG

Test Procedure

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

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz, Peak and average detection mode above 1 GHz.

If the maximized peak measured value complies with the limit, then it is unnecessary to perform QP/Average measurement.

Factor & Over Limit Calculation

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

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

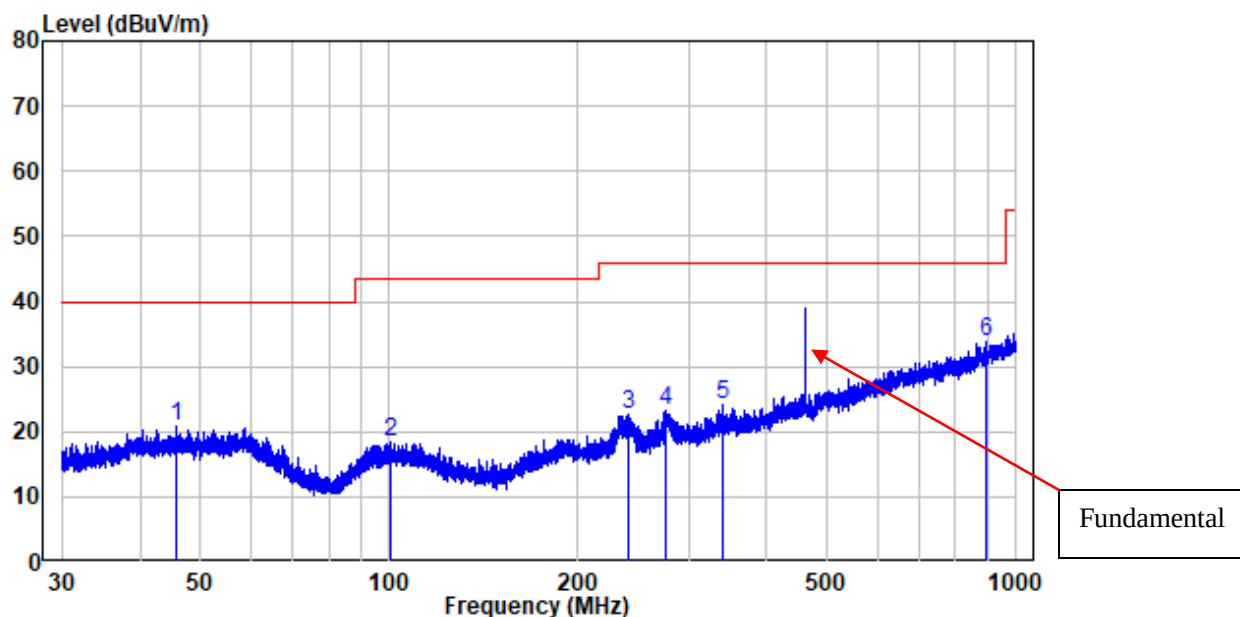
The “**Over Limit/Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

$$\begin{aligned}\text{Over Limit/Margin} &= \text{Level} / \text{Corrected Amplitude} - \text{Limit} \\ \text{Level} / \text{Corrected Amplitude} &= \text{Read Level} + \text{Factor}\end{aligned}$$

Test Data**Environmental Conditions**

Temperature:	22°C
Relative Humidity:	58 %
ATM Pressure:	101.1 kPa

The testing was performed by CHAO MO on 2022-03-05.

