

FCC RF Test Report

APPLICANT : Motorola Mobility, Inc.
EQUIPMENT : CDMA/GSM Dual-mode digital mobile phone with BT/ Wi-Fi
BRAND NAME : Motorola
MODEL NAME : XT553
MARKETING NAME : MOTOSMART MIX
TYPE NAME : M0D27
GPPD NUMBER : 3367
FCC ID : IHDT56NM6
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Apr. 17, 2012 and completely tested on Jun. 14, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 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.



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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	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 4.50 dB at 1.600 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.54 dB at 2389.420 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Motorola Mobility, Inc.

No. 1, Wang Jing East Road, Chao Yang District, Beijing, 100102, P. R. China

1.2 Manufacturer

Huizhou BYD Electronic Co., Ltd.

Xiangshui River, Economic Development Zone, Daya Bay, Huizhou, Guangdong

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	CDMA/GSM Dual-mode digital mobile phone with BT/Wi-Fi
Brand Name	Motorola
Model Name	XT553
Marketing Name	MOTOSMART MIX
Type Name	M0D27
FCC ID	IHDT56NM6
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 18.98 dBm (0.0791 W) 802.11g : 19.51 dBm (0.0893 W) 802.11g/n (BW 20MHz) : 21.11 dBm (0.1291 W)
Antenna Type	PIFA Antenna with gain -2.00 dBi
HW Version	2000
SW Version	AGSPIN_B_02.01.27IDD
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
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 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 DR01
- ♦ ANSI C63.4-2003
- ♦ 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

2.1 RF Power

Preliminary tests were performed in different data rate and recorded the RF power output in the following table:

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	18.98	18.94	18.96	18.97
CH 06	2437 MHz	18.94	18.92	18.89	18.91
CH 11	2462 MHz	18.36	18.33	18.34	18.32

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	18.99	18.41	18.85	18.18	19.51	19.43	19.32	19.26
CH 06	2437 MHz	18.76	18.25	18.71	18.03	19.24	19.18	19.04	19.06
CH 11	2462 MHz	18.44	18.01	18.61	17.79	18.91	18.83	18.66	18.73

OFDM Data Rate	Channel	Frequency	2.4GHz 802.11g/n (BW 20MHz) RF Power (dBm)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
400GI	CH 01	2412 MHz	19.57	19.86	19.84	20.05	20.15	20.08	20.72	20.19
	CH 06	2437 MHz	19.42	19.64	19.76	20.08	19.91	19.95	20.62	19.91
	CH 11	2462 MHz	19.24	19.47	19.36	19.76	19.69	19.55	20.31	19.79
800GI	CH 01	2412 MHz	20.32	20.01	19.56	20.86	20.15	20.51	21.11	19.56
	CH 06	2437 MHz	20.66	19.87	19.09	20.58	19.92	20.02	20.78	19.24
	CH 11	2462 MHz	18.69	18.66	18.16	19.81	19.34	19.22	19.85	18.85

Remark: The EUT is programmed to transmit signals continuously for all testing.

2.2 Maximum Peak Conducted Output Power:

Band	2.4GHz 802.11b RF Power (dBm)			2.4GHz 802.11g RF Power (dBm)		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power	18.98	18.94	18.36	19.51	19.24	18.91

Band	2.4GHz 802.11g/n (BW 20MHz) RF Power (dBm)			
Channel	1	6	11	
Frequency (MHz)	2412	2437	2462	
Peak Power	400GI	20.72	20.62	20.31
	800GI	21.11	20.78	19.85

Remark:

The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 24Mbps for 802.11g and MCS6 for 802.11g/n (BW 20MHz) for all the test cases due to the highest RF output power.

2.3 Maximum Average Conducted Output Power:

Band	2.4GHz 802.11b RF Power (dBm)			2.4GHz 802.11g RF Power (dBm)		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Average Power	16.81	16.79	16.33	10.97	10.84	10.91

Band	2.4GHz 802.11g/n (BW 20MHz) RF Power (dBm)			
Channel	1	6	11	
Frequency (MHz)	2412	2437	2462	
Average Power	400GI	12.61	12.61	12.69
	800GI	13.09	13.06	12.61

Remark:

1. The average power, which is used by the test method, AVG2, in DTS Meas. Guidance v01, is reporting only.
2. The EUT is programmed to transmit signals continuously.

2.4 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 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), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

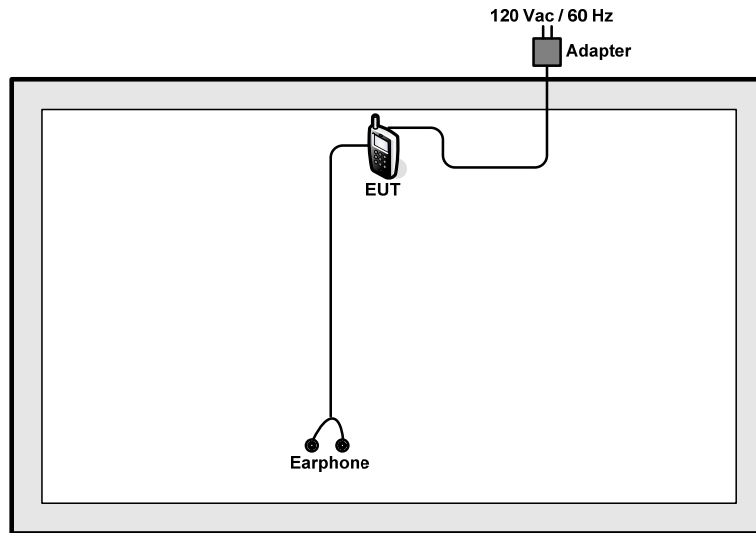
Pre-scanned tests were conducted to determine the final configuration from all possible combinations. Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

The following tables are showing the test modes as the worst cases (X plane for 802.11b and Y plane for 802.11g/n) and recorded in this report.

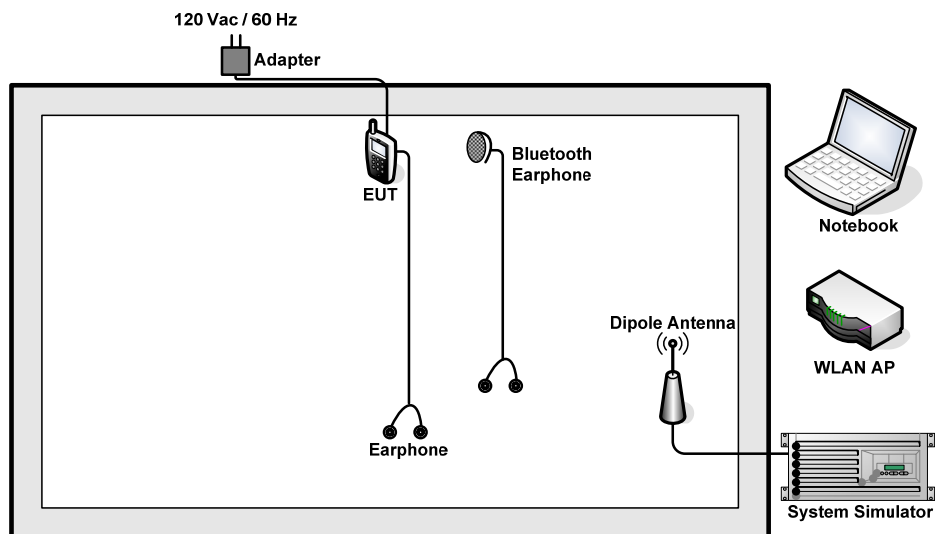
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
AC Conducted Emission	Mode 1 : CDMA2000 BC0 Idle + Bluetooth Link + WLAN Link + Earphone + Camera + Battery + USB Cable (Charging from Adapter) Mode 2 : GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + MPEG4 + Battery + USB Cable (Charging from Adapter)	
Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.		

2.5 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.6 RF Utility

For WLAN function, key in “ADB” on the PC to make the EUT provide functions like channel selection and power level 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.

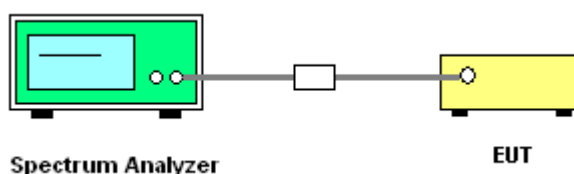
3.1.2 Measuring Instruments

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 DR01.
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. 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. The 6 dB bandwidth must be greater than 500 KHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup



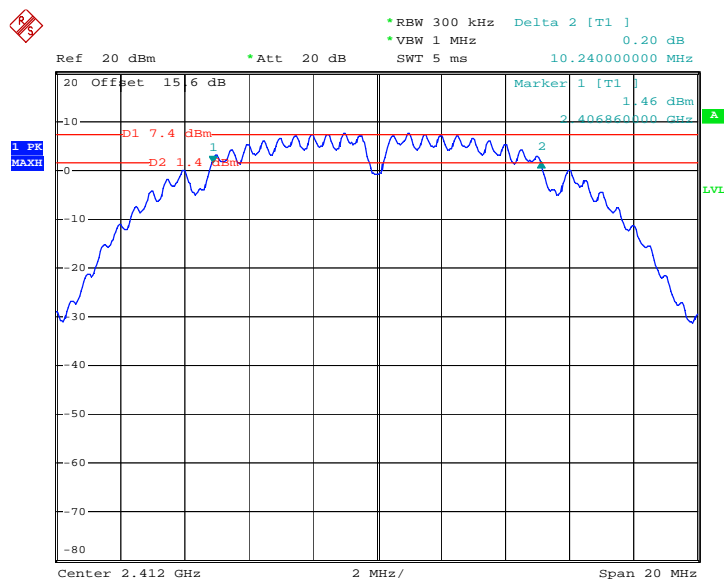


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.24	0.5	Pass
06	2437	10.24	0.5	Pass
11	2462	10.24	0.5	Pass

Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



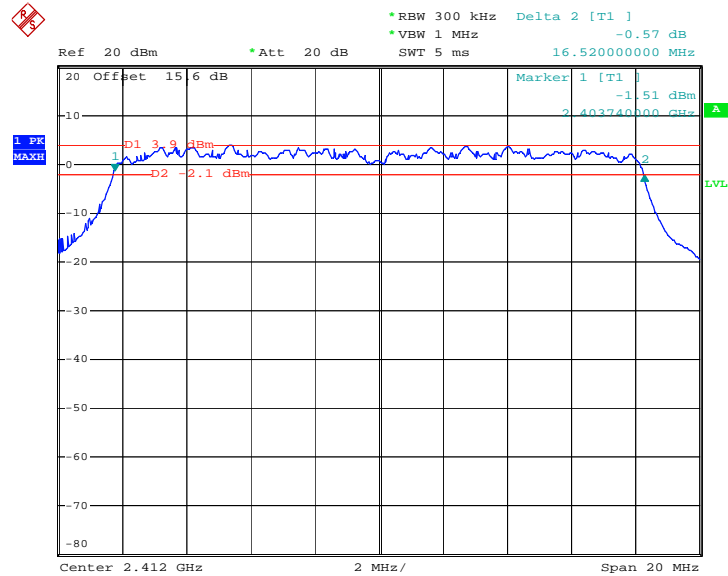
Date: 11.MAY.2012 03:10:40



Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

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

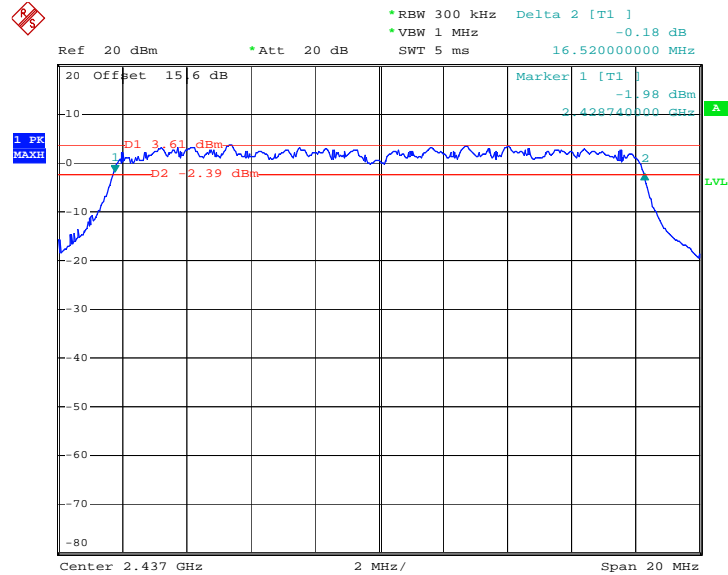
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 23.MAY.2012 15:06:04

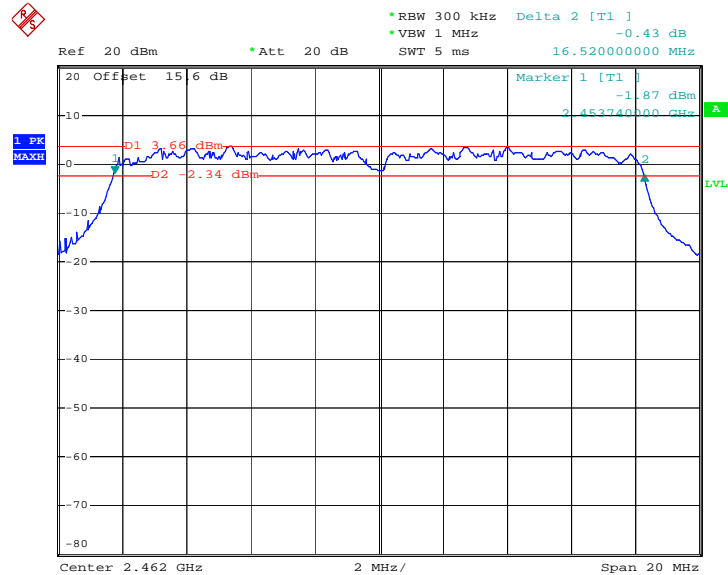


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 23.MAY.2012 15:13:14

Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11



Date: 23.MAY.2012 15:16:42



Test Mode :	Mode 7, 8, 9	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.76	0.5	Pass
06	2437	17.76	0.5	Pass
11	2462	17.72	0.5	Pass

