RF Test Report

Applicant	:	Redpine Signals, Inc.
Product Type	:	Dual Band 802.11 a/b/g/n, Bluetooth 5.0, ZigBee Module
Trade Name	:	Redpine Signals Inc
Model Number	:	M7DB6
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Receive Date	:	Oct. 24, 2018
Test Period	:	Dec. 26, 2018 ~ Jan. 02, 2019
Issue Date	:	Jan. 11, 2019

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C)
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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jan. 11, 2019	Initial Issue	Nina Lin

Verification of Compliance

Issued Date: Jan. 11, 2019

Applicant	:	Redpine Signals, Inc.
Product Type	:	Dual Band 802.11 a/b/g/n, Bluetooth 5.0, ZigBee Module
Trade Name	:	Redpine Signals Inc
Model Number	:	M7DB6
FCC ID	:	XF6-M7DB6
EUT Rated Voltage	:	DC 1.8 V, 0.4 A / DC 3.3 V, 0.4 A
Test Voltage	:	DC 3.3 V
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade District, Taoyuan City 33465, Taiwan (R.O.C) Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By	: Fly Lu	Reviewed By	: Eric Ou Yang	
(Manager)	(Fly Lu)	(Testing Engineer)	(Eric Ou Yang)	

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1 General Information

1.1 Summary of Test Result

Standard	Item	Result	Remark
FCC			
15.207	AC Power Conducted Emission	N/A	The device uses DC power source.
15.247(d)	Transmitter Radiated Emissions	PASS	-----
15.247(b)(3)	Max. Output Power	PASS	-----
15.247(a)(2)	6 dB RF Bandwidth	PASS	-----
15.247(e)	Maximum Power Spectral Density	PASS	-----
15.247(d)	Out of Band Conducted Spurious Emission	PASS	-----
15.203	Antenna Requirement	PASS	-----

The test results of this report relate only to the tested sample(s) identified in this report.

Standard	Description
CFR47, Part 15, Subpart C	Intentional Radiators
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 558074 D01 v05	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES

1.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conducted Emission	9 kHz ~ 150 kHz	2.7
	150 kHz ~ 30 MHz	2.7
Radiated Emission	9 kHz ~ 30 MHz	1.7
	30 MHz ~ 1000 MHz	5.7
	1000 MHz ~ 18000 MHz	5.5
	18000 MHz ~ 26500 MHz	4.8
	26500 MHz ~ 40000 MHz	4.8
Conducted Output Power	+0.27 dB / -0.28 dB	
RF Bandwidth	4.96 %	
Power Spectral Density	+0.71 dB / -0.77 dB	

2 EUT Description

Applicant	Redpine Signals, Inc. 2107 N.First Street, Suite 680, San Jose, California, 95131-2019, United States				
Manufacturer	Redpine Signals, Inc. 2107 N.First Street, Suite 680, San Jose, California, 95131-2019, United States				
Product Type	Dual Band 802.11 a/b/g/n, Bluetooth 5.0, ZigBee Module				
Trade Name	Redpine Signals Inc				
Model Number	M7DB6				
FCC ID	XF6-M7DB6				
Operate Freq. Band	Frequency Range (MHz)	Modulation	Channel Bandwidth	Data Rate 400 GI (ns)	
IEEE 802.11b	2412 ~ 2462	DSSS	20 MHz	Up to 11 Mbps	
IEEE 802.11g	2412 ~ 2462	OFDM	20 MHz	Up to 54 Mbps	
IEEE 802.11n 2.4 GHz 20 MHz	2412 ~ 2462	OFDM	20 MHz	Up to 72.2 Mbps	
IEEE 802.11n 2.4 GHz 40 MHz	2422 ~ 2452	OFDM	40 MHz	Up to 150 Mbps	
Antenna information	Model	Type	Connector	Max. Gain (dBi)	
	RSIA7	PCB Trace Antenna	Internal	0.712	
	GW.71.5153	Dipole Antenna	SMA Reverse	Straight	3.3
				Bent	3.8
Antenna Delivery	See section 3.1				
Operate Temp. Range	-40 ~ +85 ℃				

Frequency Band	Max. RF Output Power (W)
Power setting 1_Antenna Type: PCB Trace Antenna	
IEEE 802.11b	0.095
IEEE 802.11g	0.296
IEEE 802.11n 2.4 GHz 20 MHz	0.295
IEEE 802.11n 2.4 GHz 40 MHz	0.081
Power setting 2_Antenna Type: Dipole Antenna	
IEEE 802.11b	0.083
IEEE 802.11g	0.282
IEEE 802.11n 2.4 GHz 20 MHz	0.327
IEEE 802.11n 2.4 GHz 40 MHz	0.056

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit mode
Mode 2: IEEE 802.11b Continuous TX mode
Mode 3: IEEE 802.11g Continuous TX mode
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes.

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “X axis” position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

Note: Antenna model: GW.71.5153(Bent) is the worst cast.

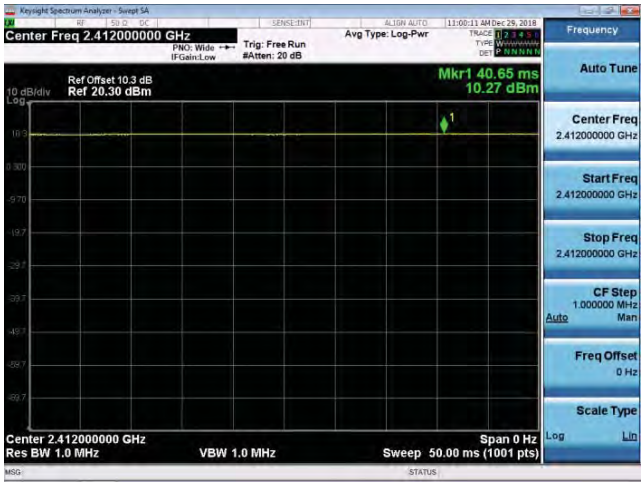
RF Power setting	Antenna Type	Antenna Max. Gain (dBi)	Test Mode	Antenna Delivery	Data Rate	Test Channel
1	PCB Trace Antenna	0.712	Mode 2	1TX	1 M	1, 6, 11
			Mode 3	1TX	6 M	1, 6, 11
			Mode 4	1TX	6.5 M	1, 6, 11
			Mode 5	1TX	13.5 M	3, 6, 9
2	Dipole Antenna	3.3(Straight)/ 3.8(Bent)	Mode 2	1TX	1 M	1, 6, 11
			Mode 3	1TX	6 M	1, 6, 11
			Mode 4	1TX	6.5 M	1, 6, 11
			Mode 5	1TX	13.5 M	3, 6, 9
Note:Redpine software has antenna selection parameter which enables the user to select the antenna and it internally adjusts the gain parameters.Default antenna type will be Redpine PCB antenna.						

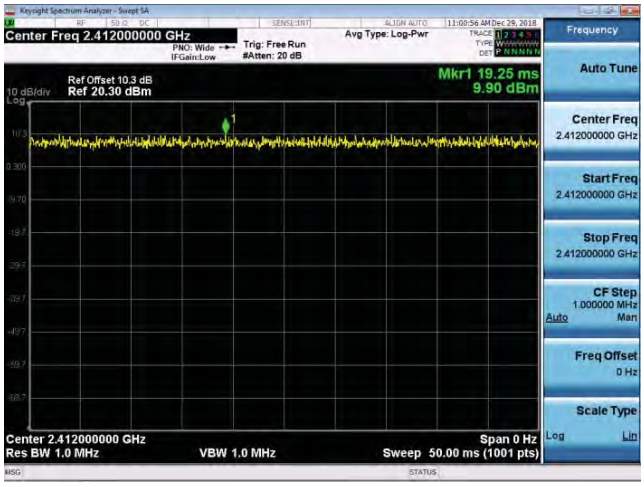
Duty cycle

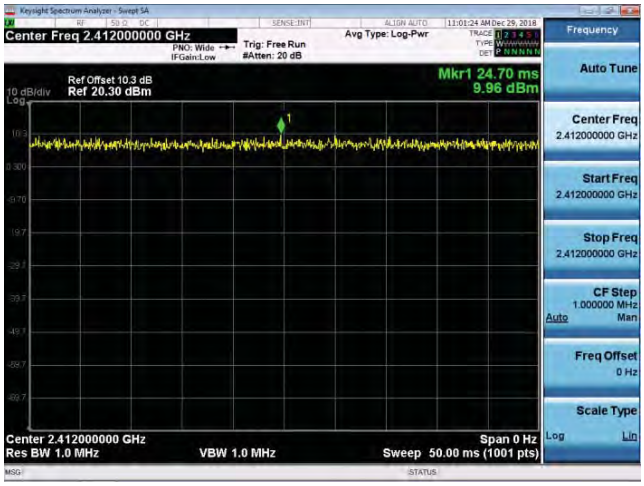
Power setting 1_Antenna Type: PCB Trace Antenna

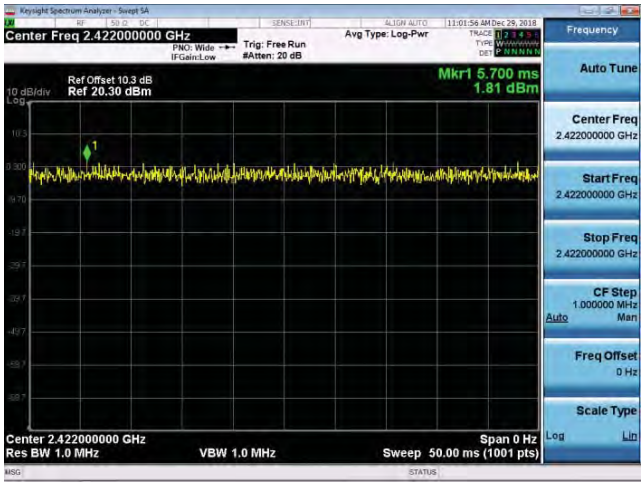
Test Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
Mode 2	2412	50.000	50.000	1.000	0.000	0.010
Mode 3	2412	50.000	50.000	1.000	0.000	0.010
Mode 4	2412	50.000	50.000	1.000	0.000	0.010
Mode 5	2422	50.000	50.000	1.000	0.000	0.010

Duty Cycle Graphs

Mode 2: IEEE 802.11b Continuous TX mode	
On+off time	

Mode 3: IEEE 802.11g Continuous TX mode	
On+off time	

Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
On+off time	

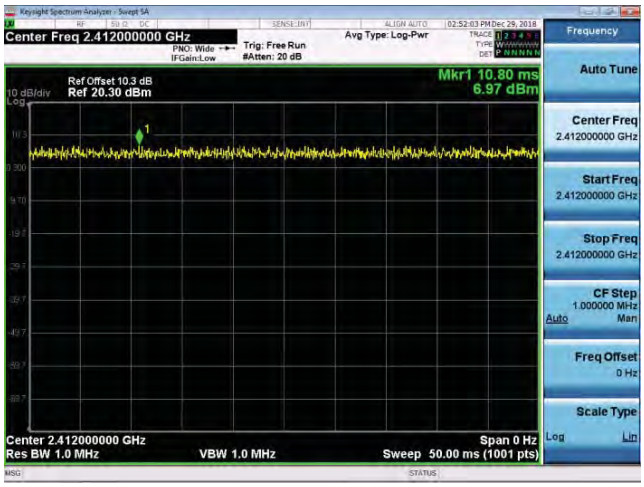
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
On+off time	

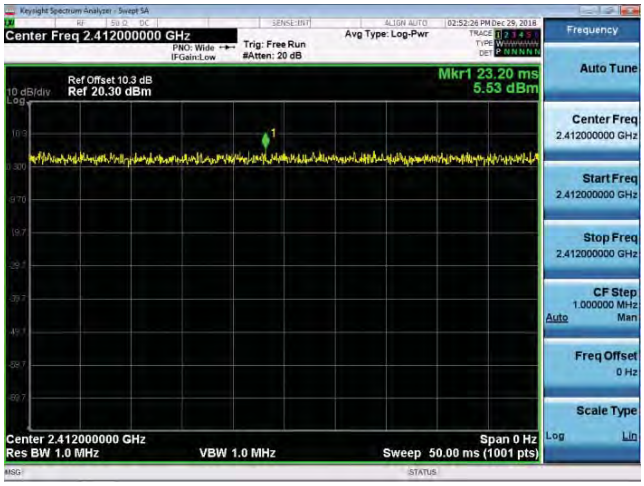
Power setting 2_Antenna Type: Dipole Antenna

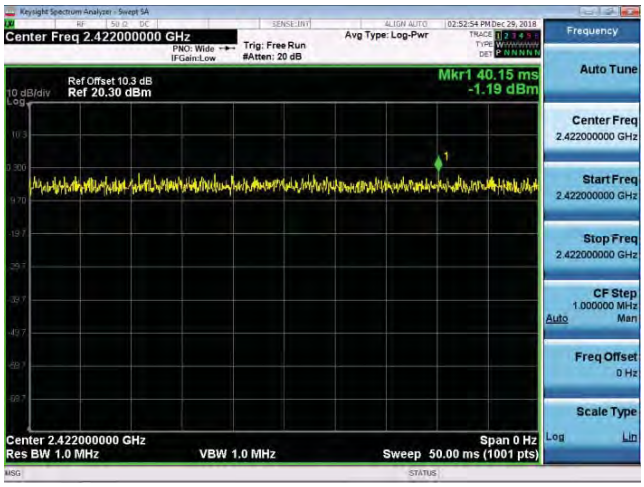
Test Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
Mode 2	2412	50.000	50.000	1.000	0.000	0.010
Mode 3	2412	50.000	50.000	1.000	0.000	0.010
Mode 4	2412	50.000	50.000	1.000	0.000	0.010
Mode 5	2422	50.000	50.000	1.000	0.000	0.010

Duty Cycle Graphs

Mode 2: IEEE 802.11b Continuous TX mode	
On+off time	

Mode 3: IEEE 802.11g Continuous TX mode	
On+off time	

Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
On+off time	

Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
On+off time	

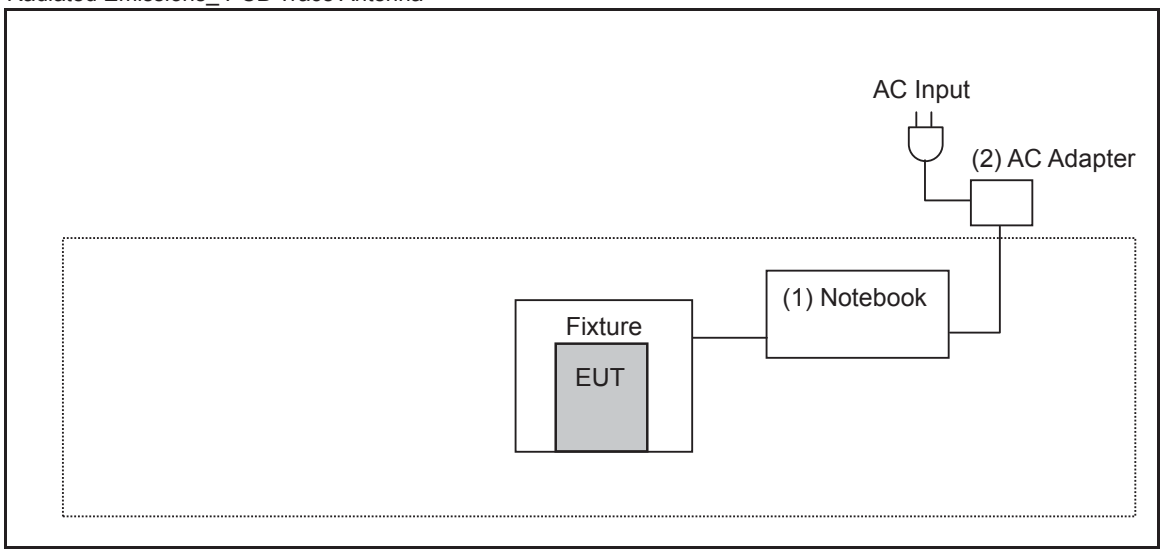
3.2. EUT Test Step

1.	Setup the EUT shown on “Configuration of Test System Details”.
2.	Turn on the power of all equipment.
3.	Turn on TX function
4.	EUT run test program.

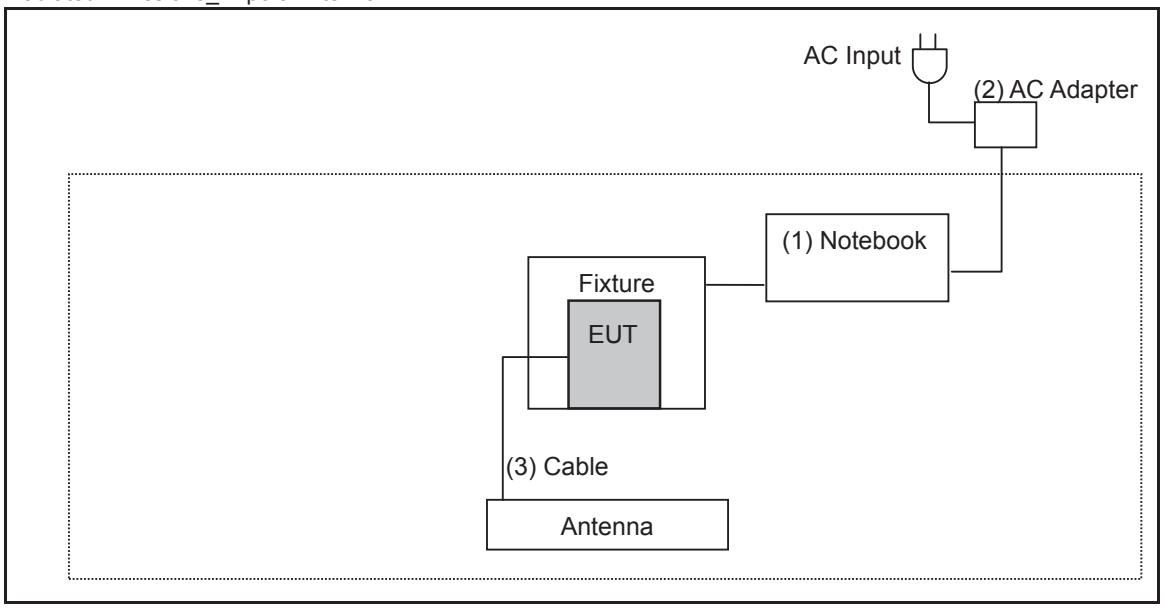
Measurement Software			
No.	Description	Software	Version
1	Radiated Emission	EZ EMC	1.1.4.4

3.3. Configuration of Test System Details

Radiated Emissions_ PCB Trace Antenna



Radiated Emissions_ Dipole Antenna



Devices Description						
Product		Manufacturer	Model Number	Serial Number	Power Cord	Loss
(1)	Notebook	DELL	Inspiron 15	726RWN2	---	---
(2)	AC Adapter	DELL	LA65NS2-01	---	Non-Shielded, 0.8 m	---
(3)	Cable	Amphenol RF	336314-12-0100	---	---	0.38 dB

3.4. Test Instruments

For Radiated Emissions

Test Period: Dec. 26 ~ Dec. 28, 2018

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Spectrum Analyzer (10 Hz~44G Hz)	Keysight	N9010A	MY52221312	01/15/2018	1 year
Pre Amplifier (1~26.5 GHz)	Agilent	8449B	3008A02237	10/19/2018	1 year
Pre Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	01/10/2018	1 year
Pre Amplifier (26.5~40 GHz)	EMCI	EMC2654045	980028	08/23/2018	1 year
Trilog Broadband Antenna	SCHWARZBECK MESS-ELEKTRONIK	SB AC VULB	9168-0841	03/02/2018	1 year
Horn Antenna (1~18 GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	08/23/2018	1 year
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	03/13/2018	1 year
RF Cable	EMCI	EMC104-N-N-6000	TE01-1	02/20/2018	1 year
Microwave Cable	EMCI	EMC102-KM-KM-14 000	151001	02/20/2018	1 year
Broadband Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	9170	9170-320	08/07/2018	1 year

For Conducted

Test Period: Jan. 02, 2019

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Power Sensor	Anritsu	MA2411B	1126022	08/29/2018	1 year
Power Meter	Anritsu	ML2495A	1135009	08/29/2018	1 year
EXA Signal Analyzer	Keysight	N9010A	MY52221312	01/15/2018	1 year
Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	09/25/2018	1 year
Microwave Cable	EMCI	EMC104-SM-SM13 000	170814	10/30/2018	1 year

Note: N.C.R. = No Calibration Request.

