

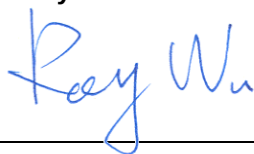
FCC RF Test Report

APPLICANT : ASUSTek Computer Inc.
EQUIPMENT : Eee Pad
BRAND NAME : ASUS
MODEL NAME : TF101
FCC ID : MSQTF101
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Feb. 08, 2011 and completely tested on Feb. 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
FR120821B	Rev. 01	Initial issue of report	Mar. 04, 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	-
3.1	-	Gen 4.4.1	99% Bandwidth	-	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	-
0	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
0	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 9.7 dB at 0.54 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.64 dB at 2389.61 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

ASUSTek Computer Inc.

No. 15, Li-Te Rd., Peitou, Taipei 112, Taiwan

1.2 Manufacturer

1. PEGATRON CORPORATION Taoyuan Mfg.

No. 5, Shing Yeh St., Kwei Shan Hsiang, Taoyuan 333, Taiwan

2. Protek (Shanghai) Limited

No. 3768, Xiu Yan Rd., Nanhui District, Shanghai, China

3. NorthTec Asis (Shanghai) Limited

No. 3768, Xiuyan Rd., Kangqiao Town, Nanhui District, Shanghai 201319, China

4. Unihan Maitek Computer

No. 233, jinfeng Rd., Suzhou New District, Jiangsu Province 215011, China

5. ASKEY TECHNOLOGY (JIANGSU) LTD.

No. 1388, JiaoTong Road, WuJiang Economic-Technological Development Area, Jiangsu Province, P.R.C.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Eee Pad
Brand Name	ASUS
Model Name	TF101
FCC ID	MSQTF101
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 : 16.54 dBm (0.05 W) 802.11g : 22.91 dBm (0.20 W) 802.11n (BW 20MHz) : 22.31 dBm (0.17 W)
Antenna Type	PIFA Antenna with gain 2.06 dBi
HW Version	1.2G
SW Version	ventana-img-20110121.092845
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark:

1. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	722060/4086B-1

1.5 Applied Standards

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

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

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.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
4.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	iPod Earphone	Apple	N/A	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	16.22	-	-	16.18
CH 06	2437 MHz	15.71	-	-	15.94
CH 11	2462 MHz	16.25	16.44	16.48	16.54

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	20.86	-	-	-	-	-	-	-
CH 06	2437 MHz	22.91	22.90	22.85	22.69	22.86	22.81	22.59	22.68
CH 11	2462 MHz	22.69	-	-	-	-	-	-	-

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	20.25	-	-	-	-	-	-	-
CH 06	2437 MHz	22.31	22.07	22.03	21.86	22.25	22.11	22.15	22.09
CH 11	2462 MHz	22.27	-	-	-	-	-	-	-

Remark:

1. The data rates of WLAN 802.11b/g/n were set in 11Mbps for 802.11b, 6Mbps for 802.11g, MCS0 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).

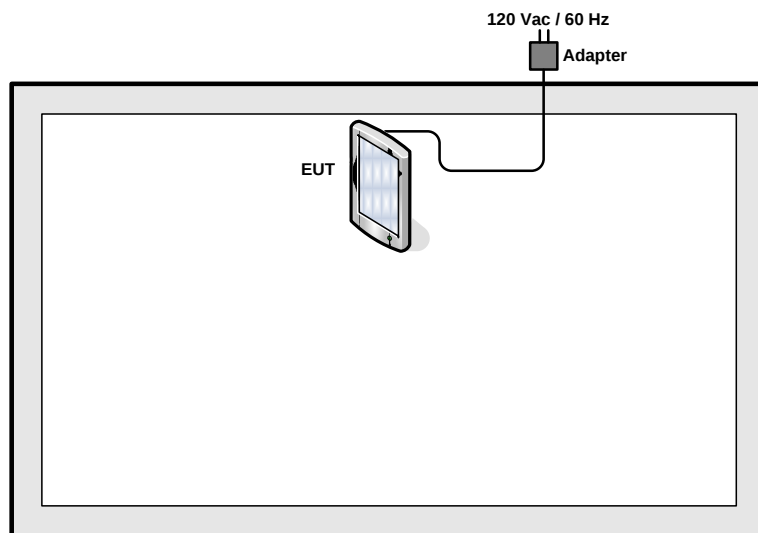
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

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

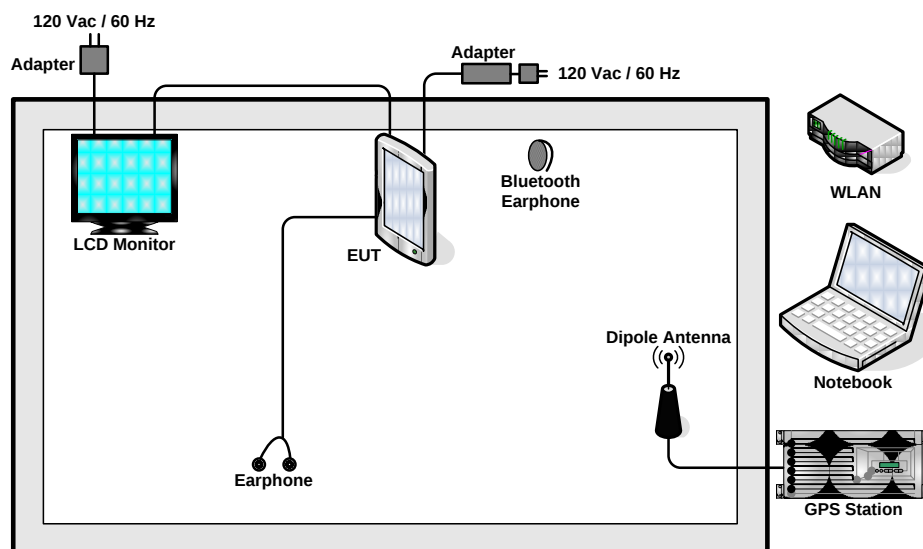
Test Cases		
Test Item	802.11b (Modulation : DSSS)	802.11g/n (Modulation : OFDM)
Conducted TCs	Mode 1 : 802.11b CH01_2412 MHz Mode 2 : 802.11b CH06_2437 MHz Mode 3 : 802.11b CH11_2462 MHz	Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n (BW 20M)_CH01_2412 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 :WLAN Link + Bluetooth Link + GPS Rx + TC + Adapter	
Remark: TC stands for Test Configuration, and consists of monitor and earphone.		

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<EUT with TC>



2.4 RF Utility

The programmed RF utility "WLAN RF Test" 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.

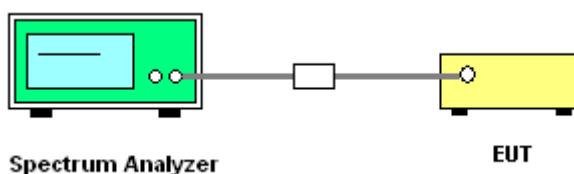
3.1.2 Measuring Instruments

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





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

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	8.40	0.5	Pass
06	2437	8.04	0.5	Pass
11	2462	8.10	0.5	Pass

Ref 20 dBm • Att 20 dB • RBW 100 kHz Delta 1 [T1] 0.02 dB
 • VBW 300 kHz 8.400000000 MHz
 • SWT 20 ms

20 Offset 20 1 dB

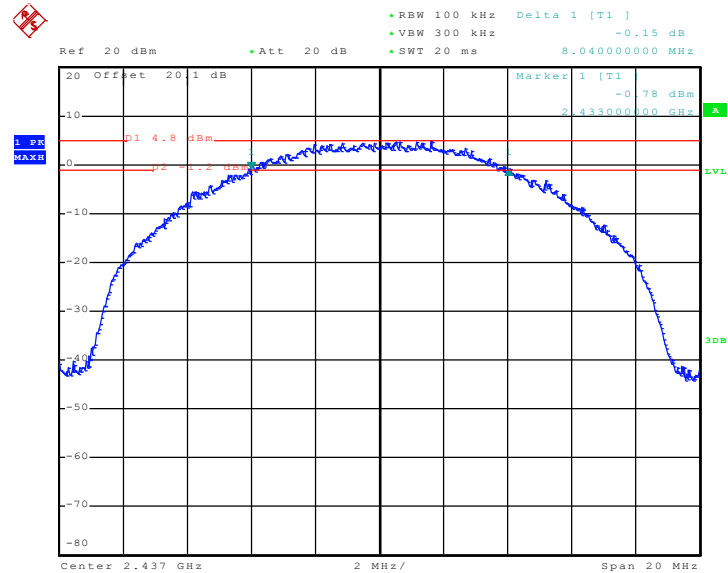
Marker 1 [T1] 0.09 dBm
 2.407940000 GHz

p1 5.93 dBm
 p2 -5.97 dBm

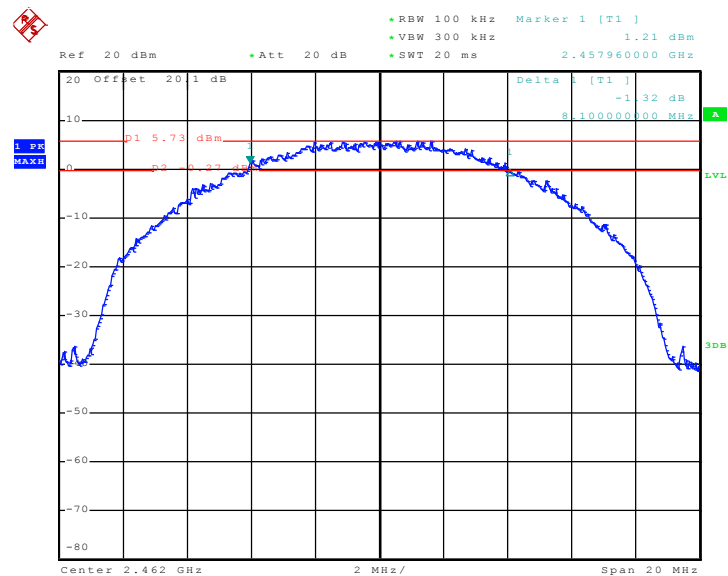
1. PR
 MAXH

Center 2.412 GHz 2 MHz/ Span 20 MHz

Date: 23.FEB.2011 08:26:38

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


Date: 23.FEB.2011 08:44:23

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


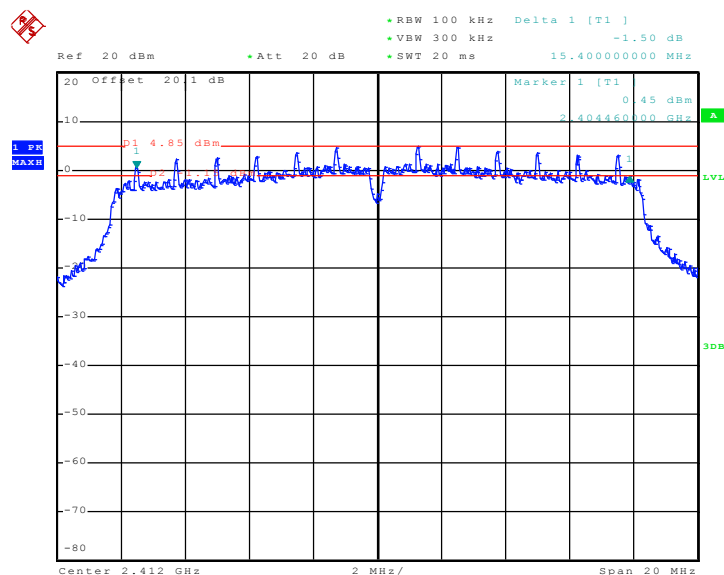
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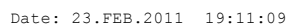
Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.40	0.5	Pass
06	2437	15.12	0.5	Pass
11	2462	15.44	0.5	Pass

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



Date: 23.FEB.2011 19:23:14



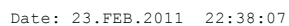
Mode 6 : 6 dB Bandwidth Plot on 802.11g Channel 11





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	15.08	0.5	Pass
11	2462	15.10	0.5	Pass

Date: 23.FEB.2011 19:37:35



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

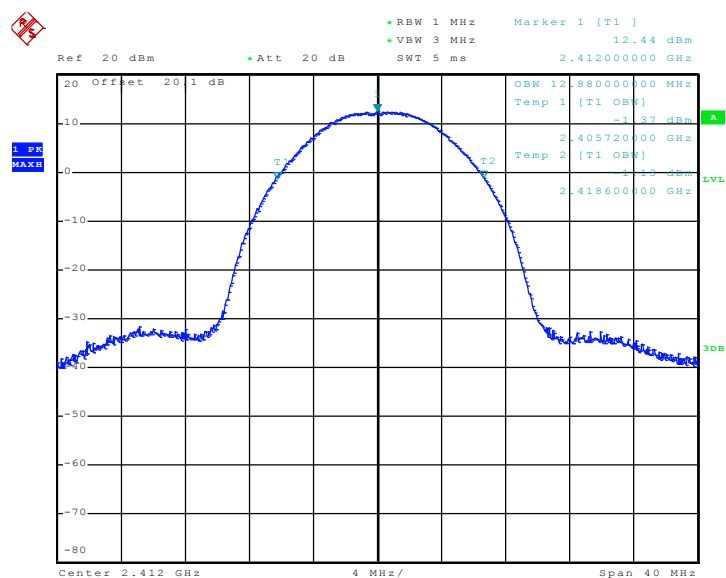


3.1.6 Test Result of 99% Occupied Bandwidth

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

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	12.88	Pass
06	2437	12.88	Pass
11	2462	12.96	Pass

