

# FCC RF Test Report

APPLICANT : NetComm Limited  
EQUIPMENT : HSPA+ WiFi Router  
BRAND NAME : NetComm  
MODEL NAME : 3G39W-V & 3G39W-I  
MARKETING NAME : HSPA+ Wi-Fi Router  
FCC ID : XIA-3G39W  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Oct. 27, 2011 and completely tested on Nov. 16, 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:



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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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### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1O2734	Rev. 01	Initial issue of report	Nov. 25, 2011
FR1O2734	Rev. 02	Update report of adding Feature information	Nov. 26, 2011

## SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	Gen 4.6.1	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 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 21.40 dB at 20.422 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.12 dB at 640.200 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

# 1 General Description

## 1.1 Applicant

**NetComm Limited**

Level 2, 18-20 Orion Road Lane Cove, NSW Australia

## 1.2 Manufacturer

**NetComm Limited**

Level 2, 18-20 Orion Road Lane Cove, NSW Australia

## 1.3 Feature of Equipment Under Test

Product Feature & Specification	
<b>Equipment</b>	HSPA+ WiFi Router
<b>Brand Name</b>	NetComm
<b>Model Name</b>	3G39W-V & 3G39W-I
<b>Marketing Name</b>	HSPA+ Wi-Fi Router
<b>FCC ID</b>	XIA-3G39W
<b>Integrated Module</b>	Brand Name : Ralink Model Name : RT3052F
<b>Tx/Rx Frequency Range</b>	802.11b/g/n : 2400 MHz ~ 2483.5 MHz
<b>Channel Spacing</b>	802.11b/g : 5 MHz
<b>Maximum Output Power to Antenna</b>	802.11b : 18.52 dBm (0.0711 W) 802.11g : 22.60 dBm (0.1820 W) 802.11n (BW 20MHz) : 22.33 dBm (0.1712 W) 802.11n (BW 40MHz) : 23.86 dBm (0.2432 W)
<b>Antenna Type</b>	PCB Antenna with gain 2.00 dBi for WLAN main and WLAN aux
<b>Directional gain</b>	2dBi
<b>HW Version</b>	V1.32
<b>SW Version</b>	3G39W-I : 1.1.70.0 / 3G39W-V : 1.1.86.0
<b>Type of Modulation</b>	802.11b : DSSS (BPSK / QPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
<b>EUT Stage</b>	Identical Prototype

**Remark:** 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	03CH06HY	722060/4086B-1

## 1.5 Applied Standards

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

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

**Remark:**

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

## 1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 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.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

## 2 Test Configuration of Equipment Under Test

### 2.1 RF Power

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

Band	2.4GHz 802.11b RF Power (dBm)					
Chain	Chain A			Chain B		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power	18.34	18.52	18.26	18.19	18.23	18.47

Band	2.4GHz 802.11g RF Power (dBm)					
Chain	Chain A			Chain B		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power	22.60	22.53	22.12	21.74	21.88	22.57

Band	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)					
Chain	Chain A			Chain B		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power	21.50	21.47	21.89	21.64	21.30	21.87

Band	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)					
Chain	Chain A + B (A)			Chain A + B (B)		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power	19.04	19.13	19.42	19.59	19.21	18.18

Band	2.4GHz 802.11n (BW 20MHz) RF Power (dBm)					
Chain	Chain A + B					
Channel	1		6		11	
Frequency (MHz)	2412		2437		2462	
Peak Power	22.33		22.18		21.85	



Band	2.4GHz 802.11n (BW 40MHz) RF Power (dBm)					
Chain	Chain A			Chain B		
Channel	3	6	9	3	6	9
Frequency (MHz)	2422	2437	2452	2422	2437	2452
Peak Power	23.58	23.65	23.71	23.28	23.04	23.32

Band	2.4GHz 802.11n (BW 40MHz) RF Power (dBm)					
Chain	Chain A + B (A)			Chain A + B (B)		
Channel	3	6	9	3	6	9
Frequency (MHz)	2422	2437	2452	2422	2437	2452
Peak Power	20.81	20.94	21.03	20.89	20.04	19.76

Band	2.4GHz 802.11n (BW 40MHz) RF Power (dBm)		
Chain	Chain A + B		
Channel	3	6	9
Frequency (MHz)	2422	2437	2452
Peak Power	23.86	23.52	23.45

**Remark:**

1. All the test data for each data rate were verified, but only the worst case was reported.
2. The data rates of WLAN 802.11b/g/n were set in 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n (BW 20MHz), and 78Mbps for 802.11n (BW 40MHz) for all the test cases due to the highest RF output power.
3. The EUT is programmed to transmit signals continuously for all testing.





## 2.2 Test Mode

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

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

### WORST-CASE CONFIGURATION AND MODE:

The worst-case data rates are determined to be as follows for each mode, based on the investigations by measuring the average power, peak power and PPSD across all the data rates, bandwidths, modulations and spatial stream modes.

Thus all tests were made with following data rates:

802.11b mode, 20 MHz Channel Bandwidth, 1 Mb/s, CCK Modulation

802.11g mode, 20 MHz Channel Bandwidth, 6 Mb/s, OFDM Modulation

802.11n HT20 mode, 20 MHz Channel Bandwidth, 6.5 Mb/s, OFDM Modulation

802.11n HT40 mode, 40 MHz Channel Bandwidth, 78 Mb/s, OFDM Modulation

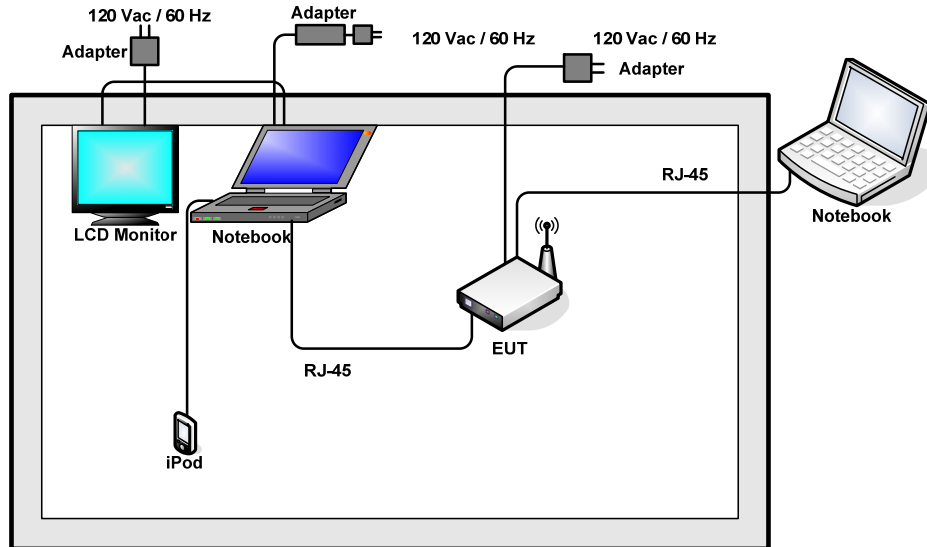


The following table is showing the total pre-scanned test modes, and the worst modes are recorded in this report only.

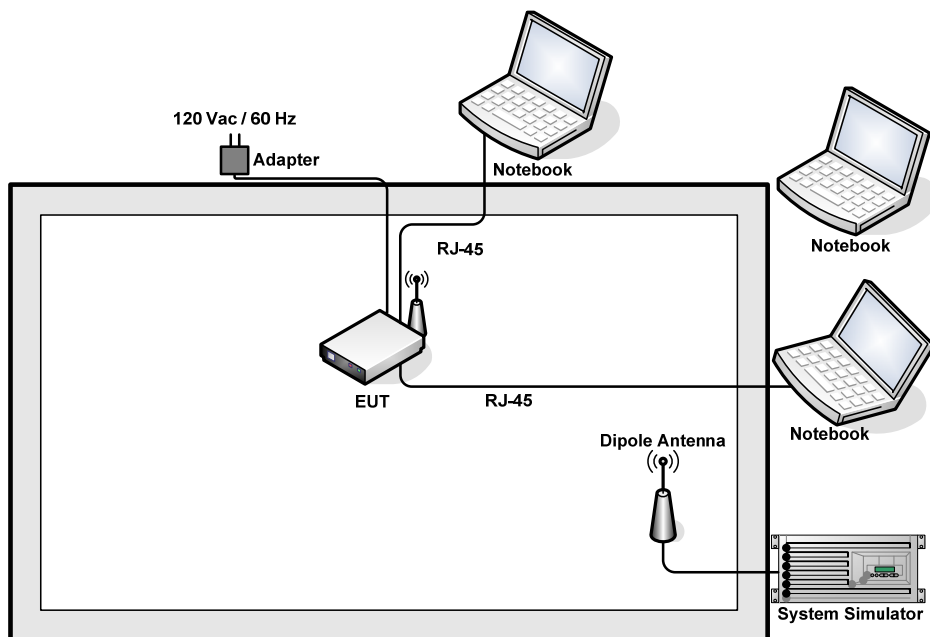
<b>Test Cases</b>	
<b>Test Item</b>	<b>802.11b (Modulation : DSSS) 802.11g/n (Modulation : OFDM)</b>
<b>Conducted TCs</b>	Mode 1: 802.11b_CH01_2412 MHz Mode 2: 802.11b_CH06_2437 MHz Mode 3: 802.11b_CH11_2462 MHz Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz 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: 802.11n_CH03_2422 MHz (BW 40M) Mode 11: 802.11n_CH06_2437 MHz (BW 40M) Mode 12: 802.11n_CH09_2452 MHz (BW 40M)
<b>Radiated TCs</b>	Mode 1: 802.11b_CH01_2412 MHz (Chain A) Mode 2: 802.11b_CH06_2437 MHz (Chain A) Mode 3: 802.11b_CH11_2462 MHz (Chain A) Mode 4: 802.11g_CH01_2412 MHz (Chain A) Mode 5: 802.11g_CH06_2437 MHz (Chain A) Mode 6: 802.11g_CH11_2462 MHz (Chain A) Mode 7: 802.11n_CH01_2412 MHz (BW 20M, Chain A+B) Mode 8: 802.11n_CH06_2437 MHz (BW 20M, Chain A+B) Mode 9: 802.11n_CH11_2462 MHz (BW 20M, Chain A+B) Mode 10: 802.11n_CH03_2422 MHz (BW 40M, Chain A+B) Mode 11: 802.11n_CH06_2437 MHz (BW 40M, Chain A+B) Mode 12: 802.11n_CH09_2452 MHz (BW 40M, Chain A+B) Mode 13: 802.11b_CH06_2437 MHz (Chain B) Mode 14: 802.11n_CH09_2452 MHz (BW 40M, Chain A) Mode 15: 802.11n_CH09_2452 MHz (BW 40M, Chain B)
<b>AC Conducted Emission</b>	Mode 1 : GSM850 (GPRS 8) Idle + WLAN Link + WAN Link + LAN Link + Adapter

## 2.3 Connection Diagram of Test System

### <WLAN Tx Mode>



### <AC Conducted Emission Mode>





## **2.4 RF Utility**

The programmed RF utility "RT3050QA.exe" 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.

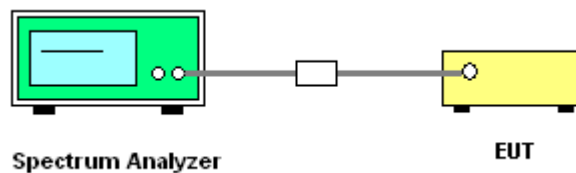
##### 3.1.2 Measuring Instruments

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 :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)		6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain A			
01	2412	10.12		0.5	Pass
06	2437	11.04		0.5	Pass
11	2462	11.08		0.5	Pass

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

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)		6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain A			
01	2412	15.84		0.5	Pass
06	2437	16.04		0.5	Pass
11	2462	16.04		0.5	Pass

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

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)		6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain A	Chain B		
01	2412	16.52	15.78	0.5	Pass
06	2437	16.16	16.28	0.5	Pass
11	2462	16.28	16.28	0.5	Pass

Test Mode :	Mode 10, 11, 12	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 40MHz) 6dB Bandwidth (MHz)		6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain A	Chain B		
03	2422	35.12	35.16	0.5	Pass
06	2437	35.20	35.44	0.5	Pass
09	2452	35.20	35.20	0.5	Pass



3.1.6 Test Result of 99% Occupied Bandwidth

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

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)		Pass/Fail
		Chain A		
01	2412	14.80		Pass
06	2437	14.80		Pass
11	2462	14.80		Pass

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

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)		Pass/Fail
		Chain A		
01	2412	17.25		Pass
06	2437	17.20		Pass
11	2462	17.30		Pass

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

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)		Pass/Fail
		Chain A	Chain B	
01	2412	17.95	17.95	Pass
06	2437	17.95	18.00	Pass
11	2462	17.95	18.00	Pass

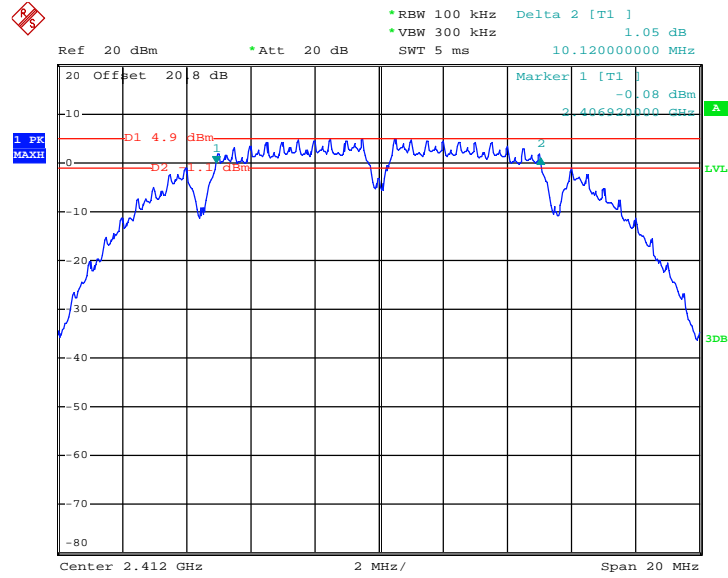
Test Mode :	Mode 10, 11, 12	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 40MHz) 99% Occupied Bandwidth (MHz)		Pass/Fail
		Chain A	Chain B	
03	2422	36.30	36.40	Pass
06	2437	36.20	36.40	Pass
09	2452	36.20	36.30	Pass



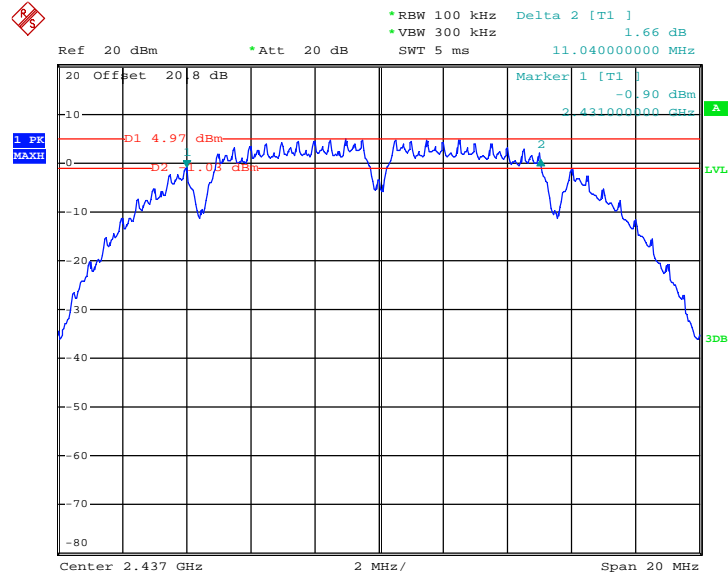
### 3.1.7 Test Result of 6dB Bandwidth Plots

