

# FCC RF Test Report

**APPLICANT** : CT Asia  
**EQUIPMENT** : GSM & WCDMA Mobile Phone  
**BRAND NAME** : BLU  
**MODEL NAME** : Quattro 4.5  
**FCC ID** : YHLBLUQUATTRO45  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : (DTS) Digital Transmission System

The product was received on Nov. 27, 2012 and completely tested on Dec. 05, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:



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Jones Tsai / Manager



**SPORTON INTERNATIONAL (KUNSHAN) INC.**  
**No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.**

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## REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR2N2701B	Rev. 01	Initial issue of report	Dec. 17, 2012

## SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	-
			Radiated Spurious Emission		Pass	Under limit 5.98 dB at 2390.000 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 12.91 dB at 2.610 MHz
3.7	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

# 1 General Description

## 1.1 Applicant

**CT Asia**

Unit 01, 15/F, Seaview Centre, 139-141 Hoi bun road, Kwun Tong, Kowloon, Hongkong

## 1.2 Manufacturer

**Beijing Tianyu Communication Equipment Co. Ltd.**

NO.55 Jiachang 2 road, OPTO-Mechatronics Industrial Park, Tongzhou district, Beijing 101111

## 1.3 Feature of Equipment Under Test

Product Feature	
Equipment	GSM & WCDMA Mobile Phone
Brand Name	BLU
Model Name	Quattro 4.5
FCC ID	YHLBLUQUATTRO45
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ WLAN 11bgn/Bluetooth
HW Version	P2.0
SW Version	BLU-D450-V05-GENERIC
EUT Stage	Production Unit

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2412 MHz ~ 2462 MHz
Number of Channels	11
Carrier Frequency of Each Channel	$2412 + (n-1) \times 5$ MHz; $n=1 \sim 11$
Maximum Output Power to Antenna	802.11b : 17.75 dBm (0.0596 W) 802.11g : 23.09 dBm (0.2037 W) 802.11n HT20 : 22.97 dBm (0.1982 W)
Antenna Type	PIFA Antenna type with gain -5.20 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

## 1.5 Testing Site

<b>Test Site</b>	SPORTON INTERNATIONAL (KUNSHAN) INC.			
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
<b>Test Site No.</b>	<b>Sporton Site No.</b>			<b>FCC/IC Registration No.</b>
	TH01-KS	CO01-KS	03CH01-KS	149928/4086E-1

## 1.6 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
- ♦ ANSI C63.4-2003 and ANSI C63.10-2009
- ♦ IC RSS-210 Issue 8
- ♦ IC RSS-Gen Issue 3
- ♦ NOTICE 2012-DRS0126

### Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, " Receivers Excluded from Industry Canada Requirements", only radio communication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.

## 2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 KHz to 30 MHz) and radiated emission (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

### 2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

## 2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and antenna configurations as following table and the highest power data rates were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	16.79	16.72	16.77	16.83
CH 06	2437 MHz	17.48	17.15	17.18	17.30
CH 11	2462 MHz	17.75	17.48	17.56	17.73

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	21.84	21.83	21.87	21.65	21.66	22.05	22.05	22.16
CH 06	2437 MHz	22.34	22.17	22.07	22.11	22.16	22.13	22.08	22.15
CH 11	2462 MHz	23.09	23.05	22.45	23.03	22.73	22.59	22.29	22.87

Channel	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	22.07	21.64	21.77	21.69	21.07	21.58	21.92	21.87
CH 06	2437 MHz	22.05	22.1	22.09	21.99	22.13	22	22.12	22.03
CH 11	2462 MHz	22.97	22.72	22.1	22.45	22.23	22.06	22.05	22.32



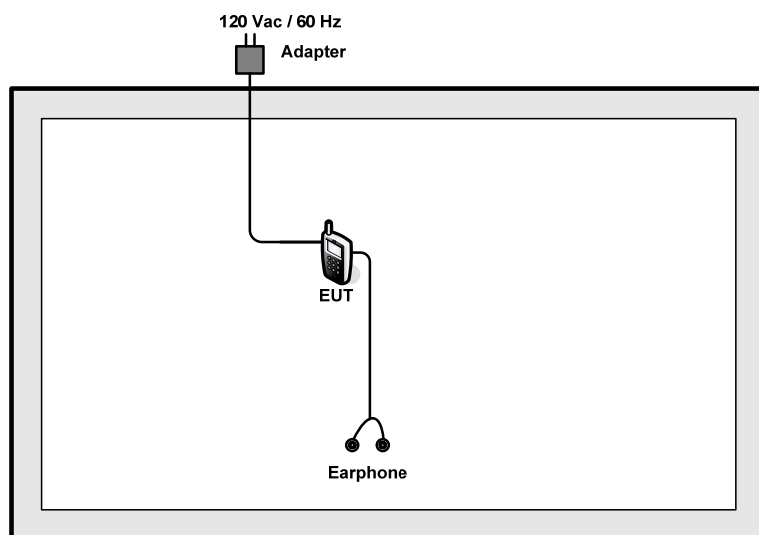
## 2.3 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

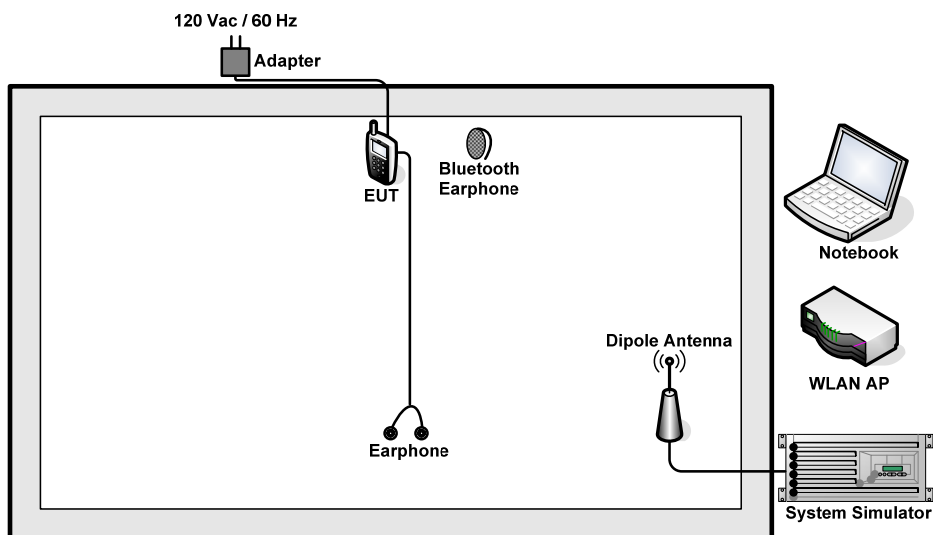
Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone			

## 2.4 Connection Diagram of Test System

### <WLAN Tx Mode>



### <AC Conducted Emission Mode>



## 2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 0.9 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	N/A	N/A

## 2.6 RF Utility

For WLAN function, programmed RF utility, "ADB" installed in the notebook make the EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

## 2.7 Measurement Results Explanation Example

### For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and 10dB attenuator between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and 10dB attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following table shows an offset computation example with cable loss 5.6 dB.

Example :

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 5.6 + 10 = 15.6 \text{ (dB)}\end{aligned}$$

### 3 Test Result

#### 3.1 6dB Bandwidth Measurement

##### 3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 KHz.

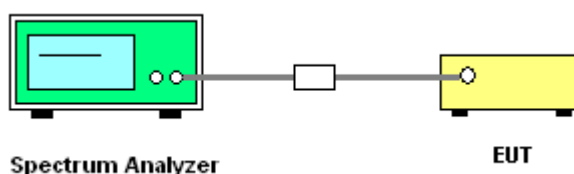
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
5. Measure and record the results in the test report.

##### 3.1.4 Test Setup

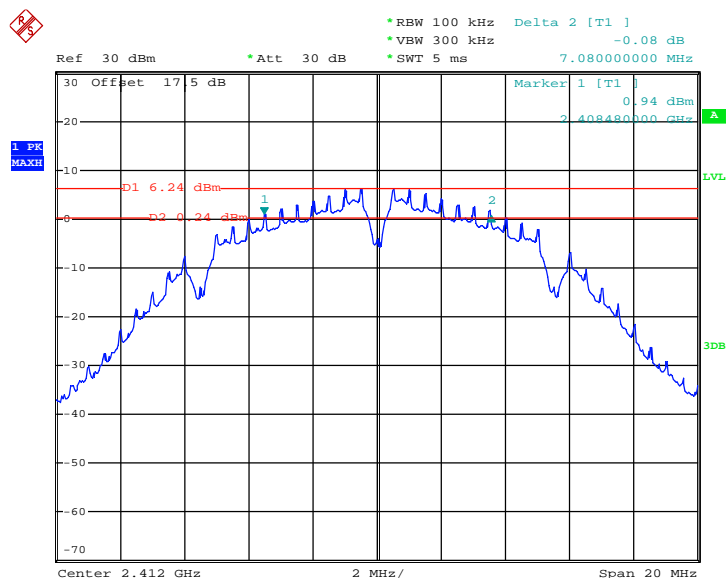


### 3.1.5 Test Result of 6dB Bandwidth

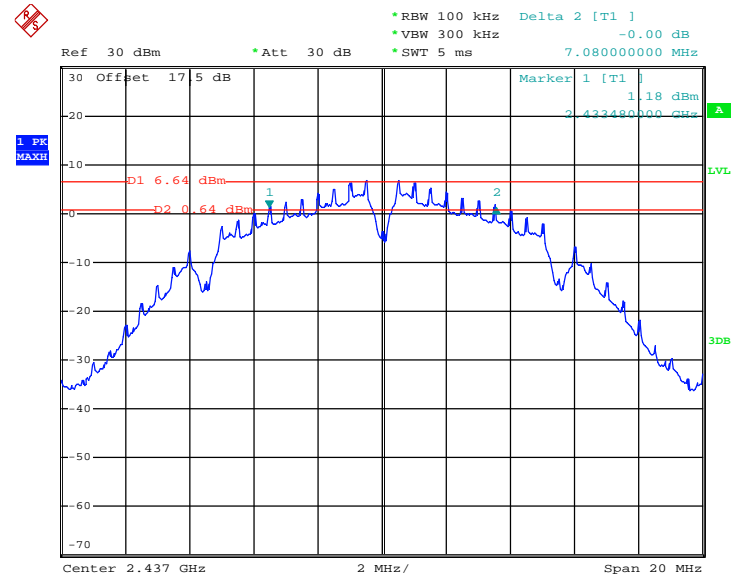
Test Mode :	802.11b	Temperature :	21~22°C
Test Engineer :	Lizy Li	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.08	0.5	Pass
06	2437	7.08	0.5	Pass
11	2462	7.08	0.5	Pass

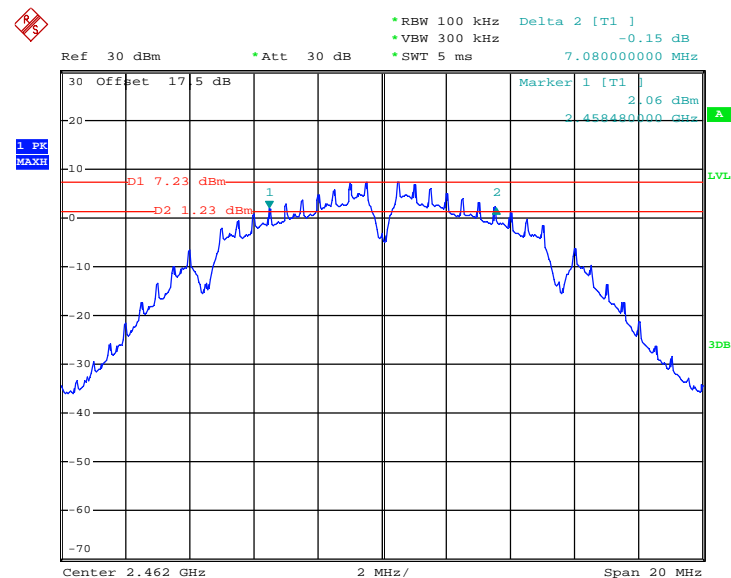
**6 dB Bandwidth Plot on 802.11b Channel 01**



Date: 4.DEC.2012 10:07:50

**6 dB Bandwidth Plot on 802.11b Channel 06**


Date: 4.DEC.2012 10:05:31

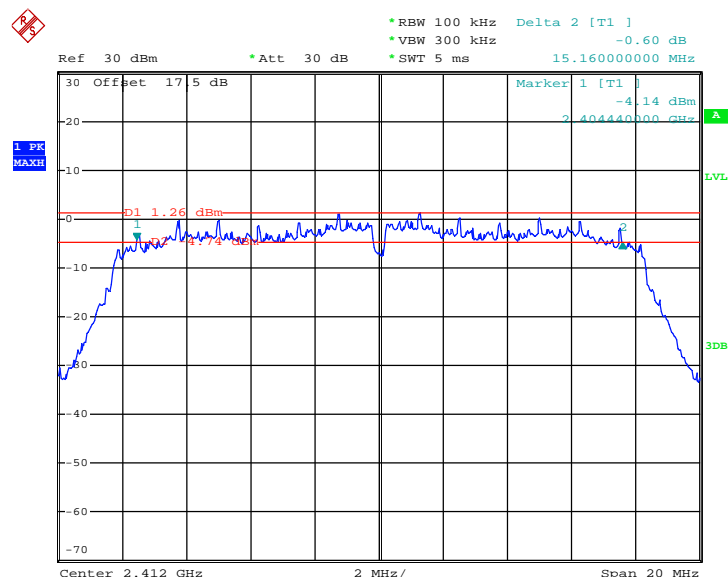
**6 dB Bandwidth Plot on 802.11b Channel 11**


Date: 4.DEC.2012 09:59:01

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22℃
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.16	0.5	Pass
06	2437	15.16	0.5	Pass
11	2462	15.16	0.5	Pass