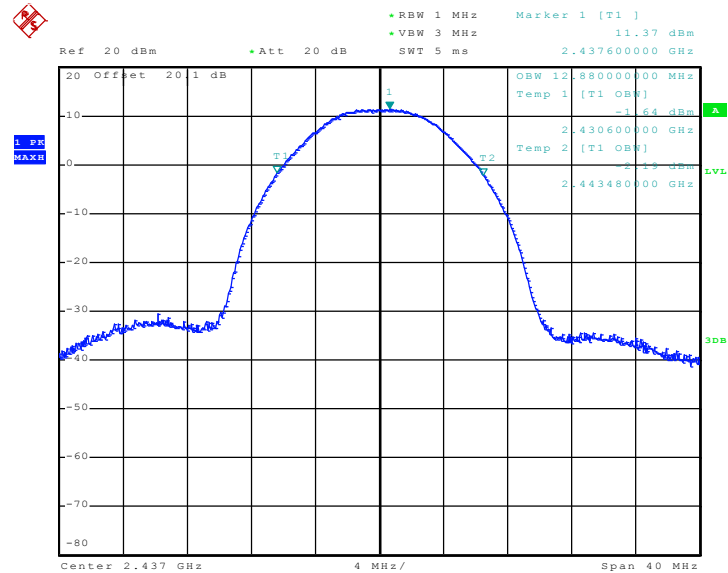
Mode 1 : 99% Occupied Bandwidth Plot on 802.11b Channel 01



Date: 23.FEB.2011 08:28:49

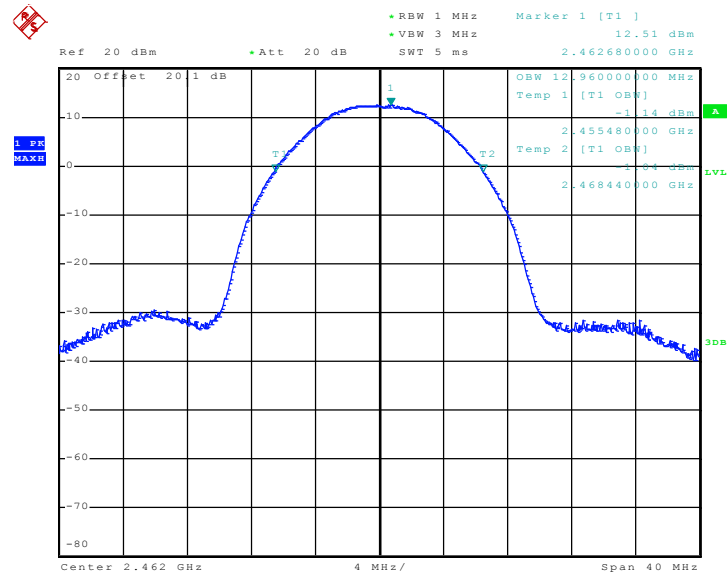


Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 23.FEB.2011 08:45:32

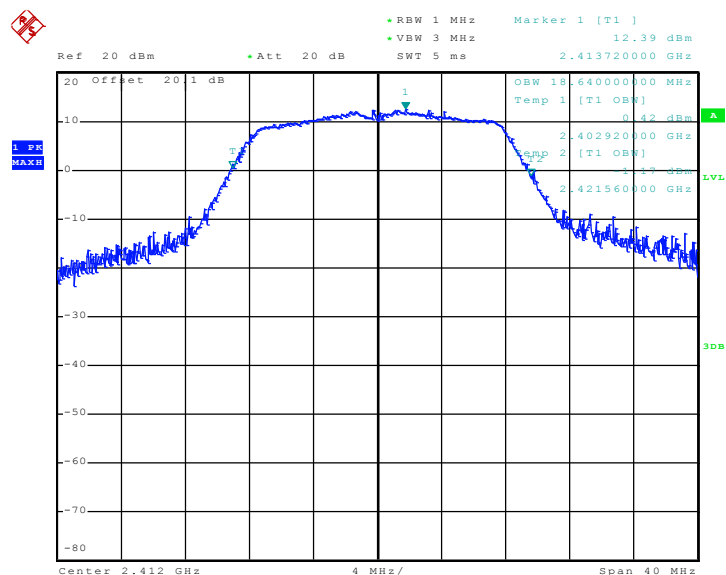
Mode 3 : 99% Occupied Bandwidth Plot on 802.11b Channel 11



Date: 23.FEB.2011 18:41:53

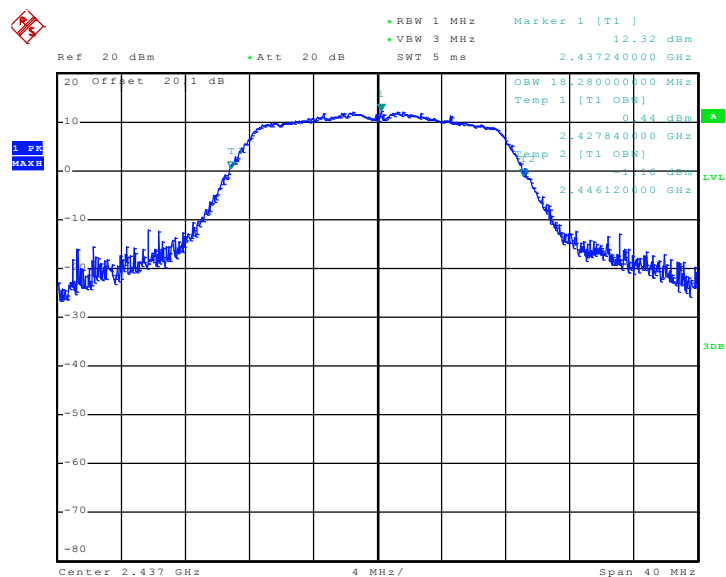
Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	18.64	Pass
06	2437	18.28	Pass
11	2462	18.88	Pass

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


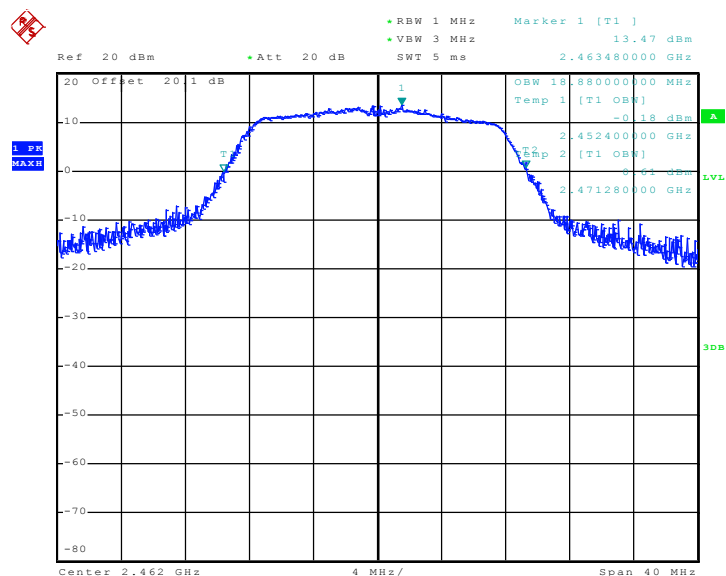
Date: 23.FEB.2011 19:24:47

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



Date: 23.FEB.2011 19:11:38

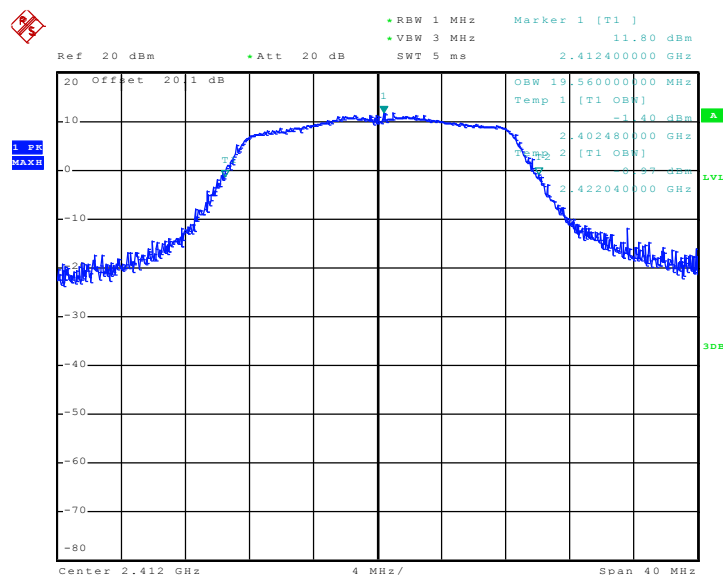
Mode 6 : 99% Occupied Bandwidth Plot on 802.11g Channel 11



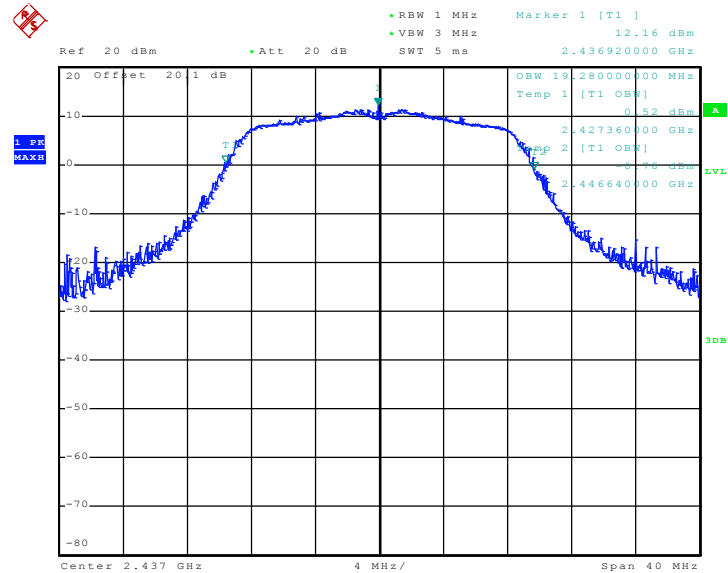
Date: 23.FEB.2011 18:59:29

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

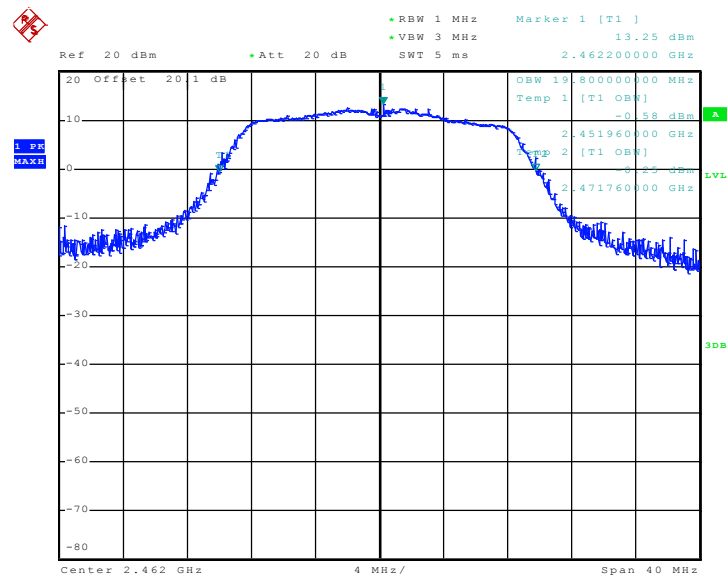
Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	19.56	Pass
06	2437	19.28	Pass
11	2462	19.80	Pass

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


Date: 23.FEB.2011 19:39:08

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


Date: 23.FEB.2011 22:38:33

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


Date: 23.FEB.2011 22:35:08

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

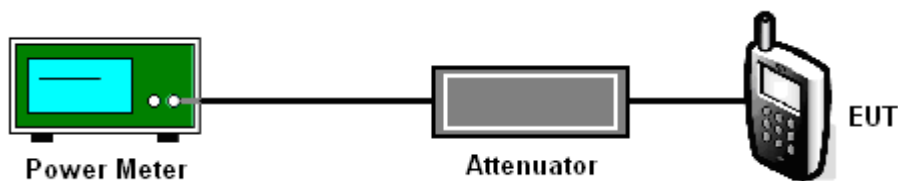
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

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

3.2.4 Test Setup



3.2.5 Test Result of Output Power

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

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	16.18	30	Pass
06	2437	15.94	30	Pass
11	2462	16.54	30	Pass

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

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.86	30	Pass
06	2437	22.91	30	Pass
11	2462	22.69	30	Pass

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

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	20.25	30	Pass
06	2437	22.31	30	Pass
11	2462	22.27	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

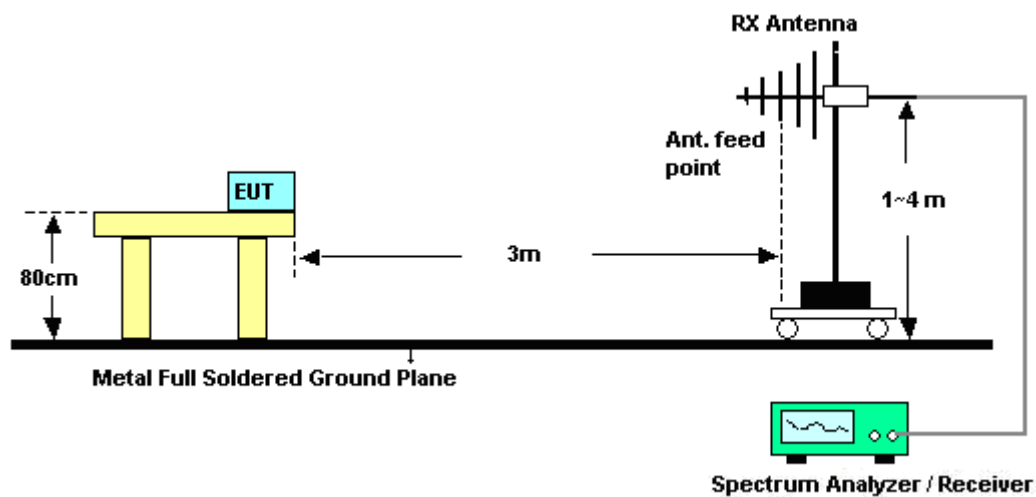
See list of measuring instruments of this test report.

