FCC RF Test Report

APPLICANT	:	HTC Corporation
EQUIPMENT	:	Windows Phone
MODEL NAME	:	PD29130
FCC ID	:	NM8PD29130
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	Digital Transmission System (DTS)

The product was received on Oct. 26, 2010 and completely tested on Nov. 06, 2010. 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:

Anderson Chiu

Anderson Chiu / Deputy Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.

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APPENDIX A. SETUP PHOTOGRAPHS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR0O2613B	Rev. 01	Initial issue of report	Nov. 23, 2010

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	≥ 0.5MHz	Pass	-
3.1	-	Gen 4.4.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Power Output	≤ 30dBm	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
0	15.247(d)	A8.5	Spurious Emission	< 20 dBc	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 9.1 dB at 0.254 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 5.46 dB at 31.35 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	Windows PHONE
Model Name	PD29130
FCC ID	NM8PD29130
Sample 1	EUT with LCM-Main and Camera 1
Sample 2	EUT with LCM-2nd and 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=1~11
Channel Spacing	5 MHz
Maximum Output Power to Antenna	802.11b : 21.25 dBm (0.133 W) 802.11g : 23.09 dBm (0.204 W) 802.11n (BW 20MHz) : 23.33 dBm (0.215 W)
Antenna Type	PCB Antenna with gain -4.1~-6.5 dBi
Type of Antenna Connector	N/A
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

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 1st 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 7

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.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
6.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		At DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	21.25	21.14	21.13	21.10
CH 06	2437 MHz	20.58	-	-	-
CH 11	2462 MHz	20.10	-	-	-

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		At OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	23.09	23.06	22.92	22.83	22.82	22.42	22.68	23.01
CH 06	2437 MHz	22.48	-	-	-	-	-	-	-
CH 11	2462 MHz	22.42	-	-	-	-	-	-	-

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		At 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	23.33	22.81	22.87	22.80	22.25	22.30	23.09	23.01
CH 06	2437 MHz	23.03	-	-	-	-	-	-	-
CH 11	2462 MHz	22.74	-	-	-	-	-	-	-

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.

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).

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

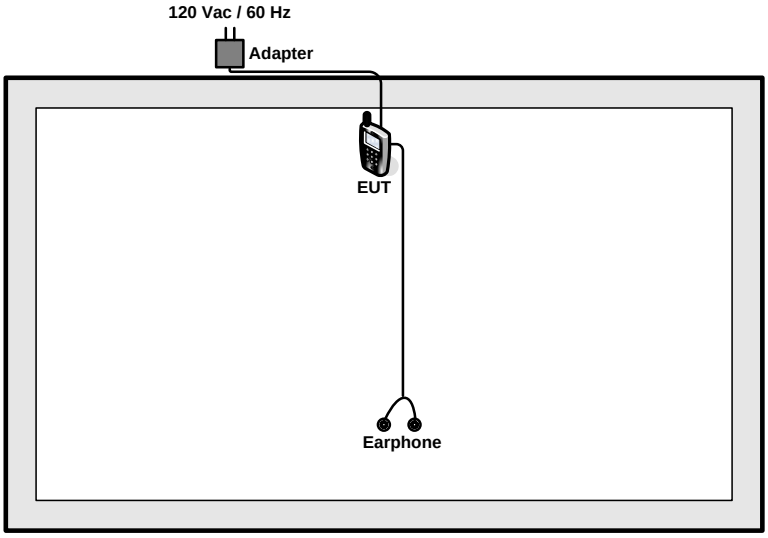
Test Cases		
Test Item	**802.11b (Modulation : DSSS)**	**802.11g/n (Modulation : OFDM)**
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (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 + Earphone 1 + Battery 1 + USB Cable 1 (Charging from Adapter 1) for Sample 1 Mode 2 : WCDMA850 Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Battery 2 + USB Cable 2 (Charging from Adapter 2) for Sample 2	

Remark:

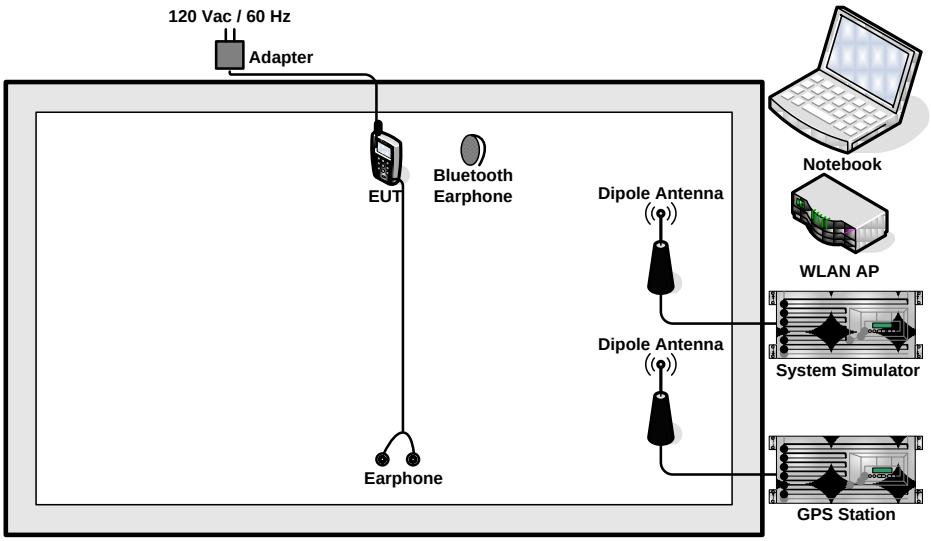
1. TC stands for Test Configuration, and consists of battery, earphone, USB cable, and adapter.
2. The worst case of conducted emission is mode 2; only the test data of it was reported.

2.3 Connection Diagram of Test System

<Radiation Test>



<Conduction Test>



2.4 RF Utility

The programmed RF utility 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 and 99% Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

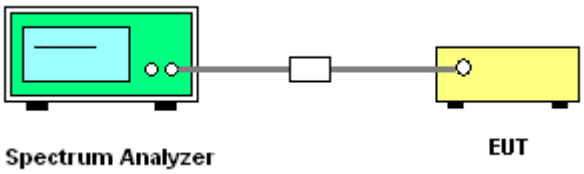
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW. The 6 dB bandwidth must be greater than 500 kHz.
4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup

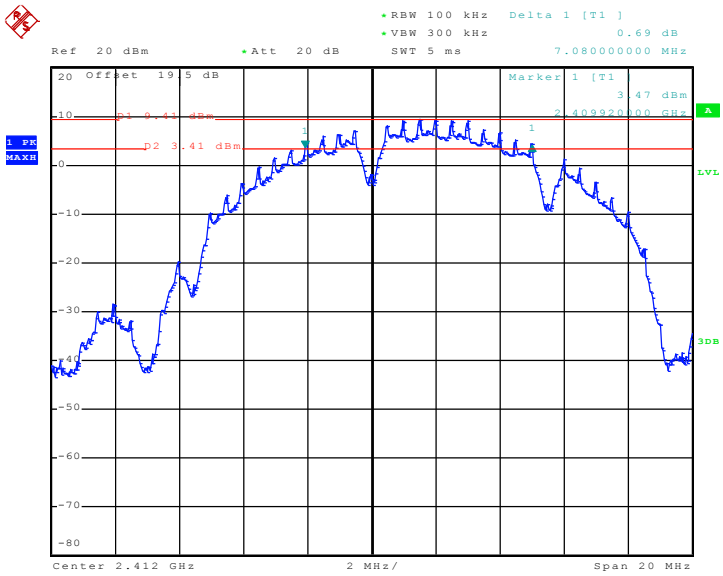


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Mode 1, 2, 3	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	7.08	0.5	Pass
06	2437	7.06	0.5	Pass
11	2462	7.56	0.5	Pass

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



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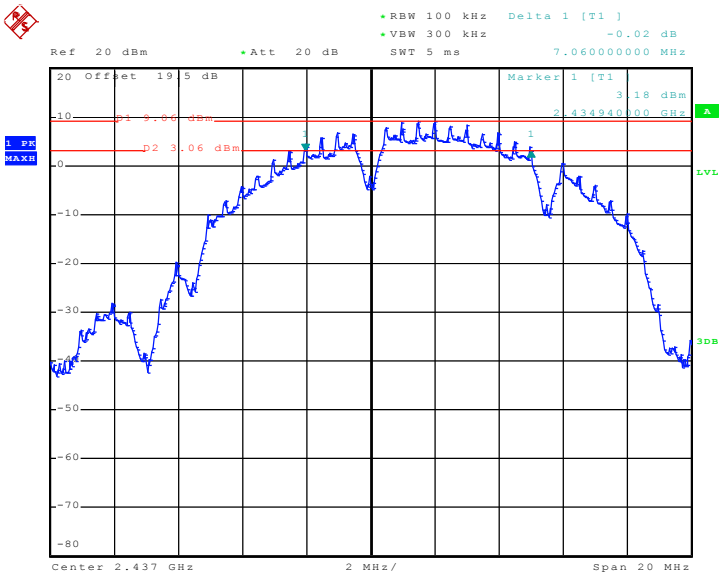
Mode 2 : 6 dB Bandwidth Plot on 802.11b Channel 06



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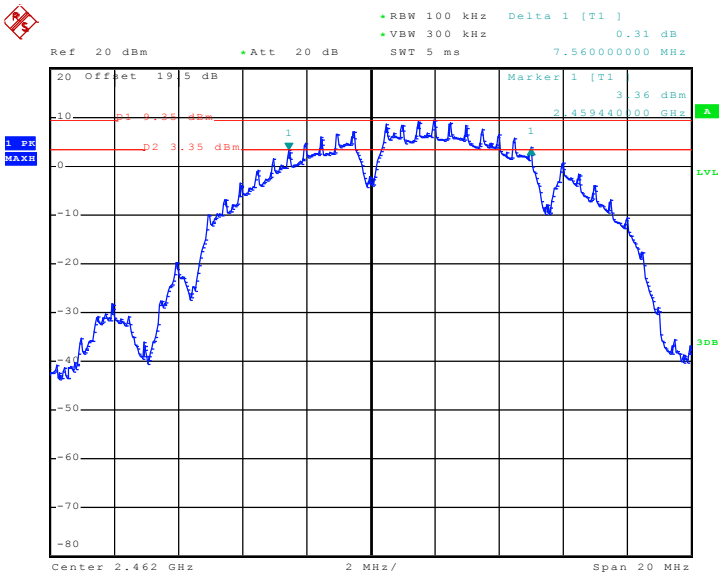
Mode 3 : 6 dB Bandwidth Plot on 802.11b Channel 11



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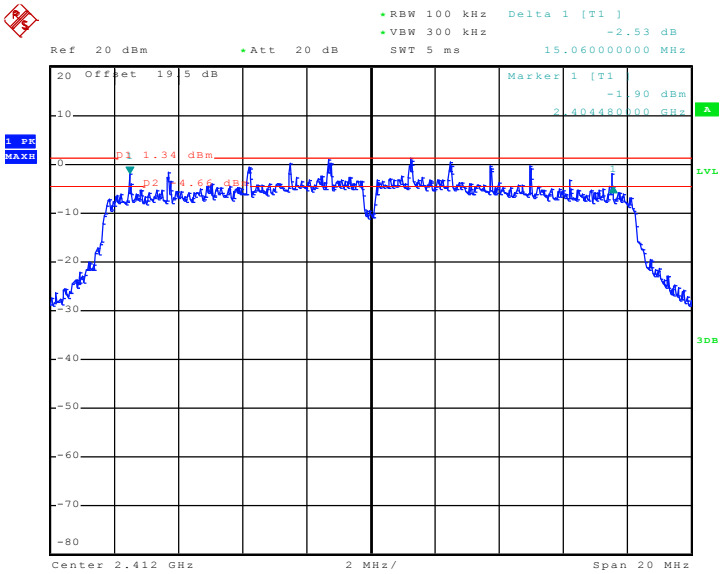
Test Mode :	Mode 4, 5, 6	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.06	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.12	0.5	Pass

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



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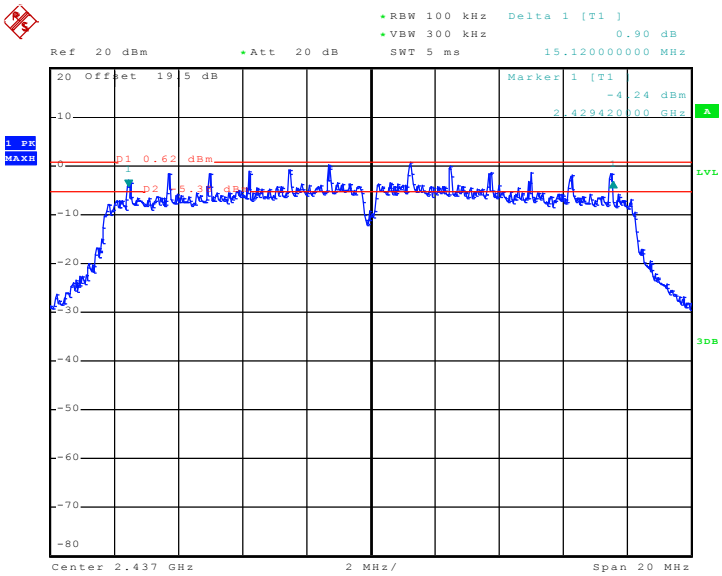
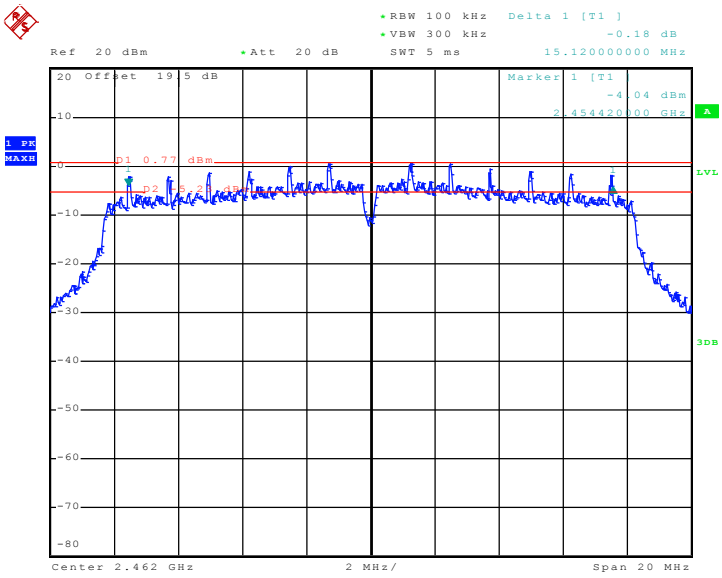
Mode 5 : 6 dB Bandwidth Plot on 802.11g Channel 06



