SPORTON International Inc.
No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
Ph: 886-3-656-9065 / FAX: 886-3-656-9085 / www.sporton.com.tw

FCC RADIO TEST REPORT

Applicant's company	**Bolymin, Inc.**
Applicant Address	5F, No. 38, Keya Rd., Daya Dist., Central Taiwan Science Park, Taichung City, Taiwan, 42881, R.O.C.
FCC ID	**C3O-BEGA220A-2012**
Manufacturer's company	**Bolymin, Inc.**
Manufacturer Address	5F, No. 38, Keya Rd., Daya Dist., Central Taiwan Science Park, Taichung City, Taiwan, 42881, R.O.C.

Product Name	Embedded Panel PC
Brand Name	BOLYMIN
Model Name	BEGA220A Serials
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	Jun. 17, 2011
Final Test Date	Apr. 04, 2012
Submission Type	Original Equipment

Statement

Test result included is only for the 802.11b/g part of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2009** and **47 CFR FCC Part 15 Subpart C**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR161707-01	Rev. 01	Initial issue of report	Apr. 10, 2012

Certificate No.: CB10104015

1. CERTIFICATE OF COMPLIANCE

Product Name	:	**Embedded Panel PC**
Brand Name	:	**BOLYMIN**
Model Name	:	**BEGA220A Serials**
Applicant	:	**Bolymin, Inc.**
Test Rule Part(s)	:	**47 CFR FCC Part 15 Subpart C § 15.247**

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jun. 17, 2011 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Jordan Hsiao

Jordan Hsiao
SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
-	15.207	AC Power Line Conducted Emissions	-	Note1
4.1	15.247(b)(3)	Peak Output Power	Complies	9.97 dB
4.2	-	Average Output Power	-	-
4.3	15.247(e)	Power Spectral Density	Complies	21.59 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	3.72 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.16 dB
4.7	15.203	Antenna Requirements	Complies	-

Note 1: Due to the EUT is a DC-powered equipment; it's not necessary to apply for this test.

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Peak Output Power	±0.8dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
6dB Spectrum Bandwidth	$\pm 8.5\times10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (1TX/1RX)
Power Type	From DC Power Supply
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11g
Data Modulation	DSSS (BPSK / QPSK / CCK) ; OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	DSSS (1/ 2/ 5.5/11) ; OFDM (6/9/12/18/24/36/48/54)
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11
Channel Band Width (99%)	11b:13.72 MHz ; 11g: 16.48 MHz
Peak Output Power	11b: 15.24 dBm ; 11g: 20.03 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	WAVEFAR	WTHG5003	Helical Antenna	SMA	3.7

3.4. Table for Carrier Frequencies

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400~2483.5MHz	1	2412 MHz	7	2442 MHz
	2	2417 MHz	8	2447 MHz
	3	2422 MHz	9	2452 MHz
	4	2427 MHz	10	2457 MHz
	5	2432 MHz	11	2462 MHz
	6	2437 MHz	-	-

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	Antenna
Peak Output Power Average Output Power Power Spectral Density	11b/BPSK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
6dB Spectrum Bandwidth	11b/BPSK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Radiated Emissions 9kHz~1GHz	CTX	Auto	-	-
Radiated Emissions 1GHz~10th Harmonic	11b/BPSK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Band Edge Emissions	11b/BPSK	1 Mbps	1/11	1
	11g/BPSK	6 Mbps	1/11	1

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

3.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Battery	-	-	-

3.8. Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power Parameters of IEEE 802.11b/g

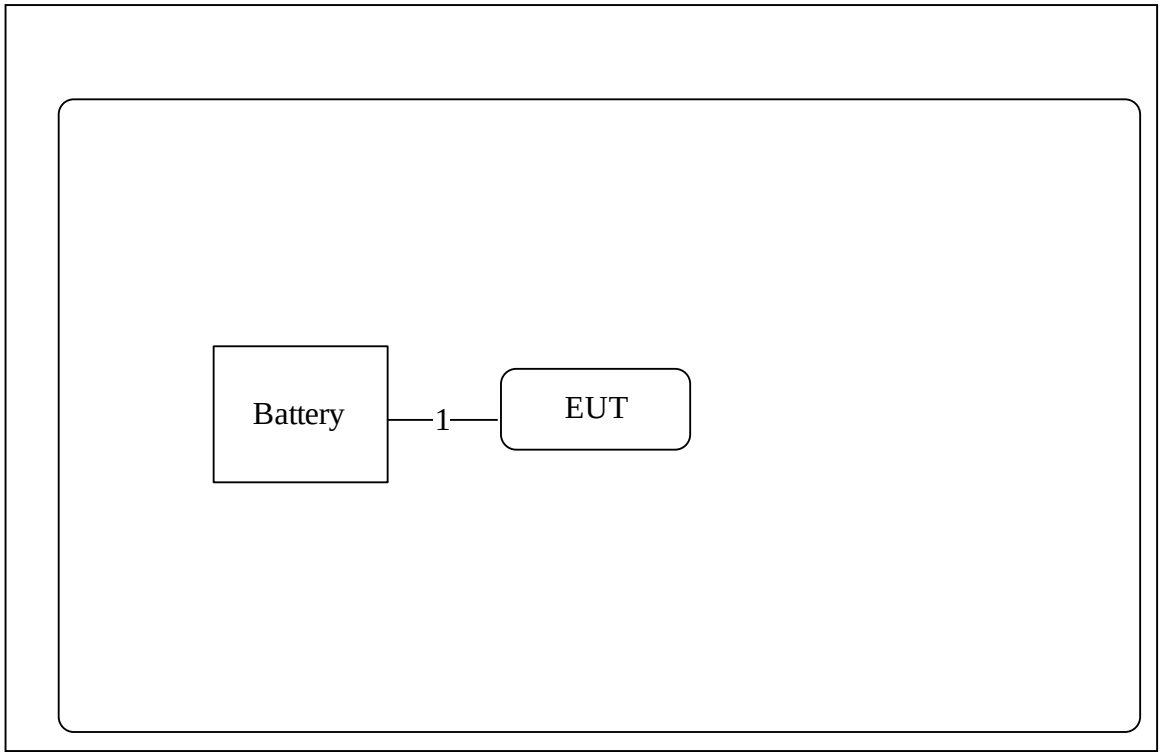
Test Software Version	N/A		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b	15	15	15
IEEE 802.11g	13	15	15

During the test, it was executed the hardware under WIN XP to control the EUT continuously transmit RF signal.

