

FCC RF Test Report

APPLICANT : Motorola Mobility Inc.
EQUIPMENT : CDMA 1X-EVDO Digital Mobile Phone with BT/WIFI
BRAND NAME : Motorola
MODEL NAME : XT681
GPPD NUMBER : 3203
FCC ID : IHDP56MM7
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Nov. 05, 2011 and completely tested on Nov. 24, 2011. We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1N0501B	Rev. 01	Initial issue of report	Nov. 28, 2011

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 11.48 dB at 2.030 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.29 dB at 4924.000 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, 100102 Beijing, P. R. China

1.2 Manufacturer

BYD

Floor 7, Building 5, No. 3000 Long Dong Avenue, Pudong District, Shanghai, 201203, P. R. China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	CDMA 1X-EVDO Digital Mobile Phone with BT/WIFI
Brand Name	Motorola
Model Name	XT681
FCC ID	IHDP56MM7
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 : 20.12 dBm (0.1028 W) 802.11g : 22.37 dBm (0.1726 W) 802.11n (BW 20MHz) : 21.79 dBm (0.1510 W)
Antenna Type	Monopole Antenna with gain -2.05 dBi
HW Version	B1
SW Version	IRMXCT_9_02.01.00IDS
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

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. : 03CH01-KS; CO01-KS

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 (Measurement Guidelines of DTS)
- ♦ ANSI C63.4-2003
- ♦ IC RSS-210 Issue 8

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.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
3.	Notebook	Acer	Trave Imate 2413Lci	QDS-BRCM1016	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	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	19.86	19.76	19.83	19.81
CH 06	2437 MHz	20.09	20.06	19.98	20.01
CH 11	2462 MHz	20.12	20.08	20.06	20.09

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	21.89	21.84	21.79	21.76	21.72	21.68	21.64	21.69
CH 06	2437 MHz	22.32	22.31	22.24	22.17	21.85	21.95	21.89	21.94
CH 11	2462 MHz	22.37	22.34	21.78	21.66	21.77	21.53	21.67	21.76

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	21.59	21.37	21.24	21.27	21.24	21.28	21.31	21.35
CH 06	2437 MHz	21.73	21.59	21.34	21.36	21.31	21.36	21.43	21.47
CH 11	2462 MHz	21.79	21.63	21.42	21.47	21.48	21.49	21.68	21.61

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

2.2 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).

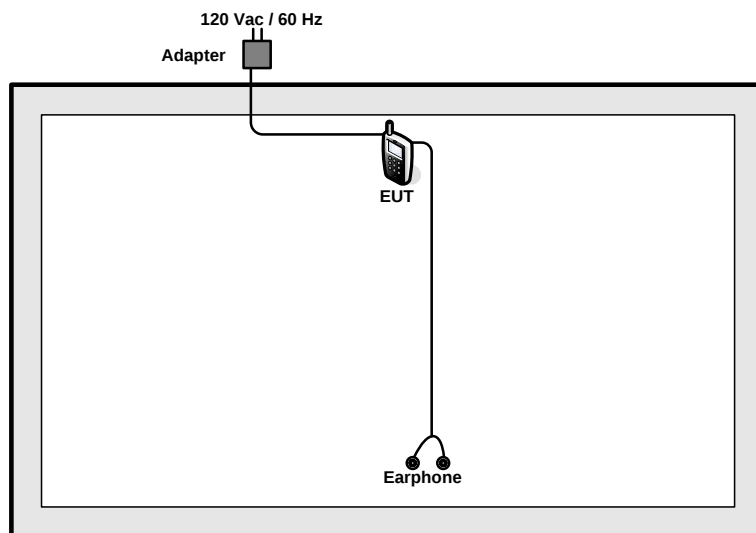
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

The following tables are showing the test modes as the worst cases (H plane) and recorded in this report.

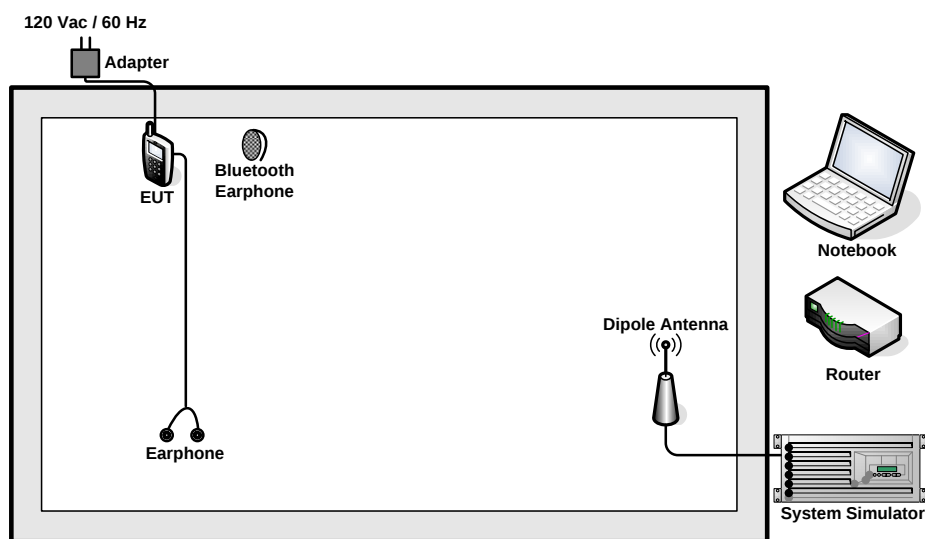
Test Cases	
Test Item	802.11b (Modulation : DSSS) / 802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 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 + USB Cable (Charging from Adapter) + Earphone + Camera
Remark: For radiated TCs, the test was performance with USB cable, adapter, battery, and earphone.	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

For WLAN function, programmed RF utility, "ABD" installed in the EUT provides 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.

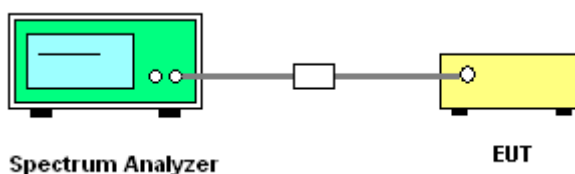
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 KHz.
In order to make an accurate measurement, set the span greater than RBW. 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

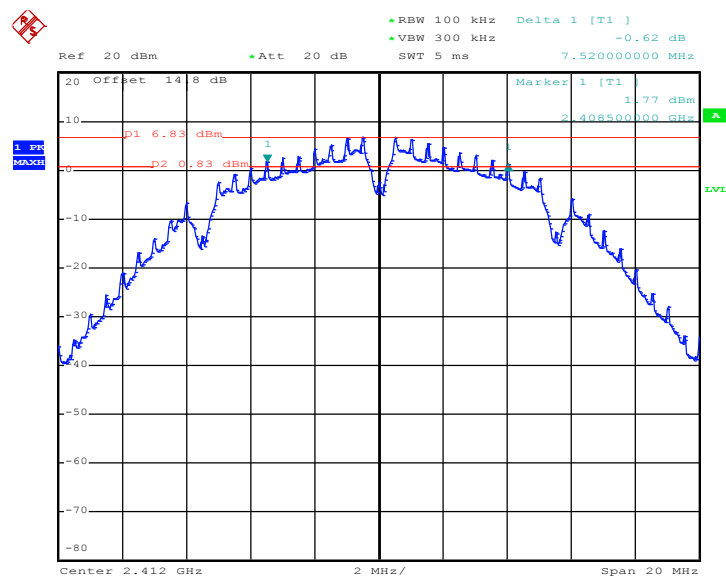


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	23~24℃
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	7.52	0.5	Pass
06	2437	7.04	0.5	Pass
11	2462	7.08	0.5	Pass

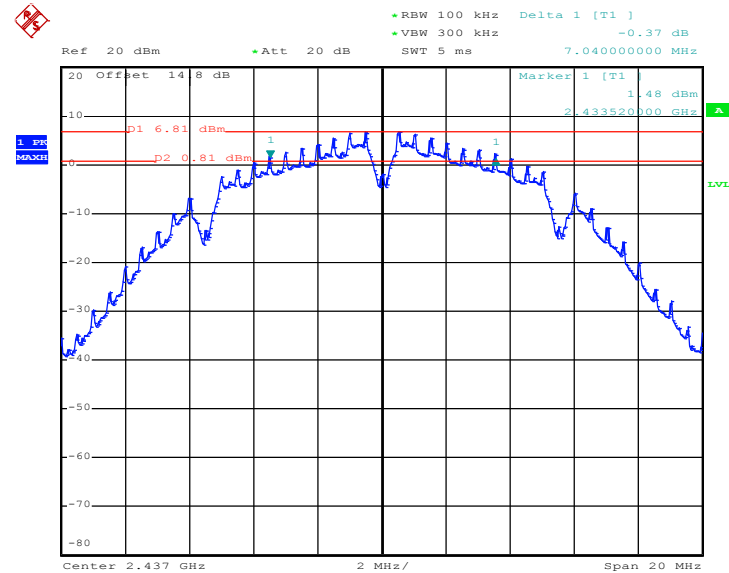
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 24.NOV.2011 19:22:26

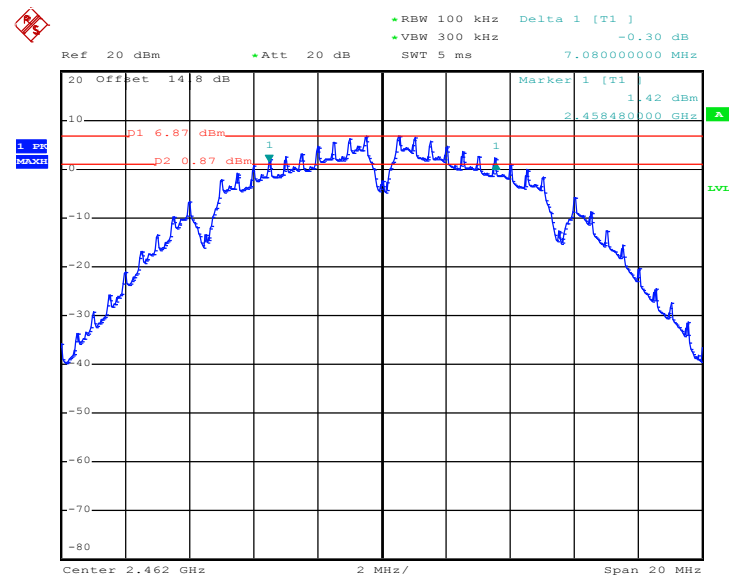


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 24.NOV.2011 19:26:07

Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



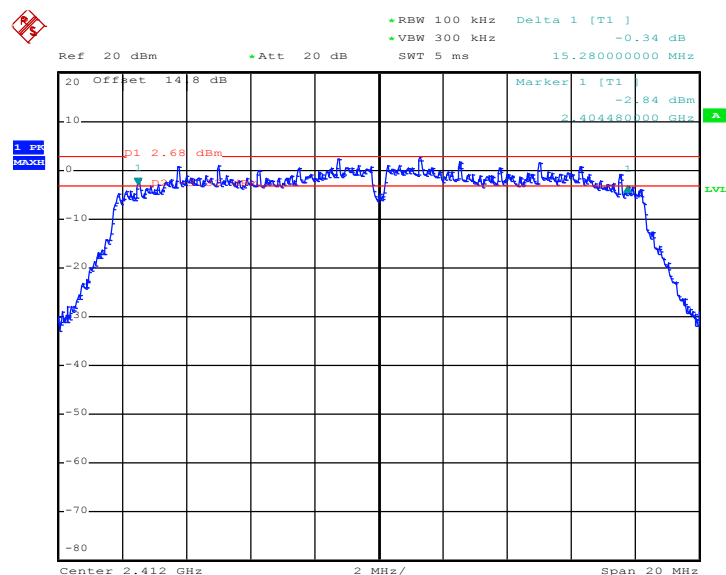
Date: 24.NOV.2011 19:28:32



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	15.28	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	15.08	0.5	Pass

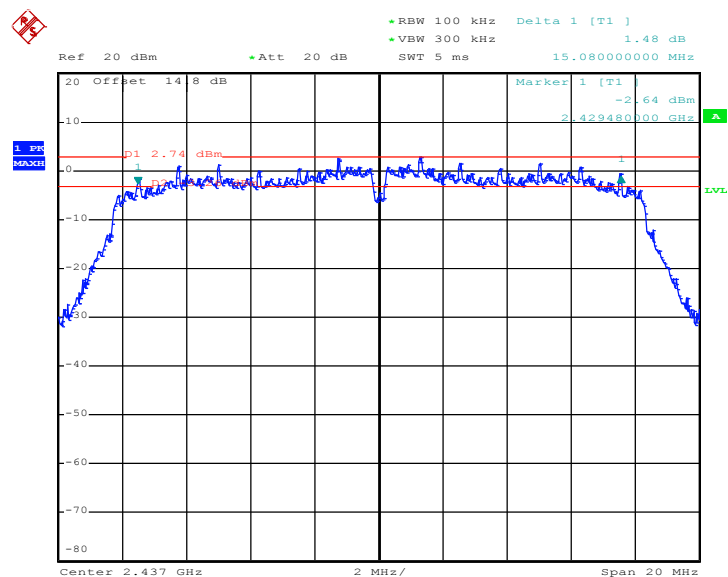
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 14.NOV.2011 23:55:33

