

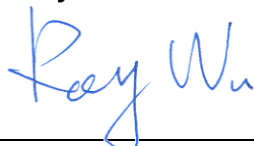
FCC RF Test Report

APPLICANT : CHI MEI Communication System Inc.
EQUIPMENT : Smart Phone
BRAND NAME : VIZIO
MODEL NAME : VPHN1044G
MARKETING NAME : VIZIO Phone
FCC ID : QDJ-VPHN1044G
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Mar. 01, 2011 and completely tested on Apr. 24, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Roy Wu / Manager



SPORTON INTERNATIONAL INC.

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



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR130101B	Rev. 01	Initial issue of report	May. 02, 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 19.6 dB at 0.15 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.08 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

CHI MEI Communication System Inc.

No. 4, MingSheng St., TuCheng City, Taipei County 23678, Taiwan

1.2 Manufacturer

CHI MEI Communication System Inc.

No. 4, MingSheng St., TuCheng City, Taipei County 23678, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smart Phone
Brand Name	VIZIO
Model Name	VPHN1044G
Marketing Name	VIZIO Phone
FCC ID	QDJ-VPHN1044G
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 : 17.04 dBm (0.051 W) 802.11g : 19.48 dBm (0.089 W) 802.11n (BW 20MHz) : 19.01 dBm (0.080 W)
Antenna Type	PIFA Antenna with gain -3.2649 dBi
HW Version	PR2
SW Version	V2.060
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	03CH05-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

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.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	LCD Monitor	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
6.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
7.	Earphone	Fujikon	TDM-600-002	N/A	N/A	N/A
8.	HDMI Cable	N/A	N/A	N/A	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 11	2462 MHz	16.93	16.95	17.01	17.04

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 11	2462 MHz	19.48	19.44	19.46	19.42	19.34	19.44	19.32	19.46

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		M0	M1	M2	M3	M4	M5	M6	M7
CH 11	2462 MHz	19.01	18.85	18.92	18.96	18.90	18.86	18.97	18.86

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 11Mbps for 802.11b, 6Mbps for 802.11g, and M0 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).

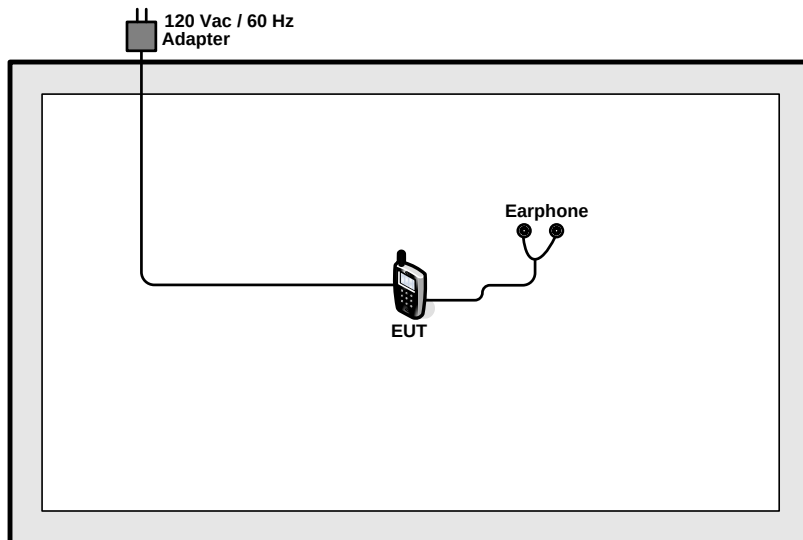
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

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

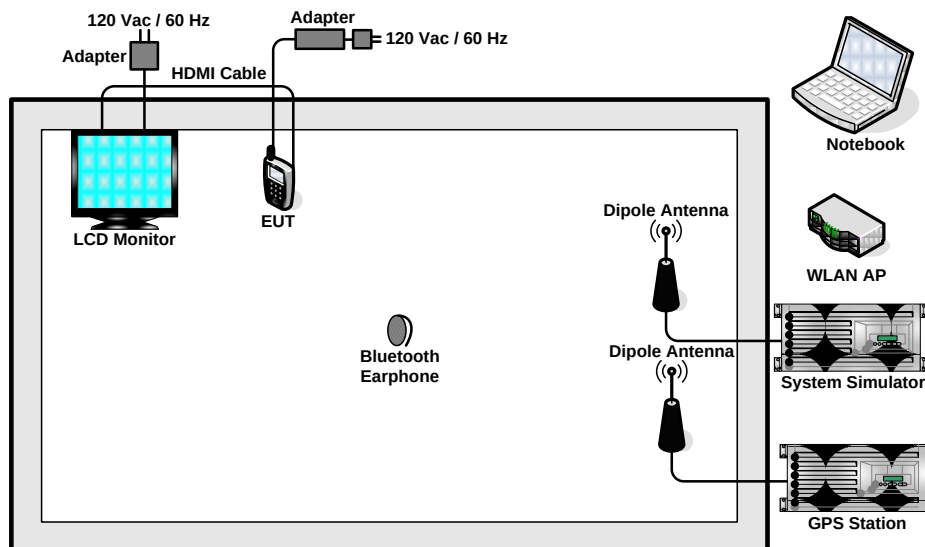
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412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

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.

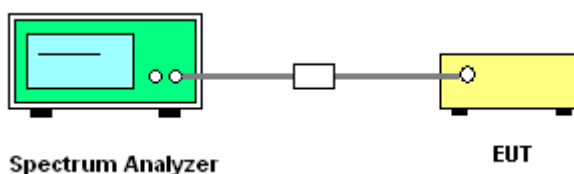
3.1.2 Measuring Instruments

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

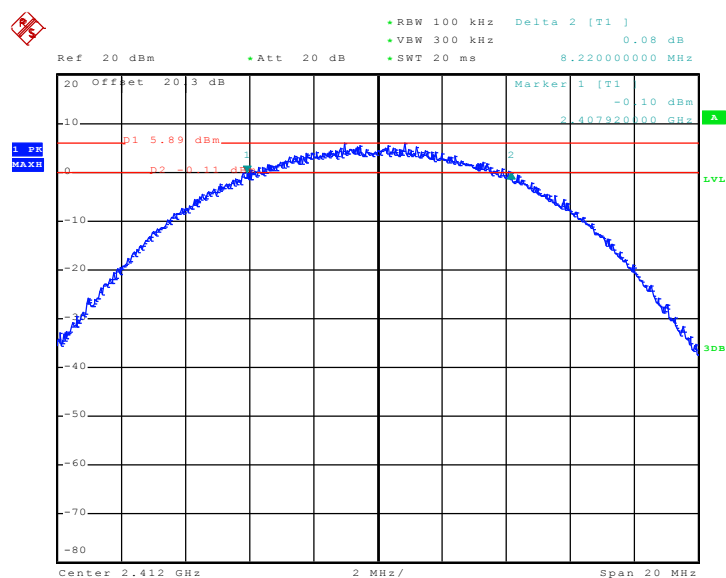


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	22~24℃
Test Engineer :	Hank Yu	Relative Humidity :	44~48%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	8.22	0.5	Pass
06	2437	7.44	0.5	Pass
11	2462	7.56	0.5	Pass

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



Date: 11.APR.2011 18:19:24



• RBW 100 kHz Delta 2 [T1]
 • VBW 300 kHz -0.15 dBm
 Ref 20 dBm Att 20 dB SWT 5 ms 7.44000000 MHz

20 Offset 20.3 dB
 Marker 1 [T1] -0.30 dBm
 2.43320000 GHz
 p1 5.53 dBm
 p2 5.47 dBm
 1
 2
 LVL
 3dB
 Center 2.437 GHz Span 20 MHz

Date: 11.APR.2011 18:04:20

• RBW 100 kHz Delta 2 [T1]
 • VSW 300 kHz 0.71 dB
 SWT 5 ms 7.560000000 MHz

Ref 20 dBm

Offset 20.3 dB

Marker 1 [T1]
-0.53 dBm
2.458240000 GHz

1
2

p1 5.44 dBm
p2 -6.56 dBm

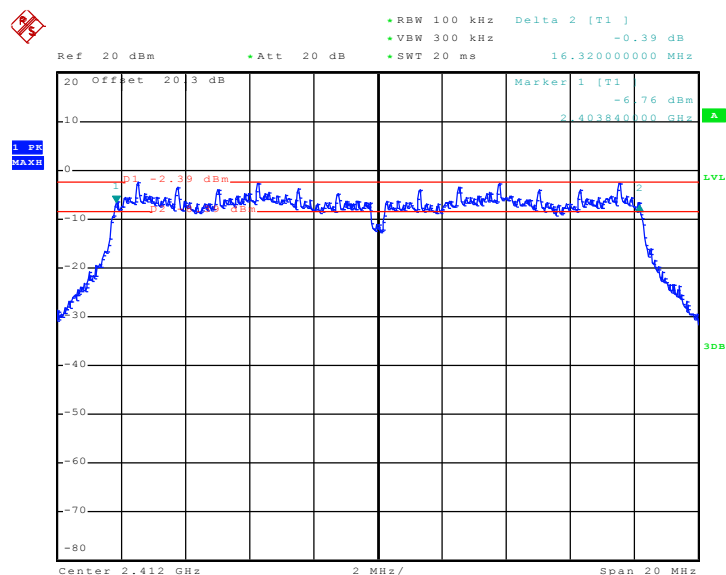
Center 2.462 GHz 2 MHz/ Span 20 MHz

Date: 11.APR.2011 17:43:33

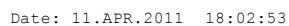


Test Mode :	Mode 4, 5, 6	Temperature :	22~24°C
Test Engineer :	Hank Yu	Relative Humidity :	44~48%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.32	0.5	Pass
06	2437	16.32	0.5	Pass
11	2462	16.34	0.5	Pass

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

Date: 11.APR.2011 18:48:05



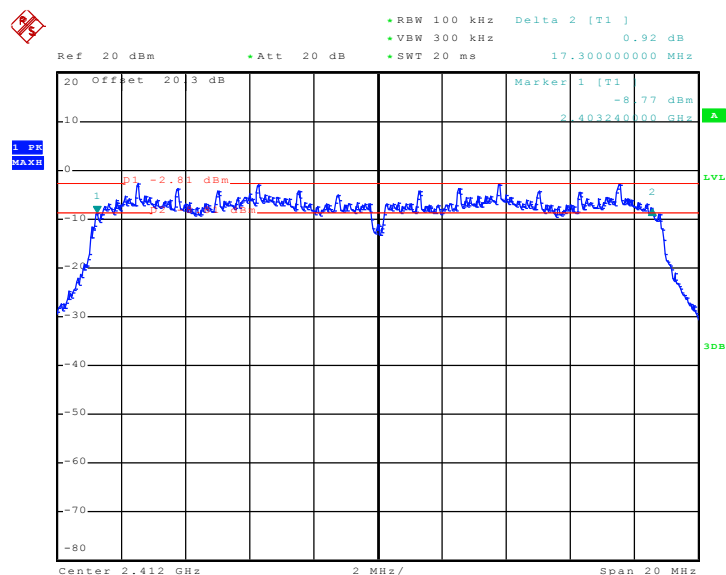
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11





Test Mode :	Mode 7, 8, 9	Temperature :	22~24°C
Test Engineer :	Hank Yu	Relative Humidity :	44~48%

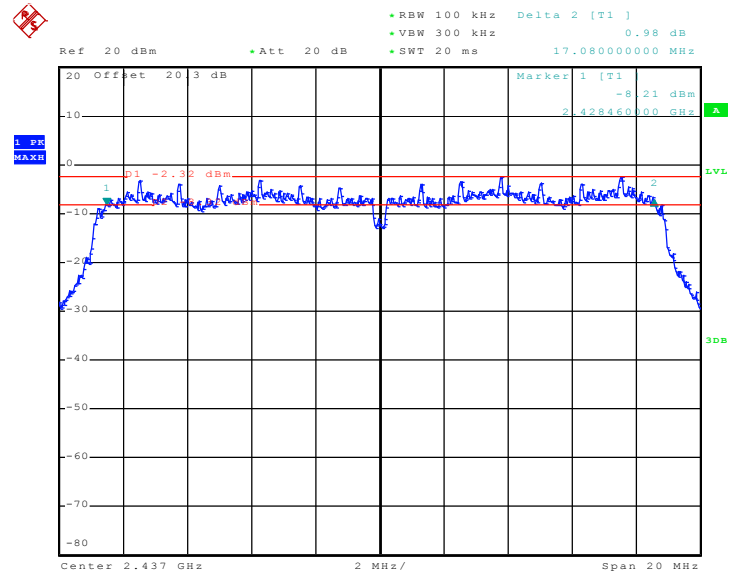
Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.30	0.5	Pass
06	2437	17.08	0.5	Pass
11	2462	17.52	0.5	Pass

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

Date: 11.APR.2011 18:10:09

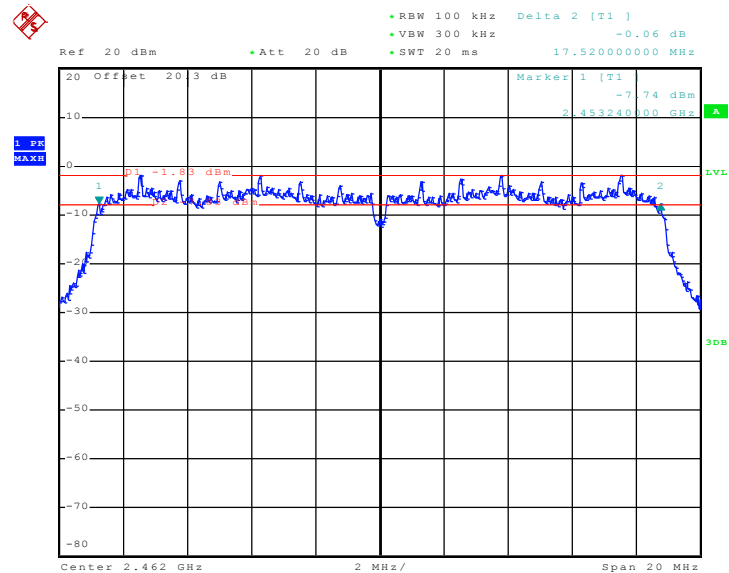


Mode 8 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



Date: 11.APR.2011 18:19:55

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



Date: 11.APR.2011 18:15:10

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.