3.3.3 Test Procedures

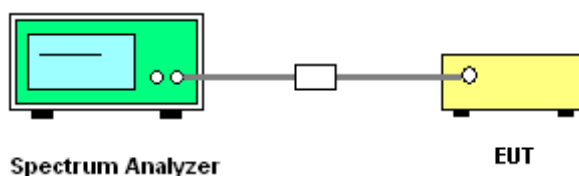
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) $\geq$ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized 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 :	22~23℃
Test Band :	802.11b	Relative Humidity :	45~49%
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
2389.61	53.47	-20.53	74	49.11	32.18	6.03	33.85	100	58	Peak
2389.61	41.79	-12.21	54	37.43	32.18	6.03	33.85	100	58	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	51.55	-22.45	74	47.19	32.18	6.03	33.85	134	60	Peak
2389.99	39.2	-14.8	54	34.84	32.18	6.03	33.85	134	60	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Band :	802.11b	Relative Humidity :	45~49%
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	49.56	-24.44	74	45	32.28	6.18	33.9	100	130	Peak
2483.5	37.86	-16.14	54	33.3	32.28	6.18	33.9	100	130	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
2484.61	47.68	-26.32	74	43.12	32.28	6.18	33.9	131	42	Peak
2484.61	36.51	-17.49	54	31.95	32.28	6.18	33.9	131	42	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	45~49%
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
2389.61	72.18	-1.82	74	67.82	32.18	6.03	33.85	100	128	Peak
2389.61	53.36	-0.64	54	49	32.18	6.03	33.85	100	128	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	69.25	-4.75	74	64.89	32.18	6.03	33.85	134	60	Peak
2390	48.39	-5.61	54	44.03	32.18	6.03	33.85	134	60	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Band :	802.11g	Relative Humidity :	45~49%
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	70.44	-3.56	74	65.88	32.28	6.18	33.9	100	130	Peak
2483.5	48.65	-5.35	54	44.09	32.28	6.18	33.9	100	130	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	69.21	-4.79	74	64.65	32.28	6.18	33.9	100	29	Peak
2483.5	47.52	-6.48	54	42.96	32.28	6.18	33.9	100	29	Average



Test Mode :	Mode 7	Temperature :	22~23℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	45~49%
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	72.85	-1.15	74	68.49	32.18	6.03	33.85	120	48	Peak
2389.99	52.46	-1.54	54	48.1	32.18	6.03	33.85	120	48	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	65.24	-8.76	74	60.88	32.18	6.03	33.85	102	42	Peak
2389.61	45.4	-8.6	54	41.04	32.18	6.03	33.85	102	42	Average

Test Mode :	Mode 9	Temperature :	22~23℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	45~49%
Test Channel :	11	Test Engineer :	David Yang

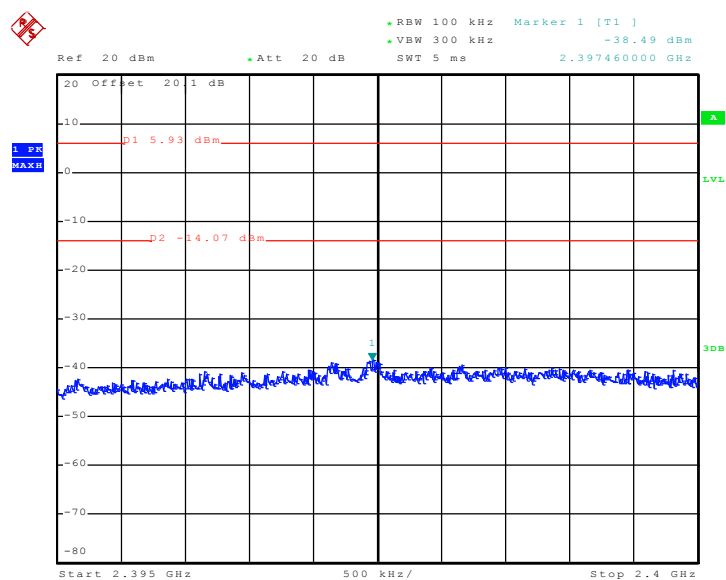
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	70.62	-3.38	74	66.06	32.28	6.18	33.9	122	54	Peak
2483.85	49.05	-4.95	54	44.49	32.28	6.18	33.9	122	54	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
2483.85	66.04	-7.96	74	61.48	32.28	6.18	33.9	130	61	Peak
2483.85	46.76	-7.24	54	42.2	32.28	6.18	33.9	130	61	Average

3.3.6 Test Plots of Conducted Band Edges

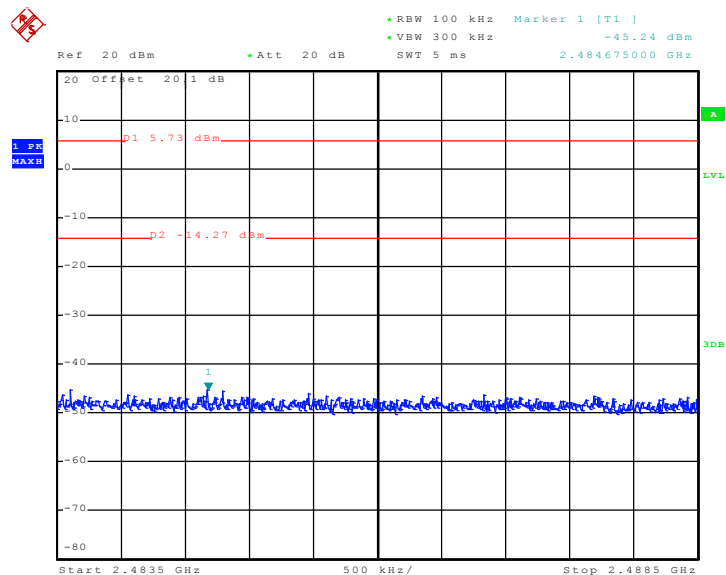
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Hank Yu

Low Band Edge Plot on 802.11b Channel 01



Date: 23.FEB.2011 08:27:46

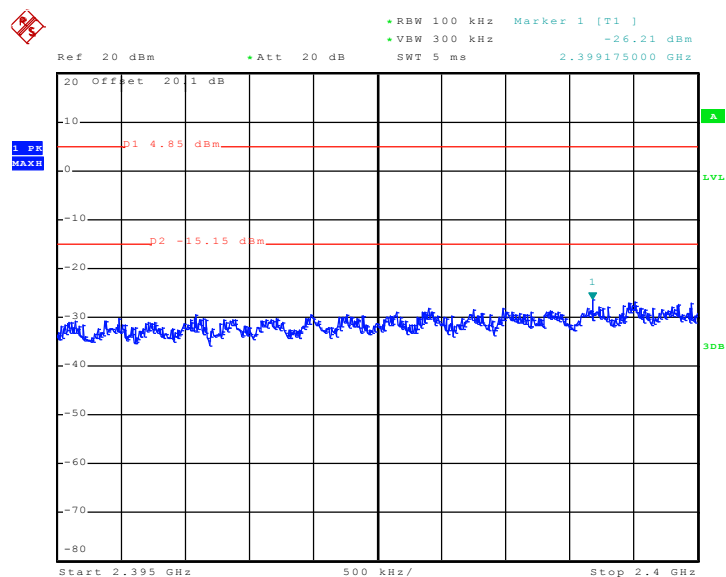
High Band Edge Plot on 802.11b Channel 11



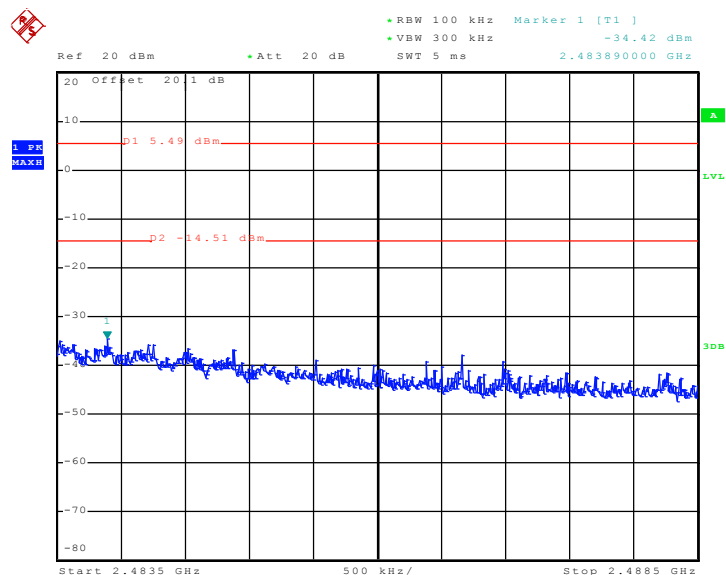
Date: 23.FEB.2011 18:41:27



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

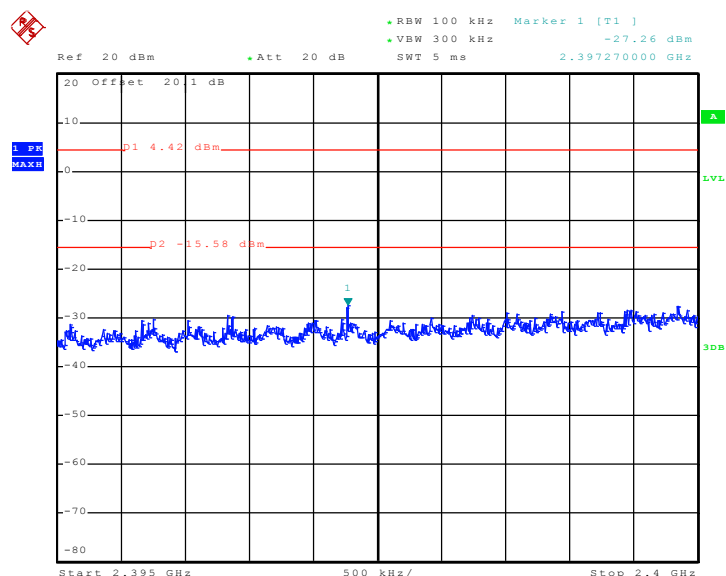
Low Band Edge Plot on 802.11g Channel 01

Date: 23.FEB.2011 19:24:22

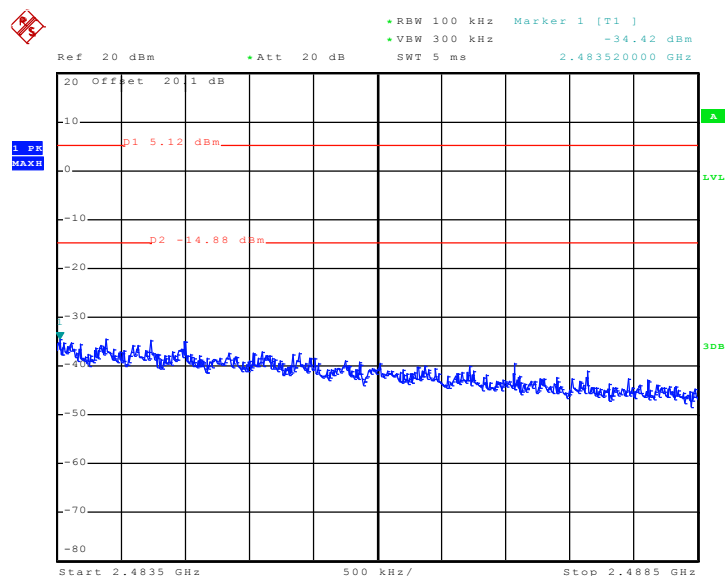
High Band Edge Plot on 802.11g Channel 11

Date: 23.FEB.2011 18:59:04

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

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


Date: 23.FEB.2011 19:38:43

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


Date: 23.FEB.2011 22:34:42

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

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

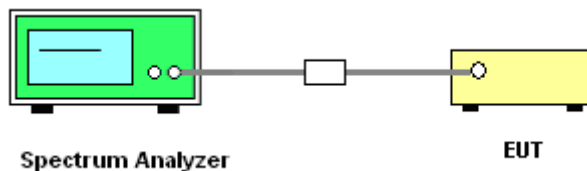
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

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

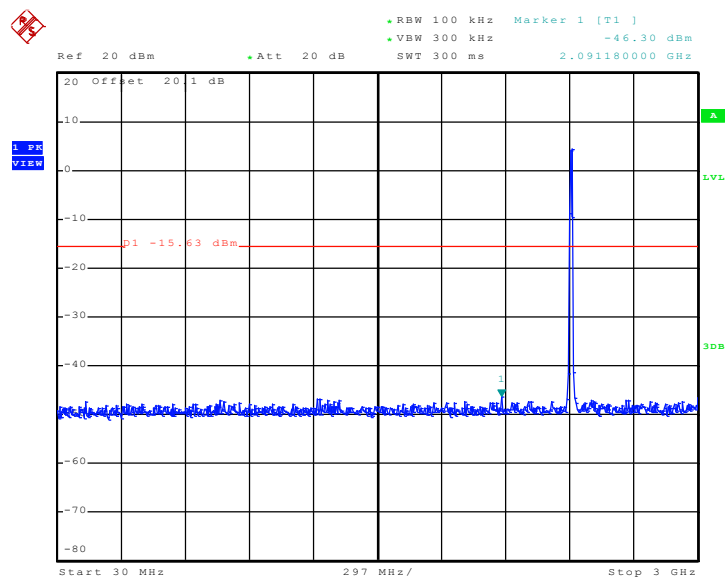
3.4.4 Test Setup



3.4.5 Test Plots of Spurious Emission

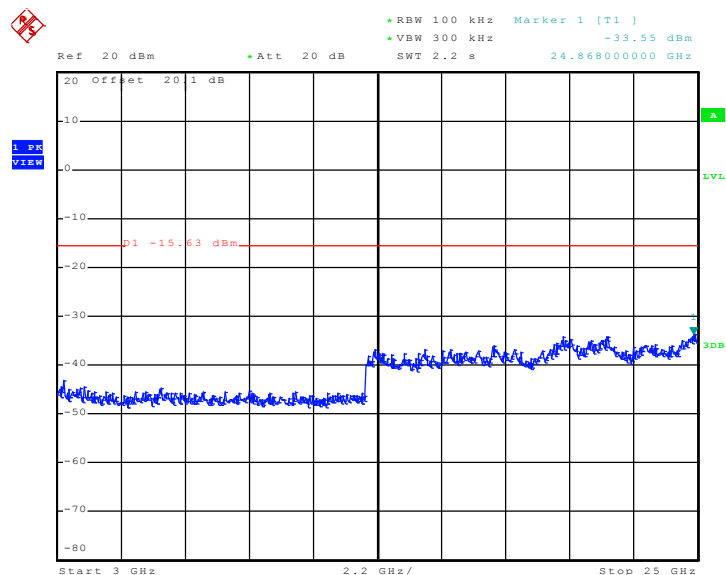
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 23.FEB.2011 08:29:10

