

FCC RF Test Report

APPLICANT : HTC Corporation
EQUIPMENT : Smartphone
MODEL NAME : PH39130
FCC ID : NM8PH39130
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Oct. 07, 2011 and completely tested on Oct. 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 INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test	5
1.4 Testing Site	6
1.5 Applied Standards	6
1.6 Ancillary Equipment List	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 RF Power	7
2.2 Test Mode	8
2.3 Connection Diagram of Test System	9
2.4 RF Utility	9
3 TEST RESULT	10
3.1 6dB Bandwidth Measurement	10
3.2 Output Power Measurement	17
3.3 Band Edges Measurement	19
3.4 Spurious Emission Measurement	27
3.5 Power Spectral Density Measurement	37
3.6 AC Conducted Emission Measurement	44
3.7 Radiated Emission Measurement	48
3.8 Antenna Requirements	69
4 LIST OF MEASURING EQUIPMENT	70
5 UNCERTAINTY OF EVALUATION	71
APPENDIX A. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1O0640-01B	Rev. 01	Initial issue of report	Nov. 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 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 10.1 dB at 2.086 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.57 dB at 7386 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

HTC Corporation

No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

1.2 Manufacturer

HTC Corporation

No. 23, Xinghua Rd., Taoyuan City, Taoyuan County 330, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smartphone
Model Name	PH39130
FCC ID	NM8PH39130
Sample 1	EUT with Camera 1 and Video Camera 1
Sample 2	EUT with Camera 2 and Video Camera 2
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	11
Carrier Frequency of Each Channel	$2412+(n-1)*5$ MHz; $n=1\sim11$
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 20.77 dBm (0.1194 W) 802.11g : 23.15 dBm (0.2065 W) 802.11n (BW 20MHz) : 22.93 dBm (0.1963 W)
Antenna Type	PIFA Antenna with gain -2.18 dBi
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 INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	722060/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ♦ ANSI C63.4-2003
- ♦ IC RSS-210 Issue 8
- ♦ IC RSS-Gen Issue 3

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
5.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	19.80	-	-	-
CH 06	2437 MHz	20.30	-	-	-
CH 11	2462 MHz	20.77	20.69	20.71	20.75

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	22.25	-	-	-	-	-	-	-
CH 06	2437 MHz	22.80	-	-	-	-	-	-	-
CH 11	2462 MHz	23.15	23.13	22.95	22.91	22.97	22.97	22.90	22.98

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	22.15	-	-	-	-	-	-	-
CH 06	2437 MHz	22.76	-	-	-	-	-	-	-
CH 11	2462 MHz	22.93	22.83	22.90	22.88	22.88	22.84	22.89	22.81

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 1Mbps 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.
4. The EUT have support 802.11n (BW 20 MHz) function only, not support 802.11n (BW 40 MHz) function.

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).

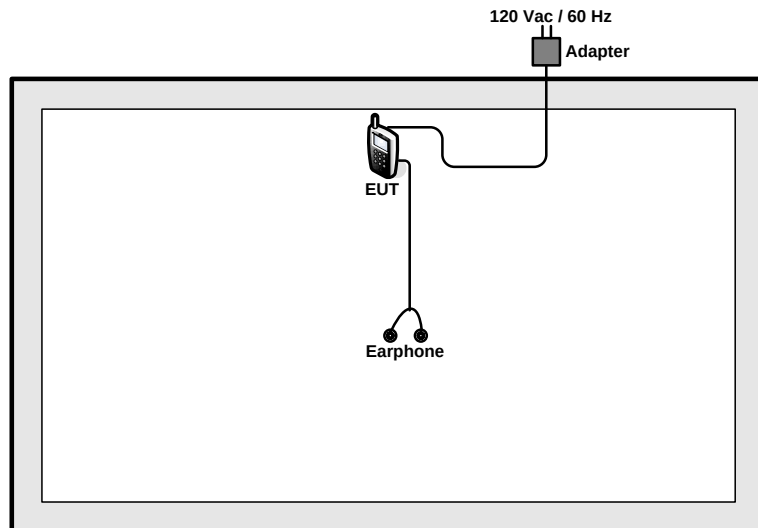
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

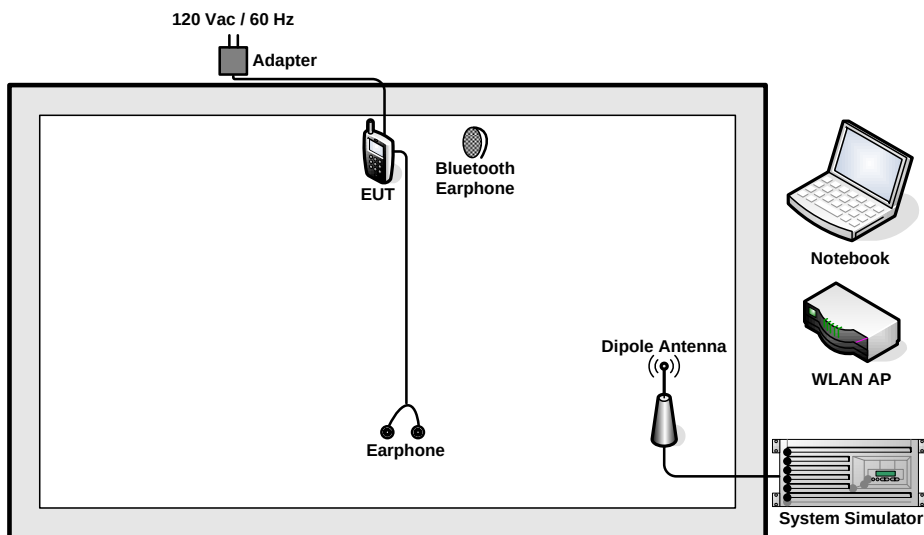
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
Radiated TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 MHz Mode 8: 802.11n (BW 20M)_CH06_2437 MHz Mode 9: 802.11n (BW 20M)_CH11_2462 MHz
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN Link + Camera + Battery 1 + Earphone 1 + USB Cable 1 (Charging from Adapter 1)	
Remark: All the tests were performance with Sample 1.		

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

The programmed RF utility “HTC SSD Test → WIFI Router” and “Remote 432X controller” were 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.

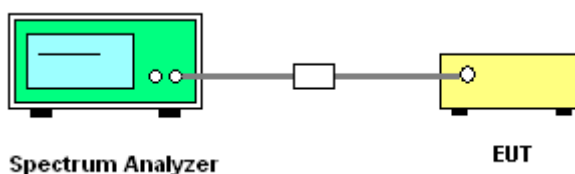
3.1.2 Measuring Instruments

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

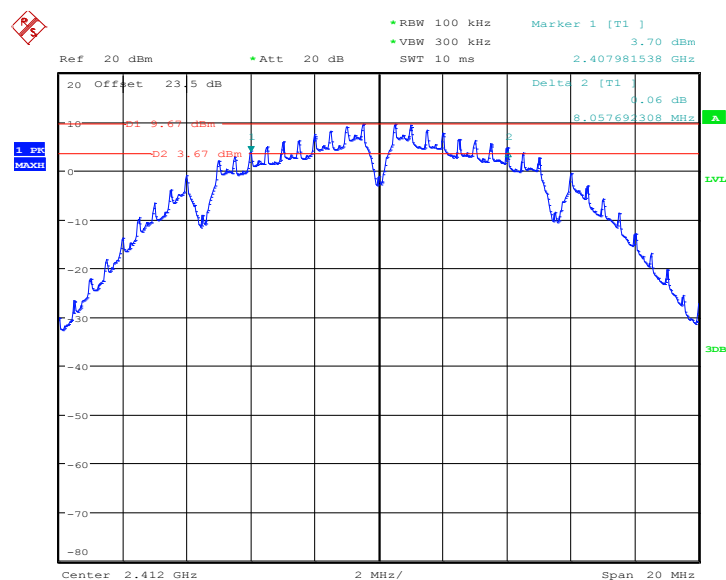


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	8.057692308	0.5	Pass
06	2437	8.032051282	0.5	Pass
11	2462	8.038461538	0.5	Pass

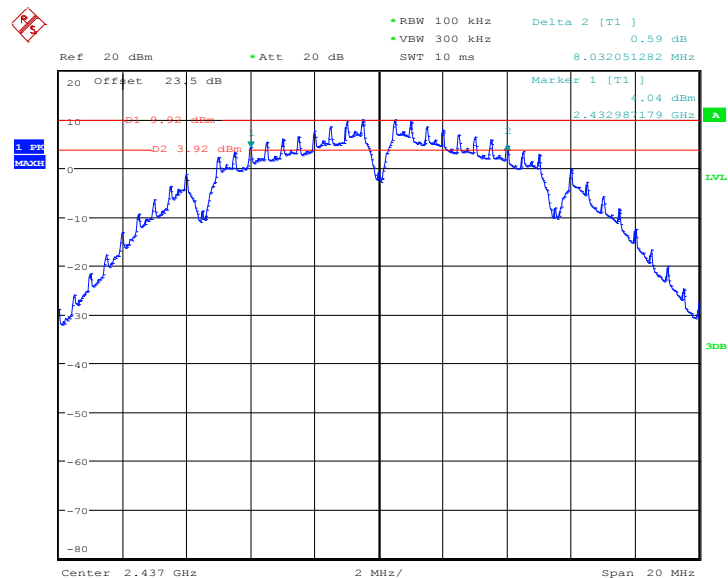
Mode 1 : 6 dB Bandwidth Plot on 802.11b Channel 01



Date: 13.OCT.2011 16:16:00

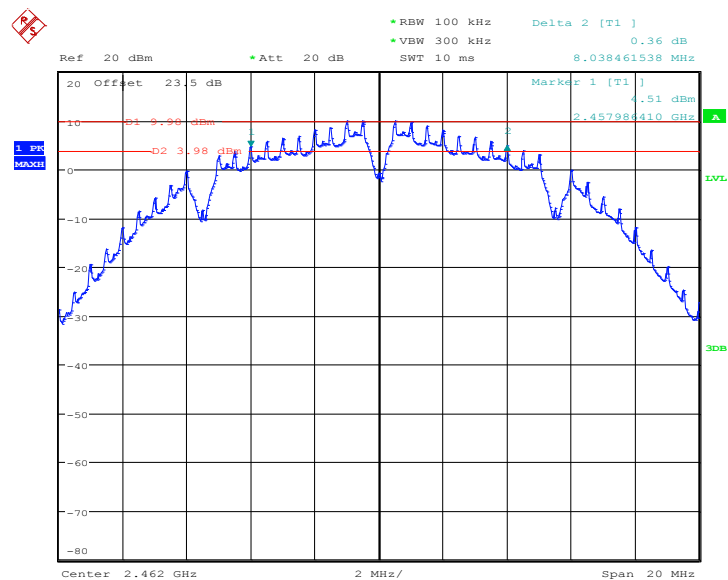


Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



Date: 13.OCT.2011 16:23:52

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



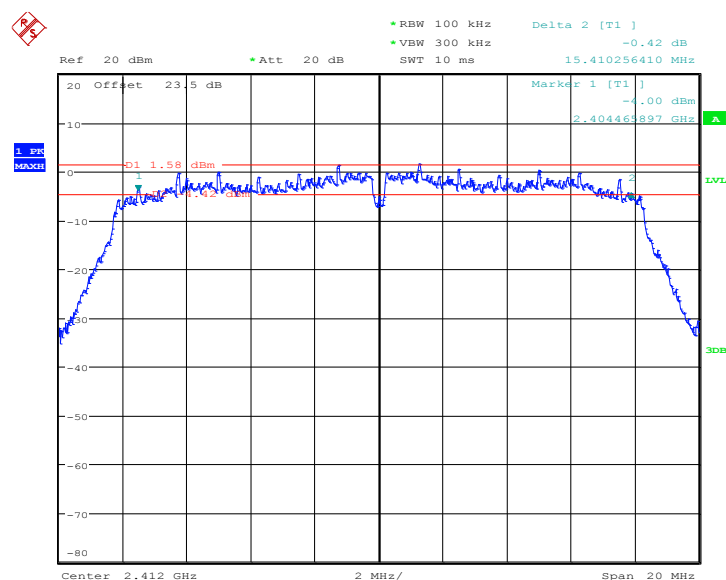
Date: 13.OCT.2011 16:33:00



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.410256410	0.5	Pass
06	2437	15.121794872	0.5	Pass
11	2462	15.121794872	0.5	Pass

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



Date: 13.OCT.2011 16:43:31



Ref 20 dBm Att 20 dB RBW 100 kHz VBW 300 kHz Delta 2 [T1] -0.66 dB SWT 10 ms

Marker 1 [T1] -1.26 dBm 2.429458718 GHz

D1 1.86 dBm

Center 2.437 GHz 2 MHz/ Span 20 MHz

Date: 13.OCT.2011 16:40:56

Ref 20 dBm Att 20 dB Delta 2 [T1] 0.90 dB
RBW 100 kHz VBW 300 kHz SWT 10 ms 15.121794872 MHz

