

Measurement and Test Report under Part 15.249 of the FCC Rules

For

MTMS (HK) LIMITED

ROOM 1701, 17/F., FO TAN INDUSTRIAL CENTRE,

NO. 26-28 AU PUI WAN STREET, FO TAN, N.T., HONG KONG

FCC ID: 2A03LB1314SR24G

FCC Rule(s):	<u>Part 15.249 of the FCC Rules</u>
Product Description:	<u>2.4 GHz Radio Control Vehicle - TX Portion</u>
Tested Brand Name:	<u>None</u>
Tested Model Number/ Item Number:	<u>B1314</u>
Report No.:	<u>WTX19X04021392W-1</u>
Received Date of Sample:	<u>2019-04-09</u>
Tested Date:	<u>2019-04-10 to 2019-04-12</u>
Issued Date:	<u>2019-04-12</u>
Tested by:	<u>Mike Shi (Engineer)</u> <i>Mike Shi</i>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM Test Technology Co. Ltd

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: MTMS (HK) LIMITED
 Address of applicant: ROOM 1701, 17/F., FO TAN INDUSTRIAL CENTRE,
 NO. 26-28 AU PUI WAN STREET, FO TAN, N.T., HONG KONG

Manufacturer: MTMS (HK) LIMITED
 Address of manufacturer: ROOM 1701, 17/F., FO TAN INDUSTRIAL CENTRE,
 NO. 26-28 AU PUI WAN STREET, FO TAN, N.T., HONG KONG

General Description of EUT	
Product Description:	2.4 GHz Radio Control Vehicle - TX Portion
Tested Brand Name:	/
Tested Model Number/ Item Number:	B1314
Adding Model Number(s)/ Item Number(s):	B1118, B1322, B1166, B1236 [All Adding Brand Name(s) and Model Number(s)/Item Number(s) are same electrically identical as Tested Brand Name and Tested Model Number/Item Number]
Power Source:	DC 3.7V (1 unit of Built-in DC 3.7V 70mAh Rechargeable Lithium-ion Battery)
Battery Capacity	70 mAh
Power Adapter Model:	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Frequency Range:	2410-2475 MHz
Max. Field Strength:	100.04 dBuV/m
Modulation:	GFSK
Quantity of Channels:	66
Channel Separation:	1 MHz
Antenna Type:	Integral Antenna
Antenna Gain:	0 dBi
Lowest Internal Frequency of EUT:	16 MHz

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

The test facility is recognized, certified, or accredited by the following organizations:

Federal Communications Commission (FCC) - Test Firm Registration Number: 125990

Shenzhen SEM Test Technology Co. Ltd, EMC Laboratory has been notified by National Voluntary Laboratory Accreditation Program that Shenzhen SEM Test Technology Co. Ltd has been accredited as a testing laboratory and fully described in a report filed with the Federal Communications Commission (FCC). All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, 518101, China. The acceptance letter from the FCC is maintained in our files, Designation Number: CN5010 and the Test Firm Registration Number: 125990.

Innovation, Science and Economic Development Canada (ISED) - Registration No.: 11464A

The 3M Semi-anechoic chamber of Shenzhen SEM Test Technology Co. Ltd has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada (ISED) for radio equipment testing with 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	2410MHz
TM2	Near Middle Channel	2442MHz
TM3	Highest Channel	2475MHz

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
/	/	/	/

A tact switch is added and is connected to the EUT which can be selected to fixed transmitting frequency at 2410MHz, 2442MHz or 2475MHz for testing its Lowest Channel, Near Middle Channel or Highest Channel.

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	$\pm 0.42\text{dB}$
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Conducted Emissions	Conducted	9-150kHz $\pm 3.74\text{dB}$
		0.15-30MHz $\pm 3.34\text{dB}$
Transmitter Spurious Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-18GHz $\pm 3.92\text{dB}$

1.7 Test Equipment List and Details

Test Equipment List						
No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2018-05-22	2019-05-21
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2018-05-22	2019-05-21
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2018-05-22	2019-05-21
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2018-05-22	2019-05-21
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2018-05-22	2019-05-21
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-08	2020-06-07
SEMT-1042	Horn Antenna	ETS	3117	00086197	2017-06-08	2020-06-07
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2017-06-08	2020-06-07
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-08	2020-06-07
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2018-05-22	2019-05-21
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2018-05-22	2019-05-21
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2018-05-22	2019-05-21
SEMT-1168	Pre-amplifier	Direction Systems Inc.	PAP-0126	14141-12838	2018-05-22	2019-05-21
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2018-05-22	2019-05-21
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2018-05-22	2019-05-21
SEMT-1170	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2018-03-19	2021-03-18
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2018-05-22	2019-05-21
SEMT-1048	RF Limiter	ATTEN	AT-BSF-2400~2500	/	2018-05-22	2019-05-21
SEMT-1076	RF Switcher	Top Precision	RCS03-A2	/	2018-05-22	2019-05-21
SEMT-C001	Cable	Zheng DI	LL142-07-07-10M(A)	/	2019-03-18	2020-03-17
SEMT-C002	Cable	Zheng DI	ZT40-2.92J-2.92J-6M	/	2019-03-18	2020-03-17
SEMT-C003	Cable	Zheng DI	ZT40-2.92J-2.92J-2.5M	/	2019-03-18	2020-03-17
SEMT-C004	Cable	Zheng DI	2M0RFC	/	2019-03-18	2020-03-17
SEMT-C005	Cable	Zheng DI	1M0RFC	/	2019-03-18	2020-03-17
SEMT-C006	Cable	Zheng DI	1M0RFC	/	2019-03-18	2020-03-17

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	CCS	EZ-EMC	V1.0
EMI Test Software (Conducted Emission)*	CCS	EZ-EMC	V1.0
LTE Test System*	Tonscend	JS1120-1	V2.5

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

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	Compliant
§15.207(a)	Conducted Emission	N/A
§15.209(a)(f)	Radiated Spurious Emissions	Compliant
§15.249(a)	Field Strength of Emissions	Compliant
§15.249(d)	Out of Band Emission	Compliant
§15.215 (c)	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 an integral antenna, fulfill the requirement of this section.

4. Radiated Emissions

4.1 Standard Applicable

According to §15.249(a), 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.

