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

CERTIFICATION TEST REPORT

For

H2S Gas Detector Watch
MODEL NUMBER: EAGLE 1
FCC ID: 2AQNI110001
IC: 24014-110001

REPORT NUMBER: 4788613300.1-1

ISSUE DATE: September 24, 2018

Prepared for
EAGLE DETECTION LTD
Rue du Marche 7, La Neuveville, Switzerland

Prepared by
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	24/9/2018	Initial Issue	

Summary of Test Results			
Clause	Test Items	FCC/IC Rules	Test Results
1	6db DTS Bandwidth and 99% Bandwidth	FCC 15.247 (a) (2) RSS-247 Clause 5.2 (a) RSS-Gen Clause 6.6	PASS
2	Peak Conducted Power	FCC 15.247 (b) (3) RSS-247 Clause 5.4 (e)	PASS
3	Power Spectral Density	FCC 15.247 (e) RSS-247 Clause 5.2 (b)	PASS
4	Conducted Band edge And Spurious emission	FCC 15.247 (d) RSS-247 Clause 5.5	PASS
5	Radiated Band edges and Spurious emission	FCC 15.247 (d) FCC 15.209 FCC 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9 RSS-GEN Clause 8.10	PASS
6	Conducted Emission Test For AC Power Port	FCC 15.207 RSS-GEN Clause 8.8	Not Applicable
7	Antenna Requirement	FCC 15.203 RSS-GEN Clause 8.3	PASS

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: EAGLE DETECTION LTD
Address: Rue du Marche 7, La Neuveville, Switzerland

Manufacturer Information

Company Name: EAGLE DETECTION LTD
Address: Rue du Marche 7, La Neuveville, Switzerland

EUT Description

Product Name H2S Gas Detector Watch
Model Name EAGLE 1
Sample Status Normal
Sample Received date August 03, 2018
Date Tested August 04, 2018~ September 20, 2018

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	PASS
ISED RSS-247 Issue 2	PASS
ISED RSS-GEN Issue 5	PASS

Tested By:

Miller Ma
Engineer

Checked By:

Shawn Wen
Operations Leader

Approved By:

Stephen Guo

Operations Manager

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB414788 D01 Radiated Test Site v01,ANSI C63.10-2013, KDB558074 D01 DTS Meas Guidance v05, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 5, and RSS-247 Issue 2.

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. **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 recognize 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

Equipment	H2S Gas Detector Watch		
Model Name	EAGLE 1		
Product Description	Operation Frequency	2402 MHz ~ 2480 MHz	
	Modulation Type		Data Rate
	GFSK ,Pi/4 DQPSK		1Mbps, 2Mbps
Power Supply	3.6Vdc，100mA		
Bluetooth Version	BT5.0		

5.2. MAXIMUM OUTPUT POWER

Bluetooth Mode	Frequency (MHz)	Channel Number	Max Output Power (dBm)	EIRP (dBm)
1Mbps	2402-2480	0-39[40]	-0.483	-0.483
2Mbps	2402-2480	0-39[40]	-1.177	-1.177

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	11	2424	22	2446	33	2468
1	2404	12	2426	23	2448	34	2470
2	2406	13	2428	24	2450	35	2472
3	2408	14	2430	25	2452	36	2474
4	2410	15	2432	26	2454	37	2476
5	2412	16	2434	27	2456	38	2478
6	2414	17	2436	28	2458	39	2480
7	2416	18	2438	29	2460		
8	2418	19	2440	30	2462		
9	2420	20	2442	31	2464		
10	2422	21	2444	32	2468		

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
GFSK	CH 0, CH 19, CH 39	2402MHz, 2440MHz, 2480MHz

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software		Serial assistant		
Modulation Type	Transmit Antenna Number	Test Channel		
		CH 0	CH 19	CH 39
GFSK	1	N/A	N/A	N/A
Pi/4 DQPSK	1	N/A	N/A	N/A

Note: N/A means not applicable.

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2402-2480	Chip Antenna	0

Test Mode	Transmit and Receive Mode	Description
GFSK, Pi/4 DQPSK	1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

5.7. WORST-CASE CONFIGURATIONS

Bluetooth Mode	Modulation Technology	Modulation Type	Data Rate (Mbps)
BLE	DTS	GFSK, Pi/4 DQPSK	1Mbit/s, 2Mbit/s

5.8. 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	3.6Vdc，100mA
	VH	N/A

Note: VL= Lower Extreme Test Voltage
VN= Nominal Voltage
VH= Upper Extreme Test Voltage
TN= Normal Temperature

5.9. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	PC	Dell	Vostro 3902	8KNDDB2
2	USB TO RS232	N/A	N/A	N/A

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	N/A	N/A	0.15	N/A

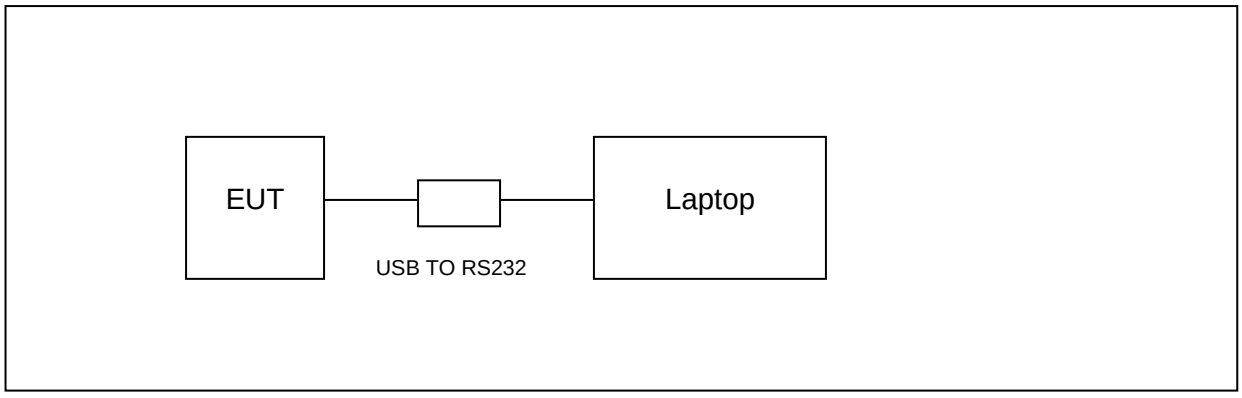
ACCESSORY

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

TEST SETUP

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

SETUP DIAGRAM FOR TEST



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. MEASUREMENT METHODS

No.	Test Item	KDB Name	Section
1	6 dB Bandwidth	KDB 558074 D01 DTS Meas Guidance v05	8.0
2	Peak Output Power	KDB 558074 D01 DTS Meas Guidance v05	9.1.3
3	Power Spectral Density	KDB 558074 D01 DTS Meas Guidance v05	10.2
4	Out-of-band emissions in non-restricted bands	KDB 558074 D01 DTS Meas Guidance v05	11.0
5	Out-of-band emissions in restricted bands	KDB 558074 D01 DTS Meas Guidance v05	12.1
6	Band-edge	KDB 558074 D01 DTS Meas Guidance v05	13.3.2
7	Conducted Emission Test For AC Power Port	ANSI C63.10-2013	6.2

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

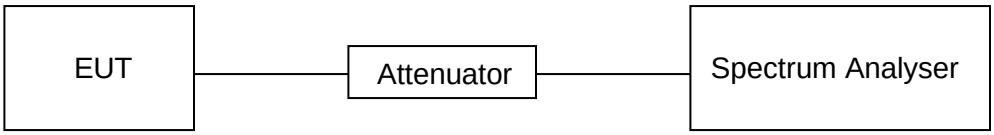
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



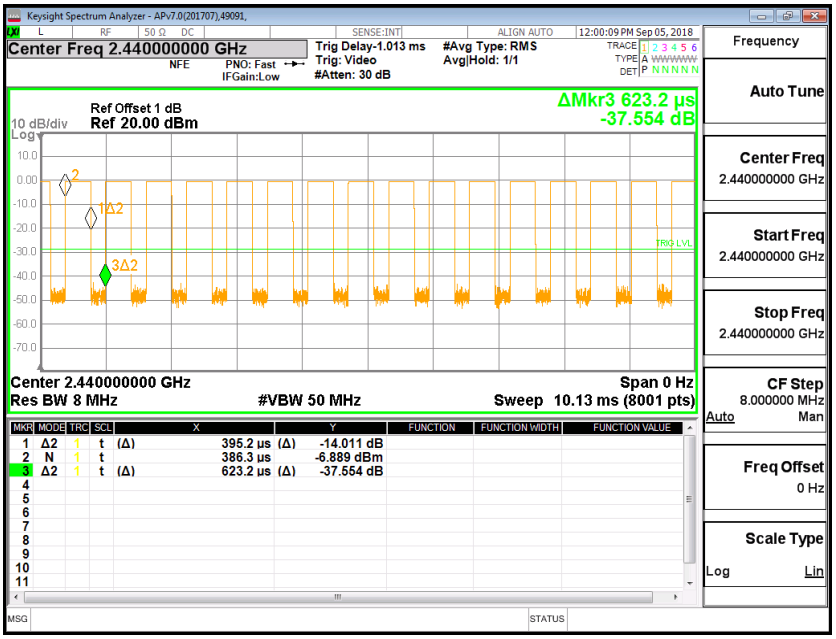
RESULTS

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (KHz)	Implemented VBW (KHz)
1Mbps	0.3952	0.6232	0.634	63	1.98	2.53	3.00
2Mbps	0.2090	0.6245	0.335	33	4.75	4.78	5.00

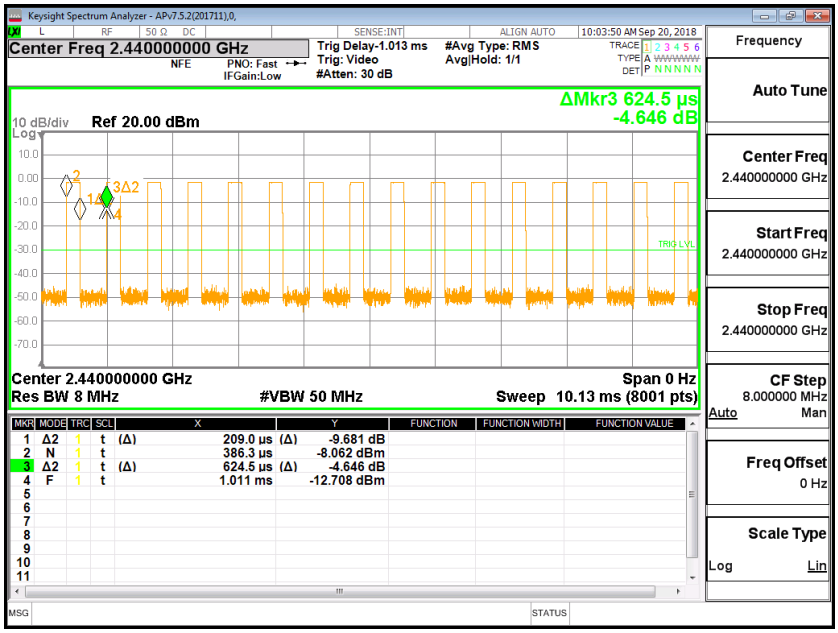
Note: Duty Cycle Correction Factor=10log(1/x).
Where: x is Duty Cycle(Linear)
Where: T is On Time (transmit duration)

ON TIME AND DUTY CYCLE MID CH

1Mbps



2Mbps



7.2. 6 dB DTS 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)(2) RSS-247 5.2 (a)	6dB Bandwidth	>= 500KHz	2400-2483.5
RSS-Gen Clause 6.6	99% Bandwidth	For reporting purposes only.	2400-2483.5

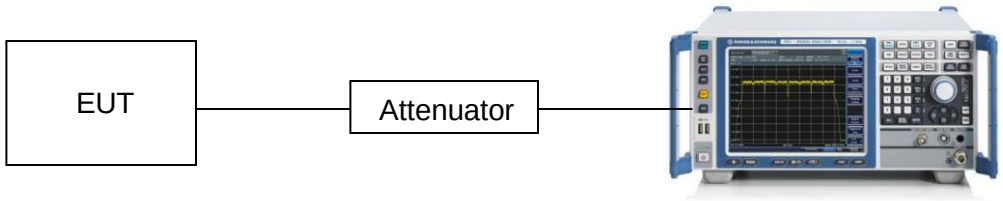
TEST PROCEDURE

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

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth :100K For 99% Bandwidth :1% to 5% of the occupied bandwidth
VBW	For 6dB Bandwidth : ≥3 × RBW For 99% Bandwidth : approximately 3×RBW
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 relative to the maximum level measured in the fundamental emission.

TEST SETUP

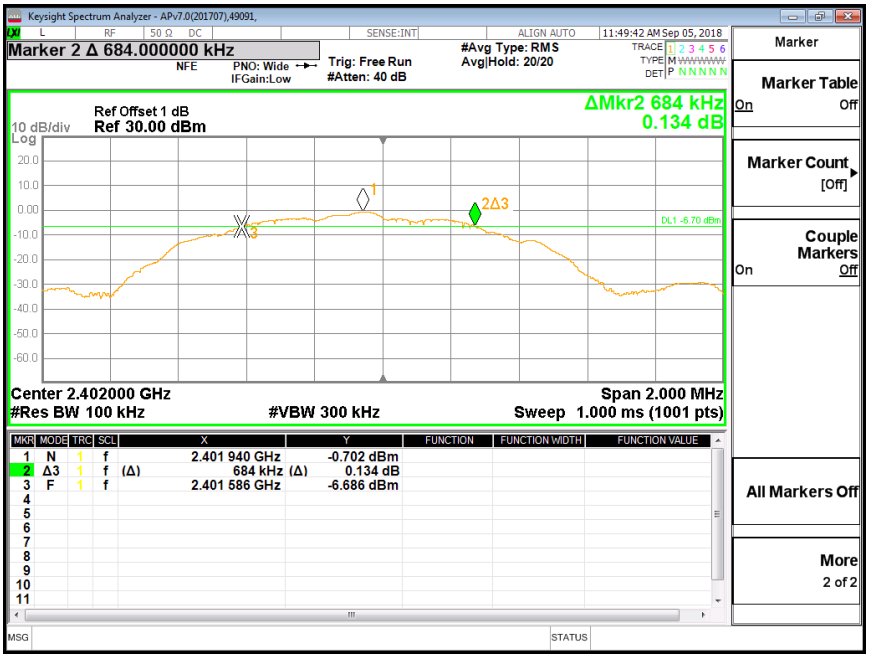


RESULTS

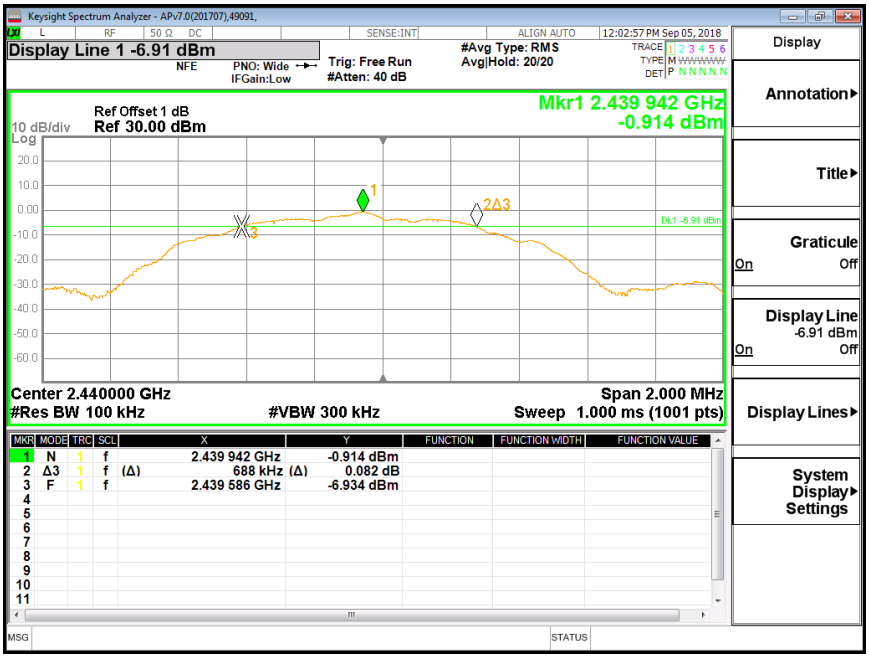
Mode: 1Mbps

Channel	Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit (kHz)	Result
Low	2402	0.684	1.0379	500	Pass
Middle	2440	0.688	1.0396	500	Pass
High	2480	0.690	1.0379	500	Pass

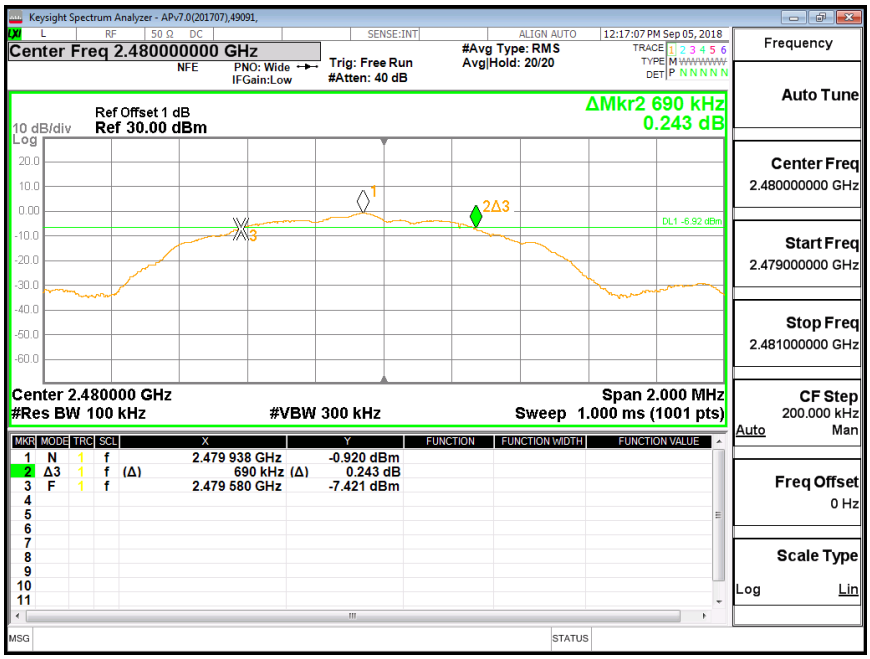
6 dB BANDWIDTH LOW CH



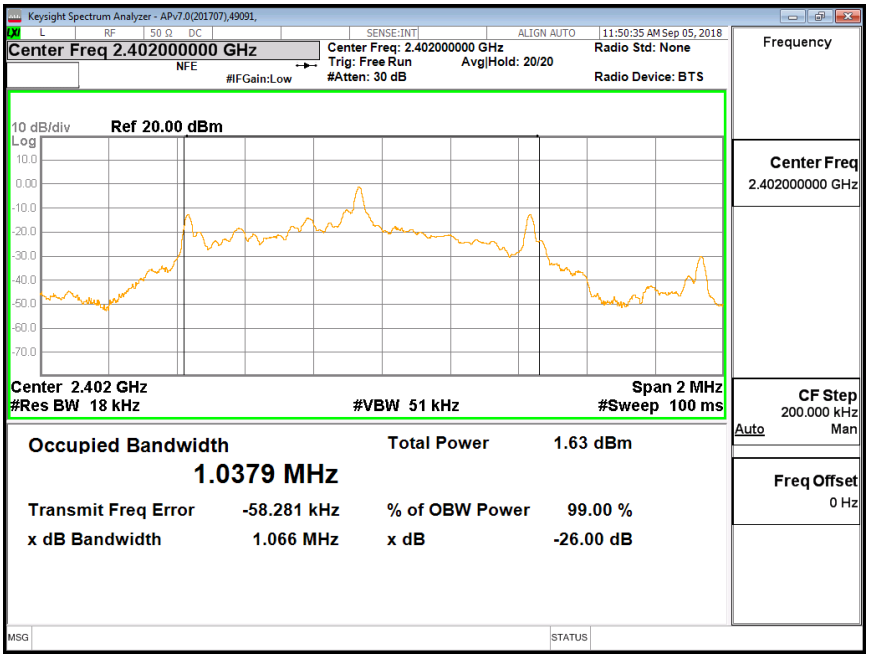
6 dB BANDWIDTH MID CH



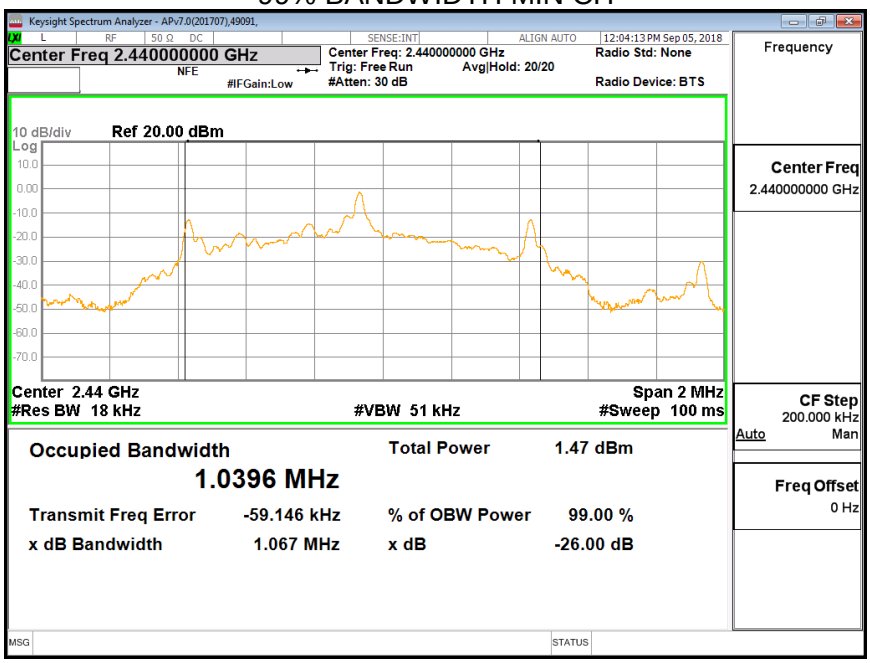
6 dB BANDWIDTH HIGH CH



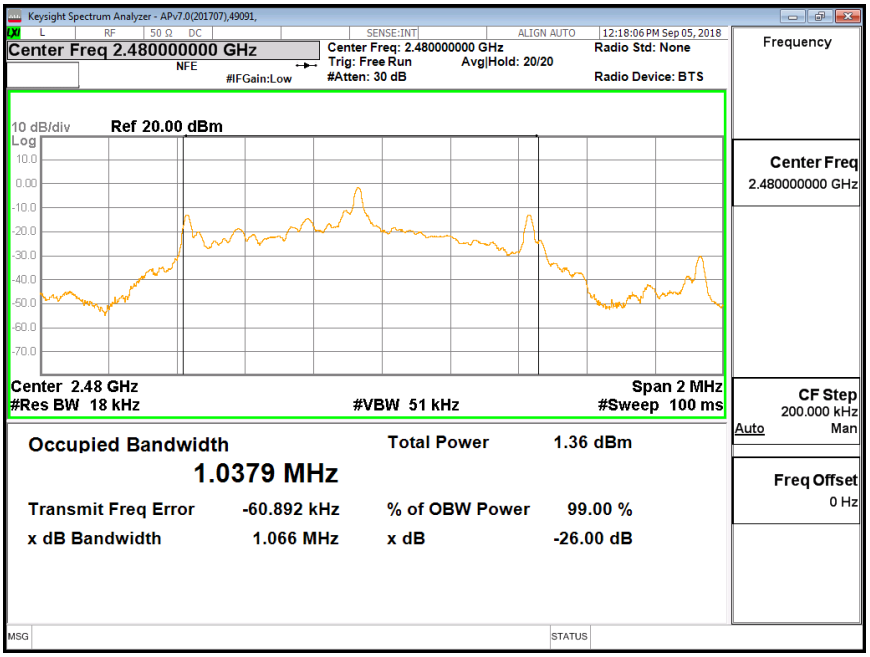
99% BANDWIDTH LOW CH



99% BANDWIDTH MIN CH



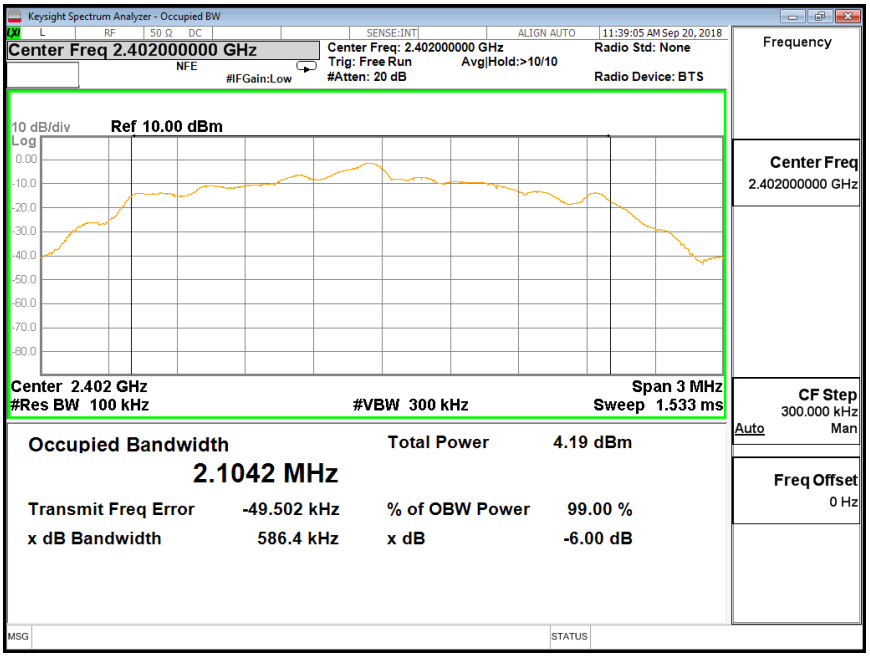
99% BANDWIDTH HIGH CH



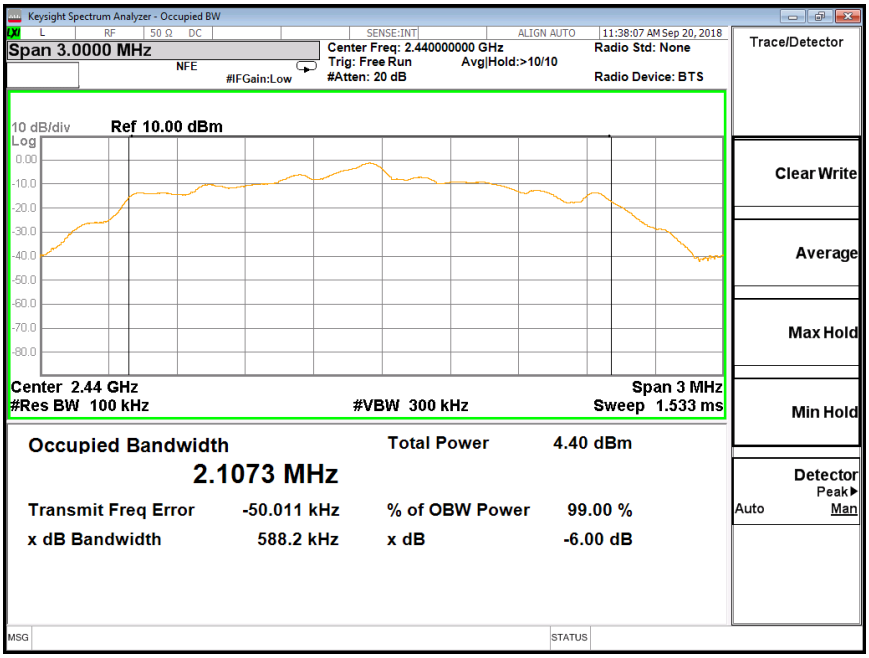
Mode: 2Mbps

Channel	Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit (kHz)	Result
Low	2402	0.586	2.0748	500	Pass
Middle	2440	0.588	2.0777	500	Pass
High	2480	0.537	2.0756	500	Pass

