FCC 47 CFR PART 15 SUBPART C
ISED RSS-247 ISSUE 2

CERTIFICATION TEST REPORT

For

Videoconferencing Endpoint

MODEL: HUAWEI Box 900, HUAWEI Box 700, HUAWEI Box 500

FCC ID: QIS-BOX

IC: 6369A-BOX

REPORT NUMBER: 4788680510-2

ISSUE DATE: October 29, 2018

Prepared for

HUAWEI TECHNOLOGIES CO., LTD.
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Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	10/29/2018	Initial Issue	

Summary of Test Results			
Clause	**Test Items**	**FCC/IC Rules**	**Test Results**
1	20dB Bandwidth And 99% Bandwidth	FCC 15.247 (a) (1)	Pass
2	Peak Conducted Output Power	FCC 15.247 (b) (1)	Pass
3	Carrier Hopping Channel Separation	FCC 15.247 (a) (1)	Pass
4	Number of Hopping Frequency	15.247 (a) (1) III	Pass
5	Time of Occupancy (Dwell Time)	15.247 (a) (1) III	Pass
6	Conducted Bandedge	FCC 15.247 (d)	Pass
7	Radiated Bandedge and Spurious	FCC 15.247 (d) FCC 15.209 FCC 15.205	Pass
8	Conducted Emission Test For AC Power Port	FCC 15.207	Pass
9	Antenna Requirement	FCC 15.203	Pass

Note: N/A means not applicable, the EUT was used in vehicle environment.

TABLE OF CONTENTS

1. ATTESTATION OF TESCT RESULTS

Applicant Information	
Company Name:	HUAWEI TECHNOLOGIES CO., LTD.
Address:	Administration Building, Huawei Technologies Co., Ltd. Bantian, Longgang District, Shenzhen, P.R. China, 518129
Manufacturer Information	
Company Name:	HUAWEI TECHNOLOGIES CO., LTD.
Address:	Administration Building, Huawei Technologies Co., Ltd. Bantian, Longgang District, Shenzhen, P.R. China, 518129
EUT Name:	Videoconferencing Endpoint
Model:	HUAWEI Box 900, HUAWEI Box 700, HUAWEI Box 500
Sample Status:	Normal
Brand:	HUAWEI
Sample Received:	Sep. 18, 2018
Date of Tested:	Sep. 19, 2018 ~ Oct. 26, 2018

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC Part 15 Subpart C	**PASS**
ISED RSS-247 Issue 2	**PASS**
ISED RSS-GEN Issue 5	**PASS**

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Stephen Guo

Operations Manager

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with 558074 D01 DTS Meas Guidance v05, 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part 2, CFR 47 FCC Part 15, ANSI C63.10-2013, ISED RSS-247 Issue 2 and ISED RSS-GEN Issue 5.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **IAS (Lab Code: TL-702)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has demonstrated compliance with ISO/IEC Standard 17025:2005, General requirements for the competence of testing and calibration laboratories **FCC (FCC Designation No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Delcaration of Conformity (DoC) and Certification rules **IC(Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320. **VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: 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)	2.2dB
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

EUT Name	Videoconferencing Endpoint		
Model Name	HUAWEI Box 900		
Band Name	HUAWEI		
Series Model	HUAWEI Box 700, HUAWEI Box 500		
Model Difference	HUAWEI Box 500 use a PCB board, HUAWEI Box 700 and HUAWEI Box 900 share another PCB boards. HUAWEI Box 500 and HUAWEI Box 700 and HUAWEI Box 900 share components such as structural parts, power supplies and fans, Box 900 has two more DVI interfaces and one HDMI interface than Box 700 and three interface chips corresponding to these three interfaces. Box 900 has two more DVI interfaces and one HDMI interface and two SDI interfaces than Box 500 and five interface chips corresponding to these five interfaces.		
Operation frequency	2402 MHz ~ 2480 MHz		
Product Description	Operation Frequency	2402 MHz ~ 2480 MHz	
	Modulation Type	Data Rate	
	GFSK	1Mbps	
	∏/4-DQPSK	2Mbps	
	8-DPSK	3Mbps	
Power Rate (AC/DC Power Supply)	Manufacturer :VAPEL Input: 100-240Vac,50/60 Hz,3A MAX Output: 12Vdc, 35W MAX; -53.5Vdc, 130W MAX		
	Manufacturer : ASTEC Input: 100-240Vac,50/60 Hz,3A MAX Output: 12Vdc, 4.17A; -53.5Vdc, 2.43A		

5.2. MAXIMUM OUTPUT POWER

Bluetooth Mode	Frequency (MHz)	Channel Number	Max Output Power (dBm)	EIRP (dBm)
GFSK	2402-2480	0-78[79]	7.779	12.179
8DPSK	2402-2480	0-78[79]	6.647	11.047

5.3. PACKET TYPE CONFIGURATION

Test Mode	Packet Type	Setting(Packet Length)
GFSK	DH1	27
	DH3	183
	DH5	339
∏/4-DQPSK	2-DH1	54
	2-DH3	367
	2-DH5	679
8DPSK	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
8DPSK	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		adb		
Modulation Type	Transmit Antenna Number	Test Channel		
		CH 00	CH 39	CH 78
GFSK	1	Default	Default	Default
8DPSK	1	Default	Default	Default

5.7. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna manufacturer: Sheng Lu

Chain Ant.	Frequency (MHz)	Max Antenna Gain (dBi)	Antenna Type
0	2402-2480	4.4	PIFA

Antenna manufacturer: PCTEL

Chain Ant.	Frequency (MHz)	Max Antenna Gain (dBi)	Antenna Type
0	2402-2480	3.13	PIFA

Test Mode	Transmit and Receive Mode	Description
GFSK	☒1TX, 1RX	Chain 0 can be used as transmitting/receiving antenna.
∏/4-DQPSK	☒1TX, 1RX	Chain 0 can be used as transmitting/receiving antenna.
8-DPSK	☒1TX, 1RX	Chain 0 can be used as transmitting/receiving antenna.

Note: The antenna of the EUT is provided by two manufacturers. The antenna types of the two manufacturers are the same, Sheng lu antenna gain is greater, So the Sheng Lu antenna is selected for the test.

5.8. WORST-CASE CONFIGURATIONS

Bluetooth Mode	Modulation Technology	Modulation Type	Data Rate (Mbps)
BR	FHSS	GFSK	1Mbit/s
EDR	FHSS	8DPSK	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. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	Laptop	ThinkPad	T460S	SL10K24796 JS
2	High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23
3	Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	4

I/O CABLES

Cable No	Port	Connector Type	Shield	Cable Length(m)	Remarks
1	RJ45	RJ45	Yes	5	/

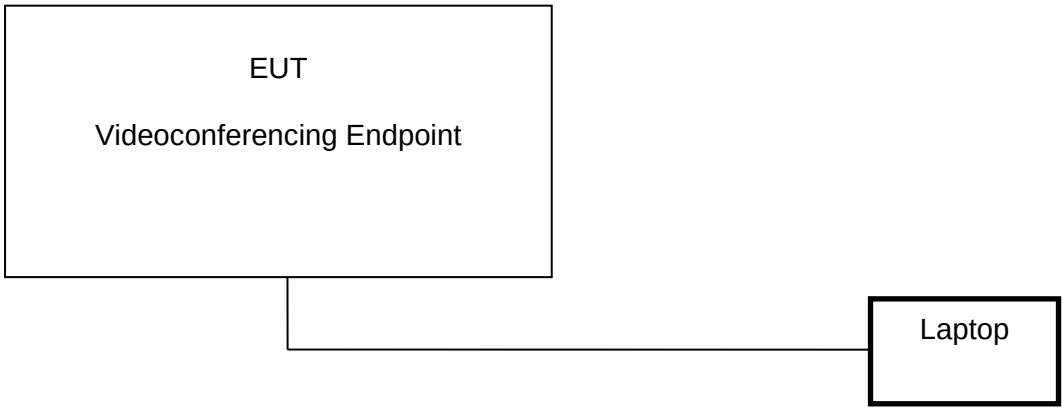
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

TEST SETUP

The EUT can work in engineering mode with the inside software.

SETUP DIAGRAM FOR TESTS



5.10. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions							
Instrument							
Used	Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Next Cal.
☑	EMI Test Receiver	R&S	ESR3	101961	Dec.20, 2016	Dec.12, 2017	Dec.11, 2018
☑	Two-Line V-Network	R&S	ENV216	101983	Dec.20, 2016	Dec.12, 2017	Dec.11, 2018
☑	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Feb.10, 2017	Dec.12, 2017	Dec.11, 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.	Upper Last Cal.	Last Cal.	Next Cal.
☑	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Feb. 24, 2017	Dec.12, 2017	Dec.11, 2018
☑	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jan.09, 2016	Jan.09, 2016	Jan.09, 2019
☑	Preamplifier	HP	8447D	2944A09099	Feb. 13, 2017	Dec.12, 2017	Dec.11, 2018
☑	EMI Measurement Receiver	R&S	ESR26	101377	Dec. 20, 2016	Dec.12, 2017	Dec.11, 2018
☑	Horn Antenna	TDK	HRN-0118	130939	Jan. 09, 2016	Jan. 09, 2016	Jan. 09, 2019
☑	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Jan.06, 2016	Jan.06, 2016	Jan.06, 2019
☑	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Jan. 14, 2017	Dec.12, 2017	Dec.11, 2018
☑	Preamplifier	TDK	PA-02-2	TRS-307-00003	Dec. 20, 2016	Dec.12, 2017	Dec.11, 2018
☑	Loop antenna	Schwarzbeck	1519B	00008	Mar. 26, 2016	Mar. 26, 2016	Mar. 26, 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.	Upper Last Cal.	Last Cal.	Next Cal.
☑	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec. 20, 2016	Dec.12, 2017	Dec.11, 2018
☑	Power Meter	Keysight	N9031A	MY55416024	Feb. 13, 2017	Dec.12, 2017	Dec.11, 2018
☑	Power Sensor	Keysight	N9323A	MY55440013	Feb. 13, 2017	Dec.12, 2017	Dec.11, 2018

6. ANTENNA PORT TEST RESULTS

6.1. ON TIME AND DUTY CYCLE

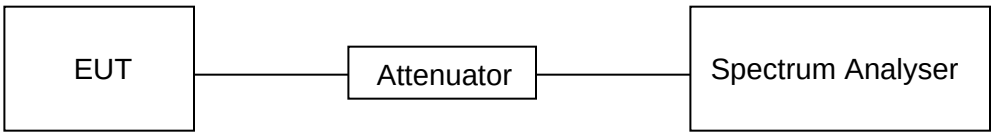
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

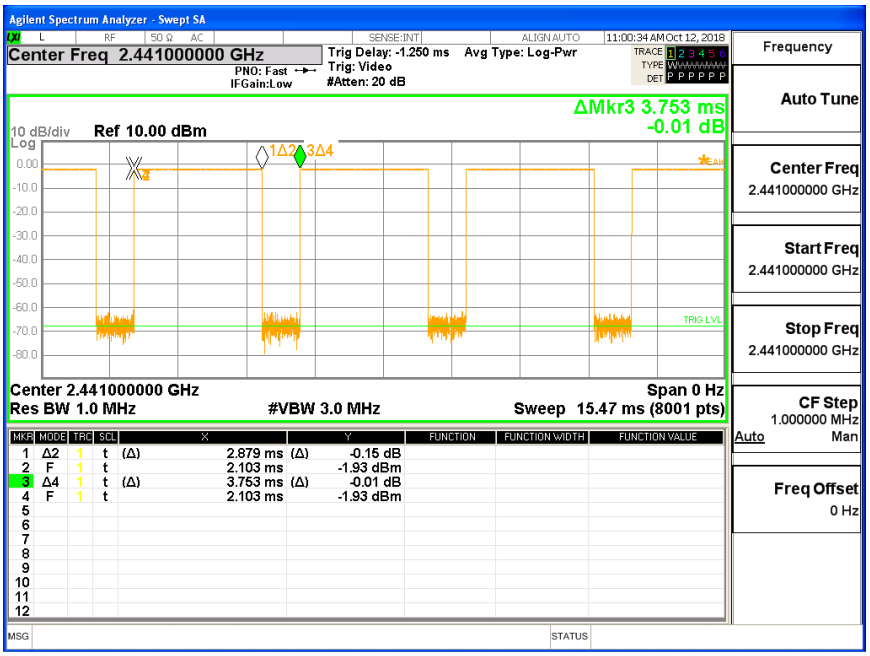
Temperature	23.5°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

RESULTS

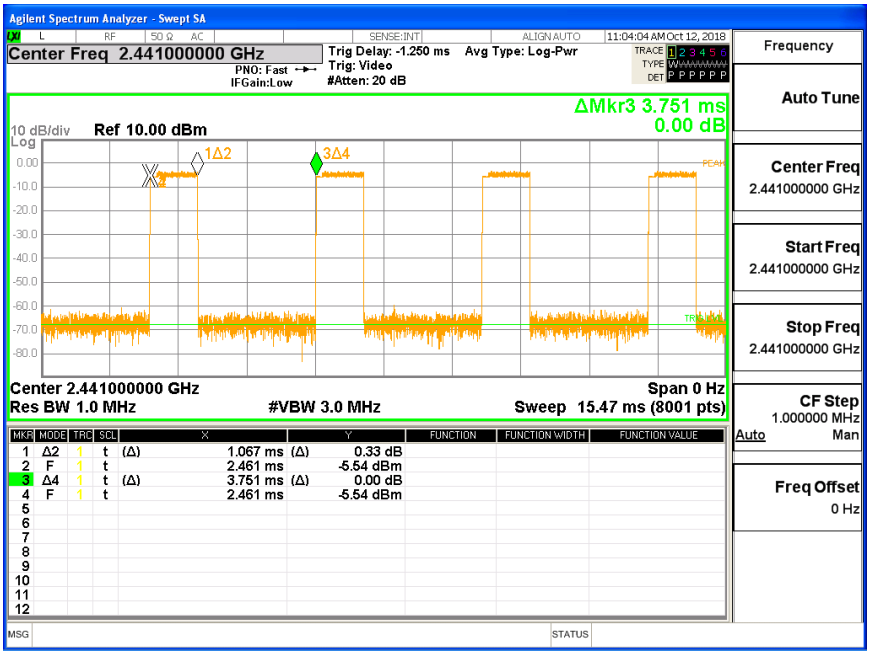
Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)
GFSK	2.879	3.753	0.767	76.7	1.152
8DPSK	1.067	3.751	0.284	28.4	5.467

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

DH5 ON TIME AND DUTY CYCLE MID CH



3DH5 ON TIME AND DUTY CYCLE MID CH



6.2. 20 dB BANDWIDTH AND 99% BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247 (a) (1)	20dB Bandwidth	N/A	2400-2483.5

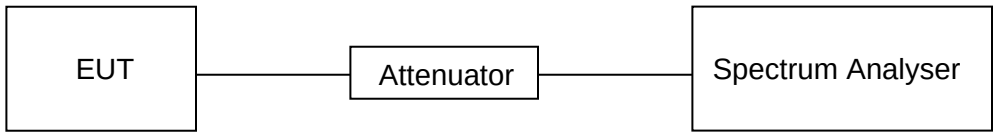
TEST PROCEDURE

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% of the 20 dB bandwidth For 99% Occupied Bandwidth: 1% to 5% of the occupied bandwidth
VBW	For 20dB Bandwidth: ≥ RBW For 99% Occupied Bandwidth: approximately 3×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 20 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



TEST ENVIRONMENT

Temperature	23.5°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

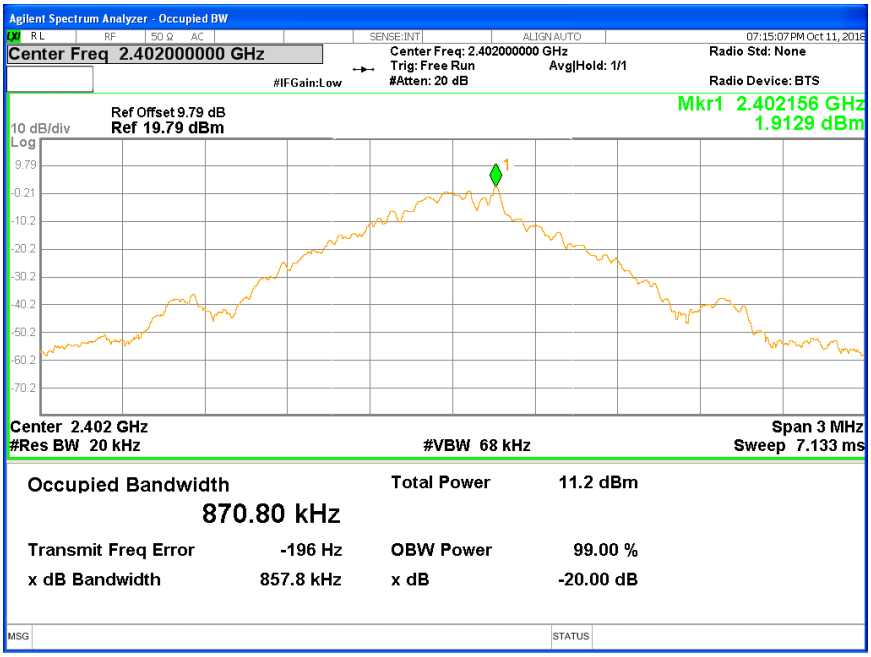
RESULTS

6.2.1. GFSK MODE

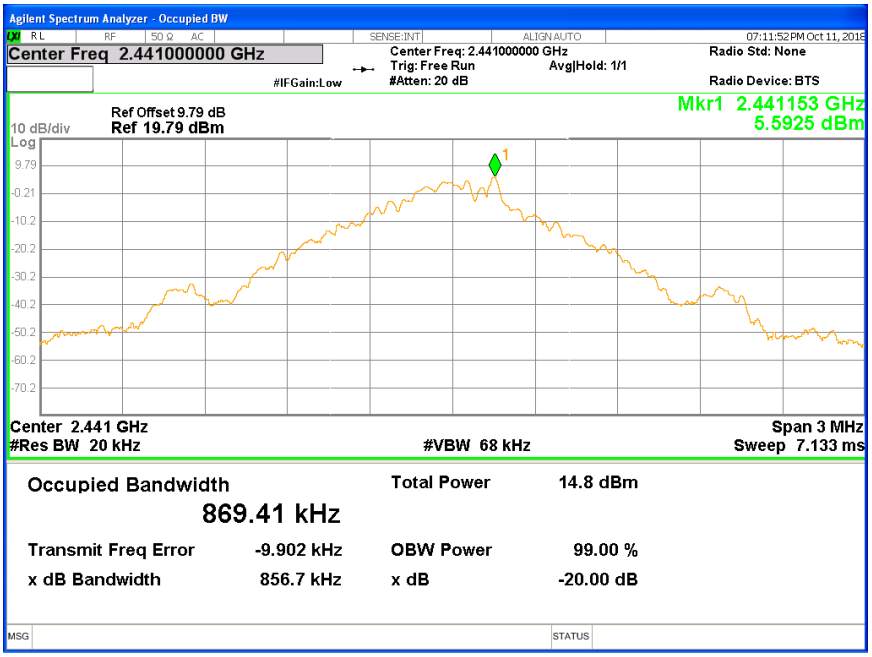
Channel	Frequency (MHz)	20dB bandwidth (MHz)	99% bandwidth (MHz)	Result
Low	2402	0.858	0.875	PASS
Middle	2441	0.857	0.868	PASS
High	2480	0.858	0.868	PASS

Test Graph

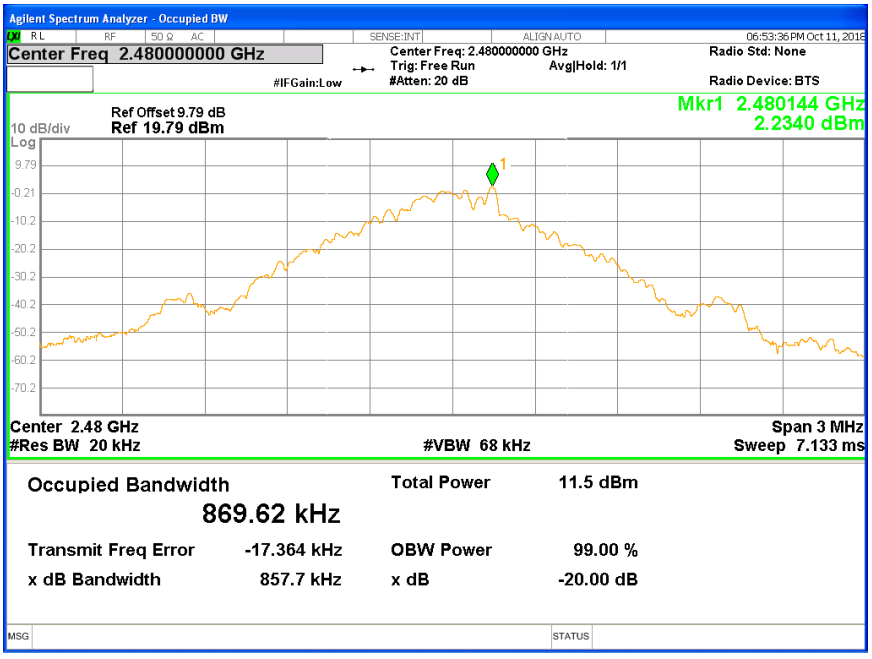
20 dB BANDWIDTH LOW CH



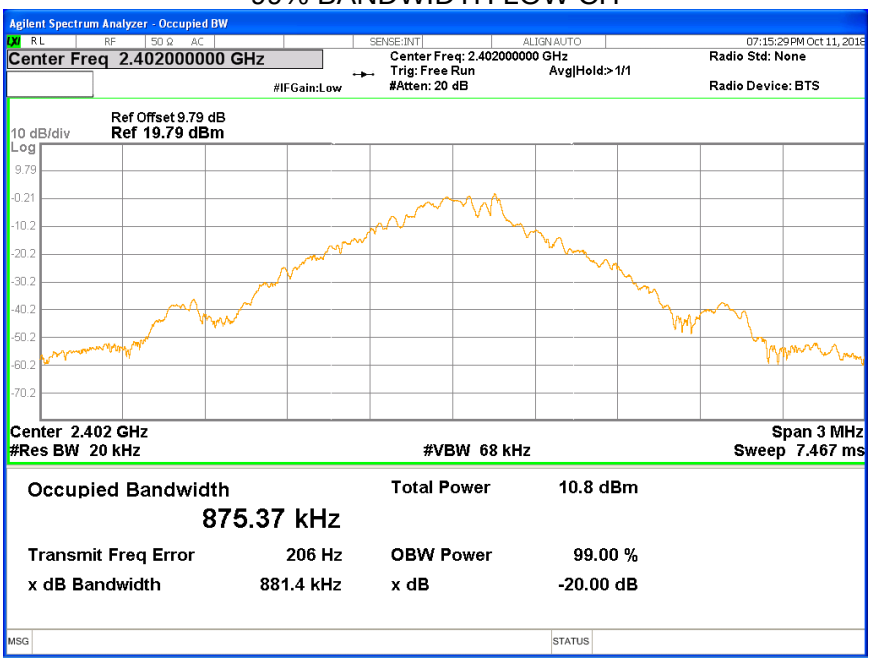
20 dB BANDWIDTH MID CH



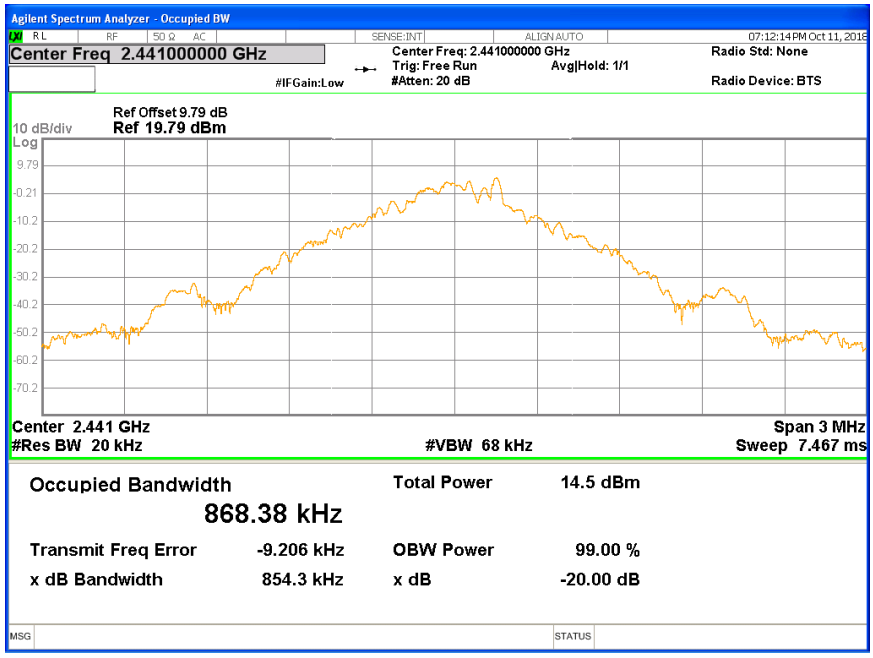
20 dB BANDWIDTH HIGH CH



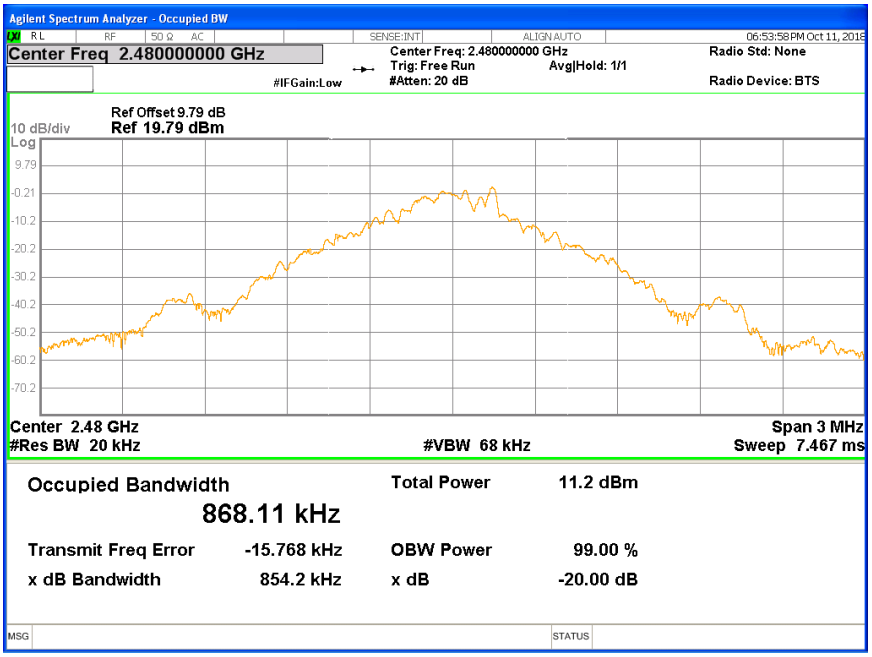
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



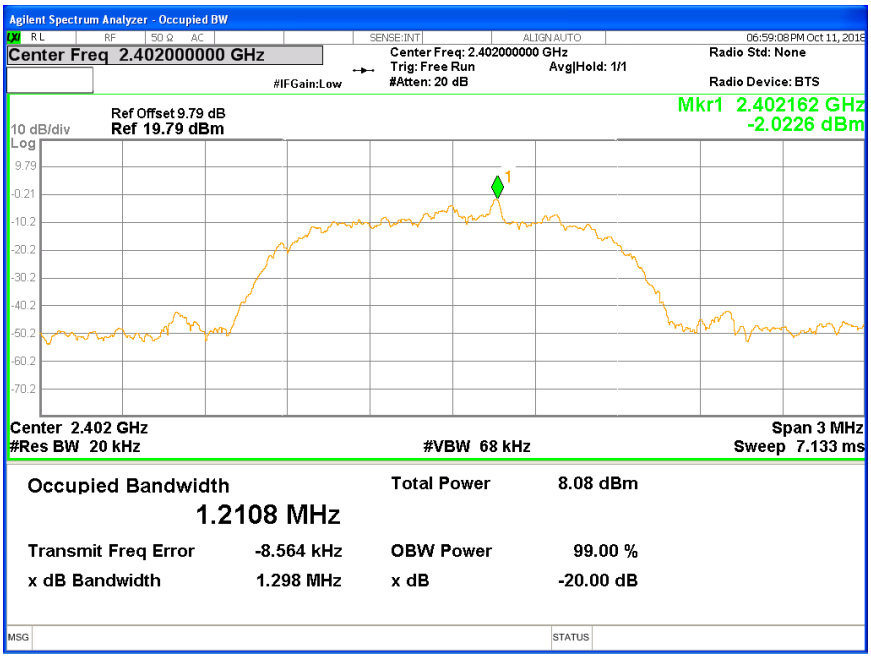
99% BANDWIDTH HIGH CH



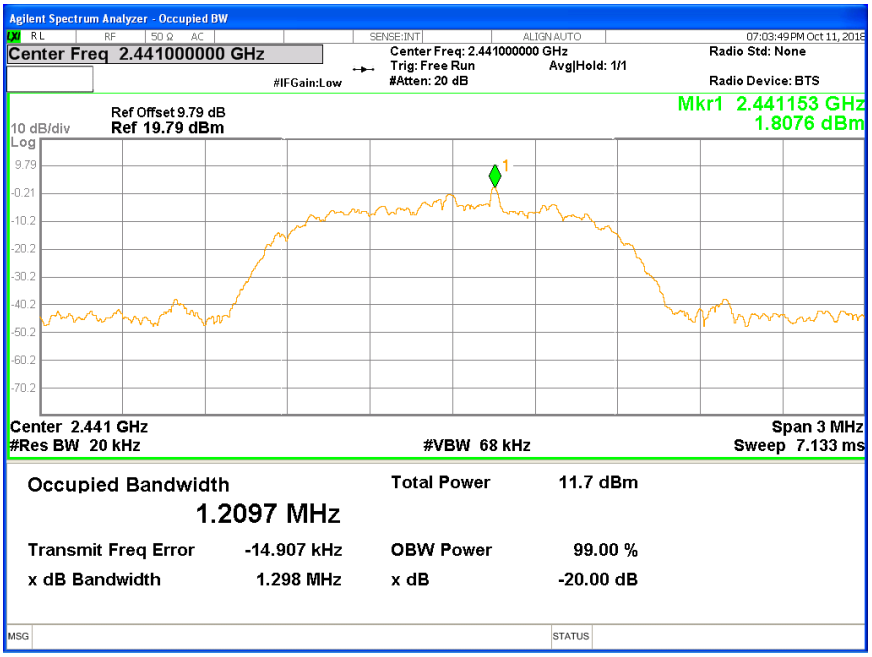
6.2.2. 8DPSK MODE

Channel	Frequency (MHz)	20dB bandwidth (MHz)	99% bandwidth (MHz)	Result
Low	2402	1.298	1.2129	Pass
Middle	2441	1.298	1.2109	Pass
High	2480	1.272	1.2193	Pass