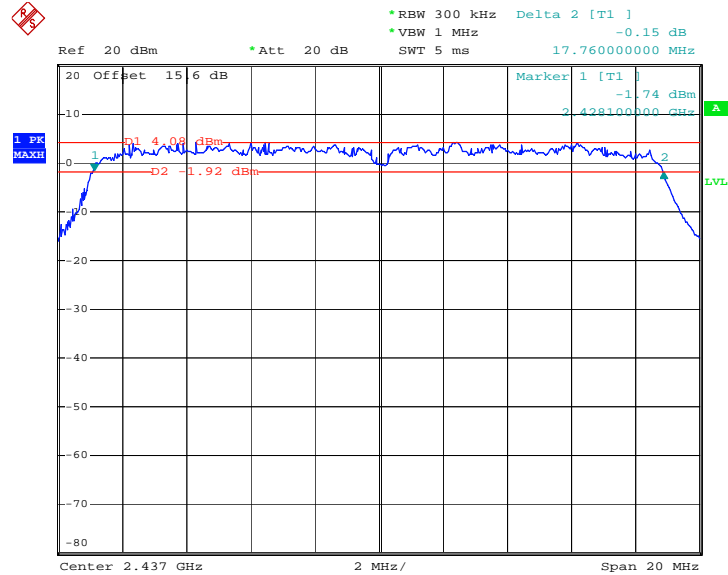
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 11.MAY.2012 03:37:43

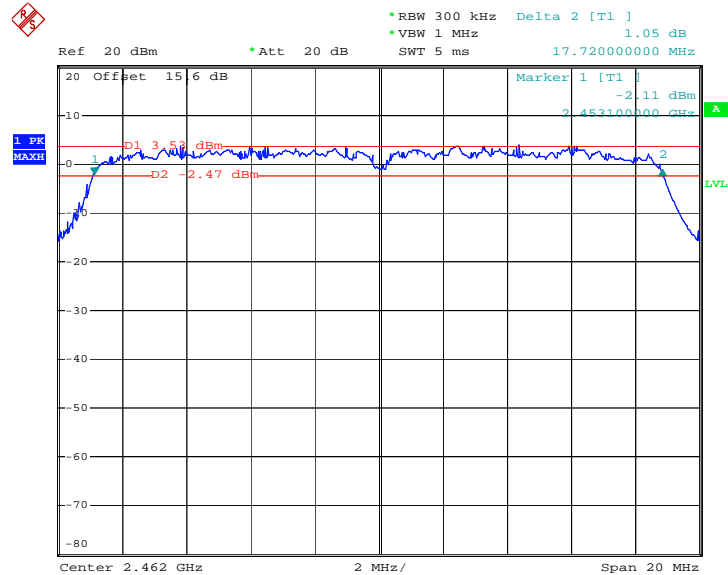


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 11.MAY.2012 03:41:11

Mode 9 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 11



Date: 11.MAY.2012 03:45:07

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

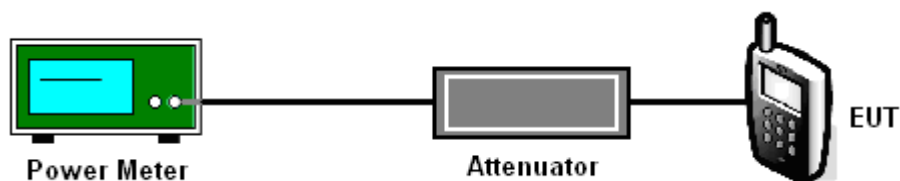
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure PK2 of FCC KDB No. 558074 DTS Meas. Guidelines DR01.
2. The RF output of EUT was connected to the power meter by a low loss cable.
3. Measure the power by power meter.

3.2.4 Test Setup



3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.98	30	Pass
06	2437	18.94	30	Pass
11	2462	18.36	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.51	30	Pass
06	2437	19.24	30	Pass
11	2462	18.91	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.11	30	Pass
06	2437	20.78	30	Pass
11	2462	19.85	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

In any 100 KHz bandwidth outside the unintentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. 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.

3.3.2 Measuring Instruments

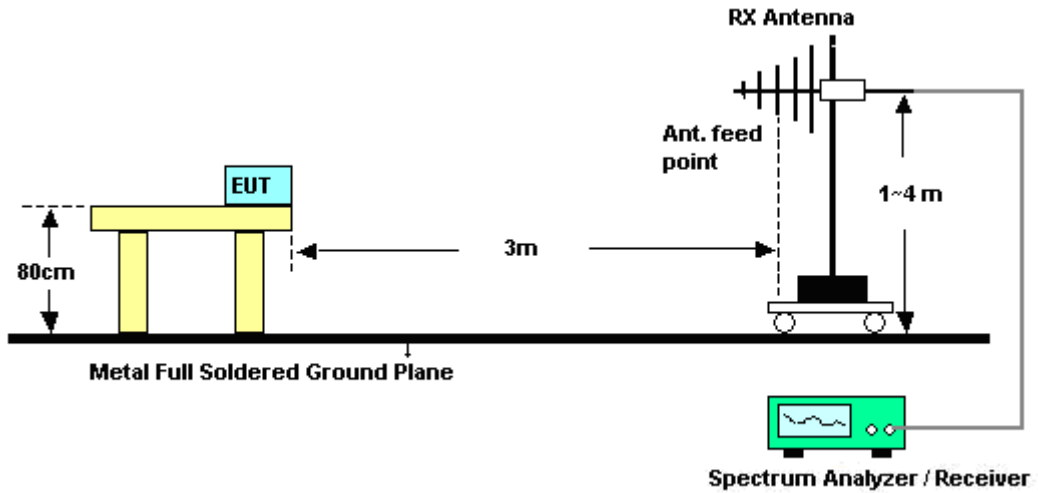
See list of measuring instruments of this test report.

3.3.3 Test Procedures

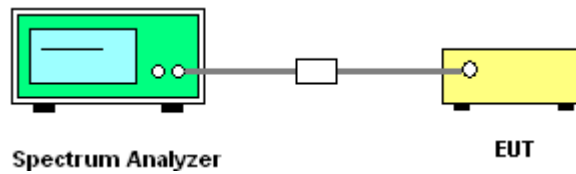
1. The testing follows the guidelines in ANSI C63.4-2003 and the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) \geq RBW. Out of the authorized frequency band emissions must be at least 20 dB lower than the highest emission level within the authorized band as measured with a 100 KHz RBW. 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).
3. Radiated emission test: Apply to band edge emissions that falling on the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, then modify the unit for continuous operation. Use the settings in this paragraph to correct the reading level by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation per 15.35(b) and (c).

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>





3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	22~23°C
Test Band :	802.11b	Relative Humidity :	41~42%
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	54.63	-19.37	74	52.35	32.86	3.47	34.05	100	92	Peak
2390	41.51	-12.49	54	39.23	32.86	3.47	34.05	100	92	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	51.15	-22.85	74	48.87	32.86	3.47	34.05	100	21	Peak
2390	39.09	-14.91	54	36.81	32.86	3.47	34.05	100	21	Average

Test Mode :	Mode 3	Temperature :	22~23°C
Test Band :	802.11b	Relative Humidity :	41~42%
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
2488.22	58.34	-15.66	74	55.8	33.05	3.72	34.23	100	21	Peak
2488.22	49.46	-4.54	54	46.92	33.05	3.72	34.23	100	21	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
2487.84	54.97	-19.03	74	52.43	33.05	3.72	34.23	100	96	Peak
2487.84	47.75	-6.25	54	45.21	33.05	3.72	34.23	100	96	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Band :	802.11g	Relative Humidity :	41~42%
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	50.59	-23.41	74	48.31	32.86	3.47	34.05	100	91	Peak
2390	38.09	-15.91	54	35.81	32.86	3.47	34.05	100	91	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	52.32	-21.68	74	50.04	32.86	3.47	34.05	100	106	Peak
2390	38.73	-15.27	54	36.45	32.86	3.47	34.05	200	106	Average

Test Mode :	Mode 6	Temperature :	22~23°C
Test Band :	802.11g	Relative Humidity :	41~42%
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
2483.66	49.84	-24.16	74	47.35	33.01	3.68	34.2	100	176	Peak
2483.66	37.3	-16.7	54	34.81	33.01	3.68	34.2	100	176	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
2483.5	51.08	-22.92	74	48.59	33.01	3.68	34.2	100	305	Peak
2483.5	39.1	-14.9	54	36.61	33.01	3.68	34.2	100	305	Average



Test Mode :	Mode 7	Temperature :	22~23°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	41~42%
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
2389.42	61.04	-12.96	74	58.76	32.86	3.47	34.05	200	337	Peak
2389.42	46.94	-7.06	54	44.66	32.86	3.47	34.05	200	337	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
2389.42	67.9	-6.1	74	65.62	32.86	3.47	34.05	100	355	Peak
2389.42	50.46	-3.54	54	48.18	32.86	3.47	34.05	100	355	Average

Test Mode :	Mode 9	Temperature :	22~23°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	41~42%
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	61.49	-12.51	74	59	33.01	3.68	34.2	200	345	Peak
2483.5	47.21	-6.79	54	44.72	33.01	3.68	34.2	200	345	Average

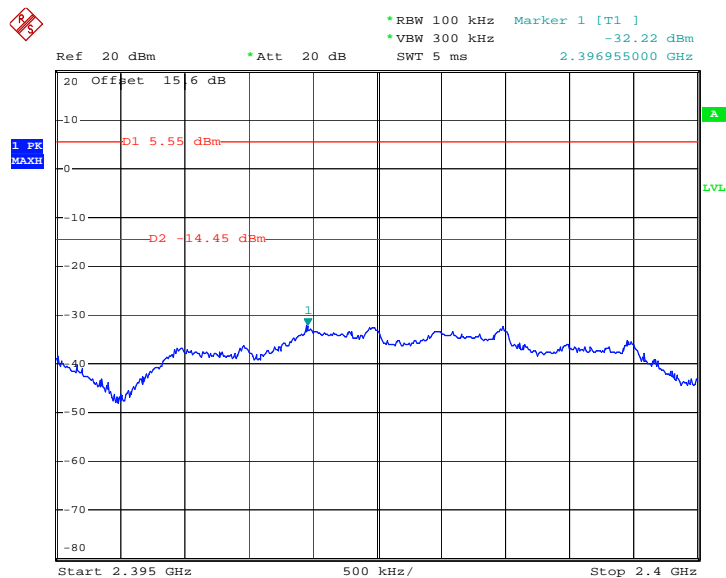
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.61	62.79	-11.21	74	60.3	33.01	3.68	34.2	200	49	Peak
2484.61	47.46	-6.54	54	44.97	33.01	3.68	34.2	200	49	Average



3.3.6 Test Plots of Conducted Band Edges

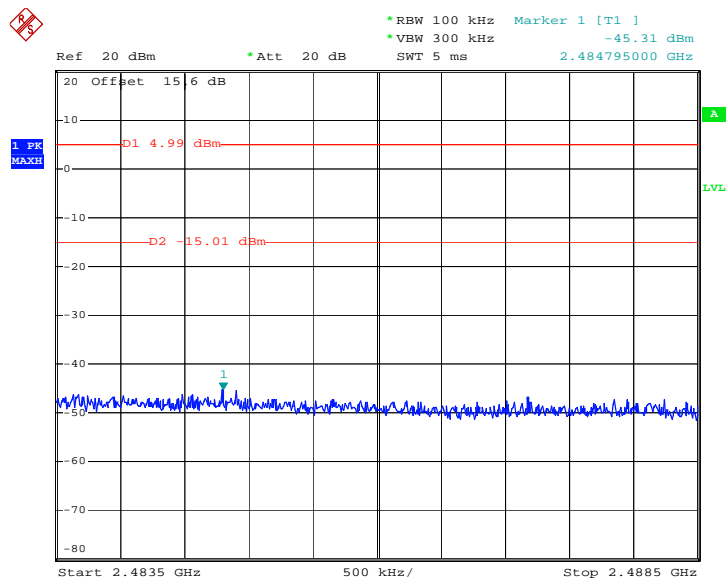
Test Mode :	Mode 1 and 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11b Channel 01



Date: 11.MAY.2012 03:11:54

High Band Edge Plot on 802.11b Channel 11

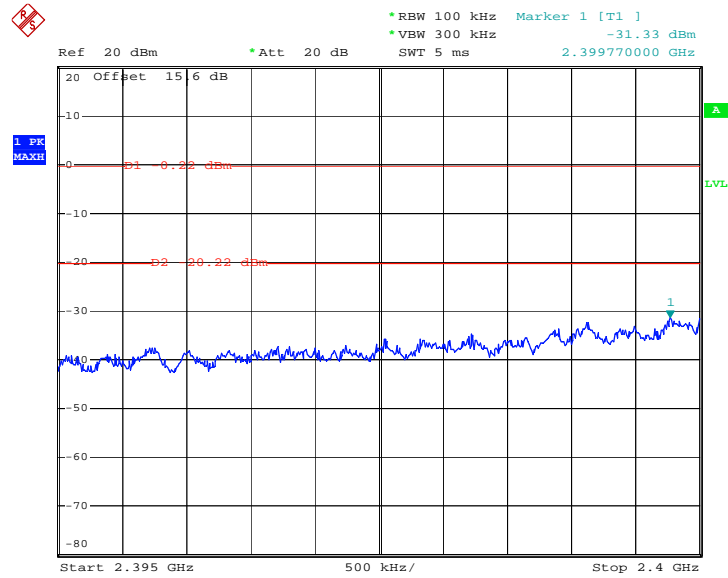


Date: 11.MAY.2012 03:19:48



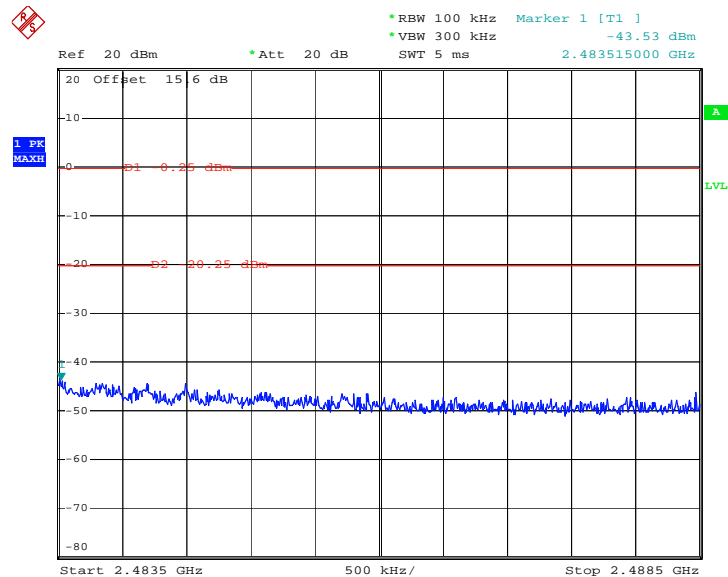
Test Mode :	Mode 4 and 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g Channel 01



