

FCC RF Test Report

APPLICANT : Huawei Technologies Co., Ltd.
EQUIPMENT : Smart Phone
BRAND NAME : Huawei
MODEL NAME : 007HW
PRODUCTING NAME : VISION/HUAWEI
U8850-91/U8850-91
FCC ID : QISU8850-91
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on May 11, 2011 and completely tested on Jun. 29, 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 (KUNSHAN) INC.
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.



TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant.....	5
1.2 Manufacturer.....	5
1.3 Feature of Equipment Under Test	5
1.4 Testing Site.....	6
1.5 Applied Standards	6
1.6 Ancillary Equipment List	7
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	8
2.1 RF Power	8
2.2 Test Mode.....	9
2.3 Connection Diagram of Test System.....	10
2.4 RF Utility	11
3 TEST RESULT.....	12
3.1 6dB Bandwidth Measurement	12
3.2 Output Power Measurement.....	19
3.3 Band Edges Measurement.....	21
3.4 Spurious Emission Measurement.....	29
3.5 Power Spectral Density Measurement	39
3.6 AC Conducted Emission Measurement.....	46
3.7 Radiated Emission Measurement.....	50
3.8 Antenna Requirements.....	71
4 LIST OF MEASURING EQUIPMENT	72
5 UNCERTAINTY OF EVALUATION.....	73
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR151102	Rev. 01	Initial issue of report	Jul. 29, 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 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 14.87 dB at 0.19 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 8.51 dB at 2483.5 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Huawei Technologies Co., Ltd.

Bantian, Longgang District, Shenzhen, 51829 Guangdong, P.R.China

1.2 Manufacturer

Huawei Technologies Co., Ltd.

Bantian, Longgang District, Shenzhen, 51829 Guangdong, P.R.China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smart Phone
Brand Name	Huawei
Model Name	007HW
Producing Name	VISION/HUAWEI U8850-91/U8850-91
FCC ID	QISU8850-91
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	2412+(n-1)*5 MHz; n=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 18.35 dBm (0.068 W) 802.11g : 20.46 dBm (0.111 W) 802.11n (BW 20MHz) : 18.87 dBm (0.077 W)
Antenna Type	PIFA Antenna with gain -6.7 dBi
HW Version	PR 2.5
SW Version	V2.15
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : 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	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 (DoC), 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.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 0.9 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	CELLINK	BTHS-6025-F	PQY-4710874200357	N/A	N/A
5.	Router	D-link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
6.	DC Power Supply	GW	GPC-60300	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	18.05	18.35	18.32	18.34
CH 06	2437 MHz	18.14	18.22	18.27	18.29
CH 11	2462 MHz	17.63	17.98	18.27	18.05

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	20.46	20.04	19.51	19.21	19.18	19.14	19.58	19.87
CH 06	2437 MHz	20.08	19.87	19.28	19.62	19.76	19.45	19.63	19.78
CH 11	2462 MHz	19.75	19.78	19.54	19.02	18.87	18.68	19.39	19.24

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS=0	MCS=1	MCS=2	MCS=3	MCS=4	MCS=5	MCS=6	MCS=7
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 01	2412 MHz	18.54	18.14	18.19	18.13	17.45	17.58	18.15	18.34
CH 06	2437 MHz	18.87	18.32	18.4	18.12	18.03	17.95	18.01	18.25
CH 11	2462 MHz	18.64	18.23	18.03	17.68	17.42	18.01	18.06	17.98

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 2Mbps for 802.11b, 6Mbps for 802.11g, and 6.5Mbps for 802.11n (BW 20MHz) for all the test cases due to the highest RF output power.
2. The EUT is programmed to transmit signals continuously for all testing.
3. Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

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).

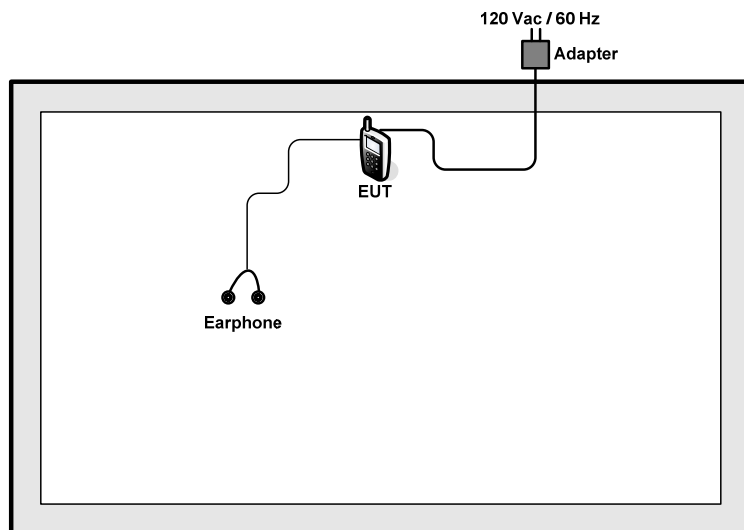
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

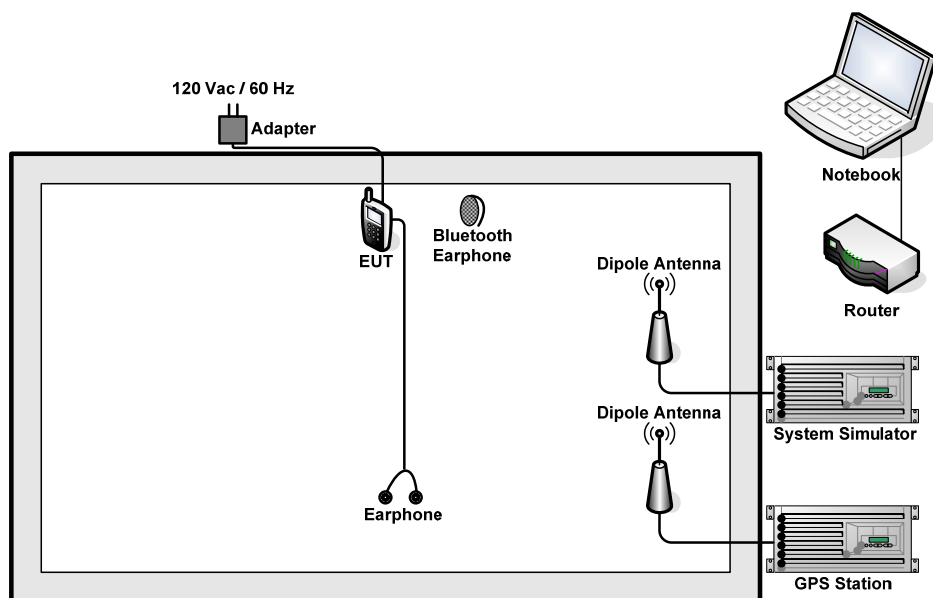
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 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 : GSM850 Idle + Bluetooth Link + WLAN Link + Adapter + Earphone + GPS Rx	

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

The programmed RF utility “* # * # 373 # * # *” 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.

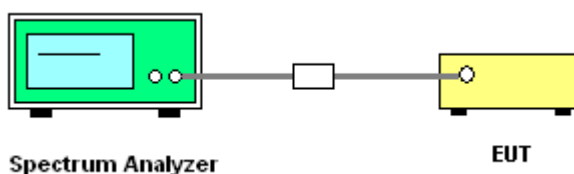
3.1.2 Measuring Instruments

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

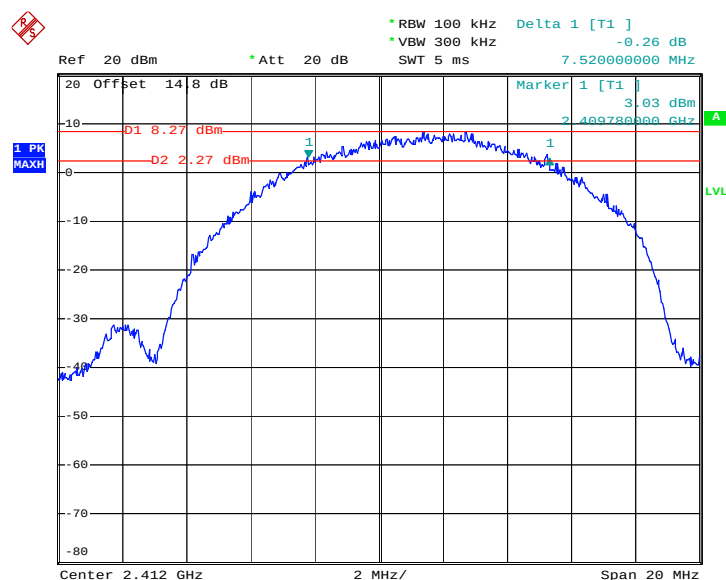


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	25~26℃
Test Engineer :	Jun Liu	Relative Humidity :	60~62%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.52	0.5	Pass
06	2437	7.08	0.5	Pass
11	2462	7.40	0.5	Pass

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



Date: 24.JUN.2011 10:29:01



Ref 20 dBm * Att 20 dB SWT 5 ms Delta 1 [T1] 0.85 dB 7.08000000 MHz

20 Offset 14.8 dB

Marker 1 [T1] 2.53 dBm 2.43468000 GHz

D1 8.25 dBm D2 2.25 dBm

1 PK MAX

LVL

Center 2.437 GHz 2 MHz/ Span 20 MHz

Date: 24.JUN.2011 10:50:11

* RBW 100 kHz
 * VBW 300 kHz
 SWT 5 ms

Delta 1 [T1]
 -0.00 dB
 7.40000000 MHz

Ref 20 dBm
 * Att 20 dB

20 Offset 14.8 dB

Marker 1 [T1]
 2.06 dBm
 2.45966000 GHz

1 PK
 MAX

D1 8.49 dBm
 D2 2.49 dBm

1
 1

LVL

Center 2.462 GHz
 2 MHz/
 Span 20 MHz

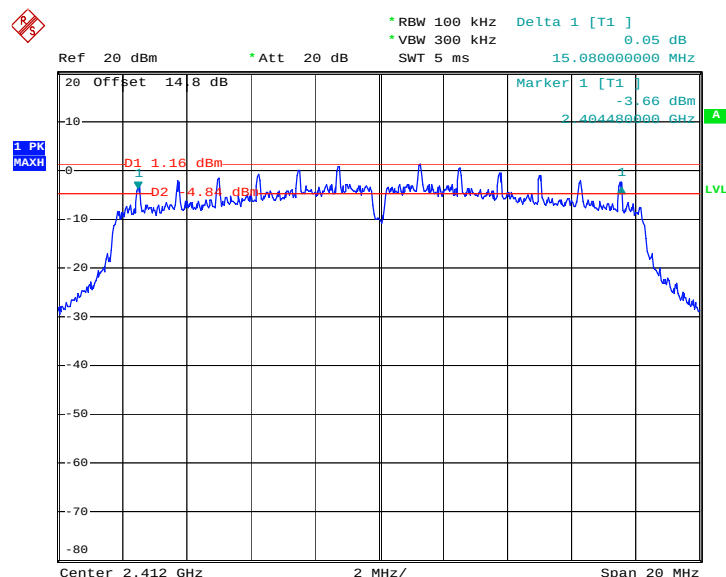
Date: 24.JUN.2011 11:25:18



Test Mode :	Mode 4, 5, 6	Temperature :	25~26°C
Test Engineer :	Jun Liu	Relative Humidity :	60~62%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.08	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.04	0.5	Pass

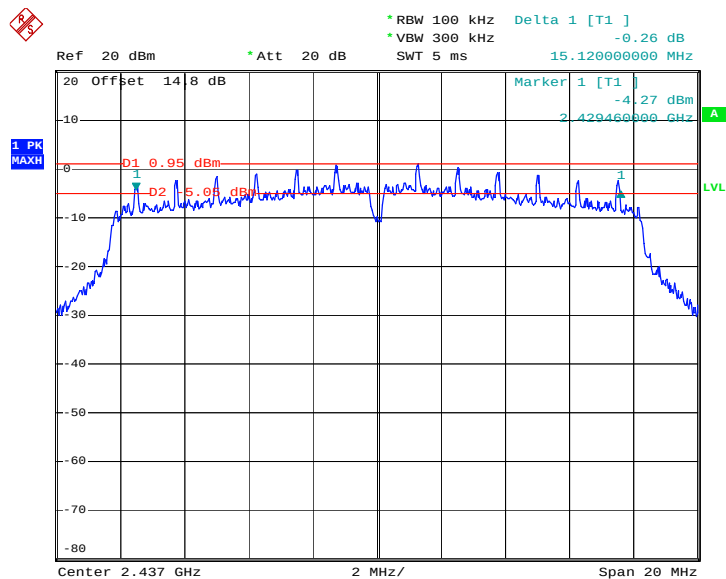
Mode 4 : 6 dB Bandwidth Plot on 802.11g Channel 01