Date: 29.OCT.2010 06:10:48

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

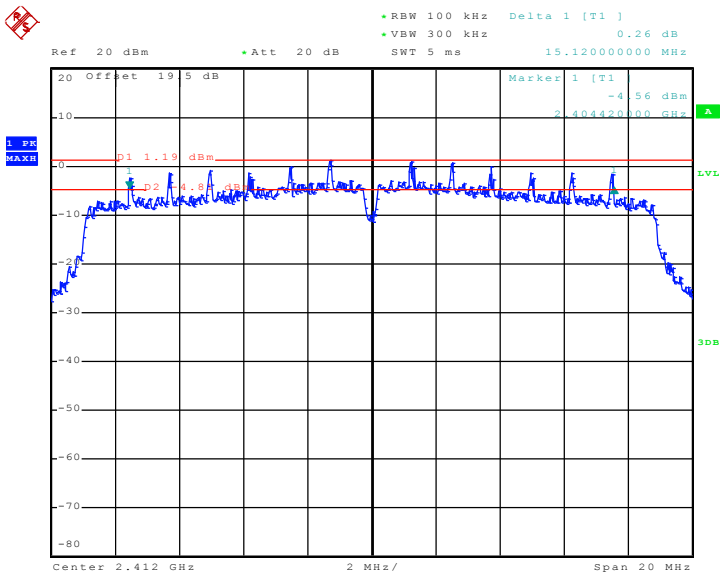


Date: 29.OCT.2010 06:23:16

Test Mode :	Mode 7, 8, 9	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

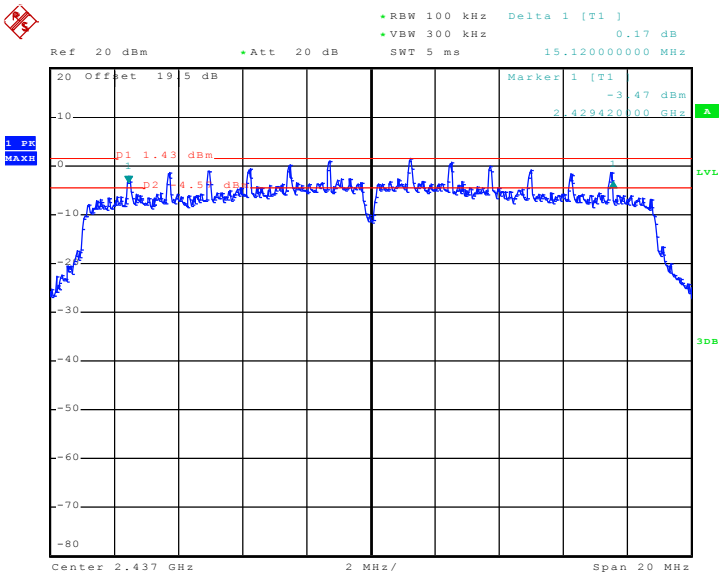
Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.12	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.10	0.5	Pass

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



Date: 29.OCT.2010 06:36:08

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



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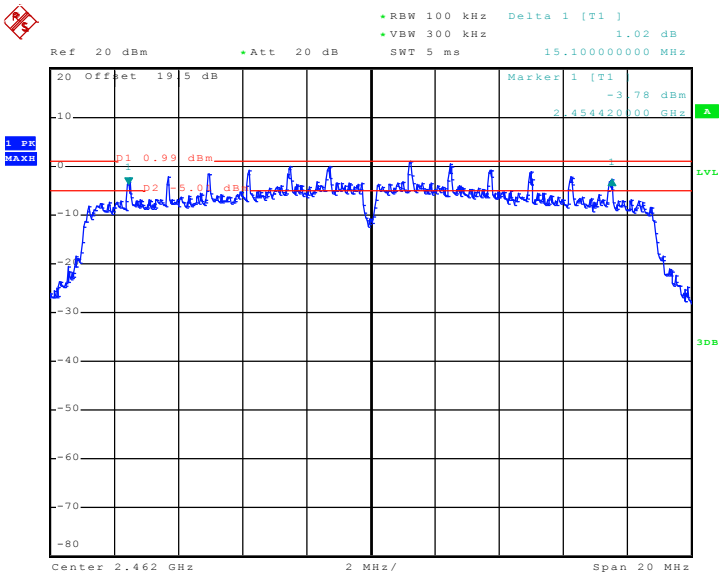
Mode 9 : 6 dB Bandwidth Plot on 802.11n(BW 20MHz) Channel 11



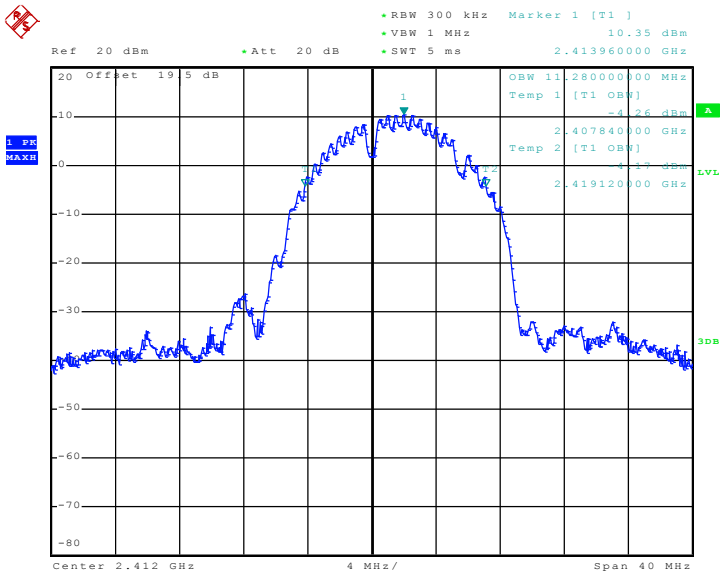
Date: 29.OCT.2010 07:02:39

3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1, 2, 3	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	11.28	Pass
06	2437	11.36	Pass
11	2462	11.28	Pass

Mode 1 : 99% Occupied Bandwidth Plot on 802.11b Channel 01



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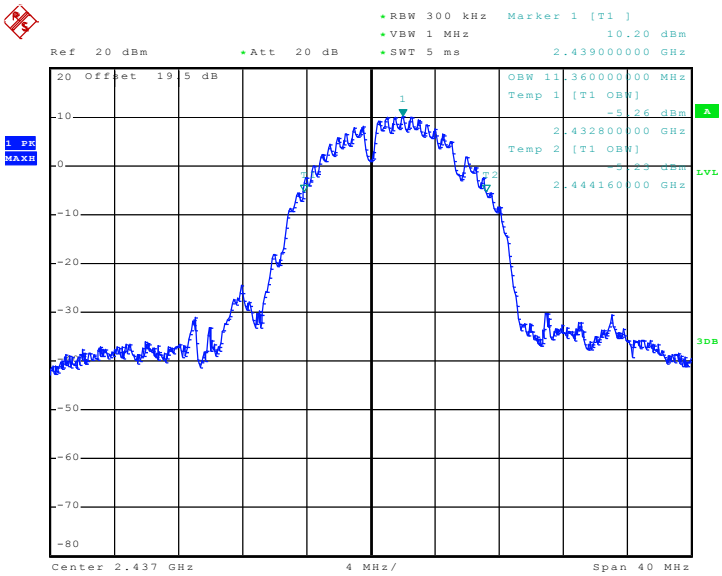
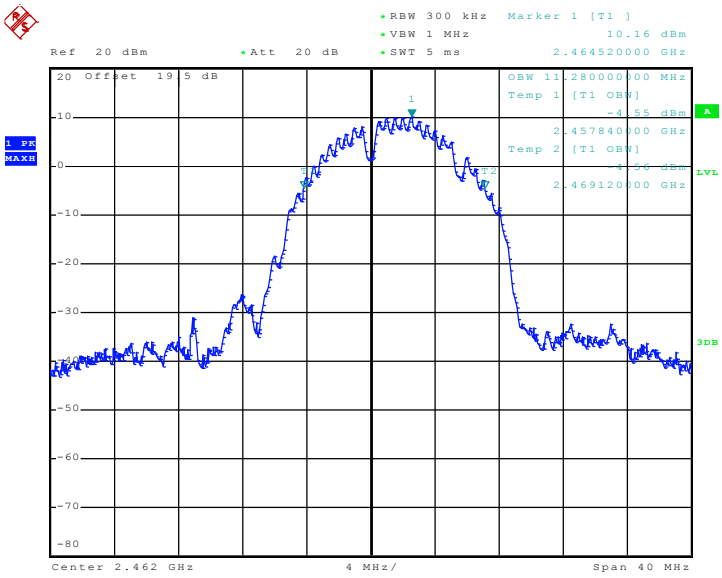
Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 29.OCT.2010 05:32:31

Mode 3 : 99% Occupied Bandwidth Plot on 802.11b Channel 11

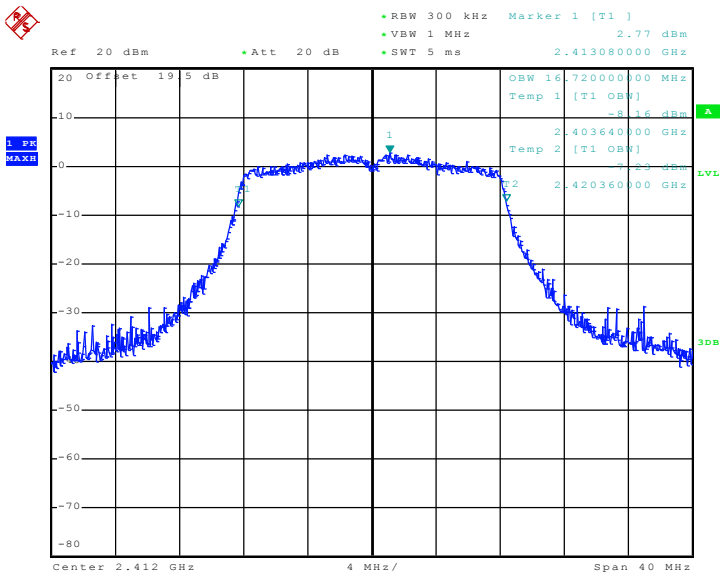


Date: 29.OCT.2010 05:47:20

Test Mode :	Mode 4, 5, 6	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	16.72	Pass
06	2437	16.80	Pass
11	2462	16.72	Pass

Mode 4 : 99% Occupied Bandwidth Plot on 802.11g Channel 01



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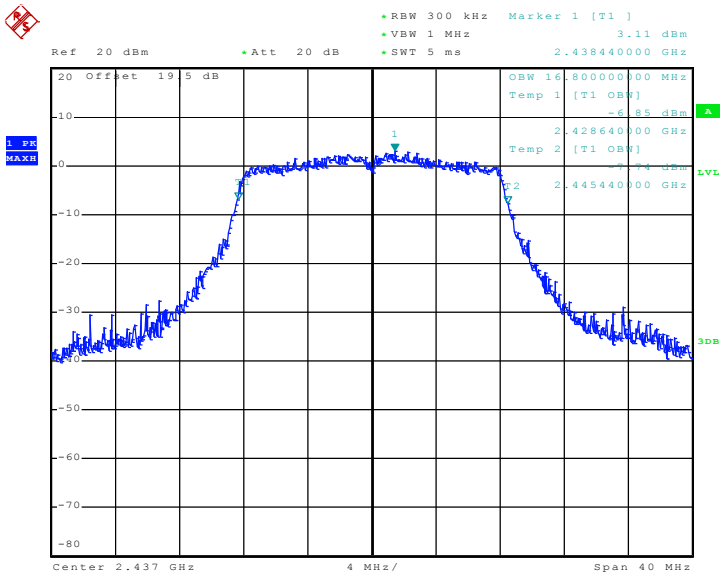
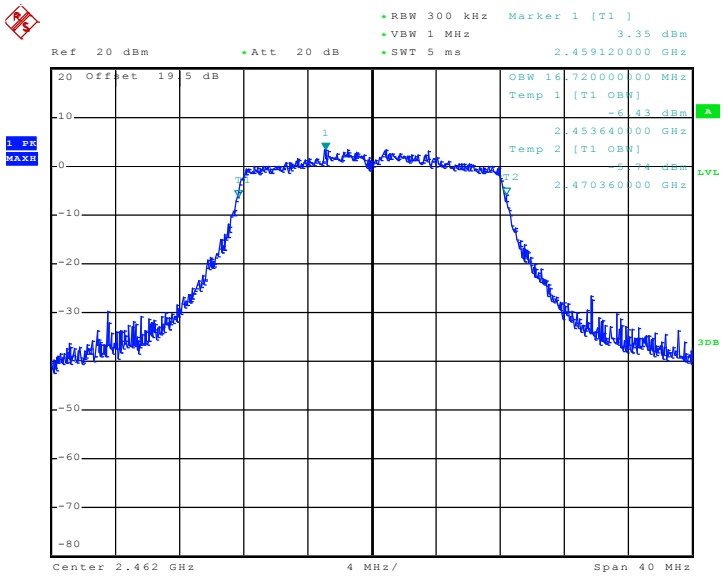
Mode 5 : 99% Occupied Bandwidth Plot on 802.11g Channel 06



Date: 29.OCT.2010 06:11:42

Mode 6 : 99% Occupied Bandwidth Plot on 802.11g Channel 11

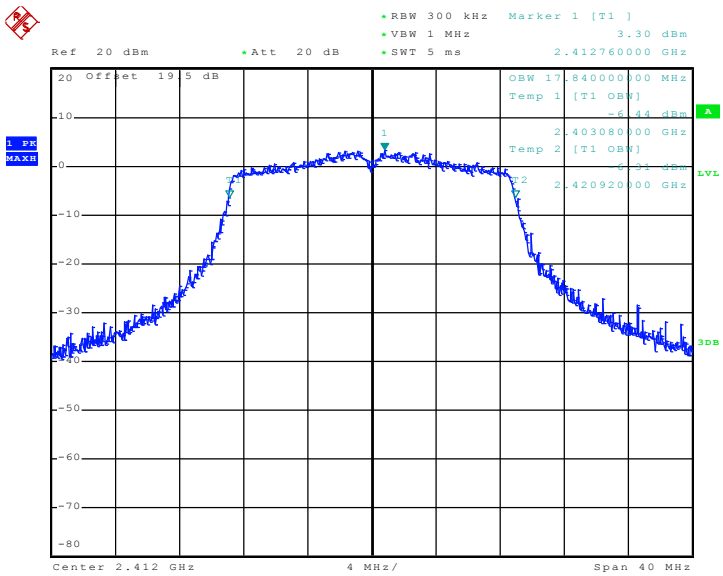


Date: 29.OCT.2010 06:24:23

Test Mode :	Mode 7, 8, 9	Temperature :	25~27℃
Test Engineer :	Alan Liu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	17.84	Pass
06	2437	17.88	Pass
11	2462	17.88	Pass

Mode 7 : 99% Occupied Bandwidth Plot on 802.11n(BW 20MHz) Channel 01



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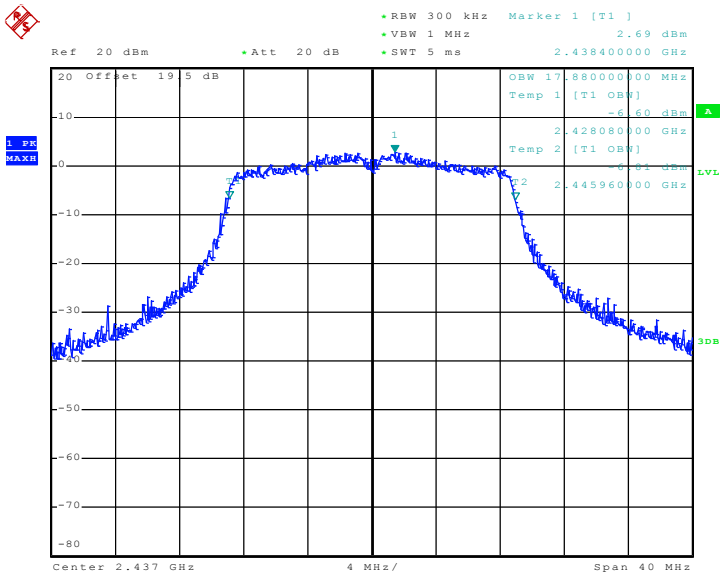
Mode 8 : 99% Occupied Bandwidth Plot on 802.11n(BW 20MHz) Channel 06



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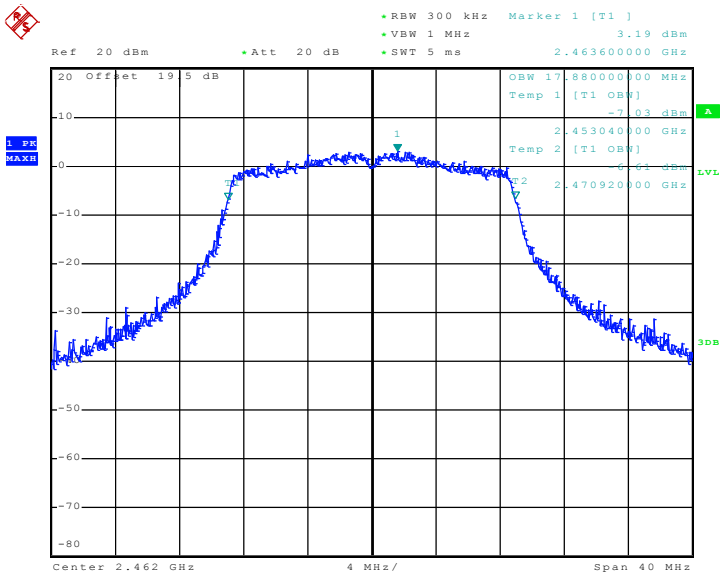
Mode 9 : 99% Occupied Bandwidth Plot on 802.11n(BW 20MHz) Channel 11



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3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

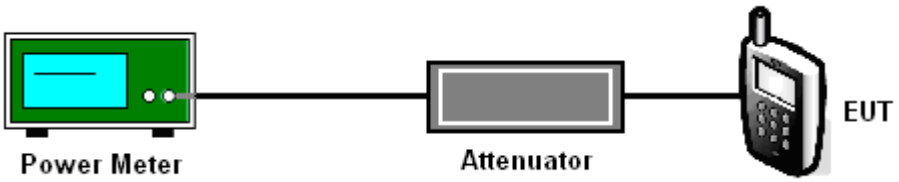
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the power meter by a low loss cable.
3. Measure the power by power meter.