20 Offset 23.5 dB Marker 1 [T1] -1.47 dBm
2.45443718 GHz

O1 2.5 dBm

Center 2.462 GHz 2 MHz/ Span 20 MHz

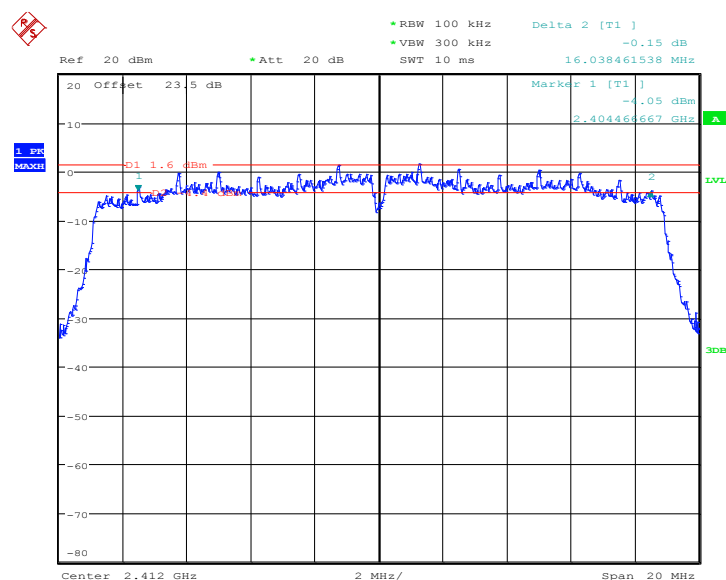
Date: 13.OCT.2011 16:37:04



Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.038461538	0.5	Pass
06	2437	15.923076923	0.5	Pass
11	2462	15.089743590	0.5	Pass

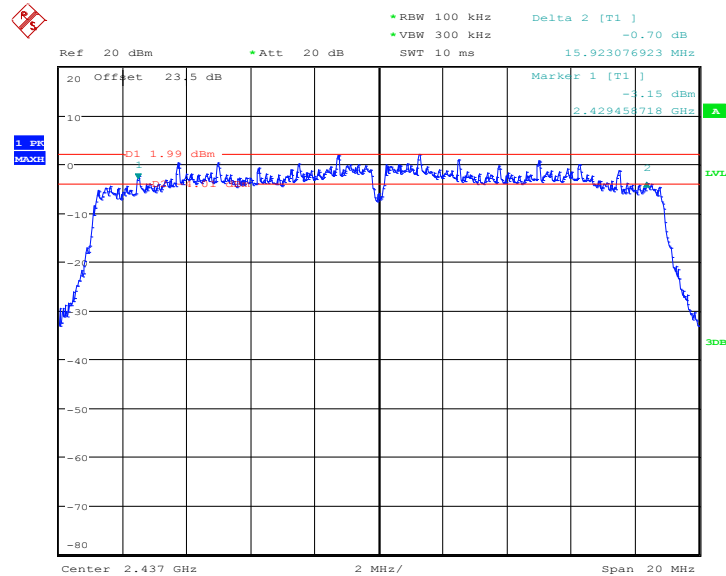
Mode 7 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



Date: 13.OCT.2011 16:46:50

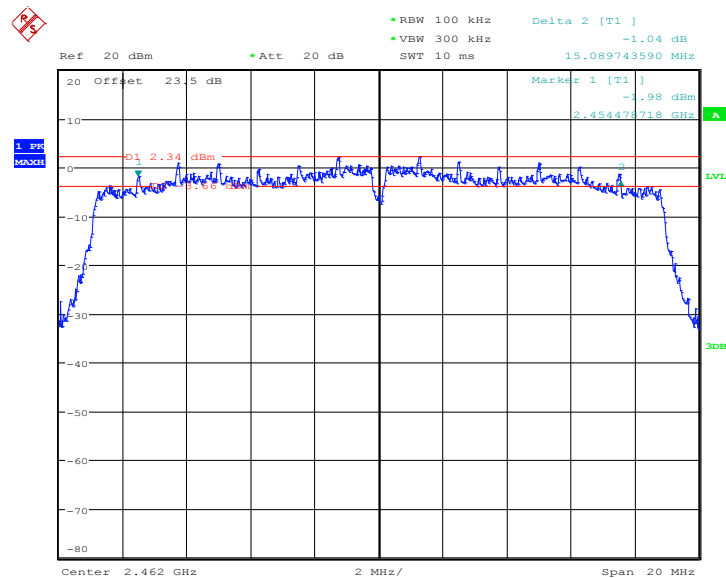


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 13.OCT.2011 16:55:31

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



Date: 13.OCT.2011 16:49:51

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.

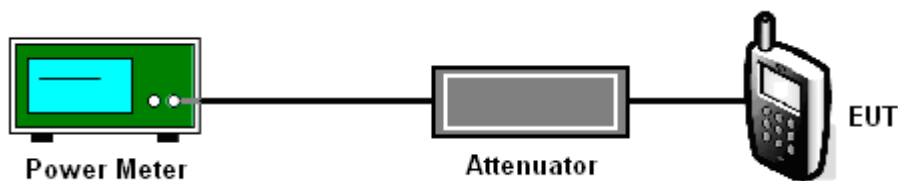
3.2.2 Measuring Instruments

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 :	24~26℃
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.80	30	Pass
06	2437	20.30	30	Pass
11	2462	20.77	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26℃
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.25	30	Pass
06	2437	22.80	30	Pass
11	2462	23.15	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26℃
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	22.15	30	Pass
06	2437	22.76	30	Pass
11	2462	22.93	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

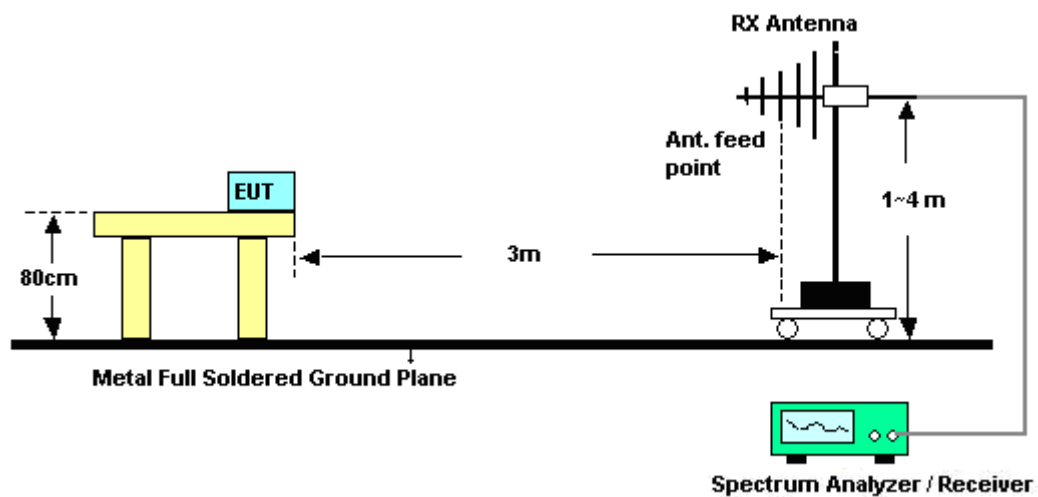
See list of measuring instruments of this test report.

3.3.3 Test Procedures

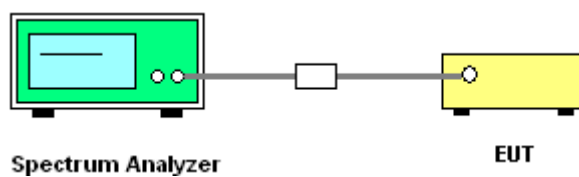
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	23~24℃
Test Band :	802.11b	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	David Yang

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
2385.05	52.6	-21.4	74	48.39	32.03	6.03	33.85	168	351	Peak
2385.05	41.14	-12.86	54	36.93	32.03	6.03	33.85	168	351	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
2387.33	49.62	-24.38	74	45.38	32.06	6.03	33.85	100	177	Peak
2387.33	38.61	-15.39	54	34.37	32.06	6.03	33.85	100	177	Average

Test Mode :	Mode 3	Temperature :	23~24℃
Test Band :	802.11b	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	David Yang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.42	57.94	-16.06	74	53.48	32.18	6.18	33.9	110	341	Peak
2484.42	46.15	-7.85	54	41.69	32.18	6.18	33.9	110	341	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
2483.66	53.39	-20.61	74	48.93	32.18	6.18	33.9	100	306	Peak
2483.66	44.95	-9.05	54	40.49	32.18	6.18	33.9	100	306	Average



Test Mode :	Mode 4	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	David Yang

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
2389.99	60.41	-13.59	74	56.17	32.06	6.03	33.85	138	0	Peak
2389.99	42.29	-11.71	54	38.05	32.06	6.03	33.85	138	0	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.42	54.49	-19.51	74	50.25	32.06	6.03	33.85	100	321	Peak
2389.42	37.6	-16.4	54	33.36	32.06	6.03	33.85	100	321	Average

Test Mode :	Mode 6	Temperature :	23~24℃
Test Band :	802.11g	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	David Yang

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
2486.7	67.75	-6.25	74	63.29	32.18	6.18	33.9	134	347	Peak
2486.7	46.41	-7.59	54	41.95	32.18	6.18	33.9	134	347	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
2486.7	58.49	-15.51	74	54.03	32.18	6.18	33.9	199	318	Peak
2486.7	37.89	-16.11	54	33.43	32.18	6.18	33.9	199	318	Average



Test Mode :	Mode 7	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	David Yang

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
2388.85	64.33	-9.67	74	60.09	32.06	6.03	33.85	110	340	Peak
2388.85	44.25	-9.75	54	40.01	32.06	6.03	33.85	110	340	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
2389.61	57.95	-16.05	74	53.71	32.06	6.03	33.85	102	321	Peak
2389.61	39.42	-14.58	54	35.18	32.06	6.03	33.85	102	321	Average

Test Mode :	Mode 9	Temperature :	23~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	David Yang

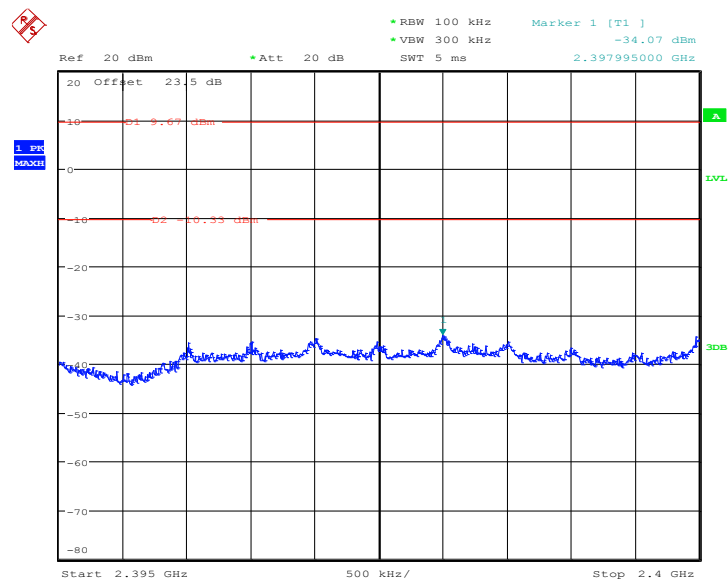
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	67.81	-6.19	74	63.35	32.18	6.18	33.9	107	354	Peak
2483.85	47.83	-6.17	54	43.37	32.18	6.18	33.9	107	354	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
2483.66	59.5	-14.5	74	55.04	32.18	6.18	33.9	106	318	Peak
2483.66	39.98	-14.02	54	35.52	32.18	6.18	33.9	106	318	Average

3.3.6 Test Plots of Conducted Band Edges

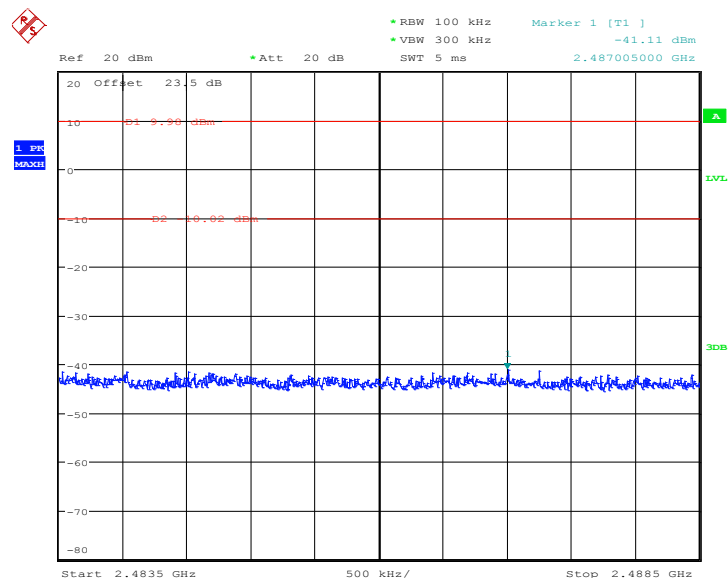
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11b Channel 01