Test mode 1:**30MHz-1GHz:****Horizontal:**

Site : chamber

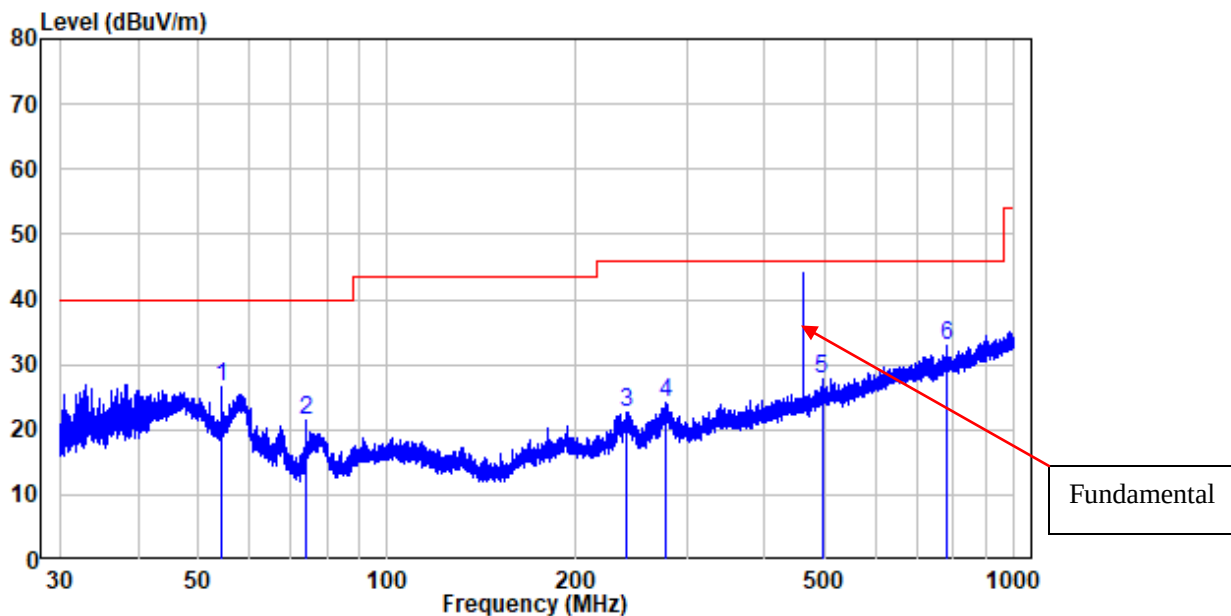
Condition: 3m HORIZONTAL

Job No. : XMTN1220221-05216E-EM

Mode : Charging for charging base+receiving

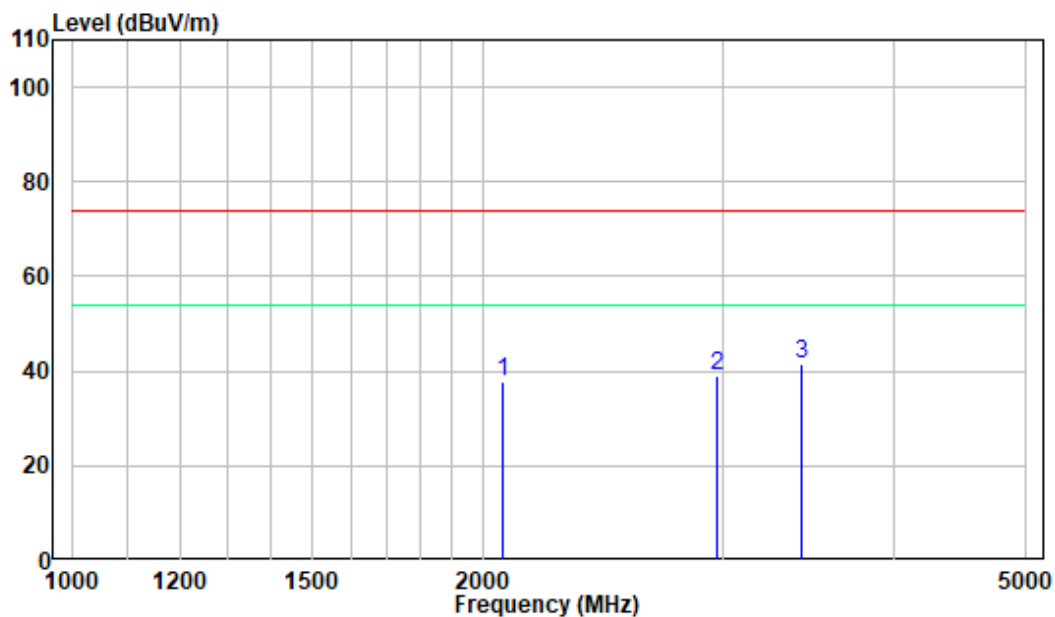
	Freq	Factor	Read Level	Level	Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	45.655	-9.97	30.92	20.95	40.00	-19.05	Peak
2	100.493	-11.74	30.26	18.52	43.50	-24.98	Peak
3	241.042	-10.84	33.38	22.54	46.00	-23.46	Peak
4	275.640	-9.86	33.16	23.30	46.00	-22.70	Peak
5	339.738	-7.44	31.70	24.26	46.00	-21.74	Peak
6	898.177	1.20	32.70	33.90	46.00	-12.10	Peak

Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : XMTN1220221-05216E-EM
Mode : Charging for charging base+receiving

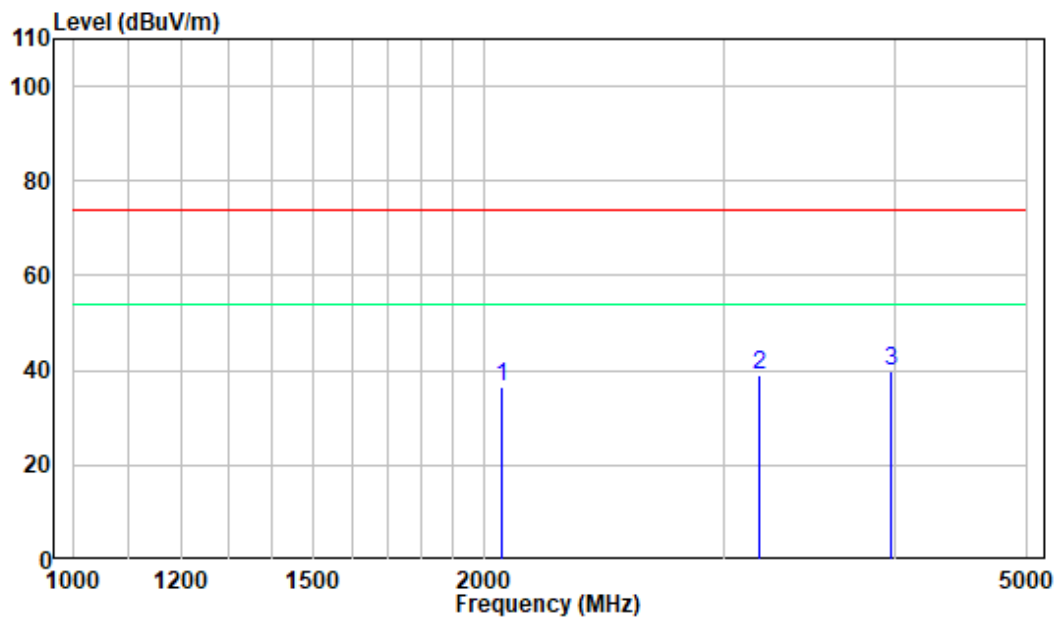
	Freq	Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	54.213	-10.33	37.02	26.69	40.00	-13.31	Peak
2	74.070	-16.07	37.59	21.52	40.00	-18.48	Peak
3	241.253	-10.82	33.48	22.66	46.00	-23.34	Peak
4	278.433	-9.68	33.86	24.18	46.00	-21.82	Peak
5	493.549	-4.53	32.41	27.88	46.00	-18.12	Peak
6	783.031	0.01	32.81	32.82	46.00	-13.18	Peak

Above 1 GHz:**Horizontal:**

Site : chamber
Condition: 3m HORIZONTAL
Job No. : XMTN1220221-05216E-EM
Mode : Charging for charging base+receiving