3.2.4 Test Setup



3.2.5 Test Result of Output Power

Test Mode :	Mode 1, 2, 3	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.25	30	Pass
06	2437	20.58	30	Pass
11	2462	20.10	30	Pass

Test Mode :	Mode 4, 5, 6	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.09	30	Pass
06	2437	22.48	30	Pass
11	2462	22.42	30	Pass

Test Mode :	Mode 7, 8, 9	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.33	30	Pass
06	2437	23.03	30	Pass
11	2462	22.74	30	Pass

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

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

3.3.2 Measuring Instruments

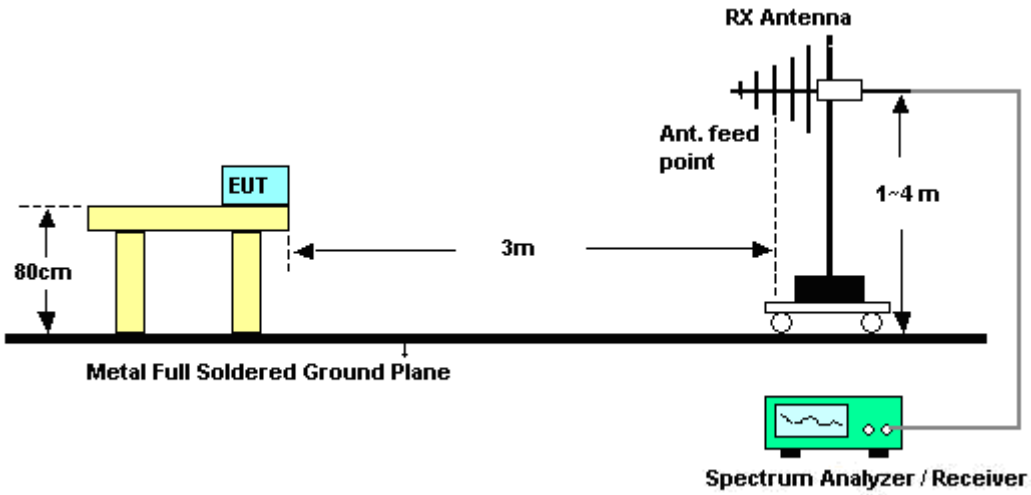
See list of measuring instruments of this test report.

3.3.3 Test Procedures

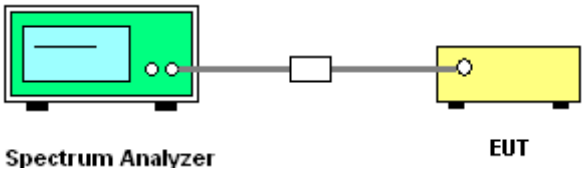
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized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

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	**Temperature :**	23~24℃
Test Band :	802.11b	**Relative Humidity :**	46~47%
Test Channel :	01	**Test Engineer :**	Kay Wu

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	55.16	-18.84	74	52.48	31.7	4.5	33.52	125	334	Peak
2389.99	43.57	-10.43	54	40.89	31.7	4.5	33.52	125	334	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	58.54	-15.46	74	55.86	31.7	4.5	33.52	100	10	Peak
2389.99	45.3	-8.7	54	42.62	31.7	4.5	33.52	100	10	Average

Test Mode :	Mode 3	**Temperature :**	23~24℃
Test Band :	802.11b	**Relative Humidity :**	46~47%
Test Channel :	11	**Test Engineer :**	Kay Wu

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	54.57	-19.43	74	51.77	31.78	4.59	33.57	156	310	Peak
2483.5	41.11	-12.89	54	38.31	31.78	4.59	33.57	156	310	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	55.33	-18.67	74	52.53	31.78	4.59	33.57	100	8	Peak
2483.66	43.18	-10.82	54	40.38	31.78	4.59	33.57	100	8	Average

Test Mode :	Mode 4	**Temperature :**	23~24℃
Test Band :	802.11g	**Relative Humidity :**	46~47%
Test Channel :	01	**Test Engineer :**	Kay Wu

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	63.95	-10.05	74	61.27	31.7	4.5	33.52	125	332	Peak
2389.99	44.18	-9.82	54	41.5	31.7	4.5	33.52	125	332	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	63.5	-10.5	74	60.82	31.7	4.5	33.52	100	356	Peak
2389.8	44.97	-9.03	54	42.29	31.7	4.5	33.52	100	356	Average

Test Mode :	Mode 6	**Temperature :**	23~24℃
Test Band :	802.11g	**Relative Humidity :**	46~47%
Test Channel :	11	**Test Engineer :**	Kay Wu

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	52.77	-21.23	74	49.97	31.78	4.59	33.57	124	7	Peak
2483.5	45.29	-8.71	54	42.49	31.78	4.59	33.57	124	7	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	63.72	-10.28	74	60.92	31.78	4.59	33.57	123	6	Peak
2483.66	45.49	-8.51	54	42.69	31.78	4.59	33.57	123	6	Average

Test Mode :	Mode 7	**Temperature :**	23~24℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	46~47%
Test Channel :	01	**Test Engineer :**	Kay Wu

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
2388.47	64.87	-9.13	74	62.78	31.7	4.47	34.08	100	346	Peak
2388.47	45.07	-8.93	54	42.98	31.7	4.47	34.08	100	346	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2490	44.55	-29.45	74	42.21	31.8	4.62	34.08	107	1	Peak
2490	33.19	-20.81	54	30.85	31.8	4.62	34.08	107	1	Average

Test Mode :	Mode 9	**Temperature :**	23~24℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	46~47%
Test Channel :	11	**Test Engineer :**	Kay Wu

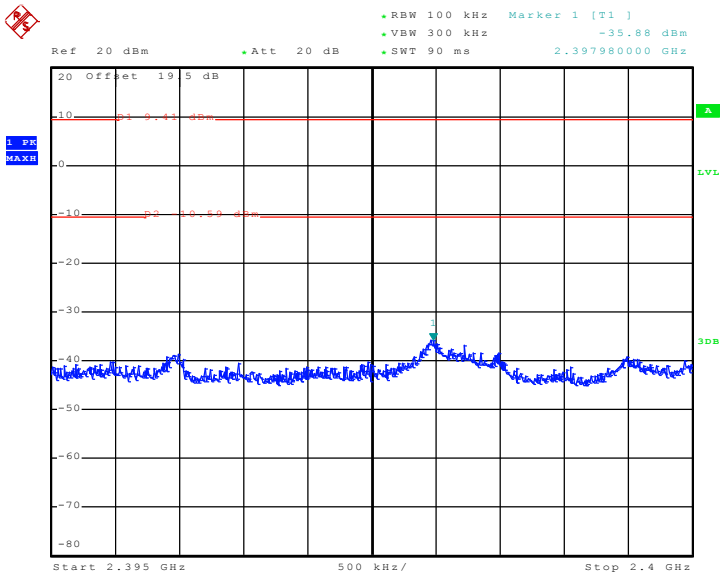
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	61.47	-12.53	74	59.18	31.78	4.59	34.08	100	348	Peak
2483.66	43.52	-10.48	54	41.23	31.78	4.59	34.08	100	348	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	65.56	-8.44	74	63.27	31.78	4.59	34.08	100	10	Peak
2483.66	46.46	-7.54	54	44.17	31.78	4.59	34.08	100	10	Average

3.3.6 Test Plots of Conducted Band Edges

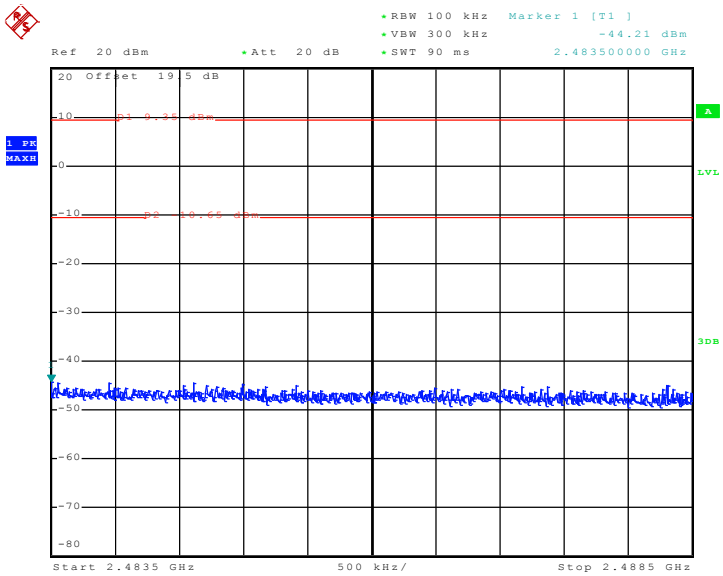
Test Mode :	Mode 1 and 3	**Temperature :**	25~27℃
Test Band :	802.11b	**Relative Humidity :**	40~43%
Test Channel :	01 and 11	**Test Engineer :**	Alan Liu

Low Band Edge Plot on 802.11b Channel 01



Date: 29.OCT.2010 05:13:10

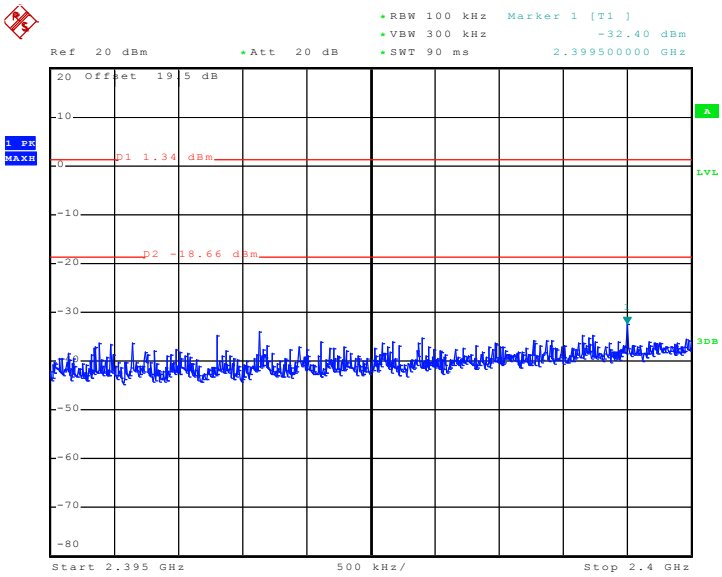
High Band Edge Plot on 802.11b Channel 11



Date: 29.OCT.2010 05:46:30

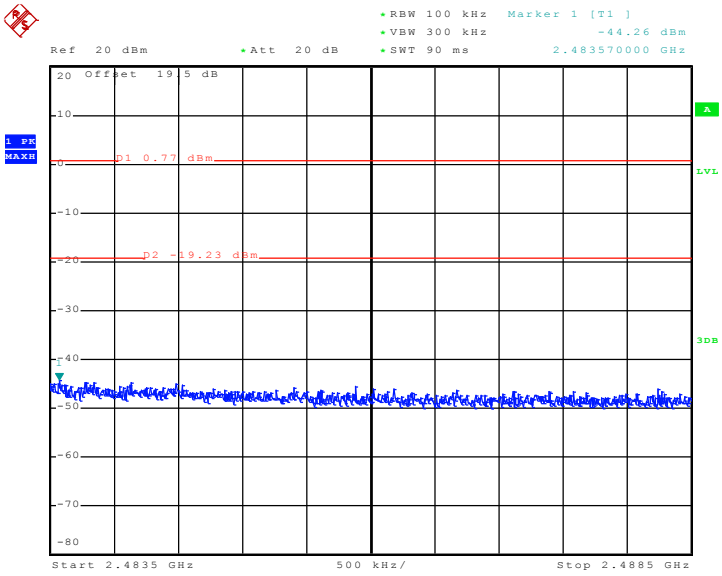
Test Mode :	Mode 4 and 6	**Temperature :**	25~27℃
Test Band :	802.11g	**Relative Humidity :**	40~43%
Test Channel :	01 and 11	**Test Engineer :**	Alan Liu

Low Band Edge Plot on 802.11g Channel 01



Date: 29.OCT.2010 05:59:04

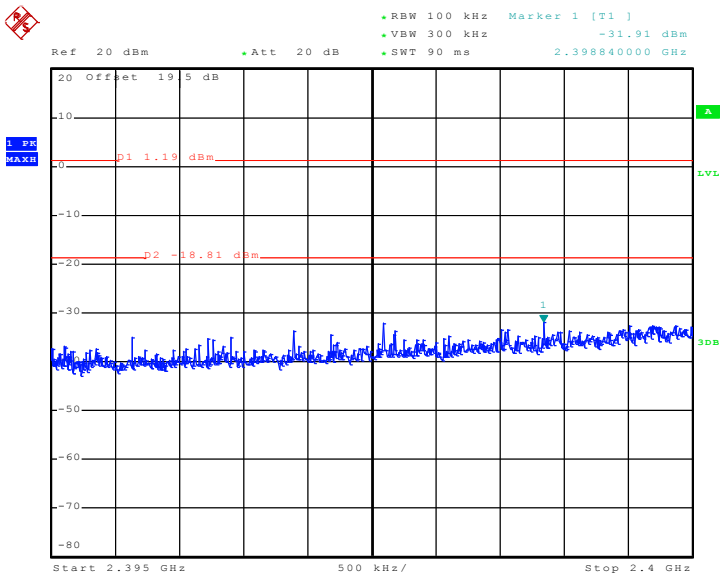
High Band Edge Plot on 802.11g Channel 11



Date: 29.OCT.2010 06:23:34

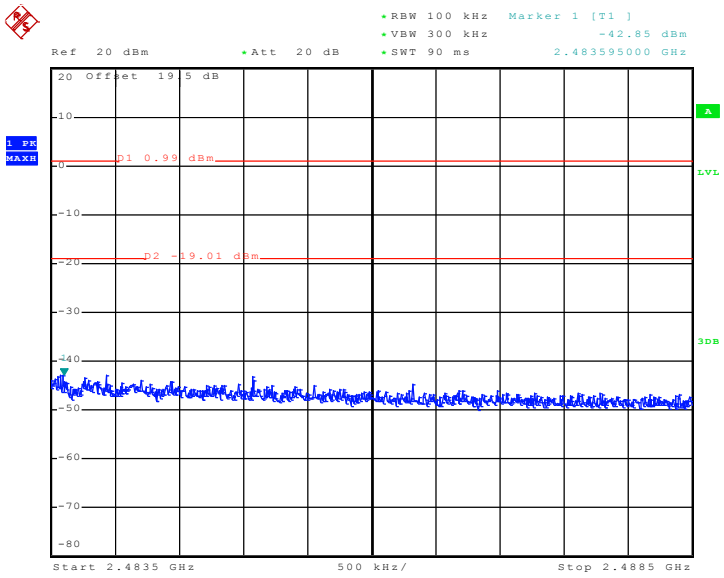
Test Mode :	Mode 7 and 9	**Temperature :**	25~27℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	40~43%
Test Channel :	01 and 11	**Test Engineer :**	Alan Liu

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



Date: 29.OCT.2010 06:36:26

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



Date: 29.OCT.2010 07:02:57

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band.