Date: 13.OCT.2011 16:17:06

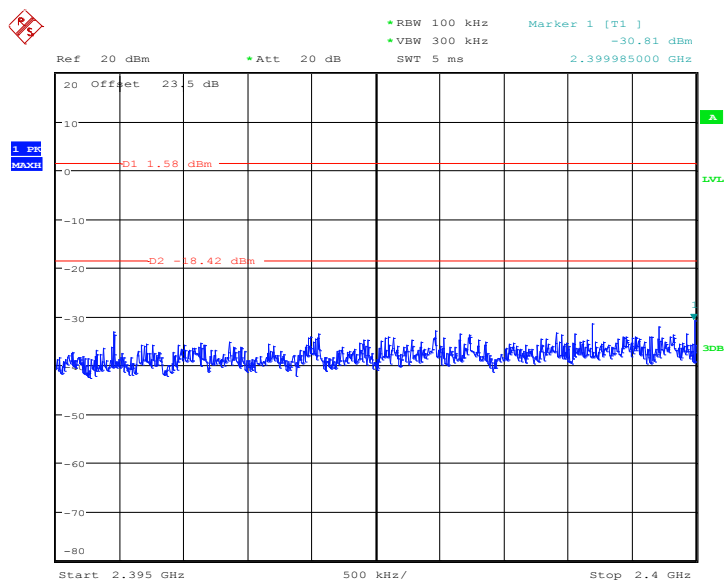
High Band Edge Plot on 802.11b Channel 11



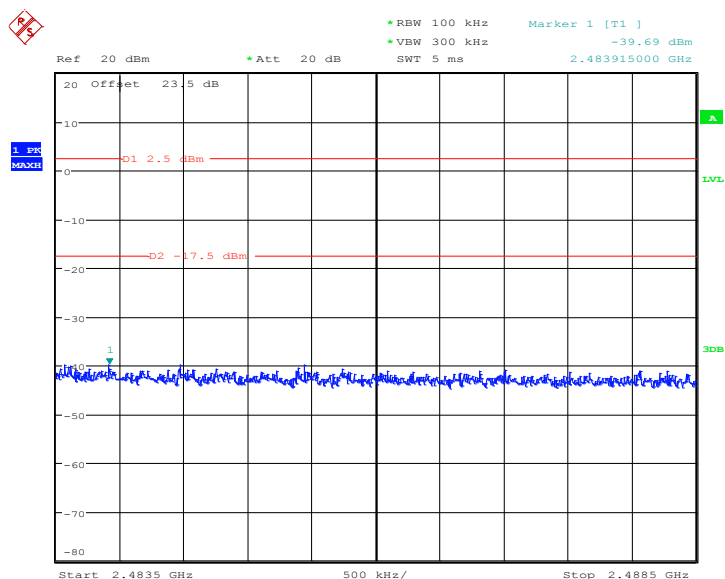
Date: 13.OCT.2011 16:33:46



Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11g Channel 01

Date: 13.OCT.2011 16:44:37

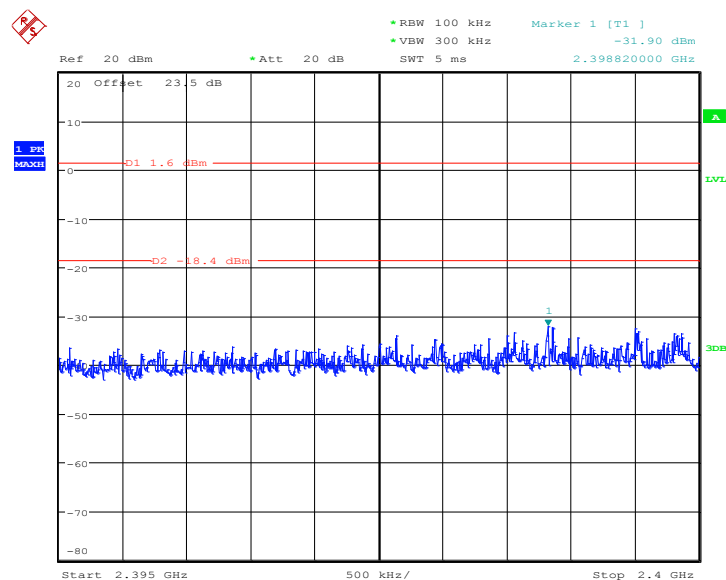
High Band Edge Plot on 802.11g Channel 11

Date: 13.OCT.2011 16:37:49



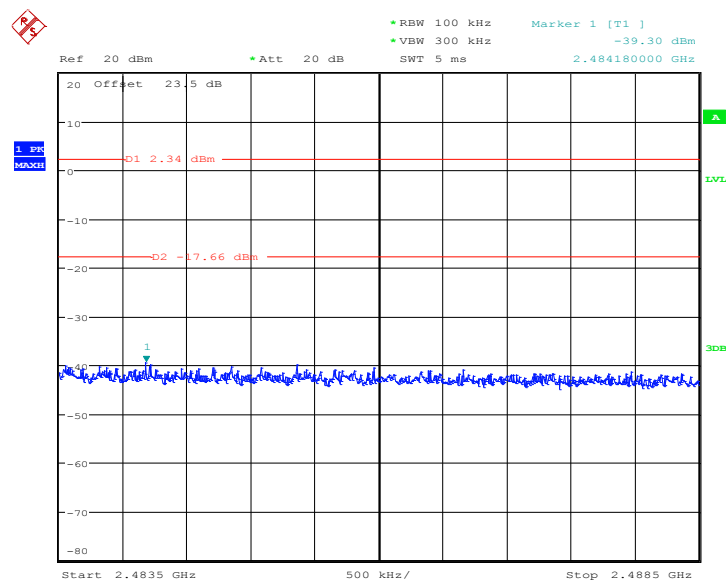
Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

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



Date: 13.OCT.2011 16:47:57

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



Date: 13.OCT.2011 16:50:37

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.

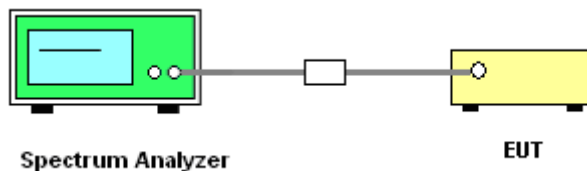
3.4.2 Measuring Instruments

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.

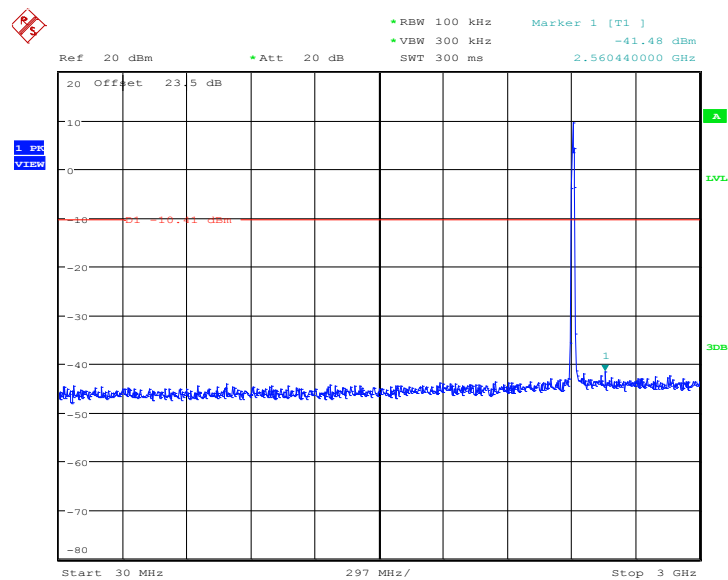
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

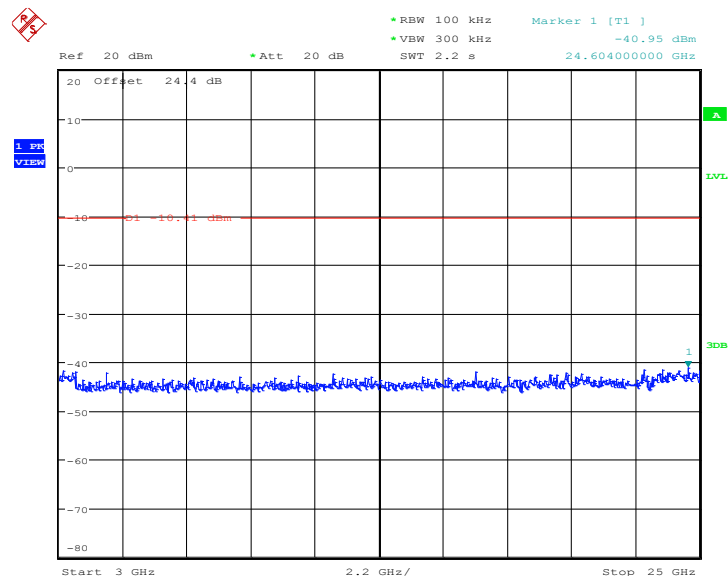
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 13.OCT.2011 16:17:26

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

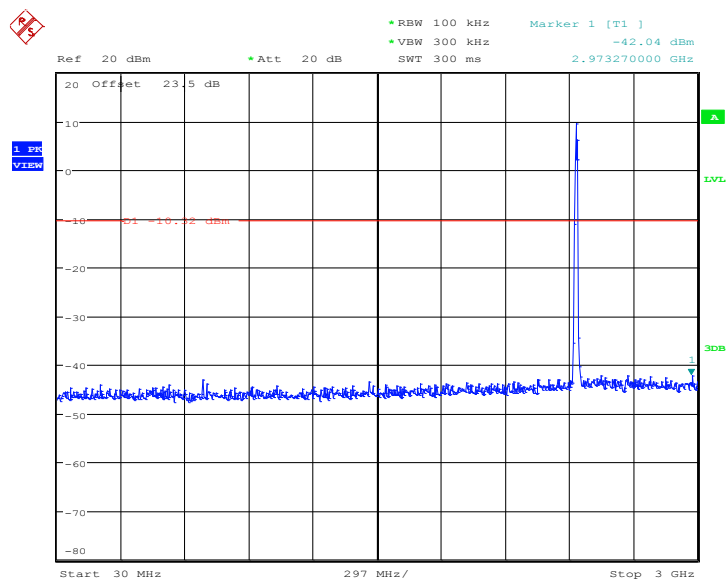


Date: 13.OCT.2011 16:17:43



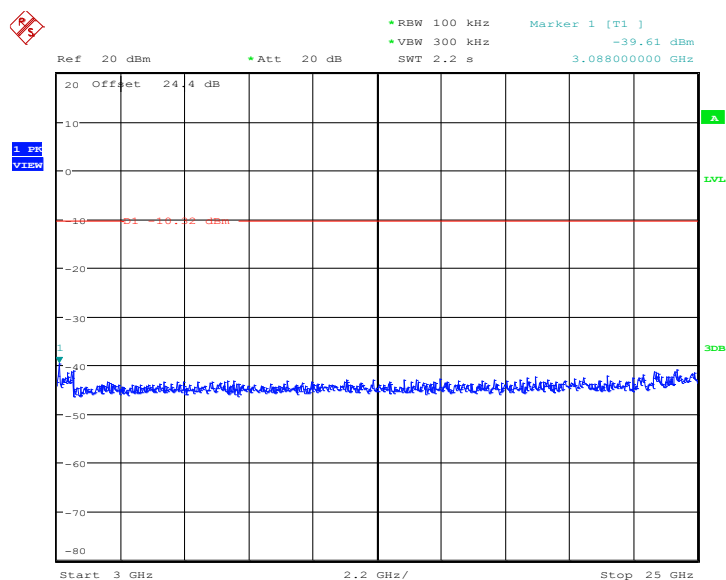
Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 13.OCT.2011 16:24:40

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

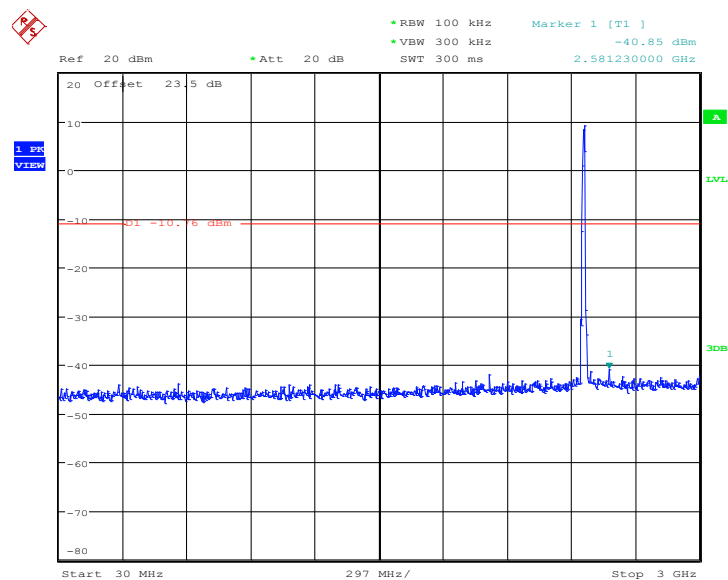


Date: 13.OCT.2011 16:24:56



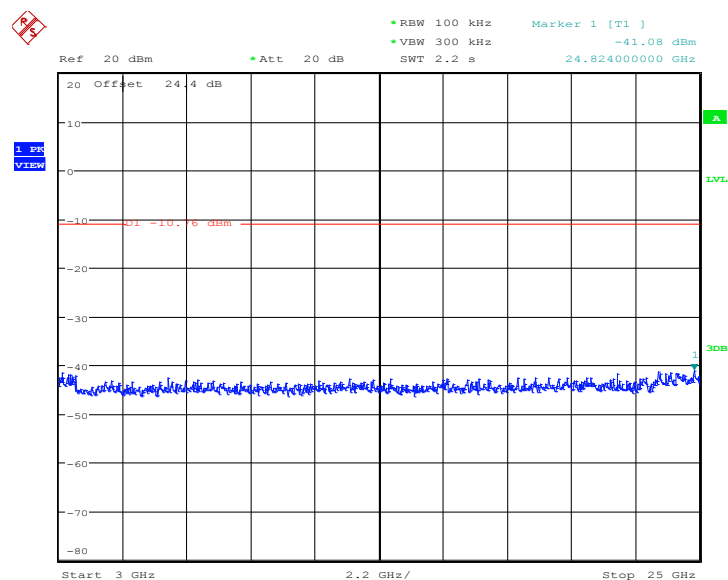
Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