### 6 dB Bandwidth Plot on 802.11g Channel 01

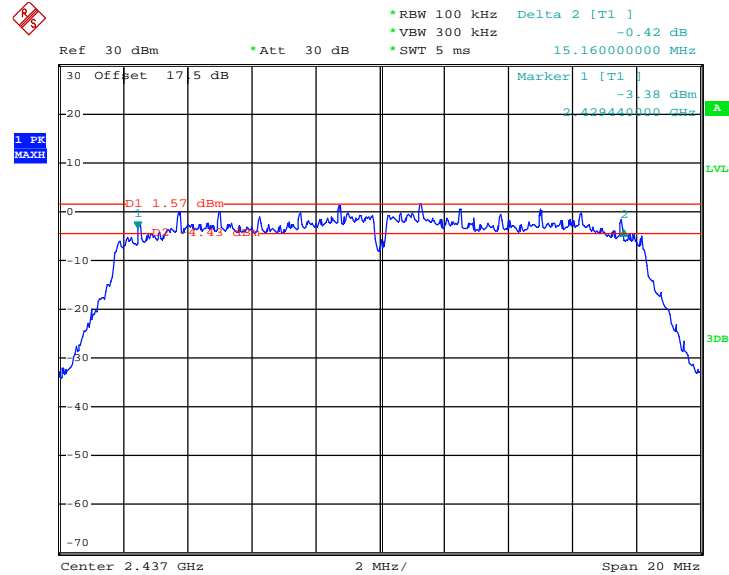


Date: 4.DEC.2012 10:09:27



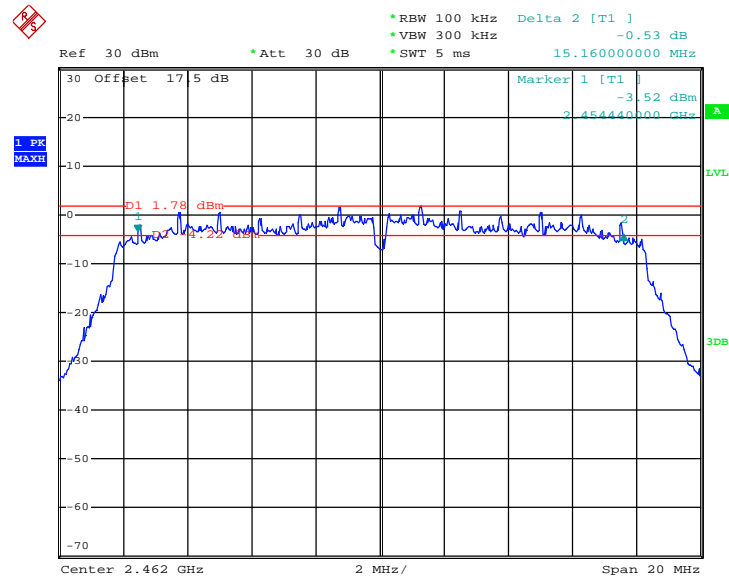


6 dB Bandwidth Plot on 802.11g Channel 06



Date: 4.DEC.2012 10:10:37

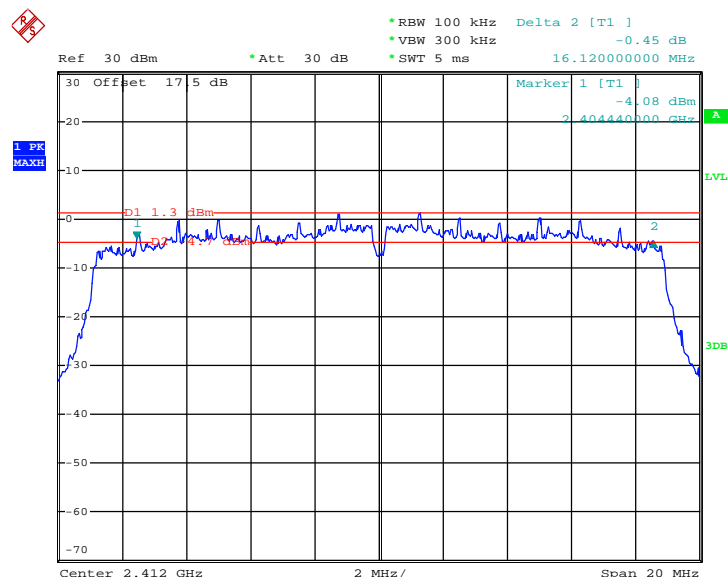
6 dB Bandwidth Plot on 802.11g Channel 11



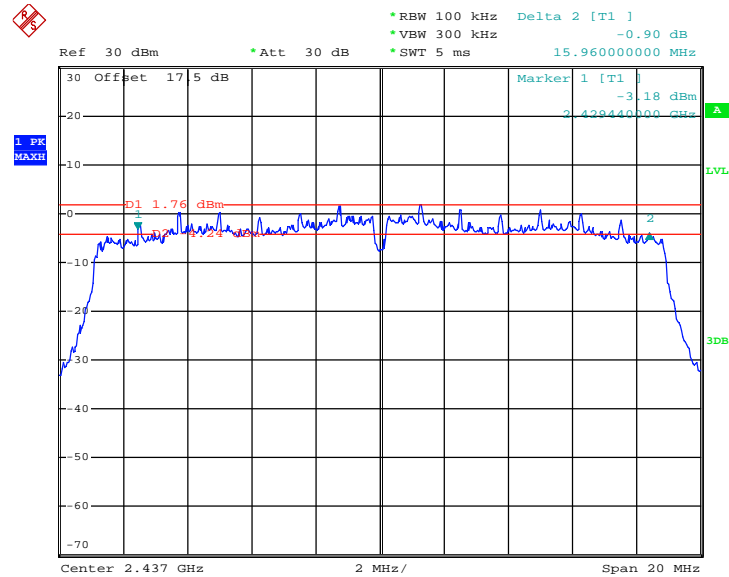
Date: 4.DEC.2012 10:11:40

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	21~22°C
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%

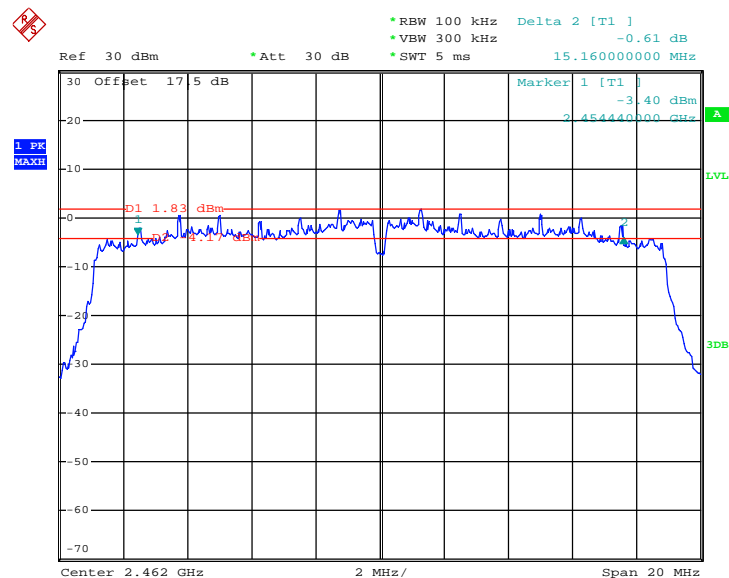
Channel	Frequency (MHz)	2.4GHz 802.11n HT20 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.12	0.5	Pass
06	2437	15.96	0.5	Pass
11	2462	15.16	0.5	Pass

**6 dB Bandwidth Plot on 802.11n HT20 Channel 01**


Date: 4.DEC.2012 10:18:03

**6 dB Bandwidth Plot on 802.11n HT20 Channel 06**


Date: 4.DEC.2012 10:16:34

**6 dB Bandwidth Plot on 802.11n HT20 Channel 11**


Date: 4.DEC.2012 10:13:00

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. 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.

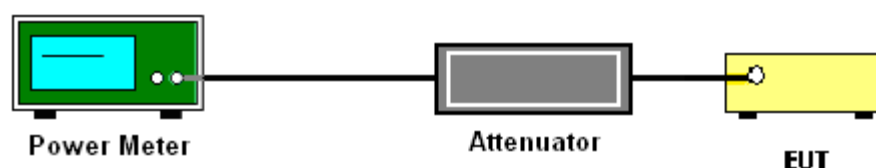
### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Peak Output Power

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	21~22°C
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.79	30	Pass
06	2437	17.48	30	Pass
11	2462	17.75	30	Pass

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22°C
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.84	30	Pass
06	2437	22.34	30	Pass
11	2462	23.09	30	Pass

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	21~22°C
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	2.4GHz 802.11n HT20 Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.07	30	Pass
06	2437	22.05	30	Pass
11	2462	22.97	30	Pass

**3.2.6 Test Result of Average output Power (Reporting Only)**

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	21~22℃
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%
<b>Duty Cycle:</b>	99.23%	<b>Duty Factor:</b>	0.03dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	13.73
06	2437	13.87
11	2462	14.72

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22℃
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%
<b>Duty Cycle:</b>	94.49%	<b>Duty Factor:</b>	0.25dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	12.30
06	2437	12.56
11	2462	12.98

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	21~22℃
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%
<b>Duty Cycle:</b>	95.05%	<b>Duty Factor:</b>	0.22dB

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)
01	2412	12.05
06	2437	12.31
11	2462	12.97

### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3KHz band at any time interval of continuous transmission.

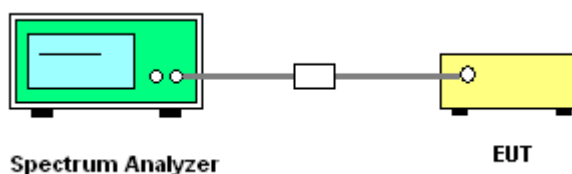
#### 3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

1. The testing follows Measurement Procedure 9.1 Option 1 of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

#### 3.3.4 Test Setup



### 3.3.5 Test Result of Power Spectral Density

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	21~22℃
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	6.64	-7.18	8	Pass
06	2437	6.73	-6.43	8	Pass
11	2462	7.01	-6.85	8	Pass

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22℃
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	1.30	-12.98	8	Pass
06	2437	1.68	-11.83	8	Pass
11	2462	1.88	-11.38	8	Pass

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	21~22℃
<b>Test Engineer :</b>	Lizy Li	<b>Relative Humidity :</b>	41~42%

Channel	Frequency (MHz)	802.11n HT20 Power Density		Max. Limits (dBm/3KHz)	Pass/Fail
		PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	1.37	-11.85	8	Pass
06	2437	1.62	-11.72	8	Pass
11	2462	1.87	-11.21	8	Pass

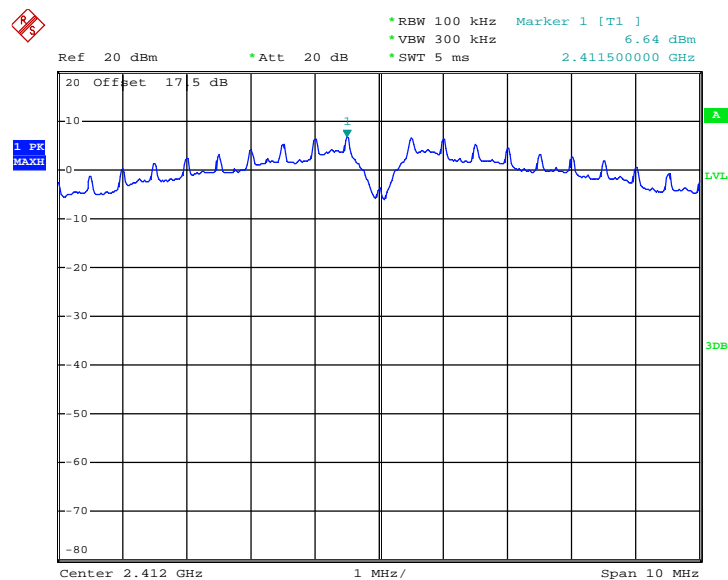
**Note:**

1. Measured power density (dBm) has offset with cable loss.
2. The Measured power density (dBm)/ 100KHz is reference level and used as 20dBc down for Conducted Band Edges and Conducted Spurious Emission limit line.



### 3.3.6 Test Result of Power Spectral Density Plots (100kHz)

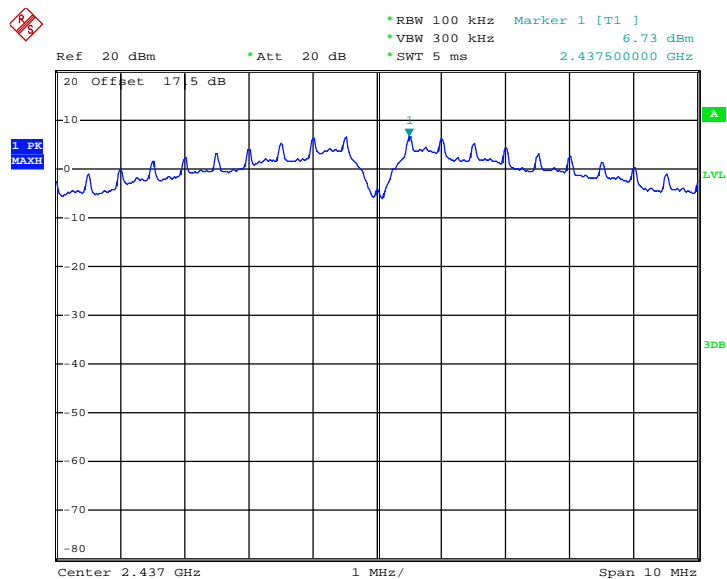
**PSD 100kHz Plot on 802.11b Channel 01**



