FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

For

Balance Scooter
MODEL NUMBER: X1-5, F1-5, A1-5

FCC ID: 2ANXQHZRYDZKJX1

REPORT NUMBER: 4788009119.1-1

ISSUE DATE: November 23, 2017

Prepared for

HangZhou RuiYan Electronic technology co., LTD
3rd Floor No.8 Shuangyang Road Jiulong Industrial Park Renhe Sreet Yuhang District Hangzhou,Zhejiang

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	11/23/2017	Initial Issue	

Summary of Test Results			
Clause	**Test Items**	**FCC/IC Rules**	**Test Results**
1	20dB Bandwidth	FCC 15.247 (a) (1)	Complied
2	Peak Conducted Output Power	FCC 15.247 (b) (1)	Complied
3	Carrier Hopping Channel Separation	FCC 15.247 (a) (1)	Complied
4	Number of Hopping Frequency	15.247 (a) (1) III	Complied
5	Time of Occupancy (Dwell Time)	15.247 (a) (1) III	Complied
6	Conducted Band edge	FCC 15.247 (d)	Complied
7	Radiated Band edge and Spurious	FCC 15.247 (d) FCC 15.209 FCC 15.205	Complied
8	Conducted Emission Test For AC Power Port	FCC 15.207	Complied
9	Antenna Requirement	FCC 15.203	Complied

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	HangZhou RuiYan Electronic technology co., LTD
Address:	3rd Floor No.8 Shuangyang Road Jiulong Industrial Park Renhe Sreet Yuhang District Hangzhou,Zhejiang

Manufacturer Information

Company Name:	HangZhou RuiYan Electronic technology co., LTD
Address:	3rd Floor No.8 Shuangyang Road Jiulong Industrial Park Renhe Sreet Yuhang District Hangzhou,Zhejiang

EUT Description

Product Name:	Balance Scooter
Brand Name:	N/A
Model Name:	X1-5, F1-5, A1-5
Model Difference:	Models X1-5, F1-5 and A1-5 are identical except for the model name which used for distinguishing the different buyers.
Sample Status:	Normal
Sample ID:	1034948
Sample Received:	July 03, 2017
Date Tested	September 18, 2017 ~ September 28, 2017

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	PASS

Tested By:

Miller Ma
Engineer Project Associate

Check By:

Shawn Wen
Laboratory Leader

Approved By:

Stephen Guo

Laboratory Manager

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with DA 00-705, ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, KDB 414788 D01, RSS-GEN Issue 4, and RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

Test Location	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
Address	Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
Accreditation Certificate	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. The Certificate Registration Number is 4102.01. UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The Designation Number is CN1187. UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320.

Note: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.90dB
Uncertainty for Radiation Emission test(include Fundamental emission) (9KHz-30MHz)	2.00dB
Uncertainty for Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.52dB
Uncertainty for Radiation Emission test (1GHz to 26GHz)(include Fundamental emission)	5.04dB(1-6GHz)
	5.30dB (6GHz-18Gz)
	5.23dB (18GHz-26Gz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Equipment	Balance Scooter		
Model Name	X1-5, F1-5, A1-5		
Model Difference	The is no more difference other than the model name which used for distinguishing the different buyers.		
Product Description (Bluetooth)	Operation Frequency	2402 MHz ~ 2480 MHz	
	Modulation Type		Data Rate
	GFSK		1Mbps
	P/4-DQPSK		2Mbps
	8DPSK		3Mbps
SWITCHING POWER SUPPLY:	Model:FY0632521000 INPUT:100-240V~,50/60Hz,1.8A OUTPUT:25.2V/1A		
Battery	24V,4Ah		
Bluetooth Version	3.0+EDR		

5.2. MAXIMUM OUTPUT POWER

Frequency Range (MHz)	Number of Transmit Chains (NTX)	Bluetooth Mode	Frequency (MHz)	Channel Number	Max EIRP (dBm)
2402-2480	1	GFSK	2402-2480	0-78[79]	-3.427
2402-2480	1	8-DPSK	2402-2480	0-78[79]	-3.521

5.3. PACKET TYPE CONFIGURATION

Test Mode	Packet Type	Setting
GFSK	DH1	27
	DH3	183
	DH5	339
∏/4-DQPSK	2-DH1	54
	2-DH3	367
	2-DH5	679
8-DPSK	3-DH1	83
	3-DH3	552
	3-DH5	1021

5.4. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2422	40	2442	60	2462
01	2403	21	2423	41	2443	61	2463
02	2404	22	2424	42	2444	62	2464
03	2405	23	2425	43	2445	63	2465
04	2406	24	2426	44	2446	64	2466
05	2407	25	2427	45	2447	65	2467
06	2408	26	2428	46	2448	66	2468
07	2409	27	2429	47	2449	67	2469
08	2410	28	2430	48	2450	68	2470
09	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

5.5. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel Number	Test Channel
GFSK	CH 00, CH 39, CH 78	Low, Middle, High
8-DPSK	CH 00, CH 39, CH 78	Low, Middle, High

5.6. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software		BK3256 RF Test_V1.3		
Modulation Type	Transmit Antenna Number	Test Channel		
		CH 00	CH 39	CH 78
GFSK	1	3	3	3
8-DPSK	1	3	3	3

5.7. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2402-2480	PCB Antenna	-0.61

Test Mode	Transmit and Receive Mode	Description
GFSK	☒1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
8-DPSK	☒1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

5.8. WORST-CASE CONFIGURATIONS

Bluetooth Mode	Modulation Technology	Modulation Type	Data Rate (Mbps)
BR	FHSS	GFSK	1Mbit/s
EDR	FHSS	8-DPSK	3Mbit/s

Note: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.

5.9. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	55 ~ 65%	
Atmospheric Pressure:	1025Pa	
Temperature	TN	23 ~ 28 °C
Voltage :	VL	N/A
	VN	DC 24V,AC120V/60Hz
	VH	N/A

Note: VL= Lower Extreme Test Voltage
VN= Nominal Voltage, AC 120V from Adapter, DC 24V from battery.
VH= Upper Extreme Test Voltage
TN= Normal Temperature

5.10. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	FCC ID
1	N/A	N/A	N/A	N/A

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	N/A	N/A	N/A	N/A	N/A

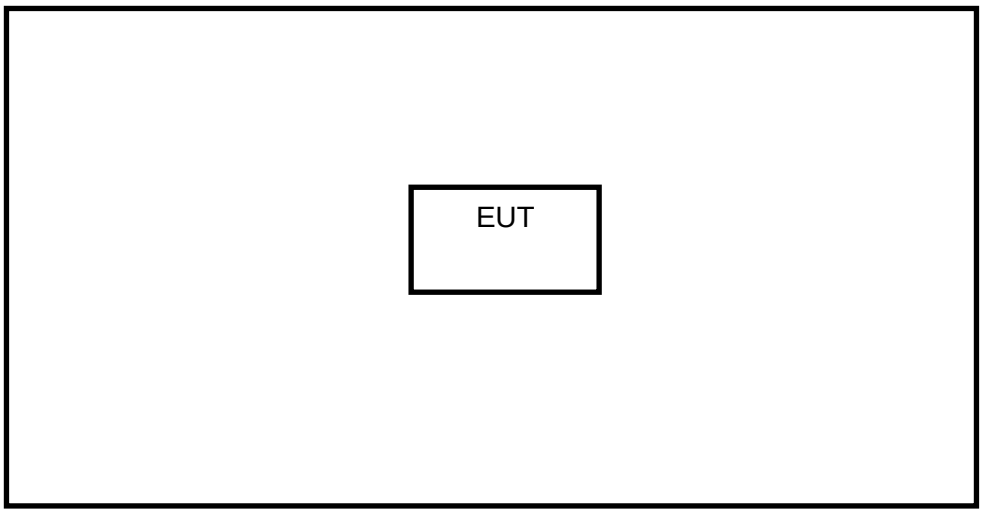
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	SWITCHING POWER SUPPLY	N/A	FY0632521000	INPUT:100-240V~, 50/60Hz,1.8A OUTPUT:25.2V/1A

TEST SETUP

The EUT can work in an engineer mode with a software through a Laptop.

SETUP DIAGRAM FOR TESTS



5.11. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	EMI Test Receiver	R&S	ESR3	101961	Dec.20, 2016	Dec.19, 2017
☑	Two-Line V-Network	R&S	ENV216	101983	Dec.20, 2016	Dec.19, 2017
☑	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Feb.10, 2017	Feb.10, 2018
Software						
Used	Description		Manufacturer	Name	Version	
☑	Test Software for Conducted disturbance		Farad	EZ-EMC	Ver. UL-3A1	
Radiated Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Feb. 24, 2017	Feb. 24, 2018
☑	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jan.09, 2016	Jan.09, 2019
☑	Preamplifier	HP	8447D	2944A09099	Feb. 13, 2017	Feb. 13, 2018
☑	EMI Measurement Receiver	R&S	ESR26	101377	Dec. 20, 2016	Dec. 20, 2017
☑	Horn Antenna	TDK	HRN-0118	130939	Jan. 09, 2016	Jan. 09, 2019
☑	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Jan.06, 2016	Jan.06, 2019
☑	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Jan. 14, 2017	Jan. 14, 2018
☑	Preamplifier	TDK	PA-02-2	TRS-307-00003	Dec. 20, 2016	Dec. 20, 2017
☑	Loop antenna	Schwarzbeck	1519B	00008	Mar. 26, 2016	Mar. 25, 2019
Software						
Used	Description		Manufacturer	Name	Version	
☑	Test Software for Radiated disturbance		Farad	EZ-EMC	Ver. UL-3A1	
Other instruments						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec. 20, 2016	Dec. 20, 2017
	Power Meter	Keysight	N9031A	MY55416024	Feb. 13, 2017	Feb. 13, 2018
	Power Sensor	Keysight	N9323A	MY55440013	Feb. 13, 2017	Feb. 13, 2018

	DC Supply	Keysight	E36103A	MY55350020	Feb. 10, 2017	Feb. 10, 2018

6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

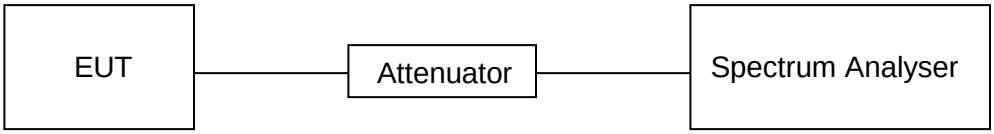
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP

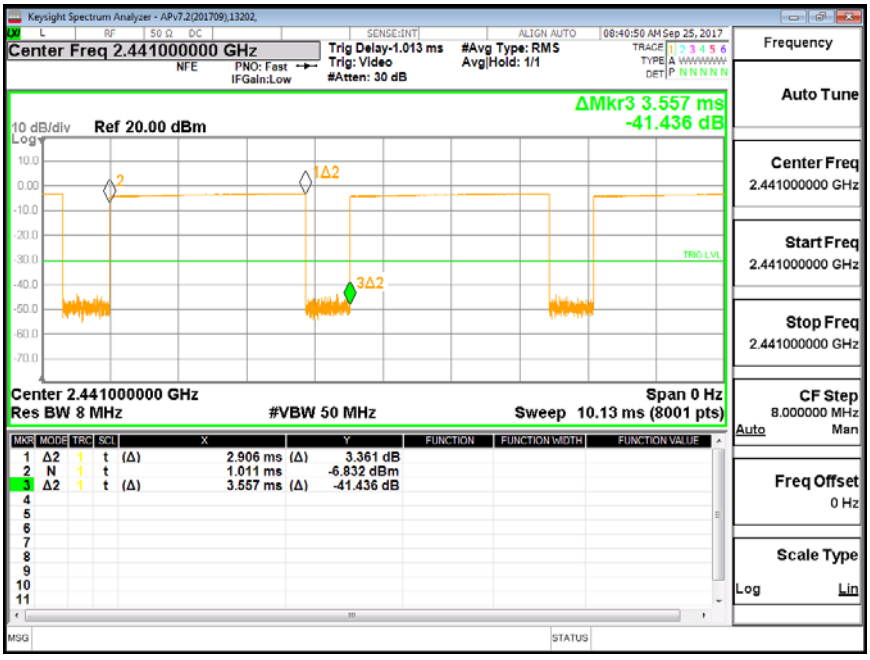


RESULTS

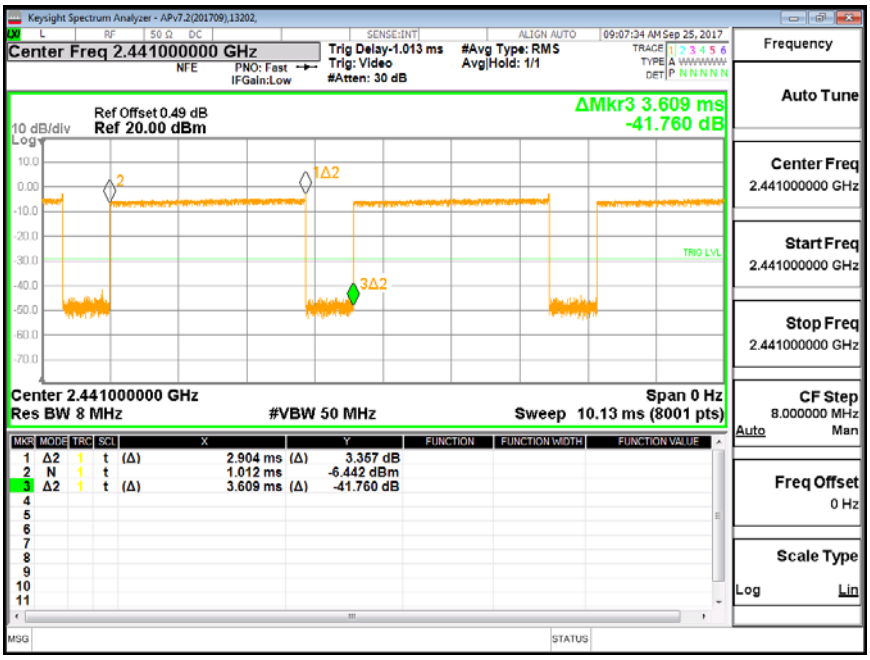
Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/B Minimum VBW (KHz)
GFSK	2.906	3.557	0.816980602	82	0.88	0.34
8-DPSK	2.904	3.609	0.804655029	80	0.94	0.34

Note: Duty Cycle Correction Factor=10log(1/x).
Where: x is Duty Cycle(Linear)
Where: B is On Time

DH5 ON TIME AND DUTY CYCLE MID CH



3DH5 ON TIME AND DUTY CYCLE MID CH



6.2. 20 dB BANDWIDTH & 99% DTS BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247(a)(2) RSS-247 5.2 (a)	6dB Bandwidth	>= 500KHz	2400-2483.5

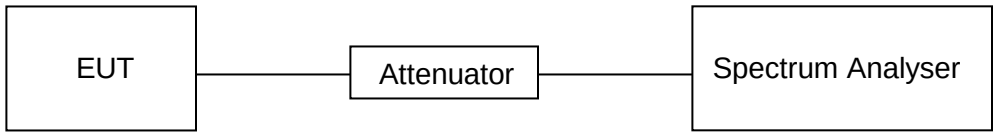
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 20dB Bandwidth:1%~5% of the 20 dB bandwidth
VBW	For 20dB Bandwidth: ≥ RBW
Span	approximately 2 to 3 times the 20 dB bandwidth
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB and 99% relative to the maximum level measured in the fundamental emission.

TEST SETUP

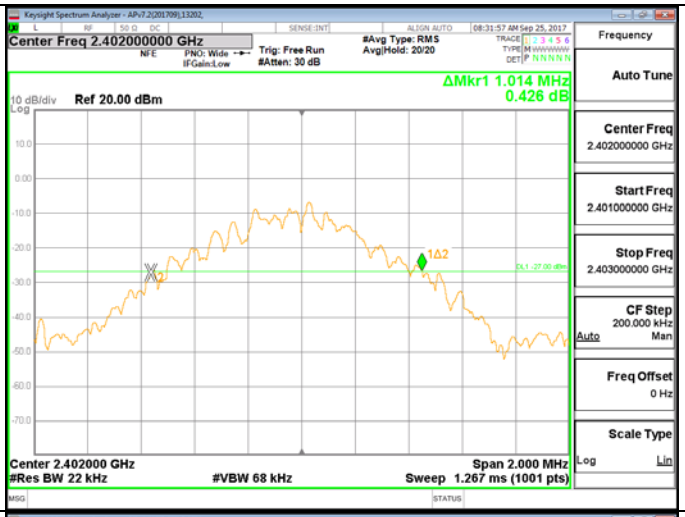


RESULTS

6.2.1. GFSK MODE

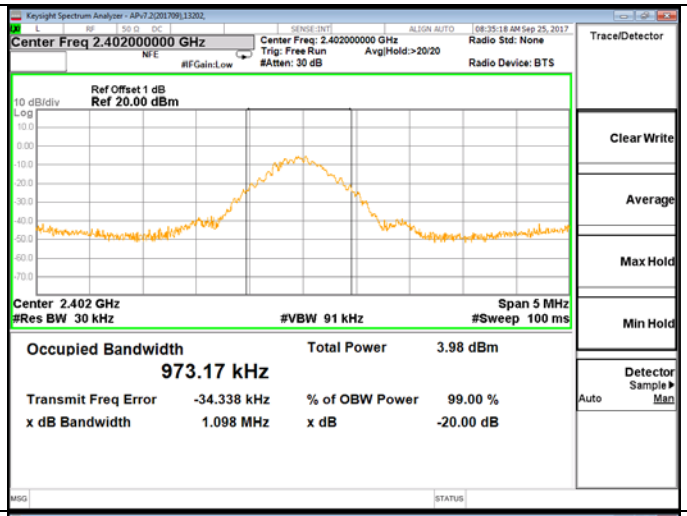
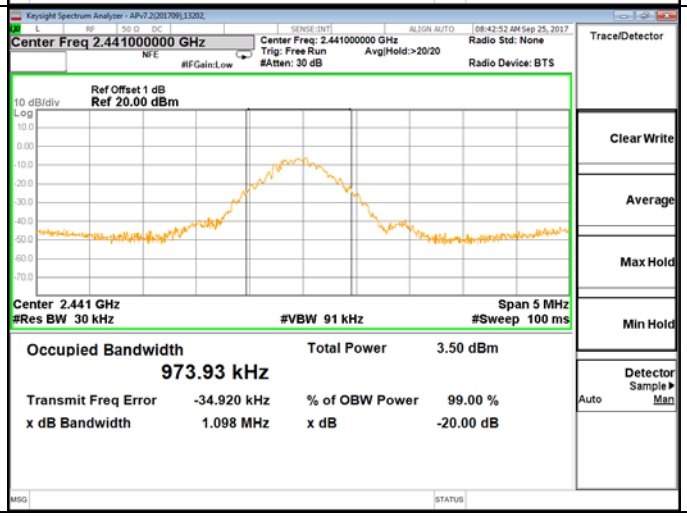
Channel	Frequency (MHz)	20dB bandwidth (MHz)	99% Bandwidth (MHz)	Result
Low	2402	1.01	0.973	PASS
Middle	2441	1.11	0.974	PASS
High	2480	1.03	0.970	PASS

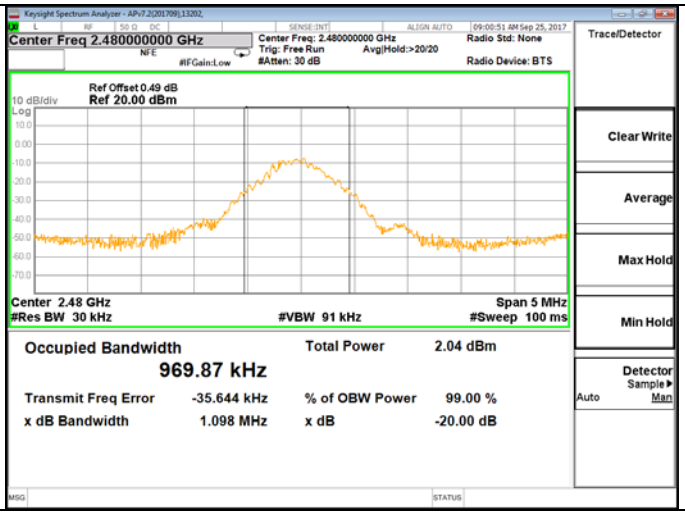
Test Graph: 20dB bandwidth

GFSK/LCH			
GFSK/MCH			

GFSK/HCH			

Test Graph: 99% Bandwidth

GFSK/LCH			
GFSK/MCH			

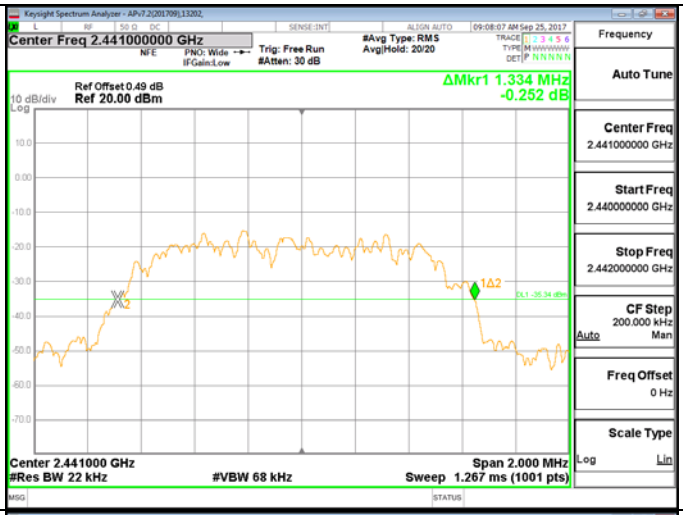
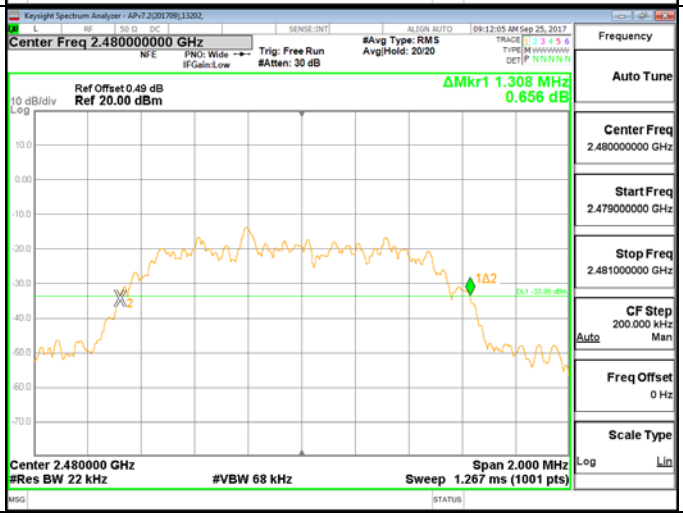
GFSK/HCH			

6.2.2. 8-DPSK MODE

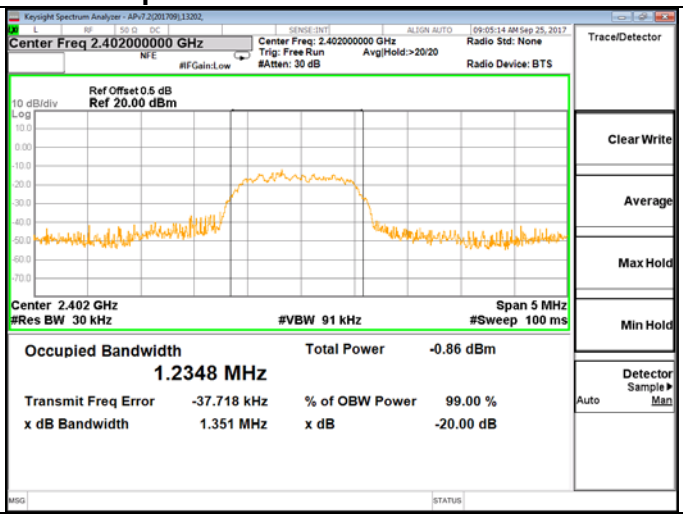
Channel	Frequency (MHz)	20dB bandwidth (MHz)	99% Bandwidth (MHz)	Result
Low	2402	1.33	1.235	Pass
Middle	2441	1.33	1.232	Pass
High	2480	1.31	1.234	Pass

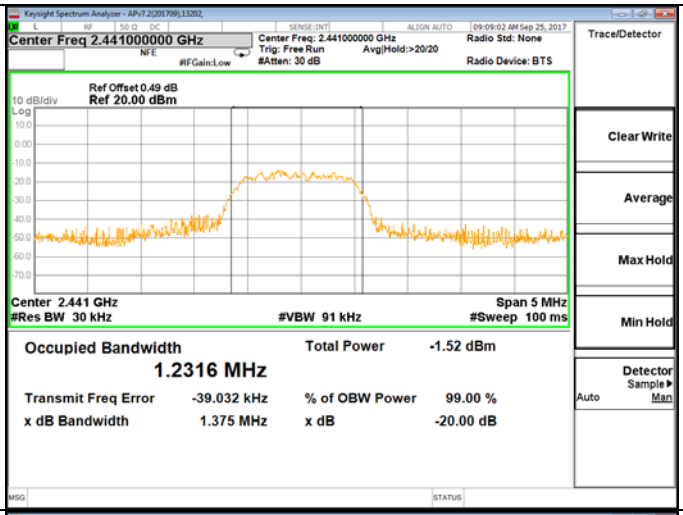
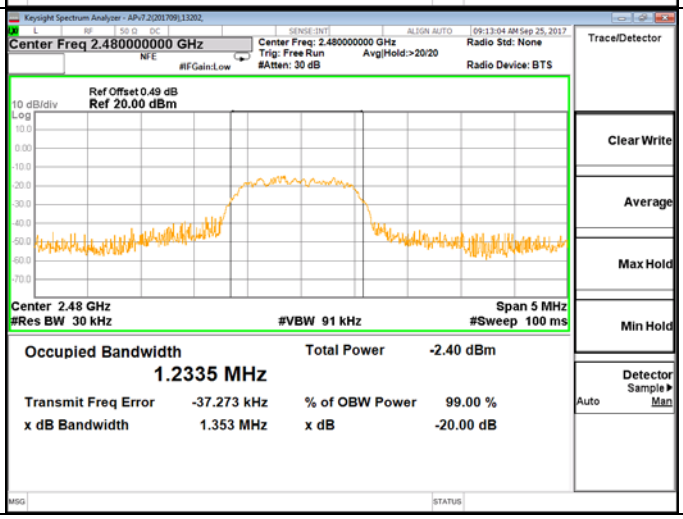
Test Graph: 20dB bandwidth

8DPSK/LCH			

8DPSK/MCH			
8DPSK/HCH			

Test Graph: 99% Bandwidth

8DPSK/LCH			

8DPSK/MCH			
8DPSK/HCH			

6.3. PEAK CONDUCTED OUTPUT POWER

LIMITS

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247 (b) (1)	Peak Conducted Output Power	1 watt or 30dBm	2400-2483.5

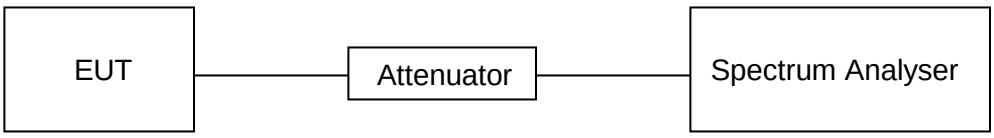
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	> the 20 dB bandwidth of the emission being measured (e.g. 1 MHz for BT)
VBW	≥RBW
Span	approximately 5 times the 20 dB bandwidth, centered on a hopping channel
Trace	Max hold
Sweep time	Auto couple

Allow trace to fully stabilize and use peak marker function to determine the peak amplitude level.