Conducted Spurious Emission Plot between 3GHz ~ 25 GHz

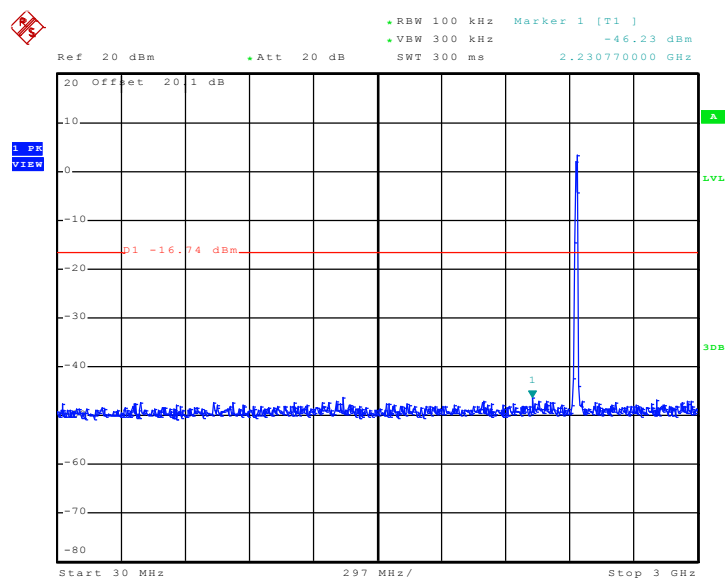


Date: 23.FEB.2011 08:29:27



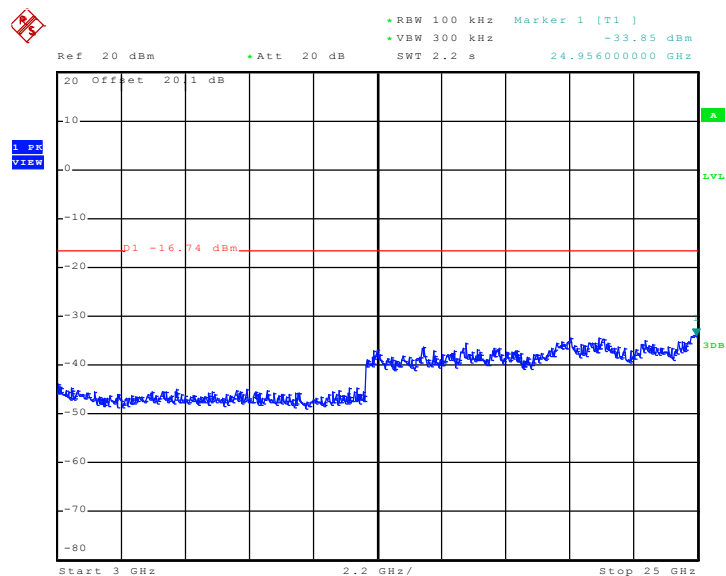
Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 23.FEB.2011 08:54:48

Conducted Spurious Emission Plot between 3GHz ~ 25 GHz

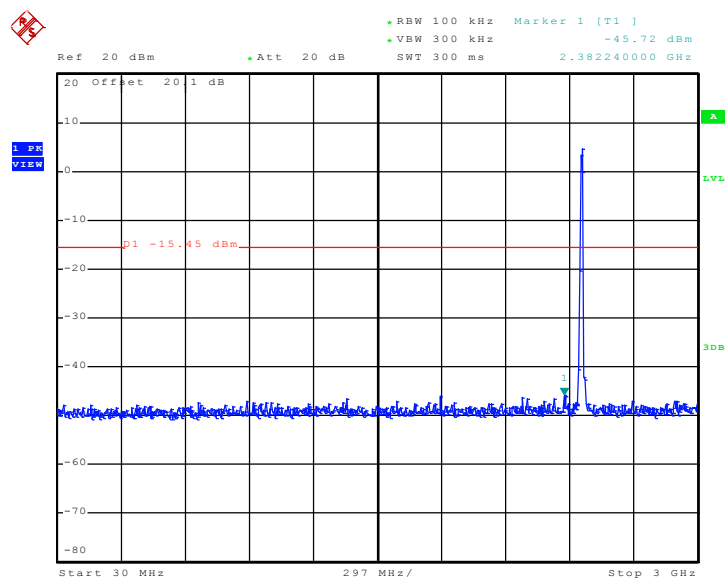


Date: 23.FEB.2011 08:55:05



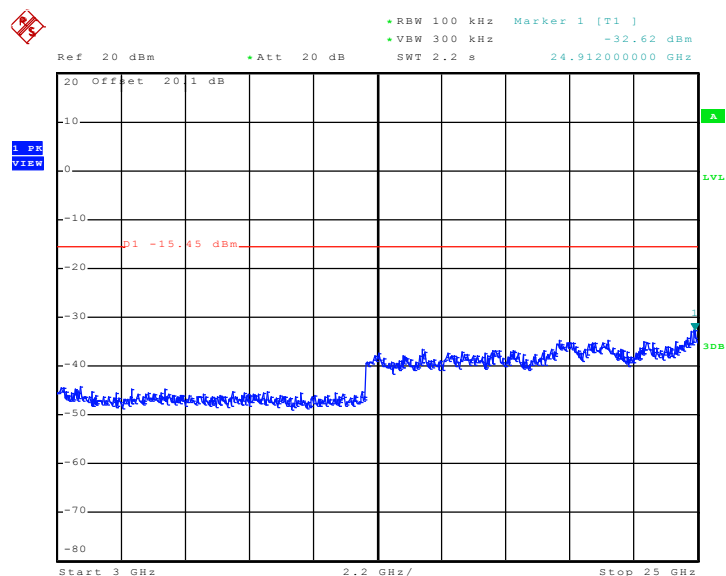
Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 23.FEB.2011 18:51:29

Conducted Spurious Emission Plot between 3GHz ~ 25 GHz

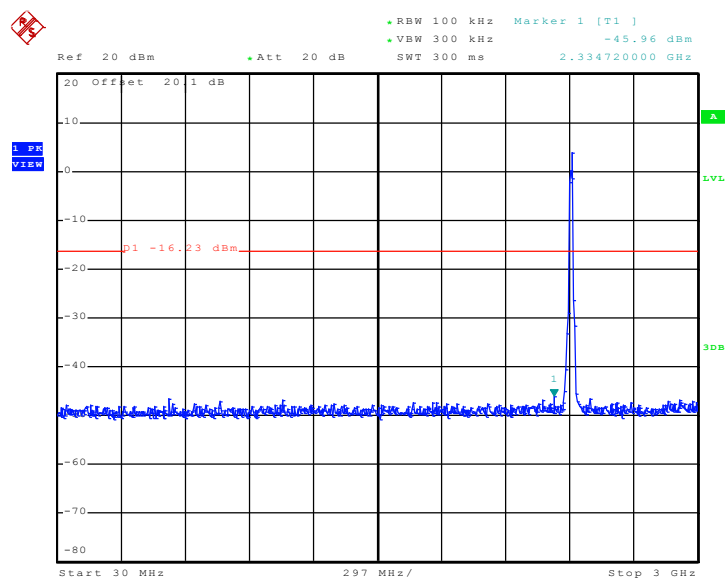


Date: 23 FEB 2011 18:51:45



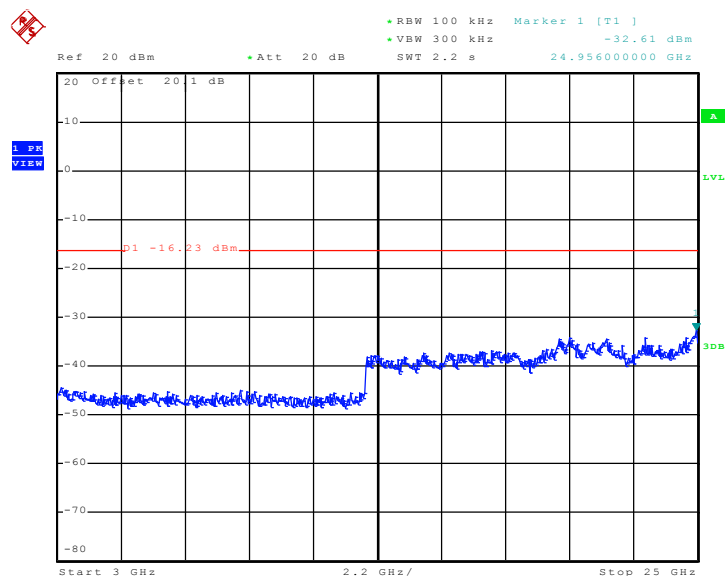
Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



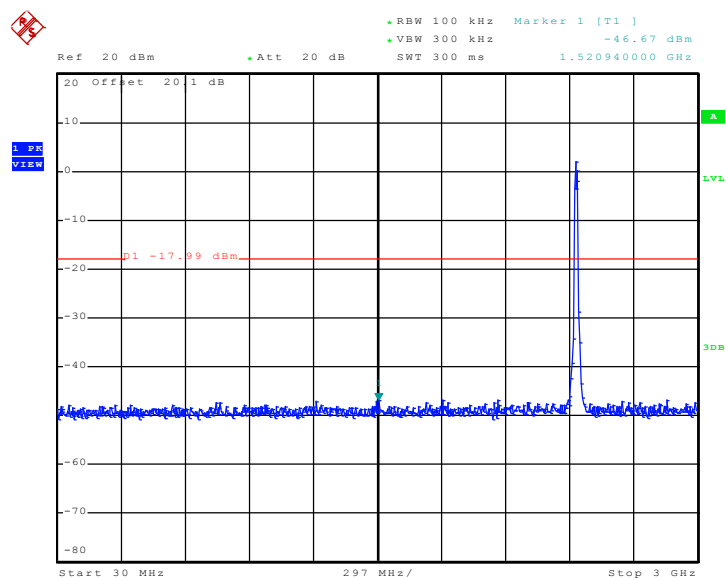
Date: 23.FEB.2011 19:34:42

Conducted Spurious Emission Plot between 3GHz ~ 25 GHz

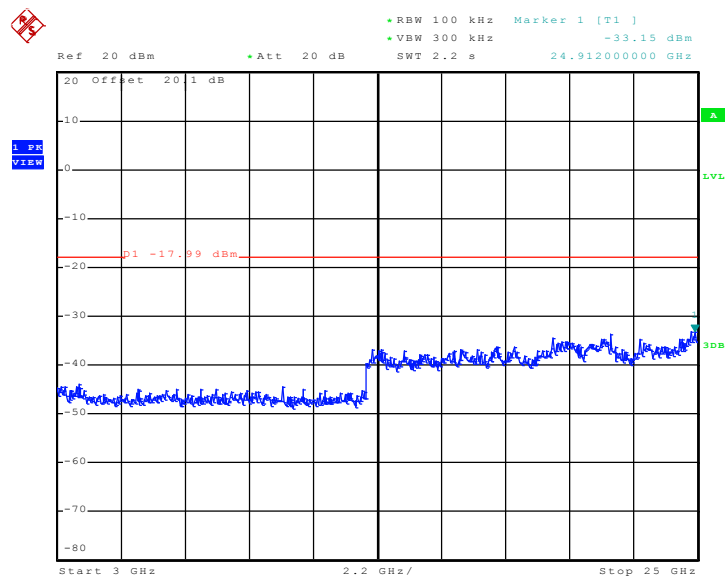


Date: 23.FEB.2011 19:34:58

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

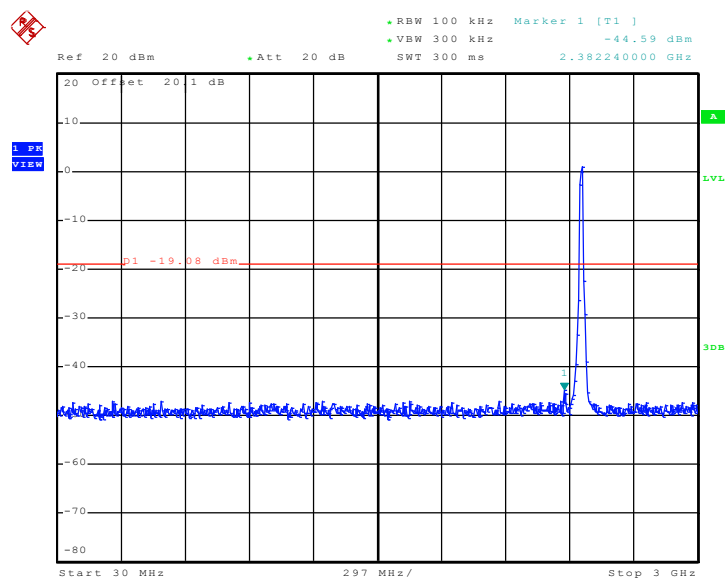
Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 23.FEB.2011 19:20:32

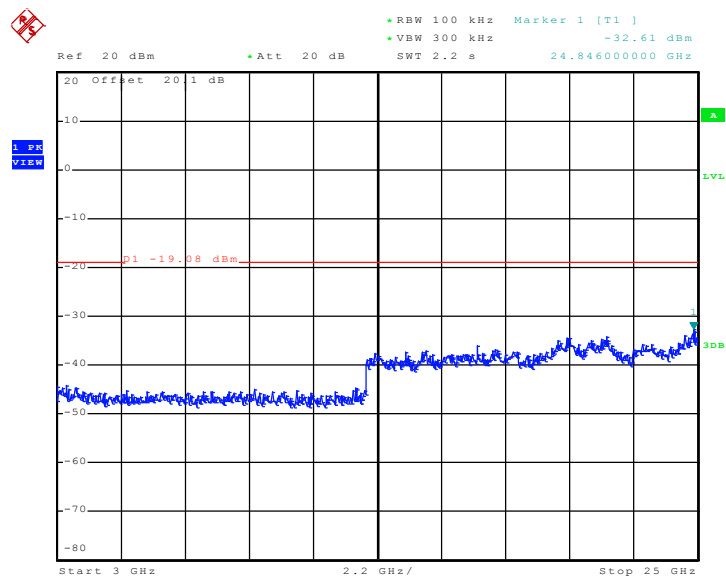
Conducted Spurious Emission Plot between 3GHz ~ 25 GHz


