Measurement and Test Report under Part 15.249 of the FCC Rules and RSS-210 Issue 9 (August 2016)

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: 2AO3LB1363T24G	IC: 25023-B1363T

FCC Rule(s)/Standard(s):	Part 15.249 of the FCC Rules and RSS-210 Issue 9 (August 2016)
Product Description:	Controller
Tested Item Number:	B1363
Tested Model #:	B1363T
Report No.:	WTX19X06036214W
Received Date of Sample:	2019-06-04
Tested Date:	2019-06-04 to 2019-06-05
Issued Date:	2019-06-05
Tested by:	Mike Shi (Engineer)
Reviewed by:	Silin Chen (EMC Manager)
Approved & Authorized by:	Jandy So (Manager)

Prepared by:

Shenzhen SEM Test Technology Co. Ltd
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, 518101, China
Tel.: +86-755-33663308 Fax: +86-755-33663309 Website: www.semtest.com.cn

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:	Controller
Tested Brand Name:	/
Tested Item Number:	B1363
Tested Model #:	B1363T [Tested Model # is same electrically identical as Tested Item Number]
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Power Source:	DC 9.0V (1 unit of DC 9V Battery)
Frequency Range:	2415-2475 MHz
Max. Field Strength:	101.98 dBuV/m
Modulation:	GFSK
Quantity of Channels:	/
Antenna Type:	Fixed 30mm-long Wire Antenna
Antenna Gain:	0 dBi
Lowest Internal Frequency:	16 MHz
Highest Internal Frequency:	2475 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.

RSS-210 Issue 9 (August 2016): Licence-Exempt Radio Apparatus: Category I Equipment.

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, American National Standard for Testing Unlicensed Wireless Devices,

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted with Lowest Channel, Near Middle Channel and Highest Channel, 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 Test Firm Registration Number: 125990.

Innovation, Science and Economic Development Canada (ISED) - 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 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	2415MHz
TM2	Near Middle Channel	2445MHz
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
/	/	/	/

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
		6-18GHz ±3.92dB

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2019-04-30	2020-04-29
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2019-04-30	2020-04-29
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2019-04-30	2020-04-29
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2019-04-30	2020-04-29
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2019-04-30	2020-04-29
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2019-05-05	2021-05-04
SEMT-1042	Horn Antenna	ETS	3117	00086197	2019-05-05	2021-05-04
SEMT-1121	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2019-05-05	2021-05-04
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2019-05-05	2021-05-04
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2019-04-30	2020-04-29
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2019-04-30	2020-04-29
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2019-04-30	2020-04-29
SEMT-1168	Pre-amplifier	Direction Systems Inc.	PAP-0126	14141-12838	2019-04-30	2020-04-29
SEMT-1169	Pre-amplifier	Direction Systems Inc.	PAP-2640	14145-14153	2019-04-30	2020-04-29
SEMT-1163	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2019-04-30	2020-04-29
SEMT-1170	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2019-05-05	2021-05-04
SEMT-1166	Power Limiter	Agilent	N9356B	MY45450376	2019-04-30	2020-04-29
SEMT-1048	RF Limiter	ATTEN	AT-BSF-2400~2500	/	2019-04-30	2020-04-29
SEMT-1076	RF Switcher	Top Precision	RCS03-A2	/	2019-04-30	2020-04-29
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

Rule(s)/Standard(s)	Description of Test Item	Result
Part 15.203 of the FCC Rules; RSS-Gen Issue 5 (March 2019) Section 6.8	Antenna Requirement	Compliant
Part 15.205 of the FCC Rules	Restricted Band of Operation	Compliant
Part 15.209(a)(f) of the FCC Rules; RSS-210 Issue 9 (August 2016) B.10 (a)	Radiated Emission; Radiated Spurious Emissions	Compliant
Part 15.249(a) of the FCC Rules; RSS-210 Issue 9, B.10 (a)	Field Strength of Emissions	Compliant
Part 15.249(d) of the FCC Rules; RSS-210 Issue 9 (August 2016) B.10 (b)	Out-of-band Emission	Compliant
Part 15.215(c) of the FCC Rules; RSS-Gen Issue 5 (March 2019) Section 6.7	Emission Bandwidth; Occupied Bandwidth	Compliant
Part 15.207(a) of the FCC Rules; RSS-Gen Issue 5 (March 2019) Section 8.8	Conducted Emissions	N/A

N/A: Not applicable

*Remark: The AC Line Conducted Emissions testing is exempted because it is powered solely by battery/batteries. Thus, the AC Line Conducted Emissions testing is 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.

According to RSS-Gen Issue 5 (March 2019) Section 6.8, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns.

3.2 Test Result

This product has a Fixed 30mm-long Wire 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.

According to RSS-210 Issue 9 (August 2016) B.10(a), and RSS-Gen Issue 5 (March 2019) Section 8.9, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Table 2 of the section 2.5
30 - 88 MHz 40 dBuV/m @3M
88 -216 MHz 43.5 dBuV/m @3M
216 -960 MHz 46 dBuV/m @3M
Above 960 MHz 54dBuV/m @3M

The field strength of fundamental and harmonic emissions, measured at 3 m, shall not exceed 50 mV/m and 0.5 mV/m respectively.

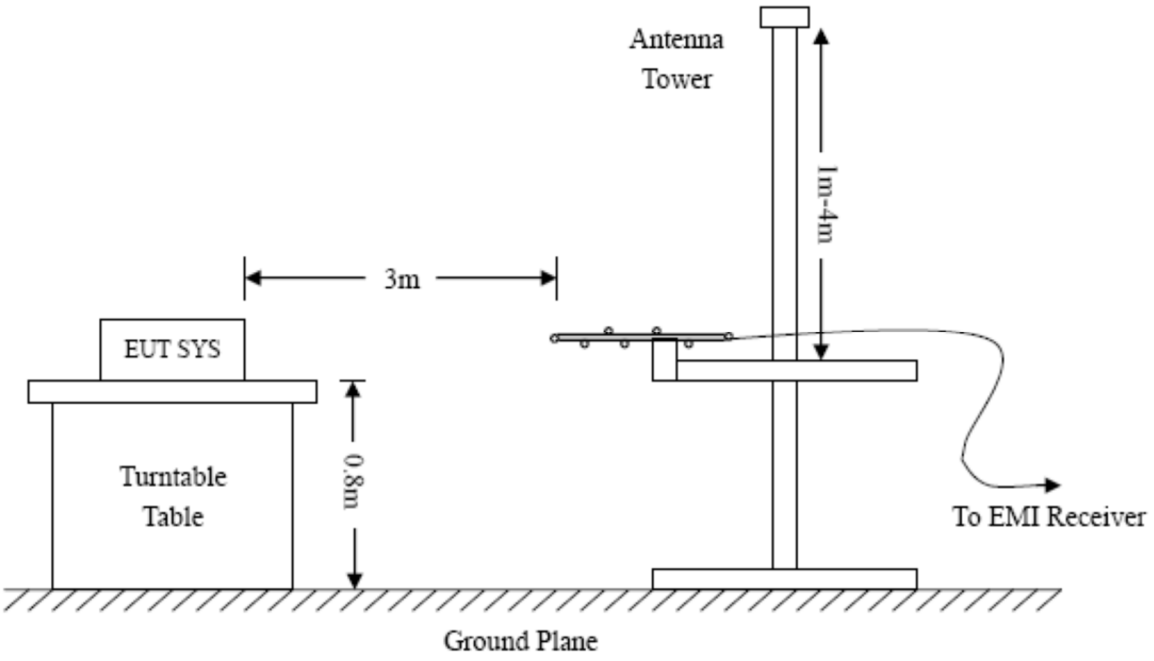
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in RSS-Gen Issue 5 (March 2019) Section 8.9 for limiting peak emissions apply.

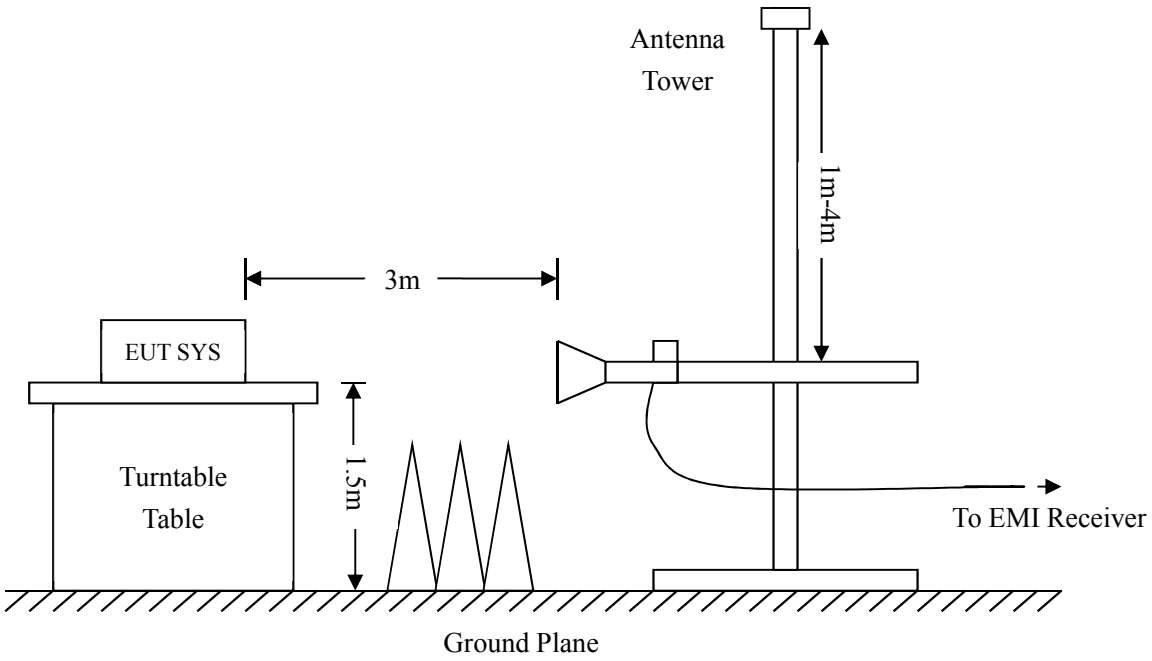
Emissions that fall in the restricted bands [RSS-210 Issue 9 (August 2016) Section 4.4] must be less than 54dBuV/m otherwise the spurious and harmonics must be attenuated by at least 50dB.

4.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with Part 15.205, 15.249(a), 15.209 of the FCC Rules, RSS-210 Issue 9 (August 2016) B.10(a) and RSS-Gen Issue 5 (March 2019) Section 8.9 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	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 -6dBμV means the emission is 6dBμV below the maximum limit. The equation for margin calculation is as follows:

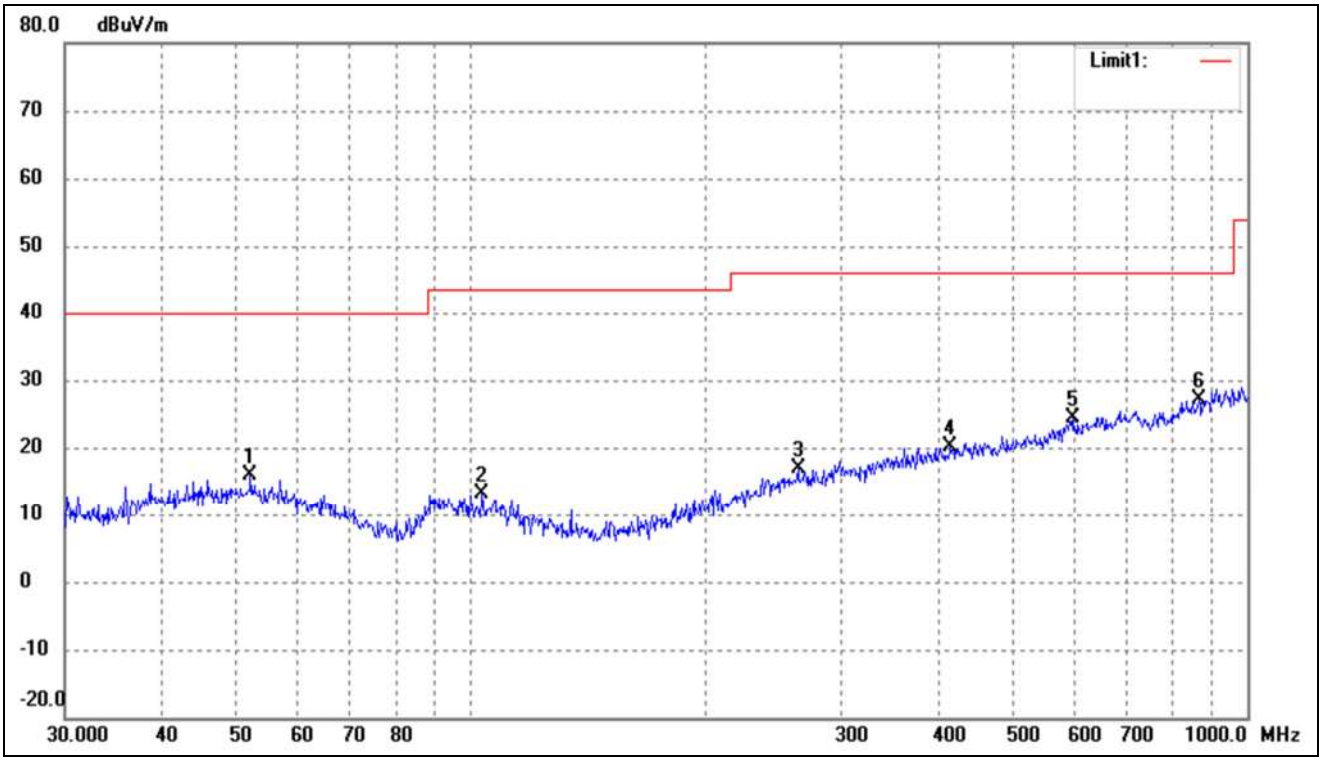
Margin = Corr. Ampl. – FCC Part 15C Limit [RSS-210 Issue 9 (August 2016) B.10 Limit]

4.4 Summary of Test Results/Plots

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

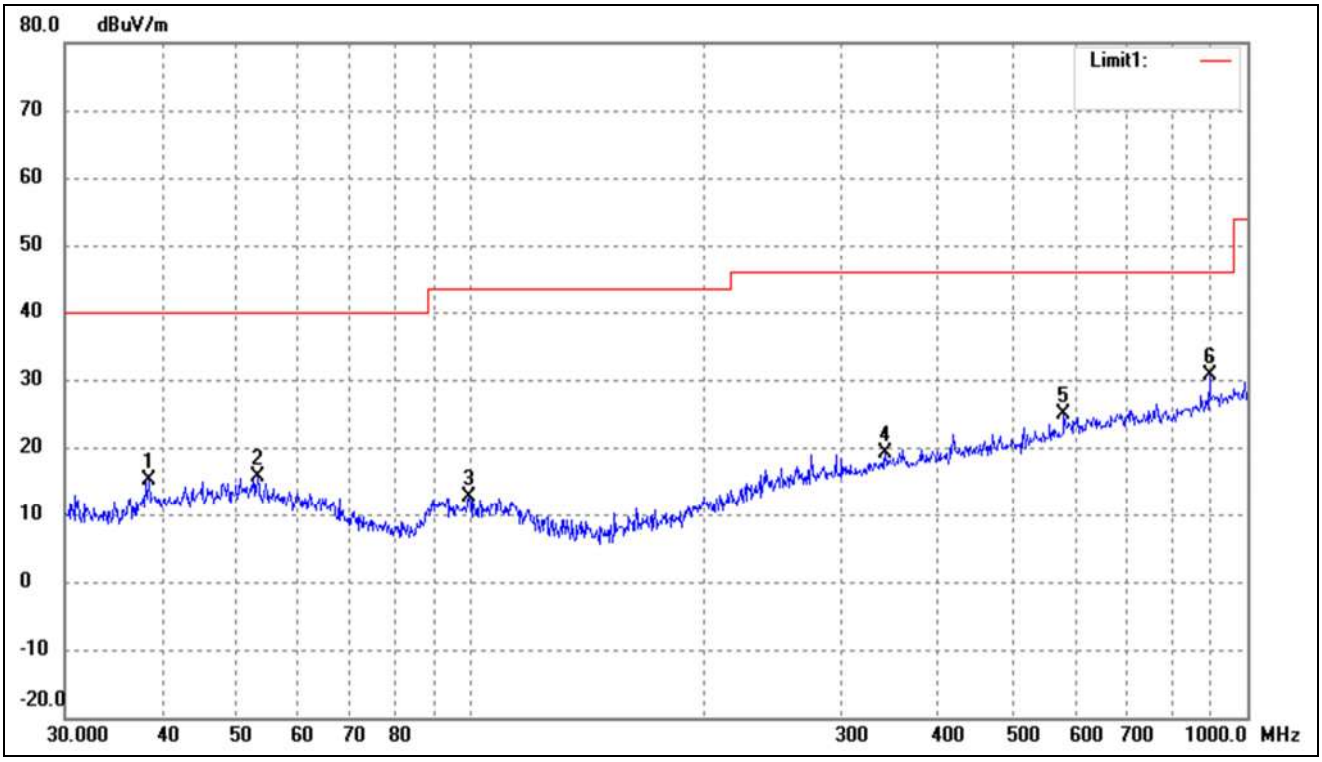
➢ Spurious Emissions Below 1GHz

Test Channel	Lowest Channel	Polarity:	Horizontal



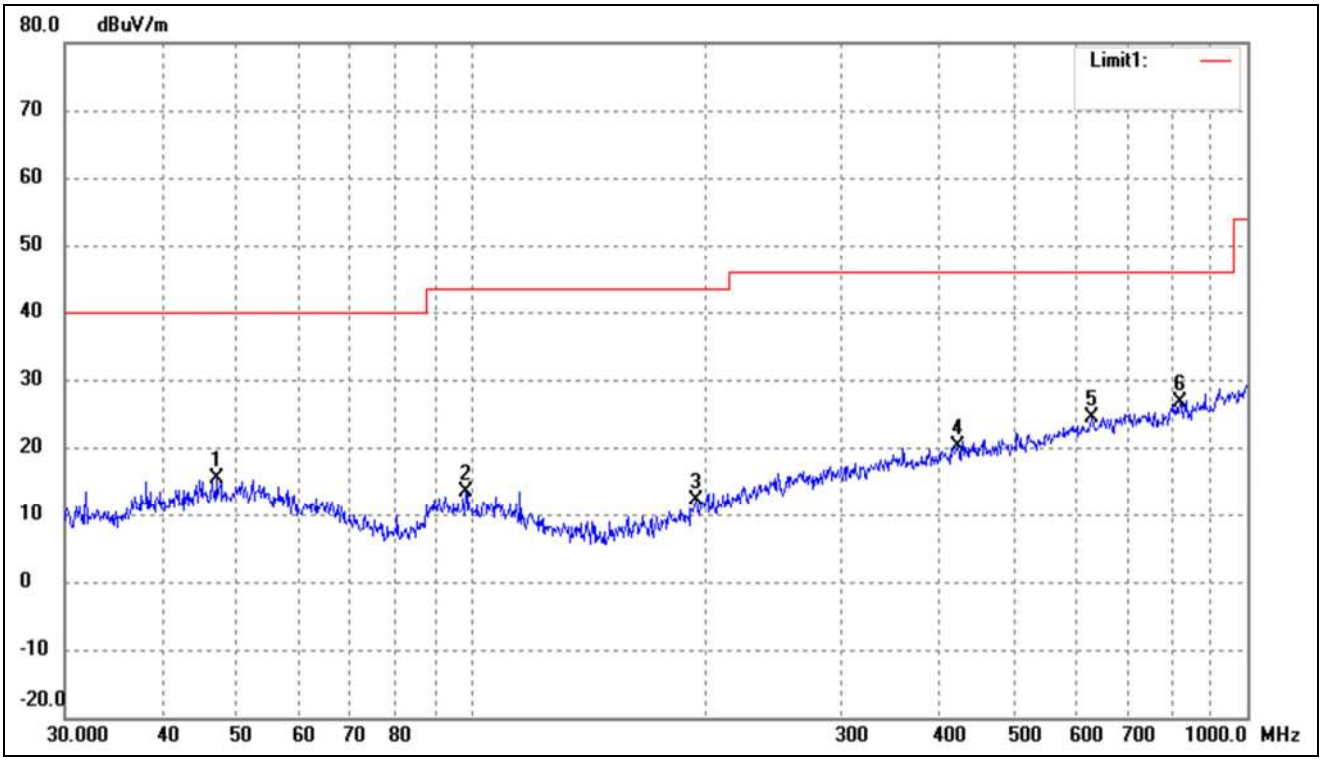
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	52.0251	27.42	-11.59	15.83	40.00	-24.17	203	100	peak
2	103.4421	26.70	-13.51	13.19	43.50	-30.31	99	100	peak
3	263.8190	25.99	-9.02	16.97	46.00	-29.03	245	100	peak
4	414.7223	26.44	-6.41	20.03	46.00	-25.97	118	100	peak
5	595.1329	27.69	-3.35	24.34	46.00	-21.66	107	100	peak
6	866.0879	26.96	0.28	27.24	46.00	-18.76	207	100	peak

Test Channel	Lowest Channel	Polarity:	Vertical



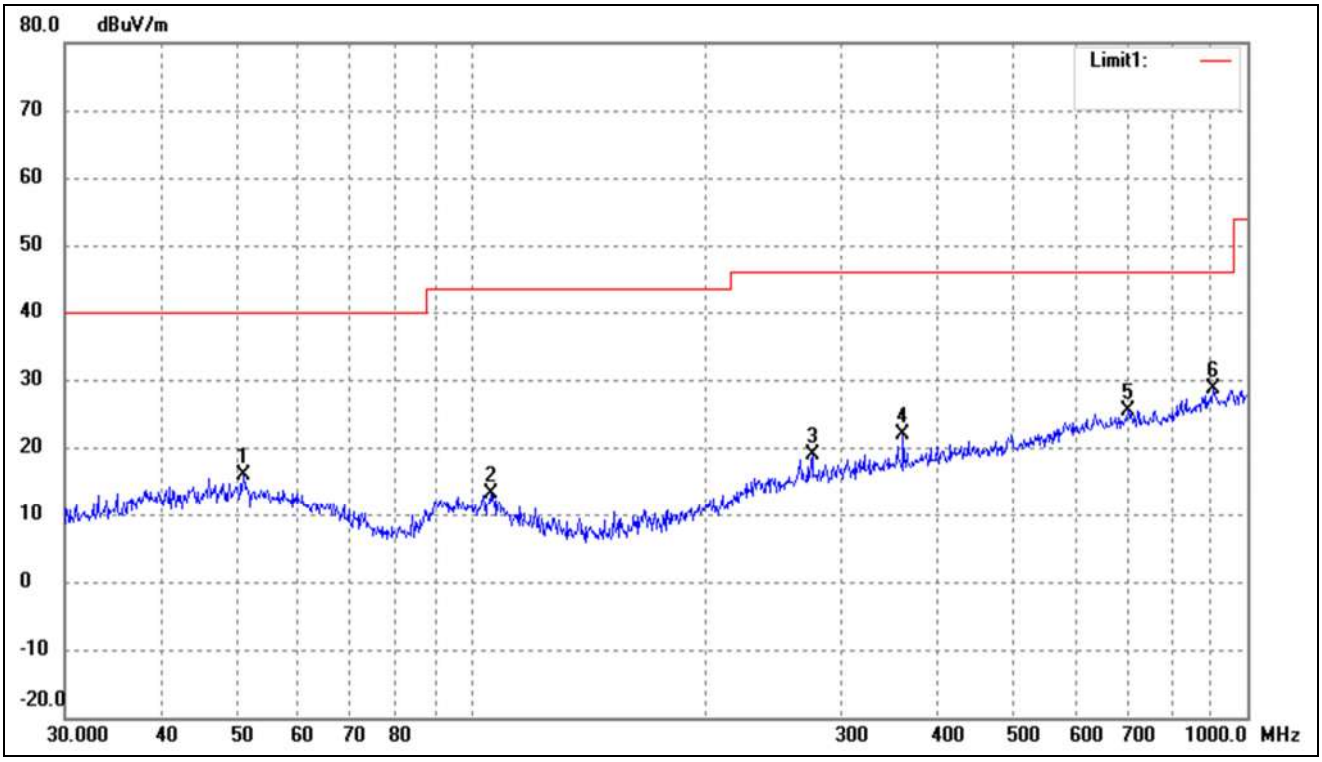
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	38.4809	28.21	-13.07	15.14	40.00	-24.86	308	100	peak
2	53.1313	27.33	-11.75	15.58	40.00	-24.42	91	100	peak
3	99.5281	26.52	-13.86	12.66	43.50	-30.84	197	100	peak
4	341.9787	26.44	-7.22	19.22	46.00	-26.78	113	100	peak
5	580.7026	28.49	-3.69	24.80	46.00	-21.20	122	100	peak
6	893.8567	29.82	0.72	30.54	46.00	-15.46	203	100	peak

Test Channel	Near Middle Channel	Polarity:	Horizontal



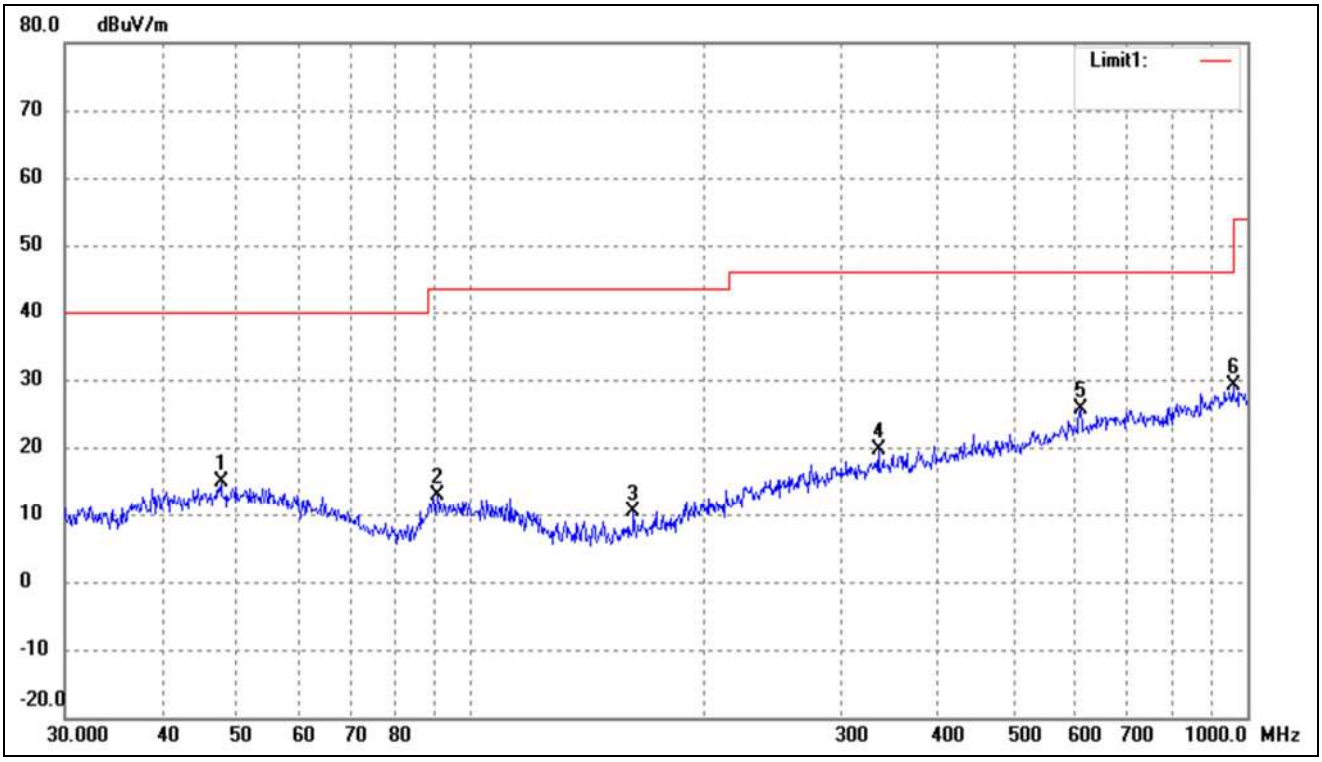
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	46.9948	27.09	-11.73	15.36	40.00	-24.64	115	100	peak
2	98.4866	27.26	-13.98	13.28	43.50	-30.22	210	100	peak
3	195.1365	25.92	-13.74	12.18	43.50	-31.32	73	100	peak
4	423.5403	26.45	-6.23	20.22	46.00	-25.78	105	100	peak
5	631.6884	27.20	-2.72	24.48	46.00	-21.52	151	100	peak
6	818.8341	27.03	-0.38	26.65	46.00	-19.35	340	100	peak

Test Channel	Near Middle Channel	Polarity:	Vertical



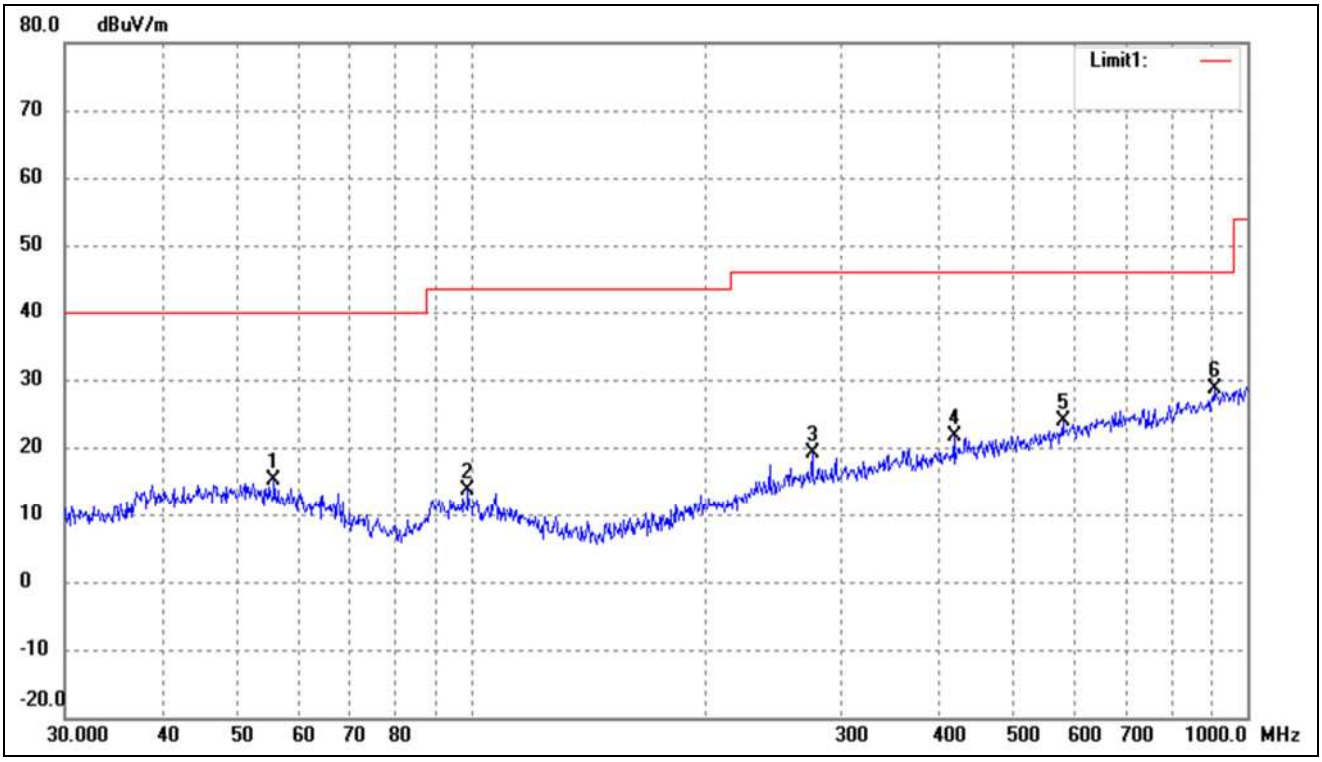
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	50.9420	27.48	-11.59	15.89	40.00	-24.11	72	100	peak
2	106.0126	26.58	-13.48	13.10	43.50	-30.40	141	100	peak
3	275.1570	27.81	-8.97	18.84	46.00	-27.16	77	100	peak
4	360.4477	29.15	-7.16	21.99	46.00	-24.01	111	100	peak
5	701.7610	27.10	-1.77	25.33	46.00	-20.67	305	100	peak
6	903.3094	27.59	1.03	28.62	46.00	-17.38	316	100	peak

