FCC Test Report

for

Wireless AV Transmitter for iPhone/iPod

Brand	**: VogDUO; COMDA**
Model No.	**: FD104(VogDUO); AD203(COMDA)**
FCC ID	**: Y3A-FD104-AD203-1**
Report Number	**: RF- U070-1012-057**
Date of Receipt	**: December 7, 2010**
Date of Report	**: January 26, 2011**

Prepared for

Comda Advanced Technology Corporation

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Prepared by

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EMC Test Laboratory

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NVLAP LAB CODE 200575-0

Verification of Compliance

Brand	**: VogDUO; COMDA**
Equipment under Test	**: Wireless AV Transmitter for iPhone/iPod**
Model No.	**: FD104(VogDUO); AD203(COMDA)**
FCC ID	**: Y3A-FD104-AD203-1**
Applicant	**: Comda Advanced Technology Corporation**
Address	**: 9F,No. 738,Chung Cheng Rd., Chungho City, Taipei, Taiwan,R.O.C.**
Applicable Standards	**: 47 CFR part 15, Subpart C RSS 210 Issue 7**
Date of Testing	**: December 27, 2010 ~ January 17, 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 : Cathy Chen , **DATE :** Jan. 26, 2011
(Cathy Chen/ Technical Manager)

APPROVED BY : J. Y. Shih , **DATE :** Jan. 26, 2011
(Tsun-Yu Shih/General Manager)

Contents

1 General Description

1.1 General Description of EUT

Equipment under Test : Wireless AV Transmitter for iPhone/iPod
Model No. : FD104(VogDUO); AD203(COMDA)
Power in : 5Vdc by battery or charged by the USB port of the receiver
Test Voltage : 120Vac/50Hz to the power adaptor of the receiver
Manufacturer : Comda Advanced Technology Corporation
Factory : Comda Advanced Technology (ZhongShan) Corp.
Factory Address : The 2nd Industrial Park, Mao-Wan Village, San-Xiang Town, 528463, Zhong-Shan City, Guang Dong, PRC
Channel Numbers : 4
Frequency Range : 2414~2468MHz
Channel Frequency : CH1:2414MHz, CH2:2432MHz, CH3:2450MHz, CH4:2468MHz
Modulation : FM
Function Description :

The EUT is used to transmit signal. Please refer to the user's manual for the details.

The EUT tested with transmitter/ receiver mode is to be the representative condition for the designated tests and its data are recorded in the present document.

Test Mode	Description
Mode 1	Charged by the USB port of the receiver
Mode 2	Power supplied by the battery.

According to the preliminary test, it was found that Mode 1 is the worst. It was taken as the representative condition for testing and its data are recorded in the present document.

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) Field strength of emissions

According to 15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 - 928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

(3) Radiated Emission Requirement

According to 15.249(d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

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.

(4) Restricted Band

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
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			

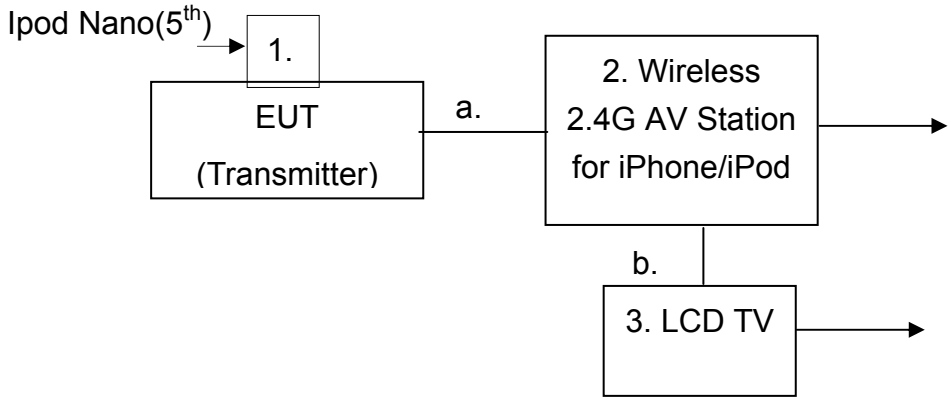
[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

1.3 The Support Units

No.	Unit	Model No./ Serial No.	Trade Name	Power Cord	Supported by lab.
1.	Ipod Nano(5th)	A1320/YM940AZ3721	Apple	N/A	
2.	Wireless 2.4G AV Station for iPhone/iPod	FD104	VogDUO	N/A	
3.	LCD TV	LC-13B2UA/301436645	SHARP	1.8m	V

1.4 Layout of Setup



Connecting Cables :

No.	Cable	Length	Shielded	Core	Supported by lab.	Note
a.	Micro USB cable	0.2m	V			
b.	AV cable	1.9m	V			

Justification :

For both conducted and radiated emission below 1GHz, the system was configured for typical fashion as a customer could normal use it. The peripherals other than EUT was connected in normally standing by situation.

For line conducted emission, only measurement of TX/RX operated, for the digital circuits portion also function normally whenever TX or RX is operated. For radiated emission, measurement of radiated emission from digital circuit is performed with lowest, middle and highest channels by transmitting mode.

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 site	Type of Test site	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 Data
	Canada	IC	4699A-1, -3	Test facility list & NSA Data
	Japan	VCCI	R-1527,C-1609,T-131,T-1441, G-10	Test facility list & NSA Data
Authorization Certificate	Germany	TUV	10021687-2010	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	
Peak Output Power	1.1dB	
Radiated Emission: (30MHz~200MHz)	Horizontal 3.5dB；Vertical 4.0 dB	
Radiated Emission: (200MHz~1GHz)	Horizontal 4.2dB；Vertical 3.9dB	
Radiated Emission: (1GHz~18GHz)	Horizontal 2.5dB；Vertical 2.5dB	
Radiated Emission: (18GHz~26.5GHz)	Horizontal 4.0dB；Vertical 4.0dB	
Line Conducted Emission	ESH2-Z5	3.1dB
	ENV 4200	3.8dB

2 Field Strength of Fundamental

Result: Pass

2.1 Applied standard

Fundamental Frequency	Peak	Average
☐ 902 – 928 MHz	500mV/m (**114dBuV/m**)	50mV/m (**94dBuV/m**)
☑ 2400 – 2483.5 MHz	500 mV/m (**114dBuV/m**)	50 mV/m (**94dBuV/m**)
☐ 5725 – 5875 MHz	500 mV/m (**114dBuV/m**)	50 mV/m (**94dBuV/m**)
☐ 24.0 – 24.25 GHz	2500 mV/m (**128dBuV/m**)	250 mV/m (**108dBuV/m**)

2.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4407B/ MY45106795	2010/5/3	2011/5/3
Antenna	EMCO	3117/57416	2010/3/4	2011/3/4
Pre-Amplifier	MITEQ	JS4-00101800-28-5 A/742309	2010/12/22	2011/12/22
RF Cable	N/A	N/A/C0081	2010/10/21	2011/4/21
Semi - anechoic Chamber	ETS. LINDGREN	TR11/ 906-A	2010/4/19	2011/4/19

Note:

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

Instrument Setting

RBW	VBW	Detector	Trace	Comment
1MHz	1MHz	Peak	Maxhold	Peak
1MHz	10Hz	Peak	Maxhold	Average

Climatic Condition

Ambient Temperature：24℃ 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. 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 3m away from the receiving antenna.

e. Rapidly sweep the signal at the test frequency 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 higher emission level and record it.

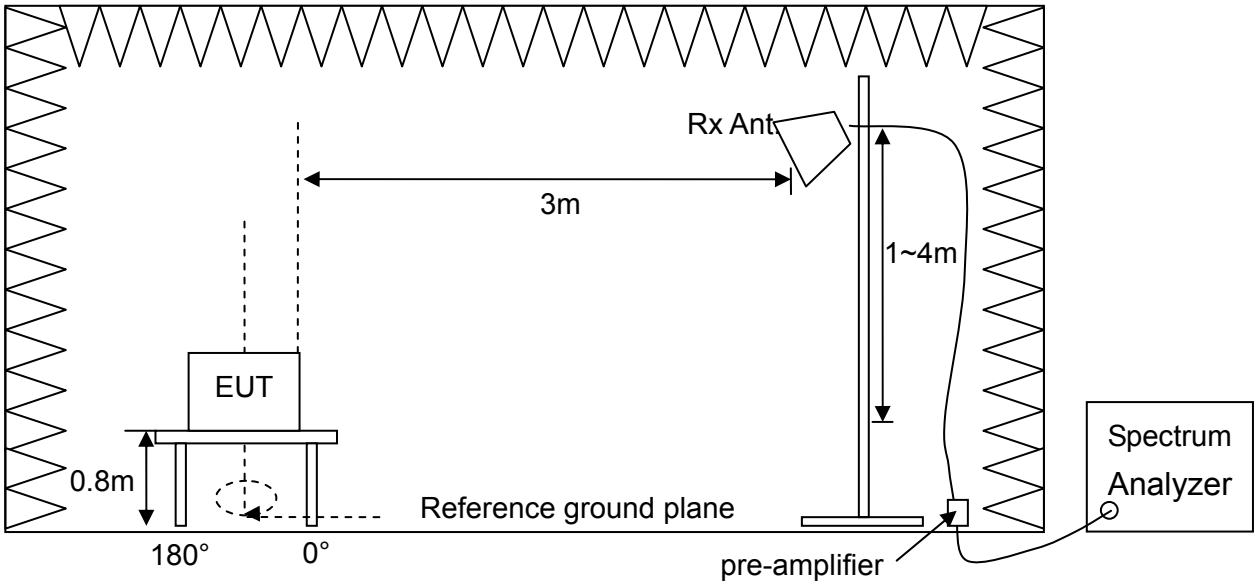
g. Then measure frequency found from step f. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.

h. Set the spectrum detector to be Peak or Average to find out the maximum level occurred.

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

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

2.4 Test configuration



2.5 Test Data

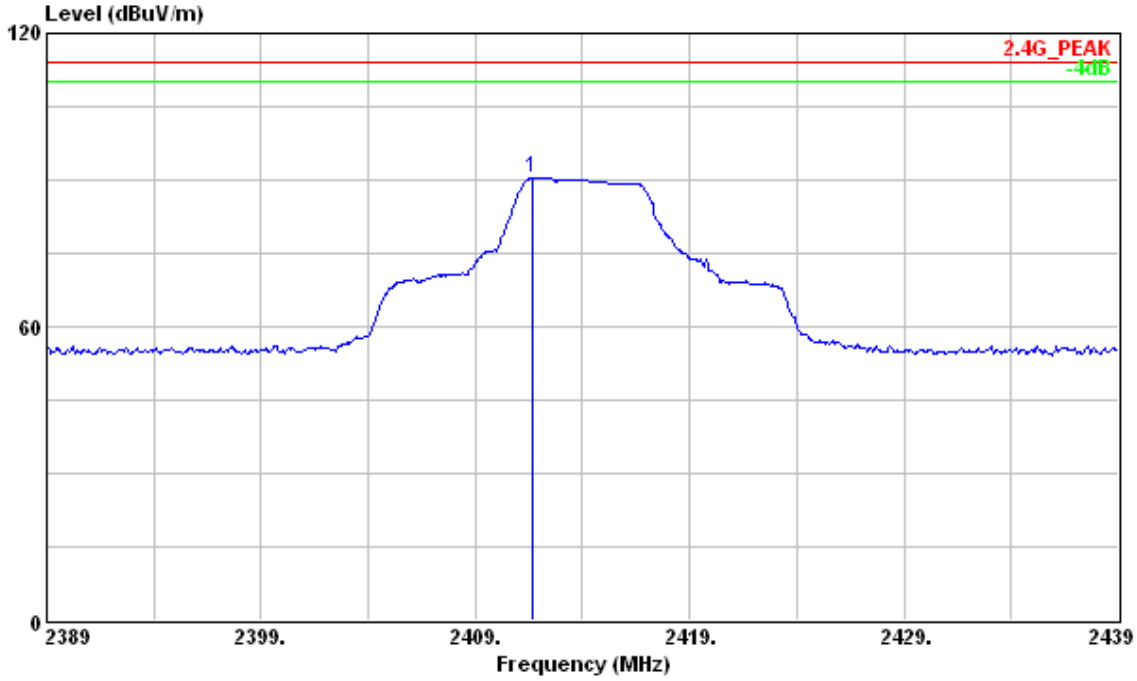
Test Mode : Continuous Transmitting **Tester :** Liu

Operational Frequency (MHz)	Polarization	Reading Data (dBuV)		Correction Factor (dB/m)	Output Field Strength (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
2414	V	90.44	88.52	1.15	91.59	89.67	114	94	22.41	4.33
	H	89.02	84.86	1.15	90.17	86.01	114	94	23.83	7.99
2432	V	90.13	87.44	1.16	91.29	88.6	114	94	22.71	5.4
	H	90.34	87.99	1.16	91.5	89.15	114	94	22.5	4.85
2468	V	90.95	87.44	1.19	92.14	88.63	114	94	21.86	5.37
	H	94.28	91.78	1.19	95.47	92.97	114	94	18.53	1.03

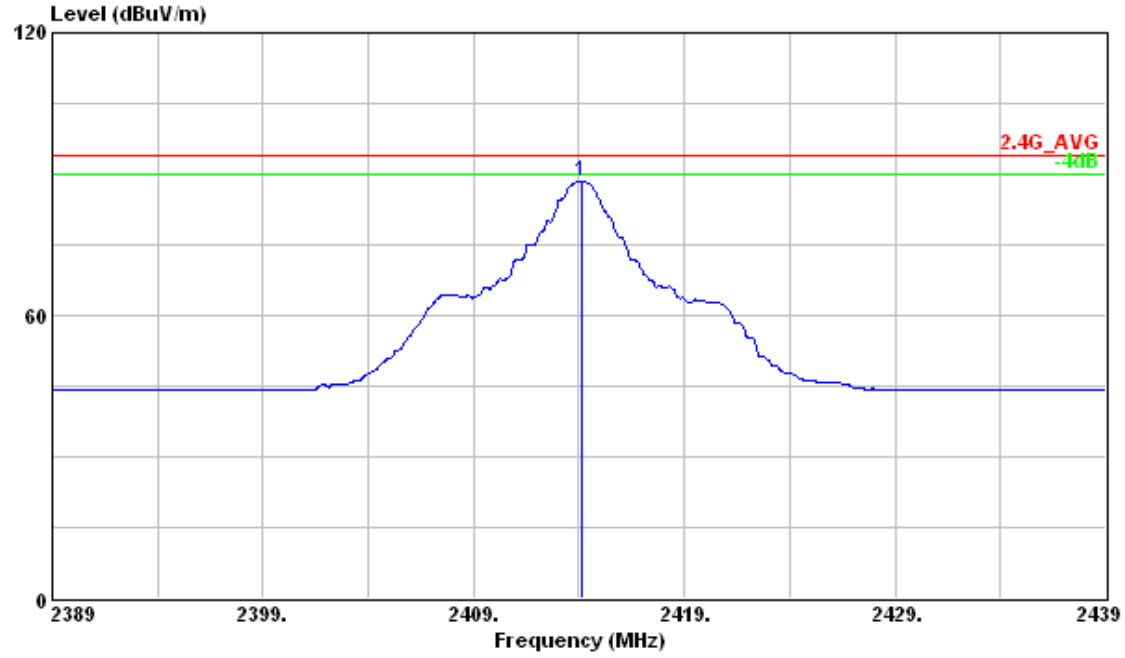
Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Output Field Strength (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Output Field Strength

