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

CERTIFICATION TEST REPORT

For

Smart Plug

MODEL NUMBER: 7A-PL-Z-A1

FCC ID: 2AB2Q-7APLZA1
IC: 10256A-7APLZA1

REPORT NUMBER: 4788899177.1-8

ISSUE DATE: March 25, 2019

Prepared for

LEEDARSON LIGHTING CO., LTD.
Xingtai Industrial Zone, Economic Development Zone, Changtai County, Zhangzhou City, Fujian Province, P.R.China

Prepared by
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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	3/25/2019	Initial Issue	

Summary of Test Results			
Clause	**Test Items**	**FCC/IC Rules**	**Test Results**
1	6dB Bandwidth and 99% Occupied Bandwidth	FCC Part 15.247 (a) (2) RSS-247 Clause 5.2 (a) ISED RSS-Gen Clause 6.7	Pass
2	Peak Conducted Output Power	FCC Part 15.247 (b) (3) RSS-247 Clause 5.4 (e)	Pass
3	Power Spectral Density	FCC Part 15.247 (e) RSS-247 Clause 5.2 (b)	Pass
4	Conducted Bandedge and Spurious Emission	FCC Part 15.247 (d) RSS-247 Clause 5.5	Pass
5	Radiated Bandedge and Spurious Emission	FCC Part 15.247 (d) FCC Part 15.209 FCC Part 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	Pass
6	Conducted Emission Test For AC Power Port	FCC Part 15.207 RSS-GEN Clause 8.8	Pass
7	Antenna Requirement	FCC Part 15.203 RSS-GEN Clause 8.3	Pass

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: LEEDARSON LIGHTING CO., LTD.
Address: Xingtai Industrial Zone, Economic Development Zone, Changtai County, Zhangzhou City, Fujian Province, P.R.China

Manufacturer Information

Company Name: LEEDARSON LIGHTING CO., LTD.
Address: Xingtai Industrial Zone, Economic Development Zone, Changtai County, Zhangzhou City, Fujian Province, P.R.China

EUT Information

EUT Name: Smart Plug
Model: 7A-PL-Z-A1
Brand: LEEDARSON
Sample Received Date: March 11, 2019
Date of Tested: March 11~ 21, 2019

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 FCC PART 15 SUBPART C	PASS
ISED RSS-247 Issue 2	PASS
ISED RSS-GEN Issue 5	PASS

Tested By:

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Laboratory Manager

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 15.247 Meas Guidance v05r01, KDB 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. **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.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.

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
Conduction emission	3.62dB
Radiation Emission test(include Fundamental emission) (9kHz-30MHz)	2.2dB
Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.00dB
Radiation Emission test (1GHz to 26GHz)(include Fundamental emission)	5.78dB (1GHz-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	Smart Plug	
Model	7A-PL-Z-A1	
Product Description	Operation Frequency	2405 MHz ~ 2480 MHz
	Modulation Type	Data Rate
	O-QPSK	250kbps
Power supply	AC 120V,60Hz	
Remark	1. There are four different choices for the end product and They have the same RF circuit and the performance , same technical construction including drive circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction. The difference lies only have different brands of relay and with or without the power analyzer chip. 2. The end product will have two kinds of appearance, but the change of appearance is very small and the material is the same, the two kinds of appearance has been considered, so the test will show the worst case.	

Test Construction	Description
Construction 1	AZ9481 Relay with power analyzer chip
Construction 2	AZ9481 Relay without power analyzer chip
Construction 3	HF7520 Relay with power analyzer chip
Construction 4	HF7520 Relay without power analyzer chip

Appearance 1(Test Construction)	Appearance 2
	

5.2. MAXIMUM OUTPUT POWER

Mode	Frequency (MHz)	Channel Number	Max Output Power (dBm)	EIRP (dBm)
ZigBee	2405-2480	11-26 [16]	13.425	16.615

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	2405	15	2425	19	2445	23	2465
12	2410	16	2430	20	2450	24	2470
13	2415	17	2435	21	2455	25	2475
14	2420	18	2440	22	2460	26	2480

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
ZigBee	LCH, MCH, HCH, CH 26	2405MHz, 2445MHz, 2475MHz, 2480MHz

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band					
Test Software		UartAssis			
Modulation Type	Transmit Antenna Number	Test Channel			
		CH 11	CH 19	CH 25	CH 26
O-QPSK	1	12	13	13	6

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2405-2480	Internal Antenna	3.19

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

5.7. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	40 ~ 60%	
Atmospheric Pressure:	1025Pa	
Temperature	TN	22 ~ 28°C
Voltage :	VL	N/A
	VN	AC 120V,60Hz
	VH	N/A

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

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	Laptop	ThinkPad	T460S	SL10K24796 JS
2	USB TO RS232	/	/	/

I/O CABLES

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

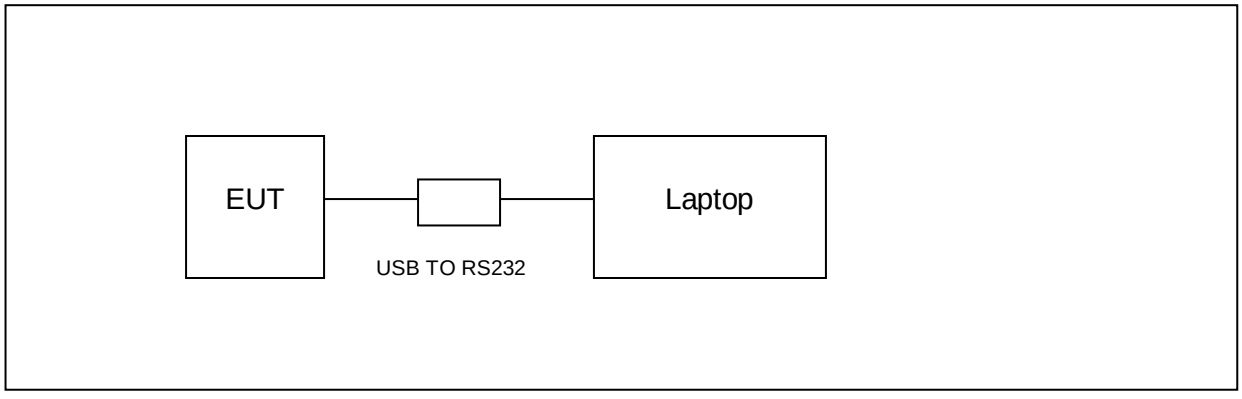
ACCESSORY

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



5.9. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	EMI Test Receiver	R&S	ESR3	101961	Dec.10,2018	Dec.10,2019
☑	Two-Line V-Network	R&S	ENV216	101983	Dec.10,2018	Dec.10,2019
☑	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Dec.10,2018	Dec.10,2019
Software						
Used	Description		Manufacturer	Name	Version	
☑	Test Software for Conducted disturbance		Farad	EZ-EMC	Ver. UL-3A1	
Radiated Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Dec.10,2018	Dec.10,2019
☑	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Sep.17, 2018	Sep.17, 2021
☑	Preamplifier	HP	8447D	2944A09099	Dec.10,2018	Dec.10,2019
☑	EMI Measurement Receiver	R&S	ESR26	101377	Dec.10,2018	Dec.10,2019
☑	Horn Antenna	TDK	HRN-0118	130939	Sep.17, 2018	Sep.17, 2021
☑	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Aug.11, 2018	Aug.11, 2021
☑	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Dec.10,2018	Dec.10,2019
☑	Preamplifier	TDK	PA-02-2	TRS-307-00003	Dec.10,2018	Dec.10,2019
☑	Loop antenna	Schwarzbeck	1519B	00008	Mar.26,2016	Mar.25, 2019
☑	Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	4	Dec.10, 2018	Dec.10, 2019
☑	High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Dec.10,2018	Dec.10,2019
Software						
Used	Description		Manufacturer	Name	Version	
☑	Test Software for Radiated disturbance		Farad	EZ-EMC	Ver. UL-3A1	

Other instruments						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec.10,2018	Dec.10,2019
☑	Power Meter	Keysight	N9031A	MY55416024	Dec.10,2018	Dec.10,2019
☑	Power Sensor	Keysight	N9323A	MY55440013	Dec.10,2018	Dec.10,2019

6. MEASUREMENT METHODS

No.	Test Item	KDB Name	Section
1	6 dB Bandwidth	KDB 558074 D01 15.247 Meas Guidance v05r01	8.2
2	Peak Output Power	KDB 558074 D01 15.247 Meas Guidance v05r01	8.3.1.3
3	Power Spectral Density	KDB 558074 D01 15.247 Meas Guidance v05r01	8.4
4	Out-of-band emissions in non-restricted bands	KDB 558074 D01 15.247 Meas Guidance v05r01	8.5
5	Out-of-band emissions in restricted bands	KDB 558074 D01 15.247 Meas Guidance v05r01	8.6
6	Band-edge	KDB 558074 D01 15.247 Meas Guidance v05r01	8.7
7	Conducted Emission Test For AC Power Port	ANSI C63.10-2013	6.2
8	99% Bandwidth	ANSI C63.10-2013	6.9.3

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

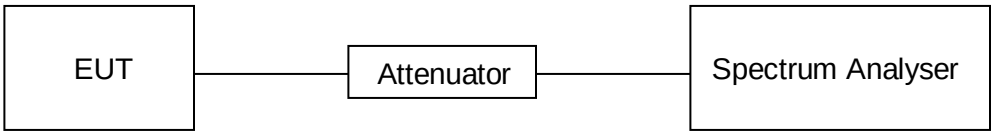
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

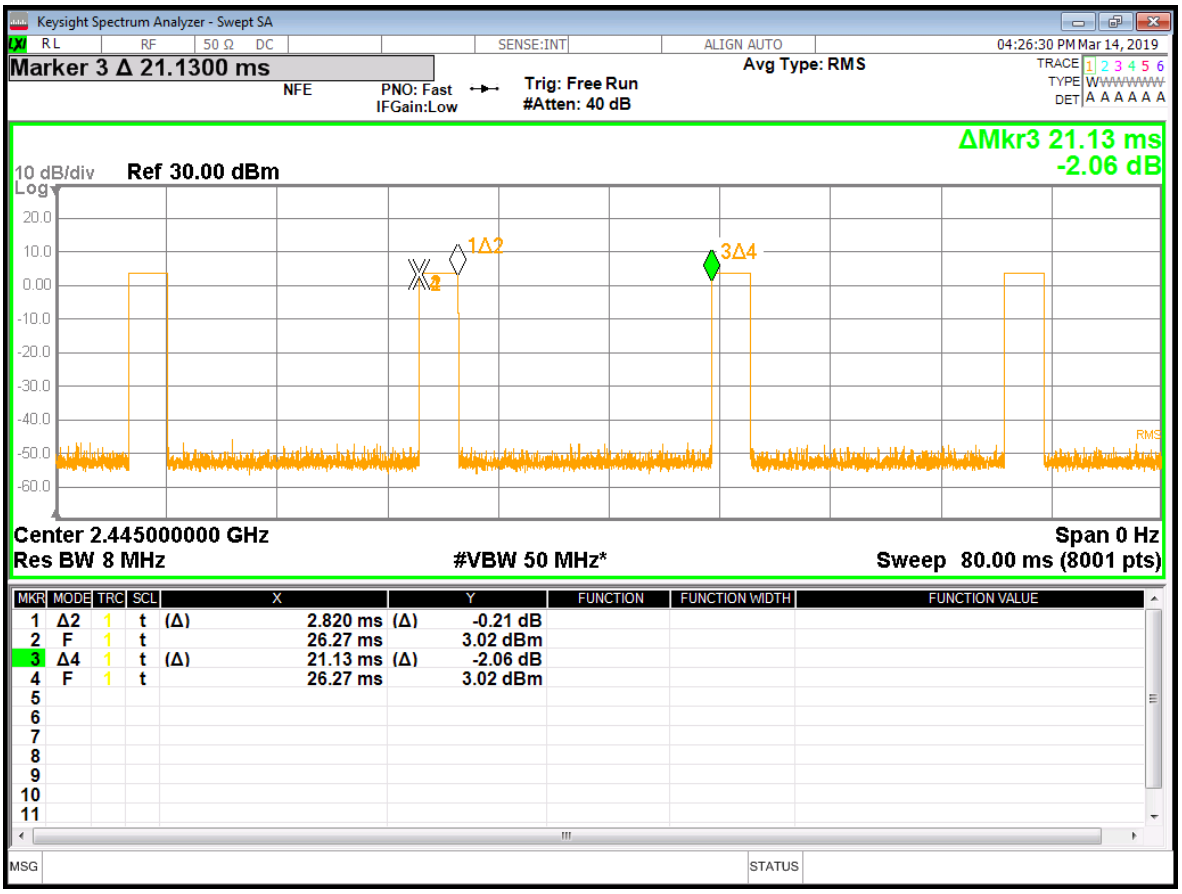
Temperature	23.1°C	Relative Humidity	57%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V,60HZ

RESULTS

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
ZigBee	2.82	21.13	0.133	13.3	8.76	0.355	0.500

Note:
Duty Cycle Correction Factor=10log(1/x).
Where: x is Duty Cycle(Linear)
Where: T is On Time (transmit duration)
If that calculated VBW is not available on the analyzer then the next higher value should be used.

ON TIME AND DUTY CYCLE MID CH



7.2. 6 dB DTS BANDWIDTH AND 99% BANDWIDTH

LIMITS

CFR 47FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(a)(2) ISED RSS-247 5.2 (a)	6dB Bandwidth	>= 500kHz	2400-2483.5
ISED RSS-Gen Clause 6.7	99% Occupied Bandwidth	For reporting purposes only.	2400-2483.5

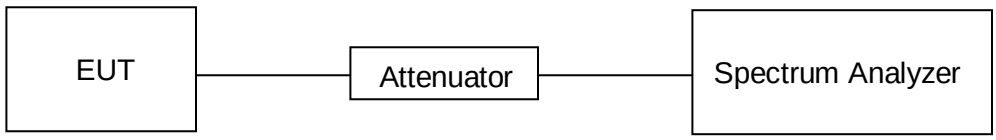
TEST PROCEDURE

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% Occupied Bandwidth :1% to 5% of the occupied bandwidth
VBW	For 6dB Bandwidth : ≥3 × RBW For 99% Occupied 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/99% relative to the maximum level measured in the fundamental emission.

TEST SETUP



TEST ENVIRONMENT

Temperature	23.1°C	Relative Humidity	57%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V,60HZ

RESULTS

Please refer to appendix A and B.

7.3. PEAK CONDUCTED OUTPUT POWER

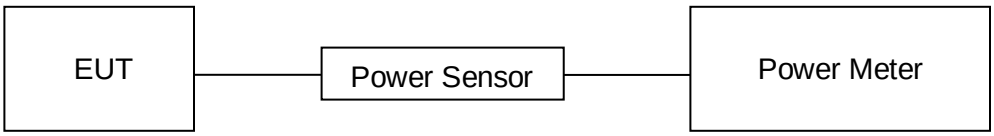
LIMITS

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3) ISED 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



TEST ENVIRONMENT

Temperature	23.1°C	Relative Humidity	57%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V,60HZ

RESULTS

Test Channel	Frequency	Maximum Conducted Output Power(PK)	EIRP	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
Low	2405	12.895	16.085	30
Middle	2445	12.959	16.149	30
High	2475	13.425	16.615	30
CH 26	2480	5.89	9.08	30

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

7.4. POWER SPECTRAL DENSITY

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC §15.247 (e) ISED RSS-247 5.2 (b)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

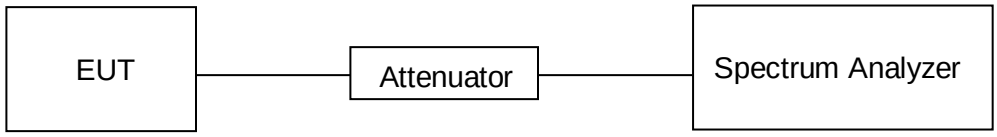
TEST PROCEDURE

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



Temperature	23.1°C	Relative Humidity	57%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V,60HZ

RESULTS

Please refer to appendix E.

7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2		
Section	Test Item	Limit
CFR 47 FCC §15.247 (d) ISED 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:

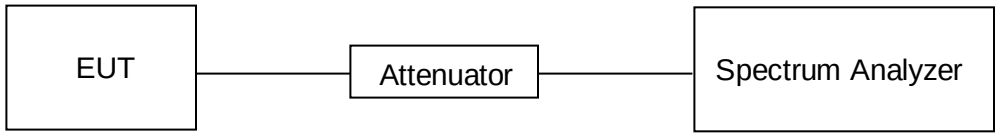
Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

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



TEST ENVIRONMENT

Temperature	23.1°C	Relative Humidity	57%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V,60HZ

RESULTS

Please refer to appendix C and D.

8. RADIATED TEST RESULTS

LIMITS

Please refer to FCC §15.205 and §15.209

Please refer to ISED 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.

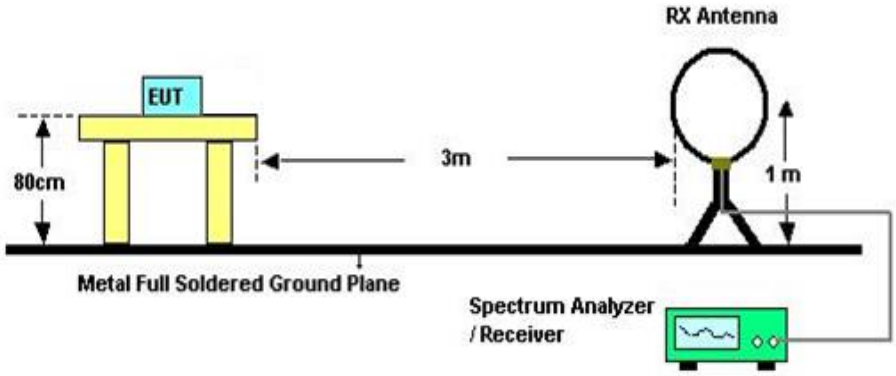
Note: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites.
Radiation Disturbance Test Limit for FCC (Above 1G)

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.

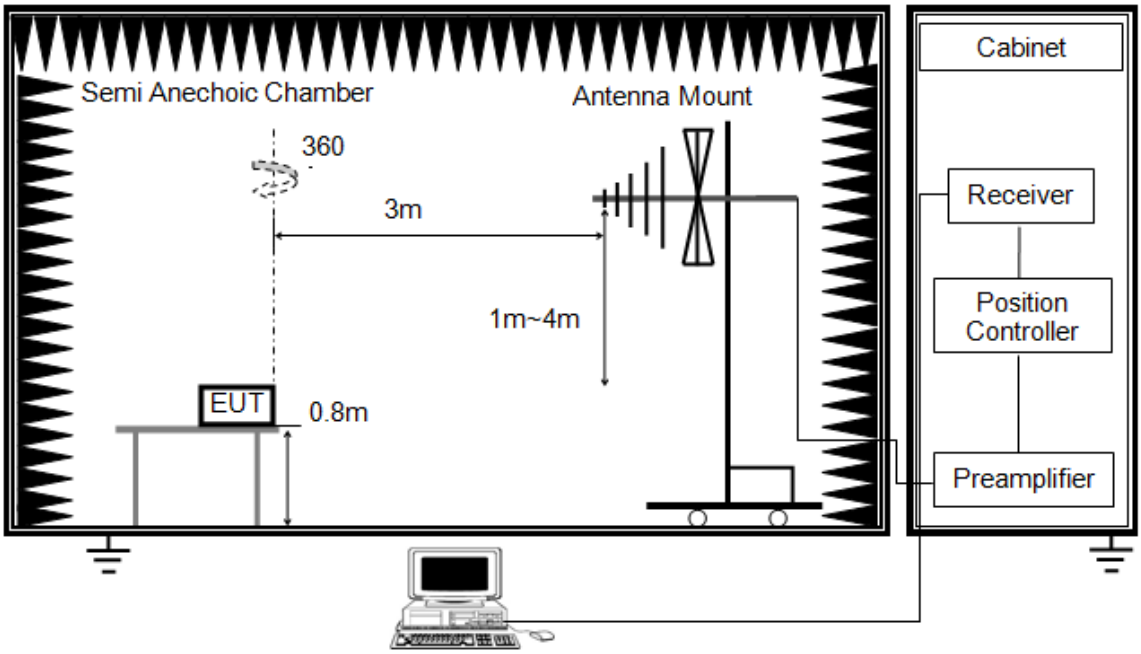
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

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. 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.

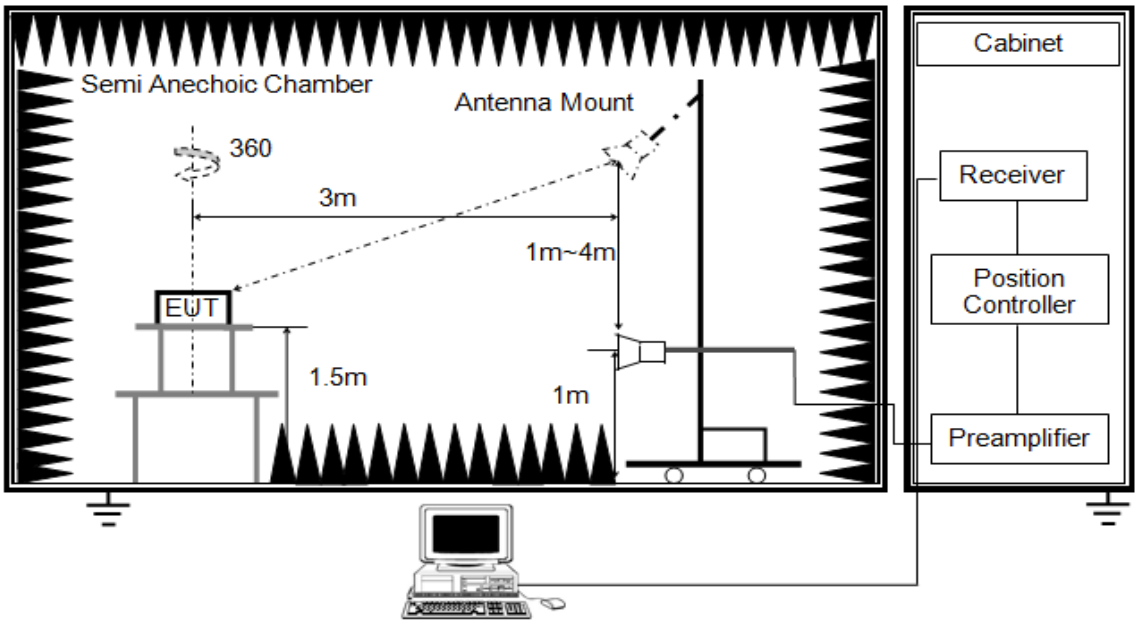
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations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

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.

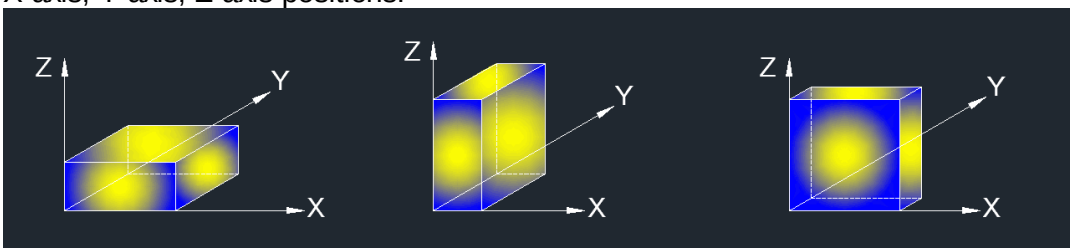
3. The EUT was placed on a turntable with 1.5m above ground.

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 average measurements. For the Duty Cycle and Correction Factor please refer to clause 7.1.ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

TEST ENVIRONMENT

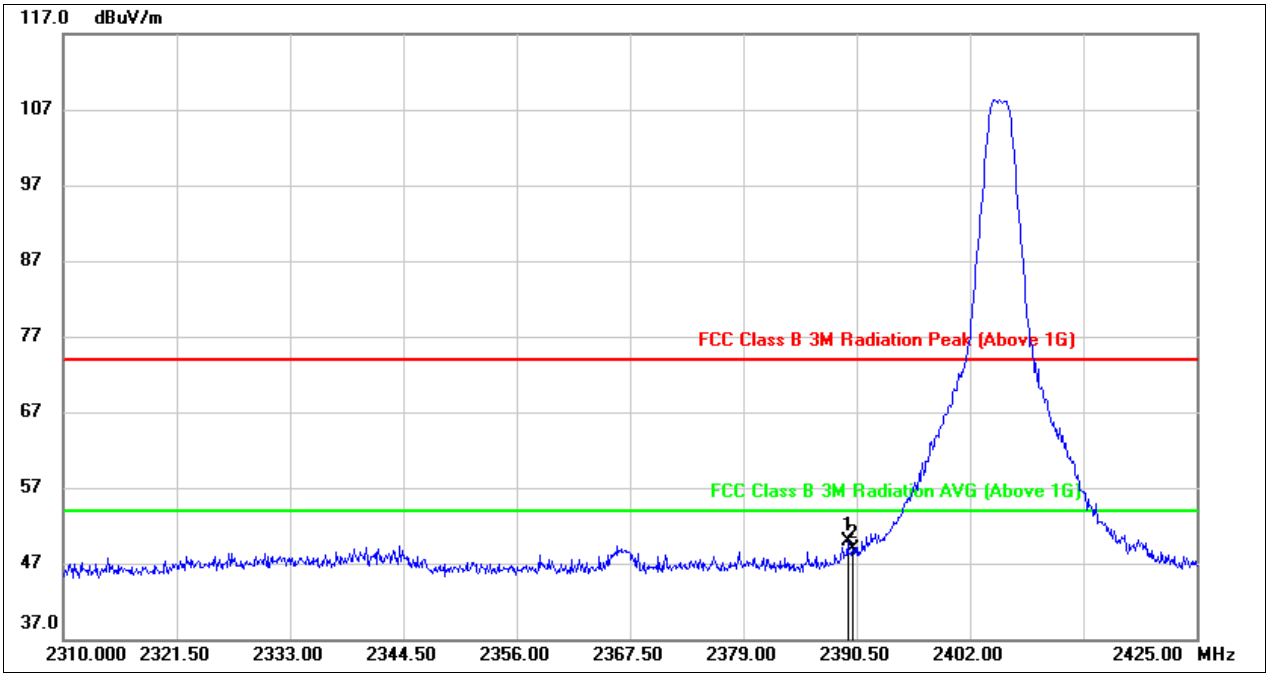
Temperature	22.8°C	Relative Humidity	59%
Atmosphere Pressure	101kPa	Test Voltage	AC 120V,60HZ

RESULTS

8.1. RESTRICTED BANDEDGE

8.1.1. TEST CONSTRUCTION 3

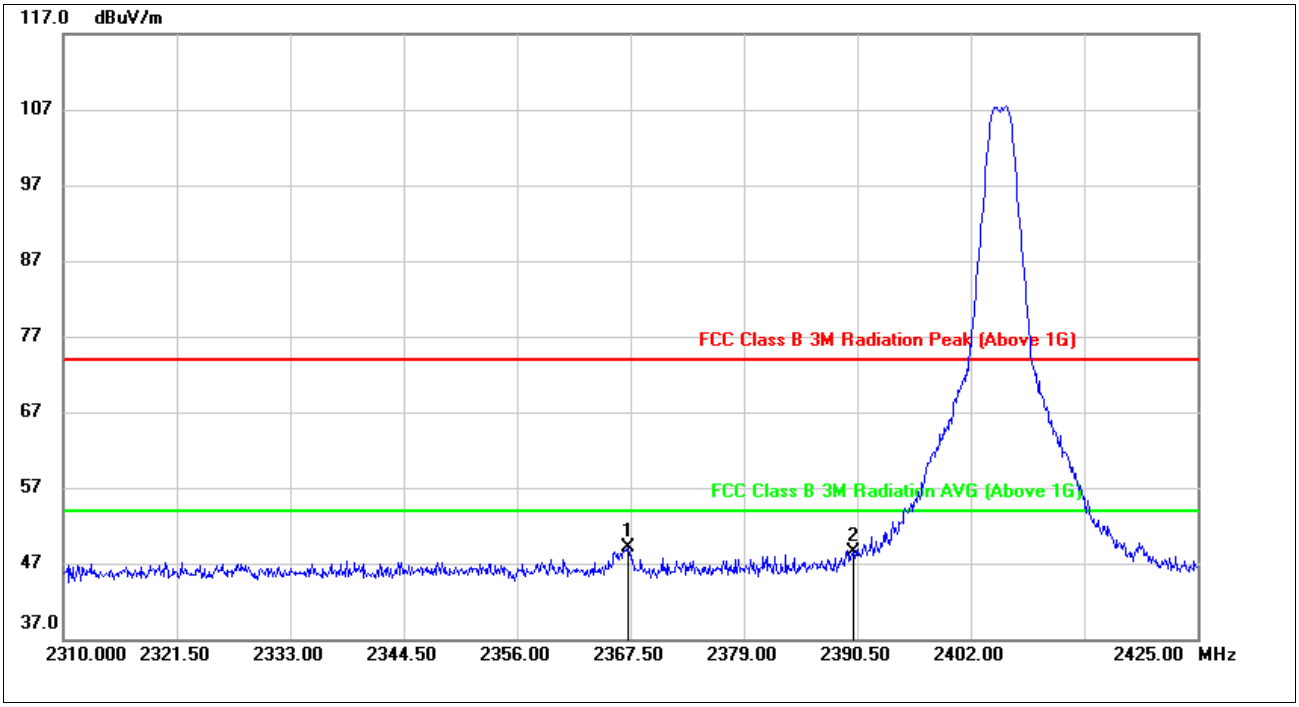
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.580	16.98	32.94	49.92	74.00	-24.08	peak
2	2390.000	16.03	32.94	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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

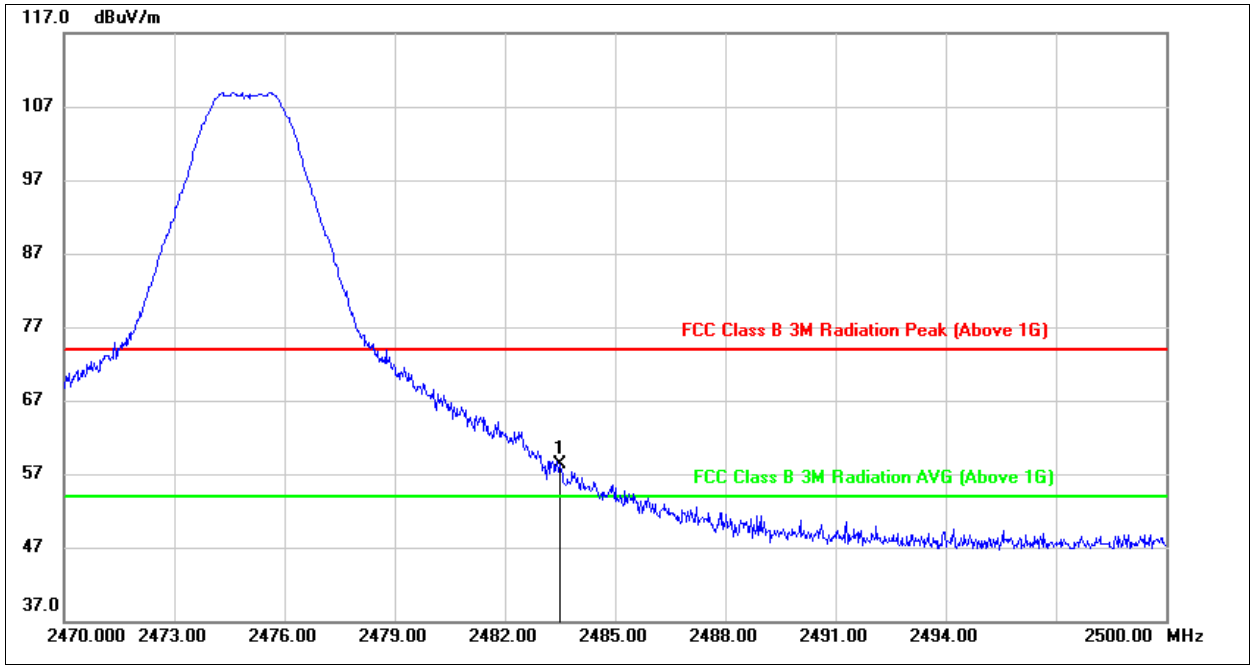
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2367.270	16.14	32.87	49.01	74.00	-24.99	peak
2	2390.000	15.53	32.94	48.47	74.00	-25.53	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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