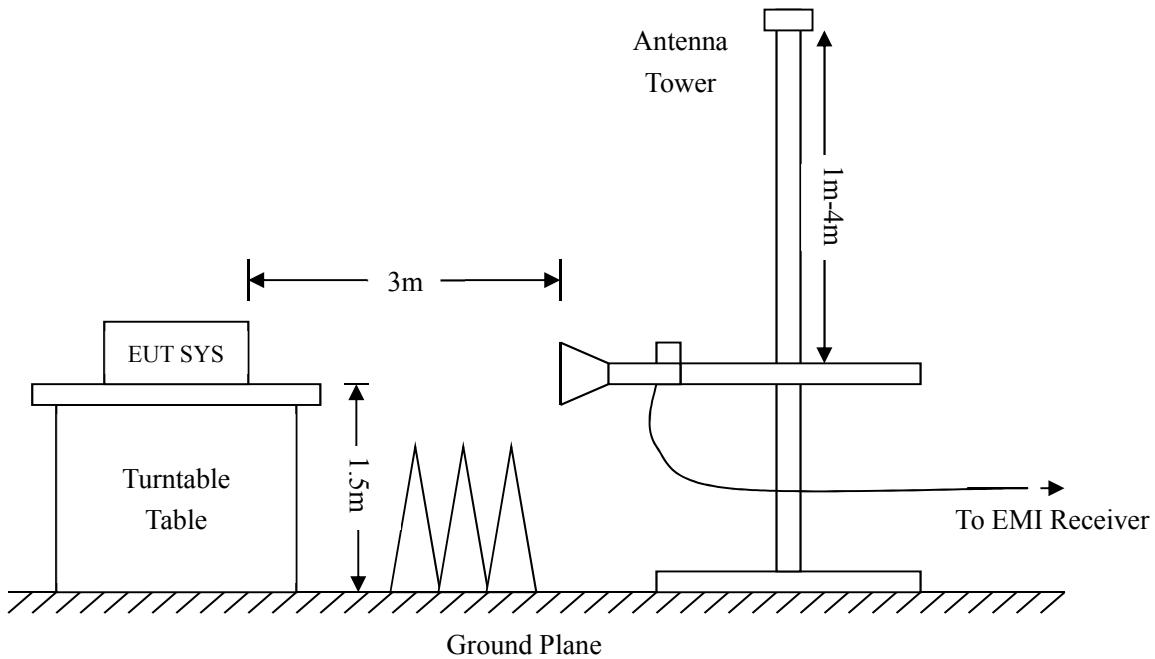
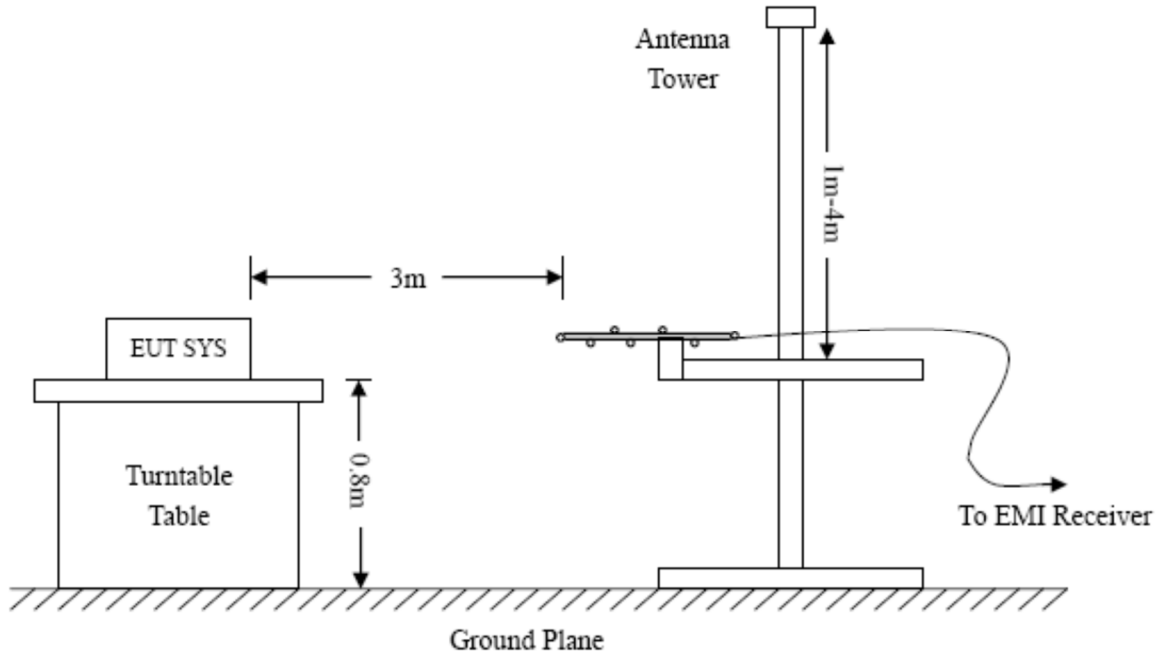
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

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 the 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.



Frequency: 9kHz-30MHz
 RBW=10kHz
 VBW=30kHz
 Sweep time=Auto
 Trace=Max hold
 Detector function=Peak

Frequency: 30MHz-1GHz
 RBW=120kHz
 VBW=300kHz
 Sweep time=Auto
 Trace=Max hold
 Detector function=Peak, QP

Frequency: Above 1GHz
 RBW=1MHz
 VBW=3MHz(Peak), 10Hz(AV)
 Sweep time=Auto
 Trace=Max hold
 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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of $-6\text{dB}\mu\text{V}$ means the emission is $6\text{dB}\mu\text{V}$ below the maximum limit. The equation for margin calculation is as follows:

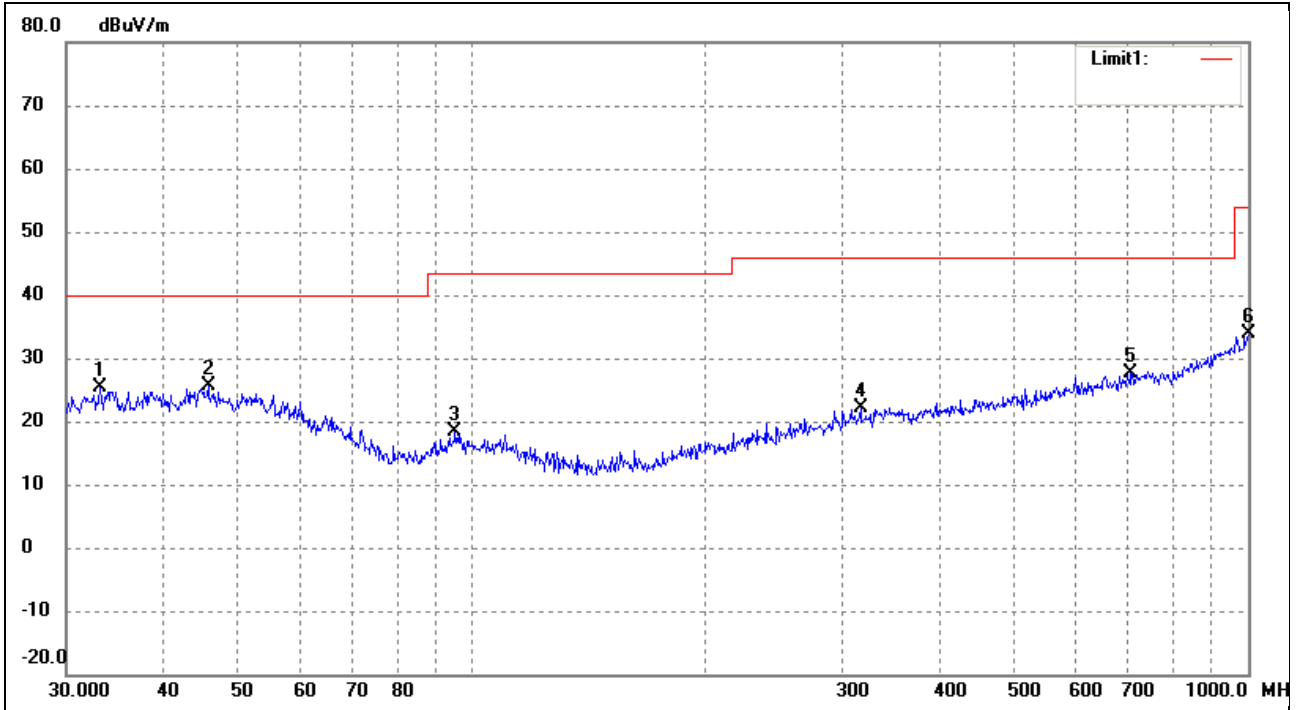
$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15C Limit}$$

