FCC Test Report

for

2.4GHz USB RF dongle

Model Number	**:**	**DZUSB01**
FCC ID	**:**	**YCMDZUSB01**
Report Number	**:**	**RF-D230-1111-016**
Date of Receipt	**:**	**November 16, 2011**
Date of Report	**:**	**December 8, 2011**

Prepared for

DiZiC Co., Ltd.

3Fl., No 4-2 Jin Xi Street, Zhong Shan District, 104 Taipei, TAIWAN

Prepared by

Central Research Technology Co.

EMC Test Laboratory

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NVLAP LAB CODE 200575-0

Verification of Compliance

Equipment under Test	**: 2.4GHz USB RF dongle**
Model No.	**: DZUSB01**
FCC ID	**: YCMDZUSB01**
Manufacturer	**: DiZiC Co., Ltd.**
Applicant	**: DiZiC Co., Ltd.**
Address	**: 3Fl., No 4-2 Jin Xi Street, Zhong Shan District, 104 Taipei, TAIWAN**
Applicable Standards	**: 47 CFR part 15, Subpart C**
Date of Testing	**: November 16 ~ November 22, 2011**
Deviation	**: N/A**
Condition of Test Sample	**: Engineering Sample**

We, **Central Research Technology Co**., hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's RF characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

PREPARED BY : Rosa Hsieh (Rosa Hsieh/System Executive), **DATE :** December 8, 2011

APPROVED BY : J. Y. Shih (Tsun-Yu Shih/General Manager), **DATE :** Dec. 8, 2011

Contents

1 General Description

1.1 General Description of EUT

Equipment under Test	:	2.4GHz USB RF dongle
Model No.	:	DZUSB01
Power in	:	5Vdc
Test Voltage	:	supplied by the connected notebook
Manufacturer	:	DiZiC Co. Ltd.
Channel Numbers	:	16
Frequency Range	:	2405~2480MHz
Function Modulation	:	OQPSK
Modular Function	:	IEEE 802.15.4 / Zigbee
Antenna Spec	:	Printed Antenna 1.95dBi (Gain)
Function Description	:	

The EUT is used to transmit and receive command both. Please refer to the user's manual for the details.

Perform the functions of EUT continuously by executing the test program supplied by manufacturer.

1.2 Applied standards

(1) Conduction Emission Requirement

For intentional device, according to §15.207(a) line conduction emission limit is as below table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency.

(2) Radiated Emission Requirement

For intentional device, according to §15.209, the general requirement of field strength of radiated emissions from intentional radiator at a distance of 3 meters shall not exceed the below table.

Frequency (MHz)	Measurement Distance (m)	Field Strength (uV/m)	Field Strength (dBuV/m)
30 – 88	3	100	40.0
88 – 216	3	150	43.5
216 – 960	3	200	46.0
960 – 1610	3	500	54.0
above 1610	3	500	54.0

Note 1- The lower limit shall apply at the transition frequency.

(3) 6dB Bandwidth

According to 15.247(a)(2), Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

(4) Maximun Peak Output Power

According to 15.247(b)(3), For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

(5) 100kHz Bandedge

According to 15.247(d), 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, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

(6) Power spectral density

According to 15.247(e),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.

(7) Restricted Band

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
[2]1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(2)
13.36 - 13.41			

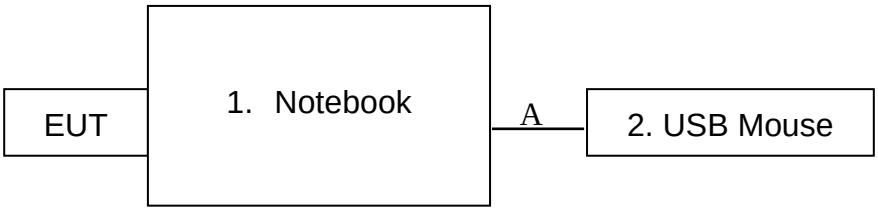
[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

1.3 The Support Units

No.	Unit	Model No./ Serial No.	Trade Name	Power Code	Supported by lab.
1	Notebook	LATITUDE D400/ 5FL891S	DELL	0.8m	V
2	USB Mouse	ITE78CJ/ 1396201673855	MICROSOFT	N/A	V

1.4 Layout of Setup



Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A	USB Mouse Cable	1.85m	V			V	

1.5 Test Capability

Test Facility

The test facility used for evaluating the conformance of the EUT with each standard in the present report meets what required in CISPR16-1-4, CISPR16-2-3 and ANSI C63.4:2003.

Test Room	Type of Test Room	Descriptions
TR1	10m semi-anechoic chamber (23m×14m×9m)	Complying with the NSA requirements in documents CISPR 22 and ANSI C63.4:2003. For the radiated emission measurement.
TR11	3m semi-anechoic chamber (9m × 6m × 6m)	
TR13	Test Site	For the RF conducted emission measurement.
TR5	Shielding Room (8m×5m×4m)	For the conducted emission measurement.

Test Laboratory Competence Information

Central Research Technology Co. has been accredited / filed / authorized by the agencies listed in the following table.

Certificate	Nation	Agency	Code	Mark
Accreditation Certificate	USA	NVLAP	200575-0	ISO/IEC 17025
	R.O.C. (Taiwan)	TAF	0905	ISO/IEC 17025
	R.O.C. (Taiwan)	BSMI	SL2-IN-E-0033, SL2-IS-E-0033, SL2-R1/R2-E-0033, SL2-A1-E-0033 SL2-L1-E-0033	ISO/IEC 17025
Site Filing Document	USA	FCC	474046, TW1053	Test facility list & NSA/SVSWR Data
	Canada	IC	4699A-1,-3	Test facility list & NSA Data
	Japan	VCCI	R-1527,C-1609,T-1441, G-10	Test facility list & NSA/SVSWR Data
Authorization Certificate	Germany	TUV	10021687	ISO/IEC 17025
	Norway	Nemko	ELA212	ISO/IEC 17025

The copy of each certificate can be downloaded from our web site: www.crc-lab.com

1.6 Measurement Uncertainty

The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than U_{cispr} in table 1 of CISPR 16-4-2.

Test Item	Measurement Uncertainty	
Radiated Emission: (30MHz~200MHz)	Horizontal 3.5dB；Vertical 3.8dB	
Radiated Emission: (200MHz~1GHz)	Horizontal 3.9dB；Vertical 3.9dB	
Radiated Emission: (1GHz~18GHz)	Horizontal 3.5dB；Vertical 3.6dB	
Radiated Emission: (18GHz~26.5GHz)	Horizontal 4.4dB；Vertical 4.5dB	
Line Conducted Emission	ESH2-Z5	3.1dB
	ENV 4200	2.8dB

2 Maximum Peak Output Power

Result: Pass

2.1 Applied standard

According to 15.247(b)(3), For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

Filed strength tranfers to peak output power is as below：

$$P = \frac{(ExD)^2}{30 \times G}$$

Note:
P : output power (W)
E : Field strength (V/m)
D : measurement distance = 3m
G : EUT antenna gain = 1.95dBi

Transfer:
P(dBm) = E(dBuV/m) – 90 + 20log3 – 10log30 – 1.95
= E(dBuV/m) – 90 + 9.54 – 14.77 – 1.95
= E(dBuV/m) – 97.18

2.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4407B/ MY45106795	2011/5/2	2012/5/2
Antenna	EMCO	3117/57408	2011/2/11	2012/2/11
RF Cable	N/A	N/A/C0080	2011/8/6	2012/2/6
RF Cable	N/A	N/A/C0081	2011/10/17	2012/4/17
Semi - anechoic Chamber	ETS. LINDGREN	TR11/ 906-A	2011/4/17	2012/4/17

Note:

1. The calibrations are traceable to NML/ROC.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
1MHz	3MHz	Peak	Maxhold	

Climatic Condition

Ambient Temperature：21℃ Relative Humidity : 54%

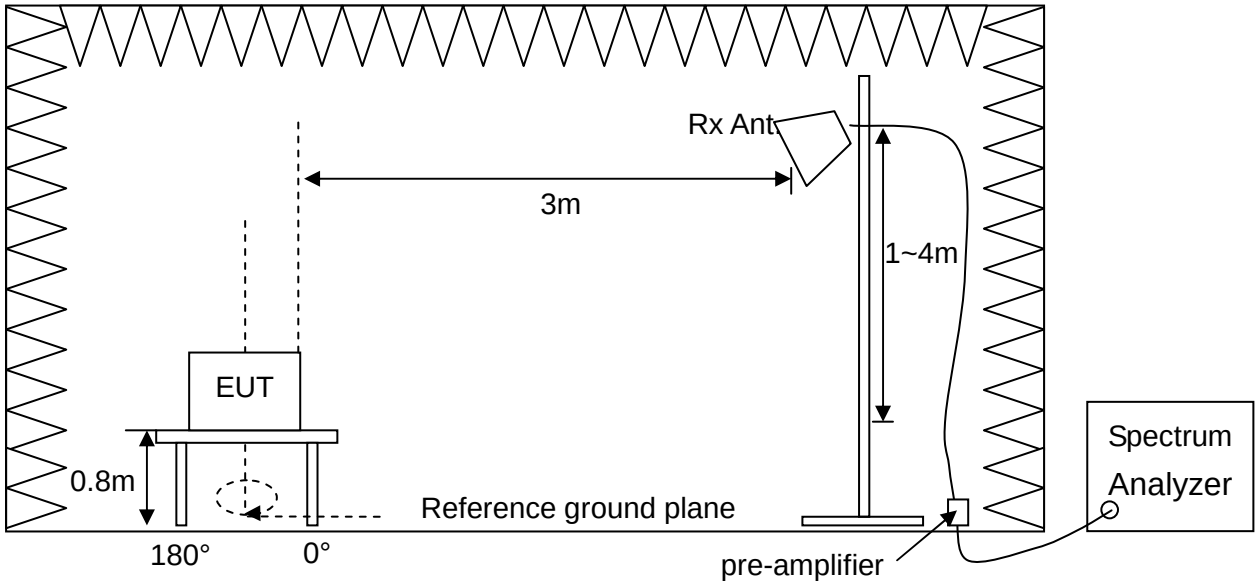
2.3 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. The software provided by client enabled the EUT to transmit data at lowest, middle and highest channel frequencies individually.

c. Measurement the maximum peak output and compare with the required limit.

2.4 Test configuration



2.5 Test Data

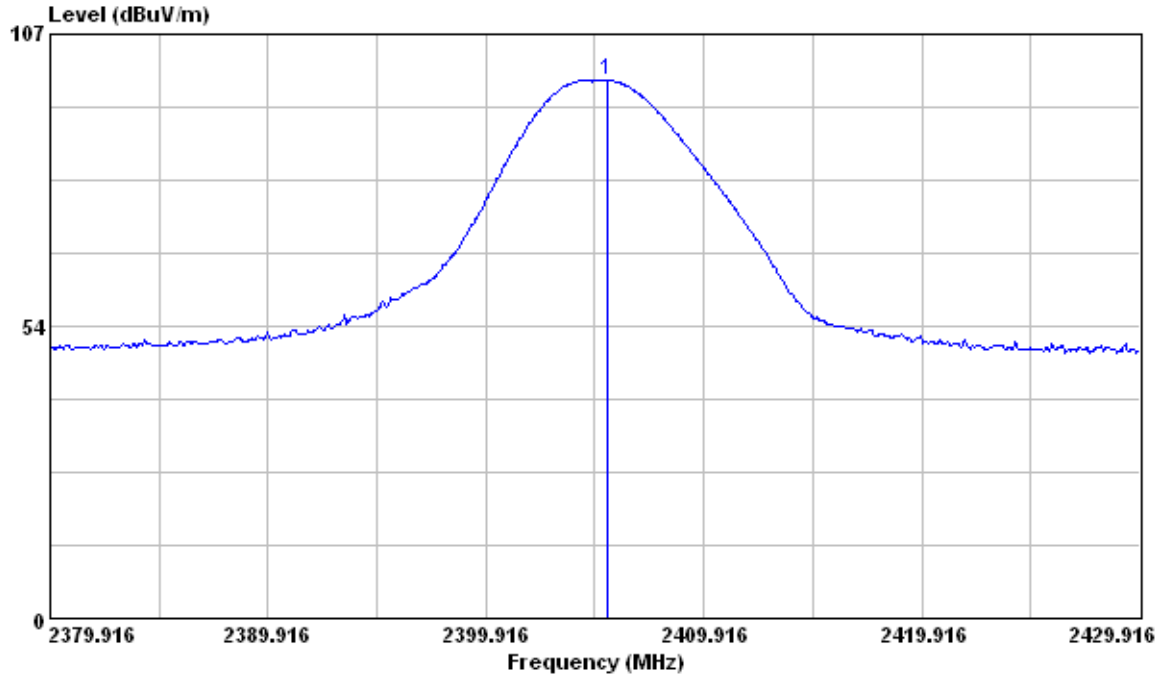
Test Mode : Continuous Transmitting **Tester :** Liu

Frequency (MHz)	Polarization	Reading Data (dBuV)	Correction Factor (dB/m)	Emission (dBuV/m)	Peak output power (dBm)	Limit (dBm)	Margin (dB)
2405.47	Vertical	97.40	1.09	98.49	1.31	30	28.69
2405.32	Horizontal	96.02	1.09	97.11	-0.07	30	30.07
2440.40	Vertical	96.62	1.15	97.77	0.59	30	29.41
2440.30	Horizontal	93.56	1.15	94.71	-2.47	30	32.47
2480.40	Vertical	87.70	1.22	88.92	-8.26	30	38.26
2479.40	Horizontal	87.25	1.22	88.47	-8.71	30	38.71

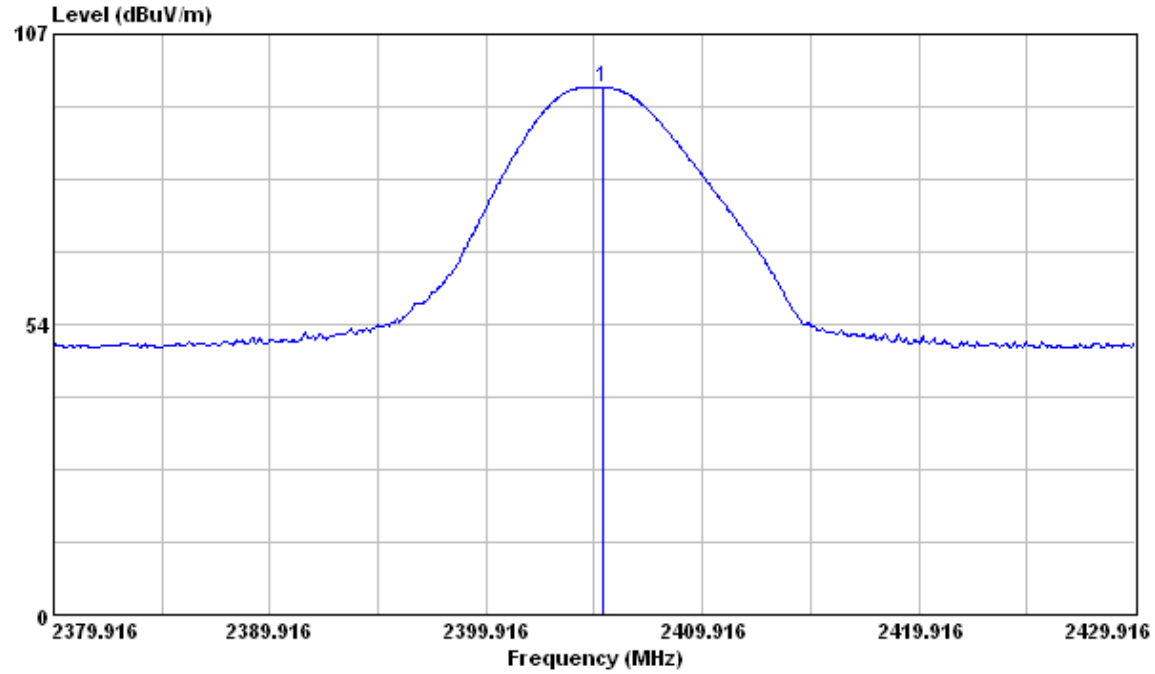
Note:

1. Correction Factor (dB/m) = Antenna factor + Cable Loss - pre-amplifier
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Peak output power (dBm) = Emission – 97.18(see section 2.1)
4. Margin (dB) = Limit – Peak output power

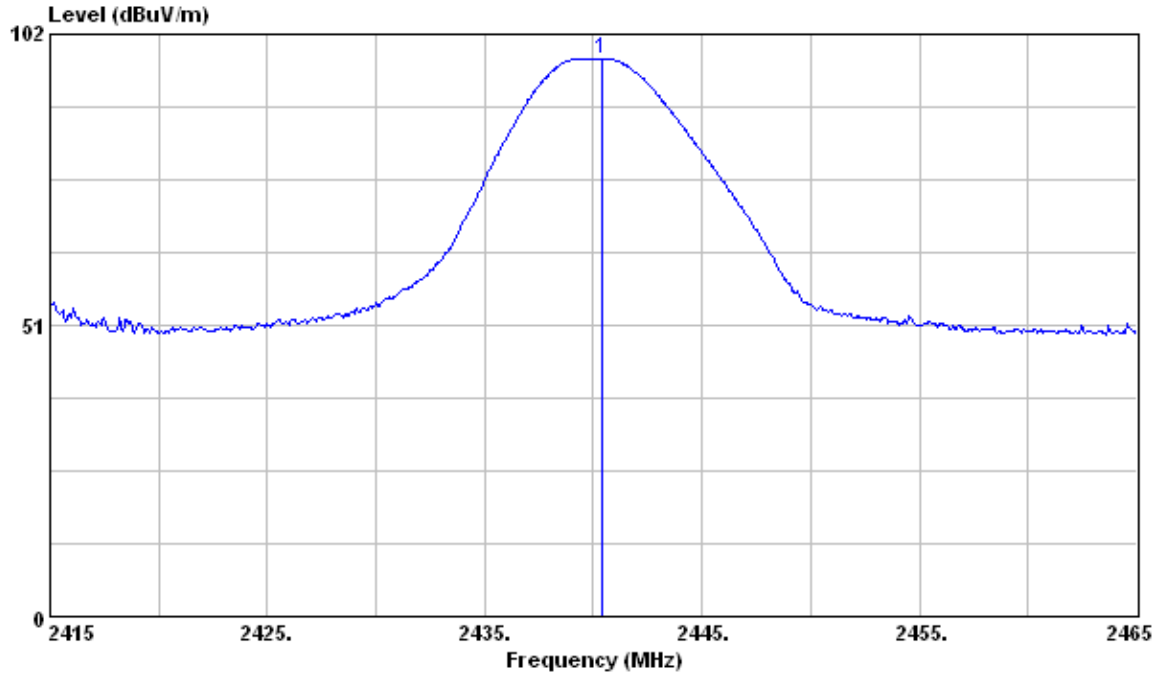
Low Channel (2405MHz)- Vertical



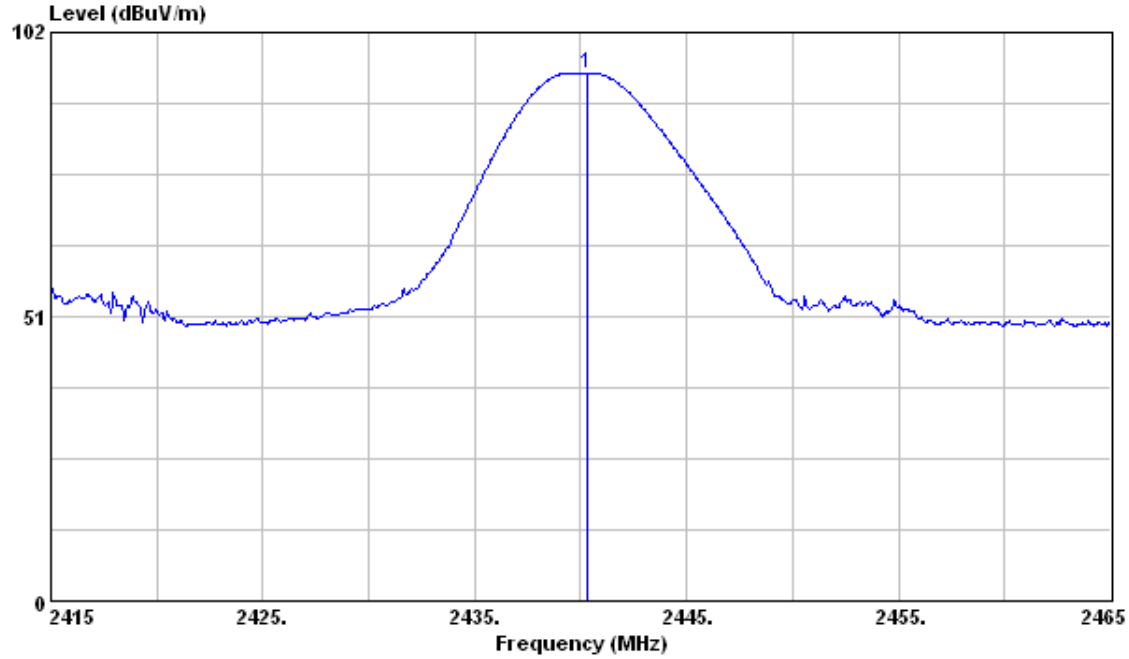
Low Channel (2405MHz)- Horizontal



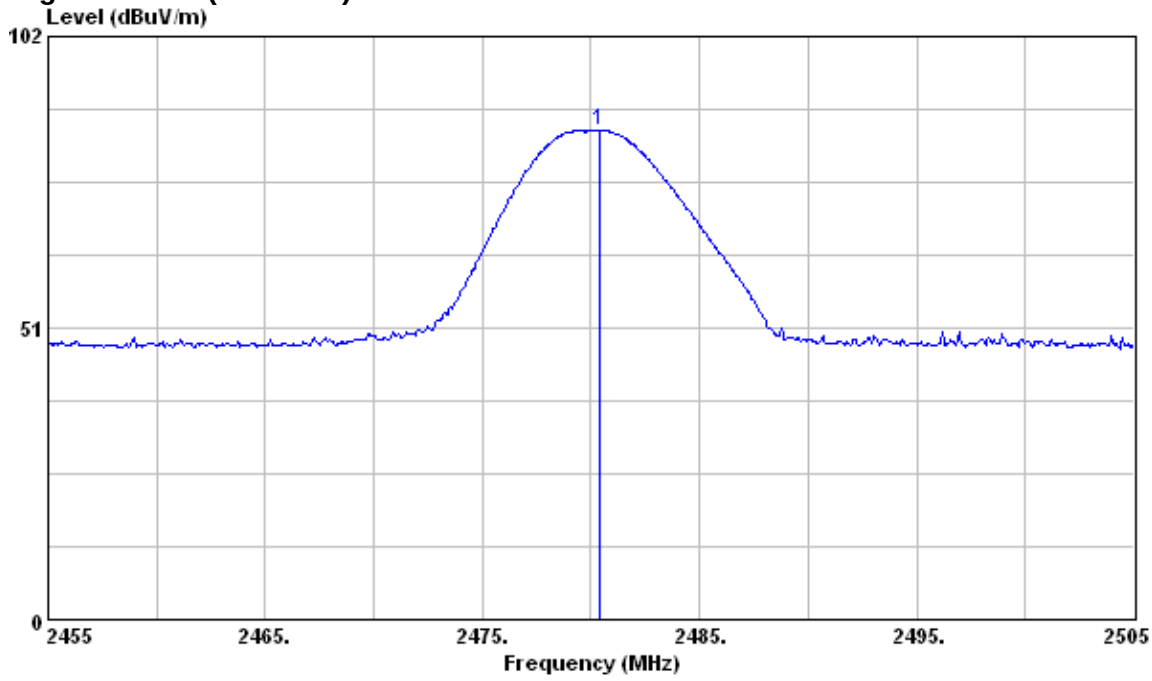
MiddleChannel (2440MHz)- Vertical



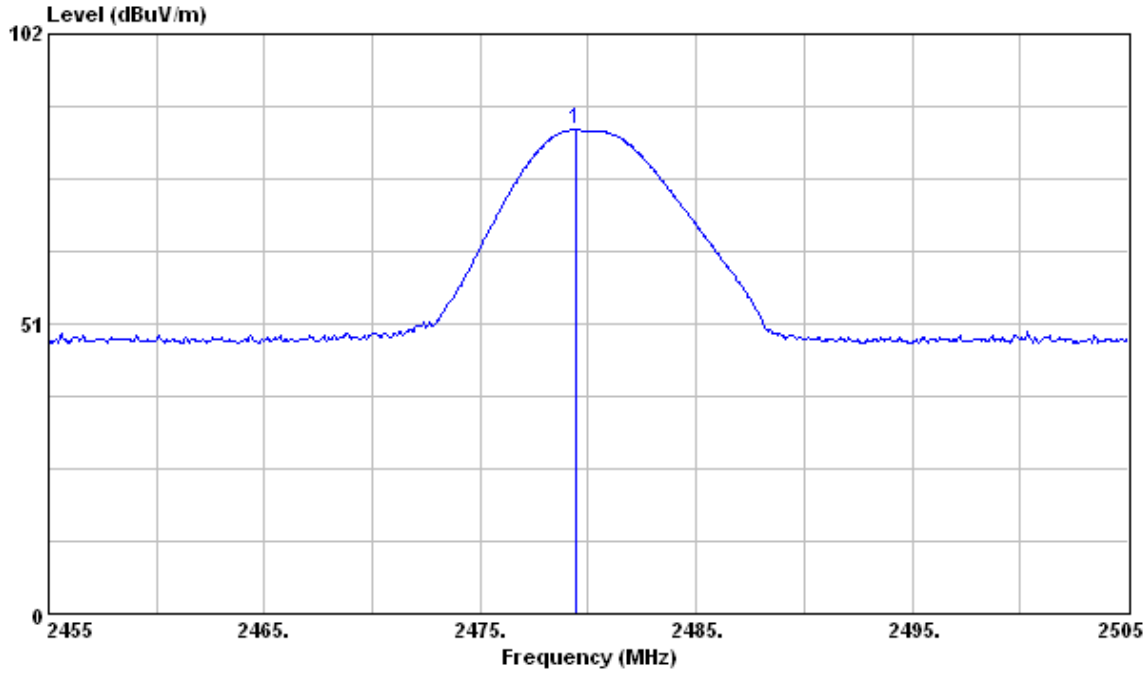
MiddleChannel (2440MHz)- Horizontal



High Channel (2480MHz)- Vertical



High Channel (2480MHz)- Horizontal



3 Band Edge

Result: Pass

3.1 Applied standard

According to 15.247(c),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, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

3.2 Test Instruments

As section 2.2

Instrument Setting

RBW	VBW	Detector	Trace	Comment
100kHz	300kHz	Peak	Maxhold	100kHz Bandedge
1MHz	3MHz	Peak	Maxhold	Bandedge Peak
1MHz	10Hz	Peak	Maxhold	Bandedge Average

Climatic Condition

Ambient Temperature：24℃ Relative Humidity : 54%

3.3 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. The software provided by client enabled the EUT to transmit data at lowest and highest channel frequencies individually.

c. Measurement the band edge and compare with the required limit.