3.5. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	990

4 Measurement Procedure

4.1. Radiated Emission Measurement

■ **Limit**

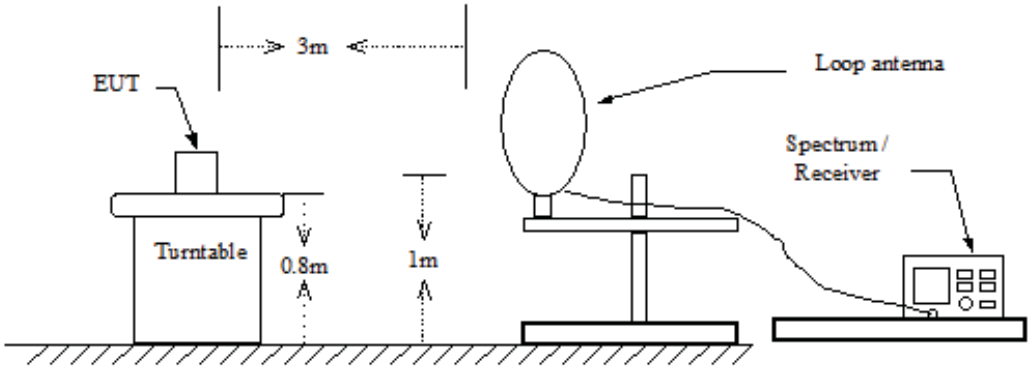
According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m at 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
Above 960	500	3

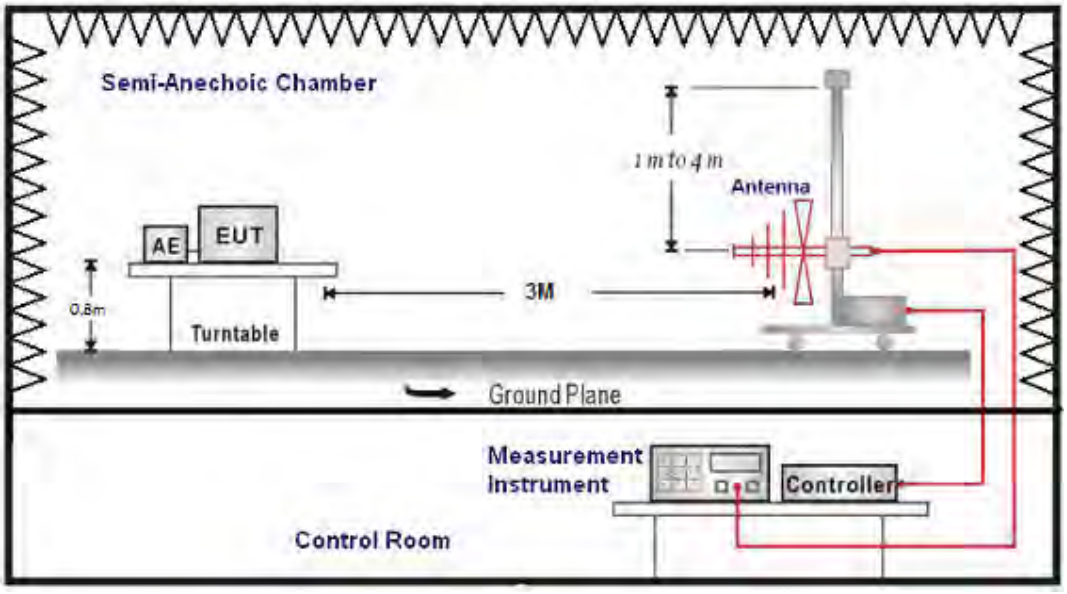
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

■ **Setup**

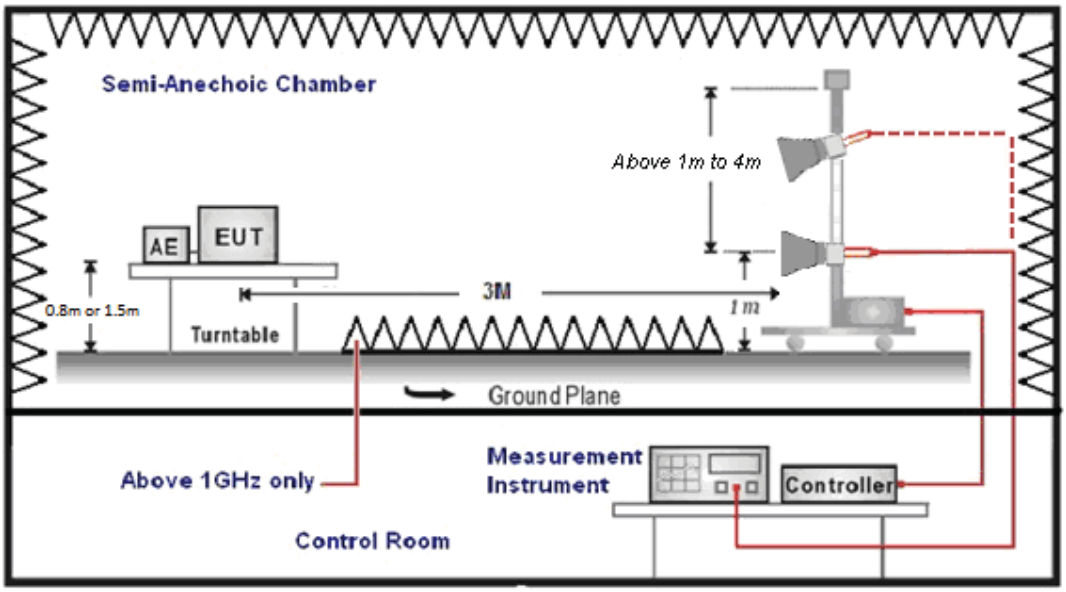
9 kHz ~ 30 MHz



Below 1 GHz



Above 1 GHz


Semi-Anechoic Chamber
Above 1m to 4m
AE
EUT
0.8m or 1.5m
Turntable
3M
1 m
Ground Plane
Above 1GHz only
Measurement
Instrument
Controller
Control Room

■ **Test Procedure**

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements when Duty cycle >0.98 / 1/T for average measurements when Duty cycle <0.98. A nonconductive material surrounded the EUT to supporting the EUT for standing on tree orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna was used in frequencies 1 –26.5 GHz at a distance of 3 meter. The antenna at an angle toward the source of the emission. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20 dB/decade).

For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro colts per meter (dBuV/m).

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)
FI= Reading of the field intensity.
AF= Antenna factor.
CL= Cable loss.
P.S Amplitude is auto calculate in spectrum analyzer.

(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)
The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:
(a) For fundamental frequency : Transmitter Output < +30 dBm
(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

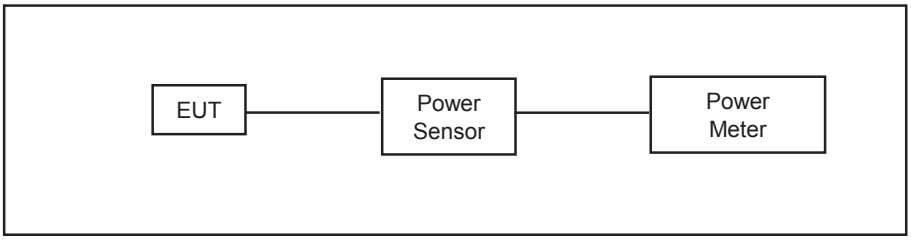
4.2. Maximum Conducted Output Power Measurement

■ **Limit**

For systems using digital modulation in the 2400-2483.5 MHz, the limit for maximum output power is 30 dBm.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ **Test Setup**



■ **Test Procedure**

The testing follows the Measurement Procedure of ANSI C63.10-2013 section 11.9.2.3 Method AVGPM.

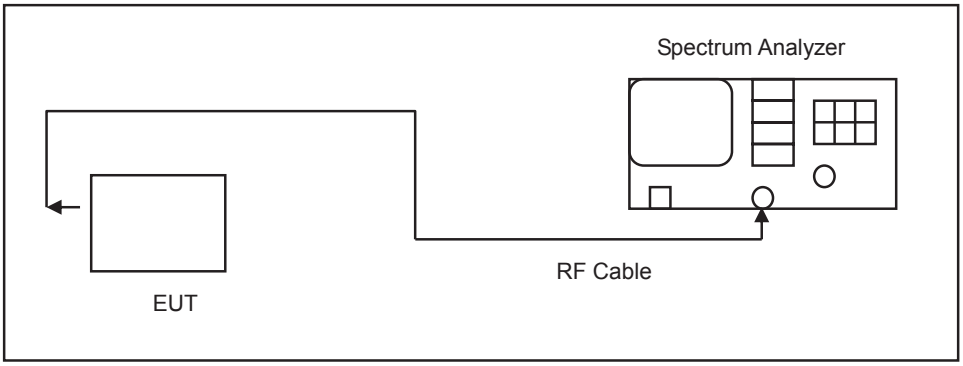
The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor.

4.3. 6 dB RF Bandwidth Measurement

■ **Limit**

6 dB RF Bandwidth: Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

■ **Test Setup**



■ **Test Procedure**

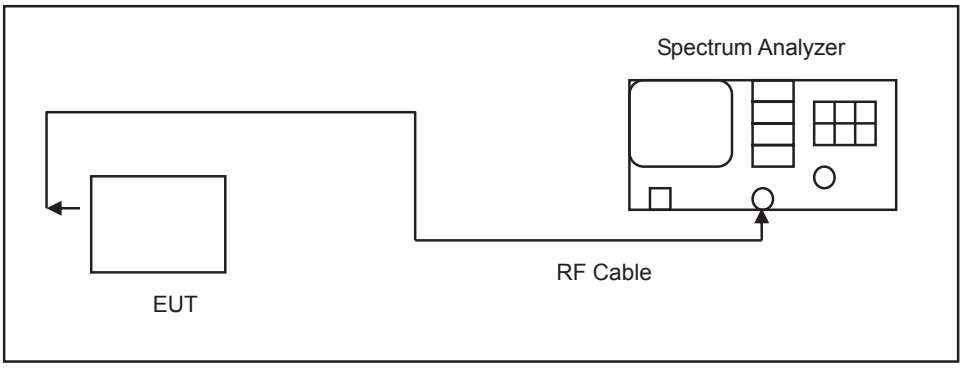
The EUT tested to DTS test procedure of KDB 558074 D01 for compliance to FCC 47CFR 15.247 requirements.
6 dB RF Bandwidth: The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.
The test was performed at 3 channels (Channel low, middle, high)

4.4. Maximum Power Spectral Density Measurement

■ **Limit**

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

■ **Test Setup**



■ **Test Procedure**

The EUT tested to DTS test procedure of KDB 558074 D01 section 10.2 Method PKPSD for compliance to FCC 47CFR 15.247 requirements.

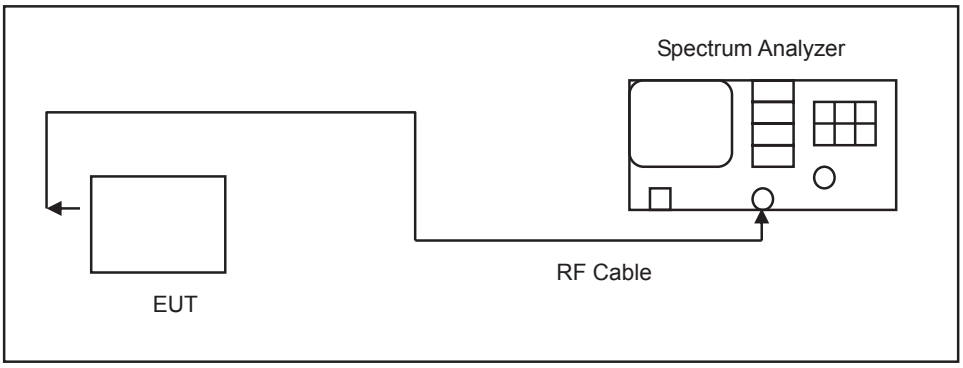
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 × RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.5. Out of Band Conducted Emissions Measurement

■ **Limit**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

■ **Test Setup**



■ **Test Procedure**

In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.
All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band.
The test was performed at 3 channels.

4.6. Antenna Measurement

■ **Limit**

For intentional device, according to 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.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

■ **Antenna Description**

See section 2 – antenna information.

5 Test Results

Annex A. Conducted Test Results

Power setting 1_Antenna Type: PCB Trace Antenna

Maximum Conducted Output Power Measurement

Test Mode	Frequency (MHz)	RF Power setting in Test Software	Test Software Version
Mode 2	2412	17.0	FCC Test App
	2437	17.0	
	2462	18.0	
Mode 3	2412	15.0	
	2437	22.0	
	2462	13.0	
Mode 4	2412	14.0	
	2437	22.0	
	2462	12.0	
Mode 5	2422	10.0	
	2437	12.0	
	2452	8.0	

Test Mode	Data Rate (Mbps)	Frequency (MHz)	Average Output Power		Peak Output Power		
			Measurement Results		Measurement Results		Limit
			dBm	W	dBm	W	dBm
Mode 2	1	2412	16.55	0.045	**19.78**	**0.095**	≤ 30
		2437	16.02	0.040	18.94	0.078	≤ 30
		2462	16.14	0.041	19.42	0.087	≤ 30
	2	2437	16.00	0.040	18.91	0.078	≤ 30
	5.5	2437	15.98	0.040	18.88	0.077	≤ 30
	11	2437	15.93	0.039	18.83	0.076	≤ 30
Mode 3	6	2412	14.37	0.027	21.42	0.139	≤ 30
		2437	17.39	0.055	**24.71**	**0.296**	≤ 30
		2462	11.29	0.013	18.44	0.070	≤ 30
	9	2437	17.37	0.055	24.68	0.294	≤ 30
	12	2437	17.35	0.054	24.65	0.292	≤ 30
	18	2437	17.31	0.054	24.61	0.289	≤ 30
	24	2437	17.26	0.053	24.59	0.288	≤ 30
	36	2437	17.23	0.053	24.56	0.286	≤ 30
	48	2437	17.20	0.052	24.53	0.284	≤ 30
	54	2437	17.15	0.052	24.51	0.282	≤ 30

Note: The relevant measured result has the offset with cable loss already.

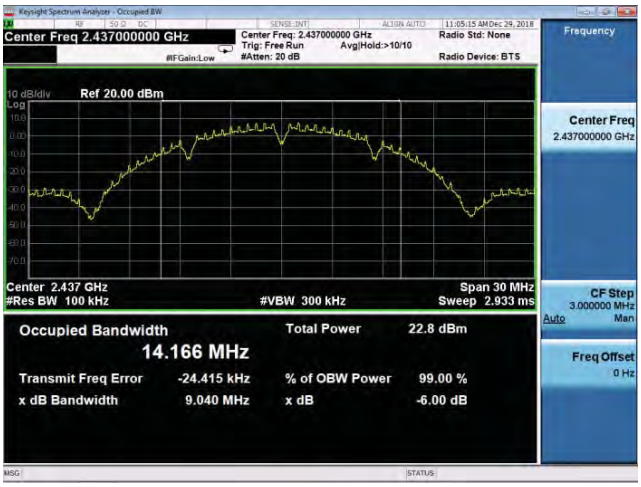
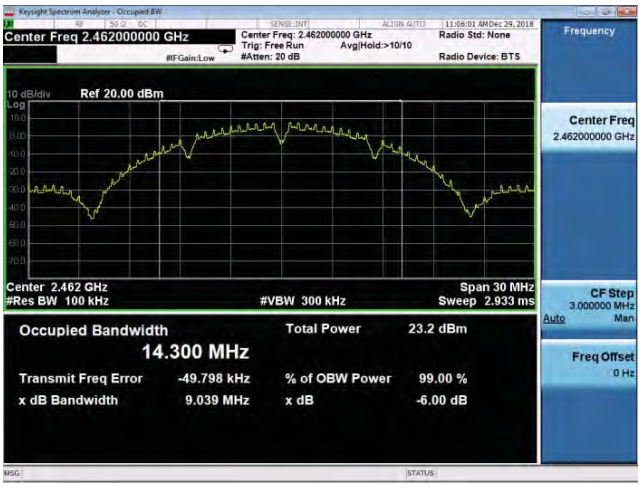
Test Mode	Data Rate (Mbps)	Frequency (MHz)	Average Output Power		Peak Output Power		
			Measurement Results		Measurement Results		Limit
			dBm	W	dBm	W	dBm
Mode 4	6.5M	2412	13.82	0.024	21.10	0.129	≤ 30
		2437	17.60	0.058	**24.70**	**0.295**	≤ 30
		2462	10.44	0.011	17.62	0.058	≤ 30
	14.4M	2437	17.58	0.057	24.68	0.294	≤ 30
	21.7M	2437	17.55	0.057	24.65	0.292	≤ 30
	28.9M	2437	17.51	0.056	24.61	0.289	≤ 30
	43.3M	2437	17.49	0.056	24.59	0.288	≤ 30
	57.8M	2437	17.45	0.056	24.55	0.285	≤ 30
	65M	2437	17.43	0.055	24.51	0.282	≤ 30
	72.2M	2437	17.40	0.055	24.48	0.281	≤ 30
Mode 5	13.5M	2422	10.36	0.011	17.55	0.057	≤ 30
		2437	11.76	0.015	**19.07**	**0.081**	≤ 30
		2452	7.76	0.006	14.94	0.031	≤ 30
	30M	2437	11.73	0.015	19.04	0.080	≤ 30
	45M	2437	11.71	0.015	19.01	0.080	≤ 30
	60M	2437	11.69	0.015	18.98	0.079	≤ 30
	90M	2437	11.66	0.015	18.95	0.079	≤ 30
	120M	2437	11.63	0.015	18.91	0.078	≤ 30
	135M	2437	11.60	0.014	18.89	0.077	≤ 30
	150M	2437	11.58	0.014	18.85	0.077	≤ 30

Note: The relevant measured result has the offset with cable loss already.

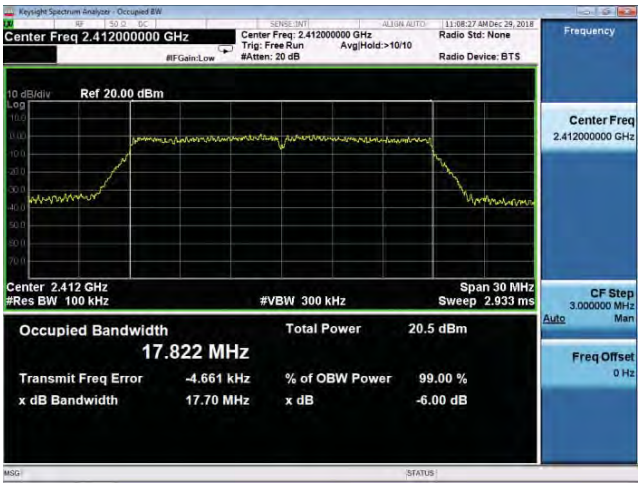
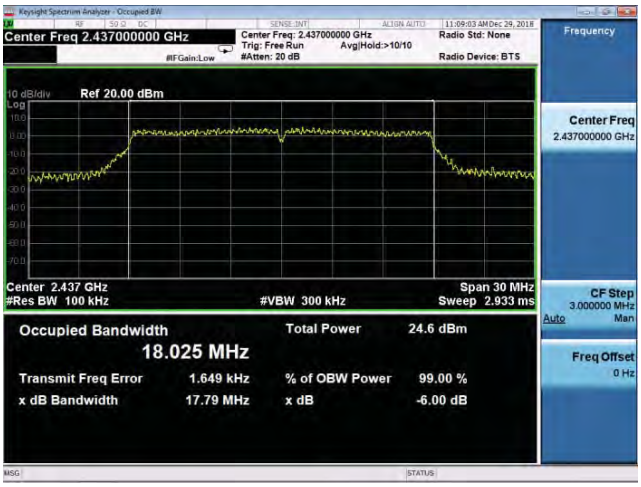
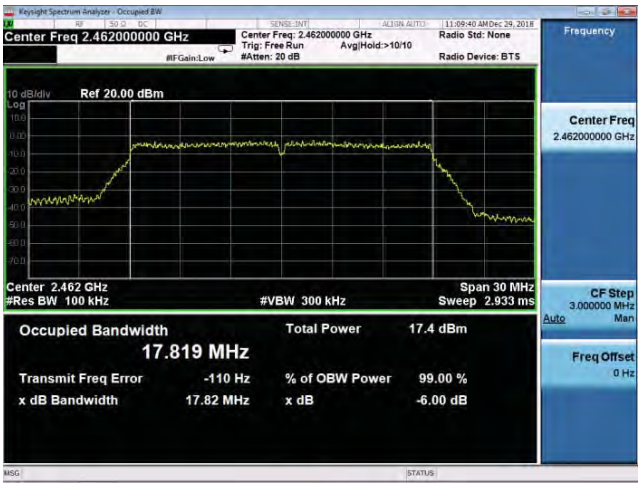
6 dB RF Bandwidth Measurement

Test Mode	Frequency (MHz)	Measurement (kHz)	Limit (kHz)
Mode 2	2412	9044	≥ 500
	2437	9040	≥ 500
	2462	9039	≥ 500
Mode 3	2412	16610	≥ 500
	2437	16590	≥ 500
	2462	16590	≥ 500
Mode 4	2412	17700	≥ 500
	2437	17790	≥ 500
	2462	17820	≥ 500
Mode 5	2422	36530	≥ 500
	2437	36500	≥ 500
	2452	36500	≥ 500