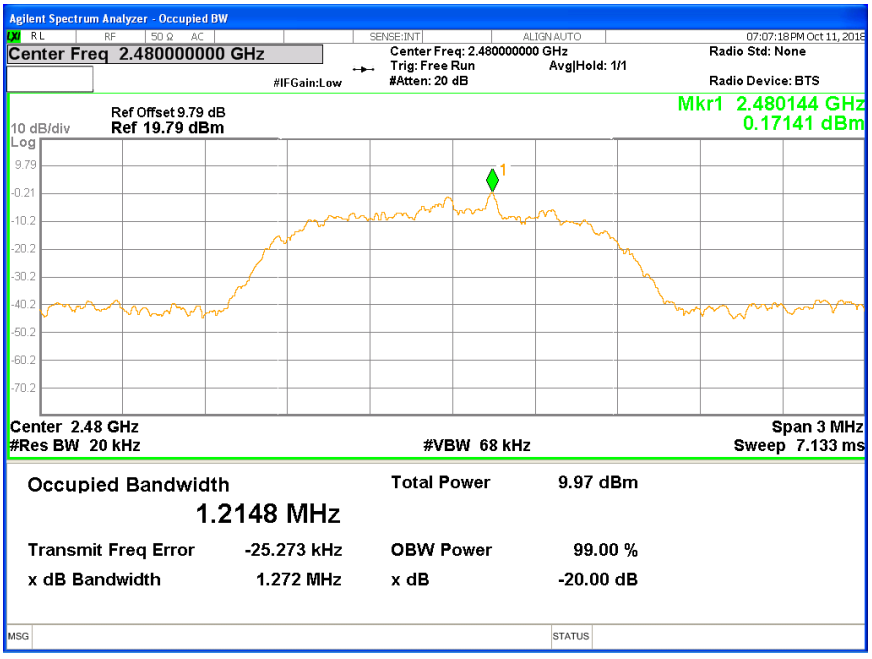
20 dB BANDWIDTH LOW CH



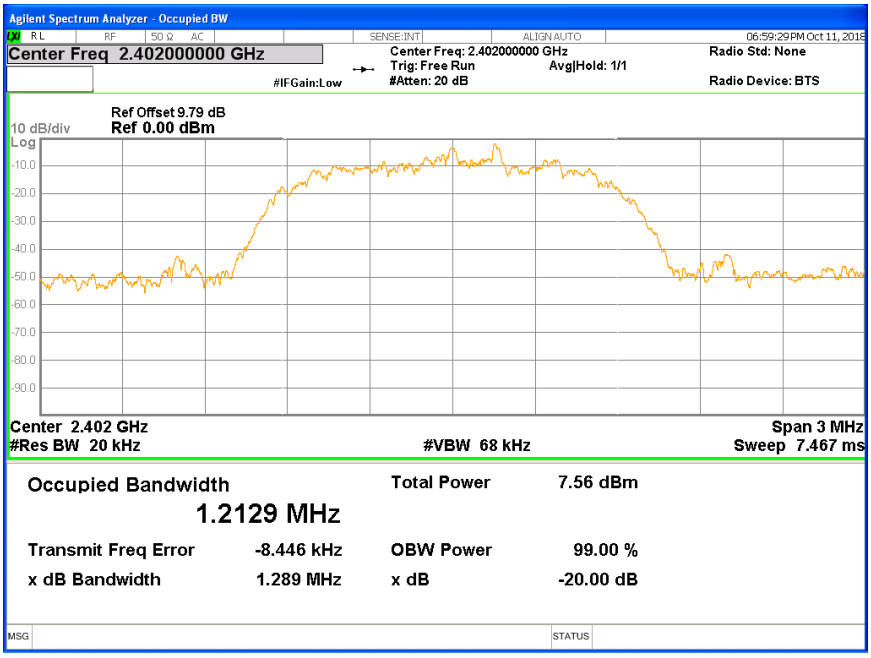
20 dB BANDWIDTH MID CH



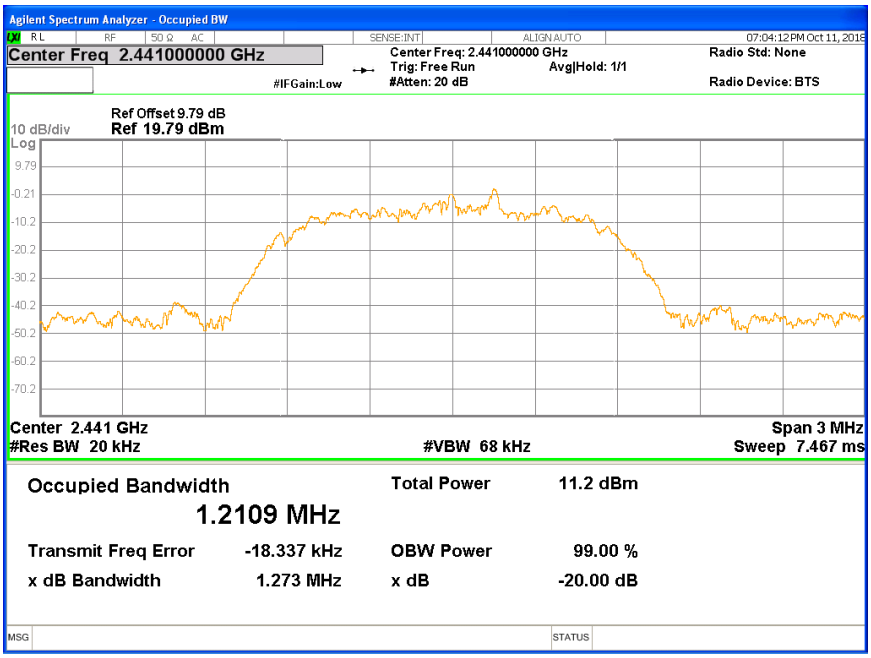
20 dB BANDWIDTH HIGH CH



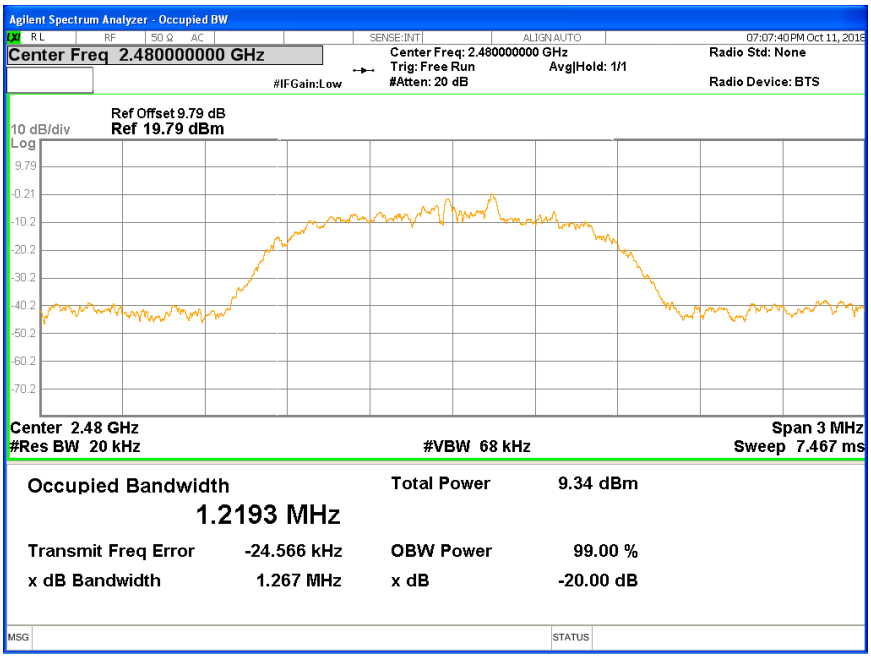
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH



6.3. PEAK CONDUCTED OUTPUT POWER

LIMITS

FCC Part15 (15.247) , Subpart C RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247 (b) (1)	Peak Conducted Output Power	1 watt or 30dBm	2400-2483.5

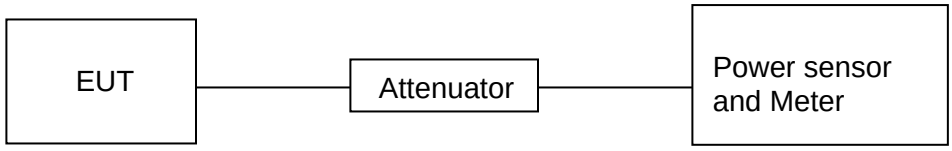
TEST PROCEDURE

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	≥ 20 dB bandwidth
VBW	≥RBW
Span	Approximately five times the 20 dB bandwidth
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



TEST ENVIRONMENT

Temperature	23.5°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

RESULTS

6.3.1. GFSK MODE

Channel	Frequency	Maximum Conducted Output Power(PK)	PK EIRP	Result
	(MHz)	(dBm)	(dBm)	
Low	2402	4.138	8.538	Pass
Middle	2441	7.779	12.179	Pass
High	2480	4.447	8.847	Pass

Note: EIRP= Maximum Conducted Output Power + Antenna Gain

6.3.2. 8DPSK MODE

Channel	Frequency	Maximum Conducted Output Power(PK)	PK EIRP	Result
	(MHz)	(dBm)	(dBm)	
Low	2402	3.156	7.556	Pass
Middle	2441	6.647	11.047	Pass
High	2480	4.556	8.956	Pass

Note: EIRP= Maximum Conducted Output Power + Antenna Gain

6.4. CARRIER HOPPING CHANNEL SEPARATION

LIMITS

FCC Part15 (15.247) , Subpart C RSS-247 ISSUE 2			
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

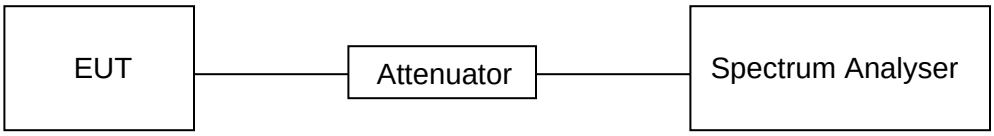
TEST PROCEDURE

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	Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
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



TEST ENVIRONMENT

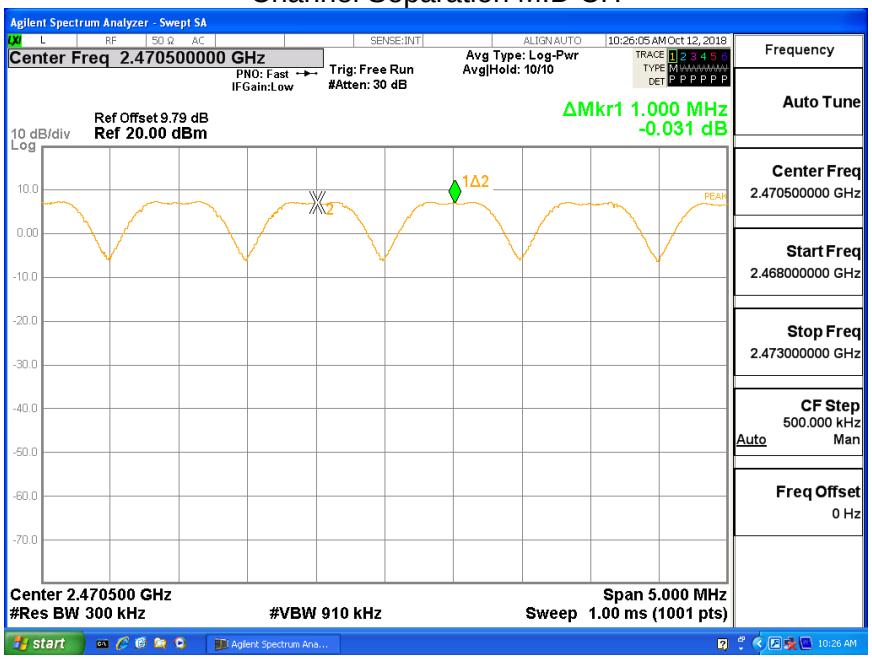
Temperature	23.5°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

RESULTS

6.4.1. GFSK MODE

Channel	Carrier Hopping Channel Separation (MHz)	Limit (MHz)	Result
Middle	1.0	≥ two-thirds of the 20 dB Bandwidth Of The Hopping Channel	PASS

Channel Separation MID CH

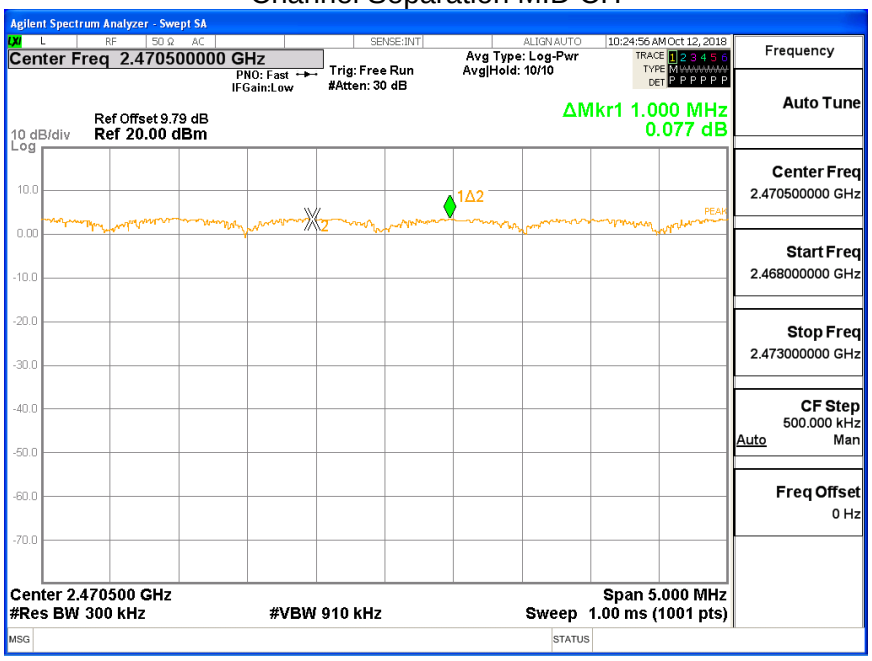


Note: For 20 dB Bandwidth of The Hopping Channel, please refer to clause 6.2.1.

6.4.2. 8DPSK MODE

Channel	Carrier Hopping Channel Separation (MHz)	Limit (MHz)	Result
Middle	1.0	≥ two-thirds of the 20 dB Bandwidth Of The Hopping Channel	PASS

Channel Separation MID CH



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 RSS-247 ISSUE 2		
Section	Test Item	Limit
15.247 (a) (1) III	Number of Hopping Frequency	at least 15 hopping channels

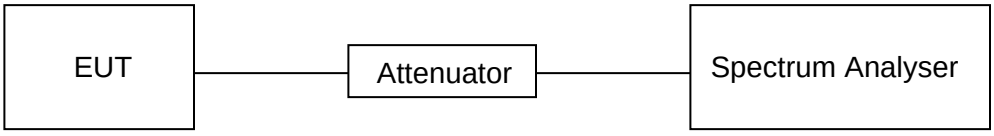
TEST PROCEDURE

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

Detector	Peak
RBW	To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
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



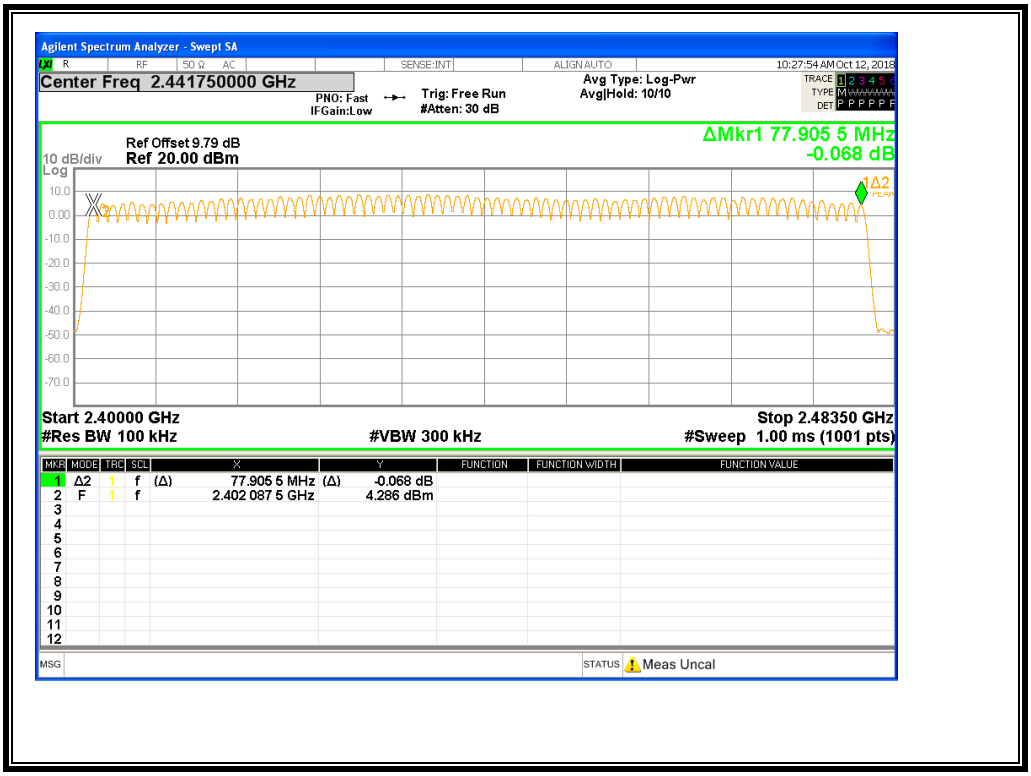
TEST ENVIRONMENT

Temperature	23.5°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

RESULTS

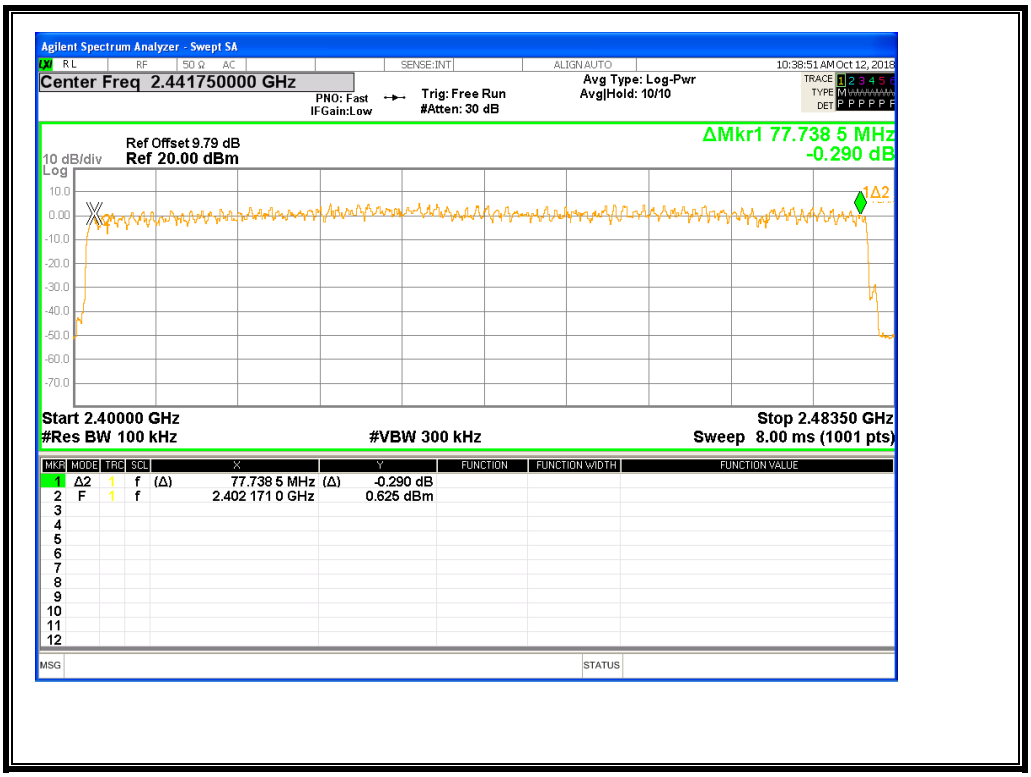
6.5.1. GFSK MODE

Hopping numbers	Limit	Results
79	>15	Pass



6.5.2. 8DPSK MODE

Hopping numbers	Limit	Results
79	>15	Pass



6.6. TIME OF OCCUPANCY (DWELL TIME)

LIMITS

FCC Part15 (15.247) , Subpart C RSS-247 ISSUE 2		
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:

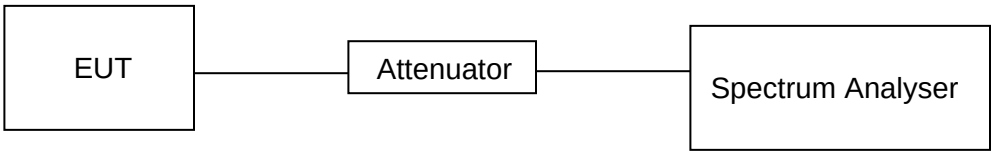
Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	1 MHz
VBW	≥RBW
Span	zero span
Trace	Max hold
Sweep time	As necessary to capture the entire dwell time per hopping channel

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



TEST ENVIRONMENT

Temperature	23.5°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

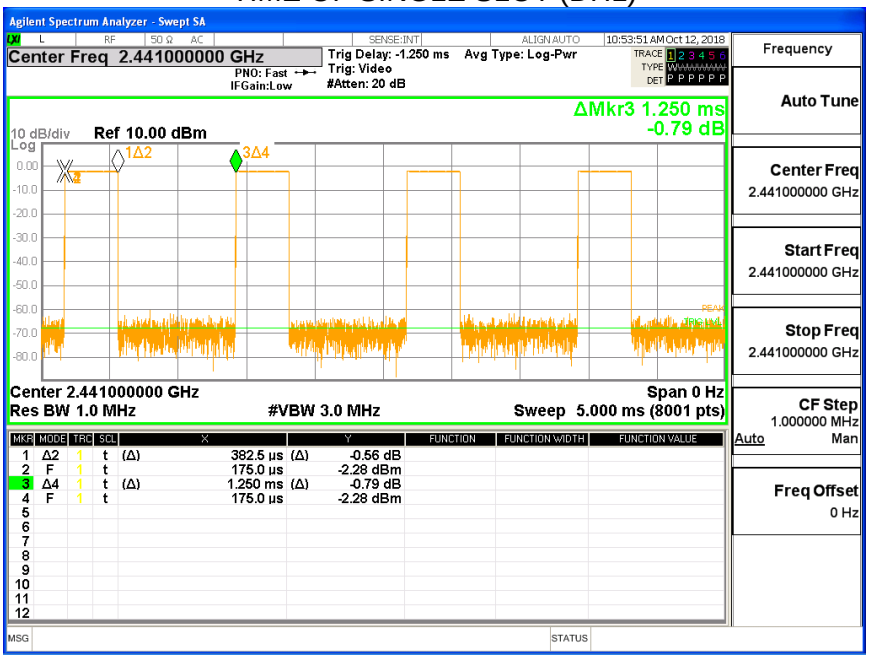
RESULTS

6.6.1. GFSK MODE

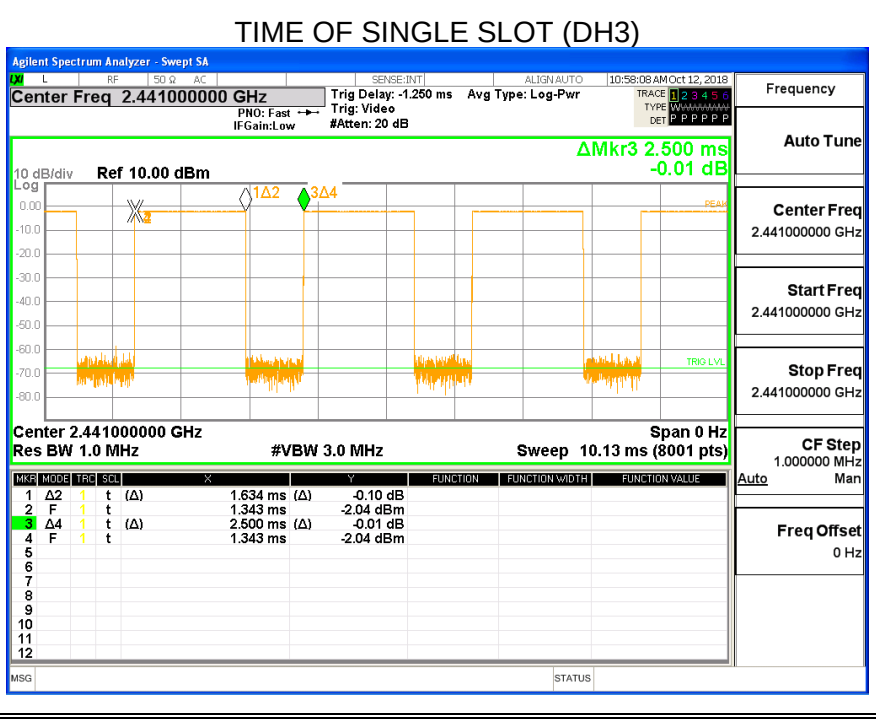
Normal Mode				
Packet	**Channel**	**Burst Width [ms/hop/ch]**	**Dwell Time [ms]**	**Results**
DH1	MCH	0.382	0.122	PASS
DH3	MCH	1.634	0.523	PASS
DH5	MCH	2.879	0.921	PASS
AFH Mode				
DH1	MCH	0.382	0.031	PASS
DH3	MCH	1.634	0.132	PASS
DH5	MCH	2.879	0.233	PASS

Test Graph

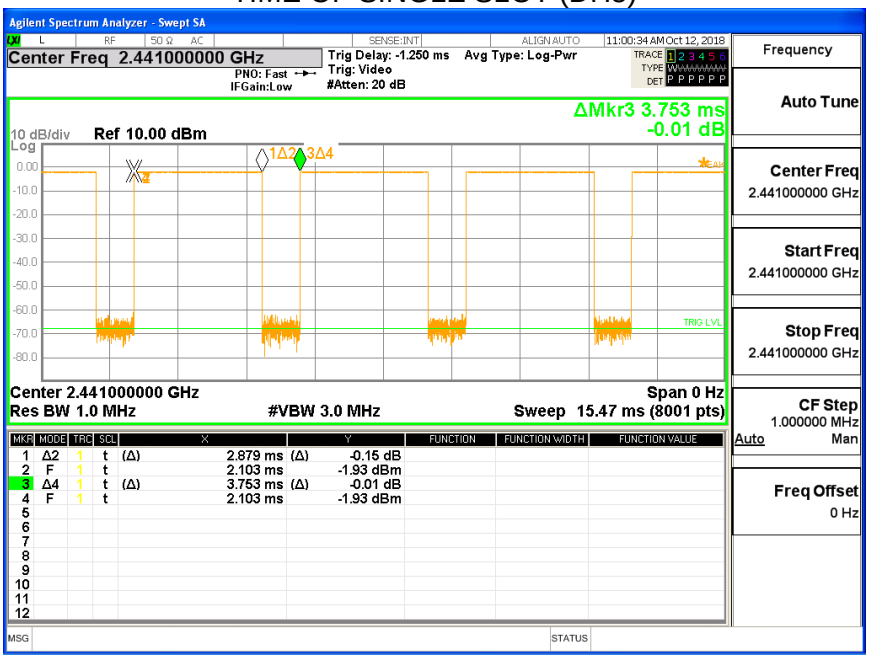
TIME OF SINGLE SLOT (DH1)



TIME OF SINGLE SLOT (DH3)



TIME OF SINGLE SLOT (DH5)

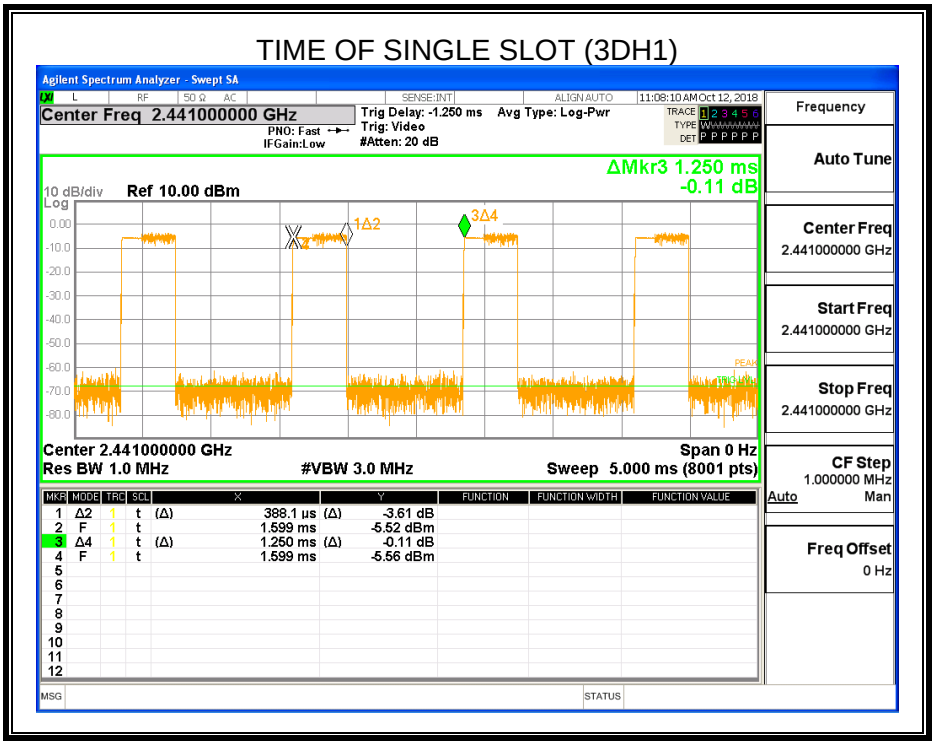


6.6.2. 8DPSK MODE

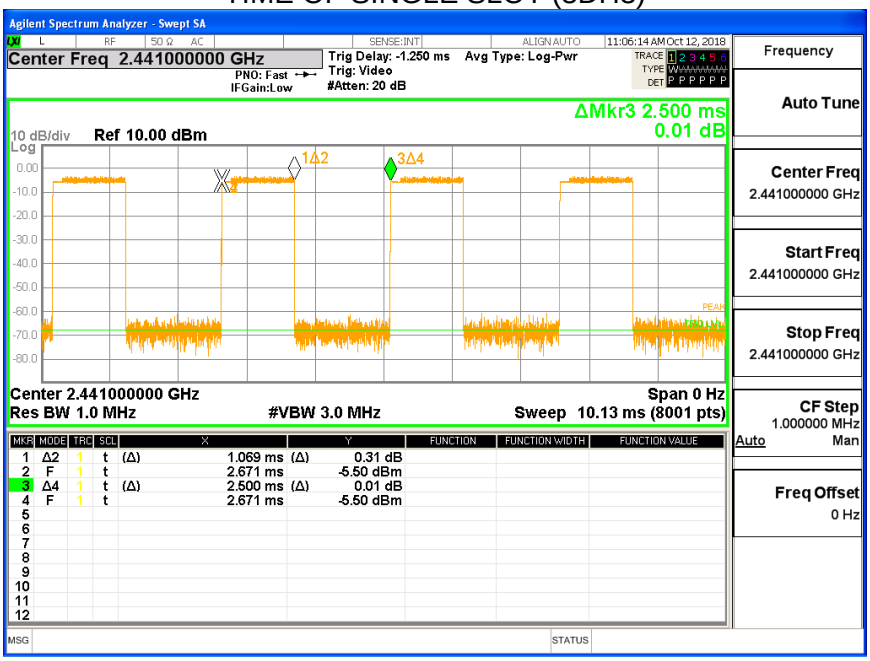
Normal Mode				
Packet	Channel	Burst Width [ms/hop/ch]	Dwell Time [ms]	Results
3DH1	MCH	0.388	0.124	PASS
3DH3	MCH	1.069	0.342	PASS
3DH5	MCH	1.067	0.310	PASS
AFH Mode				
3DH1	MCH	0.388	0.031	PASS
3DH3	MCH	1.069	0.087	PASS
3DH5	MCH	1.067	0.086	PASS

Test Graph

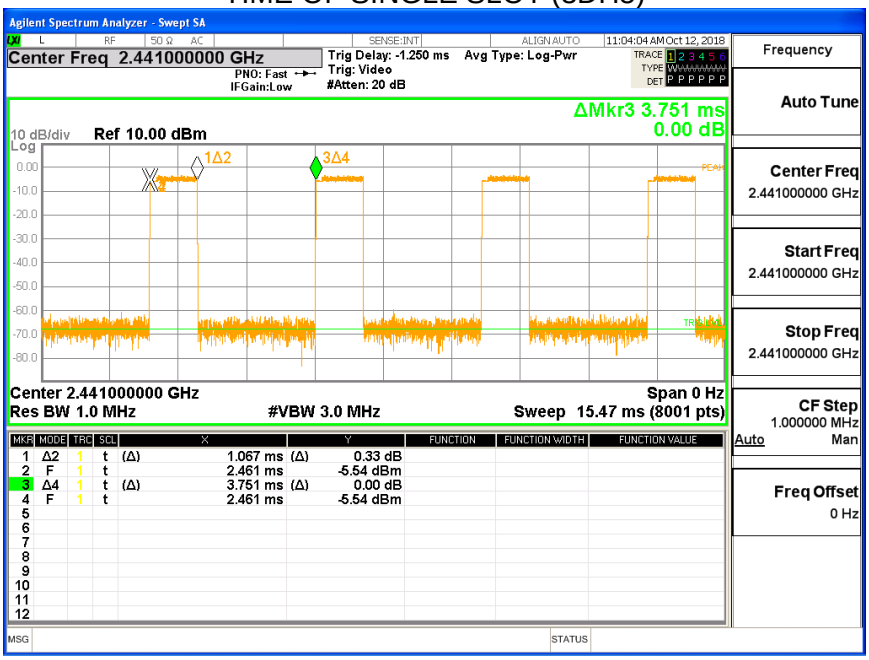
TIME OF SINGLE SLOT (3DH1)



TIME OF SINGLE SLOT (3DH3)



TIME OF SINGLE SLOT (3DH5)



6.7. CONDUCTED SPURIOUS EMISSION

LIMITS

FCC Part15 (15.247) , Subpart C RSS-247 ISSUE 2		
Section	Test Item	Limit
FCC §15.247 (d)	Conducted Spurious Emission	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

For Bandedge use the following settings:

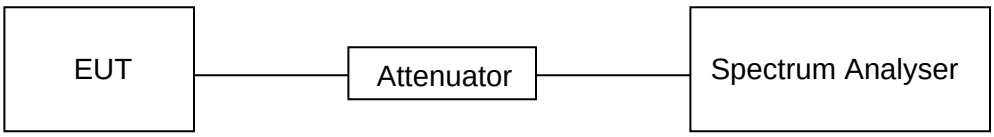
Detector	Peak
RBW	100KHz
VBW	300KHz
Span	wide enough to fully capture the emission being measured
Trace	Max hold
Sweep time	Auto couple.