Date: 4.DEC.2012 09:29:21

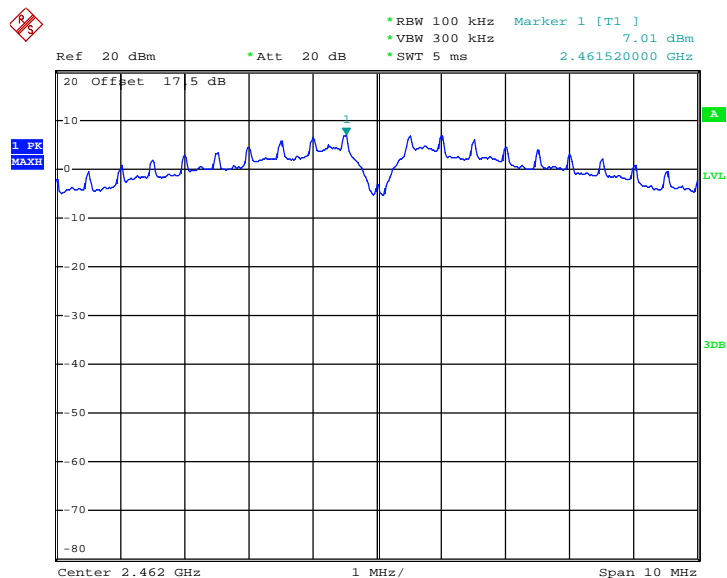


PSD 100kHz Plot on 802.11b Channel 06



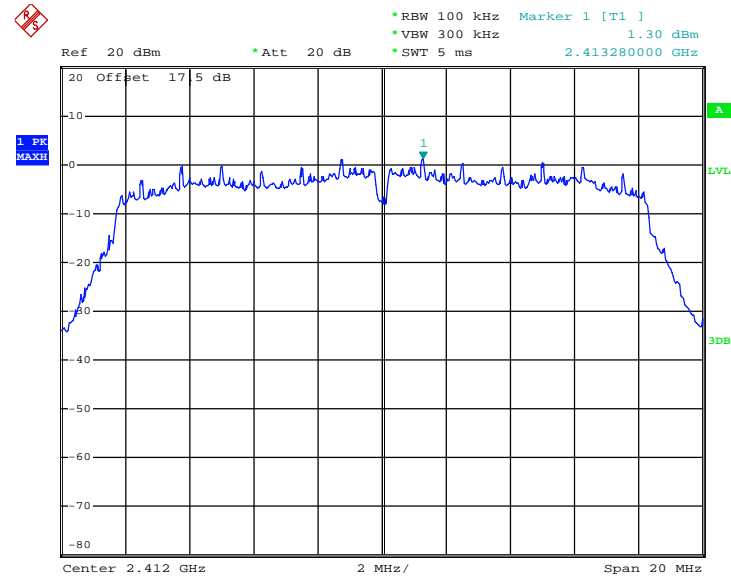
Date: 4.DEC.2012 09:30:03

PSD 100kHz Plot on 802.11b Channel 11



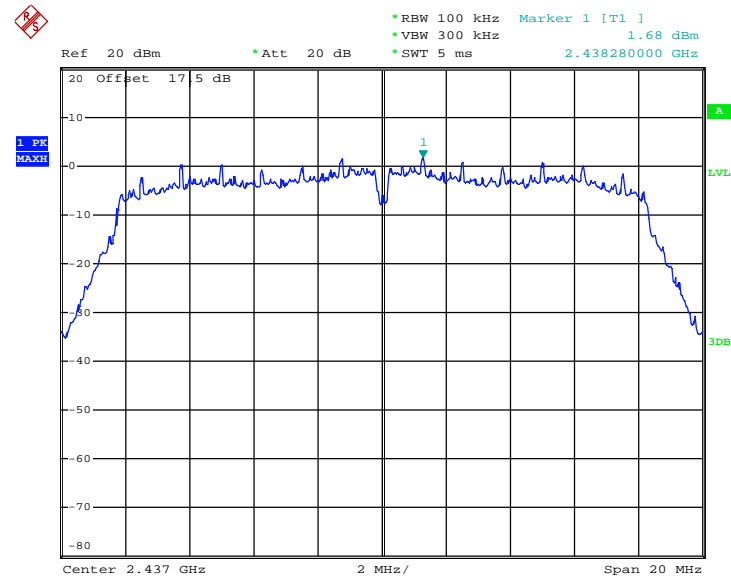
Date: 4.DEC.2012 09:30:48

### PSD 100kHz Plot on 802.11g Channel 01



Date: 4.DEC.2012 09:42:42

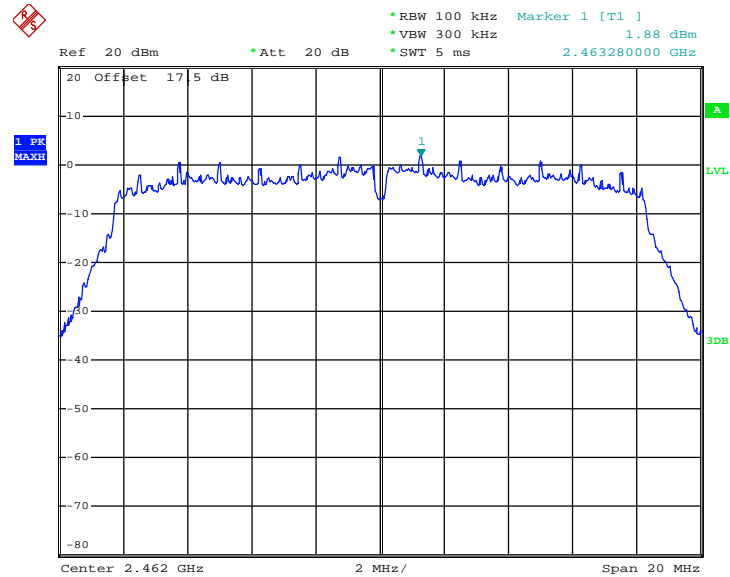
### PSD 100kHz Plot on 802.11g Channel 06



