

RF Test Report

Applicant : Redpine Signals, Inc
Product Type : Single Band 802.11 b/g/n, Bluetooth 5.0, ZigBee Module
Trade Name : Redpine Signals Inc
Model Number : M15SB
Test Specification : FCC 47 CFR PART 15 SUBPART C
ANSI C63.10:2013
Receive Date : Oct. 24, 2018
Test Period : Nov. 06 ~ Dec. 04, 2018
Issue Date : Dec. 17, 2018

Issue by

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Taiwan Accreditation Foundation accreditation number: 1330

Test Firm MRA designation number: TW0010

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Dec. 05, 2018	Initial Issue	Shelly Chen
01	Dec. 17, 2018	Revised Report Information	Janet Chao

Verification of Compliance

Issued Date: Dec. 17, 2018

Applicant : Redpine Signals, Inc

Product Type : Single Band 802.11 b/g/n, Bluetooth 5.0, ZigBee Module

Trade Name : Redpine Signals Inc

Model Number : M15SB

FCC ID : XF6-M15SB

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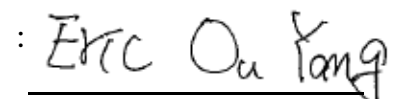
A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that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

Approved By



(Manager)

Reviewed By



(Testing Engineer)

(Eric Ou Yang)



TABLE OF CONTENTS

1	General Information	5
2	EUT Description	7
3	Test Methodology	8
3.1.	Mode of Operation	8
3.2.	EUT Test Step	9
3.3.	Configuration of Test System Details	10
3.4.	Test Instruments	11
3.5.	Test Site Environment	11
4	Measurement Procedure	12
4.1.	AC Power Line Conducted Emission Measurement	12
4.2.	Radiated Emission Measurement	14
4.3.	Maximum Conducted Output Power Measurement	18
4.4.	6 dB RF Bandwidth Measurement	19
4.5.	Maximum Power Density Measurement	20
4.6.	Out of Band Conducted Emissions Measurement	21
4.7.	Antenna Measurement	21
5	Test Results	22
	Annex A. Conducted Test Results	22
	Annex B. Radiated Emission Measurement	48



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	Single Band 802.11 b/g/n, Bluetooth 5.0, ZigBee Module			
Trade Name	Redpine Signals Inc			
Model No.	M15SB			
FCC ID	XF6-M15SB			
Frequency Range	2402 ~ 2480 MHz			
Modulation Type	GFSK			
Operate Temp. Range	-40 ~ +85 °C			
Antenna information	Model	Type	Connector	Max. Gain (dBi)
	RSIA15	PCB Trace Antenna	Internal	0.99
	WS.01.B.305151	Heavy Duty Screw Mount Antenna	SMA Reverse	4.10

Frequency Band	Max. RF Output Power (W)
Power setting 1_Antenna Type: PCB Trace Antenna	
LE, GFSK	0.07907
2LE, GFSK	0.09078
BLR C2, GFSK	0.07870
BLR C8, GFSK	0.07889
Power setting 2_Antenna Type: Heavy Duty Screw Mount Antenna	
LE, GFSK	0.02153
2LE, GFSK	0.09441
BLR C2, GFSK	0.02133
BLR C8, GFSK	0.02138



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: LE, GFSK Continuous TX Mode
Mode 3: 2LE, GFSK Continuous TX Mode
Mode 4: BLR C2, GFSK Continuous TX Mode
Mode 5: BLR C8, GFSK Continuous TX Mode

Final-Test Mode
Mode 1: Transmit Mode
Mode 2: LE, GFSK Continuous TX Mode
Mode 3: 2LE, GFSK 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: The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98 %.

RF Power setting	Antenna Type	Antenna Max. Gain (dBi)	Test Mode	Antenna Delivery	Frequency (MHz)
1	PCB Trace Antenna	0.99	Mode 2	1TX	2402, 2440, 2480
			Mode 3	1TX	2402, 2440, 2480
			Mode 4	1TX	2402, 2440, 2480
			Mode 5	1TX	2402, 2440, 2480
2	Heavy Duty Screw Mount Antenna	4.1	Mode 2	1TX	2402, 2440, 2480
			Mode 3	1TX	2402, 2440, 2480
			Mode 4	1TX	2402, 2440, 2480
			Mode 5	1TX	2402, 2440, 2480

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.



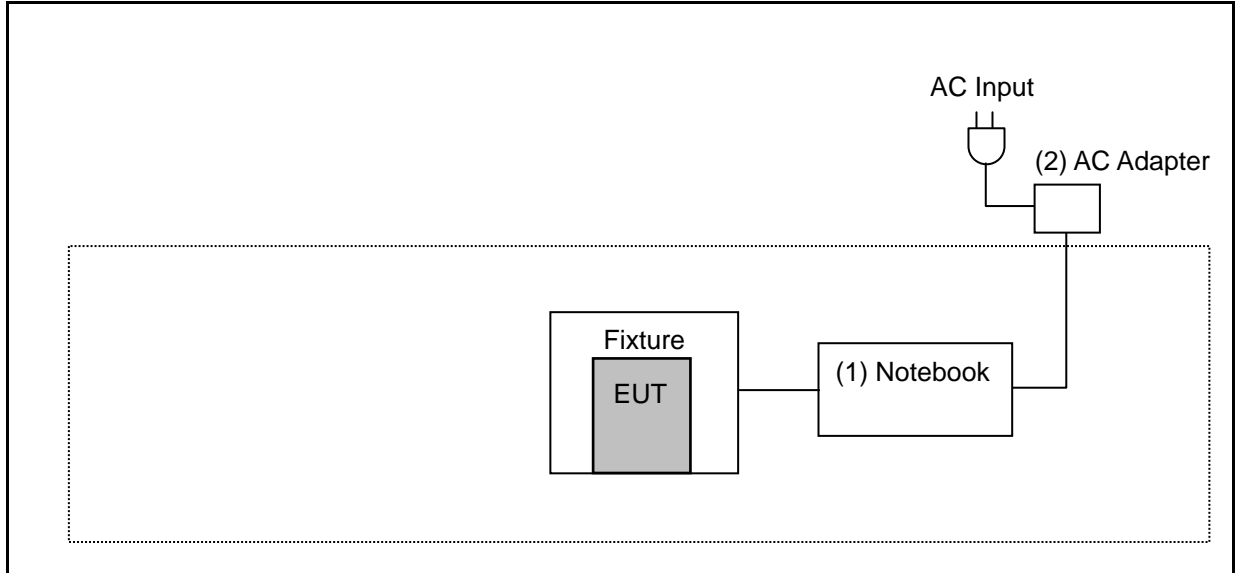
3.2. EUT Test Step

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.

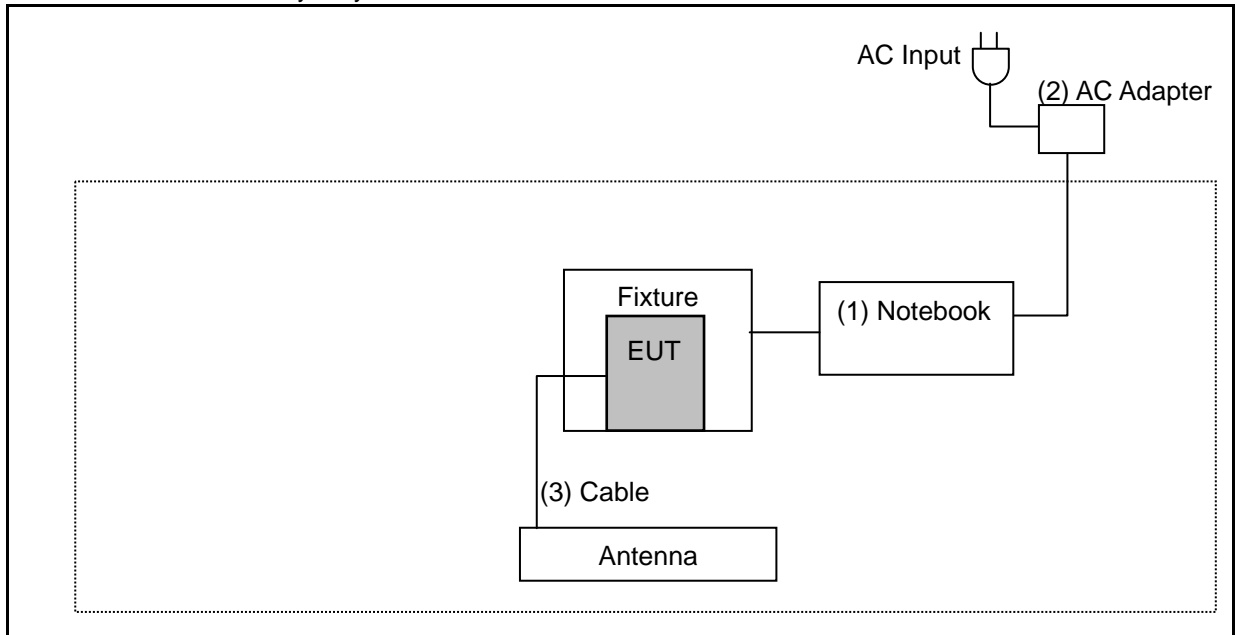
Measurement Software			
No.	Description	Software	Version
1	Radiated Emission	EZ EMC	1.1.4.4

3.3. Configuration of Test System Details

Radiated Emissions_ PCB Trace Antenna



Radiated Emissions_ Heavy Duty Screw Mount 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: Nov. 06 ~ Dec. 04, 2018

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Spectrum Analyzer (10 Hz~44 GHz)	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
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
Broadband Horn Antenna (18~ 40 GHz)	SCHWARZBECK MESS-ELEKTRONIK	9170	9170-320	08/07/2018	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-14000	151001	02/20/2018	1 year

For Conducted

Test Period: Nov. 08 ~ Dec. 04, 2018

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
Spectrum Analyzer (3 Hz~50 GHz)	Agilent	N9030A	MY53120541	01/02/2018	1 year
Microwave Cable	EMCI	EMC102-SM-SM1500	001	11/22/2017	1 year
				11/21/2018	

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

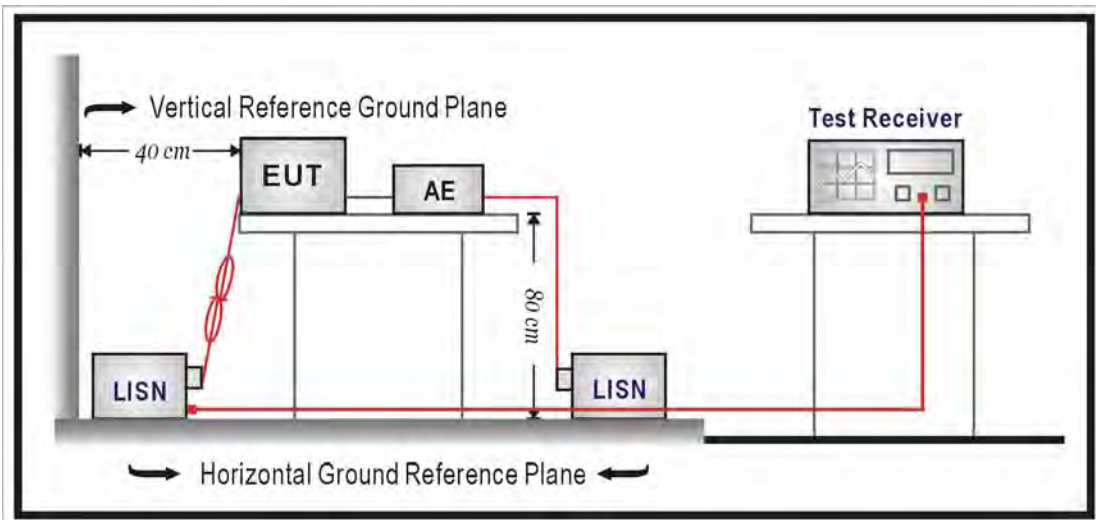
4 Measurement Procedure

4.1. AC Power Line Conducted Emission Measurement

■ Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

■ Test Setup



■ Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a $50 \Omega // 50 \mu\text{H}$ coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a $50 \Omega // 50 \mu\text{H}$ coupling impedance with 50 ohm termination.

Tabletop device shall be placed on a non-conducting platform, of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The wall of screened room shall be located 40 cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80 cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12 mm insulating material.

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a resolution bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. When all of peak value were complied with quasi-peak and average limit from 150 kHz to 30 MHz then quasi-peak and average measurement was unnecessary.

The AMN shall be placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for AMNs mounted on top of the ground reference plane. This distance is between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the AMN. If the mains power cable is longer than 1 m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4 m. All of interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long. All of EUT and AE shall be separate place more than 0.1 m. All 50 Ω ports of the LISN shall be resistively terminated into 50 Ω loads when not connected to the measuring instrument.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.

4.2. Radiated Emission Measurement

■ Limit

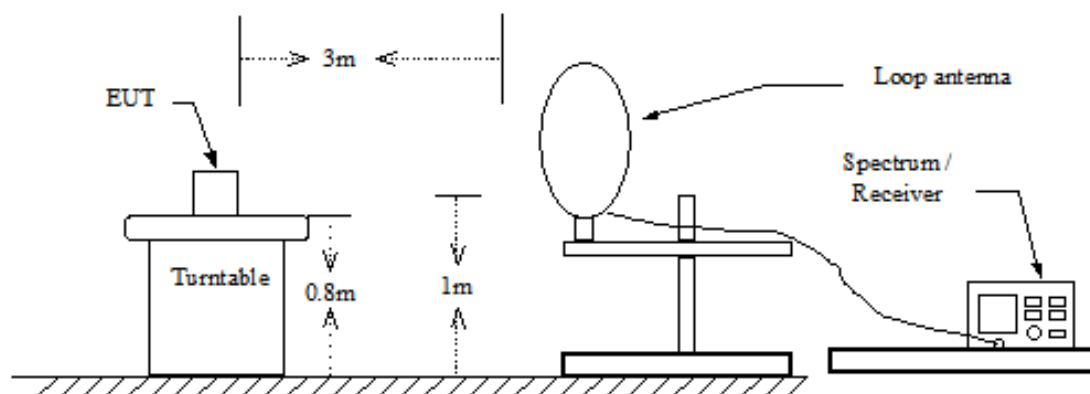
According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ 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

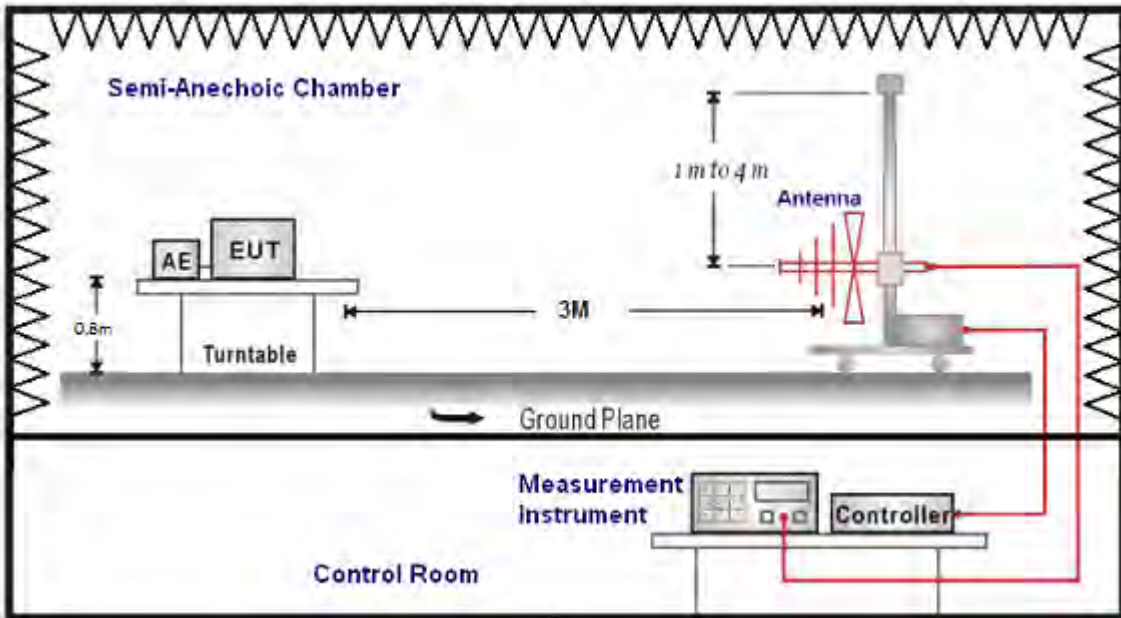
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this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

■ Setup

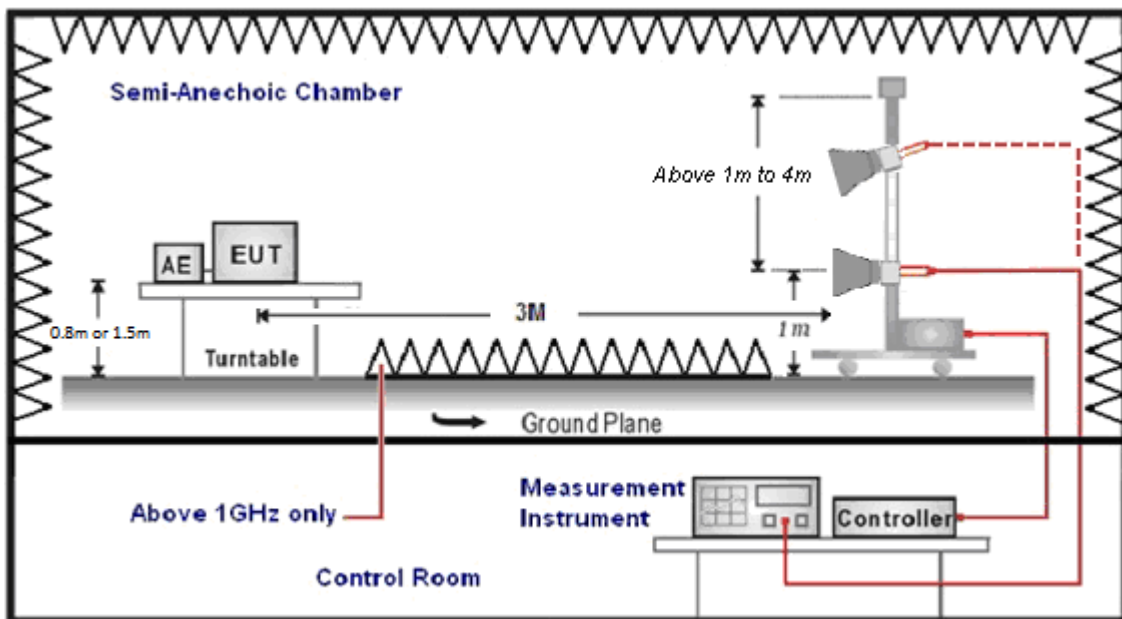
9 kHz ~ 30 MHz



Below 1 GHz



Above 1 GHz



■ 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 three 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 ($\mu\text{V}/\text{m}$).

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



The actual field 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) $\text{Amplitude (dBuV/m)} = \text{FI (dBuV)} + \text{AF (dBuV)} + \text{CL (dBuV)} - \text{Gain (dB)}$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) $\text{Actual Amplitude (dBuV/m)} = \text{Amplitude (dBuV)} - \text{Dis(dB)}$

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

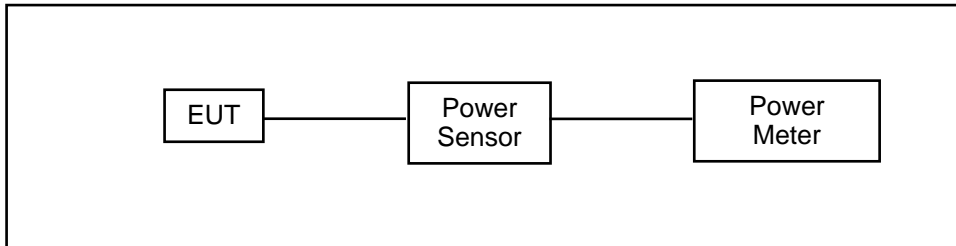
Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

4.3. Maximum Conducted Output Power Measurement

■ Limit

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

■ 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..

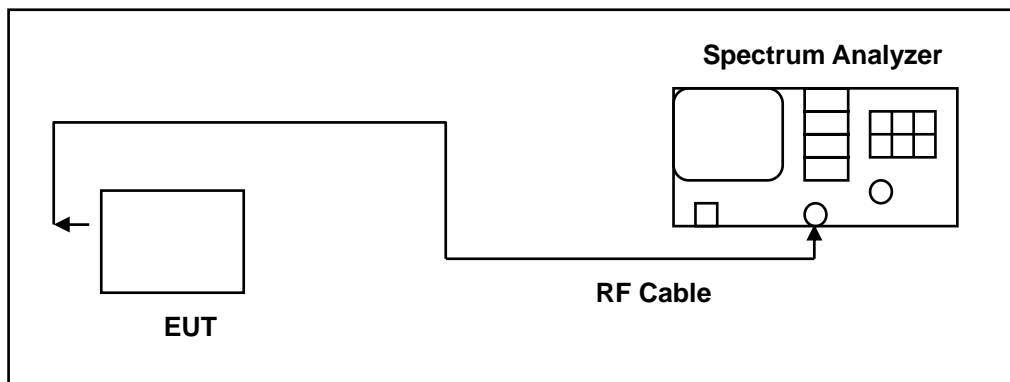
4.4. 6 dB RF Bandwidth Measurement

■ 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.

99 % Occupied Bandwidth: N/A

■ 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.