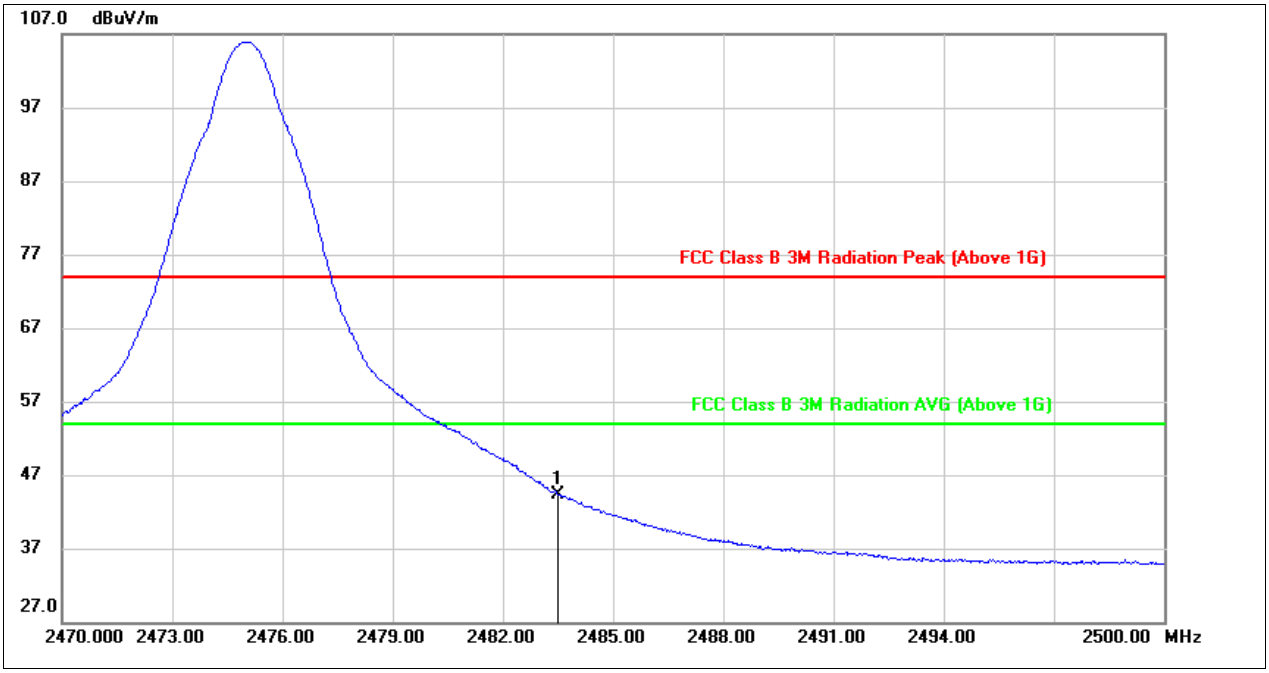
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)
PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	24.79	33.58	58.37	74.00	-15.63	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.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

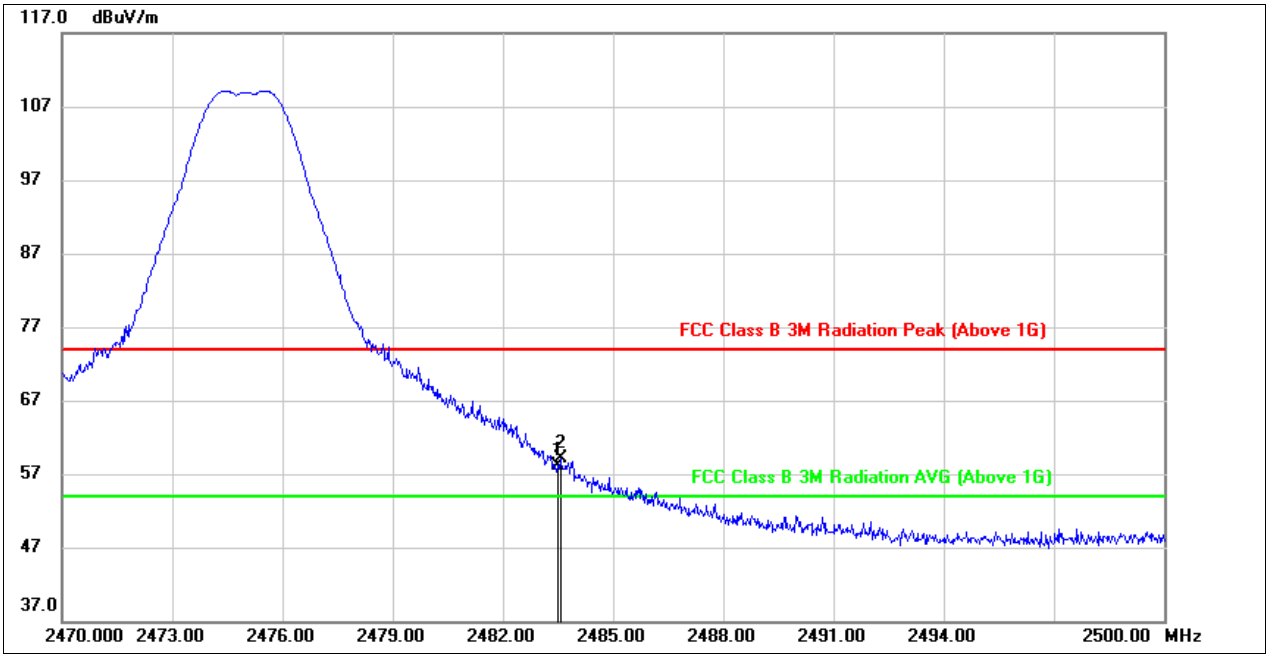
AVG



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	10.81	33.58	44.39	54.00	-9.61	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. AVG: VBW=1/Ton where: ton is transmit duration.
3. For duty cycle, please refer to clause 7.1.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

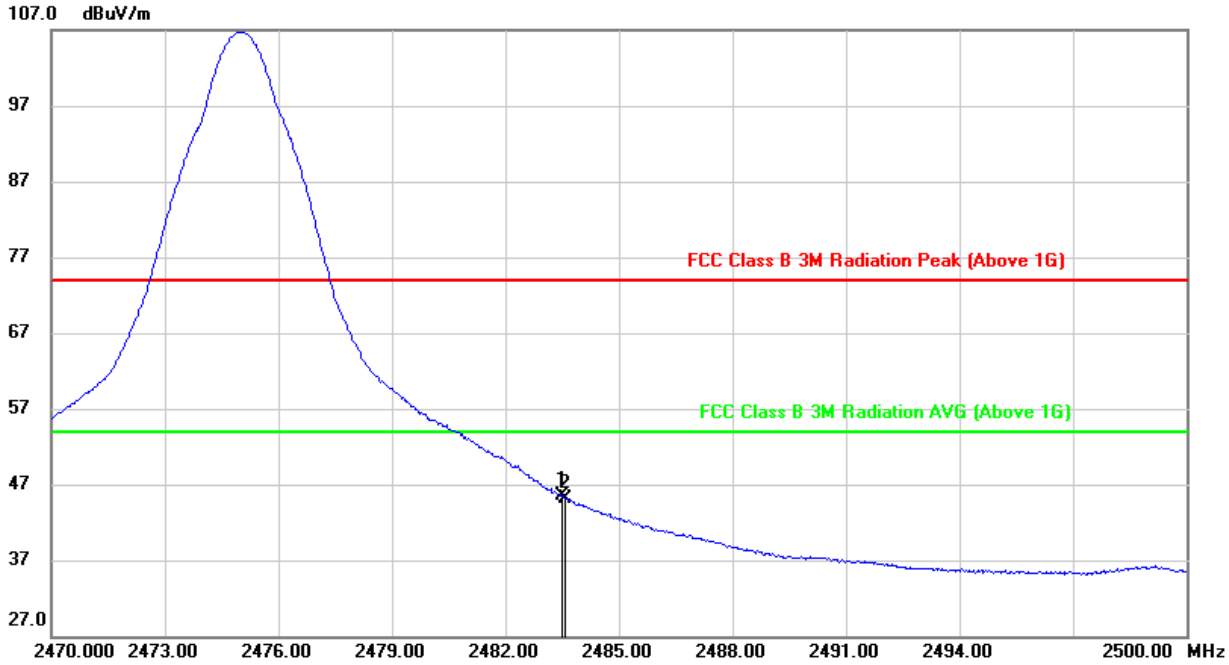
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)
PEAK



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	24.56	33.58	58.14	74.00	-15.86	peak
2	2483.560	25.59	33.58	59.17	74.00	-14.83	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.

AVG

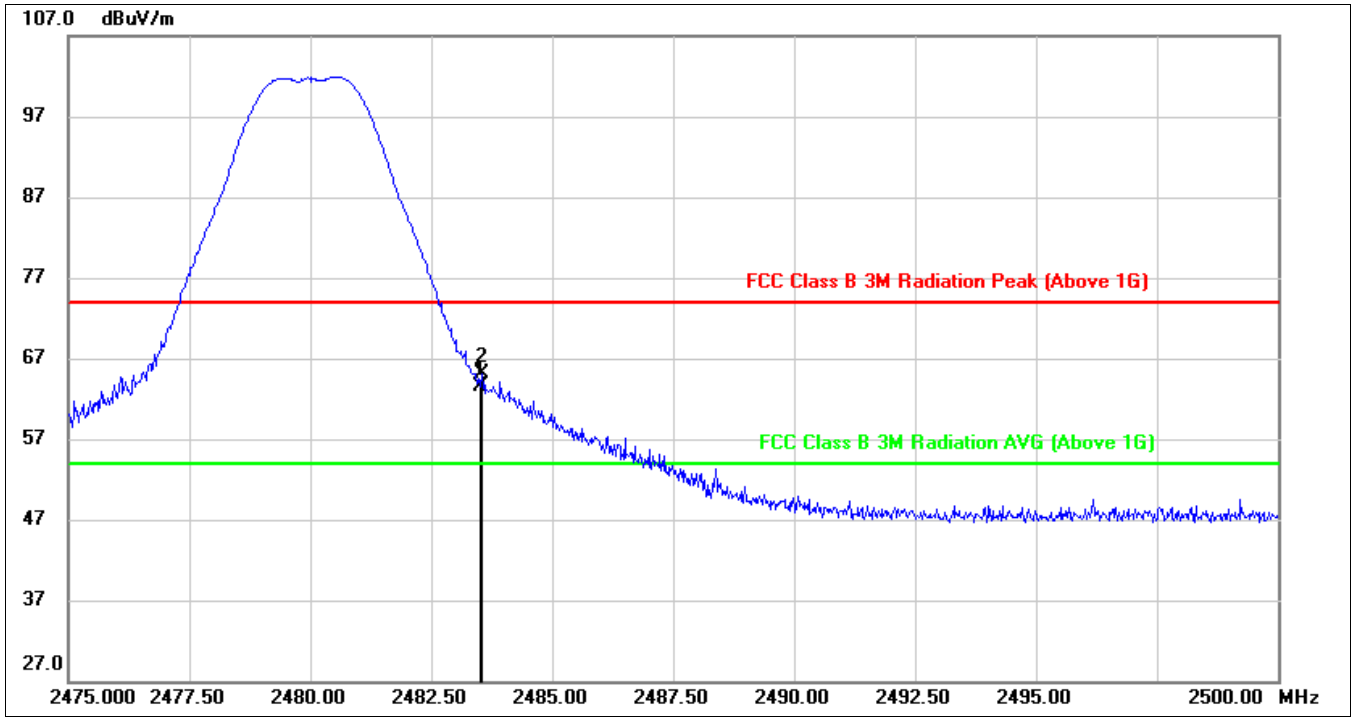


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	11.96	33.58	45.54	54.00	-8.46	AVG
2	2483.560	11.54	33.58	45.12	54.00	-8.88	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. AVG: VBW=1/Ton where: ton is transmit duration.
3. For duty cycle, please refer to clause 7.1.
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 (CHANNEL 26, HORIZONTAL)

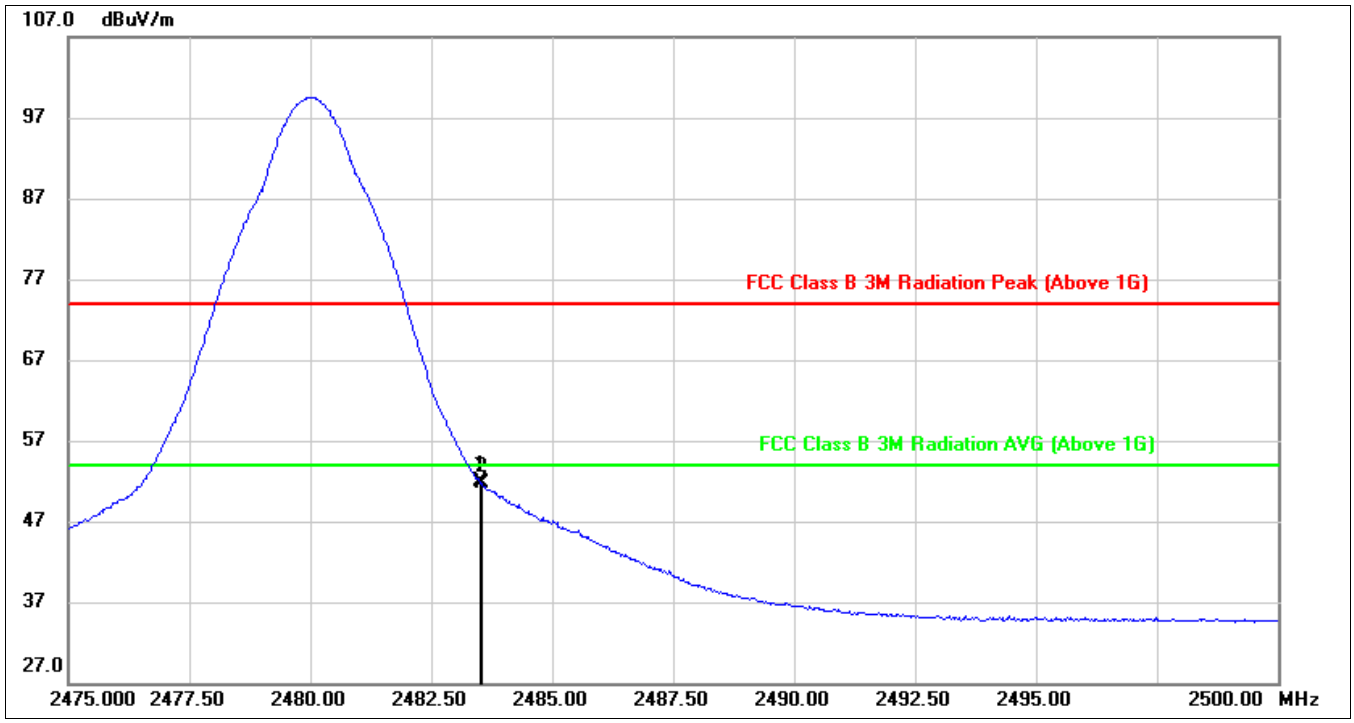
PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	29.95	33.58	63.53	74.00	-10.47	peak
2	2483.550	31.58	33.58	65.16	74.00	-8.84	peak

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

AVG

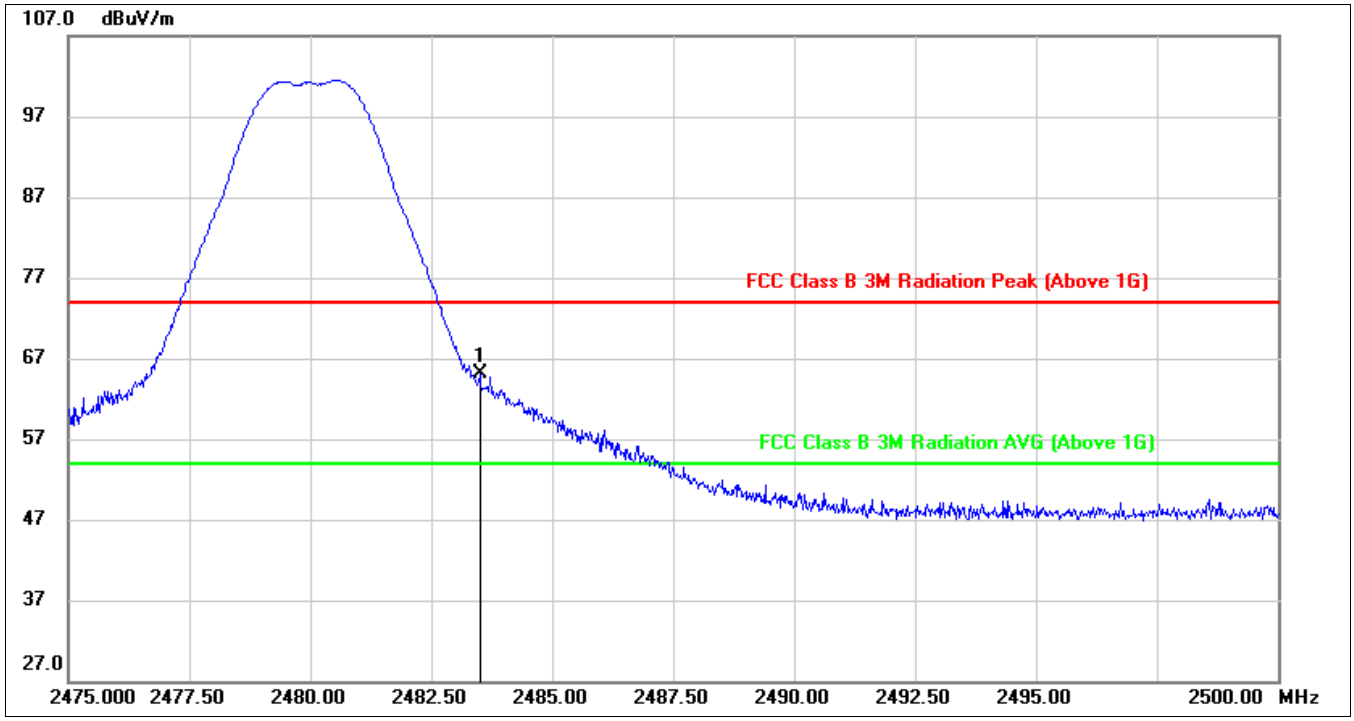


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	18.28	33.58	51.86	54.00	-2.14	AVG
2	2483.550	18.03	33.58	51.61	54.00	-2.39	AVG

Note: 1. Measurement = Reading Level + Correct Factor.
2. AVG: VBW=1/Ton where: ton is transmit duration.
3. For duty cycle, please refer to clause 7.1.
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 (CHANNEL 26, VERTICAL)

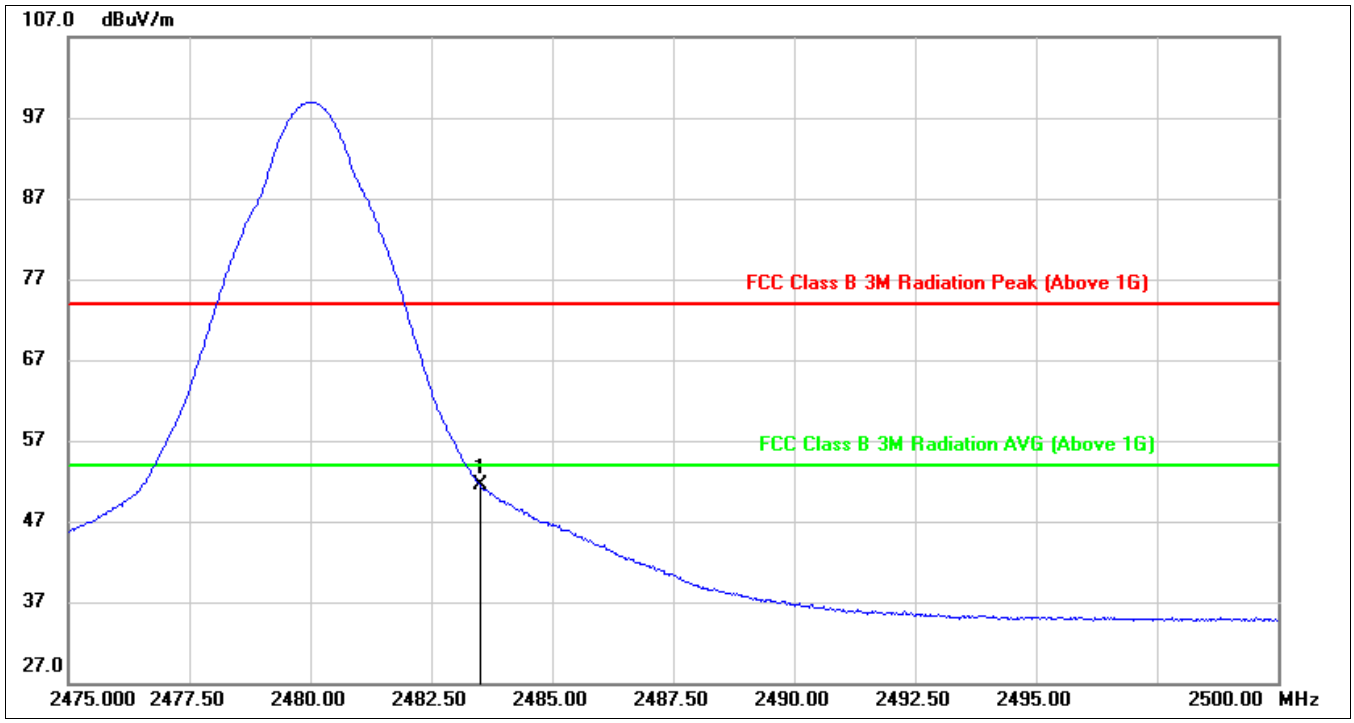
PEAK



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	31.46	33.58	65.04	74.00	-8.96	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.

AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	17.91	33.58	51.49	54.00	-2.51	AVG

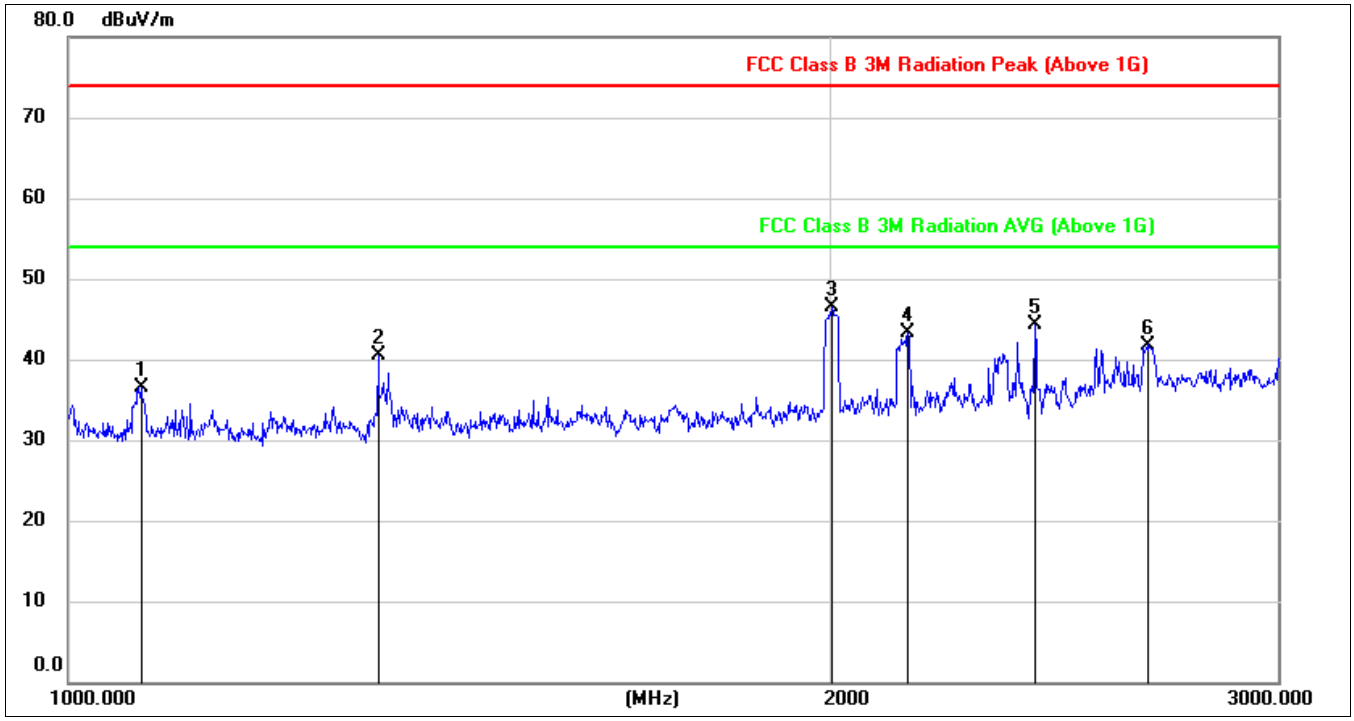
Note: 1. Measurement = Reading Level + Correct Factor.
2. AVG: VBW=1/Ton where: ton is transmit duration.
3. For duty cycle, please refer to clause 7.1.
4. Only the worst case emission will be recorder, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: All constructions have been tested, only the worst data record in the report

8.2. SPURIOUS EMISSIONS (1~3GHz)

8.2.1. TEST CONSTRUCTION 3

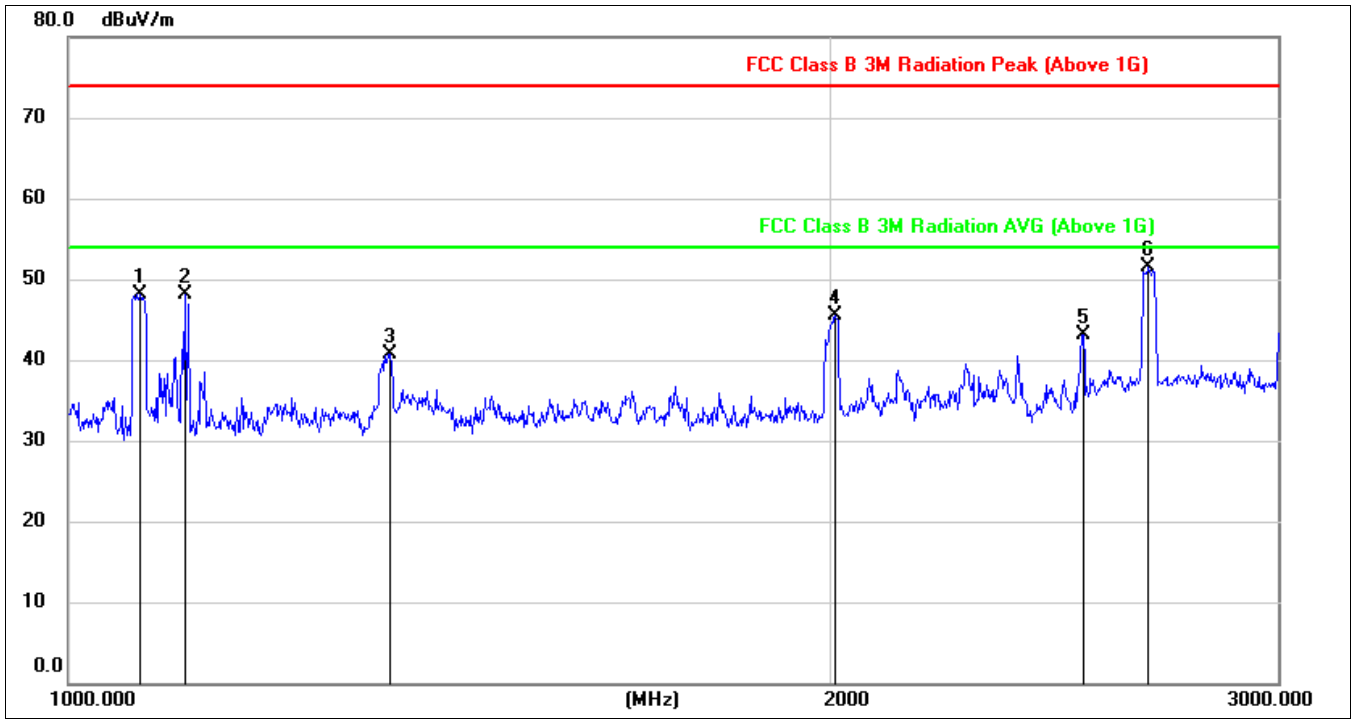
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1069.312	49.32	-12.76	36.56	74.00	-37.44	peak
2	1324.778	51.89	-11.39	40.50	74.00	-33.50	peak
3	2002.353	56.31	-9.75	46.56	74.00	-27.44	peak
4	2143.493	51.61	-8.38	43.23	74.00	-30.77	peak
5	2405.580	51.37	-7.06	44.31	74.00	-29.69	peak
6	2667.284	49.02	-7.22	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.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

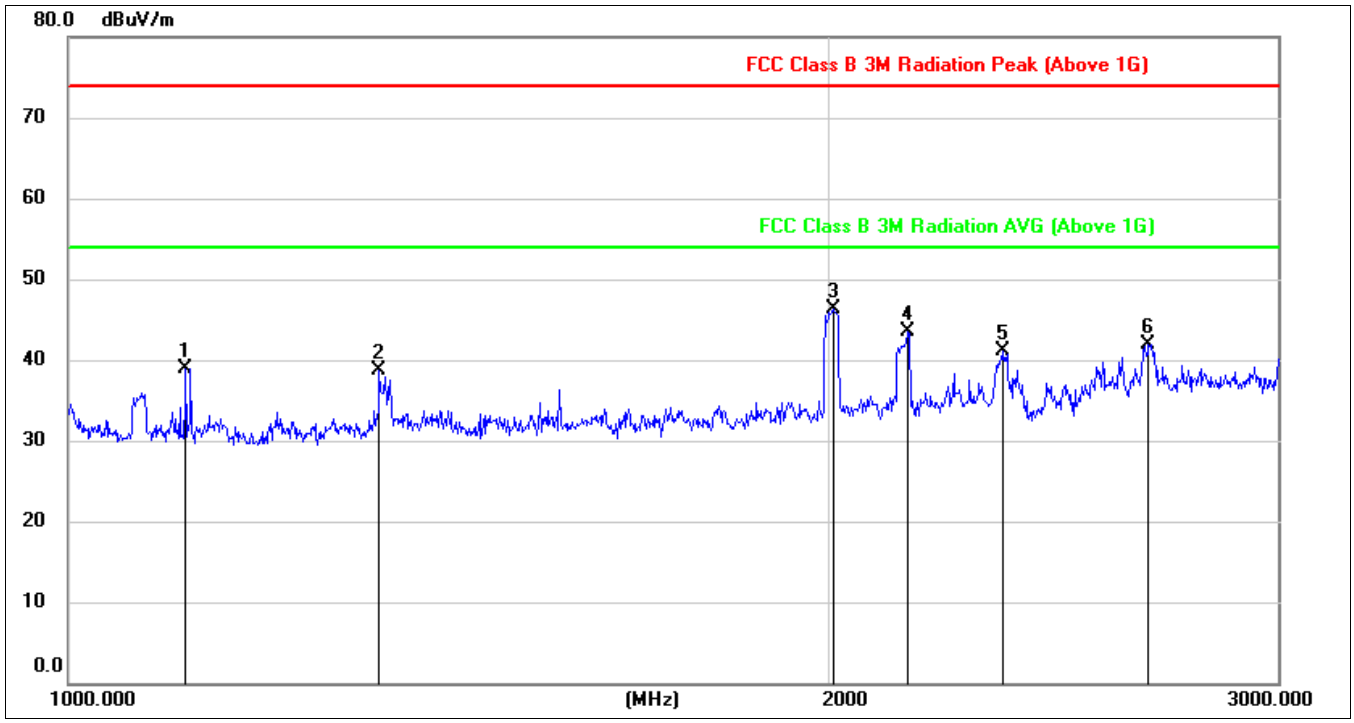
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1068.138	60.87	-12.77	48.10	74.00	-25.90	peak
2	1112.451	60.68	-12.58	48.10	74.00	-25.90	peak
3	1339.412	52.11	-11.49	40.62	74.00	-33.38	peak
4	2006.757	55.10	-9.69	45.41	74.00	-28.59	peak
5	2513.650	49.57	-6.39	43.18	74.00	-30.82	peak
6	2667.284	58.78	-7.22	51.56	74.00	-22.44	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.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

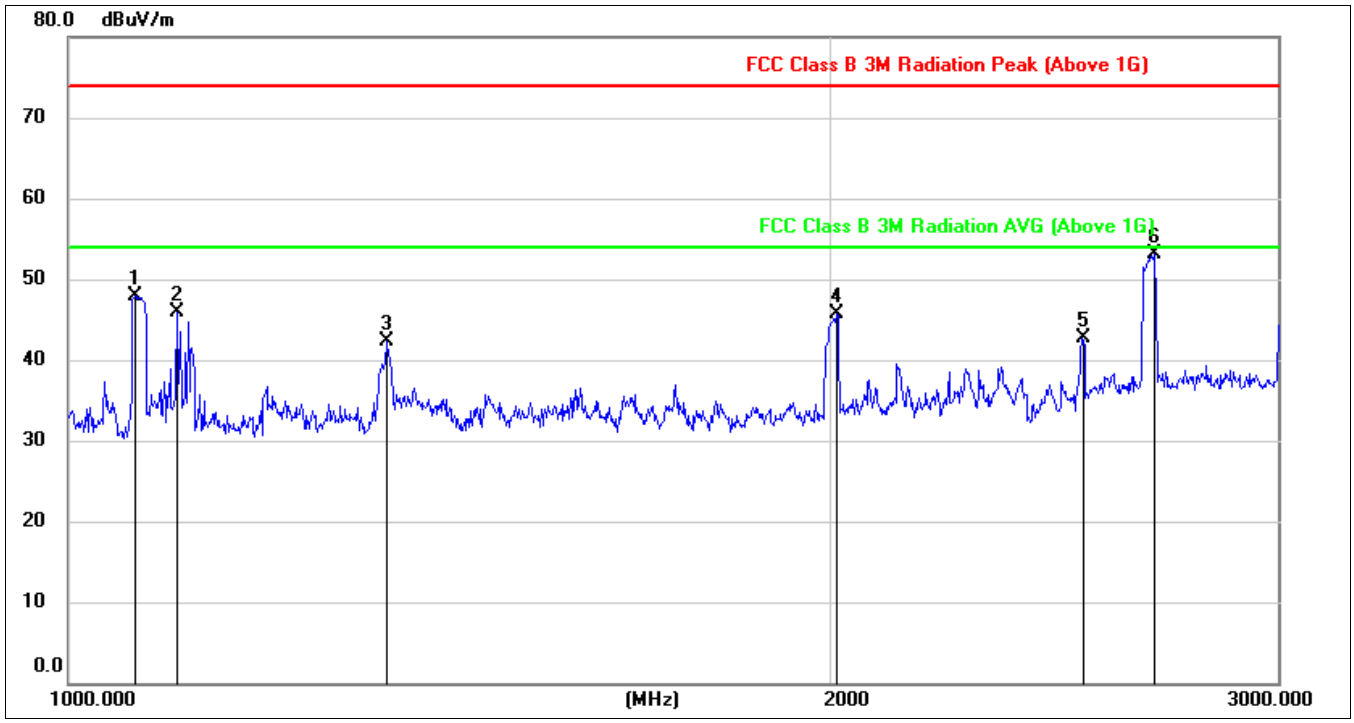
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1113.673	51.56	-12.58	38.98	74.00	-35.02	peak
2	1326.234	50.04	-11.39	38.65	74.00	-35.35	peak
3	2004.554	55.93	-9.71	46.22	74.00	-27.78	peak
4	2143.493	51.88	-8.38	43.50	74.00	-30.50	peak
5	2337.840	48.41	-7.34	41.07	74.00	-32.93	peak
6	2667.284	49.06	-7.22	41.84	74.00	-32.16	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. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