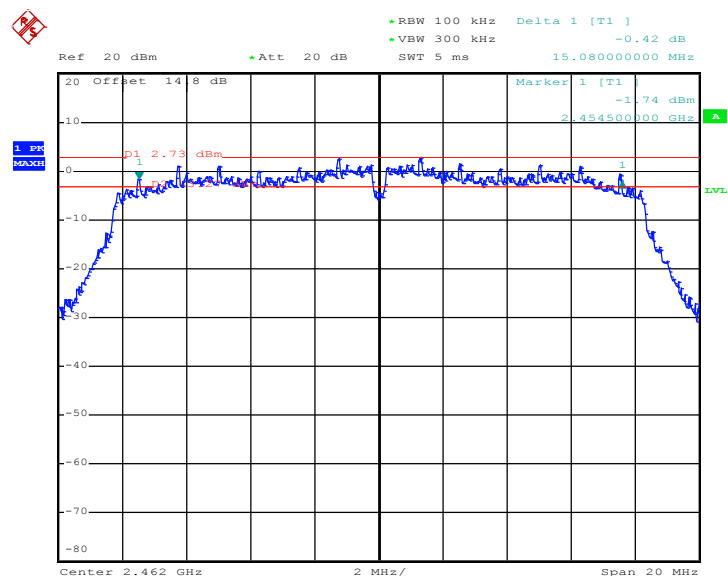


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 15.NOV.2011 00:11:28

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



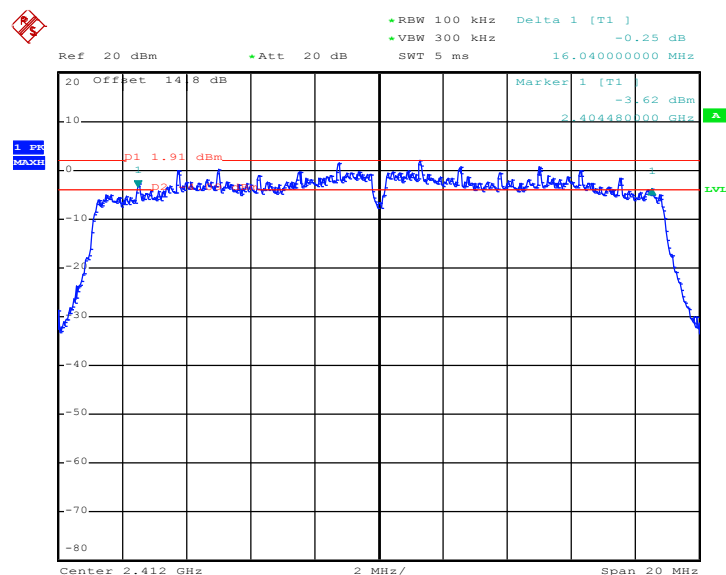
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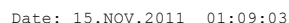
Test Mode :	Mode 7, 8, 9	Temperature :	23~24°C
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.04	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	15.08	0.5	Pass

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



Date: 15.NOV.2011 00:48:50



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



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.

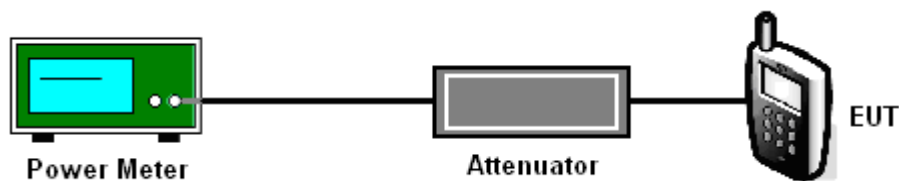
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
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℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.86	30	Pass
06	2437	20.09	30	Pass
11	2462	20.12	30	Pass

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

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.89	30	Pass
06	2437	22.32	30	Pass
11	2462	22.37	30	Pass

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

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.59	30	Pass
06	2437	21.73	30	Pass
11	2462	21.79	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

In any 100 KHz bandwidth outside the intentional 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

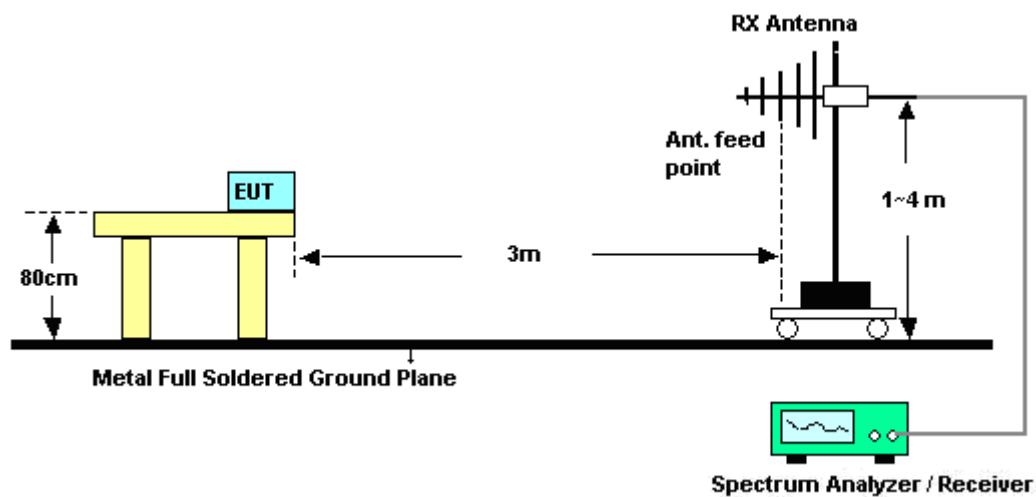
See list of measuring instruments of this test report.

3.3.3 Test Procedures

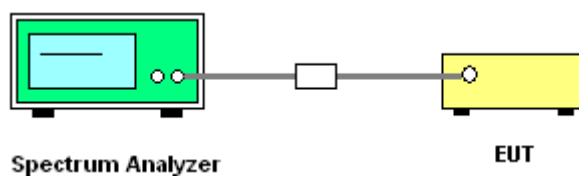
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 KHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 KHz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Apply to band edge emissions that fall in 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 measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation as in FCC Section 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 :	21~22℃
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	52.43	-21.57	74	50.15	32.86	3.47	0	100	216	Peak
2390	38.96	-15.04	54	36.68	32.86	3.47	0	100	216	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.42	50.79	-23.21	74	48.51	32.86	3.47	0	100	226	Peak
2389.42	37.51	-16.49	54	35.23	32.86	3.47	0	100	226	Average

Test Mode :	Mode 3	Temperature :	21~22℃
Test Band :	802.11b	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	53.39	-20.61	74	50.9	33.01	3.68	0	200	112	Peak
2483.5	41.18	-12.82	54	38.69	33.01	3.68	0	200	112	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.03	56.38	-17.62	74	53.84	33.05	3.72	0	100	226	Peak
2488.03	42.7	-11.3	54	40.16	33.05	3.72	0	100	226	Average



Test Mode :	Mode 4	Temperature :	21~22℃
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	57.96	-16.04	74	55.68	32.86	3.47	0	110	0	Peak
2389.61	44.85	-9.15	54	42.57	32.86	3.47	0	110	0	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.23	67.17	-6.83	74	64.89	32.86	3.47	0	102	360	Peak
2389.23	49.02	-4.98	54	46.74	32.86	3.47	0	102	360	Average

Test Mode :	Mode 6	Temperature :	21~22℃
Test Band :	802.11g	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.42	60.02	-13.98	74	57.53	33.01	3.68	0	103	346	Peak
2484.42	43.43	-10.57	54	40.94	33.01	3.68	0	103	346	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.61	62.46	-11.54	74	59.97	33.01	3.68	0	100	63	Peak
2484.61	43.91	-10.09	54	41.42	33.01	3.68	0	100	63	Average



Test Mode :	Mode 7	Temperature :	21~22℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Jack Li

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2387.52	62.34	-11.66	74	60.06	32.86	3.47	0	100	39	Peak
2387.52	45.15	-8.85	54	42.87	32.86	3.47	0	100	39	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.28	53.71	-20.29	74	51.43	32.86	3.47	0	100	58	Peak
2388.28	43.7	-10.3	54	41.42	32.86	3.47	0	100	58	Average

Test Mode :	Mode 9	Temperature :	21~22℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Jack Li

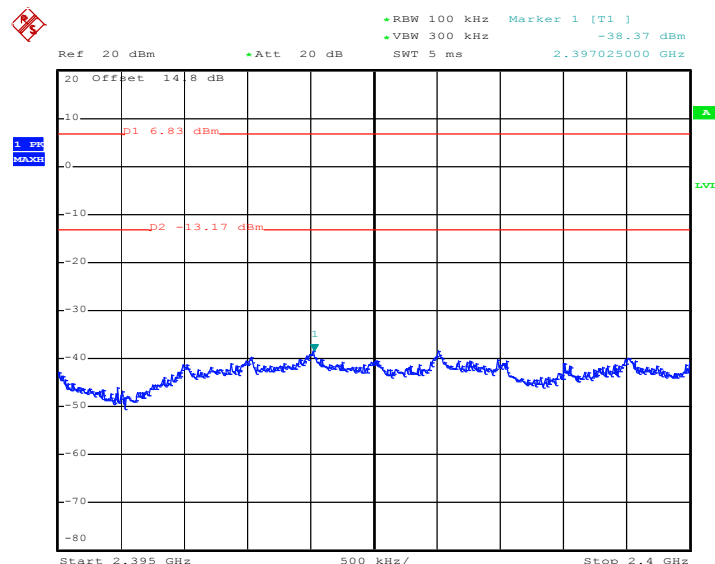
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.61	64.74	-9.26	74	62.25	33.01	3.68	0	131	32	Peak
2484.61	46.39	-7.61	54	43.9	33.01	3.68	0	131	32	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	57.68	-16.32	74	55.19	33.01	3.68	0	130	64	Peak
2483.5	43.15	-10.85	54	40.66	33.01	3.68	0	130	64	Average

3.3.6 Test Plots of Conducted Band Edges

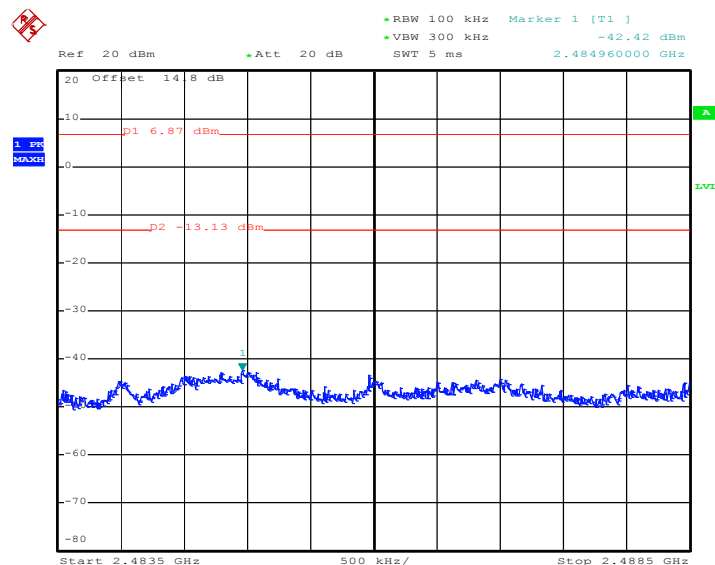
Test Mode :	Mode 1 and 3	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11b Channel 01



Date: 24.NOV.2011 19:23:33

High Band Edge Plot on 802.11b Channel 11

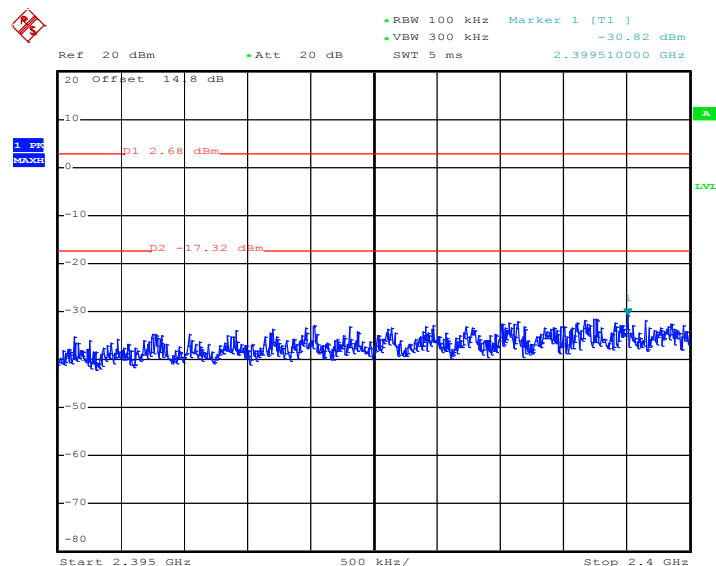


Date: 24.NOV.2011 19:29:20



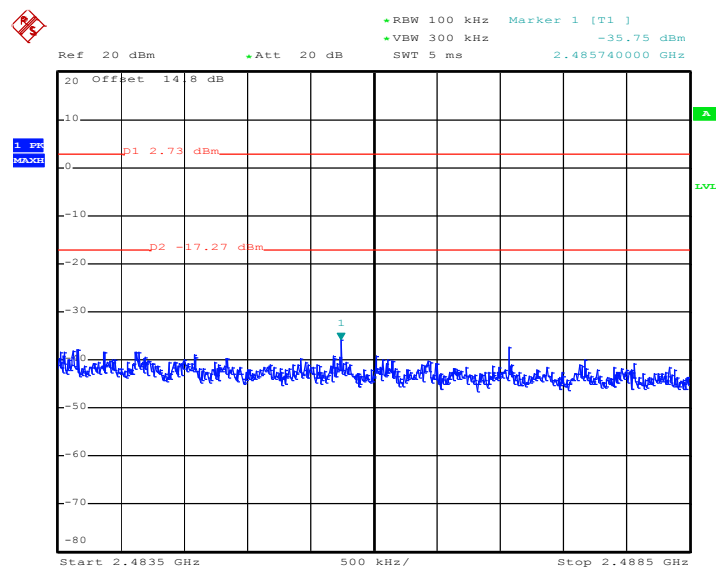
Test Mode :	Mode 4 and 6	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	01 and 11	Test Engineer :	Zhi Lu

Low Band Edge Plot on 802.11g Channel 01



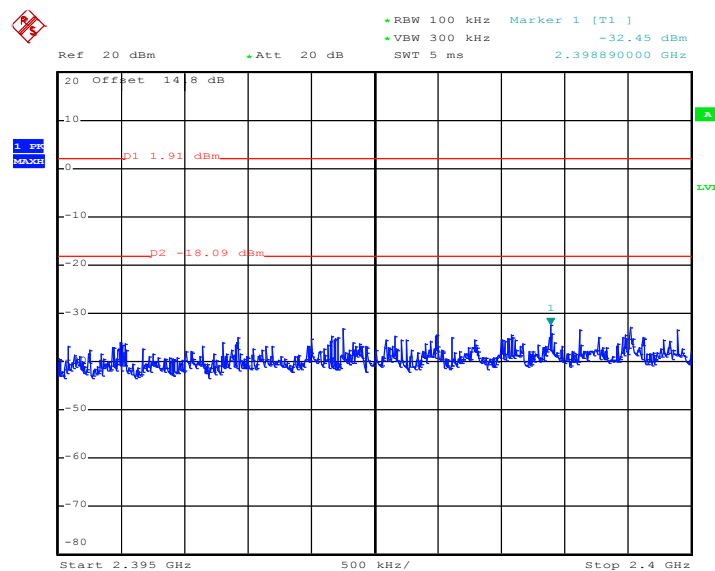
Date: 14.NOV.2011 23:56:56

High Band Edge Plot on 802.11g Channel 11

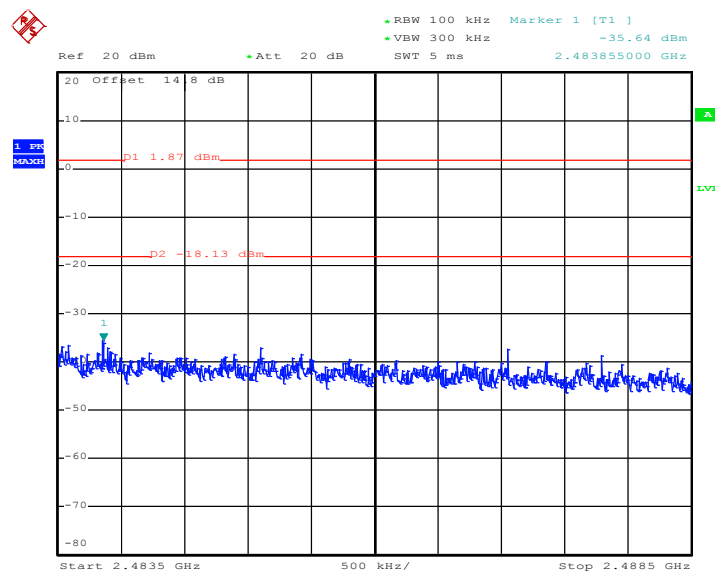


Date: 15.NOV.2011 00:32:37

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

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


Date: 15.NOV.2011 00:50:08

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


Date: 15.NOV.2011 01:23:49

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.

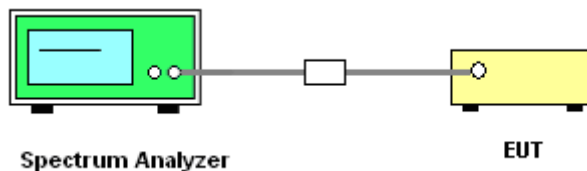
3.4.2 Measuring Instruments

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.
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.

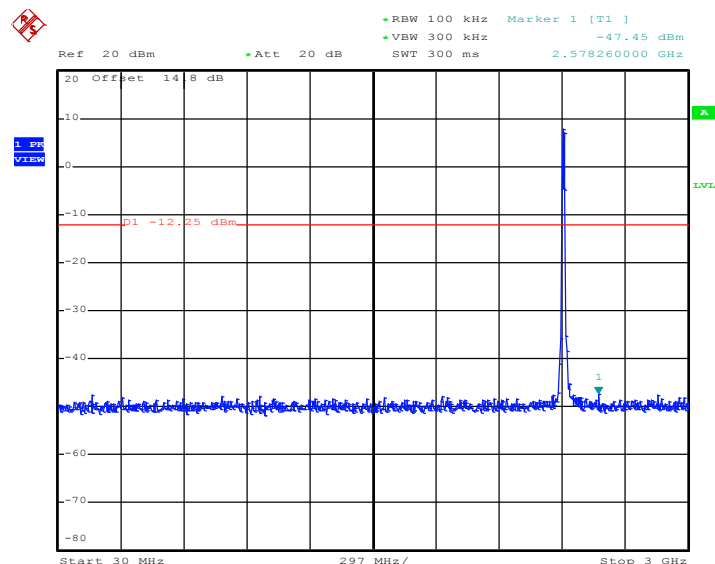
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

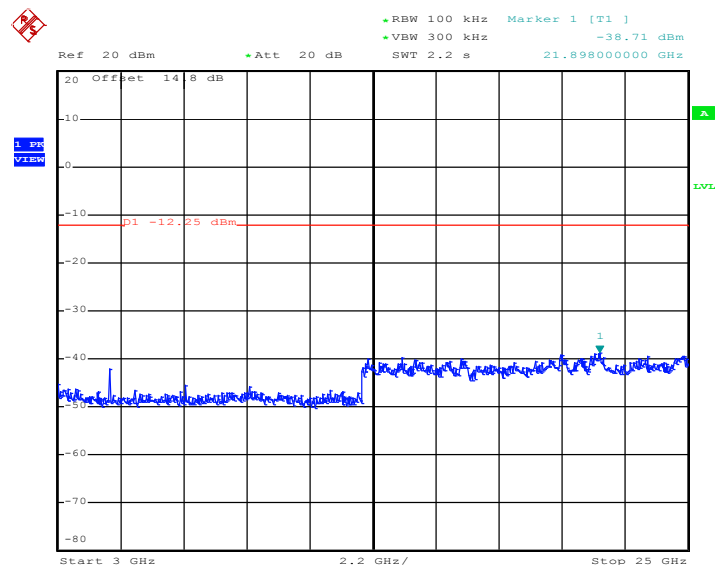
Test Mode :	Mode 1	Temperature :	23~24°C
Test Band :	802.11b	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 14.NOV.2011 22:50:52

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 14.NOV.2011 22:51:09



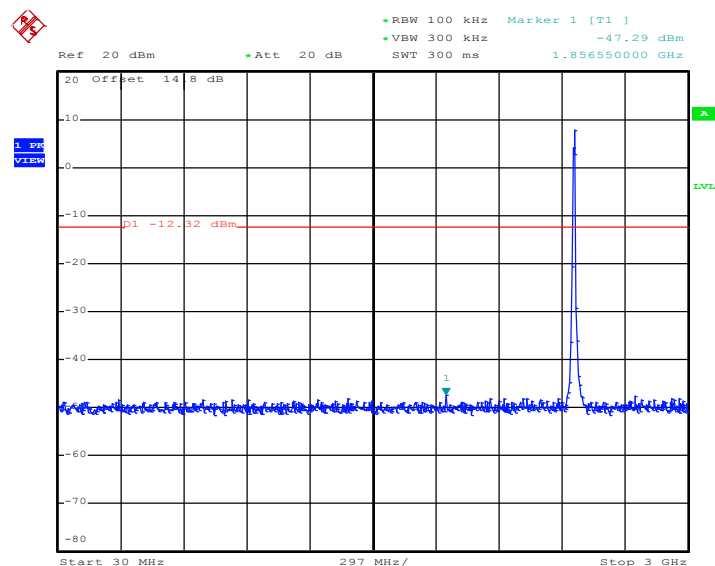
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



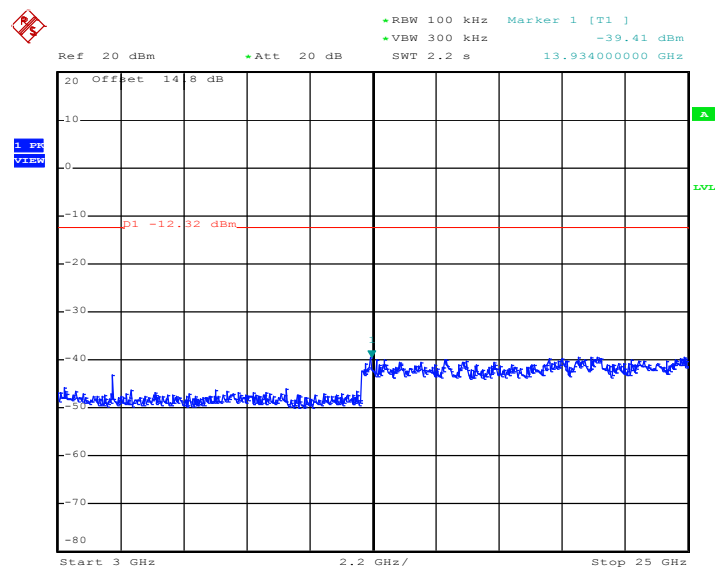
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



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

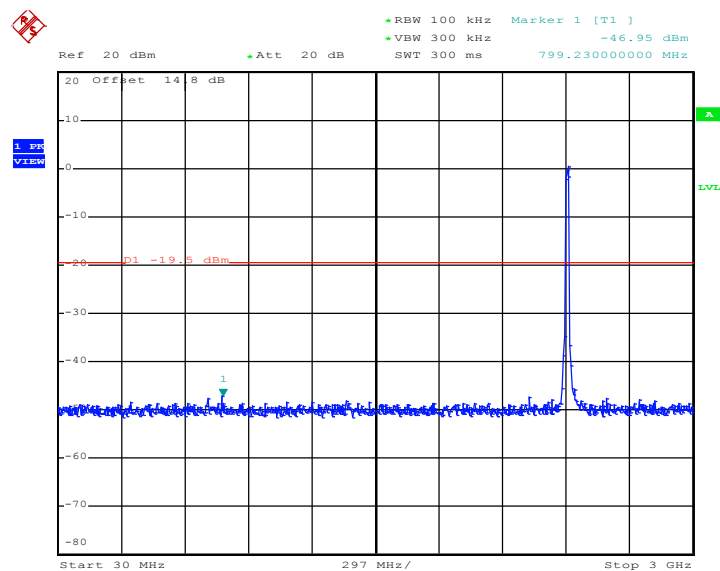
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 14.NOV.2011 23:26:53

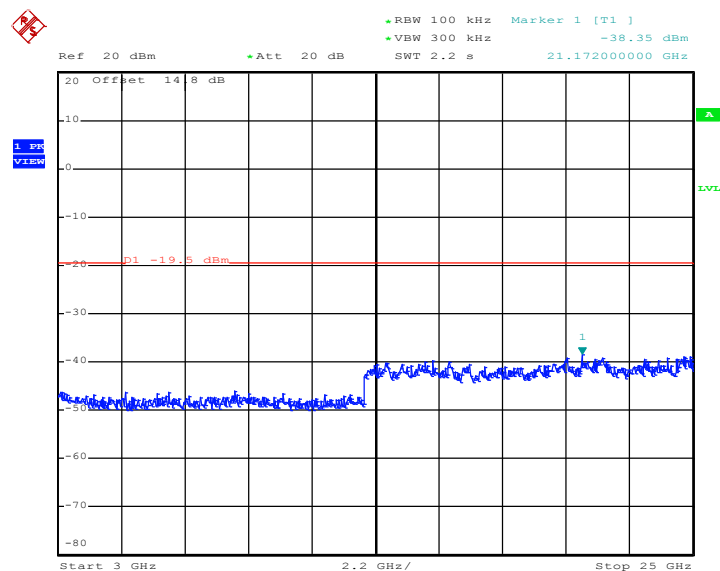
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 14.NOV.2011 23:27:10