TEST SETUP

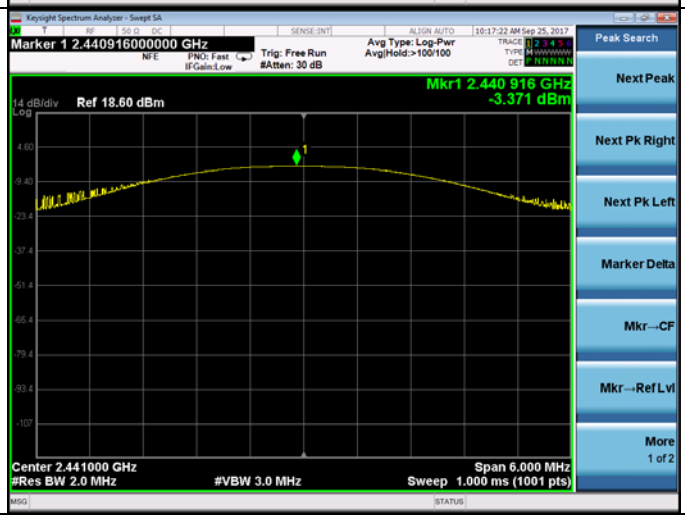


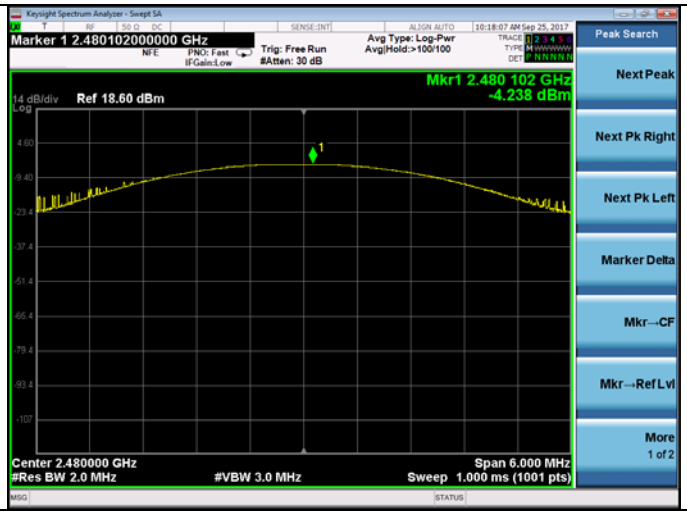
RESULTS

6.3.1. GFSK MODE

Channel	Frequency	Maximum Conducted Output Power(PK)	EIRP	Result
	(MHz)	(dBm)	(dBm)	
Low	2402	-2.817	-3.427	Pass
Middle	2441	-3.371	-3.981	Pass
High	2480	-4.238	-4.848	Pass

Note: EIRP = Maximum Conducted Output Power (PK) + Antenna Gain

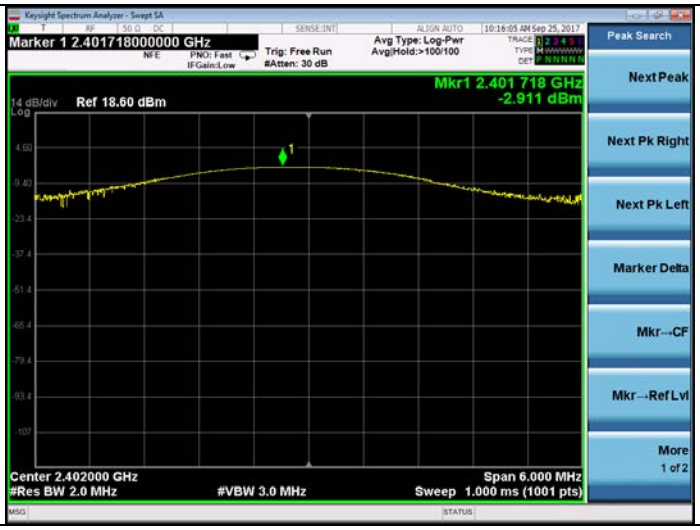
Graphs			
GFSK/LCH			
GFSK/MCH			

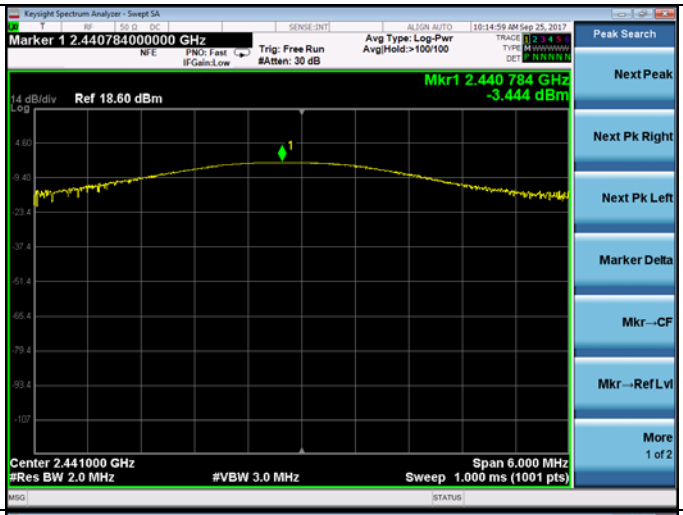
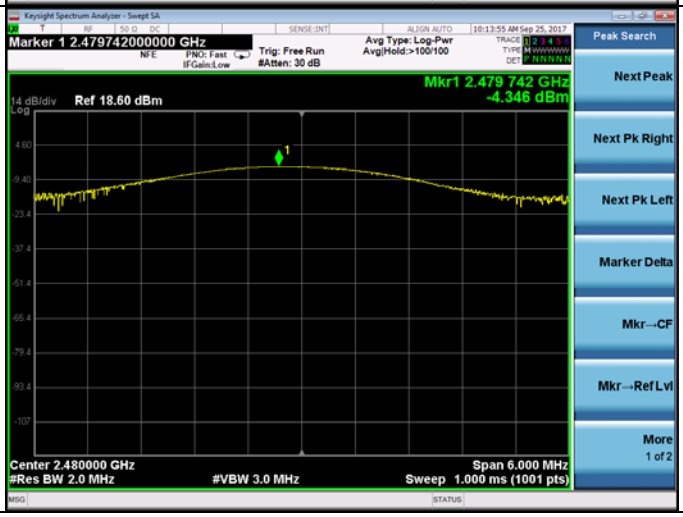
GFSK/HCH			

6.3.1. 8-DPSK MODE

Channel	Frequency	Maximum Conducted Output Power(PK)	EIRP	Result
	(MHz)	(dBm)	(dBm)	
Low	2402	-2.911	-3.521	Pass
Middle	2441	-3.444	-4.054	Pass
High	2480	-4.346	-4.956	Pass

Note: EIRP = Maximum Conducted Output Power (PK) + Antenna Gain

8DPSK/LCH			

8DPSK/MCH			
8DPSK/HCH			

6.4. CARRIER HOPPING CHANNEL SEPARATION

LIMITS

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247 (a) (1)	Carrier Hopping Channel Separation	25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.	2400-2483.5

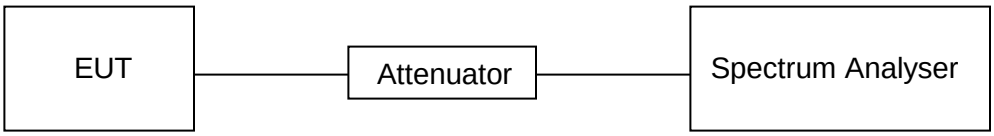
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Span	wide enough to capture the peaks of two adjacent channels
Detector	Peak
RBW	≥ 1% of the span
VBW	≥RBW
Trace	Max hold
Sweep time	Auto couple

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section. Submit this plot.

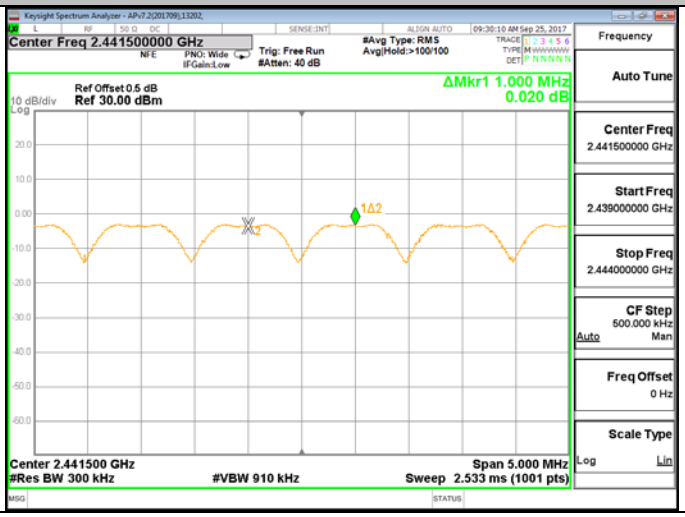
TEST SETUP



RESULTS

6.4.1. GFSK MODE

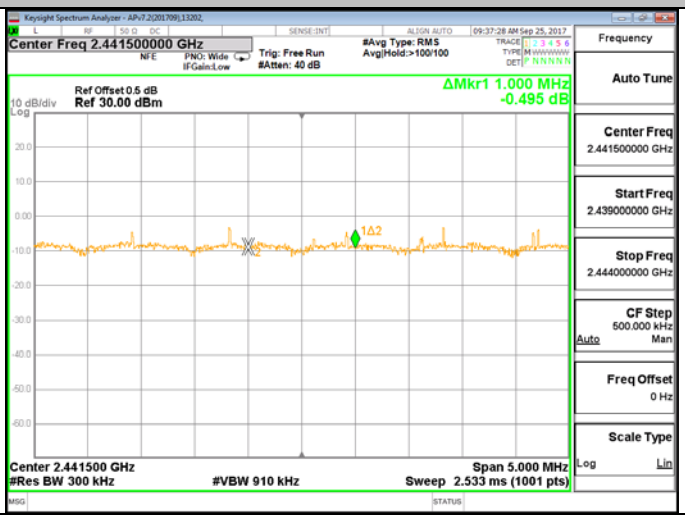
Channel	Carrier Hopping Channel Separation (MHz)	Limit (MHz)	Result
Middle	1.00	≥ two-thirds of the 20 dB Bandwidth Of The Hopping Channel	PASS

Graphs		
GFSK/MCH		

Note: For 20 dB Bandwidth of The Hopping Channel, please refer to clause 6.2.1.

6.4.2. 8-DPSK MODE

Channel	Carrier Hopping Channel Separation (MHz)	Limit (MHz)	Result
Middle	1.00	≥ two-thirds of the 20 dB Bandwidth Of The Hopping Channel	PASS

Graphs			
8DPSK/MCH			

Note: For 20 dB Bandwidth of The Hopping Channel, please refer to clause 6.2.2.

6.5. NUMBER OF HOPPING FREQUENCY

LIMITS

FCC Part15 (15.247) , Subpart C		
Section	Test Item	Limit
15.247 (a) (1) III	Number of Hopping Frequency	at least 15 hopping channels

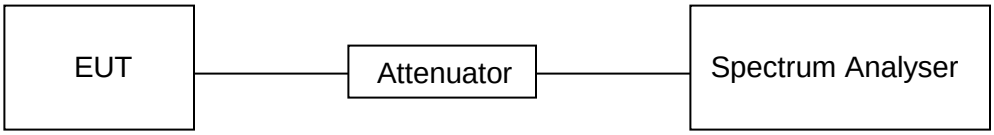
TEST PROCEDURE

Connect the EUT to the spectrum analyser and use the following settings:

Detector	Peak
RBW	1% of the span
VBW	≥RBW
Span	The frequency band of operation
Trace	Max hold
Sweep time	Auto couple

Set EUT to transmit maximum output power and switch on frequency hopping function. then set enough count time (larger than 5000 times) to get all the hopping frequency channel displayed on the screen of spectrum analyzer.
Count the quantity of peaks to get the number of hopping channels.
Normal Mode: 79 Channels observed.
AFH Mode: 20 Channels declared.

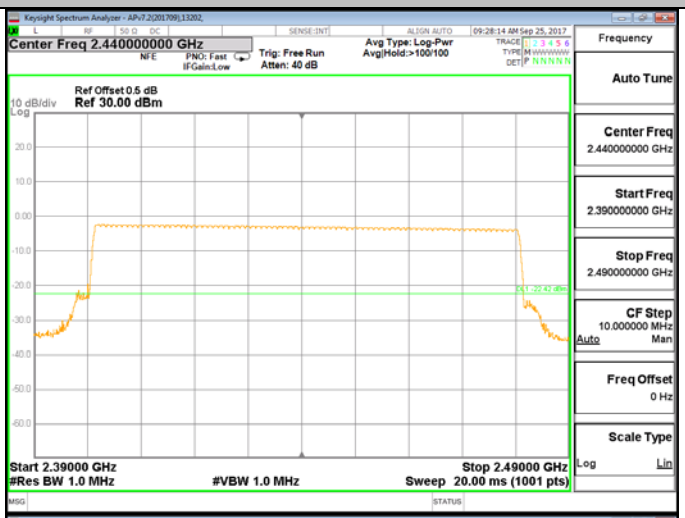
TEST SETUP

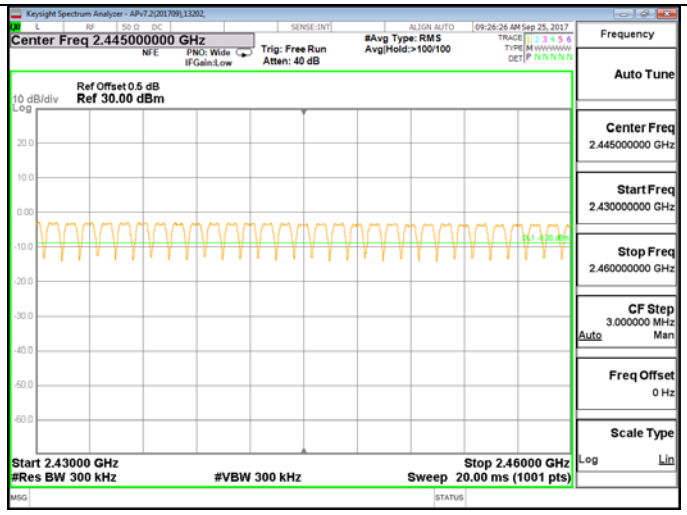


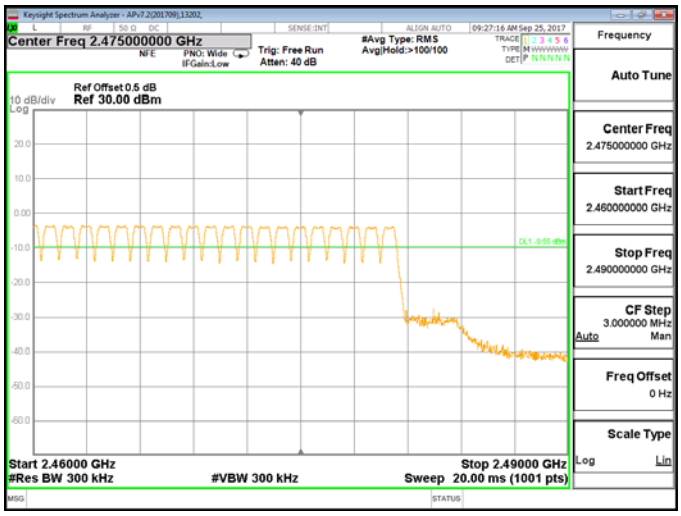
RESULTS

6.5.1. GFSK MODE

Hopping numbers	Limit	Results
79	>15	Pass

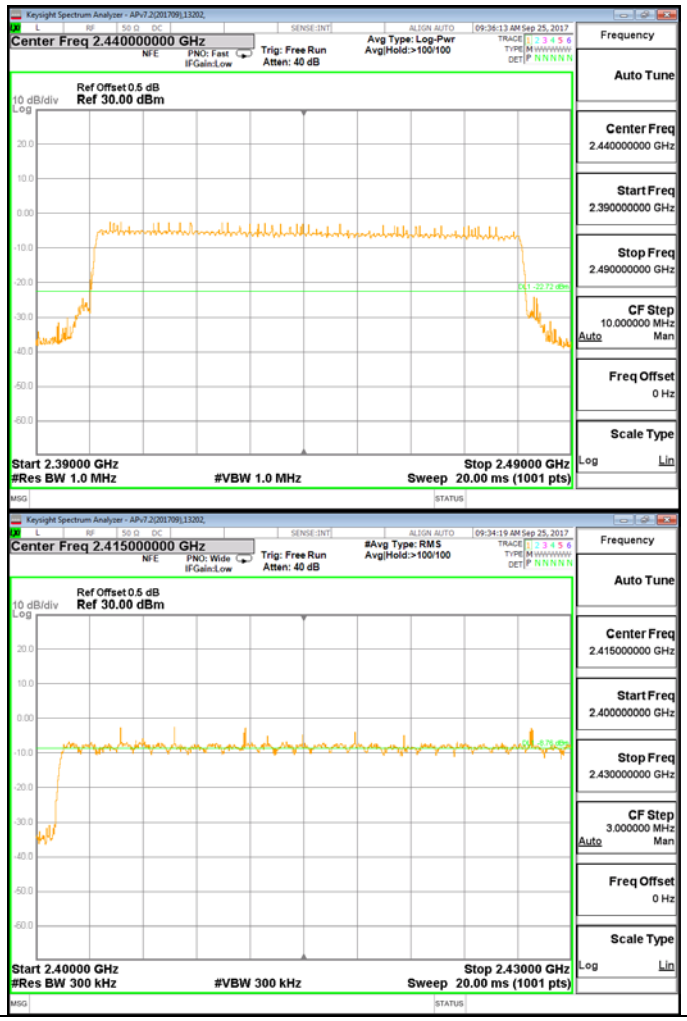
Graphs			
GFSK/Hop			

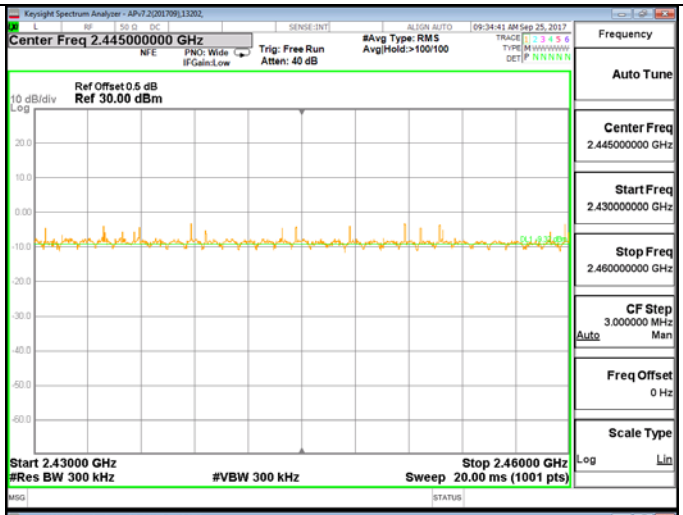




6.5.2. 8-DPSK MODE

Hopping numbers	Limit	Results
79	>15	Pass

Graphs	
8DPSK/Hop	



6.6. TIME OF OCCUPANCY (DWELL TIME)

LIMITS

FCC Part15 (15.247) , Subpart C		
Section	Test Item	Limit
15.247 (a) (1) III	Time of Occupancy (Dwell Time)	The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed.

TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

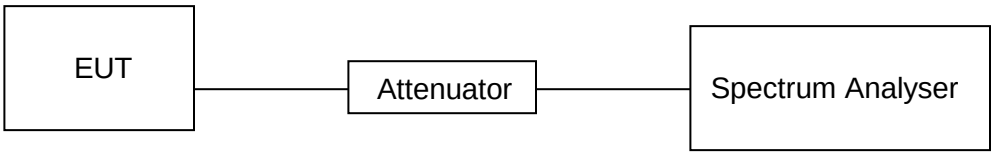
Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	1 MHz
VBW	≥RBW
Span	zero span
Trace	Max hold
Sweep time	As necessary to capture the entire dwell time per hopping channel

a. The transmitter output (antenna port) was connected to the spectrum analyzer
b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
d. Sweep Time is more than once pulse time.
e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
f. Measure the maximum time duration of one single pulse.
g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
h. Measure the maximum time duration of one single pulse.
A Period Time = (channel number)*0.4

For Normal Mode (79 Channel):
DH1 Time Slot: Reading * (1600/2)*31.6/(channel number)
DH3 Time Slot: Reading * (1600/4)*31.6/(channel number)
DH5 Time Slot: Reading * (1600/6)*31.6/(channel number)

For AFH Mode (20 Channel):
DH1 Time Slot: Reading * (1600/2)*8/(channel number)
DH3 Time Slot: Reading * (1600/4)*8/(channel number)
DH5 Time Slot: Reading * (1600/6)*8/(channel number)

TEST SETUP

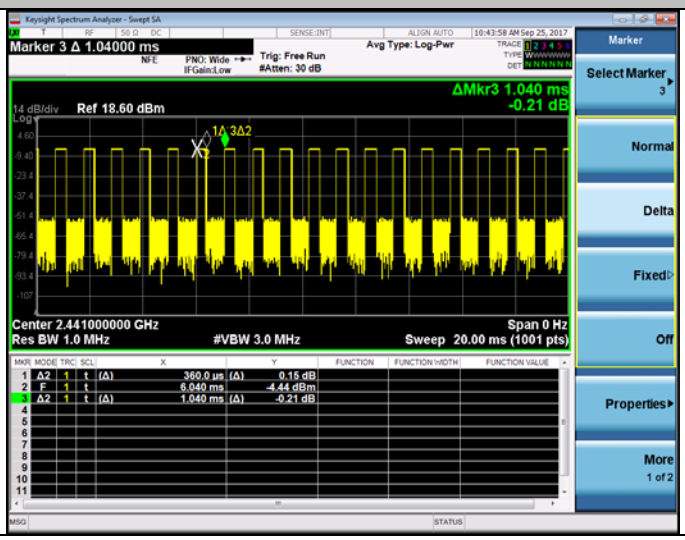


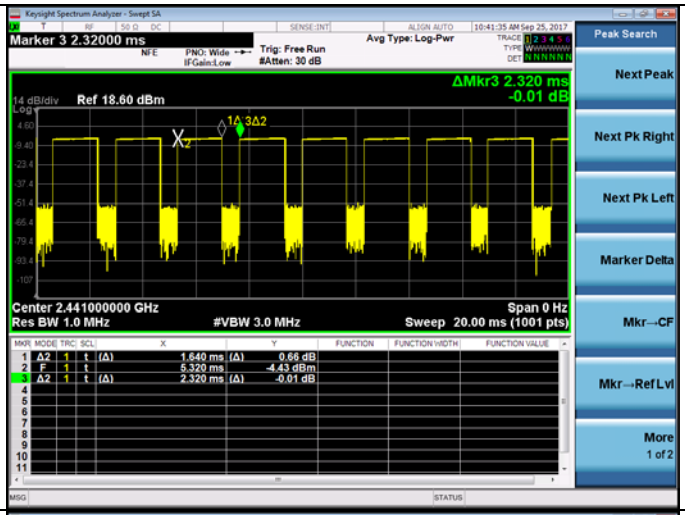
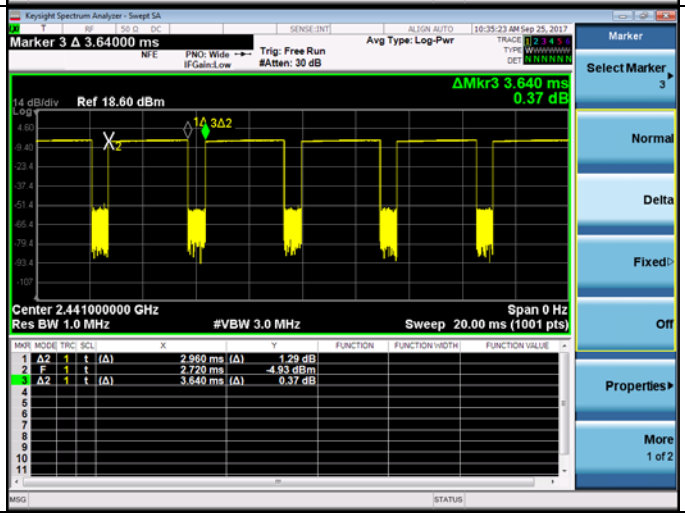
RESULTS

6.6.1. GFSK MODE

Normal Mode				
Packet	**Channel**	**Burst Width [ms/hop/ch]**	**Dwell Time [ms]**	**Results**
DH1	MCH	0.360	0.1152	PASS
DH3	MCH	1.640	0.2624	PASS
DH5	MCH	2.960	0.3157	PASS
AFH Mode				
DH1	MCH	0.360	0.1152	PASS
DH3	MCH	1.640	0.2624	PASS
DH5	MCH	2.960	0.3157	PASS