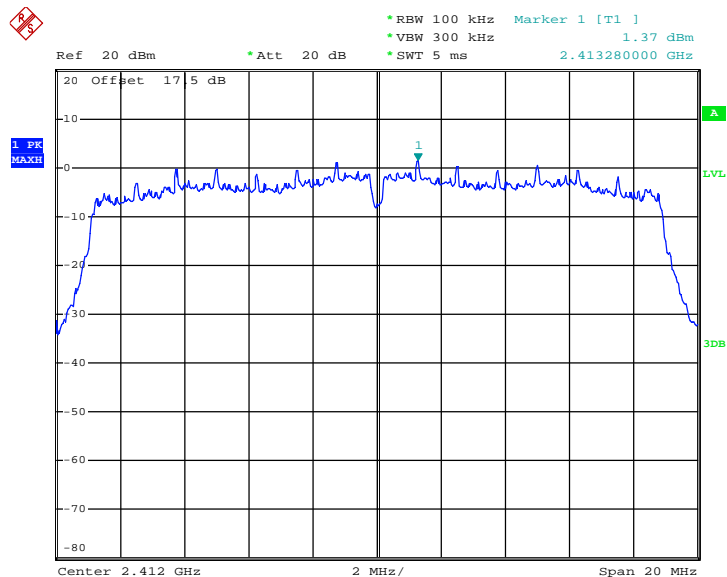
Date: 4.DEC.2012 09:33:05



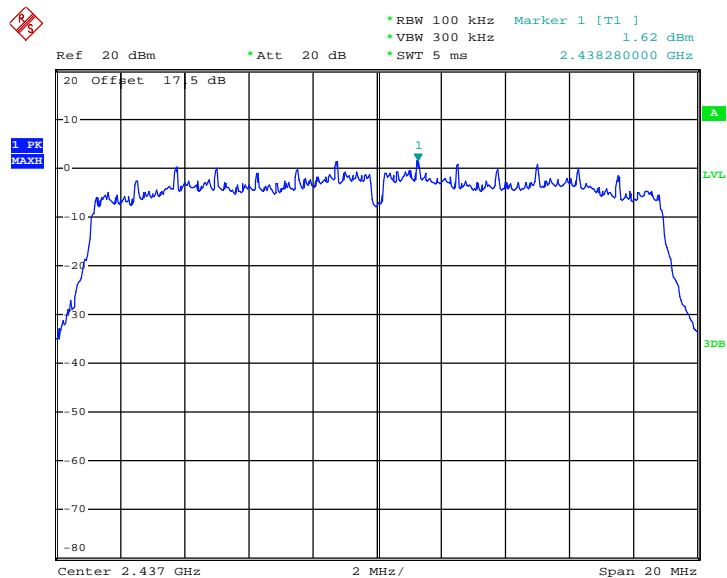
PSD 100kHz Plot on 802.11g Channel 11



Date: 4.DEC.2012 09:31:55

**PSD 100kHz Plot on 802.11n HT20 Channel 01**


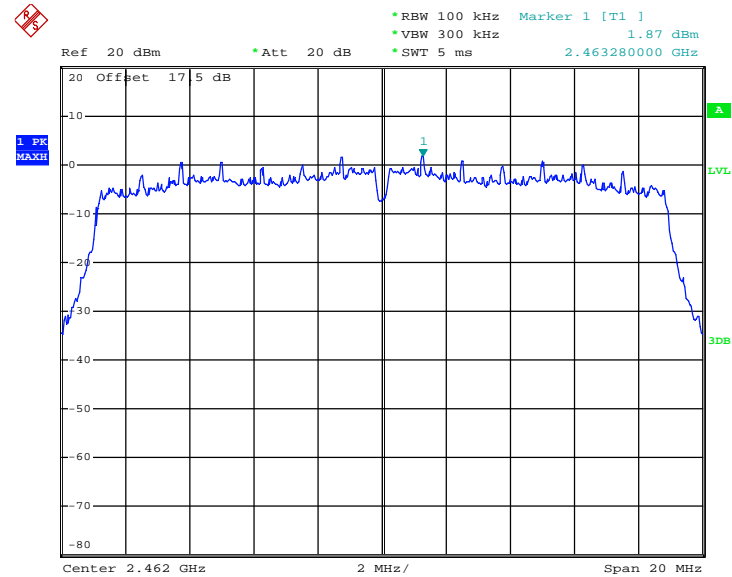
Date: 4.DEC.2012 09:44:39

**PSD 100kHz Plot on 802.11n HT20 Channel 06**


Date: 4.DEC.2012 09:45:37

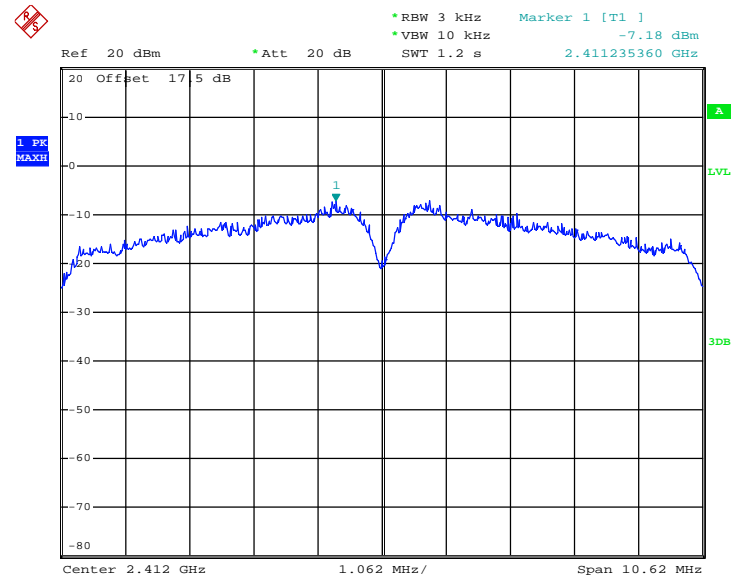


PSD 100kHz Plot on 802.11n HT20 Channel 11

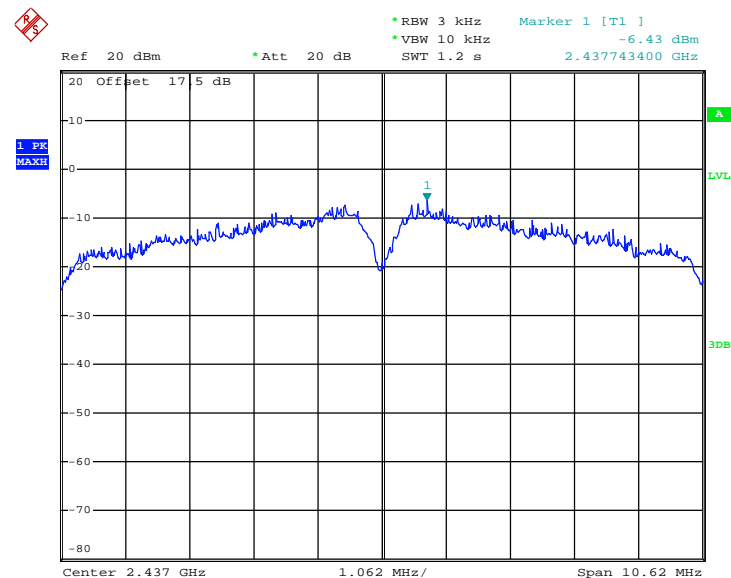


Date: 4.DEC.2012 09:46:26

### 3.3.7 Test Result of Power Spectral Density Plots (3kHz)

**PSD 3kHz Plot on 802.11b Channel 01**


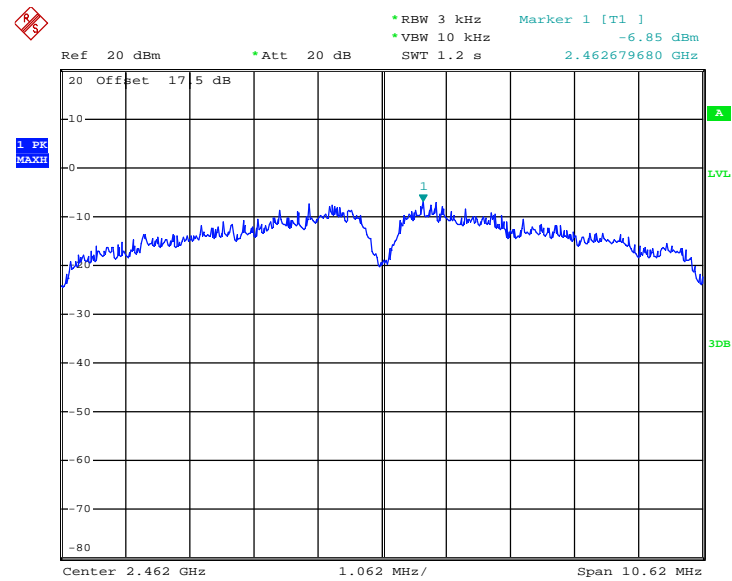
Date: 4.DEC.2012 10:35:37

**PSD 3kHz Plot on 802.11b Channel 06**


Date: 4.DEC.2012 10:41:05



PSD 3kHz Plot on 802.11b Channel 11

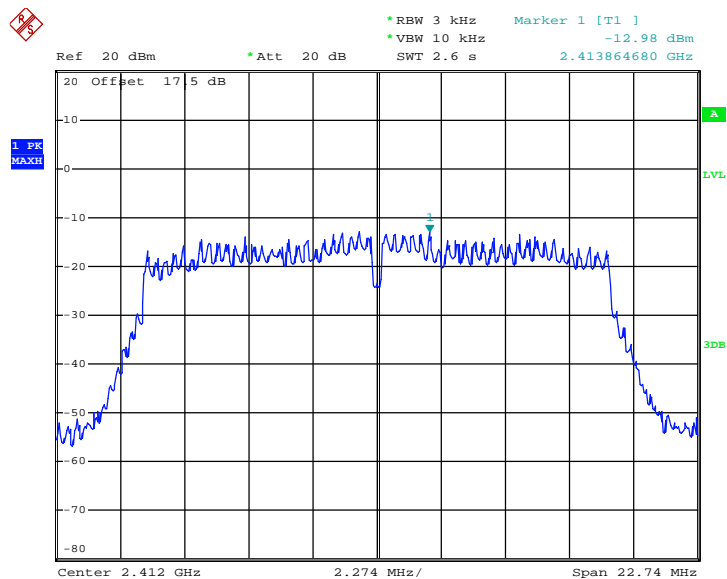


Date: 4.DEC.2012 10:41:41



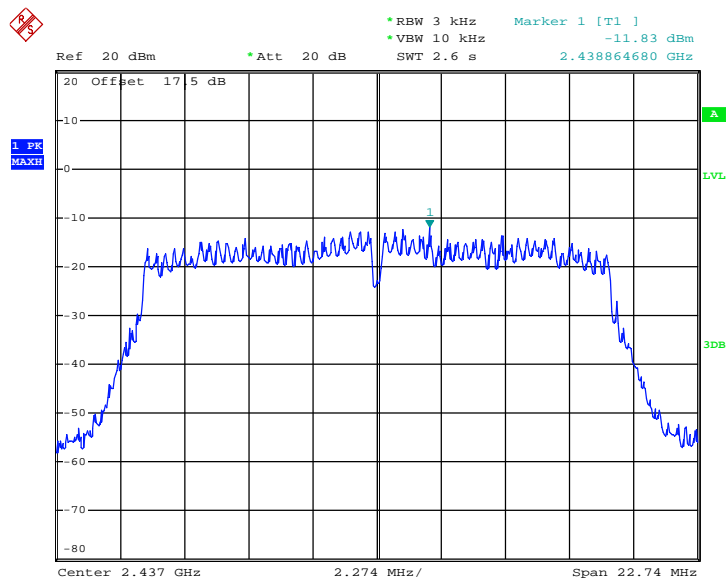


PSD 3kHz Plot on 802.11g Channel 01



Date: 4.DEC.2012 10:31:17

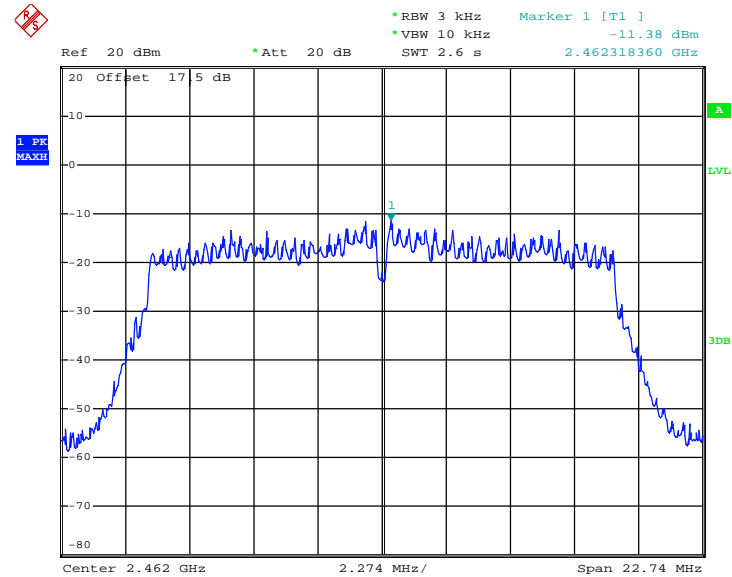
PSD 3kHz Plot on 802.11g Channel 06



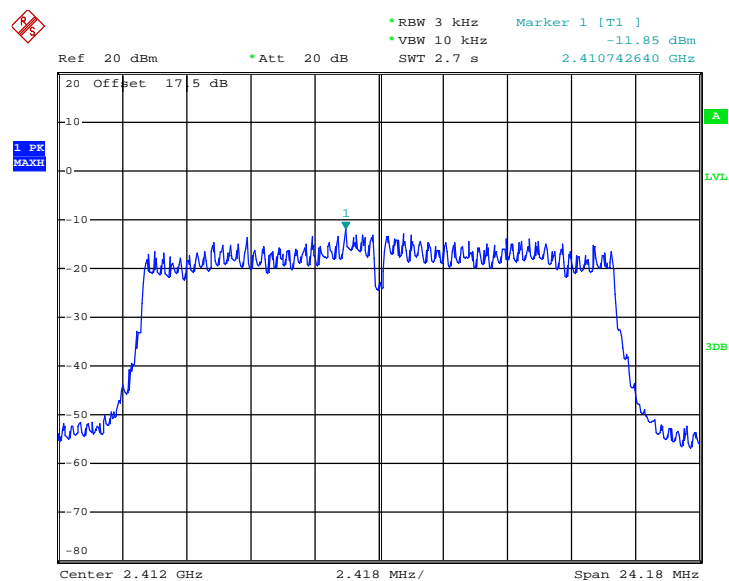
Date: 4.DEC.2012 10:32:11



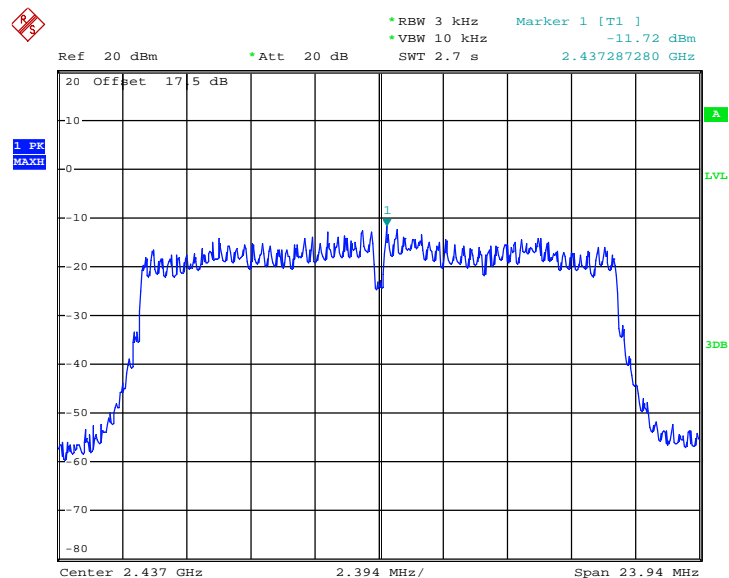
PSD 3kHz Plot on 802.11g Channel 11



Date: 4.DEC.2012 10:32:50

**PSD 3kHz Plot on 802.11n HT20 Channel 01**


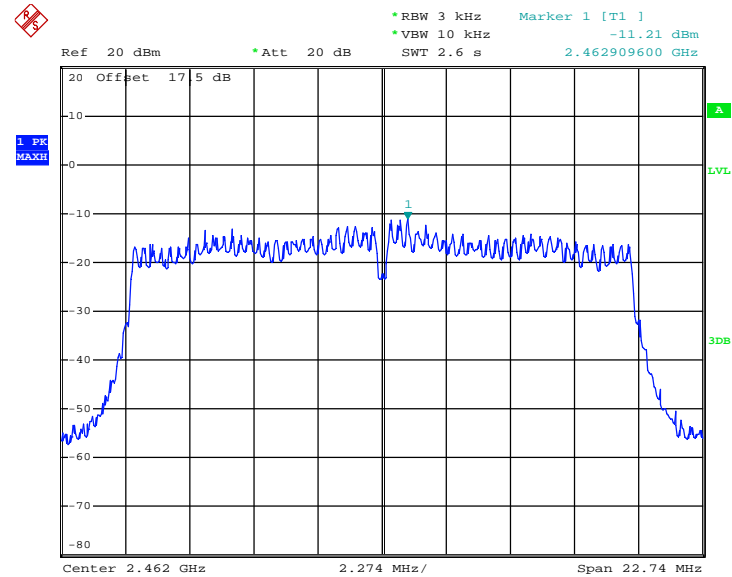
Date: 4.DEC.2012 10:27:28

**PSD 3kHz Plot on 802.11n HT20 Channel 06**


Date: 4.DEC.2012 10:28:48



PSD 3kHz Plot on 802.11n HT20 Channel 11



Date: 4.DEC.2012 10:30:02

### 3.4 Conducted Band Edges and Spurious Emission Measurement

#### 3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and 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).

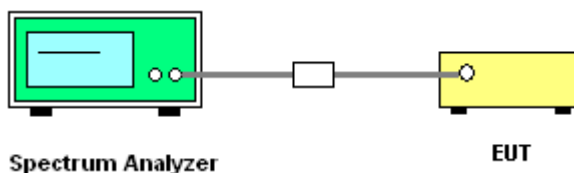
#### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.4.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz, when maximum peak conducted output power procedure is used. The attenuation is set to 30dB, when maximum conducted output power procedure is used.
5. Measure and record the results in the test report.

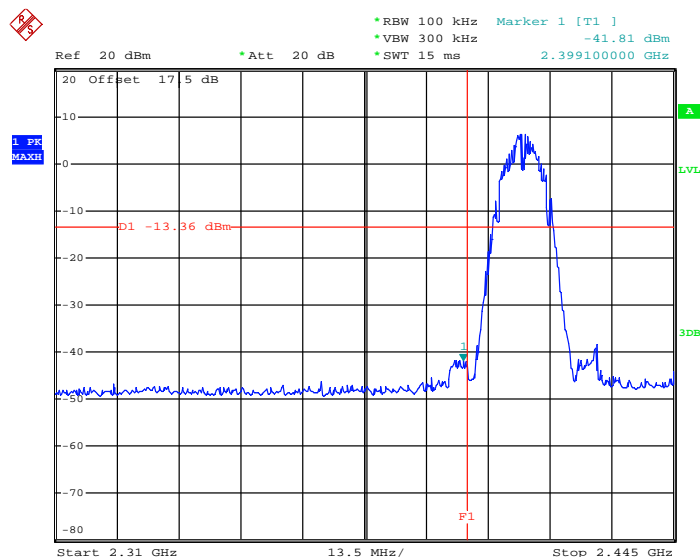
#### 3.4.4 Test Setup



### 3.4.5 Test Plots of Conducted Band Edges

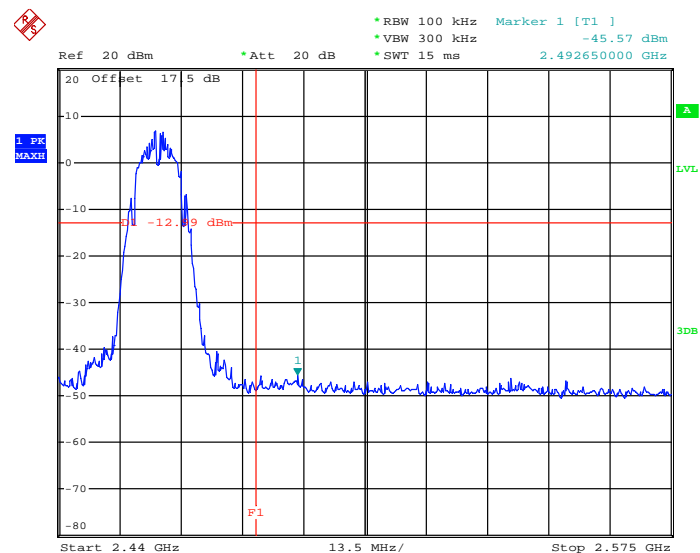
Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Lizy Li

**Low Band Edge Plot on 802.11b Channel 01**



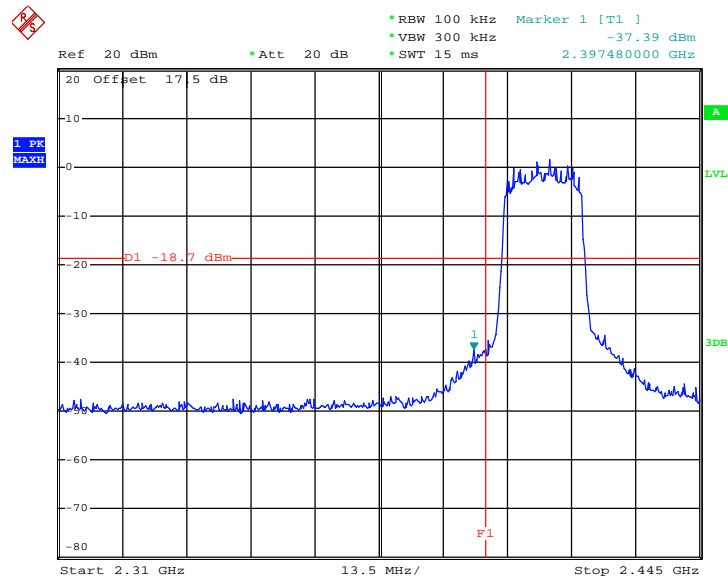
Date: 4.DEC.2012 11:55:00

**High Band Edge Plot on 802.11b Channel 11**

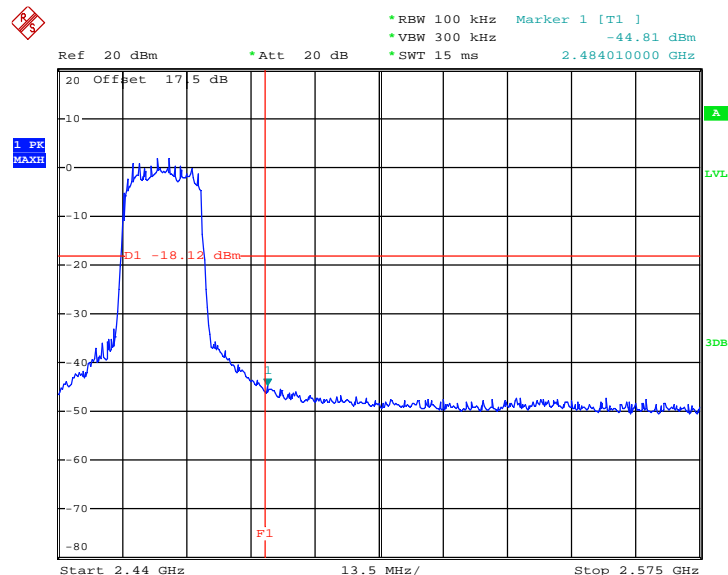


Date: 4.DEC.2012 12:16:35

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	21~22°C
<b>Test Band :</b>	Low and High	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	01 and 11	<b>Test Engineer :</b>	Lizy Li

**Low Band Edge Plot on 802.11g Channel 01**


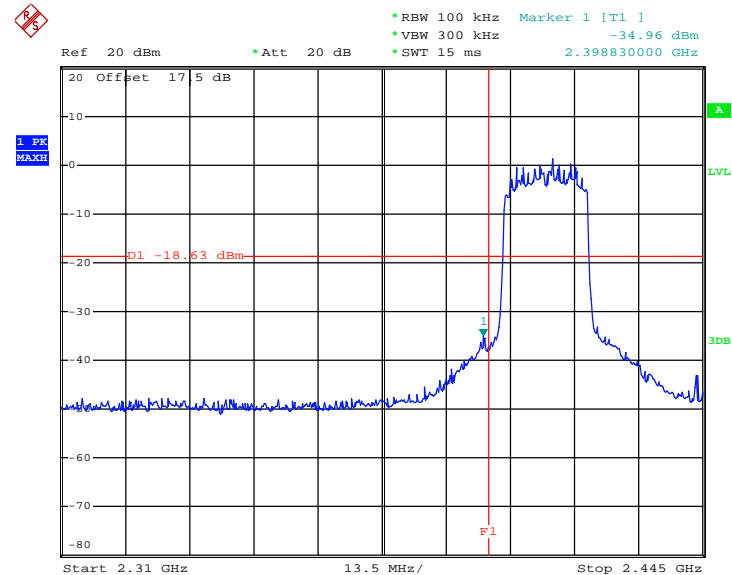
Date: 4.DEC.2012 12:17:36

**High Band Edge Plot on 802.11g Channel 11**


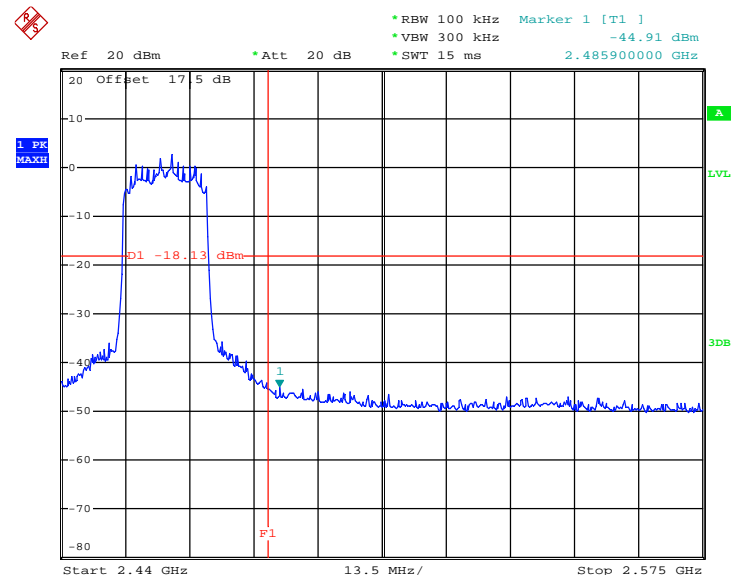
Date: 4.DEC.2012 12:18:41



Test Mode :	802.11n HT20	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Lizy Li