3.4 Test configuration

As section 2.4

3.5 Test Data

100KHz Bandedge Measurement

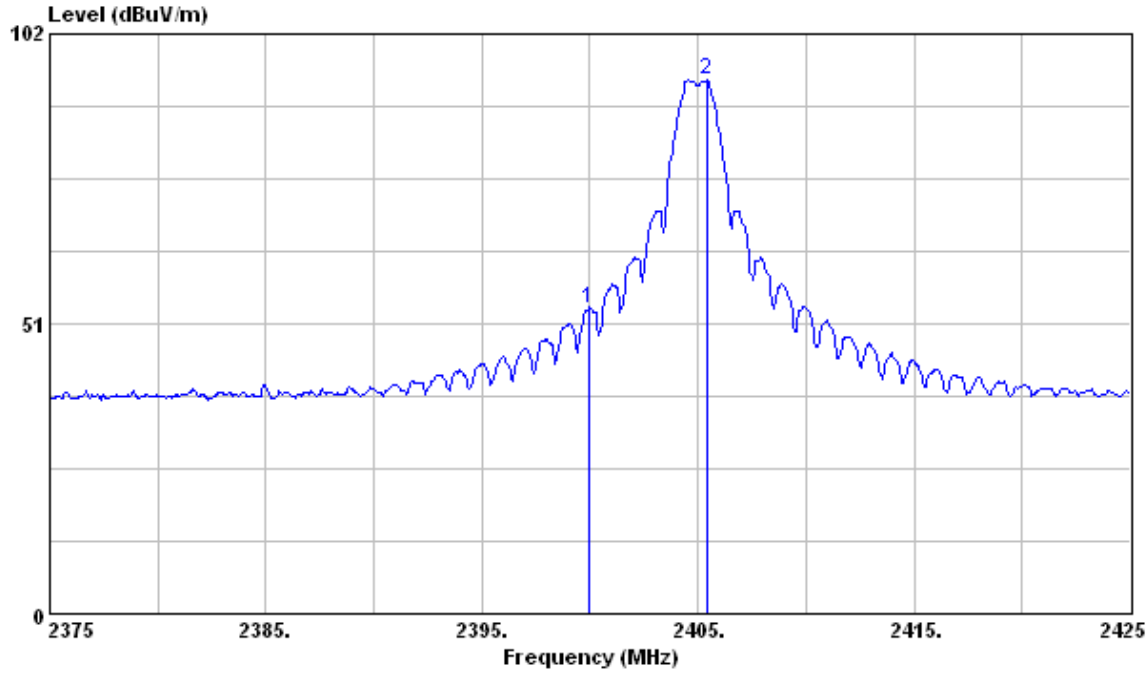
Test Mode : Continuous Transmitting **Tester : Liu**

Operating Frequency : 2405MHz						
Frequency (MHz)	**Main Frequency Emission Data (dBuV/m)**	**Bandedge Emission Data (dBuV/m)**	**Attenuation (dB)**	**Limit (dB)**	**Margin (dB)**	**Polarization**
2399.95	93.95	53.59	40.36	20	20.36	Vertical
2399.95	90.70	50.35	40.35	20	20.35	Horizontal
Operating Frequency : 2480MHz						
2483.80	83.06	47.73	35.33	20	15.33	Vertical
2483.90	80.02	44.79	35.23	20	15.23	Horizontal

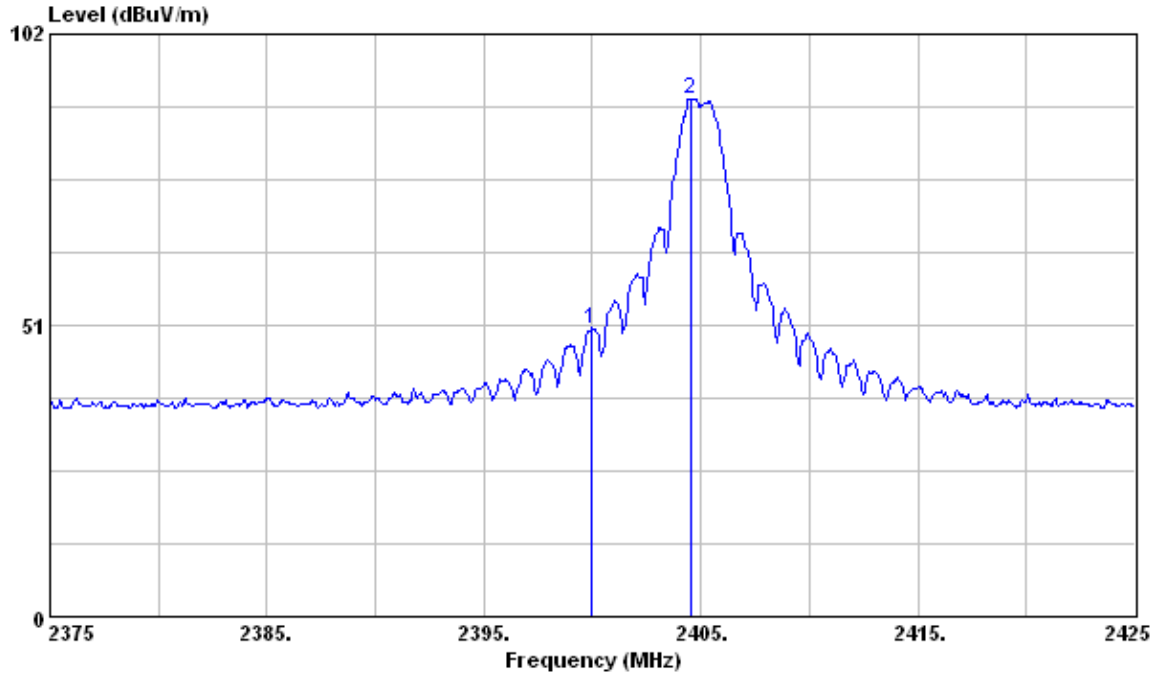
Note:

1. Attenuation (dB) = Main Frequency Emission Data – Bandedge Emission Data
2. Margin(dB) = Attenuation – Limit

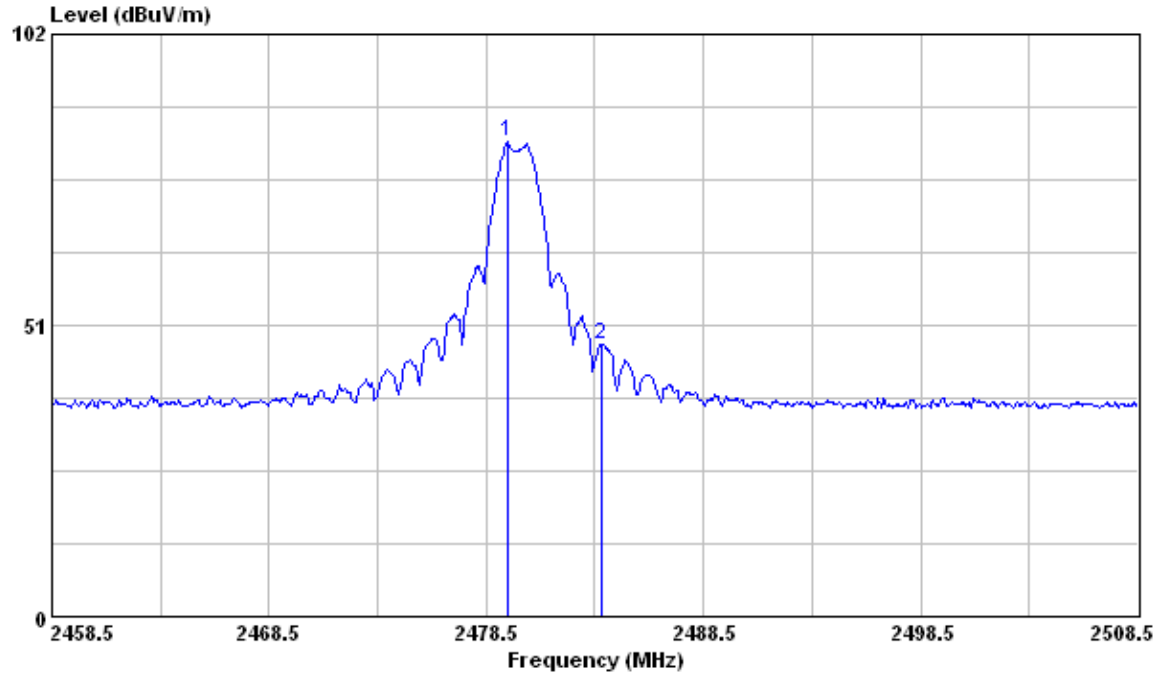
Low Channel (2405MHz) Vertical



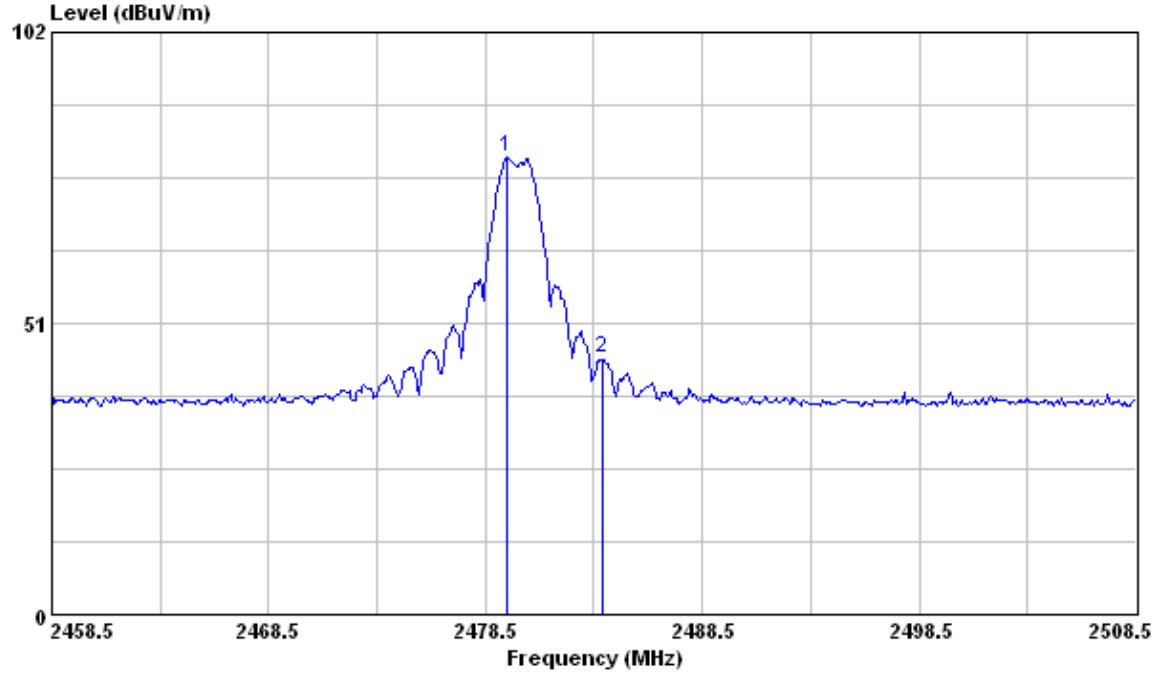
Low Channel (2405MHz) Horizontal



High Channel (2480MHz) Vertical



High Channel (2480MHz) Horizontal



Restricted Bandedge Measurement

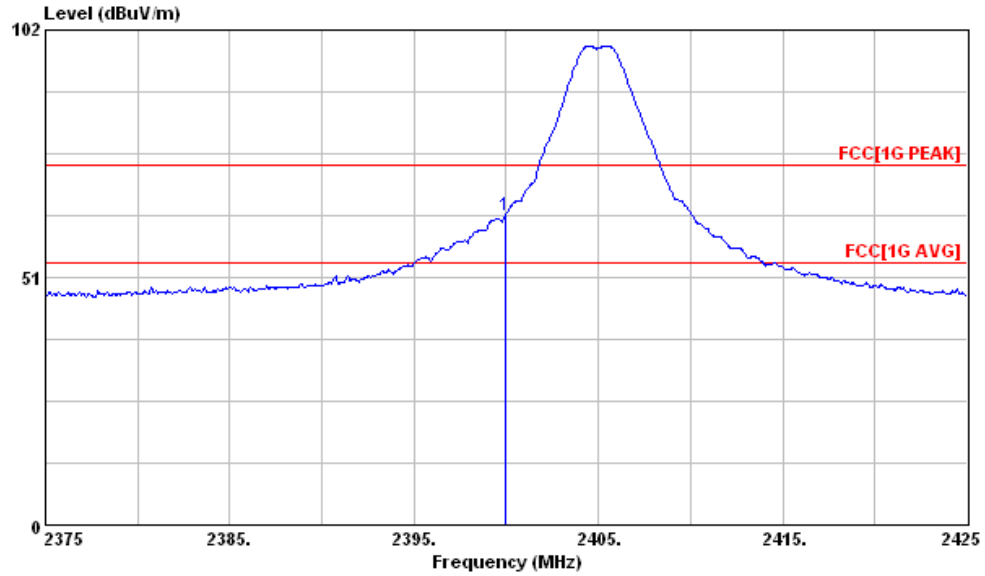
Test Mode :Continuous Transmitting **Tester : Liu**

Operation frequency : 2405MHz							
Frequency (MHz)	**Reading Data (dBuV)**	**Correction Factor (dB/m)**	**Emission (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Polarization**	**Remark**
2399.95	62.70	1.08	63.78	74.00	10.22	Vertical	Peak
2399.95	52.24	1.08	53.32	54.00	0.68	Vertical	Average
2399.95	59.01	1.08	60.09	74.00	13.91	Horizontal	Peak
2399.95	48.63	1.08	49.71	54.00	4.29	Horizontal	Average
Operation frequency : 2480MHz							
2483.55	59.10	1.23	60.33	74.00	13.67	Vertical	Peak
2483.55	51.24	1.23	52.47	54.00	1.53	Vertical	Average
2483.55	57.74	1.23	58.97	74.00	15.03	Horizontal	Peak
2483.55	51.70	1.23	52.93	54.00	1.07	Horizontal	Average

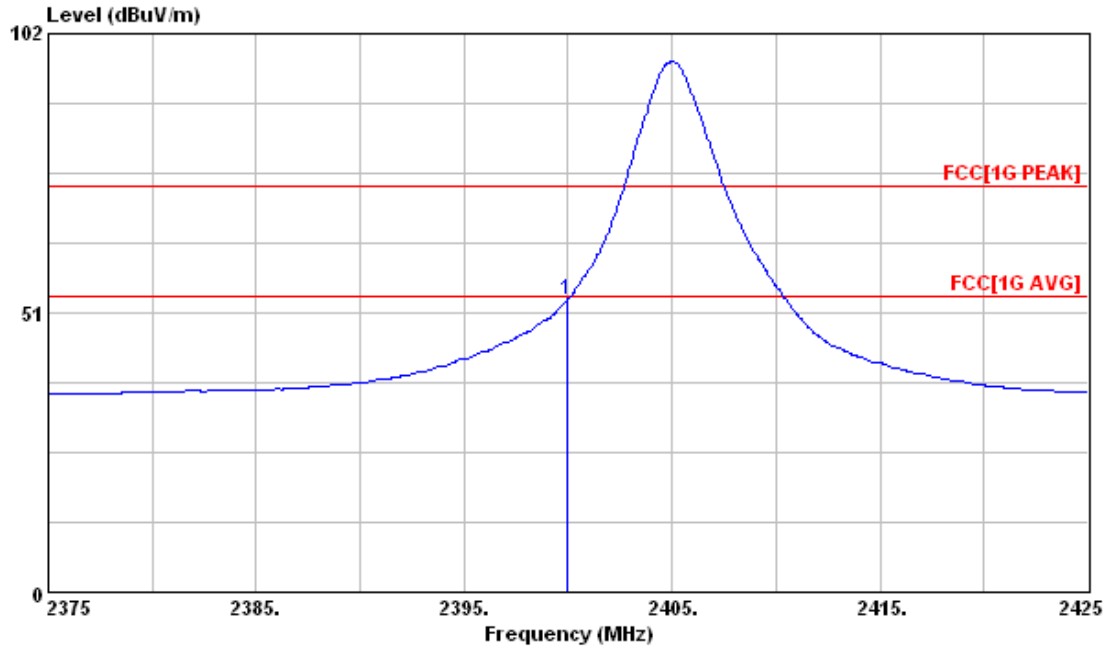
Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Pre-amplifier
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

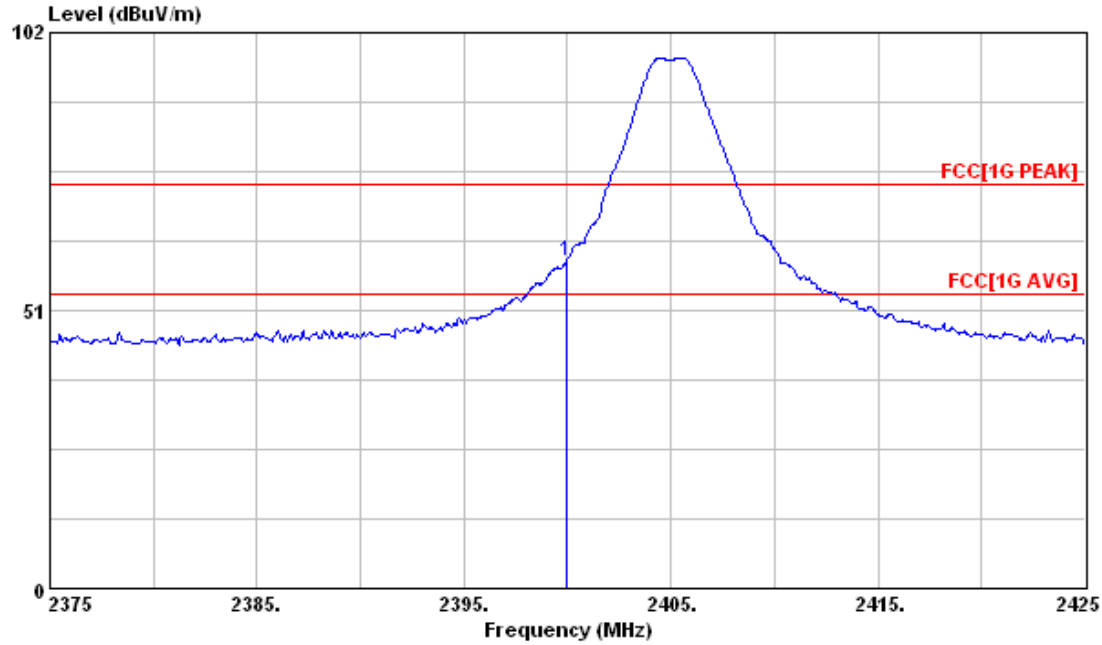
Low Channel (2405MHz), V Polarization – Peak



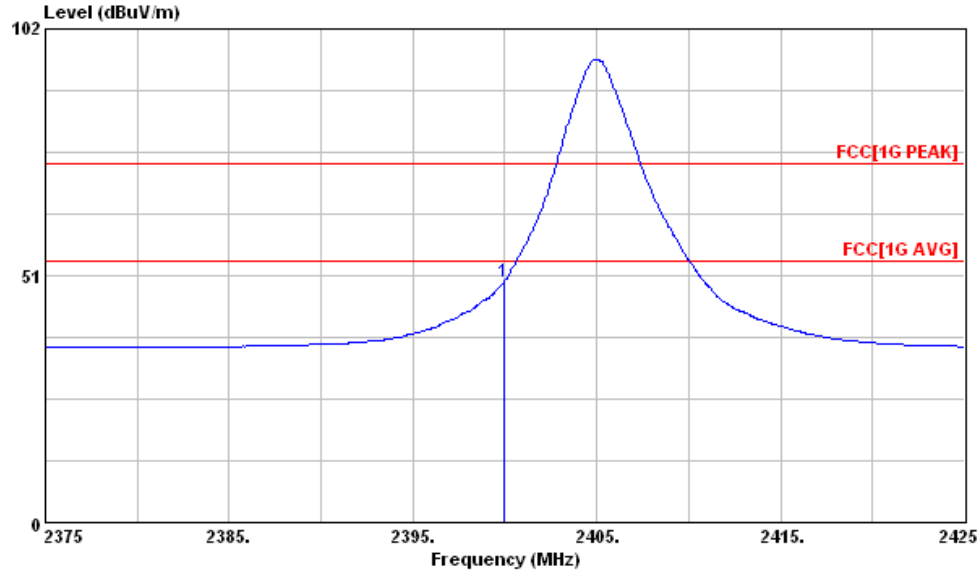
Low Channel (2405MHz), V Polarization – Average



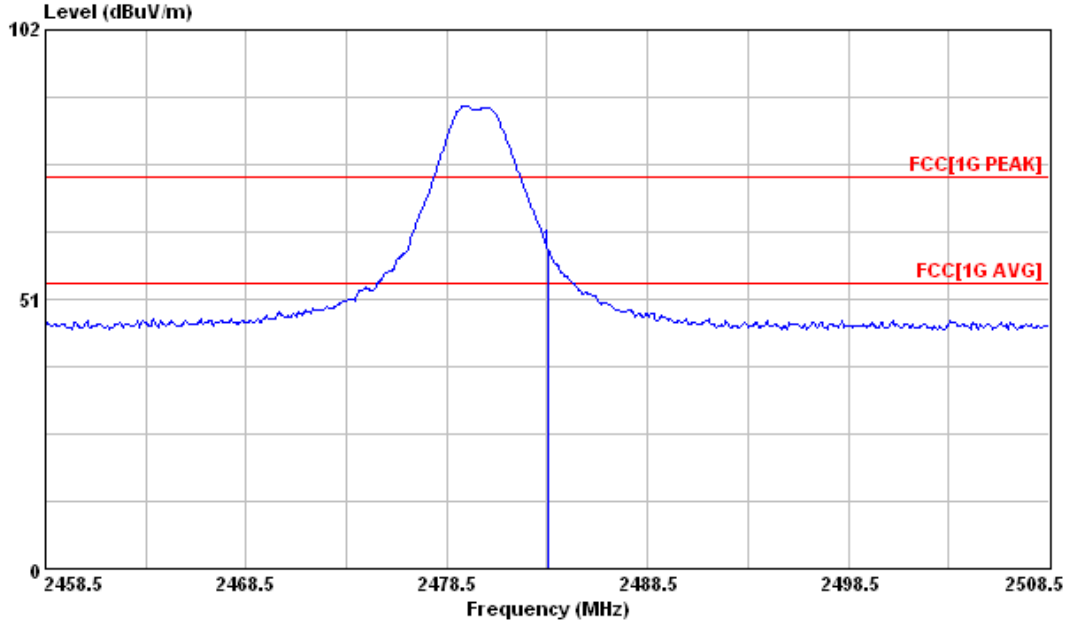
Low Channel (2405MHz), H Polarization – Peak