4.4 Summary of Test Results/Plots

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

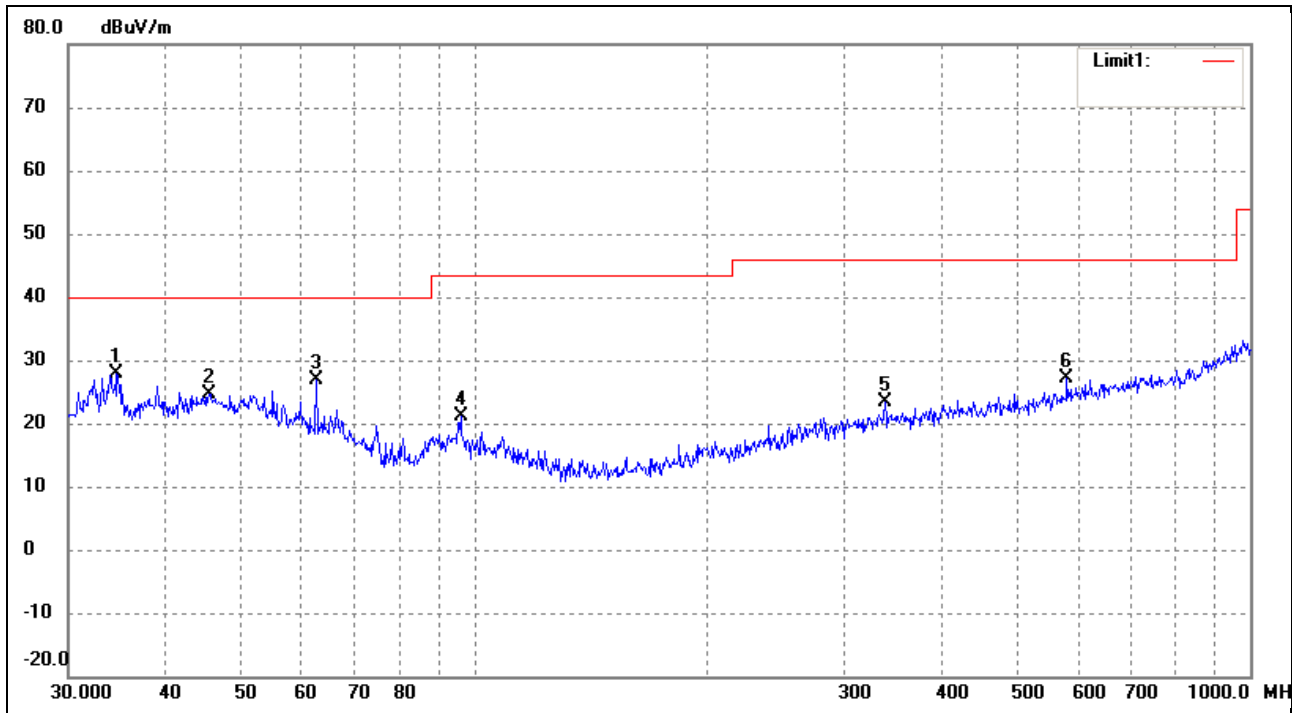
Spurious Emissions Below 1GHz

Test Channel	Lowest Channel	Polarity:	Horizontal
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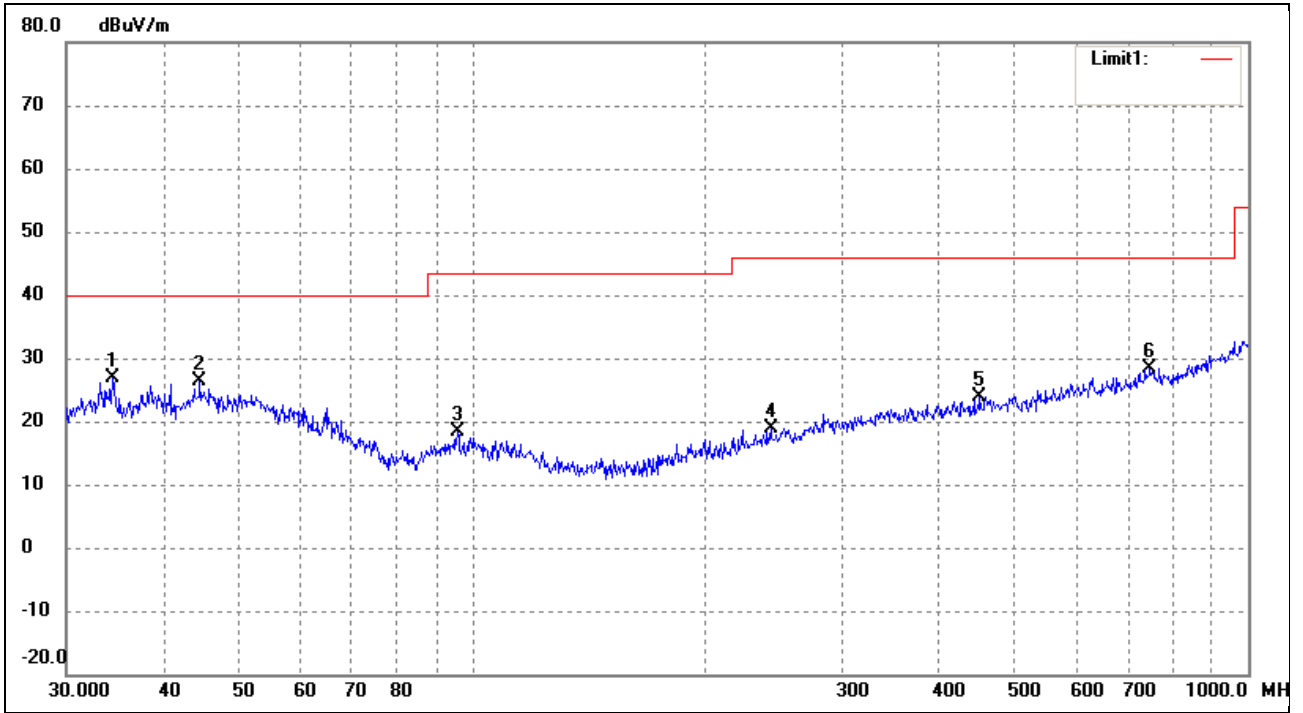
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	33.0950	35.26	-9.77	25.49	40.00	-14.51	240	100	peak
2	45.6948	33.58	-8.07	25.51	40.00	-14.49	142	100	peak
3	95.0930	33.36	-15.09	18.27	43.50	-25.23	76	100	peak
4	316.5890	31.07	-8.96	22.11	46.00	-23.89	144	100	peak
5	706.6999	30.25	-2.51	27.74	46.00	-18.26	125	100	peak
6	1000.0000	29.80	4.04	33.84	54.00	-20.16	273	100	peak

Test Channel	Lowest Channel	Polarity:	Vertical
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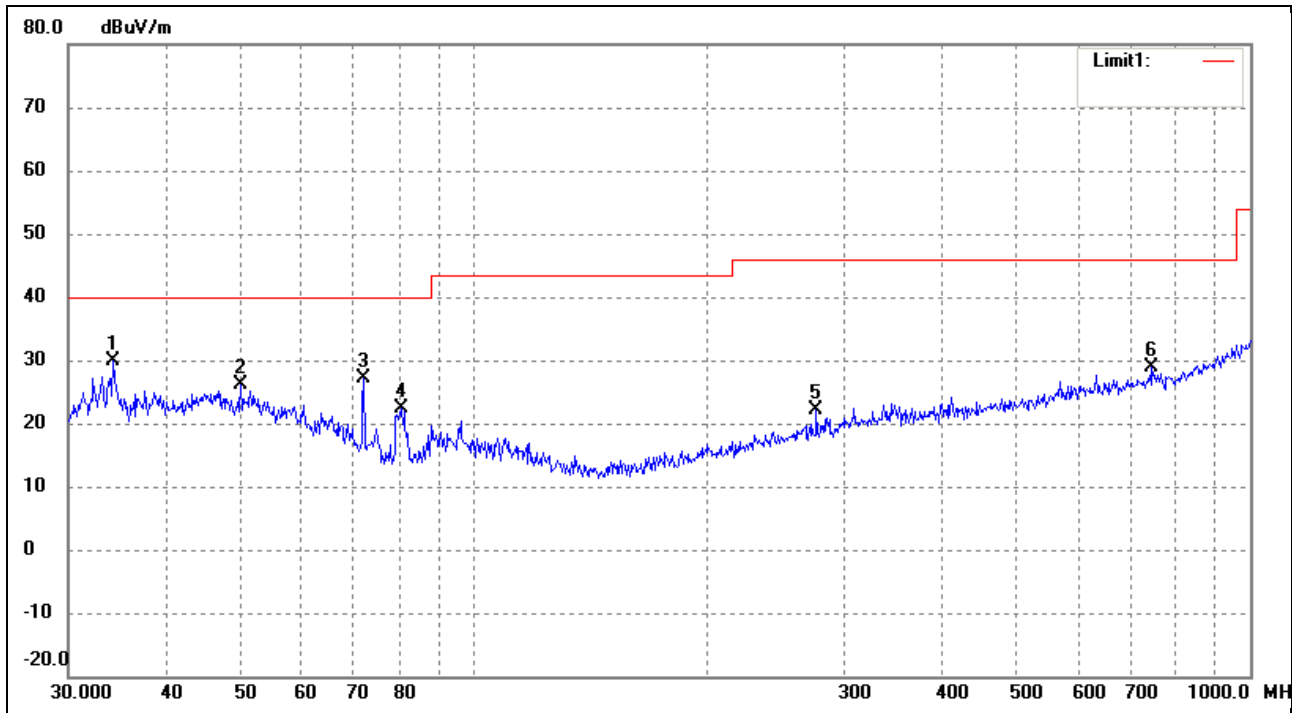
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	34.6385	37.56	-9.70	27.86	40.00	-12.14	66	100	peak
2	45.5348	32.72	-8.07	24.65	40.00	-15.35	190	100	peak
3	62.6507	38.50	-11.65	26.85	40.00	-13.15	70	100	peak
4	96.0986	36.12	-15.07	21.05	43.50	-22.45	96	100	peak
5	338.4001	31.46	-8.15	23.31	46.00	-22.69	337	100	peak
6	580.7026	31.42	-4.38	27.04	46.00	-18.96	156	100	peak