**Low Band Edge Plot on 802.11n HT20 Channel 01**

Date: 4.DEC.2012 12:20:24

**High Band Edge Plot on 802.11n HT20 Channel 11**

Date: 4.DEC.2012 12:19:36

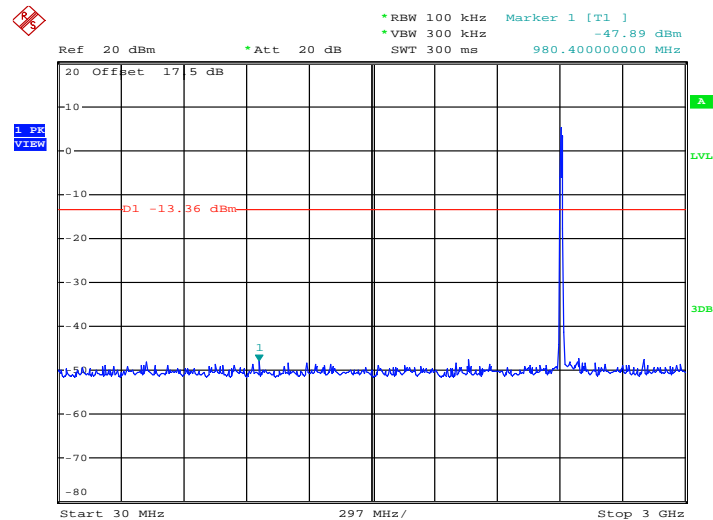


### 3.4.6 Test Plots of Spurious Emission

Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	41~42%
Test Channel :	01, 06, 11	Test Engineer :	Lizy Li

#### 802.11b 30 MHz~3 GHz

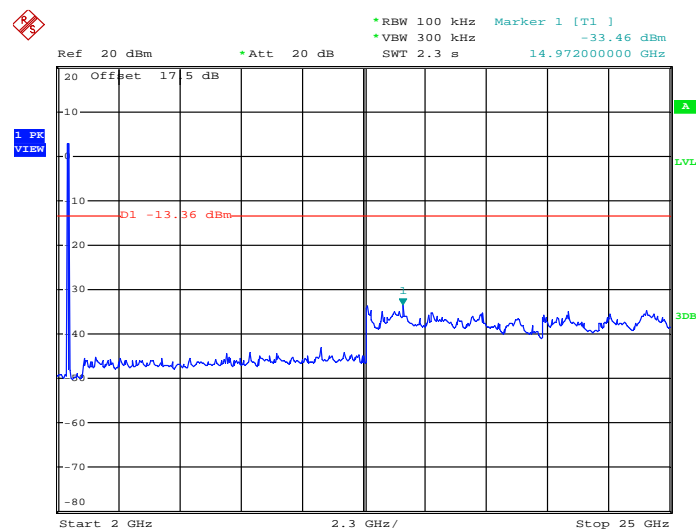
##### Conducted Spurious Emission Plot on Channel 01



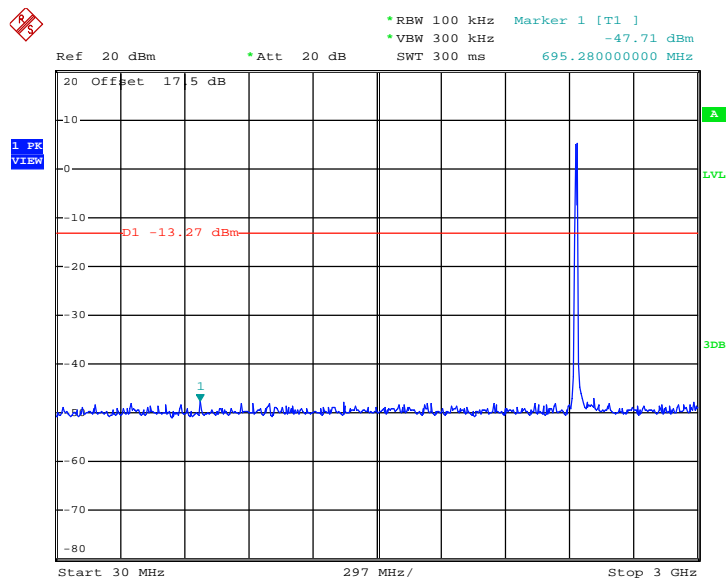
Date: 4.DEC.2012 10:48:08

#### 802.11b 2 GHz~25 GHz

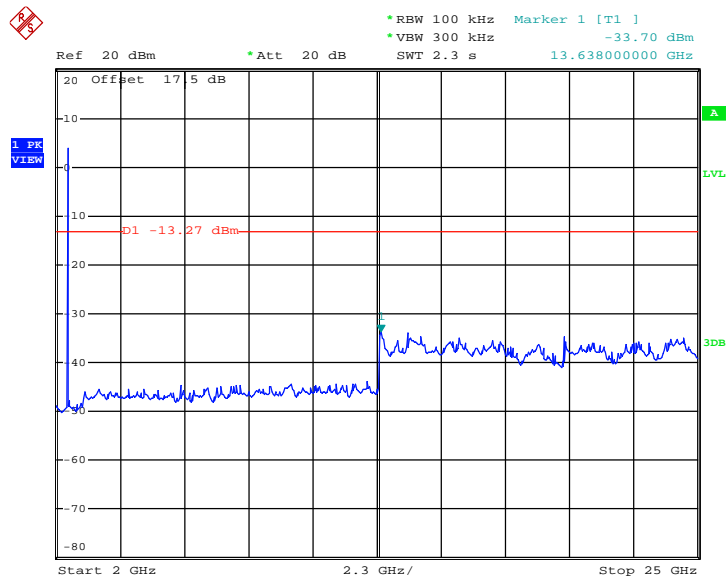
##### Conducted Spurious Emission Plot on Channel 01



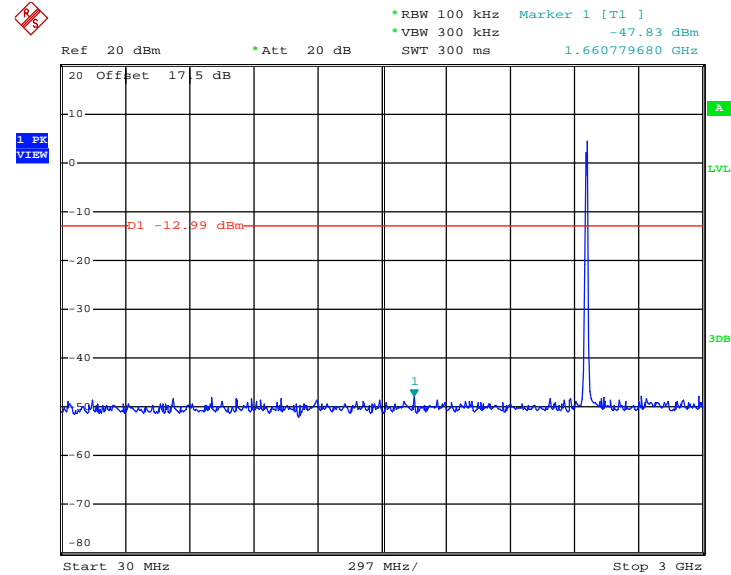
Date: 4.DEC.2012 10:47:33

**802.11b 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 06**


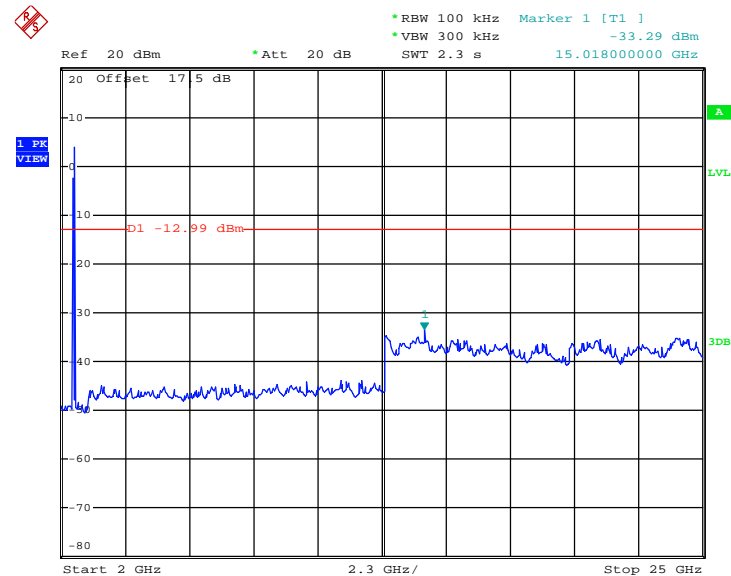
Date: 4.DEC.2012 10:45:45

**802.11b 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 06**


Date: 4.DEC.2012 10:46:22

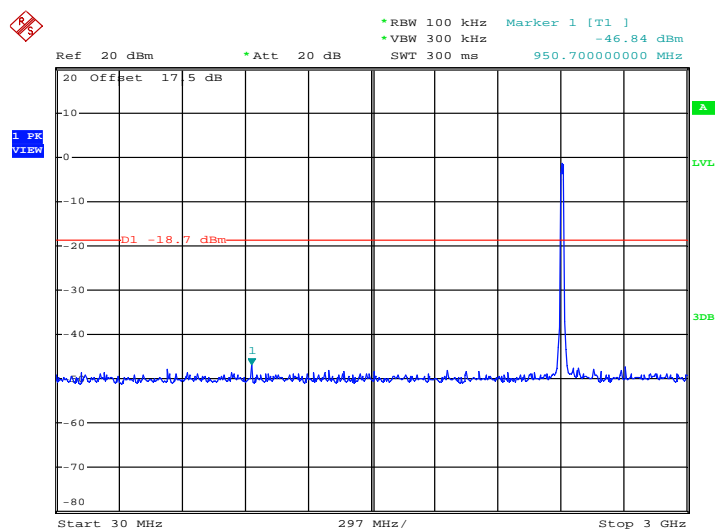
**802.11b 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 4.DEC.2012 10:43:46

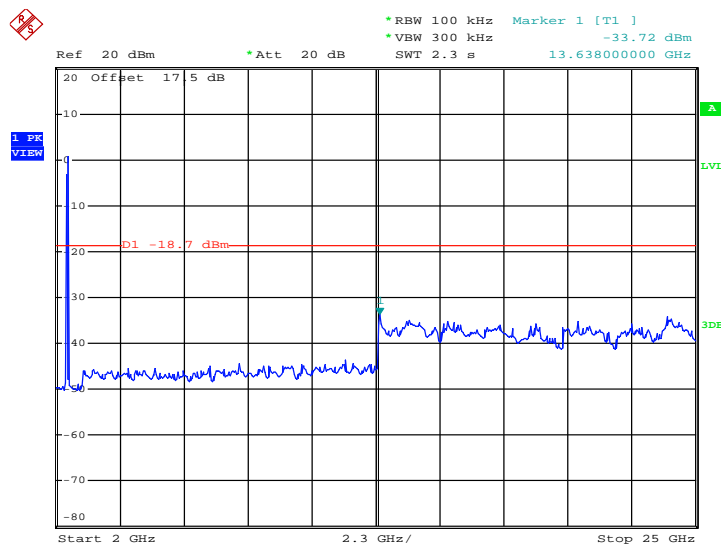
**802.11b 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 4.DEC.2012 10:44:34

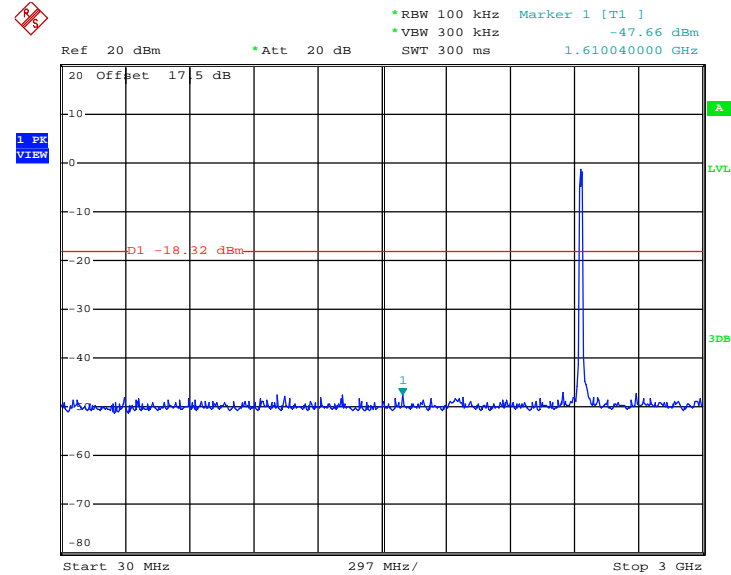
Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	30MHz-3GHz and 2G-25GHz	Relative Humidity :	41~42%
Test Channel :	01, 06, 11	Test Engineer :	Lizy Li

