FCC RF Test Report

APPLICANT	**:**	**CT Asia**
EQUIPMENT	**:**	**GSM/WCDMA touch book**
BRAND NAME	**:**	**BLU**
MODEL NAME	**:**	**Touch book 7.0**
FCC ID	**:**	**YHLBLUTOUCHBOOK**
STANDARD	**:**	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	**:**	**Digital Transmission System (DTS)**

The product was received on Nov. 12, 2011 and completely tested on Dec. 06, 2011. 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

Jones Tsai / Manager

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

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1N1201B	Rev. 01	Initial issue of report	Dec. 06, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	Power Output	≤ 30dBm	Pass	-
3.3	15.247(d)	Frequency Band Edges	≤ 20dBc	Pass	-
3.4	15.247(d)	Spurious Emission	< 20 dBc	Pass	-
3.5	15.247(e)	Power Spectral Density	≤ 8dBm	Pass	-
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 6.00 dB at 0.50 MHz
3.7	15.247(d)	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.24 dB at 2389.99 MHz
3.8	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

CT Asia
RMA2011, 20/F, GOLDEN CENTRAL TOWER, NO.3037# JINTIAN ROAD, FUTIAN DISTRICT

1.2 Manufacturer

Dynamax Industry Co., Ltd.
Room 808, Block A, TianJing Building, Tian`an Cyber Park, FuTian, Shenzhen, China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	GSM/WCDMA touch book
Brand Name	BLU
Model Name	Touch book 7.0
FCC ID	YHLBLUTOUCHBOOK
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 : 15.91 dBm (0.039 W) 802.11g : 21.44 dBm (0.139 W)
Antenna Type	PIFA Antenna with gain -0.66 dBi
HW Version	ver2.0
SW Version	REL_C1.2ZZ02V01.01
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. 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.	
	TH01-KS	03CH01-KS

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.
Test Site Location	No. 101, Complex Building C, Guanglong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755-8637-9589
Test Site No.	Sporton Site No. :
	CO01-SZ

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

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 (Certification), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	Agilent	8960	N/A	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Nokia	BH-108	N/A	N/A	N/A
4.	Notebook	IBM	1706	FCC DoC	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
5.	Router	D-Link	DIR-615	N/A	N/A	Unshielded, 1.8 m

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	15.07	15.04	14.91	14.96
CH 06	2437 MHz	15.77	15.73	15.68	15.72
CH 11	2462 MHz	**15.91**	15.86	15.78	15.85

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	20.98	20.84	20.94	20.82	20.87	20.91	20.94	20.96
CH 06	2437 MHz	**21.44**	21.36	21.37	21.35	21.41	21.39	21.35	21.38
CH 11	2462 MHz	21.08	20.98	21.04	20.95	21.03	20.94	20.86	21.04

Remark:

1. The data rates of WLAN 802.11b/g were set in 1Mbps for 802.11b and 6Mbps for 802.11g, for all the test cases due to the highest RF output power.
2. 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, laptop / tablet modes.

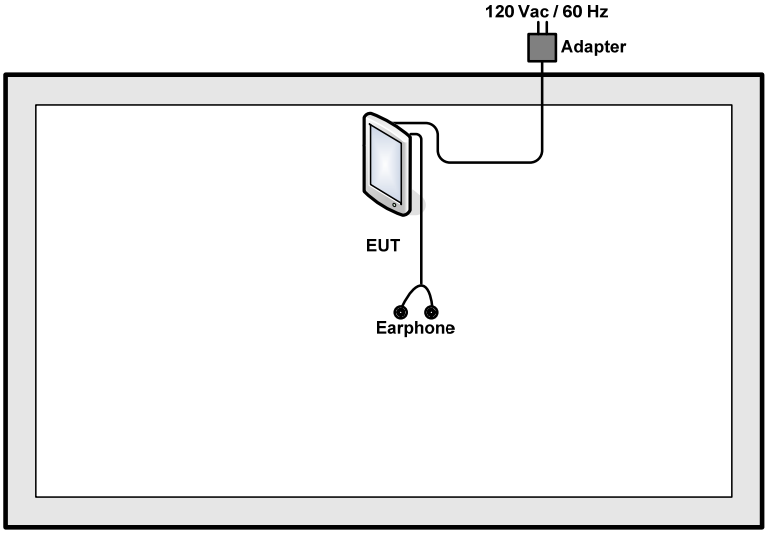
The following tables are showing the test modes as the worst cases (E2 plane) and recorded in this report.

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

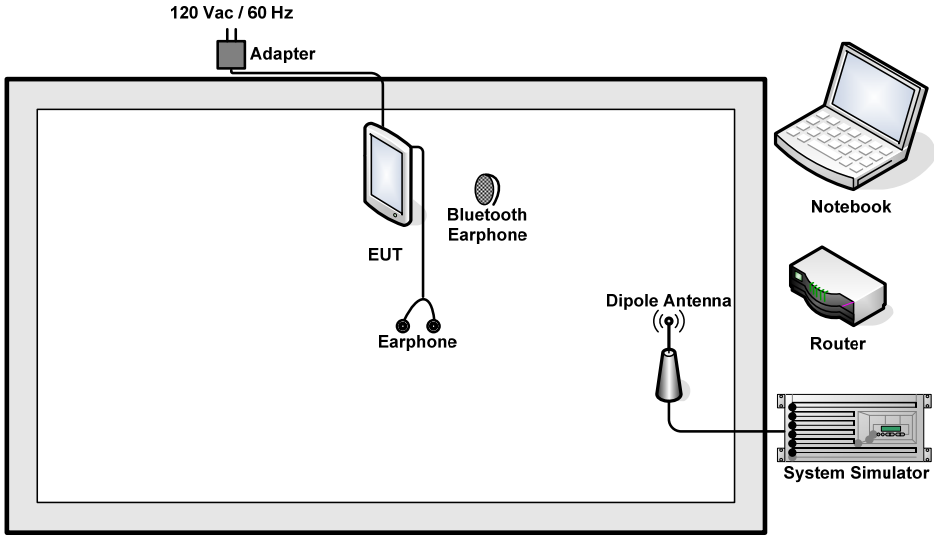
Test Cases		
Test Item	**802.11b**	**802.11g**
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4 : 802.11g CH01_2412 MHz Mode 5 : 802.11g CH06_2437 MHz Mode 6 : 802.11g CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b 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
AC Conducted Emission	Mode 1 :GSM 850 Idle + Bluetooth Link + WIFI Link(2.4GHz) + Adapter + Earphone + Camera	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

The programmed RF utility, “Commed” is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

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.

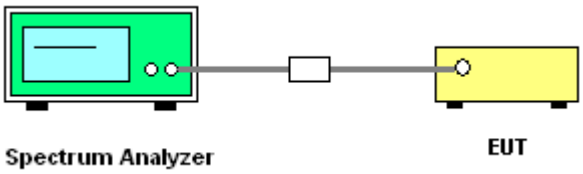
3.1.2 Measuring Instruments

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

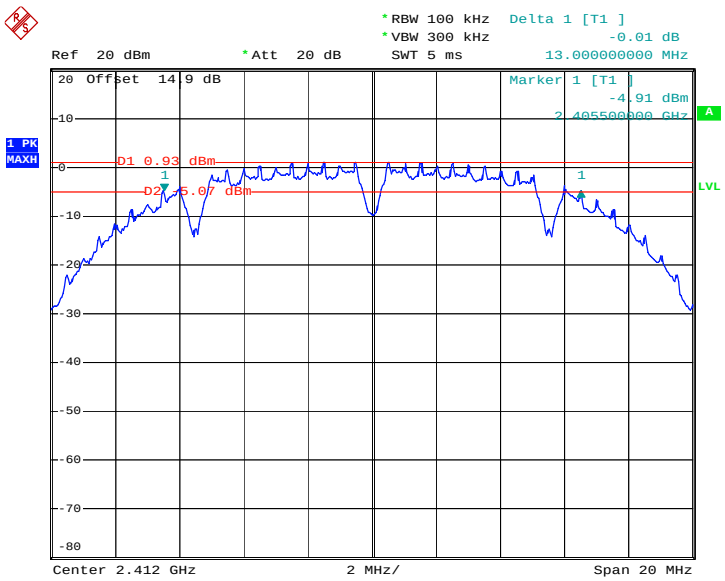


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~25℃
Test Engineer :	Fly Chen	Relative Humidity :	48~49%

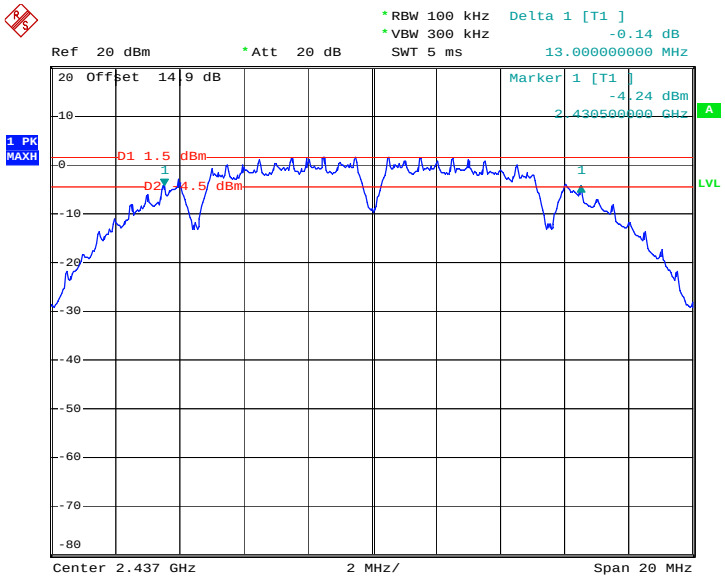
Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	13.00	0.5	Pass
06	2437	13.00	0.5	Pass
11	2462	13.00	0.5	Pass

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



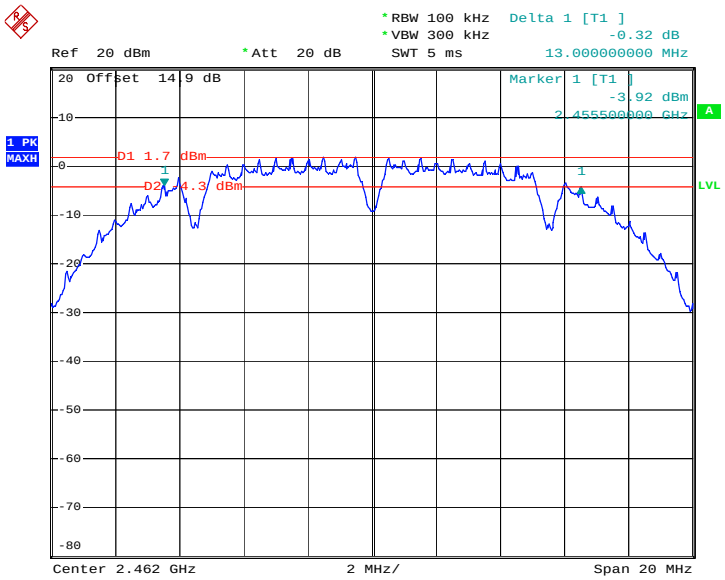
Date: 3.DEC.2011 13:03:08

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



Date: 3.DEC.2011 13:15:55

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

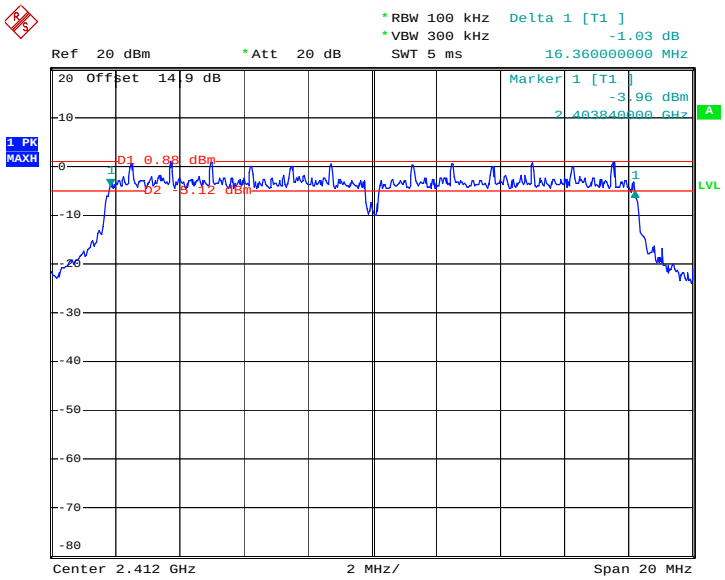


Date: 3.DEC.2011 13:28:03

Test Mode :	Mode 4, 5, 6	Temperature :	24~25℃
Test Engineer :	Fly Chen	Relative Humidity :	48~49%

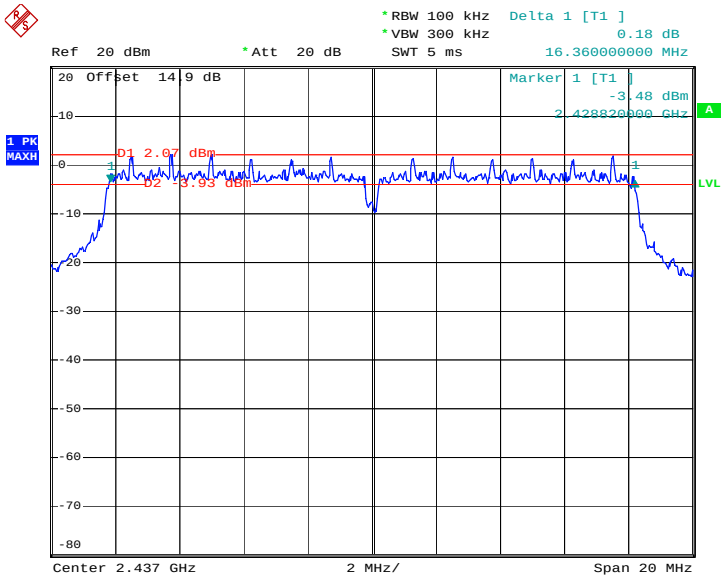
Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.36	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.36	0.5	Pass

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



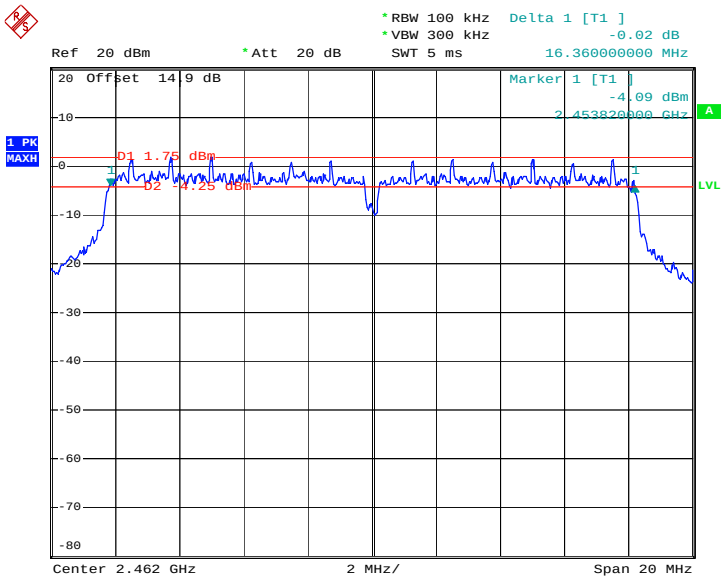
Date: 3.DEC.2011 13:42:54

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



Date: 3.DEC.2011 14:02:05

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



Date: 3.DEC.2011 14:26:47

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.

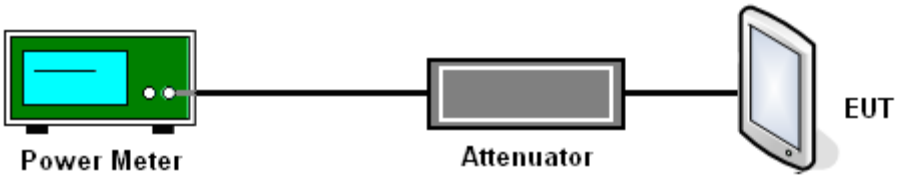
3.2.2 Measuring Instruments

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 :	24~25℃
Test Engineer :	Fly Chen	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	15.07	30	Pass
06	2437	15.77	30	Pass
11	2462	15.91	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~25℃
Test Engineer :	Fly Chen	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.98	30	Pass
06	2437	21.44	30	Pass
11	2462	21.08	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

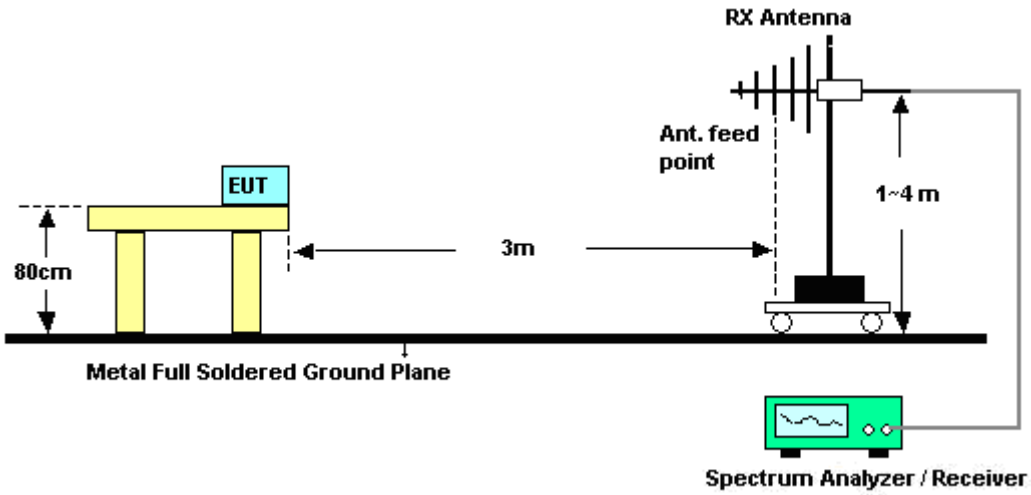
See list of measuring instruments of this test report.

3.3.3 Test Procedures

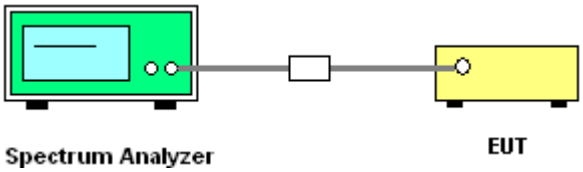
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	22~23℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Chenmy Cheng

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
2325.2	55.22	-18.78	74	53.09	32.76	3.27	33.9	102	323	Peak
2325.2	48.54	-5.46	54	46.41	32.76	3.27	33.9	102	323	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
2324.82	54.48	-19.52	74	52.35	32.76	3.27	33.9	102	89	Peak
2324.82	47.58	-6.42	54	45.45	32.76	3.27	33.9	102	89	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Band :	802.11b	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Chenmy Cheng

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
2488.98	50.49	-23.51	74	47.95	33.05	3.72	34.23	200	203	Peak
2488.98	39.76	-14.24	54	37.22	33.05	3.72	34.23	200	203	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
2484.23	50.57	-23.43	74	48.08	33.01	3.68	34.2	134	360	Peak
2484.23	37.98	-16.02	54	35.49	33.01	3.68	34.2	134	360	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	01	Test Engineer :	Chenmy Cheng

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
2389.8	69.95	-4.05	74	67.67	32.86	3.47	34.05	102	310	Peak
2389.8	50.52	-3.48	54	48.24	32.86	3.47	34.05	102	310	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
2389.99	69.7	-4.3	74	67.42	32.86	3.47	34.05	101	89	Peak
2389.99	53.76	-0.24	54	51.48	32.86	3.47	34.05	101	89	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	45~46%
Test Channel :	11	Test Engineer :	Chenmy Cheng

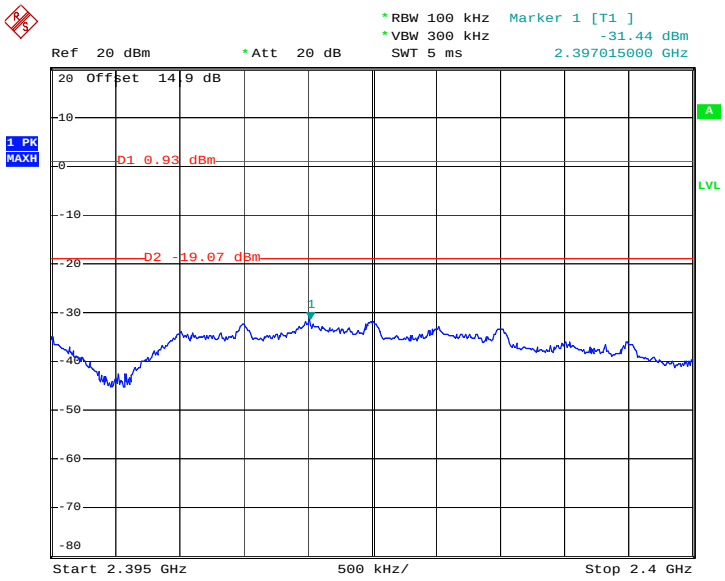
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	63.98	-10.02	74	61.49	33.01	3.68	34.2	100	311	Peak
2483.5	46.28	-7.72	54	43.79	33.01	3.68	34.2	100	311	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	67.43	-6.57	74	64.94	33.01	3.68	34.2	102	88	Peak
2483.5	50.28	-3.72	54	47.79	33.01	3.68	34.2	102	88	Average

3.3.6 Test Plots of Conducted Band Edges

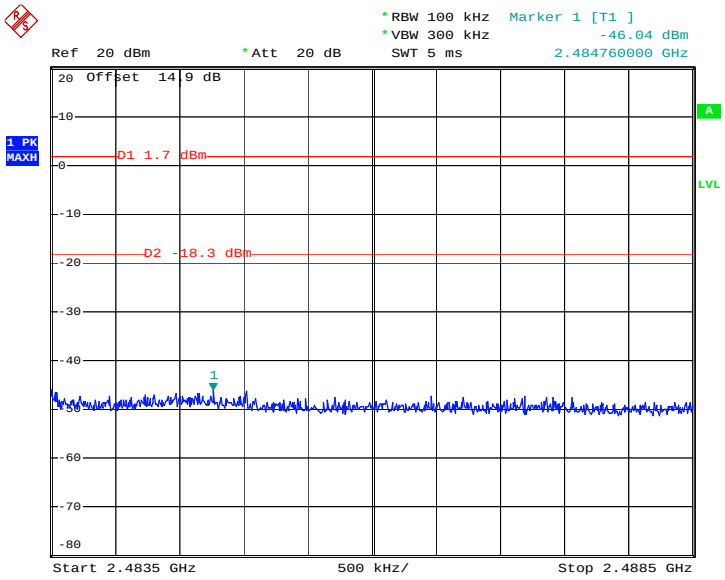
Test Mode :	Mode 1 and 3	**Temperature :**	24~25℃
Test Band :	802.11b	**Relative Humidity :**	48~49%
Test Channel :	01 and 11	**Test Engineer :**	Fly Chen

Low Band Edge Plot on 802.11b Channel 01



Date: 3.DEC.2011 13:04:25

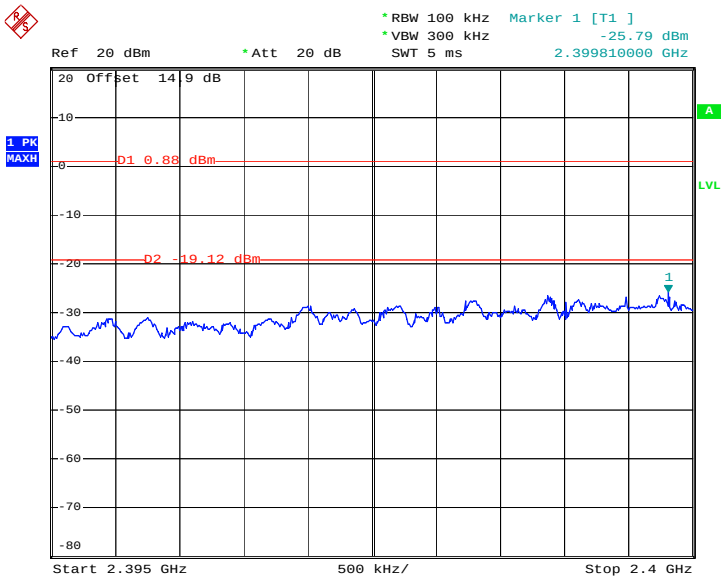
High Band Edge Plot on 802.11b Channel 11



Date: 3.DEC.2011 13:29:08

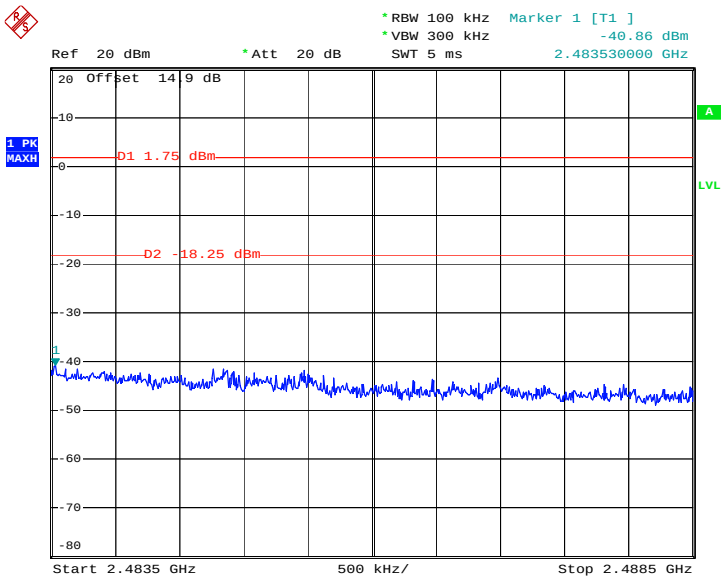
Test Mode :	Mode 4 and 6	Temperature :	24~25℃
Test Band :	802.11g	Relative Humidity :	48~49%
Test Channel :	01 and 11	Test Engineer :	Fly Chen

Low Band Edge Plot on 802.11g Channel 01



Date: 3.DEC.2011 13:44:04

High Band Edge Plot on 802.11g Channel 11



Date: 3.DEC.2011 14:27:41

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.

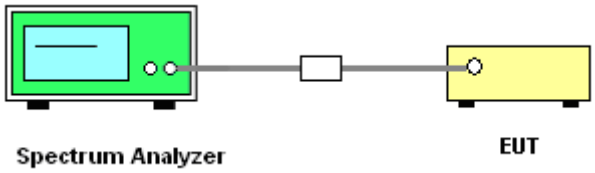
3.4.2 Measuring Instruments

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) ≥ 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.

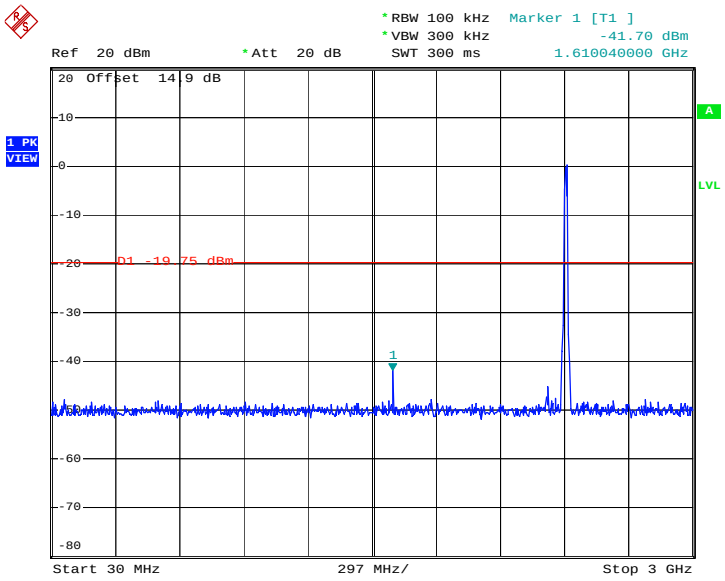
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

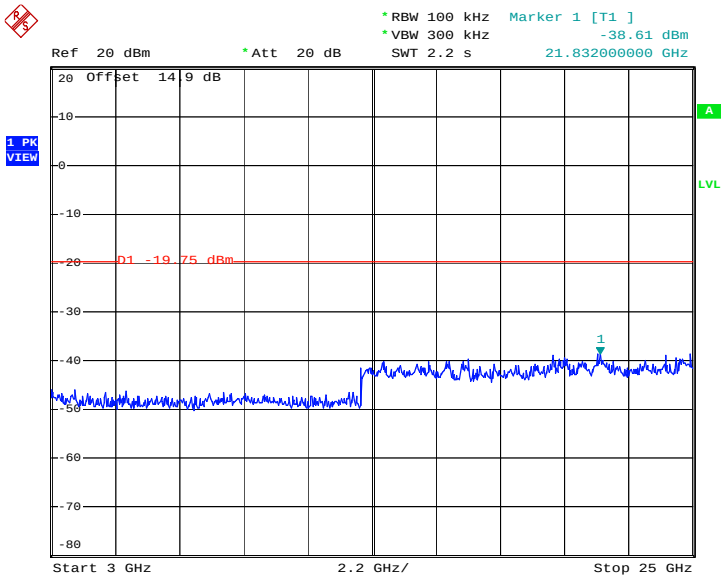
Test Mode :	Mode 1	Temperature :	24~25℃
Test Band :	802.11b	Relative Humidity :	48~49%
Test Channel :	01	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 13:05:14

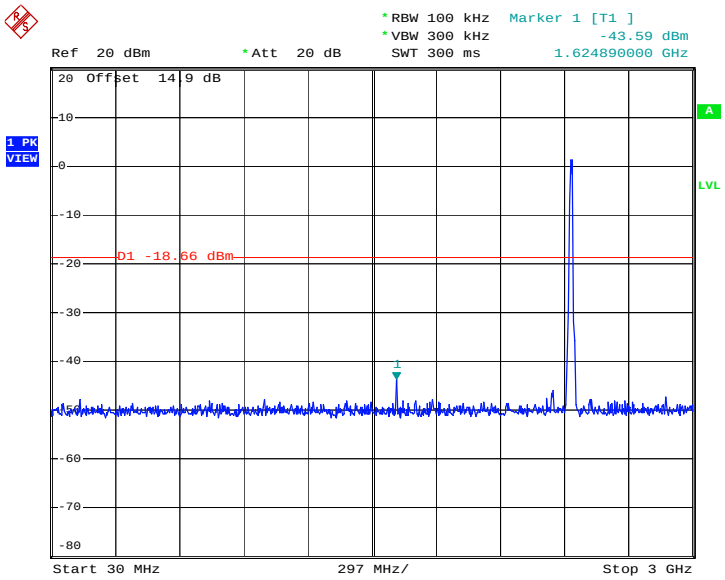
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 3.DEC.2011 13:05:31

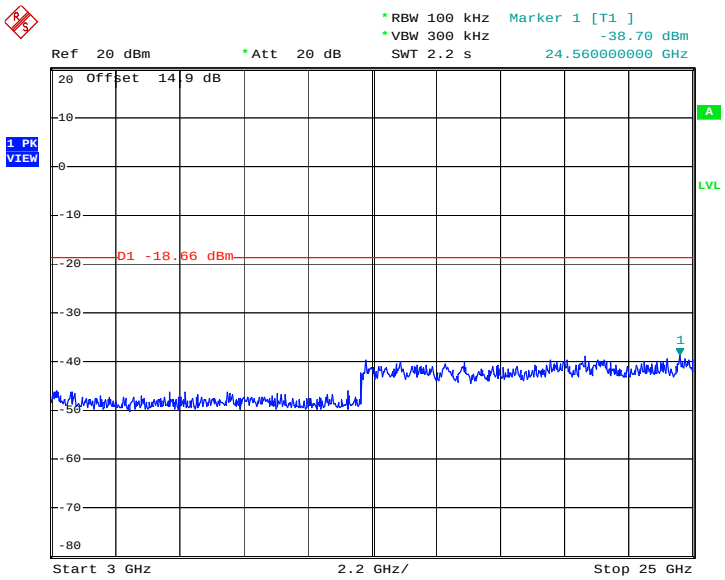
Test Mode :	Mode 2	Temperature :	24~25℃
Test Band :	802.11b	Relative Humidity :	48~49%
Test Channel :	06	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 13:17:01

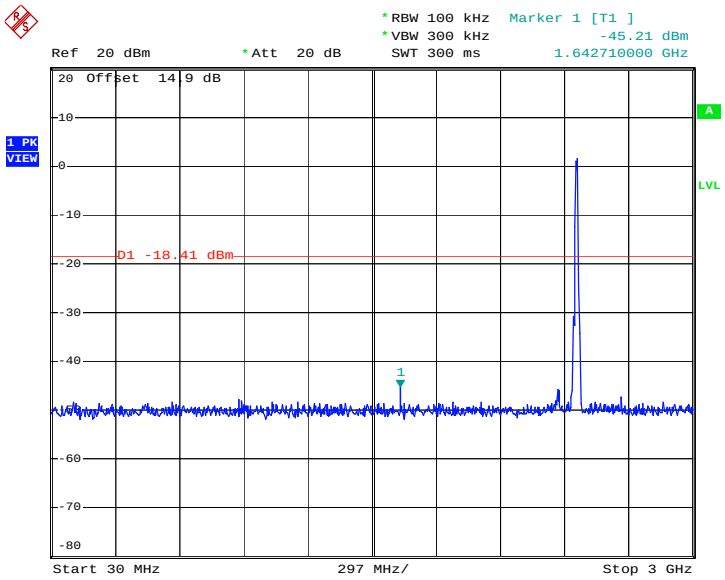
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 3.DEC.2011 13:17:18

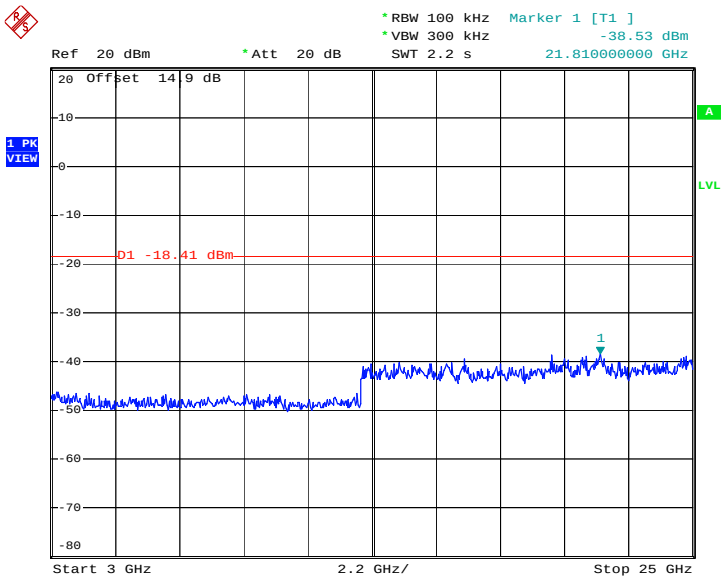
Test Mode :	Mode 3	Temperature :	24~25℃
Test Band :	802.11b	Relative Humidity :	48~49%
Test Channel :	11	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 14:25:06

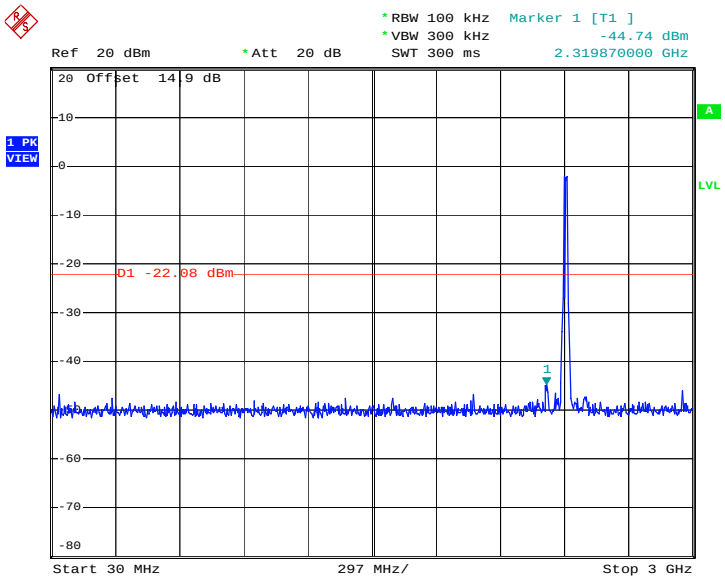
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 3.DEC.2011 14:25:23

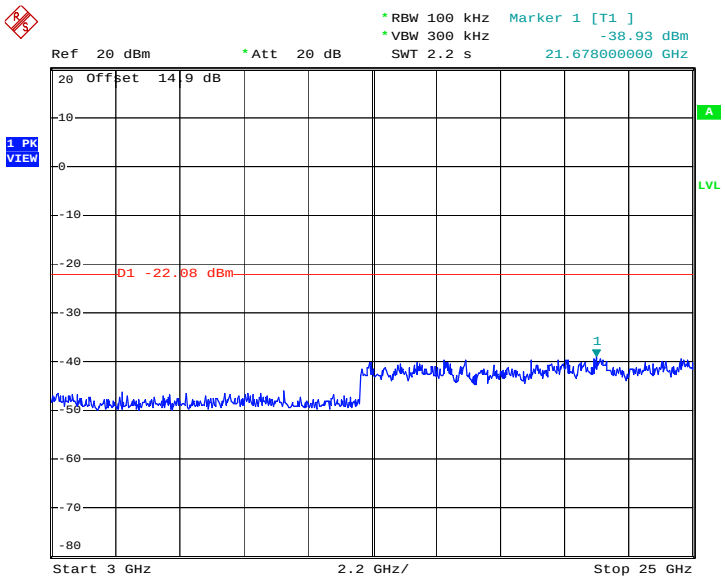
Test Mode :	Mode 4	Temperature :	24~25℃
Test Band :	802.11g	Relative Humidity :	48~49%
Test Channel :	01	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 14:22:55

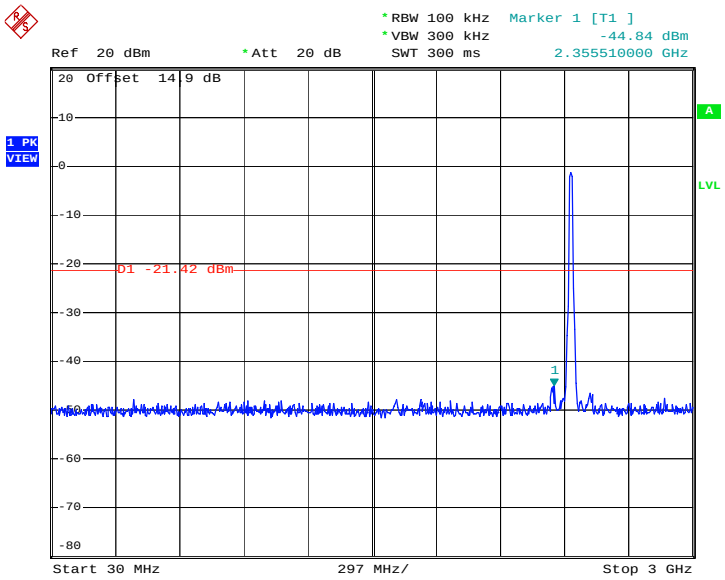
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 3.DEC.2011 14:23:12

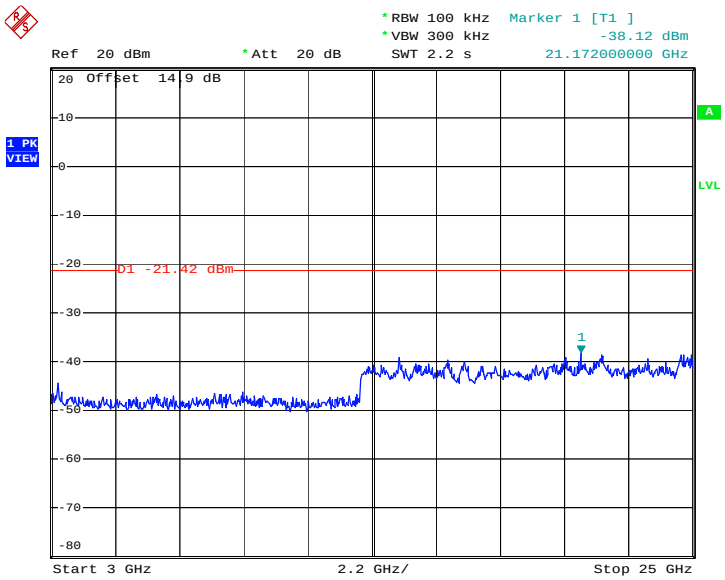
Test Mode :	Mode 5	Temperature :	24~25℃
Test Band :	802.11g	Relative Humidity :	48~49%
Test Channel :	06	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 14:23:52

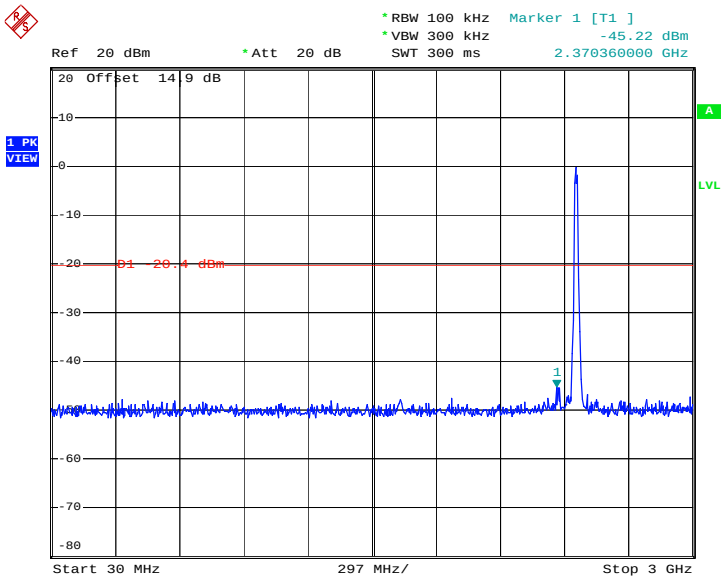
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 3.DEC.2011 14:24:09

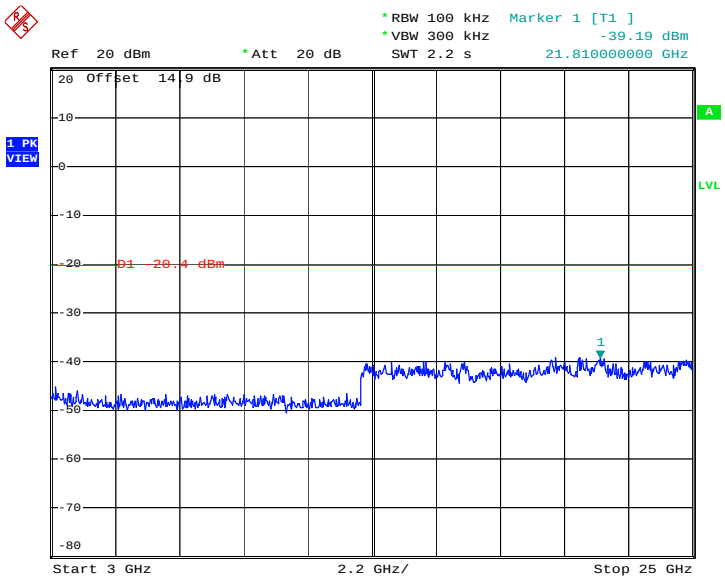
Test Mode :	Mode 6	Temperature :	24~25℃
Test Band :	802.11g	Relative Humidity :	48~49%
Test Channel :	11	Test Engineer :	Fly Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 3.DEC.2011 14:28:56

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



Date: 3.DEC.2011 14:29:13

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.

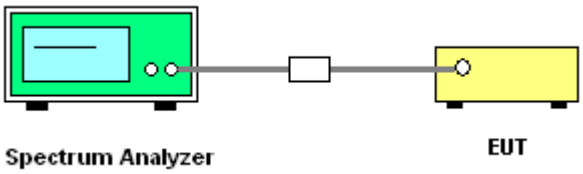
3.5.2 Measuring Instruments

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

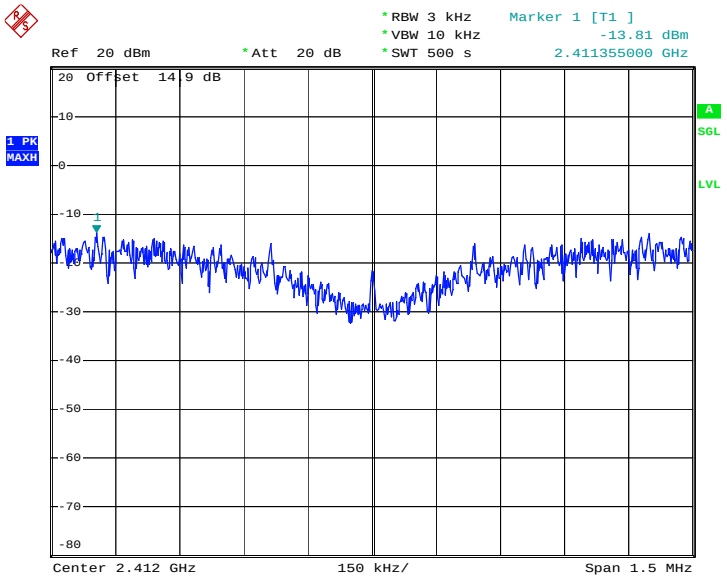


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~25℃
Test Engineer :	Fly Chen	Relative Humidity :	48~49%

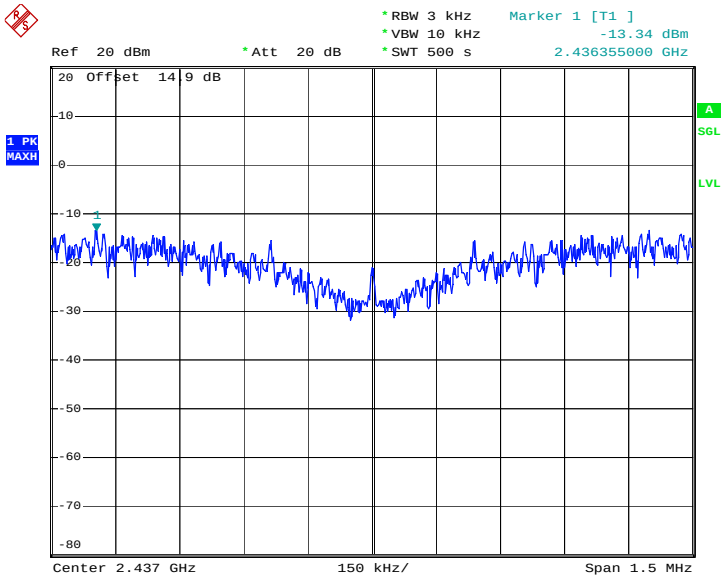
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-13.81	8	Pass
06	2437	-13.34	8	Pass
11	2462	-13.18	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



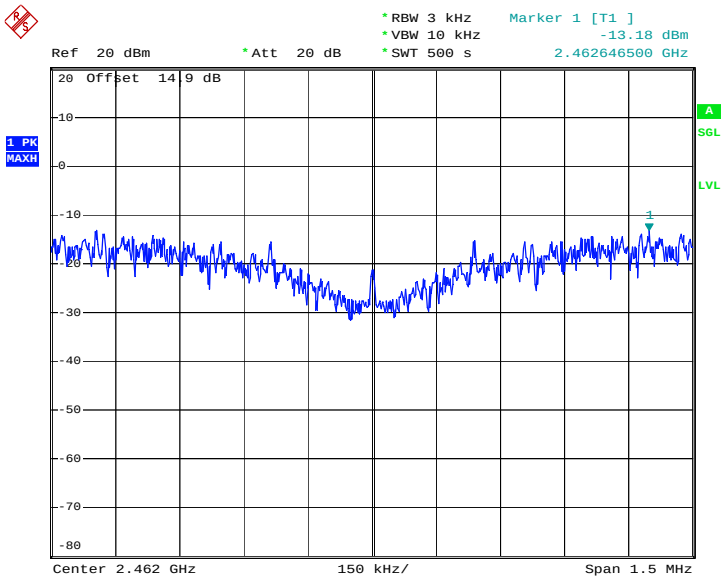
Date: 3.DEC.2011 13:14:42

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 3.DEC.2011 13:26:11

Mode 3 : PSD Plot on 802.11b Channel 11

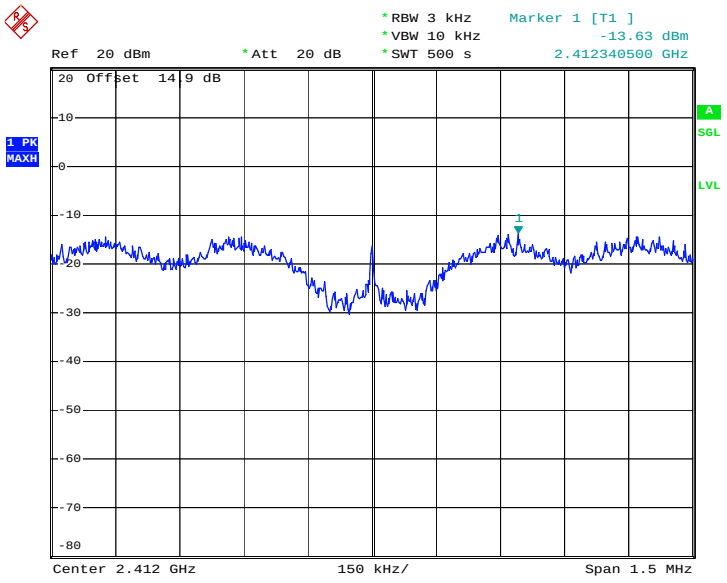


Date: 3.DEC.2011 13:39:48

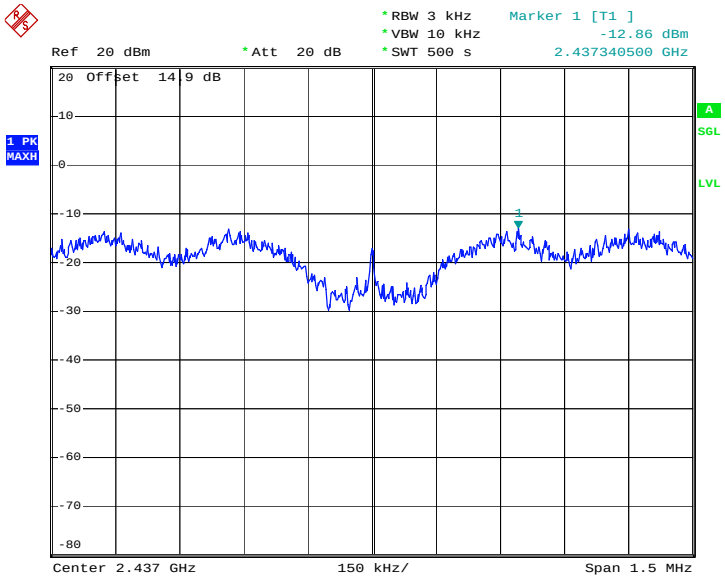
Test Mode :	Mode 4, 5, 6	Temperature :	24~25℃
Test Engineer :	Fly Chen	Relative Humidity :	48~49%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-13.63	8	Pass
06	2437	-12.86	8	Pass
11	2462	-13.02	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01

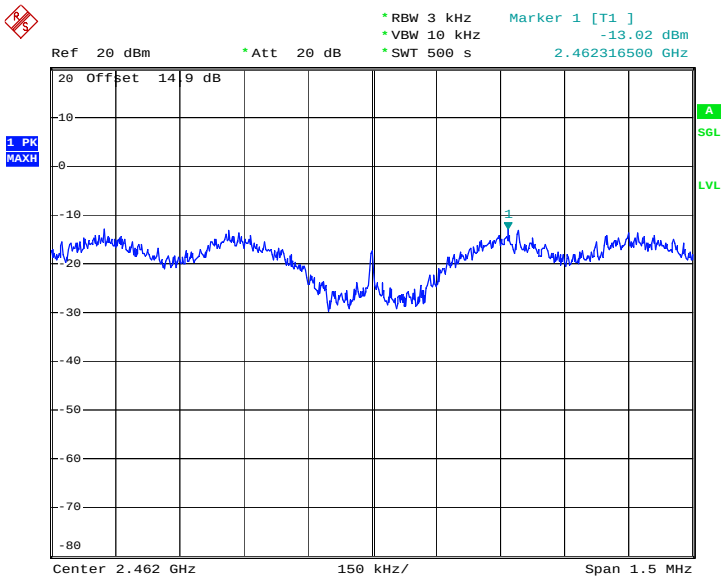


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 3.DEC.2011 14:20:55

Mode 6 : PSD Plot on 802.11g Channel 11



Date: 3.DEC.2011 14:39:05

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.

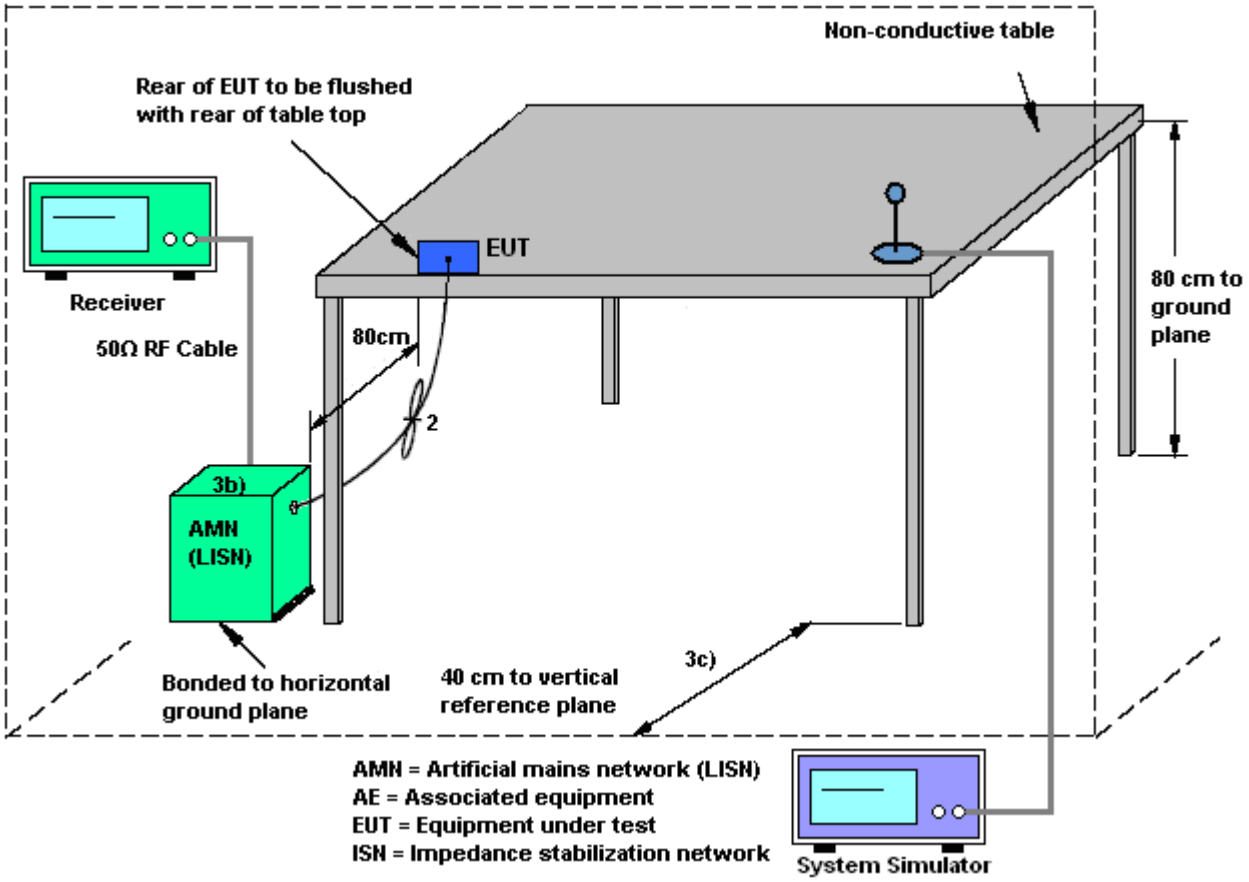
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

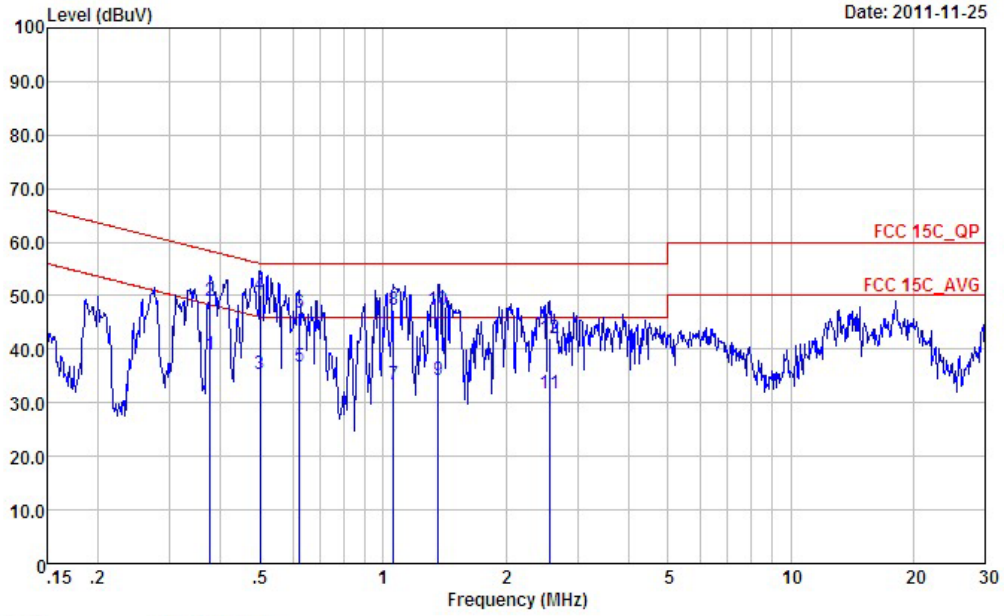
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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

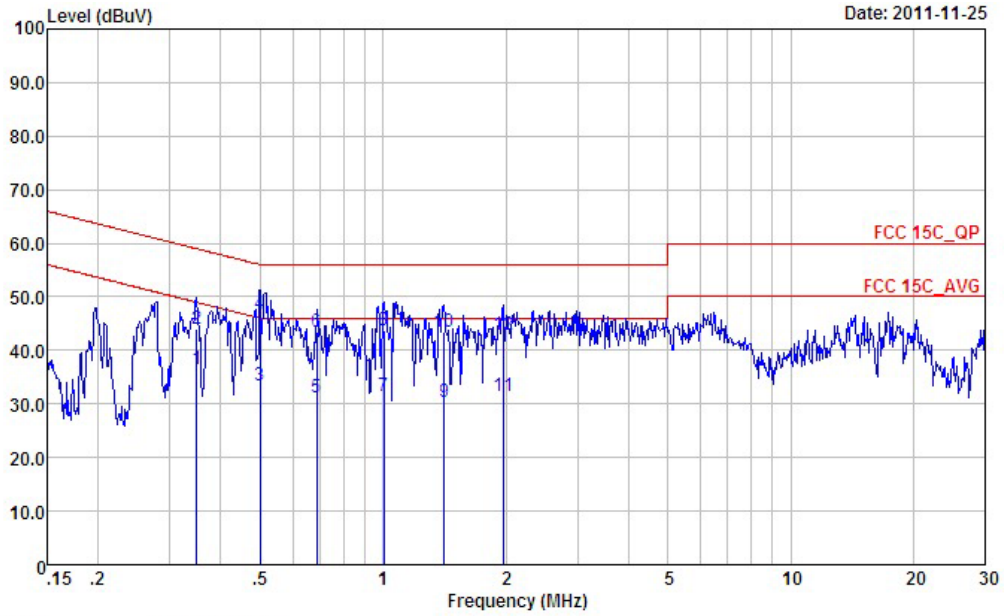
Test Mode :	Mode 1	Temperature :	23℃
Test Engineer :	Lei Wang	Relative Humidity :	45%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM 850 Idle + Bluetooth Link + WIFI Link(2.4GHz) + Adapter + Earphone + Camera		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition : FCC 15C_QP LISN_L_2000601 LINE
Project : (FR)1N1201
Mode : Mode1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.38	39.10	-9.24	48.34	29.01	0.02	10.07	Average
2	0.38	48.90	-9.44	58.34	38.81	0.02	10.07	QP
3	0.50	35.31	-10.70	46.01	25.20	0.02	10.09	Average
4	0.50	50.01	-6.00	56.01	39.90	0.02	10.09	QP
5	0.62	36.72	-9.28	46.00	26.60	0.02	10.10	Average
6	0.62	46.72	-9.28	56.00	36.60	0.02	10.10	QP
7	1.06	33.44	-12.56	46.00	23.29	0.03	10.12	Average
8	1.06	47.24	-8.76	56.00	37.09	0.03	10.12	QP
9	1.37	34.35	-11.65	46.00	24.20	0.03	10.12	Average
10	1.37	47.25	-8.75	56.00	37.10	0.03	10.12	QP
11	2.55	31.72	-14.28	46.00	21.50	0.04	10.18	Average
12	2.55	42.02	-13.98	56.00	31.80	0.04	10.18	QP

Test Mode :	Mode 1	Temperature :	23℃
Test Engineer :	Lei Wang	Relative Humidity :	45%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM 850 Idle + Bluetooth Link + WIFI Link(2.4GHz) + Adapter + Earphone + Camera		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-SZ
Condition : FCC 15C_QP LISN_N_2000601 NEUTRAL
Project : (FR)1N1201
Mode : Mode1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.35	36.49	-12.51	49.00	26.40	0.02	10.07	Average
2	0.35	43.99	-15.01	59.00	33.90	0.02	10.07	QP
3	0.50	33.50	-12.51	46.01	23.39	0.02	10.09	Average
4	0.50	46.90	-9.11	56.01	36.79	0.02	10.09	QP
5	0.69	31.22	-14.78	46.00	21.10	0.02	10.10	Average
6	0.69	43.42	-12.58	56.00	33.30	0.02	10.10	QP
7	1.00	31.44	-14.56	46.00	21.31	0.02	10.11	Average
8	1.00	43.74	-12.26	56.00	33.61	0.02	10.11	QP
9	1.41	30.35	-15.65	46.00	20.20	0.03	10.12	Average
10	1.41	43.35	-12.65	56.00	33.20	0.03	10.12	QP
11	1.97	31.58	-14.42	46.00	21.40	0.03	10.15	Average
12	1.97	42.98	-13.02	56.00	32.80	0.03	10.15	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

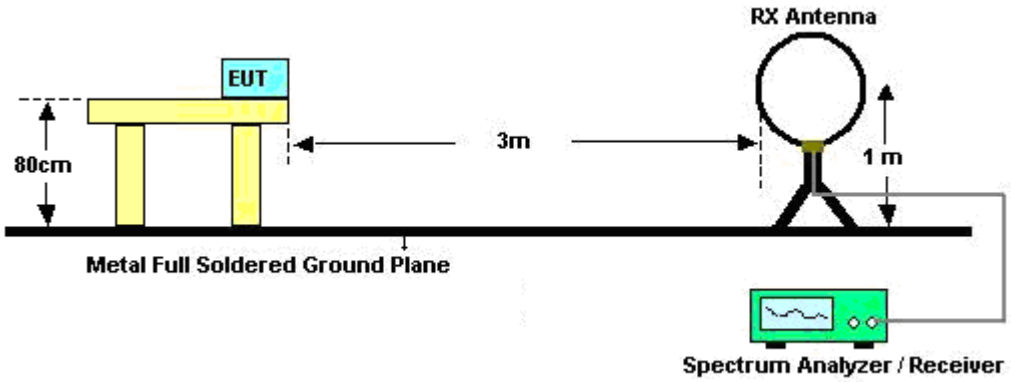
See list of measuring instruments of this test report.

3.7.3 Test Procedures

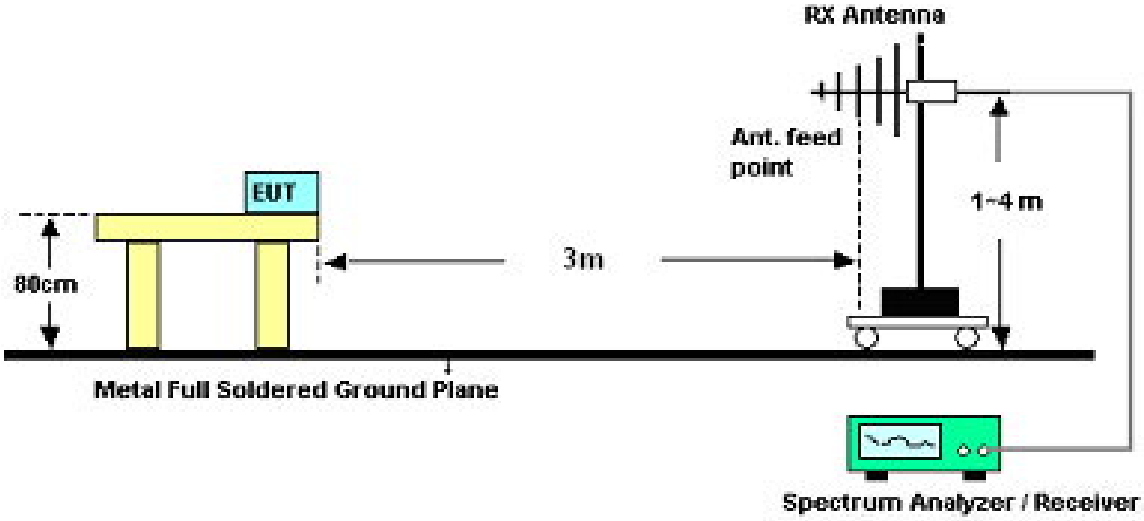
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
   (2) 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 (specific distance [3m] / test distance [1m]) (dB)
3. 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

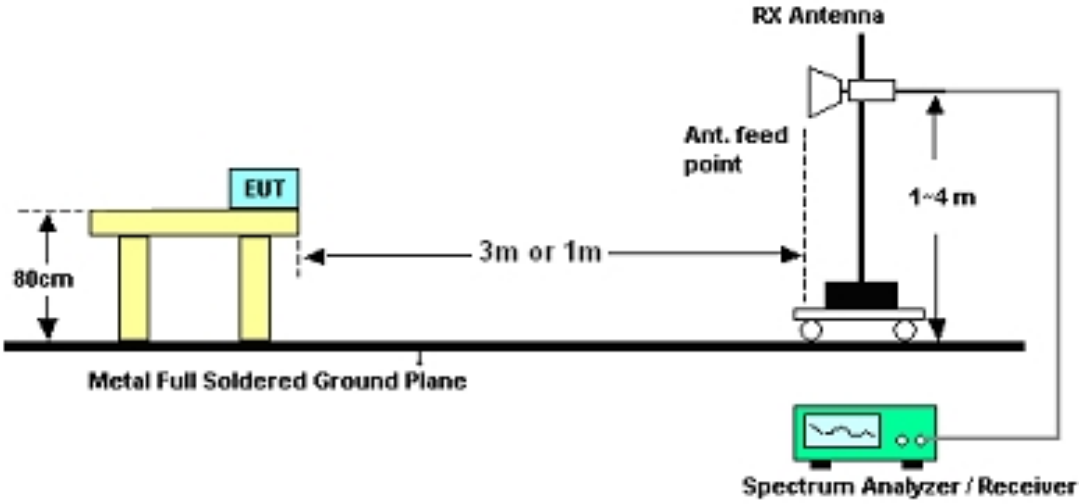
For radiated emissions below 30MHz



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 :	Chenmy Cheng	Temperature :	22~23℃
		Relative Humidity :	45~46%

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 (specific distance / 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 :	22~23℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2412 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
30.54	20.45	-19.55	40	32.99	17.29	0.25	30.08	-	-	Peak
79.95	17.48	-22.52	40	40.7	6.47	0.35	30.04	-	-	Peak
249.78	22.6	-23.4	46	39.77	12	0.67	29.84	-	-	Peak
633.9	25.19	-20.81	46	34.93	18.82	1.08	29.64	-	-	Peak
836.9	30.3	-15.7	46	38.31	20.37	1.27	29.65	200	331	Peak
921.6	27.41	-18.59	46	35.03	20.57	1.31	29.5	-	-	Peak
2325.2	55.22	-18.78	74	53.09	32.76	3.27	33.9	102	323	Peak
2325.2	48.54	-5.46	54	46.41	32.76	3.27	33.9	102	323	Average
2412	105.06	-	-	102.73	32.89	3.52	34.08	100	321	Peak
2412	100.77	-	-	98.44	32.89	3.52	34.08	100	321	Average
2499.05	50.28	-23.72	74	47.74	33.05	3.72	34.23	101	311	Peak
2499.05	43.71	-10.29	54	41.17	33.05	3.72	34.23	101	311	Average

Test Mode :	Mode 1	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2412 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
30.54	30.61	-9.39	40	43.15	17.29	0.25	30.08	-	-	Peak
41.34	31.12	-8.88	40	49.99	10.95	0.26	30.08	100	117	Peak
81.03	21.58	-18.42	40	44.4	6.87	0.35	30.04	-	-	Peak
748.7	25.5	-20.5	46	33.97	19.89	1.18	29.54	-	-	Peak
836.9	29.01	-16.99	46	37.02	20.37	1.27	29.65	-	-	Peak
921.6	29.38	-16.62	46	37	20.57	1.31	29.5	-	-	Peak
2324.82	54.48	-19.52	74	52.35	32.76	3.27	33.9	102	89	Peak
2324.82	47.58	-6.42	54	45.45	32.76	3.27	33.9	102	89	Average
2412	105.98	-	-	103.65	32.89	3.52	34.08	101	87	Peak
2412	101.65	-	-	99.32	32.89	3.52	34.08	101	87	Average
2496.58	52.14	-21.86	74	49.6	33.05	3.72	34.23	100	91	Peak
2496.58	45.54	-8.46	54	43	33.05	3.72	34.23	100	91	Average

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2437 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
30.54	19.91	-20.09	40	32.45	17.29	0.25	30.08	-	-	Peak
81.3	17.43	-22.57	40	40.25	6.87	0.35	30.04	-	-	Peak
249.78	21.3	-24.7	46	38.47	12	0.67	29.84	-	-	Peak
784.4	27.32	-18.68	46	35.81	19.86	1.23	29.58	-	-	Peak
825	36.81	-9.19	46	44.99	20.18	1.26	29.62	100	205	Peak
845.3	31.54	-14.46	46	39.45	20.47	1.28	29.66	-	-	Peak
2348	59.15	-14.85	74	56.98	32.78	3.33	33.94	100	318	Peak
2348	52.07	-1.93	54	49.9	32.78	3.33	33.94	100	318	Average
2437	104.8	-	-	102.4	32.95	3.6	34.15	122	319	Peak
2437	100.91	-	-	98.51	32.95	3.6	34.15	122	319	Average
2487.84	47.11	-26.89	74	44.57	33.05	3.72	34.23	120	360	Peak
2487.84	36.18	-17.82	54	33.64	33.05	3.72	34.23	120	360	Average

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2437 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
30	32.57	-7.43	40	44.39	18	0.26	30.08	-	-	Peak
41.88	32.79	-7.21	40	51.66	10.95	0.26	30.08	100	220	Peak
80.49	22.67	-17.33	40	45.76	6.6	0.35	30.04	-	-	Peak
556.9	25.46	-20.54	46	35.61	18.51	1.01	29.67	-	-	Peak
824.3	27.74	-18.26	46	35.94	20.16	1.26	29.62	-	-	Peak
921.6	29.1	-16.9	46	36.72	20.57	1.31	29.5	-	-	Peak
2352.56	57.97	-16.03	74	55.76	32.81	3.38	33.98	100	92	Peak
2352.56	51.6	-2.4	54	49.39	32.81	3.38	33.98	100	92	Average
2437	107.54	-	-	105.14	32.95	3.6	34.15	103	93	Peak
2437	103.95	-	-	101.55	32.95	3.6	34.15	103	93	Average
2485.18	48.95	-25.05	74	46.46	33.01	3.68	34.2	100	100	Peak
2485.18	37.08	-16.92	54	34.59	33.01	3.68	34.2	100	100	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
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
41.61	21.43	-18.57	40	40.3	10.95	0.26	30.08	-	-	Peak
149.61	20.04	-23.46	43.5	39.43	10.07	0.51	29.97	-	-	Peak
249.78	21.88	-24.12	46	39.05	12	0.67	29.84	-	-	Peak
786.5	26.34	-19.66	46	34.83	19.86	1.23	29.58	-	-	Peak
827.8	27.82	-18.18	46	35.96	20.22	1.27	29.63	-	-	Peak
849.5	31.42	-14.58	46	39.29	20.51	1.28	29.66	100	113	Peak
2370.8	53.5	-20.5	74	51.26	32.83	3.42	34.01	200	331	Peak
2370.8	46.84	-7.16	54	44.6	32.83	3.42	34.01	200	331	Average
2462	104	-	-	101.55	32.98	3.64	34.17	200	326	Peak
2462	99.89	-	-	97.44	32.98	3.64	34.17	200	326	Average
2488.98	50.49	-23.51	74	47.95	33.05	3.72	34.23	200	203	Peak
2488.98	39.76	-14.24	54	37.22	33.05	3.72	34.23	200	203	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	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
34.32	31.59	-8.41	40	45.89	15.56	0.23	30.09	-	-	Peak
41.88	37.75	-2.25	40	56.62	10.95	0.26	30.08	100	112	Peak
80.49	24.75	-15.25	40	47.84	6.6	0.35	30.04	-	-	Peak
537.3	25.46	-20.54	46	35.92	18.24	0.99	29.69	-	-	Peak
824.3	33.11	-12.89	46	41.31	20.16	1.26	29.62	-	-	Peak
951	25.37	-28.63	54	32.85	20.73	1.33	29.54	-	-	Peak
2371.94	53.89	-20.11	74	51.65	32.83	3.42	34.01	200	266	Peak
2371.94	45.09	-8.91	54	42.85	32.83	3.42	34.01	200	266	Average
2462	104.77	-	-	102.32	32.98	3.64	34.17	102	40	Peak
2462	95.62	-	-	93.17	32.98	3.64	34.17	102	40	Average
2484.23	50.57	-23.43	74	48.08	33.01	3.68	34.2	134	360	Peak
2484.23	37.98	-16.02	54	35.49	33.01	3.68	34.2	134	360	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2412 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
30	22.02	-17.98	40	33.84	18	0.26	30.08	-	-	Peak
41.34	17.75	-22.25	40	36.62	10.95	0.26	30.08	-	-	Peak
249.78	22	-24	46	39.17	12	0.67	29.84	-	-	Peak
748.7	27.29	-18.71	46	35.76	19.89	1.18	29.54	-	-	Peak
845.3	30.16	-15.84	46	38.07	20.47	1.28	29.66	100	209	Peak
921.6	27.69	-18.31	46	35.31	20.57	1.31	29.5	-	-	Peak
2389.8	69.95	-4.05	74	67.67	32.86	3.47	34.05	102	310	Peak
2389.8	50.52	-3.48	54	48.24	32.86	3.47	34.05	102	310	Average
2412	106.13	-	-	103.8	32.89	3.52	34.08	101	71	Peak
2412	93.67	-	-	91.34	32.89	3.52	34.08	101	71	Average
2495.25	55.42	-18.58	74	52.88	33.05	3.72	34.23	100	38	Peak
2495.25	44.9	-9.1	54	42.36	33.05	3.72	34.23	100	38	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2412 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
30.81	30.91	-9.09	40	43.45	17.29	0.25	30.08	-	-	Peak
41.34	32.37	-7.63	40	51.24	10.95	0.26	30.08	100	116	Peak
81.57	20.29	-19.71	40	43.11	6.87	0.35	30.04	-	-	Peak
633.9	25.76	-20.24	46	35.5	18.82	1.08	29.64	-	-	Peak
836.9	28.48	-17.52	46	36.49	20.37	1.27	29.65	-	-	Peak
921.6	28.85	-17.15	46	36.47	20.57	1.31	29.5	-	-	Peak
2389.99	69.7	-4.3	74	67.42	32.86	3.47	34.05	101	89	Peak
2389.99	53.76	-0.24	54	51.48	32.86	3.47	34.05	101	89	Average
2412	109.32	-	-	106.99	32.89	3.52	34.08	102	91	Peak
2412	98.83	-	-	96.5	32.89	3.52	34.08	102	91	Average
2495.63	59.12	-14.88	74	56.58	33.05	3.72	34.23	101	93	Peak
2495.63	48.37	-5.63	54	45.83	33.05	3.72	34.23	101	93	Average

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
Remark :	2437 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
31.62	19.07	-20.93	40	32.37	16.55	0.24	30.09	-	-	Peak
41.07	17.12	-22.88	40	35.28	11.64	0.25	30.05	-	-	Peak
249.78	20.85	-25.15	46	38.02	12	0.67	29.84	-	-	Peak
749.4	26.37	-19.63	46	34.83	19.9	1.18	29.54	-	-	Peak
845.3	29.49	-16.51	46	37.4	20.47	1.28	29.66	122	302	Peak
921.6	27.75	-18.25	46	35.37	20.57	1.31	29.5	-	-	Peak
2352.75	62.41	-11.59	74	60.2	32.81	3.38	33.98	102	320	Peak
2352.75	51.73	-2.27	54	49.52	32.81	3.38	33.98	102	320	Average
2437	105.46	-	-	103.06	32.95	3.6	34.15	120	316	Peak
2437	95.3	-	-	92.9	32.95	3.6	34.15	120	316	Average
2487.84	51.34	-22.66	74	48.8	33.05	3.72	34.23	113	360	Peak
2487.84	41.05	-12.95	54	38.51	33.05	3.72	34.23	113	360	Average

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Vertical
Remark :	2437 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
34.59	27.98	-12.02	40	42.74	15.1	0.23	30.09	-	-	Peak
41.88	30.37	-9.63	40	49.24	10.95	0.26	30.08	100	113	Peak
92.1	19.43	-24.07	43.5	39.67	9.35	0.39	29.98	-	-	Peak
633.9	24.77	-21.23	46	34.51	18.82	1.08	29.64	-	-	Peak
836.9	27.21	-18.79	46	35.22	20.37	1.27	29.65	-	-	Peak
921.6	28.23	-17.77	46	35.85	20.57	1.31	29.5	-	-	Peak
2353.32	63.1	-10.9	74	60.89	32.81	3.38	33.98	102	94	Peak
2353.32	52.2	-1.8	54	49.99	32.81	3.38	33.98	102	94	Average
2437	109.04	-	-	106.64	32.95	3.6	34.15	100	93	Peak
2437	97.5	-	-	95.1	32.95	3.6	34.15	100	93	Average
2486.7	54.56	-19.44	74	52.07	33.01	3.68	34.2	111	95	Peak
2486.7	43.86	-10.14	54	41.37	33.01	3.68	34.2	111	95	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	Polarization :	Horizontal
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
31.08	20.75	-19.25	40	33.29	17.29	0.25	30.08	-	-	Peak
249.78	22.17	-23.83	46	39.34	12	0.67	29.84	-	-	Peak
268.95	20.62	-25.38	46	37.49	12.34	0.69	29.9	-	-	Peak
465.9	26.73	-19.27	46	39.05	16.53	0.92	29.77	-	-	Peak
848.8	30.89	-15.11	46	38.77	20.5	1.28	29.66	100	226	Peak
921.6	28.54	-17.46	46	36.16	20.57	1.31	29.5	-	-	Peak
2377.45	62.08	-11.92	74	59.84	32.83	3.42	34.01	128	308	Peak
2377.45	51.05	-2.95	54	48.81	32.83	3.42	34.01	128	308	Average
2462	106.75	-	-	104.3	32.98	3.64	34.17	101	315	Peak
2462	95.9	-	-	93.45	32.98	3.64	34.17	101	315	Average
2483.5	63.98	-10.02	74	61.49	33.01	3.68	34.2	100	311	Peak
2483.5	46.28	-7.72	54	43.79	33.01	3.68	34.2	100	311	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~46%
Test Engineer :	Chenmy Cheng	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
34.86	27.79	-12.21	40	42.55	15.1	0.23	30.09	-	-	Peak
42.15	30.83	-9.17	40	50.18	10.48	0.26	30.09	136	209	Peak
80.49	21.15	-18.85	40	44.24	6.6	0.35	30.04	-	-	Peak
748.7	25.24	-20.76	46	33.71	19.89	1.18	29.54	-	-	Peak
836.9	27.86	-18.14	46	35.87	20.37	1.27	29.65	-	-	Peak
921.6	29.31	-16.69	46	36.93	20.57	1.31	29.5	-	-	Peak
2368.9	63.97	-10.03	74	61.73	32.83	3.42	34.01	102	93	Peak
2368.9	53.29	-0.71	54	51.05	32.83	3.42	34.01	102	93	Average
2462	108.94	-	-	106.49	32.98	3.64	34.17	100	94	Peak
2462	98.01	-	-	95.56	32.98	3.64	34.17	100	94	Average
2483.5	67.43	-6.57	74	64.94	33.01	3.68	34.2	102	88	Peak
2483.5	50.28	-3.72	54	47.79	33.01	3.68	34.2	102	88	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	Jan. 07, 2011	Dec. 03, 2011	Jan. 06, 2012	Conducted (TH01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band	Jan. 07, 2011	Dec. 03, 2011	Jan. 06, 2012	Conducted (TH01-KS)
DC Power Supply	TOPWARD	GPS-3030D	E1884515	N/A	Aug. 23, 2011	Dec. 03, 2011	Aug. 22, 2012	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	N/A	Jan. 17, 2011	Dec. 03, 2011	Jan. 16, 2012	Conducted (TH01-KS)
ESCIO TEST Receiver	R&S	1142.8007.03	100724	9K-3GHz	Mar. 08, 2011	Nov. 25, 2011	Mar. 07, 2012	Conduction (CO01-SZ)
AC LISN	ETS-LINDGREN	3816/2SH	00103912	0.1MHz~108MHz	Feb. 28, 2011	Nov. 25, 2011	Feb. 27, 2012	Conduction (CO01-SZ)
AC LISN	ETS-LINDGREN	3816/2SH	00103892	0.1MHz~108MHz	Feb. 28, 2011	Nov. 25, 2011	Feb. 27, 2012	Conduction (CO01-SZ)
AVR	Throma	61602	61602000891N/A	NA	Oct. 12, 2011	Nov. 25, 2011	Oct. 11, 2012	Conduction (CO01-SZ)
System Simulator	Agilent	8960	MY50264168	GSM/WCDMA/CDMA2000	Mar. 14, 2011	Nov. 25, 2011	Mar. 13, 2012	Conduction (CO01-SZ)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Dec. 06, 2011	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Dec. 06, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2010	Dec. 06, 2011	Dec. 06, 2011	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/00	9G-30GHz	Jul. 28, 2011	Dec. 06, 2011	Jul. 27, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Dec. 06, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 09, 2010	Dec. 06, 2011	Dec. 08, 2011	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 07, 2011	Dec. 06, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz-18GHz	Nov. 07, 2011	Dec. 06, 2011	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz -40GHz	Oct. 11, 2011	Dec. 06, 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 Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP1N1201 as below.