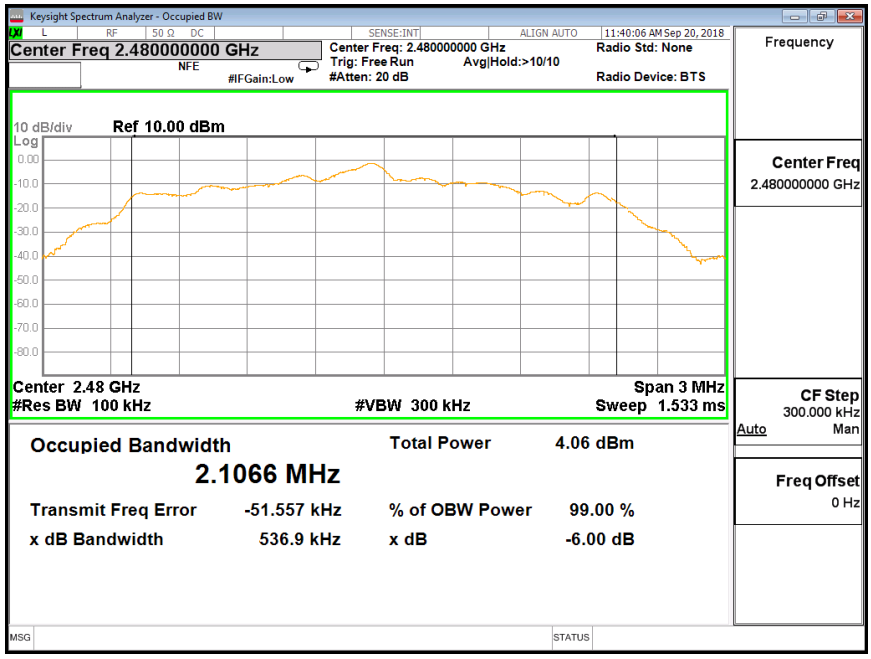
6 dB BANDWIDTH LOW CH



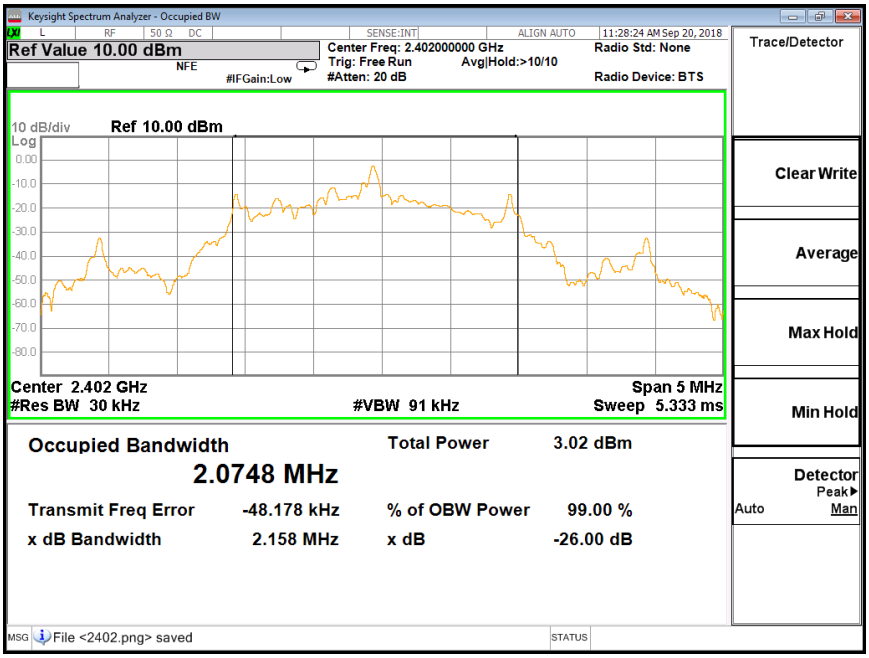
6 dB BANDWIDTH MID CH



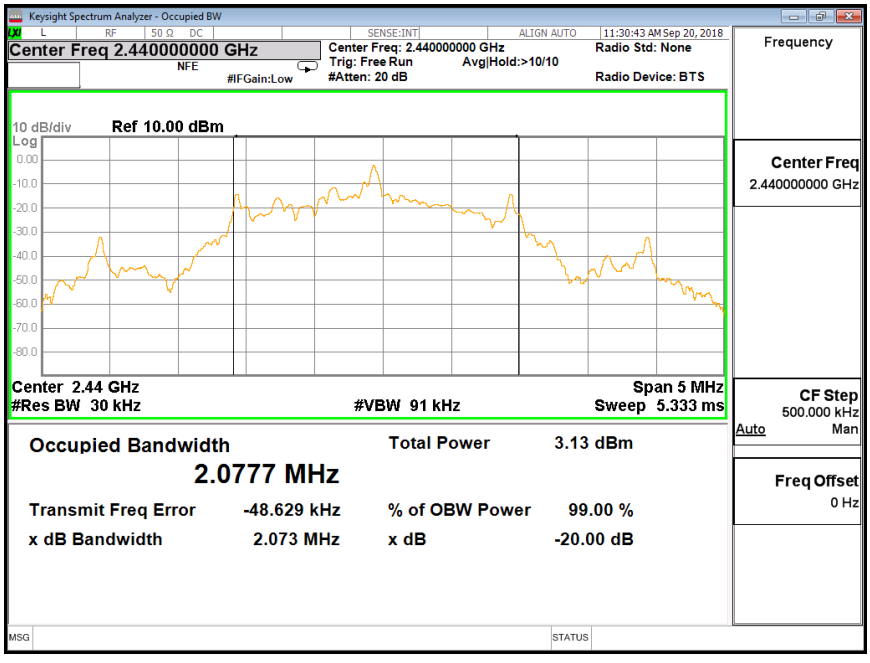
6 dB BANDWIDTH HIGH CH



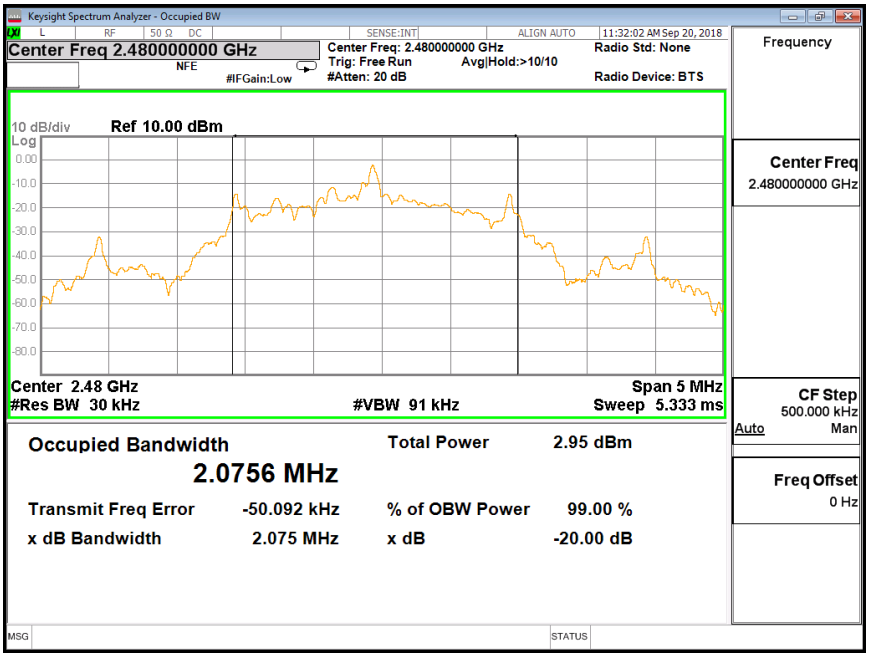
99% BANDWIDTH LOW CH



99% BANDWIDTH MIN CH



99% BANDWIDTH HIGH CH



7.3. PEAK CONDUCTED OUTPUT POWER

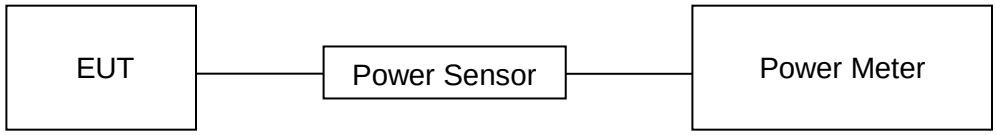
LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247(b)(3) RSS-247 5.4 (e)	Peak Output Power	1 watt or 30dBm	2400-2483.5

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.
Measure peak power each channel.

TEST SETUP



RESULTS

Mode: 1Mbps

Test Channel	Frequency	Maximum Conducted Output Power(PK)	EIRP	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH00	2402	-0.483	-0.483	30
CH19	2440	-0.700	-0.700	30
CH39	2480	-0.686	-0.686	30

Mode: 2Mbps

Test Channel	Frequency	Maximum Conducted Output Power(PK)	EIRP	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH00	2402	-1.289	-1.289	30
CH19	2440	-1.177	-1.177	30
CH39	2480	-1.291	-1.291	30

7.4. POWER SPECTRAL DENSITY

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC §15.247 (e) RSS-247 5.2 (b)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

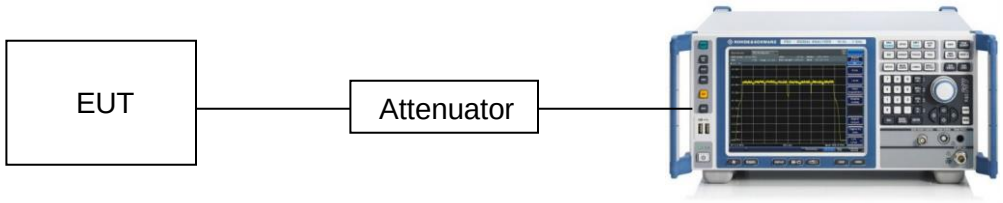
TEST PROCEDURE

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

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	3 kHz ≤ RBW ≤ 100 kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST SETUP

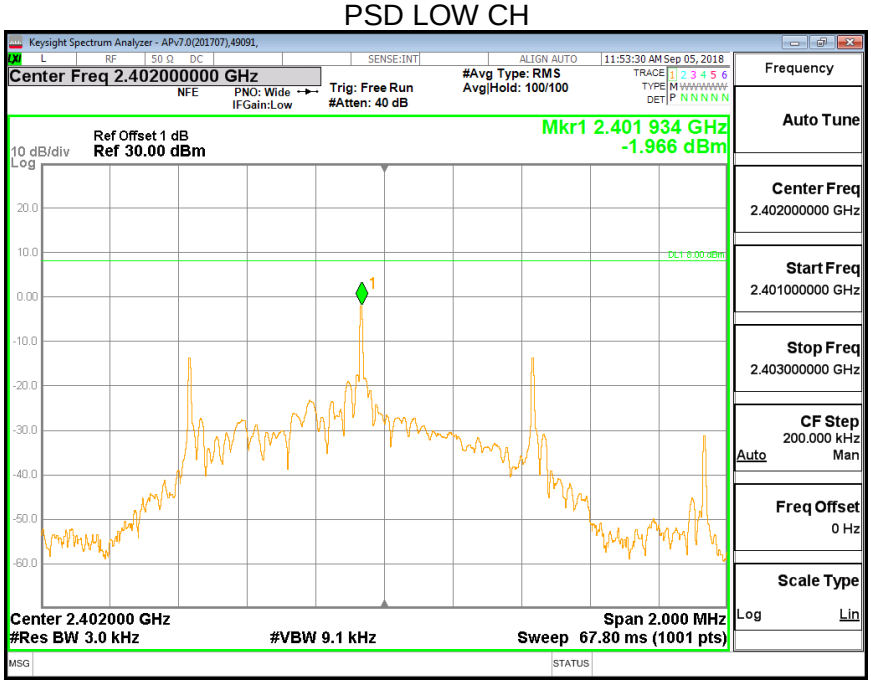


RESULTS

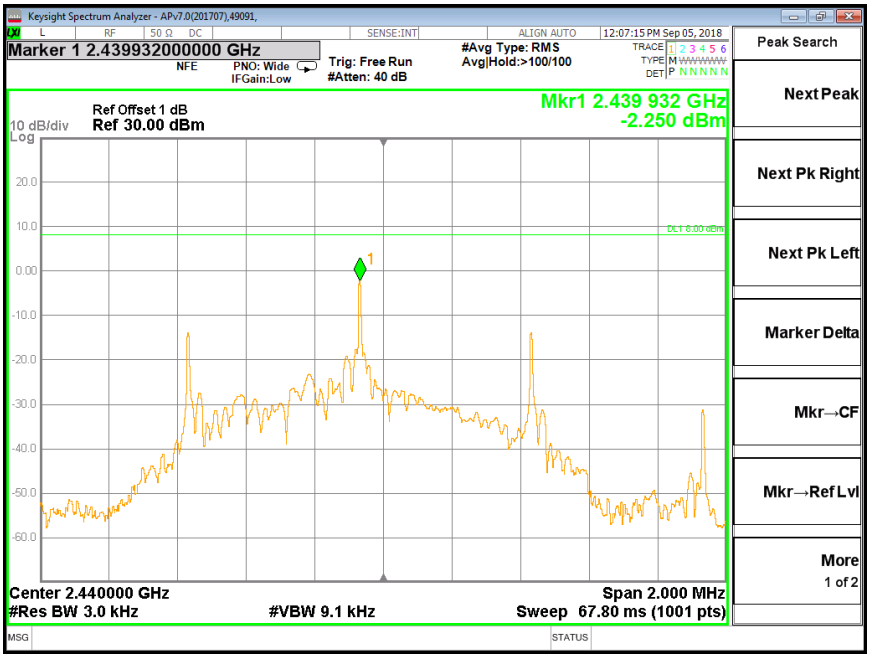
Mode: 1Mbps

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2402 MHz	-1.966	8	PASS
2440 MHz	-2.250	8	PASS
2480 MHz	-2.260	8	PASS

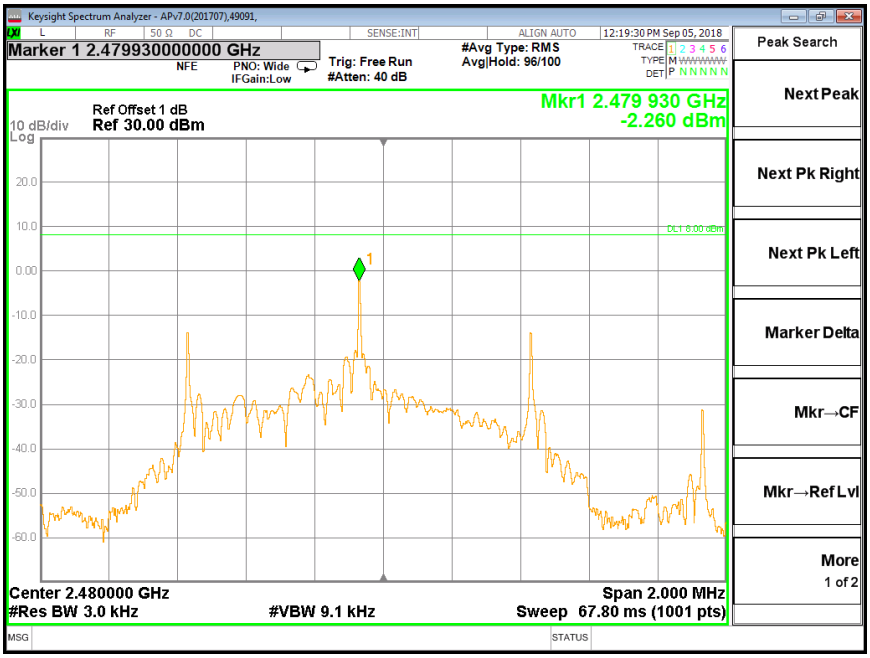
PSD LOW CH



PSD MID CH



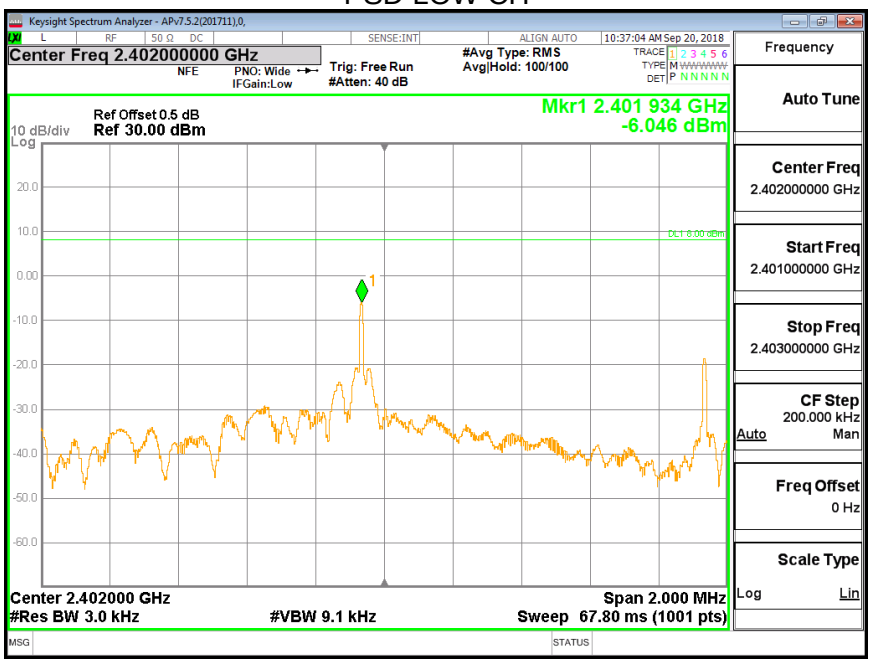
PSD HIGH CH



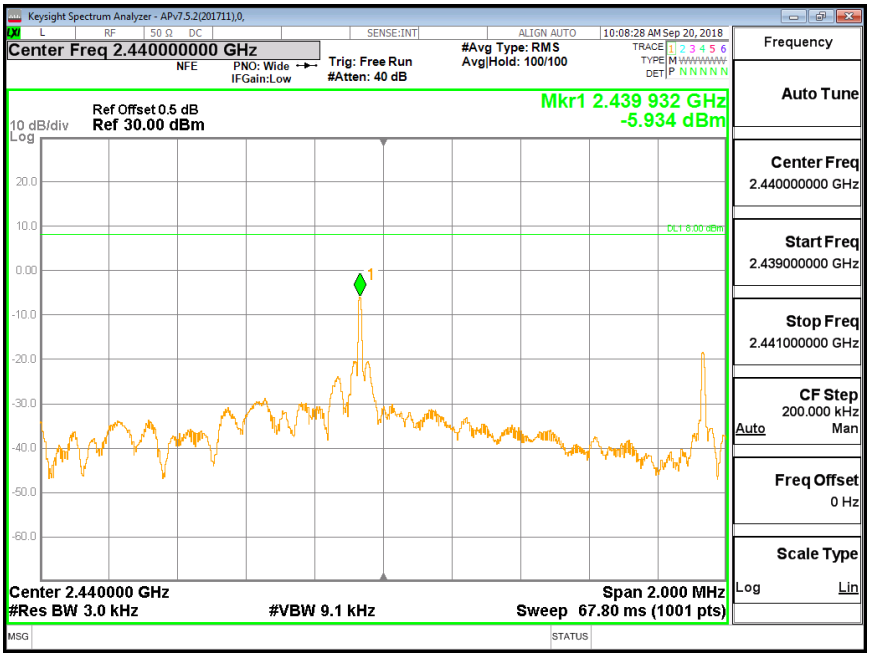
Mode: 2Mbps

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2402 MHz	-6.046	8	PASS
2440 MHz	-5.934	8	PASS
2480 MHz	-6.176	8	PASS

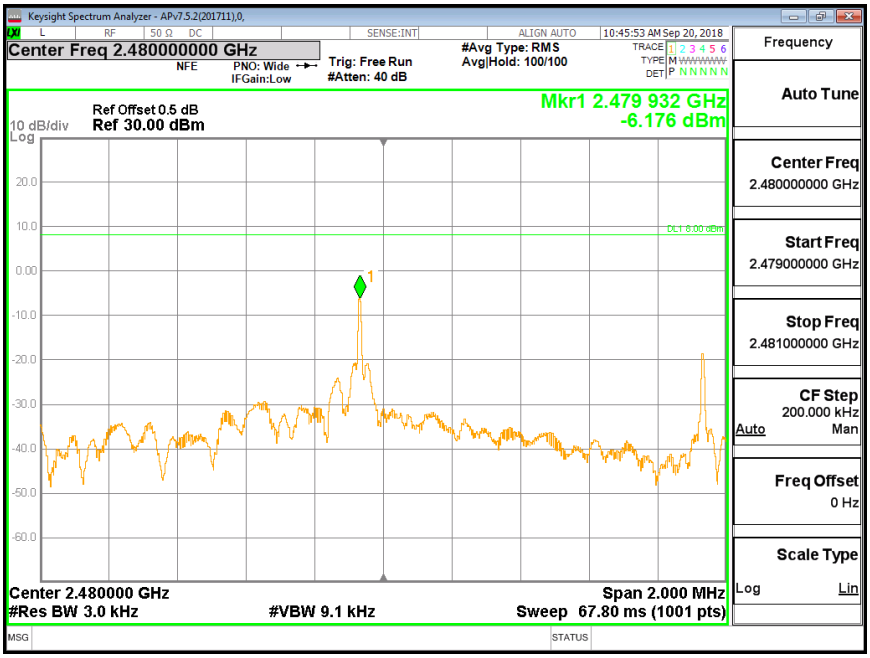
PSD LOW CH



PSD MID CH



PSD HIGH CH



7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2		
Section	Test Item	Limit
FCC §15.247 (d) RSS-247 5.5	Conducted Bandedge and Spurious Emissions	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:

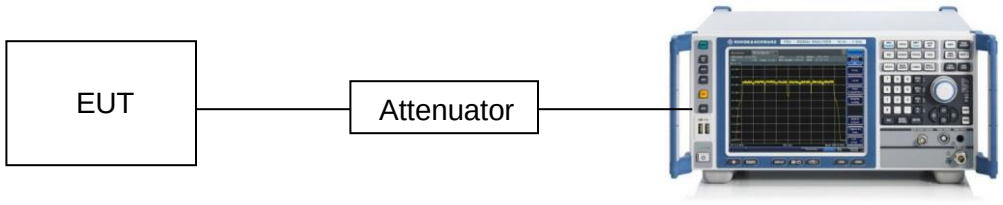
Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100KHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum PSD level.