For Spurious Emission use the following settings:

Detector	Peak
RBW	100KHz
VBW	300KHz
Span	wide enough to fully capture the emission being measured
Trace	Max hold
Sweep time	Auto couple.

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

TEST SETUP



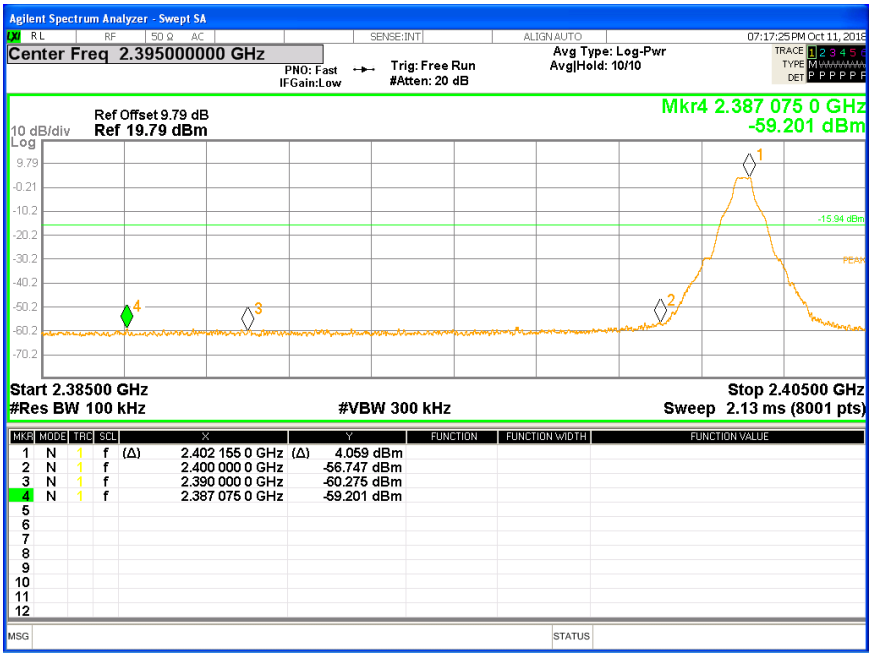
TEST ENVIRONMENT

Temperature	23.5°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

RESULTS

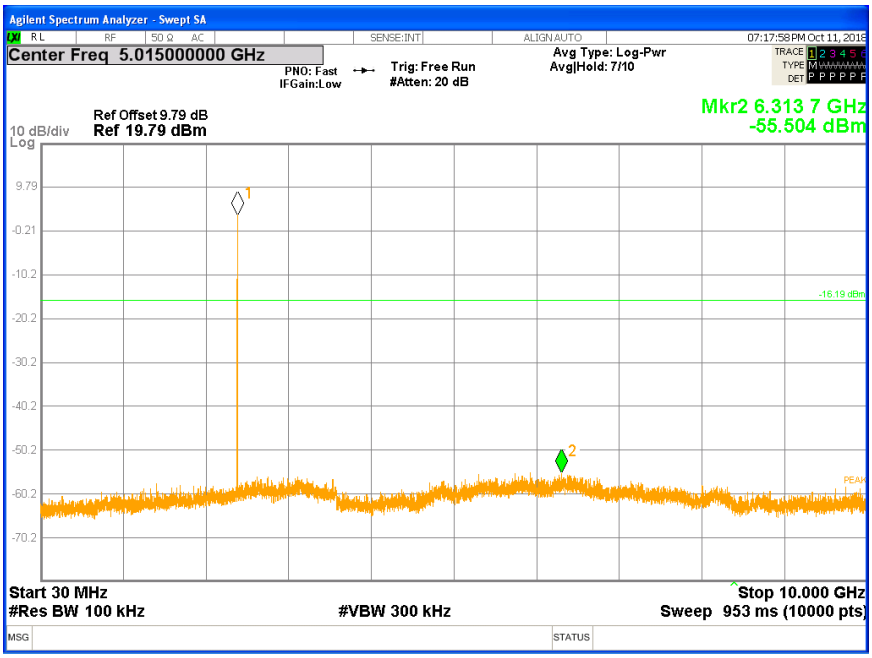
6.7.1. GFSK MODE

Low CH Bandedge

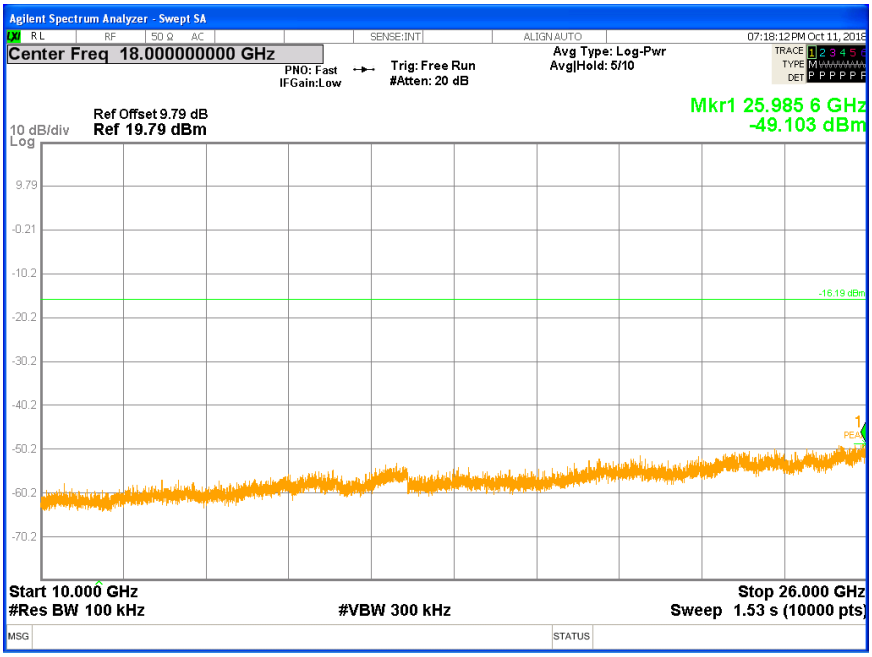


Low CH Unwanted Emissions In Non-restricted Frequency Bands-1

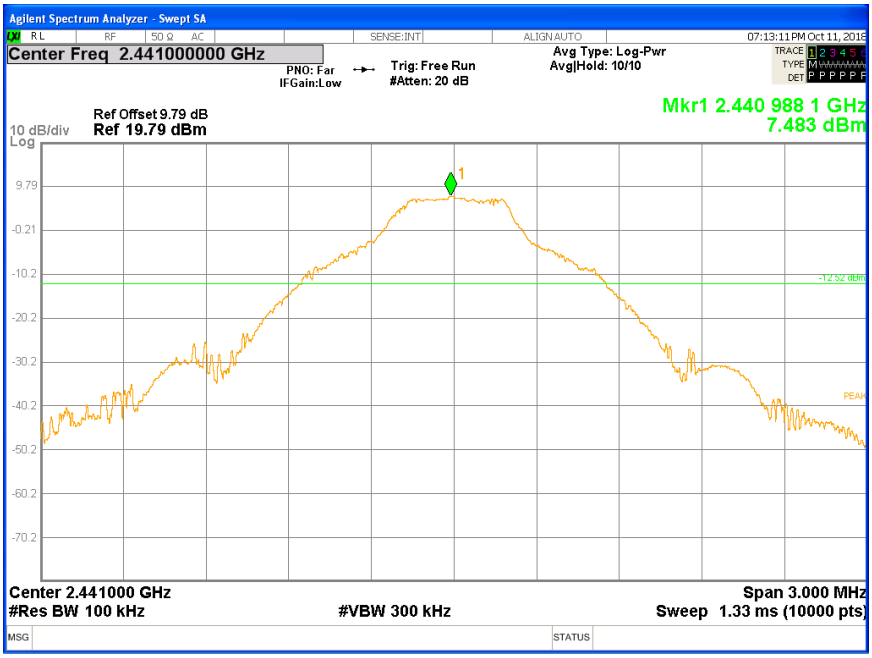
Low CH Unwanted Emissions In Non-restricted Frequency Bands-2



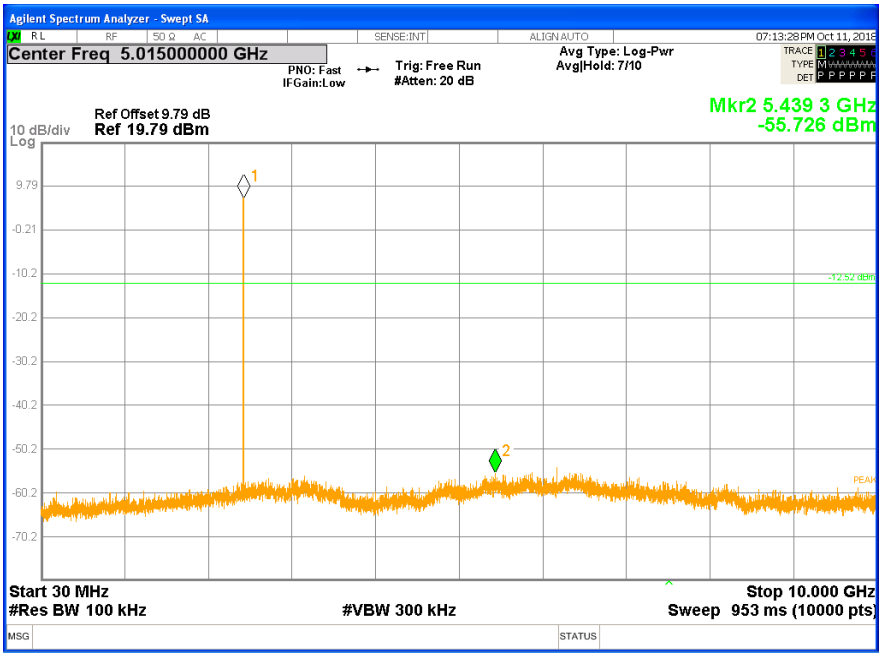
Low CH Unwanted Emissions In Non-restricted Frequency Bands-3



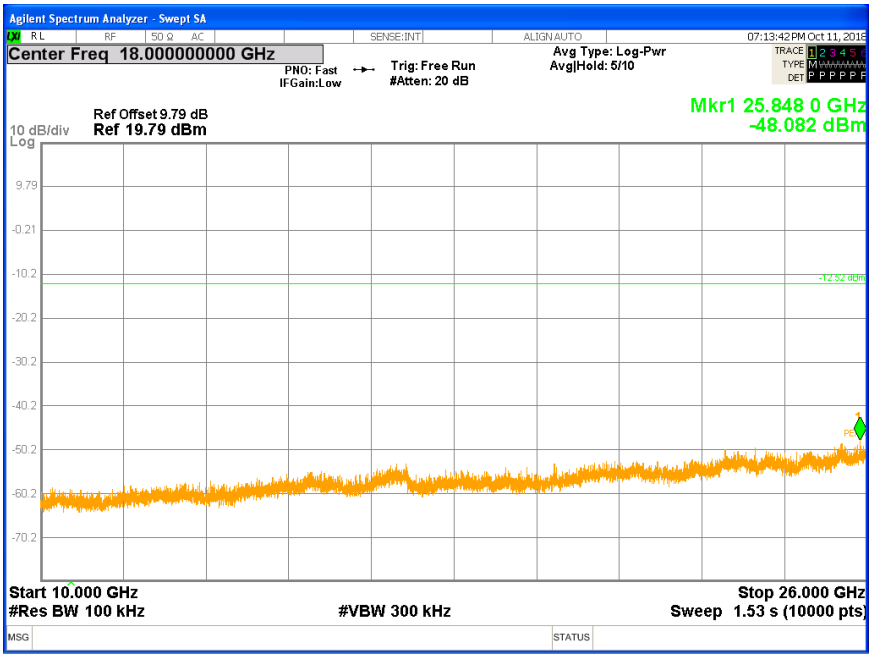
Mid CH Unwanted Emissions In Non-restricted Frequency Bands-1



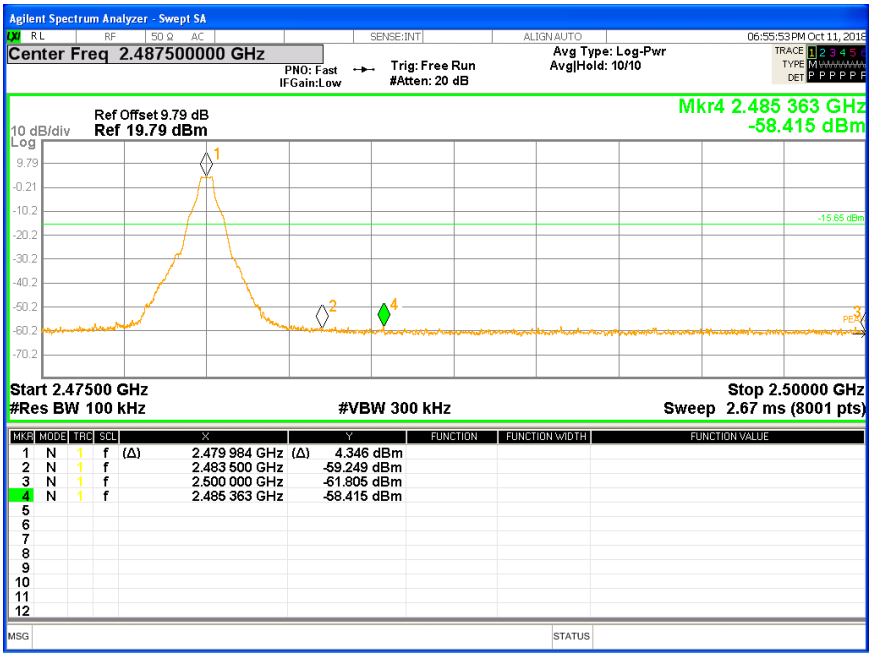
Mid CH Unwanted Emissions In Non-restricted Frequency Bands-2



Mid CH Unwanted Emissions In Non-restricted Frequency Bands-3

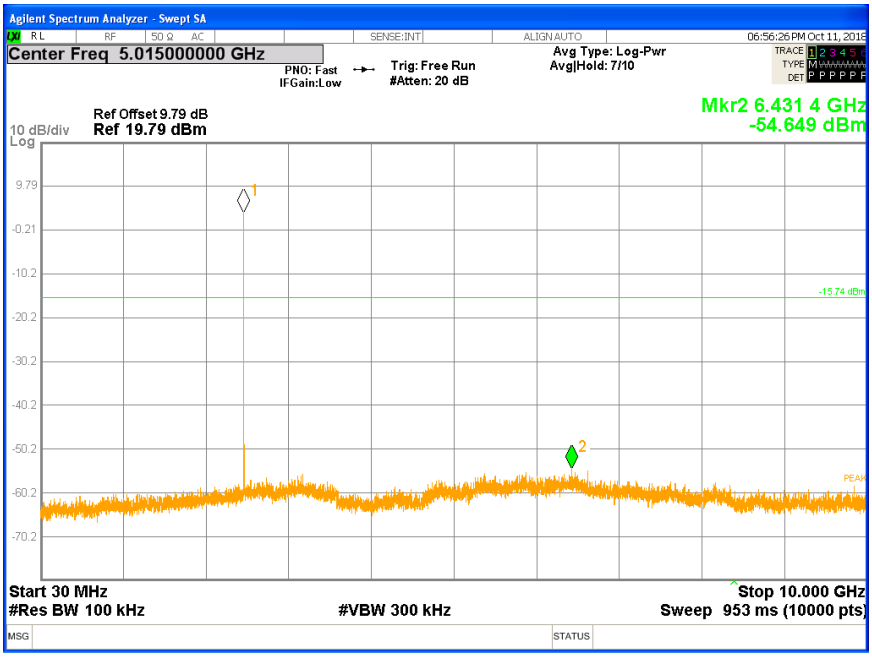


High CH Bandedge

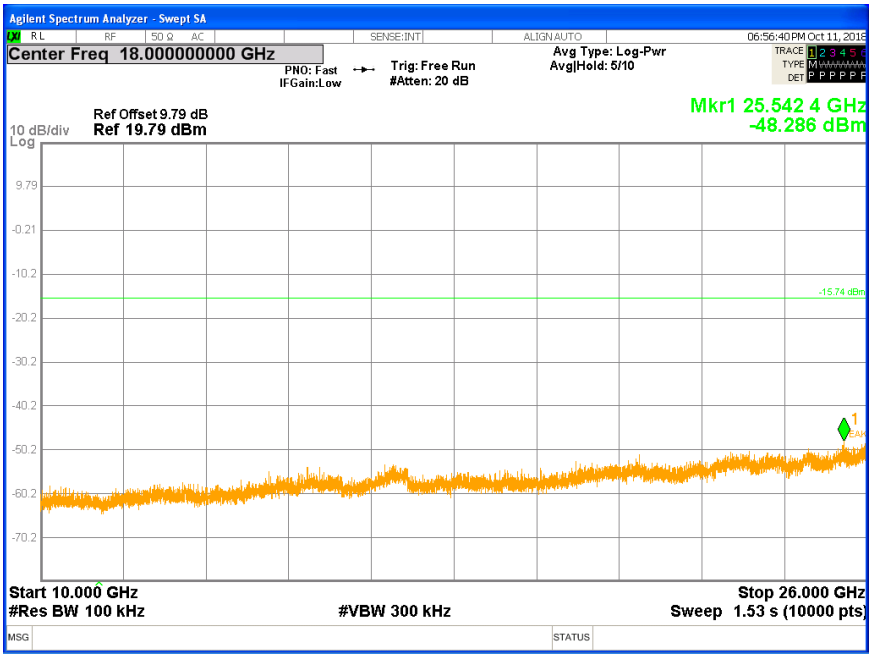


High CH Unwanted Emissions In Non-restricted Frequency Bands-1

High CH Unwanted Emissions In Non-restricted Frequency Bands-2



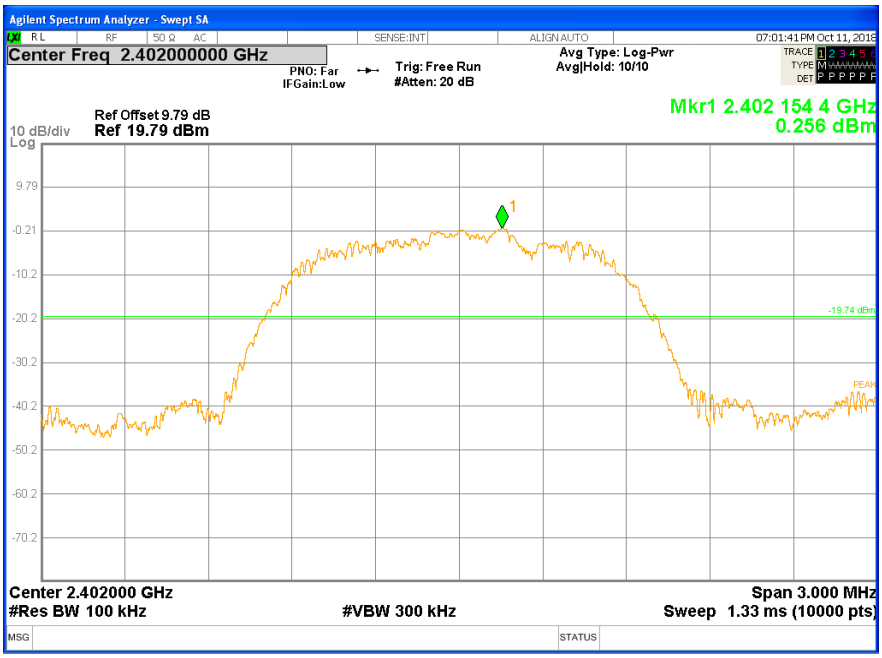
High CH Unwanted Emissions In Non-restricted Frequency Bands-3



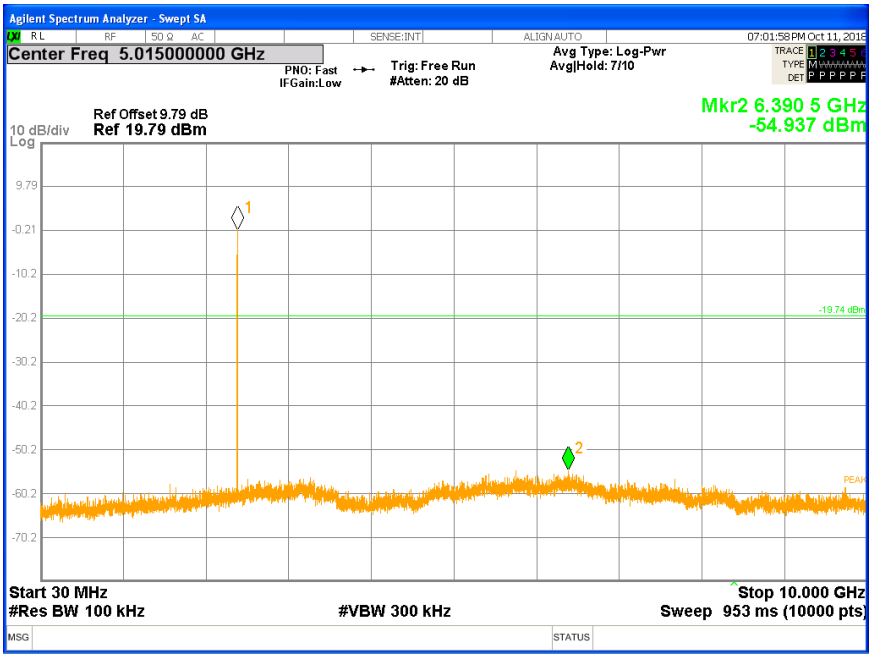
6.7.2. 8DPSK MODE

Low CH Bandedge

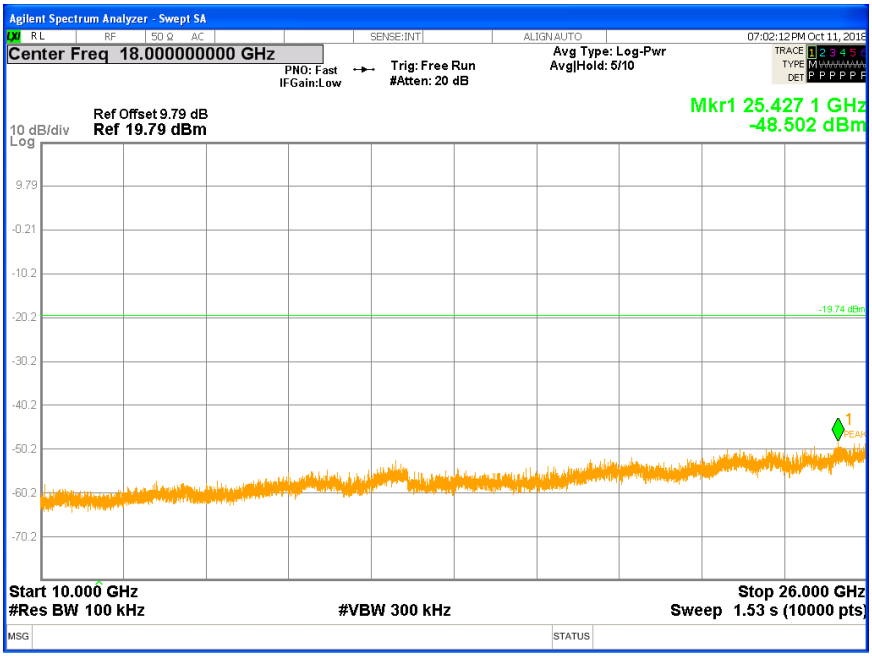
Low CH Unwanted Emissions In Non-restricted Frequency Bands-1



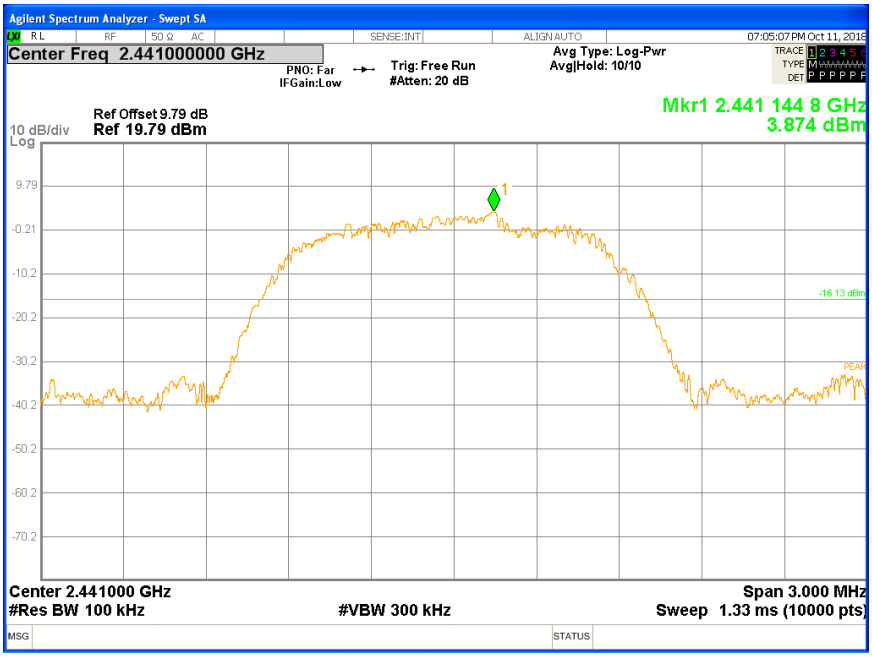
Low CH Unwanted Emissions In Non-restricted Frequency Bands-2



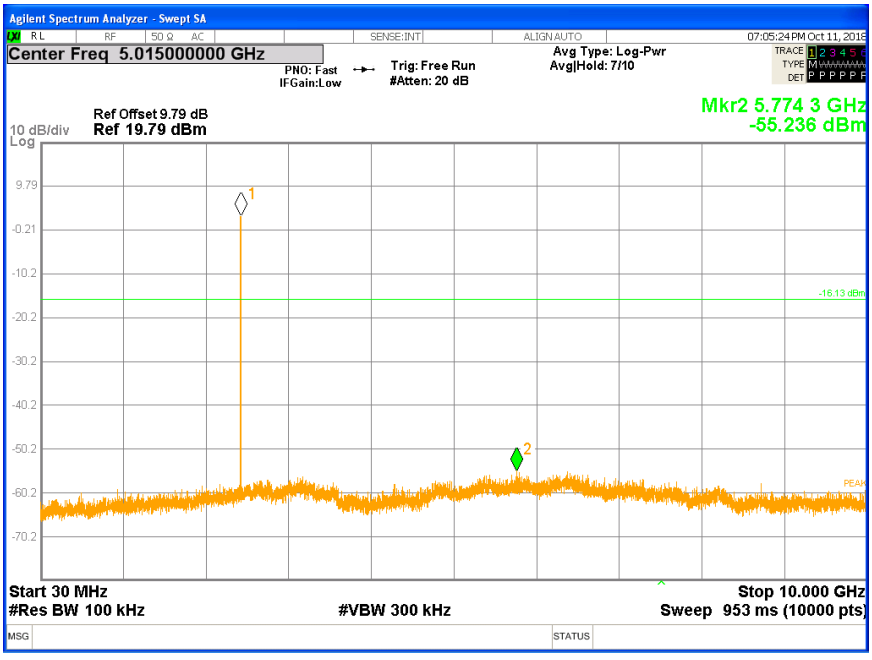
Low Unwanted Emissions In Non-restricted Frequency Bands-3