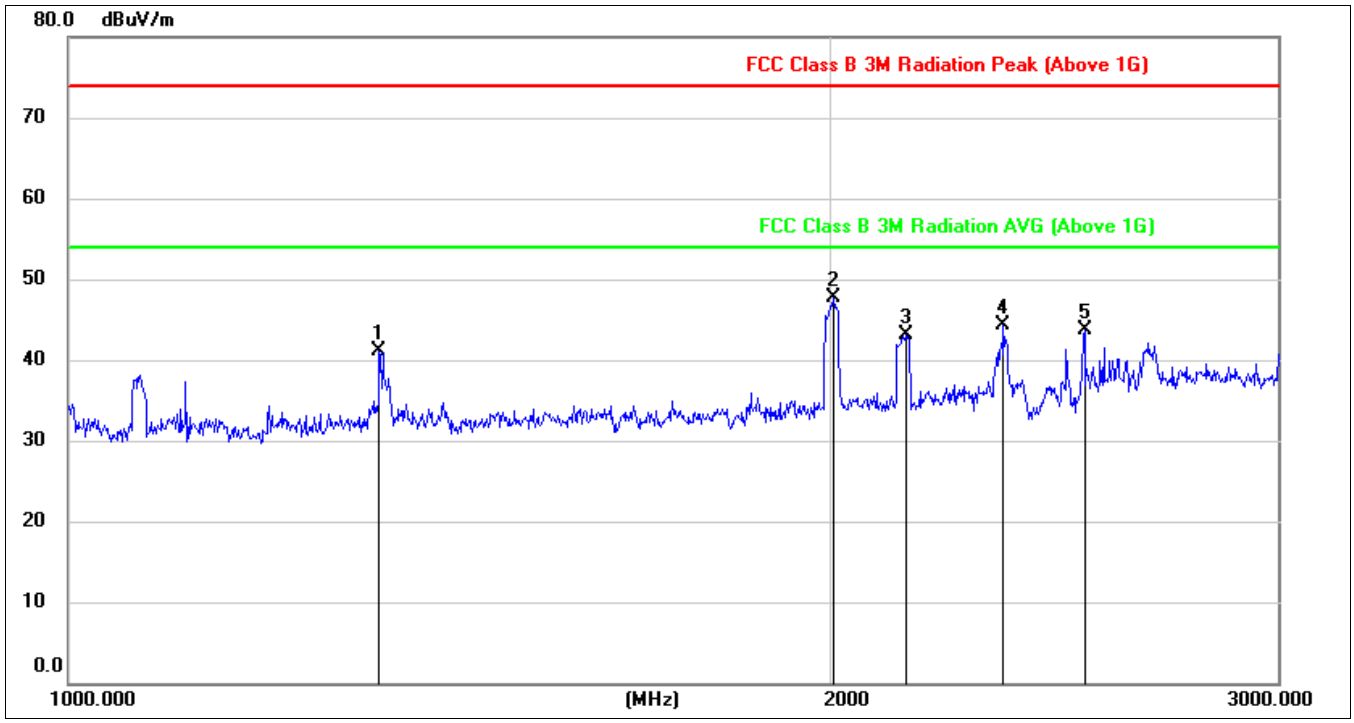
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1062.287	60.78	-12.80	47.98	74.00	-26.02	peak
2	1103.928	58.43	-12.59	45.84	74.00	-28.16	peak
3	1336.472	53.68	-11.46	42.22	74.00	-31.78	peak
4	2011.172	55.30	-9.61	45.69	74.00	-28.31	peak
5	2513.650	49.12	-6.39	42.73	74.00	-31.27	peak
6	2684.924	60.41	-7.32	53.09	74.00	-20.91	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

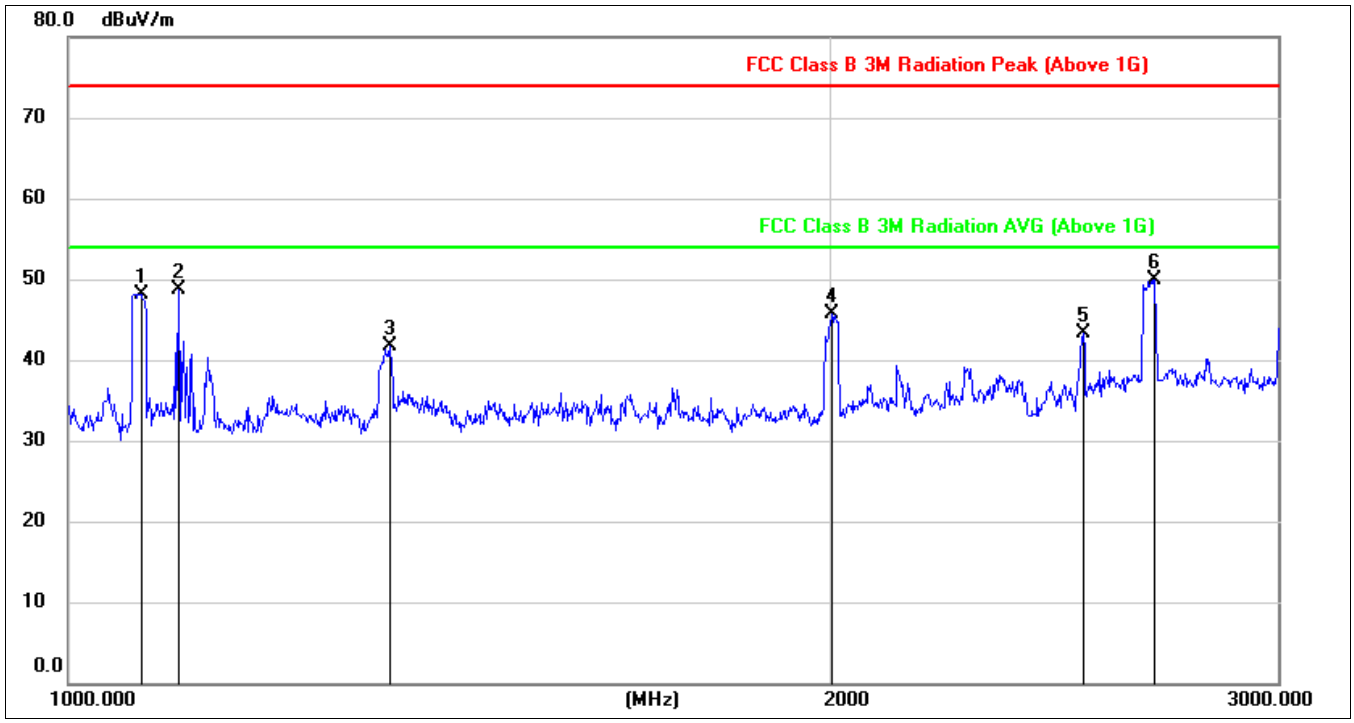
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1326.234	52.51	-11.39	41.12	74.00	-32.88	peak
2	2004.554	57.36	-9.71	47.65	74.00	-26.35	peak
3	2138.789	51.49	-8.37	43.12	74.00	-30.88	peak
4	2337.840	51.67	-7.34	44.33	74.00	-29.67	peak
5	2516.413	50.08	-6.41	43.67	74.00	-30.33	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. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

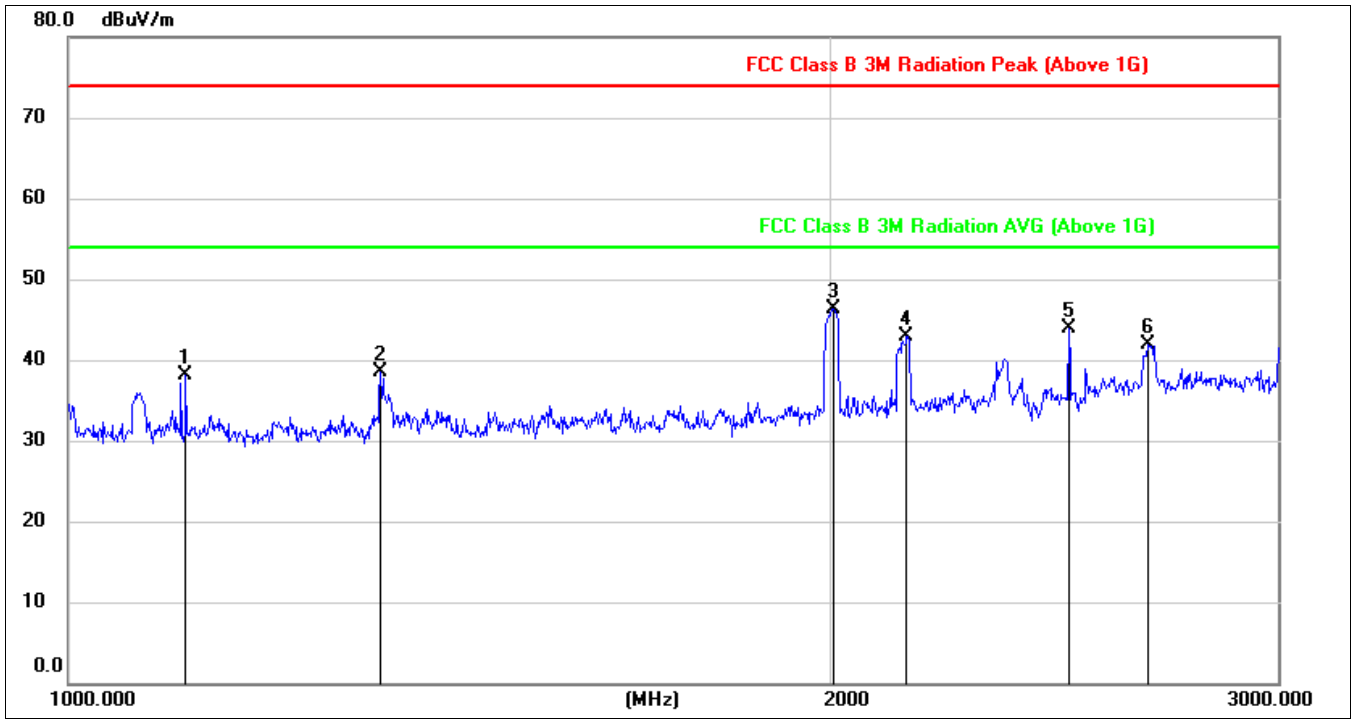
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1069.312	60.85	-12.76	48.09	74.00	-25.91	peak
2	1106.357	61.29	-12.59	48.70	74.00	-25.30	peak
3	1339.412	53.20	-11.49	41.71	74.00	-32.29	peak
4	2002.353	55.37	-9.75	45.62	74.00	-28.38	peak
5	2513.650	49.66	-6.39	43.27	74.00	-30.73	peak
6	2684.924	57.30	-7.32	49.98	74.00	-24.02	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. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

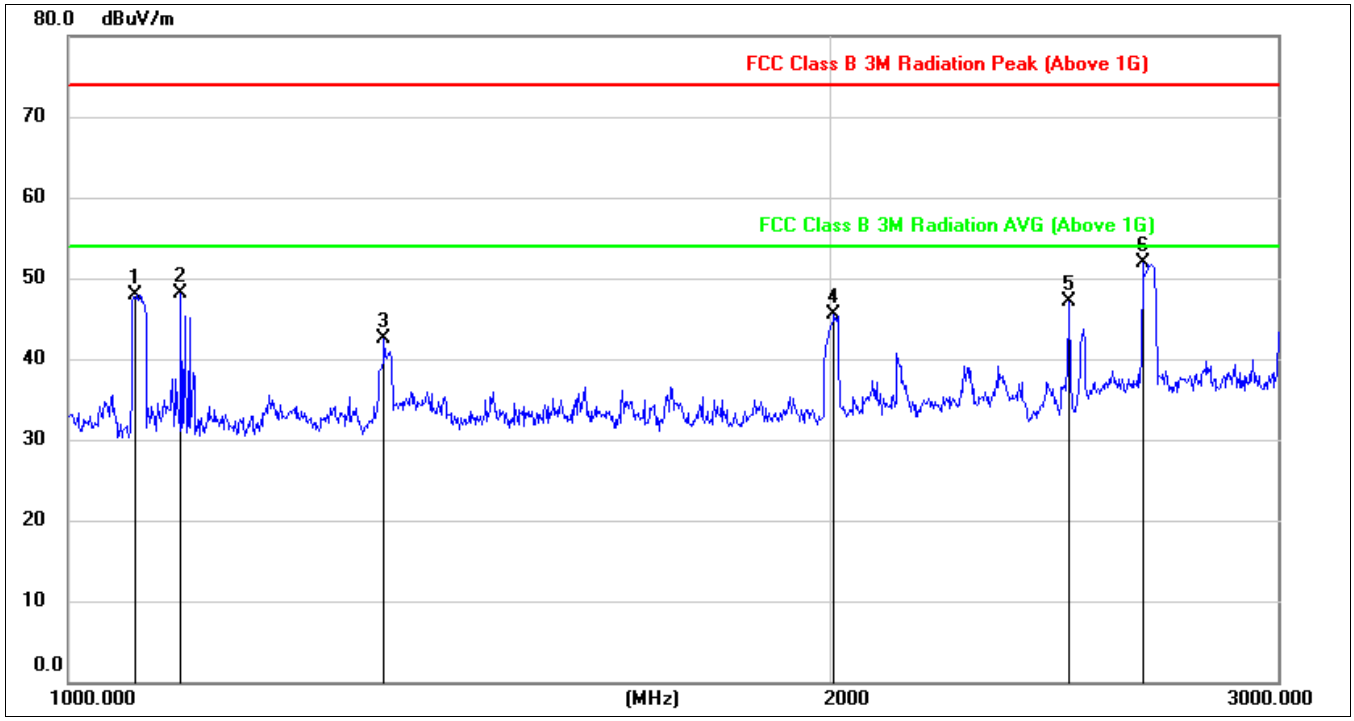
HARMONICS AND SPURIOUS EMISSIONS (CHANNEL26, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1113.673	50.70	-12.58	38.12	74.00	-35.88	peak
2	1327.692	49.92	-11.40	38.52	74.00	-35.48	peak
3	2004.554	56.01	-9.71	46.30	74.00	-27.70	peak
4	2141.140	51.32	-8.38	42.94	74.00	-31.06	peak
5	2480.729	50.45	-6.48	43.97	74.00	-30.03	peak
6	2664.355	49.16	-7.20	41.96	74.00	-32.04	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (CHANNEL26, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1064.623	60.61	-12.78	47.83	74.00	-26.17	peak
2	1107.573	60.75	-12.59	48.16	74.00	-25.84	peak
3	1332.075	54.02	-11.43	42.59	74.00	-31.41	peak
4	2004.554	55.17	-9.71	45.46	74.00	-28.54	peak
5	2480.729	53.65	-6.48	47.17	74.00	-26.83	peak
6	2652.673	59.00	-7.12	51.88	74.00	-22.12	peak

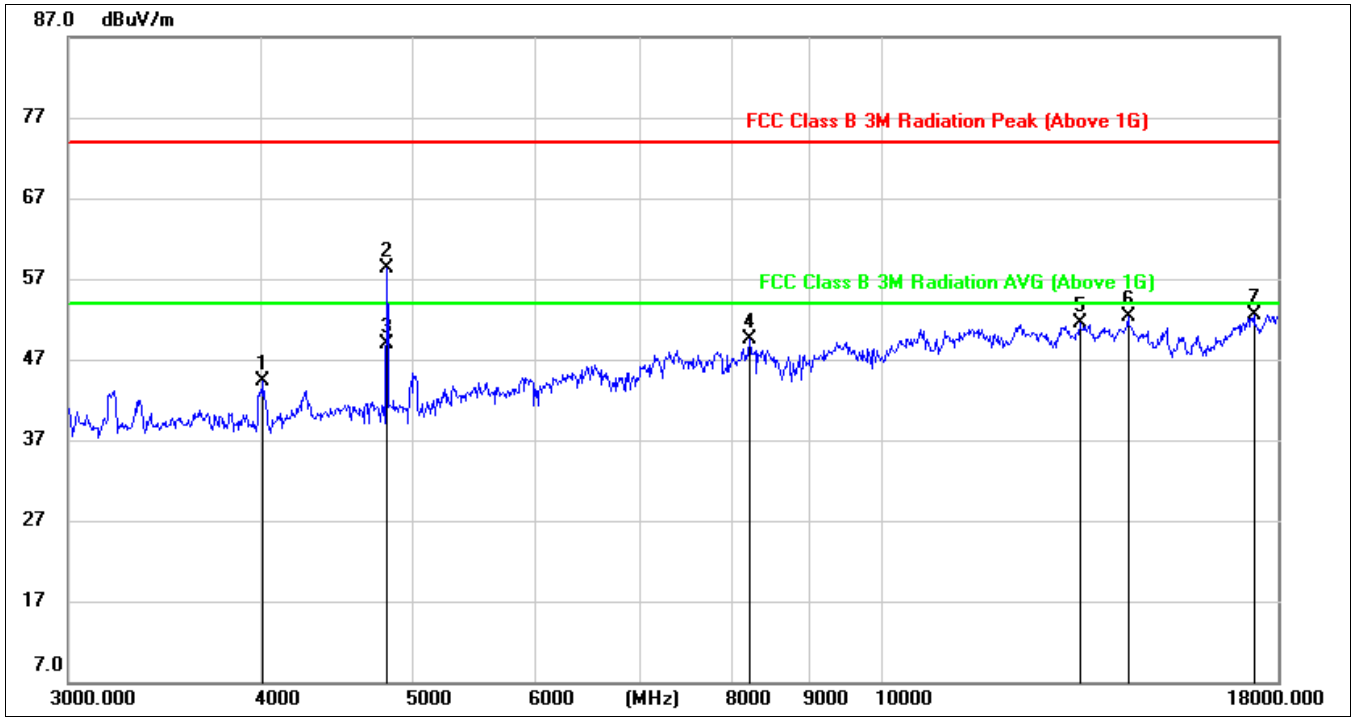
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in then spurious frequency bands and the authorized band was not corrected for BRF losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All constructions have been tested, only the worst data record in the report

8.3. SPURIOUS EMISSIONS (3~18GHz)

8.3.1. TEST CONSTRUCTION 3

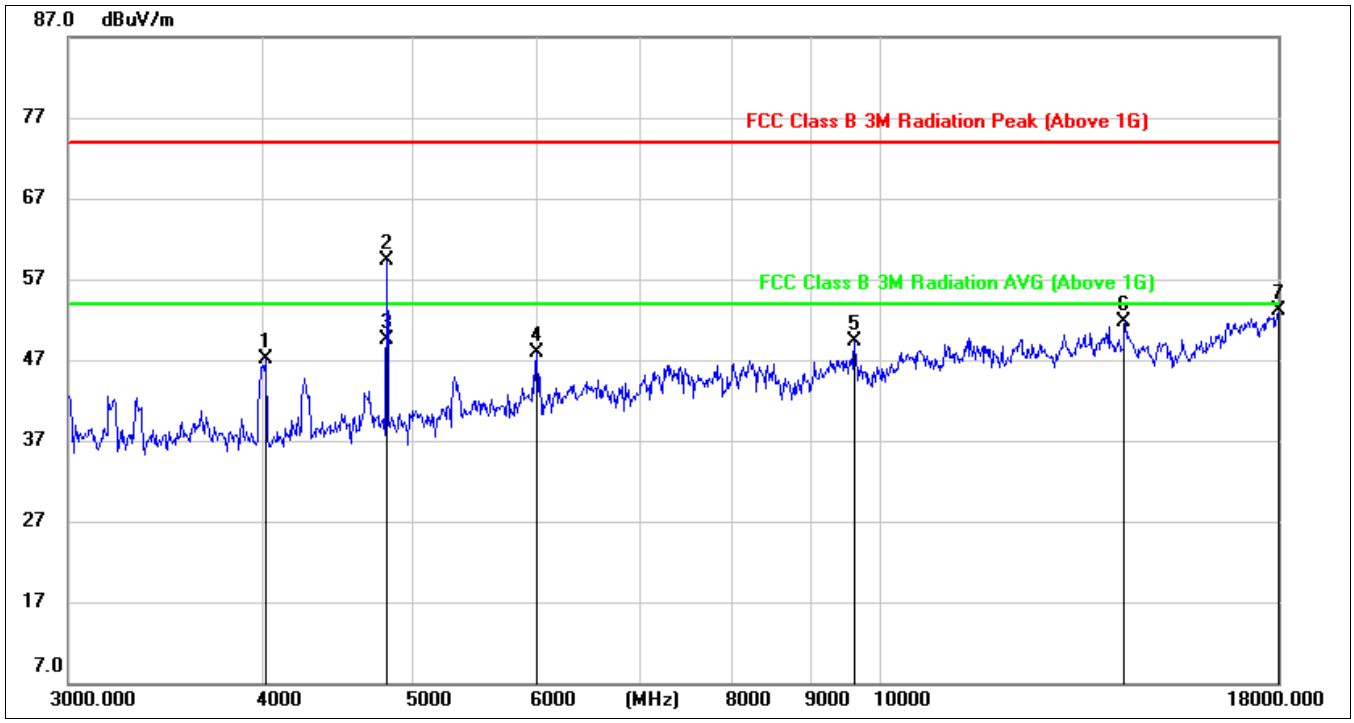
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4003.166	47.19	-2.94	44.25	74.00	-29.75	peak
2	4810.918	58.53	-0.23	58.30	74.00	-15.70	peak
3	4810.918	49.08	-0.23	48.85	54.00	-5.15	AVG
4	8226.601	40.08	9.33	49.41	74.00	-24.59	peak
5	13441.070	35.69	15.79	51.48	74.00	-22.52	peak
6	14413.908	35.89	16.41	52.30	74.00	-21.70	peak
7	17366.387	30.90	21.61	52.51	74.00	-21.49	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. AVG: VBW=1/Ton where: ton is transmit duration.
4. For duty cycle, please refer to clause 7.1.
5. The High Pass filter loss factor already add into the correct factor.
6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

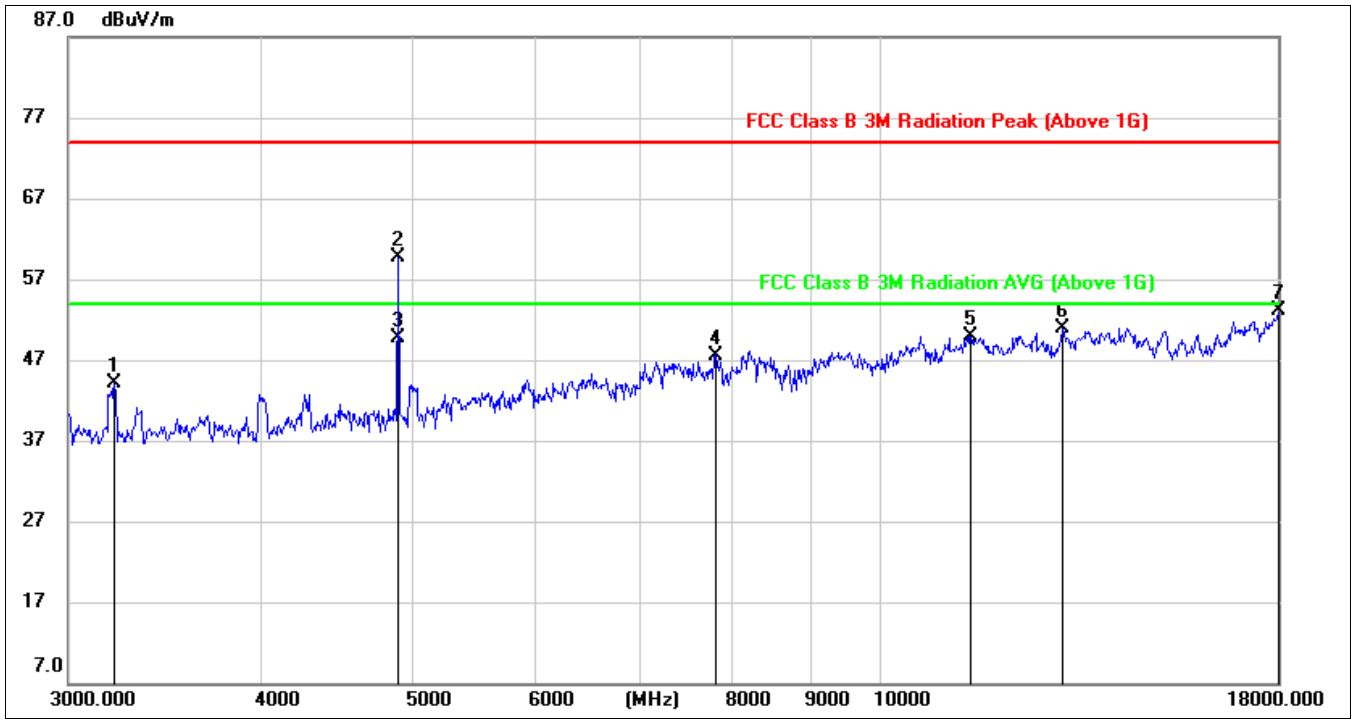
HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4017.537	49.97	-2.94	47.03	74.00	-26.97	peak
2	4810.059	59.46	-0.23	59.23	74.00	-14.77	peak
3	4810.059	49.72	-0.23	49.49	54.00	-4.51	AVG
4	6001.583	44.19	3.76	47.95	74.00	-26.05	peak
5	9614.342	39.28	10.00	49.28	74.00	-24.72	peak
6	14362.348	35.40	16.38	51.78	74.00	-22.22	peak
7	18000.000	29.82	23.27	53.09	74.00	-20.91	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. AVG: VBW=1/Ton where: ton is transmit duration.
4. For duty cycle, please refer to clause 7.1.
5. The High Pass filter loss factor already add into the correct factor.
6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

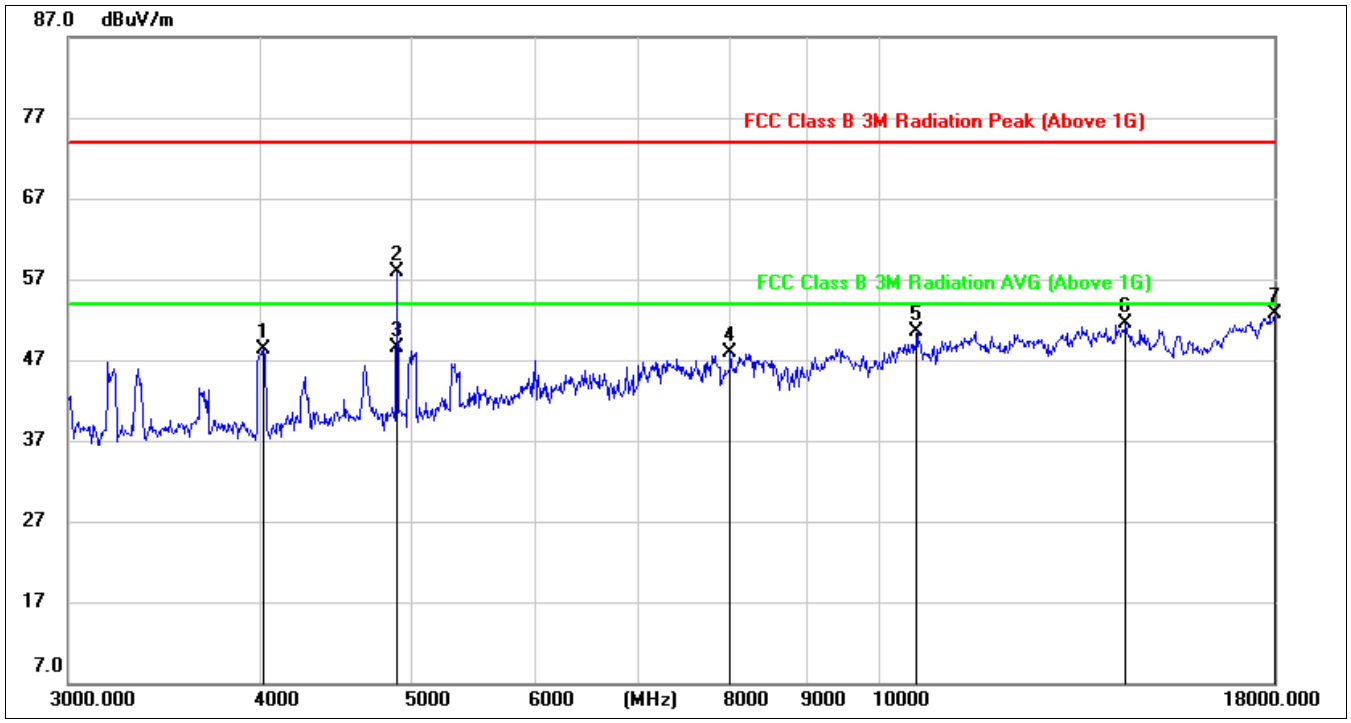
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3211.375	48.53	-4.51	44.02	74.00	-29.98	peak
2	4890.032	59.71	-0.10	59.61	74.00	-14.39	peak
3	4890.032	49.82	-0.10	49.72	54.00	-4.28	AVG
4	7824.060	38.83	8.77	47.60	74.00	-26.40	peak
5	11418.843	36.44	13.49	49.93	74.00	-24.07	peak
6	13084.634	35.93	14.95	50.88	74.00	-23.12	peak
7	18000.000	29.74	23.27	53.01	74.00	-20.99	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. AVG: VBW=1/Ton where: ton is transmit duration.
4. For duty cycle, please refer to clause 7.1.
5. The High Pass filter loss factor already add into the correct factor.
6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

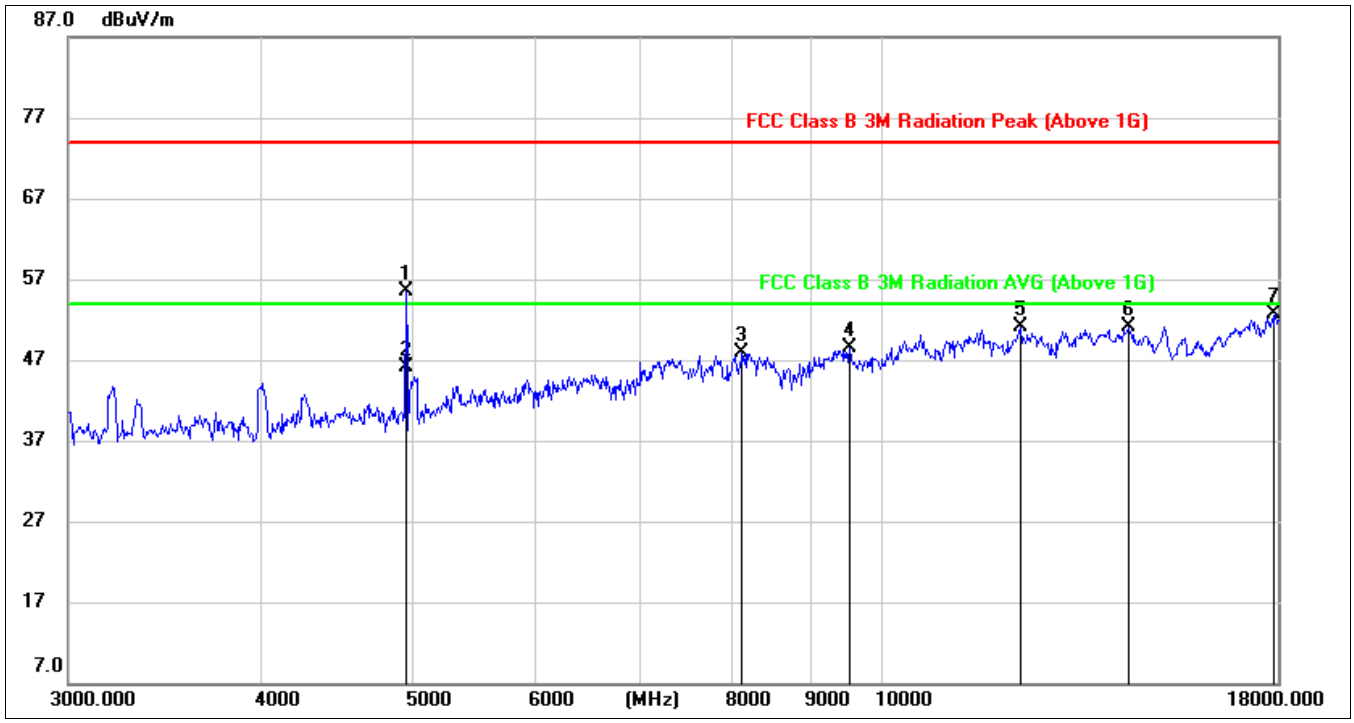
HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4010.345	51.18	-2.93	48.25	74.00	-25.75	peak
2	4890.872	58.04	-0.10	57.94	74.00	-16.06	peak
3	4890.872	48.51	-0.10	48.41	54.00	-5.59	AVG
4	8022.806	39.53	8.35	47.88	74.00	-26.12	peak
5	10591.067	37.86	12.69	50.55	74.00	-23.45	peak
6	14439.758	35.11	16.39	51.50	74.00	-22.50	peak
7	18000.000	29.35	23.27	52.62	74.00	-21.38	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. AVG: VBW=1/Ton where: ton is transmit duration.
4. For duty cycle, please refer to clause 7.1.
5. The High Pass filter loss factor already add into the correct factor.
6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