**802.11g 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 01**


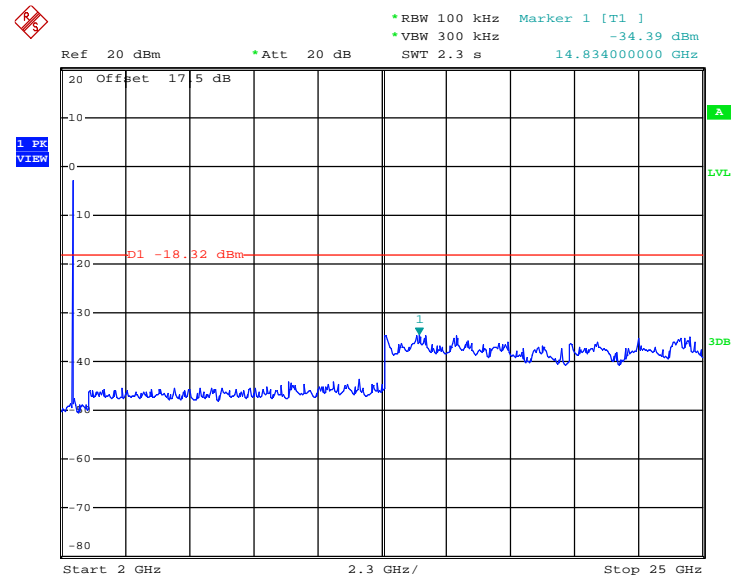
Date: 4.DEC.2012 10:49:17

**802.11g 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 01**


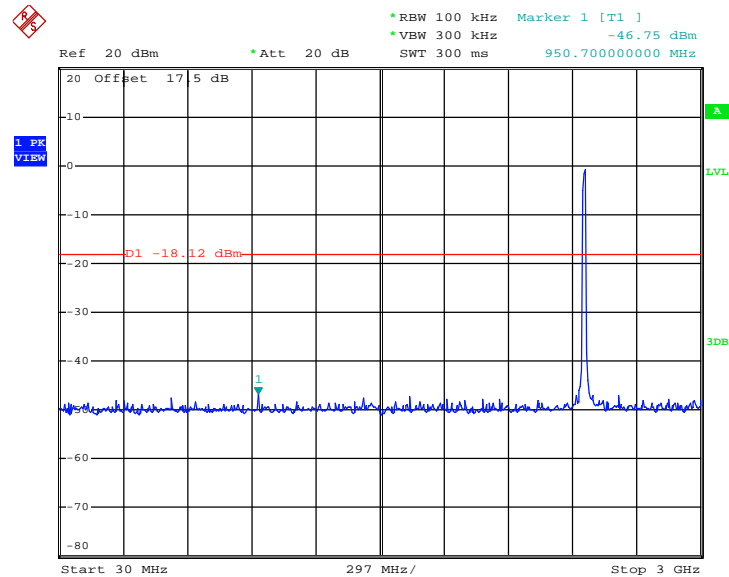
Date: 4.DEC.2012 10:50:02

**802.11g 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 06**


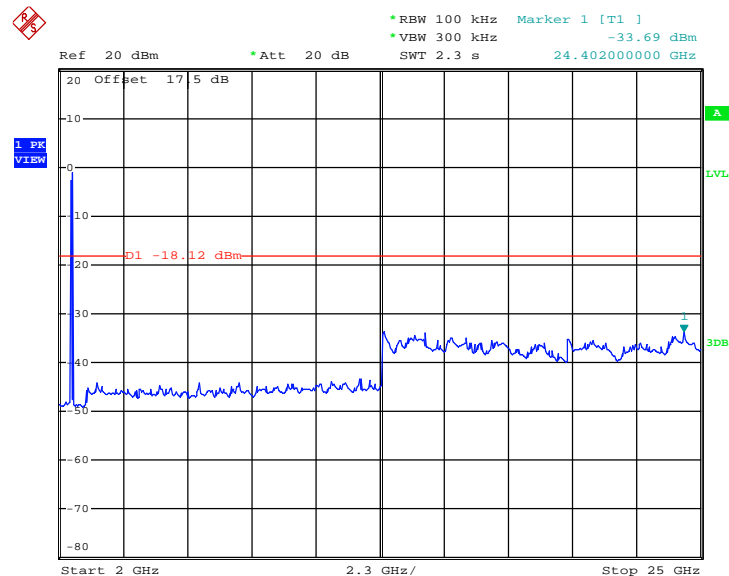
Date: 4.DEC.2012 10:52:30

**802.11g 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 06**


Date: 4.DEC.2012 10:51:41

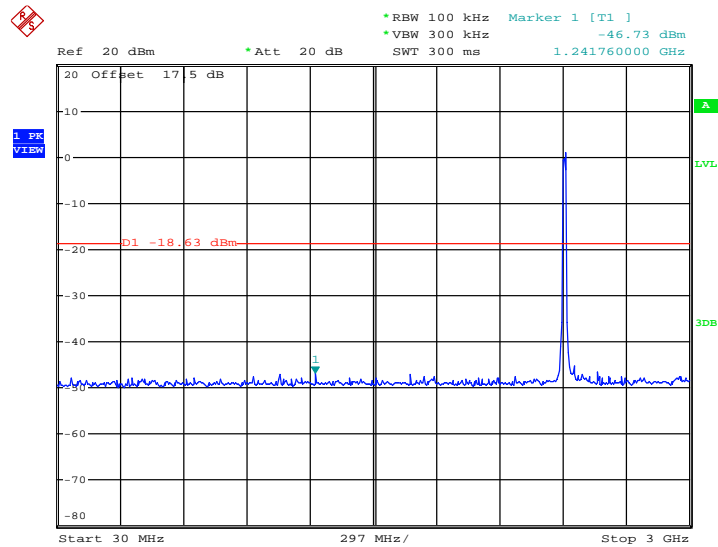
**802.11g 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 4.DEC.2012 10:53:35

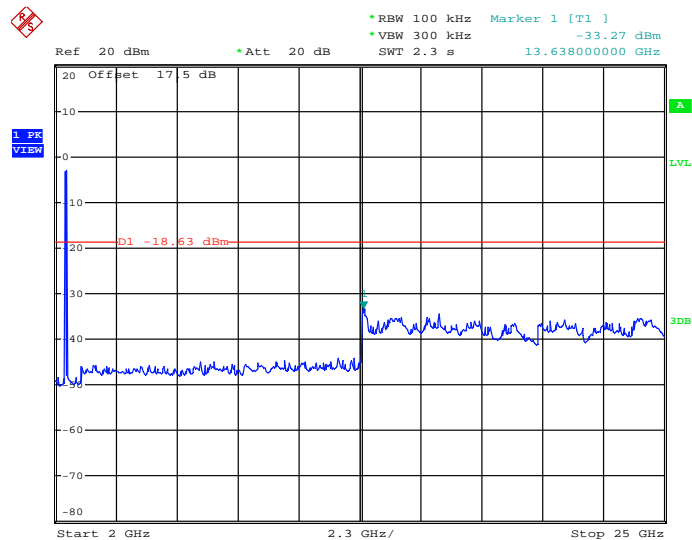
**802.11g 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 4.DEC.2012 10:55:04

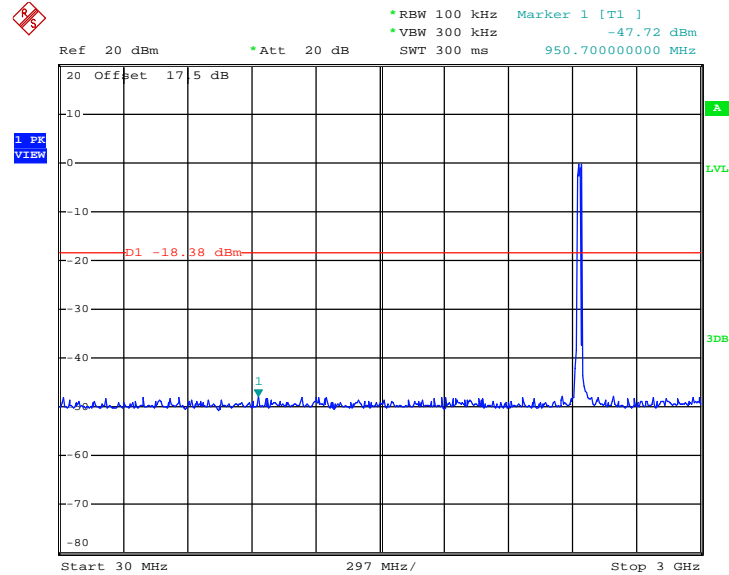
<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	21~22°C
<b>Test Band :</b>	30MHz-3GHz and 2G-25GHz	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	01, 06, 11	<b>Test Engineer :</b>	Lizy Li

**802.11n HT20 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 01**


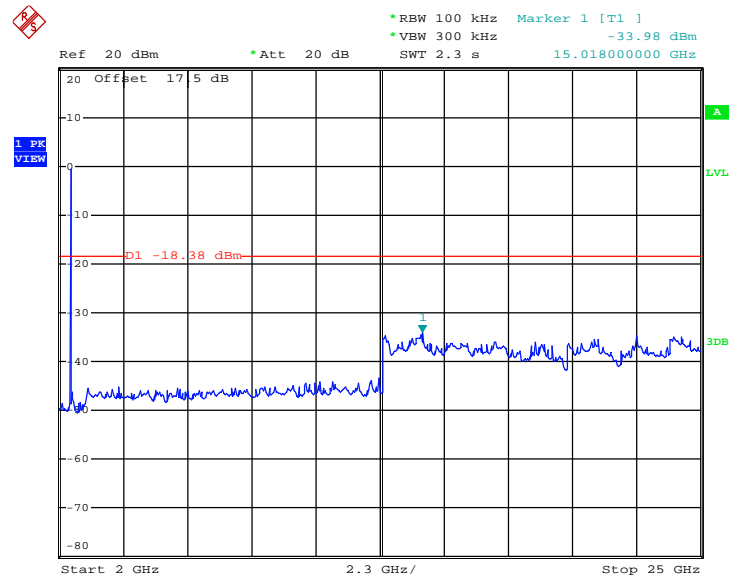
Date: 4.DEC.2012 10:59:25

**802.11n HT20 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 01**


Date: 4.DEC.2012 10:56:38

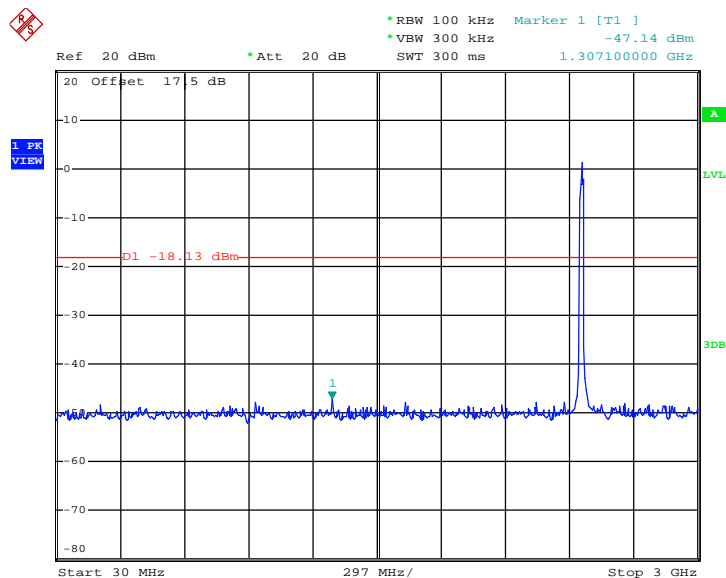
**802.11n HT20 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 06**


Date: 4.DEC.2012 11:00:32

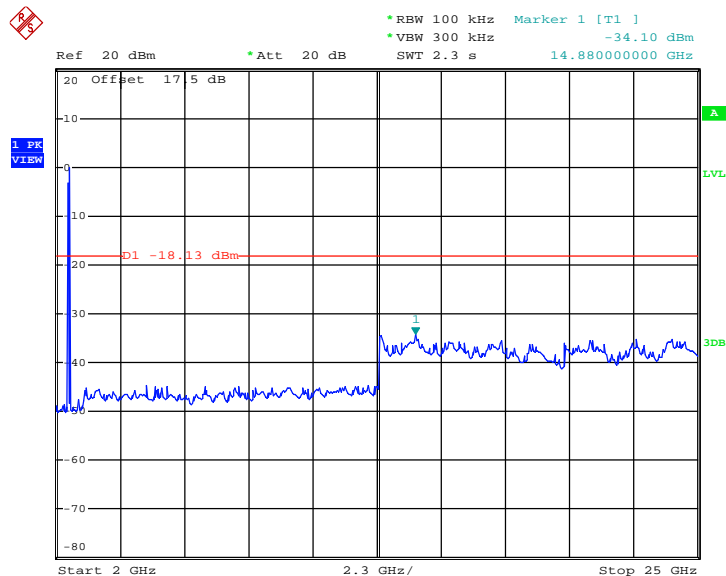
**802.11n HT20 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 06**


Date: 4.DEC.2012 11:01:02



**802.11n HT20 30 MHz~3 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 4.DEC.2012 11:02:21

**802.11n HT20 2 GHz~25 GHz**
**Conducted Spurious Emission Plot on Channel 11**


Date: 4.DEC.2012 11:01:48

### 3.5 Radiated Emission Measurement

#### 3.5.1 Limit of Radiated Emission

In any 100 KHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/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

#### 3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.5.3 Test Procedures

1. The testing follows the guidelines in ANSI C63. 10-2009
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 KHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.

For average measurement:

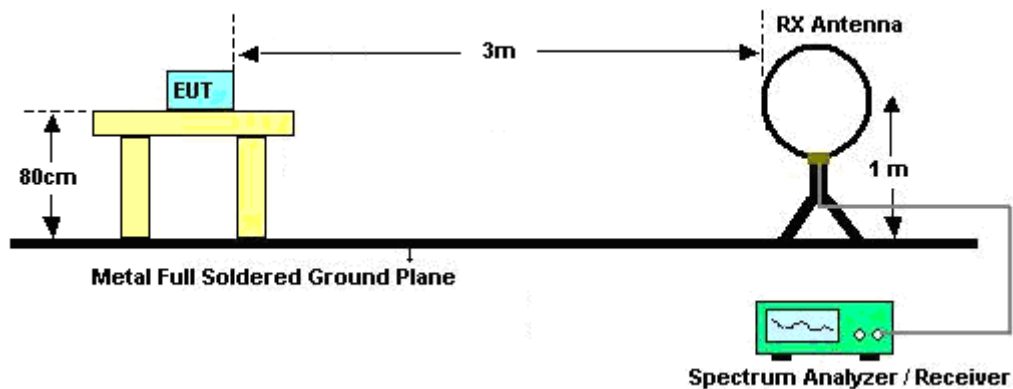
  - VBW = 10 Hz, when duty cycle is no less than 98 percent.
  - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(ms)	1/T(KHz)	VBW Setting
802.11b	99.234450	-	-	10Hz
802.11g	94.485294	2.056	0.48638132	1KHz
2.4G 802.11n HT20	95.054402	1.922	0.52029136	1KHz

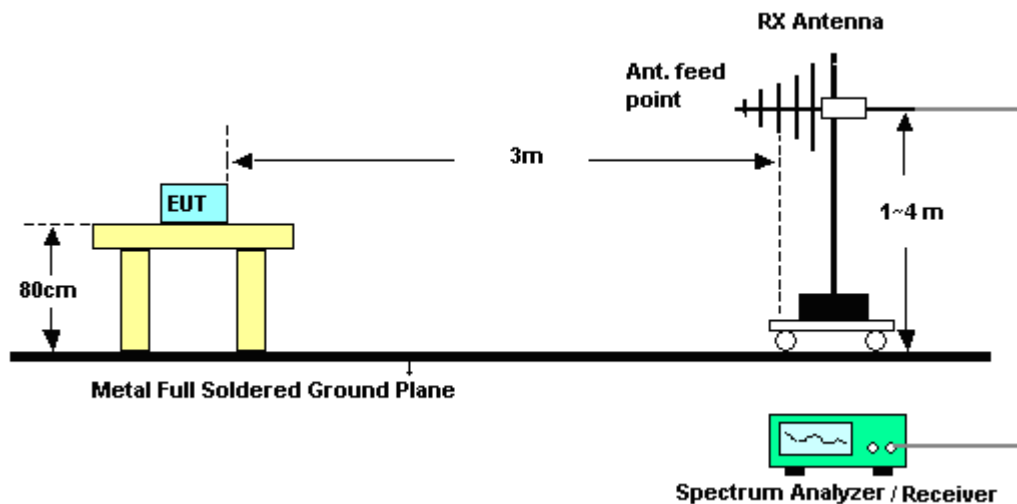
**Note:** For average measurement with duty cycle  $< 98\%$ , use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

### 3.5.4 Test Setup

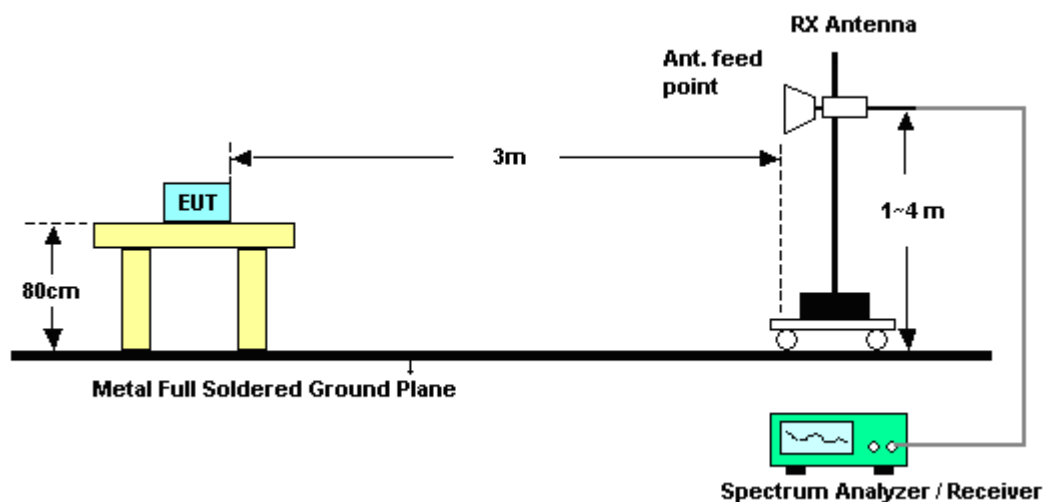
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