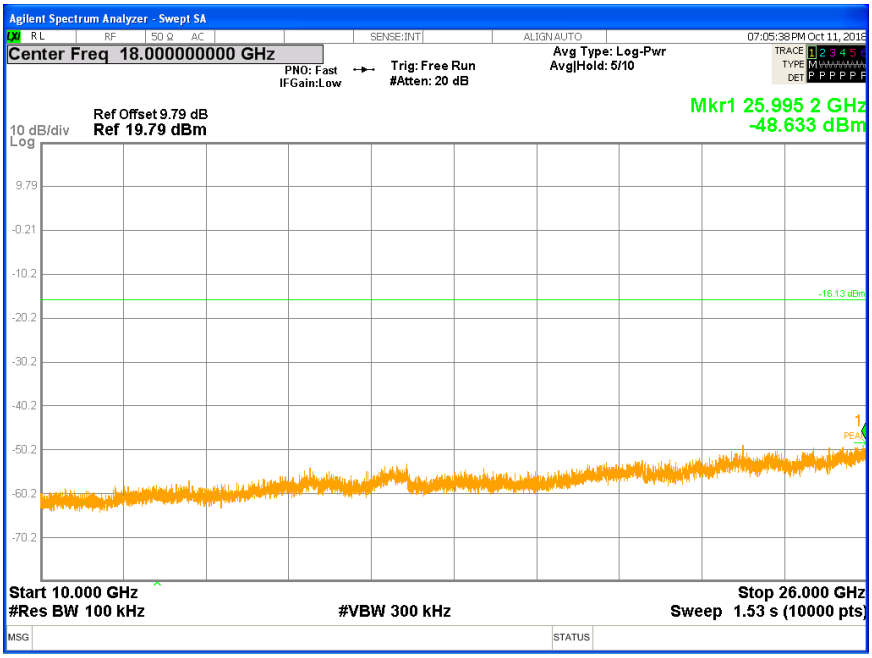
Mid CH Unwanted Emissions In Non-restricted Frequency Bands-1



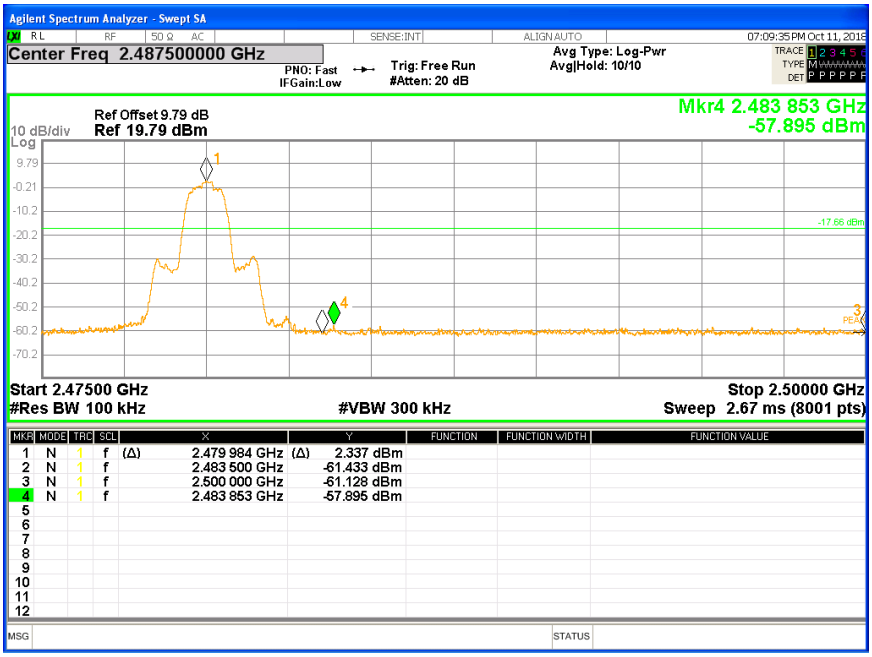
Mid CH Unwanted Emissions In Non-restricted Frequency Bands-2



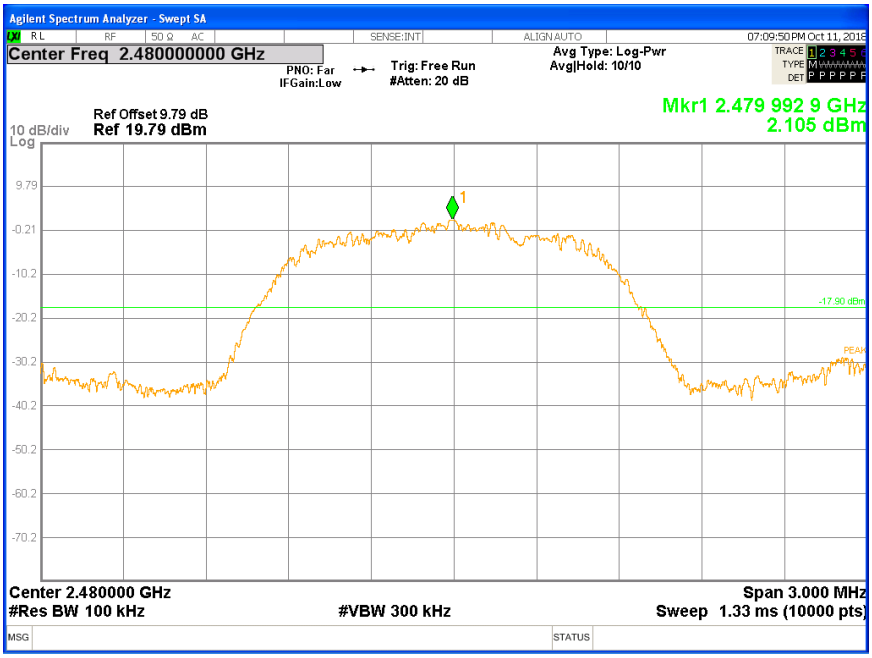
Mid CH Unwanted Emissions In Non-restricted Frequency Bands-3



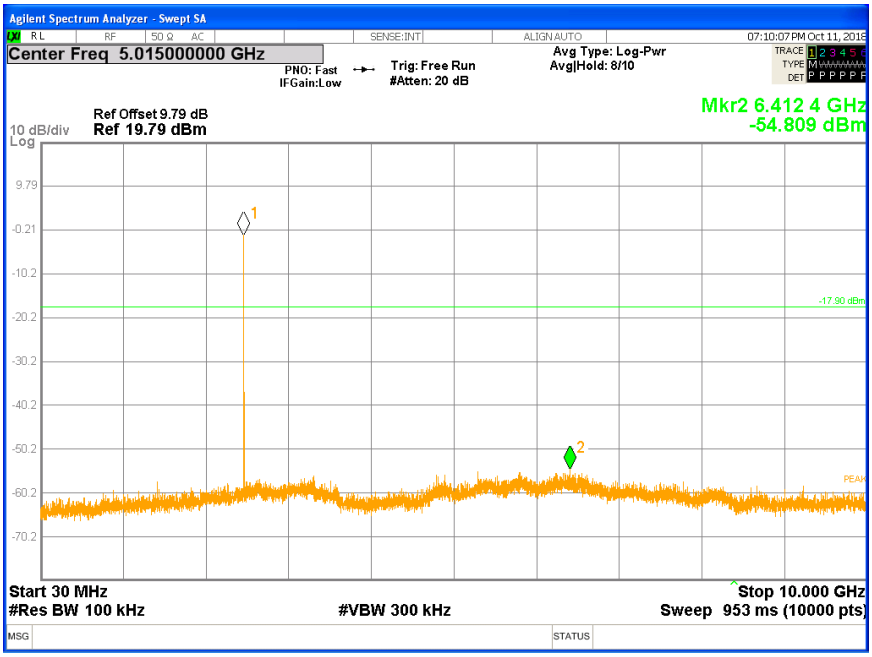
High CH Bandedge



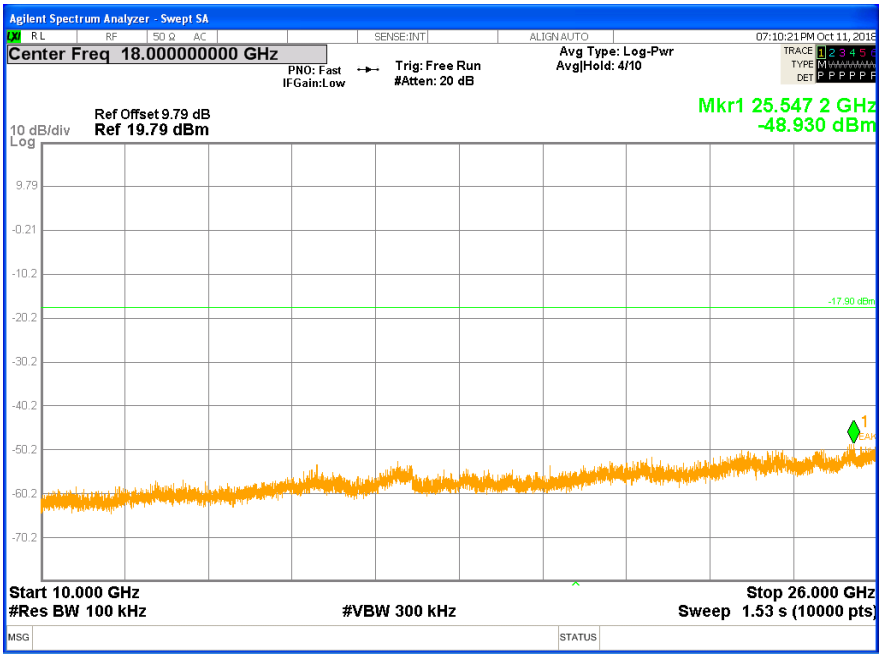
High CH Unwanted Emissions In Non-restricted Frequency Bands-1



High CH Unwanted Emissions In Non-restricted Frequency Bands-2



High CH Unwanted Emissions In Non-restricted Frequency Bands-3



7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209

Please refer to ISED RSS-GEN Clause 8.9 (Transmitter)

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

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

Radiation Disturbance Test Limit for FCC (Above 1G)

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

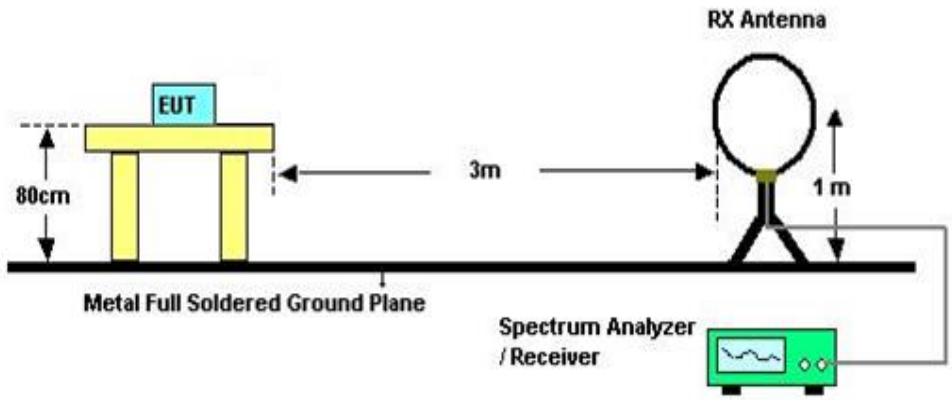
IC Restricted bands please refer to ISED RSS-GEN Clause 8.10
FCC Restricted bands of operation:

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 38.6c

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.

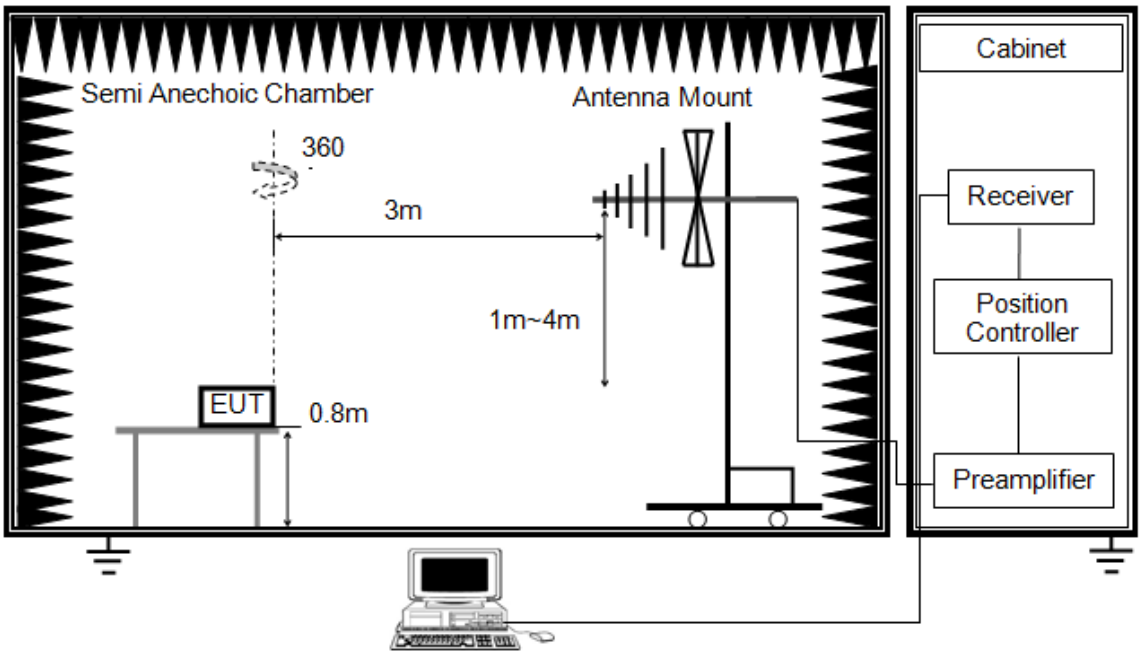
3. The EUT was placed on a turntable with 80cm meter above ground.

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. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

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.

Below 1G and above 30MHz



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.

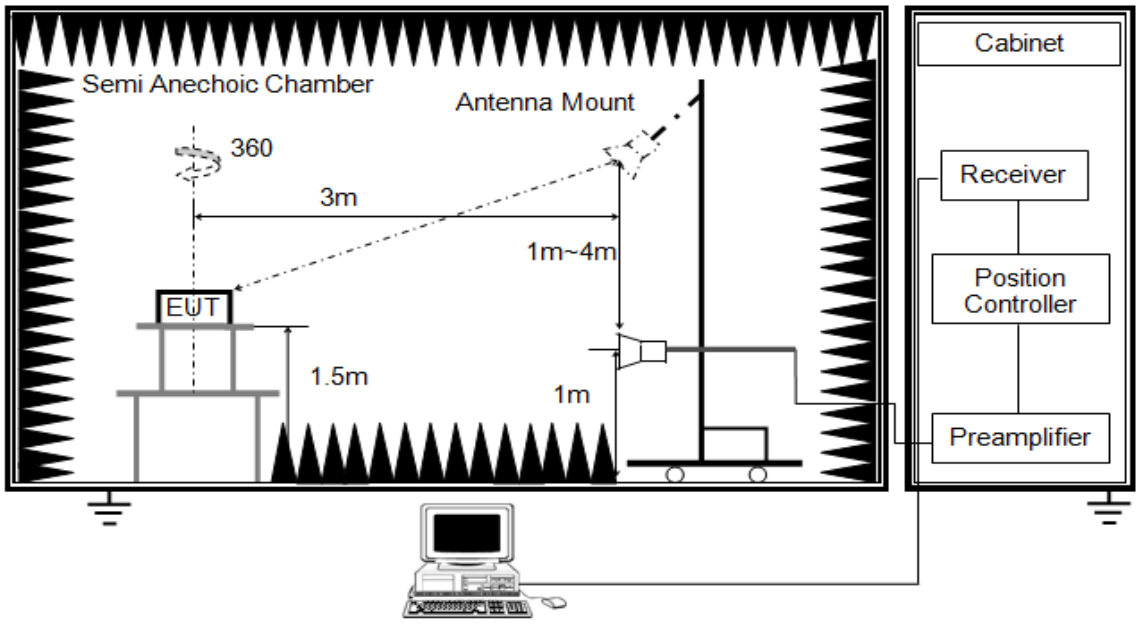
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations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

3. The EUT was placed on a turntable with 80cm 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 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.

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 80cm 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 measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector. For the Duty Cycle please refer to clause 6.1.ON TIME AND DUTY CYCLE.

TEST ENVIRONMENT

Temperature	24.4°C	Relative Humidity	52%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

RESULTS

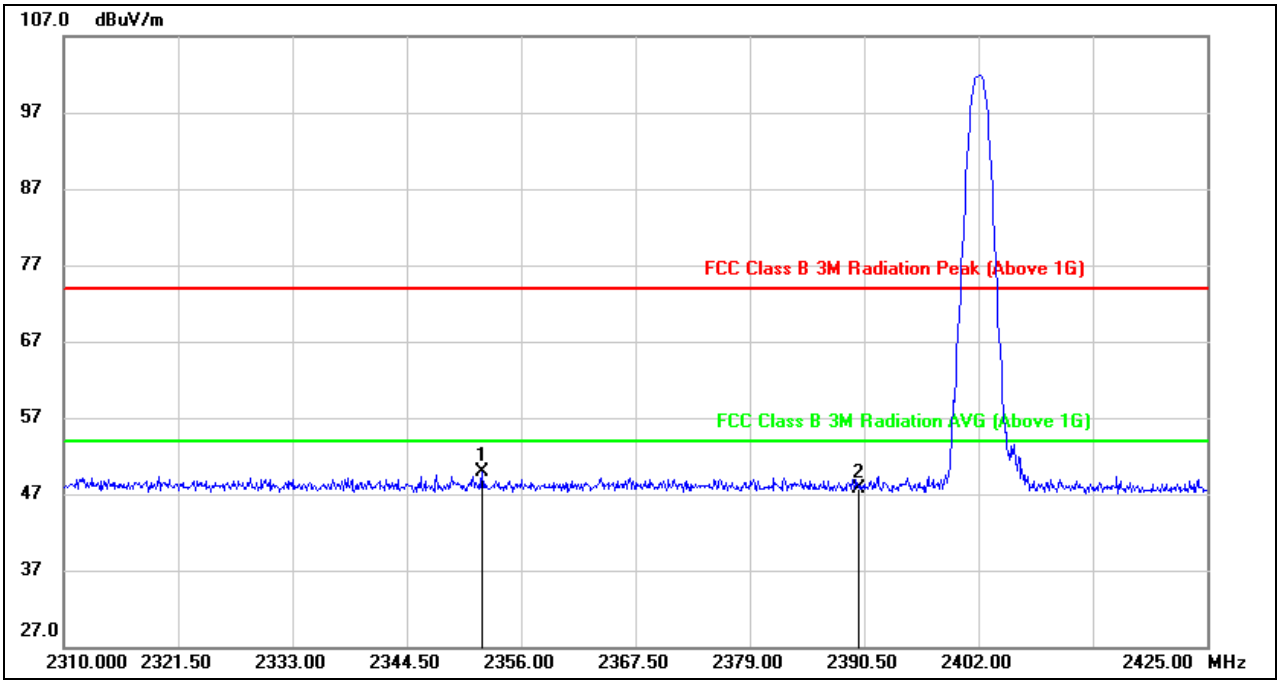
Note1: For all the radiated emission testes, all the modes and antennas had been tested, but only the worst data recorded in the report.

Note 2: The EUT was fully exercised with external accessories during the test. In the case of multiple accessory external ports, an external accessory shall be connected to one of each type of port.

7.2. RESTRICTED BANDEDGE

7.2.1. GFSK MODE

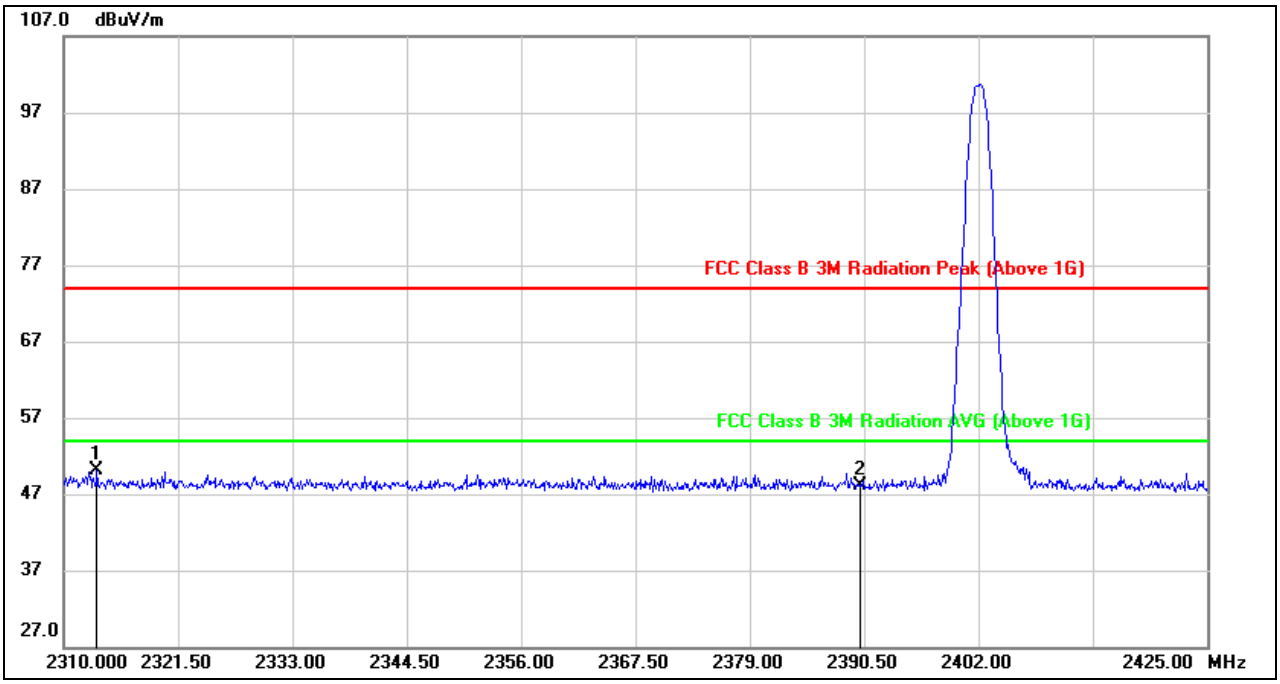
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2352.090	16.50	33.41	49.91	74.00	-24.09	peak
2	2390.000	14.49	33.14	47.63	74.00	-26.37	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. Peak: Peak detector.

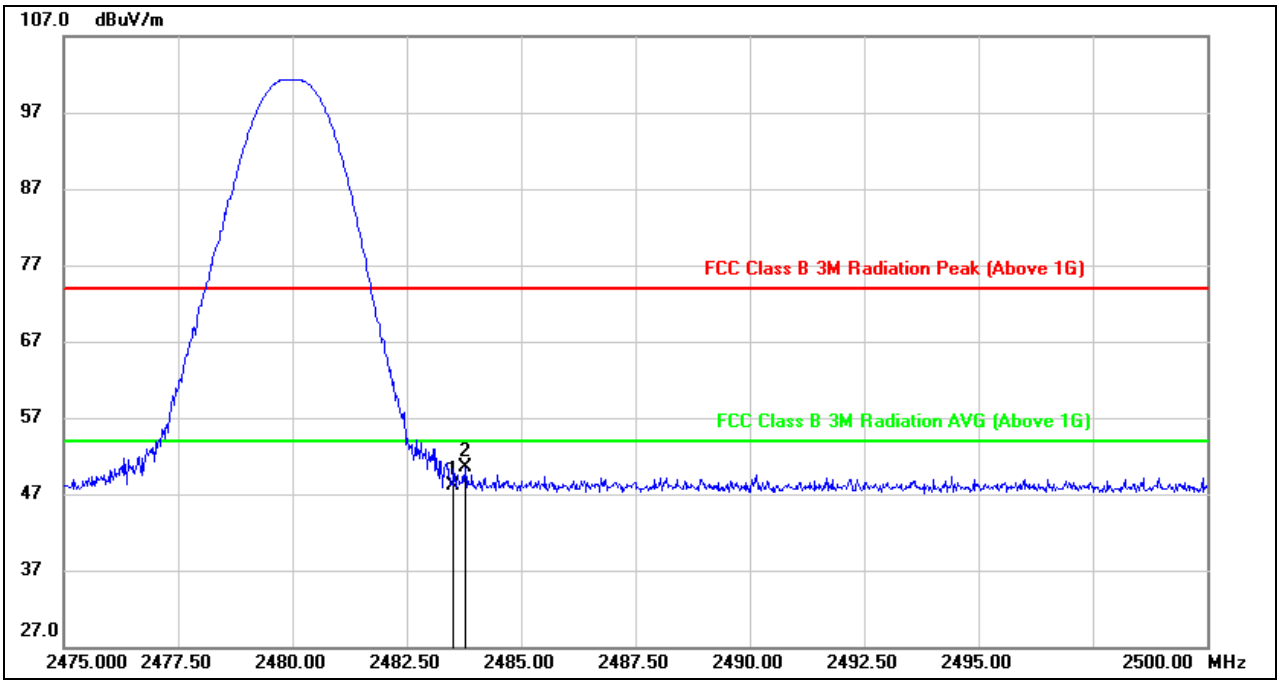
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2313.335	16.31	33.87	50.18	74.00	-23.82	peak
2	2390.000	14.81	33.24	48.05	74.00	-25.95	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. Peak: Peak detector.

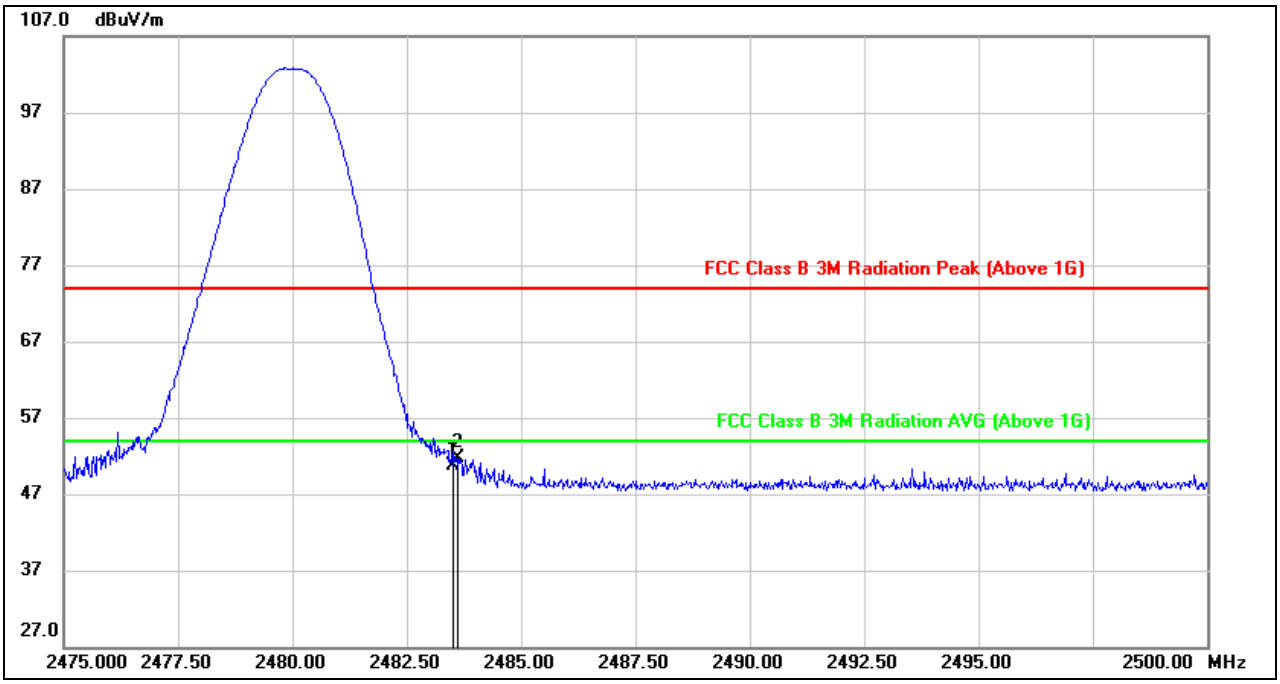
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	15.41	32.78	48.19	74.00	-25.81	peak
2	2483.775	17.77	32.78	50.55	74.00	-23.45	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. Peak: Peak detector.

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



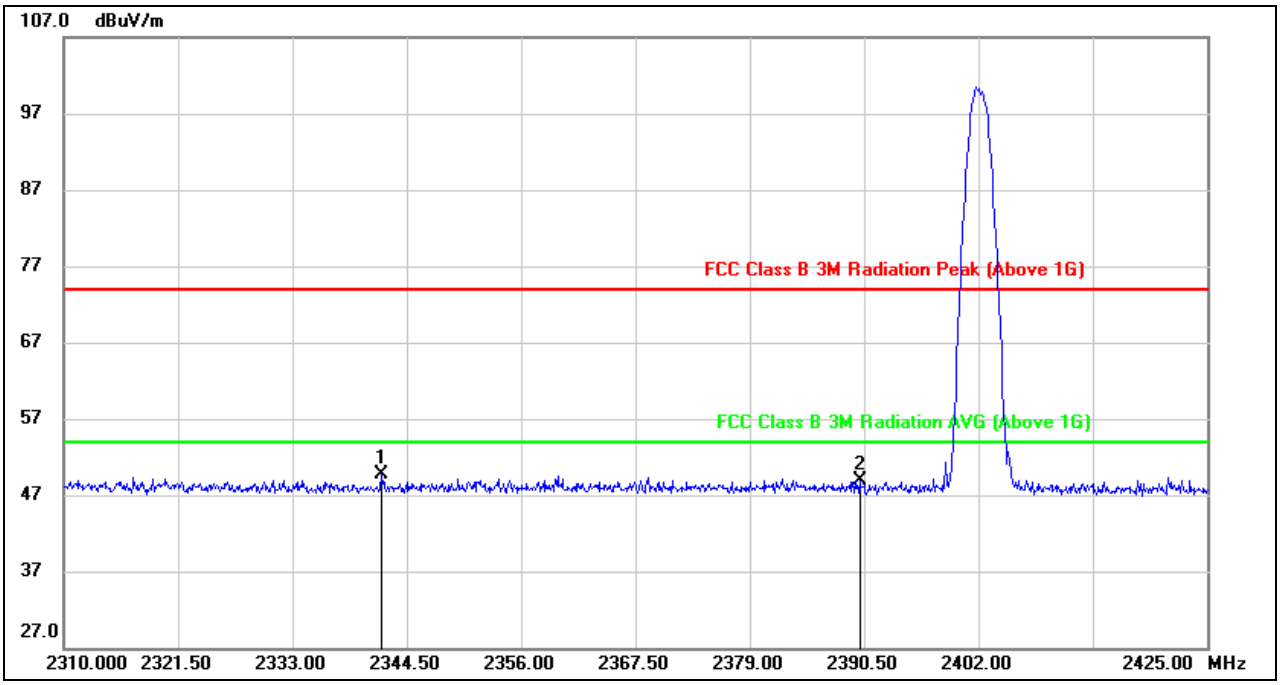
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	17.85	32.88	50.73	74.00	-23.27	peak
2	2483.600	18.80	32.88	51.68	74.00	-22.32	peak

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. Peak: Peak detector.