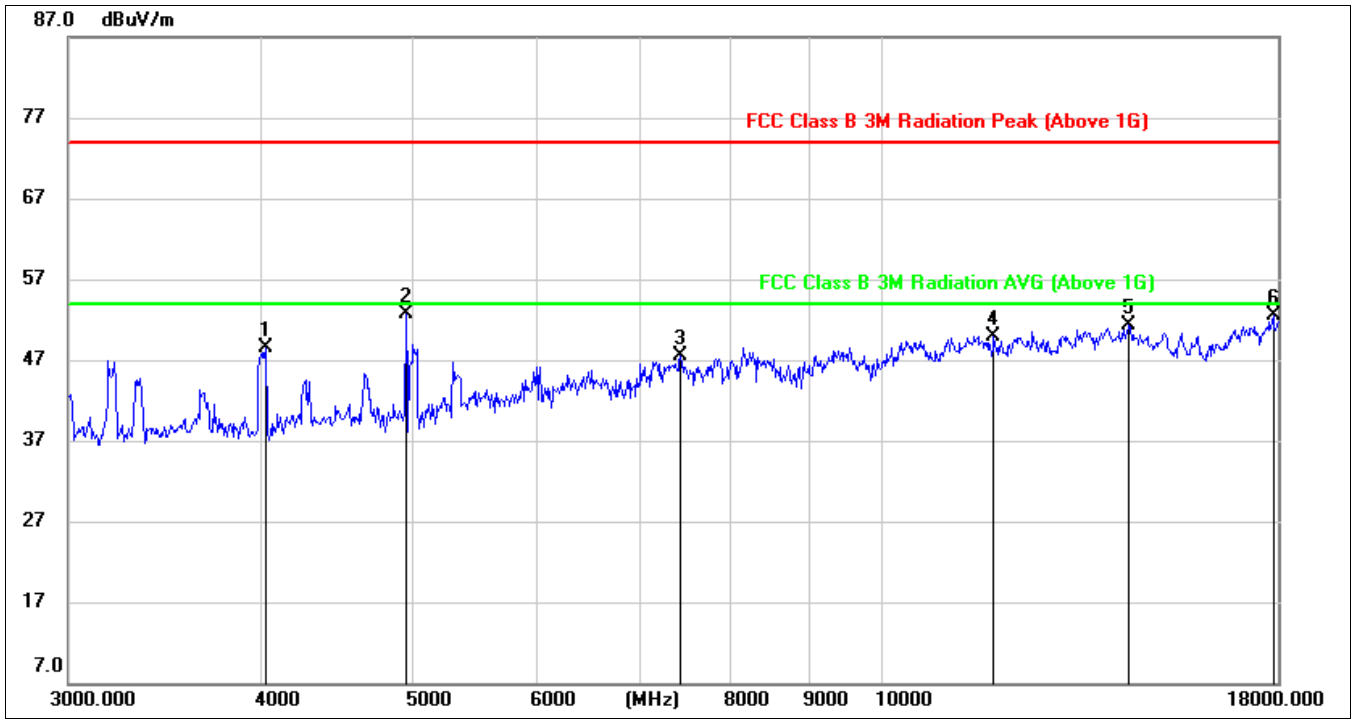
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4950.889	55.31	0.20	55.51	74.00	-18.49	peak
2	4950.889	45.91	0.20	46.11	54.00	-7.89	AVG
3	8138.634	38.73	9.25	47.98	74.00	-26.02	peak
4	9545.682	38.34	10.25	48.59	74.00	-25.41	peak
5	12289.276	36.78	14.38	51.16	74.00	-22.84	peak
6	14413.908	34.73	16.41	51.14	74.00	-22.86	peak
7	17935.612	29.44	23.19	52.63	74.00	-21.37	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. AVG: VBW=1/Ton where: ton is transmit duration.
4. For duty cycle, please refer to clause 7.1.
5. The High Pass filter loss factor already add into the correct factor.
6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

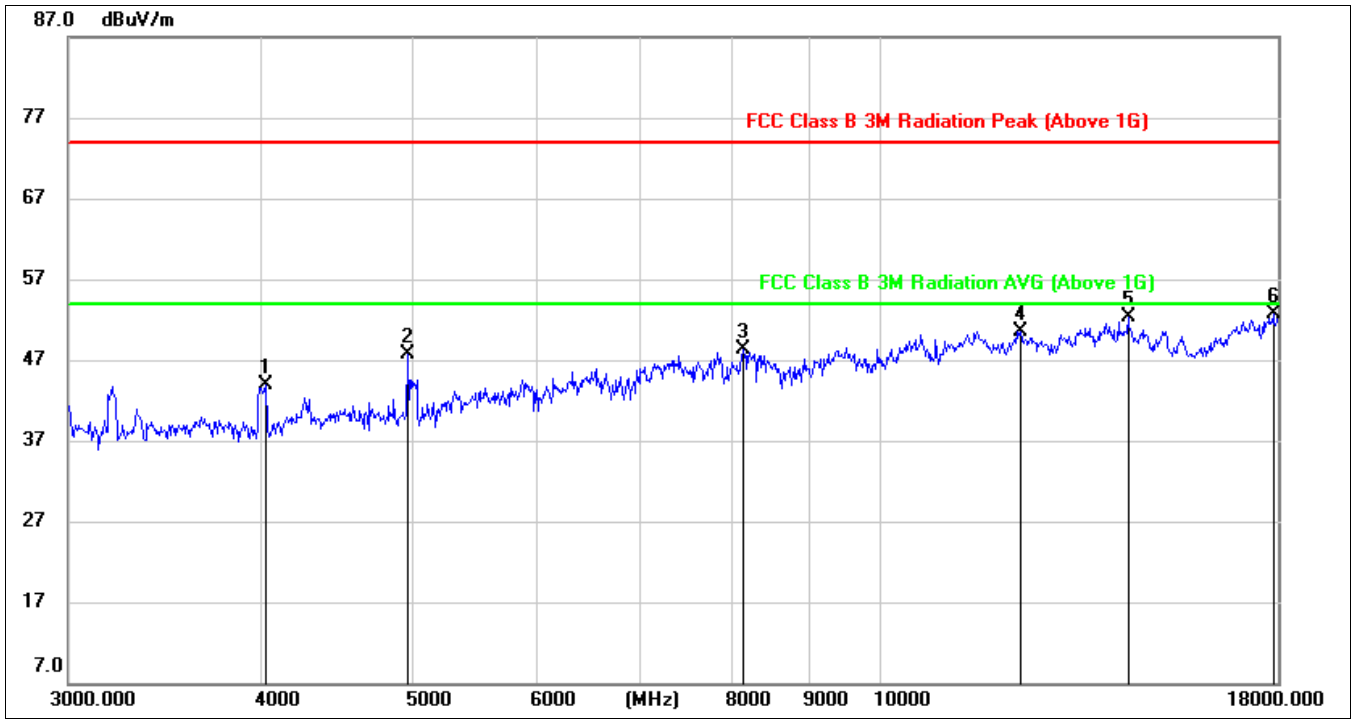
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4017.537	51.42	-2.94	48.48	74.00	-25.52	peak
2	4945.674	52.56	0.17	52.73	74.00	-21.27	peak
3	7427.896	40.14	7.43	47.57	74.00	-26.43	peak
4	11835.459	36.06	13.81	49.87	74.00	-24.13	peak
5	14439.758	34.87	16.39	51.26	74.00	-22.74	peak
6	17871.455	29.30	23.18	52.48	74.00	-21.52	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. The High Pass filter loss factor already add into the correct factor.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

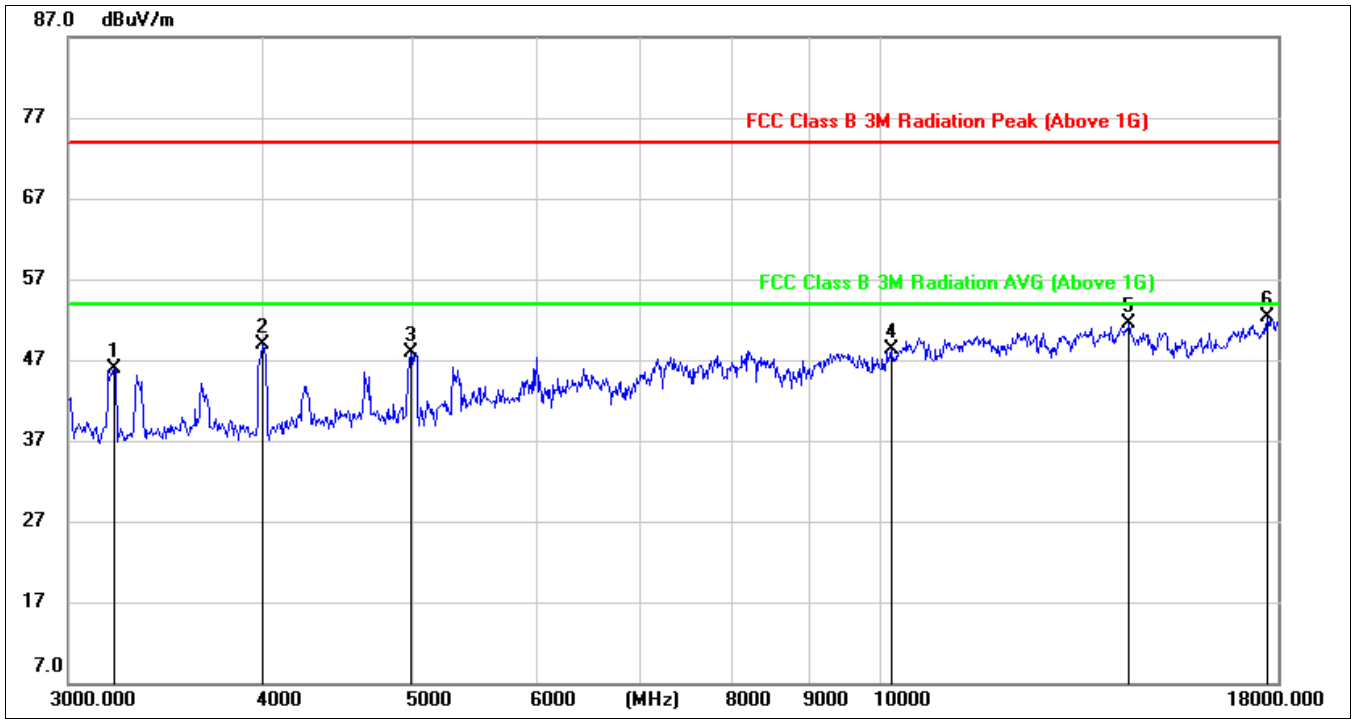
HARMONICS AND SPURIOUS EMISSIONS (CHANNEL26, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4017.537	46.90	-2.94	43.96	74.00	-30.04	peak
2	4954.543	47.41	0.22	47.63	74.00	-26.37	peak
3	8153.229	38.92	9.35	48.27	74.00	-25.73	peak
4	12289.276	36.17	14.38	50.55	74.00	-23.45	peak
5	14413.908	35.82	16.41	52.23	74.00	-21.77	peak
6	17871.455	29.45	23.18	52.63	74.00	-21.37	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.
4. The High Pass filter loss factor already add into the correct factor.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (CHANNEL26, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3211.375	50.44	-4.51	45.93	74.00	-28.07	peak
2	4003.166	51.93	-2.94	48.99	74.00	-25.01	peak
3	4990.180	47.45	0.42	47.87	74.00	-26.13	peak
4	10163.476	37.39	10.85	48.24	74.00	-25.76	peak
5	14439.758	35.04	16.39	51.43	74.00	-22.57	peak
6	17712.063	29.88	22.36	52.24	74.00	-21.76	peak

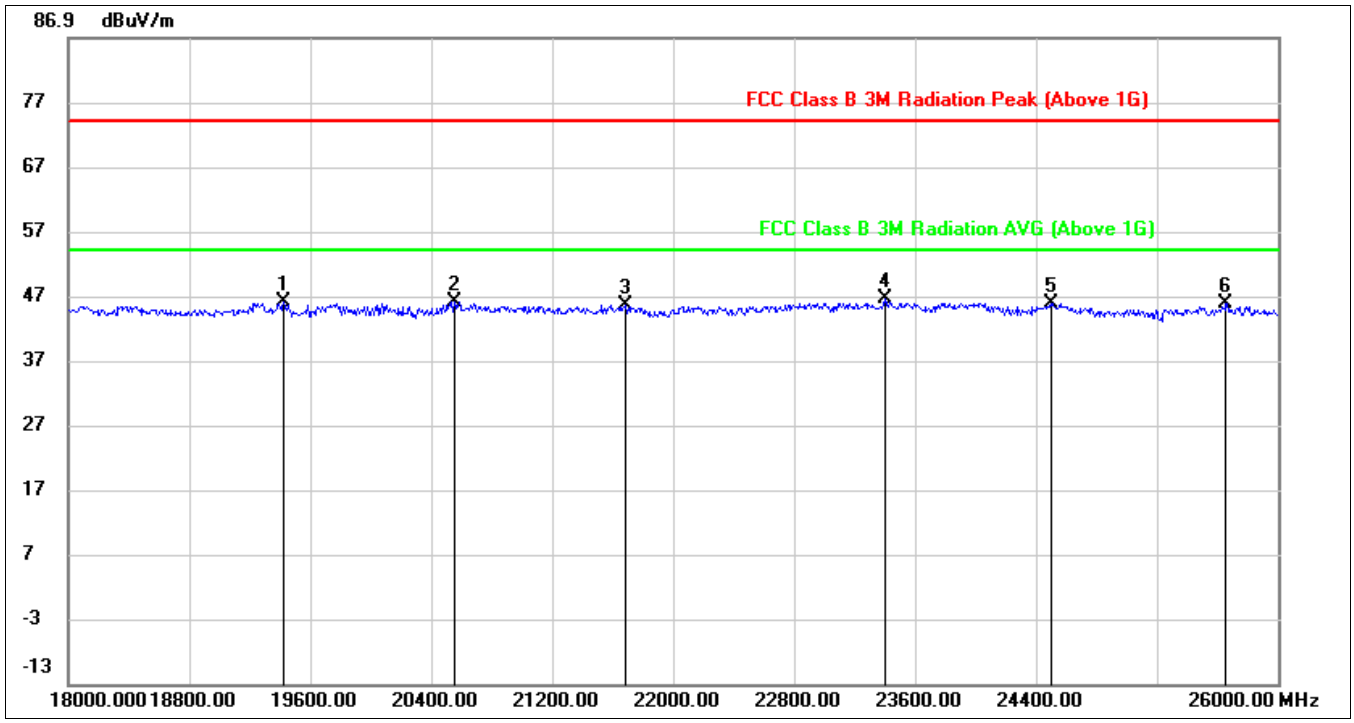
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. The High Pass filter loss factor already add into the correct factor.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All constructions have been tested, only the worst data record in the report

8.4. SPURIOUS EMISSIONS 18G ~ 26GHz

8.4.1. TEST CONSTRUCTION 3

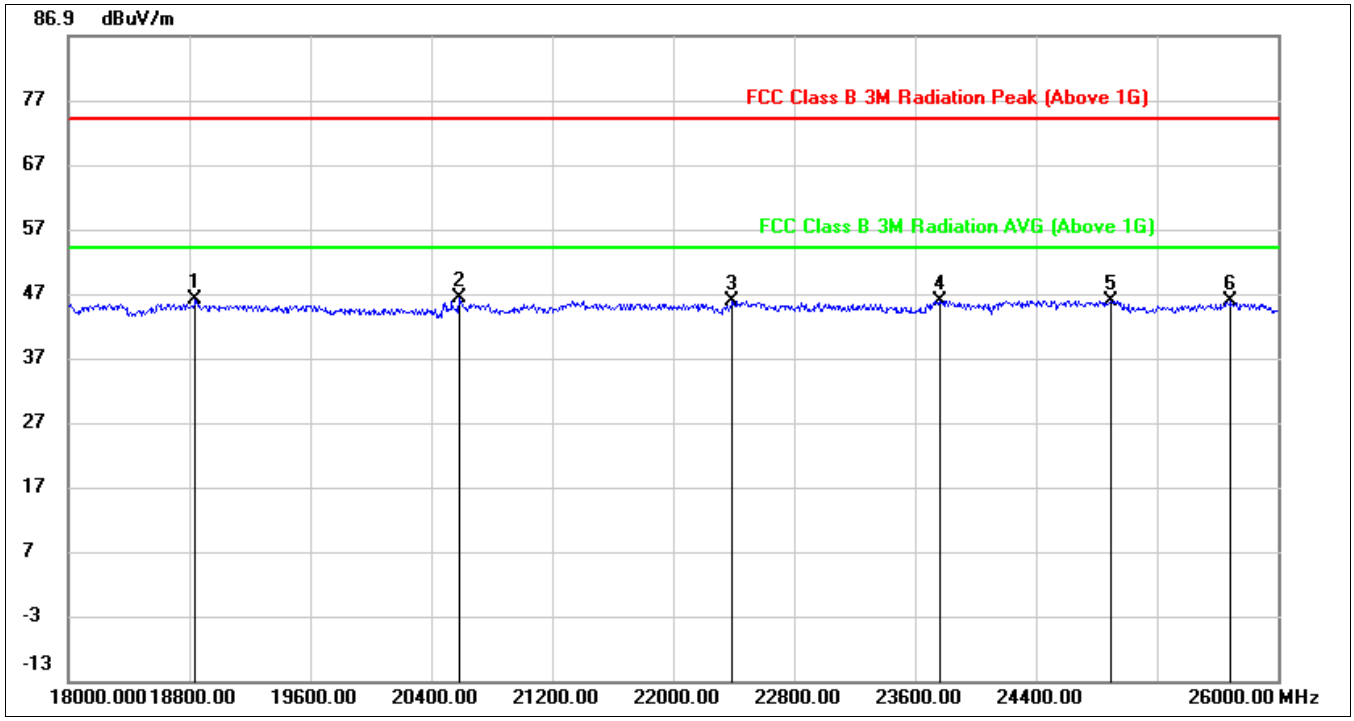
SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19424.000	50.85	-4.87	45.98	74.00	-28.02	peak
2	20552.000	51.05	-5.00	46.05	74.00	-27.95	peak
3	21680.000	51.24	-5.76	45.48	74.00	-28.52	peak
4	23400.000	51.42	-4.96	46.46	74.00	-27.54	peak
5	24496.000	48.47	-2.60	45.87	74.00	-28.13	peak
6	25656.000	47.27	-1.52	45.75	74.00	-28.25	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. Proper operation of the transmitter prior to adding the filter to the measurement chain.

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	18840.000	50.82	-4.85	45.97	74.00	-28.03	peak
2	20584.000	51.24	-5.02	46.22	74.00	-27.78	peak
3	22392.000	51.70	-5.91	45.79	74.00	-28.21	peak
4	23760.000	50.46	-4.61	45.85	74.00	-28.15	peak
5	24896.000	47.31	-1.44	45.87	74.00	-28.13	peak
6	25688.000	47.17	-1.46	45.71	74.00	-28.29	peak

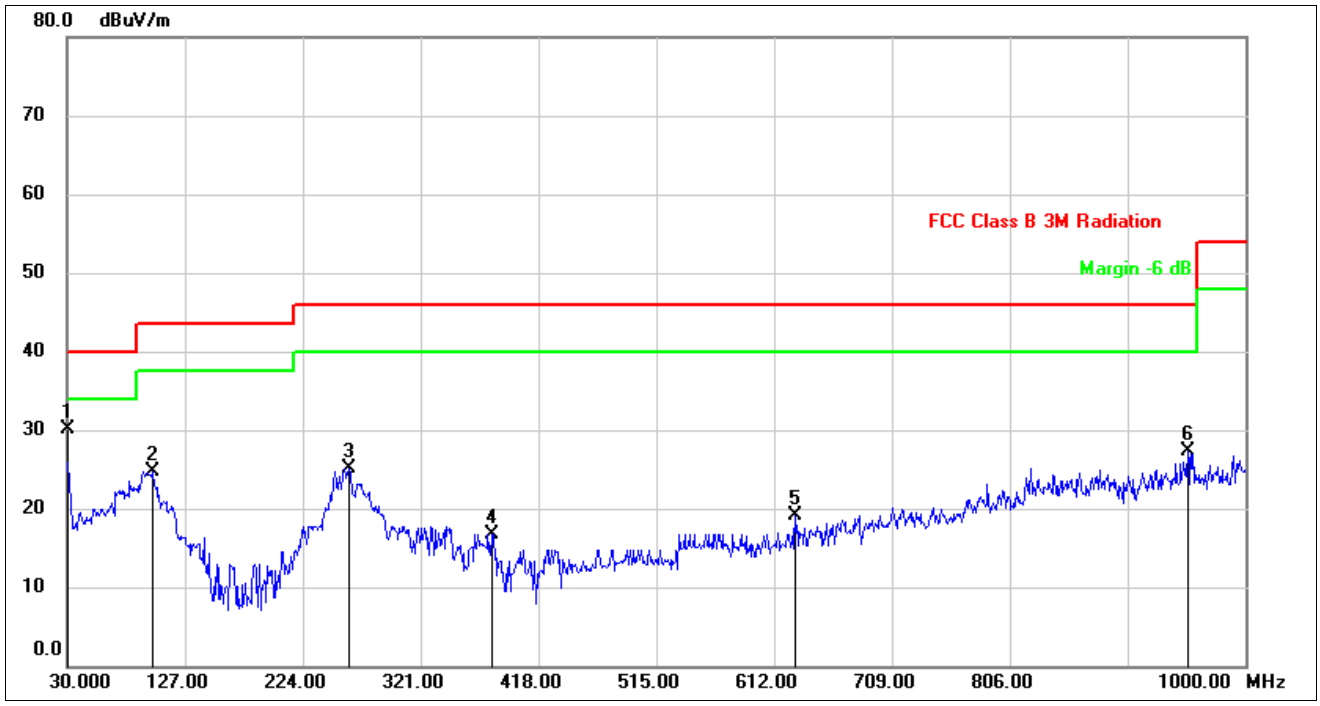
Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All constructions and test modes have been tested, only the worst data record in the report.

8.5. SPURIOUS EMISSIONS 30M ~ 1 GHz

8.5.1. TEST CONSTRUCTION 1

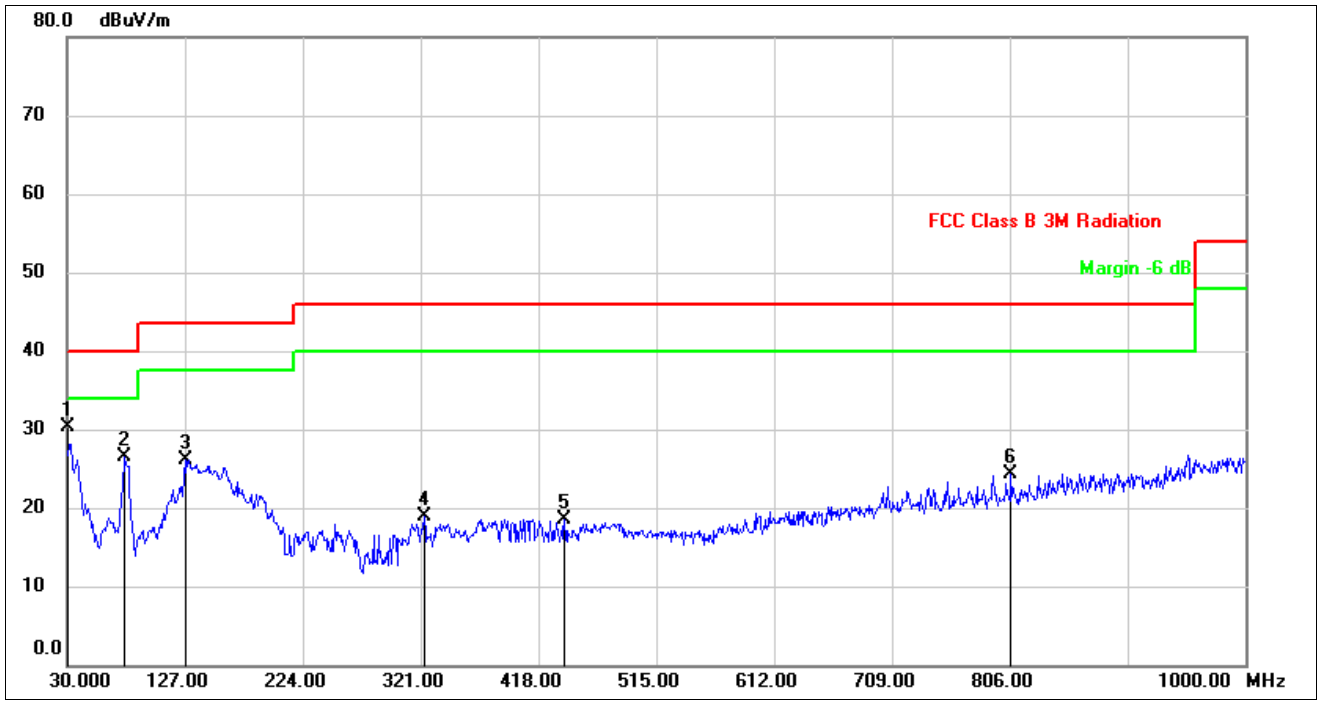
SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	46.99	-16.80	30.19	40.00	-9.81	QP
2	99.8399	46.37	-21.62	24.75	43.50	-18.75	QP
3	261.8299	40.44	-15.29	25.15	46.00	-20.85	QP
4	380.1700	29.10	-12.30	16.80	46.00	-29.20	QP
5	629.4600	26.81	-7.62	19.19	46.00	-26.81	QP
6	952.4700	30.34	-3.00	27.34	46.00	-18.66	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)

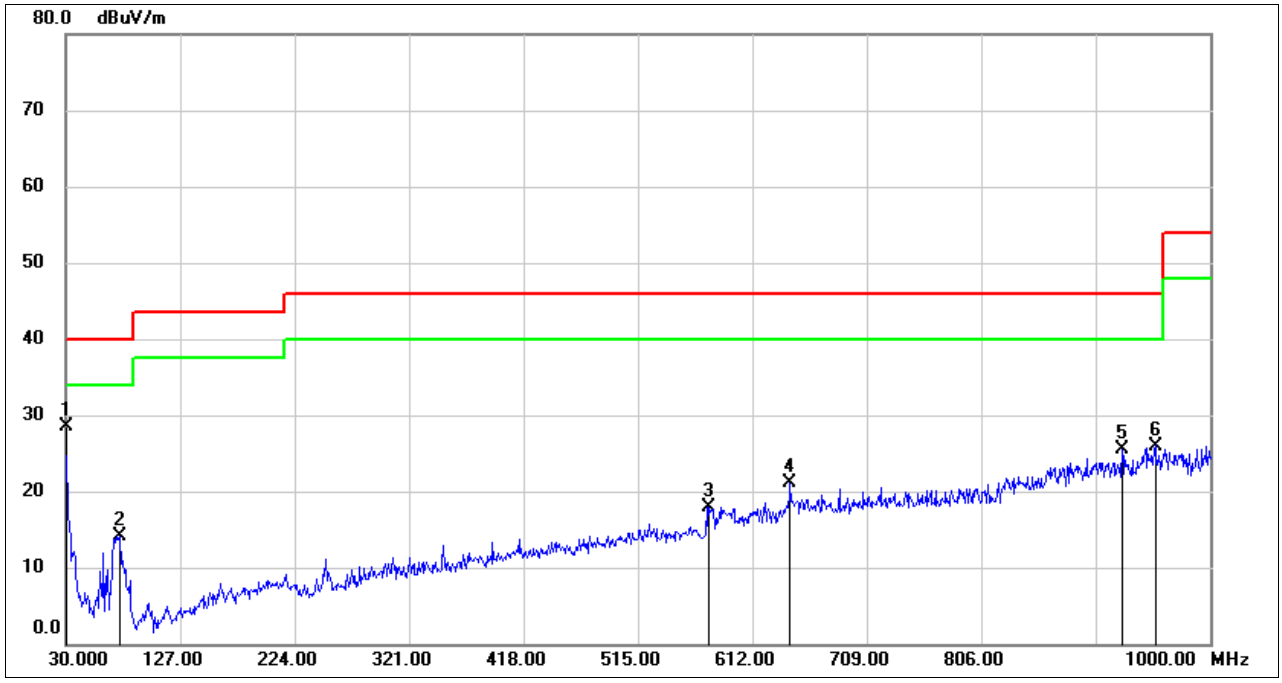


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	47.08	-16.80	30.28	40.00	-9.72	QP
2	77.5300	46.82	-20.25	26.57	40.00	-13.43	QP
3	127.0000	45.86	-19.68	26.18	43.50	-17.32	QP
4	323.9100	32.23	-13.24	18.99	46.00	-27.01	QP
5	439.3400	29.78	-11.25	18.53	46.00	-27.47	QP
6	806.9699	29.17	-4.90	24.27	46.00	-21.73	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

8.5.2. TEST CONSTRUCTION 2

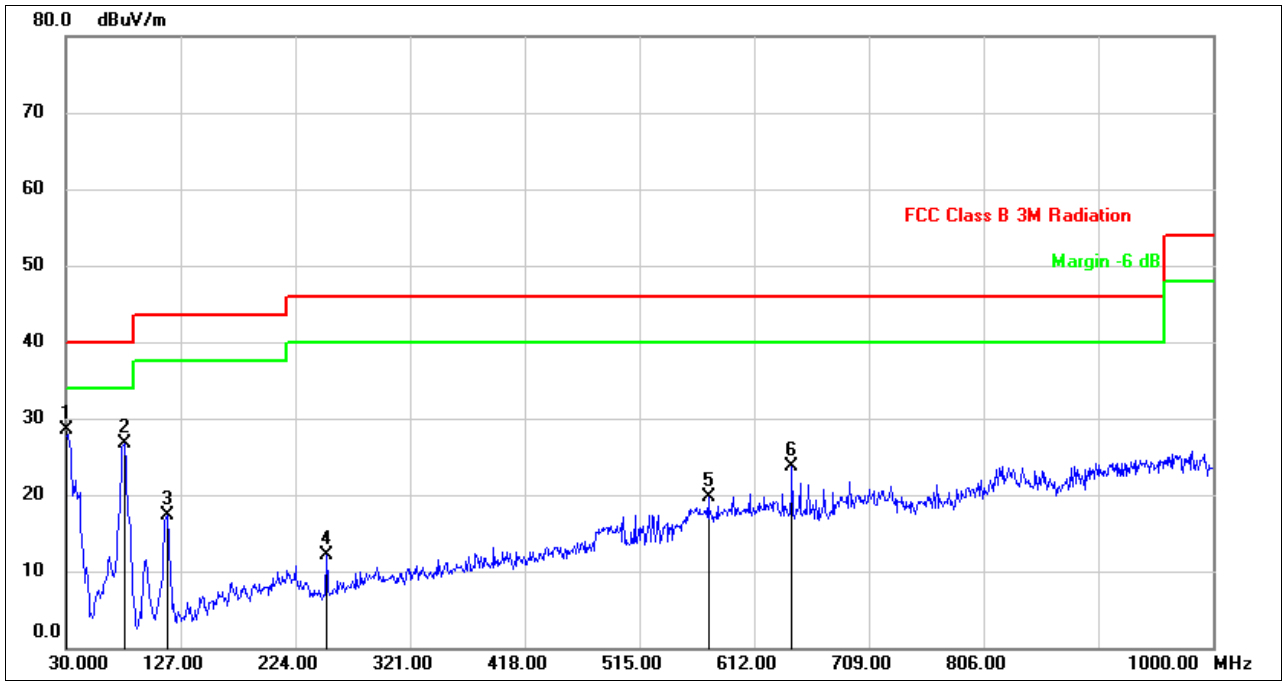
SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	45.27	-16.80	28.47	40.00	-11.53	QP
2	75.5900	34.41	-20.22	14.19	40.00	-25.81	QP
3	575.1400	26.48	-8.49	17.99	46.00	-28.01	QP
4	644.0100	28.40	-7.30	21.10	46.00	-24.90	QP
5	925.3100	28.88	-3.39	25.49	46.00	-20.51	QP
6	953.4400	29.01	-3.01	26.00	46.00	-20.00	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)