### 3.5.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

**3.5.6 Test Result of Radiated Band Edges**

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~24°C
<b>Test Band :</b>	Low	<b>Relative Humidity :</b>	43~44%
<b>Test Channel :</b>	01	<b>Test Engineer :</b>	Stone Gu

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.74	50.83	-23.17	74	47.37	32.86	2.11	31.51	169	185	Peak
2389.56	37.92	-16.08	54	34.46	32.86	2.11	31.51	169	168	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2388.66	49.68	-24.32	74	46.22	32.86	2.11	31.51	128	45	Peak
2389.47	38.2	-15.8	54	34.74	32.86	2.11	31.51	130	38	Average

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~24°C
<b>Test Band :</b>	High	<b>Relative Humidity :</b>	43~44%
<b>Test Channel :</b>	11	<b>Test Engineer :</b>	Stone Gu

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2492.58	54.89	-19.11	74	51.18	33.05	2.17	31.51	100	169	Peak
2491.72	42.92	-11.08	54	39.21	33.05	2.17	31.51	100	166	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2496.22	51.45	-22.55	74	47.74	33.05	2.17	31.51	135	326	Peak
2484.18	37.2	-16.8	54	33.54	33.01	2.16	31.51	133	320	Average



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~24°C
<b>Test Band :</b>	Low	<b>Relative Humidity :</b>	43~44%
<b>Test Channel :</b>	01	<b>Test Engineer :</b>	Stone Gu

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.02	63.32	-10.68	74	59.86	32.86	2.11	31.51	100	179	Peak
2390	48.02	-5.98	54	44.56	32.86	2.11	31.51	100	175	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2390	56.2	-17.8	74	52.74	32.86	2.11	31.51	140	169	Peak
2390	42.21	-11.79	54	38.75	32.86	2.11	31.51	142	174	Average

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~24°C
<b>Test Band :</b>	High	<b>Relative Humidity :</b>	43~44%
<b>Test Channel :</b>	11	<b>Test Engineer :</b>	Stone Gu

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2484.18	59.92	-14.08	74	56.26	33.01	2.16	31.51	125	165	Peak
2483.5	44.32	-9.68	54	40.66	33.01	2.16	31.51	126	168	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2484.02	56.84	-17.16	74	53.18	33.01	2.16	31.51	106	324	Peak
2483.5	41.33	-12.67	54	37.67	33.01	2.16	31.51	110	335	Average



<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	23~24°C
<b>Test Band :</b>	Low	<b>Relative Humidity :</b>	43~44%
<b>Test Channel :</b>	01	<b>Test Engineer :</b>	Stone Gu

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.92	63.08	-10.92	74	59.62	32.86	2.11	31.51	102	158	Peak
2390	45.33	-8.67	54	41.87	32.86	2.11	31.51	103	159	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2388.84	55.12	-18.88	74	51.66	32.86	2.11	31.51	100	255	Peak
2390	40.02	-13.98	54	36.56	32.86	2.11	31.51	100	254	Average

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	23~24°C
<b>Test Band :</b>	High	<b>Relative Humidity :</b>	43~44%
<b>Test Channel :</b>	11	<b>Test Engineer :</b>	Stone Gu

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.92	60.64	-13.36	74	56.98	33.01	2.16	31.51	100	163	Peak
2483.5	44.32	-9.68	54	40.66	33.01	2.16	31.51	100	165	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2485.24	55.56	-18.44	74	51.9	33.01	2.16	31.51	124	20	Peak
2483.5	39.79	-14.21	54	36.13	33.01	2.16	31.51	125	31	Average



**3.5.7 Test Result of Radiated Emission (30 MHz ~ 10<sup>th</sup> Harmonic)**

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
33.211	19.22	-20.78	40	36.42	16.04	0.35	33.59	-	-	Peak
108.267	23.04	-20.46	43.5	44.37	11.68	0.6	33.61	-	-	Peak
213.015	26.22	-17.28	43.5	49.26	9.65	0.84	33.53	-	-	Peak
426.521	20.42	-25.58	46	36.32	16.17	1.18	33.25	-	-	Peak
824.597	24.91	-21.09	46	35.79	20.16	1.64	32.68	-	-	Peak
945.44	30.26	-15.74	46	40.24	20.71	1.75	32.44	200	48	Peak
2412	92.66	-	-	89.16	32.89	2.12	31.51	164	173	Average
2412	97.34	-	-	93.84	32.89	2.12	31.51	164	173	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
33.211	22.67	-17.33	40	39.87	16.04	0.35	33.59	-	-	Peak
62.213	24.55	-15.45	40	52.38	5.27	0.49	33.59	-	-	Peak
101.289	23.26	-20.24	43.5	45.67	10.62	0.58	33.61	-	-	Peak
129.015	24.17	-19.33	43.5	45.38	11.71	0.67	33.59	-	-	Peak
824.597	34.32	-11.68	46	45.2	20.16	1.64	32.68	200	315	Peak
945.44	29.58	-16.42	46	39.56	20.71	1.75	32.44	-	-	Peak
2412	90.52	-	-	87.02	32.89	2.12	31.51	128	31	Average
2412	95.11	-	-	91.61	32.89	2.12	31.51	128	31	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
33.328	19.39	-20.61	40	36.59	16.04	0.35	33.59	-	-	Peak
66.266	16.49	-23.51	40	44.36	5.22	0.5	33.59	-	-	Peak
108.267	23.06	-20.44	43.5	44.39	11.68	0.6	33.61	-	-	Peak
129.015	20.54	-22.96	43.5	41.75	11.71	0.67	33.59	-	-	Peak
213.015	27.7	-15.8	43.5	50.74	9.65	0.84	33.53	120	70	Peak
945.44	29.72	-16.28	46	39.7	20.71	1.75	32.44	-	-	Peak
2437	98.65	-	-	95.07	32.95	2.14	31.51	128	165	Average
2437	103.11	-	-	99.53	32.95	2.14	31.51	128	165	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
37.285	22.44	-17.56	40	41.99	13.7	0.38	33.63	-	-	Peak
64.433	23.89	-16.11	40	51.76	5.22	0.5	33.59	189	243	Peak
100.934	22.93	-20.57	43.5	45.34	10.62	0.58	33.61	-	-	Peak
129.015	24.28	-19.22	43.5	45.49	11.71	0.67	33.59	-	-	Peak
213.015	16.83	-26.67	43.5	39.87	9.65	0.84	33.53	-	-	Peak
945.44	29.46	-16.54	46	39.44	20.71	1.75	32.44	-	-	Peak
2437	94.25	-	-	90.67	32.95	2.14	31.51	190	188	Average
2437	99.27	-	-	95.69	32.95	2.14	31.51	190	188	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
32.067	19.49	-20.51	40	36.17	16.55	0.35	33.58	-	-	Peak
104.17	23.39	-20.11	43.5	45.4	11.01	0.59	33.61	-	-	Peak
129.015	20.56	-22.94	43.5	41.77	11.71	0.67	33.59	-	-	Peak
213.015	27.85	-15.65	43.5	50.89	9.65	0.84	33.53	-	-	Peak
824.597	34.26	-11.74	46	45.14	20.16	1.64	32.68	100	58	Peak
945.44	29.64	-16.36	46	39.62	20.71	1.75	32.44	-	-	Peak
2462	98.03	-	-	94.41	32.98	2.15	31.51	100	167	Average
2462	103.01	-	-	99.39	32.98	2.15	31.51	100	167	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
37.025	22.05	-17.95	40	41.1	14.19	0.38	33.62	-	-	Peak
60.704	23.36	-16.64	40	51.19	5.28	0.48	33.59	-	-	Peak
100.934	22.93	-20.57	43.5	45.34	10.62	0.58	33.61	-	-	Peak
129.015	23.9	-19.6	43.5	45.11	11.71	0.67	33.59	-	-	Peak
824.597	33.32	-12.68	46	44.2	20.16	1.64	32.68	165	200	Peak
945.44	30.61	-15.39	46	40.59	20.71	1.75	32.44	-	-	Peak
2462	94.61	-	-	90.99	32.98	2.15	31.51	131	322	Average
2462	99.43	-	-	95.81	32.98	2.15	31.51	131	322	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
31.289	19.17	-20.83	40	35.12	17.29	0.34	33.58			Peak
105.642	23.01	-20.49	43.5	44.74	11.29	0.59	33.61			Peak
129.015	20.95	-22.55	43.5	42.16	11.71	0.67	33.59			Peak
213.015	27.55	-15.95	43.5	50.59	9.65	0.84	33.53	200	340	Peak
824.597	25.67	-20.33	46	36.55	20.16	1.64	32.68			Peak
945.44	29.88	-16.12	46	39.86	20.71	1.75	32.44			Peak
2412	93.83	-	-	90.33	32.89	2.12	31.51	100	172	Average
2412	104.74	-	-	101.24	32.89	2.12	31.51	100	172	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
37.945	23.57	-16.43	40	43.12	13.7	0.38	33.63	-	-	Peak
60.704	23.72	-16.28	40	51.55	5.28	0.48	33.59	-	-	Peak
101.289	23.39	-20.11	43.5	45.8	10.62	0.58	33.61	-	-	Peak
129.015	24.07	-19.43	43.5	45.28	11.71	0.67	33.59	-	-	Peak
824.597	32.17	-13.83	46	43.05	20.16	1.64	32.68	200	100	Peak
945.44	29.56	-16.44	46	39.54	20.71	1.75	32.44	-	-	Peak
2412	88.77	-	-	85.27	32.89	2.12	31.51	140	174	Average
2412	99.64	-	-	96.14	32.89	2.12	31.51	140	174	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
31.071	19.91	-20.09	40	35.86	17.29	0.34	33.58	-	-	Peak
108.647	23.61	-19.89	43.5	44.94	11.68	0.6	33.61	-	-	Peak
129.015	20.04	-23.46	43.5	41.25	11.71	0.67	33.59	-	-	Peak
213.015	27.96	-15.54	43.5	51	9.65	0.84	33.53	-	-	Peak
824.597	32.18	-13.82	46	43.06	20.16	1.64	32.68	100	0	Peak
945.44	29.15	-16.85	46	39.13	20.71	1.75	32.44	-	-	Peak
2437	91.42	-	-	87.84	32.95	2.14	31.51	100	189	Average
2437	103.35	-	-	99.77	32.95	2.14	31.51	100	189	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
38.346	22.84	-17.16	40	43.11	12.98	0.39	33.64	-	-	Peak
61.346	24.49	-15.51	40	52.32	5.28	0.48	33.59	-	-	Peak
100.934	22.39	-21.11	43.5	44.8	10.62	0.58	33.61	-	-	Peak
129.015	23.91	-19.59	43.5	45.12	11.71	0.67	33.59	-	-	Peak
824.597	31.31	-14.69	46	42.19	20.16	1.64	32.68	100	260	Peak
945.44	29.09	-16.91	46	39.07	20.71	1.75	32.44	-	-	Peak
2437	89.56	-	-	85.98	32.95	2.14	31.51	100	12	Average
2437	101.06	-	-	97.48	32.95	2.14	31.51	100	12	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
31.51	18.96	-21.04	40	35.64	16.55	0.35	33.58	-	-	Peak
109.029	23.71	-19.79	43.5	45.04	11.68	0.6	33.61	-	-	Peak
129.015	20.26	-23.24	43.5	41.47	11.71	0.67	33.59	-	-	Peak
213.015	25.06	-18.44	43.5	48.1	9.65	0.84	33.53	-	-	Peak
426.521	19.54	-26.46	46	35.44	16.17	1.18	33.25	-	-	Peak
945.44	30.78	-15.22	46	40.76	20.71	1.75	32.44	200	0	Peak
2462	93.28	-	-	89.66	32.98	2.15	31.51	125	168	Average
2462	105.69	-	-	102.07	32.98	2.15	31.51	125	168	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
37.548	22.21	-17.79	40	41.76	13.7	0.38	33.63	-	-	Peak
61.995	24.43	-15.57	40	52.26	5.27	0.49	33.59	200	100	Peak
100.934	22.9	-20.6	43.5	45.31	10.62	0.58	33.61	-	-	Peak
129.015	23.86	-19.64	43.5	45.07	11.71	0.67	33.59	-	-	Peak
213.015	16.41	-27.09	43.5	39.45	9.65	0.84	33.53	-	-	Peak
945.44	30.1	-15.9	46	40.08	20.71	1.75	32.44	-	-	Peak
2462	88.6	-	-	84.98	32.98	2.15	31.51	107	336	Average
2462	100.47	-	-	96.85	32.98	2.15	31.51	107	336	Peak

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
30.745	19.13	-20.87	40	35.08	17.29	0.34	33.58	-	-	Peak
66.733	14.87	-25.13	40	42.7	5.25	0.51	33.59	-	-	Peak
107.888	21.42	-22.08	43.5	42.87	11.56	0.6	33.61	-	-	Peak
213.015	26.72	-16.78	43.5	49.76	9.65	0.84	33.53	185	210	Peak
339.589	21.55	-24.45	46	39.58	14.25	1.08	33.36	-	-	Peak
875.247	23.01	-22.99	46	33.41	20.48	1.7	32.58	-	-	Peak
2412	93.43	-	-	89.93	32.89	2.12	31.51	102	159	Average
2412	104.65	-	-	101.15	32.89	2.12	31.51	102	159	Peak

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	23~24°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
37.548	23.15	-16.85	40	42.7	13.7	0.38	33.63	-	-	Peak
49.014	24.02	-15.98	40	49.42	7.75	0.44	33.59	-	-	Peak
100.934	24.72	-18.78	43.5	47.13	10.62	0.58	33.61	-	-	Peak
129.015	24.47	-19.03	43.5	45.68	11.71	0.67	33.59	-	-	Peak
226.099	25.26	-20.74	46	47.3	10.59	0.87	33.5	-	-	Peak
945.44	30.86	-15.14	46	40.84	20.71	1.75	32.44	200	152	Peak
2412	86	-	-	82.5	32.89	2.12	31.51	100	256	Average
2412	97.42	-	-	93.92	32.89	2.12	31.51	100	256	Peak

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
32.179	19.15	-20.85	40	35.83	16.55	0.35	33.58	-	-	Peak
54.071	16.16	-23.84	40	42.79	6.49	0.46	33.58	-	-	Peak
110.569	20.28	-23.22	43.5	41.49	11.8	0.6	33.61	-	-	Peak
213.015	26.51	-16.99	43.5	49.55	9.65	0.84	33.53	-	-	Peak
426.521	20.77	-25.23	46	36.67	16.17	1.18	33.25	-	-	Peak
945.44	29.77	-16.23	46	39.75	20.71	1.75	32.44	100	18	Peak
2437	93.17	-	-	89.59	32.95	2.14	31.51	100	157	Average
2437	104.05	-	-	100.47	32.95	2.14	31.51	100	157	Peak

