



# FCC RF Test Report

**APPLICANT** : Hewlett-Packard Company, Palm GBU  
**EQUIPMENT** : Phone  
**BRAND NAME** : HP  
**MODEL NAME** : HSTNH-F30CE  
**FCC ID** : B94HHF30CE  
**STANDARD** : FCC Part 15 Subpart C §15.247  
**CLASSIFICATION** : Digital Transmission System (DTS)

The product was received on Mar. 05, 2011 and completely tested on Apr. 22, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

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

Reviewed by:

Jones Tsai / Manager



## **SPORTON INTERNATIONAL INC.**

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



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## 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 Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 11.5 dB at 0.55 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.46 dB at 2389.99 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1 Applicant

**Hewlett-Packard Company, Palm GBU**  
950 W Maude Avenue, Sunnyvale, CA 94085

## 1.2 Manufacturer

**Hewlett-Packard Company, Palm GBU**  
950 W Maude Avenue, Sunnyvale, CA 94085

## 1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Phone
Brand Name	HP
Model Name	HSTNH-F30CE
FCC ID	B94HHF30CE
Tx/Rx Frequency Range	802.11b/g/n : 2400 MHz ~ 2483.5 MHz 802.11a/n : 5725 MHz ~ 5850 MHz
Channel Spacing	802.11b/g : 5 MHz 802.11a : 20 MHz
Maximum Output Power to Antenna	<b>&lt;2400 MHz ~ 2483.5 MHz&gt;</b> 802.11b : 19.04 dBm (0.08 W) 802.11g : 23.57 dBm (0.23 W) 802.11n (BW 20MHz) : 23.54 dBm (0.23 W) <b>&lt;5725 MHz ~ 5850 MHz&gt;</b> 802.11a : 23.54 dBm (0.23 W) 802.11n (BW 20MHz) : 23.38 dBm (0.22 W) 802.11n (BW 40MHz) : 23.29 dBm (0.21 W)
Antenna Type	802.11b/g/n : PIFA Antenna with gain 0.3 dBi 802.11a/n : PIFA Antenna with gain 4.5 dBi
HW Version	D2
SW Version	WebOS 2.3
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

**Remark:**

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 1.4 Testing Site

<b>Test Site</b>	SPORTON INTERNATIONAL INC.		
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
<b>Test Site No.</b>	<b>Sporton Site No.</b>		<b>FCC/IC Registration No.</b>
	CO05-HY	03CH07HY	722060/4086B-1

## 1.5 Applied Standards

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

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

### Remark:

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

## 1.6 Ancillary Equipment List

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

## 2 Test Configuration of Equipment Under Test

### 2.1 RF Power

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

Channel	Frequency	2.4GHz 802.11b RF Power (dBm)			
		DSSS Data Rate			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	18.85	18.93	19.02	19.04
CH 06	2437 MHz	18.17	-	-	18.25
CH 11	2462 MHz	17.96	-	-	18.28

Channel	Frequency	2.4GHz 802.11g RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	22.34	-	-	-	-	-	-	23.10
CH 06	2437 MHz	22.74	-	-	-	-	-	-	23.45
CH 11	2462 MHz	22.77	22.69	22.97	22.6	22.96	23.54	22.96	23.57

Channel	Frequency	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		M0	M1	M2	M3	M4	M5	M6	M7
CH 01	2412 MHz	22.36	-	-	-	-	-	-	23.05
CH 06	2437 MHz	22.70	-	-	-	-	-	-	23.11
CH 11	2462 MHz	22.90	22.85	23.00	22.75	22.79	23.36	23.50	23.54

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH149	5745 MHz	23.42	-	-	-	-	-	-	-
CH157	5785 MHz	23.54	23.42	23.42	23.11	23.50	23.52	23.46	23.34
CH165	5825 MHz	23.16	-	-	-	-	-	-	-

Channel	Frequency	802.11n (BW 20MHz) RF Power (dBm)							
		OFDM Data Rate							
		M0	M1	M2	M3	M4	M5	M6	M7
CH149	5745 MHz	23.35	-	-	-	-	-	-	-
CH157	5785 MHz	23.38	23.24	23.22	23.02	22.80	22.71	23.03	22.64
CH165	5825 MHz	23.08	-	-	-	-	-	-	-

Channel	Frequency	802.11n (BW 40MHz) RF Power (dBm)							
		OFDM Data Rate							
		M0	M1	M2	M3	M4	M5	M6	M7
CH151	5755 MHz	23.12	-	-	-	-	-	-	-
CH159	5795 MHz	23.29	23.25	23.22	23.1	23.07	23.17	23	22.82

**Remark:**

1. The data rates of WLAN 802.11a/b/g/n were set in 11Mbps for 802.11b, 54Mbps for 802.11g, M7 for 802.11n (BW 20MHz), 6Mbps for 802.11a, M0 for 802.11n (BW 20MHz), and M0 for 802.11n (BW 40MHz) 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

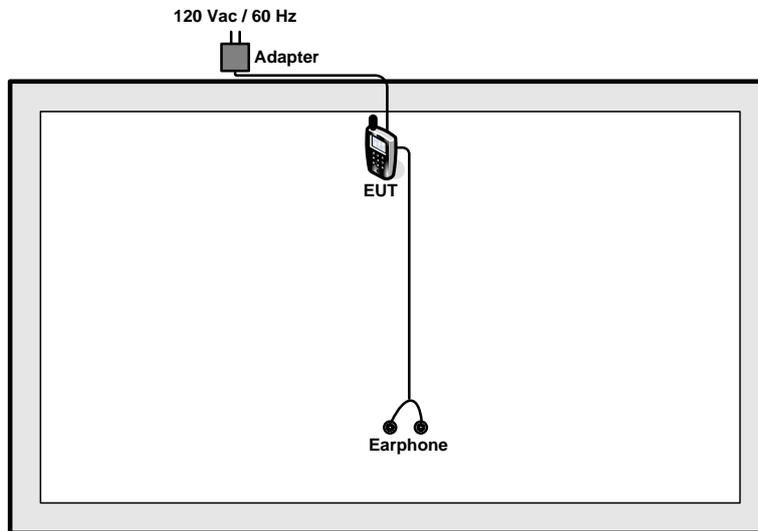
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following table is showing the total pre-scanned test modes, and the worst modes are recorded in this report only.

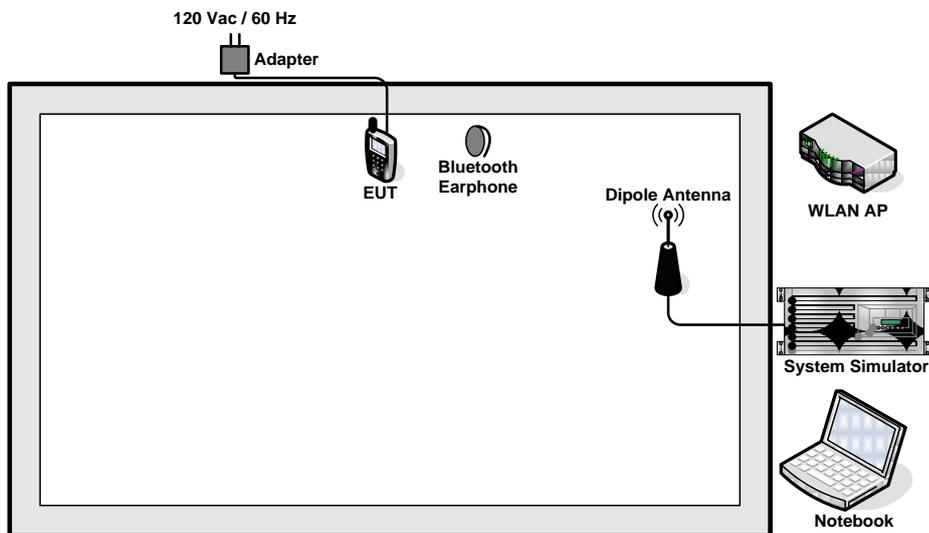
Test Cases		
Test Item	802.11b (Modulation : DSSS) 802.11g/n (Modulation : OFDM)	802.11a/n (Modulation : OFDM)
<b>Conducted TCs</b>	Mode 1: 802.11b_CH01_2412 MHz Mode 2: 802.11b_CH06_2437 MHz Mode 3: 802.11b_CH11_2462 MHz Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n_CH01_2412 MHz (BW 20M) Mode 8: 802.11n_CH06_2437 MHz (BW 20M) Mode 9: 802.11n_CH11_2462 MHz (BW 20M)	Mode 10: 802.11a_CH149_5745 MHz Mode 11: 802.11a_CH157_5785 MHz Mode 12: 802.11a_CH165_5825 MHz Mode 13: 802.11n_CH149_5745 MHz (BW 20M) Mode 14: 802.11n_CH157_5785 MHz (BW 20M) Mode 15: 802.11n_CH165_5825 MHz (BW 20M) Mode 16: 802.11n_CH151_5755 MHz (BW 40M) Mode 17: 802.11n_CH159_5795 MHz (BW 40M)
<b>Radiated TCs</b>	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_CH01_2412 MHz (BW 20M) Mode 8: 802.11n_CH06_2437 MHz (BW 20M) Mode 9: 802.11n_CH11_2462 MHz (BW 20M)	Mode 10: 802.11a_CH149_5745 MHz Mode 11: 802.11a_CH157_5785 MHz Mode 12: 802.11a_CH165_5825 MHz Mode 13: 802.11n_CH149_5745 MHz (BW 20M) Mode 14: 802.11n_CH157_5785 MHz (BW 20M) Mode 15: 802.11n_CH165_5825 MHz (BW 20M) Mode 16: 802.11n_CH151_5755 MHz (BW 40M) Mode 17: 802.11n_CH159_5795 MHz (BW 40M)
<b>AC Conducted Emission</b>	Mode 1 : GSM850 Idle + WLAN Link + Bluetooth Link + Adapter	

## 2.3 Connection Diagram of Test System

### <WLAN Tx Mode>



### <AC Conducted Emission Mode>



## 2.4 RF Utility

The programmed RF utility "Compliance" 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.

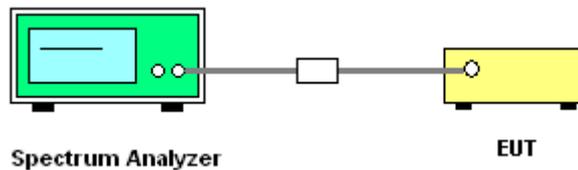
##### 3.1.2 Measuring Instruments

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 :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	10.00	0.5	Pass
06	2437	9.96	0.5	Pass
11	2462	10.00	0.5	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	16.44	0.5	Pass
06	2437	16.44	0.5	Pass
11	2462	16.42	0.5	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	17.16	0.5	Pass
06	2437	17.48	0.5	Pass
11	2462	17.28	0.5	Pass



Test Mode :	Mode 10, 11, 12	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11a 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	16.28	0.5	Pass
157	5785	16.32	0.5	Pass
165	5825	16.32	0.5	Pass

Test Mode :	Mode 13, 14, 15	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	16.84	0.5	Pass
157	5785	16.80	0.5	Pass
165	5825	16.88	0.5	Pass

Test Mode :	Mode 16, 17	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 40MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
151	5755	35.52	0.5	Pass
159	5795	35.76	0.5	Pass



3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	14.24	Pass
06	2437	14.16	Pass
11	2462	14.08	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	19.28	Pass
06	2437	18.72	Pass
11	2462	18.48	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	20.00	Pass
06	2437	19.60	Pass
11	2462	19.40	Pass



<b>Test Mode :</b>	Mode 10, 11, 12	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Hank Yu and Phoenix Chen	<b>Relative Humidity :</b>	40~44%

Channel	Frequency (MHz)	802.11a 99% Occupied Bandwidth (MHz)	Pass/Fail
149	5745	18.40	Pass
157	5785	18.40	Pass
165	5825	18.40	Pass

<b>Test Mode :</b>	Mode 13, 14, 15	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Hank Yu and Phoenix Chen	<b>Relative Humidity :</b>	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
149	5745	19.04	Pass
157	5785	19.00	Pass
165	5825	19.00	Pass

<b>Test Mode :</b>	Mode 16, 17	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Hank Yu and Phoenix Chen	<b>Relative Humidity :</b>	40~44%

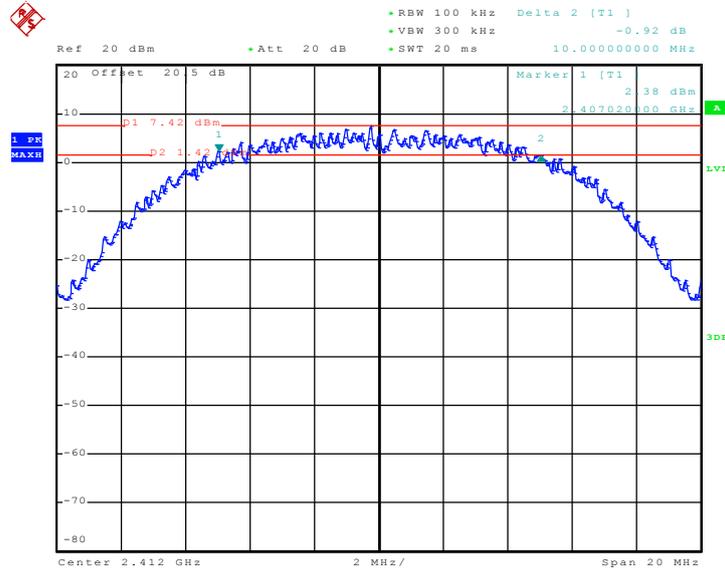
Channel	Frequency (MHz)	802.11n (BW 40MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
151	5755	37.70	Pass
159	5795	37.60	Pass



### 3.1.7 Test Result of 6dB Bandwidth Plots

Mode 1 :

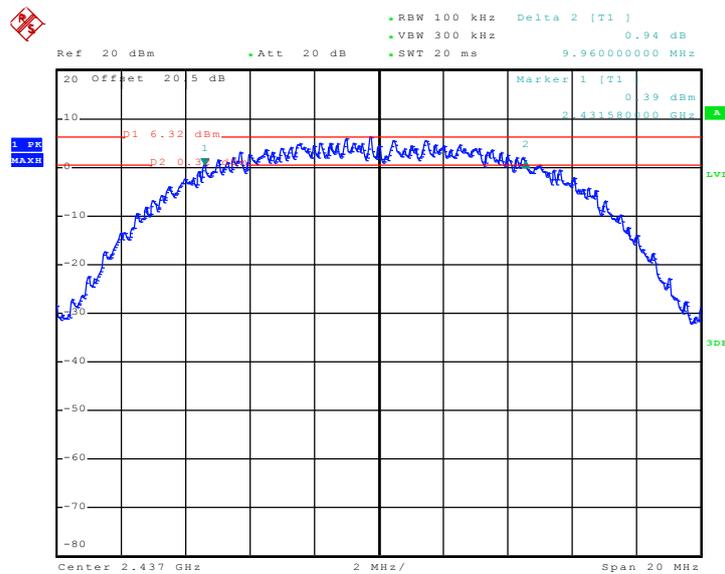
6 dB Bandwidth Plot on 802.11b Channel 01



Date: 5.MAR.2011 13:30:33

Mode 2 :

6 dB Bandwidth Plot on 802.11b Channel 06

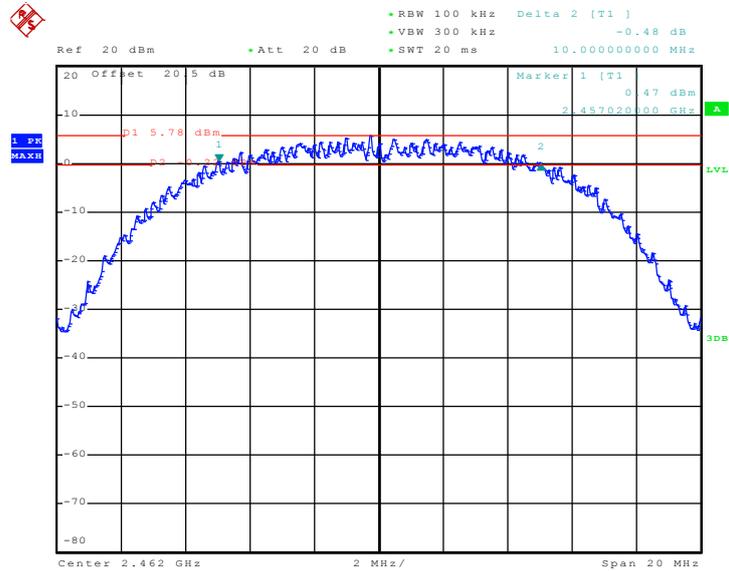


Date: 5.MAR.2011 13:38:39



Mode 3 :

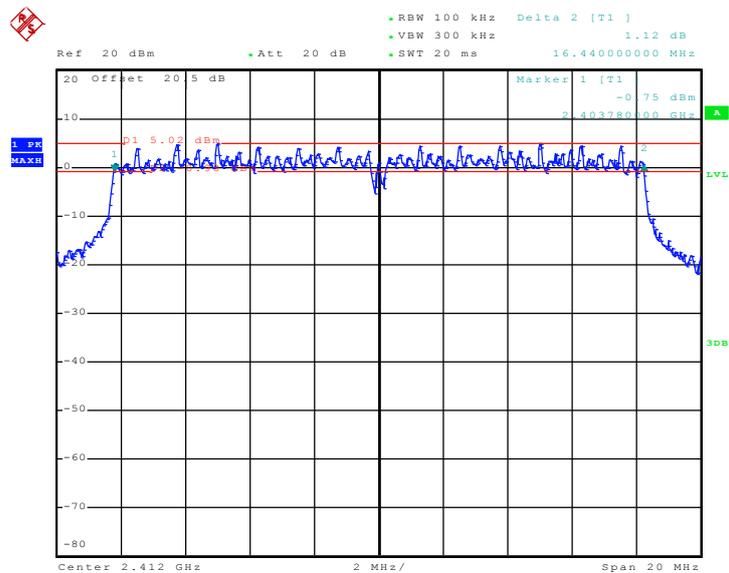
6 dB Bandwidth Plot on 802.11b Channel 11



Date: 5.MAR.2011 13:34:18

Mode 4 :

6 dB Bandwidth Plot on 802.11g Channel 01

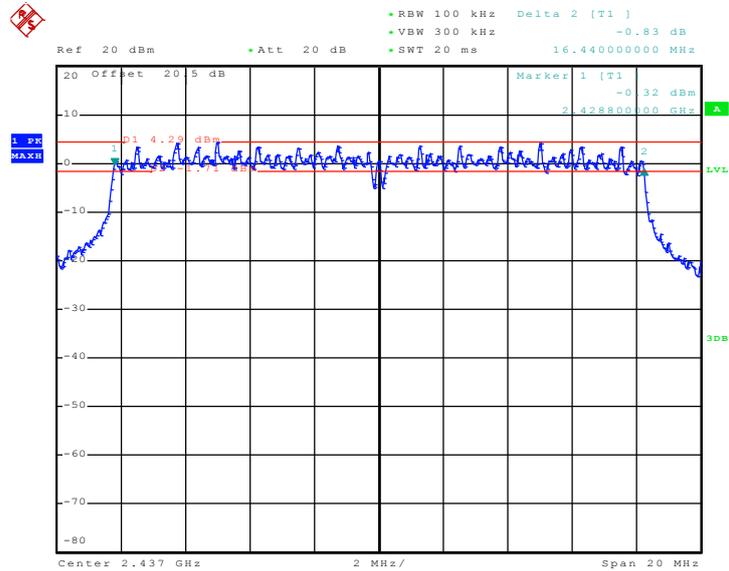


Date: 5.MAR.2011 13:21:10



Mode 5 :

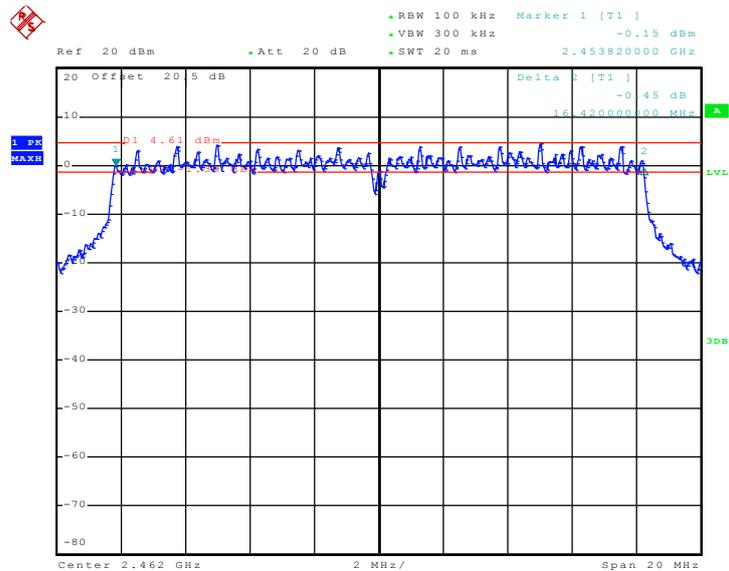
6 dB Bandwidth Plot on 802.11g Channel 06



Date: 5.MAR.2011 13:18:53

Mode 6 :

6 dB Bandwidth Plot on 802.11g Channel 11

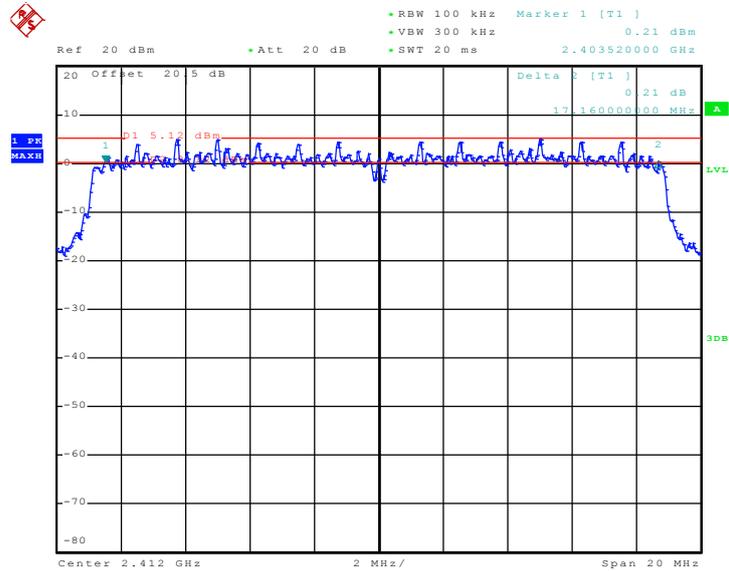


Date: 5.MAR.2011 13:16:04



Mode 7 :

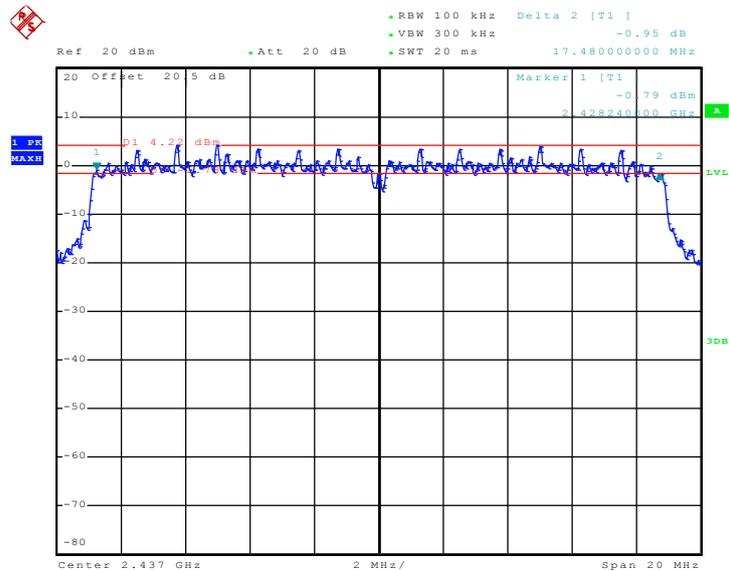
6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 01



Date: 5.MAR.2011 13:02:49

Mode 8 :

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

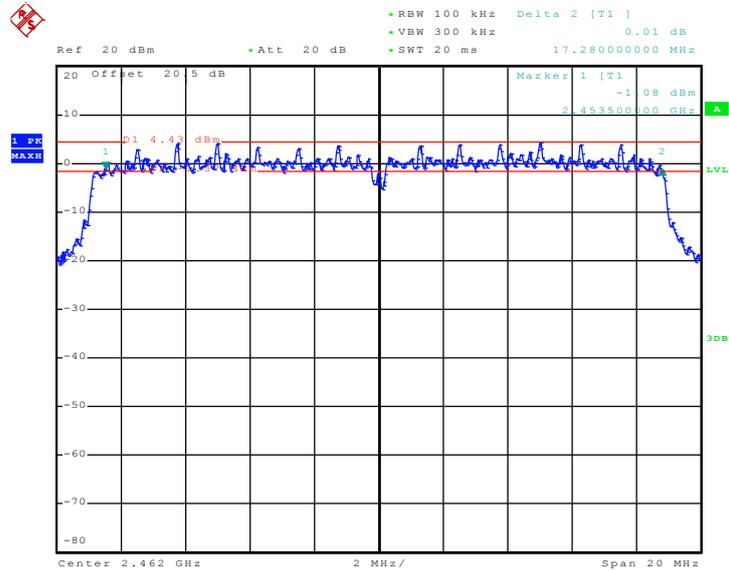


Date: 5.MAR.2011 12:58:00



Mode 9 :

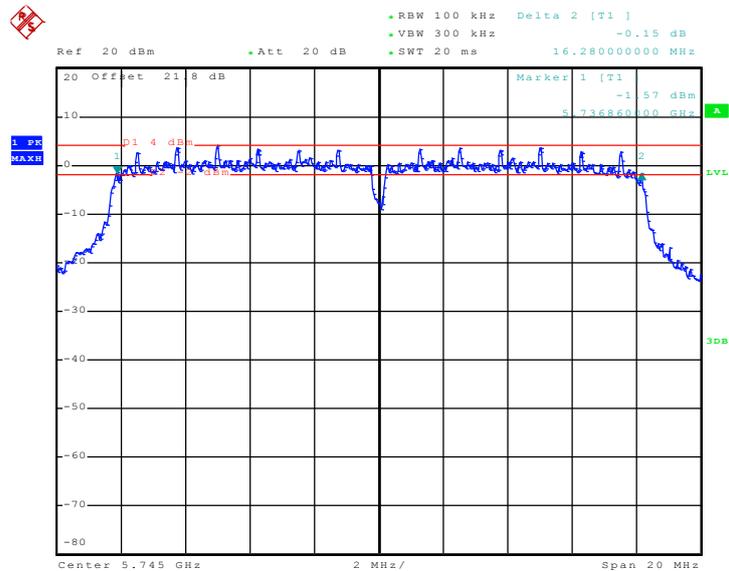
6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 11



