

# FCC RF Test Report

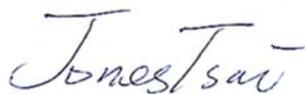
APPLICANT : ZTE CORPORATION  
EQUIPMENT : WCDMA/GSM (GPRS) Dual-Mode  
Digital Mobile Phone  
BRAND NAME : ZTE  
MODEL NAME : ZTE Z730  
FCC ID : SRQ-ZTEZ730  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Nov. 13, 2013 and testing was completed on Jan. 14, 2014. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown to be compliant with the applicable technical standards.

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



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



Testing Laboratory  
2627

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



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**APPENDIX A. SETUP PHOTOGRAPHS**



### 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 1.02 dB at 2483.800 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 15.34 dB at 0.500 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, 518057, P.R.China

## 1.2 Manufacturer

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China

## 1.3 Feature of Equipment Under Test

Product Feature	
Equipment	WCDMA/GSM (GPRS) Dual-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE Z730
FCC ID	SRQ-ZTEZ730
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/HSPA+(Downlink Only) WLAN 2.4GHz 802.11bgn HT20/ Bluetooth v3.0+EDR/ Bluetooth v4.0 LE
HW Version	wyuA
SW Version	P821T02V1.0.0B01
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	2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to Antenna	802.11b : 22.15 dBm (0.1641 W) 802.11g : 23.81 dBm (0.2404 W) 802.11n HT20 : 23.56 dBm (0.2270 W)
Antenna Type	PIFA Antenna with gain -2 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 (KUNSHAN) INC.			
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
<b>Test Site No.</b>	<b>Sporton Site No.</b>			<b>FCC Registration No.</b>
	TH01-KS	CO01-KS	03CH01-KS	149928

**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 C63.4-2003

**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 (Z 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.

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	20.28	20.12	20.23	20.47
CH 02	2417 MHz	21.08	21.12	21.18	21.35
CH 03	2422 MHz	21.64	21.63	21.67	21.83
CH 04	2427 MHz	21.75	21.76	21.81	21.89
CH 05	2432 MHz	21.85	21.87	21.87	22.04
CH 06	2437 MHz	22.15	21.84	21.83	21.90
CH 07	2442 MHz	21.91	21.91	21.90	22.07
CH 08	2447 MHz	21.97	21.98	21.98	22.14
CH 09	2452 MHz	22.05	22.01	22.03	22.01
CH 10	2457 MHz	20.93	20.95	20.97	21.13
CH 11	2462 MHz	20.82	20.83	20.94	21.07

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	20.28	20.13	20.57	20.37	20.66	20.43	20.50	20.32
CH 02	2417 MHz	21.62	21.19	21.44	21.57	21.33	21.69	21.63	21.51
CH 03	2422 MHz	22.12	22.04	21.83	21.94	22.06	21.98	22.02	22.10
CH 04	2427 MHz	22.28	22.38	22.42	22.47	22.50	22.48	22.54	22.52
CH 05	2432 MHz	22.57	22.55	22.54	22.63	22.66	22.67	22.75	22.76
CH 06	2437 MHz	23.81	23.67	23.69	23.65	23.71	23.79	23.80	23.73
CH 07	2442 MHz	22.80	22.74	22.76	22.77	22.82	22.87	22.89	22.96
CH 08	2447 MHz	22.59	22.70	22.72	22.80	22.78	22.82	22.77	22.85
CH 09	2452 MHz	22.52	22.40	22.51	22.67	22.46	22.55	22.59	22.56
CH 10	2457 MHz	22.33	22.48	22.46	22.34	22.46	22.32	22.29	22.46
CH 11	2462 MHz	20.11	20.59	20.52	20.49	20.46	20.19	20.34	20.41



Channel	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	19.86	20.45	19.77	20.21	19.94	19.91	20.05	19.89
CH 02	2417 MHz	22.13	22.03	21.96	22.03	22.20	22.13	22.09	21.95
CH 03	2422 MHz	22.07	22.32	22.01	22.03	22.16	22.19	22.03	22.01
CH 04	2427 MHz	22.93	22.85	23.02	22.99	23.04	23.01	22.94	23.09
CH 05	2432 MHz	23.17	23.22	23.19	23.21	23.16	23.11	23.09	23.14
CH 06	2437 MHz	23.56	23.43	23.42	23.34	23.37	23.46	23.41	23.51
CH 07	2442 MHz	23.13	23.16	23.21	23.17	23.11	23.16	23.14	23.11
CH 08	2447 MHz	22.99	22.83	23.01	22.91	23.02	22.76	22.69	23.03
CH 09	2452 MHz	22.73	22.89	22.94	22.83	22.99	22.95	22.99	22.92
CH 10	2457 MHz	22.48	22.63	22.58	22.49	22.52	22.56	22.67	22.98
CH 11	2462 MHz	20.27	21.09	20.34	20.29	20.49	20.51	20.03	19.98



### 2.3 Test Mode

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

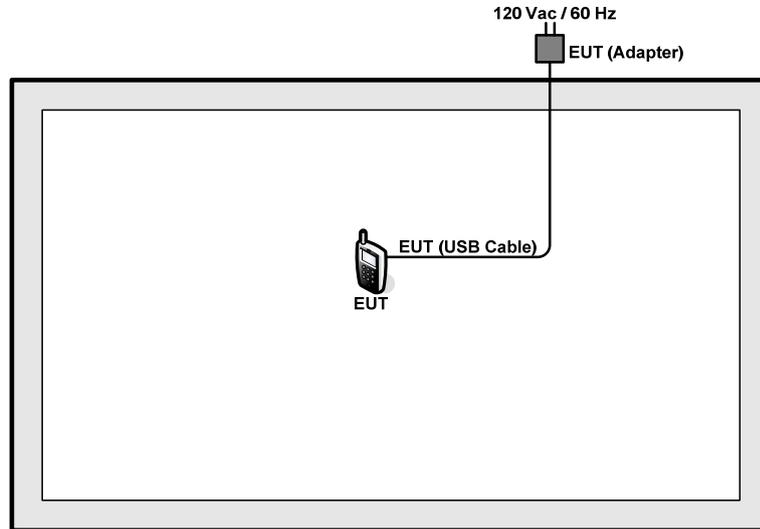
<2.4GHz>

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	1/2/3/4/5/6/7/8/9/10/11	
		802.11g	6 Mbps	1/2/3/4/5/6/7/8/9/10/11	
		802.11n HT20	MCS0	1/2/3/4/5/6/7/8/9/10/11	
	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	1/2/3/9/10/11	
		802.11g	6 Mbps	1/2/3/4/5/6/7/8/9/10/11	
		802.11n HT20	MCS0	1/2/3/4/5/7/8/9/10/11	
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11	
		802.11g	6 Mbps	1/6/11	
		802.11n HT20	MCS0	1/6/11	

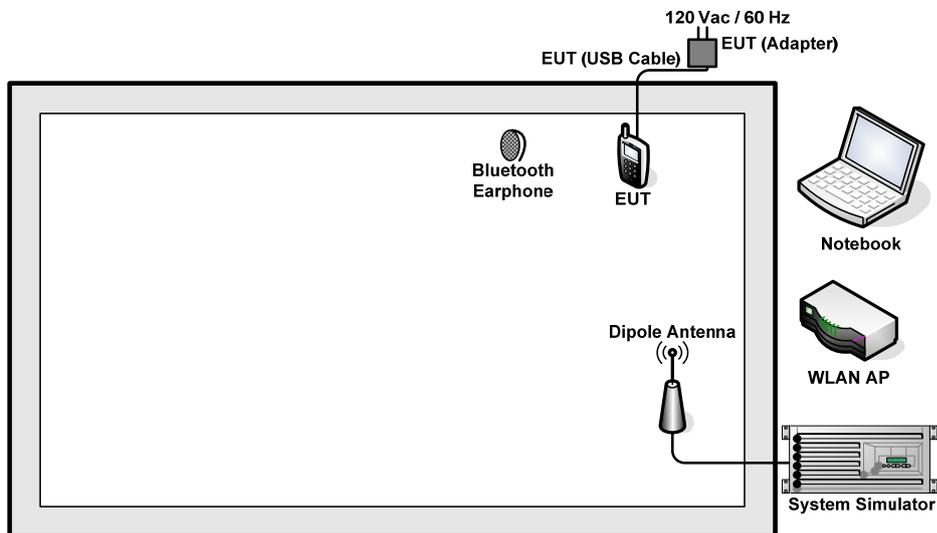
Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)

## 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.	DC Power Supply	GWINSTEK	GPS-3030D	FCC DoC	N/A	Unshielded, 1.8 m
2.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 0.8 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	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 5 dB and 10dB attenuator.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 5 + 10 = 15 \text{ (dB)} \end{aligned}$$

### 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.

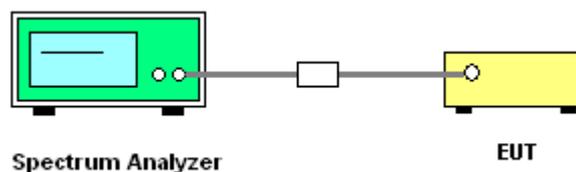
##### 3.1.2 Measuring Instruments

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 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