3.9. Test Configurations

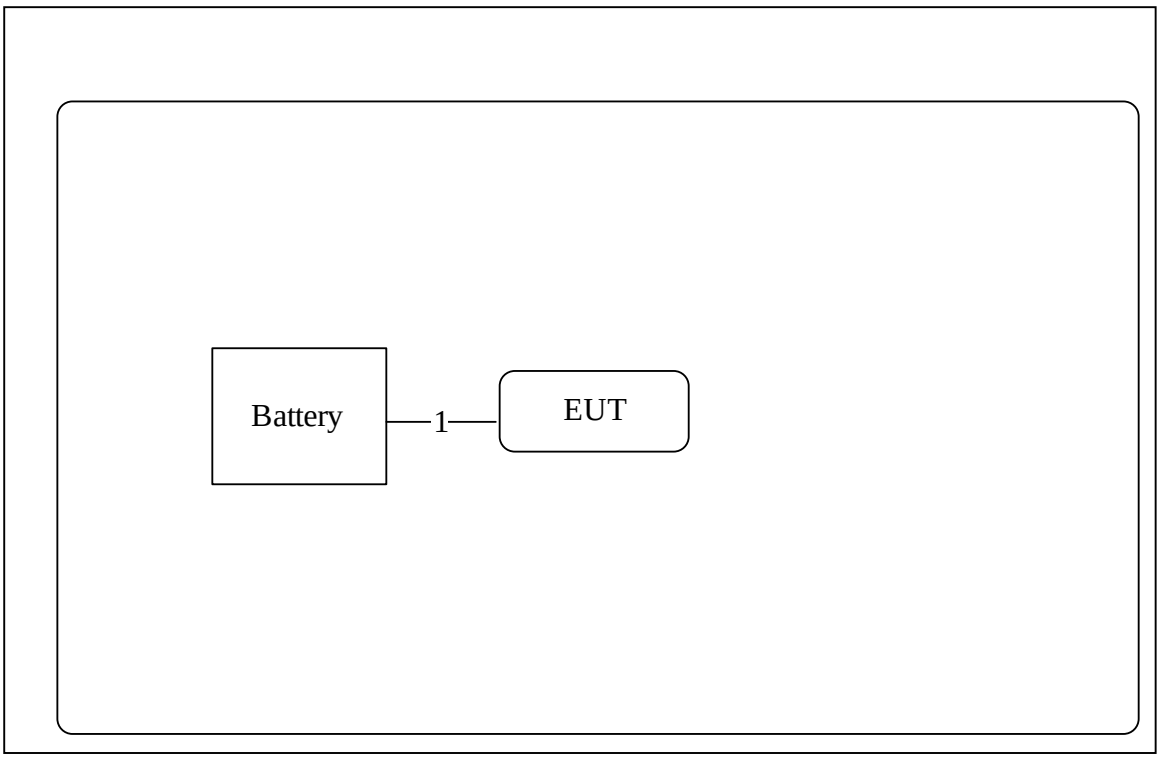
3.9.1. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



Item	Connection	Shield	Length
1	Power Cable	No	0.4M

Test Configuration: Above 1GHz



Item	Connection	Shield	Length
1	Power Cable	No	0.4M

4. TEST RESULT

4.1. Peak Output Power Measurement

4.1.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

4.1.2. Measuring Instruments and Setting

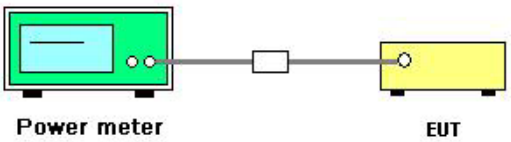
Please refer to section 5 of equipments list in this report. The following table is the setting of the peak power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	Peak

4.1.3. Test Procedures

Spectrum Parameter	Setting
RF Output Power Method	☒ ANSI C63.10 clause 6.10.2.1 (a) power meter method
RF Output Power Method	☐ ANSI C63.10 clause 6.10.2.1 (b) channel integration method
RF Output Power Method	☐ ANSI C63.10 clause 6.10.3.1 Method 1 - spectral trace averaging
RF Output Power Method	☐ ANSI C63.10 clause 6.10.3.2 Method 2 - zero-span mode with trace averaging

4.1.4. Test Setup Layout



4.1.5. Test Deviation

There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.1.7. Test Result of Peak Output Power

Temperature	25°C	Humidity	60%
Test Engineer	Satoshi Yang	Configurations	802.11b/g
Test Date	Mar. 21, 2012		

Configuration IEEE 802.11b

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	15.03	30.00	Complies
6	2437 MHz	15.24	30.00	Complies
11	2462 MHz	14.90	30.00	Complies

Configuration IEEE 802.11g

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	19.79	30.00	Complies
6	2437 MHz	20.03	30.00	Complies
11	2462 MHz	20.01	30.00	Complies

4.2. Average Output Power Measurement

4.2.1. Measuring Instruments and Setting

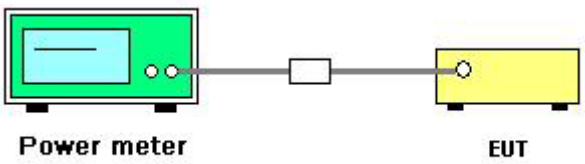
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	Average

4.2.2. Test Procedures

Spectrum Parameter	Setting
RF Output Power Method	☒ ANSI C63.10 clause 6.10.2.1 (a) power meter method
RF Output Power Method	☐ ANSI C63.10 clause 6.10.2.1 (b) channel integration method
RF Output Power Method	☐ ANSI C63.10 clause 6.10.3.1 Method 1 - spectral trace averaging
RF Output Power Method	☐ ANSI C63.10 clause 6.10.3.2 Method 2 - zero-span mode with trace averaging

4.2.3. Test Setup Layout



4.2.4. Test Deviation

There is no deviation with the original standard.

4.2.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

Note: Average output power is only for Maximum Permissible Exposure use.

4.2.6. Test Result of Average Output Power

Temperature	25°C	Humidity	60%
Test Engineer	Satoshi Yang	Configurations	802.11b/g
Test Date	Mar. 21, 2012		

Configuration IEEE 802.11b

Channel	Frequency	Average Conducted Power (dBm)
1	2412 MHz	12.58
6	2437 MHz	12.76
11	2462 MHz	12.44

Configuration IEEE 802.11g

Channel	Frequency	Average Conducted Power (dBm)
1	2412 MHz	11.15
6	2437 MHz	12.66
11	2462 MHz	11.88

4.3. Power Spectral Density Measurement

4.3.1. Limit

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

4.3.2. Measuring Instruments and Setting

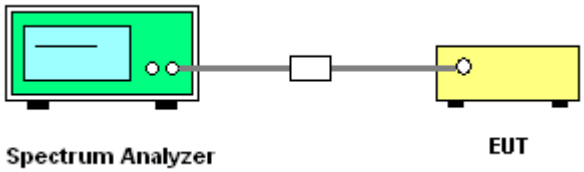
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the analyzer span to 5-30% greater than the EBW.
RB	100 kHz
VB	300 kHz
Detector	PEAK
Trace	Single Sweep
Sweep Time	≥ 10 x (number of measurement points in sweep) x (transmission symbol period).

