

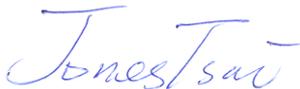
FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : GSM Digital Mobile Phone
BRAND NAME : ZTE
MODEL NAME : ZTE R3000
FCC ID : Q78-R3000
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Aug. 10, 2012 and completely tested on Aug. 24, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

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

Reviewed by:



Jones Tsai / Manager



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



TABLE OF CONTENTS

REVISION HISTORY..... 3

SUMMARY OF TEST RESULT 4

1 GENERAL DESCRIPTION 5

 1.1 Applicant 5

 1.2 Manufacturer 5

 1.3 Feature of Equipment Under Test 5

 1.4 Testing Site 6

 1.5 Applied Standards 6

 1.6 Ancillary Equipment List 6

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST 7

 2.1 Carrier Frequency Channel 7

 2.2 Pre-Scanned RF Power 8

 2.3 Test Mode 9

 2.4 Connection Diagram of Test System 10

 2.5 RF Utility 10

3 TEST RESULT 11

 3.1 6dB Bandwidth Measurement 11

 3.2 Output Power Measurement 16

 3.3 Power Spectral Density Measurement 19

 3.4 Conducted Band Edges and Spurious Emission Measurement 24

 3.5 Radiated Emission Measurement 33

 3.6 AC Conducted Emission Measurement 51

 3.7 Antenna Requirements 55

4 LIST OF MEASURING EQUIPMENT 56

5 UNCERTAINTY OF EVALUATION 57

APPENDIX A. PHOTOGRAPHS OF EUT

APPENDIX B. SETUP PHOTOGRAPHS

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.2	15.247(b)	A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	A8.5	Radiated Band Edges	15.209(a) & 15.247(d)	Pass	-
			Radiated Spurious Emission		Pass	Under limit 5.6 dB at 86.200 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 10.30 dB at 2.300 MHz
3.7	15.203 & 15.247(b)	A8.4	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	GSM Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE R3000
FCC ID	Q78-R3000
EUT supports Radios application	GSM/WLAN 11bg/Bluetooth
HW Version	MB3601AMB_C
SW Version	R3000_V1_Z1_ES_D18G101
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.

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2412 MHz ~ 2462 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Maximum Output Power to Antenna	802.11b : 12.39 dBm (0.017 W) 802.11g : 12.58 dBm (0.018 W)
Antenna Type	PIFA Antenna with gain 0.00 dBi
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.4 Testing Site

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

1.5 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 v01
- ♦ FCC TCB Workshop 2012, April
- ♦ ANSI C63.4-2003 and ANSI C63.10-2009
- ♦ IC RSS-210 Issue 8
- ♦ IC RSS-Gen Issue 3

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.

1.6 Ancillary Equipment List

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

2 Test Configuration of Equipment Under Test

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

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

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

2.1 Carrier Frequency Channel

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

2.2 Pre-Scanned RF Power

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

Channel	Frequency	2.4GHz 802.11b mode			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	11.38	11.65	10.56	11.26
CH 06	2437 MHz	12.11	12.07	10.98	11.68
CH 11	2462 MHz	12.39	12.3	11.26	11.97

Channel	Frequency	2.4GHz 802.11g mode							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	11.53	10.46	10.98	10.32	11.55	11.24	11.28	10.88
CH 06	2437 MHz	12.06	10.98	11.38	10.37	11.63	11.03	11.02	11.51
CH 11	2462 MHz	12.58	11.05	12.22	11.26	12.17	12.26	11.49	12.03



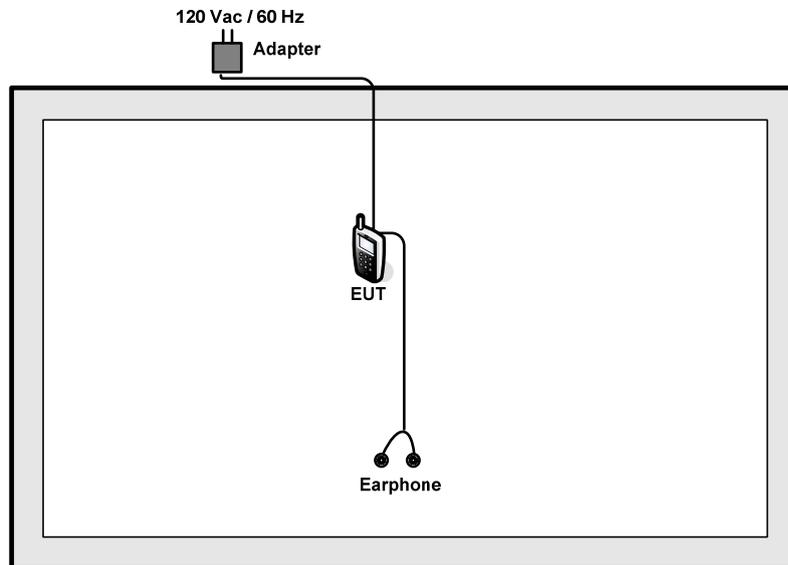
2.3 Test Mode

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

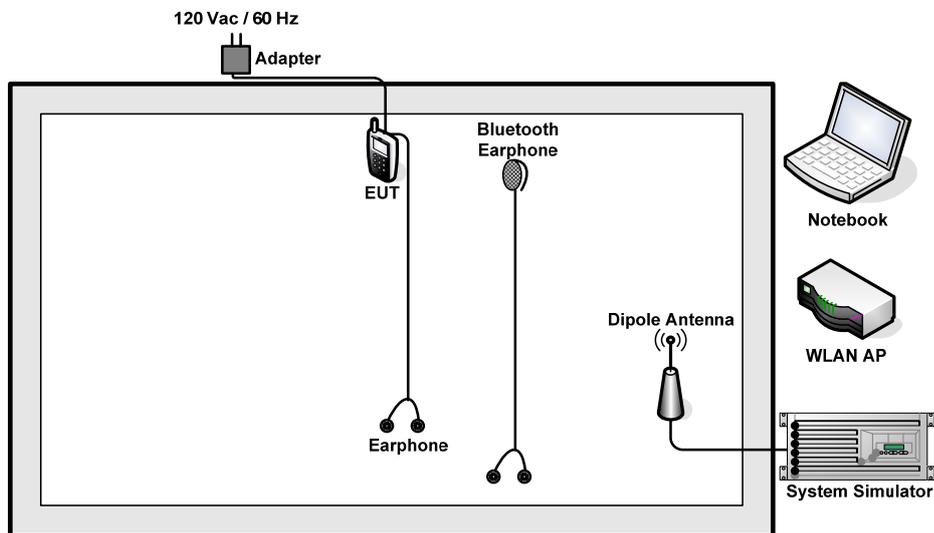
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB BW Power Spectral Density	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
	Conducted Band EDGE	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
	Conducted Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
Radiated TCs	Radiated Band EDGE	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
AC Conducted Emission	Mode 1 : GSM850 Idle + WLAN Link + Bluetooth Link + Adapter + Earphone			

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 RF Utility

For WLAN function, key in “* # 8603 #” on the EUT directly. Then, the EUT will get into the engineering modes to contact with WLAN AP for continuous transmitting and receiving signals.

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.

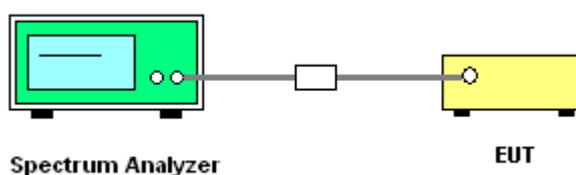
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. 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) = 1-5% of the emission bandwidth (EBW). Set the Video bandwidth (VBW) $\geq 3 * RBW$. In order to make an accurate measurement.

3.1.4 Test Setup



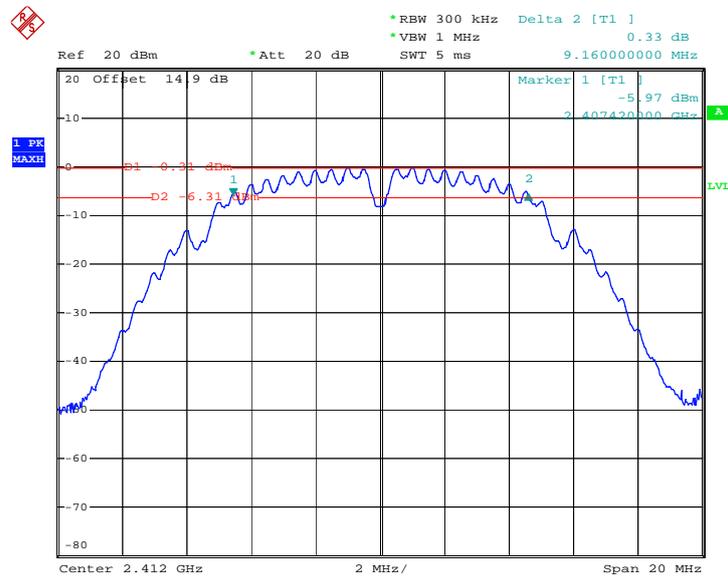


3.1.5 Test Result of 6dB Bandwidth

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

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.16	0.5	Pass
06	2437	9.16	0.5	Pass
11	2462	9.16	0.5	Pass

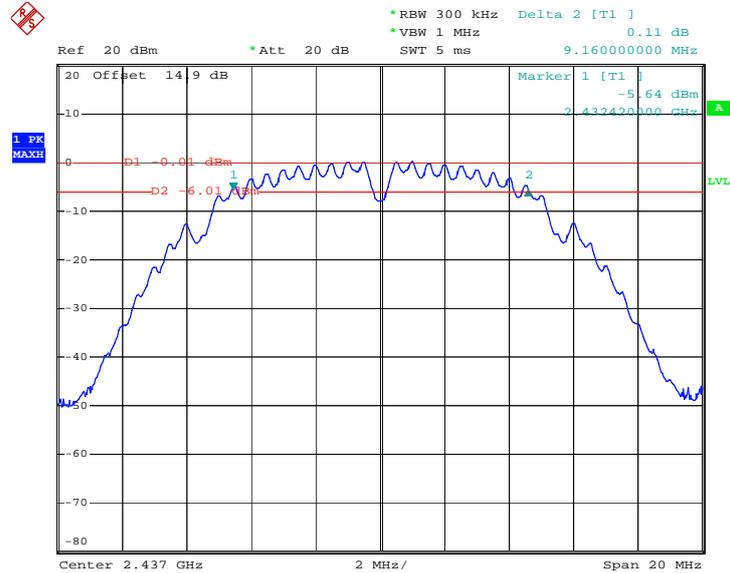
6 dB Bandwidth Plot on 802.11b Channel 01