2414MHz
Vertical Polarization - Peak

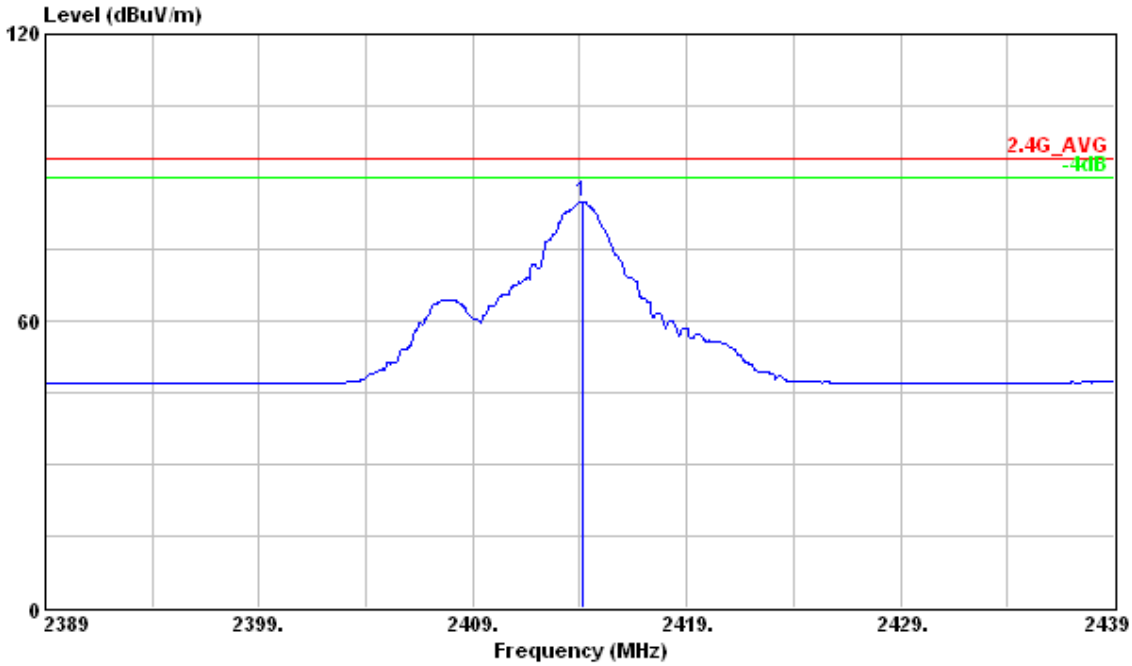


Vertical Polarization - Average

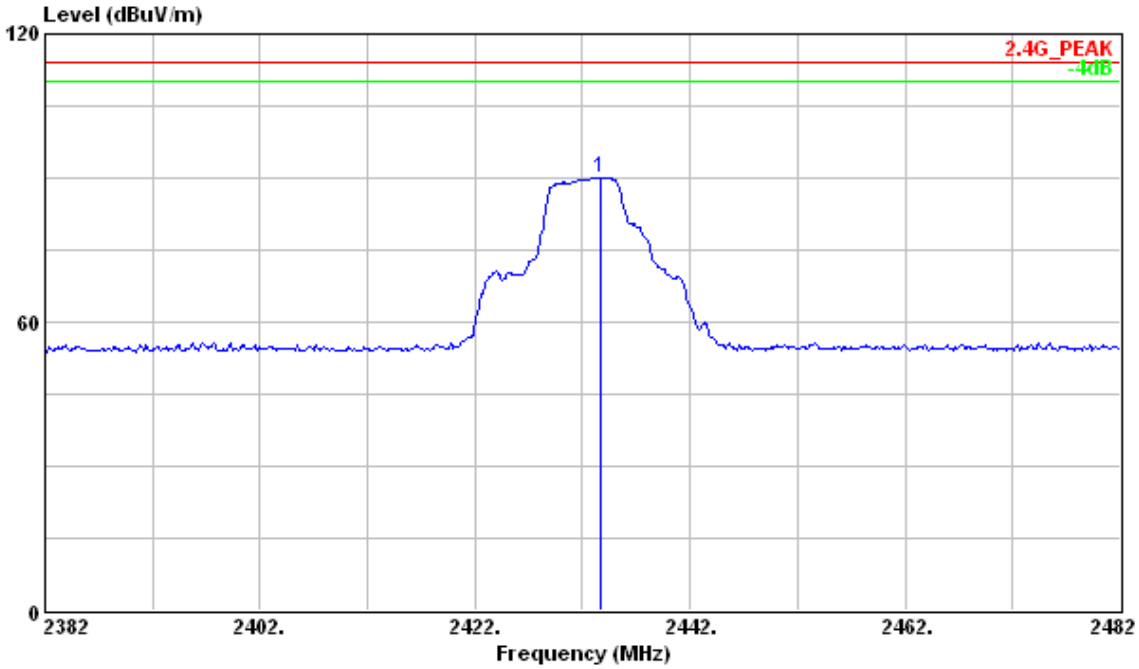


Horizontal Polarization - Peak

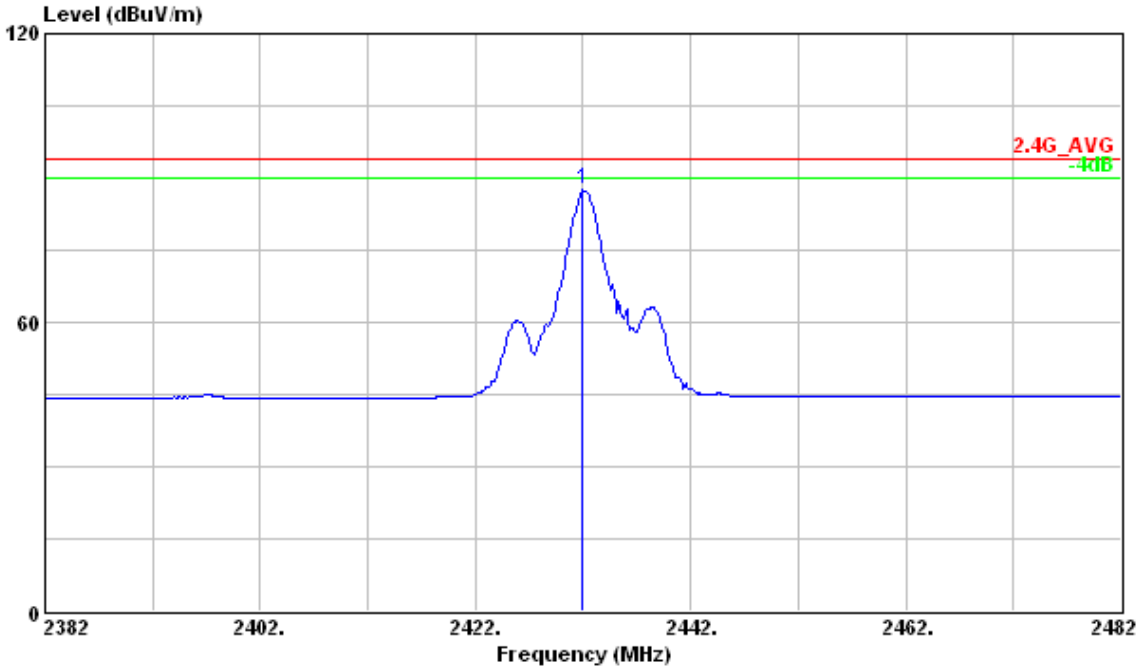
Horizontal Polarization - Average



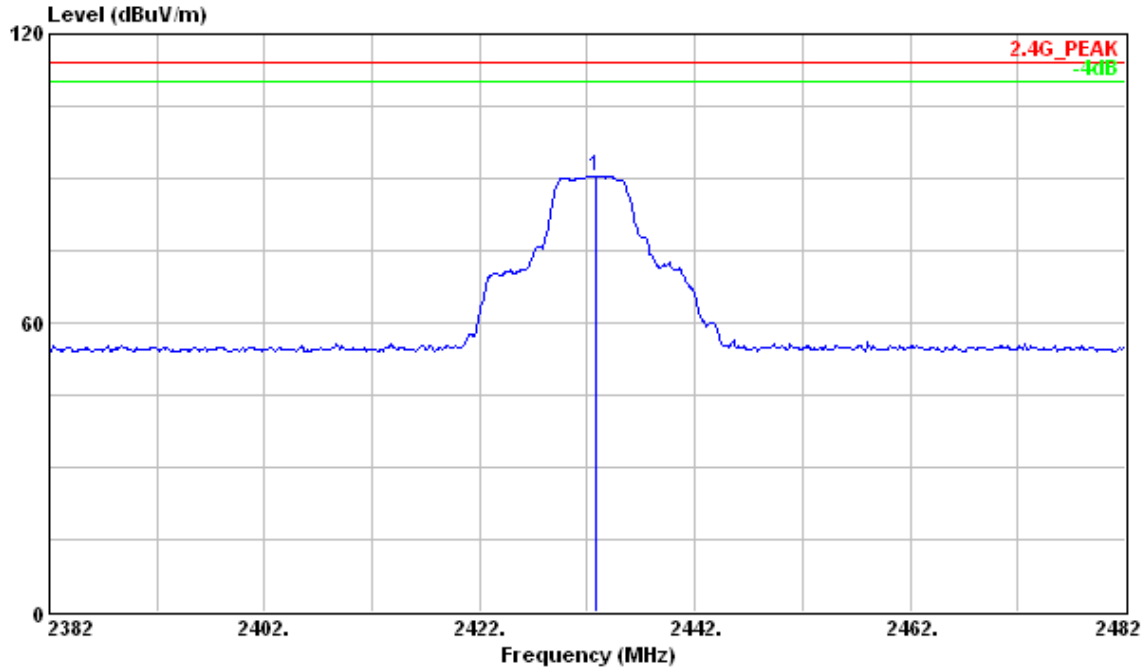
2432MHz
Vertical Polarization - Peak



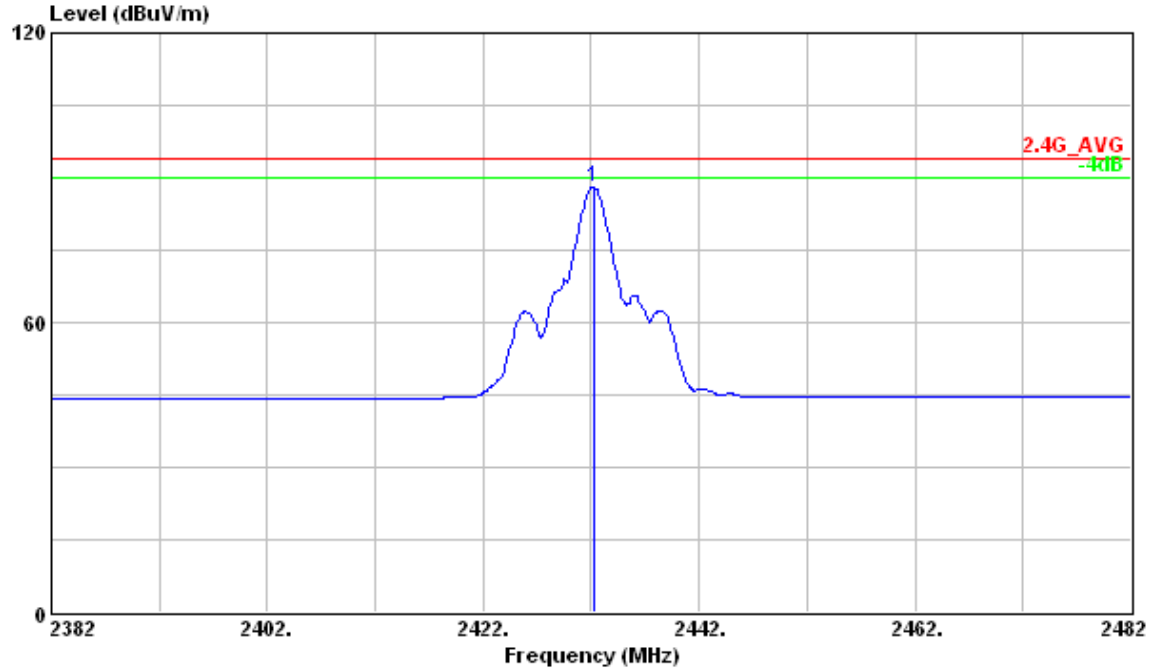
Vertical Polarization - Average



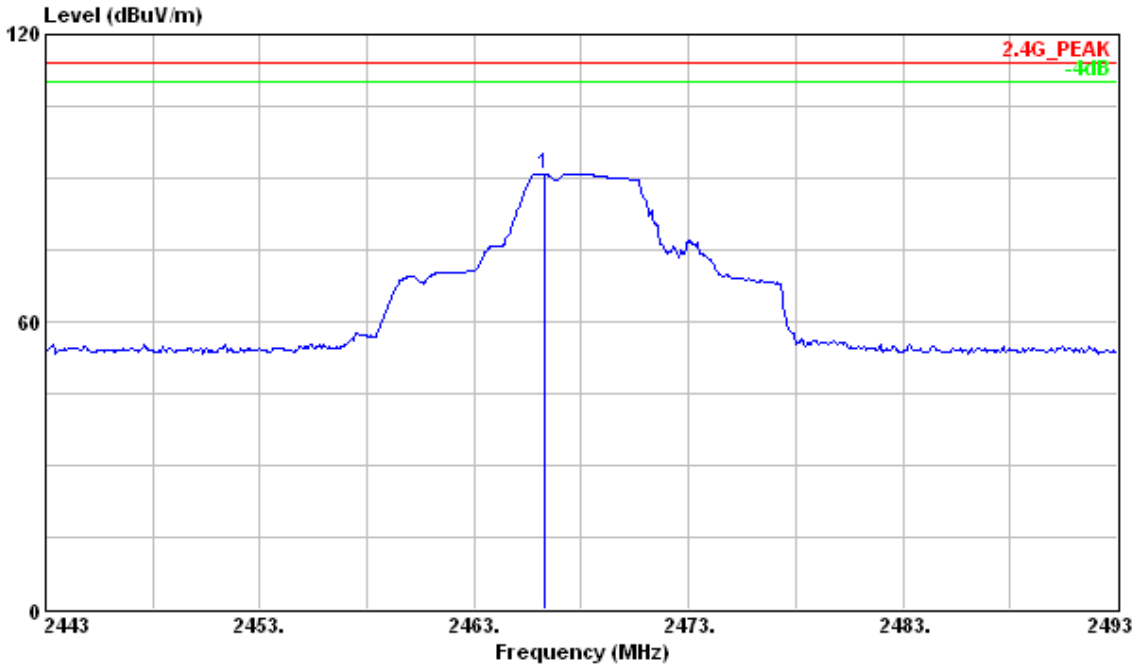
Horizontal Polarization - Peak



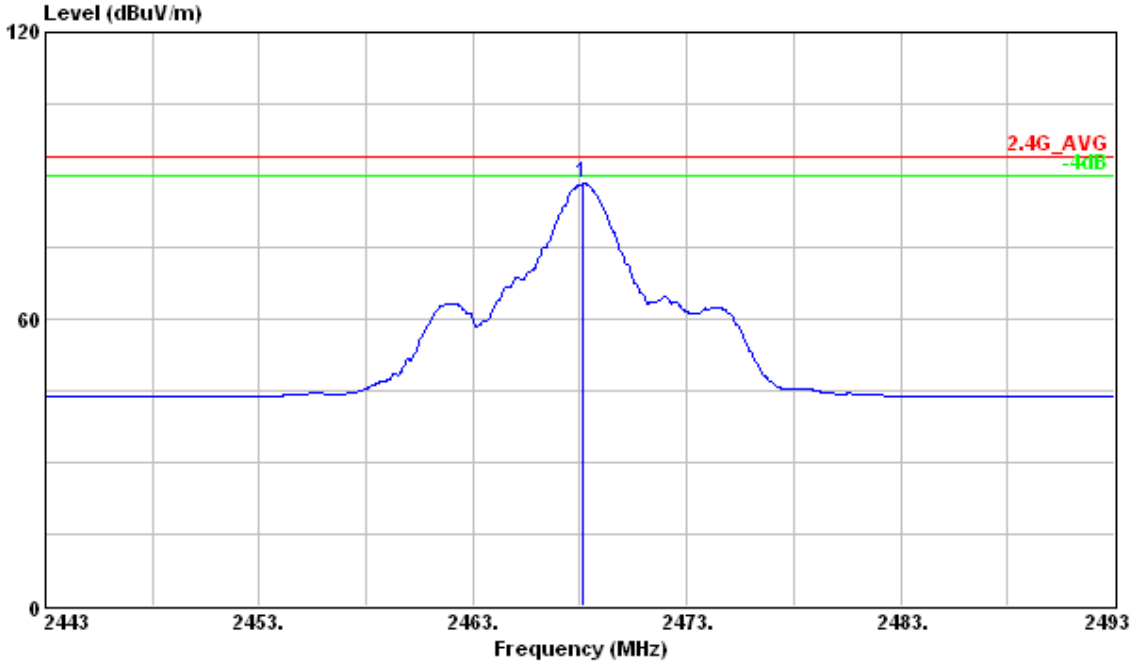
Horizontal Polarization - Average



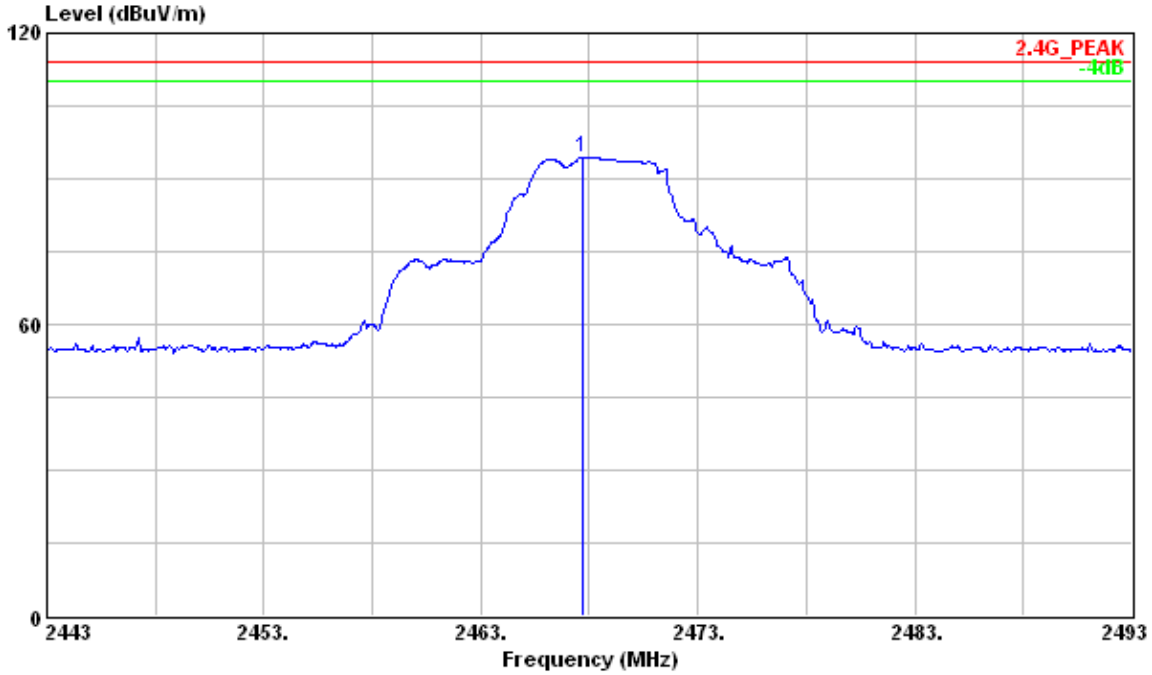
2468MHz
Vertical Polarization - Peak



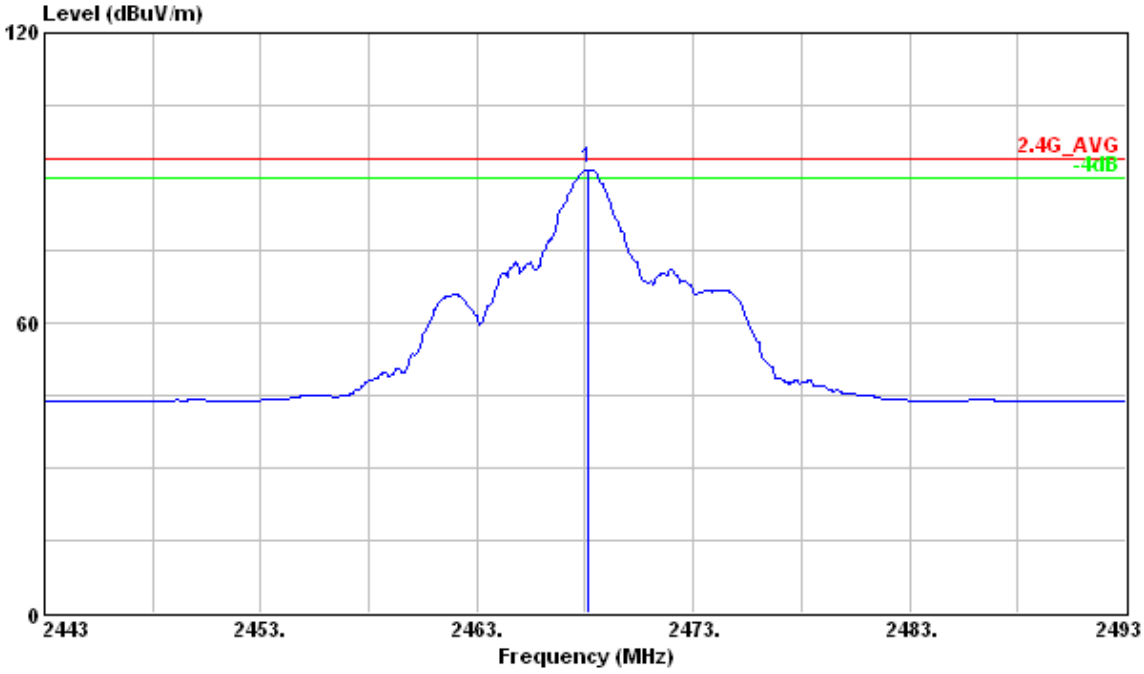
Vertical Polarization - Average



Horizontal Polarization - Peak



Horizontal Polarization - Average



3 Radiated Emission Measurement

Result: PASS

3.1 Limit for Radiated Emission Measurement

Limit for Harmonics Radiation Emission Measurement

Fundamental Frequency	Field Strength of Harmonics
☐ 902 – 928 MHz	500 uV/m (54dBuV/m)
☑ 2400 – 2483.5 MHz	500 uV/m (54dBuV/m)
☐ 5725 – 5875 MHz	500 uV/m (54dBuV/m)
☐ 24.0 – 24.25 GHz	2500 uV/m(68dBuV/m)

Limit for Other Emissions except Harmonics

Frequency (MHz)	Quasi-peak (dBμV/m)	
30 to 88	40	
88 to 216	43.5	
216 to 960	46	
960 to 1000	54	
Frequency (MHz)	**Peak (dBμV/m)**	**Average (dBμV/m)**
Above 1000	74	54

Note 1- The lower limit shall apply at the transition frequency.
Note 2- Additional provisions may be required for cases where interference occurs.

3.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4407B/ MY45106795	2010/5/3	2011/5/3