#### 6 dB Bandwidth Plot on 802.11b Channel 01 – Chain A



Date: 11.NOV.2011 21:16:37

#### 6 dB Bandwidth Plot on 802.11b Channel 06 – Chain A

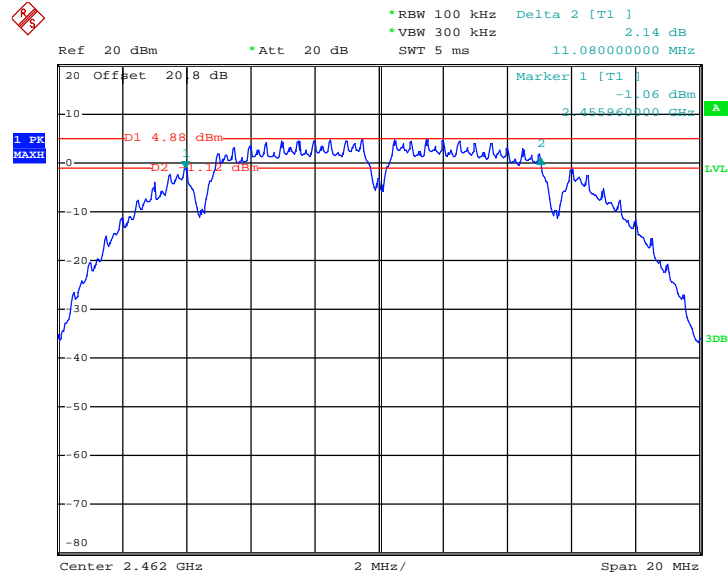


Date: 11.NOV.2011 21:31:53



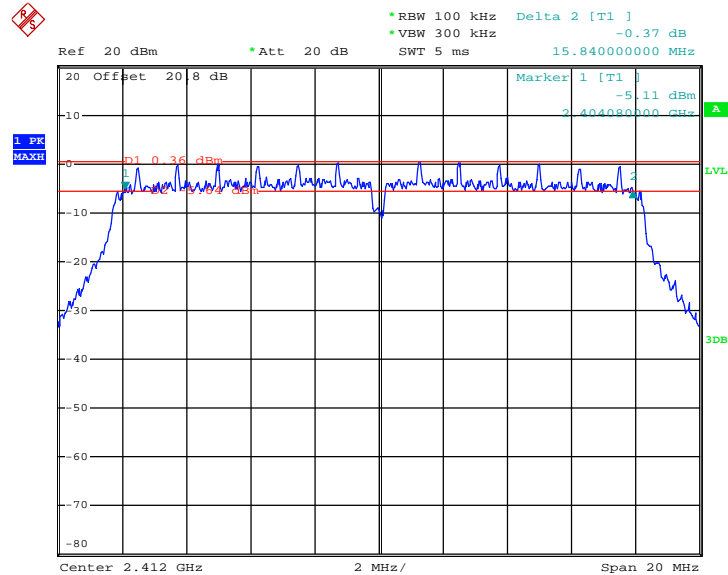


6 dB Bandwidth Plot on 802.11b Channel 11 – Chain A



Date: 11.NOV.2011 21:47:19

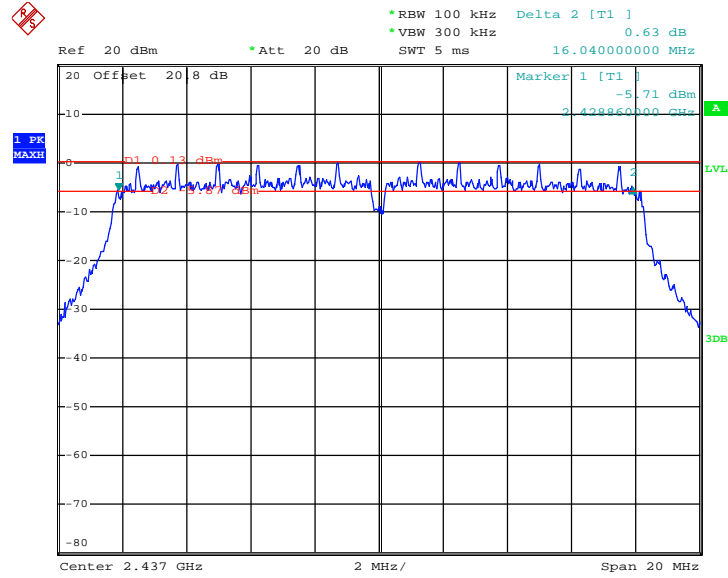
6 dB Bandwidth Plot on 802.11g Channel 01 – Chain A



Date: 11.NOV.2011 22:46:12

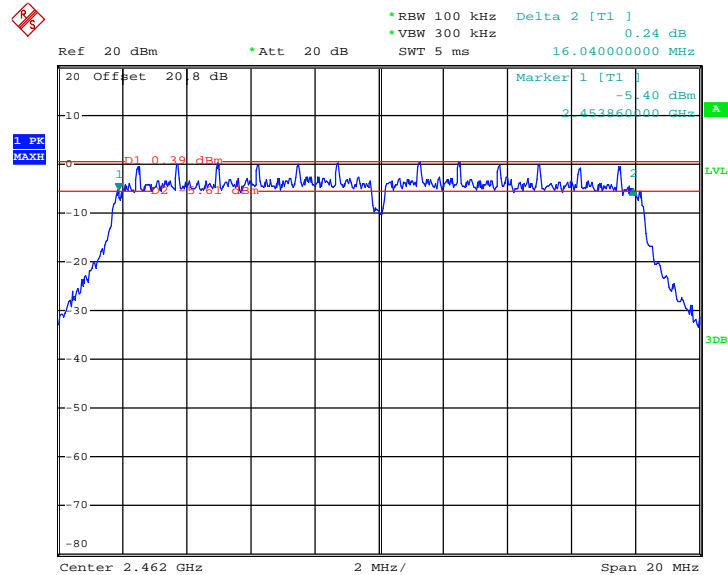


6 dB Bandwidth Plot on 802.11g Channel 06 – Chain A



Date: 11.NOV.2011 22:49:46

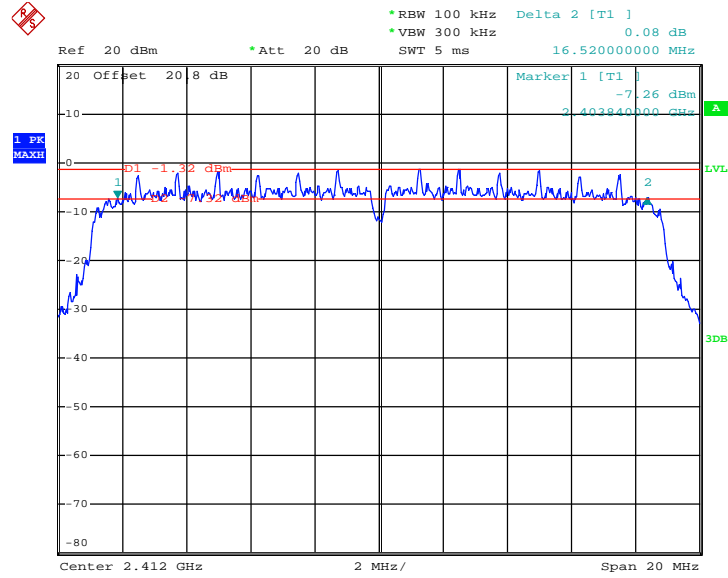
6 dB Bandwidth Plot on 802.11g Channel 11 – Chain A



Date: 11.NOV.2011 22:28:43

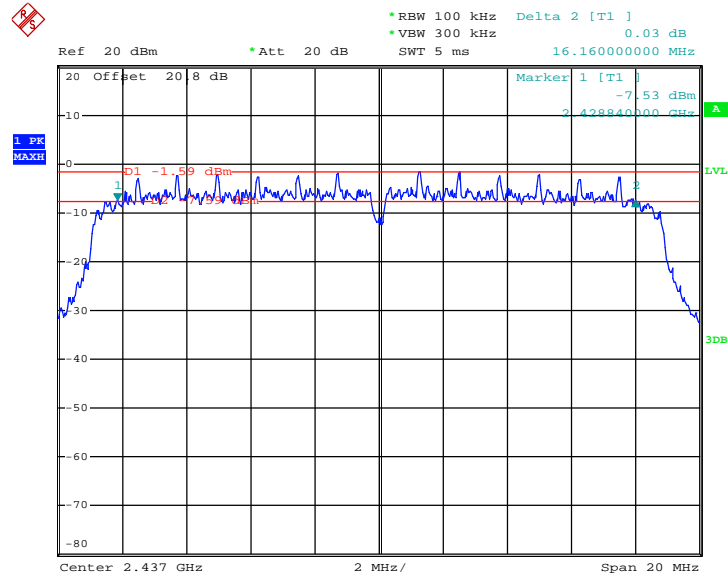


6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 01 – Chain A



Date: 11.NOV.2011 22:57:08

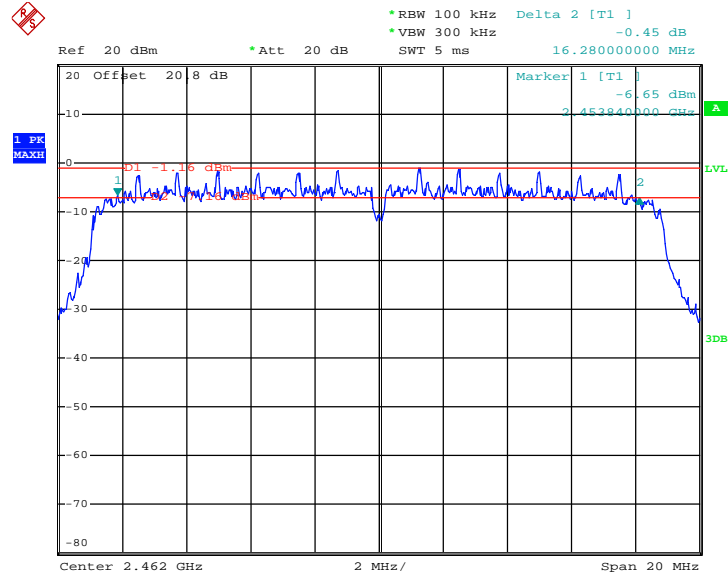
6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 06 – Chain A



Date: 11.NOV.2011 23:11:19

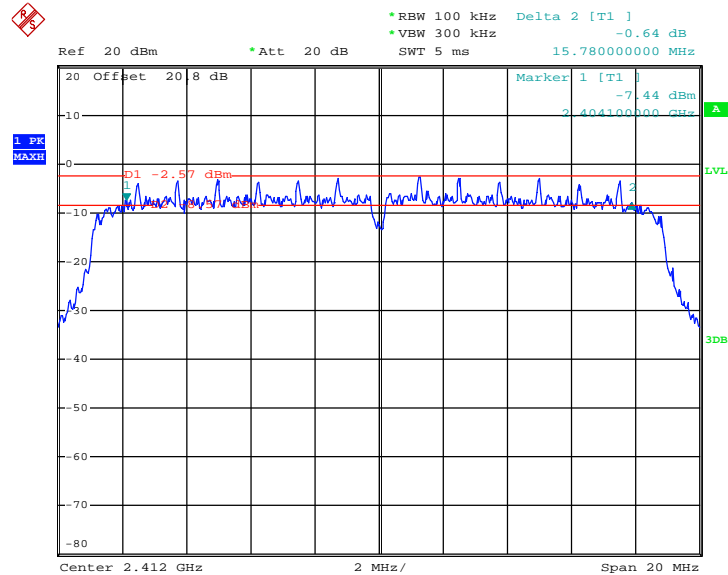


6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 11 – Chain A



Date: 11.NOV.2011 23:24:10

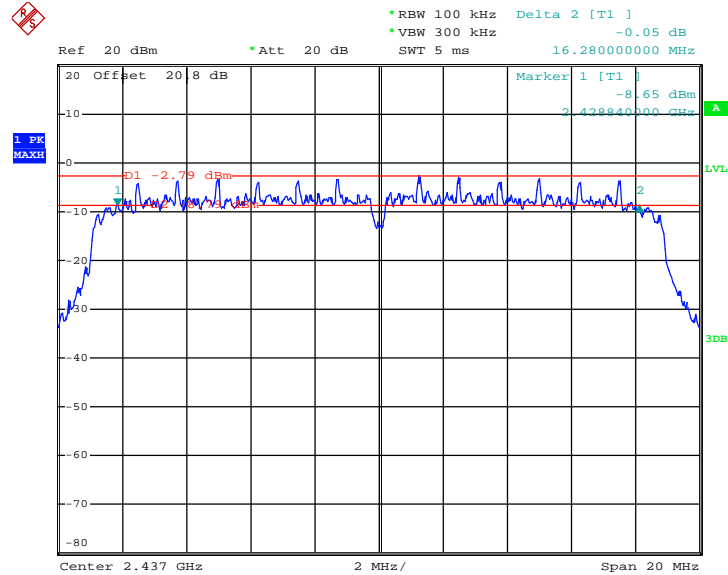
6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 01 – Chain B



Date: 14.NOV.2011 13:38:27

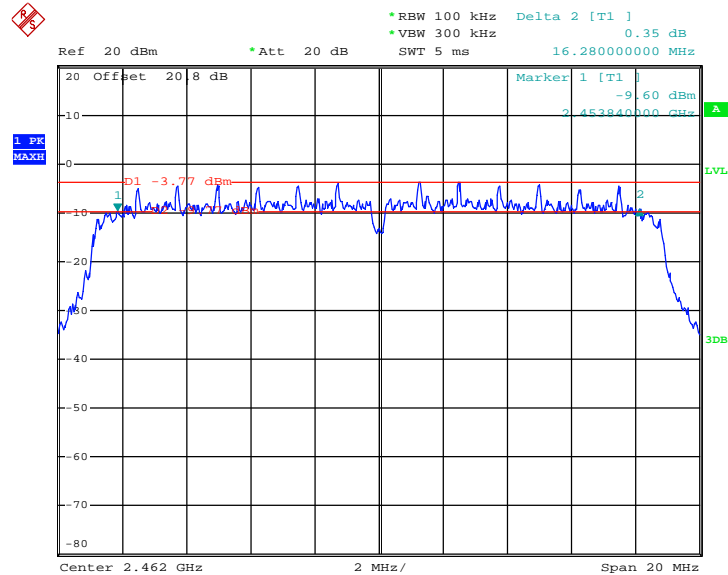


6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 06 – Chain B



Date: 14.NOV.2011 13:53:18

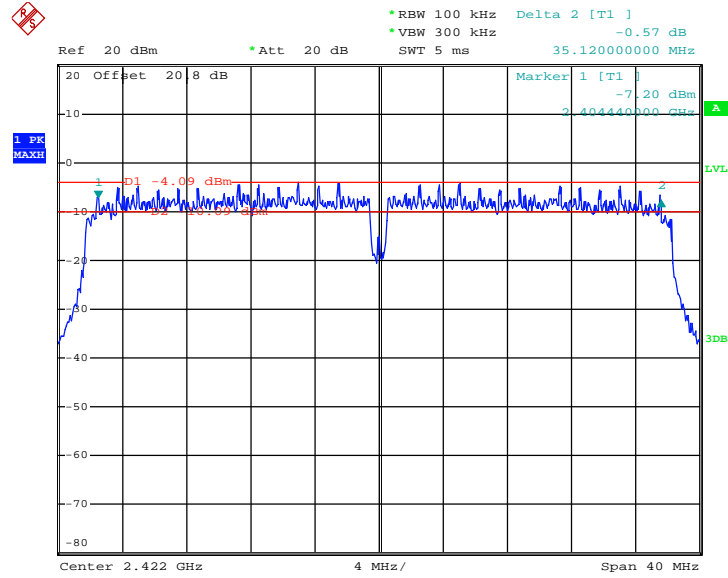
6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 11–Chain B



Date: 14.NOV.2011 14:20:00

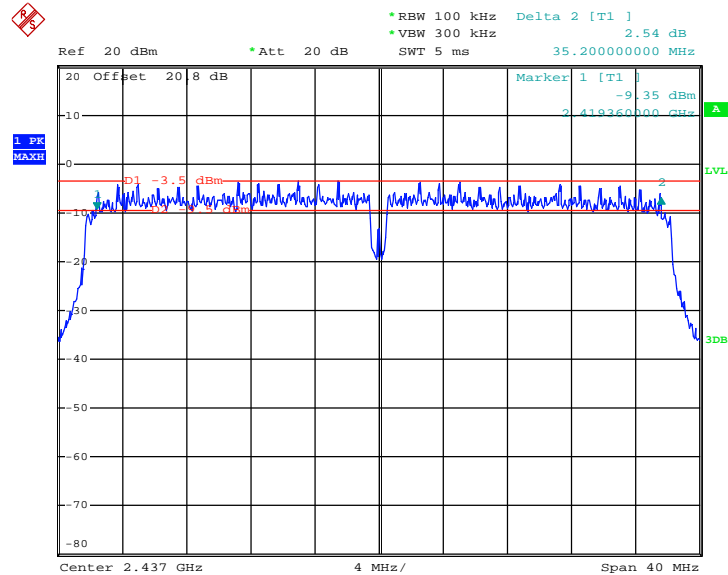


6 dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 03 – Chain A



Date: 12.NOV.2011 00:41:43

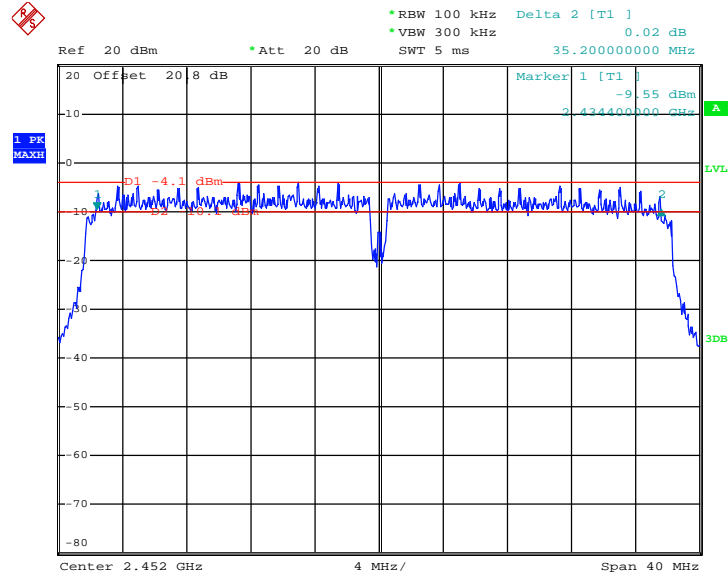
6 dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 06 – Chain A