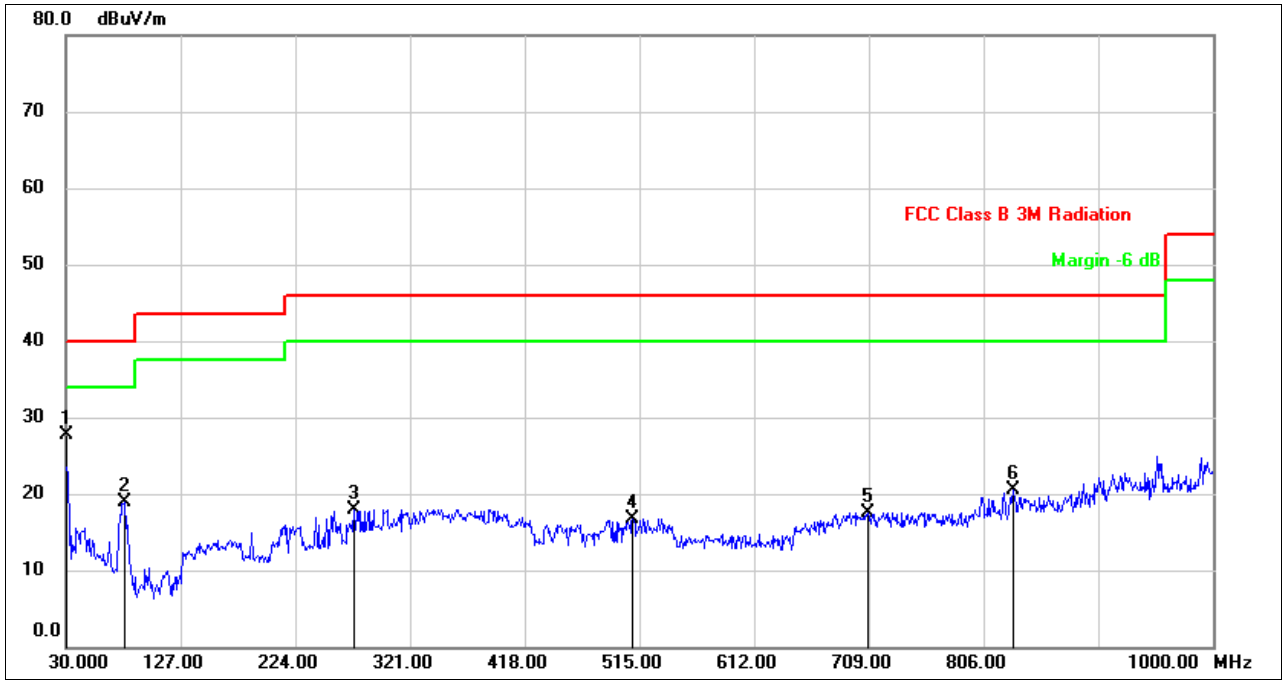


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	45.28	-16.80	28.48	40.00	-11.52	QP
2	79.4700	47.02	-20.28	26.74	40.00	-13.26	QP
3	115.3600	38.15	-20.93	17.22	43.50	-26.28	QP
4	250.1900	27.84	-15.76	12.08	46.00	-33.92	QP
5	573.2000	28.23	-8.54	19.69	46.00	-26.31	QP
6	644.0100	31.03	-7.30	23.73	46.00	-22.27	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

8.5.3. TEST CONSTRUCTION 3

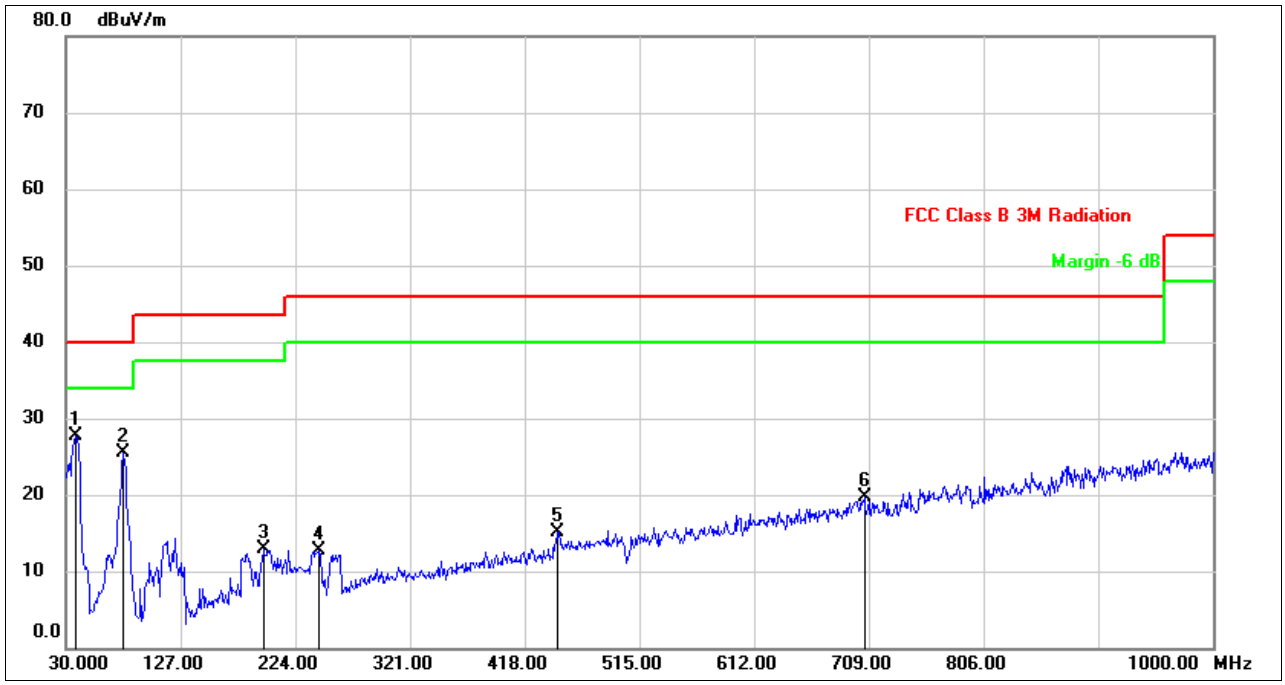
SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	30.0000	44.49	-16.80	27.69	40.00	-12.31	QP
2	79.4700	39.25	-20.28	18.97	40.00	-21.03	QP
3	273.4700	32.78	-14.80	17.98	46.00	-28.02	QP
4	509.1800	26.62	-9.86	16.76	46.00	-29.24	QP
5	708.0300	23.59	-6.07	17.52	46.00	-28.48	QP
6	831.2199	25.02	-4.49	20.53	46.00	-25.47	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)

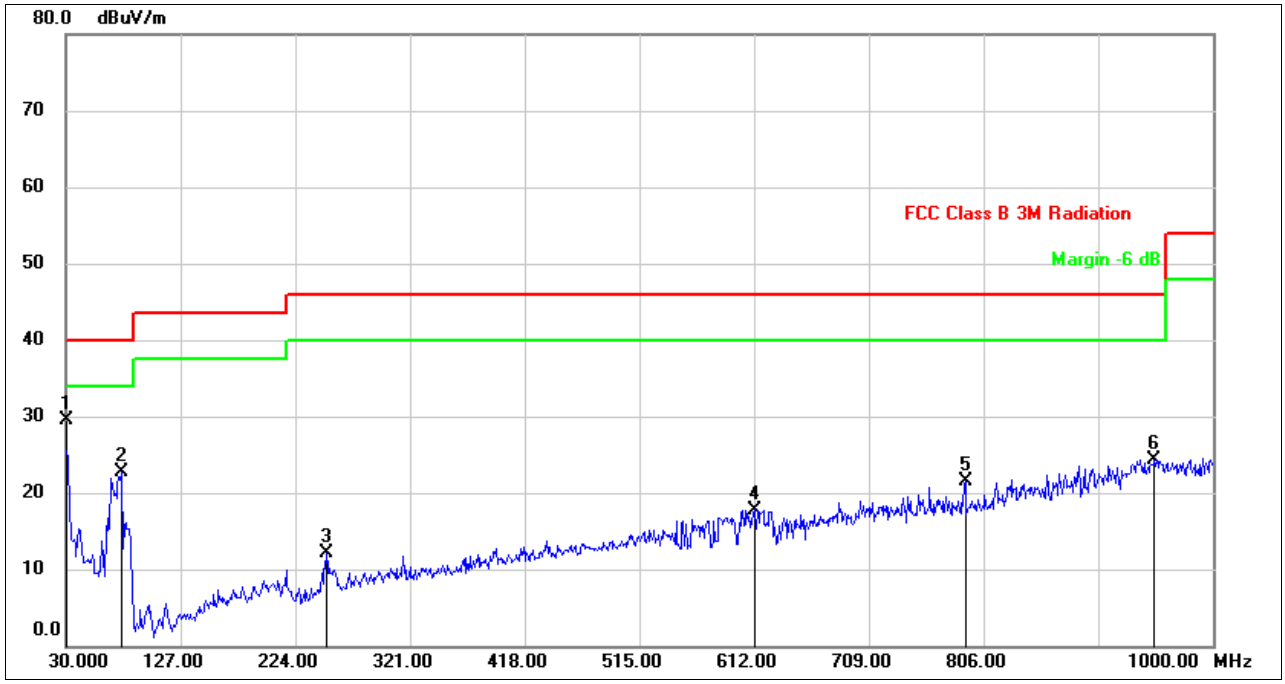


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	38.7300	45.33	-17.67	27.66	40.00	-12.34	peak
2	78.5000	45.80	-20.27	25.53	40.00	-14.47	peak
3	196.8400	28.77	-15.96	12.81	43.50	-30.69	peak
4	243.4000	28.97	-16.36	12.61	46.00	-33.39	peak
5	446.1300	26.25	-11.12	15.13	46.00	-30.87	peak
6	705.1200	25.81	-6.11	19.70	46.00	-26.30	peak

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

8.5.4. TEST CONSTRUCTION 4

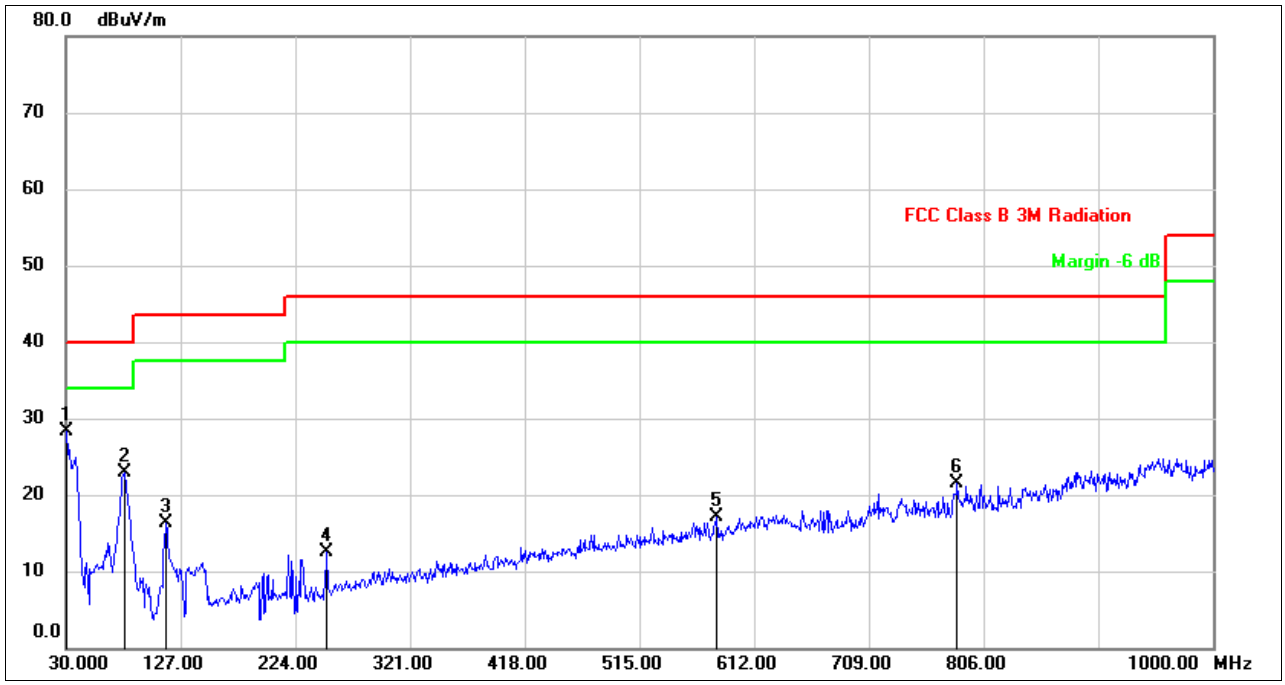
SPURIOUS EMISSIONS (MID CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	46.32	-16.80	29.52	40.00	-10.48	QP
2	77.5300	43.01	-20.25	22.76	40.00	-17.24	QP
3	250.1900	27.96	-15.76	12.20	46.00	-33.80	QP
4	612.9699	25.63	-7.83	17.80	46.00	-28.20	QP
5	790.4800	26.71	-5.17	21.54	46.00	-24.46	QP
6	950.5300	27.31	-2.99	24.32	46.00	-21.68	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/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.9700	45.30	-16.95	28.35	40.00	-11.65	QP
2	79.4700	43.21	-20.28	22.93	40.00	-17.07	QP
3	114.3900	37.32	-21.01	16.31	43.50	-27.19	QP
4	250.1900	28.22	-15.76	12.46	46.00	-33.54	QP
5	579.9900	25.54	-8.35	17.19	46.00	-28.81	QP
6	783.6900	26.79	-5.23	21.56	46.00	-24.44	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

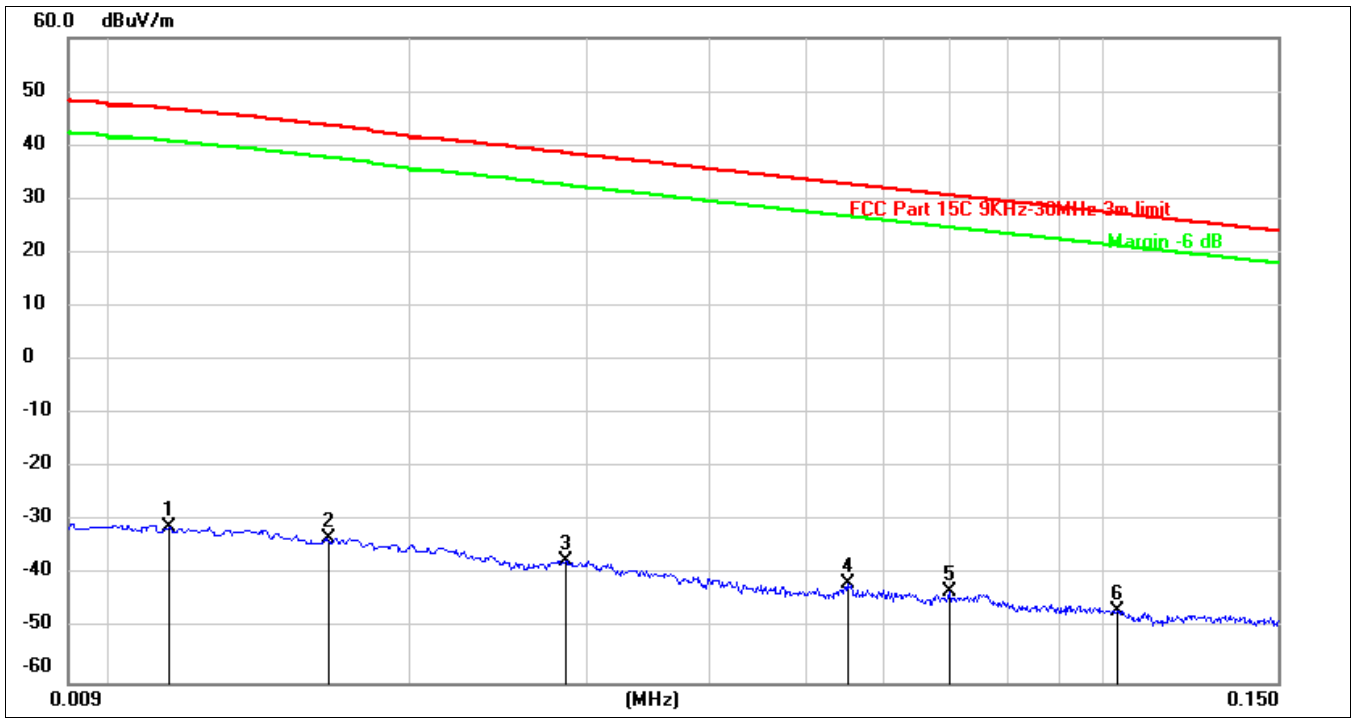
Note: All test modes have been tested, only the worst data record in the report.

8.6. SPURIOUS EMISSIONS BELOW 30M

8.6.1. TEST CONSTRUCTION 3

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

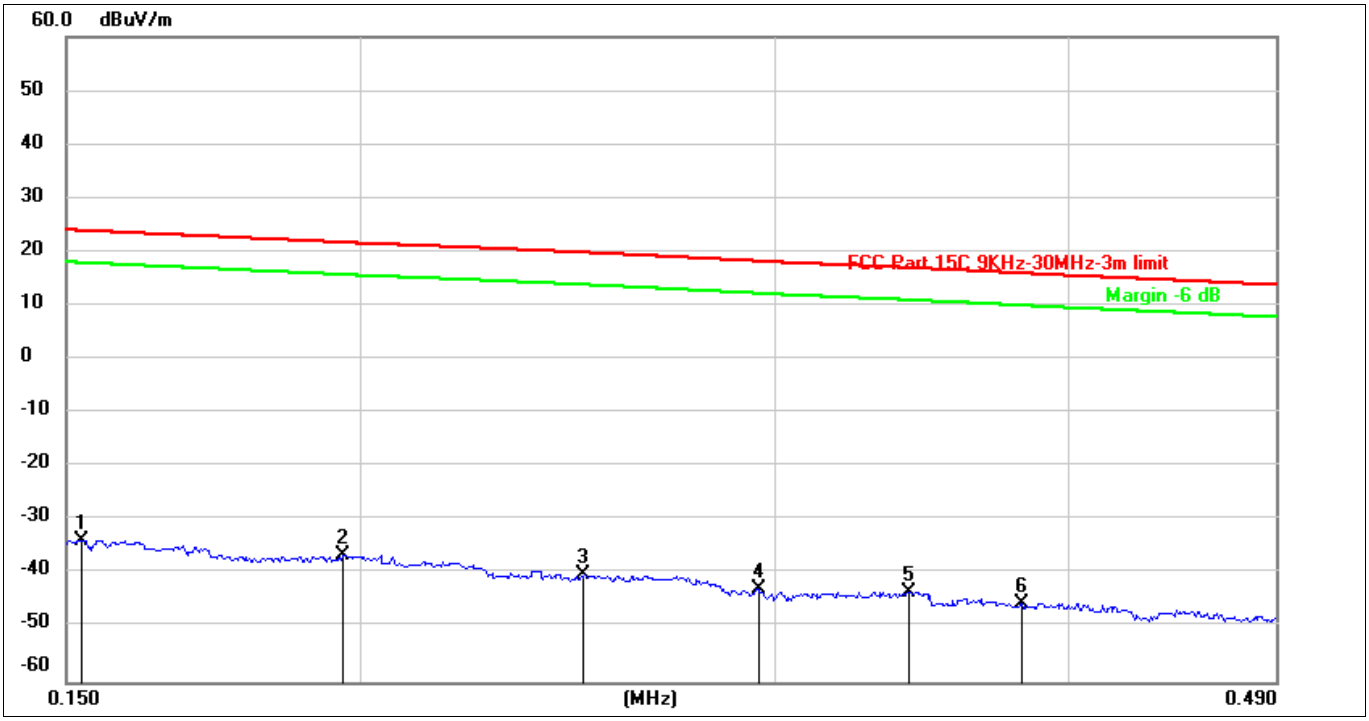
9kHz~ 150kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0114	70.38	-101.40	-31.02	46.76	-77.78	peak
2	0.0165	68.14	-101.37	-33.23	43.69	-76.92	peak
3	0.0286	63.94	-101.38	-37.44	38.55	-75.99	peak
4	0.0551	59.95	-101.50	-41.55	32.81	-74.36	peak
5	0.0700	58.41	-101.57	-43.16	30.70	-73.86	peak
6	0.1032	55.27	-101.79	-46.52	27.34	-73.86	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

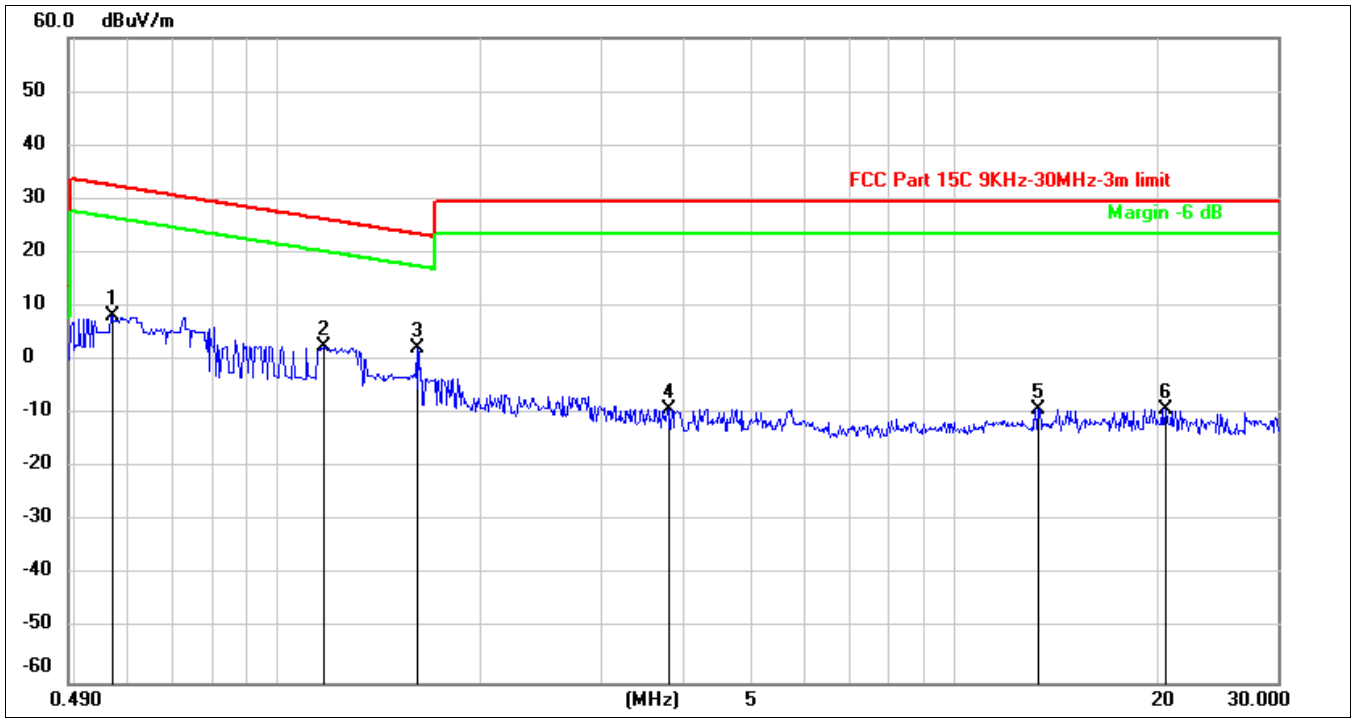
150kHz ~ 490kHz



No.	Frequency (KHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1524	67.80	-101.63	-33.83	23.95	-57.78	peak
2	0.1965	65.19	-101.71	-36.52	21.74	-58.26	peak
3	0.2489	61.69	-101.80	-40.11	19.86	-59.97	peak
4	0.2953	59.13	-101.85	-42.72	18.22	-60.94	peak
5	0.3421	58.60	-101.90	-43.30	17.01	-60.31	peak
6	0.3820	56.52	-101.94	-45.42	16.01	-61.43	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

490kHz ~ 30MHz

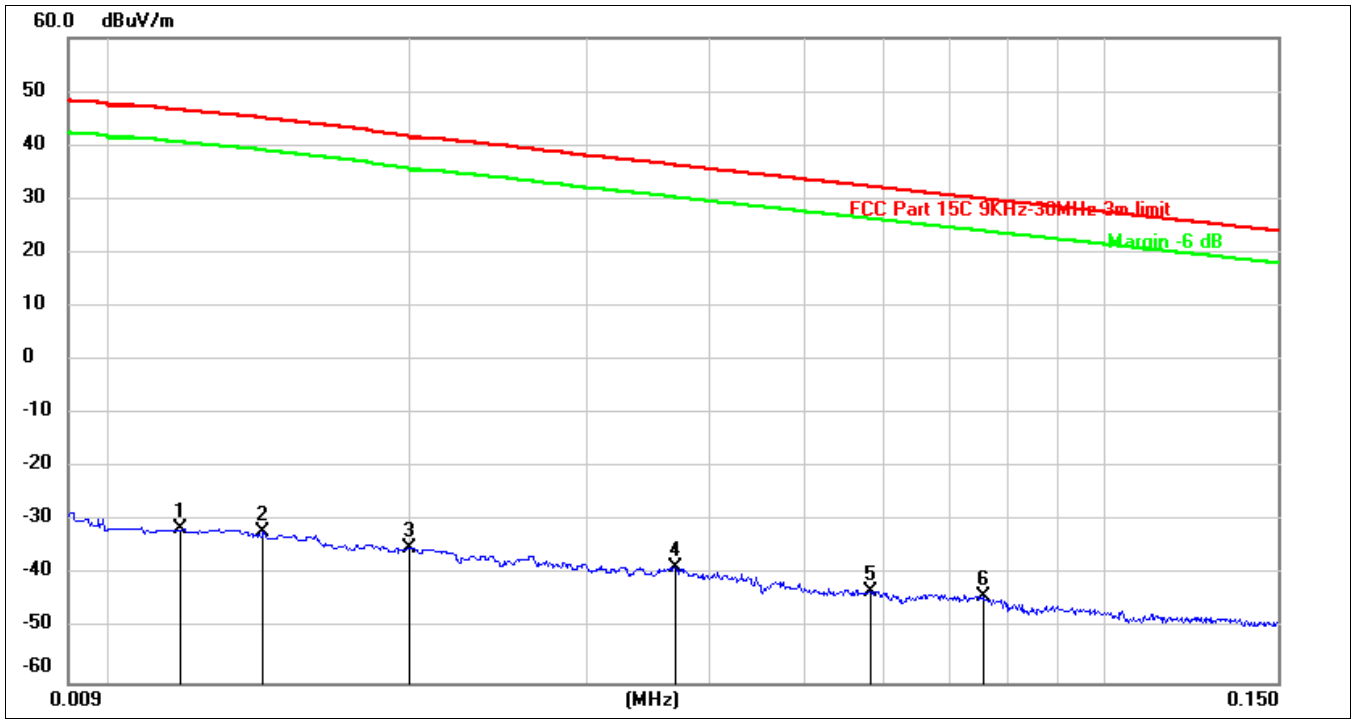


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.5682	70.37	-62.07	8.30	32.55	-24.25	peak
2	1.1687	64.72	-62.19	2.53	26.26	-23.73	peak
3	1.6026	64.19	-62.00	2.19	23.51	-21.32	peak
4	3.7715	52.29	-61.38	-9.09	29.54	-38.63	peak
5	13.3269	51.87	-60.94	-9.07	29.54	-38.61	peak
6	20.4978	51.58	-60.79	-9.21	29.54	-38.75	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. 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, HORIZONTAL)

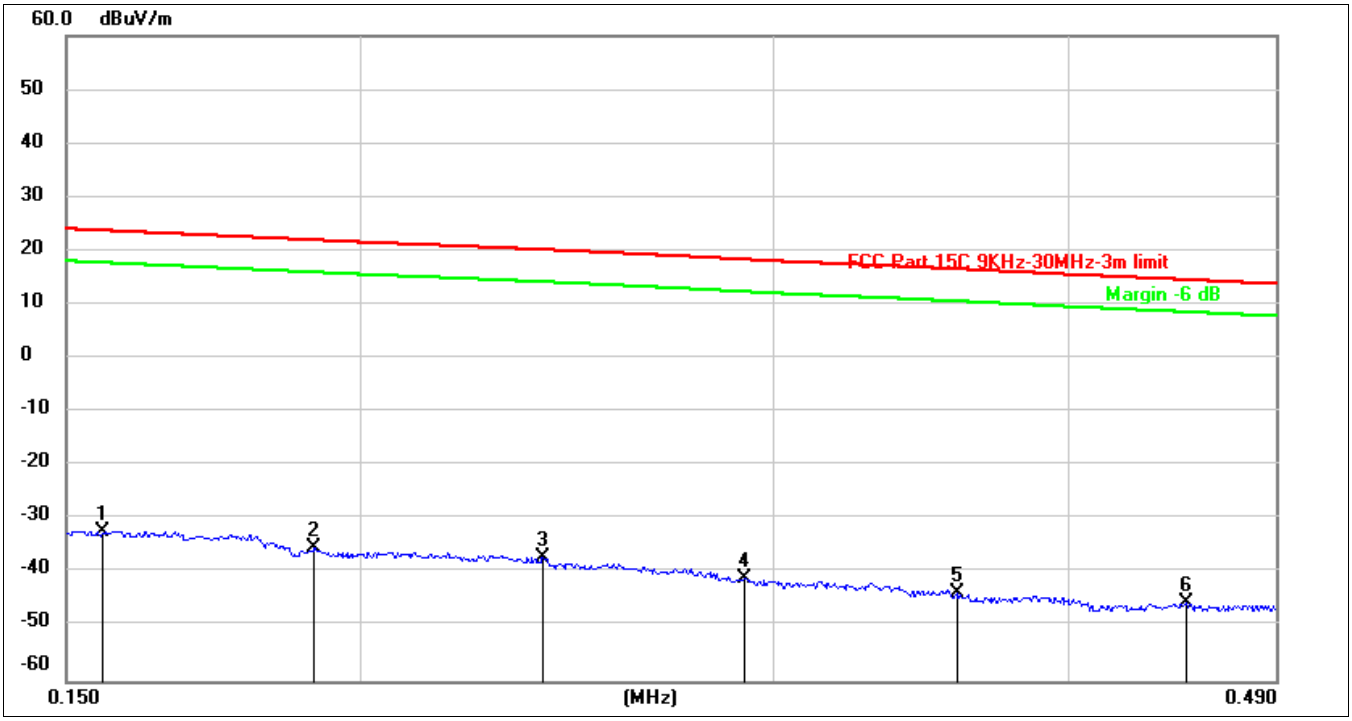
9kHz~ 150kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0117	69.98	-101.39	-31.41	46.58	-77.99	peak
2	0.0142	69.46	-101.38	-31.92	45.07	-76.99	peak
3	0.0200	66.44	-101.34	-34.90	41.58	-76.48	peak
4	0.0369	62.93	-101.42	-38.49	36.34	-74.83	peak
5	0.0582	58.58	-101.51	-42.93	32.32	-75.25	peak
6	0.0756	57.76	-101.59	-43.83	30.05	-73.88	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

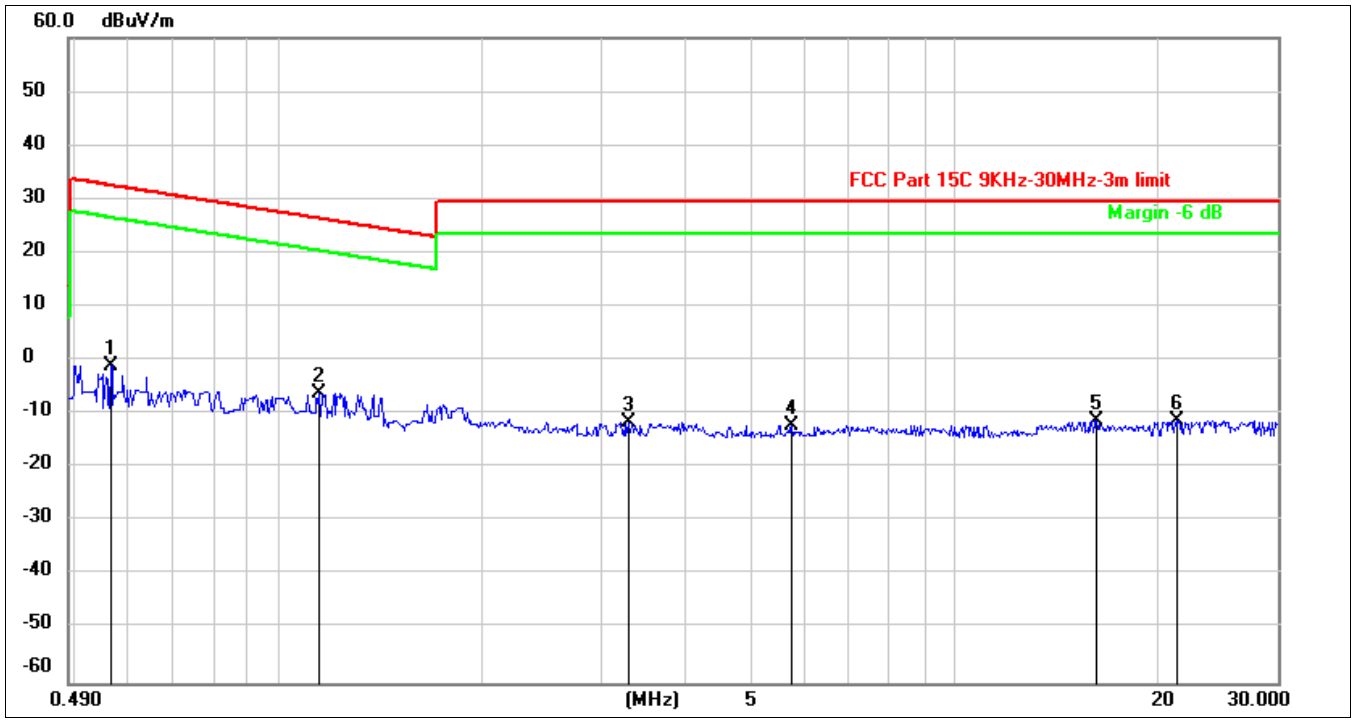
150kHz ~ 490kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.1556	69.52	-101.65	-32.13	23.77	-55.90	peak
2	0.1912	66.38	-101.70	-35.32	21.98	-57.30	peak
3	0.2391	64.60	-101.78	-37.18	20.20	-57.38	peak
4	0.2912	61.02	-101.85	-40.83	18.37	-59.20	peak
5	0.3588	58.20	-101.91	-43.71	16.59	-60.30	peak
6	0.4490	56.42	-102.01	-45.59	14.60	-60.19	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

490kHz ~ 30MHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.5655	61.13	-62.07	-0.94	32.59	-33.53	peak
2	1.1484	56.11	-62.21	-6.10	26.41	-32.51	peak
3	3.2934	49.88	-61.50	-11.62	29.54	-41.16	peak
4	5.7427	49.18	-61.39	-12.21	29.54	-41.75	peak
5	16.2188	49.63	-60.97	-11.34	29.54	-40.88	peak
6	21.3826	49.40	-60.73	-11.33	29.54	-40.87	peak

Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

Note: All constructions and test modes have been tested, only the worst data record in the report.