EMI Test Receiver	R&S	ESCI/100019	2010/5/19	2011/5/19
Broadband Antenna	EMCO	3142C/52088	2010/5/18	2011/5/18
Antenna	EMCO	3117/57416	2010/3/4	2011/3/4
Pre-Amplifier	MITEQ	JS4-00101800-28-5 A/742309	2010/12/22	2011/12/22
Pre-Amplifier	Mini Circuit	ZKL-2/004	2010/2/5	2011/2/5
RFCable	N/A	N/A/C0080	2010/8/6	2011/2/6
RF Cable	N/A	N/A/C0081	2010/10/21	2011/4/21
Semi - anechoic Chamber	ETS. LINDGREN	TR11/ 906-A	2010/4/19	2011/4/19

Note:

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

Instrument Setting

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

Climatic Condition

Ambient Temperature：23°C; Relative Humidity ：52%

3.3 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. 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 wooden 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 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. 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.

h. 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.

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

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

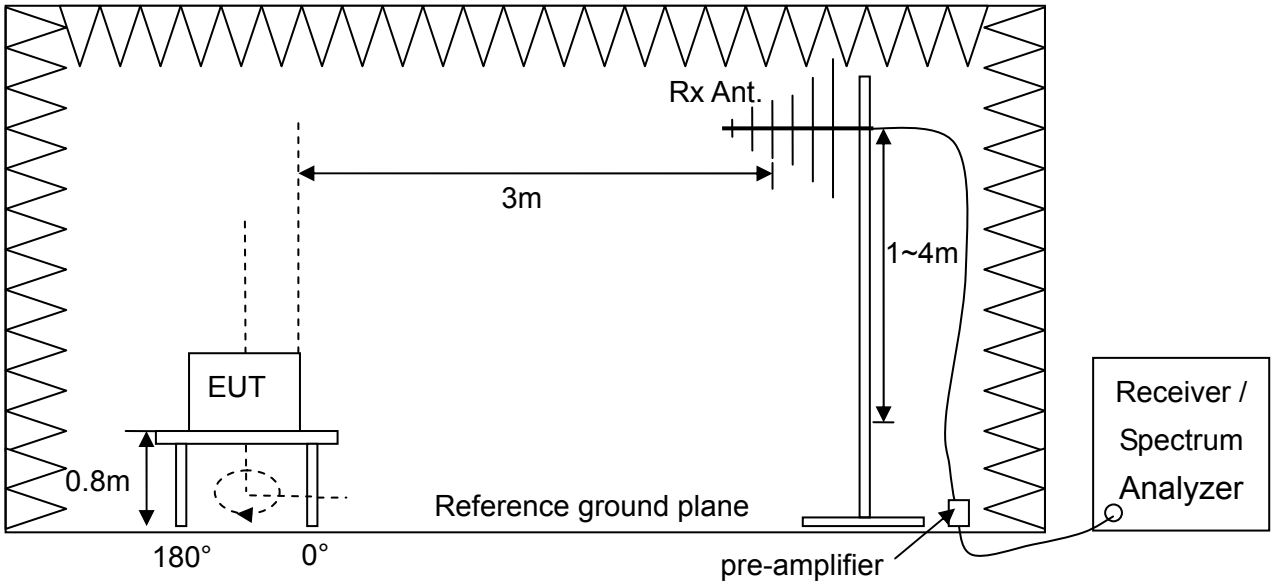
k. Change the receiving antenna to another polarization to measure radiated emission by following step e. to j. again.

l. 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.

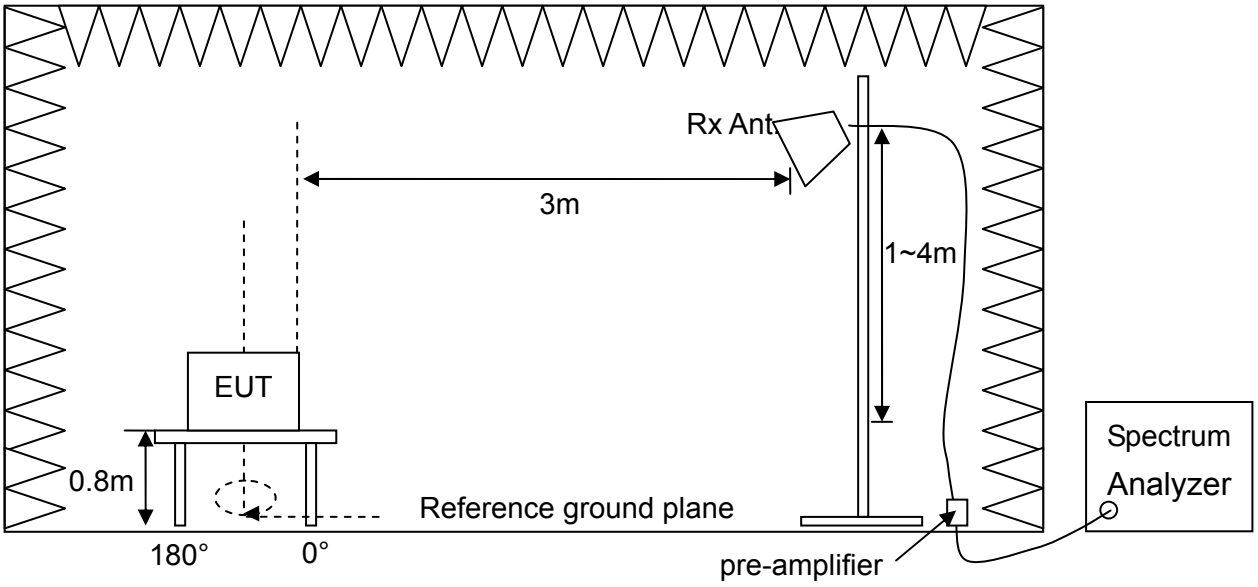
m. If the peak emission level above 1000MHz measured from step f. is 20dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate A.V. value will be measured and presented.

