TEST REPORT

Reference No......	:	WTX21X10106038W-1
FCC ID Number	:	FCC ID: 2AO3LB1176R24G
Applicant.....	:	MTMS (HK) LIMITED
Address.....	:	Room 1306, Block B, Veristrong Industrial Centre, No. 34-36 Au Pui Wan Street, Fo Tan, New Territories, Hong Kong
Product Description	:	2-way 2.4 GHz Boat - TX Portion
Product Name	:	Full Function Radio Control Boat
Tested Model/Item No...	:	B1176R
FCC Rule(s)	:	**Part 15.249 of the FCC Rules**
Received Date of Sample(s)	:	Oct. 08, 2021
Date of Test.....	:	Oct. 08, 2021 to Oct. 21, 2021
Date of Issue	:	Oct. 21, 2021
Test Result.....	:	**Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared by:

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Report version

Version No.	Date of issue	Description
Rev.00	Oct. 21, 2021	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: MTMS (HK) LIMITED
Address of applicant: Room 1306, Block B, Veristrong Industrial Centre,
No. 34-36 Au Pui Wan Street, Fo Tan, New Territories, Hong Kong

Manufacturer: MTMS (HK) LIMITED
Address of manufacturer: Room 1306, Block B, Veristrong Industrial Centre,
No. 34-36 Au Pui Wan Street, Fo Tan, New Territories, Hong Kong

General Description of EUT	
Product Description:	2-way 2.4 GHz Boat - TX Portion
Product Name:	Full Function Radio Control Boat
Tested Trade Name:	/
Tested Model/ Item No.:	B1176R
Adding Model(s)/ Item No(s).:	B1176 [All Adding Model(s)/Item No(s). is/are same electrically identical as Tested Model/Item No. and Tested Trade Name]
Test Sample No.:	WTX21X10106039W-1#
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Power Source:	DC 9.0V (6 units of DC 1.5V AA-Size Battery)
Frequency Range:	2410-2475 MHz
Max. Field Strength:	86.20 dBuV/m
Modulation:	GFSK
Antenna Type:	Fixed Line Antenna
Antenna Gain:	0 dBi

1.2 Test Standards

The tests were performed according to following standards:

Part 15.249 of the FCC Rules: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

Test Laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, 518101, China

Federal Communications Commission (FCC) - Test Firm Registration Number: 125990
The EMC Laboratory of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010 and Test Firm Registration Number is 125990.

Test Laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70, Bao'an District, Shenzhen, Guangdong 518101, P.R.C.

Innovation, Science and Economic Development Canada (ISED) - ISED#/Registration No.: 11464A
The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada (ISED) for radio equipment testing with CAB identifier: CN0057 and ISED#/Registration No.: 11464A.

1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	Lowest Channel	2410 MHz
TM2	Near Middle Channel	2443 MHz
TM3	Highest Channel	2475 MHz

Test Conditions	
Temperature:	22~25 °C
Relative Humidity:	50~55 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded / Unshielded	With / Without Ferrite
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded / Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
2-way 2.4 GHz Controller - RX Portion	MTMS (HK) LIMITED	B1176T	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	±0.42dB
Occupied Bandwidth	Conducted	±1.5%
Conducted Spurious Emission	Conducted	±2.17dB
Conducted Emissions	Conducted	9-150kHz ±3.74dB
		0.15-30MHz ±3.34dB
Transmitter Spurious Emissions	Radiated	30-200MHz ±4.52dB
		0.2-1GHz ±5.56dB
		1-6GHz ±3.84dB
		6-26GHz ±3.92dB

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
SEMT-1075	Communication Tester	Rohde & Schwarz	CMW500	148650	2021-03-27	2022-03-26
SEMT-1063	GSM Tester	Rohde & Schwarz	CMU200	114403	2021-03-27	2022-03-26
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2021-03-27	2022-03-26
SEMT-1079	Spectrum Analyzer	Agilent	N9020A	US47140102	2021-03-27	2022-03-26
SEMT-1080	Signal Generator	Agilent	83752A	3610A01453	2021-03-27	2022-03-26
SEMT-1081	Vector Signal Generator	Agilent	N5182A	MY47070202	2021-03-27	2022-03-26
SEMT-1028	Power Divider	Weinschel	1506A	PM204	2021-03-27	2022-03-26
SEMT-1082	Power Divider	RF-Lambda	RFLT4W5M18G	14110400027	2021-03-27	2022-03-26
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2021-03-27	2022-03-26
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2021-03-27	2022-03-26
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2021-04-12	2022-04-11
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2021-04-12	2022-04-11
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-19	2023-03-18
SEMT-1068	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2021-03-19	2023-03-18
SEMT-1042	Horn Antenna	ETS	3117	00086197	2021-03-19	2023-03-18
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2021-04-27	2023-04-26
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2021-04-27	2022-04-26
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2021-03-27	2022-03-26
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2021-03-27	2022-03-26
SEMT-	RF Switcher	Top Precision	RCS03-A2	/	2021-03-19	2023-03-18

1076						
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	/	/
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	/	/
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	/	/
SEMT-C004	Cable	Zheng DI	2M0RFC	/	/	/
SEMT-C005	Cable	Zheng DI	1M0RFC	/	/	/
SEMT-C006	Cable	Zheng DI	1M0RFC	/	/	/

Software List			
Description	**Manufacturer**	**Model**	**Version**
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

*Remark: indicates software version used in the compliance certification testing.

2. SUMMARY OF TEST RESULTS

FCC Rule(s)	Description of Test Item	Result
Part 15.203 of the FCC Rules	Antenna Requirement	Compliant
Part 15.205 of the FCC Rules	Restricted Band of Operation	Compliant
Part 15.207(a) of the FCC Rules	Conducted Emission	N/A
Part 15.209(a)(f) of the FCC Rules	Radiated Spurious Emissions	Compliant
Part 15.249(a) of the FCC Rules	Field Strength of Emissions	Compliant
Part 15.249(d) of the FCC Rules	Out of Band Emission	Compliant
Part 15.215(c) of the FCC Rules	Emission Bandwidth	Compliant

N/A: Not Applicable

3. Antenna Requirements

3.1 Standard Applicable

According to Part 15.203 of the FCC Rules, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Test Result

This product has a fixed line antenna, fulfill the requirement of this section.

4. Radiated Emissions

4.1 Standard Applicable

According to Part 15.249(a) of the FCC Rules, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of Harmonics (micro-volts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

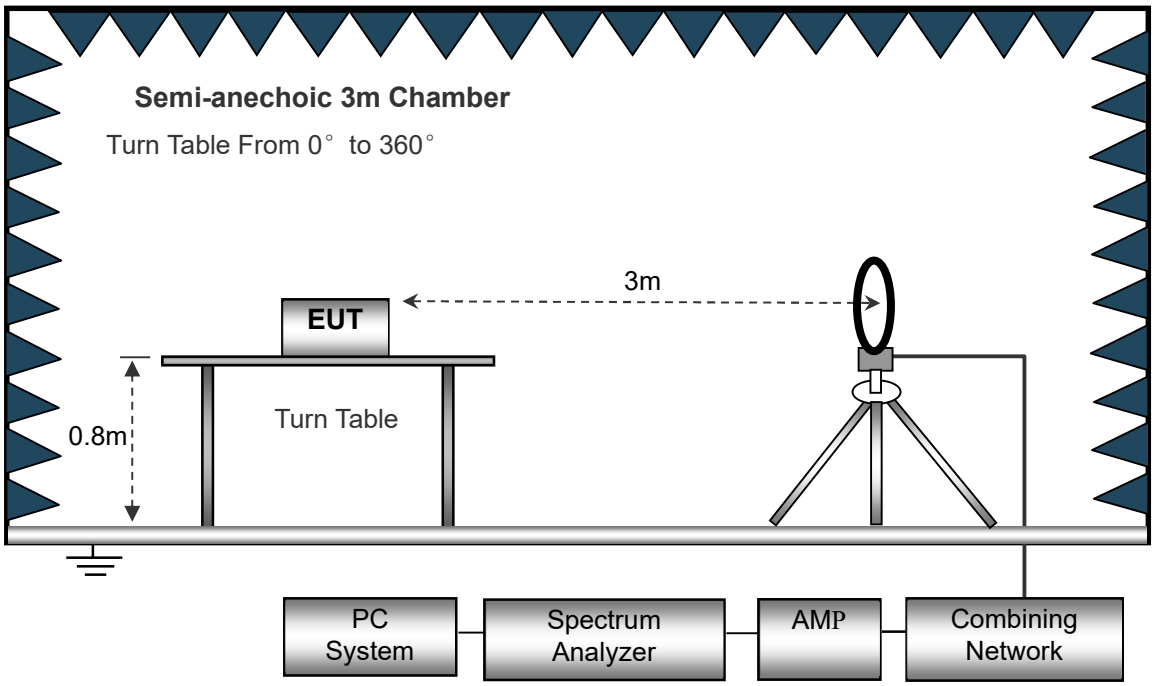
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