Date: 23.MAY.2012 15:07:17

High Band Edge Plot on 802.11g Channel 11

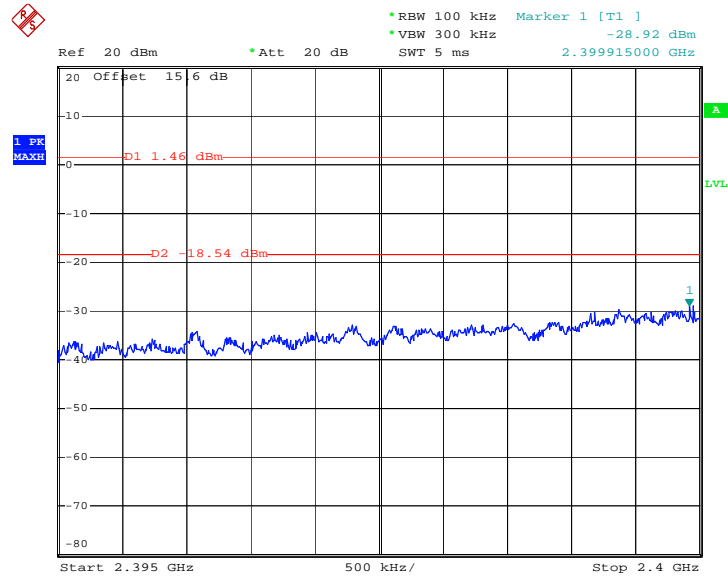


Date: 23.MAY.2012 15:17:37



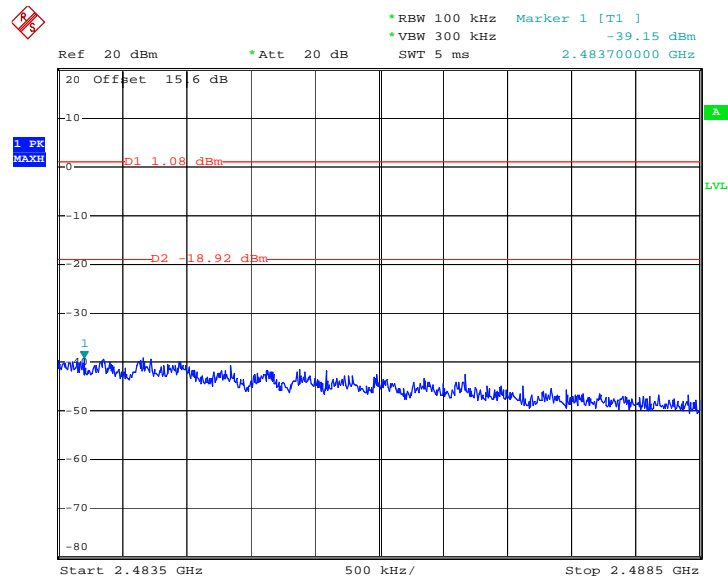
Test Mode :	Mode 7 and 9	Temperature :	23~24°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g/n (BW 20MHz) Channel 01



Date: 11.MAY.2012 03:39:12

High Band Edge Plot on 802.11g/n (BW 20MHz) Channel 11



Date: 11.MAY.2012 03:46:11

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

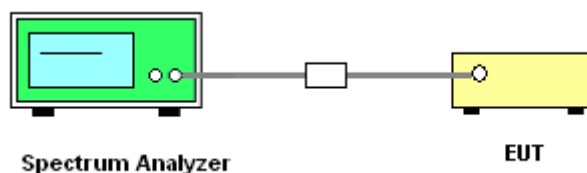
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable. The path loss was compensated to the results for each measurement.
2. Set RBW = 100 KHz, Video bandwidth (VBW) \geq RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 KHz RBW.

3.4.4 Test Setup

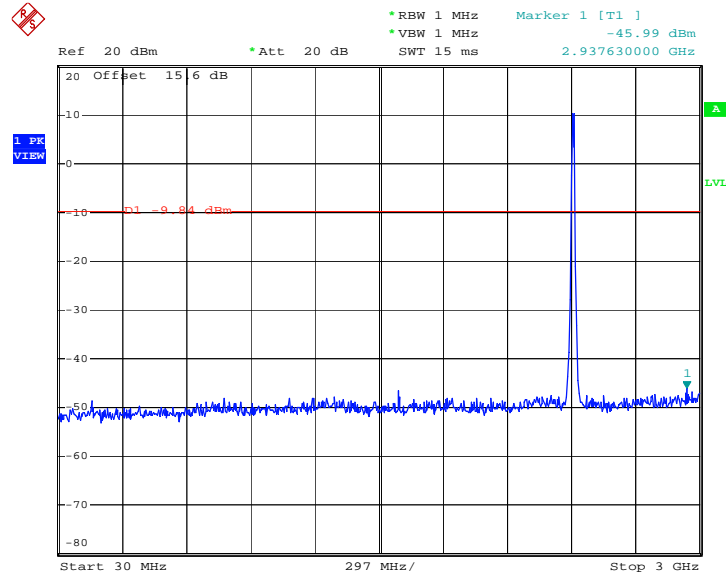




3.4.5 Test Plots of Spurious Emission

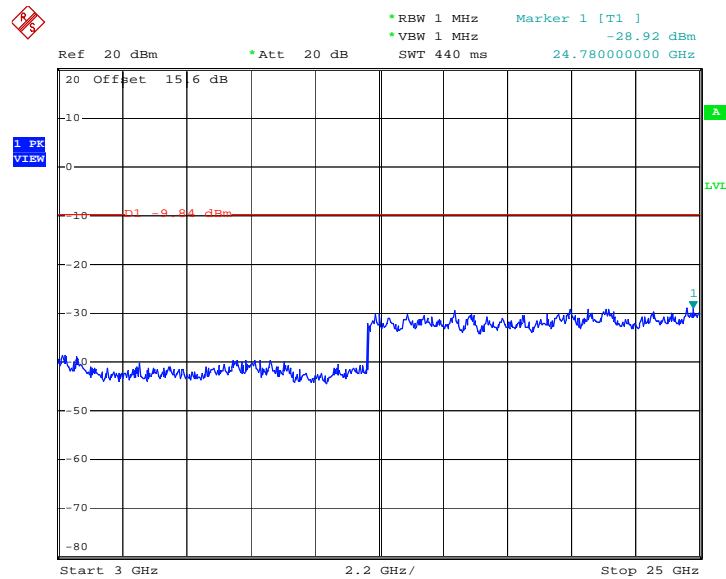
Test Mode :	Mode 1	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.MAY.2012 03:12:34

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

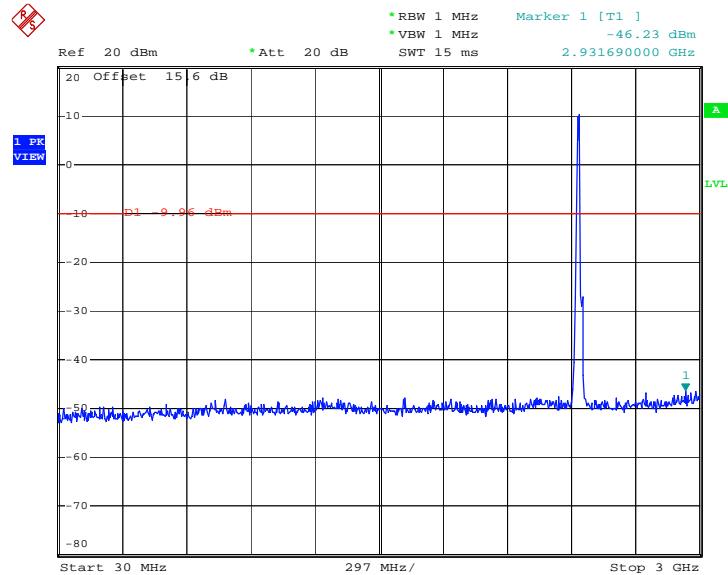


Date: 11.MAY.2012 03:12:51



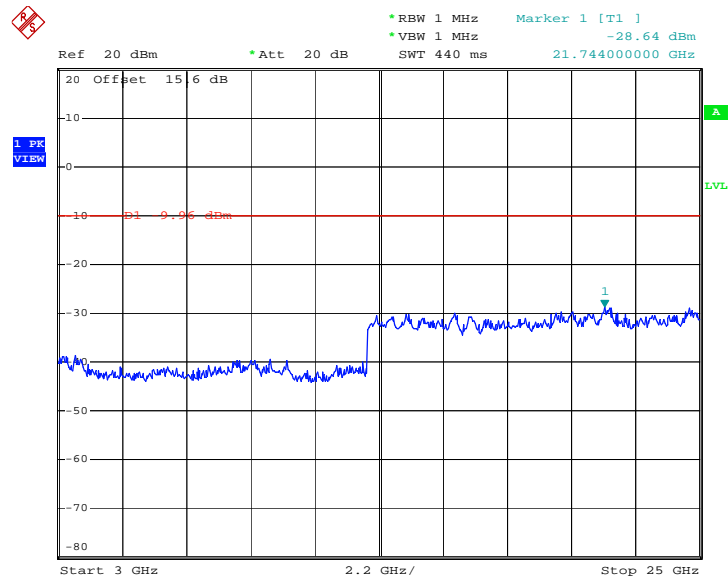
Test Mode :	Mode 2	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.MAY.2012 03:16:41

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

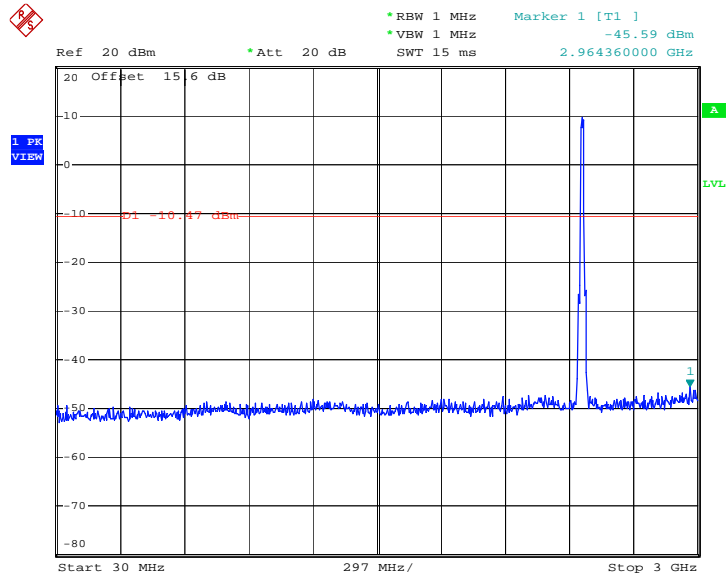


Date: 11.MAY.2012 03:16:59



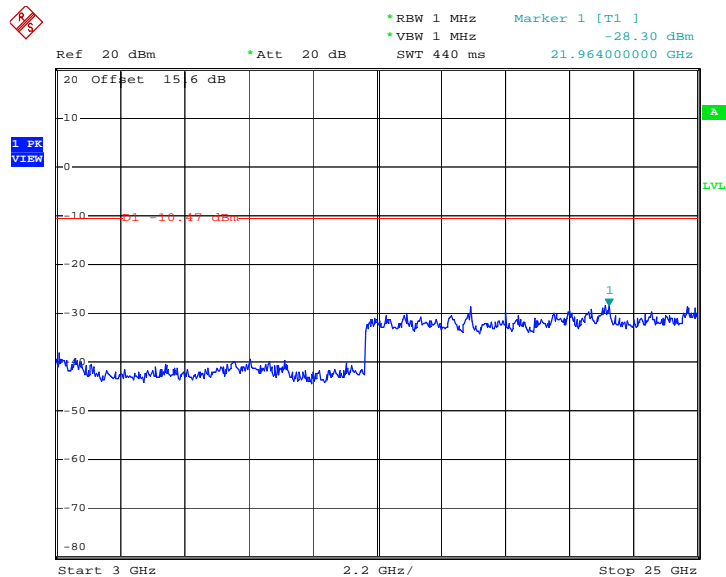
Test Mode :	Mode 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.MAY.2012 03:20:32

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

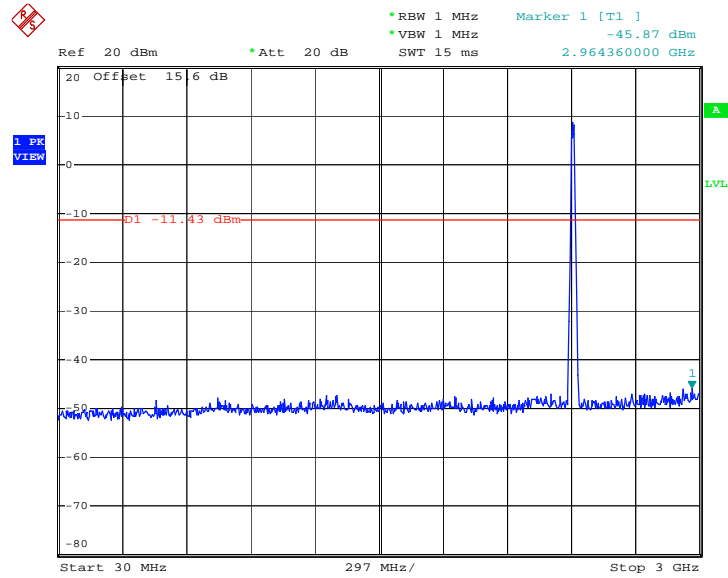


Date: 11.MAY.2012 03:20:51



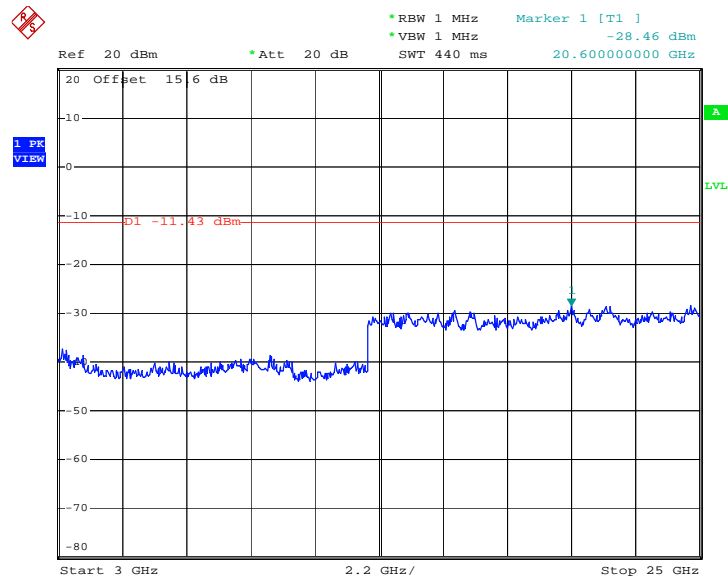
Test Mode :	Mode 4	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 23.MAY.2012 16:24:07