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

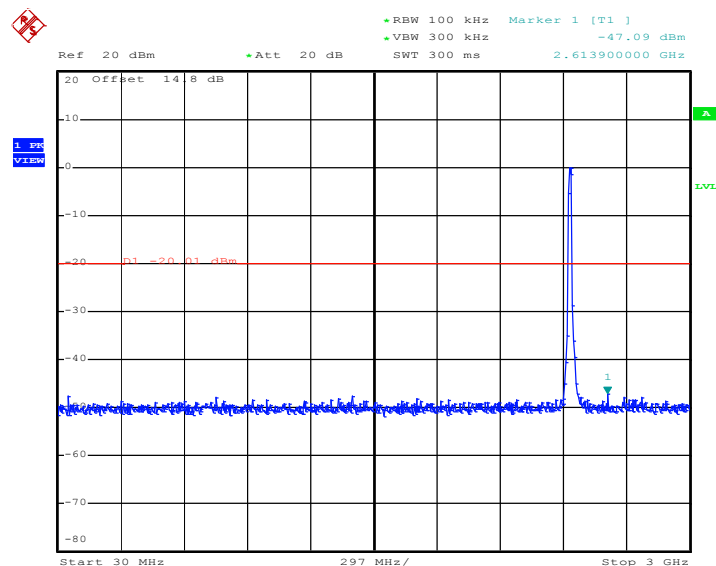
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 14.NOV.2011 23:58:38

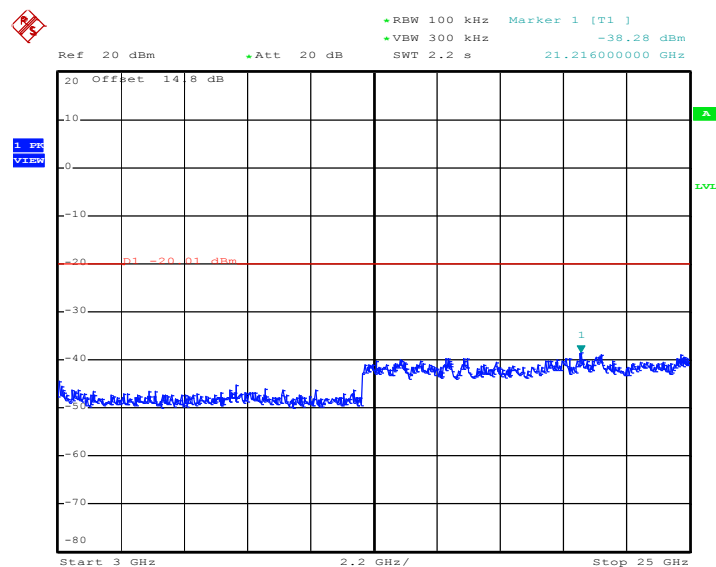
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 14.NOV.2011 23:58:55

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

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 15.NOV.2011 00:13:10

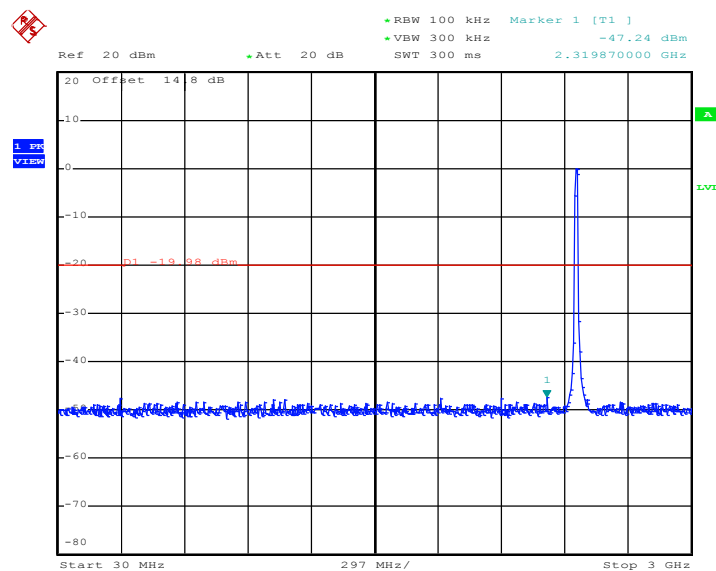
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 15.NOV.2011 00:13:27



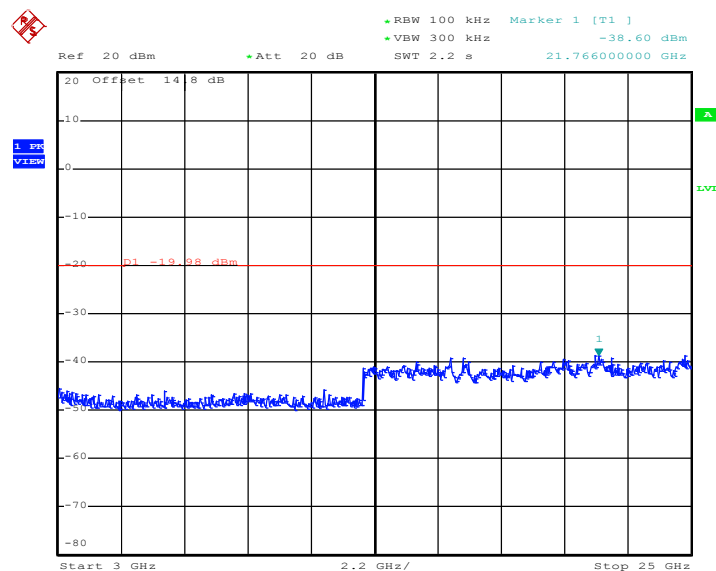
Test Mode :	Mode 6	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.NOV.2011 00:33:44

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

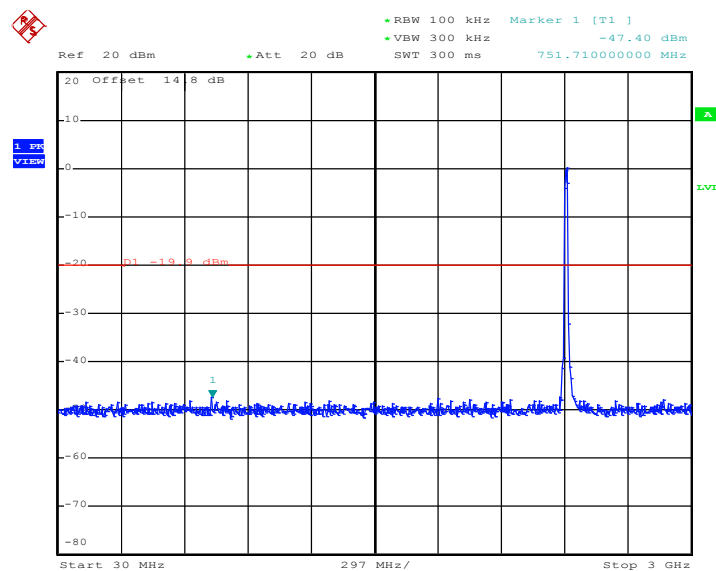


Date: 15.NOV.2011 00:34:01



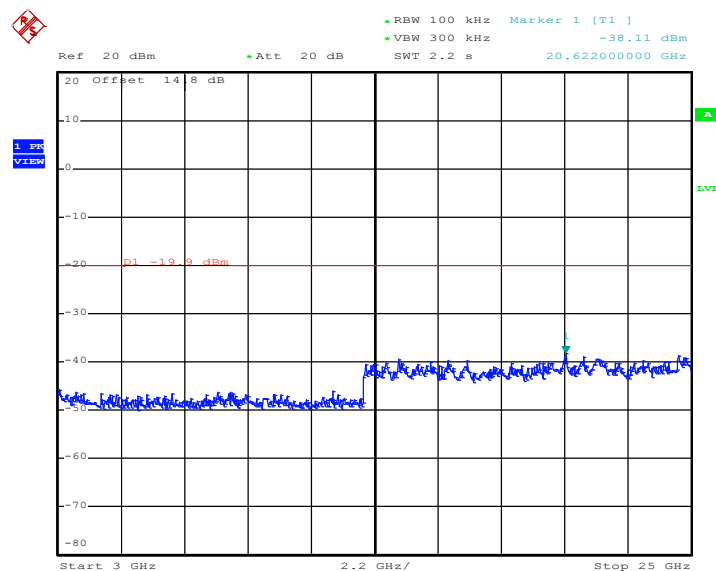
Test Mode :	Mode 7	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	01	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.NOV.2011 00:52:54

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

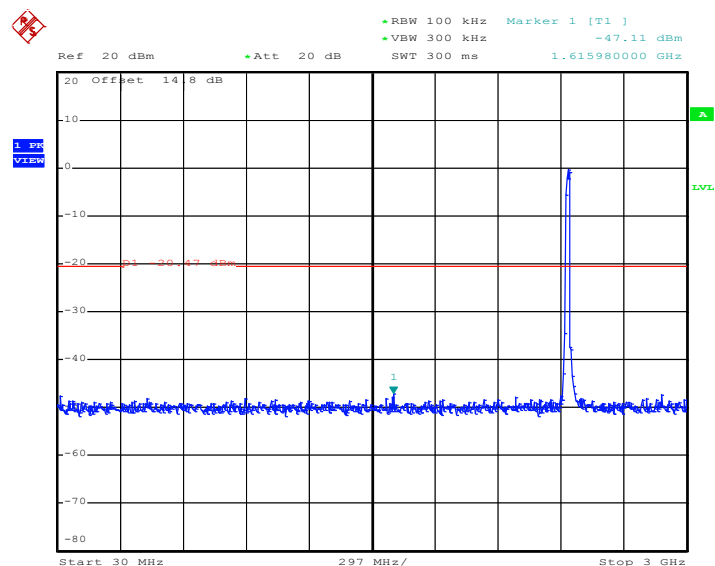


Date: 15.NOV.2011 00:53:11



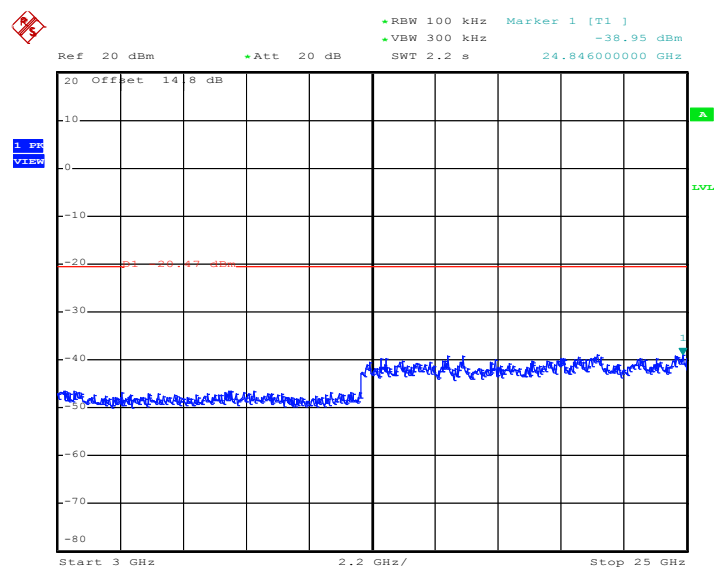
Test Mode :	Mode 8	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	06	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.NOV.2011 01:10:47

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

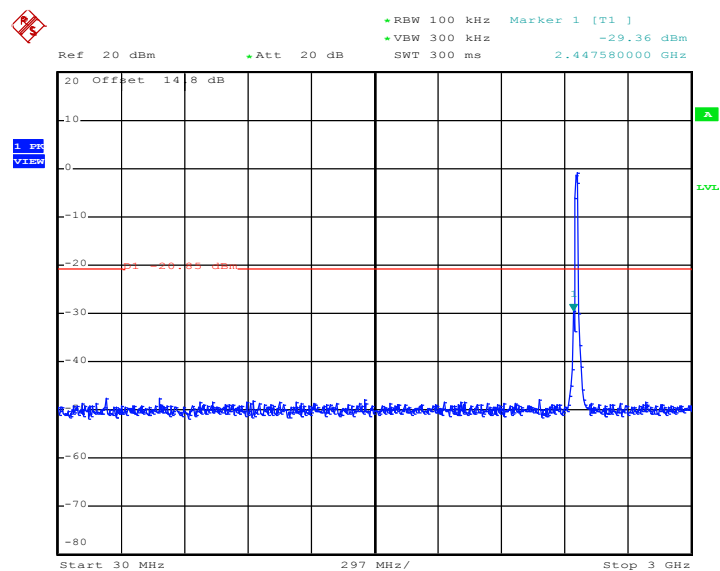


Date: 15.NOV.2011 01:11:04



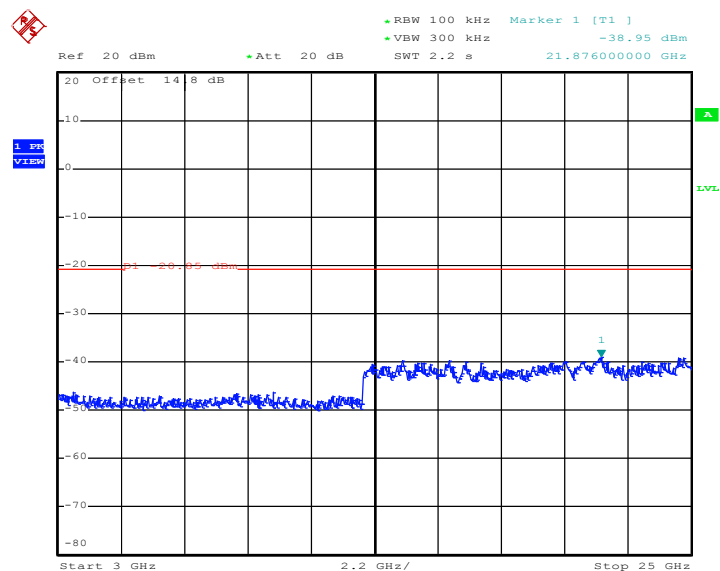
Test Mode :	Mode 9	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	47~48%
Test Channel :	11	Test Engineer :	Zhi Lu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 15.NOV.2011 01:28:45

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 15.NOV.2011 01:29:02

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.