Test Channel	Near Middle Channel	Polarity:	Horizontal
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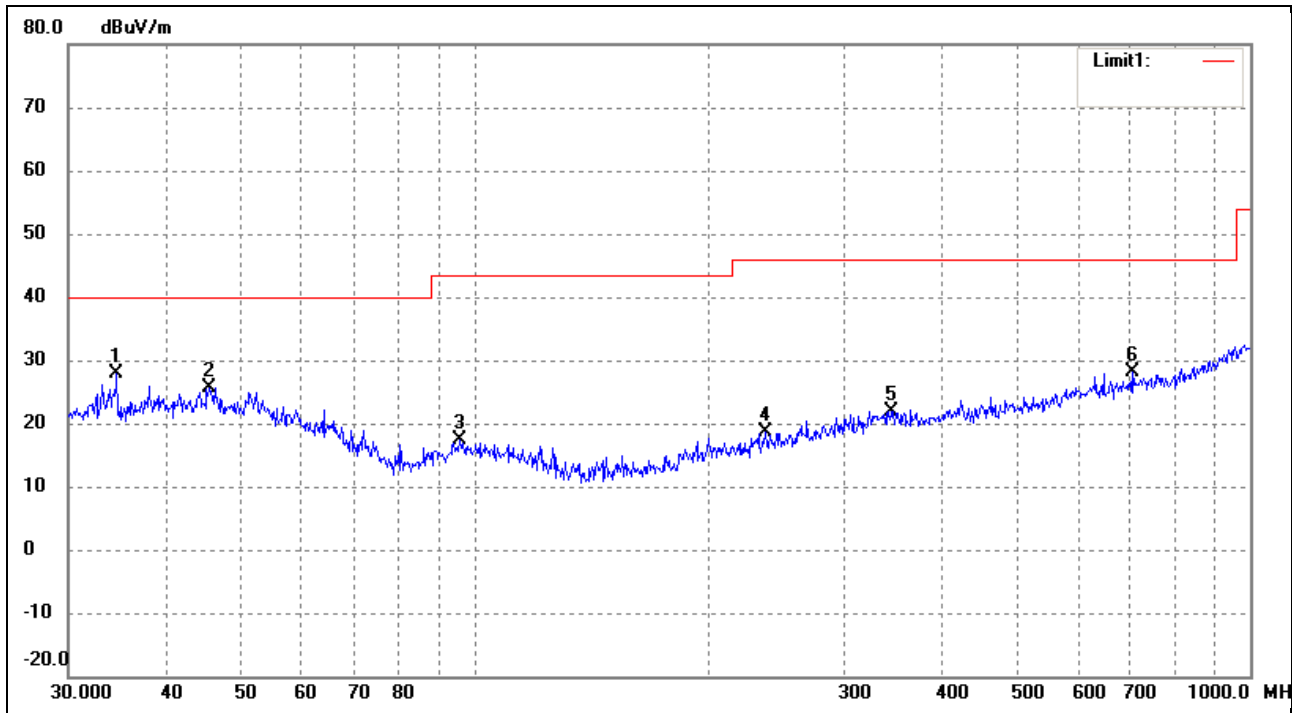
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	34.3964	36.56	-9.74	26.82	40.00	-13.18	278	100	peak
2	44.5868	34.37	-8.03	26.34	40.00	-13.66	151	100	peak
3	95.7622	33.49	-15.08	18.41	43.50	-25.09	78	100	peak
4	242.5253	30.09	-11.31	18.78	46.00	-27.22	286	100	peak
5	451.1350	30.91	-6.94	23.97	46.00	-22.03	53	100	peak
6	747.4826	30.10	-1.78	28.32	46.00	-17.68	269	100	peak

Test Channel	Near Middle Channel	Polarity:	Vertical
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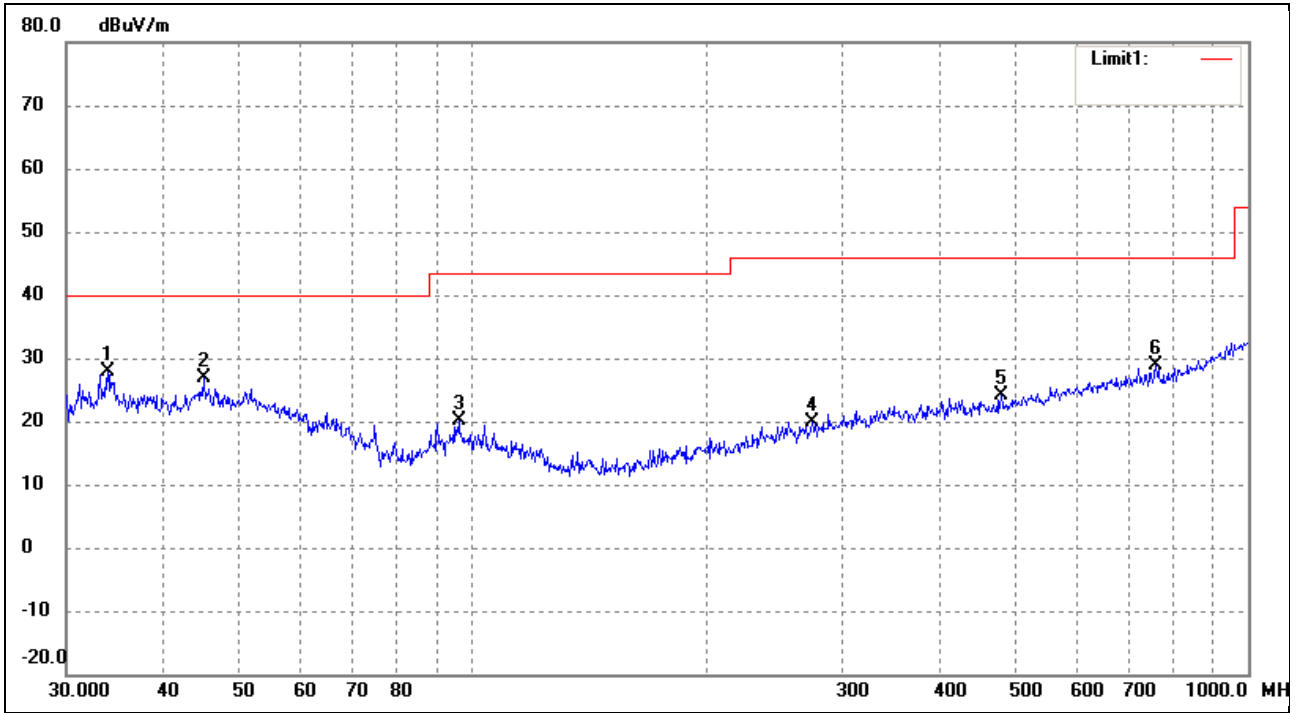
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	34.2760	39.74	-9.76	29.98	40.00	-10.02	82	100	peak
2	50.0566	34.62	-8.54	26.08	40.00	-13.92	124	100	peak
3	72.0843	42.39	-15.32	27.07	40.00	-12.93	128	100	peak
4	80.6442	39.43	-17.04	22.39	40.00	-17.61	135	100	peak
5	276.1236	32.30	-10.19	22.11	46.00	-23.89	247	100	peak
6	747.4826	30.54	-1.78	28.76	46.00	-17.24	225	100	peak