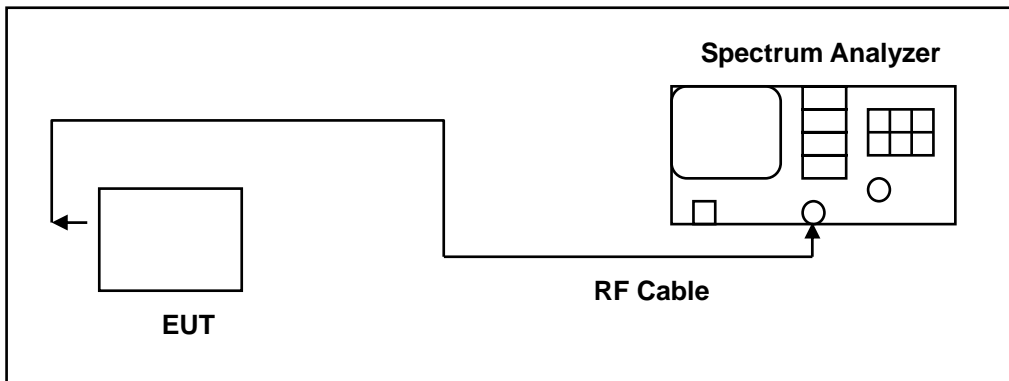
The test was performed at 3 channels (Channel low, middle, high)

4.5. Maximum Power 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 ANSI C63.10-2013 section 11.10.2 Method PKPSD.

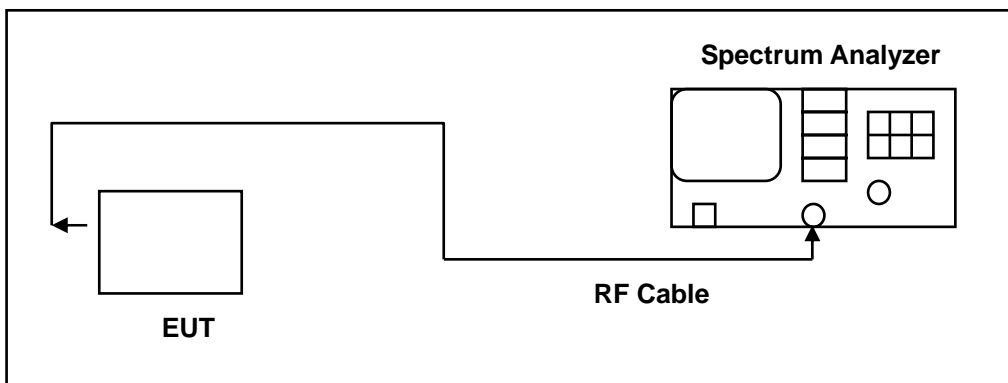
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
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.

4.6. 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.

4.7. 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 Connector Construction

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

Modulation Type	Frequency (MHz)	RF Power setting in Test Software				Test Software Version
		Mode 2	Mode 3	Mode 4	Mode 5	
GFSK	2402	22.00	22.00	22.00	22.00	Terminal
	2440	18.00	22.00	18.00	18.00	
	2480	15.00	15.00	15.00	15.00	

Test Mode	Mode 2				
Frequency (MHz)	Average Power		Peak Power		Limit (dBm)
	(dBm)	(W)	(dBm)	(W)	
2402	17.08	0.05105	18.84	0.07656	≤ 30
2440	17.10	0.05129	18.98	0.07907	≤ 30
2480	13.70	0.02344	15.40	0.03467	≤ 30

Test Mode	Mode 3				
Frequency (MHz)	Average Power		Peak Power		Limit (dBm)
	(dBm)	(W)	(dBm)	(W)	
2402	15.52	0.03565	18.50	0.07079	≤ 30
2440	16.53	0.04498	19.58	0.09078	≤ 30
2480	11.66	0.01466	14.66	0.02924	≤ 30

Test Mode	Mode 4				
Frequency (MHz)	Average Power		Peak Power		Limit (dBm)
	(dBm)	(W)	(dBm)	(W)	
2402	17.04	0.05058	18.81	0.07603	≤ 30
2440	17.07	0.05093	18.96	0.07870	≤ 30
2480	13.69	0.02339	15.38	0.03451	≤ 30

Test Mode	Mode 5				
Frequency (MHz)	Average Power		Peak Power		Limit (dBm)
	(dBm)	(W)	(dBm)	(W)	
2402	17.06	0.05082	18.78	0.07551	≤ 30
2440	17.08	0.05105	18.97	0.07889	≤ 30
2480	13.66	0.02323	15.37	0.03443	≤ 30

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



6 dB RF Bandwidth Measurement

Test Mode	Mode 2	
Frequency (MHz)	Measurement Results (kHz)	Limit (kHz)
2402	804.200	≥ 500
2440	815.800	≥ 500
2480	827.700	≥ 500

Test Mode	Mode 3	
Frequency (MHz)	Measurement Results (kHz)	Limit (kHz)
2402	1611.000	≥ 500
2440	1607.000	≥ 500
2480	1610.000	≥ 500



■ Test Graphs

Mode 2	
2402 MHz	<p>Keylight Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.40200000 GHz Trig: Free Run #Atten: 20 dB AvgHold: >10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 10.8 dB Ref 30.00 dBm</p> <p>Center 2.402 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1.533 ms</p> <p>Occupied Bandwidth 1.2429 MHz Total Power 23.1 dBm</p> <p>Transmit Freq Error 15.115 kHz % of OBW Power 99.00 % x dB Bandwidth 804.2 kHz x dB -6.00 dB</p>
2440 MHz	<p>Keylight Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.44000000 GHz Trig: Free Run #Atten: 20 dB AvgHold: >10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 10.8 dB Ref 30.00 dBm</p> <p>Center 2.44 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1.533 ms</p> <p>Occupied Bandwidth 1.2398 MHz Total Power 23.4 dBm</p> <p>Transmit Freq Error 16.289 kHz % of OBW Power 99.00 % x dB Bandwidth 815.8 kHz x dB -6.00 dB</p>
2480 MHz	<p>Keylight Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.48000000 GHz Trig: Free Run #Atten: 20 dB AvgHold: >10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 10.8 dB Ref 30.00 dBm</p> <p>Center 2.48 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1.533 ms</p> <p>Occupied Bandwidth 1.2448 MHz Total Power 19.5 dBm</p> <p>Transmit Freq Error 15.163 kHz % of OBW Power 99.00 % x dB Bandwidth 827.7 kHz x dB -6.00 dB</p>



Mode 3													
2402 MHz	<table border="1"><thead><tr><th>Occupied Bandwidth</th><th>Total Power</th><th></th></tr></thead><tbody><tr><td>2.3685 MHz</td><td>21.2 dBm</td><td></td></tr><tr><td>Transmit Freq Error</td><td>6.377 kHz</td><td>% of OBW Power 99.00 %</td></tr><tr><td>x dB Bandwidth</td><td>1.611 MHz</td><td>x dB -6.00 dB</td></tr></tbody></table>	Occupied Bandwidth	Total Power		2.3685 MHz	21.2 dBm		Transmit Freq Error	6.377 kHz	% of OBW Power 99.00 %	x dB Bandwidth	1.611 MHz	x dB -6.00 dB
Occupied Bandwidth	Total Power												
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Transmit Freq Error	6.377 kHz	% of OBW Power 99.00 %											
x dB Bandwidth	1.611 MHz	x dB -6.00 dB											
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x dB Bandwidth	1.610 MHz	x dB -6.00 dB											



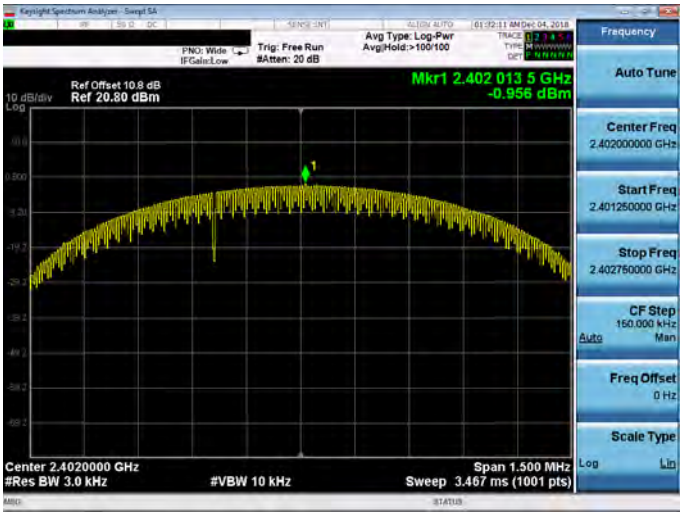
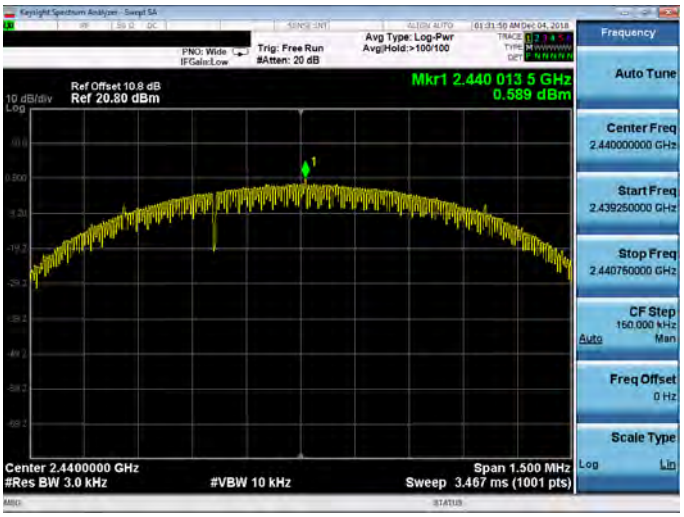
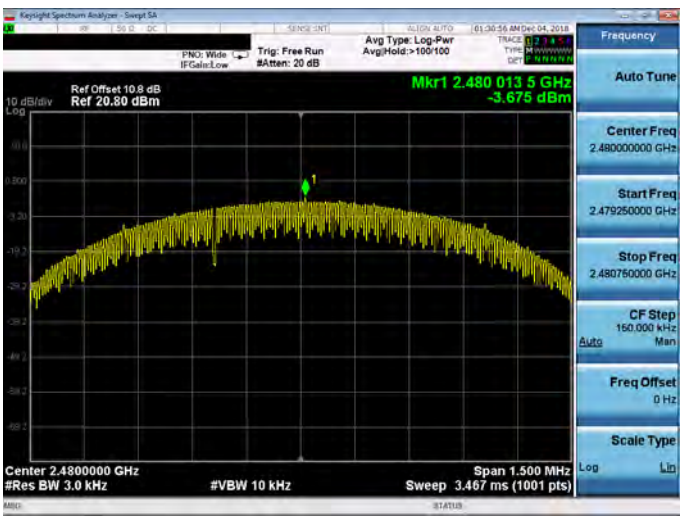
Maximum Power Density Measurement

Test Mode	Mode 2	
Frequency (MHz)	Measurement Results (dBm/ 3kHz)	Limit (dBm)
2402	-0.956	≤ 8
2440	0.589	≤ 8
2480	-3.675	≤ 8

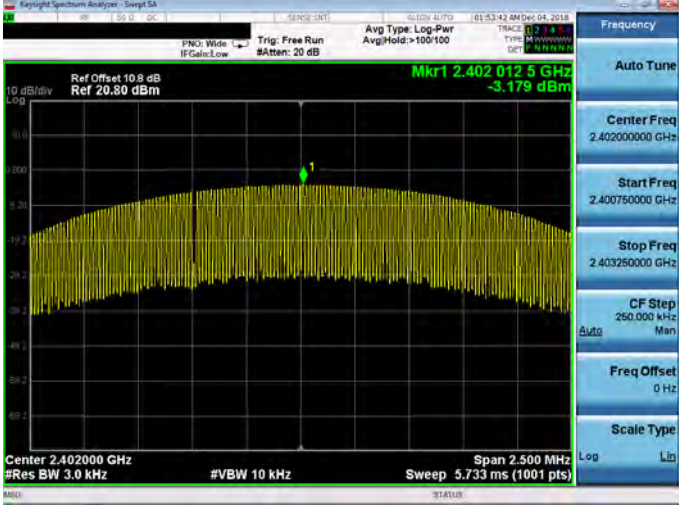
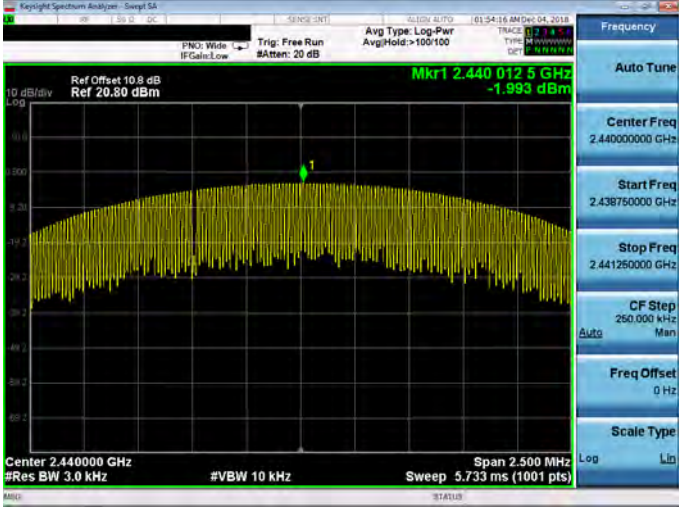
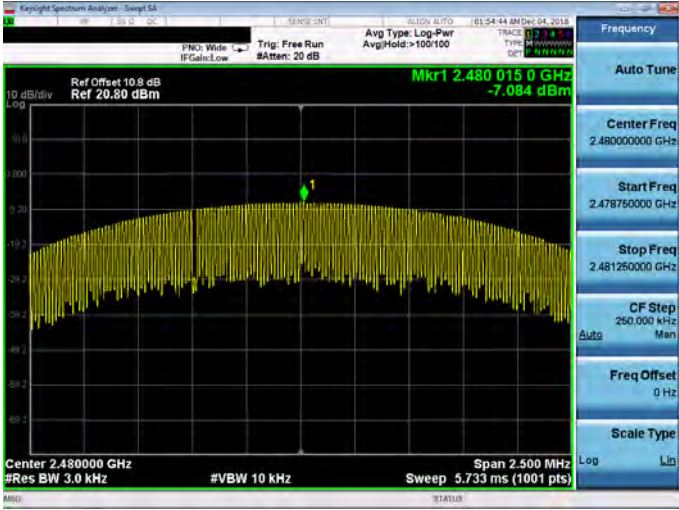
Test Mode	Mode 3	
Frequency (MHz)	Measurement Results (dBm/ 3kHz)	Limit (dBm)
2402	-3.179	≤ 8
2440	-1.993	≤ 8
2480	-7.084	≤ 8



■ Test Graphs

Mode 2	
2402 MHz	
2440 MHz	
2480 MHz	



Mode 3	
2402 MHz	
2440 MHz	
2480 MHz	




Out of Band Conducted Emissions Measurement

■ Test Graphs

Reference level

Mode 2	
2402 MHz	
2440 MHz	
2480 MHz	



Mode 3	
2402 MHz	
2440 MHz	
2480 MHz	

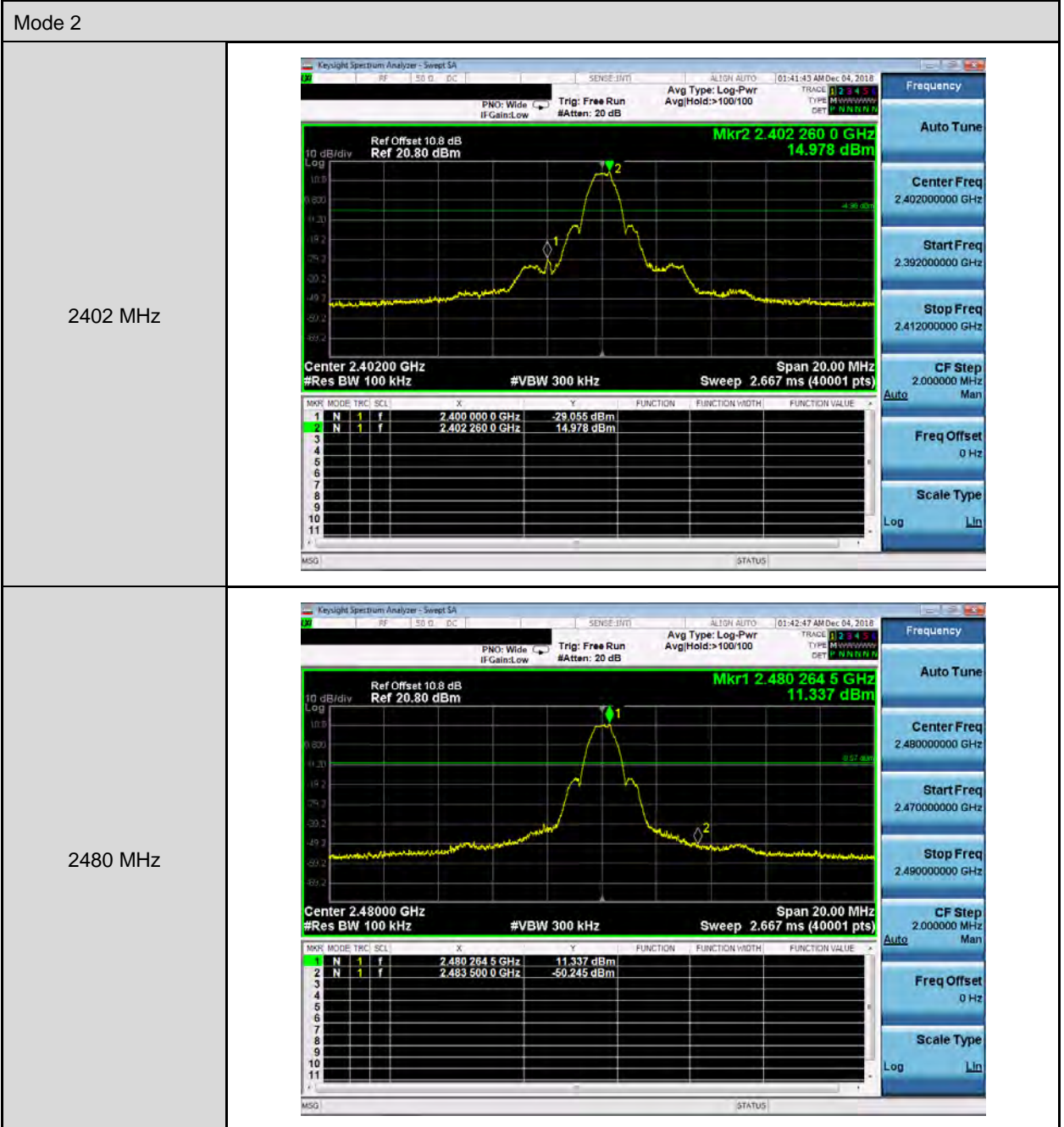
Out of Band Conducted Emissions

Mode 2	
2402 MHz	<p>Keylight Spectrum Analyzer - Sneyt SA (61:40:59 AM Dec 04, 2018) Avg Type: Log-Pwr AvgHold: >100/100 Trig: Free Run #Atten: 20 dB PNO: Fast IFGain: Low Ref Offset: 10.8 dB Ref: 20.80 dBm Mkr1 2.402 0 GHz 10.845 dBm Start 0.03 GHz #Res BW 100 kHz #VBW 300 kHz Stop 26.50 GHz Sweep 88.00 ms (40001 pts) Mkr MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE 1 N 1 f 2.402 0 GHz 10.845 dBm 2 3 4 5 6 7 8 9 10 11 MIC STATUS</p>
2440 MHz	<p>Keylight Spectrum Analyzer - Sneyt SA (61:08:34 AM Dec 04, 2018) Avg Type: Log-Pwr AvgHold: 58/100 Trig: Free Run #Atten: 20 dB PNO: Fast IFGain: Low Ref Offset: 10.8 dB Ref: 20.80 dBm Mkr1 2.440 0 GHz 14.944 dBm Start 0.03 GHz #Res BW 100 kHz #VBW 300 kHz Stop 26.50 GHz Sweep 88.00 ms (40001 pts) Mkr MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE 1 N 1 f 2.440 0 GHz 14.944 dBm 2 3 4 5 6 7 8 9 10 11 MIC STATUS</p>
2480 MHz	<p>Keylight Spectrum Analyzer - Sneyt SA (61:37:13 AM Dec 04, 2018) Avg Type: Log-Pwr AvgHold: >100/100 Trig: Free Run #Atten: 20 dB PNO: Fast IFGain: Low Ref Offset: 10.8 dB Ref: 20.80 dBm Mkr1 2.480 0 GHz 10.232 dBm Start 0.03 GHz #Res BW 100 kHz #VBW 300 kHz Stop 26.50 GHz Sweep 88.00 ms (40001 pts) Mkr MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE 1 N 1 f 2.480 0 GHz 10.232 dBm 2 3 4 5 6 7 8 9 10 11 MIC STATUS</p>



Mode 3	
<p>2402 MHz</p>	
<p>2440 MHz</p>	
<p>2480 MHz</p>	

Conducted Band Edge



Mode 3																												
2402 MHz	<p>Keysight Spectrum Analyzer - Swept SA</p> <p>Ref Offset: 10.8 dB Ref: 20.80 dBm</p> <p>Mkr2 2.402 057 0 GHz 11.344 dBm</p> <p>Center 2.40200 GHz #Res BW 100 kHz #VBW 300 kHz Span 20.00 MHz Sweep 2.667 ms (40001 pts)</p> <table border="1"> <thead> <tr> <th>MARK</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.400 000 0 GHz</td> <td>-16.090 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.402 057 0 GHz</td> <td>11.344 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MARK	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.400 000 0 GHz	-16.090 dBm				2	N	1	f	2.402 057 0 GHz	11.344 dBm			
MARK	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
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2480 MHz	<p>Keysight Spectrum Analyzer - Swept SA</p> <p>Ref Offset: 10.8 dB Ref: 20.80 dBm</p> <p>Mkr1 2.480 043 5 GHz 7.446 dBm</p> <p>Center 2.48000 GHz #Res BW 100 kHz #VBW 300 kHz Span 20.00 MHz Sweep 2.667 ms (40001 pts)</p> <table border="1"> <thead> <tr> <th>MARK</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.480 043 5 GHz</td> <td>7.446 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>N</td> <td>1</td> <td>f</td> <td>2.483 500 0 GHz</td> <td>-49.359 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MARK	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.480 043 5 GHz	7.446 dBm				2	N	1	f	2.483 500 0 GHz	-49.359 dBm			
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2	N	1	f	2.483 500 0 GHz	-49.359 dBm																							



Power setting 2_Antenna Type: Heavy Duty Screw Mount Antenna

Maximum Conducted Output Power Measurement

Modulation Type	Frequency (MHz)	RF Power setting in Test Software				Test Software Version
		Mode 2	Mode 3	Mode 4	Mode 5	
GFSK	2402	14.00	20.00	14.00	14.00	Terminal
	2440	13.00	20.00	13.00	13.00	
	2480	11.00	12.00	11.00	11.00	

Test Mode	Mode 2				
Frequency (MHz)	Average Power		Peak Power		Limit (dBm)
	(dBm)	(W)	(dBm)	(W)	
2402	11.36	0.01368	13.33	0.02153	≤ 30
2440	11.04	0.01271	12.88	0.01941	≤ 30
2480	9.21	0.00834	11.13	0.01297	≤ 30