Date: 23.FEB.2011 19:20:49

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

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 23.FEB.2011 19:08:26

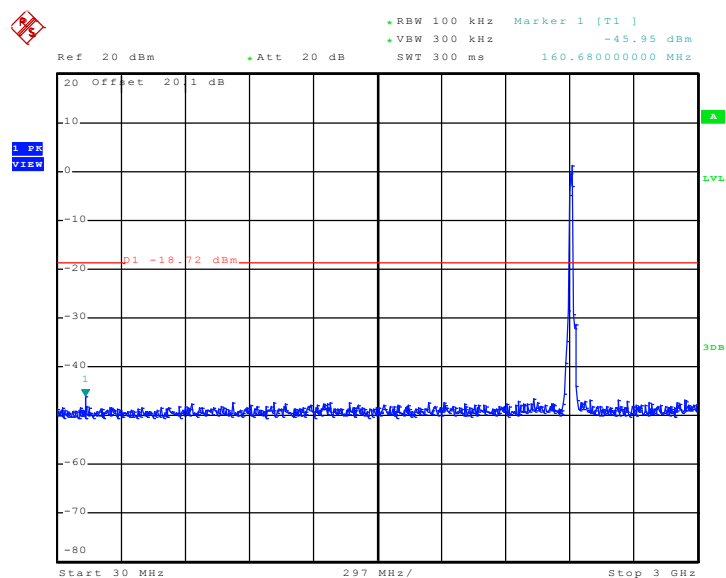
Conducted Spurious Emission Plot between 3GHz ~ 25 GHz


Date: 23.FEB.2011 19:08:43



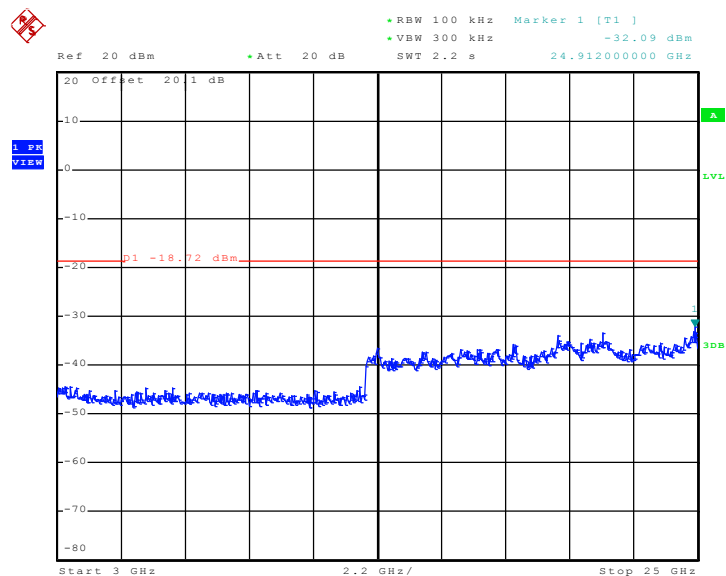
Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



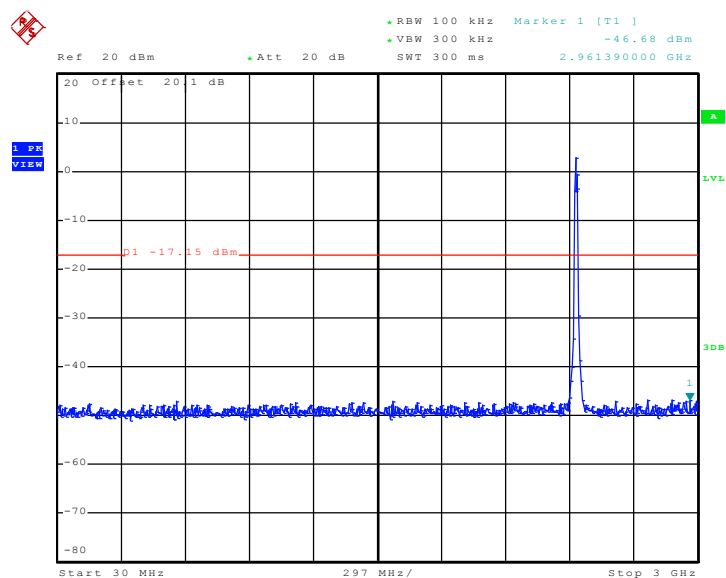
Date: 23.FEB.2011 20:45:34

Conducted Spurious Emission Plot between 3GHz ~ 25 GHz

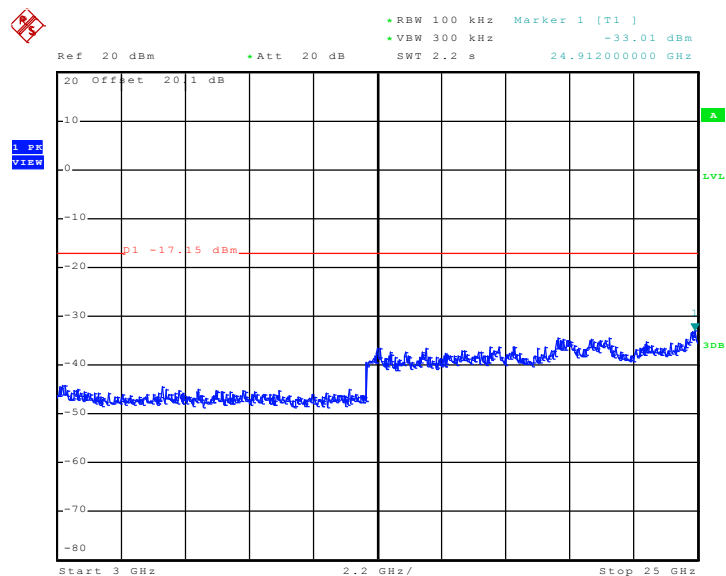


Date: 23.FEB.2011 20:45:51

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

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz


Date: 23.FEB.2011 22:38:54

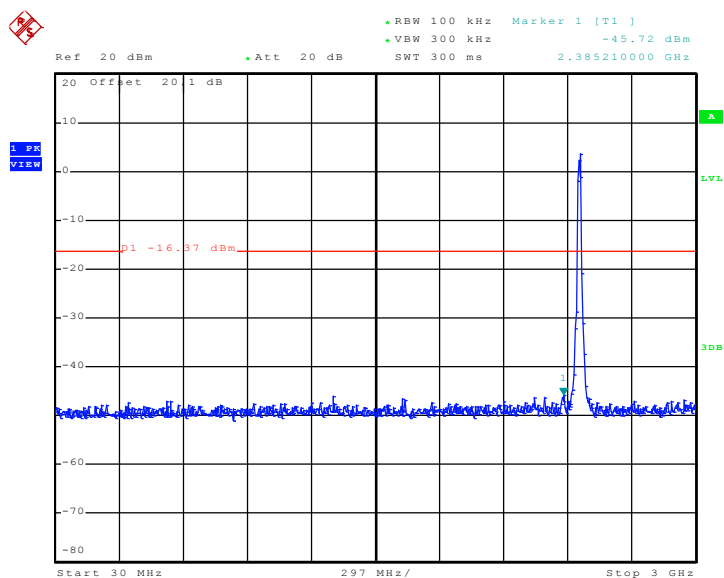
Conducted Spurious Emission Plot between 3GHz ~ 25 GHz


Date: 23.FEB.2011 22:39:11



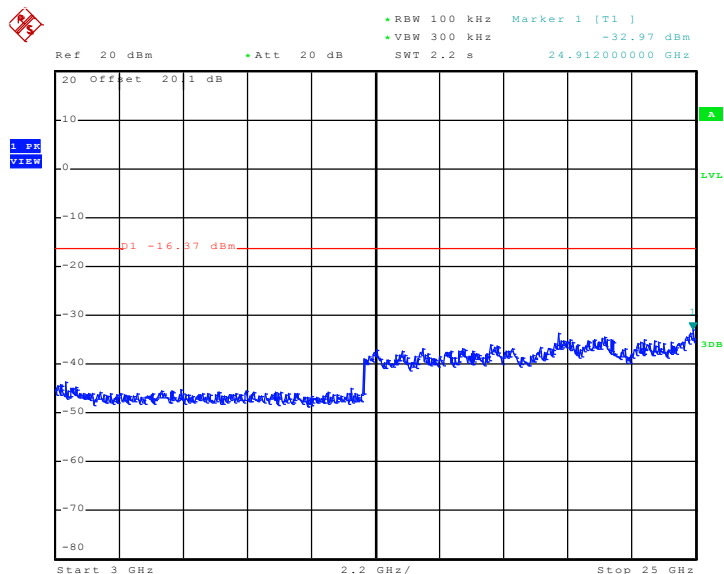
Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Hank Yu

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 23.FEB.2011 22:35:30

Conducted Spurious Emission Plot between 3GHz ~ 25 GHz



Date: 23.FEB.2011 22:35:47

3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density

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

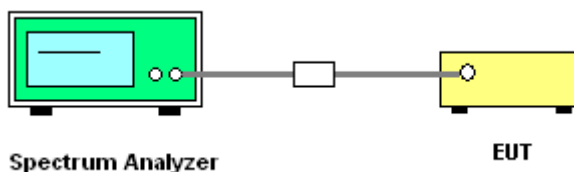
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup

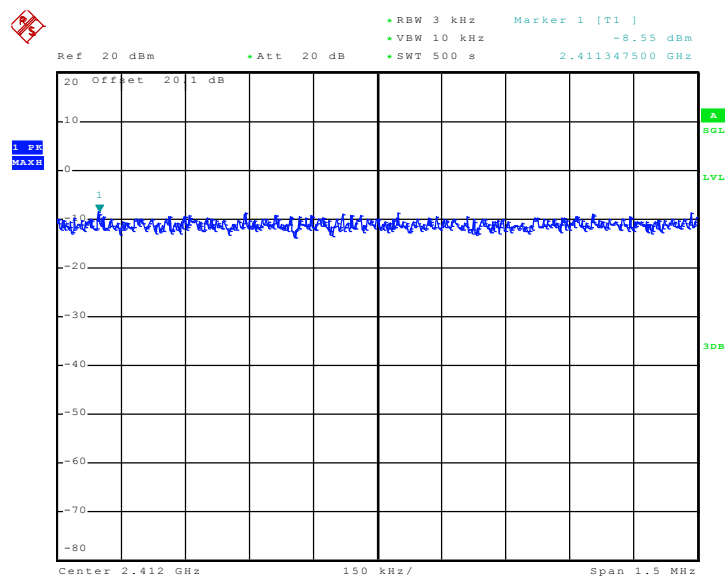


3.5.5 Test Result of Power Spectral Density

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

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-8.55	8	Pass
06	2437	-9.85	8	Pass
11	2462	-8.40	8	Pass