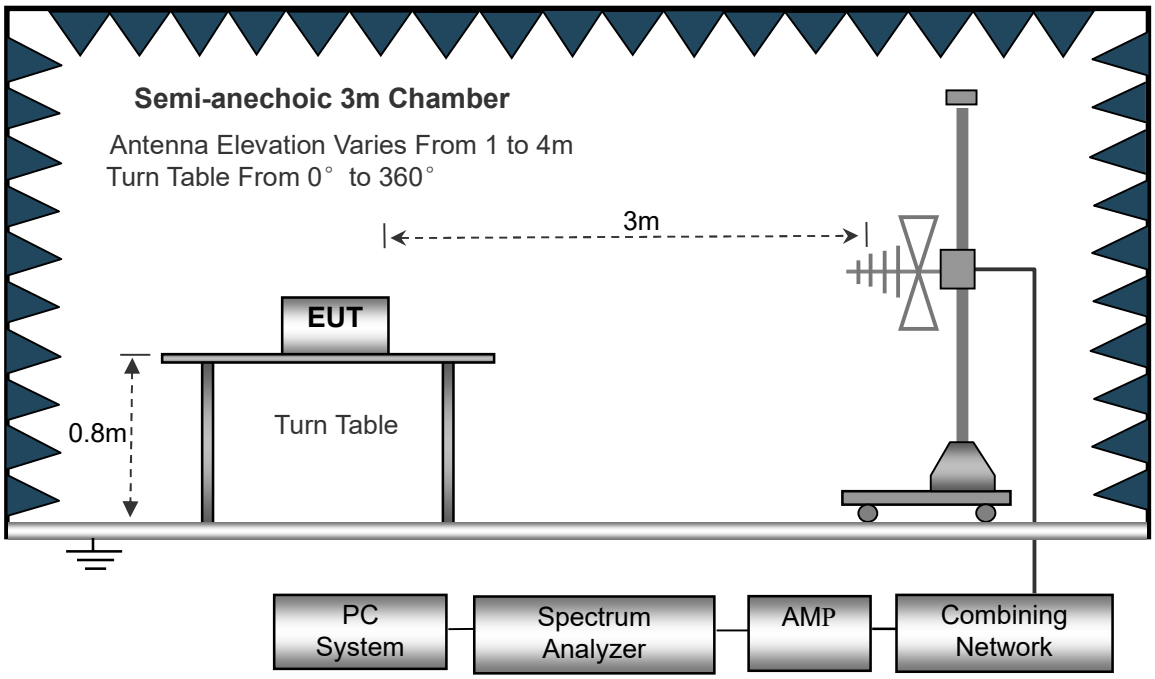
4.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.249(a) and FCC Part 15.209 Limit.
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.

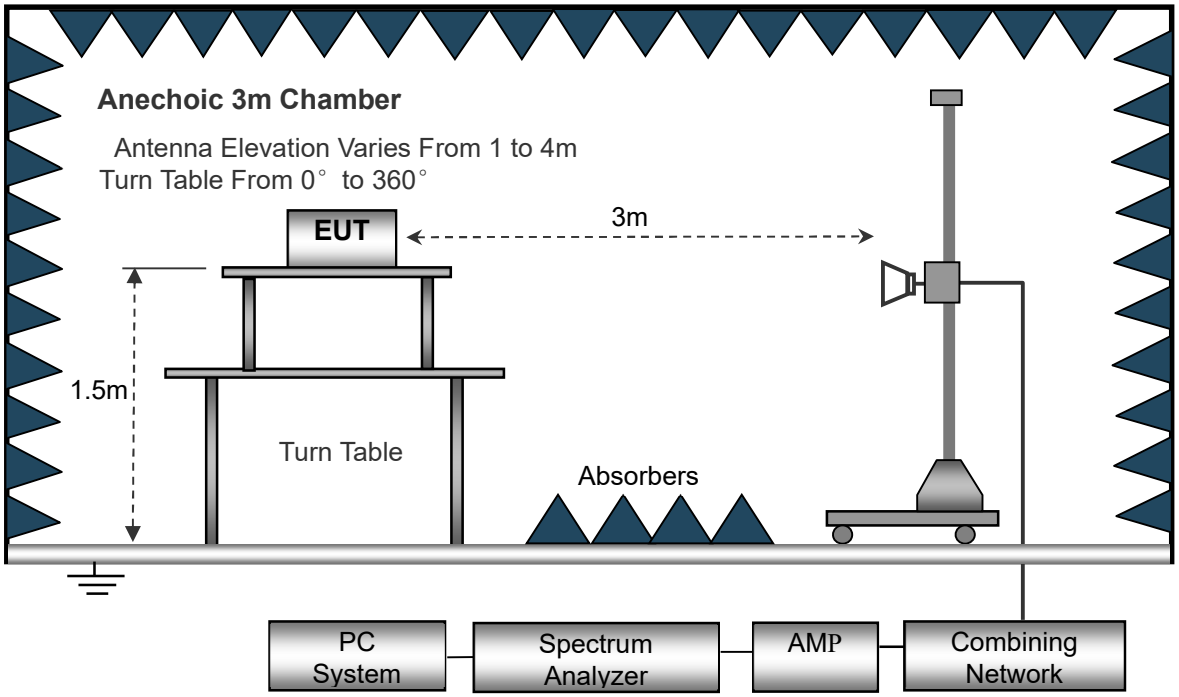
The test setup for emission measurement below 30 MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



Frequency: 9kHz-30MHz	Frequency: 30MHz-1GHz	Frequency: Above 1GHz
RBW=10kHz	RBW=120kHz	RBW=1MHz
VBW=30kHz	VBW=300kHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time=Auto	Sweep time=Auto	Sweep time=Auto
Trace=Max hold	Trace=Max hold	Trace=Max hold
Detector function=Peak	Detector function=Peak, QP	Detector function=Peak, AV

4.3 Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Indicated Reading + Ant. Factor + Cable Loss – Ampl. Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6 dBμV means the emission is 6 dBμV below the maximum limit. The equation for margin calculation is as follows:

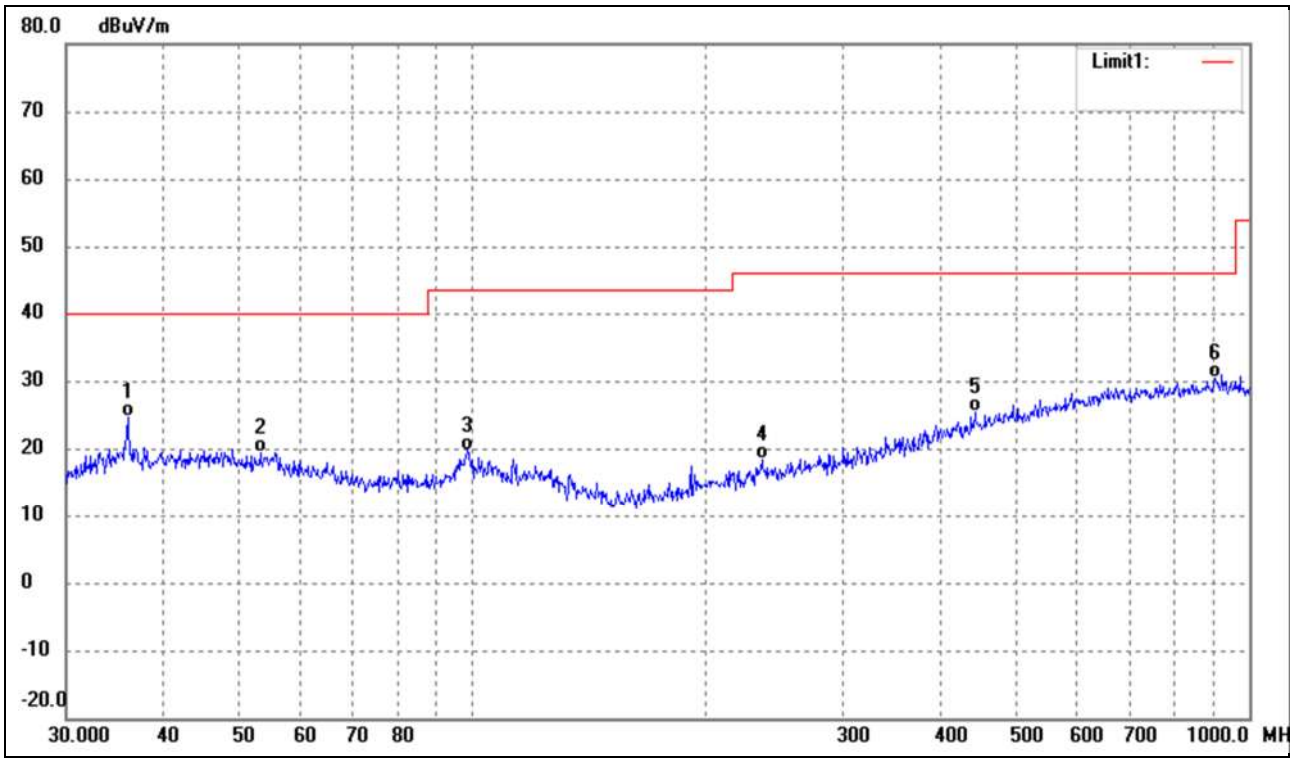
Margin = Corr. Ampl. – FCC Part 15C Limit