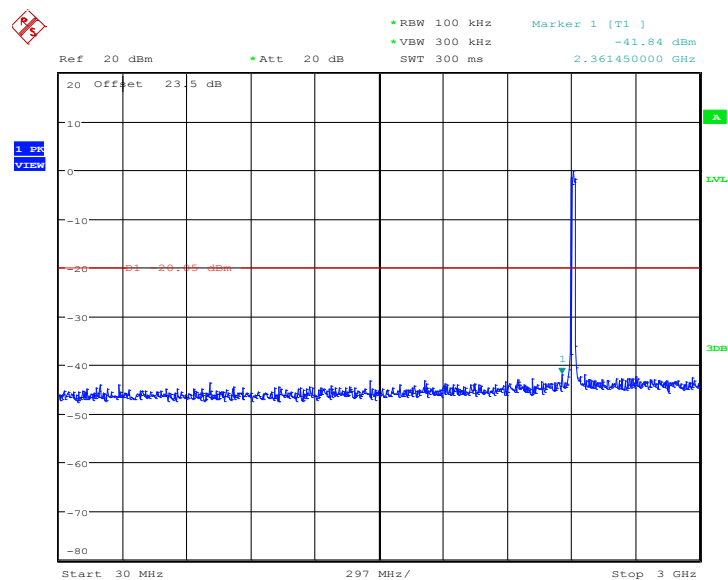
Date: 13.OCT.2011 16:34:30

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

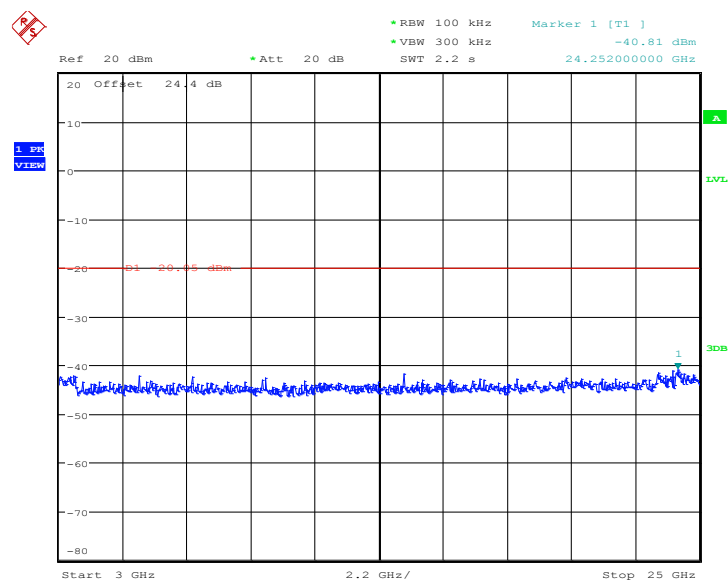


Date: 13.OCT.2011 16:34:47

Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 13.OCT.2011 16:45:22

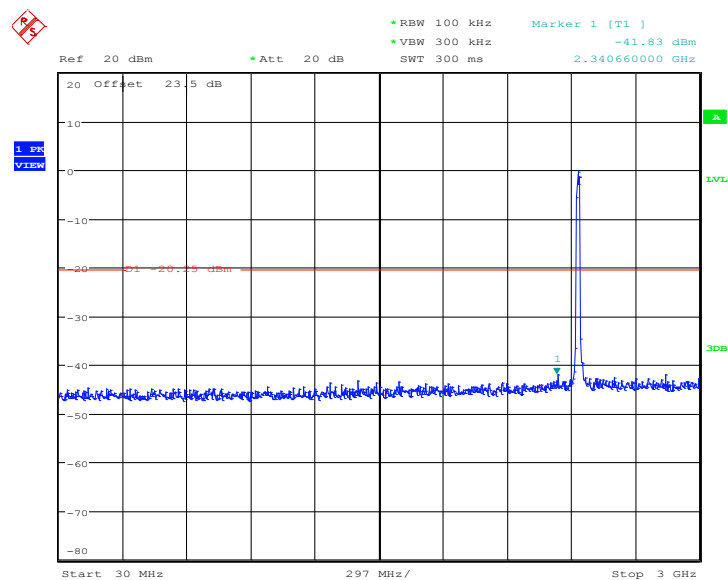
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 13.OCT.2011 16:45:38



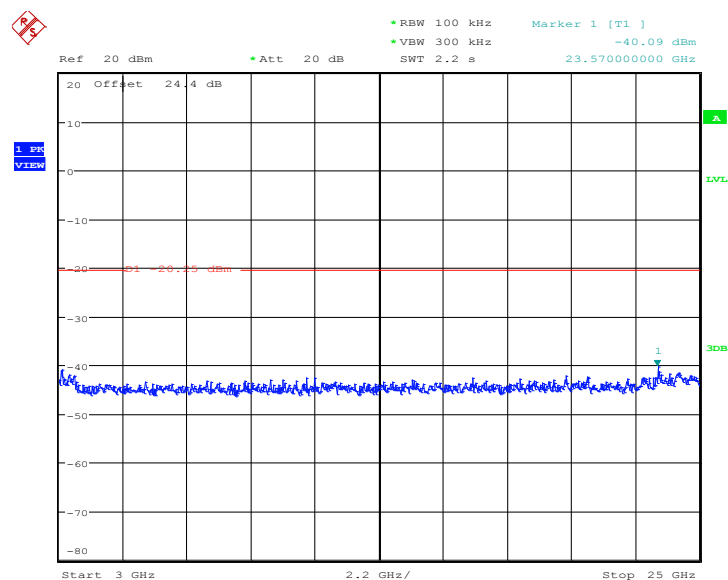
Test Mode :	Mode 5	Temperature :	24~26
Test Band :	802.11g	Relative Humidity :	50~53
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 13.OCT.2011 16:41:40

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

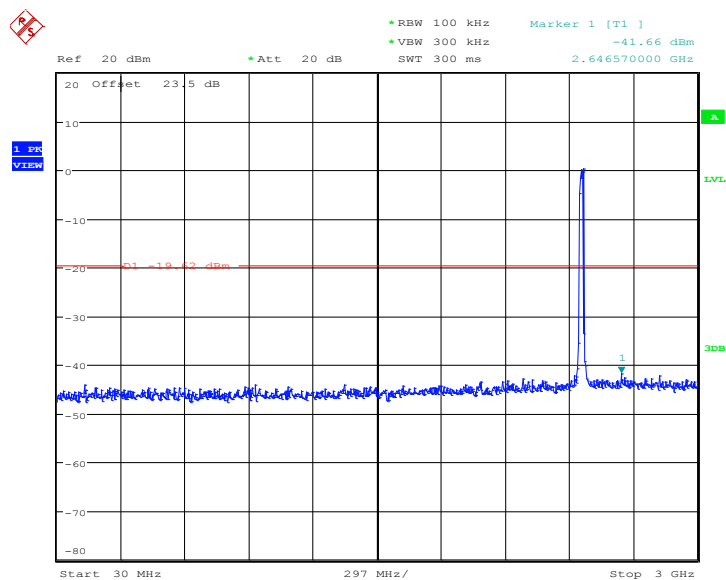


Date: 13.OCT.2011 16:41:57



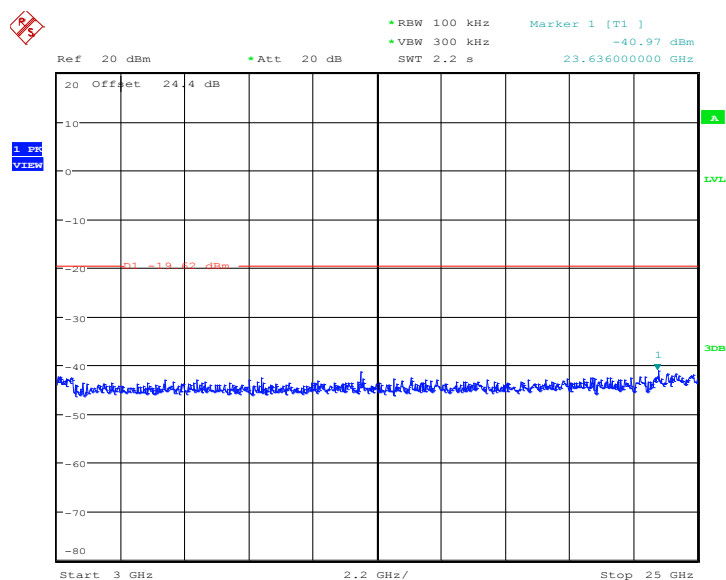
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 13.OCT.2011 16:39:02

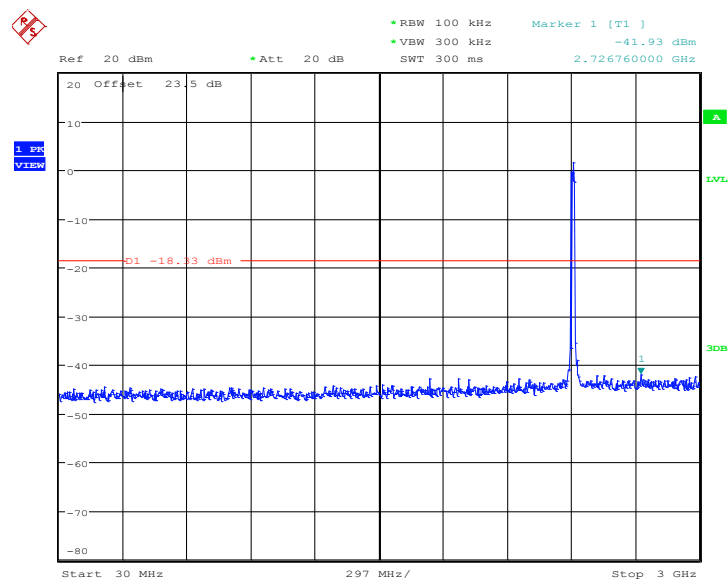
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