4.3.3. Test Procedures

1. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
2. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
3. Use the peak marker function to determine the maximum level in any 100 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent level in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where: BWCF = 10log (3 kHz/100 kHz = -15.2 dB).
5. The resulting PSD level must be ≤ 8 dBm.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Power Spectral Density

Temperature	25°C	Humidity	60%
Test Engineer	Satoshi Yang	Configurations	802.11b/g

Configuration IEEE 802.11b

Channel	Frequency	Power Density (dBm/100kHz)	Total Power Density (dBm/100kHz)	BWCF factor (100KHz to 3KHz	Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	1.41	1.41	-15.23	-13.82	8.00	Complies
6	2437 MHz	1.64	1.64	-15.23	-13.59	8.00	Complies
11	2462 MHz	1.18	1.18	-15.23	-14.05	8.00	Complies

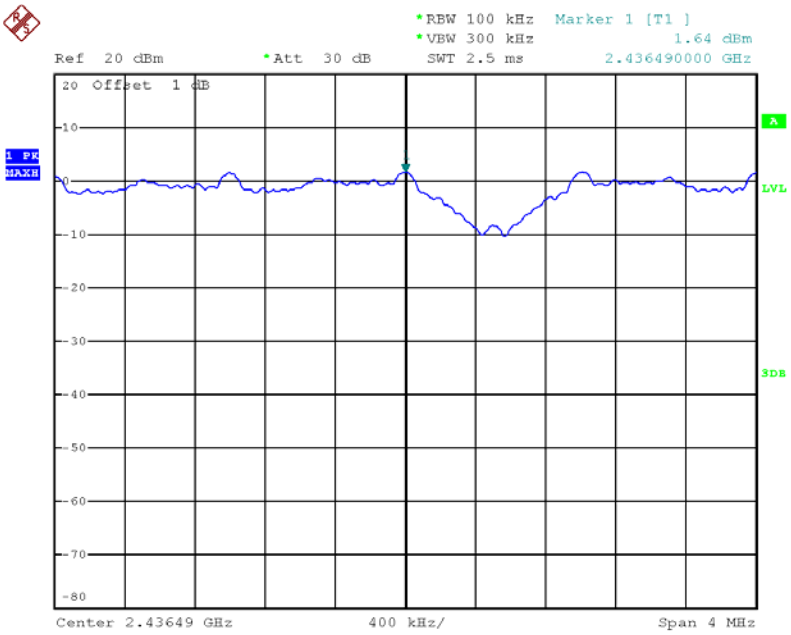
Configuration IEEE 802.11g

Channel	Frequency	Power Density (dBm/100kHz)	Total Power Density (dBm/100kHz)	BWCF factor (100KHz to 3KHz	Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	-3.82	-3.82	-15.23	-19.05	8.00	Complies
6	2437 MHz	-1.30	-1.30	-15.23	-16.53	8.00	Complies
11	2462 MHz	-2.18	-2.18	-15.23	-17.41	8.00	Complies

Note: All the test values were listed in the report.

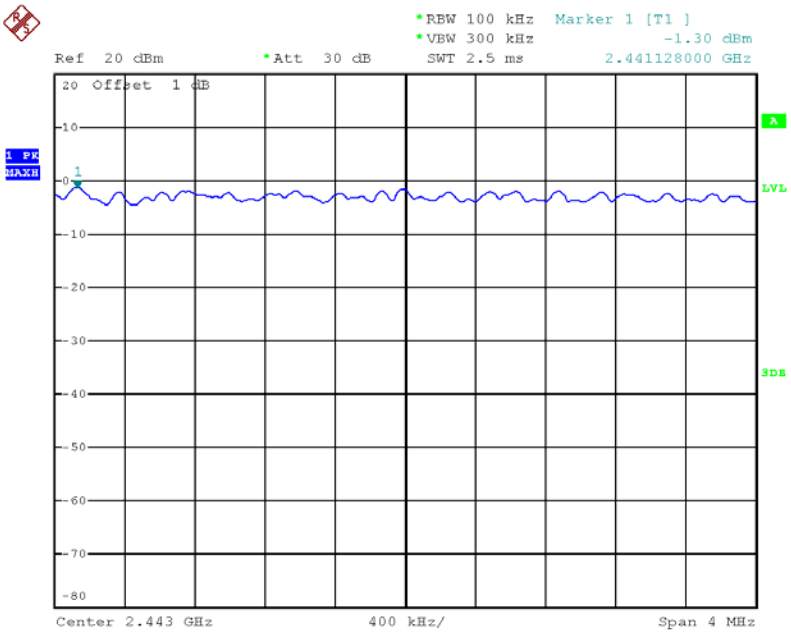
For plots, only the channel with maximum results was shown.

Power Density Plot on Configuration IEEE 802.11b / 2437 MHz



Date: 21.MAR.2012 11:47:29

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz



Date: 21.MAR.2012 11:55:11

4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

4.4.2. Measuring Instruments and Setting

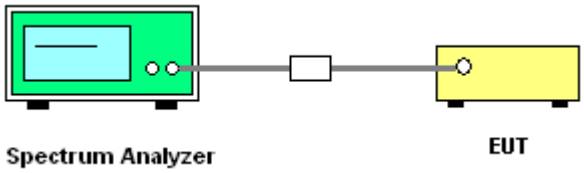
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were used.
3. Measured the spectrum width with power higher than 6dB below carrier.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of 6dB Spectrum Bandwidth

Temperature	25°C	Humidity	60%
Test Engineer	Satoshi Yang	Configurations	802.11b/g

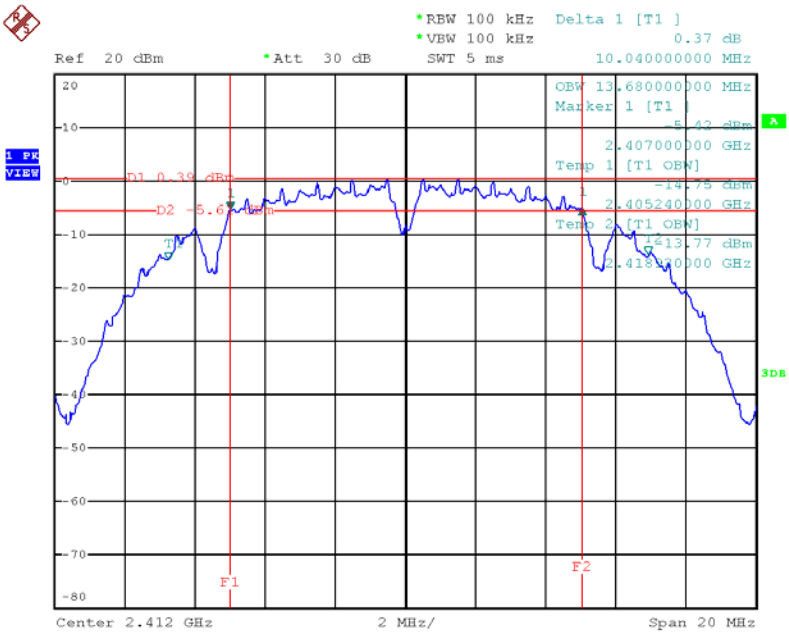
Configuration IEEE 802.11b

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	10.04	13.68	500	Complies
6	2437 MHz	10.08	13.72	500	Complies
11	2462 MHz	10.04	13.68	500	Complies