Test Channel	Highest Channel	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	34.6385	37.61	-9.70	27.91	40.00	-12.09	344	100	peak
2	45.5348	33.71	-8.07	25.64	40.00	-14.36	216	100	peak
3	95.7622	32.36	-15.08	17.28	43.50	-26.22	68	100	peak
4	237.4760	30.26	-11.62	18.64	46.00	-27.36	124	100	peak
5	345.5952	29.97	-8.02	21.95	46.00	-24.05	230	100	peak
6	704.2261	30.65	-2.56	28.09	46.00	-17.91	98	100	peak

Test Channel	Highest Channel	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	33.9174	37.65	-9.80	27.85	40.00	-12.15	308	100	peak
2	45.0583	34.85	-8.05	26.80	40.00	-13.20	95	100	peak
3	96.0986	35.32	-15.07	20.25	43.50	-23.25	282	100	peak
4	274.1939	30.19	-10.26	19.93	46.00	-26.07	97	100	peak
5	480.5276	30.45	-6.32	24.13	46.00	-21.87	93	100	peak
6	760.7036	30.40	-1.60	28.80	46.00	-17.20	124	100	peak

Spurious Emissions Above 1GHz

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector
(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	H/V	
Lowest Channel: 2410MHz							
2410	105.55	-7.19	98.36	114	-15.64	H	PK
2410	91.66	-7.19	84.47	94	-9.53	H	AV
4820	62.25	-3.51	58.74	74	-15.26	H	PK
4820	45.66	-3.51	42.15	54	-11.85	H	AV
7230	50.84	1.41	52.25	74	-21.75	H	PK
7230	41.45	1.41	42.86	54	-11.14	H	AV
2410	107.03	-7.19	99.84	114	-14.16	V	PK
2410	92.94	-7.19	85.75	94	-8.25	V	AV
4820	62.59	-3.51	59.08	74	-14.92	V	PK
4820	44.19	-3.51	40.68	54	-13.32	V	AV
7230	49.34	1.41	50.75	74	-23.25	V	PK
7230	41.76	1.41	43.17	54	-10.83	V	AV
Near Middle Channel: 2442MHz							
2442	107.01	-7.01	100.00	114	-14.00	H	PK
2442	92.36	-7.01	85.35	94	-8.65	H	AV
4884	62.14	-3.46	58.68	74	-15.32	H	PK
4884	44.47	-3.46	41.01	54	-12.99	H	AV
7326	51.45	1.32	52.77	74	-21.23	H	PK
7326	39.73	1.32	41.05	54	-12.95	H	AV
2442	107.05	-7.01	100.04	114	-13.96	V	PK
2442	93.48	-7.01	86.47	94	-7.53	V	AV
4884	62.98	-3.46	59.52	74	-14.48	V	PK
4884	43.84	-3.46	40.38	54	-13.62	V	AV
7326	50.48	1.32	51.80	74	-22.20	V	PK
7326	40.74	1.32	42.06	54	-11.94	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	106.60	-6.81	99.79	114	-14.21	H	PK
2475	93.78	-6.81	86.97	94	-7.03	H	AV
4950	63.34	-3.41	59.93	74	-14.07	H	PK
4950	45.88	-3.41	42.47	54	-11.53	H	AV
7425	51.64	1.22	52.86	74	-21.14	H	PK
7425	40.95	1.22	42.17	54	-11.83	H	AV
2475	101.44	-6.81	99.84	114	-14.16	V	PK
2475	93.67	-6.81	85.75	94	-8.25	V	AV
4950	62.96	-3.41	59.55	74	-14.45	V	PK
4950	43.95	-3.41	40.54	54	-13.46	V	AV
7425	51.40	1.22	52.62	74	-21.38	V	PK
7425	41.71	1.22	42.93	54	-11.07	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 50 dB 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.