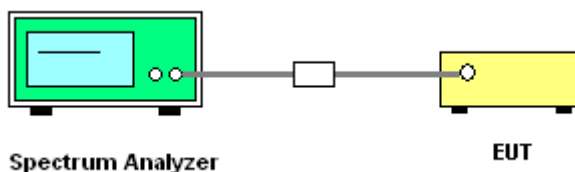
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The test follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Take the measured data from spectrum analyzer.

3.5.4 Test Setup

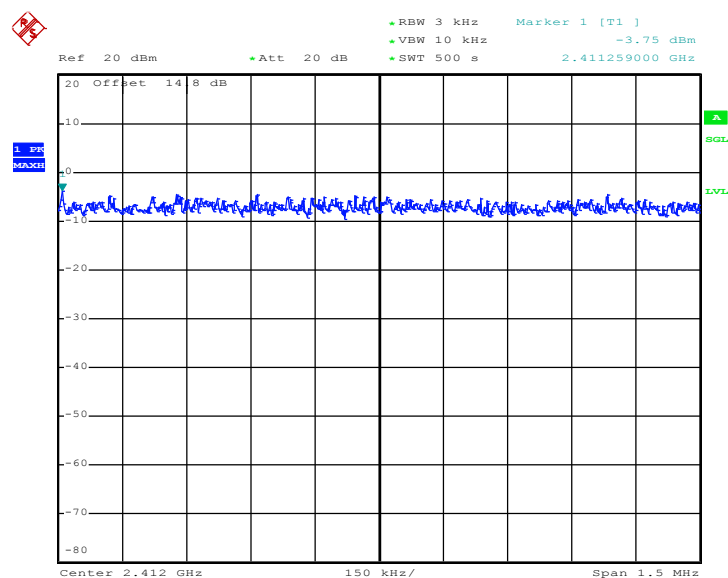


3.5.5 Test Result of Power Spectral Density

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

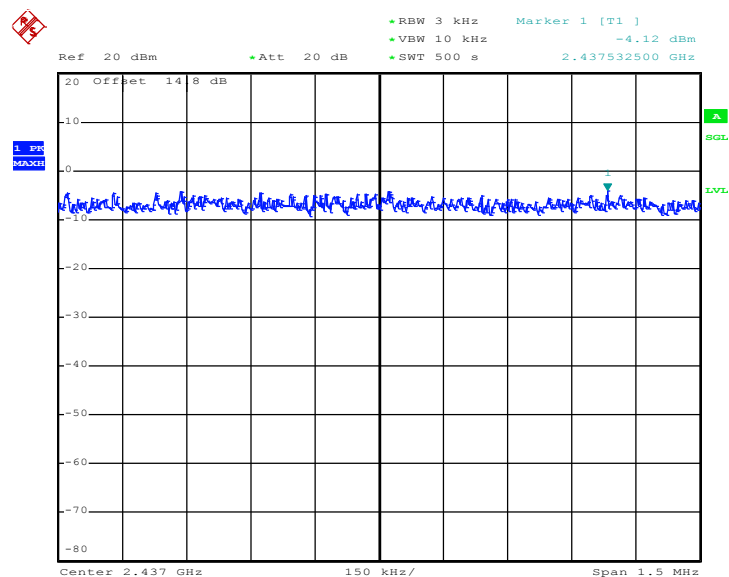
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.75	8	Pass
06	2437	-4.12	8	Pass
11	2462	-4.24	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



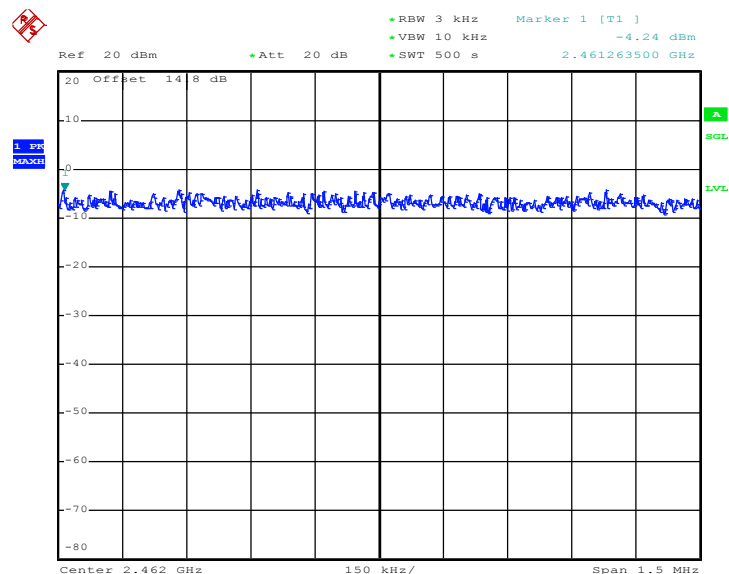
Date: 14.NOV.2011 23:02:16

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 14.NOV.2011 23:21:15

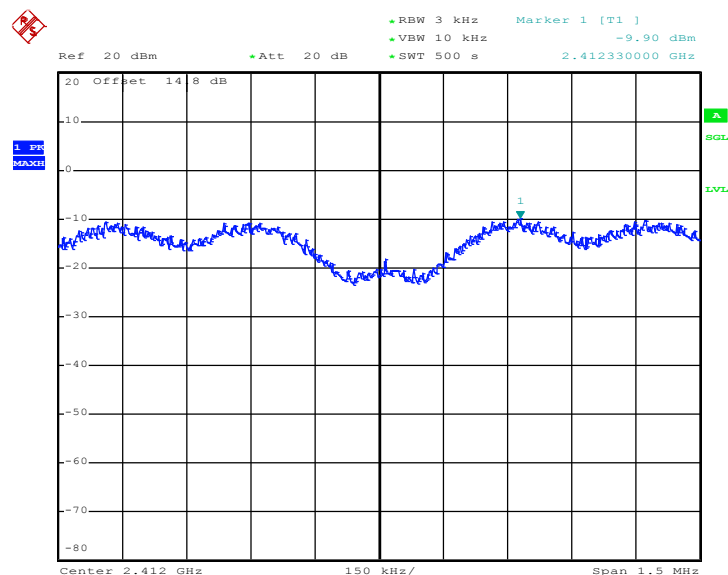
Mode 3 : PSD Plot on 802.11b Channel 11



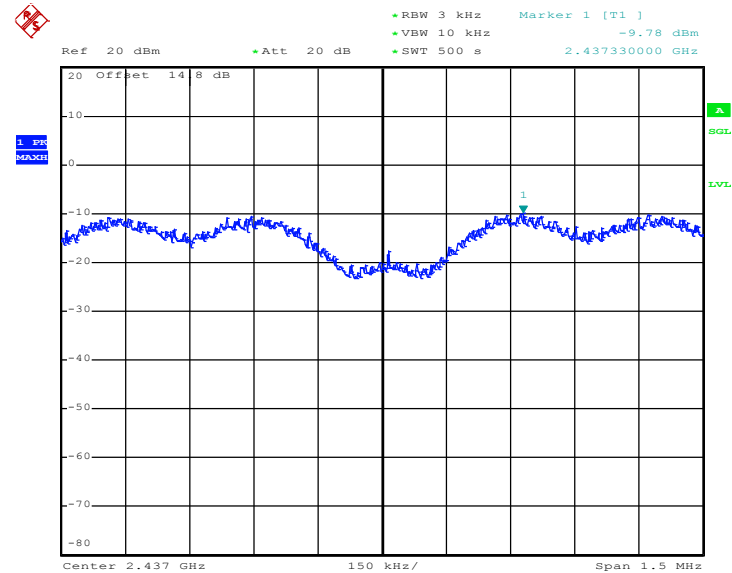
Date: 14.NOV.2011 23:41:43

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

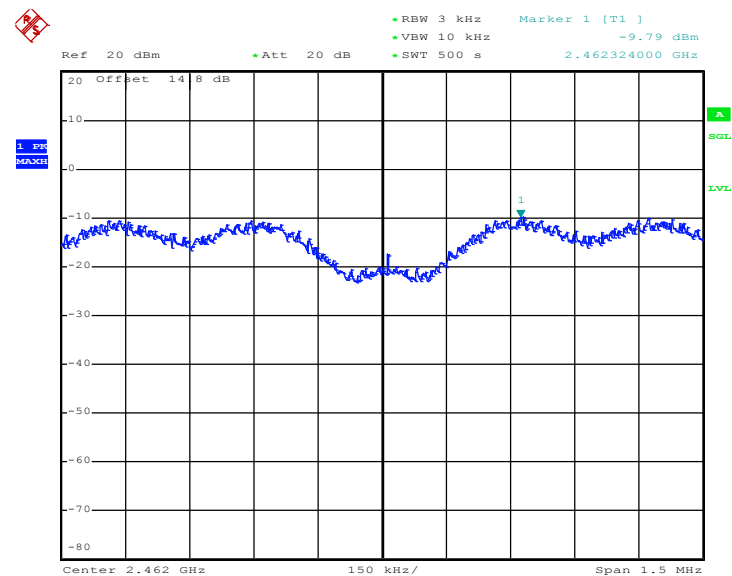
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.90	8	Pass
06	2437	-9.78	8	Pass
11	2462	-9.79	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01


Date: 15.NOV.2011 00:07:37

Mode 5 : PSD Plot on 802.11g Channel 06


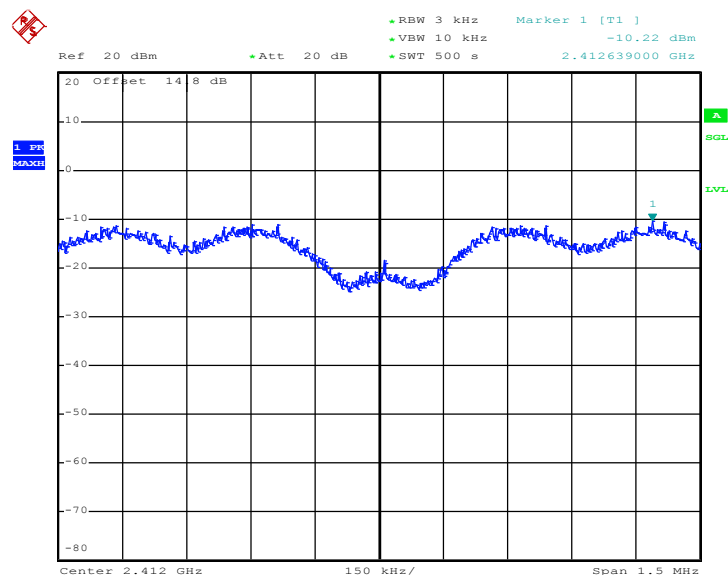
Date: 15.NOV.2011 00:25:24

Mode 6 : PSD Plot on 802.11g Channel 11


Date: 15.NOV.2011 00:43:18

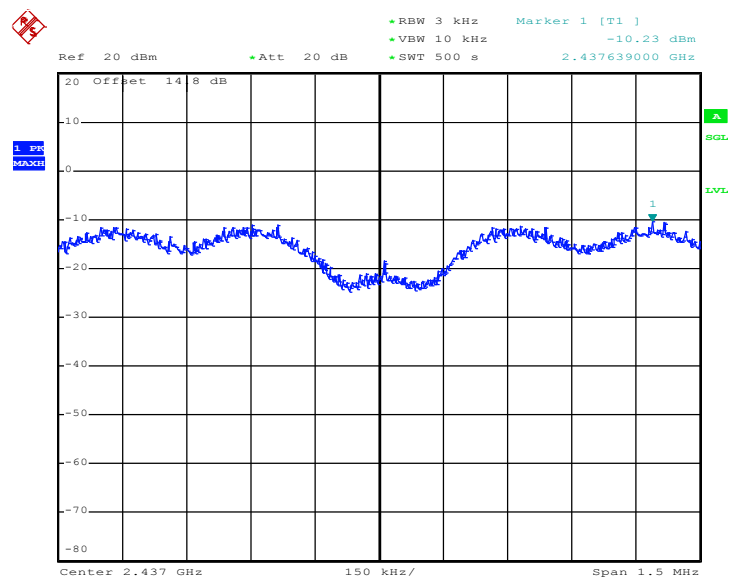
Test Mode :	Mode 7, 8, 9	Temperature :	23~24℃
Test Engineer :	Zhi Lu	Relative Humidity :	47~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.22	8	Pass
06	2437	-10.23	8	Pass
11	2462	-9.85	8	Pass

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


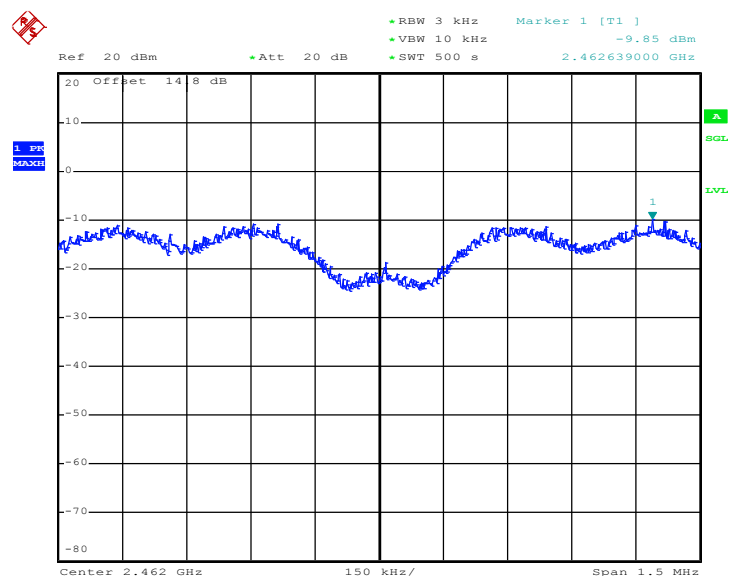
Date: 15.NOV.2011 01:07:18

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



Date: 15.NOV.2011 01:20:32

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



Date: 15.NOV.2011 01:38:02

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.