■ **Test Graphs**

Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

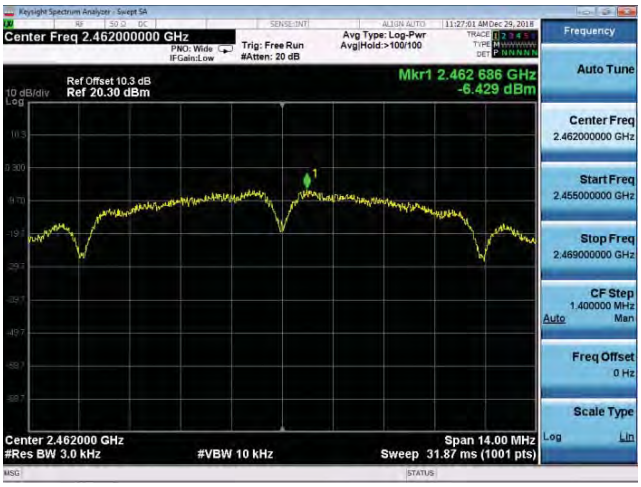
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

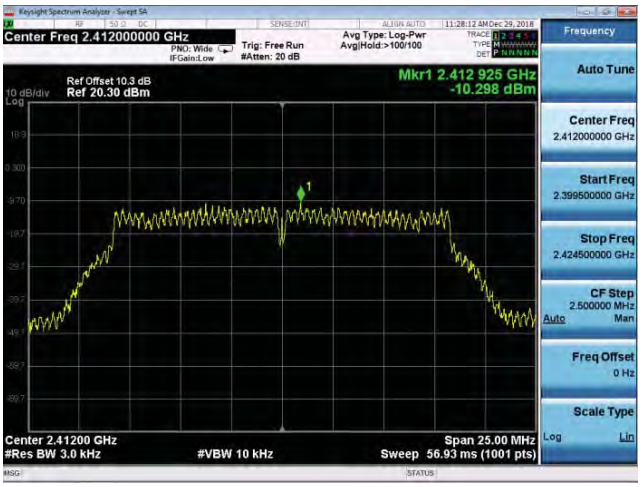
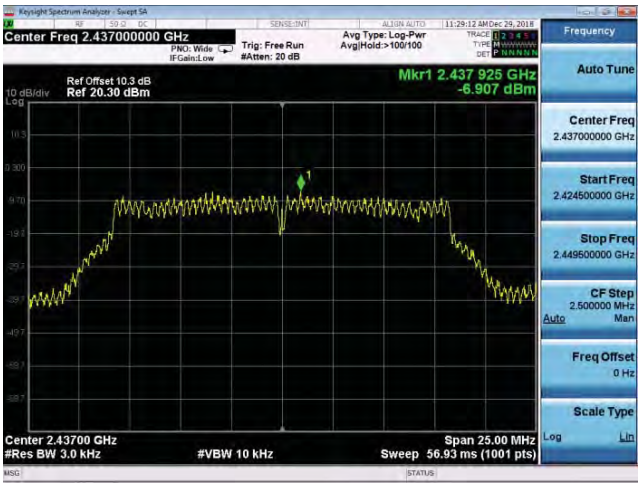
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2437 MHz	
2452 MHz	

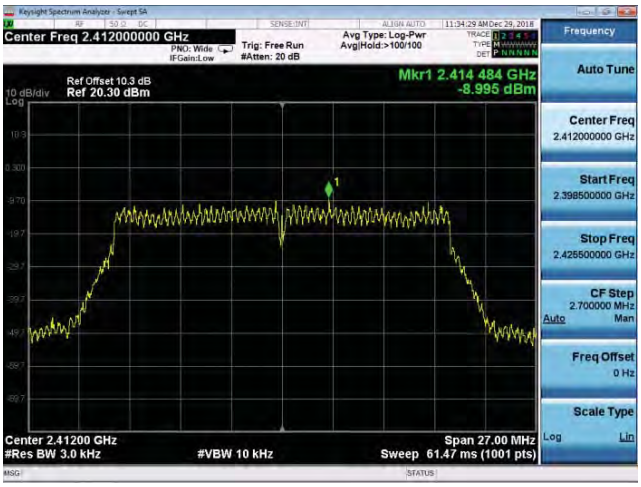
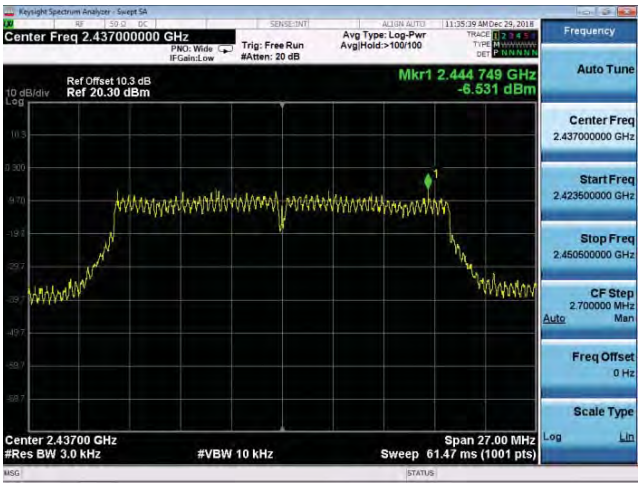
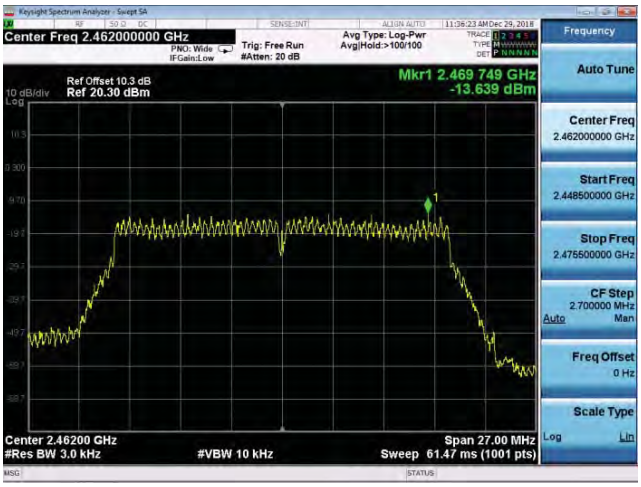
Maximum Power Spectral Density Measurement

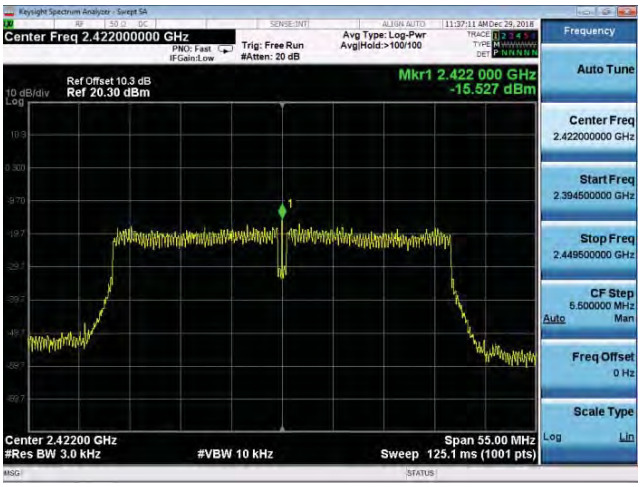
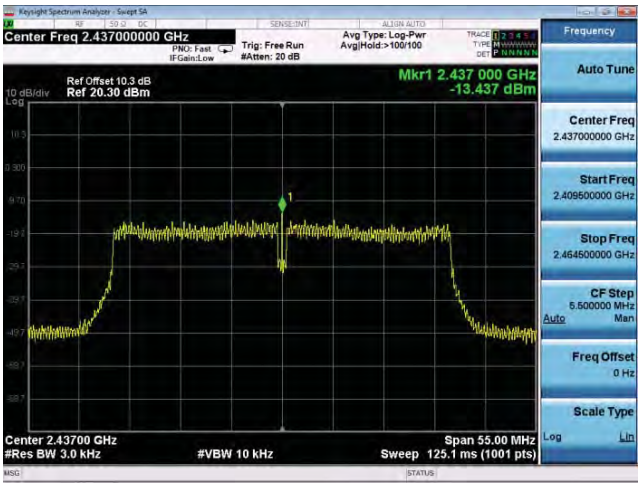
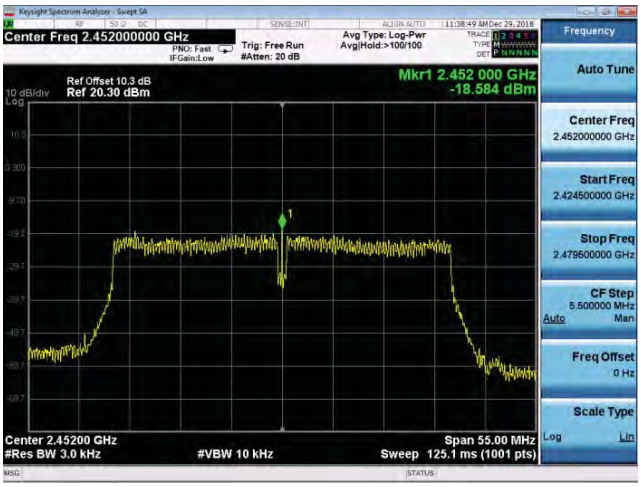
Test Mode	Frequency (MHz)	Measurement (dBm/3 kHz)	Limit (dBm/3 kHz)
Mode 2	2412	-5.844	≤ 8
	2437	-6.574	≤ 8
	2462	-6.429	≤ 8
Mode 3	2412	-10.298	≤ 8
	2437	-6.907	≤ 8
	2462	-13.185	≤ 8
Mode 4	2412	-8.995	≤ 8
	2437	-6.531	≤ 8
	2462	-13.639	≤ 8
Mode 5	2422	-15.527	≤ 8
	2437	-13.437	≤ 8
	2452	-18.584	≤ 8

■ **Test Graphs**

Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

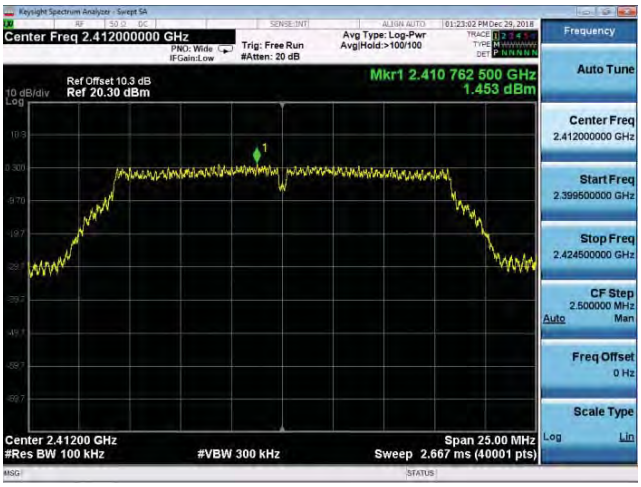
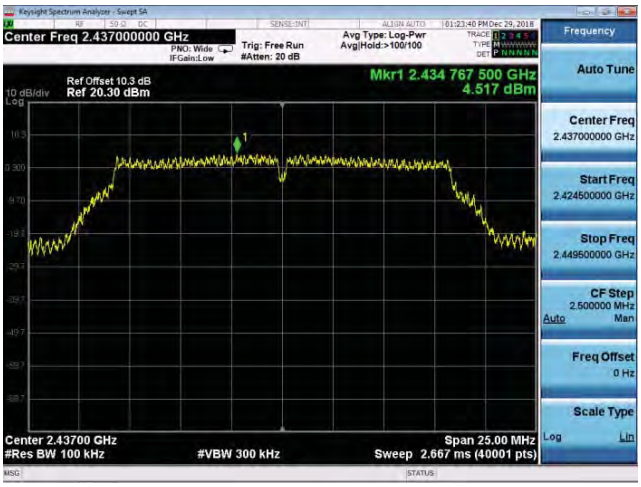
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2437 MHz	
2452 MHz	

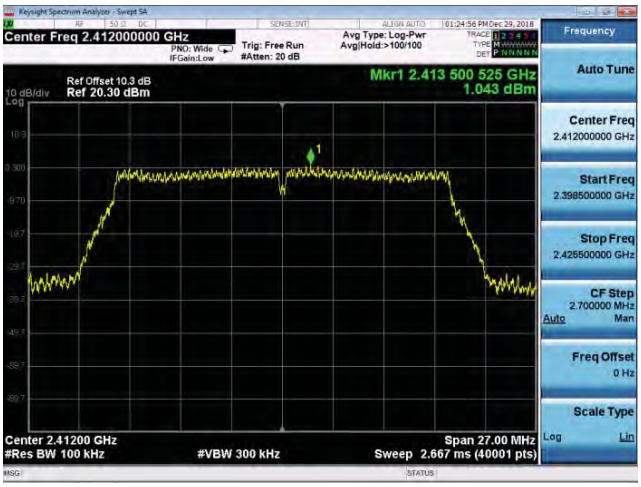
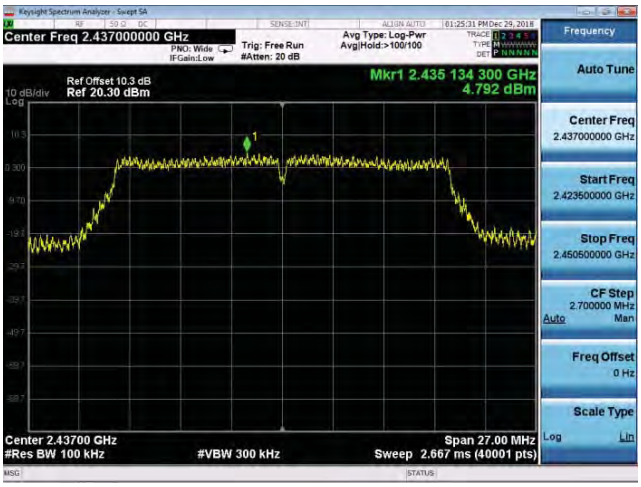
Out of Band Conducted Emissions Measurement

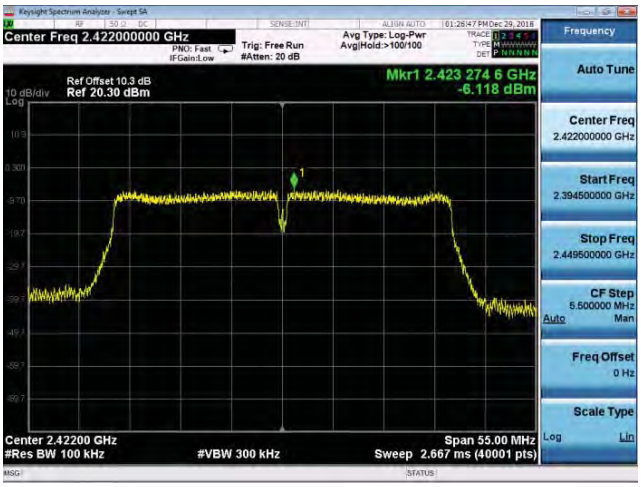
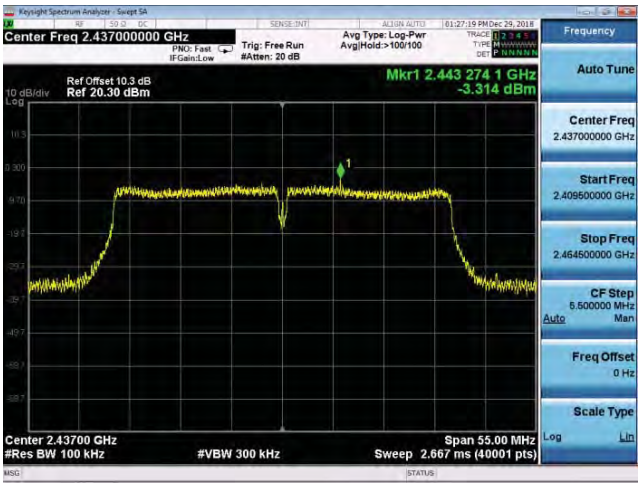
■ **Test Graphs**

Reference level

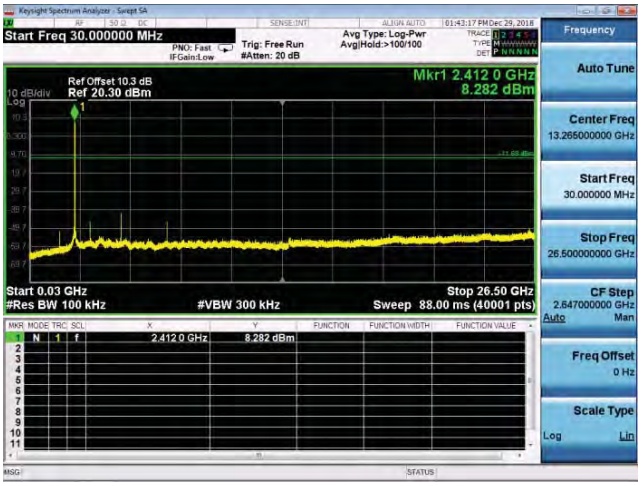
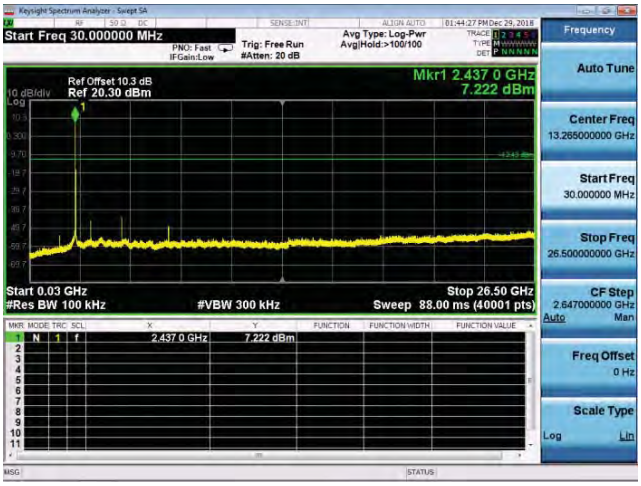
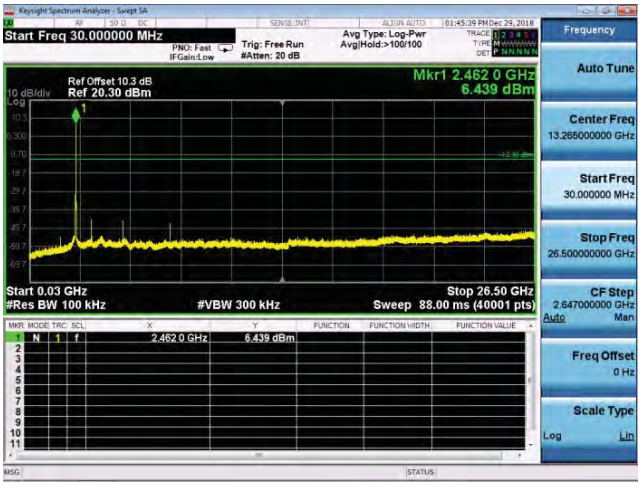
Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

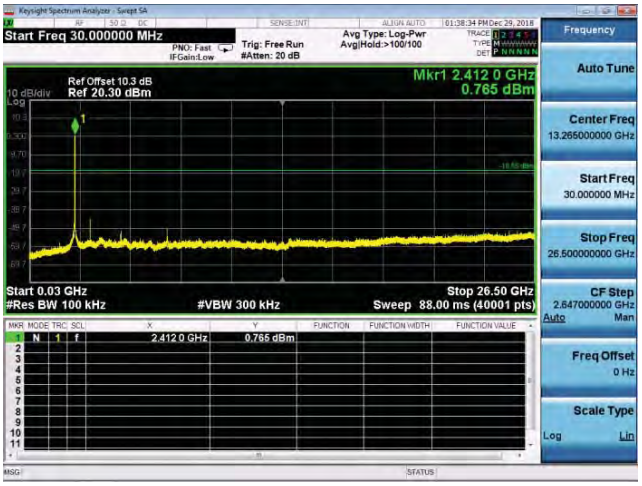
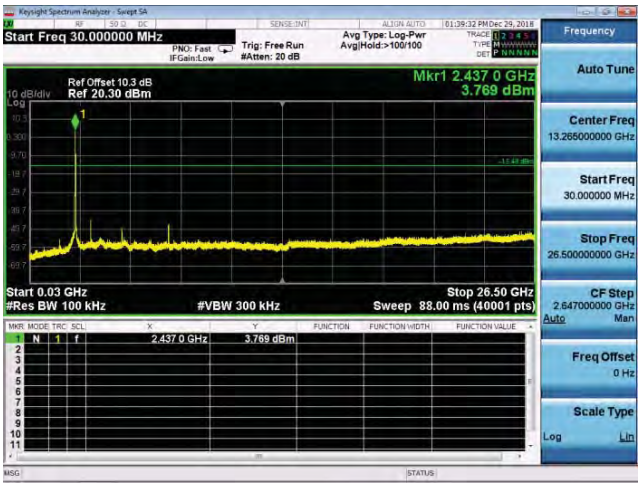
Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