4.4 Summary of Test Results/Plots

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

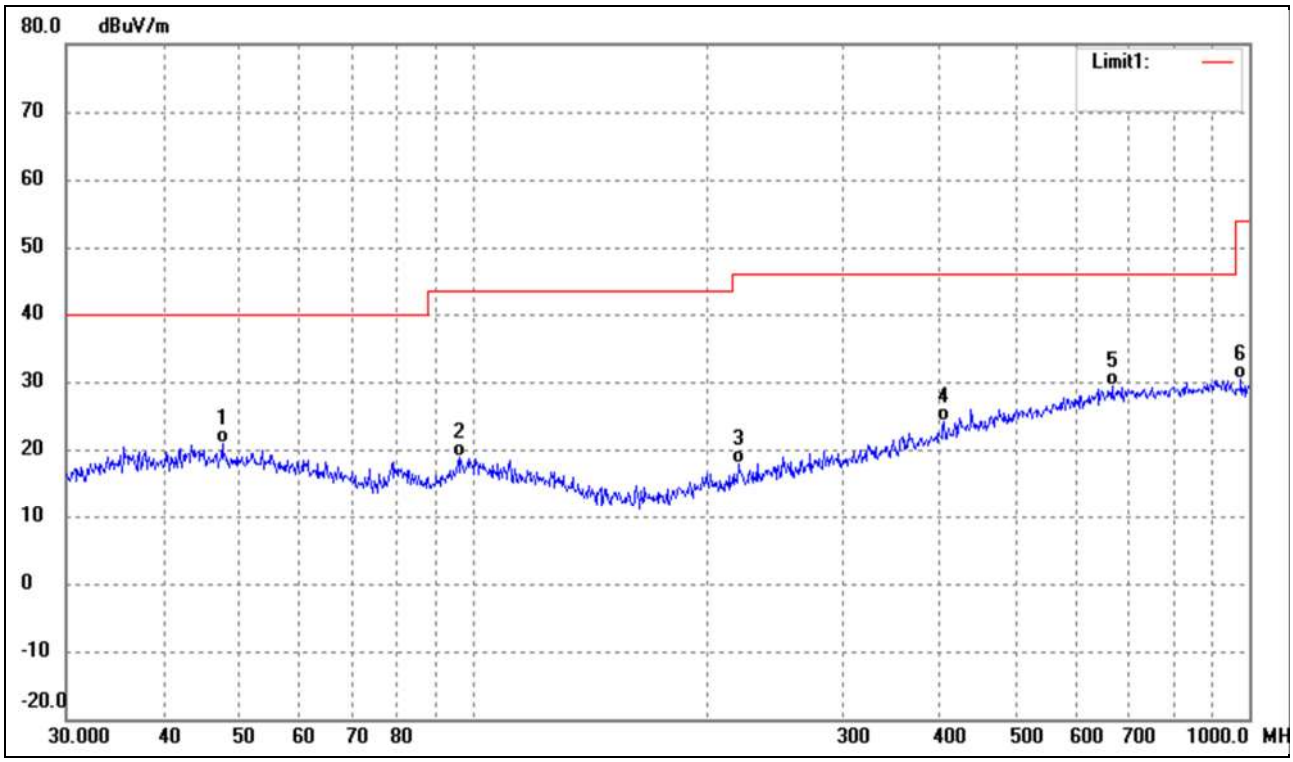
➢ Spurious Emissions Below 1 GHz

Test Channel	Lowest Channel	Polarity:	Horizontal



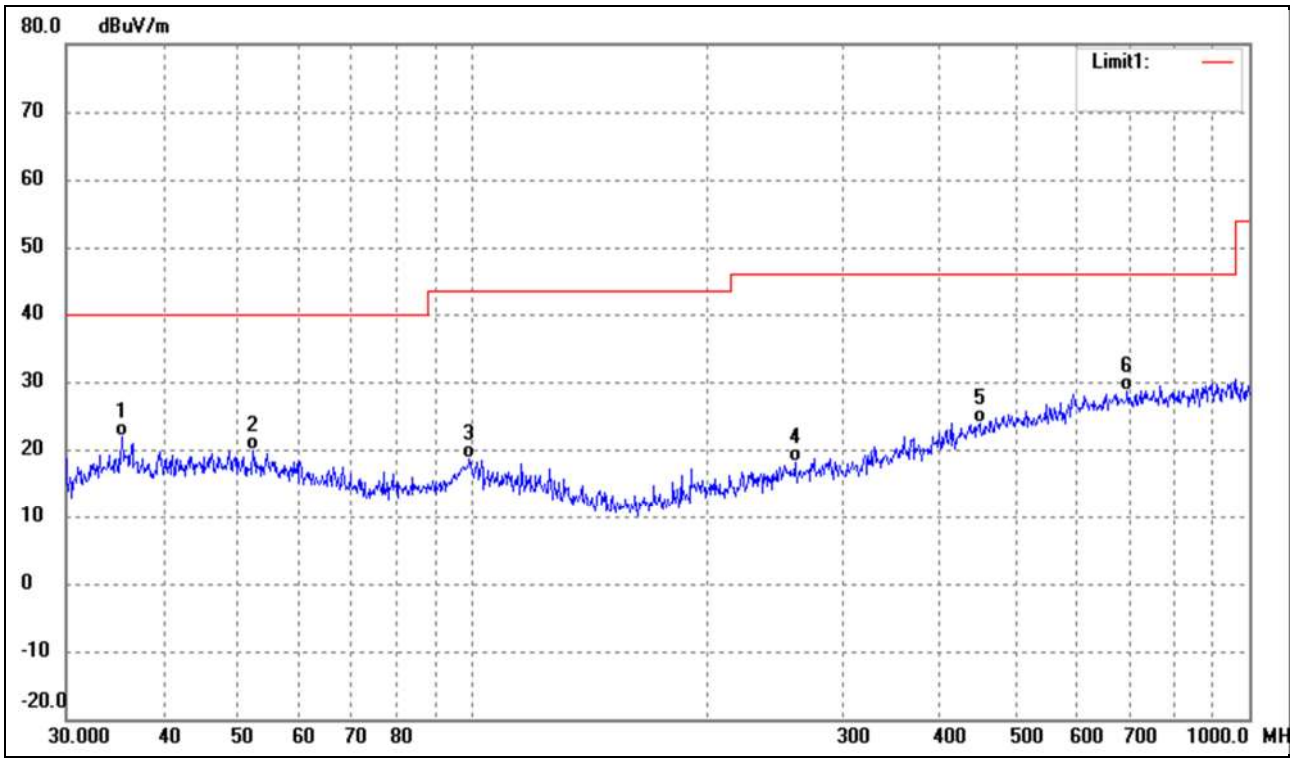
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	36.0007	32.69	-7.98	24.71	40.00	-15.29	-	-	QP
2	53.3179	26.91	-7.45	19.46	40.00	-20.54	-	-	QP
3	98.4866	28.76	-9.01	19.75	43.50	-23.75	-	-	QP
4	235.8164	27.06	-8.71	18.35	46.00	-27.65	-	-	QP
5	443.2943	28.10	-2.74	25.36	46.00	-20.64	-	-	QP
6	903.3094	27.52	2.74	30.26	46.00	-15.74	-	-	QP

Test Channel	Lowest Channel	Polarity:	Vertical



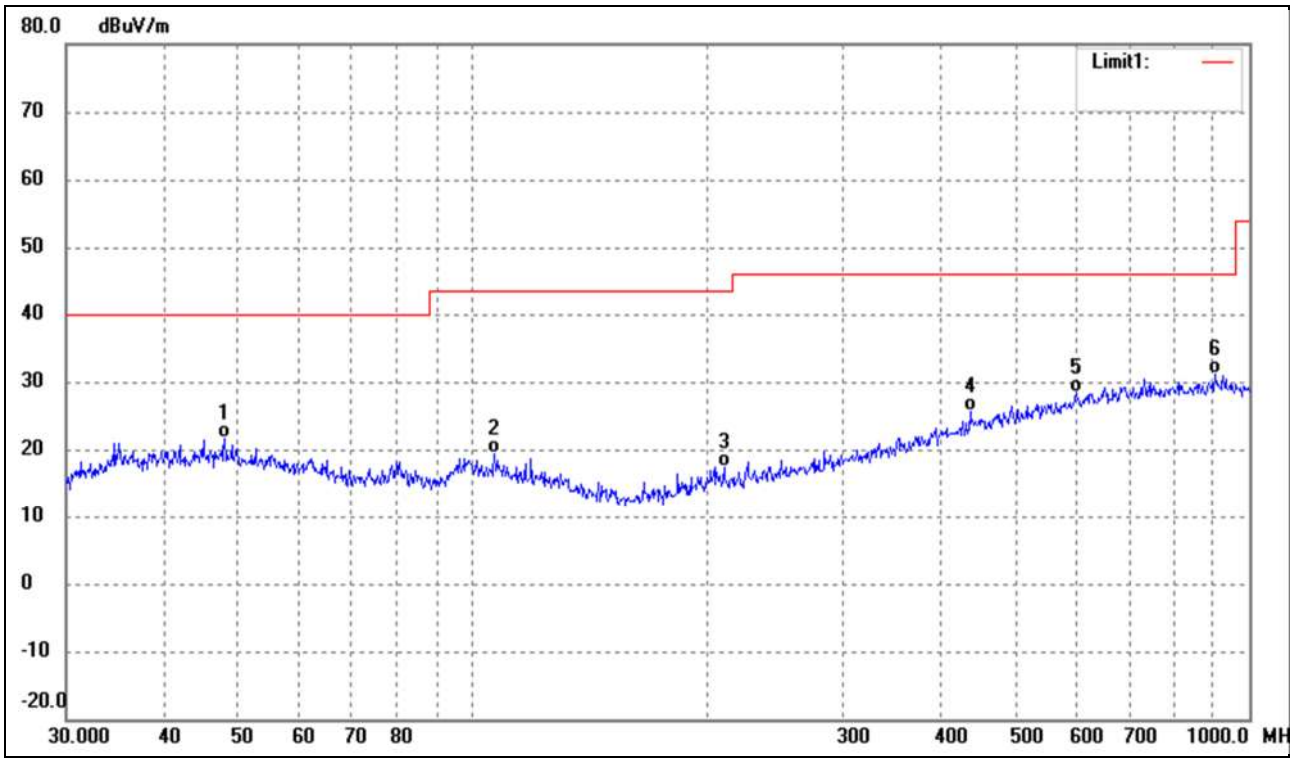
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	47.6586	27.76	-6.97	20.79	40.00	-19.21	-	-	QP
2	96.4362	28.39	-9.40	18.99	43.50	-24.51	-	-	QP
3	219.8449	27.01	-9.15	17.86	46.00	-28.14	-	-	QP
4	404.6665	27.93	-3.76	24.17	46.00	-21.83	-	-	QP
5	665.8035	28.28	1.08	29.36	46.00	-16.64	-	-	QP
6	975.7529	27.87	2.49	30.36	54.00	-23.64	-	-	QP

Test Channel	Near Middle Channel	Polarity:	Horizontal



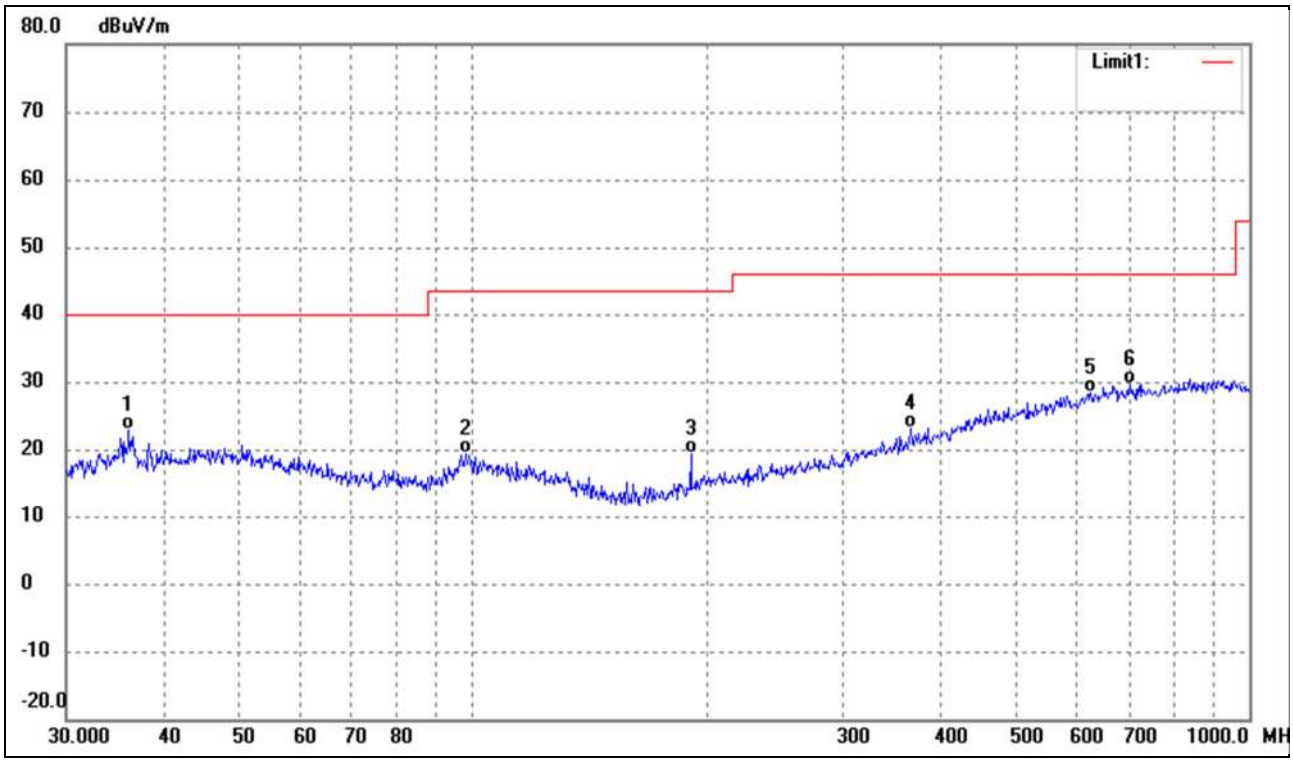
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	35.3750	29.98	-8.13	21.85	40.00	-18.15	-	-	QP
2	52.2079	27.05	-7.29	19.76	40.00	-20.24	-	-	QP
3	99.1797	27.49	-8.88	18.61	43.50	-24.89	-	-	QP
4	260.1444	26.11	-8.04	18.07	46.00	-27.93	-	-	QP
5	449.5558	26.46	-2.57	23.89	46.00	-22.11	-	-	QP
6	696.8567	27.18	1.40	28.58	46.00	-17.42	-	-	QP