Date: 24.JUN.2011 11:29:10

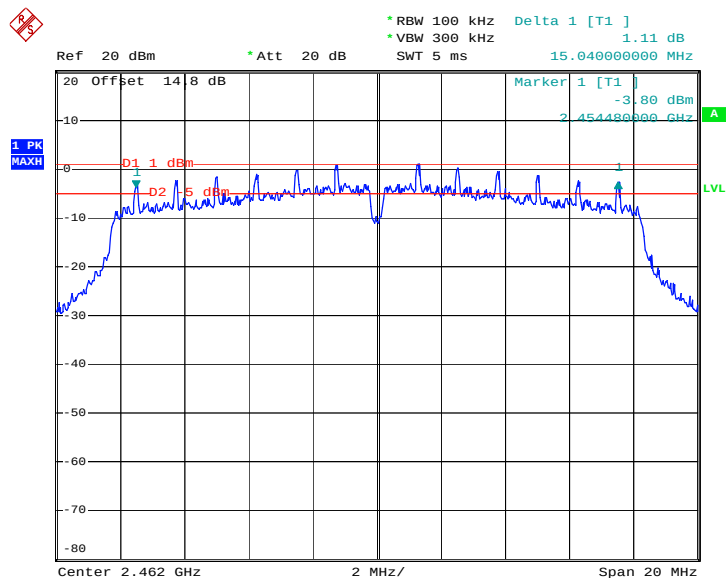


Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 24.JUN.2011 11:57:54

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



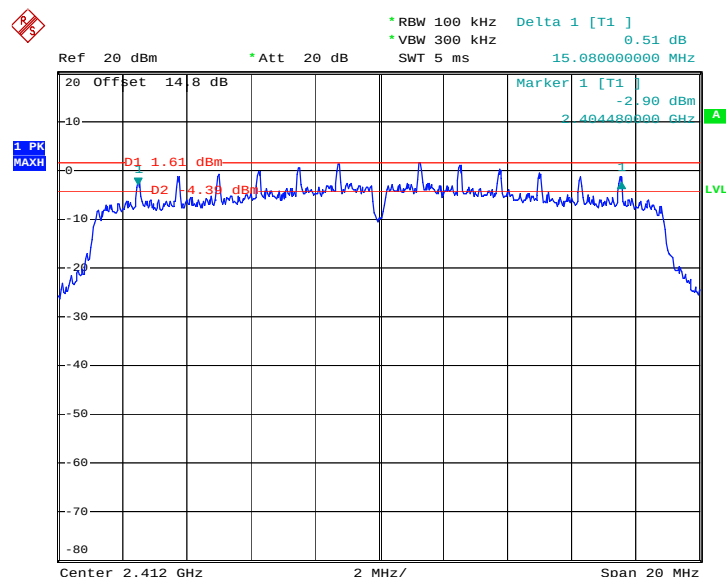
Date: 24.JUN.2011 11:45:57



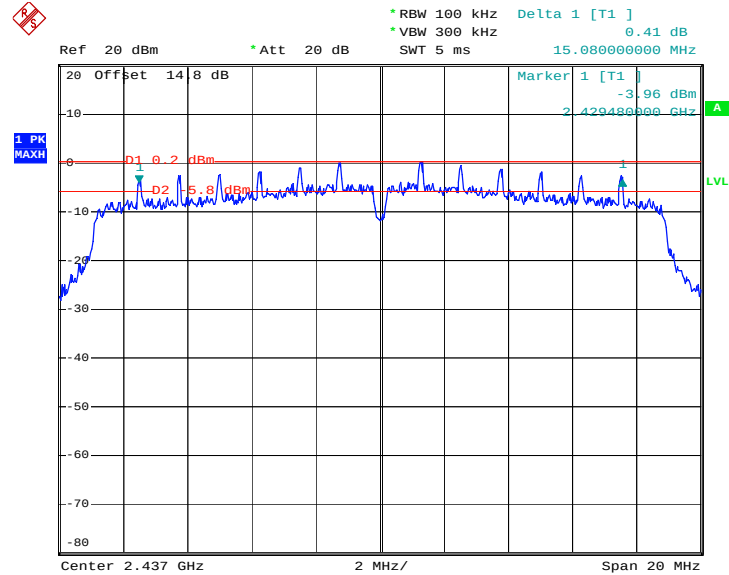
Test Mode :	Mode 7, 8, 9	Temperature :	25~26°C
Test Engineer :	Jun Liu	Relative Humidity :	60~62%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.08	0.5	Pass
06	2437	15.08	0.5	Pass
11	2462	15.12	0.5	Pass

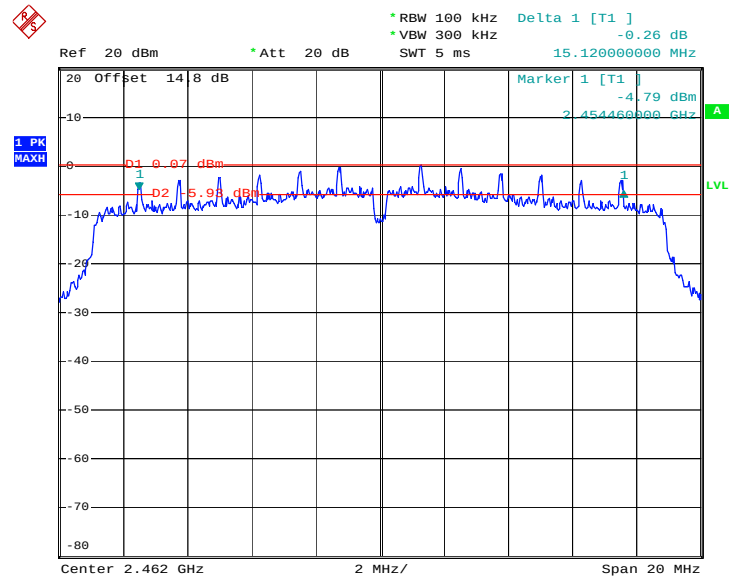
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 24.JUN.2011 13:01:58

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


Date: 24.JUN.2011 13:18:11

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


Date: 24.JUN.2011 13:20:53

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.

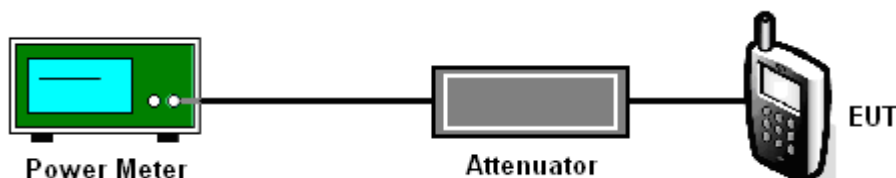
3.2.2 Measuring Instruments

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 :	25~26℃
Test Engineer :	Jun Liu	Relative Humidity :	60~62%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.34	30	Pass
06	2437	18.29	30	Pass
11	2462	18.05	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	25~26℃
Test Engineer :	Jun Liu	Relative Humidity :	60~62%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.46	30	Pass
06	2437	20.08	30	Pass
11	2462	19.75	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	25~26℃
Test Engineer :	Jun Liu	Relative Humidity :	60~62%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.54	30	Pass
06	2437	18.87	30	Pass
11	2462	18.64	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

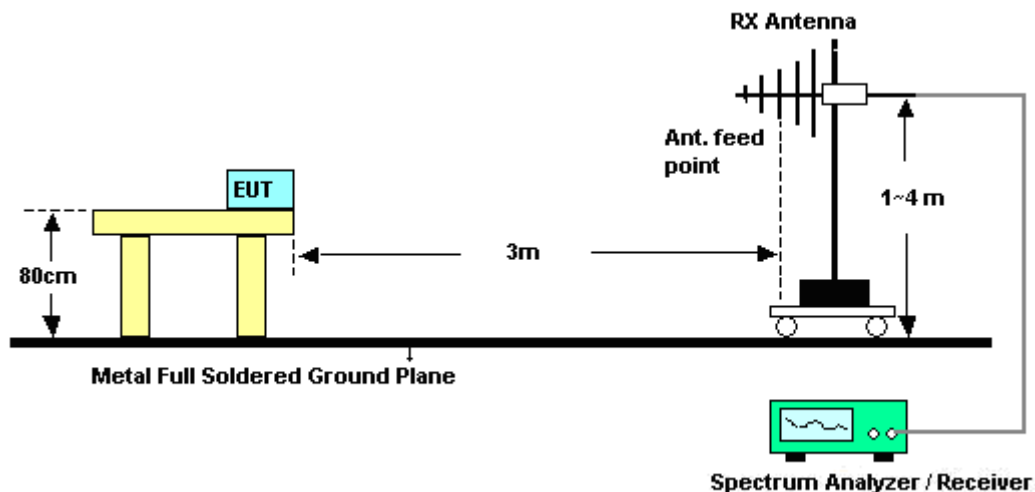
See list of measuring instruments of this test report.

3.3.3 Test Procedures

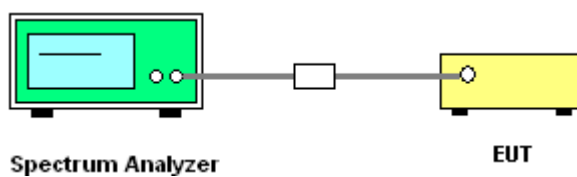
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	24~25℃
Test Band :	802.11b	Relative Humidity :	40~42%
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
2386.57	50.2	-23.8	74	47.92	32.86	3.47	34.05	100	20	Peak
2386.57	38.77	-15.23	54	36.49	32.86	3.47	34.05	100	20	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
2388.47	50.42	-23.58	74	48.14	32.86	3.47	34.05	100	210	Peak
2388.47	39.49	-14.51	54	37.21	32.86	3.47	34.05	100	210	Average

Test Mode :	Mode 3	Temperature :	24~25℃
Test Band :	802.11b	Relative Humidity :	40~42%
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
2484.04	55.19	-18.81	74	52.7	33.01	3.68	34.2	100	20	Peak
2484.04	42.79	-11.21	54	40.3	33.01	3.68	34.2	100	20	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	51.82	-22.18	74	49.33	33.01	3.68	34.2	100	120	Peak
2483.5	40.35	-13.65	54	37.86	33.01	3.68	34.2	100	120	Average

Test Mode :	Mode 4	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	40~42%
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
2389.61	56.96	-17.04	74	54.68	32.86	3.47	34.05	197	45	Peak
2389.61	40.47	-13.53	54	38.19	32.86	3.47	34.05	197	45	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
2390	51.92	-22.08	74	49.64	32.86	3.47	34.05	132	125	Peak
2390	38.69	-15.31	54	36.41	32.86	3.47	34.05	132	125	Average

Test Mode :	Mode 6	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	40~42%
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	45.49	-8.51	54	43	33.01	3.68	34.2	200	52	Average
2483.5	57.3	-16.7	74	54.81	33.01	3.68	34.2	200	52	Peak

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	45.29	-8.71	54	42.8	33.01	3.68	34.2	100	0	Average
2483.5	58.58	-15.42	74	56.09	33.01	3.68	34.2	100	0	Peak

Test Mode :	Mode 7	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~42%
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
2390	53.52	-20.48	74	51.24	32.86	3.47	34.05	100	0	Peak
2390	41.28	-12.72	54	39	32.86	3.47	34.05	100	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
2390	53.72	-20.28	74	51.44	32.86	3.47	34.05	100	0	Peak
2390	41.03	-12.97	54	38.75	32.86	3.47	34.05	100	0	Average

Test Mode :	Mode 9	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~42%
Test Channel :	11	Test Engineer :	Chenmy Cheng

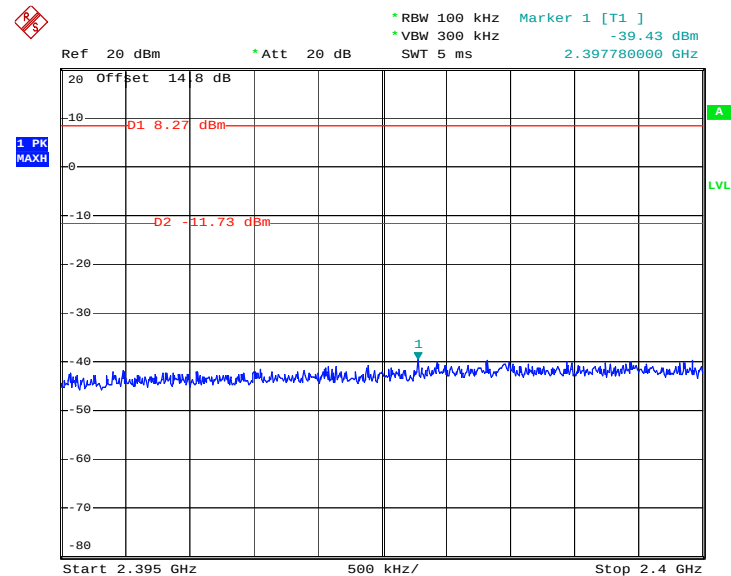
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	57.7	-16.3	74	55.21	33.01	3.68	34.2	200	360	Peak
2483.5	44.63	-9.37	54	42.14	33.01	3.68	34.2	200	360	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	42.62	-11.38	54	40.13	33.01	3.68	34.2	100	360	Average
2483.5	58.06	-15.94	74	55.57	33.01	3.68	34.2	100	360	Peak

3.3.6 Test Plots of Conducted Band Edges

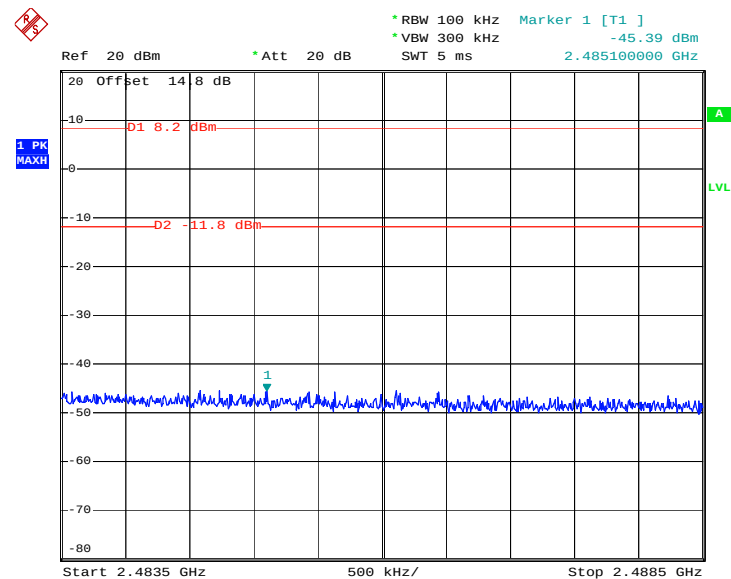
Test Mode :	Mode 1 and 3	Temperature :	25~26°C
Test Band :	802.11b	Relative Humidity :	60~62%
Test Channel :	01 and 11	Test Engineer :	Jun Liu

Low Band Edge Plot on 802.11b Channel 01



Date: 24.JUN.2011 10:30:13

High Band Edge Plot on 802.11b Channel 11

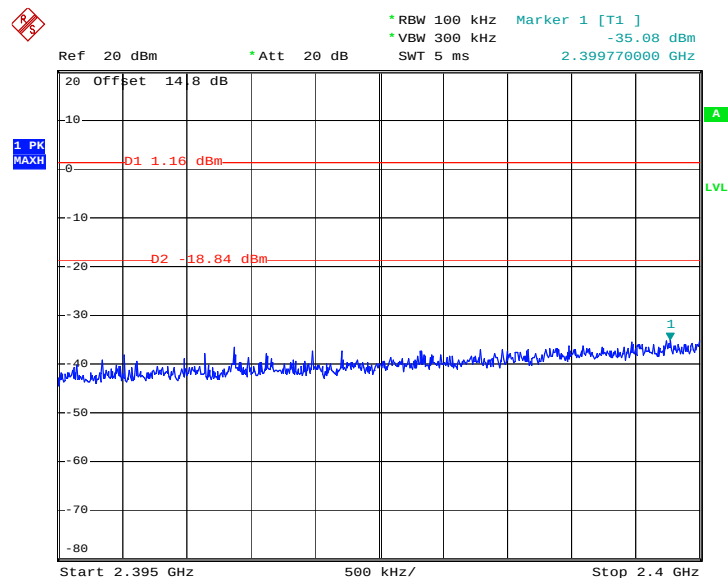


Date: 24.JUN.2011 11:12:59



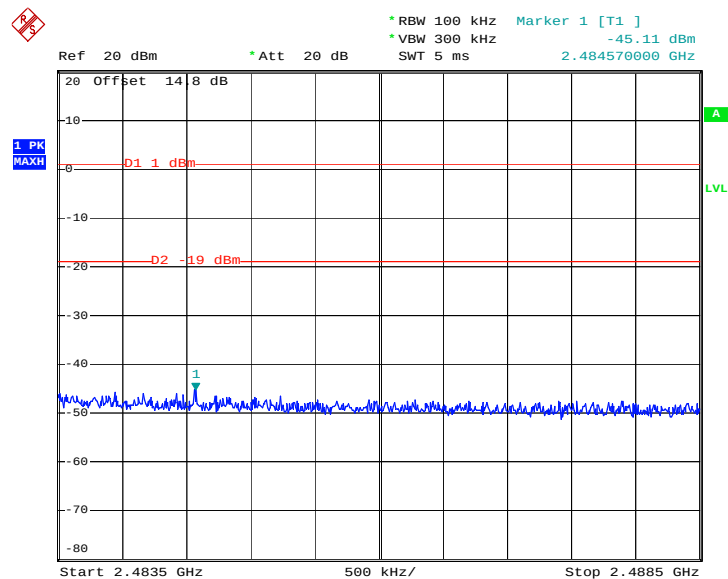
Test Mode :	Mode 4 and 6	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	60~62%
Test Channel :	01 and 11	Test Engineer :	Jun Liu

Low Band Edge Plot on 802.11g Channel 01



Date: 24.JUN.2011 11:30:23

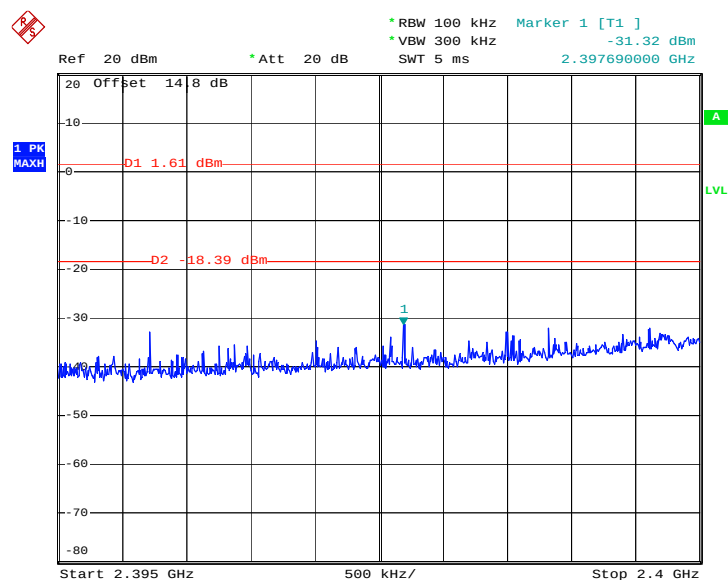
High Band Edge Plot on 802.11g Channel 11



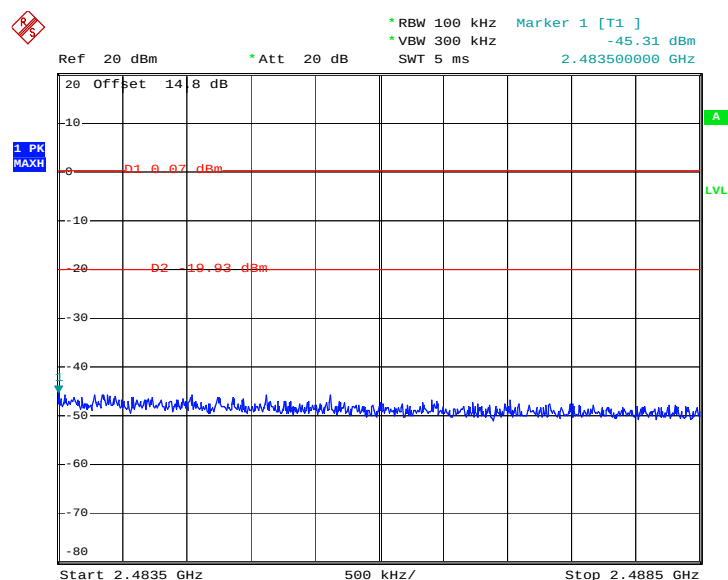
Date: 24.JUN.2011 11:46:43



Test Mode :	Mode 7 and 9	Temperature :	25~26℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	60~62%
Test Channel :	01 and 11	Test Engineer :	Jun Liu

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

Date: 24.JUN.2011 13:03:12

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

Date: 24.JUN.2011 13:21:53

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.

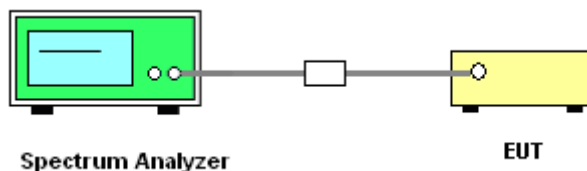
3.4.2 Measuring Instruments

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.

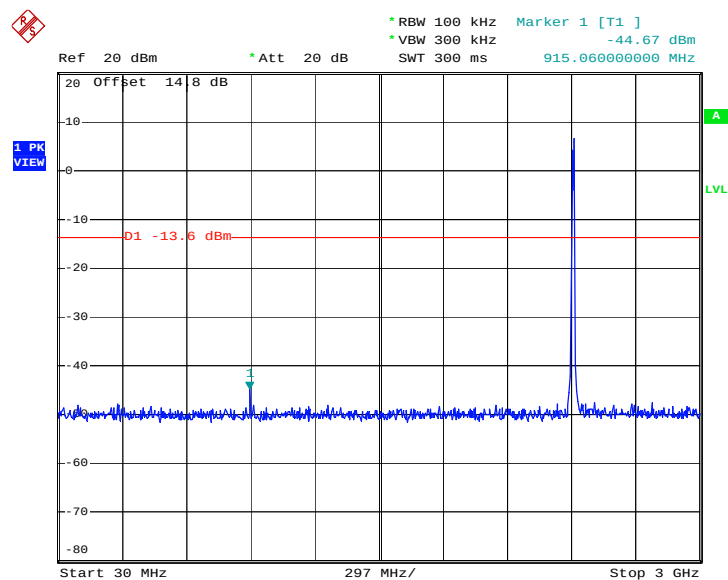
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

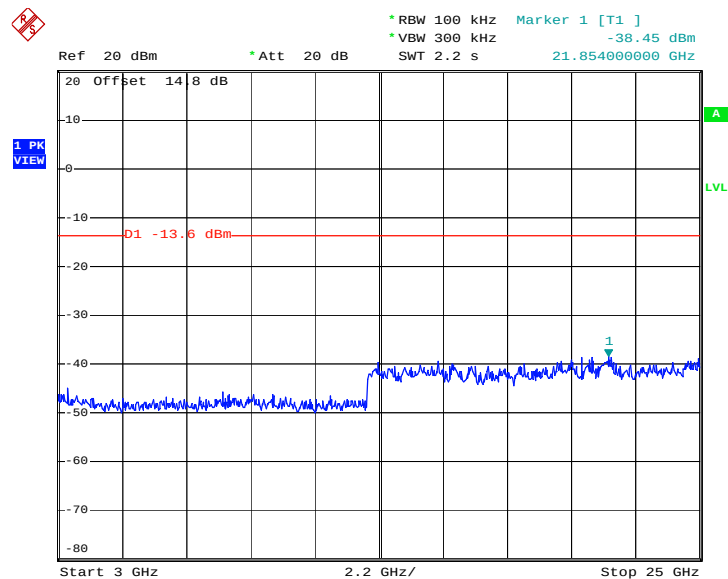
Test Mode :	Mode 1	Temperature :	25~26°C
Test Band :	802.11b	Relative Humidity :	60~62%
Test Channel :	01	Test Engineer :	Jun Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



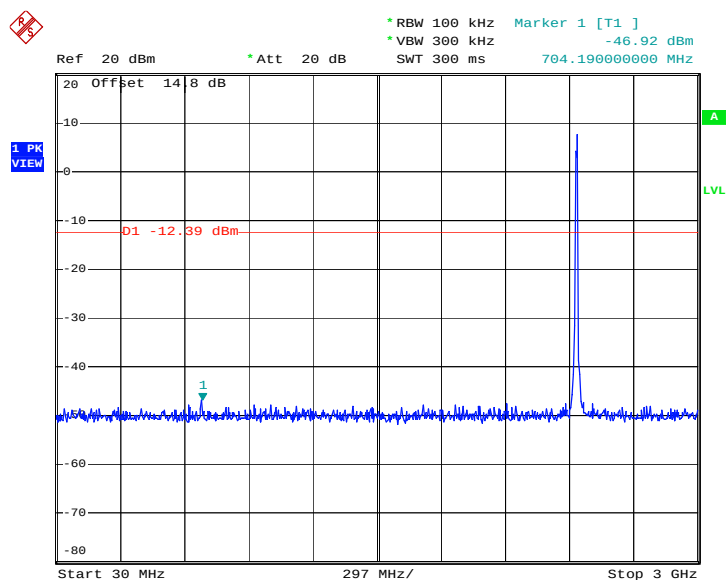
Date: 24.JUN.2011 10:31:40

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

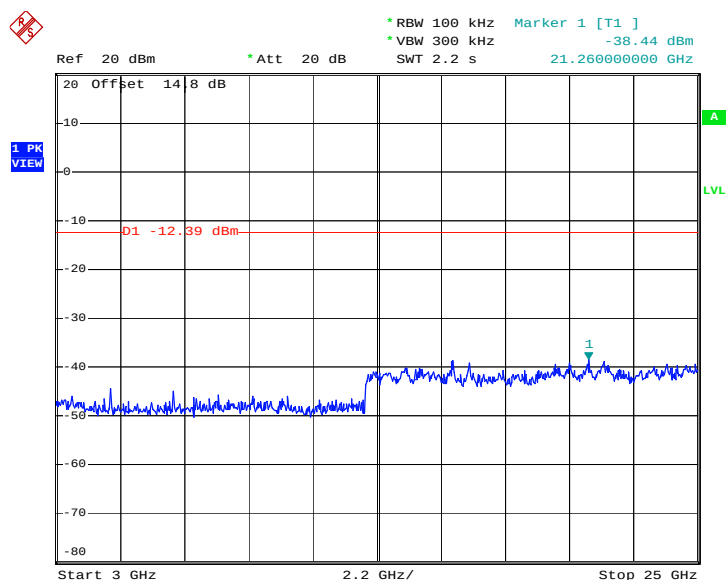


Date: 24.JUN.2011 10:31:57

Test Mode :	Mode 2	Temperature :	25~26°C
Test Band :	802.11b	Relative Humidity :	60~62%
Test Channel :	06	Test Engineer :	Jun Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


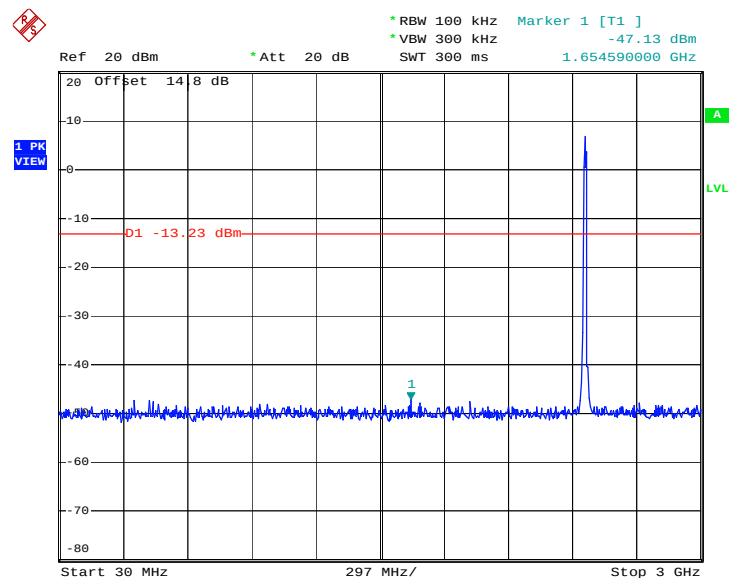
Date: 24.JUN.2011 10:56:50

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


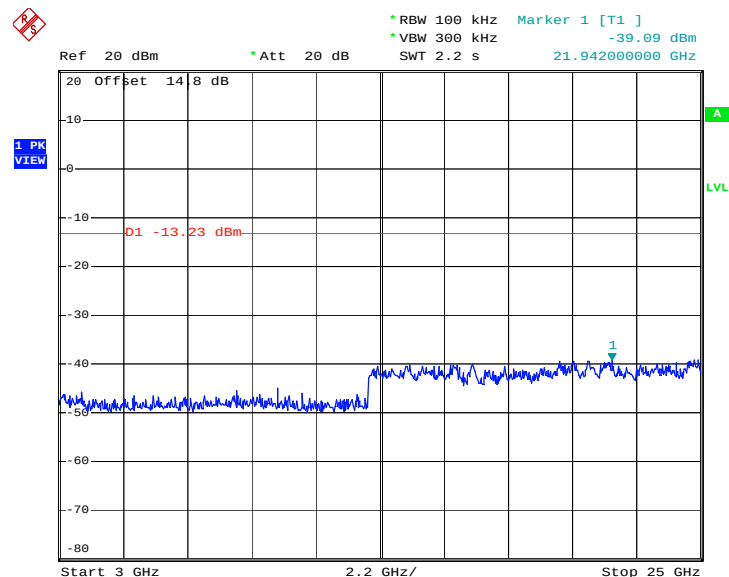
Date: 24.JUN.2011 10:57:07



Test Mode :	Mode 3	Temperature :	25~26°C
Test Band :	802.11b	Relative Humidity :	60~62%
Test Channel :	11	Test Engineer :	Jun Liu