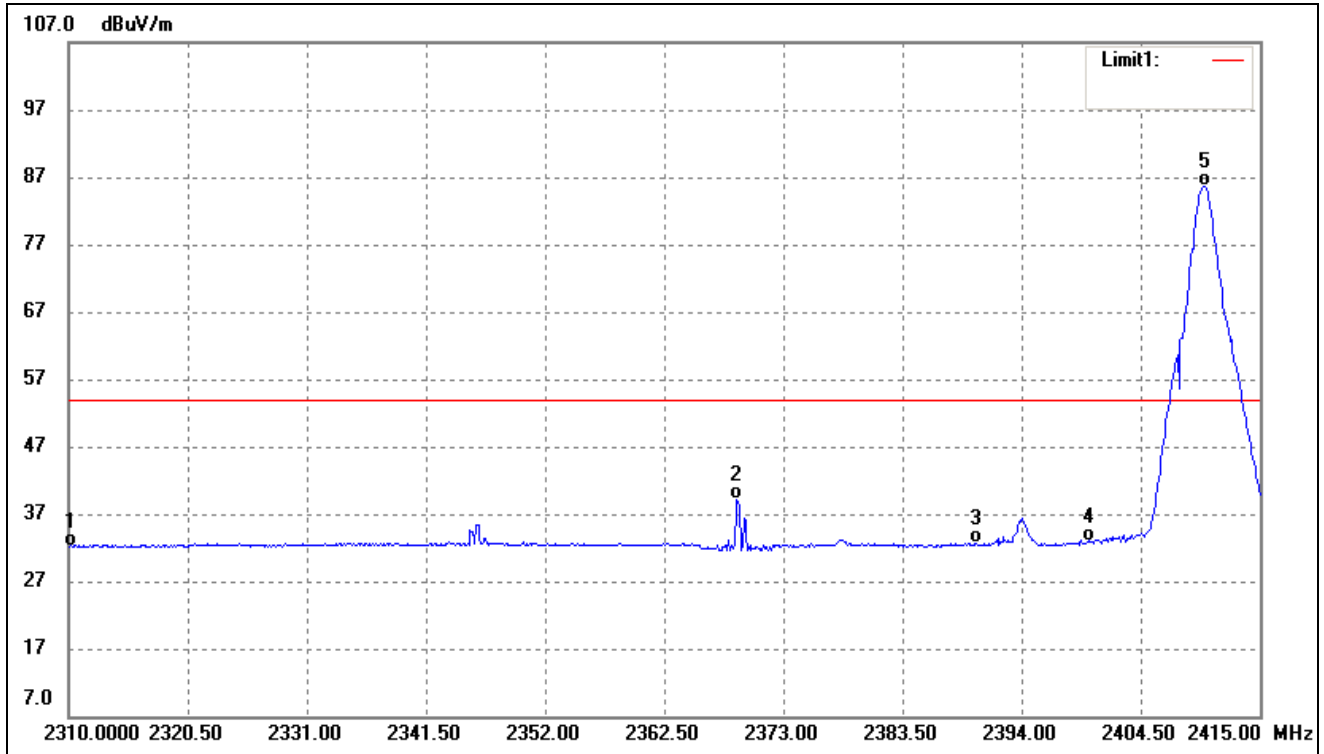
5.3 Summary of Test Results/Plots

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

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

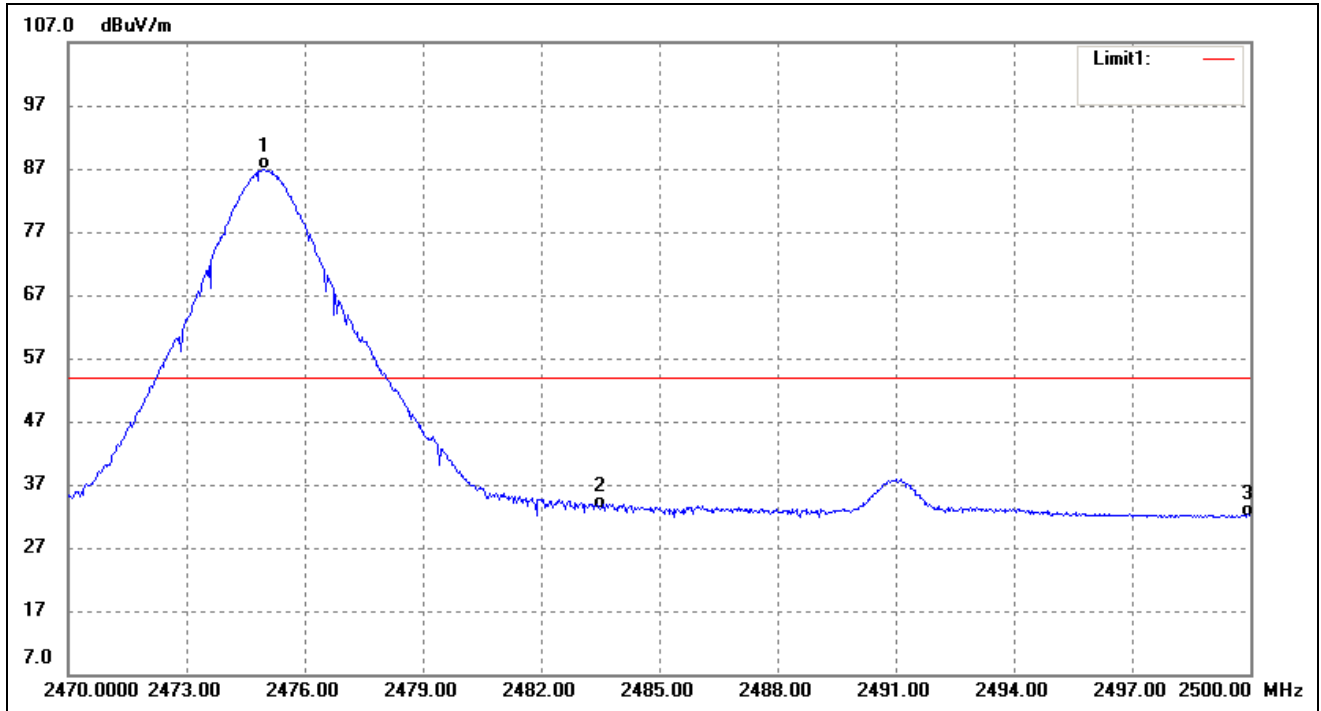
Please refer to the test plots as below.