Test Channel	Near Middle Channel	Polarity:	Vertical



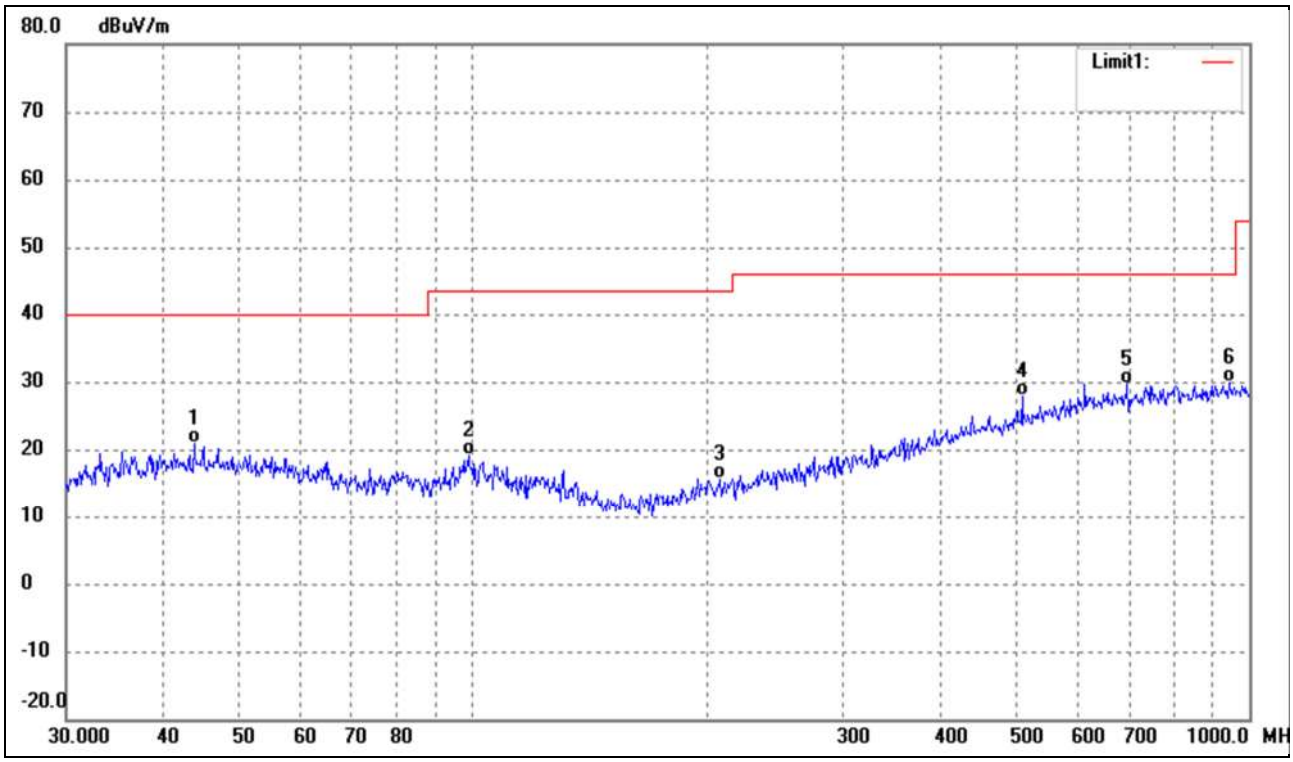
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	47.9940	28.56	-6.97	21.59	40.00	-18.41	-	-	QP
2	106.7587	28.13	-8.83	19.30	43.50	-24.20	-	-	QP
3	210.7860	26.74	-9.41	17.33	43.50	-26.17	-	-	QP
4	437.1199	28.60	-2.90	25.70	46.00	-20.30	-	-	QP
5	599.3212	28.04	0.36	28.40	46.00	-17.60	-	-	QP
6	903.3094	28.37	2.74	31.11	46.00	-14.89	-	-	QP

Test Channel	Highest Channel	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	36.1272	30.90	-7.95	22.95	40.00	-17.05	-	-	QP
2	98.1419	28.44	-9.07	19.37	43.50	-24.13	-	-	QP
3	191.0738	29.31	-10.01	19.30	43.50	-24.20	-	-	QP
4	366.8231	28.03	-4.89	23.14	46.00	-22.86	-	-	QP
5	625.0780	27.84	0.65	28.49	46.00	-17.51	-	-	QP
6	701.7610	28.29	1.44	29.73	46.00	-16.27	-	-	QP

Test Channel	Highest Channel	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	43.8119	27.90	-6.98	20.92	40.00	-19.08	-	-	QP
2	98.8326	28.13	-8.94	19.19	43.50	-24.31	-	-	QP
3	208.5803	25.07	-9.46	15.61	43.50	-27.89	-	-	QP
4	510.0436	29.06	-1.13	27.93	46.00	-18.07	-	-	QP
5	696.8567	28.30	1.40	29.70	46.00	-16.30	-	-	QP
6	942.1305	27.30	2.61	29.91	46.00	-16.09	-	-	QP

Remark: '-' means the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

Spurious Emissions Above 1 GHz

Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polar H/V	Detector
Lowest Channel-2410MHz							
2410	94.34	-10.68	83.66	114	-30.34	H	PK
2410	94.95	-10.68	84.27	94	-9.73	H	AV
4820	55.72	-6.08	49.64	74	-24.36	H	PK
4820	52.17	-6.08	46.09	54	-7.91	H	AV
7230	46.68	-1.64	45.04	74	-28.96	H	PK
7230	39.89	-1.64	38.25	54	-15.75	H	AV
2410	96.61	-10.68	85.93	114	-28.07	V	PK
2410	95.97	-10.68	85.29	94	-8.71	V	AV
4820	58.28	-6.08	52.20	74	-21.80	V	PK
4820	55.93	-6.08	49.85	54	-4.15	V	AV
7230	45.88	-1.64	44.24	74	-29.76	V	PK
7230	35.98	-1.64	34.34	54	-19.66	V	AV
Near Middle Channel-2443MHz							
2443	94.54	-10.63	83.91	114	-30.09	H	PK
2443	93.97	-10.63	83.34	94	-10.66	H	AV
4886	57.22	-5.90	51.32	74	-22.68	H	PK
4886	51.72	-5.90	45.82	54	-8.18	H	AV
7329	47.06	-1.58	45.48	74	-28.52	H	PK
7329	39.14	-1.58	37.56	54	-16.44	H	AV
2443	96.83	-10.63	86.20	114	-27.80	V	PK
2443	96.48	-10.63	85.85	94	-8.15	V	AV
4886	57.74	-5.90	51.84	74	-22.16	V	PK
4886	54.68	-5.90	48.78	54	-5.22	V	AV
7329	42.79	-1.58	41.21	74	-32.79	V	PK
7329	34.28	-1.58	32.70	54	-21.30	V	AV