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100KHz
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

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

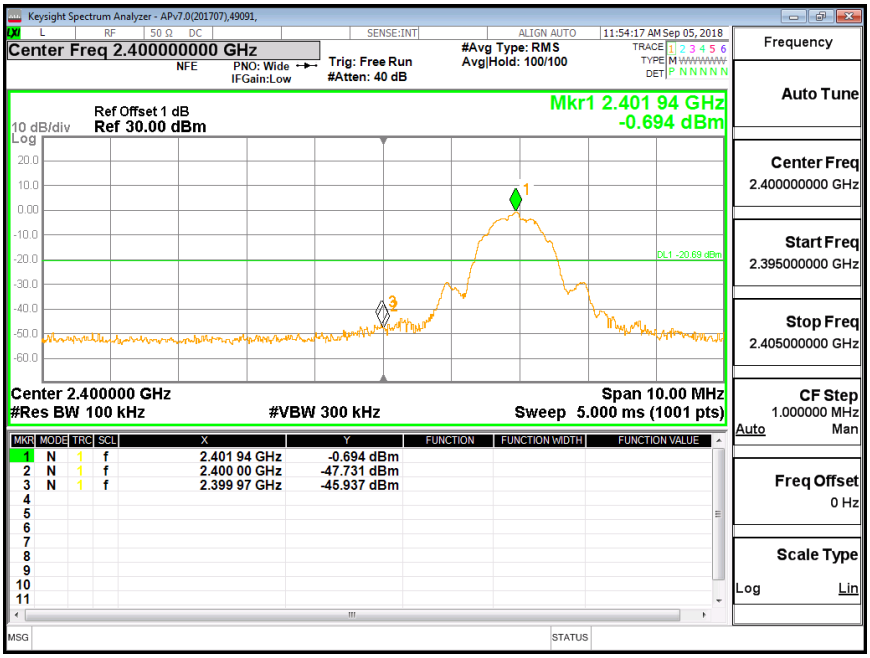
TEST SETUP



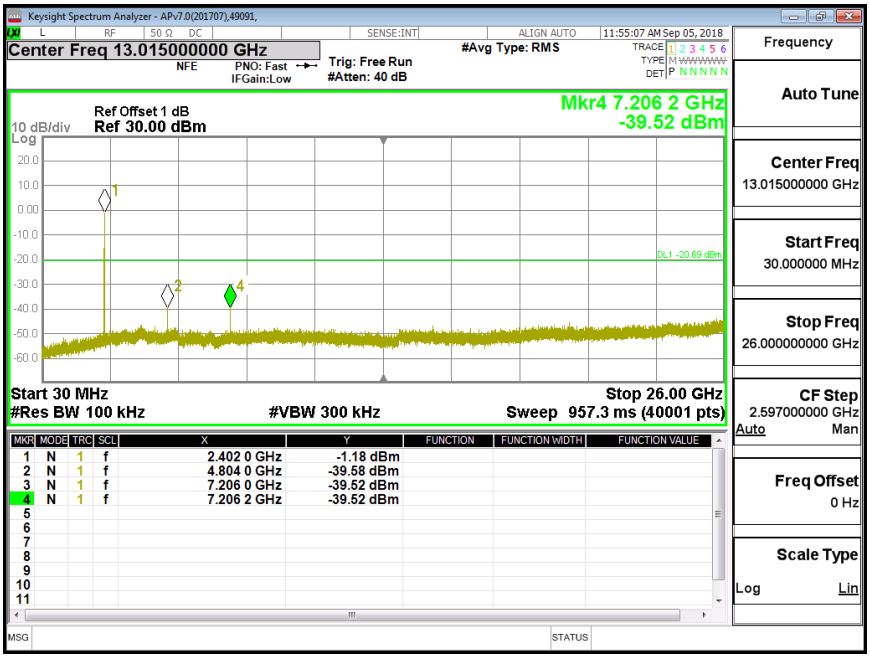
RESULTS

Mode: 1Mbps

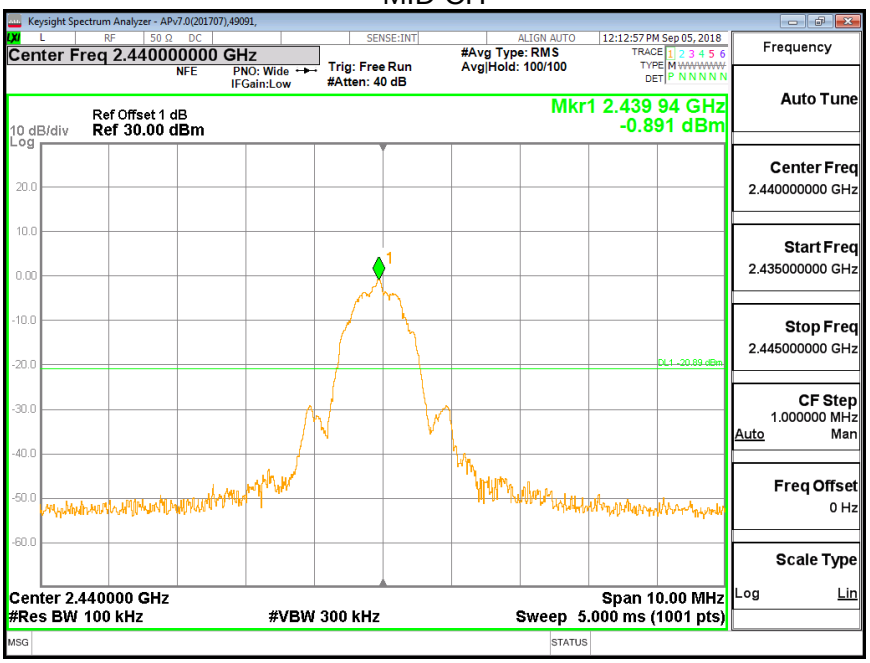
LOW CH BANDEDAGE



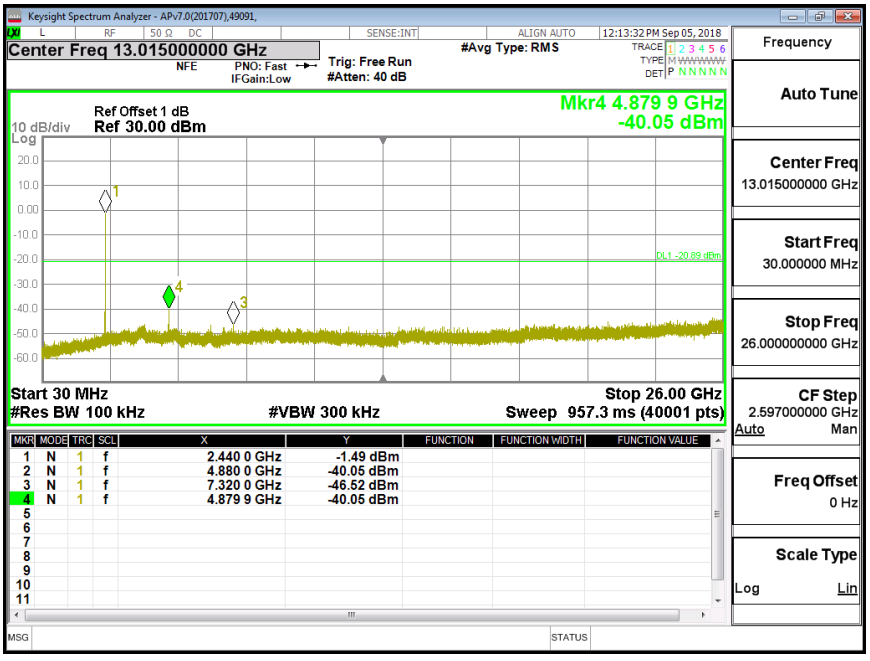
LOW CH SPURIOUS EMISSIONS 30M-26G



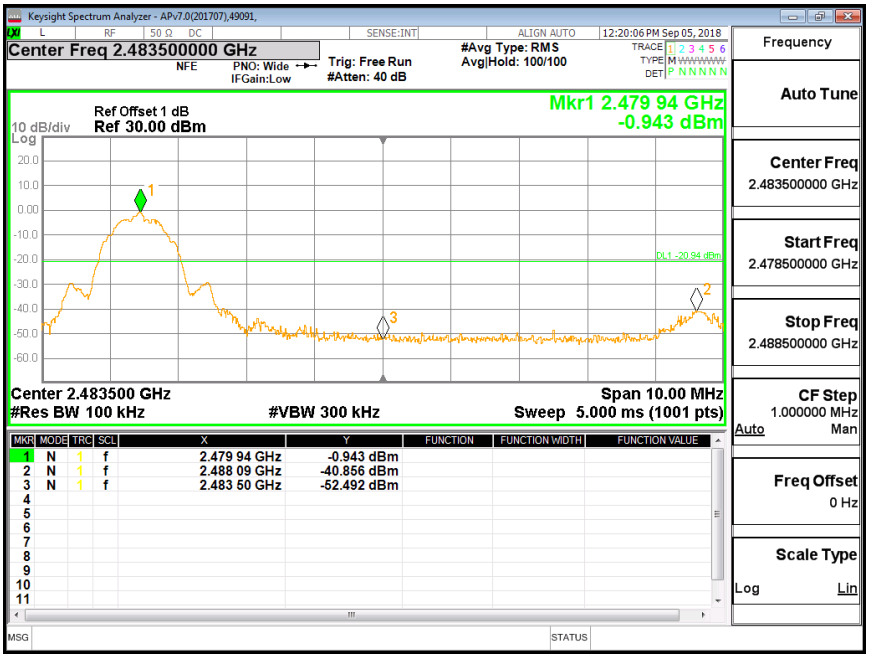
MID CH



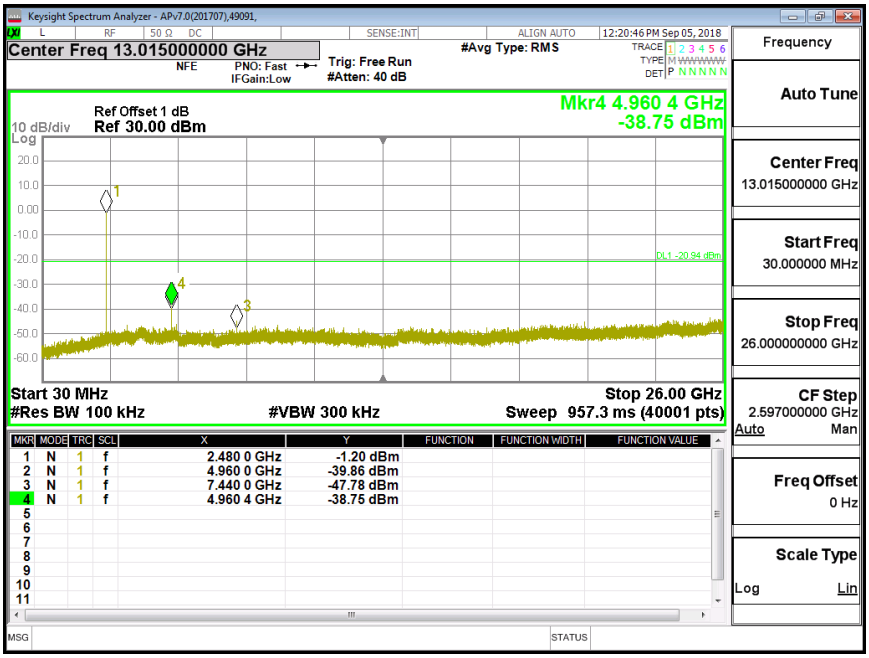
MID CH SPURIOUS EMISSIONS 30M-26G



HIGH CH BANDEDAGE

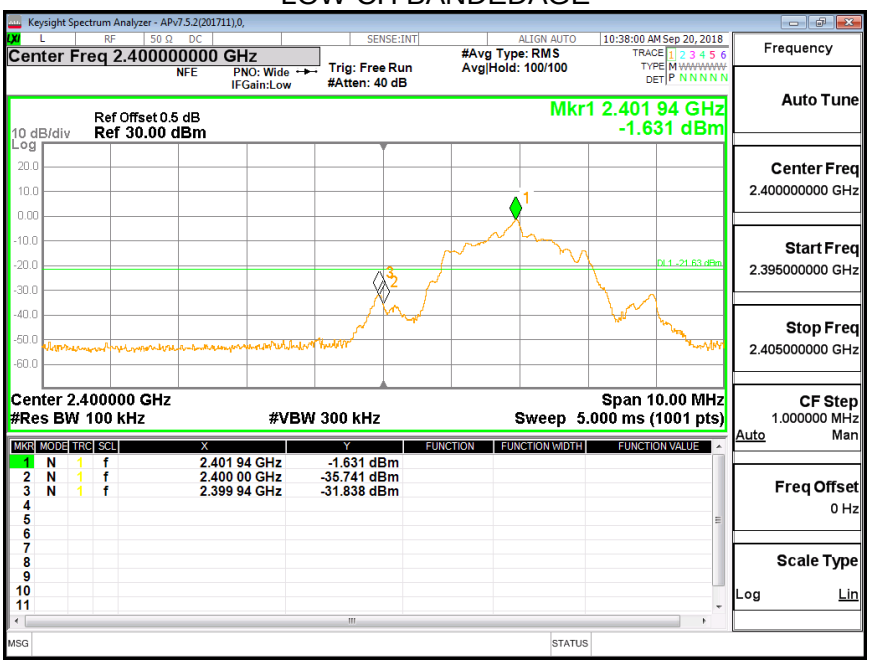


HIGH CH SPURIOUS EMISSIONS 30M-26G

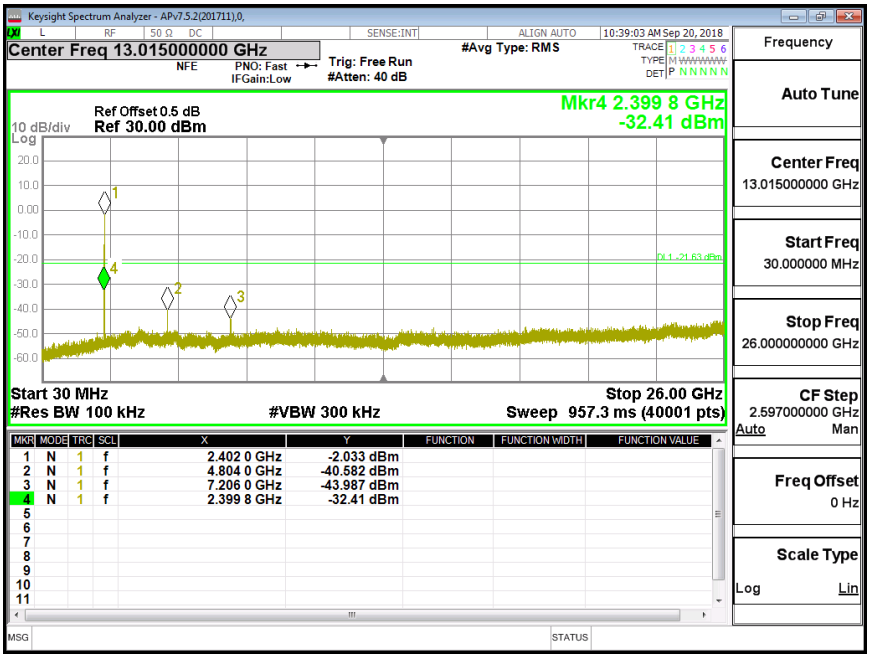


Mode: 2Mbps

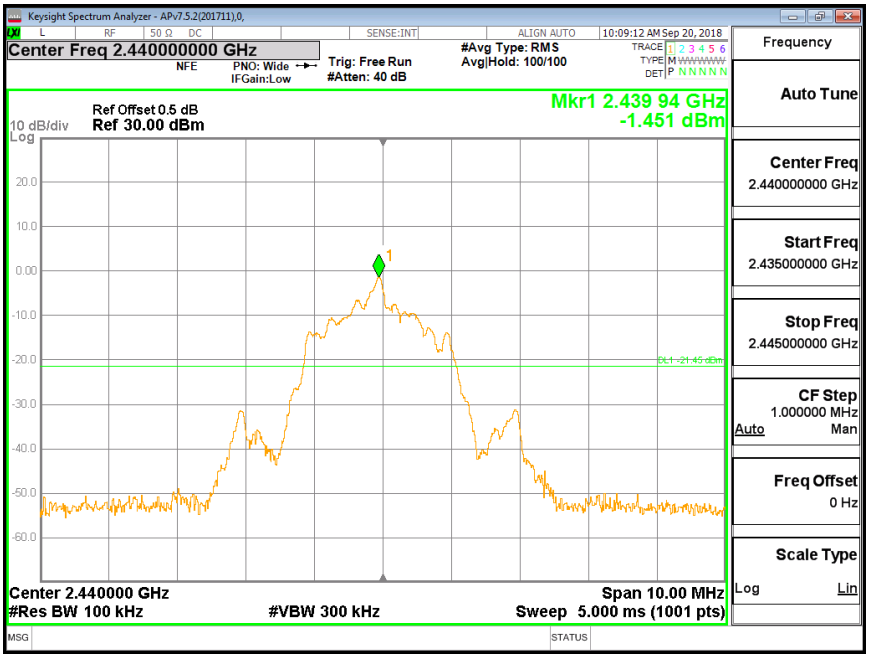
LOW CH BANDEDAGE



LOW CH SPURIOUS EMISSIONS 30M-26G

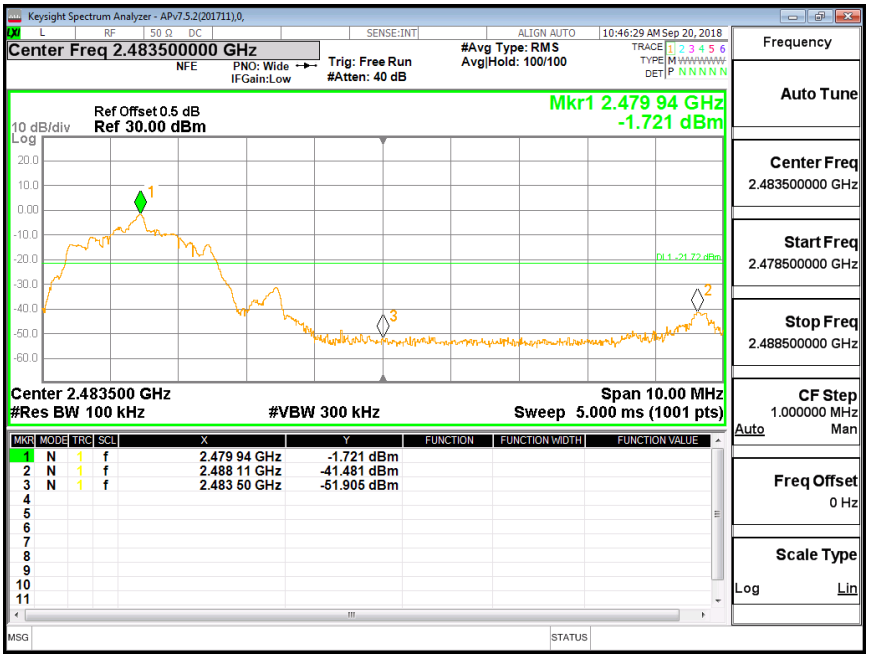


MID CH

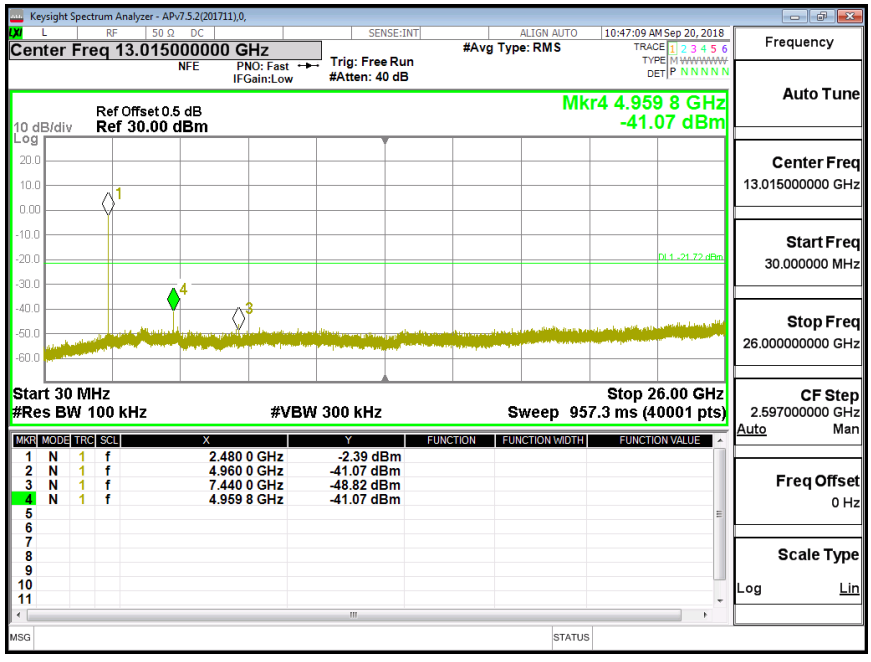


MID CH SPURIOUS EMISSIONS 30M-26G

HIGH CH BANDEDAGE



HIGH CH SPURIOUS EMISSIONS 30M-26G



8. RADIATED TEST RESULTS

LIMITS

Please refer to FCC §15.205 and §15.209

Please refer to RSS-GEN Clause 8.9 and Clause 8.10

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.

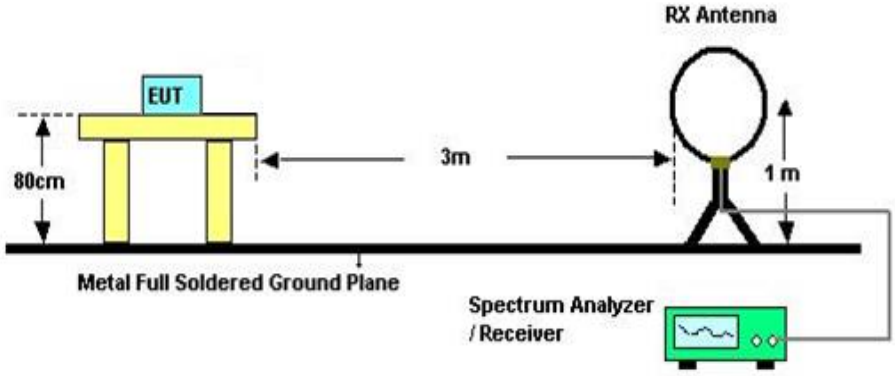
Radiation Disturbance Test Limit for FCC (Above 1G)

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

About Restricted bands of operation please refer to RSS-Gen section 8.10 and FCC §15.205 (a)

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 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.

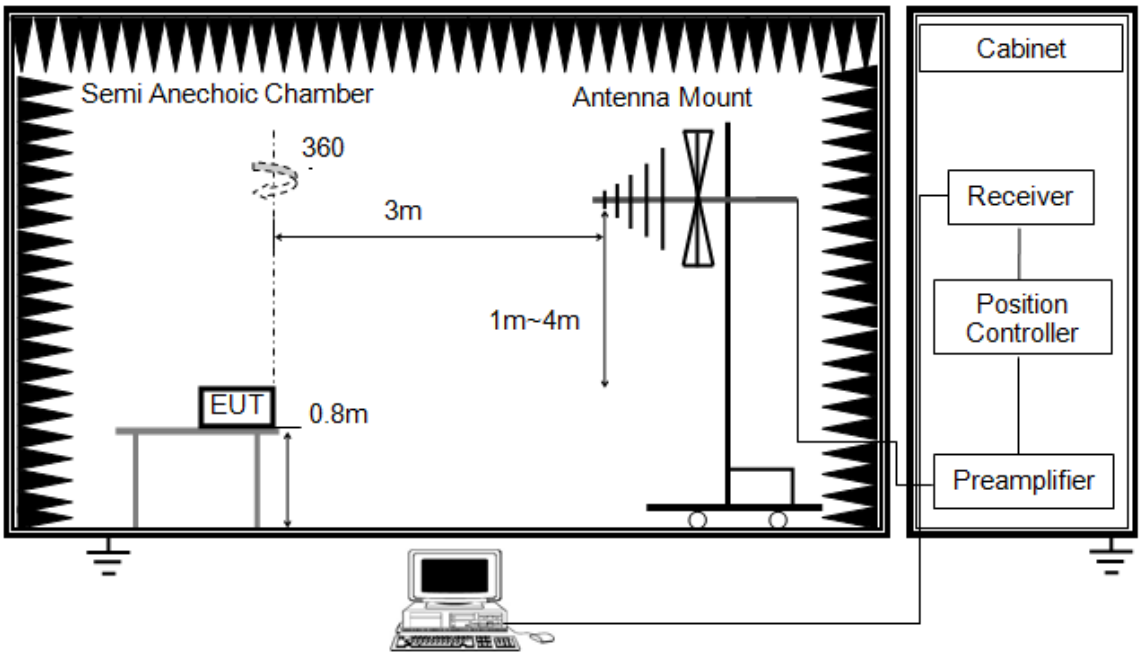
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

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 and average 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 and average detector and reported.

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

8. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

Below 1G and above 30MHz



The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
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.

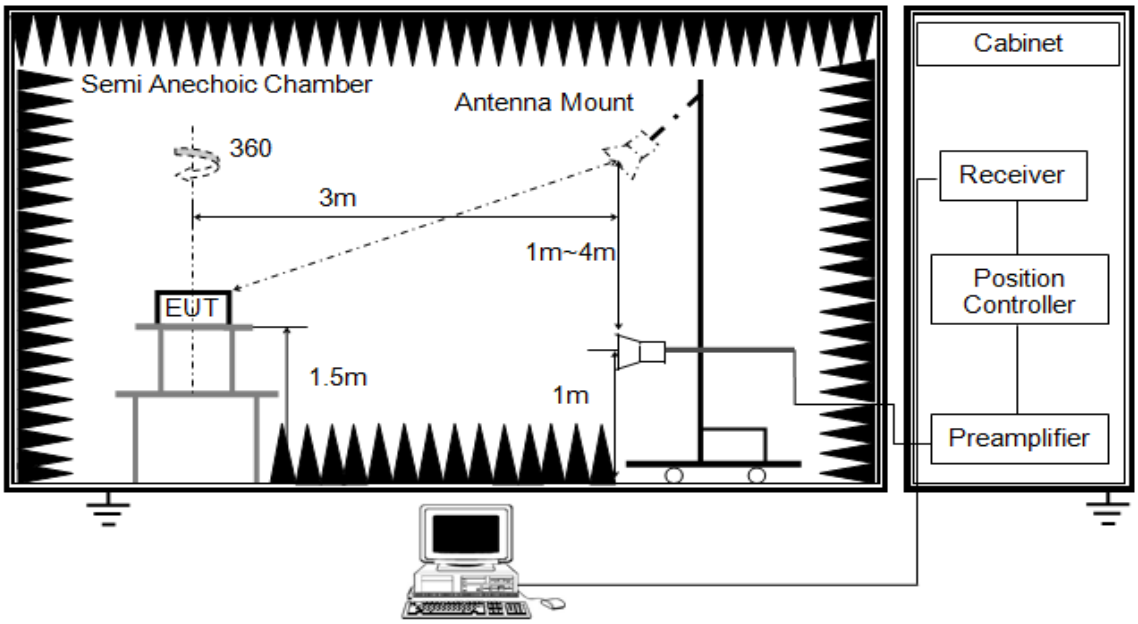
3. The EUT was placed on a turntable with 80cm above ground.

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.

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

Above 1G



The setting of the spectrum analyser

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 (1.5 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.

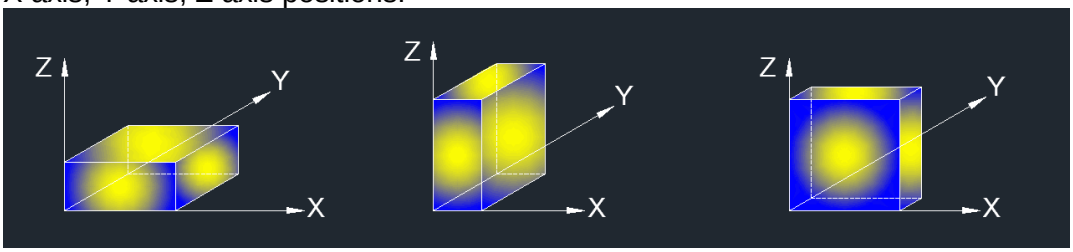
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

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 and Correction Factor please refer to clause 7.1.ON TIME AND DUTY CYCLE.

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

X axis, Y axis, Z axis positions:

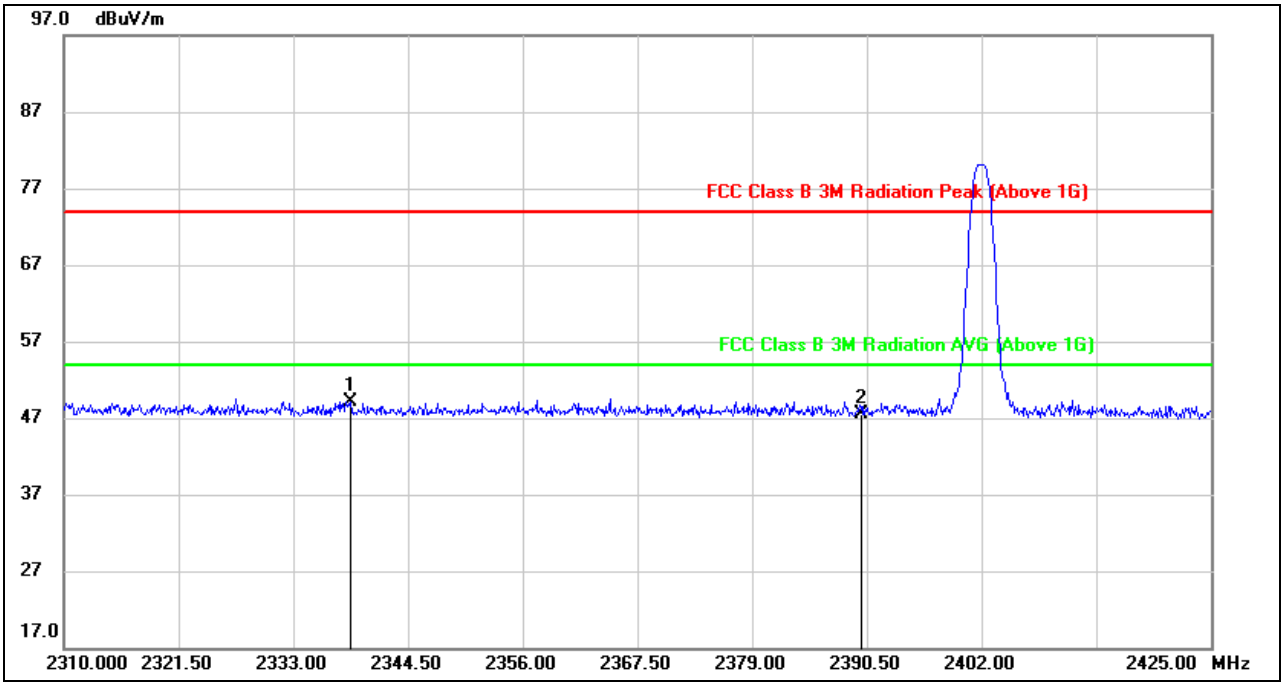


Note: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (Y axis) data recorded in the report.

8.1. RESTRICTED BANDEDGE

Mode: 1Mbps

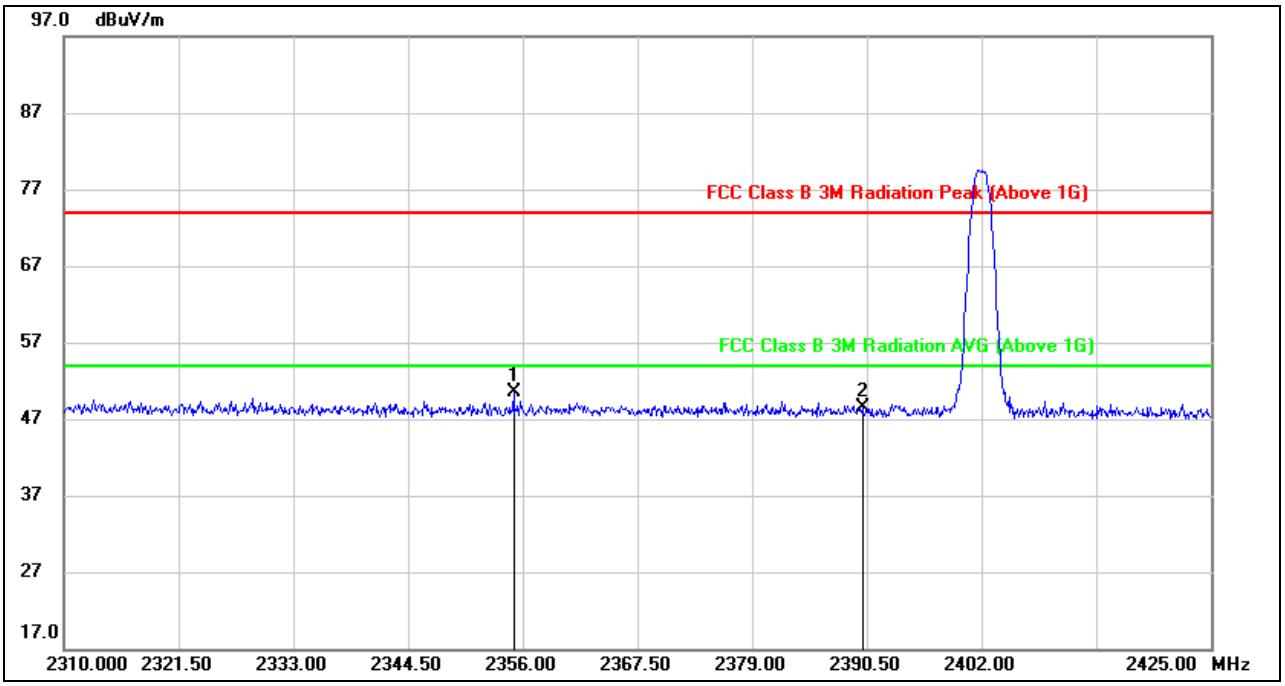
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2338.750	15.69	33.51	49.20	74.00	-24.80	peak
2	2390.000	14.41	33.14	47.55	74.00	-26.45	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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

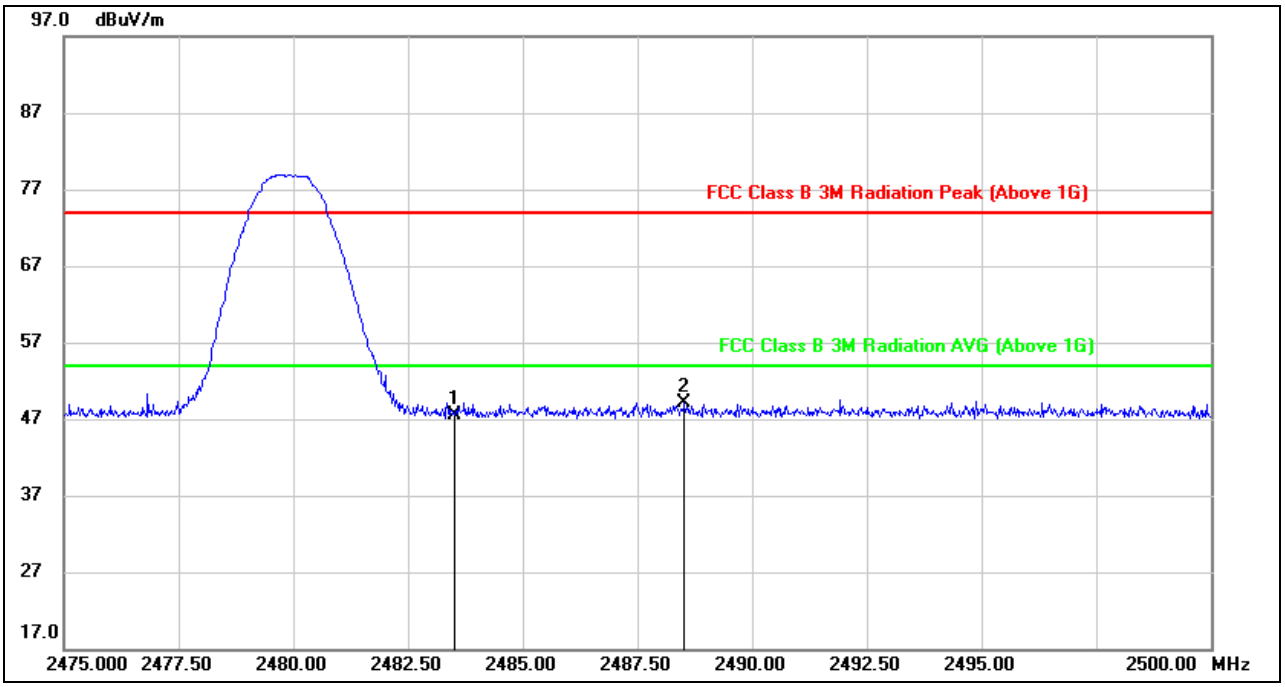
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2355.080	16.94	33.49	50.43	74.00	-23.57	peak
2	2390.000	15.33	33.24	48.57	74.00	-25.43	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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

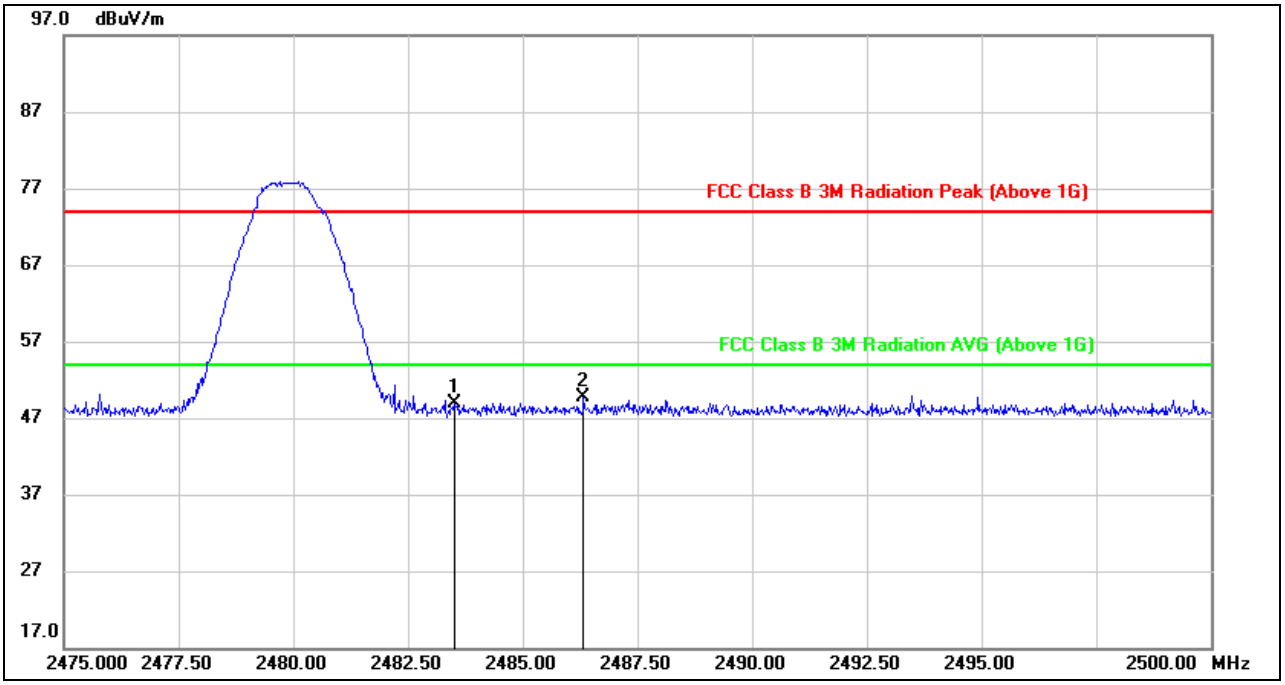
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	14.78	32.78	47.56	74.00	-26.44	peak
2	2488.525	16.39	32.78	49.17	74.00	-24.83	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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

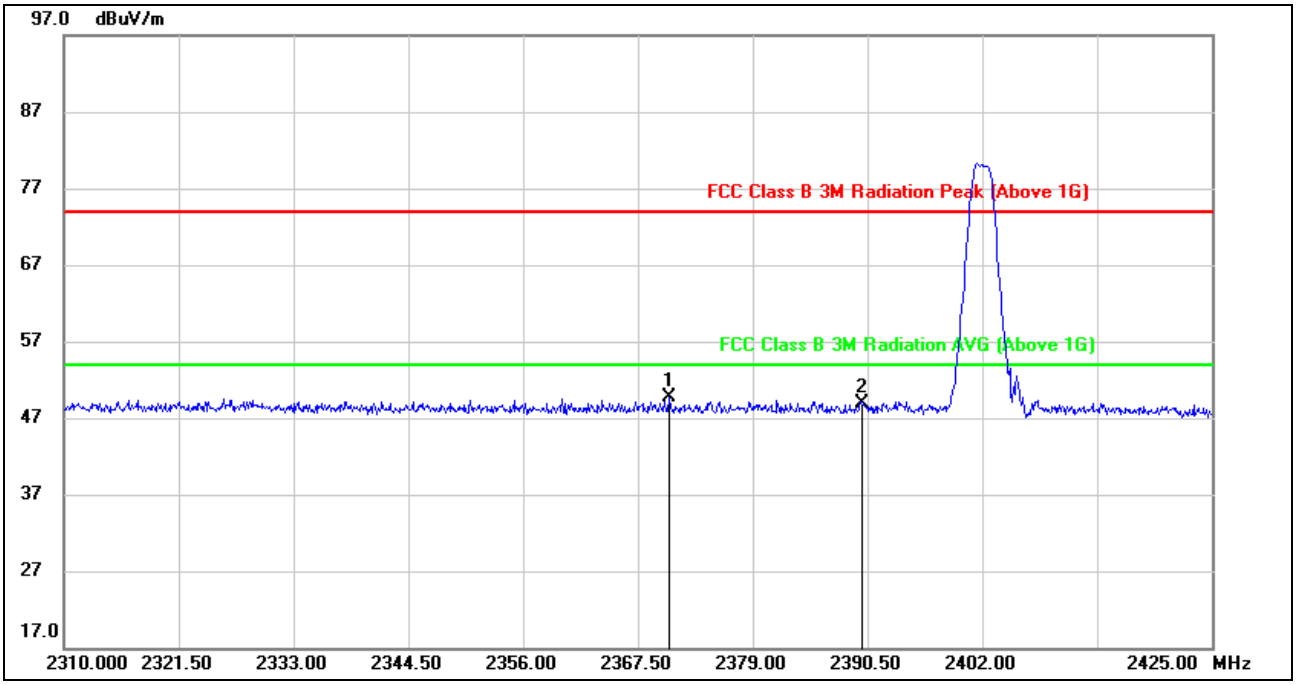


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	15.97	32.88	48.85	74.00	-25.15	peak
2	2486.325	16.82	32.89	49.71	74.00	-24.29	peak

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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

Mode: 2Mbps

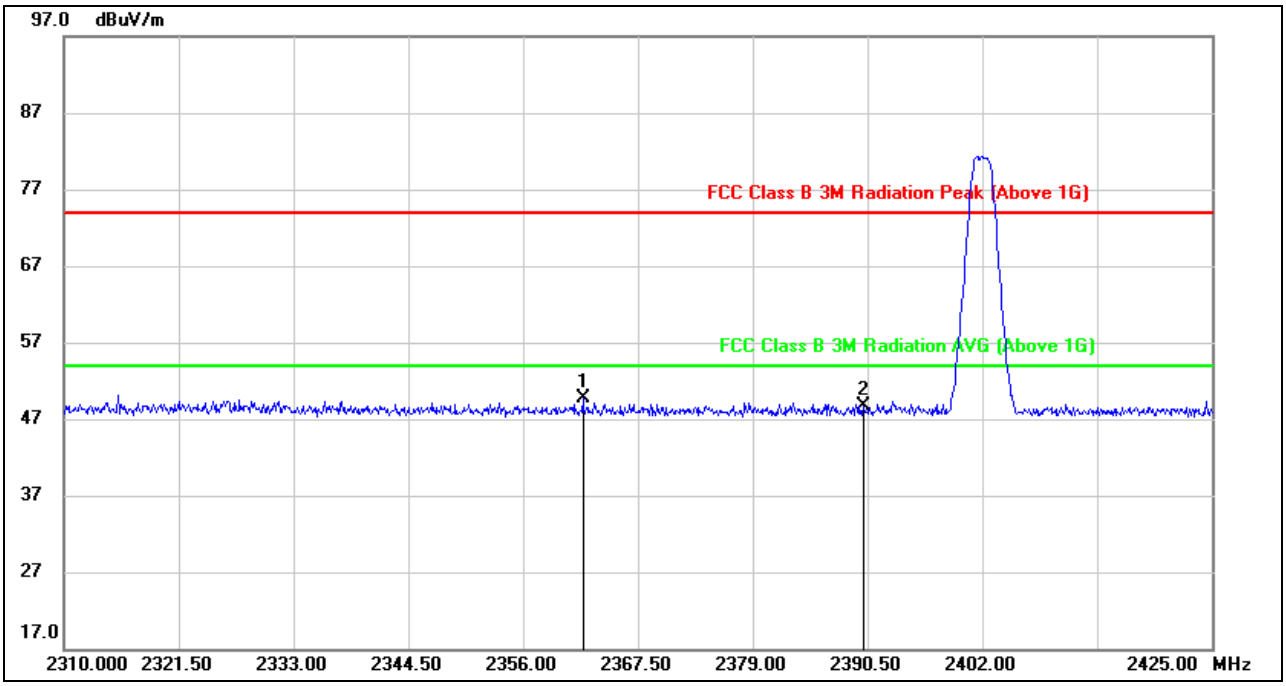
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2370.605	16.46	33.29	49.75	74.00	-24.25	peak
2	2390.000	15.79	33.14	48.93	74.00	-25.07	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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

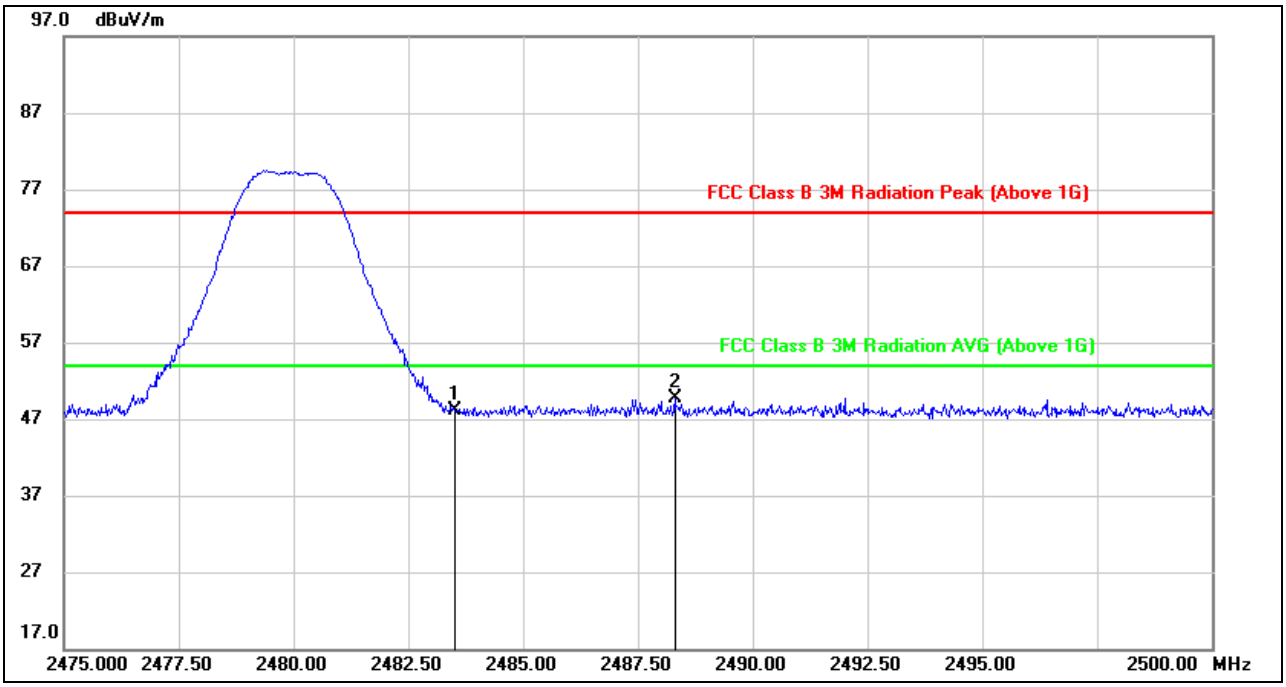
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2361.980	16.26	33.44	49.70	74.00	-24.30	peak
2	2390.000	15.38	33.24	48.62	74.00	-25.38	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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

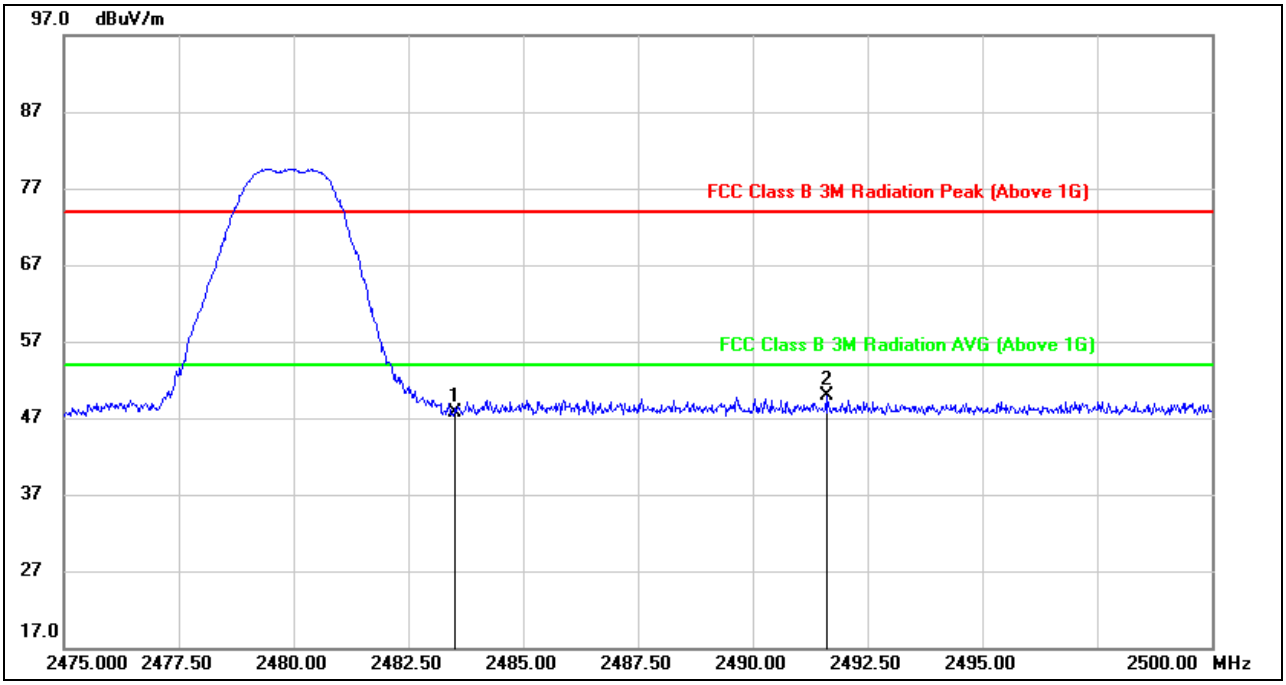
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	15.24	32.78	48.02	74.00	-25.98	peak
2	2488.300	16.92	32.78	49.70	74.00	-24.30	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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



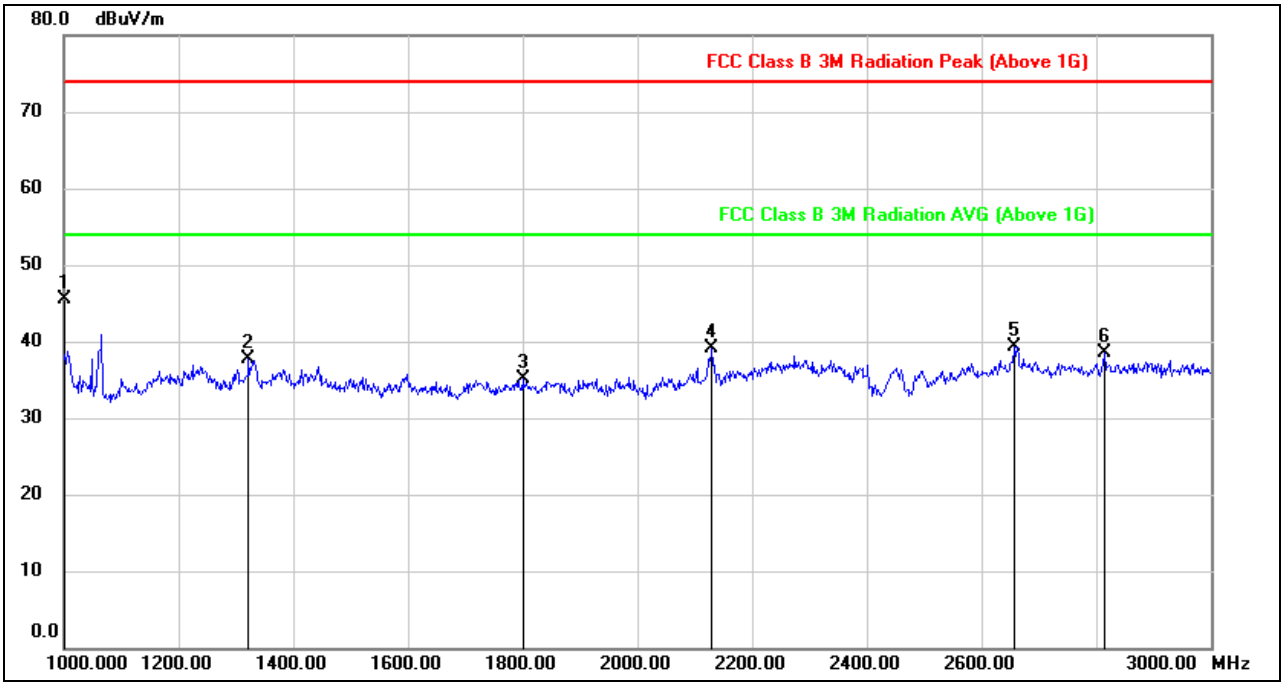
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	14.78	32.88	47.66	74.00	-26.34	peak
2	2491.600	16.97	32.88	49.85	74.00	-24.15	peak

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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