Test Graph

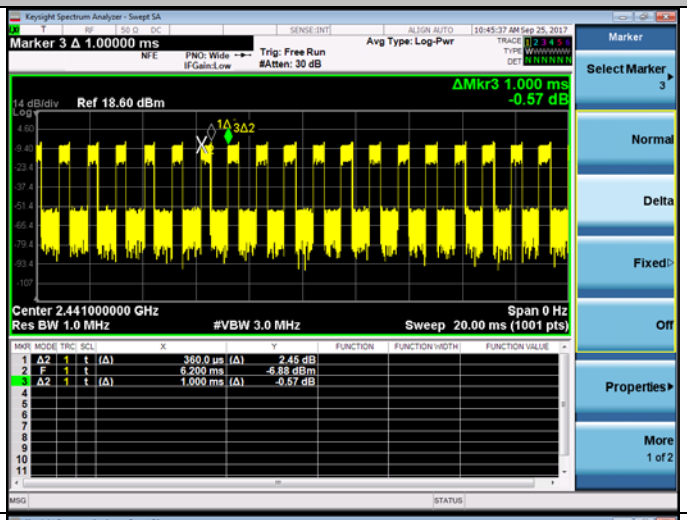
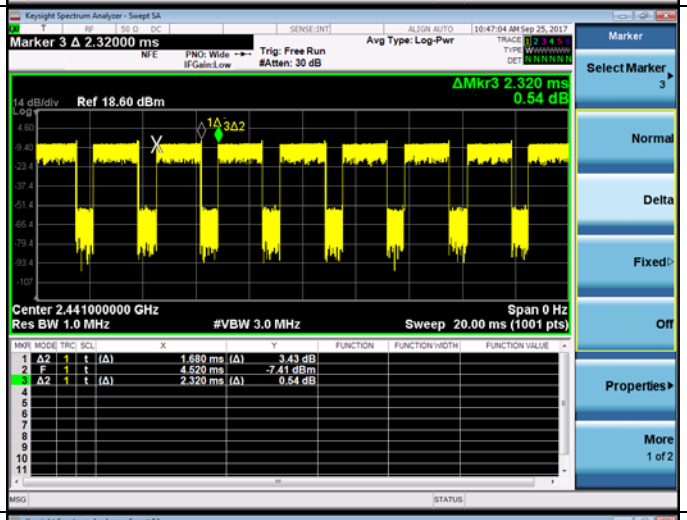
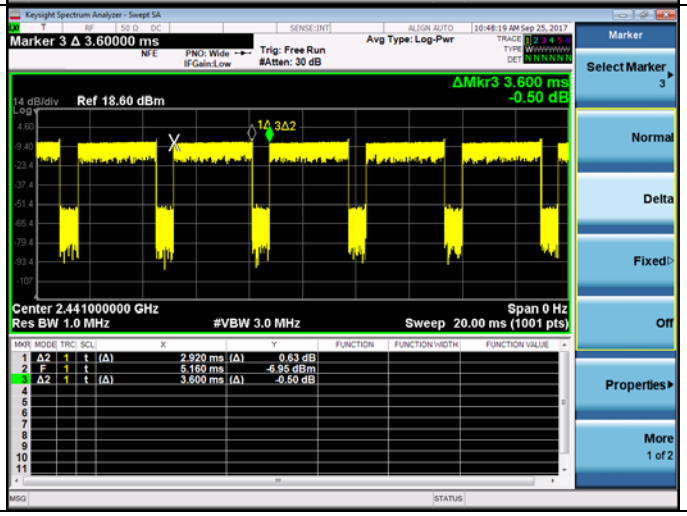
Graphs		
DH1		

DH3			
DH5			

6.6.2. 8-DPSK MODE

Normal Mode				
Packet	**Channel**	**Burst Width [ms/hop/ch]**	**Dwell Time [ms]**	**Results**
DH1	MCH	0.360	0.1152	PASS
DH3	MCH	1.680	0.2688	PASS
DH5	MCH	2.920	0.3115	PASS
AFH Mode				
DH1	MCH	0.360	0.1152	PASS
DH3	MCH	1.680	0.2688	PASS
DH5	MCH	2.920	0.3115	PASS

Test Graph

Graphs			
3DH1			
3DH3			
3DH5			

6.7. CONDUCTED BANDEDGE

LIMITS

FCC Part15 (15.247) , Subpart C		
Section	Test Item	Limit
FCC §15.247 (d)	Conducted Bandedge	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

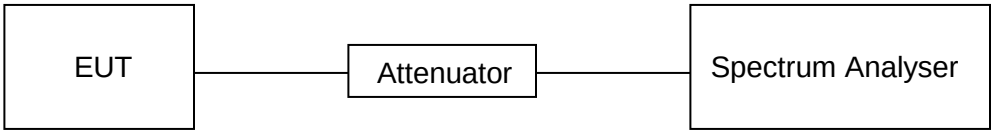
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100K
VBW	≥RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level**.**

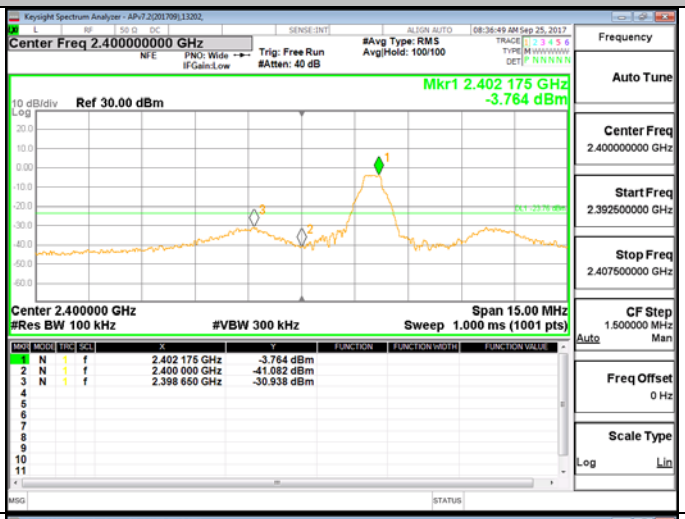
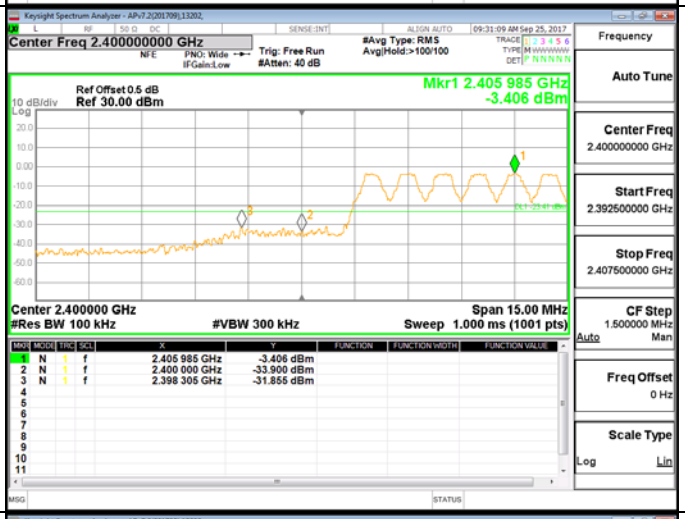
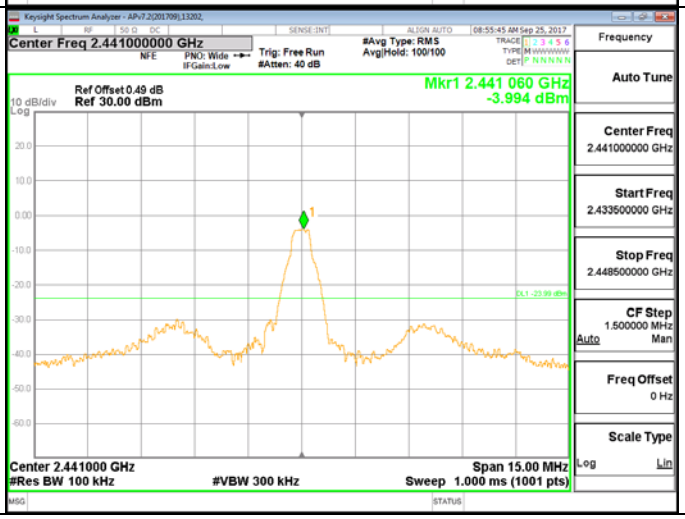
TEST SETUP

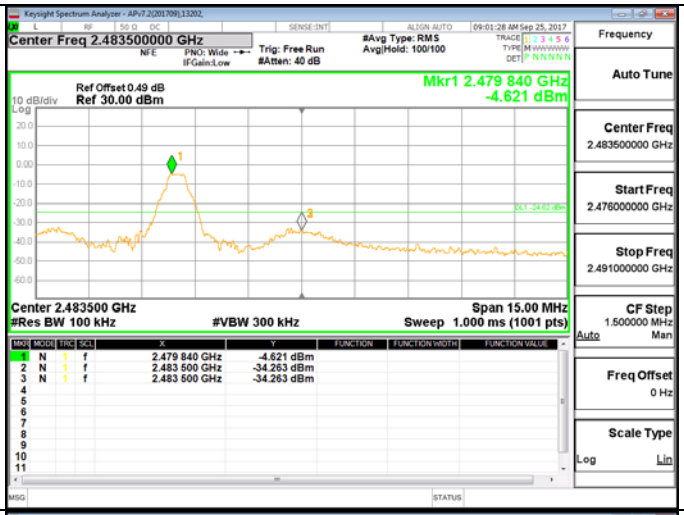
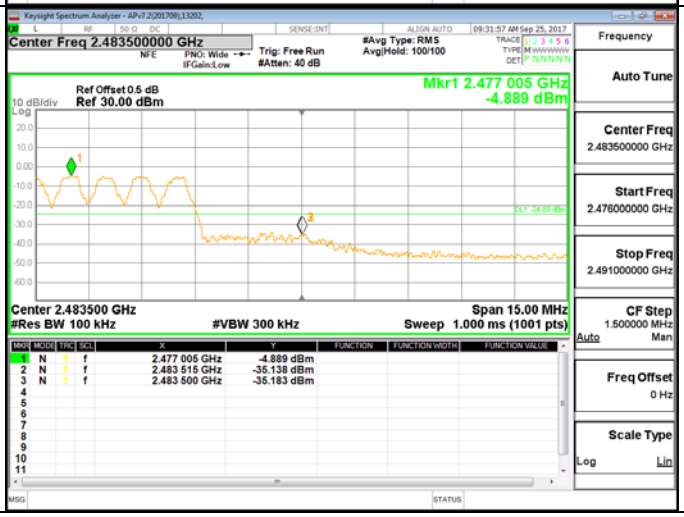


RESULTS

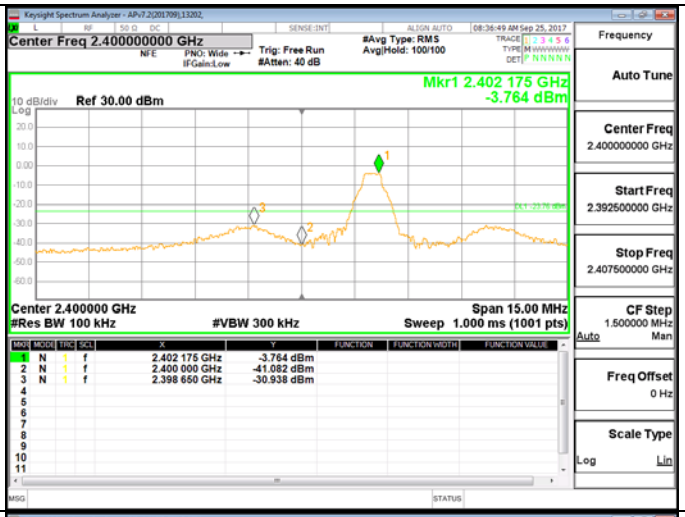
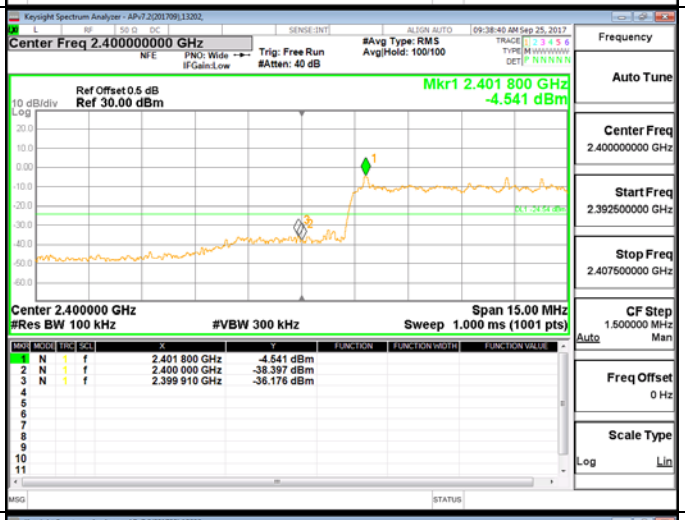
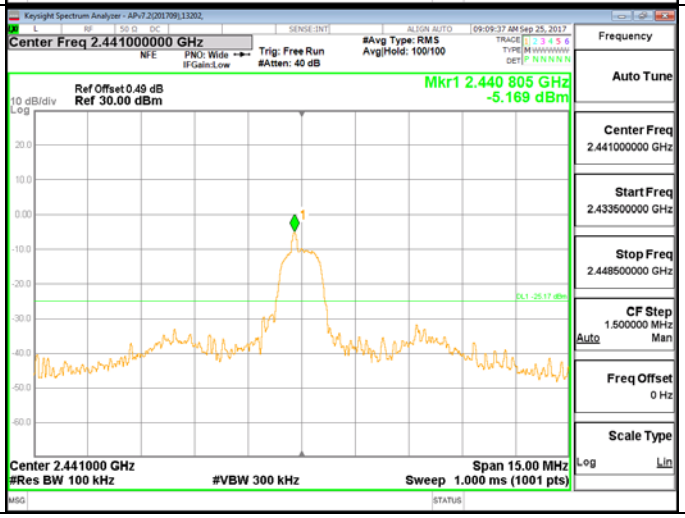
6.7.1. GFSK MODE

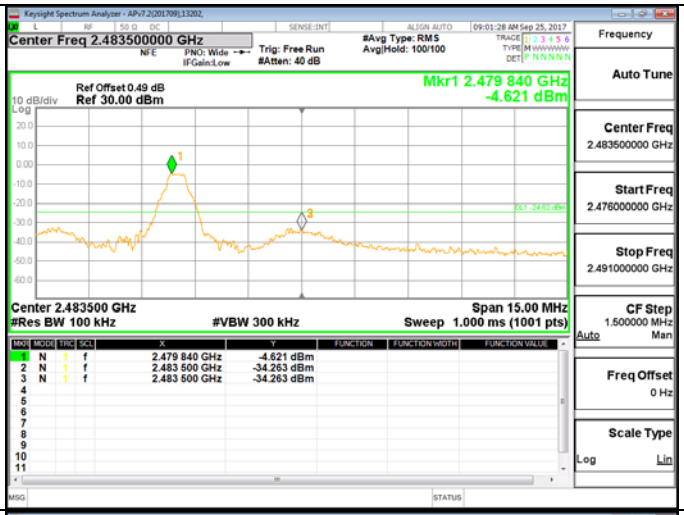
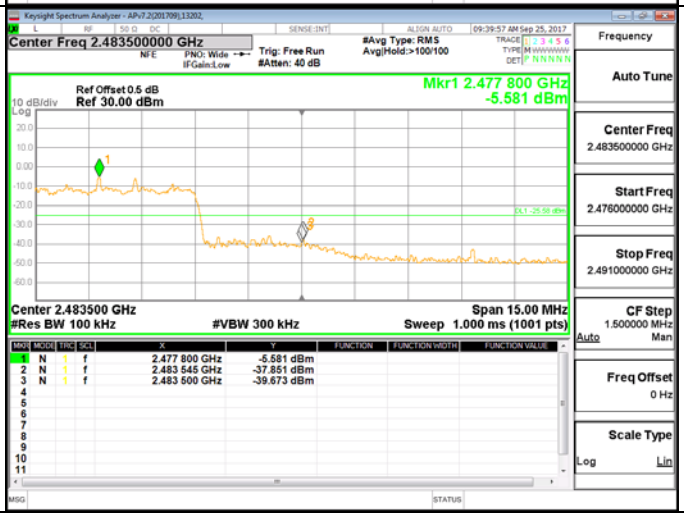
Test Graph

Graphs			
GFSK/LCH/No Hop			
GFSK/LCH/Hop			
GFSK/MCH/No Hop			

GFSK/HCH/No Hop			
GFSK/HCH/Hop			

6.7.1. 8-DPSK MODE

8DPSK/LCH/No Hop			
8DPSK/LCH/Hop			
8DPSK/MCH/No Hop			

8DPSK/HCH/No Hop			
8DPSK/HCH/Hop			

6.8. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC Part15 (15.247) , Subpart C		
Section	Test Item	Limit
FCC §15.247 (d)	Conducted Bandedge	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

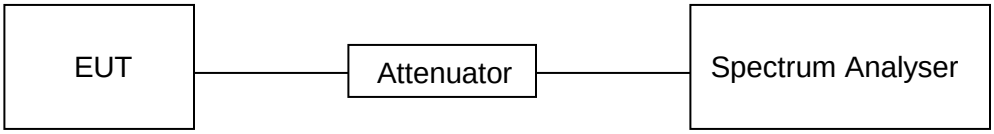
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100K
VBW	≥RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level**.**

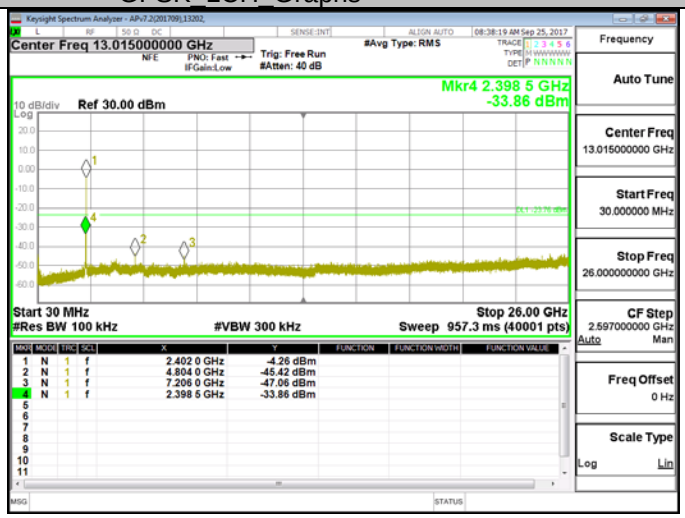
TEST SETUP

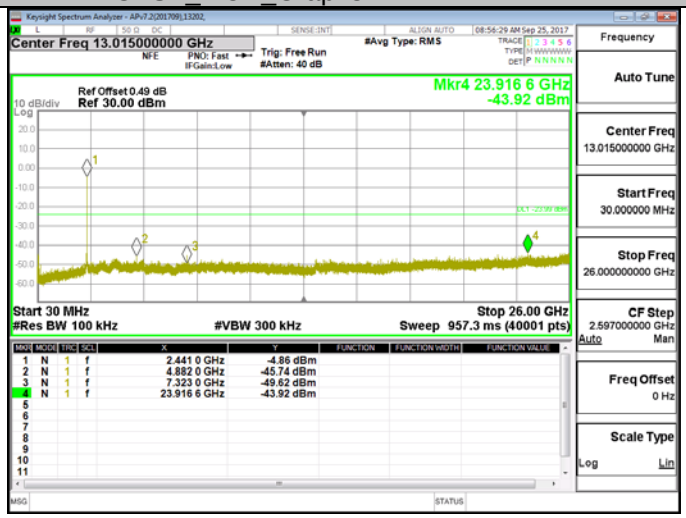


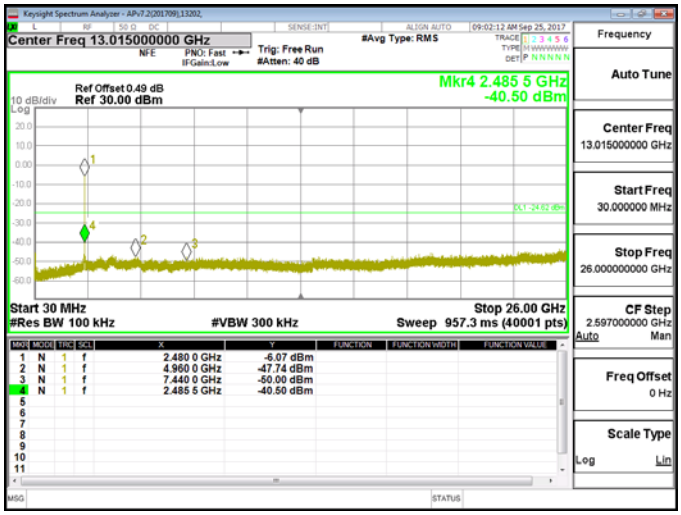
RESULTS

6.8.1. GFSK MODE

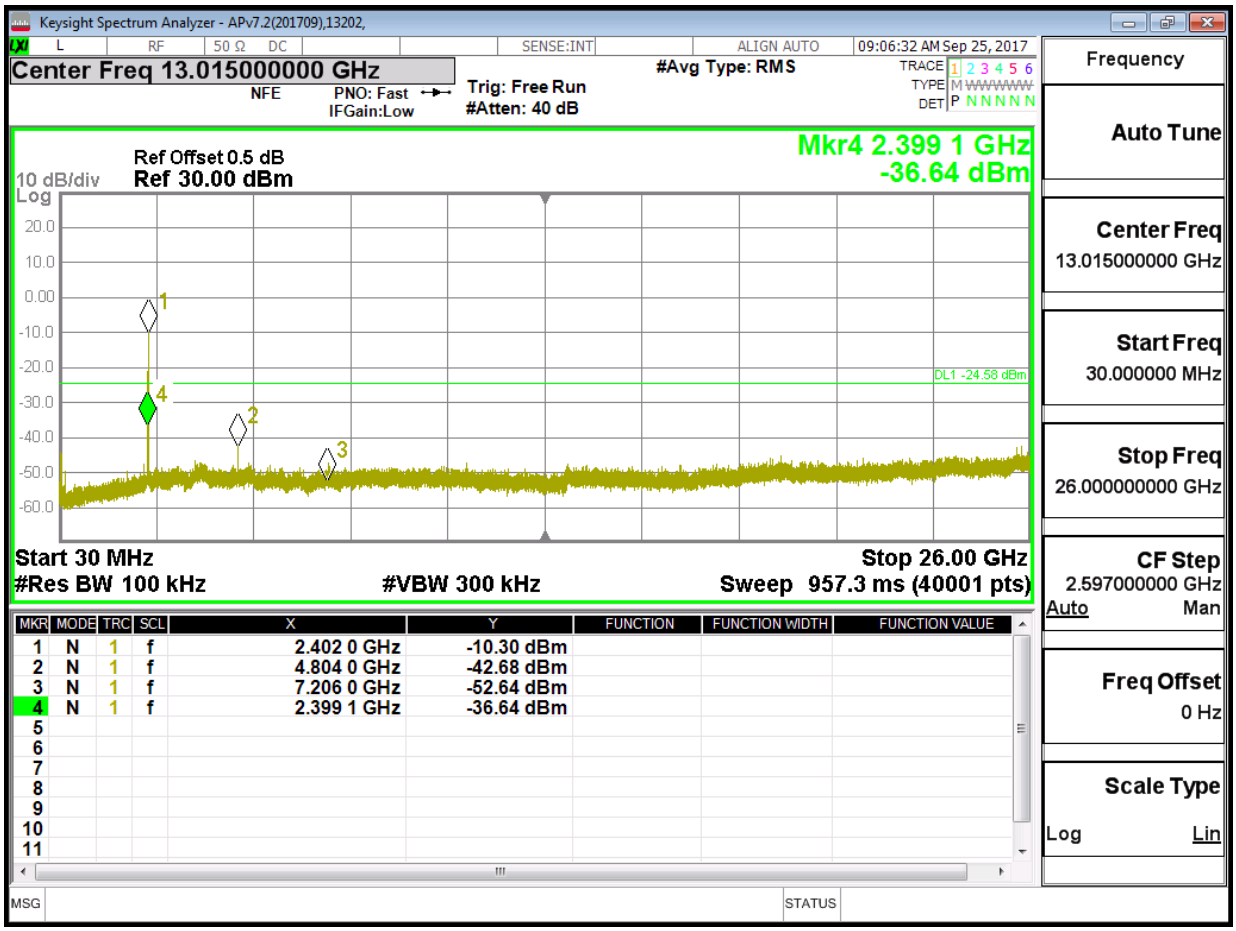
Test Graph

GFSK_LCH_Graphs	
Channel 00	

GFSK_MCH_Graphs	
Channel 39	

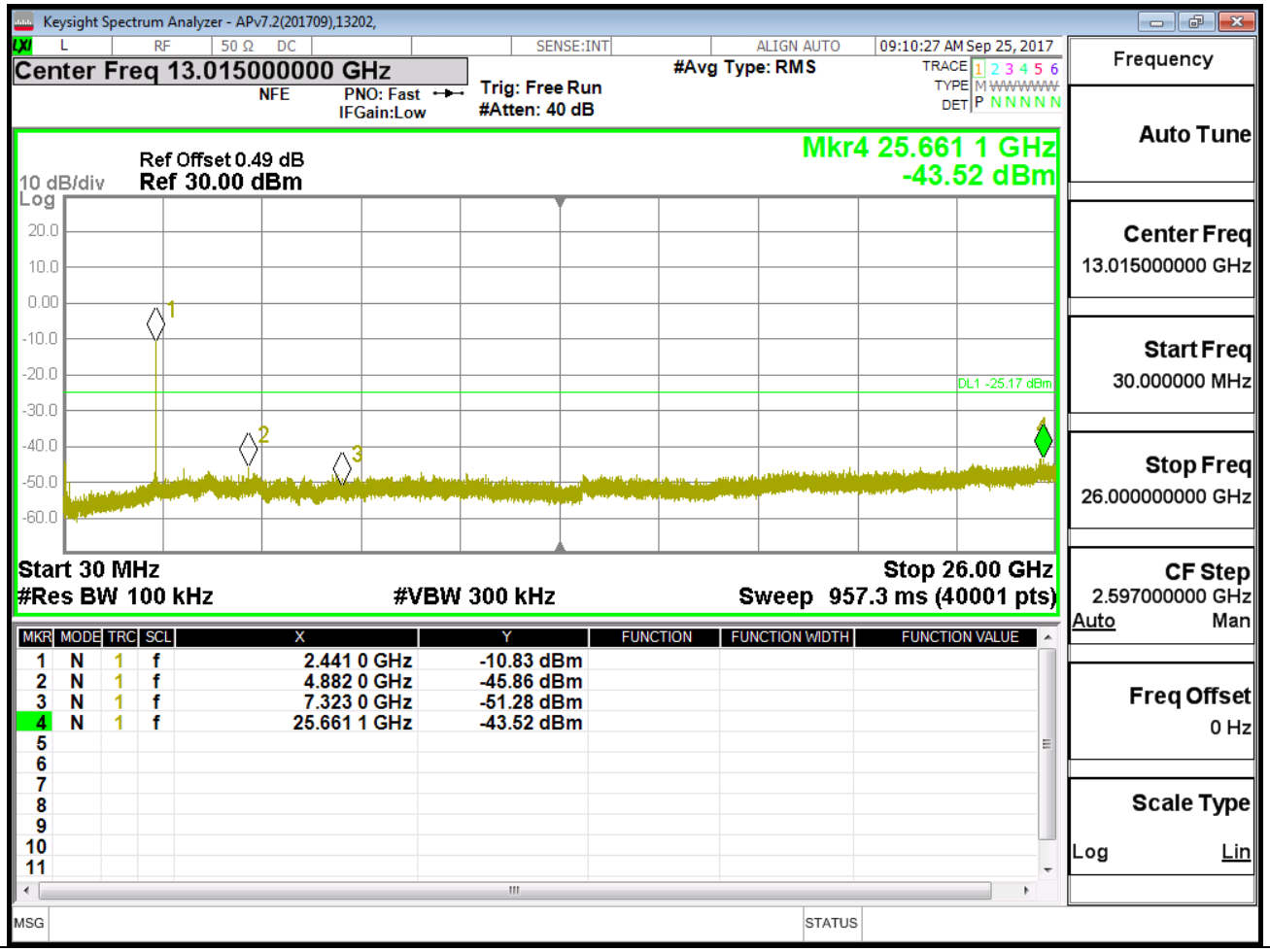
GFSK_HCH_Graphs	
Channel 78	

6.8.2. 8-DPSK MODE

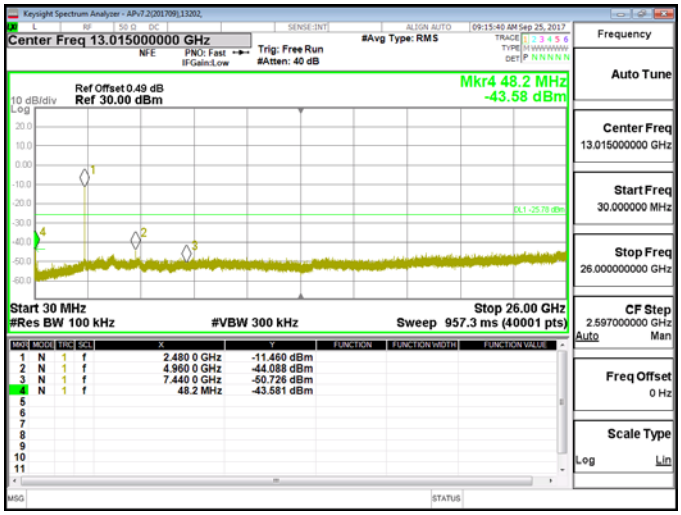
8DPSK_LCH_Graphs	
Channel 00	

8DPSK_MCH_Graphs

Channel 39



8DPSK_HCH_Graphs

Channel 78	

7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

Please refer to FCC §15.205 and §15.209

Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Radiation Disturbance Test Limit for FCC (Above 1G)

Frequency (MHz)	dB(uV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

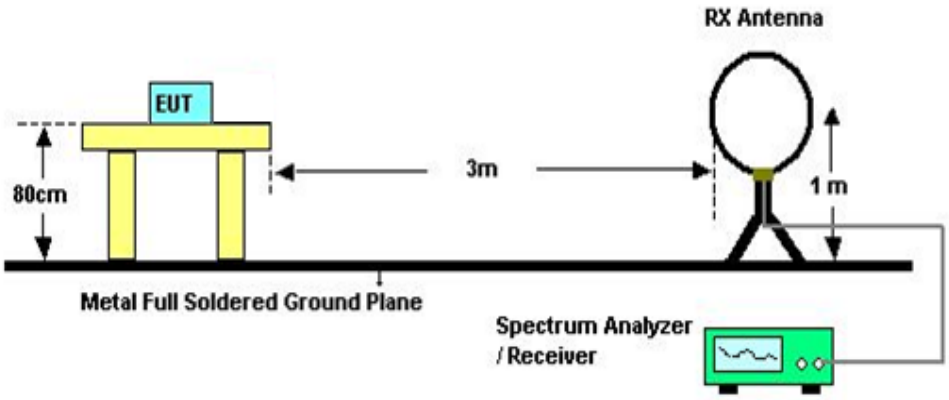
Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6

TEST SETUP AND PROCEDURE

Below 30MHz



The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 0.8m meter above ground.