Test Mode	Mode 3				
Frequency (MHz)	Average Power		Peak Power		Limit (dBm)
	(dBm)	(W)	(dBm)	(W)	
2402	15.59	0.03622	18.53	0.07129	≤ 30
2440	16.68	0.04656	19.75	0.09441	≤ 30
2480	10.53	0.01130	13.51	0.02244	≤ 30

Test Mode	Mode 4				
Frequency (MHz)	Average Power		Peak Power		Limit (dBm)
	(dBm)	(W)	(dBm)	(W)	
2402	11.32	0.01355	13.29	0.02133	≤ 30
2440	11.00	0.01259	12.86	0.01932	≤ 30
2480	9.12	0.00817	11.08	0.01282	≤ 30

Test Mode	Mode 5				
Frequency (MHz)	Average Power		Peak Power		Limit (dBm)
	(dBm)	(W)	(dBm)	(W)	
2402	11.34	0.01361	13.30	0.02138	≤ 30
2440	11.01	0.01262	12.87	0.01936	≤ 30
2480	9.16	0.00824	11.07	0.01279	≤ 30

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



6 dB RF Bandwidth Measurement

Test Mode	Mode 2	
Frequency (MHz)	Measurement Results (kHz)	Limit (kHz)
2402	808.700	≥ 500
2440	812.300	≥ 500
2480	803.400	≥ 500

Test Mode	Mode 3	
Frequency (MHz)	Measurement Results (kHz)	Limit (kHz)
2402	1605.000	≥ 500
2440	1580.000	≥ 500
2480	1595.000	≥ 500

■ Test Graphs

Mode 2																			
2402 MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.402000000 GHz Trig: Free Run #Atten: 20 dB</p> <p>Ref: 30.00 dBm</p> <p>Center 2.402 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>17.7 dBm</td> </tr> <tr> <td>1.2369 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-4.685 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>808.7 kHz</td> <td></td> <td></td> </tr> </table>	Occupied Bandwidth	Total Power	17.7 dBm	1.2369 MHz			Transmit Freq Error	OBW Power	99.00 %	-4.685 kHz	x dB	-6.00 dB	x dB Bandwidth			808.7 kHz		
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1.2369 MHz																			
Transmit Freq Error	OBW Power	99.00 %																	
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2440 MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.440000000 GHz Trig: Free Run #Atten: 20 dB</p> <p>Ref: 30.00 dBm</p> <p>Center 2.44 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>17.3 dBm</td> </tr> <tr> <td>1.2276 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-3.681 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>812.3 kHz</td> <td></td> <td></td> </tr> </table>	Occupied Bandwidth	Total Power	17.3 dBm	1.2276 MHz			Transmit Freq Error	OBW Power	99.00 %	-3.681 kHz	x dB	-6.00 dB	x dB Bandwidth			812.3 kHz		
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2480 MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.480000000 GHz Trig: Free Run #Atten: 20 dB</p> <p>Ref: 30.00 dBm</p> <p>Center 2.48 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>15.6 dBm</td> </tr> <tr> <td>1.2284 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-2.857 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td></td> </tr> <tr> <td>803.4 kHz</td> <td></td> <td></td> </tr> </table>	Occupied Bandwidth	Total Power	15.6 dBm	1.2284 MHz			Transmit Freq Error	OBW Power	99.00 %	-2.857 kHz	x dB	-6.00 dB	x dB Bandwidth			803.4 kHz		
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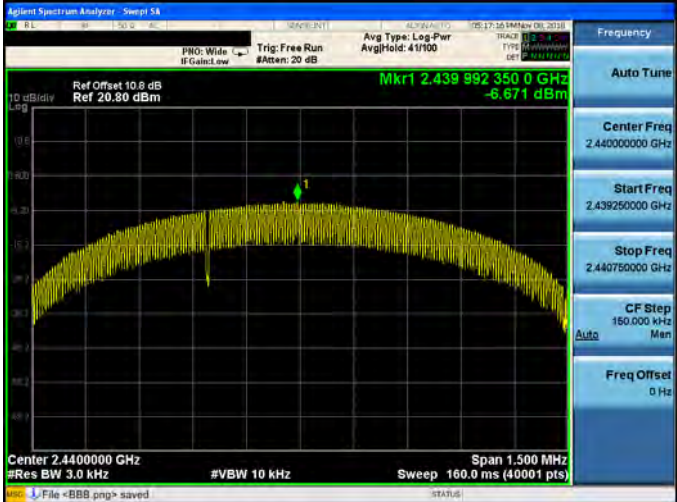

Mode 3	
2402 MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.402000000 GHz Trig: Free Run #Atten: 10 dB Radio Std: None Radio Device: BTS</p> <p>Ref: 30.00 dBm</p> <p>Center 2.402 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1 ms</p> <p>Occupied Bandwidth: 2.3726 MHz Total Power: 21.9 dBm Transmit Freq Error: -13.892 kHz OBW Power: 99.00 % x dB Bandwidth: 1.605 MHz x dB: -6.00 dB</p>
2440 MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.440000000 GHz Trig: Free Run #Atten: 10 dB Radio Std: None Radio Device: BTS</p> <p>Ref: 30.00 dBm</p> <p>Center 2.44 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1 ms</p> <p>Occupied Bandwidth: 2.3649 MHz Total Power: 22.8 dBm Transmit Freq Error: -13.851 kHz OBW Power: 99.00 % x dB Bandwidth: 1.580 MHz x dB: -6.00 dB</p>
2480 MHz	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq: 2.480000000 GHz Trig: Free Run #Atten: 10 dB Radio Std: None Radio Device: BTS</p> <p>Ref: 30.00 dBm</p> <p>Center 2.48 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1 ms</p> <p>Occupied Bandwidth: 2.3588 MHz Total Power: 14.5 dBm Transmit Freq Error: -15.556 kHz OBW Power: 99.00 % x dB Bandwidth: 1.595 MHz x dB: -6.00 dB</p>

**Maximum Power Density Measurement**

Test Mode	Mode 2	
Frequency (MHz)	Measurement Results (dBm/ 3kHz)	Limit (dBm)
2402	-6.503	≤ 8
2440	-6.671	≤ 8
2480	-7.759	≤ 8

Test Mode	Mode 3	
Frequency (MHz)	Measurement Results (dBm/ 3kHz)	Limit (dBm)
2402	-2.738	≤ 8
2440	-1.729	≤ 8
2480	-9.864	≤ 8

■ Test Graphs

Mode 2	
<p>2402 MHz</p>	
<p>2440 MHz</p>	
<p>2480 MHz</p>	

Mode 3	
<p>2402 MHz</p>	
<p>2440 MHz</p>	
<p>2480 MHz</p>	




Out of Band Conducted Emissions Measurement

■ Test Graphs

Reference level

Mode 2	
2402 MHz	
2440 MHz	
2480 MHz	



Mode 3	
2402 MHz	
2440 MHz	
2480 MHz	



Out of Band Conducted Emissions

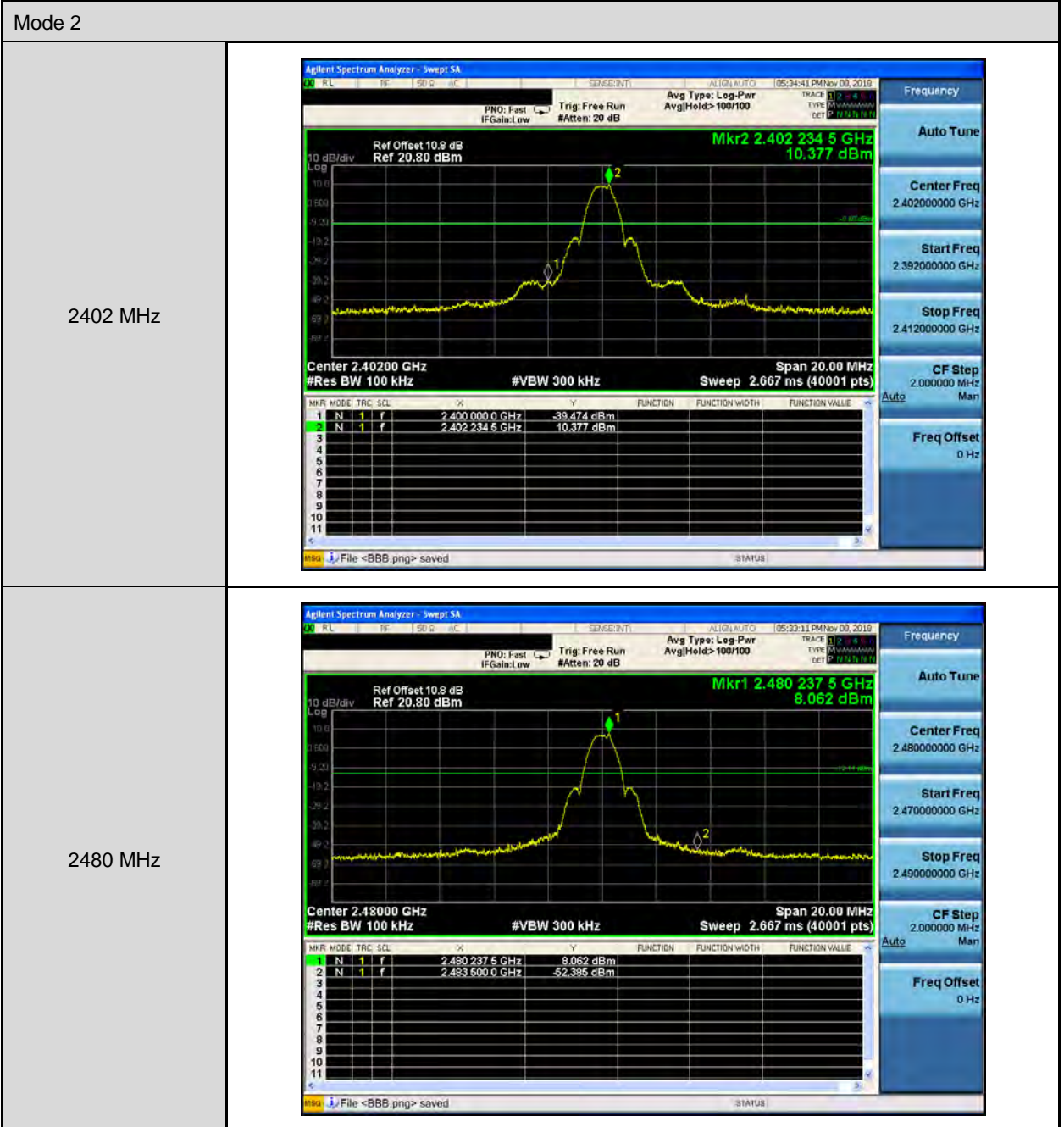
Mode 2																			
<p>2402 MHz</p>	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset: 10.8 dB Ref: 20.30 dBm</p> <p>Mkr1 2.402 0 GHz 9.736 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.50 GHz Sweep 2.531 s (40001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>P</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.402 0 GHz</td> <td>9.736 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.402 0 GHz	9.736 dBm			
MKR	MODE	TRC	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE											
1	N	1	f	2.402 0 GHz	9.736 dBm														
<p>2440 MHz</p>	<p>Agilent Spectrum Analyzer - Sweep SA</p> <p>Ref Offset: 10.8 dB Ref: 20.30 dBm</p> <p>Mkr1 2.440 0 GHz 9.762 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.50 GHz Sweep 2.531 s (40001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SOL</th> <th>F</th> <th>P</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.440 0 GHz</td> <td>9.762 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SOL	F	P	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.440 0 GHz	9.762 dBm			
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1	N	1	f	2.440 0 GHz	9.762 dBm														
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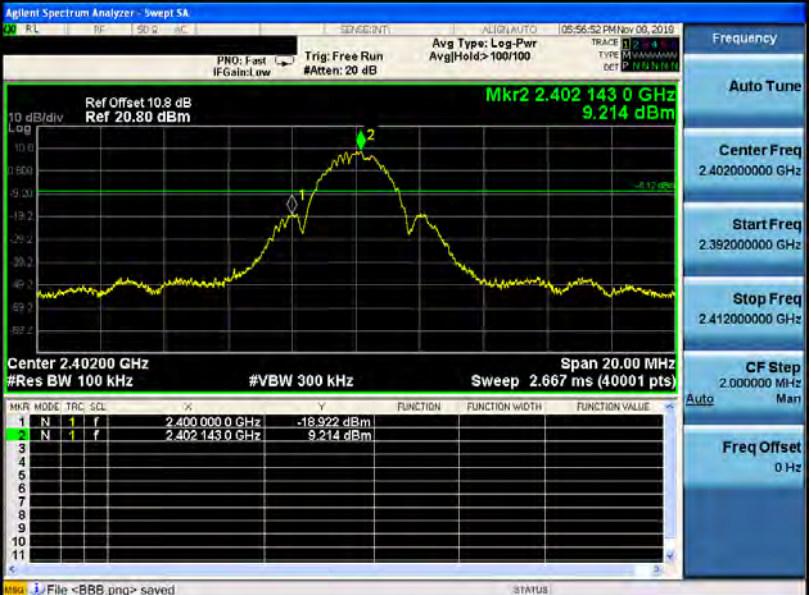
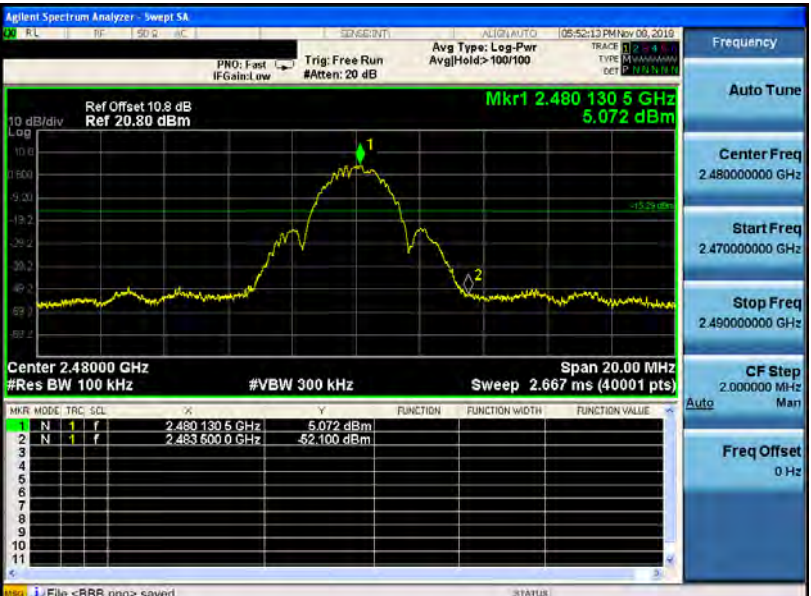
Mode 3	
<p>2402 MHz</p>	
<p>2440 MHz</p>	
<p>2480 MHz</p>	



Conducted Band Edge





Mode 3																												
2402 MHz	 <table border="1"><thead><tr><th>MKR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2,400,000.0 GHz</td><td>-18.922 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2,402,143.0 GHz</td><td>9.214 dBm</td><td></td><td></td><td></td></tr></tbody></table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2,400,000.0 GHz	-18.922 dBm				2	N	1	f	2,402,143.0 GHz	9.214 dBm			
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	N	1	f	2,400,000.0 GHz	-18.922 dBm																							
2	N	1	f	2,402,143.0 GHz	9.214 dBm																							
2480 MHz	 <table border="1"><thead><tr><th>MKR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2,480,130.5 GHz</td><td>5.072 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2,483,600.0 GHz</td><td>-52.100 dBm</td><td></td><td></td><td></td></tr></tbody></table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2,480,130.5 GHz	5.072 dBm				2	N	1	f	2,483,600.0 GHz	-52.100 dBm			
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	N	1	f	2,480,130.5 GHz	5.072 dBm																							
2	N	1	f	2,483,600.0 GHz	-52.100 dBm																							



Annex B. Radiated Emission Measurement

Harmonic

Power setting 1_Antenna Type: PCB Trace Antenna

Below 1 GHz

Standard:	FCC Part 15.247	Test Distance:	3 m				
Test item:	Harmonic	Power:	DC 3.3 V				
Test Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH				
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
167.7400	40.15	-6.57	33.58	43.50	-9.92	QP	H
233.7000	40.12	-7.59	32.53	46.00	-13.47	QP	H
365.6200	32.45	-3.56	28.89	46.00	-17.11	QP	H
522.7600	35.05	-0.35	34.70	46.00	-11.30	QP	H
650.8000	29.01	2.16	31.17	46.00	-14.83	QP	H
845.7700	28.91	5.94	34.85	46.00	-11.15	QP	H
167.7400	35.18	-6.57	28.61	43.50	-14.89	QP	V
298.6900	32.76	-4.73	28.03	46.00	-17.97	QP	V
364.6500	29.16	-3.59	25.57	46.00	-20.43	QP	V
493.6600	32.62	-0.93	31.69	46.00	-14.31	QP	V
636.2500	28.69	1.94	30.63	46.00	-15.37	QP	V
874.8700	28.92	6.42	35.34	46.00	-10.66	QP	V

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

Example: 33.58 = -6.57 + 40.15.

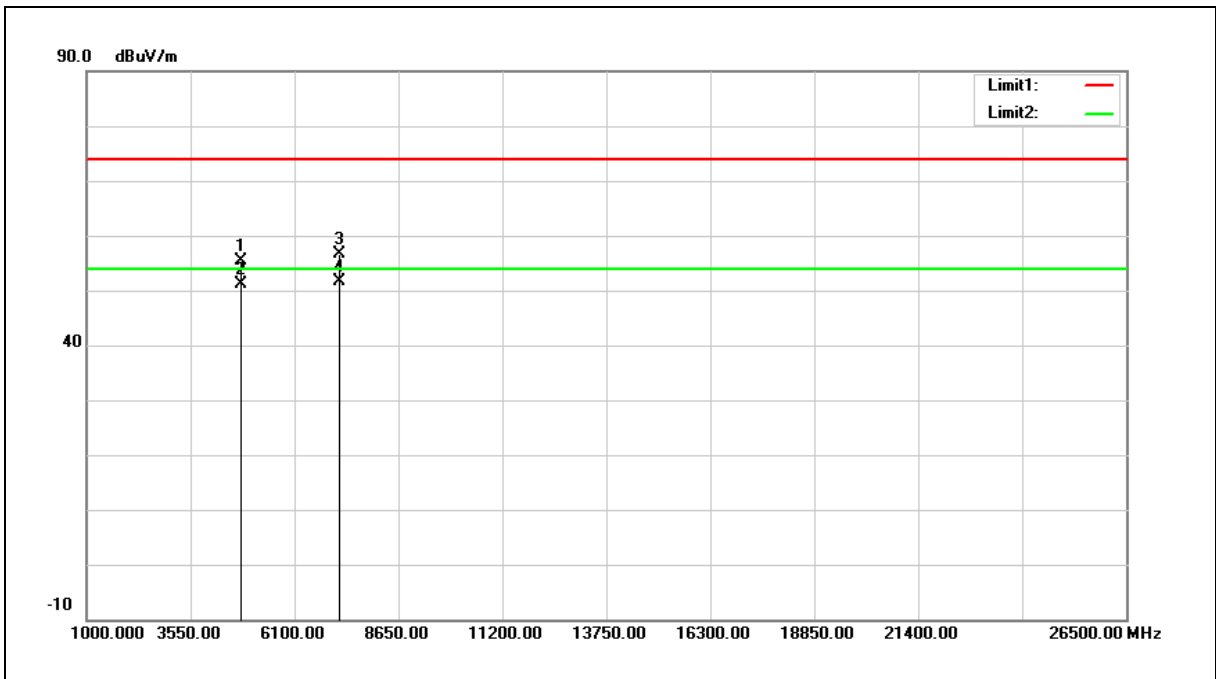
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

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:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4804.000	60.29	-4.81	55.48	74.00	-18.52	peak
2	4804.000	55.89	-4.81	51.08	54.00	-2.92	AVG
3	7206.000	57.11	-0.51	56.60	74.00	-17.40	peak
4	7206.000	52.26	-0.51	51.75	54.00	-2.25	AVG

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

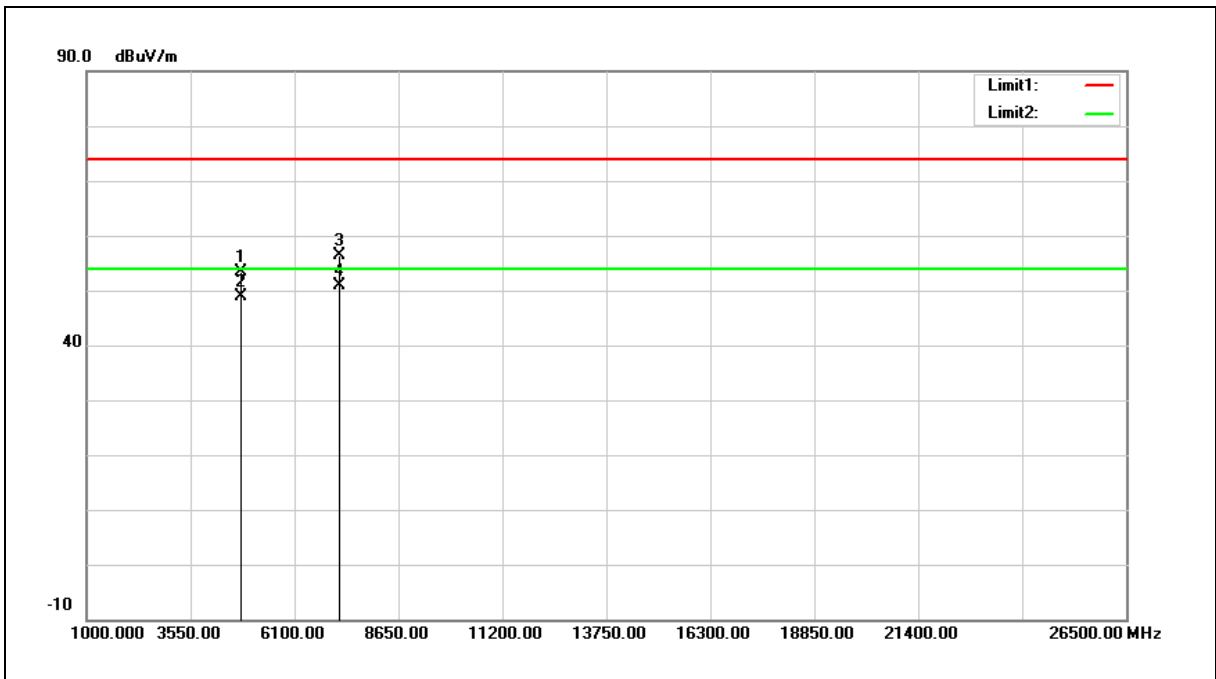
Example: 55.48 = -4.81 + 60.29.