Date: 12.NOV.2011 00:55:08

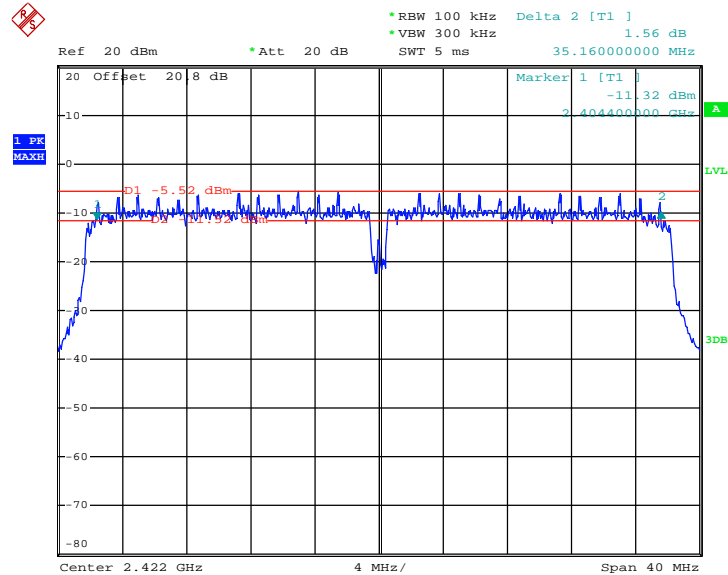


6 dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 09 – Chain A



Date: 12.NOV.2011 01:07:04

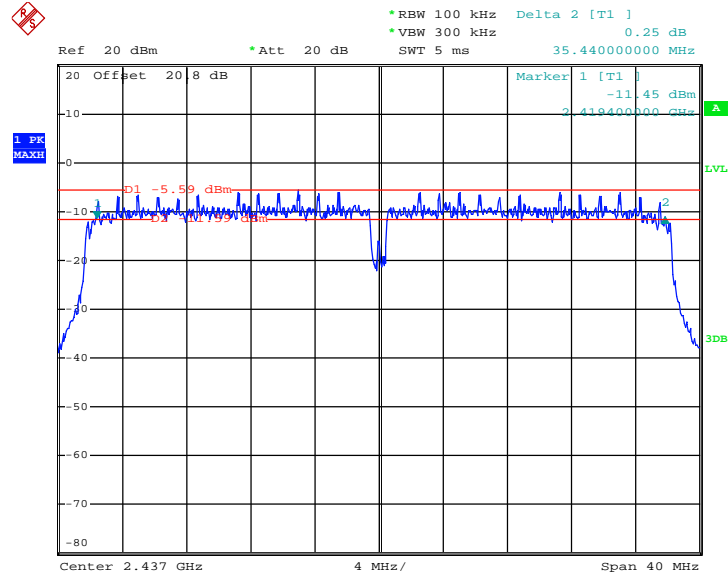
6 dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 03 – Chain B



Date: 14.NOV.2011 14:33:48

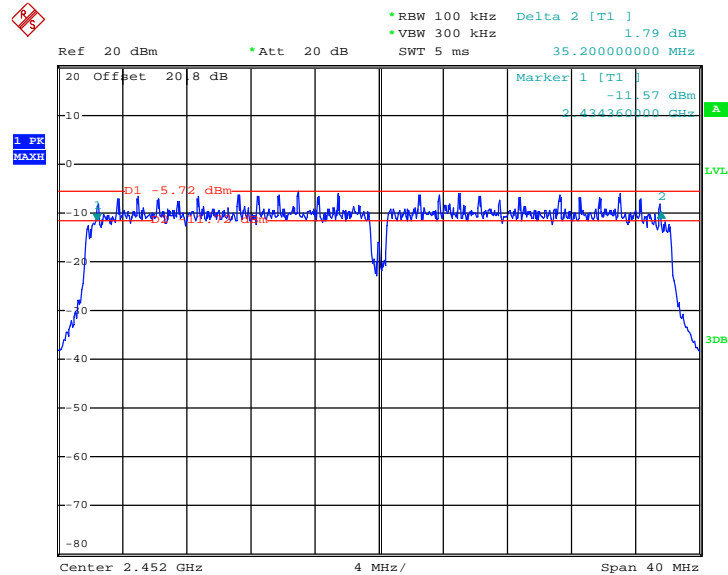


6 dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 06 – Chain B



Date: 14.NOV.2011 14:49:41

6 dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 09 – Chain B



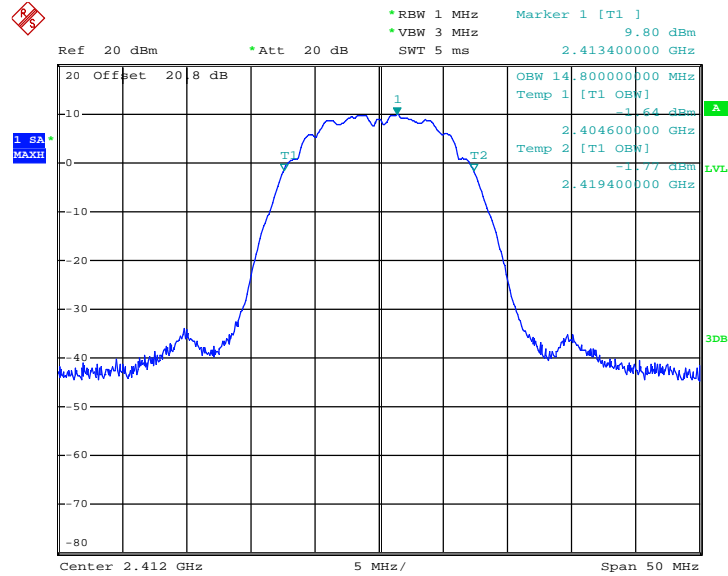
Date: 14.NOV.2011 15:01:54





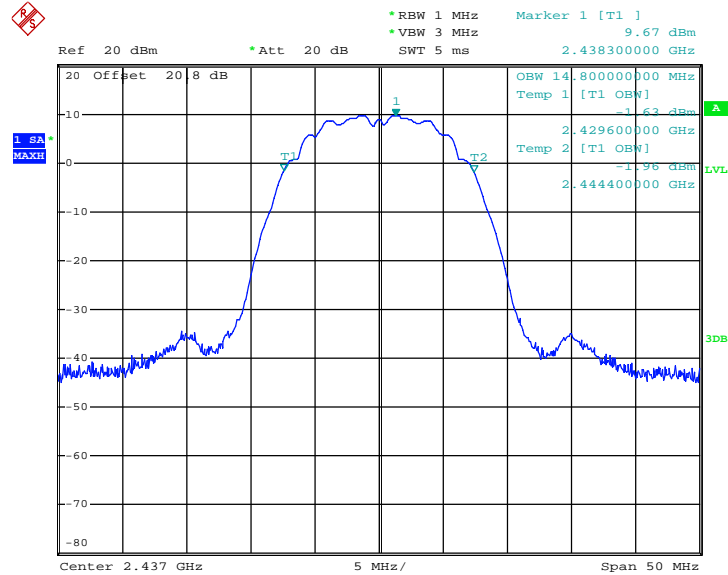
### 3.1.8 Test Result of 99% Bandwidth Plots

#### 99% Occupied Bandwidth Plot on 802.11b Channel 01 – Chain A



Date: 11.NOV.2011 21:18:10

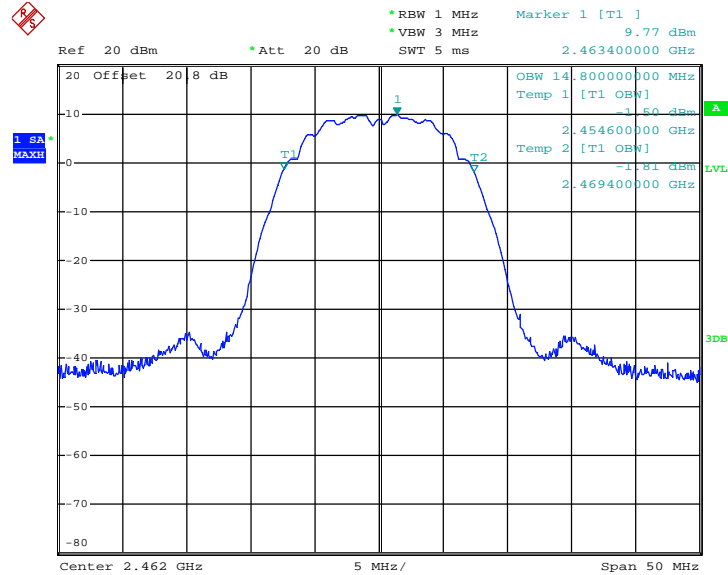
#### 99% Occupied Bandwidth Plot on 802.11b Channel 06 – Chain A



Date: 11.NOV.2011 21:32:22

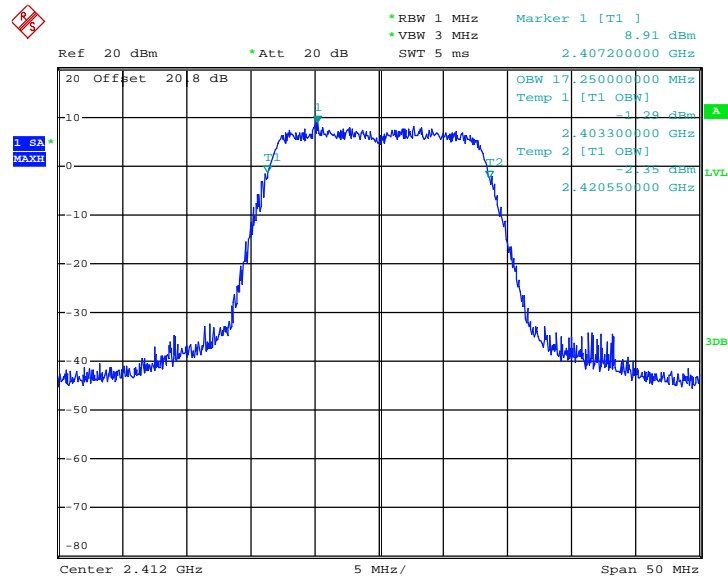


99% Occupied Bandwidth Plot on 802.11b Channel 11 – Chain A



Date: 11.NOV.2011 21:48:30

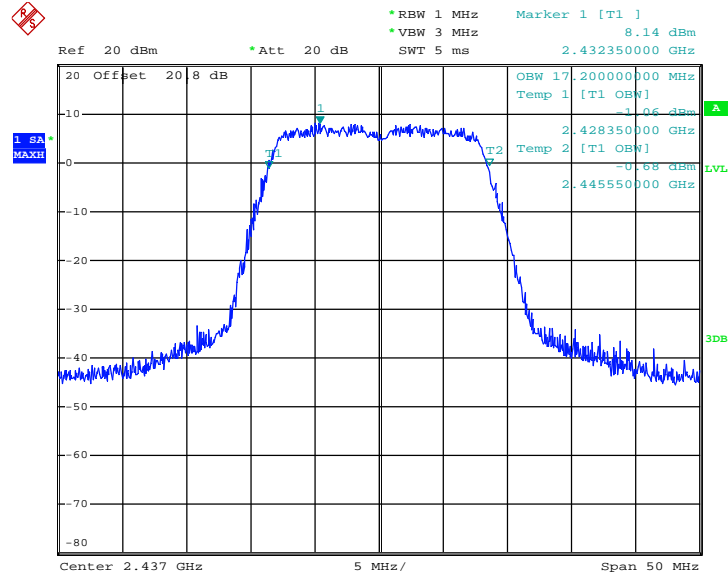
99% Occupied Bandwidth Plot on 802.11g Channel 01 – Chain A