7.2.2. 8DPSK MODE

SPEEDWIRE ANTENNA RESULTS

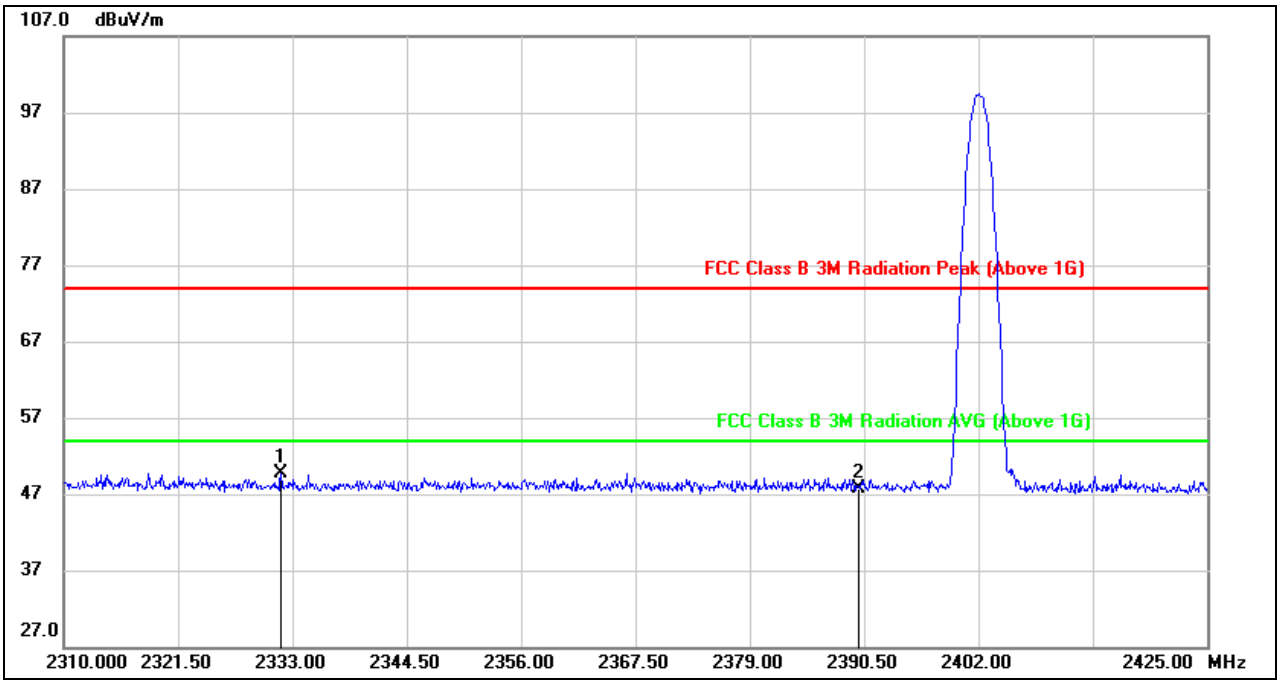
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2341.970	16.20	33.48	49.68	74.00	-24.32	peak
2	2390.000	15.83	33.14	48.97	74.00	-25.03	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. Peak: Peak detector.

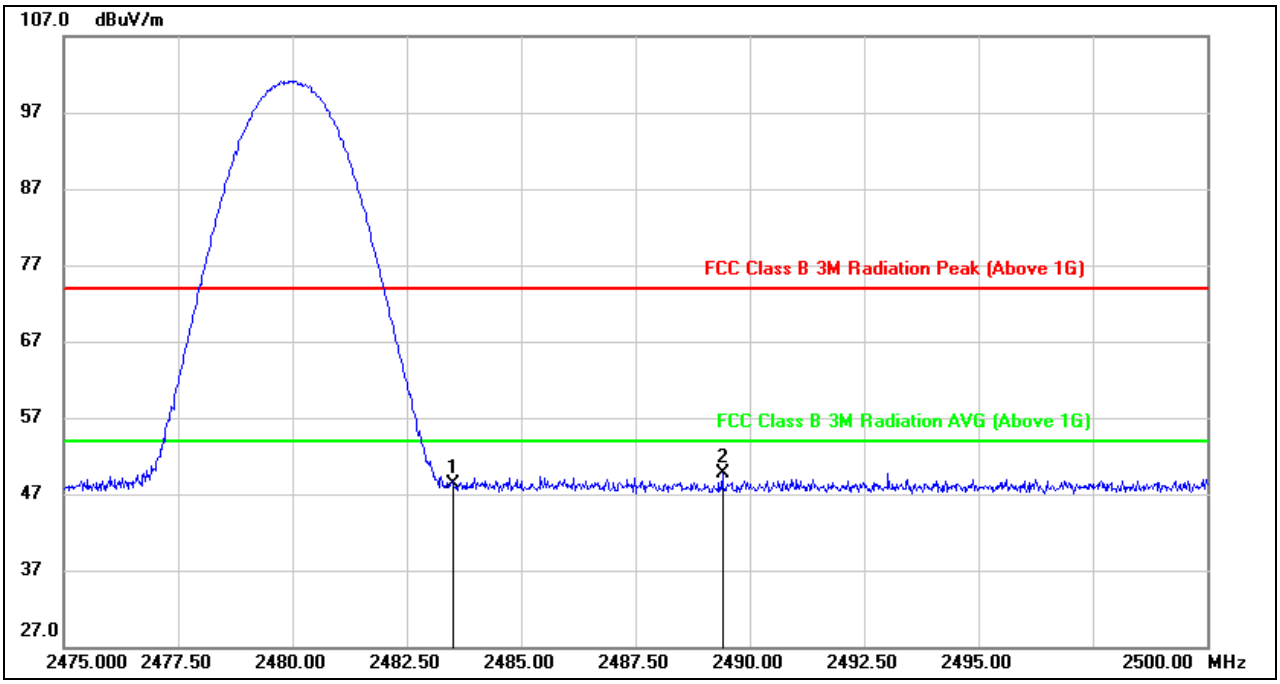
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2331.850	15.99	33.70	49.69	74.00	-24.31	peak
2	2390.000	14.53	33.24	47.77	74.00	-26.23	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. Peak: Peak detector.

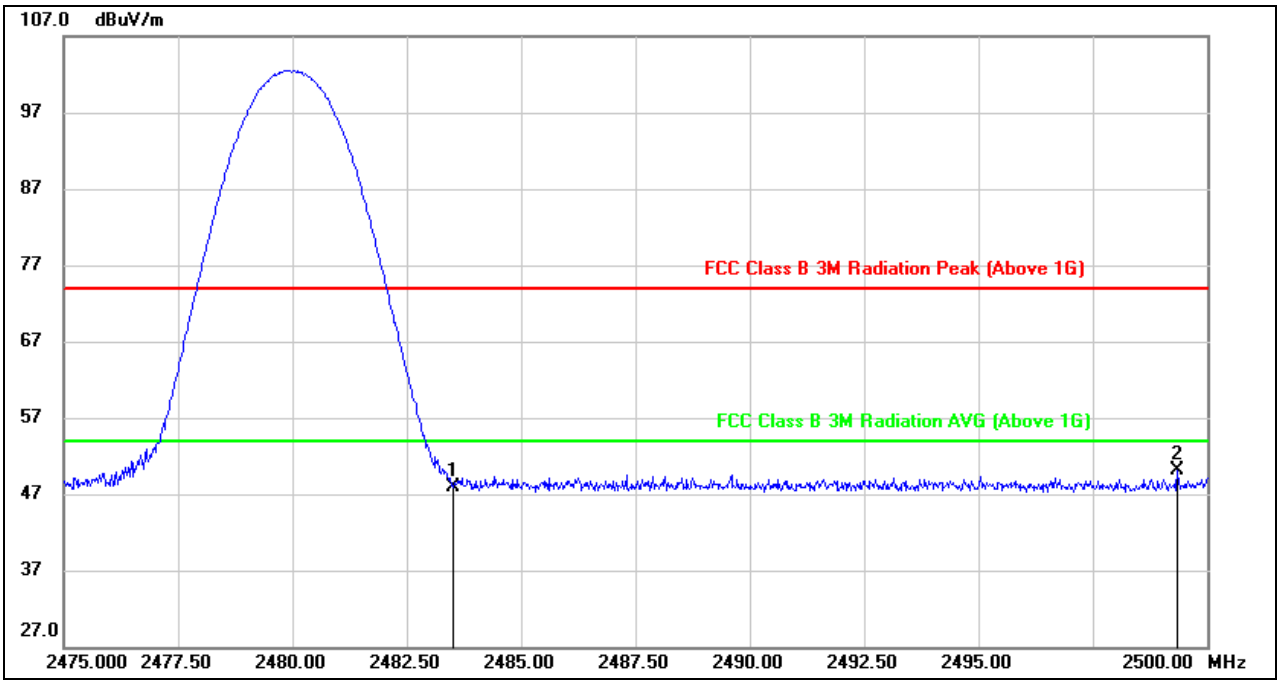
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	15.50	32.78	48.28	74.00	-25.72	peak
2	2489.400	16.99	32.78	49.77	74.00	-24.23	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. Peak: Peak detector.

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	15.06	32.88	47.94	74.00	-26.06	peak
2	2499.350	17.24	32.87	50.11	74.00	-23.89	peak

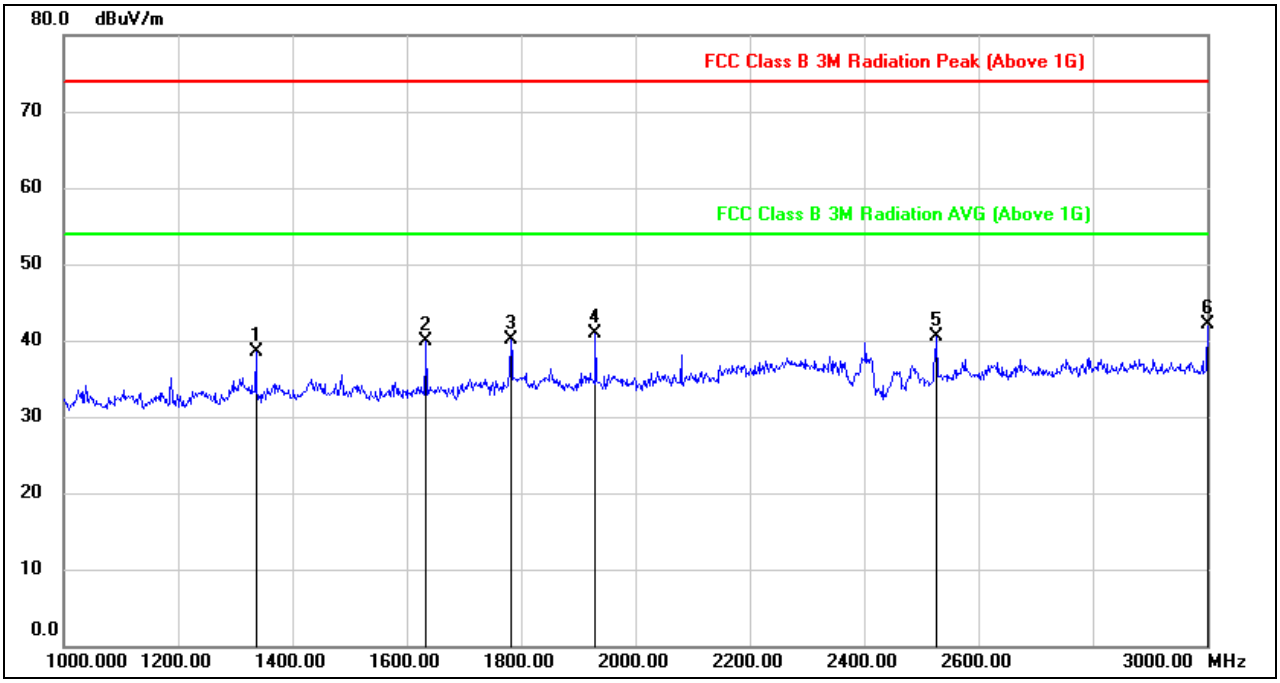
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

7.3. SPURIOUS EMISSIONS (1~18GHz)

7.3.1. GFSK MODE

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

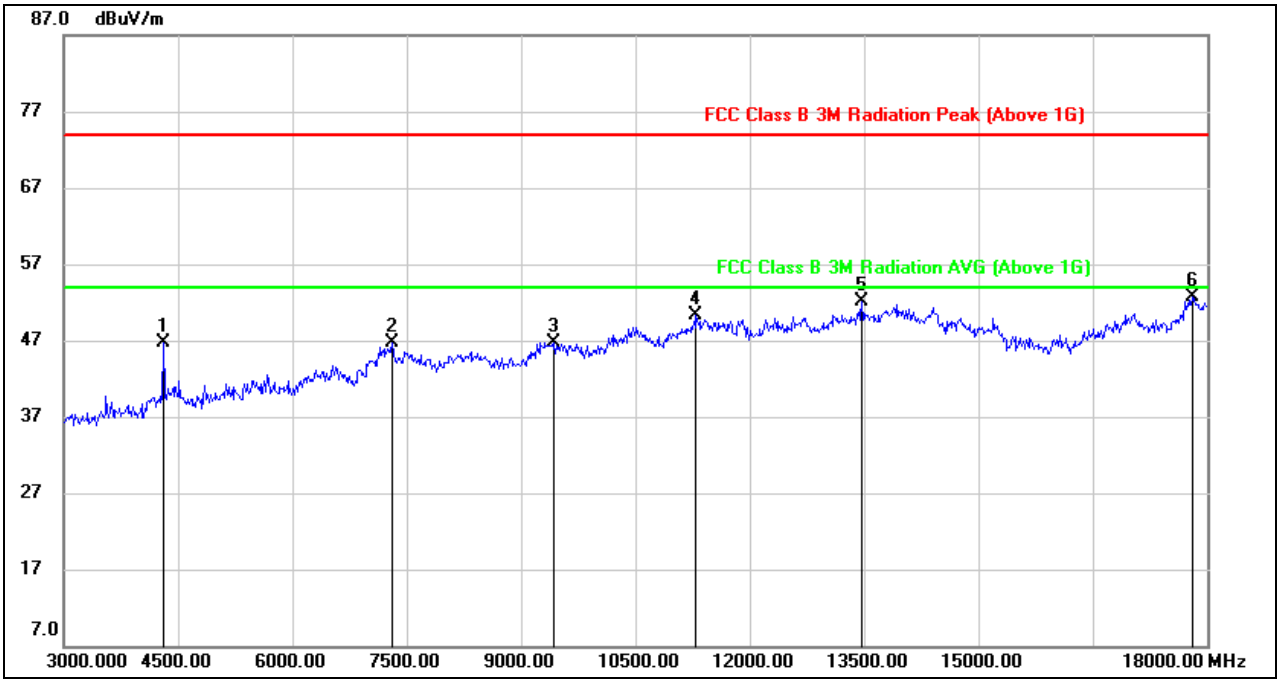
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	50.81	-12.37	38.44	74.00	-35.56	peak
2	1634.000	51.74	-11.83	39.91	74.00	-34.09	peak
3	1782.000	51.22	-11.19	40.03	74.00	-33.97	peak
4	1930.000	51.55	-10.70	40.85	74.00	-33.15	peak
5	2526.000	48.92	-8.38	40.54	74.00	-33.46	peak
6	3000.000	48.77	-6.60	42.17	74.00	-31.83	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. Peak: Peak detector.

3GHz~18GHz

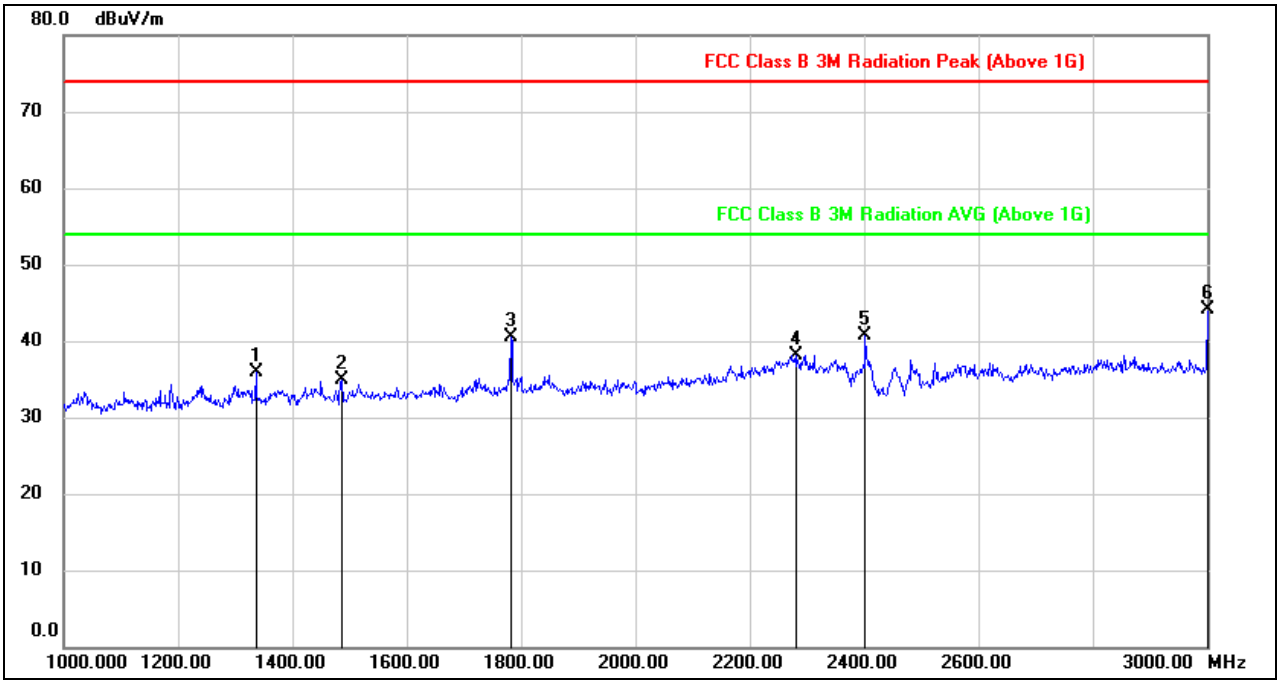


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4305.000	48.27	-1.54	46.73	74.00	-27.27	peak
2	7305.000	38.90	7.80	46.70	74.00	-27.30	peak
3	9435.000	35.87	10.87	46.74	74.00	-27.26	peak
4	11295.000	34.81	15.53	50.34	74.00	-23.66	peak
5	13470.000	31.96	20.09	52.05	74.00	-21.95	peak
6	17805.000	26.23	26.48	52.71	74.00	-21.29	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

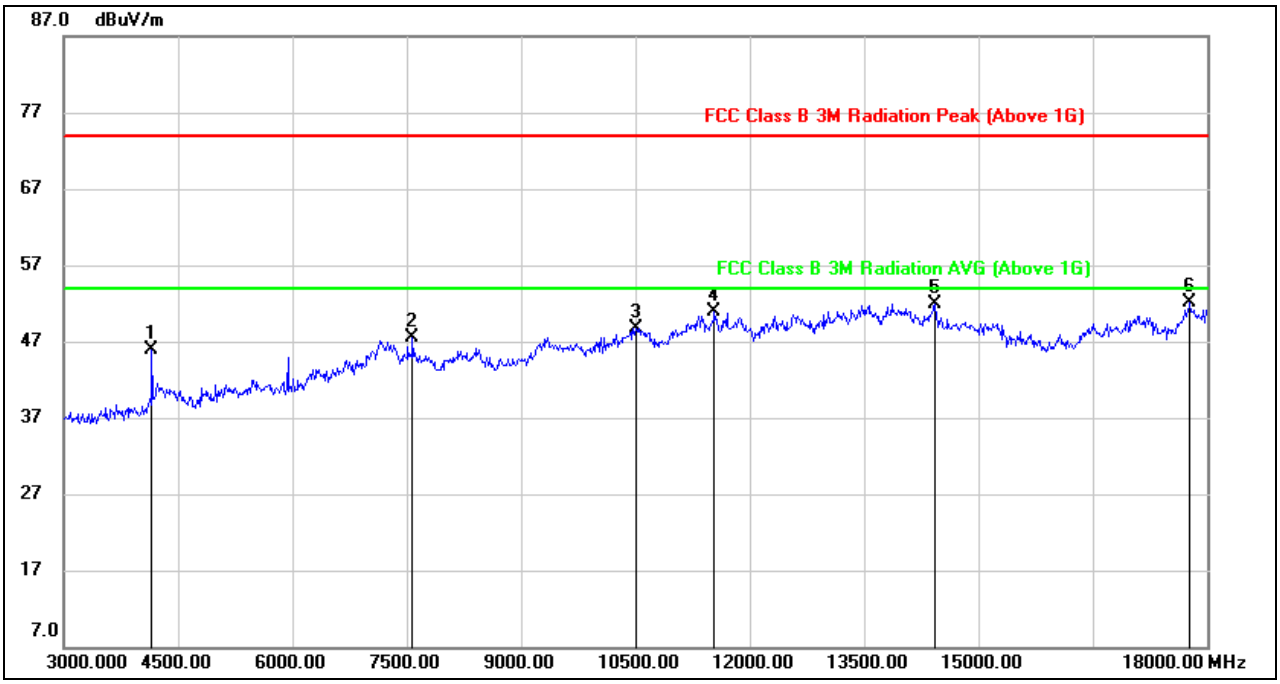
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	48.29	-12.46	35.83	74.00	-38.17	peak
2	1486.000	47.24	-12.28	34.96	74.00	-39.04	peak
3	1782.000	51.68	-11.19	40.49	74.00	-33.51	peak
4	2280.000	45.54	-7.36	38.18	74.00	-35.82	peak
5	2402.000	48.64	-8.01	40.63	74.00	-33.37	peak
6	3000.000	50.77	-6.60	44.17	74.00	-29.83	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. Peak: Peak detector.

3GHz~18GHz

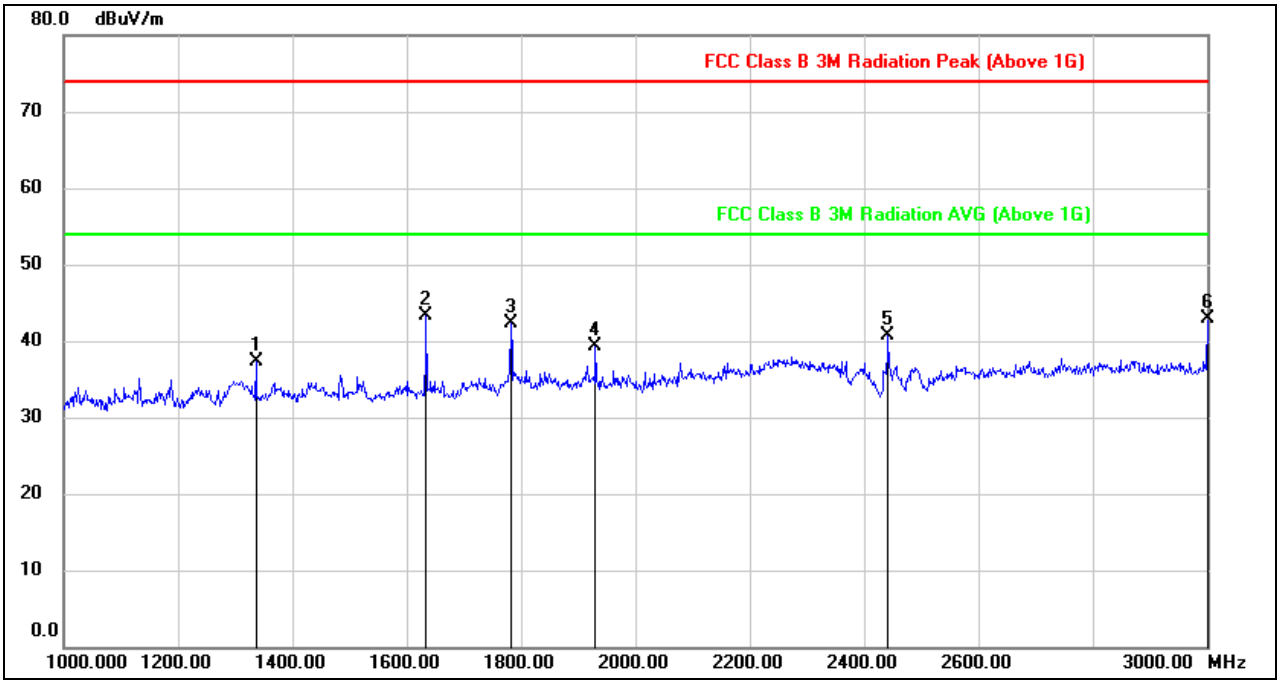


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4155.000	48.26	-2.38	45.88	74.00	-28.12	peak
2	7575.000	39.31	8.17	47.48	74.00	-26.52	peak
3	10515.000	35.00	13.78	48.78	74.00	-25.22	peak
4	11535.000	34.65	16.23	50.88	74.00	-23.12	peak
5	14430.000	31.99	19.97	51.96	74.00	-22.04	peak
6	17775.000	25.60	26.57	52.17	74.00	-21.83	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

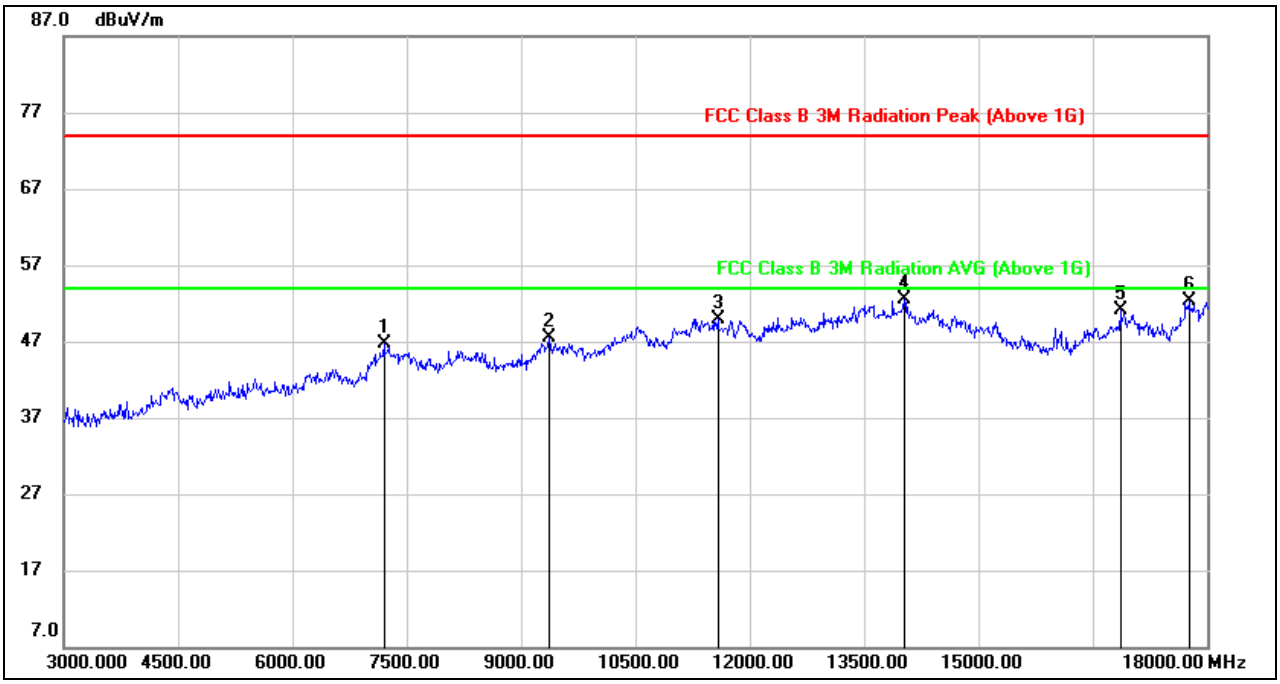
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	49.76	-12.37	37.39	74.00	-36.61	peak
2	1634.000	55.20	-11.83	43.37	74.00	-30.63	peak
3	1782.000	53.54	-11.19	42.35	74.00	-31.65	peak
4	1930.000	50.06	-10.70	39.36	74.00	-34.64	peak
5	2441.000	49.00	-8.31	40.69	74.00	-33.31	peak
6	3000.000	49.45	-6.60	42.85	74.00	-31.15	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. Peak: Peak detector.

3GHz~18GHz

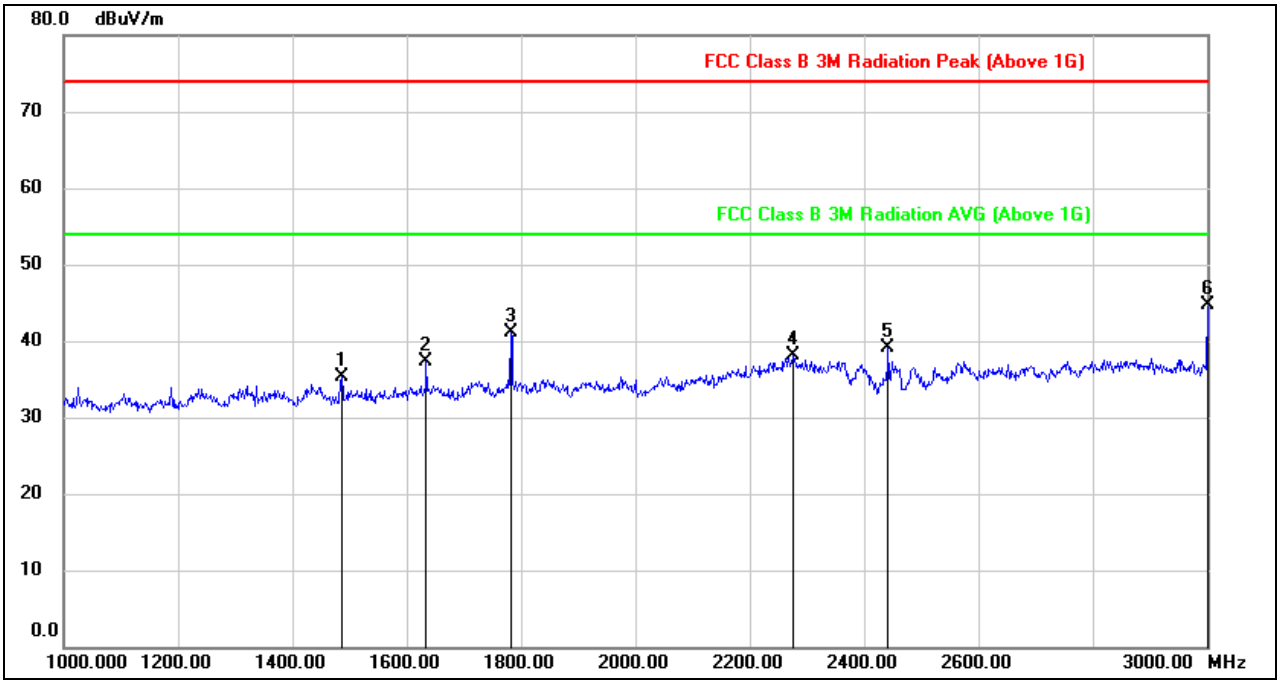


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7200.000	38.89	7.75	46.64	74.00	-27.36	peak
2	9375.000	36.59	10.83	47.42	74.00	-26.58	peak
3	11580.000	33.81	16.09	49.90	74.00	-24.10	peak
4	14025.000	31.92	20.62	52.54	74.00	-21.46	peak
5	16860.000	30.35	20.71	51.06	74.00	-22.94	peak
6	17760.000	26.26	25.99	52.25	74.00	-21.75	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

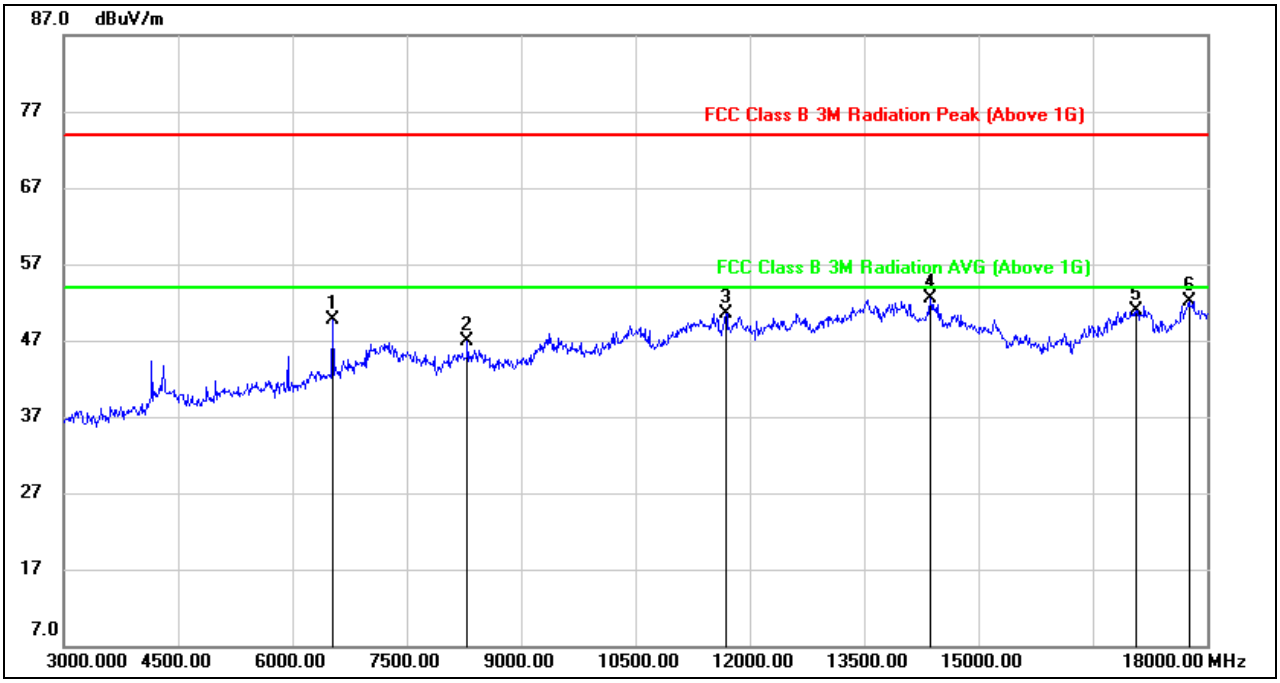
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1486.000	47.52	-12.28	35.24	74.00	-38.76	peak
2	1634.000	49.17	-11.83	37.34	74.00	-36.66	peak
3	1782.000	52.22	-11.19	41.03	74.00	-32.97	peak
4	2276.000	45.42	-7.39	38.03	74.00	-35.97	peak
5	2441.000	47.34	-8.21	39.13	74.00	-34.87	peak
6	3000.000	51.30	-6.60	44.70	74.00	-29.30	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. Peak: Peak detector.