3.4 Test Configuration

Radiated Emission Measurement below 1000MHz



Radiated Emission Measurement above 1000MHz



3.5 Test Results

Band Edge

Test Mode **: Continuous Transmitting**

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

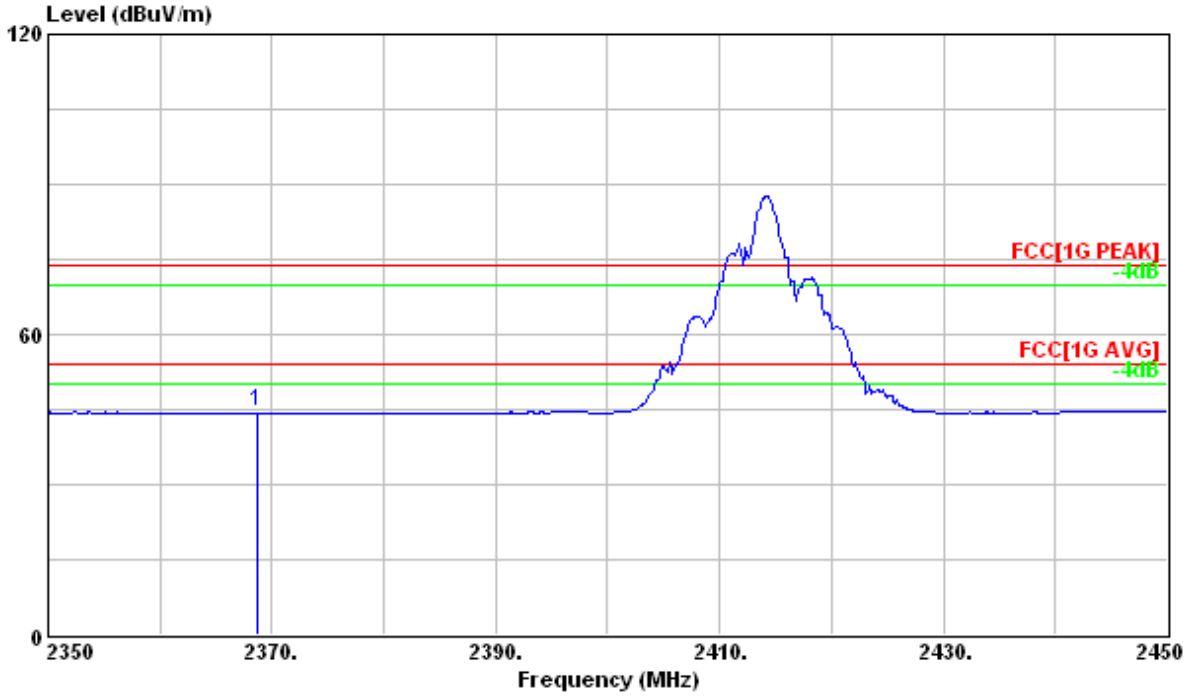
Test Range	Polarization	Frequency (MHz)	Reading Data (dBuV)		Correction Factor (dB/m)	Emission (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
			PK.	AV.		PK.	AV.	PK.	AV.	PK.	AV.
Lowest	V	2368.70	57.60	44.71	1.06	58.66	45.77	74	54	15.34	8.23
	H	2400.00	55.75	44.98	1.14	56.89	46.12	74	54	17.11	7.88
Highest	V	2513.10	55.13	44.12	1.21	56.34	45.33	74	54	17.66	8.67
	H	2486.80	54.97	44.07	1.20	56.17	45.27	74	54	17.83	8.73

Note:

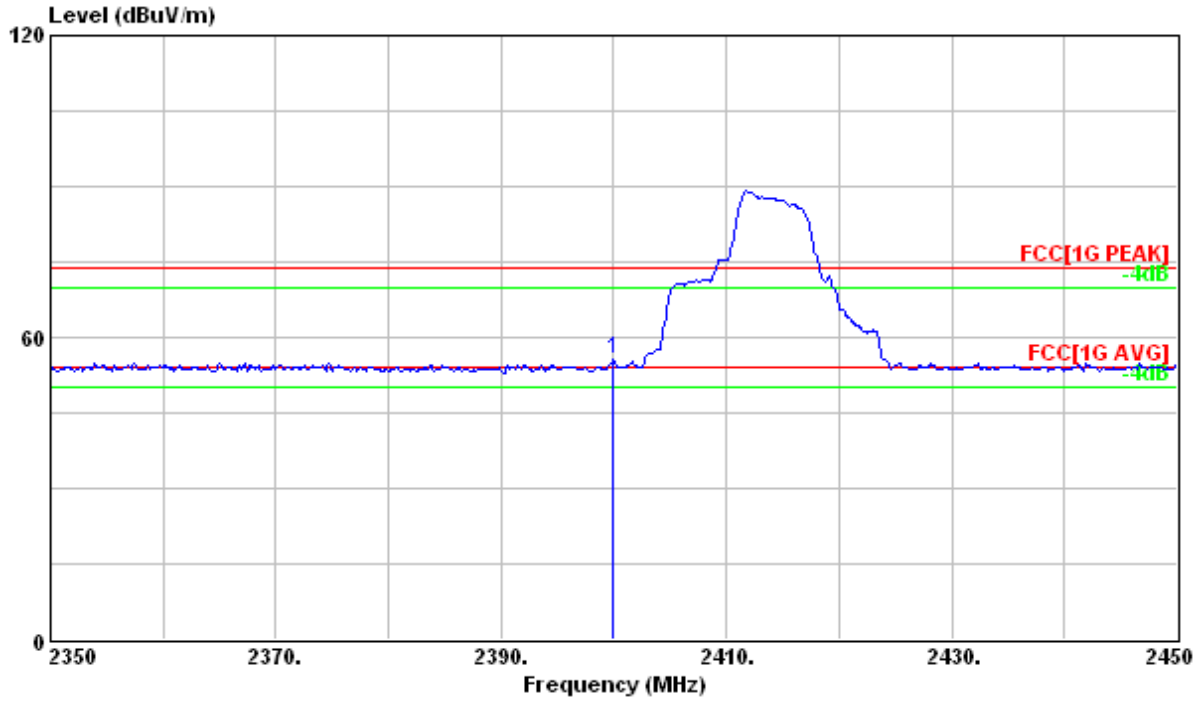
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