Configuration IEEE 802.11g

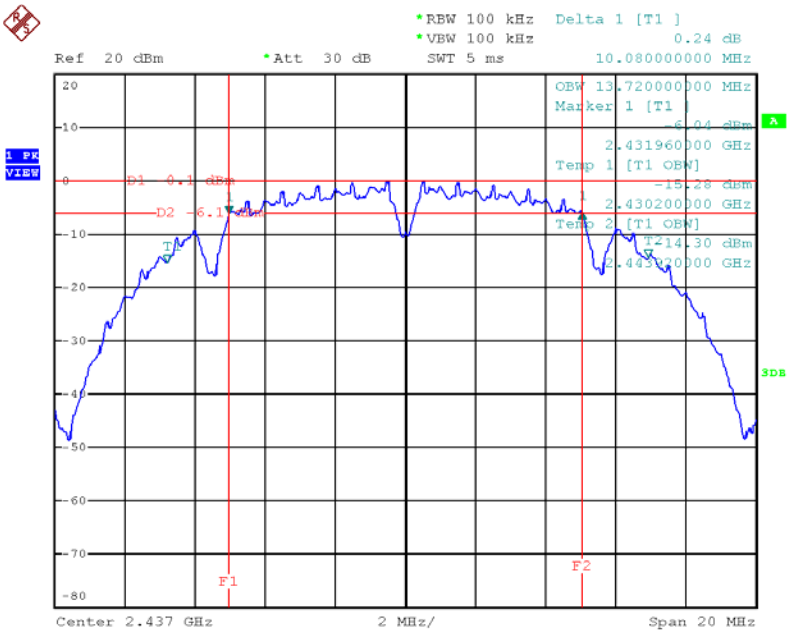
Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.56	16.48	500	Complies
6	2437 MHz	16.56	16.48	500	Complies
11	2462 MHz	16.56	16.48	500	Complies

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz



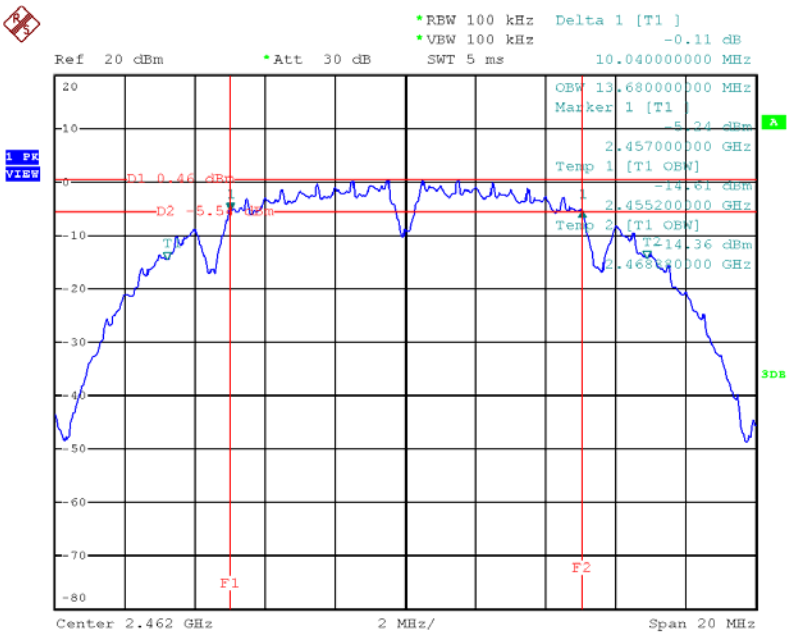
Date: 21.MAR.2012 11:08:57

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2437 MHz



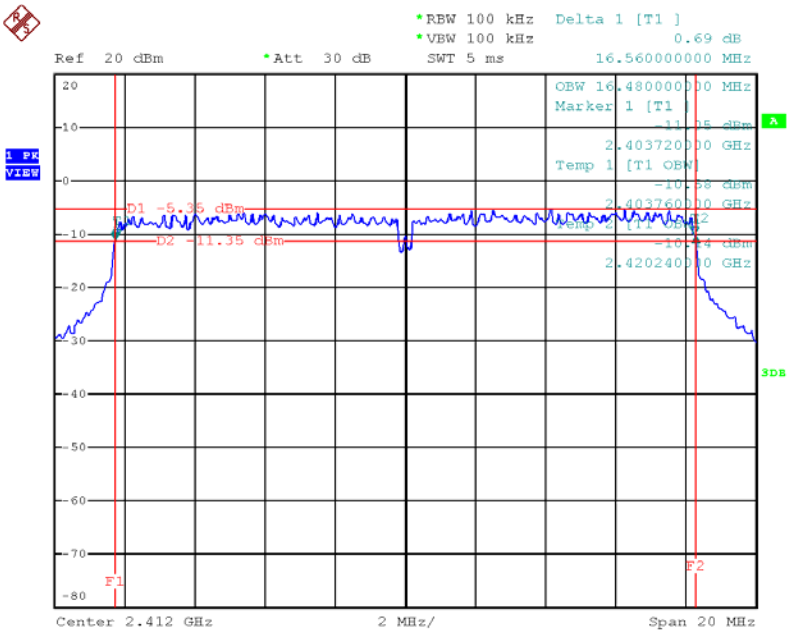
Date: 21.MAR.2012 11:35:36

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2462 MHz



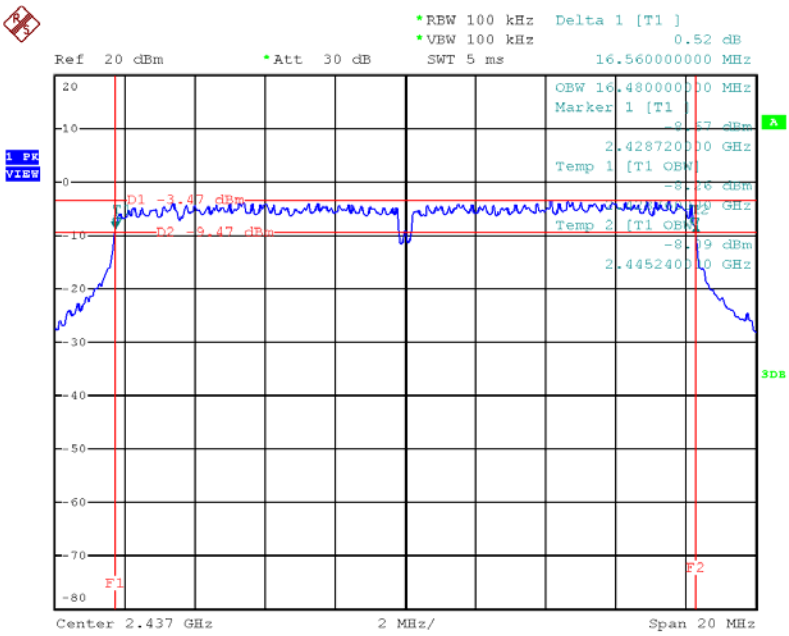
Date: 21.MAR.2012 11:38:57

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2412 MHz



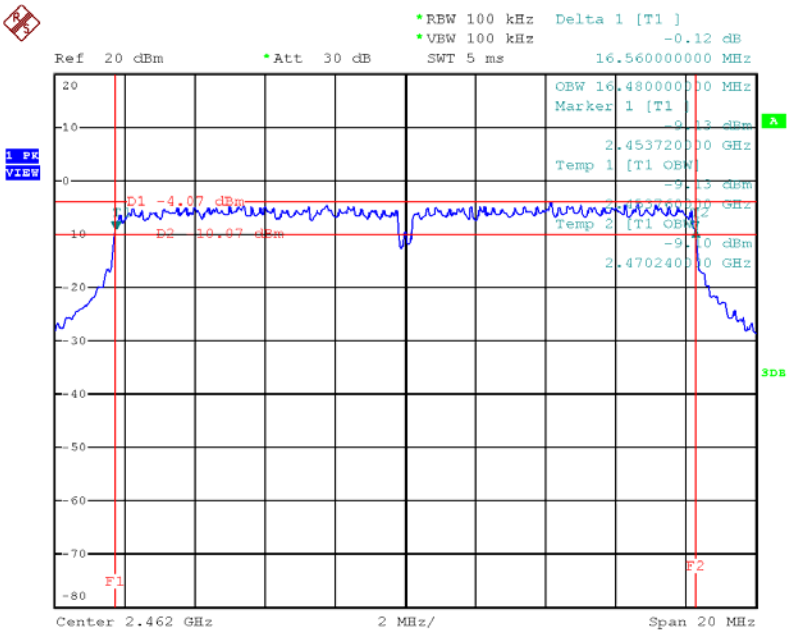
Date: 21.MAR.2012 11:02:09

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz



Date: 21.MAR.2012 11:03:49

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2462 MHz



Date: 21.MAR.2012 10:49:24

4.5. Radiated Emissions Measurement

4.5.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 3MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 3MHz for peak