Date: 24.AUG.2012 21:09:13

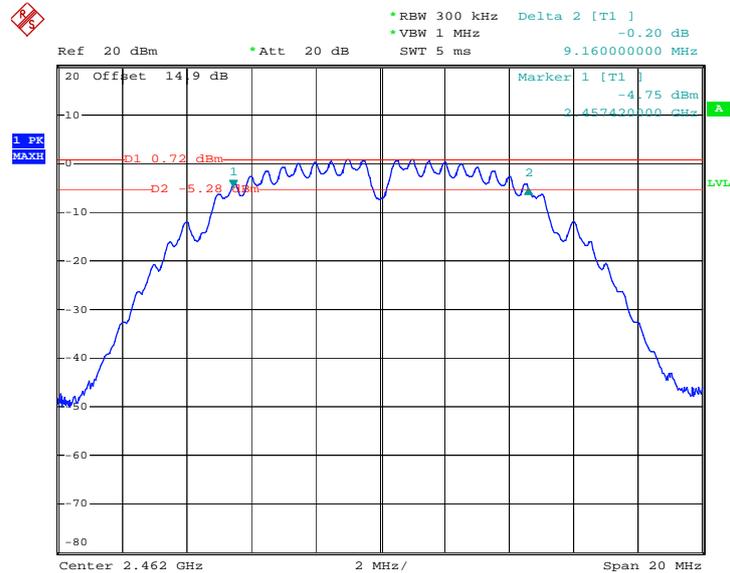


6 dB Bandwidth Plot on 802.11b Channel 06



Date: 24.AUG.2012 21:13:13

6 dB Bandwidth Plot on 802.11b Channel 11



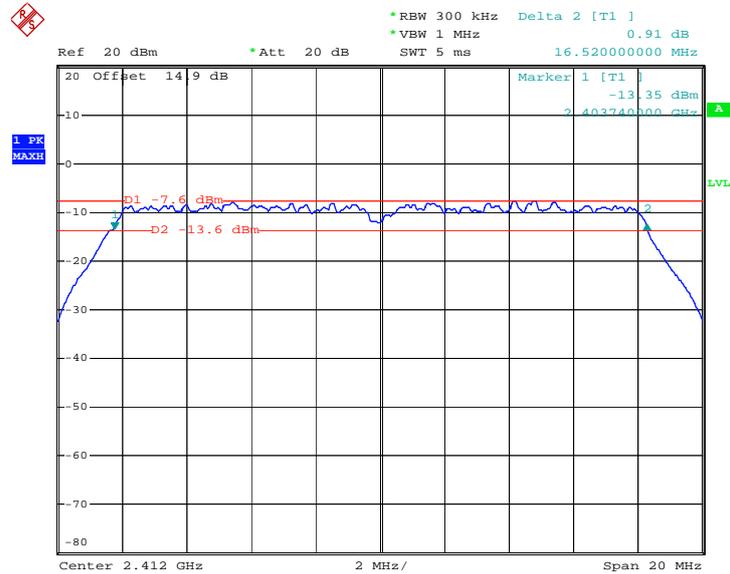
Date: 24.AUG.2012 21:15:55



Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.52	0.5	Pass
06	2437	16.68	0.5	Pass
11	2462	16.64	0.5	Pass

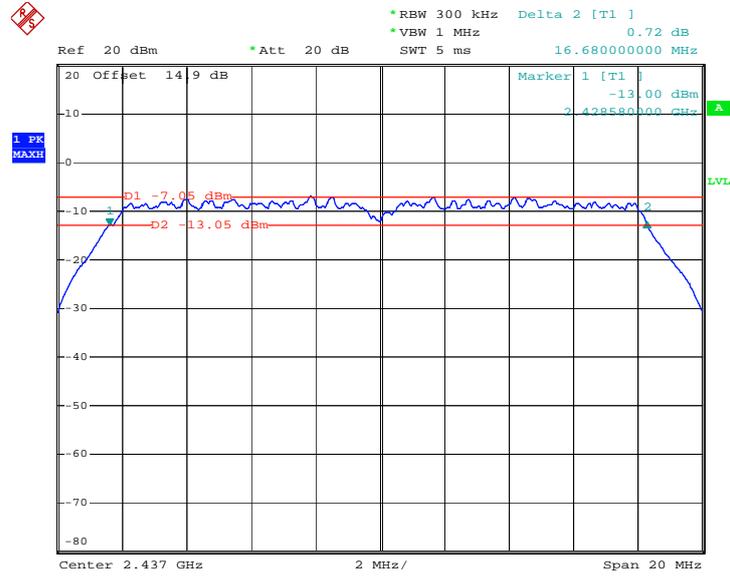
6 dB Bandwidth Plot on 802.11g Channel 01



Date: 24.AUG.2012 21:19:47

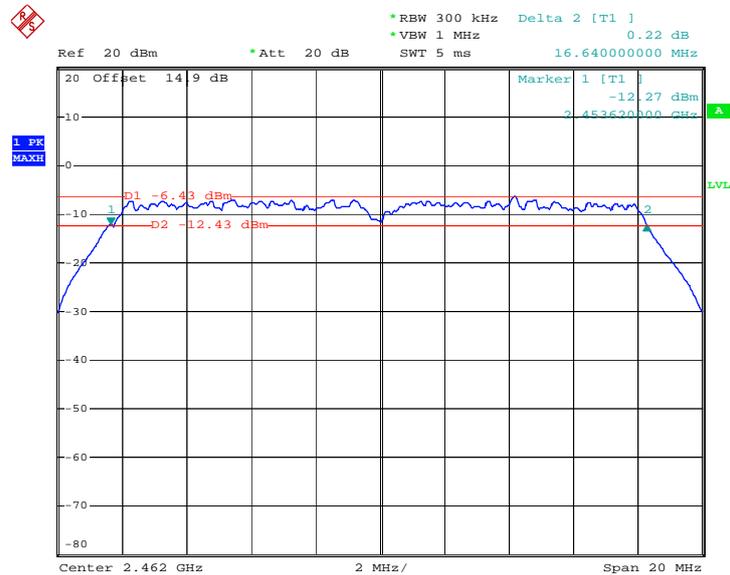


6 dB Bandwidth Plot on 802.11g Channel 06



Date: 24.AUG.2012 21:24:15

6 dB Bandwidth Plot on 802.11g Channel 11



Date: 24.AUG.2012 21:27:24

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, 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.

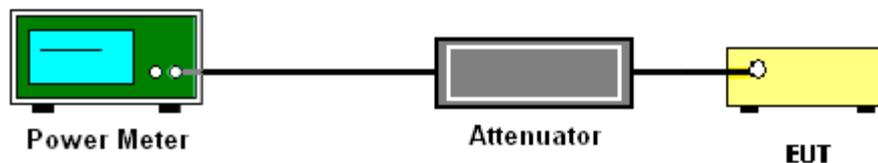
3.2.2 Measuring Instruments

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 and TCB Workshop 2012, April.
2. The RF output of EUT was connected to the power meter by a low loss cable
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 :	802.11b	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	11.38	30	Pass
06	2437	12.11	30	Pass
11	2462	12.39	30	Pass

Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	11.53	30	Pass
06	2437	12.06	30	Pass
11	2462	12.58	30	Pass



3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
01	2412	8.09
06	2437	8.38
11	2462	8.78

Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%
Duty Cycle:	100%	Duty Factor:	0.00dB

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
01	2412	0.83
06	2437	1.36
11	2462	1.89

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.

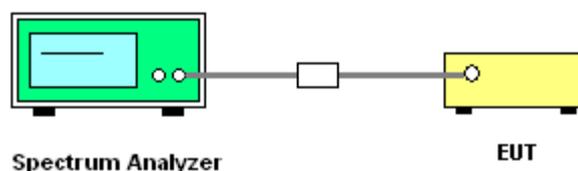
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 5.3.1 (Peak PSD) of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. 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. Video bandwidth (VBW) \geq 300 KHz In order to make an accurate measurement, set the span to 5-30% greater than Emission Bandwidth (EBW)
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 in any 100 kHz band segment within the fundamental EBW.
6. Record the measurement data derived from spectrum analyzer.
7. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3 \text{ kHz}/100 \text{ kHz} = -15.2 \text{ dB})$.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

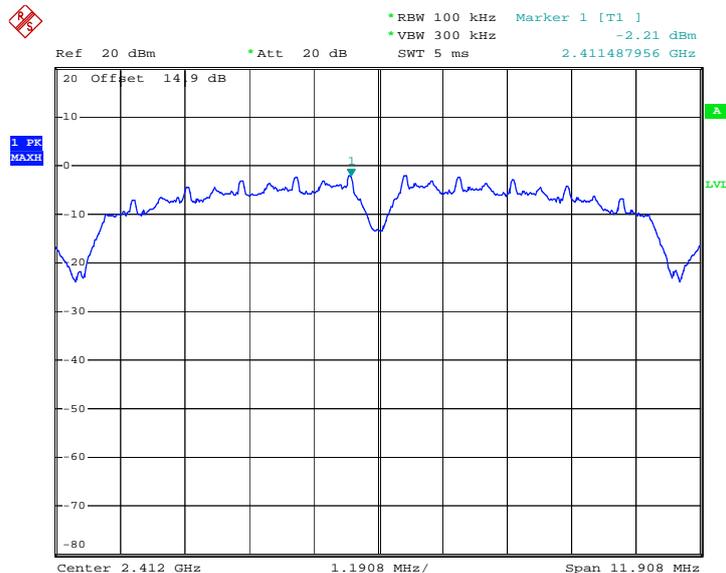
Test Mode :	802.11b	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-2.21	-17.41	8	Pass
06	2437	-1.83	-17.03	8	Pass
11	2462	-1.20	-16.40	8	Pass

Note:

1. Measured power density (dBm) has offset with cable loss.
2. BWCF (dB) = $10 \log (3k/100k) = -15.2 \text{ dB}$
3. Power Density/ 3kHz (dBm) = Measured power density/ 100KHz (dBm) + BWCF (dB)