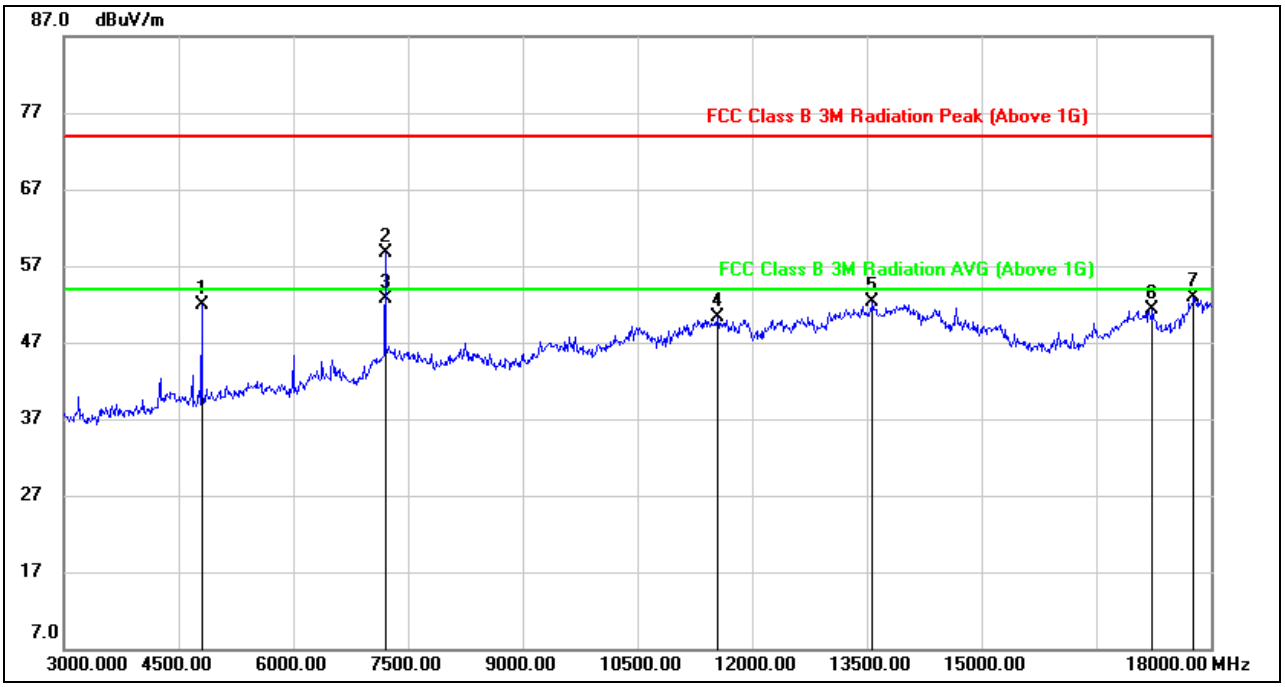
8.2. SPURIOUS EMISSIONS (1~18GHz)

Mode:1Mbps

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1000.0000	59.79	-14.21	45.58	74.00	-28.42	peak
2	1322.000	50.07	-12.38	37.69	74.00	-36.31	peak
3	1800.000	46.28	-11.13	35.15	74.00	-38.85	peak
4	2130.000	48.37	-9.18	39.19	74.00	-34.81	peak
5	2658.000	47.17	-7.82	39.35	74.00	-34.65	peak
6	2814.000	45.33	-6.88	38.45	74.00	-35.55	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4800.000	52.43	-0.56	51.87	74.00	-22.13	peak
2	7205.774	51.02	7.76	58.78	74.00	-15.22	peak
3	7205.774	44.99	7.76	52.75	54.00	-1.25	AVG
4	11550.000	34.56	15.82	50.38	74.00	-23.62	peak
5	13575.000	31.84	20.43	52.27	74.00	-21.73	peak
6	17235.000	28.56	22.72	51.28	74.00	-22.72	peak
7	17775.000	26.72	26.17	52.89	74.00	-21.11	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

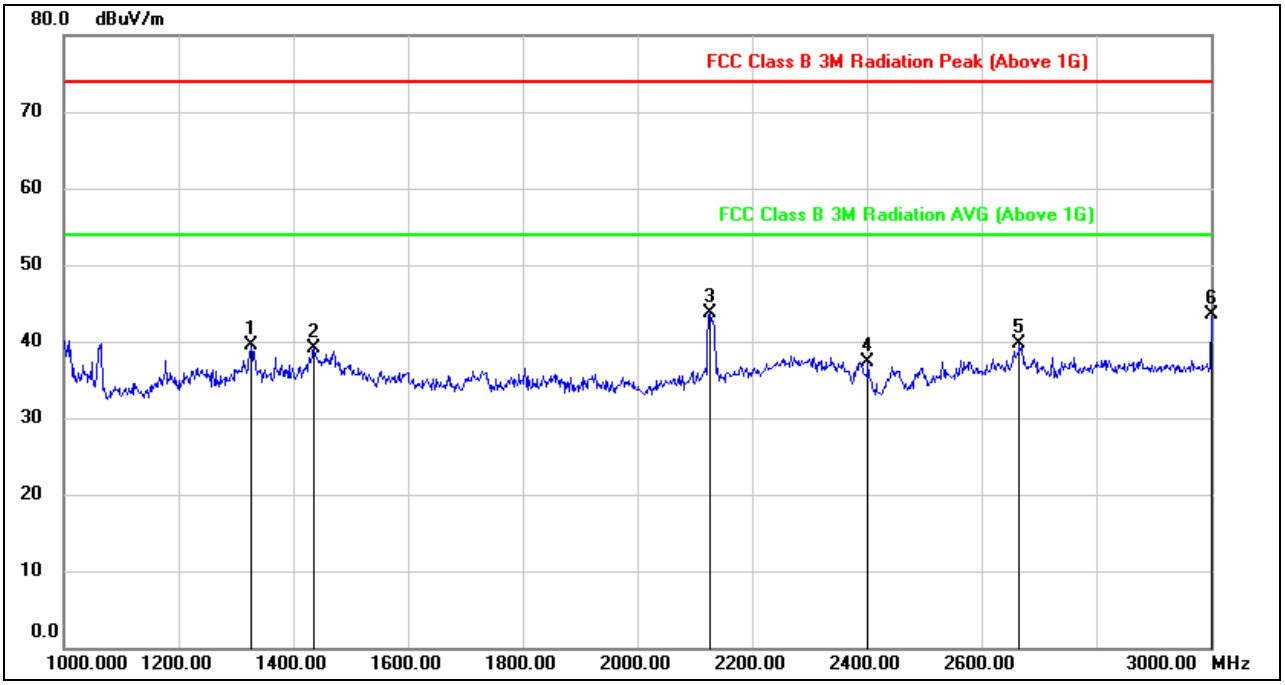
3. Peak: Peak detector.

4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.

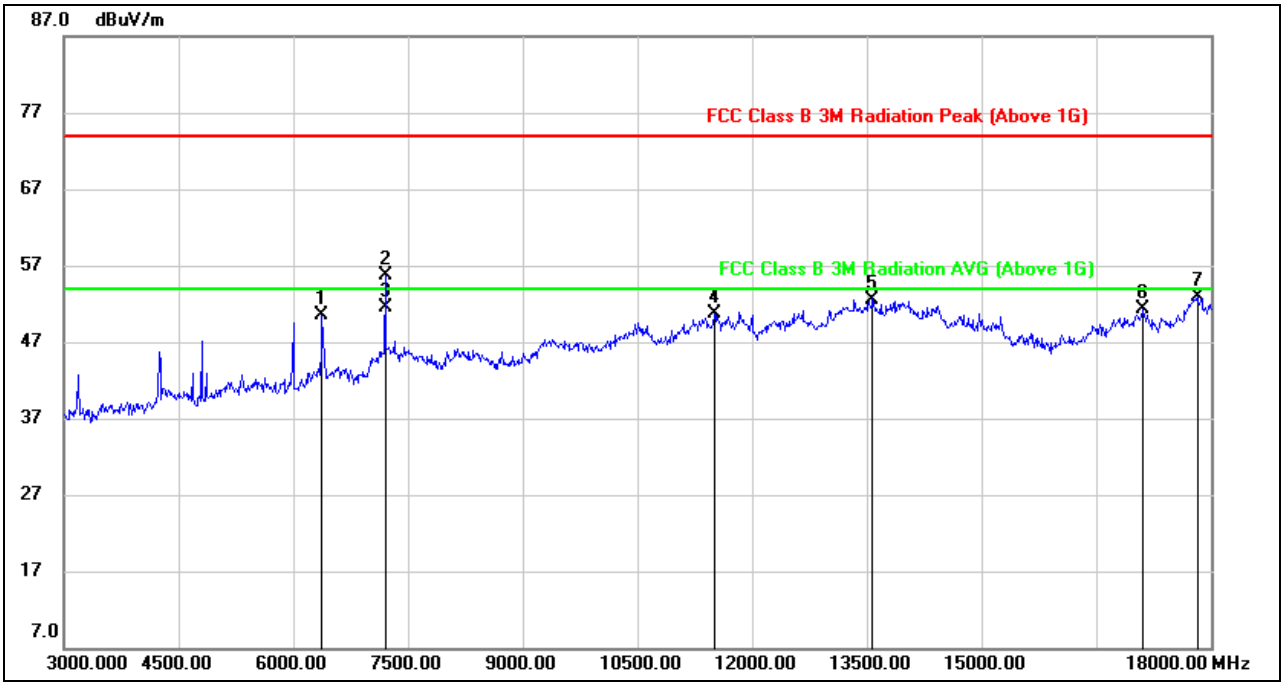
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)

6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1326.000	52.01	-12.53	39.48	74.00	-34.52	peak
2	1436.000	51.47	-12.32	39.15	74.00	-34.85	peak
3	2126.000	53.07	-9.34	43.73	74.00	-30.27	peak
4	2402.000	45.40	-8.01	37.39	74.00	-36.61	peak
5	2666.000	47.46	-7.84	39.62	74.00	-34.38	peak
6	3000.000	50.12	-6.60	43.52	74.00	-30.48	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6375.000	45.89	4.70	50.59	74.00	-23.41	peak
2	7205.794	47.91	7.84	55.75	74.00	-18.25	peak
3	7205.794	43.61	7.84	51.45	54.00	-2.55	AVG
4	11505.000	34.39	16.26	50.65	74.00	-23.35	peak
5	13575.000	31.97	20.63	52.60	74.00	-21.40	peak
6	17100.000	28.52	22.84	51.36	74.00	-22.64	peak
7	17820.000	26.31	26.56	52.87	74.00	-21.13	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

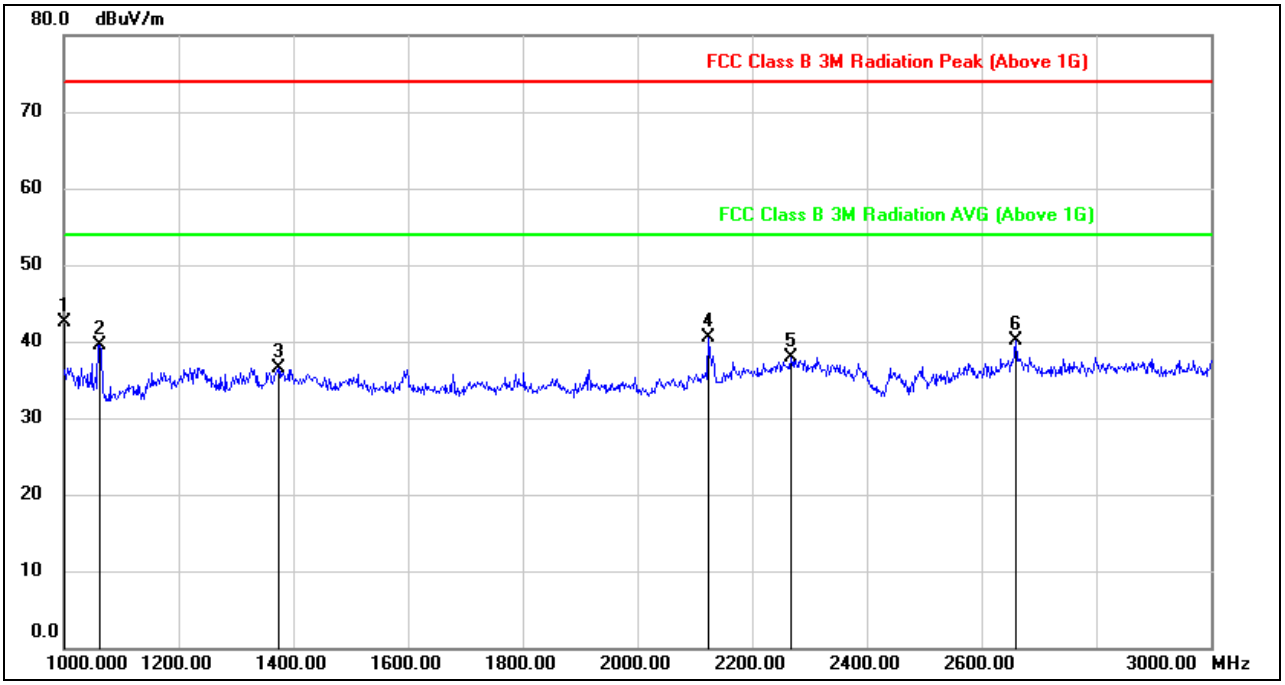
3. Peak: Peak detector.

4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.

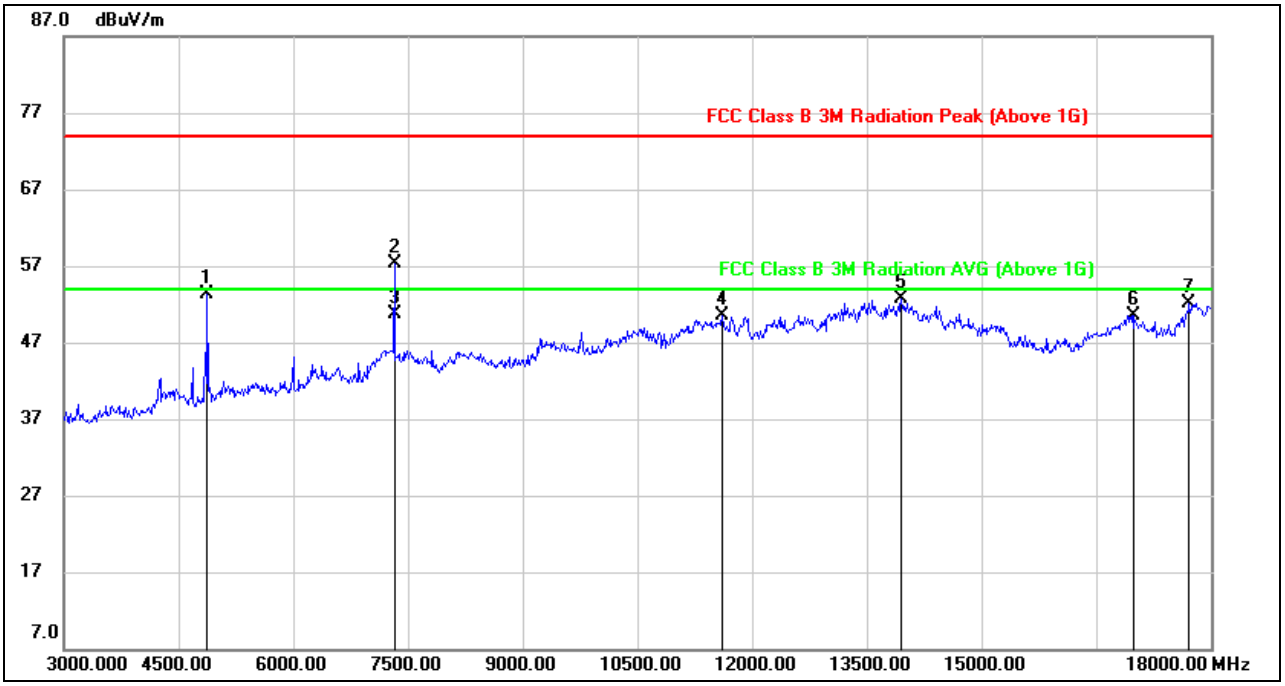
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)

6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1000.0000	56.75	-14.21	42.54	74.00	-31.46	peak
2	1062.000	53.19	-13.62	39.57	74.00	-34.43	peak
3	1374.000	48.77	-12.22	36.55	74.00	-37.45	peak
4	2124.000	49.75	-9.26	40.49	74.00	-33.51	peak
5	2268.000	45.45	-7.53	37.92	74.00	-36.08	peak
6	2660.000	47.86	-7.80	40.06	74.00	-33.94	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	52.92	0.38	53.30	74.00	-20.70	peak
2	7320.000	49.72	7.63	57.35	74.00	-16.65	peak
3	7320.000	43.17	7.63	50.80	54.00	-3.20	AVG
4	11610.000	34.32	16.17	50.49	74.00	-23.51	peak
5	13950.000	32.09	20.68	52.77	74.00	-21.23	peak
6	16995.000	28.70	21.85	50.55	74.00	-23.45	peak
7	17715.000	26.40	25.79	52.19	74.00	-21.81	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

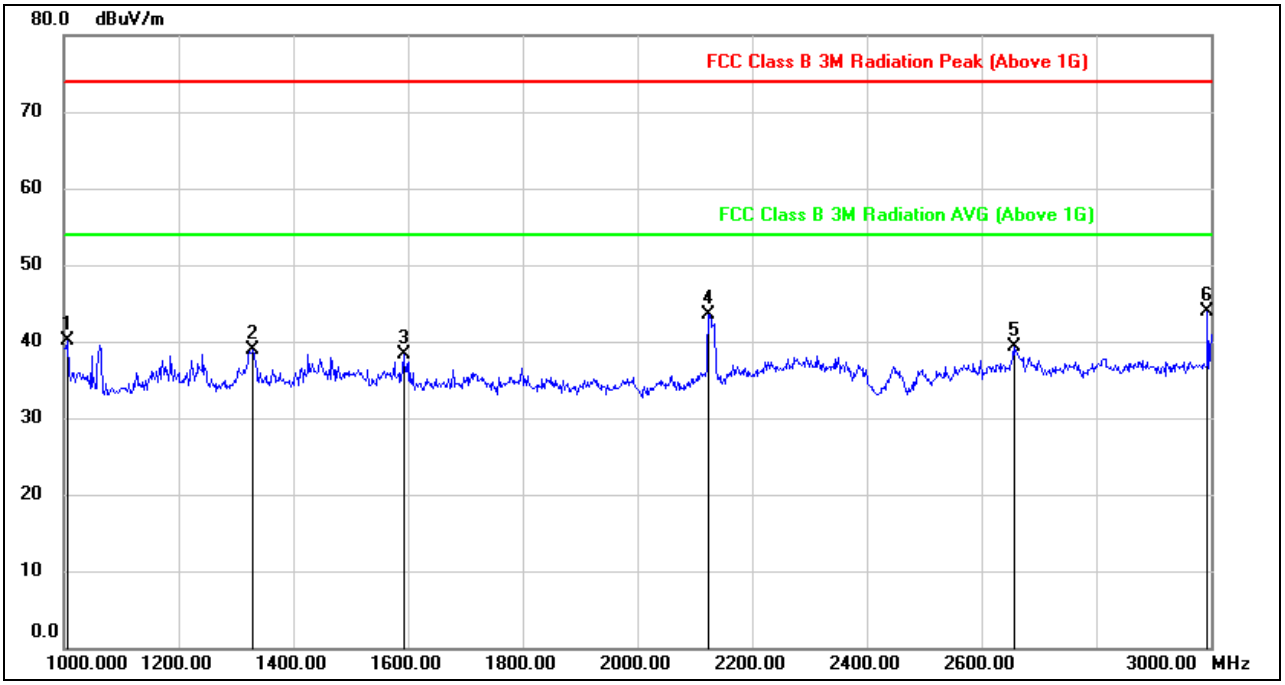
3. Peak: Peak detector.

4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.

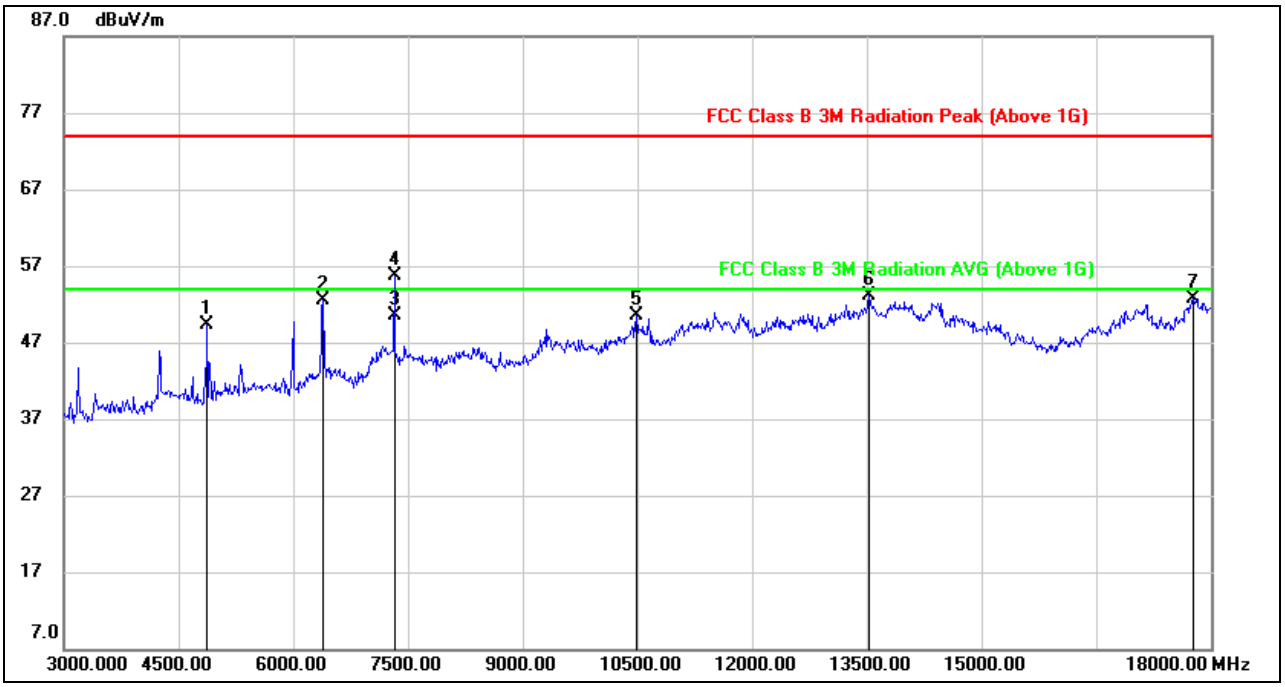
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)

6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1006.000	54.15	-14.00	40.15	74.00	-33.85	peak
2	1330.000	51.35	-12.50	38.85	74.00	-35.15	peak
3	1592.000	50.41	-12.10	38.31	74.00	-35.69	peak
4	2124.000	52.92	-9.36	43.56	74.00	-30.44	peak
5	2656.000	47.29	-7.91	39.38	74.00	-34.62	peak
6	2994.000	50.48	-6.59	43.89	74.00	-30.11	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	49.00	0.33	49.33	74.00	-24.67	peak
2	6390.000	47.84	4.73	52.57	74.00	-21.43	peak
3	7319.760	42.90	7.67	50.57	54.00	-3.43	AVG
4	7320.000	48.02	7.67	55.69	74.00	-18.31	peak
5	10485.000	36.79	13.72	50.51	74.00	-23.49	peak
6	13530.000	32.42	20.78	53.20	74.00	-20.80	peak
7	17760.000	26.33	26.39	52.72	74.00	-21.28	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

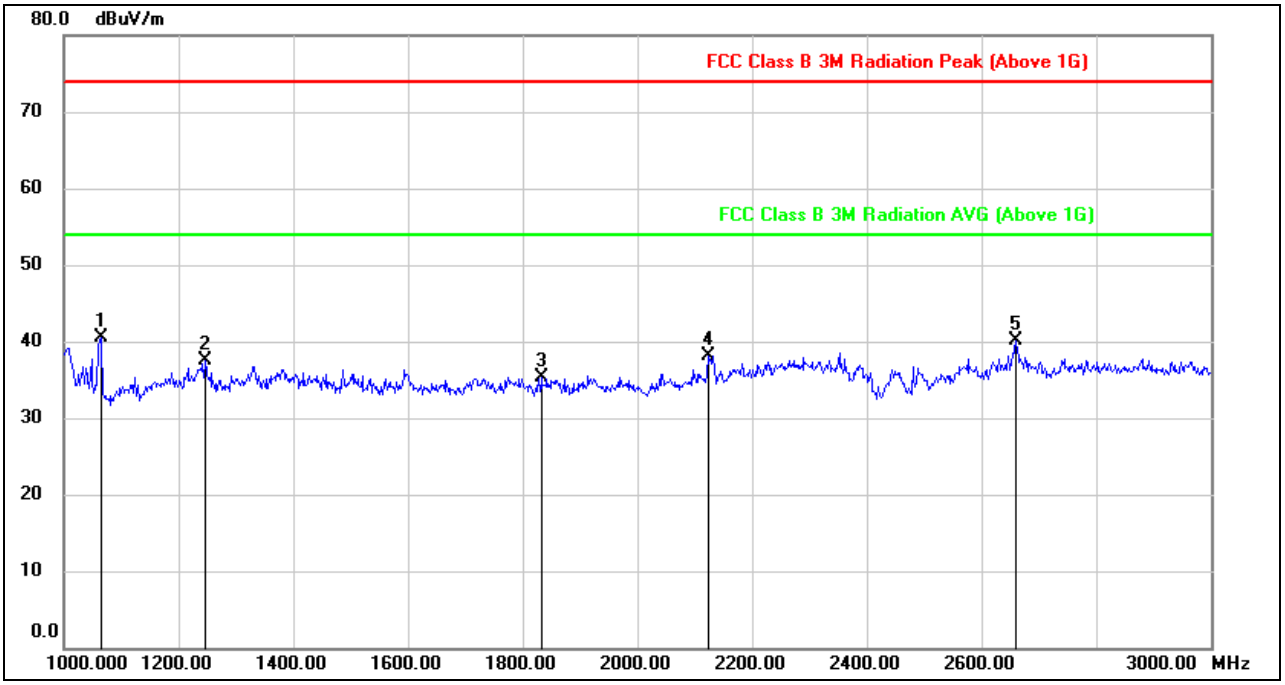
3. Peak: Peak detector.

4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.