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

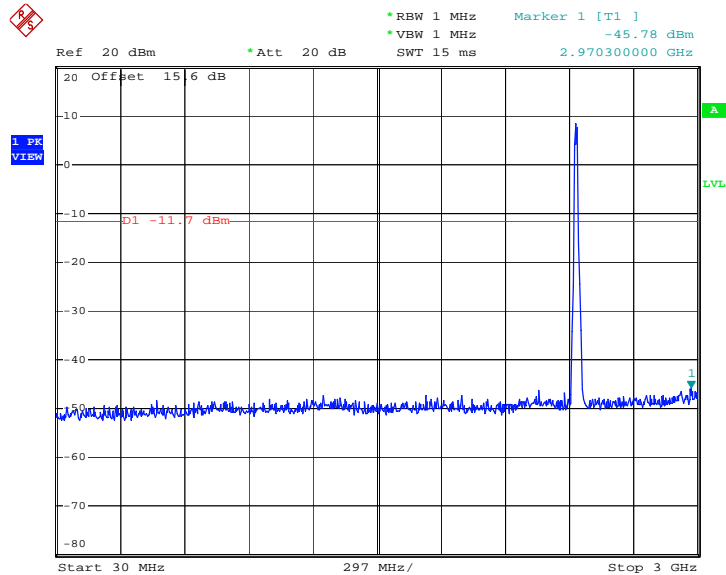


Date: 23.MAY.2012 16:24:26



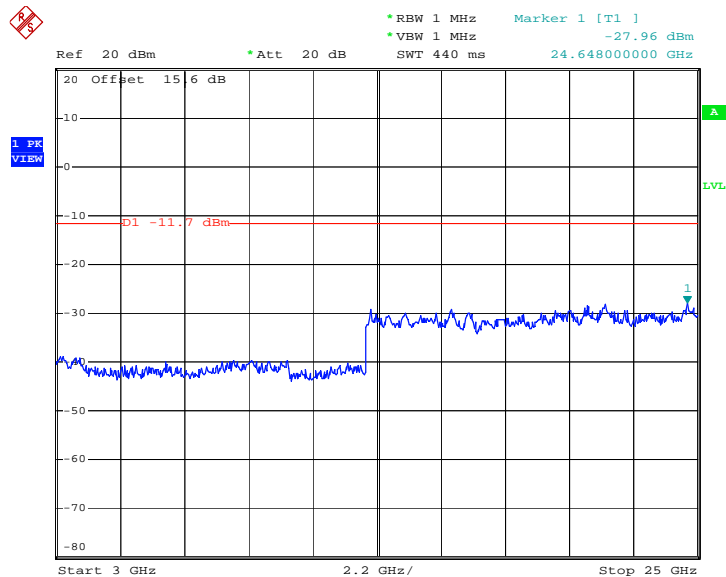
Test Mode :	Mode 5	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 23.MAY.2012 16:26:42

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

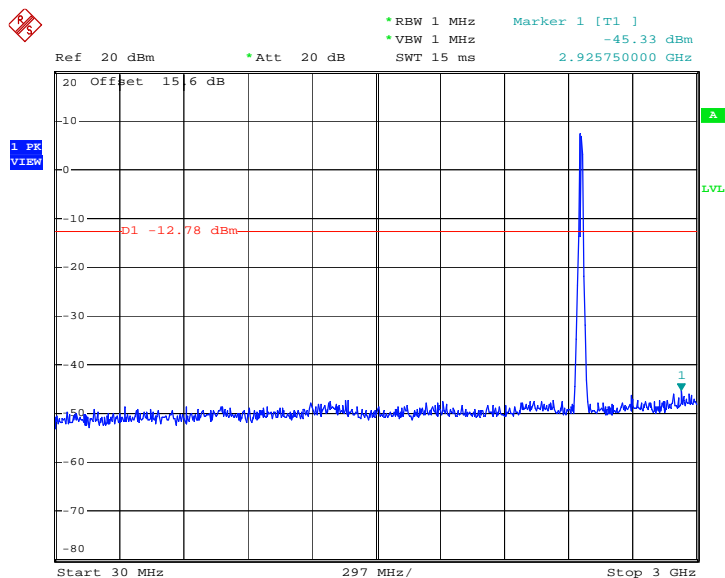


Date: 23.MAY.2012 16:27:01



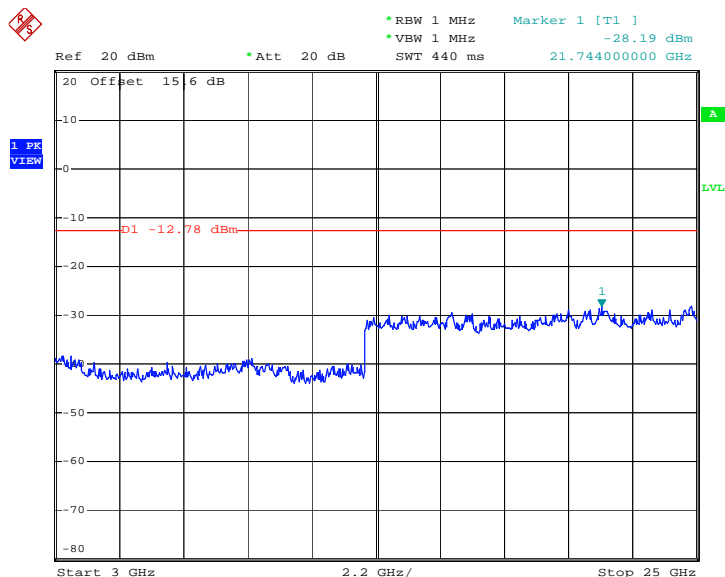
Test Mode :	Mode 6	Temperature :	23~24°C
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 23.MAY.2012 16:33:10

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

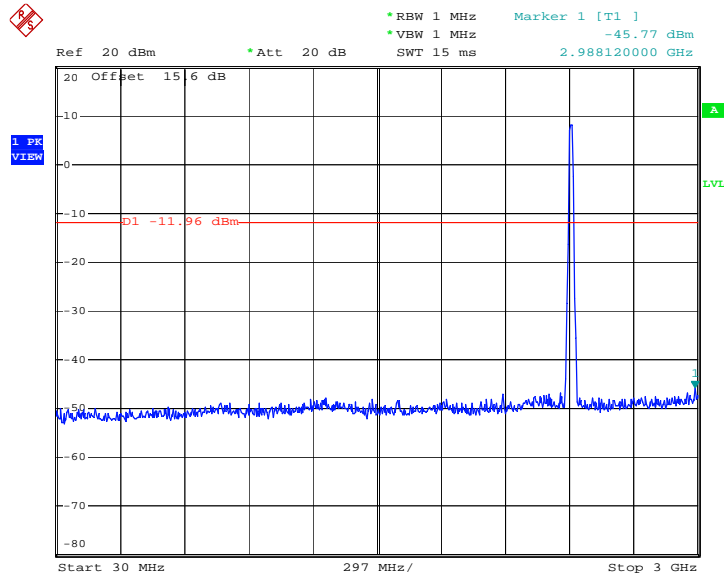


Date: 23.MAY.2012 16:33:28



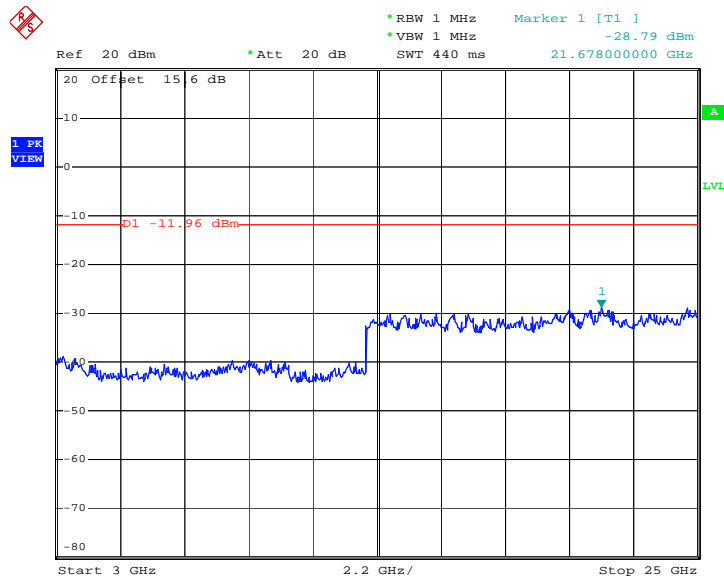
Test Mode :	Mode 7	Temperature :	23~24°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.MAY.2012 03:39:38

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

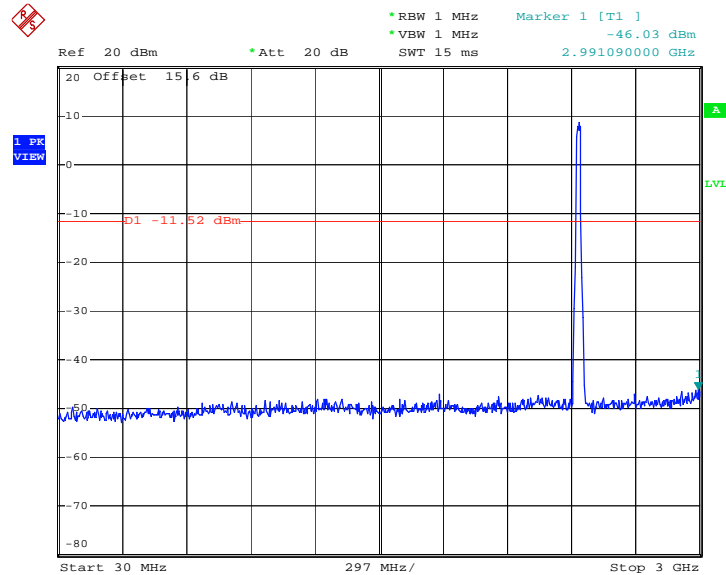


Date: 11.MAY.2012 03:39:56



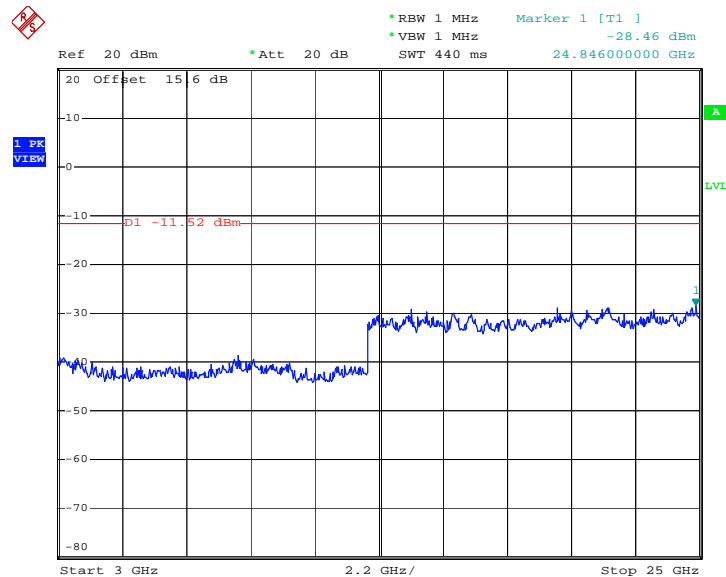
Test Mode :	Mode 8	Temperature :	23~24°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.MAY.2012 03:42:38

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

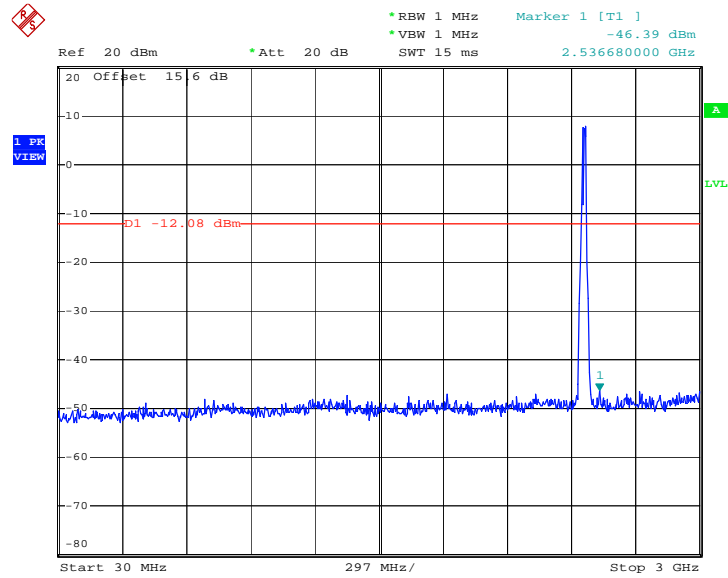


Date: 11.MAY.2012 03:42:56



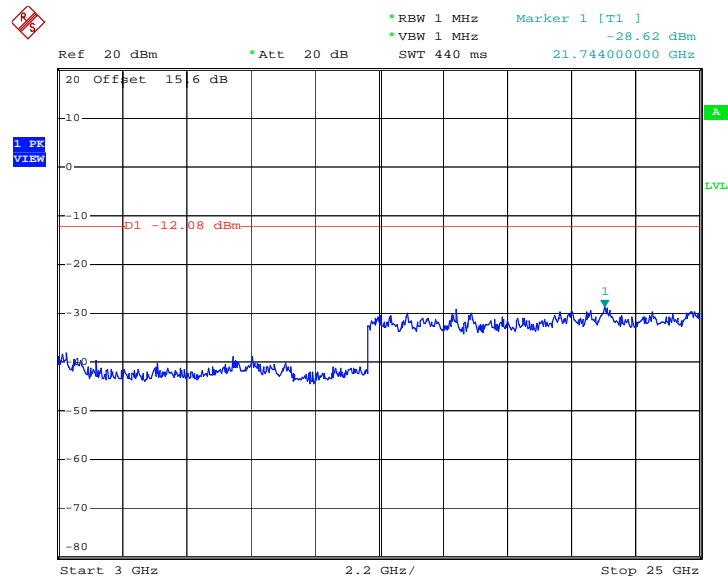
Test Mode :	Mode 9	Temperature :	23~24°C
Test Band :	802.11g/n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.MAY.2012 03:46:50

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 11.MAY.2012 03:47:08

3.5 Power Spectral Density Measurement

3.5.1 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.