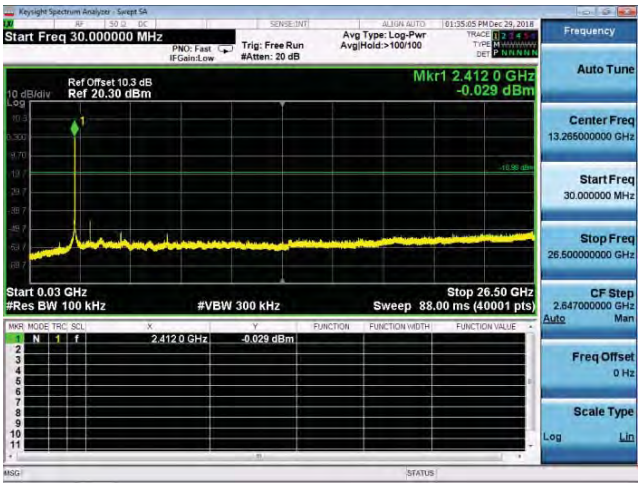
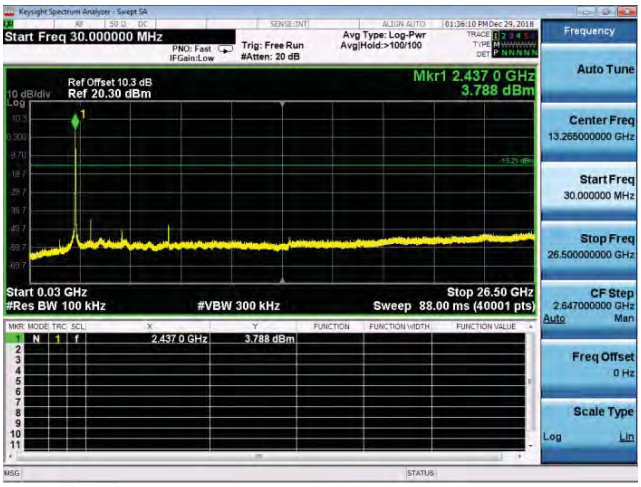
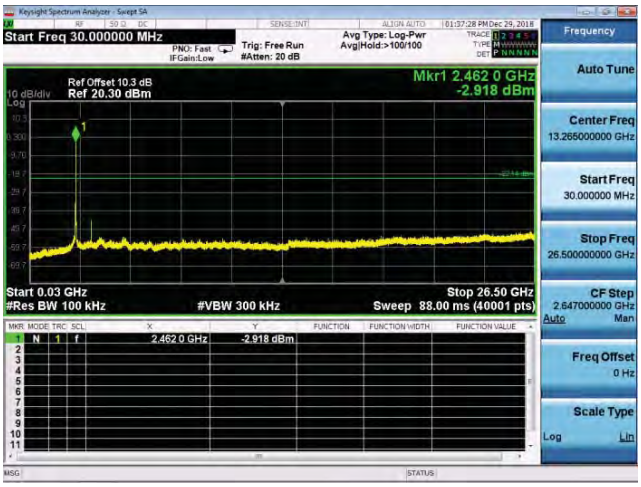
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

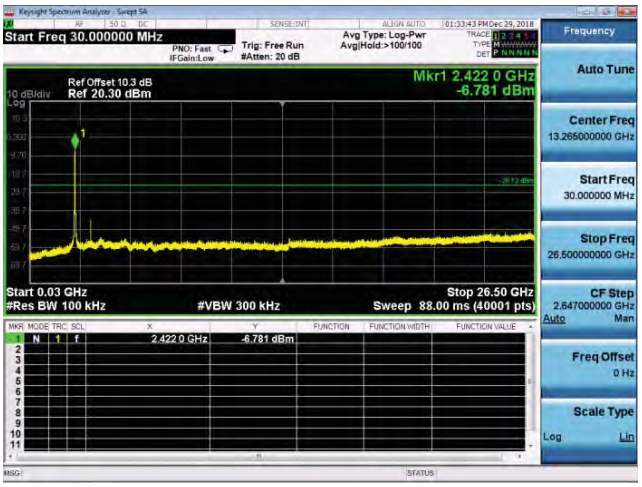
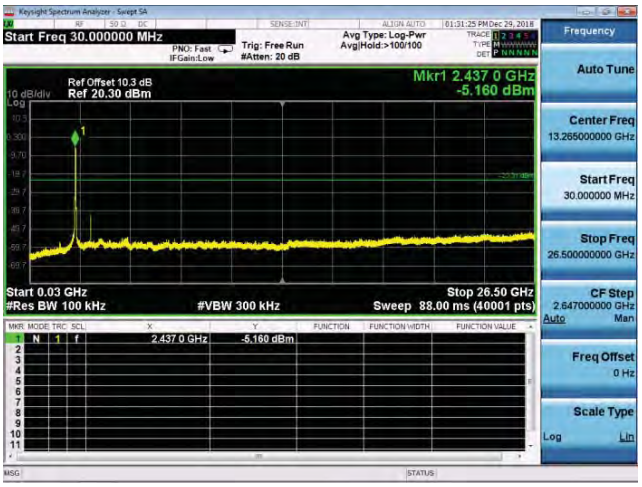
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2437 MHz	
2452 MHz	

Out of Band Conducted Emissions

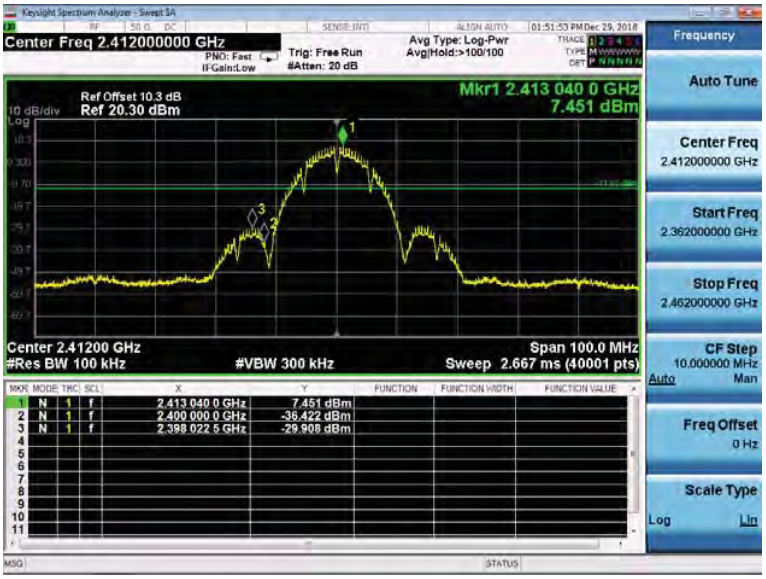
Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

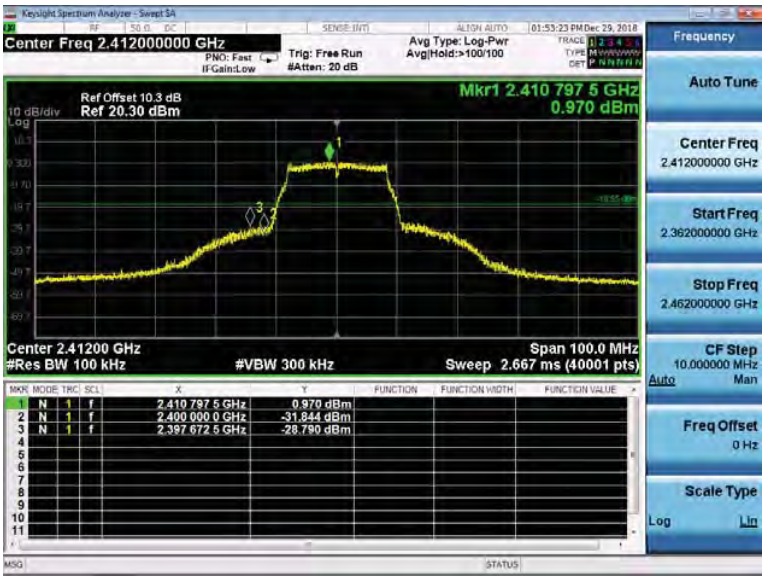
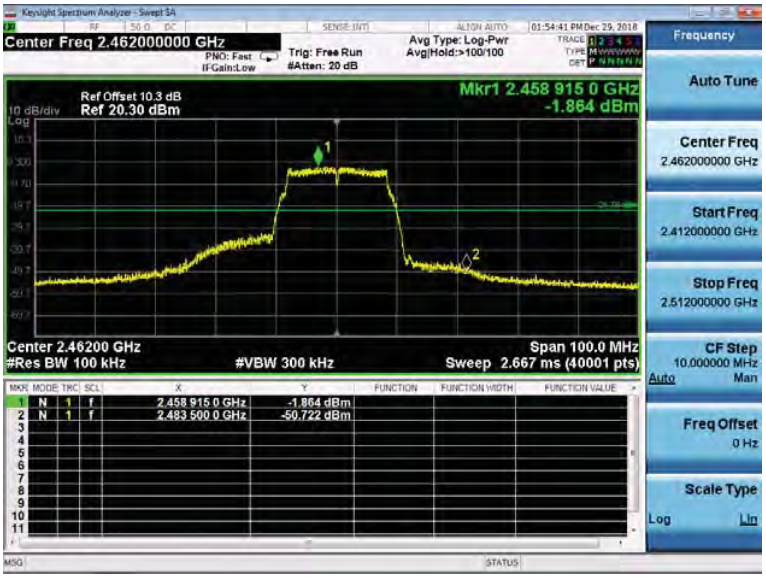
Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

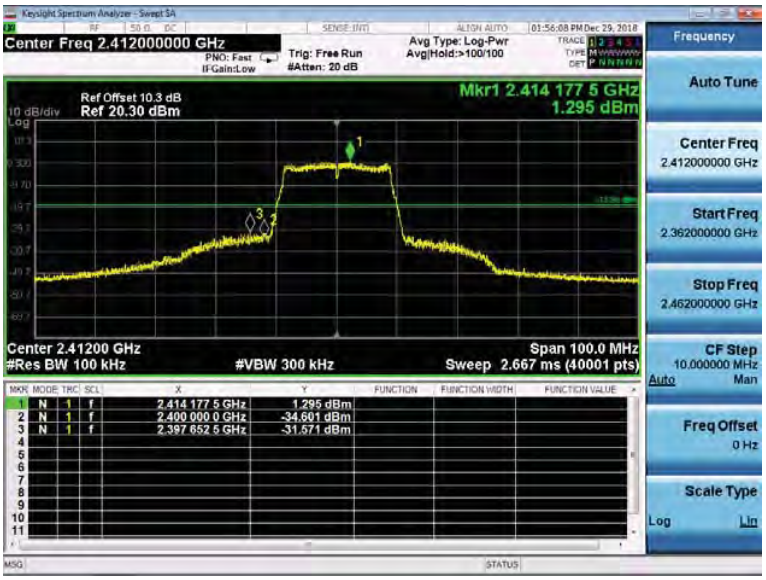
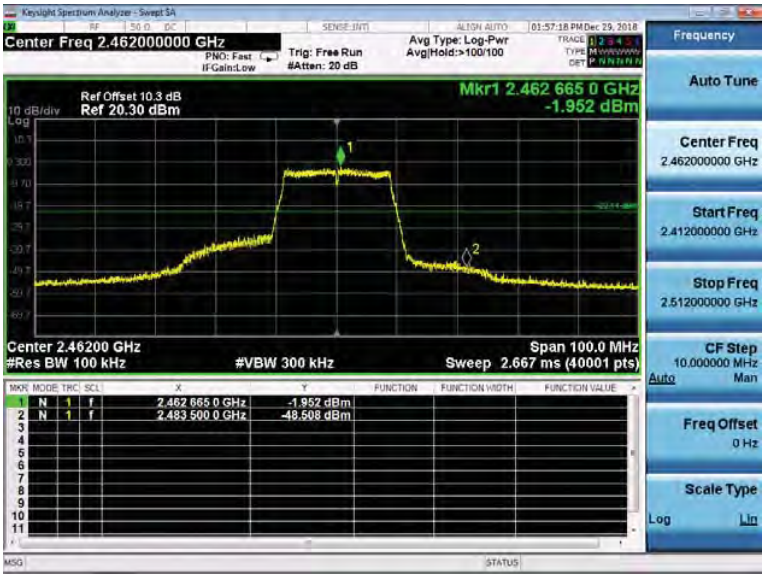
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

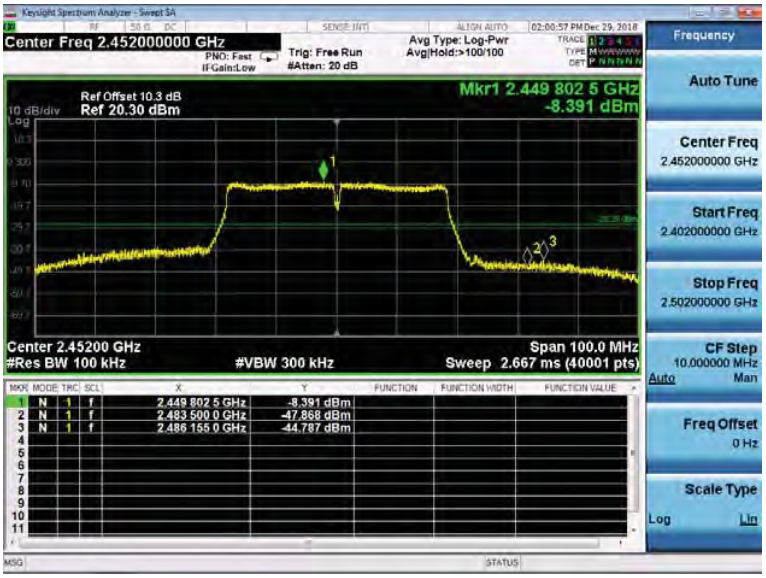
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2437 MHz	
2452 MHz	

Conducted Band Edge

Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2462 MHz	

Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2462 MHz	

Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2462 MHz	

Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2452 MHz	

Power setting 2_Antenna Type: Dipole Antenna

Maximum Conducted Output Power Measurement

Test Mode	Frequency (MHz)	RF Power setting in Test Software	Test Software Version
Mode 2	2412	16.0	FCC Test App
	2437	16.0	
	2462	17.0	
Mode 3	2412	12.0	
	2437	22.0	
	2462	10.0	
Mode 4	2412	10.0	
	2437	22.0	
	2462	9.0	
Mode 5	2422	7.0	
	2437	10.0	
	2452	6.0	

Test Mode	Data Rate (Mbps)	Frequency (MHz)	Average Output Power		Peak Output Power		
			Measurement Results		Measurement Results		Limit
			dBm	W	dBm	W	dBm
Mode 2	1	2412	16.40	0.044	**19.18**	**0.083**	≤ 30
		2437	15.07	0.032	18.26	0.067	≤ 30
		2462	16.10	0.041	18.85	0.077	≤ 30
	2	2437	15.04	0.032	18.23	0.067	≤ 30
	5.5	2437	15.00	0.032	18.20	0.066	≤ 30
	11	2437	14.95	0.031	18.16	0.065	≤ 30
Mode 3	6	2412	12.05	0.016	19.27	0.085	≤ 30
		2437	17.38	0.055	**24.50**	**0.282**	≤ 30
		2462	8.28	0.007	15.45	0.035	≤ 30
	9	2437	17.35	0.054	24.48	0.281	≤ 30
	12	2437	17.33	0.054	24.45	0.279	≤ 30
	18	2437	17.26	0.053	24.43	0.277	≤ 30
	24	2437	17.23	0.053	24.40	0.275	≤ 30
	36	2437	17.20	0.052	24.37	0.274	≤ 30
	48	2437	17.15	0.052	24.35	0.272	≤ 30
	54	2437	17.10	0.051	24.31	0.270	≤ 30

Note: The relevant measured result has the offset with cable loss already.

Test Mode	Data Rate (Mbps)	Frequency (MHz)	Average Output Power		Peak Output Power		
			Measurement Results		Measurement Results		Limit
			dBm	W	dBm	W	dBm
Mode 4	6.5M	2412	9.89	0.010	16.98	0.050	≤ 30
		2437	17.71	0.059	**25.15**	**0.327**	≤ 30
		2462	7.20	0.005	14.38	0.027	≤ 30
	14.4M	2437	17.68	0.059	25.10	0.324	≤ 30
	21.7M	2437	17.65	0.058	25.08	0.322	≤ 30
	28.9M	2437	17.60	0.058	25.05	0.320	≤ 30
	43.3M	2437	17.58	0.057	25.00	0.316	≤ 30
	57.8M	2437	17.55	0.057	24.98	0.315	≤ 30
	65M	2437	17.53	0.057	24.95	0.313	≤ 30
	72.2M	2437	17.50	0.056	24.93	0.311	≤ 30
Mode 5	13.5M	2422	7.51	0.006	14.80	0.030	≤ 30
		2437	10.50	0.011	**17.48**	**0.056**	≤ 30
		2452	5.45	0.004	12.68	0.019	≤ 30
	30M	2437	10.48	0.011	17.45	0.056	≤ 30
	45M	2437	10.45	0.011	17.43	0.055	≤ 30
	60M	2437	10.41	0.011	17.40	0.055	≤ 30
	90M	2437	10.39	0.011	17.38	0.055	≤ 30
	120M	2437	10.35	0.011	17.35	0.054	≤ 30
	135M	2437	10.33	0.011	17.33	0.054	≤ 30
	150M	2437	10.31	0.011	17.28	0.053	≤ 30

Note: The relevant measured result has the offset with cable loss already.