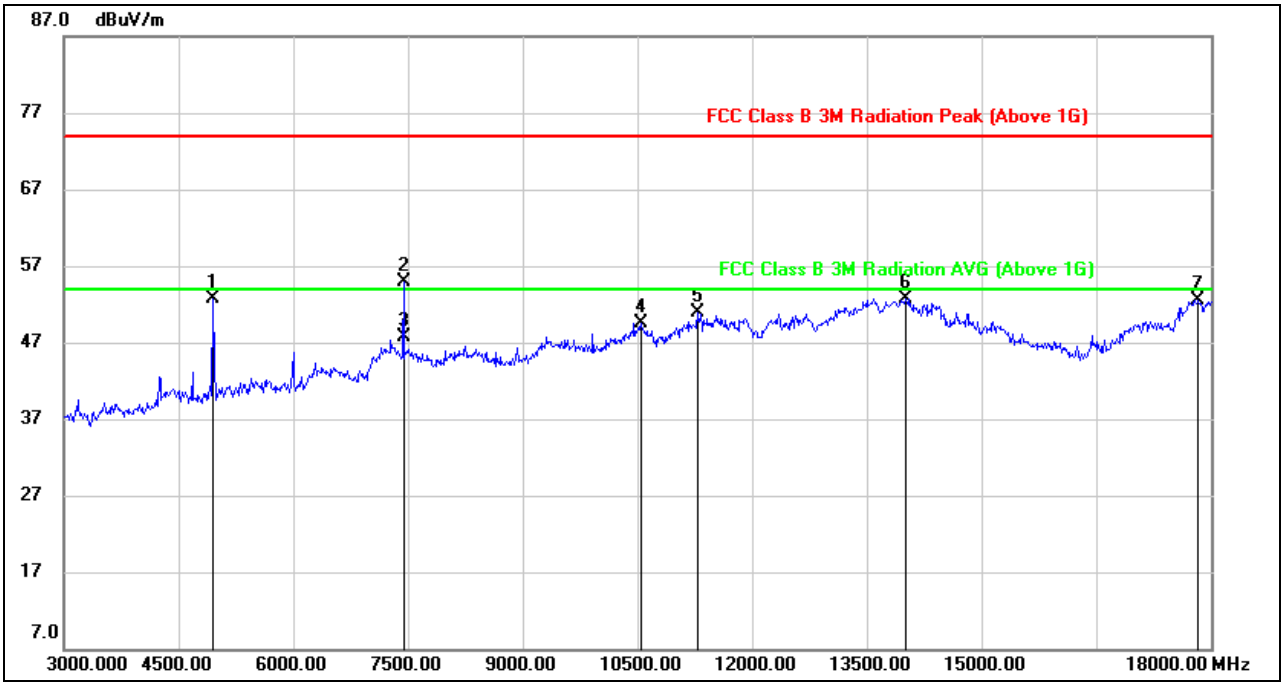
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)

6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1064.000	54.21	-13.62	40.59	74.00	-33.41	peak
2	1246.000	50.44	-12.85	37.59	74.00	-36.41	peak
3	1832.000	46.33	-10.97	35.36	74.00	-38.64	peak
4	2124.000	47.46	-9.26	38.20	74.00	-35.80	peak
5	2660.000	47.85	-7.80	40.05	74.00	-33.95	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4950.000	52.05	0.59	52.64	74.00	-21.36	peak
2	7440.000	47.45	7.44	54.89	74.00	-19.11	peak
3	7440.000	40.26	7.44	47.70	54.00	-6.30	AVG
4	10545.000	35.71	13.79	49.50	74.00	-24.50	peak
5	11280.000	35.55	15.40	50.95	74.00	-23.05	peak
6	14010.000	32.15	20.61	52.76	74.00	-21.24	peak
7	17835.000	26.10	26.49	52.59	74.00	-21.41	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

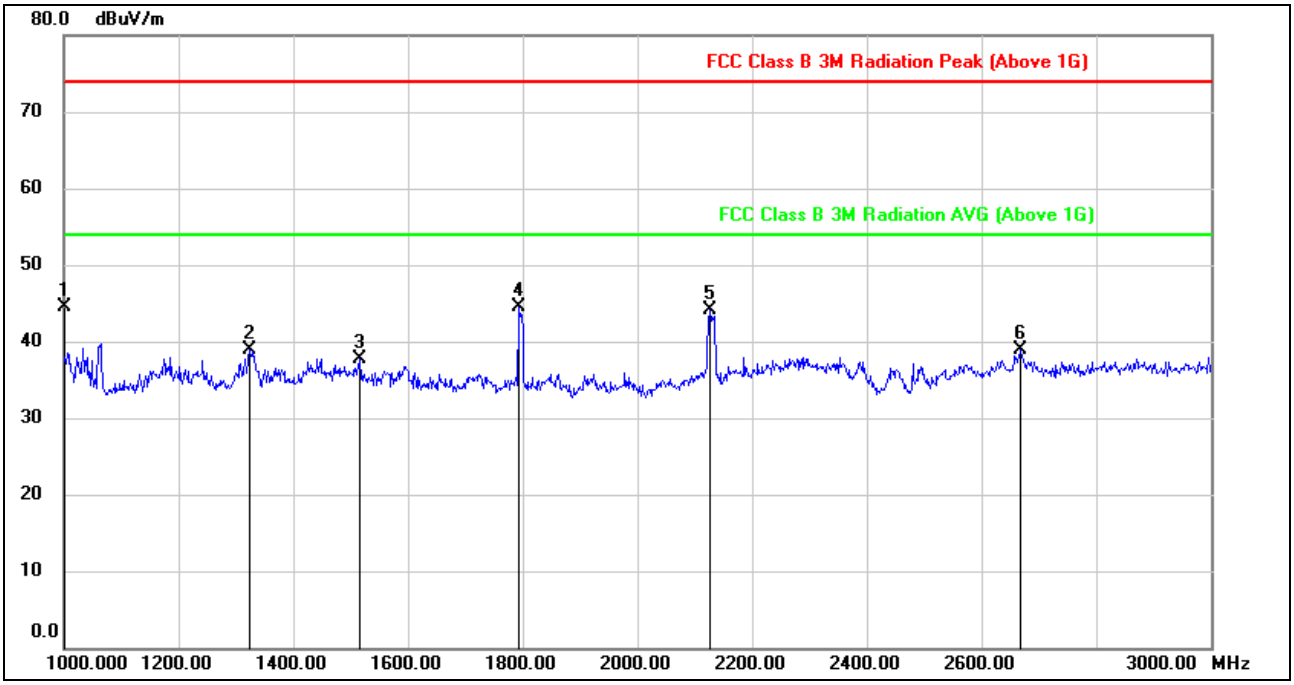
3. Peak: Peak detector.

4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.

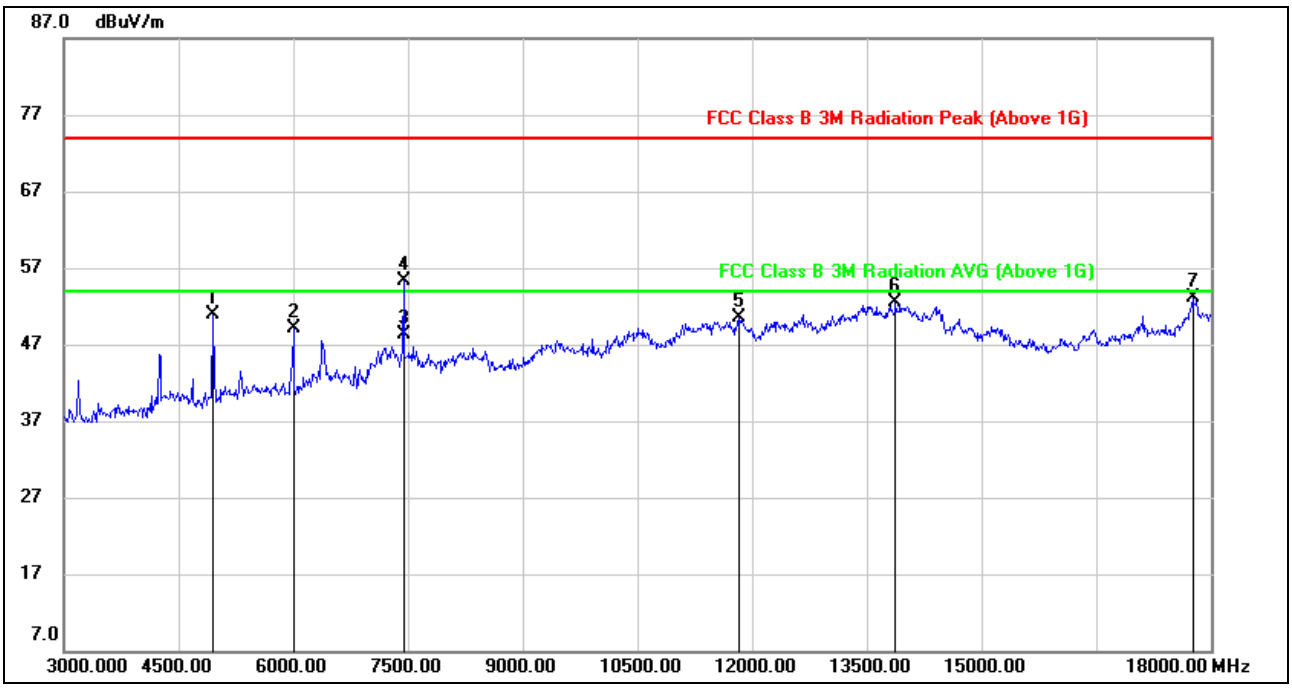
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)

6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1000.0000	58.48	-14.01	44.47	74.00	-29.53	peak
2	1324.000	51.41	-12.53	38.88	74.00	-35.12	peak
3	1516.000	49.88	-12.27	37.61	74.00	-36.39	peak
4	1794.000	55.72	-11.15	44.57	74.00	-29.43	peak
5	2126.000	53.51	-9.34	44.17	74.00	-29.83	peak
6	2668.000	46.77	-7.83	38.94	74.00	-35.06	peak



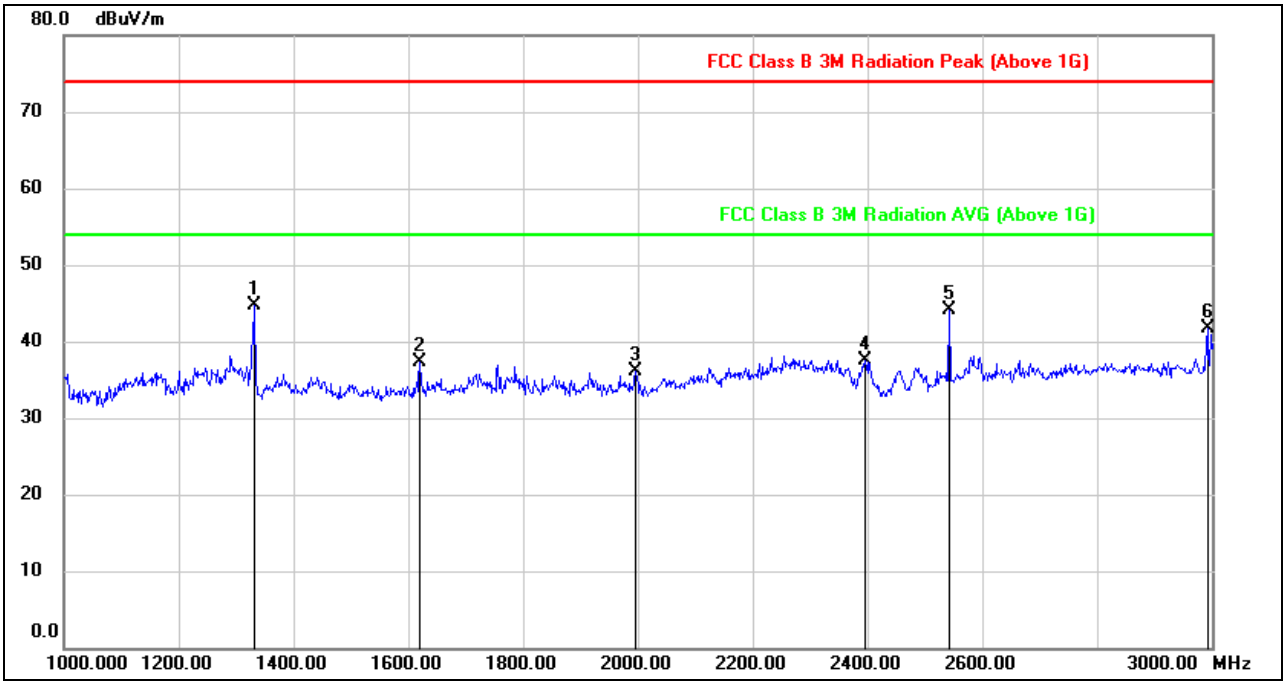
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4950.000	50.38	0.59	50.97	74.00	-23.03	peak
2	6000.000	45.73	3.32	49.05	74.00	-24.95	peak
3	7439.820	40.78	7.52	48.30	54.00	-5.70	AVG
4	7440.000	47.74	7.52	55.26	74.00	-18.74	peak
5	11820.000	33.91	16.58	50.49	74.00	-23.51	peak
6	13875.000	31.69	20.89	52.58	74.00	-21.42	peak
7	17760.000	26.78	26.39	53.17	74.00	-20.83	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)
6. The DCCF already added in Correct Factor.

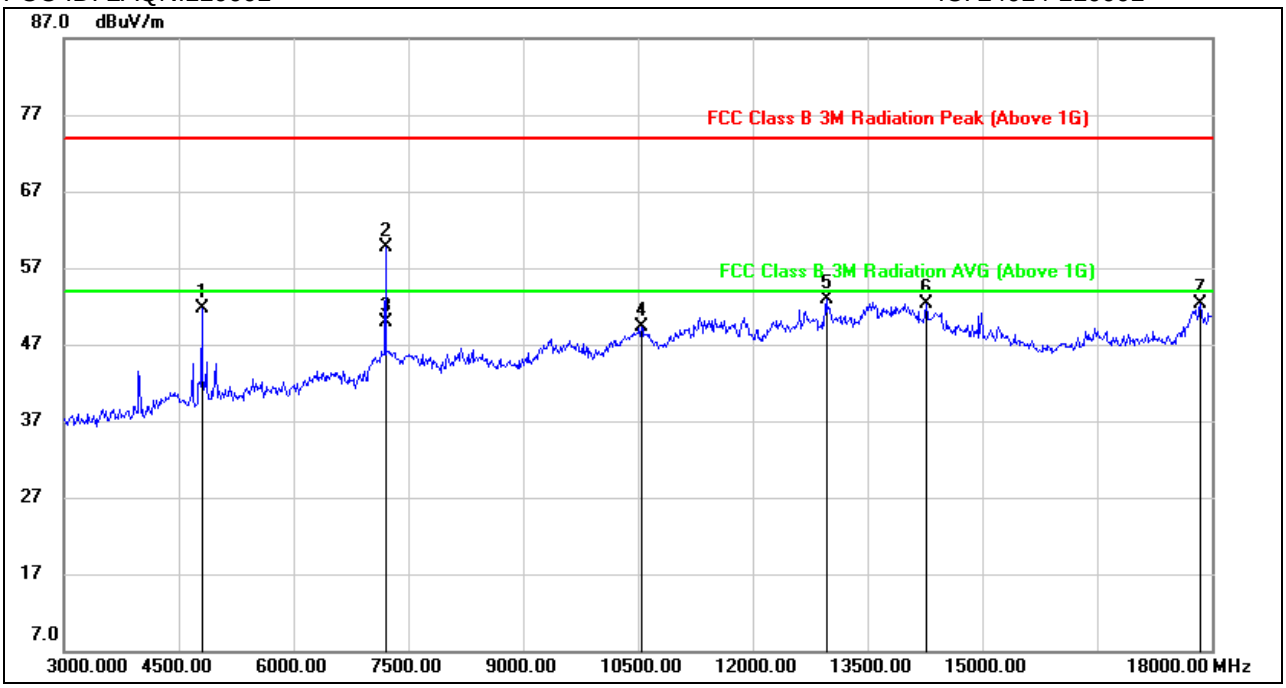
Note: All the channels had been tested, but only the worst data recorded in the report.

Mode:2Mbps

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1332.000	57.02	-12.37	44.65	74.00	-29.35	peak
2	1620.000	49.25	-11.93	37.32	74.00	-36.68	peak
3	1996.000	46.73	-10.64	36.09	74.00	-37.91	peak
4	2396.000	45.67	-8.07	37.60	74.00	-36.40	peak
5	2542.000	52.51	-8.36	44.15	74.00	-29.85	peak
6	2992.000	48.36	-6.59	41.77	74.00	-32.23	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4800.000	52.24	-0.56	51.68	74.00	-22.32	peak
2	7200.000	51.86	7.75	59.61	74.00	-14.39	peak
3	7206.000	42.08	7.76	49.84	54.00	-4.16	AVG
4	10545.000	35.42	13.79	49.21	74.00	-24.79	peak
5	12960.000	34.27	18.68	52.95	74.00	-21.05	peak
6	14265.000	32.50	19.79	52.29	74.00	-21.71	peak
7	17850.000	25.77	26.49	52.26	74.00	-21.74	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

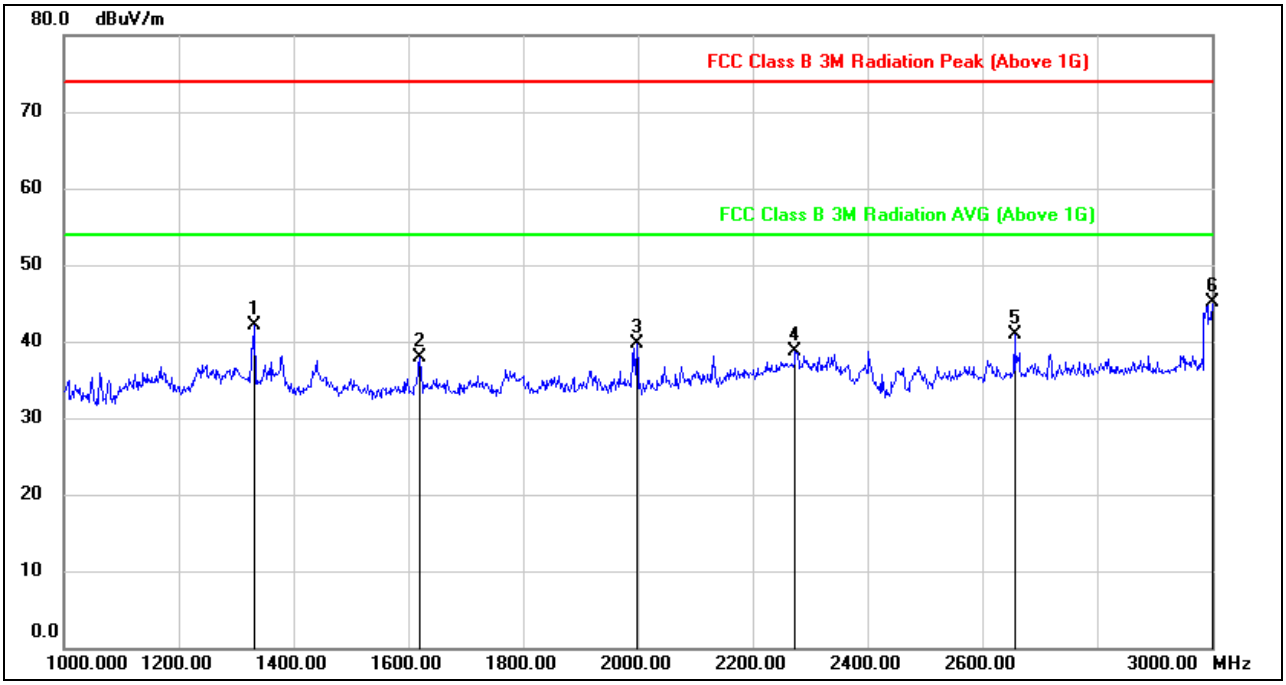
3. Peak: Peak detector.

4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.

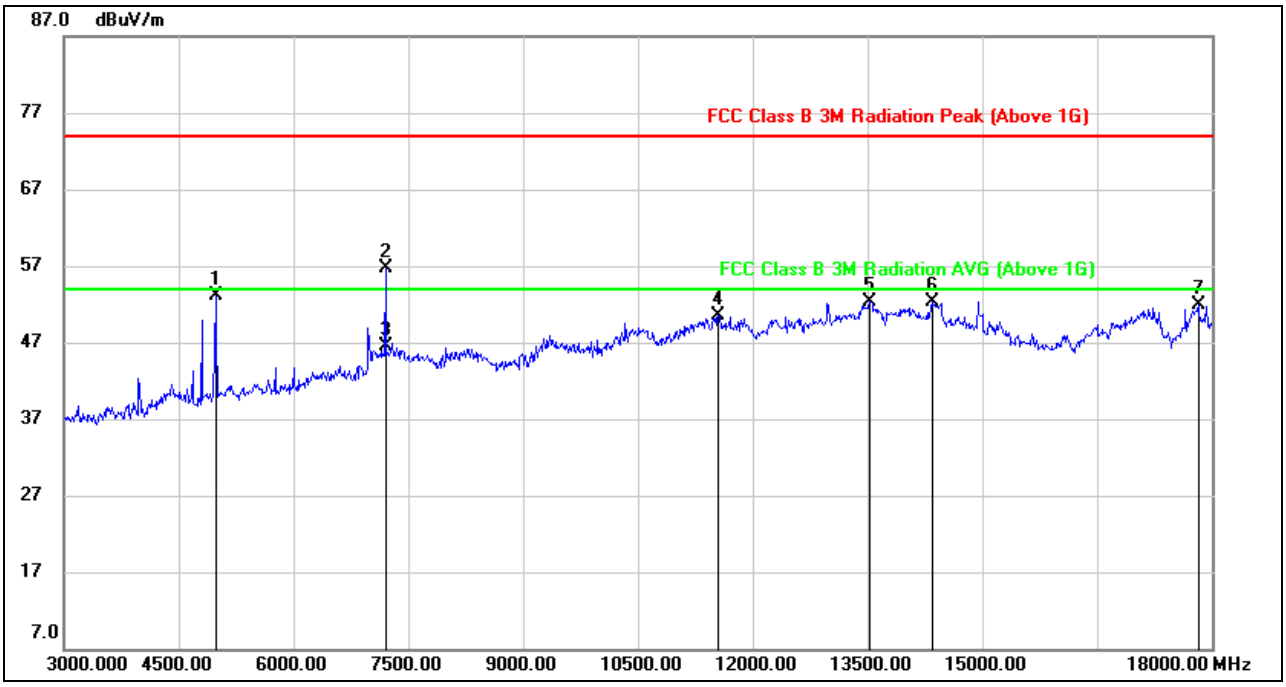
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)

6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1332.000	54.61	-12.48	42.13	74.00	-31.87	peak
2	1620.000	49.79	-11.93	37.86	74.00	-36.14	peak
3	1998.000	50.36	-10.64	39.72	74.00	-34.28	peak
4	2274.000	46.03	-7.40	38.63	74.00	-35.37	peak
5	2656.000	48.82	-7.91	40.91	74.00	-33.09	peak
6	3000.000	51.75	-6.60	45.15	74.00	-28.85	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4980.000	52.61	0.58	53.19	74.00	-20.81	peak
2	7206.000	48.79	7.84	56.63	74.00	-17.37	peak
3	7206.000	38.66	7.84	46.50	54.00	-7.50	AVG
4	11550.000	34.29	16.22	50.51	74.00	-23.49	peak
5	13530.000	31.55	20.78	52.33	74.00	-21.67	peak
6	14340.000	32.01	20.25	52.26	74.00	-21.74	peak
7	17820.000	25.28	26.56	51.84	74.00	-22.16	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

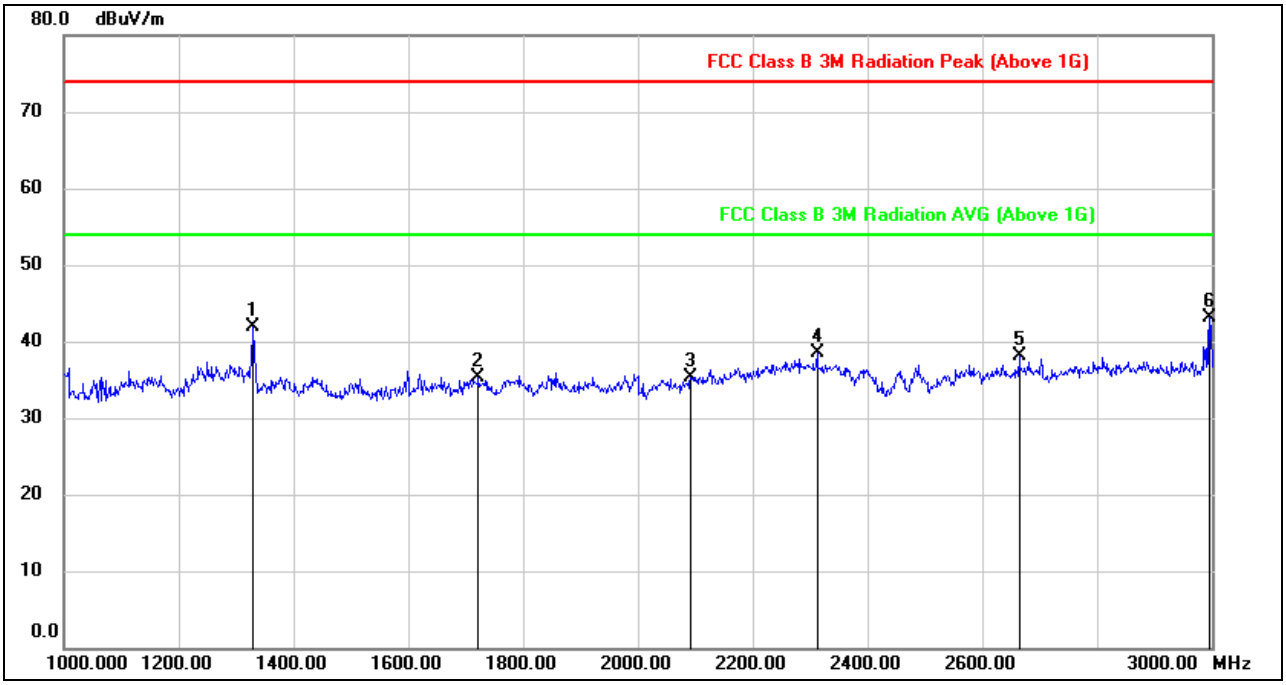
3. Peak: Peak detector.