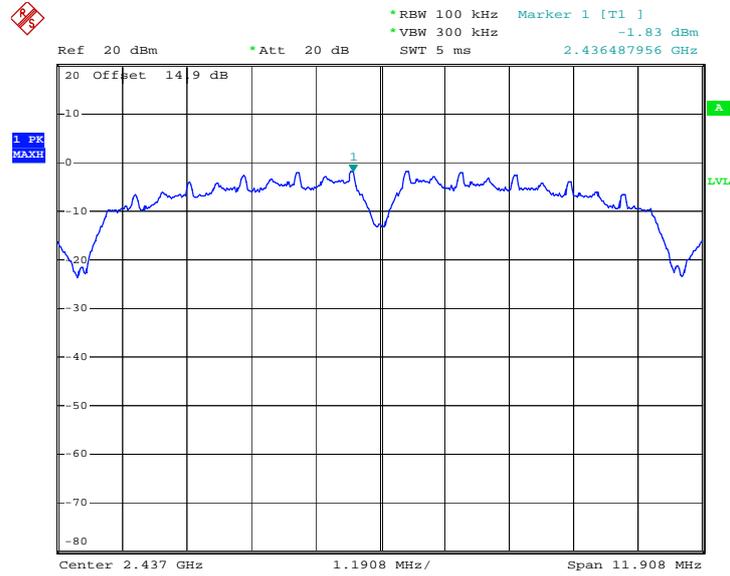
PSD Plot on 802.11b Channel 01



Date: 24.AUG.2012 21:09:33

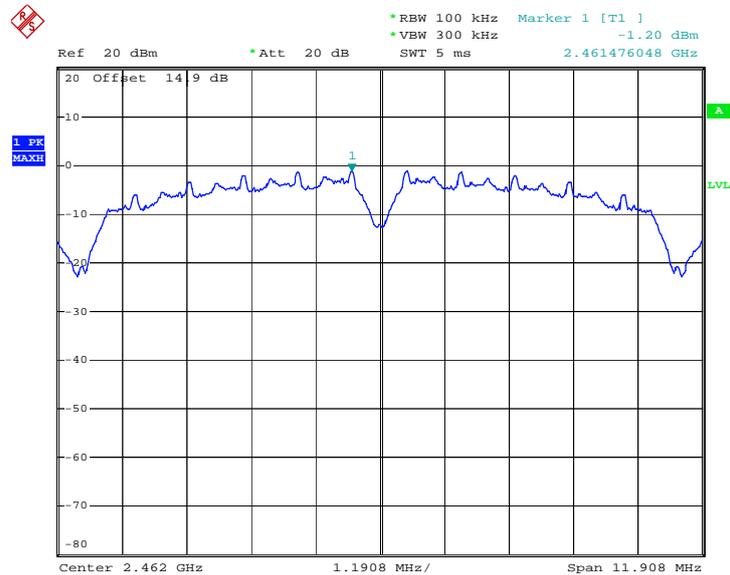


PSD Plot on 802.11b Channel 06



Date: 24.AUG.2012 21:13:33

PSD Plot on 802.11b Channel 11



Date: 24.AUG.2012 21:16:15



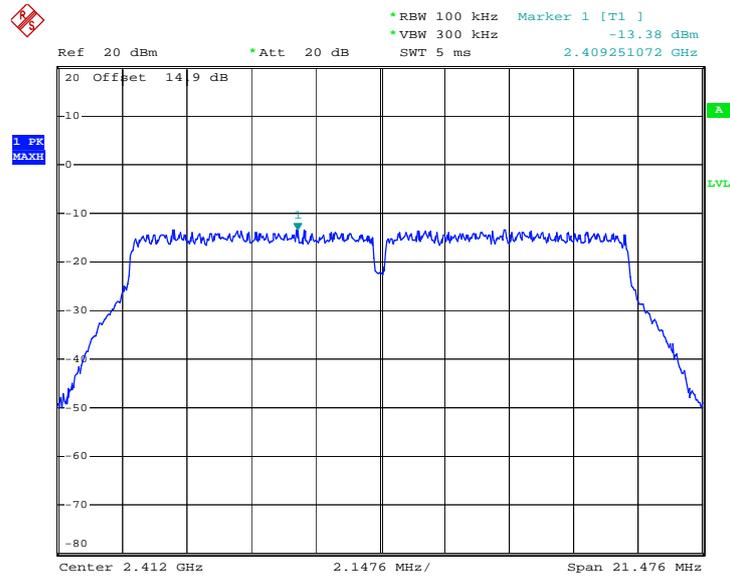
Test Mode :	802.11g	Temperature :	21~22°C
Test Engineer :	Cloud Peng	Relative Humidity :	41~42%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-13.38	-28.58	8	Pass
06	2437	-12.93	-28.13	8	Pass
11	2462	-12.45	-27.65	8	Pass

Note:

1. Measured power density (dBm) has offset with cable loss.
2. $BWCF (dB) = 10 \log (3k/100k) = -15.2 \text{ dB}$
3. $Power \text{ Density}/ 3KHz (dBm) = Measured \text{ power density}/ 100KHz (dBm) + BWCF (dB)$

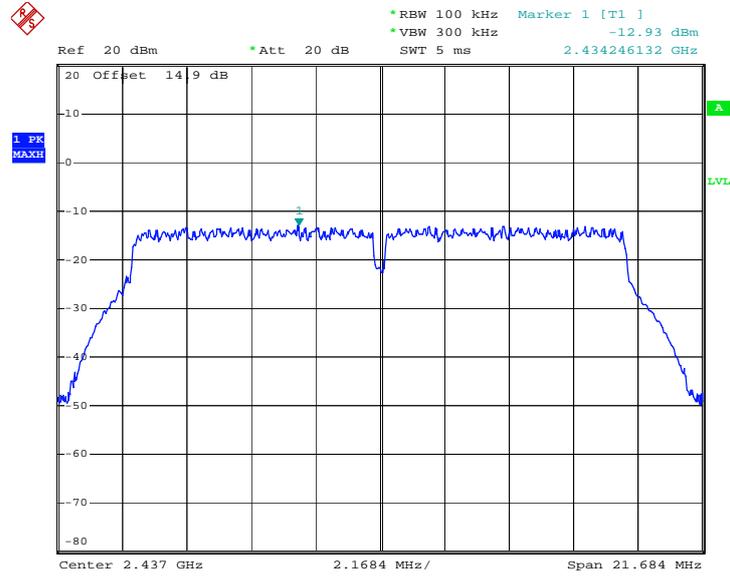
PSD Plot on 802.11g Channel 01



Date: 24.AUG.2012 21:20:10

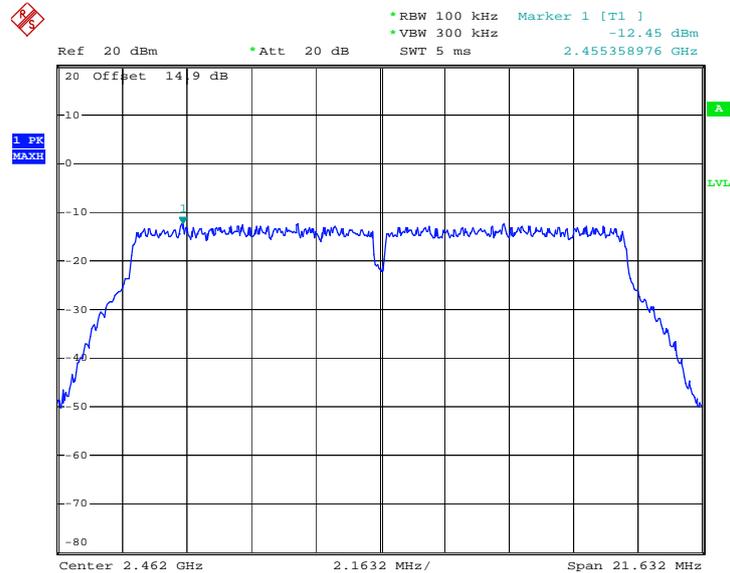


PSD Plot on 802.11g Channel 06



Date: 24.AUG.2012 21:24:34

PSD Plot on 802.11g Channel 11



Date: 24.AUG.2012 21:27:47

3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

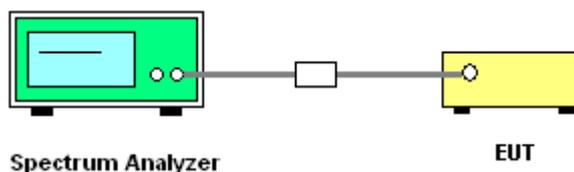
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The testing follows the guidelines in the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance and TCB Workshop 2012, April.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz, when maximum peak conducted output power procedure is used. The attenuation is set to 30dB, when maximum conducted output power procedure is used.
4. Measure and record the results in the test report.

3.4.4 Test Setup

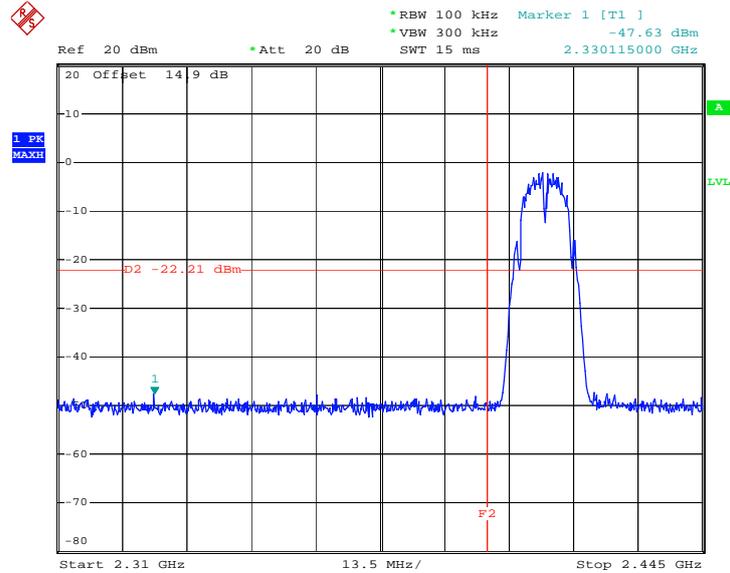




3.4.5 Test Plots of Conducted Band Edges

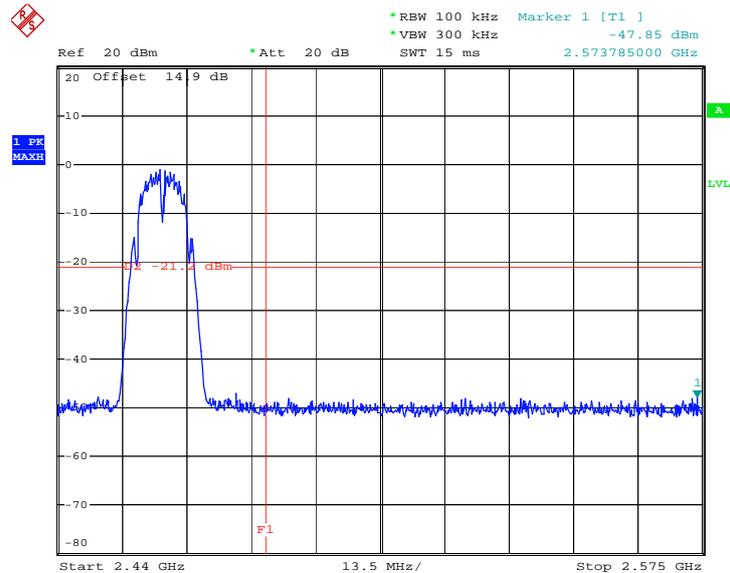
Test Mode :	802.11b	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11b Channel 01



Date: 24.AUG.2012 21:10:01

High Band Edge Plot on 802.11b Channel 11

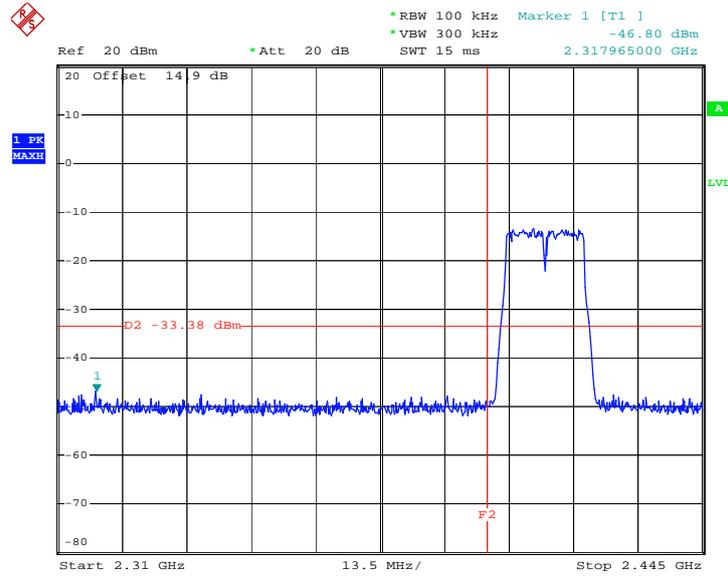


Date: 24.AUG.2012 21:16:34



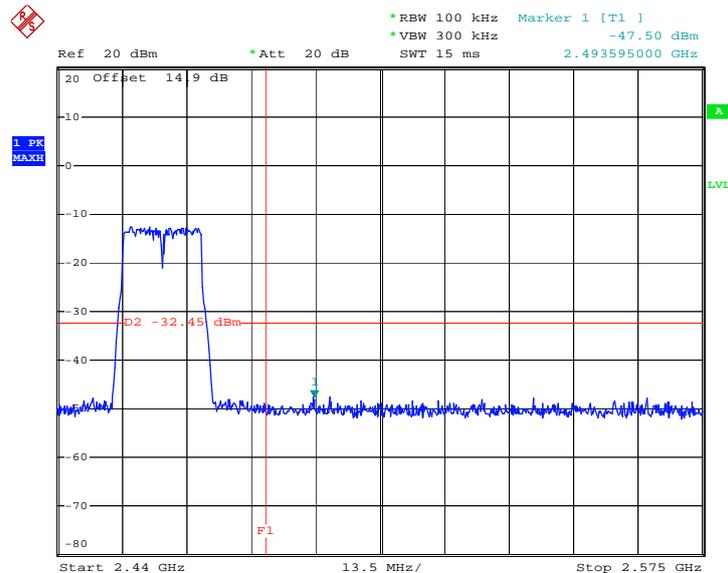
Test Mode :	802.11g	Temperature :	21~22°C
Test Band :	Low and High	Relative Humidity :	41~42%
Test Channel :	01 and 11	Test Engineer :	Cloud Peng

Low Band Edge Plot on 802.11g Channel 01



Date: 24.AUG.2012 21:20:28

High Band Edge Plot on 802.11g Channel 11



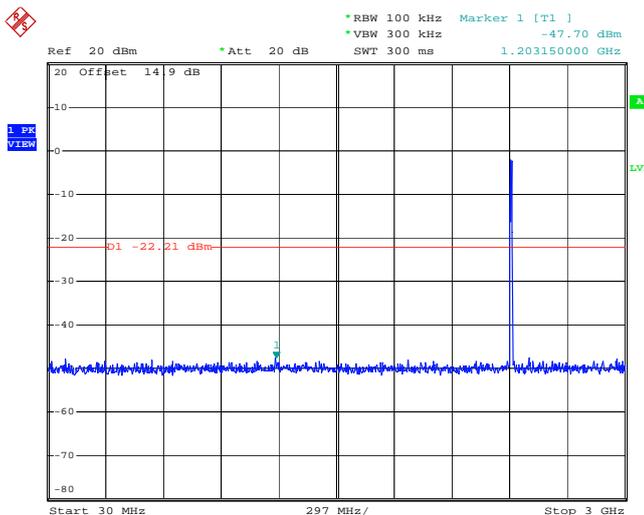
Date: 24.AUG.2012 21:28:28

3.4.6 Test Plots of Spurious Emission

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

802.11b 30 MHz~3 GHz

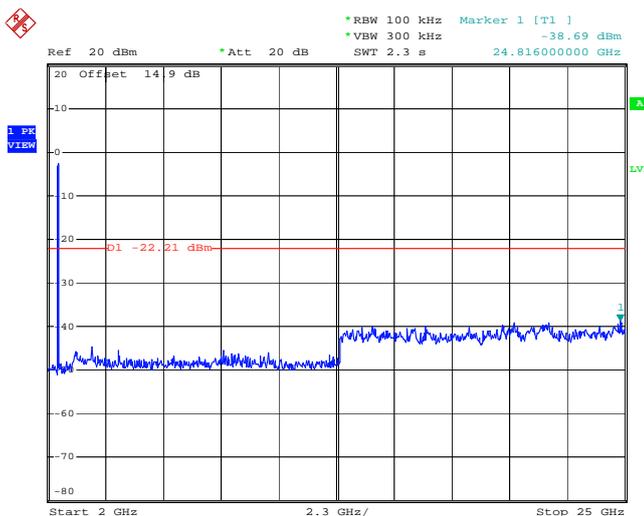
Conducted Spurious Emission Plot on Channel 01



Date: 24.AUG.2012 21:10:53

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

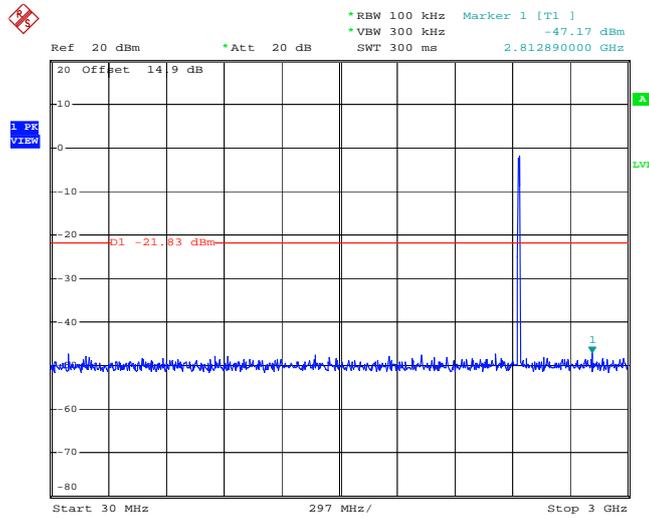


Date: 24.AUG.2012 21:11:12



802.11b 30 MHz~3 GHz

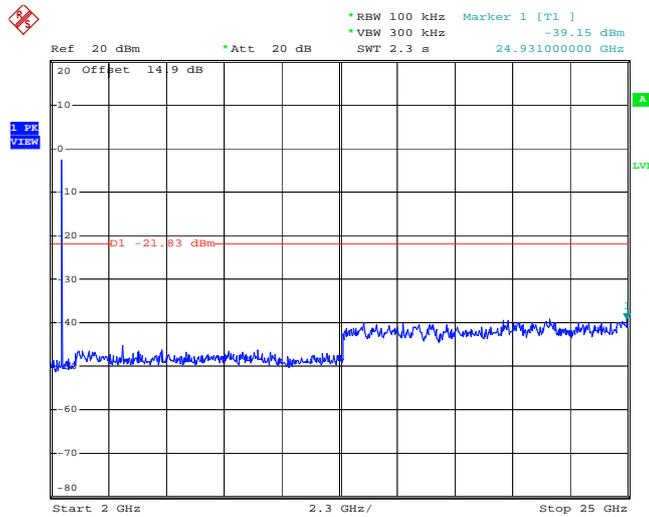
Conducted Spurious Emission Plot on Channel 06



Date: 24.AUG.2012 21:14:17

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

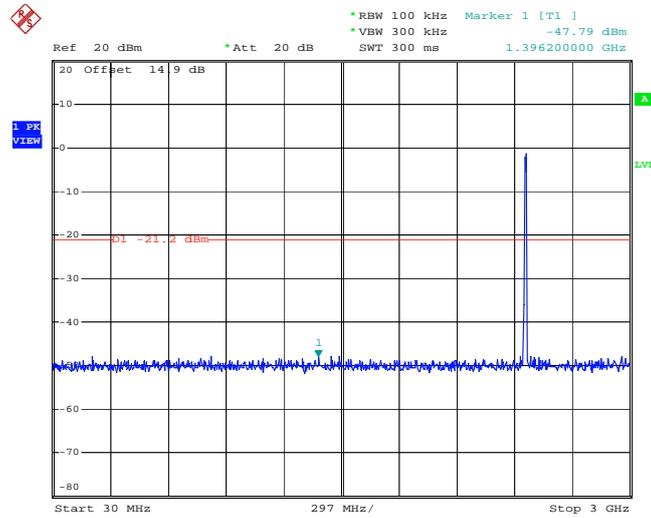


Date: 24.AUG.2012 21:14:36



802.11b 30 MHz~3 GHz

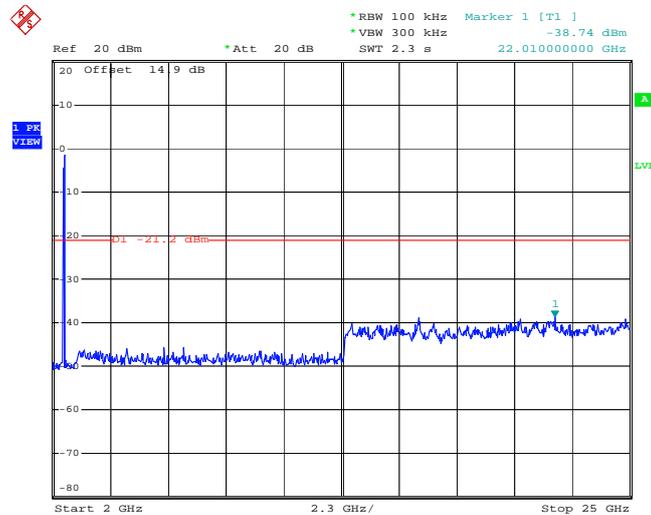
Conducted Spurious Emission Plot on Channel 11



Date: 24.AUG.2012 21:16:57

802.11b 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



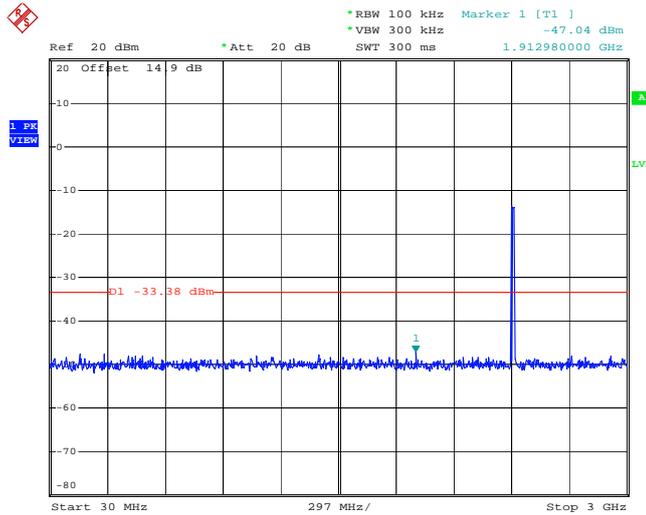
Date: 24.AUG.2012 21:17:16



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

802.11g 30 MHz~3 GHz

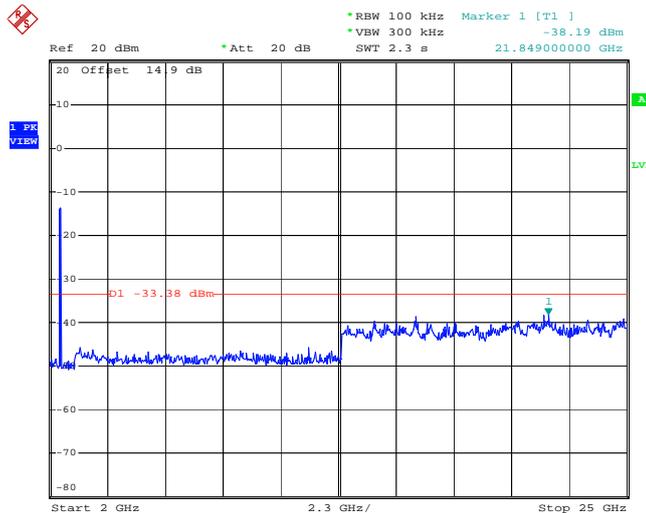
Conducted Spurious Emission Plot on Channel 01



Date: 24.AUG.2012 21:21:01

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 01

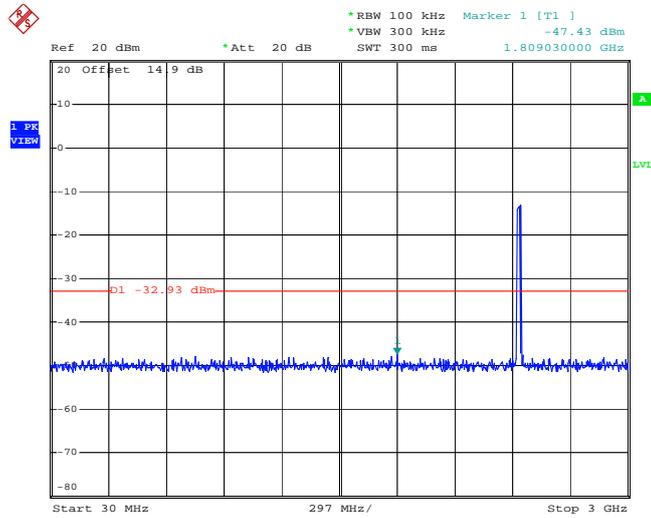


Date: 24.AUG.2012 21:21:19



802.11g 30 MHz~3 GHz

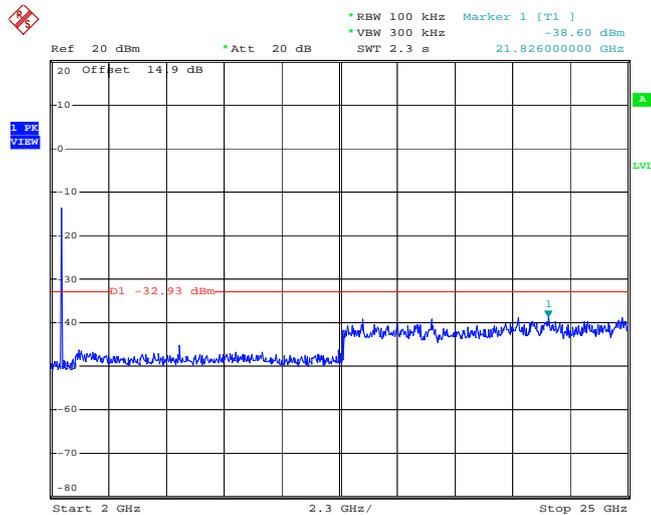
Conducted Spurious Emission Plot on Channel 06



Date: 24.AUG.2012 21:24:55

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 06

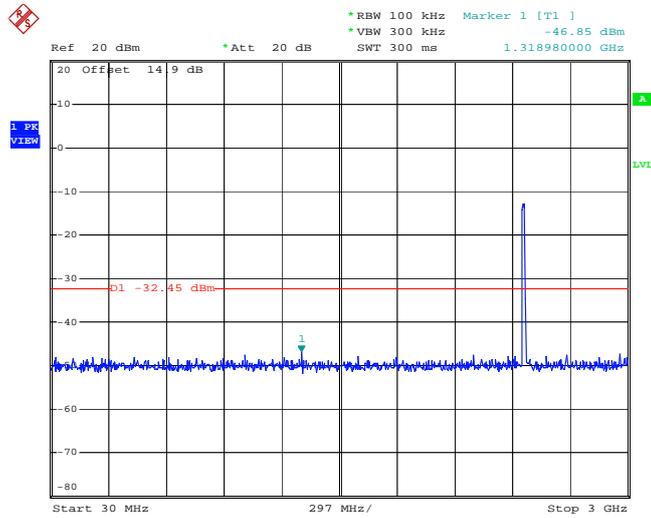


Date: 24.AUG.2012 21:25:13



802.11g 30 MHz~3 GHz

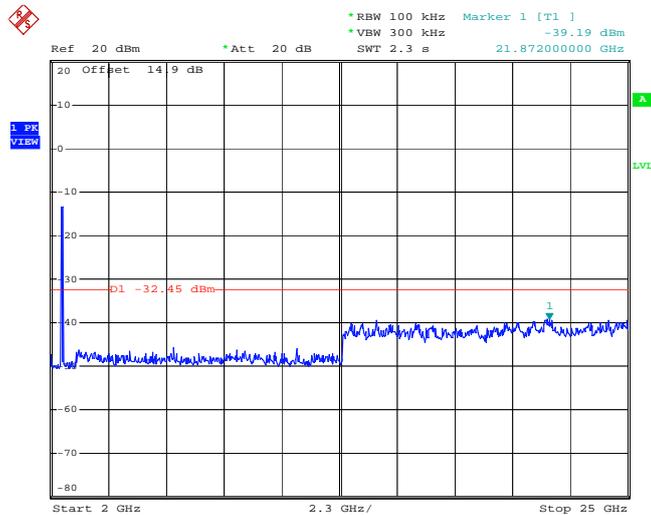
Conducted Spurious Emission Plot on Channel 11