6 dB RF Bandwidth Measurement

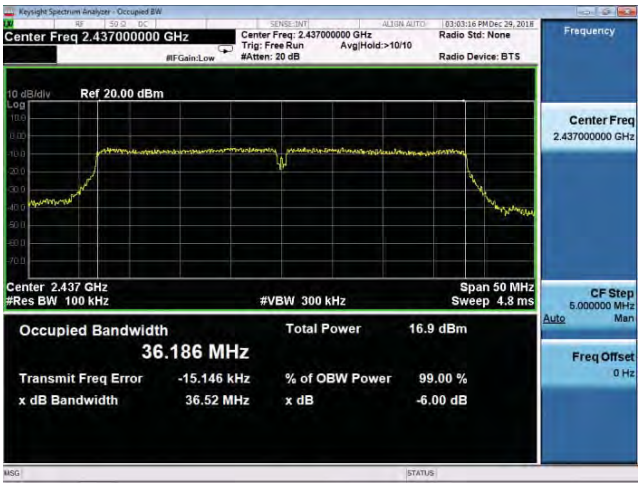
Test Mode	Frequency (MHz)	Measurement (kHz)	Limit (kHz)
Mode 2	2412	8571	≥ 500
	2437	8581	≥ 500
	2462	9045	≥ 500
Mode 3	2412	16600	≥ 500
	2437	16600	≥ 500
	2462	16590	≥ 500
Mode 4	2412	17730	≥ 500
	2437	17850	≥ 500
	2462	17800	≥ 500
Mode 5	2422	36470	≥ 500
	2437	36520	≥ 500
	2452	36530	≥ 500

■ **Test Graphs**

Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

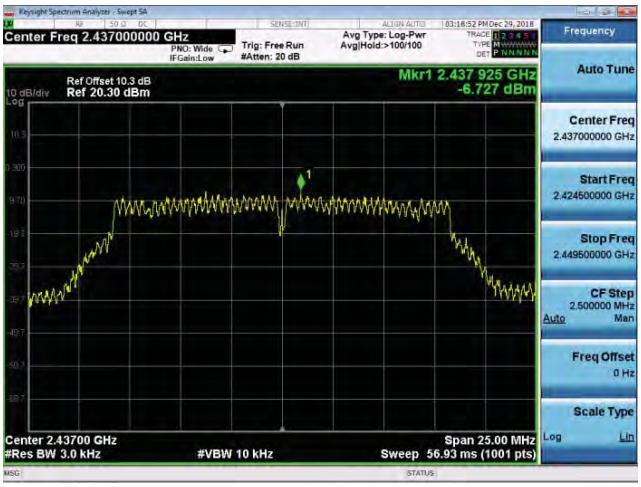
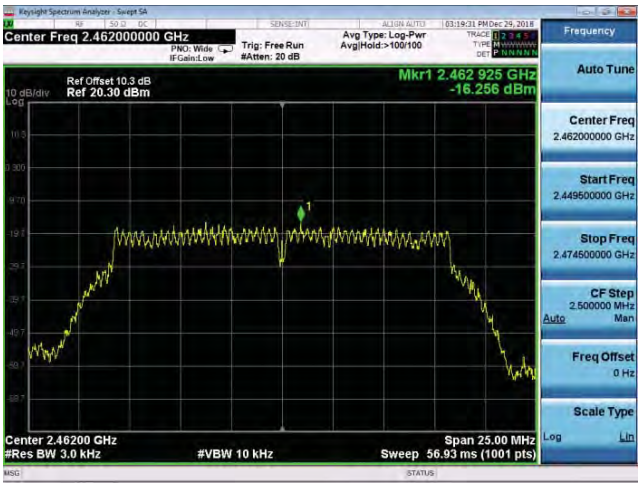
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2437 MHz	
2452 MHz	

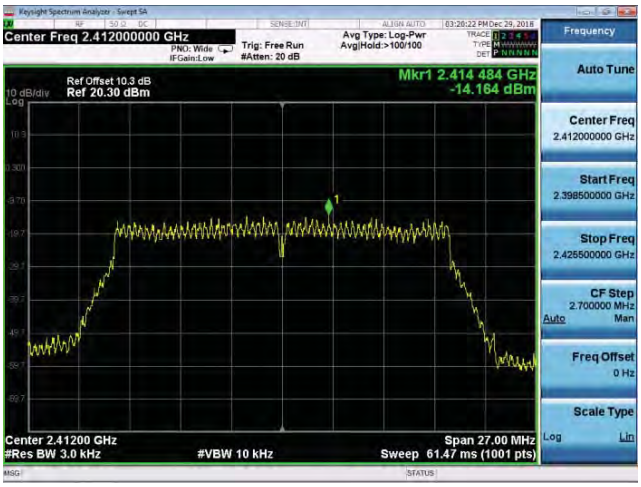
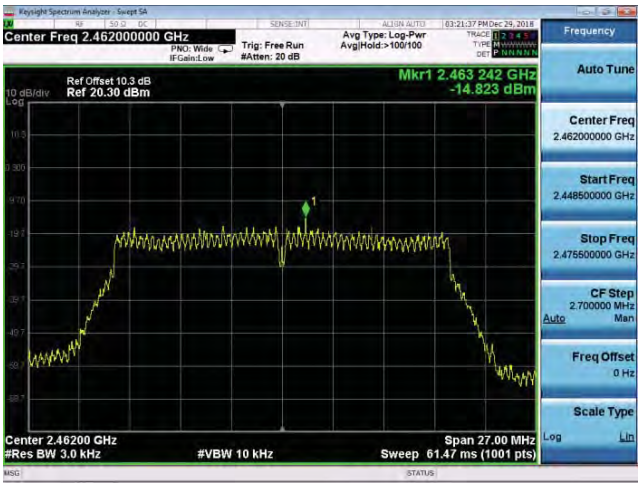
Maximum Power Spectral Density Measurement

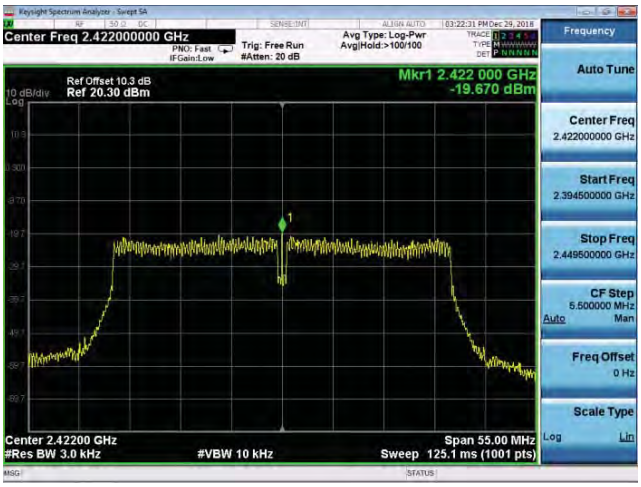
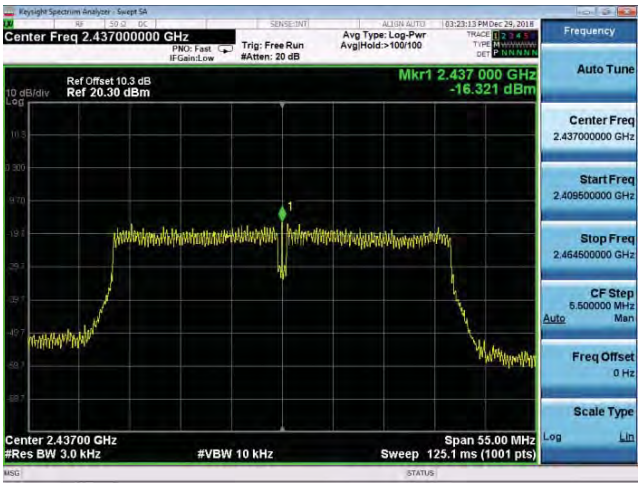
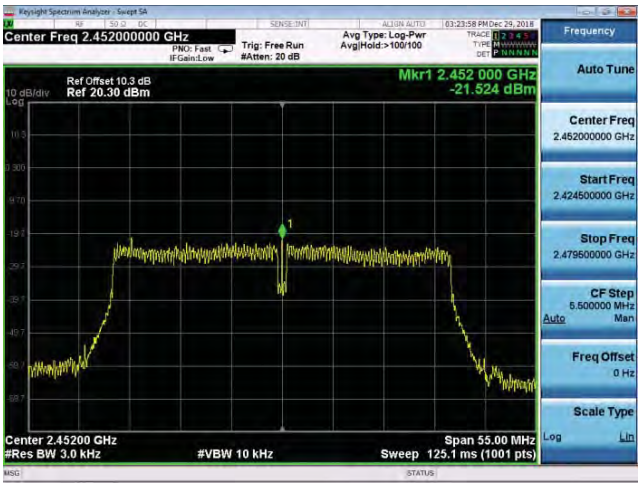
Test Mode	Frequency (MHz)	Measurement (dBm/3 kHz)	Limit (dBm/3 kHz)
Mode 2	2412	-7.677	≤ 8
	2437	-8.191	≤ 8
	2462	-7.657	≤ 8
Mode 3	2412	-12.819	≤ 8
	2437	-6.727	≤ 8
	2462	-16.256	≤ 8
Mode 4	2412	-14.164	≤ 8
	2437	-5.949	≤ 8
	2462	-14.823	≤ 8
Mode 5	2422	-19.670	≤ 8
	2437	-16.321	≤ 8
	2452	-21.524	≤ 8

■ **Test Graphs**

Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

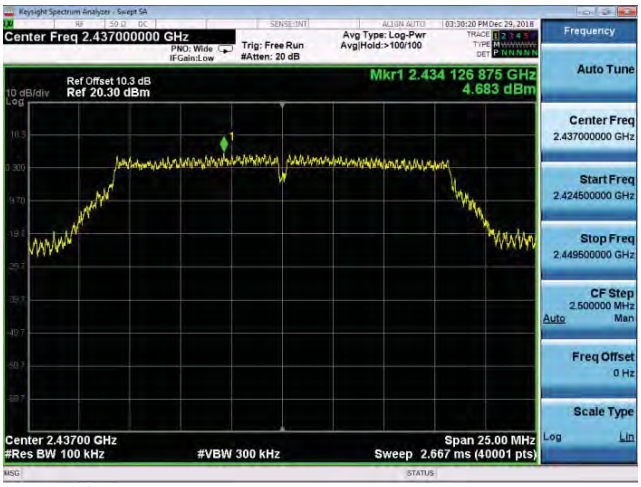
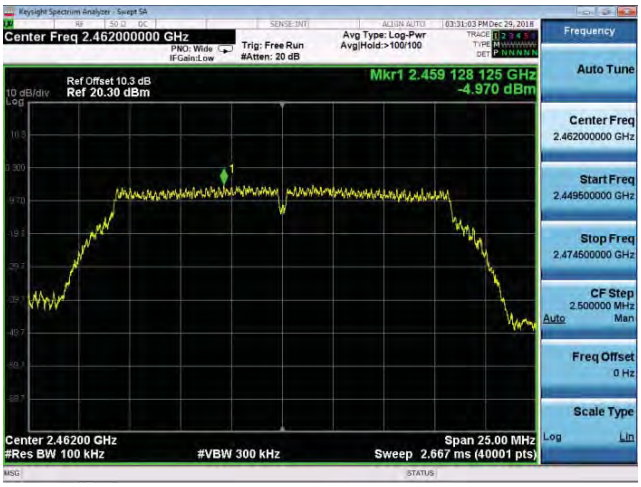
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2437 MHz	
2452 MHz	

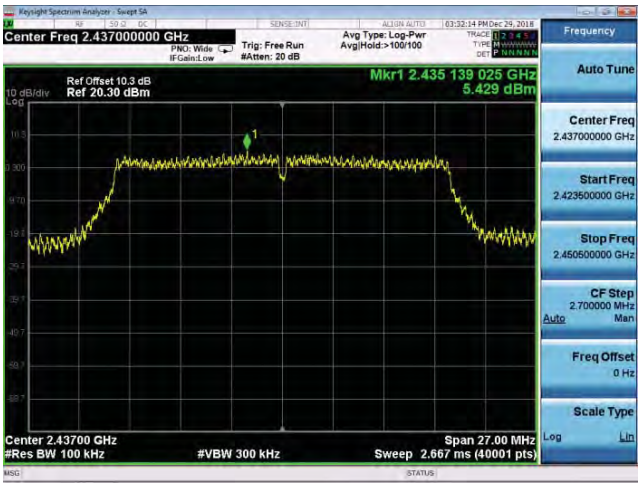
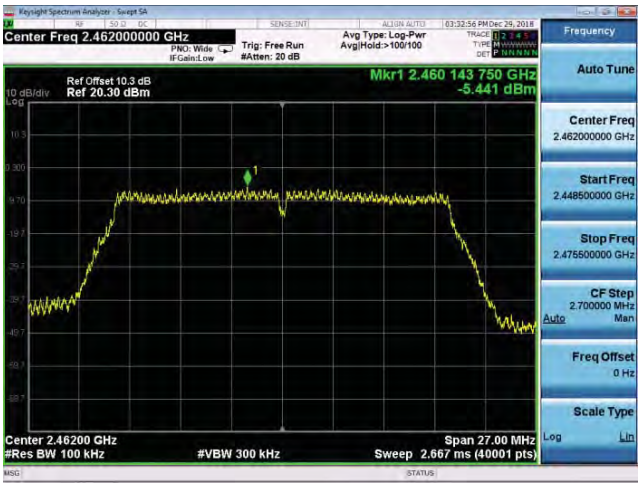
Out of Band Conducted Emissions Measurement

■ **Test Graphs**

Reference level

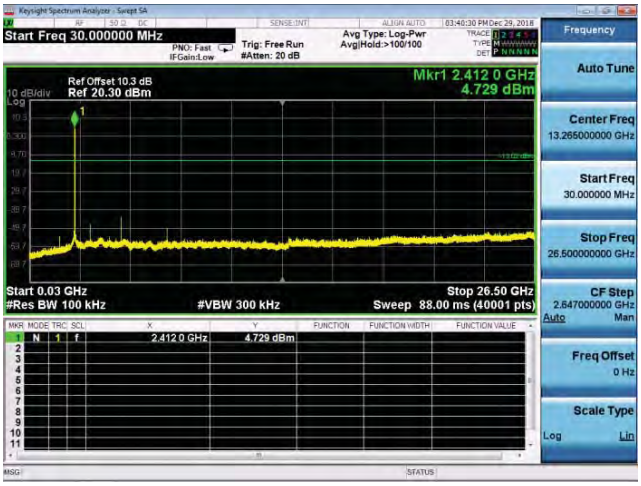
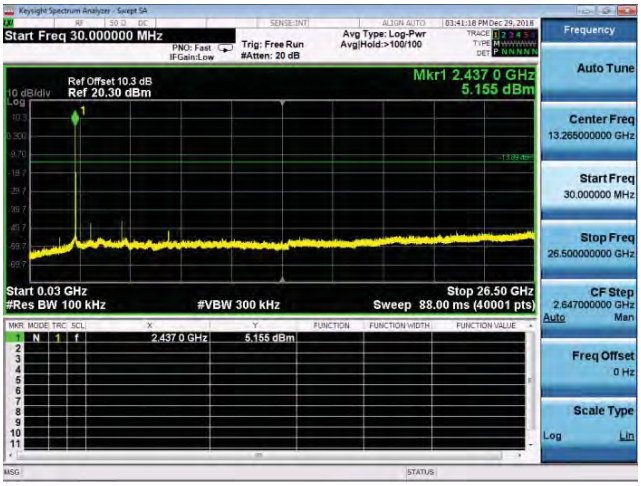
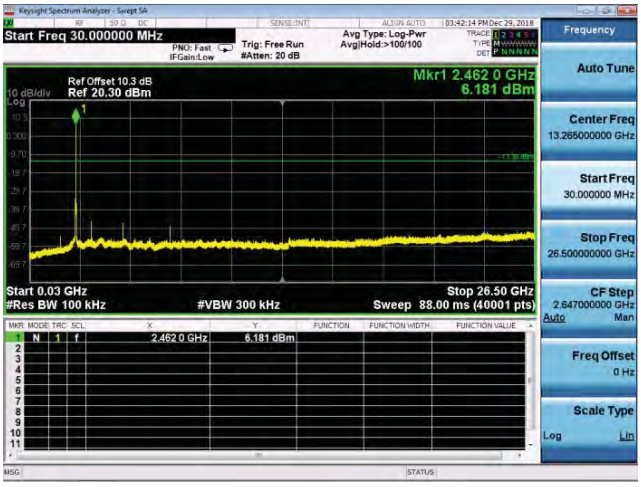
Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

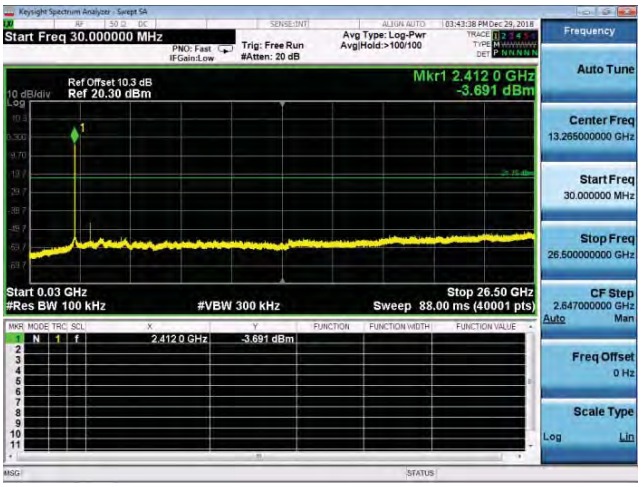
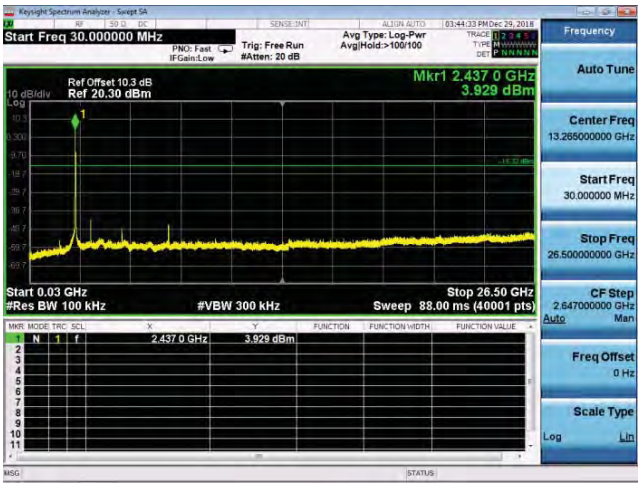
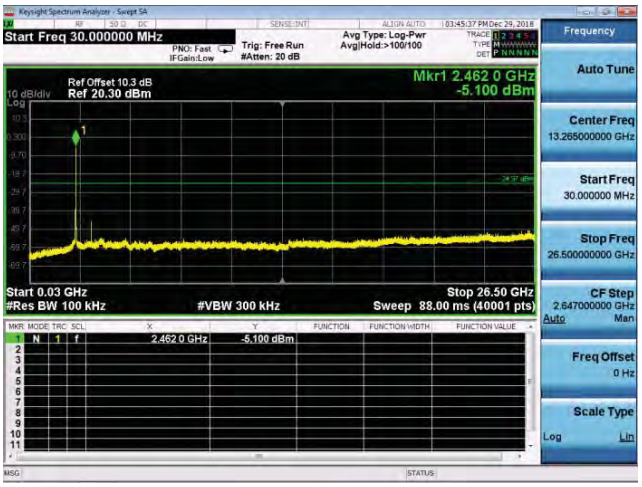
Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

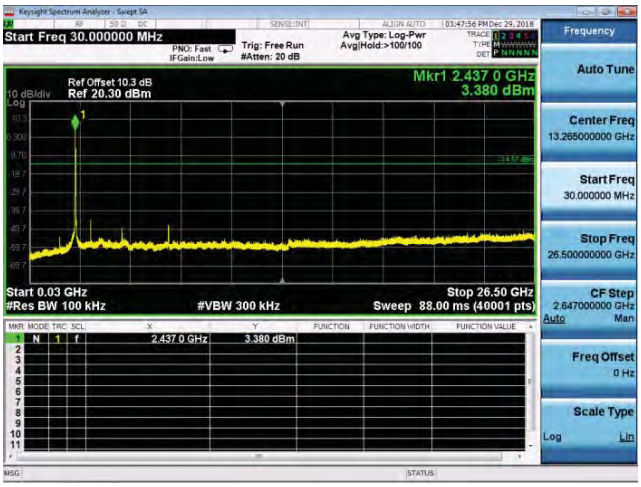
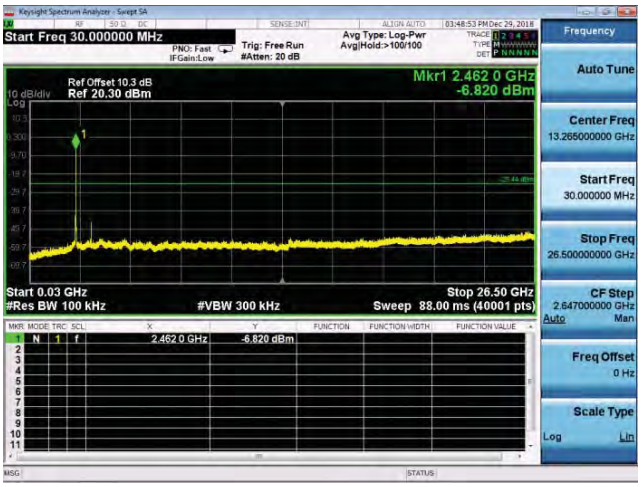
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

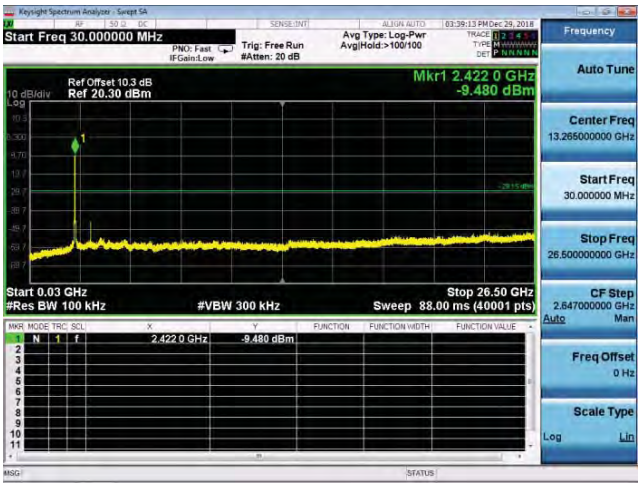
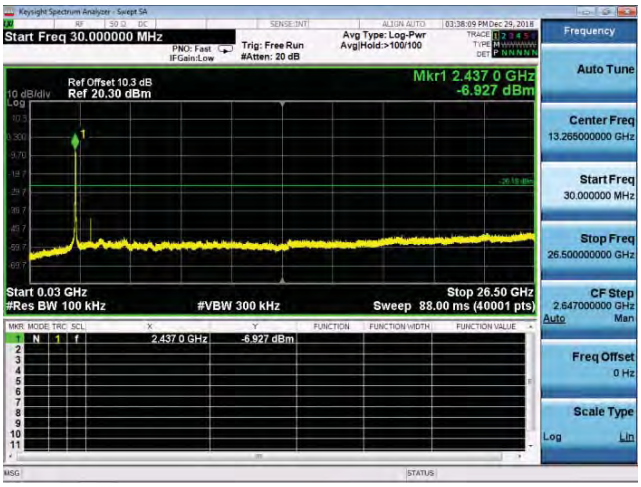
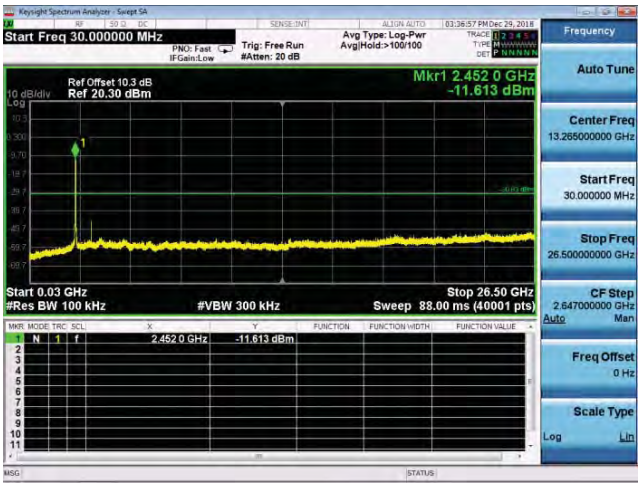
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2437 MHz	
2452 MHz	