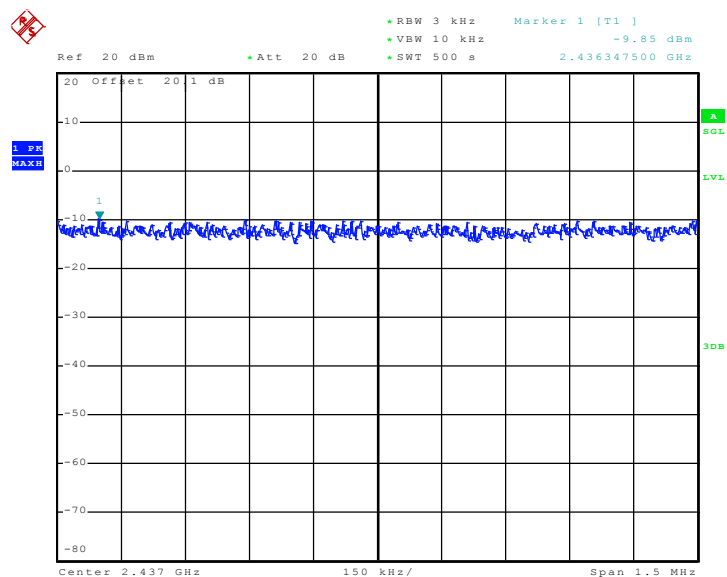
Mode 1 : PSD Plot on 802.11b Channel 01



Date: 23.FEB.2011 08:41:14

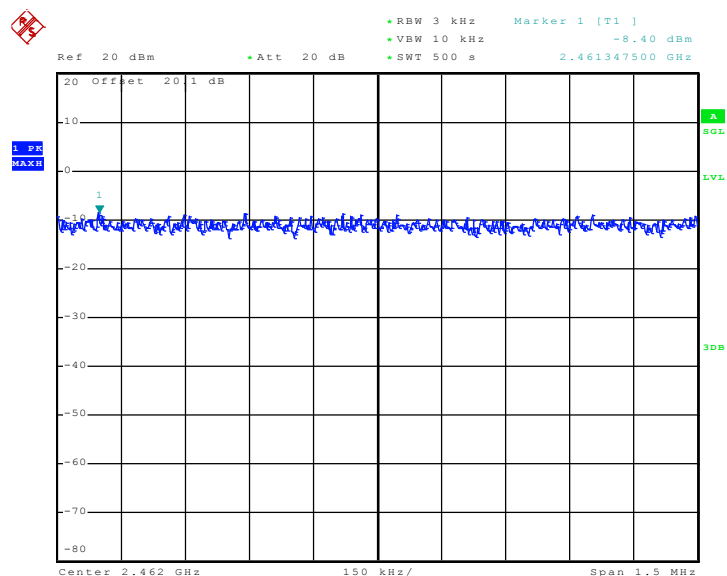


Mode 2 : PSD Plot on 802.11b Channel 06



Date: 23.FEB.2011 08:54:27

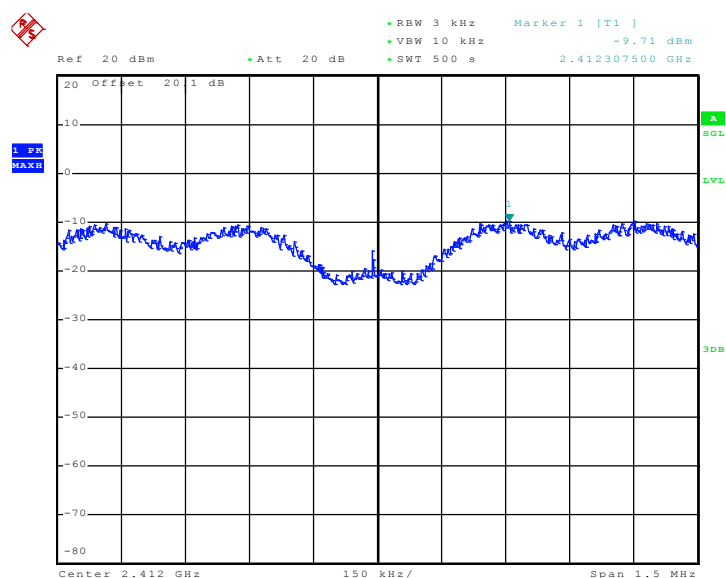
Mode 3 : PSD Plot on 802.11b Channel 11



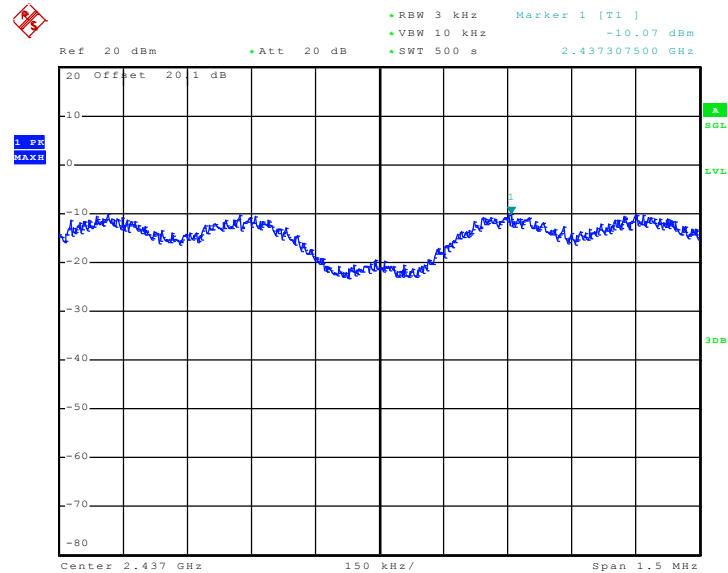
Date: 23.FEB.2011 18:51:08

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

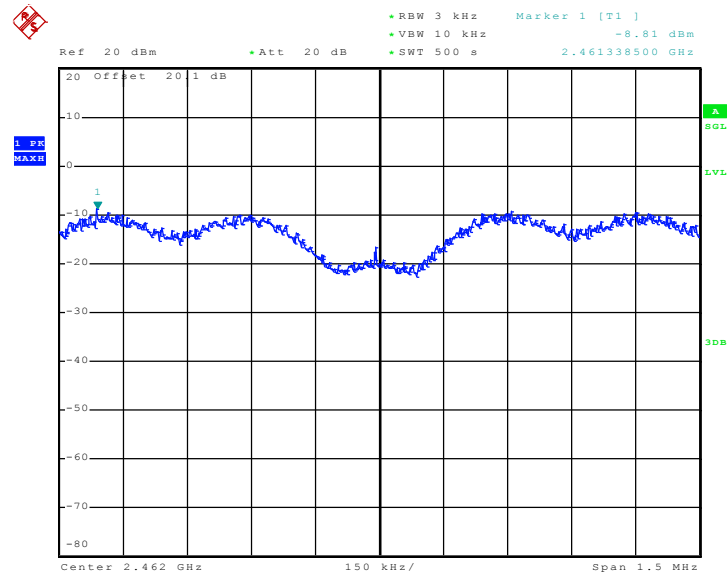
Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.71	8	Pass
06	2437	-10.07	8	Pass
11	2462	-8.81	8	Pass

Mode 4 : PSD Plot on 802.11g Channel 01


Date: 23.FEB.2011 19:33:27

Mode 5 : PSD Plot on 802.11g Channel 06


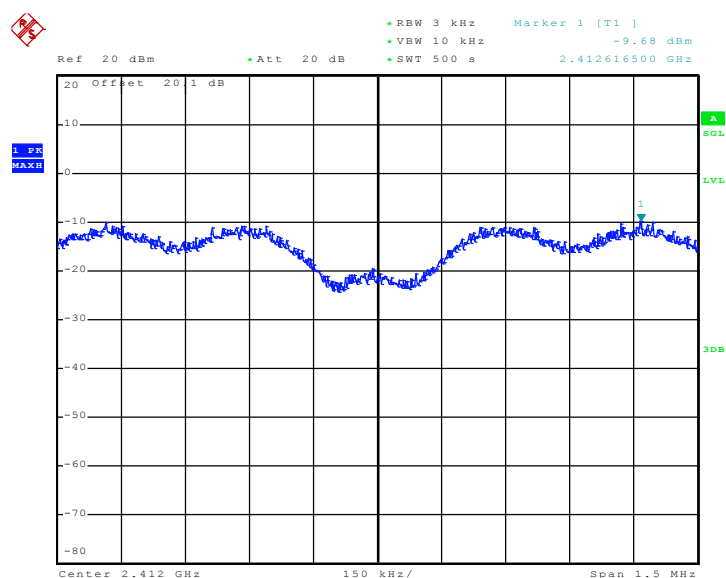
Date: 23.FEB.2011 19:20:11

Mode 6 : PSD Plot on 802.11g Channel 11


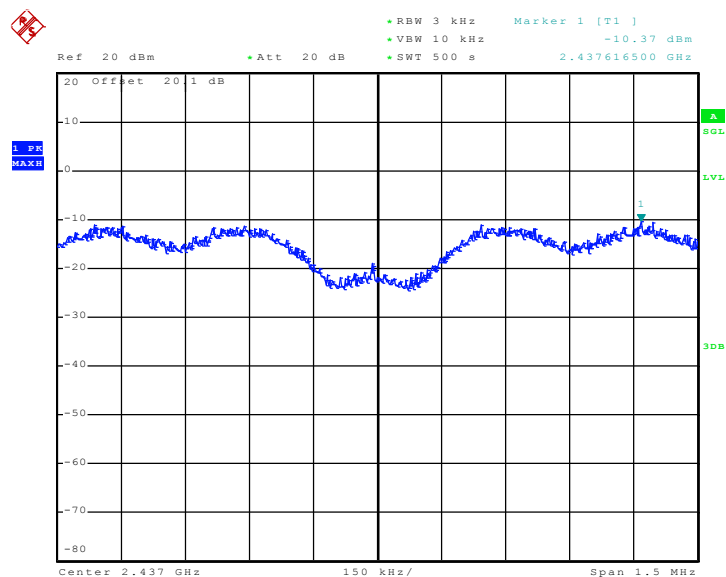
Date: 23.FEB.2011 19:08:06

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

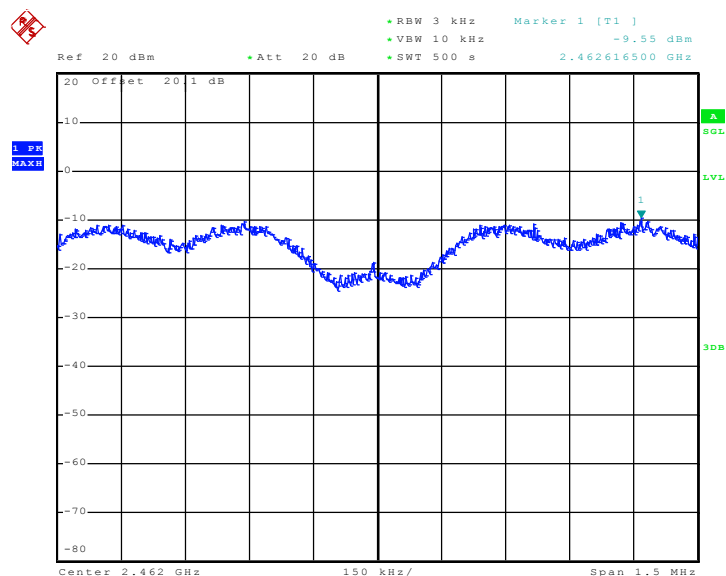
Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-9.68	8	Pass
06	2437	-10.37	8	Pass
11	2462	-9.55	8	Pass

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


Date: 23.FEB.2011 20:45:12

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


Date: 23.FEB.2011 20:59:07

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


Date: 23.FEB.2011 21:08:02

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.

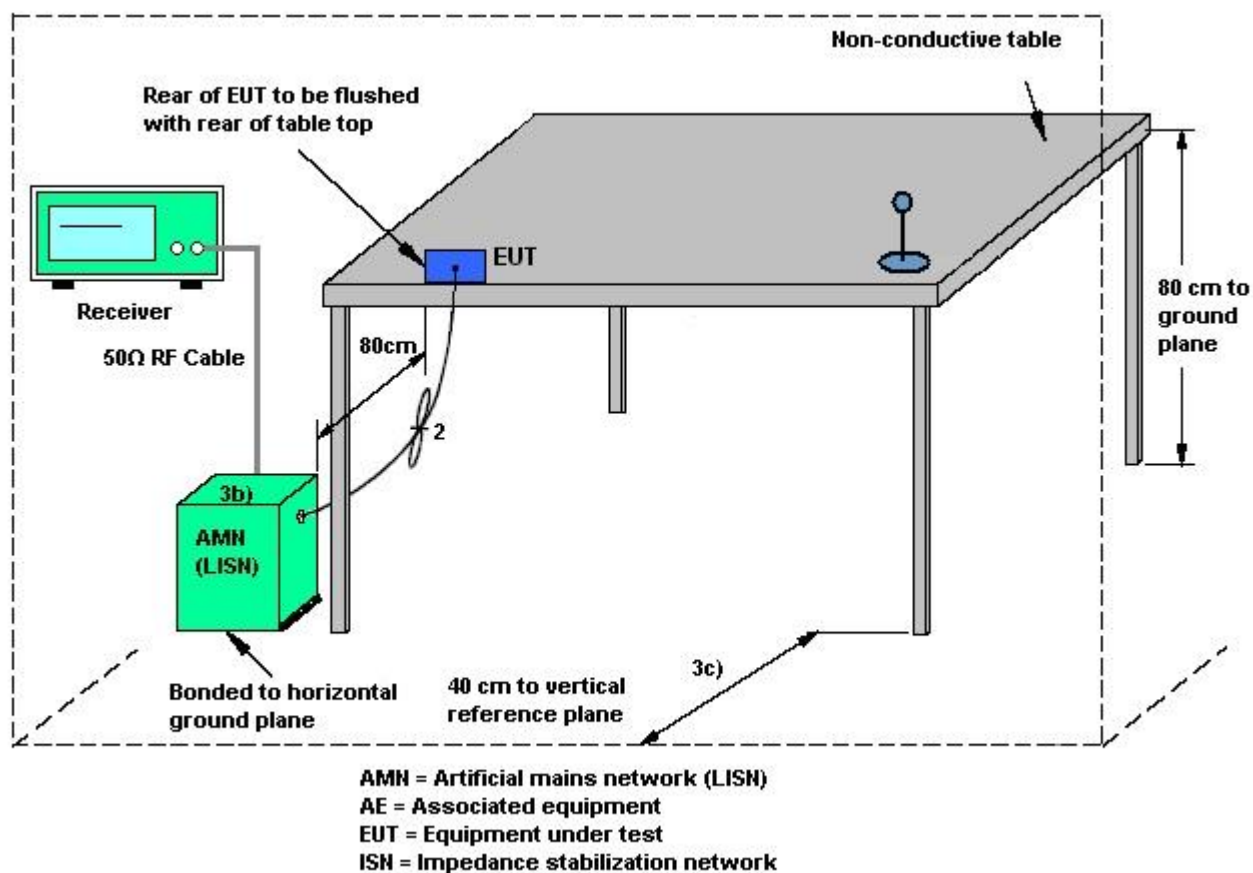
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

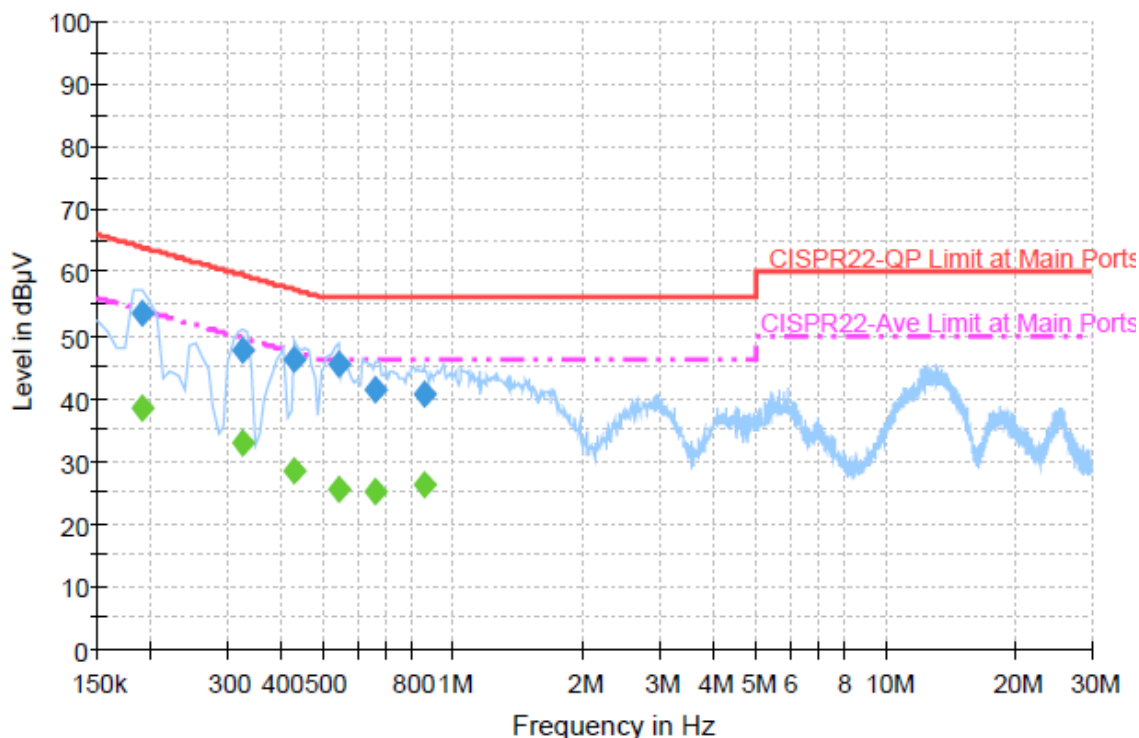
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (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 :	WLAN Link + Bluetooth Link + GPS Rx + TC + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