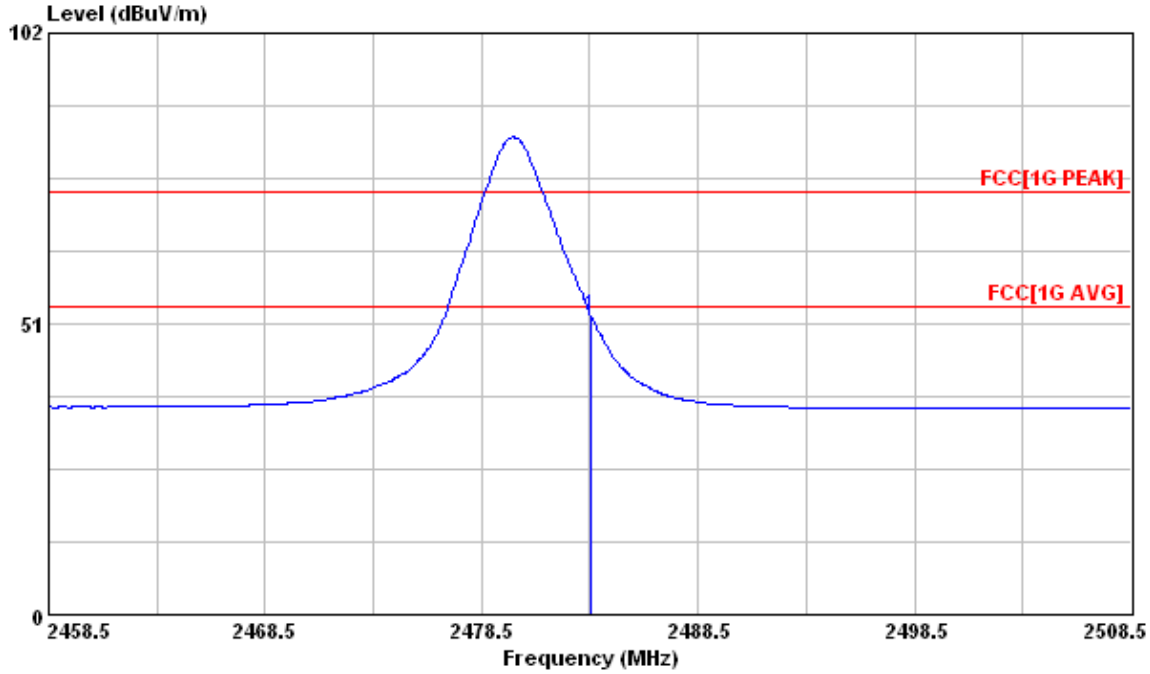
Low Channel (2405MHz), H Polarization – Average



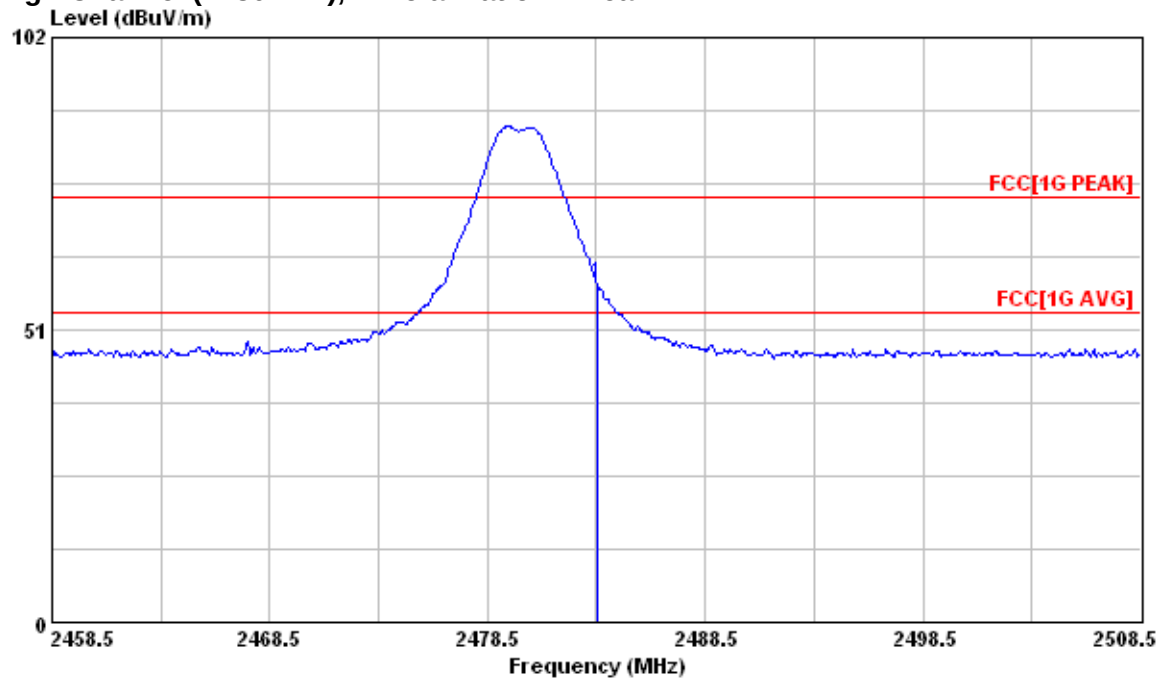
High Channel (2480MHz), V Polarization – Peak



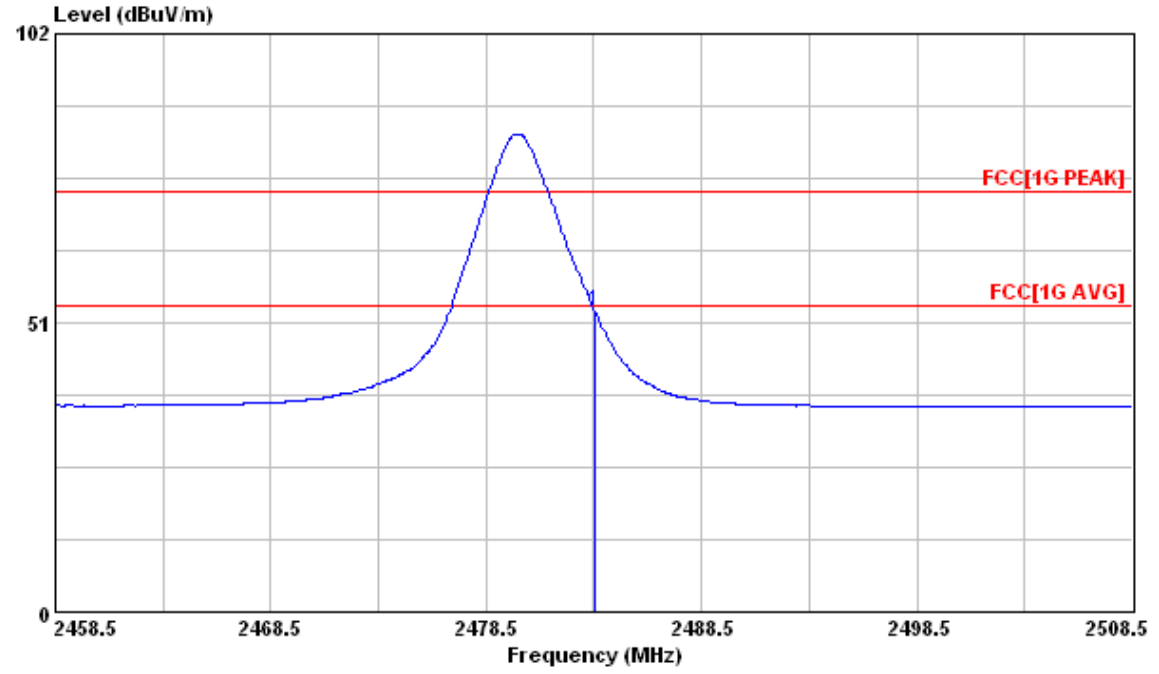
High Channel (2480MHz), V Polarization – Average



High Channel (2480MHz), H Polarization – Peak



High Channel (2480MHz), H Polarization – Average



4 6dB Bandwidth

Result: Pass

4.1 Applied standard

According to 15.247(a)(2), Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

4.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No. /Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4405B/ MY45106706	2011/3/29	2012/3/29
Test Site	NA	TR13	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR:No Calibration Required.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
100kHz	300kHz	Peak	Maxhold	

Climatic Condition

Ambient Temperature：22℃ Relative Humidity :60%

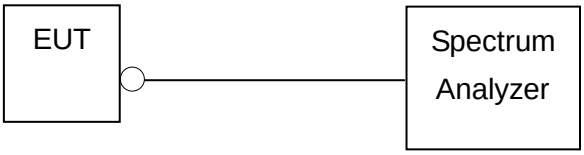
4.3 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. A software provided by client enabled the EUT to transmit data at low, middle and high channel frequencies individually.

c. Measure the 6dB bandwidth and compare with the required limit.

4.4 Test configuration

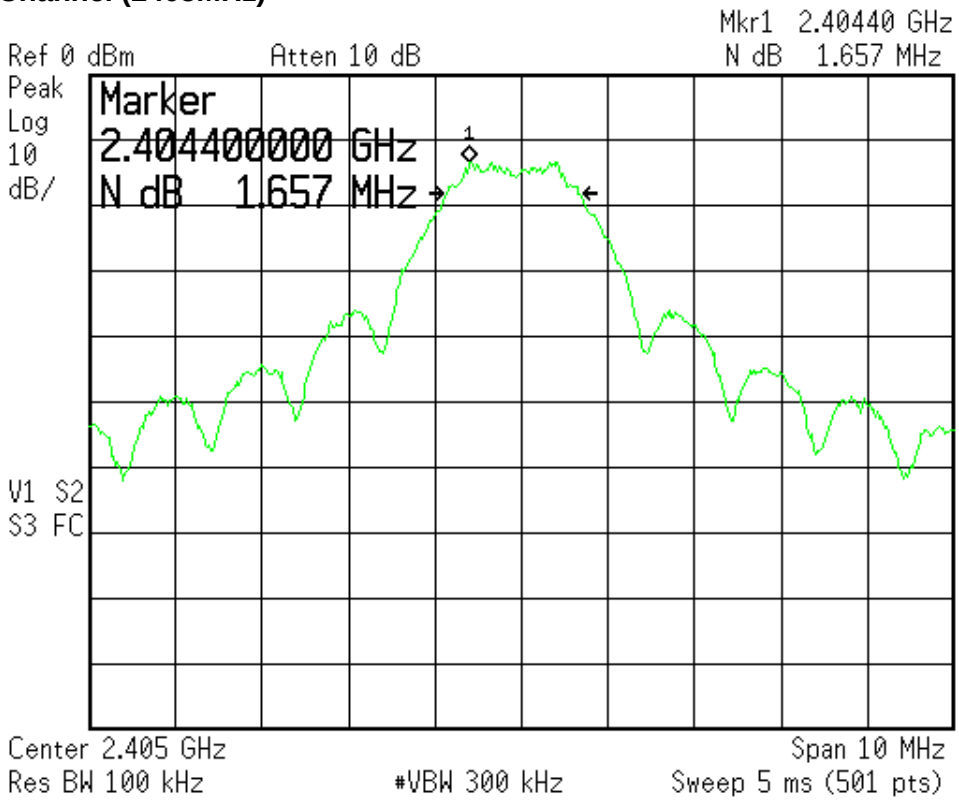


4.5 Test Data

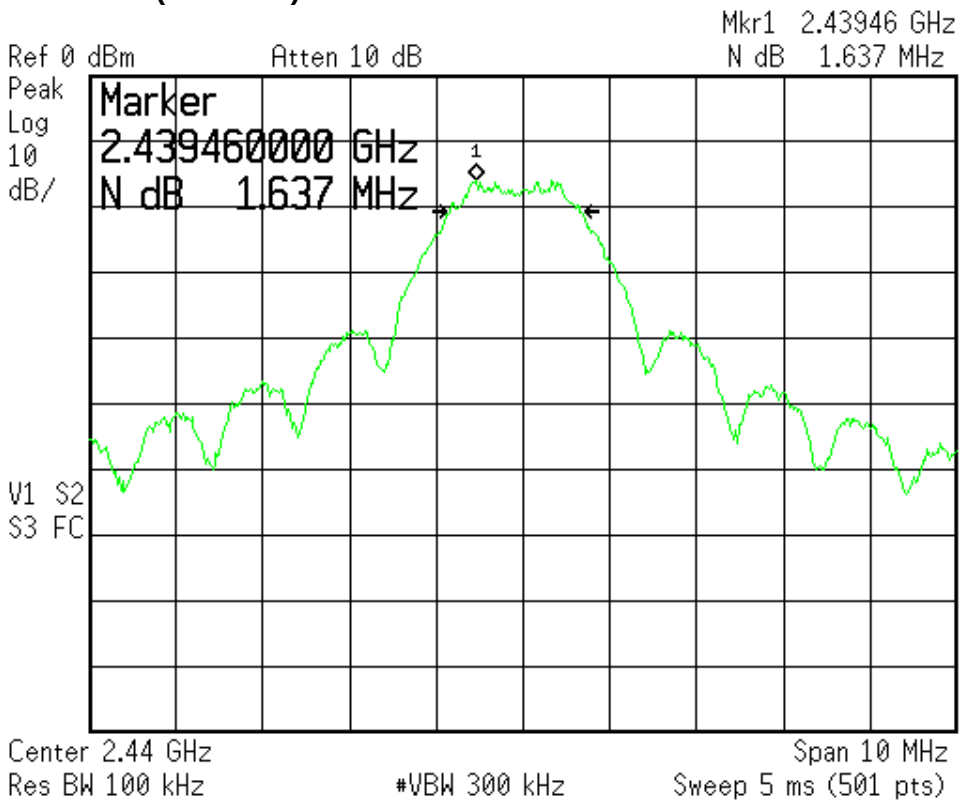
Test Mode : Continuous Transmitting **Tester :** Jun Kong

Operating Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (kHz)
2405	1.657	500
2440	1.637	500
2480	1.657	500

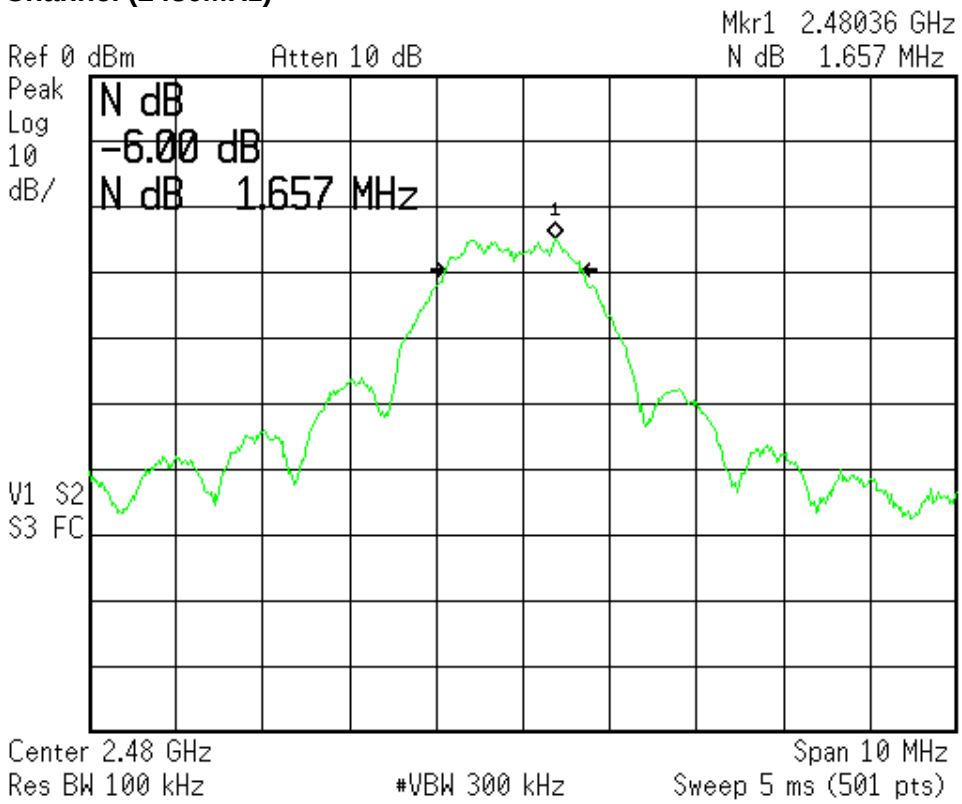
Low Channel (2405MHz)



Middle Channel (2440MHz)



High Channel (2480MHz)



5 Power Spectral Density

Result: Pass

5.1 Applied standard

According to 15.247(e),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.

5.2 Test Instruments

See section 2.2

Instrument Setting

RBW	VBW	Detector	Trace	Comment
3kHz	10kHz	Peak	Maxhold	

Climatic Condition

Ambient Temperature：22℃ Relative Humidity :60%

5.3 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. A software provided by client enabled the EUT to transmit data at low, middle and high channel frequencies individually.

c. According KDB 558074 - PDS Option1, measure the peak power spectrum density and compare with the required limit.

5.4 Test configuration

See section 2.4.

5.5 Test Data

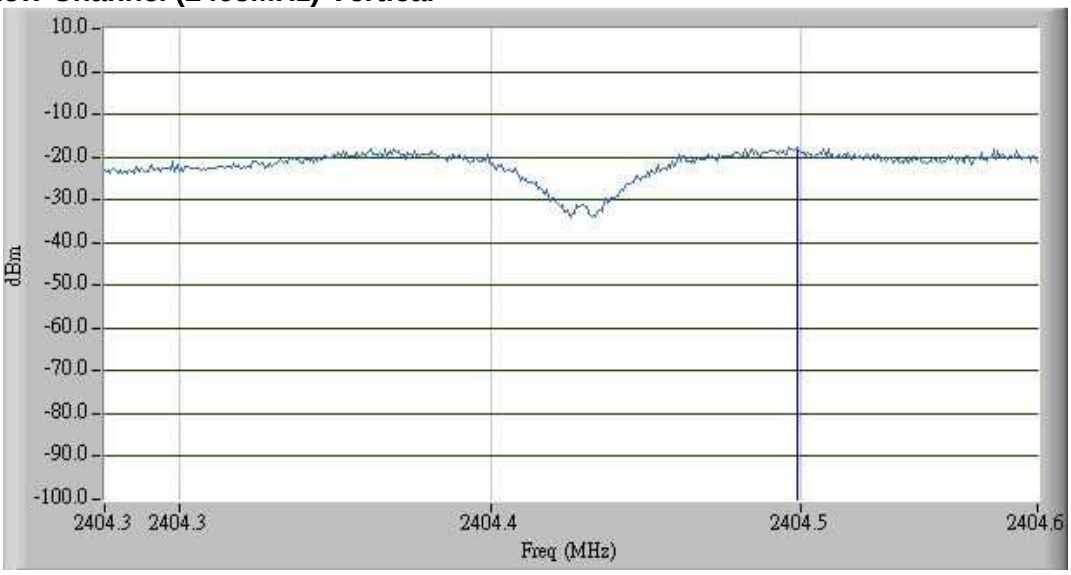
Test Mode : Continuous Transmitting **Tester** **:** Liu

Freq. (MHz)	Reading Data (dBm)	Output Power of S.G. (dBm)	Factor (dB)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)	Polarization
2404.5	-24.44	-16.79	-0.88	-17.67	8	25.67	Vertical
2405.4	-18.78	-11.08	-0.88	-11.96	8	19.96	Horizontal
2439.5	-26.97	-19.03	-0.93	-19.96	8	27.96	Vertical
2440.37	-21.26	-13.25	-0.93	-14.18	8	22.18	Horizontal
2480.4	-28.15	-20.17	-0.88	-21.05	8	29.05	Vertical
2480.36	-22.01	-14.08	-0.88	-14.96	8	22.96	Horizontal

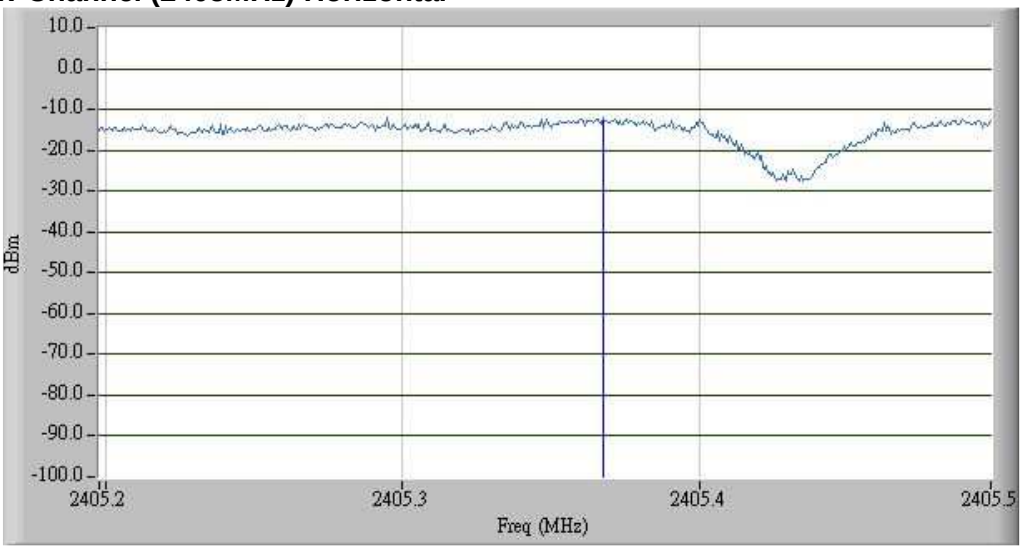
Note:

1. Factor (dB) = Gain of Tx antenna – Cable Loss of cable
2. Power Density (dBm/3kHz) = Output power of S.G. + Factor
3. Margin (dB/3kHz) = Limit – Power Density