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Highest Channel-2475MHz							
2475	91.41	-10.58	80.83	114	-33.17	H	PK
2475	90.86	-10.58	80.28	94	-13.72	H	AV
4950	50.23	-5.74	44.49	74	-29.51	H	PK
4950	48.22	-5.74	42.48	54	-11.52	H	AV
7425	48.02	-1.52	46.50	74	-27.50	H	PK
7425	42.83	-1.52	41.31	54	-12.69	H	AV
2475	96.52	-10.58	85.94	114	-28.06	V	PK
2475	96.20	-10.58	85.62	94	-8.38	V	AV
4950	55.72	-5.74	49.98	74	-24.02	V	PK
4950	51.75	-5.74	46.01	54	-7.99	V	AV
7425	44.49	-1.52	42.97	74	-31.03	V	PK
7425	37.67	-1.52	36.15	54	-17.85	V	AV

Note: Testing is carried out with frequency rang 9 kHz to the 10th harmonic, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured. Emissions attenuated more than 20 dB below the permissible value are not reported.

5. Out of Band Emissions

5.1 Standard Applicable

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

5.2 Test Procedure

As the radiation test, set the Lowest and Highest Transmitting Channel, observed the outside band of 2400MHz to 2483.5MHz, than mark the higher-level emission for comparing with the FCC Rules.

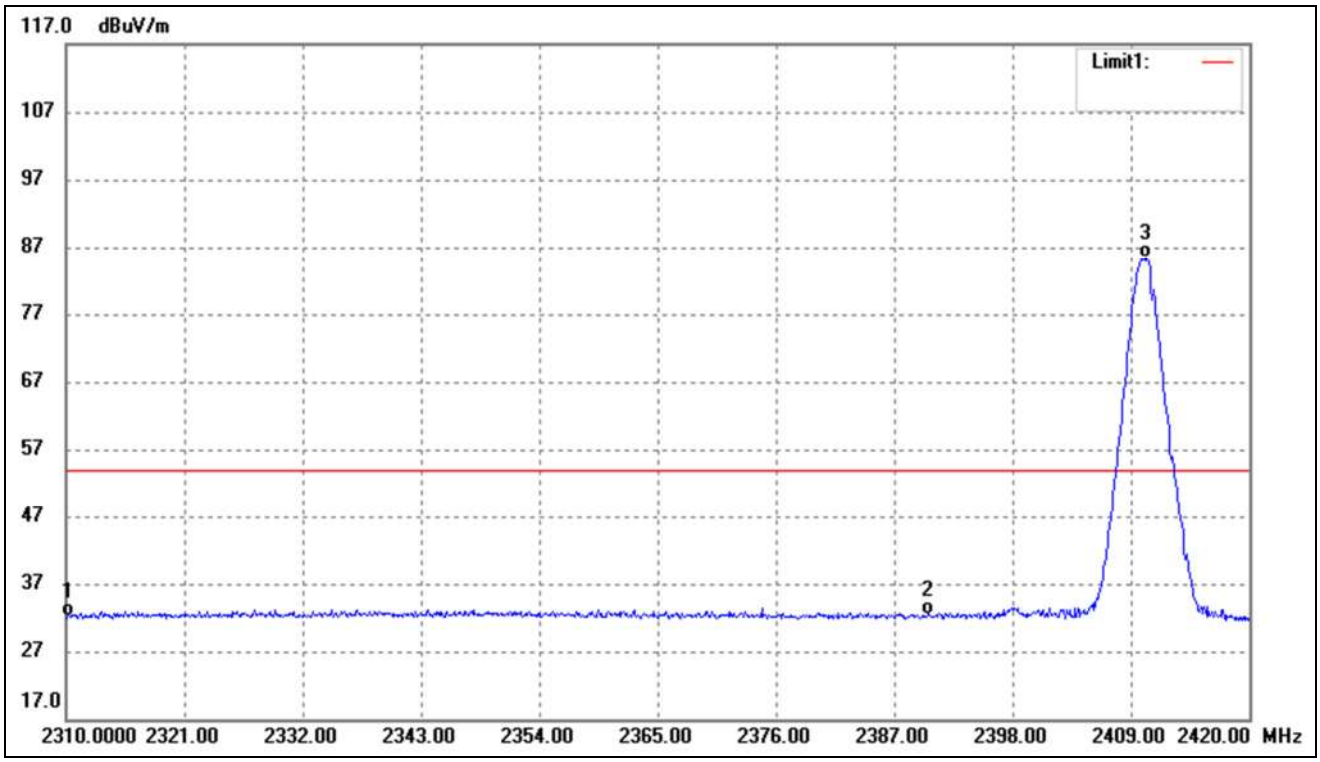
5.3 Summary of Test Results/Plots

Test mode	Frequency (MHz)	Limit (dBuV / dBc)	Result
Lowest	2310.00	<54dBuV	Pass
	2390.00	<54dBuV	Pass
	2400.00	<54dBuV	Pass
Highest	2483.50	<54dBuV	Pass
	2500.00	<54dBuV	Pass

The edge emissions are below the FCC 15.209 Limits or complies with the 15.249 requirements.

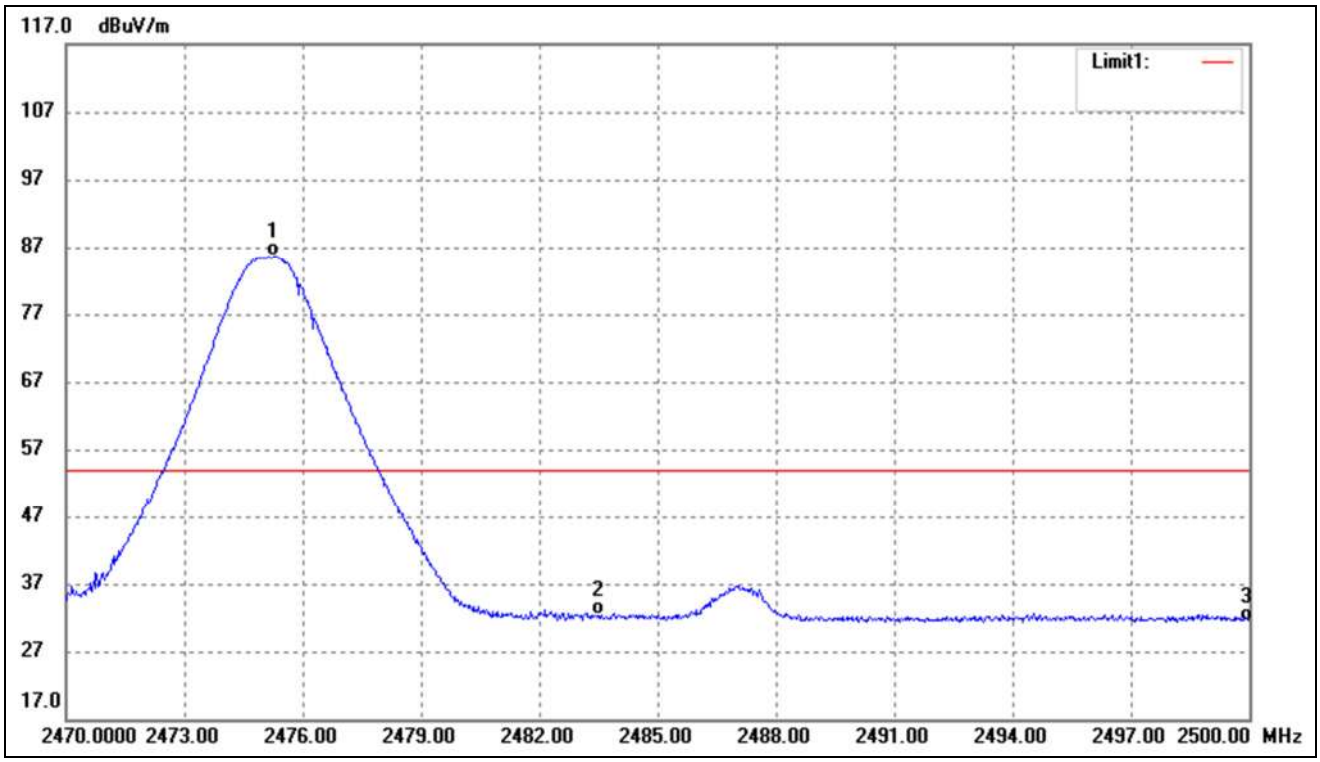
Please refer to the test plots as below:

Test Channel	Lowest Channel	Polarity:	Vertical (worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	42.91	-10.82	32.09	54.00	-21.91	Ave Detector
	2310.000	53.54	-10.82	42.72	74.00	-31.28	Peak Detector
2	2390.000	43.04	-10.70	32.34	54.00	-21.66	Ave Detector
	2390.000	53.94	-10.70	43.24	74.00	-30.76	Peak Detector
3	2410.430	95.97	-10.68	85.29	/	/	Ave Detector
	2410.210	96.61	-10.68	85.93	/	/	Peak Detector

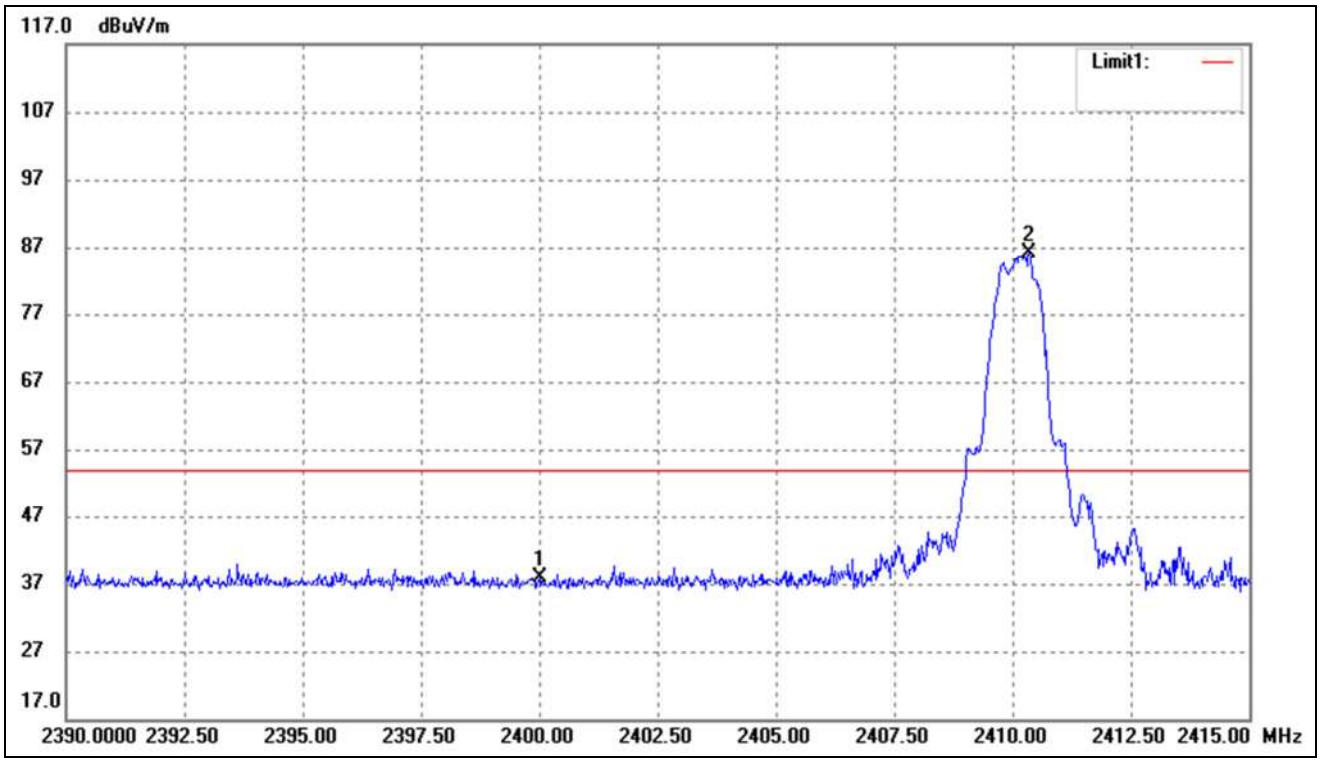
Test Channel	Highest Channel	Polarity:	Vertical (worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2475.250	96.20	-10.58	85.62	/	/	Ave Detector
	2474.230	96.52	-10.59	85.93	/	/	Peak Detector
2	2483.500	42.90	-10.58	32.32	54.00	-21.68	Ave Detector
	2483.500	58.45	-10.58	47.87	74.00	-26.13	Peak Detector
3	2500.000	41.99	-10.55	31.44	54.00	-22.56	Ave Detector
	2500.000	53.28	-10.55	42.73	74.00	-31.27	Peak Detector