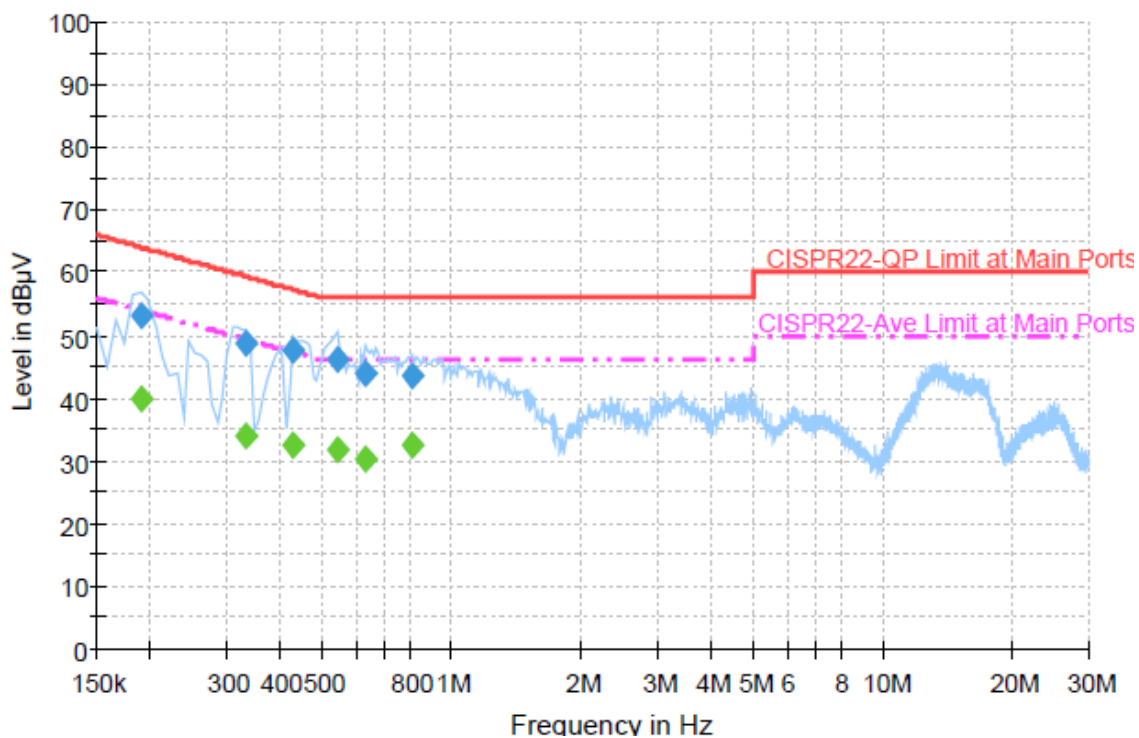
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190000	53.6	Off	L1	19.4	10.4	64.0
0.326000	47.7	Off	L1	19.3	11.9	59.6
0.430000	45.9	Off	L1	19.4	11.4	57.3
0.542000	45.5	Off	L1	19.3	10.5	56.0
0.662000	41.4	Off	L1	19.4	14.6	56.0
0.854000	40.7	Off	L1	19.5	15.3	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190000	38.4	Off	L1	19.4	15.6	54.0
0.326000	32.9	Off	L1	19.3	16.7	49.6
0.430000	28.5	Off	L1	19.4	18.8	47.3
0.542000	25.5	Off	L1	19.3	20.5	46.0
0.662000	25.2	Off	L1	19.4	20.8	46.0
0.854000	26.1	Off	L1	19.5	19.9	46.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Bluetooth Link + GPS Rx + TC + 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)
0.190000	53.2	Off	N	19.4	10.8	64.0
0.334000	48.6	Off	N	19.3	10.8	59.4
0.430000	47.4	Off	N	19.4	9.9	57.3
0.542000	46.3	Off	N	19.3	9.7	56.0
0.630000	43.9	Off	N	19.4	12.1	56.0
0.806000	43.5	Off	N	19.4	12.5	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.190000	39.9	Off	N	19.4	14.1	54.0
0.334000	33.8	Off	N	19.3	15.6	49.4
0.430000	32.6	Off	N	19.4	14.7	47.3
0.542000	31.7	Off	N	19.3	14.3	46.0
0.630000	30.2	Off	N	19.4	15.8	46.0
0.806000	32.4	Off	N	19.4	13.6	46.0

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

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

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

3.7.2 Measuring Instruments

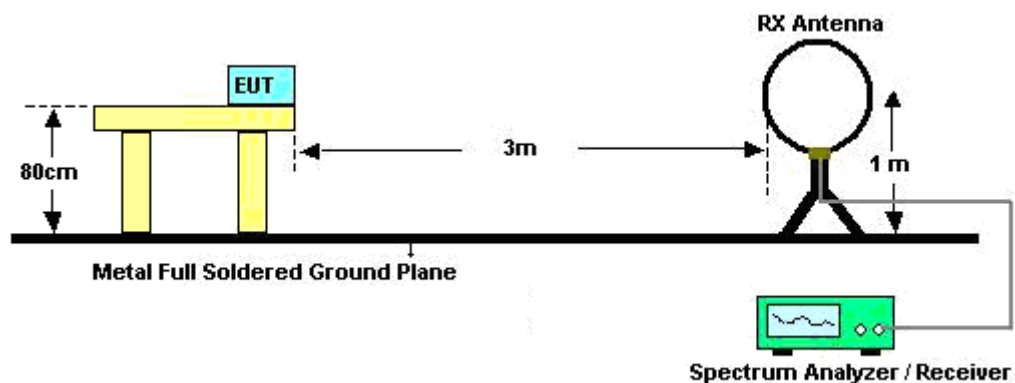
See list of measuring instruments of this test report.

3.7.3 Test Procedures

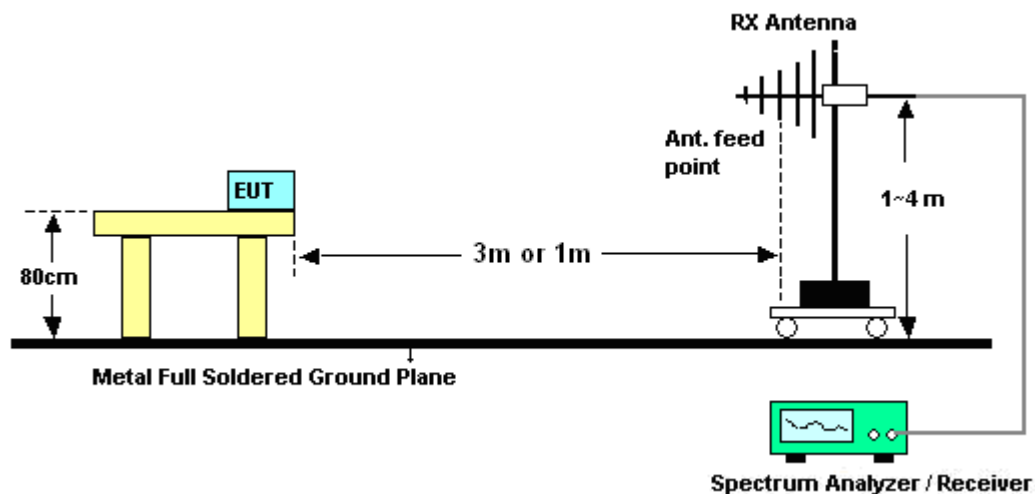
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	David Yang	Temperature :	22~23℃	
		Relative Humidity :	45~49%	

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 :	22~23℃
Test Channel :	01	Relative Humidity :	45~49%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz and 9648 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.54	25.13	-14.87	40	39.78	16.27	0.54	31.46	-	-	Peak
40.53	25.4	-14.6	40	43.78	12.5	0.63	31.51	121	196	Peak
177.42	16.33	-27.17	43.5	37.36	9.26	1.24	31.53	-	-	Peak
318.2	22.78	-23.22	46	38.26	14.03	1.81	31.32	-	-	Peak
531	25.14	-20.86	46	34.96	18.69	2.51	31.02	-	-	Peak
766.9	25.03	-20.97	46	30.68	21.95	3.09	30.69	-	-	Peak
2389.61	53.47	-20.53	74	49.11	32.18	6.03	33.85	100	58	Peak
2389.61	41.79	-12.21	54	37.43	32.18	6.03	33.85	100	58	Average
2412	105.28	-	-	100.88	32.2	6.07	33.87	100	58	Peak
2412	101.43	-	-	97.03	32.2	6.07	33.87	100	58	Average
2494	35.67	-18.33	54	31.09	32.3	6.18	33.9	100	58	Average
2494	46.17	-27.83	74	41.59	32.3	6.18	33.9	100	58	Peak
4824	50.13	-23.87	74	63.39	34.07	9.12	56.45	100	0	Peak
7236	56.68	-28.6	85.28	68.15	35.51	10.03	57.01	100	0	Peak
9648	48.58	-36.7	85.28	56.76	36.65	11.99	56.82	100	0	Peak

Test Mode :	Mode 1	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	45~49%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.62	36.68	-3.32	40	51.55	16.04	0.55	31.46	100	358	Peak
83.46	26.67	-13.33	40	49.65	7.66	0.9	31.54	-	-	Peak
164.46	21.74	-21.76	43.5	41.95	10.08	1.23	31.52	-	-	Peak
318.2	21.52	-24.48	46	37	14.03	1.81	31.32	-	-	Peak
531	23.22	-22.78	46	33.04	18.69	2.51	31.02	-	-	Peak
719.3	24.14	-21.86	46	30.72	21.2	2.99	30.77	-	-	Peak
2389.99	51.55	-22.45	74	47.19	32.18	6.03	33.85	134	60	Peak
2389.99	39.2	-14.8	54	34.84	32.18	6.03	33.85	134	60	Average
2412	102.02	-	-	97.62	32.2	6.07	33.87	134	60	Peak
2412	98.14	-	-	93.74	32.2	6.07	33.87	134	60	Average
2492	34.54	-19.46	54	29.96	32.3	6.18	33.9	134	60	Average
2492	45.53	-28.47	74	40.95	32.3	6.18	33.9	134	60	Peak
4824	46.92	-27.08	74	60.18	34.07	9.12	56.45	100	0	Peak
7236	57.23	-24.79	82.02	68.7	35.51	10.03	57.01	100	0	Peak

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~49%
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
30	23.85	-16.15	40	38.27	16.51	0.53	31.46	-	-	Peak
40.53	25.14	-14.86	40	43.52	12.5	0.63	31.51	133	255	Peak
212.25	15.43	-28.07	43.5	35.54	9.99	1.37	31.47	-	-	Peak
318.2	23.92	-22.08	46	39.4	14.03	1.81	31.32	-	-	Peak
531	24.23	-21.77	46	34.05	18.69	2.51	31.02	-	-	Peak
719.3	26.11	-19.89	46	32.69	21.2	2.99	30.77	-	-	Peak
2356	45.53	-28.47	74	41.28	32.13	5.95	33.83	100	59	Peak
2356	34.47	-19.53	54	30.22	32.13	5.95	33.83	100	59	Average
2437	104.77	-	-	100.3	32.24	6.11	33.88	100	59	Peak
2437	100.93	-	-	96.46	32.24	6.11	33.88	100	59	Average
2492	44.01	-29.99	74	39.43	32.3	6.18	33.9	100	59	Peak
2492	32.69	-21.31	54	28.11	32.3	6.18	33.9	100	59	Average
4874	46.75	-27.25	74	60.02	34.08	9.14	56.49	100	0	Peak
7311	54.83	-19.17	74	66.3	35.45	10.06	56.98	100	345	Peak
7311	49.85	-4.15	54	61.32	35.45	10.06	56.98	100	345	Average

Test Mode :	Mode 2	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~49%
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
30.81	35.78	-4.22	40	50.43	16.27	0.54	31.46	104	41	Peak
84.54	26.34	-13.66	40	49.18	7.8	0.9	31.54	-	-	Peak
164.73	21.89	-21.61	43.5	42.1	10.08	1.23	31.52	-	-	Peak
318.2	21.72	-24.28	46	37.2	14.03	1.81	31.32	-	-	Peak
531	23.48	-22.52	46	33.3	18.69	2.51	31.02	-	-	Peak
719.3	23.37	-22.63	46	29.95	21.2	2.99	30.77	-	-	Peak
2390	45.21	-28.79	74	40.85	32.18	6.03	33.85	133	60	Peak
2390	33.59	-20.41	54	29.23	32.18	6.03	33.85	133	60	Average
2437	98.42	-	-	93.95	32.24	6.11	33.88	133	60	Average
2437	102.19	-	-	97.72	32.24	6.11	33.88	133	60	Peak
2500	44.23	-29.77	74	39.65	32.3	6.18	33.9	133	60	Peak
2500	32.54	-21.46	54	27.96	32.3	6.18	33.9	133	60	Average
4874	46.97	-27.03	74	60.25	34.08	9.13	56.49	100	0	Peak
7311	56.27	-17.73	74	67.74	35.45	10.06	56.98	101	355	Peak
7311	51.58	-2.42	54	63.05	35.45	10.06	56.98	101	355	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~49%
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
30.54	23.76	-16.24	40	38.41	16.27	0.54	31.46	-	-	Peak
40.53	25.58	-14.42	40	43.96	12.5	0.63	31.51	131	174	Peak
188.22	14.42	-29.08	43.5	35.6	9.06	1.27	31.51	-	-	Peak
318.2	23.12	-22.88	46	38.6	14.03	1.81	31.32	-	-	Peak
531	24.09	-21.91	46	33.91	18.69	2.51	31.02	-	-	Peak
719.3	26.53	-19.47	46	33.11	21.2	2.99	30.77	-	-	Peak
2382	53.15	-20.85	74	48.81	32.16	6.03	33.85	100	130	Peak
2382	46.66	-7.34	54	42.32	32.16	6.03	33.85	100	130	Average
2462	99.98	-	-	95.47	32.26	6.14	33.89	100	130	Average
2462	103.78	-	-	99.27	32.26	6.14	33.89	100	130	Peak
2483.5	49.56	-24.44	74	45	32.28	6.18	33.9	100	130	Peak
2483.5	37.86	-16.14	54	33.3	32.28	6.18	33.9	100	130	Average
4924	49.95	-24.05	74	63.23	34.09	9.15	56.52	100	0	Peak
7386	54.43	-19.57	74	65.88	35.38	10.1	56.93	103	72	Peak
7386	49.91	-4.09	54	61.36	35.38	10.1	56.93	103	72	Average