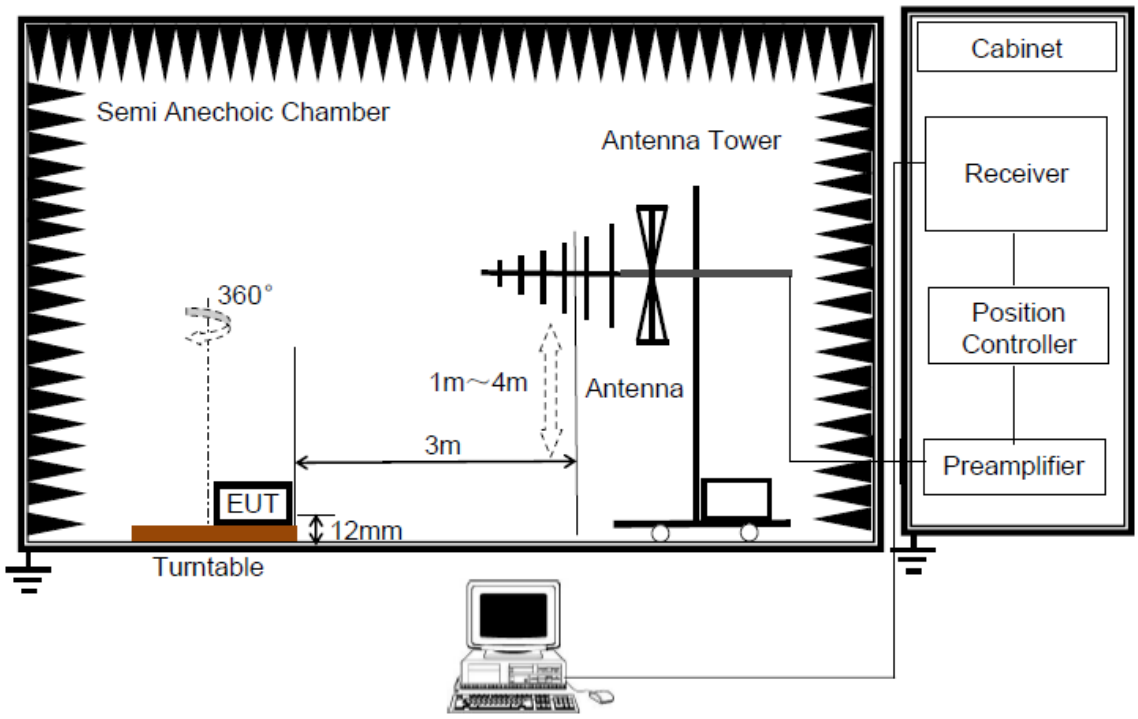
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

Below 1G



The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 12mm above ground.

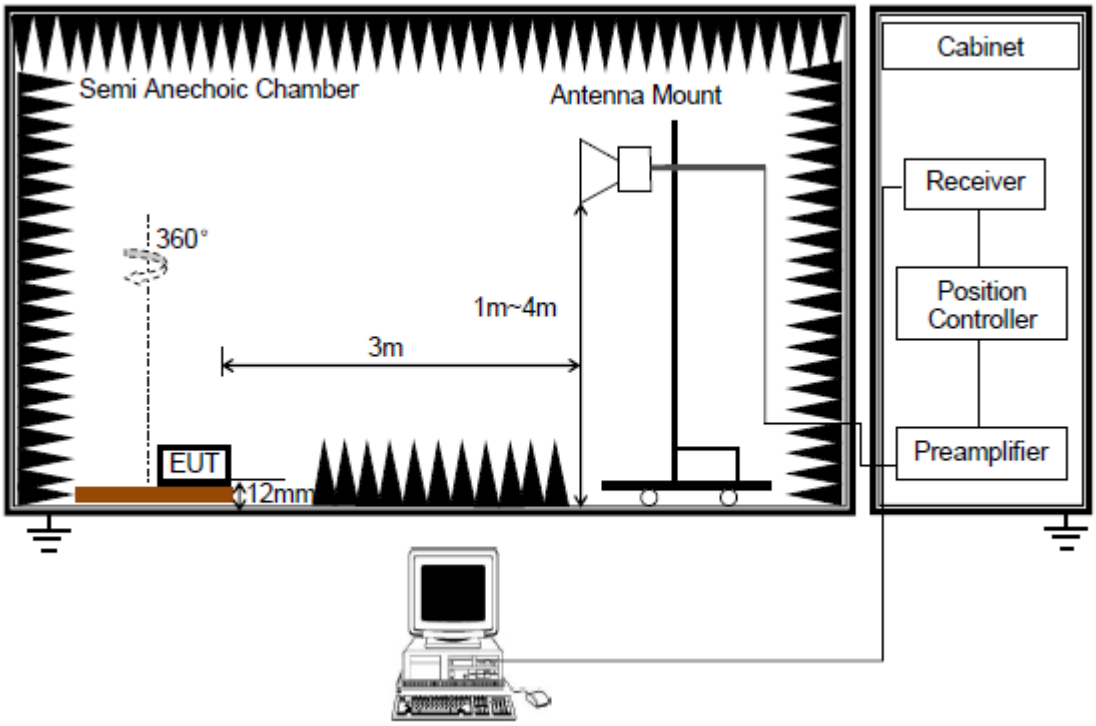
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. For the actual test configuration, please refer to the related Item in this test report.

Above 1G



RBW	1M
VBW	PEAK: 3M AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 12mm above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For average power measurement, set the detector to RMS, while maintaining all of the other instrument settings, if the duty cycle of the EUT is less than 98%, the Duty Cycle Correction Factor shall be added to the measured emission levels. For the Duty Cycle and Correction

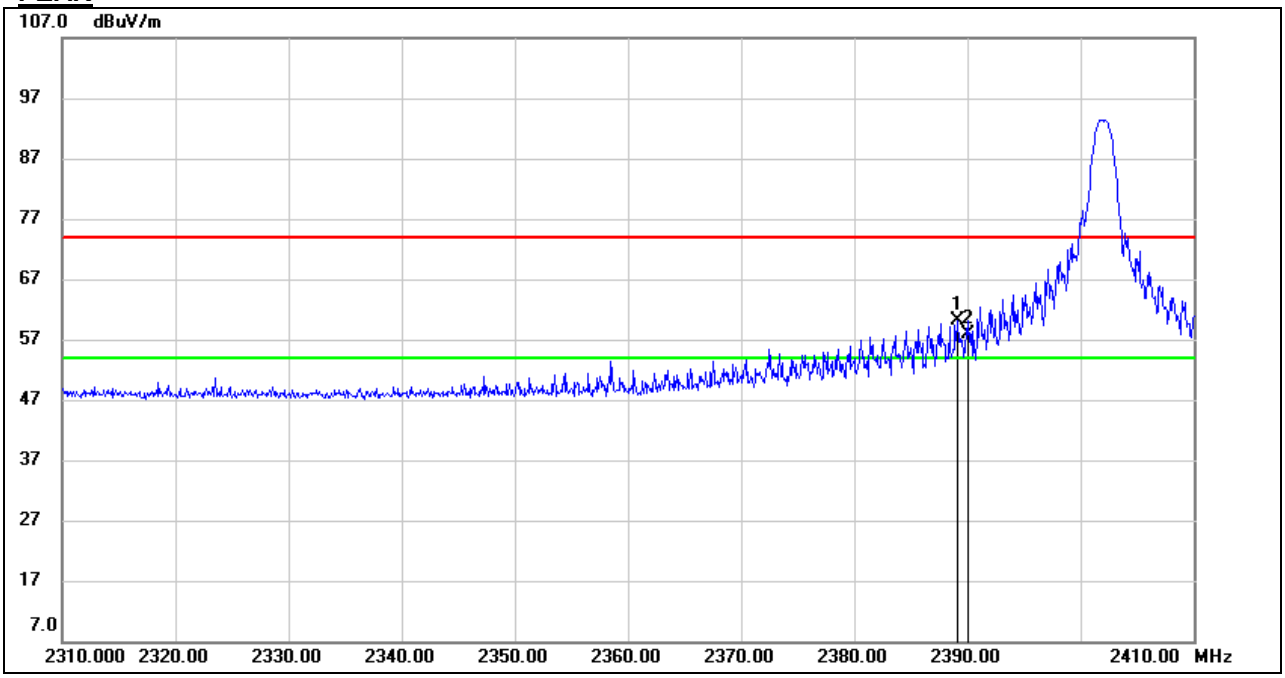
Factor please refer to clause 6.1.ON TIME AND DUTY CYCLE8. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

7.2. RESTRICTED BANDEDGE

7.2.1. GFSK MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

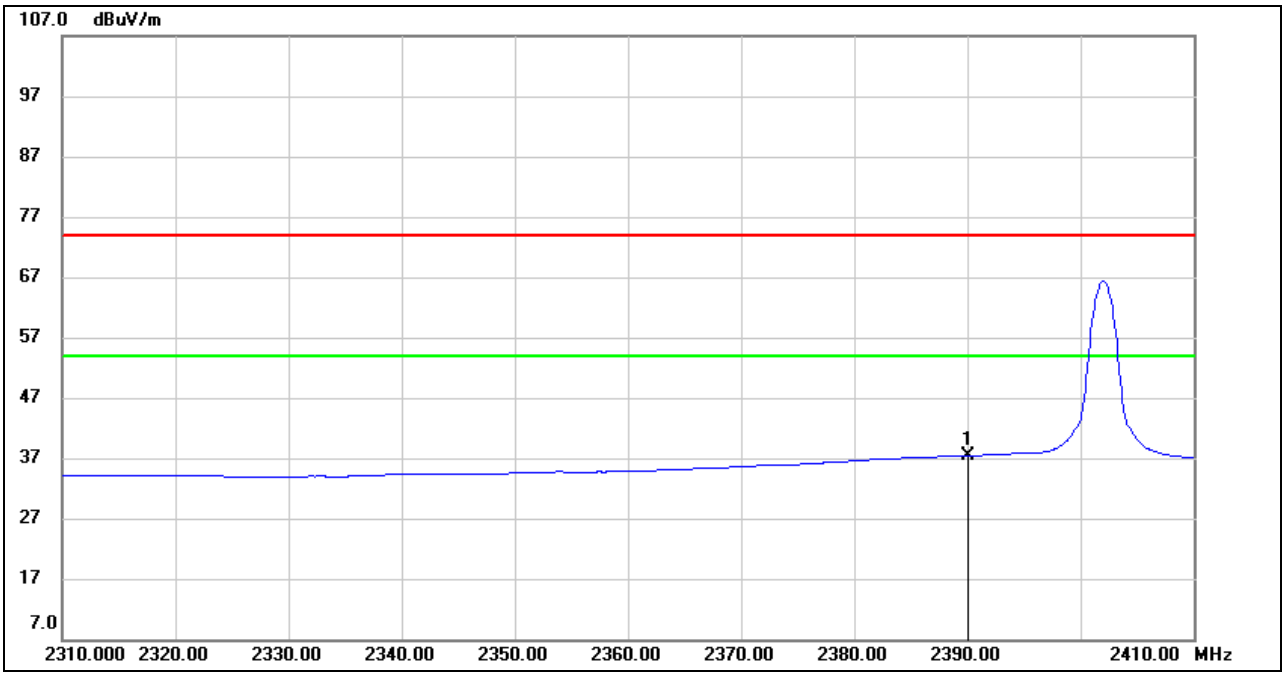
PEAK



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.100	27.04	33.15	60.19	74.00	-13.81	peak
2	2390.000	24.73	33.14	57.87	74.00	-16.13	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

AVG

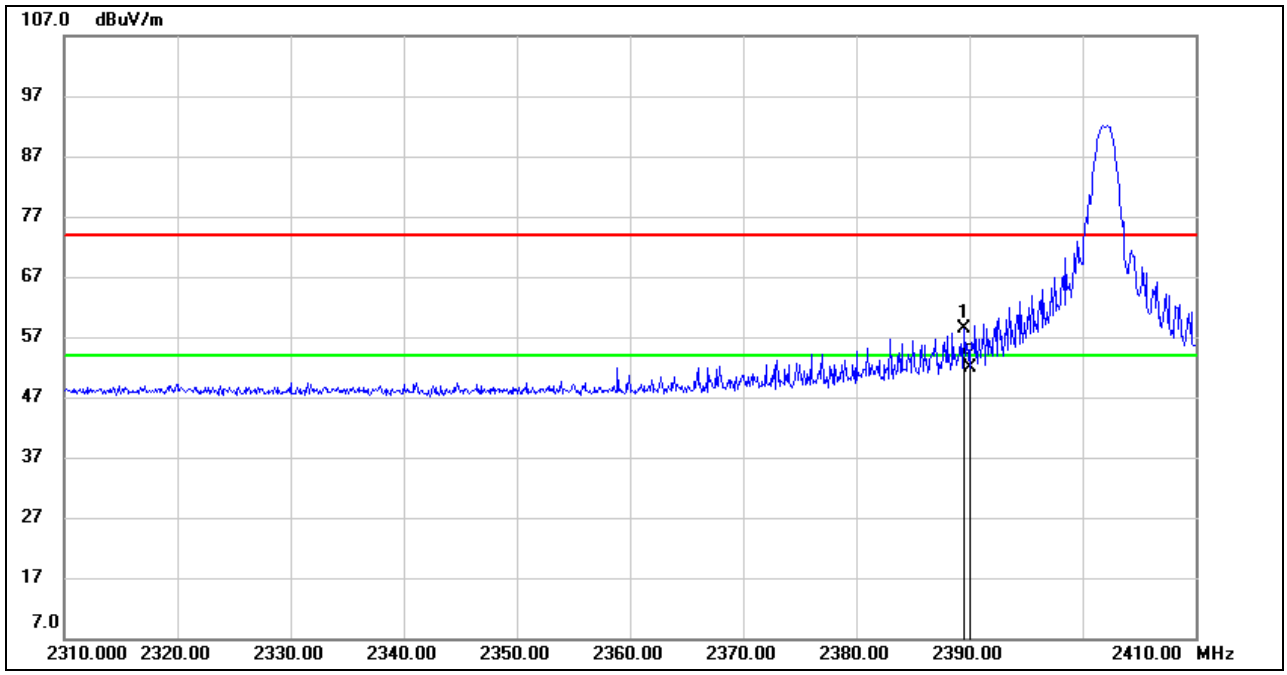


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	4.29	33.14	37.43	54.00	-16.57	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

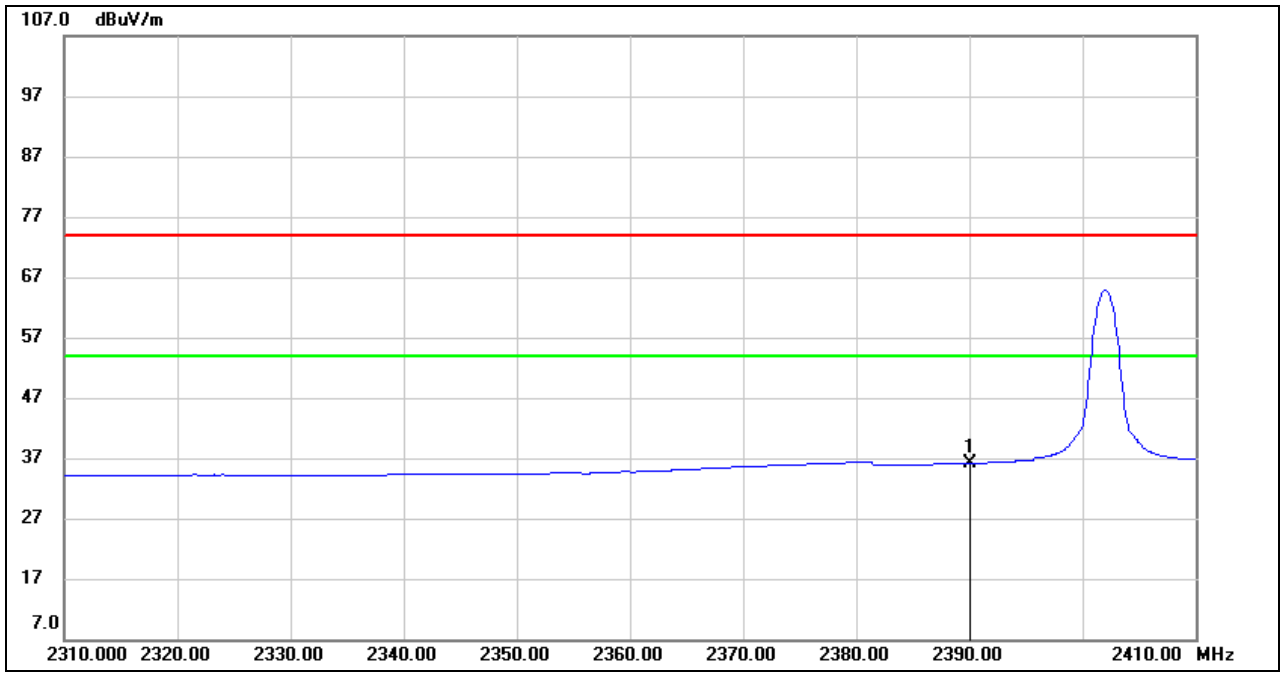
PEAK



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.500	25.25	33.24	58.49	74.00	-15.51	peak
2	2390.000	18.63	33.24	51.87	74.00	-22.13	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

AVG

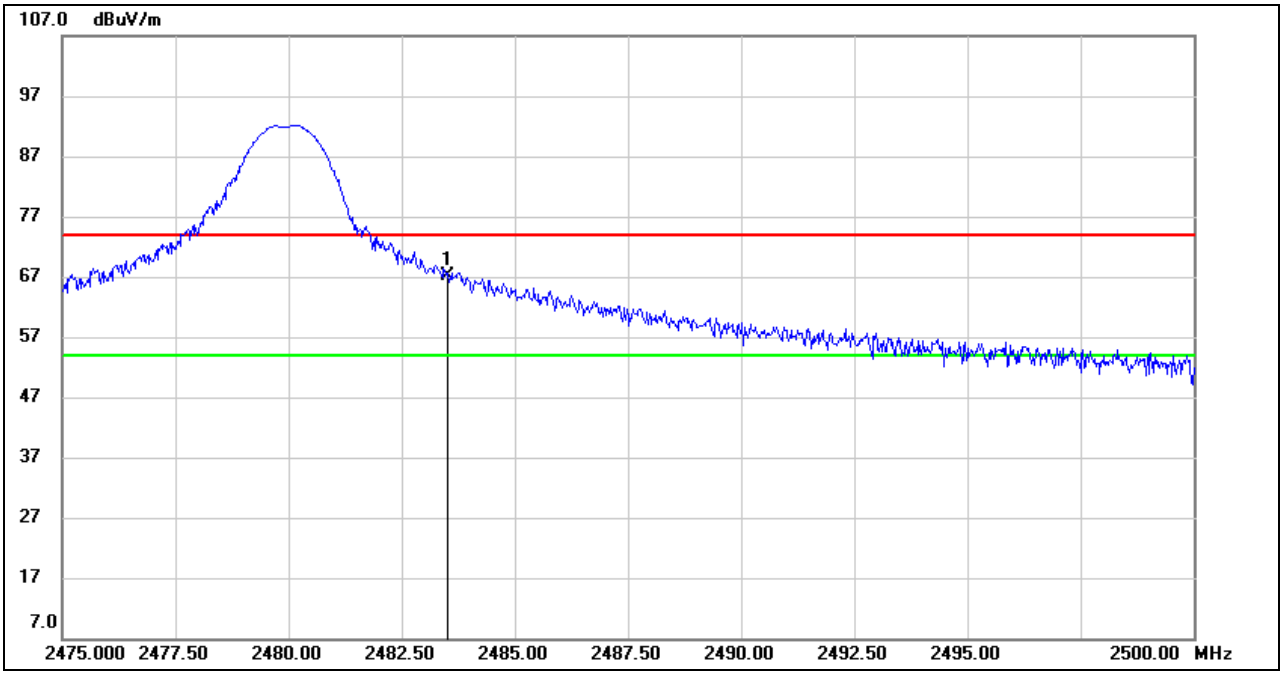


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	2.92	33.24	36.16	54.00	-17.84	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

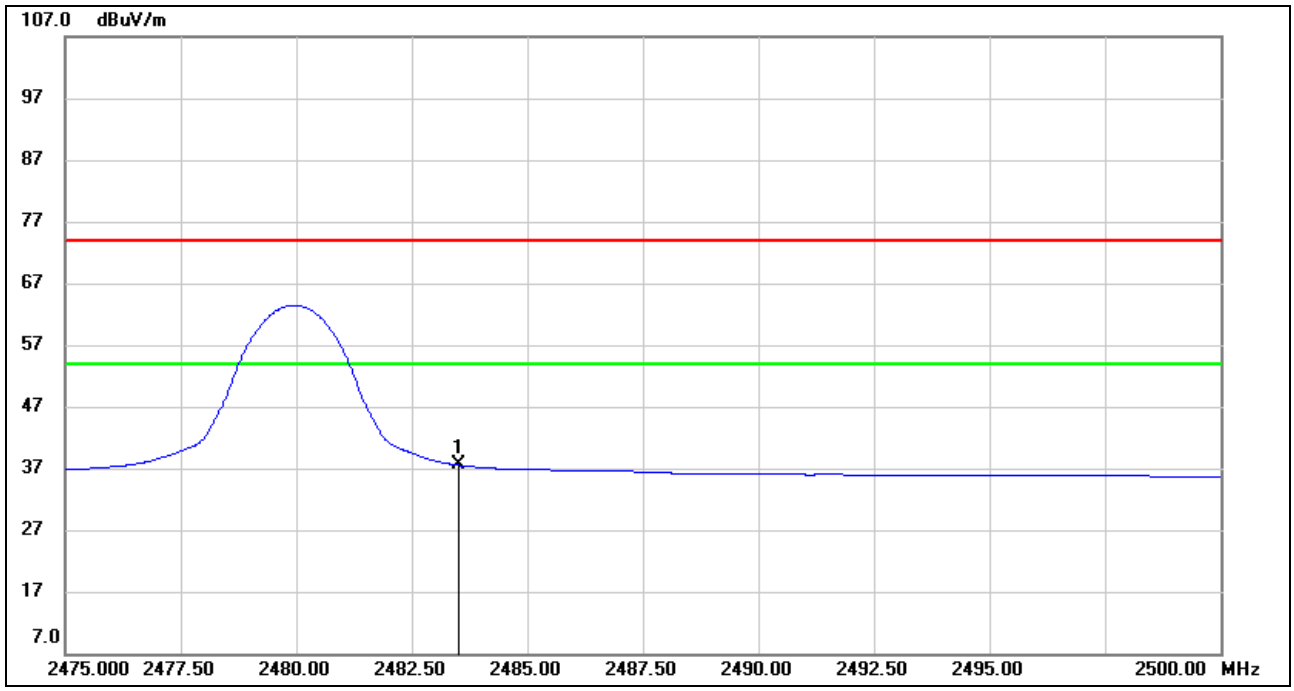
PEAK



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	34.34	32.78	67.12	74.00	-6.88	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