Lowest Channel, Vertical - Peak

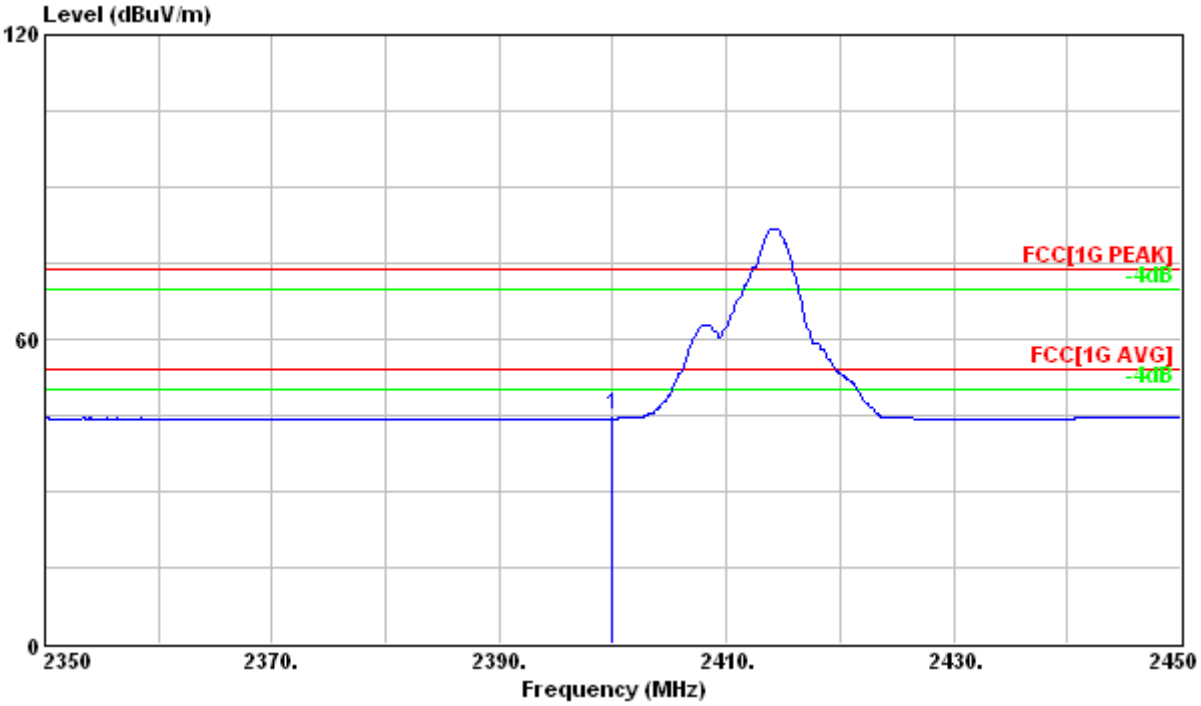
Lowest Channel, Vertical - Average



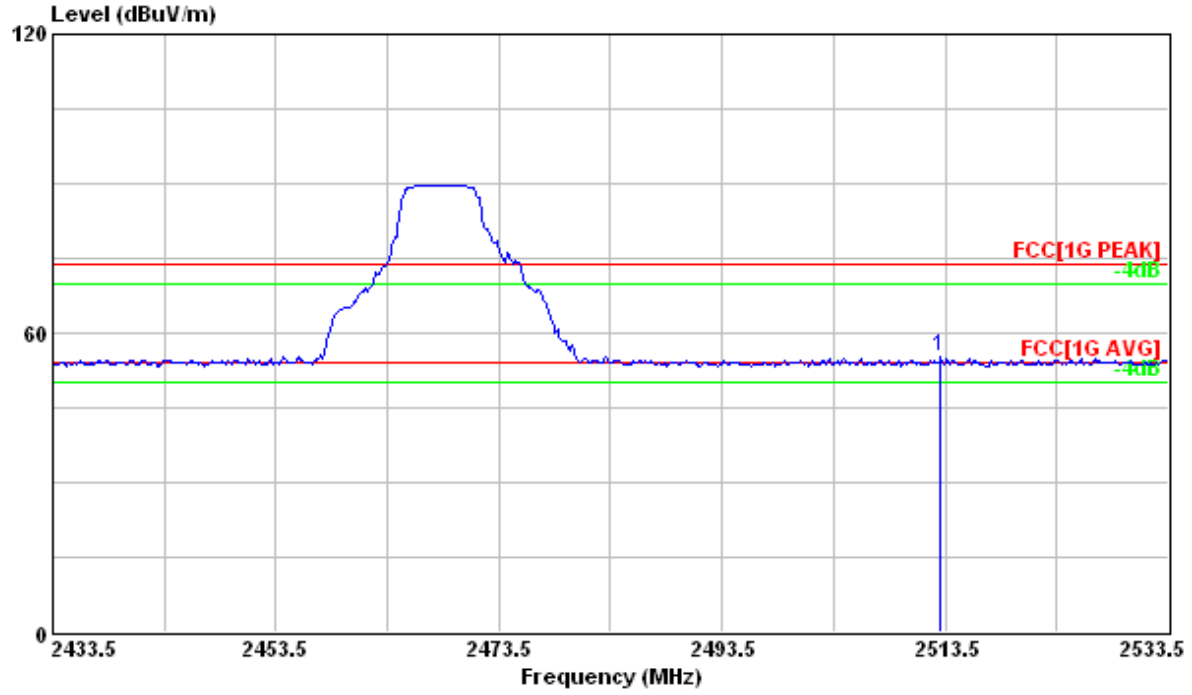
Lowest Channel, Horizontal - Peak



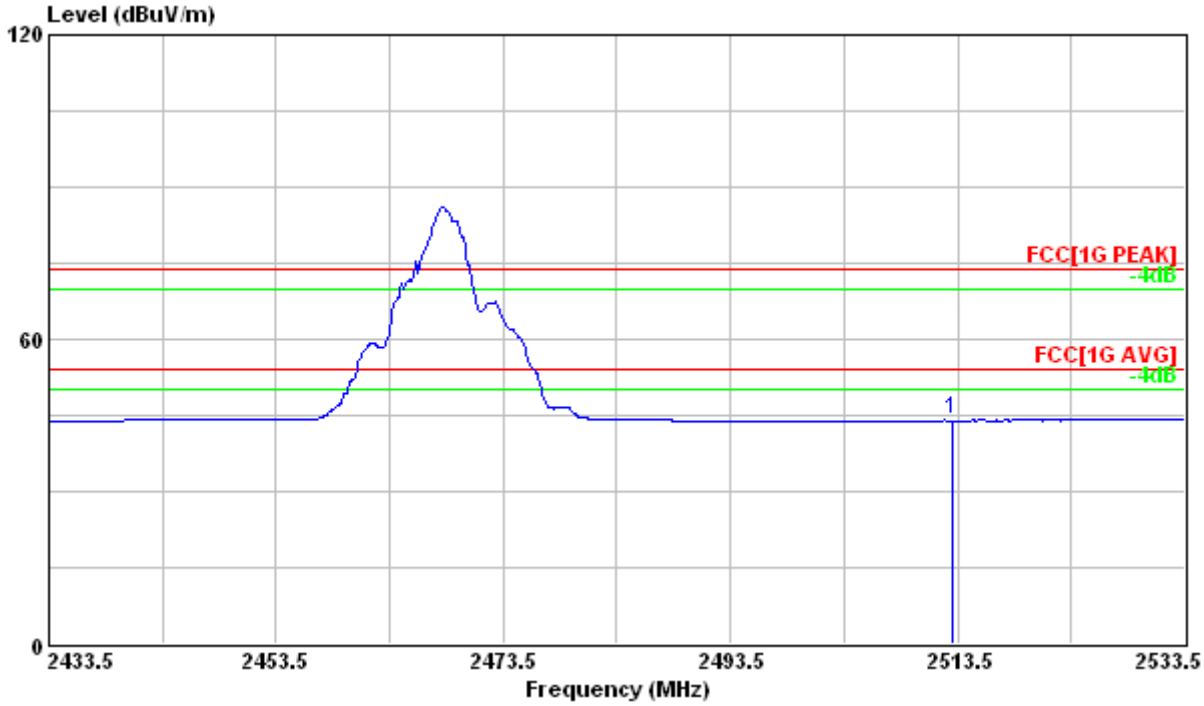
Lowest Channel, Horizontal - Average



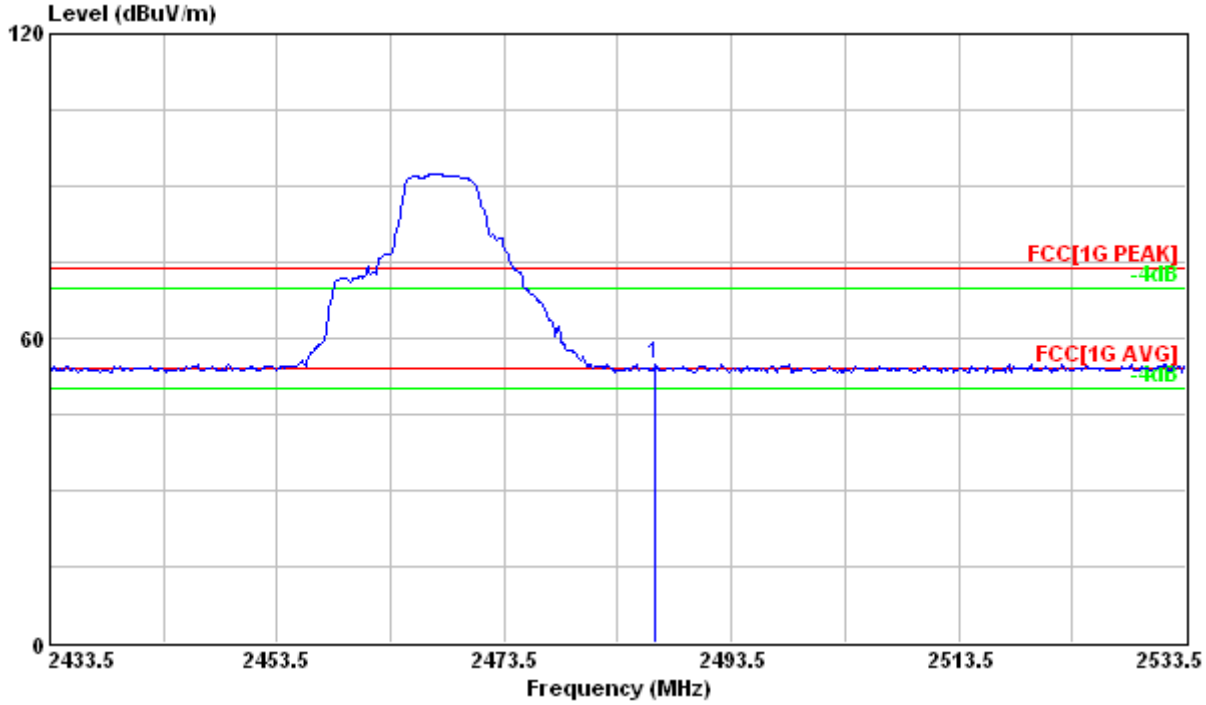
Highest Channel, Vertical - Peak



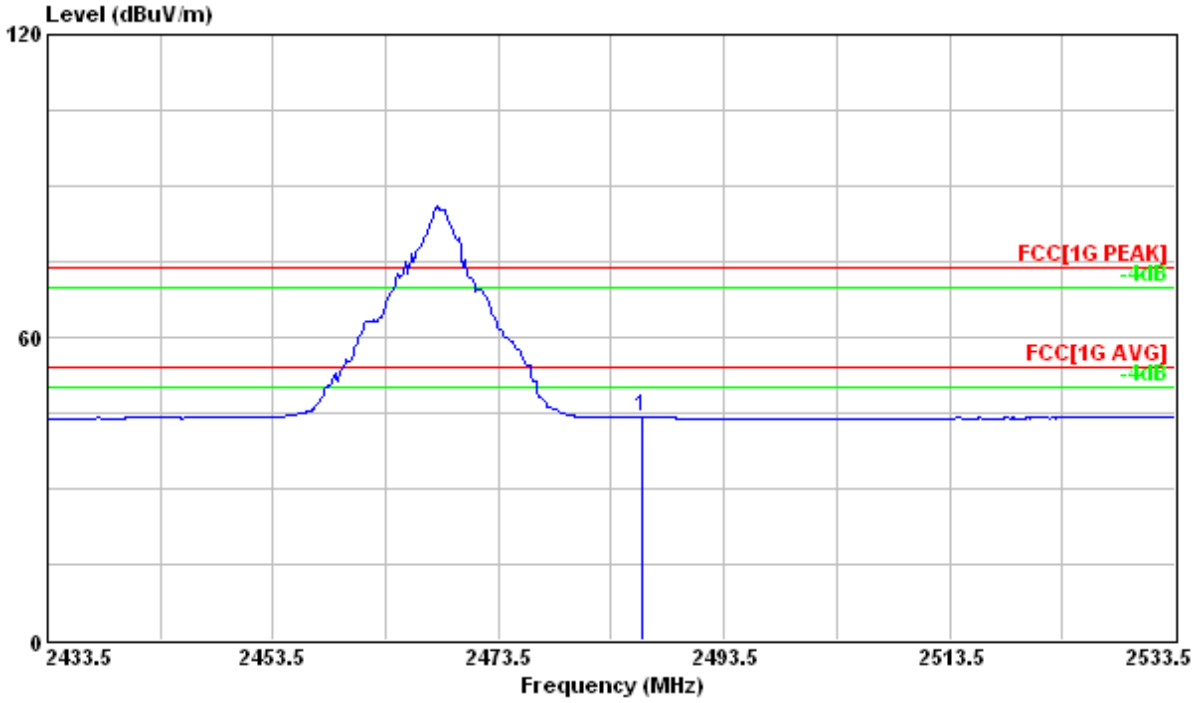
Highest Channel, Vertical - Average



Highest Channel, Horizontal - Peak



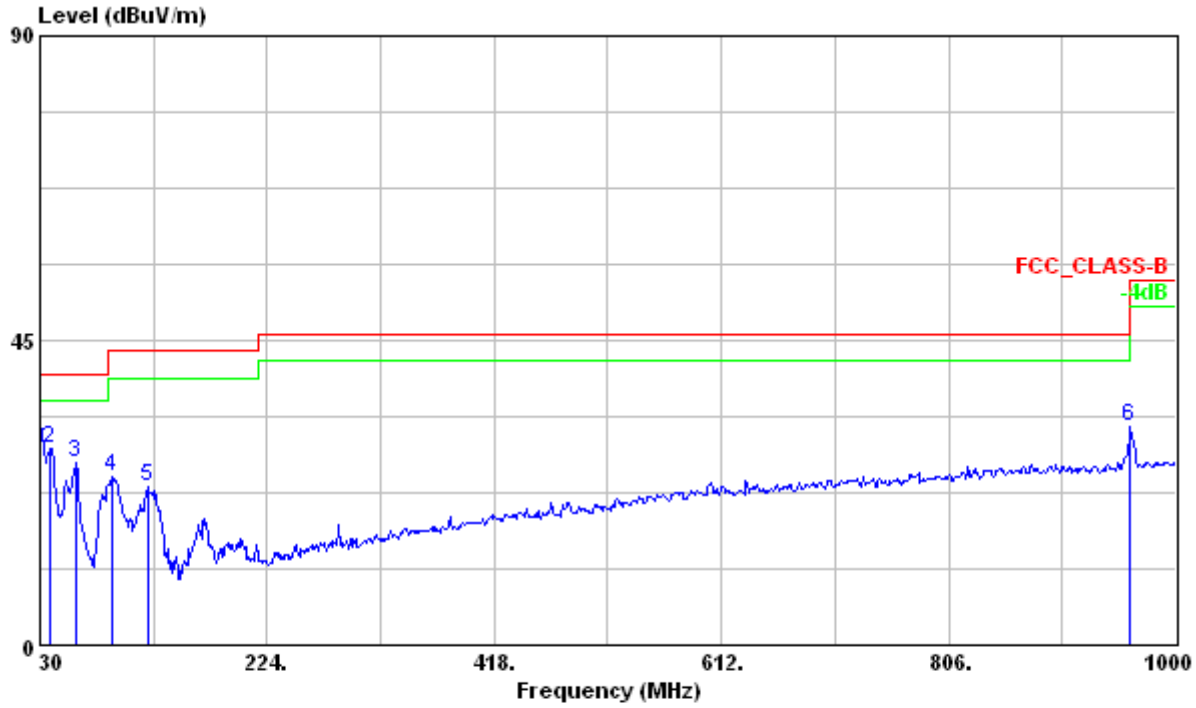
Highest Channel, Horizontal - Average



Transmitter Radiated Emission Measurement

Below 1000MHz

Test Mode	:	**Continuous Transmitting, 2414MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Vertical	**Frequency Range**	:	30MHz~1000MHz

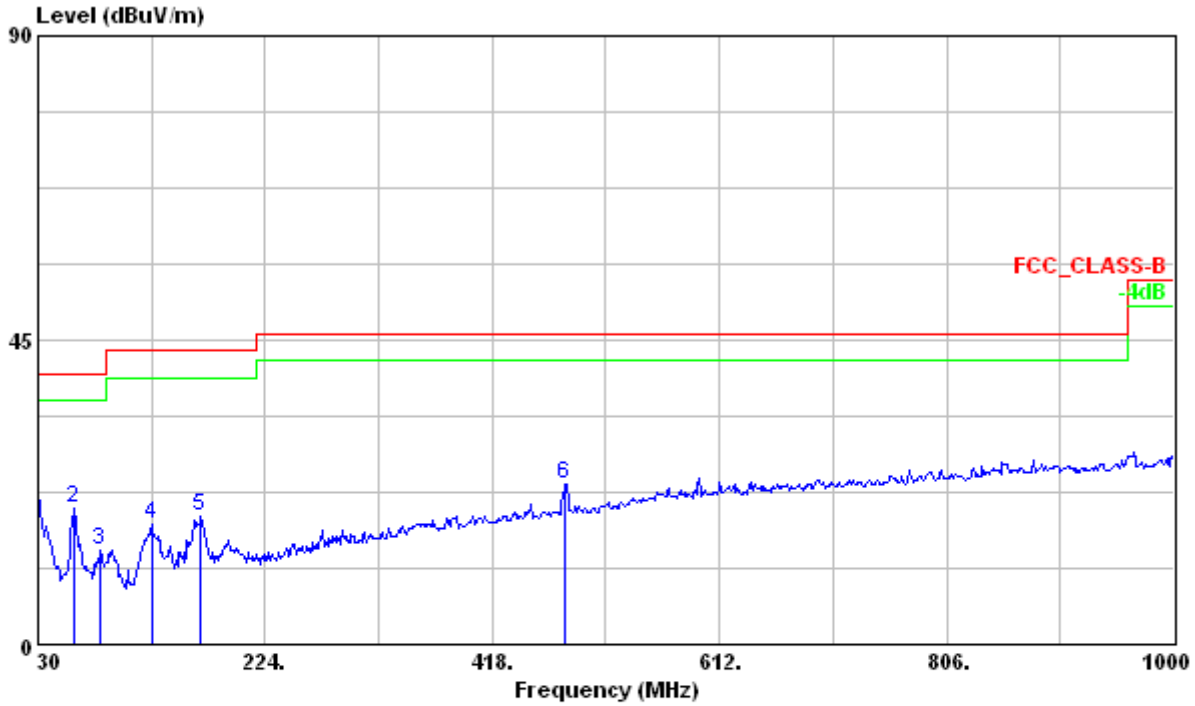


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	30.000	33.46	-8.65	42.11	40.00	-6.54	100	106	VERTICAL	QP
2	39.180	28.91	-13.73	42.64	40.00	-11.09	---	---	VERTICAL	Peak
3	60.240	27.08	-19.31	46.39	40.00	-12.92	---	---	VERTICAL	Peak
4	91.290	24.82	-19.17	43.99	43.50	-18.68	---	---	VERTICAL	Peak
5	121.800	23.50	-19.35	42.85	43.50	-20.00	---	---	VERTICAL	Peak
6	960.800	32.33	-0.49	32.82	54.00	-21.67	---	---	VERTICAL	Peak

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Test Mode	:	**Continuous Transmitting, 2414MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Horizontal	**Frequency Range**	:	30MHz~1000MHz

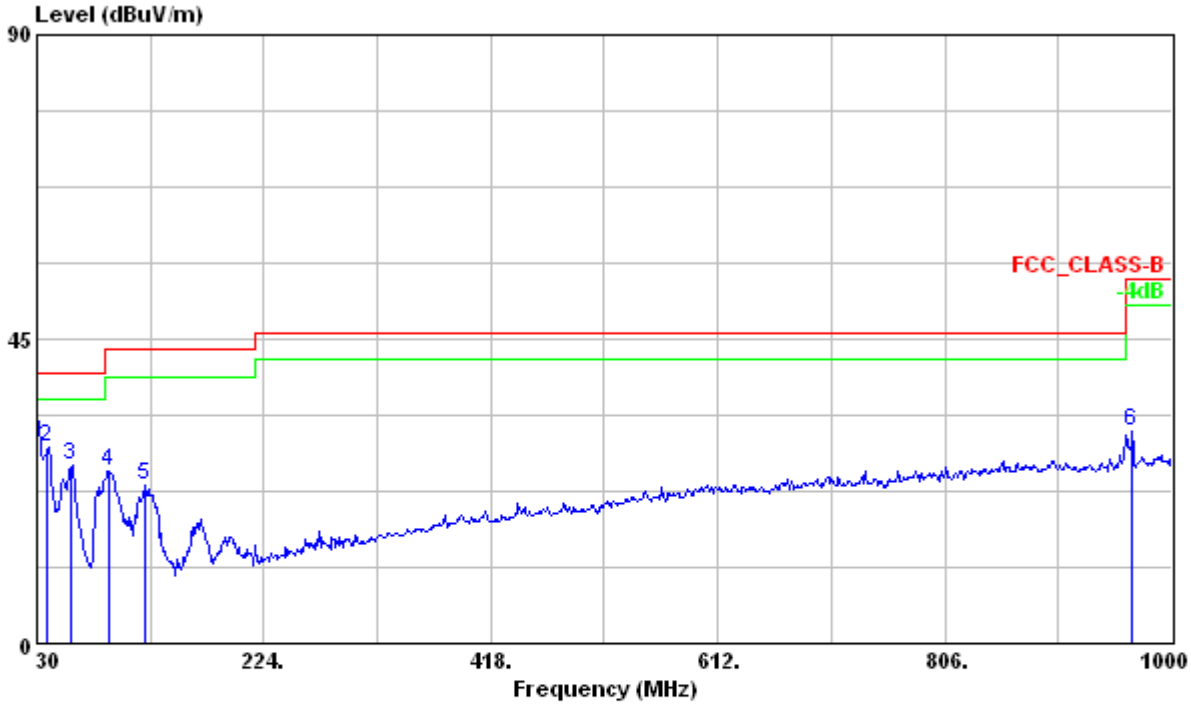


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	30.000	17.65	-8.65	26.30	40.00	-22.35	113	207	HORIZONTAL	QP
2	60.240	20.03	-19.31	39.34	40.00	-19.97	---	---	HORIZONTAL	Peak
3	83.190	13.83	-19.67	33.50	40.00	-26.17	---	---	HORIZONTAL	Peak
4	126.660	17.86	-19.29	37.15	43.50	-25.64	---	---	HORIZONTAL	Peak
5	168.510	18.95	-16.78	35.73	43.50	-24.55	---	---	HORIZONTAL	Peak
6	479.900	23.61	-7.41	31.02	46.00	-22.39	---	---	HORIZONTAL	Peak