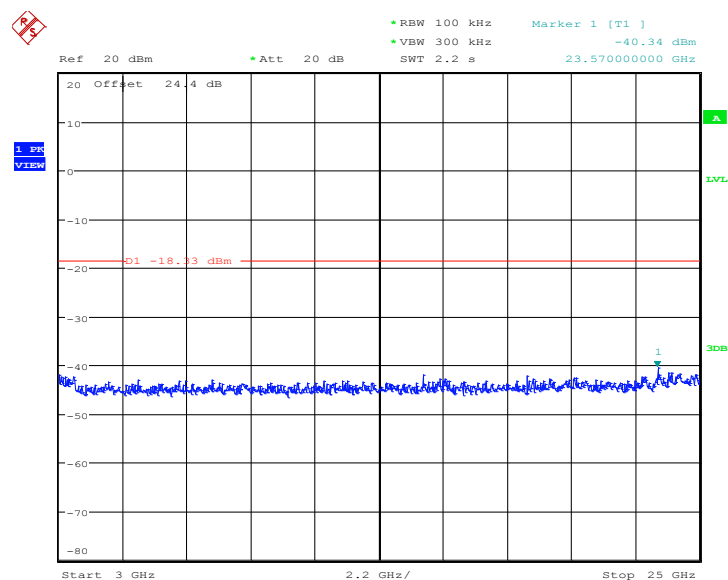
Date: 13.OCT.2011 16:39:18



Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

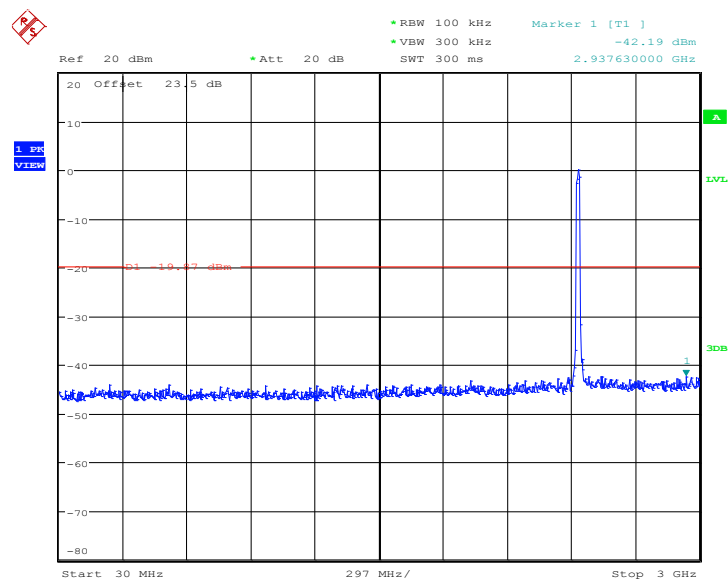
Date: 13.OCT.2011 16:48:41

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

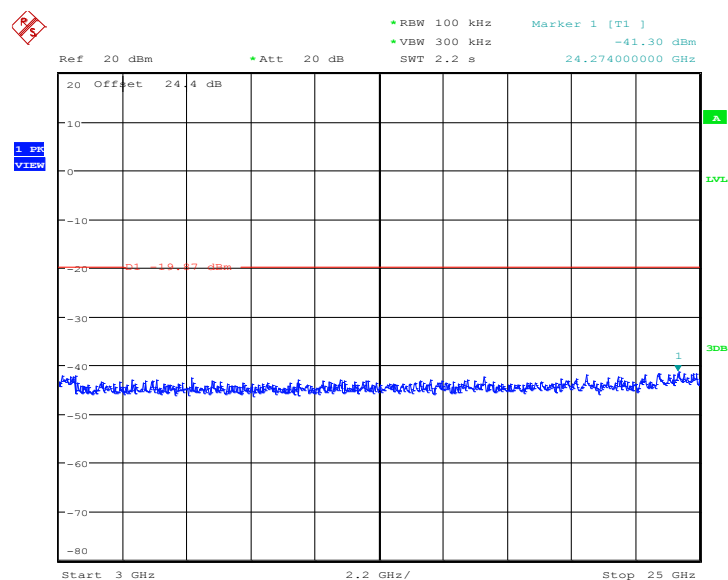
Date: 13.OCT.2011 16:48:58



Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Hank Yu

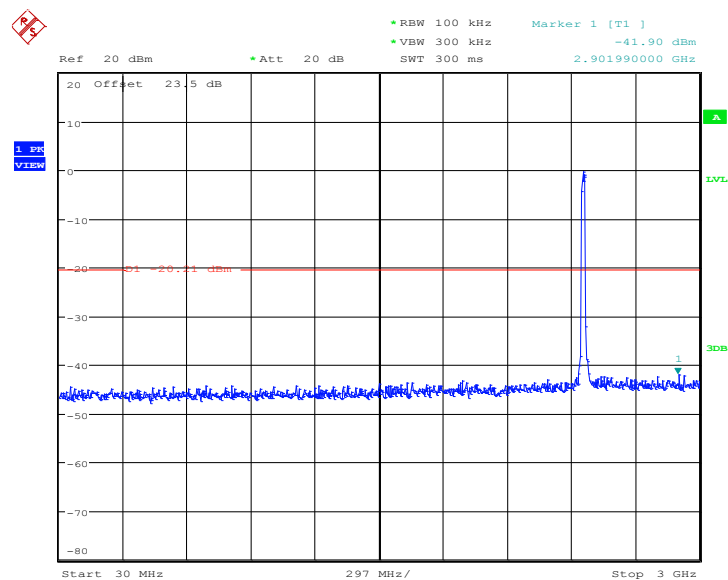
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 13.OCT.2011 16:52:32

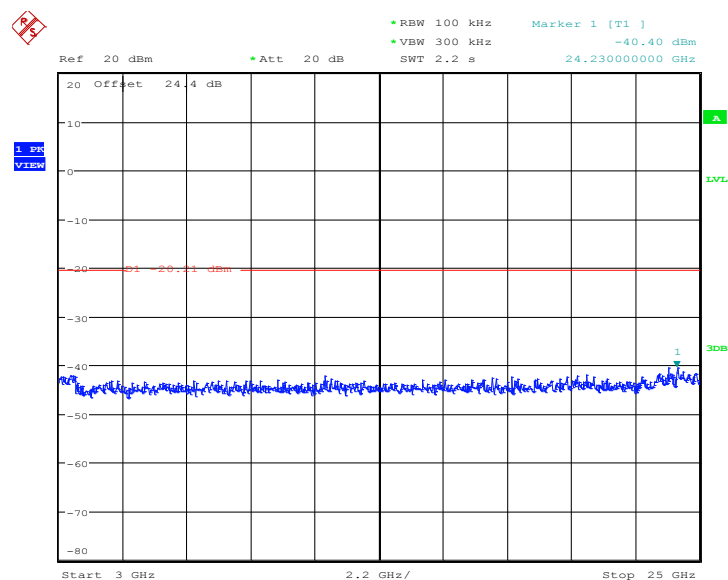
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 13.OCT.2011 16:52:48

Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 13.OCT.2011 16:54:26

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


Date: 13.OCT.2011 16:54:42

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.

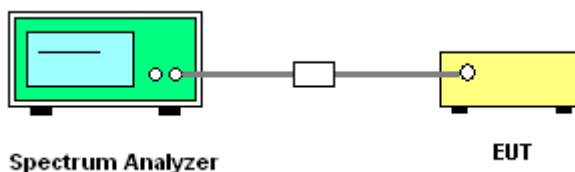
3.5.2 Measuring Instruments

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

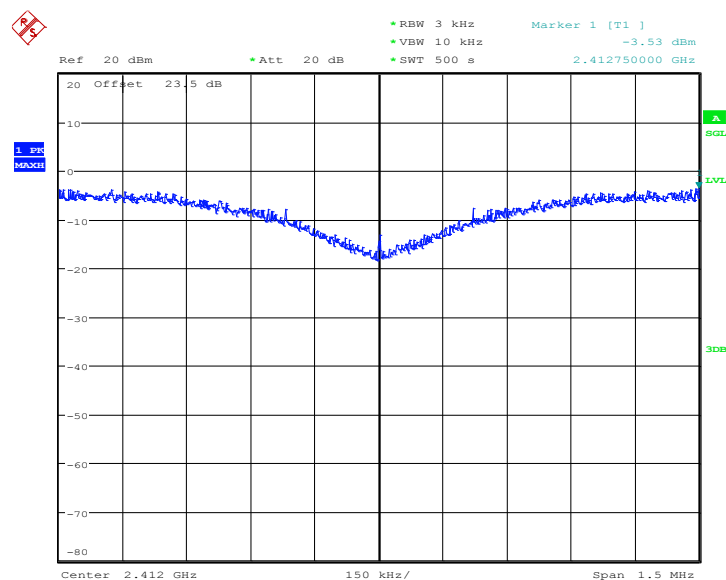


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	24~26℃
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.53	8	Pass
06	2437	-3.14	8	Pass
11	2462	-2.80	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



Date: 13.OCT.2011 17:55:26



Ref 20 dBm • Att 20 dB • RBW 3 kHz Marker 1 [T1] -3.14 dBm
 • VBW 10 kHz • SWT 500 s 2.436260500 GHz

20 Offset 23.5 dB
 10
 0
 -10
 -20
 -30
 -40
 -50
 -60
 -70
 -80

1.5 MHz
 30dB

Center 2.437 GHz 150 kHz/ Span 1.5 MHz

Date: 13.OCT.2011 18:09:56

Ref 20 dBm • Att. 20 dB • RBW 3 kHz Marker 1 [T1] -2.80 dBm
 • VBW 10 kHz • SWT 500 s 2.462742500 GHz

20 Offset 23.5 dB

1.5 MHz

Center 2.462 GHz 150 kHz/ Span 1.5 MHz

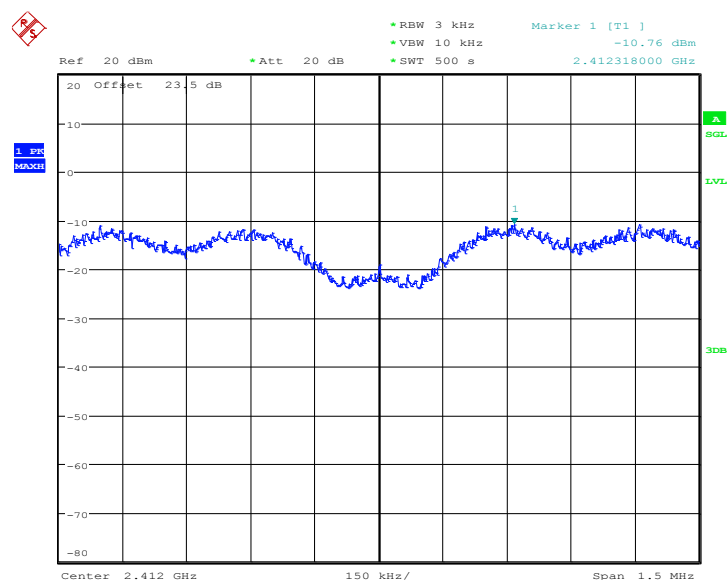
Date: 13.OCT.2011 18:19:04



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.76	8	Pass
06	2437	-10.41	8	Pass
11	2462	-9.70	8	Pass

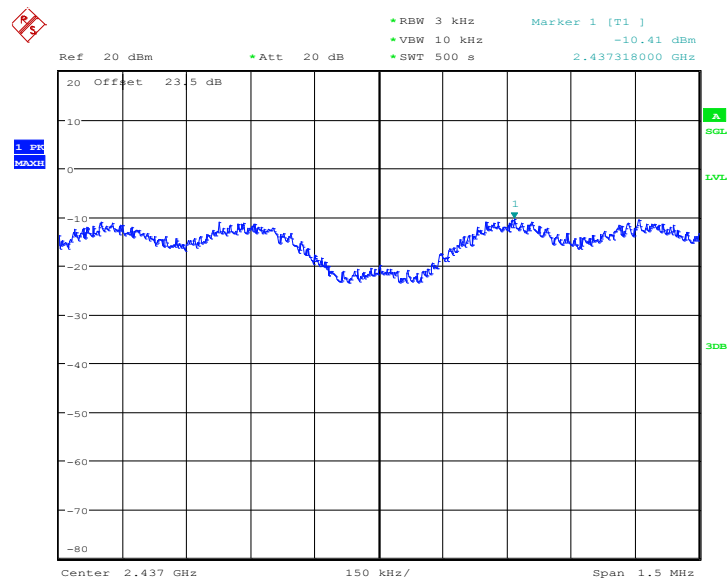
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 13.OCT.2011 17:46:48

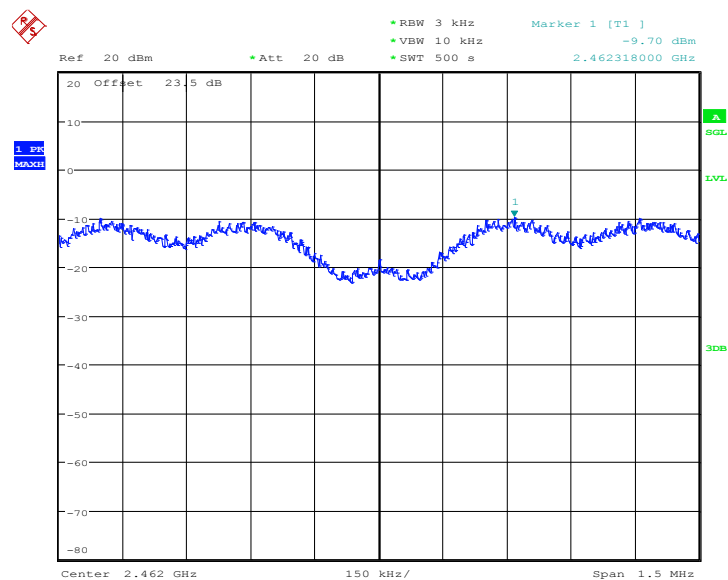


Mode 5 : PSD Plot on 802.11g Channel 06



Date: 13.OCT.2011 17:38:24

Mode 6 : PSD Plot on 802.11g Channel 11



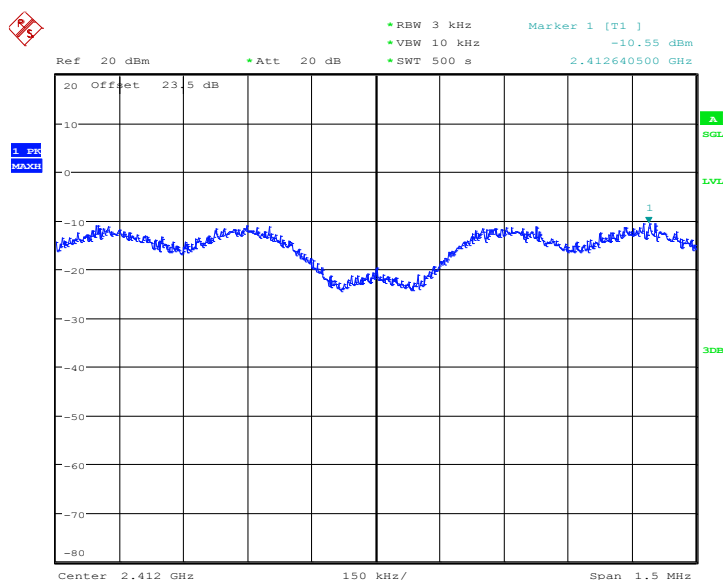
Date: 13.OCT.2011 17:29:44



Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.55	8	Pass
06	2437	-9.61	8	Pass
11	2462	-9.35	8	Pass