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:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4804.000	58.12	-4.81	53.31	74.00	-20.69	peak
2	4804.000	53.75	-4.81	48.94	54.00	-5.06	AVG
3	7206.000	56.95	-0.51	56.44	74.00	-17.56	peak
4	7206.000	51.38	-0.51	50.87	54.00	-3.13	AVG

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

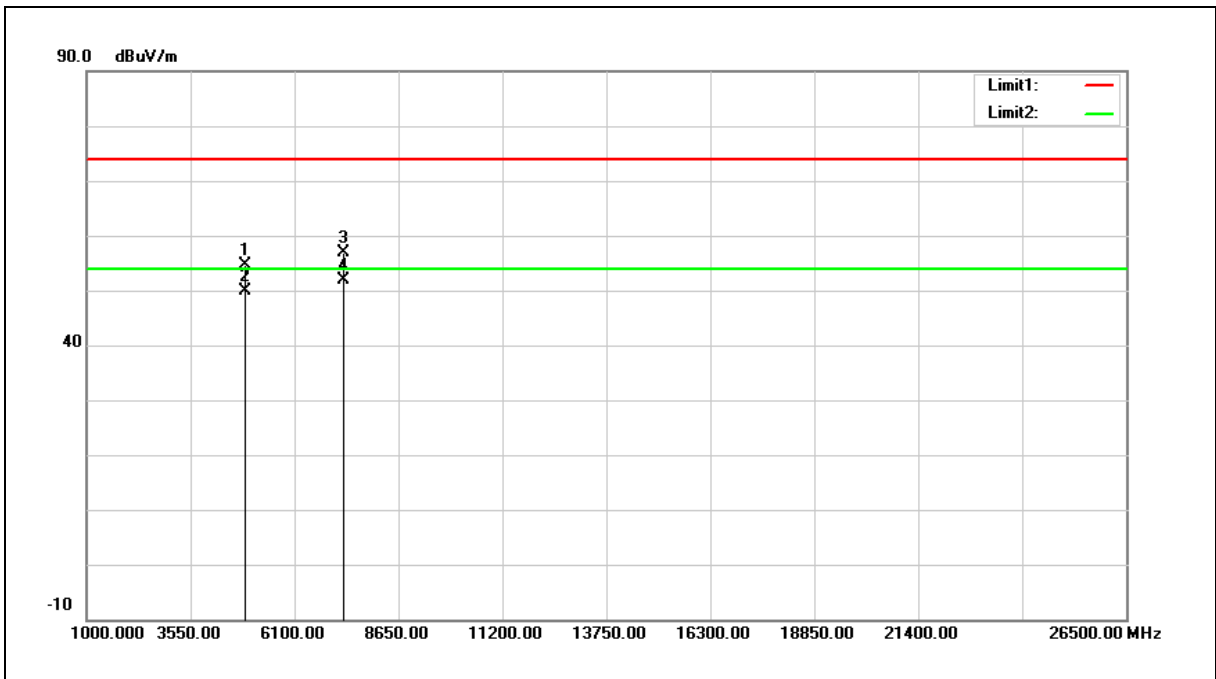
Example: 53.31 = -4.81 + 58.12.

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:	2440 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4880.000	59.50	-4.85	54.65	74.00	-19.35	peak
2	4880.000	54.67	-4.85	49.82	54.00	-4.18	AVG
3	7320.000	57.11	-0.21	56.90	74.00	-17.10	peak
4	7320.000	52.19	-0.21	51.98	54.00	-2.02	AVG

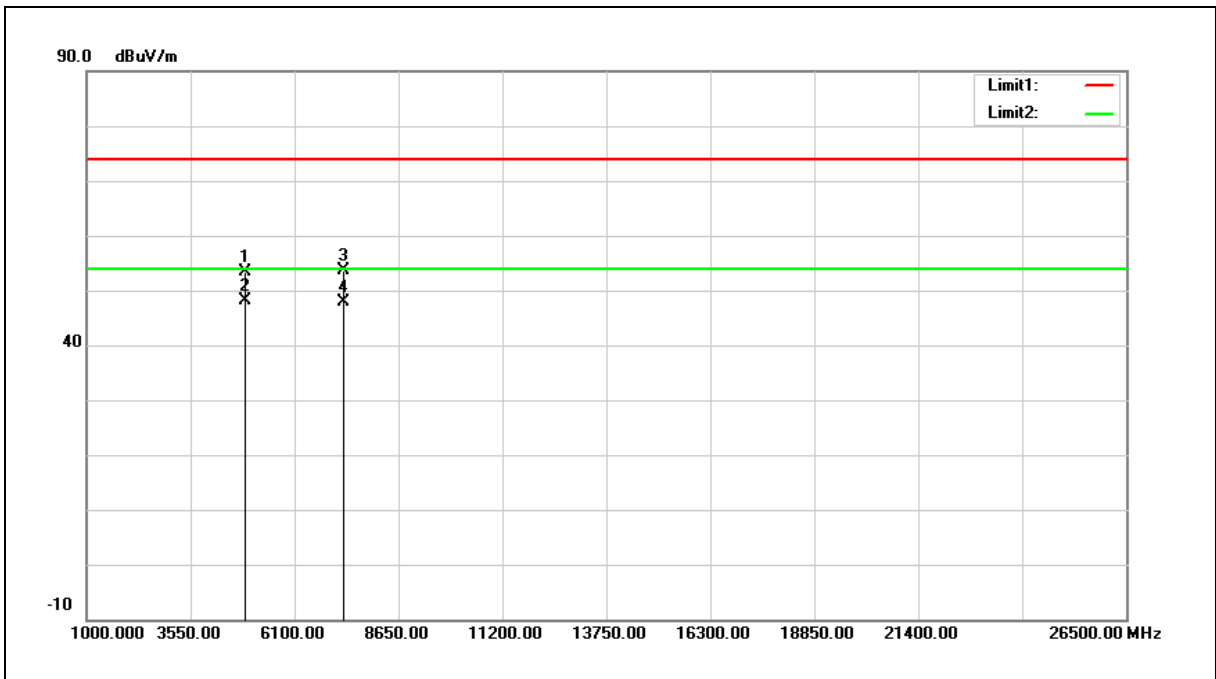
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2440 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4880.000	58.29	-4.85	53.44	74.00	-20.56	peak
2	4880.000	52.95	-4.85	48.10	54.00	-5.90	AVG
3	7320.000	53.84	-0.21	53.63	74.00	-20.37	peak
4	7320.000	47.99	-0.21	47.78	54.00	-6.22	AVG

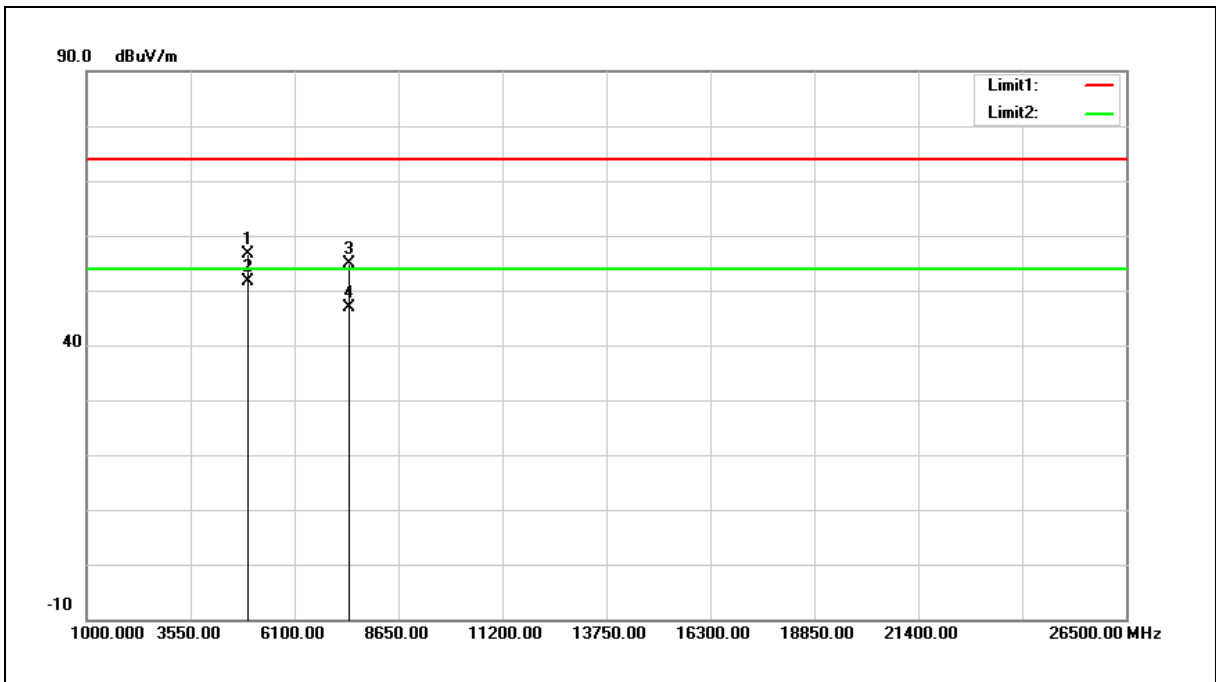
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4960.000	61.57	-4.89	56.68	74.00	-17.32	peak
2	4960.000	56.49	-4.89	51.60	54.00	-2.40	AVG
3	7440.000	54.86	0.06	54.92	74.00	-19.08	peak
4	7440.000	46.82	0.06	46.88	54.00	-7.12	AVG

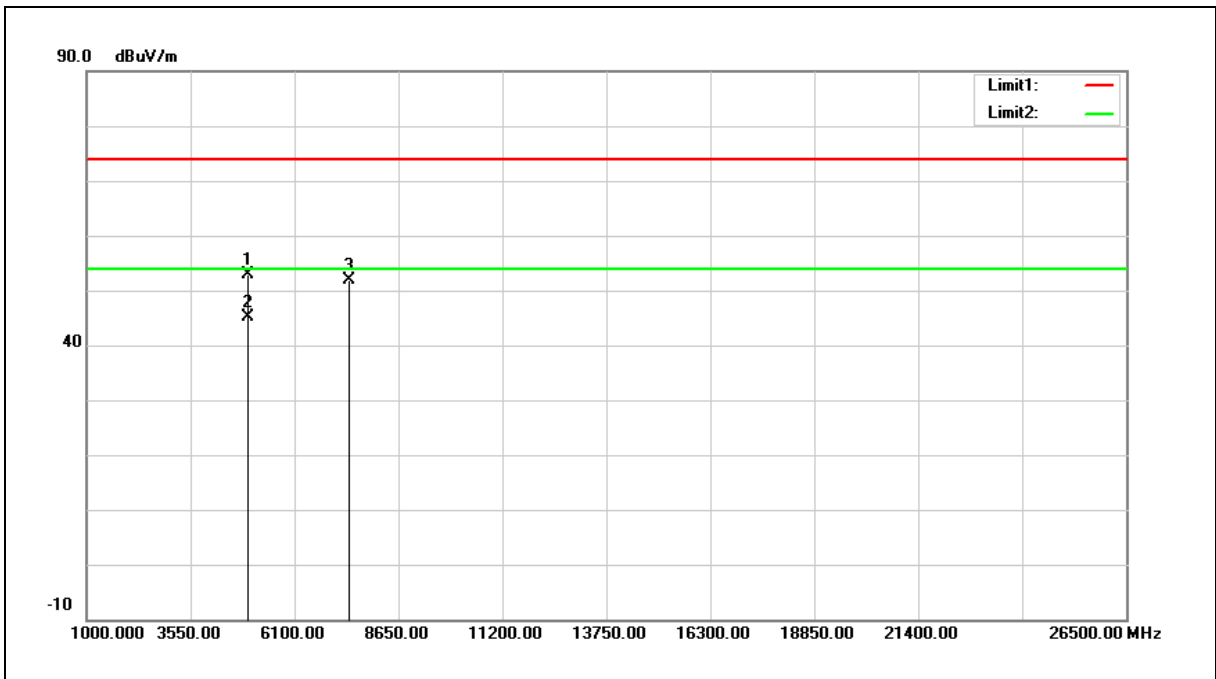
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4960.000	57.81	-4.89	52.92	74.00	-21.08	peak
2	4960.000	50.06	-4.89	45.17	54.00	-8.83	AVG
3	7443.000	51.82	0.06	51.88	74.00	-22.12	peak

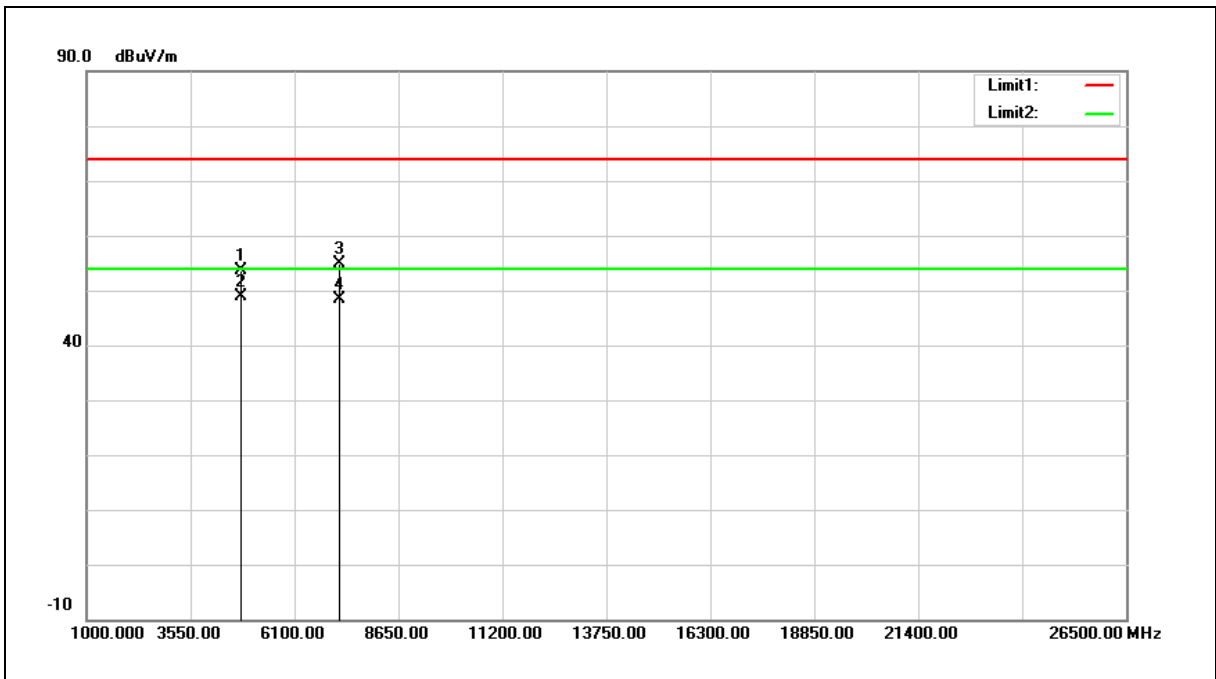
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4804.000	58.53	-4.81	53.72	74.00	-20.28	peak
2	4804.000	53.79	-4.81	48.98	54.00	-5.02	AVG
3	7206.000	55.37	-0.51	54.86	74.00	-19.14	peak
4	7206.000	48.82	-0.51	48.31	54.00	-5.69	AVG

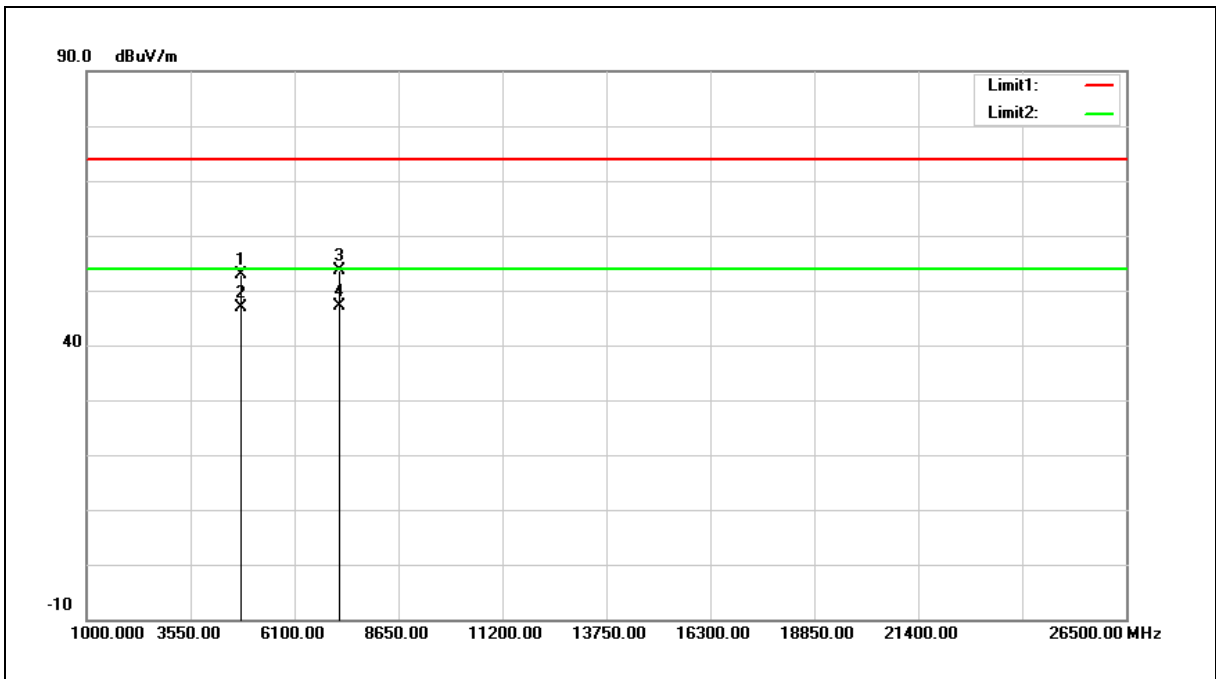
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4804.000	57.64	-4.81	52.83	74.00	-21.17	peak
2	4804.000	51.57	-4.81	46.76	54.00	-7.24	AVG
3	7206.000	54.12	-0.51	53.61	74.00	-20.39	peak
4	7206.000	47.54	-0.51	47.03	54.00	-6.97	AVG

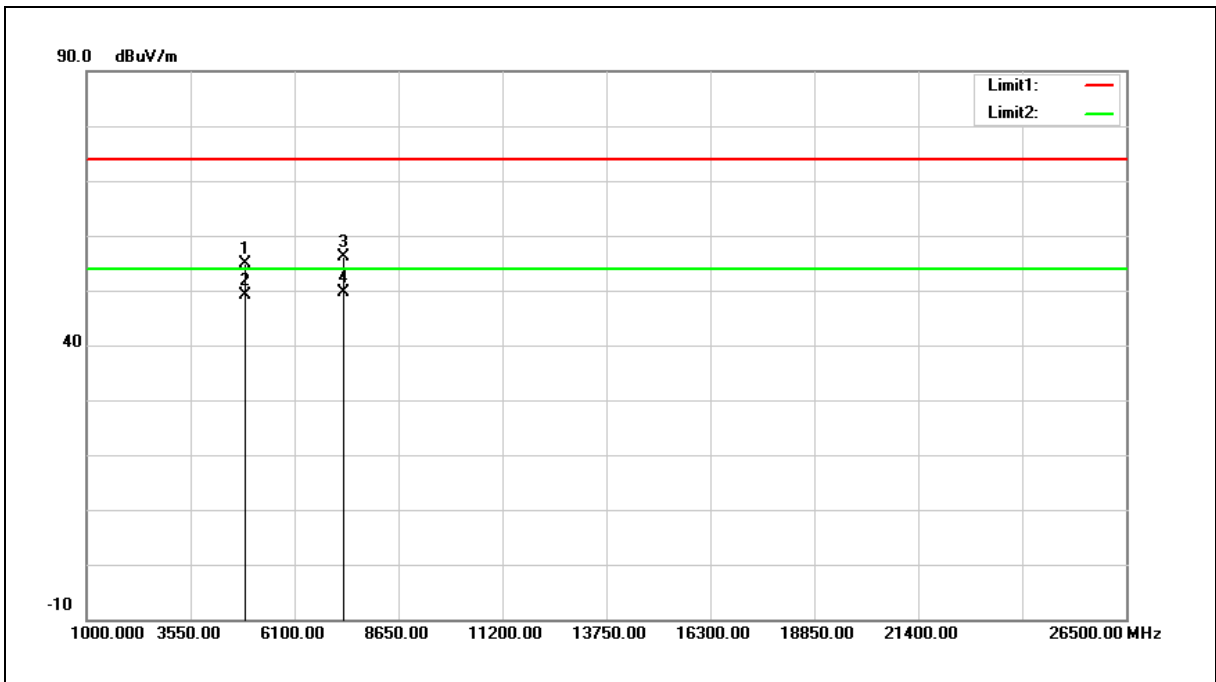
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2440 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4880.000	59.82	-4.85	54.97	74.00	-19.03	peak
2	4880.000	53.89	-4.85	49.04	54.00	-4.96	AVG
3	7320.000	56.43	-0.21	56.22	74.00	-17.78	peak
4	7320.000	49.81	-0.21	49.60	54.00	-4.40	AVG