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Test Mode	:	**Continuous Transmitting, 2432MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Vertical	**Frequency Range**	:	30MHz~1000MHz

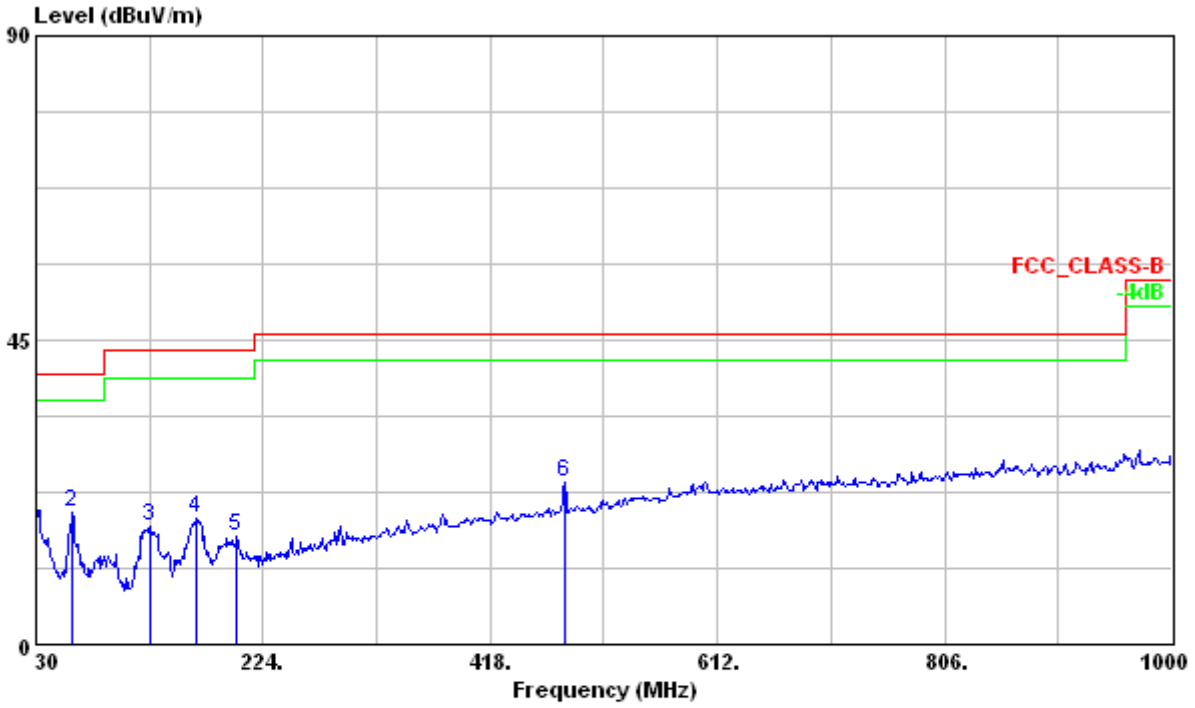


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	30.000	33.04	-8.65	41.69	40.00	-6.96	100	169	VERTICAL	QP
2	39.180	28.93	-13.73	42.66	40.00	-11.07	---	---	VERTICAL	Peak
3	59.700	26.27	-19.26	45.53	40.00	-13.73	---	---	VERTICAL	Peak
4	90.750	25.40	-19.22	44.62	43.50	-18.10	---	---	VERTICAL	Peak
5	122.610	23.27	-19.34	42.61	43.50	-20.23	---	---	VERTICAL	Peak
6	966.400	31.31	-0.40	31.71	54.00	-22.69	---	---	VERTICAL	Peak

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Test Mode	:	**Continuous Transmitting, 2432MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Horizontal	**Frequency Range**	:	30MHz~1000MHz

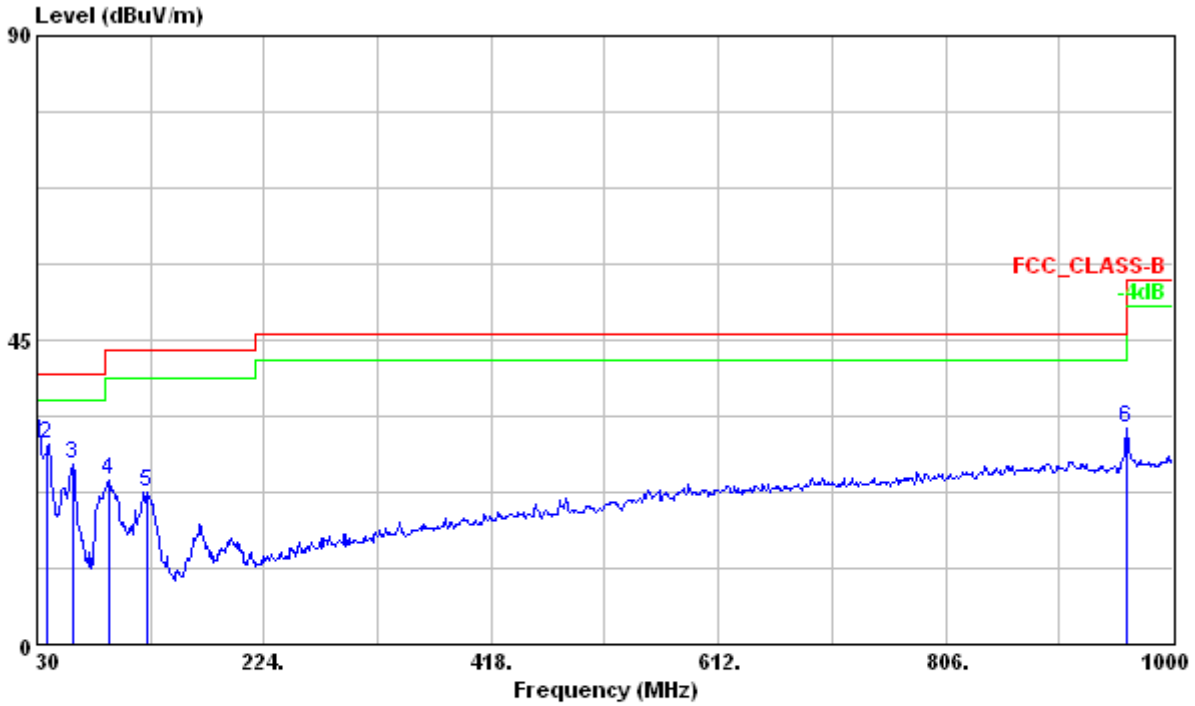


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	30.000	18.16	-8.65	26.81	40.00	-21.84	103	198	HORIZONTAL	QP
2	61.050	19.41	-19.35	38.76	40.00	-20.59	---	---	HORIZONTAL	Peak
3	126.660	17.47	-19.29	36.76	43.50	-26.03	---	---	HORIZONTAL	Peak
4	166.620	18.67	-16.86	35.53	43.50	-24.83	---	---	HORIZONTAL	Peak
5	200.910	16.01	-15.77	31.78	43.50	-27.49	---	---	HORIZONTAL	Peak
6	482.000	24.11	-7.37	31.48	46.00	-21.89	---	---	HORIZONTAL	Peak

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Test Mode	:	**Continuous Transmitting, 2468MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Vertical	**Frequency Range**	:	30MHz~1000MHz

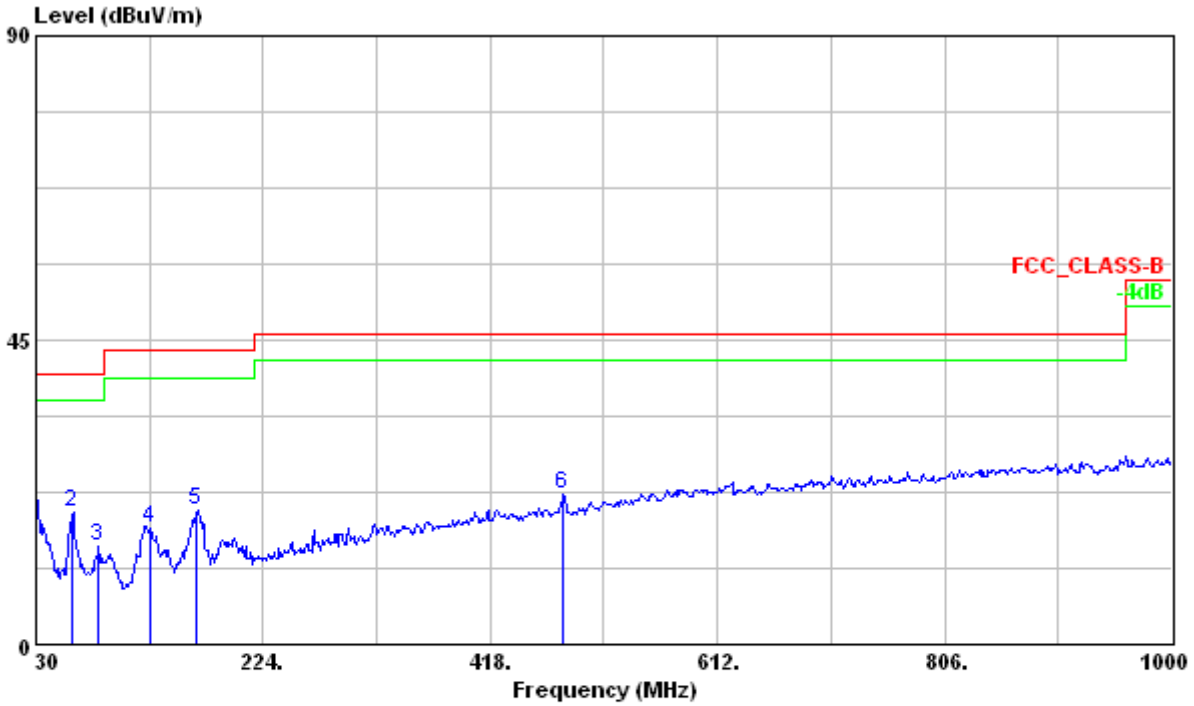


	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	30.000	32.23	-8.65	40.88	40.00	-7.77	111	135	VERTICAL	QP
2	39.180	29.53	-13.73	43.26	40.00	-10.47	---	---	VERTICAL	Peak
3	60.240	26.59	-19.31	45.90	40.00	-13.41	---	---	VERTICAL	Peak
4	90.750	24.22	-19.22	43.44	43.50	-19.28	---	---	VERTICAL	Peak
5	123.960	22.54	-19.33	41.87	43.50	-20.96	---	---	VERTICAL	Peak
6	960.800	31.84	-0.49	32.33	54.00	-22.16	---	---	VERTICAL	Peak

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Test Mode	:	**Continuous Transmitting, 2468MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Horizontal	**Frequency Range**	:	30MHz~1000MHz



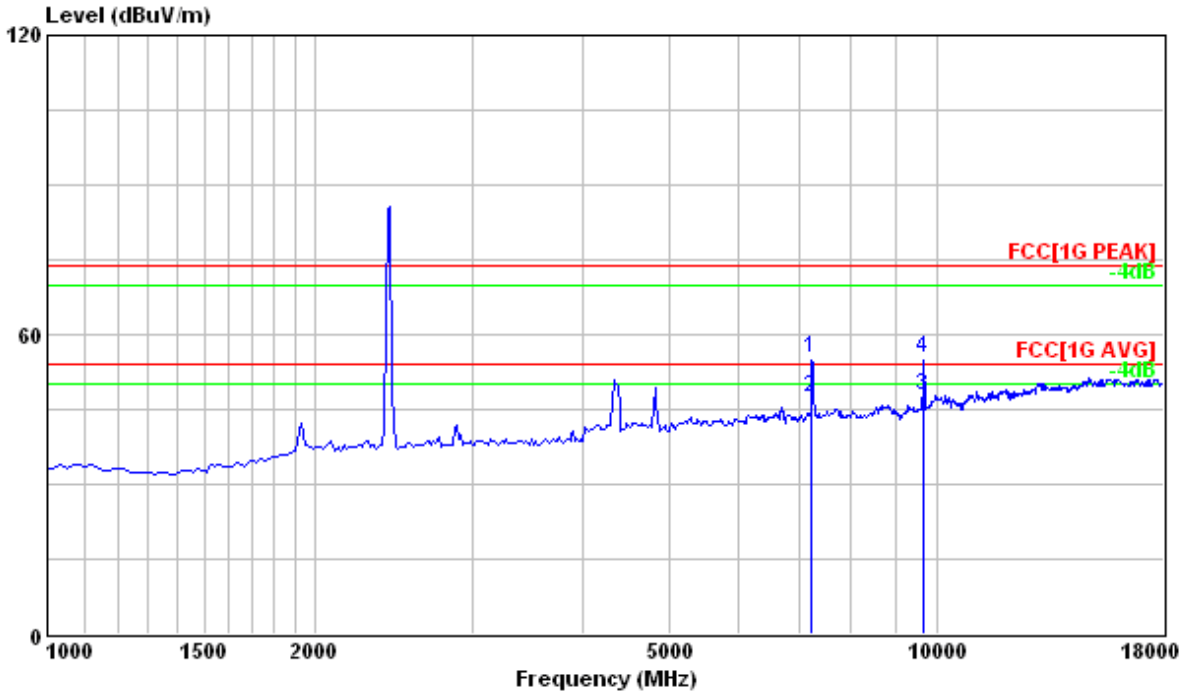
	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	30.000	18.38	-8.65	27.03	40.00	-21.62	100	186	HORIZONTAL	QP
2	61.590	19.57	-19.38	38.95	40.00	-20.43	---	---	HORIZONTAL	Peak
3	82.650	14.46	-19.70	34.16	40.00	-25.54	---	---	HORIZONTAL	Peak
4	126.660	17.07	-19.29	36.36	43.50	-26.43	---	---	HORIZONTAL	Peak
5	167.160	19.91	-16.83	36.74	43.50	-23.59	---	---	HORIZONTAL	Peak
6	479.900	22.24	-7.41	29.65	46.00	-23.76	---	---	HORIZONTAL	Peak

