

# FCC RF Test Report

APPLICANT : CT Asia  
EQUIPMENT : Mobile Phone  
BRAND NAME : BLU  
MODEL NAME : Studio 5.0 C  
FCC ID : YHLBLUSTUDIO5C  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Jun. 16, 2014 and testing was completed on Aug. 01, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in 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 (SHENZHEN) INC., the test report shall not be reproduced except in full.



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Reviewed by: Joseph Lin / Supervisor



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Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL (SHENZHEN) INC.**

**No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.**



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**REVISION HISTORY**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR461606	Rev. 01	Initial issue of report	Aug. 06, 2014

## SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
		Conducted Spurious Emission		Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.16 dB at 2483.62 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 7.94 dB at 0.490 MHz
3.7	15.203 & 15.247(b)	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

**TINNO MOBILE**

4/F., H-3 Building, OCT Eastern Industrial Park. NO.1 Xiangshan EastRoad., Nan Shan District, Shenzhen, P.R. CHINA

## 1.3 Product Feature of Equipment Under Test

Product Feature	
<b>Equipment</b>	Mobile Phone
<b>Brand Name</b>	BLU
<b>Model Name</b>	Studio 5.0 C
<b>FCC ID</b>	YHLBLUSTUDIO5C
<b>EUT supports Radios application</b>	GSM/GPRS/EGPRS/WCDMA/HSPA/HSPA+(Downlink Only) WLAN 2.4GHz 802.11b/g/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
<b>HW Version</b>	V1.0
<b>SW Version</b>	BLU_STUDIO50C_V01_GENERIC
<b>EUT Stage</b>	Identical Prototype

**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 subjective to this standard

Product Specification subjective to this standard	
<b>Tx/Rx Channel Frequency Range</b>	802.11b/g/n : 2412 MHz ~ 2462 MHz
<b>Maximum (Peak) Output Power to Antenna</b>	802.11b : 13.32 dBm (0.0215 W) 802.11g : 17.44 dBm (0.0555 W) 802.11n HT20 : 17.47 dBm (0.0558 W) 802.11n HT40 : 17.37 dBm (0.0546 W)
<b>Antenna Type</b>	802.11b/g/n : PIFA Antenna type with gain 0.75 dBi
<b>Type of Modulation</b>	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

## 1.5 Modification of EUT

No modifications are made to the EUT during all test items.

## 1.6 Testing Location

<b>Test Site</b>	SPORTON INTERNATIONAL (SHENZHEN) INC.		
<b>Test Site Location</b>	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755- 3320-2398		
<b>Test Site No.</b>	<b>Sporton Site No.</b>		<b>FCC/IC Registration No.</b>
	TH01-SZ	03CH01-SZ	CO01-SZ
			831040//4086F-1

## 1.7 Applicable 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 v03r02
- ANSI C63.4-2003

### 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.

## 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 (X 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 data rate associated with the highest power were chosen for full test shown in the following tables.

2.4GHz 802.11b RF Output Power (dBm)						
Power vs. Channel			Power vs. Data Rate			
Channel	Frequency (MHz)	Data Rate 1Mbps	Channel	2Mbps	5.5Mbps	11Mbps
CH 01	2412 MHz	12.45	CH 11	13.28	13.27	13.22
CH 06	2437 MHz	12.56				
CH 11	2462 MHz	13.32				

2.4GHz 802.11g RF Output Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate 6Mbps	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 01	2412 MHz	16.85	CH 11	17.41	17.36	17.32	17.29	17.26	17.24	17.18
CH 06	2437 MHz	17.02								
CH 11	2462 MHz	17.44								

2.4GHz 802.11n HT20 RF Output Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	17.01	CH 011	17.41	17.33	17.32	17.28	17.27	17.27	17.24
CH 06	2437 MHz	17.06								
CH 11	2462 MHz	17.47								

2.4GHz 802.11n HT40 RF Output Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 03	2422 MHz	16.75	CH 09	16.91	16.85	16.84	16.74	16.72	16.69	16.68
CH 06	2437 MHz	17.13								
CH 09	2452 MHz	17.37								

## 2.3 Test Mode

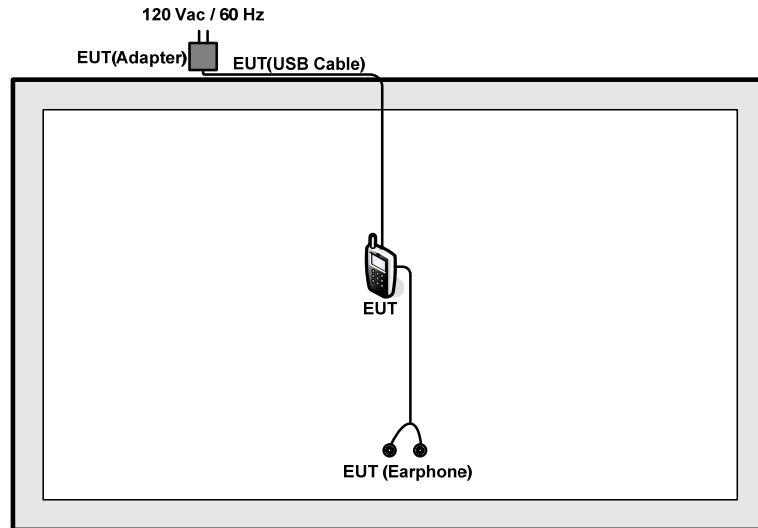
Final results of test modes, data rates and test channels are shown as following table.

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	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
		802.11n HT40	MCS0	3/9
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
		802.11n HT40	MCS0	3/9
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9

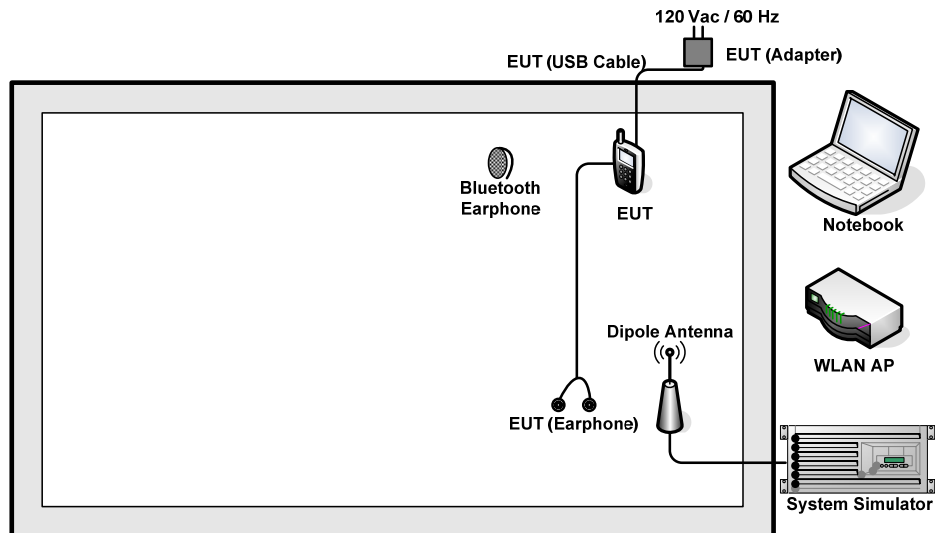
Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone
<b>Remark:</b> For radiated TCs, the tests were performed with earphone, adapter and USB cable.	

## 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	CMW 500	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-815	KA2IR815A1	N/A	Unshielded, 1.8 m
3.	Notebook	Lenovo	G480	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-108	PYAHS-107W	N/A	N/A

## 2.6 EUT Operation Test Setup

For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

## 2.7 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 7.5 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 7.5 + 10 = 17.5 \text{ (dB)}\end{aligned}$$

### 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

The measuring equipment is listed in the section 4 of this test report.

##### 3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r02.
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.

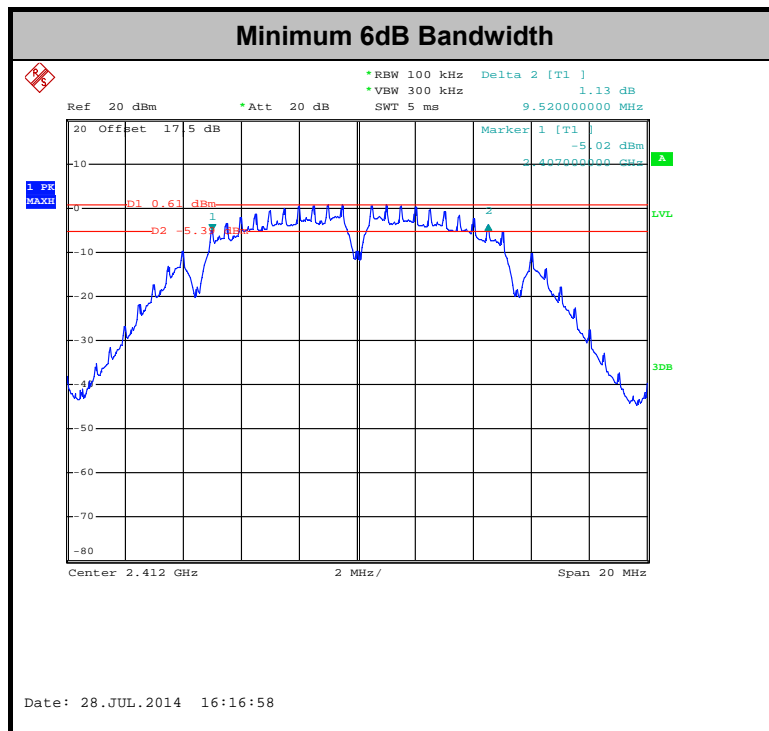
##### 3.1.4 Test Setup



**3.1.5 Test Result of 6dB Occupied Bandwidth**

<b>Test Band :</b>	2.4GHz	<b>Temperature :</b>	24~26℃
<b>Test Engineer :</b>	Tiny You	<b>Relative Humidity :</b>	50~53%

Mod.	Data Rate	N <sub>TX</sub>	Channel	Freq. (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	9.52	0.5	Pass
11b	1Mbps	1	6	2437	9.52	0.5	Pass
11b	1Mbps	1	11	2462	9.52	0.5	Pass
11g	6Mbps	1	1	2412	16.36	0.5	Pass
11g	6Mbps	1	6	2437	16.36	0.5	Pass
11g	6Mbps	1	11	2462	16.36	0.5	Pass
HT20	MCS0	1	1	2412	17.56	0.5	Pass
HT20	MCS0	1	6	2437	17.60	0.5	Pass
HT20	MCS0	1	11	2462	17.60	0.5	Pass
HT40	MCS0	1	3	2422	36.00	0.5	Pass
HT40	MCS0	1	6	2437	36.04	0.5	Pass
HT40	MCS0	1	9	2452	36.08	0.5	Pass



Note : The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



## 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

The measuring equipment is listed in the section 4 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 v03r02.
2. The RF output of EUT was connected to the power meter 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>	2.4GHz	<b>Temperature :</b>	24~26℃
<b>Test Engineer :</b>	Tiny You	<b>Relative Humidity :</b>	50~53%

Mod.	Data Rate	N <sub>TX</sub>	Channel	Freq. (MHz)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	12.45	30.00	0.75	Pass
11b	1Mbps	1	6	2437	12.56	30.00	0.75	Pass
11b	1Mbps	1	11	2462	13.32	30.00	0.75	Pass
11g	6Mbps	1	1	2412	16.85	30.00	0.75	Pass
11g	6Mbps	1	6	2437	17.02	30.00	0.75	Pass
11g	6Mbps	1	11	2462	17.44	30.00	0.75	Pass
HT20	MCS0	1	1	2412	17.01	30.00	0.75	Pass
HT20	MCS0	1	6	2437	17.06	30.00	0.75	Pass
HT20	MCS0	1	11	2462	17.47	30.00	0.75	Pass
HT40	MCS0	1	3	2422	16.75	30.00	0.75	Pass
HT40	MCS0	1	6	2437	17.13	30.00	0.75	Pass
HT40	MCS0	1	9	2452	17.37	30.00	0.75	Pass

**Note:** Measured power (dBm) has offset with cable loss.

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

<b>Test Mode :</b>	2.4GHz	<b>Temperature :</b>	24~26℃
<b>Test Engineer :</b>	Tiny You	<b>Relative Humidity :</b>	50~53%

Mod.	Data Rate	N <sub>TX</sub>	Channel	Freq. (MHz)	Duty Factor (dB)	Average Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	0.09	9.47	30	0.75	Pass
11b	1Mbps	1	6	2437	0.09	9.63	30	0.75	Pass
11b	1Mbps	1	11	2462	0.09	10.42	30	0.75	Pass
11g	6Mbps	1	1	2412	0.49	7.72	30	0.75	Pass
11g	6Mbps	1	6	2437	0.49	8.17	30	0.75	Pass
11g	6Mbps	1	11	2462	0.49	8.65	30	0.75	Pass
HT20	MCS0	1	1	2412	0.54	7.89	30	0.75	Pass
HT20	MCS0	1	6	2437	0.54	8.28	30	0.75	Pass
HT20	MCS0	1	11	2462	0.54	8.94	30	0.75	Pass
HT40	MCS0	1	3	2422	1.03	5.92	30	0.75	Pass
HT40	MCS0	1	6	2437	1.03	6.24	30	0.75	Pass
HT40	MCS0	1	9	2452	1.03	6.77	30	0.75	Pass

**Note:** Measured power (dBm) has offset with cable loss and duty factor.

### 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.

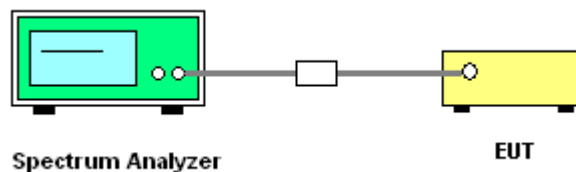
#### 3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02
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



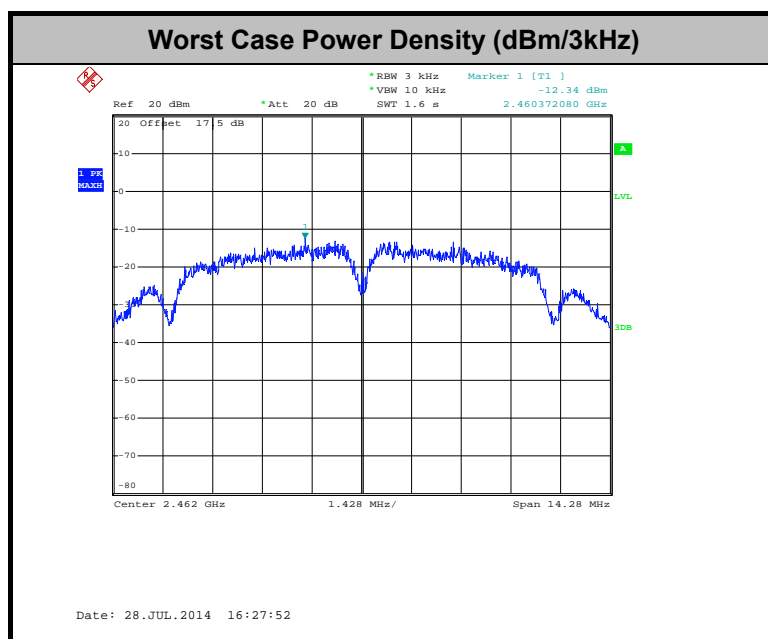


## 3.3.5 Test Result of Power Spectral Density

Test Mode :	2.4GHz	Temperature :	24~26°C
Test Engineer :	Tiny You	Relative Humidity :	50~53%

Mod.	Data Rate	N <sub>TX</sub>	Channel	Freq. (MHz)	Peak Power Density (dBm/3kHz)	Max. Limits (dBm/3kHz)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	-13.58	8	0.75	Pass
11b	1Mbps	1	6	2437	-12.55	8	0.75	Pass
11b	1Mbps	1	11	2462	-12.34	8	0.75	Pass
11g	6Mbps	1	1	2412	-17.04	8	0.75	Pass
11g	6Mbps	1	6	2437	-17.30	8	0.75	Pass
11g	6Mbps	1	11	2462	-16.88	8	0.75	Pass
HT20	MCS0	1	1	2412	-18.06	8	0.75	Pass
HT20	MCS0	1	6	2437	-16.34	8	0.75	Pass
HT20	MCS0	1	11	2462	-17.55	8	0.75	Pass
HT40	MCS0	1	3	2422	-22.44	8	0.75	Pass
HT40	MCS0	1	6	2437	-22.55	8	0.75	Pass
HT40	MCS0	1	9	2452	-21.26	8	0.75	Pass

**Note:** Measured power density (dBm) has offset with cable loss.



## **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).

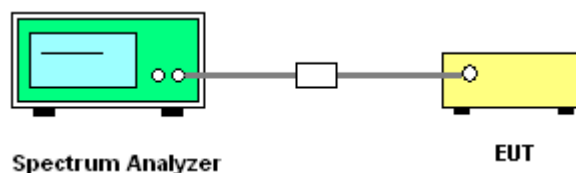
### **3.4.2 Measuring Instruments**

The measuring equipment is listed in the section 4 of this test report.

### **3.4.3 Test Procedures**

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

### **3.4.4 Test Setup**



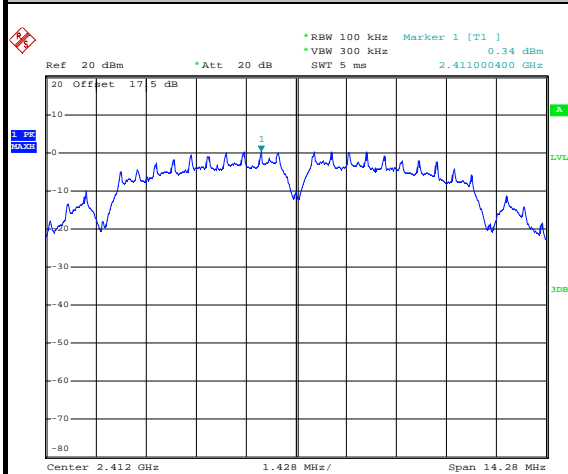


## 3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Tiny You

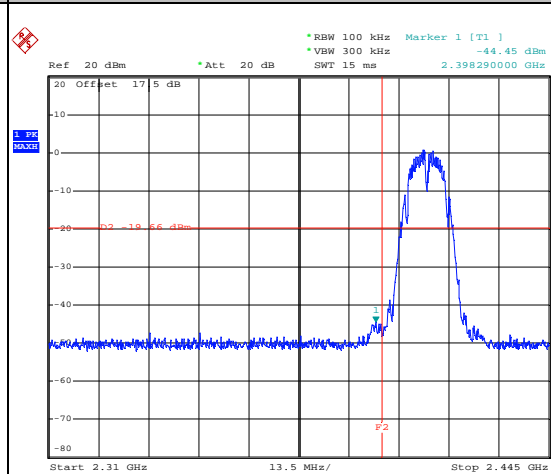
## WLAN 802.11b Channel 01

## 100kHz PSD reference Level



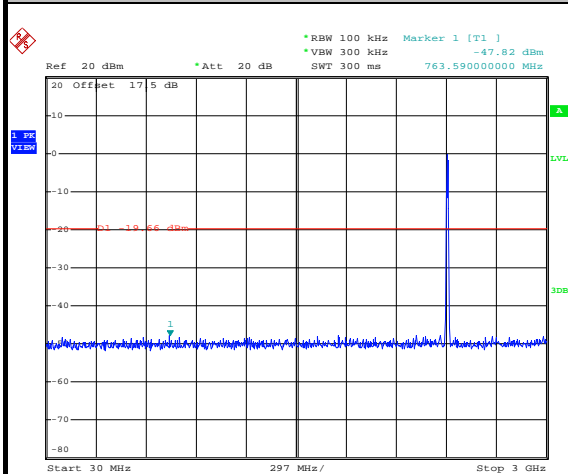
Date: 28.JUL.2014 16:17:29

## Low Channel Plot



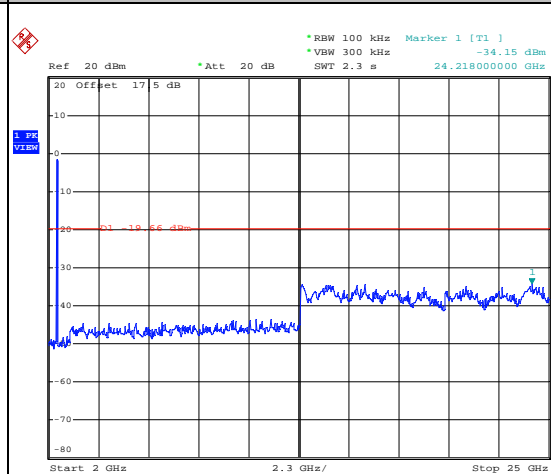
Date: 28.JUL.2014 16:17:43

## Spurious Emission 30MHz~3GHz



Date: 28.JUL.2014 16:18:02

## Spurious Emission 2GHz~25GHz

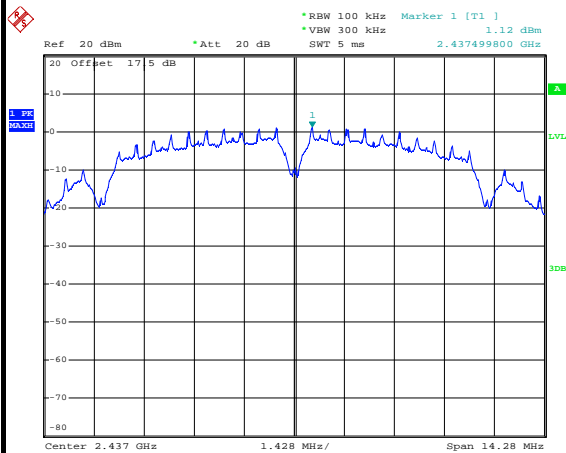


Date: 28.JUL.2014 16:18:21

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	24~26℃
<b>Test Band :</b>	2.4GHz Mid	<b>Relative Humidity :</b>	50~53%
<b>Test Channel :</b>	06	<b>Test Engineer :</b>	Tiny You

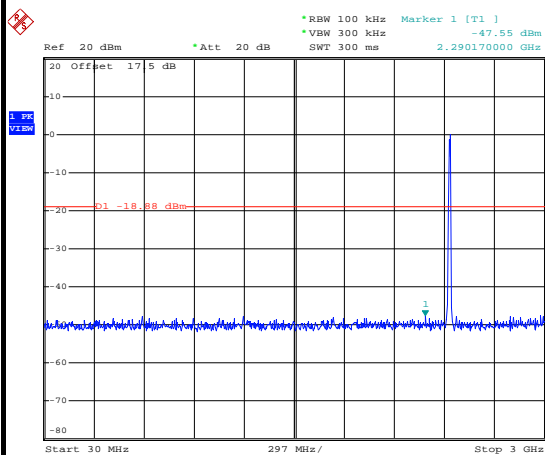
## WLAN 802.11b Channel 06

### 100kHz PSD reference Level



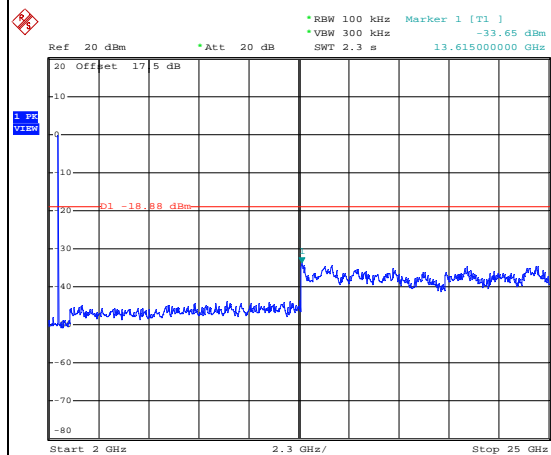
Date: 28.JUL.2014 16:22:48

## Spurious Emission 30MHz~3GHz



Date: 28.JUL.2014 16:23:08

## Spurious Emission 2GHz~25GHz



Date: 28.JUL.2014 16:23:27

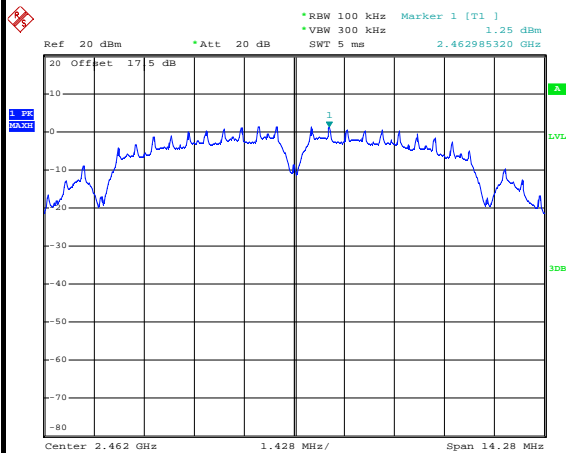




Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Tiny You

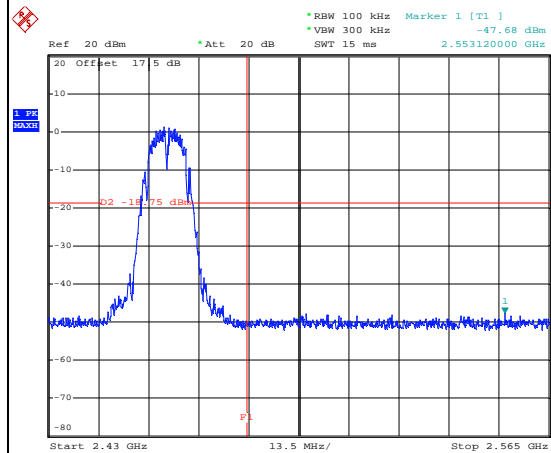
## WLAN 802.11b Channel 11

## 100kHz PSD reference Level



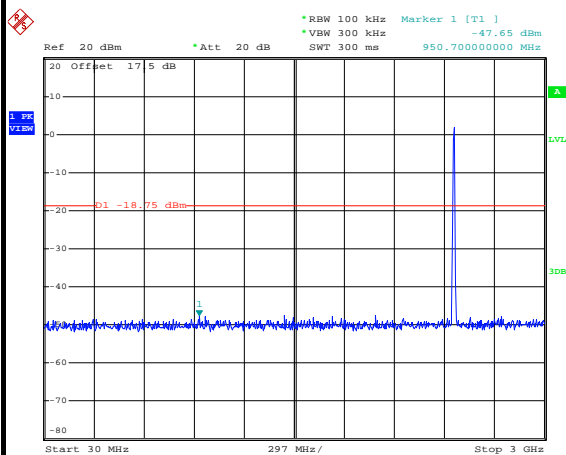
Date: 28.JUL.2014 16:28:01

## High Channel Plot



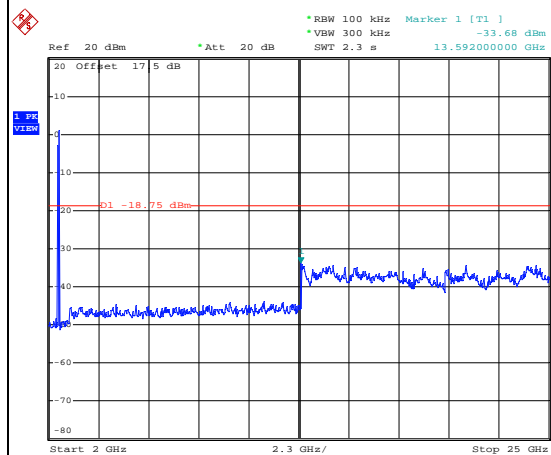
Date: 28.JUL.2014 16:28:15

## Spurious Emission 30MHz~3GHz



Date: 28.JUL.2014 16:28:34

## Spurious Emission 2GHz~25GHz



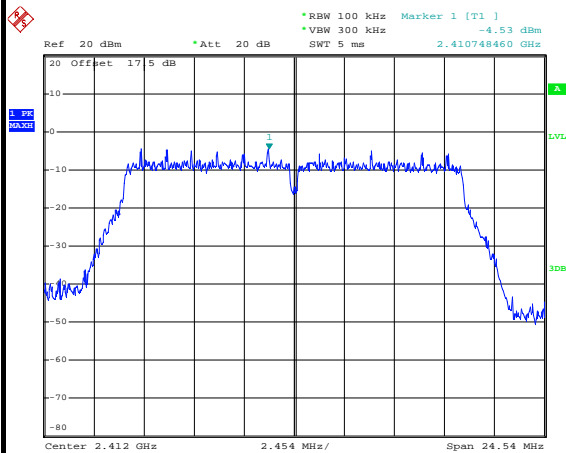
Date: 28.JUL.2014 16:28:53



Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Tiny You

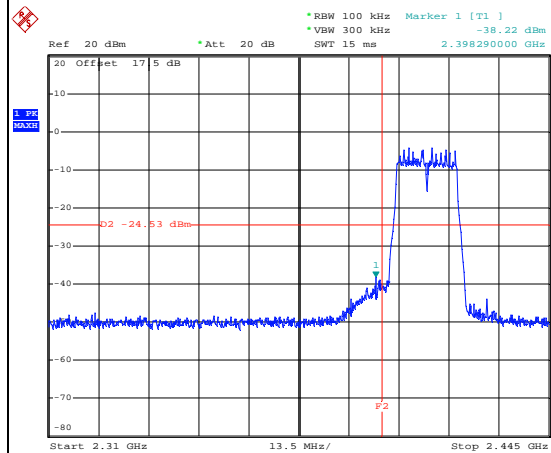
## WLAN 802.11g Channel 01

## 100kHz PSD reference Level



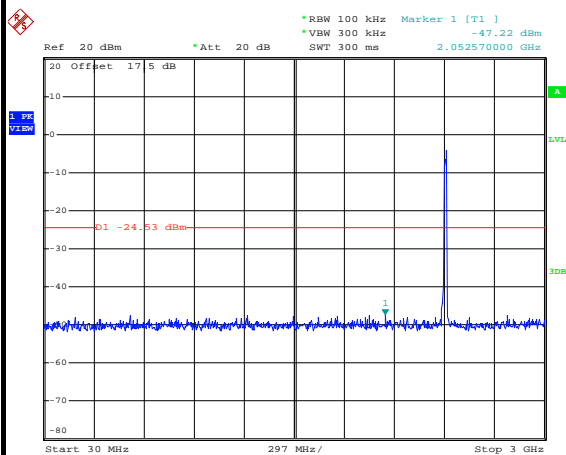
Date: 28.JUL.2014 16:35:36

## Low Channel Plot



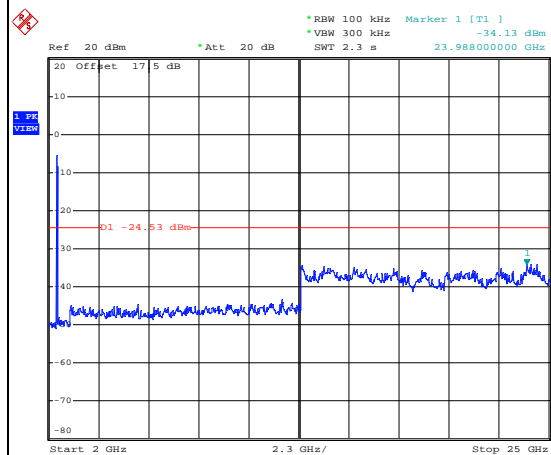
Date: 28.JUL.2014 16:35:50

## Spurious Emission 30MHz~3GHz



Date: 28.JUL.2014 16:38:13

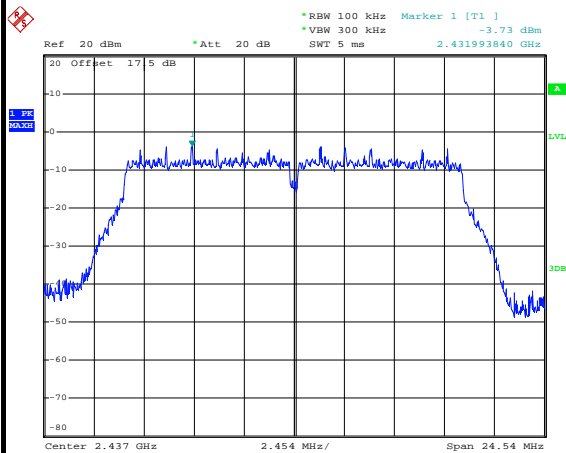
## Spurious Emission 2GHz~25GHz



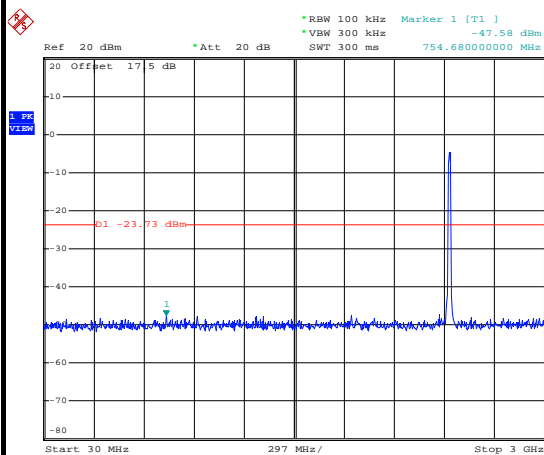
Date: 28.JUL.2014 16:38:32



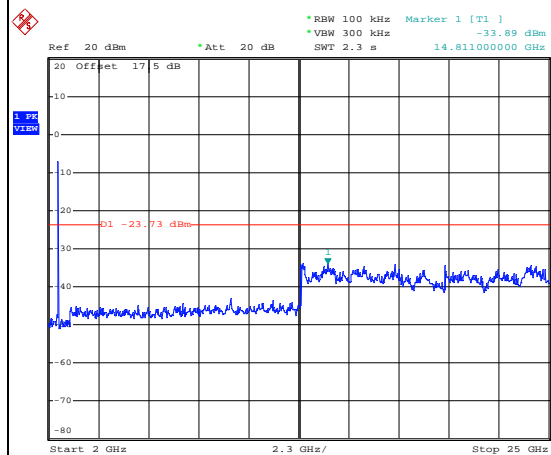
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Tiny You

**WLAN 802.11g Channel 06****100kHz PSD reference Level**

Date: 28.JUL.2014 16:43:09

**Spurious Emission 30MHz~3GHz**

Date: 28.JUL.2014 16:43:29

**Spurious Emission 2GHz~25GHz**

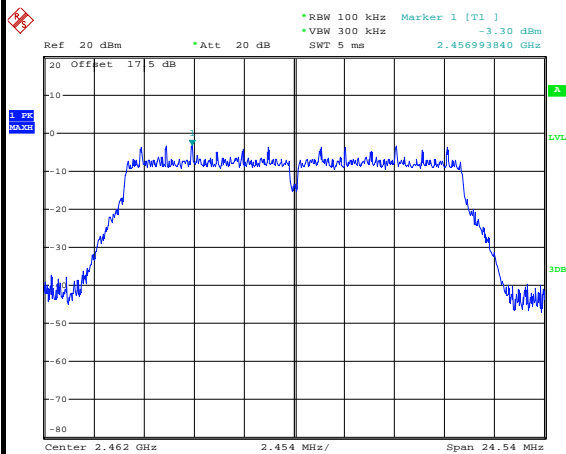
Date: 28.JUL.2014 16:43:48



Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Tiny You

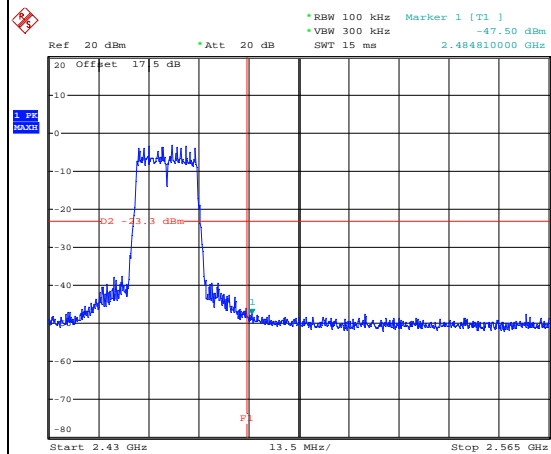
## WLAN 802.11g Channel 11

## 100kHz PSD reference Level



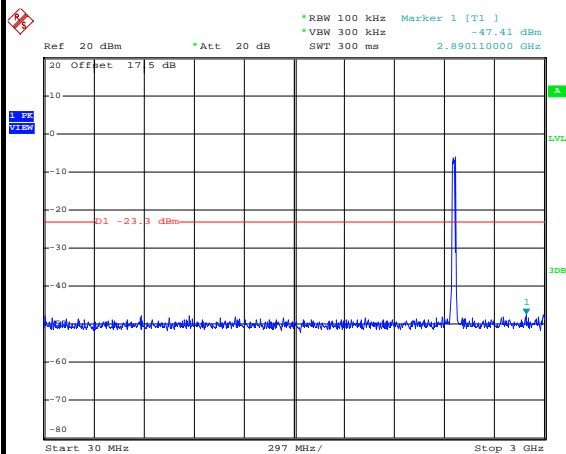
Date: 28.JUL.2014 16:47:49

## High Channel Plot



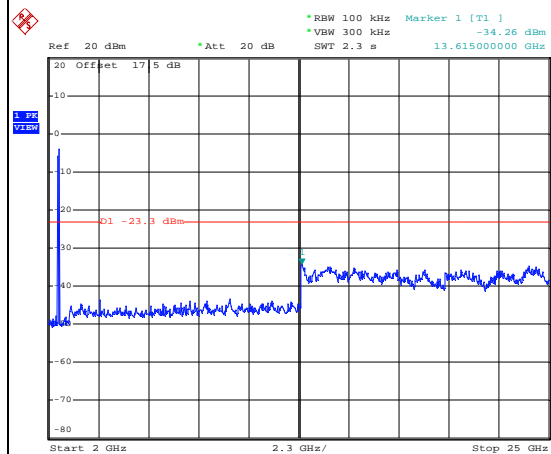
Date: 28.JUL.2014 16:48:03

## Spurious Emission 30MHz~3GHz



Date: 28.JUL.2014 16:48:22

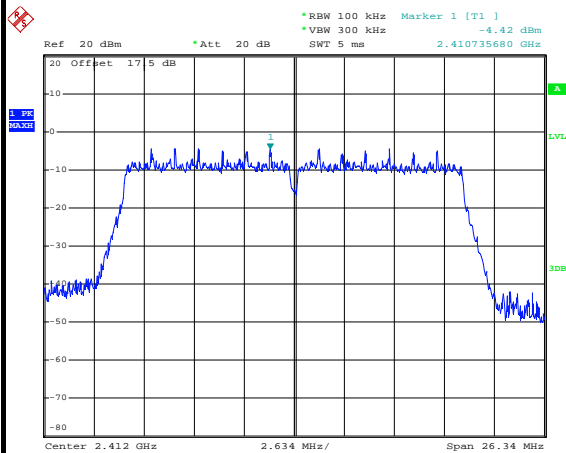
## Spurious Emission 2GHz~25GHz



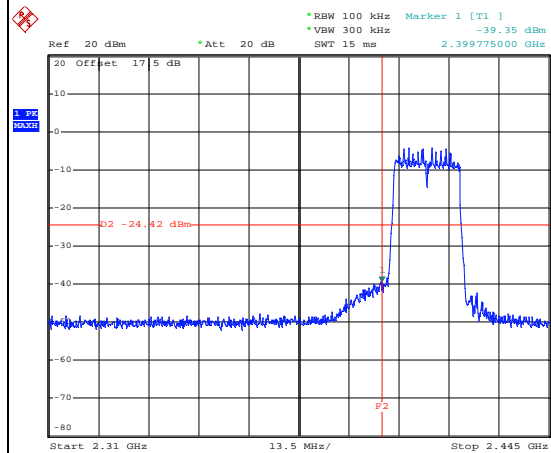
Date: 28.JUL.2014 16:48:41



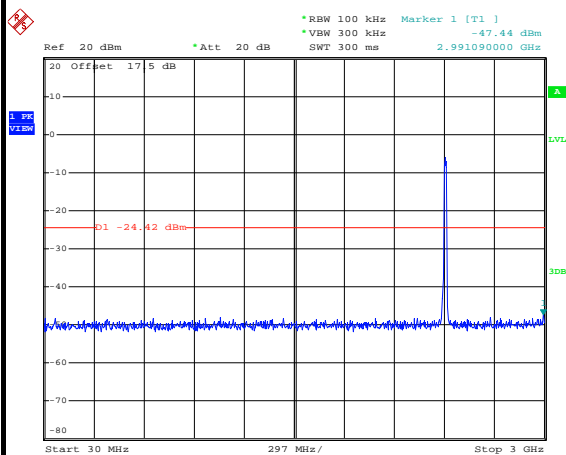
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Tiny You

**WLAN 802.11n HT20 Channel 01****100kHz PSD reference Level**

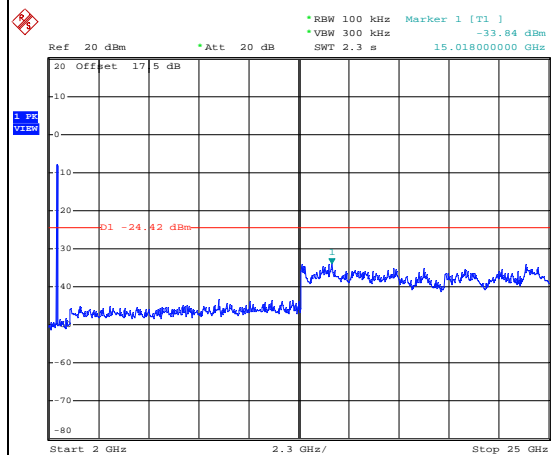
Date: 28.JUL.2014 16:53:01

**Low Channel Plot**

Date: 28.JUL.2014 16:53:15

**Spurious Emission 30MHz~3GHz**

Date: 28.JUL.2014 16:55:21

**Spurious Emission 2GHz~25GHz**

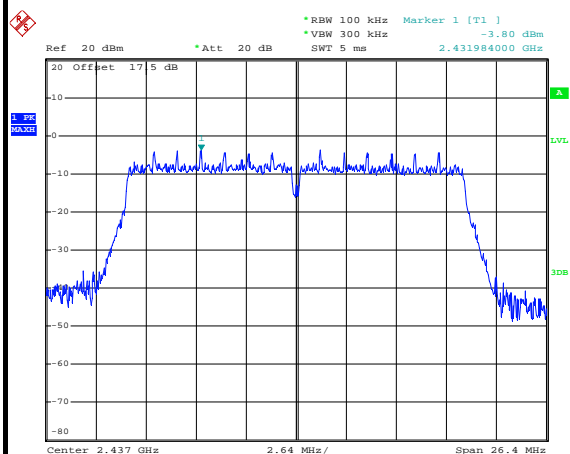
Date: 28.JUL.2014 16:55:39



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Tiny You

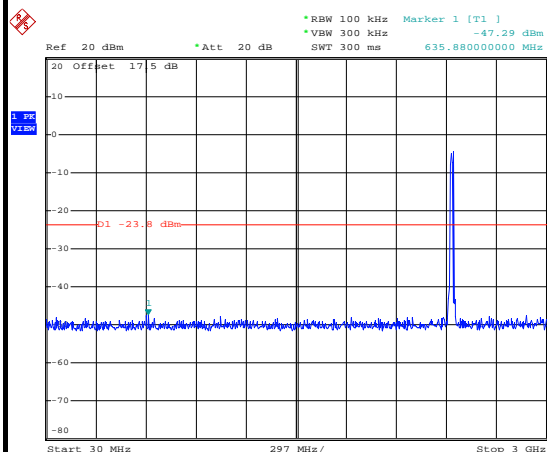
## WLAN 802.11n HT20 Channel 06

## 100kHz PSD reference Level



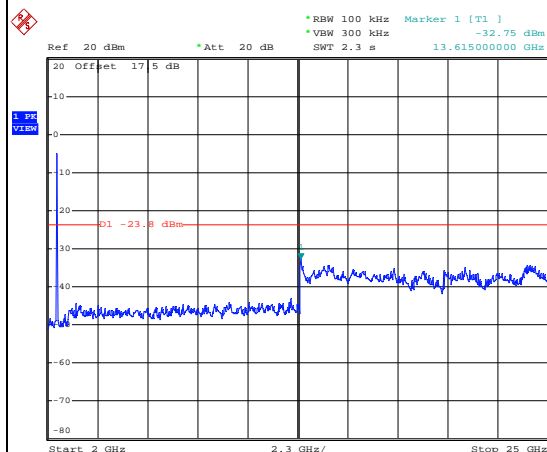
Date: 28.JUL.2014 16:59:45

## Spurious Emission 30MHz~3GHz



Date: 28.JUL.2014 17:01:30

## Spurious Emission 2GHz~25GHz



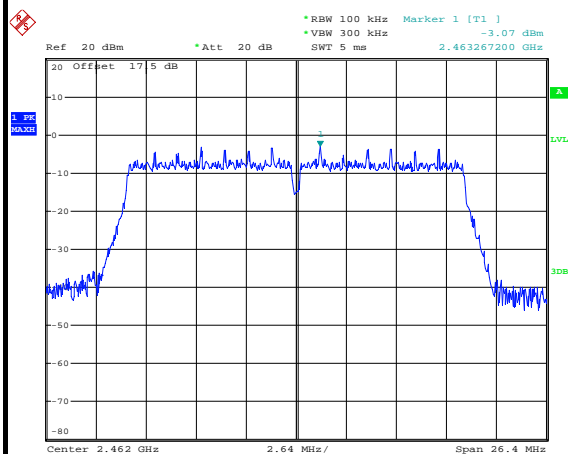
Date: 28.JUL.2014 17:01:49



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Tiny You

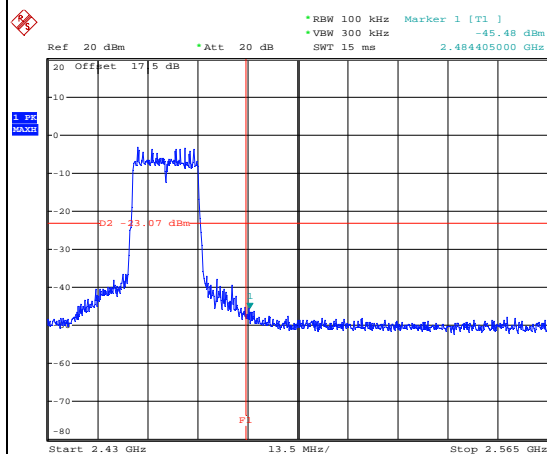
## WLAN 802.11n HT20 Channel 11

## 100kHz PSD reference Level



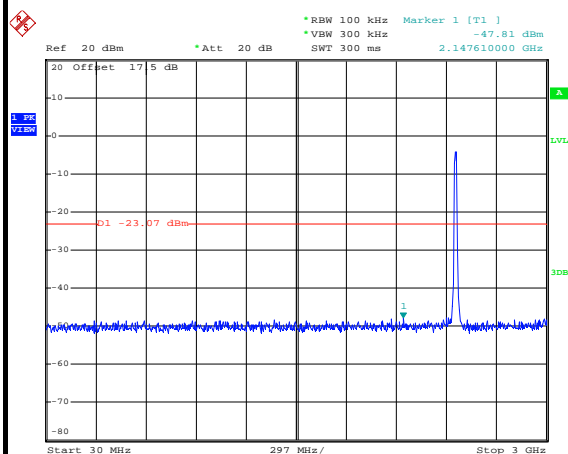
Date: 28.JUL.2014 17:04:32

## High Channel Plot



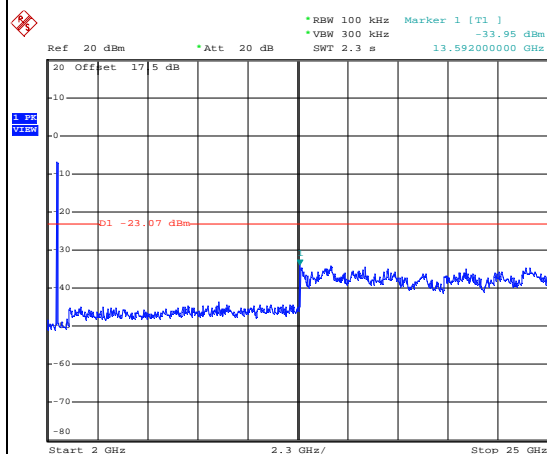
Date: 28.JUL.2014 17:08:46

## Spurious Emission 30MHz~3GHz



Date: 28.JUL.2014 17:06:48

## Spurious Emission 2GHz~25GHz



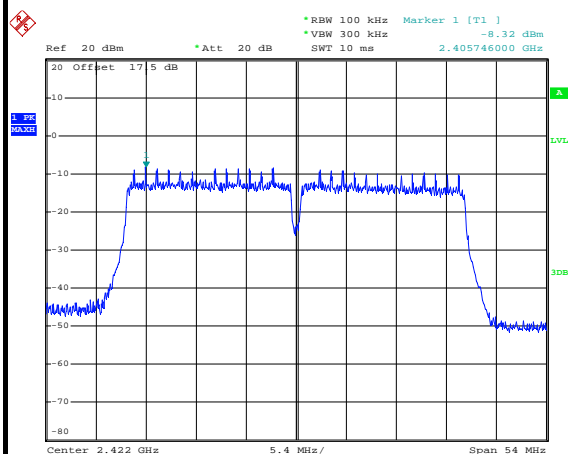
Date: 28.JUL.2014 17:07:07



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	03	Test Engineer :	Tiny You

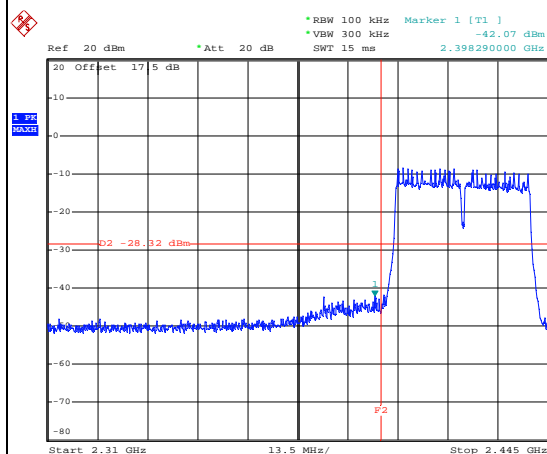
## WLAN 802.11n HT40 Channel 03

## 100kHz PSD reference Level



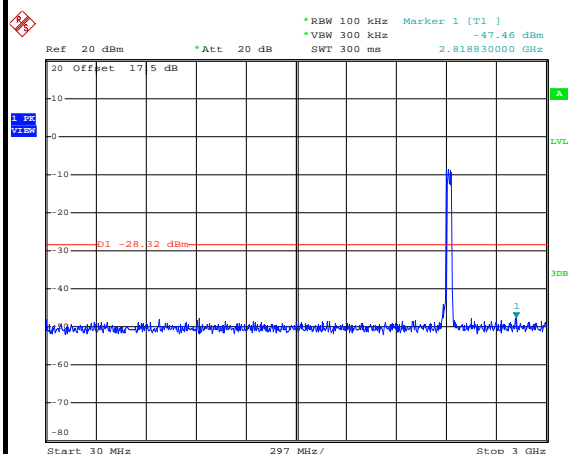
Date: 28.JUL.2014 17:14:08

## Low Channel Plot



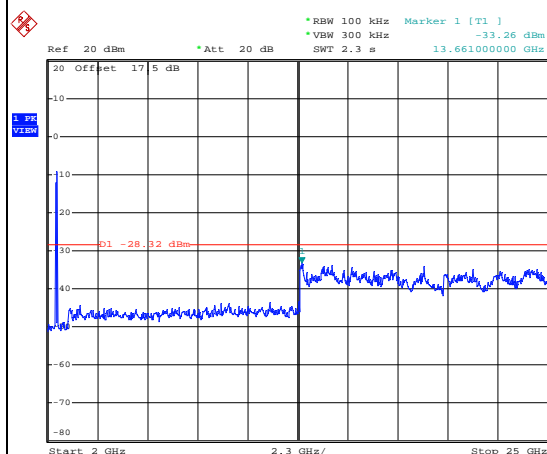
Date: 28.JUL.2014 17:14:22

## Spurious Emission 30MHz~3GHz



Date: 28.JUL.2014 17:18:58

## Spurious Emission 2GHz~25GHz



Date: 28.JUL.2014 17:16:18

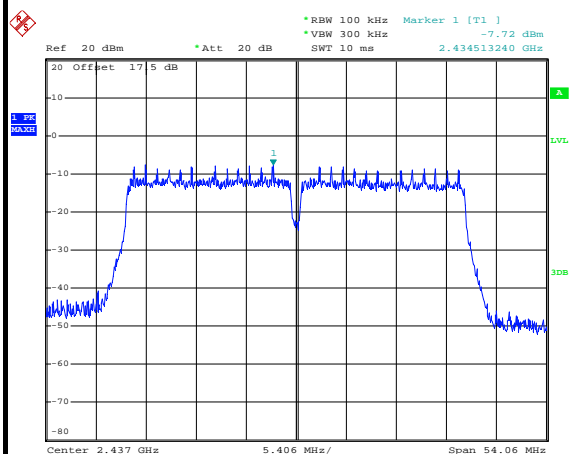




Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Tiny You

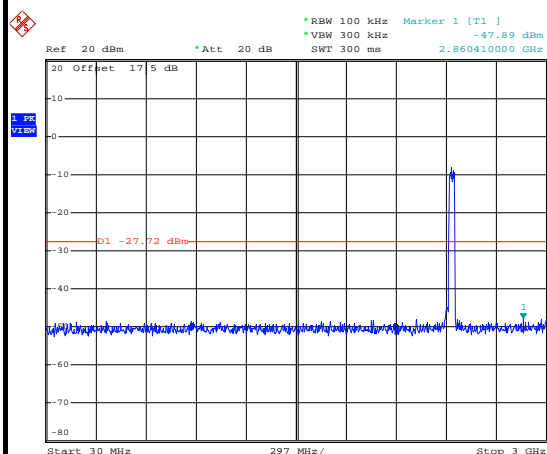
## WLAN 802.11n HT40 Channel 06

## 100kHz PSD reference Level



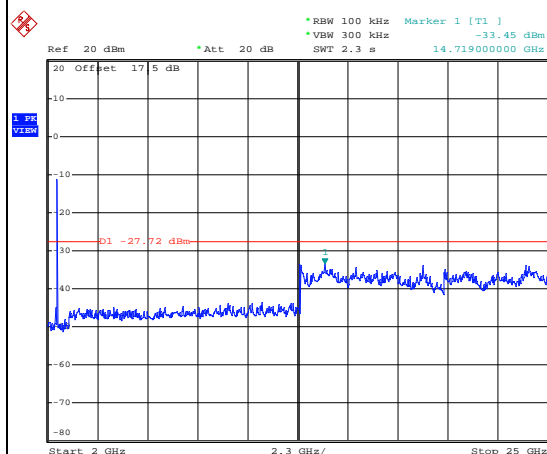
Date: 28.JUL.2014 17:22:12

## Spurious Emission 30MHz~3GHz



Date: 28.JUL.2014 17:26:33

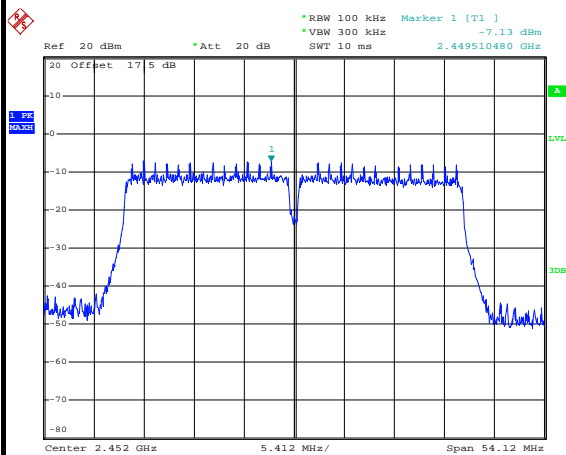
## Spurious Emission 2GHz~25GHz



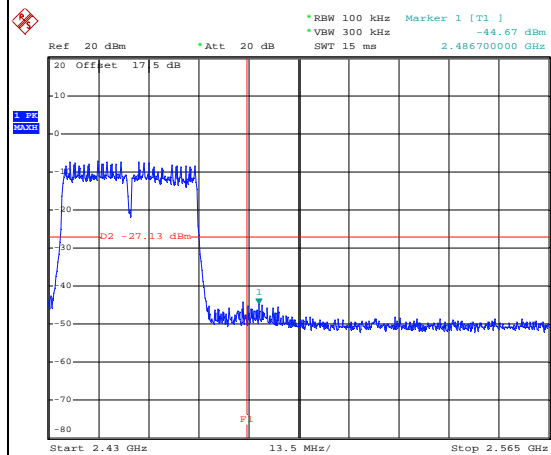
Date: 28.JUL.2014 17:24:33



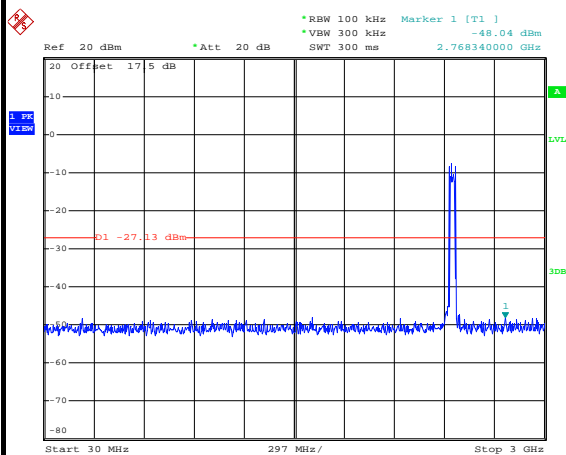
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	09	Test Engineer :	Tiny You

**WLAN 802.11n HT40 Channel 09****100kHz PSD reference Level**

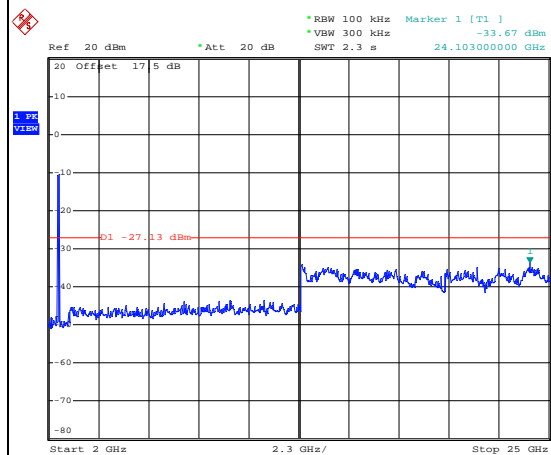
Date: 28.JUL.2014 17:29:40

**High Channel Plot**

Date: 28.JUL.2014 17:29:54

**Spurious Emission 30MHz~3GHz**

Date: 28.JUL.2014 17:35:23

**Spurious Emission 2GHz~25GHz**

Date: 28.JUL.2014 17:33:26

### 3.5 Radiated Band Edges and Spurious Emission Measurement

#### 3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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

The measuring equipment is listed in the section 4 of this test report.

### 3.5.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
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 - Preamplifier 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.

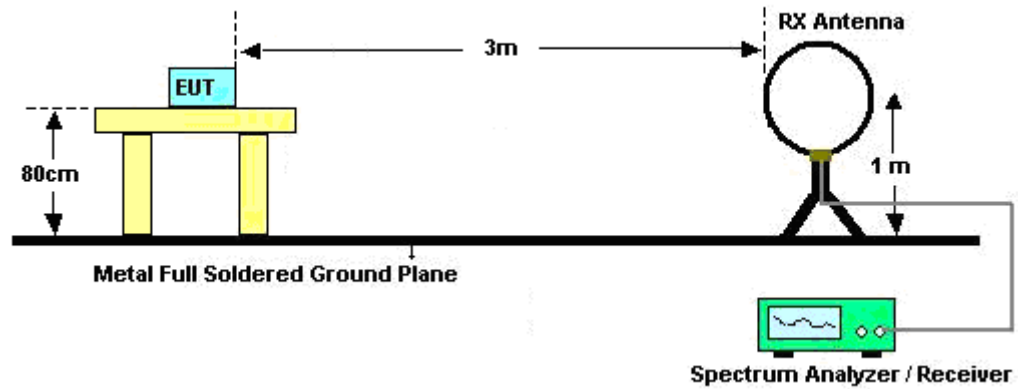
For average measurement:

  - 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.

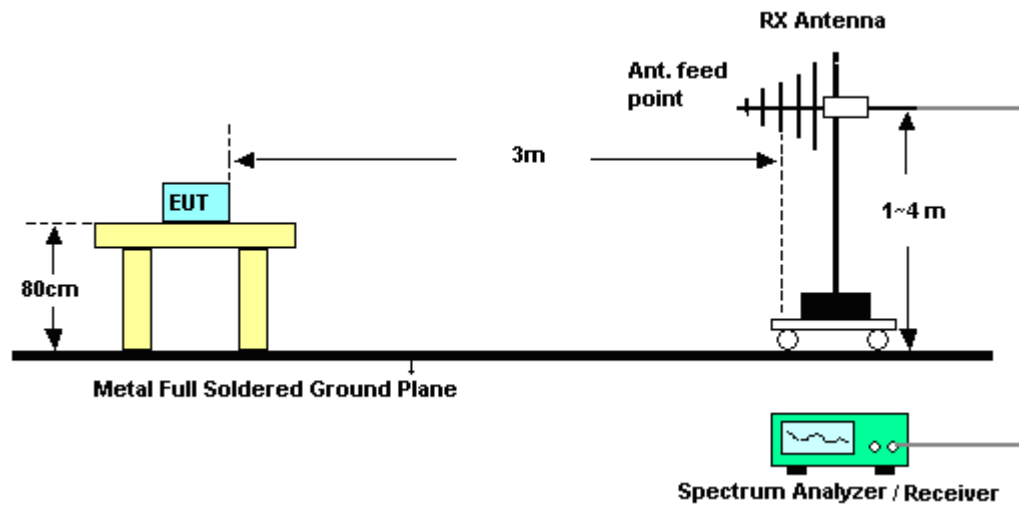
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	100.00	97.41	0.12	300Hz
802.11g	99.15	87.84	0.73	1kHz
2.4GHz 802.11n HT20	99.01	86.34	0.79	1kHz
2.4GHz 802.11n HT40	99.01	86.34	0.79	1kHz

### 3.5.4 Test Setup

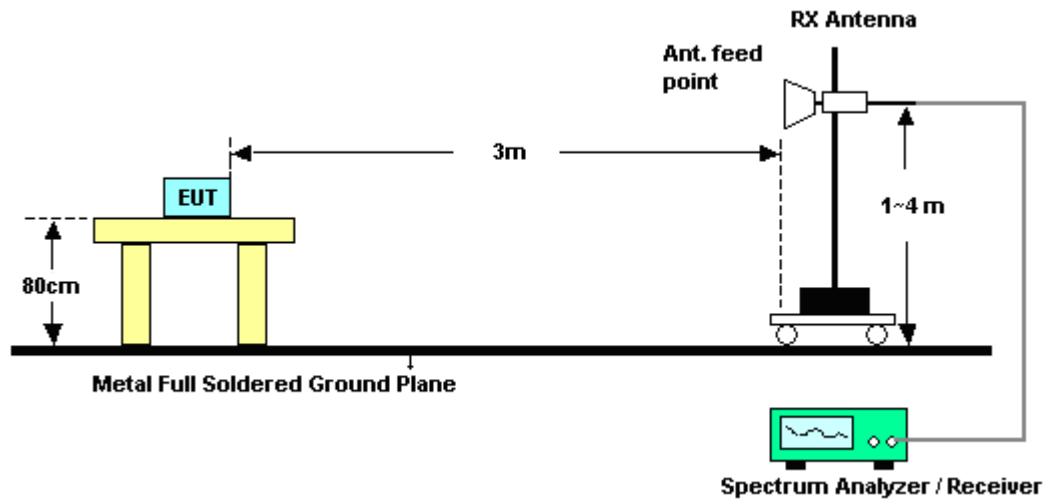
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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 Spurious at Band Edges

Test Mode :	802.11b	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	48~52%
Test Channel :	01	Test Engineer :	Kaer Huang

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
2369.94	55.99	-18.01	74	48.31	31.9	5.59	29.81	132	245	Peak
2388.12	43.87	-10.13	54	36.08	31.98	5.59	29.78	132	245	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
2355.9	49.97	-24.03	74	42.43	31.81	5.56	29.83	200	310	Peak
2358.69	38.64	-15.36	54	31.1	31.81	5.56	29.83	200	310	Average

Test Mode :	802.11b	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	48~52%
Test Channel :	11	Test Engineer :	Kaer Huang

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
2489.38	55.79	-18.21	74	47.18	32.5	5.71	29.6	127	245	Peak
2488.96	42.94	-11.06	54	34.33	32.5	5.71	29.6	127	245	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
2496.04	50.67	-23.33	74	42.03	32.5	5.74	29.6	190	310	Peak
2488.99	38.67	-15.33	54	30.06	32.5	5.71	29.6	190	310	Average



Test Mode :	802.11g	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	48~52%
Test Channel :	01	Test Engineer :	Kaer Huang

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
2383.98	67.1	-6.9	74	59.42	31.9	5.59	29.81	132	245	Peak
2389.83	51.15	-2.85	54	43.33	31.98	5.62	29.78	132	245	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
2389.56	60.39	-13.61	74	52.6	31.98	5.59	29.78	200	310	Peak
2389.92	42.63	-11.37	54	34.81	31.98	5.62	29.78	200	310	Average

Test Mode :	802.11g	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	48~52%
Test Channel :	11	Test Engineer :	Kaer Huang

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
2484.37	70.65	-3.35	74	62.16	32.41	5.71	29.63	126	245	Peak
2483.5	51.41	-2.59	54	42.92	32.41	5.71	29.63	126	245	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
2485.18	61.65	-12.35	74	53.16	32.41	5.71	29.63	200	310	Peak
2483.5	41.31	-12.69	54	32.82	32.41	5.71	29.63	200	310	Average





Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	Low	Relative Humidity :	48~52%
Test Channel :	01	Test Engineer :	Kaer Huang

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
2388.84	69.85	-4.15	74	62.06	31.98	5.59	29.78	130	245	Peak
2389.92	51.72	-2.28	54	43.9	31.98	5.62	29.78	130	245	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
2389.83	60.31	-13.69	74	52.49	31.98	5.62	29.78	200	310	Peak
2389.74	43.8	-10.2	54	36.01	31.98	5.59	29.78	200	310	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Band :	High	Relative Humidity :	48~52%
Test Channel :	11	Test Engineer :	Kaer Huang

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
2485.18	71.13	-2.87	74	62.64	32.41	5.71	29.63	100	245	Peak
2483.62	51.84	-2.16	54	43.35	32.41	5.71	29.63	100	245	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
2484.73	61.22	-12.78	74	52.73	32.41	5.71	29.63	200	310	Peak
2483.5	41.29	-12.71	54	32.8	32.41	5.71	29.63	200	310	Average



<b>Test Mode :</b>	802.11n HT40	<b>Temperature :</b>	23~25°C
<b>Test Band :</b>	Low	<b>Relative Humidity :</b>	48~52%
<b>Test Channel :</b>	03	<b>Test Engineer :</b>	Kaer Huang

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
2372.73	62	-12	74	54.32	31.9	5.59	29.81	130	245	Peak
2388.66	51.05	-2.95	54	43.26	31.98	5.59	29.78	130	245	Average
2484.34	56.99	-17.01	74	48.5	32.41	5.71	29.63	130	245	Peak
2483.5	41.7	-12.3	54	33.21	32.41	5.71	29.63	130	245	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
2388.57	60.65	-13.35	74	52.86	31.98	5.59	29.78	200	310	Peak
2385.78	44.87	-9.13	54	37.08	31.98	5.59	29.78	200	310	Average
2490.1	49.02	-24.98	74	40.41	32.5	5.71	29.6	200	310	Peak
2486.35	37.58	-16.42	54	29.09	32.41	5.71	29.63	200	310	Average



<b>Test Mode :</b>	802.11n HT40	<b>Temperature :</b>	23~25°C
<b>Test Band :</b>	High	<b>Relative Humidity :</b>	48~52%
<b>Test Channel :</b>	09	<b>Test Engineer :</b>	Kaer Huang

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2384.16	63.6	-10.4	74	55.92	31.9	5.59	29.81	130	245	Peak
2386.95	46.72	-7.28	54	38.93	31.98	5.59	29.78	130	245	Average
2487.31	68.92	-5.08	74	60.43	32.41	5.71	29.63	130	245	Peak
2484.07	50.82	-3.18	54	42.33	32.41	5.71	29.63	130	245	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2384.43	55.41	-18.59	74	47.73	31.9	5.59	29.81	200	310	Peak
2385.69	39.4	-14.6	54	31.61	31.98	5.59	29.78	200	310	Average
2490.31	58.44	-15.56	74	49.83	32.5	5.71	29.6	200	310	Peak
2483.56	41.52	-12.48	54	33.03	32.41	5.71	29.63	200	310	Average

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

**Note:** Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 1GHz.

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	106.2	-	-	98.26	32.07	5.62	29.75	132	245	Peak
2412	104.2	-	-	96.26	32.07	5.62	29.75	132	245	Average
4824	43.11	-30.89	74	30	33.82	8.36	29.07	105	198	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	98.42	-	-	90.48	32.07	5.62	29.75	200	310	Peak
2412	96.55	-	-	88.61	32.07	5.62	29.75	200	310	Average
4824	43.38	-30.62	74	30.27	33.82	8.36	29.07	105	198	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	106.52	-	-	98.32	32.24	5.65	29.69	128	245	Peak
2437	104.74	-	-	96.54	32.24	5.65	29.69	128	245	Average
4874	43.79	-30.21	74	30.49	33.93	8.41	29.04	145	265	Peak
7311	33.18	-40.82	74	46.47	33.89	9.99	57.17	174	321	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	98.41	-	-	90.21	32.24	5.65	29.69	200	310	Peak
2437	96.56	-	-	88.36	32.24	5.65	29.69	200	310	Average
4874	42.55	-31.45	74	29.25	33.93	8.41	29.04	145	265	Peak
7311	32.89	-41.11	74	46.18	33.89	9.99	57.17	174	321	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2462	106.57	-	-	98.22	32.33	5.68	29.66	127	245	Peak
2462	104.63	-	-	96.28	32.33	5.68	29.66	127	245	Average
4924	43.53	-30.47	74	30.03	34.05	8.46	29.01	146	347	Peak
7386	33.34	-40.66	74	46.47	33.94	10.02	57.09	145	274	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2462	98.98	-	-	90.63	32.33	5.68	29.66	190	310	Peak
2462	97.05	-	-	88.7	32.33	5.68	29.66	190	310	Average
4924	44.8	-29.2	74	31.3	34.05	8.46	29.01	146	347	Peak
7386	33.5	-40.5	74	46.63	33.94	10.02	57.09	145	274	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	107.52	-	-	99.58	32.07	5.62	29.75	132	245	Peak
2412	98.6	-	-	90.66	32.07	5.62	29.75	132	245	Average
4824	43.67	-30.33	74	30.56	33.82	8.36	29.07	105	198	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	98.64	-	-	90.7	32.07	5.62	29.75	200	310	Peak
2412	90.2	-	-	82.26	32.07	5.62	29.75	200	310	Average
4824	43.58	-30.42	74	30.47	33.82	8.36	29.07	105	198	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	112.6	-	-	104.4	32.24	5.65	29.69	133	72	Peak
2437	104.27	-	-	96.07	32.24	5.65	29.69	133	72	Average
4874	44.27	-29.73	74	30.97	33.93	8.41	29.04	145	265	Peak
7311	35.23	-38.77	74	48.52	33.89	9.99	57.17	174	321	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	105.4	-	-	97.2	32.24	5.65	29.69	104	125	Peak
2437	96.51	-	-	88.31	32.24	5.65	29.69	104	125	Average
4874	45.23	-28.77	74	31.93	33.93	8.41	29.04	145	265	Peak
7311	33.32	-40.68	74	46.61	33.89	9.99	57.17	174	321	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2462	107.77	-	-	99.42	32.33	5.68	29.66	126	245	Peak
2462	98.93	-	-	90.58	32.33	5.68	29.66	126	245	Average
4924	43.66	-30.34	74	30.16	34.05	8.46	29.01	146	347	Peak
7386	33.47	-40.53	74	46.6	33.94	10.02	57.09	145	274	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2462	99.75	-	-	91.4	32.33	5.68	29.66	200	310	Peak
2462	90.65	-	-	82.3	32.33	5.68	29.66	200	310	Average
4924	43.76	-30.24	74	30.26	34.05	8.46	29.01	146	347	Peak
7386	33.21	-40.79	74	46.34	33.94	10.02	57.09	145	274	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	107.13	-	-	99.19	32.07	5.62	29.75	130	245	Peak
2412	98.19	-	-	90.25	32.07	5.62	29.75	130	245	Average
4824	44.86	-29.14	74	31.75	33.82	8.36	29.07	105	198	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	99.25	-	-	91.31	32.07	5.62	29.75	200	310	Peak
2412	90.41	-	-	82.47	32.07	5.62	29.75	200	310	Average
4824	43.44	-30.56	74	30.33	33.82	8.36	29.07	105	198	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	112.43	-	-	104.23	32.24	5.65	29.69	131	70	Peak
2437	103.75	-	-	95.55	32.24	5.65	29.69	131	70	Average
4874	43.12	-30.88	74	29.82	33.93	8.41	29.04	145	265	Peak
7311	34.79	-39.21	74	48.08	33.89	9.99	57.17	174	321	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	106.41	-	-	98.21	32.24	5.65	29.69	160	124	Peak
2437	97.47	-	-	89.27	32.24	5.65	29.69	160	124	Average
4874	43.91	-30.09	74	30.61	33.93	8.41	29.04	145	265	Peak
7311	33.83	-40.17	74	47.12	33.89	9.99	57.17	174	321	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
95.96	27.89	-15.61	43.5	46.15	10.44	1.24	29.94	-	-	Peak
155.13	28.55	-14.95	43.5	47.68	9.3	1.51	29.94	-	-	Peak
194.9	32.28	-11.22	43.5	51.65	8.9	1.67	29.94	100	20	Peak
266.68	25.3	-20.7	46	41.08	12.25	1.9	29.93	-	-	Peak
359.8	20.67	-25.33	46	33.63	14.8	2.17	29.93	-	-	Peak
629.46	23.19	-22.81	46	31.71	18.6	2.81	29.93	-	-	Peak
2462	106.81	-	-	98.46	32.33	5.68	29.66	100	245	Peak
2462	98.56	-	-	90.21	32.33	5.68	29.66	100	245	Average
4924	44.45	-29.55	74	30.95	34.05	8.46	29.01	146	347	Peak
7386	34.49	-39.51	74	47.62	33.94	10.02	57.09	145	274	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
32.91	30.45	-9.55	40	42.29	17.3	0.79	29.93	120	50	Peak
104.69	28.27	-15.23	43.5	45.32	11.6	1.29	29.94	-	-	Peak
191.99	29.48	-14.02	43.5	48.98	8.78	1.66	29.94	-	-	Peak
404.42	21.43	-24.57	46	32.91	16.13	2.31	29.92	-	-	Peak
608.12	23.23	-22.77	46	31.77	18.6	2.78	29.92	-	-	Peak
743.92	25.29	-20.71	46	31.75	20.42	3.05	29.93	-	-	Peak
2462	99.53	-	-	91.18	32.33	5.68	29.66	200	310	Peak
2462	90.77	-	-	82.42	32.33	5.68	29.66	200	310	Average
4924	44.18	-29.82	74	30.68	34.05	8.46	29.01	146	347	Peak
7386	33.77	-40.23	74	46.9	33.94	10.02	57.09	145	274	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2422 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2422	102.55	-	-	94.46	32.16	5.65	29.72	130	245	Peak
2422	94.65	-	-	86.56	32.16	5.65	29.72	130	245	Average
4844	44.69	-29.31	74	31.51	33.86	8.38	29.06	126	248	Peak
7266	34.05	-39.95	74	47.41	33.87	9.98	57.21	185	252	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2422 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2422	94.96	-	-	86.87	32.16	5.65	29.72	200	310	Peak
2422	86.83	-	-	78.74	32.16	5.65	29.72	200	310	Average
4844	43.62	-30.38	74	30.44	33.86	8.38	29.06	126	248	Peak
7266	33.45	-40.55	74	46.81	33.87	9.98	57.21	185	252	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	104.36	-	-	96.16	32.24	5.65	29.69	130	245	Peak
2437	95.85	-	-	87.65	32.24	5.65	29.69	130	245	Average
4874	45.24	-28.76	74	31.94	33.93	8.41	29.04	132	224	Peak
7311	35.16	-38.84	74	48.45	33.89	9.99	57.17	119	347	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	96.15	-	-	87.95	32.24	5.65	29.69	200	310	Peak
2437	87.78	-	-	79.58	32.24	5.65	29.69	200	310	Average
4874	44.82	-29.18	74	31.52	33.93	8.41	29.04	132	224	Peak
7311	34.52	-39.48	74	47.81	33.89	9.99	57.17	119	347	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2452 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2452	103.88	-	-	95.65	32.24	5.68	29.69	130	245	Peak
2452	95.78	-	-	87.55	32.24	5.68	29.69	130	245	Average
4904	44.96	-29.04	74	31.53	34.01	8.44	29.02	125	214	Peak
7356	33.9	-40.1	74	47.09	33.92	10.01	57.12	127	315	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT40	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	48~52%
<b>Test Engineer :</b>	Kaer Huang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2452 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2452	95.4	-	-	87.17	32.24	5.68	29.69	200	310	Peak
2452	87.09	-	-	78.86	32.24	5.68	29.69	200	310	Average
4904	43.55	-30.45	74	30.12	34.01	8.44	29.02	125	214	Peak
7356	35.41	-38.59	74	48.6	33.92	10.01	57.12	127	315	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 (dB $\mu$ V)	
	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.

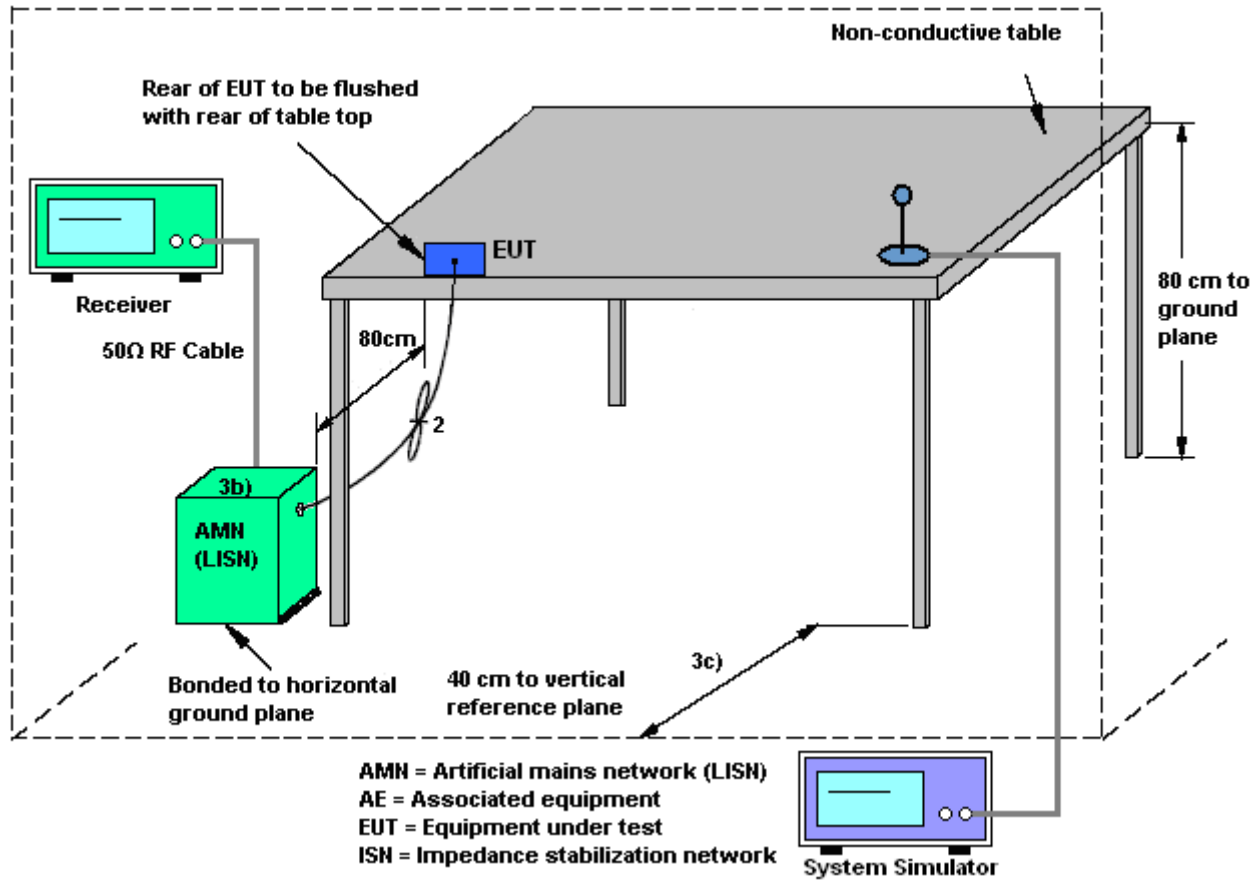
#### 3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.6.3 Test Procedures

1. 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.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

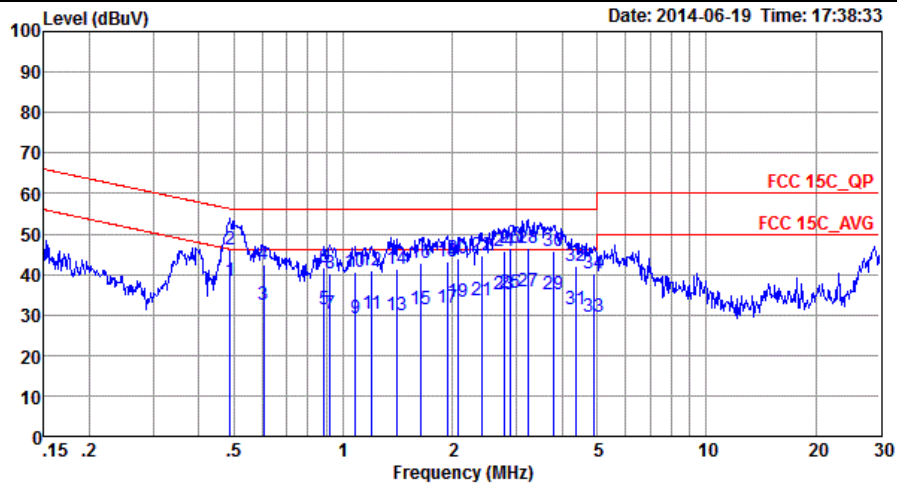
### 3.6.4 Test Setup





## 3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~22℃
Test Engineer :	Jack Tian	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone		

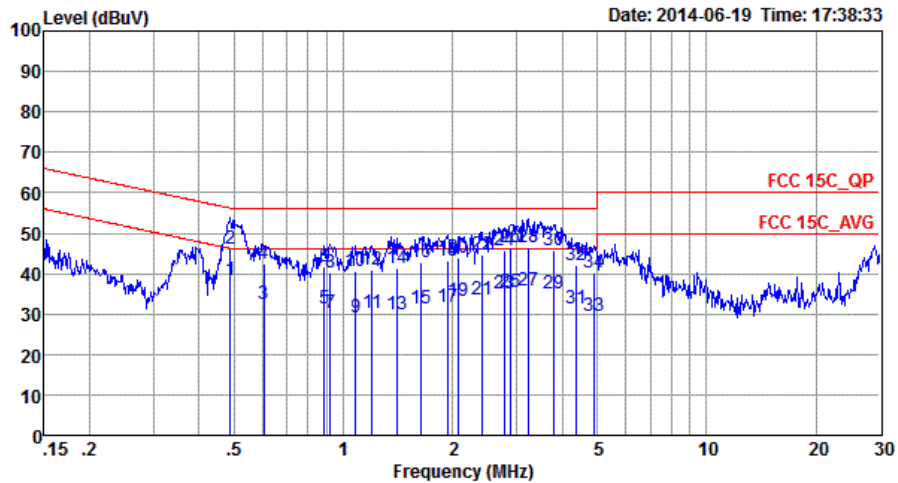


Site : CO01-SZ  
Condition: FCC 15C\_QP LISN\_L\_20140304 LINE  
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.49	38.25	-7.94	46.19	27.79	0.30	10.16	Average
2	0.49	46.25	-9.94	56.19	35.79	0.30	10.16	QP
3	0.60	32.38	-13.62	46.00	22.00	0.23	10.15	Average
4	0.60	42.58	-13.42	56.00	32.20	0.23	10.15	QP
5	0.88	31.48	-14.52	46.00	21.10	0.23	10.15	Average
6	0.88	41.78	-14.22	56.00	31.40	0.23	10.15	QP
7	0.92	30.09	-15.91	46.00	19.70	0.24	10.15	Average
8	0.92	40.19	-15.81	56.00	29.80	0.24	10.15	QP
9	1.08	29.01	-16.99	46.00	18.60	0.26	10.15	Average
10	1.08	40.51	-15.49	56.00	30.10	0.26	10.15	QP
11	1.20	30.21	-15.79	46.00	19.80	0.25	10.16	Average
12	1.20	41.01	-14.99	56.00	30.60	0.25	10.16	QP
13	1.41	30.01	-15.99	46.00	19.60	0.24	10.17	Average
14	1.41	41.41	-14.59	56.00	31.00	0.24	10.17	QP
15	1.64	31.31	-14.69	46.00	20.90	0.23	10.18	Average
16	1.64	42.81	-13.19	56.00	32.40	0.23	10.18	QP
17	1.94	31.61	-14.39	46.00	21.20	0.22	10.19	Average
18	1.94	43.11	-12.89	56.00	32.70	0.22	10.19	QP
19	2.08	33.22	-12.78	46.00	22.80	0.23	10.19	Average
20	2.08	44.02	-11.98	56.00	33.60	0.23	10.19	QP
21	2.41	33.66	-12.34	46.00	23.20	0.26	10.20	Average
22	2.41	44.76	-11.24	56.00	34.30	0.26	10.20	QP
23	2.78	34.90	-11.10	46.00	24.40	0.29	10.21	Average
24	2.78	45.90	-10.10	56.00	35.40	0.29	10.21	QP
25	2.88	35.41	-10.59	46.00	24.90	0.30	10.21	Average



Test Mode :	Mode 1	Temperature :	21~22℃
Test Engineer :	Jack Tian	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone		

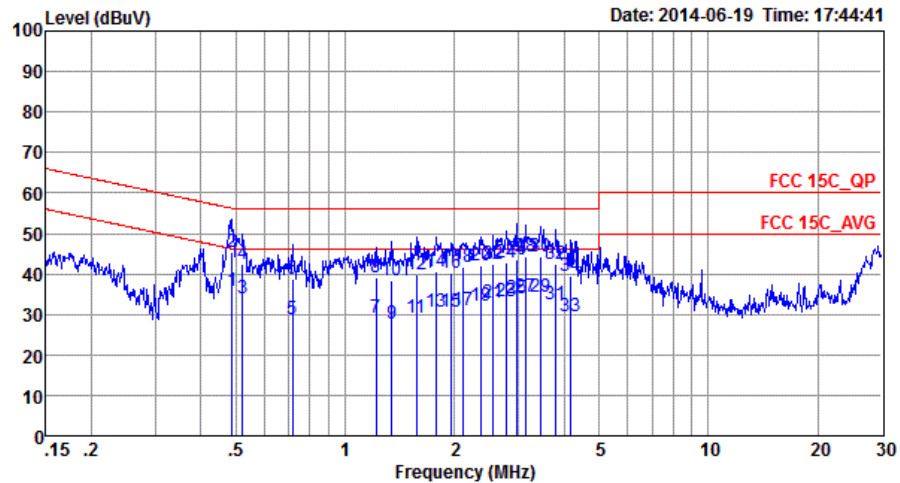


Site : C001-SZ  
Condition: FCC 15C\_QP LISN\_L\_20140304 LINE  
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
26	2.88	46.41	-9.59	56.00	35.90	0.30	10.21	QP
27	3.22	35.84	-10.16	46.00	25.30	0.32	10.22	Average
28	3.22	46.64	-9.36	56.00	36.10	0.32	10.22	QP
29	3.80	35.08	-10.92	46.00	24.50	0.36	10.22	Average
30	3.80	45.68	-10.32	56.00	35.10	0.36	10.22	QP
31	4.36	31.32	-14.68	46.00	20.70	0.39	10.23	Average
32	4.36	42.12	-13.88	56.00	31.50	0.39	10.23	QP
33	4.90	29.36	-16.64	46.00	18.70	0.42	10.24	Average
34	4.90	40.16	-15.84	56.00	29.50	0.42	10.24	QP



Test Mode :	Mode 1	Temperature :	21~22°C
Test Engineer :	Jack Tian	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone		



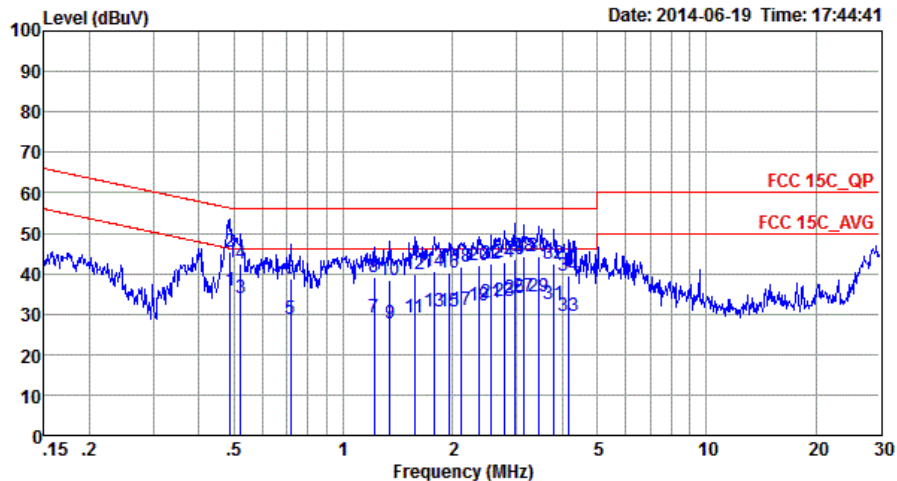
Site : C001-SZ  
Condition: FCC 15C\_QP LISN\_N\_20140304 NEUTRAL

Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.49	35.96	-10.23	46.19	25.39	0.41	10.16	Average
2	0.49	45.36	-10.83	56.19	34.79	0.41	10.16	QP
3	0.52	33.95	-12.05	46.00	23.41	0.39	10.15	Average
4	0.52	42.55	-13.45	56.00	32.01	0.39	10.15	QP
5	0.72	28.61	-17.39	46.00	18.20	0.26	10.15	Average
6	0.72	38.81	-17.19	56.00	28.40	0.26	10.15	QP
7	1.22	29.20	-16.80	46.00	18.70	0.34	10.16	Average
8	1.22	39.20	-16.80	56.00	28.70	0.34	10.16	QP
9	1.34	27.71	-18.29	46.00	17.19	0.35	10.17	Average
10	1.34	38.31	-17.69	56.00	27.79	0.35	10.17	QP
11	1.57	29.23	-16.77	46.00	18.69	0.36	10.18	Average
12	1.57	39.93	-16.07	56.00	29.39	0.36	10.18	QP
13	1.78	30.75	-15.25	46.00	20.21	0.36	10.18	Average
14	1.78	40.75	-15.25	56.00	30.21	0.36	10.18	QP
15	1.96	30.66	-15.34	46.00	20.10	0.37	10.19	Average
16	1.96	40.16	-15.84	56.00	29.60	0.37	10.19	QP
17	2.11	31.17	-14.83	46.00	20.60	0.38	10.19	Average
18	2.11	41.67	-14.33	56.00	31.10	0.38	10.19	QP
19	2.36	32.19	-13.81	46.00	21.60	0.39	10.20	Average
20	2.36	42.19	-13.81	56.00	31.60	0.39	10.20	QP
21	2.55	32.80	-13.20	46.00	22.20	0.40	10.20	Average
22	2.55	42.60	-13.40	56.00	32.00	0.40	10.20	QP
23	2.78	33.12	-12.88	46.00	22.50	0.41	10.21	Average
24	2.78	42.82	-13.18	56.00	32.20	0.41	10.21	QP
25	2.96	33.83	-12.17	46.00	23.20	0.42	10.21	Average



Test Mode :	Mode 1	Temperature :	21~22℃
Test Engineer :	Jack Tian	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter) + Earphone		



Site : C001-SZ  
Condition: FCC 15C\_QP LISN\_N\_20140304 NEUTRAL  
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
26	2.96	43.43	-12.57	56.00	32.80	0.42	10.21	QP
27	3.14	34.24	-11.76	46.00	23.60	0.43	10.21	Average
28	3.14	44.14	-11.86	56.00	33.50	0.43	10.21	QP
29	3.45	34.26	-11.74	46.00	23.60	0.44	10.22	Average
30	3.45	44.16	-11.84	56.00	33.50	0.44	10.22	QP
31	3.80	32.48	-13.52	46.00	21.81	0.45	10.22	Average
32	3.80	42.28	-13.72	56.00	31.61	0.45	10.22	QP
33	4.16	29.60	-16.40	46.00	18.90	0.47	10.23	Average
34	4.16	39.40	-16.60	56.00	28.70	0.47	10.23	QP



## **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 Anti-Replacement Construction**

An embedded-in antenna design is 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	FSV40	101078	10Hz~40GHz	May 08, 2014	Jul. 28, 2014~ Jul. 30, 2014	May 07, 2015	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	13dBm~-20dBm	Mar. 03, 2014	Jul. 28, 2014~ Jul. 30, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	0.3GHz~40GHz	Mar. 03, 2014	Jul. 28, 2014~ Jul. 30, 2014	Mar. 02, 2015	Conducted (TH01-SZ)
Thermal Chamber	Hongzhan	LP-150U	HD201204 25	-40℃~150℃	Feb. 21, 2014	Jul. 28, 2014~ Jul. 30, 2014	Feb. 20, 2015	Conducted (TH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Jul. 27, 2014~ Aug. 01, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY522601 85	20Hz~26.5GHz	May 26, 2014	Jul. 27, 2014~ Aug. 01, 2014	May 25, 2015	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 09, 2014	Jul. 27, 2014~ Aug. 01, 2014	May 08, 2015	Radiation (03CH01-SZ)
Bilog Antenna	TESEQ	CBL 6112D	23188	30MHz~2GHz	Oct. 26, 2013	Jul. 27, 2014~ Aug. 01, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	Jul. 27, 2014~ Aug. 01, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Double Ridged Horn Antenna	COM-POWER	AH-840	101073	18GHz~40GHz	Jan. 27, 2014	Jul. 27, 2014~ Aug. 01, 2014	Jan. 26, 2015	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz	Feb. 21, 2014	Jul. 27, 2014~ Aug. 01, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	May 08, 2014	Jul. 27, 2014~ Aug. 01, 2014	May 07, 2015	Radiation (03CH01-SZ)
AC Source(AVR)	Chroma	61601	616010001 985	100Vac~250Vac	Mar. 25, 2014	Jul. 27, 2014~ Aug. 01, 2014	Mar. 24, 2015	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	Jul. 27, 2014~ Aug. 01, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	Jul. 27, 2014~ Aug. 01, 2014	NCR	Radiation (03CH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Jun. 19, 2014	Feb. 20, 2015	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Mar. 04, 2014	Jun. 19, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Mar. 04, 2014	Jun. 19, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000 891	100Vac~250Vac	Dec. 17, 2013	Jun. 19, 2014	Dec. 16, 2014	Conduction (CO01-SZ)





## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.3
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.5
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