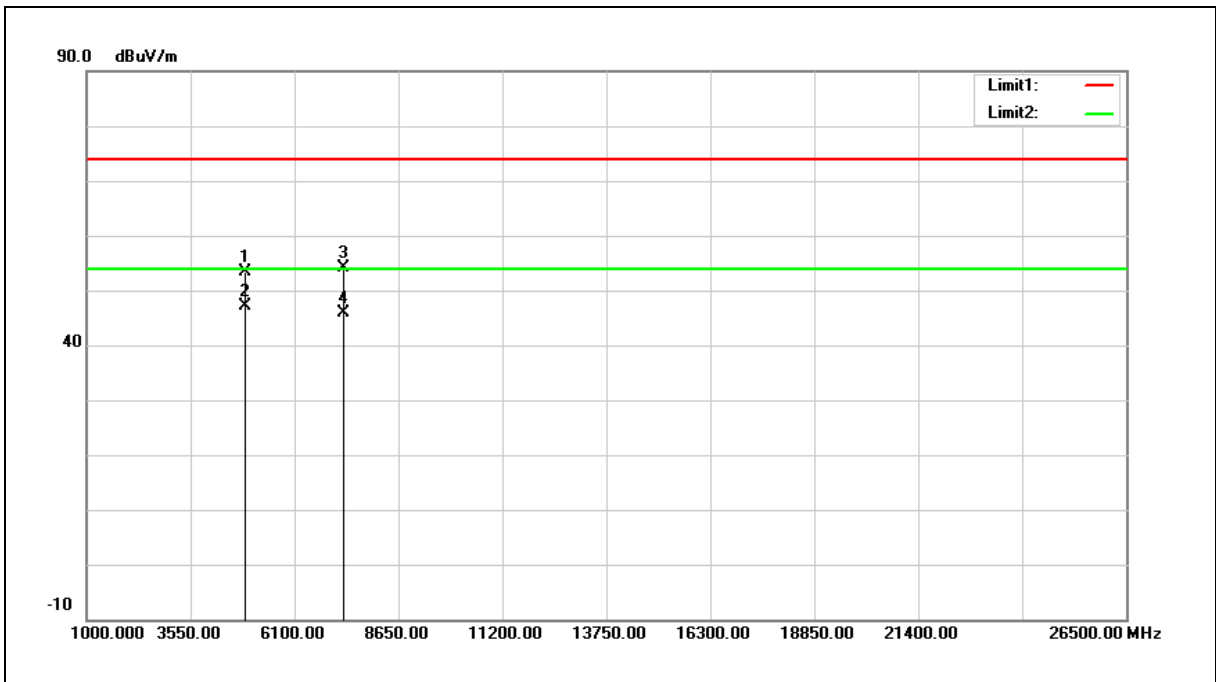
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2440 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4880.000	58.19	-4.85	53.34	74.00	-20.66	peak
2	4880.000	51.91	-4.85	47.06	54.00	-6.94	AVG
3	7320.000	54.29	-0.21	54.08	74.00	-19.92	peak
4	7320.000	46.04	-0.21	45.83	54.00	-8.17	AVG

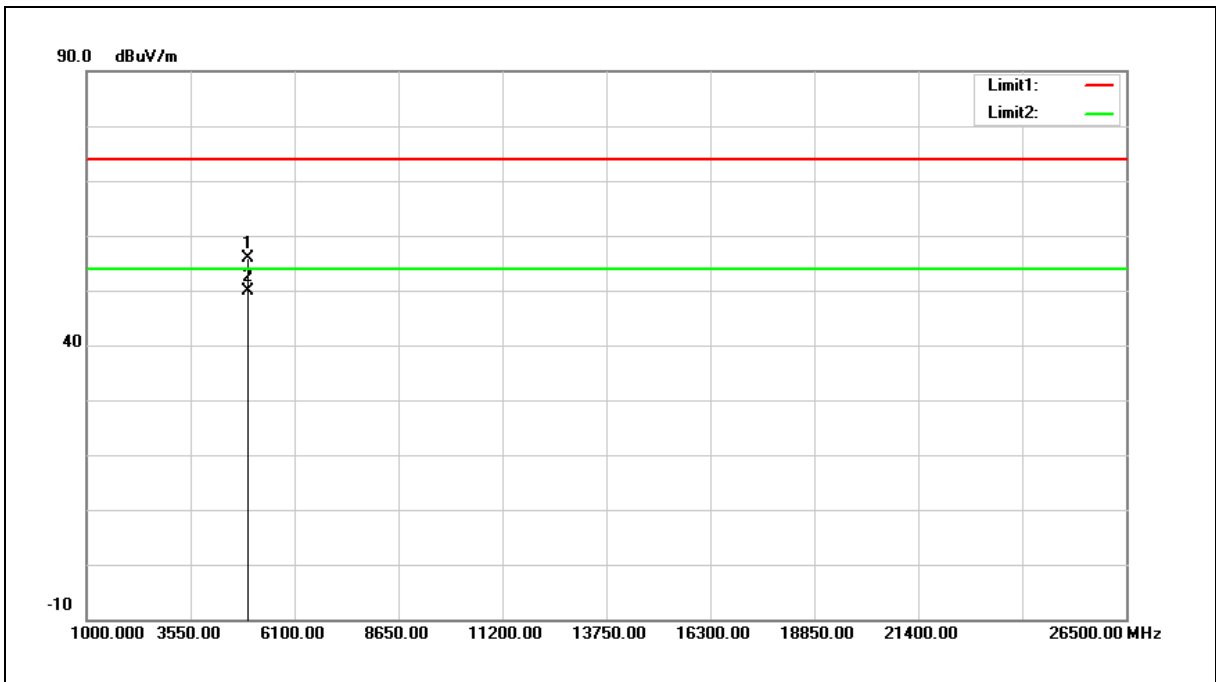
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4960.000	60.73	-4.89	55.84	74.00	-18.16	peak
2	4960.000	54.86	-4.89	49.97	54.00	-4.03	AVG

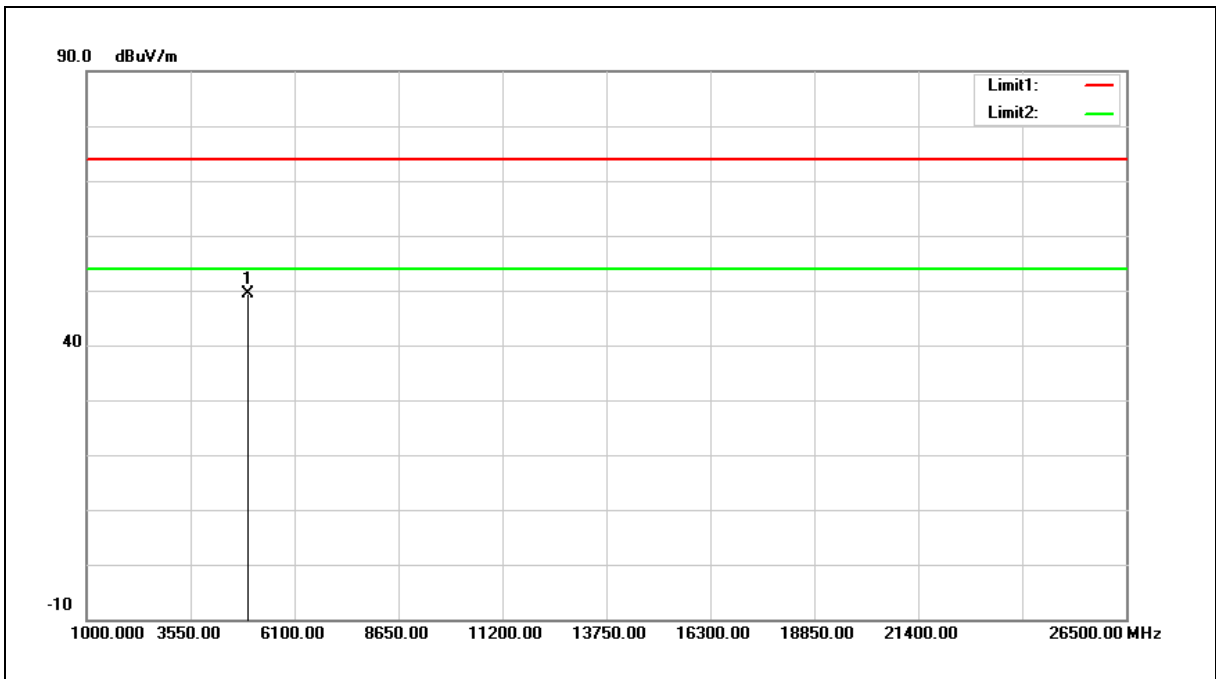
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4960.000	54.22	-4.89	49.33	74.00	-24.67	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.



Power setting 2_Antenna Type: Heavy Duty Screw Mount Antenna

Below 1 GHz

Standard:	FCC Part 15.247	Test Distance:	3 m				
Test item:	Harmonic	Power:	DC 3.3 V				
Test Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH				
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V
78.5000	43.21	-14.53	28.68	40.00	-11.32	QP	H
114.3900	39.54	-13.62	25.92	43.50	-17.58	QP	H
174.5300	39.46	-10.74	28.72	43.50	-14.78	QP	H
267.6500	40.20	-11.35	28.85	46.00	-17.15	QP	H
691.5400	36.38	-1.99	34.39	46.00	-11.61	QP	H
877.7800	35.99	1.09	37.08	46.00	-8.92	QP	H
67.8300	40.57	-12.59	27.98	40.00	-12.02	QP	V
174.5300	39.35	-10.74	28.61	43.50	-14.89	QP	V
226.9100	36.79	-12.85	23.94	46.00	-22.06	QP	V
462.6200	35.59	-5.95	29.64	46.00	-16.36	QP	V
700.2700	34.71	-1.98	32.73	46.00	-13.27	QP	V
857.4100	36.47	0.94	37.41	46.00	-8.59	QP	V

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

Example: 28.68 = -14.53 + 43.21.

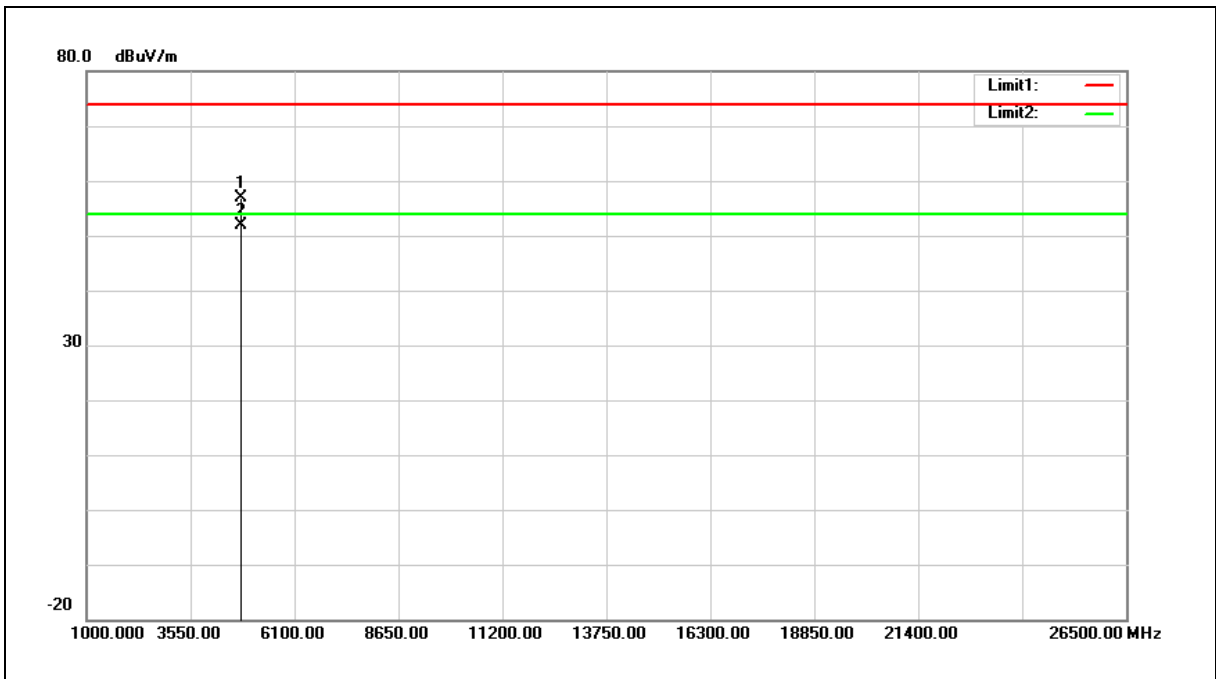
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

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:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4804.000	61.57	-4.81	56.76	74.00	-17.24	peak
2	4804.000	56.67	-4.81	51.86	54.00	-2.14	AVG

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

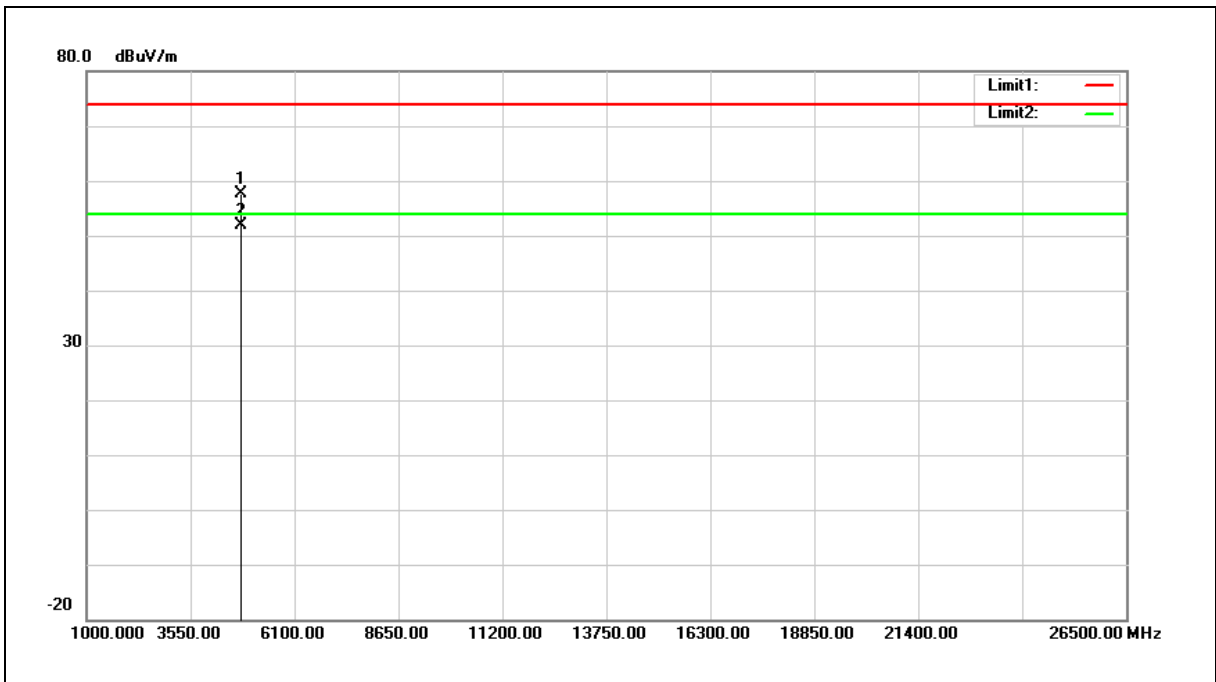
Example: $56.76 = -4.81 + 61.57$.

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:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4804.000	62.38	-4.81	57.57	74.00	-16.43	peak
2	4804.000	56.59	-4.81	51.78	54.00	-2.22	AVG

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

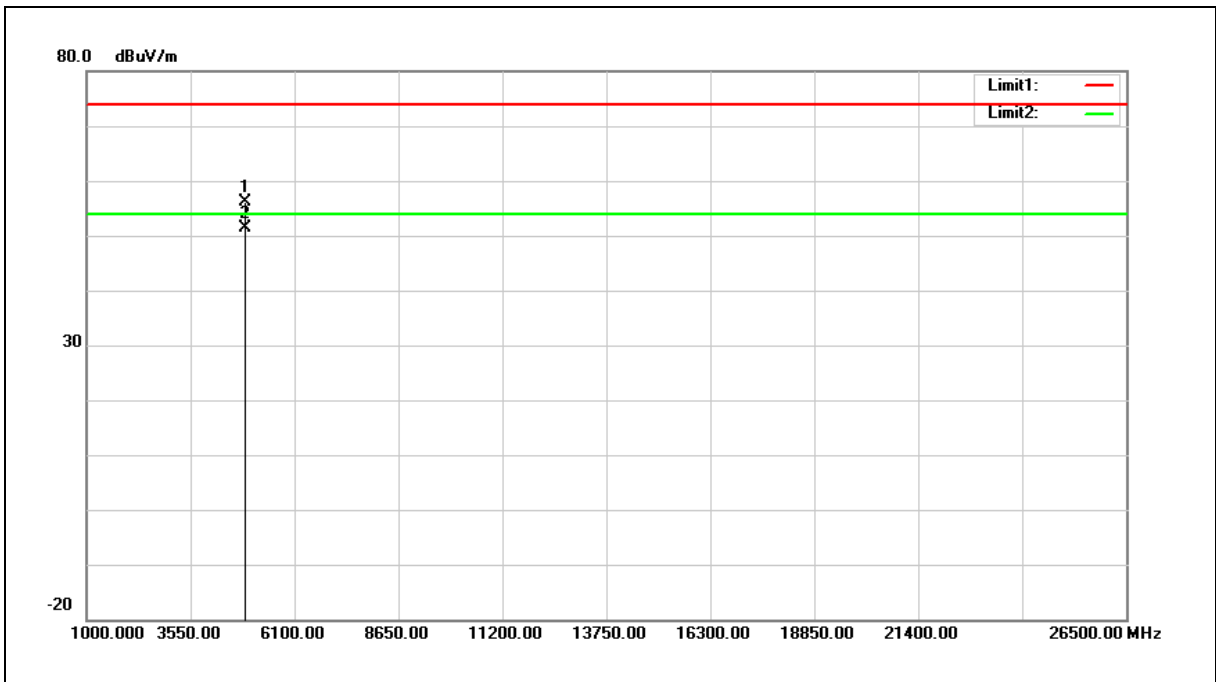
Example: 57.57 = -4.81 + 62.38.

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:	2440 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4880.000	61.10	-4.85	56.25	74.00	-17.75	peak
2	4880.000	56.18	-4.85	51.33	54.00	-2.67	AVG

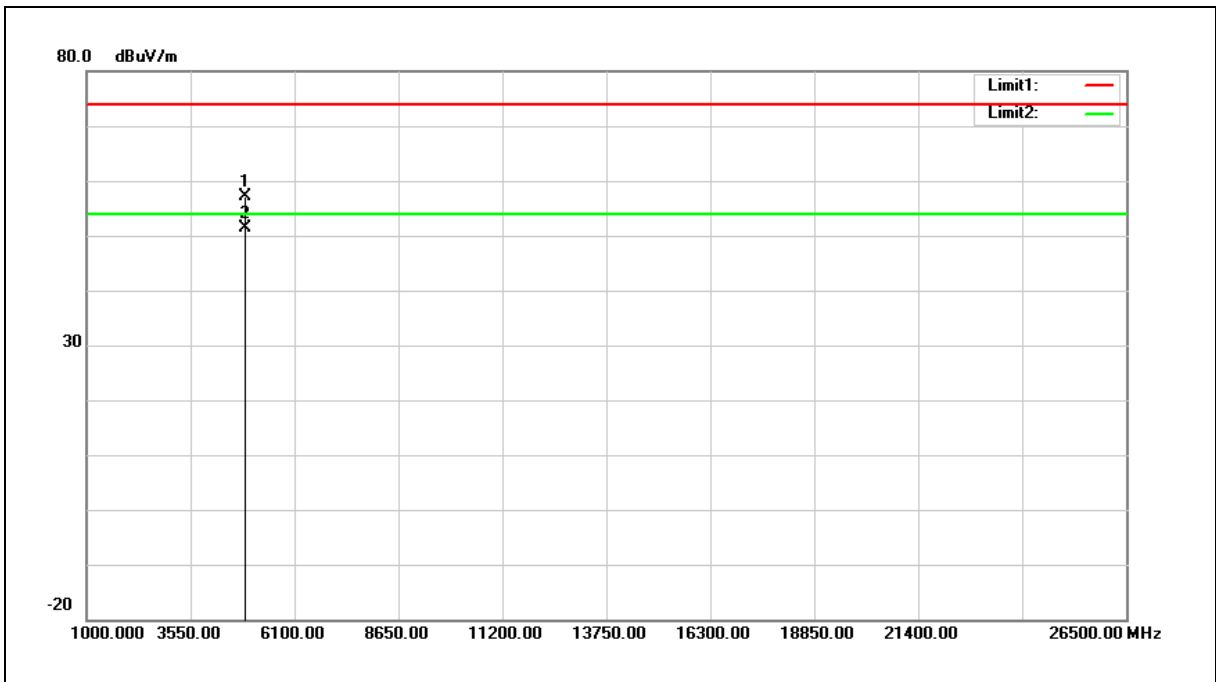
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2440 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4880.000	61.92	-4.85	57.07	74.00	-16.93	peak
2	4880.000	56.12	-4.85	51.27	54.00	-2.73	AVG

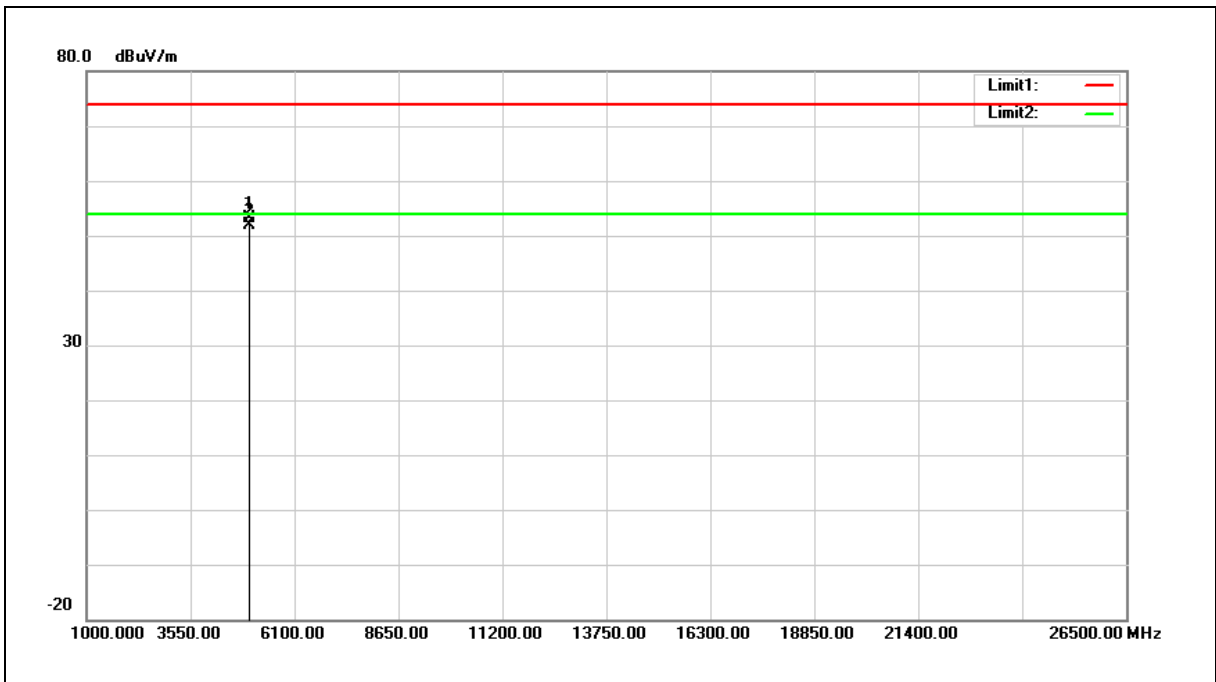
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4960.000	57.99	-4.89	53.10	74.00	-20.90	peak
2	4960.000	56.79	-4.89	51.90	54.00	-2.10	AVG