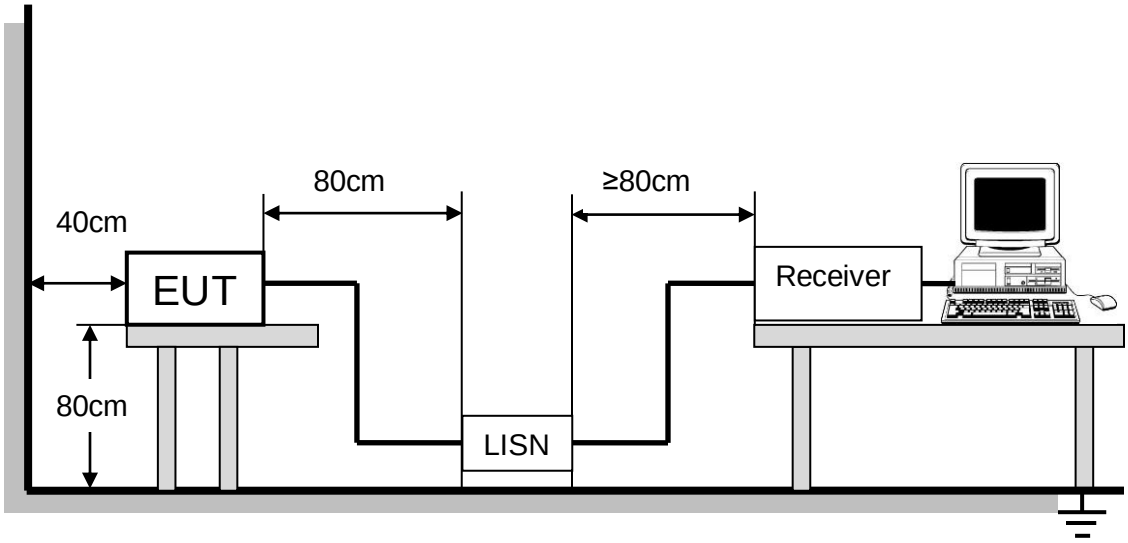
9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

Please refer to CFR 47 FCC §15.207 (a) and ISED RSS-Gen Clause 8.8

FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

TEST SETUP AND PROCEDURE



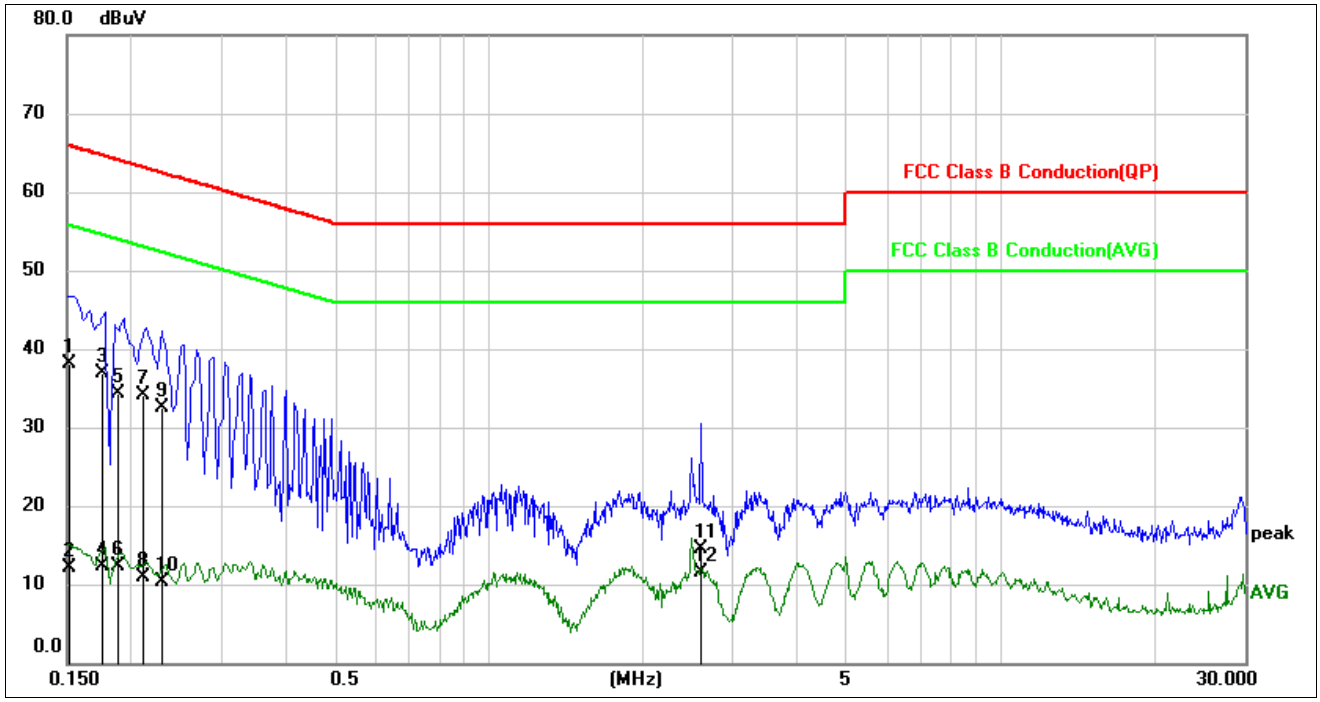
The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10 -2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

TEST RESULTS

9.1. TEST CONSTRUCTION 1

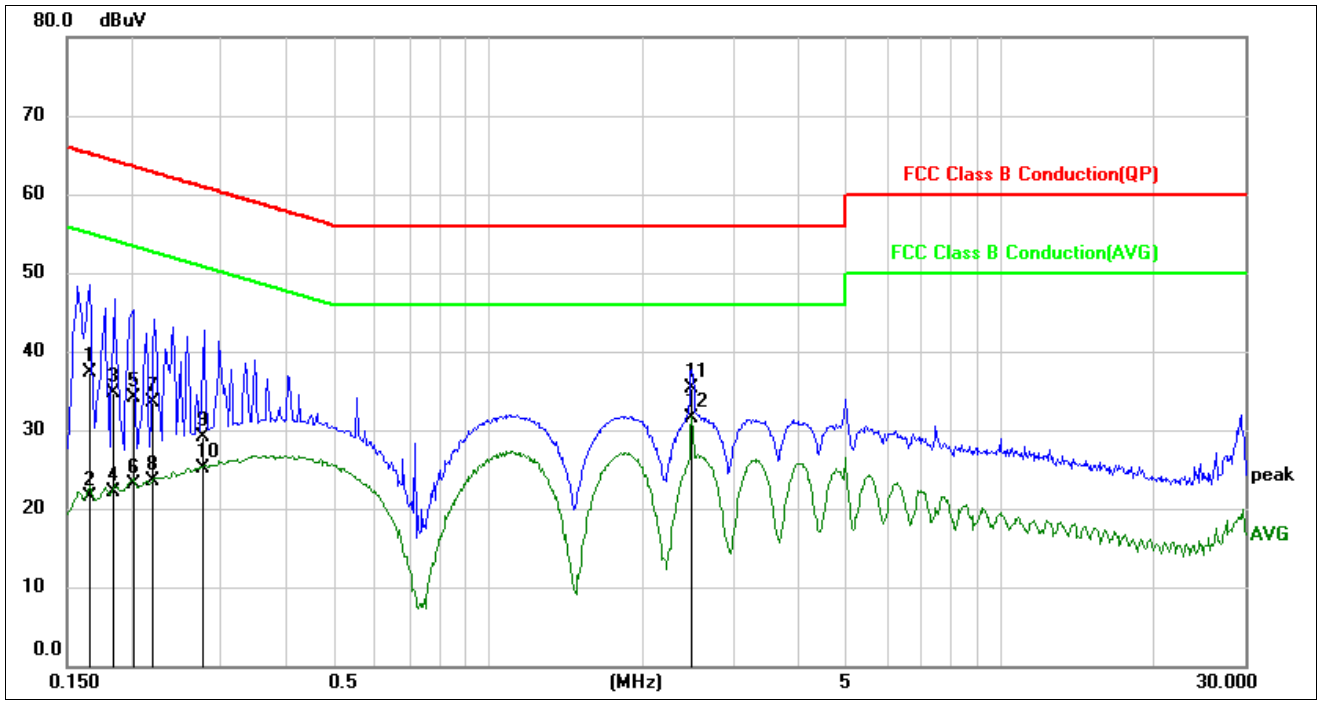
LINE N RESULTS (LOW CHANNEL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1521	28.42	9.60	38.02	65.88	-27.86	QP
2	0.1521	2.54	9.60	12.14	55.88	-43.74	AVG
3	0.1753	27.28	9.60	36.88	64.71	-27.83	QP
4	0.1753	2.70	9.60	12.30	54.71	-42.41	AVG
5	0.1897	24.67	9.60	34.27	64.05	-29.78	QP
6	0.1897	2.71	9.60	12.31	54.05	-41.74	AVG
7	0.2109	24.43	9.60	34.03	63.17	-29.14	QP
8	0.2109	1.36	9.60	10.96	53.17	-42.21	AVG
9	0.2289	22.81	9.60	32.41	62.49	-30.08	QP
10	0.2289	0.76	9.60	10.36	52.49	-42.13	AVG
11	2.6025	4.96	9.64	14.60	56.00	-41.40	QP
12	2.6025	1.87	9.64	11.51	46.00	-34.49	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 (LOW CHANNEL, WORST-CASE CONFIGURATION)

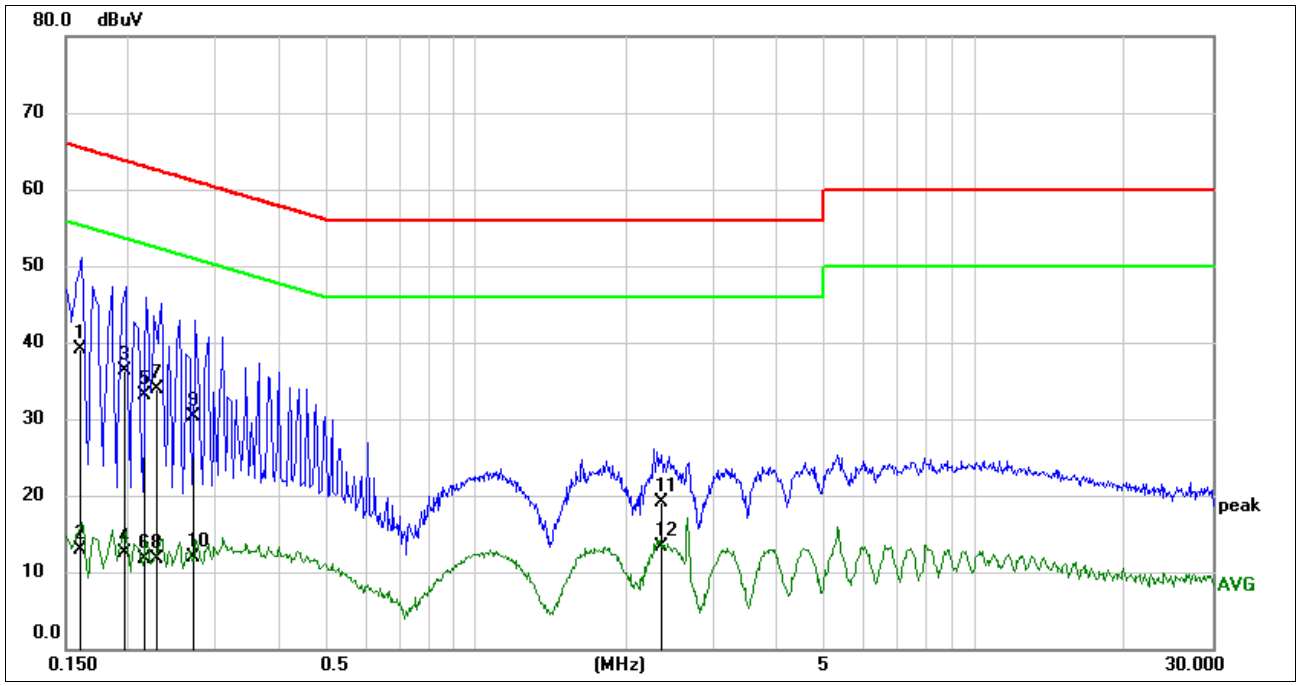


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1654	27.68	9.61	37.29	65.19	-27.90	QP
2	0.1654	11.86	9.61	21.47	55.19	-33.72	AVG
3	0.1842	25.08	9.61	34.69	64.29	-29.60	QP
4	0.1842	12.45	9.61	22.06	54.29	-32.23	AVG
5	0.2026	24.49	9.60	34.09	63.50	-29.41	QP
6	0.2026	13.42	9.60	23.02	53.50	-30.48	AVG
7	0.2202	23.93	9.60	33.53	62.81	-29.28	QP
8	0.2202	13.93	9.60	23.53	52.81	-29.28	AVG
9	0.2746	19.43	9.60	29.03	60.98	-31.95	QP
10	0.2746	15.51	9.60	25.11	50.98	-25.87	AVG
11	2.4924	25.63	9.63	35.26	56.00	-20.74	QP
12	2.4924	21.89	9.63	31.52	46.00	-14.48	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.

9.2. TEST CONSTRUCTION 2

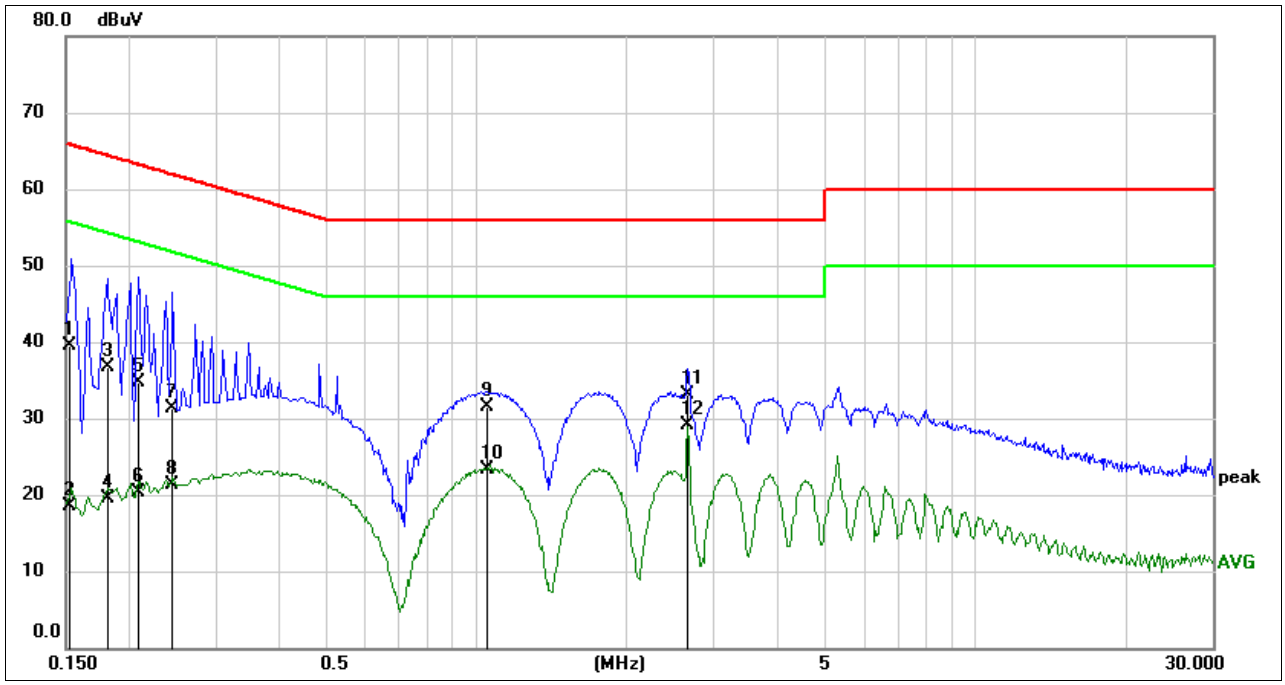
LINE N RESULTS (LOW CHANNEL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1599	29.51	9.60	39.11	65.47	-26.36	QP
2	0.1599	3.36	9.60	12.96	55.47	-42.51	AVG
3	0.1958	26.61	9.60	36.21	63.79	-27.58	QP
4	0.1958	2.91	9.60	12.51	53.79	-41.28	AVG
5	0.2155	23.58	9.60	33.18	62.99	-29.81	QP
6	0.2155	2.14	9.60	11.74	52.99	-41.25	AVG
7	0.2290	24.21	9.60	33.81	62.49	-28.68	QP
8	0.2290	2.17	9.60	11.77	52.49	-40.72	AVG
9	0.2701	20.62	9.60	30.22	61.11	-30.89	QP
10	0.2701	2.37	9.60	11.97	51.11	-39.14	AVG
11	2.3343	9.55	9.63	19.18	56.00	-36.82	QP
12	2.3343	3.65	9.63	13.28	46.00	-32.72	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 (LOW CHANNEL, WORST-CASE CONFIGURATION)

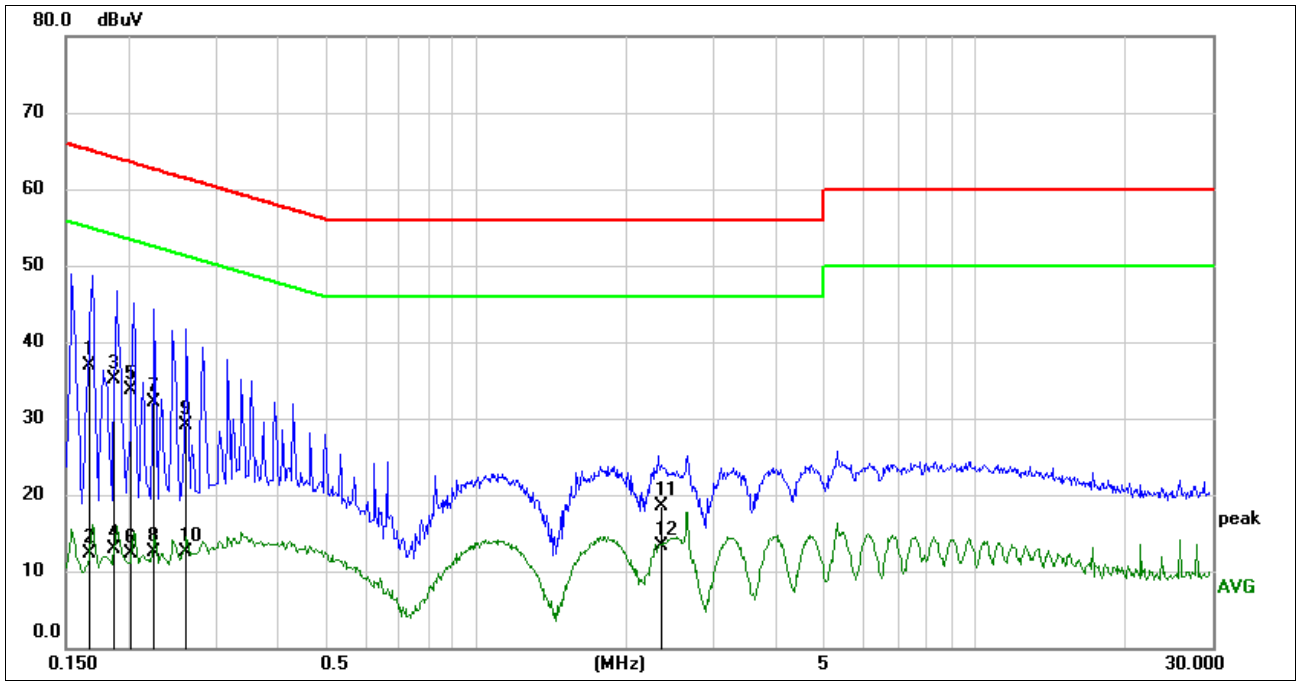


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1522	29.85	9.61	39.46	65.88	-26.42	QP
2	0.1522	8.87	9.61	18.48	55.88	-37.40	AVG
3	0.1819	27.11	9.61	36.72	64.40	-27.68	QP
4	0.1819	9.90	9.61	19.51	54.40	-34.89	AVG
5	0.2090	25.18	9.60	34.78	63.24	-28.46	QP
6	0.2090	10.71	9.60	20.31	53.24	-32.93	AVG
7	0.2466	21.77	9.60	31.37	61.87	-30.50	QP
8	0.2466	11.71	9.60	21.31	51.87	-30.56	AVG
9	1.0471	21.92	9.61	31.53	56.00	-24.47	QP
10	1.0471	13.74	9.61	23.35	46.00	-22.65	AVG
11	2.6568	23.45	9.64	33.09	56.00	-22.91	QP
12	2.6568	19.46	9.64	29.10	46.00	-16.90	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.

9.3. TEST CONSTRUCTION 3

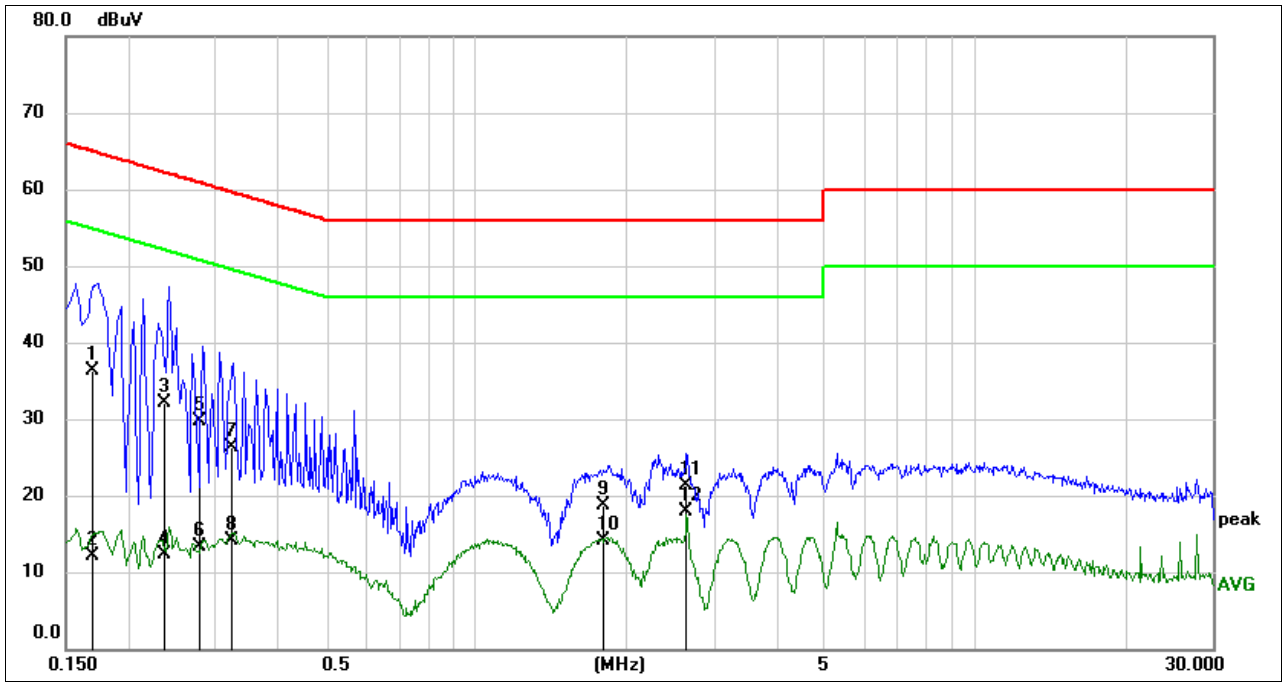
LINE N RESULTS (LOW CHANNEL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1675	27.29	9.60	36.89	65.08	-28.19	QP
2	0.1675	2.71	9.60	12.31	55.08	-42.77	AVG
3	0.1874	25.48	9.60	35.08	64.15	-29.07	QP
4	0.1874	3.24	9.60	12.84	54.15	-41.31	AVG
5	0.2027	24.17	9.60	33.77	63.50	-29.73	QP
6	0.2027	2.72	9.60	12.32	53.50	-41.18	AVG
7	0.2242	22.60	9.60	32.20	62.66	-30.46	QP
8	0.2242	2.92	9.60	12.52	52.66	-40.14	AVG
9	0.2601	19.44	9.60	29.04	61.43	-32.39	QP
10	0.2601	2.92	9.60	12.52	51.43	-38.91	AVG
11	2.3365	8.85	9.63	18.48	56.00	-37.52	QP
12	2.3365	3.61	9.63	13.24	46.00	-32.76	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 (LOW CHANNEL, WORST-CASE CONFIGURATION)

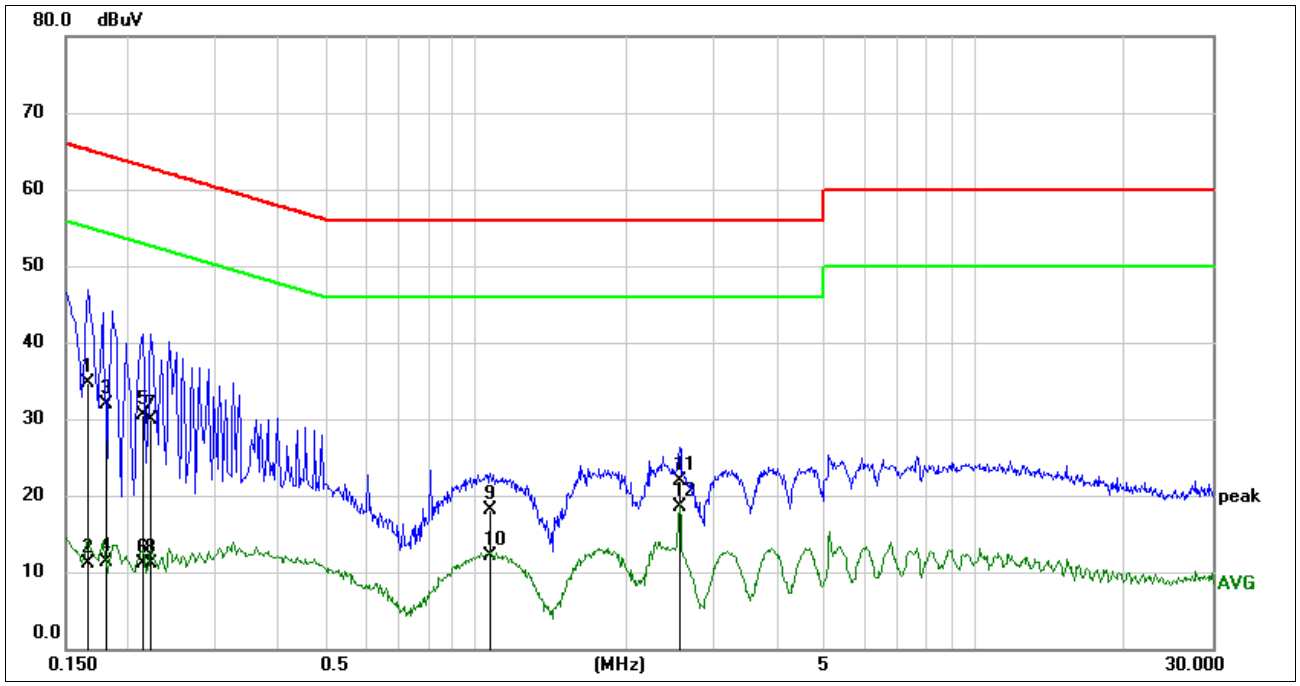


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1699	26.72	9.61	36.33	64.97	-28.64	QP
2	0.1699	2.51	9.61	12.12	54.97	-42.85	AVG
3	0.2370	22.55	9.60	32.15	62.20	-30.05	QP
4	0.2370	2.80	9.60	12.40	52.20	-39.80	AVG
5	0.2781	20.01	9.60	29.61	60.87	-31.26	QP
6	0.2781	3.64	9.60	13.24	50.87	-37.63	AVG
7	0.3234	16.75	9.60	26.35	59.62	-33.27	QP
8	0.3234	4.42	9.60	14.02	49.62	-35.60	AVG
9	1.8038	9.18	9.62	18.80	56.00	-37.20	QP
10	1.8038	4.50	9.62	14.12	46.00	-31.88	AVG
11	2.6447	11.68	9.64	21.32	56.00	-34.68	QP
12	2.6447	8.19	9.64	17.83	46.00	-28.17	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.

9.4. TEST CONSTRUCTION 4

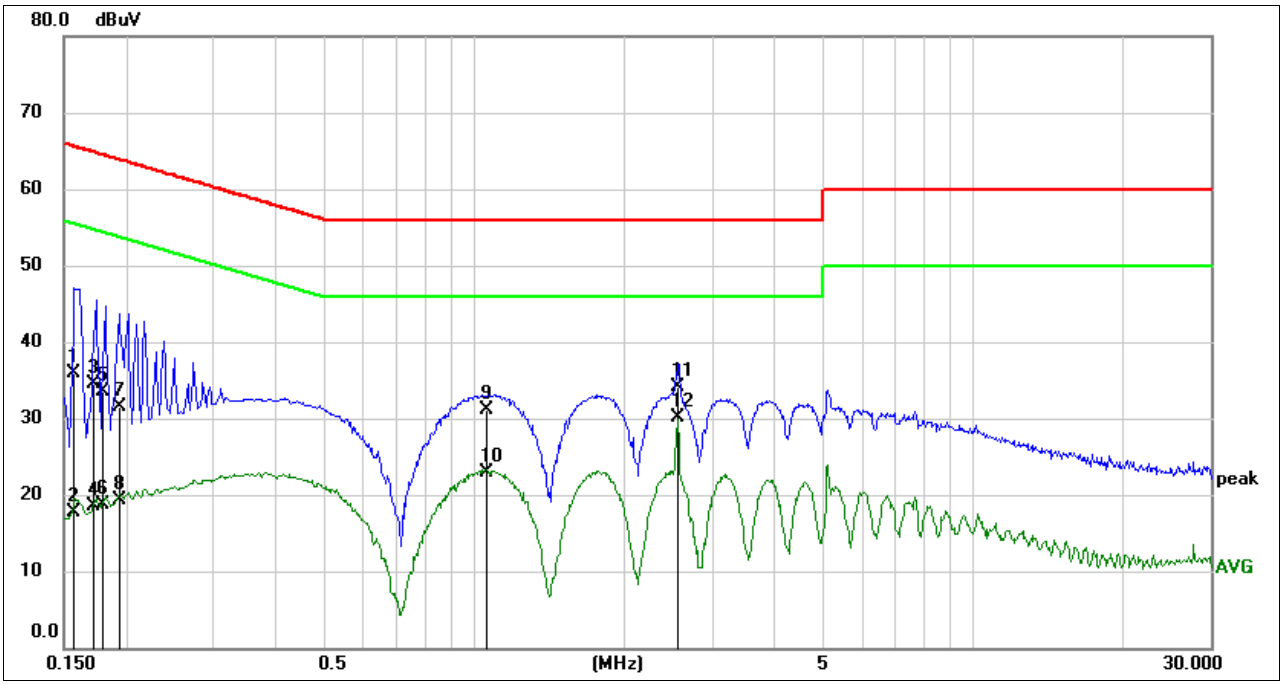
LINE N RESULTS (LOW CHANNEL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1665	25.10	9.60	34.70	65.13	-30.43	QP
2	0.1665	1.47	9.60	11.07	55.13	-44.06	AVG
3	0.1819	22.27	9.60	31.87	64.40	-32.53	QP
4	0.1819	1.69	9.60	11.29	54.40	-43.11	AVG
5	0.2130	20.94	9.60	30.54	63.09	-32.55	QP
6	0.2130	1.47	9.60	11.07	53.09	-42.02	AVG
7	0.2214	20.37	9.60	29.97	62.77	-32.80	QP
8	0.2214	1.52	9.60	11.12	52.77	-41.65	AVG
9	1.0639	8.53	9.61	18.14	56.00	-37.86	QP
10	1.0639	2.40	9.61	12.01	46.00	-33.99	AVG
11	2.5589	12.21	9.64	21.85	56.00	-34.15	QP
12	2.5589	8.84	9.64	18.48	46.00	-27.52	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 (LOW CHANNEL, WORST-CASE CONFIGURATION)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1558	26.34	9.61	35.95	65.68	-29.73	QP
2	0.1558	8.07	9.61	17.68	55.68	-38.00	AVG
3	0.1718	24.86	9.61	34.47	64.87	-30.40	QP
4	0.1718	8.82	9.61	18.43	54.87	-36.44	AVG
5	0.1796	23.95	9.61	33.56	64.50	-30.94	QP
6	0.1796	9.13	9.61	18.74	54.50	-35.76	AVG
7	0.1930	21.81	9.60	31.41	63.91	-32.50	QP
8	0.1930	9.71	9.60	19.31	53.91	-34.60	AVG
9	1.0615	21.50	9.61	31.11	56.00	-24.89	QP
10	1.0615	13.39	9.61	23.00	46.00	-23.00	AVG
11	2.5592	24.55	9.64	34.19	56.00	-21.81	QP
12	2.5592	20.51	9.64	30.15	46.00	-15.85	AVG

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

Note: All test modes have been tested, only the worst data record in the report.