Date: 24.AUG.2012 21:29:04

802.11g 2 GHz~25 GHz

Conducted Spurious Emission Plot on Channel 11



Date: 24.AUG.2012 21:29:23



3.5 Radiated Emission Measurement

3.5.1 Limit of Radiated Emission

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

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

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

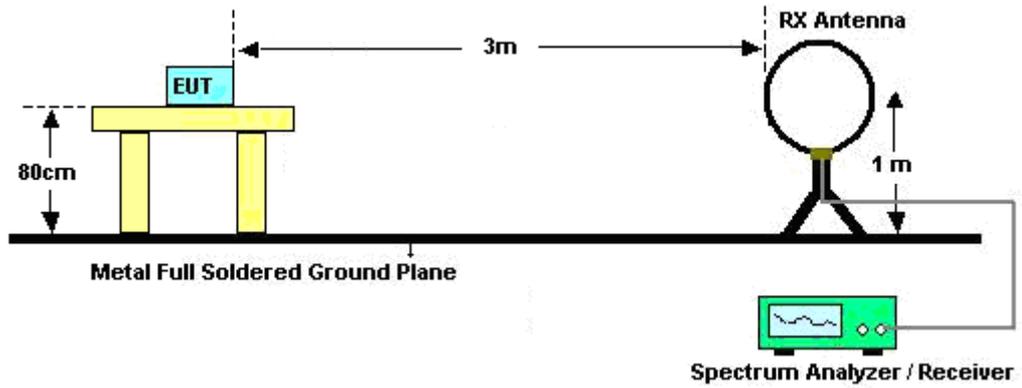


3.5.3 Test Procedures

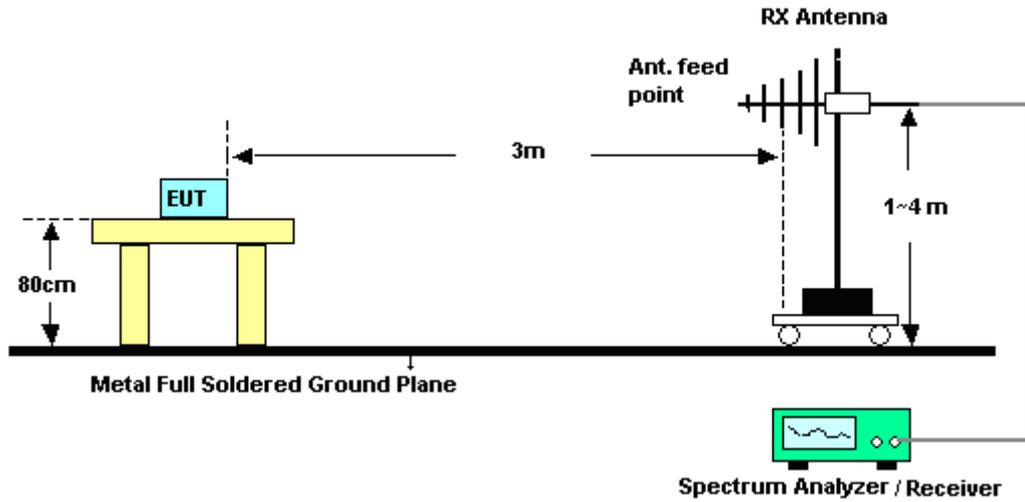
1. The testing follows TCB Workshop 2012, April and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) 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 to comply with the guidelines.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving Antenna, which was mounted on the top of a variable height Antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest radiation.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. 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, and then set VBW=10Hz, while maintaining all of the other instrument settings for Average measurement.
7. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
8. If the emission level of the EUT measured by the peak detector is more than 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

3.5.4 Test Setup

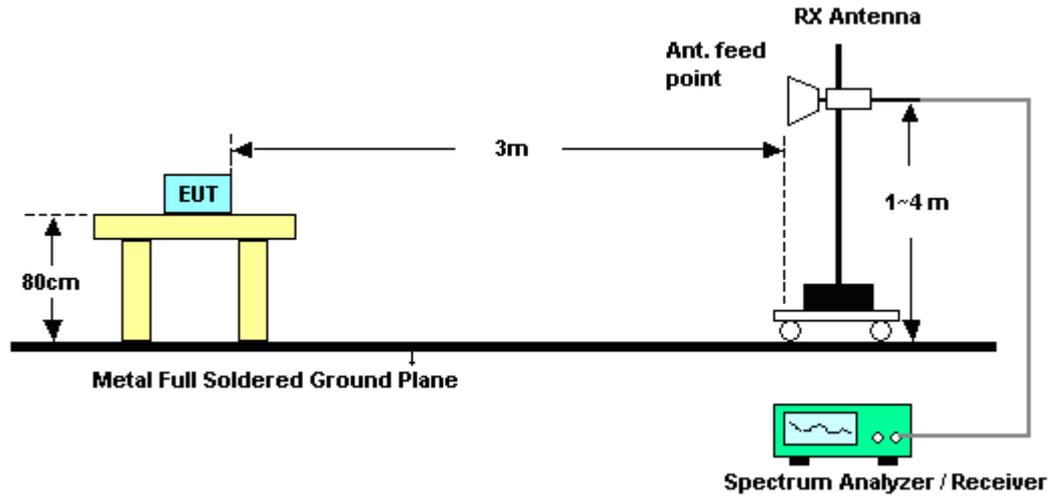
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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



3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11b	Temperature :	19~21°C
Test Band :	Low	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Jack Li

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	53.6	-20.4	74	45.59	32.86	4.23	29.08	100	156	Peak
2390	38.63	-15.37	54	30.62	32.86	4.23	29.08	100	156	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
2357.88	52.2	-21.8	74	44.31	32.81	4.21	29.13	100	261	Peak
2357.88	38.5	-15.5	54	30.61	32.81	4.21	29.13	100	261	Average

Test Mode :	802.11b	Temperature :	19~21°C
Test Band :	High	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Jack Li

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	52.77	-21.23	74	44.47	33.01	4.29	29	100	151	Peak
2483.5	39.93	-14.07	54	31.63	33.01	4.29	29	100	151	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2496.01	52.01	-21.99	74	43.65	33.05	4.3	28.99	100	0	Peak
2496.01	39.57	-14.43	54	31.21	33.05	4.3	28.99	100	0	Average



Test Mode :	802.11g	Temperature :	19~21°C
Test Band :	Low	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Jack Li

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
2386	53.2	-20.8	74	45.2	32.86	4.22	29.08	100	93	Peak
2386	39.21	-14.79	54	31.21	32.86	4.22	29.08	100	93	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
2387.33	53.56	-20.44	74	45.55	32.86	4.23	29.08	100	103	Peak
2387.33	38.2	-15.8	54	30.19	32.86	4.23	29.08	100	103	Average

Test Mode :	802.11g	Temperature :	19~21°C
Test Band :	High	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Jack Li

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
2498.48	52.2	-21.8	74	43.84	33.05	4.3	28.99	100	319	Peak
2498.48	39.18	-14.82	54	30.82	33.05	4.3	28.99	100	319	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
2492.02	52.01	-21.99	74	43.65	33.05	4.3	28.99	100	155	Peak
2492.02	39.11	-14.89	54	30.75	33.05	4.3	28.99	100	155	Average



3.5.8 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Test Mode :	802.11b	Temperature :	19~21°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
86.2	32.4	-7.6	40	54.15	7.89	0.37	30.01	100	152	Peak
94.76	33.07	-10.43	43.5	52.84	9.8	0.4	29.97	-	-	Peak
151.597	25.99	-17.51	43.5	45.49	9.96	0.51	29.97	-	-	Peak
222.95	32.86	-13.14	46	51.86	10.33	0.63	29.96	-	-	Peak
336.035	25.22	-20.78	46	40.19	14.17	0.8	29.94	-	-	Peak
948.761	28.29	-17.71	46	35.77	20.73	1.33	29.54	-	-	Peak
2390	53.6	-20.4	74	45.59	32.86	4.23	29.08	100	156	Peak
2390	38.63	-15.37	54	30.62	32.86	4.23	29.08	100	156	Average
2412	103.19	-	-	95.11	32.89	4.24	29.05	161	21	Peak
2412	99.68	-	-	91.6	32.89	4.24	29.05	161	21	Average
2498.67	52.14	-21.86	74	43.78	33.05	4.3	28.99	100	215	Peak
2498.67	39.28	-14.72	54	30.92	33.05	4.3	28.99	100	215	Average



Test Mode :	802.11b	Temperature :	19~21°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
37.68	19.96	-20.04	40	36.08	13.7	0.24	30.06	-	-	Peak
47.659	21.74	-18.26	40	43.1	8.5	0.27	30.13	-	-	Peak
53.318	24.64	-15.36	40	47.68	6.8	0.29	30.13	-	-	Peak
95.762	34.06	-9.44	43.5	53.72	9.91	0.4	29.97	100	200	Peak
227.691	25.04	-20.96	46	43.57	10.75	0.64	29.92	-	-	Peak
948.761	28.3	-17.7	46	35.78	20.73	1.33	29.54	-	-	Peak
2357.88	52.2	-21.8	74	44.31	32.81	4.21	29.13	100	261	Peak
2357.88	38.5	-15.5	54	30.61	32.81	4.21	29.13	100	261	Average
2412	102.36	-	-	94.28	32.89	4.24	29.05	100	251	Peak
2412	97.69	-	-	89.61	32.89	4.24	29.05	100	251	Average
2495.06	51.9	-22.1	74	43.54	33.05	4.3	28.99	100	201	Peak
2495.06	39.19	-14.81	54	30.83	33.05	4.3	28.99	100	201	Average



Test Mode :	802.11b	Temperature :	19~21°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

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
86.2	34.4	-5.6	40	56.15	7.89	0.37	30.01	100	152	Peak
94.76	33.07	-10.43	43.5	52.84	9.8	0.4	29.97	-	-	Peak
151.597	25.99	-17.51	43.5	45.49	9.96	0.51	29.97	-	-	Peak
222.95	32.86	-13.14	46	51.86	10.33	0.63	29.96	-	-	Peak
336.035	25.22	-20.78	46	40.19	14.17	0.8	29.94	-	-	Peak
948.761	28.29	-17.71	46	35.77	20.73	1.33	29.54	-	-	Peak
2363.01	52.36	-21.64	74	44.45	32.81	4.22	29.12	100	96	Peak
2363.01	38.72	-15.28	54	30.81	32.81	4.22	29.12	100	96	Average
2437	103.09	-	-	94.92	32.95	4.25	29.03	168	0	Peak
2437	98.53	-	-	90.36	32.95	4.25	29.03	168	0	Average
2496.2	52.2	-21.8	74	43.84	33.05	4.3	28.99	100	206	Peak
2496.2	39.25	-14.75	54	30.89	33.05	4.3	28.99	100	206	Average



Test Mode :	802.11b	Temperature :	19~21°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

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
48.843	21.32	-18.68	40	43.05	8.12	0.28	30.13	-	-	Peak
54.452	21.42	-18.58	40	44.77	6.49	0.29	30.13	-	-	Peak
95.093	33.55	-9.95	43.5	53.32	9.8	0.4	29.97	100	109	Peak
169.599	19.79	-23.71	43.5	39.96	9.2	0.54	29.91	-	-	Peak
228.49	25.27	-20.73	46	43.71	10.83	0.64	29.91	-	-	Peak
948.761	28.3	-17.7	46	35.78	20.73	1.33	29.54	-	-	Peak
2373.65	52.54	-21.46	74	44.59	32.83	4.22	29.1	100	0	Peak
2373.65	38.57	-15.43	54	30.62	32.83	4.22	29.1	100	0	Average
2437	100.41	-	-	92.24	32.95	4.25	29.03	100	302	Peak
2437	96.52	-	-	88.35	32.95	4.25	29.03	100	302	Average
2496.01	51.92	-22.08	74	43.56	33.05	4.3	28.99	100	181	Peak
2496.01	38.87	-15.13	54	30.51	33.05	4.3	28.99	100	181	Average