4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.

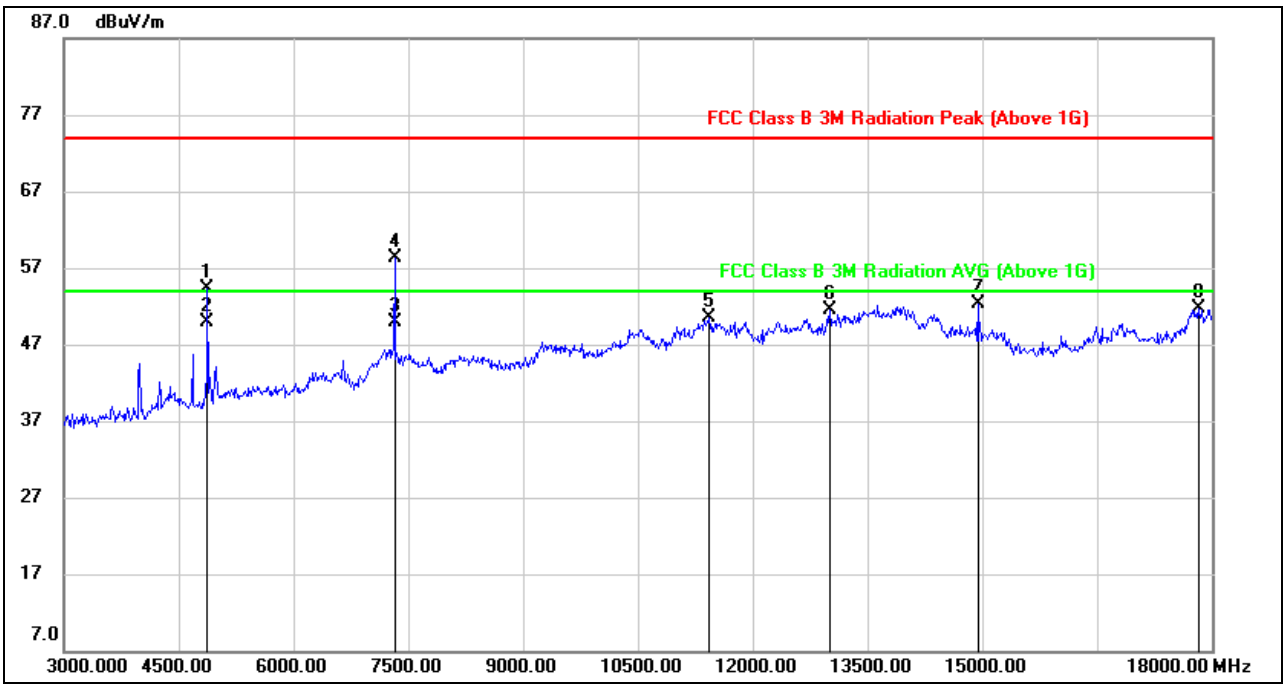
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)

6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1330.000	54.23	-12.38	41.85	74.00	-32.15	peak
2	1722.000	46.64	-11.41	35.23	74.00	-38.77	peak
3	2092.000	45.02	-9.67	35.35	74.00	-38.65	peak
4	2312.000	45.90	-7.48	38.42	74.00	-35.58	peak
5	2664.000	45.85	-7.78	38.07	74.00	-35.93	peak
6	2996.000	49.64	-6.60	43.04	74.00	-30.96	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4880.000	53.79	0.45	54.24	74.00	-19.76	peak
2	4880.000	49.41	0.45	49.86	54.00	-4.14	AVG
3	7319.800	42.20	7.63	49.83	54.00	-4.17	AVG
4	7320.000	50.67	7.63	58.30	74.00	-15.70	peak
5	11430.000	34.59	15.83	50.42	74.00	-23.58	peak
6	13005.000	32.88	18.65	51.53	74.00	-22.47	peak
7	14940.000	34.10	18.20	52.30	74.00	-21.70	peak
8	17820.000	25.32	26.48	51.80	74.00	-22.20	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

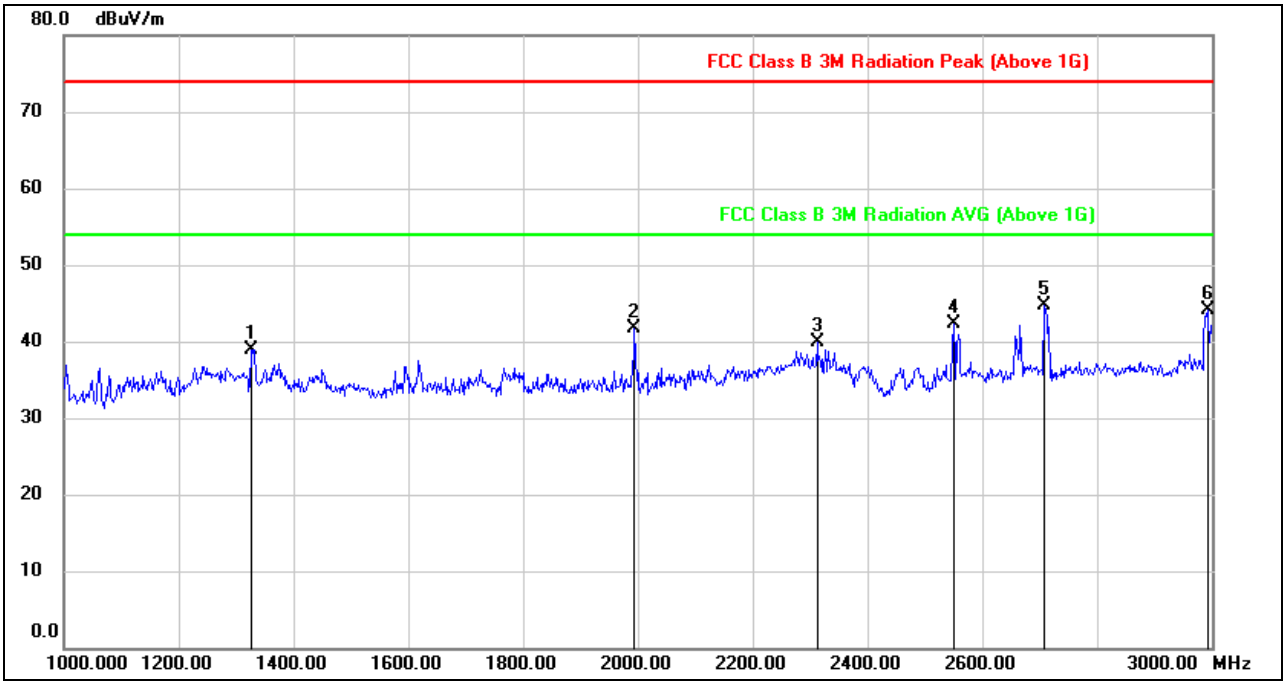
3. Peak: Peak detector.

4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.

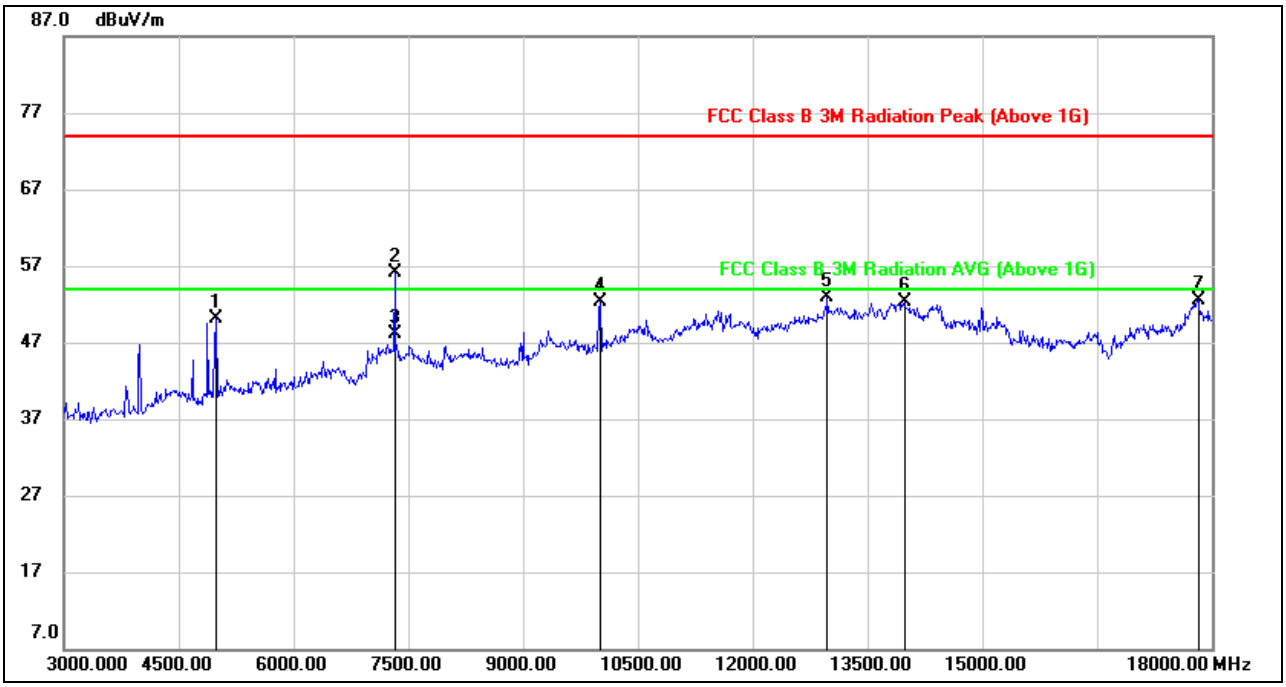
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)

6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1326.000	51.51	-12.53	38.98	74.00	-35.02	peak
2	1994.000	52.26	-10.65	41.61	74.00	-32.39	peak
3	2312.000	47.13	-7.30	39.83	74.00	-34.17	peak
4	2550.000	50.50	-8.25	42.25	74.00	-31.75	peak
5	2708.000	52.19	-7.56	44.63	74.00	-29.37	peak
6	2992.000	50.61	-6.59	44.02	74.00	-29.98	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4995.000	49.62	0.57	50.19	74.00	-23.81	peak
2	7320.000	48.48	7.67	56.15	74.00	-17.85	peak
3	7320.000	40.49	7.67	48.16	54.00	-5.84	AVG
4	10005.000	40.08	12.15	52.23	74.00	-21.77	peak
5	12975.000	34.14	18.73	52.87	74.00	-21.13	peak
6	13980.000	31.67	20.73	52.40	74.00	-21.60	peak
7	17820.000	26.02	26.56	52.58	74.00	-21.42	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

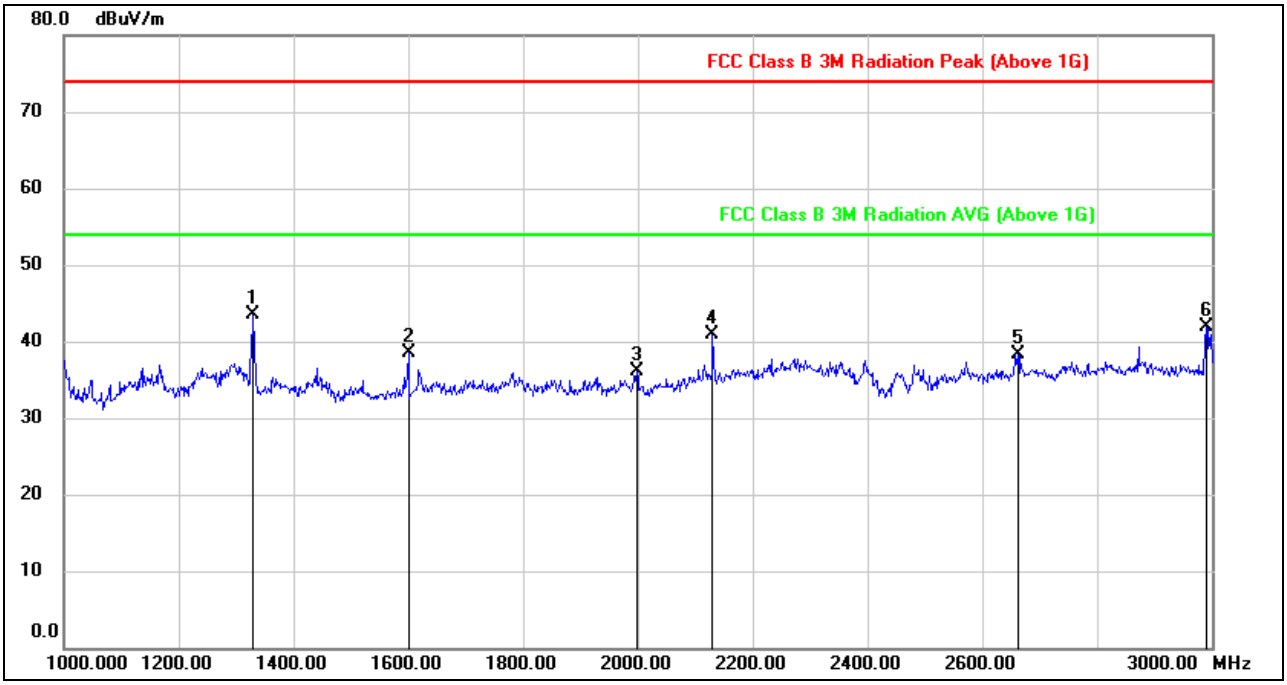
3. Peak: Peak detector.

4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.

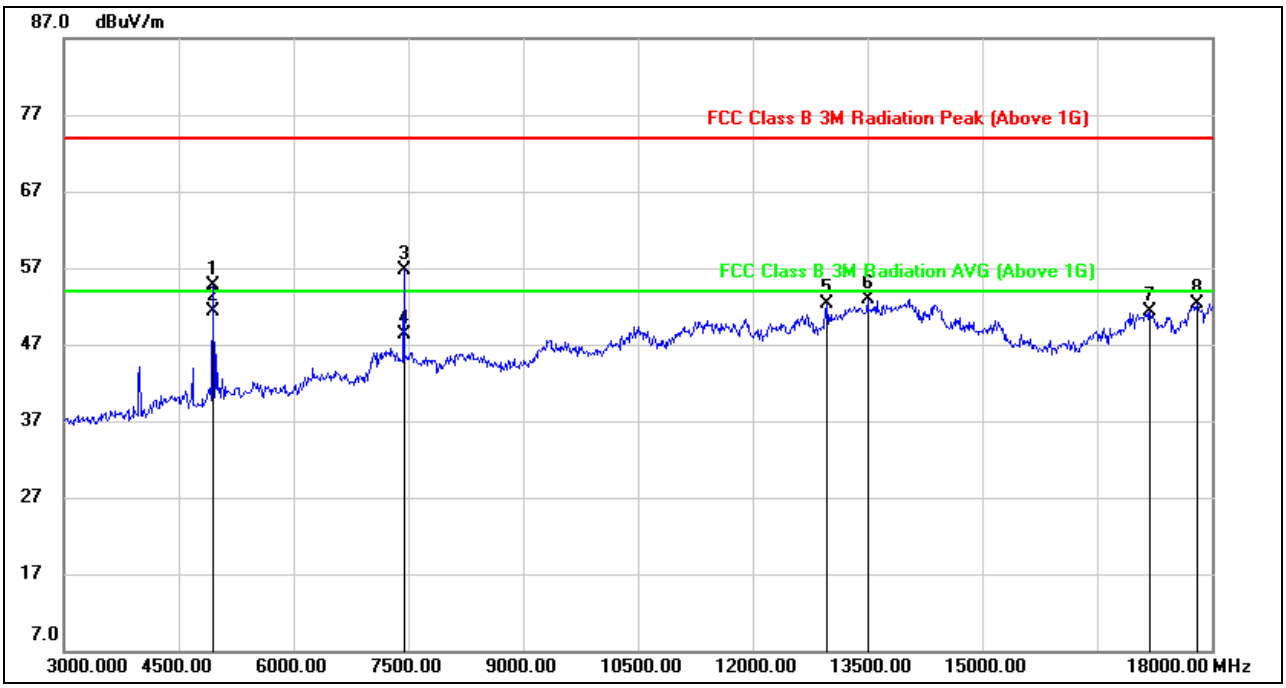
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)

6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



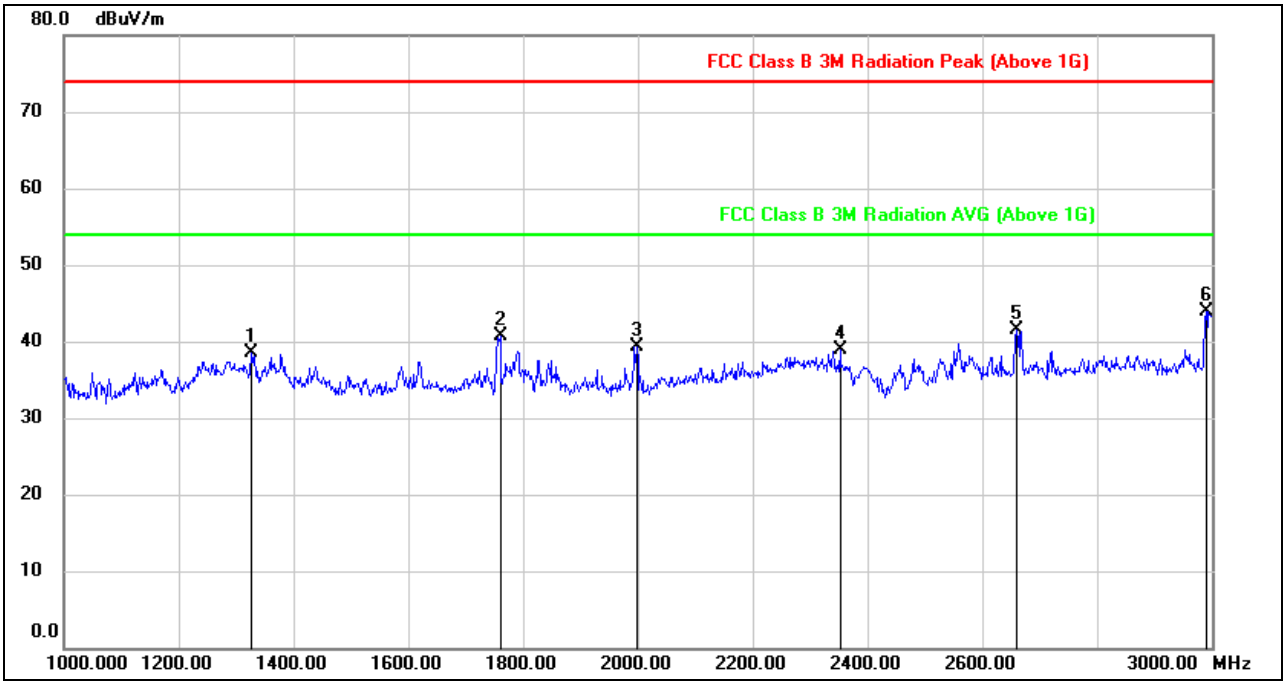
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1330.000	55.91	-12.38	43.53	74.00	-30.47	peak
2	1600.000	50.49	-12.06	38.43	74.00	-35.57	peak
3	1998.000	46.67	-10.63	36.04	74.00	-37.96	peak
4	2130.000	50.11	-9.18	40.93	74.00	-33.07	peak
5	2662.000	46.19	-7.79	38.40	74.00	-35.60	peak
6	2990.000	48.50	-6.59	41.91	74.00	-32.09	peak



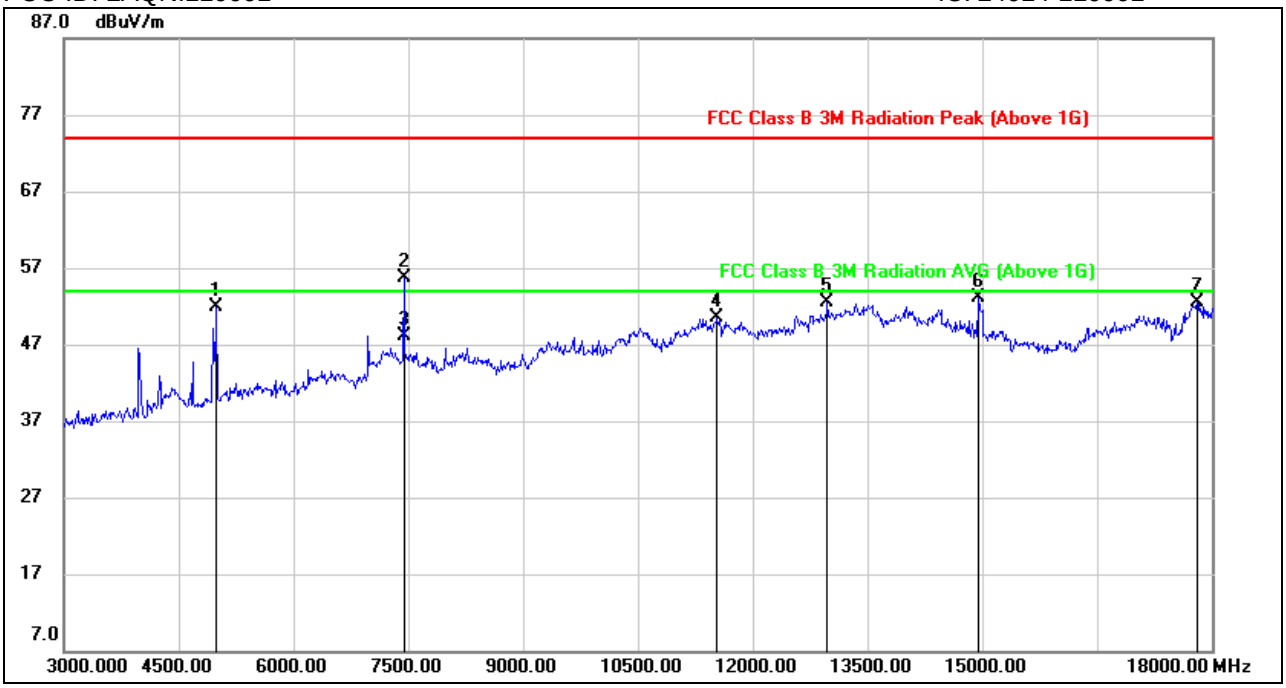
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.000	54.07	0.56	54.63	74.00	-19.37	peak
2	4960.000	50.80	0.56	51.36	54.00	-2.64	AVG
3	7440.000	49.29	7.44	56.73	74.00	-17.27	peak
4	7440.000	40.90	7.44	48.34	54.00	-5.66	AVG
5	12975.000	33.61	18.68	52.29	74.00	-21.71	peak
6	13500.000	32.76	20.07	52.83	74.00	-21.17	peak
7	17190.000	28.59	22.77	51.36	74.00	-22.64	peak
8	17805.000	25.85	26.48	52.33	74.00	-21.67	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)
6. The DCCF already added in Correct Factor.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1326.000	50.98	-12.53	38.45	74.00	-35.55	peak
2	1760.000	51.98	-11.25	40.73	74.00	-33.27	peak
3	1998.000	49.98	-10.64	39.34	74.00	-34.66	peak
4	2352.000	46.64	-7.66	38.98	74.00	-35.02	peak
5	2660.000	49.39	-7.88	41.51	74.00	-32.49	peak
6	2990.000	50.50	-6.59	43.91	74.00	-30.09	peak



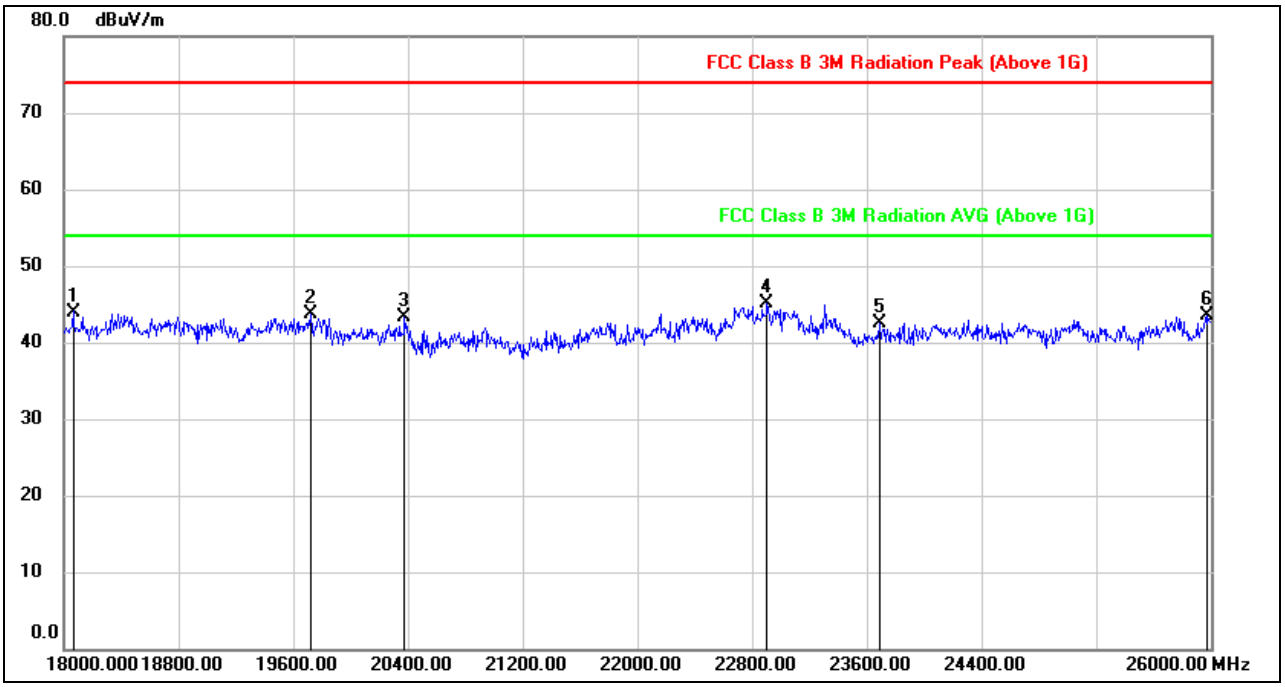
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4995.000	51.34	0.57	51.91	74.00	-22.09	peak
2	7440.000	48.15	7.52	55.67	74.00	-18.33	peak
3	7440.000	40.58	7.52	48.10	54.00	-5.90	AVG
4	11535.000	34.32	16.23	50.55	74.00	-23.45	peak
5	12975.000	33.77	18.73	52.50	74.00	-21.50	peak
6	14955.000	34.58	18.43	53.01	74.00	-20.99	peak
7	17805.000	25.69	26.80	52.49	74.00	-21.51	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. Only the worst case emission recorded in the report, if Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. AVG: RMS detector, the detector and averaging type may be set for linear voltage averaging.
5. DCCF: Duty Cycle Correction Factor (Please refer to clause 7.1.ON TIME AND DUTY CYCLE)
6. The DCCF already added in Correct Factor.