Date: 11.NOV.2011 22:03:21

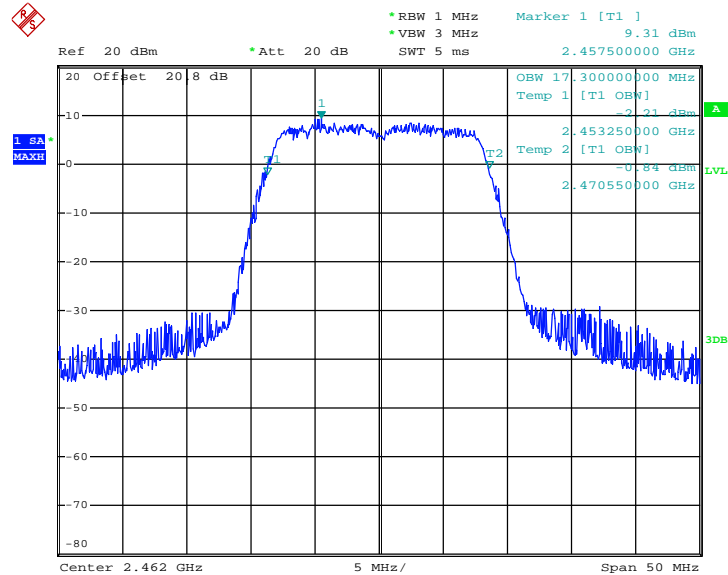


99% Occupied Bandwidth Plot on 802.11g Channel 06 – Chain A



Date: 11.NOV.2011 22:16:36

99% Occupied Bandwidth Plot on 802.11g Channel 11 – Chain A

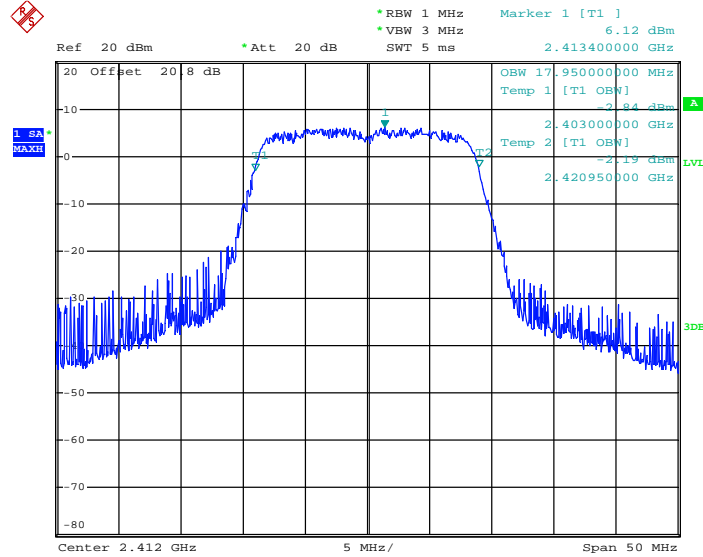


Date: 11.NOV.2011 22:29:54



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

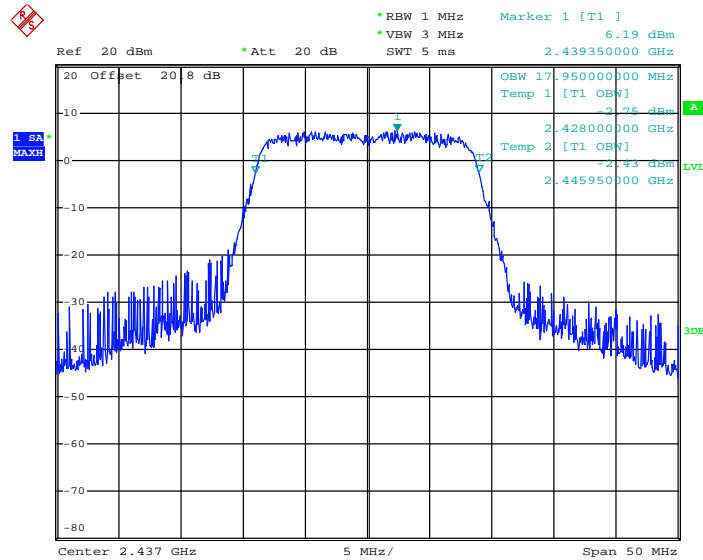
01 – Chain A



Date: 11.NOV.2011 23:37:27

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

06 – Chain A

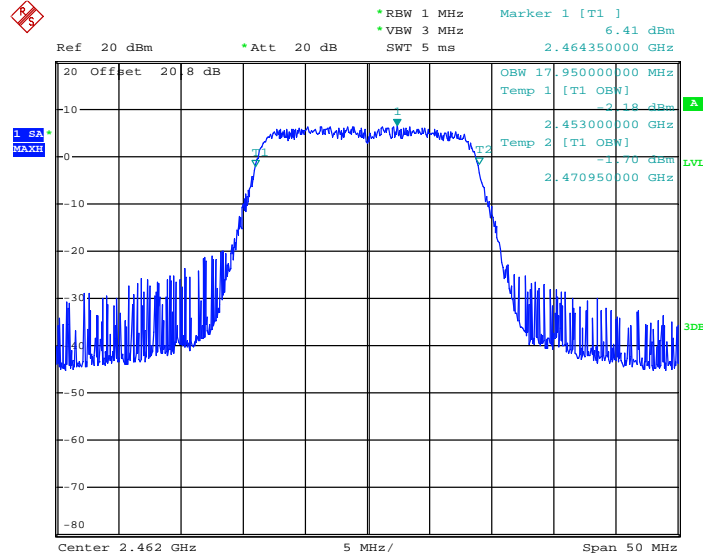


Date: 11.NOV.2011 23:11:49



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

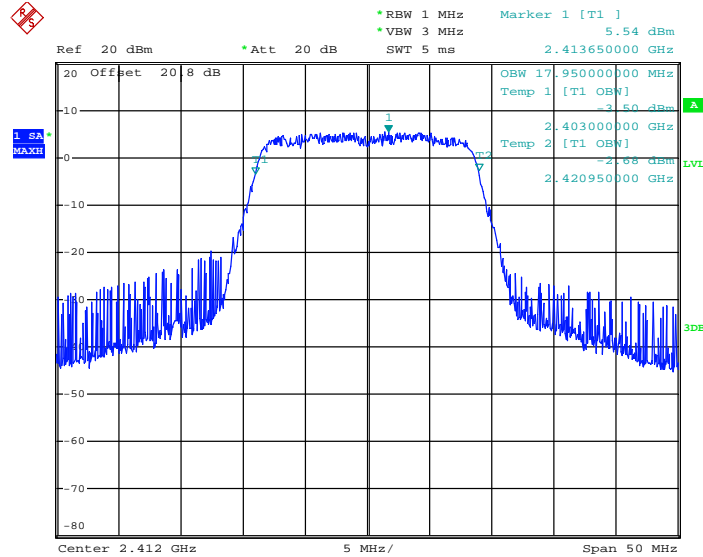
11 – Chain A



Date: 11.NOV.2011 23:25:22

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

01– Chain B

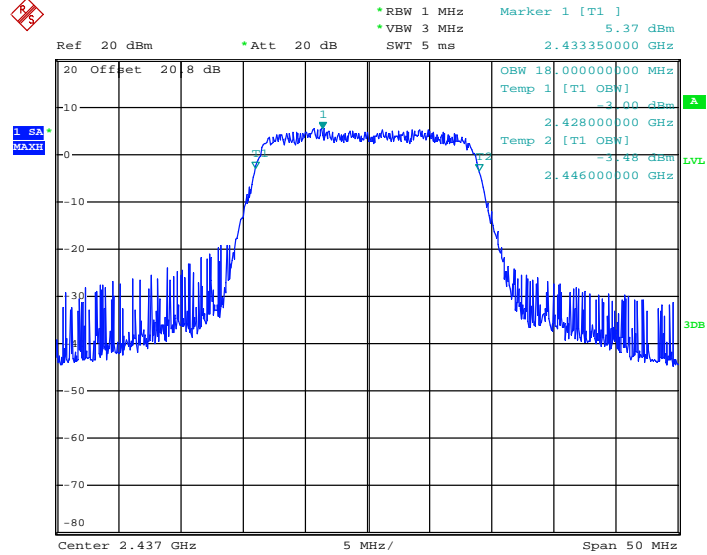


Date: 14.NOV.2011 13:40:01



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

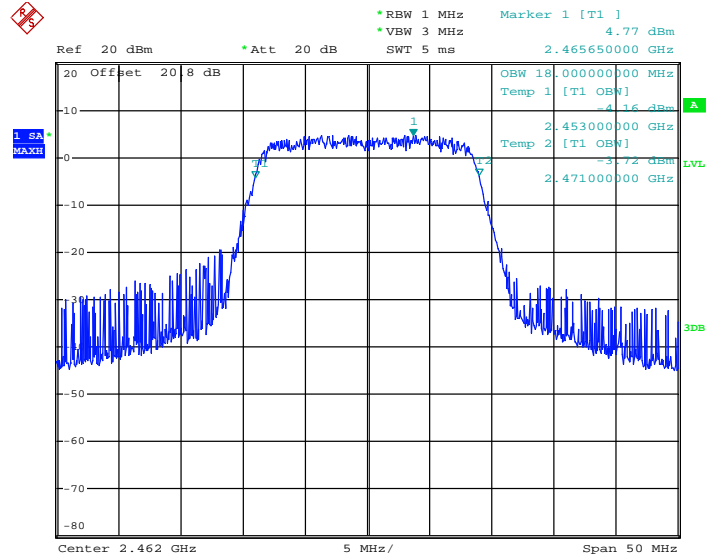
06 – Chain B



Date: 14.NOV.2011 13:53:48

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

11 – Chain B

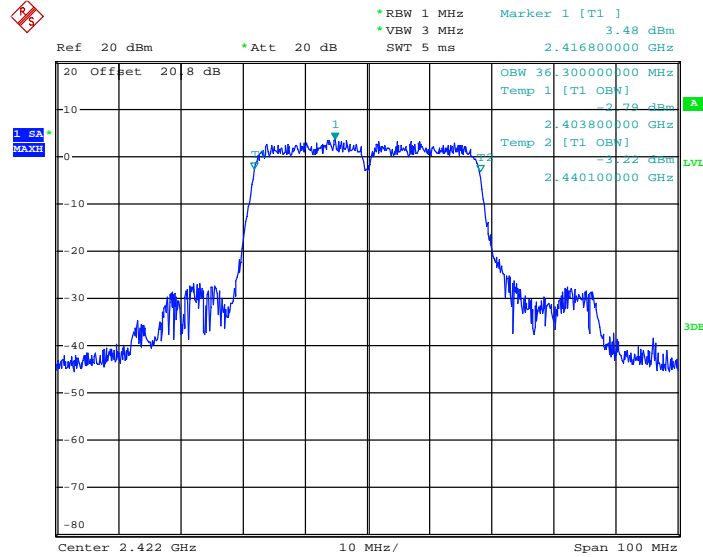


Date: 14.NOV.2011 14:07:18



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

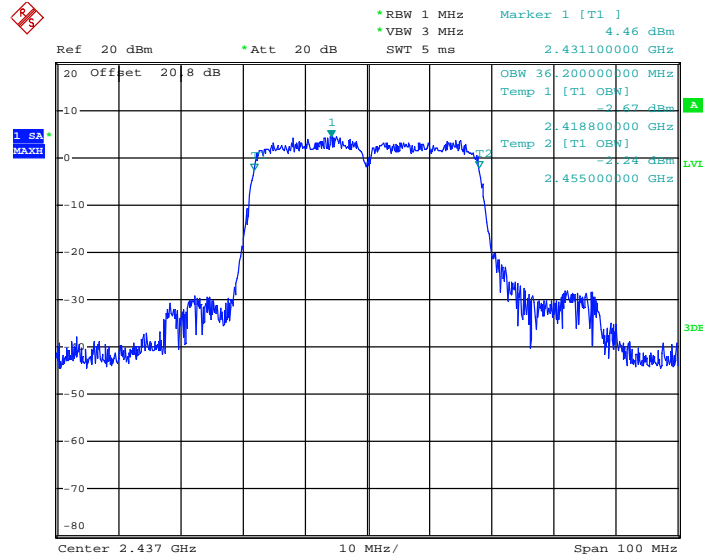
03 – Chain A



Date: 12.NOV.2011 00:43:16

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

06 – Chain A

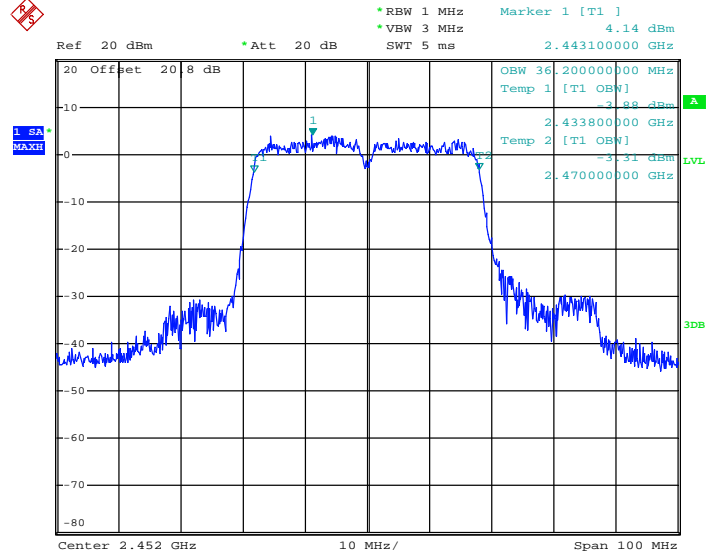


Date: 12.NOV.2011 00:55:38



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

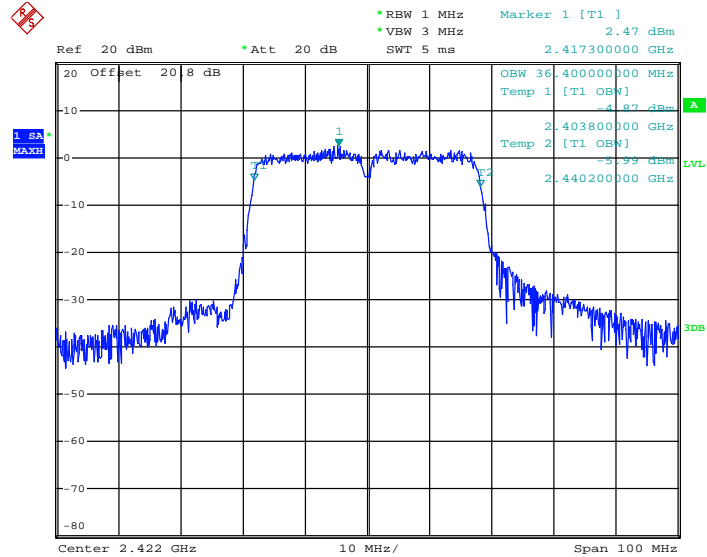
09 – Chain A



Date: 12.NOV.2011 01:08:16

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

03 – Chain B



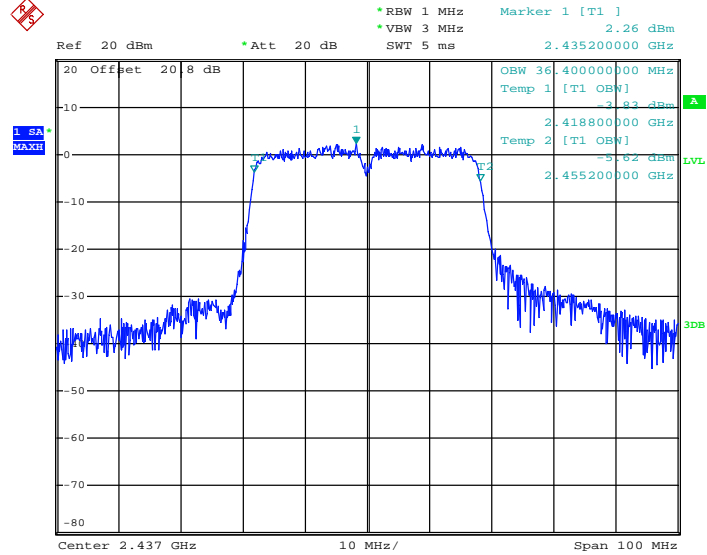
Date: 14.NOV.2011 14:35:21





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

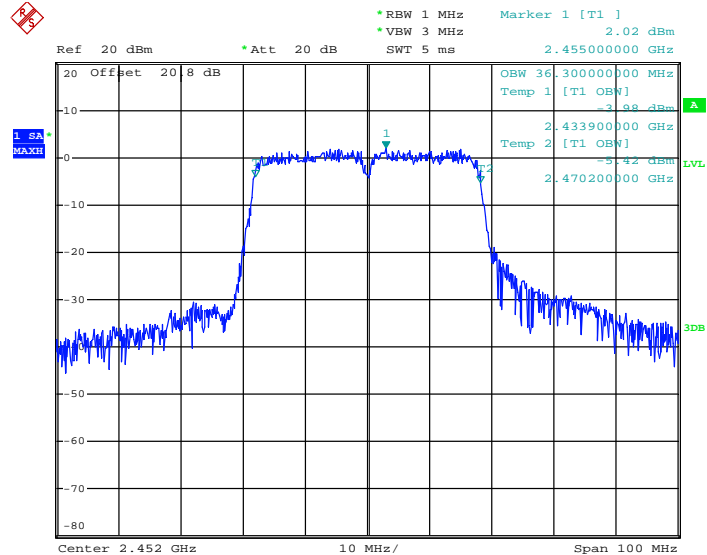
06 – Chain B



Date: 14.NOV.2011 14:50:11

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

09 – Chain B



Date: 14.NOV.2011 15:03:06

## 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.

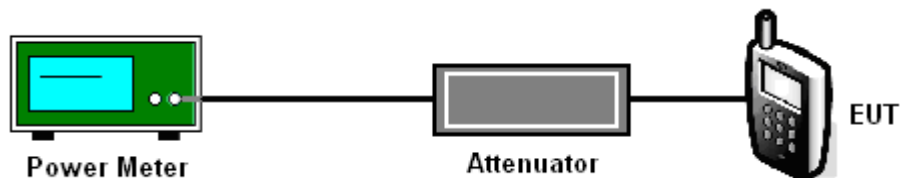
### 3.2.2 Measuring Instruments

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 :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A				
01	2412	18.34			30	Pass
06	2437	18.52			30	Pass
11	2462	18.26			30	Pass

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

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A				
01	2412	22.60			30	Pass
06	2437	22.53			30	Pass
11	2462	22.12			30	Pass

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

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A	Chain B	Chain A+B		
01	2412	19.04	19.59	22.33	30	Pass
06	2437	19.13	19.21	22.18	30	Pass
11	2462	19.42	18.18	21.85	30	Pass

Test Mode :	Mode 10, 11, 12	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A	Chain B	Chain A+B		
03	2422	20.81	20.89	23.86	30	Pass
06	2437	20.94	20.04	23.52	30	Pass
09	2452	21.03	19.76	23.45	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

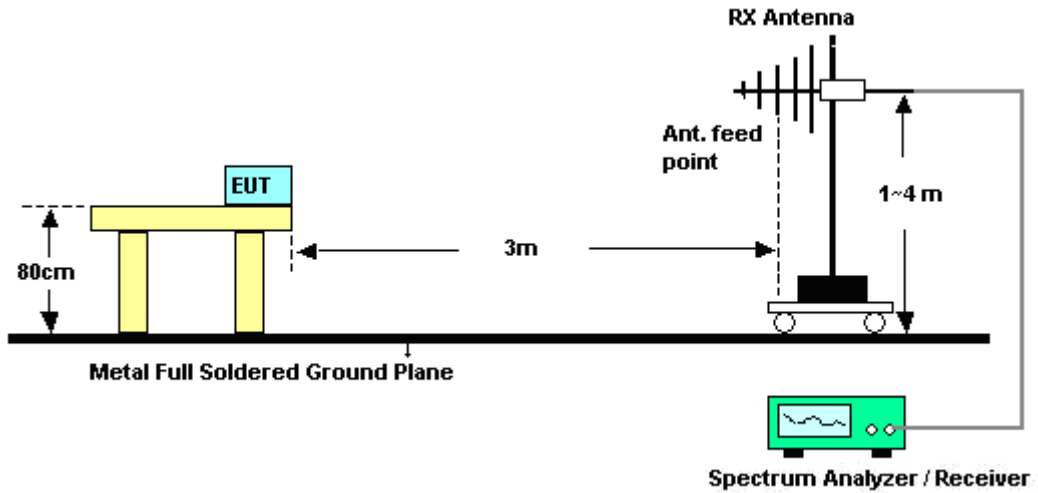
See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