Date: 5.MAR.2011 13:09:20

Mode 10:

6 dB Bandwidth Plot on 802.11a Channel 149

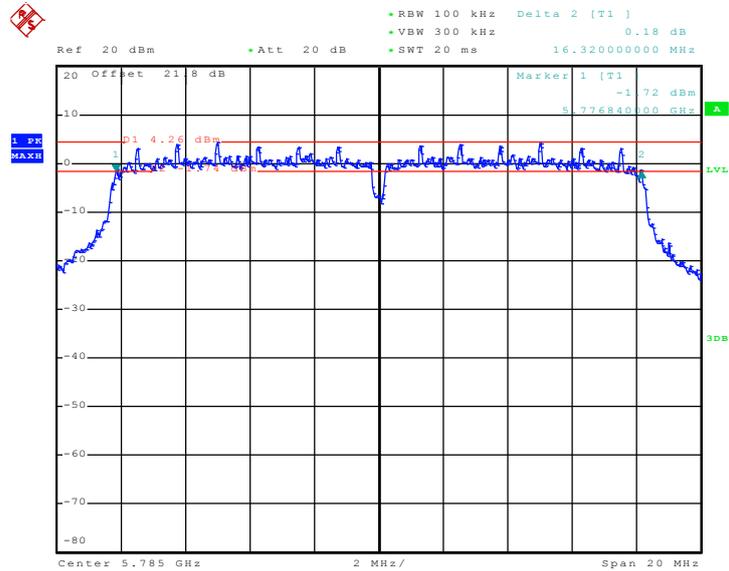


Date: 14.MAR.2011 17:17:57



Mode 11:

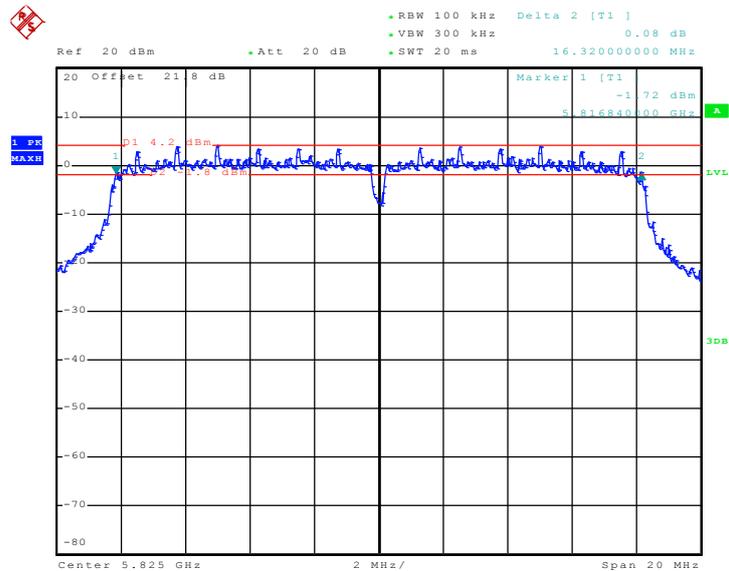
6 dB Bandwidth Plot on 802.11a Channel 157



Date: 14.MAR.2011 17:31:22

Mode 12:

6 dB Bandwidth Plot on 802.11a Channel 165

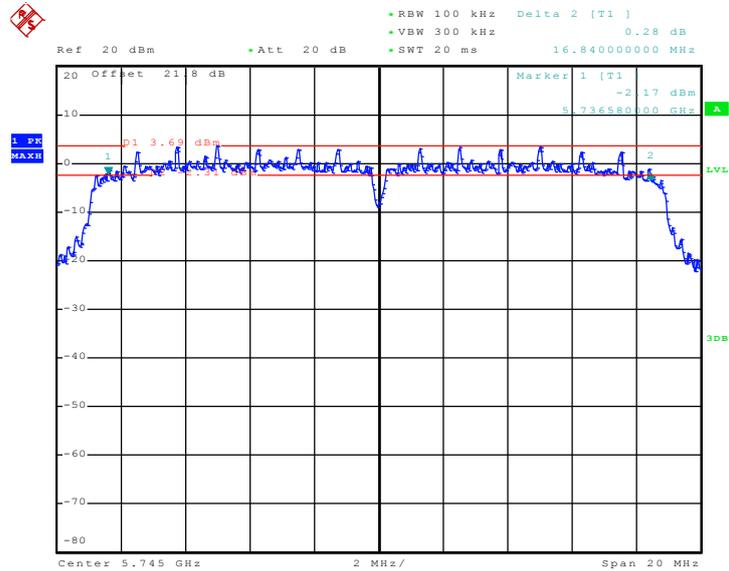


Date: 14.MAR.2011 17:44:32



Mode 13:

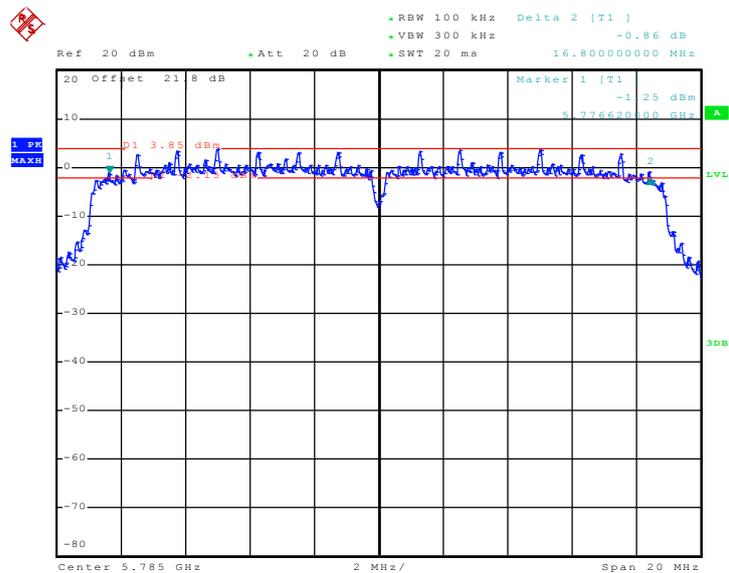
6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 149



Date: 14.MAR.2011 18:23:24

Mode 14:

6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 157



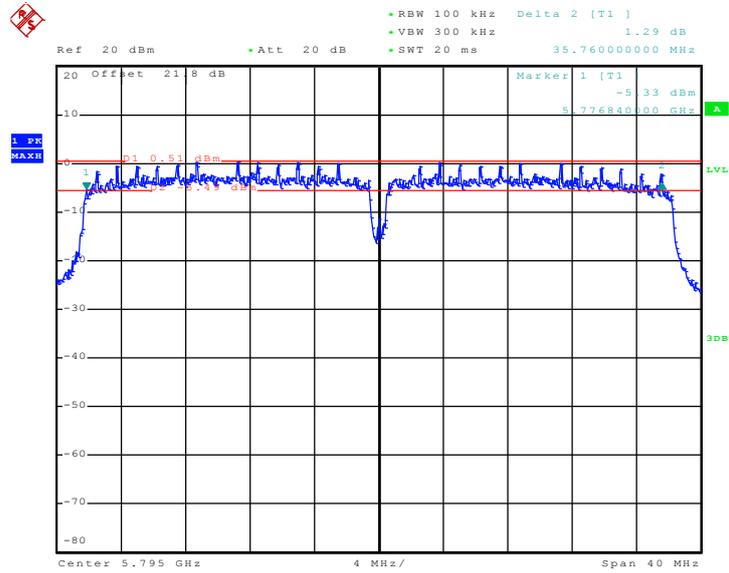
Date: 14.MAR.2011 18:11:39





Mode 17:

6 dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 159



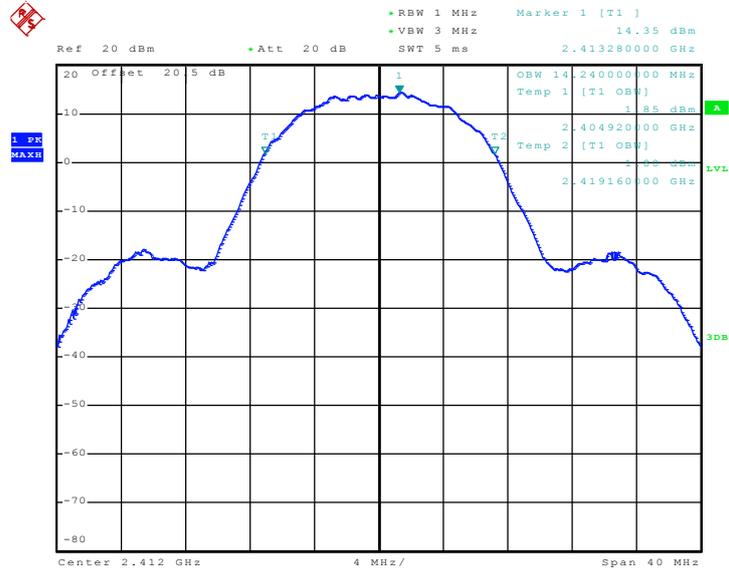
Date: 14.MAR.2011 19:10:43



### 3.1.8 Test Result of 99% Bandwidth Plots

Mode 1 :

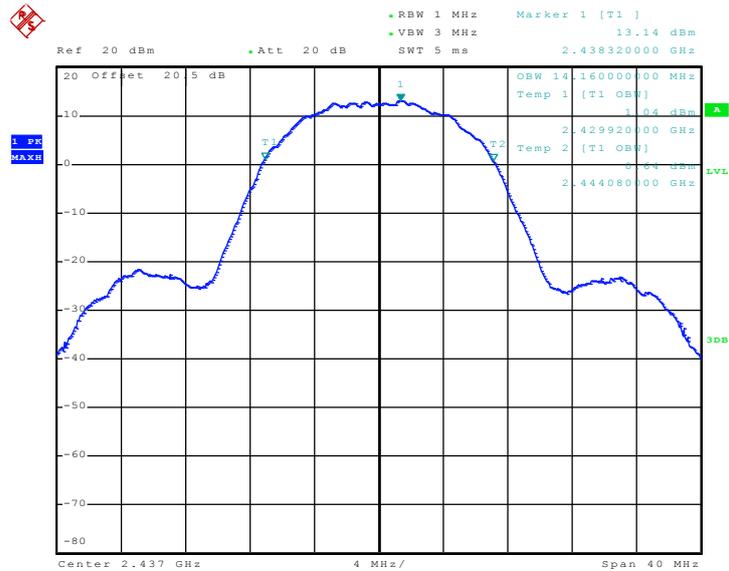
99% Occupied Bandwidth Plot on 802.11b Channel 01



Date: 5.MAR.2011 13:32:06

Mode 2 :

99% Occupied Bandwidth Plot on 802.11b Channel 06

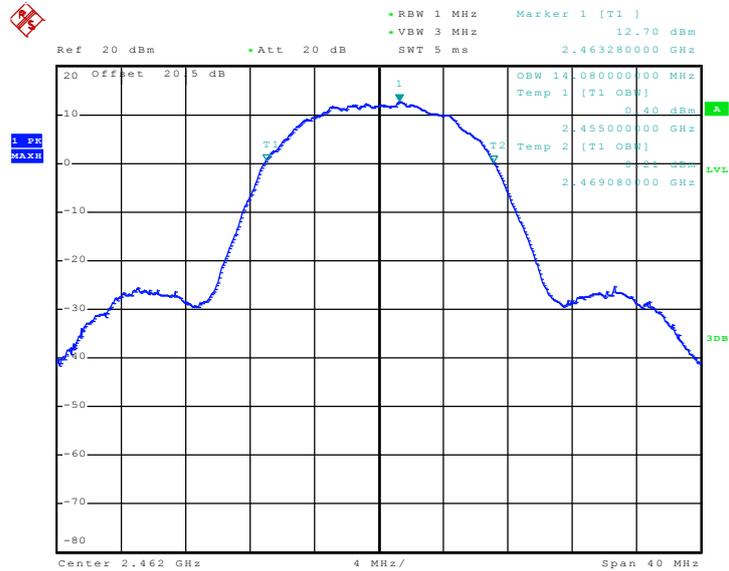


Date: 5.MAR.2011 13:39:09



Mode 3 :

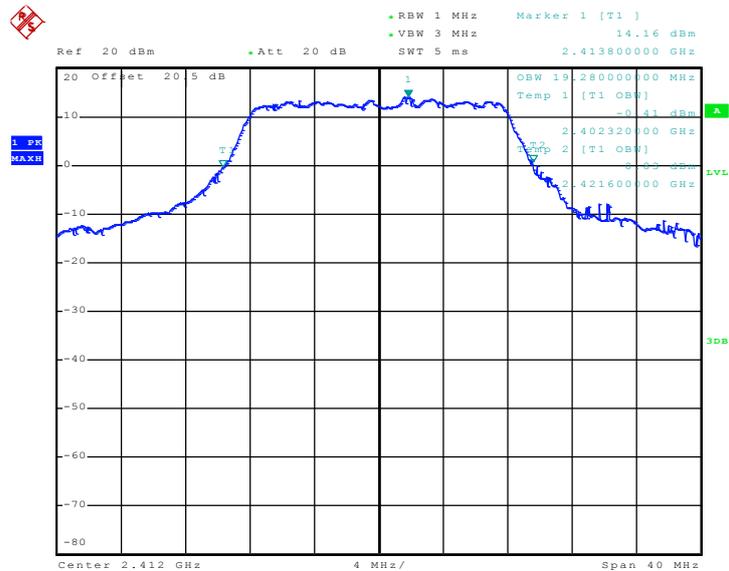
99% Occupied Bandwidth Plot on 802.11b Channel 11



Date: 5.MAR.2011 13:35:29

Mode 4 :

99% Occupied Bandwidth Plot on 802.11g Channel 01

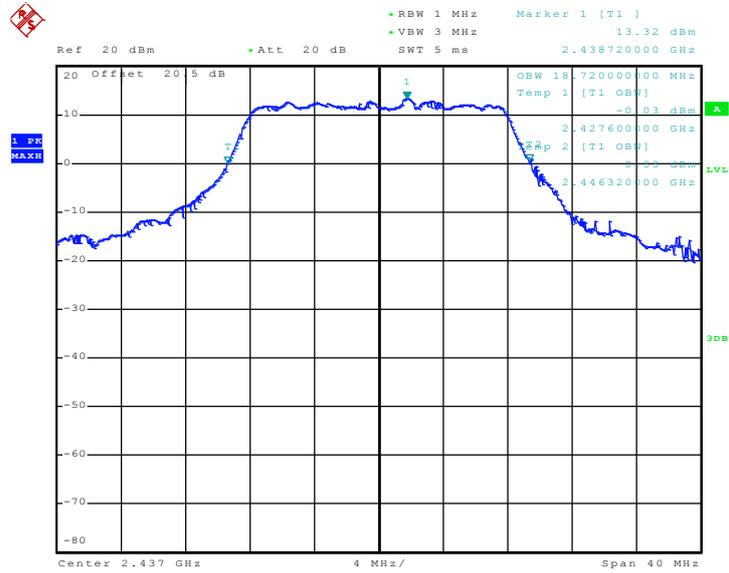


Date: 5.MAR.2011 13:22:44



Mode 5 :

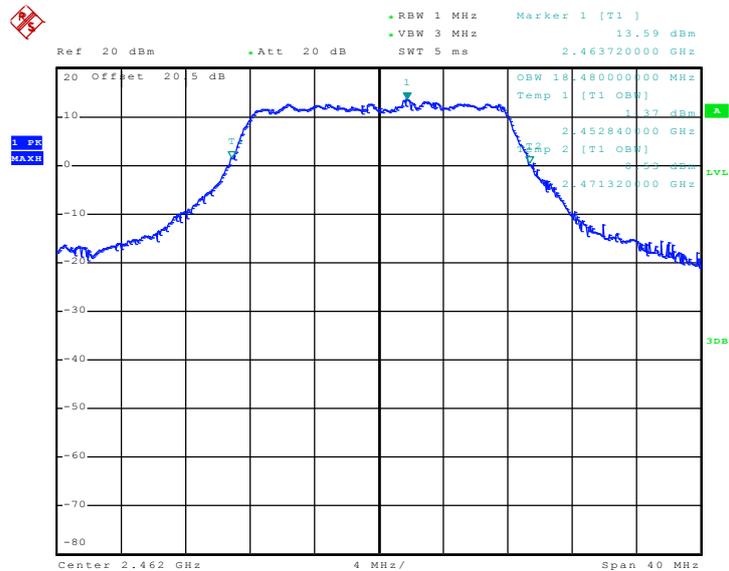
99% Occupied Bandwidth Plot on 802.11g Channel 06



Date: 5.MAR.2011 13:19:49

Mode 6 :

99% Occupied Bandwidth Plot on 802.11g Channel 11

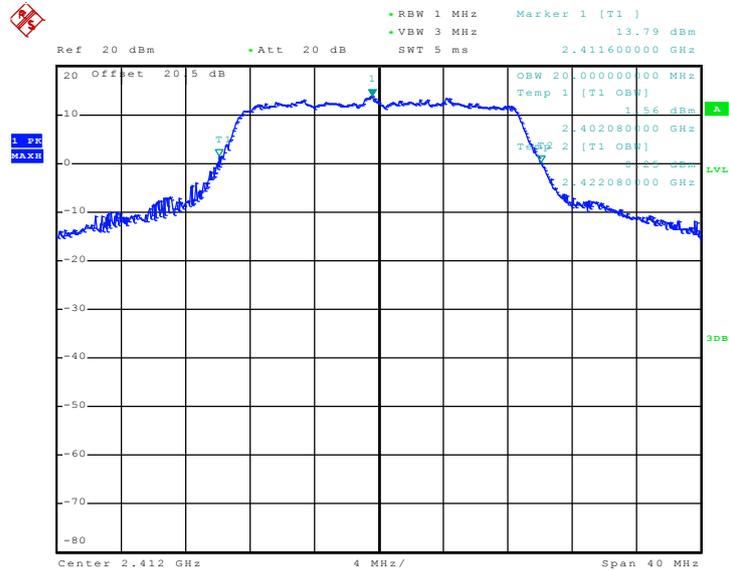


Date: 5.MAR.2011 13:17:16



Mode 7 :

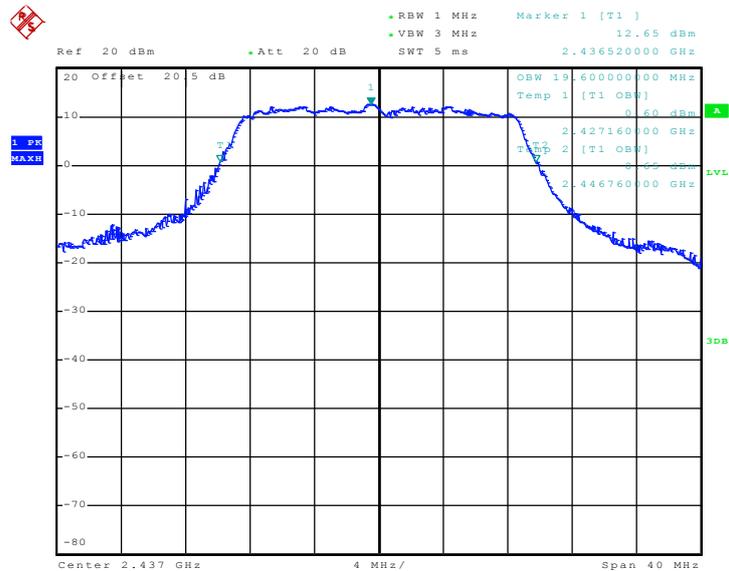
99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 01



Date: 5.MAR.2011 13:04:22

Mode 8 :

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

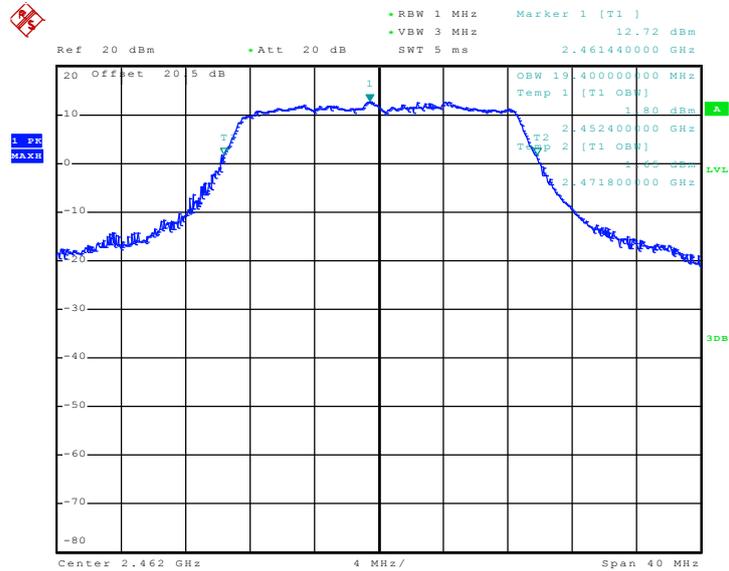


Date: 5.MAR.2011 12:58:30



Mode 9 :

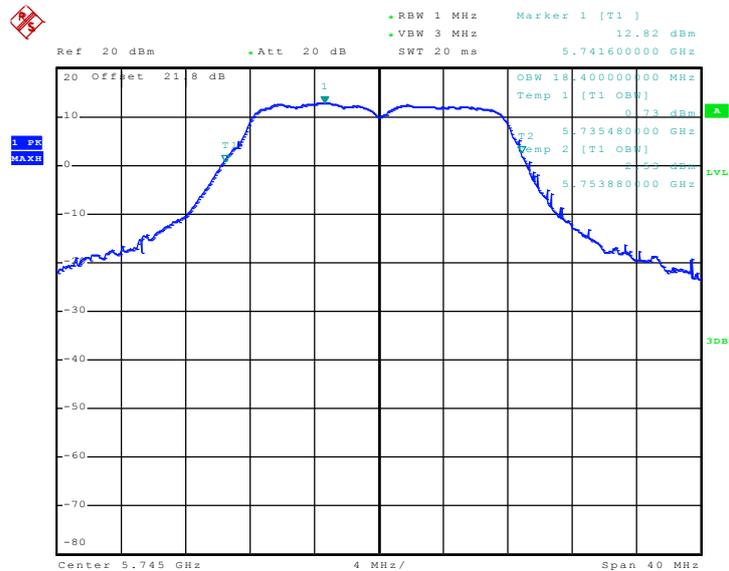
99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 11



Date: 5.MAR.2011 13:10:32

Mode 10:

99% Occupied Bandwidth Plot on 802.11a Channel 149

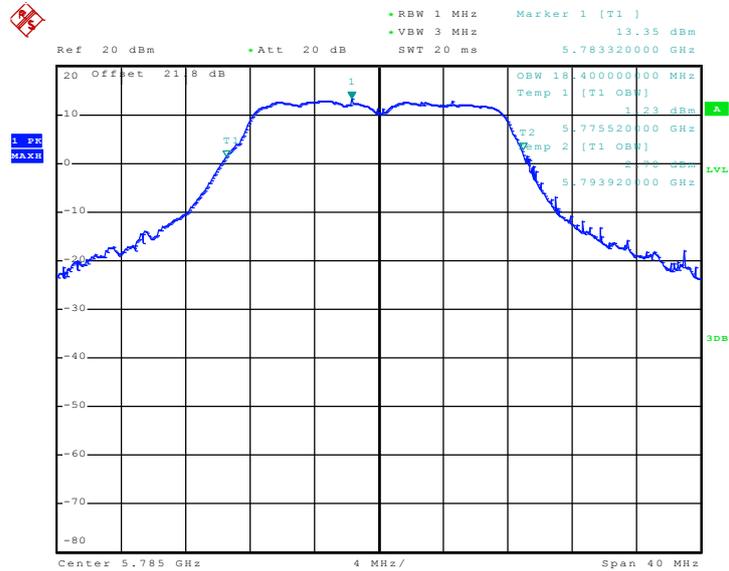


Date: 14.MAR.2011 17:18:48



Mode 11:

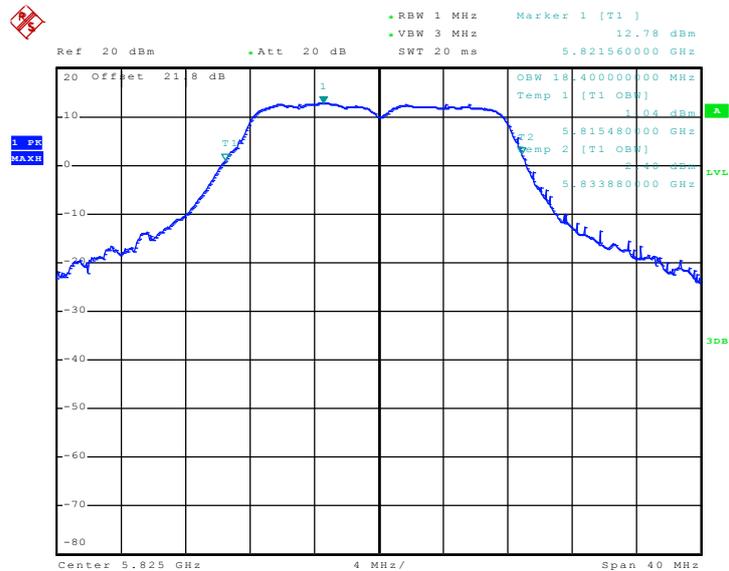
99% Occupied Bandwidth Plot on 802.11a Channel 157



Date: 14.MAR.2011 17:31:51

Mode 12:

99% Occupied Bandwidth Plot on 802.11a Channel 165

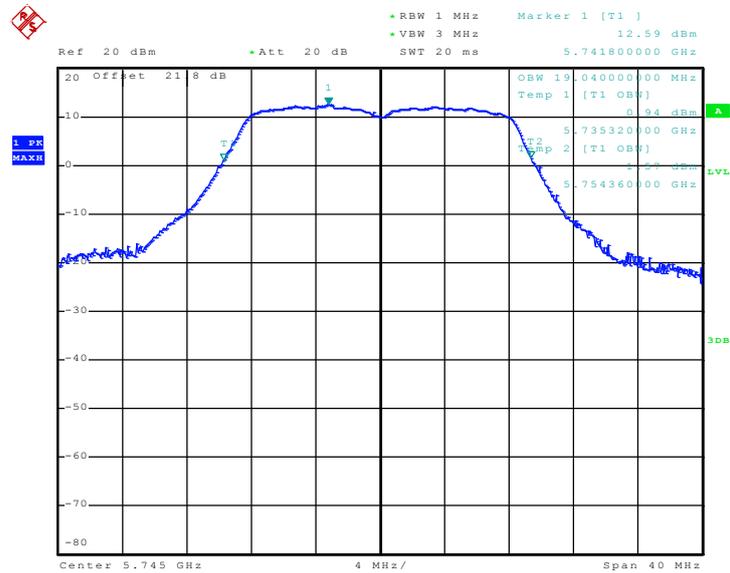


Date: 14.MAR.2011 17:45:23



Mode 13:

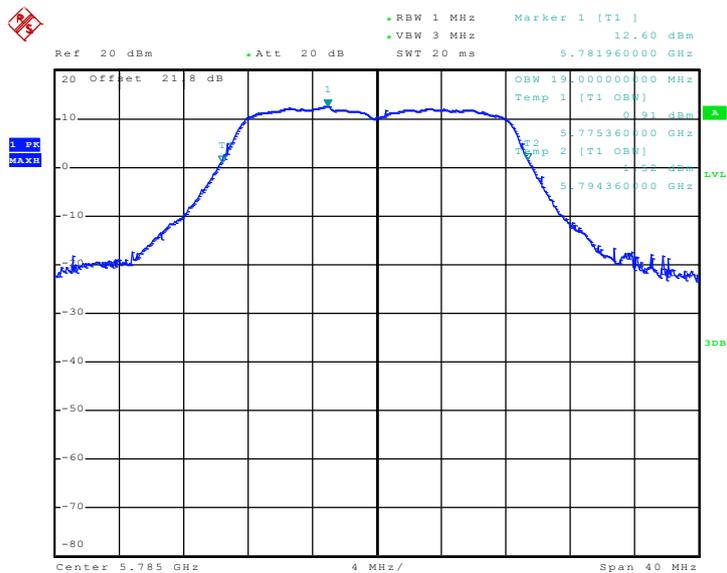
99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 149



Date: 14.MAR.2011 18:24:15

Mode 14:

99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 157

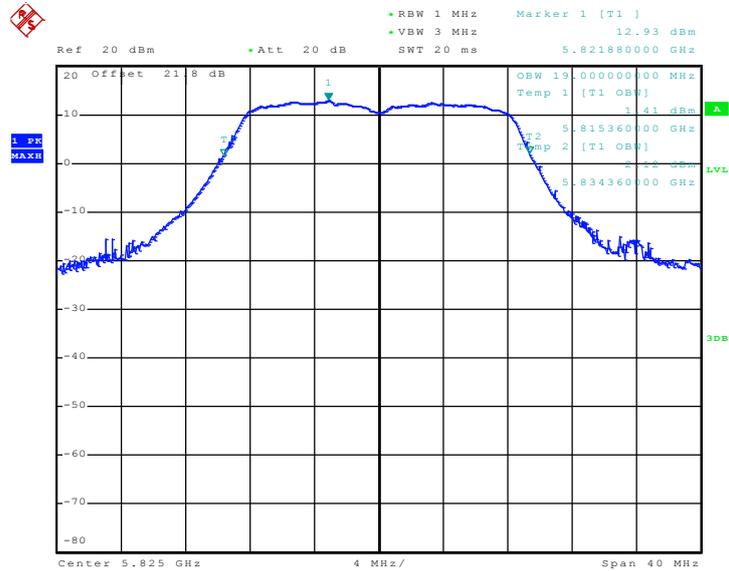


Date: 14.MAR.2011 18:12:09



Mode 15:

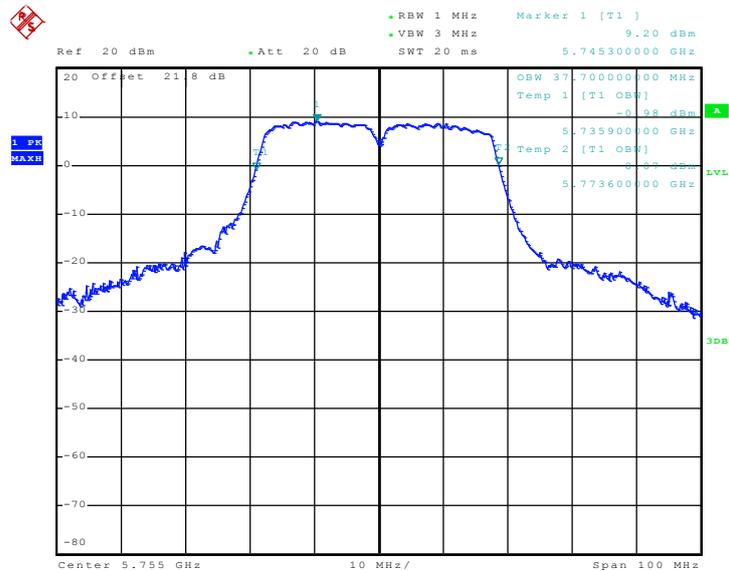
99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 165



Date: 14.MAR.2011 18:00:03

Mode 16:

99% Occupied Bandwidth Plot on 802.11n (BW 40MHz) Channel 151

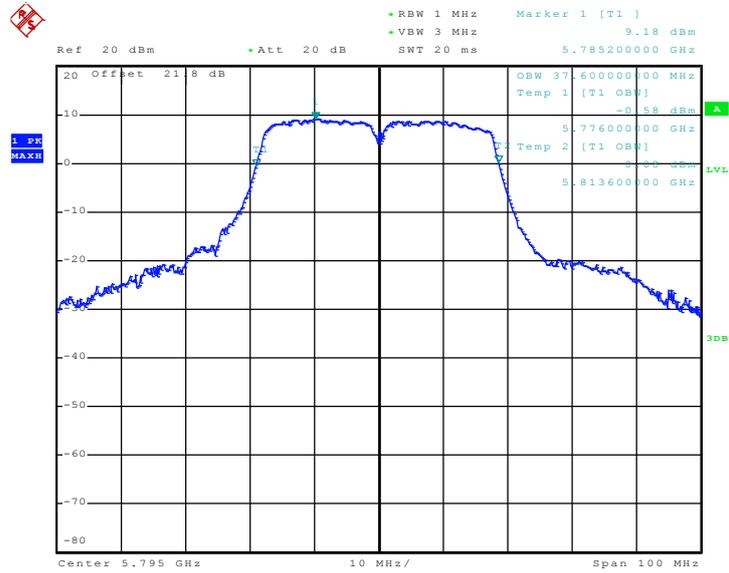


Date: 14.MAR.2011 18:54:34



Mode 17:

99% Occupied Bandwidth Plot on 802.11n (BW 40MHz) Channel 159



Date: 14.MAR.2011 19:11:35

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, 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.

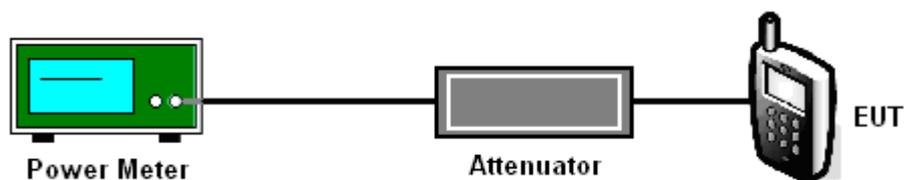
### 3.2.2 Measuring Instruments

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°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.04	30	Pass
06	2437	18.25	30	Pass
11	2462	18.28	30	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.10	30	Pass
06	2437	23.45	30	Pass
11	2462	23.57	30	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	23.05	30	Pass
06	2437	23.11	30	Pass
11	2462	23.54	30	Pass



<b>Test Mode :</b>	Mode 10, 11, 12	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Hank Yu and Phoenix Chen	<b>Relative Humidity :</b>	40~44%

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	23.42	30	Pass
157	5785	23.54	30	Pass
165	5825	23.16	30	Pass

<b>Test Mode :</b>	Mode 13, 14, 15	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Hank Yu and Phoenix Chen	<b>Relative Humidity :</b>	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	23.35	30	Pass
157	5785	23.38	30	Pass
165	5825	23.08	30	Pass

<b>Test Mode :</b>	Mode 16, 17	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Hank Yu and Phoenix Chen	<b>Relative Humidity :</b>	40~44%

Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
151	5755	23.12	30	Pass
159	5795	23.29	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**

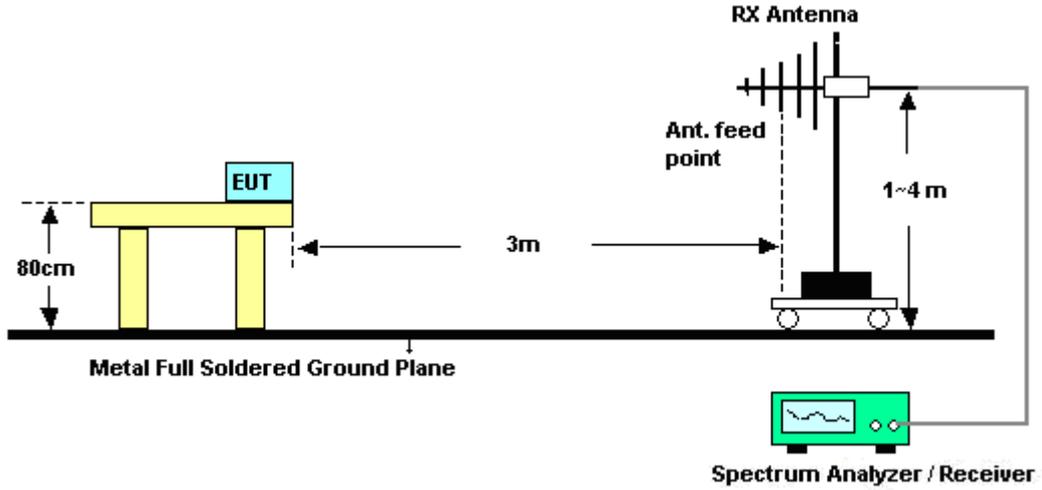
See list of measuring instruments of this test report.

#### **3.3.3 Test Procedures**

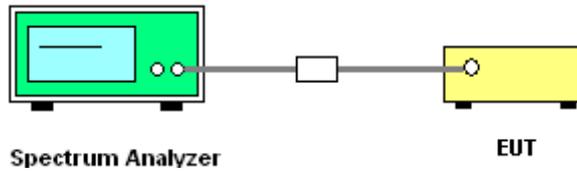
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band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

### 3.3.4 Test Setup

#### <Radiated Band Edges>



#### <Conducted Band Edges>





3.3.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	49~50%
Test Channel :	01	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2386.57	48.98	-25.02	74	44.62	32.18	6.03	33.85	152	302	Peak
2386.57	36.92	-17.08	54	32.56	32.18	6.03	33.85	152	302	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
2386.57	47.39	-26.61	74	43.03	32.18	6.03	33.85	101	43	Peak
2386.57	35.98	-18.02	54	31.62	32.18	6.03	33.85	101	43	Average

Test Mode :	Mode 3	Temperature :	24~25°C
Test Band :	802.11b	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Ivan Chiang

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
2487.65	47.25	-26.75	74	42.67	32.3	6.18	33.9	100	95	Peak
2487.65	35.09	-18.91	54	30.51	32.3	6.18	33.9	100	95	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2486.7	47.51	-26.49	74	42.95	32.28	6.18	33.9	103	45	Peak
2486.7	35.37	-18.63	54	30.81	32.28	6.18	33.9	103	45	Average



Test Mode :	Mode 4	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	49~50%
Test Channel :	01	Test Engineer :	Ivan Chiang

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	69.54	-4.46	74	65.18	32.18	6.03	33.85	146	308	Peak
2389.99	48.01	-5.99	54	43.65	32.18	6.03	33.85	146	308	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	68.72	-5.28	74	64.36	32.18	6.03	33.85	102	43	Peak
2389.99	46.72	-7.28	54	42.36	32.18	6.03	33.85	102	43	Average

Test Mode :	Mode 6	Temperature :	24~25°C
Test Band :	802.11g	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Ivan Chiang

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	66.15	-7.85	74	61.59	32.28	6.18	33.9	119	299	Peak
2483.5	47.31	-6.69	54	42.75	32.28	6.18	33.9	119	299	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	64.61	-9.39	74	60.05	32.28	6.18	33.9	100	342	Peak
2483.5	46.15	-7.85	54	41.59	32.28	6.18	33.9	100	342	Average



Test Mode :	Mode 7	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	49~50%
Test Channel :	01	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2389.99	62.48	-11.52	74	58.12	32.18	6.03	33.85	126	65	Peak
2389.99	42.96	-11.04	54	38.6	32.18	6.03	33.85	126	65	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	59.79	-14.21	74	55.43	32.18	6.03	33.85	100	325	Peak
2389.99	41.19	-12.81	54	36.83	32.18	6.03	33.85	100	325	Average

Test Mode :	Mode 9	Temperature :	24~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Ivan Chiang

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	64.71	-9.29	74	60.15	32.28	6.18	33.9	119	55	Peak
2483.66	45.39	-8.61	54	40.83	32.28	6.18	33.9	119	55	Average

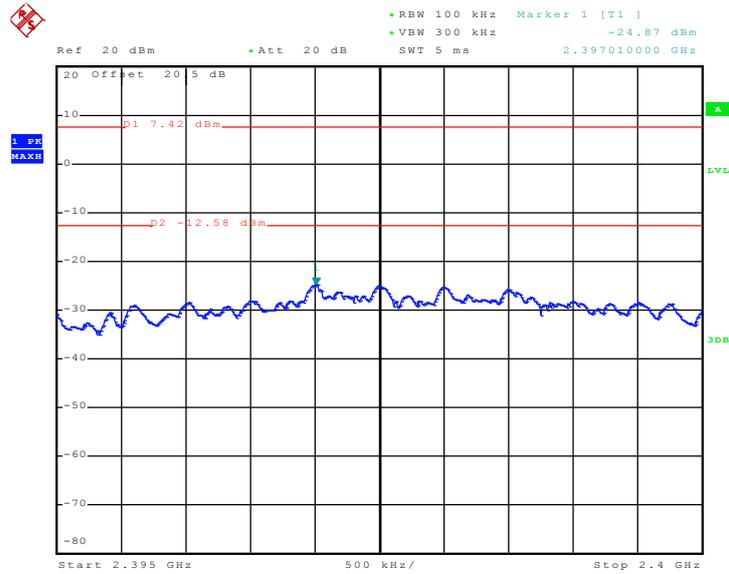
ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.66	61.31	-12.69	74	56.75	32.28	6.18	33.9	100	321	Peak
2483.66	42.76	-11.24	54	38.2	32.28	6.18	33.9	100	321	Average



### 3.3.6 Test Result of Conducted Band Edges

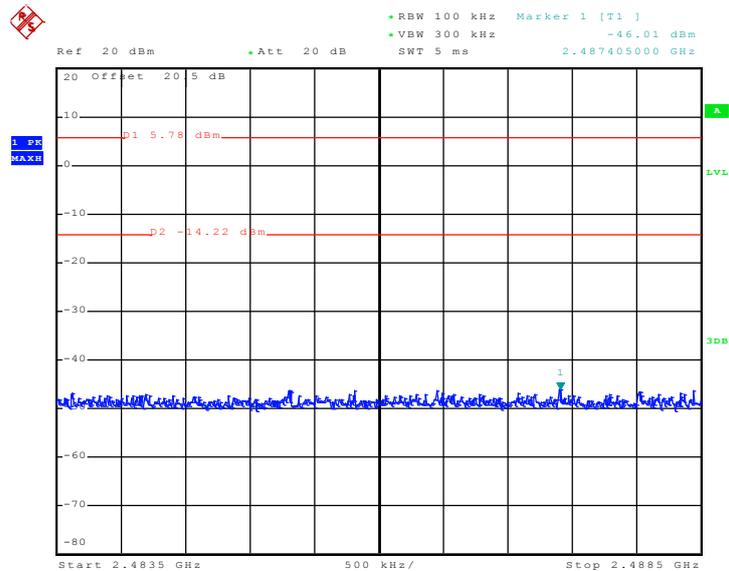
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	01 and 11	Test Engineer :	Hank Yu and Phoenix Chen

#### Low Band Edge Plot on 802.11b Channel 01



Date: 5.MAR.2011 13:31:41

#### High Band Edge Plot on 802.11b Channel 11

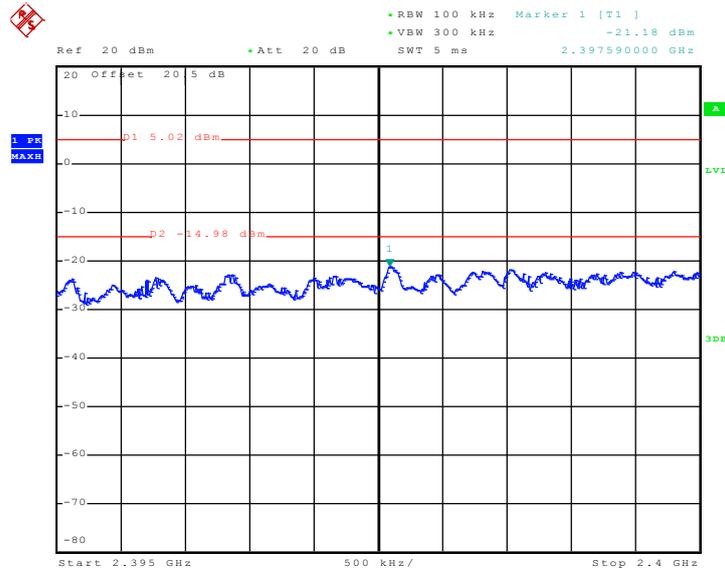


Date: 5.MAR.2011 13:35:04



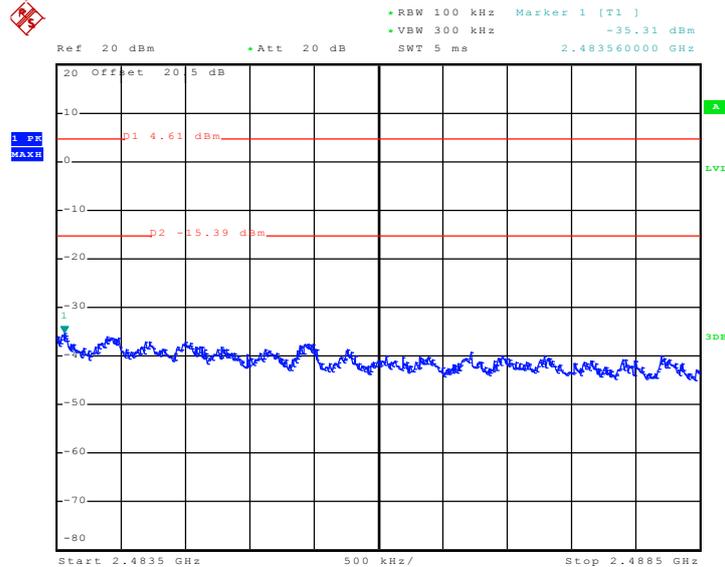
Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	40~44%
Test Channel :	01 and 11	Test Engineer :	Hank Yu and Phoenix Chen

Low Band Edge Plot on 802.11g Channel 01



Date: 5.MAR.2011 13:22:18

High Band Edge Plot on 802.11g Channel 11

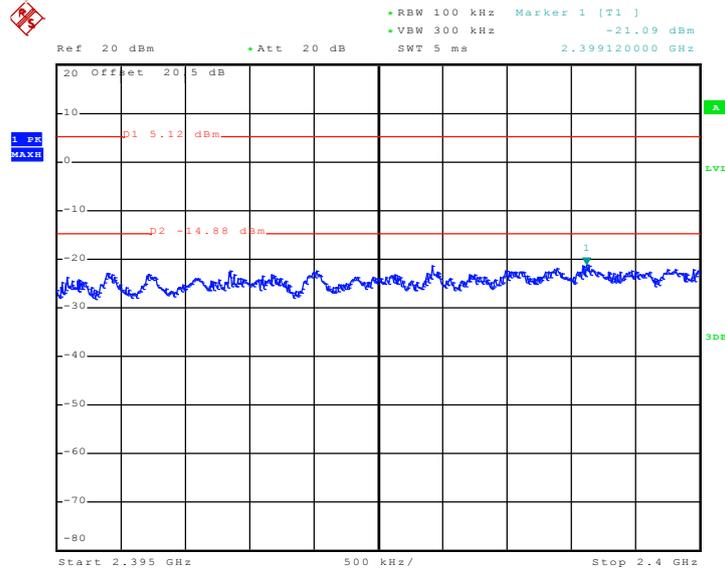


Date: 5.MAR.2011 13:16:51



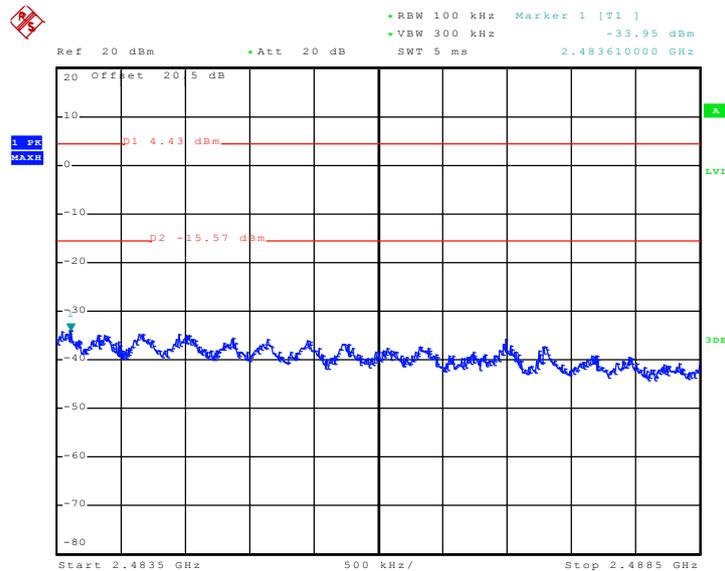
Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	01 and 11	Test Engineer :	Hank Yu and Phoenix Chen

Low Band Edge Plot on 802.11n Channel 01



Date: 5.MAR.2011 13:03:57

High Band Edge Plot on 802.11n Channel 11

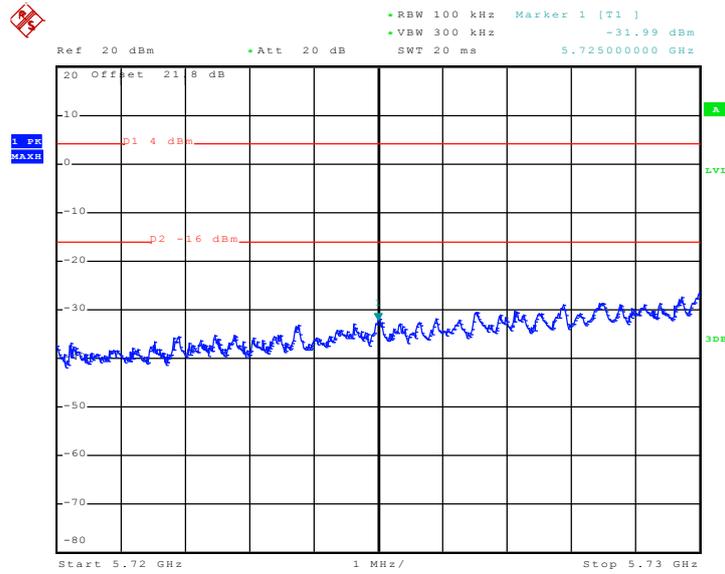


Date: 5.MAR.2011 13:10:07



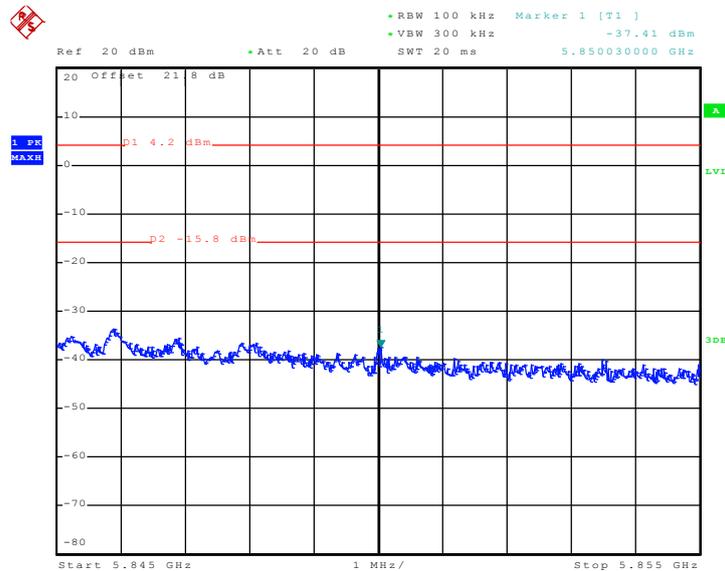
Test Mode :	Mode 10 and 12	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	40~44%
Test Channel :	149 and 165	Test Engineer :	Hank Yu and Phoenix Chen

Low Band Edge Plot on 802.11a Channel 149



Date: 14.MAR.2011 17:18:22

High Band Edge Plot on 802.11a Channel 165

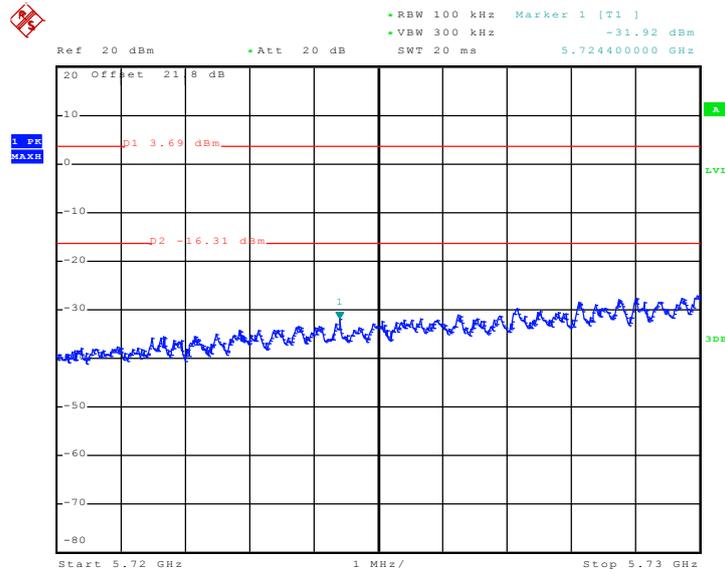


Date: 14.MAR.2011 17:44:58



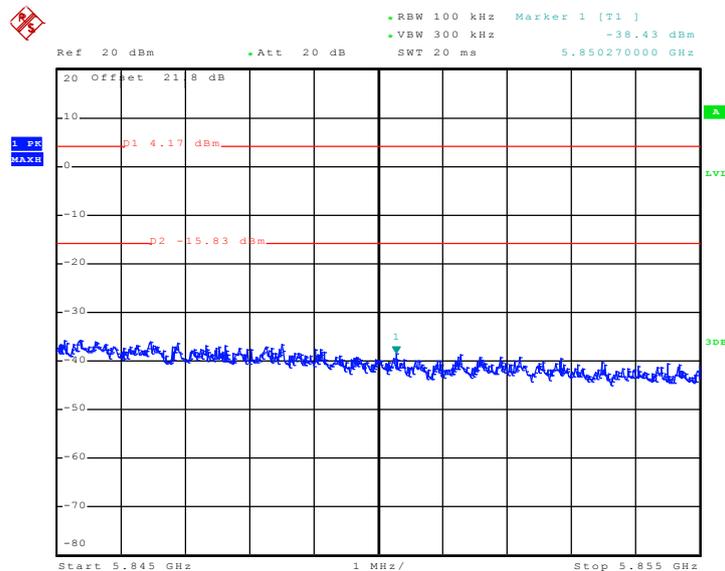
Test Mode :	Mode 13 and 15	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	149 and 165	Test Engineer :	Hank Yu and Phoenix Chen

Low Band Edge Plot on 802.11n Channel 149



Date: 14.MAR.2011 18:23:50

High Band Edge Plot on 802.11n Channel 165

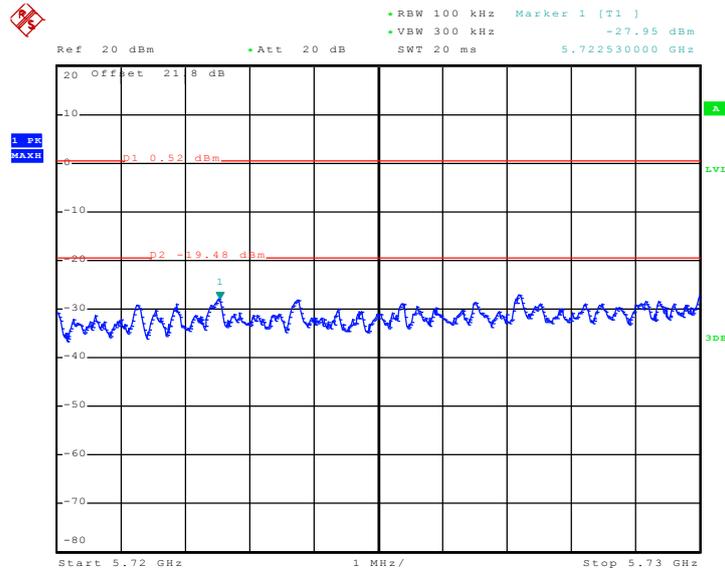


Date: 14.MAR.2011 17:59:38



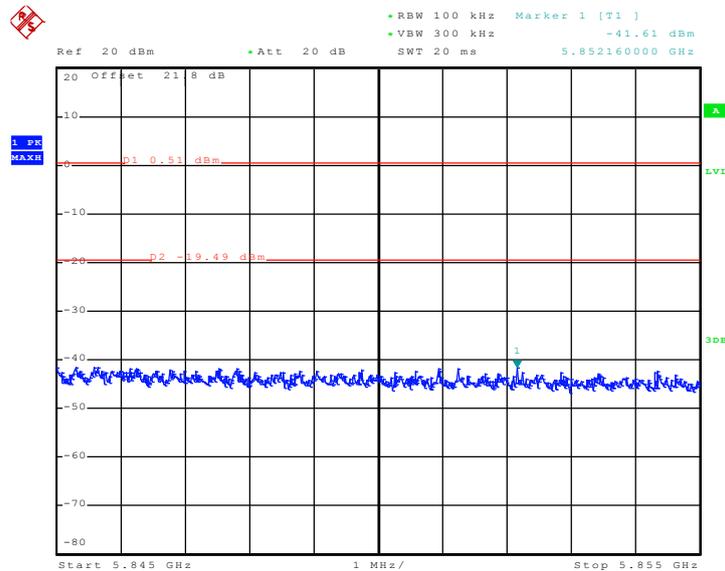
Test Mode :	Mode 16 and 17	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	40~44%
Test Channel :	151 and 159	Test Engineer :	Hank Yu and Phoenix Chen

Low Band Edge Plot on 802.11n Channel 151



Date: 14.MAR.2011 18:54:09

High Band Edge Plot on 802.11n Channel 159



Date: 14.MAR.2011 19:11:09

## 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.

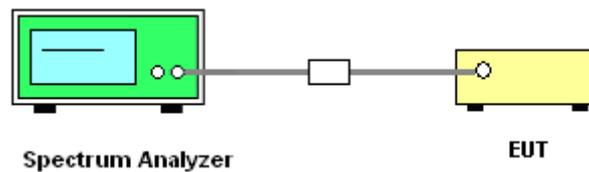
### 3.4.2 Measuring Instruments

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) > 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

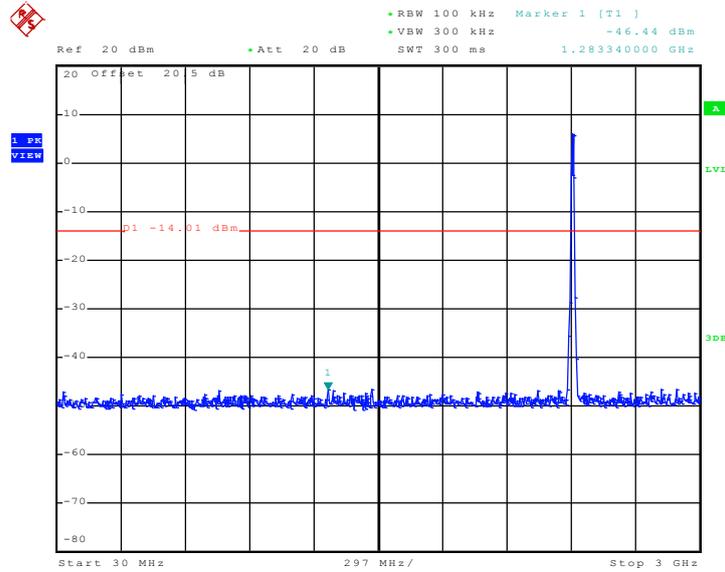




3.4.5 Test Result

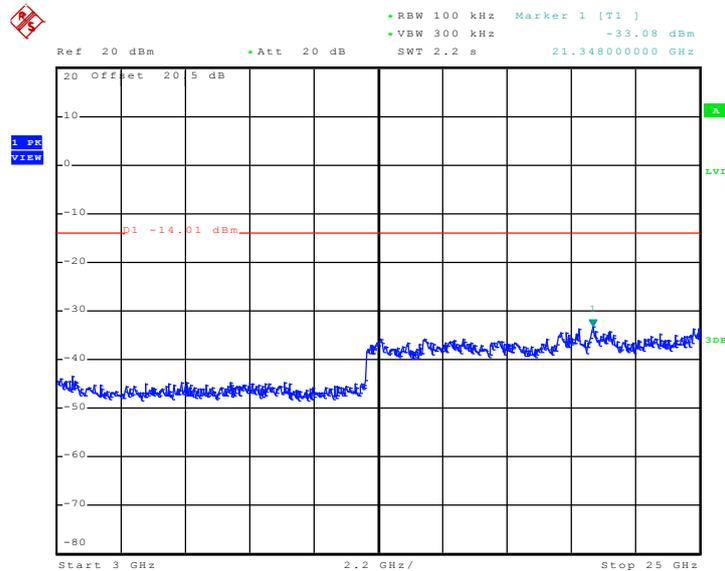
Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	01	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAR.2011 12:46:06

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

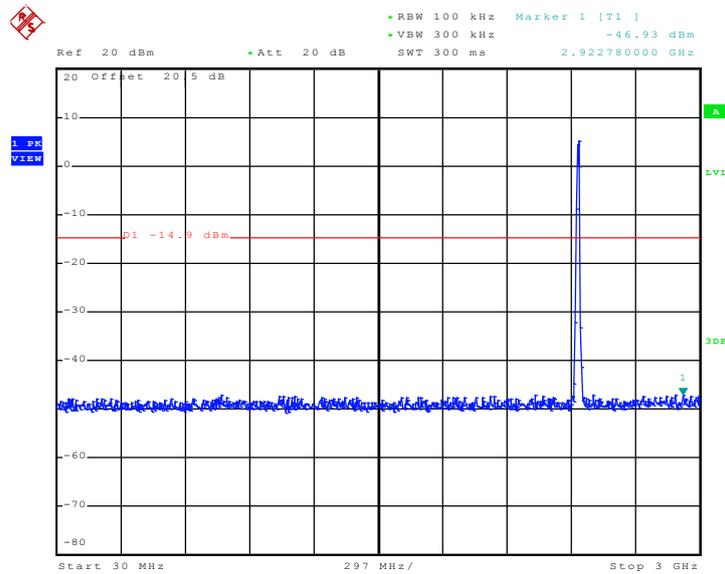


Date: 5.MAR.2011 12:46:23



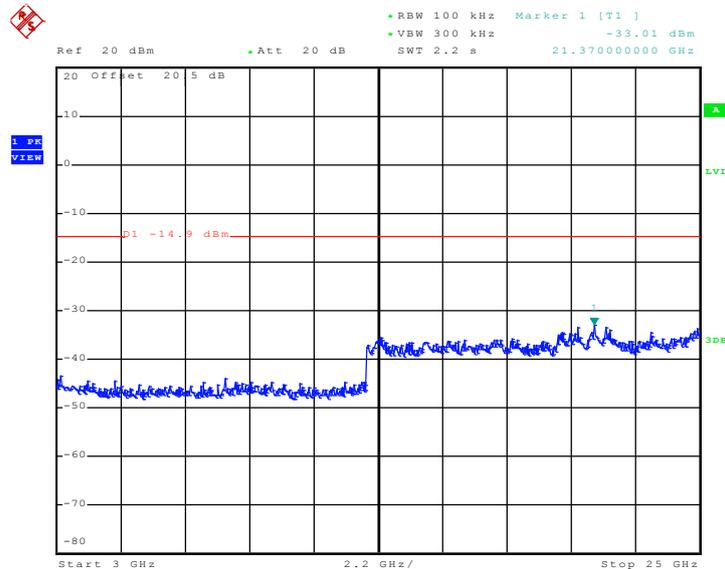
Test Mode :	Mode 2	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	06	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAR.2011 12:46:53

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

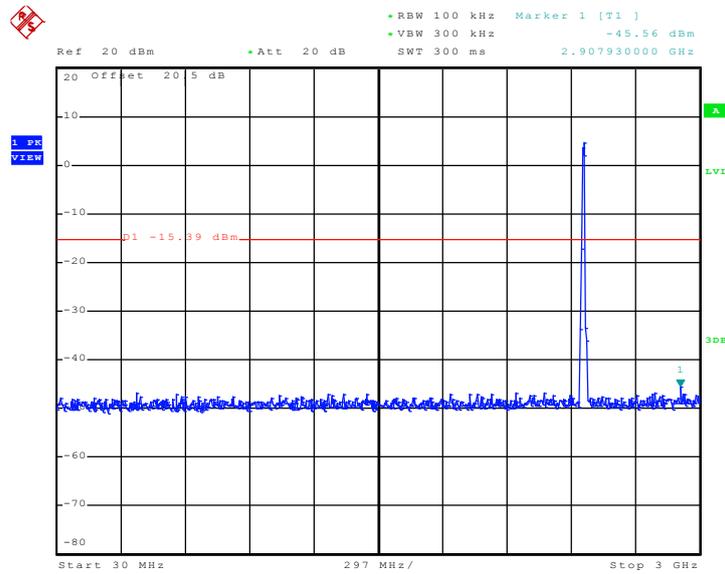


Date: 5.MAR.2011 12:47:10



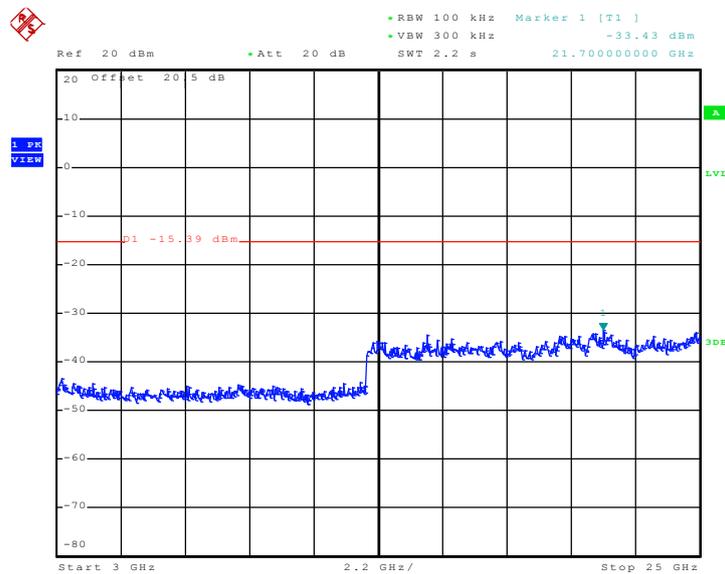
Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	40~44%
Test Channel :	11	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAR.2011 12:47:45

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

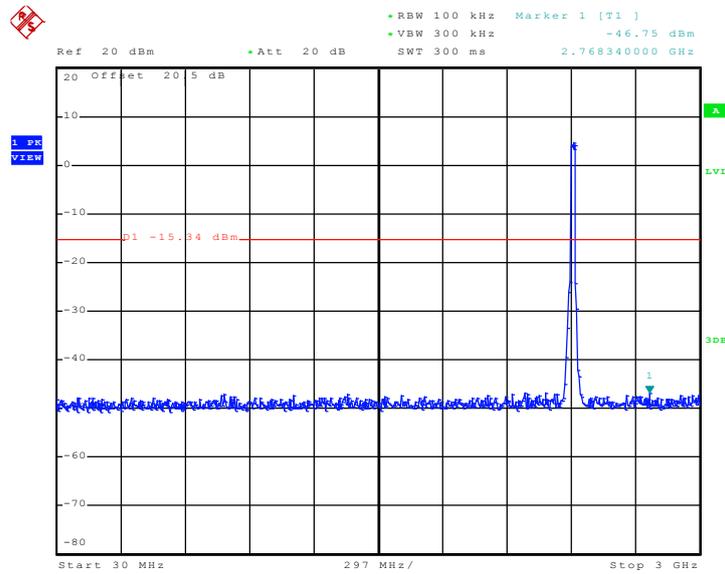


Date: 5.MAR.2011 12:48:02



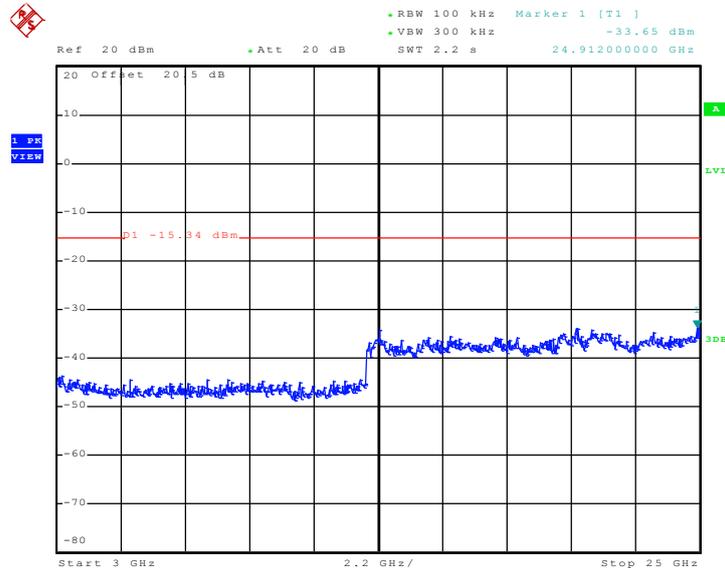
Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	40~44%
Test Channel :	01	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAR.2011 12:49:17

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

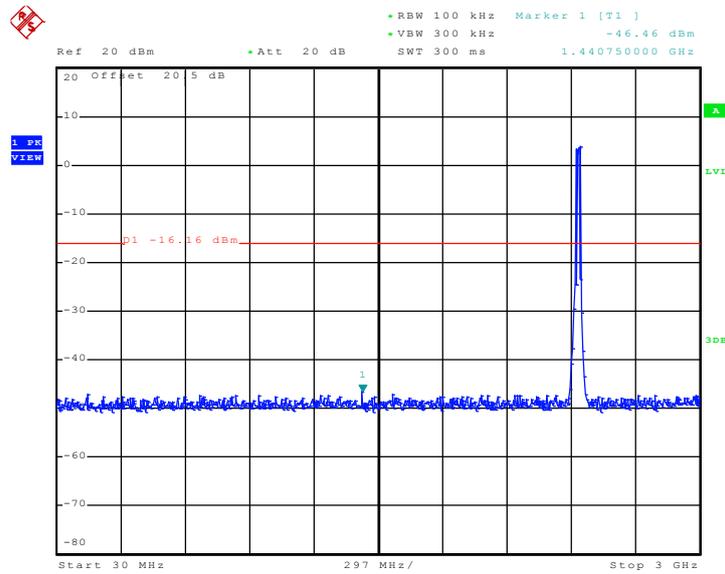


Date: 5.MAR.2011 12:49:34



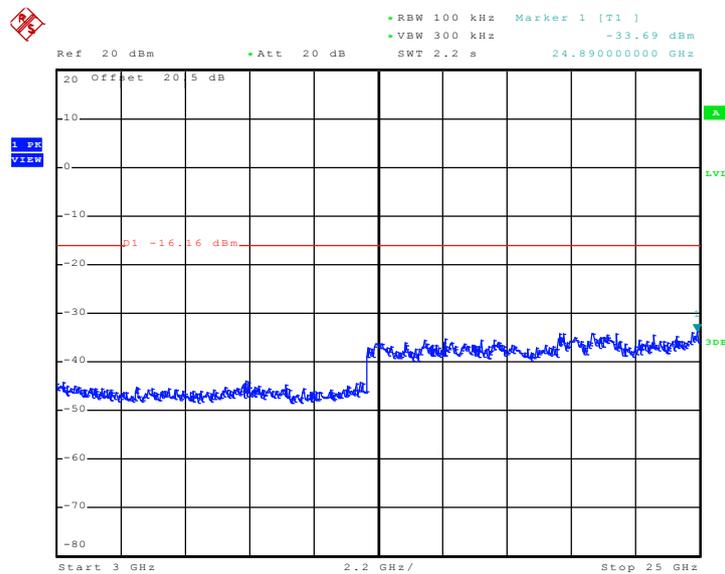
Test Mode :	Mode 5	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	40~44%
Test Channel :	06	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAR.2011 12:50:08

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

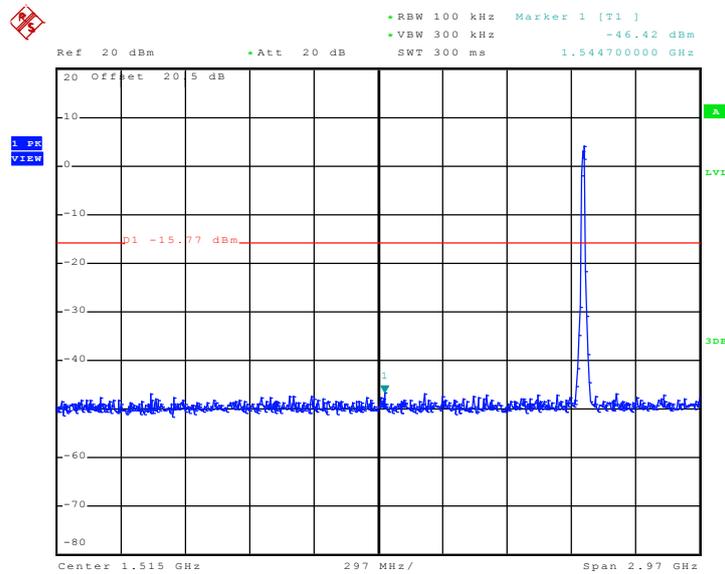


Date: 5.MAR.2011 12:50:25



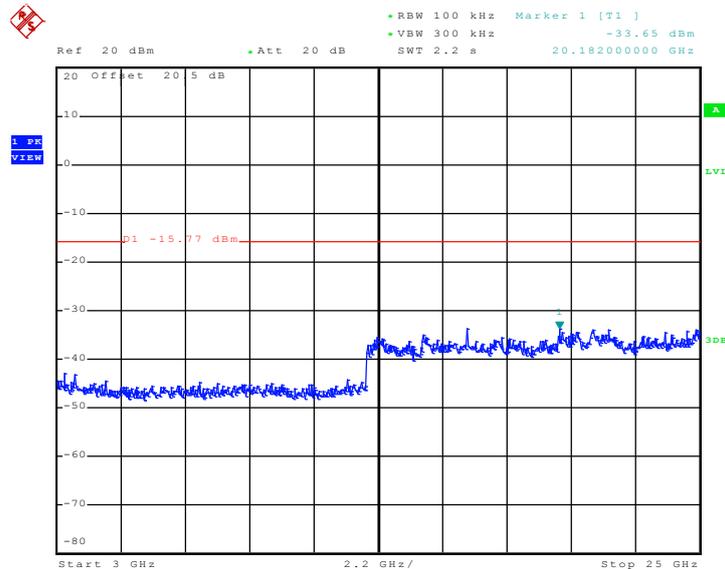
Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	40~44%
Test Channel :	11	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAR.2011 12:48:27

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

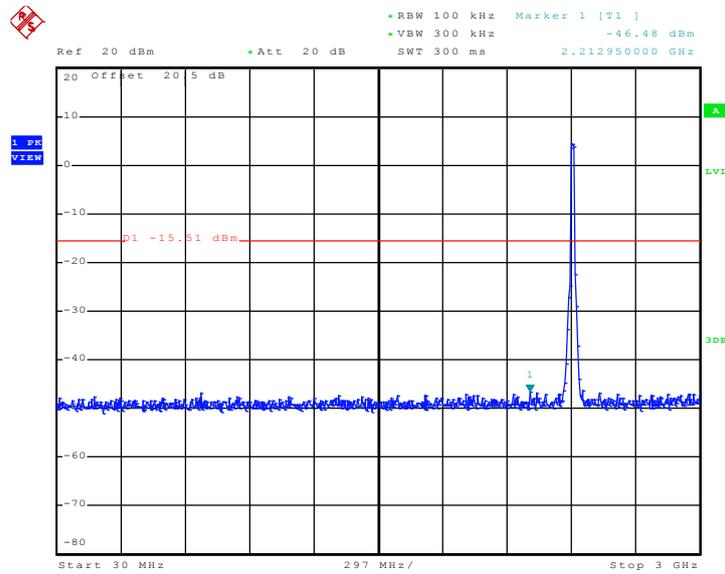


Date: 5.MAR.2011 12:48:44



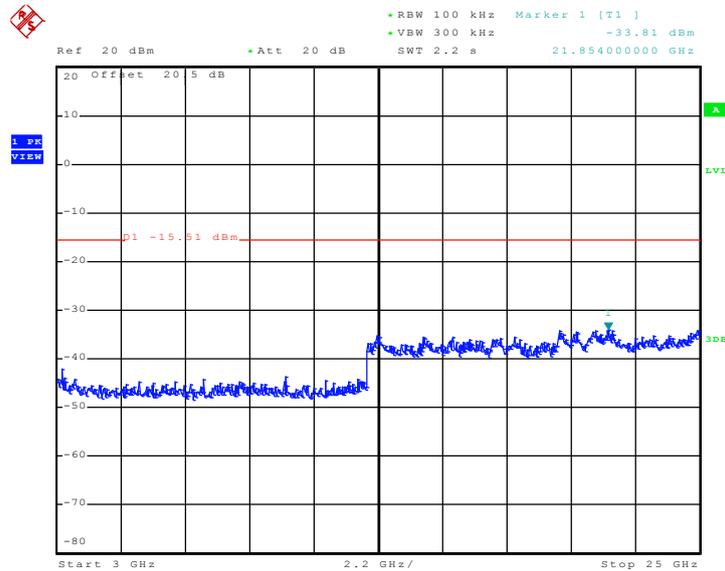
Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	01	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAR.2011 12:51:44

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

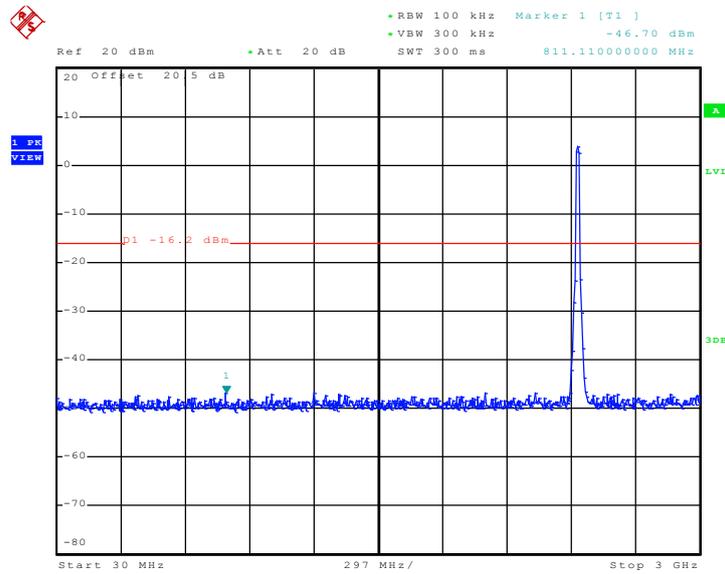


Date: 5.MAR.2011 12:52:01



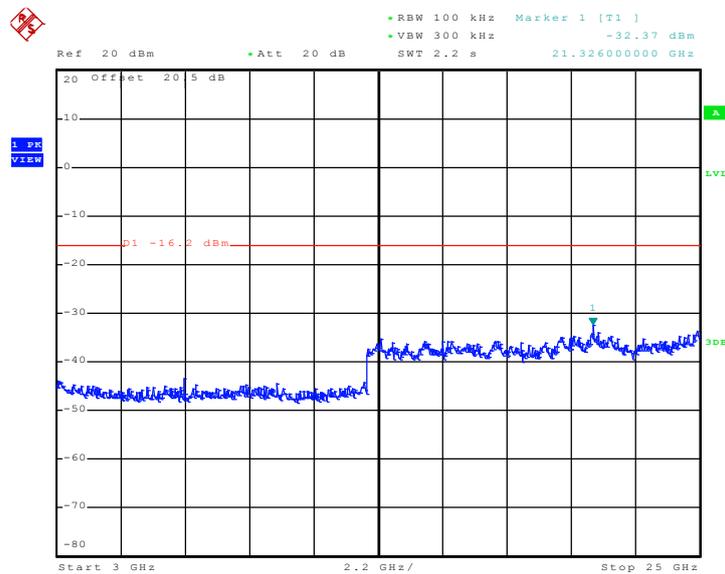
Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	06	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAR.2011 12:55:42