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

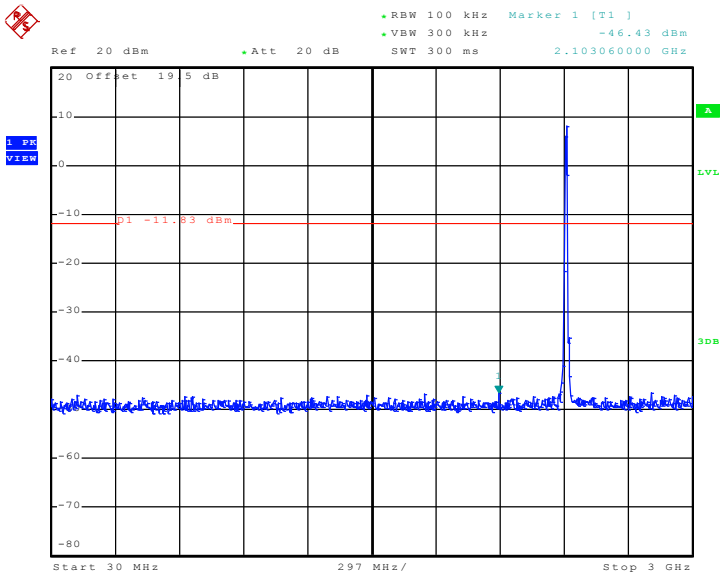
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set RBW = 100 kHz, Video bandwidth (VBW) ≥ RBW, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

3.4.4 Test Setup

3.4.5 Test Plots of Spurious Emission

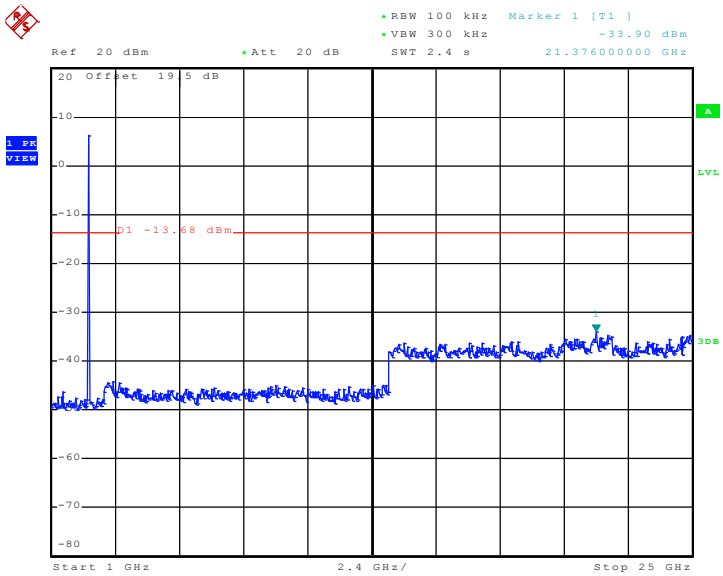
Test Mode :	Mode 1	**Temperature :**	25~27℃
Test Band :	802.11b	**Relative Humidity :**	40~43%
Test Channel :	01	**Test Engineer :**	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.OCT.2010 05:18:38

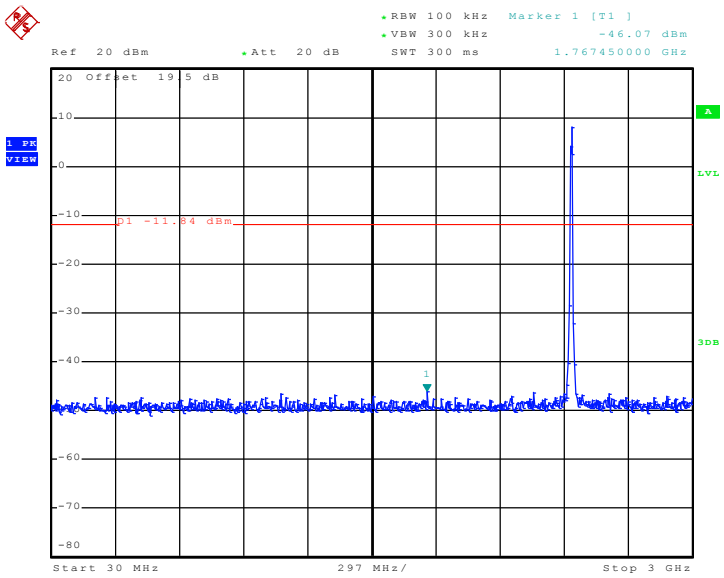
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 29.OCT.2010 05:18:54

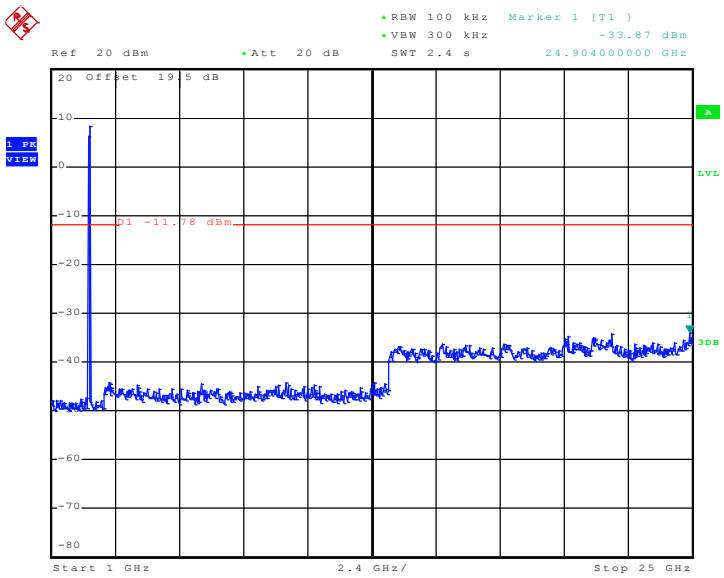
Test Mode :	Mode 2	**Temperature :**	25~27℃
Test Band :	802.11b	**Relative Humidity :**	40~43%
Test Channel :	06	**Test Engineer :**	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.OCT.2010 05:43:43

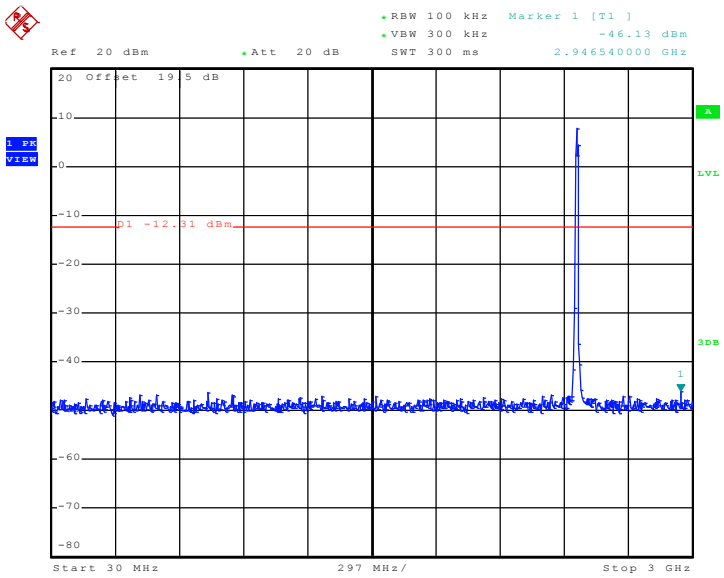
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 29.OCT.2010 05:44:00

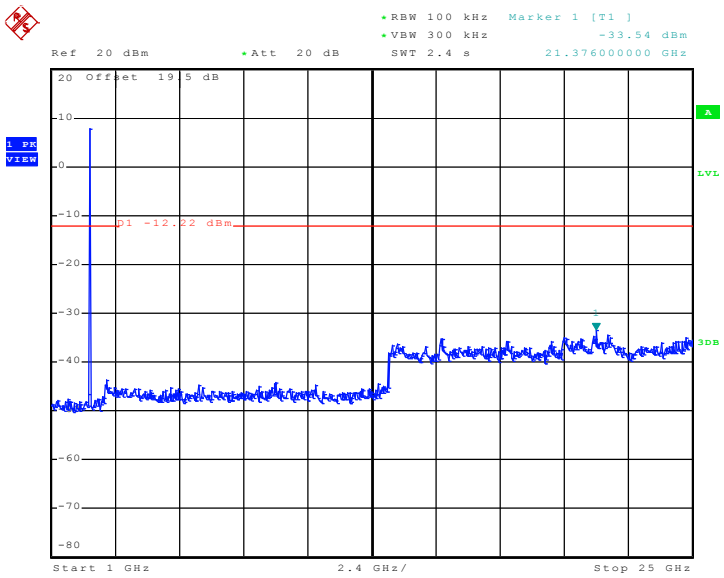
Test Mode :	Mode 3	**Temperature :**	25~27℃
Test Band :	802.11b	**Relative Humidity :**	40~43%
Test Channel :	11	**Test Engineer :**	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.OCT.2010 05:56:17

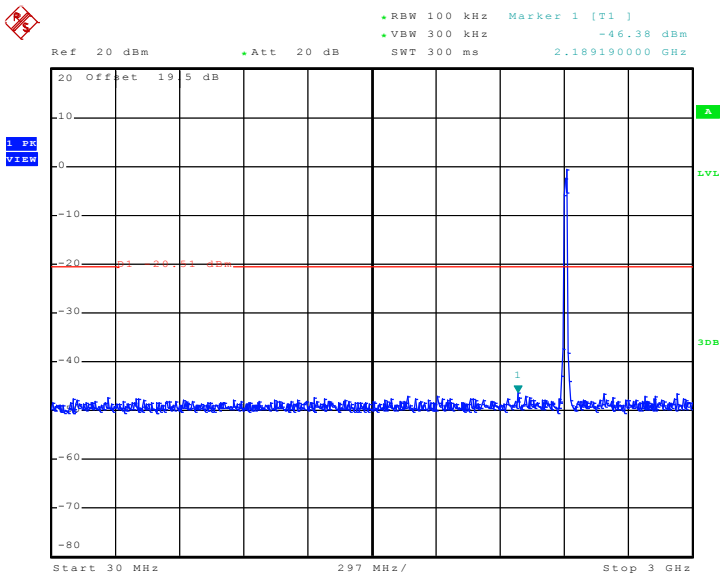
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 29.OCT.2010 05:56:33

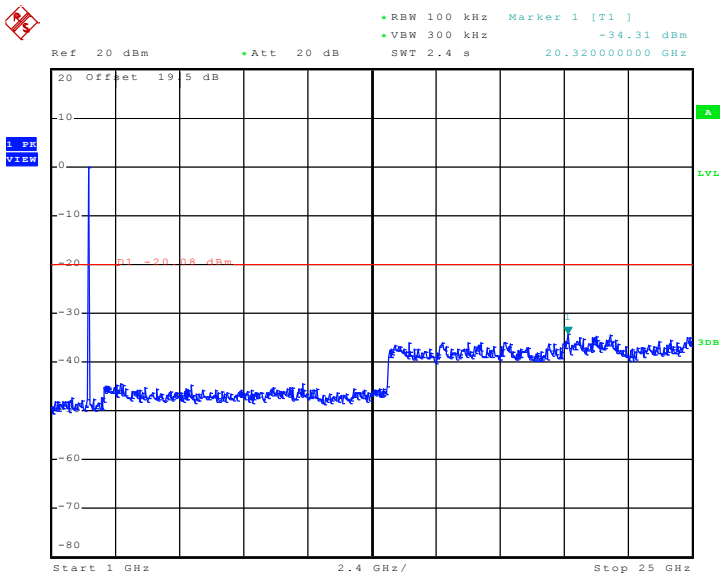
Test Mode :	Mode 4	**Temperature :**	25~27℃
Test Band :	802.11g	**Relative Humidity :**	40~43%
Test Channel :	01	**Test Engineer :**	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.OCT.2010 06:47:36

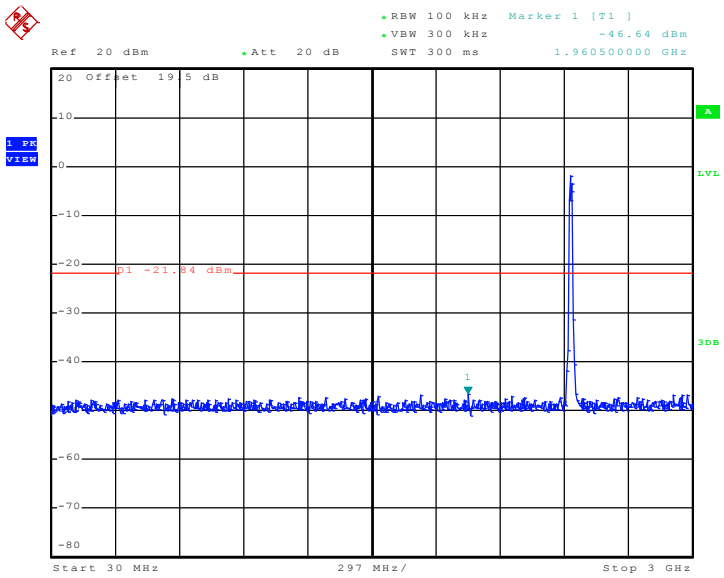
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 29.OCT.2010 06:09:09

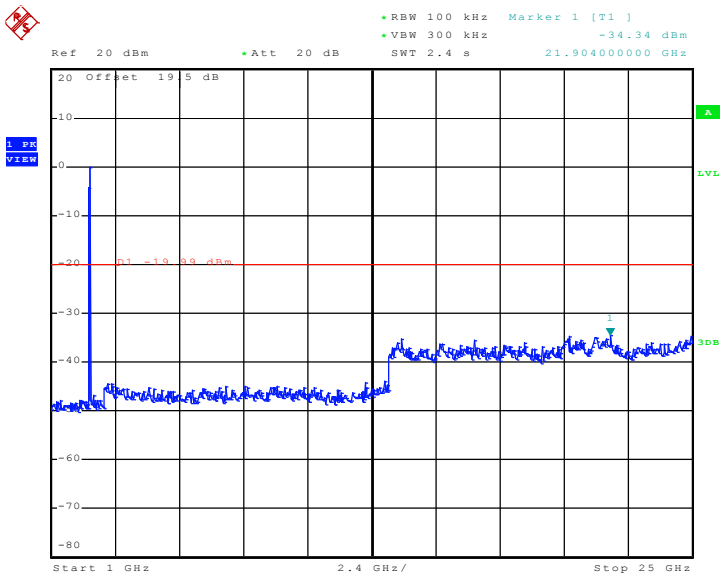
Test Mode :	Mode 5	**Temperature :**	25~27
Test Band :	802.11g	**Relative Humidity :**	40~43
Test Channel :	06	**Test Engineer :**	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.OCT.2010 06:20:46