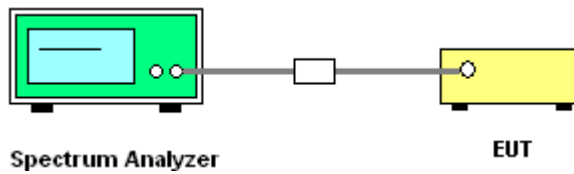
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band 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 :	23~25°C
Test Band :	802.11b	Relative Humidity :	51~53%
Test Channel :	01	Test Engineer :	Eric Shih

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
2386.38	54	-20	74	51.09	31.9	5.4	34.39	103	40	Peak
2386.38	44.4	-9.6	54	41.49	31.9	5.4	34.39	103	40	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
2330.33	50.85	-23.15	74	48.12	31.83	5.31	34.41	107	146	Peak
2330.33	40.81	-13.19	54	38.08	31.83	5.31	34.41	107	146	Average

Test Mode :	Mode 3	Temperature :	23~25°C
Test Band :	802.11b	Relative Humidity :	51~53%
Test Channel :	11	Test Engineer :	Eric Shih

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
2485.18	51.11	-22.89	74	47.98	31.98	5.52	34.37	100	34	Peak
2485.18	40.29	-13.71	54	37.16	31.98	5.52	34.37	100	34	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2484.61	49.4	-24.6	74	46.27	31.98	5.52	34.37	101	146	Peak
2484.61	37.74	-16.26	54	34.61	31.98	5.52	34.37	101	146	Average



Test Mode :	Mode 4	Temperature :	23~25°C
Test Band :	802.11g	Relative Humidity :	51~53%
Test Channel :	01	Test Engineer :	Eric Shih

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
2359.4	54.2	-19.8	74	51.37	31.86	5.37	34.4	103	34	Peak
2359.4	43	-11	54	40.17	31.86	5.37	34.4	103	34	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
2379.73	48.32	-25.68	74	45.47	31.88	5.37	34.4	100	23	Peak
2379.73	36.25	-17.75	54	33.4	31.88	5.37	34.4	100	23	Average

Test Mode :	Mode 6	Temperature :	23~25°C
Test Band :	802.11g	Relative Humidity :	51~53%
Test Channel :	11	Test Engineer :	Eric Shih

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	55.12	-18.88	74	51.99	31.98	5.52	34.37	100	33	Peak
2483.5	37.49	-16.51	54	34.36	31.98	5.52	34.37	100	33	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
2486.13	51	-23	74	47.87	31.98	5.52	34.37	104	166	Peak
2486.13	35.31	-18.69	54	32.18	31.98	5.52	34.37	104	166	Average



Test Mode :	Mode 7	Temperature :	23~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	51~53%
Test Channel :	01	Test Engineer :	Eric Shih

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	66.45	-7.55	74	63.54	31.9	5.4	34.39	101	40	Peak
2389.99	41.12	-12.88	54	38.21	31.9	5.4	34.39	101	40	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	64.24	-9.76	74	61.33	31.9	5.4	34.39	102	161	Peak
2389.99	38.14	-15.86	54	35.23	31.9	5.4	34.39	102	161	Average

Test Mode :	Mode 9	Temperature :	23~25°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	51~53%
Test Channel :	11	Test Engineer :	Eric Shih

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
2487.46	57.65	-16.35	74	54.52	31.98	5.52	34.37	100	34	Peak
2487.46	38.71	-15.29	54	35.58	31.98	5.52	34.37	100	34	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
2488.41	56.28	-17.72	74	53.13	32	5.52	34.37	102	155	Peak
2488.41	35.94	-18.06	54	32.79	32	5.52	34.37	102	155	Average





Test Mode :	Mode 10	Temperature :	23~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	51~53%
Test Channel :	03	Test Engineer :	Eric Shih

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	66.72	-7.28	74	63.81	31.9	5.4	34.39	104	39	Peak
2389.99	42.92	-11.08	54	40.01	31.9	5.4	34.39	104	39	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	62.05	-11.95	74	59.14	31.9	5.4	34.39	102	150	Peak
2389.99	39.3	-14.7	54	36.39	31.9	5.4	34.39	102	150	Average

Test Mode :	Mode 12	Temperature :	23~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	51~53%
Test Channel :	09	Test Engineer :	Eric Shih

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2484.42	67.84	-6.16	74	64.71	31.98	5.52	34.37	103	37	Peak
2484.42	41	-13	54	37.87	31.98	5.52	34.37	103	37	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2484.61	65.19	-8.81	74	62.06	31.98	5.52	34.37	102	155	Peak
2484.61	39.26	-14.74	54	36.13	31.98	5.52	34.37	102	155	Average



Test Mode :	Mode 14	Temperature :	23~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	51~53%
Test Channel :	09	Test Engineer :	Eric Shih

ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.85	69.06	-4.94	74	65.93	31.98	5.52	34.37	101	36	Peak
2483.85	40.98	-13.02	54	37.85	31.98	5.52	34.37	101	36	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.85	65.5	-8.5	74	62.37	31.98	5.52	34.37	104	148	Peak
2483.85	38.7	-15.3	54	35.57	31.98	5.52	34.37	104	148	Average

Test Mode :	Mode 15	Temperature :	23~25°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	51~53%
Test Channel :	09	Test Engineer :	Eric Shih

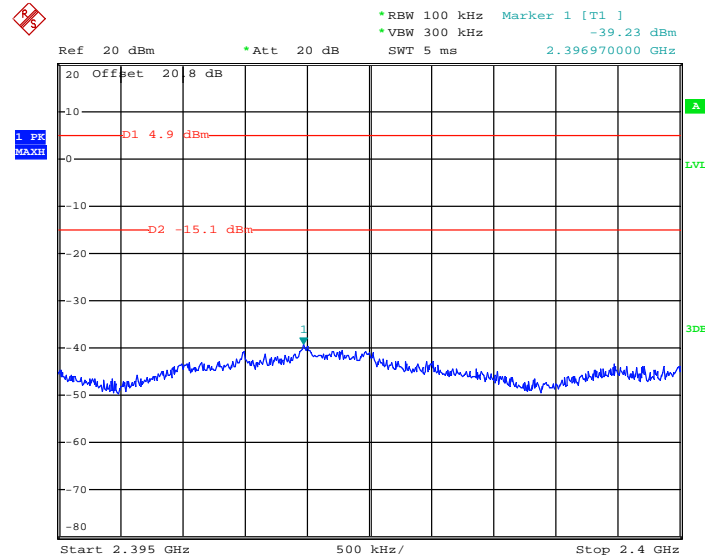
ANTENNA POLARITY : HORIZONTAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2483.85	68.12	-5.88	74	64.99	31.98	5.52	34.37	122	128	Peak
2483.85	42.23	-11.77	54	39.1	31.98	5.52	34.37	122	128	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2484.42	64.44	-9.56	74	61.31	31.98	5.52	34.37	103	206	Peak
2484.42	39.47	-14.53	54	36.34	31.98	5.52	34.37	103	206	Average

### 3.3.6 Test Result of Conducted Band Edges

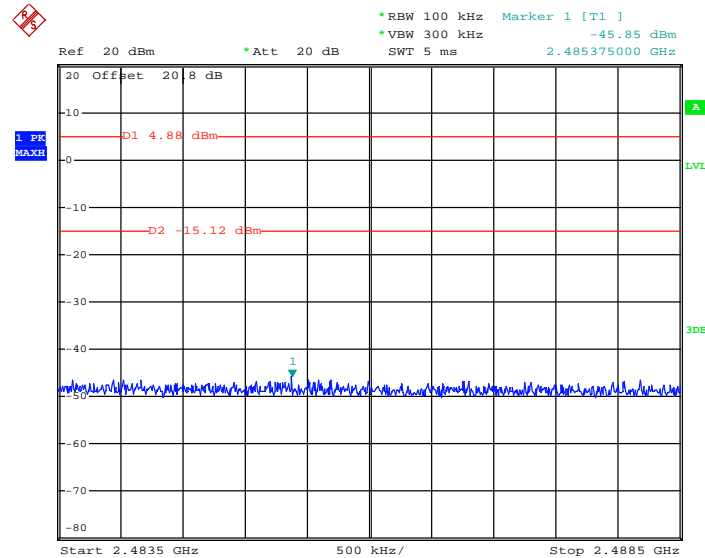
Test Mode :	Mode 1 and 3	Temperature :	24~26°C
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11b Channel 01 - Chain A



Date: 11.NOV.2011 21:17:45

High Band Edge Plot on 802.11b Channel 11 - Chain A

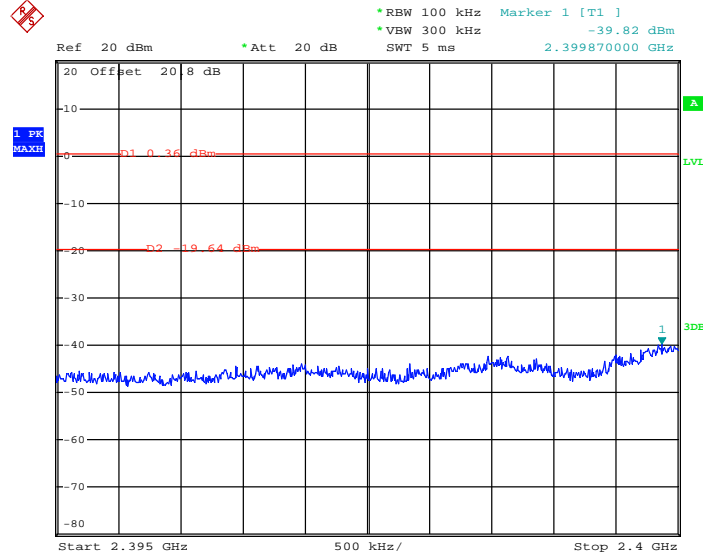


Date: 11.NOV.2011 21:48:05



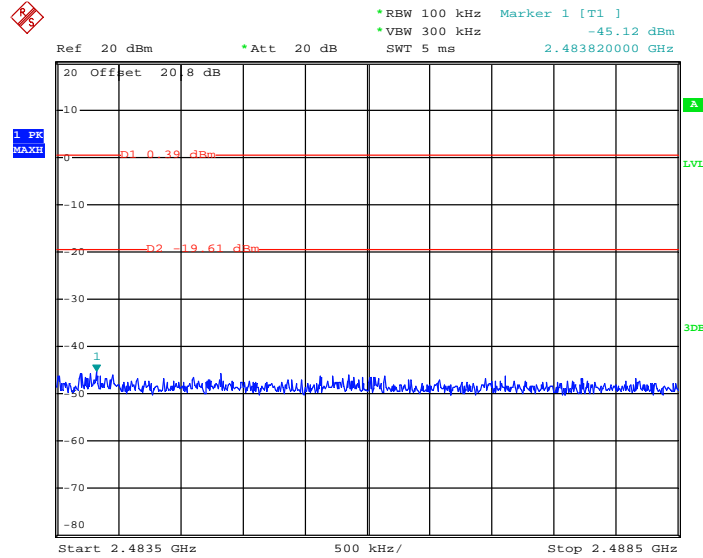
Test Mode :	Mode 4 and 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11g Channel 01 - Chain A



Date: 11.NOV.2011 22:47:20

High Band Edge Plot on 802.11g Channel 11 - Chain A

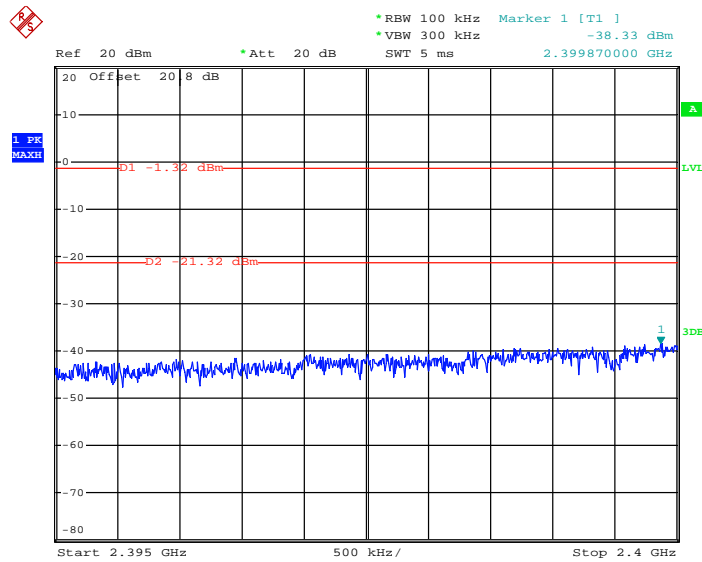


Date: 11.NOV.2011 22:29:29



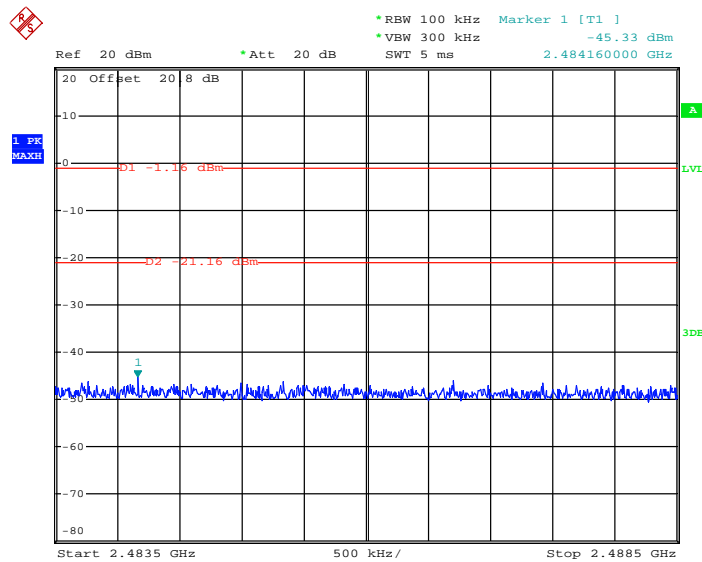
Test Mode :	Mode 7 and 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Pinkston Tu

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



Date: 11.NOV.2011 22:58:16

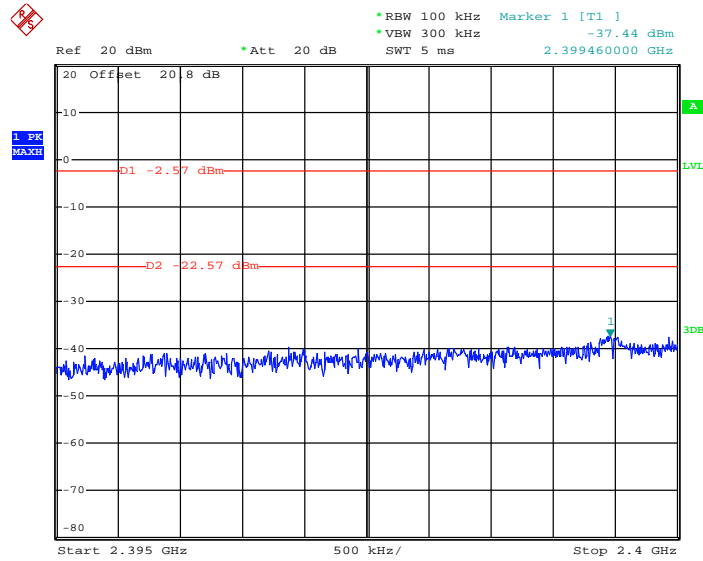
High Band Edge Plot on 802.11n (BW 20MHz) Channel 11 - Chain A