AVG

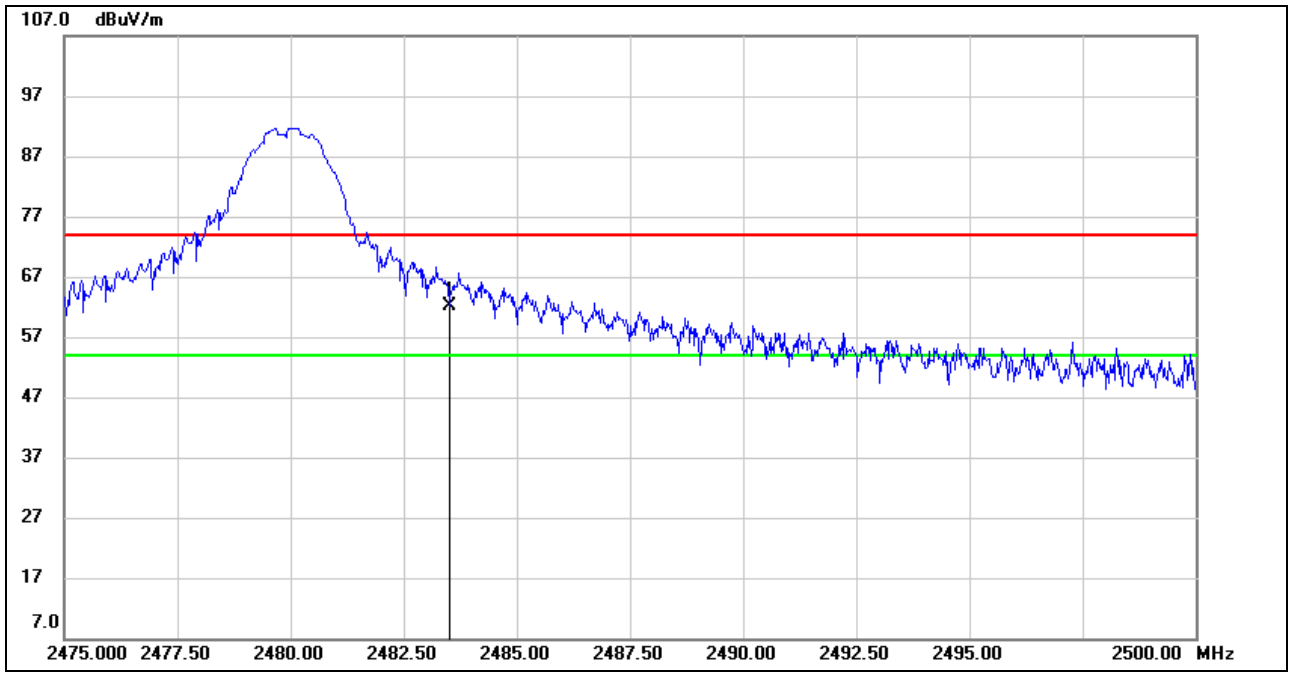


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	4.76	32.78	37.54	54.00	-16.46	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

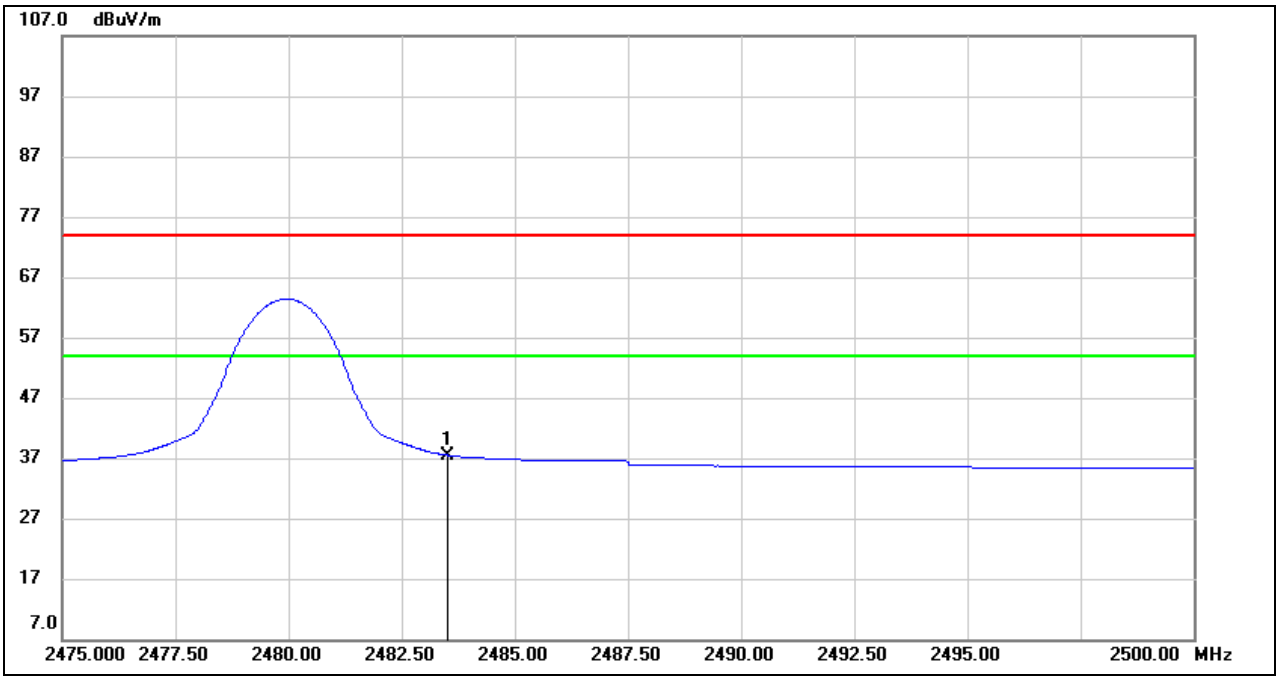
PEAK



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	29.22	32.88	62.10	74.00	-11.90	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

AVG



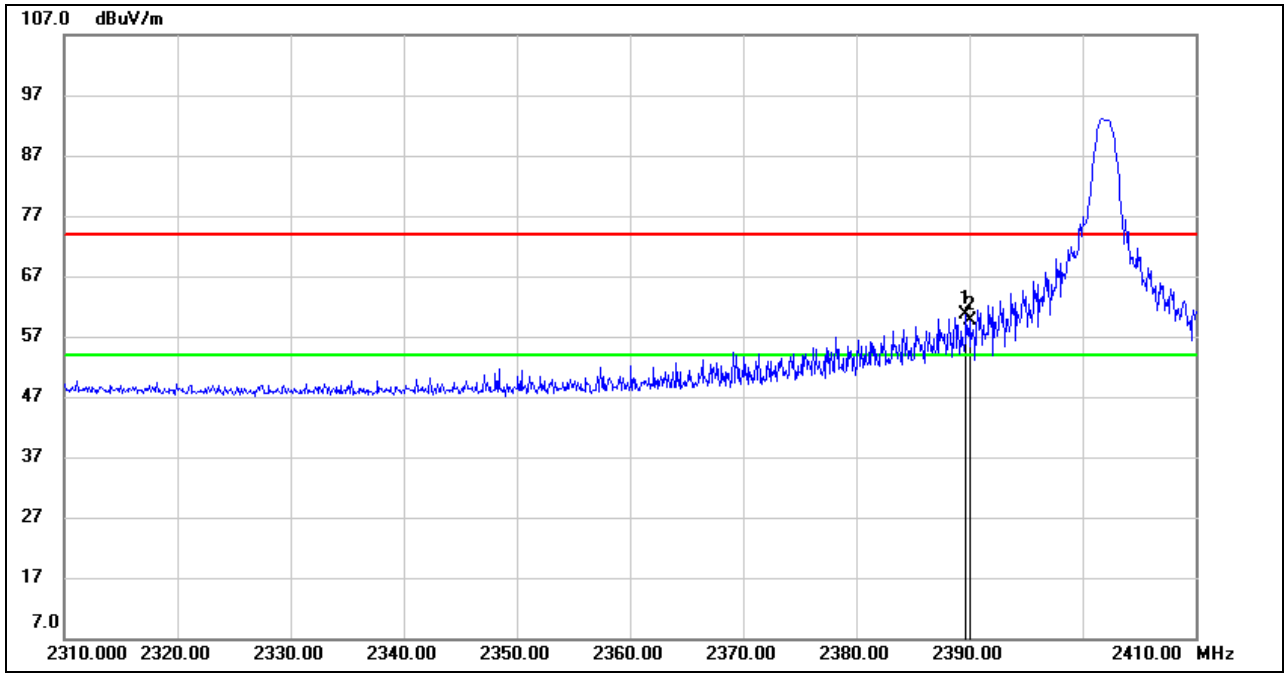
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	4.62	32.88	37.50	54.00	-16.50	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

7.2.2. 8-DPSK MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

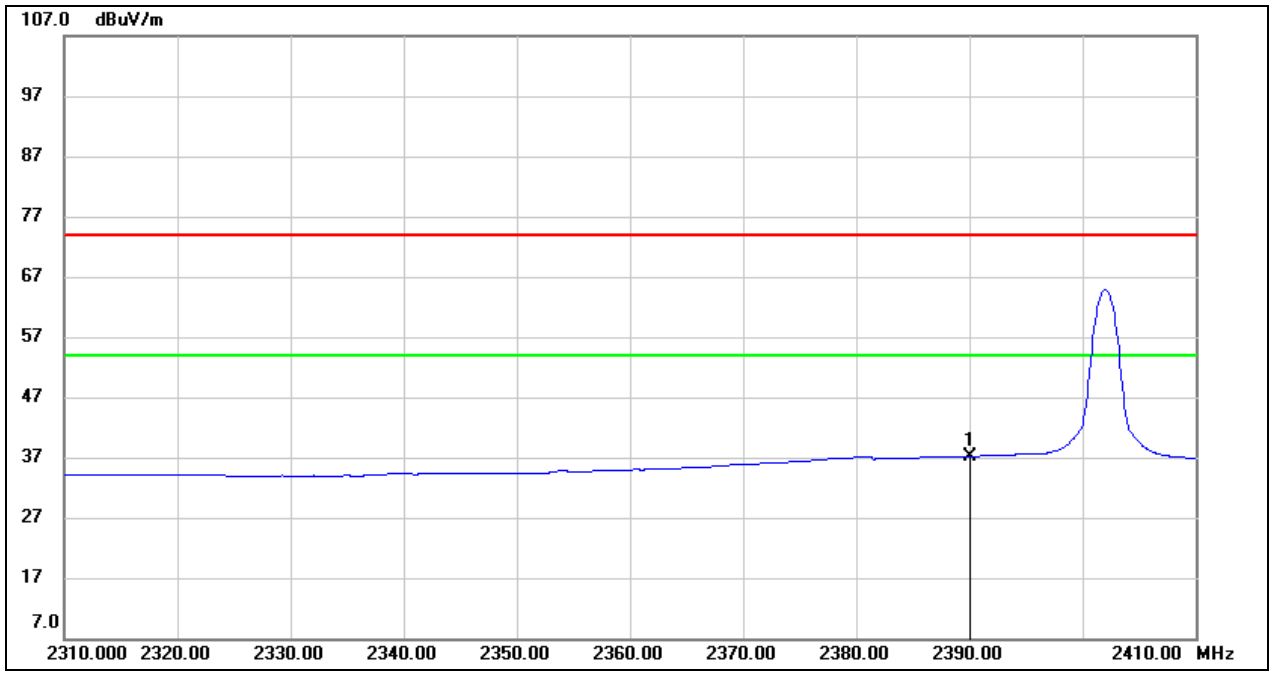
PEAK



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.700	27.43	33.14	60.57	74.00	-13.43	peak
2	2390.000	26.58	33.14	59.72	74.00	-14.28	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

AVG

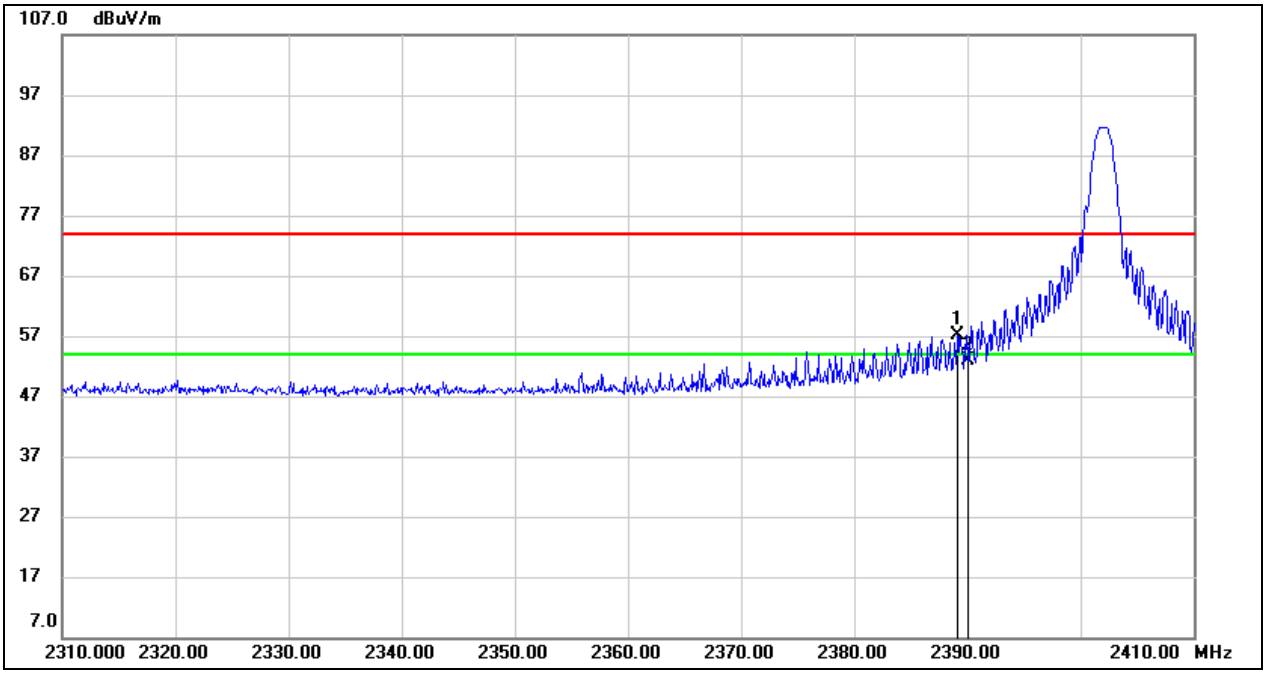


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	4.05	33.14	37.19	54.00	-16.81	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

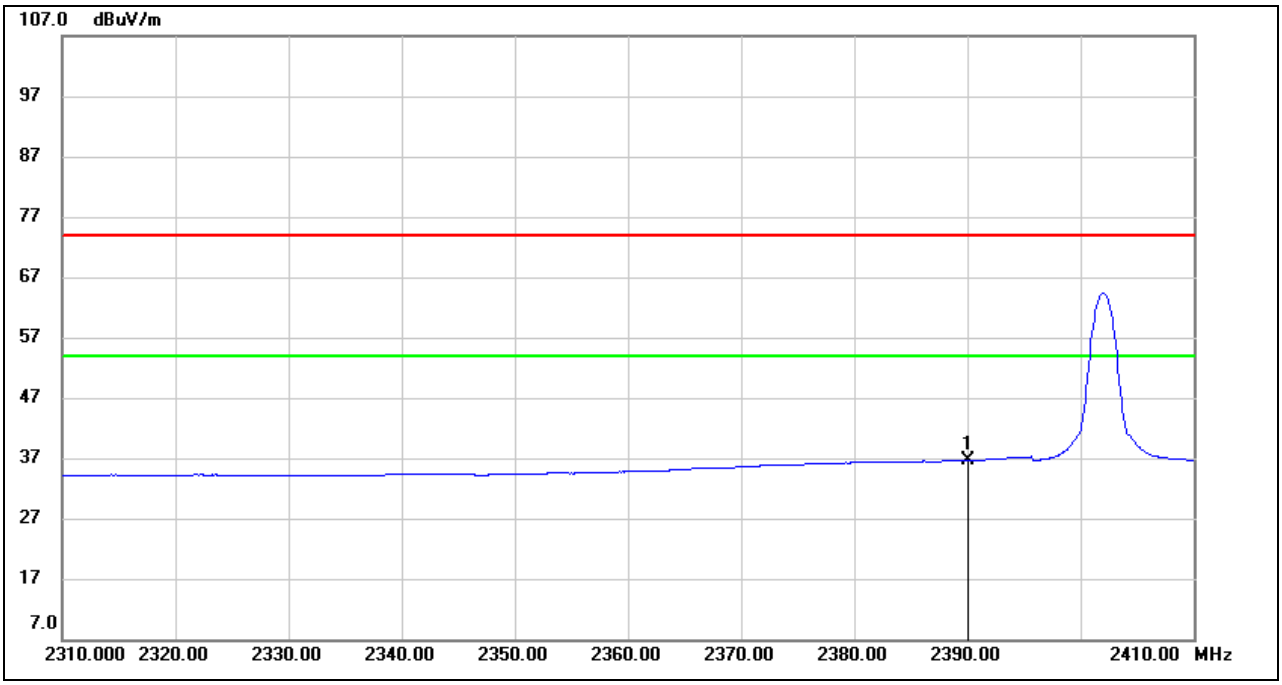
PEAK



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.100	23.87	33.25	57.12	74.00	-16.88	peak
2	2390.000	19.72	33.24	52.96	74.00	-21.04	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

AVG

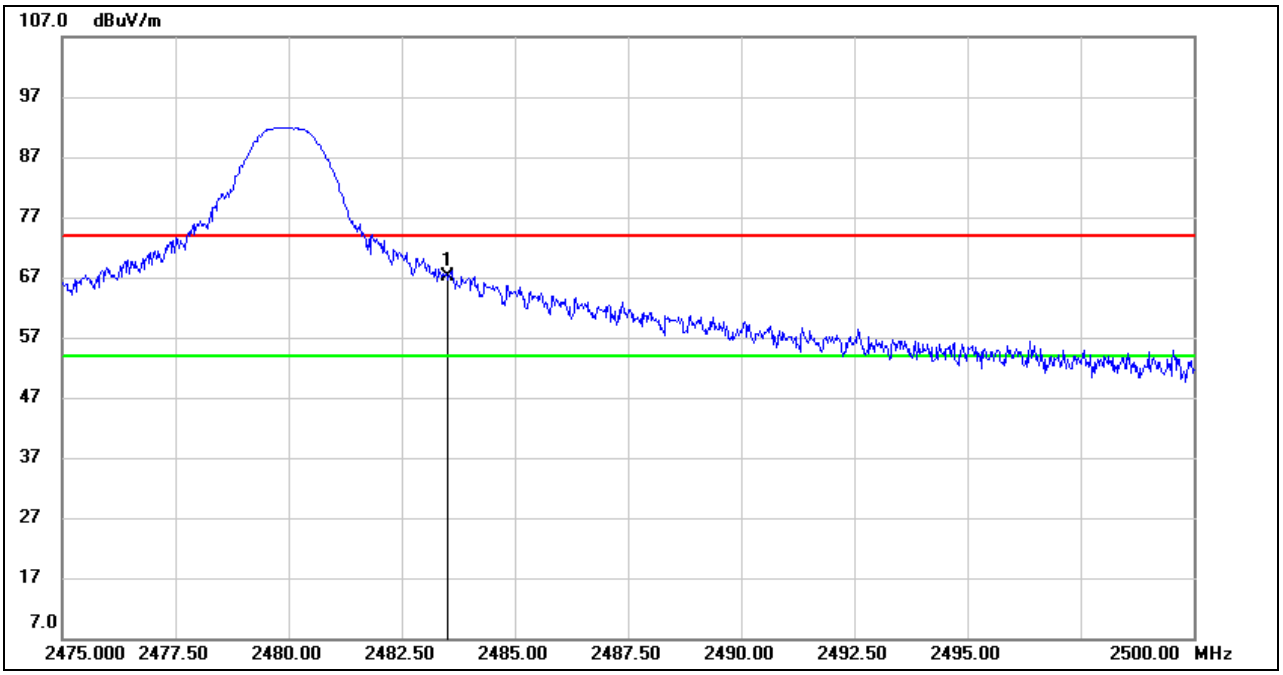


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	3.42	33.24	36.66	54.00	-17.34	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

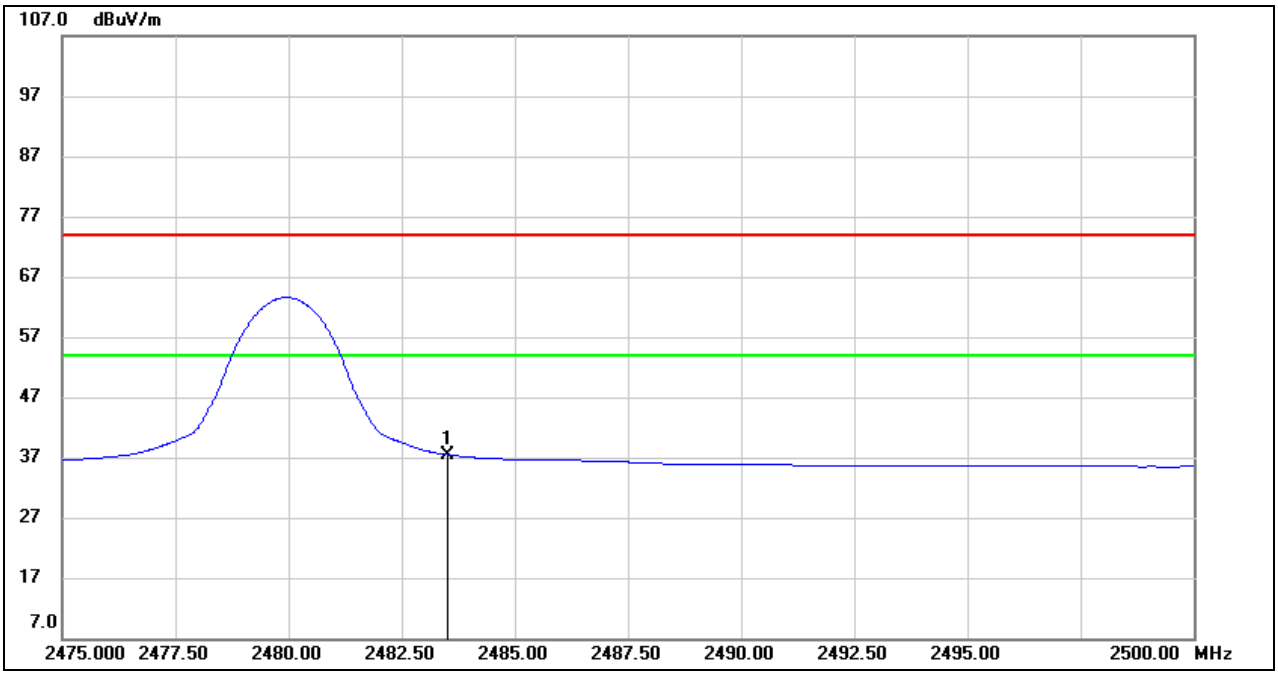
PEAK



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	34.37	32.78	67.15	74.00	-6.85	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

AVG

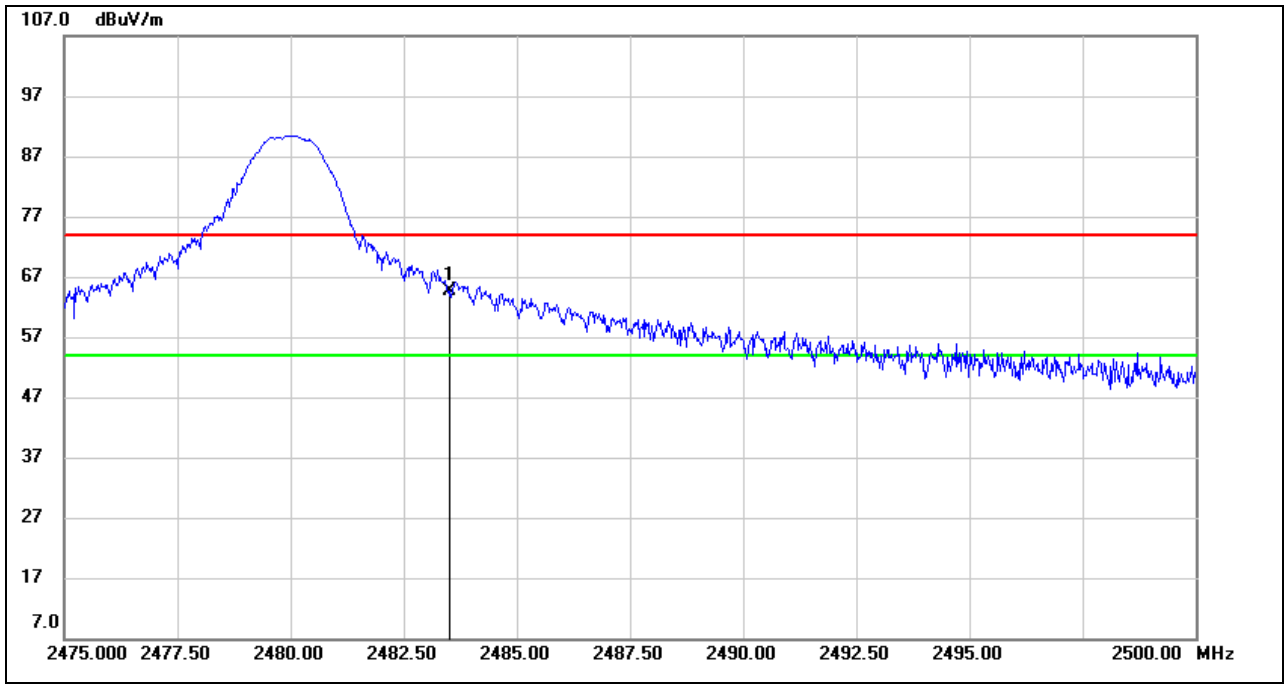


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	4.70	32.78	37.48	54.00	-16.52	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