3GHz~18GHz

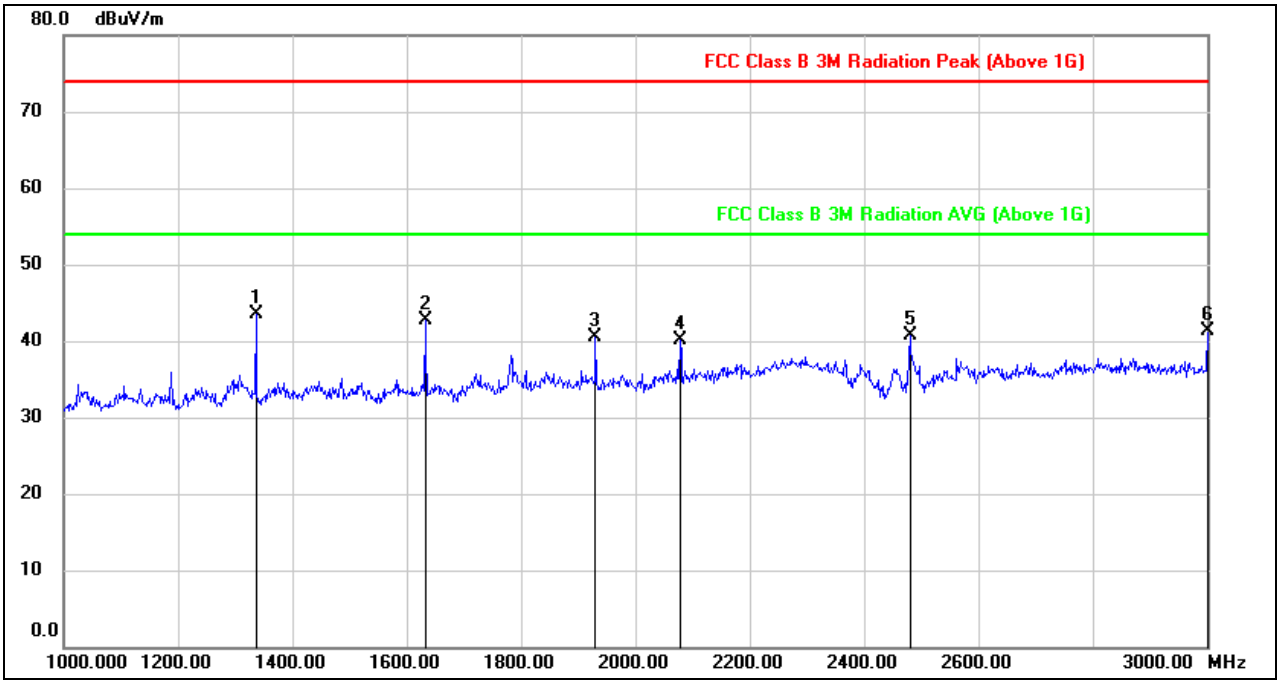


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6525.000	44.54	5.11	49.65	74.00	-24.35	peak
2	8295.000	38.48	8.44	46.92	74.00	-27.08	peak
3	11685.000	33.96	16.55	50.51	74.00	-23.49	peak
4	14370.000	32.13	20.34	52.47	74.00	-21.53	peak
5	17070.000	28.17	22.73	50.90	74.00	-23.10	peak
6	17760.000	25.63	26.39	52.02	74.00	-21.98	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

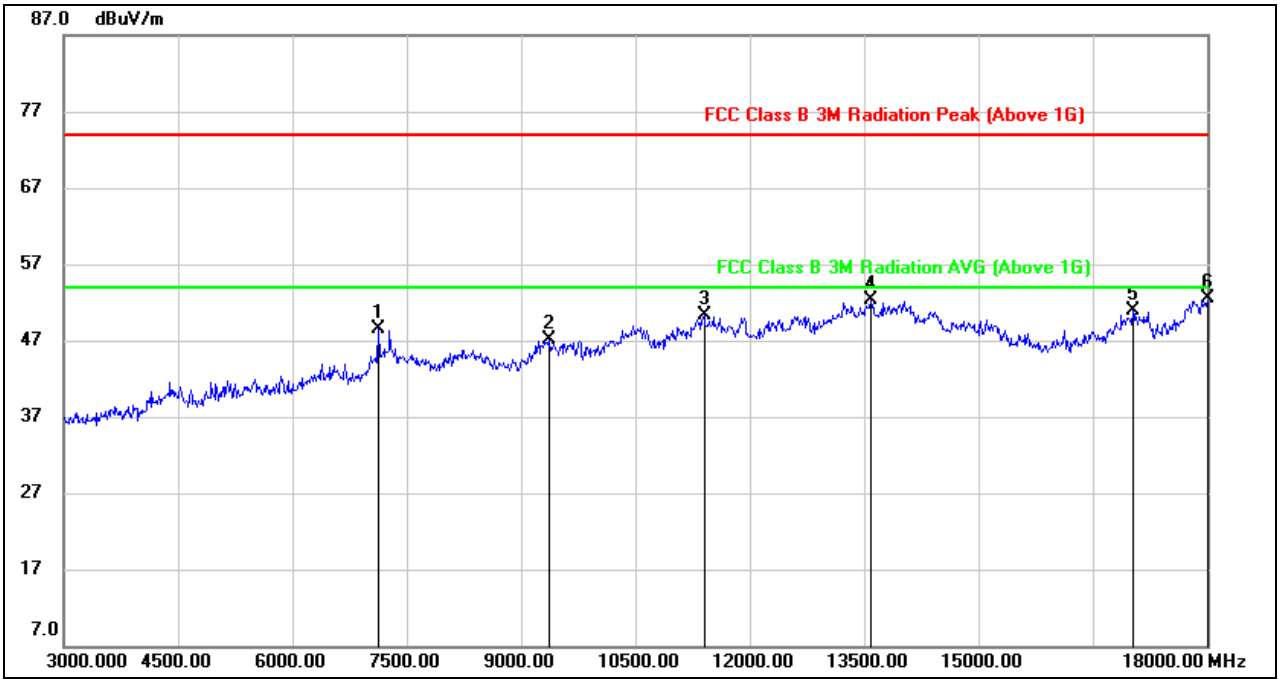
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	55.89	-12.37	43.52	74.00	-30.48	peak
2	1632.000	54.61	-11.85	42.76	74.00	-31.24	peak
3	1930.000	51.16	-10.70	40.46	74.00	-33.54	peak
4	2078.000	49.90	-9.85	40.05	74.00	-33.95	peak
5	2480.000	49.11	-8.38	40.73	74.00	-33.27	peak
6	3000.000	47.97	-6.60	41.37	74.00	-32.63	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. Peak: Peak detector.

3GHz~18GHz

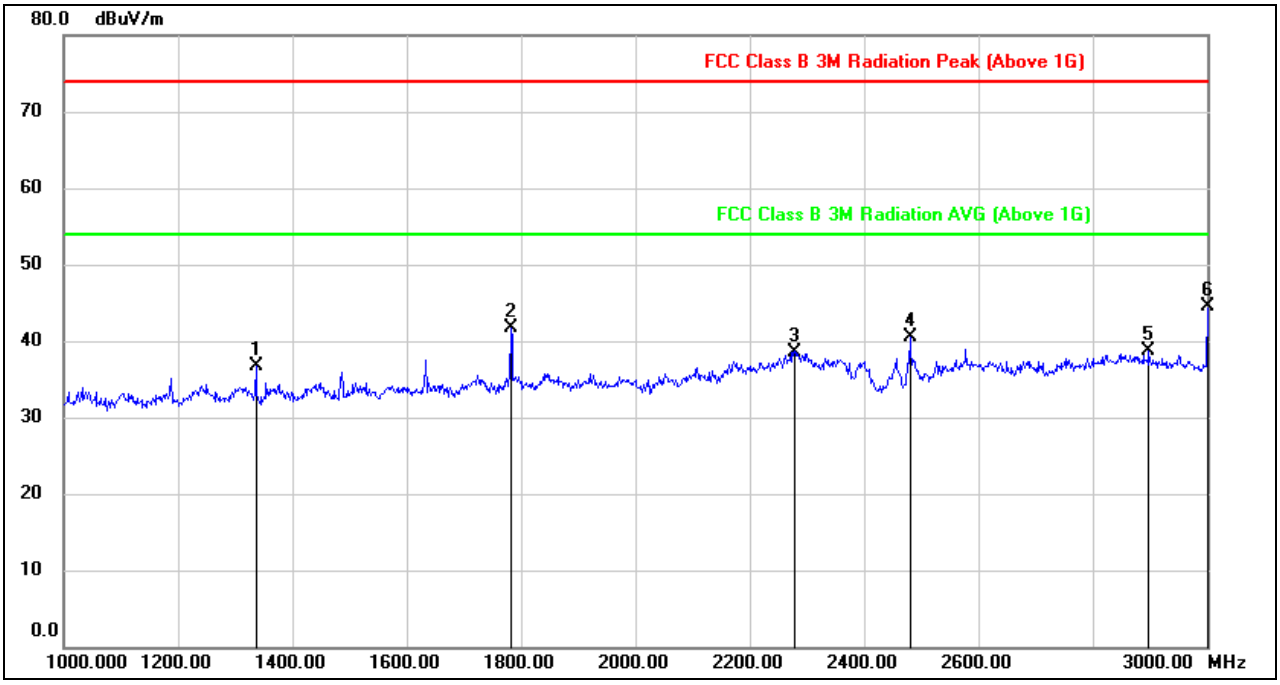


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7125.000	41.05	7.52	48.57	74.00	-25.43	peak
2	9360.000	36.18	10.83	47.01	74.00	-26.99	peak
3	11400.000	34.56	15.69	50.25	74.00	-23.75	peak
4	13590.000	31.74	20.51	52.25	74.00	-21.75	peak
5	17025.000	28.81	22.03	50.84	74.00	-23.16	peak
6	18000.000	25.41	27.06	52.47	74.00	-21.53	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)

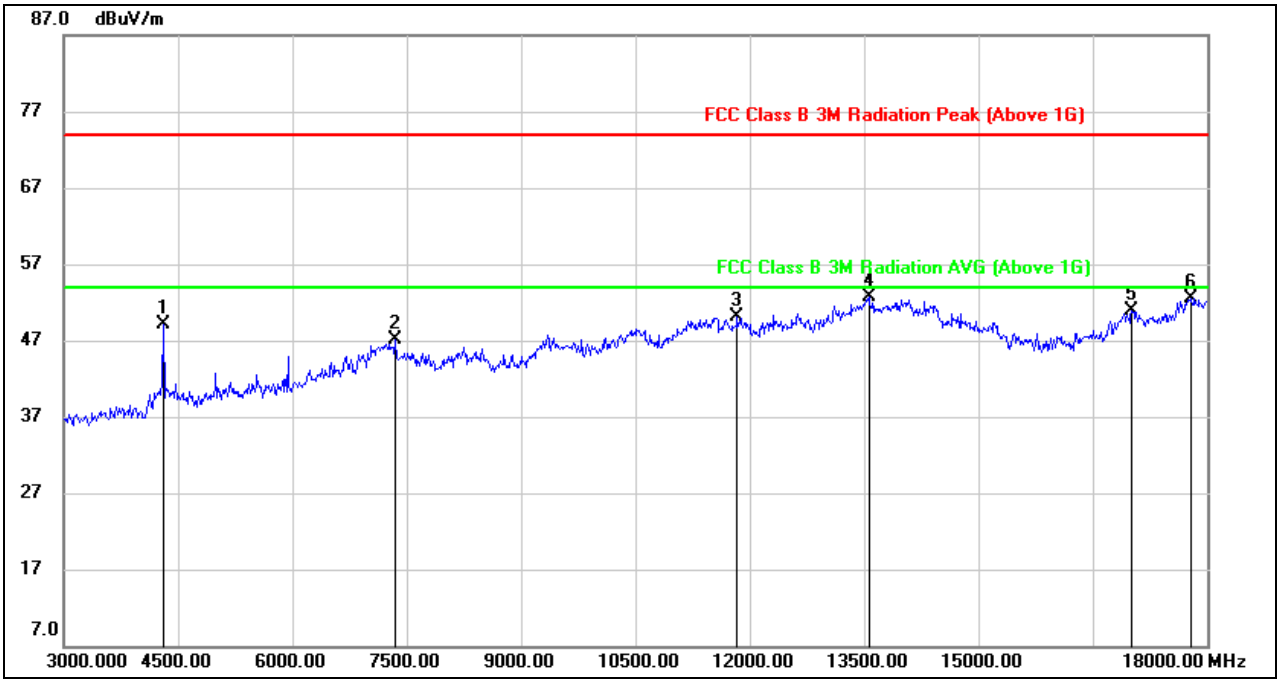
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	49.18	-12.46	36.72	74.00	-37.28	peak
2	1782.000	52.97	-11.19	41.78	74.00	-32.22	peak
3	2278.000	45.97	-7.37	38.60	74.00	-35.40	peak
4	2480.000	48.72	-8.28	40.44	74.00	-33.56	peak
5	2898.000	45.15	-6.54	38.61	74.00	-35.39	peak
6	3000.000	51.16	-6.60	44.56	74.00	-29.44	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. Peak: Peak detector.

3GHz~18GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4305.000	50.51	-1.44	49.07	74.00	-24.93	peak
2	7350.000	39.65	7.38	47.03	74.00	-26.97	peak
3	11835.000	33.58	16.61	50.19	74.00	-23.81	peak
4	13560.000	31.87	20.81	52.68	74.00	-21.32	peak
5	17010.000	28.55	22.36	50.91	74.00	-23.09	peak
6	17790.000	25.74	26.76	52.50	74.00	-21.50	peak

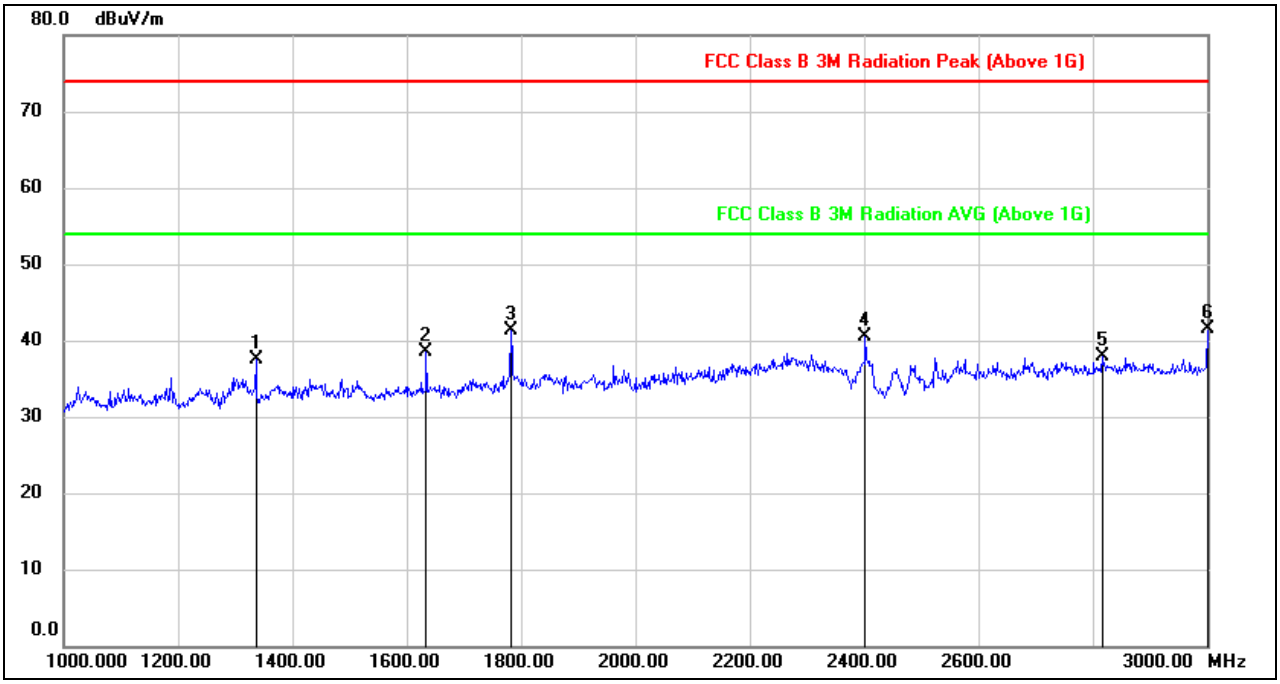
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.

7.3.2. 8DPSK MODE

SPEEDWIRE ANTENNA RESULTS

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

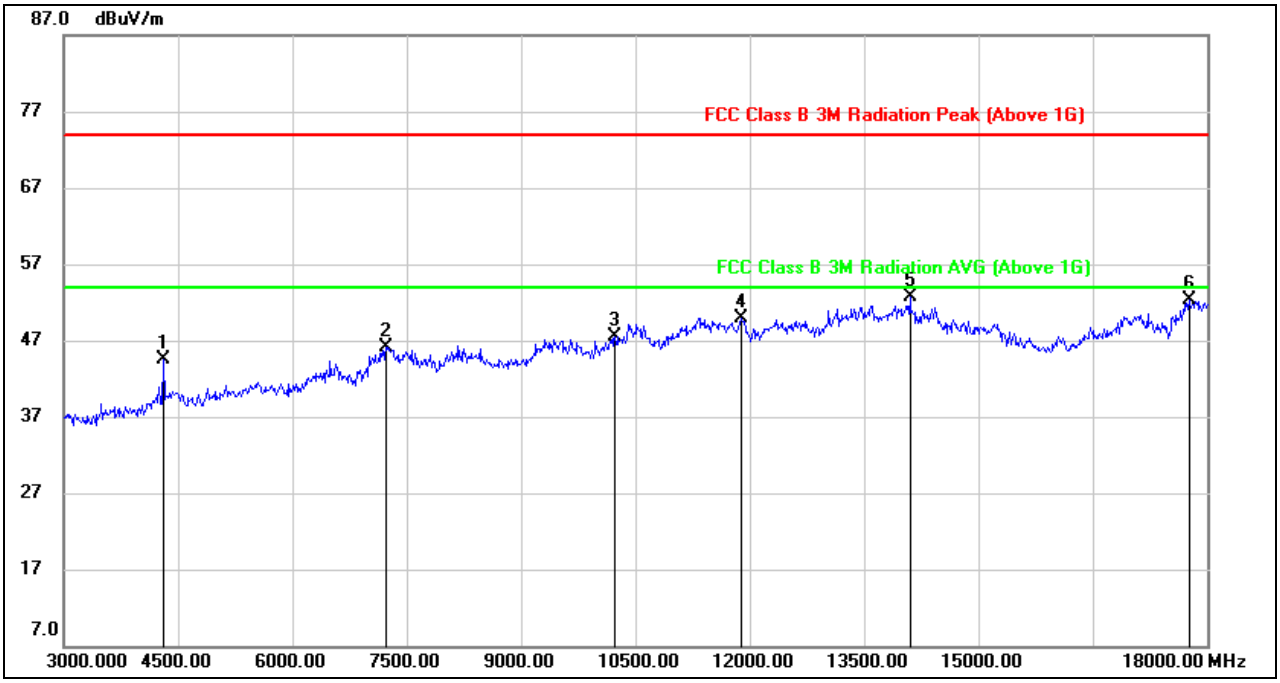
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	49.78	-12.37	37.41	74.00	-36.59	peak
2	1634.000	50.29	-11.83	38.46	74.00	-35.54	peak
3	1782.000	52.44	-11.19	41.25	74.00	-32.75	peak
4	2402.000	48.64	-8.11	40.53	74.00	-33.47	peak
5	2816.000	44.69	-6.88	37.81	74.00	-36.19	peak
6	3000.000	48.13	-6.60	41.53	74.00	-32.47	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. Peak: Peak detector.

3GHz~18GHz

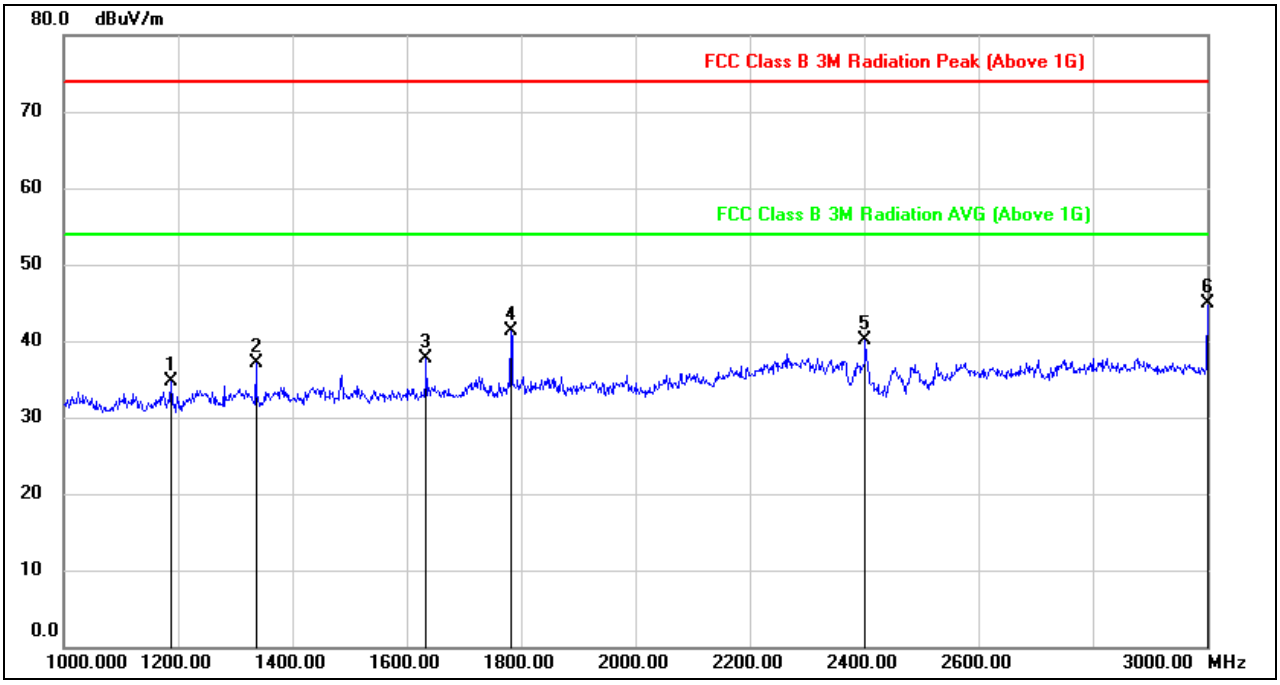


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4305.000	46.04	-1.54	44.50	74.00	-29.50	peak
2	7230.000	38.37	7.81	46.18	74.00	-27.82	peak
3	10230.000	34.97	12.56	47.53	74.00	-26.47	peak
4	11880.000	33.23	16.74	49.97	74.00	-24.03	peak
5	14100.000	32.02	20.67	52.69	74.00	-21.31	peak
6	17760.000	26.24	25.99	52.23	74.00	-21.77	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

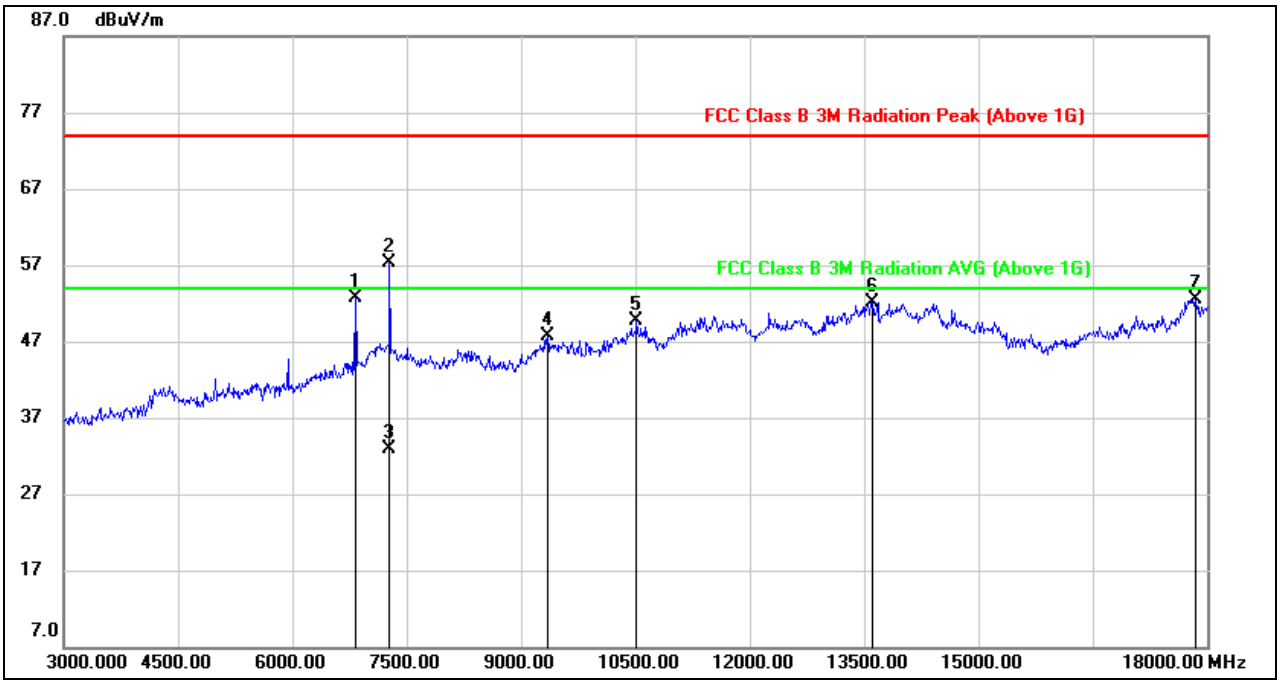
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1188.000	48.01	-13.26	34.75	74.00	-39.25	peak
2	1336.000	49.59	-12.46	37.13	74.00	-36.87	peak
3	1634.000	49.57	-11.83	37.74	74.00	-36.26	peak
4	1782.000	52.44	-11.19	41.25	74.00	-32.75	peak
5	2402.000	48.15	-8.01	40.14	74.00	-33.86	peak
6	3000.000	51.42	-6.60	44.82	74.00	-29.18	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. Peak: Peak detector.