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	47.6586	26.62	-11.69	14.93	40.00	-25.07	168	100	peak
2	90.5374	26.27	-13.51	12.76	43.50	-30.74	128	100	peak
3	162.0414	26.90	-16.42	10.48	43.50	-33.02	82	100	peak
4	334.8589	27.21	-7.49	19.72	46.00	-26.28	132	100	peak
5	609.9217	28.87	-3.20	25.67	46.00	-20.33	299	100	peak
6	958.7943	27.40	1.80	29.20	46.00	-16.80	271	100	peak

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	55.8047	27.44	-12.31	15.13	40.00	-24.87	308	100	peak
2	99.1797	27.58	-13.90	13.68	43.50	-29.82	91	100	peak
3	275.1570	28.01	-8.97	19.04	46.00	-26.96	197	100	peak
4	419.1081	27.92	-6.33	21.59	46.00	-24.41	113	100	peak
5	578.6699	27.71	-3.78	23.93	46.00	-22.07	122	100	peak
6	906.4824	27.52	1.18	28.70	46.00	-17.30	203	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-2415MHz							
2415	109.15	-7.17	101.98	114	-12.02	H	PK
2410	95.73	-7.17	88.56	94	-5.44	H	AV
4830	62.11	-3.71	58.40	74	-15.60	H	PK
4830	46.01	-3.71	42.30	54	-11.70	H	AV
7245	49.66	1.48	51.14	74	-22.86	H	PK
7245	39.84	1.48	41.32	54	-12.68	H	AV
2415	91.89	-7.17	84.72	114	-29.28	V	PK
2410	88.13	-7.17	80.96	94	-13.04	V	AV
4830	61.71	-3.71	58.00	74	-16.00	V	PK
4830	46.19	-3.71	42.48	54	-11.52	V	AV
7245	49.78	1.48	51.26	74	-22.74	V	PK
7245	41.08	1.48	42.56	54	-11.44	V	AV
Near Middle Channel-2445MHz							
2445	107.15	-7.14	101.98	114	-12.02	H	PK
2445	94.71	-7.14	88.56	94	-5.44	H	AV
4890	62.17	-3.56	58.61	74	-15.39	H	PK
4890	45.91	-3.56	42.35	54	-11.65	H	AV
7335	49.39	1.52	50.91	74	-23.09	H	PK
7335	42.67	1.52	44.19	54	-9.81	H	AV
2445	91.52	-7.14	84.38	114	-29.62	V	PK
2445	90.24	-7.14	83.10	94	-10.90	V	AV
4890	62.05	-3.56	58.49	74	-15.51	V	PK
4890	46.32	-3.56	42.76	54	-11.24	V	AV
7335	50.74	1.52	52.26	74	-21.74	V	PK
7335	39.87	1.52	41.39	54	-12.61	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	104.96	-6.91	98.15	114	-15.85	H	PK
2475	94.31	-6.91	87.5	94	-6.50	H	AV
4950	64.26	-3.48	60.78	74	-13.22	H	PK
4950	47.68	-3.48	44.20	54	-9.80	H	AV
7425	51.64	1.35	52.99	74	-21.01	H	PK
7425	40.25	1.35	41.60	54	-12.40	H	AV
2475	90.53	-6.91	83.62	114	-30.38	V	PK
2475	86.26	-6.91	79.35	94	-14.65	V	AV
4950	63.84	-3.48	60.36	74	-13.64	V	PK
4950	42.83	-3.48	39.35	54	-14.65	V	AV
7425	53.03	1.35	54.38	74	-19.62	V	PK
7425	41.50	1.35	42.85	54	-11.15	V	AV

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 5th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
The measurements greater than 20dB below the limit from 9kHz to 30MHz.

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.

Emissions radiated outside of the specified frequency bands, except for harmonic emissions, shall be attenuated by at least 50 dB below the level of the fundamental emissions or to the general field strength limits listed in RSS-Gen Issue 5 (March 2019), whichever is less stringent.

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 and RSS-210 Issue 9 (August 2016).

5.3 Summary of Test Results/Plots

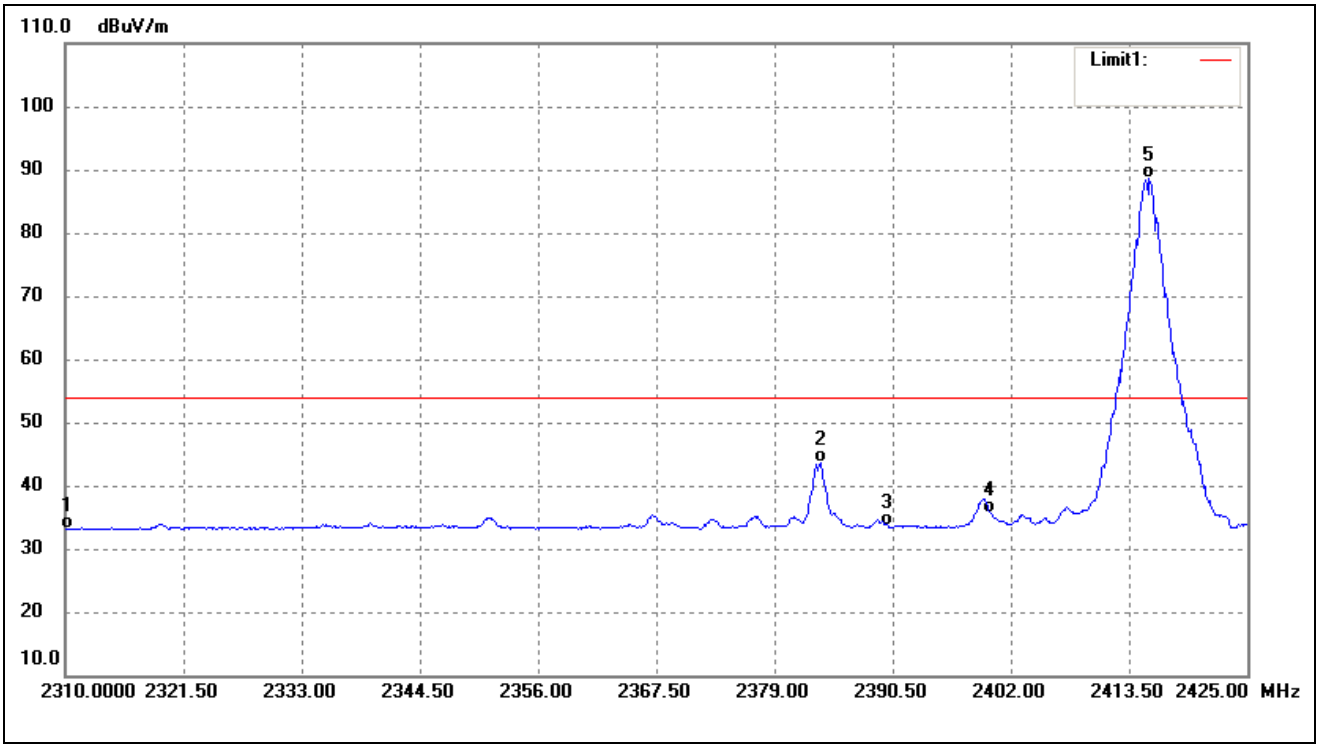
Test mode	Frequency (MHz)	Limit (dBuV / dBc)	Result
Lowest	2310.00	<54 dBuV	Pass
	2390.00	<54 dBuV	Pass
	2400.00	<54 dBuV	Pass
Highest	2483.50	<54 dBuV	Pass
	2500.00	<54 dBuV	Pass