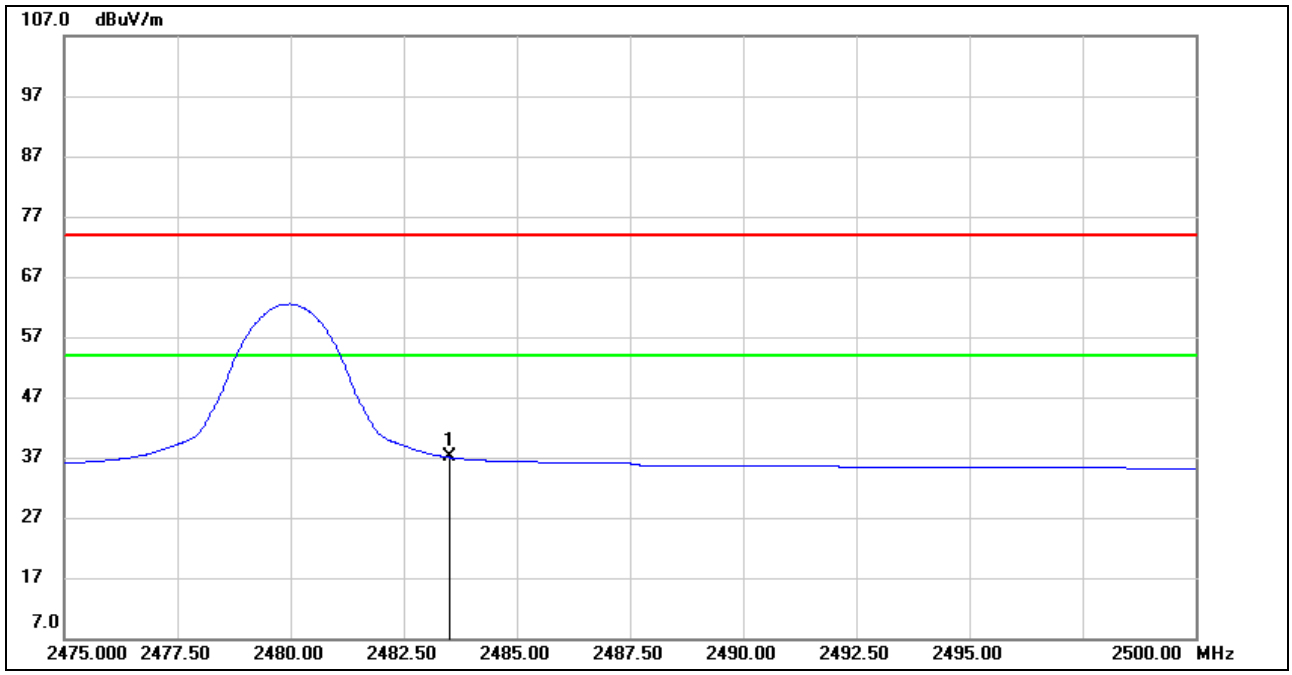
PEAK



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	31.80	32.88	64.68	74.00	-9.32	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

AVG



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	4.15	32.88	37.03	54.00	-16.97	AVG

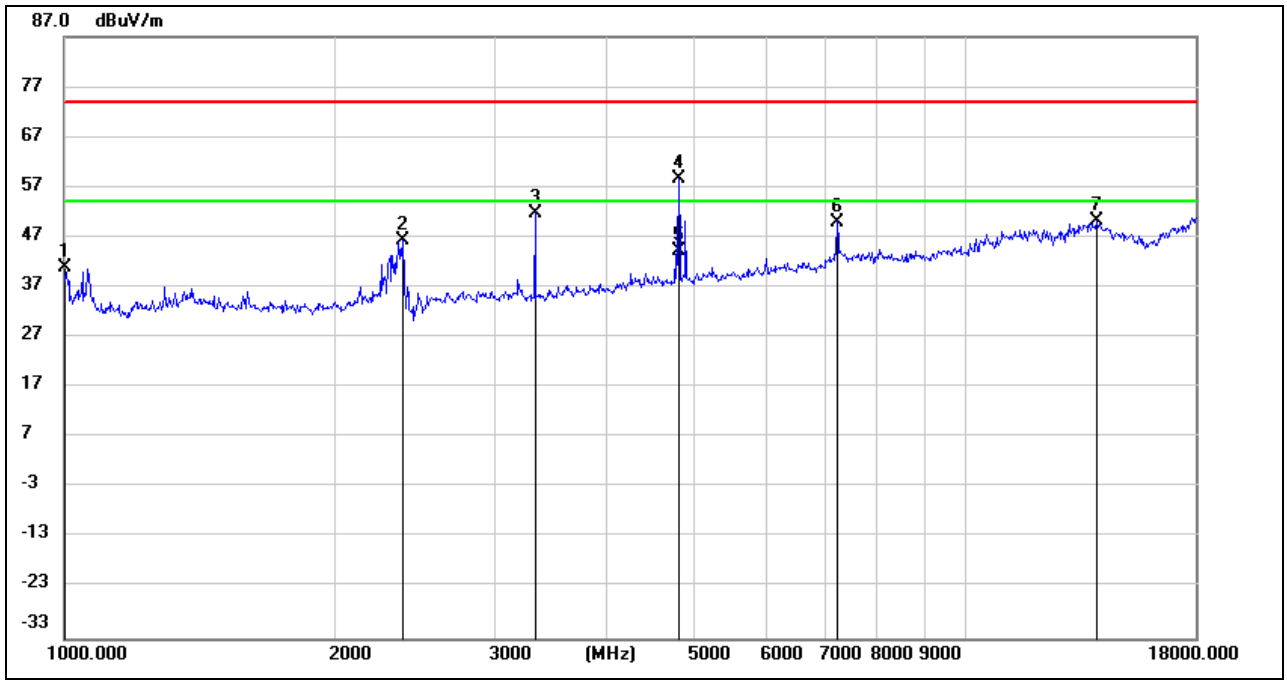
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

7.3. SPURIOUS EMISSIONS (1~18GHz)

7.3.1. GFSK MODE

HARMONICS AND SPURIOUS EMISSIONS

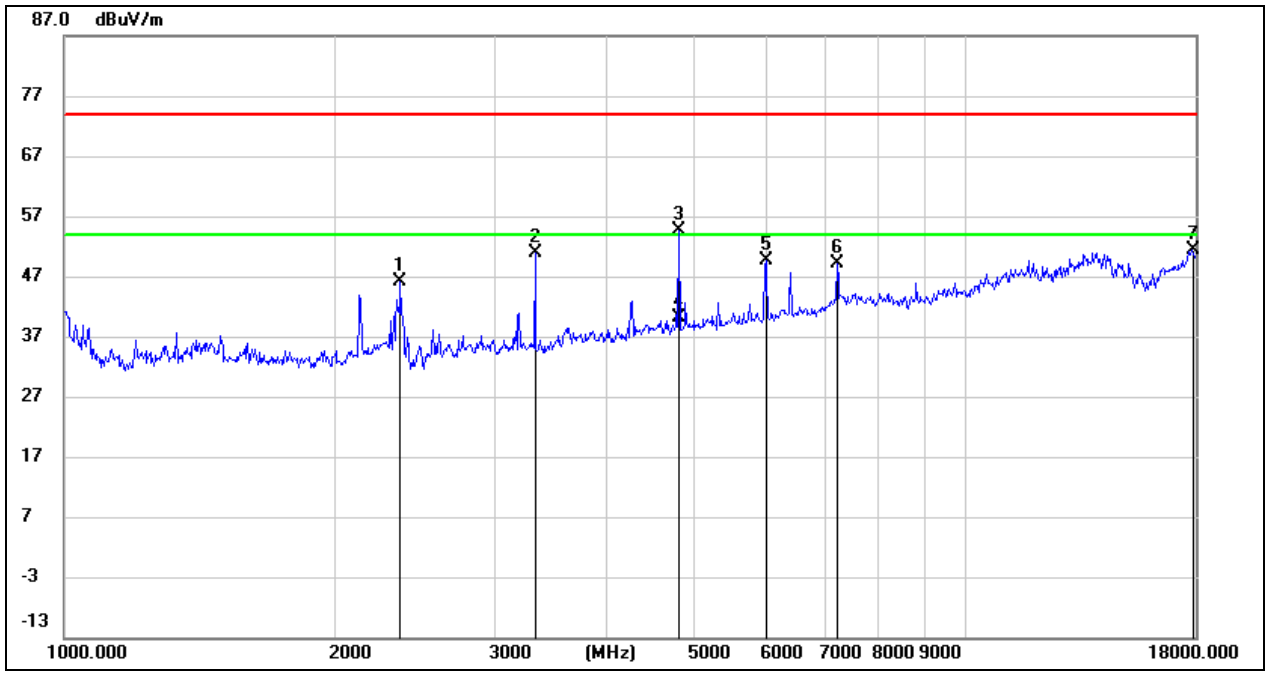
EUT:	Balance Scooter	Polarization :	Horizontal
Test Mode:	GFSK(DH5) Mode Low Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1000.0000	55.71	-14.76	40.95	74.00	-33.05	peak
2	2373.157	55.26	-8.81	46.45	74.00	-27.55	peak
3	3337.710	58.41	-6.51	51.90	74.00	-22.10	peak
4	4804.110	60.55	-1.76	58.79	74.00	-15.21	peak
5	4804.110	45.90	-1.76	44.14	54.00	-9.86	AVG
6	7221.150	44.23	5.87	50.10	74.00	-23.90	peak
7	13997.929	31.29	18.87	50.16	74.00	-23.84	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

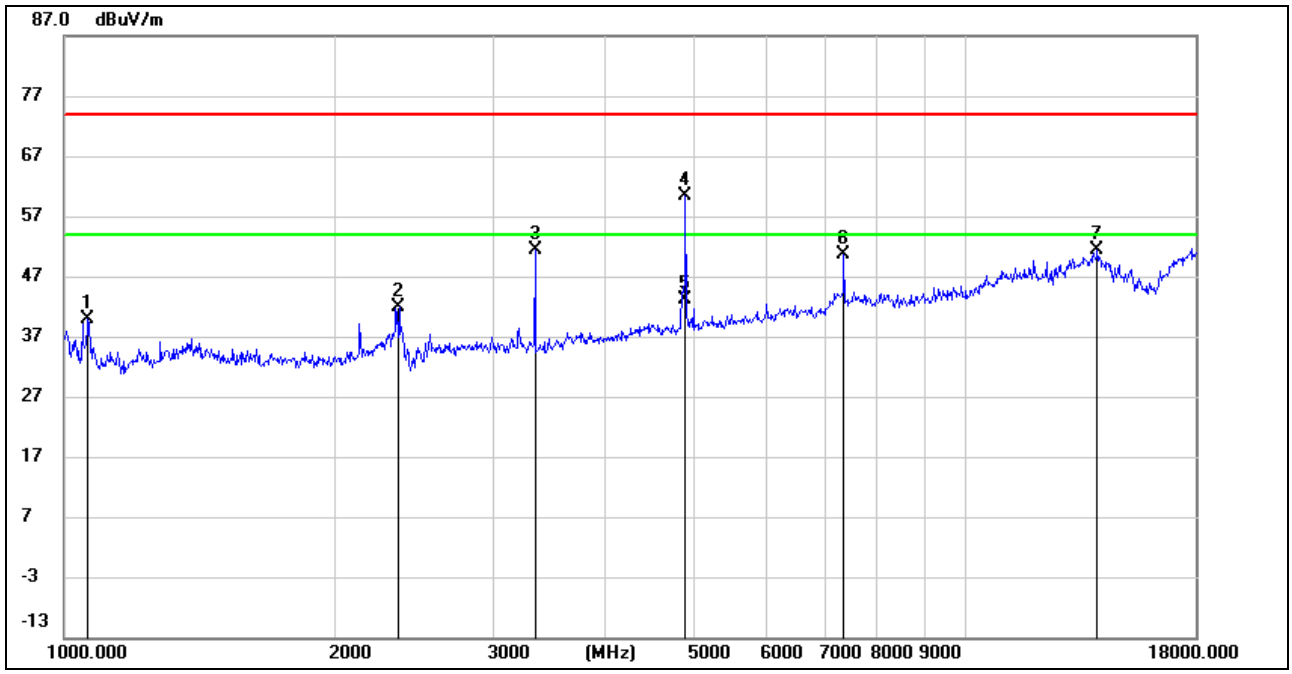
EUT:	Balance Scooter	Polarization :	Vertical
Test Mode:	GFSK(DH5) Mode Low Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2359.478	54.82	-8.62	46.20	74.00	-27.80	peak
2	3337.710	57.35	-6.51	50.84	74.00	-23.16	peak
3	4804.110	56.36	-1.67	54.69	74.00	-19.31	peak
4	4804.110	41.79	-1.67	40.12	54.00	-13.88	AVG
5	6001.626	47.55	2.10	49.65	74.00	-24.35	peak
6	7221.150	43.34	5.89	49.23	74.00	-24.77	peak
7	17896.247	25.50	25.99	51.49	74.00	-22.51	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

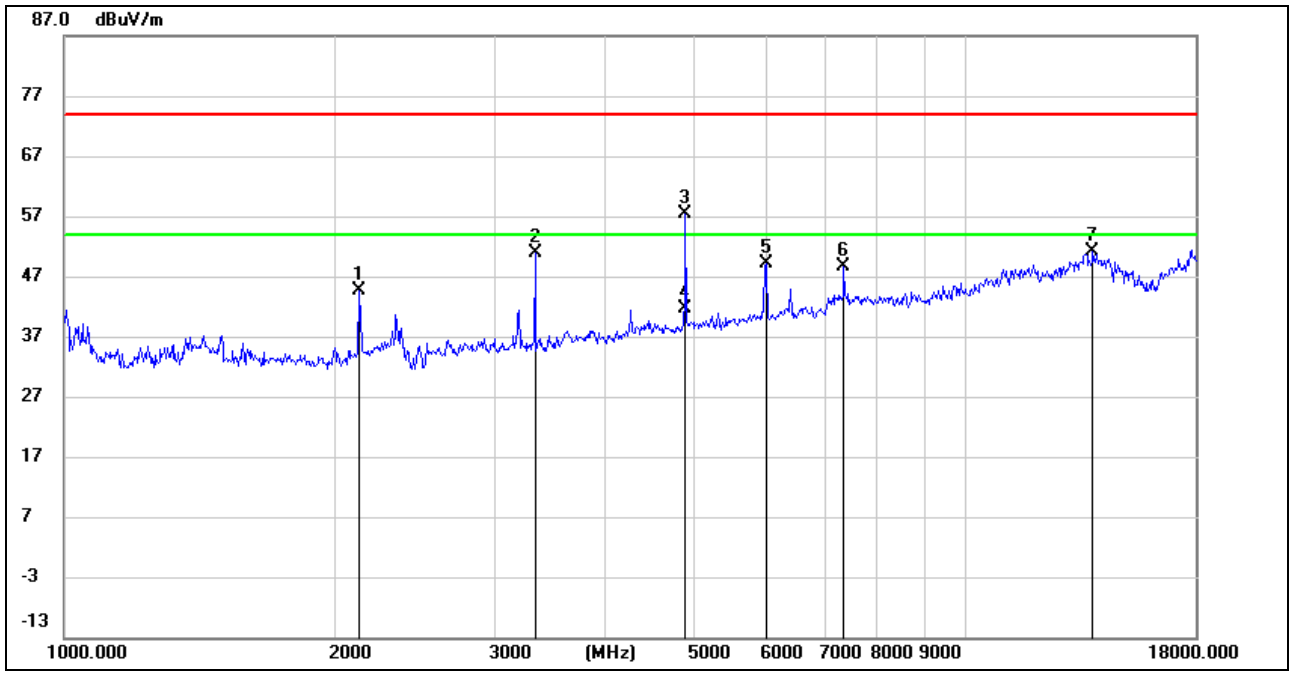
EUT:	Balance Scooter	Polarization :	Horizontal
Test Mode:	GFSK(DH5) Mode Middle Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1062.578	54.04	-14.07	39.97	74.00	-34.03	peak
2	2352.668	50.56	-8.68	41.88	74.00	-32.12	peak
3	3337.710	57.87	-6.51	51.36	74.00	-22.64	peak
4	4888.151	61.06	-0.79	60.27	74.00	-13.73	peak
5	4888.151	44.02	-0.79	43.23	54.00	-10.77	AVG
6	7326.267	44.83	5.70	50.53	74.00	-23.47	peak
7	13997.929	32.51	18.87	51.38	74.00	-22.62	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

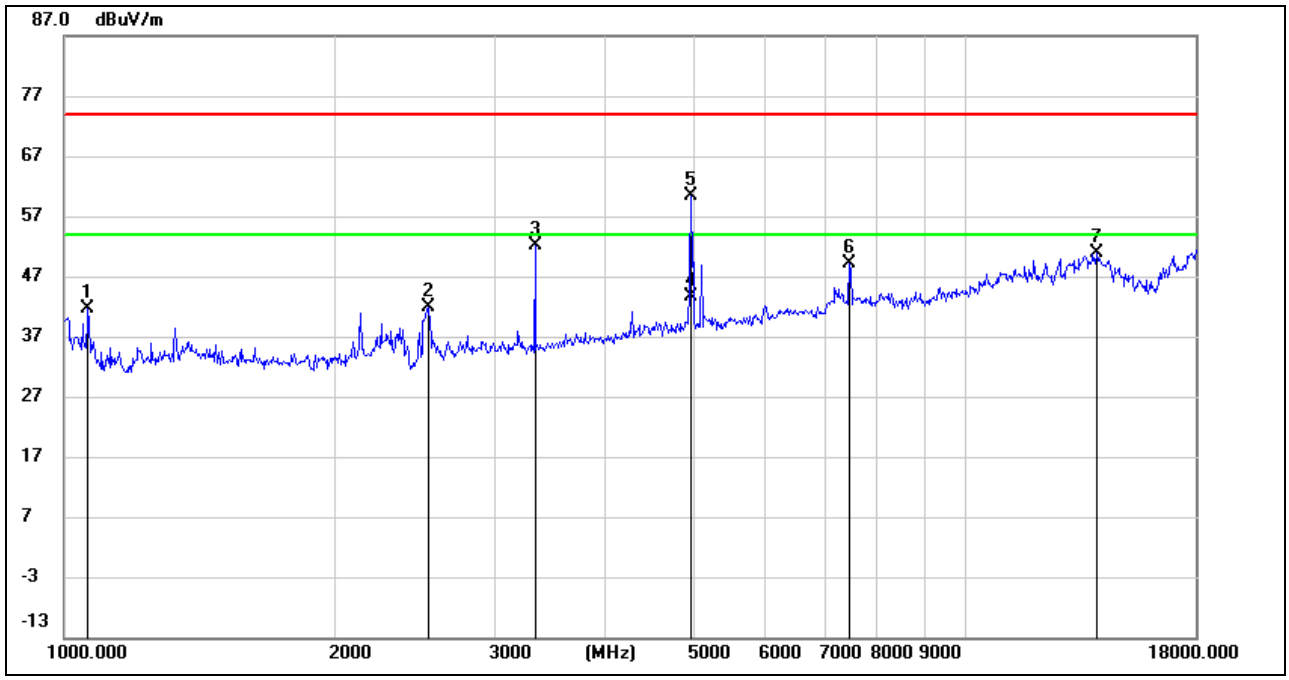
EUT:	Balance Scooter	Polarization :	Vertical
Test Mode:	GFSK(DH5) Mode Middle Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2120.171	54.72	-10.05	44.67	74.00	-29.33	peak
2	3337.710	57.39	-6.51	50.88	74.00	-23.12	peak
3	4888.151	58.19	-0.86	57.33	74.00	-16.67	peak
4	4888.151	42.45	-0.86	41.59	54.00	-12.41	AVG
5	6001.626	47.13	2.10	49.23	74.00	-24.77	peak
6	7326.267	42.92	5.76	48.68	74.00	-25.32	peak
7	13837.024	31.80	19.29	51.09	74.00	-22.91	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

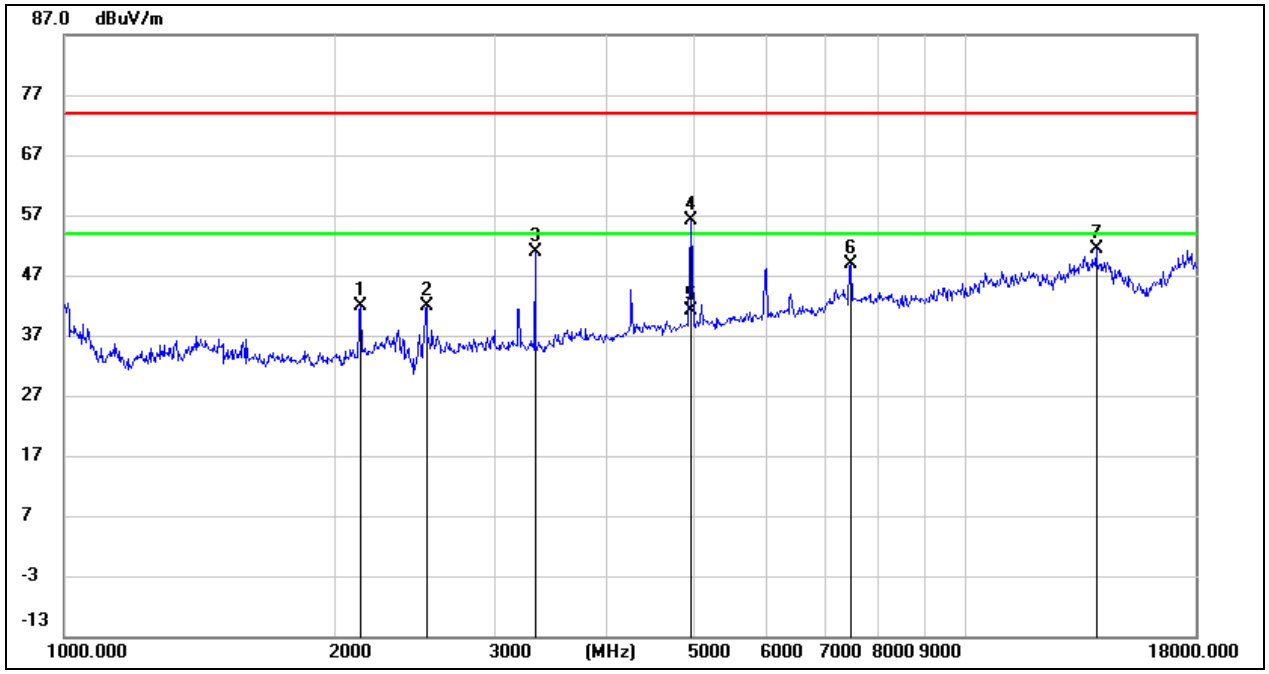
EUT:	Balance Scooter	Polarization :	Horizontal
Test Mode:	GFSK(DH5) Mode High Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1062.578	55.58	-14.07	41.51	74.00	-32.49	peak
2	2536.283	50.91	-9.14	41.77	74.00	-32.23	peak
3	3337.710	58.56	-6.51	52.05	74.00	-21.95	peak
4	4959.307	44.38	-0.78	43.60	74.00	-30.40	peak
5	4959.307	61.19	-0.78	60.41	74.00	-13.59	peak
6	7432.914	43.48	5.57	49.05	74.00	-24.95	peak
7	13997.929	31.90	18.87	50.77	74.00	-23.23	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

EUT:	Balance Scooter	Polarization :	Vertical
Test Mode:	GFSK(DH5) Mode High Chanel		



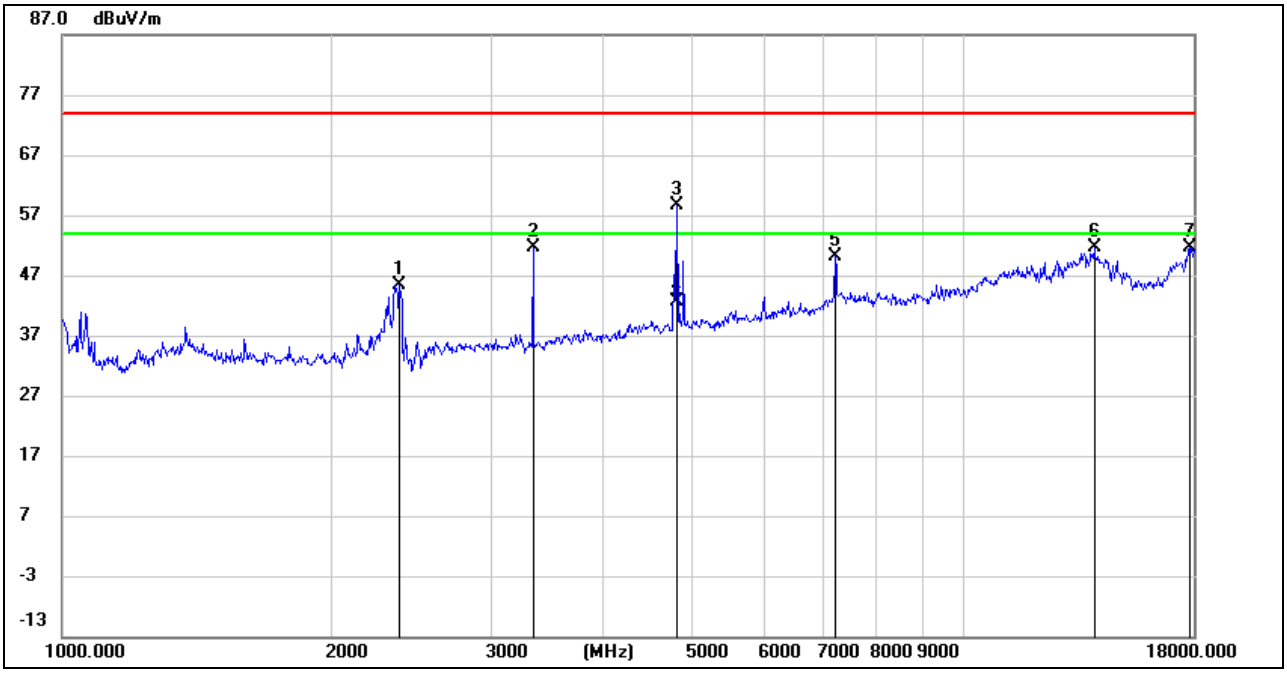
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2138.635	51.67	-9.81	41.86	74.00	-32.14	peak
2	2521.664	50.88	-9.08	41.80	74.00	-32.20	peak
3	3337.710	57.31	-6.51	50.80	74.00	-23.20	peak
4	4959.307	57.00	-0.76	56.24	74.00	-17.76	peak
5	4959.307	41.87	-0.76	41.11	54.00	-12.89	AVG
6	7454.429	42.85	5.92	48.77	74.00	-25.23	peak
7	13957.529	32.24	19.05	51.29	74.00	-22.71	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