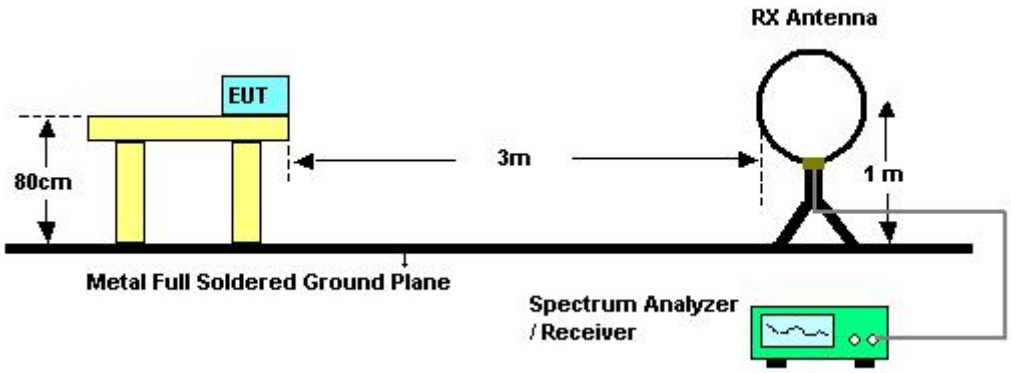
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.5.3. Test Procedures

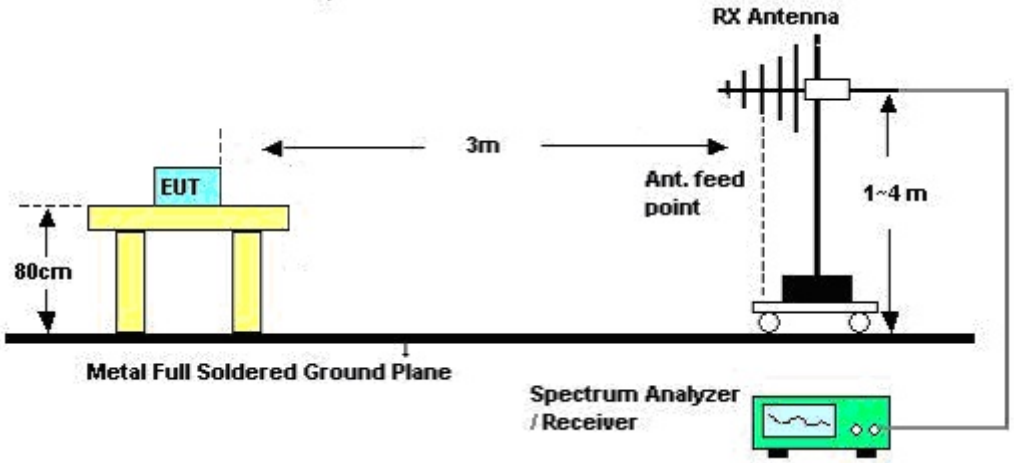
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz 1VBW and 3RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.5.4. Test Setup Layout

For radiated emissions below 1GHz



For radiated emissions above 1GHz



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	22°C	Humidity	59%
Test Engineer	Robert Chang	Configurations	CTX
Test Date	Mar. 30, 2012		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

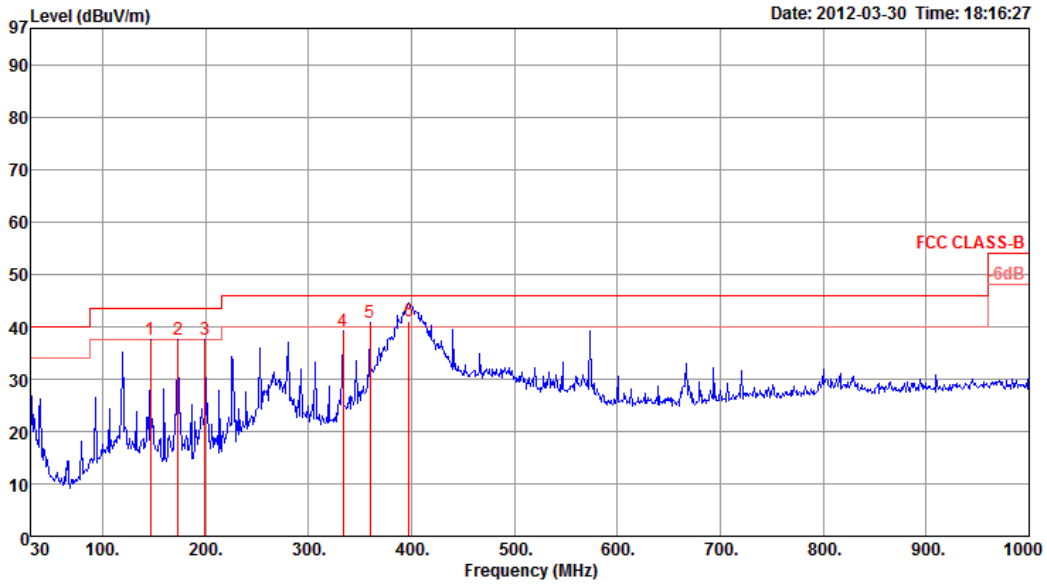
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.5.8. Results of Radiated Emissions (30MHz~1GHz)

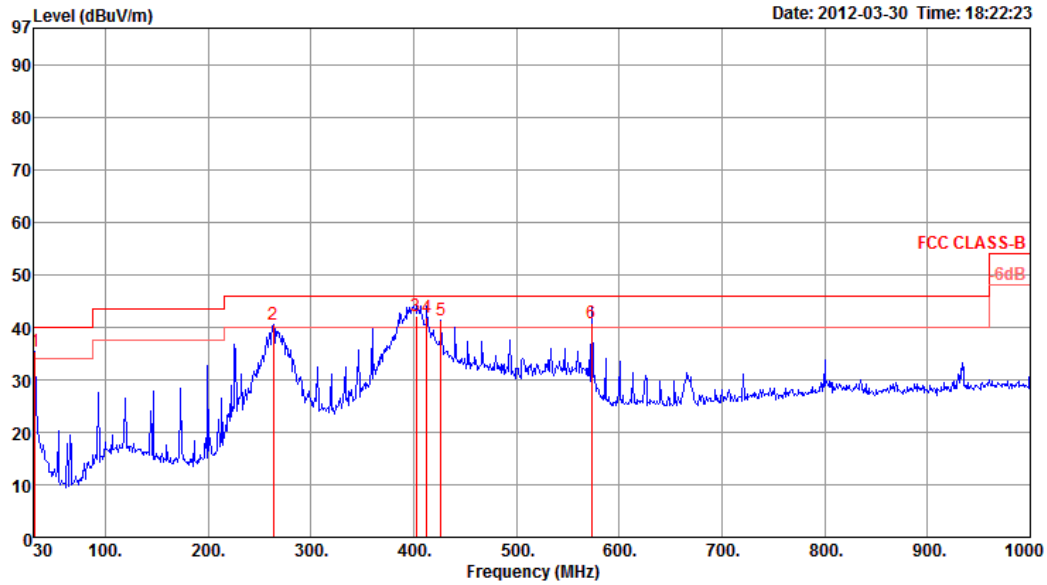
Temperature	22°C	Humidity	59%
Test Engineer	Robert Chang	Configurations	CTX