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.

RESULTS

Complies

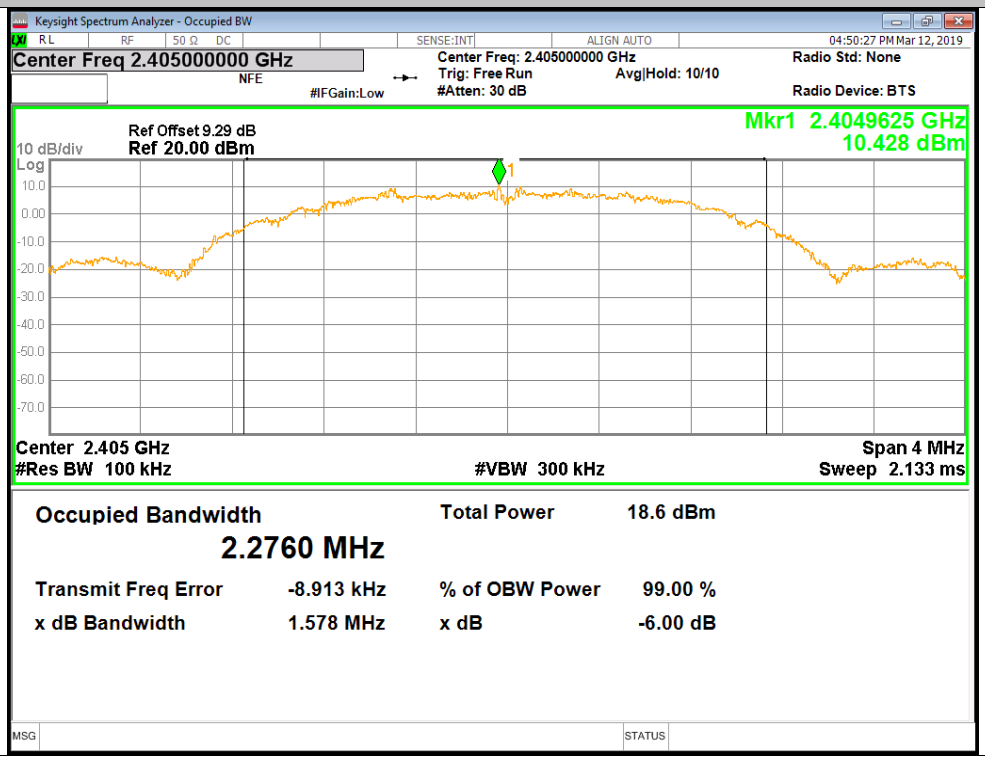
11. APPENDIXES

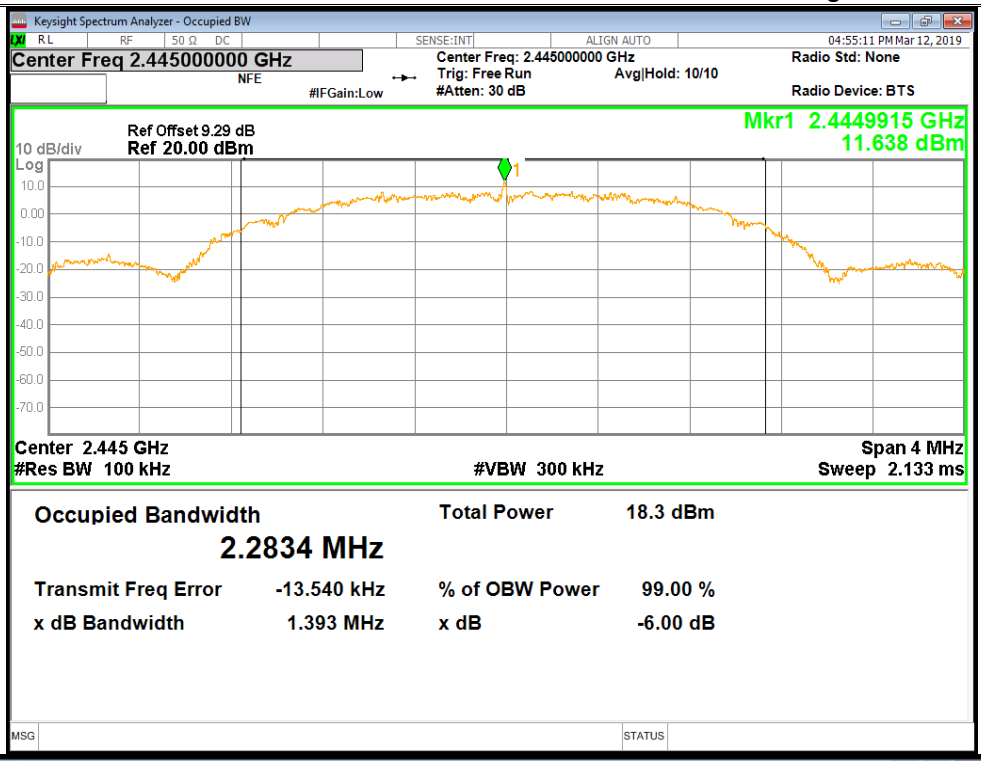
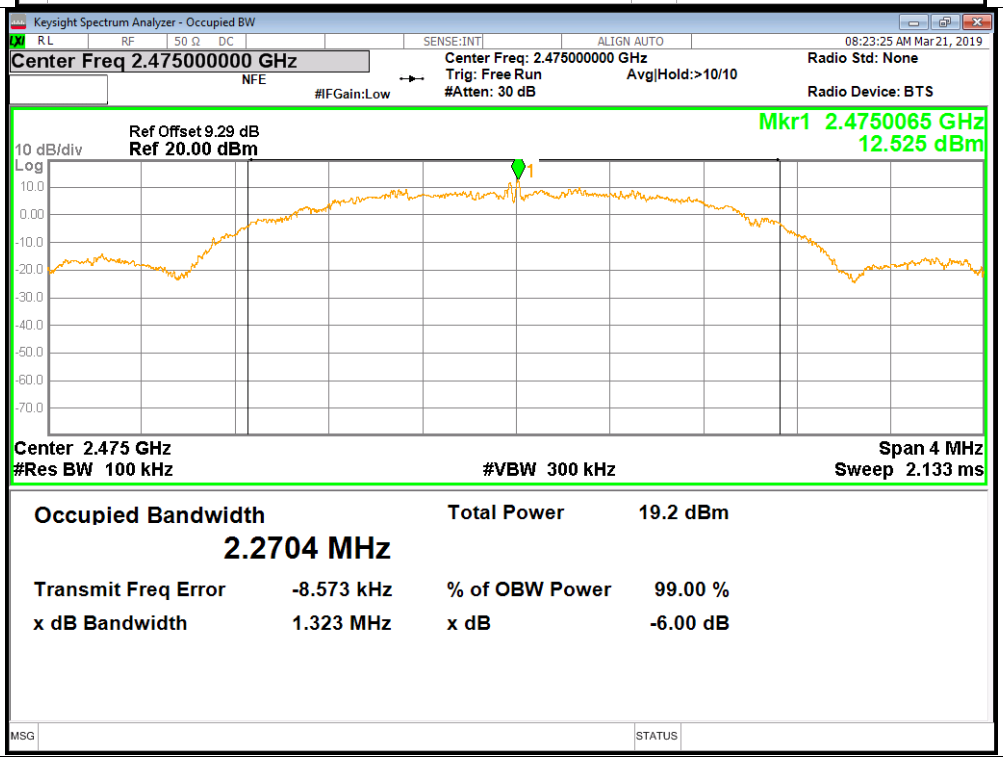
Appendix A): 6dB Bandwidth

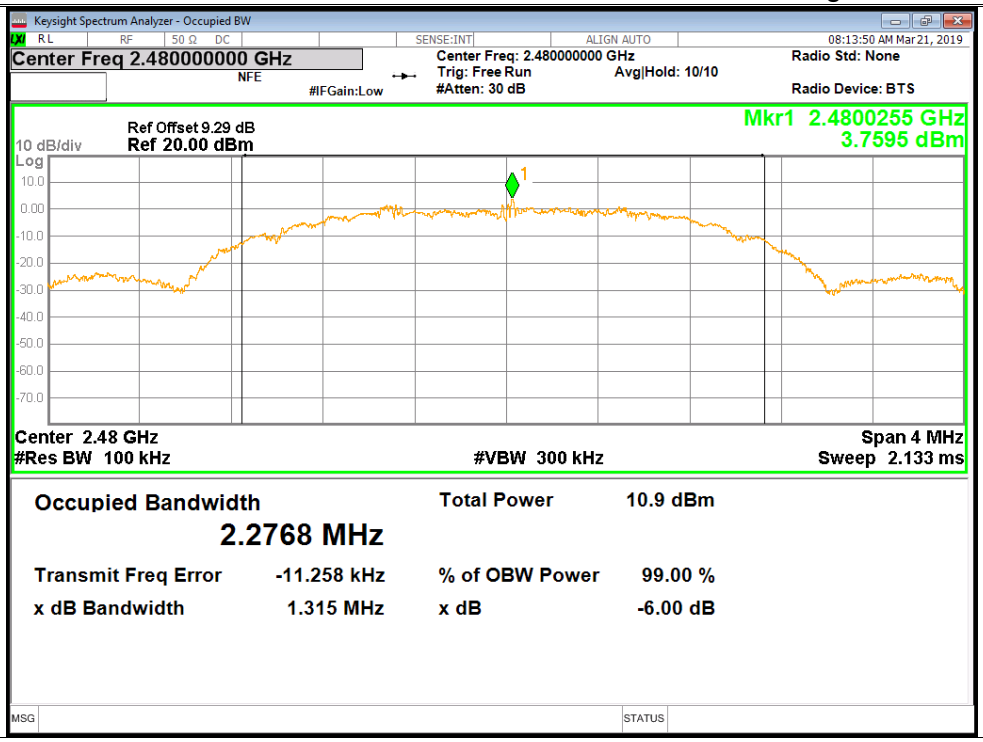
Test Result

Mode	Channel	6dB Bandwidth [MHz]	Verdict
ZigBee	LCH	1.578	PASS
ZigBee	MCH	1.393	PASS
ZigBee	HCH	1.323	PASS
ZigBee	CH26	1.315	PASS

Test Graphs

Graphs	
LCH	

MCH	
HCH	

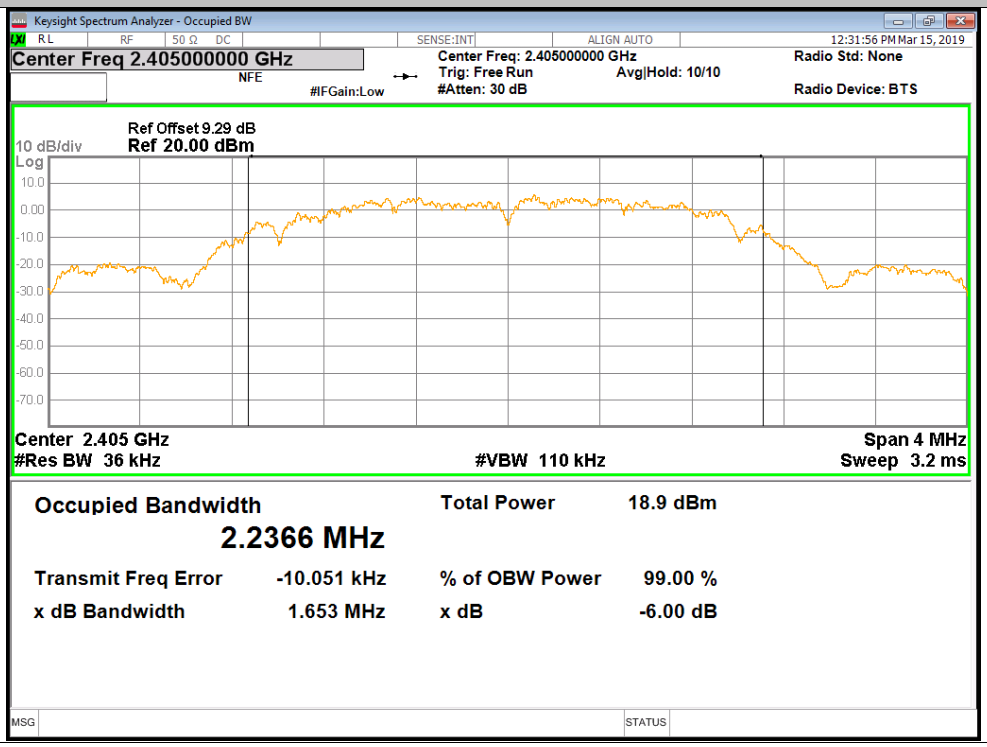
CH26	

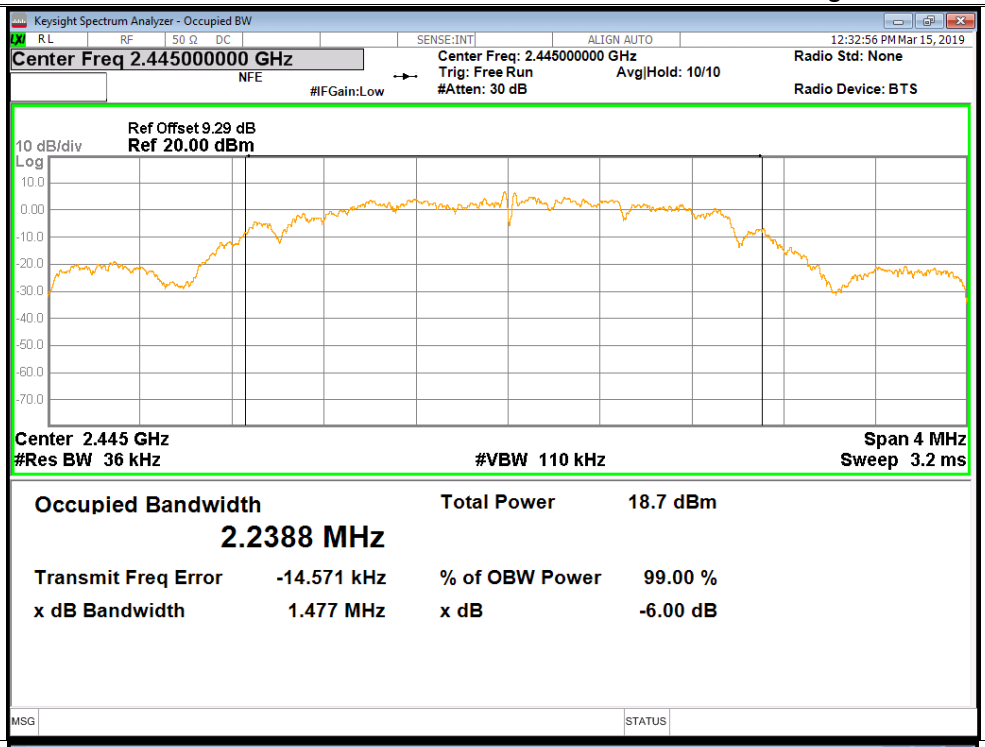
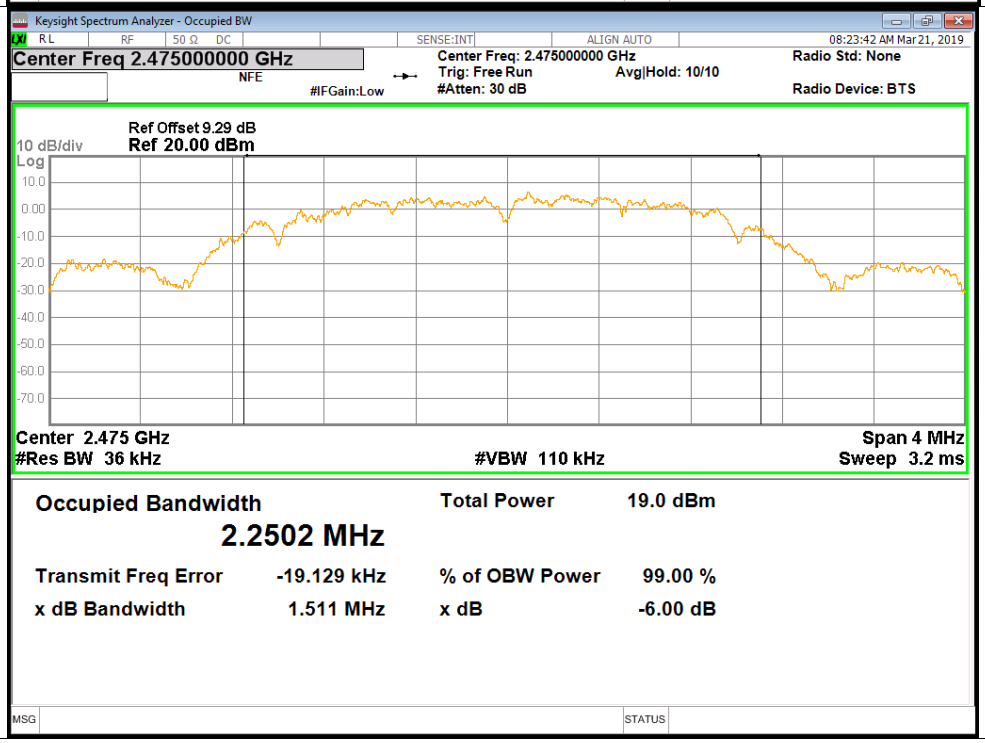
Appendix B): Occupied Bandwidth

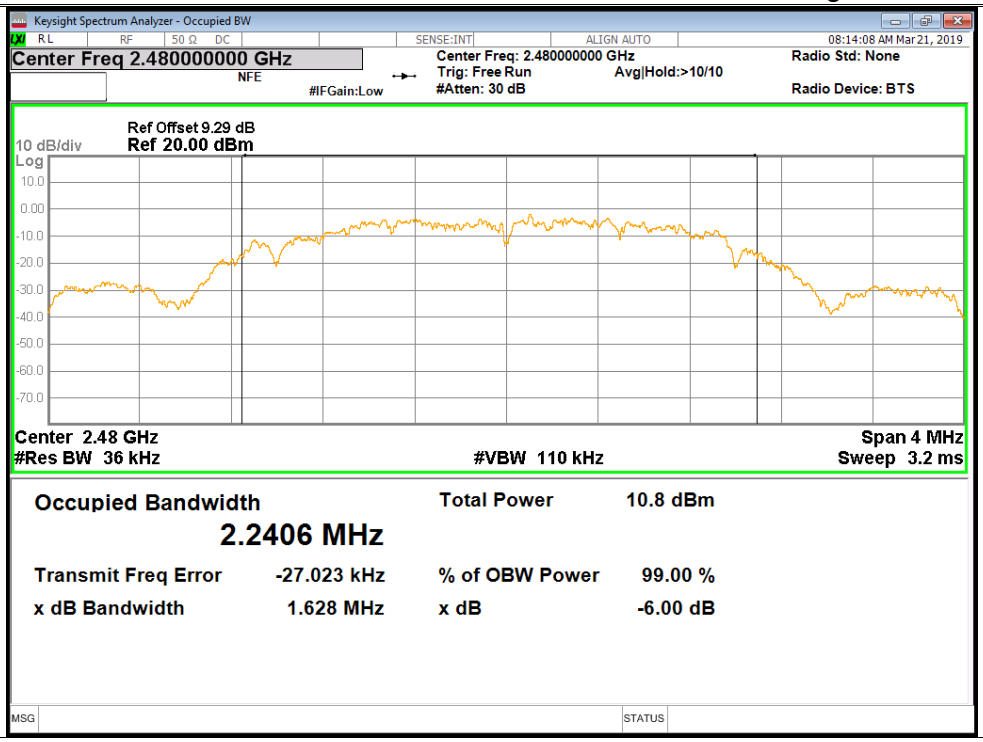
Test Result

Mode	Channel	99% OBW[MHz]	Verdict
ZigBee	LCH	2.2366	PASS
ZigBee	MCH	2.2388	PASS
ZigBee	HCH	2.2502	PASS
ZigBee	CH26	2.2406	PASS

Test Graphs

Graphs	
LCH	

MCH	
HCH	

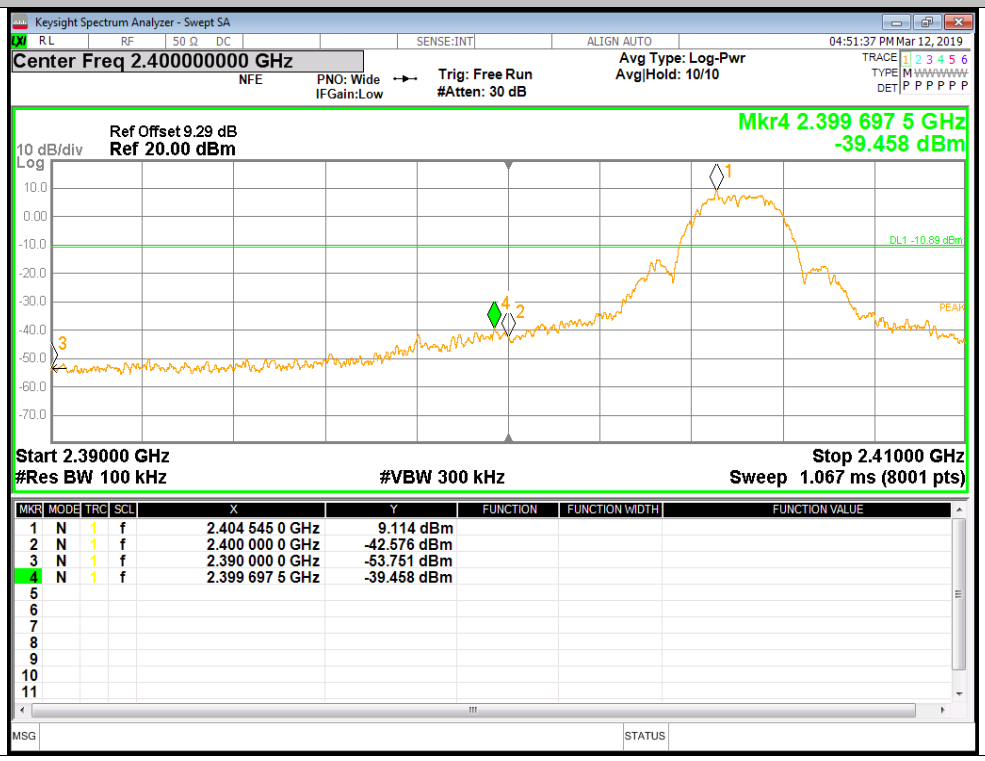
CH26	

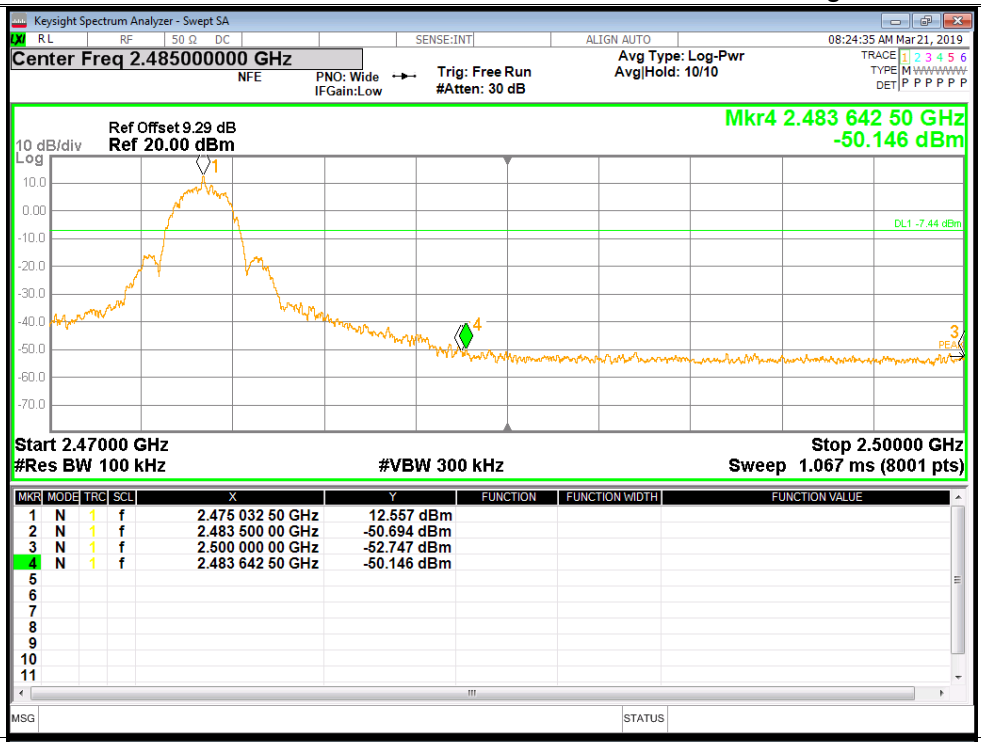
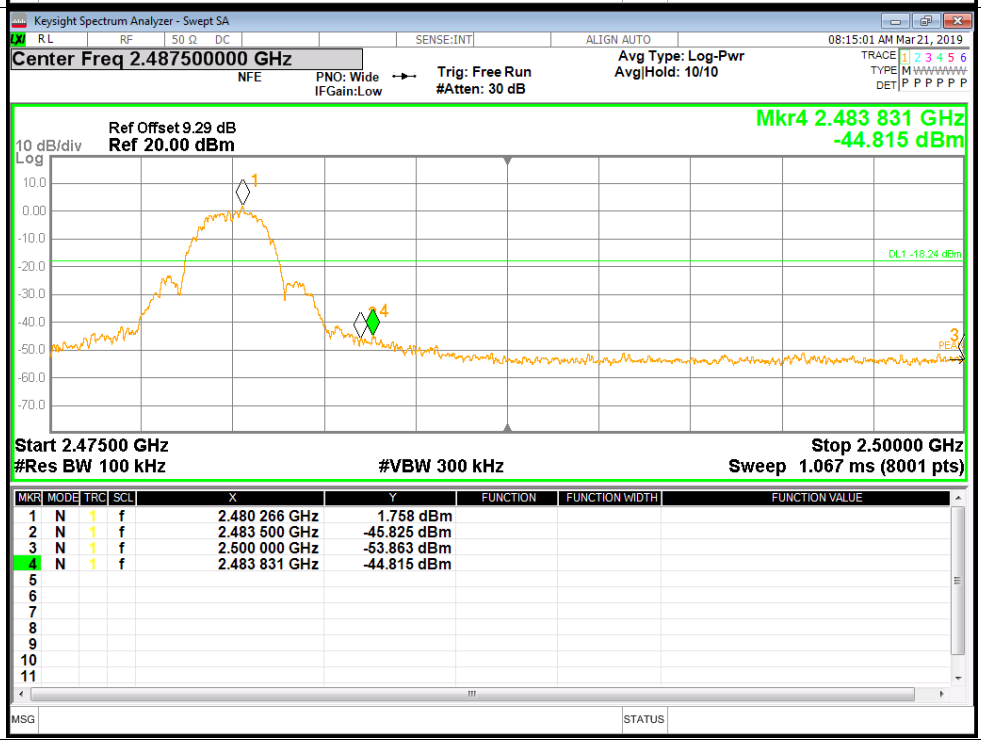
Appendix C): Band-edge for RF Conducted Emissions

Result Table

Mode	Channel	Verdict
ZigBee	LCH	PASS
ZigBee	HCH	PASS
ZigBee	CH26	PASS

Test Graphs

Graphs	
LCH	

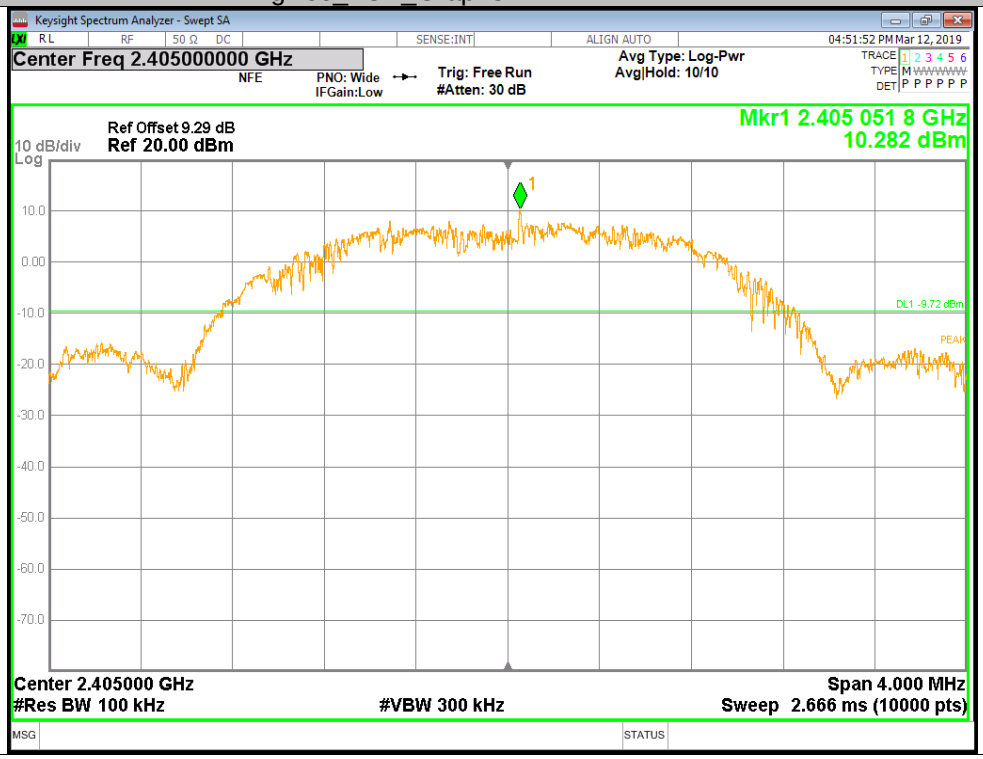
HCH	
CH26	

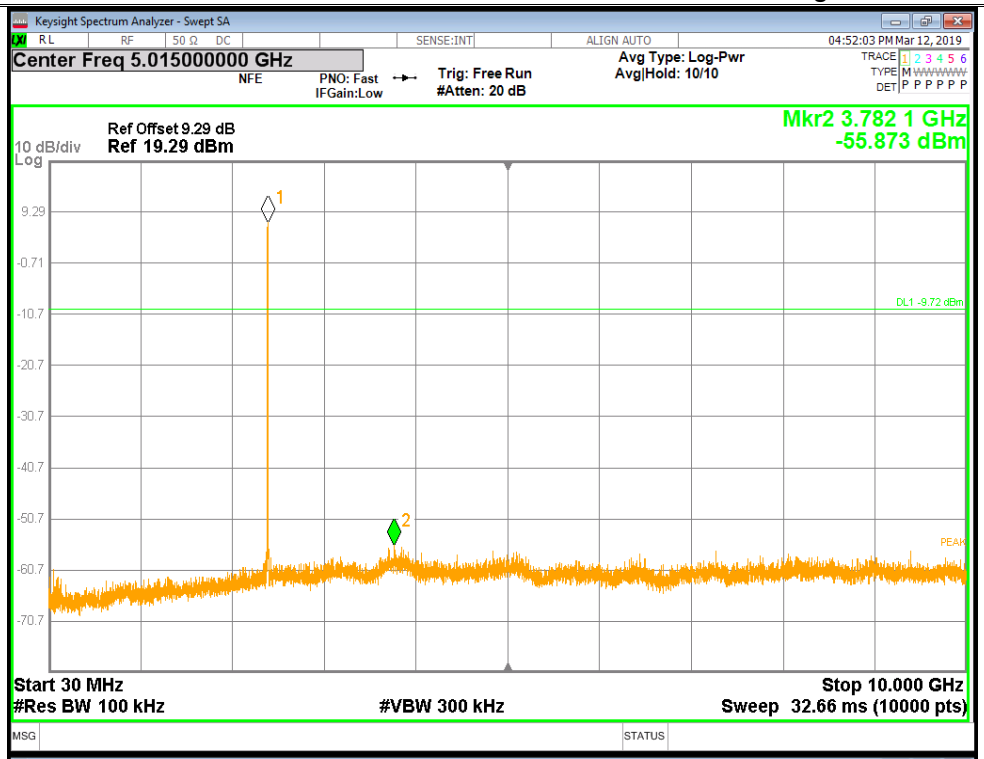
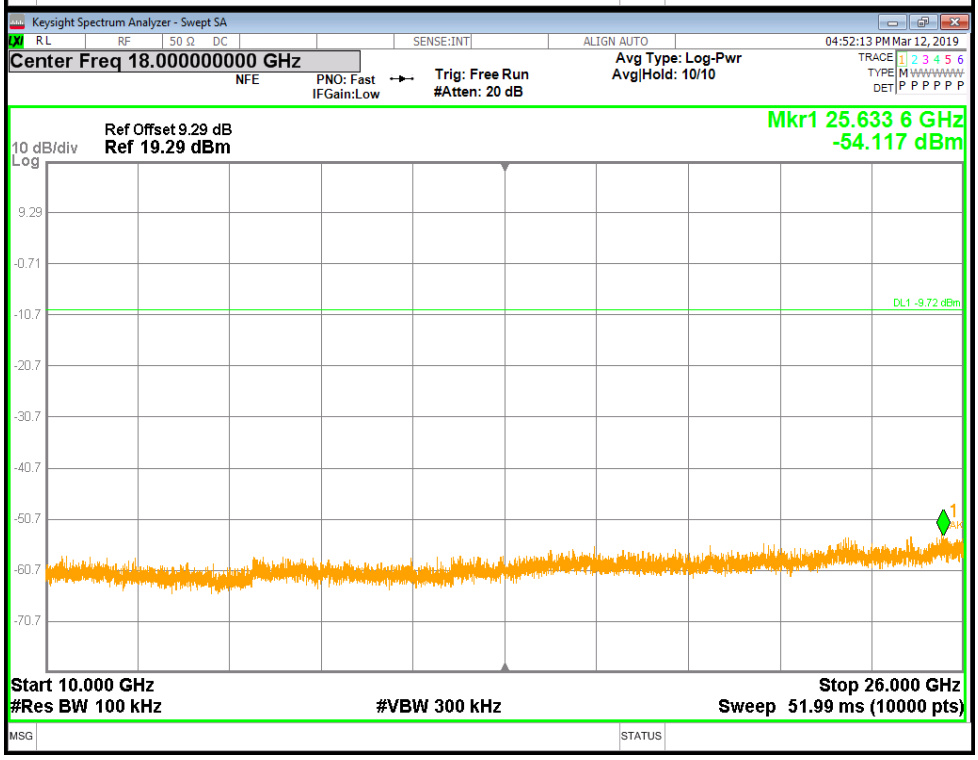
Appendix D): RF Conducted Spurious Emissions