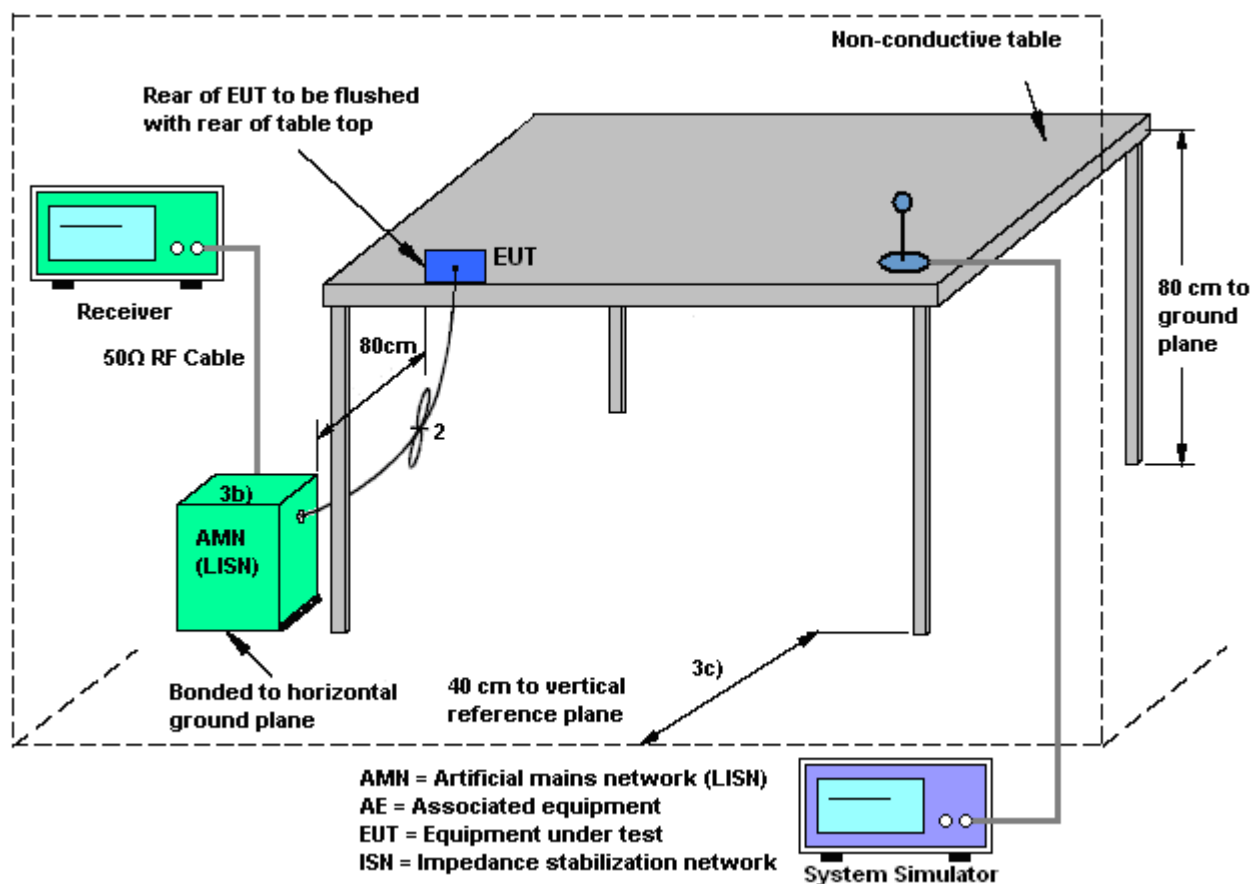
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

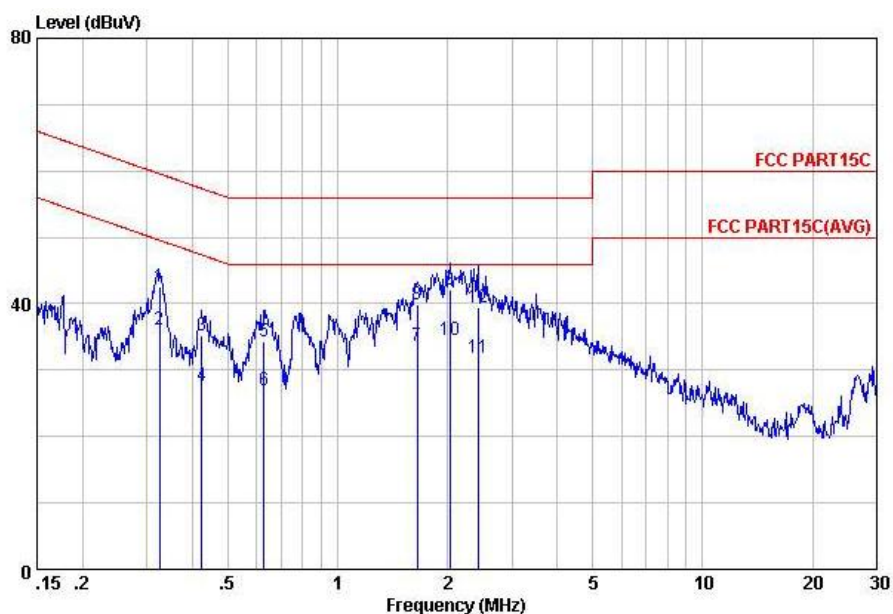
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 :	21~22℃
Test Engineer :	Alva Guo	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	CDMA2000 BC0 Idle + Bluetooth link + WLAN Link + USB Cable (Charging from Adapter) + Earphone + Camera		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



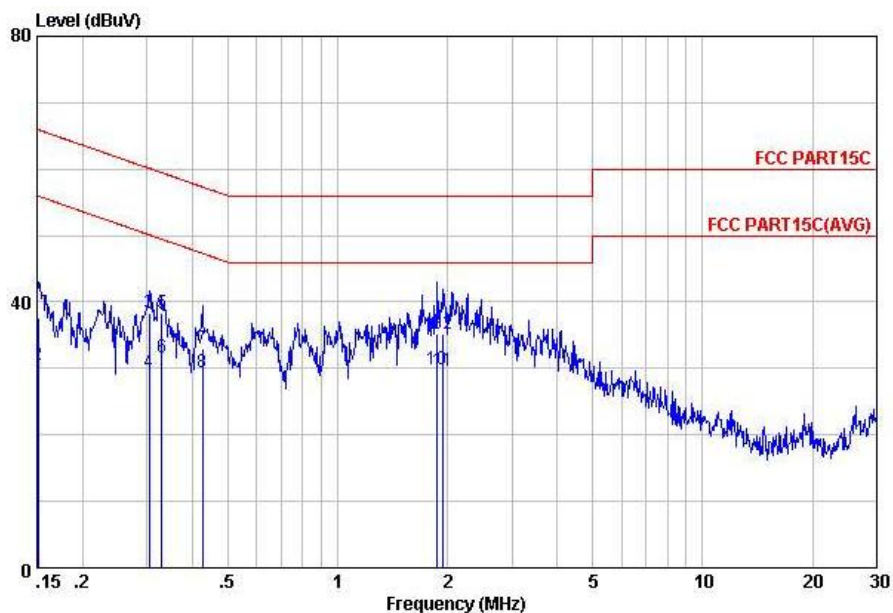
Site : C001-KS
Condition: FCC PART15C LISN-100807 LINE

mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.33	42.60	-16.97	59.57	32.50	-0.08	10.18	QP
2	0.33	36.00	-13.57	49.57	25.90	-0.08	10.18	Average
3	0.42	35.32	-22.05	57.37	25.20	-0.08	10.20	QP
4	0.42	27.72	-19.65	47.37	17.60	-0.08	10.20	Average
5	0.63	34.24	-21.76	56.00	24.10	-0.09	10.23	QP
6	0.63	26.94	-19.06	46.00	16.80	-0.09	10.23	Average
7	1.65	33.60	-12.40	46.00	23.40	-0.11	10.31	Average
8	1.65	39.80	-16.20	56.00	29.60	-0.11	10.31	QP
9	2.03	42.02	-13.98	56.00	31.80	-0.11	10.33	QP
10	2.03	34.52	-11.48	46.00	24.30	-0.11	10.33	Average
11	2.42	31.94	-14.06	46.00	21.70	-0.11	10.35	Average
12	2.42	39.44	-16.56	56.00	29.20	-0.11	10.35	QP



Test Mode :	Mode 1	Temperature :	21~22°C
Test Engineer :	Alva Guo	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC0 Idle + Bluetooth link + WLAN Link + USB Cable (Charging from Adapter) + Earphone + Camera		
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 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	37.75	-28.21	65.96	27.70	-0.09	10.14	QP
2	0.15	30.55	-25.41	55.96	20.50	-0.09	10.14	Average
3	0.31	38.30	-21.80	60.10	28.20	-0.07	10.17	QP
4	0.31	29.50	-20.60	50.10	19.40	-0.07	10.17	Average
5	0.33	38.30	-21.14	59.44	28.20	-0.08	10.18	QP
6	0.33	31.60	-17.84	49.44	21.50	-0.08	10.18	Average
7	0.43	32.99	-24.34	57.33	22.87	-0.08	10.20	QP
8	0.43	29.42	-17.91	47.33	19.30	-0.08	10.20	Average
9	1.88	35.31	-20.69	56.00	25.10	-0.11	10.32	QP
10	1.88	29.91	-16.09	46.00	19.70	-0.11	10.32	Average
11	1.95	29.62	-16.38	46.00	19.40	-0.11	10.33	Average
12	1.95	35.12	-20.88	56.00	24.90	-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

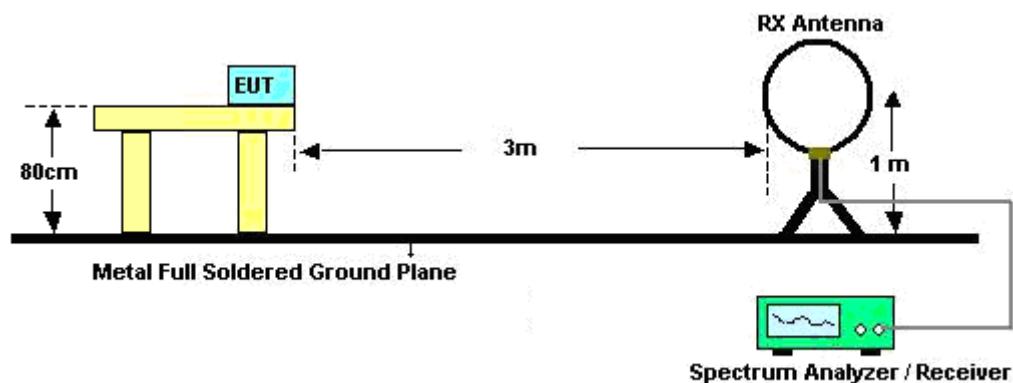
See list of measuring instruments of this test report.