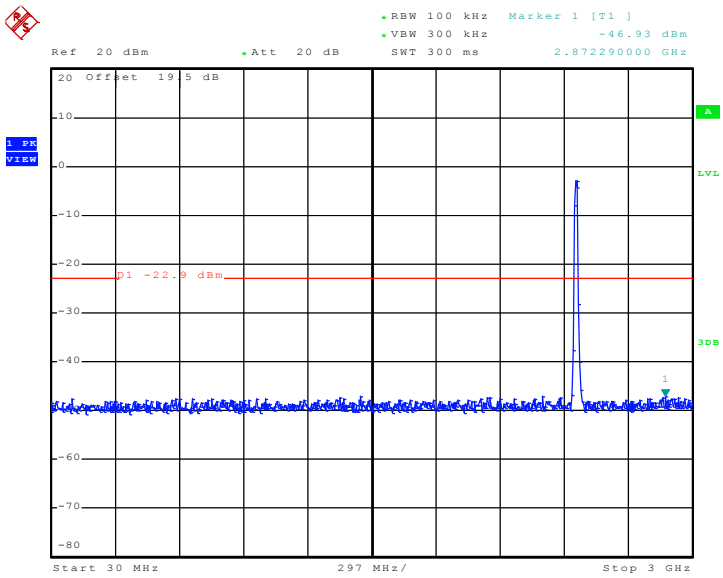
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 29.OCT.2010 06:21:02

Test Mode :	Mode 6	**Temperature :**	25~27℃
Test Band :	802.11g	**Relative Humidity :**	40~43%
Test Channel :	11	**Test Engineer :**	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



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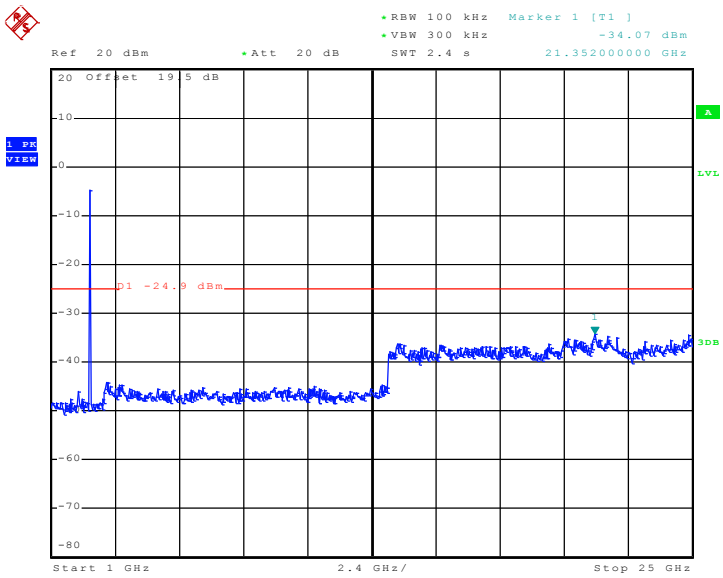
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



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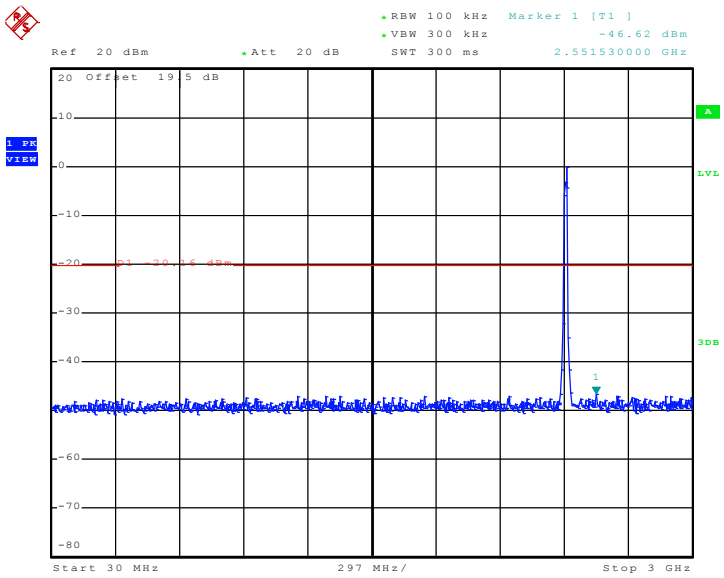
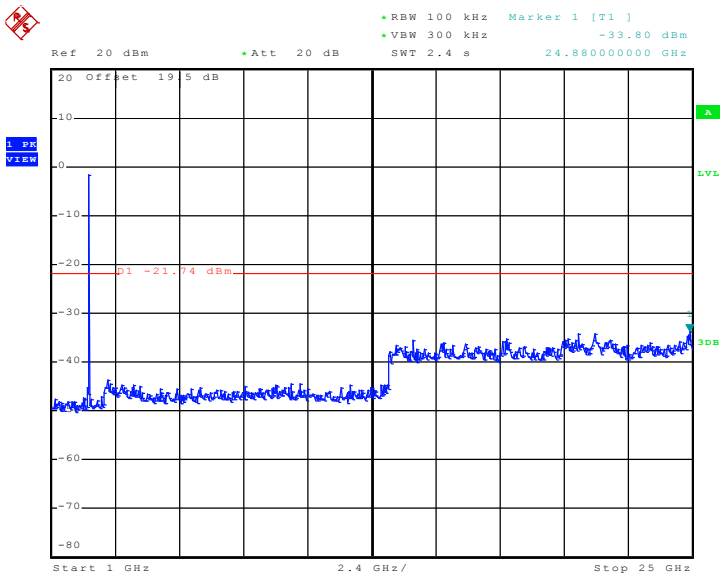
Test Mode :	Mode 7	**Temperature :**	25~27℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	40~43%
Test Channel :	01	**Test Engineer :**	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.OCT.2010 06:46:28

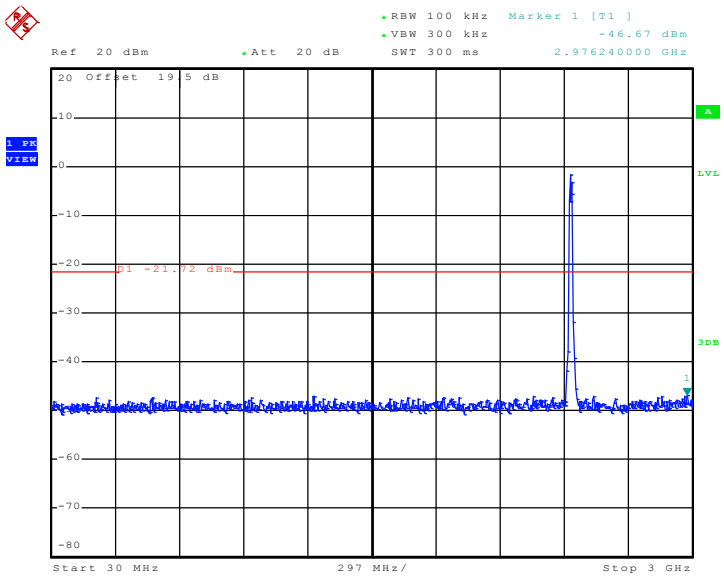
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 29.OCT.2010 06:46:44

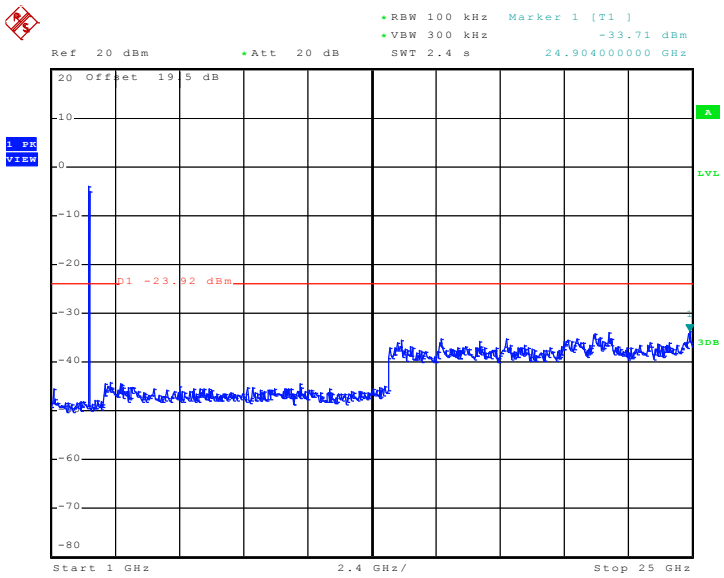
Test Mode :	Mode 8	**Temperature :**	25~27℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	40~43%
Test Channel :	06	**Test Engineer :**	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.OCT.2010 07:00:27

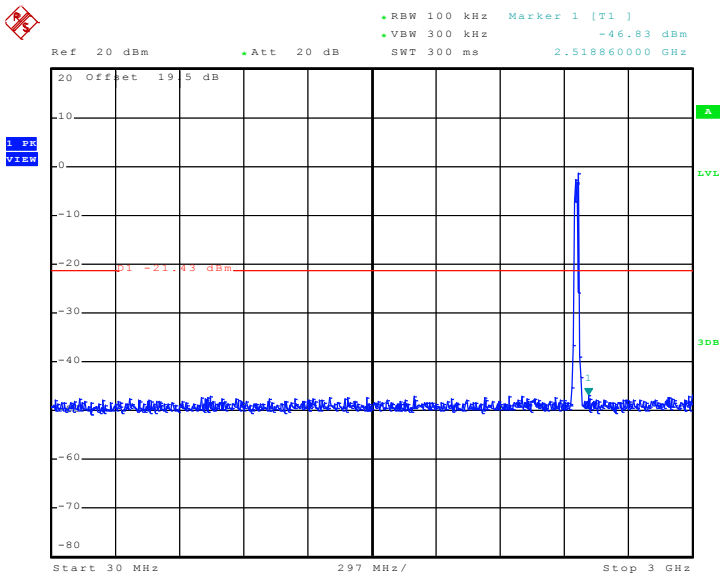
Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 29.OCT.2010 07:00:44

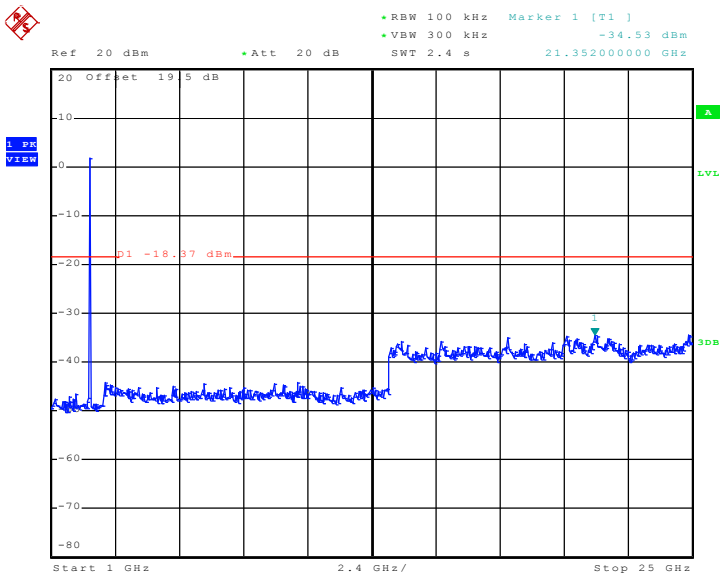
Test Mode :	Mode 9	**Temperature :**	25~27℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	40~43%
Test Channel :	11	**Test Engineer :**	Alan Liu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 29.OCT.2010 07:12:45

Conducted Spurious Emission Plot between 1 GHz ~ 25 GHz



Date: 29.OCT.2010 07:13:01

3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

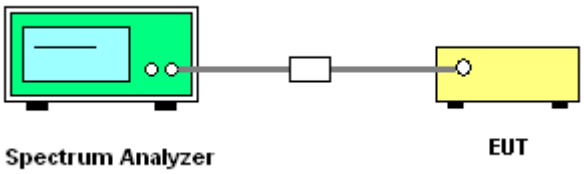
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup

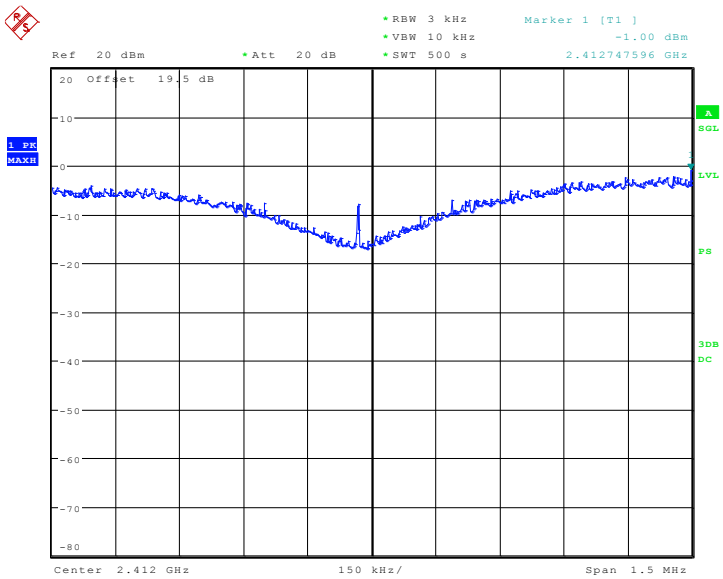


3.5.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

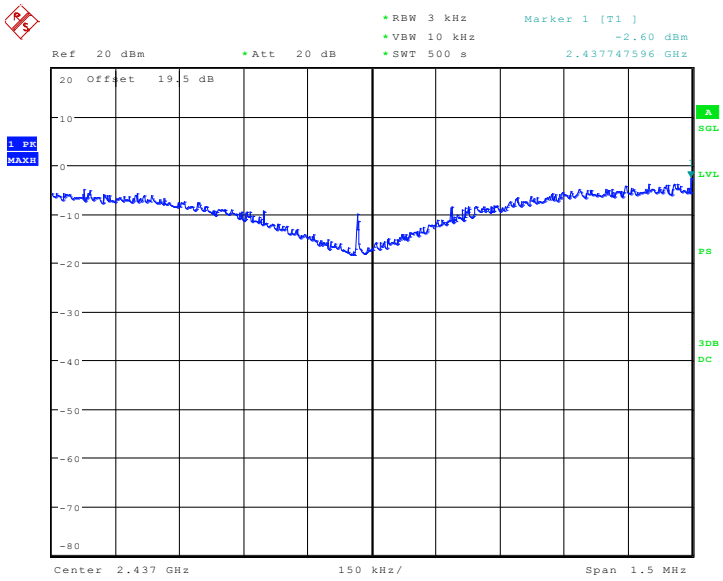
Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-1.00	8	Pass
06	2437	-2.60	8	Pass
11	2462	-2.62	8	Pass