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Above 1000MHz

Test Mode	:	**Continuous transmitting, 2414MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Vertical	**Frequency Range**	:	1GHz ~ 25GHz



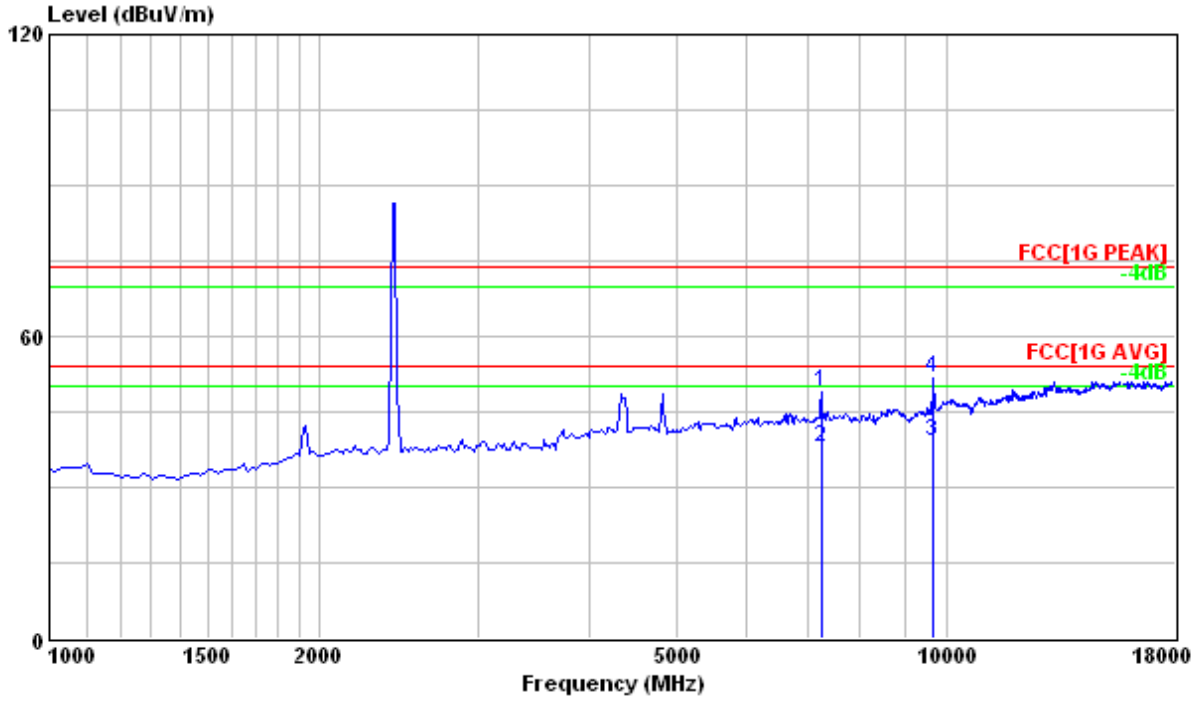
	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	7241.885	55.40	-28.23	83.63	74.00	-18.60	171	188	VERTICAL	Peak
2	7241.885	47.52	-28.23	75.75	54.00	-6.48	171	188	VERTICAL	Average
3 @	9656.471	47.86	-24.00	71.86	54.00	-6.14	174	135	VERTICAL	Average
4	9656.471	55.18	-24.00	79.18	74.00	-18.82	174	135	VERTICAL	Peak

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

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

Test Mode	:	**Continuous transmitting, 2414MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Horizontal	**Frequency Range**	:	1GHz ~ 25GHz



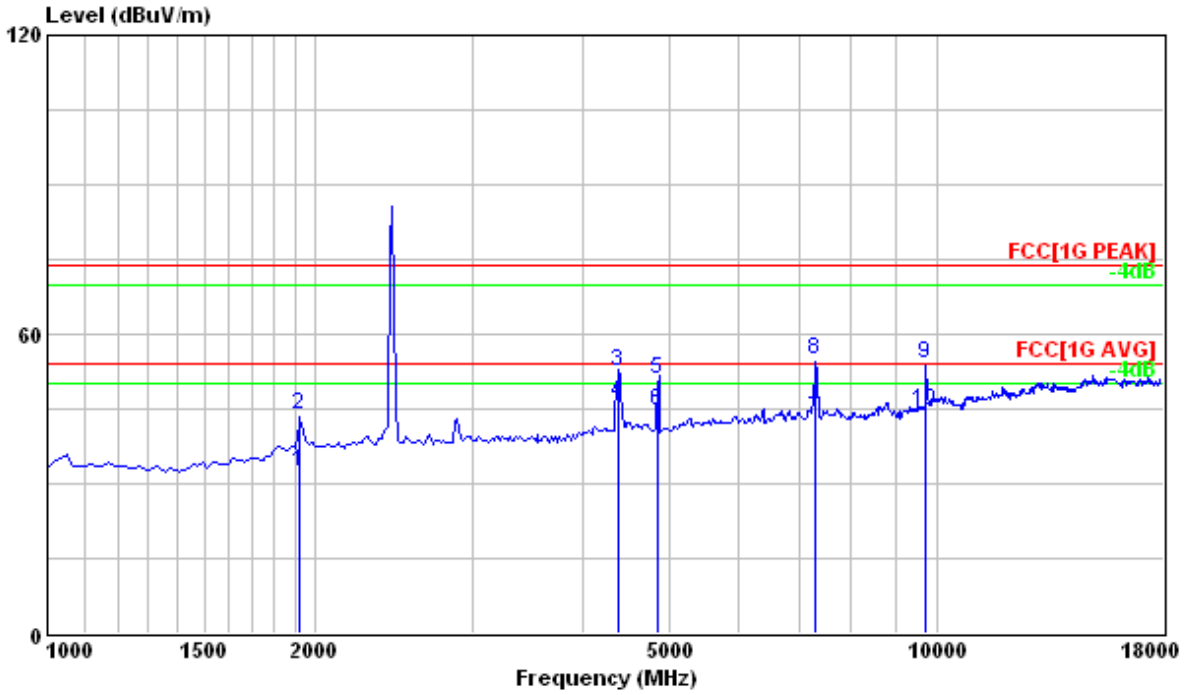
	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	7248.000	48.82	-28.23	77.05	74.00	-25.18	120	136	HORIZONTAL	Peak
2	7248.000	38.02	-28.23	66.25	54.00	-15.98	120	136	HORIZONTAL	Average
3	9670.000	39.05	-23.99	63.04	54.00	-14.95	203	250	HORIZONTAL	Average
4	9670.000	51.65	-23.99	75.64	74.00	-22.35	203	250	HORIZONTAL	Peak

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

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

Test Mode	:	**Continuous transmitting, 2432MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Vertical	**Frequency Range**	:	1GHz ~ 25GHz



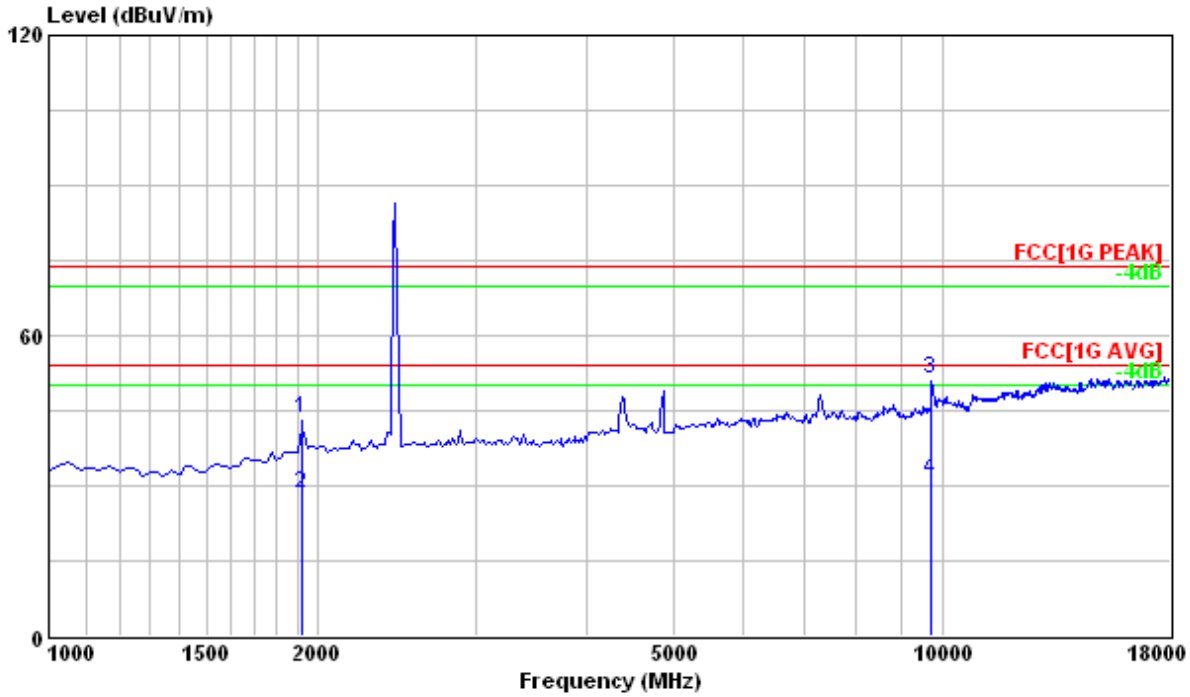
	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1 @	1919.777	32.35	-37.42	69.77	54.00	-21.65	100	215	VERTICAL	Average
2	1919.777	43.97	-37.42	81.39	74.00	-30.03	100	215	VERTICAL	Peak
3 @	4383.779	52.38	-33.29	85.67	74.00	-21.62	110	172	VERTICAL	Peak
4 @	4383.779	46.18	-33.29	79.47	54.00	-7.82	110	172	VERTICAL	Average
5	4865.066	50.81	-32.97	83.78	74.00	-23.19	110	180	VERTICAL	Peak
6 @	4865.066	44.54	-32.97	77.51	54.00	-9.46	110	180	VERTICAL	Average
7 @	7288.598	42.86	-28.19	71.05	54.00	-11.14	111	190	VERTICAL	Average
8 @	7288.598	55.03	-28.19	83.22	74.00	-18.97	111	190	VERTICAL	Peak
9 @	9725.875	54.08	-23.95	78.03	74.00	-19.92	100	143	VERTICAL	Peak
10 @	9725.875	44.79	-23.95	68.74	54.00	-9.21	100	143	VERTICAL	Average

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

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

Test Mode	:	**Continuous transmitting, 2432MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Horizontal	**Frequency Range**	:	1GHz ~ 25GHz



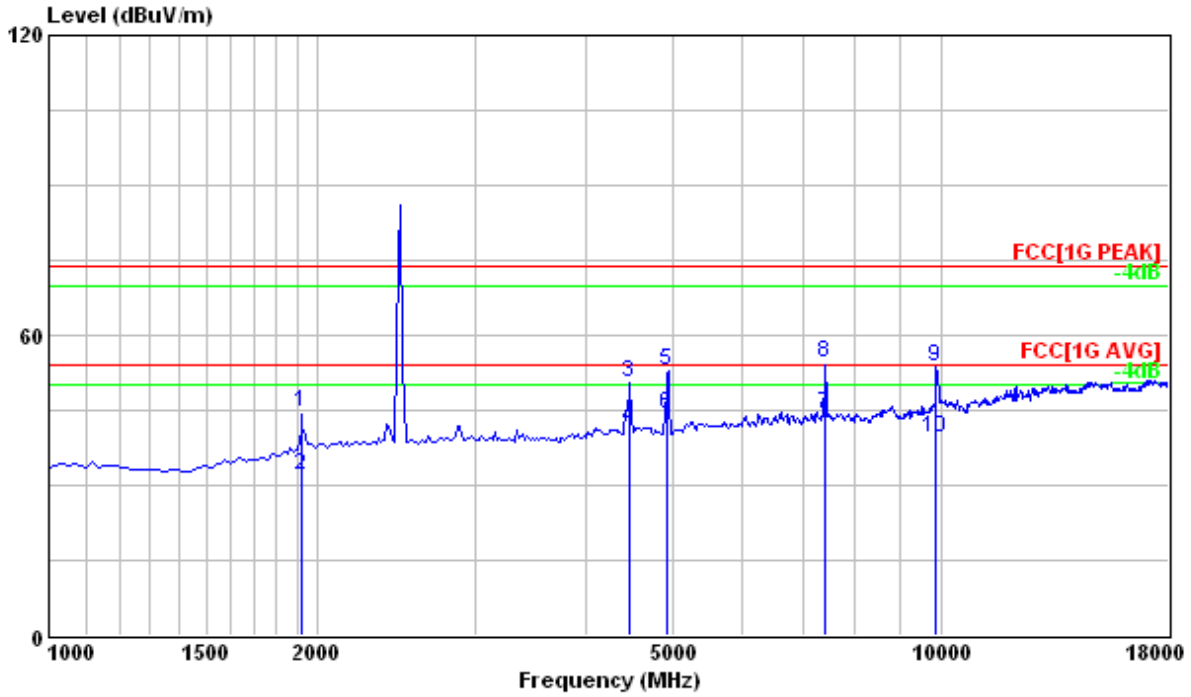
	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	1921.370	43.38	-37.40	80.78	74.00	-30.62	100	88	HORIZONTAL	Peak
2	1921.370	28.27	-37.40	65.67	54.00	-25.73	100	88	HORIZONTAL	Average
3	9728.600	51.23	-23.94	75.17	74.00	-22.77	108	247	HORIZONTAL	Peak
4	9728.600	31.24	-23.94	55.18	54.00	-22.76	108	247	HORIZONTAL	Average

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

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

Test Mode	:	**Continuous transmitting, 2468MHz**			
Test Distance	:	3m	**Tester**	:	Liu
Polarization	:	Vertical	**Frequency Range**	:	1GHz ~ 25GHz