Out of Band Conducted Emissions

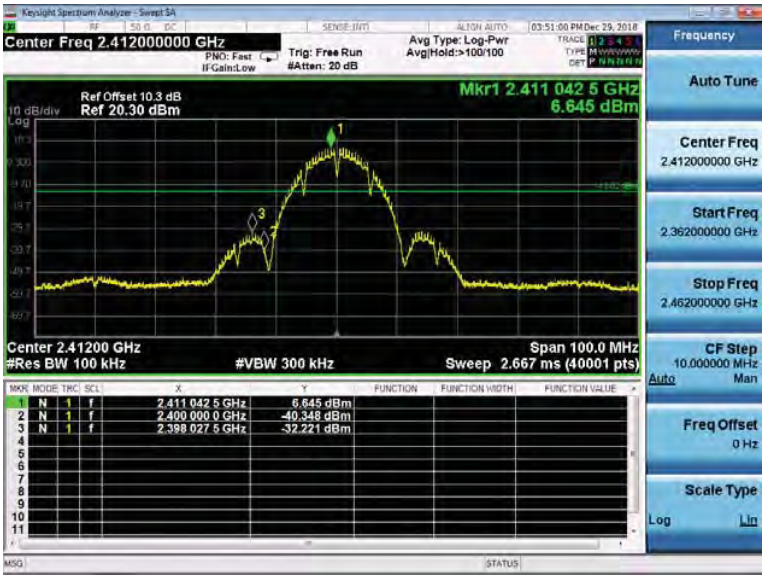
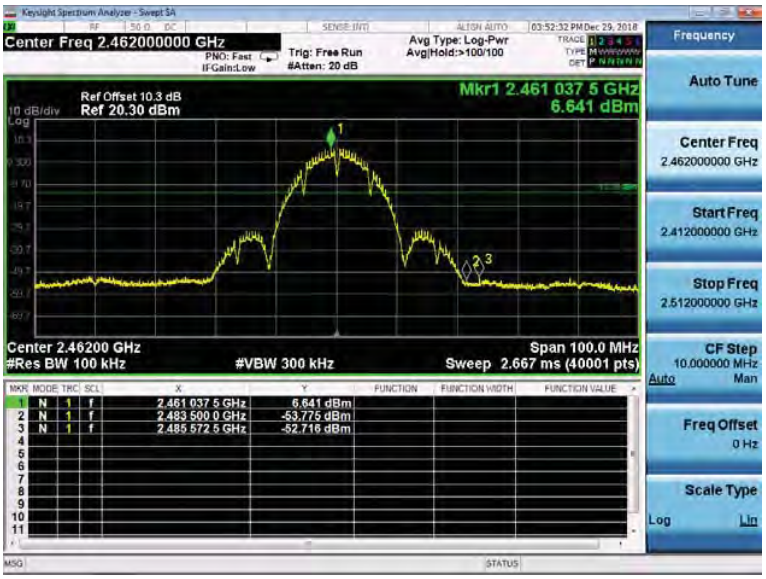
Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

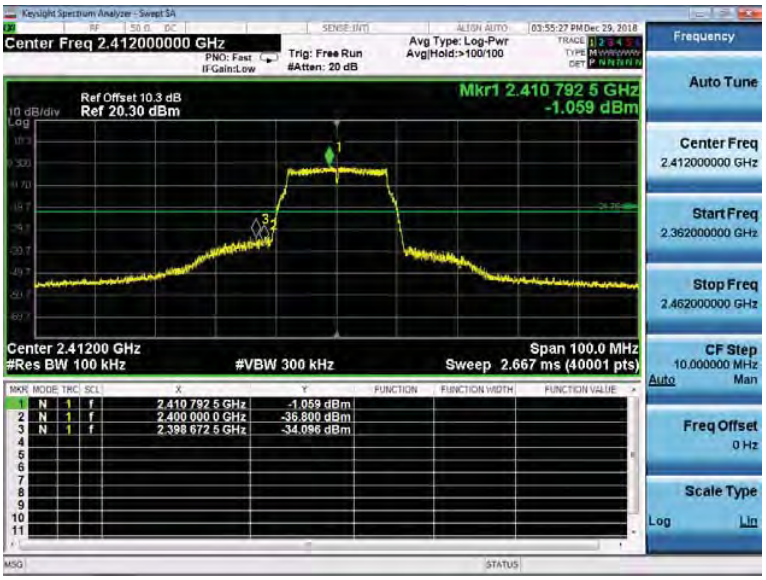
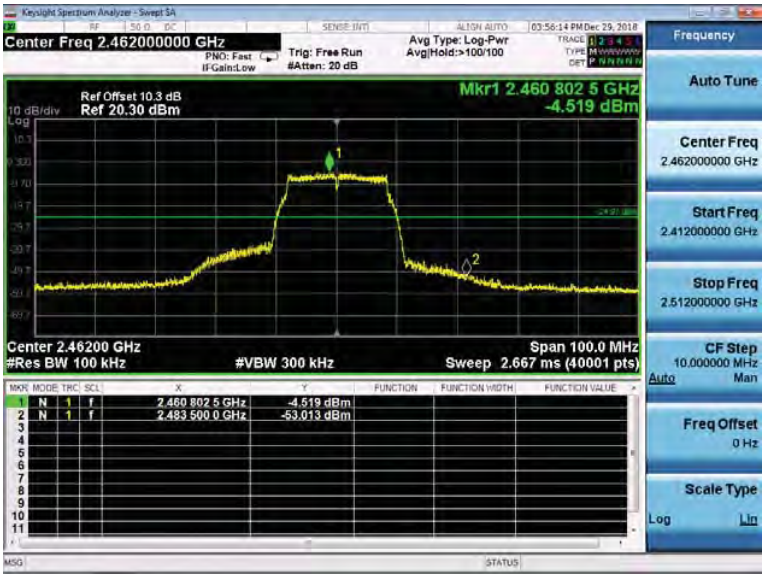
Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

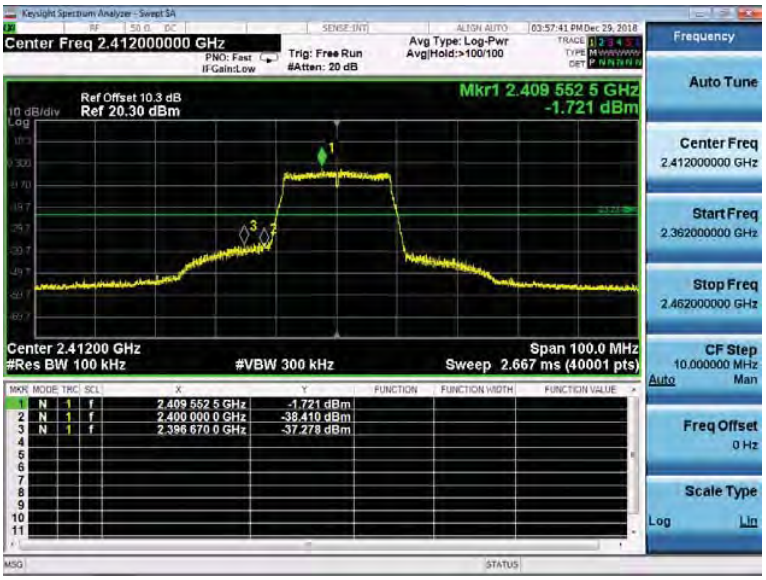
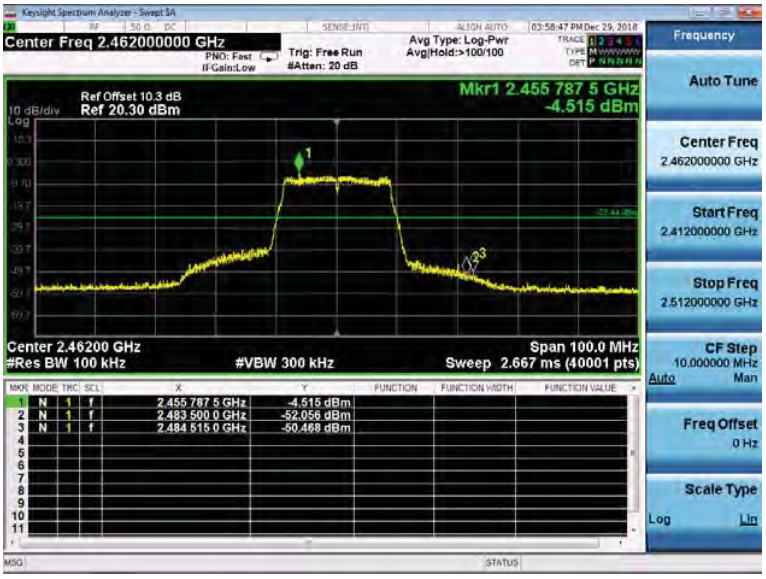
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2437 MHz	
2462 MHz	

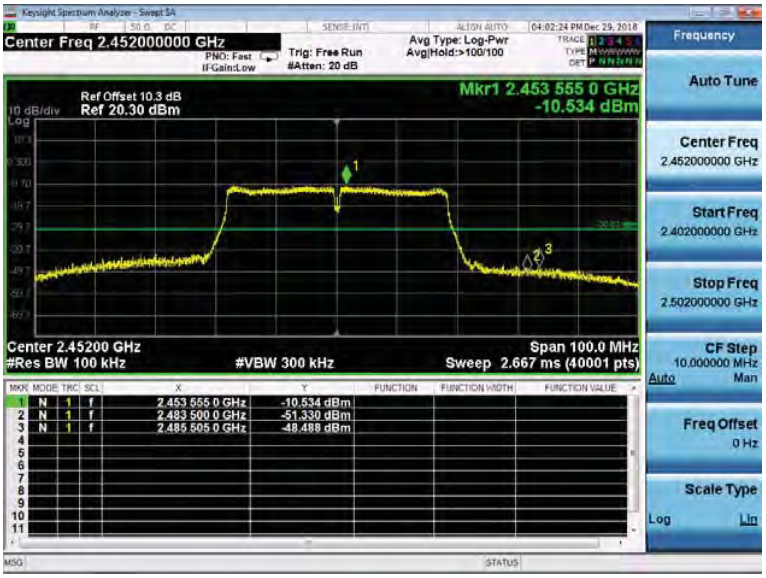
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2437 MHz	
2452 MHz	

Conducted Band Edge

Mode 2: IEEE 802.11b Continuous TX mode	
2412 MHz	
2462 MHz	

Mode 3: IEEE 802.11g Continuous TX mode	
2412 MHz	
2462 MHz	

Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
2412 MHz	
2462 MHz	

Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	
2422 MHz	
2452 MHz	

Annex B. Radiated Emission Test Results

Power setting 1_Antenna Type: PCB Trace Antenna

Harmonic

Below 1 GHz

Standard:	FCC Part 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2412 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Test Mode:	Mode 1		

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
114.3900	50.15	-13.62	36.53	43.50	-6.97	QP	H
170.6500	44.92	-10.44	34.48	43.50	-9.02	QP	H
239.5200	45.25	-12.29	32.96	46.00	-13.04	QP	H
320.0300	43.83	-9.65	34.18	46.00	-11.82	QP	H
715.7900	41.16	-1.51	39.65	46.00	-6.35	QP	H
862.2600	33.85	1.12	34.97	46.00	-11.03	QP	H
113.4200	43.31	-13.80	29.51	43.50	-13.99	QP	V
213.3300	48.19	-13.45	34.74	43.50	-8.76	QP	V
244.3700	48.96	-12.32	36.64	46.00	-9.36	QP	V
448.0700	43.02	-6.13	36.89	46.00	-9.11	QP	V
665.3500	39.46	-2.27	37.19	46.00	-8.81	QP	V
930.1600	32.51	2.26	34.77	46.00	-11.23	QP	V

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

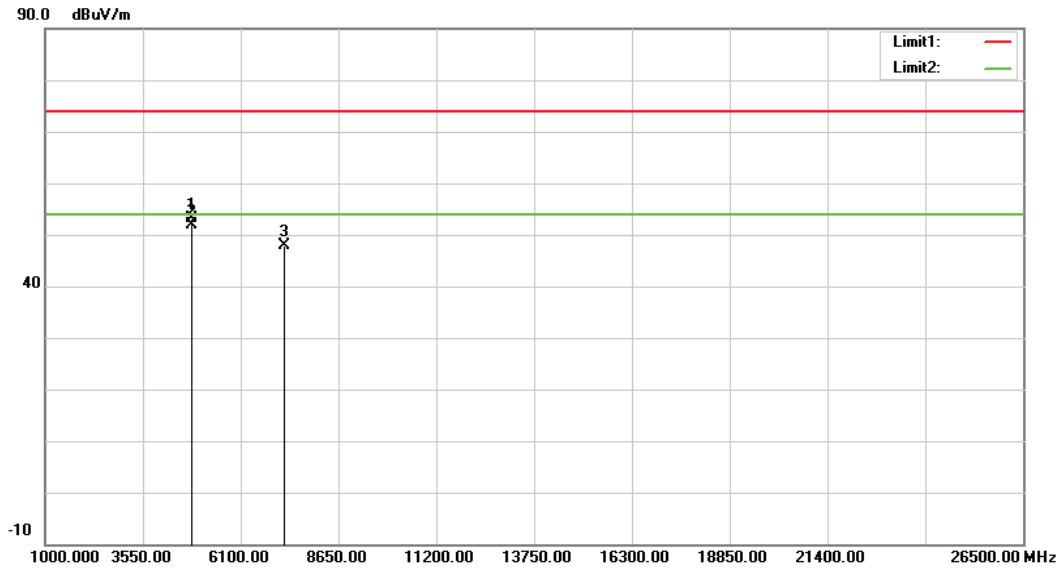
Example: 36.53= -13.62+50.15

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Above 1 GHz

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2412 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	58.16	-5.05	53.11	74.00	-20.89	peak
2	4824.000	56.95	-5.05	51.90	54.00	-2.10	AVG
3	7236.000	48.84	-0.88	47.96	74.00	-26.04	peak

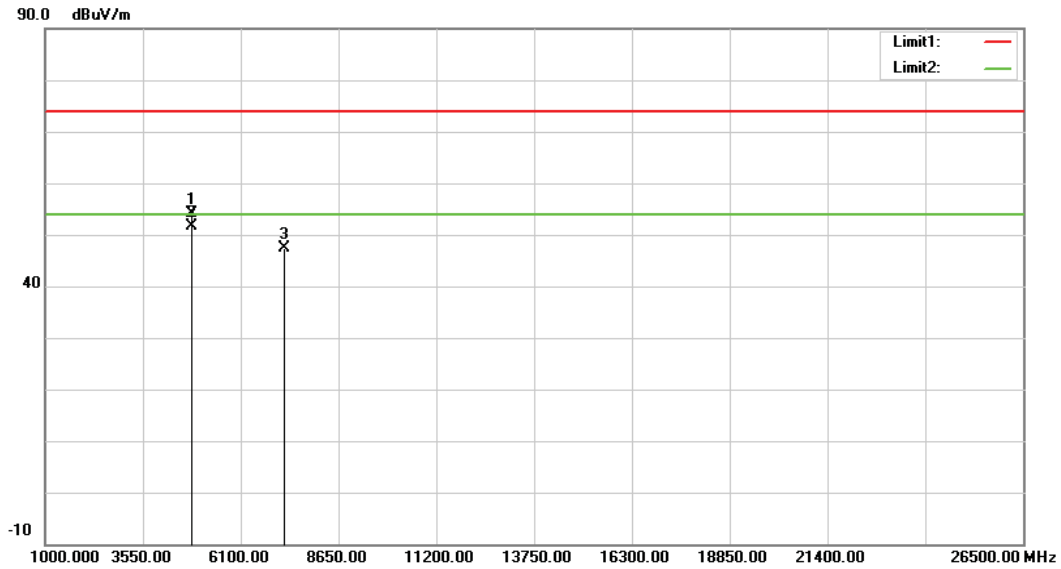
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 53.11= -5.05+58.16

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2412 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	59.15	-5.05	54.10	74.00	-19.90	peak
2	4824.000	56.78	-5.05	51.73	54.00	-2.27	AVG
3	7236.000	48.24	-0.88	47.36	74.00	-26.64	peak

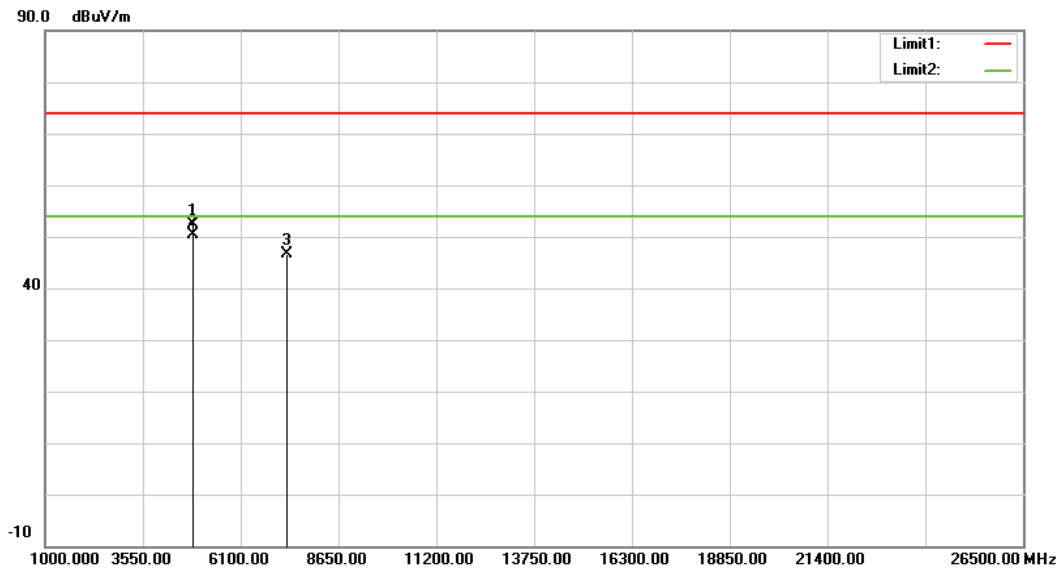
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 54.10= -5.05+59.15

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2437 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



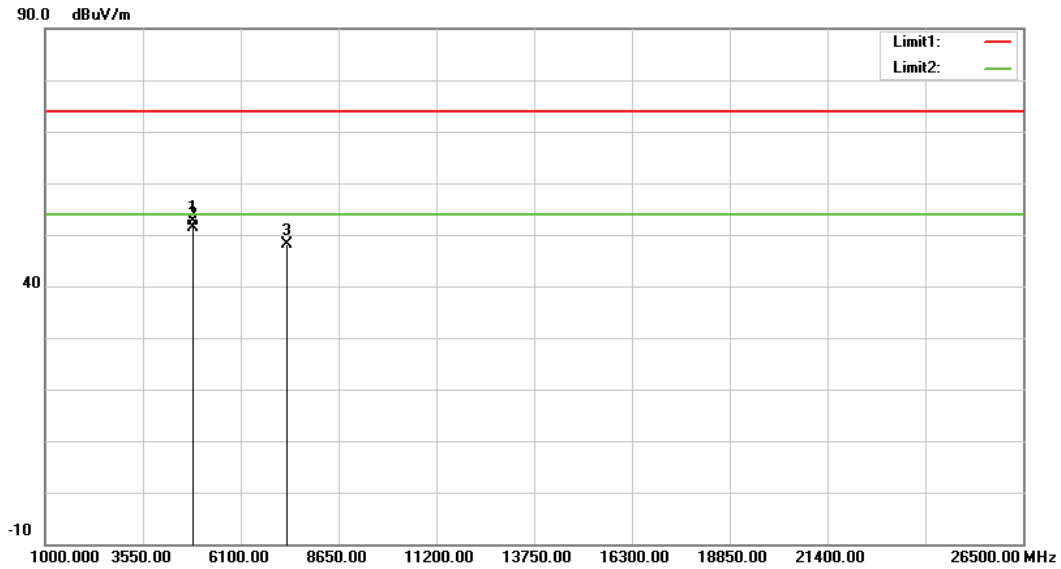
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	57.49	-5.09	52.40	74.00	-21.60	peak
2	4874.000	55.59	-5.09	50.50	54.00	-3.50	AVG
3	7311.000	47.39	-0.67	46.72	74.00	-27.28	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2437 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Vertical		