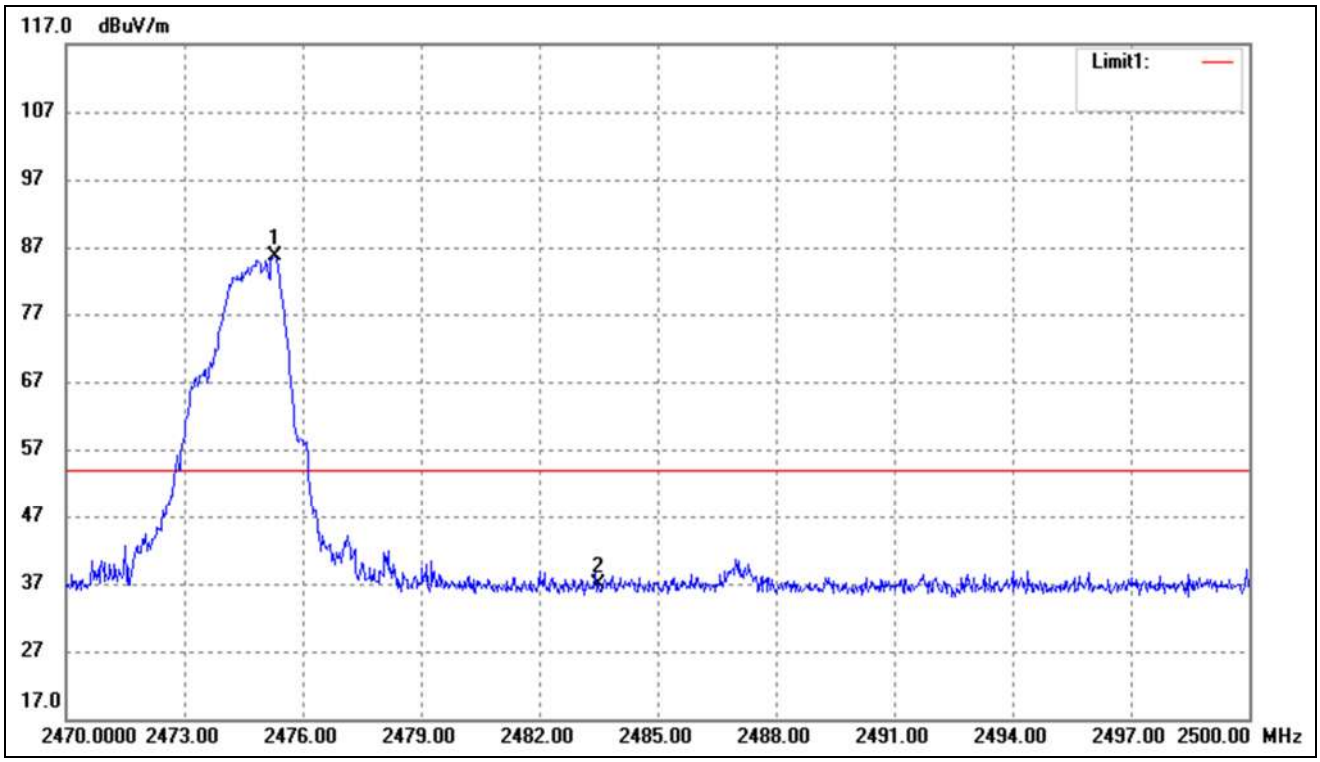
Band edge

Test Channel	Lowest Channel	Polarity:	Vertical(worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2400.000	48.55	-10.69	37.86	54.00	-16.14	Peak Detector
2	2410.350	96.70	-10.68	86.02	/	/	Peak Detector

Test Channel	Highest Channel	Polarity:	Vertical(worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2475.310	96.19	-10.58	85.61	/	/	Peak Detector
2	2483.500	47.46	-10.58	36.88	54.00	-17.12	Peak Detector

6. Emission Bandwidth

6.1 Standard Applicable

According to Part 15.215(c) of the FCC Rules, intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

6.2 Test Procedure

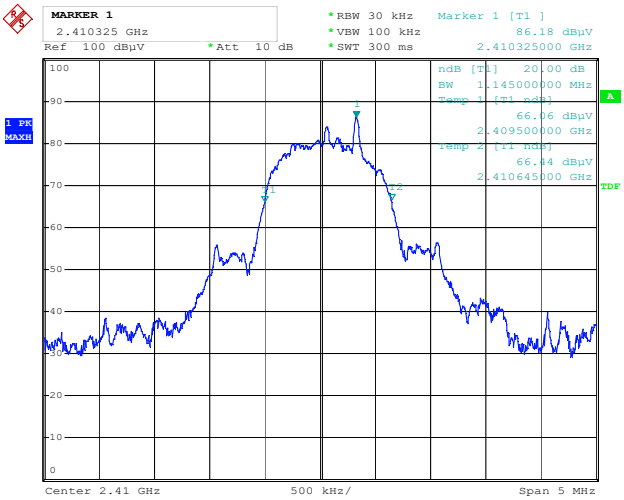
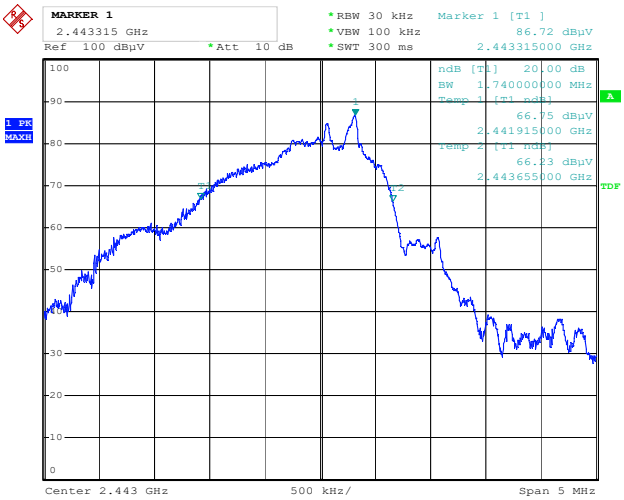
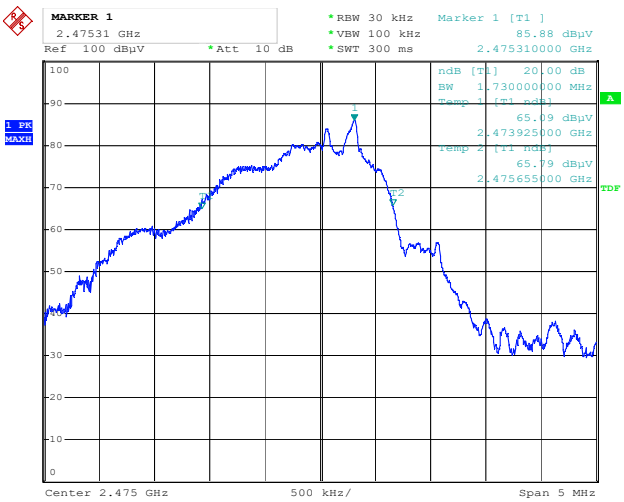
According to the ANSI 63.10-2013, the emission bandwidth test method as follows:

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
Set span = 1MHz, centered on a transmitting channel
RBW ≥1% 20dB Bandwidth, VBW ≥RBW
Sweep = auto
Detector function = peak
Trace = max hold
All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down and 99% bandwidth of the emission.

6.3 Summary of Test Results/Plots

Test Channel	20dB Bandwidth (kHz)
Lowest Channel	1.15
Near Middle Channel	1.74
Highest Channel	1.73

Please refer to the following test plots:

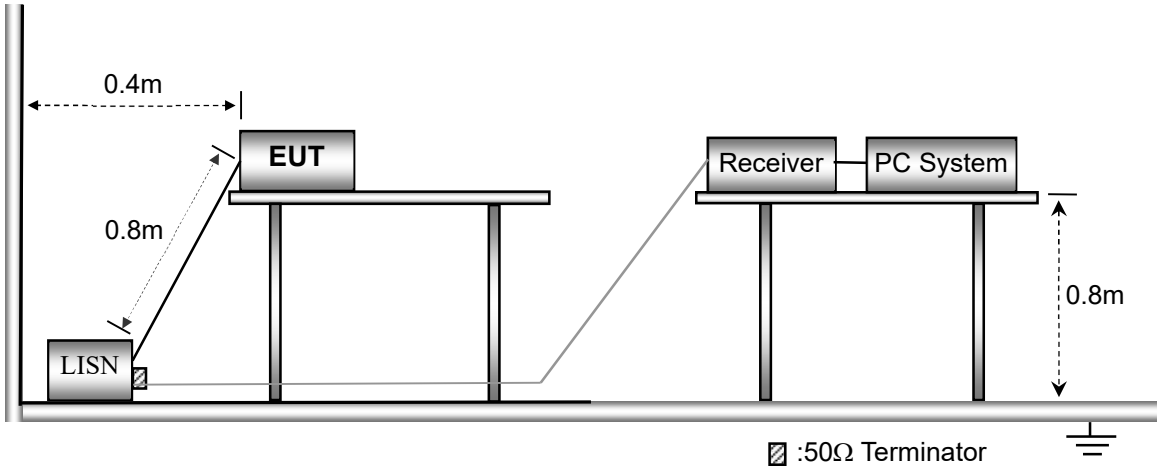
Lowest Channel	
Near Middle Channel	
Highest Channel	

7. Conducted Emissions

7.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40cm long in the middle.
The spacing between the peripherals was 10cm.

7.2 Basic Test Setup Block Diagram



7.3 Test Receiver Setup

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

Start Frequency 150kHz
Stop Frequency 30MHz
Sweep Speed ..... Auto
IF Bandwidth..... 10kHz
Quasi-Peak Adapter Bandwidth 9kHz
Quasi-Peak Adapter Mode ..... Normal

7.4 Summary of Test Results/Plots

Not applicable.

APPENDIX PHOTOGRAPHS

Please refer to "ANNEX".

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