Horizontal



	Freq	Level	Line	Limit	Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 !	146.40	37.57	43.50	-5.93	52.44	1.77	27.37	10.73	0	400	Peak	HORIZONTAL
2 !	173.56	37.50	43.50	-6.00	53.30	1.97	27.23	9.46	0	400	Peak	HORIZONTAL
3 !	199.75	37.66	43.50	-5.84	53.02	2.09	27.10	9.65	0	400	Peak	HORIZONTAL
4	333.61	39.10	46.00	-6.90	48.93	2.71	27.13	14.59	0	400	Peak	HORIZONTAL
5 p	359.80	40.80	46.00	-5.20	50.07	2.84	27.32	15.21	0	400	Peak	HORIZONTAL
6 q	397.63	41.04	46.00	-4.96	49.26	2.98	27.58	16.38	262	100	QP	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1 p	31.94	35.50	40.00	-4.50	45.18	0.87	27.80	17.25	0	100	Peak	VERTICAL
2 !	263.77	40.61	46.00	-5.39	51.84	2.46	26.97	13.28	0	100	Peak	VERTICAL
3 q	402.48	42.28	46.00	-3.72	50.30	3.00	27.61	16.59	325	100	QP	VERTICAL
4 !	413.15	41.99	46.00	-4.01	49.50	3.05	27.66	17.10	145	108	QP	VERTICAL
5 !	426.73	41.27	46.00	-4.73	48.72	3.12	27.73	17.16	0	100	Peak	VERTICAL
6 !	573.20	40.84	46.00	-5.16	46.09	3.63	28.10	19.22	198	100	QP	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.5.9. Results for Radiated Emissions (1GHz~10th Harmonic)

Temperature	22°C	Humidity	59%
Test Engineer	Robert Chang	Configurations	802.11b CH 1
Test Date	Mar. 21, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.98	46.28	74.00	-27.72	41.86	6.23	33.39	35.20	Peak	100	184	HORIZONTAL
2	4823.98	36.55	54.00	-17.45	32.13	6.23	33.39	35.20	Average	100	184	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4824.00	35.39	54.00	-18.61	30.97	6.23	33.39	35.20	Average	111	286	VERTICAL
2	4824.35	45.55	74.00	-28.45	41.13	6.23	33.39	35.20	Peak	111	286	VERTICAL

Temperature	22°C	Humidity	59%
Test Engineer	Robert Chang	Configurations	802.11b CH 6
Test Date	Mar. 21, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.91	45.76	74.00	-28.24	41.19	6.29	33.48	35.20	Peak	100	183	HORIZONTAL
2	4874.00	34.13	54.00	-19.87	29.56	6.29	33.48	35.20	Average	100	183	HORIZONTAL
3	7309.49	49.96	74.00	-24.04	41.39	7.49	36.51	35.43	Peak	100	194	HORIZONTAL
4	7313.44	35.31	54.00	-18.69	26.72	7.51	36.51	35.43	Average	100	194	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.96	31.46	54.00	-22.54	26.89	6.29	33.48	35.20	Average	100	360	VERTICAL
2	4876.50	44.96	74.00	-29.04	40.39	6.29	33.48	35.20	Peak	100	360	VERTICAL
3	7313.20	36.73	54.00	-17.27	28.14	7.51	36.51	35.43	Average	100	248	VERTICAL
4	7313.27	50.02	74.00	-23.98	41.43	7.51	36.51	35.43	Peak	100	248	VERTICAL

Temperature	22℃	Humidity	59%
Test Engineer	Robert Chang	Configurations	802.11b CH 11
Test Date	Mar. 21, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4920.99	31.44	54.00	-22.56	26.76	6.34	33.54	35.20	Average	100	241	HORIZONTAL
2	4932.43	44.75	74.00	-29.25	40.03	6.34	33.58	35.20	Peak	100	241	HORIZONTAL
3	7380.14	35.65	54.00	-18.35	26.94	7.55	36.61	35.45	Average	100	146	HORIZONTAL
4	7389.85	48.90	74.00	-25.10	40.18	7.57	36.61	35.46	Peak	100	146	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4919.03	45.40	74.00	-28.60	40.72	6.34	33.54	35.20	Peak	100	255	VERTICAL
2	4921.28	31.34	54.00	-22.66	26.66	6.34	33.54	35.20	Average	100	255	VERTICAL
3	7377.25	48.79	74.00	-25.21	40.08	7.55	36.61	35.45	Peak	100	146	VERTICAL
4	7383.63	35.66	54.00	-18.34	26.96	7.55	36.61	35.46	Average	100	146	VERTICAL

Temperature	22°C	Humidity	59%
Test Engineer	Robert Chang	Configurations	802.11g CH 1
Test Date	Mar. 21, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4822.91	31.09	54.00	-22.91	26.67	6.23	33.39	35.20	Average	100	214	HORIZONTAL
2	4823.24	44.86	74.00	-29.14	40.44	6.23	33.39	35.20	Peak	100	214	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4822.02	44.89	74.00	-29.11	40.47	6.23	33.39	35.20	Peak	100	258	VERTICAL
2	4822.78	31.06	54.00	-22.94	26.64	6.23	33.39	35.20	Average	100	258	VERTICAL

Temperature	22°C	Humidity	59%
Test Engineer	Robert Chang	Configurations	802.11g CH 6
Test Date	Mar. 21, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4877.06	45.34	74.00	-28.66	40.77	6.29	33.48	35.20	Peak	100	305	HORIZONTAL
2	4877.72	31.14	54.00	-22.86	26.57	6.29	33.48	35.20	Average	100	305	HORIZONTAL
3	7314.09	35.41	54.00	-18.59	26.82	7.51	36.51	35.43	Average	100	214	HORIZONTAL
4	7315.22	50.85	74.00	-23.15	42.26	7.51	36.51	35.43	Peak	100	214	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4871.13	45.06	74.00	-28.94	40.49	6.29	33.48	35.20	Peak	100	251	VERTICAL
2	4877.86	31.07	54.00	-22.93	26.50	6.29	33.48	35.20	Average	100	251	VERTICAL
3	7308.26	35.47	54.00	-18.53	26.90	7.49	36.51	35.43	Average	100	155	VERTICAL
4	7311.98	48.80	74.00	-25.20	40.23	7.49	36.51	35.43	Peak	100	155	VERTICAL