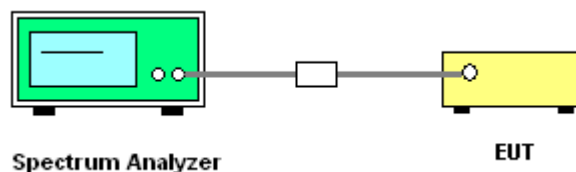
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows Measurement Procedure PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
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. Record the measurement data derived from spectrum analyzer.
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. 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 $BWCF = 10\log(3\text{ kHz}/100\text{ kHz} = -15.2\text{ dB})$.

3.5.4 Test Setup



3.5.5 Test Result of Power Spectral Density

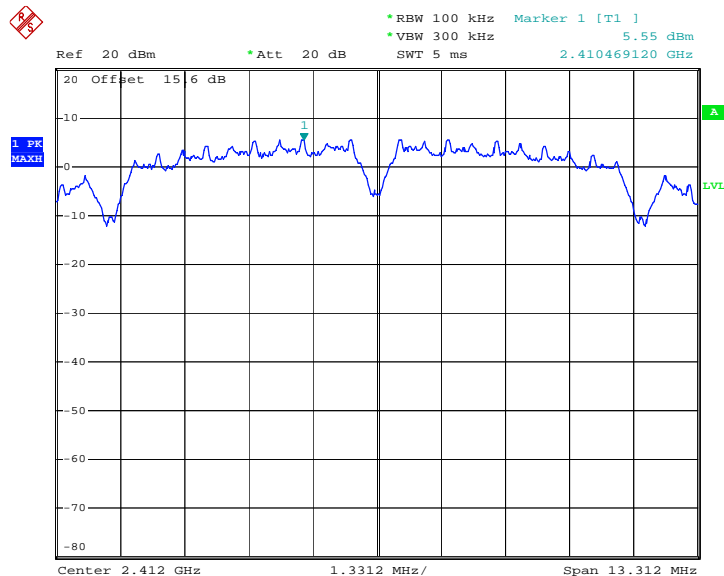
Test Mode :	Mode 1, 2, 3	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	5.55	-9.65	8	Pass
06	2437	5.30	-9.90	8	Pass
11	2462	4.99	-10.21	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)

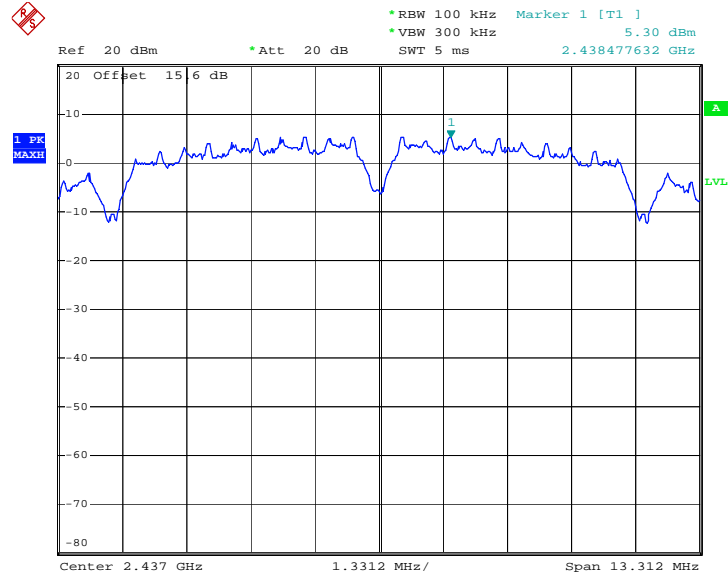
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 11.MAY.2012 03:11:08

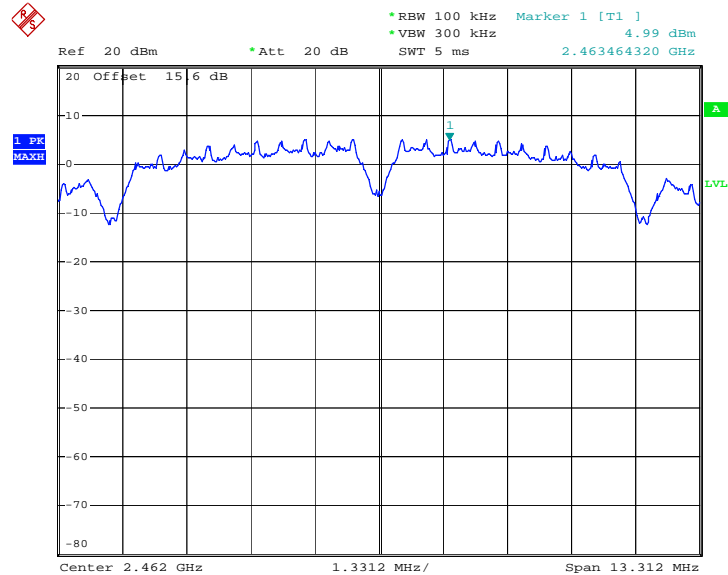


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 11.MAY.2012 03:15:54

Mode 3 : PSD Plot on 802.11b Channel 11



Date: 11.MAY.2012 03:19:21



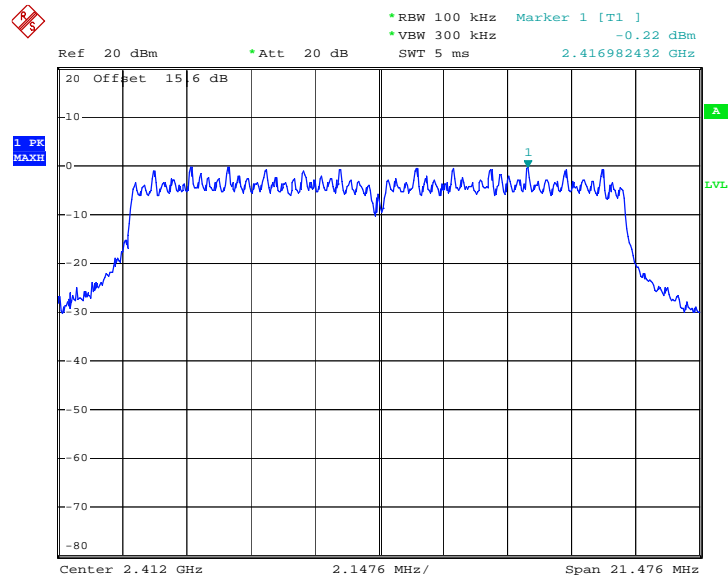
Test Mode :	Mode 4, 5, 6	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	-0.22	-15.42	8	Pass
06	2437	-0.30	-15.50	8	Pass
11	2462	-0.25	-15.45	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)

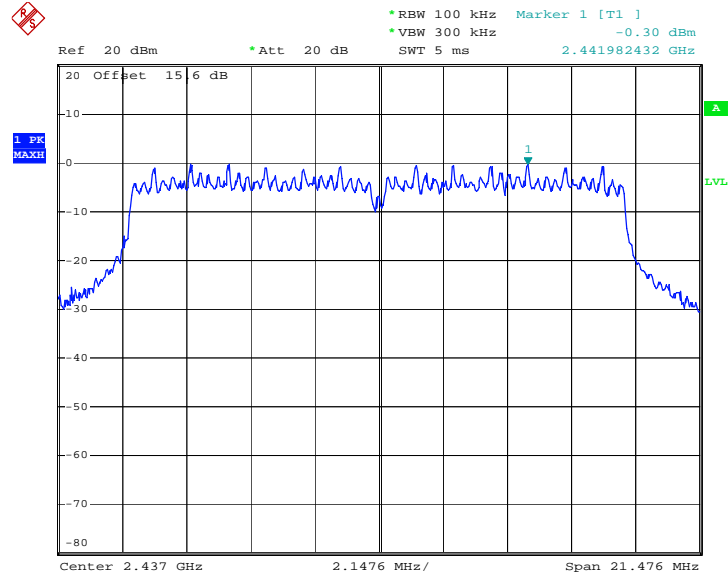
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 23.MAY.2012 15:06:28

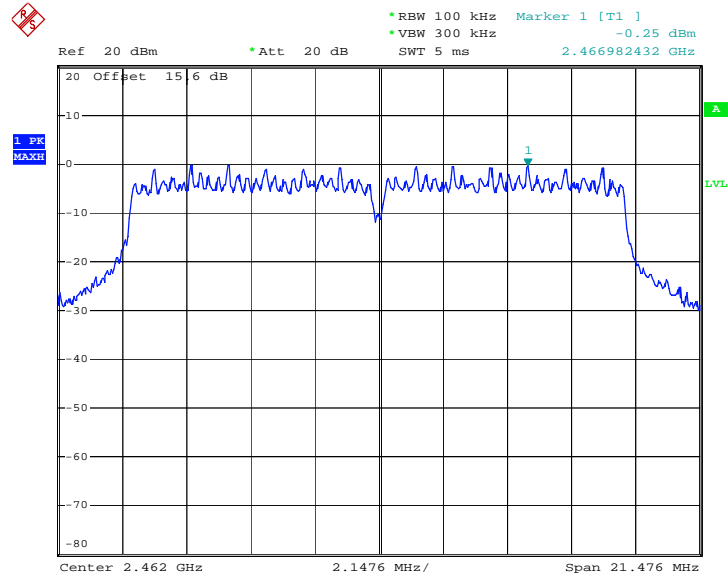


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 23.MAY.2012 15:13:34

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 23.MAY.2012 15:17:01



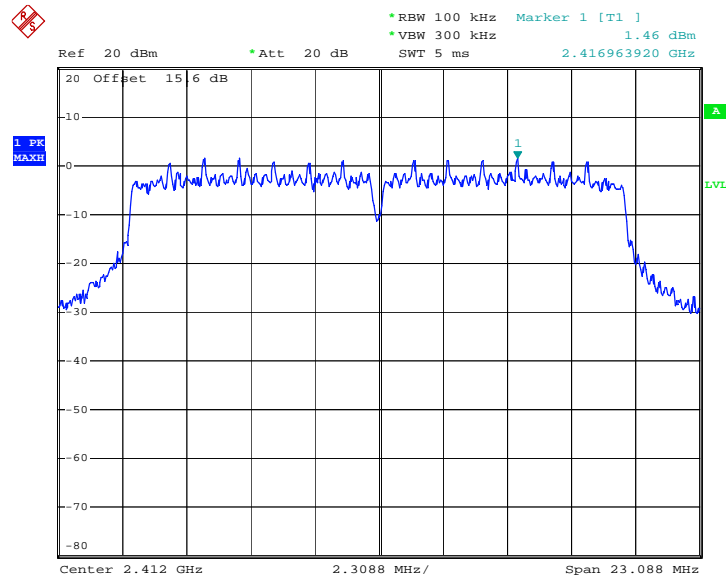
Test Mode :	Mode 7, 8, 9	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11g/n (BW 20MHz) Power Density		Max. Limits (dBm)	Pass/Fail
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	1.46	-13.74	8	Pass
06	2437	1.30	-13.90	8	Pass
11	2462	1.08	-14.12	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)

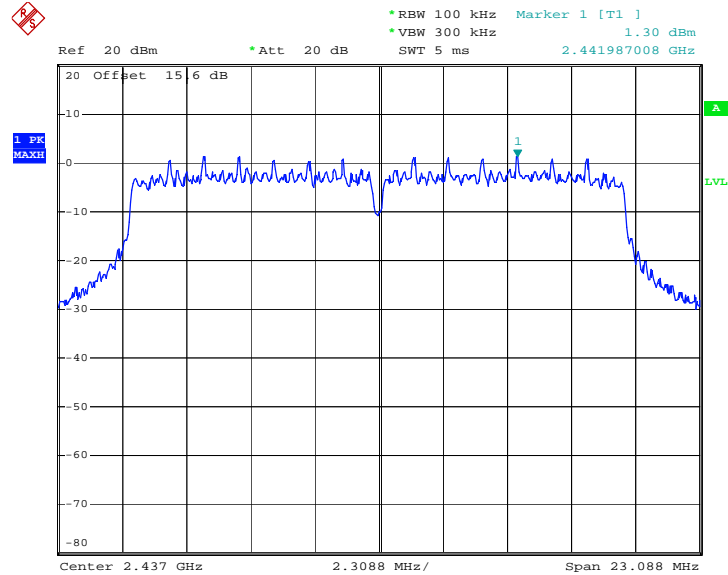
Mode 7 : PSD Plot on 802.11g/n (BW 20MHz) Channel 01



Date: 11.MAY.2012 03:38:08

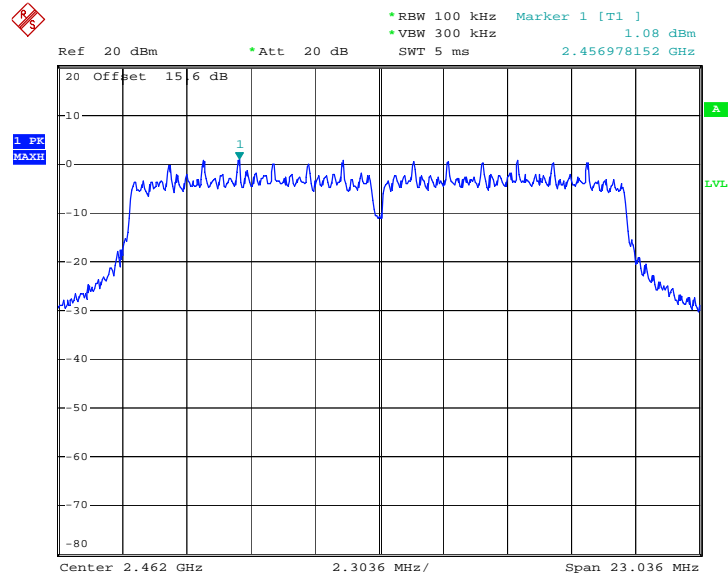


Mode 8 : PSD Plot on 802.11g/n (BW 20MHz) Channel 06



Date: 11.MAY.2012 03:42:07

Mode 9 : PSD Plot on 802.11g/n (BW 20MHz) Channel 11



Date: 11.MAY.2012 03:45:30

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.