3.7.3 Test Procedures

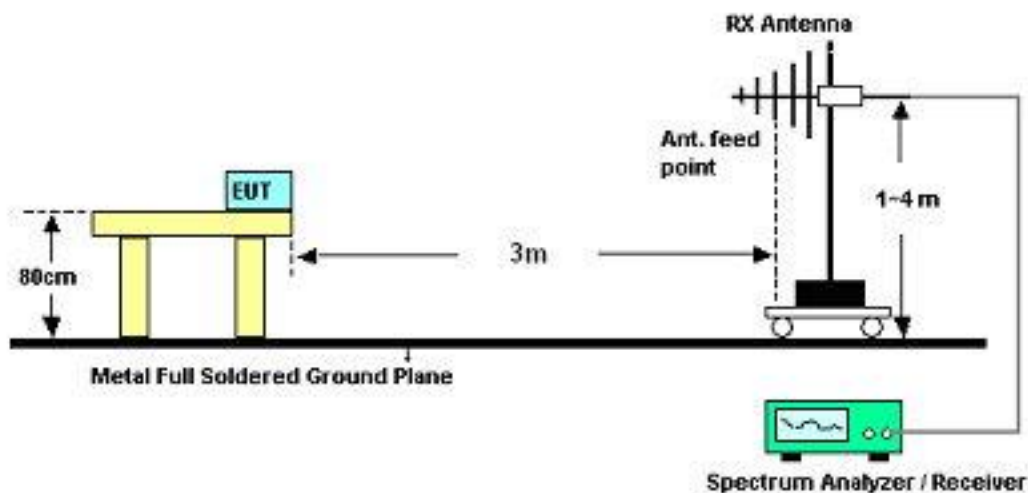
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 KHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
 - Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
Distance extrapolation factor = $20 \log (\text{specific distance [3m]} / \text{test distance [1m]})$ (dB)
- Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.7.4 Test Setup

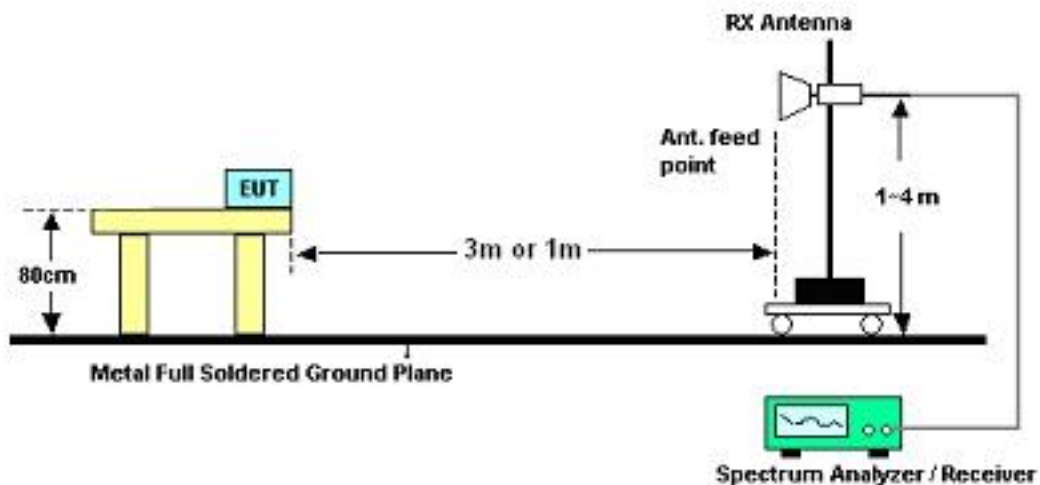
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Jack Li	Temperature :	21~22℃	
		Relative Humidity :	41~42%	

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

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

Test Mode :	Mode 1	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
60.51	19.62	-20.38	40	44.15	5.3	0.31	0	-	-	Peak
96.69	19.01	-24.49	43.5	38.55	10.03	0.4	0	-	-	Peak
134.49	20.43	-23.07	43.5	38.64	11.3	0.48	0	-	-	Peak
319.6	35.25	-10.75	46	50.89	13.55	0.76	0	102	345	Peak
872.6	27.48	-18.52	46	35.29	20.48	1.29	0	-	-	Peak
960.1	27.82	-26.18	54	35.23	20.79	1.34	0	-	-	Peak
2390	52.43	-21.57	74	50.15	32.86	3.47	0	100	216	Peak
2390	38.96	-15.04	54	36.68	32.86	3.47	0	100	216	Average
2412	107.84	-	-	105.51	32.89	3.52	0	182	142	Peak
2412	94.99	-	-	92.66	32.89	3.52	0	182	142	Average
2486.13	51.97	-22.03	74	49.48	33.01	3.68	0	100	229	Peak
2486.13	40.35	-13.65	54	37.86	33.01	3.68	0	100	229	Average
4826	51.65	-22.35	74	43.78	35.17	4.97	0	100	256	Peak
4826	40.53	-13.47	54	32.66	35.17	4.97	0	100	256	Average



Test Mode :	Mode 1	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
58.62	28.49	-11.51	40	52.88	5.44	0.31	0	167	350	Peak
99.12	23.11	-20.39	43.5	42.33	10.33	0.41	0	-	-	Peak
191.46	21.61	-21.89	43.5	42.43	8.55	0.58	0	-	-	Peak
319.6	28.3	-17.7	46	43.94	13.55	0.76	0	-	-	Peak
876.8	27.89	-18.11	46	35.68	20.48	1.29	0	-	-	Peak
960.1	28.53	-25.47	54	35.94	20.79	1.34	0	-	-	Peak
2389.42	50.79	-23.21	74	48.51	32.86	3.47	0	100	226	Peak
2389.42	37.51	-16.49	54	35.23	32.86	3.47	0	100	226	Average
2412	103.2	-	-	100.87	32.89	3.52	0	100	273	Peak
2412	90.35	-	-	88.02	32.89	3.52	0	100	273	Average
2486.32	50.62	-23.38	74	48.13	33.01	3.68	0	100	332	Peak
2486.32	38.78	-15.22	54	36.29	33.01	3.68	0	100	332	Average
4824	51.63	-22.37	74	43.76	35.17	4.97	0	100	183	Peak
4824	38.17	-15.83	54	30.3	35.17	4.97	0	100	183	Average



Test Mode :	Mode 2	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
60.51	18.88	-21.12	40	43.41	5.3	0.31	0	-	-	Peak
134.49	19.84	-23.66	43.5	38.05	11.3	0.48	0	-	-	Peak
240.06	19.97	-26.03	46	37.57	11.56	0.66	0	-	-	Peak
319.6	39.7	-6.3	46	55.34	13.55	0.76	0	197	354	Peak
876.8	27.98	-18.02	46	35.77	20.48	1.29	0	-	-	Peak
944.7	26.98	-27.02	54	34.48	20.71	1.33	0	-	-	Peak
2390	49.35	-24.65	74	47.07	32.86	3.47	0	200	108	Peak
2390	37.54	-16.46	54	35.26	32.86	3.47	0	200	108	Average
2437	108.89	-	-	106.49	32.95	3.6	0	200	173	Peak
2437	95.23	-	-	92.83	32.95	3.6	0	200	173	Average
2483.5	50.04	-23.96	74	47.55	33.01	3.68	0	200	116	Peak
2483.5	38.9	-15.1	54	36.41	33.01	3.68	0	200	116	Average
4874	54.04	-19.96	74	46.15	35.18	4.98	0	200	208	Peak
4874	41.52	-12.48	54	33.63	35.18	4.98	0	200	208	Average

Test Mode :	Mode 2	Temperature :	21~22°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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	27.5	-12.5	40	39.32	18	0.26	0	100	0	Peak
59.16	25.93	-14.07	40	50.32	5.44	0.31	0	-	-	Peak
99.66	21.14	-22.36	43.5	40.19	10.5	0.41	0	-	-	Peak
747.3	22.53	-23.47	46	31.02	19.88	1.18	0	-	-	Peak
878.9	27.49	-18.51	46	35.28	20.47	1.29	0	-	-	Peak
960.1	27.45	-26.55	54	34.86	20.79	1.34	0	-	-	Peak
2389.42	49.2	-24.8	74	46.92	32.86	3.47	0	100	116	Peak
2389.42	37.06	-16.94	54	34.78	32.86	3.47	0	100	116	Average
2437	105.44	-	-	103.04	32.95	3.6	0	100	231	Peak
2437	92.03	-	-	89.63	32.95	3.6	0	100	231	Average
2484.04	49.66	-24.34	74	47.17	33.01	3.68	0	100	207	Peak
2484.04	37.7	-16.3	54	35.21	33.01	3.68	0	100	207	Average
4874	52.49	-21.51	74	44.6	35.18	4.98	0	100	182	Peak
4874	39.13	-14.87	54	31.24	35.18	4.98	0	100	182	Average



Test Mode :	Mode 3	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
59.97	22.37	-17.63	40	46.9	5.3	0.31	0	-	-	Peak
101.82	25.59	-17.91	43.5	44.4	10.74	0.41	0	-	-	Peak
134.49	23.92	-19.58	43.5	42.13	11.3	0.48	0	-	-	Peak
319.6	31.07	-14.93	46	46.71	13.55	0.76	0	199	301	Peak
871.9	28.04	-17.96	46	35.85	20.49	1.29	0	-	-	Peak
960.1	27.07	-26.93	54	34.48	20.79	1.34	0	-	-	Peak
2386	59.41	-14.59	74	57.13	32.86	3.47	0	200	336	Peak
2386	38.8	-15.2	54	36.52	32.86	3.47	0	200	336	Average
2462	106.97	-	-	104.52	32.98	3.64	0	200	324	Peak
2462	93.62	-	-	91.17	32.98	3.64	0	200	324	Average
2483.5	53.39	-20.61	74	50.9	33.01	3.68	0	200	112	Peak
2483.5	41.18	-12.82	54	38.69	33.01	3.68	0	200	112	Average
4924	54.65	-19.35	74	46.73	35.19	4.99	0	200	226	Peak
4924	41.27	-12.73	54	33.35	35.19	4.99	0	200	226	Average



Test Mode :	Mode 3	Temperature :	21~22°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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
58.62	26.38	-13.62	40	50.77	5.44	0.31	0	143	264	Peak
100.47	21.58	-21.92	43.5	40.51	10.62	0.41	0	-	-	Peak
199.29	17.19	-26.31	43.5	37.61	9	0.59	0	-	-	Peak
806.8	21.62	-24.38	46	30.05	19.92	1.25	0	-	-	Peak
876.1	27.11	-18.89	46	34.9	20.48	1.29	0	-	-	Peak
960.1	28.44	-25.56	54	35.85	20.79	1.34	0	-	-	Peak
2386	50.28	-23.72	74	48	32.86	3.47	0	200	220	Peak
2386	37.24	-16.76	54	34.96	32.86	3.47	0	200	220	Average
2462	107.62	-	-	105.17	32.98	3.64	0	200	204	Peak
2462	93.97	-	-	91.52	32.98	3.64	0	200	204	Average
2488.03	56.38	-17.62	74	53.84	33.05	3.72	0	100	226	Peak
2488.03	42.7	-11.3	54	40.16	33.05	3.72	0	100	226	Average
4924	52.62	-21.38	74	44.7	35.19	4.99	0	200	113	Peak
4924	40.54	-13.46	54	32.62	35.19	4.99	0	200	113	Average



Test Mode :	Mode 4	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
60.24	19.87	-20.13	40	44.4	5.3	0.31	0	-	-	Peak
95.61	20.37	-23.13	43.5	40.03	9.91	0.4	0	-	-	Peak
134.49	19.92	-23.58	43.5	38.13	11.3	0.48	0	-	-	Peak
319.6	35.59	-10.41	46	51.23	13.55	0.76	0	105	360	Peak
871.9	28.13	-17.87	46	35.94	20.49	1.29	0	-	-	Peak
960.1	28.41	-25.59	54	35.82	20.79	1.34	0	-	-	Peak
2389.61	57.96	-16.04	74	55.68	32.86	3.47	0	110	0	Peak
2389.61	44.85	-9.15	54	42.57	32.86	3.47	0	110	0	Average
2412	98.66	-	-	96.33	32.89	3.52	0	108	356	Peak
2412	85.51	-	-	83.18	32.89	3.52	0	108	356	Average
2485.37	46.98	-27.02	74	44.49	33.01	3.68	0	105	10	Peak
2485.37	36.7	-17.3	54	34.21	33.01	3.68	0	105	10	Average



Test Mode :	Mode 4	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
58.62	28.84	-11.16	40	53.23	5.44	0.31	0	200	0	Peak
98.58	23.2	-20.3	43.5	42.42	10.33	0.41	0	-	-	Peak
197.94	21.75	-21.75	43.5	42.25	8.91	0.59	0	-	-	Peak
319.6	24.4	-21.6	46	40.04	13.55	0.76	0	-	-	Peak
745.2	22.23	-23.77	46	30.74	19.86	1.18	0	-	-	Peak
872.6	28	-18	46	35.81	20.48	1.29	0	-	-	Peak
2389.23	67.17	-6.83	74	64.89	32.86	3.47	0	102	360	Peak
2389.23	49.02	-4.98	54	46.74	32.86	3.47	0	102	360	Average
2412	103.33	-	-	101	32.89	3.52	0	101	358	Peak
2412	89.45	-	-	87.12	32.89	3.52	0	101	358	Average
2484.04	51.91	-22.09	74	49.42	33.01	3.68	0	198	354	Peak
2484.04	40	-14	54	37.51	33.01	3.68	0	198	354	Average



Test Mode :	Mode 5	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.27	19.73	-20.27	40	31.55	18	0.26	0	-	-	Peak
95.88	19.93	-23.57	43.5	39.59	9.91	0.4	0	-	-	Peak
134.49	20	-23.5	43.5	38.21	11.3	0.48	0	-	-	Peak
319.6	36.13	-9.87	46	51.77	13.55	0.76	0	120	0	Peak
871.9	28.01	-17.99	46	35.82	20.49	1.29	0	-	-	Peak
960.1	27.7	-26.3	54	35.11	20.79	1.34	0	-	-	Peak
2384.67	53.76	-20.24	74	51.52	32.83	3.42	0	110	350	Peak
2384.67	37.46	-16.54	54	35.22	32.83	3.42	0	110	350	Average
2437	99.41	-	-	97.01	32.95	3.6	0	109	348	Peak
2437	86.2	-	-	83.8	32.95	3.6	0	109	348	Average
2485.37	47.59	-26.41	74	45.1	33.01	3.68	0	111	352	Peak
2485.37	35.94	-18.06	54	33.45	33.01	3.68	0	111	352	Average