7.3.2. 8-DPSK MODE

HARMONICS AND SPURIOUS EMISSIONS

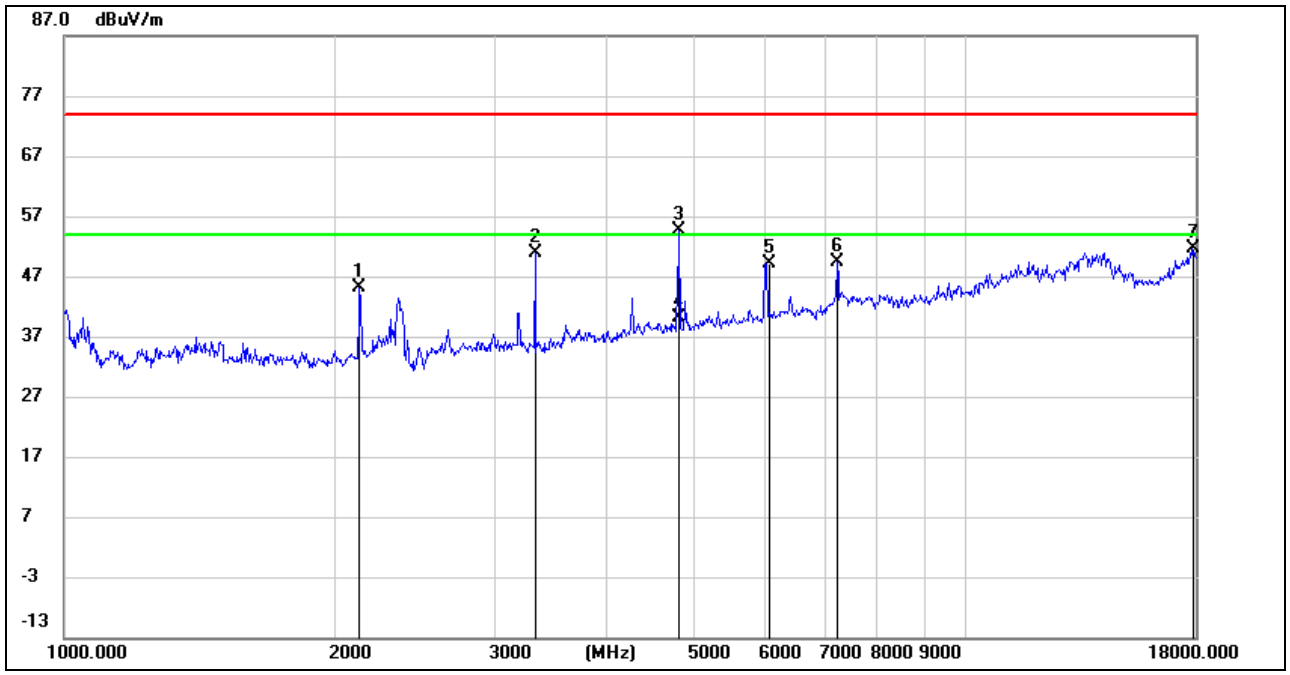
EUT:	Balance Scooter	Polarization :	Horizontal
Test Mode:	8-DPSK(DH5) Mode Low Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2366.308	54.23	-8.77	45.46	74.00	-28.54	peak
2	3337.710	58.17	-6.51	51.66	74.00	-22.34	peak
3	4804.110	60.43	-1.76	58.67	74.00	-15.33	peak
4	4804.110	44.41	-1.76	42.65	54.00	-11.35	AVG
5	7221.150	44.38	5.87	50.25	74.00	-23.75	peak
6	13957.529	32.73	18.95	51.68	74.00	-22.32	peak
7	17793.091	25.85	25.79	51.64	74.00	-22.36	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

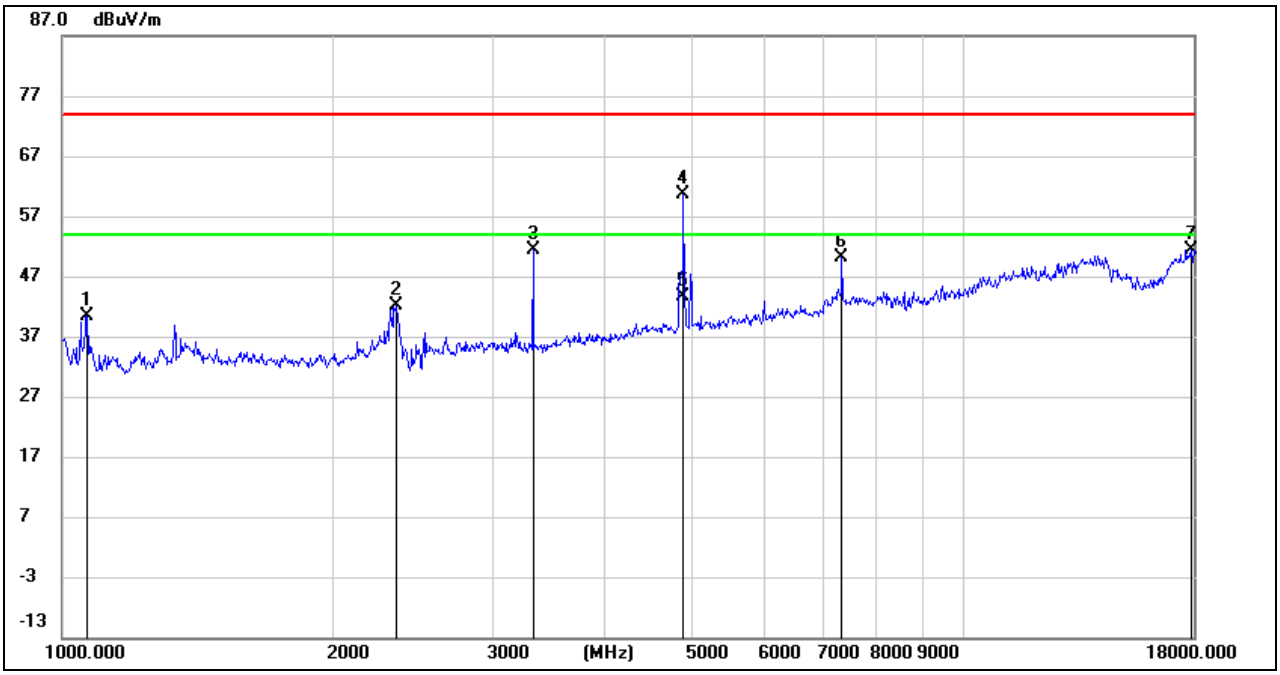
EUT:	Balance Scooter	Polarization :	Vertical
Test Mode:	8-DPSK(DH5) Mode Low Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2132.462	54.95	-9.88	45.07	74.00	-28.93	peak
2	3337.710	57.41	-6.51	50.90	74.00	-23.10	peak
3	4804.110	56.30	-1.67	54.63	74.00	-19.37	peak
4	4804.110	41.75	-1.67	40.08	54.00	-13.92	AVG
5	6036.421	46.93	2.11	49.04	74.00	-24.96	peak
6	7221.150	43.51	5.89	49.40	74.00	-24.60	peak
7	17896.247	25.53	25.99	51.52	74.00	-22.48	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

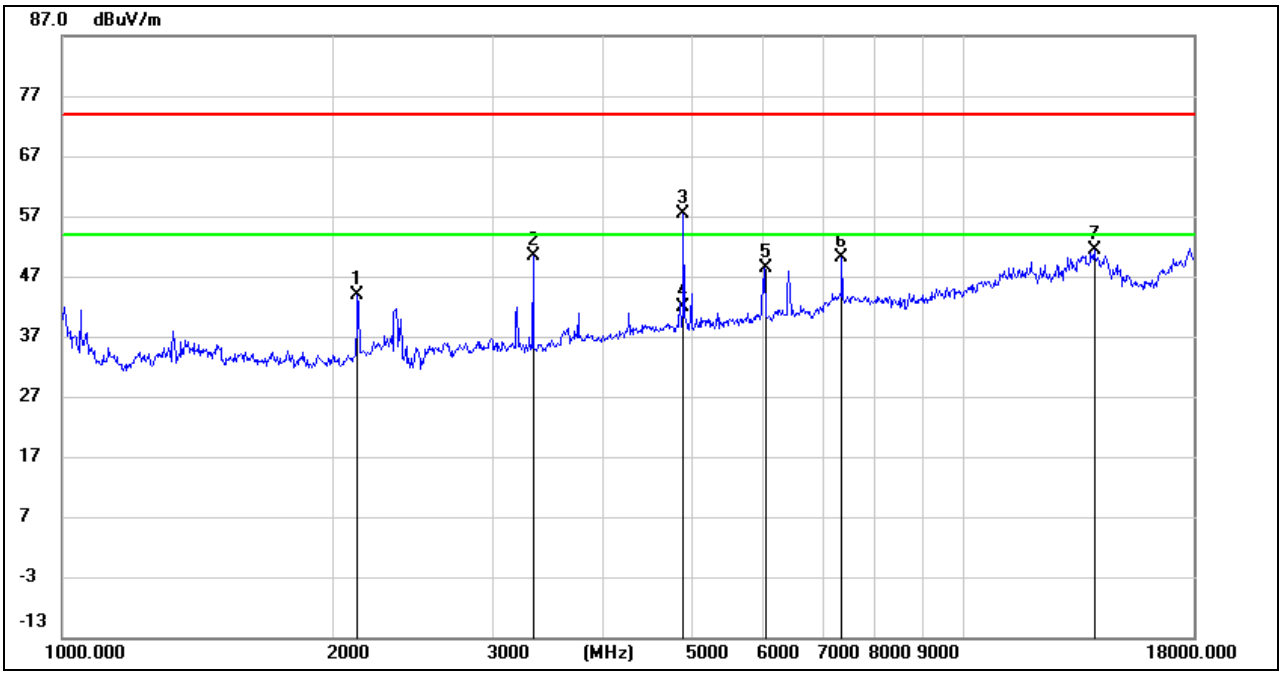
EUT:	Balance Scooter	Polarization :	Horizontal
Test Mode:	8-DPSK (DH5) Mode Middle Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1065.653	54.42	-14.06	40.36	74.00	-33.64	peak
2	2345.878	50.76	-8.63	42.13	74.00	-31.87	peak
3	3337.710	57.81	-6.51	51.30	74.00	-22.70	peak
4	4888.151	61.37	-0.79	60.58	74.00	-13.42	peak
5	4888.151	44.41	-0.79	43.62	54.00	-10.38	AVG
6	7326.267	44.38	5.70	50.08	74.00	-23.92	peak
7	17896.247	25.73	25.75	51.48	74.00	-22.52	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

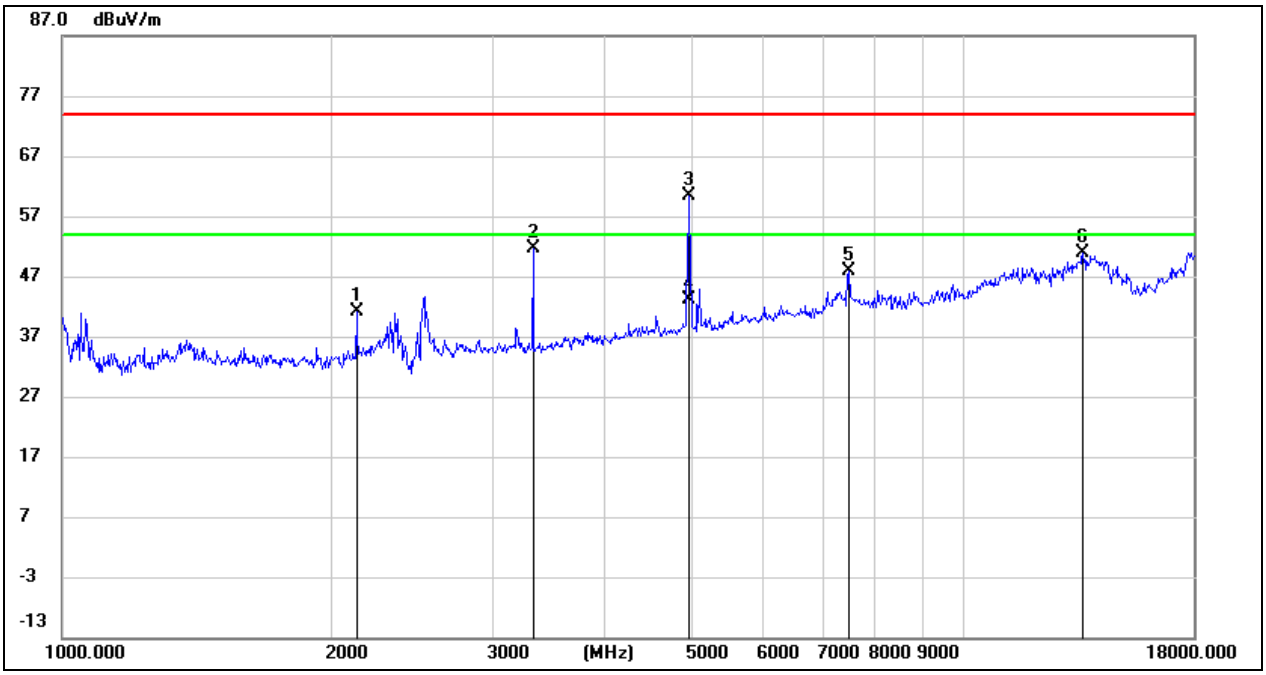
EUT:	Balance Scooter	Polarization :	Vertical
Test Mode:	8-DPSK (DH5) Mode Middle Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2132.462	53.77	-9.88	43.89	74.00	-30.11	peak
2	3337.710	56.98	-6.51	50.47	74.00	-23.53	peak
3	4888.151	58.29	-0.86	57.43	74.00	-16.57	peak
4	4888.151	42.72	-0.86	41.86	54.00	-12.14	AVG
5	6036.421	46.35	2.11	48.46	74.00	-25.54	peak
6	7326.267	44.34	5.76	50.10	74.00	-23.90	peak
7	13957.529	32.33	19.05	51.38	74.00	-22.62	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

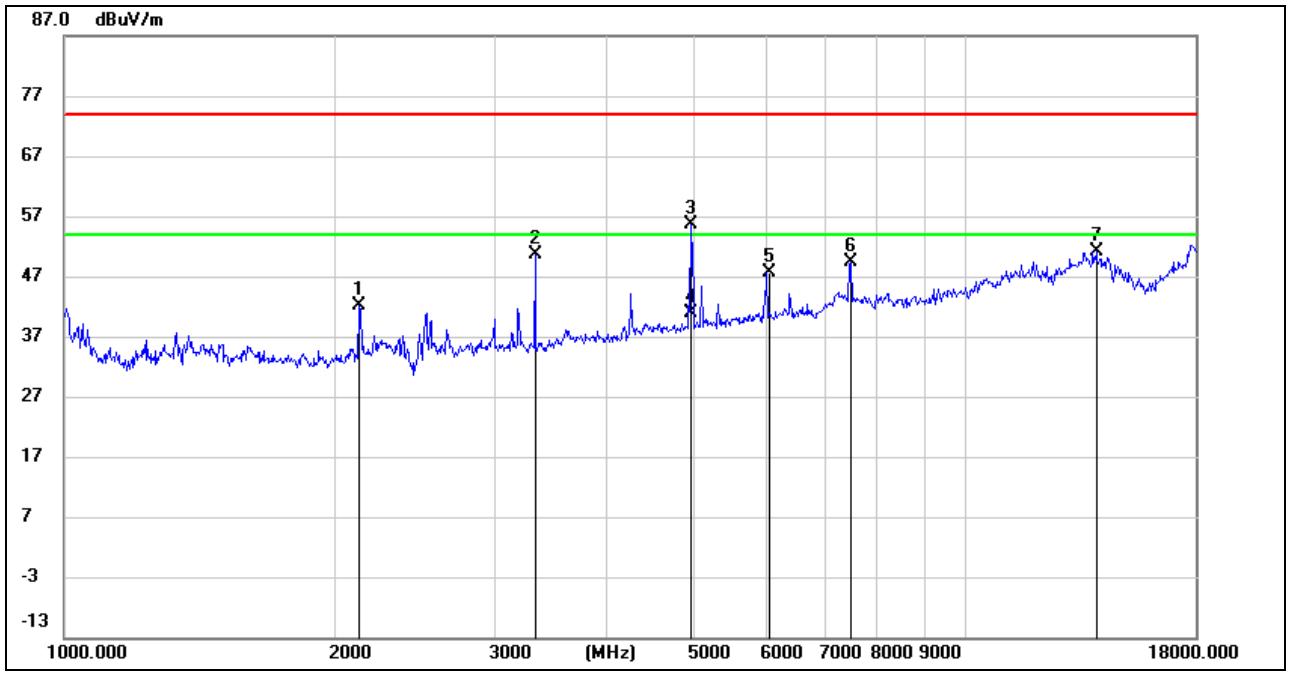
EUT:	Balance Scooter	Polarization :	Horizontal
Test Mode:	8-DPSK(DH5) Mode High Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2120.171	51.13	-9.95	41.18	74.00	-32.82	peak
2	3337.710	58.24	-6.51	51.73	74.00	-22.27	peak
3	4959.307	61.06	-0.78	60.28	74.00	-13.72	peak
4	4959.307	43.93	-0.78	43.15	54.00	-10.85	AVG
5	7454.429	42.13	5.82	47.95	74.00	-26.05	peak
6	13559.879	31.93	18.85	50.78	74.00	-23.22	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

EUT:	Balance Scooter	Polarization :	Vertical
Test Mode:	8-DPSK(DH5) Mode High Chanel		



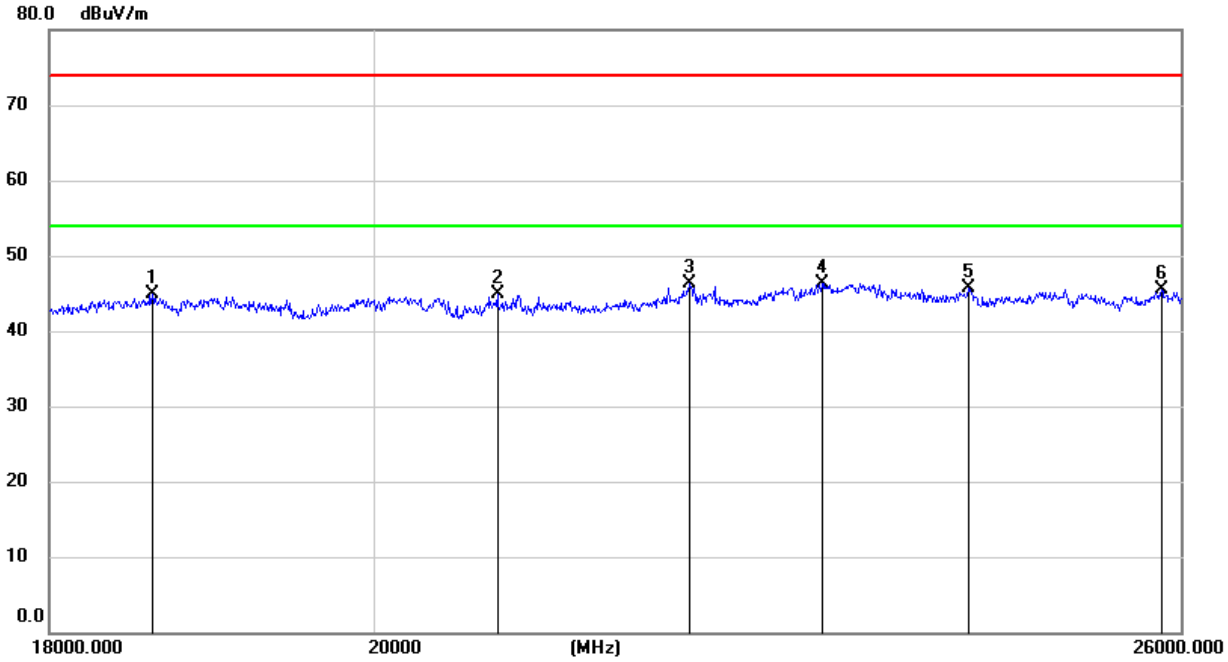
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2132.462	51.96	-9.88	42.08	74.00	-31.92	peak
2	3337.710	57.11	-6.51	50.60	74.00	-23.40	peak
3	4959.307	56.39	-0.76	55.63	74.00	-18.37	peak
4	4959.307	41.72	-0.76	40.96	54.00	-13.04	AVG
5	6036.421	45.60	2.11	47.71	74.00	-26.29	peak
6	7454.429	43.41	5.92	49.33	74.00	-24.67	peak
7	13957.529	32.04	19.05	51.09	74.00	-22.91	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

7.4. SPURIOUS EMISSIONS (18~25GHz)

HARMONICS AND SPURIOUS EMISSIONS

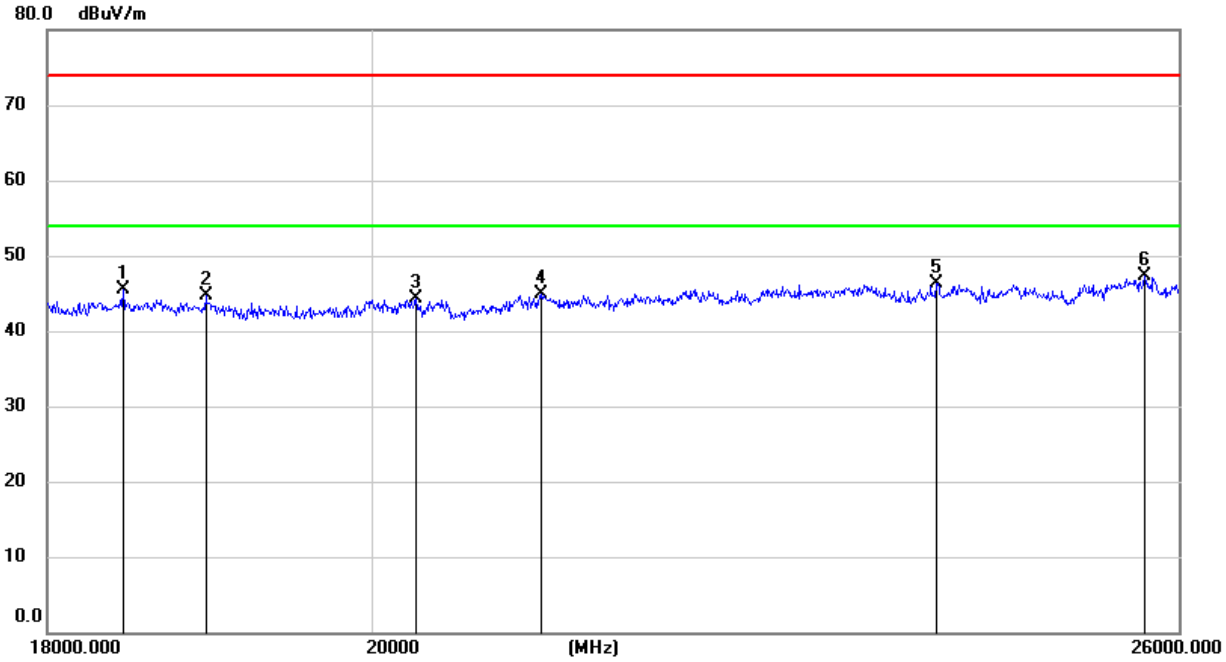
EUT:	Balance Scooter	Polarization :	Horizontal
Test Mode:	Middle Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18612.524	50.24	-5.34	44.90	74.00	-29.10	peak
2	20821.597	49.97	-5.04	44.93	74.00	-29.07	peak
3	22164.768	50.64	-4.31	46.33	74.00	-27.67	peak
4	23139.192	49.65	-3.40	46.25	74.00	-27.75	peak
5	24263.284	48.61	-2.81	45.80	74.00	-28.20	peak
6	25837.973	46.26	-0.76	45.50	74.00	-28.50	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

EUT:	Balance Scooter	Polarization :	Vertical
Test Mode:	Middle Chanel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18448.984	50.77	-5.32	45.45	74.00	-28.55	peak
2	18950.934	49.99	-5.26	44.73	74.00	-29.27	peak
3	20292.473	49.95	-5.57	44.38	74.00	-29.62	peak
4	21137.897	49.63	-4.82	44.81	74.00	-29.19	peak
5	24032.412	49.12	-2.75	46.37	74.00	-27.63	peak
6	25714.751	48.15	-0.77	47.38	74.00	-26.62	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Duty cycle factor was taking into account.

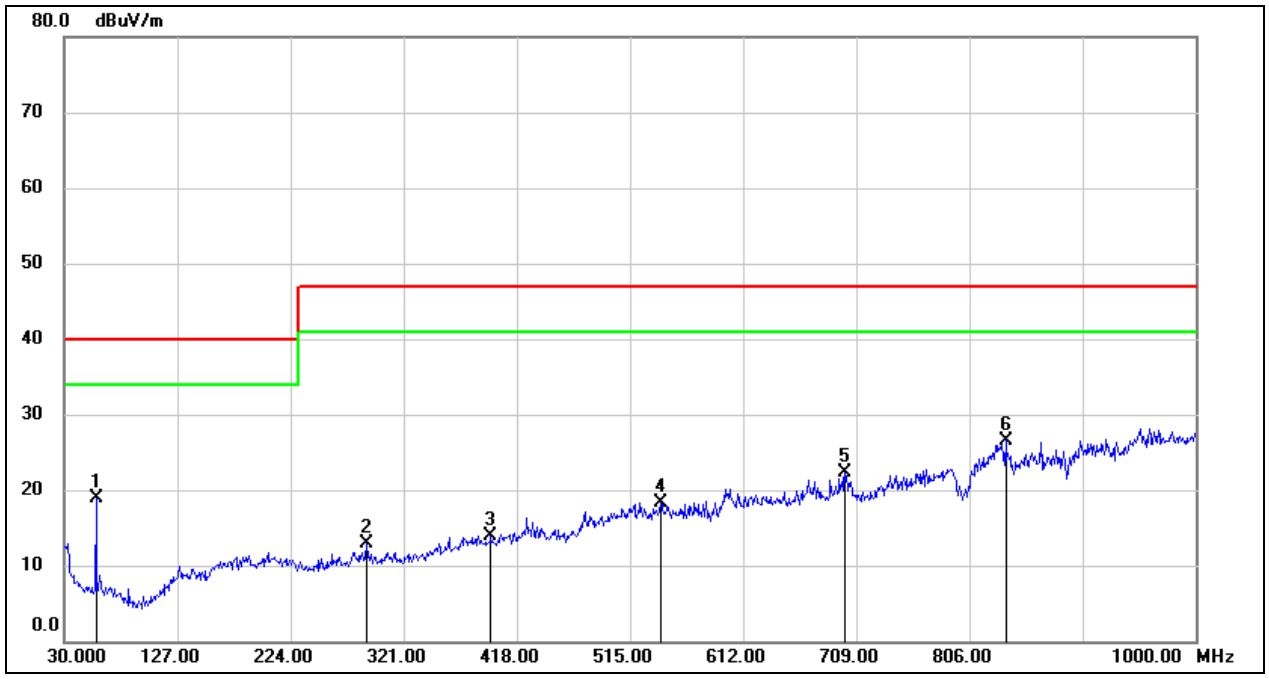
Note: All the modulation and channels had been tested, but only the worst data recorded in the report.