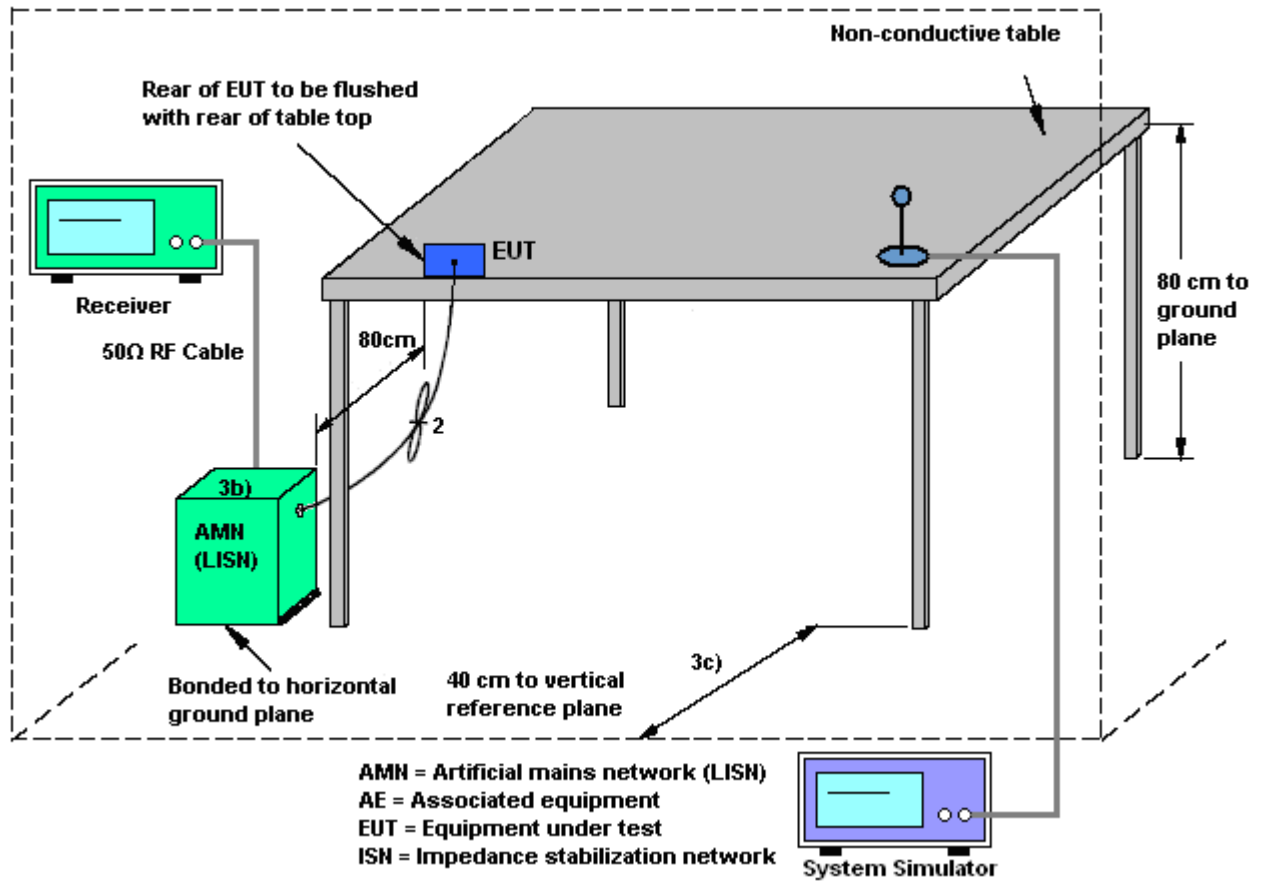
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

4. The testing follows the guidelines in ANSI C63.4-2003.
5. 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.
6. Connect EUT to the power mains through a line impedance stabilization network (LISN).
7. All the support units are connecting to the other LISN.
8. The LISN provides 50 ohm coupling impedance for the measuring instrument.
9. The FCC states that a 50 ohm, 50 micrometry LISN should be used.
10. Both sides of AC line were checked for maximum conducted interference.
11. The frequency range from 150 KHz to 30 MHz was searched.
12. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

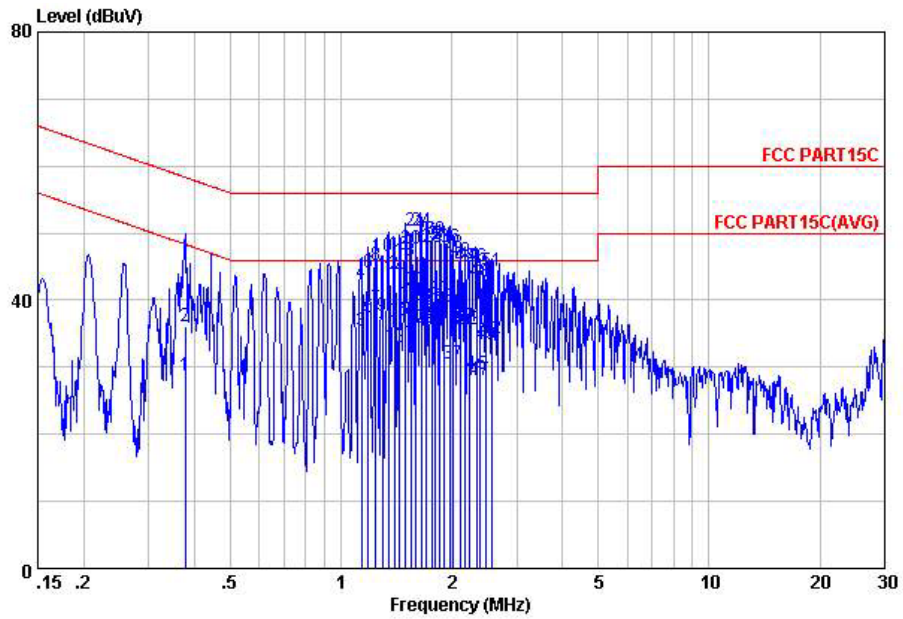
3.6.4 Test Setup





3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + MPEG4 + Battery + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



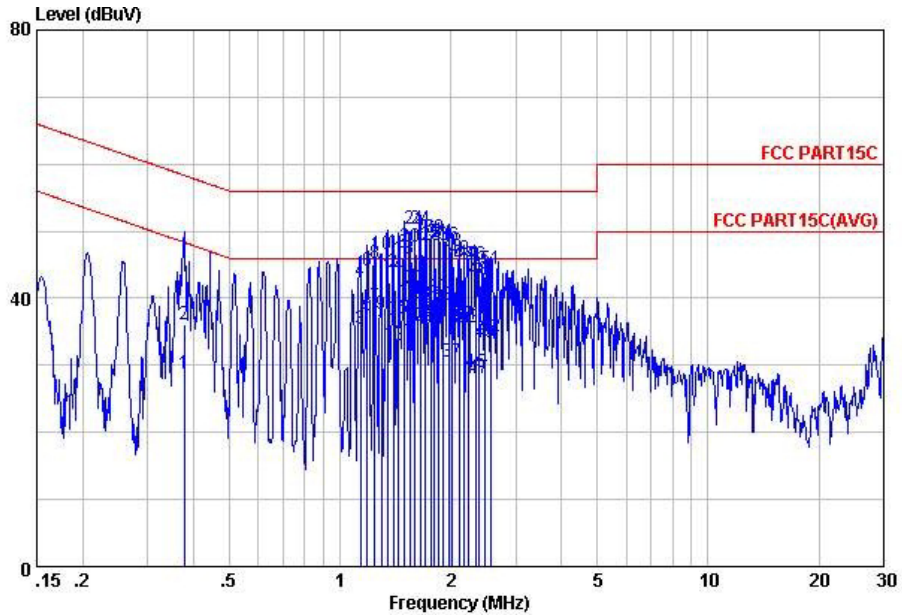
Site : C001-KS
 Condition: FCC PART15C LISM-100807 LINE

mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.38	28.71	-19.63	48.34	18.60	-0.08	10.19	Average
2	0.38	36.11	-22.23	58.34	26.00	-0.08	10.19	QP
3	1.14	35.47	-10.53	46.00	25.30	-0.10	10.27	Average
4	1.14	42.57	-13.43	56.00	32.40	-0.10	10.27	QP
5	1.18	37.48	-8.52	46.00	27.30	-0.10	10.28	Average
6	1.18	44.08	-11.92	56.00	33.90	-0.10	10.28	QP
7	1.24	38.88	-7.12	46.00	28.70	-0.10	10.28	Average
8	1.24	45.28	-10.72	56.00	35.10	-0.10	10.28	QP
9	1.30	37.58	-8.42	46.00	27.39	-0.10	10.29	Average
10	1.30	46.48	-9.52	56.00	36.29	-0.10	10.29	QP
11	1.35	35.19	-10.81	46.00	25.00	-0.10	10.29	Average
12	1.35	43.89	-12.11	56.00	33.70	-0.10	10.29	QP
13	1.40	32.89	-13.11	46.00	22.70	-0.10	10.29	Average
14	1.40	43.39	-12.61	56.00	33.20	-0.10	10.29	QP
15	1.44	37.09	-8.91	46.00	26.90	-0.11	10.30	Average
16	1.44	46.79	-9.21	56.00	36.60	-0.11	10.30	QP
17	1.50	33.39	-12.61	46.00	23.20	-0.11	10.30	Average
18	1.50	45.99	-10.01	56.00	35.80	-0.11	10.30	QP
19	1.55	39.60	-6.40	46.00	29.41	-0.11	10.30	Average
20	1.55	47.60	-8.40	56.00	37.41	-0.11	10.30	QP
21	1.60	50.40	-5.60	56.00	40.20	-0.11	10.31	QP
22	1.60	41.50	-4.50	46.00	31.30	-0.11	10.31	Average
23	1.65	39.20	-6.80	46.00	29.00	-0.11	10.31	Average
24	1.65	50.40	-5.60	56.00	40.20	-0.11	10.31	QP
25	1.71	35.80	-10.20	46.00	25.60	-0.11	10.31	Average
26	1.71	49.10	-6.90	56.00	38.90	-0.11	10.31	QP
27	1.76	36.51	-9.49	46.00	26.30	-0.11	10.32	Average



Test Mode :	Mode 2	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + MPEG4 + Battery + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

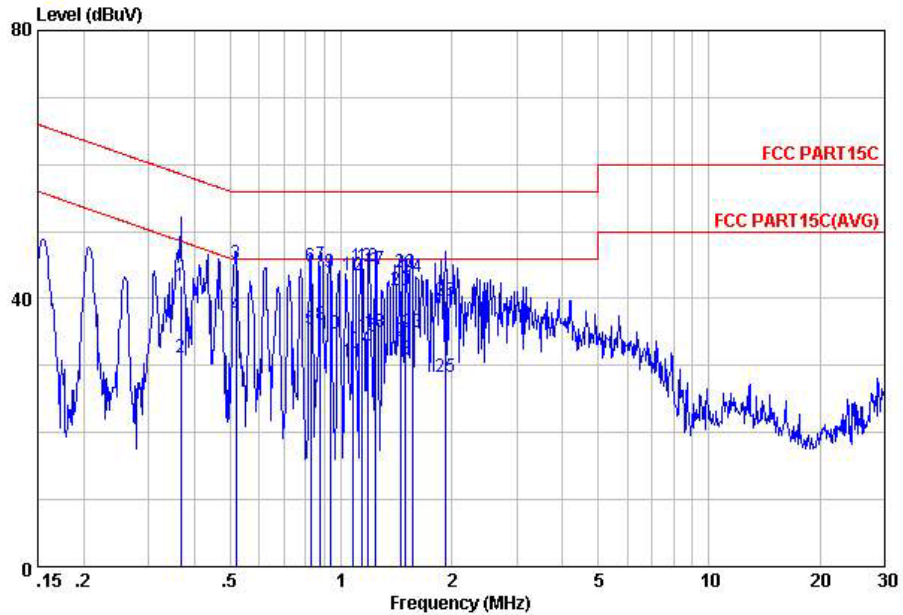


Site : C001-KS
 Condition: FCC PART15C LISN-100807 LINE
 mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
		dBuV	dB	dBuV	dBuV	dB	dB	
28	1.76	47.81	-8.19	56.00	37.60	-0.11	10.32	QP
29	1.81	38.61	-7.39	46.00	28.40	-0.11	10.32	Average
30	1.81	49.11	-6.89	56.00	38.90	-0.11	10.32	QP
31	1.86	48.31	-7.69	56.00	38.10	-0.11	10.32	QP
32	1.86	40.01	-5.99	46.00	29.80	-0.11	10.32	Average
33	1.91	39.01	-6.99	46.00	28.80	-0.11	10.32	Average
34	1.91	48.41	-7.59	56.00	38.20	-0.11	10.32	QP
35	1.97	36.52	-9.48	46.00	26.30	-0.11	10.33	Average
36	1.97	47.82	-8.18	56.00	37.60	-0.11	10.33	QP
37	2.02	30.42	-15.58	46.00	20.20	-0.11	10.33	Average
38	2.02	46.92	-9.08	56.00	36.70	-0.11	10.33	QP
39	2.11	35.32	-10.68	46.00	25.09	-0.11	10.34	Average
40	2.11	45.82	-10.18	56.00	35.59	-0.11	10.34	QP
41	2.17	36.23	-9.77	46.00	26.00	-0.11	10.34	Average
42	2.17	45.03	-10.97	56.00	34.80	-0.11	10.34	QP
43	2.22	35.63	-10.37	46.00	25.40	-0.11	10.34	Average
44	2.22	45.13	-10.87	56.00	34.90	-0.11	10.34	QP
45	2.33	28.93	-17.07	46.00	18.69	-0.11	10.35	Average
46	2.33	44.93	-11.07	56.00	34.69	-0.11	10.35	QP
47	2.38	28.14	-17.86	46.00	17.90	-0.11	10.35	Average
48	2.38	42.84	-13.16	56.00	32.60	-0.11	10.35	QP
49	2.47	33.44	-12.56	46.00	23.20	-0.11	10.35	Average
50	2.47	43.34	-12.66	56.00	33.10	-0.11	10.35	QP
51	2.58	44.44	-11.56	56.00	34.19	-0.11	10.36	QP
52	2.58	34.24	-11.76	46.00	23.99	-0.11	10.36	Average