Test Mode :	802.11b	Temperature :	19~21°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
95.093	32.77	-10.73	43.5	52.54	9.8	0.4	29.97	100	21	Peak
151.067	25.16	-18.34	43.5	44.66	9.96	0.51	29.97	-	-	Peak
226.894	33.15	-12.85	46	51.78	10.67	0.63	29.93	-	-	Peak
268.485	27.83	-18.17	46	44.7	12.34	0.69	29.9	-	-	Peak
339.589	25.78	-20.22	46	40.67	14.25	0.8	29.94	-	-	Peak
945.44	28.82	-17.18	46	36.32	20.71	1.33	29.54	-	-	Peak
2352.37	52.72	-21.28	74	44.84	32.81	4.21	29.14	100	215	Peak
2352.37	38.21	-15.79	54	30.33	32.81	4.21	29.14	100	215	Average
2462	105.32	-	-	97.08	32.98	4.27	29.01	110	0	Peak
2462	101.85	-	-	93.61	32.98	4.27	29.01	110	0	Average
2483.5	52.77	-21.23	74	44.47	33.01	4.29	29	100	151	Peak
2483.5	39.93	-14.07	54	31.63	33.01	4.29	29	100	151	Average



Test Mode :	802.11b	Temperature :	19~21°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
42.154	20.12	-19.88	40	39.47	10.48	0.26	30.09	-	-	Peak
52.945	21.7	-18.3	40	44.74	6.8	0.29	30.13	-	-	Peak
62.213	19.7	-20.3	40	44.24	5.27	0.32	30.13	-	-	Peak
94.428	33.78	-9.72	43.5	53.7	9.66	0.4	29.98	100	209	Peak
226.099	25.93	-20.07	46	44.65	10.59	0.63	29.94	-	-	Peak
948.761	29.51	-16.49	46	36.99	20.73	1.33	29.54	-	-	Peak
2358.26	52.2	-21.8	74	44.31	32.81	4.21	29.13	100	218	Peak
2358.26	38.48	-15.52	54	30.59	32.81	4.21	29.13	100	218	Average
2462	102.23	-	-	93.99	32.98	4.27	29.01	100	166	Peak
2462	97.85	-	-	89.61	32.98	4.27	29.01	100	166	Average
2496.01	52.01	-21.99	74	43.65	33.05	4.3	28.99	100	0	Peak
2496.01	39.57	-14.43	54	31.21	33.05	4.3	28.99	100	0	Average



Test Mode :	802.11g	Temperature :	19~21°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
94.428	32.81	-10.69	43.5	52.73	9.66	0.4	29.98	100	163	Peak
152.664	24.35	-19.15	43.5	43.87	9.93	0.51	29.96	-	-	Peak
225.308	33.78	-12.22	46	52.59	10.5	0.63	29.94	-	-	Peak
249.425	29.02	-16.98	46	46.23	11.96	0.67	29.84	-	-	Peak
272.278	27.32	-18.68	46	44.11	12.44	0.69	29.92	-	-	Peak
945.44	29.97	-16.03	46	37.47	20.71	1.33	29.54	-	-	Peak
2386	53.2	-20.8	74	45.2	32.86	4.22	29.08	100	93	Peak
2386	39.21	-14.79	54	31.21	32.86	4.22	29.08	100	93	Average
2412	97.29	-	-	89.21	32.89	4.24	29.05	200	28	Peak
2412	88.23	-	-	80.15	32.89	4.24	29.05	200	28	Average
2498.29	52.32	-21.68	74	43.96	33.05	4.3	28.99	100	200	Peak
2498.29	39.27	-14.73	54	30.91	33.05	4.3	28.99	100	200	Average



Test Mode :	802.11g	Temperature :	19~21°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
37.68	19.96	-20.04	40	36.08	13.7	0.24	30.06	-	-	Peak
47.659	21.74	-18.26	40	43.1	8.5	0.27	30.13	-	-	Peak
53.318	24.64	-15.36	40	47.68	6.8	0.29	30.13	-	-	Peak
95.762	34.06	-9.44	43.5	53.72	9.91	0.4	29.97	100	201	Peak
227.691	25.04	-20.96	46	43.57	10.75	0.64	29.92	-	-	Peak
948.761	28.3	-17.7	46	35.78	20.73	1.33	29.54	-	-	Peak
2387.33	53.56	-20.44	74	45.55	32.86	4.23	29.08	100	103	Peak
2387.33	38.2	-15.8	54	30.19	32.86	4.23	29.08	100	103	Average
2412	96.57	-	-	88.49	32.89	4.24	29.05	100	251	Peak
2412	87.68	-	-	79.6	32.89	4.24	29.05	100	251	Average
2493.54	51.73	-22.27	74	43.37	33.05	4.3	28.99	100	155	Peak
2493.54	38.94	-15.06	54	30.58	33.05	4.3	28.99	100	155	Average



Test Mode :	802.11g	Temperature :	19~21°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

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
94.428	31.81	-11.69	43.5	51.73	9.66	0.4	29.98	100	163	Peak
152.664	24.35	-19.15	43.5	43.87	9.93	0.51	29.96	-	-	Peak
225.308	33.78	-12.22	46	52.59	10.5	0.63	29.94	-	-	Peak
249.425	29.02	-16.98	46	46.23	11.96	0.67	29.84	-	-	Peak
272.278	27.32	-18.68	46	44.11	12.44	0.69	29.92	-	-	Peak
945.44	29.97	-16.03	46	37.47	20.71	1.33	29.54	-	-	Peak
2364.15	52.08	-21.92	74	44.17	32.81	4.22	29.12	200	49	Peak
2364.15	38.82	-15.18	54	30.91	32.81	4.22	29.12	200	49	Average
2437	99.1	-	-	90.93	32.95	4.25	29.03	200	106	Peak
2437	88.79	-	-	80.62	32.95	4.25	29.03	200	106	Average
2499.43	52.41	-21.59	74	44.04	33.05	4.31	28.99	200	0	Peak
2499.43	39.53	-14.47	54	31.16	33.05	4.31	28.99	200	0	Average



Test Mode :	802.11g	Temperature :	19~21°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

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
48.332	21.78	-18.22	40	43.51	8.12	0.28	30.13	-	-	Peak
51.121	22.08	-17.92	40	44.72	7.21	0.28	30.13	-	-	Peak
53.693	21.92	-18.08	40	44.96	6.8	0.29	30.13	-	-	Peak
95.093	33.7	-9.8	43.5	53.47	9.8	0.4	29.97	100	145	Peak
227.691	25.19	-20.81	46	43.72	10.75	0.64	29.92	-	-	Peak
952.094	29.66	-16.34	46	37.13	20.74	1.33	29.54	-	-	Peak
2347.81	51.95	-22.05	74	44.11	32.78	4.21	29.15	100	356	Peak
2347.81	39.1	-14.9	54	31.26	32.78	4.21	29.15	100	356	Average
2437	94.9	-	-	86.73	32.95	4.25	29.03	100	86	Peak
2437	84.86	-	-	76.69	32.95	4.25	29.03	100	86	Average
2488.79	52.23	-21.77	74	43.89	33.05	4.29	29	100	0	Peak
2488.79	39.2	-14.8	54	30.86	33.05	4.29	29	100	0	Average



Test Mode :	802.11g	Temperature :	19~21°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
86.2	34.4	-5.6	40	56.15	7.89	0.37	30.01	100	152	Peak
94.76	33.07	-10.43	43.5	52.84	9.8	0.4	29.97	-	-	Peak
151.597	25.99	-17.51	43.5	45.49	9.96	0.51	29.97	-	-	Peak
222.95	32.86	-13.14	46	51.86	10.33	0.63	29.96	-	-	Peak
336.035	25.22	-20.78	46	40.19	14.17	0.8	29.94	-	-	Peak
948.761	28.29	-17.71	46	35.77	20.73	1.33	29.54	-	-	Peak
2359.4	52.2	-21.8	74	44.3	32.81	4.21	29.12	100	256	Peak
2359.4	38.51	-15.49	54	30.61	32.81	4.21	29.12	100	256	Average
2462	96.93	-	-	88.69	32.98	4.27	29.01	200	116	Peak
2462	86.89	-	-	78.65	32.98	4.27	29.01	200	116	Average
2498.48	52.2	-21.8	74	43.84	33.05	4.3	28.99	100	319	Peak
2498.48	39.18	-14.82	54	30.82	33.05	4.3	28.99	100	319	Average



Test Mode :	802.11g	Temperature :	19~21°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
42.154	20.12	-19.88	40	39.47	10.48	0.26	30.09	-	-	Peak
52.945	21.7	-18.3	40	44.74	6.8	0.29	30.13	-	-	Peak
62.213	19.7	-20.3	40	44.24	5.27	0.32	30.13	-	-	Peak
94.428	33.78	-9.72	43.5	53.7	9.66	0.4	29.98	100	209	Peak
226.099	25.93	-20.07	46	44.65	10.59	0.63	29.94	-	-	Peak
948.761	29.51	-16.49	46	36.99	20.73	1.33	29.54	-	-	Peak
2379.35	52.81	-21.19	74	44.85	32.83	4.22	29.09	100	146	Peak
2379.35	39.18	-14.82	54	31.22	32.83	4.22	29.09	100	146	Average
2462	96.63	-	-	88.39	32.98	4.27	29.01	100	183	Peak
2462	87.15	-	-	78.91	32.98	4.27	29.01	100	183	Average
2492.02	52.01	-21.99	74	43.65	33.05	4.3	28.99	100	155	Peak
2492.02	39.11	-14.89	54	30.75	33.05	4.3	28.99	100	155	Average