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

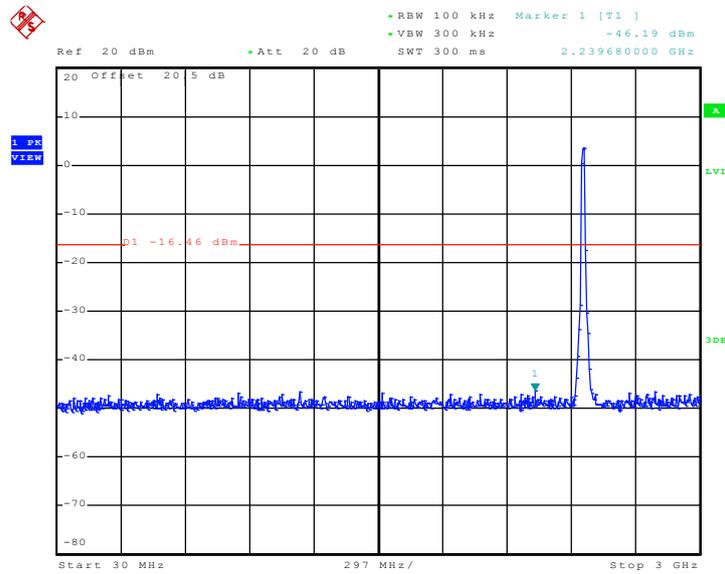


Date: 5.MAR.2011 12:55:59



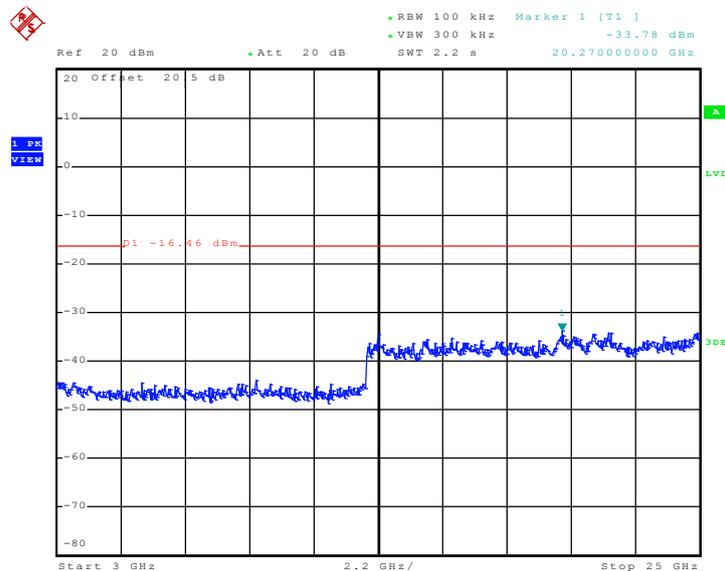
Test Mode :	Mode 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	11	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.MAR.2011 12:53:04

Conducted Spurious Emission Plot between 3 GHz ~ 25 GHz

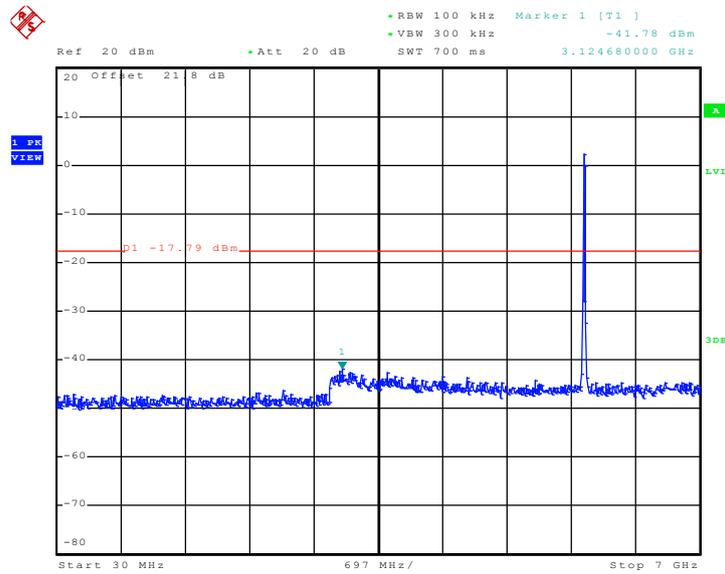


Date: 5.MAR.2011 12:53:21



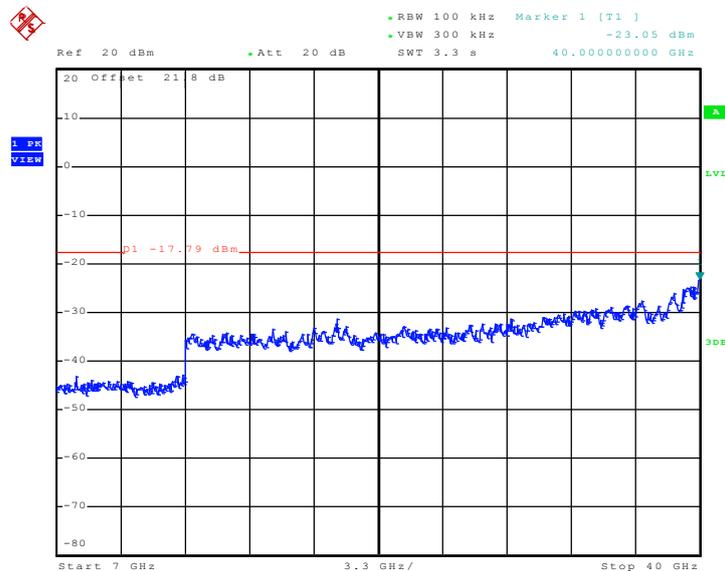
Test Mode :	Mode 10	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	40~44%
Test Channel :	149	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



Date: 14.MAR.2011 17:28:02

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

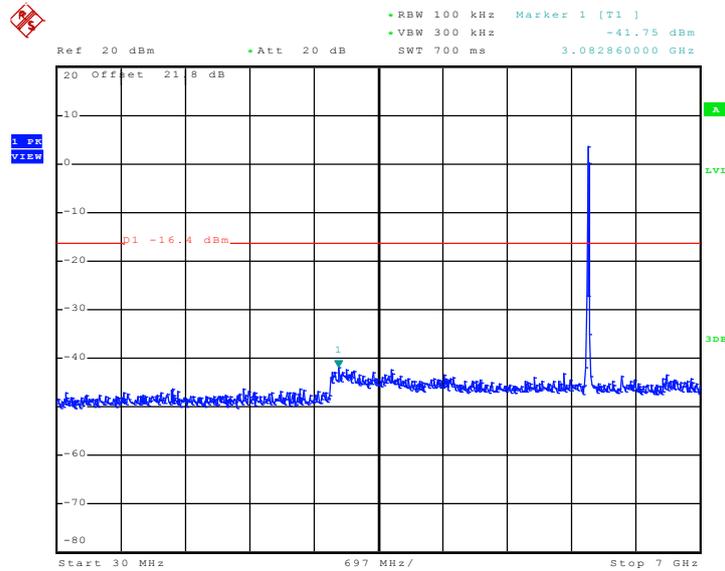


Date: 14.MAR.2011 17:28:19



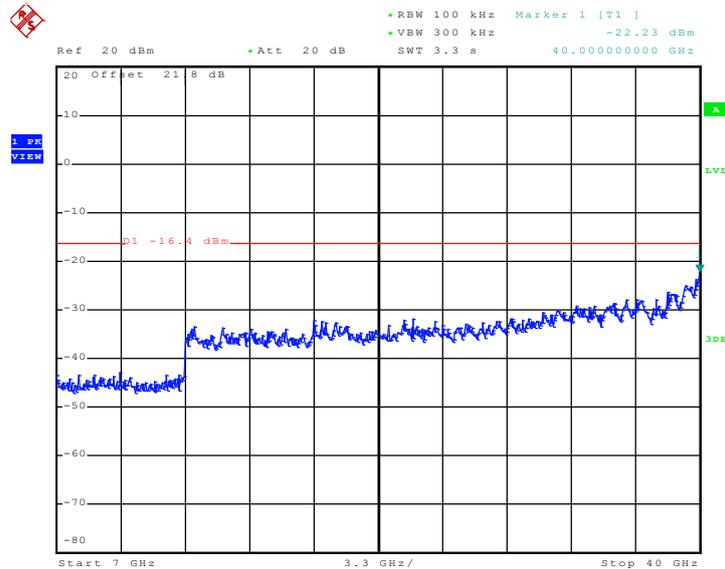
Test Mode :	Mode 11	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	40~44%
Test Channel :	157	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



Date: 14.MAR.2011 17:41:18

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

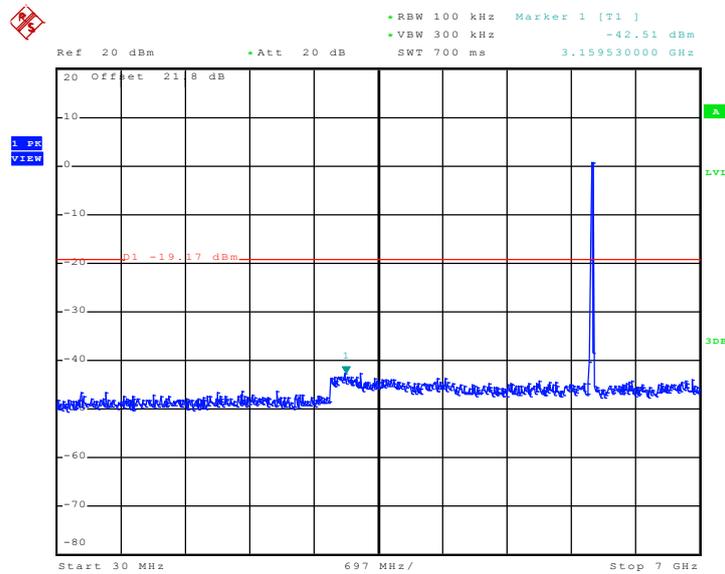


Date: 14.MAR.2011 17:41:34



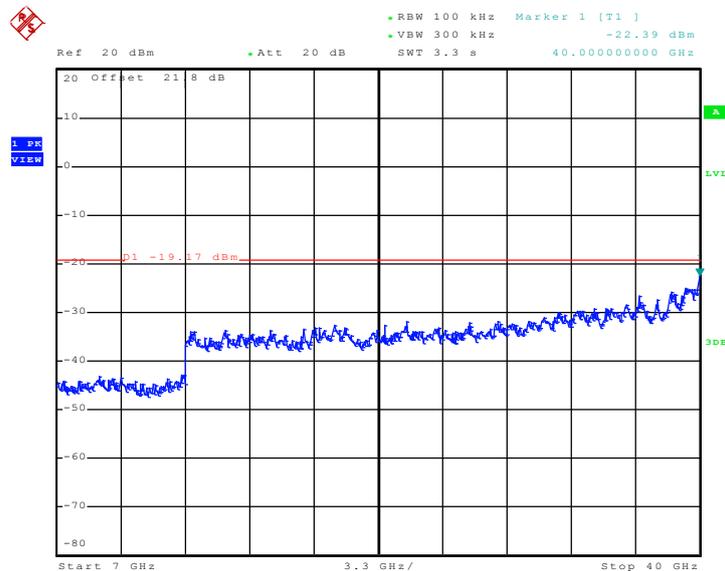
Test Mode :	Mode 12	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	40~44%
Test Channel :	165	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



Date: 14.MAR.2011 17:54:24

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

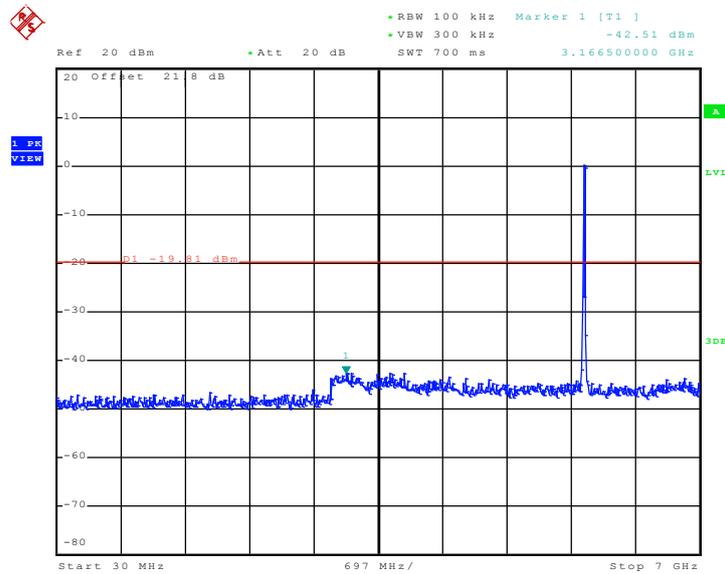


Date: 14.MAR.2011 17:54:41



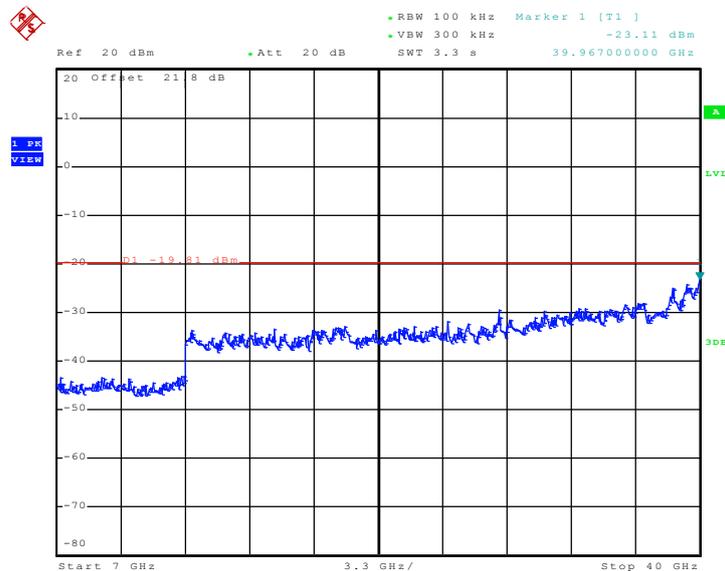
Test Mode :	Mode 13	Temperature :	24~26°C
Test Band :	802.11a (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	149	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



Date: 14.MAR.2011 18:50:53

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

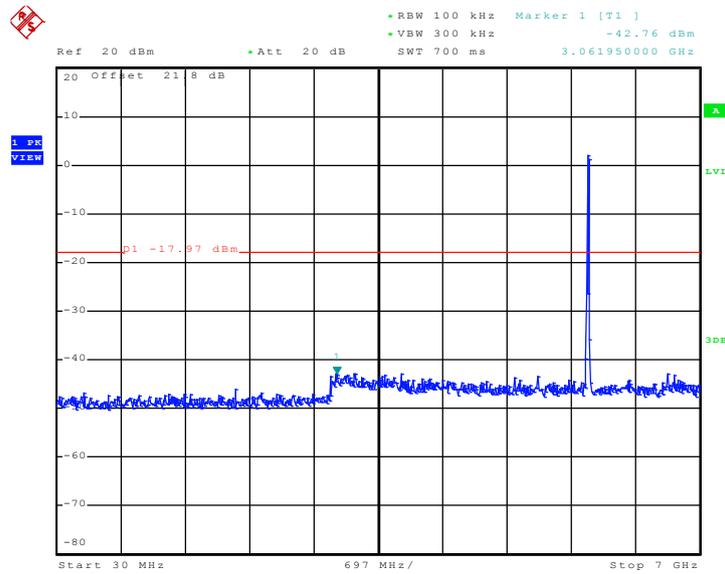


Date: 14.MAR.2011 18:51:09



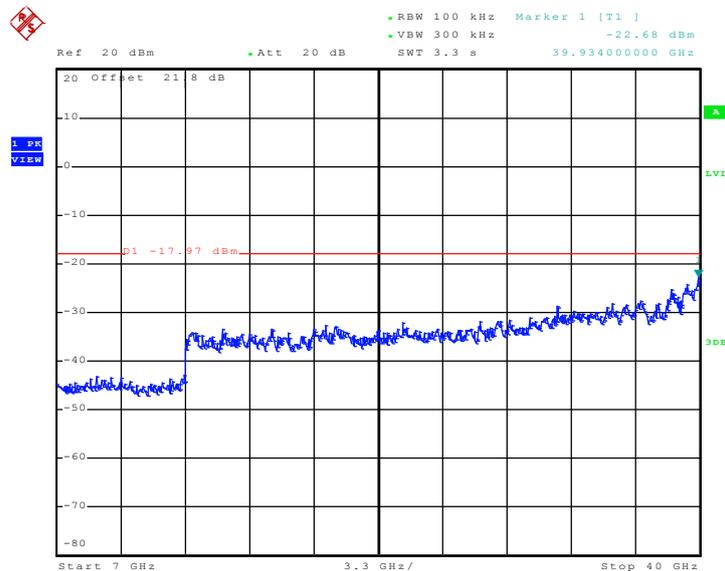
Test Mode :	Mode 14	Temperature :	24~26°C
Test Band :	802.11a (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	151	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



Date: 14.MAR.2011 18:21:25

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

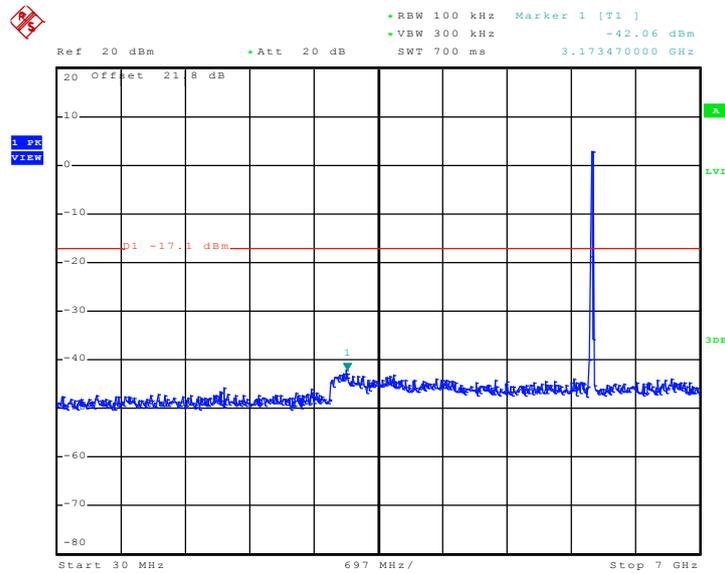


Date: 14.MAR.2011 18:21:42



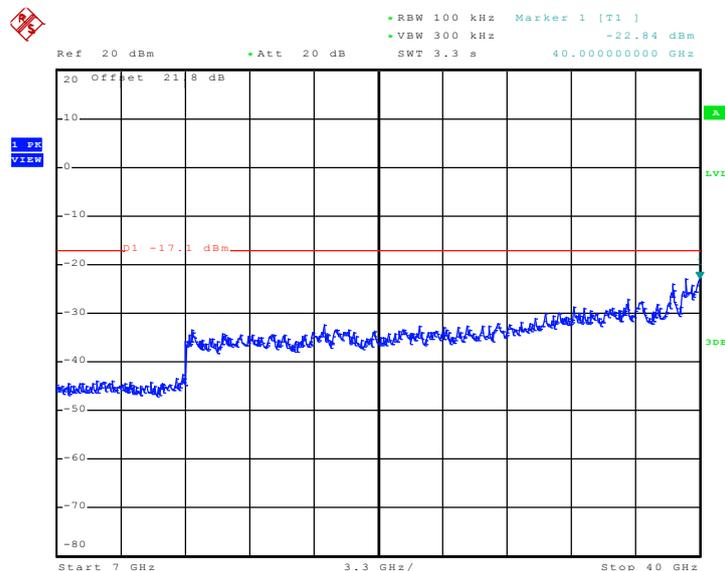
Test Mode :	Mode 15	Temperature :	24~26°C
Test Band :	802.11a (BW 20MHz)	Relative Humidity :	40~44%
Test Channel :	165	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



Date: 14.MAR.2011 18:09:03

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

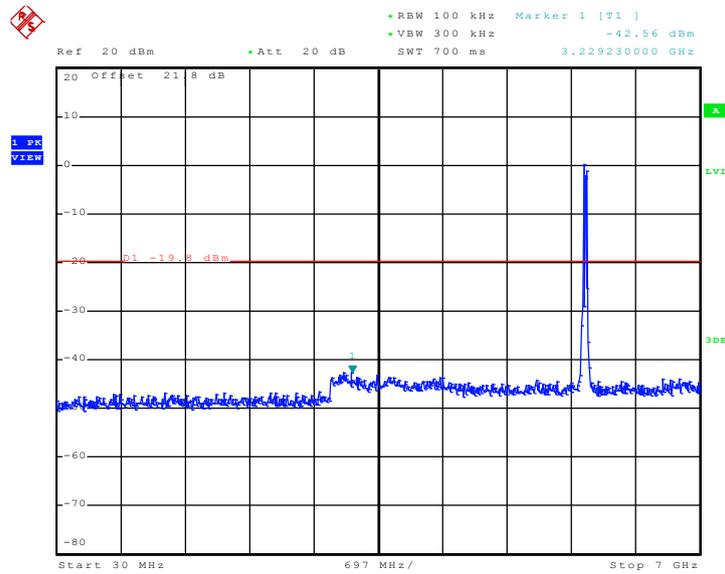


Date: 14.MAR.2011 18:09:20



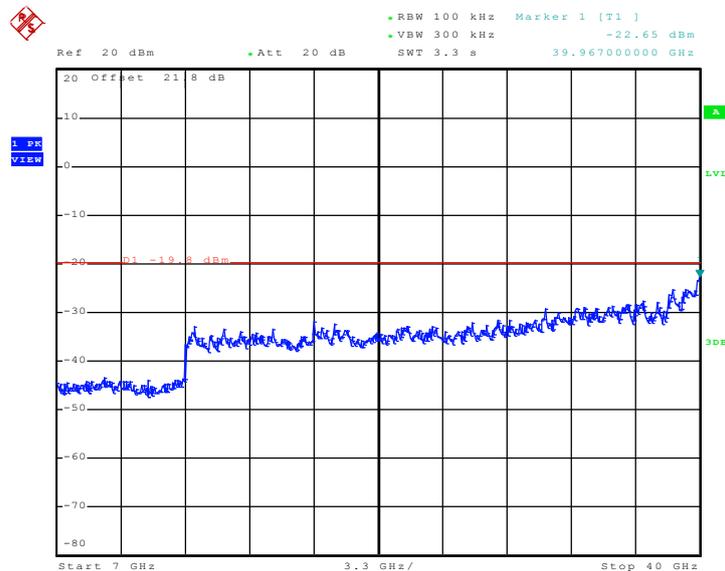
Test Mode :	Mode 16	Temperature :	24~26°C
Test Band :	802.11a (BW 40MHz)	Relative Humidity :	40~44%
Test Channel :	151	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



Date: 14.MAR.2011 19:04:09

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz

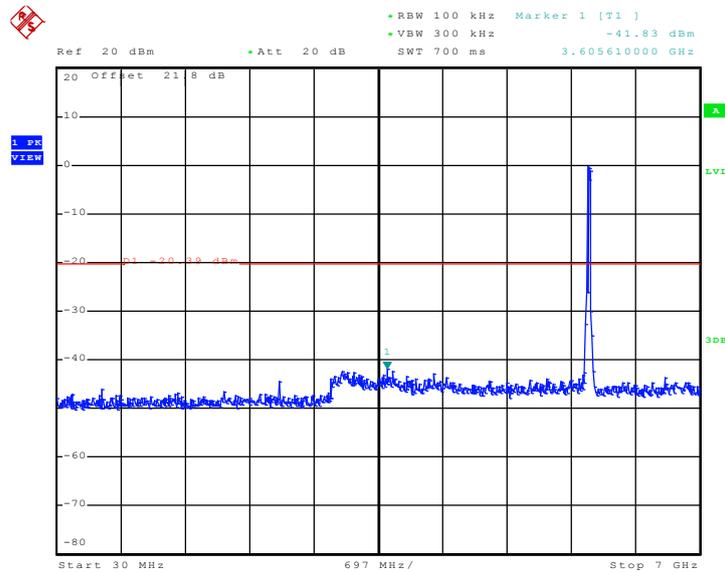


Date: 14.MAR.2011 19:04:25



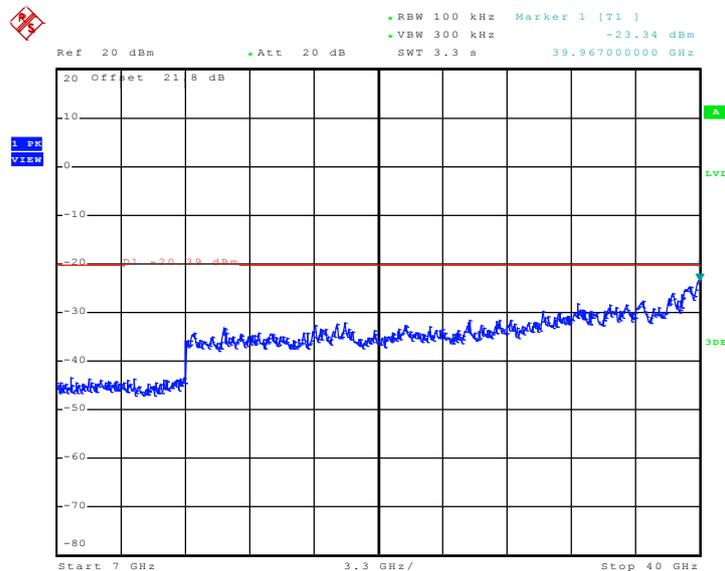
Test Mode :	Mode 17	Temperature :	24~26°C
Test Band :	802.11a (BW 40MHz)	Relative Humidity :	40~44%
Test Channel :	159	Test Engineer :	Hank Yu and Phoenix Chen