Test Mode :	Mode 2	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + Bluetooth Link + WLAN Link + Earphone + MPEG4 + Battery + USB Cable (Charging from Adapter)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
 Condition: FCC PART15C LISN-100807 NEUTRAL

mode : Mode 2

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.37	41.91	-16.65	58.56	31.81	-0.08	10.18	QP
2	0.37	31.11	-17.45	48.56	21.01	-0.08	10.18	Average
3	0.52	45.13	-10.87	56.00	35.00	-0.08	10.21	QP
4	0.52	37.53	-8.47	46.00	27.40	-0.08	10.21	Average
5	0.83	35.46	-10.54	46.00	25.29	-0.08	10.25	Average
6	0.83	44.86	-11.14	56.00	34.69	-0.08	10.25	QP
7	0.88	44.97	-11.03	56.00	34.81	-0.09	10.25	QP
8	0.88	36.07	-9.93	46.00	25.91	-0.09	10.25	Average
9	0.93	43.87	-12.13	56.00	33.70	-0.09	10.26	QP
10	0.93	34.87	-11.13	46.00	24.70	-0.09	10.26	Average
11	1.08	30.48	-15.52	46.00	20.30	-0.09	10.27	Average
12	1.08	43.38	-12.62	56.00	33.20	-0.09	10.27	QP
13	1.14	44.78	-11.22	56.00	34.60	-0.09	10.27	QP
14	1.14	32.58	-13.42	46.00	22.40	-0.09	10.27	Average
15	1.18	34.28	-11.72	46.00	24.09	-0.09	10.28	Average
16	1.18	44.68	-11.32	56.00	34.49	-0.09	10.28	QP
17	1.24	44.39	-11.61	56.00	34.20	-0.09	10.28	QP
18	1.24	34.89	-11.11	46.00	24.70	-0.09	10.28	Average
19	1.46	30.90	-15.10	46.00	20.70	-0.10	10.30	Average
20	1.46	41.30	-14.70	56.00	31.10	-0.10	10.30	QP
21	1.50	33.70	-12.30	46.00	23.50	-0.10	10.30	Average
22	1.50	43.90	-12.10	56.00	33.70	-0.10	10.30	QP
23	1.56	34.90	-11.10	46.00	24.70	-0.10	10.30	Average
24	1.56	43.20	-12.80	56.00	33.00	-0.10	10.30	QP
25	1.93	28.32	-17.68	46.00	18.10	-0.11	10.33	Average
26	1.93	39.72	-16.28	56.00	29.50	-0.11	10.33	QP

3.7 Radiated Emission Measurement

3.7.1 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

3.7.2 Measuring Instruments

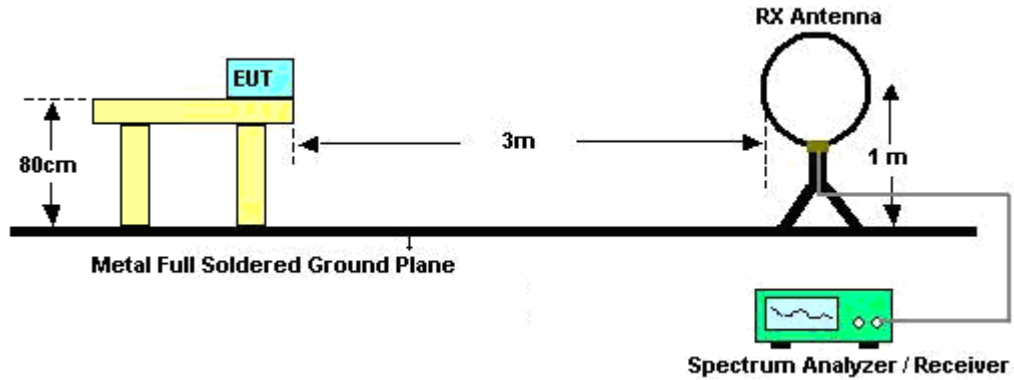
See list of measuring instruments of this test report.

3.7.3 Test Procedures

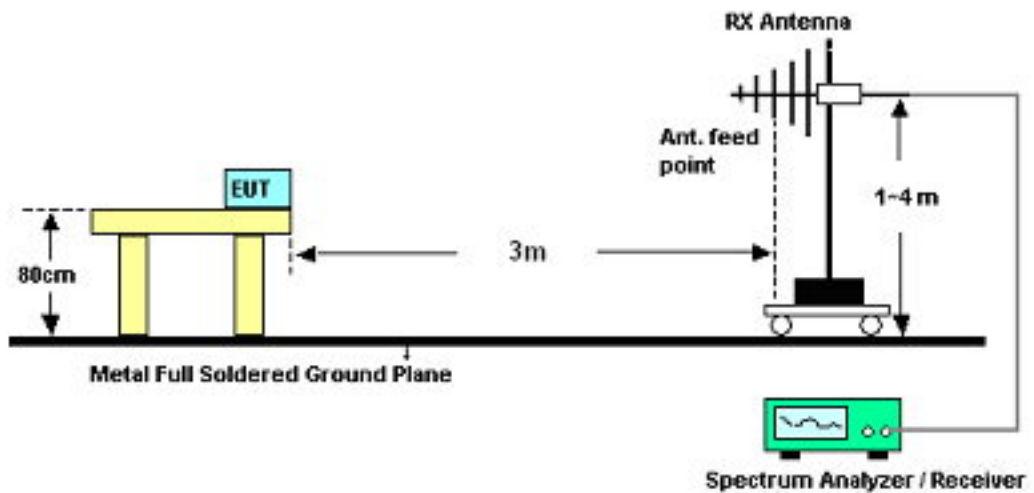
1. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW = 1 MHz for $f \geq 1$ GHz, 100 KHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Measurement above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB per decade from 3m to 1m.
 Distance extrapolation factor = $20 \log(\text{specific distance [3m]} / \text{test distance [1m]})$ (dB)
2. Maximize the emission by rotating the EUT for three orthogonal planes, and adjusting the measurement antenna height and polarization. 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 in ANSI C63.4-2003.

3.7.4 Test Setup

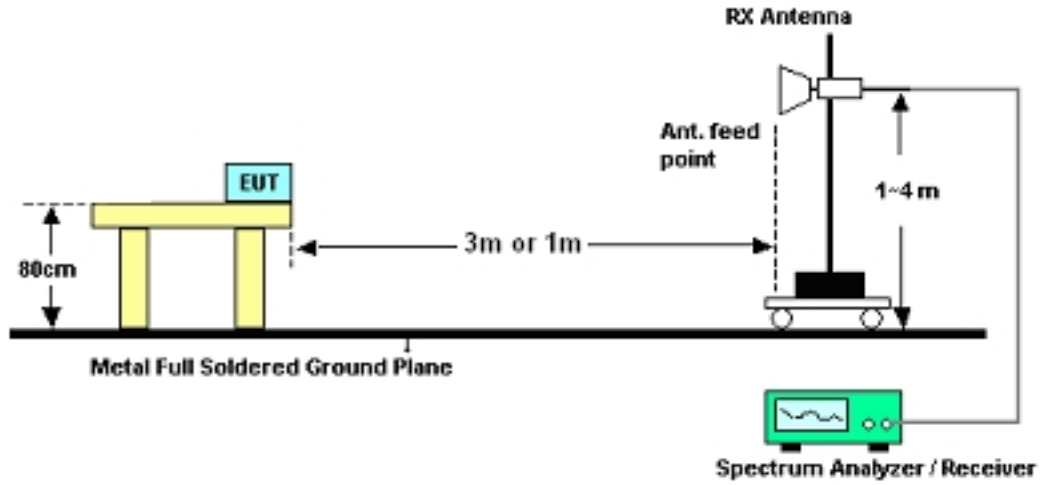
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.7.5 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.

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

Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Jack Li	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dB μ V/m)	Over Limit (dB)	Limit Line (dB μ V/m)	Read Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
75.59	22.46	-17.54	40	46.24	5.93	0.35	30.06	-	-	Peak
89.17	25.81	-17.69	43.5	46.8	8.61	0.39	29.99	-	-	Peak
213.33	21.12	-22.38	43.5	40.85	9.65	0.61	29.99	-	-	Peak
825.4	31.25	-14.75	46	39.43	20.18	1.26	29.62	100	183	Peak
943.74	29.69	-16.31	46	37.18	20.71	1.33	29.53	-	-	Peak
960.23	26.7	-27.3	54	34.11	20.79	1.34	29.54	-	-	Peak
2390	54.63	-19.37	74	52.35	32.86	3.47	34.05	100	92	Peak
2390	41.51	-12.49	54	39.23	32.86	3.47	34.05	100	92	Average
2412	104.84	-	-	102.51	32.89	3.52	34.08	100	83	Peak
2412	99.93	-	-	97.6	32.89	3.52	34.08	100	83	Average
2485.18	50.12	-23.88	74	47.63	33.01	3.68	34.2	100	105	Peak
2485.18	37.14	-16.86	54	34.65	33.01	3.68	34.2	100	105	Average



Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	41~42%
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
74.62	25.86	-14.14	40	49.78	5.8	0.34	30.06	100	105	Peak
88.2	23.5	-20	43.5	44.82	8.3	0.38	30	-	-	Peak
206.54	21.17	-22.33	43.5	41.27	9.3	0.6	30	-	-	Peak
837.04	29.65	-16.35	46	37.66	20.37	1.27	29.65	-	-	Peak
943.74	27.8	-18.2	46	35.29	20.71	1.33	29.53	-	-	Peak
960.23	27.37	-26.63	54	34.78	20.79	1.34	29.54	-	-	Peak
2390	51.15	-22.85	74	48.87	32.86	3.47	34.05	100	21	Peak
2390	39.09	-14.91	54	36.81	32.86	3.47	34.05	100	21	Average
2412	103.47	-	-	101.14	32.89	3.52	34.08	100	86	Peak
2412	98.55	-	-	96.22	32.89	3.52	34.08	100	86	Average
2494.49	49.87	-24.13	74	47.33	33.05	3.72	34.23	100	101	Peak
2494.49	37.2	-16.8	54	34.66	33.05	3.72	34.23	100	101	Average



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	41~42%
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
93.05	25.28	-18.22	43.5	45.35	9.51	0.4	29.98	-	-	Peak
201.69	24.04	-19.46	43.5	44.38	9.08	0.59	30.01	-	-	Peak
296.75	22.23	-23.77	46	38.5	12.96	0.72	29.95	-	-	Peak
825.4	23.59	-22.41	46	31.77	20.18	1.26	29.62	-	-	Peak
898.15	26.1	-19.9	46	33.83	20.45	1.3	29.48	-	-	Peak
941.8	28.21	-17.79	46	35.71	20.7	1.33	29.53	102	12	Peak
2348.76	50.27	-23.73	74	48.1	32.78	3.33	33.94	100	10	Peak
2348.76	37.49	-16.51	54	35.32	32.78	3.33	33.94	100	10	Average
2437	103.5	-	-	101.1	32.95	3.6	34.15	100	185	Peak
2437	99.12	-	-	96.72	32.95	3.6	34.15	100	185	Average
2485.75	49.98	-24.02	74	47.49	33.01	3.68	34.2	100	0	Peak
2485.75	37.18	-16.82	54	34.69	33.01	3.68	34.2	100	0	Average



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	41~42%
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
75.59	26.61	-13.39	40	50.39	5.93	0.35	30.06	142	201	Peak
93.05	22.92	-20.58	43.5	42.99	9.51	0.4	29.98	-	-	Peak
212.36	19.53	-23.97	43.5	39.31	9.6	0.61	29.99	-	-	Peak
628.49	21.98	-24.02	46	31.76	18.78	1.08	29.64	-	-	Peak
943.74	29.95	-16.05	46	37.44	20.71	1.33	29.53	-	-	Peak
960.23	27.99	-26.01	54	35.4	20.79	1.34	29.54	-	-	Peak
2381.63	50.25	-23.75	74	48.01	32.83	3.42	34.01	100	23	Peak
2381.63	37.05	-16.95	54	34.81	32.83	3.42	34.01	100	23	Average
2437	102.26	-	-	99.86	32.95	3.6	34.15	100	186	Peak
2437	97.26	-	-	94.86	32.95	3.6	34.15	100	186	Average
2484.99	50.57	-23.43	74	48.08	33.01	3.68	34.2	100	52	Peak
2484.99	37.34	-16.66	54	34.85	33.01	3.68	34.2	100	52	Average



Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	41~42%
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
75.59	21.68	-18.32	40	45.46	5.93	0.35	30.06	-	-	Peak
93.05	25.29	-18.21	43.5	45.36	9.51	0.4	29.98	-	-	Peak
202.66	23.64	-19.86	43.5	43.94	9.12	0.59	30.01	-	-	Peak
296.75	21.4	-24.6	46	37.67	12.96	0.72	29.95	-	-	Peak
941.8	28.46	-17.54	46	35.96	20.7	1.33	29.53	100	32	Peak
960.23	26.76	-27.24	54	34.17	20.79	1.34	29.54	-	-	Peak
2370.04	50.6	-23.4	74	48.36	32.83	3.42	34.01	100	0	Peak
2370.04	36.85	-17.15	54	34.61	32.83	3.42	34.01	100	0	Average
2462	103.82	-	-	101.37	32.98	3.64	34.17	100	192	Peak
2462	98.76	-	-	96.31	32.98	3.64	34.17	100	192	Average
2488.22	58.34	-15.66	74	55.8	33.05	3.72	34.23	100	21	Peak
2488.22	49.46	-4.54	54	46.92	33.05	3.72	34.23	100	21	Average



Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	41~42%
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
75.59	26.69	-13.31	40	50.47	5.93	0.35	30.06	100	18	Peak
92.08	22.81	-20.69	43.5	43.05	9.35	0.39	29.98	-	-	Peak
212.36	20.58	-22.92	43.5	40.36	9.6	0.61	29.99	-	-	Peak
825.4	25.03	-20.97	46	33.21	20.18	1.26	29.62	-	-	Peak
943.74	27.43	-18.57	46	34.92	20.71	1.33	29.53	-	-	Peak
960.23	27.41	-26.59	54	34.82	20.79	1.34	29.54	-	-	Peak
2388.28	49.97	-24.03	74	47.69	32.86	3.47	34.05	100	0	Peak
2388.28	36.93	-17.07	54	34.65	32.86	3.47	34.05	100	0	Average
2462	102.56	-	-	100.11	32.98	3.64	34.17	100	179	Peak
2462	97.17	-	-	94.72	32.98	3.64	34.17	100	179	Average
2487.84	54.97	-19.03	74	52.43	33.05	3.72	34.23	100	96	Peak
2487.84	47.75	-6.25	54	45.21	33.05	3.72	34.23	100	96	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	41~42%
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
93.05	24.97	-18.53	43.5	45.04	9.51	0.4	29.98	-	-	Peak
202.66	23.46	-20.04	43.5	43.76	9.12	0.59	30.01	-	-	Peak
293.84	21.92	-24.08	46	38.23	12.92	0.72	29.95	-	-	Peak
824.43	29.01	-16.99	46	37.21	20.16	1.26	29.62	100	56	Peak
946.65	27.12	-18.88	46	34.61	20.72	1.33	29.54	-	-	Peak
960.23	26.08	-27.92	54	33.49	20.79	1.34	29.54	-	-	Peak
2390	50.59	-23.41	74	48.31	32.86	3.47	34.05	100	91	Peak
2390	38.09	-15.91	54	35.81	32.86	3.47	34.05	100	91	Average
2412	94.91	-	-	92.58	32.89	3.52	34.08	100	186	Peak
2412	82.95	-	-	80.62	32.89	3.52	34.08	100	186	Average
2496.58	50.96	-23.04	74	48.42	33.05	3.72	34.23	100	161	Peak
2496.58	37.3	-16.7	54	34.76	33.05	3.72	34.23	100	161	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	41~42%
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
75.59	26.53	-13.47	40	50.31	5.93	0.35	30.06	100	61	Peak
92.08	23.15	-20.35	43.5	43.39	9.35	0.39	29.98	-	-	Peak
600.36	22.86	-23.14	46	32.81	18.6	1.07	29.62	-	-	Peak
824.43	30.54	-15.46	46	38.74	20.16	1.26	29.62	-	-	Peak
943.74	26.83	-19.17	46	34.32	20.71	1.33	29.53	-	-	Peak
960.23	28.67	-25.33	54	36.08	20.79	1.34	29.54	-	-	Peak
2390	52.32	-21.68	74	50.04	32.86	3.47	34.05	100	106	Peak
2390	38.73	-15.27	54	36.45	32.86	3.47	34.05	200	106	Average
2412	101.66	-	-	99.33	32.89	3.52	34.08	200	190	Peak
2412	89.93	-	-	87.6	32.89	3.52	34.08	200	190	Average
2486.51	50.57	-23.43	74	48.08	33.01	3.68	34.2	200	31	Peak
2486.51	36.67	-17.33	54	34.18	33.01	3.68	34.2	200	31	Average