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
38.078	23.62	-16.38	40	43.17	13.7	0.38	33.63	-	-	Peak
54.071	27.04	-12.96	40	53.67	6.49	0.46	33.58	100	23	Peak
100.934	25.95	-17.55	43.5	48.36	10.62	0.58	33.61	-	-	Peak
129.015	24.38	-19.12	43.5	45.59	11.71	0.67	33.59	-	-	Peak
213.015	19.98	-23.52	43.5	43.02	9.65	0.84	33.53	-	-	Peak
945.44	30.78	-15.22	46	40.76	20.71	1.75	32.44	-	-	Peak
2437	86.22	-	-	82.64	32.95	2.14	31.51	100	41	Average
2437	97.5	-	-	93.92	32.95	2.14	31.51	100	41	Peak



<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
32.067	19.48	-20.52	40	36.16	16.55	0.35	33.58	-	-	Peak
65.114	16.65	-23.35	40	44.54	5.2	0.5	33.59	-	-	Peak
108.267	23.31	-20.19	43.5	44.64	11.68	0.6	33.61	-	-	Peak
213.015	27.86	-15.64	43.5	50.9	9.65	0.84	33.53	-	-	Peak
824.597	35.63	-10.37	46	46.51	20.16	1.64	32.68	200	100	Peak
945.44	30.11	-15.89	46	40.09	20.71	1.75	32.44	-	-	Peak
2462	94.11	-	-	90.49	32.98	2.15	31.51	100	166	Average
2462	105.22	-	-	101.6	32.98	2.15	31.51	100	166	Peak

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	23~24℃
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	43~44%
<b>Test Engineer :</b>	Stone Gu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported and considered that's already beyond the background noise floor per15.31.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
33.211	21.77	-18.23	40	38.97	16.04	0.35	33.59	-	-	Peak
63.536	25.25	-14.75	40	53.12	5.22	0.5	33.59	200	360	Peak
100.934	22.92	-20.58	43.5	45.33	10.62	0.58	33.61	-	-	Peak
129.015	24.07	-19.43	43.5	45.28	11.71	0.67	33.59	-	-	Peak
824.597	28.27	-17.73	46	39.15	20.16	1.64	32.68	-	-	Peak
945.44	29.29	-16.71	46	39.27	20.71	1.75	32.44	-	-	Peak
2462	85.62	-	-	82	32.98	2.15	31.51	124	20	Average
2462	97.79	-	-	94.17	32.98	2.15	31.51	124	20	Peak

## 3.6 AC Conducted Emission Measurement

### 3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 KHz to 30 MHz shall not exceed the limits in the following 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.

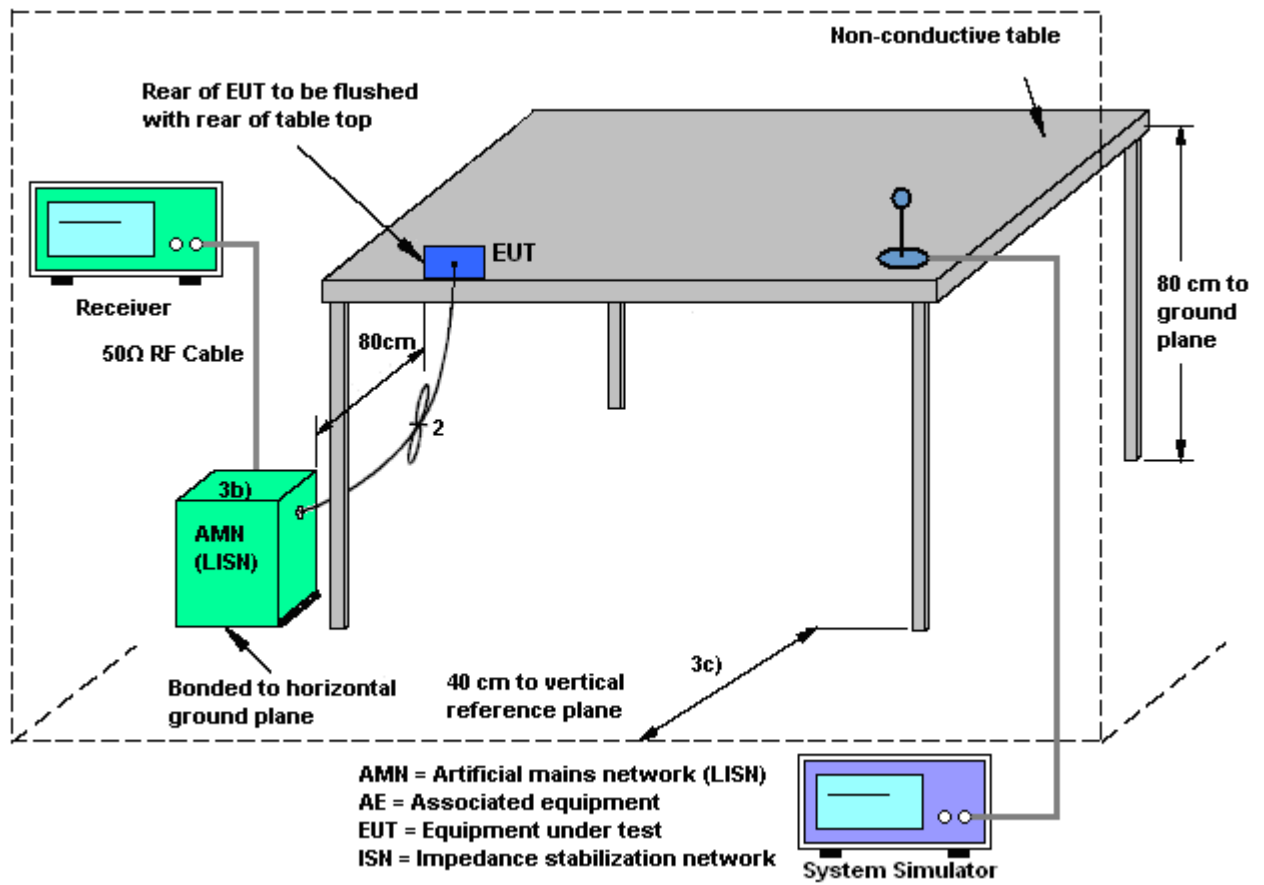
### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.6.3 Test Procedures

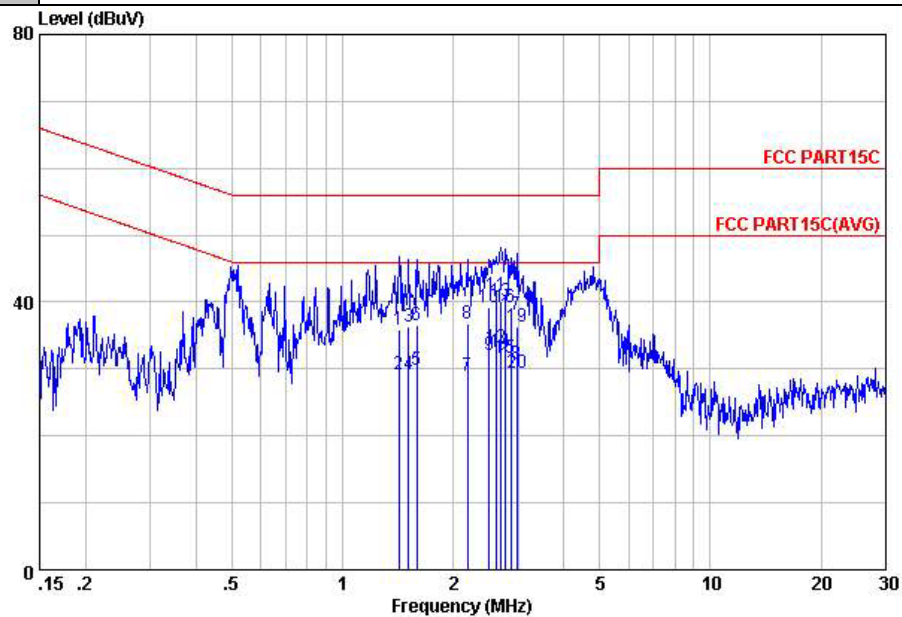
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 KHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

### 3.6.4 Test Setup



### 3.6.5 Test Result of AC Conducted Emission

<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	19~20°C
<b>Test Engineer :</b>	Tom Wang	<b>Relative Humidity :</b>	39~40%
<b>Test Voltage :</b>	120Vac / 60Hz	<b>Phase :</b>	Line
<b>Function Type :</b>	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone		
<b>Remark :</b>	All emissions not reported here are more than 10 dB below the prescribed limit.		

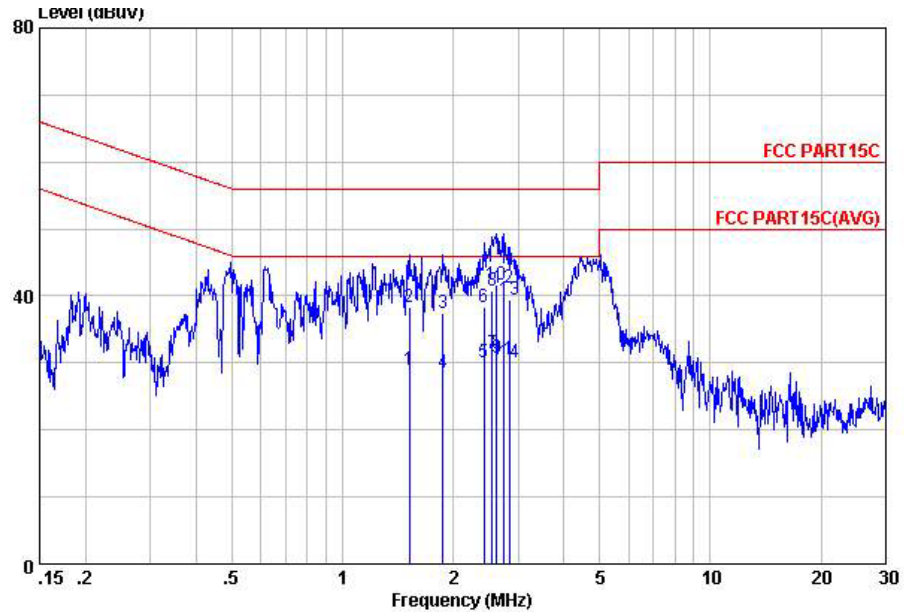


Site : C001-KS  
Condition: FCC PART15C LISN-111230 LINE

mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	1.43	35.99	-20.01	56.00	25.81	-0.11	10.29	QP
2	1.43	29.29	-16.71	46.00	19.11	-0.11	10.29	Average
3	1.51	36.39	-19.61	56.00	26.21	-0.11	10.29	QP
4	1.51	29.19	-16.81	46.00	19.01	-0.11	10.29	Average
5	1.59	29.79	-16.21	46.00	19.60	-0.11	10.30	Average
6	1.59	36.49	-19.51	56.00	26.30	-0.11	10.30	QP
7	2.19	28.99	-17.01	46.00	18.80	-0.11	10.30	Average
8	2.19	36.79	-19.21	56.00	26.60	-0.11	10.30	QP
9	2.50	31.99	-14.01	46.00	21.79	-0.11	10.31	Average
10	2.50	39.19	-16.81	56.00	28.99	-0.11	10.31	QP
11	2.61	41.09	-14.91	56.00	30.89	-0.11	10.31	QP
12	2.61	33.09	-12.91	46.00	22.89	-0.11	10.31	Average
13	2.69	40.20	-15.80	56.00	30.00	-0.11	10.31	QP
14	2.69	32.50	-13.50	46.00	22.30	-0.11	10.31	Average
15	2.78	31.70	-14.30	46.00	21.51	-0.12	10.31	Average
16	2.78	39.20	-16.80	56.00	29.01	-0.12	10.31	QP
17	2.87	38.00	-18.00	56.00	27.80	-0.12	10.32	QP
18	2.87	30.70	-15.30	46.00	20.50	-0.12	10.32	Average
19	2.98	36.30	-19.70	56.00	26.10	-0.12	10.32	QP
20	2.98	29.50	-16.50	46.00	19.30	-0.12	10.32	Average

<b>Test Mode :</b>	Mode 1	<b>Temperature :</b>	19~20°C
<b>Test Engineer :</b>	Tom Wang	<b>Relative Humidity :</b>	39~40%
<b>Test Voltage :</b>	120Vac / 60Hz	<b>Phase :</b>	Neutral
<b>Function Type :</b>	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone		
<b>Remark :</b>	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS  
Condition: FCC PART15C LISN-111230 NEUTRAL  
mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	1.52	28.99	-17.01	46.00	18.80	-0.10	10.29	Average
2	1.52	38.29	-17.71	56.00	28.10	-0.10	10.29	QP
3	1.88	37.39	-18.61	56.00	27.20	-0.11	10.30	QP
4	1.88	28.59	-17.41	46.00	18.40	-0.11	10.30	Average
5	2.42	30.19	-15.81	46.00	19.99	-0.11	10.31	Average
6	2.42	38.29	-17.71	56.00	28.09	-0.11	10.31	QP
7	2.55	31.49	-14.51	46.00	21.29	-0.11	10.31	Average
8	2.55	40.79	-15.21	56.00	30.59	-0.11	10.31	QP
9	2.62	30.70	-15.30	46.00	20.50	-0.11	10.31	Average
10	2.62	41.60	-14.40	56.00	31.40	-0.11	10.31	QP
11	2.75	30.60	-15.40	46.00	20.41	-0.12	10.31	Average
12	2.75	41.20	-14.80	56.00	31.01	-0.12	10.31	QP
13	2.85	39.40	-16.60	56.00	29.20	-0.12	10.32	QP
14	2.85	30.00	-16.00	46.00	19.80	-0.12	10.32	Average

## **3.7 Antenna Requirements**

### **3.7.1 Standard Applicable**

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

### **3.7.2 Antenna Connected Construction**

Non-standard connector used.

### **3.7.3 Antenna Gain**

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Dec. 04, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 22, 2012	Dec. 04, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 22, 2012	Dec. 04, 2012	Aug. 21, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 22, 2012	Dec. 04, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 30, 2011	Dec. 04, 2012	Dec. 29, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	Dec. 05, 2012	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	100400	9kHz~30GHz	Jun. 01, 2012	Dec. 05, 2012	May 31, 2013	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Dec. 05, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 03, 2012	Dec. 05, 2012	Jul. 02, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2012	Dec. 05, 2012	Jan. 06, 2013	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	Jun. 01, 2012	Dec. 05, 2012	May 31, 2013	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Dec. 05, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2012	Dec. 05, 2012	Nov. 06, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	9170249	15GHz~40GHz	Nov. 23, 2012	Dec. 05, 2012	Nov. 22, 2013	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Dec. 03, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Dec. 03, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Dec. 03, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 15, 2012	Dec. 03, 2012	Nov. 14, 2013	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Dec. 03, 2012	Dec. 29, 2012	Conduction (CO01-KS)



## 5 Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ )	2.26
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ )	2.54
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### Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ )	4.72
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## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP2N2701 as below.