Temperature	22℃	Humidity	59%
Test Engineer	Robert Chang	Configurations	802.11g CH 11
Test Date	Mar. 21, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4921.31	31.48	54.00	-22.52	26.80	6.34	33.54	35.20	Average	100	166	HORIZONTAL
2	4923.41	45.21	74.00	-28.79	40.49	6.34	33.58	35.20	Peak	100	166	HORIZONTAL
3	7385.70	50.24	74.00	-23.76	41.54	7.55	36.61	35.46	Peak	100	233	HORIZONTAL
4	7389.48	35.74	54.00	-18.26	27.02	7.57	36.61	35.46	Average	100	233	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4920.94	31.49	54.00	-22.51	26.81	6.34	33.54	35.20	Average	100	152	VERTICAL
2	4928.68	46.21	74.00	-27.79	41.49	6.34	33.58	35.20	Peak	100	152	VERTICAL
3	7381.18	49.73	74.00	-24.27	41.02	7.55	36.61	35.45	Peak	100	294	VERTICAL
4	7385.90	35.79	54.00	-18.21	27.09	7.55	36.61	35.46	Average	100	294	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6. Band Edge Emissions Measurement

4.6.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz /100 KHz for Peak

4.6.3. Test Procedures

1. The test procedure is the same as section 4.5.3, only the frequency range investigated is limited to 100MHz around bandedges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

4.6.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.5.4.

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	23°C	Humidity	54%
Test Engineer	Robert Chang	Configurations	802.11b CH 1, 6, 11
Test Date	Mar. 21, 2012		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	48.01	54.00	-5.99	15.82	4.14	28.05	0.00	Average	146	241	HORIZONTAL
2	2390.00	60.06	74.00	-13.94	27.87	4.14	28.05	0.00	Peak	146	241	HORIZONTAL
3	2412.96	108.05	74.00			4.16	28.09	0.00	Peak	146	241	HORIZONTAL
4	2413.76	104.24	54.00			4.16	28.09	0.00	Average	146	241	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.88	59.33	74.00	-14.67	27.14	4.14	28.05	0.00	Peak	148	265	HORIZONTAL
2	2390.00	47.54	54.00	-6.46	15.35	4.14	28.05	0.00	Average	148	265	HORIZONTAL
3	2436.04	107.83	74.00			4.16	28.18	0.00	Peak	148	265	HORIZONTAL
4	2436.20	104.12	54.00			4.16	28.18	0.00	Average	148	265	HORIZONTAL
5	2483.50	48.13	54.00	-5.87	15.66	4.21	28.26	0.00	Average	148	265	HORIZONTAL
6	2486.39	60.00	74.00	-14.00	27.49	4.21	28.30	0.00	Peak	148	265	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2461.20	102.84	54.00			4.18	28.22	0.00	Average	147	262	HORIZONTAL
2	2462.96	106.62	74.00			4.21	28.22	0.00	Peak	147	262	HORIZONTAL
3	2483.50	48.35	54.00	-5.65	15.88	4.21	28.26	0.00	Average	147	262	HORIZONTAL
4	2483.66	60.21	74.00	-13.79	27.74	4.21	28.26	0.00	Peak	147	262	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	23℃	Humidity	54%
Test Engineer	Robert Chang	Configurations	802.11g CH 1, 6, 11
Test Date	Mar. 21, 2012		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	53.23	54.00	-0.77	21.04	4.14	28.05	0.00	Average	151	243	HORIZONTAL
2	2390.00	71.24	74.00	-2.76	39.05	4.14	28.05	0.00	Peak	151	243	HORIZONTAL
3	2418.41	98.55	54.00			4.16	28.13	0.00	Average	151	243	HORIZONTAL
4	2419.21	108.02	74.00			4.16	28.13	0.00	Peak	151	243	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.40	59.29	74.00	-14.71	27.10	4.14	28.05	0.00	Peak	143	240	HORIZONTAL
2	2390.00	47.97	54.00	-6.03	15.78	4.14	28.05	0.00	Average	143	240	HORIZONTAL
3	2443.57	100.48	54.00			4.18	28.18	0.00	Average	143	240	HORIZONTAL
4	2444.05	109.72	74.00			4.18	28.18	0.00	Peak	143	240	HORIZONTAL
5	2483.50	48.84	54.00	-5.16	16.37	4.21	28.26	0.00	Average	143	240	HORIZONTAL
6	2483.50	59.95	74.00	-14.05	27.48	4.21	28.26	0.00	Peak	143	240	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2466.17	108.86	74.00			4.21	28.22	0.00	Peak	140	242	HORIZONTAL
2	2466.97	99.26	54.00			4.21	28.22	0.00	Average	140	242	HORIZONTAL
3	2483.50	53.84	54.00	-0.16	21.37	4.21	28.26	0.00	Average	140	242	HORIZONTAL
4	2483.66	71.50	74.00	-2.50	39.03	4.21	28.26	0.00	Peak	140	242	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

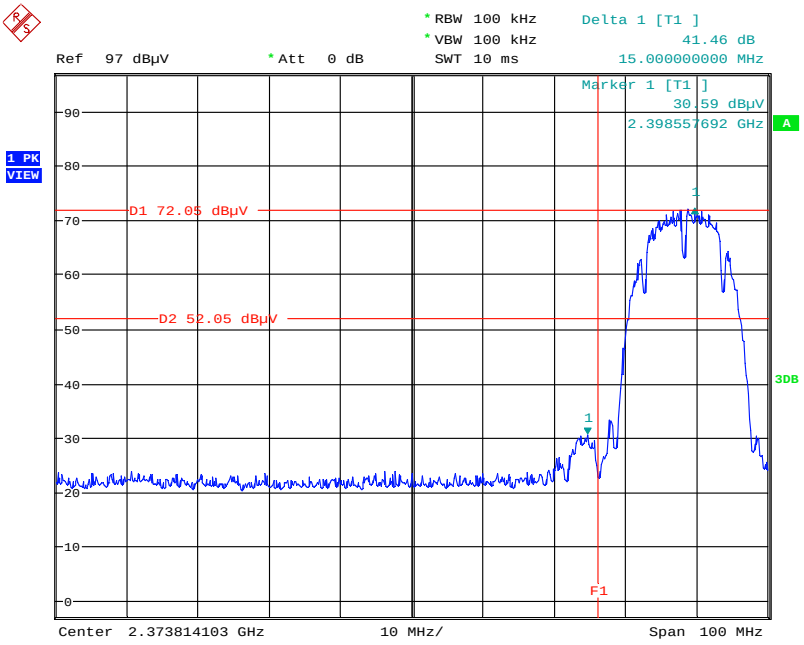
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