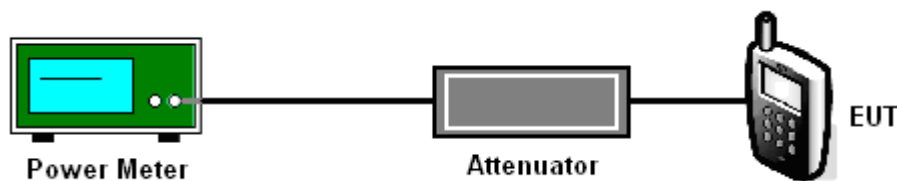
3.2.2 Measuring Instruments

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 :	22~24℃
Test Engineer :	Hank Yu	Relative Humidity :	44~48%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.89	30	Pass
06	2437	16.62	30	Pass
11	2462	17.04	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	22~24℃
Test Engineer :	Hank Yu	Relative Humidity :	44~48%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.93	30	Pass
06	2437	18.88	30	Pass
11	2462	19.48	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	22~24℃
Test Engineer :	Hank Yu	Relative Humidity :	44~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	18.33	30	Pass
06	2437	18.15	30	Pass
11	2462	19.01	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

3.3.2 Measuring Instruments

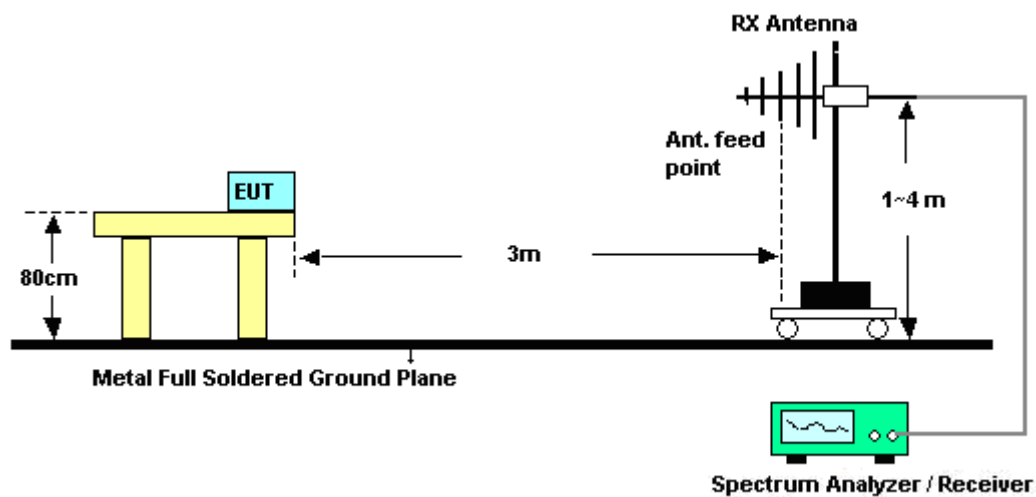
See list of measuring instruments of this test report.

3.3.3 Test Procedures

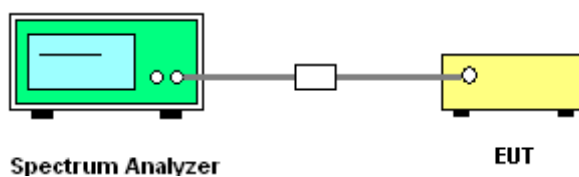
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Apply to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation as in FCC Section 15.35(b) and (c).

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~23℃
Test Band :	802.11b	Relative Humidity :	45~50%
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
2389.23	45.88	-28.12	74	43.79	31.7	4.47	34.08	140	360	Peak
2389.23	33.61	-20.39	54	31.52	31.7	4.47	34.08	140	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
2373.08	45.5	-28.5	74	43.43	31.68	4.47	34.08	103	51	Peak
2373.08	32.77	-21.23	54	30.7	31.68	4.47	34.08	103	51	Average

Test Mode :	Mode 3	Temperature :	21~23℃
Test Band :	802.11b	Relative Humidity :	45~50%
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	49.93	-24.07	74	47.64	31.78	4.59	34.08	171	0	Peak
2483.85	38.27	-15.73	54	35.98	31.78	4.59	34.08	171	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
2484.42	45.42	-28.58	74	43.13	31.78	4.59	34.08	100	61	Peak
2484.42	33.58	-20.42	54	31.29	31.78	4.59	34.08	100	61	Average



Test Mode :	Mode 4	Temperature :	21~23℃
Test Band :	802.11g	Relative Humidity :	45~50%
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	63.7	-10.3	74	61.58	31.7	4.5	34.08	141	360	Peak
2389.99	41.1	-12.9	54	38.98	31.7	4.5	34.08	141	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
2389.99	56.84	-17.16	74	54.72	31.7	4.5	34.08	103	50	Peak
2389.99	36.24	-17.76	54	34.12	31.7	4.5	34.08	103	50	Average

Test Mode :	Mode 6	Temperature :	21~23℃
Test Band :	802.11g	Relative Humidity :	45~50%
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
2483.5	70.92	-3.08	74	68.63	31.78	4.59	34.08	169	360	Peak
2483.5	46.6	-7.4	54	44.31	31.78	4.59	34.08	169	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	62.38	-11.62	74	60.09	31.78	4.59	34.08	100	59	Peak
2483.5	37.41	-16.59	54	35.12	31.78	4.59	34.08	100	59	Average



Test Mode :	Mode 7	Temperature :	21~23℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	45~50%
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	62.83	-11.17	74	60.71	31.7	4.5	34.08	141	360	Peak
2389.99	39.02	-14.98	54	36.9	31.7	4.5	34.08	141	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
2389.8	54.26	-19.74	74	52.14	31.7	4.5	34.08	101	50	Peak
2389.8	35.06	-18.94	54	32.94	31.7	4.5	34.08	101	50	Average

Test Mode :	Mode 9	Temperature :	21~23℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	45~50%
Test Channel :	11	Test Engineer :	David Yang

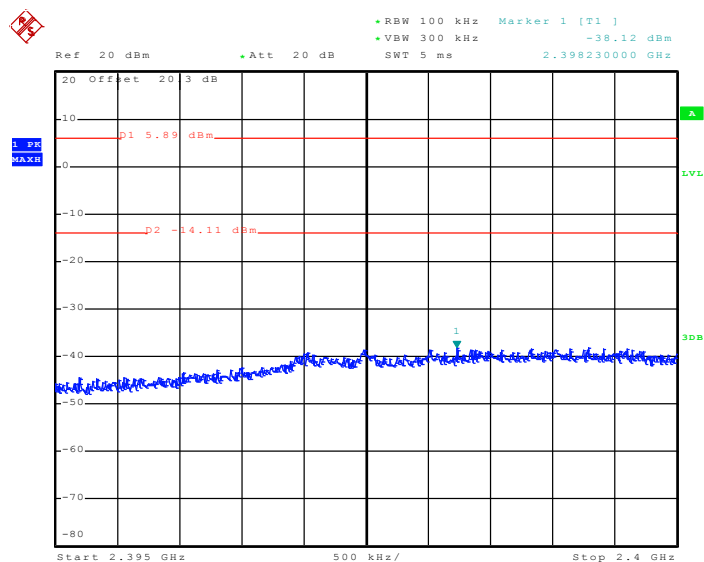
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	69.45	-4.55	74	67.16	31.78	4.59	34.08	168	360	Peak
2483.66	43.02	-10.98	54	40.73	31.78	4.59	34.08	168	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
2484.23	57.19	-16.81	74	54.9	31.78	4.59	34.08	100	60	Peak
2484.23	34.99	-19.01	54	32.7	31.78	4.59	34.08	100	60	Average

3.3.6 Test Plots of Conducted Band Edges

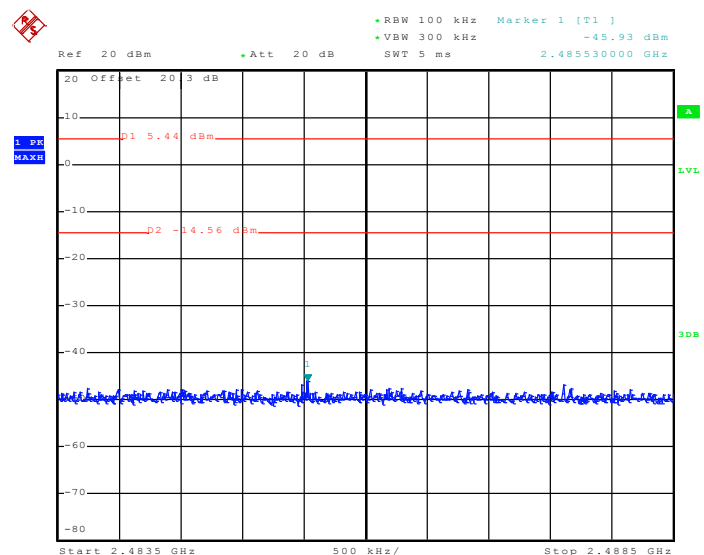
Test Mode :	Mode 1 and 3	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	44~48%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11b Channel 01



Date: 11.APR.2011 18:20:33

High Band Edge Plot on 802.11b Channel 11

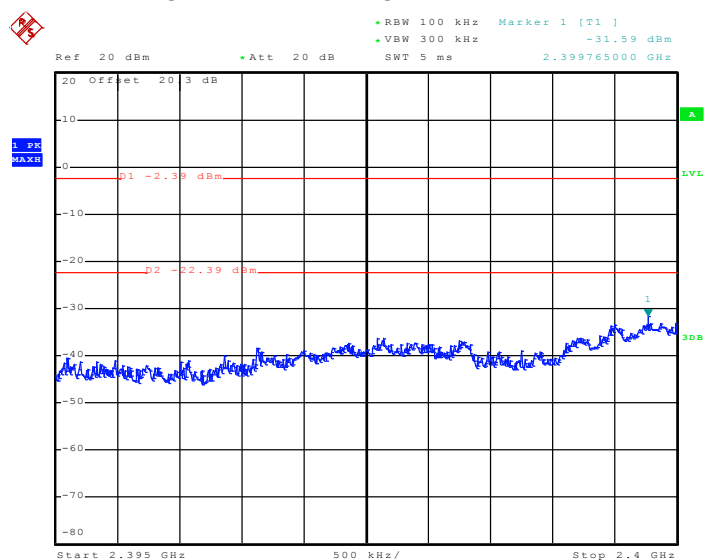


Date: 11.APR.2011 17:44:20



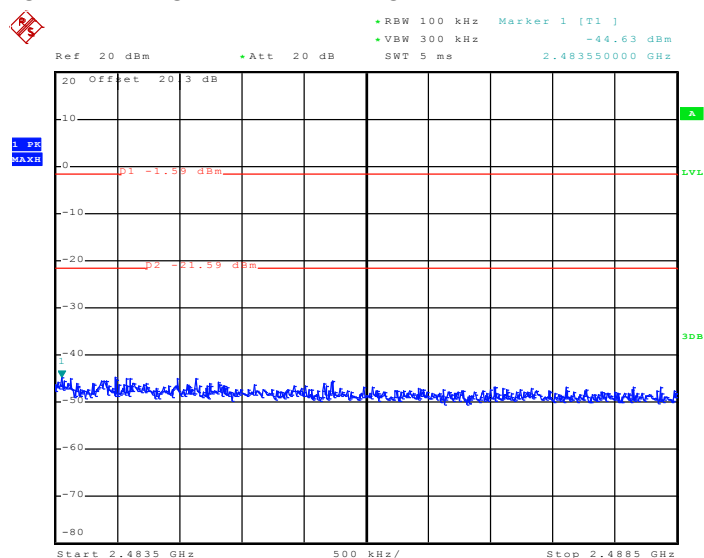
Test Mode :	Mode 4 and 6	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	44~48%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11g Channel 01