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

The edge emissions are below the section 8.10 Limits of RSS-Gen Issue 5 (March 2019) or complies with the RSS-210 Issue 9 (August 2016) requirements.

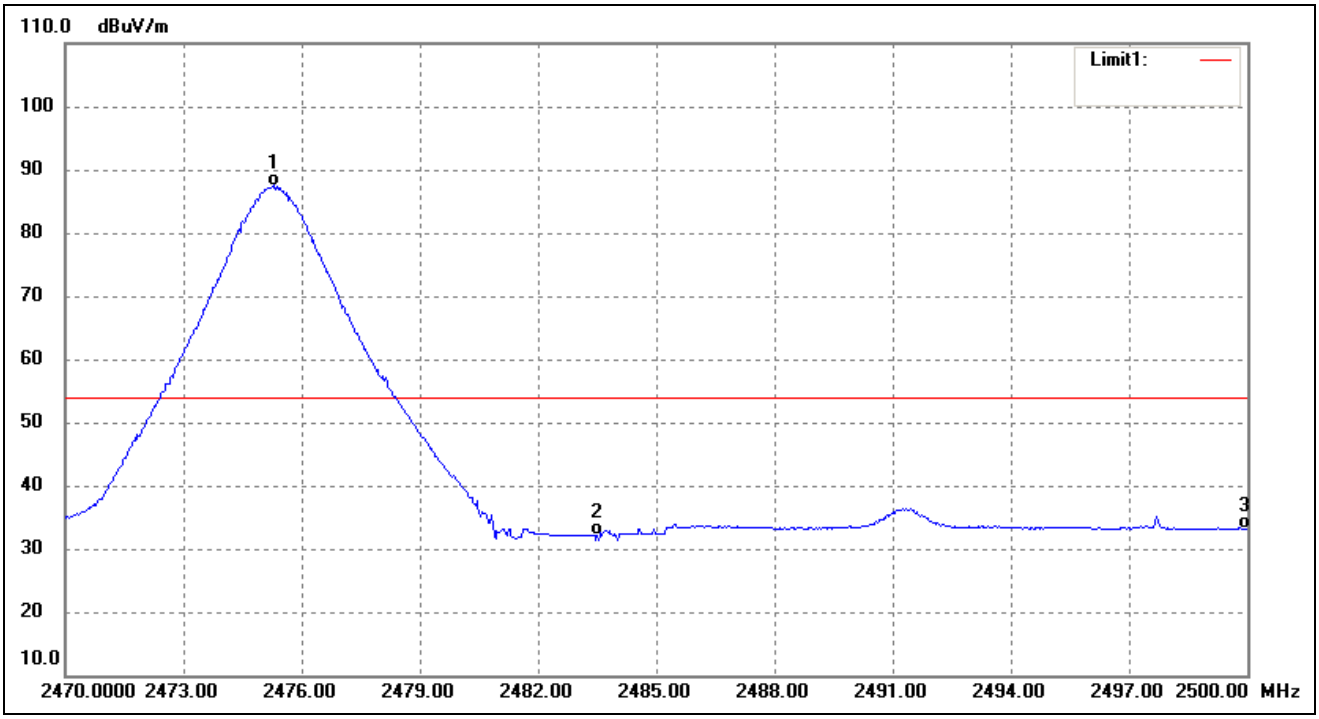
Please refer to the test plots as below:

Test Channel	Lowest Channel	Polarity:	Horizontal(worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	40.90	-7.78	33.12	54.00	-20.88	Average Detector
	2310.000	53.35	-7.78	45.57	74.00	-28.43	Peak Detector
2	2383.485	51.03	-7.36	43.67	54.00	-10.33	Average Detector
	/	/	/	/	/	/	Peak Detector
3	2390.000	40.94	-7.32	33.62	54.00	-20.38	Average Detector
	2390.000	69.95	-7.32	62.63	74.00	-11.37	Peak Detector
4	2400.000	42.78	-7.26	35.52	54.00	-18.48	Average Detector
	2400.000	74.60	-7.26	67.34	74.00	-6.66	Peak Detector
5	2415.455	95.73	-7.17	88.56	/	/	Average Detector
	2415.225	109.15	-7.17	101.98	/	/	Peak Detector

Test Channel	Highest Channel	Polarity:	Horizontal(worst case)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2475.280	94.31	-6.81	87.50	/	/	Average Detector
	2475.430	104.96	-6.81	98.15	/		Peak Detector
2	2483.500	38.82	-6.77	32.05	54.00	-21.95	Average Detector
	2483.500	74.64	-6.77	67.87	74.00	-6.13	Peak Detector
3	2500.000	39.76	-6.67	33.09	54.00	-20.91	Average Detector
	2500.000	64.36	-6.67	57.69	74.00	-16.31	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 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.