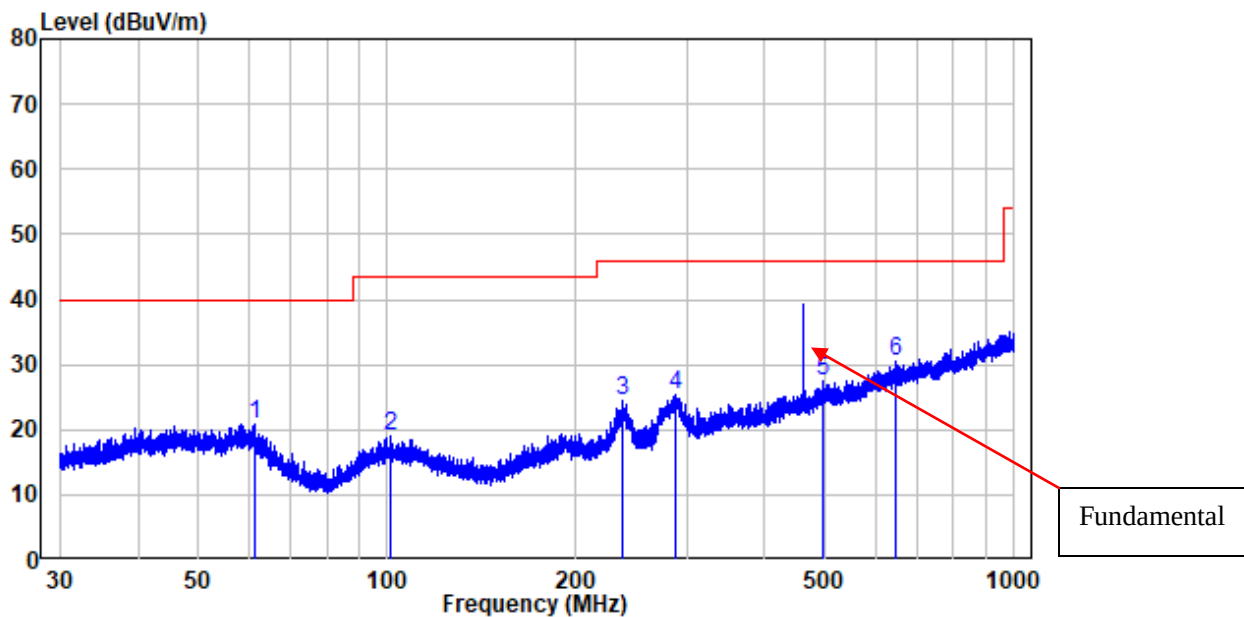
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2069.413	-7.27	45.04	37.77	74.00	-36.23	Peak
2	2969.467	-5.89	45.08	39.19	74.00	-34.81	Peak
3	3427.474	-5.98	47.37	41.39	74.00	-32.61	Peak

Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : XMTN1220221-05216E-EM
Mode : Charging for charging base+receiving