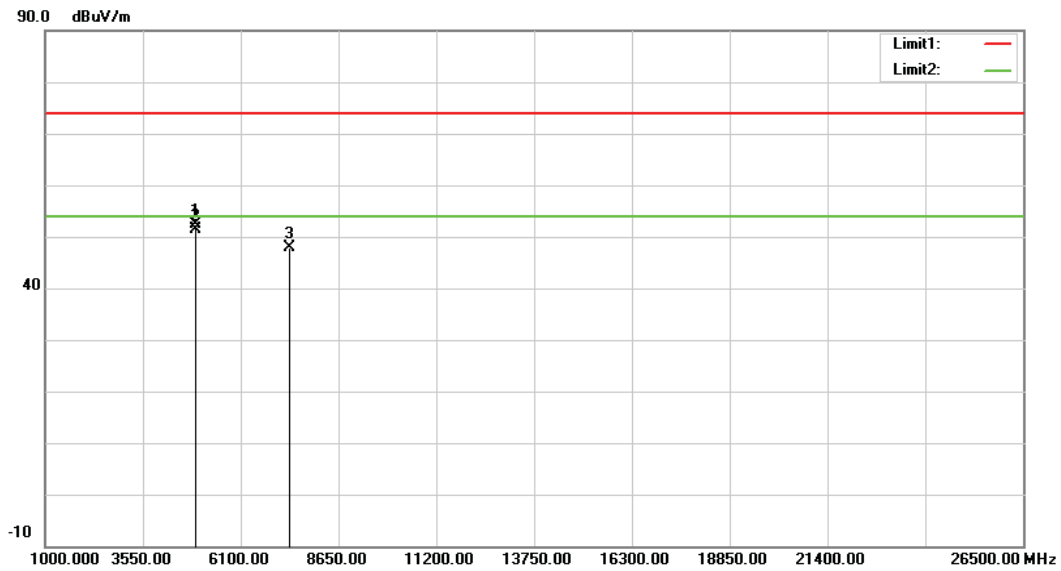
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	57.62	-5.09	52.53	74.00	-21.47	peak
2	4874.000	56.47	-5.09	51.38	54.00	-2.62	AVG
3	7311.000	48.90	-0.67	48.23	74.00	-25.77	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2462 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



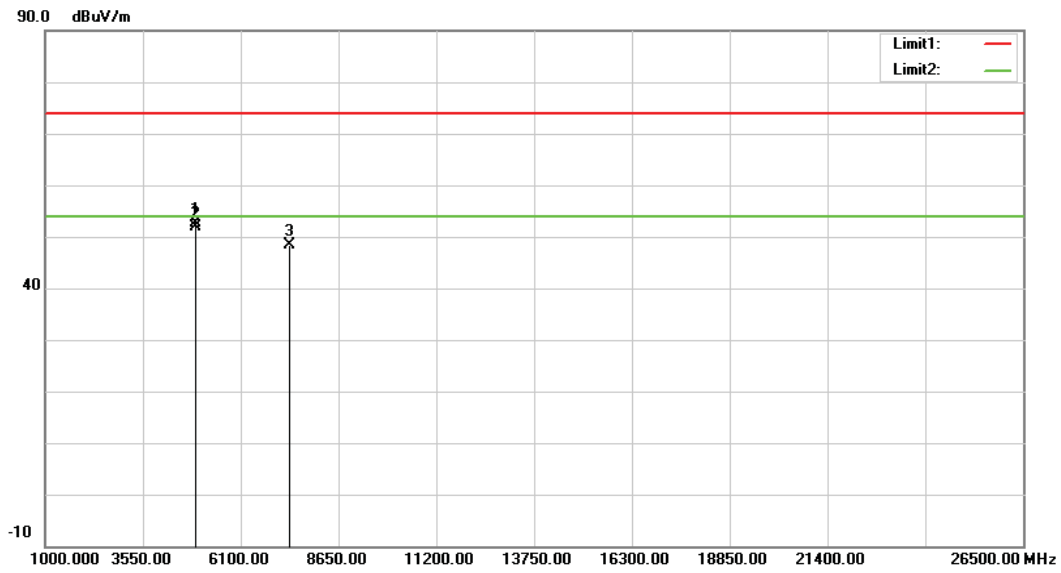
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4927.000	57.42	-5.14	52.28	74.00	-21.72	peak
2	4927.000	56.40	-5.14	51.26	54.00	-2.74	AVG
3	7386.000	48.27	-0.45	47.82	74.00	-26.18	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2462 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Vertical		



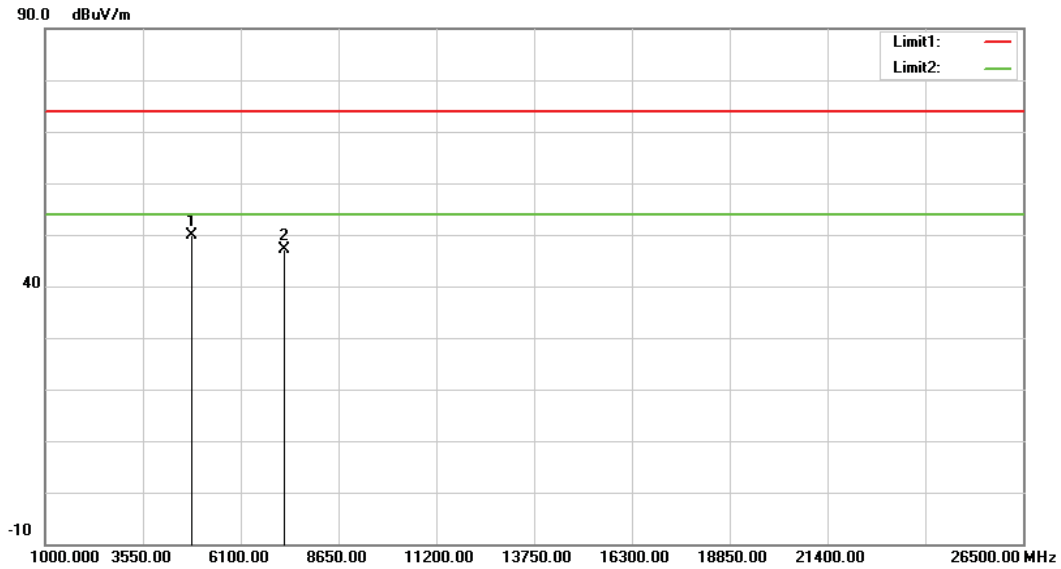
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	57.85	-5.14	52.71	74.00	-21.29	peak
2	4924.000	57.07	-5.14	51.93	54.00	-2.07	AVG
3	7386.000	48.79	-0.45	48.34	74.00	-25.66	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2412 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 3		
Ant.Polar.:	Horizontal		



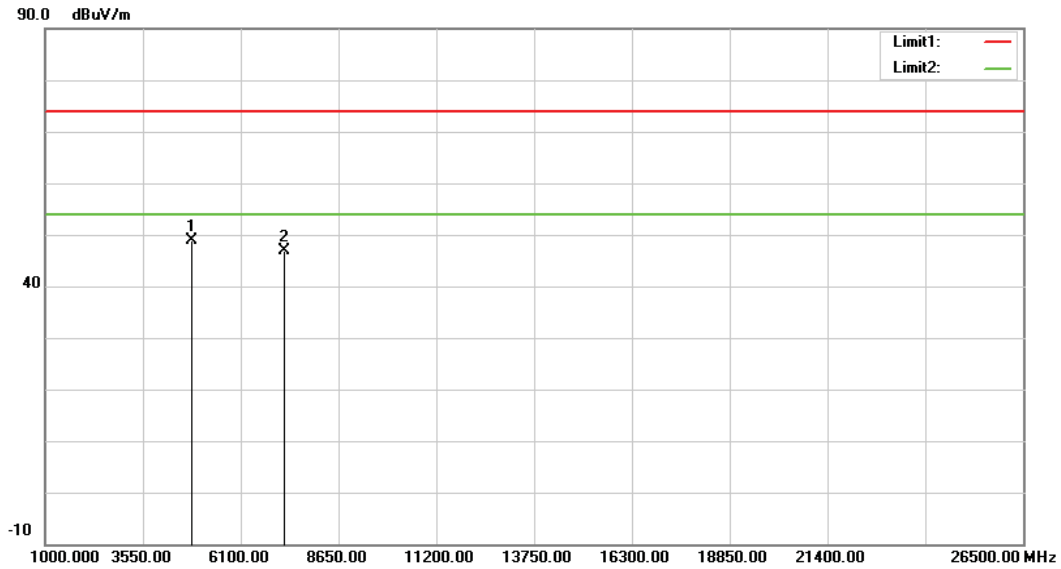
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	54.92	-5.05	49.87	74.00	-24.13	peak
2	7236.000	48.01	-0.88	47.13	74.00	-26.87	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2412 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 3		
Ant.Polar.:	Vertical		



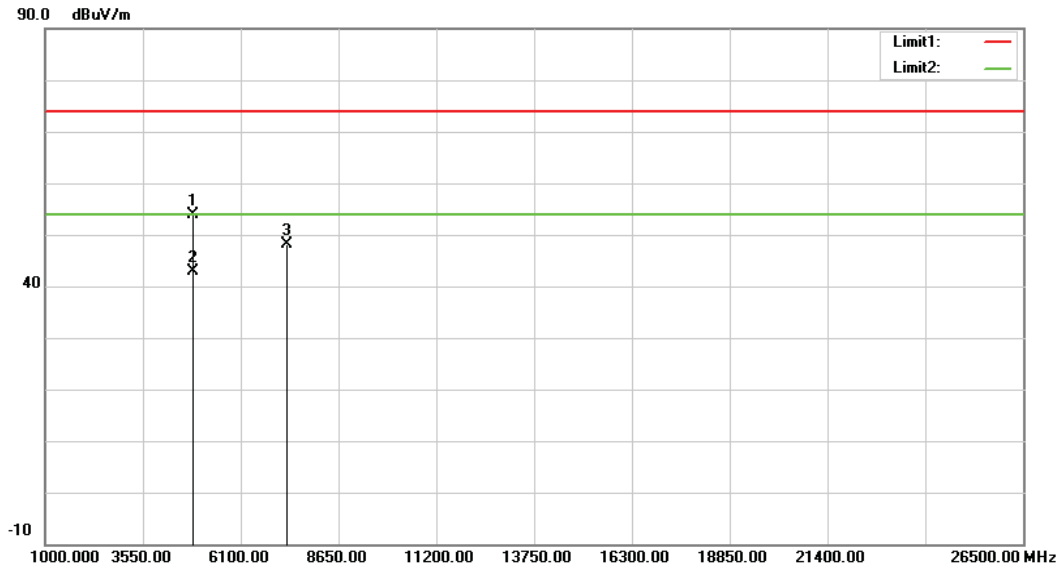
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4825.000	53.91	-5.05	48.86	74.00	-25.14	peak
2	7236.000	47.64	-0.88	46.76	74.00	-27.24	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2437 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 3		
Ant.Polar.:	Horizontal		



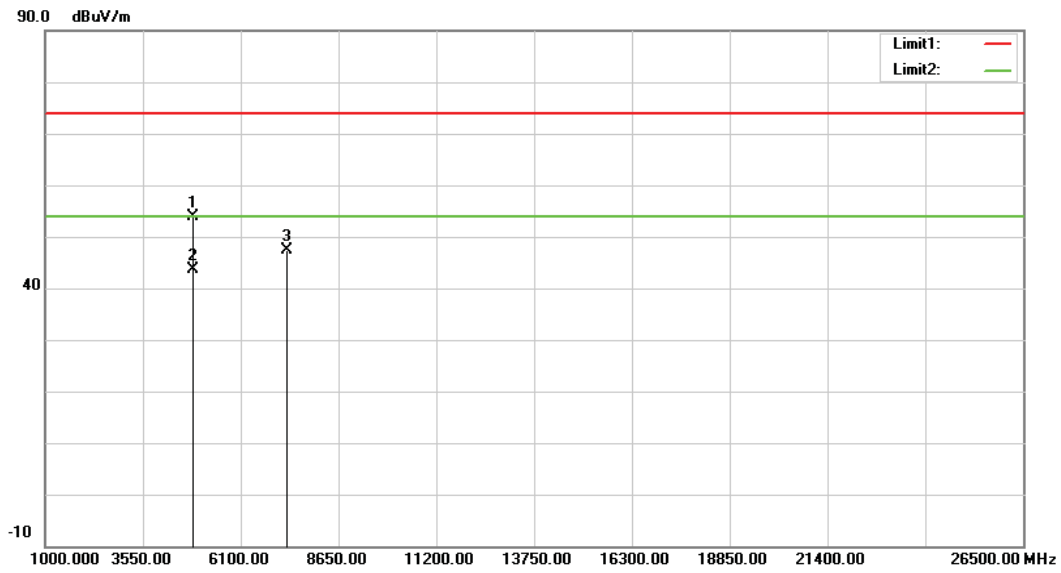
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	59.00	-5.09	53.91	74.00	-20.09	peak
2	4874.000	47.95	-5.09	42.86	54.00	-11.14	AVG
3	7311.000	48.82	-0.67	48.15	74.00	-25.85	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2437 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 3		
Ant.Polar.:	Vertical		



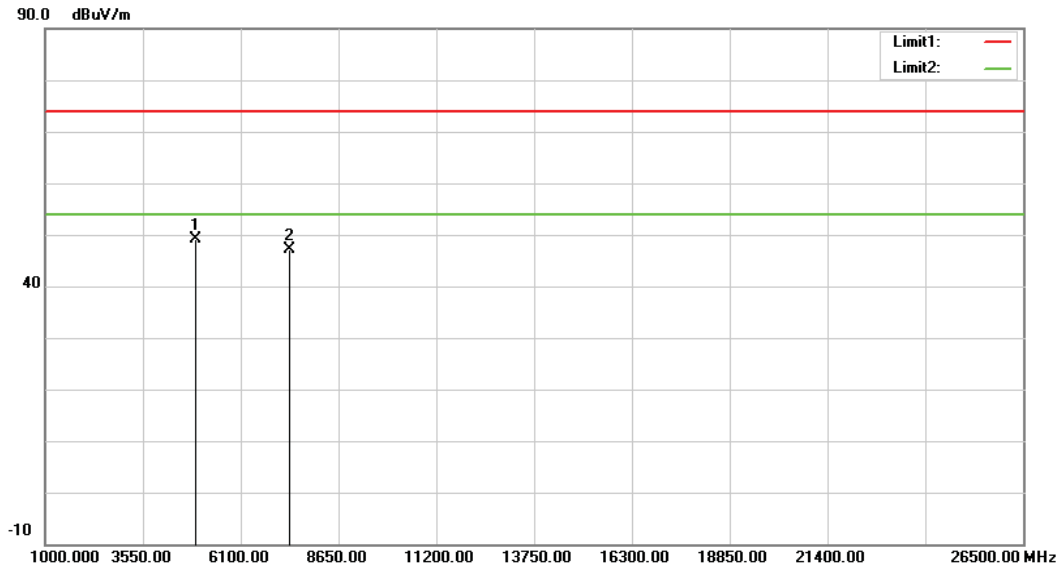
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	58.90	-5.09	53.81	74.00	-20.19	peak
2	4874.000	48.70	-5.09	43.61	54.00	-10.39	AVG
3	7311.000	48.10	-0.67	47.43	74.00	-26.57	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2462 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 3		
Ant.Polar.:	Horizontal		



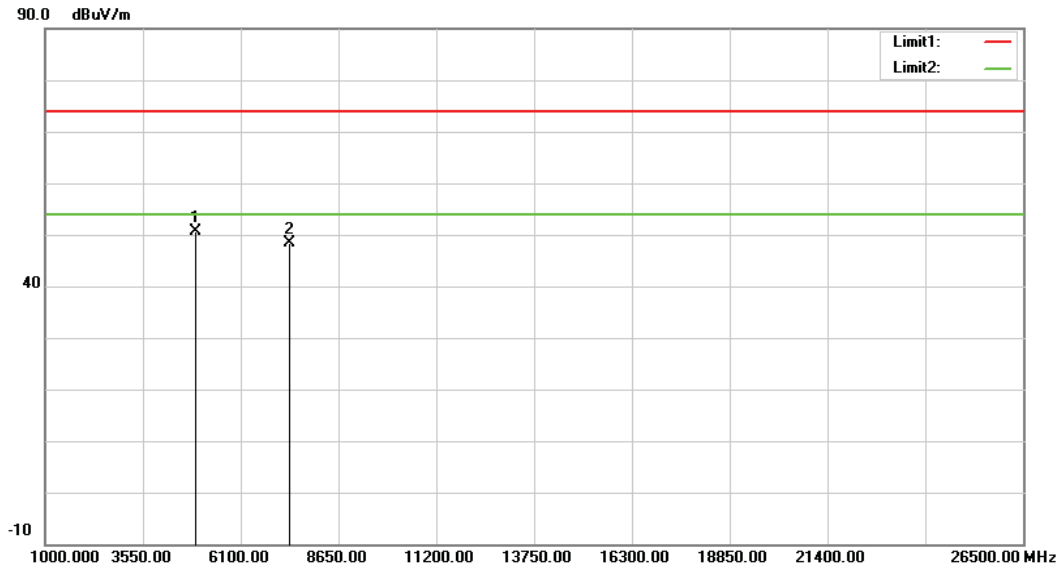
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	54.21	-5.14	49.07	74.00	-24.93	peak
2	7386.000	47.49	-0.45	47.04	74.00	-26.96	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2462 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 3		
Ant.Polar.:	Vertical		



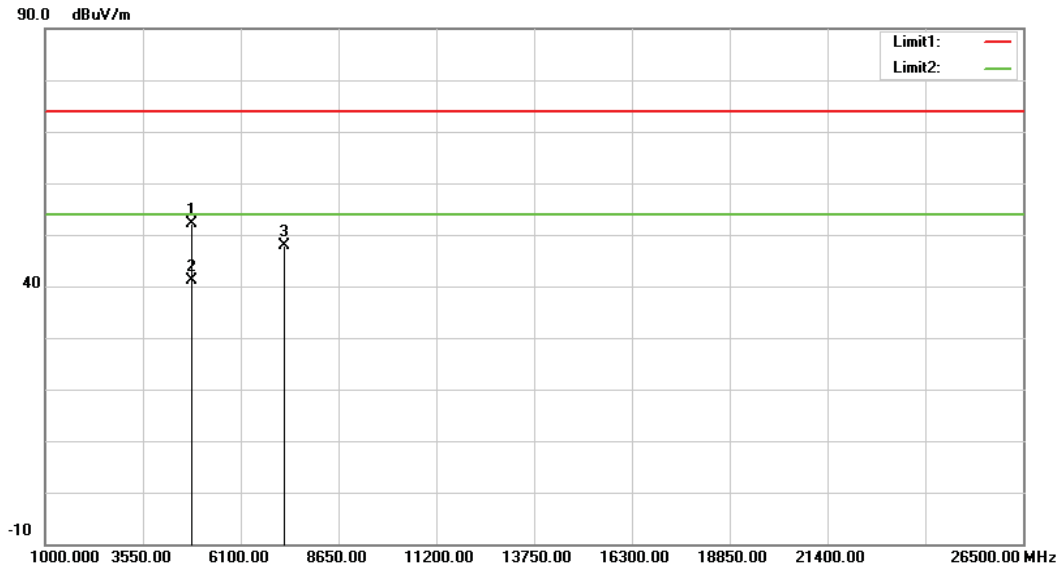
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	55.72	-5.14	50.58	74.00	-23.42	peak
2	7386.000	48.83	-0.45	48.38	74.00	-25.62	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2412 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