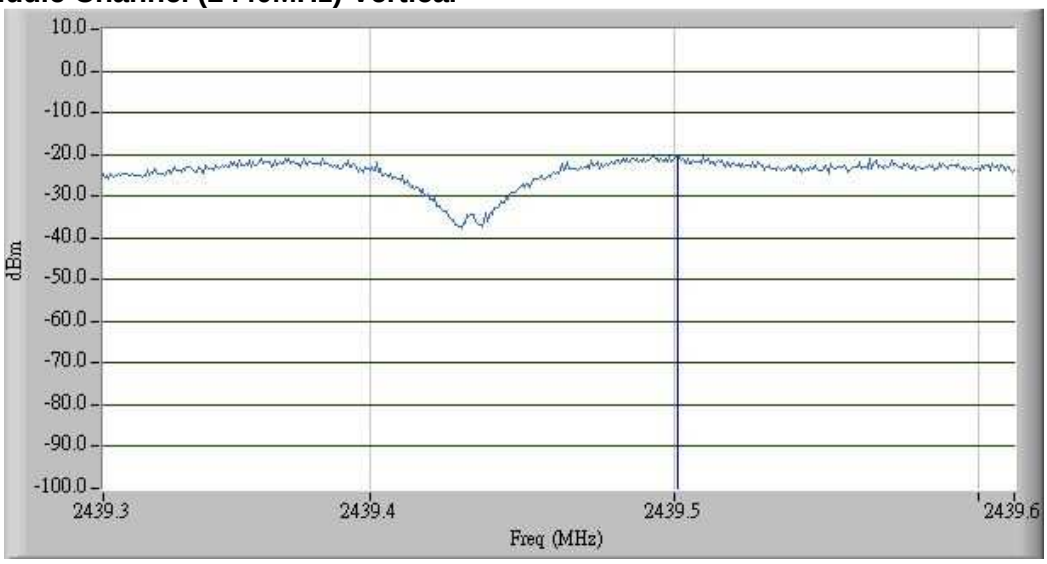
Low Channel (2405MHz) Vertical



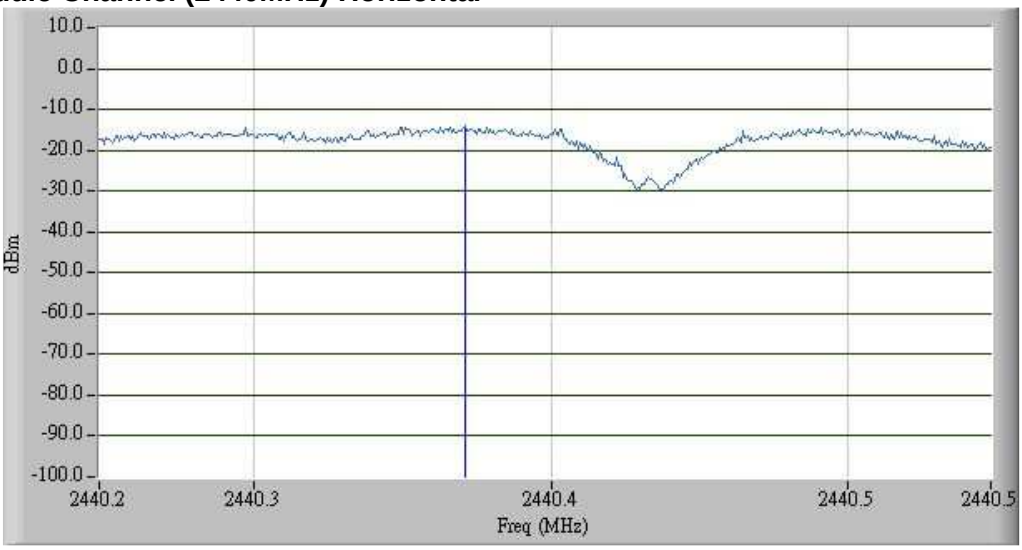
Low Channel (2405MHz) Horizontal



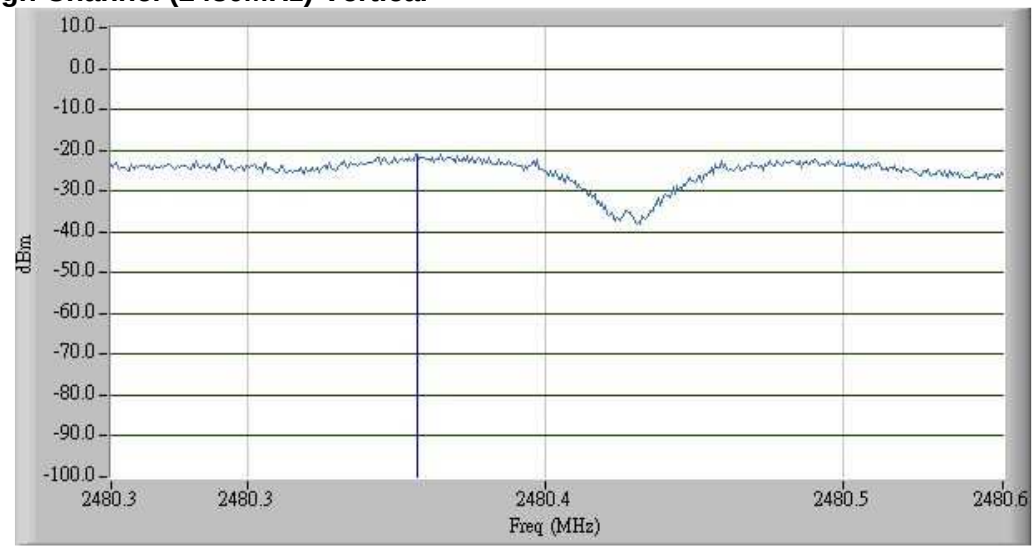
Middle Channel (2440MHz) Vertical



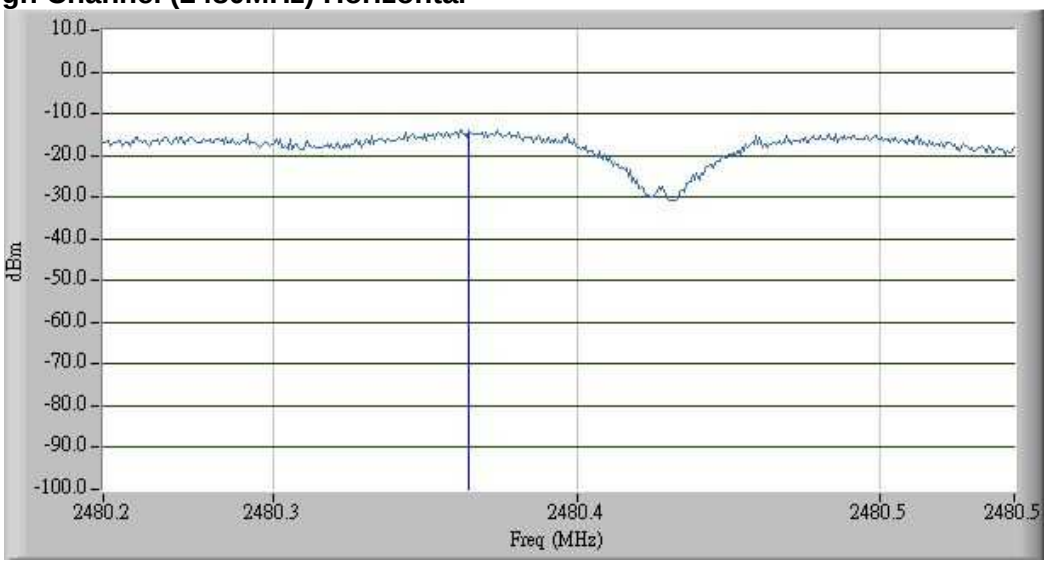
Middle Channel (2440MHz) Horizontal



High Channel (2480MHz) Vertical



High Channel (2480MHz) Horizontal



6 Radiated Emission

Result: Pass

6.1 Applied standard

According to 15.247(c),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, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

6.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ESCI/100019	2011/5/25	2012/5/25
Spectrum Analyzer	Agilent	E4407B/ MY45106795	2011/5/2	2012/5/2
Broadband Antenna	EMCO	3142C/52088	2011/5/19	2012/5/19
Antenna	EMCO	3117/57408	2011/2/11	2012/2/11
Antenna	EMCO	3116/20533	2011/2/11	2012/2/11
Pre-amplifier	MITEQ	JS4-00101800-28-10P/74229	2011/12/10	2012/12/10
Pre-amplifier	Mini Circuit	ZKL-2/004	2011/8/6	2012/2/6
RF Cable	N/A	N/A/C0080	2011/8/6	2012/2/6
RF Cable	N/A	N/A/C0081	2011/10/17	2012/4/17
Semi - anechoic Chamber	ETS. LINDGREN	TR11/ 906-A	2011/4/17	2012/4/17

Note:

1. The calibrations are traceable to NML/ROC.
2. The calibration date of the semi-anechoic chamber listed above is the date of NSA measurement.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
120kHz	N/A	Quasi-Peak	Maxhold	Below 1GHz
1MHz	3MHz	Peak	Maxhold	Above 1GHz, Peak
1MHz	10Hz	Peak	Maxhold	Above 1GHz, Average

Climatic Condition

Ambient Temperature：24℃ Relative Humidity :53%

6.3 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. A software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

c. If the EUT is tabletop equipment, it was placed on a non-conducted table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 12 millimeters above the reference ground plane in the semi-anechoic chamber.

d. The EUT was set at 3m away from the interference receiving antenna.

e. Rapidly sweep the signal in the test frequency range by using the spectrum through the Maximum-peak detector.

f. Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4 meters above the reference ground plane continuously to determine at least six frequencies associated with higher emission levels and record them.

g. For measurement of frequency above 1000MHz, the beamwidth of receiving horn antenna should keep covering EUT when the receiving horn antenna height varied.

h. Then measure each frequency found from step f. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.

i. Finely tune the antenna and turntable around the recorded position of each frequency found from step g.

j. For measurement of frequency below 1000MHz, set the receiver detector to be Quasi-Peak per CISPR 16-1 to find out the maximum level occurred.

k. For measurement of frequency above 1000MHz, set the spectrum detector to be Peak or Average to find out the maximum level occurred, if any.

l. Record frequency, azimuth angle of the turntable, height, and polarization of the receiving antenna and compare the maximum level with the required limit.

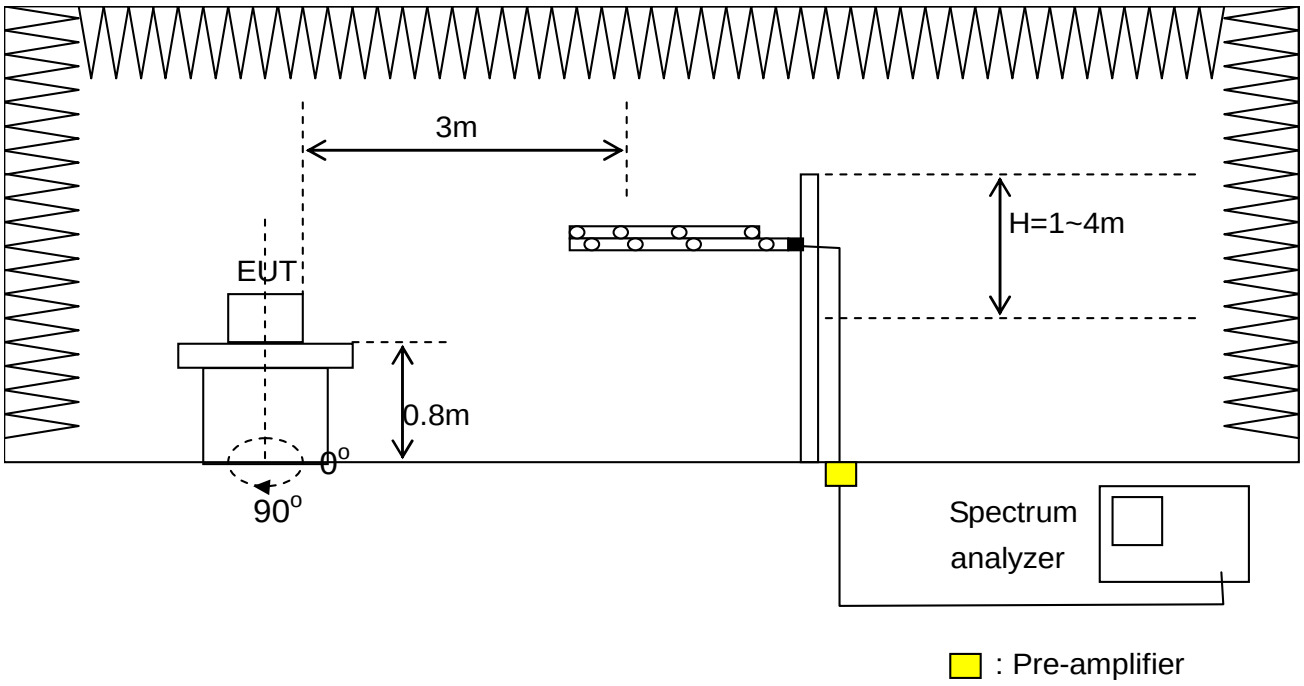
m. Change the receiving antenna to another polarization to measure radiated emission by following step e. to l. again.

n. If the peak emission level below 1000MHz measured from step f. is 4dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. value will be measured and presented.

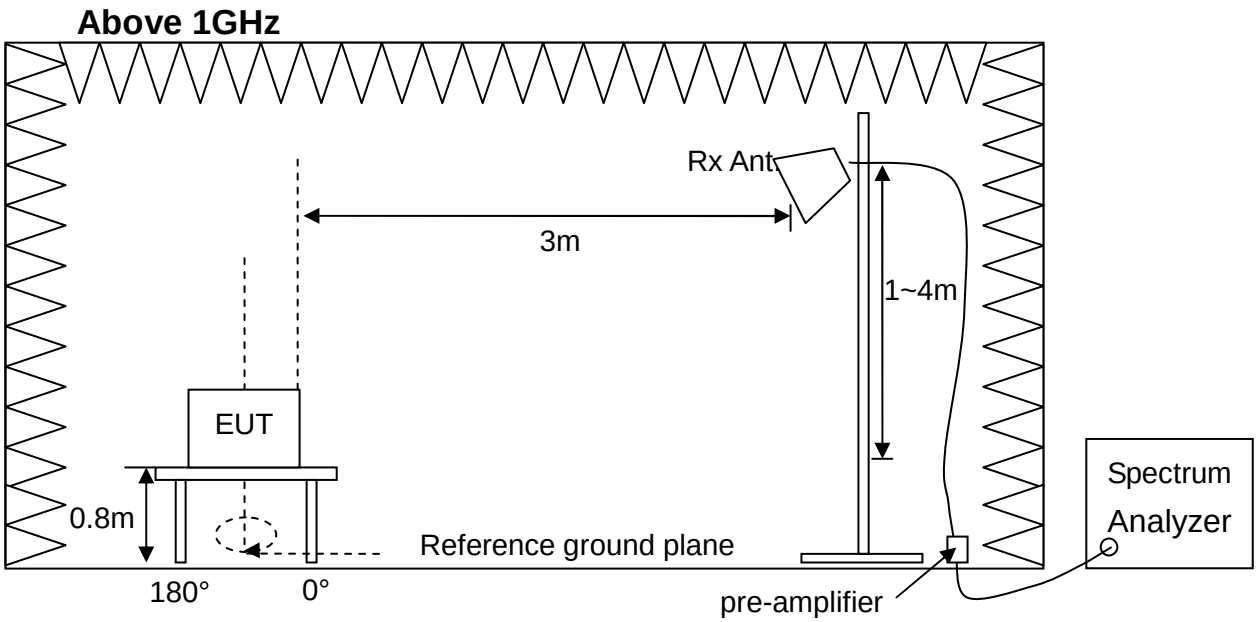
o.If the peak emission level above 1000MHz measured from step f. is 20dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate A.V. value will be measured and presented.

6.4 Test configuration

Below 1GHz



Above 1GHz



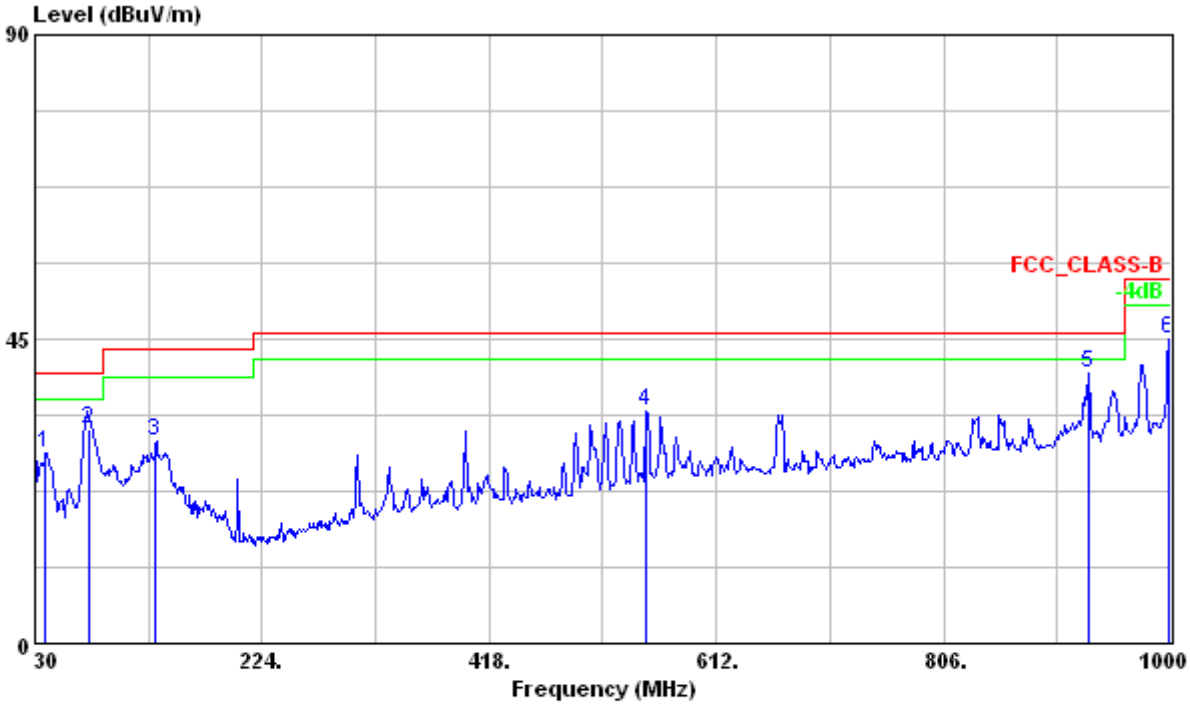
6.5 Test Data

Radiated Emission Measurement below 1000MHz

Test Mode : **2405MHz, Continuous Transmitting**

Test Distance : 3m **Tester** : Liu

Polarization : Vertical **Frequency Range** : 30MHz~1000MHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	38.640	27.98	-13.25	41.23	40.00	-12.02	---	---	VERTICAL	Peak
2	75.648	31.80	-19.70	51.50	40.00	-8.20	144	192	VERTICAL	QP
3	133.410	29.96	-18.98	48.94	43.50	-13.54	---	---	VERTICAL	Peak
4	552.000	34.20	-5.45	39.65	46.00	-11.80	---	---	VERTICAL	Peak
5	929.300	39.84	-0.41	40.25	46.00	-6.16	---	---	VERTICAL	Peak
6	997.900	44.88	0.23	44.65	54.00	-9.12	---	---	VERTICAL	Peak

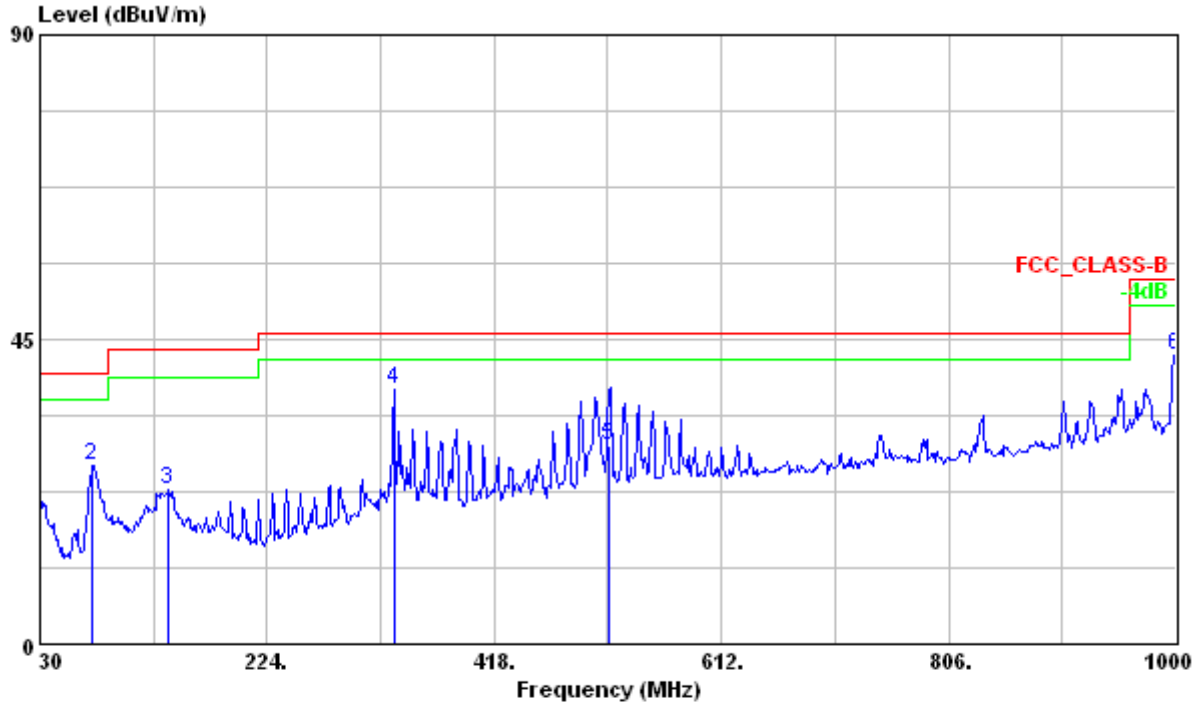
Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Mode : **2405MHz, Continuous Transmitting**

Test Distance : 3m **Tester** : Liu

Polarization : Horizontal **Frequency Range** : 30MHz~1000MHz

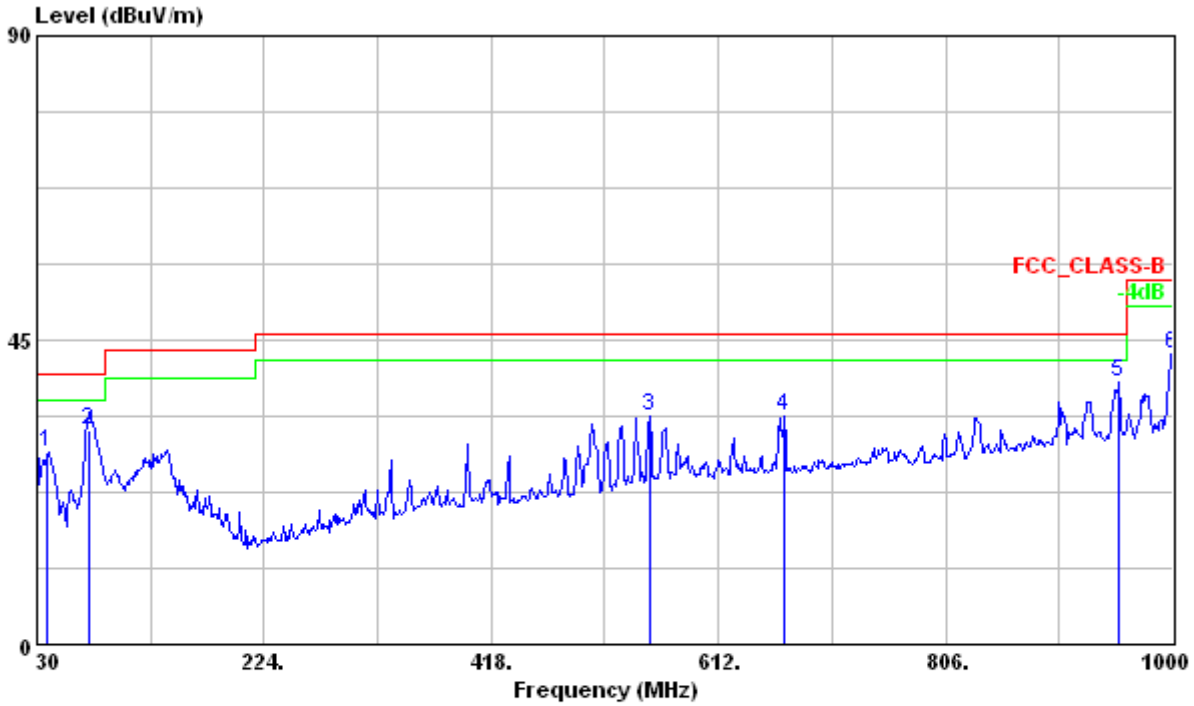


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	30.000	21.03	-8.35	29.38	40.00	-18.97	---	---	HORIZONTAL	Peak
2	74.550	26.44	-19.68	46.12	40.00	-13.56	---	---	HORIZONTAL	Peak
3	139.350	22.78	-18.60	41.38	43.50	-20.72	---	---	HORIZONTAL	Peak
4	332.900	37.49	-11.03	48.52	46.00	-8.51	---	---	HORIZONTAL	Peak
5	516.124	29.40	-6.66	36.06	46.00	-16.60	101	356	HORIZONTAL	QP
6	1000.000	42.70	0.25	42.45	54.00	-11.30	---	---	HORIZONTAL	Peak

Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Mode	**: 2440MHz, Continuous Transmitting**		
Test Distance	**:** 3m	**Tester**	**:** Liu
Polarization	**:** Vertical	**Frequency Range**	**:** 30MHz~1000MHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	39.180	28.35	-13.52	41.87	40.00	-11.65	---	---	VERTICAL	Peak
2	74.633	31.69	-19.68	51.37	40.00	-8.31	102	236	VERTICAL	QP
3	554.100	33.85	-5.41	39.26	46.00	-12.15	---	---	VERTICAL	Peak
4	668.200	33.81	-3.83	37.64	46.00	-12.19	---	---	VERTICAL	Peak
5	953.800	38.71	-0.18	38.89	46.00	-7.29	---	---	VERTICAL	Peak
6	1000.000	42.96	0.25	42.71	54.00	-11.04	---	---	VERTICAL	Peak

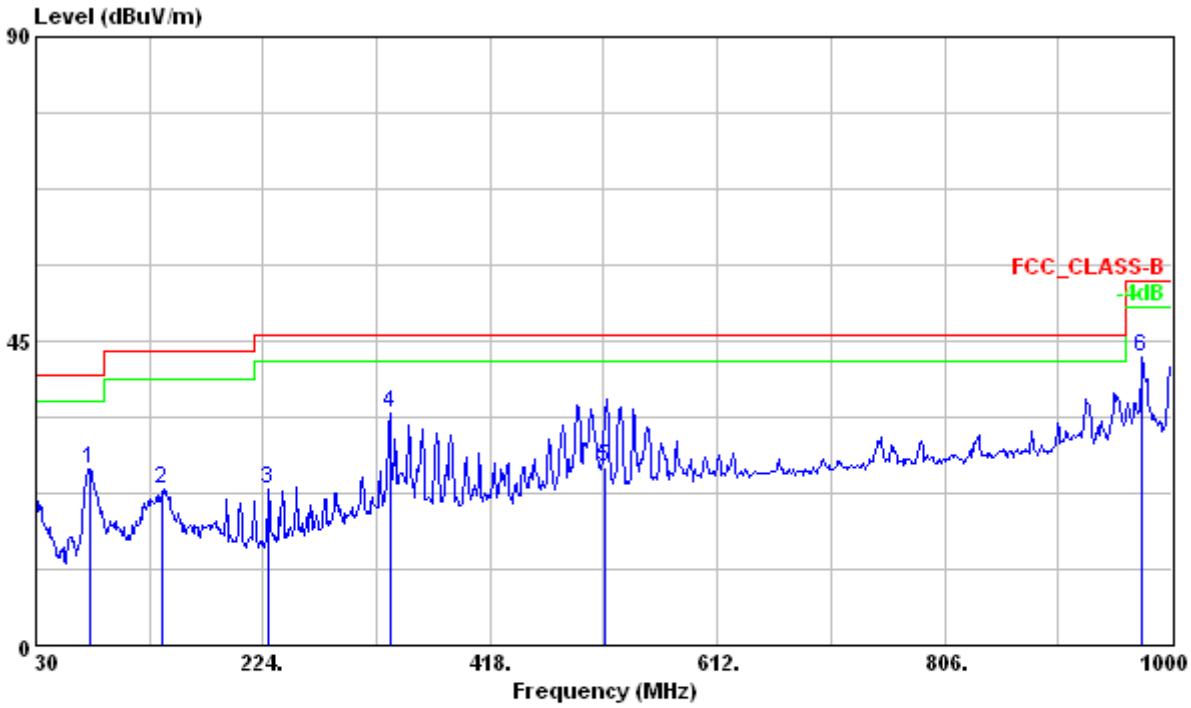
Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Mode : **2440MHz, Continuous Transmitting**

Test Distance : 3m **Tester** : Liu

Polarization : Horizontal **Frequency Range** : 30MHz~1000MHz

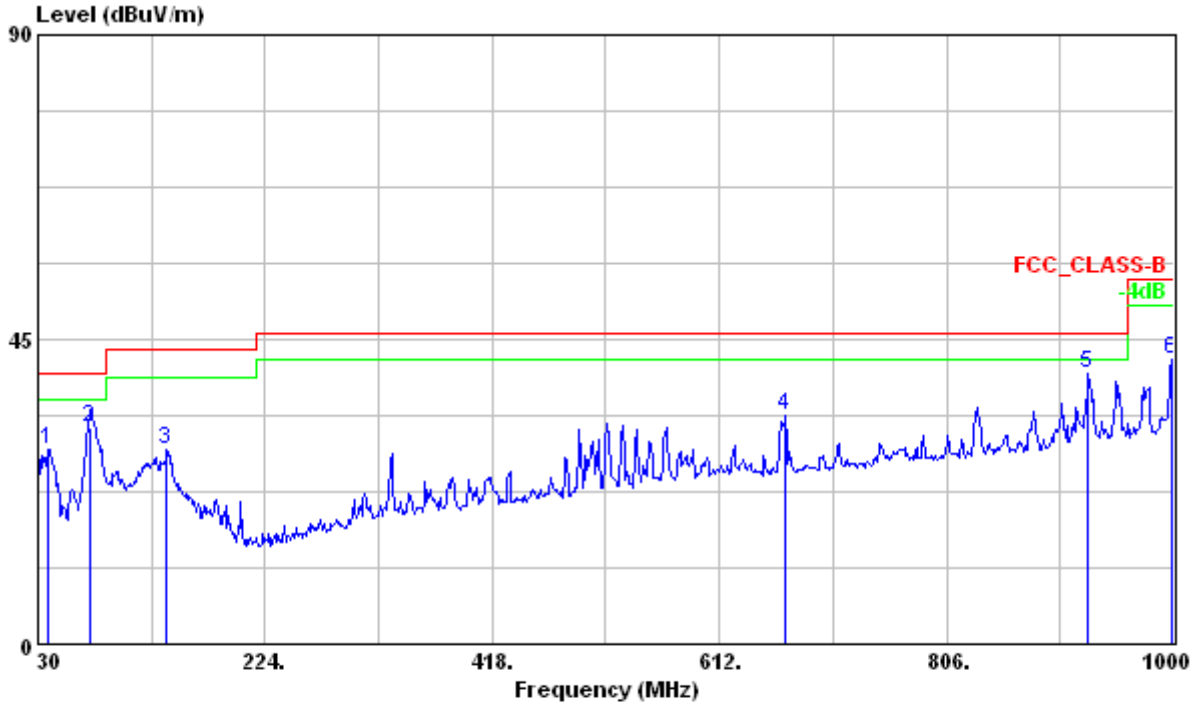


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	76.440	26.02	-19.71	45.73	40.00	-13.98	---	---	HORIZONTAL	Peak
2	138.000	22.96	-18.68	41.64	43.50	-20.54	---	---	HORIZONTAL	Peak
3	228.720	22.97	-14.85	37.82	46.00	-23.03	---	---	HORIZONTAL	Peak
4	332.900	34.28	-11.03	45.31	46.00	-11.72	---	---	HORIZONTAL	Peak
5	516.515	26.48	-6.64	33.12	46.00	-19.52	102	271	HORIZONTAL	QP
6	974.800	42.54	0.02	42.52	54.00	-11.46	---	---	HORIZONTAL	Peak

Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Model	**: 2480MHz, Continuous Transmitting**		
Test Distance	**:** 3m	**Tester**	**:** Liu
Polarization	**:** Vertical	**Frequency Range**	**:** 30MHz~1000MHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	39.180	28.83	-13.52	42.35	40.00	-11.17	---	---	VERTICAL	Peak
2	75.259	31.84	-19.70	51.54	40.00	-8.16	120	229	VERTICAL	QP
3	139.350	28.75	-18.60	47.35	43.50	-14.75	---	---	VERTICAL	Peak
4	668.200	33.73	-3.83	37.56	46.00	-12.27	---	---	VERTICAL	Peak
5	927.200	39.97	-0.44	40.41	46.00	-6.03	---	---	VERTICAL	Peak
6	997.900	42.05	0.23	41.82	54.00	-11.95	---	---	VERTICAL	Peak

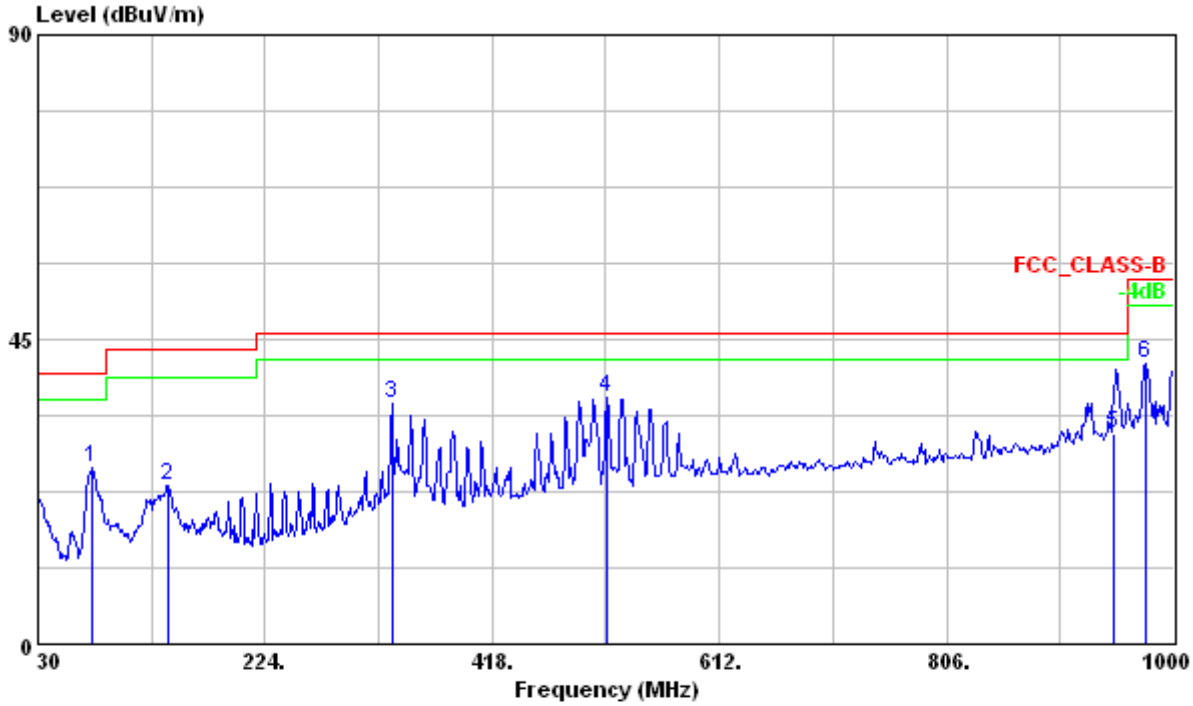
Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Model **: 2480MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Liu

Polarization **:** Horizontal **Frequency Range :** 30MHz~1000MHz

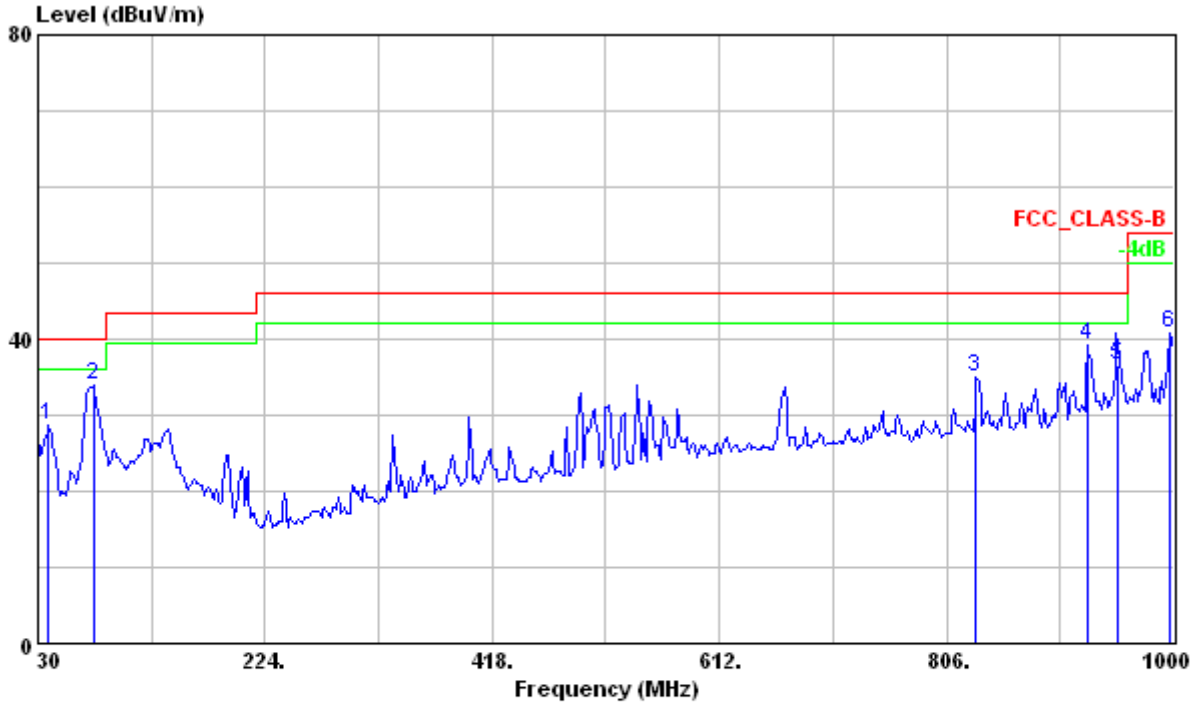


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	75.900	25.95	-19.70	45.65	40.00	-14.05	---	---	HORIZONTAL	Peak
2	140.700	23.47	-18.47	41.94	43.50	-20.03	---	---	HORIZONTAL	Peak
3	332.900	35.47	-11.03	46.50	46.00	-10.53	---	---	HORIZONTAL	Peak
4	515.600	36.47	-6.68	43.15	46.00	-9.53	---	---	HORIZONTAL	Peak
5	949.300	31.21	-0.22	31.43	46.00	-14.79	101	172	HORIZONTAL	QP
6	976.900	41.52	0.03	41.49	54.00	-12.48	---	---	HORIZONTAL	Peak

Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Mode	**: 2405MHz, Continuous Receiving**		
Test Distance	**:** 3m	**Tester**	**:** Liu
Polarization	**:** Vertical	**Frequency Range**	**:** 30MHz~1000MHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	38.730	28.62	-13.30	41.92	40.00	-11.38	---	---	VERTICAL	Peak
2	77.530	33.82	-19.72	53.54	40.00	-6.18	---	---	VERTICAL	Peak
3	831.220	34.97	-1.75	36.72	46.00	-11.03	---	---	VERTICAL	Peak
4	926.280	39.08	-0.44	39.52	46.00	-6.92	---	---	VERTICAL	Peak
5	952.282	36.48	-0.20	36.68	46.00	-9.52	107	268	VERTICAL	QP
6	997.090	40.87	0.22	40.65	54.00	-13.13	---	---	VERTICAL	Peak

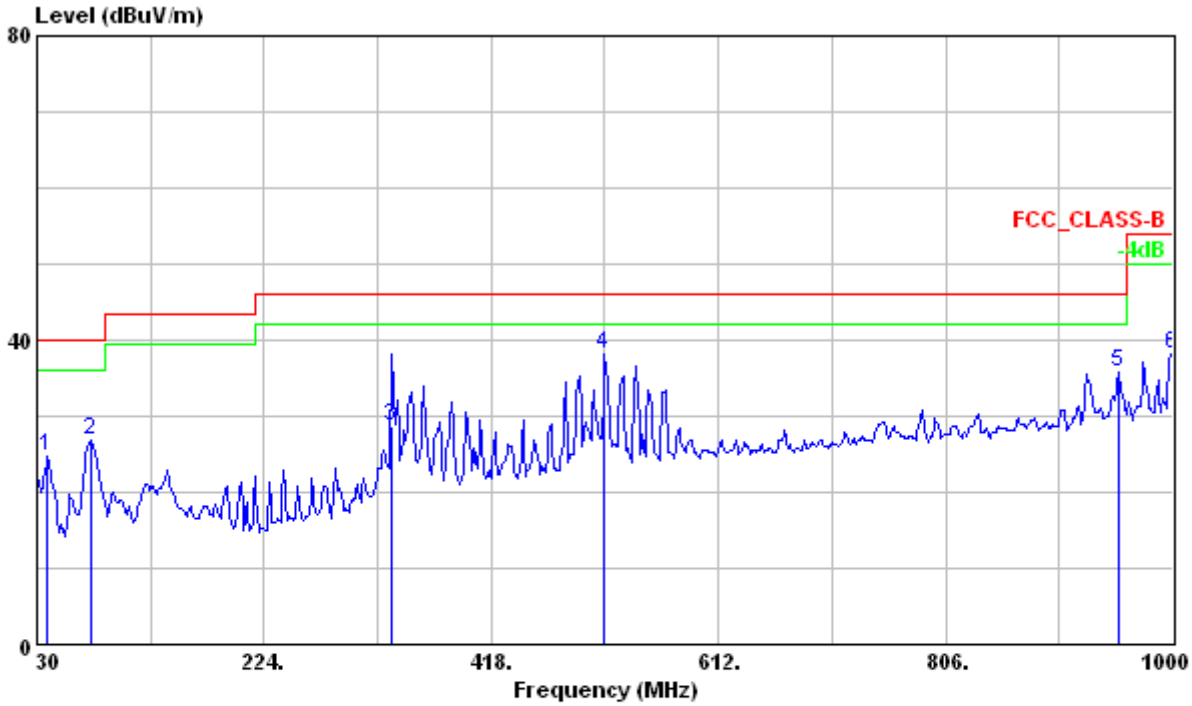
Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Mode : **2405MHz, Continuous Receiving**

Test Distance : 3m **Tester** : Liu

Polarization : Horizontal **Frequency Range** : 30MHz~1000MHz

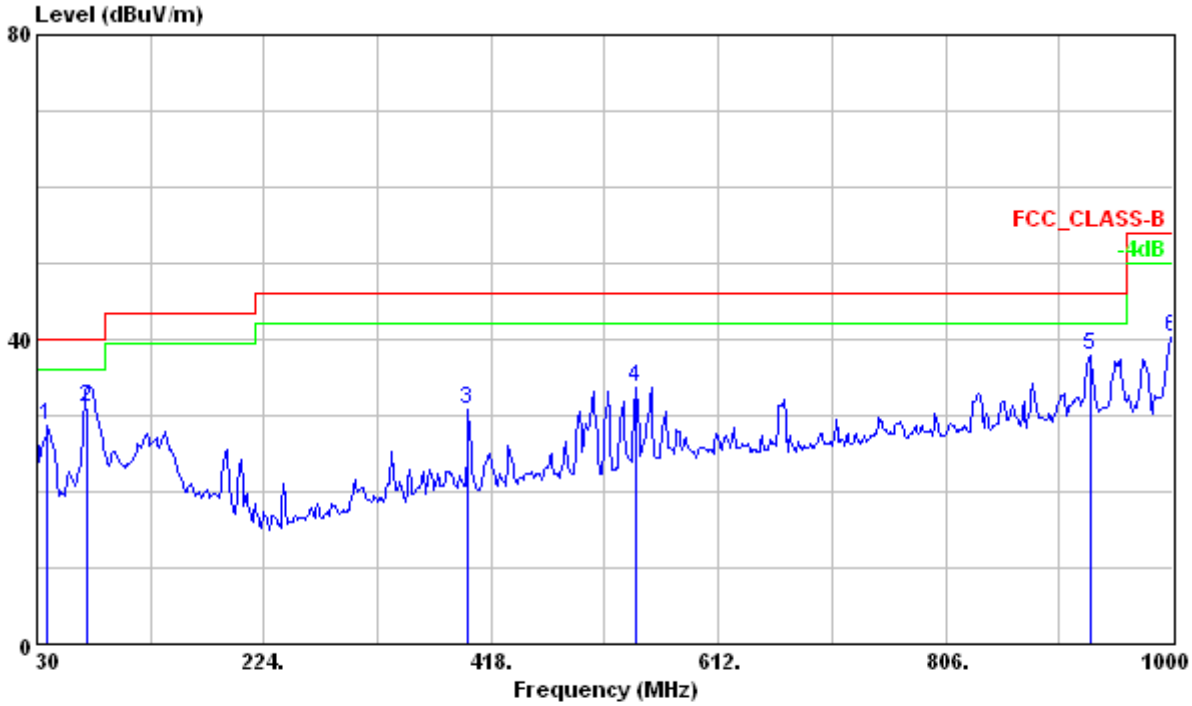


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	38.730	24.67	-13.30	37.97	40.00	-15.33	---	---	HORIZONTAL	Peak
2	75.590	26.90	-19.70	46.60	40.00	-13.10	---	---	HORIZONTAL	Peak
3	332.250	28.59	-11.06	39.65	46.00	-17.41	107	360	HORIZONTAL	QP
4	515.000	38.11	-6.70	44.81	46.00	-7.89	---	---	HORIZONTAL	Peak
5	953.440	35.83	-0.19	36.02	46.00	-10.17	---	---	HORIZONTAL	Peak
6	1000.000	38.22	0.25	37.97	54.00	-15.78	---	---	HORIZONTAL	Peak

Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Mode	**: 2440MHz, Continuous Receiving**		
Test Distance	**:** 3m	**Tester**	**:** Liu
Polarization	**:** Vertical	**Frequency Range**	**:** 30MHz~1000MHz

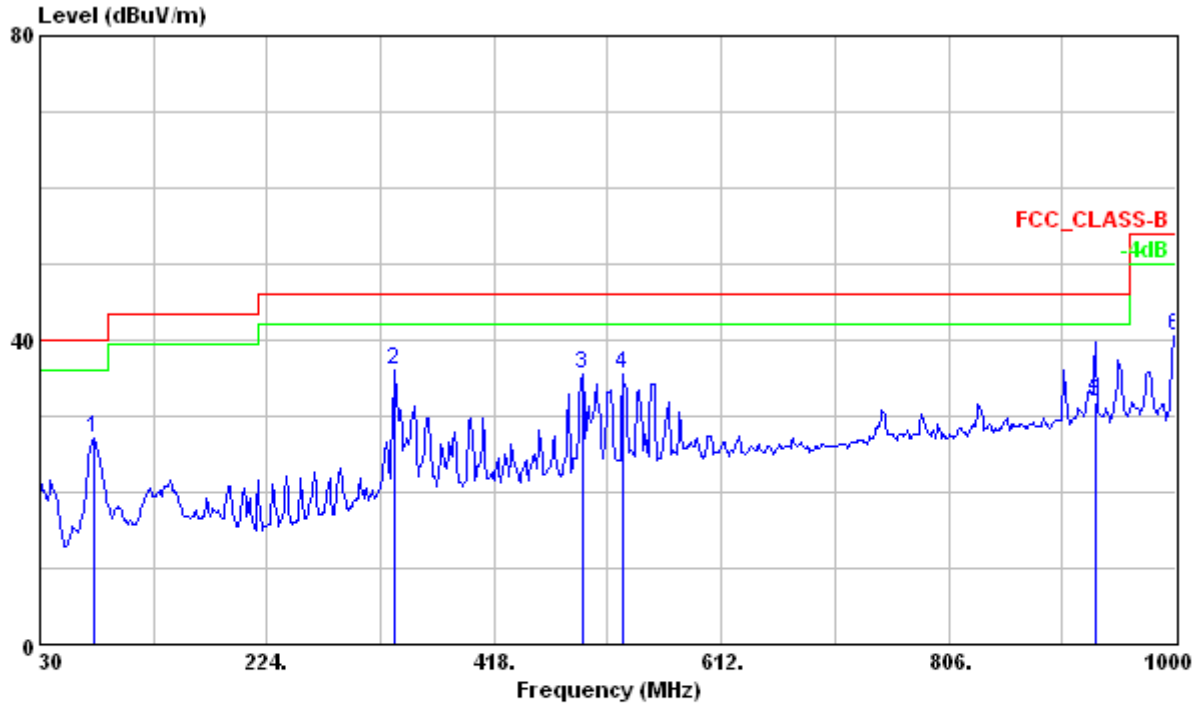


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	38.730	28.63	-13.30	41.93	40.00	-11.37	---	---	VERTICAL	Peak
2	72.680	30.95	-19.65	50.60	40.00	-9.05	102	184	VERTICAL	QP
3	398.600	30.82	-9.28	40.10	46.00	-15.18	---	---	VERTICAL	Peak
4	542.160	33.64	-5.76	39.40	46.00	-12.36	---	---	VERTICAL	Peak
5	929.190	37.99	-0.41	38.40	46.00	-8.01	---	---	VERTICAL	Peak
6	1000.000	40.33	0.25	40.08	54.00	-13.67	---	---	VERTICAL	Peak

Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Mode	**: 2440MHz, Continuous Receiving**		
Test Distance	**:** 3m	**Tester**	**:** Liu
Polarization	**:** Horizontal	**Frequency Range**	**:** 30MHz~1000MHz

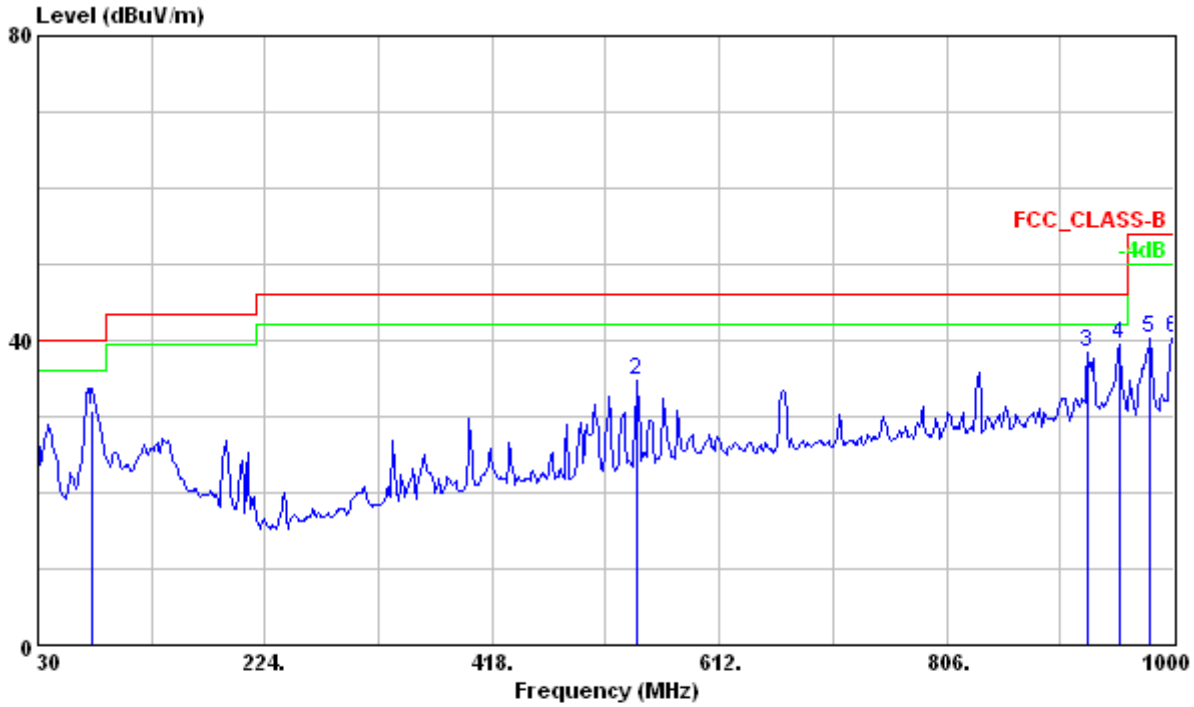


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	75.590	27.23	-19.70	46.93	40.00	-12.77	---	---	HORIZONTAL	Peak
2	333.610	36.05	-11.00	47.05	46.00	-9.95	---	---	HORIZONTAL	Peak
3	493.660	35.62	-7.34	42.96	46.00	-10.38	---	---	HORIZONTAL	Peak
4	527.610	35.49	-6.26	41.75	46.00	-10.51	---	---	HORIZONTAL	Peak
5	931.130	31.76	-0.40	32.16	46.00	-14.24	110	182	HORIZONTAL	QP
6	1000.000	40.58	0.25	40.33	54.00	-13.42	---	---	HORIZONTAL	Peak

Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Model	**: 2480MHz, Continuous Receiving**		
Test Distance	**:** 3m	**Tester**	**:** Liu
Polarization	**:** Vertical	**Frequency Range**	**:** 30MHz~1000MHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	75.590	30.77	-19.70	50.47	40.00	-9.23	103	166	VERTICAL	QP
2	542.160	34.62	-5.76	40.38	46.00	-11.38	---	---	VERTICAL	Peak
3	926.280	38.32	-0.44	38.76	46.00	-7.68	---	---	VERTICAL	Peak
4	953.440	39.53	-0.19	39.72	46.00	-6.47	---	---	VERTICAL	Peak
5	979.630	40.19	0.06	40.13	54.00	-13.81	---	---	VERTICAL	Peak
6	1000.000	40.22	0.25	39.97	54.00	-13.78	---	---	VERTICAL	Peak

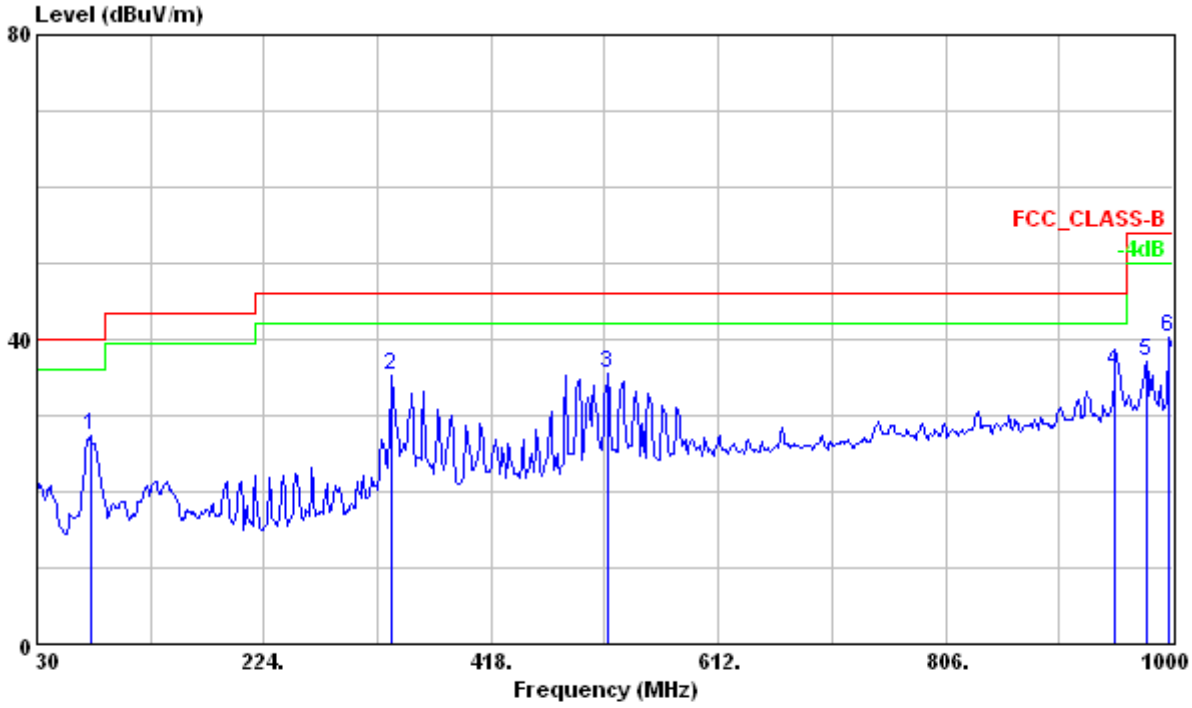
Note：

1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Test Model **: 2480MHz, Continuous Receiving**

Test Distance **:** 3m **Tester** **:** Liu

Polarization **:** Horizontal **Frequency Range :** 30MHz~1000MHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	75.590	27.32	-19.70	47.02	40.00	-12.68	---	---	HORIZONTAL	Peak
2	333.610	35.23	-11.00	46.23	46.00	-10.77	---	---	HORIZONTAL	Peak
3	517.910	35.60	-6.59	42.19	46.00	-10.40	---	---	HORIZONTAL	Peak
4	950.530	35.69	-0.21	35.90	46.00	-10.31	110	145	HORIZONTAL	QP
5	977.690	37.01	0.05	36.96	54.00	-16.99	---	---	HORIZONTAL	Peak
6	997.090	40.35	0.22	40.13	54.00	-13.65	---	---	HORIZONTAL	Peak

Note：

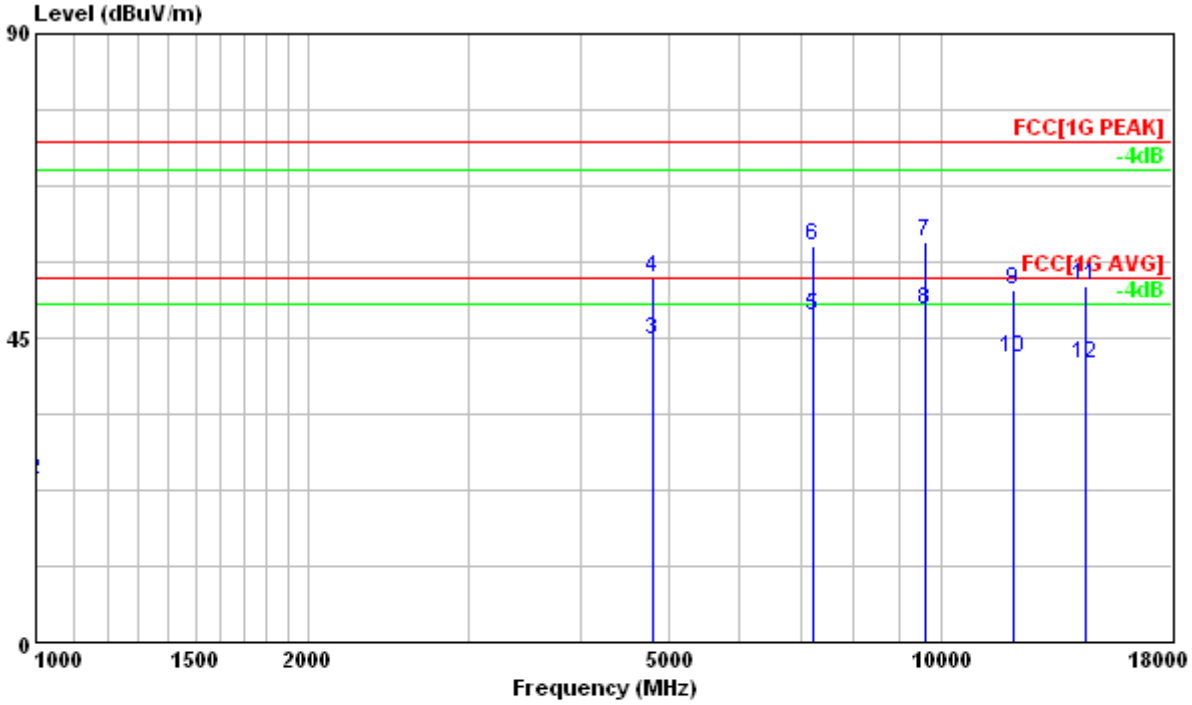
1. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Level (dBuV/m) = Read Level + Factor
3. Over Limit (dB) = Level – Limit line
4. QP is abbreviation of Quasi-peak.

Radiated Emission Measurement above 1000MHz

Test Model **: 2405MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Vertical **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	1000.000	54.64	-40.91	95.55	74.00	-19.36	101	220	VERTICAL	Peak
2	1000.000	24.11	-40.91	65.02	54.00	-29.89	101	220	VERTICAL	Average
3	4808.768	44.59	-32.99	77.58	54.00	-9.41	120	178	VERTICAL	Average
4	4808.768	53.85	-32.99	86.84	74.00	-20.15	120	178	VERTICAL	Peak
5	7224.000	48.33	-28.52	76.85	54.00	-5.67	139	228	VERTICAL	Average
6	7224.000	58.49	-28.52	87.01	74.00	-15.51	139	228	VERTICAL	Peak
7	9621.629	59.21	-21.80	81.01	74.00	-14.79	142	256	VERTICAL	Peak
8	9621.629	49.02	-21.80	70.82	54.00	-4.98	142	256	VERTICAL	Average
9	12022.080	52.18	-19.06	71.24	74.00	-21.82	171	145	VERTICAL	Peak
10	12022.080	42.09	-19.06	61.15	54.00	-11.91	171	145	VERTICAL	Average
11	14426.390	52.58	-17.16	69.74	74.00	-21.42	183	204	VERTICAL	Peak
12	14426.390	41.20	-17.16	58.36	54.00	-12.80	183	204	VERTICAL	Average

Note:

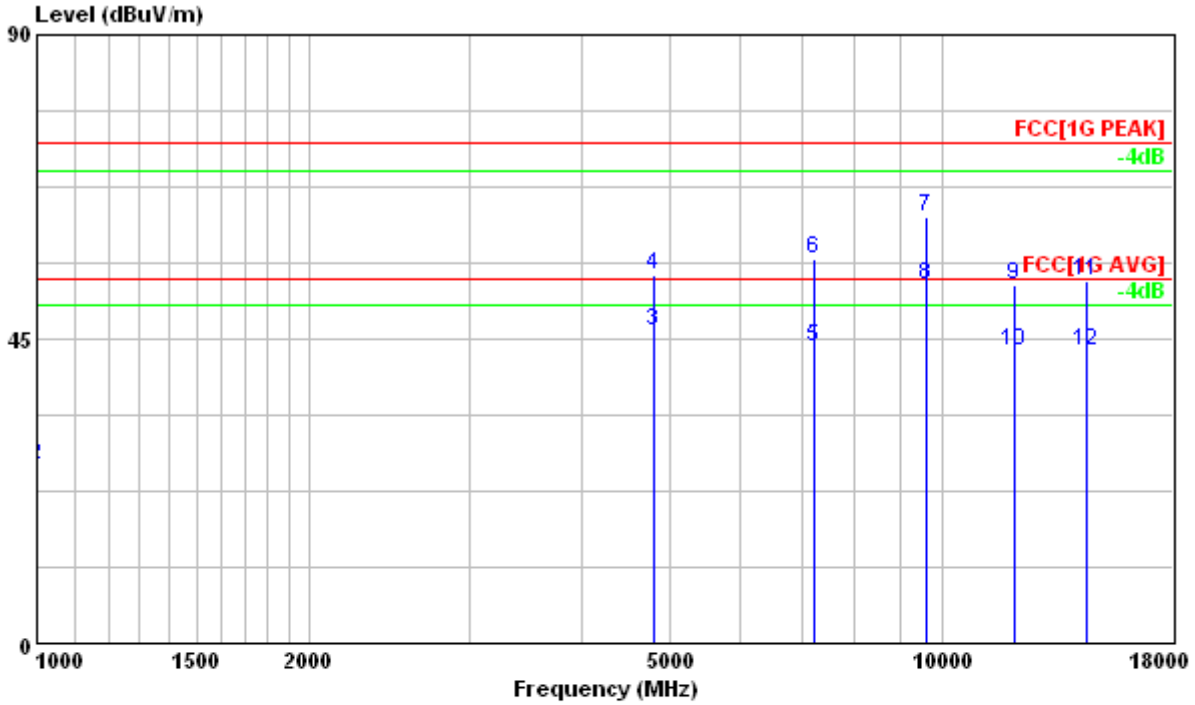
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2405MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Horizontal **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	1000.000	54.46	-40.91	95.37	74.00	-19.54	211	220	HORIZONTAL	Peak
2	1000.000	26.35	-40.91	67.26	54.00	-27.65	211	220	HORIZONTAL	Average
3	4808.910	46.10	-32.99	79.09	54.00	-7.90	123	178	HORIZONTAL	Average
4	4808.910	54.42	-32.99	87.41	74.00	-19.58	123	178	HORIZONTAL	Peak
5	7224.000	43.68	-28.52	72.20	54.00	-10.32	282	123	HORIZONTAL	Average
6	7224.000	56.86	-28.52	85.38	74.00	-17.14	282	123	HORIZONTAL	Peak
7	9621.784	62.96	-21.80	84.76	74.00	-11.04	198	102	HORIZONTAL	Peak
8	9621.784	53.05	-21.80	74.85	54.00	-0.95	198	102	HORIZONTAL	Average
9	12021.840	53.03	-19.06	72.09	74.00	-20.97	203	124	HORIZONTAL	Peak
10	12021.840	43.19	-19.06	62.25	54.00	-10.81	203	124	HORIZONTAL	Average
11	14432.720	53.56	-17.14	70.70	74.00	-20.44	141	153	HORIZONTAL	Peak
12	14432.720	43.19	-17.14	60.33	54.00	-10.81	141	153	HORIZONTAL	Average

Note:

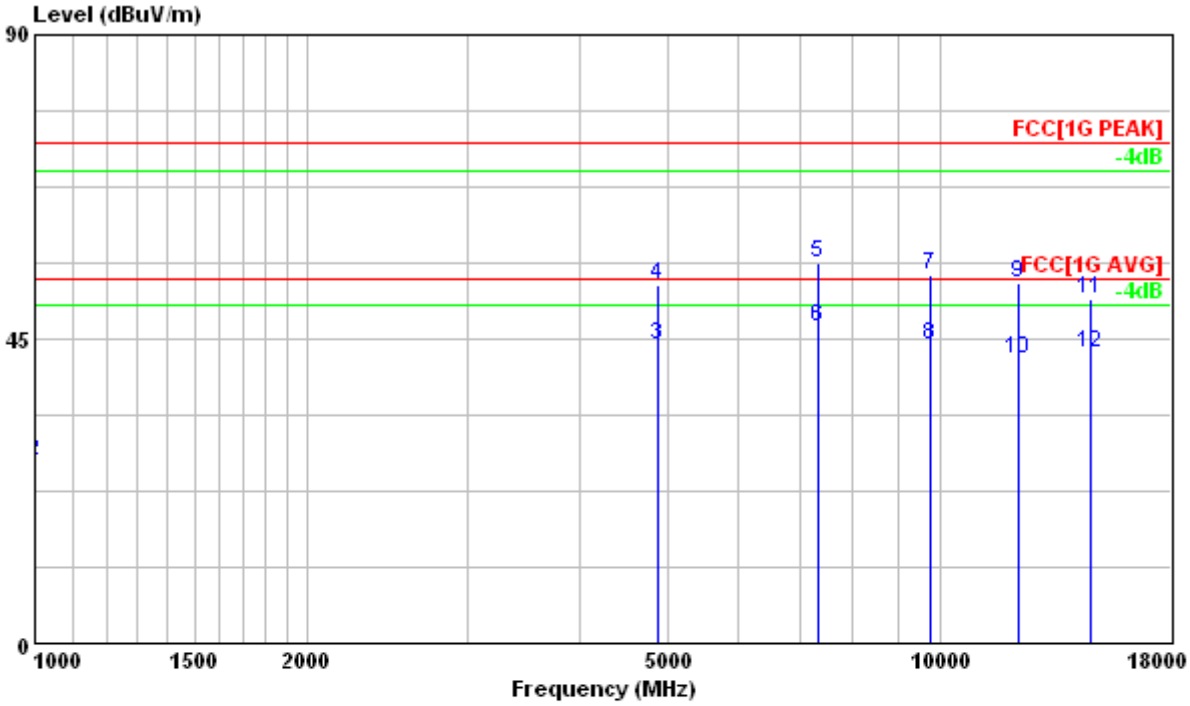
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2440MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Vertical **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	1000.153	58.96	-40.91	99.87	74.00	-15.04	111	271	VERTICAL	Peak
2	1000.153	26.96	-40.91	67.87	54.00	-27.04	111	271	VERTICAL	Average
3	4880.840	44.17	-33.02	77.19	54.00	-9.83	134	113	VERTICAL	Average
4	4880.840	52.97	-33.02	85.99	74.00	-21.03	134	113	VERTICAL	Peak
5	7321.235	56.10	-28.45	84.55	74.00	-17.90	101	222	VERTICAL	Peak
6	7321.235	46.68	-28.45	75.13	54.00	-7.32	101	222	VERTICAL	Average
7	9770.000	54.55	-23.40	77.95	74.00	-19.45	101	187	VERTICAL	Peak
8	9770.000	44.08	-23.40	67.48	54.00	-9.92	101	187	VERTICAL	Average
9	12196.900	53.37	-19.03	72.40	74.00	-20.63	102	168	VERTICAL	Peak
10	12196.900	42.13	-19.03	61.16	54.00	-11.87	102	168	VERTICAL	Average
11	14660.000	50.96	-17.03	67.99	74.00	-23.04	100	180	VERTICAL	Peak
12	14660.000	43.02	-17.03	60.05	54.00	-10.98	100	180	VERTICAL	Average

Note:

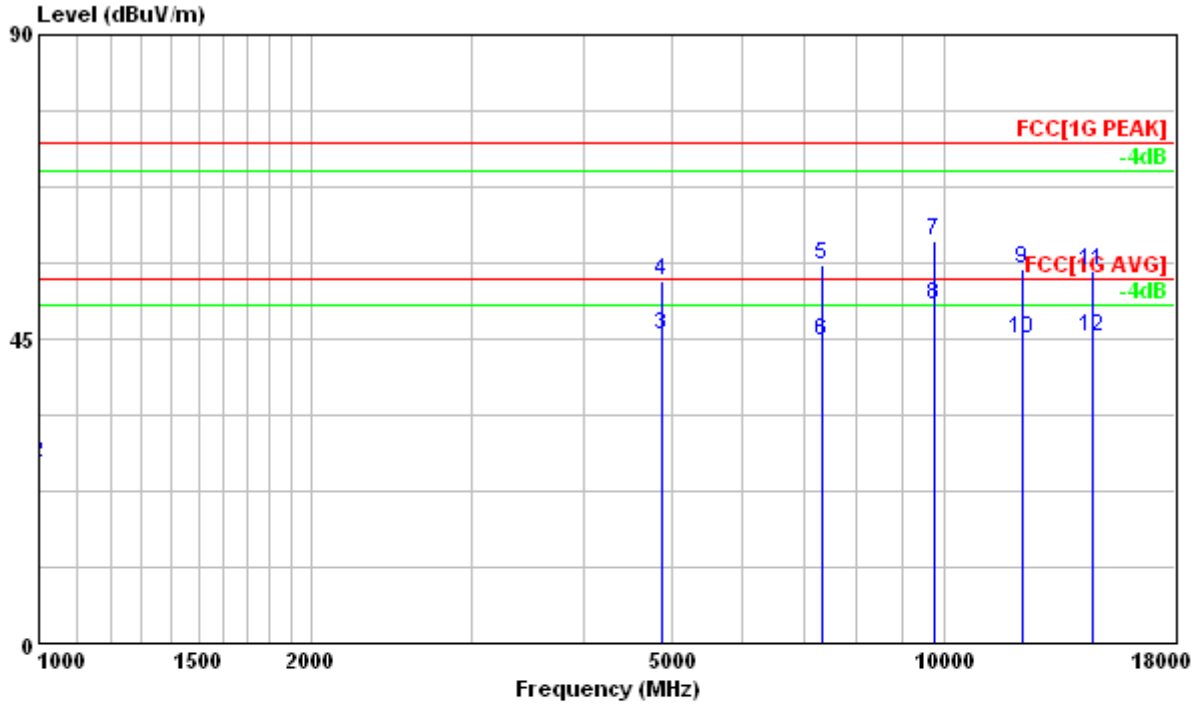
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2440MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Horizontal **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	1000.006	50.25	-40.91	91.16	74.00	-23.75	236	271	HORIZONTAL	Peak
2	1000.006	26.60	-40.91	67.51	54.00	-27.40	236	271	HORIZONTAL	Average
3	4880.840	45.50	-33.02	78.52	54.00	-8.50	136	153	HORIZONTAL	Average
4	4880.840	53.52	-33.02	86.54	74.00	-20.48	136	153	HORIZONTAL	Peak
5	7324.000	56.06	-28.45	84.51	74.00	-17.94	152	359	HORIZONTAL	Peak
6	7324.000	44.58	-28.45	73.03	54.00	-9.42	152	359	HORIZONTAL	Average
7	9757.744	59.60	-23.31	82.91	74.00	-14.40	209	92	HORIZONTAL	Peak
8	9757.744	49.91	-23.31	73.22	54.00	-4.09	209	92	HORIZONTAL	Average
9	12200.000	55.28	-19.03	74.31	74.00	-18.72	121	197	HORIZONTAL	Peak
10	12200.000	45.12	-19.03	64.15	54.00	-8.88	121	197	HORIZONTAL	Average
11	14636.380	54.96	-17.05	72.01	74.00	-19.04	101	179	HORIZONTAL	Peak
12	14636.380	45.21	-17.05	62.26	54.00	-8.79	101	179	HORIZONTAL	Average

Note:

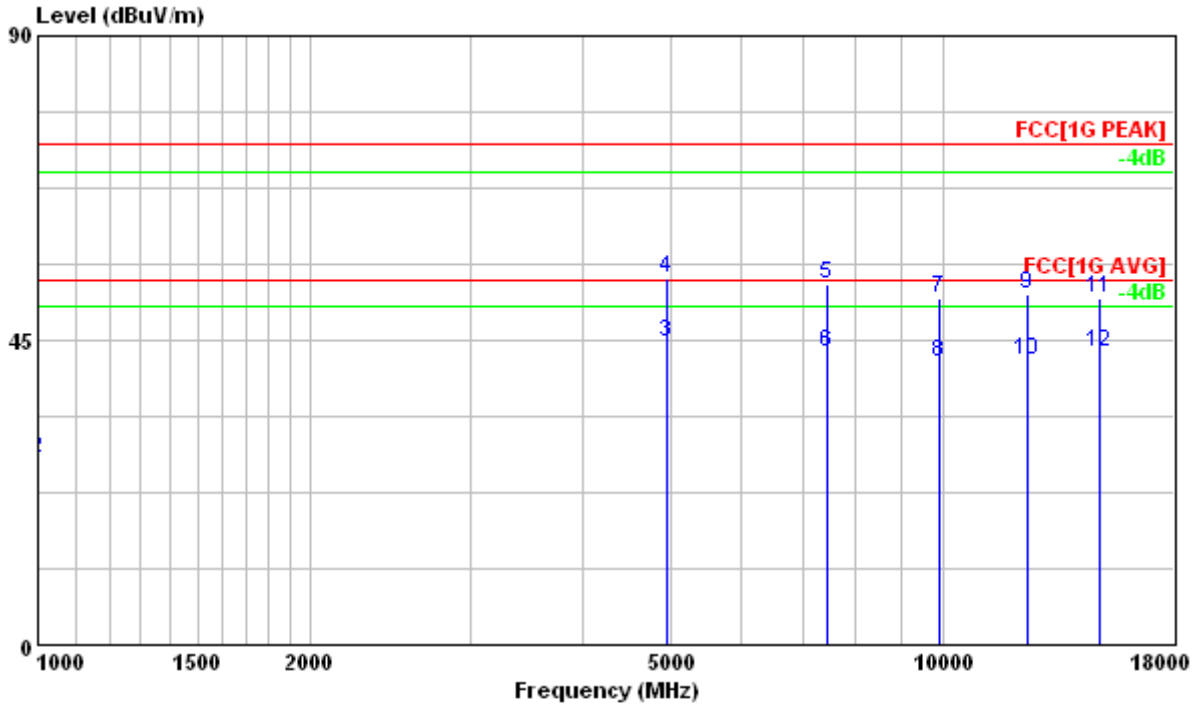
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2480MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Vertical **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	1000.000	56.69	-40.91	97.60	74.00	-17.31	102	116	VERTICAL	Peak
2	1000.000	27.42	-40.91	68.33	54.00	-26.58	102	116	VERTICAL	Average
3	4960.856	44.77	-32.97	77.74	54.00	-9.23	101	186	VERTICAL	Average
4	4960.856	54.20	-32.97	87.17	74.00	-19.80	101	186	VERTICAL	Peak
5	7441.351	53.17	-28.23	81.40	74.00	-20.83	102	188	VERTICAL	Peak
6	7441.351	43.17	-28.23	71.40	74.00	-30.83	102	188	VERTICAL	QP
7	9921.966	51.22	-23.29	74.51	74.00	-22.78	108	173	VERTICAL	Peak
8	9921.966	41.85	-23.29	65.14	54.00	-12.15	108	173	VERTICAL	Average
9	12402.050	51.90	-18.45	70.35	74.00	-22.10	103	6	VERTICAL	Peak
10	12402.050	42.13	-18.45	60.58	54.00	-11.87	103	6	VERTICAL	Average
11	14910.000	51.26	-16.79	68.05	74.00	-22.74	121	165	VERTICAL	Peak
12	14910.000	43.31	-16.79	60.10	54.00	-10.69	121	165	VERTICAL	Average

Note:

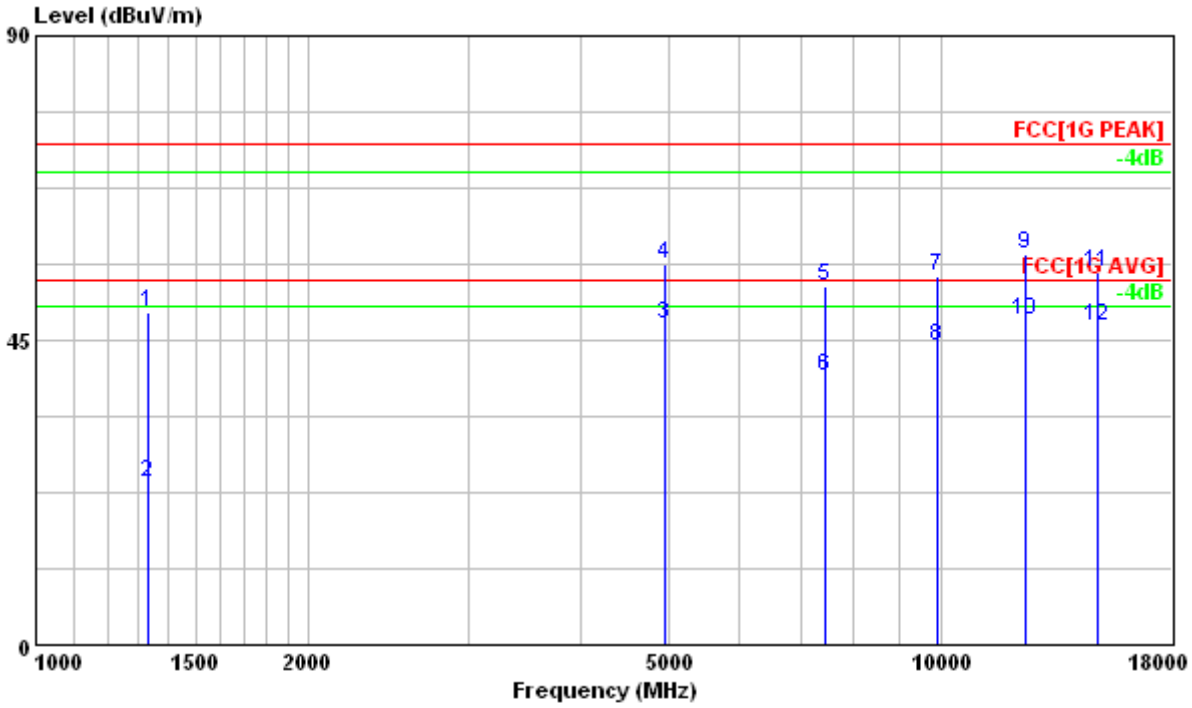
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2480MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Horizontal **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	1327.289	49.20	-40.84	90.04	74.00	-24.80	102	331	HORIZONTAL	Peak
2	1327.289	23.92	-40.84	64.76	54.00	-30.08	102	331	HORIZONTAL	Average
3	4960.856	47.25	-32.97	80.22	54.00	-6.75	179	161	HORIZONTAL	Average
4	4960.856	56.16	-32.97	89.13	74.00	-17.84	179	161	HORIZONTAL	Peak
5	7444.000	52.92	-28.23	81.15	74.00	-21.08	100	209	HORIZONTAL	Peak
6	7444.000	39.65	-28.23	67.88	54.00	-14.35	100	209	HORIZONTAL	Average
7	9920.000	54.52	-23.30	77.82	74.00	-19.48	204	226	HORIZONTAL	Peak
8	9920.000	44.20	-23.30	67.50	54.00	-9.80	204	226	HORIZONTAL	Average
9	12430.000	57.83	-18.26	76.09	74.00	-16.17	143	193	HORIZONTAL	Peak
10	12430.000	47.88	-18.26	66.14	54.00	-6.12	143	193	HORIZONTAL	Average
11	14910.000	55.05	-16.79	71.84	74.00	-18.95	132	188	HORIZONTAL	Peak
12	14910.000	47.11	-16.79	63.90	54.00	-6.89	132	188	HORIZONTAL	Average

Note:

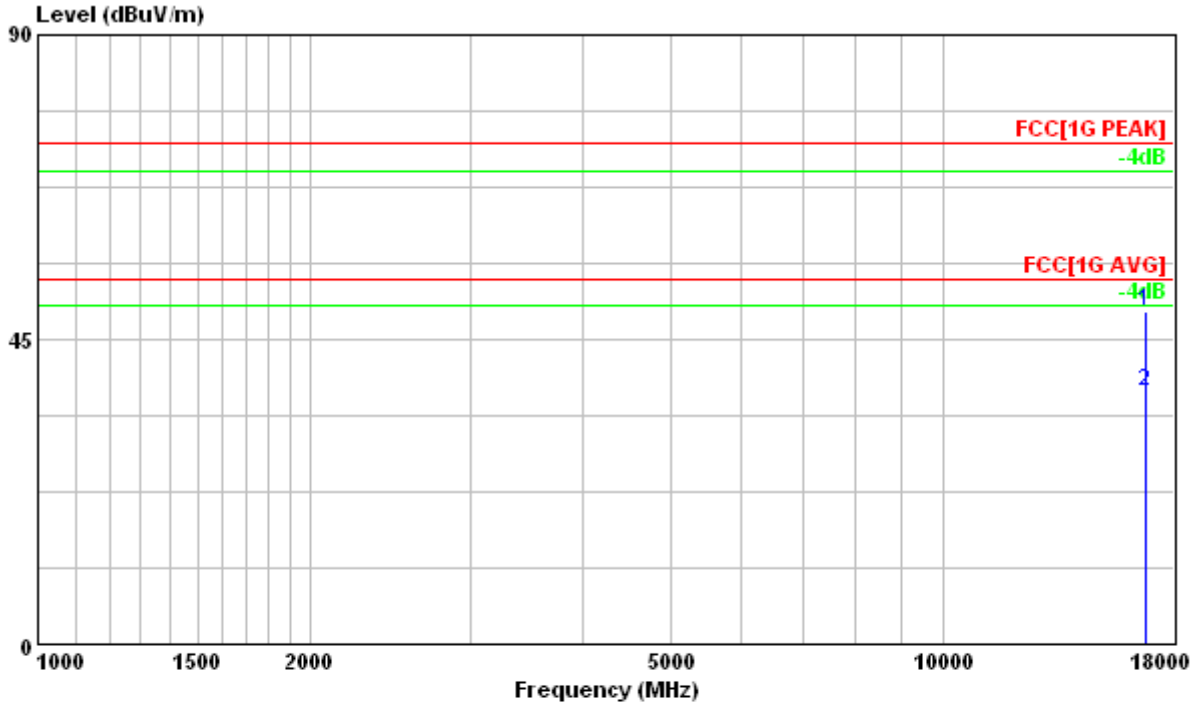
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2405MHz, Continuous Receiving**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Vertical **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	16726.000	49.17	-13.12	62.29	74.00	-24.83	100	0	VERTICAL	Peak
2	16726.000	37.16	-13.12	50.28	54.00	-16.84	100	0	VERTICAL	Average

Note:

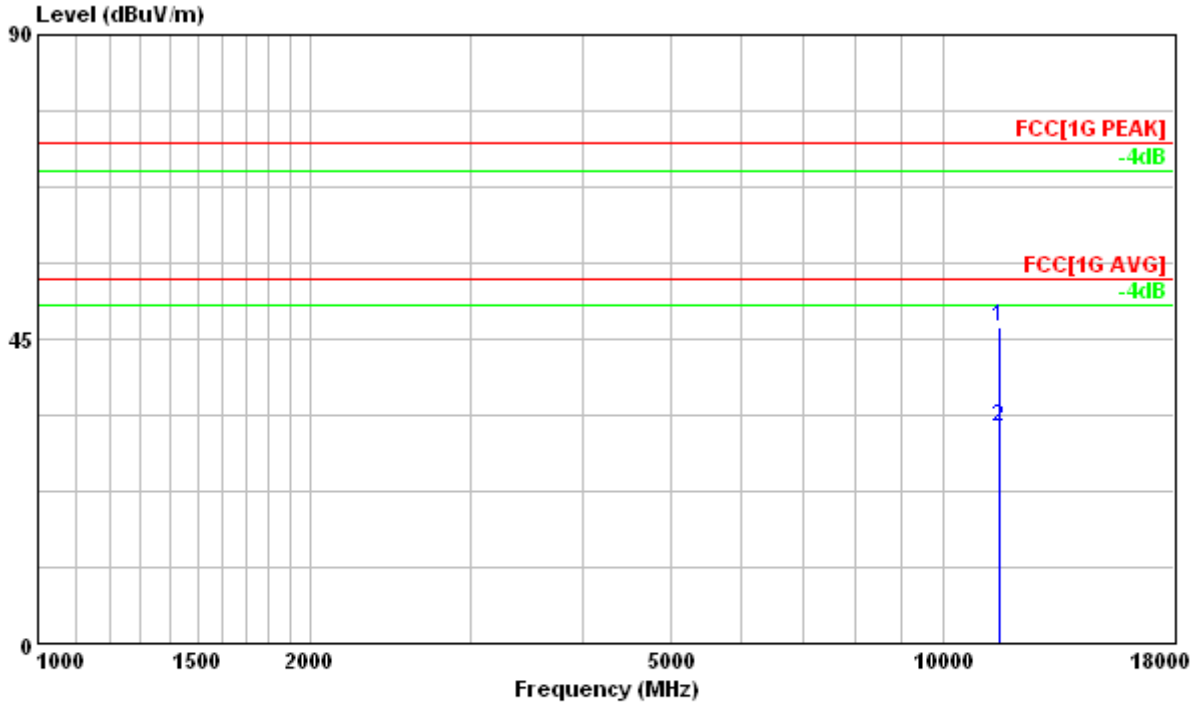
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2405MHz, Continuous Receiving**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Horizontal **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	11574.000	46.88	-20.14	67.02	74.00	-27.12	120	23	HORIZONTAL	Peak
2	11574.000	31.87	-20.14	52.01	54.00	-22.13	120	23	HORIZONTAL	Average

Note:

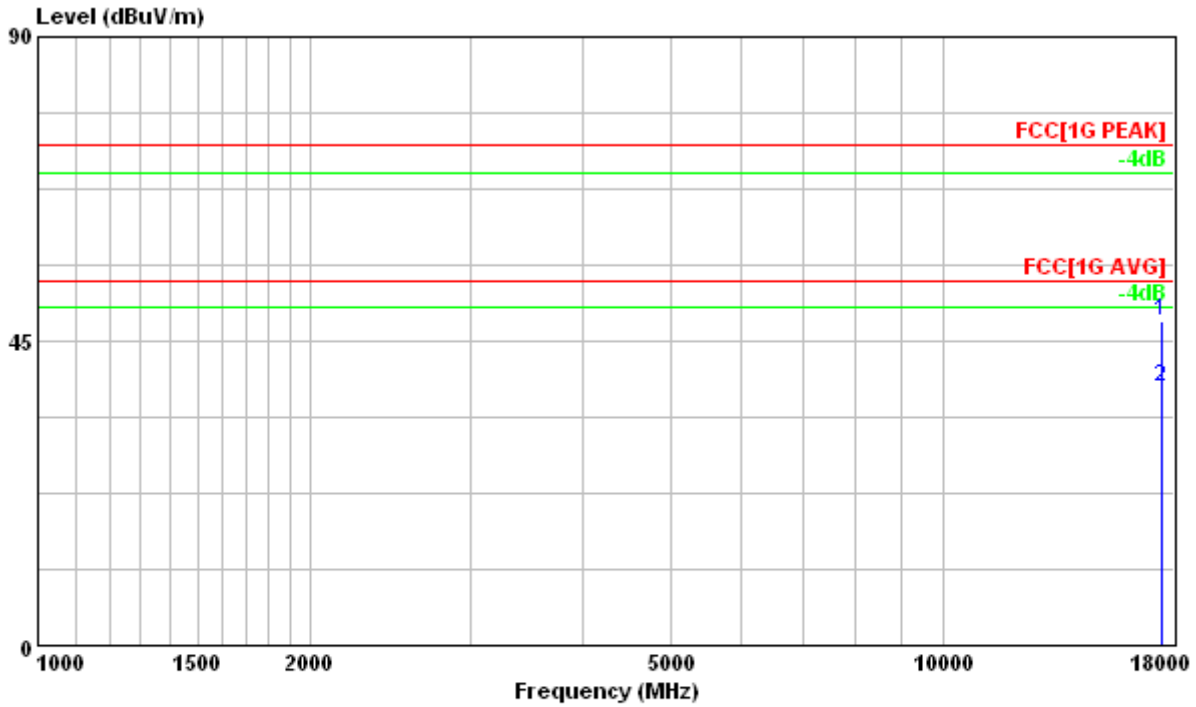
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2440MHz, Continuous Receiving**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Vertical **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	17426.000	48.09	-12.62	60.71	74.00	-25.91	102	8	VERTICAL	Peak
2	17426.000	38.08	-12.62	50.70	54.00	-15.92	102	8	VERTICAL	Average

Note:

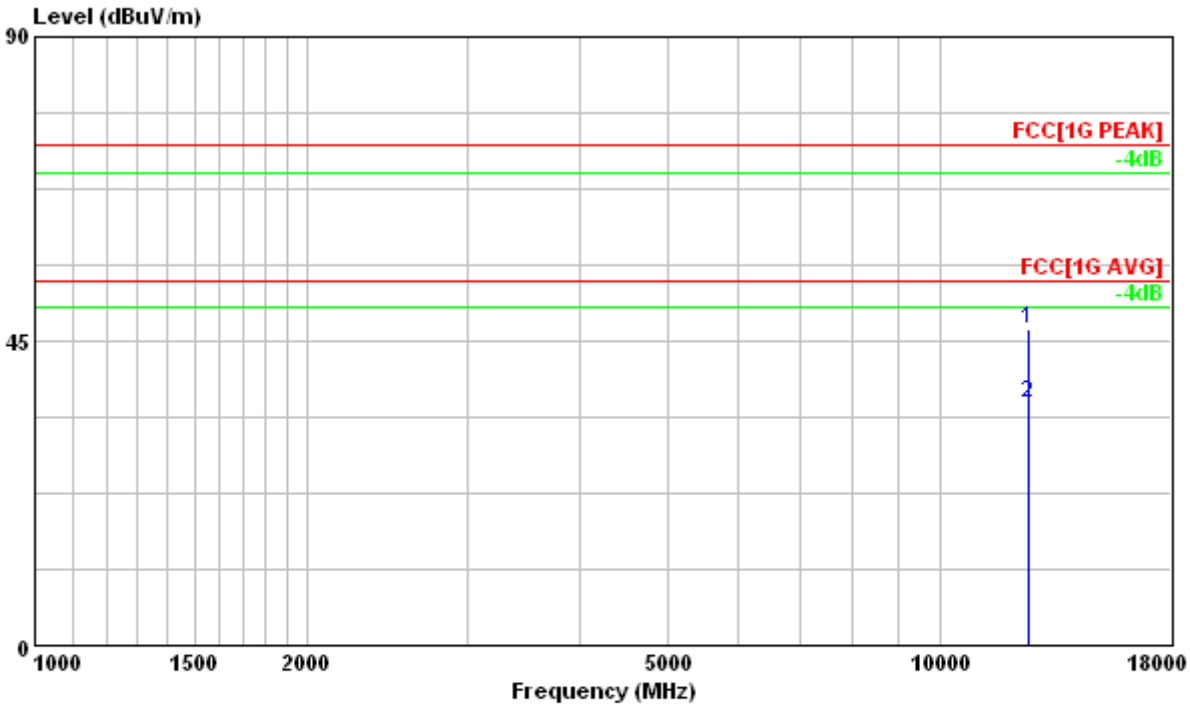
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2440MHz, Continuous Receiving**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Horizontal **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	12554.000	46.89	-17.74	64.63	74.00	-27.11	118	32	HORIZONTAL	Peak
2	12554.000	35.90	-17.74	53.64	54.00	-18.10	118	32	HORIZONTAL	Average

Note:

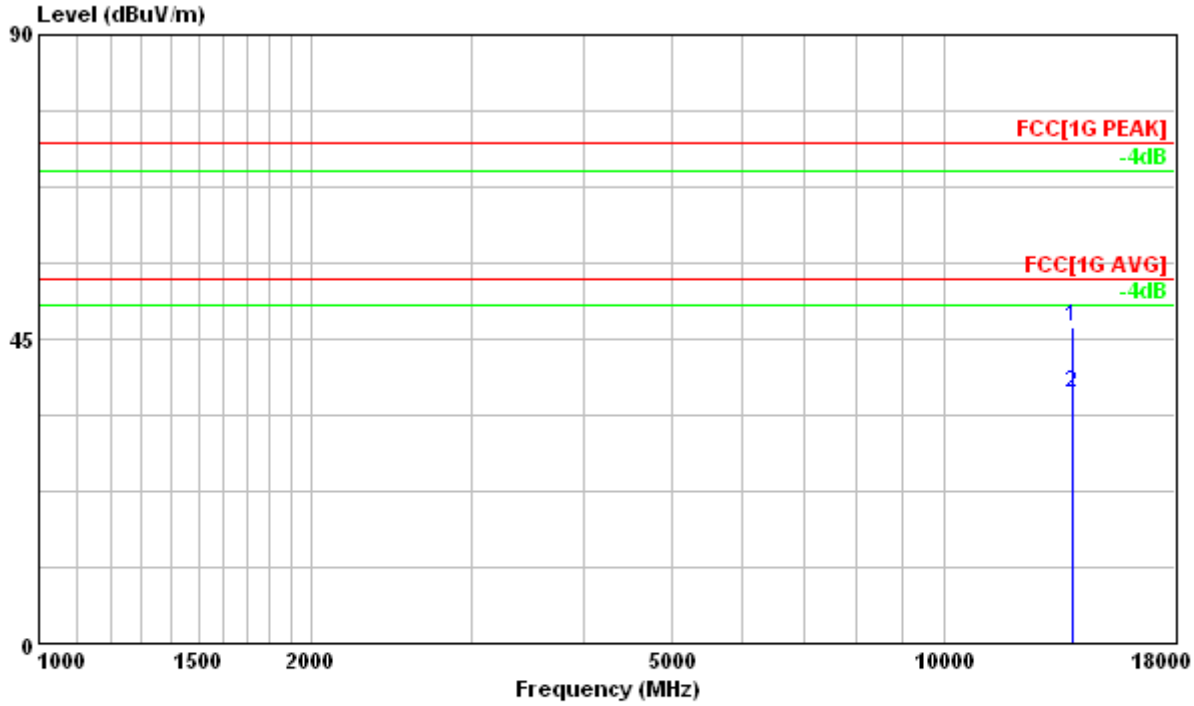
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2480MHz, Continuous Receiving**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Vertical **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	13884.000	46.92	-17.30	64.22	74.00	-27.08	106	44	VERTICAL	Peak
2	13884.000	36.91	-17.30	54.21	54.00	-17.09	106	44	VERTICAL	Average

Note:

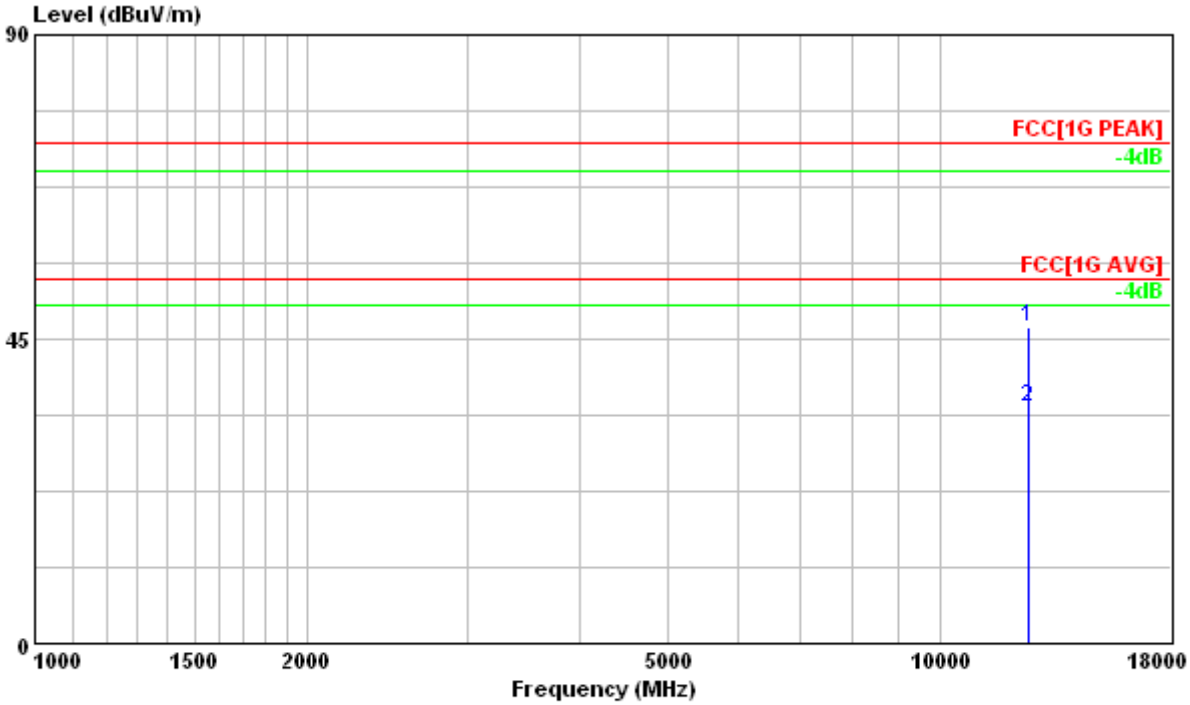
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2480MHz, Continuous Receiving**

Test Distance **:** 3m **Tester** **:** Liu

Antenna Polarization **:** Horizontal **Frequency Range :**1GHz~25GHz



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	12554.000	46.89	-17.74	64.63	74.00	-27.11	112	80	HORIZONTAL	Peak
2	12554.000	34.89	-17.74	52.63	54.00	-19.11	112	80	HORIZONTAL	Average

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

7 Antenna Requirement

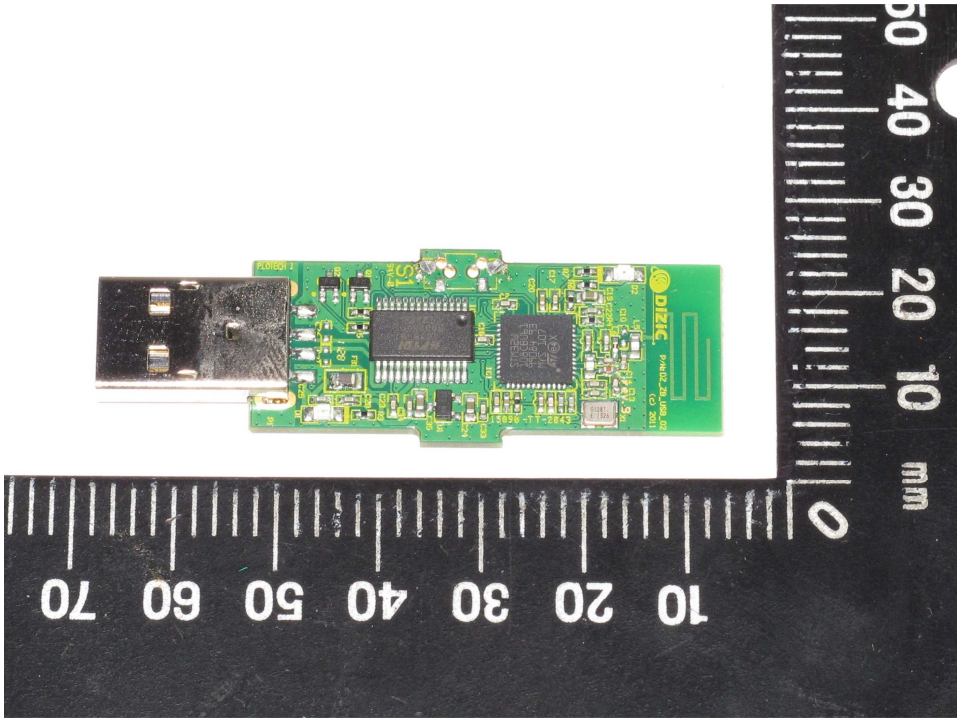
7.1 Applied standard

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

7.2 Antenna Information

This antenna's relative information as follow:

Brand	Model	Frequency Range (MHz)	Gain (dBi)	Comment
DiZic	N/A	2400 ~ 2480	1.95	



7.3 Result

Gain of the antenn is less than 6dBi.

8 Conducted Emission Measurement

Test Result: Pass

8.1 Limits for Emission Measurement

For intentional device, according to §15.207(a) line conduction emission limit is as below table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency.

8.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ESCS 30/ 836858/021	2011/1/14	2012/1/14
LISN	R&S	ESH2-Z5/ 836613/001	2011/6/2	2012/6/2
2nd LISN	R&S	ENV4200/ 833209/010	2011/1/14	2012/1/14
50Ω terminator	N/A	N/A/001	2011/8/20	2012/8/20
RF Switch	N/A	RSU28/ 338965/002	2011/8/20	2012/8/20
RF Cable	N/A	N/A/ C0052 ~ 56	2011/8/20	2012/8/20
Test Software	Audix	e3/ Ver. 5.2004-2-19k	NCR	NCR
shielded room	ETS LINDGREN	TR5/15353-F	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

Instrument Setting

IF BW	Measurement Time	Detector	Trace	Comment
9kHz	1 second	Quasi-Peak / Average	Maxhold	

Climatic Condition

Ambient Temperature：27°C; Relative Humidity : 65%

8.3 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a non-conducted table with a height of 0.8 meters above the reference ground plane and 0.4 meters from the conducting wall of the shielded room. Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 12 millimeters above the reference ground plane.

c. Connect the EUT's power source to the appropriate power mains through the LISN.

d. All the other peripherals are connected to the 2^{nd} LISN, if any.

e. The LISN was placed 0.8 meters from the EUT and at least 0.8 meters from other units and other metal planes.

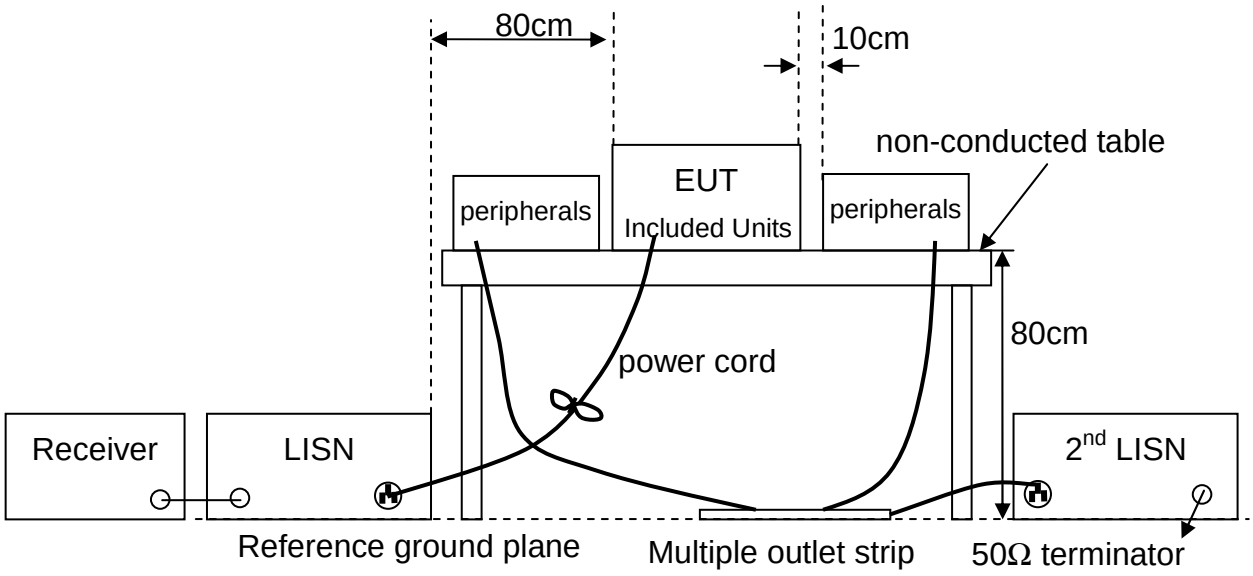
f. Measure the conducted emissions on each power line (Neutral Line and Line 1 – Hot side) of the EUT's power source by using the test receiver connected to the coupling RF output port of LISN.

g. Rapidly scan the signal from 150kHz to 30MHz by using the receiver through the Maximum-Peak detector to determine those frequencies associated with higher emission levels for each measured line.

h. Then measure the maximum level of conducted disturbance for each frequency found from step g. by using the receiver through the Quasi-Peak and Average detectors per CISPR 16-1.

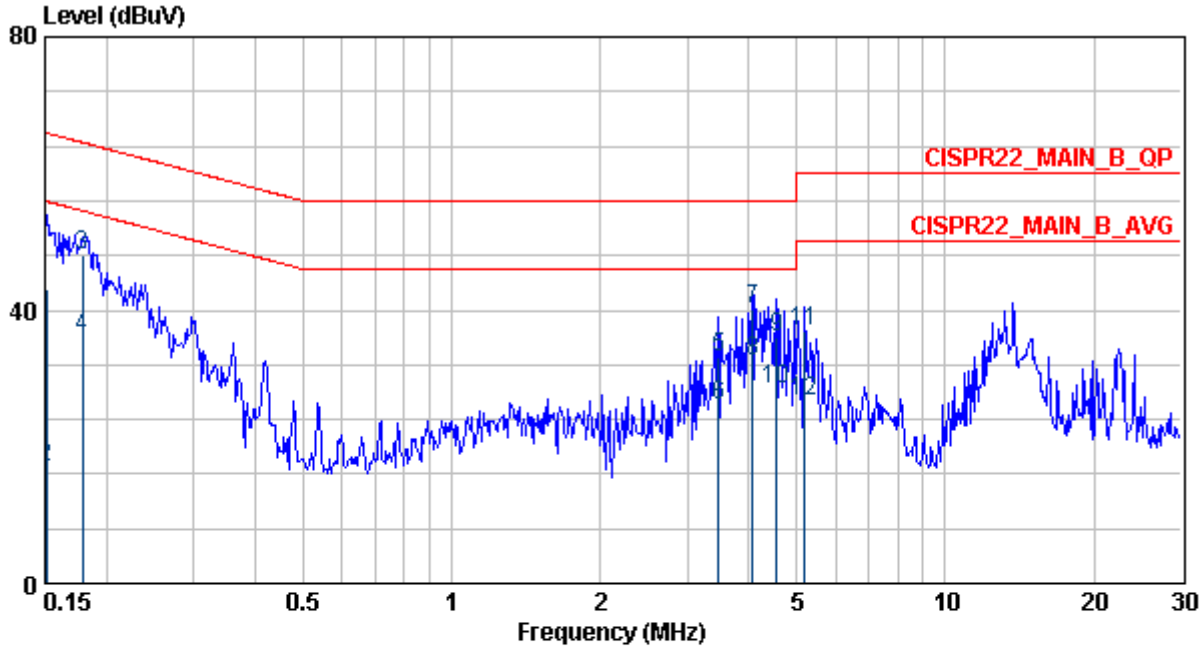
i. Record the level for each frequency and compare with the required limit.

8.4 Test Configurations



8.5 Test Results

Test Mode	**:**	**Continuous Transmitting**			
Tester	**:**	CDC	**Frequency Range**	**:**	150kHz~30MHz
IF Bandwidth	**:**	9kHz	**Phase**	**:**	**Line**

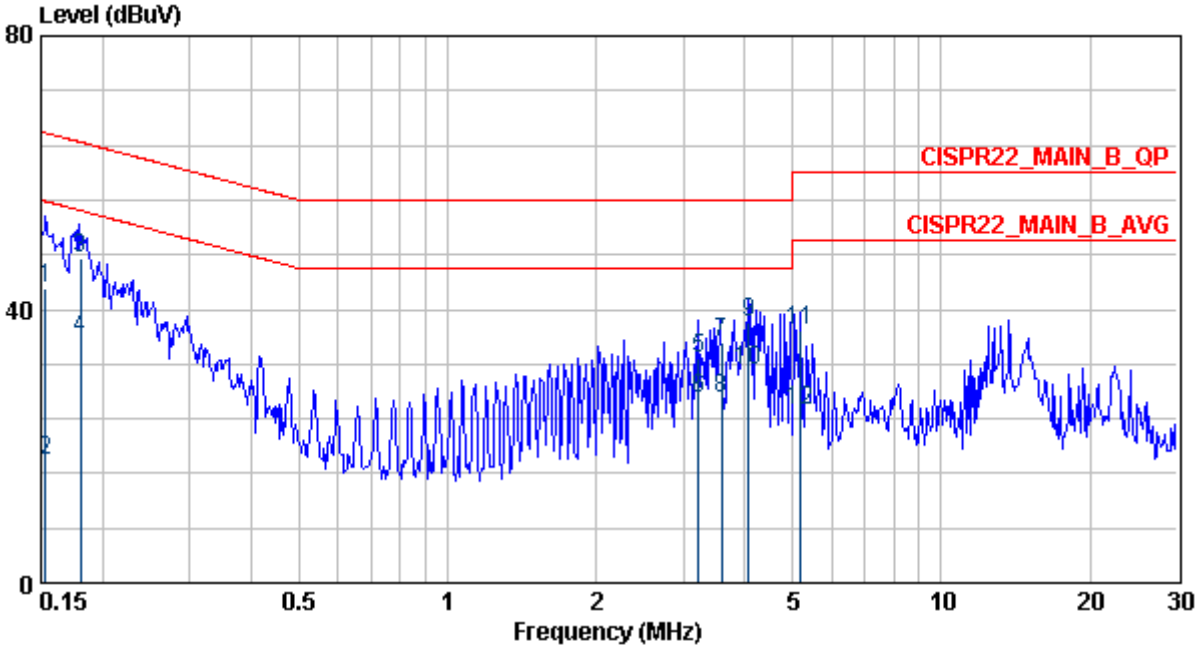


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	cm		
1	0.151	43.11	0.20	42.91	65.96	-22.85	---	LINE	QP
2	0.151	17.04	0.20	16.84	55.96	-38.92	---	LINE	AVERAGE
3	0.179	48.17	0.22	47.95	64.55	-16.38	---	LINE	QP
4	0.179	35.96	0.22	35.74	54.55	-18.59	---	LINE	AVERAGE
5	3.468	33.18	0.45	32.73	56.00	-22.82	---	LINE	QP
6	3.468	25.99	0.45	25.54	46.00	-20.01	---	LINE	AVERAGE
7	4.064	40.19	0.47	39.72	56.00	-15.81	---	LINE	QP
8	4.064	32.51	0.47	32.04	46.00	-13.49	---	LINE	AVERAGE
9	4.543	36.09	0.49	35.60	56.00	-19.91	---	LINE	QP
10	4.543	28.40	0.49	27.91	46.00	-17.60	---	LINE	AVERAGE
11	5.202	36.83	0.51	36.32	60.00	-23.17	---	LINE	QP
12	5.202	26.53	0.51	26.02	50.00	-23.47	---	LINE	AVERAGE

Note:

1. Level = reading value + Factor.
2. Factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.

Test Mode	**:**	**Continuous Transmitting**			
Tester	**:**	CDC	**Frequency Range**	**:**	150kHz~30MHz
IF Bandwidth	**:**	9kHz	**Phase**	**:**	**Neutral**

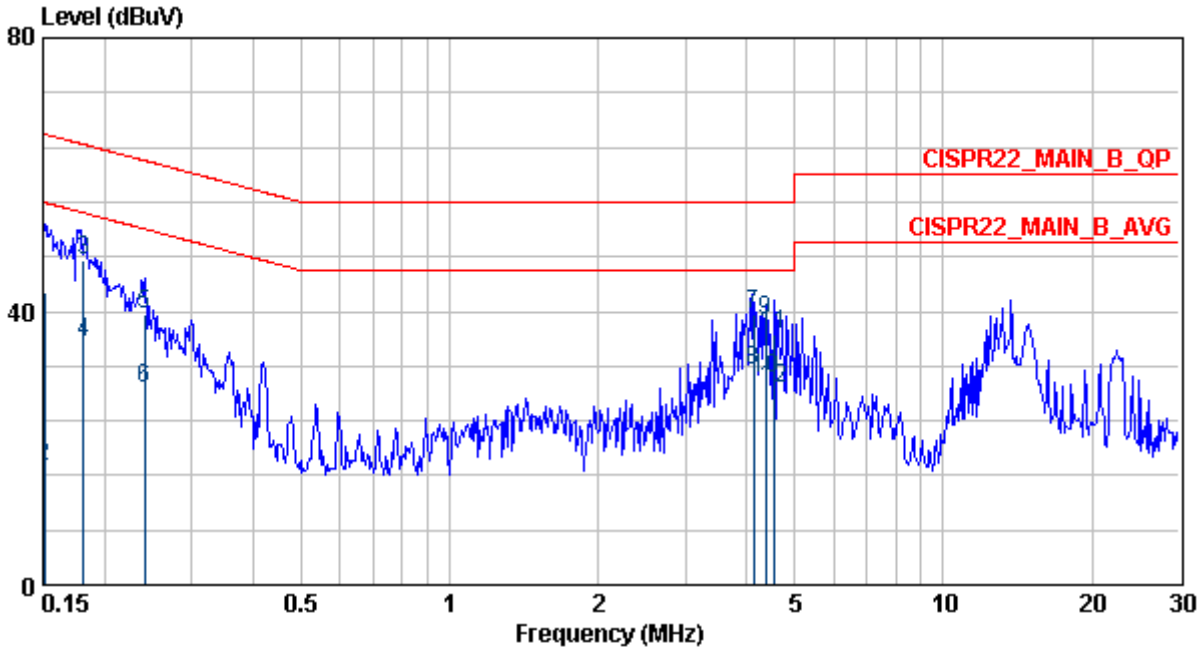


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	cm		
1	0.153	43.14	0.19	42.95	65.82	-22.68	---	NEUTRAL	QP
2	0.153	17.78	0.19	17.59	55.82	-38.04	---	NEUTRAL	AVERAGE
3	0.181	47.38	0.21	47.17	64.46	-17.07	---	NEUTRAL	QP
4	0.181	35.79	0.21	35.58	54.46	-18.66	---	NEUTRAL	AVERAGE
5	3.228	32.81	0.43	32.38	56.00	-23.19	---	NEUTRAL	QP
6	3.228	26.83	0.43	26.40	46.00	-19.17	---	NEUTRAL	AVERAGE
7	3.588	35.27	0.44	34.83	56.00	-20.73	---	NEUTRAL	QP
8	3.588	27.09	0.44	26.65	46.00	-18.91	---	NEUTRAL	AVERAGE
9	4.066	38.15	0.46	37.69	56.00	-17.85	---	NEUTRAL	QP
10	4.066	31.03	0.46	30.57	46.00	-14.97	---	NEUTRAL	AVERAGE
11	5.200	36.98	0.49	36.49	60.00	-23.02	---	NEUTRAL	QP
12	5.200	25.18	0.49	24.69	50.00	-24.82	---	NEUTRAL	AVERAGE

Note:

1. Level = reading value + Factor.
2. Factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.

Test Mode	**:**	**Continuous Receiving**			
Tester	**:**	CDC	**Frequency Range**	**:**	150kHz~30MHz
IF Bandwidth	**:**	9kHz	**Phase**	**:**	**Line**

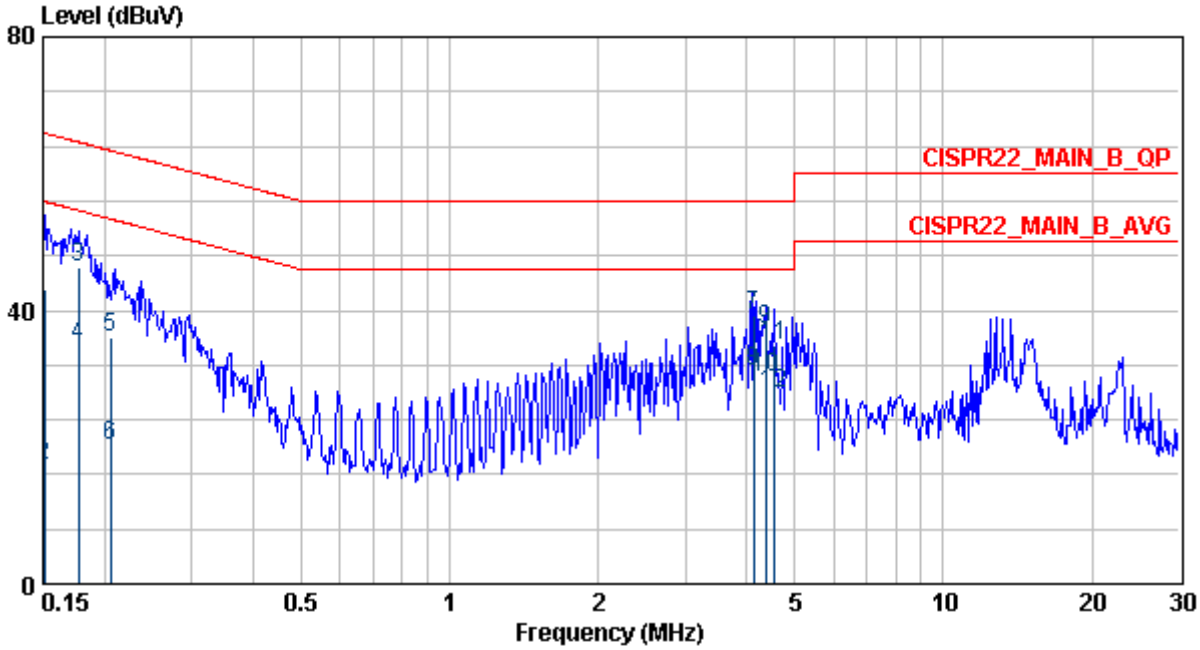


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	cm		
1	0.151	42.79	0.20	42.59	65.96	-23.17	---	LINE	QP
2	0.151	17.32	0.20	17.12	55.96	-38.64	---	LINE	AVERAGE
3	0.181	47.59	0.22	47.37	64.45	-16.86	---	LINE	QP
4	0.181	35.44	0.22	35.22	54.45	-19.01	---	LINE	AVERAGE
5	0.241	39.46	0.23	39.23	62.07	-22.61	---	LINE	QP
6	0.241	28.65	0.23	28.42	52.07	-23.42	---	LINE	AVERAGE
7	4.126	39.61	0.47	39.14	56.00	-16.39	---	LINE	QP
8	4.126	31.47	0.47	31.00	46.00	-14.53	---	LINE	AVERAGE
9	4.365	38.58	0.48	38.10	56.00	-17.42	---	LINE	QP
10	4.365	30.21	0.48	29.73	46.00	-15.79	---	LINE	AVERAGE
11	4.542	36.51	0.49	36.02	56.00	-19.49	---	LINE	QP
12	4.542	28.84	0.49	28.35	46.00	-17.16	---	LINE	AVERAGE

Note:

1. Level = reading value + Factor.
2. Factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.

Test Mode	**:**	**Continuous Receiving**			
Tester	**:**	CDC	**Frequency Range**	**:**	150kHz~30MHz
IF Bandwidth	**:**	9kHz	**Phase**	**:**	**Neutral**



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	cm		
1	0.151	42.94	0.19	42.75	65.96	-23.02	---	NEUTRAL	QP
2	0.151	17.33	0.19	17.14	55.96	-38.63	---	NEUTRAL	AVERAGE
3	0.177	46.34	0.21	46.13	64.64	-18.29	---	NEUTRAL	QP
4	0.177	34.75	0.21	34.54	54.64	-19.88	---	NEUTRAL	AVERAGE
5	0.205	35.94	0.23	35.71	63.39	-27.45	---	NEUTRAL	QP
6	0.205	20.32	0.23	20.09	53.39	-33.07	---	NEUTRAL	AVERAGE
7	4.126	39.32	0.46	38.86	56.00	-16.68	---	NEUTRAL	QP
8	4.126	31.17	0.46	30.71	46.00	-14.83	---	NEUTRAL	AVERAGE
9	4.365	37.16	0.47	36.69	56.00	-18.84	---	NEUTRAL	QP
10	4.365	30.12	0.47	29.65	46.00	-15.88	---	NEUTRAL	AVERAGE
11	4.543	34.99	0.47	34.52	56.00	-21.01	---	NEUTRAL	QP
12	4.543	27.80	0.47	27.33	46.00	-18.20	---	NEUTRAL	AVERAGE

Note:

1. Level = reading value + Factor.
2. Factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.