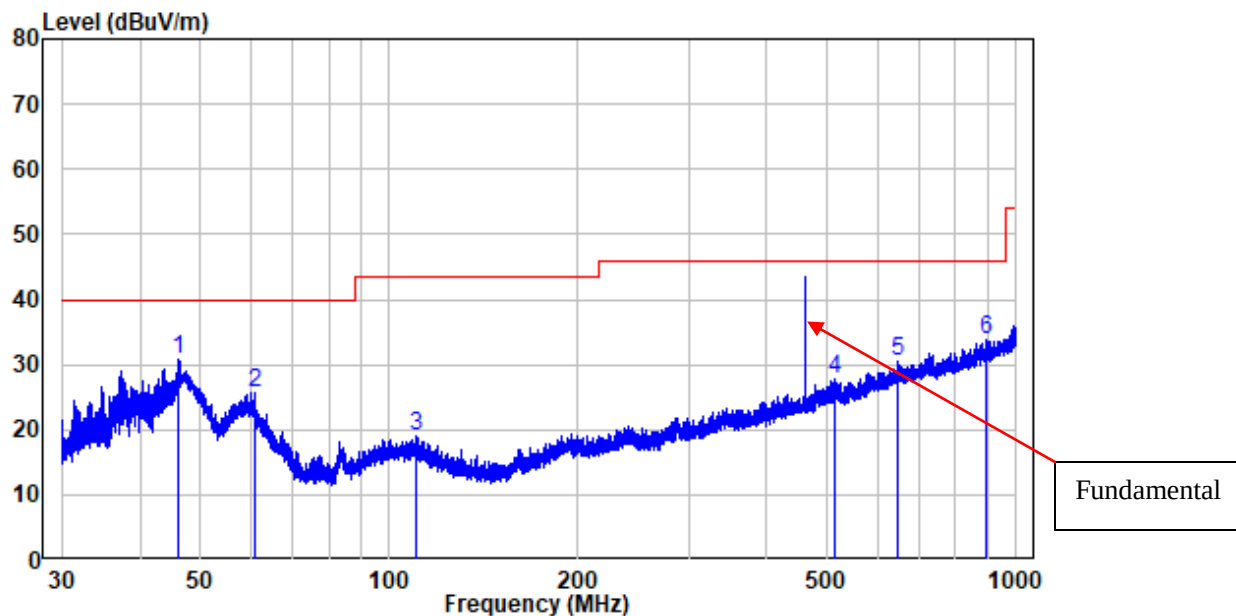
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2059.031	-7.28	43.83	36.55	74.00	-37.45	Peak
2	3181.609	-5.90	44.79	38.89	74.00	-35.11	Peak
3	3972.873	-5.47	45.43	39.96	74.00	-34.04	Peak

Test mode 2:**30MHz-1GHz:****Horizontal:**

Site : chamber
Condition: 3m HORIZONTAL
Job No. : XMTN1220221-05216E-EM
Mode : Charging+receiving

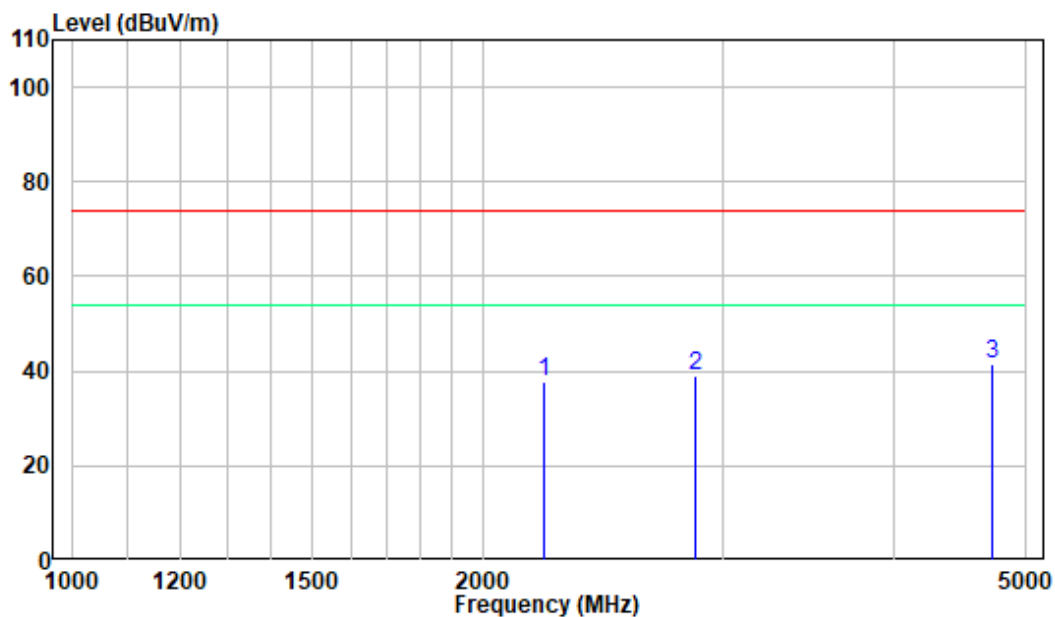
	Freq	Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	61.319	-11.16	32.08	20.92	40.00	-19.08	Peak
2	100.890	-11.70	30.78	19.08	43.50	-24.42	Peak
3	236.749	-10.94	35.43	24.49	46.00	-21.51	Peak
4	289.129	-9.33	34.79	25.46	46.00	-20.54	Peak
5	495.066	-4.46	31.84	27.38	46.00	-18.62	Peak
6	648.806	-1.77	32.28	30.51	46.00	-15.49	Peak

Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : XMTN1220221-05216E-EM
Mode : Charging+receiving

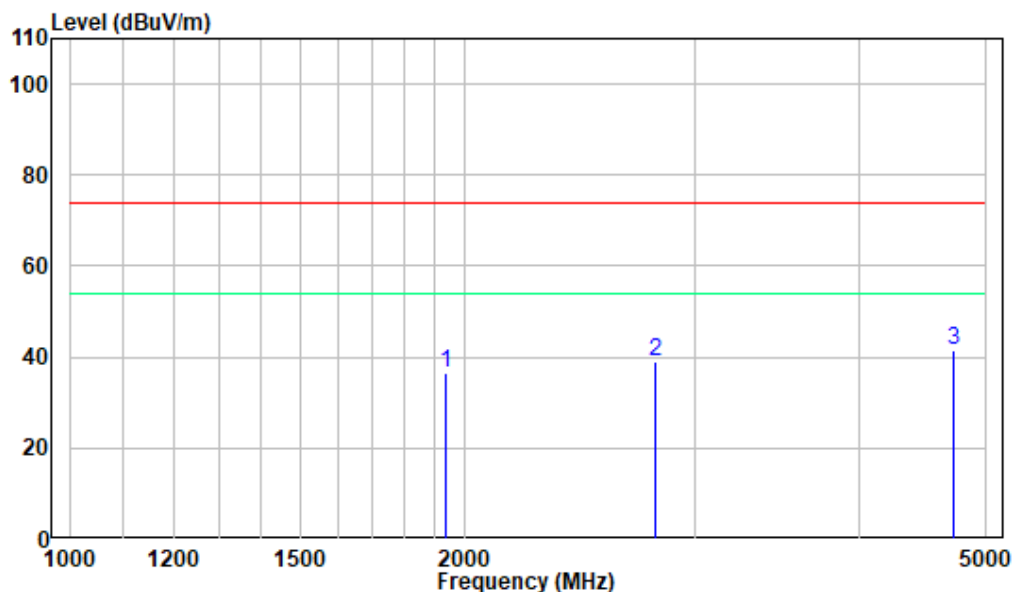
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	46.138	-9.99	40.89	30.90	40.00	-9.10	Peak
2	60.838	-10.97	36.75	25.78	40.00	-14.22	Peak
3	110.182	-11.99	30.99	19.00	43.50	-24.50	Peak
4	513.408	-4.27	32.10	27.83	46.00	-18.17	Peak
5	646.818	-1.82	32.36	30.54	46.00	-15.46	Peak
6	894.641	0.95	32.86	33.81	46.00	-12.19	Peak

Above 1 GHz:**Horizontal:**

Site : chamber
Condition: 3m HORIZONTAL
Job No. : XMTN1220221-05216E-EM
Mode : Charging+receiving

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2219.485	-7.21	44.83	37.62	74.00	-36.38	Peak
2	2866.165	-6.14	45.11	38.97	74.00	-35.03	Peak
3	4719.483	-3.87	45.57	41.70	74.00	-32.30	Peak

Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : XMTN1220221-05216E-EM
Mode : Charging+receiving

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1936.097	-7.74	44.13	36.39	74.00	-37.61	Peak
2	2800.052	-6.26	45.43	39.17	74.00	-34.83	Peak
3	4725.184	-3.83	45.47	41.64	74.00	-32.36	Peak

For above 1GHz, the test result of peak was 20dB below to the limit of peak, which can be compliant to the average limit, so just peak value was recorded.

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