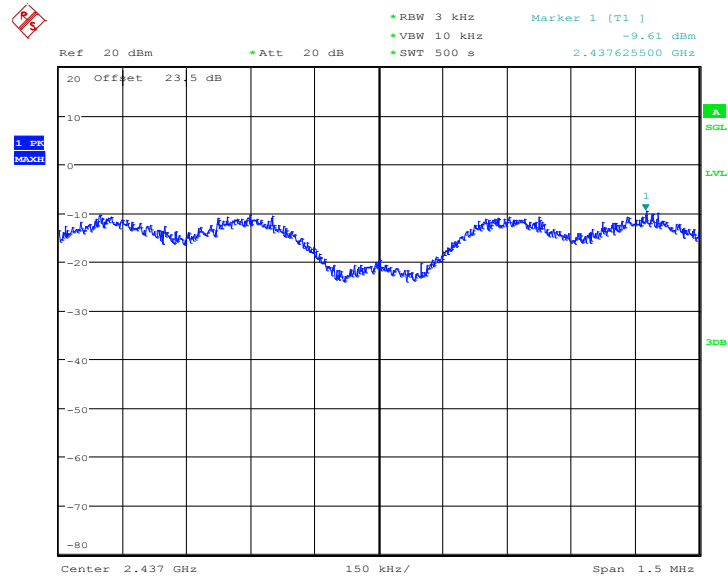
Mode 7 : PSD Plot on 802.11n (BW 20MHz) Channel 01



Date: 13.OCT.2011 17:12:42

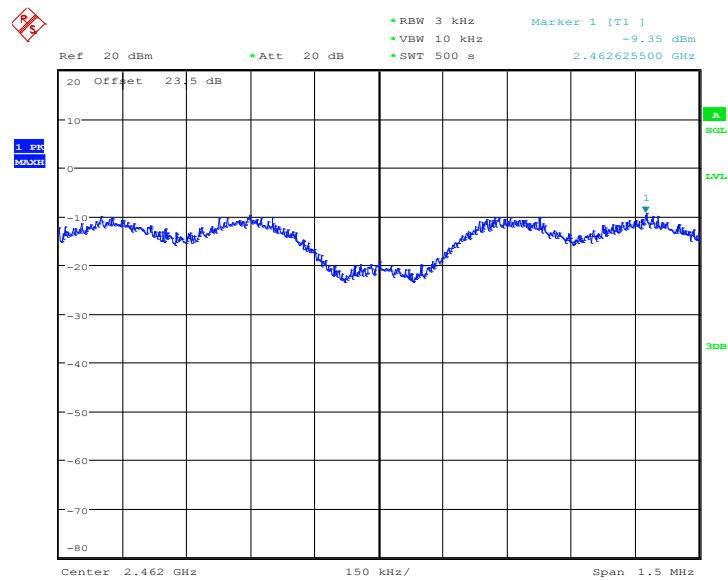


Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06



Date: 13.OCT.2011 17:04:18

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



Date: 13.OCT.2011 17:21:21

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

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

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

*Decreases with the logarithm of the frequency.

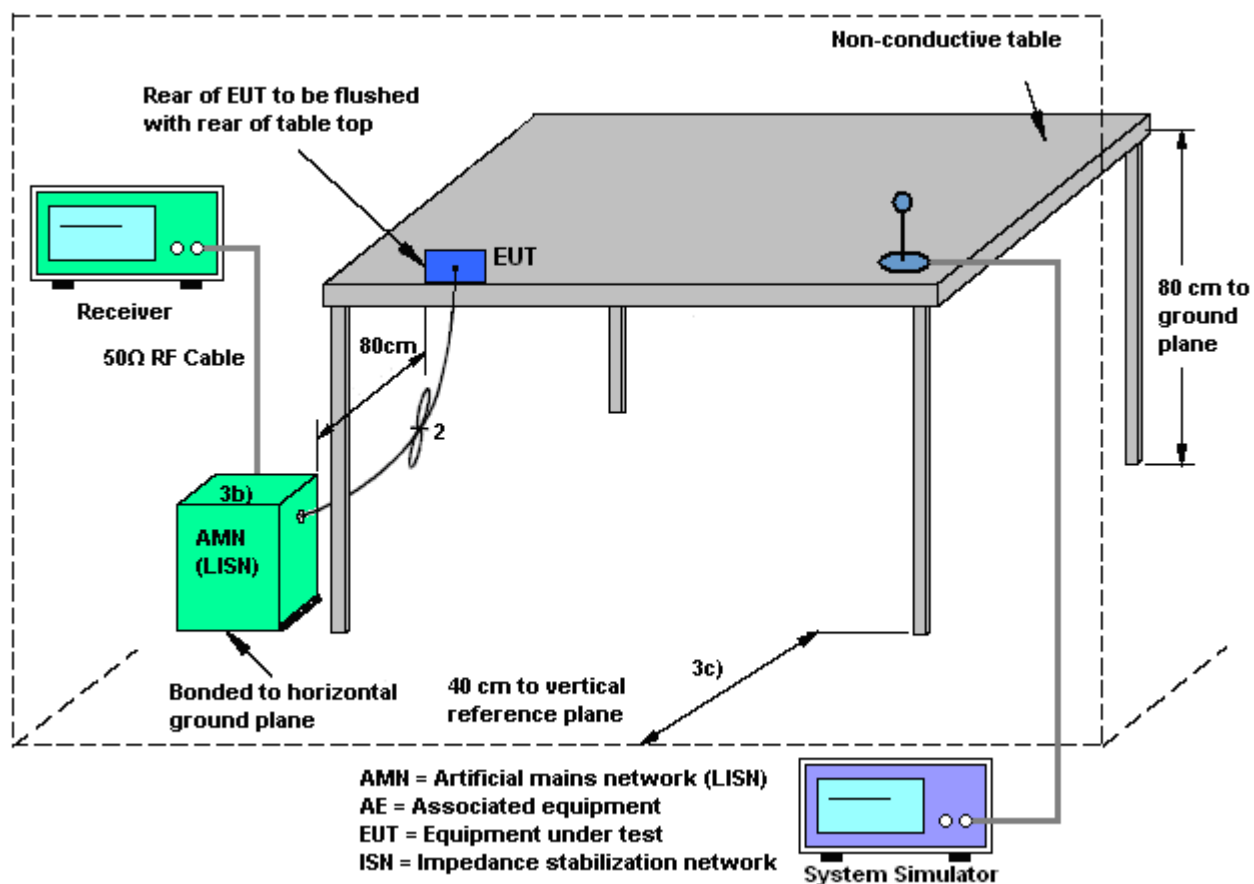
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

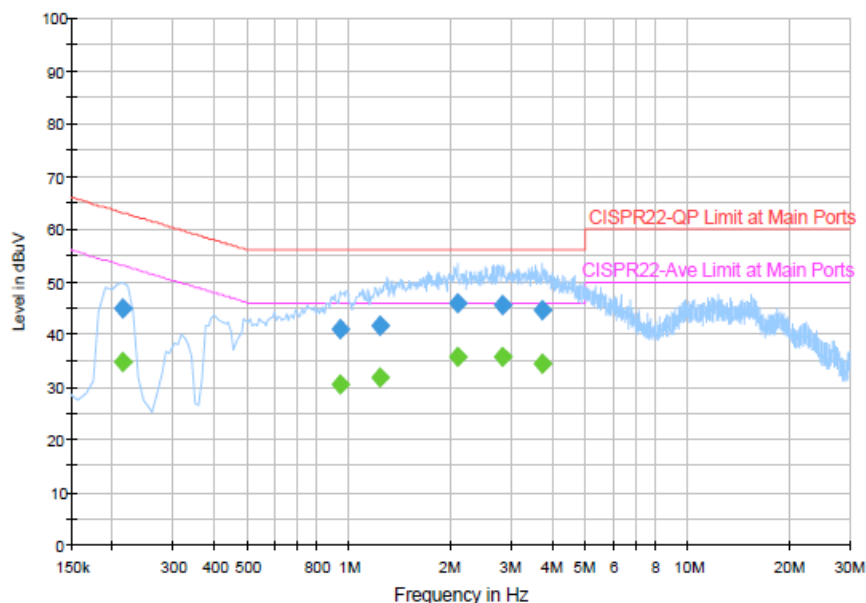
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	42~44%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + Camera + Battery 1 + Earphone 1 + USB Cable 1 (Charging from Adapter 1)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



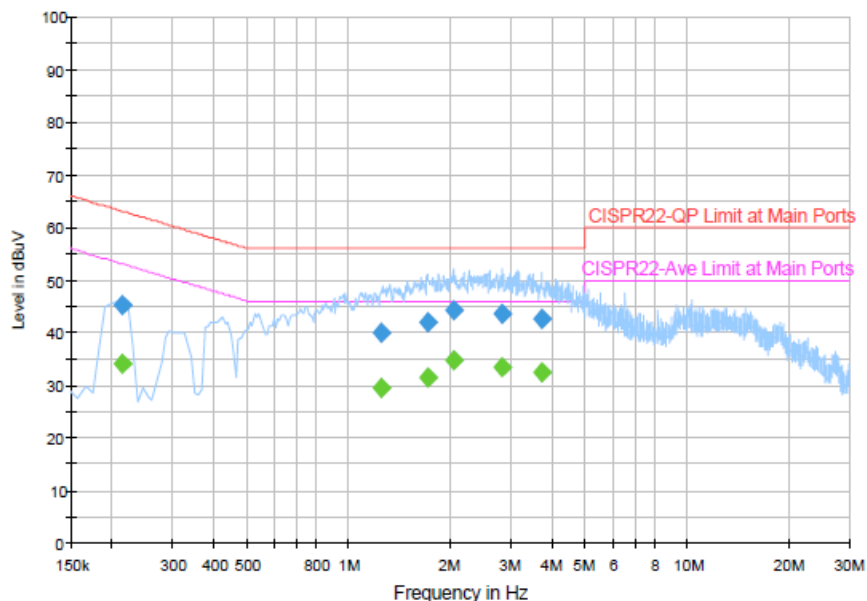
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	45.0	Off	L1	19.4	18.0	63.0
0.934000	40.9	Off	L1	19.4	15.1	56.0
1.222000	41.7	Off	L1	19.4	14.3	56.0
2.086000	45.9	Off	L1	19.4	10.1	56.0
2.830000	45.5	Off	L1	19.4	10.5	56.0
3.702000	44.6	Off	L1	19.5	11.4	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	34.6	Off	L1	19.4	18.4	53.0
0.934000	30.5	Off	L1	19.4	15.5	46.0
1.222000	31.7	Off	L1	19.4	14.3	46.0
2.086000	35.8	Off	L1	19.4	10.2	46.0
2.830000	35.6	Off	L1	19.4	10.4	46.0
3.702000	34.6	Off	L1	19.5	11.4	46.0

Test Mode :	Mode 1	Temperature :	21~23°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	42~44%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + Camera + Battery 1 + Earphone 1 + USB Cable 1 (Charging from Adapter 1)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	45.2	Off	N	19.4	17.8	63.0
1.238000	40.1	Off	N	19.5	15.9	56.0
1.702000	42.1	Off	N	19.5	13.9	56.0
2.030000	44.3	Off	N	19.5	11.7	56.0
2.822000	43.7	Off	N	19.5	12.3	56.0
3.710000	42.6	Off	N	19.5	13.4	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	34.2	Off	N	19.4	18.8	53.0
1.238000	29.5	Off	N	19.5	16.5	46.0
1.702000	31.5	Off	N	19.5	14.5	46.0
2.030000	34.8	Off	N	19.5	11.2	46.0
2.822000	33.5	Off	N	19.5	12.5	46.0
3.710000	32.5	Off	N	19.5	13.5	46.0

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

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

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

3.7.2 Measuring Instruments

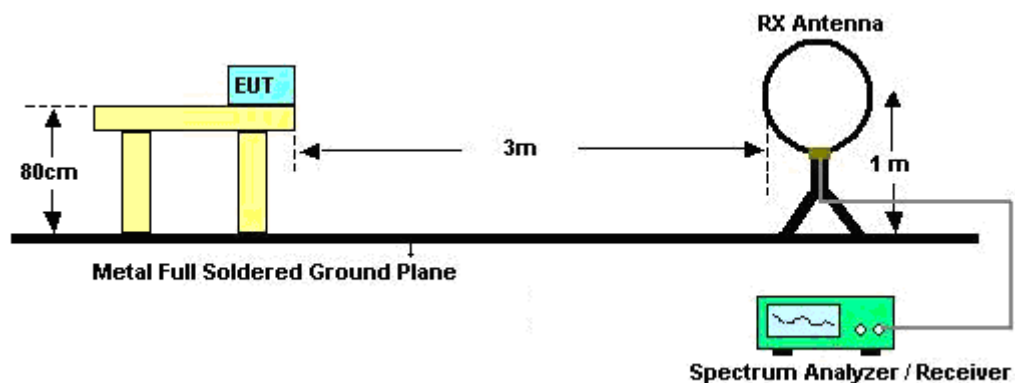
See list of measuring instruments of this test report.