Test Mode :	Mode 5	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
59.7	28.53	-11.47	40	53.06	5.3	0.31	0	176	360	Peak
96.69	23.04	-20.46	43.5	42.58	10.03	0.4	0	-	-	Peak
193.08	21.74	-21.76	43.5	42.49	8.64	0.58	0	-	-	Peak
319.6	25.7	-20.3	46	41.34	13.55	0.76	0	-	-	Peak
872.6	27.87	-18.13	46	35.68	20.48	1.29	0	-	-	Peak
960.1	28.25	-25.75	54	35.66	20.79	1.34	0	-	-	Peak
2375.74	63.12	-10.88	74	60.88	32.83	3.42	0	100	360	Peak
2375.74	33.19	-20.81	54	30.95	32.83	3.42	0	100	360	Average
2437	103.11	-	-	100.71	32.95	3.6	0	101	10	Peak
2437	88.31	-	-	85.91	32.95	3.6	0	101	10	Average
2500	53.32	-20.68	74	50.78	33.05	3.72	0	122	345	Peak
2500	33.78	-20.22	54	31.24	33.05	3.72	0	122	345	Average



Test Mode :	Mode 6	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
60.78	19.54	-20.46	40	44.08	5.28	0.31	0	-	-	Peak
97.77	20.46	-23.04	43.5	39.87	10.15	0.41	0	-	-	Peak
134.49	20.27	-23.23	43.5	38.48	11.3	0.48	0	-	-	Peak
319.6	35.78	-10.22	46	51.42	13.55	0.76	0	200	310	Peak
876.1	28.66	-17.34	46	36.45	20.48	1.29	0	-	-	Peak
960.1	28.5	-25.5	54	35.91	20.79	1.34	0	-	-	Peak
2315.89	50.12	-23.88	74	48.03	32.73	3.22	0	122	0	Peak
2315.89	38.76	-15.24	54	36.67	32.73	3.22	0	122	0	Average
2462	101.35	-	-	98.9	32.98	3.64	0	100	347	Peak
2462	87.74	-	-	85.29	32.98	3.64	0	100	347	Average
2484.42	60.02	-13.98	74	57.53	33.01	3.68	0	103	346	Peak
2484.42	43.43	-10.57	54	40.94	33.01	3.68	0	103	346	Average



Test Mode :	Mode 6	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
59.16	26.75	-13.25	40	51.14	5.44	0.31	0	-	-	Peak
68.34	27.26	-12.74	40	51.73	5.28	0.34	0	183	360	Peak
93.45	21.78	-21.72	43.5	41.85	9.51	0.4	0	-	-	Peak
786.5	21.99	-24.01	46	30.48	19.86	1.23	0	-	-	Peak
872.6	27.83	-18.17	46	35.64	20.48	1.29	0	-	-	Peak
960.1	28	-26	54	35.41	20.79	1.34	0	-	-	Peak
2351.8	50.35	-23.65	74	48.14	32.81	3.38	0	100	59	Peak
2351.8	38.69	-15.31	54	36.48	32.81	3.38	0	100	59	Average
2462	103.02	-	-	100.57	32.98	3.64	0	102	63	Peak
2462	89.16	-	-	86.71	32.98	3.64	0	102	63	Average
2484.61	62.46	-11.54	74	59.97	33.01	3.68	0	100	63	Peak
2484.61	43.91	-10.09	54	41.42	33.01	3.68	0	100	63	Average

Test Mode :	Mode 7	Temperature :	21~22°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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.54	19.41	-20.59	40	31.95	17.29	0.25	0	-	-	Peak
94.8	24.83	-18.67	43.5	44.6	9.8	0.4	0	-	-	Peak
288.12	20.13	-25.87	46	36.55	12.82	0.71	0	-	-	Peak
319.6	33.49	-12.51	46	49.13	13.55	0.76	0	100	0	Peak
876.1	30.59	-15.41	46	38.38	20.48	1.29	0	-	-	Peak
960.1	28.35	-25.65	54	35.76	20.79	1.34	0	-	-	Peak
2387.52	62.34	-11.66	74	60.06	32.86	3.47	0	100	39	Peak
2387.52	45.15	-8.85	54	42.87	32.86	3.47	0	100	39	Average
2412	100.54	-	-	98.21	32.89	3.52	0	105	14	Peak
2412	87.89	-	-	85.56	32.89	3.52	0	105	14	Average
2484.23	48.42	-25.58	74	45.93	33.01	3.68	0	108	56	Peak
2484.23	35.74	-18.26	54	33.25	33.01	3.68	0	108	56	Average
4824	52.56	-21.44	74	44.69	35.17	4.97	0	110	0	Peak
4824	46	-8	54	38.13	35.17	4.97	0	110	0	Average



Test Mode :	Mode 7	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.16	35.97	-4.03	40	49.27	16.55	0.24	0	200	360	Peak
61.05	33.37	-6.63	40	57.91	5.28	0.31	0	-	-	Peak
93.45	28.29	-15.21	43.5	48.36	9.51	0.4	0	-	-	Peak
319.6	33.61	-12.39	46	49.25	13.55	0.76	0	-	-	Peak
871.9	27.17	-18.83	46	34.98	20.49	1.29	0	-	-	Peak
960.1	27.35	-26.65	54	34.76	20.79	1.34	0	-	-	Peak
2388.28	53.71	-20.29	74	51.43	32.86	3.47	0	100	58	Peak
2388.28	43.7	-10.3	54	41.42	32.86	3.47	0	100	58	Average
2412	97.39	-	-	95.06	32.89	3.52	0	102	61	Peak
2412	84.53	-	-	82.2	32.89	3.52	0	102	61	Average
2484.8	46.61	-27.39	74	44.12	33.01	3.68	0	106	67	Peak
2484.8	34.07	-19.93	54	31.58	33.01	3.68	0	106	67	Average
4824	52.15	-21.85	74	44.28	35.17	4.97	0	114	360	Peak
4824	45.18	-8.82	54	37.31	35.17	4.97	0	114	360	Average



Test Mode :	Mode 8	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
92.91	22.25	-21.25	43.5	42.32	9.51	0.4	0	-	-	Peak
197.13	17.99	-25.51	43.5	38.53	8.86	0.59	0	-	-	Peak
281.64	19.08	-26.92	46	35.65	12.68	0.7	0	-	-	Peak
319.6	36.21	-9.79	46	51.85	13.55	0.76	0	134	349	Peak
872.6	27.97	-18.03	46	35.78	20.48	1.29	0	-	-	Peak
960.1	27.69	-26.31	54	35.1	20.79	1.34	0	-	-	Peak
2388.28	50.39	-23.61	74	48.11	32.86	3.47	0	128	27	Peak
2388.28	38.62	-15.38	54	36.34	32.86	3.47	0	128	27	Average
2437	102.16	-	-	99.76	32.95	3.6	0	132	30	Peak
2437	90.38	-	-	87.98	32.95	3.6	0	132	30	Average
2484.23	55.88	-18.12	74	53.39	33.01	3.68	0	100	33	Peak
2484.23	42.64	-11.36	54	40.15	33.01	3.68	0	100	33	Average
4874	53.11	-20.89	74	45.22	35.18	4.98	0	141	59	Peak
4874	47.32	-6.68	54	39.43	35.18	4.98	0	141	59	Average



Test Mode :	Mode 8	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.77	31.27	-8.73	40	51.08	10.03	0.27	0	-	-	Peak
60.24	34.08	-5.92	40	58.61	5.3	0.31	0	200	357	Peak
93.18	28.03	-15.47	43.5	48.1	9.51	0.4	0	-	-	Peak
319.6	28.76	-17.24	46	44.4	13.55	0.76	0	-	-	Peak
872.6	28.19	-17.81	46	36	20.48	1.29	0	-	-	Peak
960.1	28.39	-25.61	54	35.8	20.79	1.34	0	-	-	Peak
2389.61	49.36	-24.64	74	47.08	32.86	3.47	0	110	0	Peak
2389.61	37.7	-16.3	54	35.42	32.86	3.47	0	110	0	Average
2437	100.27	-	-	97.87	32.95	3.6	0	101	62	Peak
2437	87.25	-	-	84.85	32.95	3.6	0	101	62	Average
2483.66	51.84	-22.16	74	49.35	33.01	3.68	0	100	61	Peak
2483.66	39.81	-14.19	54	37.32	33.01	3.68	0	100	61	Average
4874	54.22	-19.78	74	46.33	35.18	4.98	0	100	355	Peak
4874	50.16	-3.84	54	42.27	35.18	4.98	0	100	355	Average



Test Mode :	Mode 9	Temperature :	21~22℃
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 (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
93.45	28.57	-14.93	43.5	48.64	9.51	0.4	0	-	-	Peak
193.08	17.71	-25.79	43.5	38.46	8.64	0.58	0	-	-	Peak
284.34	19.96	-26.04	46	36.46	12.74	0.71	0	-	-	Peak
319.6	31.19	-14.81	46	46.83	13.55	0.76	0	100	0	Peak
876.1	27.58	-18.42	46	35.37	20.48	1.29	0	-	-	Peak
960.1	27.82	-26.18	54	35.23	20.79	1.34	0	-	-	Peak
2341.92	46.75	-27.25	74	44.58	32.78	3.33	0	120	26	Peak
2341.92	33.62	-20.38	54	31.45	32.78	3.33	0	120	26	Average
2462	104.77	-	-	102.32	32.98	3.64	0	105	19	Peak
2462	89.85	-	-	87.4	32.98	3.64	0	105	19	Average
2484.61	64.74	-9.26	74	62.25	33.01	3.68	0	131	32	Peak
2484.61	46.39	-7.61	54	43.9	33.01	3.68	0	131	32	Average
4924	53.1	-20.9	74	45.18	35.19	4.99	0	100	51	Peak
4924	47.02	-6.98	54	39.1	35.19	4.99	0	100	51	Average

Test Mode :	Mode 9	Temperature :	21~22°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Jack Li	Polarization :	Vertical
Remark :	2462 MHz is fundamental signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
57.54	31.65	-8.35	40	55.74	5.75	0.3	0	200	354	Peak
93.18	27.68	-15.82	43.5	47.75	9.51	0.4	0	-	-	Peak
192	17.6	-25.9	43.5	38.39	8.59	0.58	0	-	-	Peak
319.6	28.75	-17.25	46	44.39	13.55	0.76	0	-	-	Peak
876.1	28.75	-17.25	46	36.54	20.48	1.29	0	-	-	Peak
944.7	26.6	-27.4	54	34.1	20.71	1.33	0	-	-	Peak
2370.8	46.81	-27.19	74	44.57	32.83	3.42	0	111	60	Peak
2370.8	34.3	-19.7	54	32.06	32.83	3.42	0	111	60	Average
2462	99.95	-	-	97.5	32.98	3.64	0	102	63	Peak
2462	86.57	-	-	84.12	32.98	3.64	0	102	63	Average
2483.5	57.68	-16.32	74	55.19	33.01	3.68	0	130	64	Peak
2483.5	43.15	-10.85	54	40.66	33.01	3.68	0	130	64	Average
4924	56.04	-17.96	74	48.12	35.19	4.99	0	200	320	Peak
4924	50.71	-3.29	54	42.79	35.19	4.99	0	200	320	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 Monopole 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	Jan. 07, 2011	Nov. 14, 2011 ~ Nov. 24, 2011	Jan. 06, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 23, 2011	Nov. 14, 2011 ~ Nov. 24, 2011	Aug. 22, 2012	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 23, 2011	Nov. 14, 2011 ~ Nov. 24, 2011	Aug. 22, 2012	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Jan. 17, 2011	Nov. 14, 2011 ~ Nov. 24, 2011	Jan. 16, 2012	Conducted (TH01-KS)
DC Power Supply	TOPWARD	GPS-3030D	E1884515	N/A	Aug. 23, 2011	Nov. 14, 2011 ~ Nov. 24, 2011	Aug. 22, 2012	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI7	100768	9KHz~7GHz	Jun. 02, 2011	Nov. 24, 2011	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9KHz~30MHz	Jan. 07, 2011	Nov. 24, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9KHz~30MHz	Jan. 07, 2011	Nov. 24, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	N/A	Nov. 16, 2011	Nov. 24, 2011	Nov. 15, 2012	Conduction (CO01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band	Jan. 07, 2011	Nov. 24, 2011	Jan. 06, 2012	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9KHz~3GHz	Nov. 09, 2011	Nov. 24, 2011	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9KHz~40GHz	Jan. 07, 2011	Nov. 24, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101400	9KHz~30GHz	Jun. 02, 2011	Nov. 24, 2011	Jun. 01, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2010	Nov. 24, 2011	Dec. 06, 2011	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Nov. 24, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060029	9KHz~2GHz	Jan. 10, 2011	Nov. 24, 2011	Jan. 09, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 07, 2011	Nov. 24, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 07, 2011	Nov. 24, 2011	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15G-40GHz	Oct. 11, 2011	Nov. 24, 2011	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				