Date: 11.NOV.2011 23:24:56

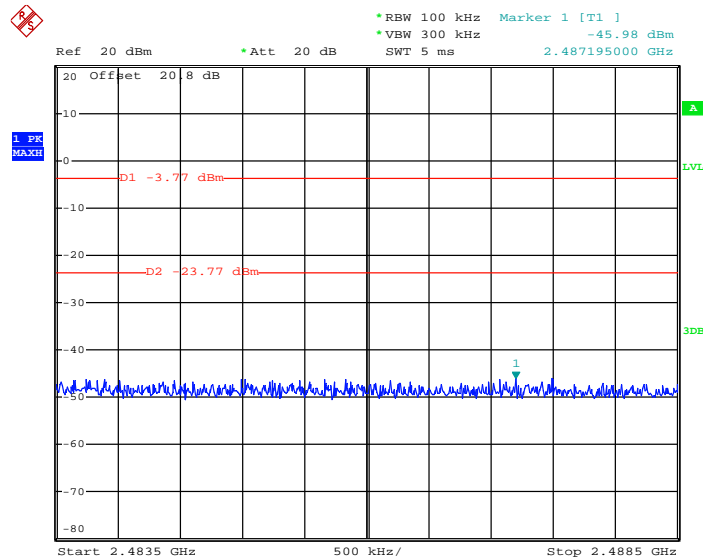


Low Band Edge Plot on 802.11n (BW 20MHz) Channel 01 - Chain B



Date: 14.NOV.2011 13:39:35

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

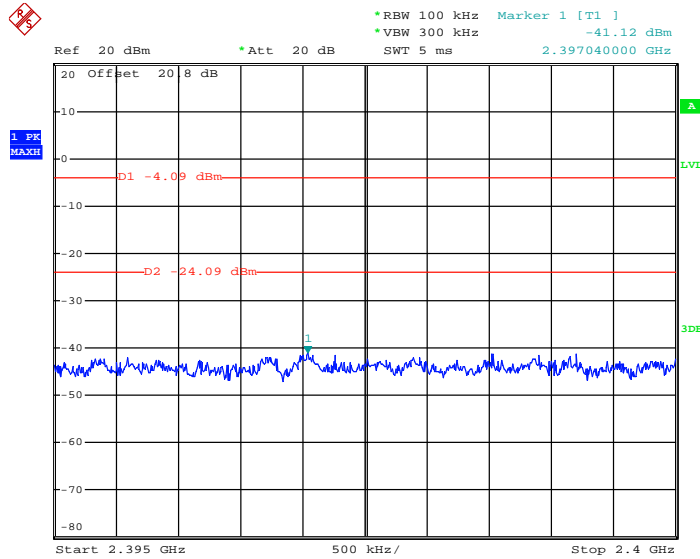


Date: 14.NOV.2011 14:20:47



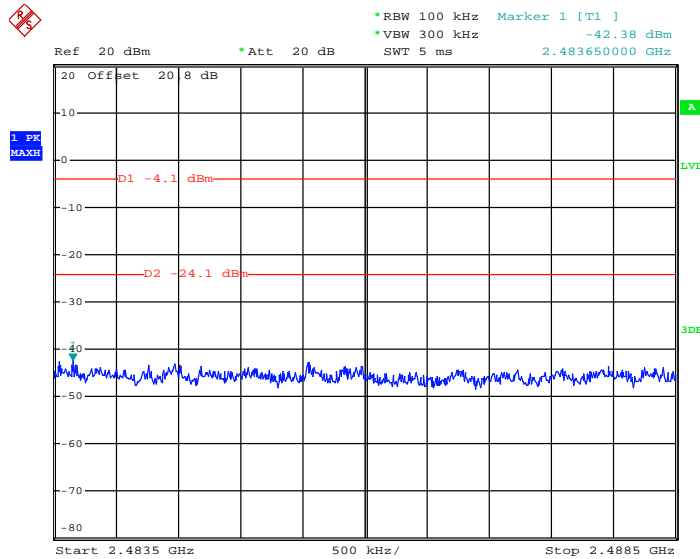
Test Mode :	Mode 10 and 12	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	03 and 09	Test Engineer :	Pinkston Tu

Low Band Edge Plot on 802.11n (BW 40MHz) Channel 03 - Chain A



Date: 12.NOV.2011 00:42:51

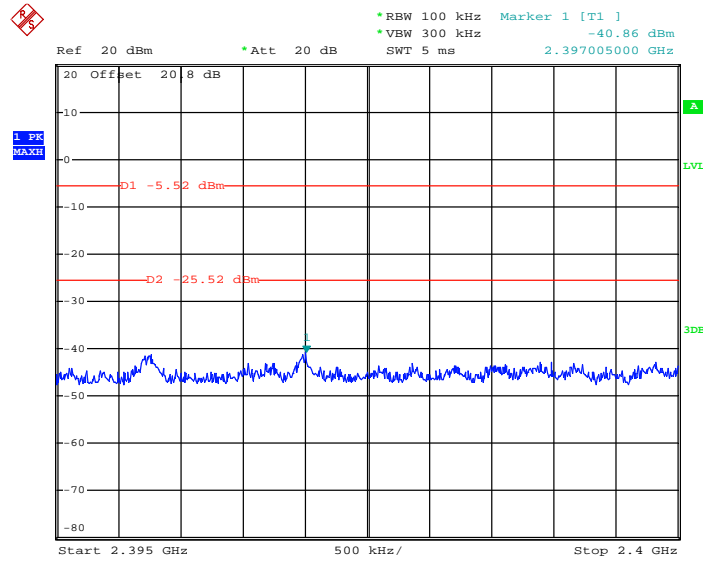
High Band Edge Plot on 802.11n (BW 40MHz) Channel 09 - Chain A



Date: 12.NOV.2011 01:07:29

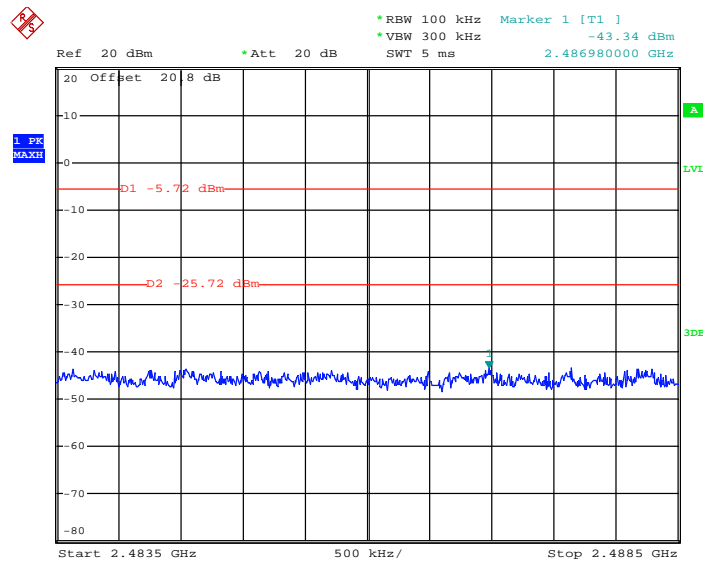


Low Band Edge Plot on 802.11n (BW 40MHz) Channel 03 - Chain B



Date: 14.NOV.2011 14:34:56

High Band Edge Plot on 802.11n (BW 40MHz) Channel 09 - Chain B



Date: 14.NOV.2011 15:02:19



## 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.

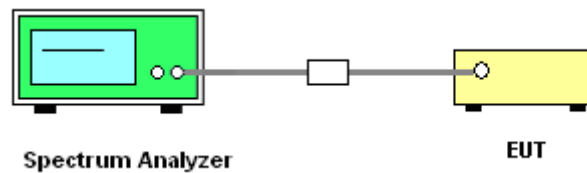
### 3.4.2 Measuring Instruments

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

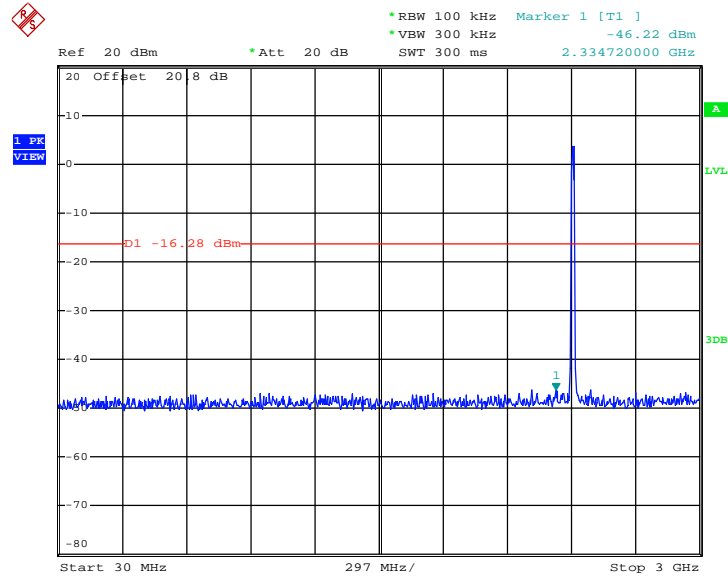




3.4.5 Test Result

Test Mode :	Mode 1, 2, 3	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Pinkston Tu

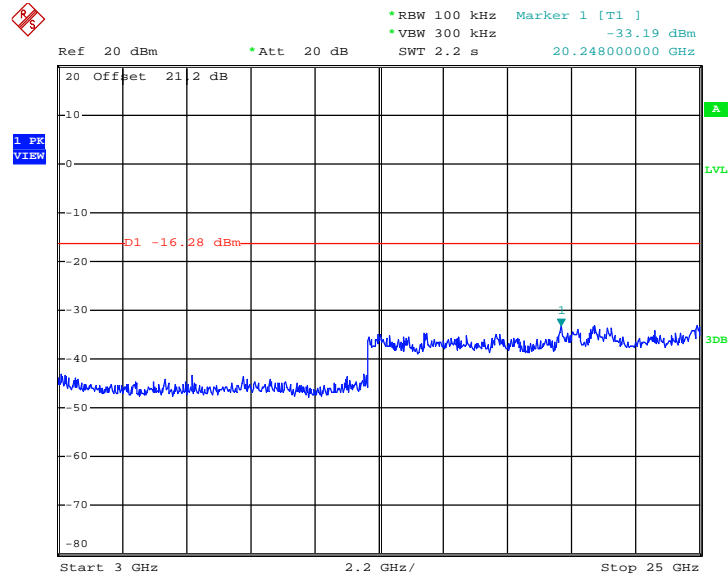
Conducted Spurious Emission Plot on 802.11b Channel 01  
between 30 MHz~3 GHz - Chain A



Date: 11.NOV.2011 21:27:08

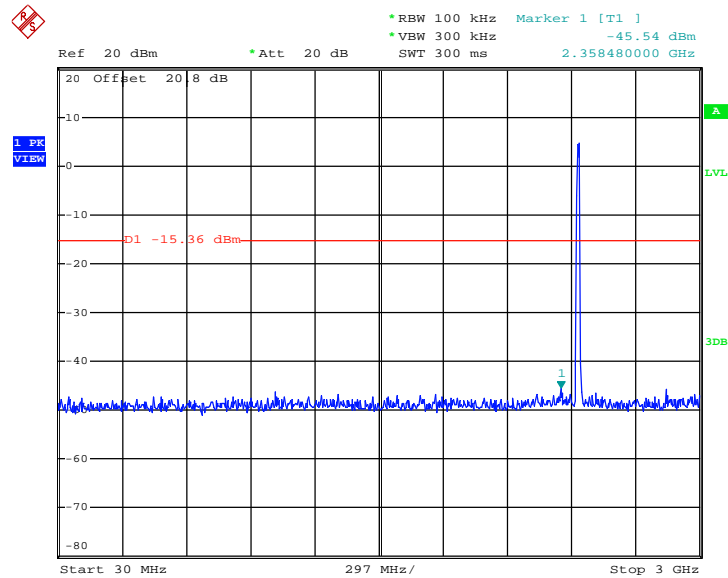


### Conducted Spurious Emission Plot on 802.11b Channel 01 between 3 GHz~25 GHz - Chain A



Date: 11.NOV.2011 21:27:25

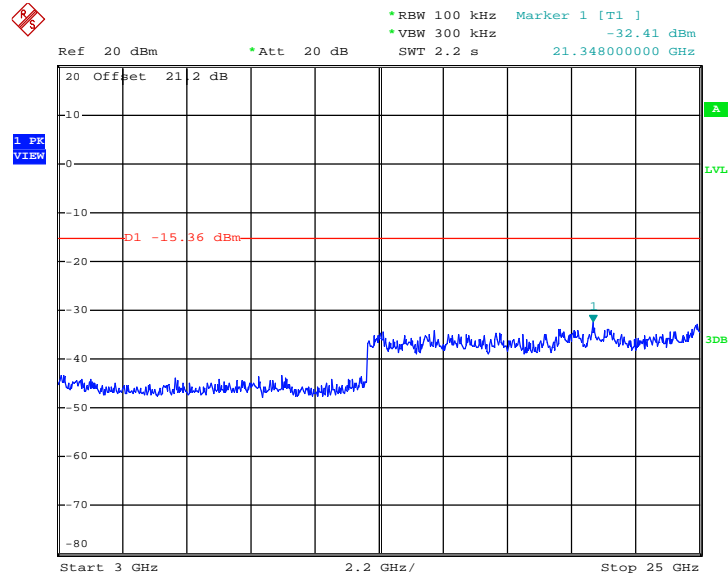
### Conducted Spurious Emission Plot on 802.11b Channel 06 between 30 MHz~3 GHz - Chain A



Date: 11.NOV.2011 21:44:12

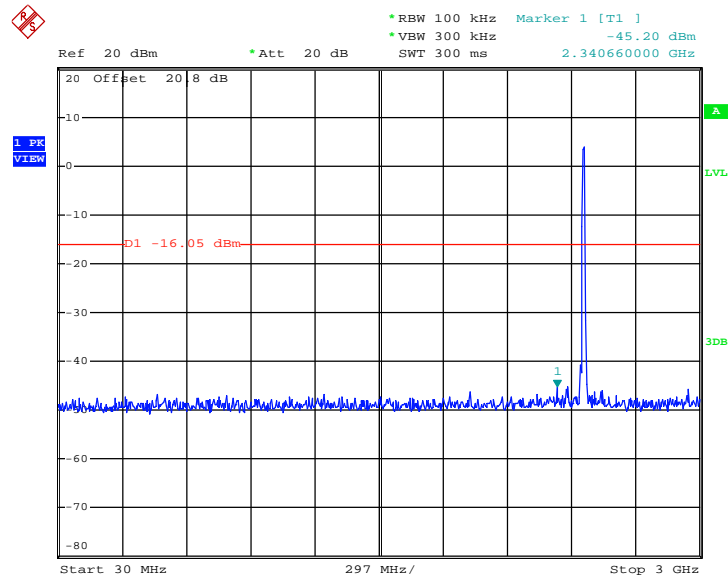


Conducted Spurious Emission Plot on 802.11b Channel 06  
between 3 GHz~25 GHz - Chain A



Date: 11.NOV.2011 21:44:29

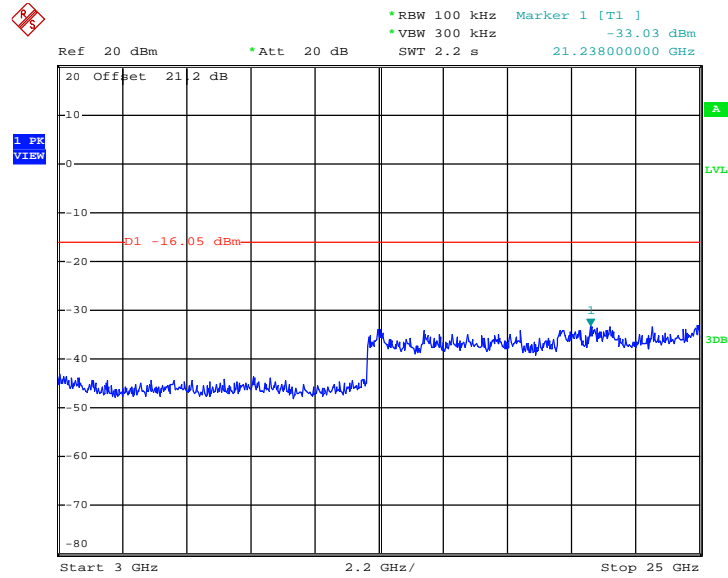
Conducted Spurious Emission Plot on 802.11b Channel 11  
between 30 MHz~3 GHz - Chain A



Date: 11.NOV.2011 21:57:38



Conducted Spurious Emission Plot on 802.11b Channel 11  
between 3 GHz~25 GHz - Chain A