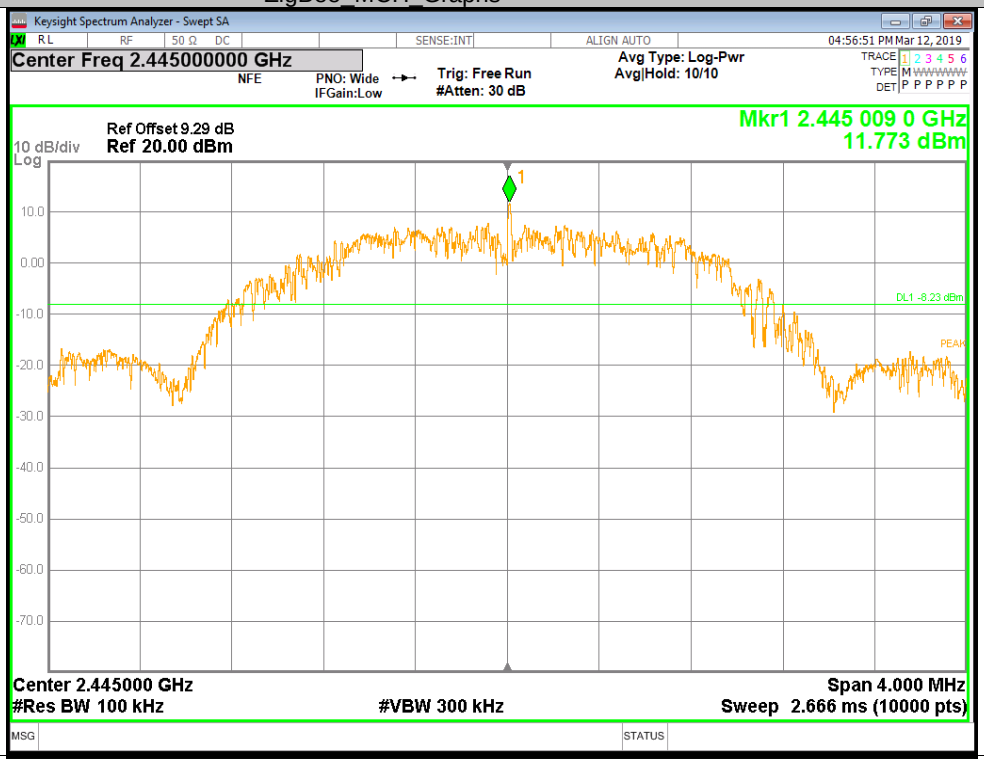
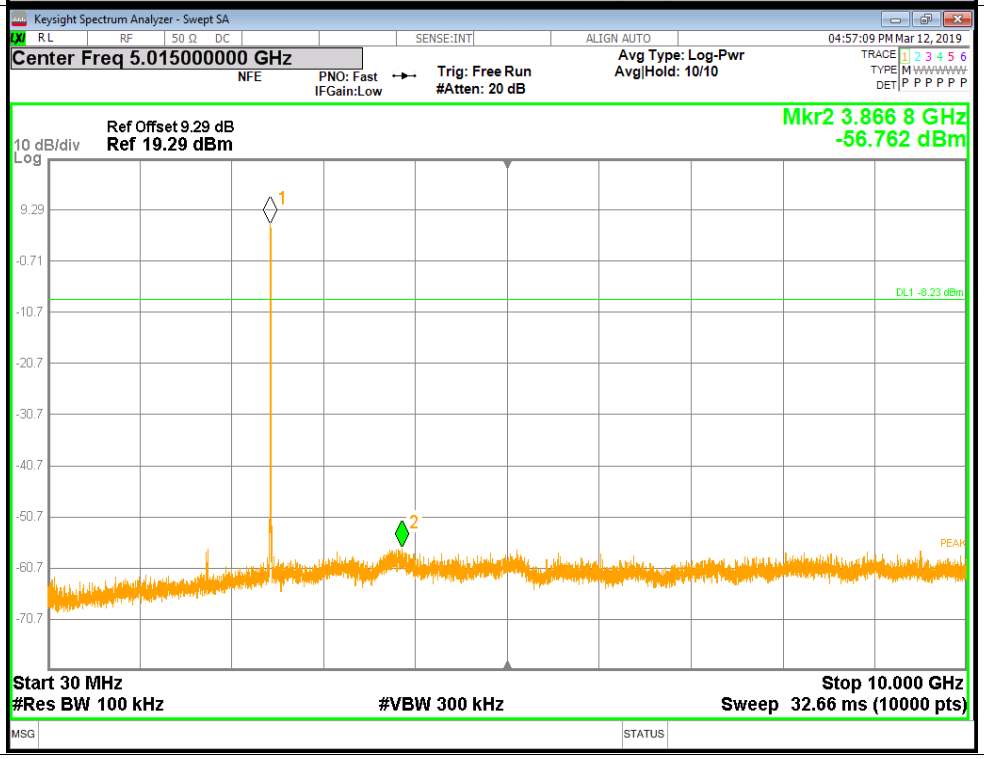
Result Table

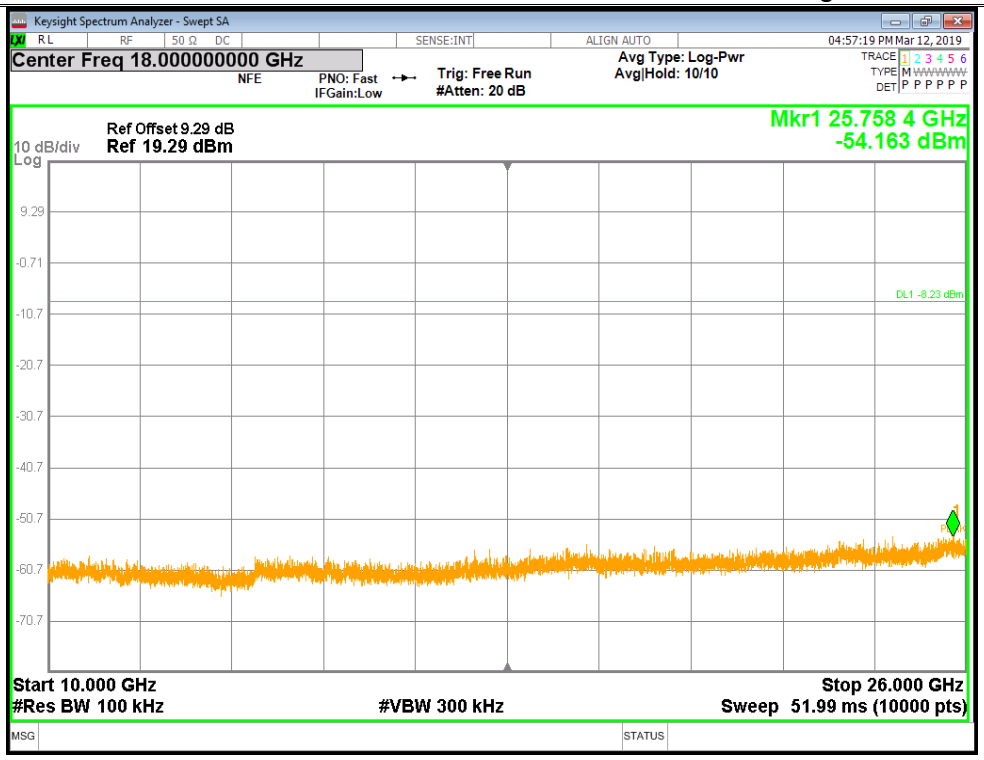
Mode	Channel	Verdict
ZigBee	LCH	PASS
ZigBee	MCH	PASS
ZigBee	HCH	PASS
ZigBee	CH26	PASS

Test Graphs

ZigBee_LCH_Graphs	
Pref/ZigBee/LCH	

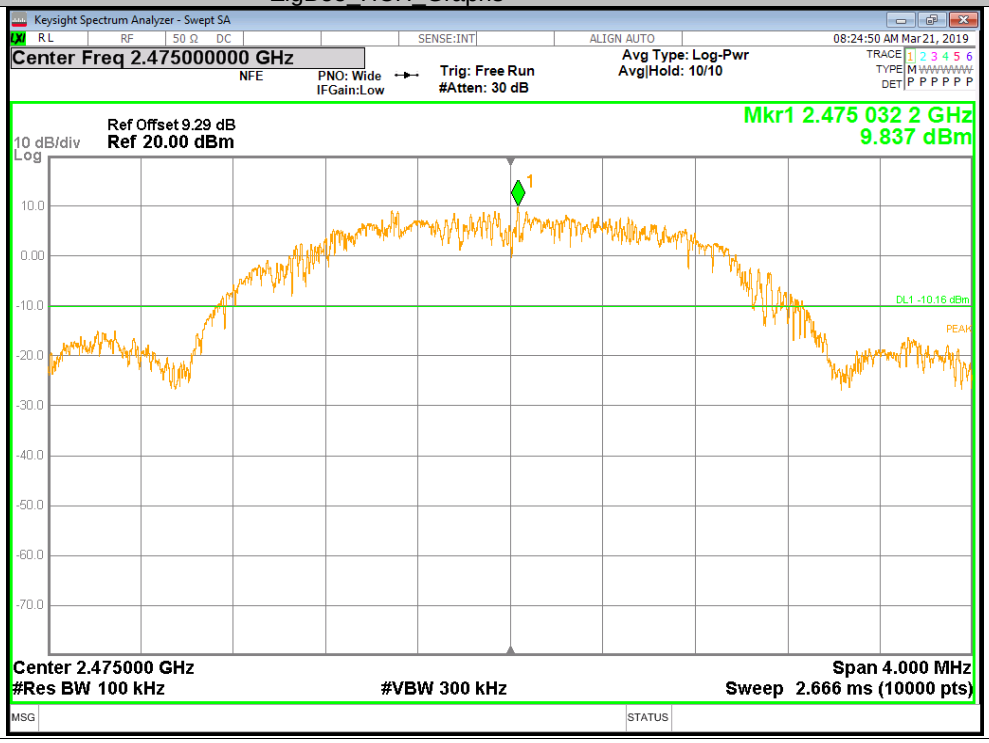
Puw/ZigBee/LCH	 

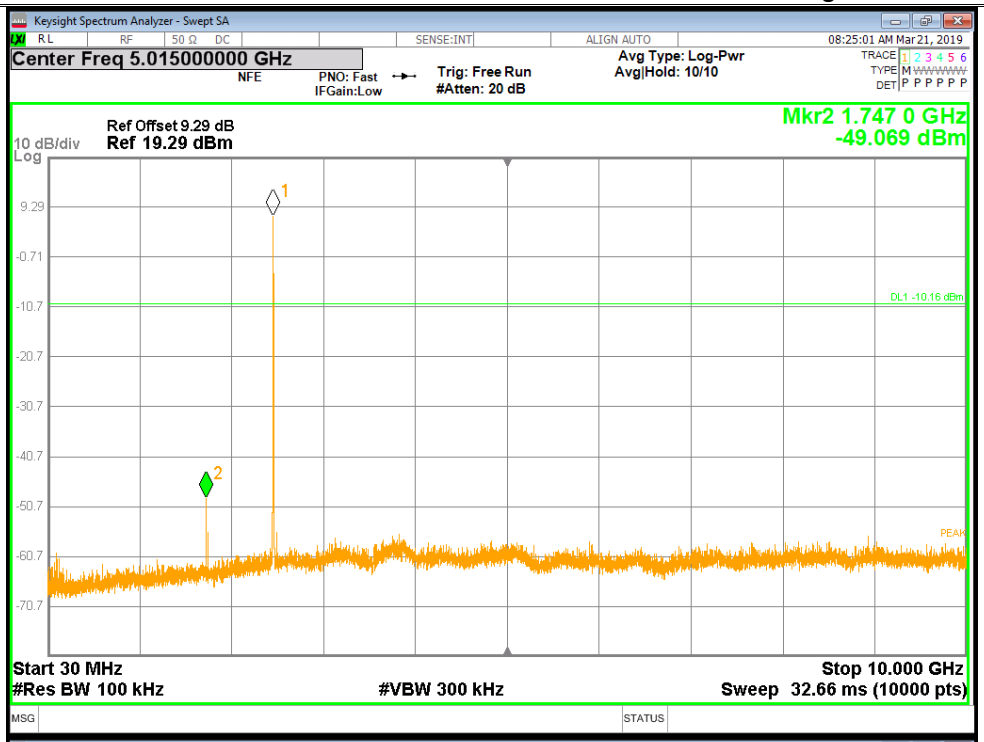
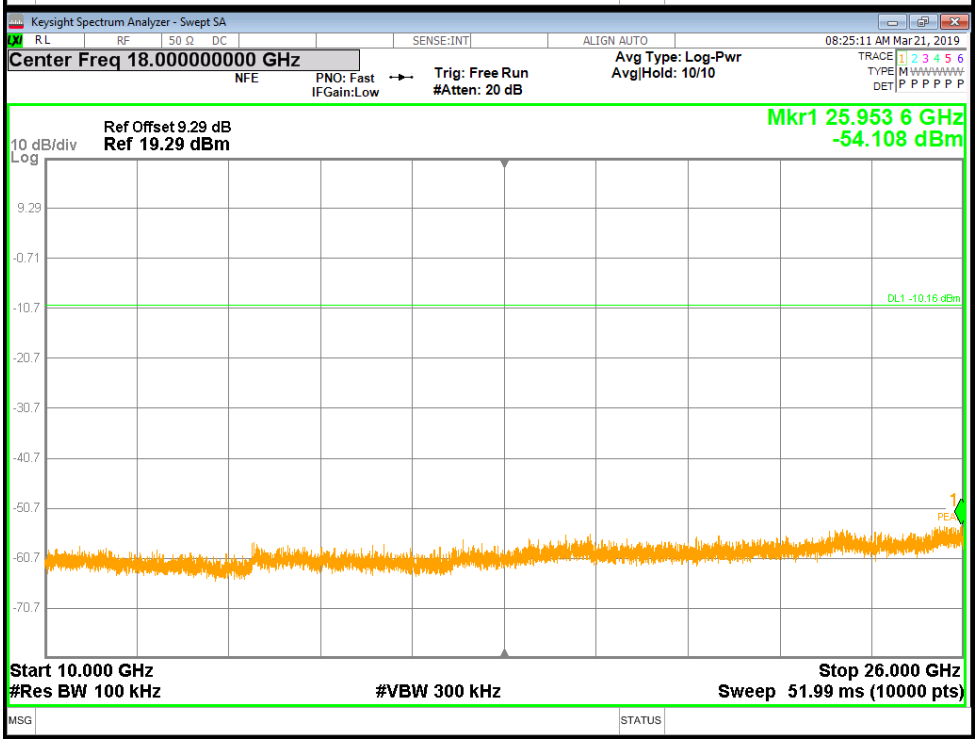
ZigBee_MCH_Graphs	
Pref/ZigBee/MCH	
Puw/ZigBee/MCH	

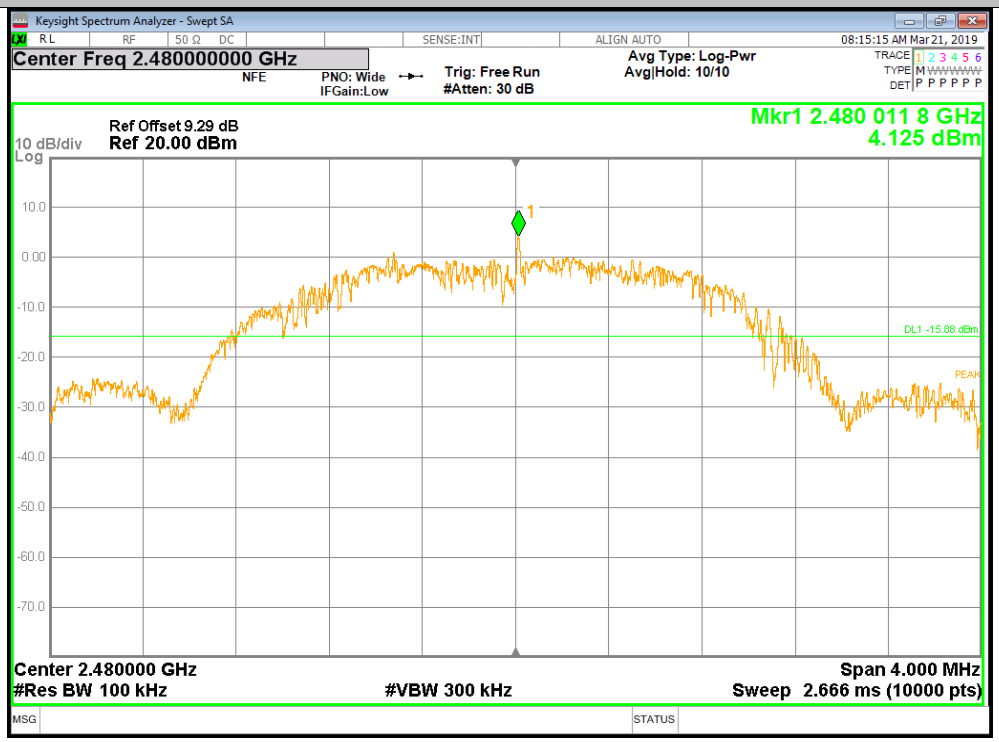
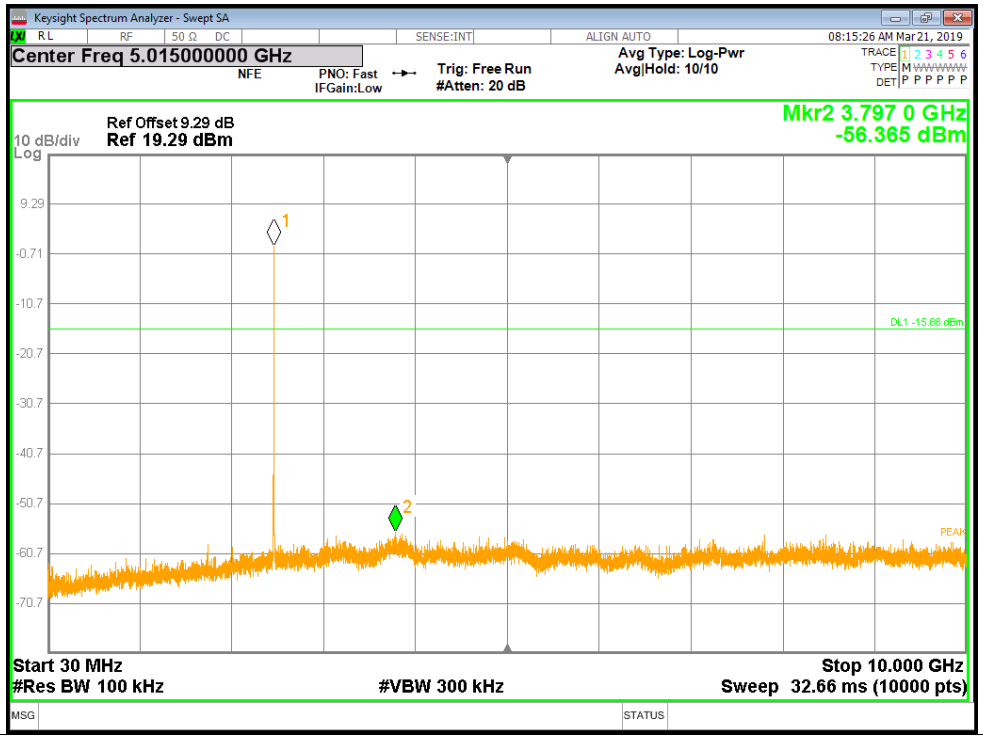


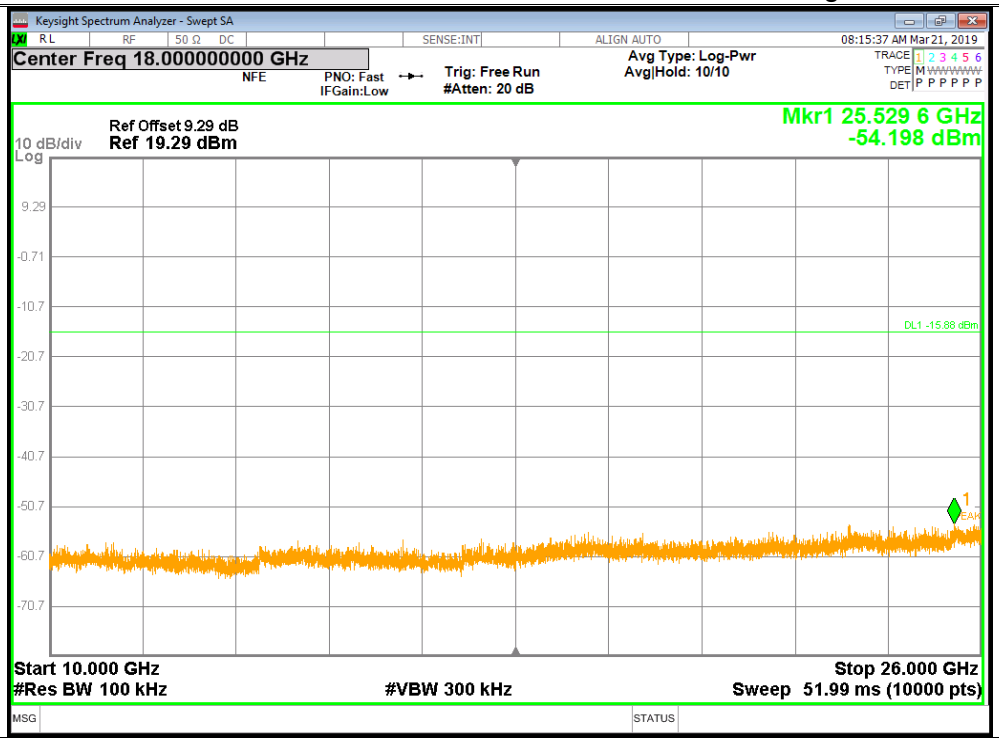
ZigBee_HCH_Graphs

Pref/ZigBee/HCH



Puw/ZigBee/HCH	 

ZigBee_CH26_Graphs	
Puw/ZigBee/CH26	 

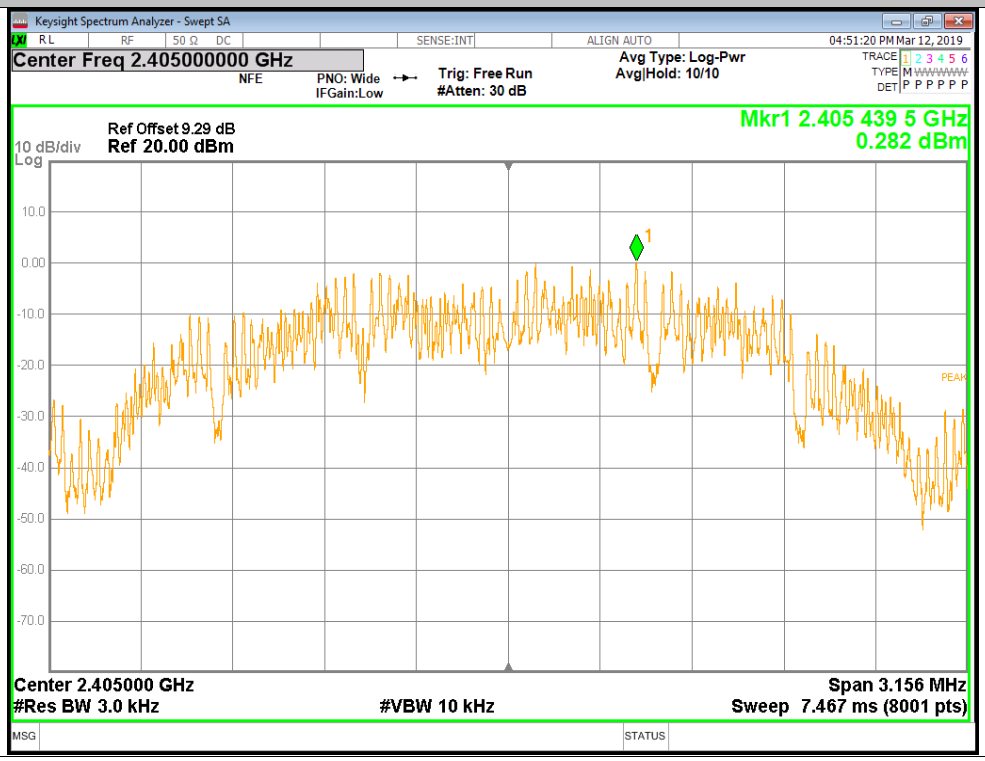


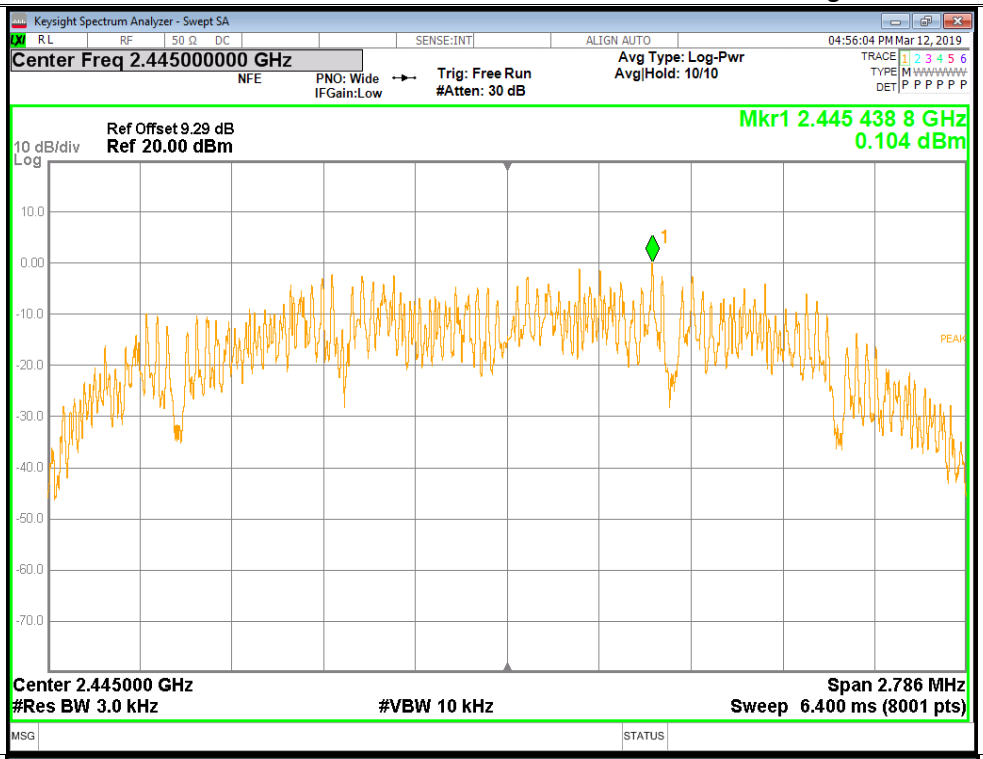
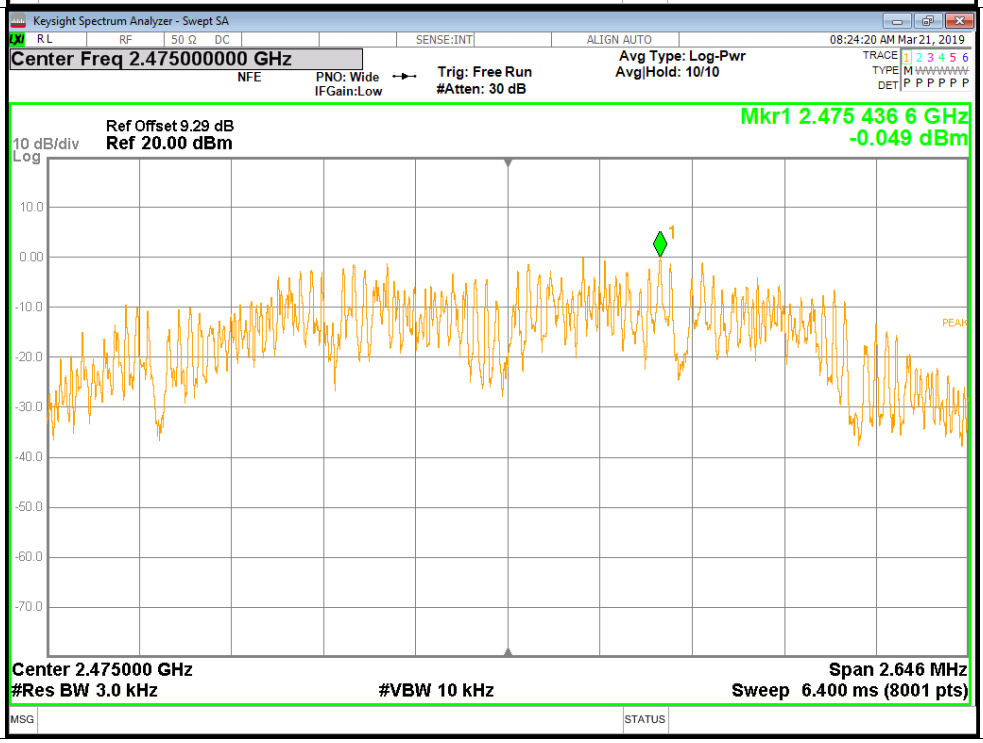
Appendix E): Maximum Power Spectral Density

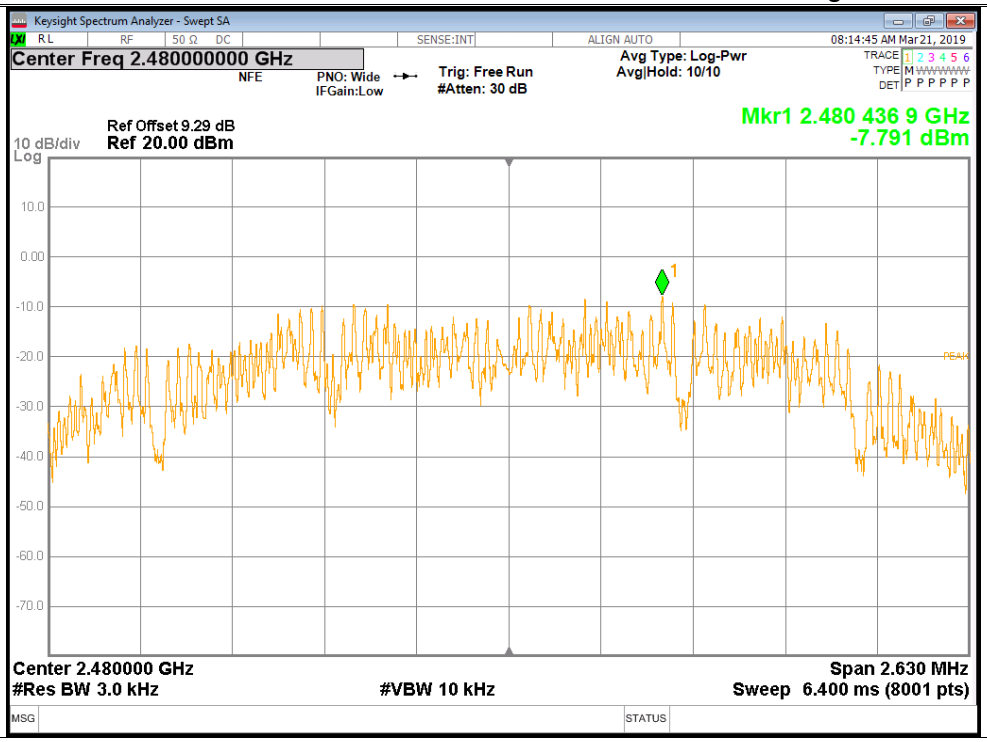
Result Table

Mode	Channel	PSD [dBm]	Verdict
ZigBee	LCH	0.282	PASS
ZigBee	MCH	0.104	PASS
ZigBee	HCH	-0.049	PASS
ZigBee	CH26	-7.791	PASS

Test Graphs

Graphs	
LCH	

MCH	
HCH	

CH26		

END OF REPORT