7.5. SPURIOUS EMISSIONS 30M ~ 1 GHz

7.5.1. GFSK MODE

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

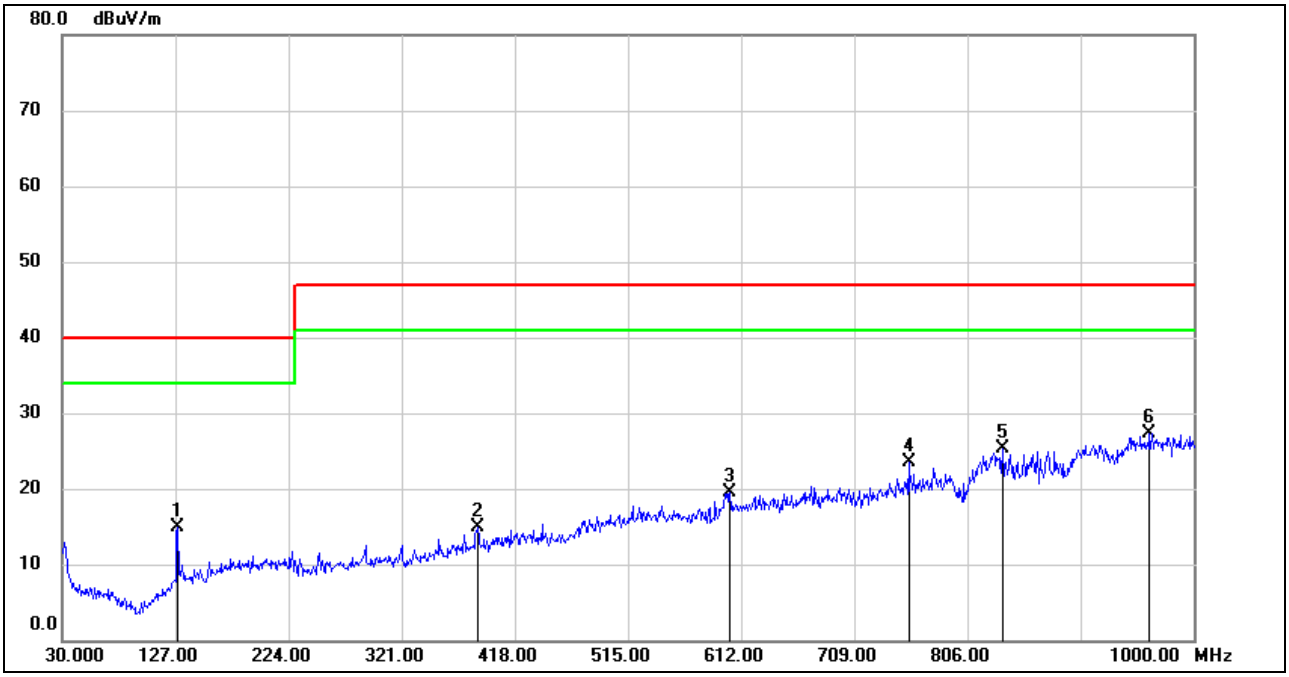
EUT:	Balance Scooter	Polarization :	Horizontal
Test Mode:	GFSK Mode Middle Channel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	57.1600	35.35	-16.54	18.81	40.00	-21.19	QP
2	288.9900	25.15	-12.25	12.90	47.00	-34.10	QP
3	395.6900	24.20	-10.23	13.97	47.00	-33.03	QP
4	541.1900	25.75	-7.35	18.40	47.00	-28.60	QP
5	699.3000	-0.51	22.81	22.30	47.00	-24.70	QP
6	837.0400	2.02	24.58	26.60	47.00	-20.40	QP

Note: 1. Result = Reading +Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

EUT:	Balance Scooter	Polarization :	Vertical
Test Mode:	GFSK Mode Middle Channel		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	128.9400	29.35	-14.45	14.90	40.00	-25.10	peak
2	385.9900	25.13	-10.20	14.93	47.00	-32.07	peak
3	602.3000	25.52	-6.11	19.41	47.00	-27.59	peak
4	755.5600	0.15	23.26	23.41	47.00	-23.59	peak
5	836.0700	0.66	24.65	25.31	47.00	-21.69	peak
6	962.1700	1.04	26.30	27.34	47.00	-19.66	peak

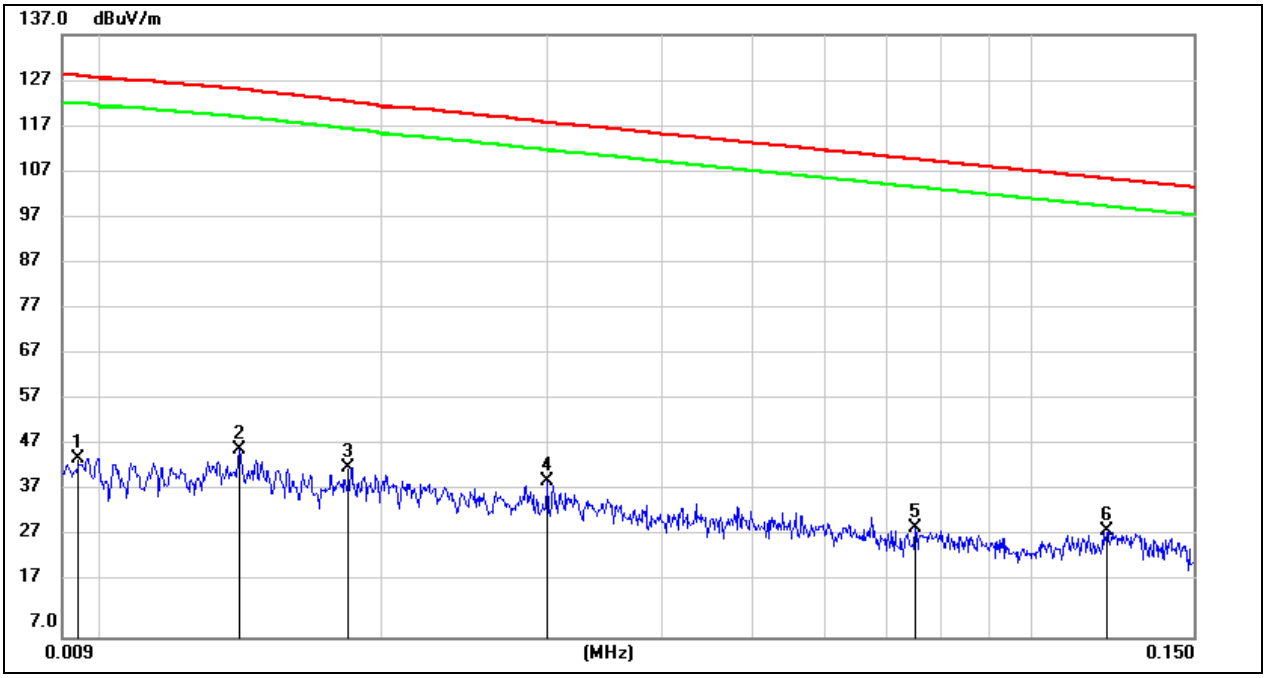
Note: 1. Result = Reading +Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

Note: All the modulation and channels had been tested, but only the worst data recorded in the report.

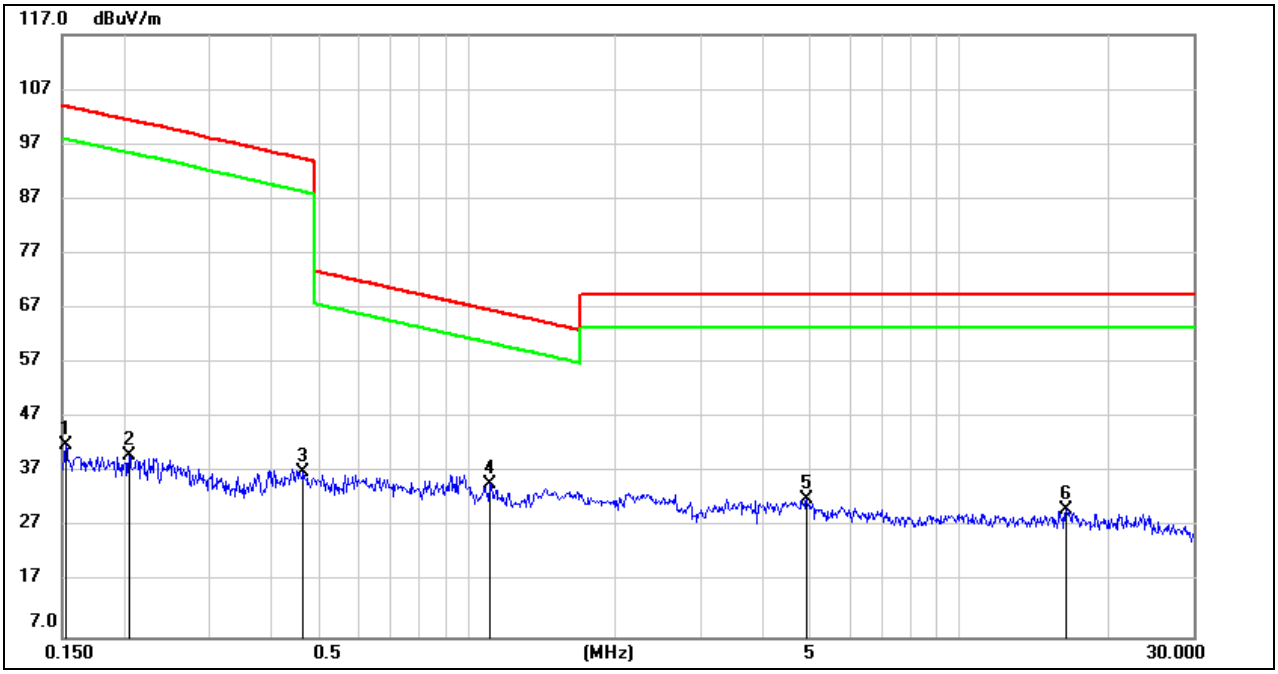
7.6. SPURIOUS EMISSIONS BELOW 30M

SPURIOUS EMISSIONS Below 30MHz (WORST-CASE CONFIGURATION)

EUT:	Balance Scooter	Polarization :	Horizontal
Test Mode:	GFSK Mode Middle Channel		

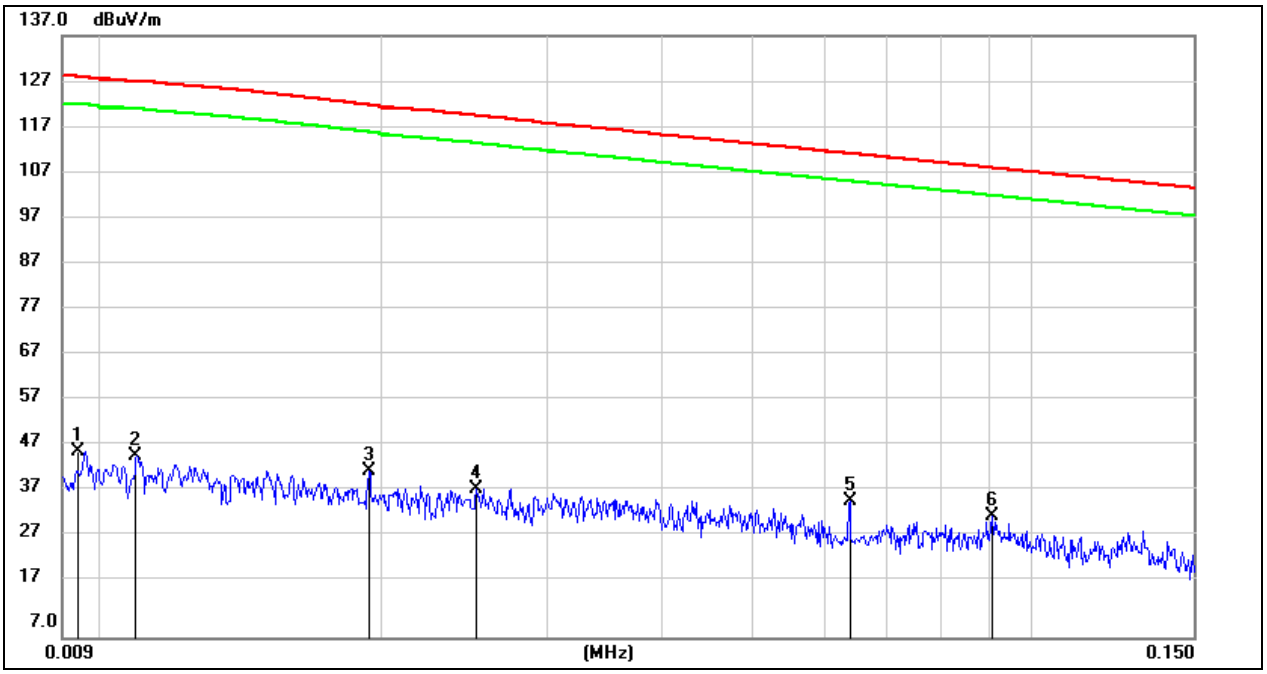


No.	Frequency (KHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0094	25.26	20.26	45.52	128.06	-82.54	QP
2	0.0140	27.24	20.25	47.49	125.19	-77.70	QP
3	0.0183	23.16	20.29	43.45	122.60	-79.15	QP
4	0.0300	20.19	20.31	40.50	118.06	-77.56	QP
5	0.0751	10.25	20.31	30.56	110.11	-79.55	QP

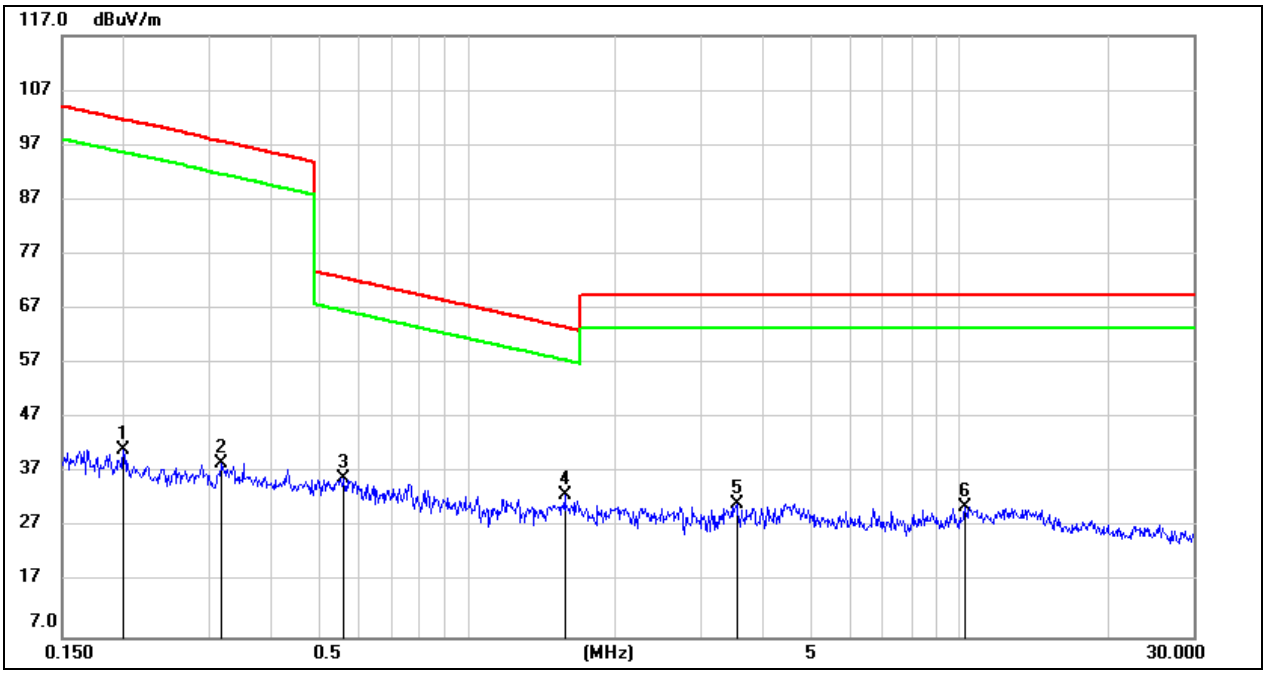


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1524	21.66	20.42	42.08	103.95	-61.87	QP
2	0.2048	19.70	20.36	40.06	101.41	-61.35	QP
3	0.4637	16.77	20.25	37.02	94.31	-57.29	QP
4	1.1109	14.39	20.41	34.80	66.70	-31.90	QP
5	4.8997	11.38	20.84	32.22	69.54	-37.32	QP
6	16.4856	9.20	20.96	30.16	69.54	-39.38	QP

EUT:	Balance Scooter	Polarization :	Vertical
Test Mode:	GFSK Mode Middle Channel		



No.	Frequency (KHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0094	26.97	20.26	47.23	128.06	-80.83	QP
2	0.0108	25.81	20.22	46.03	127.12	-81.09	QP
3	0.0193	22.53	20.30	42.83	122.00	-79.17	QP
4	0.0252	18.86	20.31	39.17	119.75	-80.58	QP
5	0.0637	15.95	20.31	36.26	111.54	-75.28	QP
6	0.0908	12.91	20.26	33.17	108.45	-75.28	QP



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1995	20.85	20.37	41.22	101.60	-60.38	QP
2	0.3165	18.57	20.30	38.87	97.65	-58.78	QP
3	0.5581	15.80	20.26	36.06	72.71	-36.65	QP
4	1.5766	12.49	20.58	33.07	63.65	-30.58	QP
5	3.5278	10.47	20.98	31.45	69.54	-38.09	QP
6	10.2873	9.71	21.05	30.76	69.54	-38.78	QP

Note 1: All the channels and polarization had been tested, but only the worst data recorded in the report.

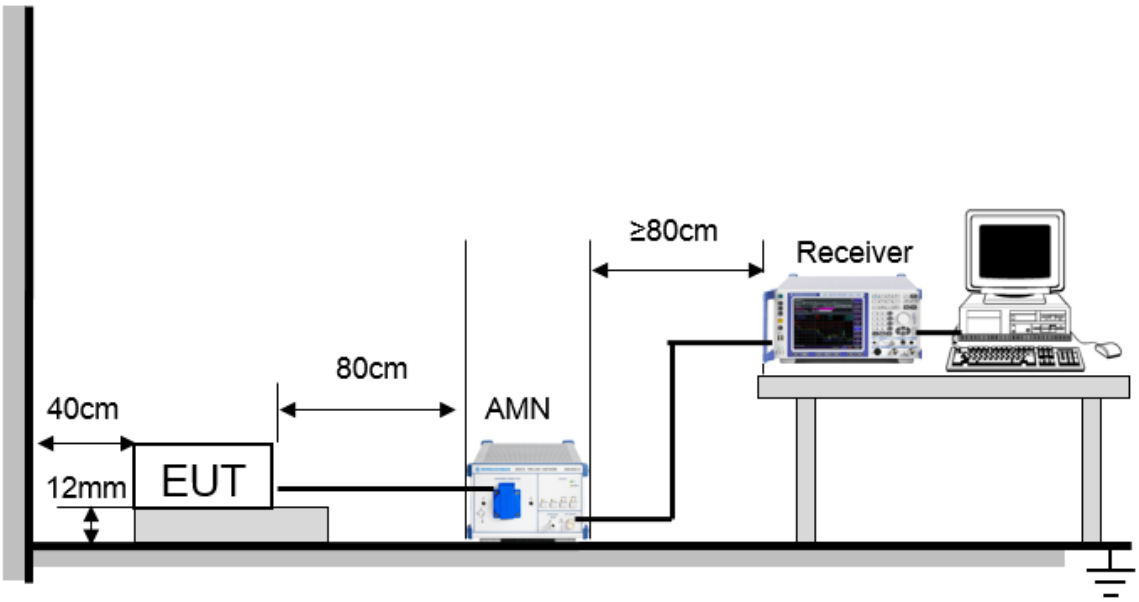
8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

Please refer to FCC §15.207 (a)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

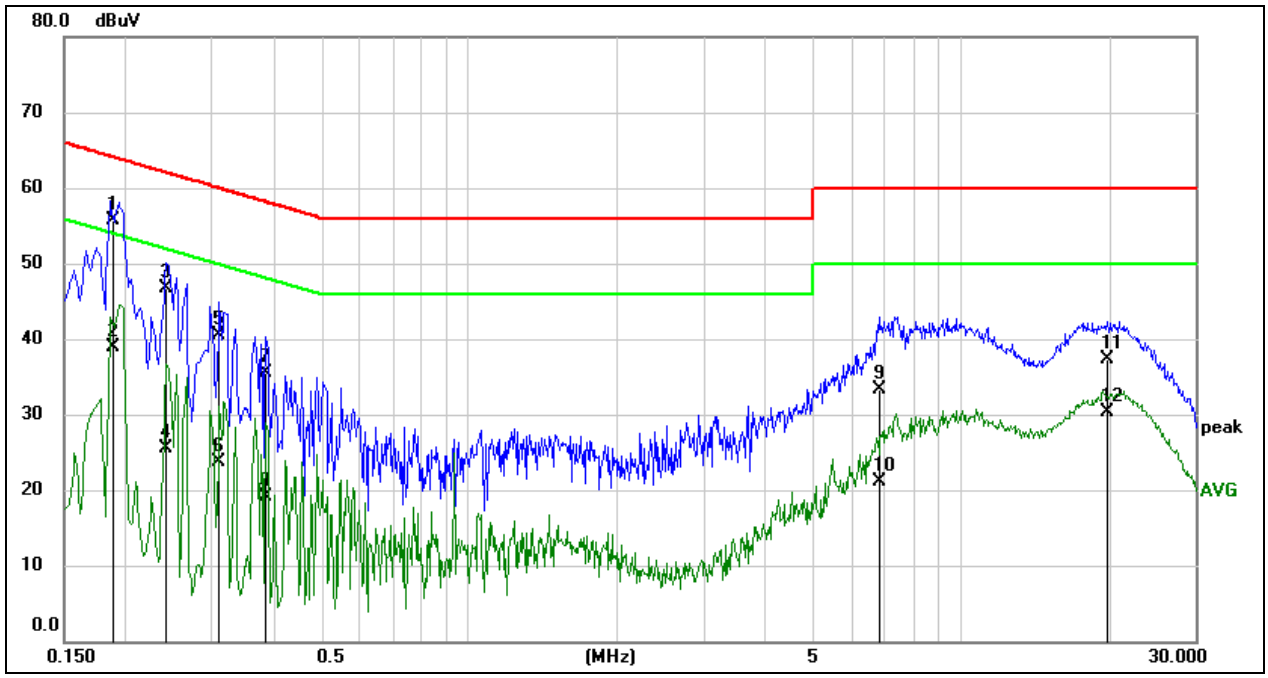
TEST SETUP AND PROCEDURE



The EUT is put on a table of non-conducting material that is 12mm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.
The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

TEST RESULTS (WORST-CASE CONFIGURATION)

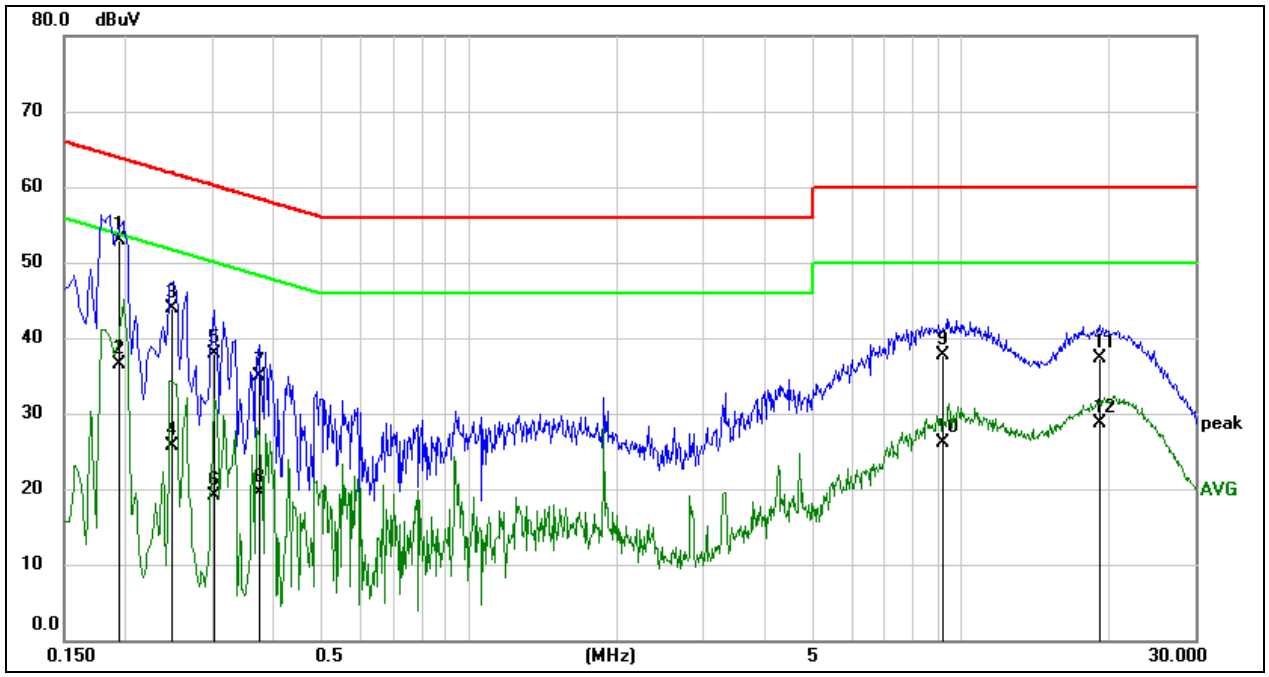
EUT:	Balance Scooter	Phase :	L
Test Mode:	GFSK Mode Middle Channel		



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1893	46.10	9.65	55.75	64.07	-8.32	QP
2	0.1893	29.17	9.65	38.82	54.07	-15.25	AVG
3	0.2427	37.14	9.65	46.79	62.00	-15.21	QP
4	0.2427	15.85	9.65	25.50	52.00	-26.50	AVG
5	0.3104	30.79	9.66	40.45	59.96	-19.51	QP
6	0.3104	14.00	9.66	23.66	49.96	-26.30	AVG
7	0.3862	25.94	9.65	35.59	58.15	-22.56	QP
8	0.3862	9.50	9.65	19.15	48.15	-29.00	AVG
9	6.8161	23.62	9.74	33.36	60.00	-26.64	QP
10	6.8161	11.42	9.74	21.16	50.00	-28.84	AVG
11	19.9809	27.49	9.85	37.34	60.00	-22.66	QP
12	19.9809	20.49	9.85	30.34	50.00	-19.66	AVG

Note: 1. Result = Reading +Correct Factor.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

EUT:	Balance Scooter	Phase :	N
Test Mode:	GFSK Mode Middle Channel		



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1932	43.23	9.64	52.87	63.90	-11.03	QP
2	0.1932	26.81	9.64	36.45	53.90	-17.45	AVG
3	0.2471	34.20	9.64	43.84	61.85	-18.01	QP
4	0.2471	16.09	9.64	25.73	51.85	-26.12	AVG
5	0.3022	28.31	9.65	37.96	60.18	-22.22	QP
6	0.3022	9.47	9.65	19.12	50.18	-31.06	AVG
7	0.3753	25.17	9.65	34.82	58.38	-23.56	QP
8	0.3753	9.92	9.65	19.57	48.38	-28.81	AVG
9	9.2931	27.91	9.77	37.68	60.00	-22.32	QP
10	9.2931	16.32	9.77	26.09	50.00	-23.91	AVG
11	19.1371	27.46	9.88	37.34	60.00	-22.66	QP
12	19.1371	18.92	9.88	28.80	50.00	-21.20	AVG

Note: 1. Result = Reading +Correct Factor.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

Note: All the modulation and channels had been tested, but only the worst data recorded in the report.

9. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §15.203

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

ANTENNA CONNECTOR

EUT has a PCB antenna without antenna connector.

ANTENNA GAIN

The antenna gain of EUT is less than 6 dBi.

END OF REPORT