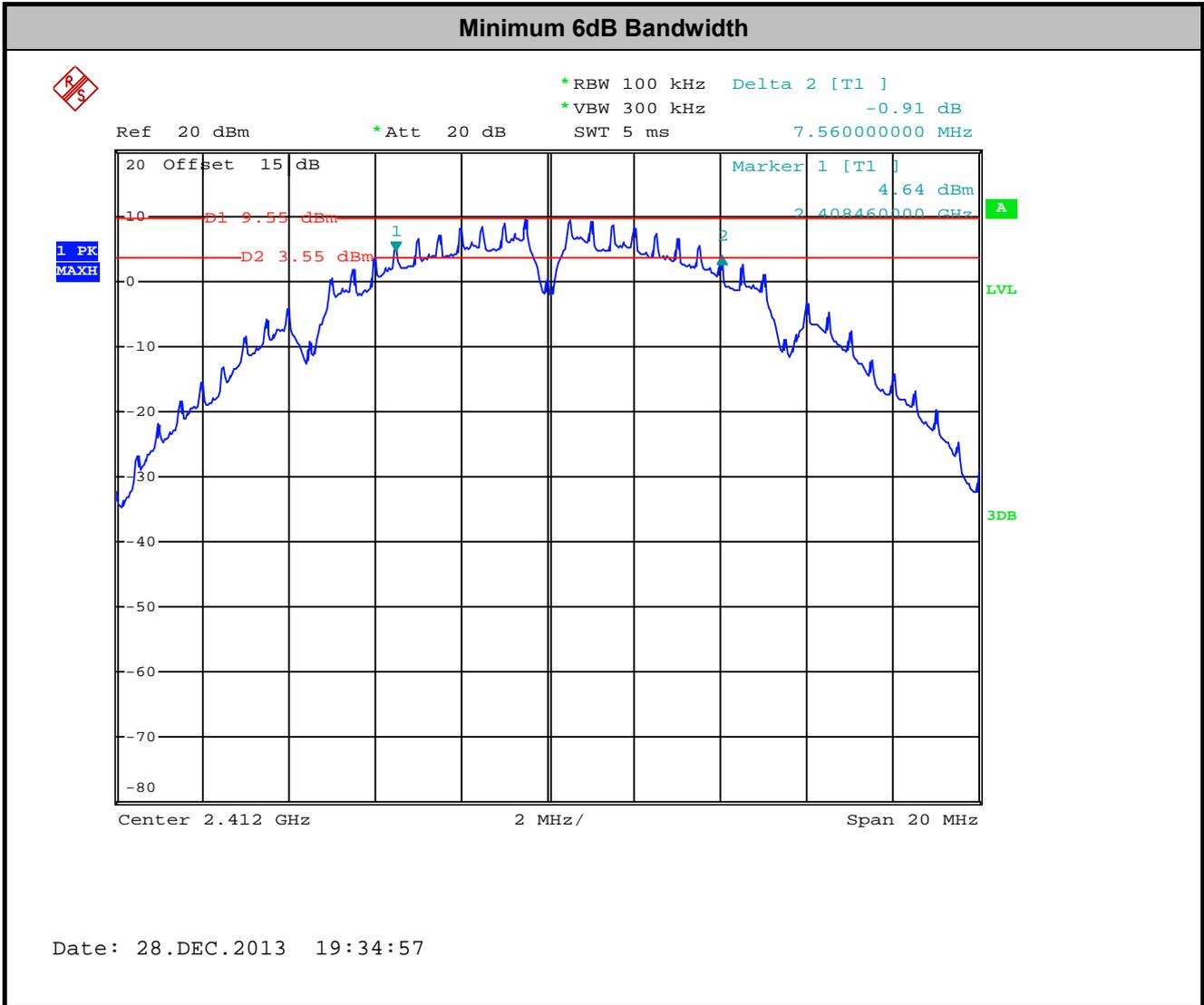




3.1.5 Test Result of 6dB Occupied Bandwidth

Test Band :	2.4GHz	Temperature :	24~25°C
Test Engineer :	Issac Song	Relative Humidity :	47~49%

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	7.56	0.5	Pass
11b	1Mbps	1	6	2437	8.04	0.5	Pass
11b	1Mbps	1	11	2462	8.04	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	17.56	0.5	Pass
HT20	MCS0	1	6	2437	17.56	0.5	Pass
HT20	MCS0	1	11	2462	17.56	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.

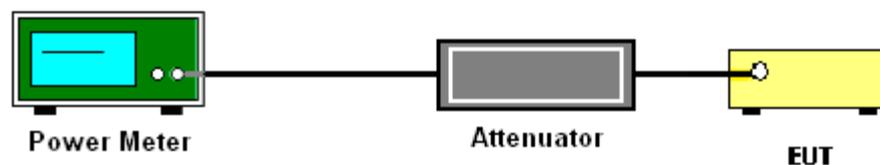
### 3.2.2 Measuring Instruments

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 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 :	24~25°C
Test Engineer :	Issac Song	Relative Humidity :	47~49%

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	20.28	30	-2.00	Pass
11b	1Mbps	1	6	2437	22.15	30	-2.00	Pass
11b	1Mbps	1	11	2462	20.82	30	-2.00	Pass
11g	6Mbps	1	1	2412	20.28	30	-2.00	Pass
11g	6Mbps	1	6	2437	23.81	30	-2.00	Pass
11g	6Mbps	1	11	2462	20.11	30	-2.00	Pass
HT20	MCS0	1	1	2412	19.86	30	-2.00	Pass
HT20	MCS0	1	6	2437	23.56	30	-2.00	Pass
HT20	MCS0	1	11	2462	20.27	30	-2.00	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 :	24~25°C
Test Engineer :	Issac Song	Relative Humidity :	47~49%

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	0.11	17.78	30	-2.00	Pass
11b	1Mbps	1	6	2437	0.11	19.81	30	-2.00	Pass
11b	1Mbps	1	11	2462	0.11	18.20	30	-2.00	Pass
11g	6Mbps	1	1	2412	0.60	12.53	30	-2.00	Pass
11g	6Mbps	1	6	2437	0.60	20.26	30	-2.00	Pass
11g	6Mbps	1	11	2462	0.60	11.58	30	-2.00	Pass
HT20	MCS0	1	1	2412	0.63	11.46	30	-2.00	Pass
HT20	MCS0	1	6	2437	0.63	18.56	30	-2.00	Pass
HT20	MCS0	1	11	2462	0.63	11.72	30	-2.00	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.

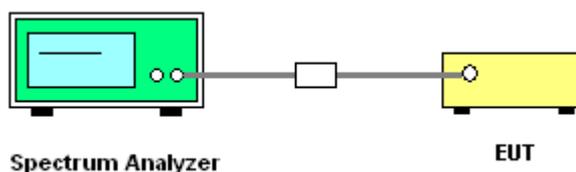
#### 3.3.2 Measuring Instruments

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 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 :	24~25°C
Test Engineer :	Issac Song	Relative Humidity :	47~49%

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	-5.11	8	-2.00	Pass
11b	1Mbps	1	6	2437	-1.24	8	-2.00	Pass
11b	1Mbps	1	11	2462	-3.27	8	-2.00	Pass
11g	6Mbps	1	1	2412	-13.67	8	-2.00	Pass
11g	6Mbps	1	6	2437	-5.20	8	-2.00	Pass
11g	6Mbps	1	11	2462	-13.78	8	-2.00	Pass
HT20	MCS0	1	1	2412	-14.24	8	-2.00	Pass
HT20	MCS0	1	6	2437	-6.90	8	-2.00	Pass
HT20	MCS0	1	11	2462	-13.70	8	-2.00	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).

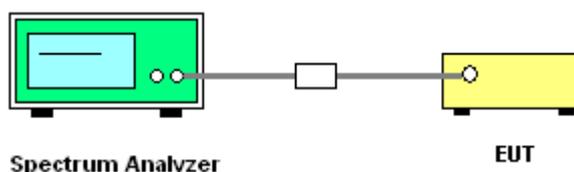
### 3.4.2 Measuring Instruments

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 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.

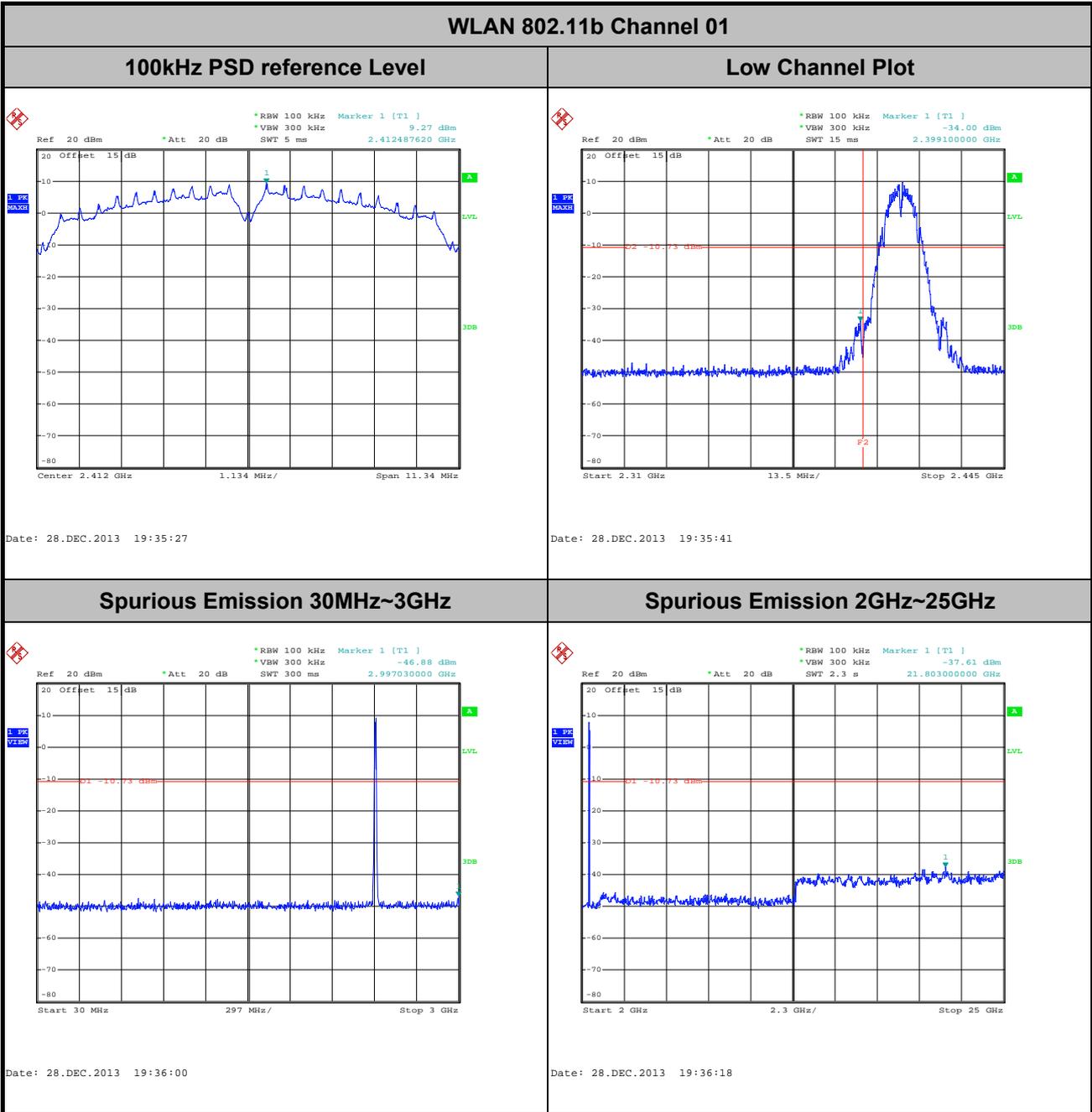
### 3.4.4 Test Setup





3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	2.4GHz Low	Relative Humidity :	47~49%
Test Channel :	01	Test Engineer :	Issac Song

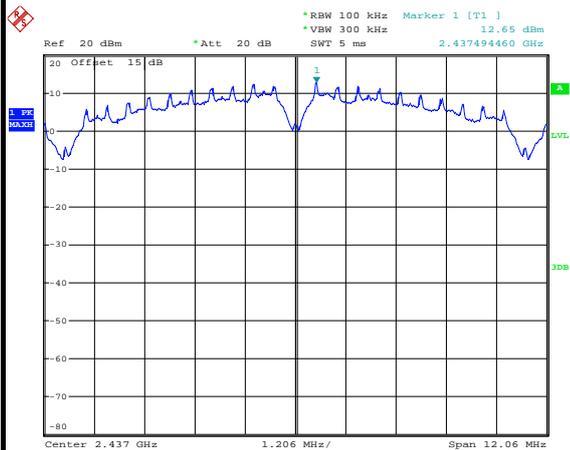




Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	47~49%
Test Channel :	06	Test Engineer :	Issac Song

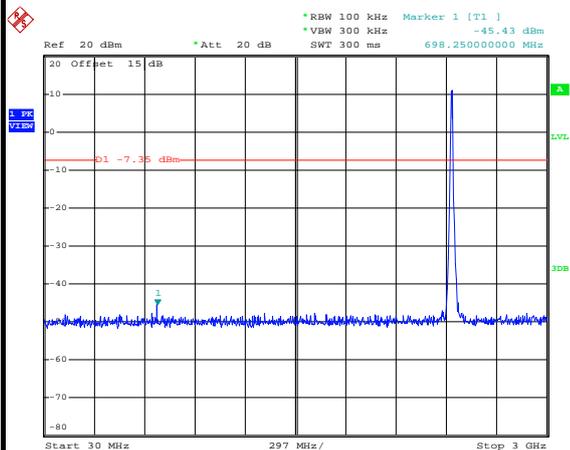
WLAN 802.11b Channel 06

100kHz PSD reference Level



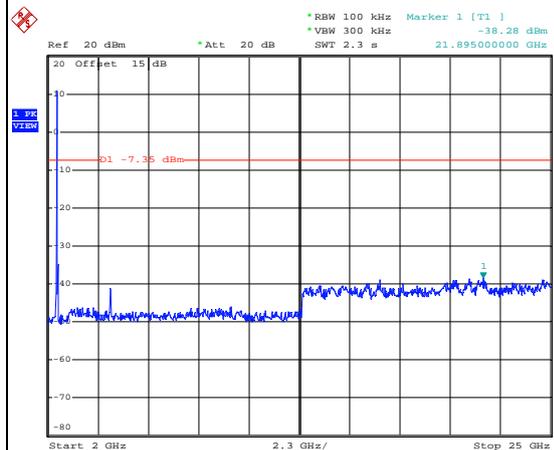
Date: 28.DEC.2013 19:38:54

Spurious Emission 30MHz~3GHz



Date: 28.DEC.2013 19:39:14

Spurious Emission 2GHz~25GHz



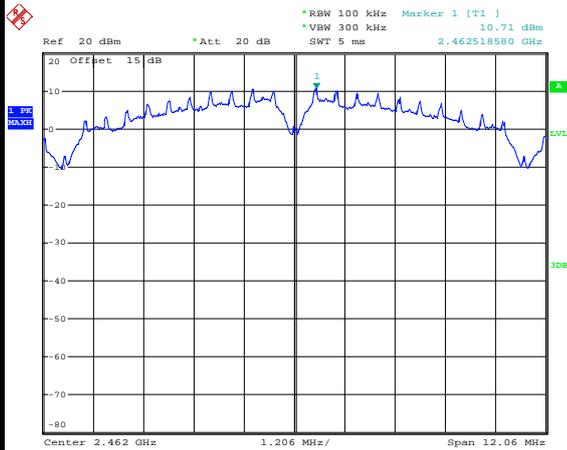
Date: 28.DEC.2013 19:39:32



Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	2.4GHz High	Relative Humidity :	47~49%
Test Channel :	11	Test Engineer :	Issac Song

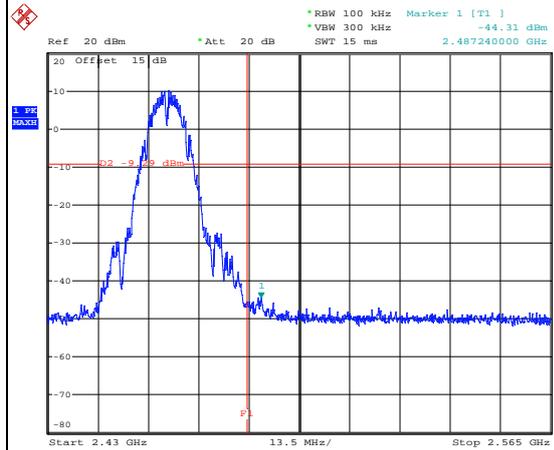
WLAN 802.11b Channel 11

100kHz PSD reference Level



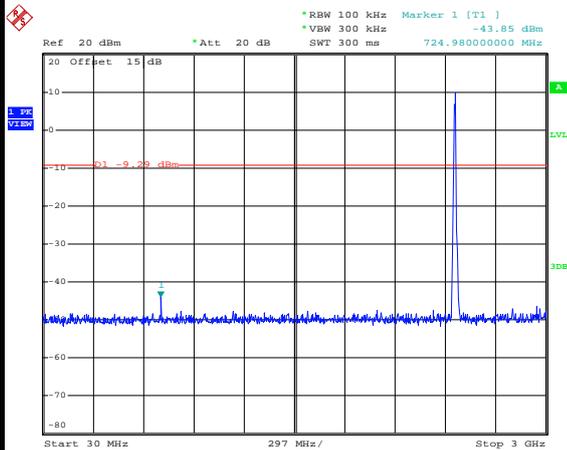
Date: 28.DEC.2013 19:42:39

High Channel Plot



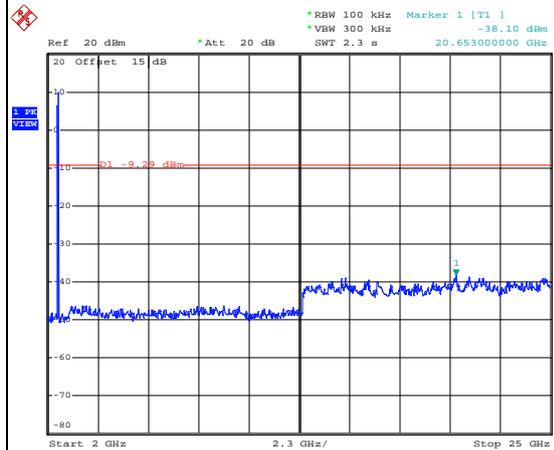
Date: 28.DEC.2013 19:42:53

Spurious Emission 30MHz~3GHz



Date: 28.DEC.2013 19:43:12

Spurious Emission 2GHz~25GHz



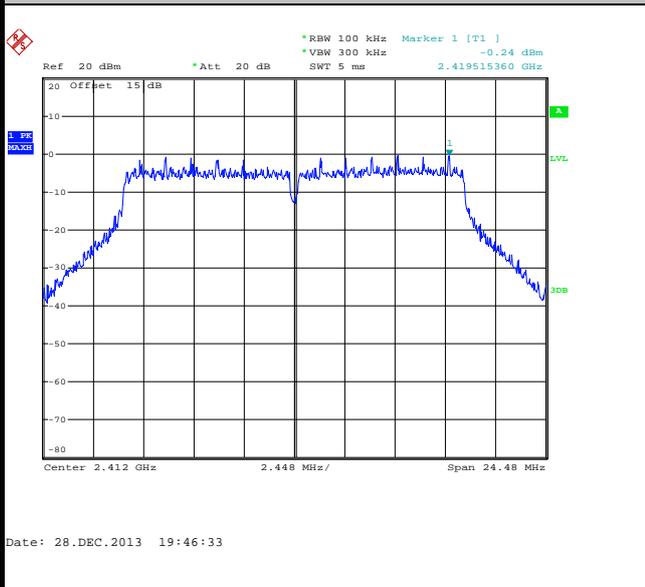
Date: 28.DEC.2013 19:43:31



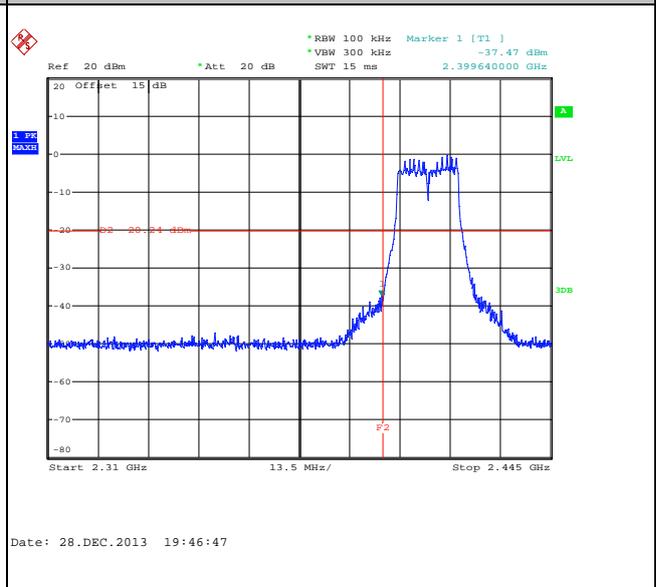
Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	2.4GHz Low	Relative Humidity :	47~49%
Test Channel :	01	Test Engineer :	Issac Song

WLAN 802.11g Channel 01

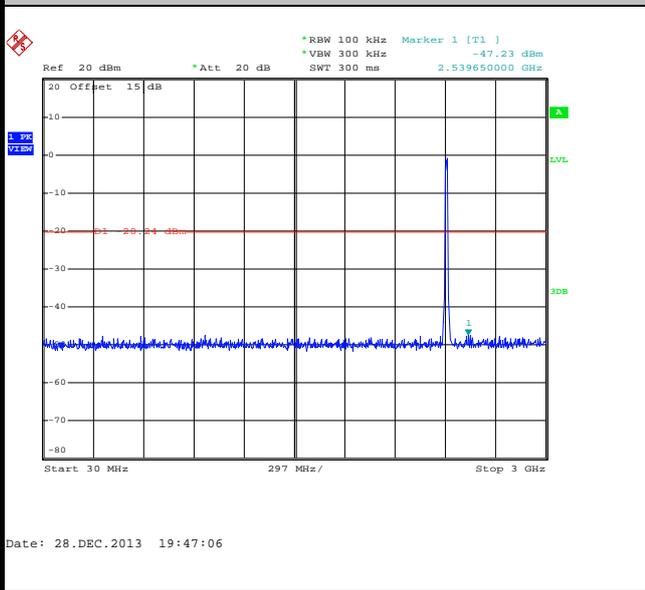
100kHz PSD reference Level



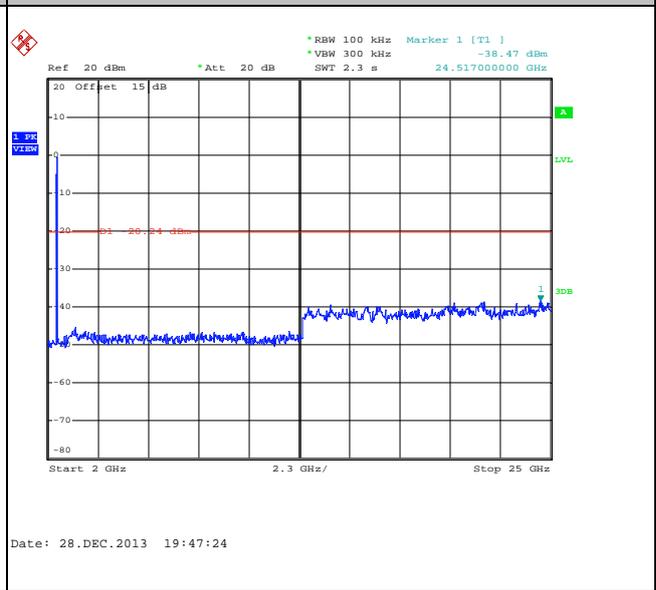
Low Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

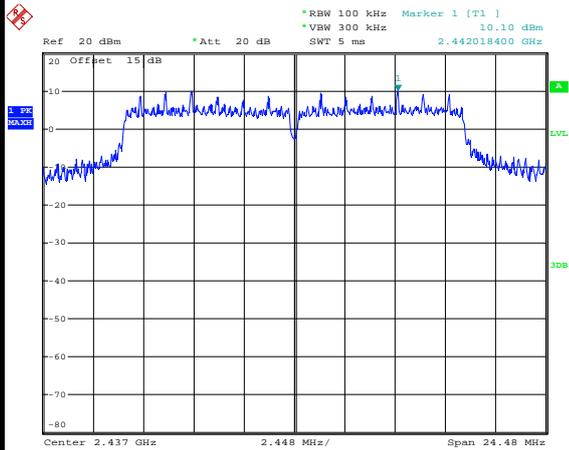




Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	47~49%
Test Channel :	06	Test Engineer :	Issac Song

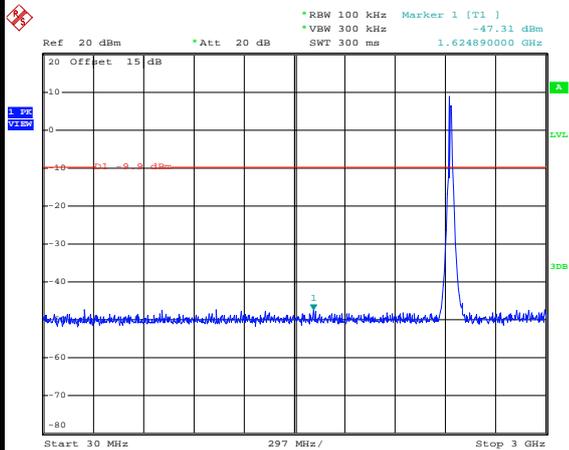
WLAN 802.11g Channel 06

100kHz PSD reference Level



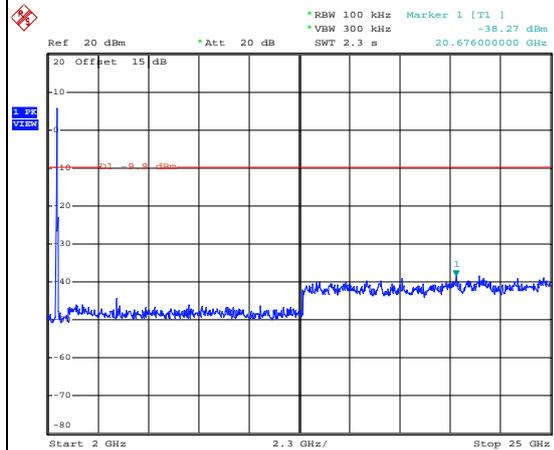
Date: 28.DEC.2013 19:49:49

Spurious Emission 30MHz~3GHz



Date: 28.DEC.2013 19:50:09

Spurious Emission 2GHz~25GHz



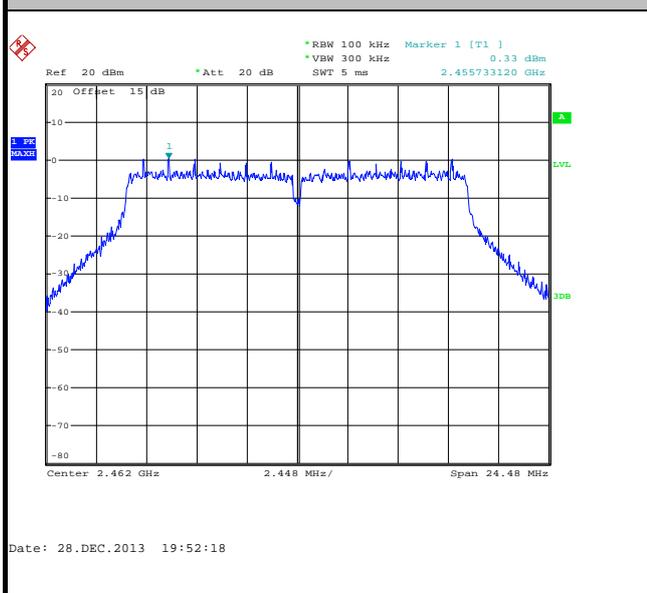
Date: 28.DEC.2013 19:50:28



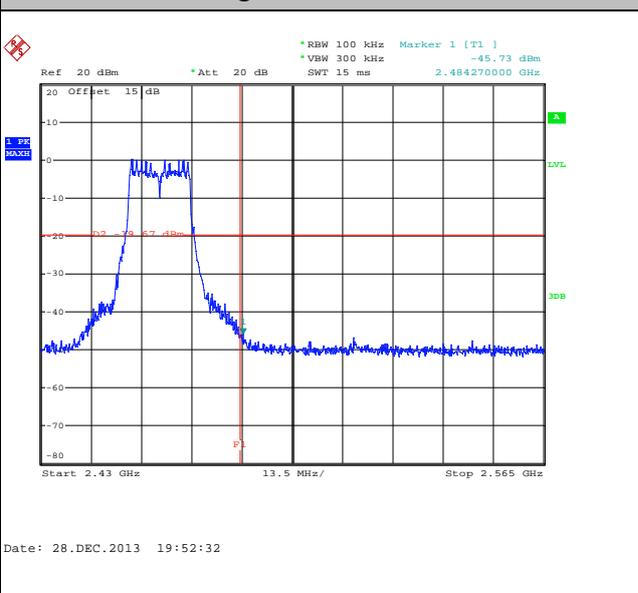
Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	2.4GHz High	Relative Humidity :	47~49%
Test Channel :	11	Test Engineer :	Issac Song

WLAN 802.11g Channel 11

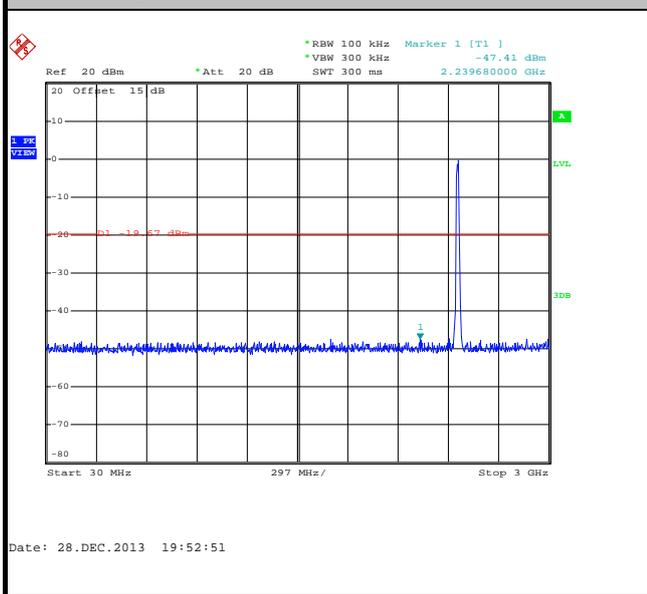
100kHz PSD reference Level



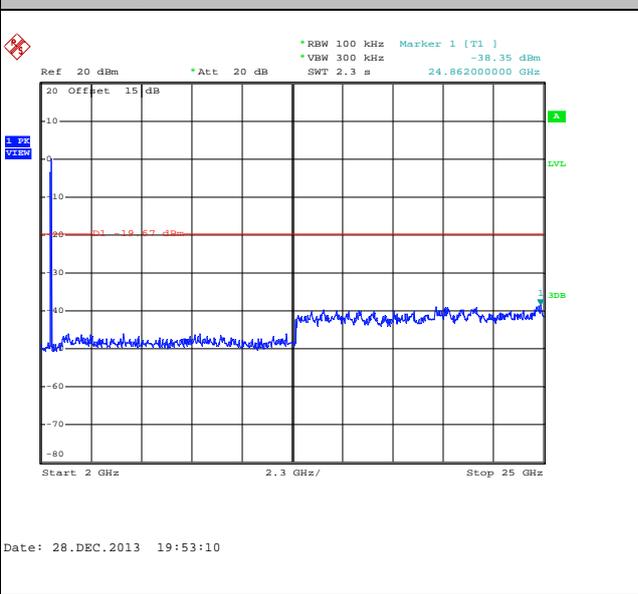
High Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

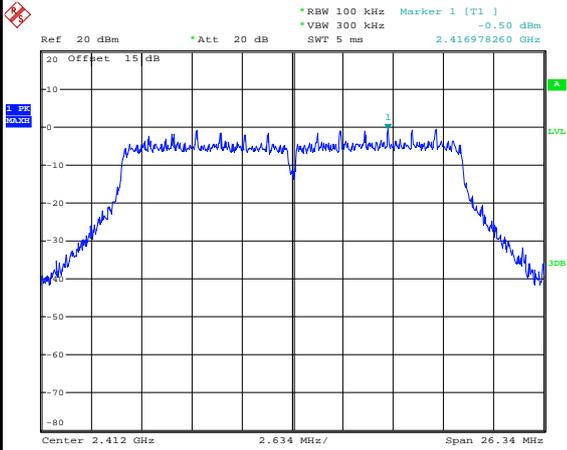




Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	2.4GHz Low	Relative Humidity :	47~49%
Test Channel :	01	Test Engineer :	Issac Song

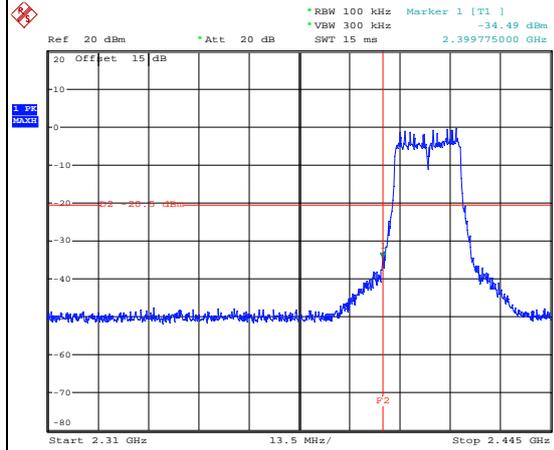
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



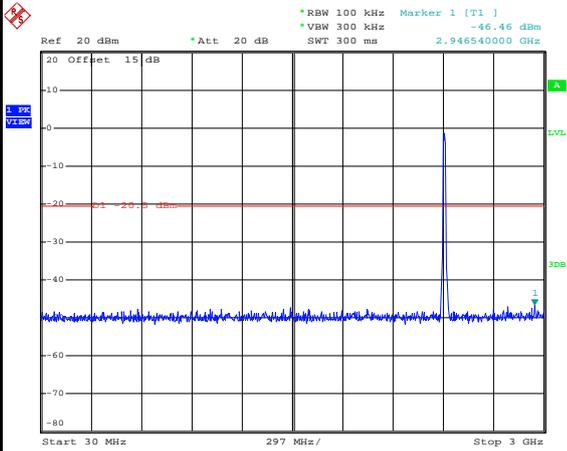
Date: 28.DEC.2013 19:55:41

Low Channel Plot



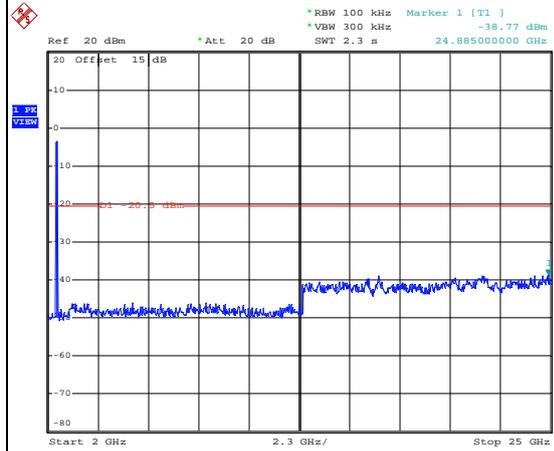
Date: 28.DEC.2013 19:55:55

Spurious Emission 30MHz~3GHz



Date: 28.DEC.2013 19:56:15

Spurious Emission 2GHz~25GHz



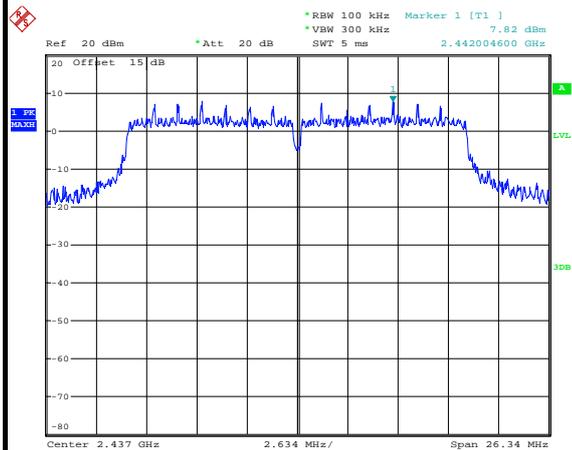
Date: 28.DEC.2013 19:56:33



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	2.4GHz Mid	Relative Humidity :	47~49%
Test Channel :	06	Test Engineer :	Issac Song

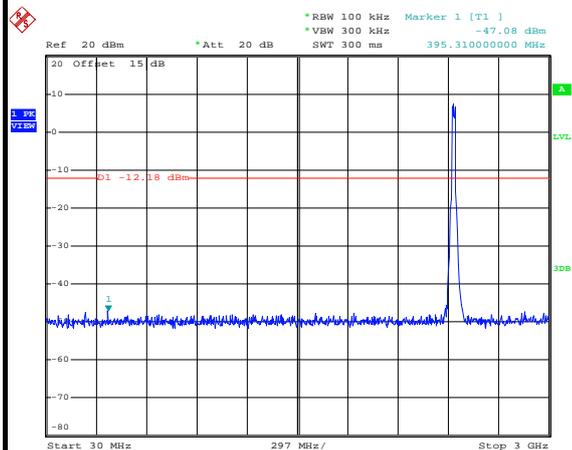
WLAN 802.11n HT20 Channel 06

100kHz PSD reference Level



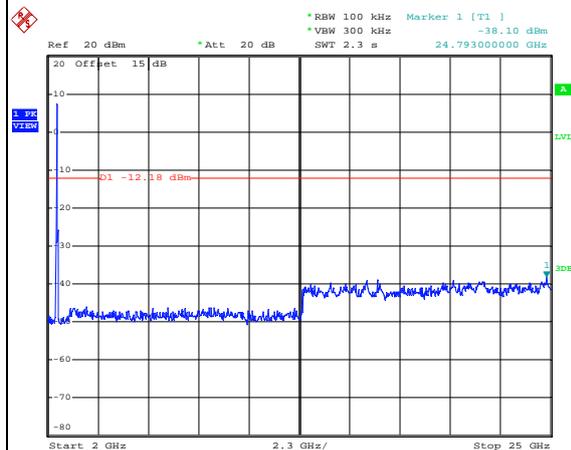
Date: 28.DEC.2013 19:58:39

Spurious Emission 30MHz~3GHz



Date: 28.DEC.2013 19:58:59

Spurious Emission 2GHz~25GHz



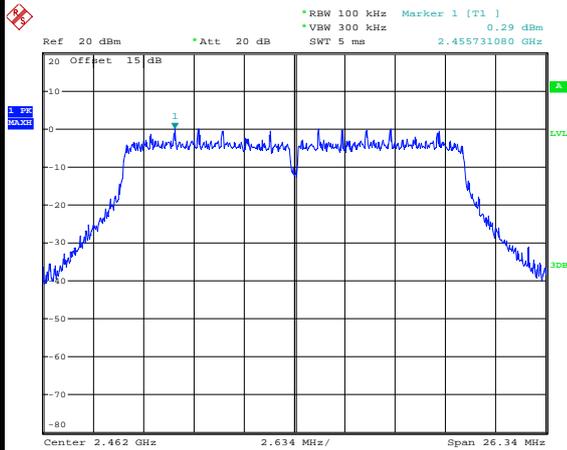
Date: 28.DEC.2013 19:59:17



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	2.4GHz High	Relative Humidity :	47~49%
Test Channel :	11	Test Engineer :	Issac Song

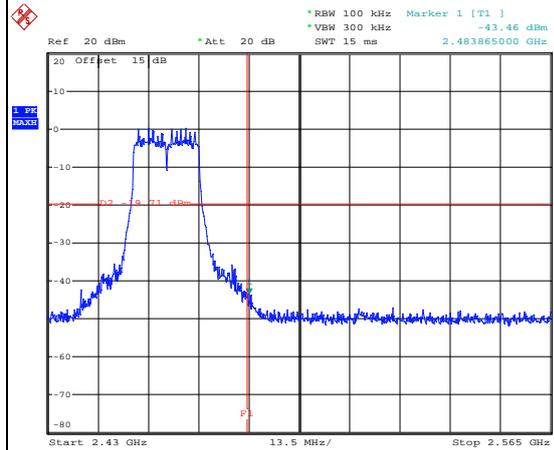
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



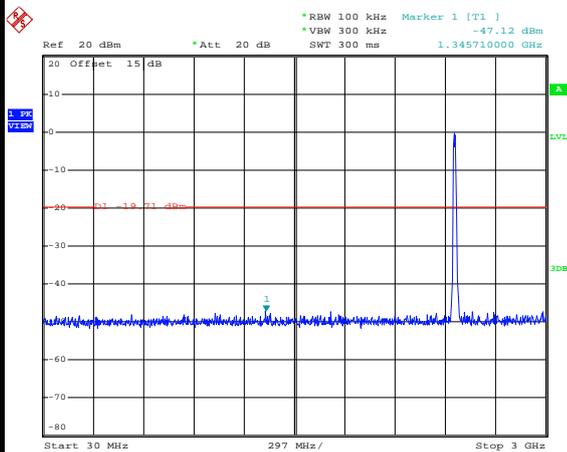
Date: 28.DEC.2013 20:01:20

High Channel Plot



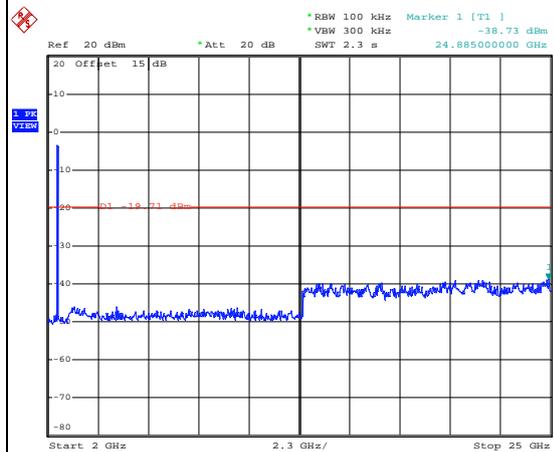
Date: 28.DEC.2013 20:01:34

Spurious Emission 30MHz~3GHz



Date: 28.DEC.2013 20:01:53

Spurious Emission 2GHz~25GHz



Date: 28.DEC.2013 20:02:12



### 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.

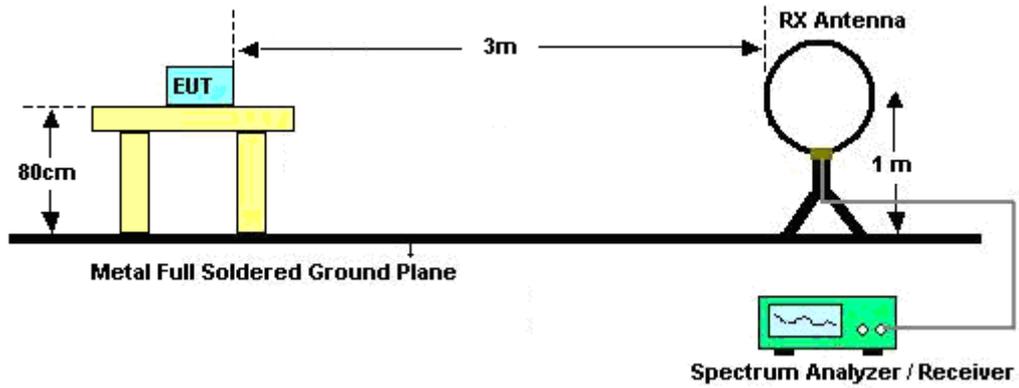
### 3.5.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for  $f < 1$  GHz;  $VBW \geq RBW$ ; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.  
 For average measurement:
    - $VBW = 10$  Hz, when duty cycle is no less than 98 percent.
    - $VBW \geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

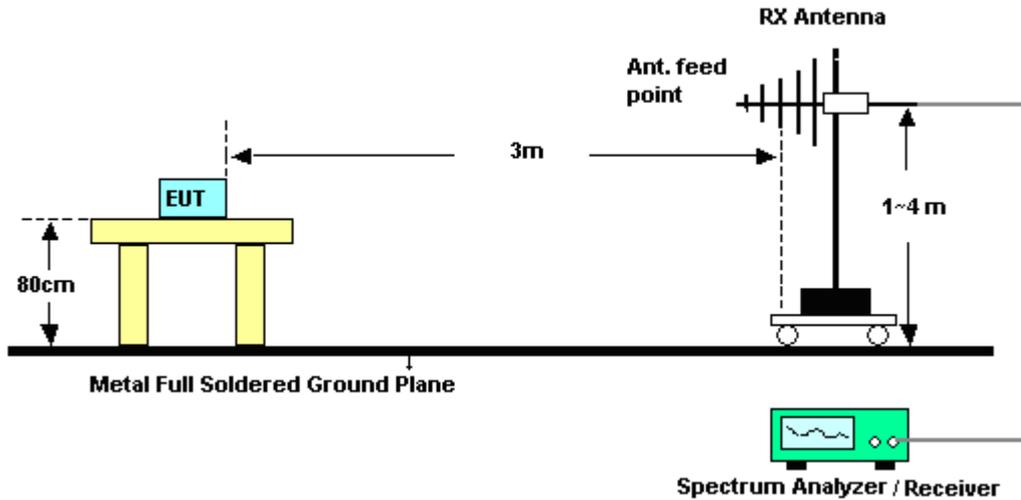
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	97.41	8.260	0.121	300Hz
802.11g	87.18	1.360	0.735	1kHz
2.4GHz 802.11n HT20	86.50	1.282	0.780	1kHz

### 3.5.4 Test Setup

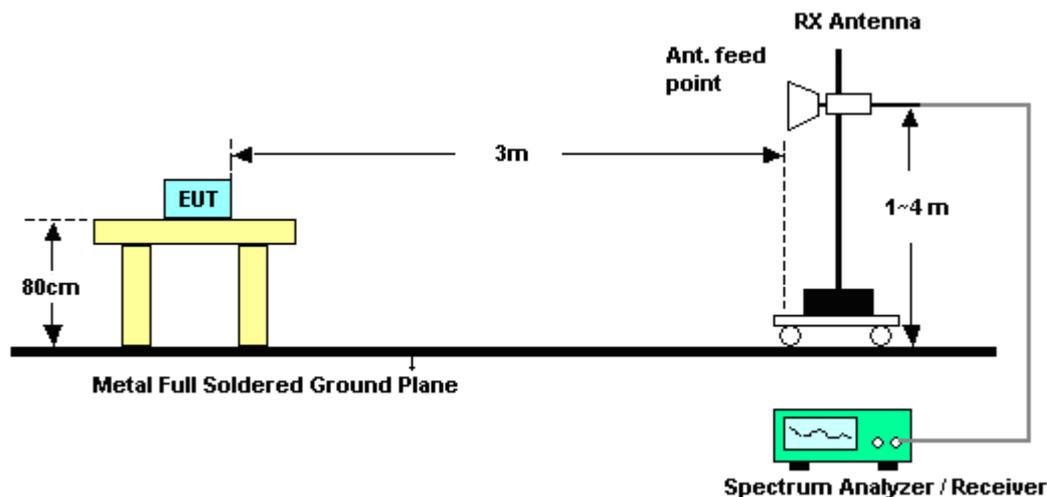
For radiated emissions below 30MHz



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 :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Star Wei

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
2387.04	55.91	-18.09	74	52.72	32.86	3.59	33.26	141	25	Peak
2387.67	47.24	-6.76	54	44.05	32.86	3.59	33.26	141	25	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	58.22	-15.78	74	55.03	32.86	3.59	33.26	100	95	Peak
2387.85	50.08	-3.92	54	46.89	32.86	3.59	33.26	100	95	Average

Test Mode :	802.11b	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	02	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.2	55	-19	74	51.81	32.86	3.59	33.26	141	139	Peak
2390	46.83	-7.17	54	43.64	32.86	3.59	33.26	141	139	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
2389.47	57.93	-16.07	74	54.74	32.86	3.59	33.26	100	138	Peak
2390	49.89	-4.11	54	46.7	32.86	3.59	33.26	100	138	Average



Test Mode :	802.11b	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	03	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.11	54.53	-19.47	74	51.34	32.86	3.59	33.26	107	44	Peak
2389.47	44.11	-9.89	54	40.92	32.86	3.59	33.26	107	44	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
2389.38	54.83	-19.17	74	51.64	32.86	3.59	33.26	100	124	Peak
2389.56	45.5	-8.5	54	42.31	32.86	3.59	33.26	100	124	Average

Test Mode :	802.11b	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	09	Test Engineer :	Star Wei

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
2483.5	59.07	-14.93	74	55.7	33.01	3.65	33.29	108	53	Peak
2483.5	52.45	-1.55	54	49.08	33.01	3.65	33.29	108	53	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
2483.56	58.62	-15.38	74	55.25	33.01	3.65	33.29	100	112	Peak
2483.5	51.57	-2.43	54	48.2	33.01	3.65	33.29	100	112	Average



Test Mode :	802.11b	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	10	Test Engineer :	Star Wei

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
2483.5	54.96	-19.04	74	51.59	33.01	3.65	33.29	200	220	Peak
2483.74	45.81	-8.19	54	42.44	33.01	3.65	33.29	200	220	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
2483.59	57.59	-16.41	74	54.22	33.01	3.65	33.29	100	94	Peak
2483.95	48.25	-5.75	54	44.88	33.01	3.65	33.29	100	94	Average

Test Mode :	802.11b	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Star Wei

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
2486.83	60.39	-13.61	74	57.02	33.01	3.65	33.29	132	48	Peak
2487.22	51.66	-2.34	54	48.29	33.01	3.65	33.29	132	48	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
2483.59	59.5	-14.5	74	56.13	33.01	3.65	33.29	100	92	Peak
2487.28	50.43	-3.57	54	47.06	33.01	3.65	33.29	100	92	Average



Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.92	68.62	-5.38	74	65.43	32.86	3.59	33.26	200	235	Peak
2389.92	45.45	-8.55	54	42.26	32.86	3.59	33.26	200	235	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	69.28	-4.72	74	66.09	32.86	3.59	33.26	100	106	Peak
2389.92	48.59	-5.41	54	45.4	32.86	3.59	33.26	100	106	Average

Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	02	Test Engineer :	Star Wei

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
2388.48	65.35	-8.65	74	62.16	32.86	3.59	33.26	116	222	Peak
2389.92	40.41	-13.59	54	37.22	32.86	3.59	33.26	116	222	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
2389.11	69.03	-4.97	74	65.84	32.86	3.59	33.26	100	111	Peak
2389.56	43.03	-10.97	54	39.84	32.86	3.59	33.26	100	111	Average



Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	03	Test Engineer :	Star Wei

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
2387.04	68.15	-5.85	74	64.96	32.86	3.59	33.26	113	215	Peak
2389.65	42.58	-11.42	54	39.39	32.86	3.59	33.26	113	215	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
2388.75	71.21	-2.79	74	68.02	32.86	3.59	33.26	100	103	Peak
2389.92	45.43	-8.57	54	42.24	32.86	3.59	33.26	100	103	Average

Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	04	Test Engineer :	Star Wei

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
2388.57	68.87	-5.13	74	65.68	32.86	3.59	33.26	172	220	Peak
2389.56	42.93	-11.07	54	39.74	32.86	3.59	33.26	172	220	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	71.05	-2.95	74	67.86	32.86	3.59	33.26	100	132	Peak
2389.74	47.17	-6.83	54	43.98	32.86	3.59	33.26	100	132	Average



Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	05	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.56	69.48	-4.52	74	66.29	32.86	3.59	33.26	200	224	Peak
2389.74	44.52	-9.48	54	41.33	32.86	3.59	33.26	200	224	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
2389.29	72.47	-1.53	74	69.28	32.86	3.59	33.26	100	129	Peak
2389.29	46.35	-7.65	54	43.16	32.86	3.59	33.26	100	129	Average

Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	Middle	Relative Humidity :	42~43%
Test Channel :	06	Test Engineer :	Star Wei

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
2388.93	70.81	-3.19	74	67.62	32.86	3.59	33.26	200	225	Peak
2389.74	45.04	-8.96	54	41.85	32.86	3.59	33.26	200	225	Average
2483.74	69.1	-4.9	74	65.73	33.01	3.65	33.29	125	46	Peak
2489.74	47.58	-6.42	54	44.17	33.05	3.66	33.3	125	46	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2388.66	71.29	-2.71	74	68.1	32.86	3.59	33.26	100	139	Peak
2385.06	46.9	-7.1	54	43.75	32.83	3.58	33.26	100	139	Average
2484.58	70.93	-3.07	74	67.56	33.01	3.65	33.29	100	119	Peak
2489.29	48.36	-5.64	54	44.95	33.05	3.66	33.3	100	115	Average



Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	07	Test Engineer :	Star Wei

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
2483.5	70.08	-3.92	74	66.71	33.01	3.65	33.29	200	131	Peak
2483.5	49.99	-4.01	54	46.62	33.01	3.65	33.29	200	131	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
2484.13	72.4	-1.6	74	69.03	33.01	3.65	33.29	100	125	Peak
2484.19	50.62	-3.38	54	47.25	33.01	3.65	33.29	100	125	Average

Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	08	Test Engineer :	Star Wei

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
2483.5	69.79	-4.21	74	66.42	33.01	3.65	33.29	200	133	Peak
2483.65	51.09	-2.91	54	47.72	33.01	3.65	33.29	200	133	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	72.4	-1.6	74	69.03	33.01	3.65	33.29	100	130	Peak
2483.56	51.43	-2.57	54	48.06	33.01	3.65	33.29	100	130	Average



Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	09	Test Engineer :	Star Wei

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
2486.83	70.02	-3.98	74	66.65	33.01	3.65	33.29	200	136	Peak
2483.68	49.86	-4.14	54	46.49	33.01	3.65	33.29	200	136	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
2483.74	72.1	-1.9	74	68.73	33.01	3.65	33.29	100	123	Peak
2483.56	50.37	-3.63	54	47	33.01	3.65	33.29	100	123	Average

Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	10	Test Engineer :	Star Wei

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
2486.08	71.4	-2.6	74	68.03	33.01	3.65	33.29	200	132	Peak
2483.5	51.17	-2.83	54	47.8	33.01	3.65	33.29	200	132	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
2485.66	72.03	-1.97	74	68.66	33.01	3.65	33.29	100	116	Peak
2483.5	51.85	-2.15	54	48.48	33.01	3.65	33.29	100	116	Average



Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Star Wei

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	72.59	-1.41	74	69.22	33.01	3.65	33.29	197	23	Peak
2483.56	47.41	-6.59	54	44.04	33.01	3.65	33.29	197	23	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
2483.74	71.81	-2.19	74	68.44	33.01	3.65	33.29	100	124	Peak
2483.53	47.76	-6.24	54	44.39	33.01	3.65	33.29	100	127	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	01	Test Engineer :	Star Wei

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
2388.75	64.56	-9.44	74	61.37	32.86	3.59	33.26	200	135	Peak
2389.92	44.57	-9.43	54	41.38	32.86	3.59	33.26	200	135	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	70.89	-3.11	74	67.7	32.86	3.59	33.26	100	126	Peak
2389.92	46.49	-7.51	54	43.3	32.86	3.59	33.26	100	126	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	02	Test Engineer :	Star Wei

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
2387.85	66.88	-7.12	74	63.69	32.86	3.59	33.26	200	222	Peak
2389.83	41.06	-12.94	54	37.87	32.86	3.59	33.26	200	222	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
2387.49	71.33	-2.67	74	68.14	32.86	3.59	33.26	100	131	Peak
2389.65	44.41	-9.59	54	41.22	32.86	3.59	33.26	100	131	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	03	Test Engineer :	Star Wei

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
2388.93	69.1	-4.9	74	65.91	32.86	3.59	33.26	118	42	Peak
2370.21	43.34	-10.66	54	40.19	32.83	3.58	33.26	118	49	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2388.84	71.68	-2.32	74	68.49	32.86	3.59	33.26	100	100	Peak
2370.3	44.79	-9.21	54	41.64	32.83	3.58	33.26	100	98	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	04	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.2	70.77	-3.23	74	67.58	32.86	3.59	33.26	200	58	Peak
2390	43.46	-10.54	54	40.27	32.86	3.59	33.26	200	57	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
2389.11	72.34	-1.66	74	69.15	32.86	3.59	33.26	100	83	Peak
2375.25	46.22	-7.78	54	43.07	32.83	3.58	33.26	100	83	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	42~43%
Test Channel :	05	Test Engineer :	Star Wei

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.38	71.01	-2.99	74	67.82	32.86	3.59	33.26	200	136	Peak
2380.29	44.94	-9.06	54	41.79	32.83	3.58	33.26	200	56	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
2387.13	71.8	-2.2	74	68.61	32.86	3.59	33.26	100	115	Peak
2380.47	46.84	-7.16	54	43.69	32.83	3.58	33.26	100	116	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	07	Test Engineer :	Star Wei

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
2485.15	70.43	-3.57	74	67.06	33.01	3.65	33.29	200	132	Peak
2483.65	47.72	-6.28	54	44.35	33.01	3.65	33.29	200	133	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
2488.66	72.12	-1.88	74	68.71	33.05	3.66	33.3	100	113	Peak
2483.5	48.83	-5.17	54	45.46	33.01	3.65	33.29	100	113	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	08	Test Engineer :	Star Wei

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
2484.34	69.77	-4.23	74	66.4	33.01	3.65	33.29	200	132	Peak
2483.53	48.81	-5.19	54	45.44	33.01	3.65	33.29	200	120	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
2484.07	72.43	-1.57	74	69.06	33.01	3.65	33.29	100	100	Peak
2483.59	49.9	-4.1	54	46.53	33.01	3.65	33.29	100	102	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	09	Test Engineer :	Star Wei

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
2484.67	70.06	-3.94	74	66.69	33.01	3.65	33.29	200	146	Peak
2483.56	49.76	-4.24	54	46.39	33.01	3.65	33.29	200	135	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
2483.8	70.83	-3.17	74	67.46	33.01	3.65	33.29	100	112	Peak
2483.5	50.03	-3.97	54	46.66	33.01	3.65	33.29	100	87	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	10	Test Engineer :	Star Wei

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
2483.5	71.61	-2.39	74	68.24	33.01	3.65	33.29	200	135	Peak
2483.5	50.67	-3.33	54	47.3	33.01	3.65	33.29	200	133	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
2486.2	71.45	-2.55	74	68.08	33.01	3.65	33.29	100	98	Peak
2483.77	51.24	-2.76	54	47.87	33.01	3.65	33.29	100	100	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	42~43%
Test Channel :	11	Test Engineer :	Star Wei

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
2483.8	72.98	-1.02	74	69.61	33.01	3.65	33.29	199	35	Peak
2483.56	48.68	-5.32	54	45.31	33.01	3.65	33.29	199	48	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
2483.77	71.91	-2.09	74	68.54	33.01	3.65	33.29	100	124	Peak
2483.5	48.47	-5.53	54	45.1	33.01	3.65	33.29	100	124	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>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	110.19	-	-	106.96	32.89	3.61	33.27	141	25	Peak
2412	106.01	-	-	102.78	32.89	3.61	33.27	141	25	Average
4824	48.05	-25.95	74	41.43	35.17	5.25	33.8	100	226	Peak



Test Mode :	802.11b	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	42~43%
Test Engineer :	Star Wei	Polarization :	Vertical
Remark :	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	112.09	-	-	108.86	32.89	3.61	33.27	100	94	Peak
2412	107.49	-	-	104.26	32.89	3.61	33.27	100	94	Average
4824	48.47	-25.53	74	41.85	35.17	5.25	33.8	120	25	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	110.76	-	-	107.46	32.95	3.63	33.28	135	59	Peak
2437	106.43	-	-	103.13	32.95	3.63	33.28	135	59	Average
4874	49.41	-24.59	74	42.75	35.18	5.28	33.8	100	145	Peak
7312	50.07	-23.93	74	41.39	36.2	6.61	34.13	100	122	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	112.24	-	-	108.94	32.95	3.63	33.28	100	79	Peak
2437	107.72	-	-	104.42	32.95	3.63	33.28	100	79	Average
4874	49.09	-24.91	74	42.43	35.18	5.28	33.8	100	26	Peak
7312	50.38	-23.62	74	41.7	36.2	6.61	34.13	145	122	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	112.78	-	-	109.45	32.98	3.64	33.29	132	48	Peak
2462	108.55	-	-	105.22	32.98	3.64	33.29	132	48	Average
4924	47.52	-26.48	74	40.82	35.19	5.31	33.8	100	263	Peak
7386	49.27	-24.73	74	40.49	36.24	6.7	34.16	110	29	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	112.67	-	-	109.34	32.98	3.64	33.29	100	91	Peak
2462	108.01	-	-	104.68	32.98	3.64	33.29	100	91	Average
4924	47.03	-26.97	74	40.33	35.19	5.31	33.8	100	14	Peak
7386	49.85	-24.15	74	41.07	36.24	6.7	34.16	110	92	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	106.56	-	-	103.33	32.89	3.61	33.27	107	57	Peak
2412	94.87	-	-	91.64	32.89	3.61	33.27	107	57	Average
4824	47.66	-26.34	74	41.04	35.17	5.25	33.8	100	26	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	106.58	-	-	103.35	32.89	3.61	33.27	100	75	Peak
2412	95	-	-	91.77	32.89	3.61	33.27	100	75	Average
4824	46.8	-27.2	74	40.18	35.17	5.25	33.8	100	91	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	112.76	-	-	109.46	32.95	3.63	33.28	105	50	Peak
2437	101.26	-	-	97.96	32.95	3.63	33.28	105	50	Average
4874	47.79	-26.21	74	41.13	35.18	5.28	33.8	100	100	Peak
7312	50.28	-23.72	74	41.6	36.2	6.61	34.13	120	112	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	113.03	-	-	109.73	32.95	3.63	33.28	100	85	Peak
2437	101.5	-	-	98.2	32.95	3.63	33.28	100	85	Average
4874	47.84	-26.16	74	41.18	35.18	5.28	33.8	145	122	Peak
7312	50.22	-23.78	74	41.54	36.2	6.61	34.13	163	200	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	107.37	-	-	104.04	32.98	3.64	33.29	197	41	Peak
2462	96.82	-	-	93.49	32.98	3.64	33.29	197	41	Average
4924	47.53	-26.47	74	40.83	35.19	5.31	33.8	100	21	Peak
7386	49.87	-24.13	74	41.09	36.24	6.7	34.16	100	89	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	107.82	-	-	104.49	32.98	3.64	33.29	100	117	Peak
2462	96.5	-	-	93.17	32.98	3.64	33.29	100	117	Average
4924	47.03	-26.97	74	40.33	35.19	5.31	33.8	100	52	Peak
7386	49.64	-24.36	74	40.86	36.24	6.7	34.16	100	91	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	104.08	-	-	100.85	32.89	3.61	33.27	200	60	Peak
2412	92.7	-	-	89.47	32.89	3.61	33.27	200	60	Average
4824	46.33	-27.67	74	39.71	35.17	5.25	33.8	100	154	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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	105.06	-	-	101.83	32.89	3.61	33.27	100	104	Peak
2412	93.45	-	-	90.22	32.89	3.61	33.27	100	104	Average
4824	47.08	-26.92	74	40.46	35.17	5.25	33.8	100	51	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2441MHz 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
2441	108.97	-	-	105.67	32.95	3.63	33.28	100	53	Peak
2441	98.71	-	-	95.41	32.95	3.63	33.28	100	53	Average
4874	47.01	-26.99	74	40.35	35.18	5.28	33.8	120	110	Peak
7312	50.27	-23.73	74	41.59	36.2	6.61	34.13	141	78	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2441 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
2441	114.82	-	-	111.52	32.95	3.63	33.28	100	121	Peak
2441	104.5	-	-	101.2	32.95	3.63	33.28	100	121	Average
4874	47.13	-26.87	74	40.47	35.18	5.28	33.8	115	145	Peak
7312	50.15	-23.85	74	41.47	36.2	6.61	34.13	100	21	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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
43.58	23.28	-16.72	40	46.25	10.03	0.62	33.62	100	162	Peak
92.08	17.41	-26.09	43.5	40.8	9.35	0.88	33.62	-	-	Peak
194.9	25.33	-18.17	43.5	48.86	8.75	1.28	33.56	-	-	Peak
342.34	25.6	-20.4	46	42.93	14.33	1.7	33.36	-	-	Peak
435.46	19.95	-26.05	46	35.01	16.23	1.94	33.23	-	-	Peak
677.96	20.36	-25.64	46	31.78	19.13	2.36	32.91	-	-	Peak
2462	107.12	-	-	103.79	32.98	3.64	33.29	199	41	Peak
2462	96.43	-	-	93.1	32.98	3.64	33.29	199	41	Average
4924	46.9	-27.1	74	40.2	35.19	5.31	33.8	100	164	Peak
7386	48.93	-25.07	74	40.15	36.24	6.7	34.16	100	14	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Star Wei	<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
42.61	31.08	-8.92	40	53.61	10.48	0.62	33.63	200	123	Peak
53.28	26.93	-13.07	40	53.03	6.8	0.68	33.58	-	-	Peak
88.2	20.62	-22.88	43.5	45.07	8.3	0.87	33.62	-	-	Peak
193.93	19.94	-23.56	43.5	43.53	8.7	1.27	33.56	-	-	Peak
354.95	17.89	-28.11	46	34.95	14.6	1.7	33.36	-	-	Peak
454.86	24.77	-21.23	46	39.66	16.36	1.95	33.2	-	-	Peak
2462	107.98	-	-	104.65	32.98	3.64	33.29	100	124	Peak
2462	95.59	-	-	92.26	32.98	3.64	33.29	100	124	Average
4924	46.82	-27.18	74	40.12	35.19	5.31	33.8	100	163	Peak
7386	49.58	-24.42	74	40.8	36.24	6.7	34.16	100	29	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.

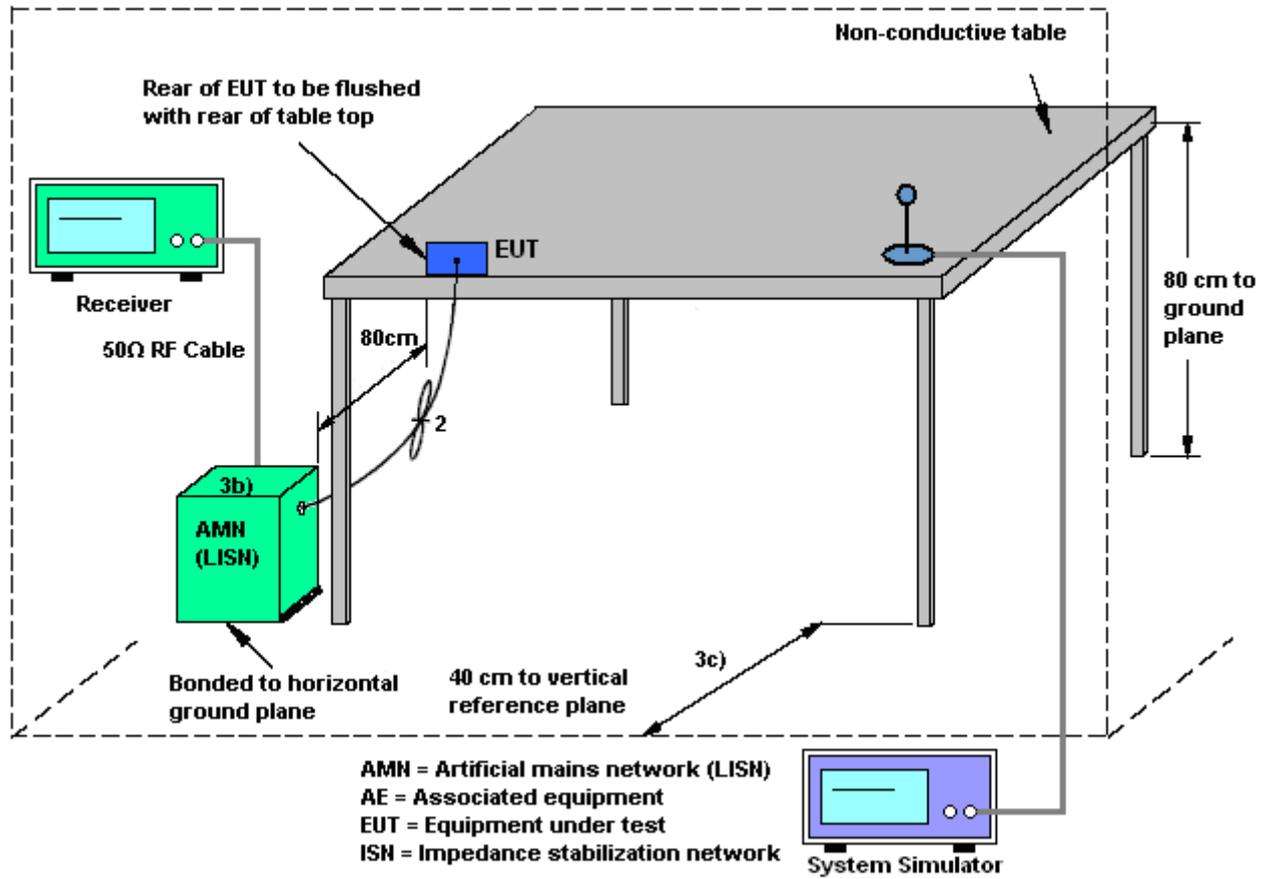
### 3.6.2 Measuring Instruments

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

### 3.6.3 Test Procedures

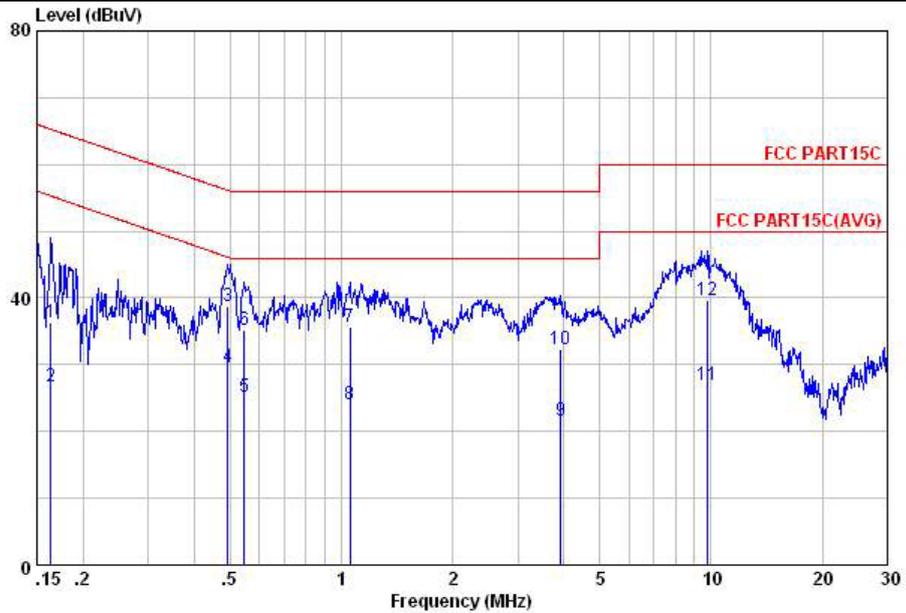
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other 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 :	21~23°C
Test Engineer :	Harvey Tang	Relative Humidity :	41~43%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)		



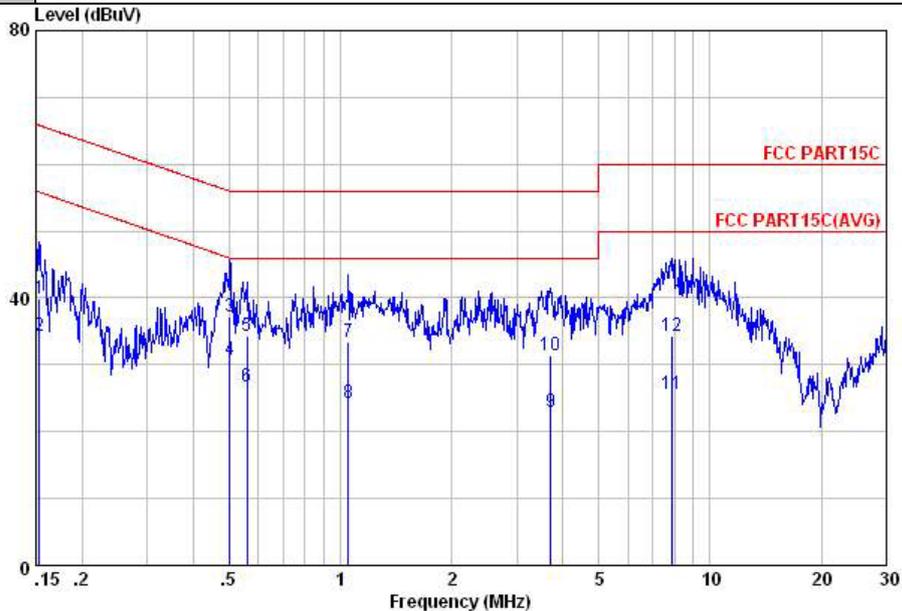
Site : C001-KS  
 Condition: FCC PART15C LISN-L20130306 LINE

mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	36.28	-29.02	65.30	23.90	1.72	10.66	QP
2	0.16	26.68	-28.62	55.30	14.30	1.72	10.66	Average
3	0.49	38.67	-17.47	56.14	28.19	0.21	10.27	QP
4	0.49	29.57	-16.57	46.14	19.09	0.21	10.27	Average
5	0.55	25.15	-20.85	46.00	14.70	0.20	10.25	Average
6	0.55	35.25	-20.75	56.00	24.80	0.20	10.25	QP
7	1.05	35.68	-20.32	56.00	25.40	0.10	10.18	QP
8	1.05	23.98	-22.02	46.00	13.70	0.10	10.18	Average
9	3.92	21.72	-24.28	46.00	11.30	0.18	10.24	Average
10	3.92	32.32	-23.68	56.00	21.90	0.18	10.24	QP
11	9.81	26.86	-23.14	50.00	16.30	0.20	10.36	Average
12	9.81	39.66	-20.34	60.00	29.10	0.20	10.36	QP



Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Harvey Tang	Relative Humidity :	41~43%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from Adapter)		



Site : C001-KS  
 Condition: FCC PART15C LISN-N20130306 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	0.15	39.86	-25.96	65.82	27.31	1.85	10.70	QP
2	0.15	34.26	-21.56	55.82	21.71	1.85	10.70	Average
3	0.50	37.26	-18.74	56.00	26.70	0.30	10.26	QP
4	0.50	30.66	-15.34	46.00	20.10	0.30	10.26	Average
5	0.56	34.22	-21.78	56.00	23.70	0.27	10.25	QP
6	0.56	26.72	-19.28	46.00	16.20	0.27	10.25	Average
7	1.05	33.48	-22.52	56.00	23.20	0.10	10.18	QP
8	1.05	24.18	-21.82	46.00	13.90	0.10	10.18	Average
9	3.70	23.01	-22.99	46.00	12.59	0.18	10.24	Average
10	3.70	31.51	-24.49	56.00	21.09	0.18	10.24	QP
11	7.89	25.64	-24.36	50.00	15.10	0.20	10.34	Average
12	7.89	34.34	-25.66	60.00	23.80	0.20	10.34	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	FSP40	100319	9kHz~40GHz	Dec. 29, 2012 Dec. 29, 2013	Dec. 28, 2013~ Jan. 14, 2014	Dec. 28, 2013 Dec. 28, 2014	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	N/A	Feb. 28, 2013	Dec. 28, 2013~ Jan. 14, 2014	Feb. 27, 2014	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	N/A	Feb. 28, 2013	Dec. 28, 2013~ Jan. 14, 2014	Feb. 27, 2014	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 05, 2013	Jan. 10, 2014	Nov. 04, 2014	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101399	9kHz~30GHz	May 23, 2013	Jan. 10, 2014	May 22, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2013	Jan. 10, 2014	Dec. 06, 2014	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 09, 2013	Jan. 10, 2014	Oct. 08, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Dec. 07, 2013	Jan. 10, 2014	Dec. 06, 2014	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	N/A	Jan. 10, 2014	N/A	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	N/A	Jan. 10, 2014	N/A	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	May 23, 2013	Jan. 10, 2014	May 22, 2014	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 29, 2013	Jan. 10, 2014	Dec. 28, 2014	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 18, 2013	Jan. 10, 2014	Nov. 17, 2014	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Nov. 23, 2013	Jan. 10, 2014	Nov. 22, 2014	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	May 23, 2013	Jan. 14, 2014	May 22, 2014	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 10, 2013	Jan. 14, 2014	Dec. 09, 2014	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	60105	9kHz~30MHz	Dec. 10, 2013	Jan. 14, 2014	Dec. 09, 2014	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	N/A	May 25, 2013	Jan. 14, 2014	May 24, 2014	Conduction (CO01-KS)



## 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 (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.54
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