Conducted Spurious Emission Plot between 30MHz ~ 7 GHz



Date: 14.MAR.2011 19:38:23

Conducted Spurious Emission Plot between 7 GHz ~ 40 GHz



Date: 14.MAR.2011 19:38:40

## 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.

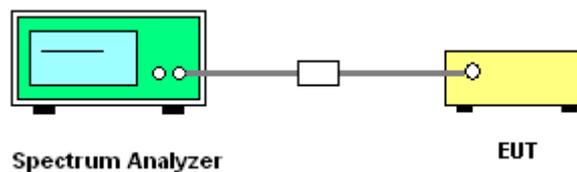
### 3.5.2 Measuring Instruments

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°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-7.08	8	Pass
06	2437	-7.92	8	Pass
11	2462	-8.11	8	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-2.97	8	Pass
06	2437	-3.87	8	Pass
11	2462	-4.51	8	Pass

Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Engineer :	Hank Yu and Phoenix Chen	Relative Humidity :	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.96	8	Pass
06	2437	-6.04	8	Pass
11	2462	-6.03	8	Pass



<b>Test Mode :</b>	Mode 10, 11, 12	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Hank Yu and Phoenix Chen	<b>Relative Humidity :</b>	40~44%

Channel	Frequency (MHz)	802.11a Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	-10.48	8	Pass
157	5785	-10.30	8	Pass
165	5825	-10.11	8	Pass

<b>Test Mode :</b>	Mode 13, 14, 15	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Hank Yu and Phoenix Chen	<b>Relative Humidity :</b>	40~44%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	-11.12	8	Pass
157	5785	-10.61	8	Pass
165	5825	-10.77	8	Pass

<b>Test Mode :</b>	Mode 16, 17	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Hank Yu and Phoenix Chen	<b>Relative Humidity :</b>	40~44%

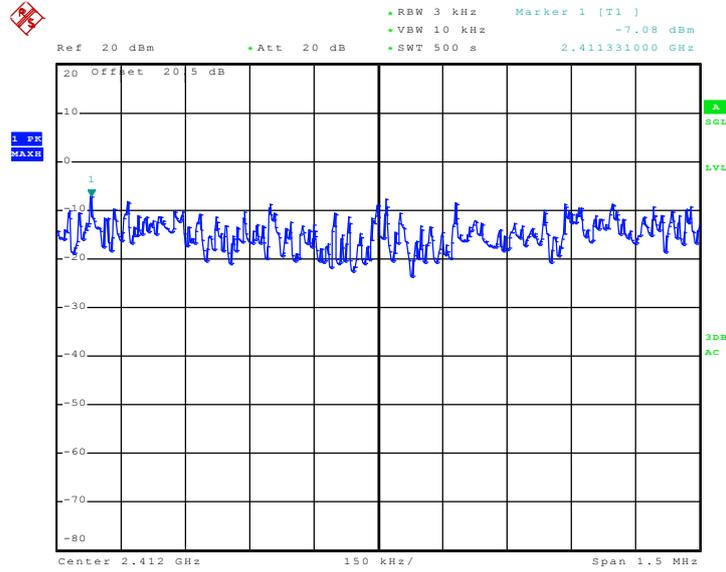
Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
151	5755	-15.91	8	Pass
159	5795	-15.64	8	Pass



### 3.5.6 Test Result of Power Spectral Density Plots

Mode 1 :

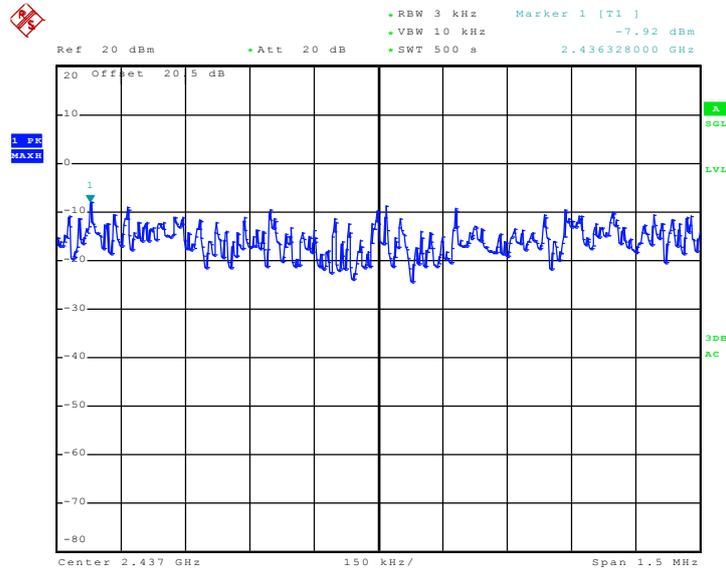
PSD Plot on 802.11b Channel 01



Date: 5.MAR.2011 14:25:11

Mode 2 :

PSD Plot on 802.11b Channel 06

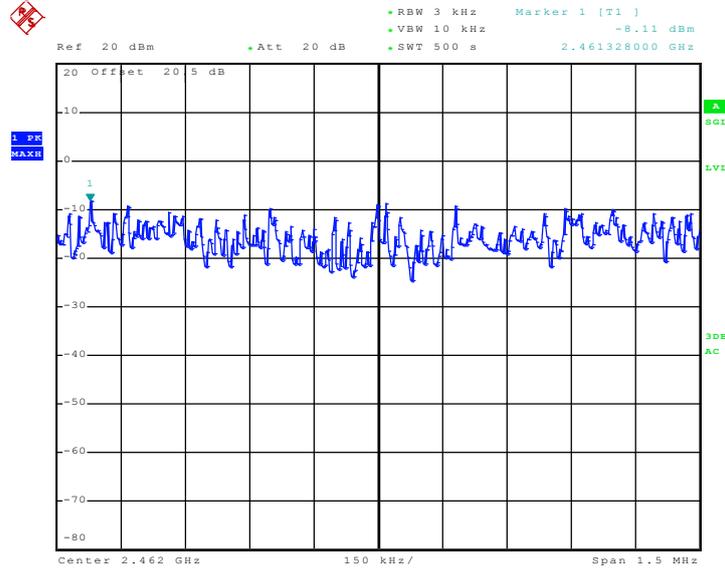


Date: 5.MAR.2011 15:09:49



Mode 3 :

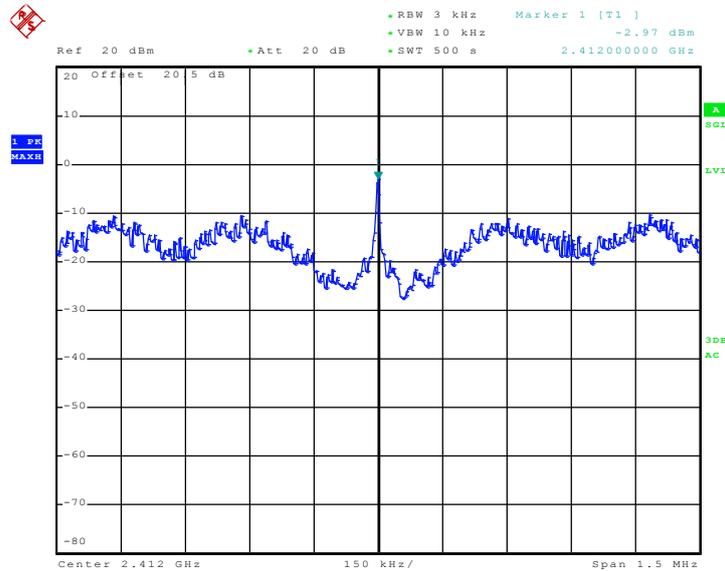
PSD Plot on 802.11b Channel 11



Date: 5.MAR.2011 14:59:43

Mode 4 :

PSD Plot on 802.11g Channel 01

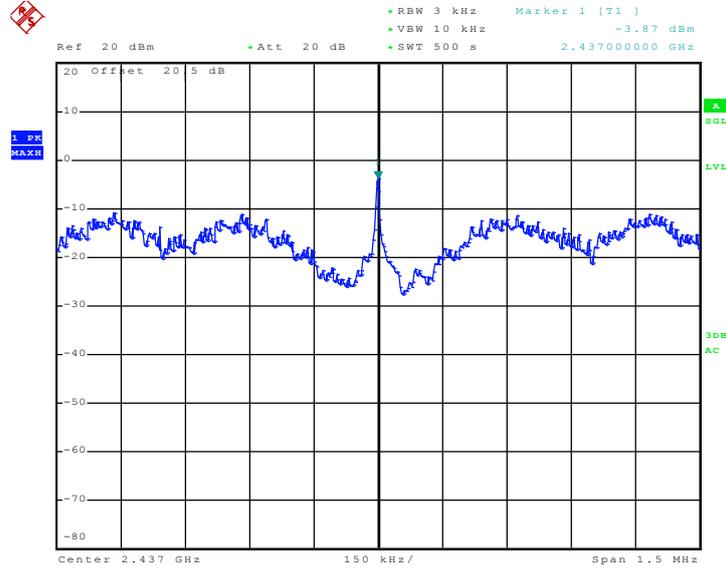


Date: 5.MAR.2011 15:31:24



Mode 5 :

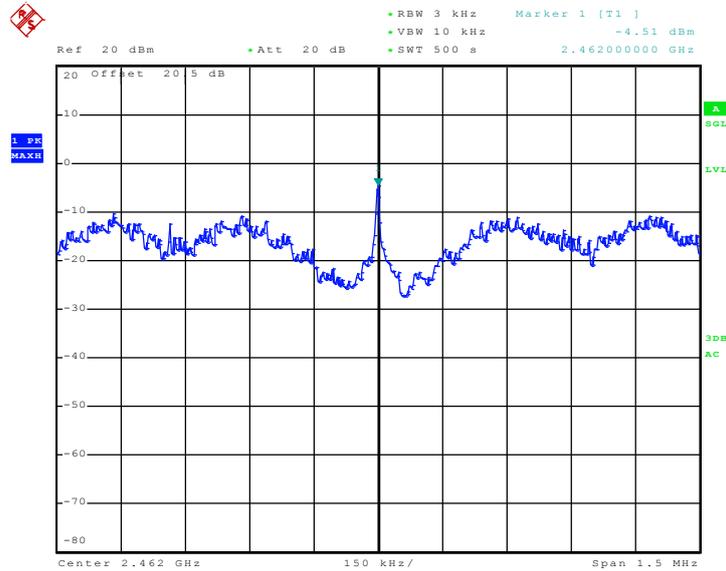
PSD Plot on 802.11g Channel 06



Date: 5.MAR.2011 15:22:04

Mode 6 :

PSD Plot on 802.11g Channel 11

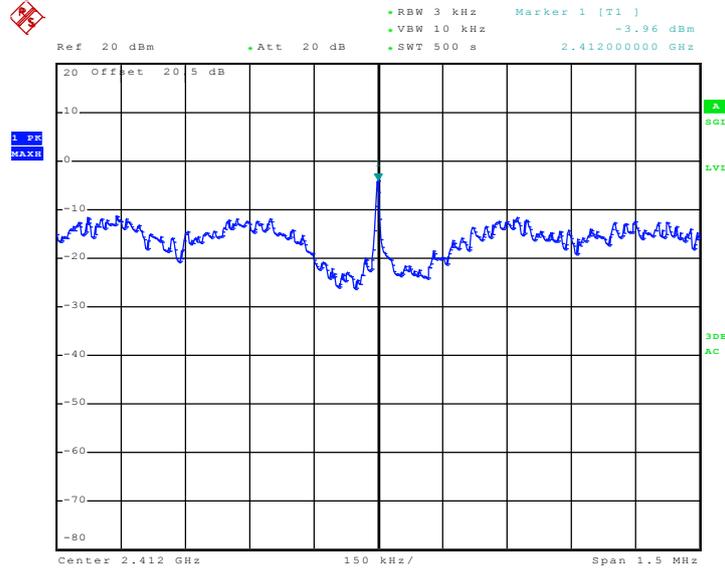


Date: 5.MAR.2011 15:40:33



Mode 7 :

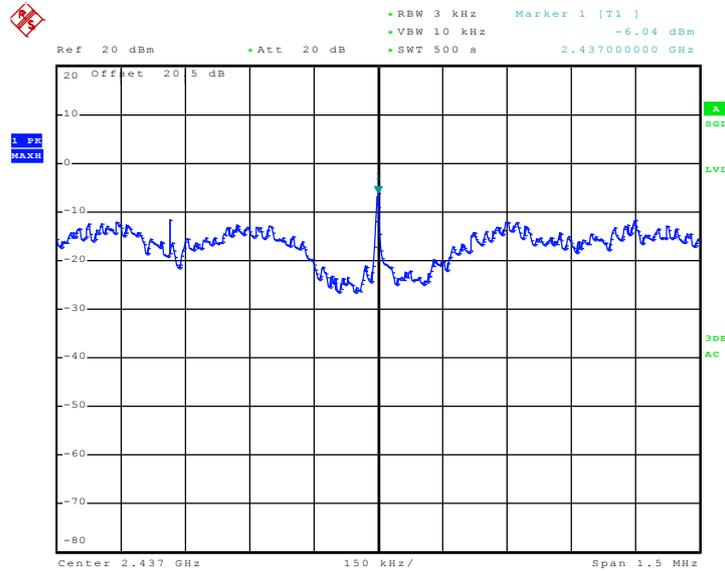
PSD Plot on 802.11n (BW 20MHz) Channel 01



Date: 5.MAR.2011 16:15:13

Mode 8 :

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

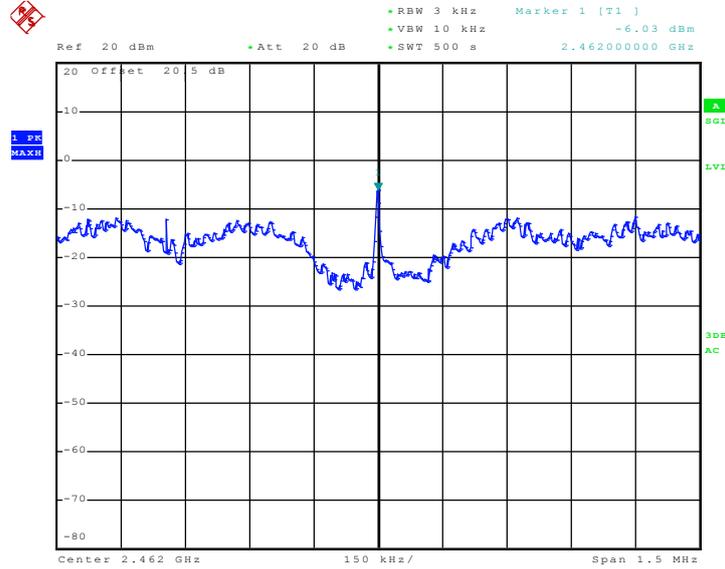


Date: 5.MAR.2011 16:04:31



Mode 9 :

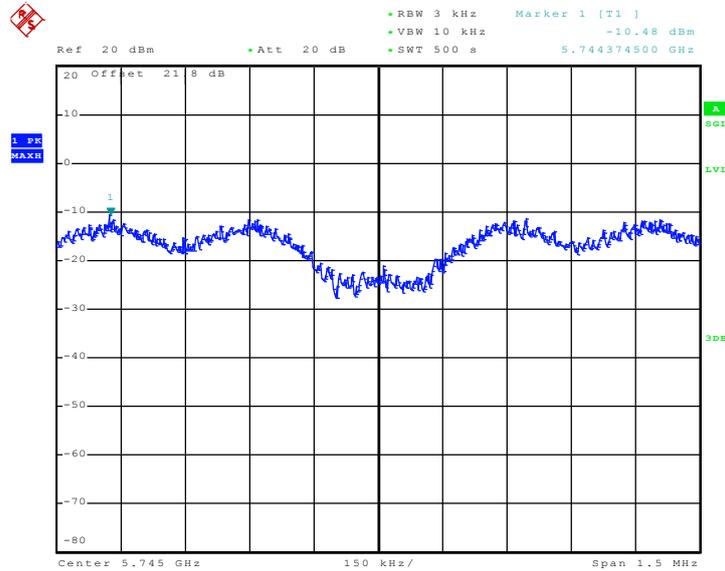
PSD Plot on 802.11n (BW 20MHz) Channel 11



Date: 5.MAR.2011 16:24:03

Mode 10:

PSD Plot on 802.11a Channel 149

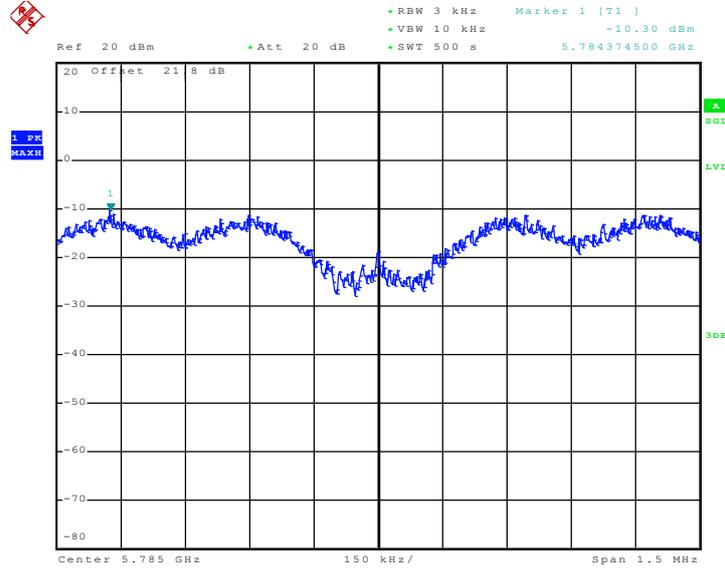


Date: 14.MAR.2011 17:27:41



Mode 11:

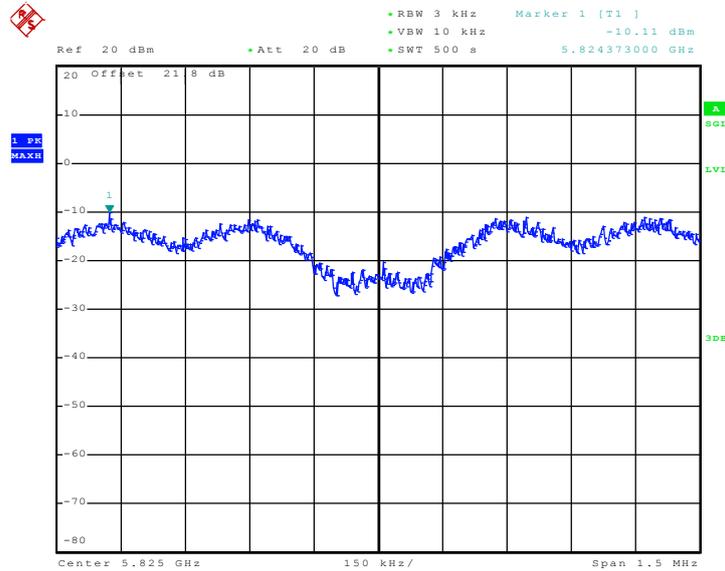
PSD Plot on 802.11a Channel 157



Date: 14.MAR.2011 17:40:57

Mode 12:

PSD Plot on 802.11a Channel 165

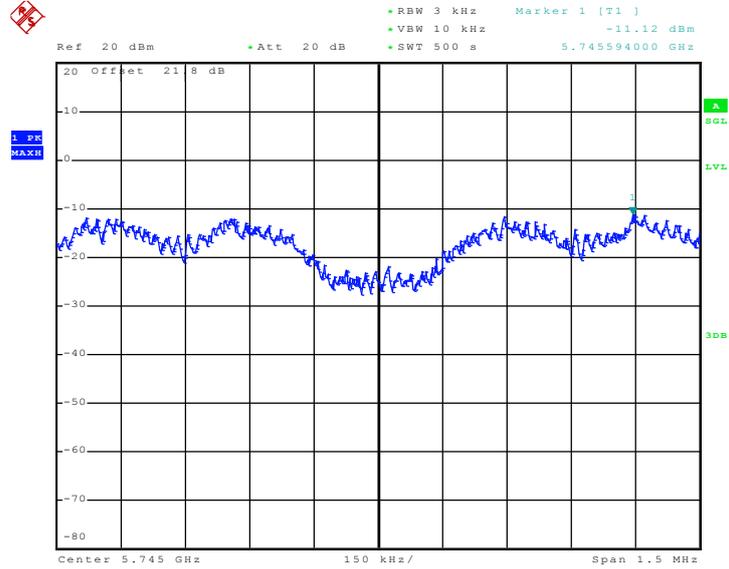


Date: 14.MAR.2011 17:54:03



Mode 13:

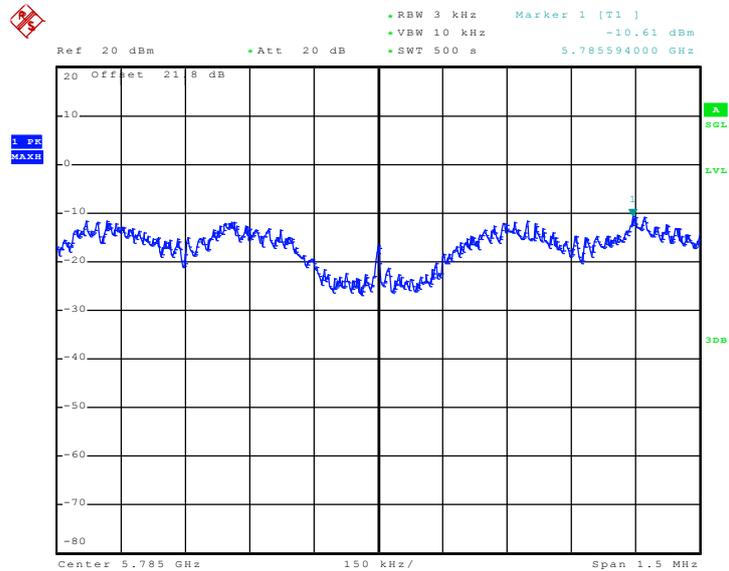
PSD Plot on 802.11n (BW 20MHz) Channel 149



Date: 14.MAR.2011 18:50:32

Mode 14:

PSD Plot on 802.11n (BW 20MHz) Channel 157

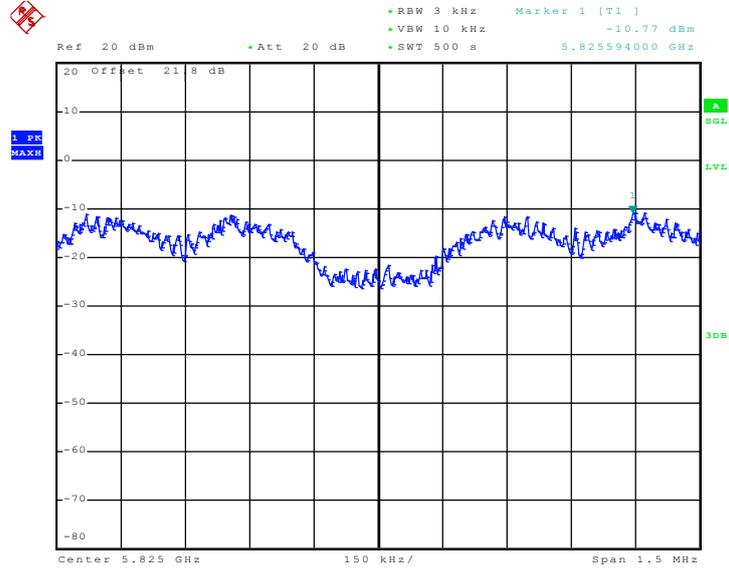


Date: 14.MAR.2011 18:21:04



Mode 15:

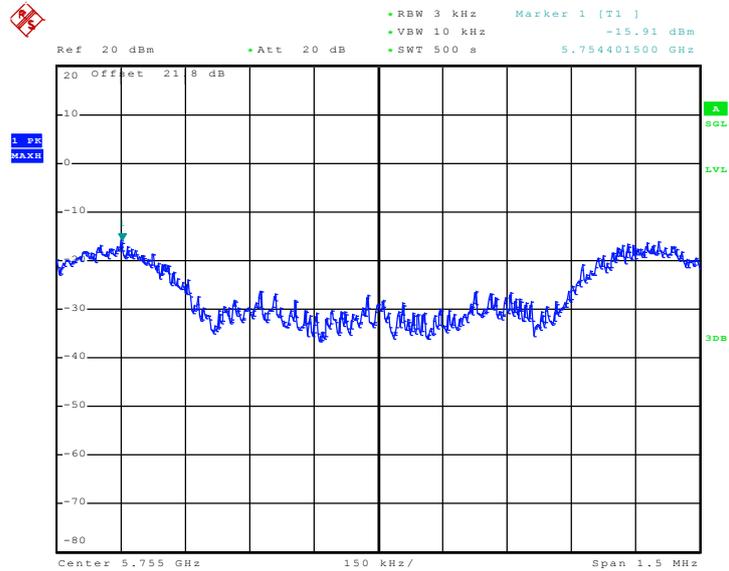
PSD Plot on 802.11n (BW 20MHz) Channel 165



Date: 14.MAR.2011 18:08:42

Mode 16:

PSD Plot on 802.11n (BW 40MHz) Channel 151

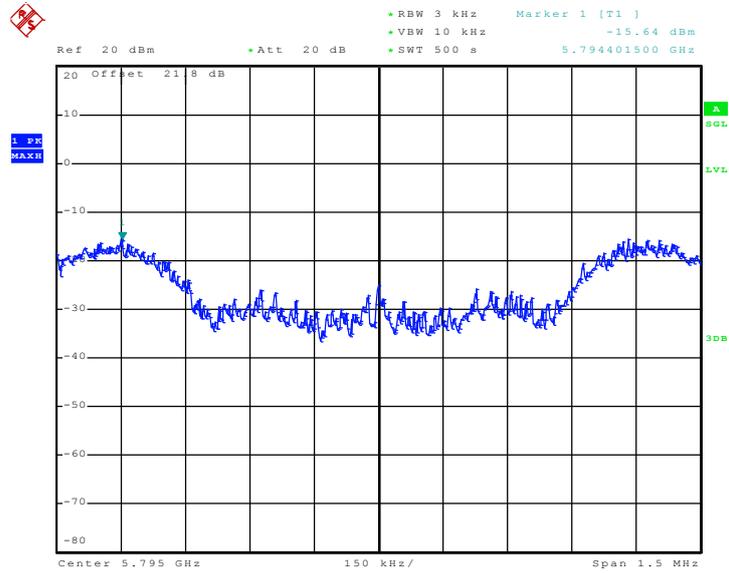


Date: 14.MAR.2011 19:03:48



Mode 17:

PSD Plot on 802.11n (BW 40MHz) Channel 159



Date: 14.MAR.2011 19:37:49

### 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.

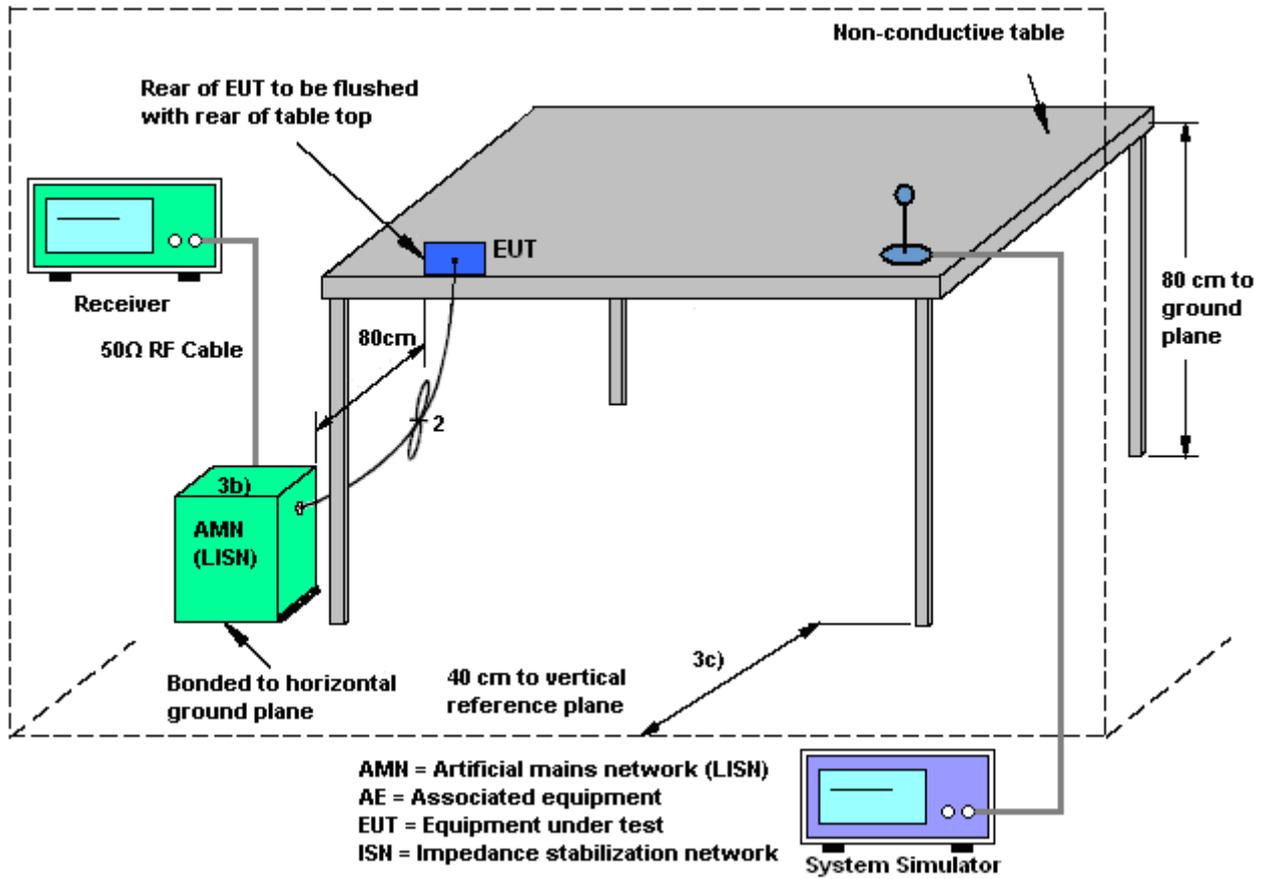
#### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.6.3 Test Procedures

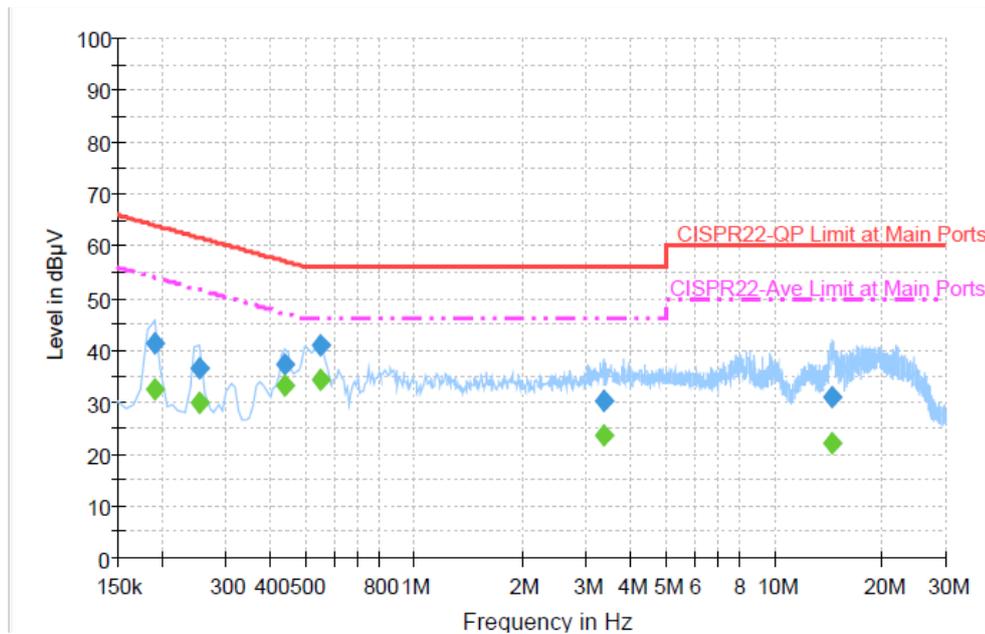
4. The testing follows the guidelines in ANSI C63.4-2003.
5. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
6. Connect EUT to the power mains through a line impedance stabilization network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

### 3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + WLAN Link + Bluetooth Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



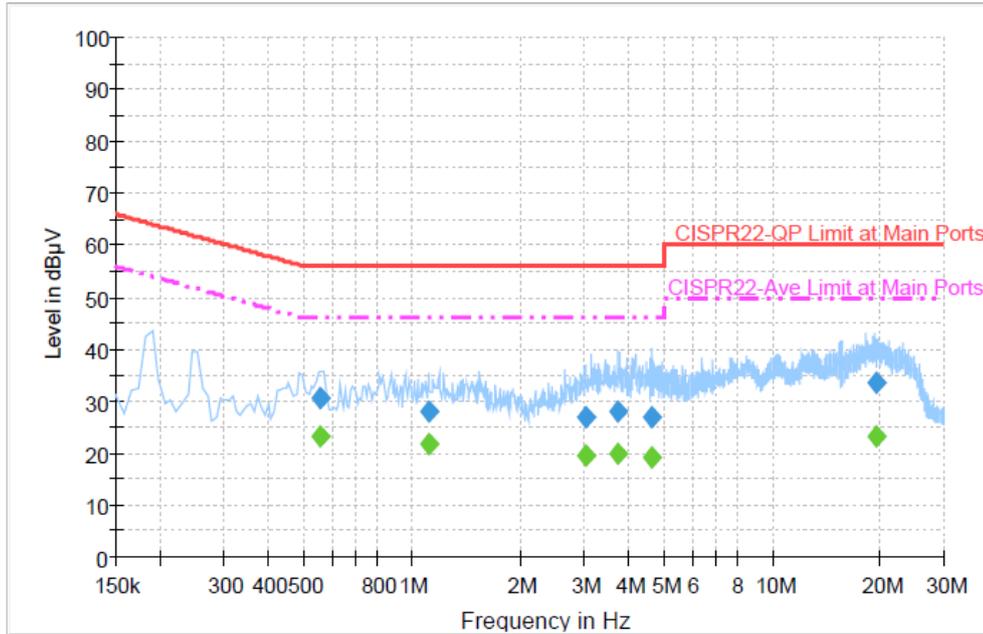
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	41.4	Off	L1	19.4	22.6	64.0
0.254000	36.4	Off	L1	19.4	25.2	61.6
0.438000	37.3	Off	L1	19.5	19.8	57.1
0.550000	40.8	Off	L1	19.4	15.2	56.0
3.350000	30.2	Off	L1	19.5	25.8	56.0
14.462000	31.0	Off	L1	19.6	29.0	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	32.6	Off	L1	19.4	21.4	54.0
0.254000	29.9	Off	L1	19.4	21.7	51.6
0.438000	33.2	Off	L1	19.5	13.9	47.1
0.550000	34.5	Off	L1	19.4	11.5	46.0
3.350000	23.7	Off	L1	19.5	22.3	46.0
14.462000	22.3	Off	L1	19.6	27.7	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Chiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + WLAN Link + Bluetooth Link + 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)
0.558000	30.6	Off	N	19.4	25.4	56.0
1.110000	28.2	Off	N	19.5	27.8	56.0
3.022000	26.8	Off	N	19.5	29.2	56.0
3.734000	28.0	Off	N	19.5	28.0	56.0
4.614000	27.1	Off	N	19.5	28.9	56.0
19.486000	33.5	Off	N	19.8	26.5	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.558000	23.2	Off	N	19.4	22.8	46.0
1.110000	21.8	Off	N	19.5	24.2	46.0
3.022000	19.4	Off	N	19.5	26.6	46.0
3.734000	20.0	Off	N	19.5	26.0	46.0
4.614000	19.2	Off	N	19.5	26.8	46.0
19.486000	23.3	Off	N	19.8	26.7	50.0

### 3.7 Radiated Emission Measurement

#### 3.7.1 Limit of Radiated Emission

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

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

#### 3.7.2 Measuring Instruments

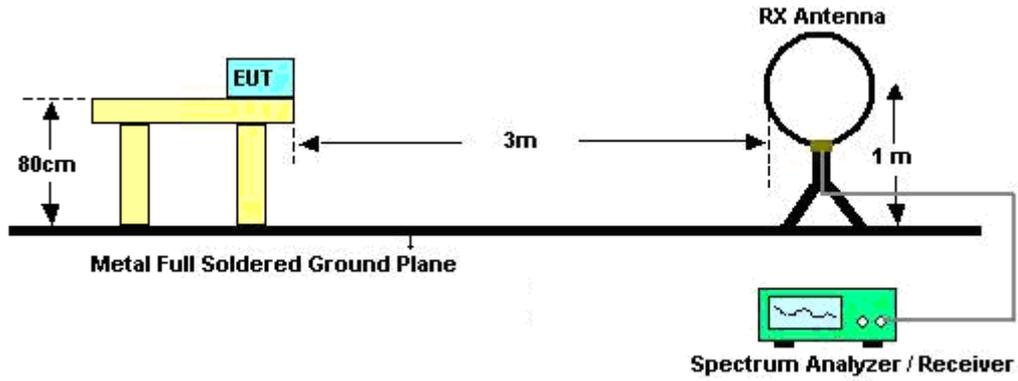
See list of measuring instruments of this test report.

#### 3.7.3 Test Procedures

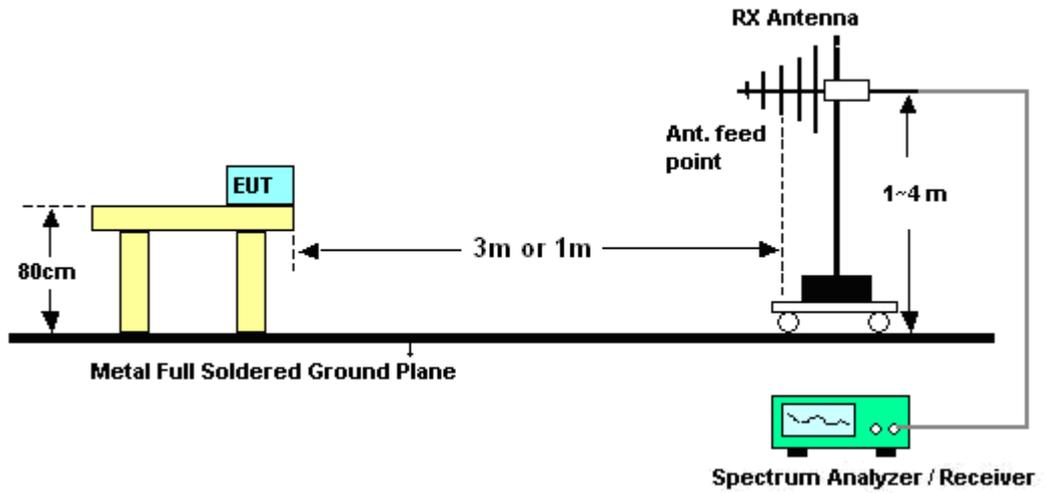
1. The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Use the following spectrum analyzer settings:
  - (1) Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz; VBW  $\geq$ 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

### 3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz





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

Test Engineer :	Ivan Chiang	Temperature :	24~25°C	
		Relative Humidity :	49~50%	
Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

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

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

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



3.7.6 Test Result of Radiated Emission (30MHz ~ 10<sup>th</sup> Harmonic)

Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	49~50%
Test Engineer :	Ivan Chiang	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
64.02	21.65	-18.35	40	46.48	5.92	0.79	31.54	-	-	Peak
119.1	26.12	-17.38	43.5	45.13	11.45	1.1	31.56	-	-	Peak
249.78	24.87	-21.13	46	42.08	12.67	1.53	31.41	-	-	Peak
313.3	27.76	-18.24	46	43.4	13.88	1.8	31.32	-	-	Peak
377	27.52	-18.48	46	40.8	15.87	2.09	31.24	-	-	Peak
509.3	29.23	-16.77	46	39.45	18.36	2.47	31.05	100	315	Peak
2386.57	36.92	-17.08	54	32.56	32.18	6.03	33.85	152	302	Average
2386.57	48.98	-25.02	74	44.62	32.18	6.03	33.85	152	302	Peak
2412	105.8	-	-	101.4	32.2	6.07	33.87	152	302	Peak
2412	96.74	-	-	92.34	32.2	6.07	33.87	152	302	Average
2486	33.93	-20.07	54	29.37	32.28	6.18	33.9	152	302	Average
2486	46.25	-27.75	74	41.69	32.28	6.18	33.9	152	302	Peak
4824	49.97	-24.03	74	65.89	34.07	9.12	59.11	100	0	Peak



Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	49~50%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level (dBuV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.73	-11.27	40	53.56	5.92	0.79	31.54	-	-	Peak
138.81	32.99	-10.51	43.5	51.74	11.6	1.2	31.55	100	215	Peak
216.57	24.91	-21.09	46	44.7	10.27	1.4	31.46	-	-	Peak
312.6	24.92	-21.08	46	40.6	13.85	1.79	31.32	-	-	Peak
386.1	28.16	-17.84	46	41.13	16.14	2.11	31.22	-	-	Peak
500.9	31.84	-14.16	46	42.23	18.23	2.45	31.07	-	-	Peak
2386.57	35.98	-18.02	54	31.62	32.18	6.03	33.85	101	43	Average
2386.57	47.39	-26.61	74	43.03	32.18	6.03	33.85	101	43	Peak
2412	103.47	-	-	99.07	32.2	6.07	33.87	101	43	Peak
2412	94.6	-	-	90.2	32.2	6.07	33.87	101	43	Average
2500	33.7	-20.3	54	29.12	32.3	6.18	33.9	101	43	Average
2500	46.01	-27.99	74	41.43	32.3	6.18	33.9	101	43	Peak
4824	46.93	-27.07	74	62.85	34.07	9.12	59.11	100	0	Peak



Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	49~50%
Test Engineer :	Ivan Chiang	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
64.02	21.65	-18.35	40	46.48	5.92	0.79	31.54	-	-	Peak
96.69	17.22	-26.28	43.5	38.31	9.46	0.98	31.53	-	-	Peak
246.81	26.09	-19.91	46	43.51	12.46	1.53	31.41	-	-	Peak
316.1	28.01	-17.99	46	43.56	13.97	1.8	31.32	-	-	Peak
379.8	27.51	-18.49	46	40.69	15.96	2.1	31.24	-	-	Peak
505.8	28.98	-17.02	46	39.26	18.32	2.46	31.06	110	158	Peak
2388	45.68	-28.32	74	41.32	32.18	6.03	33.85	101	96	Peak
2388	34.62	-19.38	54	30.26	32.18	6.03	33.85	101	96	Average
2437	94.11	-	-	89.71	32.2	6.07	33.87	101	96	Average
2437	103.29	-	-	98.82	32.24	6.11	33.88	101	96	Peak
2500	45.71	-28.29	74	41.13	32.3	6.18	33.9	101	96	Peak
2500	34.24	-19.76	54	29.66	32.3	6.18	33.9	101	96	Average
4874	48.13	-25.87	74	63.95	34.08	9.14	59.04	100	0	Peak



Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	49~50%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.9	-11.1	40	53.73	5.92	0.79	31.54	121	111	Peak
181.74	22.32	-21.18	43.5	43.56	9.04	1.25	31.53	-	-	Peak
247.62	24.49	-21.51	46	41.91	12.46	1.53	31.41	-	-	Peak
312.6	25.24	-20.76	46	40.92	13.85	1.79	31.32	-	-	Peak
393.8	28.12	-17.88	46	40.81	16.38	2.13	31.2	-	-	Peak
503.7	31.72	-14.28	46	42.05	18.27	2.46	31.06	-	-	Peak
2388	45.28	-28.72	74	40.92	32.18	6.03	33.85	132	38	Peak
2388	34.34	-19.66	54	29.98	32.18	6.03	33.85	132	38	Average
2437	101.83	-	-	97.38	32.22	6.11	33.88	132	38	Peak
2437	93.24	-	-	88.77	32.24	6.11	33.88	132	38	Average
2500	45.7	-28.3	74	41.12	32.3	6.18	33.9	132	38	Peak
2500	33.78	-20.22	54	29.2	32.3	6.18	33.9	132	38	Average
4874	45.86	-28.14	74	61.69	34.08	9.13	59.04	100	0	Peak



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
63.21	21.13	-18.87	40	46.03	5.86	0.78	31.54	-	-	Peak
98.85	18.98	-24.52	43.5	39.85	9.68	0.99	31.54	-	-	Peak
176.61	24.37	-19.13	43.5	45.33	9.33	1.24	31.53	-	-	Peak
312.6	28.47	-17.53	46	44.15	13.85	1.79	31.32	-	-	Peak
385.4	26.86	-19.14	46	39.86	16.11	2.11	31.22	-	-	Peak
500.9	29.5	-16.5	46	39.89	18.23	2.45	31.07	131	111	Peak
2372	46.05	-27.95	74	41.74	32.16	5.99	33.84	100	95	Peak
2372	34.29	-19.71	54	29.98	32.16	5.99	33.84	100	95	Average
2462	102.96	-	-	98.45	32.26	6.14	33.89	100	95	Peak
2462	94.22	-	-	89.71	32.26	6.14	33.89	100	95	Average
2487.65	35.09	-18.91	54	30.51	32.3	6.18	33.9	100	95	Average
2487.65	47.25	-26.75	74	42.67	32.3	6.18	33.9	100	95	Peak
4924	45.25	-28.75	74	60.97	34.09	9.15	58.96	100	0	Peak



<b>Test Mode :</b>	Mode 3	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2462 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.96	-11.04	40	53.79	5.92	0.79	31.54	102	159	Peak
184.17	22.23	-21.27	43.5	43.44	9.05	1.26	31.52	-	-	Peak
275.7	26.77	-19.23	46	43.42	13.07	1.64	31.36	-	-	Peak
312.6	25.29	-20.71	46	40.97	13.85	1.79	31.32	-	-	Peak
385.4	28.1	-17.9	46	41.1	16.11	2.11	31.22	-	-	Peak
511.4	31.67	-14.33	46	41.86	18.39	2.47	31.05	-	-	Peak
2390	45.75	-28.25	74	41.39	32.18	6.03	33.85	103	45	Peak
2390	34.44	-19.56	54	30.08	32.18	6.03	33.85	103	45	Average
2462	102.8	-	-	98.29	32.26	6.14	33.89	103	45	Peak
2462	93.87	-	-	89.36	32.26	6.14	33.89	103	45	Average
2486.7	35.37	-18.63	54	30.81	32.28	6.18	33.9	103	45	Average
2486.7	47.51	-26.49	74	42.95	32.28	6.18	33.9	103	45	Peak



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	21.24	-18.76	40	46.07	5.92	0.79	31.54	-	-	Peak
181.74	24.3	-19.2	43.5	45.54	9.04	1.25	31.53	-	-	Peak
247.62	24.95	-21.05	46	42.37	12.46	1.53	31.41	-	-	Peak
316.1	28.28	-17.72	46	43.83	13.97	1.8	31.32	-	-	Peak
377.7	27.36	-18.64	46	40.64	15.87	2.09	31.24	-	-	Peak
500.9	30.03	-15.97	46	40.42	18.23	2.45	31.07	131	115	Peak
2389.99	48.01	-5.99	54	43.65	32.18	6.03	33.85	146	308	Average
2389.99	69.54	-4.46	74	65.18	32.18	6.03	33.85	146	308	Peak
2412	104.45	-	-	100.05	32.2	6.07	33.87	146	308	Peak
2412	87.71	-	-	83.31	32.2	6.07	33.87	146	308	Average
2484	34.9	-19.1	54	30.34	32.28	6.18	33.9	146	308	Average
2484	48.35	-25.65	74	43.79	32.28	6.18	33.9	146	308	Peak
4824	44.89	-29.11	74	60.81	34.07	9.12	59.11	100	0	Peak



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.92	-11.08	40	53.75	5.92	0.79	31.54	100	231	Peak
181.74	22.33	-21.17	43.5	43.57	9.04	1.25	31.53	-	-	Peak
252.21	26.11	-19.89	46	43.28	12.7	1.54	31.41	-	-	Peak
310.5	26.03	-19.97	46	41.77	13.79	1.79	31.32	-	-	Peak
383.3	29.63	-16.37	46	42.7	16.05	2.11	31.23	-	-	Peak
503.7	32.3	-13.7	46	42.63	18.27	2.46	31.06	-	-	Peak
2389.99	46.72	-7.28	54	42.36	32.18	6.03	33.85	102	43	Average
2389.99	68.72	-5.28	74	64.36	32.18	6.03	33.85	102	43	Peak
2412	102.47	-	-	98.07	32.2	6.07	33.87	102	43	Peak
2412	85.45	-	-	81.05	32.2	6.07	33.87	102	43	Average
2492	34.01	-19.99	54	29.43	32.3	6.18	33.9	102	43	Average
2492	46.4	-27.6	74	41.82	32.3	6.18	33.9	102	43	Peak



Test Mode :	Mode 5	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	49~50%
Test Engineer :	Ivan Chiang	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
64.02	21.63	-18.37	40	46.46	5.92	0.79	31.54			Peak
181.74	23.54	-19.96	43.5	44.78	9.04	1.25	31.53			Peak
244.65	25.38	-20.62	46	43.01	12.26	1.53	31.42			Peak
312.6	28.14	-17.86	46	43.82	13.85	1.79	31.32			Peak
379.8	26.83	-19.17	46	40.01	15.96	2.1	31.24			Peak
505.8	29.26	-16.74	46	39.54	18.32	2.46	31.06	100	123	Peak
2390	46.69	-27.31	74	42.33	32.18	6.03	33.85	151	305	Peak
2390	34.64	-19.36	54	30.28	32.18	6.03	33.85	151	305	Average
2437	103.45	-	-	99	32.22	6.11	33.88	151	305	Peak
2437	86.83	-	-	82.36	32.24	6.11	33.88	151	305	Average
2486	46.4	-27.6	74	41.84	32.28	6.18	33.9	151	305	Peak
2486	33.68	-20.32	54	29.12	32.28	6.18	33.9	151	305	Average
4874	47.16	-26.84	74	62.99	34.08	9.13	59.04	100	0	Peak



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2437 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.29	28.81	-11.19	40	53.64	5.92	0.79	31.54	100	210	Peak
181.74	22.59	-20.91	43.5	43.83	9.04	1.25	31.53	-	-	Peak
247.62	24.2	-21.8	46	41.62	12.46	1.53	31.41	-	-	Peak
312.6	25.19	-20.81	46	40.87	13.85	1.79	31.32	-	-	Peak
388.9	27.46	-18.54	46	40.32	16.23	2.12	31.21	-	-	Peak
500.9	31.99	-14.01	46	42.38	18.23	2.45	31.07	-	-	Peak
2366	45.57	-28.43	74	41.29	32.13	5.99	33.84	100	352	Peak
2366	33.97	-20.03	54	29.69	32.13	5.99	33.84	100	352	Average
2437	102.09	-	-	97.62	32.24	6.11	33.88	100	352	Peak
2437	85.19	-	-	80.72	32.24	6.11	33.88	100	352	Average
2492	45.71	-28.29	74	41.13	32.3	6.18	33.9	100	352	Peak
2492	33.61	-20.39	54	29.03	32.3	6.18	33.9	100	352	Average



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2462 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	21.94	-18.06	40	46.77	5.92	0.79	31.54	-	-	Peak
181.74	23.4	-20.1	43.5	44.64	9.04	1.25	31.53	-	-	Peak
249.78	25.06	-20.94	46	42.27	12.67	1.53	31.41	-	-	Peak
313.3	28.06	-17.94	46	43.7	13.88	1.8	31.32	-	-	Peak
385.4	27.09	-18.91	46	40.09	16.11	2.11	31.22	-	-	Peak
503.7	29.67	-16.33	46	40	18.27	2.46	31.06	156	163	Peak
2390	45.54	-28.46	74	41.18	32.18	6.03	33.85	119	299	Peak
2390	34.19	-19.81	54	29.83	32.18	6.03	33.85	119	299	Average
2462	104.44	-	-	99.93	32.26	6.14	33.89	119	299	Peak
2462	86.78	-	-	82.27	32.26	6.14	33.89	119	299	Average
2483.5	47.31	-6.69	54	42.75	32.28	6.18	33.9	119	299	Average
2483.5	66.15	-7.85	74	61.59	32.28	6.18	33.9	119	299	Peak
4924	46.12	-27.88	74	61.84	34.09	9.15	58.96	100	0	Peak