Date: 11.APR.2011 18:49:14

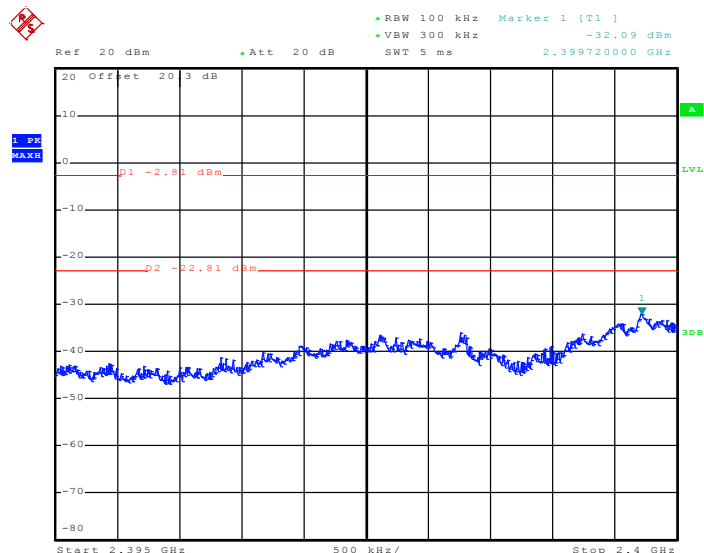
High Band Edge Plot on 802.11g Channel 11



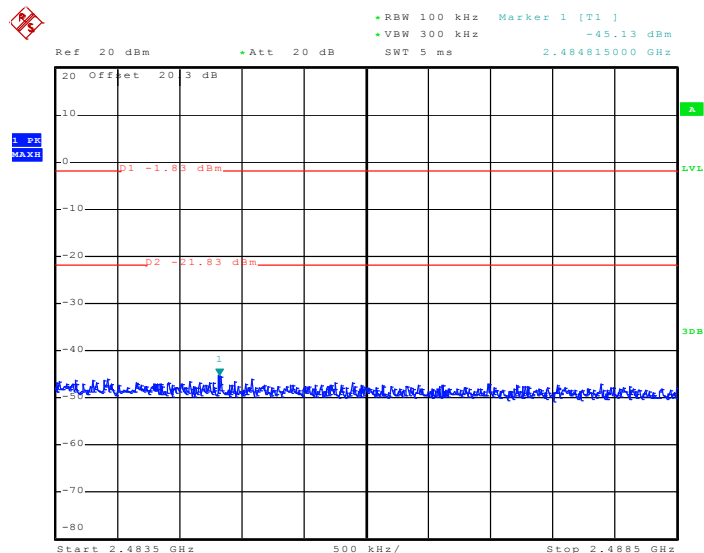
Date: 11.APR.2011 18:36:49



Test Mode :	Mode 7 and 9	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	44~48%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

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

Date: 11.APR.2011 18:11:21

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

Date: 11.APR.2011 18:15:58

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.

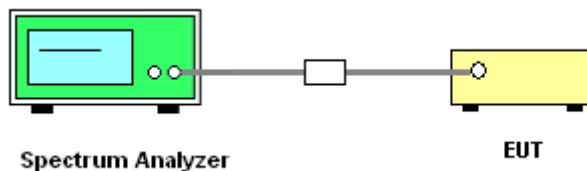
3.4.2 Measuring Instruments

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.

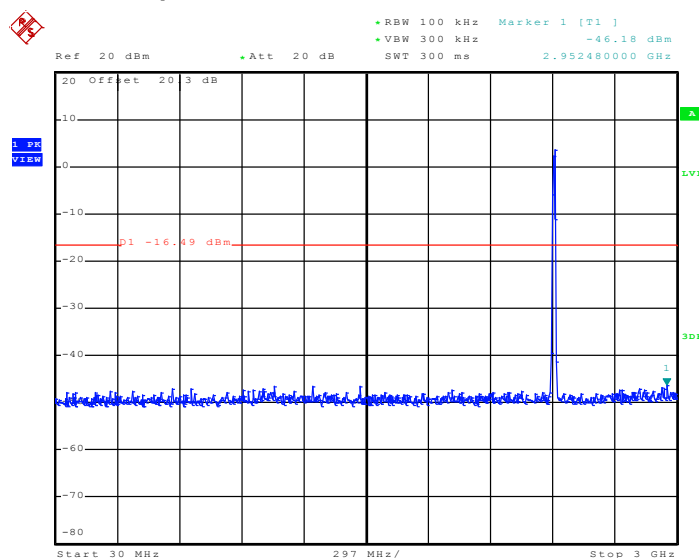
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

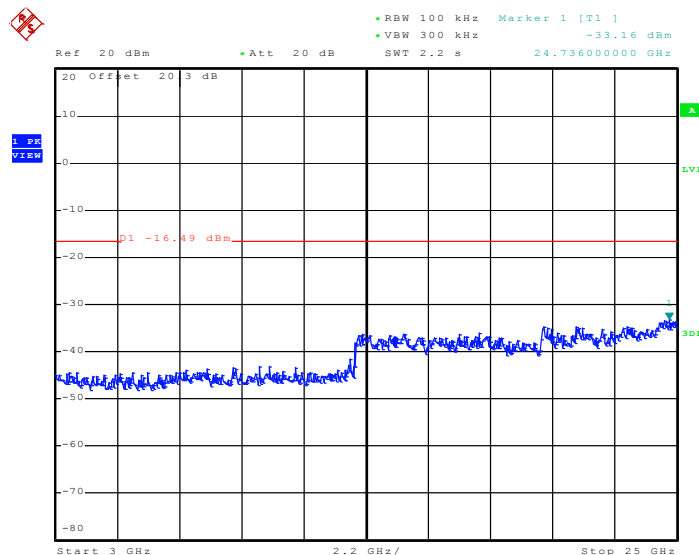
Test Mode :	Mode 1	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	44~48%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.APR.2011 18:06:34

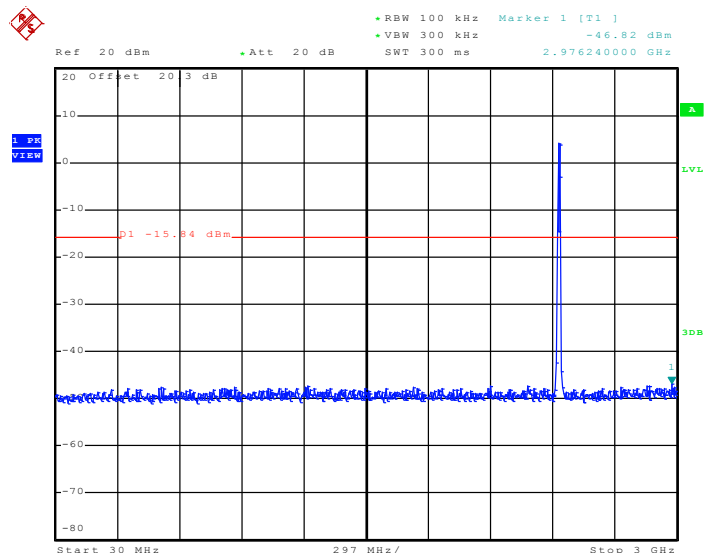
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



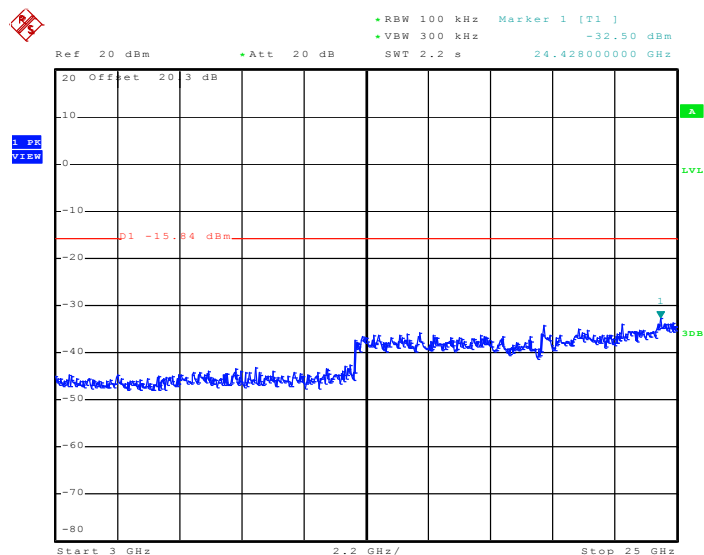
Date: 11.APR.2011 18:06:52



Test Mode :	Mode 2	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	44~48%
Test Channel :	06	Test Engineer :	Hank Yu

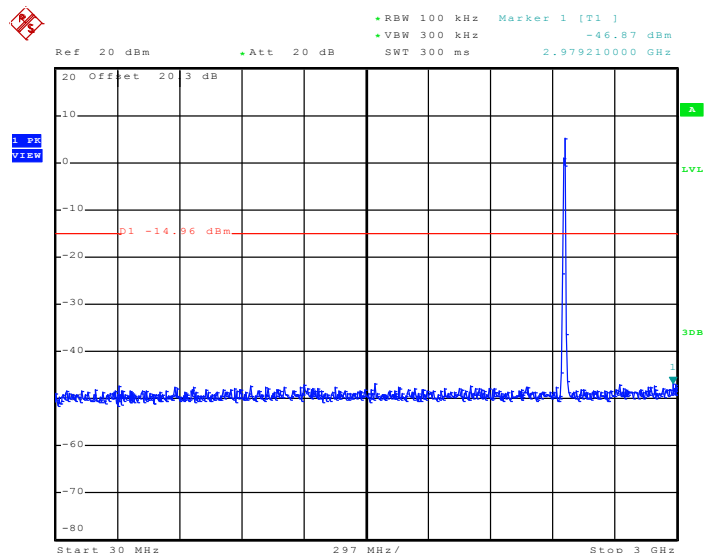
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 11.APR.2011 18:04:22

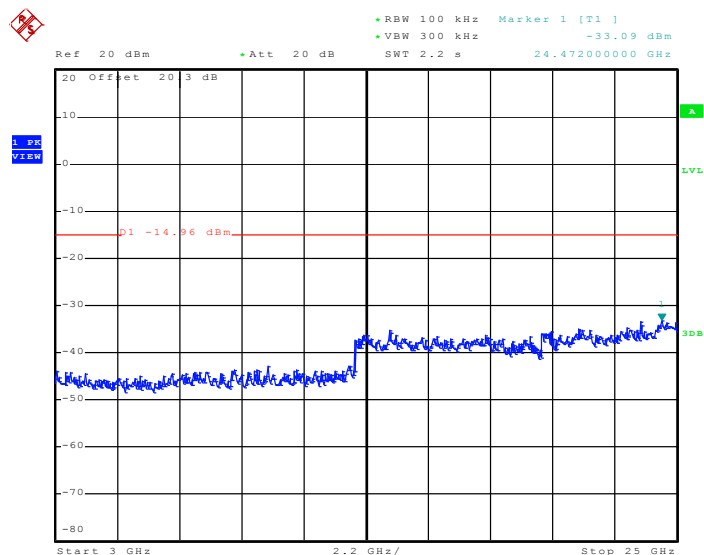
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 11.APR.2011 18:04:40

Test Mode :	Mode 3	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	44~48%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


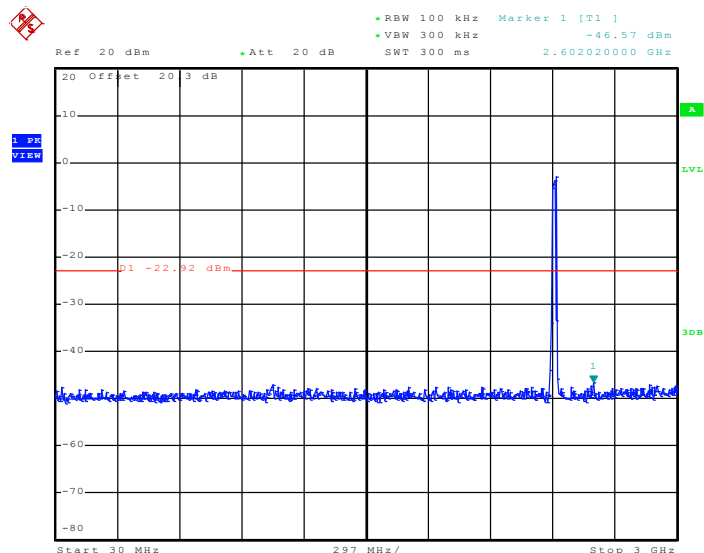
Date: 11.APR.2011 18:05:37

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz


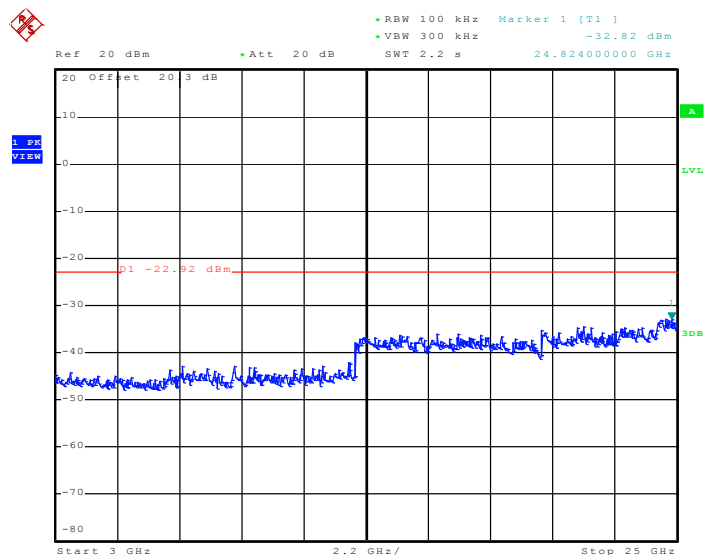
Date: 11.APR.2011 18:05:55



Test Mode :	Mode 4	Temperature :	22~24℃
Test Band :	802.11g	Relative Humidity :	44~48%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 11.APR.2011 17:57:21

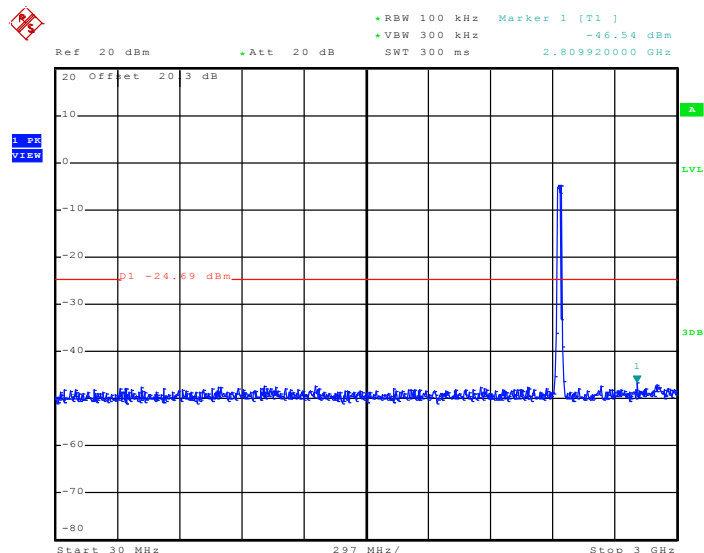
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 11.APR.2011 17:57:40



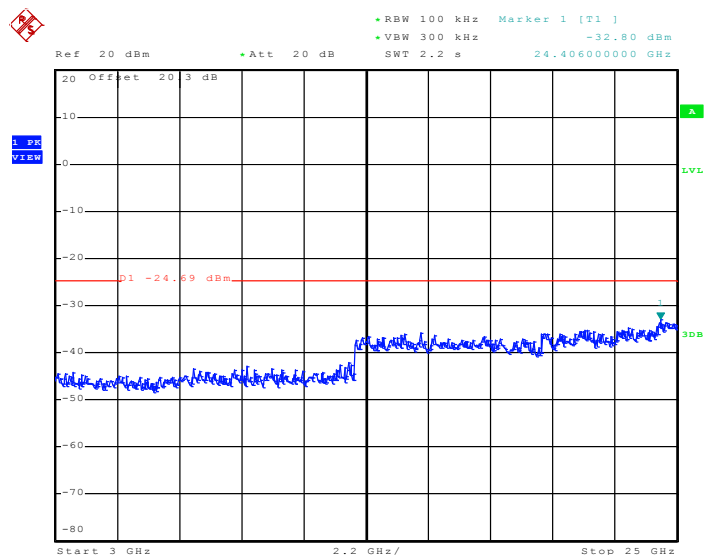
Test Mode :	Mode 5	Temperature :	22~24
Test Band :	802.11g	Relative Humidity :	44~48
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.APR.2011 18:32:35

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

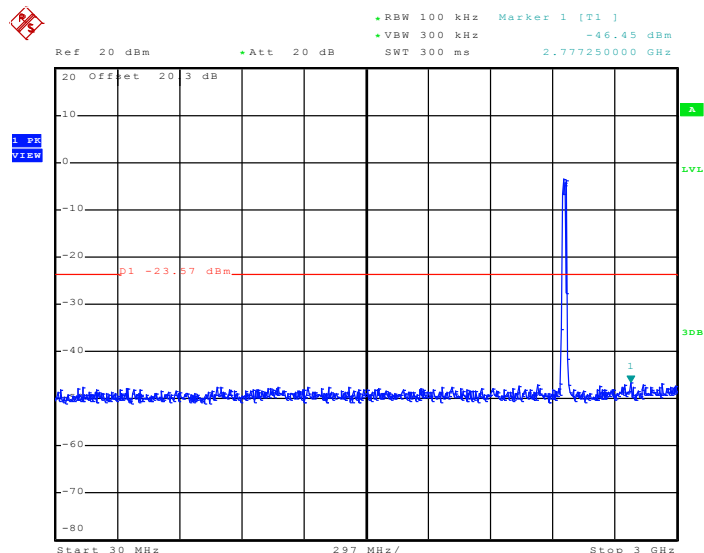


Date: 11.APR.2011 18:32:53



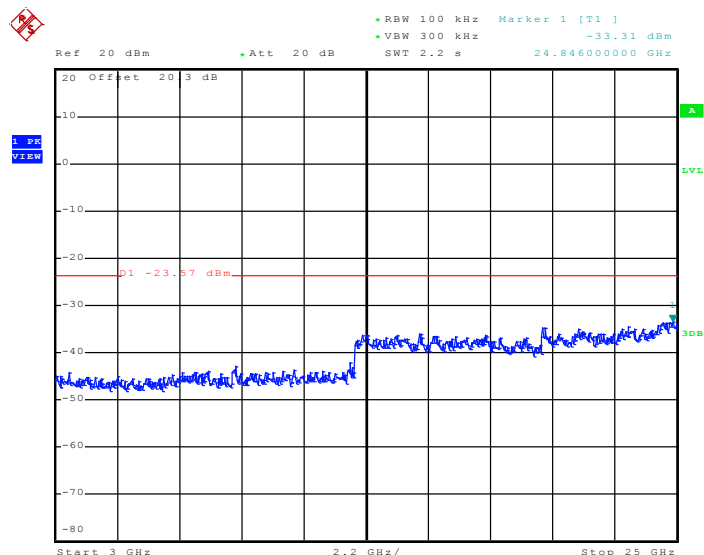
Test Mode :	Mode 6	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	44~48%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.APR.2011 17:58:29

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

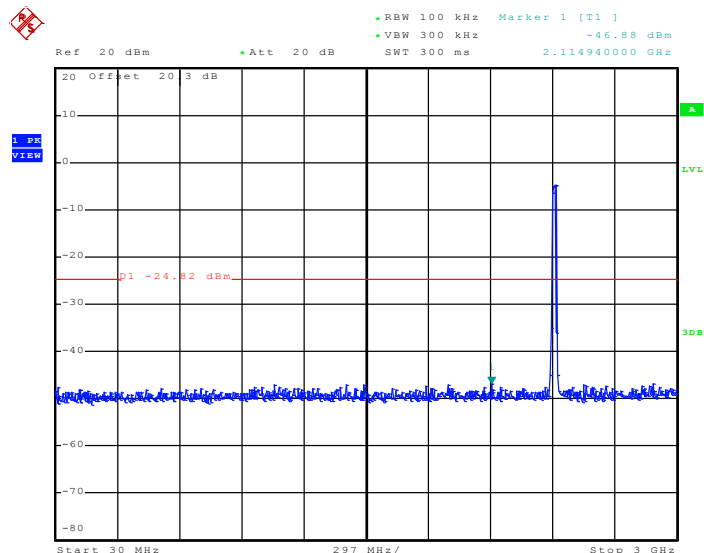


Date: 11.APR.2011 17:58:48



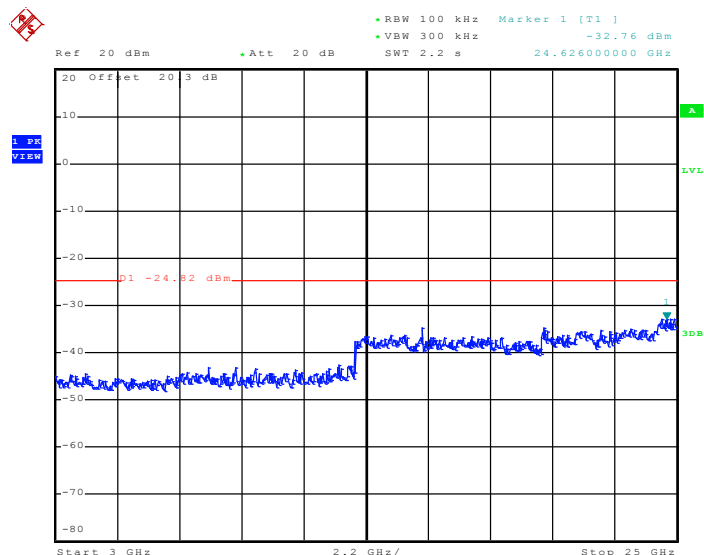
Test Mode :	Mode 7	Temperature :	22~24℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	44~48%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 11.APR.2011 18:12:11

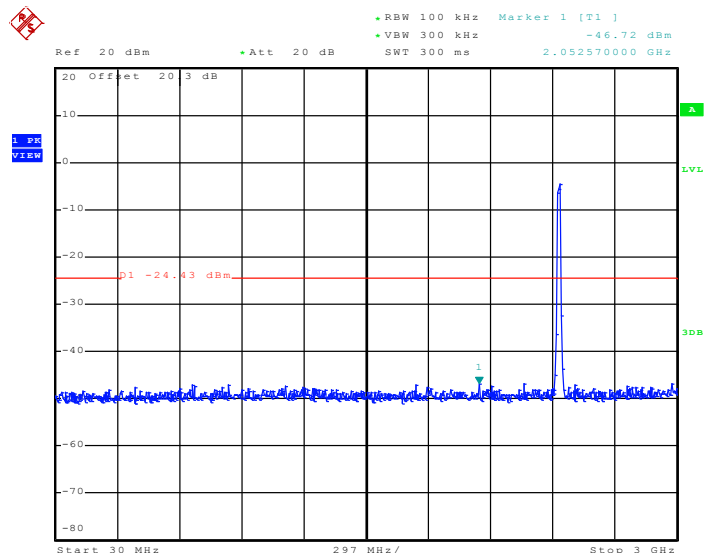
Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz



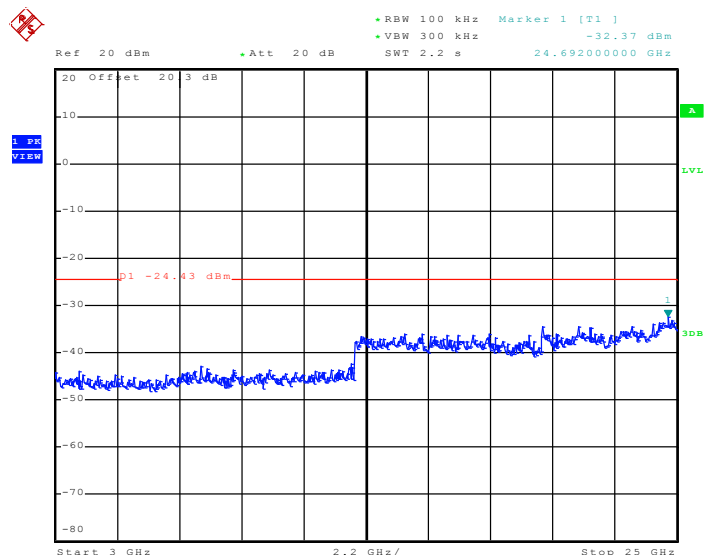
Date: 11.APR.2011 18:12:29



Test Mode :	Mode 8	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	44~48%
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

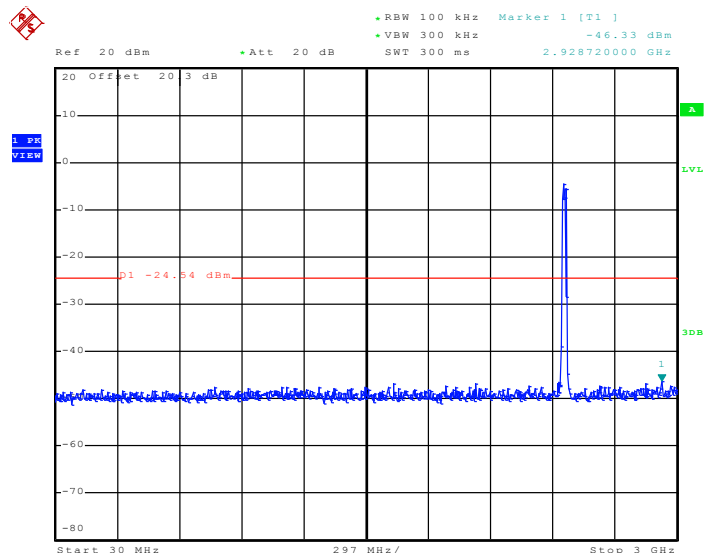
Date: 11.APR.2011 18:34:24

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

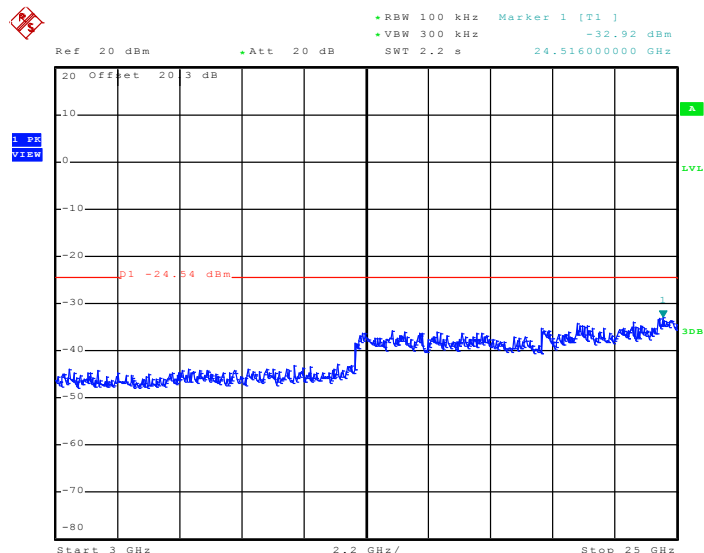
Date: 11.APR.2011 18:34:42



Test Mode :	Mode 9	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	44~48%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz

Date: 11.APR.2011 18:35:41

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

Date: 11.APR.2011 18:35:59

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.

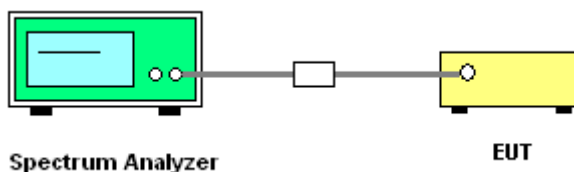
3.5.2 Measuring Instruments

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

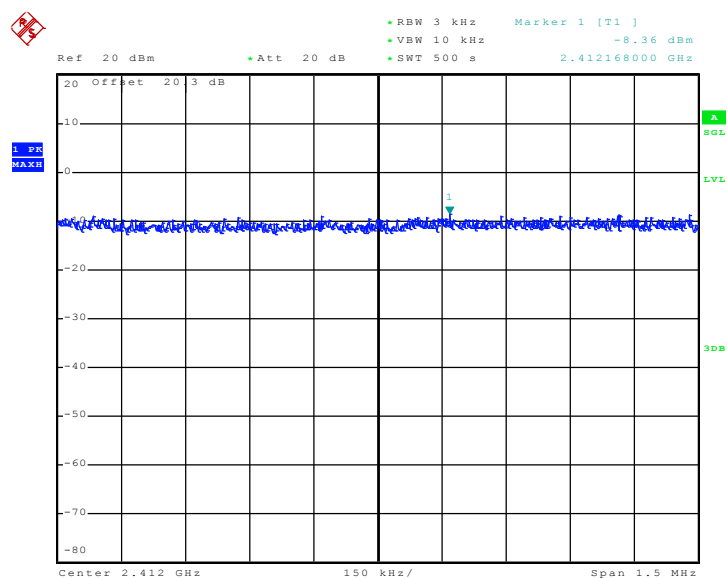


3.5.5 Test Result of Power Spectral Density

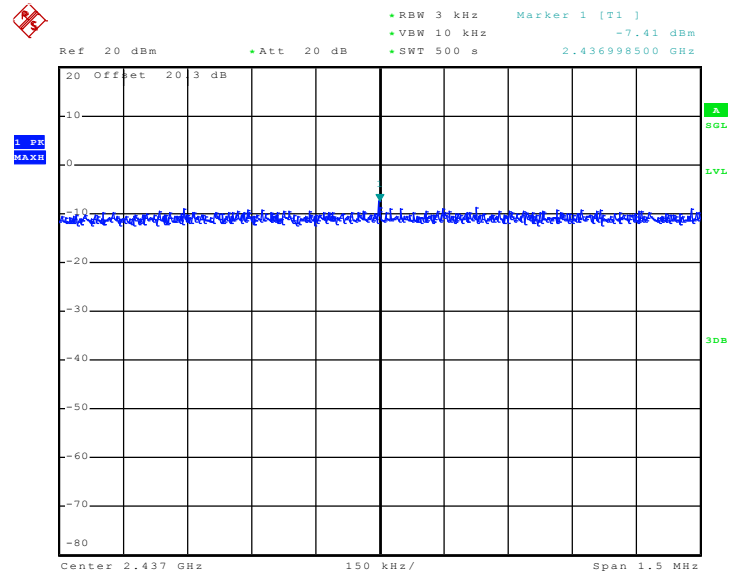
Test Mode :	Mode 1, 2, 3	Temperature :	22~24℃
Test Engineer :	Hank Yu	Relative Humidity :	44~48%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-8.36	8	Pass
06	2437	-7.41	8	Pass
11	2462	-8.69	8	Pass

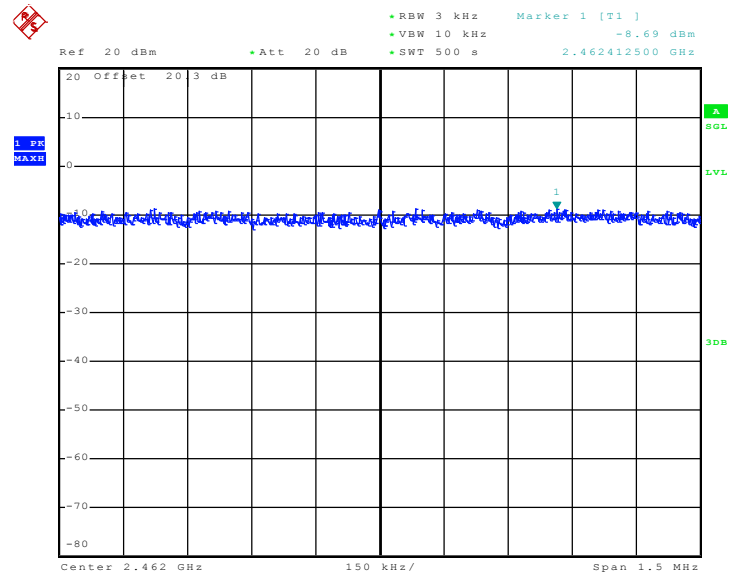
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 11.APR.2011 17:28:08

Mode 2 : PSD Plot on 802.11b Channel 06


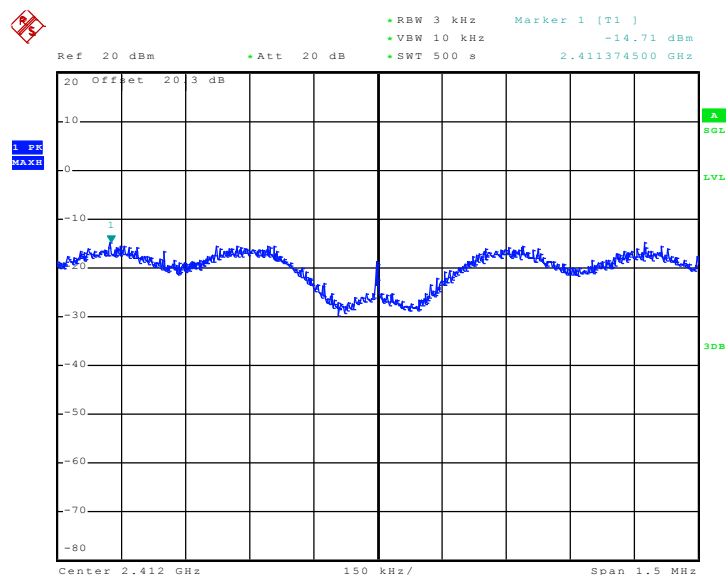
Date: 11.APR.2011 18:15:13

Mode 3 : PSD Plot on 802.11b Channel 11


Date: 11.APR.2011 18:02:01

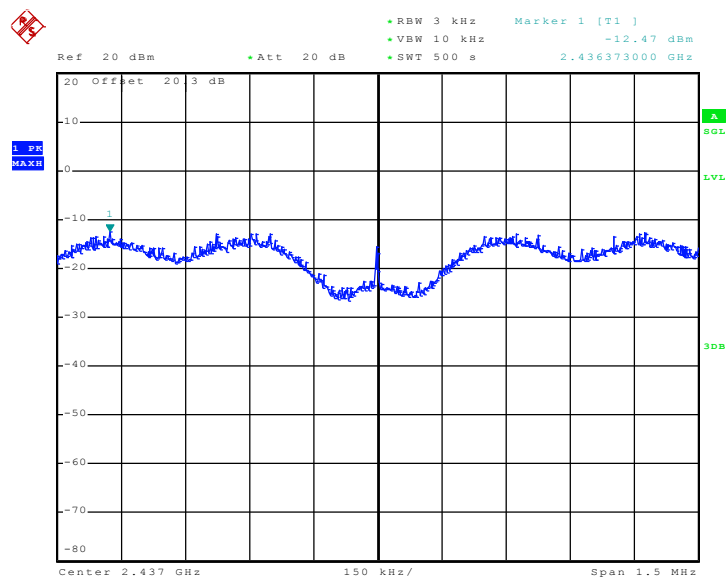
Test Mode :	Mode 4, 5, 6	Temperature :	22~24℃
Test Engineer :	Hank Yu	Relative Humidity :	44~48%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-14.71	8	Pass
06	2437	-12.47	8	Pass
11	2462	-14.38	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01


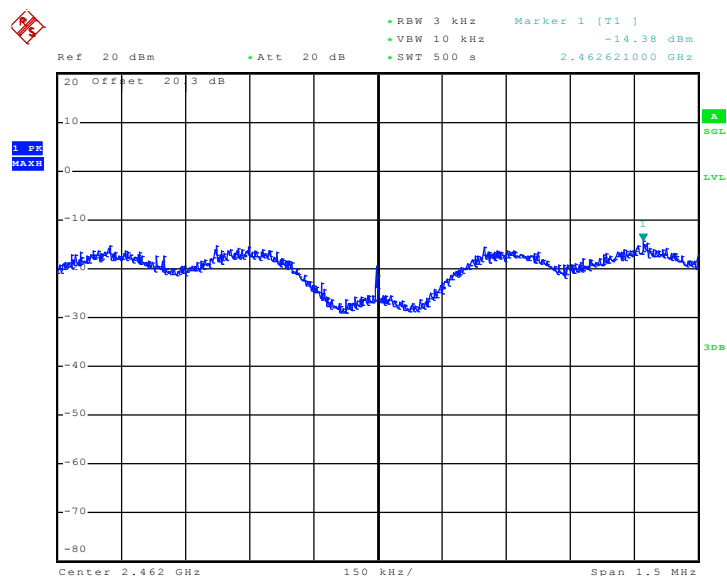
Date: 11.APR.2011 18:31:52

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 11.APR.2011 18:33:40

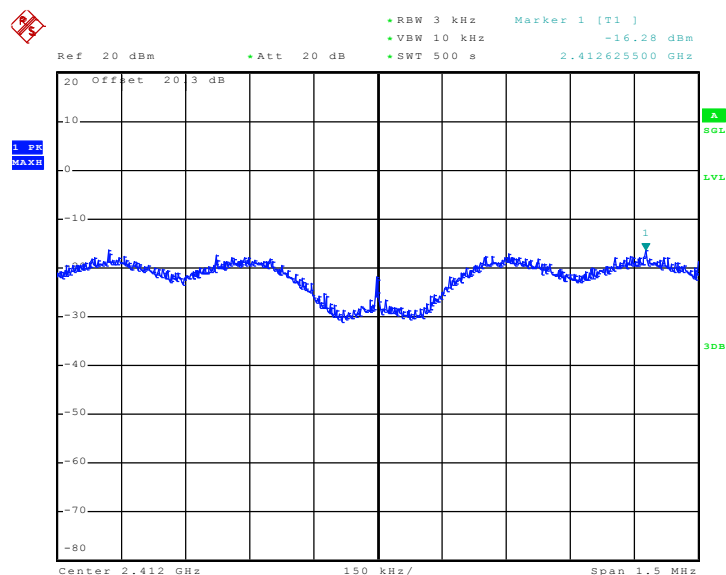
Mode 6 : PSD Plot on 802.11g Channel 11



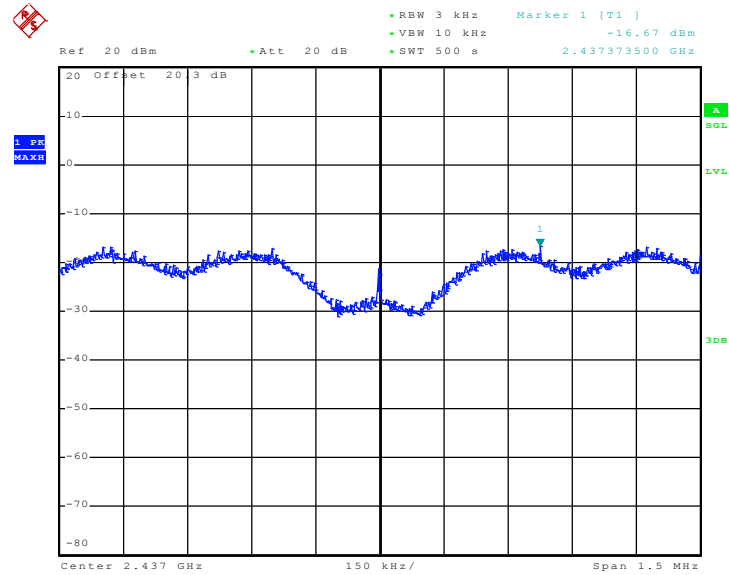
Date: 11.APR.2011 18:46:02

Test Mode :	Mode 7, 8, 9	Temperature :	22~24℃
Test Engineer :	Hank Yu	Relative Humidity :	44~48%

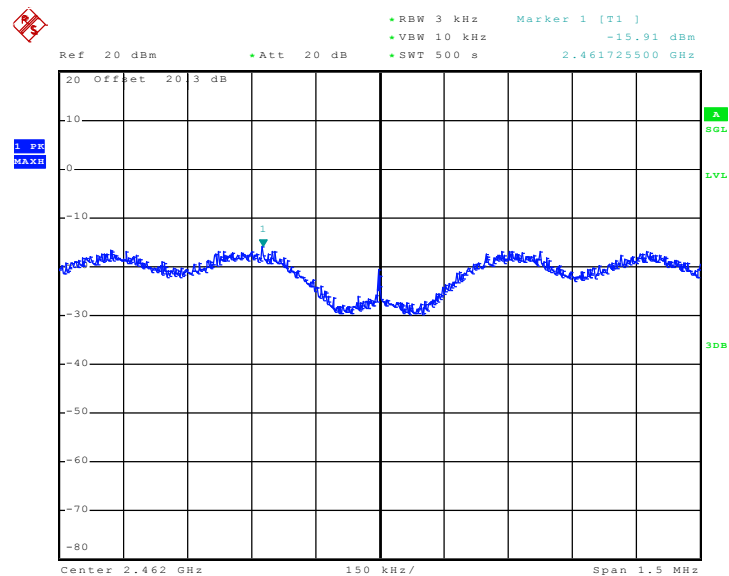
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-16.28	8	Pass
06	2437	-16.67	8	Pass
11	2462	-15.91	8	Pass

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


Date: 11.APR.2011 19:04:51

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


Date: 11.APR.2011 19:23:46

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


Date: 11.APR.2011 19:14:07

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.

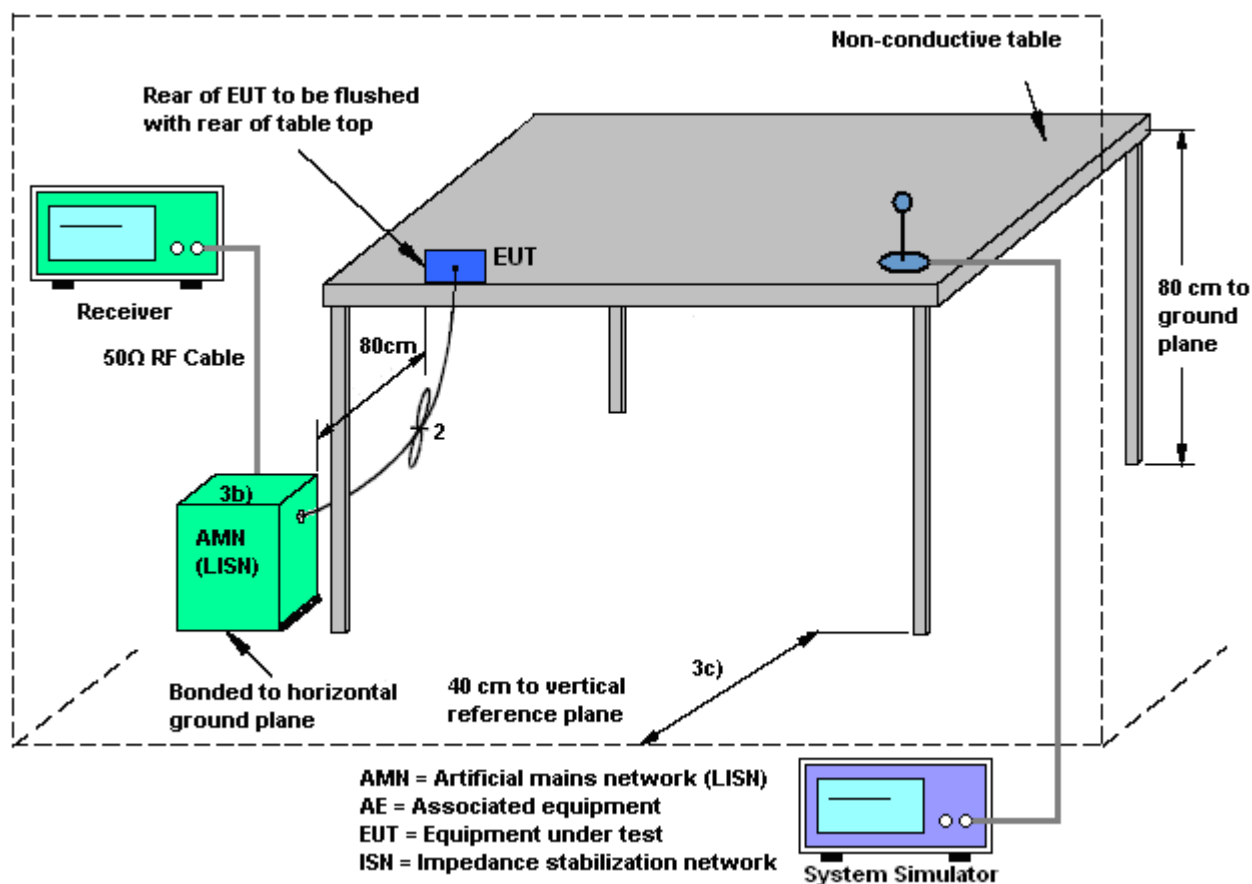
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

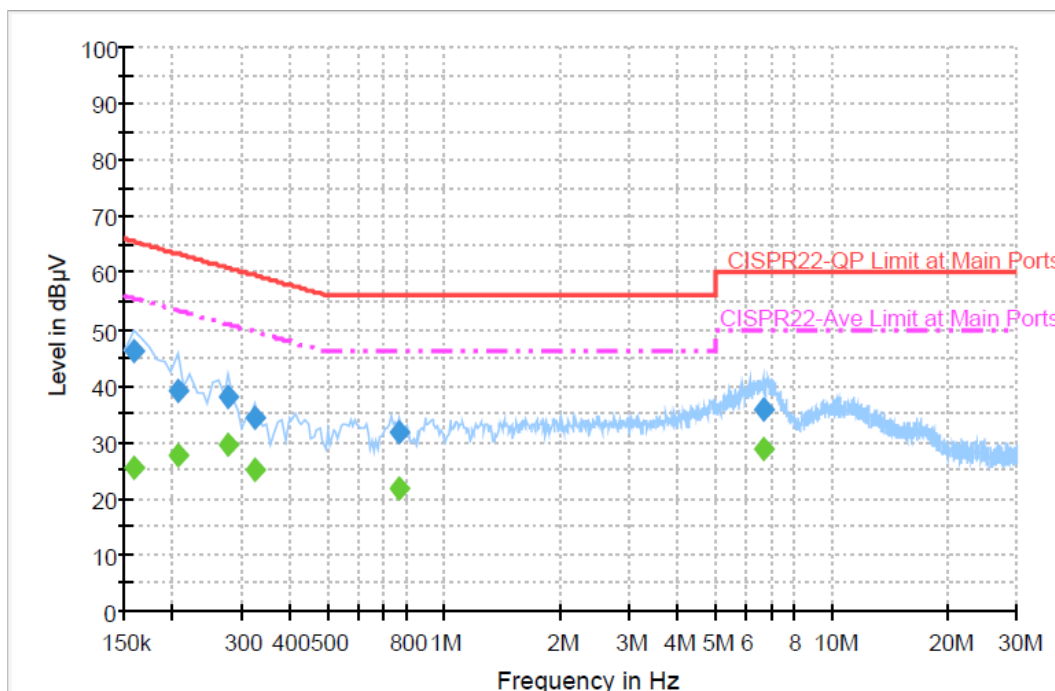
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + GPS Rx + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



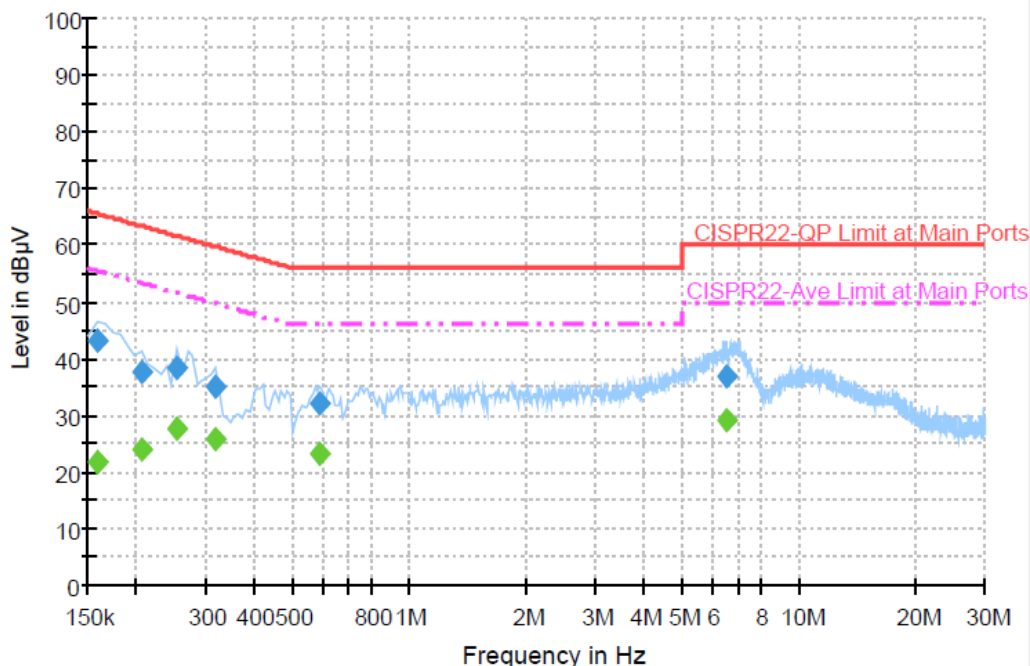
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	46.1	Off	L1	19.4	19.6	65.6
0.206000	39.2	Off	L1	19.4	24.2	63.4
0.278000	38.0	Off	L1	19.4	22.9	60.9
0.326000	34.4	Off	L1	19.4	25.2	59.6
0.766000	31.7	Off	L1	19.4	24.3	56.0
6.630000	35.9	Off	L1	19.5	24.1	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	25.5	Off	L1	19.4	30.1	55.6
0.206000	27.6	Off	L1	19.4	25.8	53.4
0.278000	29.7	Off	L1	19.4	21.2	50.9
0.326000	25.0	Off	L1	19.4	24.6	49.6
0.766000	21.8	Off	L1	19.4	24.2	46.0
6.630000	28.9	Off	L1	19.5	21.1	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link + GPS Rx + Adapter		
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)
0.158000	43.3	Off	N	19.4	22.4	65.6
0.206000	37.7	Off	N	19.4	25.7	63.4
0.254000	38.3	Off	N	19.4	23.3	61.6
0.318000	34.9	Off	N	19.4	24.9	59.8
0.590000	32.2	Off	N	19.4	23.8	56.0
6.526000	36.9	Off	N	19.5	23.1	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	21.9	Off	N	19.4	33.7	55.6
0.206000	24.2	Off	N	19.4	29.2	53.4
0.254000	27.8	Off	N	19.4	23.8	51.6
0.318000	26.0	Off	N	19.4	23.8	49.8
0.590000	23.2	Off	N	19.4	22.8	46.0
6.526000	29.2	Off	N	19.5	20.8	50.0

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

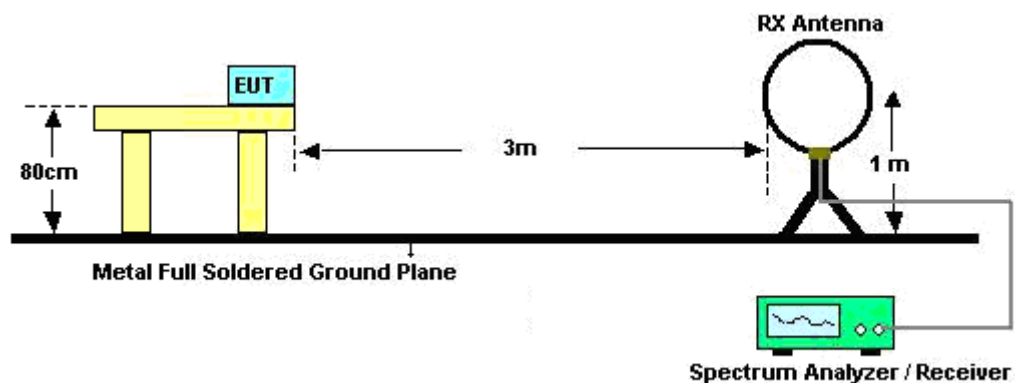
See list of measuring instruments of this test report.

3.7.3 Test Procedures

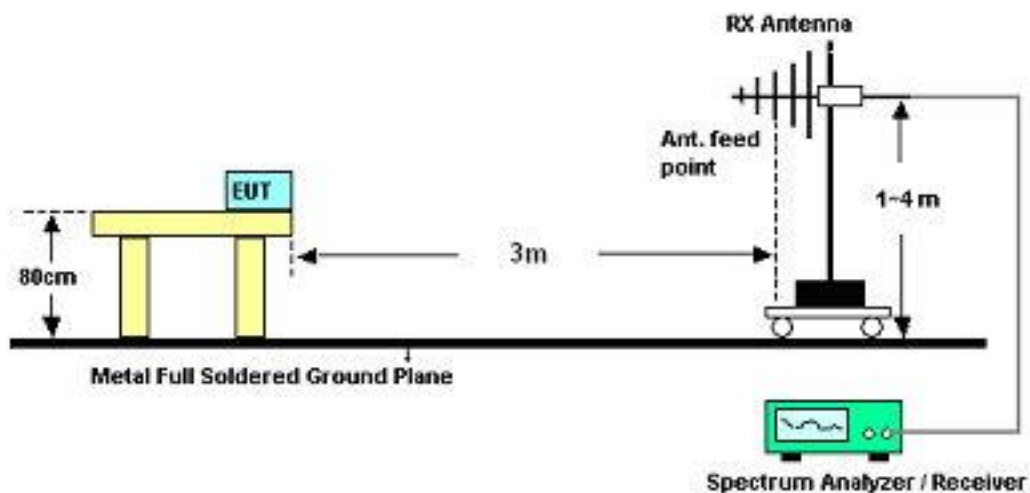
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = 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

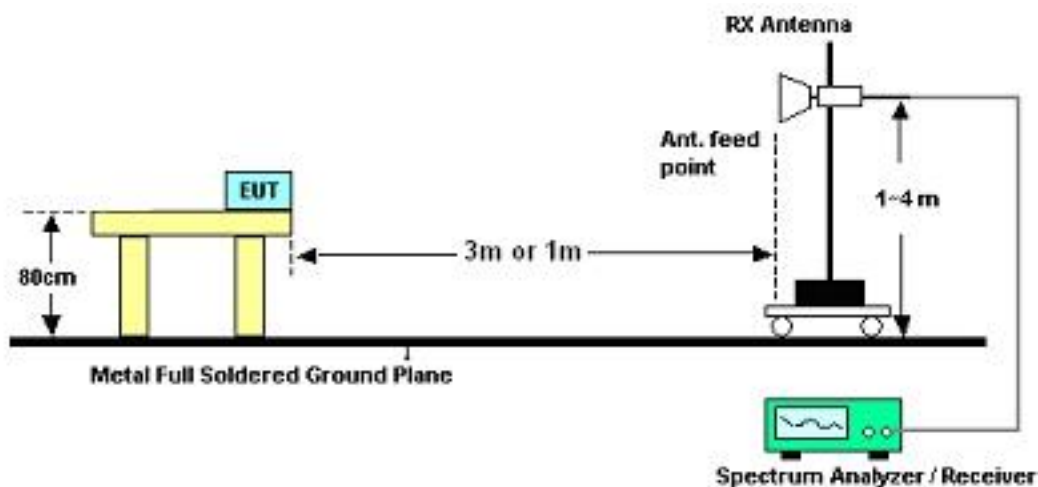
For radiated emissions below 30MHz



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 :	21~23℃	
		Relative Humidity :	45~50%	

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

Note:

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

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

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

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

Test Mode :	Mode 1	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	45~50%
Test Engineer :	David Yang	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
32.97	31	-9	40	45.33	16.63	0.58	31.54	-	-	Peak
42.42	34.91	-5.09	40	54.34	11.53	0.58	31.54	136	177	Peak
173.91	14.48	-29.02	43.5	36.06	8.73	1.23	31.54	-	-	Peak
374.9	15.19	-30.81	46	30.53	14.13	1.77	31.24	-	-	Peak
561.8	19.94	-26.06	46	30.64	18.08	2.15	30.93	-	-	Peak
841.8	23.65	-22.35	46	30.17	21.34	2.65	30.51	-	-	Peak
2389.23	33.61	-20.39	54	31.52	31.7	4.47	34.08	140	360	Average
2389.23	45.88	-28.12	74	43.79	31.7	4.47	34.08	140	360	Peak
2412	102.5	-	-	100.37	31.71	4.5	34.08	140	360	Average
2412	111.95	-	-	109.82	31.71	4.5	34.08	140	360	Peak
2490	32.57	-21.43	54	30.23	31.8	4.62	34.08	140	360	Average
2490	45.22	-28.78	74	42.88	31.8	4.62	34.08	140	360	Peak
4824	47.39	-26.61	74	65.64	33.77	6.44	58.46	100	0	Peak

Test Mode :	Mode 1	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	45~50%
Test Engineer :	David Yang	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
33.24	31.64	-8.36	40	45.97	16.63	0.58	31.54	-	-	Peak
65.37	34.95	-5.05	40	60.17	5.56	0.73	31.51	110	35	Peak
114.24	25.62	-17.88	43.5	45.74	10.45	0.95	31.52	-	-	Peak
363	15.01	-30.99	46	30.78	13.8	1.71	31.28	-	-	Peak
596.8	20.78	-25.22	46	30.8	18.66	2.2	30.88	-	-	Peak
873.3	24.23	-21.77	46	30.47	21.57	2.68	30.49	-	-	Peak
2373.08	32.77	-21.23	54	30.7	31.68	4.47	34.08	103	51	Average
2373.08	45.5	-28.5	74	43.43	31.68	4.47	34.08	103	51	Peak
2412	96.08	-	-	93.95	31.71	4.5	34.08	103	51	Average
2412	104.67	-	-	102.54	31.71	4.5	34.08	103	51	Peak
2492	32.35	-21.65	54	30.01	31.8	4.62	34.08	103	51	Average
2492	44.83	-29.17	74	42.49	31.8	4.62	34.08	103	51	Peak
4824	45.92	-28.08	74	64.17	33.77	6.44	58.46	100	0	Peak

Test Mode :	Mode 2	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	45~50%
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
42.42	36.26	-3.74	40	55.69	11.53	0.58	31.54	153	164	Peak
53.22	22.22	-17.78	40	46.02	7.01	0.73	31.54	-	-	Peak
174.45	13.58	-29.92	43.5	35.21	8.67	1.23	31.53	-	-	Peak
356	14.49	-31.51	46	30.45	13.62	1.71	31.29	-	-	Peak
496	18.26	-27.74	46	30.34	16.97	2.04	31.09	-	-	Peak
769.7	22.42	-23.58	46	29.97	20.45	2.54	30.54	-	-	Peak
2356	32.74	-21.26	54	30.73	31.66	4.44	34.09	138	360	Average
2356	44.81	-29.19	74	42.8	31.66	4.44	34.09	138	360	Peak
2437	103.86	-	-	101.66	31.75	4.53	34.08	138	360	Average
2437	112.17	-	-	109.97	31.75	4.53	34.08	138	360	Peak
2484	33.46	-20.54	54	31.17	31.78	4.59	34.08	138	360	Average
2484	47.34	-26.66	74	45.05	31.78	4.59	34.08	138	360	Peak
4874	45.71	-28.29	74	63.8	33.78	6.49	58.36	100	0	Peak

Test Mode :	Mode 2	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	45~50%
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
64.56	35.69	-4.31	40	60.91	5.56	0.73	31.51	115	271	Peak
92.64	26.64	-16.86	43.5	48.51	8.72	0.95	31.54	-	-	Peak
115.32	25.07	-18.43	43.5	45.11	10.53	0.95	31.52	-	-	Peak
391.7	15.45	-30.55	46	30.32	14.56	1.77	31.2	-	-	Peak
590.5	20.01	-25.99	46	30.16	18.56	2.18	30.89	-	-	Peak
864.2	23.75	-22.25	46	30.08	21.51	2.65	30.49	-	-	Peak
2372	32.73	-21.27	54	30.66	31.68	4.47	34.08	102	46	Average
2372	45.66	-28.34	74	43.59	31.68	4.47	34.08	102	46	Peak
2437	97.57	-	-	95.37	31.75	4.53	34.08	102	46	Average
2437	105.95	-	-	103.77	31.73	4.53	34.08	102	46	Peak
2484	32.42	-21.58	54	30.13	31.78	4.59	34.08	102	46	Average
2484	44.94	-29.06	74	42.65	31.78	4.59	34.08	102	46	Peak

Test Mode :	Mode 3	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	45~50%
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
33.24	29.82	-10.18	40	44.15	16.63	0.58	31.54	-	-	Peak
42.42	35.36	-4.64	40	54.79	11.53	0.58	31.54	133	218	Peak
144.21	13.45	-30.05	43.5	33.32	10.5	1.14	31.51	-	-	Peak
363.7	14.75	-31.25	46	30.48	13.83	1.71	31.27	-	-	Peak
505.1	18.79	-27.21	46	30.66	17.16	2.04	31.07	-	-	Peak
729.8	21.58	-24.42	46	30.05	19.69	2.45	30.61	-	-	Peak
2350	32.67	-21.33	54	30.68	31.64	4.44	34.09	171	0	Average
2350	44.43	-29.57	74	42.44	31.64	4.44	34.09	171	0	Peak
2462	104	-	-	101.75	31.77	4.56	34.08	171	0	Average
2462	112.26	-	-	110.01	31.77	4.56	34.08	171	0	Peak
2483.85	38.27	-15.73	54	35.98	31.78	4.59	34.08	171	0	Average
2483.85	49.93	-24.07	74	47.64	31.78	4.59	34.08	171	0	Peak
4924	45.48	-28.52	74	63.41	33.79	6.54	58.26	100	0	Peak



Test Mode :	Mode 3	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	45~50%
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
32.97	31.46	-8.54	40	45.79	16.63	0.58	31.54	-	-	Peak
64.56	36.7	-3.3	40	61.92	5.56	0.73	31.51	104	87	Peak
111.54	24.83	-18.67	43.5	45.16	10.24	0.95	31.52	-	-	Peak
405.7	15.95	-30.05	46	30.42	14.89	1.82	31.18	-	-	Peak
686.4	21.29	-24.71	46	30.59	19.08	2.35	30.73	-	-	Peak
940.5	25.39	-20.61	46	30.3	22.72	2.78	30.41	-	-	Peak
2380	32.7	-21.3	54	30.63	31.68	4.47	34.08	100	61	Average
2380	45.2	-28.8	74	43.13	31.68	4.47	34.08	100	61	Peak
2462	98.3	-	-	96.05	31.77	4.56	34.08	100	61	Average
2462	106.5	-	-	104.25	31.77	4.56	34.08	100	61	Peak
2484.42	33.58	-20.42	54	31.29	31.78	4.59	34.08	100	61	Average
2484.42	45.42	-28.58	74	43.13	31.78	4.59	34.08	100	61	Peak
4924	44.35	-29.65	74	62.28	33.79	6.54	58.26	100	0	Peak

Test Mode :	Mode 4	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	45~50%
Test Engineer :	David Yang	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
42.42	34.66	-5.34	40	54.09	11.53	0.58	31.54	161	274	Peak
52.41	21.25	-18.75	40	44.82	7.25	0.73	31.55	-	-	Peak
92.64	17.39	-26.11	43.5	39.26	8.72	0.95	31.54	-	-	Peak
358.8	14.87	-31.13	46	30.75	13.7	1.71	31.29	-	-	Peak
603.8	19.94	-26.06	46	29.86	18.74	2.2	30.86	-	-	Peak
799.8	26.48	-19.52	46	33.43	21.02	2.57	30.54	-	-	Peak
2389.99	41.1	-12.9	54	38.98	31.7	4.5	34.08	141	360	Average
2389.99	63.7	-10.3	74	61.58	31.7	4.5	34.08	141	360	Peak
2412	95.18	-	-	93.05	31.71	4.5	34.08	141	360	Average
2412	107.61	-	-	105.45	31.71	4.53	34.08	141	360	Peak
2484	32.68	-21.32	54	30.39	31.78	4.59	34.08	141	360	Average
2484	45.11	-28.89	74	42.82	31.78	4.59	34.08	141	360	Peak



Test Mode :	Mode 4	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	45~50%
Test Engineer :	David Yang	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
64.56	33.25	-6.75	40	58.47	5.56	0.73	31.51	117	324	Peak
112.08	23.84	-19.66	43.5	44.1	10.31	0.95	31.52	-	-	Peak
174.45	15.67	-27.83	43.5	37.3	8.67	1.23	31.53	-	-	Peak
357.4	14.97	-31.03	46	30.88	13.67	1.71	31.29	-	-	Peak
572.3	20.11	-25.89	46	30.58	18.26	2.18	30.91	-	-	Peak
780.9	23.19	-22.81	46	30.54	20.65	2.54	30.54	-	-	Peak
2389.99	36.24	-17.76	54	34.12	31.7	4.5	34.08	103	50	Average
2389.99	56.84	-17.16	74	54.72	31.7	4.5	34.08	103	50	Peak
2412	88.2	-	-	86.07	31.71	4.5	34.08	103	50	Average
2412	99.66	-	-	97.5	31.71	4.53	34.08	103	50	Peak
2492	32.31	-21.69	54	29.97	31.8	4.62	34.08	103	50	Average
2492	44.64	-29.36	74	42.3	31.8	4.62	34.08	103	50	Peak