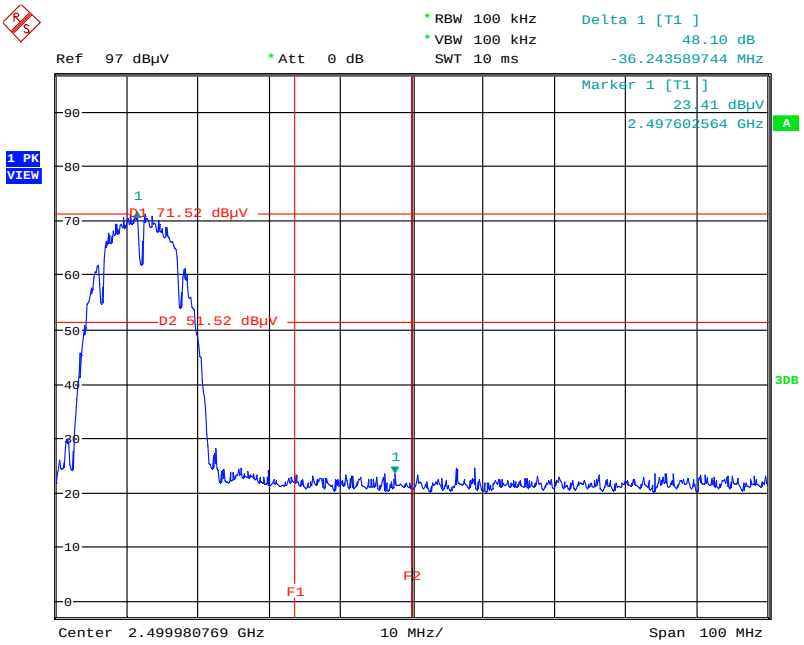
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11b / 2412 MHz



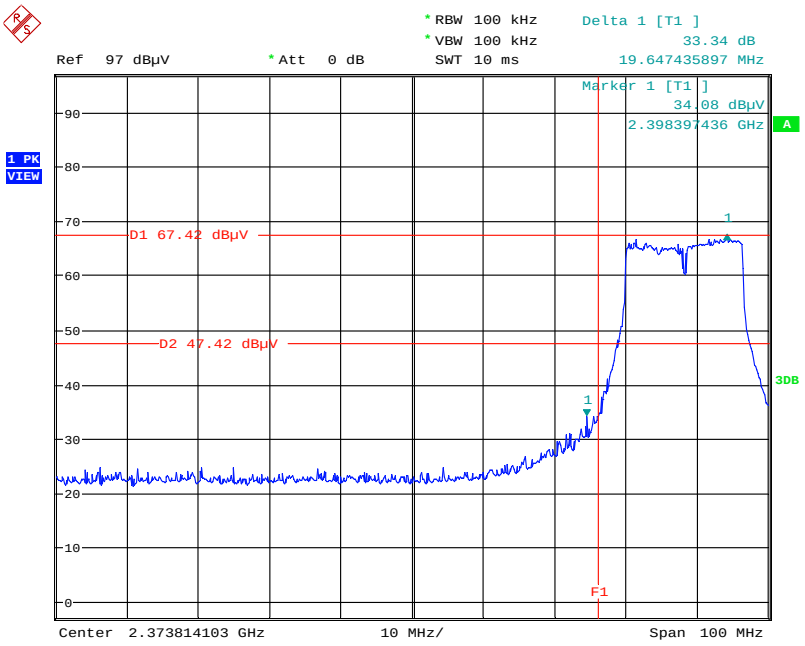
Date: 21.MAR.2012 02:34:09

High Band Edge Plot on Configuration IEEE 802.11b / 2462 MHz



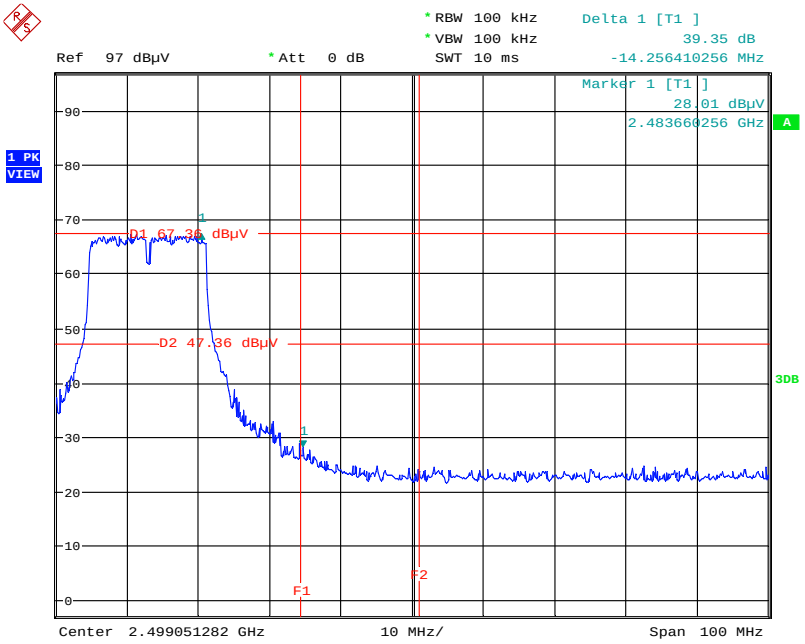
Date: 21.MAR.2012 02:37:35

Low Band Edge Plot on Configuration IEEE 802.11g / 2412 MHz



Date: 21.MAR.2012 02:30:53

High Band Edge Plot on Configuration IEEE 802.11g / 2462 MHz



Date: 21.MAR.2012 02:23:55

4.7. Antenna Requirements

4.7.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.7.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Jan. 11, 2012	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 25, 2011	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 22, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 29, 2011	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 03, 2011	Radiation (05CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 20, 2012	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Sep. 09, 2010*	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N/A	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N/A	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Sep. 26, 2011	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	May. 20, 2011	Conducted (TH01-CB)
Thermo-Hygro Meter	N/A	HC 520	#1	15~70 degree	Nov. 02, 2011	Conducted (TH01-CB)
Signal Generator	R&S	SMR40	100302	10MHz-40GHz	Nov. 22, 2011	Conducted (TH01-CB)
RF Power Divider	HP	11636A	00306	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	44100	1839	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	42100	17930	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
Signal generator	R&S	SMU200A	102782	10MHz-40GHz	Jun. 07, 2011	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071187	1GHz – 18GHz	Mar. 18, 2011	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071042	1GHz – 18GHz	Nov. 01, 2011	Radiation (05CH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-12	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-13	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

Note: "*" Calibration Interval of instruments listed above is two years.

6. TEST LOCATION

SHIJR	ADD	:	6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL	:	886-2-2696-2468
	FAX	:	886-2-2696-2255
HWA YA	ADD	:	No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL	:	886-3-327-3456
	FAX	:	886-3-318-0055
LINKOU	ADD	:	No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	:	886-2-2601-1640
	FAX	:	886-2-2601-1695
DUNGHU	ADD	:	No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	:	886-2-2631-4739
	FAX	:	886-2-2631-9740
JUNGHE	ADD	:	7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	:	886-2-8227-2020
	FAX	:	886-2-8227-2626
NEIHU	ADD	:	4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	:	886-2-2794-8886
	FAX	:	886-2-2794-9777
JHUBEI	ADD	:	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
	TEL	:	886-3-656-9065
	FAX	:	886-3-656-9085

7. TAF CERTIFICATE OF ACCREDITATION

Certificate No. : L1190-110702

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Road, Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	:	ISO/IEC 17025:2005
Accreditation Number	:	1190
Originally Accredited	:	December 15, 2003
Effective Period	:	January 10, 2010 to January 09, 2013
Accredited Scope	:	Testing Field, see described in the Appendix
Specific Accreditation Program	:	Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangment with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : July 02, 2011

P1, total 22 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix