



# FCC RF Test Report

APPLICANT : ZTE CORPORATION  
EQUIPMENT : Wireless Data Terminal  
BRAND NAME : ZTE  
MODEL NAME : AC3635  
FCC ID : SRQ-AC3635  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Jul. 23, 2013 and completely tested on Aug. 13, 2013. We, SPORTON INTERNATIONAL (SHENZHEN) 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 (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

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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## 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 3.01 dB at 2483.500 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 13.04 dB at 0.190 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

# 1 General Description

## 1.1 Applicant

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China

## 1.2 Manufacturer

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China

## 1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Wireless Data Terminal
Brand Name	ZTE
Model Name	AC3635
FCC ID	SRQ-AC3635
EUT supports Radios application	CDMA/EV-DO/WLAN 11bgn
HW Version	AC3635MD_B
SW Version	YR9AD004
EUT Stage	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 of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz
Maximum Output Power to Antenna	802.11b : 13.19 dBm (0.0208 W) 802.11g : 16.61 dBm (0.0458 W) 802.11n HT20 : 15.70 dBm (0.0372 W)
Antenna Type	802.11b/g/n : Dipole Antenna with gain -3 dBi
Type of Modulation	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 Site

<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

**Note:** The test site complies with ANSI C63.4 2003 requirement.

### 1.7 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 v03r01
- ♦ ANSI C63.10-2009

**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).

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 rates as following table and the highest peak power data rates were chosen for full test in the following tables.

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	13.19	13.12	13.15	13.14

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	16.61	16.17	16.53	15.82	16.57	16.21	16.20	16.14

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	15.70	15.19	15.49	15.18	15.08	15.02	15.42	14.85

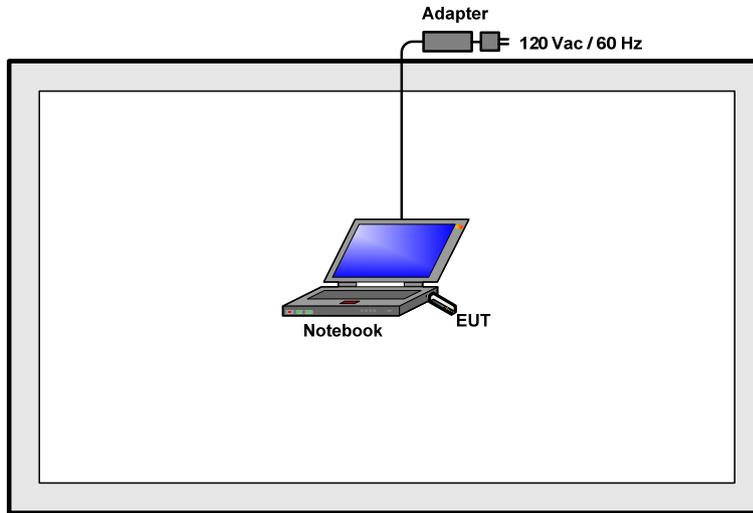
## 2.3 Test Mode

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

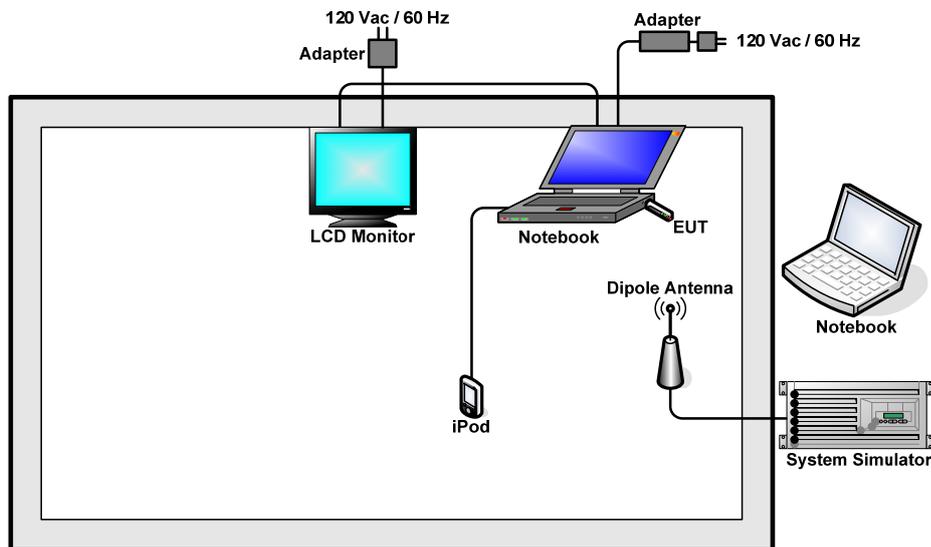
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
	Conducted Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
AC Conducted Emission	Mode 1 : CDMA2000 BC0 Idle + WLAN Link + USB Charging (Charging from Notebook)			

## 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	Agilent	E5515C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	TOPWORD	3303DR	N/A	N/A	Unshielded, 1.8 m
3.	Monitor	DELL	1707FPt	FCC DoC	Shielded, 1.2 m	Unshielded, 1.8 m
4.	Monitor	DELL	IN1940MWB	FCC DoC	Shielded, 1.2 m	Unshielded, 1.8 m
5.	iPod	Apple	MC525 ZP/A	FCC DoC	Shielded, 1.0 m	N/A
6.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
7.	Notebook	DELL	PP42L	FCC DoC	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m

## 2.6 Description of RF Function Operation Test Setup

For WLAN RF test items, an 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 notebook 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.

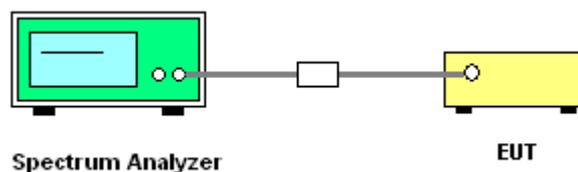
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r01.
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.

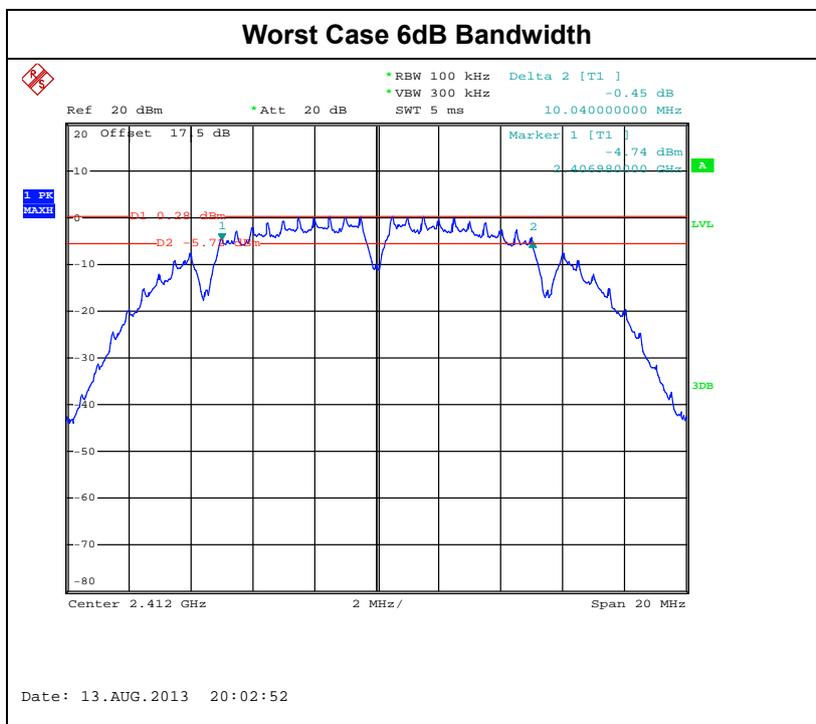
##### 3.1.4 Test Setup



3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Test Band :	2.4GHz	Temperature :	24~26°C
Test Engineer :	Blithe Li	Relative Humidity :	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	10.04	0.5	Pass
11b	1Mbps	1	6	2437	10.08	0.5	Pass
11b	1Mbps	1	11	2462	10.08	0.5	Pass
11g	6Mbps	1	1	2412	16.32	0.5	Pass
11g	6Mbps	1	6	2437	16.32	0.5	Pass
11g	6Mbps	1	11	2462	16.32	0.5	Pass
HT20	MCS0	1	1	2412	17.52	0.5	Pass
HT20	MCS0	1	6	2437	17.52	0.5	Pass
HT20	MCS0	1	11	2462	17.36	0.5	Pass



## 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.

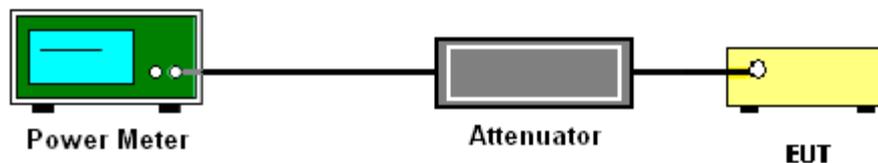
### 3.2.2 Measuring Instruments

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 v03r01.
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

Test Mode :	2.4GHz	Temperature :	24~26°C
Test Engineer :	Blithe Li	Relative Humidity :	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	12.25	30	-3.00	Pass
11b	1Mbps	1	6	2437	12.73	30	-3.00	Pass
11b	1Mbps	1	11	2462	13.19	30	-3.00	Pass
11g	6Mbps	1	1	2412	15.77	30	-3.00	Pass
11g	6Mbps	1	6	2437	16.29	30	-3.00	Pass
11g	6Mbps	1	11	2462	16.61	30	-3.00	Pass
HT20	MCS0	1	1	2412	15.55	30	-3.00	Pass
HT20	MCS0	1	6	2437	15.27	30	-3.00	Pass
HT20	MCS0	1	11	2462	15.70	30	-3.00	Pass

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



3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	2.4GHz	Temperature :	24~26°C
Test Engineer :	Blithe Li	Relative Humidity :	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	0.00	10.03	30	-3.00	Pass
11b	1Mbps	1	6	2437	0.00	10.41	30	-3.00	Pass
11b	1Mbps	1	11	2462	0.00	10.85	30	-3.00	Pass
11g	6Mbps	1	1	2412	0.08	6.24	30	-3.00	Pass
11g	6Mbps	1	6	2437	0.08	6.77	30	-3.00	Pass
11g	6Mbps	1	11	2462	0.08	7.14	30	-3.00	Pass
HT20	MCS0	1	1	2412	0.07	6.05	30	-3.00	Pass
HT20	MCS0	1	6	2437	0.07	5.58	30	-3.00	Pass
HT20	MCS0	1	11	2462	0.07	6.09	30	-3.00	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.

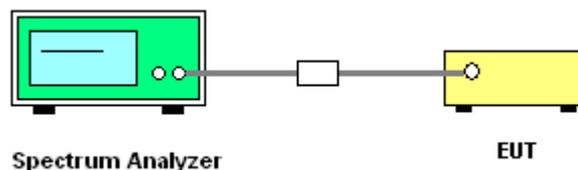
#### 3.3.2 Measuring Instruments

See list of measuring instruments 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 v03r01
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

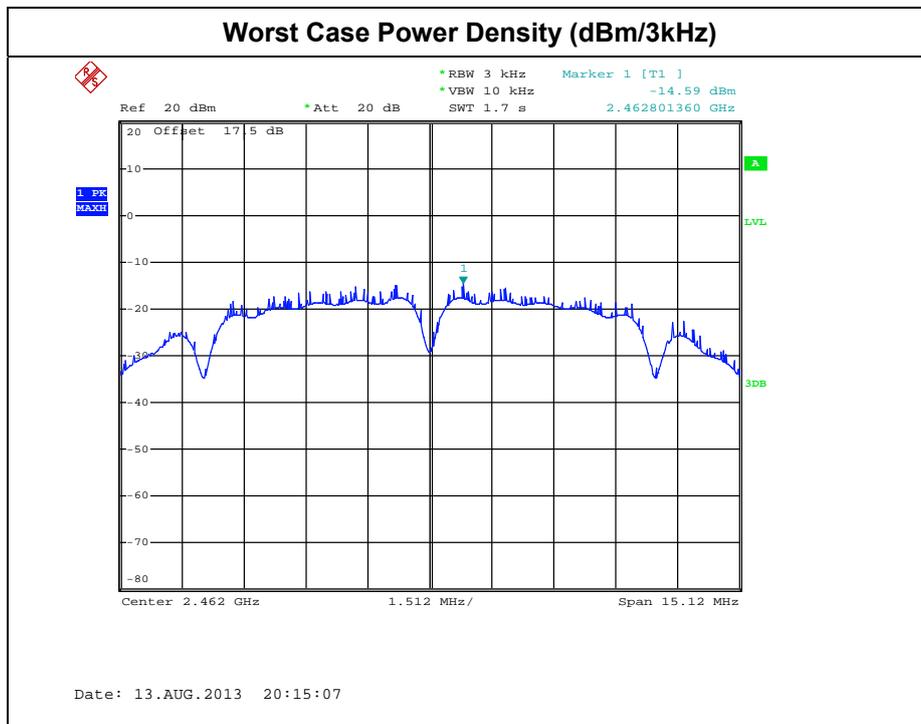


### 3.3.5 Test Result of Power Spectral Density

Test Mode :	2.4GHz	Temperature :	24~26°C
Test Engineer :	Blithe Li	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	-16.10	8	-3.00	Pass
11b	1Mbps	1	6	2437	-15.81	8	-3.00	Pass
11b	1Mbps	1	11	2462	-14.59	8	-3.00	Pass
11g	6Mbps	1	1	2412	-19.46	8	-3.00	Pass
11g	6Mbps	1	6	2437	-19.82	8	-3.00	Pass
11g	6Mbps	1	11	2462	-19.11	8	-3.00	Pass
HT20	MCS0	1	1	2412	-20.58	8	-3.00	Pass
HT20	MCS0	1	6	2437	-20.33	8	-3.00	Pass
HT20	MCS0	1	11	2462	-20.32	8	-3.00	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).

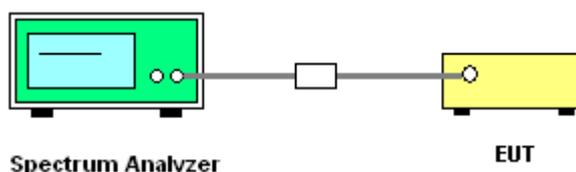
### 3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

### 3.4.3 Test Procedures

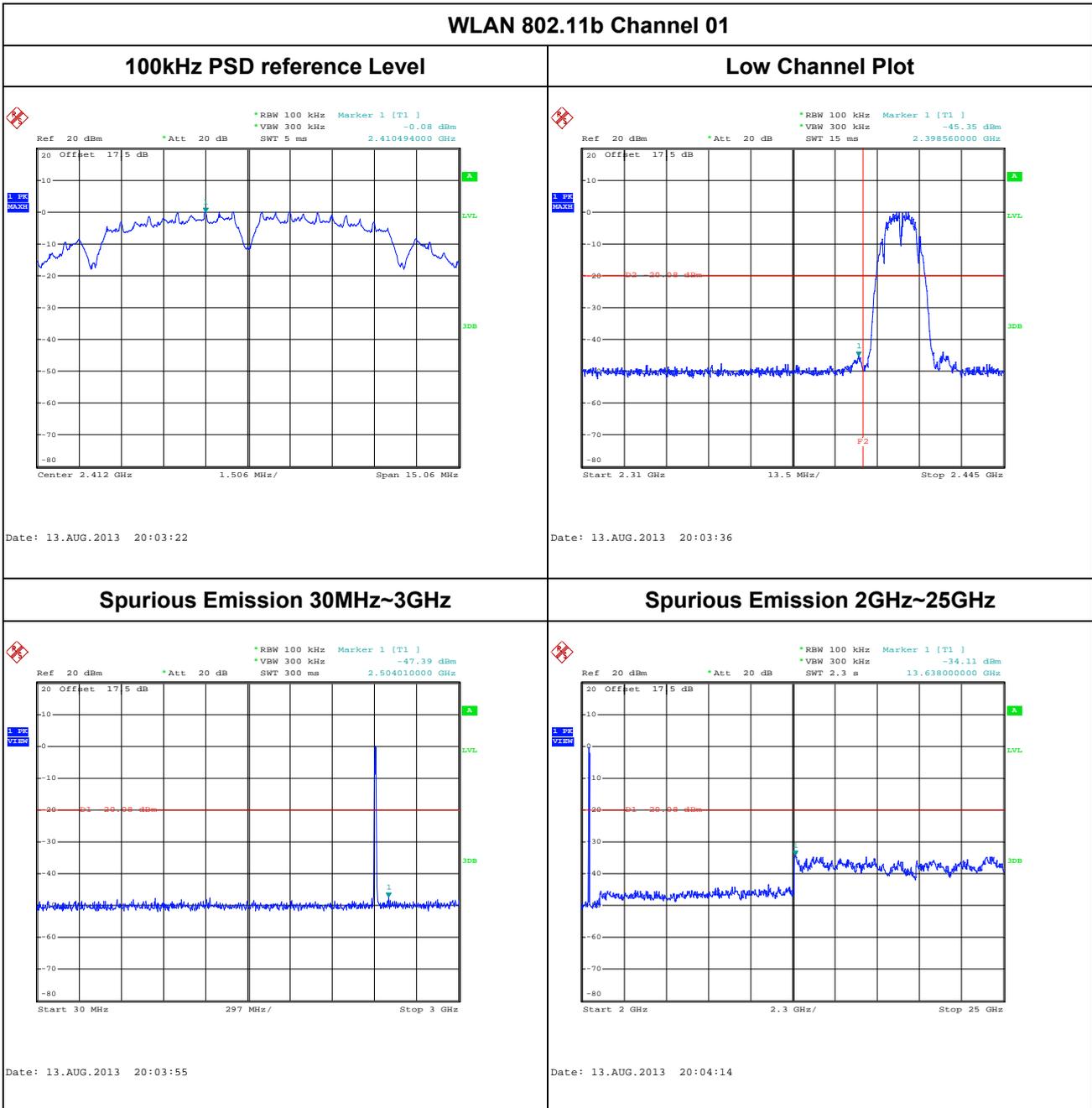
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit 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



2.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Blithe Li





Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Blithe Li

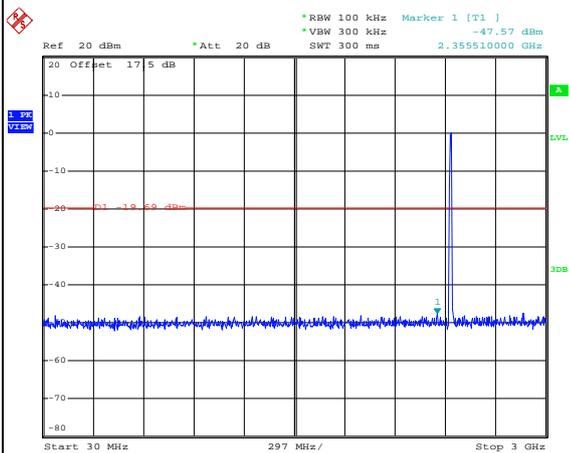
WLAN 802.11b Channel 06

100kHz PSD reference Level



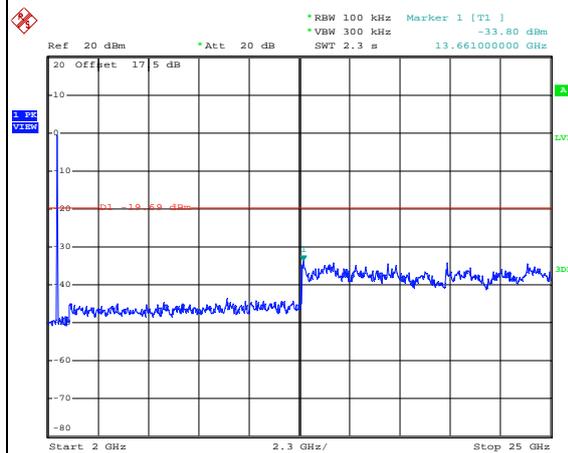
Date: 13.AUG.2013 20:09:44

Spurious Emission 30MHz~3GHz



Date: 13.AUG.2013 20:10:04

Spurious Emission 2GHz~25GHz



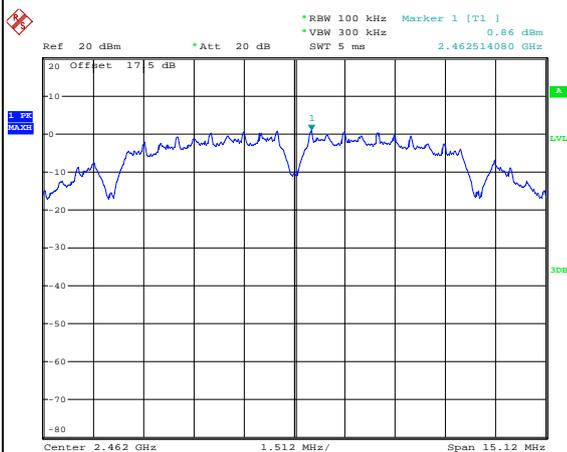
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Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Blithe Li

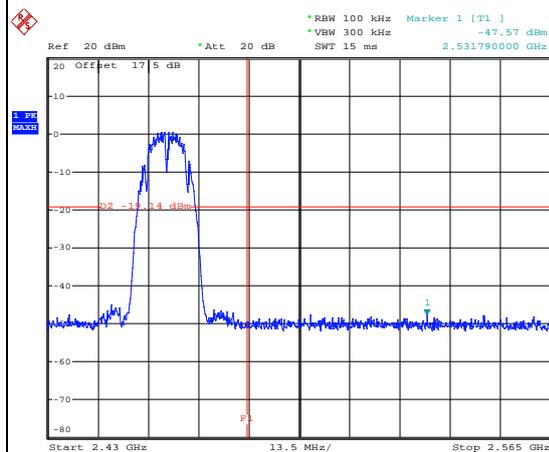
WLAN 802.11b Channel 11

100kHz PSD reference Level



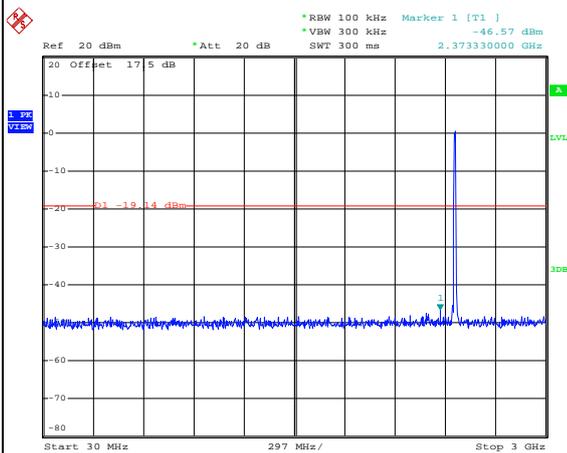
Date: 13.AUG.2013 20:15:16

High Channel Plot



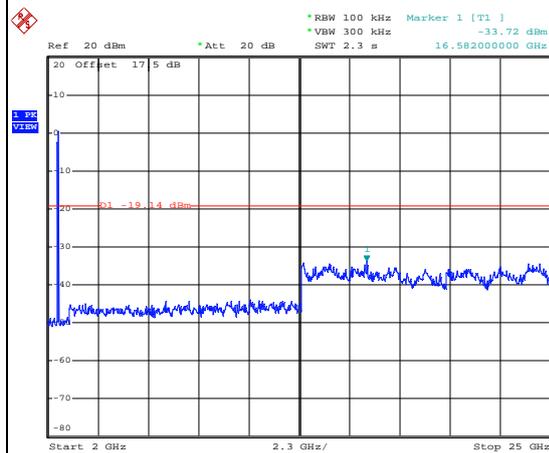
Date: 13.AUG.2013 20:15:29

Spurious Emission 30MHz~3GHz



Date: 13.AUG.2013 20:15:49

Spurious Emission 2GHz~25GHz



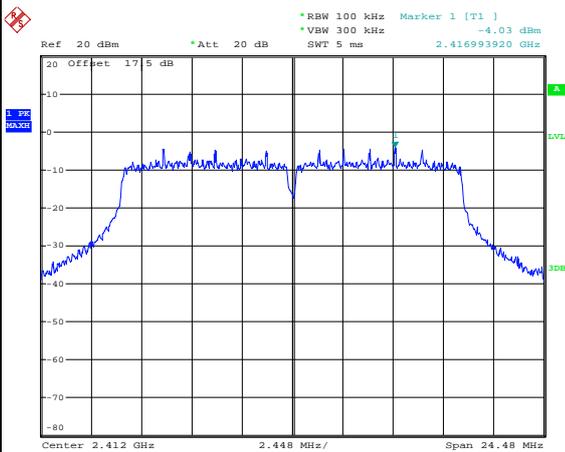
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Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Blithe Li

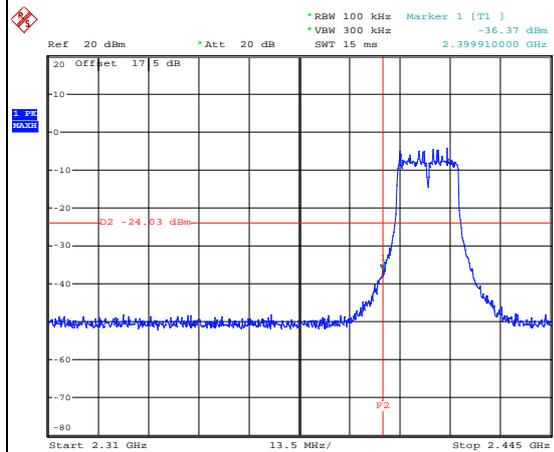
WLAN 802.11g Channel 01

100kHz PSD reference Level



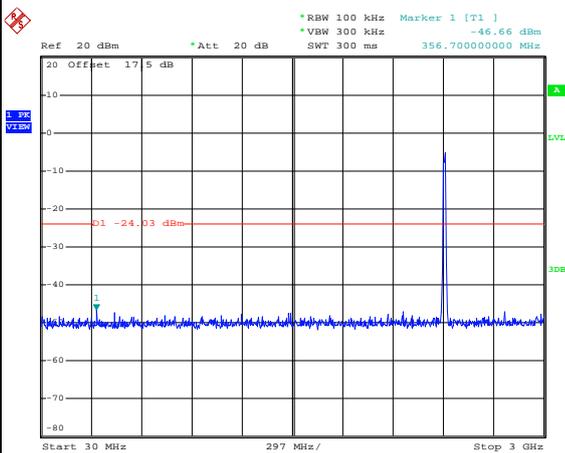
Date: 13.AUG.2013 20:49:06

Low Channel Plot



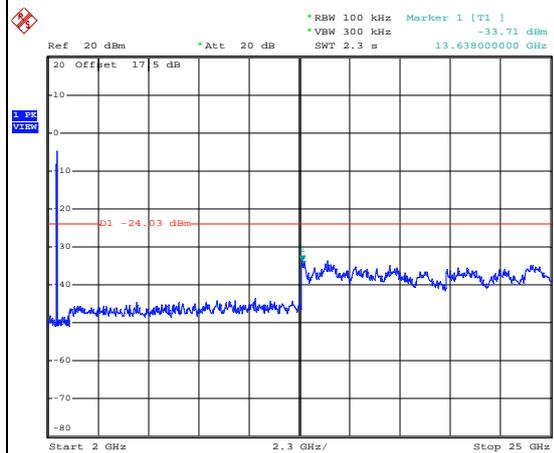
Date: 13.AUG.2013 20:49:20

Spurious Emission 30MHz~3GHz



Date: 13.AUG.2013 20:49:40

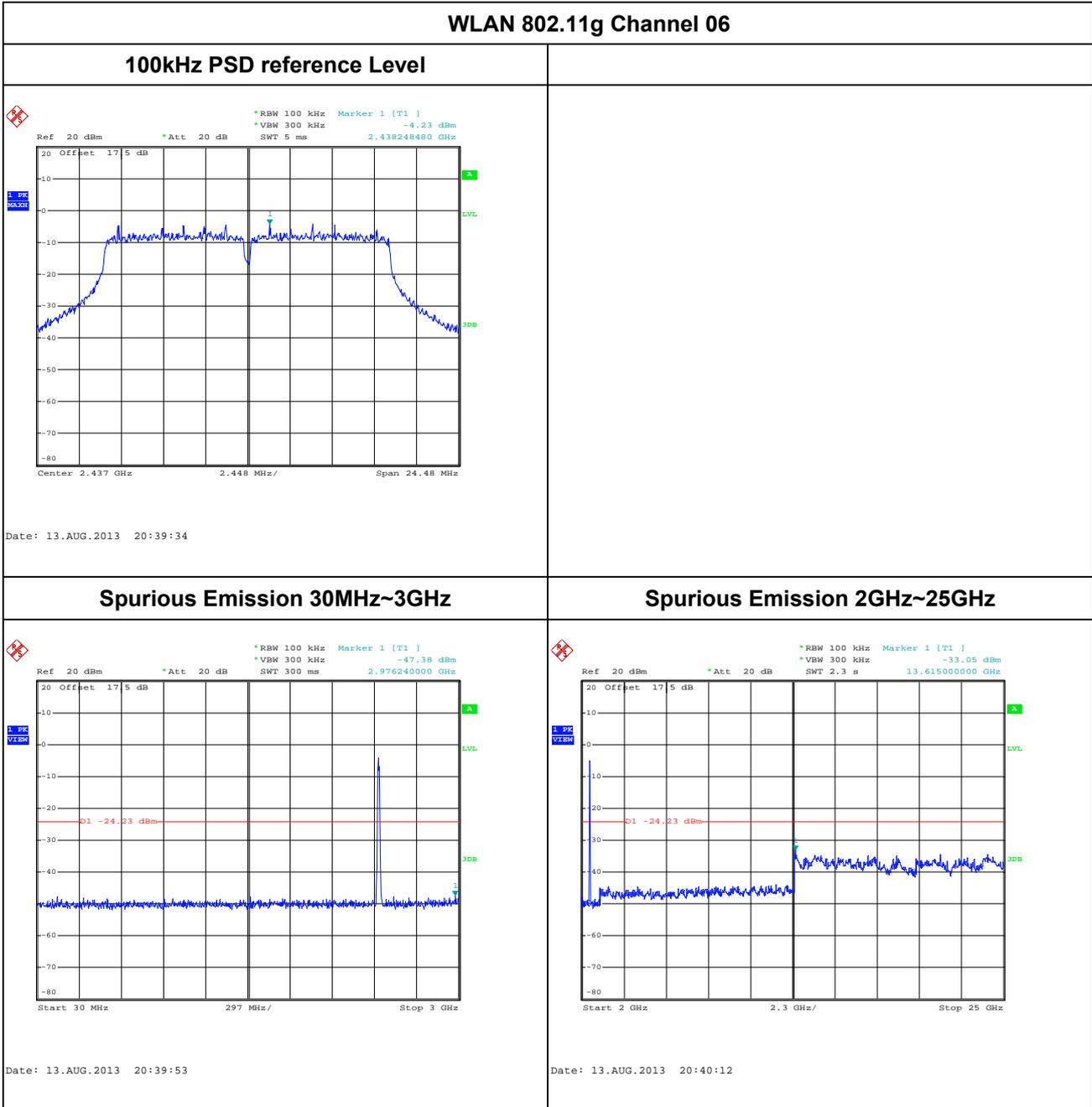
Spurious Emission 2GHz~25GHz



Date: 13.AUG.2013 20:49:58



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

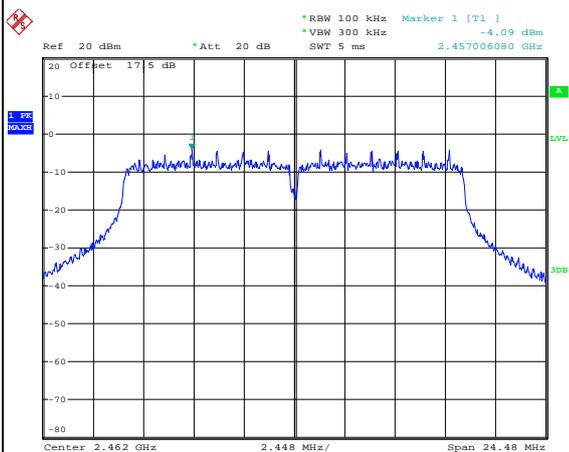




Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Blithe Li

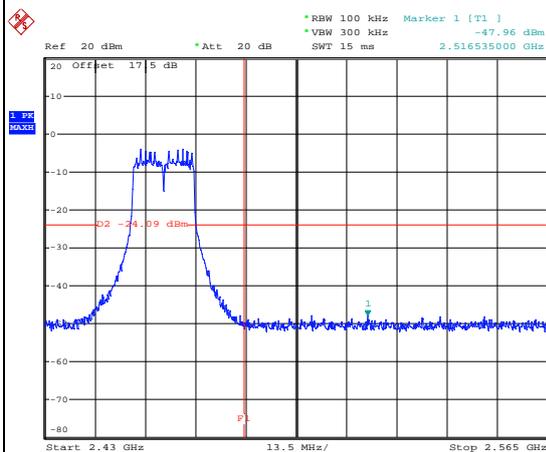
WLAN 802.11g Channel 11

100kHz PSD reference Level



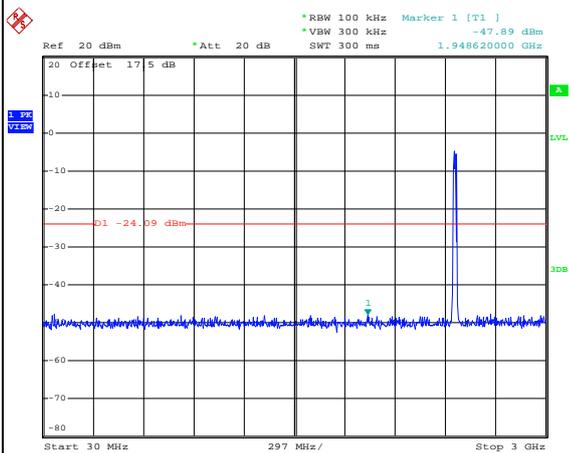
Date: 13.AUG.2013 20:30:57

High Channel Plot



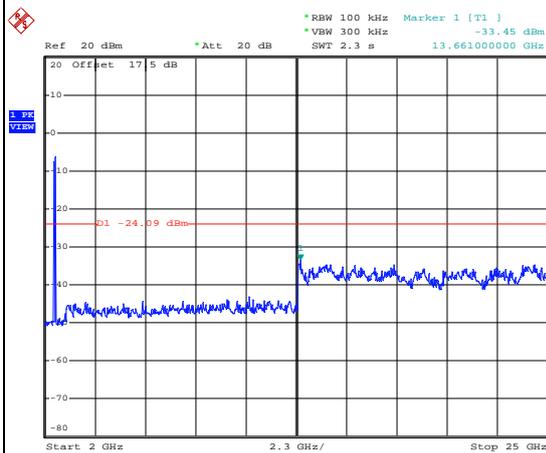
Date: 13.AUG.2013 20:31:11

Spurious Emission 30MHz~3GHz



Date: 13.AUG.2013 20:31:31

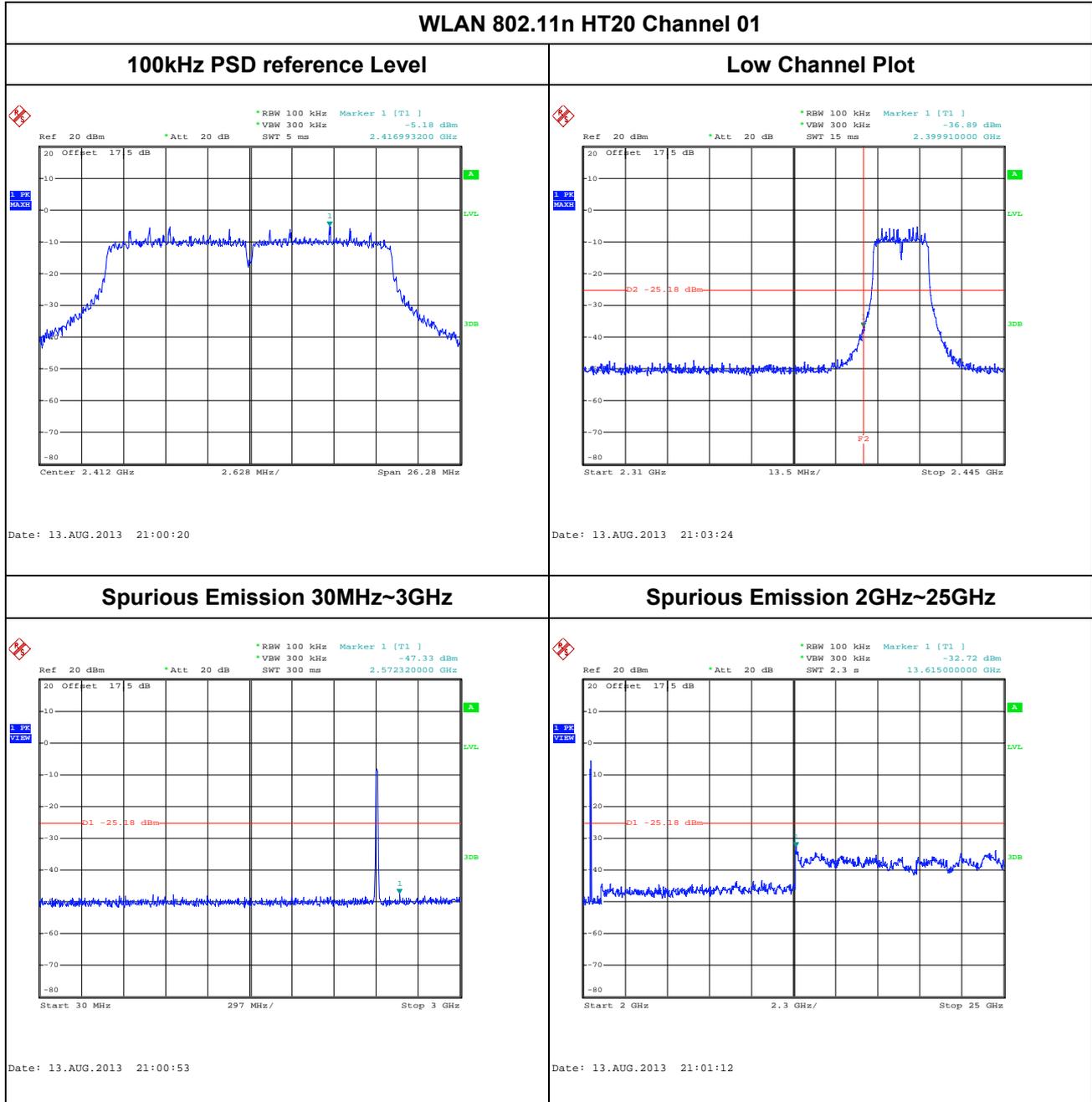
Spurious Emission 2GHz~25GHz



Date: 13.AUG.2013 20:31:49

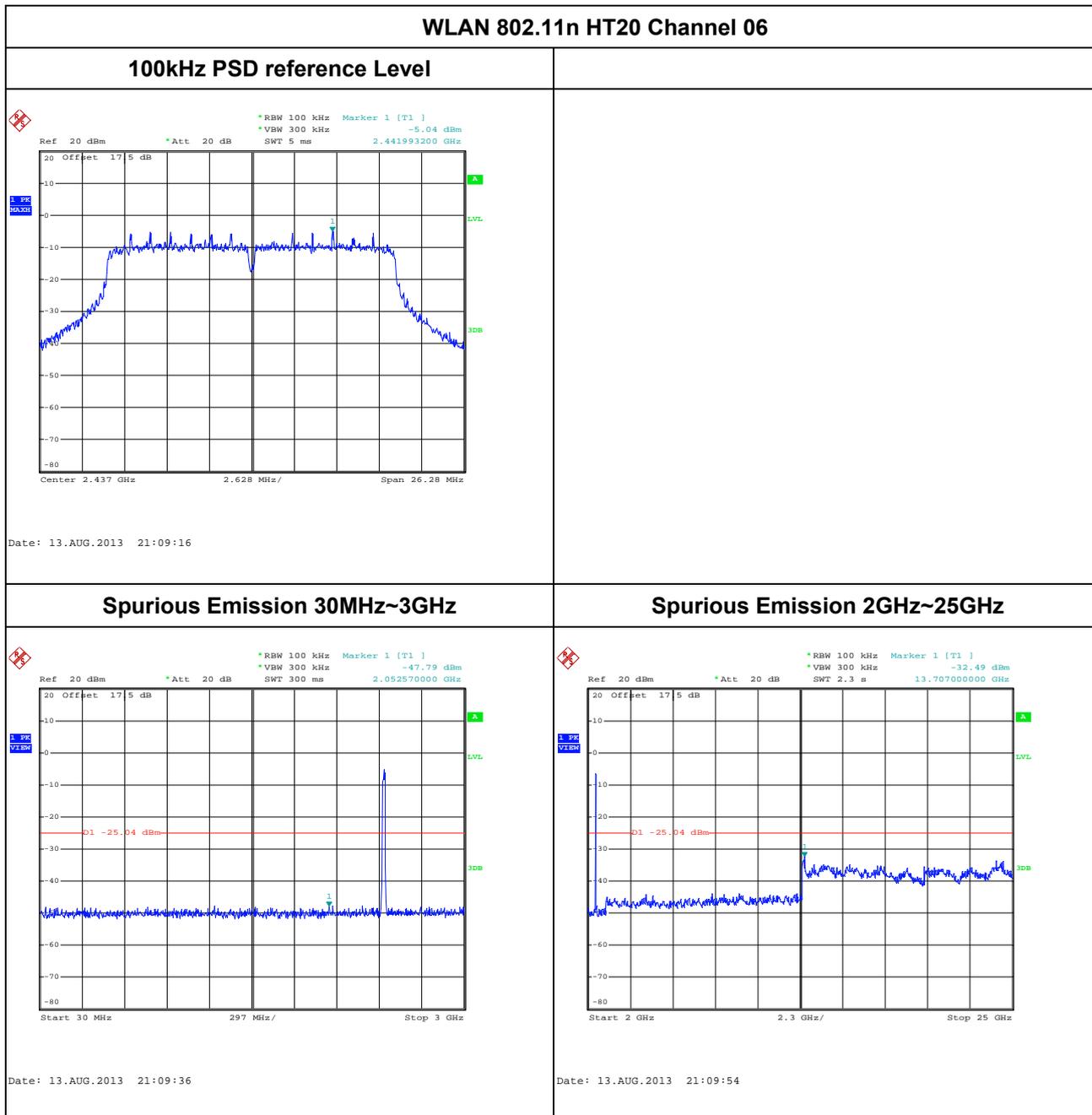


Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Blithe Li



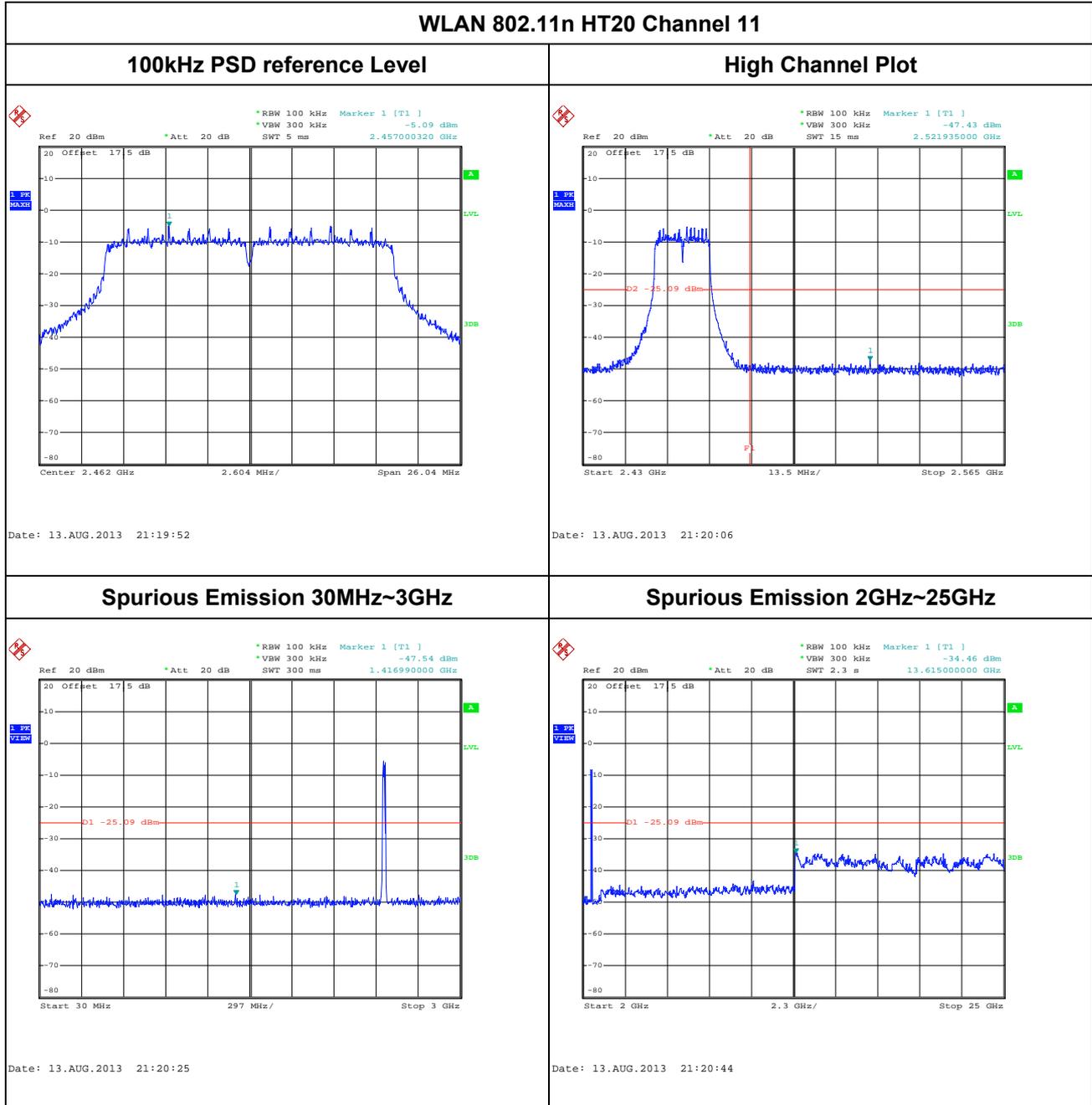


Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Blithe Li





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



### 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

See list of measuring instruments of this test report.

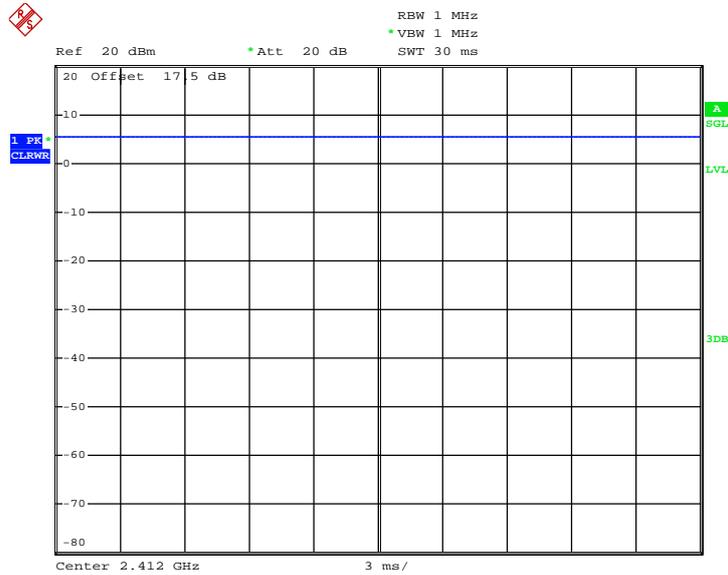
**3.5.3 Test Procedures**

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(μs)	1/T(kHz)	VBW Setting
802.11b	100.00	-	-	10Hz
802.11g	98.29	-	-	10Hz
2.4GHz 802.11n HT20	98.47	-	-	10Hz

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

802.11b Duty Cycle



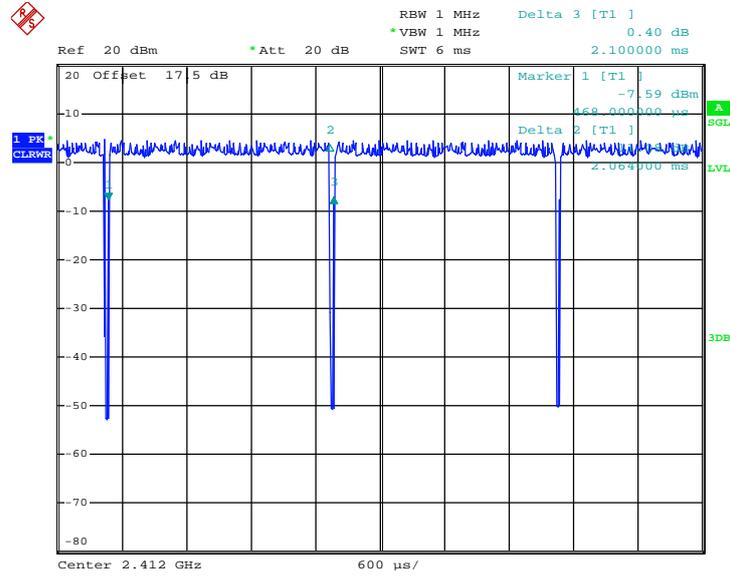
Date: 6.AUG.2013 21:40:06

**Note:**

The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



### 802.11g Duty Cycle



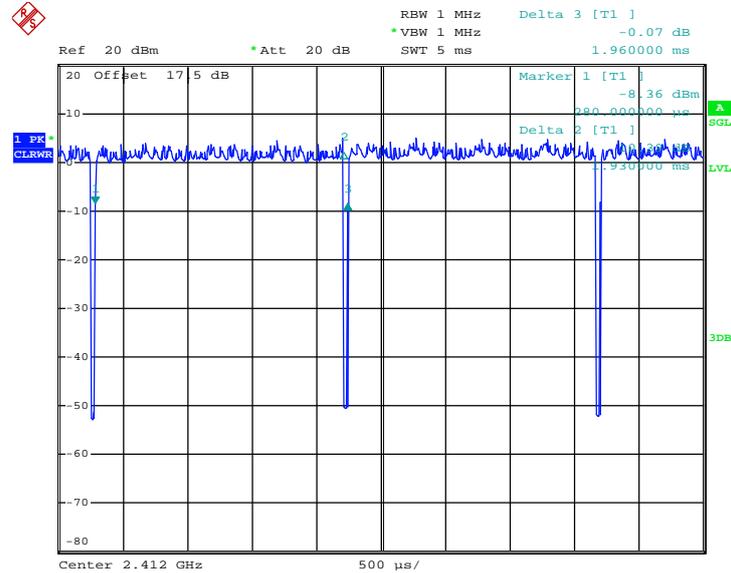
Date: 6.AUG.2013 22:06:40

**Note:**

The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



2.4GHz 802.11n HT20 Duty Cycle



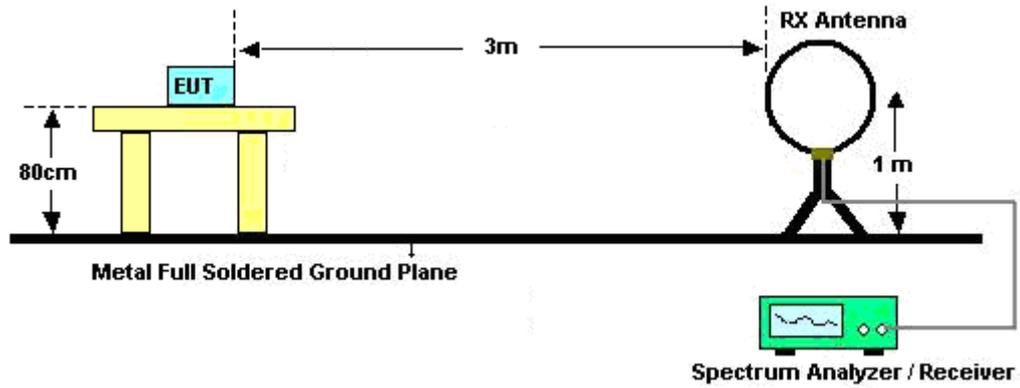
Date: 6.AUG.2013 22:38:51

**Note:**

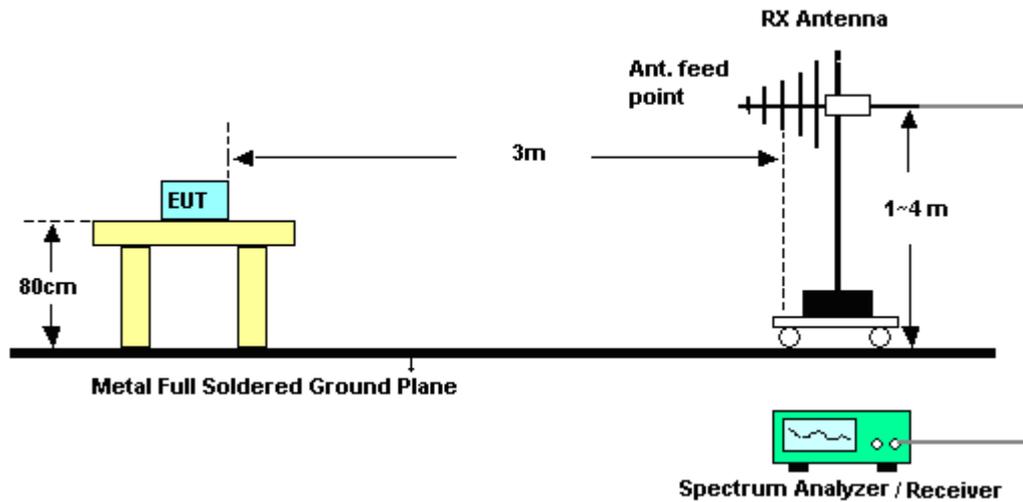
The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

### 3.5.4 Test Setup

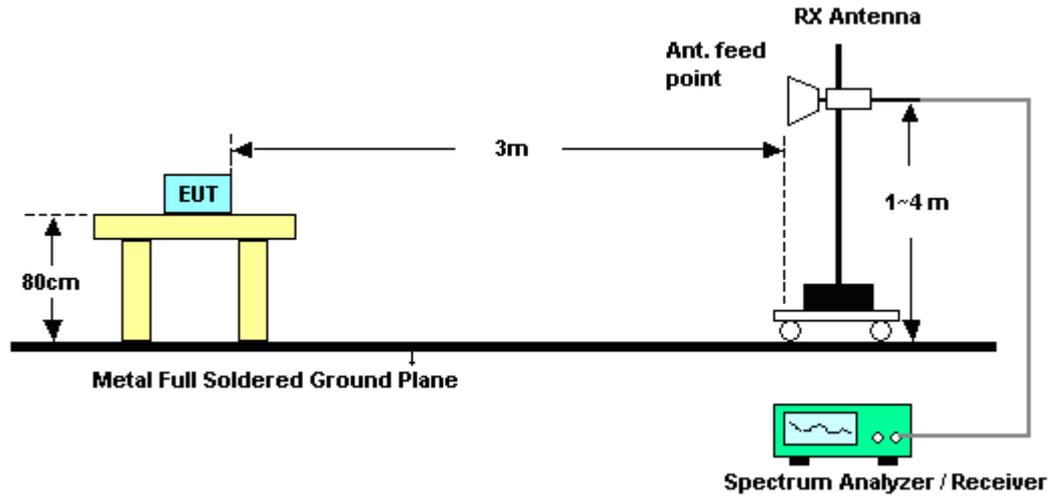
For radiated emissions below 30MHz



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 Band Edges

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	49~50%
Test Channel :	01	Test Engineer :	Robin Luo

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
2390	50.27	-23.73	74	42.29	32.14	5.62	29.78	144	62	Peak
2387.4	39.14	-14.86	54	31.2	32.14	5.59	29.79	144	62	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
2359.14	47.33	-26.67	74	39.46	32.1	5.56	29.79	200	272	Peak
2389.02	34.8	-19.2	54	26.86	32.14	5.59	29.79	200	272	Average

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Robin Luo

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
2483.56	57.92	-16.08	74	49.7	32.27	5.71	29.76	139	69	Peak
2483.5	50.99	-3.01	54	42.77	32.27	5.71	29.76	139	69	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
2484.55	51.36	-22.64	74	43.14	32.27	5.71	29.76	200	126	Peak
2483.53	42.96	-11.04	54	34.74	32.27	5.71	29.76	200	126	Average



Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	49~50%
Test Channel :	01	Test Engineer :	Robin Luo

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
2390	65.55	-8.45	74	57.57	32.14	5.62	29.78	111	66	Peak
2389.02	47.03	-6.97	54	39.09	32.14	5.59	29.79	111	66	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
2389.92	60.38	-13.62	74	52.4	32.14	5.62	29.78	176	123	Peak
2389.02	42.33	-11.67	54	34.39	32.14	5.59	29.79	176	123	Average

Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Robin Luo

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
2485.36	70.51	-3.49	74	62.29	32.27	5.71	29.76	112	65	Peak
2483.5	50.65	-3.35	54	42.43	32.27	5.71	29.76	112	65	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
2483.86	63.01	-10.99	74	54.79	32.27	5.71	29.76	200	131	Peak
2483.5	44.48	-9.52	54	36.26	32.27	5.71	29.76	200	131	Average



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	49~50%
Test Channel :	01	Test Engineer :	Robin Luo

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
2390	67	-7	74	59.02	32.14	5.62	29.78	143	55	Peak
2389.02	47.08	-6.92	54	39.14	32.14	5.59	29.79	143	55	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
2389.74	59.25	-14.75	74	51.31	32.14	5.59	29.79	173	121	Peak
2389.02	41.15	-12.85	54	33.21	32.14	5.59	29.79	173	121	Average

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Robin Luo

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
2484.64	68.33	-5.67	74	60.11	32.27	5.71	29.76	138	62	Peak
2483.5	49.82	-4.18	54	41.6	32.27	5.71	29.76	138	62	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
2485.06	61.7	-12.3	74	53.48	32.27	5.71	29.76	200	117	Peak
2483.5	42.95	-11.05	54	34.73	32.27	5.71	29.76	200	117	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 was recorded in the report for radiated spurious emission below 1GHz.

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2412 MHz is fundamental signal which can be ignored.</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 105.33 dB<math>\mu</math>V/m - 20dB = 85.33 dB<math>\mu</math>V/m.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

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
2412	105.33	-	-	97.32	32.17	5.62	29.78	144	62	Peak
2412	103.25	-	-	95.24	32.17	5.62	29.78	144	62	Average
4824	42.56	-31.44	74	57.78	33.68	8.36	57.26	100	360	Peak
7236	39.32	-46.01	85.33	51.3	35.29	9.97	57.24	189	185	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<b>Polarization :</b>	Vertical
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2412 MHz is fundamental signal which can be ignored.</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

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
2412	94.96	-	-	86.95	32.17	5.62	29.78	200	271	Peak
2412	92.2	-	-	84.19	32.17	5.62	29.78	200	271	Average
4824	42.07	-31.93	74	57.29	33.68	8.36	57.26	100	0	Peak
7236	41.25	-33.71	74.96	53.23	35.29	9.97	57.24	189	185	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	106.84	-	-	98.74	32.22	5.65	29.77	113	53	Peak
2437	104.47	-	-	96.37	32.22	5.65	29.77	113	53	Average
4874	37.9	-36.1	74	52.86	33.8	8.41	57.17	100	360	Peak
7311	40.03	-33.97	74	51.89	35.31	9.99	57.16	174	321	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	100.45	-	-	92.35	32.22	5.65	29.77	171	131	Peak
2437	98.26	-	-	90.16	32.22	5.65	29.77	171	131	Average
4874	42.21	-31.79	74	57.17	33.8	8.41	57.17	100	0	Peak
7311	41.61	-32.39	74	53.47	35.31	9.99	57.16	174	321	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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
103.98	26.07	-17.43	43.5	43.64	11.8	1.28	30.65	-	-	Peak
200.37	28.1	-15.4	43.5	47.63	9.1	1.7	30.33	-	-	Peak
228.99	41.34	-4.66	46	59.19	10.6	1.79	30.24	100	360	Peak
381.9	38.02	-7.98	46	49.47	16.04	2.24	29.73	-	-	Peak
687.8	32.48	-13.52	46	39.37	19.24	2.95	29.08	-	-	Peak
879.6	36.67	-9.33	46	41.32	20.9	3.28	28.83	-	-	Peak
2462	105.19	-	-	97.03	32.24	5.68	29.76	141	70	Peak
2462	103.18	-	-	95.02	32.24	5.68	29.76	141	70	Average
4924	42.06	-31.94	74	56.76	33.92	8.46	57.08	146	347	Peak
7386	40.19	-33.81	74	51.87	35.35	10.02	57.05	145	274	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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
104.79	25.35	-18.15	43.5	42.91	11.8	1.29	30.65	-	-	Peak
170.4	29.42	-14.08	43.5	48.48	9.8	1.57	30.43	-	-	Peak
229.26	41.06	-4.94	46	58.91	10.6	1.79	30.24	200	360	Peak
381.9	38.99	-7.01	46	50.44	16.04	2.24	29.73	-	-	Peak
687.8	31.2	-14.8	46	38.09	19.24	2.95	29.08	-	-	Peak
836.9	33	-13	46	37.64	21	3.24	28.88	-	-	Peak
2462	99.98	-	-	91.82	32.24	5.68	29.76	200	126	Peak
2462	97.96	-	-	89.8	32.24	5.68	29.76	200	126	Average
4924	43.72	-30.28	74	58.42	33.92	8.46	57.08	146	347	Peak
7386	39.78	-34.22	74	51.46	35.35	10.02	57.05	145	274	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2412 MHz is fundamental signal which can be ignored.</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

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	104.65	-	-	96.64	32.17	5.62	29.78	110	65	Peak
2412	96.5	-	-	88.49	32.17	5.62	29.78	110	65	Average
4824	38.2	-35.8	74	53.42	33.68	8.36	57.26	105	198	Peak
7236	40.31	-44.34	84.65	52.29	35.29	9.97	57.24	200	360	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<b>Polarization :</b>	Vertical
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2412 MHz is fundamental signal which can be ignored.</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

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	96.95	-	-	88.94	32.17	5.62	29.78	175	123	Peak
2412	89.79	-	-	81.78	32.17	5.62	29.78	175	123	Average
4824	37.69	-36.31	74	52.91	33.68	8.36	57.26	105	200	Peak
7236	39.82	-37.13	76.95	51.8	35.29	9.97	57.24	100	321	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	107.42	-	-	99.32	32.22	5.65	29.77	114	53	Peak
2437	98.79	-	-	90.69	32.22	5.65	29.77	114	53	Average
4874	39.5	-34.5	74	54.46	33.8	8.41	57.17	145	265	Peak
7311	40.19	-33.81	74	52.05	35.31	9.99	57.16	174	321	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	99.42	-	-	91.32	32.22	5.65	29.77	174	118	Peak
2437	91.28	-	-	83.18	32.22	5.65	29.77	174	118	Average
4874	38.49	-35.51	74	53.45	33.8	8.41	57.17	145	265	Peak
7311	40.11	-33.89	74	51.97	35.31	9.99	57.16	174	321	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	104.52	-	-	96.36	32.24	5.68	29.76	112	65	Peak
2462	96.61	-	-	88.45	32.24	5.68	29.76	112	65	Average
4924	38.42	-35.58	74	53.12	33.92	8.46	57.08	146	347	Peak
7386	41.05	-32.95	74	52.73	35.35	10.02	57.05	145	274	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	98.33	-	-	90.17	32.24	5.68	29.76	200	131	Peak
2462	90.66	-	-	82.5	32.24	5.68	29.76	200	131	Average
4924	38.42	-35.58	74	53.12	33.92	8.46	57.08	146	347	Peak
7386	39.87	-34.13	74	51.55	35.35	10.02	57.05	145	274	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. 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	103.48	-	-	95.47	32.17	5.62	29.78	142	54	Peak
2412	94.57	-	-	86.56	32.17	5.62	29.78	142	54	Average
4824	37.53	-36.47	74	52.75	33.68	8.36	57.26	100	360	Peak
7236	39.56	-43.92	83.48	51.54	35.29	9.97	57.24	100	320	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. 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	97.96	-	-	89.95	32.17	5.62	29.78	172	120	Peak
2412	88.59	-	-	80.58	32.17	5.62	29.78	172	120	Average
4824	38.8	-35.2	74	54.02	33.68	8.36	57.26	200	321	Peak
7236	41.07	-36.89	77.96	53.05	35.29	9.97	57.24	120	321	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	105.5	-	-	97.4	32.22	5.65	29.77	110	68	Peak
2437	98.11	-	-	90.01	32.22	5.65	29.77	110	68	Average
4874	38.99	-35.01	74	53.95	33.8	8.41	57.17	100	360	Peak
7311	40.42	-33.58	74	52.28	35.31	9.99	57.16	200	360	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	98.76	-	-	90.66	32.22	5.65	29.77	171	135	Peak
2437	90.69	-	-	82.59	32.22	5.65	29.77	171	135	Average
4874	38.7	-35.3	74	53.66	33.8	8.41	57.17	145	265	Peak
7311	40.59	-33.41	74	52.45	35.31	9.99	57.16	174	321	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	102.89	-	-	94.73	32.24	5.68	29.76	108	60	Peak
2462	94.86	-	-	86.7	32.24	5.68	29.76	108	60	Average
4924	38.61	-35.39	74	53.31	33.92	8.46	57.08	146	347	Peak
7386	40.23	-33.77	74	51.91	35.35	10.02	57.05	145	274	Peak

<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Robin Luo	<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	97.39	-	-	89.23	32.24	5.68	29.76	200	131	Peak
2462	88.77	-	-	80.61	32.24	5.68	29.76	200	131	Average
4924	38.93	-35.07	74	53.63	33.92	8.46	57.08	146	347	Peak
7386	40.11	-33.89	74	51.79	35.35	10.02	57.05	145	274	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.

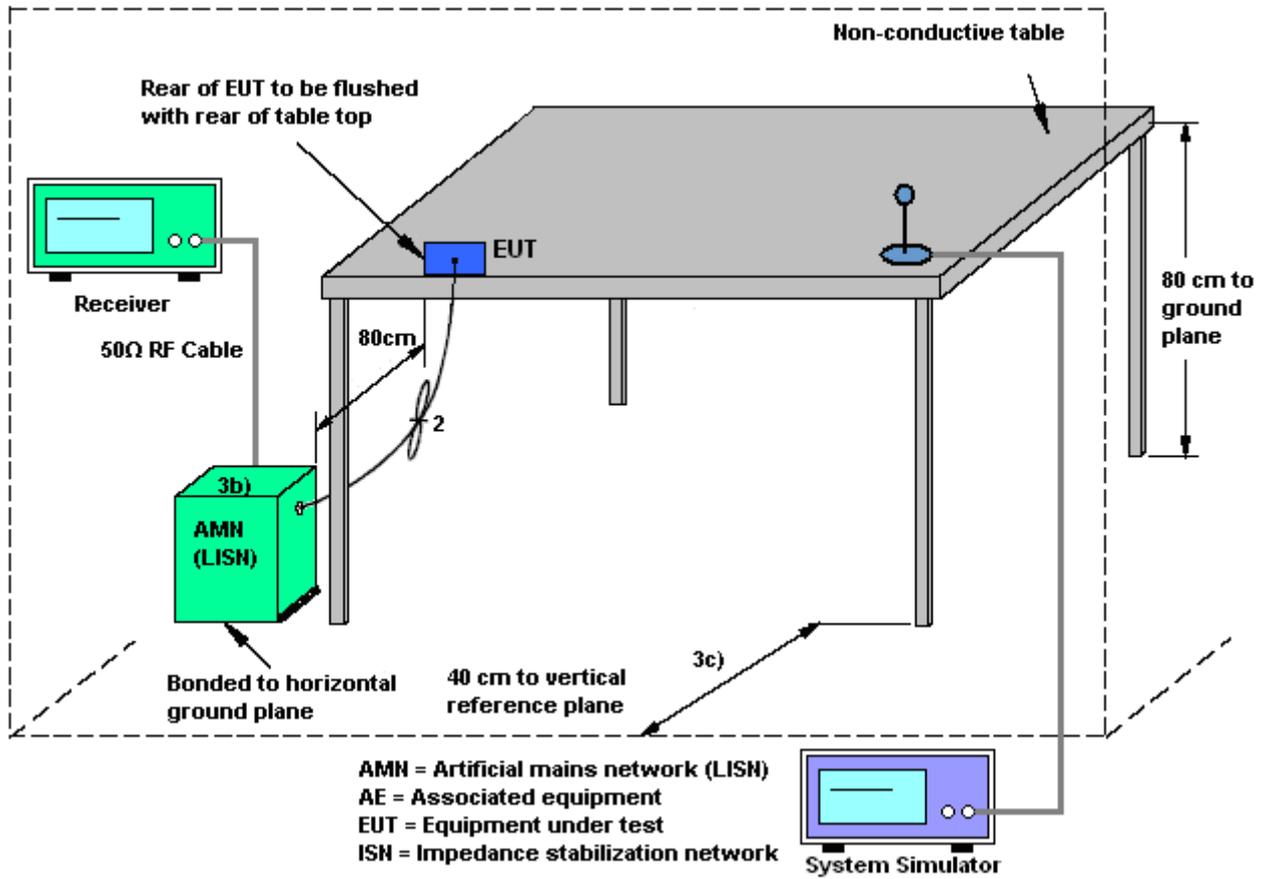
#### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.6.3 Test Procedures

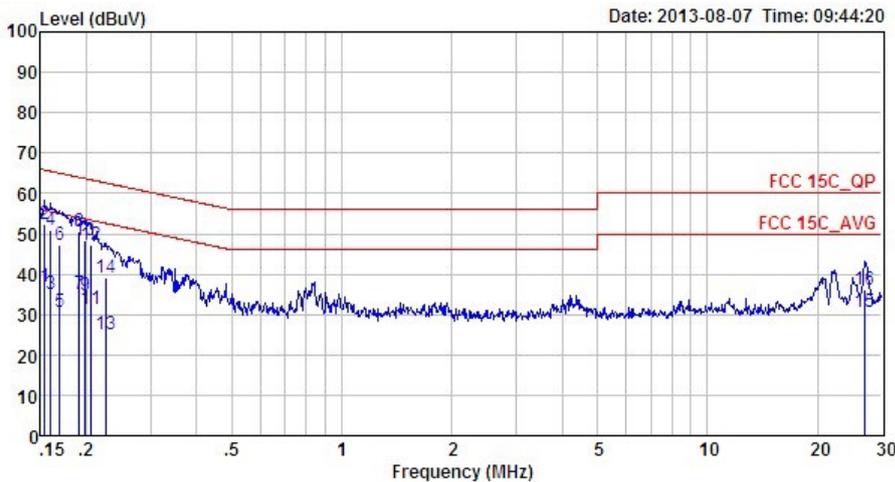
1. The testing follows the guidelines in ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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

Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Henry Chen	Relative Humidity :	48~49%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	CDMA2000 BC0 Idle + WLAN Link + USB Charging (Charging from Notebook)		

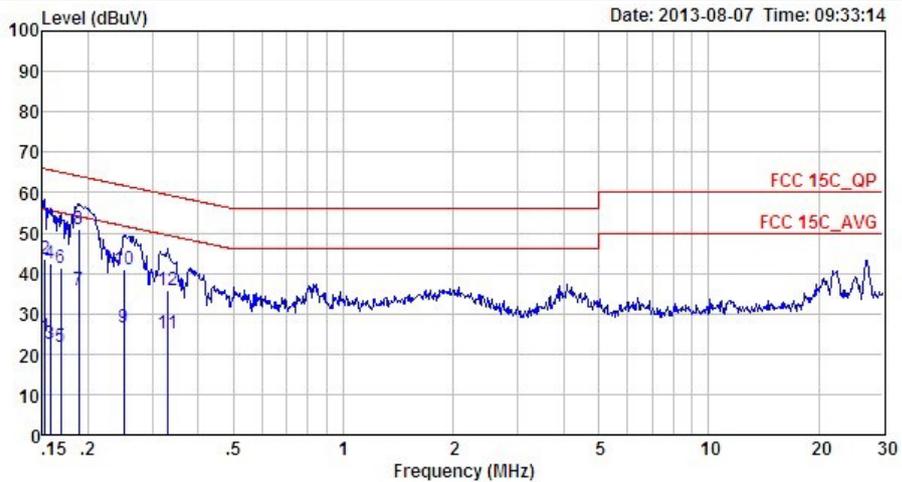


Site : CO01-SZ  
 Condition: FCC 15C\_QP LISN\_L\_2000601 LINE  
 Project : (FR) 372301  
 Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	37.08	-18.70	55.78	27.00	0.03	10.05	Average
2 *	0.15	52.58	-13.20	65.78	42.50	0.03	10.05	QP
3	0.16	35.08	-20.39	55.47	25.00	0.03	10.05	Average
4	0.16	50.88	-14.59	65.47	40.80	0.03	10.05	QP
5	0.17	30.58	-24.41	54.99	20.50	0.03	10.05	Average
6	0.17	47.08	-17.91	64.99	37.00	0.03	10.05	QP
7	0.19	35.08	-18.90	53.98	25.00	0.03	10.05	Average
8	0.19	50.58	-13.40	63.98	40.50	0.03	10.05	QP
9	0.20	34.68	-18.99	53.67	24.59	0.03	10.06	Average
10	0.20	48.22	-15.45	63.67	38.13	0.03	10.06	QP
11	0.21	31.38	-22.02	53.40	21.30	0.02	10.06	Average
12	0.21	47.08	-16.32	63.40	37.00	0.02	10.06	QP
13	0.23	25.08	-27.53	52.61	15.00	0.02	10.06	Average
14	0.23	39.18	-23.43	62.61	29.10	0.02	10.06	QP
15	26.98	30.50	-19.50	50.00	19.50	0.57	10.43	Average
16	26.98	36.20	-23.80	60.00	25.20	0.57	10.43	QP



Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Henry Chen	Relative Humidity :	48~49%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC0 Idle + WLAN Link + USB Charging (Charging from Notebook)		



Site : C001-SZ  
 Condition: FCC 15C\_QP LISN\_N\_2000601 NEUTRAL  
 Project : (FR) 372301  
 Mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.15	24.47	-31.40	55.87	14.40	0.02	10.05	Average
2	0.15	43.67	-22.20	65.87	33.60	0.02	10.05	QP
3	0.16	22.37	-33.23	55.60	12.30	0.02	10.05	Average
4	0.16	42.47	-23.13	65.60	32.40	0.02	10.05	QP
5	0.17	21.68	-33.35	55.03	11.61	0.02	10.05	Average
6	0.17	41.38	-23.65	65.03	31.31	0.02	10.05	QP
7	0.19	35.67	-18.44	54.11	25.60	0.02	10.05	Average
8 *	0.19	51.07	-13.04	64.11	41.00	0.02	10.05	QP
9	0.25	26.58	-25.15	51.73	16.50	0.02	10.06	Average
10	0.25	40.78	-20.95	61.73	30.70	0.02	10.06	QP
11	0.33	25.18	-24.26	49.44	15.09	0.02	10.07	Average
12	0.33	35.88	-23.56	59.44	25.79	0.02	10.07	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 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	FSP30	101400	9kHz~30GHz	Mar. 28, 2013	Aug. 06, 2013~ Aug. 13, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	N/A	Mar. 28, 2013	Aug. 06, 2013~ Aug. 13, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	N/A	Mar. 28, 2013	Aug. 06, 2013~ Aug. 13, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
DC Power Supply	TOPWORD	3303DR	N/A714621	N/A	Mar. 28, 2013	Aug. 06, 2013~ Aug. 13, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
ESCI TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Mar. 28, 2013	Aug. 06, 2013~ Aug. 10, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Spectrum Analyzer	R&S	FSP30	101362	9kHz~30GHz	Oct. 11, 2012	Aug. 06, 2013~ Aug. 10, 2013	Oct. 10, 2013	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 12, 2012	Aug. 06, 2013~ Aug. 10, 2013	Oct. 11, 2013	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30MHz~2GHz	Nov. 03, 2012	Aug. 06, 2013~ Aug. 10, 2013	Nov. 02, 2013	Radiation (03CH01-SZ)
Turn Table	EM Electronic	EM 1000	N/A	0 ~ 360 degree	N/A	Aug. 06, 2013~ Aug. 10, 2013	N/A	Radiation (03CH01-SZ)
Antenna Mast	EM Electronic	EM 1000	N/A	1 m ~ 4 m	N/A	Aug. 06, 2013~ Aug. 10, 2013	N/A	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3GHz Gain 30dB	Mar. 28, 2013	Aug. 06, 2013~ Aug. 10, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 28, 2013	Aug. 06, 2013~ Aug. 10, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 22, 2012	Aug. 06, 2013~ Aug. 10, 2013	Oct. 21, 2013	Radiation (03CH01-SZ)
ESCIO TEST Receiver	R&S	1142.8007.0 3	100724	9kHz~3GHz	Mar. 28, 2013	Aug. 07, 2013	Mar. 27, 2014	Conduction (CO01-SZ)
AC LISN	ETS-LINDGREN	3816/2SH	00103912	9kHz~30MHz	Mar. 28, 2013	Aug. 07, 2013	Mar. 27, 2014	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	ETS-LINDGREN	3816/2SH	00103892	9kHz~30MHz	Mar. 28, 2013	Aug. 07, 2013	Mar. 27, 2014	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000 891	N/A	Nov. 20, 2012	Aug. 07, 2013	Nov. 19, 2013	Conduction (CO01-SZ)
AC Filter	ETS-LINDGREN	LRE-2030/P EN 256260	00093783	N/A	N/A	Aug. 07, 2013	N/A	Conduction (CO01-SZ)
AC Filter	ETS-LINDGREN	LRE-2030/P EN 256260	00097973	N/A	N/A	Aug. 07, 2013	N/A	Conduction (CO01-SZ)

## 5 Uncertainty of Evaluation

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.72
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