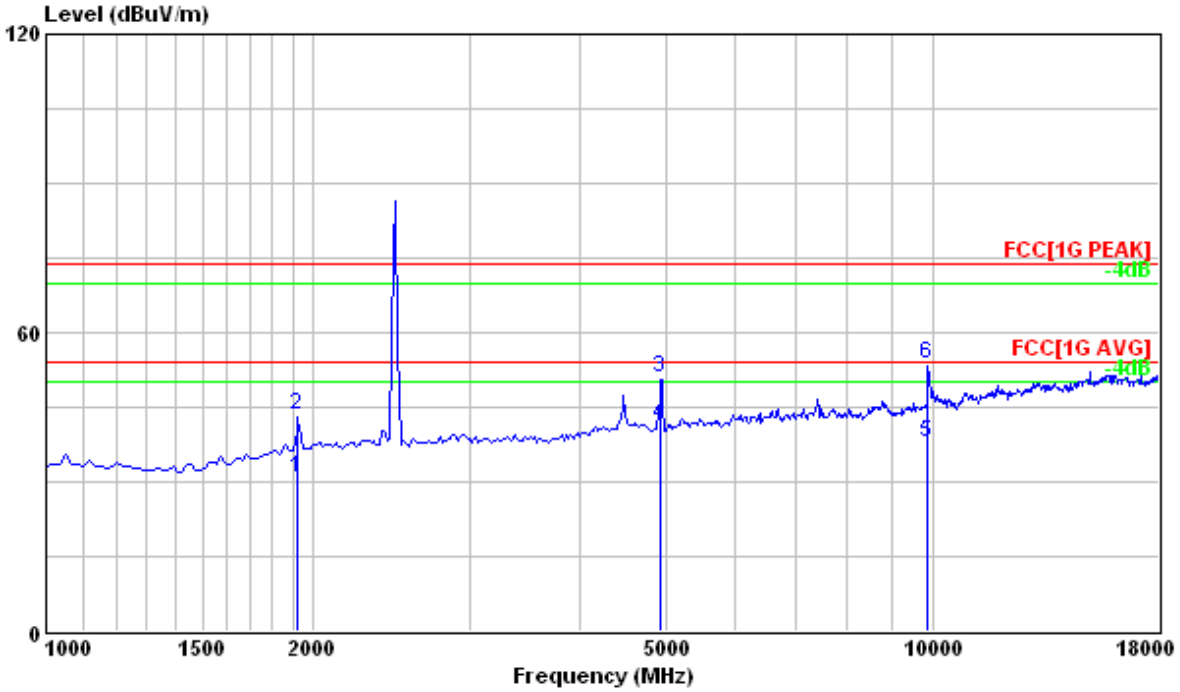
	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dB/m	dBuV	dBuV/m	dB	cm	deg		
1	1916.497	44.43	-37.44	81.87	74.00	-29.57	100	221	VERTICAL	Peak
2	1916.497	32.13	-37.44	69.57	54.00	-21.87	100	221	VERTICAL	Average
3	4476.000	50.52	-32.99	83.51	74.00	-23.48	100	37	VERTICAL	Peak
4	4476.000	41.35	-32.99	74.34	54.00	-12.65	100	37	VERTICAL	Average
5	4938.000	53.03	-32.87	85.90	74.00	-20.97	360	100	VERTICAL	Peak
6	4938.000	44.15	-32.87	77.02	54.00	-9.85	360	100	VERTICAL	Average
7 @	7404.700	44.32	-28.09	72.41	54.00	-9.68	100	192	VERTICAL	Average
8	7404.700	54.63	-28.09	82.72	74.00	-19.37	100	192	VERTICAL	Peak
9	9880.000	53.82	-23.50	77.32	74.00	-20.18	100	150	VERTICAL	Peak
10	9880.000	39.49	-23.50	62.99	54.00	-14.51	100	150	VERTICAL	Average

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

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

Test Mode	:	**Continuous transmitting, 2468MHz**			
Test Distance	:	3m	**Tester**	:	Liu
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	1922.298	30.92	-37.40	68.32	54.00	-23.08	100	141	HORIZONTAL	Average
2	1922.298	43.38	-37.40	80.78	74.00	-30.62	100	141	HORIZONTAL	
3	4936.384	50.75	-32.86	83.61	74.00	-23.25	100	309	HORIZONTAL	Peak
4	4936.384	41.63	-32.86	74.49	54.00	-12.37	100	309	HORIZONTAL	Average
5	9863.686	37.98	-23.58	61.56	54.00	-16.02	100	242	HORIZONTAL	Average
6	9863.686	53.76	-23.58	77.34	74.00	-20.24	100	242	HORIZONTAL	Peak

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

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

4 Conducted Emission Measurement

Result: Pass

4.1 Applied standard

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.

4.2 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	2010/1/12	2011/1/12
LISN	R&S	ESH2-Z5/836613/001	2010/5/26	2011/5/26
2nd LISN	R&S	ENV4200/833209/010	2010/1/12	2011/1/12
50Ω terminator	N/A	N/A/001	2010/8/26	2011/8/26
RF Switch	N/A	RSU28/338965/002	2010/8/23	2011/8/23
RF Cable	N/A	N/A/C0052 ~ 56	2010/8/23	2011/8/23
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：24℃; Relative Humidity : 53%

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. 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 2nd 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.

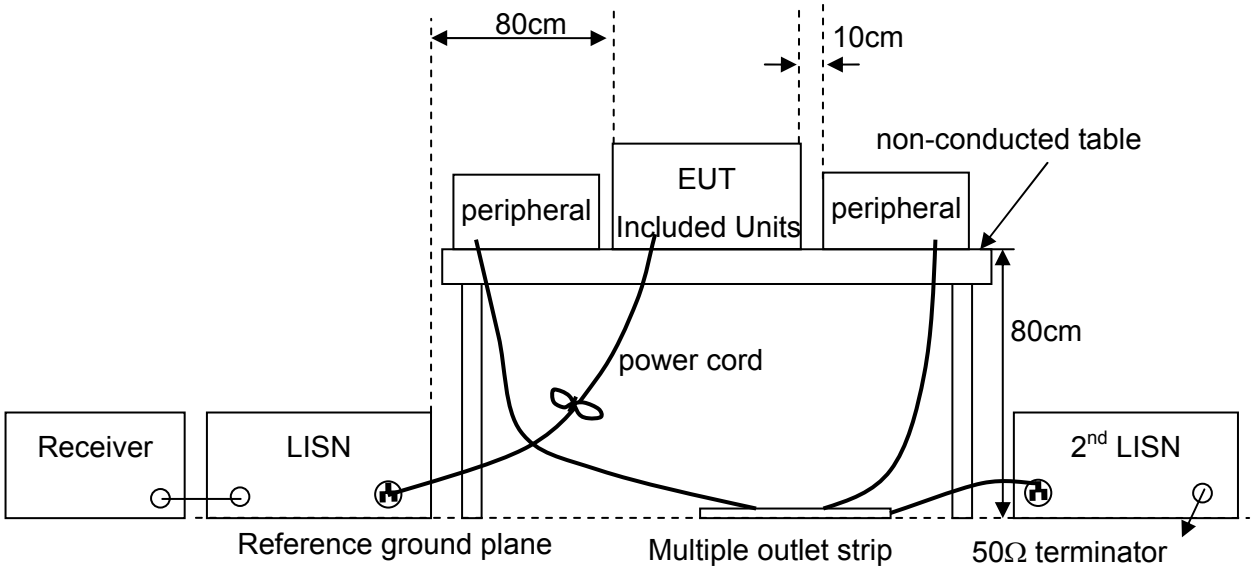
f. Measure the conducted emissions on each power line (Neutral Line and Line 1 – Hot side) of the EUT's power source by using the test receiver connected to the coupling RF output port of LISN.

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.

4.4 Test configuration

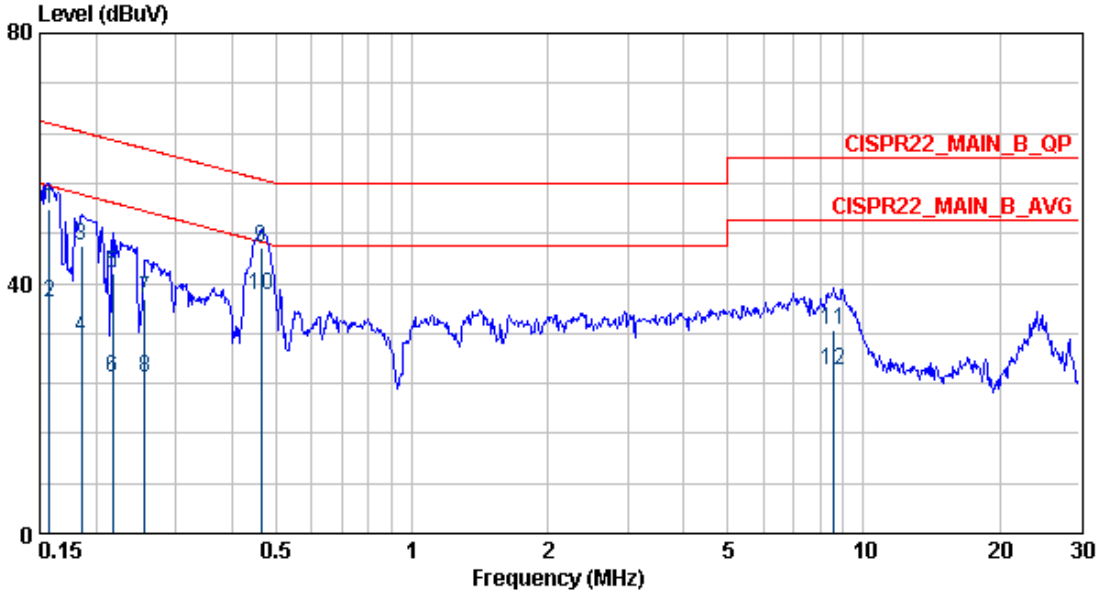


4.5 Test Data

Test Mode : **Continuous Transmitting, 2414MHz**

Frequency Range : 150kHz~30MHz **Phase** : Line

Tester : CDC



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	cm		
1	0.157	51.82	0.23	51.59	65.60	-13.78	---	LINE	QP
2	0.157	36.81	0.23	36.58	55.60	-18.79	---	LINE	AVERAGE
3	0.185	46.13	0.24	45.89	64.24	-18.11	---	LINE	QP
4	0.185	31.36	0.24	31.12	54.24	-22.88	---	LINE	AVERAGE
5	0.217	41.68	0.25	41.43	62.92	-21.24	---	LINE	QP
6	0.217	24.86	0.25	24.61	52.92	-28.06	---	LINE	AVERAGE
7	0.256	37.61	0.25	37.36	61.56	-23.94	---	LINE	QP
8	0.256	24.97	0.25	24.72	51.56	-26.58	---	LINE	AVERAGE
9	0.464	45.75	0.28	45.47	56.63	-10.87	---	LINE	QP
10 @	0.464	38.08	0.28	37.80	46.63	-8.54	---	LINE	AVERAGE
11	8.592	32.56	0.69	31.87	60.00	-27.44	---	LINE	QP
12	8.592	26.17	0.69	25.48	50.00	-23.83	---	LINE	AVERAGE

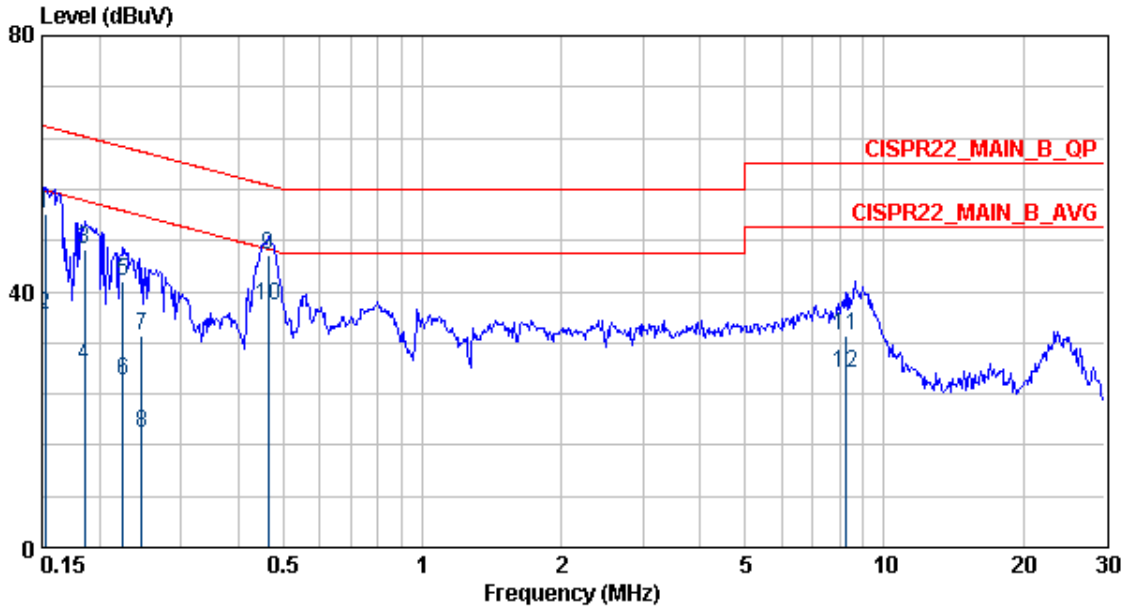
Note:

1. Emission Level = Reading Data + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.

Test Mode : **Continuous Transmitting, 2414MHz**

Frequency Range : 150kHz~30MHz **Phase** : Neutral

Tester : CDC



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Ant Pos	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	cm		
1	0.152	52.27	0.29	51.98	65.87	-13.60	---	NEUTRAL	QP
2	0.152	36.24	0.29	35.95	55.87	-19.63	---	NEUTRAL	AVERAGE
3	0.185	46.45	0.30	46.15	64.24	-17.79	---	NEUTRAL	QP
4	0.185	28.54	0.30	28.24	54.24	-25.70	---	NEUTRAL	AVERAGE
5	0.224	41.50	0.30	41.20	62.66	-21.15	---	NEUTRAL	QP
6	0.224	26.09	0.30	25.79	52.66	-26.56	---	NEUTRAL	AVERAGE
7	0.247	33.04	0.31	32.73	61.86	-28.83	---	NEUTRAL	QP
8	0.247	17.74	0.31	17.43	51.86	-34.13	---	NEUTRAL	AVERAGE
9	0.464	45.67	0.34	45.33	56.63	-10.95	---	NEUTRAL	QP
10 @	0.464	37.80	0.34	37.46	46.63	-8.82	---	NEUTRAL	AVERAGE
11	8.235	33.04	0.61	32.43	60.00	-26.96	---	NEUTRAL	QP
12	8.235	27.24	0.61	26.63	50.00	-22.76	---	NEUTRAL	AVERAGE

Note:

1. Emission Level = Reading Data + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. P.K., Q.P. and AV. are abbreviation of peak, quasi-peak and average respectively.