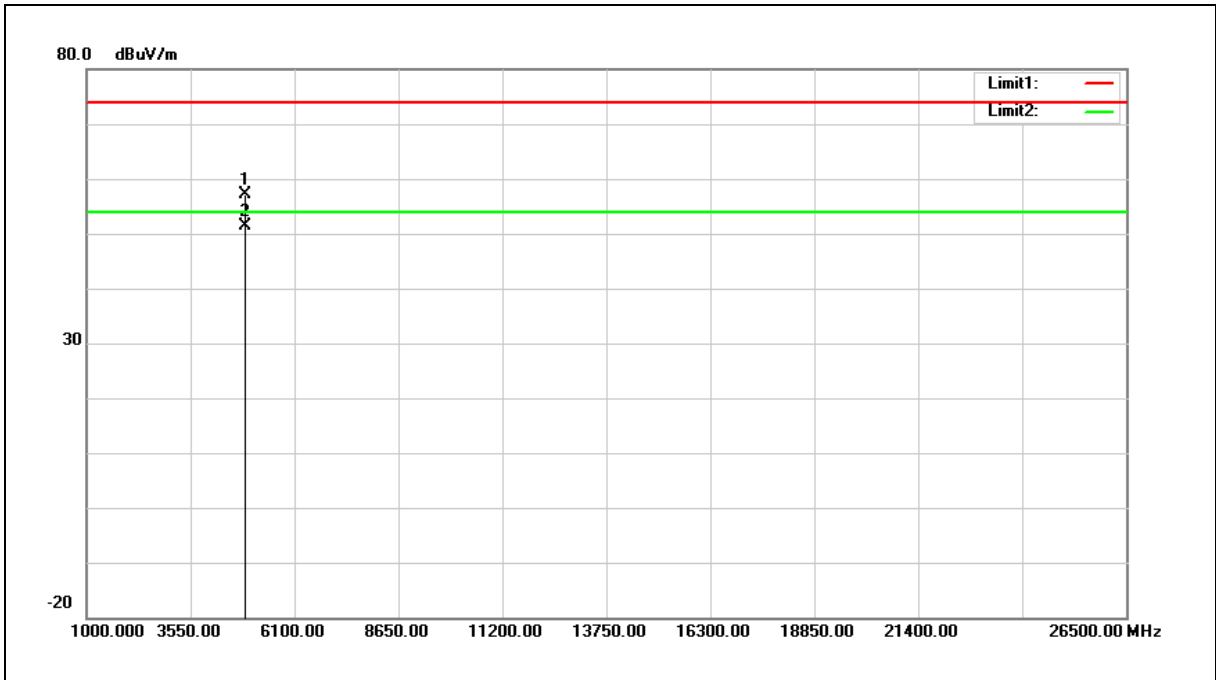
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2440 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4880.000	61.92	-4.85	57.07	74.00	-16.93	peak
2	4880.000	56.12	-4.85	51.27	54.00	-2.73	AVG

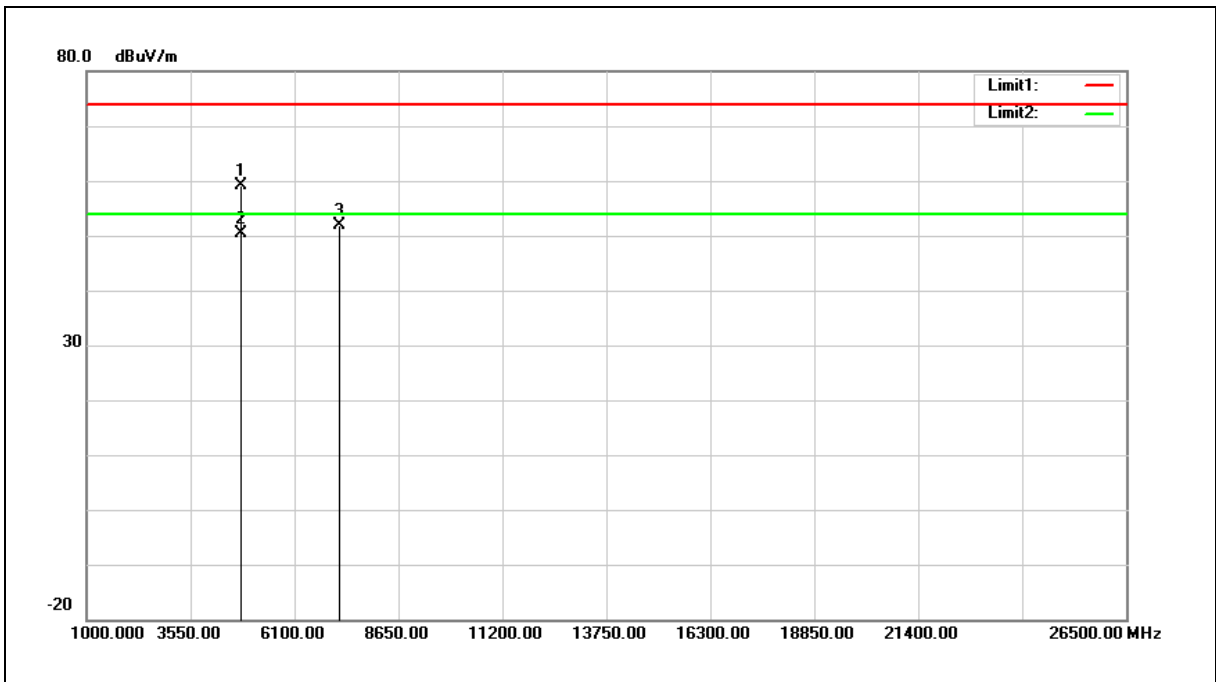
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	Mode 3		
Ant.Polar.:	Horizontal		



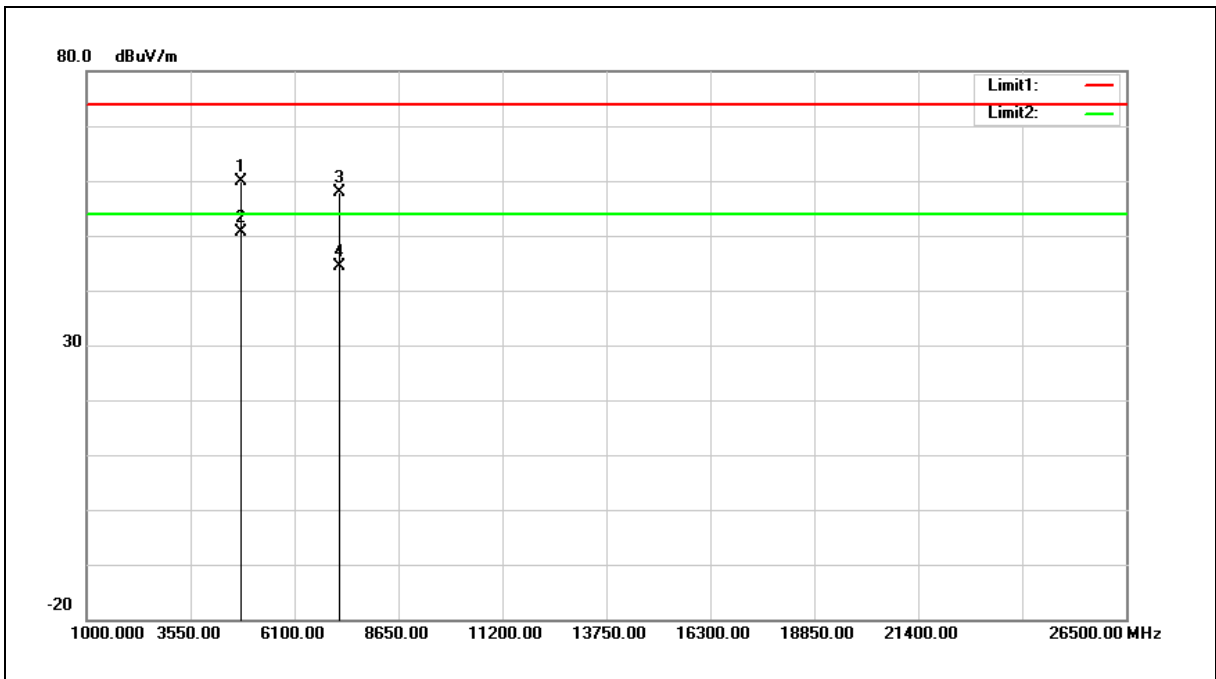
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804.000	64.03	-4.81	59.22	74.00	-14.78	peak
2	4804.000	55.29	-4.81	50.48	54.00	-3.52	AVG
3	7206.000	52.32	-0.51	51.81	74.00	-22.19	peak

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:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4804.000	64.69	-4.81	59.88	74.00	-14.12	peak
2	4804.000	55.39	-4.81	50.58	54.00	-3.42	AVG
3	7206.000	58.28	-0.51	57.77	74.00	-16.23	peak
4	7206.000	44.94	-0.51	44.43	54.00	-9.57	AVG

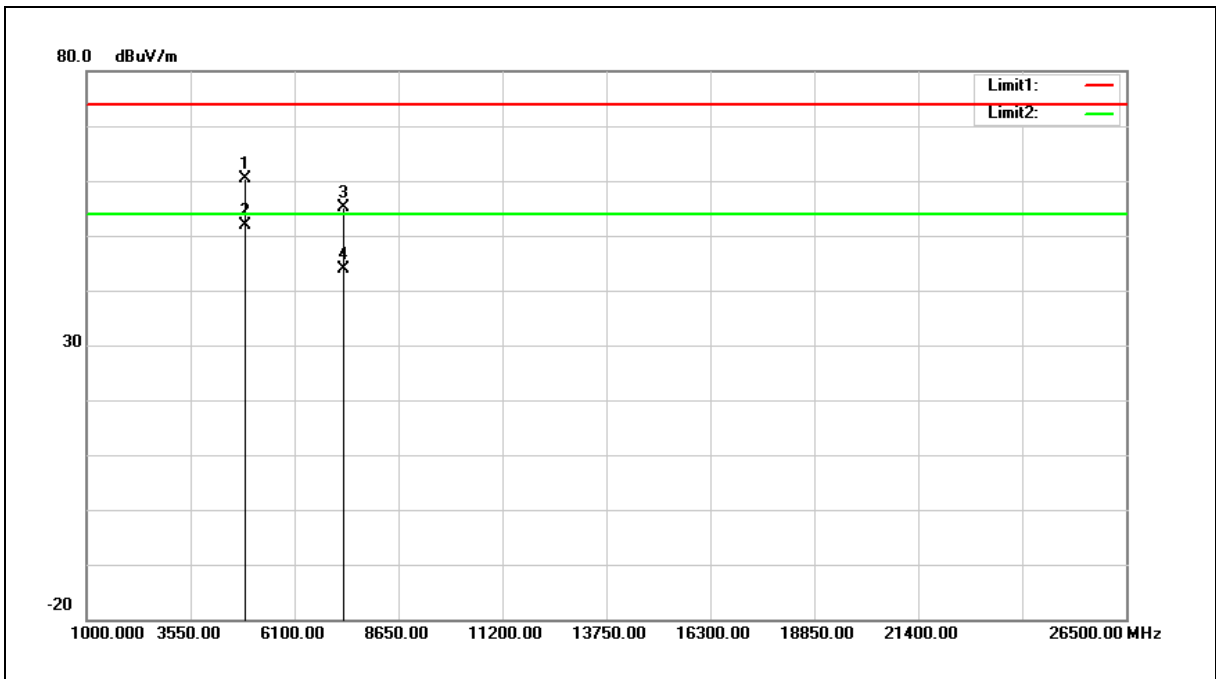
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2440 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4880.000	65.31	-4.85	60.46	74.00	-13.54	peak
2	4880.000	56.73	-4.85	51.88	54.00	-2.12	AVG
3	7320.000	55.30	-0.21	55.09	74.00	-18.91	peak
4	7320.000	44.01	-0.21	43.80	54.00	-10.20	AVG

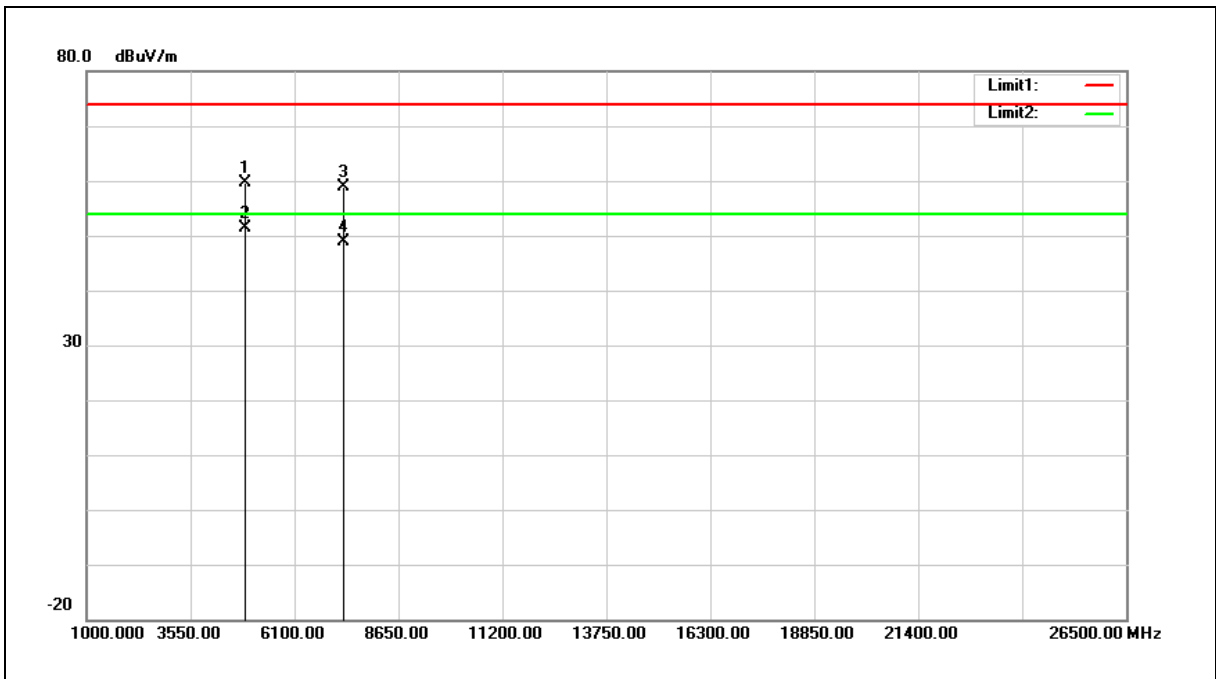
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2440 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4880.000	64.40	-4.85	59.55	74.00	-14.45	peak
2	4880.000	56.13	-4.85	51.28	54.00	-2.72	AVG
3	7320.000	59.14	-0.21	58.93	74.00	-15.07	peak
4	7320.000	49.01	-0.21	48.80	54.00	-5.20	AVG

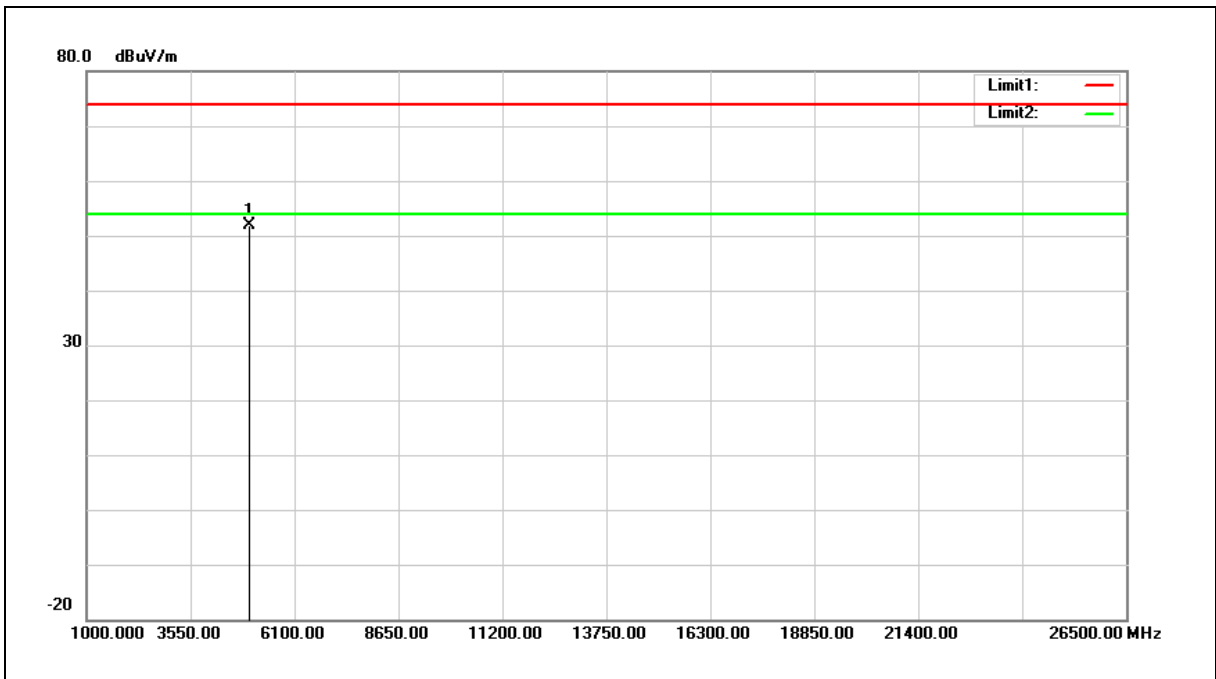
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4960.000	56.66	-4.89	51.77	74.00	-22.23	peak

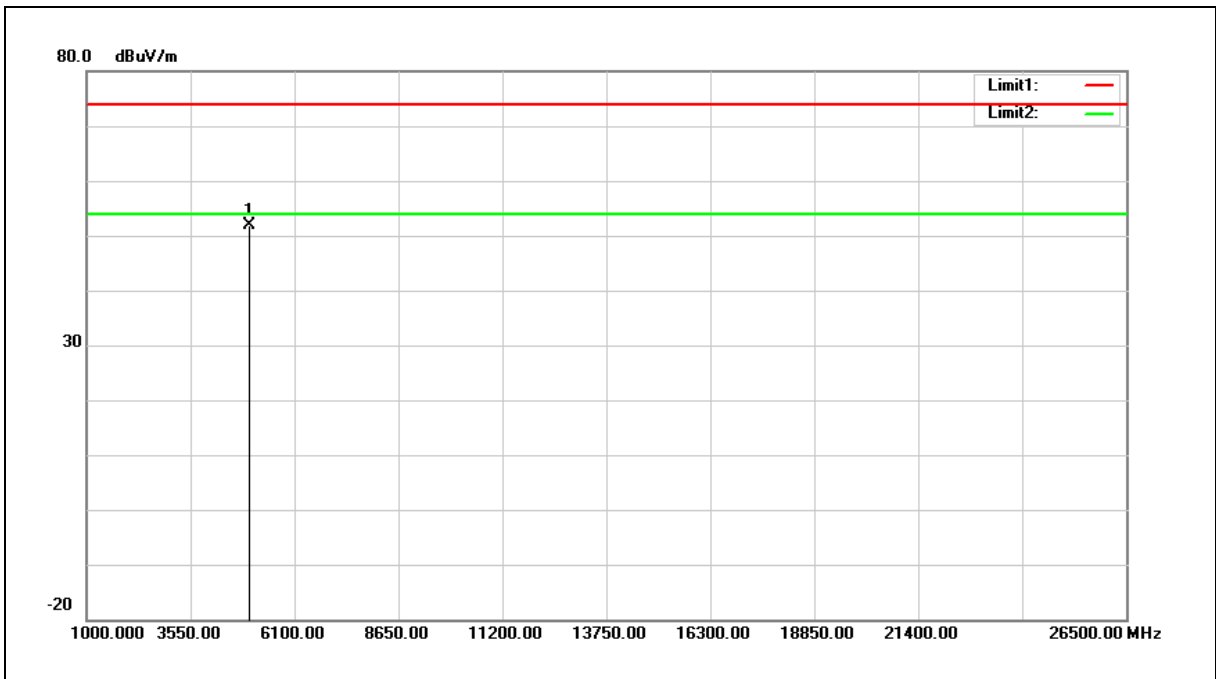
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	4960.000	56.68	-4.89	51.79	74.00	-22.21	peak

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

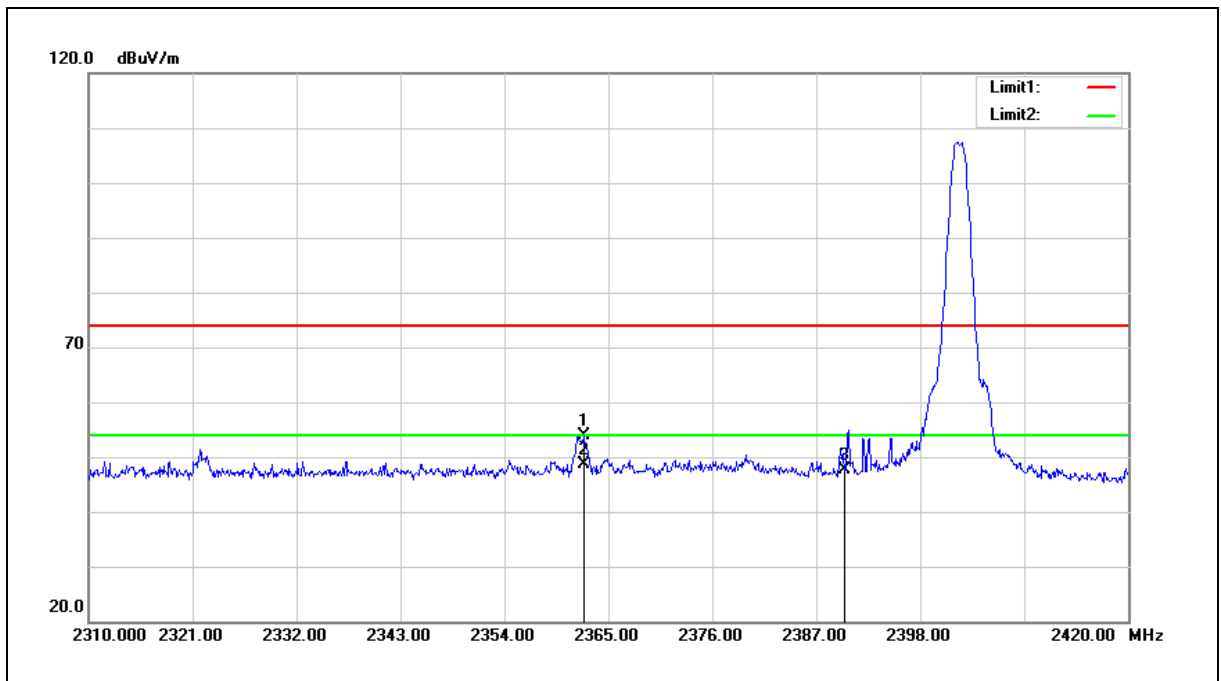
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

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

Band Edge

Power setting 1_Antenna Type: PCB Trace Antenna

Standard:	FCC Part 15.247	Test Distance:	3 m
Test item:	Band edge	Power:	DC 3.3 V
Frequency:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2362.360	63.60	-9.73	53.87	74.00	-20.13	peak
2	2362.360	58.25	-9.73	48.52	54.00	-5.48	AVG
3	2390.000	57.19	-9.62	47.57	74.00	-26.43	peak

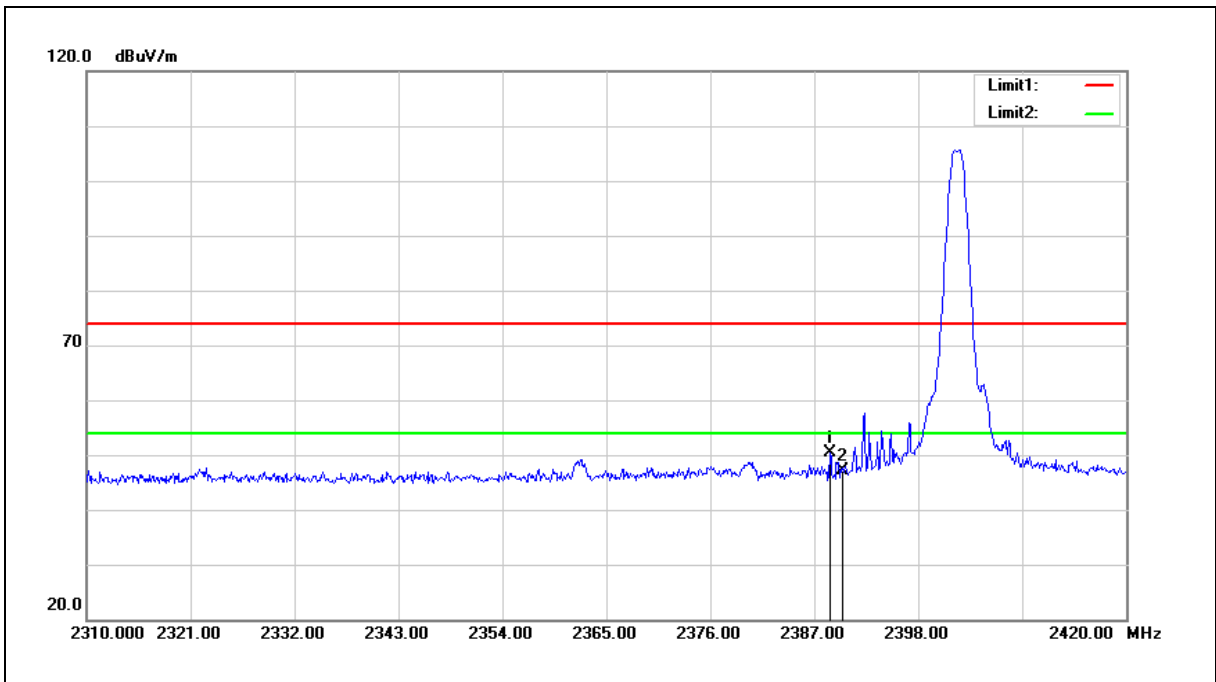
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Vertical		



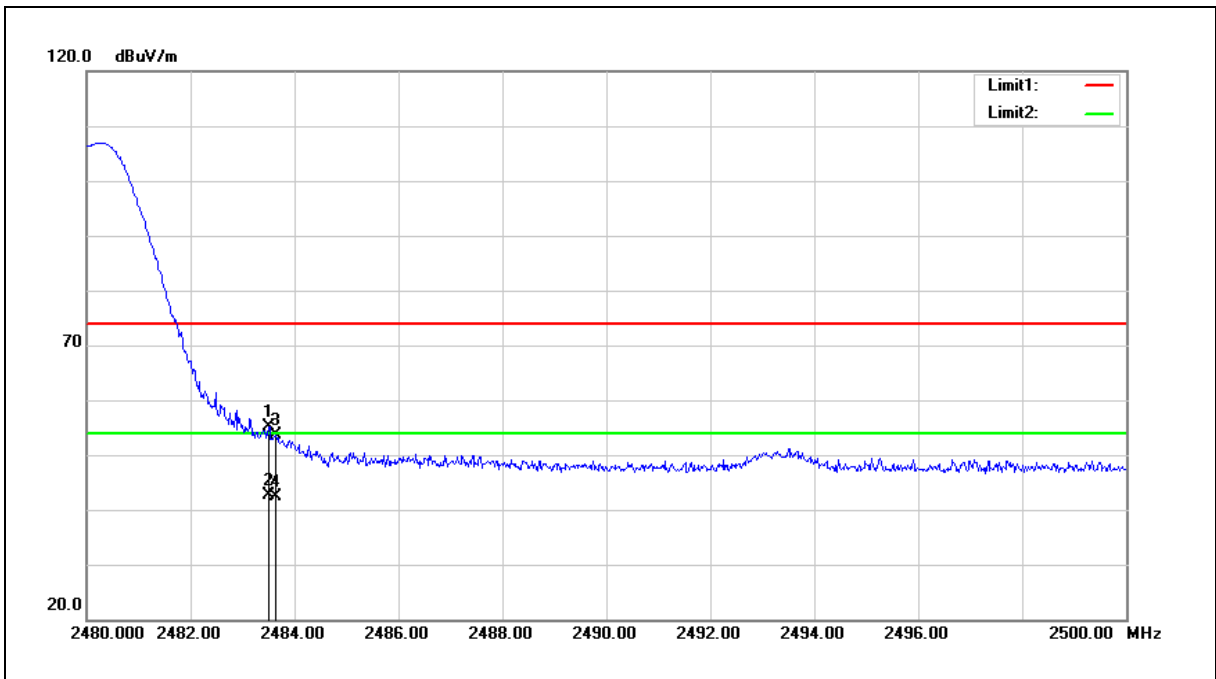
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.650	60.10	-9.63	50.47	74.00	-23.53	peak
2	2390.000	56.86	-9.62	47.24	74.00	-26.76	peak

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:	Band edge	Power:	DC 3.3 V
Frequency:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2483.500	64.39	-9.37	55.02	74.00	-18.98	peak
2	2483.500	51.89	-9.37	42.52	54.00	-11.48	AVG
3	2483.640	62.88	-9.37	53.51	74.00	-20.49	peak
4	2483.640	51.65	-9.37	42.28	54.00	-11.72	AVG

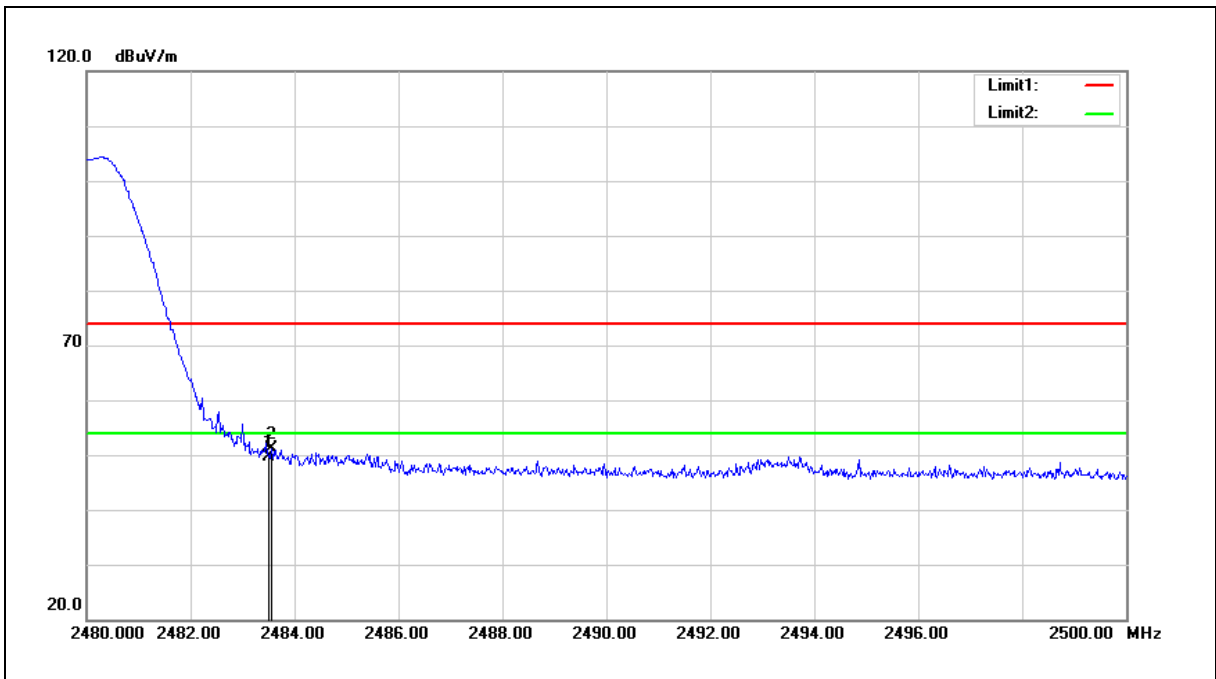
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2483.500	58.96	-9.37	49.59	74.00	-24.41	peak
2	2483.560	60.44	-9.37	51.07	74.00	-22.93	peak

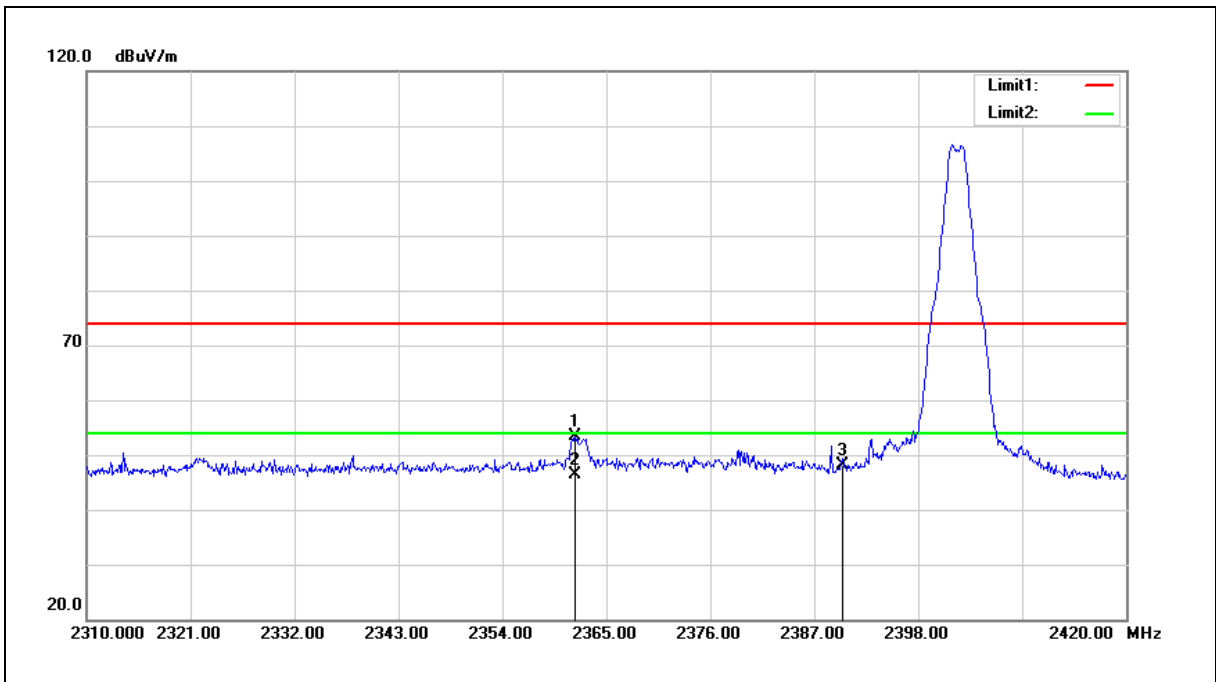
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2361.700	63.07	-9.73	53.34	74.00	-20.66	peak
2	2361.700	56.11	-9.73	46.38	54.00	-7.62	AVG
3	2390.000	57.71	-9.62	48.09	74.00	-25.91	peak

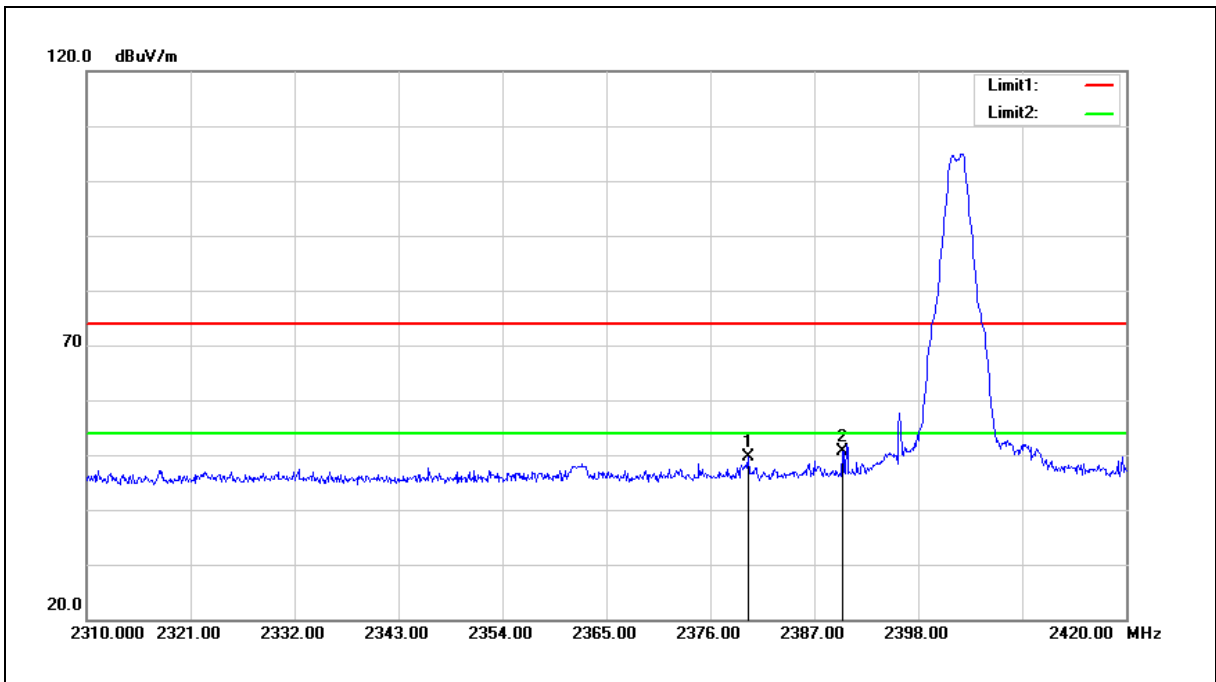
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2379.960	59.32	-9.66	49.66	74.00	-24.34	peak
2	2390.000	60.29	-9.62	50.67	74.00	-23.33	peak

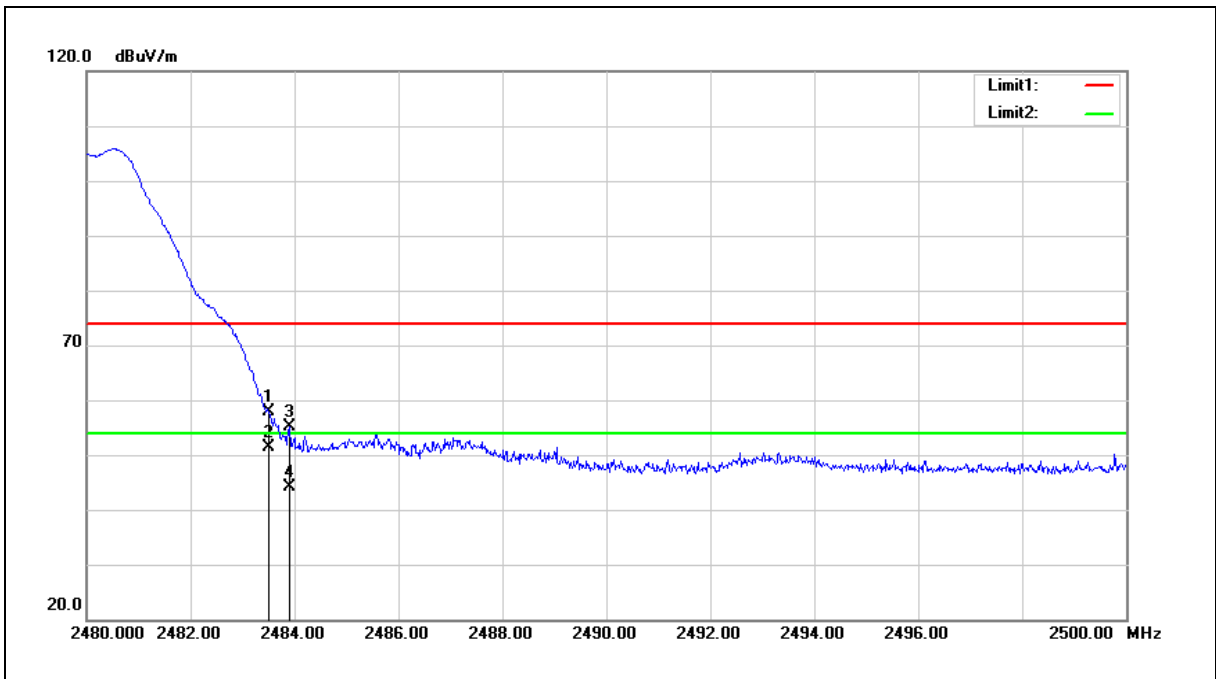
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2483.500	67.15	-9.37	57.78	74.00	-16.22	peak
2	2483.500	60.78	-9.37	51.41	54.00	-2.59	AVG
3	2483.900	64.49	-9.37	55.12	74.00	-18.88	peak
4	2483.900	53.56	-9.37	44.19	54.00	-9.81	AVG

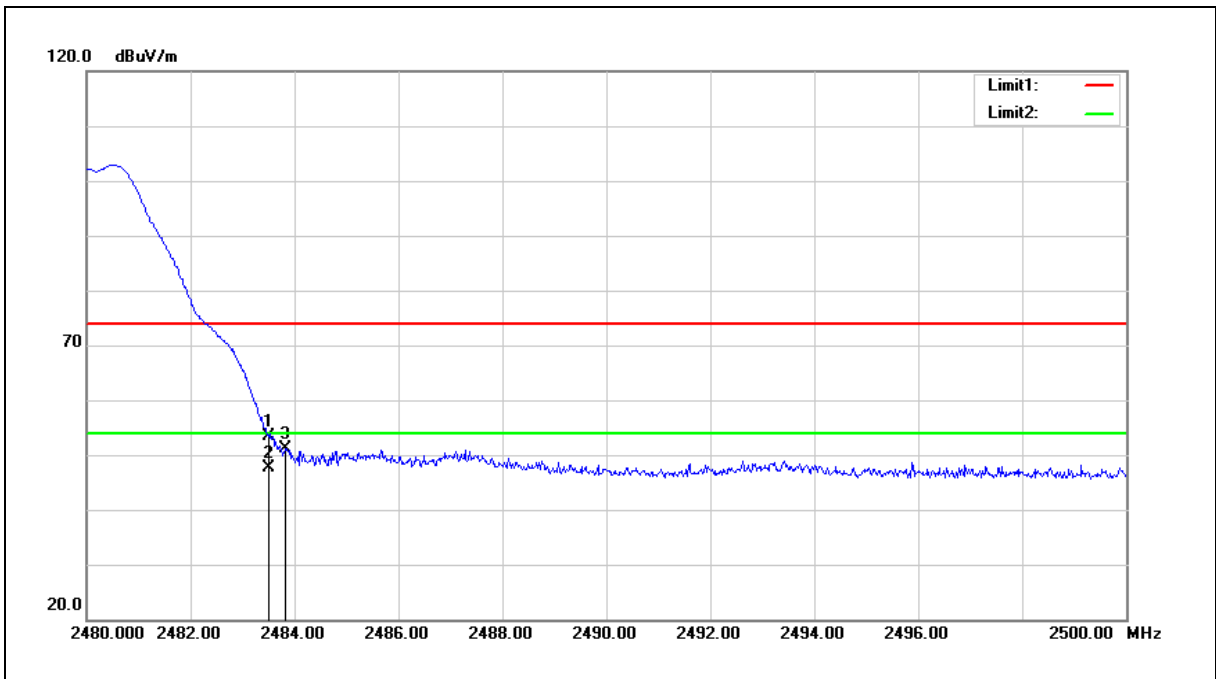
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2483.500	62.70	-9.37	53.33	74.00	-20.67	peak
2	2483.500	56.88	-9.37	47.51	54.00	-6.49	AVG
3	2483.820	60.44	-9.37	51.07	74.00	-22.93	peak

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

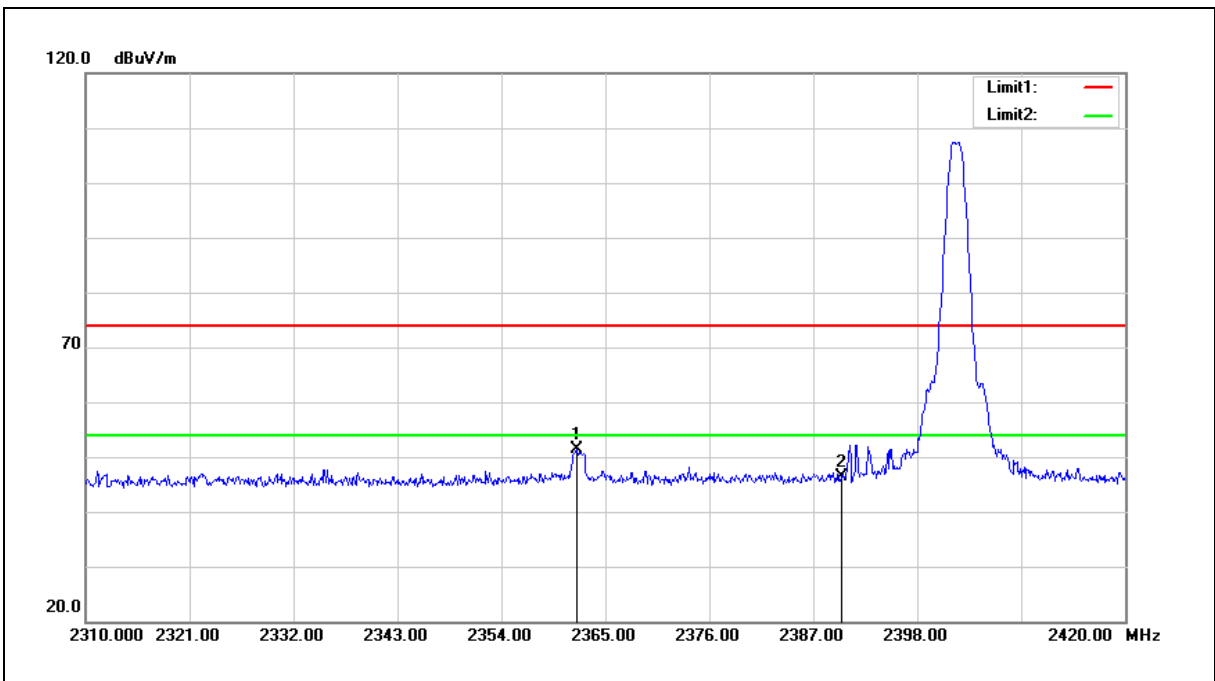
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

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



Power setting 2_Antenna Type: Heavy Duty Screw Mount Antenna

Standard:	FCC Part 15.247	Test Distance:	3 m
Test item:	Band edge	Power:	DC 3.3 V
Frequency:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2361.920	61.21	-9.73	51.48	74.00	-22.52	peak
2	2390.000	55.97	-9.62	46.35	74.00	-27.65	peak

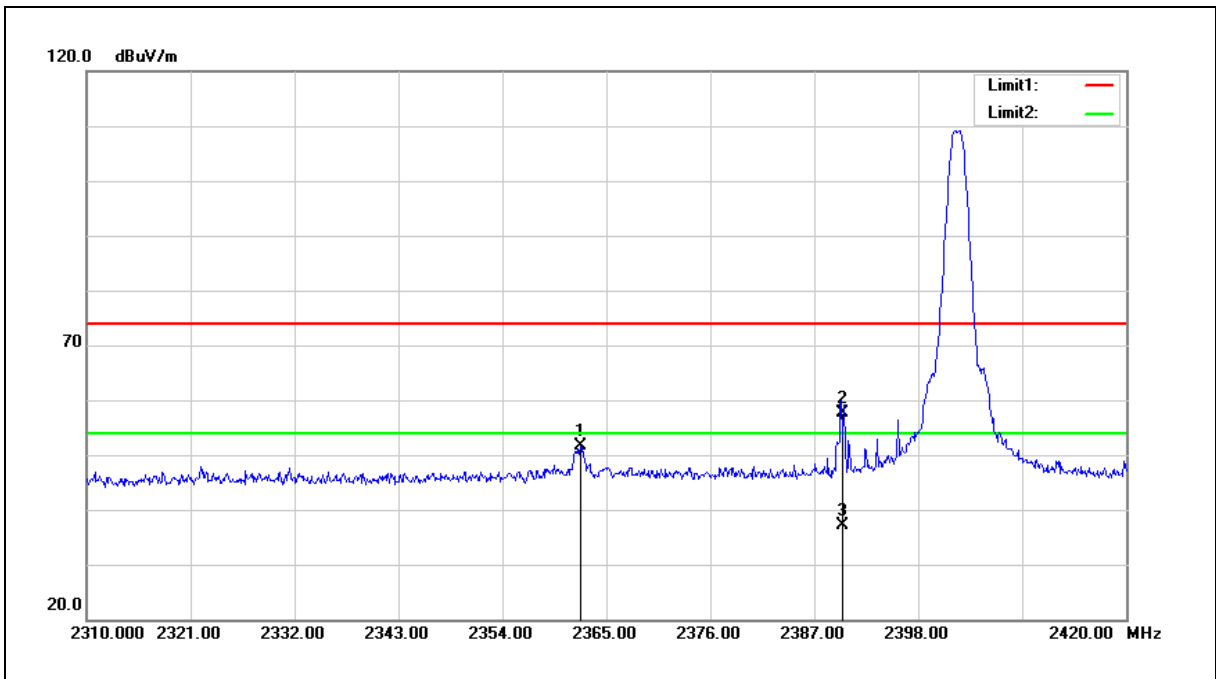
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2362.250	61.30	-9.73	51.57	74.00	-22.43	peak
2	2390.000	67.22	-9.62	57.60	74.00	-16.40	peak
3	2390.000	46.66	-9.62	37.04	54.00	-16.96	AVG

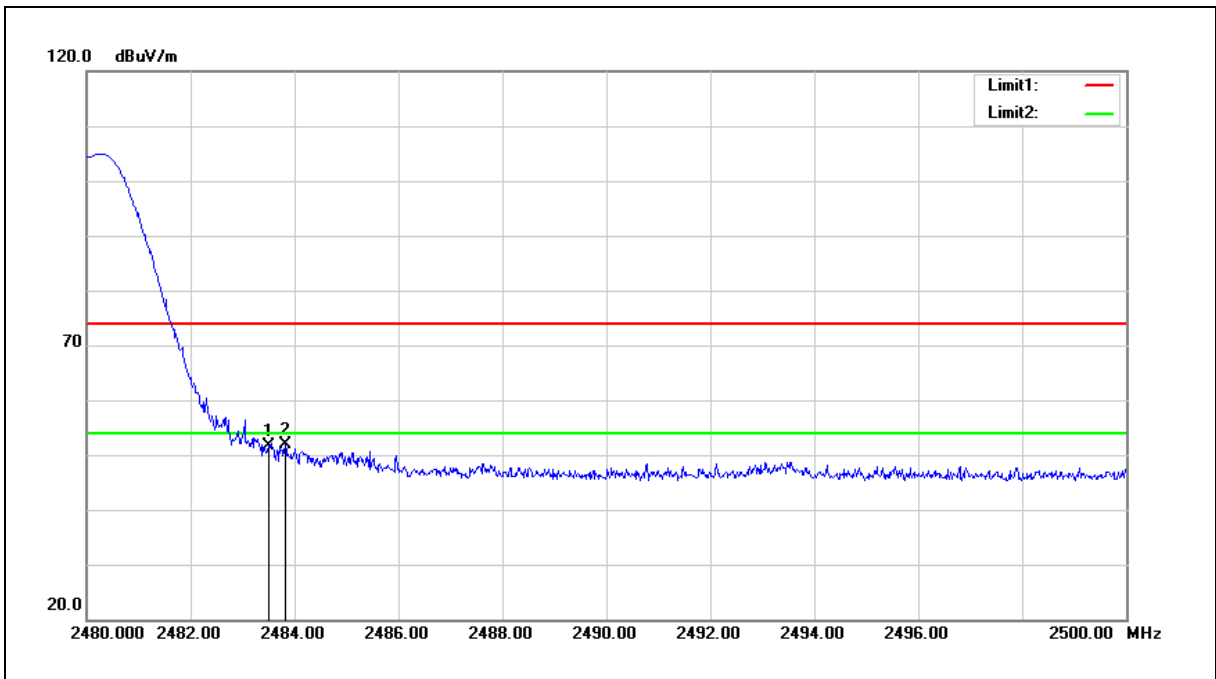
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



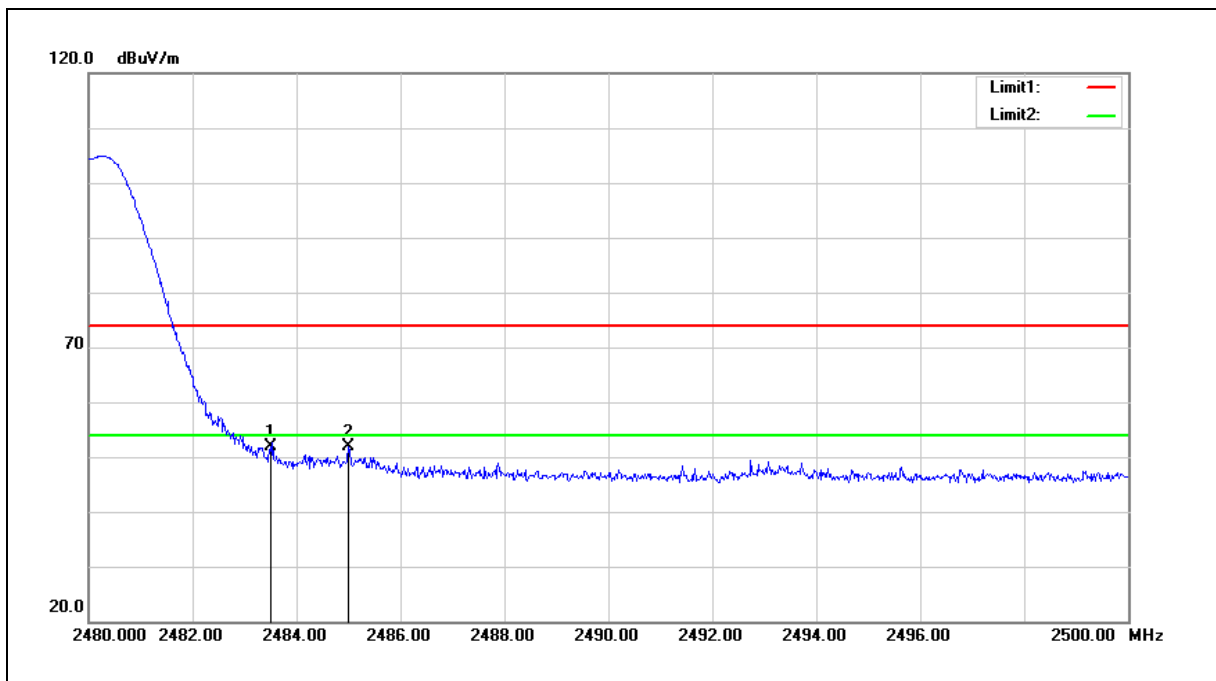
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	60.92	-9.37	51.55	74.00	-22.45	peak
2	2483.820	61.14	-9.37	51.77	74.00	-22.23	peak

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:	Band edge	Power:	DC 3.3 V
Frequency:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2483.500	61.27	-9.37	51.90	74.00	-22.10	peak
2	2485.000	61.15	-9.37	51.78	74.00	-22.22	peak

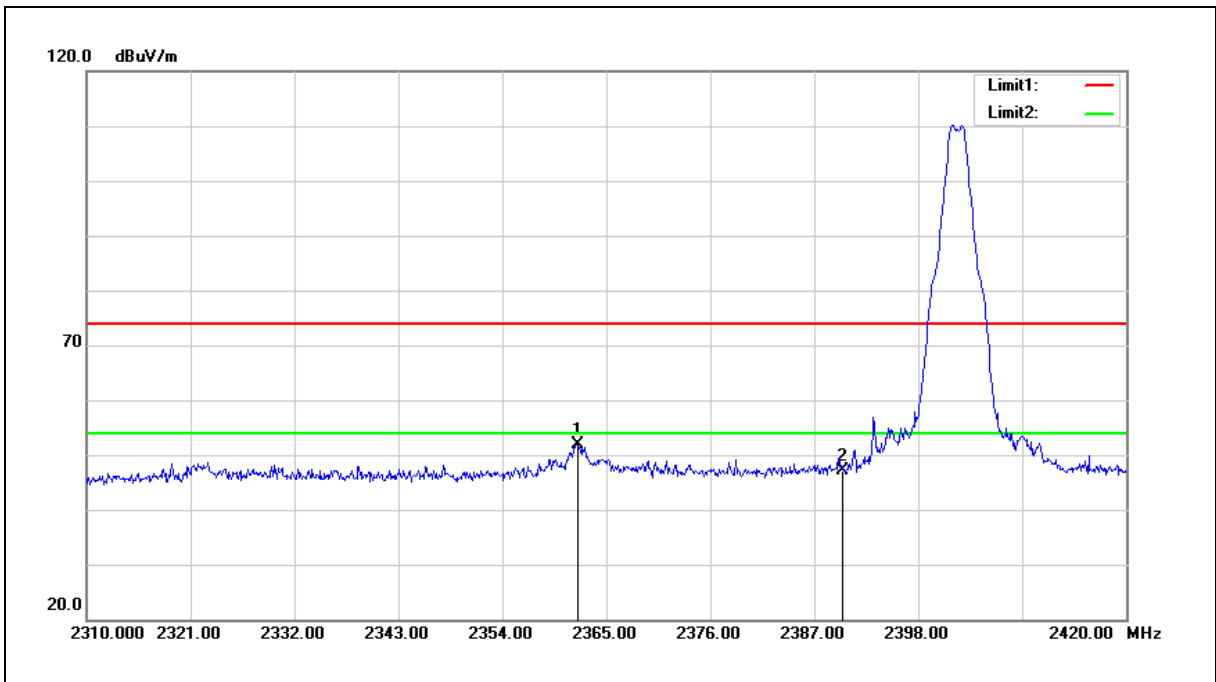
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2361.920	61.68	-9.73	51.95	74.00	-22.05	peak
2	2390.000	56.64	-9.62	47.02	74.00	-26.98	peak

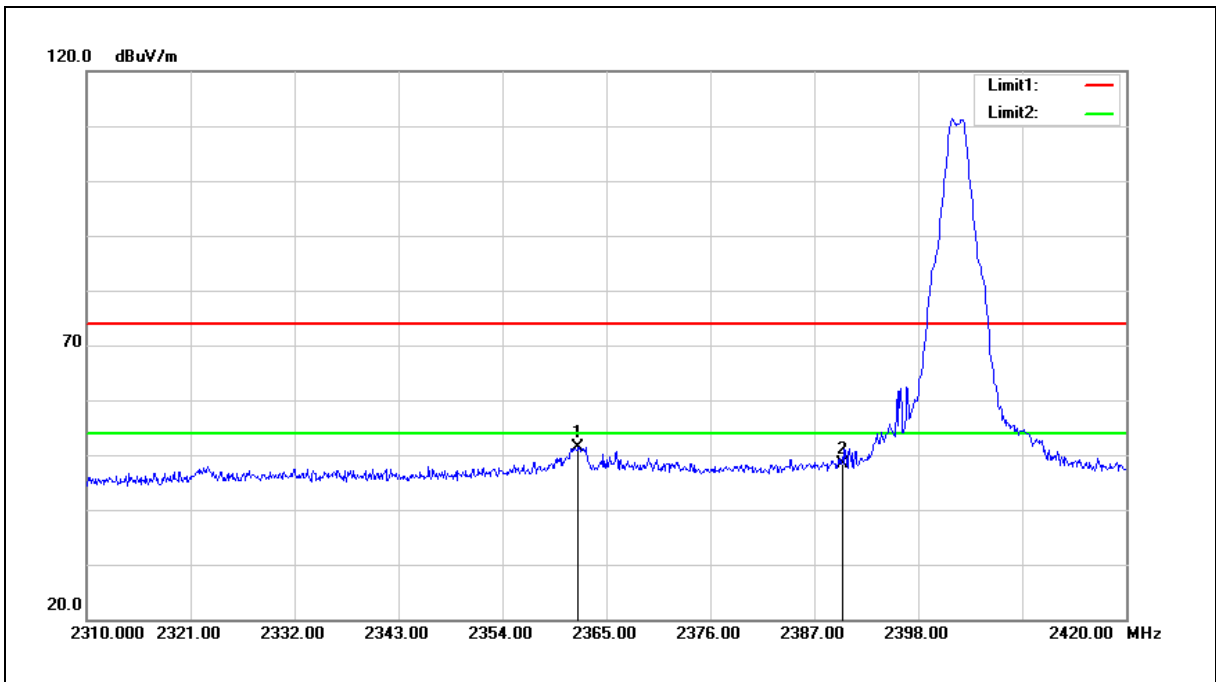
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2402 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2362.030	61.13	-9.73	51.40	74.00	-22.60	peak
2	2390.000	58.09	-9.62	48.47	74.00	-25.53	peak

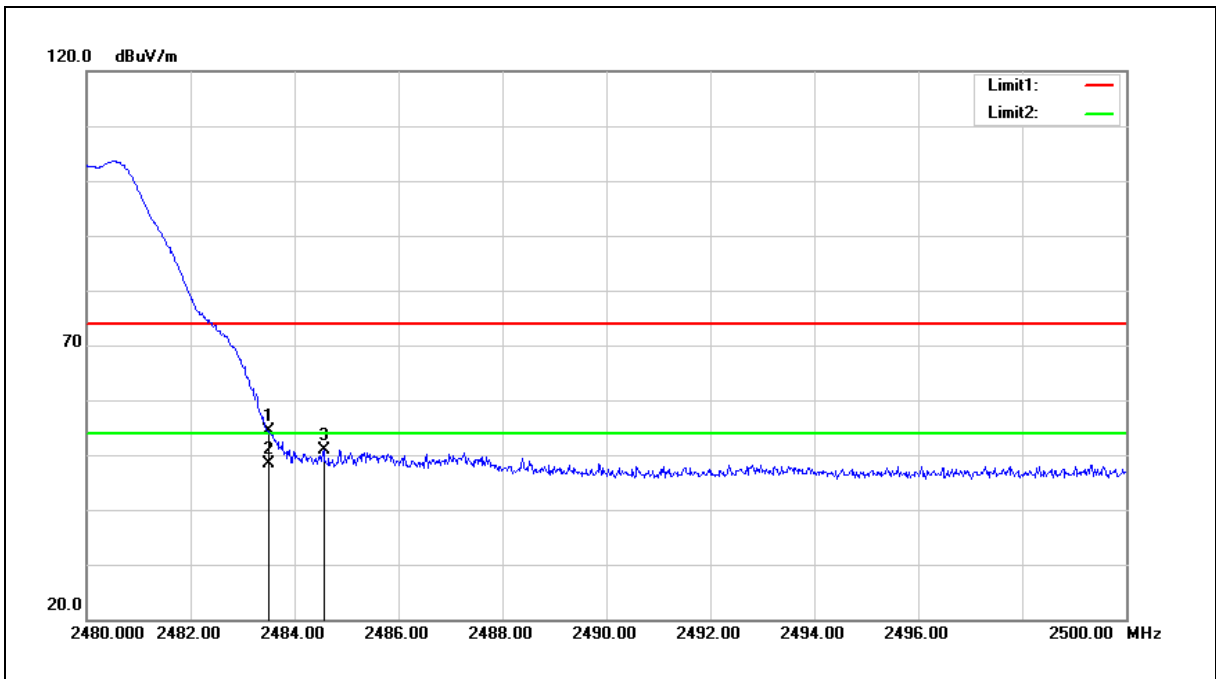
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2483.500	63.85	-9.37	54.48	74.00	-19.52	peak
2	2483.500	57.67	-9.37	48.30	54.00	-5.70	AVG
3	2484.560	60.20	-9.37	50.83	74.00	-23.17	peak

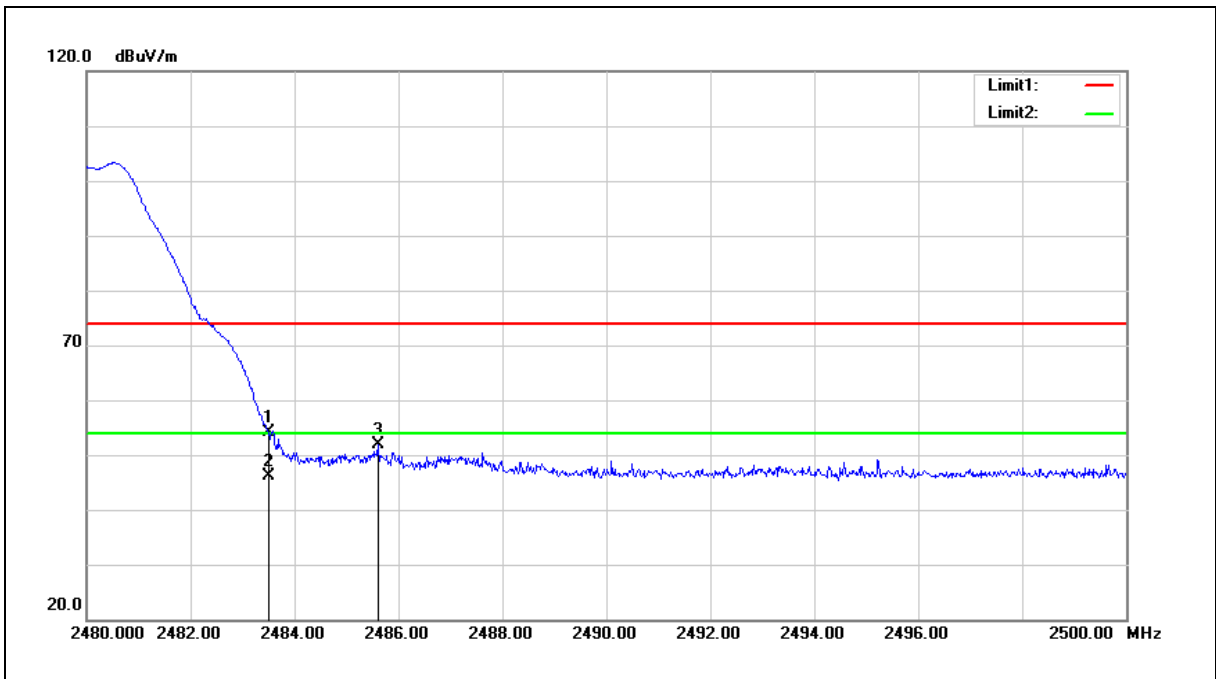
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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:	Band edge	Power:	DC 3.3 V
Frequency:	2480 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/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	2483.500	63.38	-9.37	54.01	74.00	-19.99	peak
2	2483.500	55.57	-9.37	46.20	54.00	-7.80	AVG
3	2485.600	61.33	-9.37	51.96	74.00	-22.04	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.