Mode 1 : PSD Plot on 802.11b Channel 01



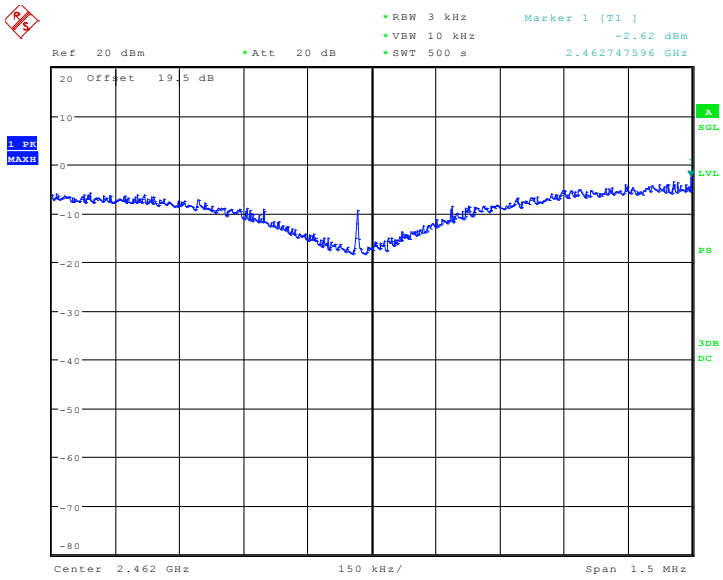
Date: 8.NOV.2010 03:08:42

Mode 2 : PSD Plot on 802.11b Channel 06



Date: 8.NOV.2010 03:17:54

Mode 3 : PSD Plot on 802.11b Channel 11

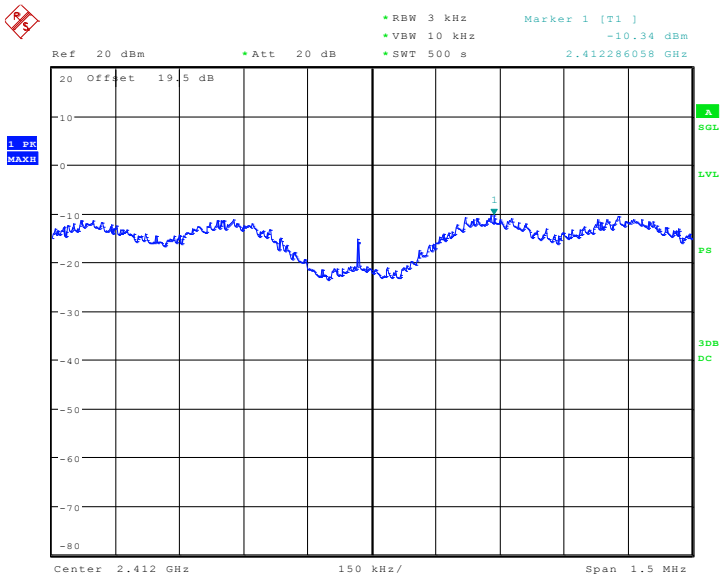


Date: 8.NOV.2010 03:26:33

Test Mode :	Mode 4, 5, 6	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

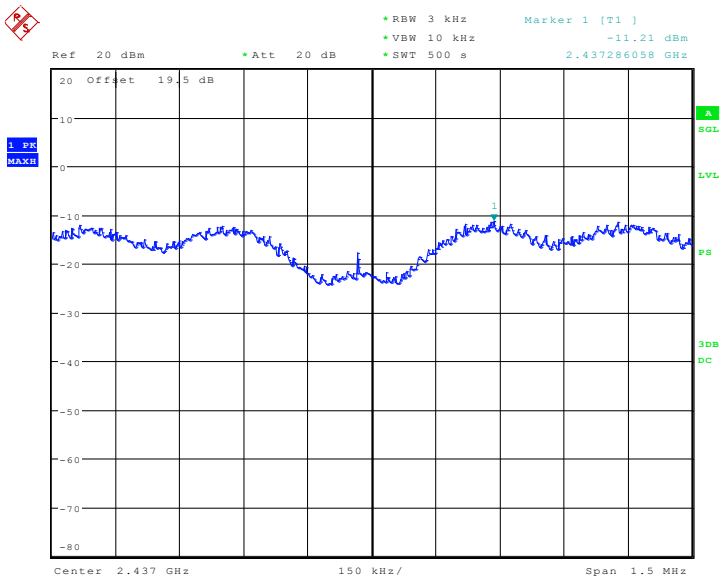
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.34	8	Pass
06	2437	-11.21	8	Pass
11	2462	-11.52	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01



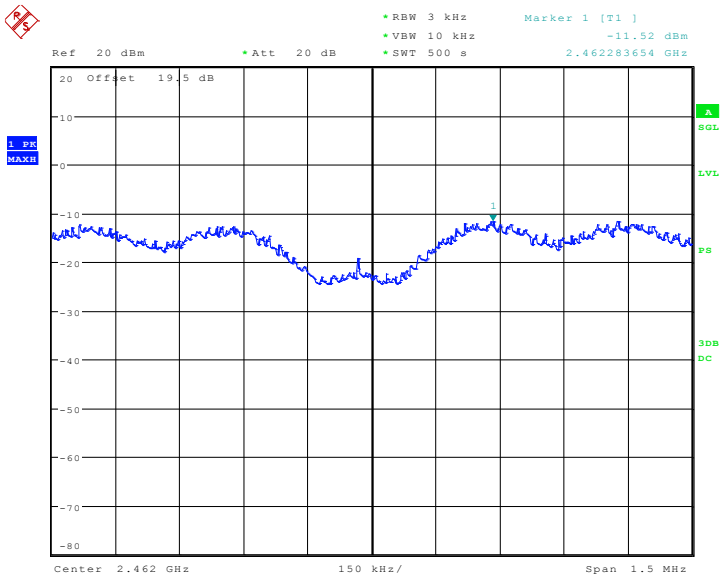
Date: 8.NOV.2010 04:01:56

Mode 5 : PSD Plot on 802.11g Channel 06



Date: 8.NOV.2010 04:15:40

Mode 6 : PSD Plot on 802.11g Channel 11

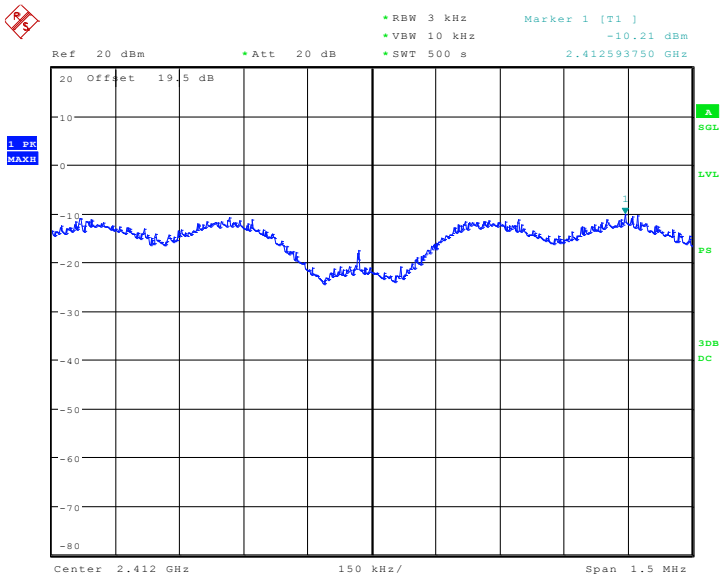


Date: 8.NOV.2010 04:28:21

Test Mode :	Mode 7, 8, 9	**Temperature :**	25~27℃
Test Engineer :	Alan Liu	**Relative Humidity :**	40~43%

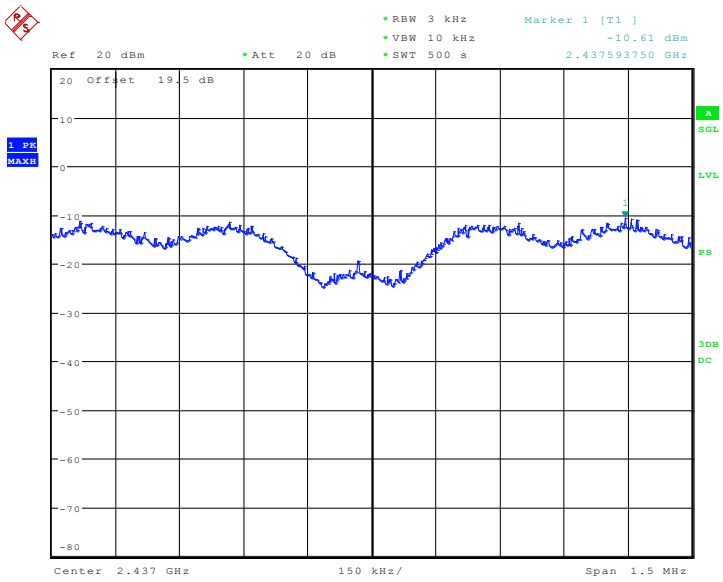
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-10.21	8	Pass
06	2437	-10.61	8	Pass
11	2462	-10.76	8	Pass

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



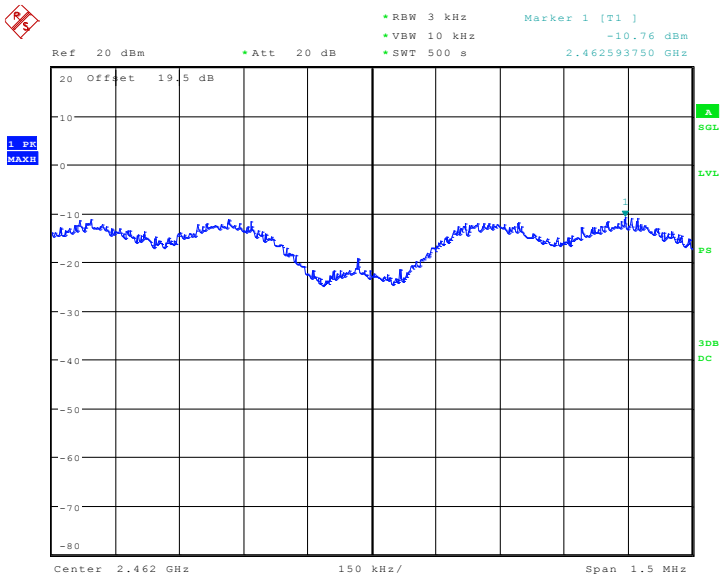
Date: 8.NOV.2010 04:59:04

Mode 8 : PSD Plot on802.11n (BW 20MHz) Channel 06



Date: 8.NOV.2010 04:48:16

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



Date: 8.NOV.2010 04:39:34

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.

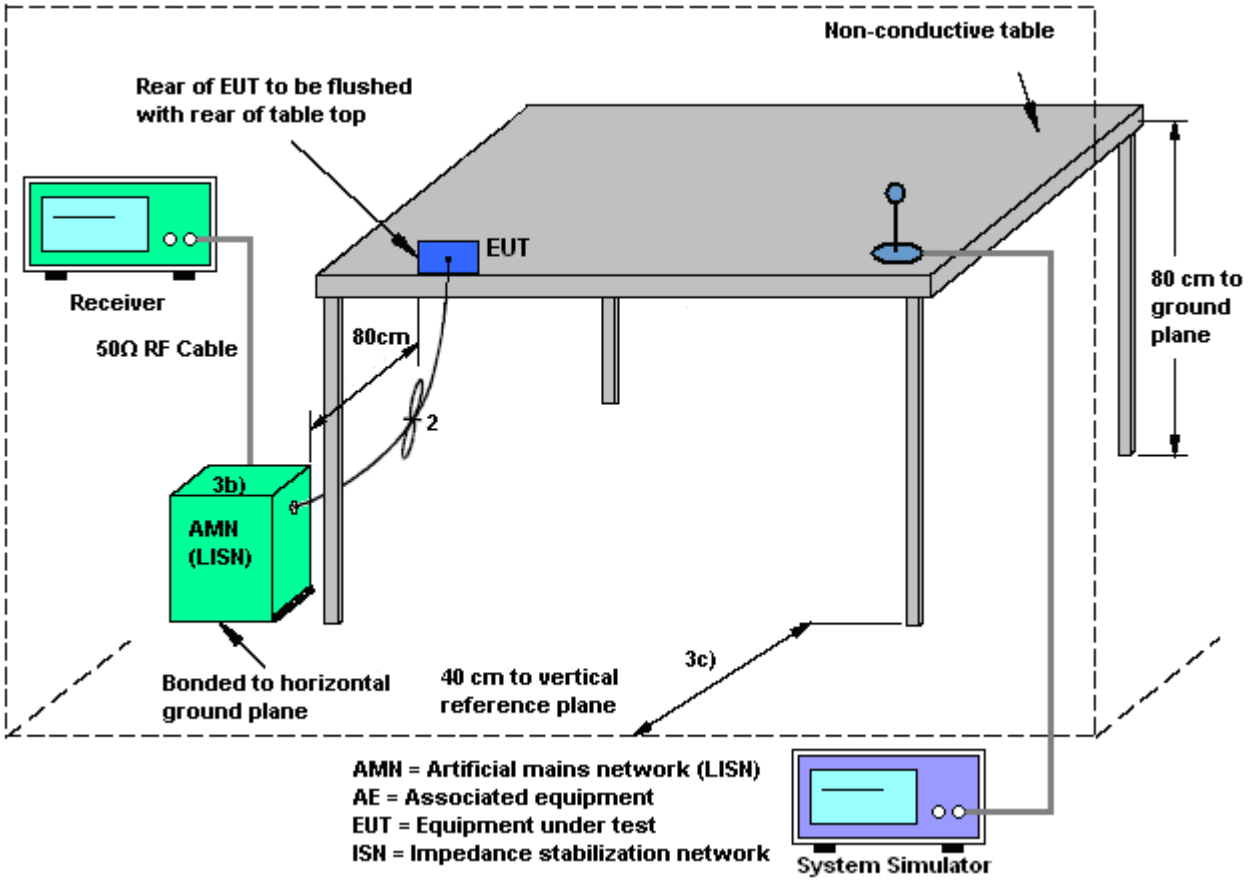
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

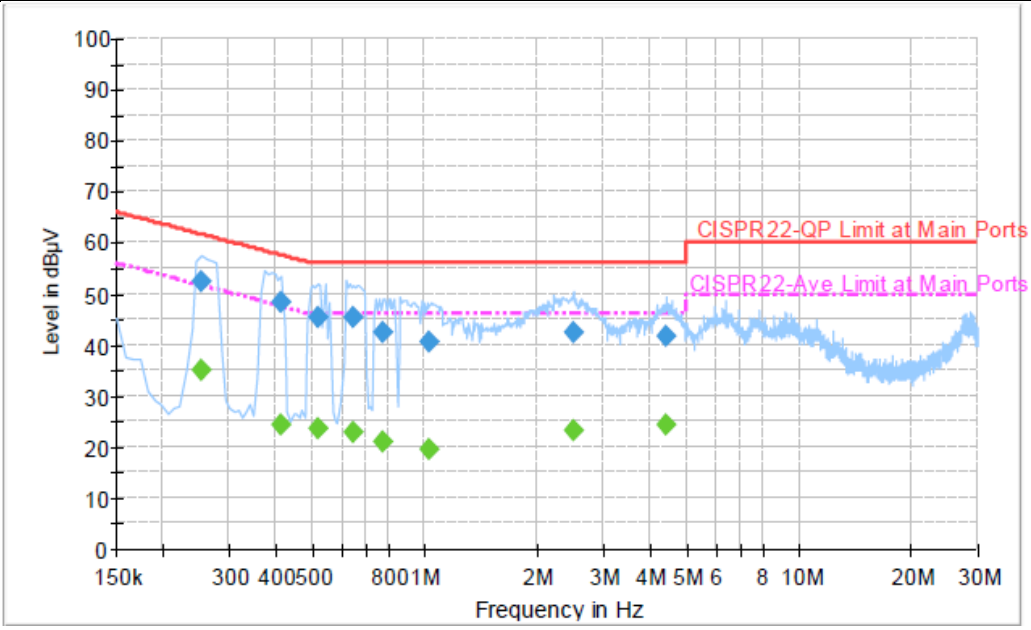
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 2	**Temperature :**	20~22℃
Test Engineer :	Novic Chiang	**Relative Humidity :**	42~44%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WCDMA850 Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Battery 2 + USB Cable 2 (Charging from Adapter 2)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