Test Mode :	Mode 5	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	45~50%
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
32.97	29.53	-10.47	40	43.86	16.63	0.58	31.54	-	-	Peak
42.42	30.77	-9.23	40	50.2	11.53	0.58	31.54	100	51	Peak
175.8	13.91	-29.59	43.5	35.56	8.65	1.23	31.53	-	-	Peak
400.1	16.55	-29.45	46	31.13	14.78	1.82	31.18	-	-	Peak
631.8	21.4	-24.6	46	31.11	18.85	2.25	30.81	-	-	Peak
844.6	23.75	-22.25	46	30.24	21.36	2.65	30.5	-	-	Peak
2378	32.83	-21.17	54	30.76	31.68	4.47	34.08	111	0	Average
2378	44.95	-29.05	74	42.88	31.68	4.47	34.08	111	0	Peak
2437	95.58	-	-	93.35	31.75	4.56	34.08	111	0	Average
2437	107.34	-	-	105.11	31.75	4.56	34.08	111	0	Peak
2484	33.45	-20.55	54	31.16	31.78	4.59	34.08	111	0	Average
2484	45.68	-28.32	74	43.39	31.78	4.59	34.08	111	0	Peak



Test Mode :	Mode 5	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	45~50%
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
64.02	34.44	-5.56	40	59.72	5.51	0.73	31.52	111	182	Peak
111.81	24.27	-19.23	43.5	44.6	10.24	0.95	31.52	-	-	Peak
174.45	16.59	-26.91	43.5	38.22	8.67	1.23	31.53	-	-	Peak
377.7	16.35	-29.65	46	31.64	14.18	1.77	31.24	-	-	Peak
608.7	20.89	-25.11	46	30.78	18.76	2.2	30.85	-	-	Peak
769	23.6	-22.4	46	31.16	20.44	2.54	30.54	-	-	Peak
2388	32.88	-21.12	54	30.79	31.7	4.47	34.08	100	46	Average
2388	45.08	-28.92	74	42.99	31.7	4.47	34.08	100	46	Peak
2437	89.44	-	-	87.24	31.75	4.53	34.08	100	46	Average
2437	100.3	-	-	98.12	31.73	4.53	34.08	100	46	Peak
2490	32.53	-21.47	54	30.19	31.8	4.62	34.08	100	46	Average
2490	44.27	-29.73	74	41.93	31.8	4.62	34.08	100	46	Peak



Test Mode :	Mode 6	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	45~50%
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
32.97	29.45	-10.55	40	43.78	16.63	0.58	31.54	-	-	Peak
42.42	36.06	-3.94	40	55.49	11.53	0.58	31.54	134	269	Peak
174.45	14.9	-28.6	43.5	36.53	8.67	1.23	31.53	-	-	Peak
392.4	15.81	-30.19	46	30.61	14.58	1.82	31.2	-	-	Peak
622.7	20.58	-25.42	46	30.34	18.81	2.25	30.82	-	-	Peak
841.1	23.78	-22.22	46	30.35	21.33	2.61	30.51	-	-	Peak
2326	32.81	-21.19	54	30.86	31.63	4.41	34.09	169	360	Average
2326	45.3	-28.7	74	43.35	31.63	4.41	34.09	169	360	Peak
2462	97.23	-	-	94.98	31.77	4.56	34.08	169	360	Average
2462	108.3	-	-	106.05	31.77	4.56	34.08	169	360	Peak
2483.5	46.6	-7.4	54	44.31	31.78	4.59	34.08	169	360	Average
2483.5	70.92	-3.08	74	68.63	31.78	4.59	34.08	169	360	Peak



Test Mode :	Mode 6	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	45~50%
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
64.56	34.27	-5.73	40	59.49	5.56	0.73	31.51	107	145	Peak
92.64	25.46	-18.04	43.5	47.33	8.72	0.95	31.54	-	-	Peak
109.11	23.51	-19.99	43.5	43.98	10.1	0.95	31.52	-	-	Peak
370	15.3	-30.7	46	30.79	14	1.77	31.26	-	-	Peak
540.8	19.95	-26.05	46	31.07	17.75	2.1	30.97	-	-	Peak
744.5	21.85	-24.15	46	29.92	19.98	2.51	30.56	-	-	Peak
2324	32.77	-21.23	54	30.82	31.63	4.41	34.09	100	59	Average
2324	45.04	-28.96	74	43.09	31.63	4.41	34.09	100	59	Peak
2462	90.67	-	-	88.42	31.77	4.56	34.08	100	59	Average
2462	100.82	-	-	98.57	31.77	4.56	34.08	100	59	Peak
2483.5	37.41	-16.59	54	35.12	31.78	4.59	34.08	100	59	Average
2483.5	62.38	-11.62	74	60.09	31.78	4.59	34.08	100	59	Peak



Test Mode :	Mode 7	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	45~50%
Test Engineer :	David Yang	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
32.97	28.72	-11.28	40	43.05	16.63	0.58	31.54	-	-	Peak
42.42	34.47	-5.53	40	53.9	11.53	0.58	31.54	145	228	Peak
175.26	13.68	-29.82	43.5	35.33	8.65	1.23	31.53	-	-	Peak
419.7	16.94	-29.06	46	31.01	15.23	1.87	31.17	-	-	Peak
598.2	20.74	-25.26	46	30.72	18.69	2.2	30.87	-	-	Peak
763.4	22.27	-23.73	46	29.97	20.33	2.51	30.54	-	-	Peak
2389.99	39.02	-14.98	54	36.9	31.7	4.5	34.08	141	360	Average
2389.99	62.83	-11.17	74	60.71	31.7	4.5	34.08	141	360	Peak
2412	93.75	-	-	91.62	31.71	4.5	34.08	141	360	Average
2412	105.47	-	-	103.31	31.71	4.53	34.08	141	360	Peak
2488	32.56	-21.44	54	30.25	31.8	4.59	34.08	141	360	Average
2488	44.72	-29.28	74	42.41	31.8	4.59	34.08	141	360	Peak



Test Mode :	Mode 7	Temperature :	21~23℃
Test Channel :	01	Relative Humidity :	45~50%
Test Engineer :	David Yang	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
58.08	26.24	-13.76	40	51.25	5.8	0.73	31.54	-	-	Peak
64.83	34.29	-5.71	40	59.51	5.56	0.73	31.51	112	183	Peak
121.26	25.47	-18.03	43.5	45.02	10.9	1.07	31.52	-	-	Peak
389.6	15.81	-30.19	46	30.74	14.51	1.77	31.21	-	-	Peak
668.2	21.93	-24.07	46	31.32	19.01	2.35	30.75	-	-	Peak
928.6	24.13	-21.87	46	29.35	22.43	2.78	30.43	-	-	Peak
2389.8	35.06	-18.94	54	32.94	31.7	4.5	34.08	101	50	Average
2389.8	54.26	-19.74	74	52.14	31.7	4.5	34.08	101	50	Peak
2412	86.03	-	-	83.9	31.71	4.5	34.08	101	50	Average
2412	98.38	-	-	96.22	31.71	4.53	34.08	101	50	Peak
2492	32.27	-21.73	54	29.93	31.8	4.62	34.08	101	50	Average
2492	44.31	-29.69	74	41.97	31.8	4.62	34.08	101	50	Peak

Test Mode :	Mode 8	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	45~50%
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
42.42	36.49	-3.51	40	55.92	11.53	0.58	31.54	142	113	Peak
52.41	21.72	-18.28	40	45.29	7.25	0.73	31.55	-	-	Peak
122.88	12.13	-31.37	43.5	31.65	10.93	1.07	31.52	-	-	Peak
378.4	15.63	-30.37	46	30.9	14.2	1.77	31.24	-	-	Peak
560.4	20.02	-25.98	46	30.73	18.07	2.15	30.93	-	-	Peak
787.9	22.91	-23.09	46	30.13	20.78	2.54	30.54	-	-	Peak
2360	32.67	-21.33	54	30.65	31.66	4.44	34.08	171	0	Average
2360	45.18	-28.82	74	43.16	31.66	4.44	34.08	171	0	Peak
2437	94.49	-	-	92.29	31.75	4.53	34.08	171	0	Average
2437	105.18	-	-	103	31.73	4.53	34.08	171	0	Peak
2486	33.2	-20.8	54	30.91	31.78	4.59	34.08	171	0	Average
2486	45.96	-28.04	74	43.67	31.78	4.59	34.08	171	0	Peak

Test Mode :	Mode 8	Temperature :	21~23℃
Test Channel :	06	Relative Humidity :	45~50%
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
32.97	29.91	-10.09	40	44.24	16.63	0.58	31.54	-	-	Peak
64.56	34.68	-5.32	40	59.9	5.56	0.73	31.51	112	187	Peak
111.81	23.78	-19.72	43.5	44.11	10.24	0.95	31.52	-	-	Peak
428.1	16.12	-29.88	46	30	15.41	1.87	31.16	-	-	Peak
636.7	20.68	-25.32	46	30.36	18.87	2.25	30.8	-	-	Peak
893.6	24.06	-21.94	46	30.11	21.73	2.7	30.48	-	-	Peak
2328	32.54	-21.46	54	30.59	31.63	4.41	34.09	101	47	Average
2328	45.78	-28.22	74	43.83	31.63	4.41	34.09	101	47	Peak
2437	87.29	-	-	85.09	31.75	4.53	34.08	101	47	Average
2437	97.54	-	-	95.36	31.73	4.53	34.08	101	47	Peak
2486	32.24	-21.76	54	29.95	31.78	4.59	34.08	101	47	Average
2486	44.65	-29.35	74	42.36	31.78	4.59	34.08	101	47	Peak

Test Mode :	Mode 9	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	45~50%
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
32.97	29.78	-10.22	40	44.11	16.63	0.58	31.54	-	-	Peak
42.42	34.77	-5.23	40	54.2	11.53	0.58	31.54	127	335	Peak
53.22	17.58	-22.42	40	41.38	7.01	0.73	31.54	-	-	Peak
398.7	16.59	-29.41	46	31.22	14.73	1.82	31.18	-	-	Peak
600.3	20.17	-25.83	46	30.12	18.72	2.2	30.87	-	-	Peak
786.5	23.18	-22.82	46	30.42	20.76	2.54	30.54	-	-	Peak
2348	32.61	-21.39	54	30.62	31.64	4.44	34.09	168	360	Average
2348	44.86	-29.14	74	42.87	31.64	4.44	34.09	168	360	Peak
2462	95.72	-	-	93.47	31.77	4.56	34.08	168	360	Average
2462	106.65	-	-	104.4	31.77	4.56	34.08	168	360	Peak
2483.66	43.02	-10.98	54	40.73	31.78	4.59	34.08	168	360	Average
2483.66	69.45	-4.55	74	67.16	31.78	4.59	34.08	168	360	Peak

Test Mode :	Mode 9	Temperature :	21~23℃
Test Channel :	11	Relative Humidity :	45~50%
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
33.24	28.87	-11.13	40	43.2	16.63	0.58	31.54	-	-	Peak
64.83	35.17	-4.83	40	60.39	5.56	0.73	31.51	109	242	Peak
111	24.37	-19.13	43.5	44.7	10.24	0.95	31.52	-	-	Peak
369.3	15.08	-30.92	46	30.59	13.98	1.77	31.26	-	-	Peak
613.6	20.96	-25.04	46	30.82	18.78	2.2	30.84	-	-	Peak
857.9	23.42	-22.58	46	29.81	21.46	2.65	30.5	-	-	Peak
2342	32.6	-21.4	54	30.61	31.64	4.44	34.09	100	60	Average
2342	44.85	-29.15	74	42.86	31.64	4.44	34.09	100	60	Peak
2462	88.26	-	-	86.01	31.77	4.56	34.08	100	60	Average
2462	98.14	-	-	95.89	31.77	4.56	34.08	100	60	Peak
2484.23	34.99	-19.01	54	32.7	31.78	4.59	34.08	100	60	Average
2484.23	57.19	-16.81	74	54.9	31.78	4.59	34.08	100	60	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
System Simulator	R&S	CMU200	117995	N/A	Jun. 08, 2009	Jun. 07, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 11, 2010	Jun. 10, 2011	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 13, 2010	Sep. 12, 2011	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 14, 2010	Sep. 13, 2011	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-930701	N/A	Jul. 30, 2010	Jul. 29, 2011	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	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	117997	N/A	May 14, 2009	May 13, 2011	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz-40GHz	Nov. 03, 2010	Nov. 02, 2011	Radiation (03CH05-HY)
Amplifier	COM-POWER	PA-103	161075	1KHz - 1GHz	Mar. 29, 2011	Mar. 28, 2012	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 1GHz	Nov. 06, 2010	Nov. 05, 2011	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 14, 2011	Apr. 13, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 - 360 degree	N/A	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m - 4 m	N/A	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	00066584	1GHz ~ 18GHz	Aug. 05, 2010	Aug. 04, 2011	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH05-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				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP130101 as below.