Test Mode :	Mode 5	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	41~42%
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
93.05	25.48	-18.02	43.5	45.55	9.51	0.4	29.98	-	-	Peak
201.69	24.17	-19.33	43.5	44.51	9.08	0.59	30.01	-	-	Peak
546.04	22.97	-23.03	46	33.22	18.43	1	29.68	-	-	Peak
837.04	27.54	-18.46	46	35.55	20.37	1.27	29.65	-	-	Peak
939.86	28.23	-17.77	46	35.74	20.69	1.33	29.53	120	13	Peak
960.23	27.89	-26.11	54	35.3	20.79	1.34	29.54	-	-	Peak
2348.19	50.52	-23.48	74	48.35	32.78	3.33	33.94	100	15	Peak
2348.19	36.68	-17.32	54	34.51	32.78	3.33	33.94	100	15	Average
2437	94.12	-	-	91.72	32.95	3.6	34.15	100	183	Peak
2437	81.31	-	-	78.91	32.95	3.6	34.15	100	183	Average
2491.64	50.05	-23.95	74	47.51	33.05	3.72	34.23	100	165	Peak
2491.64	37.17	-16.83	54	34.63	33.05	3.72	34.23	100	165	Average



Test Mode :	Mode 5	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	41~42%
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
73.65	27.06	-12.94	40	51.1	5.68	0.34	30.06	100	23	Peak
91.11	22.68	-20.82	43.5	43.16	9.12	0.39	29.99	-	-	Peak
211.39	19.46	-24.04	43.5	39.31	9.54	0.6	29.99	-	-	Peak
772.05	28.78	-17.22	46	37.25	19.88	1.21	29.56	-	-	Peak
825.4	26.92	-19.08	46	35.1	20.18	1.26	29.62	-	-	Peak
943.74	27.08	-18.92	46	34.57	20.71	1.33	29.53	-	-	Peak
2354.46	50.6	-23.4	74	48.39	32.81	3.38	33.98	100	29	Peak
2354.46	36.87	-17.13	54	34.66	32.81	3.38	33.98	100	29	Average
2437	101.24	-	-	98.84	32.95	3.6	34.15	100	196	Peak
2437	88.76	-	-	86.36	32.95	3.6	34.15	100	196	Average
2499.43	49.9	-24.1	74	47.36	33.05	3.72	34.23	100	235	Peak
2499.43	37.67	-16.33	54	35.13	33.05	3.72	34.23	100	235	Average



Test Mode :	Mode 6	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	41~42%
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
90.14	24.23	-19.27	43.5	44.93	8.9	0.39	29.99	-	-	Peak
202.66	23.5	-20	43.5	43.8	9.12	0.59	30.01	-	-	Peak
291.9	20.96	-25.04	46	37.31	12.89	0.71	29.95	-	-	Peak
875.84	24.59	-21.41	46	32.38	20.48	1.29	29.56	-	-	Peak
941.8	27.74	-18.26	46	35.24	20.7	1.33	29.53	100	210	Peak
960.23	26.03	-27.97	54	33.44	20.79	1.34	29.54	-	-	Peak
2356.36	50.66	-23.34	74	48.45	32.81	3.38	33.98	100	102	Peak
2356.36	36.52	-17.48	54	34.31	32.81	3.38	33.98	100	102	Average
2462	93.66	-	-	91.21	32.98	3.64	34.17	100	199	Peak
2462	80.8	-	-	78.35	32.98	3.64	34.17	100	199	Average
2483.66	49.84	-24.16	74	47.35	33.01	3.68	34.2	100	176	Peak
2483.66	37.3	-16.7	54	34.81	33.01	3.68	34.2	100	176	Average



Test Mode :	Mode 6	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	41~42%
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
30	23.09	-16.91	40	34.91	18	0.26	30.08	-	-	Peak
73.65	26.53	-13.47	40	50.57	5.68	0.34	30.06	100	12	Peak
90.14	23.11	-20.39	43.5	43.81	8.9	0.39	29.99	-	-	Peak
837.04	26.21	-19.79	46	34.22	20.37	1.27	29.65	-	-	Peak
941.8	29.22	-16.78	46	36.72	20.7	1.33	29.53	-	-	Peak
960.23	25.81	-28.19	54	33.22	20.79	1.34	29.54	-	-	Peak
2328.62	50.57	-23.43	74	48.44	32.76	3.27	33.9	100	29	Peak
2328.62	37.5	-16.5	54	35.37	32.76	3.27	33.9	100	29	Average
2462	100.94	-	-	98.49	32.98	3.64	34.17	100	193	Peak
2462	88.14	-	-	85.69	32.98	3.64	34.17	100	193	Average
2483.5	51.08	-22.92	74	48.59	33.01	3.68	34.2	100	305	Peak
2483.5	39.1	-14.9	54	36.61	33.01	3.68	34.2	100	305	Average



Test Mode :	Mode 7	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	41~42%
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
93.05	24.7	-18.8	43.5	44.77	9.51	0.4	29.98	-	-	Peak
202.66	23.33	-20.17	43.5	43.63	9.12	0.59	30.01	-	-	Peak
297.72	21.64	-24.36	46	37.9	12.97	0.72	29.95	-	-	Peak
837.04	28.97	-17.03	46	36.98	20.37	1.27	29.65	100	26	Peak
943.74	28.53	-17.47	46	36.02	20.71	1.33	29.53	-	-	Peak
960.23	27.09	-26.91	54	34.5	20.79	1.34	29.54	-	-	Peak
2389.42	61.04	-12.96	74	58.76	32.86	3.47	34.05	200	337	Peak
2389.42	46.94	-7.06	54	44.66	32.86	3.47	34.05	200	337	Average
2412	103.13	-	-	100.8	32.89	3.52	34.08	105	343	Peak
2412	89.32	-	-	86.99	32.89	3.52	34.08	105	343	Average
2499.62	50.78	-23.22	74	48.24	33.05	3.72	34.23	182	114	Peak
2499.62	38.03	-15.97	54	35.49	33.05	3.72	34.23	182	114	Average



Test Mode :	Mode 7	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	41~42%
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
30	22.84	-17.16	40	34.66	18	0.26	30.08	-	-	Peak
74.62	26.99	-13.01	40	50.91	5.8	0.34	30.06	100	151	Peak
92.08	22.56	-20.94	43.5	42.8	9.35	0.39	29.98	-	-	Peak
837.04	24.69	-21.31	46	32.7	20.37	1.27	29.65	-	-	Peak
943.74	29.02	-16.98	46	36.51	20.71	1.33	29.53	-	-	Peak
960.23	28.16	-25.84	54	35.57	20.79	1.34	29.54	-	-	Peak
2389.42	67.9	-6.1	74	65.62	32.86	3.47	34.05	100	355	Peak
2389.42	50.46	-3.54	54	48.18	32.86	3.47	34.05	100	355	Average
2412	106.4	-	-	104.07	32.89	3.52	34.08	101	353	Peak
2412	90.61	-	-	88.28	32.89	3.52	34.08	101	353	Average
2499.62	50.27	-23.73	74	47.73	33.05	3.72	34.23	120	0	Peak
2499.62	37.15	-16.85	54	34.61	33.05	3.72	34.23	120	0	Average



Test Mode :	Mode 8	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	41~42%
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
92.08	23.94	-19.56	43.5	44.18	9.35	0.39	29.98	-	-	Peak
201.69	23.05	-20.45	43.5	43.39	9.08	0.59	30.01	-	-	Peak
288.02	21.03	-24.97	46	37.45	12.82	0.71	29.95	-	-	Peak
837.04	25.62	-20.38	46	33.63	20.37	1.27	29.65	-	-	Peak
943.74	27.5	-18.5	46	34.99	20.71	1.33	29.53	100	128	Peak
960.23	28.12	-25.88	54	35.53	20.79	1.34	29.54	-	-	Peak
2311.71	50.07	-23.93	74	47.98	32.73	3.22	33.86	172	304	Peak
2311.71	37.57	-16.43	54	35.48	32.73	3.22	33.86	172	304	Average
2437	98.8	-	-	96.4	32.95	3.6	34.15	200	23	Peak
2437	83.87	-	-	81.47	32.95	3.6	34.15	200	23	Average
2489.17	50.21	-23.79	74	47.67	33.05	3.72	34.23	142	208	Peak
2489.17	37.4	-16.6	54	34.86	33.05	3.72	34.23	142	208	Average



Test Mode :	Mode 8	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	41~42%
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
30	23.7	-16.3	40	35.52	18	0.26	30.08	-	-	Peak
74.62	26.85	-13.15	40	50.77	5.8	0.34	30.06	100	219	Peak
88.2	23.17	-20.33	43.5	44.49	8.3	0.38	30	-	-	Peak
876.81	25.13	-20.87	46	32.92	20.48	1.29	29.56	-	-	Peak
943.74	29.54	-16.46	46	37.03	20.71	1.33	29.53	-	-	Peak
960.23	27.57	-26.43	54	34.98	20.79	1.34	29.54	-	-	Peak
2374.79	50.62	-23.38	74	48.38	32.83	3.42	34.01	127	315	Peak
2374.79	36.91	-17.09	54	34.67	32.83	3.42	34.01	127	315	Average
2437	103.37	-	-	100.97	32.95	3.6	34.15	102	351	Peak
2437	88.06	-	-	85.66	32.95	3.6	34.15	102	351	Average
2493.35	50.31	-23.69	74	47.77	33.05	3.72	34.23	200	13	Peak
2493.35	37.62	-16.38	54	35.08	33.05	3.72	34.23	200	13	Average



Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	41~42%
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
92.08	25.8	-17.7	43.5	46.04	9.35	0.39	29.98	-	-	Peak
201.69	23.26	-20.24	43.5	43.6	9.08	0.59	30.01	-	-	Peak
289.96	21.86	-24.14	46	38.25	12.85	0.71	29.95	-	-	Peak
837.04	27.44	-18.56	46	35.45	20.37	1.27	29.65	-	-	Peak
943.74	29.95	-16.05	46	37.44	20.71	1.33	29.53	100	187	Peak
960.23	26.35	-27.65	54	33.76	20.79	1.34	29.54	-	-	Peak
2354.27	50.17	-23.83	74	47.96	32.81	3.38	33.98	112	146	Peak
2354.27	36.72	-17.28	54	34.51	32.81	3.38	33.98	112	146	Average
2462	98.69	-	-	96.24	32.98	3.64	34.17	101	343	Peak
2462	83.21	-	-	80.76	32.98	3.64	34.17	101	343	Average
2483.5	61.49	-12.51	74	59	33.01	3.68	34.2	200	345	Peak
2483.5	47.21	-6.79	54	44.72	33.01	3.68	34.2	200	345	Average



Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	41~42%
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
30	23.8	-16.2	40	35.62	18	0.26	30.08	-	-	Peak
74.62	26.59	-13.41	40	50.51	5.8	0.34	30.06	100	322	Peak
89.17	23.17	-20.33	43.5	44.16	8.61	0.39	29.99	-	-	Peak
837.04	23.37	-22.63	46	31.38	20.37	1.27	29.65	-	-	Peak
943.74	27.5	-18.5	46	34.99	20.71	1.33	29.53	-	-	Peak
960.23	26.88	-27.12	54	34.29	20.79	1.34	29.54	-	-	Peak
2321.4	50.26	-23.74	74	48.13	32.76	3.27	33.9	200	340	Peak
2321.4	37.71	-16.29	54	35.58	32.76	3.27	33.9	200	340	Average
2462	102.87	-	-	100.42	32.98	3.64	34.17	102	43	Peak
2462	86.86	-	-	84.41	32.98	3.64	34.17	102	43	Average
2484.61	62.79	-11.21	74	60.3	33.01	3.68	34.2	200	49	Peak
2484.61	47.46	-6.54	54	44.97	33.01	3.68	34.2	200	49	Average



3.8 Antenna Requirements

3.8.1 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.

3.8.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

3.8.3 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	May 11, 2012~ Jun. 14, 2012	Dec. 29, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY451015 55	N/A	Aug. 23, 2011	May 11, 2012~ Jun. 14, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY444211 98	N/A	Aug. 23, 2011	May 11, 2012~ Jun. 14, 2012	Aug. 22, 2012	Conducted (TH01-KS)
DC Power Supply	GWINSTEK	GPS-3030D	E1884515	N/A	Aug. 23, 2011	May 11, 2012~ Jun. 14, 2012	Aug. 22, 2012	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-9605 02	N/A	Dec. 30, 2011	May 11, 2012~ Jun. 14, 2012	Dec. 29, 2012	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	May 09, 2012	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Dec. 30, 2011	May 09, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Dec. 30, 2011	May 09, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	N/A	Nov. 16, 2011	May 09, 2012	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/06 6	2G Full-Band	Dec. 30, 2011	May 09, 2012	Dec. 29, 2012	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	May 16, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	May 16, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	May 16, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/00	9 kHz~30 MHz	Jul. 28, 2011	May 16, 2012	Jul. 27, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	May 16, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	May 16, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A023 70	1GHz~26.5GHz	Dec. 30, 2011	May 16, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2011	May 16, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA1702 49	15GHz~40GHz	Oct. 11, 2011	May 16, 2012	Oct. 10, 2012	Radiation (03CH01-KS)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				