Test Channel	Lowest Channel	Polarity:	Vertical(worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2310.000	39.85	-7.78	32.07	54.00	-21.93	Ave Detector
		53.10	-7.78	45.32	74.00	-28.68	Peak Detector
3	2390.000	39.93	-7.32	32.61	54.00	-21.39	Ave Detector
		68.41	-7.32	61.09	74.00	-12.91	Peak Detector
4	2400.000	40.10	-7.26	32.84	54.00	-21.16	Ave Detector
		75.91	-7.26	68.65	74.00	-5.35	Peak Detector
5	2410.170	92.94	-7.19	85.75	/	/	Ave Detector
		107.03	-7.19	99.84	/	/	Peak Detector

Test Channel	Highest Channel	Polarity:	Vertical(worst case)
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2474.980	93.67	-6.82	86.85	/	/	Ave Detector
	2475.280	101.44	-6.81	94.63	/	/	Peak Detector
2	2483.500	39.85	-6.77	33.08	54.00	-20.92	Ave Detector
	2483.500	70.67	-6.77	63.90	74.00	-10.10	Peak Detector
3	2500.000	38.65	-6.67	31.98	54.00	-22.02	Ave Detector
	2500.000	61.30	-6.67	54.63	74.00	-19.37	Peak Detector

6. Emission Bandwidth

6.1 Standard Applicable

According to 15.215 (c), 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 20 dB 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 \geq 1% 20dB Bandwidth, VBW \geq RBW

Sweep = auto

Detector function = peak

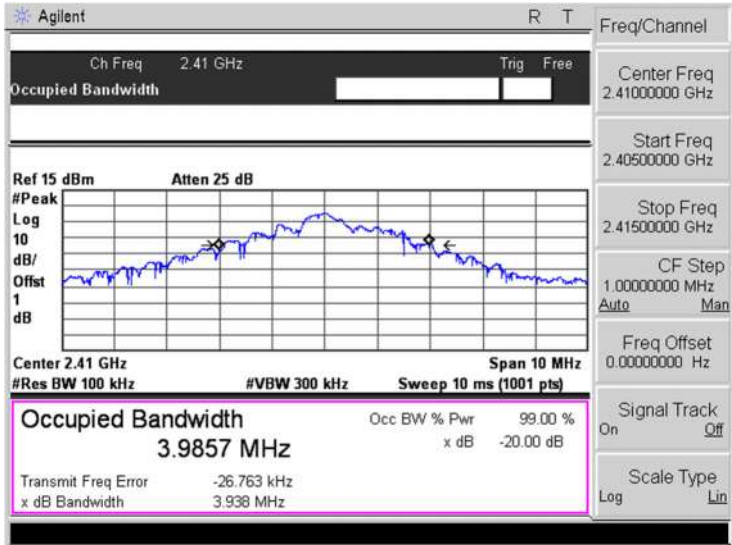
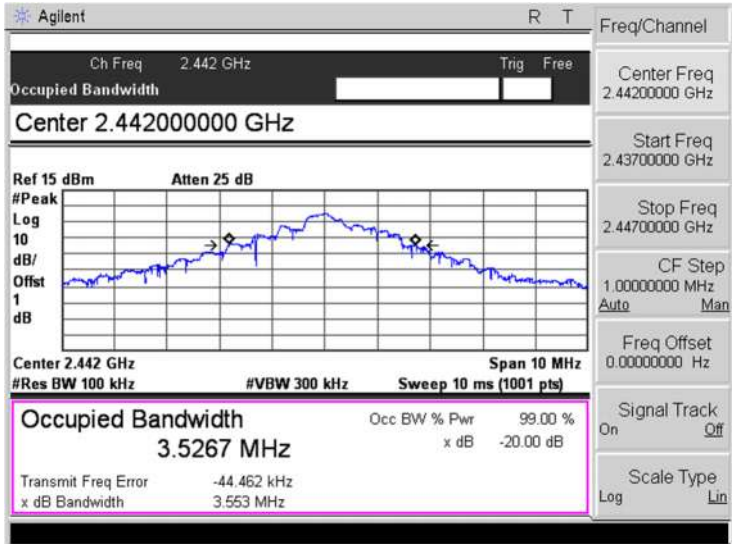
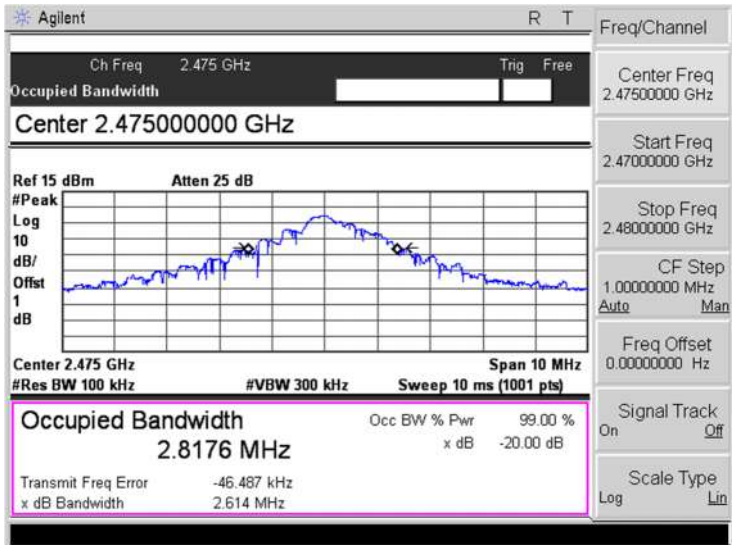
Trace = max hold

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 (MHz)
Lowest Channel	3.938
Near Middle Channel	3.553
Highest Channel	2.614

Please refer to the following test plots

<p>Lowest Channel</p>	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.41 GHz Trig Free</p> <p>Center Freq 2.41000000 GHz</p> <p>Start Freq 2.40500000 GHz</p> <p>Stop Freq 2.41500000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p> <p>Center 2.41 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 3.9857 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -20.00 dB</p> <p>Transmit Freq Error -26.763 kHz</p> <p>x dB Bandwidth 3.938 MHz</p>
<p>Near Middle Channel</p>	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.442 GHz Trig Free</p> <p>Center Freq 2.44200000 GHz</p> <p>Start Freq 2.43700000 GHz</p> <p>Stop Freq 2.44700000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p> <p>Center 2.442 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 3.5267 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -20.00 dB</p> <p>Transmit Freq Error -44.462 kHz</p> <p>x dB Bandwidth 3.553 MHz</p>
<p>Highest Channel</p>	 <p>Agilent R T Freq/Channel</p> <p>Ch Freq 2.475 GHz Trig Free</p> <p>Center Freq 2.47500000 GHz</p> <p>Start Freq 2.47000000 GHz</p> <p>Stop Freq 2.48000000 GHz</p> <p>CF Step 1.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Scale Type Log Lin</p> <p>Center 2.475 GHz Span 10 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 10 ms (1001 pts)</p> <p>Occupied Bandwidth 2.8176 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -20.00 dB</p> <p>Transmit Freq Error -46.487 kHz</p> <p>x dB Bandwidth 2.614 MHz</p>

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