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

8.3. SPURIOUS EMISSIONS 18G ~ 26GHz

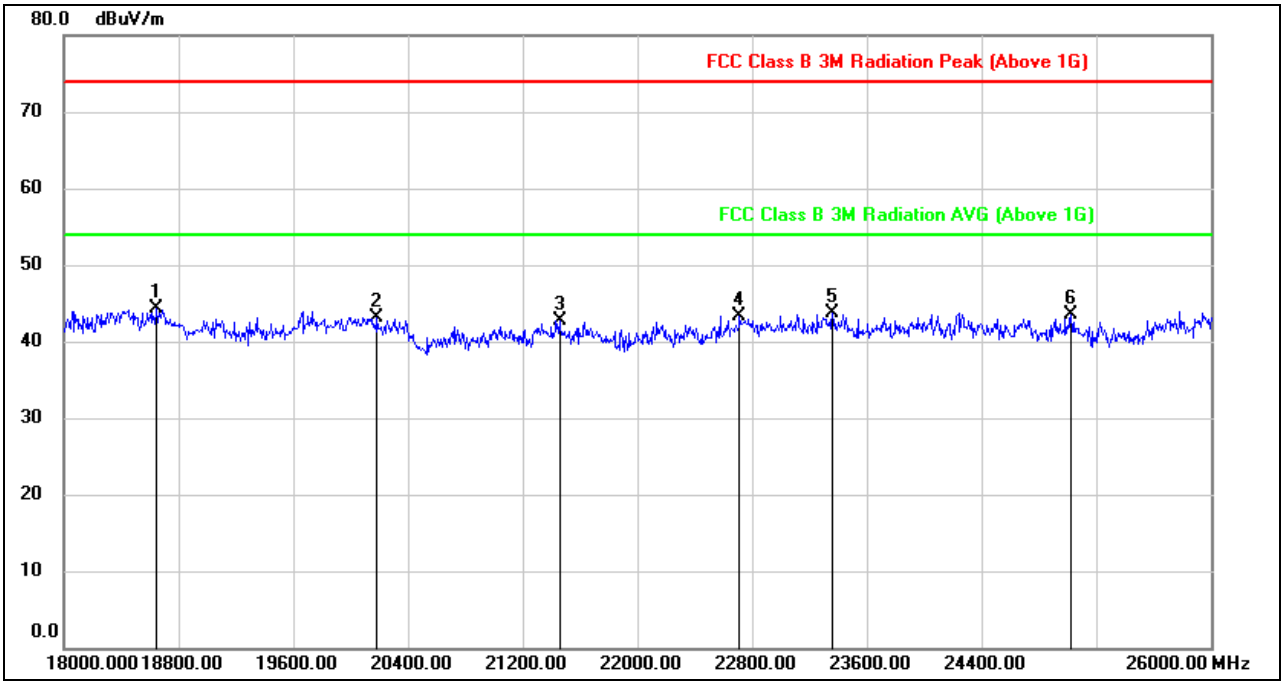
SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18064.000	48.00	-4.00	44.00	74.00	-30.00	peak
2	19720.000	47.75	-4.12	43.63	74.00	-30.37	peak
3	20376.000	48.16	-4.92	43.24	74.00	-30.76	peak
4	22904.000	48.93	-3.83	45.10	74.00	-28.90	peak
5	23688.000	46.23	-3.66	42.57	74.00	-31.43	peak
6	25968.000	46.48	-3.06	43.42	74.00	-30.58	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. Peak: Peak detector.

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



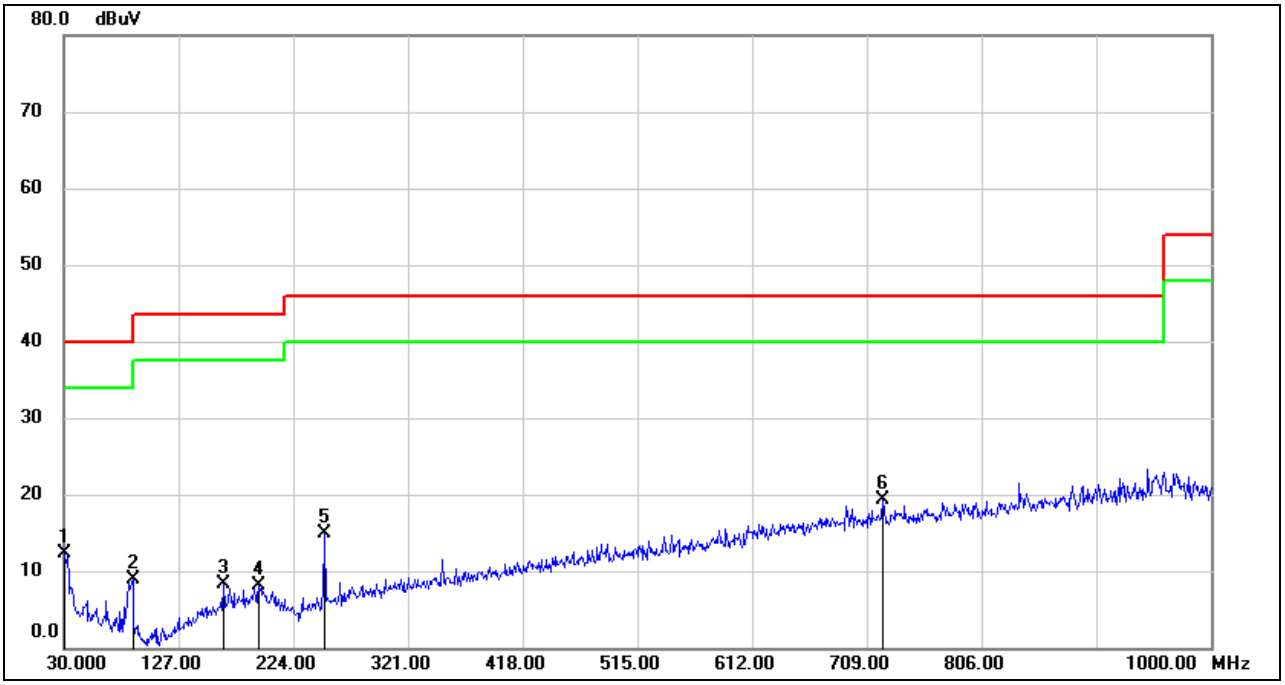
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18648.000	48.97	-4.63	44.34	74.00	-29.66	peak
2	20184.000	47.62	-4.52	43.10	74.00	-30.90	peak
3	21456.000	48.45	-5.75	42.70	74.00	-31.30	peak
4	22712.000	47.45	-4.18	43.27	74.00	-30.73	peak
5	23360.000	47.23	-3.61	43.62	74.00	-30.38	peak
6	25024.000	46.45	-2.88	43.57	74.00	-30.43	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. Peak: Peak detector.

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

8.4. SPURIOUS EMISSIONS 30M ~ 1 GHz

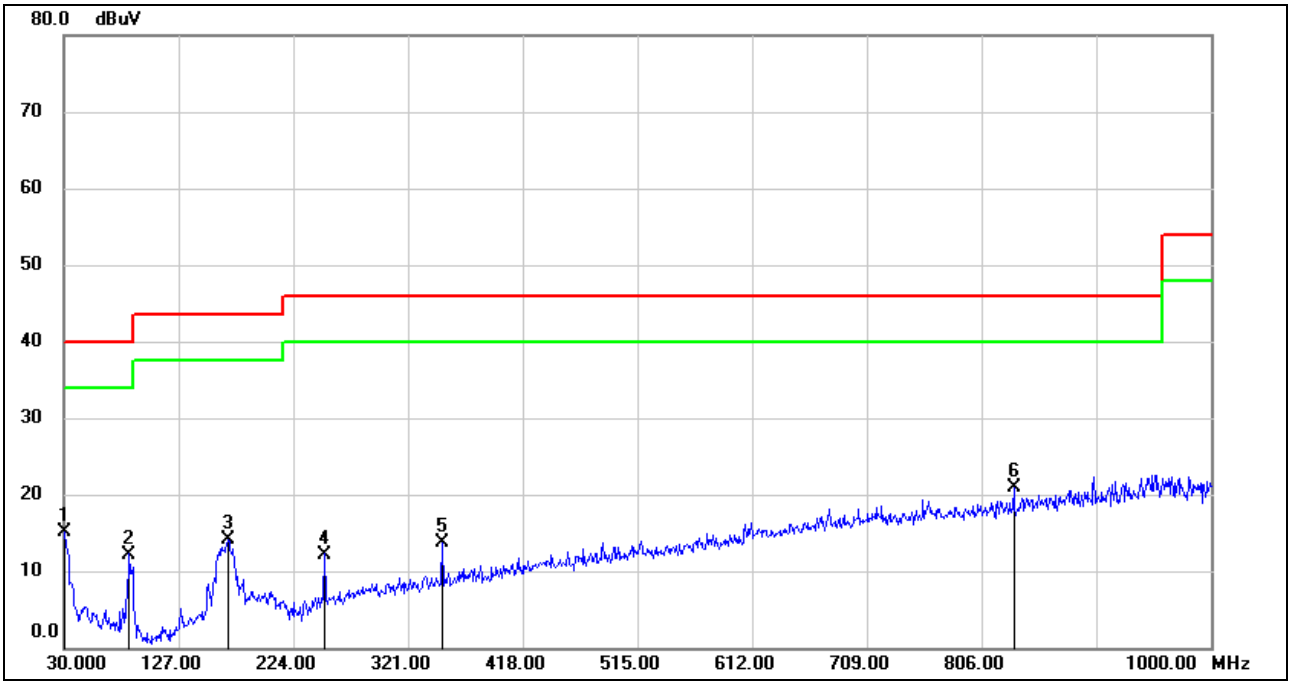
SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	30.9700	29.71	-17.43	12.28	40.00	-27.72	QP
2	88.2000	30.17	-21.27	8.90	43.50	-34.60	QP
3	164.8300	26.19	-17.81	8.38	43.50	-35.12	QP
4	194.9000	24.47	-16.31	8.16	43.50	-35.34	QP
5	250.1900	31.47	-16.66	14.81	46.00	-31.19	QP
6	722.5800	26.16	-6.80	19.36	46.00	-26.64	QP

Note: 1. Result Level = Read Level + 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.

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



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	30.9700	32.56	-17.43	15.13	40.00	-24.87	QP
2	85.2900	33.38	-21.18	12.20	40.00	-27.80	QP
3	168.7100	31.41	-17.27	14.14	43.50	-29.36	QP
4	250.1900	28.86	-16.66	12.20	46.00	-33.80	QP
5	350.1000	27.56	-13.83	13.73	46.00	-32.27	QP
6	833.1599	26.34	-5.36	20.98	46.00	-25.02	QP

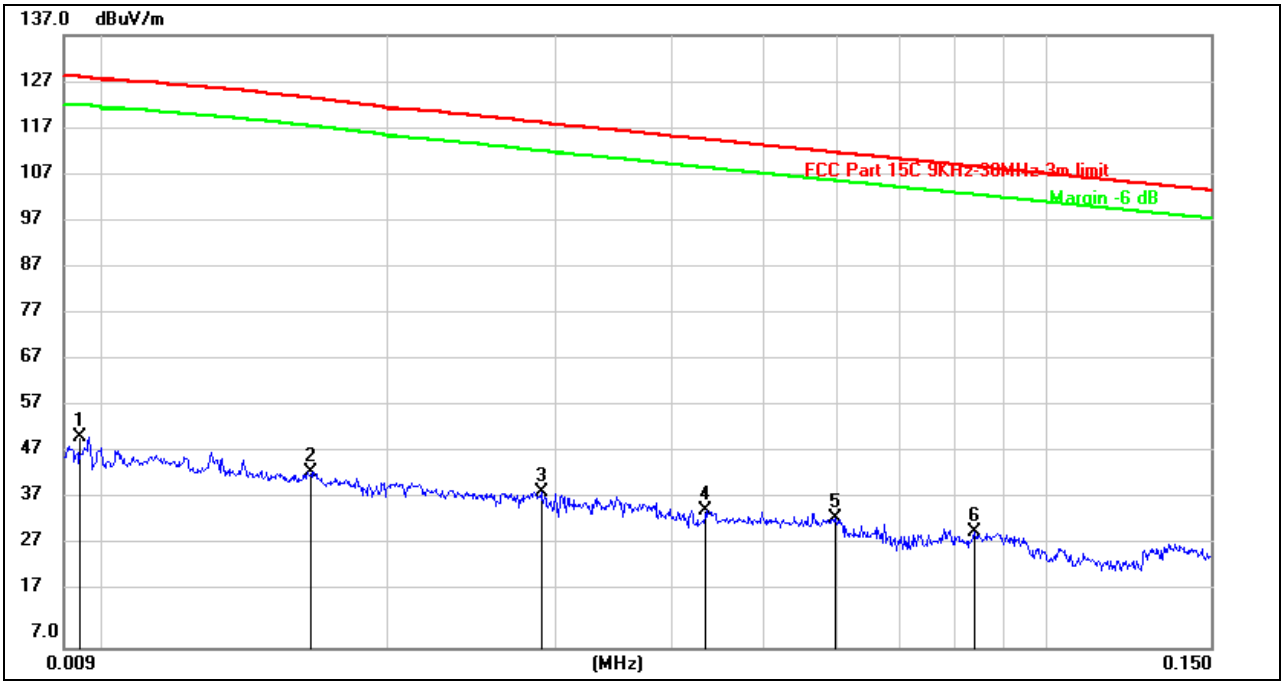
Note: 1. Result Level = Read Level + Correct Factor.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

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

8.5. SPURIOUS EMISSIONS BELOW 30M

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

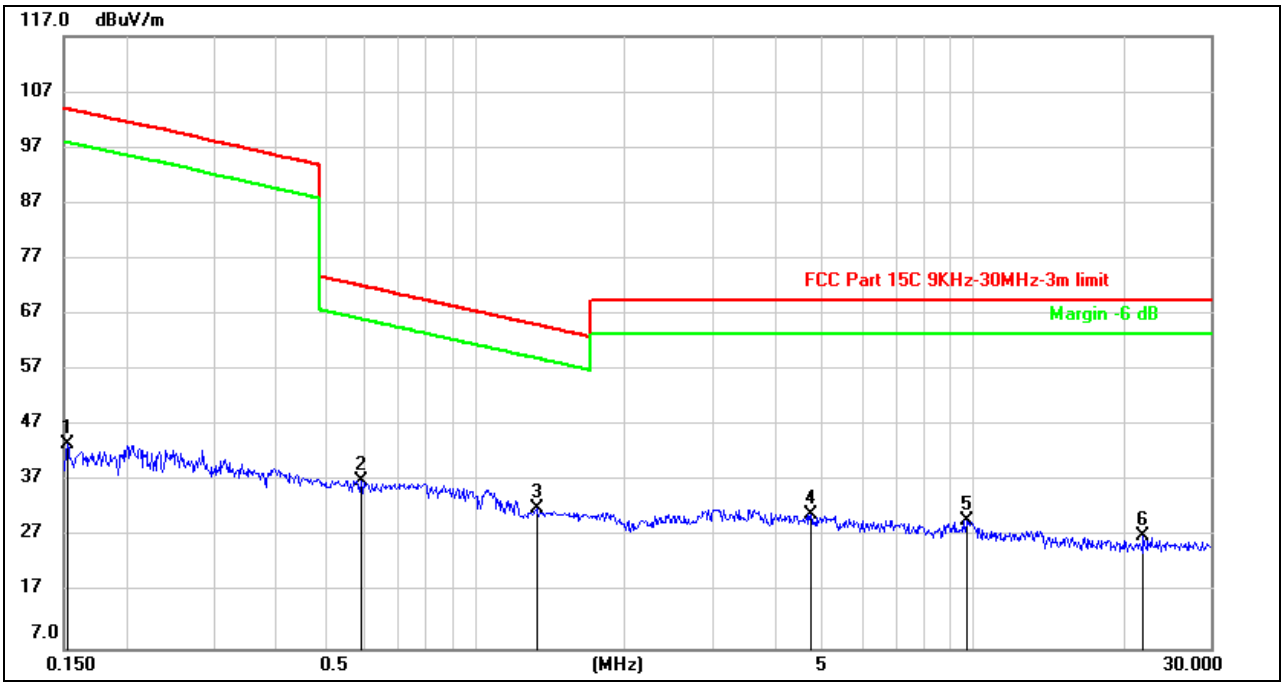
9KHz~ 150KHz



No.	Frequency (KHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0094	31.49	20.26	51.75	128.06	-76.31	peak
2	0.0165	24.08	20.27	44.35	123.69	-79.34	peak
3	0.0290	19.68	20.31	39.99	118.41	-78.42	peak
4	0.0434	15.63	20.31	35.94	114.90	-78.96	peak
5	0.0597	14.16	20.31	34.47	112.09	-77.62	peak
6	0.0840	11.15	20.27	31.42	109.13	-77.71	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

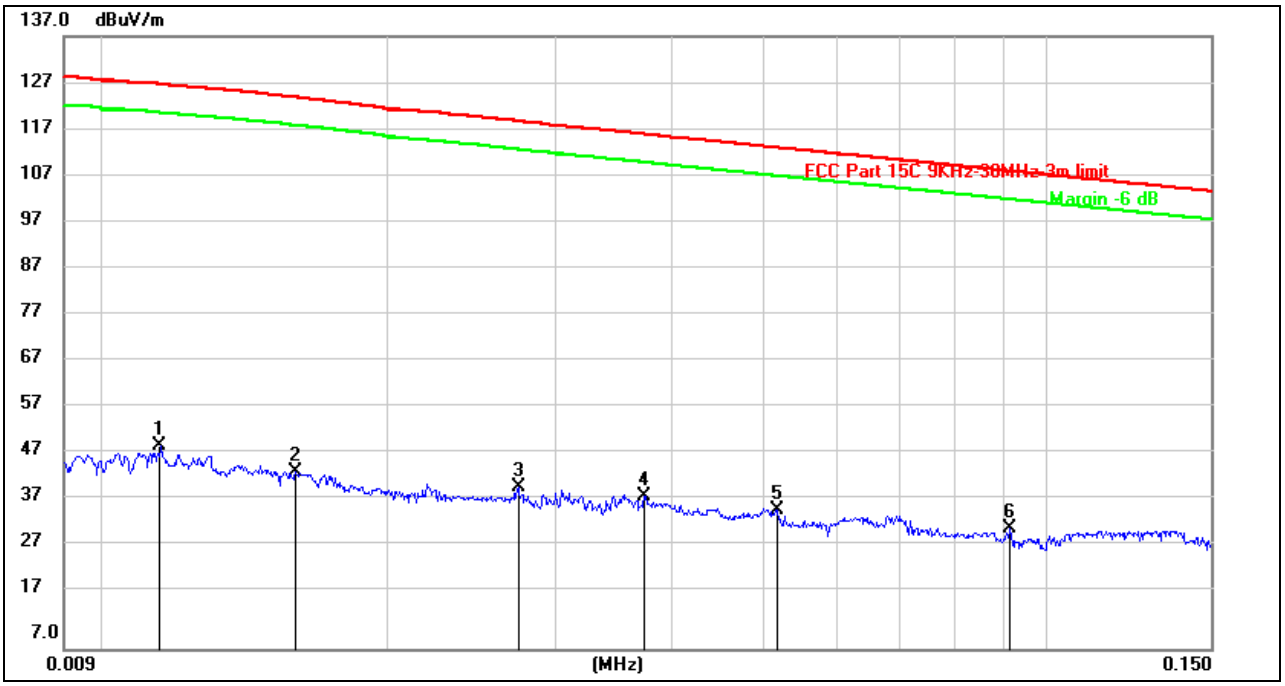


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1524	23.16	20.42	43.58	103.95	-60.37	peak
2	0.5916	16.90	20.29	37.19	72.17	-34.98	peak
3	1.3306	11.58	20.49	32.07	65.13	-33.06	peak
4	4.7213	10.20	20.88	31.08	69.54	-38.46	peak
5	9.7050	8.89	21.04	29.93	69.54	-39.61	peak
6	21.9463	5.98	21.25	27.23	69.54	-42.31	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)

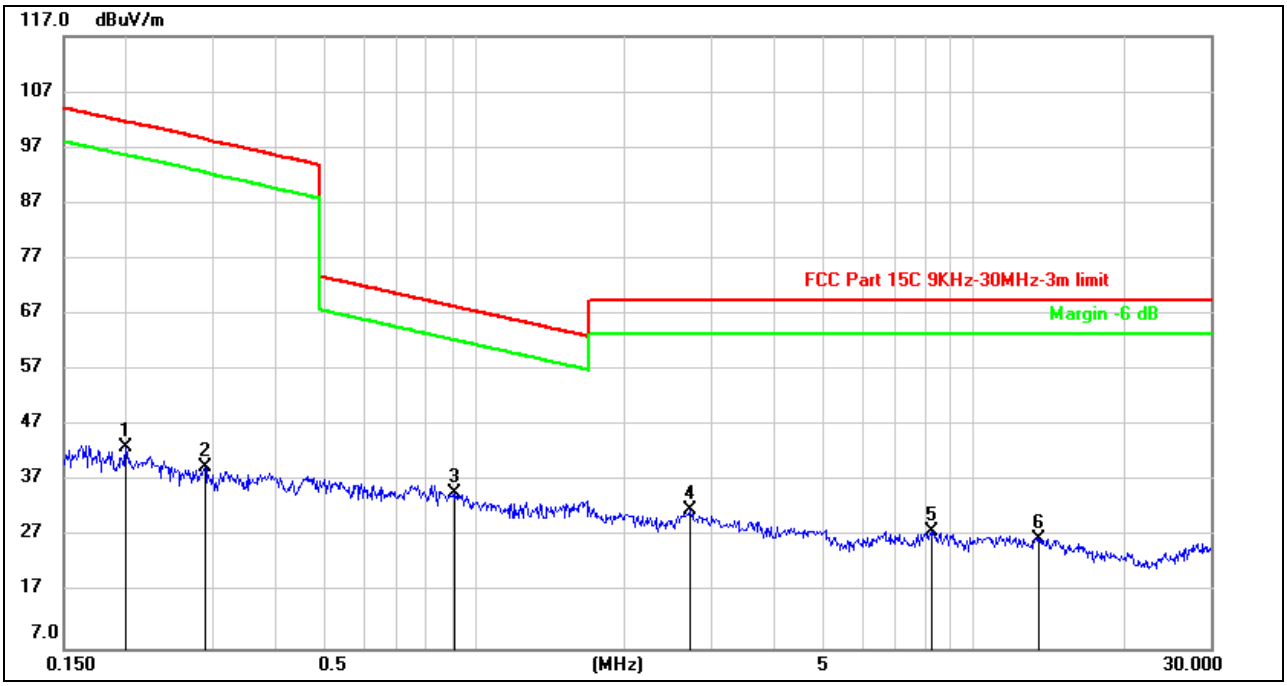
9KHz~ 150KHz



No.	Frequency (KHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0114	29.69	20.22	49.91	126.76	-76.85	peak
2	0.0159	24.28	20.27	44.55	124.05	-79.50	peak
3	0.0274	21.10	20.31	41.41	118.98	-77.57	peak
4	0.0374	19.18	20.31	39.49	116.21	-76.72	peak
5	0.0517	16.07	20.31	36.38	113.35	-76.97	peak
6	0.0916	12.19	20.25	32.44	108.37	-75.93	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	0.1995	22.85	20.37	43.22	101.60	-58.38	peak
2	0.2878	19.16	20.31	39.47	98.49	-59.02	peak
3	0.9133	14.59	20.37	34.96	68.40	-33.44	peak
4	2.7067	10.94	20.85	31.79	69.54	-37.75	peak
5	8.2347	7.19	20.97	28.16	69.54	-41.38	peak
6	13.5509	5.80	20.97	26.77	69.54	-42.77	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.

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

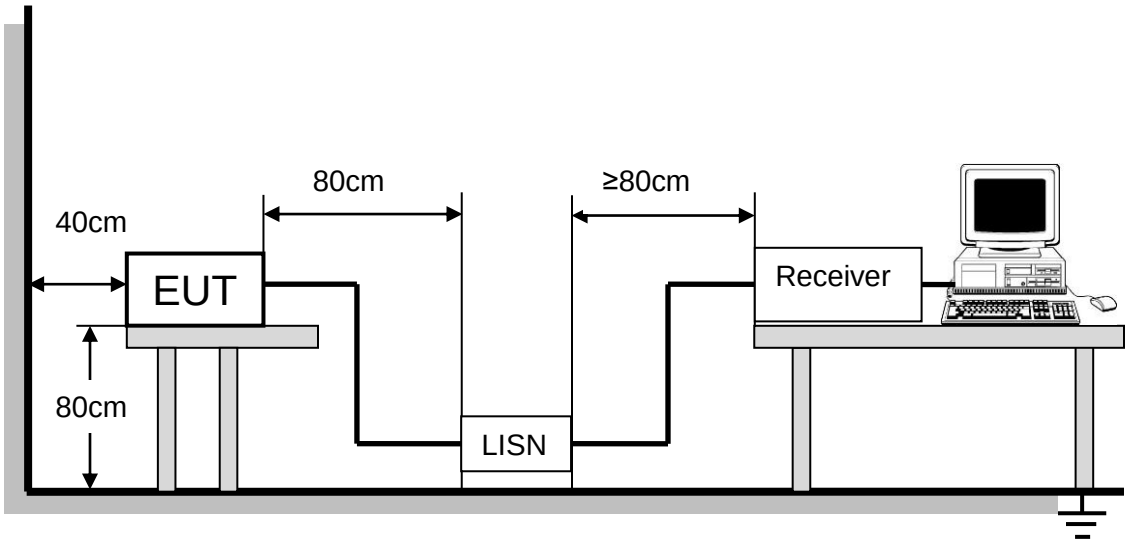
9. AC POWER LINE CONDUCTED EMISSIONS

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 6.2 of ANSI C63.10-2003.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

Not applicable, because the EUT is powered by battery.

10. 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 PCB antenna without antenna connector.

Antenna Gain

The antenna gain of EUT is less than 6 dBi.

END OF REPORT