3.7.3 Test Procedures

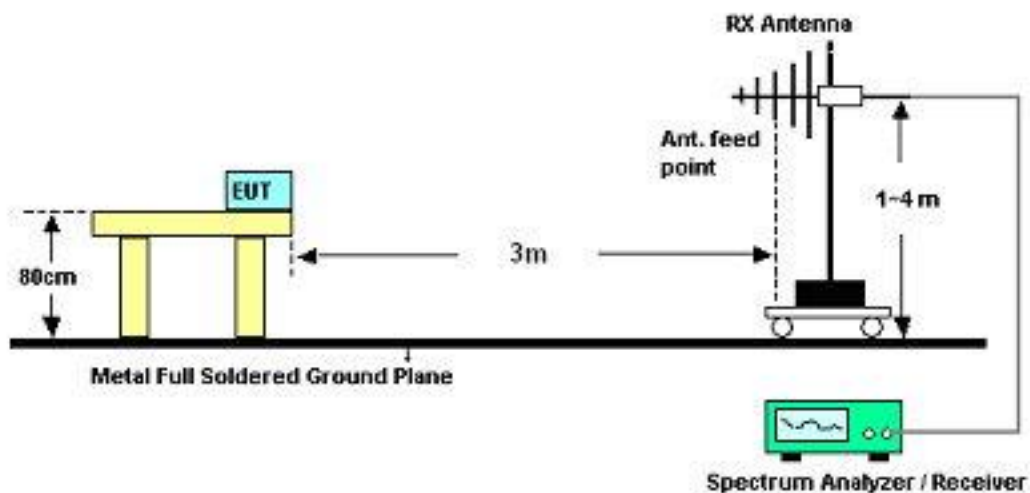
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

3.7.4 Test Setup

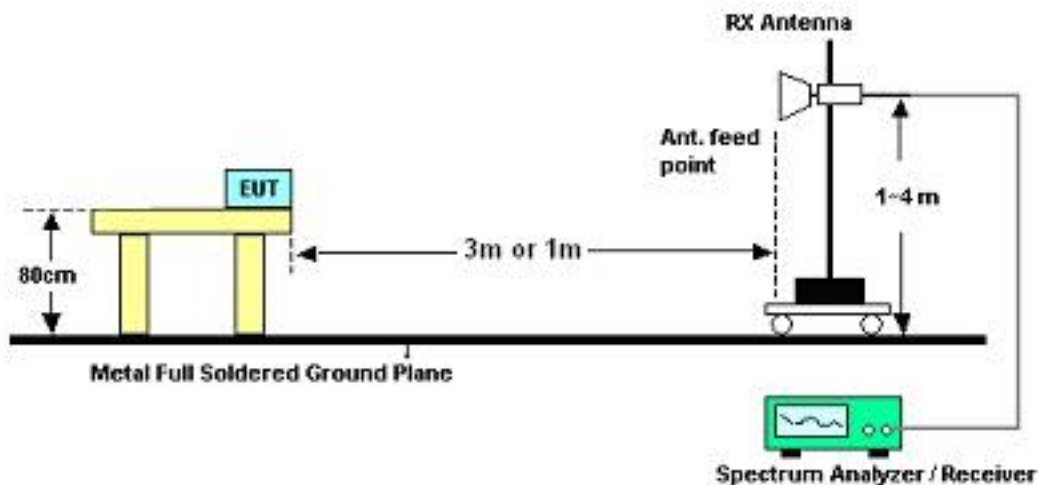
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	David Yang	Temperature :	23~24℃	
		Relative Humidity :	49~51%	

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 :	23~24℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

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
47.01	25.61	-14.39	40	46.98	9.48	0.67	31.52	-	-	Peak
253.29	26.35	-19.65	46	43.49	12.72	1.55	31.41	-	-	Peak
296.49	27.91	-18.09	46	44.08	13.41	1.75	31.33	-	-	Peak
301.4	28.73	-17.27	46	44.77	13.52	1.77	31.33	-	-	Peak
379.8	37.47	-8.53	46	50.65	15.96	2.1	31.24	121	173	Peak
456.1	28.78	-17.22	46	40.07	17.49	2.31	31.09	-	-	Peak
2385.05	52.6	-21.4	74	48.39	32.03	6.03	33.85	168	351	Peak
2385.05	41.14	-12.86	54	36.93	32.03	6.03	33.85	168	351	Average
2412	108.17	-	-	103.89	32.08	6.07	33.87	168	351	Peak
2412	104.21	-	-	99.93	32.08	6.07	33.87	168	351	Average
2486	41.87	-12.13	54	37.41	32.18	6.18	33.9	168	351	Average
2486	51.79	-22.21	74	47.33	32.18	6.18	33.9	168	351	Peak
4824	44.23	-29.77	74	60.12	34.1	9.12	59.11	100	0	Peak
7236	49.15	-39.02	88.17	61.53	35.7	10.03	58.11	100	0	Peak

Test Mode :	Mode 1	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

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
48.9	27.92	-12.08	40	49.69	9.08	0.68	31.53	108	91	Peak
130.17	26.75	-16.75	43.5	45.6	11.57	1.15	31.57	-	-	Peak
298.65	25.23	-20.77	46	41.36	13.44	1.76	31.33	-	-	Peak
304.2	26.54	-19.46	46	42.48	13.61	1.78	31.33	-	-	Peak
379.8	33.5	-12.5	46	46.68	15.96	2.1	31.24	-	-	Peak
469.4	30.45	-15.55	46	41.45	17.72	2.35	31.07	-	-	Peak
2387.33	49.62	-24.38	74	45.38	32.06	6.03	33.85	100	177	Peak
2387.33	38.61	-15.39	54	34.37	32.06	6.03	33.85	100	177	Average
2412	103.15	-	-	98.87	32.08	6.07	33.87	100	177	Peak
2412	99.28	-	-	95	32.08	6.07	33.87	100	177	Average
2486	34.32	-19.68	54	29.86	32.18	6.18	33.9	100	177	Average
2486	45.97	-28.03	74	41.51	32.18	6.18	33.9	100	177	Peak
4824	47.69	-26.31	74	63.58	34.1	9.12	59.11	100	0	Peak
7236	49.15	-34	83.15	61.53	35.7	10.03	58.11	100	0	Peak



Test Mode :	Mode 2	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
48.9	28.2	-11.8	40	49.97	9.08	0.68	31.53	-	-	Peak
134.49	22.38	-21.12	43.5	41.18	11.59	1.17	31.56	-	-	Peak
297.57	28.14	-17.86	46	44.29	13.43	1.75	31.33	-	-	Peak
304.2	27.58	-18.42	46	43.52	13.61	1.78	31.33	-	-	Peak
377.7	38.22	-7.78	46	51.5	15.87	2.09	31.24	132	340	Peak
469.4	27.91	-18.09	46	38.91	17.72	2.35	31.07	-	-	Peak
2390	49.76	-24.24	74	45.52	32.06	6.03	33.85	110	343	Peak
2390	38.18	-15.82	54	33.94	32.06	6.03	33.85	110	343	Average
2437	108.94	-	-	104.61	32.1	6.11	33.88	110	343	Peak
2437	104.93	-	-	100.57	32.13	6.11	33.88	110	343	Average
2484	52.38	-21.62	74	47.92	32.18	6.18	33.9	110	343	Peak
2484	40.34	-13.66	54	35.88	32.18	6.18	33.9	110	343	Average
4874	44.32	-29.68	74	60.12	34.1	9.14	59.04	100	0	Peak
7311	53.55	-20.45	74	65.92	35.7	10.06	58.13	100	21	Peak
7311	48.15	-5.85	54	60.52	35.7	10.06	58.13	100	21	Average

Test Mode :	Mode 2	Temperature :	23~24°C
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
48.9	30.15	-9.85	40	51.92	9.08	0.68	31.53	100	108	Peak
74.82	24.04	-15.96	40	48.02	6.71	0.85	31.54	-	-	Peak
130.17	26.74	-16.76	43.5	45.59	11.57	1.15	31.57	-	-	Peak
301.4	26.44	-19.56	46	42.48	13.52	1.77	31.33	-	-	Peak
379.8	33.9	-12.1	46	47.08	15.96	2.1	31.24	-	-	Peak
470.1	28.04	-17.96	46	39.03	17.73	2.35	31.07	-	-	Peak
2382	46.6	-27.4	74	42.39	32.03	6.03	33.85	103	313	Peak
2382	35.05	-18.95	54	30.84	32.03	6.03	33.85	103	313	Average
2437	104.42	-	-	100.06	32.13	6.11	33.88	103	313	Peak
2437	100.51	-	-	96.15	32.13	6.11	33.88	103	313	Average
2484	47.75	-26.25	74	43.29	32.18	6.18	33.9	103	313	Peak
2484	35.57	-18.43	54	31.11	32.18	6.18	33.9	103	313	Average
4874	49.55	-24.45	74	65.36	34.1	9.13	59.04	100	0	Peak
7311	53.51	-20.49	74	65.88	35.7	10.06	58.13	101	101	Peak
7311	47.88	-6.12	54	60.25	35.7	10.06	58.13	101	101	Average

Test Mode :	Mode 3	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
48.9	29.52	-10.48	40	51.29	9.08	0.68	31.53	-	-	Peak
254.1	25.76	-20.24	46	42.89	12.73	1.55	31.41	-	-	Peak
298.65	26.79	-19.21	46	42.92	13.44	1.76	31.33	-	-	Peak
304.2	27.44	-18.56	46	43.38	13.61	1.78	31.33	-	-	Peak
377.7	37.89	-8.11	46	51.17	15.87	2.09	31.24	122	311	Peak
466.6	27.73	-18.27	46	38.79	17.67	2.34	31.07	-	-	Peak
2388	51.43	-22.57	74	47.19	32.06	6.03	33.85	110	341	Peak
2388	42.38	-11.62	54	38.14	32.06	6.03	33.85	110	341	Average
2462	106.12	-	-	101.72	32.15	6.14	33.89	110	341	Average
2462	110.18	-	-	105.78	32.15	6.14	33.89	110	341	Peak
2484.42	57.94	-16.06	74	53.48	32.18	6.18	33.9	110	341	Peak
2484.42	46.15	-7.85	54	41.69	32.18	6.18	33.9	110	341	Average
4924	44.71	-29.29	74	60.42	34.1	9.15	58.96	100	0	Peak
7386	53.8	-20.2	74	66.17	35.7	10.1	58.17	100	31	Peak
7386	50.43	-3.57	54	62.8	35.7	10.1	58.17	100	31	Average

Test Mode :	Mode 3	Temperature :	23~24°C
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
48.9	29.68	-10.32	40	51.45	9.08	0.68	31.53	107	280	Peak
84.54	22.98	-17.02	40	45.82	7.8	0.9	31.54	-	-	Peak
129.09	27.06	-16.44	43.5	45.92	11.57	1.14	31.57	-	-	Peak
304.2	26.08	-19.92	46	42.02	13.61	1.78	31.33	-	-	Peak
377.7	33.32	-12.68	46	46.6	15.87	2.09	31.24	-	-	Peak
469.4	30.01	-15.99	46	41.01	17.72	2.35	31.07	-	-	Peak
2388	47.64	-26.36	74	43.4	32.06	6.03	33.85	100	306	Peak
2388	37.03	-16.97	54	32.79	32.06	6.03	33.85	100	306	Average
2462	99.45	-	-	95.05	32.15	6.14	33.89	100	306	Average
2462	103.43	-	-	99.03	32.15	6.14	33.89	100	306	Peak
2483.66	53.39	-20.61	74	48.93	32.18	6.18	33.9	100	306	Peak
2483.66	44.95	-9.05	54	40.49	32.18	6.18	33.9	100	306	Average
4924	49.53	-24.47	74	65.24	34.1	9.15	58.96	100	0	Peak
7386	54.3	-19.7	74	66.67	35.7	10.1	58.17	100	246	Peak
7386	50.05	-3.95	54	62.42	35.7	10.1	58.17	100	246	Average

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

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
48.9	29.92	-10.08	40	51.69	9.08	0.68	31.53	-	-	Peak
254.1	25.79	-20.21	46	42.92	12.73	1.55	31.41	-	-	Peak
298.65	27.4	-18.6	46	43.53	13.44	1.76	31.33	-	-	Peak
301.4	28.41	-17.59	46	44.45	13.52	1.77	31.33	-	-	Peak
382.6	38.34	-7.66	46	51.41	16.05	2.11	31.23	125	207	Peak
469.4	28.46	-17.54	46	39.46	17.72	2.35	31.07	-	-	Peak
2389.99	60.41	-13.59	74	56.17	32.06	6.03	33.85	138	0	Peak
2389.99	42.29	-11.71	54	38.05	32.06	6.03	33.85	138	0	Average
2412	107.72	-	-	103.44	32.08	6.07	33.87	138	0	Peak
2412	93.09	-	-	88.81	32.08	6.07	33.87	138	0	Average
2486	37.25	-16.75	54	32.79	32.18	6.18	33.9	138	0	Average
2486	50.62	-23.38	74	46.16	32.18	6.18	33.9	138	0	Peak
7236	46.82	-40.9	87.72	59.2	35.7	10.03	58.11	100	0	Peak

Test Mode :	Mode 4	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

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
42.42	26.92	-13.08	40	46.2	11.59	0.64	31.51	-	-	Peak
101.01	23.44	-20.06	43.5	44.11	9.87	1	31.54	-	-	Peak
131.25	27.62	-15.88	43.5	46.46	11.58	1.15	31.57	-	-	Peak
304.2	27.01	-18.99	46	42.95	13.61	1.78	31.33	-	-	Peak
377.7	34.41	-11.59	46	47.69	15.87	2.09	31.24	117	74	Peak
472.2	30.13	-15.87	46	41.08	17.76	2.36	31.07	-	-	Peak
2389.42	54.49	-19.51	74	50.25	32.06	6.03	33.85	100	321	Peak
2389.42	37.6	-16.4	54	33.36	32.06	6.03	33.85	100	321	Average
2412	99.93	-	-	95.65	32.08	6.07	33.87	100	321	Peak
2412	87.56	-	-	83.28	32.08	6.07	33.87	100	321	Average
2484	34.71	-19.29	54	30.25	32.18	6.18	33.9	100	321	Average
2484	47.14	-26.86	74	42.68	32.18	6.18	33.9	100	321	Peak
7236	45.52	-34.41	79.93	57.9	35.7	10.03	58.11	100	0	Peak

Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
48.9	29.75	-10.25	40	51.52	9.08	0.68	31.53	-	-	Peak
251.13	25.72	-20.28	46	42.9	12.69	1.54	31.41	-	-	Peak
299.46	27.99	-18.01	46	44.09	13.46	1.77	31.33	-	-	Peak
304.2	28.8	-17.2	46	44.74	13.61	1.78	31.33	-	-	Peak
377.7	38.84	-7.16	46	52.12	15.87	2.09	31.24	134	152	Peak
467.3	28.33	-17.67	46	39.38	17.68	2.34	31.07	-	-	Peak
2390	52.94	-21.06	74	48.7	32.06	6.03	33.85	136	5	Peak
2390	36.37	-17.63	54	32.13	32.06	6.03	33.85	136	5	Average
2437	107.01	-	-	102.68	32.1	6.11	33.88	136	5	Peak
2437	93.8	-	-	89.44	32.13	6.11	33.88	136	5	Average
2484	54.84	-19.16	74	50.38	32.18	6.18	33.9	136	5	Peak
2484	37.55	-16.45	54	33.09	32.18	6.18	33.9	136	5	Average
7311	49.56	-24.44	74	61.93	35.7	10.06	58.13	100	0	Peak



Test Mode :	Mode 5	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
42.42	26.7	-13.3	40	45.98	11.59	0.64	31.51	-	-	Peak
74.01	23.33	-16.67	40	47.39	6.63	0.85	31.54	-	-	Peak
134.49	27.61	-15.89	43.5	46.41	11.59	1.17	31.56	-	-	Peak
301.4	26.52	-19.48	46	42.56	13.52	1.77	31.33	-	-	Peak
380.5	33.23	-12.77	46	46.41	15.96	2.1	31.24	112	350	Peak
472.2	29.44	-16.56	46	40.39	17.76	2.36	31.07	-	-	Peak
2390	47.47	-26.53	74	43.23	32.06	6.03	33.85	100	322	Peak
2390	34.43	-19.57	54	30.19	32.06	6.03	33.85	100	322	Average
2437	99.78	-	-	95.45	32.1	6.11	33.88	100	322	Peak
2437	86.28	-	-	81.92	32.13	6.11	33.88	100	322	Average
2484	48.25	-25.75	74	43.79	32.18	6.18	33.9	100	322	Peak
2484	34.76	-19.24	54	30.3	32.18	6.18	33.9	100	322	Average
7311	47.37	-26.63	74	59.74	35.7	10.06	58.13	100	0	Peak



Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
133.41	19.65	-23.85	43.5	38.46	11.58	1.17	31.56	-	-	Peak
254.37	25.81	-20.19	46	42.94	12.73	1.55	31.41	-	-	Peak
298.65	28.48	-17.52	46	44.61	13.44	1.76	31.33	-	-	Peak
301.4	28.09	-17.91	46	44.13	13.52	1.77	31.33	-	-	Peak
379.8	39.45	-6.55	46	52.63	15.96	2.1	31.24	141	297	Peak
464.5	27.73	-18.27	46	38.84	17.64	2.33	31.08	-	-	Peak
2382	48.87	-25.13	74	44.66	32.03	6.03	33.85	134	347	Peak
2382	37.02	-16.98	54	32.81	32.03	6.03	33.85	134	347	Average
2462	94.52	-	-	90.12	32.15	6.14	33.89	134	347	Average
2462	107.42	-	-	103.02	32.15	6.14	33.89	134	347	Peak
2486.7	67.75	-6.25	74	63.29	32.18	6.18	33.9	134	347	Peak
2486.7	46.41	-7.59	54	41.95	32.18	6.18	33.9	134	347	Average
7386	50.4	-23.6	74	62.77	35.7	10.1	58.17	100	0	Peak



Test Mode :	Mode 6	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
48.9	30.84	-9.16	40	52.61	9.08	0.68	31.53	100	71	Peak
74.01	22.61	-17.39	40	46.67	6.63	0.85	31.54	-	-	Peak
131.25	27.26	-16.24	43.5	46.1	11.58	1.15	31.57	-	-	Peak
301.4	26.71	-19.29	46	42.75	13.52	1.77	31.33	-	-	Peak
377.7	33.89	-12.11	46	47.17	15.87	2.09	31.24	-	-	Peak
469.4	30.63	-15.37	46	41.63	17.72	2.35	31.07	-	-	Peak
2390	46.4	-27.6	74	42.16	32.06	6.03	33.85	199	318	Peak
2390	34.69	-19.31	54	30.45	32.06	6.03	33.85	199	318	Average
2462	87.92	-	-	83.52	32.15	6.14	33.89	199	318	Average
2462	100.63	-	-	96.23	32.15	6.14	33.89	199	318	Peak
2486.7	58.49	-15.51	74	54.03	32.18	6.18	33.9	199	318	Peak
2486.7	37.89	-16.11	54	33.43	32.18	6.18	33.9	199	318	Average
7386	49.41	-24.59	74	61.78	35.7	10.1	58.17	100	0	Peak

Test Mode :	Mode 7	Temperature :	23~24°C
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

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
101.01	20.34	-23.16	43.5	41.01	9.87	1	31.54	-	-	Peak
233.58	25.53	-20.47	46	43.96	11.5	1.5	31.43	-	-	Peak
298.38	26.77	-19.23	46	42.9	13.44	1.76	31.33	-	-	Peak
302.1	28.65	-17.35	46	44.65	13.55	1.78	31.33	-	-	Peak
377	38.27	-7.73	46	51.55	15.87	2.09	31.24	134	201	Peak
463.8	27.87	-18.13	46	39	17.62	2.33	31.08	-	-	Peak
2388.85	64.33	-9.67	74	60.09	32.06	6.03	33.85	110	340	Peak
2388.85	44.25	-9.75	54	40.01	32.06	6.03	33.85	110	340	Average
2412	107.4	-	-	103.12	32.08	6.07	33.87	110	340	Peak
2412	94.1	-	-	89.82	32.08	6.07	33.87	110	340	Average
2486	39.14	-14.86	54	34.68	32.18	6.18	33.9	110	340	Average
2486	51.93	-22.07	74	47.47	32.18	6.18	33.9	110	340	Peak
7236	45.49	-41.91	87.4	57.87	35.7	10.03	58.11	100	0	Peak

Test Mode :	Mode 7	Temperature :	23~24℃
Test Channel :	01	Relative Humidity :	49~51%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

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
48.9	30.04	-9.96	40	51.81	9.08	0.68	31.53	101	87	Peak
101.01	22.61	-20.89	43.5	43.28	9.87	1	31.54	-	-	Peak
135.57	24.94	-18.56	43.5	43.73	11.59	1.18	31.56	-	-	Peak
301.4	26.37	-19.63	46	42.41	13.52	1.77	31.33	-	-	Peak
377.7	33.58	-12.42	46	46.86	15.87	2.09	31.24	-	-	Peak
467.3	30.21	-15.79	46	41.26	17.68	2.34	31.07	-	-	Peak
2389.61	57.95	-16.05	74	53.71	32.06	6.03	33.85	102	321	Peak
2389.61	39.42	-14.58	54	35.18	32.06	6.03	33.85	102	321	Average
2412	100.39	-	-	96.11	32.08	6.07	33.87	102	321	Peak
2412	87.4	-	-	83.12	32.08	6.07	33.87	102	321	Average
2484	34.73	-19.27	54	30.27	32.18	6.18	33.9	102	321	Average
2484	47.28	-26.72	74	42.82	32.18	6.18	33.9	102	321	Peak
7236	46.69	-33.7	80.39	59.06	35.7	10.03	58.1	100	0	Peak



Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
129.9	22.86	-20.64	43.5	41.71	11.57	1.15	31.57	-	-	Peak
255.18	24.82	-21.18	46	41.93	12.75	1.56	31.42	-	-	Peak
298.65	28.1	-17.9	46	44.23	13.44	1.76	31.33	-	-	Peak
301.4	28.33	-17.67	46	44.37	13.52	1.77	31.33	-	-	Peak
377.7	36.94	-9.06	46	50.22	15.87	2.09	31.24	128	304	Peak
475	28.49	-17.51	46	39.37	17.81	2.37	31.06	-	-	Peak
2390	52.03	-21.97	74	47.79	32.06	6.03	33.85	135	0	Peak
2390	37.74	-16.26	54	33.5	32.06	6.03	33.85	135	0	Average
2437	107.74	-	-	103.41	32.1	6.11	33.88	135	0	Peak
2437	94.56	-	-	90.2	32.13	6.11	33.88	135	0	Average
2484	53.4	-20.6	74	48.94	32.18	6.18	33.9	135	0	Peak
2484	38.71	-15.29	54	34.25	32.18	6.18	33.9	135	0	Average
7311	47.95	-26.05	74	60.33	35.7	10.06	58.14	100	0	Peak



Test Mode :	Mode 8	Temperature :	23~24℃
Test Channel :	06	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
48.9	29.46	-10.54	40	51.23	9.08	0.68	31.53	101	140	Peak
77.25	28.18	-11.82	40	51.87	6.97	0.87	31.53	-	-	Peak
130.98	27.33	-16.17	43.5	46.17	11.58	1.15	31.57	-	-	Peak
301.4	26.6	-19.4	46	42.64	13.52	1.77	31.33	-	-	Peak
374.9	32.93	-13.07	46	46.28	15.81	2.09	31.25	-	-	Peak
472.9	28	-18	46	38.93	17.78	2.36	31.07	-	-	Peak
2382	46.46	-27.54	74	42.25	32.03	6.03	33.85	154	323	Peak
2382	33.97	-20.03	54	29.76	32.03	6.03	33.85	154	323	Average
2437	99.3	-	-	94.97	32.1	6.11	33.88	154	323	Peak
2437	86.49	-	-	82.13	32.13	6.11	33.88	154	323	Average
2486	46.72	-27.28	74	42.26	32.18	6.18	33.9	154	323	Peak
2486	34.27	-19.73	54	29.81	32.18	6.18	33.9	154	323	Average
7311	48.78	-25.22	74	61.15	35.7	10.06	58.13	100	0	Peak



Test Mode :	Mode 9	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
132.33	23.19	-20.31	43.5	42.02	11.58	1.16	31.57	-	-	Peak
253.02	25.95	-20.05	46	43.09	12.72	1.55	31.41	-	-	Peak
299.73	28.37	-17.63	46	44.47	13.46	1.77	31.33	-	-	Peak
300	28.18	-17.82	46	44.28	13.46	1.77	31.33	-	-	Peak
377	37.93	-8.07	46	51.21	15.87	2.09	31.24	144	208	Peak
466.6	28.7	-17.3	46	39.76	17.67	2.34	31.07	-	-	Peak
2388	48.79	-25.21	74	44.55	32.06	6.03	33.85	107	354	Peak
2388	37.17	-16.83	54	32.93	32.06	6.03	33.85	107	354	Average
2462	93.5	-	-	89.1	32.15	6.14	33.89	107	354	Average
2462	107.68	-	-	103.28	32.15	6.14	33.89	107	354	Peak
2483.85	67.81	-6.19	74	63.35	32.18	6.18	33.9	107	354	Peak
2483.85	47.83	-6.17	54	43.37	32.18	6.18	33.9	107	354	Average
7386	49.67	-24.33	74	62.04	35.7	10.1	58.17	100	0	Peak



Test Mode :	Mode 9	Temperature :	23~24℃
Test Channel :	11	Relative Humidity :	49~51%
Test Engineer :	David Yang	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
42.42	25.33	-14.67	40	44.61	11.59	0.64	31.51	-	-	Peak
80.49	26.1	-13.9	40	49.53	7.22	0.88	31.53	-	-	Peak
129.09	28.14	-15.36	43.5	47	11.57	1.14	31.57	-	-	Peak
301.4	27.29	-18.71	46	43.33	13.52	1.77	31.33	-	-	Peak
377.7	33.06	-12.94	46	46.34	15.87	2.09	31.24	114	152	Peak
472.2	29.98	-16.02	46	40.93	17.76	2.36	31.07	-	-	Peak
2388	46.31	-27.69	74	42.07	32.06	6.03	33.85	106	318	Peak
2388	34.97	-19.03	54	30.73	32.06	6.03	33.85	106	318	Average
2462	87.32	-	-	82.92	32.15	6.14	33.89	106	318	Average
2462	100.22	-	-	95.82	32.15	6.14	33.89	106	318	Peak
2483.66	59.5	-14.5	74	55.04	32.18	6.18	33.9	106	318	Peak
2483.66	39.98	-14.02	54	35.52	32.18	6.18	33.9	106	318	Average
7386	48.96	-25.04	74	61.33	35.7	10.1	58.17	100	0	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	100055	9kHz~40GHz	Jun. 13, 2011	Jun. 12, 2012	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 18, 2011	Sep. 17, 2012	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 18, 2011	Sep. 17, 2012	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Aug. 21, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 03, 2010	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 01, 2010	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	112403	N/A	Feb. 22, 2011	Feb. 21, 2012	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 03, 2010	Dec. 02, 2011	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Aug. 09, 2012	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2011	Mar. 28, 2012	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Aug. 21, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00 101800-30-10P	159088	1GHz ~ 18GHz	Feb. 21, 2011	Feb. 20, 2012	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

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

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

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

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

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