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2462 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.9	-11.1	40	53.73	5.92	0.79	31.54	100	311	Peak
192.54	21.85	-21.65	43.5	42.98	9.08	1.29	31.5	-	-	Peak
247.62	24.71	-21.29	46	42.13	12.46	1.53	31.41	-	-	Peak
312.6	25.78	-20.22	46	41.46	13.85	1.79	31.32	-	-	Peak
382.6	28.76	-17.24	46	41.83	16.05	2.11	31.23	-	-	Peak
500.2	32.72	-13.28	46	43.11	18.23	2.45	31.07	-	-	Peak
2318	45.8	-28.2	74	41.61	32.09	5.92	33.82	100	342	Peak
2318	33.77	-20.23	54	29.58	32.09	5.92	33.82	100	342	Average
2462	86.03	-	-	81.52	32.26	6.14	33.89	100	342	Average
2462	103.54	-	-	99.03	32.26	6.14	33.89	100	342	Peak
2483.5	46.15	-7.85	54	41.59	32.28	6.18	33.9	100	342	Average
2483.5	64.61	-9.39	74	60.05	32.28	6.18	33.9	100	342	Peak



<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	21.13	-18.87	40	45.96	5.92	0.79	31.54	-	-	Peak
181.74	23.74	-19.76	43.5	44.98	9.04	1.25	31.53	-	-	Peak
247.62	24.74	-21.26	46	42.16	12.46	1.53	31.41	-	-	Peak
316.1	27.66	-18.34	46	43.21	13.97	1.8	31.32	-	-	Peak
377	26.96	-19.04	46	40.24	15.87	2.09	31.24	-	-	Peak
503.7	29.35	-16.65	46	39.68	18.27	2.46	31.06	131	111	Peak
2389.99	42.96	-11.04	54	38.6	32.18	6.03	33.85	126	65	Average
2389.99	62.48	-11.52	74	58.12	32.18	6.03	33.85	126	65	Peak
2412	101.43	-	-	97.03	32.2	6.07	33.87	126	65	Peak
2412	84.41	-	-	80.01	32.2	6.07	33.87	126	65	Average
2500	33.92	-20.08	54	29.34	32.3	6.18	33.9	126	65	Average
2500	45.3	-28.7	74	40.72	32.3	6.18	33.9	126	65	Peak



<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2412 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.29	28.96	-11.04	40	53.79	5.92	0.79	31.54	100	123	Peak
181.74	21.81	-21.69	43.5	43.05	9.04	1.25	31.53	-	-	Peak
249.78	24.09	-21.91	46	41.3	12.67	1.53	31.41	-	-	Peak
312.6	25.44	-20.56	46	41.12	13.85	1.79	31.32	-	-	Peak
393.8	28.69	-17.31	46	41.38	16.38	2.13	31.2	-	-	Peak
503	31.79	-14.21	46	42.12	18.27	2.46	31.06	-	-	Peak
2389.99	41.19	-12.81	54	36.83	32.18	6.03	33.85	100	325	Average
2389.99	59.79	-14.21	74	55.43	32.18	6.03	33.85	100	325	Peak
2412	100.25	-	-	95.85	32.2	6.07	33.87	100	325	Peak
2412	83.62	-	-	79.22	32.2	6.07	33.87	100	325	Average
2484	34.4	-19.6	54	29.84	32.28	6.18	33.9	100	325	Average
2484	46.02	-27.98	74	41.46	32.28	6.18	33.9	100	325	Peak



<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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
63.21	21.43	-18.57	40	46.33	5.86	0.78	31.54	-	-	Peak
181.74	23.51	-19.99	43.5	44.75	9.04	1.25	31.53	-	-	Peak
244.65	25.33	-20.67	46	42.96	12.26	1.53	31.42	-	-	Peak
312.6	28.35	-17.65	46	44.03	13.85	1.79	31.32	-	-	Peak
377	28.1	-17.9	46	41.38	15.87	2.09	31.24	-	-	Peak
500.9	28.67	-17.33	46	39.06	18.23	2.45	31.07	133	154	Peak
2382	45.75	-28.25	74	41.41	32.16	6.03	33.85	128	64	Peak
2382	33.97	-20.03	54	29.63	32.16	6.03	33.85	128	64	Average
2437	101.82	-	-	97.35	32.24	6.11	33.88	128	64	Peak
2437	85.16	-	-	80.69	32.24	6.11	33.88	128	64	Average
2494	45.93	-28.07	74	41.35	32.3	6.18	33.9	128	64	Peak
2494	33.84	-20.16	54	29.26	32.3	6.18	33.9	128	64	Average



<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2437 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level (dBuV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	29.23	-10.77	40	54.06	5.92	0.79	31.54	100	133	Peak
184.17	22.21	-21.29	43.5	43.42	9.05	1.26	31.52	-	-	Peak
249.78	24.39	-21.61	46	41.6	12.67	1.53	31.41	-	-	Peak
313.3	24.61	-21.39	46	40.25	13.88	1.8	31.32	-	-	Peak
393.8	28.66	-17.34	46	41.35	16.38	2.13	31.2	-	-	Peak
500.9	31.81	-14.19	46	42.2	18.23	2.45	31.07	-	-	Peak
2382	44.8	-29.2	74	40.46	32.16	6.03	33.85	100	325	Peak
2382	33.88	-20.12	54	29.54	32.16	6.03	33.85	100	325	Average
2437	100.51	-	-	96.04	32.24	6.11	33.88	100	325	Peak
2437	84.52	-	-	80.05	32.24	6.11	33.88	100	325	Average
2484	45.34	-28.66	74	40.78	32.28	6.18	33.9	100	325	Peak
2484	34.17	-19.83	54	29.61	32.28	6.18	33.9	100	325	Average



Test Mode :	Mode 9	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	49~50%
Test Engineer :	Ivan Chiang	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
64.02	21.53	-18.47	40	46.36	5.92	0.79	31.54	-	-	Peak
181.74	23.17	-20.33	43.5	44.41	9.04	1.25	31.53	-	-	Peak
240.33	25.43	-20.57	46	43.34	11.98	1.53	31.42	-	-	Peak
313.3	28.06	-17.94	46	43.7	13.88	1.8	31.32	-	-	Peak
385.4	27.09	-18.91	46	40.09	16.11	2.11	31.22	-	-	Peak
503.7	28.97	-17.03	46	39.3	18.27	2.46	31.06	111	169	Peak
2382	34.23	-19.77	54	29.89	32.16	6.03	33.85	119	55	Average
2382	45.22	-28.78	74	40.88	32.16	6.03	33.85	119	55	Peak
2462	85.86	-	-	81.35	32.26	6.14	33.89	119	55	Average
2462	102.5	-	-	97.99	32.26	6.14	33.89	119	55	Peak
2483.66	45.39	-8.61	54	40.83	32.28	6.18	33.9	119	55	Average
2483.66	64.71	-9.29	74	60.15	32.28	6.18	33.9	119	55	Peak



<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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
63.21	28.66	-11.34	40	53.56	5.86	0.78	31.54	131	115	Peak
183.9	21.74	-21.76	43.5	42.95	9.05	1.26	31.52	-	-	Peak
233.85	24.8	-21.2	46	43.23	11.5	1.5	31.43	-	-	Peak
312.6	24.7	-21.3	46	40.38	13.85	1.79	31.32	-	-	Peak
385.4	28.84	-17.16	46	41.84	16.11	2.11	31.22	-	-	Peak
500.9	31.69	-14.31	46	42.08	18.23	2.45	31.07	-	-	Peak
2332	45.14	-28.86	74	40.93	32.09	5.95	33.83	100	321	Peak
2332	33.76	-20.24	54	29.55	32.09	5.95	33.83	100	321	Average
2462	100.69	-	-	96.18	32.26	6.14	33.89	100	321	Peak
2462	84.2	-	-	79.69	32.26	6.14	33.89	100	321	Average
2483.66	61.31	-12.69	74	56.75	32.28	6.18	33.9	100	321	Peak
2483.66	42.76	-11.24	54	38.2	32.28	6.18	33.9	100	321	Average



<b>Test Mode :</b>	Mode 10	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	149	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5745 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.29	21.22	-18.78	40	46.05	5.92	0.79	31.54	-	-	Peak
181.74	23.48	-20.02	43.5	44.72	9.04	1.25	31.53	-	-	Peak
244.38	25.07	-20.93	46	42.7	12.26	1.53	31.42	-	-	Peak
312.6	28.23	-17.77	46	43.91	13.85	1.79	31.32	-	-	Peak
385.4	27.02	-18.98	46	40.02	16.11	2.11	31.22	-	-	Peak
500.9	29.59	-16.41	46	39.98	18.23	2.45	31.07	122	169	Peak
5725	70.82	-15.06	85.88	59.26	34.82	9.92	33.18	101	52	Peak
5745	105.88	-	-	94.34	34.84	9.91	33.21	101	52	Peak
5745	95.74	-	-	84.2	34.84	9.91	33.21	101	52	Average
5850	52.33	-33.55	85.88	40.84	34.94	9.87	33.32	101	52	Peak
7660	50.61	-23.39	74	63.05	35.37	10.37	58.18	100	0	Peak



Test Mode :	Mode 10	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	49~50%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.9	-11.1	40	53.73	5.92	0.79	31.54	100	156	Peak
181.74	21.87	-21.63	43.5	43.11	9.04	1.25	31.53	-	-	Peak
246.81	24.12	-21.88	46	41.54	12.46	1.53	31.41	-	-	Peak
316.1	25.08	-20.92	46	40.63	13.97	1.8	31.32	-	-	Peak
377.7	28.64	-17.36	46	41.92	15.87	2.09	31.24	-	-	Peak
498.1	31.19	-14.81	46	41.62	18.2	2.44	31.07	-	-	Peak
5725	76.65	-13.54	90.19	65.09	34.82	9.92	33.18	112	0	Peak
5745	110.19	-	-	98.65	34.84	9.91	33.21	112	0	Peak
5745	100.09	-	-	88.55	34.84	9.91	33.21	112	0	Average
5850	52.28	-37.91	90.19	40.79	34.94	9.87	33.32	112	0	Peak
7660	48.03	-25.97	74	60.47	35.37	10.37	58.18	100	0	Peak
11490	47.62	-26.38	74	54.25	38.29	13.14	58.06	100	0	Peak



<b>Test Mode :</b>	Mode 11	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	157	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5785 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	21.25	-18.75	40	46.08	5.92	0.79	31.54			Peak
181.74	22.99	-20.51	43.5	44.23	9.04	1.25	31.53			Peak
243.57	25.94	-20.06	46	43.64	12.19	1.53	31.42			Peak
316.1	27.85	-18.15	46	43.4	13.97	1.8	31.32			Peak
386.1	27.26	-18.74	46	40.23	16.14	2.11	31.22			Peak
508.6	30.18	-15.82	46	40.41	18.35	2.47	31.05	119	196	Peak
5725	53.28	-32.57	85.85	41.72	34.82	9.92	33.18	100	54	Peak
5785	105.85	-	-	94.3	34.88	9.9	33.23	100	54	Peak
5785	95.78	-	-	84.23	34.88	9.9	33.23	100	54	Average
5850	52.21	-33.64	85.85	40.72	34.94	9.87	33.32	100	54	Peak
7710	50.03	-23.97	74	62.38	35.39	10.44	58.18	100	0	Peak



Test Mode :	Mode 11	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	49~50%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.73	-11.27	40	53.56	5.92	0.79	31.54	100	221	Peak
184.17	21.53	-21.97	43.5	42.74	9.05	1.26	31.52	-	-	Peak
244.65	24.77	-21.23	46	42.4	12.26	1.53	31.42	-	-	Peak
316.1	25.66	-20.34	46	41.21	13.97	1.8	31.32	-	-	Peak
386.1	29.34	-16.66	46	42.31	16.14	2.11	31.22	-	-	Peak
503.7	32.1	-13.9	46	42.43	18.27	2.46	31.06	-	-	Peak
5725	54	-36.44	90.44	42.44	34.82	9.92	33.18	112	22	Peak
5785	110.44	-	-	98.89	34.88	9.9	33.23	112	22	Peak
5785	100.57	-	-	89.02	34.88	9.9	33.23	112	22	Average
5850	52.86	-37.58	90.44	41.37	34.94	9.87	33.32	112	22	Peak
7710	47.37	-26.63	74	59.72	35.39	10.44	58.18	100	0	Peak
11570	47.29	-26.71	74	53.68	38.38	13.18	57.95	100	0	Peak



<b>Test Mode :</b>	Mode 12	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	165	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5825 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	21.13	-18.87	40	45.96	5.92	0.79	31.54	-	-	Peak
181.74	23.21	-20.29	43.5	44.45	9.04	1.25	31.53	-	-	Peak
249.78	25.38	-20.62	46	42.59	12.67	1.53	31.41	-	-	Peak
316.1	28.13	-17.87	46	43.68	13.97	1.8	31.32	-	-	Peak
386.1	27.41	-18.59	46	40.38	16.14	2.11	31.22	-	-	Peak
506.5	30.16	-15.84	46	40.44	18.32	2.46	31.06	109	48	Peak
5725	54.21	-32.69	86.9	42.65	34.82	9.92	33.18	100	56	Peak
5825	96.86	-	-	85.34	34.93	9.88	33.29	100	56	Average
5825	106.9	-	-	95.38	34.93	9.88	33.29	100	56	Peak
5850	61.11	-25.79	86.9	49.62	34.94	9.87	33.32	100	56	Peak
7766	48.68	-38.22	86.9	60.94	35.41	10.5	58.17	100	0	Peak



<b>Test Mode :</b>	Mode 12	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	165	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5825 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.86	-11.14	40	53.69	5.92	0.79	31.54	100	159	Peak
183.9	22.11	-21.39	43.5	43.32	9.05	1.26	31.52	-	-	Peak
249.78	24.39	-21.61	46	41.6	12.67	1.53	31.41	-	-	Peak
312.6	24.99	-21.01	46	40.67	13.85	1.79	31.32	-	-	Peak
393.8	28.44	-17.56	46	41.13	16.38	2.13	31.2	-	-	Peak
500.9	32.38	-13.62	46	42.77	18.23	2.45	31.07	-	-	Peak
5725	55.83	-35.55	91.38	44.27	34.82	9.92	33.18	124	29	Peak
5825	111.38	-	-	99.86	34.93	9.88	33.29	124	29	Peak
5825	101.24	-	-	89.72	34.93	9.88	33.29	124	29	Average
5850	63.98	-27.4	91.38	52.49	34.94	9.87	33.32	124	29	Peak
7766	46.7	-44.68	91.38	58.96	35.41	10.5	58.17	100	0	Peak
11650	48.54	-25.46	74	54.71	38.47	13.22	57.86	100	0	Peak



<b>Test Mode :</b>	Mode 13	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	149	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5745 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	21.11	-18.89	40	45.94	5.92	0.79	31.54	-	-	Peak
181.74	23.68	-19.82	43.5	44.92	9.04	1.25	31.53	-	-	Peak
246.81	25.1	-20.9	46	42.52	12.46	1.53	31.41	-	-	Peak
312.6	27.83	-18.17	46	43.51	13.85	1.79	31.32	-	-	Peak
385.4	27.29	-18.71	46	40.29	16.11	2.11	31.22	-	-	Peak
508.6	29.67	-16.33	46	39.9	18.35	2.47	31.05	107	188	Peak
5725	70.71	-15.21	85.92	59.15	34.82	9.92	33.18	100	50	Peak
5745	95.34	-	-	83.8	34.84	9.91	33.21	100	50	Average
5745	105.92	-	-	94.38	34.84	9.91	33.21	100	50	Peak
5850	52.5	-33.42	85.92	41.01	34.94	9.87	33.32	100	50	Peak
7660	50.79	-23.21	74	63.23	35.37	10.37	58.18	100	0	Peak



<b>Test Mode :</b>	Mode 13	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	149	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5745 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.91	-11.09	40	53.74	5.92	0.79	31.54	100	197	Peak
184.17	21.75	-21.75	43.5	42.96	9.05	1.26	31.52	-	-	Peak
255.18	25.05	-20.95	46	42.16	12.75	1.56	31.42	-	-	Peak
313.3	25.38	-20.62	46	41.02	13.88	1.8	31.32	-	-	Peak
393.8	28.5	-17.5	46	41.19	16.38	2.13	31.2	-	-	Peak
500.9	31.73	-14.27	46	42.12	18.23	2.45	31.07	-	-	Peak
5725	73.97	-16.17	90.14	62.41	34.82	9.92	33.18	124	29	Peak
5745	110.14	-	-	98.6	34.84	9.91	33.21	124	29	Peak
5745	99.68	-	-	88.14	34.84	9.91	33.21	124	29	Average
5850	52.76	-37.38	90.14	41.27	34.94	9.87	33.32	124	29	Peak
7660	48.7	-25.3	74	61.14	35.37	10.37	58.18	100	0	Peak
11490	47.27	-26.73	74	53.9	38.29	13.14	58.06	100	0	Peak



<b>Test Mode :</b>	Mode 14	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	157	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5785 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	21.68	-18.32	40	46.51	5.92	0.79	31.54	-	-	Peak
184.17	23.57	-19.93	43.5	44.78	9.05	1.26	31.52	-	-	Peak
247.62	24.57	-21.43	46	41.99	12.46	1.53	31.41	-	-	Peak
316.1	27.83	-18.17	46	43.38	13.97	1.8	31.32	-	-	Peak
382.6	26.9	-19.1	46	39.97	16.05	2.11	31.23	-	-	Peak
505.8	30.48	-15.52	46	40.76	18.32	2.46	31.06	107	44	Peak
5725	53.52	-32.26	85.78	41.96	34.82	9.92	33.18	100	53	Peak
5785	95.57	-	-	84.02	34.88	9.9	33.23	100	53	Average
5785	105.78	-	-	94.23	34.88	9.9	33.23	100	53	Peak
5850	52.21	-33.57	85.78	40.72	34.94	9.87	33.32	100	53	Peak
7710	49.44	-24.56	74	61.79	35.39	10.44	58.18	100	0	Peak



<b>Test Mode :</b>	Mode 14	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	157	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5785 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.92	-11.08	40	53.75	5.92	0.79	31.54	105	118	Peak
183.9	22.53	-20.97	43.5	43.74	9.05	1.26	31.52	-	-	Peak
270.3	25.38	-20.62	46	42.11	13	1.64	31.37	-	-	Peak
316.1	23.98	-22.02	46	39.53	13.97	1.8	31.32	-	-	Peak
382.6	28.58	-17.42	46	41.65	16.05	2.11	31.23	-	-	Peak
503	32.51	-13.49	46	42.84	18.27	2.46	31.06	-	-	Peak
5725	54.1	-36.31	90.41	42.54	34.82	9.92	33.18	111	24	Peak
5785	99.49	-	-	87.94	34.88	9.9	33.23	111	24	Average
5785	110.41	-	-	98.86	34.88	9.9	33.23	111	24	Peak
5850	53.3	-37.11	90.41	41.81	34.94	9.87	33.32	111	24	Peak
7710	50.23	-23.77	74	62.58	35.39	10.44	58.18	100	0	Peak
11570	46.12	-27.88	74	52.56	38.36	13.17	57.97	100	0	Peak



<b>Test Mode :</b>	Mode 15	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	165	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5825 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.29	21.33	-18.67	40	46.16	5.92	0.79	31.54	-	-	Peak
181.74	23.07	-20.43	43.5	44.31	9.04	1.25	31.53	-	-	Peak
244.38	24.69	-21.31	46	42.32	12.26	1.53	31.42	-	-	Peak
313.3	27.42	-18.58	46	43.06	13.88	1.8	31.32	-	-	Peak
379.8	27.2	-18.8	46	40.38	15.96	2.1	31.24	-	-	Peak
505.8	29.7	-16.3	46	39.98	18.32	2.46	31.06	133	169	Peak
5725	52.4	-33.97	86.37	40.84	34.82	9.92	33.18	100	54	Peak
5825	106.37	-	-	94.85	34.93	9.88	33.29	100	54	Peak
5825	95.76	-	-	84.24	34.93	9.88	33.29	100	54	Average
5850	58.05	-28.32	86.37	46.56	34.94	9.87	33.32	100	54	Peak
7766	48.97	-37.4	86.37	61.23	35.41	10.5	58.17	100	0	Peak



Test Mode :	Mode 15	Temperature :	24~25°C
Test Channel :	165	Relative Humidity :	49~50%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	28.98	-11.02	40	53.81	5.92	0.79	31.54	100	197	Peak
184.17	22.2	-21.3	43.5	43.41	9.05	1.26	31.52	-	-	Peak
242.49	25.07	-20.93	46	42.84	12.12	1.53	31.42	-	-	Peak
316.1	24.95	-21.05	46	40.5	13.97	1.8	31.32	-	-	Peak
393.8	29	-17	46	41.69	16.38	2.13	31.2	-	-	Peak
503.7	31.36	-14.64	46	41.69	18.27	2.46	31.06	-	-	Peak
5725	53.54	-26.74	90.28	41.98	34.82	9.92	33.18	123	29	Peak
5825	110.28	-	-	98.76	34.93	9.88	33.29	123	29	Peak
5825	99.51	-	-	87.99	34.93	9.88	33.29	123	29	Average
5850	61.87	-18.41	90.28	50.38	34.94	9.87	33.32	123	29	Peak
7766	48.05	-42.23	90.28	60.31	35.41	10.5	58.17	100	0	Peak
11650	47.79	-26.21	74	53.96	38.47	13.22	57.86	100	0	Peak



<b>Test Mode :</b>	Mode 16	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	151	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5755 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	21.66	-18.34	40	46.49	5.92	0.79	31.54	-	-	Peak
181.74	23.05	-20.45	43.5	44.29	9.04	1.25	31.53	-	-	Peak
247.62	25.08	-20.92	46	42.5	12.46	1.53	31.41	-	-	Peak
312.6	27.35	-18.65	46	43.03	13.85	1.79	31.32	-	-	Peak
388.9	26.77	-19.23	46	39.63	16.23	2.12	31.21	-	-	Peak
505.8	29.63	-16.37	46	39.91	18.32	2.46	31.06	131	116	Peak
5725	74.35	-9.7	84.05	62.79	34.82	9.92	33.18	100	46	Peak
5745	104.05	-	-	92.51	34.84	9.91	33.21	100	46	Peak
5745	92.67	-	-	81.13	34.84	9.91	33.21	100	46	Average
5850	52.43	-31.62	84.05	40.94	34.94	9.87	33.32	100	46	Peak
7660	50.49	-23.51	74	62.93	35.37	10.37	58.18	100	0	Peak



<b>Test Mode :</b>	Mode 16	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	151	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5755 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	29.02	-10.98	40	53.85	5.92	0.79	31.54	100	316	Peak
184.17	22.1	-21.4	43.5	43.31	9.05	1.26	31.52	-	-	Peak
247.62	24.41	-21.59	46	41.83	12.46	1.53	31.41	-	-	Peak
316.1	25.15	-20.85	46	40.7	13.97	1.8	31.32	-	-	Peak
386.1	27.77	-18.23	46	40.74	16.14	2.11	31.22	-	-	Peak
503	32.06	-13.94	46	42.39	18.27	2.46	31.06	-	-	Peak
5725	78.43	-9.83	88.26	66.87	34.82	9.92	33.18	136	23	Peak
5745	97.13	-	-	85.57	34.82	9.92	33.18	136	23	Average
5745	108.26	-	-	96.72	34.84	9.91	33.21	136	23	Peak
5850	53.07	-35.19	88.26	41.58	34.94	9.87	33.32	136	23	Peak
7660	48.33	-25.67	74	60.77	35.37	10.37	58.18	100	0	Peak



<b>Test Mode :</b>	Mode 17	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	159	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	5795 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	21.66	-18.34	40	46.49	5.92	0.79	31.54	-	-	Peak
181.74	23.05	-20.45	43.5	44.29	9.04	1.25	31.53	-	-	Peak
247.62	25.08	-20.92	46	42.5	12.46	1.53	31.41	-	-	Peak
312.6	27.35	-18.65	46	43.03	13.85	1.79	31.32	-	-	Peak
388.9	26.77	-19.23	46	39.63	16.23	2.12	31.21	-	-	Peak
505.8	29.63	-16.37	46	39.91	18.32	2.46	31.06	131	116	Peak
5725	74.35	-9.7	84.05	62.79	34.82	9.92	33.18	100	46	Peak
5745	104.05	-	-	92.51	34.84	9.91	33.21	100	46	Peak
5745	92.67	-	-	81.13	34.84	9.91	33.21	100	46	Average
5850	52.43	-31.62	84.05	40.94	34.94	9.87	33.32	100	46	Peak
7660	50.49	-23.51	74	62.93	35.37	10.37	58.18	100	0	Peak



<b>Test Mode :</b>	Mode 17	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	159	<b>Relative Humidity :</b>	49~50%
<b>Test Engineer :</b>	Ivan Chiang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	5795 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
64.02	29.02	-10.98	40	53.85	5.92	0.79	31.54	100	316	Peak
184.17	22.1	-21.4	43.5	43.31	9.05	1.26	31.52	-	-	Peak
247.62	24.41	-21.59	46	41.83	12.46	1.53	31.41	-	-	Peak
316.1	25.15	-20.85	46	40.7	13.97	1.8	31.32	-	-	Peak
386.1	27.77	-18.23	46	40.74	16.14	2.11	31.22	-	-	Peak
503	32.06	-13.94	46	42.39	18.27	2.46	31.06	-	-	Peak
5725	78.43	-9.83	88.26	66.87	34.82	9.92	33.18	136	23	Peak
5745	97.13	-	-	85.57	34.82	9.92	33.18	136	23	Average
5745	108.26	-	-	96.72	34.84	9.91	33.21	136	23	Peak
5850	53.07	-35.19	88.26	41.58	34.94	9.87	33.32	136	23	Peak
7660	48.33	-25.67	74	60.77	35.37	10.37	58.18	100	0	Peak



## **3.8 Antenna Requirements**

### **3.8.1 Standard Applicable**

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

### **3.8.2 Antenna Connected Construction**

The antennas type used in this product is PIFA Antenna and it is considered to meet antenna requirement.

### **3.8.3 Antenna Gain**

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
System Simulator	R&S	CMU200	117995	N/A	Jun. 08, 2009	Jun. 07, 2011	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 11, 2010	Jun. 10, 2011	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 13, 2010	Sep. 12, 2011	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 14, 2010	Sep. 13, 2011	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB412923 44	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US404415 48	N/A	Feb. 18, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D35P	TBN-9307 01	N/A	Jul. 30,2010	Jul. 29, 2011	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz – 30MHz	Dec. 03, 2010	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz – 30MHz	Dec. 01, 2010	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	106656	N/A	May 11, 2010	May 10, 2012	Conduction (CO05-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	SCHWARZBE CK	BBHA 9170	BBHA9170 251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A023 62	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2011	Mar. 28, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/00 1	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)

## 5 Uncertainty of Evaluation

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

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
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>1.13</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>2.26</b>		

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

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
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>1.27</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>2.54</b>		



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

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
<b>Combined Standard Uncertainty Uc(y)</b>	<b>2.36</b>				
<b>Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))</b>	<b>4.72</b>				