According to RSS-Gen Issue 5 (March 2019) Section 6.7, when an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

6.2 Test Procedure

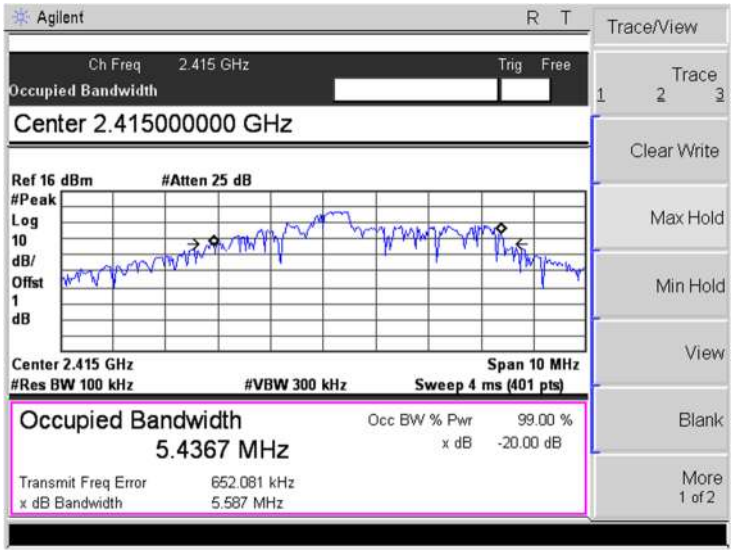
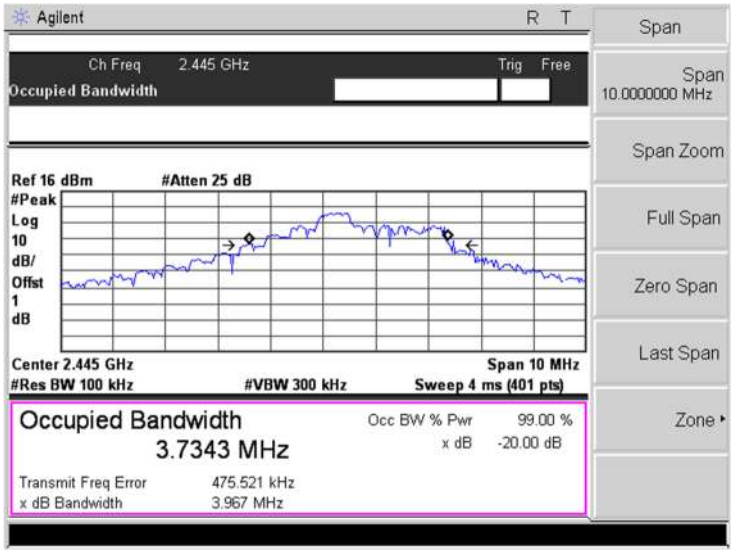
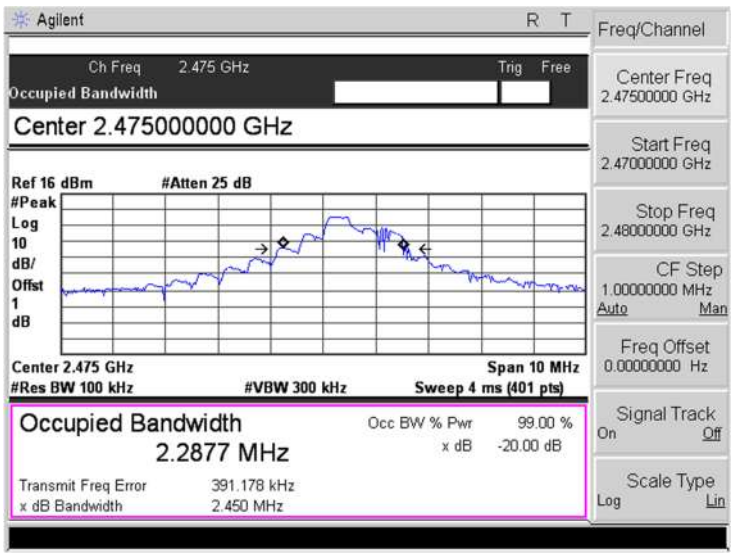
According to the ANSI 63.10-2013, the emission bandwidth test method as follows:

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	99% Bandwidth (MHz)
Lowest Channel	5.587	5.4367
Near Middle Channel	3.967	3.7343
Highest Channel	2.450	2.2877

Please refer to the following test plots

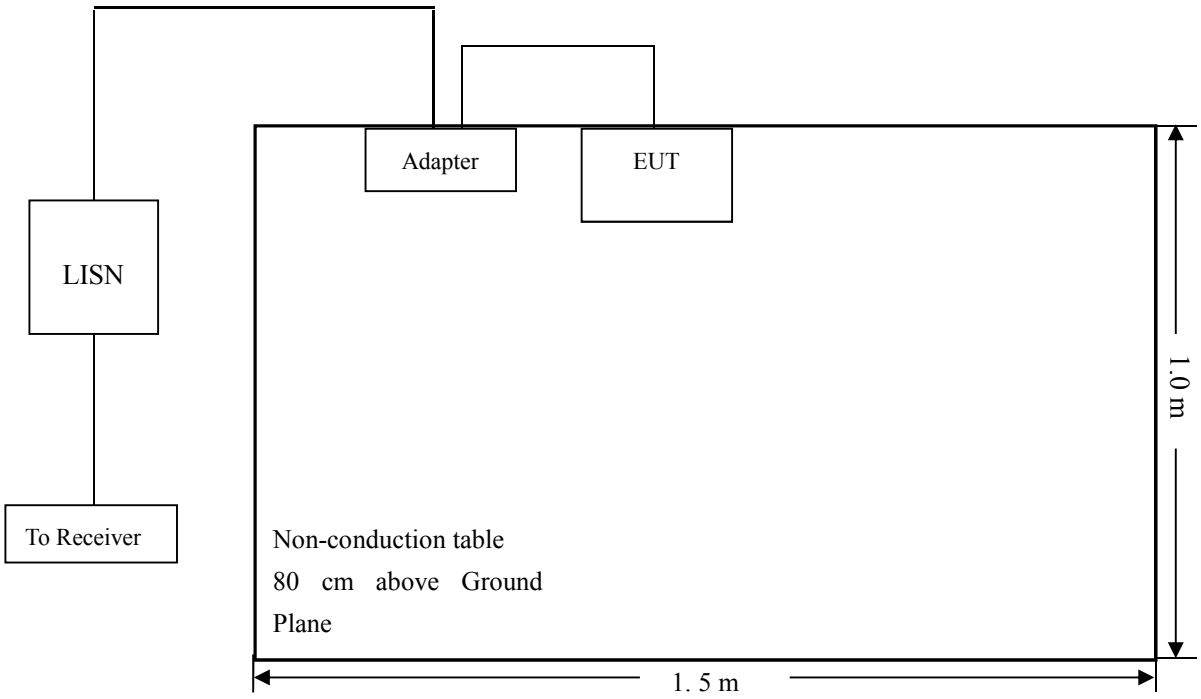
Lowest Channel	
Near Middle Channel	
Highest Channel	

7. Conducted Emissions

7.1 Test Procedure

Test is conducting under the description of ANSI 63.10-2013, 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. The specification used was with Part 15.207 of the FCC Rules and RSS-Gen Issue 5 (March 2019) Limit.

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

7.4 Summary of Test Results/Plots

Not applicable

*Remark: The AC Line Conducted Emissions testing is exempted because it is powered solely by battery/batteries. Thus, the AC Line Conducted Emissions testing is not applicable.

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