3GHz~18GHz

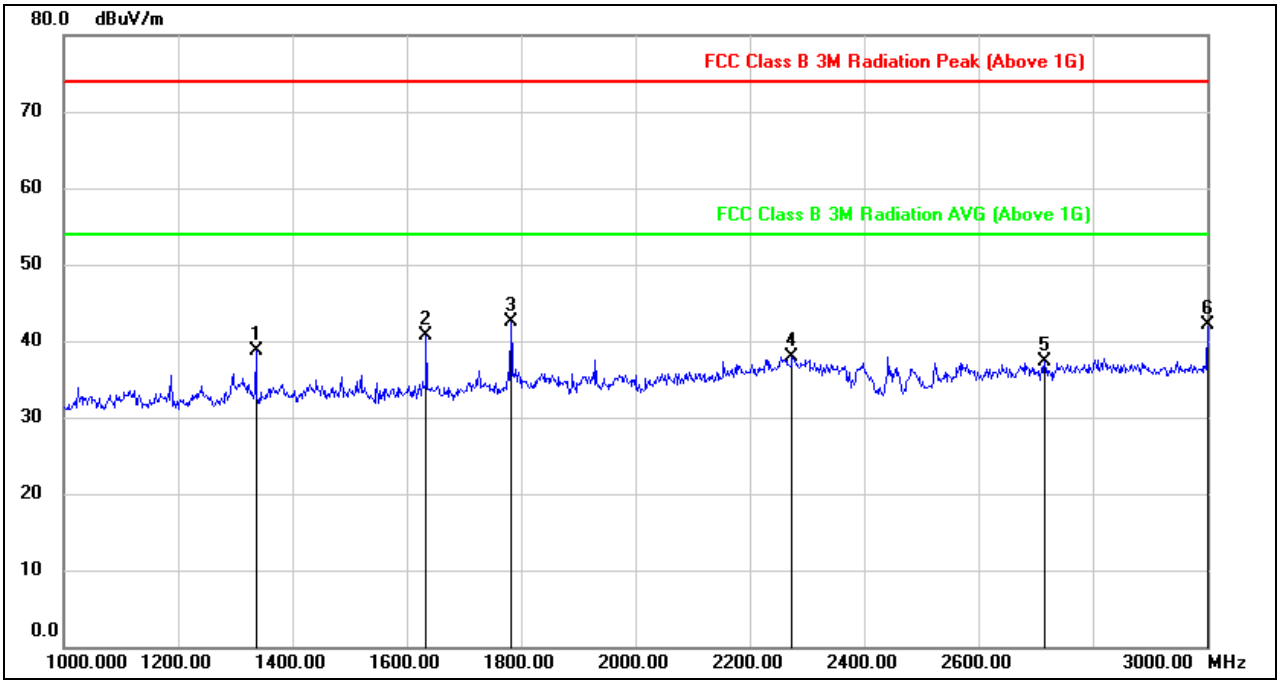


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	6825.000	46.78	5.91	52.69	74.00	-21.31	peak
2	7275.000	49.52	7.81	57.33	74.00	-16.67	peak
3	7275.000	25.00	7.81	32.81	54.00	-21.19	AVG
4	9345.000	36.81	10.93	47.74	74.00	-26.26	peak
5	10515.000	35.99	13.78	49.77	74.00	-24.23	peak
6	13605.000	31.78	20.39	52.17	74.00	-21.83	peak
7	17850.000	26.46	26.09	52.55	74.00	-21.45	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

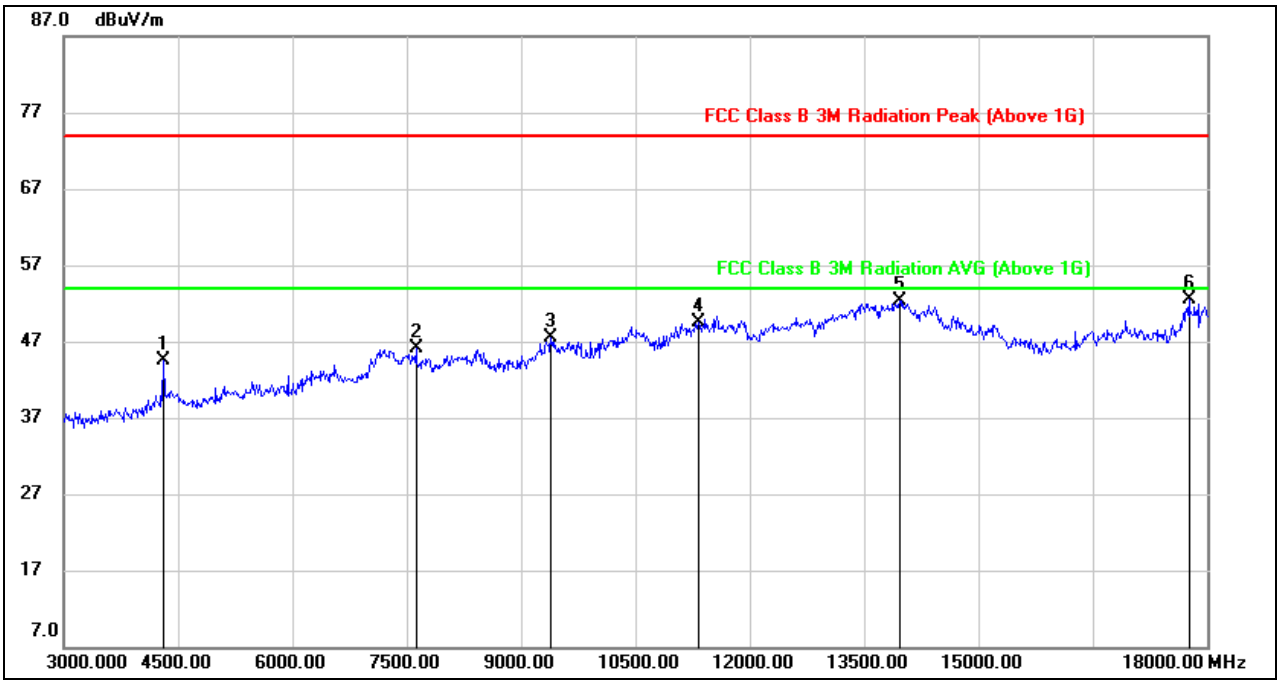
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	51.13	-12.37	38.76	74.00	-35.24	peak
2	1634.000	52.53	-11.83	40.70	74.00	-33.30	peak
3	1782.000	53.77	-11.19	42.58	74.00	-31.42	peak
4	2274.000	45.42	-7.50	37.92	74.00	-36.08	peak
5	2716.000	44.69	-7.48	37.21	74.00	-36.79	peak
6	3000.000	48.62	-6.60	42.02	74.00	-31.98	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. Peak: Peak detector.

3GHz~18GHz

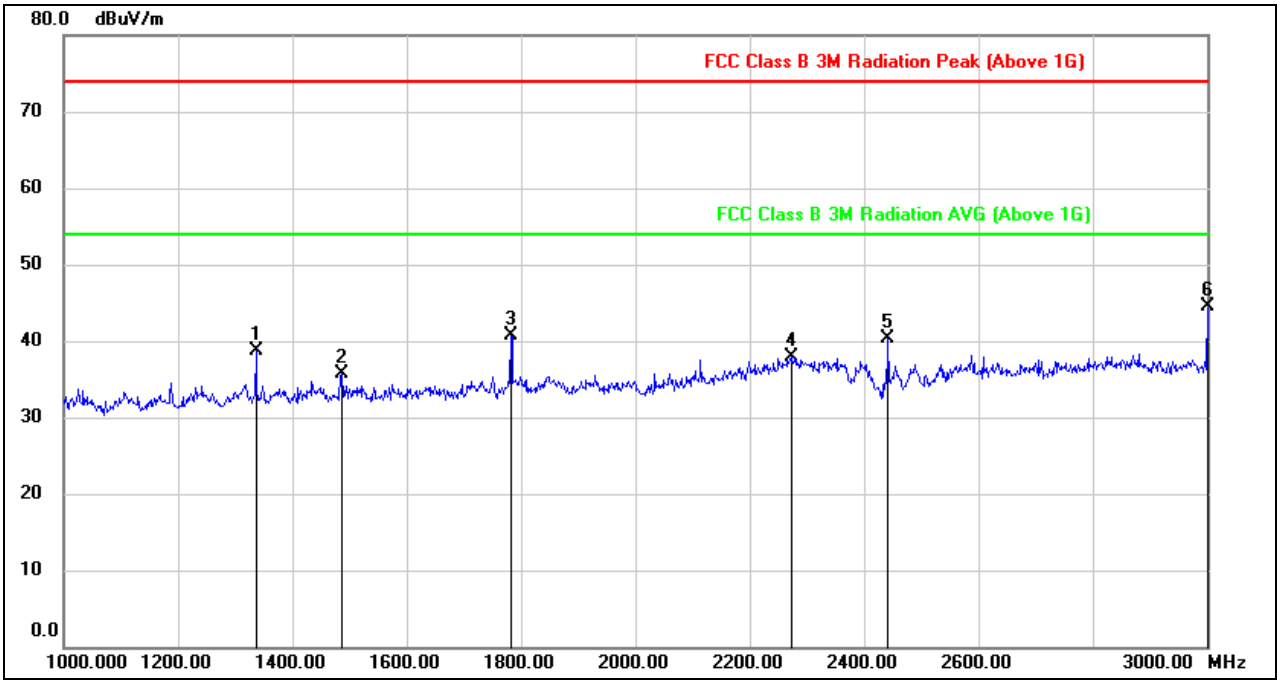


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4305.000	46.14	-1.54	44.60	74.00	-29.40	peak
2	7620.000	38.09	8.11	46.20	74.00	-27.80	peak
3	9390.000	36.75	10.82	47.57	74.00	-26.43	peak
4	11325.000	34.34	15.25	49.59	74.00	-24.41	peak
5	13965.000	31.69	20.66	52.35	74.00	-21.65	peak
6	17760.000	26.54	25.99	52.53	74.00	-21.47	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

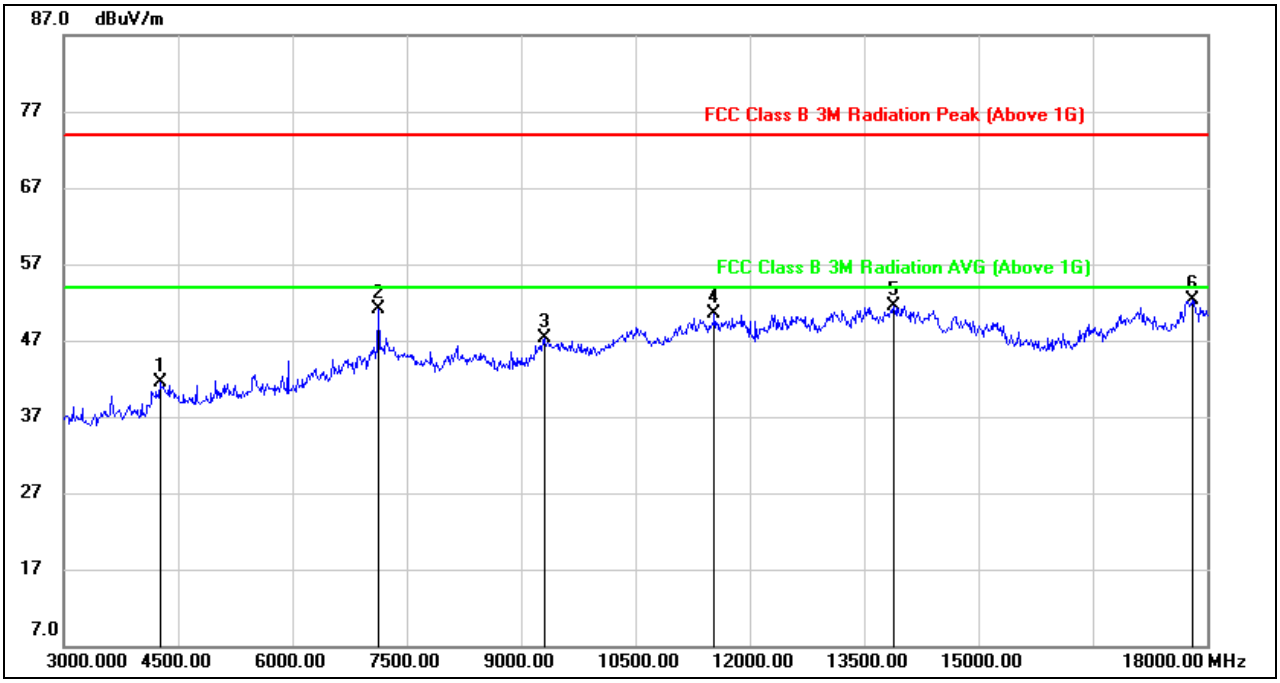
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	51.07	-12.46	38.61	74.00	-35.39	peak
2	1486.000	48.03	-12.28	35.75	74.00	-38.25	peak
3	1782.000	51.97	-11.19	40.78	74.00	-33.22	peak
4	2272.000	45.35	-7.42	37.93	74.00	-36.07	peak
5	2442.000	48.55	-8.21	40.34	74.00	-33.66	peak
6	3000.000	51.17	-6.60	44.57	74.00	-29.43	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. Peak: Peak detector.

3GHz~18GHz

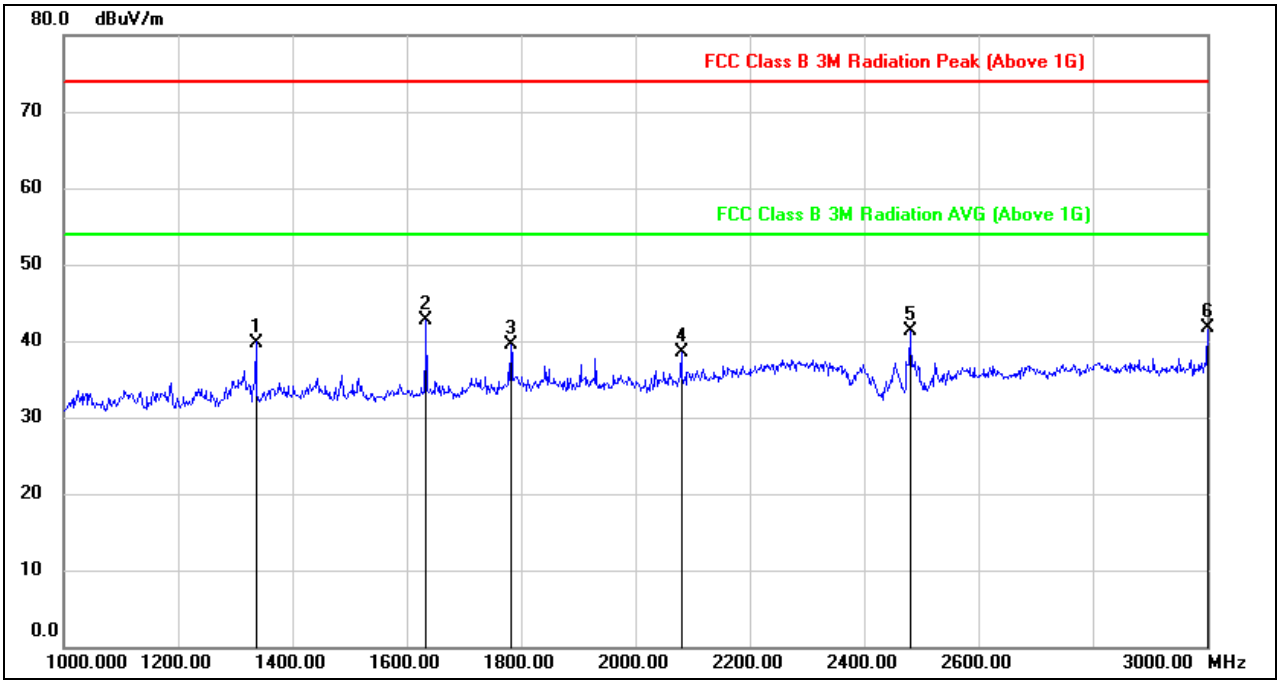


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4260.000	43.23	-1.80	41.43	74.00	-32.57	peak
2	7125.000	43.44	7.62	51.06	74.00	-22.94	peak
3	9300.000	36.37	10.86	47.23	74.00	-26.77	peak
4	11535.000	34.30	16.23	50.53	74.00	-23.47	peak
5	13890.000	30.66	20.87	51.53	74.00	-22.47	peak
6	17805.000	25.47	26.80	52.27	74.00	-21.73	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

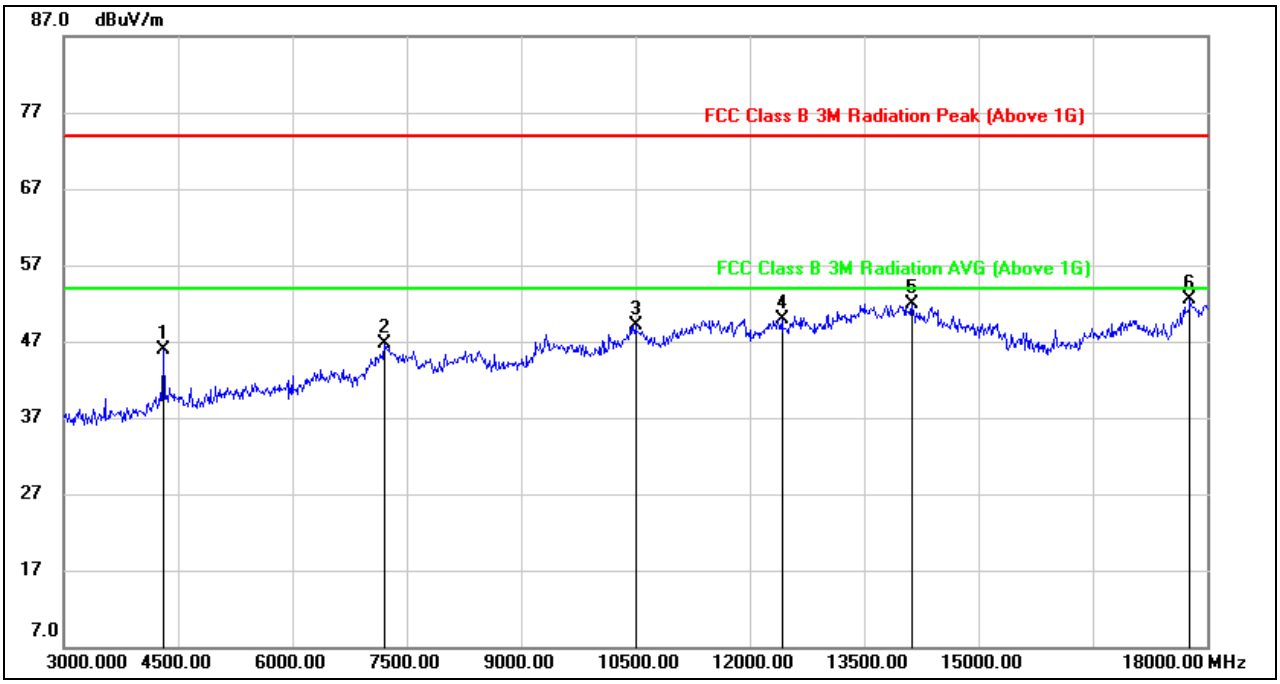
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	52.17	-12.37	39.80	74.00	-34.20	peak
2	1634.000	54.59	-11.83	42.76	74.00	-31.24	peak
3	1782.000	50.64	-11.19	39.45	74.00	-34.55	peak
4	2080.000	48.29	-9.82	38.47	74.00	-35.53	peak
5	2480.000	49.63	-8.38	41.25	74.00	-32.75	peak
6	3000.000	48.40	-6.60	41.80	74.00	-32.20	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. Peak: Peak detector.

3GHz~18GHz

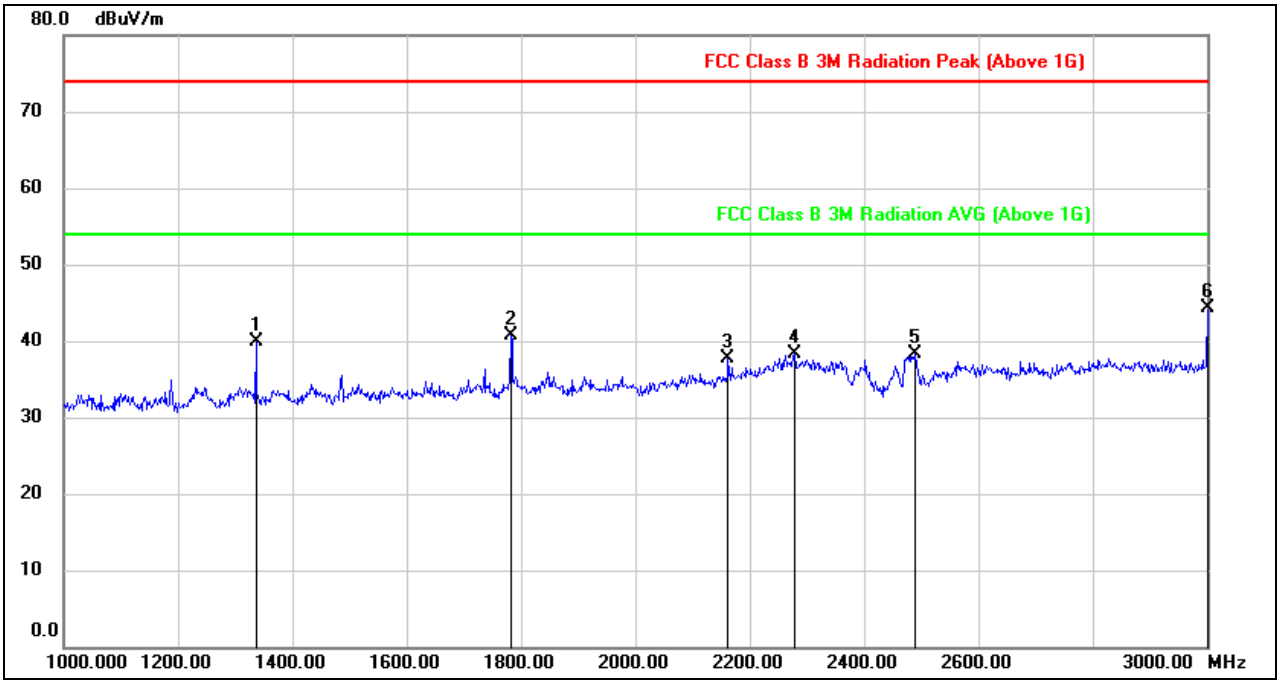


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4305.000	47.41	-1.54	45.87	74.00	-28.13	peak
2	7200.000	39.05	7.75	46.80	74.00	-27.20	peak
3	10500.000	35.36	13.71	49.07	74.00	-24.93	peak
4	12420.000	33.49	16.43	49.92	74.00	-24.08	peak
5	14130.000	31.42	20.52	51.94	74.00	-22.06	peak
6	17775.000	26.32	26.17	52.49	74.00	-21.51	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. Peak: Peak detector.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)

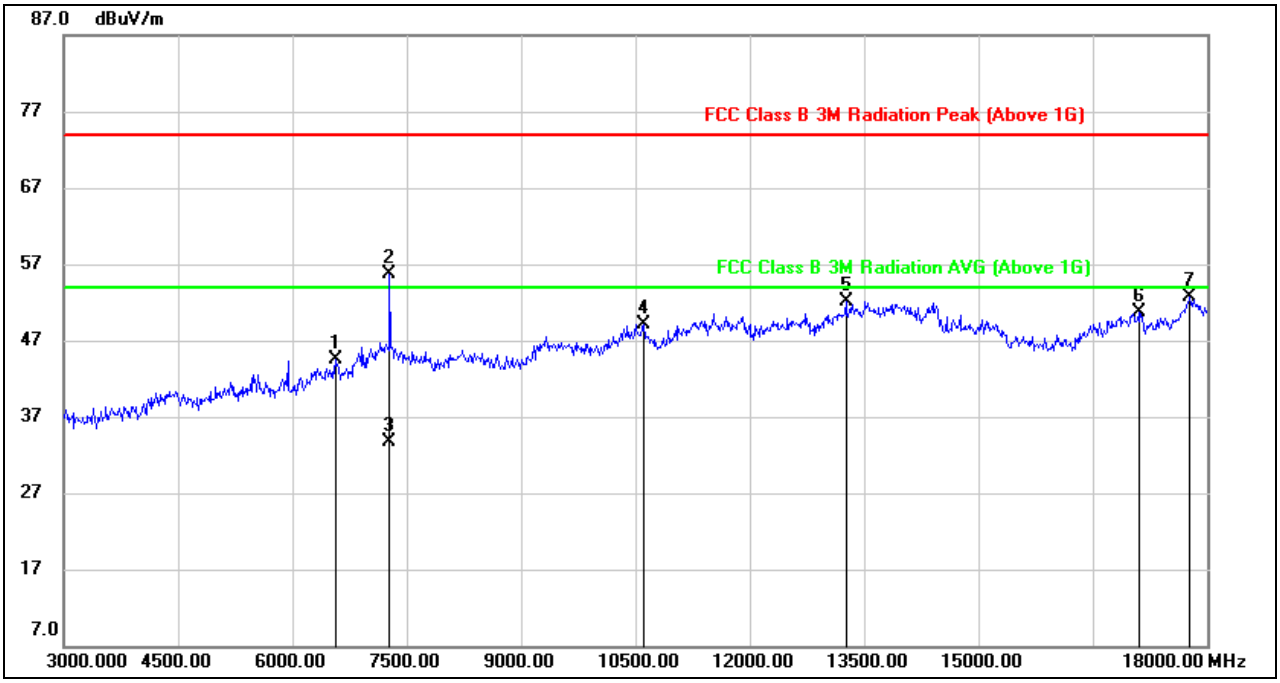
1GHz~3GHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1336.000	52.37	-12.46	39.91	74.00	-34.09	peak
2	1782.000	51.90	-11.19	40.71	74.00	-33.29	peak
3	2162.000	46.62	-8.85	37.77	74.00	-36.23	peak
4	2278.000	45.58	-7.37	38.21	74.00	-35.79	peak
5	2490.000	46.57	-8.29	38.28	74.00	-35.72	peak
6	3000.000	50.84	-6.60	44.24	74.00	-29.76	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. Peak: Peak detector.

3GHz~18GHz



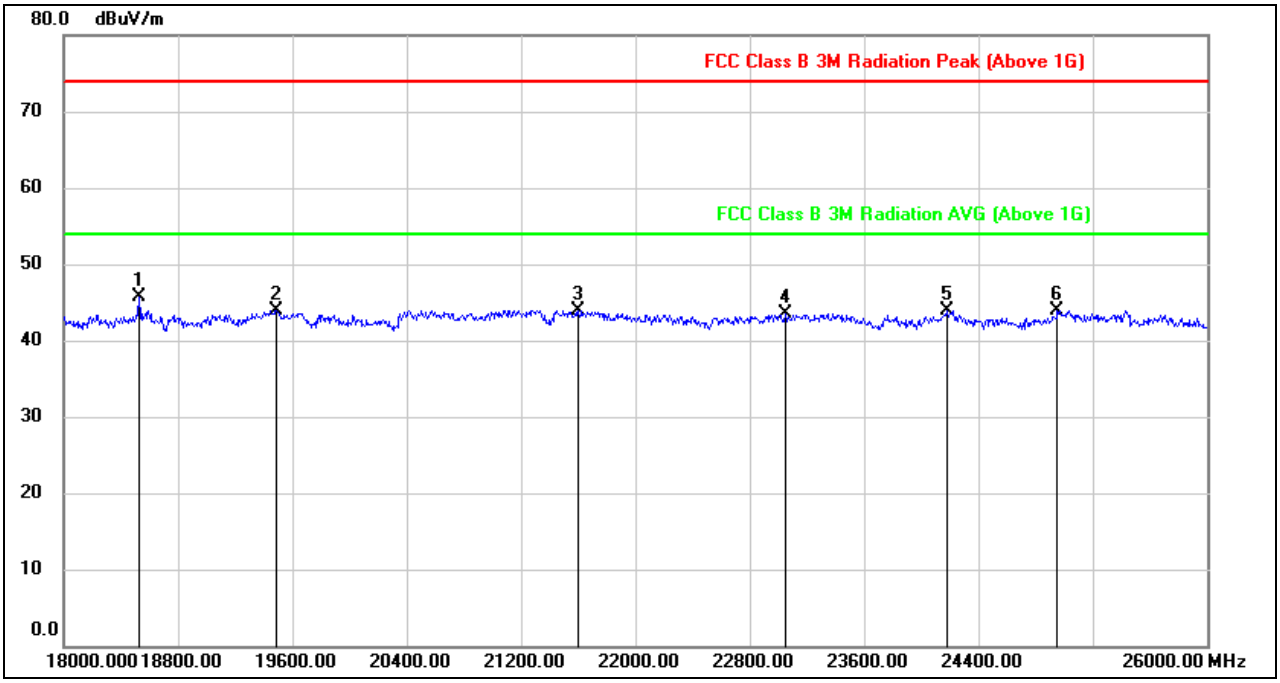
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6570.000	39.04	5.47	44.51	74.00	-29.49	peak
2	7275.000	47.93	7.81	55.74	74.00	-18.26	peak
3	7275.000	25.80	7.81	33.61	54.00	-20.39	AVG
4	10605.000	35.34	13.80	49.14	74.00	-24.86	peak
5	13260.000	32.69	19.42	52.11	74.00	-21.89	peak
6	17100.000	27.80	22.84	50.64	74.00	-23.36	peak
7	17775.000	26.09	26.57	52.66	74.00	-21.34	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. Peak: Peak detector.

7.4. SPURIOUS EMISSIONS 18G ~ 26GHz

Mode: GFSK

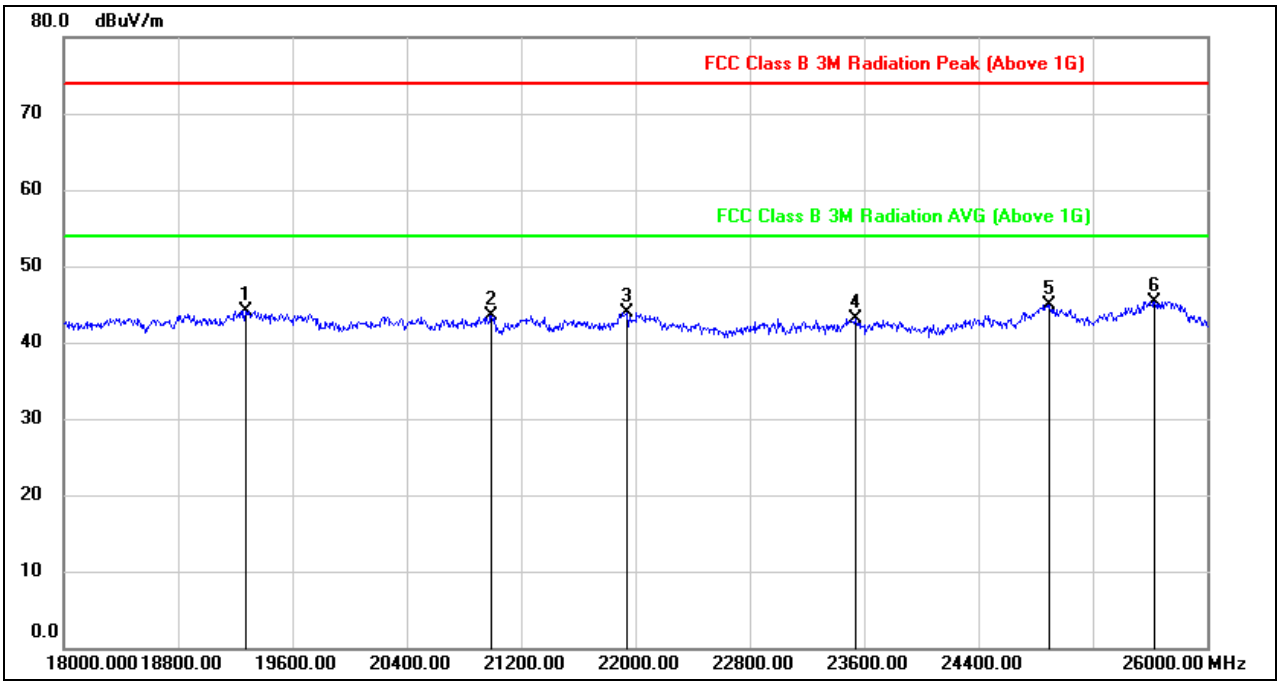
SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18528.000	50.91	-5.26	45.65	74.00	-28.35	peak
2	19488.000	49.55	-5.56	43.99	74.00	-30.01	peak
3	21600.000	48.52	-4.54	43.98	74.00	-30.02	peak
4	23048.000	46.93	-3.43	43.50	74.00	-30.50	peak
5	24176.000	46.69	-2.80	43.89	74.00	-30.11	peak
6	24952.000	46.13	-2.14	43.99	74.00	-30.01	peak

Note: 1. Peak Result= Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. All the modes had been tested, but only the worst data were recorded in the report.

SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19272.000	49.73	-5.57	44.16	74.00	-29.84	peak
2	20992.000	48.48	-4.88	43.60	74.00	-30.40	peak
3	21944.000	48.42	-4.45	43.97	74.00	-30.03	peak
4	23536.000	46.34	-3.15	43.19	74.00	-30.81	peak
5	24896.000	47.05	-2.19	44.86	74.00	-29.14	peak
6	25632.000	46.56	-1.16	45.40	74.00	-28.60	peak

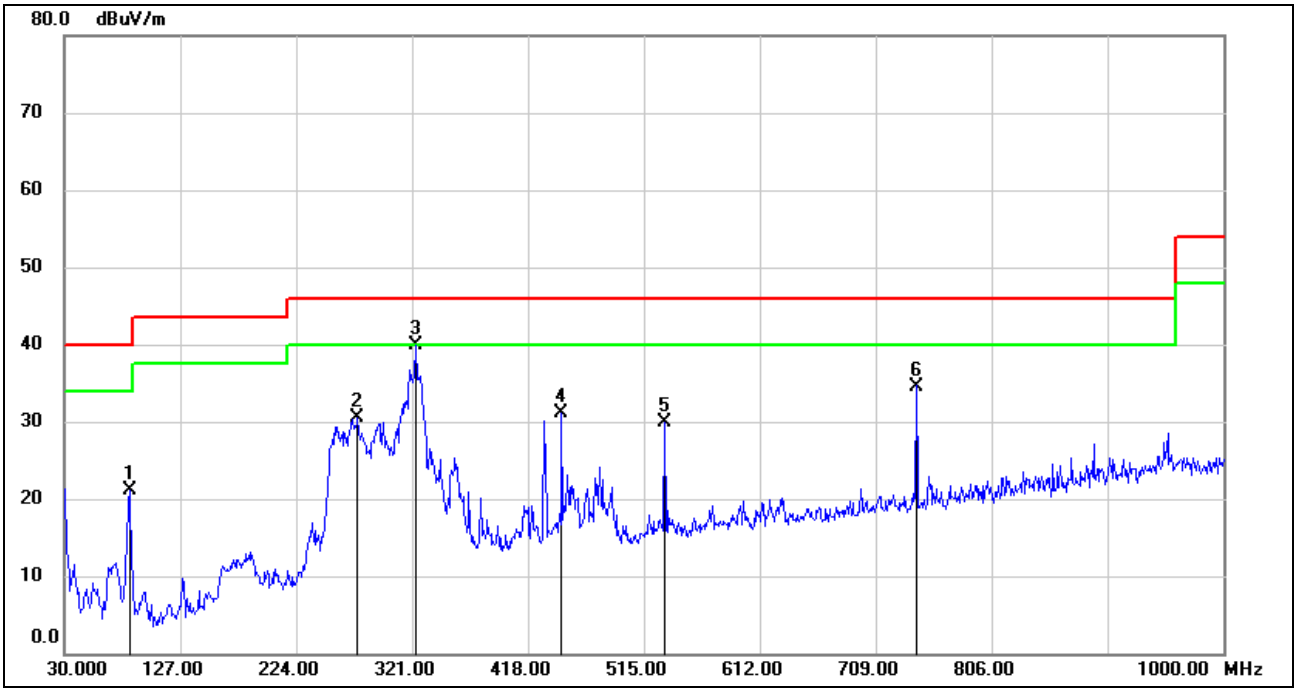
Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. All the modes had been tested, but only the worst data were recorded in the report.

7.5. SPURIOUS EMISSIONS 30M ~ 1 GHz

HUAWEI Box 900 with VAPEL manufacturer's power supply (WORST-CASE CONFIGURATION)

Mode: GFSK

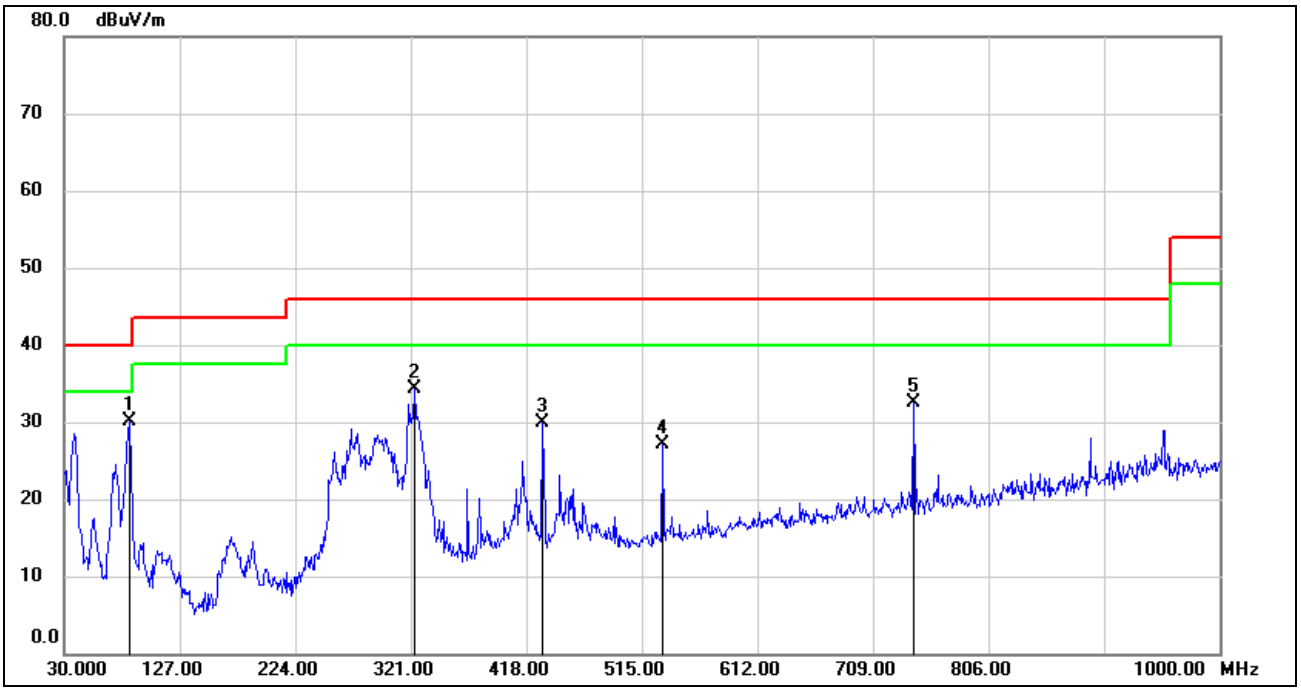
SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	84.3200	41.97	-20.93	21.04	40.00	-18.96	QP
2	275.4100	45.82	-15.28	30.54	46.00	-15.46	QP
3	323.9100	53.70	-13.89	39.81	46.00	-6.19	QP
4	446.1300	42.85	-11.83	31.02	46.00	-14.98	QP
5	532.4600	40.00	-10.12	29.88	46.00	-16.12	QP
6	742.9500	40.98	-6.38	34.60	46.00	-11.40	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
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.

SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	84.3200	51.11	-20.93	30.18	40.00	-9.82	QP
2	323.9100	48.21	-13.89	34.32	46.00	-11.68	QP
3	431.5800	41.98	-12.06	29.92	46.00	-16.08	QP
4	532.4600	37.22	-10.12	27.10	46.00	-18.90	QP
5	742.9500	38.84	-6.38	32.46	46.00	-13.54	QP

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
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: VAPEL and VAPEL manufacturer's power supply were put into HUAWEI Box 900, HUAWEI Box 700 and HUAWEI Box 500 for testing, and found the ASTEC manufacturer's Power Supply and HUAWEI Box 900 combination is the worst-case configuration.

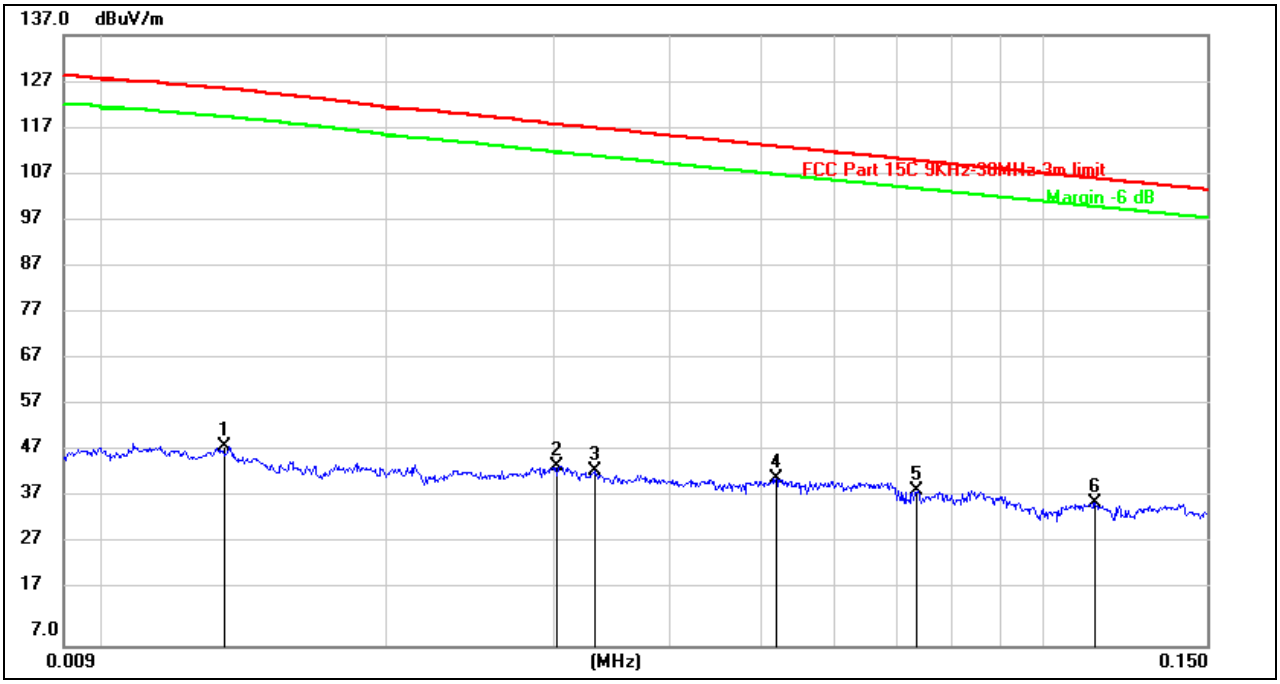
7.6. SPURIOUS EMISSIONS BELOW 30M

HUAWEI Box 900 with VAPEL manufacturer's power supply (WORST-CASE CONFIGURATION)

Mode: GFSK

SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)

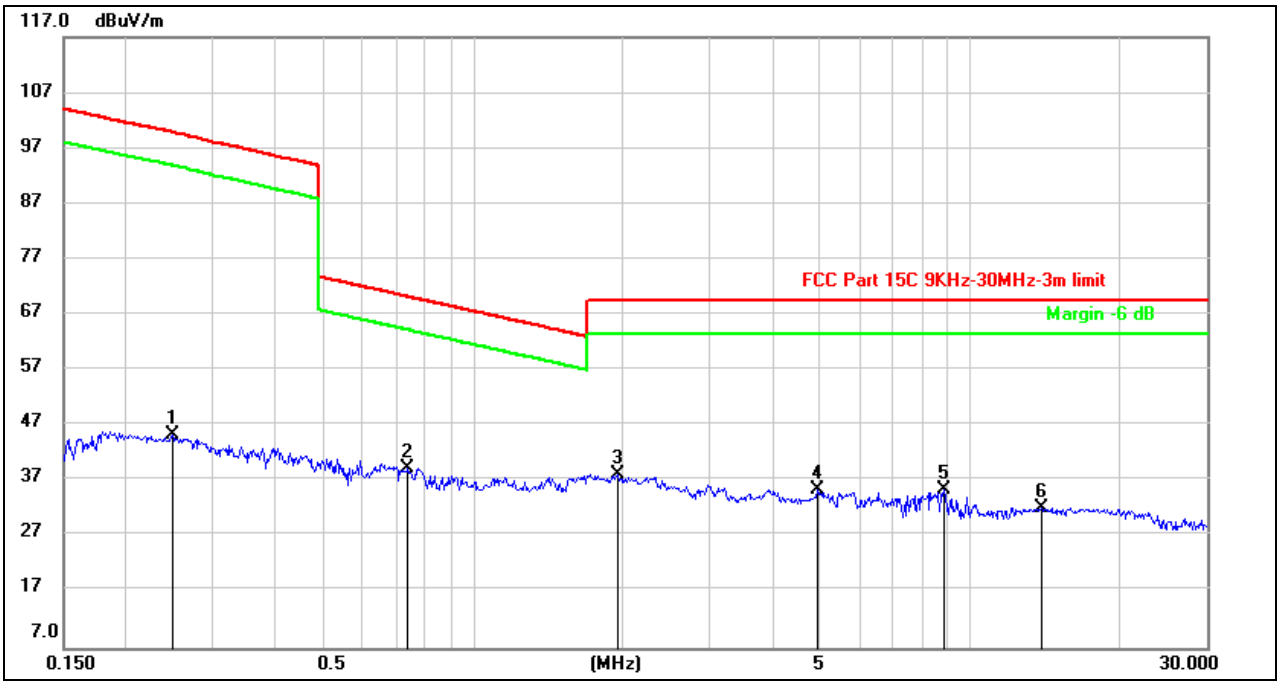
9KHz~ 150KHz



No.	Frequency (KHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0134	29.05	20.24	49.29	125.55	-76.26	peak
2	0.0303	25.00	20.31	45.31	117.98	-72.67	peak
3	0.0331	23.83	20.31	44.14	117.28	-73.14	peak
4	0.0519	22.25	20.31	42.56	113.32	-70.76	peak
5	0.0734	19.64	20.31	39.95	110.31	-70.36	peak
6	0.1139	17.08	20.28	37.36	106.48	-69.12	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. All the modes had been tested, but only the worst data were recorded in the report.
3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

150KHz ~ 30M

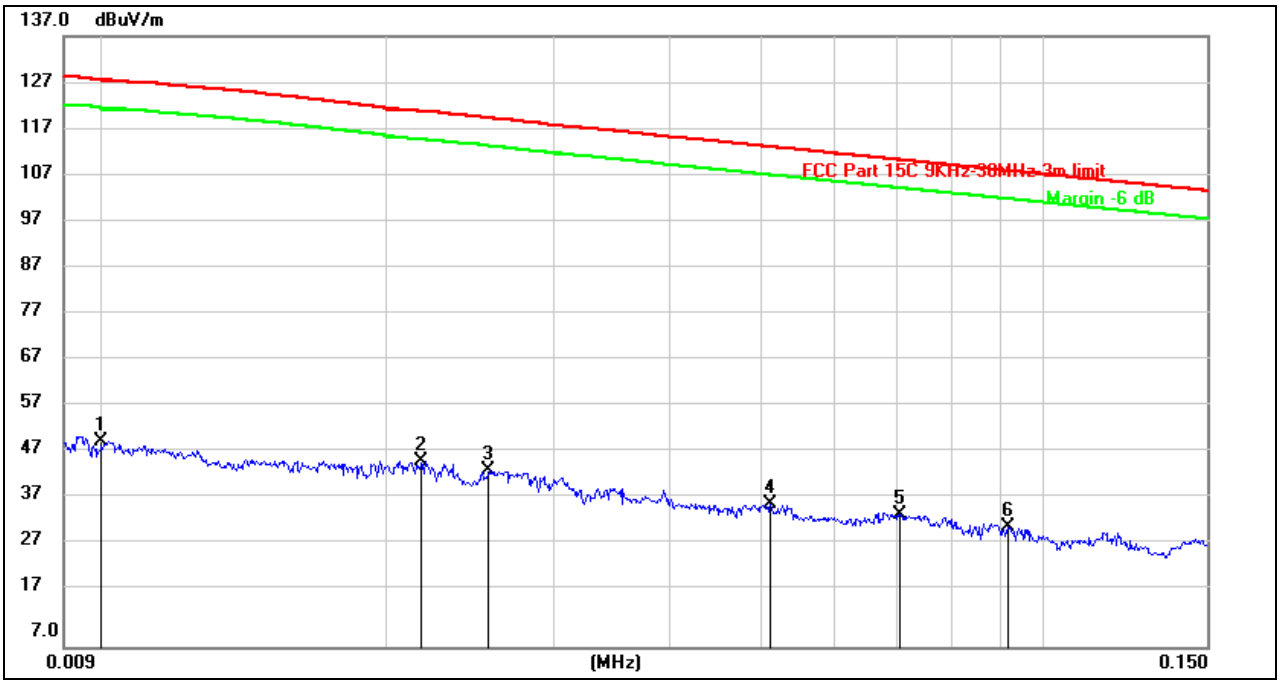


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.2479	24.91	20.32	45.23	99.89	-54.66	peak
2	0.7389	19.01	20.36	39.37	70.25	-30.88	peak
3	1.9593	17.47	20.72	38.19	69.54	-31.35	peak
4	4.9256	14.74	20.84	35.58	69.54	-33.96	peak
5	8.8688	14.44	21.01	35.45	69.54	-34.09	peak
6	13.9146	11.14	20.95	32.09	69.54	-37.45	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. All the modes had been tested, but only the worst data were recorded in the report.
3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)

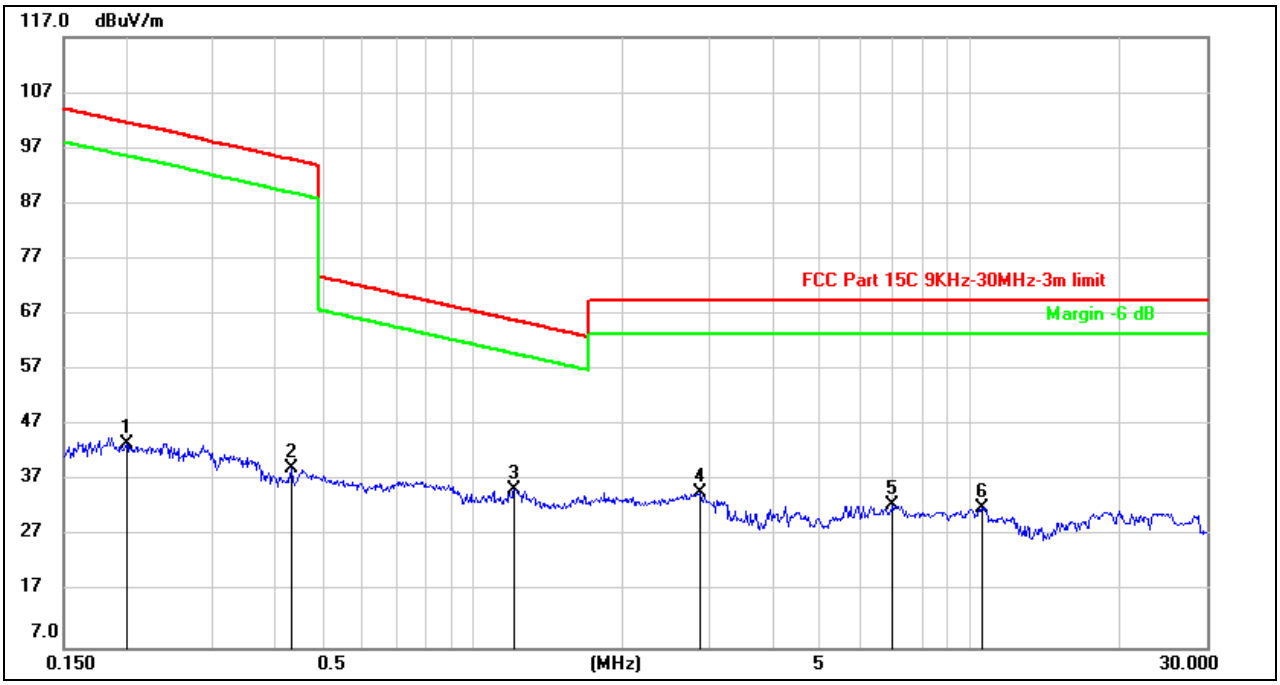
9KHz~ 150KHz



No.	Frequency (KHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0100	30.53	20.21	50.74	127.60	-76.86	peak
2	0.0217	26.28	20.31	46.59	120.98	-74.39	peak
3	0.0256	24.10	20.31	44.41	119.61	-75.20	peak
4	0.0512	17.23	20.31	37.54	113.43	-75.89	peak
5	0.0704	14.89	20.31	35.20	110.65	-75.45	peak
6	0.0918	12.33	20.25	32.58	108.35	-75.77	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. All the modes had been tested, but only the worst data were recorded in the report.
3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

150KHz ~ 30M



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.2006	23.36	20.37	43.73	101.56	-57.83	peak
2	0.4304	18.93	20.27	39.20	94.97	-55.77	peak
3	1.2096	15.03	20.44	35.47	65.95	-30.48	peak
4	2.8540	14.04	20.88	34.92	69.54	-34.62	peak
5	6.9878	11.67	20.92	32.59	69.54	-36.95	peak
6	10.5638	11.08	21.05	32.13	69.54	-37.41	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. All the modes had been tested, but only the worst data were recorded in the report.
3. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

Note: VAPEL and VAPEL manufacturer's power supply were put into HUAWEI Box 900, HUAWEI Box 700 and HUAWEI Box 500 for testing, and found the ASTEC manufacturer's Power Supply and HUAWEI Box 900 combination is the worst-case configuration.

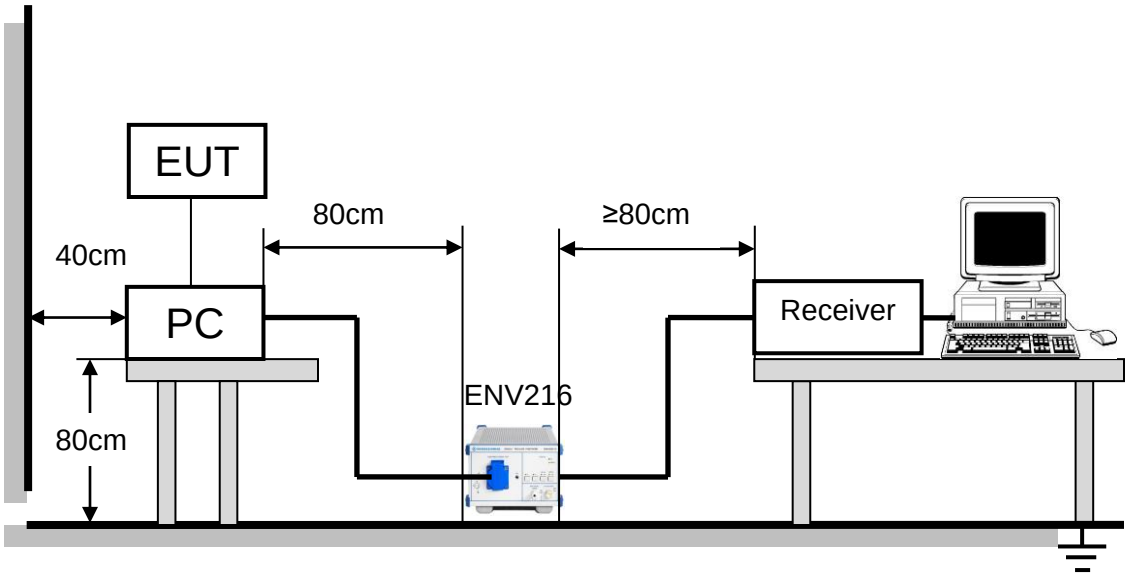
8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

Please refer to FCC §15.207 (a) and RSS-Gen Clause 8.8

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 80cm 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 7 and 13 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 ENVIRONMENT

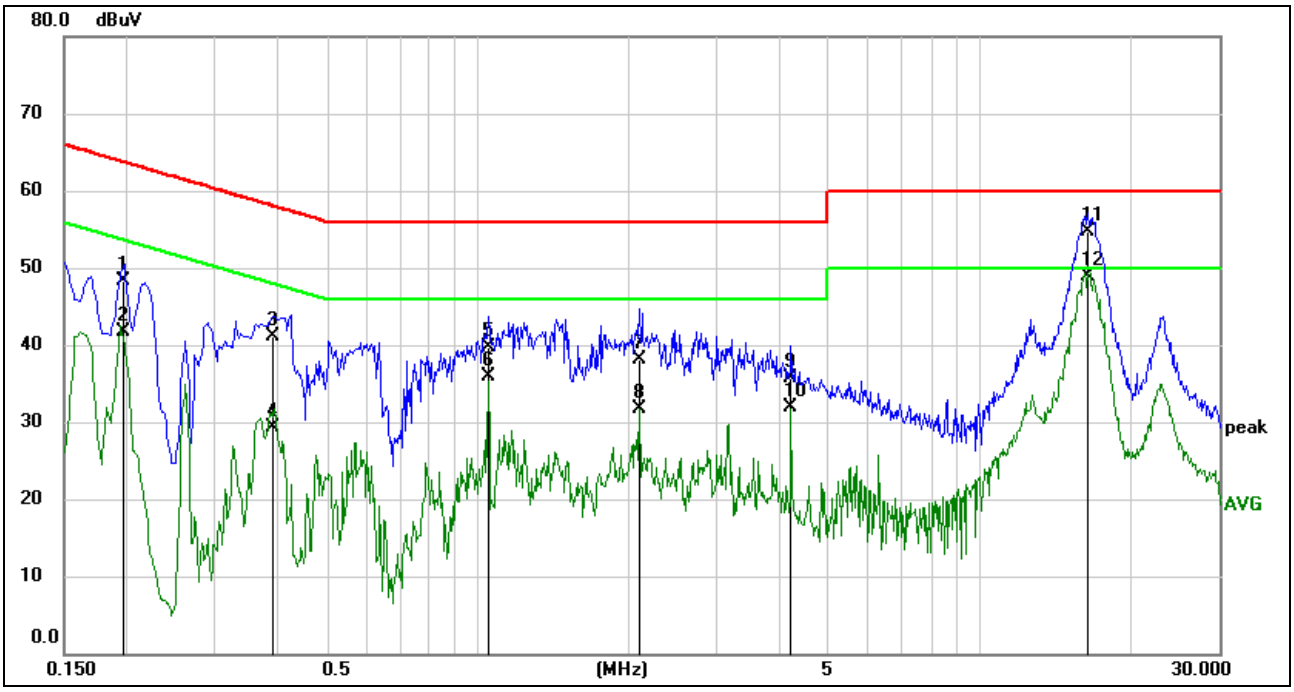
Temperature	24.4°C	Relative Humidity	52%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V

TEST RESULTS

Mode: GFSK

HUAWEI Box 900 with VAPEL manufacturer's power supply (WORST-CASE CONFIGURATION)

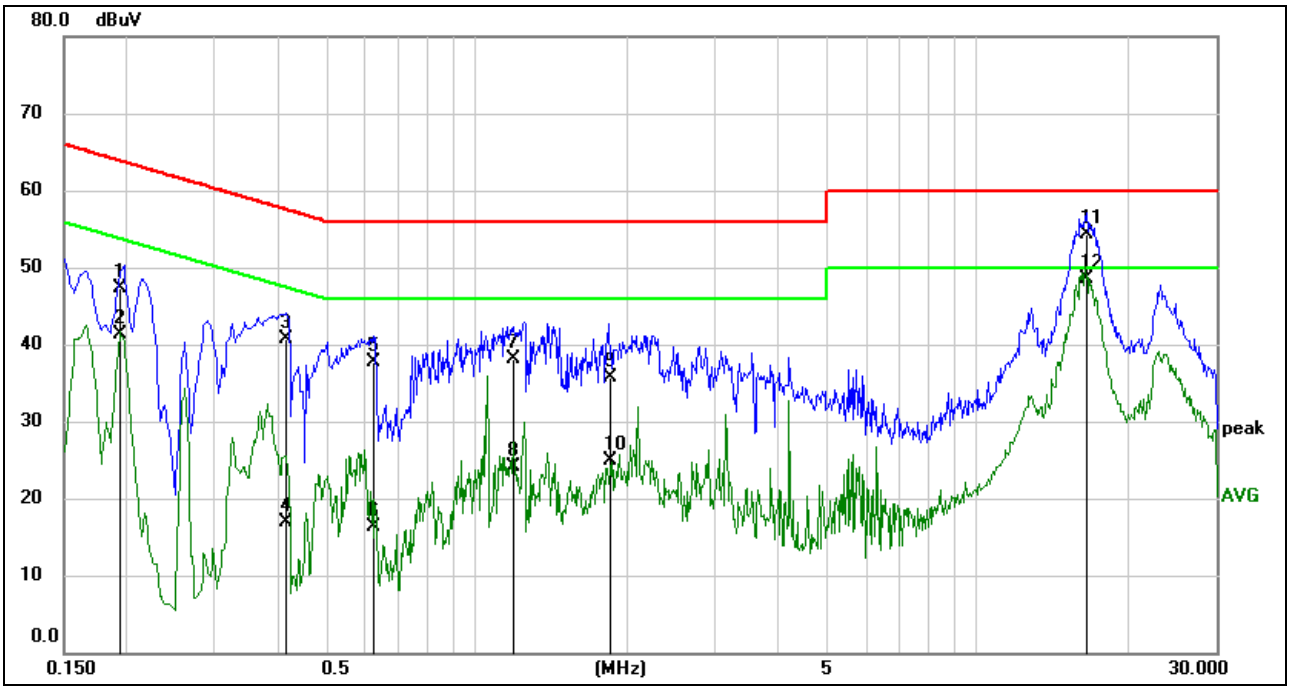
LINE N RESULTS (MID CHANNEL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1959	38.60	9.62	48.22	63.78	-15.56	QP
2	0.1959	32.18	9.62	41.80	53.78	-11.98	AVG
3	0.3896	31.48	9.63	41.11	58.07	-16.96	QP
4	0.3896	19.72	9.63	29.35	48.07	-18.72	AVG
5	1.0520	30.16	9.63	39.79	56.00	-16.21	QP
6	1.0520	26.35	9.63	35.98	46.00	-10.02	AVG
7	2.1041	28.44	9.65	38.09	56.00	-17.91	QP
8	2.1041	22.06	9.65	31.71	46.00	-14.29	AVG
9	4.2080	26.10	9.69	35.79	56.00	-20.21	QP
10	4.2080	22.18	9.69	31.87	46.00	-14.13	AVG
11	16.4641	44.82	9.84	54.66	60.00	-5.34	QP
12	16.4641	38.98	9.84	48.82	50.00	-1.18	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.

LINE L RESULTS (HIGH CHANNEL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1945	37.77	9.63	47.40	63.84	-16.44	QP
2	0.1945	31.71	9.63	41.34	53.84	-12.50	AVG
3	0.4191	30.98	9.63	40.61	57.47	-16.86	QP
4	0.4191	7.25	9.63	16.88	47.47	-30.59	AVG
5	0.6233	28.15	9.64	37.79	56.00	-18.21	QP
6	0.6233	6.76	9.64	16.40	46.00	-29.60	AVG
7	1.1861	28.45	9.64	38.09	56.00	-17.91	QP
8	1.1861	14.43	9.64	24.07	46.00	-21.93	AVG
9	1.8655	26.11	9.66	35.77	56.00	-20.23	QP
10	1.8655	15.18	9.66	24.84	46.00	-21.16	AVG
11	16.5075	44.42	9.82	54.24	60.00	-5.76	QP
12	16.5075	38.68	9.82	48.50	50.00	-1.50	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: VAPEL and ASTEC manufacturer's power supply were put into HUAWEI Box 900, HUAWEI Box 700 and HUAWEI Box 500 for testing, and found the VAPEL manufacturer's Power Supply and HUAWEI Box 900 combination is the worst-case configuration.

9. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §15.203
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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.247(b)(4)
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

ANTENNA CONNECTOR

EUT has a PIFA antenna with an IPEX connector, it is not a standard connector.

ANTENNA GAIN

Compliance.

END OF REPORT