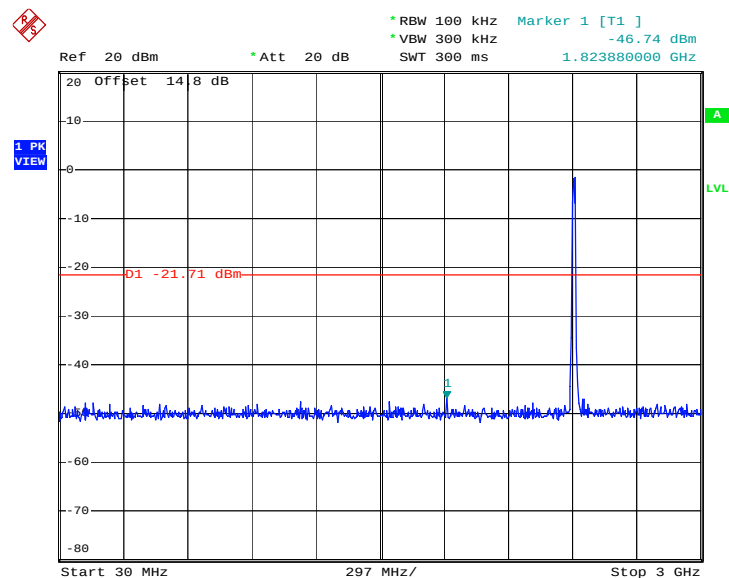
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 24.JUN.2011 11:14:41

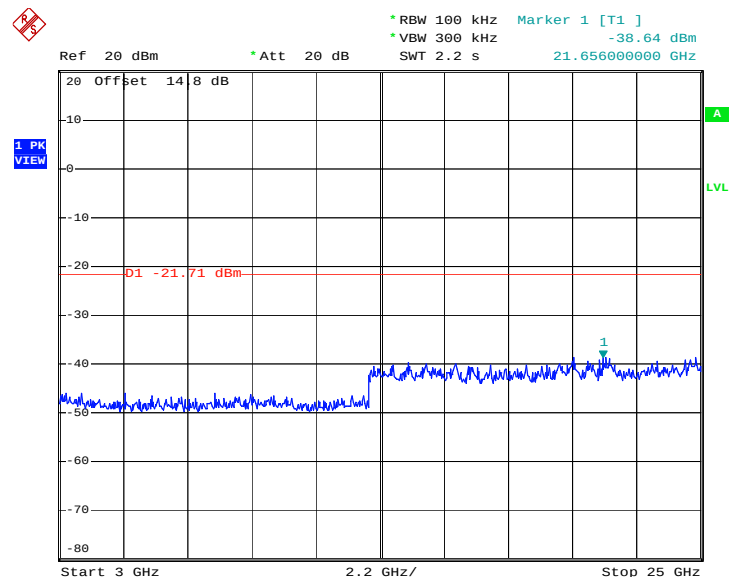
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 24.JUN.2011 11:14:58

Test Mode :	Mode 4	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	60~62%
Test Channel :	01	Test Engineer :	Jun Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


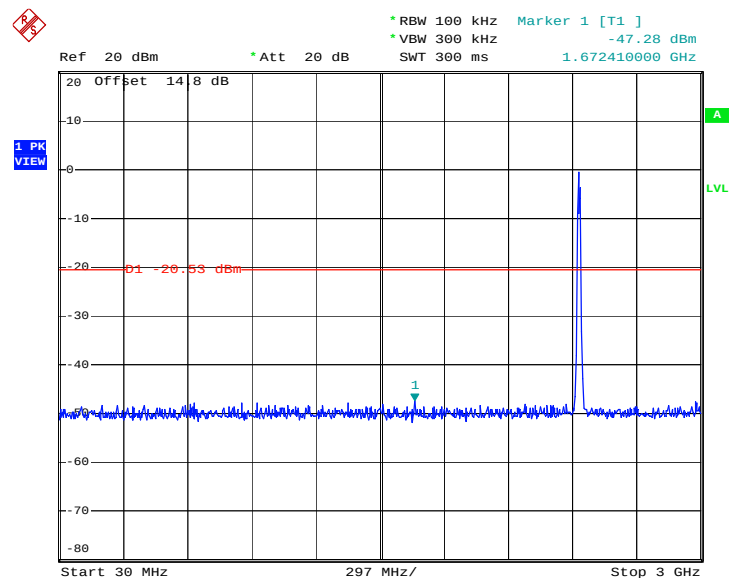
Date: 24.JUN.2011 11:32:01

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


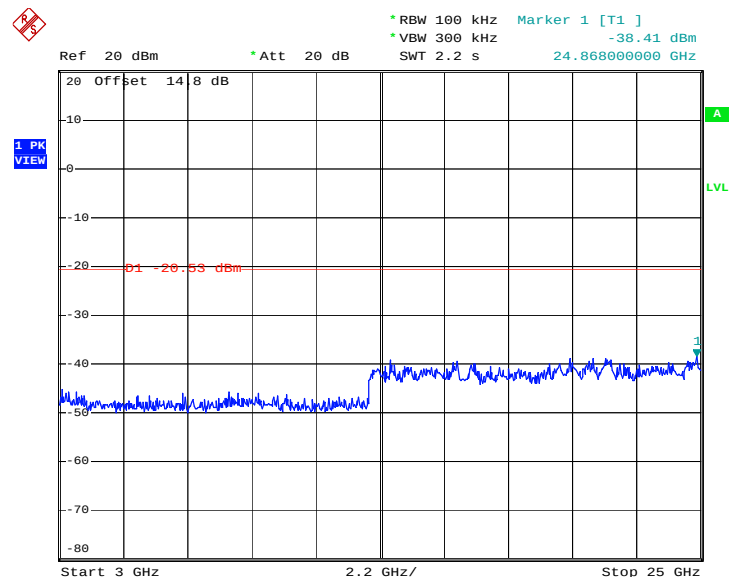
Date: 24.JUN.2011 11:32:18



Test Mode :	Mode 5	Temperature :	25~26
Test Band :	802.11g	Relative Humidity :	60~62
Test Channel :	06	Test Engineer :	Jun Liu

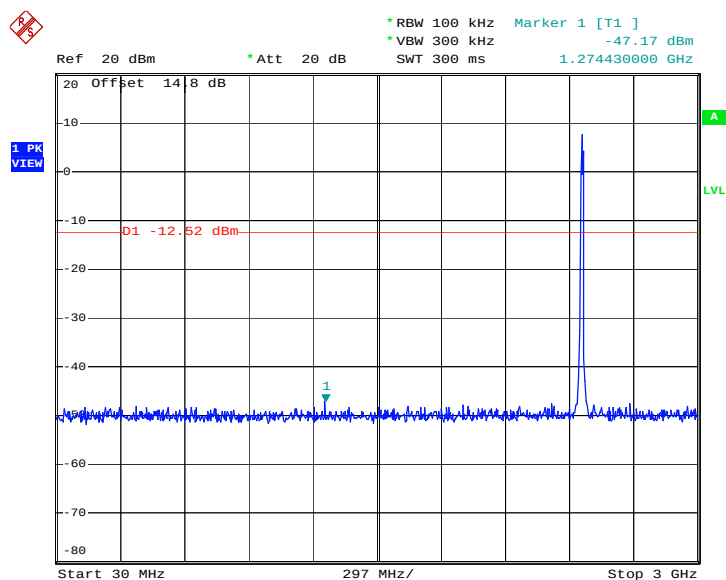
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 24.JUN.2011 11:43:52

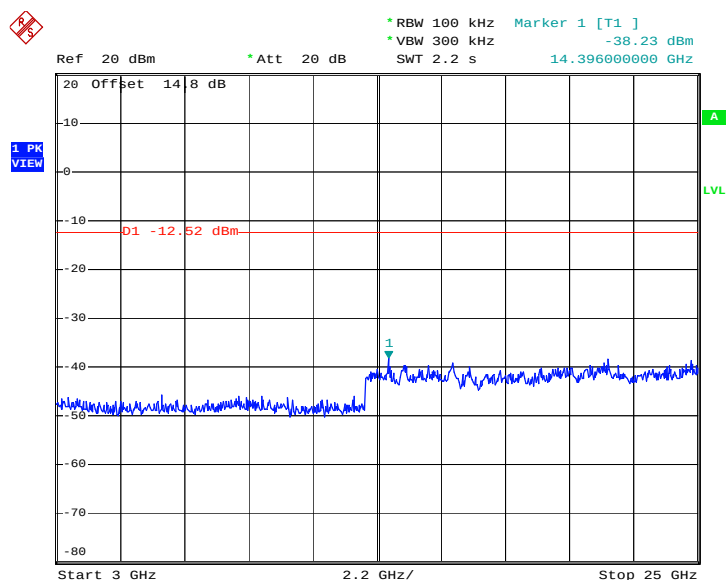
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 24.JUN.2011 11:44:09

Test Mode :	Mode 6	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	60~62%
Test Channel :	11	Test Engineer :	Jun Liu

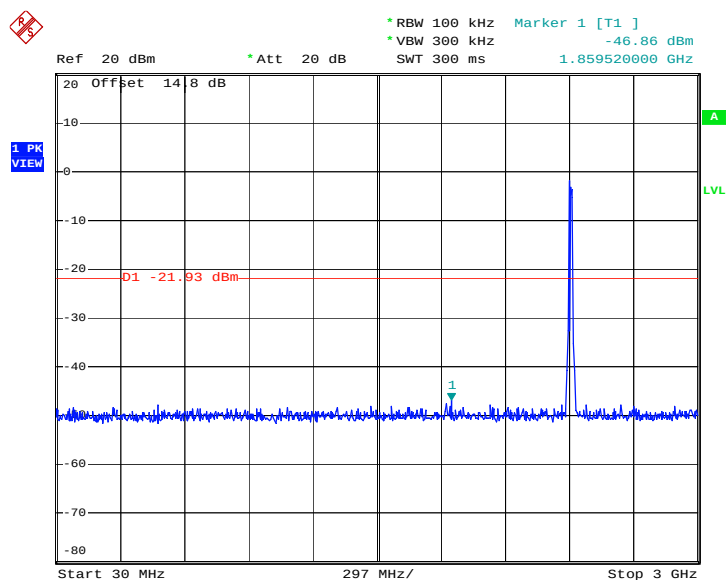
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 29.JUN.2011 15:35:42

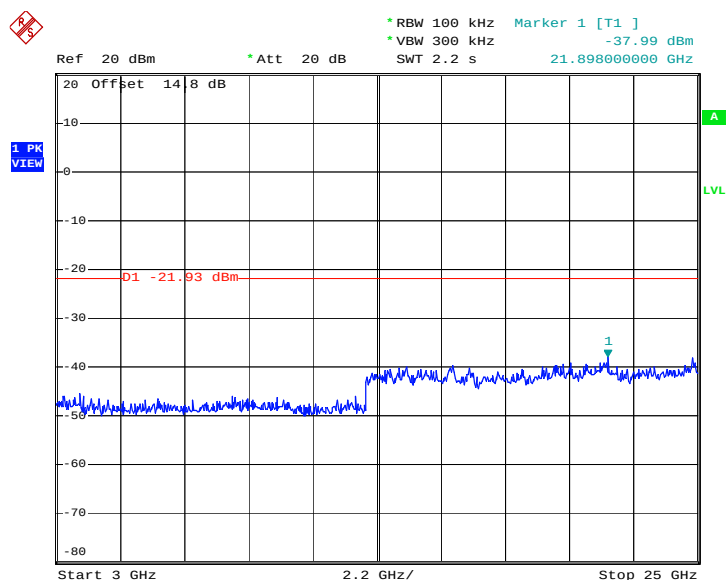
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 29.JUN.2011 15:35:59

Test Mode :	Mode 7	Temperature :	25~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	60~62%
Test Channel :	01	Test Engineer :	Jun Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 24.JUN.2011 13:05:02

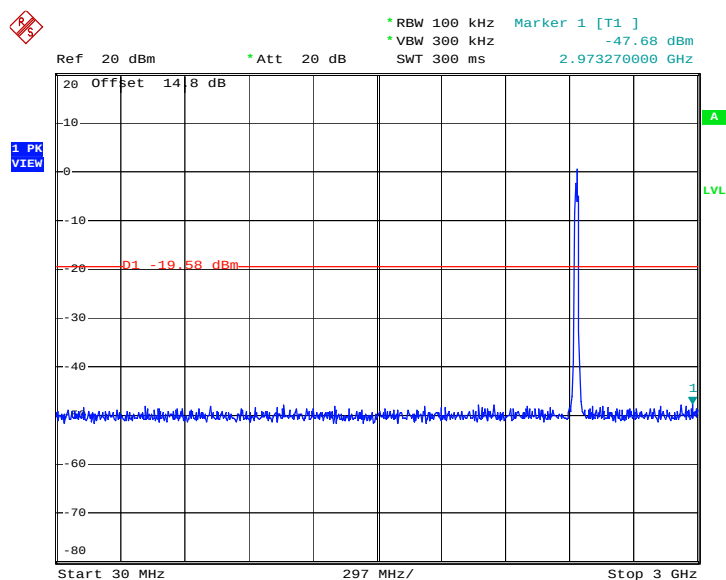
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 24.JUN.2011 13:05:19



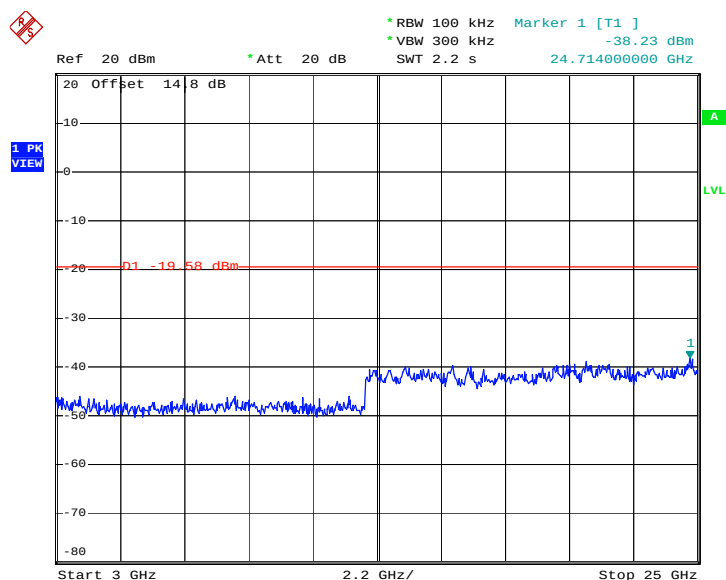
Test Mode :	Mode 8	Temperature :	25~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	60~62%
Test Channel :	06	Test Engineer :	Jun Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



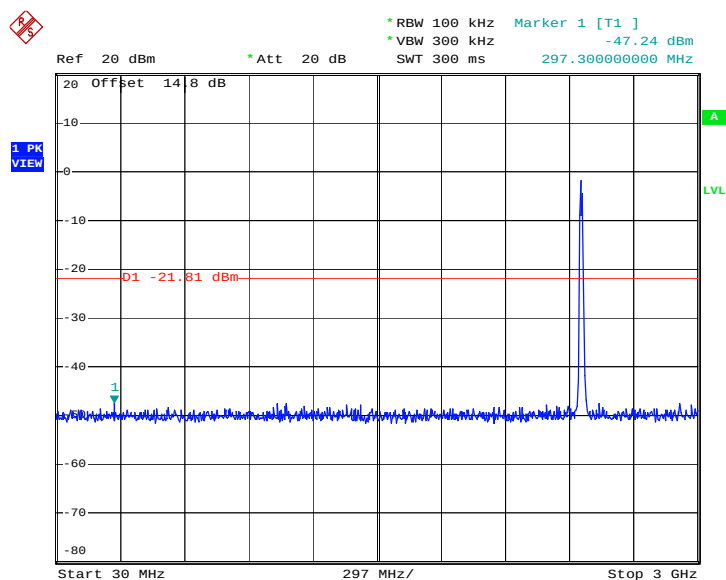
Date: 24.JUN.2011 13:18:58

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

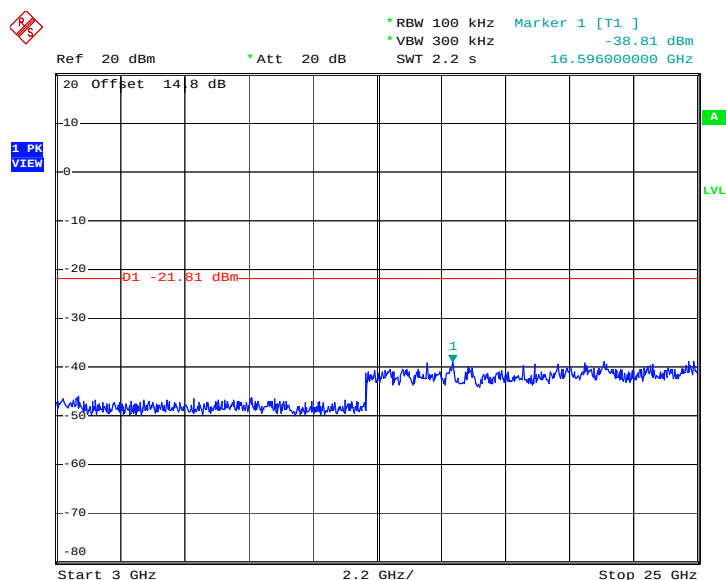


Date: 24.JUN.2011 13:19:15

Test Mode :	Mode 9	Temperature :	25~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	60~62%
Test Channel :	11	Test Engineer :	Jun Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 24.JUN.2011 13:22:45

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 24.JUN.2011 13:23:01

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.

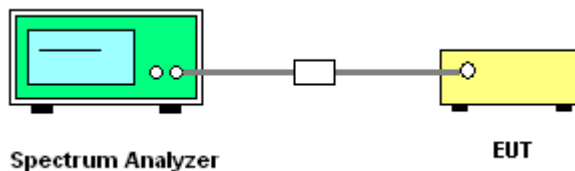
3.5.2 Measuring Instruments

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

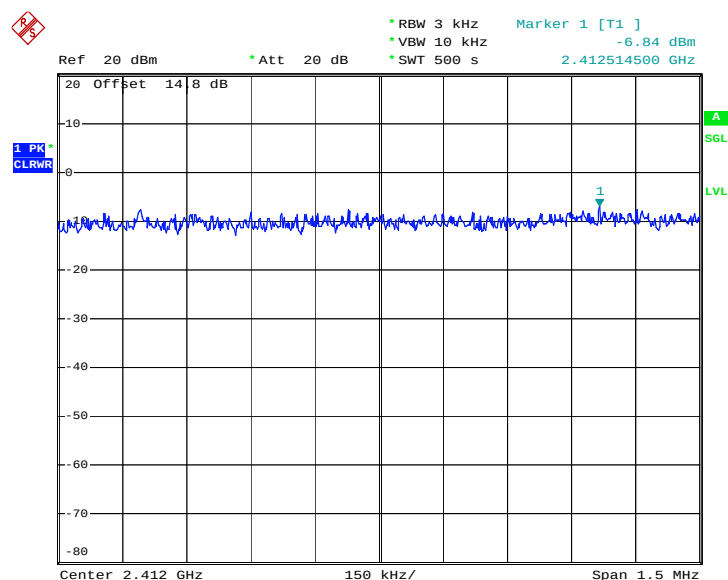


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	25~26℃
Test Engineer :	Jun Liu	Relative Humidity :	60~62%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-6.84	8	Pass
06	2437	-5.46	8	Pass
11	2462	-6.78	8	Pass

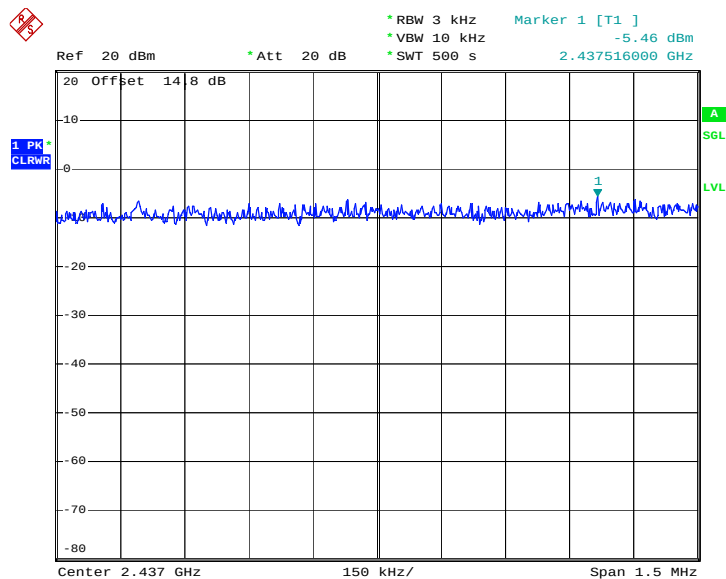
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 24.JUN.2011 10:46:23

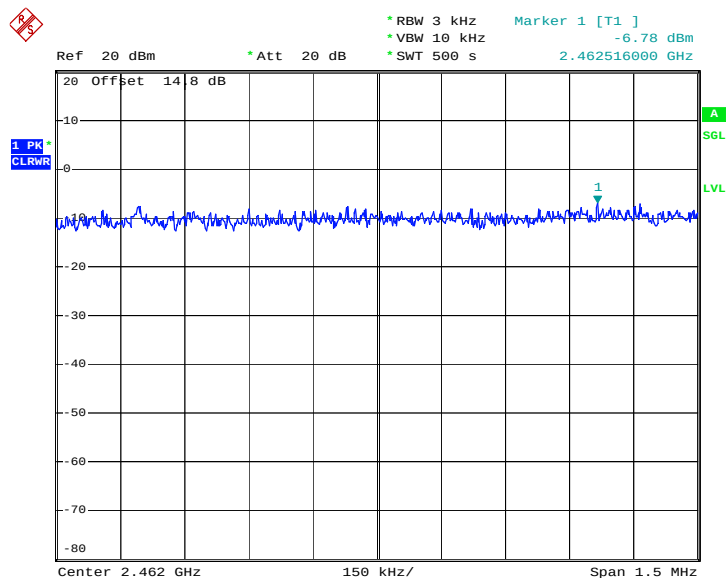


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 24.JUN.2011 11:08:16

Mode 3 : PSD Plot on 802.11b Channel 11



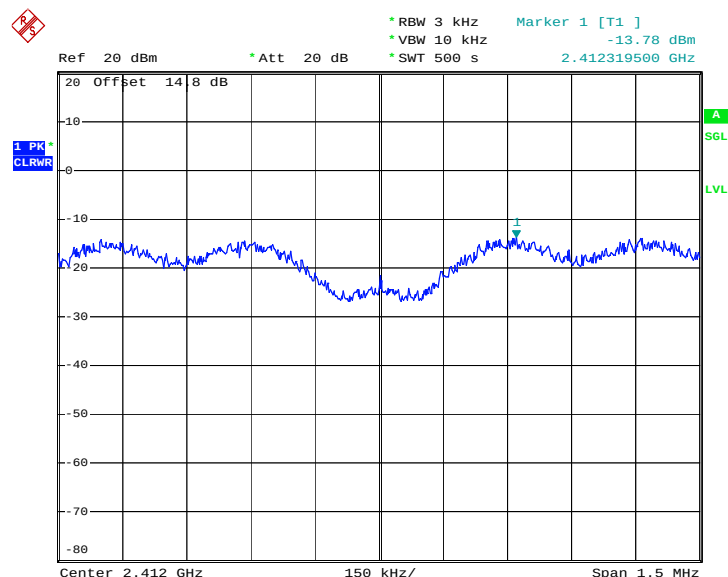
Date: 24.JUN.2011 11:23:39



Test Mode :	Mode 4, 5, 6	Temperature :	25~26℃
Test Engineer :	Jun Liu	Relative Humidity :	60~62%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-13.78	8	Pass
06	2437	-13.93	8	Pass
11	2462	-13.97	8	Pass

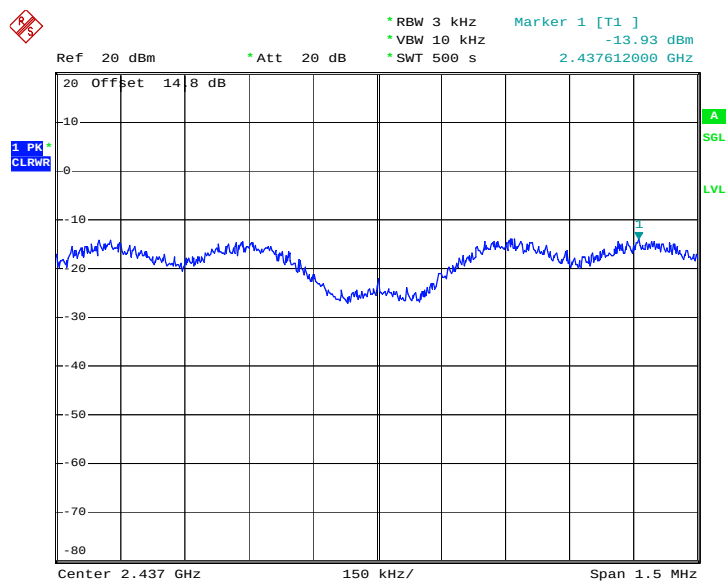
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 24.JUN.2011 11:41:33

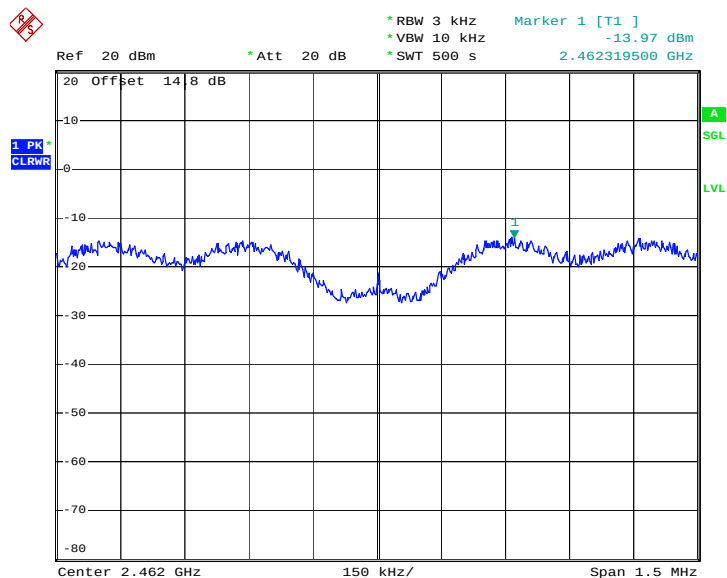


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 24.JUN.2011 12:20:18

Mode 6 : PSD Plot on 802.11g Channel 11

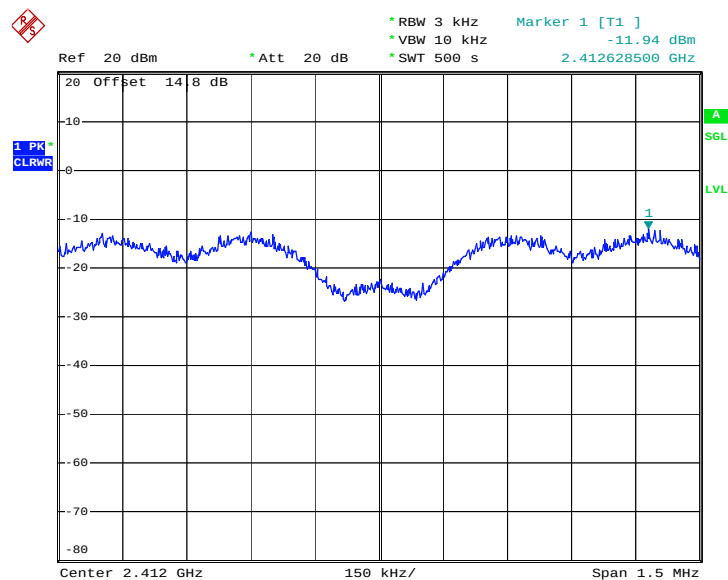


Date: 24.JUN.2011 11:56:34

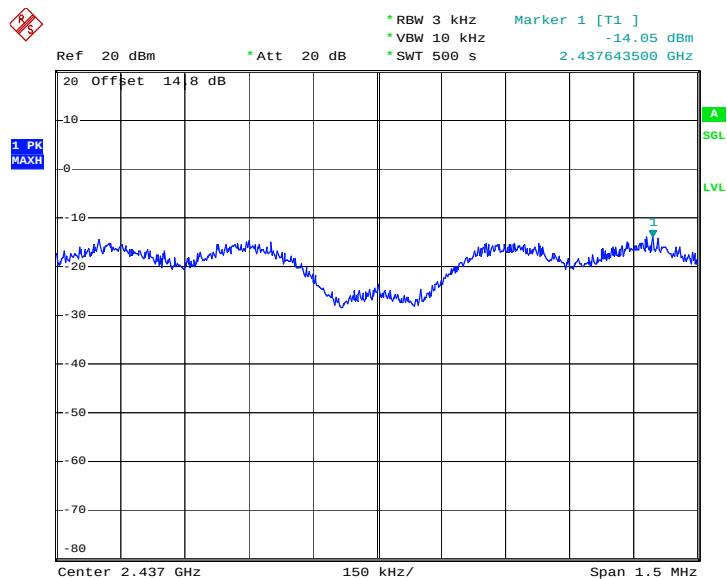


Test Mode :	Mode 7, 8, 9	Temperature :	25~26℃
Test Engineer :	Jun Liu	Relative Humidity :	60~62%

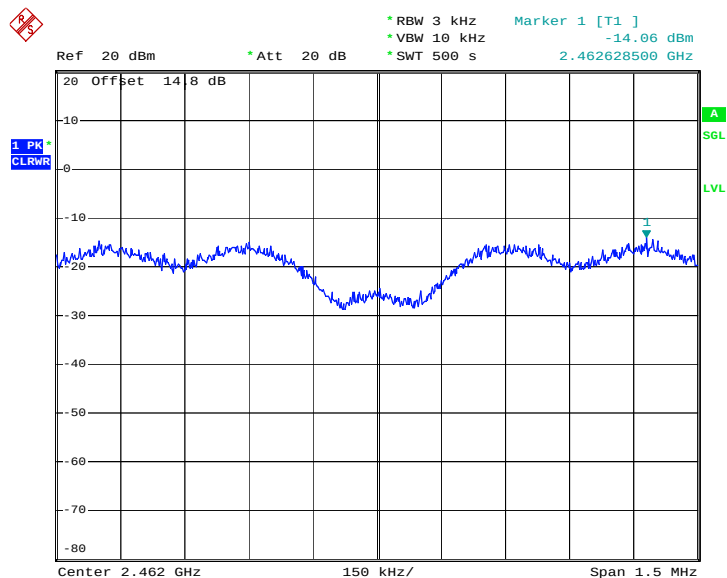
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-11.94	8	Pass
06	2437	-14.05	8	Pass
11	2462	-14.06	8	Pass

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

Date: 24.JUN.2011 13:16:03

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


Date: 24.JUN.2011 13:41:10

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


Date: 24.JUN.2011 13:31:51

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.

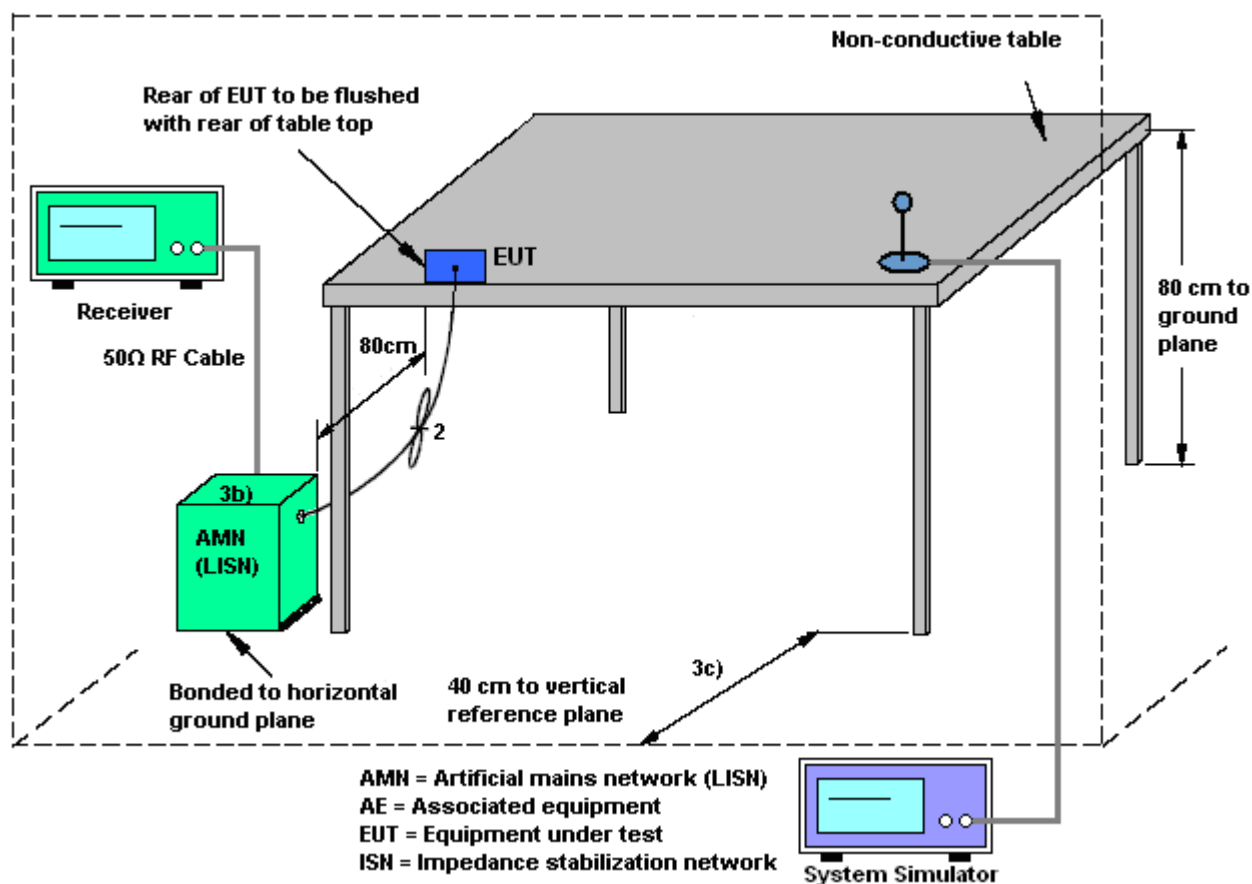
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

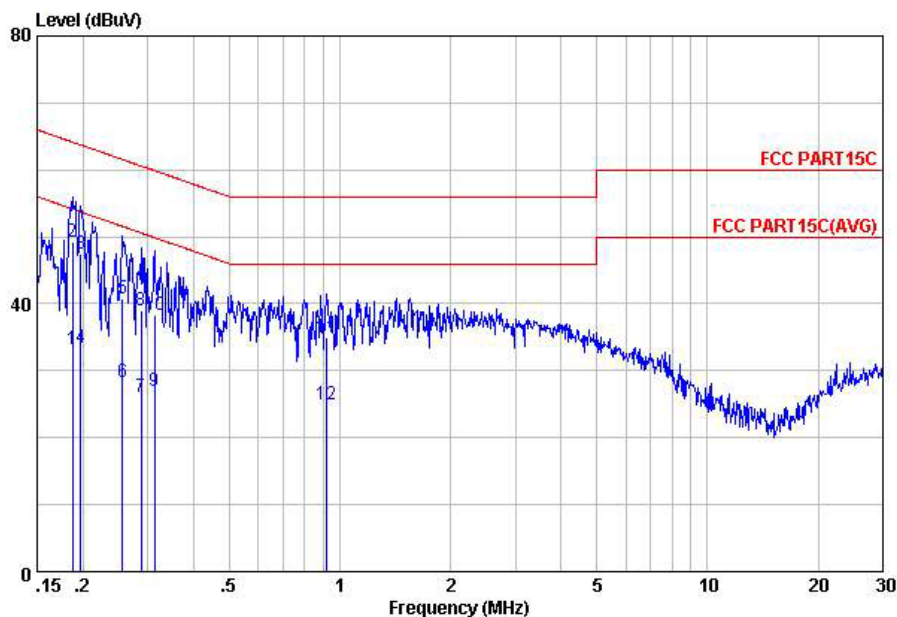
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

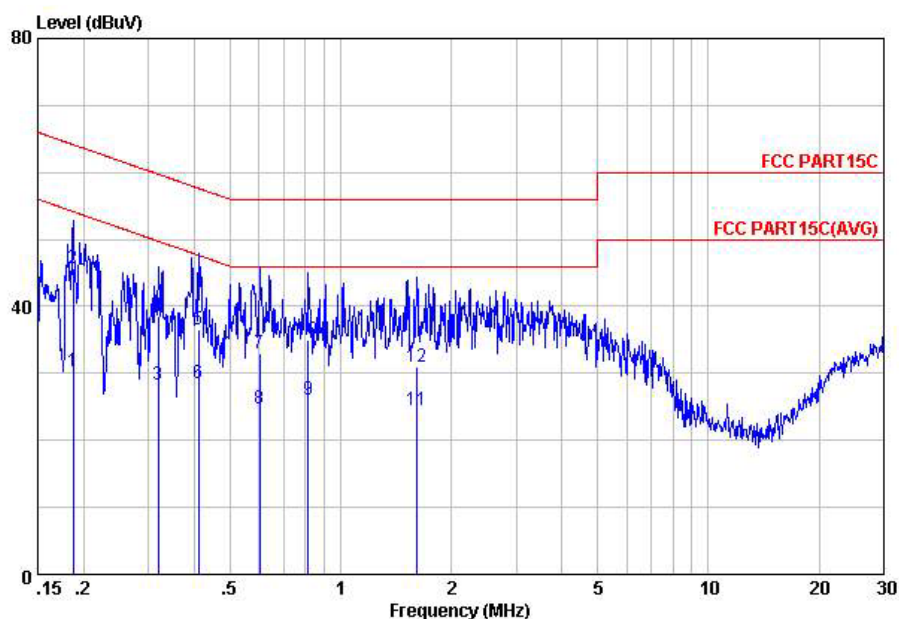
Test Mode :	Mode 1	Temperature :	25~26°C
Test Engineer :	Chenmy Cheng	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + Adapter + Earphone + GPS Rx		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
 Condition: FCC PART15C LISN-100807 LINE
 Project : (FR)151102
 Mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.19	33.28	-30.87	64.15	23.20	-0.07	10.15	Average
2	0.19	49.28	-14.87	64.15	39.20	-0.07	10.15	QP
3	0.20	47.48	-16.23	63.71	37.40	-0.07	10.15	QP
4	0.20	33.38	-30.33	63.71	23.30	-0.07	10.15	Average
5	0.26	40.89	-20.67	61.56	30.80	-0.07	10.16	QP
6	0.26	28.19	-33.37	61.56	18.10	-0.07	10.16	Average
7	0.29	25.99	-34.60	60.59	15.89	-0.07	10.17	Average
8	0.29	39.05	-21.54	60.59	28.95	-0.07	10.17	QP
9	0.31	26.90	-32.98	59.88	16.81	-0.08	10.17	Average
10	0.31	38.30	-21.58	59.88	28.21	-0.08	10.17	QP
11	0.92	35.06	-20.94	56.00	24.90	-0.10	10.26	QP
12	0.92	25.06	-30.94	56.00	14.90	-0.10	10.26	Average

Test Mode :	Mode 1	Temperature :	25~26°C
Test Engineer :	Chenmy Cheng	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + Adapter + Earphone + GPS Rx		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS
 Condition: FCC PART15C LISN-100807 NEUTRAL
 Project : (FR)151102
 Mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.19	30.37	-33.78	64.15	20.29	-0.07	10.15	Average
2	0.19	45.57	-18.58	64.15	35.49	-0.07	10.15	QP
3	0.32	28.30	-31.45	59.75	18.21	-0.08	10.17	Average
4	0.32	38.60	-21.15	59.75	28.51	-0.08	10.17	QP
5	0.41	36.51	-21.13	57.64	26.40	-0.08	10.19	QP
6	0.41	28.51	-29.13	57.64	18.40	-0.08	10.19	Average
7	0.60	33.04	-22.96	56.00	22.90	-0.08	10.22	QP
8	0.60	24.74	-31.26	56.00	14.60	-0.08	10.22	Average
9	0.82	26.06	-29.94	56.00	15.89	-0.08	10.25	Average
10	0.82	34.96	-21.04	56.00	24.79	-0.08	10.25	QP
11	1.61	24.40	-31.60	56.00	14.19	-0.10	10.31	Average
12	1.61	30.90	-25.10	56.00	20.69	-0.10	10.31	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

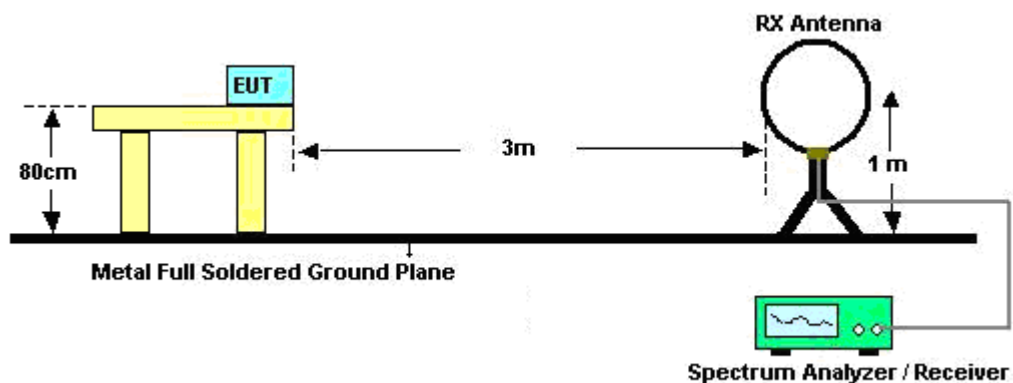
See list of measuring instruments of this test report.