Test Mode :	Mode 3	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~49%
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	36.21	-3.79	40	51.32	15.8	0.56	31.47	110	101	Peak
83.46	26.8	-13.2	40	49.78	7.66	0.9	31.54	-	-	Peak
164.46	22.16	-21.34	43.5	42.37	10.08	1.23	31.52	-	-	Peak
318.2	21.11	-24.89	46	36.59	14.03	1.81	31.32	-	-	Peak
486.2	19.68	-26.32	46	30.35	17.99	2.4	31.06	-	-	Peak
786.5	24.34	-21.66	46	29.65	22.26	3.12	30.69	-	-	Peak
2382	50.03	-23.97	74	45.69	32.16	6.03	33.85	131	42	Peak
2382	41.72	-12.28	54	37.38	32.16	6.03	33.85	131	42	Average
2462	97.51	-	-	93	32.26	6.14	33.89	131	42	Average
2462	101.37	-	-	96.86	32.26	6.14	33.89	131	42	Peak
2484.61	47.68	-26.32	74	43.12	32.28	6.18	33.9	131	42	Peak
2484.61	36.51	-17.49	54	31.95	32.28	6.18	33.9	131	42	Average
7386	57.33	-16.67	74	68.78	35.38	10.1	56.93	100	57	Peak
7386	51.96	-2.04	54	63.41	35.38	10.1	56.93	100	57	Average

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	45~49%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.54	24.18	-15.82	40	38.83	16.27	0.54	31.46	-	-	Peak
40.53	24.89	-15.11	40	43.27	12.5	0.63	31.51	123	188	Peak
212.25	16.04	-27.46	43.5	36.15	9.99	1.37	31.47	-	-	Peak
318.2	23.28	-22.72	46	38.76	14.03	1.81	31.32	-	-	Peak
531	24.08	-21.92	46	33.9	18.69	2.51	31.02	-	-	Peak
769	24.49	-21.51	46	30.11	21.98	3.09	30.69	-	-	Peak
2389.61	72.18	-1.82	74	67.82	32.18	6.03	33.85	100	128	Peak
2389.61	53.36	-0.64	54	49	32.18	6.03	33.85	100	128	Average
2412	94.46	-	-	90.06	32.2	6.07	33.87	100	128	Average
2412	104.91	-	-	100.51	32.2	6.07	33.87	100	128	Peak
2486	36.49	-17.51	54	31.93	32.28	6.18	33.9	100	128	Average
2486	47.94	-26.06	74	43.38	32.28	6.18	33.9	100	128	Peak
4824	46.78	-27.22	74	60.04	34.07	9.12	56.45	100	0	Peak
7236	54.62	-30.29	84.91	66.09	35.51	10.03	57.01	100	0	Peak

Test Mode :	Mode 4	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	45~49%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 2412 MHz is Fundamental Signals which can be ignored. 2. 7236 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	36.76	-3.24	40	51.87	15.8	0.56	31.47	108	62	Peak
77.25	26.7	-13.3	40	50.39	6.97	0.87	31.53	-	-	Peak
165.54	22.25	-21.25	43.5	42.52	10.02	1.23	31.52	-	-	Peak
318.2	21.56	-24.44	46	37.04	14.03	1.81	31.32	-	-	Peak
531	23.69	-22.31	46	33.51	18.69	2.51	31.02	-	-	Peak
774.6	23.56	-22.44	46	29.08	22.07	3.1	30.69	-	-	Peak
2390	69.25	-4.75	74	64.89	32.18	6.03	33.85	134	60	Peak
2390	48.39	-5.61	54	44.03	32.18	6.03	33.85	134	60	Average
2412	103.03	-	-	98.63	32.2	6.07	33.87	134	60	Peak
2412	92.76	-	-	88.36	32.2	6.07	33.87	134	60	Average
2492	37.1	-16.9	54	32.52	32.3	6.18	33.9	134	60	Average
2492	47.93	-26.07	74	43.35	32.3	6.18	33.9	134	60	Peak
7236	56.39	-26.64	83.03	67.86	35.51	10.03	57.01	100	0	Peak

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~49%
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
30	25.68	-14.32	40	40.1	16.51	0.53	31.46	115	127	Peak
48.09	24.28	-15.72	40	46.05	9.08	0.68	31.53	-	-	Peak
120.18	14.34	-29.16	43.5	33.27	11.53	1.1	31.56	-	-	Peak
318.2	23.29	-22.71	46	38.77	14.03	1.81	31.32	-	-	Peak
531	24.61	-21.39	46	34.43	18.69	2.51	31.02	-	-	Peak
719.3	26.14	-19.86	46	32.72	21.2	2.99	30.77	-	-	Peak
2390	57.7	-16.3	74	53.34	32.18	6.03	33.85	100	58	Peak
2390	40.09	-13.91	54	35.73	32.18	6.03	33.85	100	58	Average
2437	108.69	-	-	104.22	32.24	6.11	33.88	100	58	Peak
2437	98.51	-	-	94.04	32.24	6.11	33.88	100	58	Average
2484	51.32	-22.68	74	46.76	32.28	6.18	33.9	100	58	Peak
2484	36.39	-17.61	54	31.83	32.28	6.18	33.9	100	58	Average
4874	45.21	-28.79	74	58.49	34.08	9.13	56.49	100	0	Peak
7311	58.08	-15.92	74	69.55	35.45	10.06	56.98	100	345	Peak
7311	45.23	-8.77	54	56.7	35.45	10.06	56.98	100	345	Average

Test Mode :	Mode 5	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~49%
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
32.7	35.98	-4.02	40	51.09	15.8	0.56	31.47	107	58	Peak
83.73	26.43	-13.57	40	49.41	7.66	0.9	31.54	-	-	Peak
205.5	25.24	-18.26	43.5	45.86	9.51	1.34	31.47	-	-	Peak
318.2	21.69	-24.31	46	37.17	14.03	1.81	31.32	-	-	Peak
531	22.96	-23.04	46	32.78	18.69	2.51	31.02	-	-	Peak
719.3	22.72	-23.28	46	29.3	21.2	2.99	30.77	-	-	Peak
2390	52.85	-21.15	74	48.49	32.18	6.03	33.85	133	61	Peak
2390	37.9	-16.1	54	33.54	32.18	6.03	33.85	133	61	Average
2437	105.38	-	-	100.91	32.24	6.11	33.88	133	61	Peak
2437	95.81	-	-	91.34	32.24	6.11	33.88	133	61	Average
2484	53.14	-20.86	74	48.58	32.28	6.18	33.9	133	61	Peak
2484	36.29	-17.71	54	31.73	32.28	6.18	33.9	133	61	Average
4874	46.83	-27.17	74	60.11	34.08	9.13	56.49	100	0	Peak
7311	60.42	-13.58	74	71.89	35.45	10.06	56.98	101	11	Peak
7311	47.45	-6.55	54	58.92	35.45	10.06	56.98	101	11	Average



Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~49%
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
30.81	28.48	-11.52	40	43.13	16.27	0.54	31.46	-	-	Peak
41.34	28.84	-11.16	40	47.68	12.04	0.63	31.51	105	321	Peak
241.41	22.87	-23.13	46	40.71	12.05	1.53	31.42	-	-	Peak
318.2	22.55	-23.45	46	38.03	14.03	1.81	31.32	-	-	Peak
531	27.12	-18.88	46	36.94	18.69	2.51	31.02	-	-	Peak
623.4	23.53	-22.47	46	31.64	20.03	2.76	30.9	-	-	Peak
2382	57.22	-16.78	74	52.88	32.16	6.03	33.85	100	130	Peak
2382	47	-7	54	42.66	32.16	6.03	33.85	100	130	Average
2462	107.86	-	-	103.35	32.26	6.14	33.89	100	130	Peak
2462	97.65	-	-	93.14	32.26	6.14	33.89	100	130	Average
2483.5	70.44	-3.56	74	65.88	32.28	6.18	33.9	100	130	Peak
2483.5	48.65	-5.35	54	44.09	32.28	6.18	33.9	100	130	Average
4924	48.93	-25.07	74	62.21	34.09	9.15	56.52	100	0	Peak
7386	59.27	-14.73	74	70.72	35.38	10.1	56.93	100	25	Peak
7386	43.68	-10.32	54	55.13	35.38	10.1	56.93	100	25	Average

Test Mode :	Mode 6	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~49%
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
31.62	36.5	-3.5	40	51.37	16.04	0.55	31.46	120	69	Peak
78.06	26.47	-13.53	40	50.08	7.05	0.87	31.53	-	-	Peak
164.73	22.14	-21.36	43.5	42.35	10.08	1.23	31.52	-	-	Peak
318.2	26.61	-19.39	46	42.09	14.03	1.81	31.32	-	-	Peak
424.6	20.49	-25.51	46	32.42	16.98	2.23	31.14	-	-	Peak
623.4	24.85	-21.15	46	32.96	20.03	2.76	30.9	-	-	Peak
2382	53.34	-20.66	74	49	32.16	6.03	33.85	100	29	Peak
2382	42.38	-11.62	54	38.04	32.16	6.03	33.85	100	29	Average
2462	104.52	-	-	100.01	32.26	6.14	33.89	100	29	Peak
2462	94.01	-	-	89.5	32.26	6.14	33.89	100	29	Average
2483.5	69.21	-4.79	74	64.65	32.28	6.18	33.9	100	29	Peak
2483.5	47.52	-6.48	54	42.96	32.28	6.18	33.9	100	29	Average
7386	59.58	-14.42	74	71.02	35.4	10.1	56.94	100	17	Peak
7386	46.99	-7.01	54	58.44	35.38	10.1	56.93	100	17	Average

Test Mode :	Mode 7	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	45~49%
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
2389.99	52.46	-1.54	54	48.1	32.18	6.03	33.85	120	48	Average
2389.99	72.85	-1.15	74	68.49	32.18	6.03	33.85	120	48	Peak
2412	96.6	-	-	92.2	32.2	6.07	33.87	120	48	Average
2412	106.55	-	-	102.15	32.2	6.07	33.87	120	48	Peak
2492	51.92	-22.08	74	47.34	32.3	6.18	33.9	120	48	Peak
2492	40.66	-13.34	54	36.08	32.3	6.18	33.9	120	48	Average

Test Mode :	Mode 7	Temperature :	22~23℃
Test Channel :	01	Relative Humidity :	45~49%
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
2389.61	45.4	-8.6	54	41.04	32.18	6.03	33.85	102	42	Average
2389.61	65.24	-8.76	74	60.88	32.18	6.03	33.85	102	42	Peak
2412	89.96	-	-	85.56	32.2	6.07	33.87	102	42	Average
2412	100.09	-	-	95.69	32.2	6.07	33.87	102	42	Peak
2484	45.82	-28.18	74	41.26	32.28	6.18	33.9	102	42	Peak
2484	34.91	-19.09	54	30.35	32.28	6.18	33.9	102	42	Average

Test Mode :	Mode 8	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~49%
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
2390	39.53	-14.47	54	35.17	32.18	6.03	33.85	100	58	Average
2390	55.29	-18.71	74	50.93	32.18	6.03	33.85	100	58	Peak
2437	96.96	-	-	92.49	32.24	6.11	33.88	100	58	Average
2437	107.41	-	-	102.94	32.24	6.11	33.88	100	58	Peak
2484	35.73	-18.27	54	31.17	32.28	6.18	33.9	100	58	Average
2484	48.38	-25.62	74	43.82	32.28	6.18	33.9	100	58	Peak

Test Mode :	Mode 8	Temperature :	22~23℃
Test Channel :	06	Relative Humidity :	45~49%
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
2390	37.3	-16.7	54	32.94	32.18	6.03	33.85	132	60	Average
2390	51.89	-22.11	74	47.53	32.18	6.03	33.85	132	60	Peak
2437	104.41	-	-	99.96	32.22	6.11	33.88	132	60	Peak
2437	94.03	-	-	89.56	32.24	6.11	33.88	132	60	Average
2484	35.18	-18.82	54	30.62	32.28	6.18	33.9	132	60	Average
2484	48.86	-25.14	74	44.3	32.28	6.18	33.9	132	60	Peak

Test Mode :	Mode 9	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~49%
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
2382	44.76	-9.24	54	40.42	32.16	6.03	33.85	122	54	Average
2382	55.76	-18.24	74	51.42	32.16	6.03	33.85	122	54	Peak
2462	107.14	-	-	102.63	32.26	6.14	33.89	122	54	Peak
2462	96.69	-	-	92.18	32.26	6.14	33.89	122	54	Average
2483.85	49.05	-4.95	54	44.49	32.28	6.18	33.9	122	54	Average
2483.85	70.62	-3.38	74	66.06	32.28	6.18	33.9	122	54	Peak

Test Mode :	Mode 9	Temperature :	22~23℃
Test Channel :	11	Relative Humidity :	45~49%
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
2388	41.37	-12.63	54	37.01	32.18	6.03	33.85	130	61	Average
2388	52.26	-21.74	74	47.9	32.18	6.03	33.85	130	61	Peak
2462	103.99	-	-	99.48	32.26	6.14	33.89	130	61	Peak
2462	93.21	-	-	88.7	32.26	6.14	33.89	130	61	Average
2483.85	46.76	-7.24	54	42.2	32.28	6.18	33.9	130	61	Average
2483.85	66.04	-7.96	74	61.48	32.28	6.18	33.9	130	61	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	Mar. 19, 2009	Mar. 18, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP30	101329	9kHz~30GHz	Apr. 26, 2010	Apr. 25, 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)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 03, 2010	Dec. 02, 2011	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 27, 2010	Mar. 26, 2011	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-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)
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	Conduction (CO05-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 EP120821 as below.