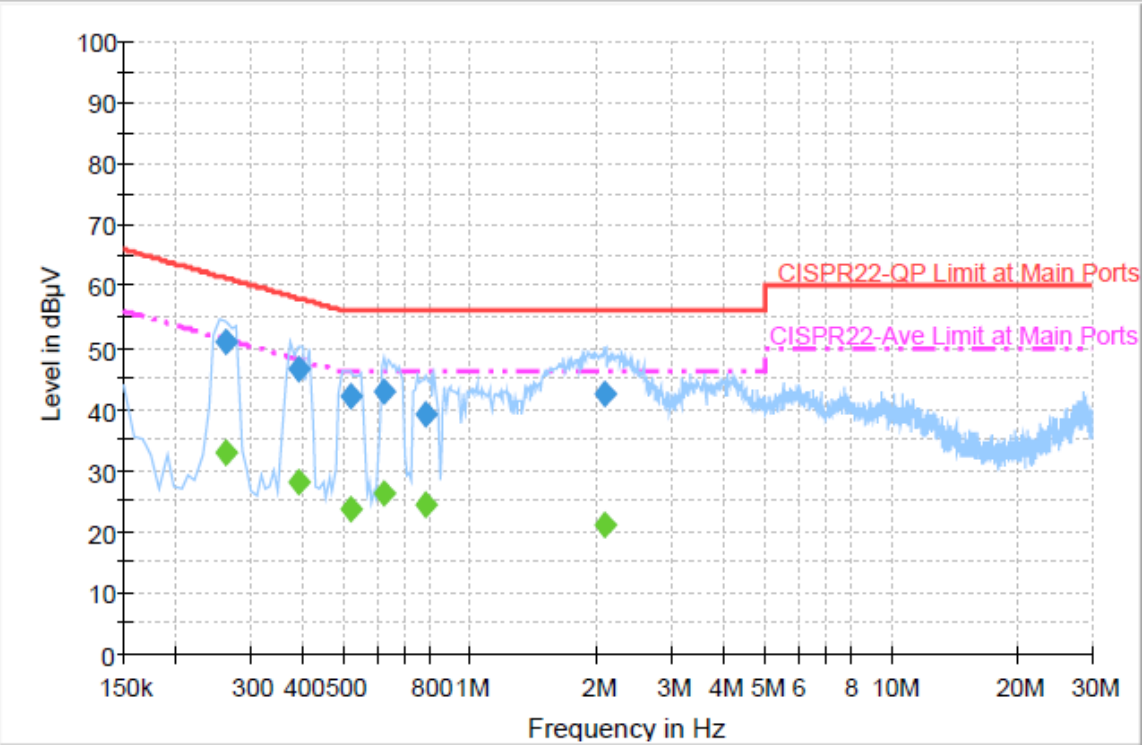
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.254000	52.5	Off	L1	19.3	9.1	61.6
0.414000	48.3	Off	L1	19.4	9.3	57.6
0.518000	45.3	Off	L1	19.3	10.7	56.0
0.646000	45.3	Off	L1	19.3	10.7	56.0
0.774000	42.4	Off	L1	19.4	13.6	56.0
1.030000	40.4	Off	L1	19.4	15.6	56.0
2.494000	42.3	Off	L1	19.4	13.7	56.0
4.422000	41.6	Off	L1	19.5	14.4	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.254000	34.9	Off	L1	19.3	16.7	51.6
0.414000	24.3	Off	L1	19.4	23.3	47.6
0.518000	23.7	Off	L1	19.3	22.3	46.0
0.646000	23.1	Off	L1	19.3	22.9	46.0
0.774000	20.9	Off	L1	19.4	25.1	46.0
1.030000	19.7	Off	L1	19.4	26.3	46.0
2.494000	23.1	Off	L1	19.4	22.9	46.0
4.422000	24.2	Off	L1	19.5	21.8	46.0

Test Mode :	Mode 2	**Temperature :**	20~22℃
Test Engineer :	Novic Chiang	**Relative Humidity :**	42~44%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	WCDMA850 Idle + Bluetooth Link + WLAN Link + GPS Rx + Earphone 2 + Battery 2 + USB Cable 2 (Charging from Adapter 2)		
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)
0.262000	50.8	Off	N	19.4	10.6	61.4
0.390000	46.4	Off	N	19.4	11.7	58.1
0.518000	42.0	Off	N	19.3	14.0	56.0
0.622000	42.7	Off	N	19.3	13.3	56.0
0.782000	39.3	Off	N	19.4	16.7	56.0
2.078000	42.5	Off	N	19.5	13.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.262000	33.0	Off	N	19.4	18.4	51.4
0.390000	27.9	Off	N	19.4	20.2	48.1
0.518000	23.7	Off	N	19.3	22.3	46.0
0.622000	26.0	Off	N	19.3	20.0	46.0
0.782000	24.4	Off	N	19.4	21.6	46.0
2.078000	21.0	Off	N	19.5	25.0	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

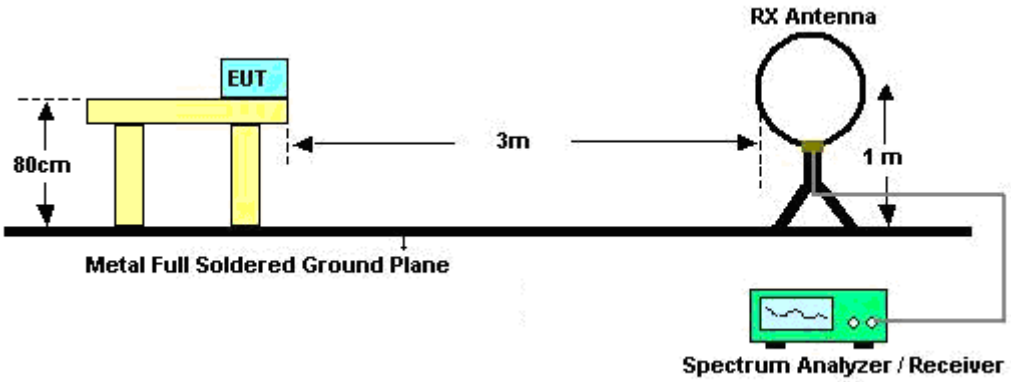
See list of measuring instruments of this test report.

3.7.3 Test Procedures

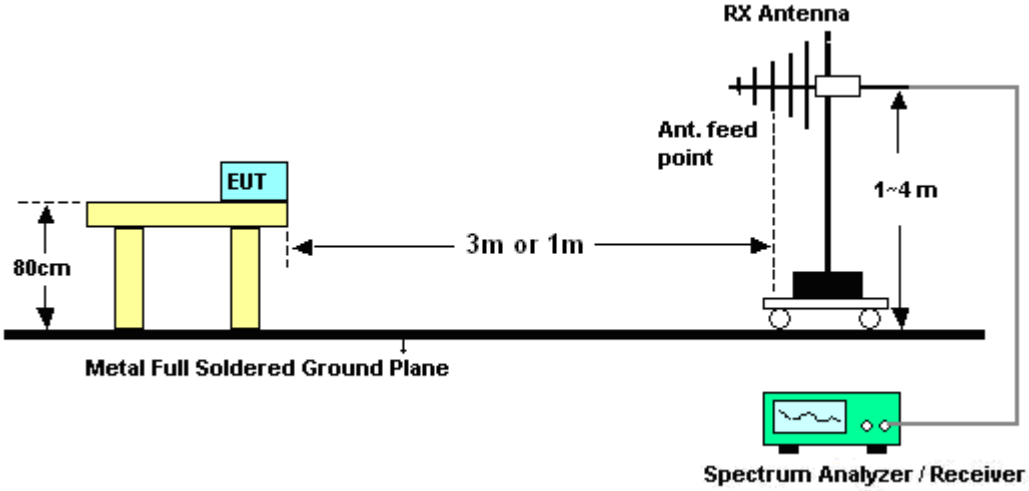
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
   (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto;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

3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	Kay Wu	Temperature :	23~24℃
		Relative Humidity :	46~47%

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

Note:

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

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

Test Mode :	Mode 1	**Temperature :**	23~24℃
Test Channel :	01	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
85.35	21.73	-18.27	40	44.01	8.43	0.84	31.55	-	-	Peak
130.98	23.97	-19.53	43.5	42.13	12.29	1.07	31.52	-	-	Peak
174.45	23.95	-19.55	43.5	44.8	9.45	1.23	31.53	-	-	Peak
388.2	27.74	-18.26	46	41.1	16.08	1.77	31.21	-	-	Peak
466.6	32.82	-13.18	46	44.53	17.5	1.92	31.13	100	22	Peak
547.1	26.91	-19.09	46	36.49	19.23	2.15	30.96	-	-	Peak
2389.99	43.57	-10.43	54	40.89	31.7	4.5	33.52	125	334	Average
2389.99	55.16	-18.84	74	52.48	31.7	4.5	33.52	125	334	Peak
2412	99.28	-	-	96.6	31.71	4.5	33.53	125	334	Average
2412	103.75	-	-	101.07	31.71	4.5	33.53	125	334	Peak
2488	36.19	-17.81	54	33.37	31.8	4.59	33.57	125	334	Average
2488	48.75	-25.25	74	45.93	31.8	4.59	33.57	125	334	Peak

Test Mode :	Mode 1	**Temperature :**	23~24℃
Test Channel :	01	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
39.45	29.43	-10.57	40	47.78	12.58	0.58	31.51	100	55	Peak
84	26.2	-13.8	40	48.69	8.22	0.84	31.55	-	-	Peak
129.9	27.27	-16.23	43.5	45.34	12.38	1.07	31.52	-	-	Peak
382.6	23.16	-22.84	46	36.73	15.88	1.77	31.22	-	-	Peak
465.9	27.92	-18.08	46	39.66	17.47	1.92	31.13	-	-	Peak
547.8	29.05	-16.95	46	38.61	19.25	2.15	30.96	-	-	Peak
2389.99	45.3	-8.7	54	42.62	31.7	4.5	33.52	100	10	Average
2389.99	58.54	-15.46	74	55.86	31.7	4.5	33.52	100	10	Peak
2412	103.05	-	-	100.37	31.71	4.5	33.53	100	10	Average
2412	107.05	-	-	104.37	31.71	4.5	33.53	100	10	Peak
2484	35.4	-18.6	54	32.6	31.78	4.59	33.57	100	10	Average
2484	48.55	-25.45	74	45.75	31.78	4.59	33.57	100	10	Peak

Test Mode :	Mode 2	**Temperature :**	23~24℃
Test Channel :	06	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
86.7	21.01	-18.99	40	43.07	8.65	0.84	31.55	-	-	Peak
126.93	24.75	-18.75	43.5	42.75	12.45	1.07	31.52	-	-	Peak
172.83	24.16	-19.34	43.5	44.95	9.52	1.23	31.54	-	-	Peak
380.5	27.13	-18.87	46	40.78	15.81	1.77	31.23	-	-	Peak
466.6	32.77	-13.23	46	44.48	17.5	1.92	31.13	100	211	Peak
559	27.35	-18.65	46	36.84	19.3	2.15	30.94	-	-	Peak
2358	35.04	-18.96	54	32.45	31.66	4.44	33.51	125	338	Average
2358	48.8	-25.2	74	46.21	31.66	4.44	33.51	125	338	Peak
2437	99.74	-	-	97.01	31.75	4.53	33.55	125	338	Average
2437	103.75	-	-	101.02	31.75	4.53	33.55	125	338	Peak
2490	35.32	-18.68	54	32.47	31.8	4.62	33.57	125	338	Average
2490	48.18	-25.82	74	45.33	31.8	4.62	33.57	125	338	Peak

Test Mode :	Mode 2	**Temperature :**	23~24℃
Test Channel :	06	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**Polarization :**	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.86	31.06	-8.94	40	46.47	15.53	0.58	31.52	-	-	Peak
84	25.61	-14.39	40	48.1	8.22	0.84	31.55	-	-	Peak
131.52	27.08	-16.42	43.5	45.24	12.29	1.07	31.52	100	115	Peak
381.9	22.05	-23.95	46	35.66	15.85	1.77	31.23	-	-	Peak
465.9	29.06	-16.94	46	40.8	17.47	1.92	31.13	-	-	Peak
547.1	27.46	-18.54	46	37.04	19.23	2.15	30.96	-	-	Peak
2390	36.46	-17.54	54	33.78	31.7	4.5	33.52	100	10	Average
2390	49.08	-24.92	74	46.4	31.7	4.5	33.52	100	10	Peak
2437	103.77	-	-	101.04	31.75	4.53	33.55	100	10	Average
2437	107.27	-	-	104.54	31.75	4.53	33.55	100	10	Peak
2486	37.78	-16.22	54	34.98	31.78	4.59	33.57	100	10	Average
2486	50.05	-23.95	74	47.25	31.78	4.59	33.57	100	10	Peak

Test Mode :	Mode 3	**Temperature :**	23~24℃
Test Channel :	11	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
83.19	21.33	-18.67	40	44.04	8	0.84	31.55	-	-	Peak
130.17	25.31	-18.19	43.5	43.38	12.38	1.07	31.52	-	-	Peak
174.18	23.17	-20.33	43.5	44.02	9.45	1.23	31.53	-	-	Peak
383.3	28.42	-17.58	46	41.99	15.88	1.77	31.22	-	-	Peak
468	32.72	-13.28	46	44.33	17.53	1.98	31.12	100	55	Peak
544.3	26.82	-19.18	46	36.46	19.18	2.15	30.97	-	-	Peak
2388	35.35	-18.65	54	32.7	31.7	4.47	33.52	156	310	Average
2388	48.03	-25.97	74	45.38	31.7	4.47	33.52	156	310	Peak
2462	99.04	-	-	96.27	31.77	4.56	33.56	156	310	Average
2462	103.01	-	-	100.24	31.77	4.56	33.56	156	310	Peak
2483.5	41.11	-12.89	54	38.31	31.78	4.59	33.57	156	310	Average
2483.5	54.57	-19.43	74	51.77	31.78	4.59	33.57	156	310	Peak

Test Mode :	Mode 3	**Temperature :**	23~24℃
Test Channel :	11	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**Polarization :**	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.86	30.34	-9.66	40	45.75	15.53	0.58	31.52	100	98	Peak
82.65	24.98	-15.02	40	47.9	7.79	0.84	31.55	-	-	Peak
130.44	27.65	-15.85	43.5	45.72	12.38	1.07	31.52	-	-	Peak
381.9	22.75	-23.25	46	36.36	15.85	1.77	31.23	-	-	Peak
463.8	28.53	-17.47	46	40.34	17.4	1.92	31.13	-	-	Peak
547.8	28.54	-17.46	46	38.1	19.25	2.15	30.96	-	-	Peak
2390	36	-18	54	33.32	31.7	4.5	33.52	100	8	Average
2390	48.05	-25.95	74	45.37	31.7	4.5	33.52	100	8	Peak
2462	103.75	-	-	100.98	31.77	4.56	33.56	100	8	Average
2462	107.66	-	-	104.89	31.77	4.56	33.56	100	8	Peak
2483.66	43.18	-10.82	54	40.38	31.78	4.59	33.57	100	8	Average
2483.66	55.33	-18.67	74	52.53	31.78	4.59	33.57	100	8	Peak