3.7.3 Test Procedures

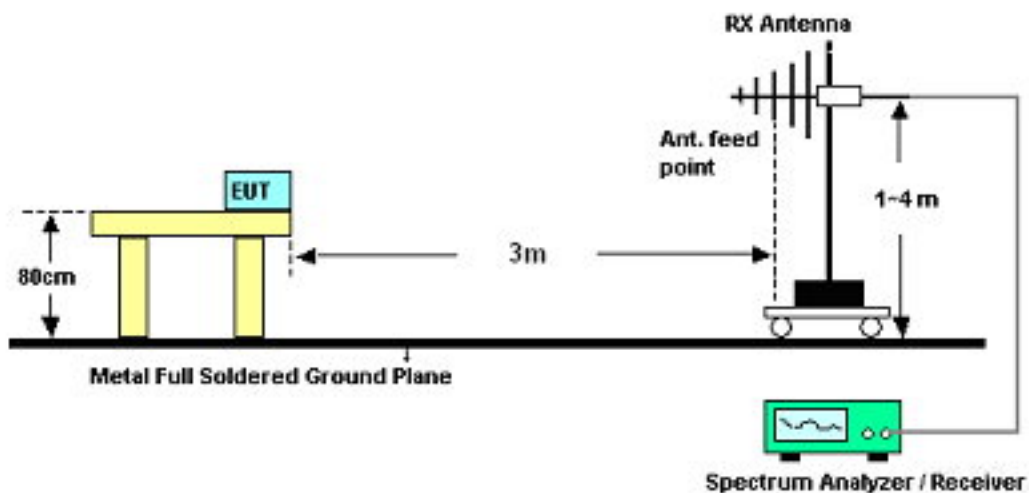
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
 - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = 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 = $20 \log (\text{specific distance [3m]} / \text{test distance [1m]})$ (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

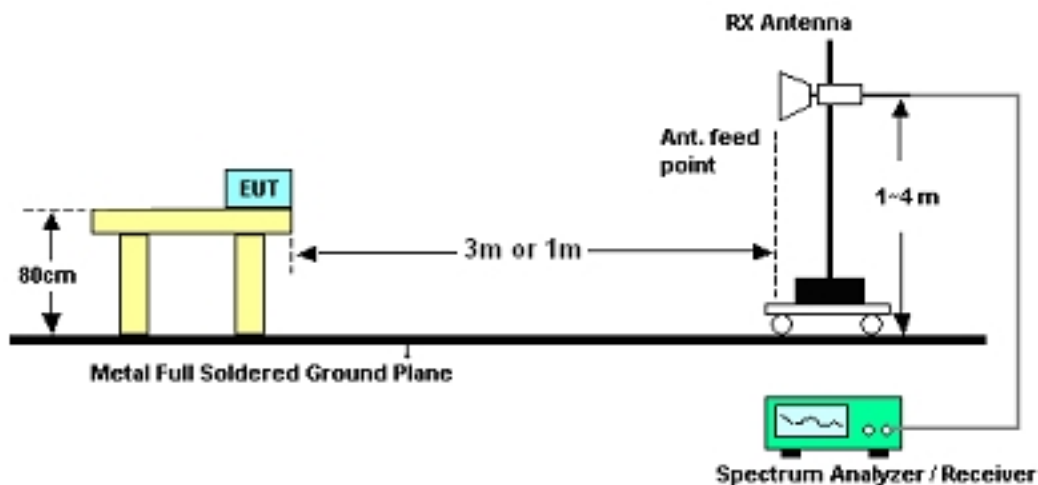
For radiated emissions below 30MHz



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 :	24~25℃	
		Relative Humidity :	40~42%	

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 :	24~25℃
Test Channel :	01	Relative Humidity :	40~42%
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
66.45	20.82	-19.18	40	45.34	5.25	0.33	30.1	-	-	Peak
91.02	26.96	-16.54	43.5	47.44	9.12	0.39	29.99	100	360	Peak
208.2	24.04	-19.46	43.5	44.05	9.39	0.6	30	-	-	Peak
871.9	28.63	-17.37	46	36.44	20.49	1.29	29.59	-	-	Peak
946.8	35.52	-18.48	54	43.01	20.72	1.33	29.54	-	-	Peak
960.1	32.5	-21.5	54	39.91	20.79	1.34	29.54	-	-	Peak
2386.57	50.2	-23.8	74	47.92	32.86	3.47	34.05	100	20	Peak
2386.57	38.77	-15.23	54	36.49	32.86	3.47	34.05	100	20	Average
2412	102.99	-	-	100.66	32.89	3.52	34.08	100	0	Peak
2412	84.67	-	-	82.34	32.89	3.52	34.08	100	0	Average
2488.41	50.77	-23.23	74	48.23	33.05	3.72	34.23	100	160	Peak
2488.41	38.27	-15.73	54	35.73	33.05	3.72	34.23	100	160	Average

Test Mode :	Mode 1	Temperature :	24~25℃
Test Channel :	01	Relative Humidity :	40~42%
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	29.91	-10.09	40	41.73	18	0.26	30.08	100	214	Peak
81.03	29.86	-10.14	40	52.68	6.87	0.35	30.04	-	-	Peak
89.67	31.62	-11.88	43.5	52.32	8.9	0.39	29.99	-	-	Peak
871.2	29.14	-16.86	46	36.95	20.49	1.29	29.59	-	-	Peak
946.8	34.96	-19.04	54	42.45	20.72	1.33	29.54	-	-	Peak
960.1	32.38	-21.62	54	39.79	20.79	1.34	29.54	-	-	Peak
2388.47	50.42	-23.58	74	48.14	32.86	3.47	34.05	100	210	Peak
2388.47	39.49	-14.51	54	37.21	32.86	3.47	34.05	100	210	Average
2412	106.13	-	-	103.8	32.89	3.52	34.08	100	116	Peak
2412	84.28	-	-	81.95	32.89	3.52	34.08	100	116	Average
2483.66	49.47	-24.53	74	46.98	33.01	3.68	34.2	100	162	Peak
2483.66	38.34	-15.66	54	35.85	33.01	3.68	34.2	100	162	Average

Test Mode :	Mode 2	Temperature :	24~25℃
Test Channel :	06	Relative Humidity :	40~42%
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
91.83	27.09	-16.41	43.5	47.33	9.35	0.39	29.98	100	241	Peak
95.88	26.87	-16.63	43.5	46.53	9.91	0.4	29.97	-	-	Peak
207.39	23.18	-20.32	43.5	43.24	9.34	0.6	30	-	-	Peak
871.2	28.92	-17.08	46	36.73	20.49	1.29	29.59	-	-	Peak
946.8	35.28	-18.72	54	42.77	20.72	1.33	29.54	-	-	Peak
960.1	30.91	-23.09	54	38.32	20.79	1.34	29.54	-	-	Peak
2323.49	49.9	-24.1	74	47.77	32.76	3.27	33.9	100	230	Peak
2323.49	37.28	-16.72	54	35.15	32.76	3.27	33.9	100	230	Average
2437	106.62	-	-	104.22	32.95	3.6	34.15	100	360	Peak
2437	86.8	-	-	84.4	32.95	3.6	34.15	100	360	Average
2486.7	50.39	-23.61	74	47.9	33.01	3.68	34.2	100	53	Peak
2486.7	38.14	-15.86	54	35.65	33.01	3.68	34.2	100	53	Average

Test Mode :	Mode 2	Temperature :	24~25℃
Test Channel :	06	Relative Humidity :	40~42%
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
39.18	27.68	-12.32	40	44.49	12.98	0.25	30.04	-	-	Peak
81.3	29.2	-10.8	40	52.02	6.87	0.35	30.04	100	0	Peak
89.94	31.36	-12.14	43.5	52.06	8.9	0.39	29.99	-	-	Peak
871.2	28.19	-17.81	46	36	20.49	1.29	29.59	-	-	Peak
946.8	34.63	-19.37	54	42.12	20.72	1.33	29.54	-	-	Peak
960.1	32.02	-21.98	54	39.43	20.79	1.34	29.54	-	-	Peak
2373.65	50.11	-23.89	74	47.87	32.83	3.42	34.01	100	278	Peak
2373.65	37.13	-16.87	54	34.89	32.83	3.42	34.01	100	278	Average
2437	104.18	-	-	101.78	32.95	3.6	34.15	100	115	Peak
2437	84.64	-	-	82.24	32.95	3.6	34.15	100	115	Average
2492.02	49.53	-24.47	74	46.99	33.05	3.72	34.23	100	160	Peak
2492.02	37.68	-16.32	54	35.14	33.05	3.72	34.23	100	160	Average

Test Mode :	Mode 3	Temperature :	24~25℃
Test Channel :	11	Relative Humidity :	40~42%
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
90.21	27.49	-16.01	43.5	48.19	8.9	0.39	29.99	-	-	Peak
95.88	27.52	-15.98	43.5	47.18	9.91	0.4	29.97	100	0	Peak
215.22	22.08	-21.42	43.5	41.69	9.77	0.61	29.99	-	-	Peak
872.6	27.88	-18.12	46	35.69	20.48	1.29	29.58	-	-	Peak
946.8	36.02	-17.98	54	43.51	20.72	1.33	29.54	-	-	Peak
960.1	32.16	-21.84	54	39.57	20.79	1.34	29.54	-	-	Peak
2315.89	50.36	-23.64	74	48.27	32.73	3.22	33.86	100	170	Peak
2315.89	37.71	-16.29	54	35.62	32.73	3.22	33.86	100	170	Average
2462	107.95	-	-	105.5	32.98	3.64	34.17	100	0	Peak
2462	87.77	-	-	85.32	32.98	3.64	34.17	100	0	Average
2484.04	55.19	-18.81	74	52.7	33.01	3.68	34.2	100	20	Peak
2484.04	42.79	-11.21	54	40.3	33.01	3.68	34.2	100	20	Average

Test Mode :	Mode 3	Temperature :	24~25℃
Test Channel :	11	Relative Humidity :	40~42%
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
30.27	28.21	-11.79	40	40.03	18	0.26	30.08	-	-	Peak
81.03	29.12	-10.88	40	51.94	6.87	0.35	30.04	100	0	Peak
89.67	31.24	-12.26	43.5	51.94	8.9	0.39	29.99	-	-	Peak
871.9	28.15	-17.85	46	35.96	20.49	1.29	29.59	-	-	Peak
939.1	33.06	-12.94	46	40.58	20.68	1.33	29.53	-	-	Peak
946.8	35.43	-18.57	54	42.92	20.72	1.33	29.54	-	-	Peak
2316.08	50.58	-23.42	74	48.49	32.73	3.22	33.86	100	100	Peak
2316.08	37.33	-16.67	54	35.24	32.73	3.22	33.86	100	100	Average
2462	105.59	-	-	103.14	32.98	3.64	34.17	100	0	Peak
2462	86.31	-	-	83.86	32.98	3.64	34.17	100	0	Average
2483.5	51.82	-22.18	74	49.33	33.01	3.68	34.2	100	120	Peak
2483.5	40.35	-13.65	54	37.86	33.01	3.68	34.2	100	120	Average

Test Mode :	Mode 4	Temperature :	24~25℃
Test Channel :	01	Relative Humidity :	40~42%
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
66.72	20.63	-19.37	40	45.15	5.25	0.33	30.1	-	-	Peak
90.48	27.31	-16.19	43.5	48.01	8.9	0.39	29.99	-	-	Peak
207.93	20.96	-22.54	43.5	41.02	9.34	0.6	30	-	-	Peak
915.3	33.41	-12.59	46	41.07	20.53	1.31	29.5	100	116	Peak
946.8	35.46	-18.54	54	42.95	20.72	1.33	29.54	-	-	Peak
960.1	31.93	-22.07	54	39.34	20.79	1.34	29.54	-	-	Peak
2389.61	56.96	-17.04	74	54.68	32.86	3.47	34.05	197	45	Peak
2389.61	40.47	-13.53	54	38.19	32.86	3.47	34.05	197	45	Average
2412	103.01	-	-	100.68	32.89	3.52	34.08	200	51	Peak
2412	86.43	-	-	84.1	32.89	3.52	34.08	200	51	Average
2483.5	48.51	-25.49	74	46.02	33.01	3.68	34.2	200	0	Peak
2483.5	36.62	-17.38	54	34.13	33.01	3.68	34.2	200	0	Average

Test Mode :	Mode 4	Temperature :	24~25℃
Test Channel :	01	Relative Humidity :	40~42%
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
30.27	27.8	-12.2	40	39.62	18	0.26	30.08	-	-	Peak
81.57	28.59	-11.41	40	51.41	6.87	0.35	30.04	100	275	Peak
89.67	30.98	-12.52	43.5	51.68	8.9	0.39	29.99	-	-	Peak
939.8	32.87	-13.13	46	40.38	20.69	1.33	29.53	-	-	Peak
946.8	36.02	-17.98	54	43.51	20.72	1.33	29.54	-	-	Peak
960.1	31.91	-22.09	54	39.32	20.79	1.34	29.54	-	-	Peak
2390	51.92	-22.08	74	49.64	32.86	3.47	34.05	132	125	Peak
2390	38.69	-15.31	54	36.41	32.86	3.47	34.05	132	125	Average
2412	99.62	-	-	97.29	32.89	3.52	34.08	100	100	Peak
2412	83.02	-	-	80.69	32.89	3.52	34.08	100	100	Average
2483.5	48.72	-25.28	74	46.23	33.01	3.68	34.2	200	360	Peak
2483.5	37.63	-16.37	54	35.14	33.01	3.68	34.2	200	360	Average

Test Mode :	Mode 5	Temperature :	24~25℃
Test Channel :	06	Relative Humidity :	40~42%
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
78.6	20.65	-19.35	40	44.01	6.34	0.35	30.05	-	-	Peak
91.02	27.41	-16.09	43.5	47.89	9.12	0.39	29.99	100	171	Peak
213.87	21.2	-22.3	43.5	40.87	9.71	0.61	29.99	-	-	Peak
915.3	29.17	-16.83	46	36.83	20.53	1.31	29.5	-	-	Peak
946.8	35.68	-18.32	54	43.17	20.72	1.33	29.54	-	-	Peak
960.1	31.79	-22.21	54	39.2	20.79	1.34	29.54	-	-	Peak
2390	48.24	-25.76	74	45.96	32.86	3.47	34.05	100	0	Peak
2390	38.38	-15.62	54	36.1	32.86	3.47	34.05	100	0	Average
2437	102.64	-	-	100.24	32.95	3.6	34.15	165	38	Peak
2437	85.51	-	-	83.11	32.95	3.6	34.15	165	38	Average
2483.5	48.45	-25.55	74	45.96	33.01	3.68	34.2	100	0	Peak
2483.5	38.07	-15.93	54	35.58	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 5	Temperature :	24~25℃
Test Channel :	06	Relative Humidity :	40~42%
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
39.45	27.69	-12.31	40	45.16	12.3	0.25	30.02	-	-	Peak
81.03	28.79	-11.21	40	51.61	6.87	0.35	30.04	100	160	Peak
90.21	31.21	-12.29	43.5	51.91	8.9	0.39	29.99	-	-	Peak
939.8	33.36	-12.64	46	40.87	20.69	1.33	29.53	-	-	Peak
946.8	35.7	-18.3	54	43.19	20.72	1.33	29.54	-	-	Peak
960.1	32.01	-21.99	54	39.42	20.79	1.34	29.54	-	-	Peak
2390	48.84	-25.16	74	46.56	32.86	3.47	34.05	200	0	Peak
2390	36.71	-17.29	54	34.43	32.86	3.47	34.05	200	0	Average
2437	99.53	-	-	97.13	32.95	3.6	34.15	140	124	Peak
2437	84.17	-	-	81.77	32.95	3.6	34.15	140	124	Average
2483.5	48.41	-25.59	74	45.92	33.01	3.68	34.2	200	0	Peak
2483.5	36.39	-17.61	54	33.9	33.01	3.68	34.2	200	0	Average

Test Mode :	Mode 6	Temperature :	24~25℃
Test Channel :	11	Relative Humidity :	40~42%
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
66.45	20.44	-19.56	40	44.96	5.25	0.33	30.1	-	-	Peak
91.29	26.62	-16.88	43.5	47.1	9.12	0.39	29.99	-	-	Peak
215.22	20.96	-22.54	43.5	40.57	9.77	0.61	29.99	-	-	Peak
897.8	30.48	-15.52	46	38.21	20.45	1.3	29.48	100	117	Peak
946.8	36.19	-17.81	54	43.68	20.72	1.33	29.54	-	-	Peak
960.1	32.15	-21.85	54	39.56	20.79	1.34	29.54	-	-	Peak
2390	48.71	-25.29	74	46.43	32.86	3.47	34.05	200	360	Peak
2390	40.44	-13.56	54	38.16	32.86	3.47	34.05	200	360	Average
2462	104.25	-	-	101.8	32.98	3.64	34.17	167	41	Peak
2462	87.76	-	-	85.31	32.98	3.64	34.17	167	41	Average
2483.5	45.49	-8.51	54	43	33.01	3.68	34.2	200	52	Average
2483.5	57.3	-16.7	74	54.81	33.01	3.68	34.2	200	52	Peak

Test Mode :	Mode 6	Temperature :	24~25℃
Test Channel :	11	Relative Humidity :	40~42%
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
40.8	27.02	-12.98	40	45.18	11.64	0.25	30.05	-	-	Peak
81.3	28.34	-11.66	40	51.16	6.87	0.35	30.04	-	-	Peak
89.67	31.27	-12.23	43.5	51.97	8.9	0.39	29.99	-	-	Peak
897.8	34.88	-11.12	46	42.61	20.45	1.3	29.48	100	327	Peak
946.8	35.38	-18.62	54	42.87	20.72	1.33	29.54	-	-	Peak
960.1	30.79	-23.21	54	38.2	20.79	1.34	29.54	-	-	Peak
2390	49.11	-24.89	74	46.83	32.86	3.47	34.05	100	0	Peak
2390	39.68	-14.32	54	37.4	32.86	3.47	34.05	100	0	Average
2462	99.42	-	-	96.97	32.98	3.64	34.17	126	98	Peak
2462	84.22	-	-	81.77	32.98	3.64	34.17	126	98	Average
2483.5	45.29	-8.71	54	42.8	33.01	3.68	34.2	100	0	Average
2483.5	58.58	-15.42	74	56.09	33.01	3.68	34.2	100	0	Peak

Test Mode :	Mode 7	Temperature :	24~25℃
Test Channel :	01	Relative Humidity :	40~42%
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
95.88	21.83	-21.67	43.5	41.49	9.91	0.4	29.97	-	-	Peak
147.45	24.99	-18.51	43.5	44.26	10.21	0.5	29.98	100	284	Peak
221.16	22.69	-23.31	46	41.87	10.17	0.62	29.97	-	-	Peak
393.1	27.23	-18.77	46	40.39	15.84	0.84	29.84	-	-	Peak
589.8	27.39	-18.61	46	37.38	18.58	1.06	29.63	-	-	Peak
713	27.12	-18.88	46	36.24	19.43	1.14	29.69	-	-	Peak
2390	53.52	-20.48	74	51.24	32.86	3.47	34.05	100	0	Peak
2390	41.28	-12.72	54	39	32.86	3.47	34.05	100	0	Average
2412	100.34	-	-	98.01	32.89	3.52	34.08	170	324	Peak
2412	85.48	-	-	83.15	32.89	3.52	34.08	170	324	Average
2483.5	48.88	-25.12	74	46.39	33.01	3.68	34.2	100	0	Peak
2483.5	39.07	-14.93	54	36.58	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 7	Temperature :	24~25℃
Test Channel :	01	Relative Humidity :	40~42%
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
41.88	27.51	-12.49	40	46.38	10.95	0.26	30.08	100	63	Peak
57.54	27.41	-12.59	40	51.5	5.75	0.3	30.14	-	-	Peak
85.62	26.1	-13.9	40	48.04	7.7	0.37	30.01	-	-	Peak
589.8	25.49	-20.51	46	35.48	18.58	1.06	29.63	-	-	Peak
664	26.69	-19.31	46	36.27	18.99	1.1	29.67	-	-	Peak
713	24.57	-21.43	46	33.69	19.43	1.14	29.69	-	-	Peak
2390	53.72	-20.28	74	51.44	32.86	3.47	34.05	100	0	Peak
2390	41.03	-12.97	54	38.75	32.86	3.47	34.05	100	0	Average
2412	99.86	-	-	97.53	32.89	3.52	34.08	100	266	Peak
2412	83.64	-	-	81.31	32.89	3.52	34.08	100	266	Average
2483.5	48.31	-25.69	74	45.82	33.01	3.68	34.2	100	0	Peak
2483.5	38.92	-15.08	54	36.43	33.01	3.68	34.2	100	0	Average

Test Mode :	Mode 8	Temperature :	24~25℃
Test Channel :	06	Relative Humidity :	40~42%
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
95.88	22.15	-21.35	43.5	41.81	9.91	0.4	29.97	-	-	Peak
147.45	23.08	-20.42	43.5	42.35	10.21	0.5	29.98	-	-	Peak
221.16	23.89	-22.11	46	43.07	10.17	0.62	29.97	-	-	Peak
393.1	26.68	-19.32	46	39.84	15.84	0.84	29.84	-	-	Peak
589.8	27.29	-18.71	46	37.28	18.58	1.06	29.63	100	0	Peak
713	27.13	-18.87	46	36.25	19.43	1.14	29.69	-	-	Peak
2390	48.61	-25.39	74	46.33	32.86	3.47	34.05	200	360	Peak
2390	39.26	-14.74	54	36.98	32.86	3.47	34.05	200	360	Average
2437	101.86	-	-	99.46	32.95	3.6	34.15	200	360	Peak
2437	84.78	-	-	82.38	32.95	3.6	34.15	200	360	Average
2483.5	48.28	-25.72	74	45.79	33.01	3.68	34.2	200	360	Peak
2483.5	40.59	-13.41	54	38.1	33.01	3.68	34.2	200	360	Average

Test Mode :	Mode 8	Temperature :	24~25℃
Test Channel :	06	Relative Humidity :	40~42%
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
41.88	27.63	-12.37	40	46.5	10.95	0.26	30.08	100	178	Peak
57.54	27.3	-12.7	40	51.39	5.75	0.3	30.14	-	-	Peak
84.54	26.24	-13.76	40	48.36	7.53	0.37	30.02	-	-	Peak
540.8	25.39	-20.61	46	35.76	18.33	0.99	29.69	-	-	Peak
589.8	25.8	-20.2	46	35.79	18.58	1.06	29.63	-	-	Peak
664	27.28	-18.72	46	36.86	18.99	1.1	29.67	-	-	Peak
2390	48.64	-25.36	74	46.36	32.86	3.47	34.05	200	360	Peak
2390	40.38	-13.62	54	38.1	32.86	3.47	34.05	200	360	Average
2437	100.08	-	-	97.68	32.95	3.6	34.15	100	269	Peak
2437	83.05	-	-	80.65	32.95	3.6	34.15	100	269	Average
2483.5	41.69	-12.31	54	39.2	33.01	3.68	34.2	200	360	Average
2483.5	48.21	-25.79	74	45.72	33.01	3.68	34.2	200	360	Peak

Test Mode :	Mode 9	Temperature :	24~25℃
Test Channel :	11	Relative Humidity :	40~42%
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
95.88	24.19	-19.31	43.5	43.85	9.91	0.4	29.97	-	-	Peak
147.45	24.07	-19.43	43.5	43.34	10.21	0.5	29.98	-	-	Peak
221.16	24.63	-21.37	46	43.81	10.17	0.62	29.97	-	-	Peak
368.6	27.93	-18.07	46	42.02	14.98	0.83	29.9	100	0	Peak
589.8	26.73	-19.27	46	36.72	18.58	1.06	29.63	-	-	Peak
713	27.96	-18.04	46	37.08	19.43	1.14	29.69	-	-	Peak
2390	48.36	-25.64	74	46.08	32.86	3.47	34.05	200	360	Peak
2390	40.4	-13.6	54	38.12	32.86	3.47	34.05	200	360	Average
2462	100.66	-	-	98.21	32.98	3.64	34.17	200	360	Peak
2462	85.57	-	-	83.12	32.98	3.64	34.17	200	360	Average
2483.5	57.7	-16.3	74	55.21	33.01	3.68	34.2	200	360	Peak
2483.5	44.63	-9.37	54	42.14	33.01	3.68	34.2	200	360	Average

Test Mode :	Mode 9	Temperature :	24~25℃
Test Channel :	11	Relative Humidity :	40~42%
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
42.15	27.78	-12.22	40	47.13	10.48	0.26	30.09	100	67	Peak
84.54	26.68	-13.32	40	48.8	7.53	0.37	30.02	-	-	Peak
221.16	23.1	-22.9	46	42.28	10.17	0.62	29.97	-	-	Peak
540.8	26.36	-19.64	46	36.73	18.33	0.99	29.69	-	-	Peak
600.3	26.91	-19.09	46	36.86	18.6	1.07	29.62	-	-	Peak
664	25.68	-20.32	46	35.26	18.99	1.1	29.67	-	-	Peak
2390	47.69	-26.31	74	45.41	32.86	3.47	34.05	100	360	Peak
2390	40.54	-13.46	54	38.26	32.86	3.47	34.05	100	360	Average
2462	103.38	-	-	100.93	32.98	3.64	34.17	100	360	Peak
2462	85.03	-	-	82.58	32.98	3.64	34.17	100	360	Average
2483.5	42.62	-11.38	54	40.13	33.01	3.68	34.2	100	360	Average
2483.5	58.06	-15.94	74	55.57	33.01	3.68	34.2	100	360	Peak

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	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Jan. 06, 2012	Conducted (TH01-KS)
Power Meter	Agilent	E4416A	MY45101555	N/A	Aug. 24, 2010	Aug. 23, 2011	Conducted (TH01-KS)
Power Sensor	Agilent	E9327A	MY44421198	N/A	Aug. 24, 2010	Aug. 23, 2011	Conducted (TH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000811	N/A	Nov. 10, 2010	Nov. 09, 2011	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 16, 2010	Nov. 15, 2011	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2010	Dec. 06, 2011	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 09, 2010	Dec. 08, 2011	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Active horn antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 09, 2010	Nov. 08, 2011	Radiation (03CH01-KS)
Signal Generator	R&S	SMR40	100455	10MHz~40GHz	Jan. 06, 2011	Jan. 05, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15-40GHz	Oct. 15, 2010	Oct. 14, 2011	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band	Jan. 07, 2011	Jan. 06, 2012	-

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 = $20\log(1-\Gamma_1\Gamma_2)$	+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				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP151102 as below.