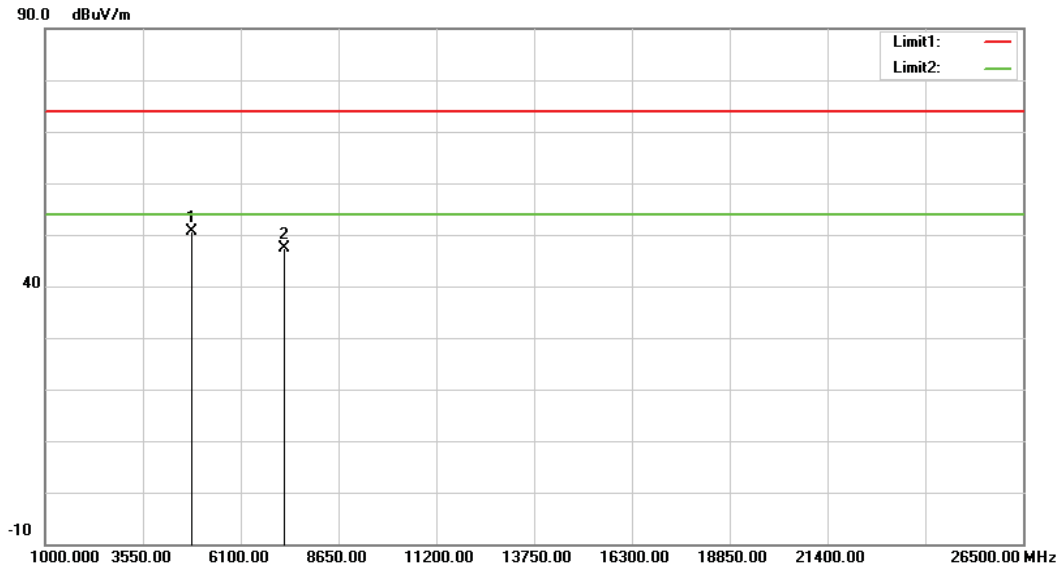
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	57.26	-5.05	52.21	74.00	-21.79	peak
2	4824.000	46.21	-5.05	41.16	54.00	-12.84	AVG
3	7236.000	48.66	-0.88	47.78	74.00	-26.22	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2412 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Vertical		



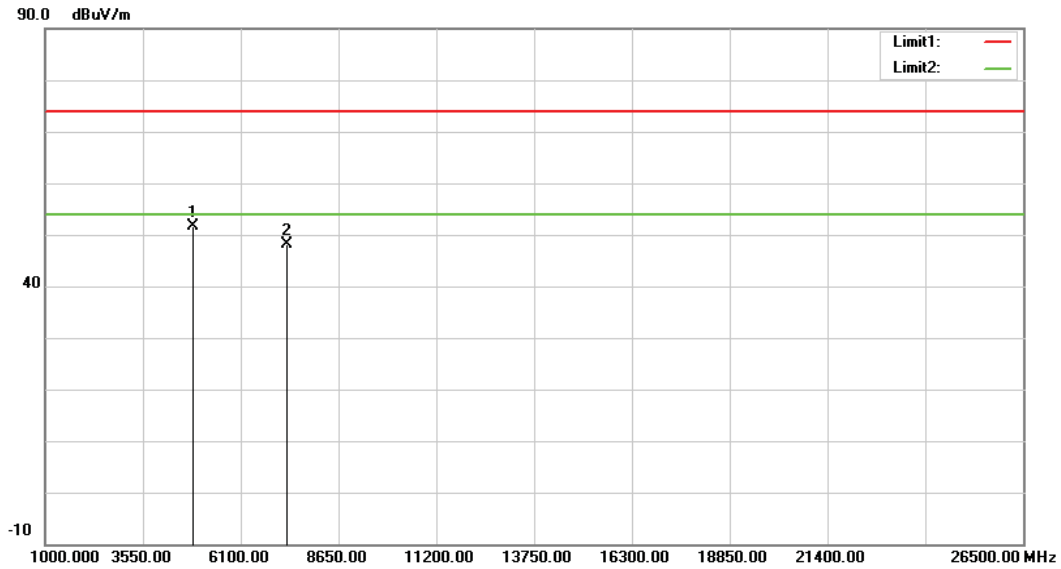
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4824.000	55.70	-5.05	50.65	74.00	-23.35	peak
2	7236.000	48.25	-0.88	47.37	74.00	-26.63	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2437 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



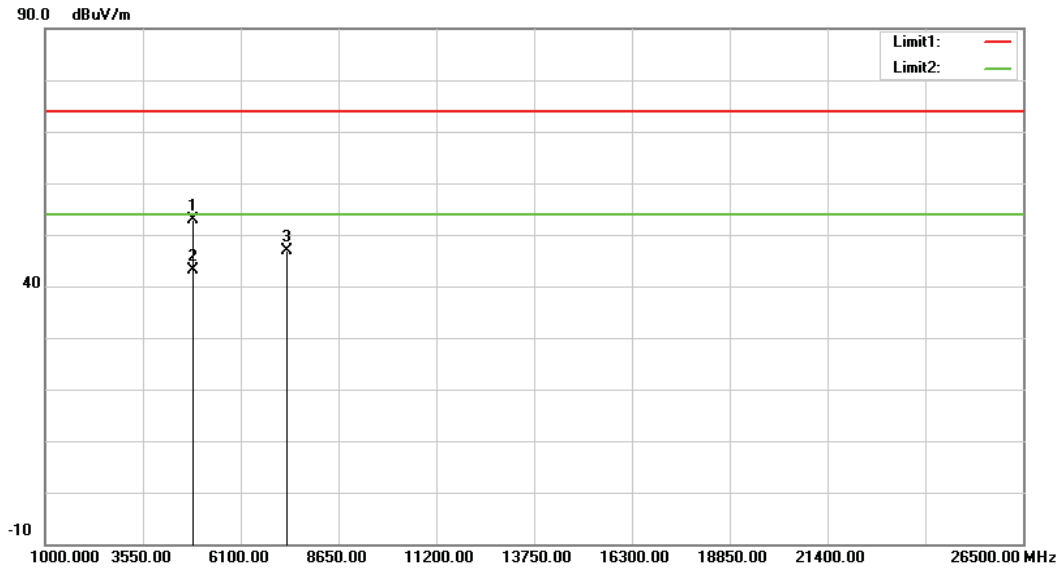
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	56.68	-5.09	51.59	74.00	-22.41	peak
2	7311.000	48.87	-0.67	48.20	74.00	-25.80	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2437 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Vertical		



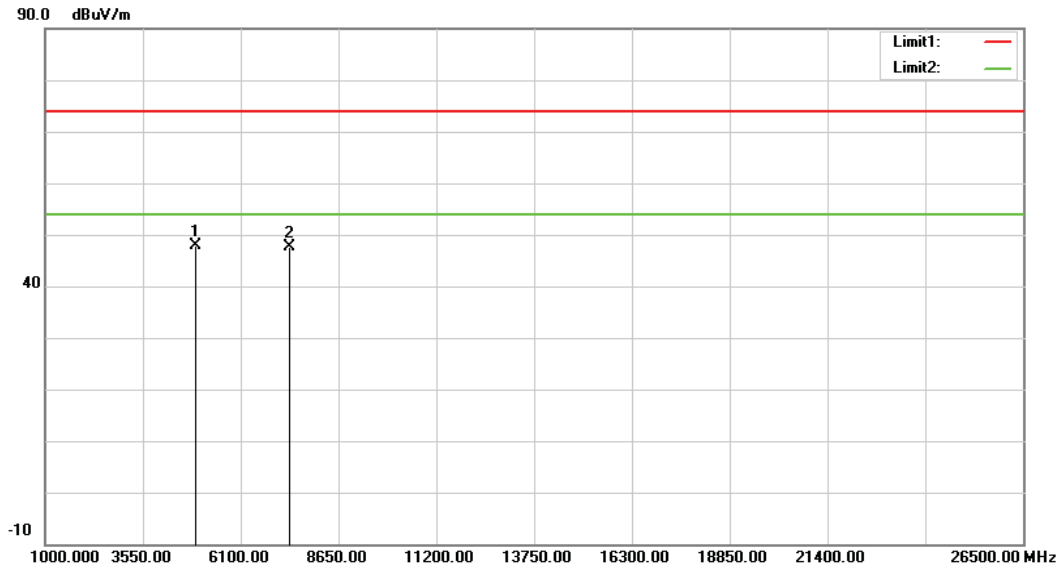
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	57.91	-5.09	52.82	74.00	-21.18	peak
2	4874.000	48.32	-5.09	43.23	54.00	-10.77	AVG
3	7311.000	47.52	-0.67	46.85	74.00	-27.15	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2462 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



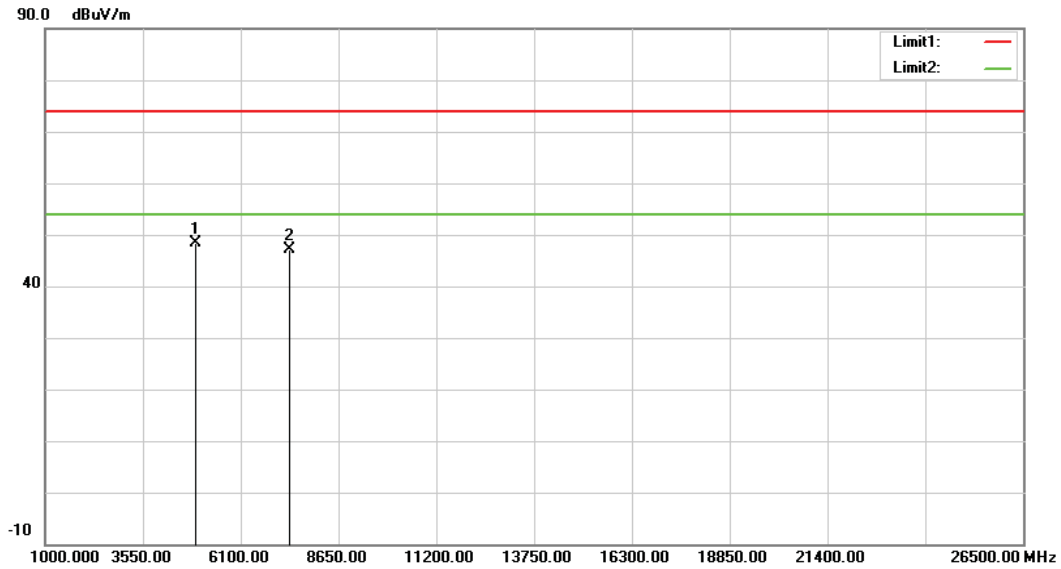
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	53.00	-5.14	47.86	74.00	-26.14	peak
2	7386.000	48.18	-0.45	47.73	74.00	-26.27	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2462 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Vertical		



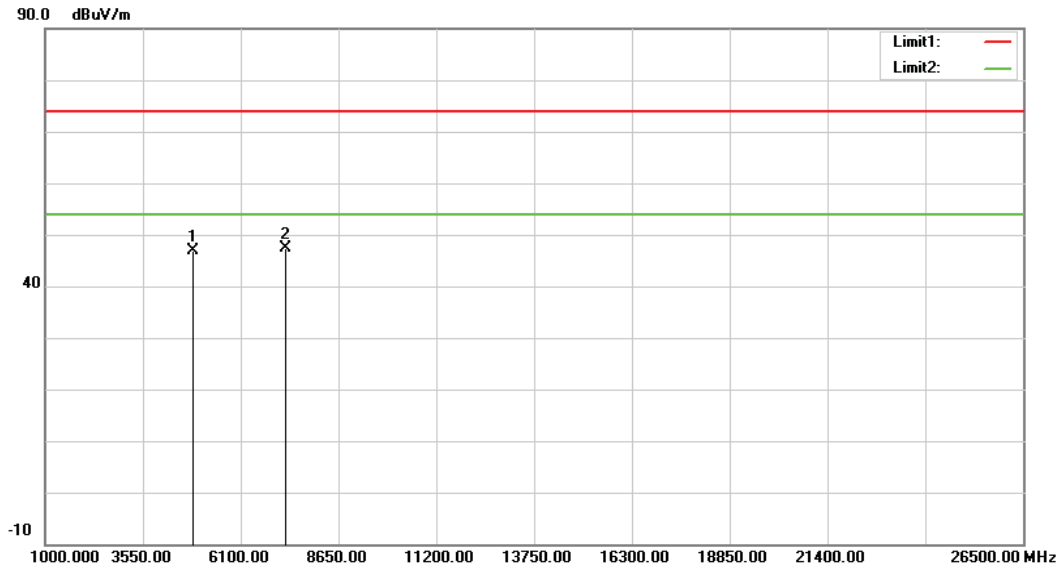
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4924.000	53.53	-5.14	48.39	74.00	-25.61	peak
2	7386.000	47.64	-0.45	47.19	74.00	-26.81	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2422 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 5		
Ant.Polar.:	Horizontal		



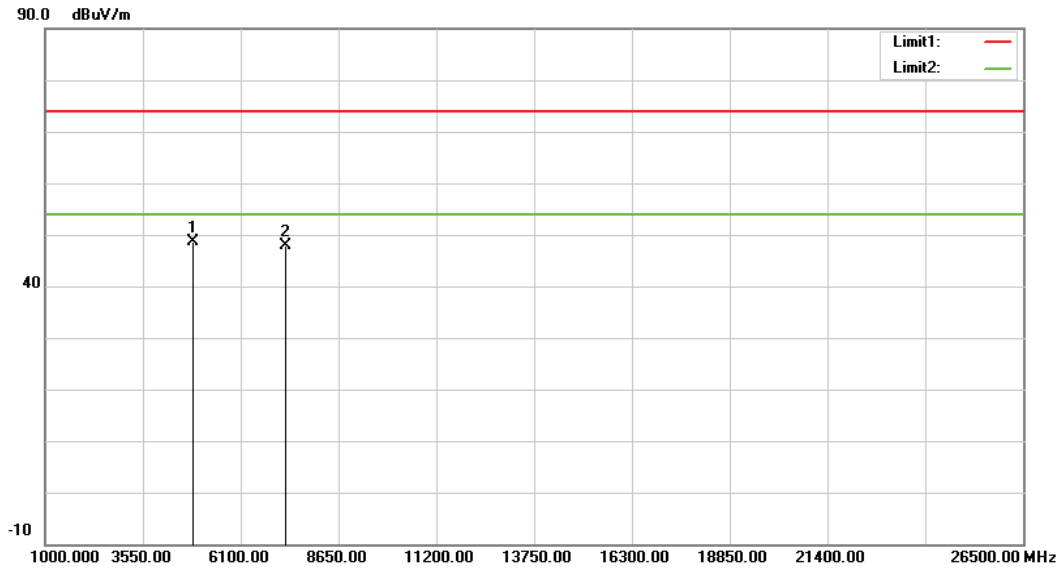
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4844.000	51.96	-5.07	46.89	74.00	-27.11	peak
2	7266.000	48.19	-0.79	47.40	74.00	-26.60	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2422 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 5		
Ant.Polar.:	Vertical		



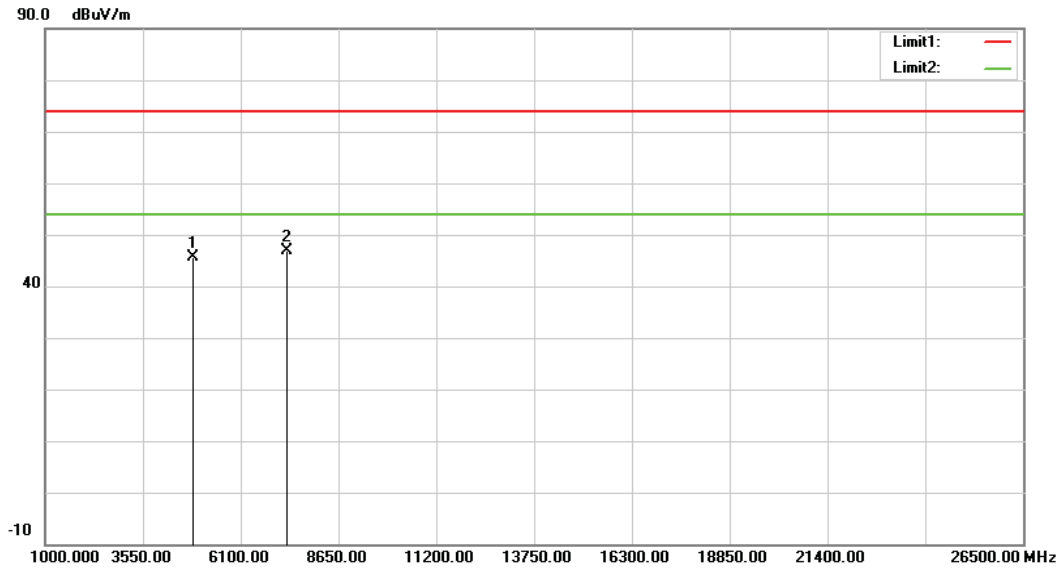
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4844.000	53.78	-5.07	48.71	74.00	-25.29	peak
2	7266.000	48.74	-0.79	47.95	74.00	-26.05	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2437 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 5		
Ant.Polar.:	Horizontal		



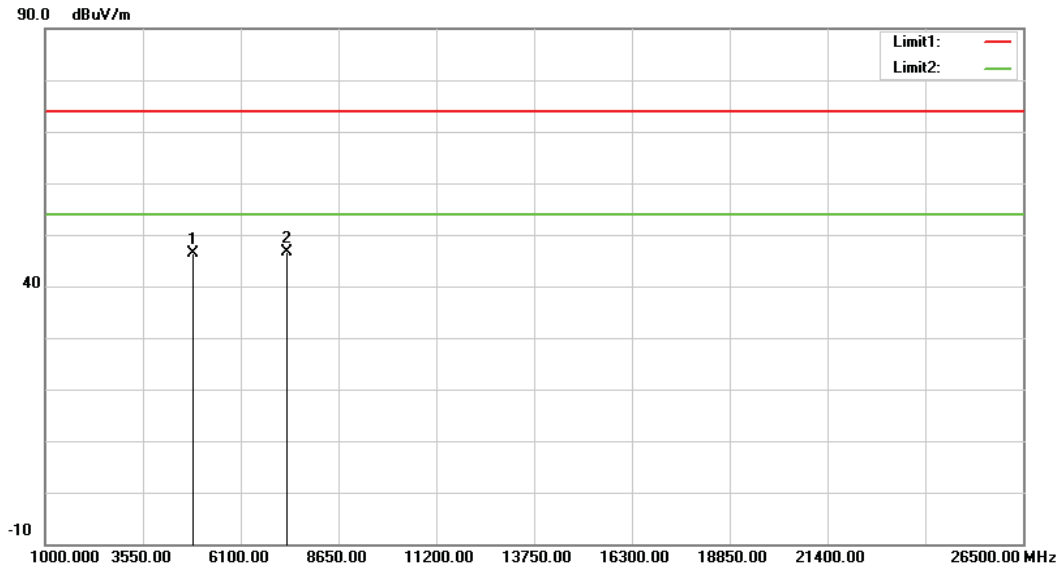
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	50.81	-5.09	45.72	74.00	-28.28	peak
2	7311.000	47.66	-0.67	46.99	74.00	-27.01	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2437 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 5		
Ant.Polar.:	Vertical		



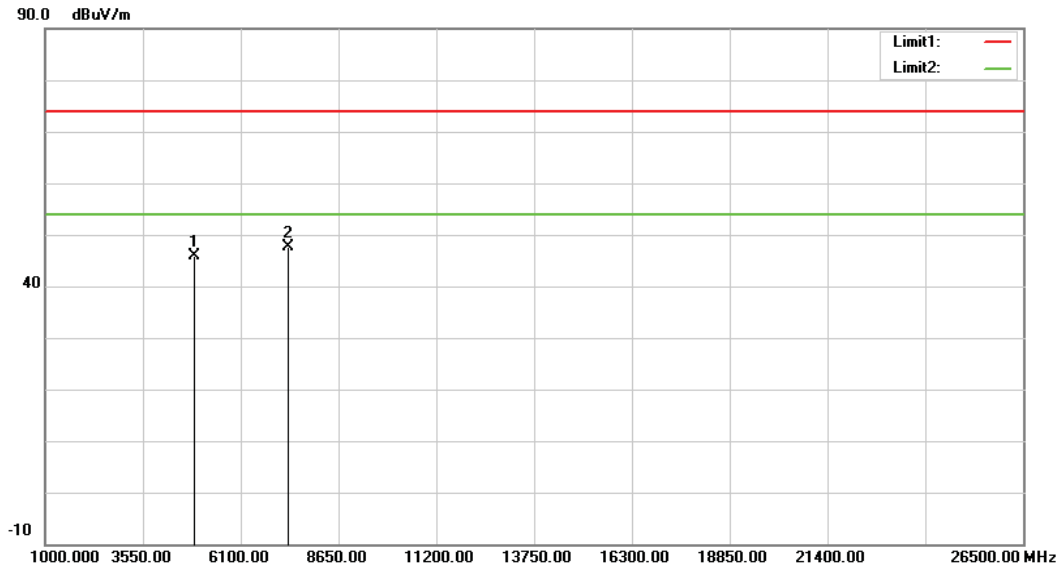
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4874.000	51.47	-5.09	46.38	74.00	-27.62	peak
2	7311.000	47.26	-0.67	46.59	74.00	-27.41	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC PART 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 3.3 V
Frequency:	2452 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 5		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4904.000	50.88	-5.12	45.76	74.00	-28.24	peak
2	7356.000	48.06	-0.54	47.52	74.00	-26.48	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.