Test Mode :	Mode 4	**Temperature :**	23~24℃
Test Channel :	01	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
83.46	22.89	-17.11	40	45.6	8	0.84	31.55	-	-	Peak
131.25	25.89	-17.61	43.5	44.05	12.29	1.07	31.52	-	-	Peak
175.53	23.41	-20.09	43.5	44.33	9.38	1.23	31.53	-	-	Peak
381.2	27.65	-18.35	46	41.3	15.81	1.77	31.23	-	-	Peak
463.1	32.41	-13.59	46	44.25	17.37	1.92	31.13	100	36	Peak
546.4	27.26	-18.74	46	36.84	19.23	2.15	30.96	-	-	Peak
2389.99	44.18	-9.82	54	41.5	31.7	4.5	33.52	125	332	Average
2389.99	63.95	-10.05	74	61.27	31.7	4.5	33.52	125	332	Peak
2412	89.57	-	-	86.89	31.71	4.5	33.53	125	332	Average
2412	101.53	-	-	98.85	31.71	4.5	33.53	125	332	Peak
2498	34.94	-19.06	54	32.09	31.8	4.62	33.57	125	332	Average
2498	47.83	-26.17	74	44.98	31.8	4.62	33.57	125	332	Peak

Test Mode :	Mode 4	**Temperature :**	23~24℃
Test Channel :	01	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
34.86	28.97	-11.03	40	44.38	15.53	0.58	31.52	100	96	Peak
82.65	24.68	-15.32	40	47.6	7.79	0.84	31.55	-	-	Peak
130.71	27.69	-15.81	43.5	45.76	12.38	1.07	31.52	-	-	Peak
381.9	22.39	-23.61	46	36	15.85	1.77	31.23	-	-	Peak
463.8	27.81	-18.19	46	39.62	17.4	1.92	31.13	-	-	Peak
546.4	28.07	-17.93	46	37.65	19.23	2.15	30.96	-	-	Peak
2389.8	44.97	-9.03	54	42.29	31.7	4.5	33.52	100	356	Average
2389.8	63.5	-10.5	74	60.82	31.7	4.5	33.52	100	356	Peak
2412	91.57	-	-	88.89	31.71	4.5	33.53	100	356	Average
2412	103.7	-	-	101.02	31.71	4.5	33.53	100	356	Peak
2494	35.02	-18.98	54	32.17	31.8	4.62	33.57	100	356	Average
2494	47.03	-26.97	74	44.18	31.8	4.62	33.57	100	356	Peak

Test Mode :	Mode 5	**Temperature :**	23~24℃
Test Channel :	06	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
83.73	21.84	-18.16	40	44.55	8	0.84	31.55	-	-	Peak
131.25	25.74	-17.76	43.5	43.9	12.29	1.07	31.52	-	-	Peak
175.53	23.66	-19.84	43.5	44.58	9.38	1.23	31.53	-	-	Peak
379.8	27.4	-18.6	46	41.08	15.78	1.77	31.23	-	-	Peak
463.1	33.73	-12.27	46	45.57	17.37	1.92	31.13	100	55	Peak
502.3	28.08	-17.92	46	38.94	18.17	2.04	31.07	-	-	Peak
2358	33.93	-20.07	54	31.34	31.66	4.44	33.51	120	311	Average
2358	46.07	-27.93	74	43.48	31.66	4.44	33.51	120	311	Peak
2437	88.78	-	-	86.05	31.75	4.53	33.55	120	311	Average
2437	101.36	-	-	98.63	31.75	4.53	33.55	120	311	Peak
2500	34.74	-19.26	54	31.89	31.8	4.62	33.57	120	311	Average
2500	46.44	-27.56	74	43.59	31.8	4.62	33.57	120	311	Peak

Test Mode :	Mode 5	**Temperature :**	23~24℃
Test Channel :	06	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**Polarization :**	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
34.86	31.01	-8.99	40	46.42	15.53	0.58	31.52	100	87	Peak
82.11	25.74	-14.26	40	48.66	7.79	0.84	31.55	-	-	Peak
231.42	31.34	-14.66	46	50.9	10.6	1.34	31.5	-	-	Peak
381.2	23.54	-22.46	46	37.19	15.81	1.77	31.23	-	-	Peak
462.4	27.78	-18.22	46	39.62	17.37	1.92	31.13	-	-	Peak
545.7	27.67	-18.33	46	37.27	19.21	2.15	30.96	-	-	Peak
2388	34.78	-19.22	54	32.13	31.7	4.47	33.52	100	9	Average
2388	45.51	-28.49	74	42.86	31.7	4.47	33.52	100	9	Peak
2437	90.83	-	-	88.1	31.75	4.53	33.55	100	9	Average
2437	103.57	-	-	100.84	31.75	4.53	33.55	100	9	Peak
2484	34.51	-19.49	54	31.71	31.78	4.59	33.57	100	9	Average
2484	46.32	-27.68	74	43.52	31.78	4.59	33.57	100	9	Peak

Test Mode :	Mode 6	**Temperature :**	23~24℃
Test Channel :	11	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
84	23.04	-16.96	40	45.53	8.22	0.84	31.55	-	-	Peak
130.17	26.06	-17.44	43.5	44.13	12.38	1.07	31.52	-	-	Peak
174.18	24.31	-19.19	43.5	45.16	9.45	1.23	31.53	-	-	Peak
387.5	28.44	-17.56	46	41.83	16.05	1.77	31.21	-	-	Peak
461.7	31.91	-14.09	46	43.78	17.34	1.92	31.13	100	65	Peak
544.3	27.38	-18.62	46	37.02	19.18	2.15	30.97	-	-	Peak
2334	34.14	-19.86	54	31.6	31.63	4.41	33.5	124	7	Average
2334	44.71	-29.29	74	42.17	31.63	4.41	33.5	124	7	Peak
2462	88.91	-	-	86.14	31.77	4.56	33.56	124	7	Average
2462	101.07	-	-	98.3	31.77	4.56	33.56	124	7	Peak
2483.5	45.29	-8.71	54	42.49	31.78	4.59	33.57	124	7	Average
2483.5	52.77	-21.23	74	49.97	31.78	4.59	33.57	124	7	Peak

Test Mode :	Mode 6	**Temperature :**	23~24℃
Test Channel :	11	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
35.67	30.64	-9.36	40	46.64	14.94	0.58	31.52	100	85	Peak
82.92	26.43	-13.57	40	49.35	7.79	0.84	31.55	-	-	Peak
230.61	31.41	-14.59	46	51.09	10.48	1.34	31.5	-	-	Peak
386.8	23	-23	46	36.43	16.01	1.77	31.21	-	-	Peak
463.1	27.8	-18.2	46	39.64	17.37	1.92	31.13	-	-	Peak
549.2	28.7	-17.3	46	38.2	19.3	2.15	30.95	-	-	Peak
2350	34.12	-19.88	54	31.54	31.64	4.44	33.5	123	6	Average
2350	45.49	-28.51	74	42.91	31.64	4.44	33.5	123	6	Peak
2462	90.88	-	-	88.11	31.77	4.56	33.56	123	6	Average
2462	103.14	-	-	100.37	31.77	4.56	33.56	123	6	Peak
2483.66	45.49	-8.51	54	42.69	31.78	4.59	33.57	123	6	Average
2483.66	63.72	-10.28	74	60.92	31.78	4.59	33.57	123	6	Peak

Test Mode :	Mode 7	**Temperature :**	23~24℃
Test Channel :	01	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
92.37	31.36	-12.14	43.5	53.44	8.62	0.84	31.54	-	-	Peak
106.68	32.43	-11.07	43.5	53.13	9.89	0.95	31.54	100	58	Peak
134.22	30.62	-12.88	43.5	50.27	10.8	1.07	31.52	-	-	Peak
304.2	21.74	-24.26	46	39.17	12.29	1.55	31.27	-	-	Peak
461.7	24.06	-21.94	46	37.08	16.19	1.92	31.13	-	-	Peak
988.1	27.74	-26.26	54	30.86	23.82	3.31	30.25	-	-	Peak
2388.47	45.07	-8.93	54	42.98	31.7	4.47	34.08	100	346	Average
2388.47	64.87	-9.13	74	62.78	31.7	4.47	34.08	100	346	Peak
2412	87.22	-	-	85.09	31.71	4.5	34.08	100	346	Average
2412	99.51	-	-	97.38	31.71	4.5	34.08	100	346	Peak
2484	34.3	-19.7	54	32.01	31.78	4.59	34.08	100	346	Average
2484	46.02	-27.98	74	43.73	31.78	4.59	34.08	100	346	Peak

Test Mode :	Mode 7	**Temperature :**	23~24℃
Test Channel :	01	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
31.35	34.54	-5.46	40	47.73	17.78	0.58	31.55	100	168	Peak
39.99	32.94	-7.06	40	50.61	13.26	0.58	31.51	-	-	Peak
145.02	29.41	-14.09	43.5	49.32	10.45	1.14	31.5	-	-	Peak
456.8	22.58	-23.42	46	35.72	16.08	1.92	31.14	-	-	Peak
545.7	29.4	-16.6	46	40.38	17.83	2.15	30.96	-	-	Peak
707.4	26.72	-19.28	46	35.75	19.27	2.4	30.7	-	-	Peak
2389.8	45.44	-8.56	54	43.32	31.7	4.5	34.08	107	1	Average
2389.8	65.94	-8.06	74	63.82	31.7	4.5	34.08	107	1	Peak
2412	89.56	-	-	87.43	31.71	4.5	34.08	107	1	Average
2412	101.78	-	-	99.65	31.71	4.5	34.08	107	1	Peak
2490	33.19	-20.81	54	30.85	31.8	4.62	34.08	107	1	Average
2490	44.55	-29.45	74	42.21	31.8	4.62	34.08	107	1	Peak

Test Mode :	Mode 8	**Temperature :**	23~24℃
Test Channel :	06	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
87.24	23.6	-16.4	40	46.42	7.89	0.84	31.55	-	-	Peak
144.48	26.84	-16.66	43.5	46.71	10.5	1.14	31.51	-	-	Peak
203.61	29.59	-13.91	43.5	51.37	8.42	1.26	31.46	-	-	Peak
372.1	30.94	-15.06	46	46.37	14.05	1.77	31.25	-	-	Peak
441.4	38.68	-7.32	46	52.25	15.72	1.87	31.16	100	178	Peak
495.3	28.76	-17.24	46	40.84	16.97	2.04	31.09	-	-	Peak
2318	33.11	-20.89	54	31.16	31.63	4.41	34.09	192	48	Average
2318	44.28	-29.72	74	42.33	31.63	4.41	34.09	192	48	Peak
2437	88.55	-	-	86.35	31.75	4.53	34.08	192	48	Average
2437	100.74	-	-	98.54	31.75	4.53	34.08	192	48	Peak
2500	34.33	-19.67	54	31.99	31.8	4.62	34.08	192	48	Average
2500	46.18	-27.82	74	43.84	31.8	4.62	34.08	192	48	Peak

Test Mode :	Mode 8	**Temperature :**	23~24℃
Test Channel :	06	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
31.89	33.57	-6.43	40	47.32	17.21	0.58	31.54	100	68	Peak
39.72	32.98	-7.02	40	50.65	13.26	0.58	31.51	-	-	Peak
143.94	29.46	-14.04	43.5	49.29	10.54	1.14	31.51	-	-	Peak
444.2	34.81	-11.19	46	48.25	15.79	1.92	31.15	-	-	Peak
496	35.33	-10.67	46	47.41	16.97	2.04	31.09	-	-	Peak
552.7	32.98	-13.02	46	43.84	17.94	2.15	30.95	-	-	Peak
2390	32.6	-21.4	54	30.48	31.7	4.5	34.08	132	14	Average
2390	43.66	-30.34	74	41.54	31.7	4.5	34.08	132	14	Peak
2437	89.47	-	-	87.27	31.75	4.53	34.08	132	14	Average
2437	101.89	-	-	99.69	31.75	4.53	34.08	132	14	Peak
2500	34.03	-19.97	54	31.69	31.8	4.62	34.08	132	14	Average
2500	45.81	-28.19	74	43.47	31.8	4.62	34.08	132	14	Peak

Test Mode :	Mode 9	**Temperature :**	23~24℃
Test Channel :	11	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**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
134.76	24.96	-18.54	43.5	44.61	10.79	1.07	31.51	-	-	Peak
144.75	26.5	-17	43.5	46.37	10.5	1.14	31.51	-	-	Peak
204.69	29.92	-13.58	43.5	51.63	8.49	1.26	31.46	110	128	Peak
383.3	23.41	-22.59	46	38.53	14.33	1.77	31.22	-	-	Peak
460.3	26.29	-19.71	46	39.34	16.17	1.92	31.14	-	-	Peak
999.3	27.11	-26.89	54	29.47	24.07	3.77	30.2	-	-	Peak
2360	33.15	-20.85	54	31.13	31.66	4.44	34.08	100	348	Average
2360	44.38	-29.62	74	42.36	31.66	4.44	34.08	100	348	Peak
2462	86.91	-	-	84.66	31.77	4.56	34.08	100	348	Average
2462	99.35	-	-	97.1	31.77	4.56	34.08	100	348	Peak
2483.66	43.52	-10.48	54	41.23	31.78	4.59	34.08	100	348	Average
2483.66	61.47	-12.53	74	59.18	31.78	4.59	34.08	100	348	Peak

Test Mode :	Mode 9	**Temperature :**	23~24℃
Test Channel :	11	**Relative Humidity :**	46~47%
Test Engineer :	Kay Wu	**Polarization :**	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.81	34.45	-5.55	40	47.64	17.78	0.58	31.55	100	30	Peak
39.72	32.58	-7.42	40	50.25	13.26	0.58	31.51	-	-	Peak
164.19	28.01	-15.49	43.5	49.02	9.37	1.14	31.52	-	-	Peak
549.9	28.55	-17.45	46	39.46	17.89	2.15	30.95	-	-	Peak
624.8	23.48	-22.52	46	33.23	18.82	2.25	30.82	-	-	Peak
985.3	27.34	-26.66	54	30.54	23.75	3.31	30.26	-	-	Peak
2366	33.44	-20.56	54	31.39	31.66	4.47	34.08	100	10	Average
2366	44.62	-29.38	74	42.57	31.66	4.47	34.08	100	10	Peak
2462	90.07	-	-	87.82	31.77	4.56	34.08	100	10	Average
2462	102.78	-	-	100.53	31.77	4.56	34.08	100	10	Peak
2483.66	46.46	-7.54	54	44.17	31.78	4.59	34.08	100	10	Average
2483.66	65.56	-8.44	74	63.27	31.78	4.59	34.08	100	10	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 PCB 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	Mar. 19, 2009	Mar. 18, 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	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	Conduction (CO05-HY)
AC Power Source	APC	APC-1000 W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP30	101352	9KHz-40GHz	Nov. 3, 2010	Nov. 2, 2011	Radiation (03CH05-HY)
Amplifier	COM-POWER	PA-103	161069	1KHz - 1GHz	Mar. 29, 2010	Mar. 28, 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	Nov. 11, 2009	Nov. 10, 2010	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)

5 Uncertainty of Evaluation

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

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

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

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

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				