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

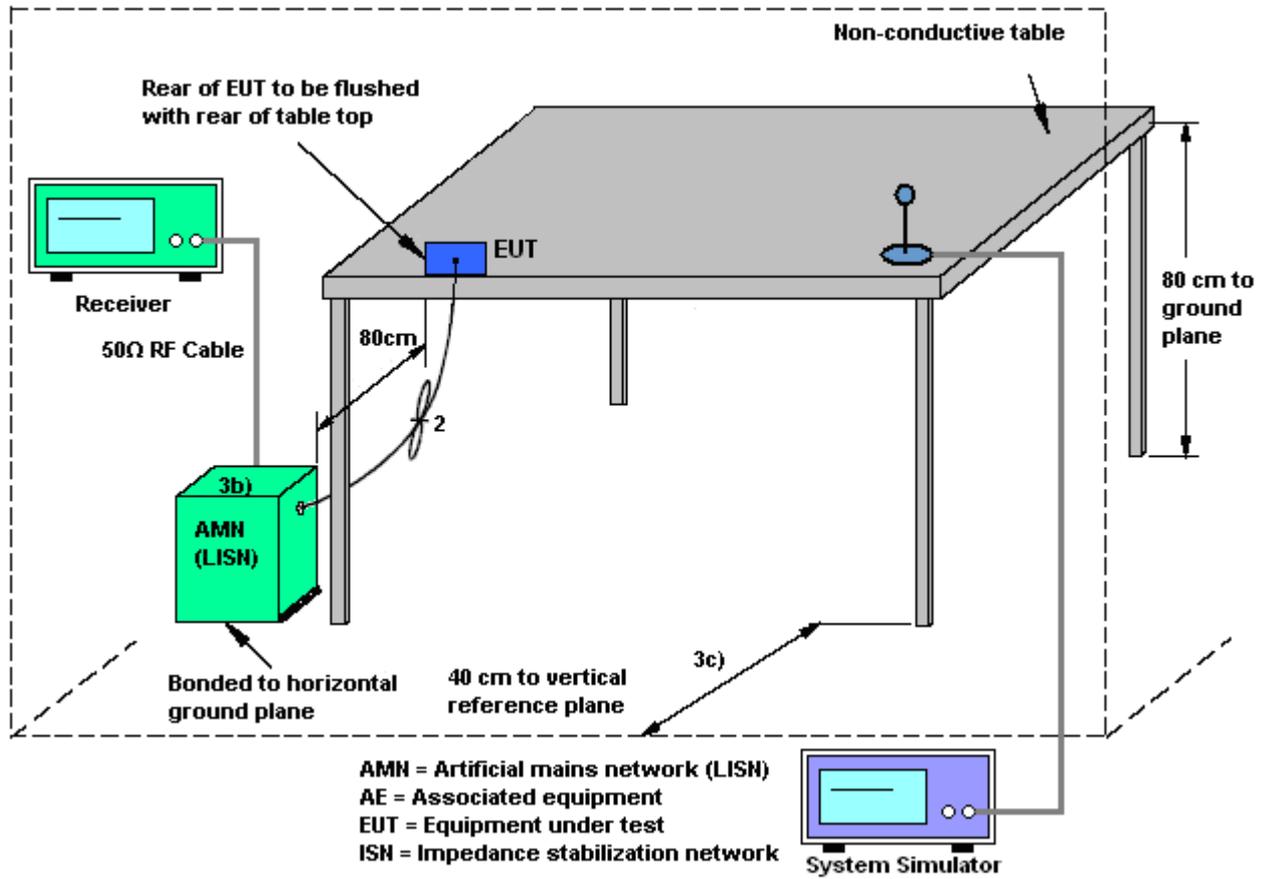
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

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

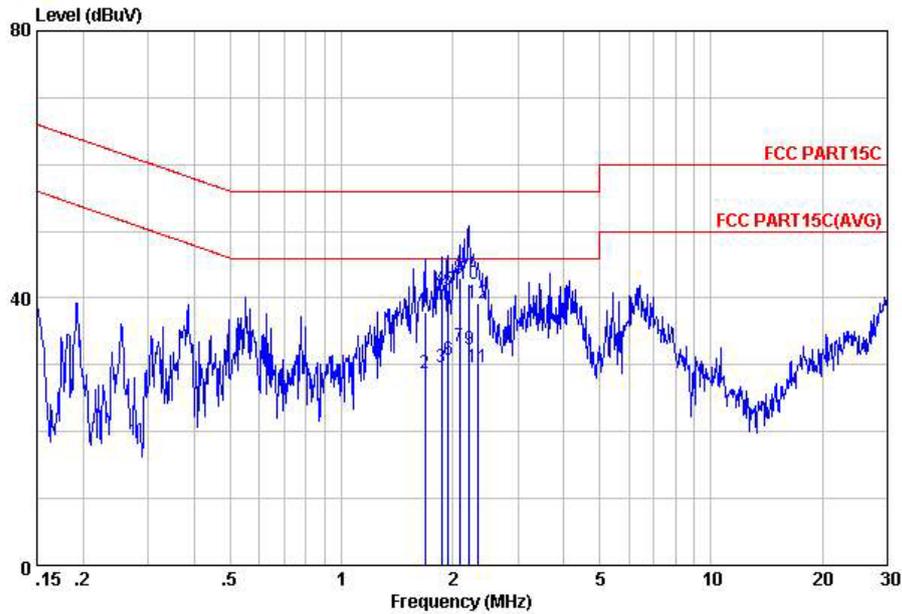
3.6.4 Test Setup





3.6.5 Test Result of AC Conducted Emission

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

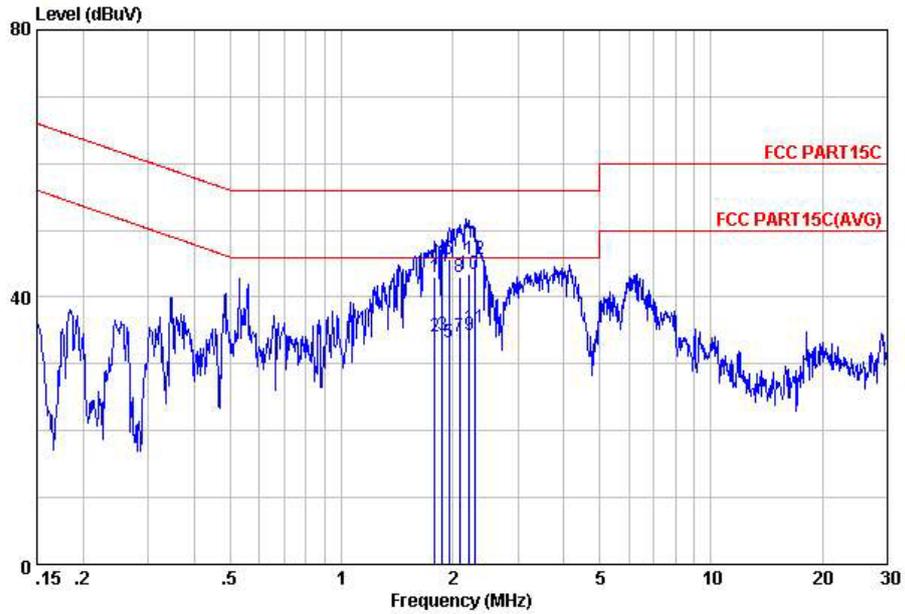


Site : C001-KS
 Condition: FCC PART15C LISN-111230 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	1.68	37.98	-18.02	56.00	27.40	-0.11	10.69	QP
2	1.68	28.68	-17.32	46.00	18.10	-0.11	10.69	Average
3	1.87	29.59	-16.41	46.00	19.00	-0.11	10.70	Average
4	1.87	41.39	-14.61	56.00	30.80	-0.11	10.70	QP
5	1.95	41.29	-14.71	56.00	30.70	-0.11	10.70	QP
6	1.95	30.69	-15.31	46.00	20.10	-0.11	10.70	Average
7	2.09	32.79	-13.21	46.00	22.20	-0.11	10.70	Average
8	2.09	43.09	-12.91	56.00	32.50	-0.11	10.70	QP
9	2.21	32.30	-13.70	46.00	21.70	-0.11	10.71	Average
10	2.21	42.10	-13.90	56.00	31.50	-0.11	10.71	QP
11	2.35	29.71	-16.29	46.00	19.10	-0.11	10.72	Average
12	2.35	39.31	-16.69	56.00	28.70	-0.11	10.72	QP



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



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

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	1.79	43.09	-12.91	56.00	32.50	-0.11	10.70	QP
2	1.79	34.09	-11.91	46.00	23.50	-0.11	10.70	Average
3	1.88	34.39	-11.61	46.00	23.80	-0.11	10.70	Average
4	1.88	45.59	-10.41	56.00	35.00	-0.11	10.70	QP
5	1.96	33.19	-12.81	46.00	22.60	-0.11	10.70	Average
6	1.96	45.69	-10.31	56.00	35.10	-0.11	10.70	QP
7	2.09	34.09	-11.91	46.00	23.50	-0.11	10.70	Average
8	2.09	42.99	-13.01	56.00	32.40	-0.11	10.70	QP
9	2.21	34.40	-11.60	46.00	23.80	-0.11	10.71	Average
10	2.21	43.50	-12.50	56.00	32.90	-0.11	10.71	QP
11	2.30	35.50	-10.50	46.00	24.89	-0.11	10.72	Average
12	2.30	45.70	-10.30	56.00	35.09	-0.11	10.72	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	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Aug. 24, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 23, 2012	Aug. 22, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 23, 2012	Aug. 22, 2012	Aug. 21, 2013	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 23, 2012	Aug. 22, 2012	Aug. 21, 2013	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Dec. 30, 2011	Aug. 24, 2012	Dec. 29, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Aug. 24, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Aug. 24, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Aug. 24, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/00	9 kHz~30 MHz	Jul. 03, 2012	Aug. 24, 2012	Jul. 02, 2014	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Aug. 24, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Aug. 24, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Aug. 24, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2011	Aug. 24, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Oct. 11, 2011	Aug. 24, 2012	Oct.10, 2012	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 01, 2012	Aug. 22, 2012	May 31, 2013	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	Aug. 22, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	Aug. 22, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Aug. 22, 2012	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Aug. 22, 2012	Dec. 29, 2012	Conduction (CO01-KS)



5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

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

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.26
---	------



Appendix A. Photographs of EUT

Please refer to Sporton report number EP281001 as below.