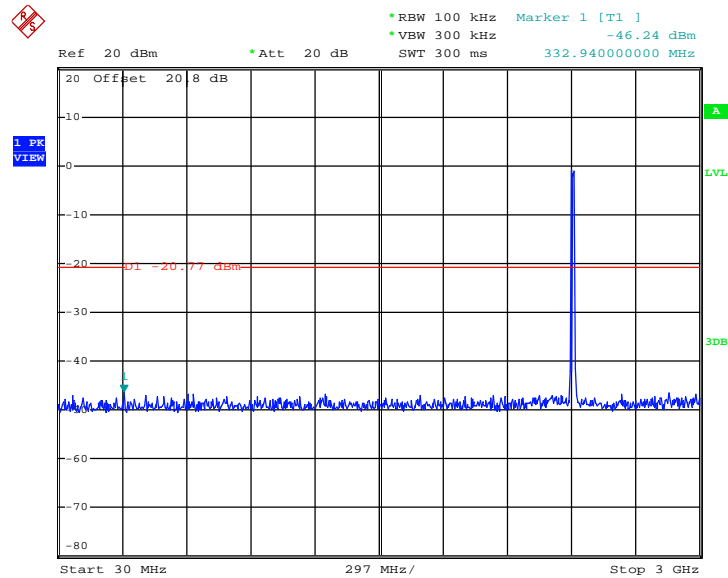


Date: 11.NOV.2011 21:57:55



Test Mode :	Mode 4, 5, 6	Temperature :	24~26°C
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Pinkston Tu

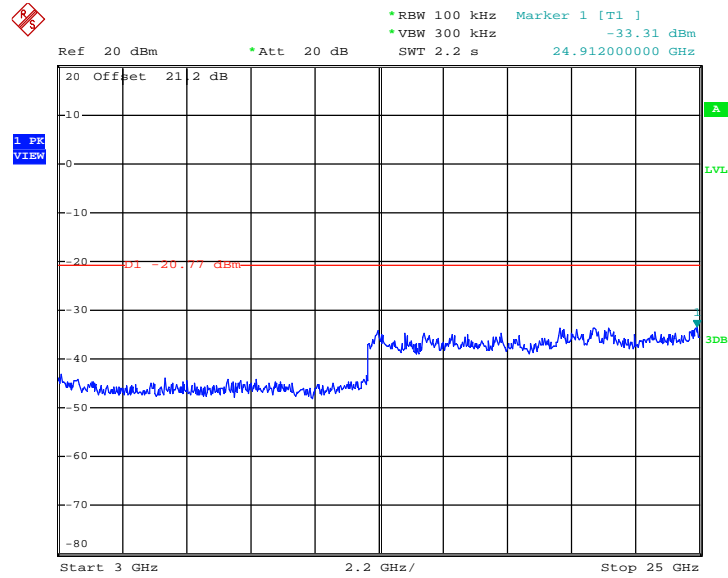
Conducted Spurious Emission Plot on 802.11g Channel 01  
between 30 MHz~3 GHz - Chain A



Date: 11.NOV.2011 22:12:16

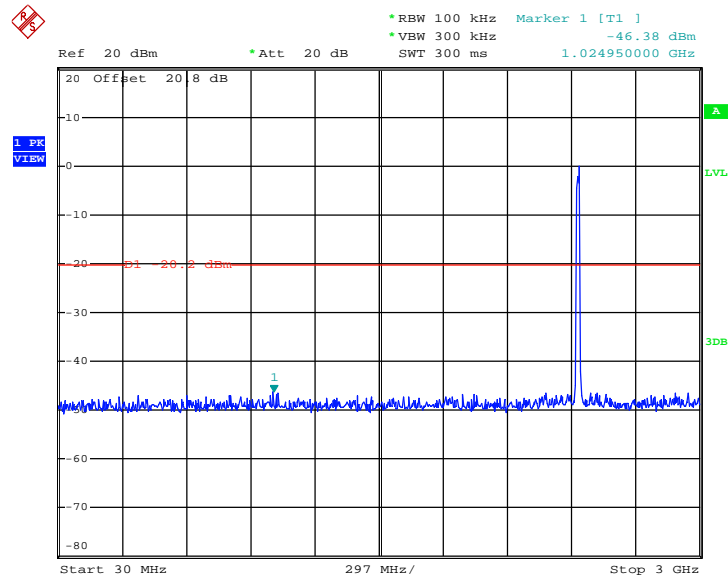


### Conducted Spurious Emission Plot on 802.11g Channel 01 between 3 GHz~25 GHz - Chain A



Date: 11.NOV.2011 22:12:33

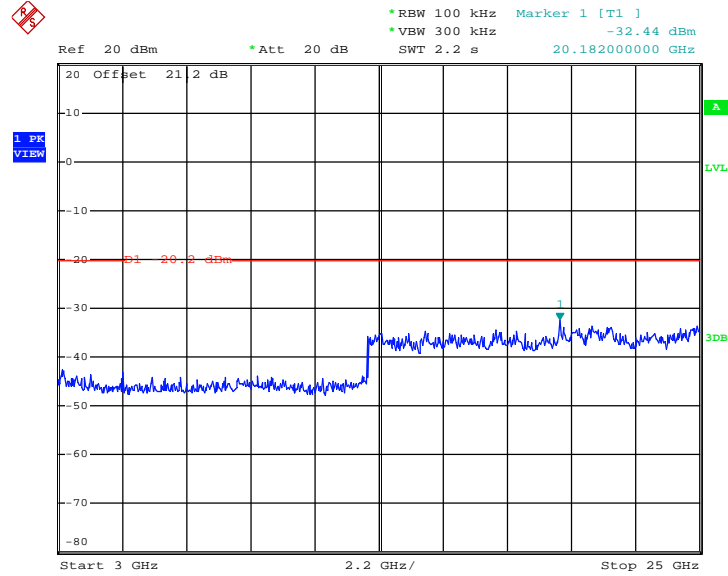
### Conducted Spurious Emission Plot on 802.11g Channel 06 between 30 MHz~3 GHz - Chain A



Date: 11.NOV.2011 22:25:31

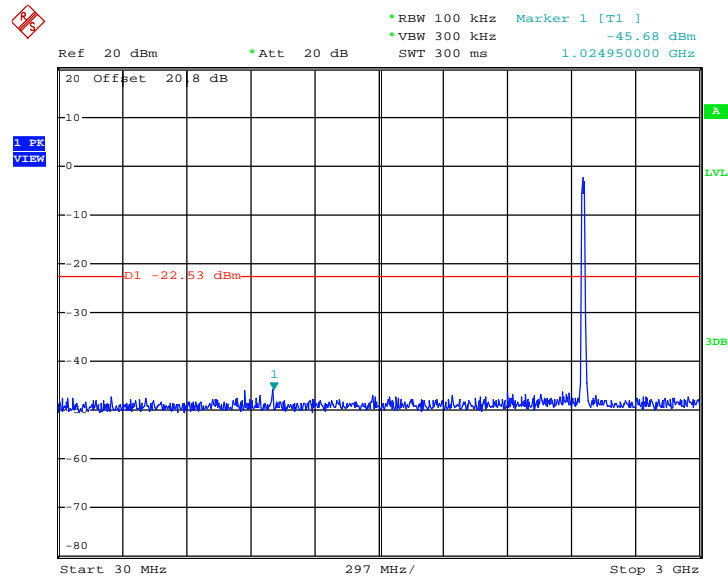


### Conducted Spurious Emission Plot on 802.11g Channel 06 between 3 GHz~25 GHz - Chain A



Date: 11.NOV.2011 22:25:48

### Conducted Spurious Emission Plot on 802.11g Channel 11 between 30 MHz~3 GHz - Chain A

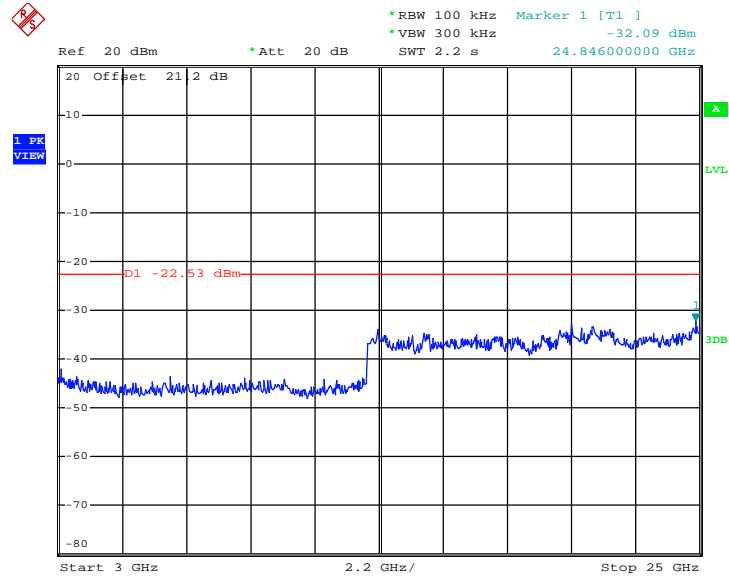


Date: 11.NOV.2011 22:38:49





Conducted Spurious Emission Plot on 802.11g Channel 11  
between 3 GHz~25 GHz - Chain A

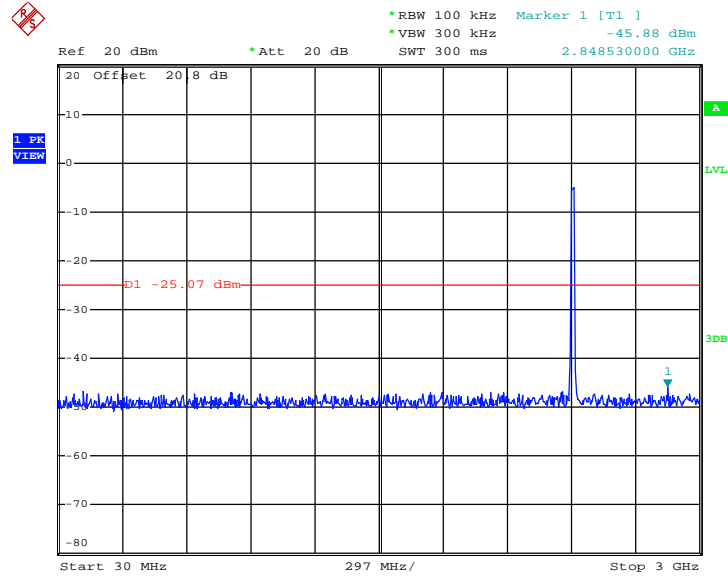


Date: 11.NOV.2011 22:39:06



Test Mode :	Mode 7, 8, 9	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Pinkston Tu

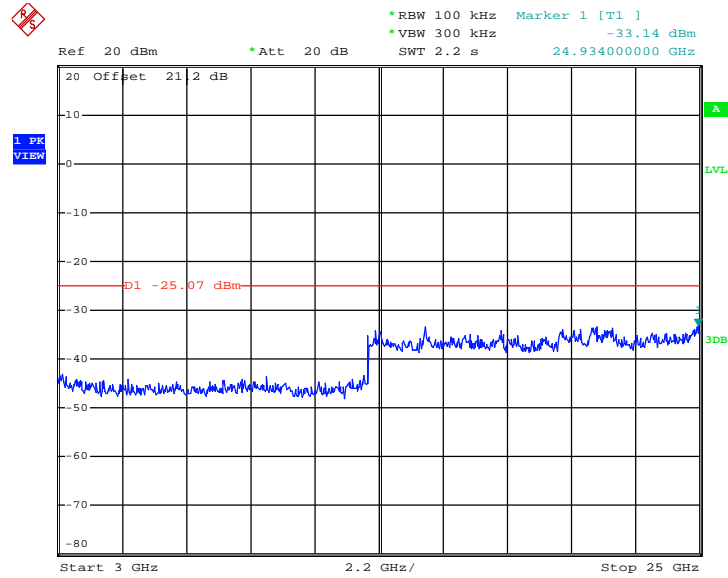
Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 01 between 30 MHz~3 GHz - Chain A



Date: 11.NOV.2011 23:08:07

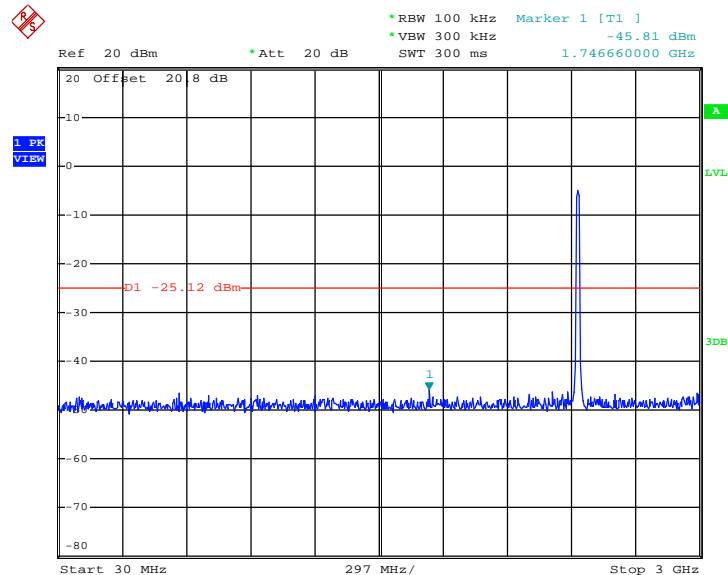


Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 01 between 3 GHz~25 GHz - Chain A



Date: 11.NOV.2011 23:08:24

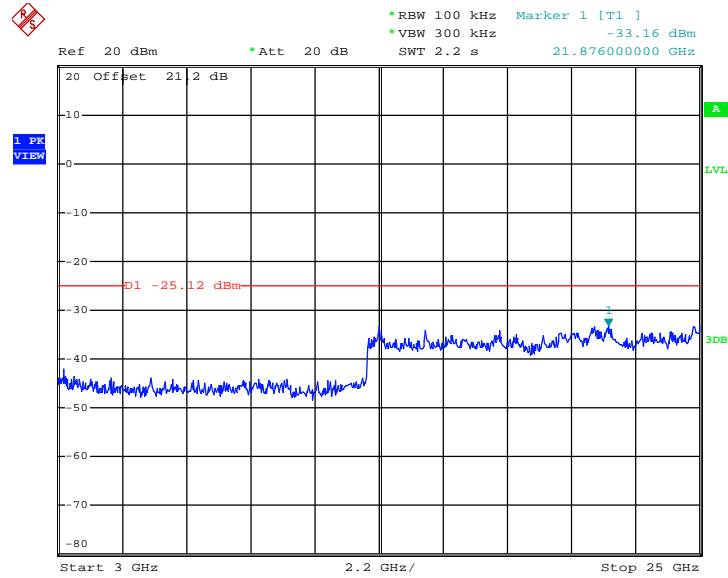
Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 06 between 30 MHz~3 GHz - Chain A



Date: 11.NOV.2011 23:20:42

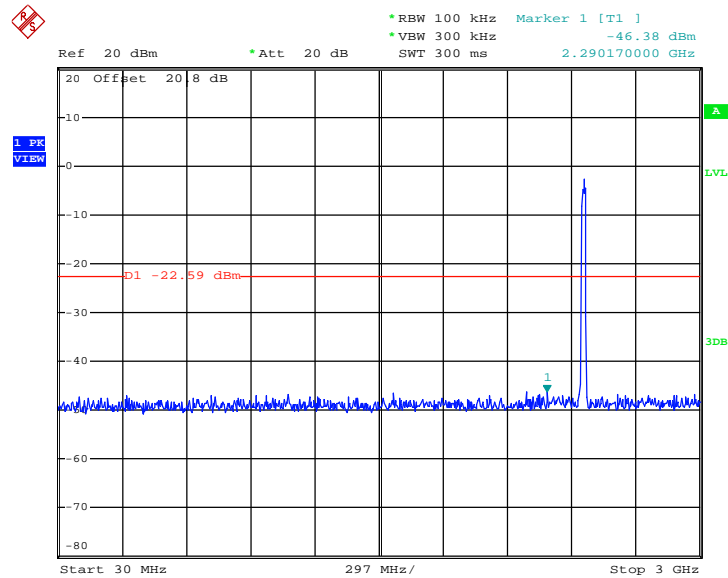


Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 06 between 3 GHz~25 GHz - Chain A



Date: 11.NOV.2011 23:20:59

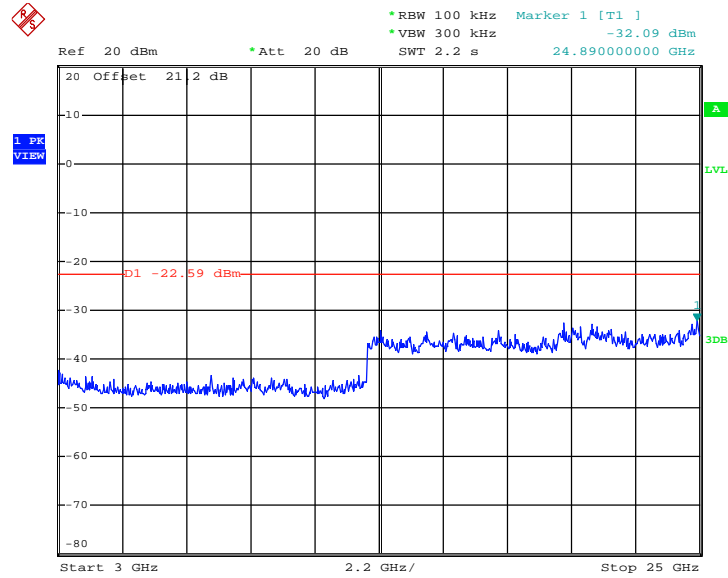
Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 11 between 30 MHz~3 GHz - Chain A



Date: 11.NOV.2011 23:34:17

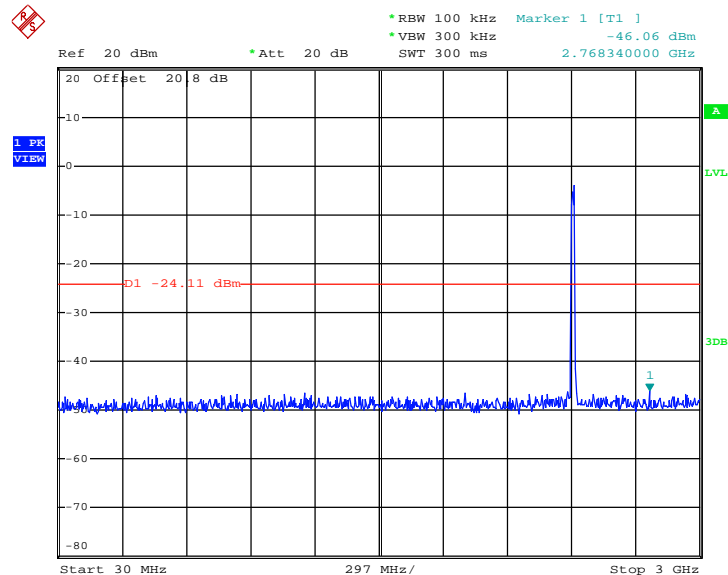


**Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 11 between 3 GHz~25 GHz - Chain A**



Date: 11.NOV.2011 23:34:34

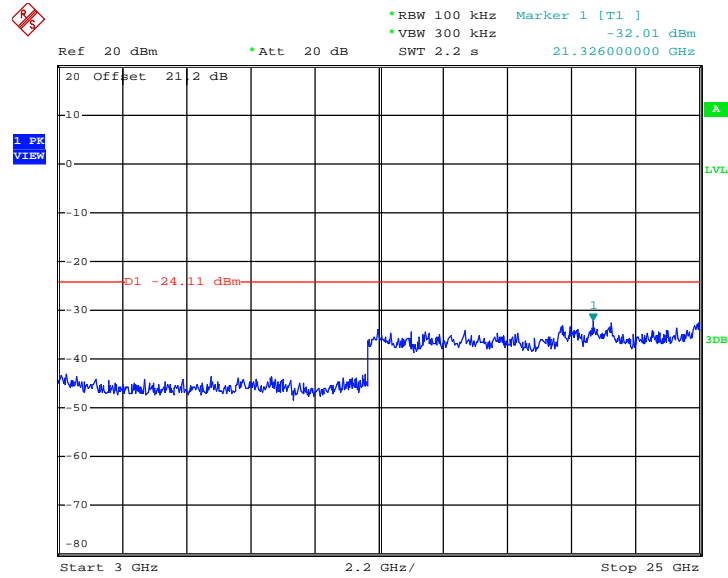
**Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 01 between 30 MHz~3 GHz - Chain B**



Date: 14.NOV.2011 13:49:52

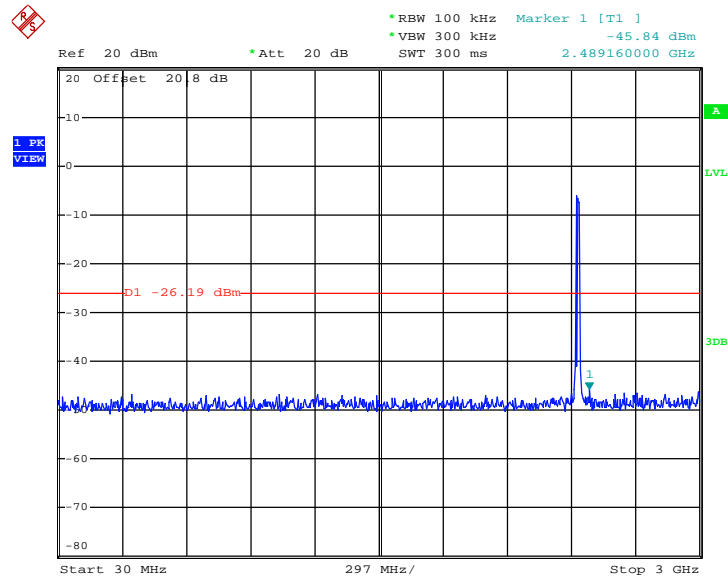


**Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 01 between 3 GHz~25 GHz - Chain B**



Date: 14.NOV.2011 13:50:09

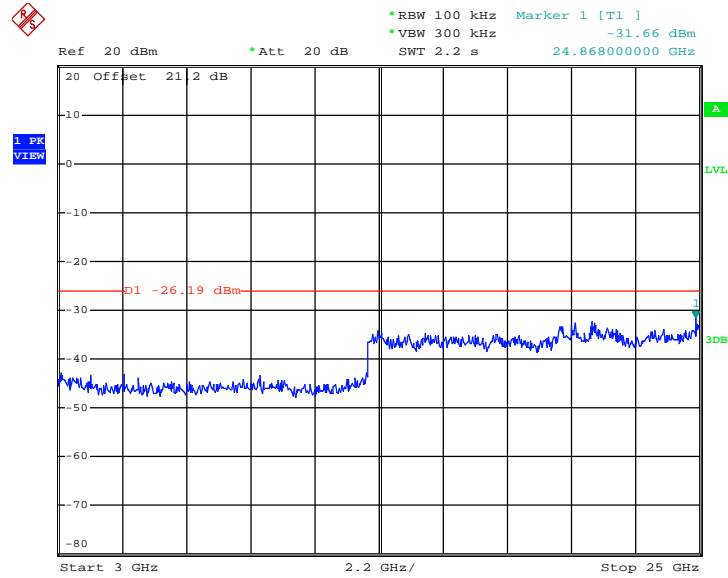
**Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 06 between 30 MHz~3 GHz - Chain B**



Date: 14.NOV.2011 14:03:30

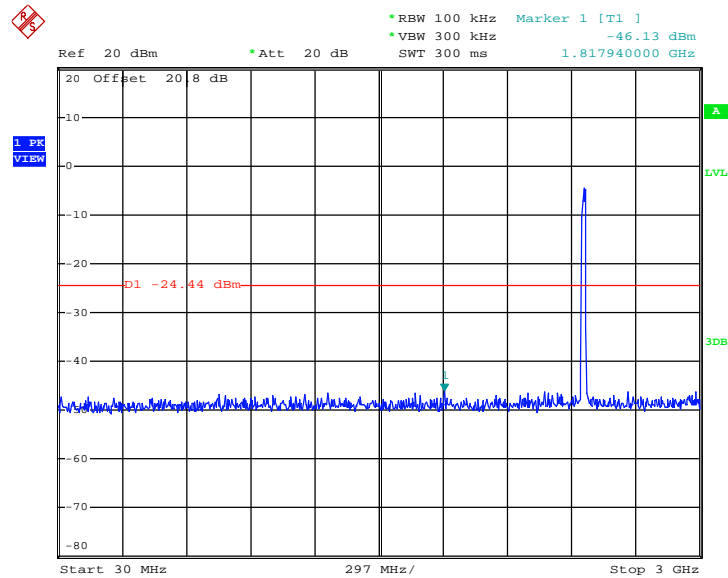


Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 06 between 3 GHz~25 GHz - Chain B



Date: 14.NOV.2011 14:03:47

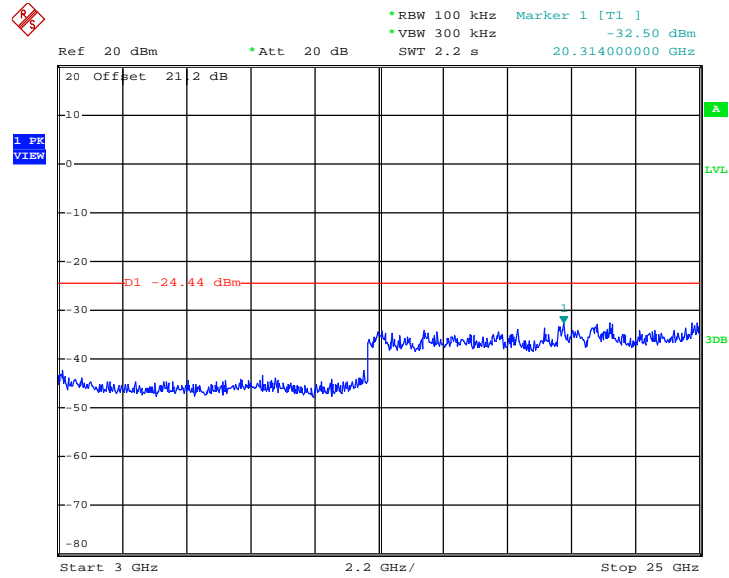
Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 11 between 30 MHz~3 GHz - Chain B



Date: 14.NOV.2011 14:16:31



Conducted Spurious Emission Plot on 802.11n (BW 20MHz)  
Channel 11 between 3 GHz~25 GHz - Chain B



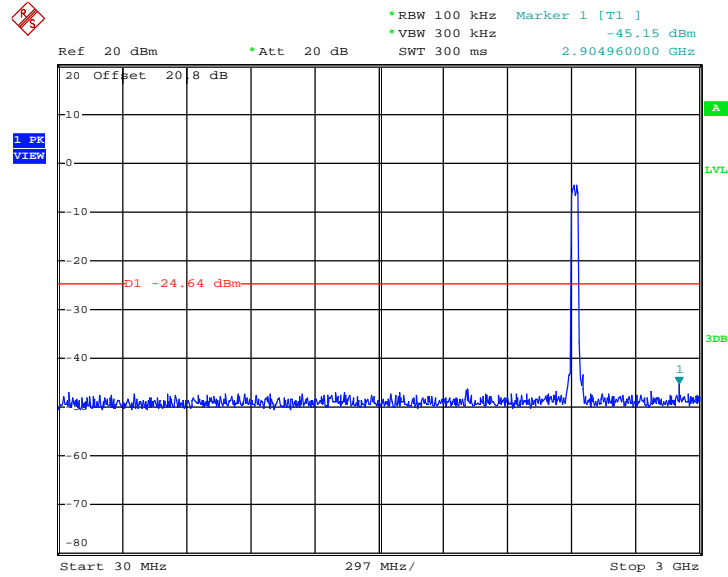
Date: 14.NOV.2011 14:16:48





Test Mode :	Mode 10, 11, 12	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	50~53%
Test Channel :	03, 06, 09	Test Engineer :	Pinkston Tu

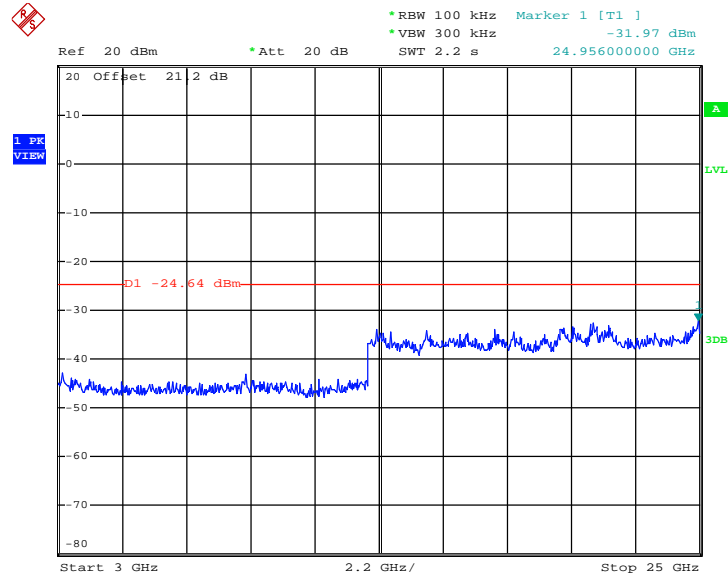
Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 03 between 30 MHz~3 GHz - Chain A



Date: 12.NOV.2011 00:52:17

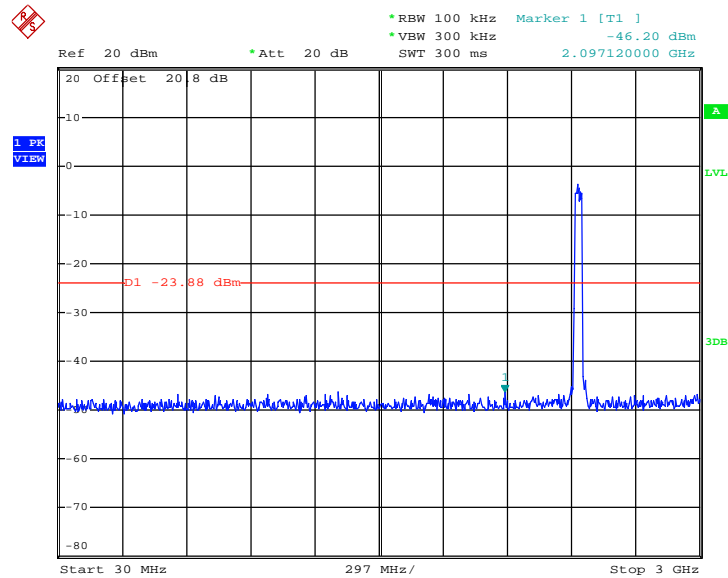


Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 03 between 3 GHz~25 GHz - Chain A



Date: 12.NOV.2011 00:52:34

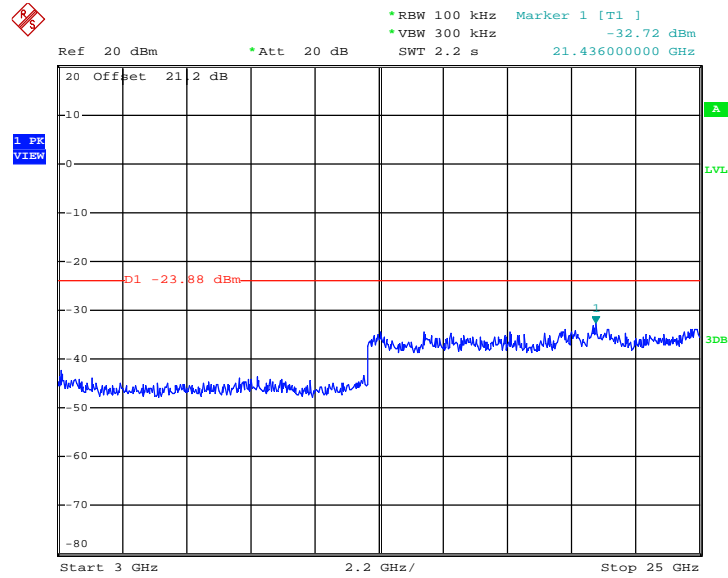
Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 06 between 30 MHz~3 GHz - Chain A



Date: 12.NOV.2011 01:04:35

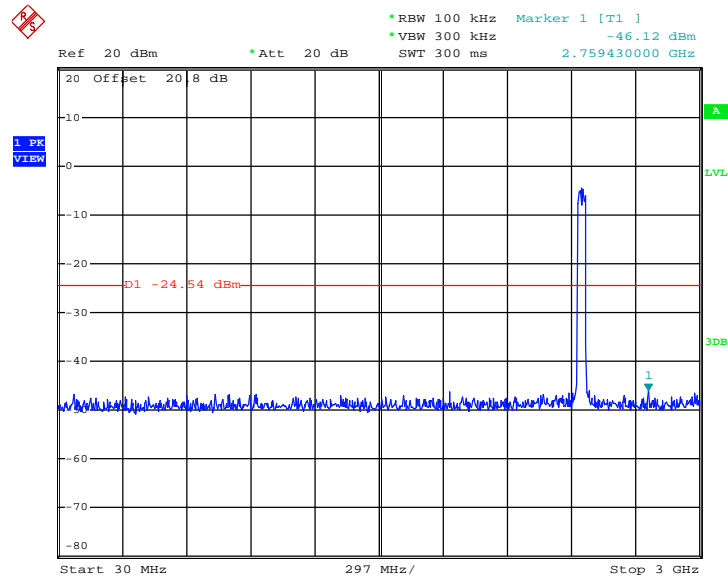


**Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 06 between 3 GHz~25 GHz - Chain A**



Date: 12.NOV.2011 01:04:52

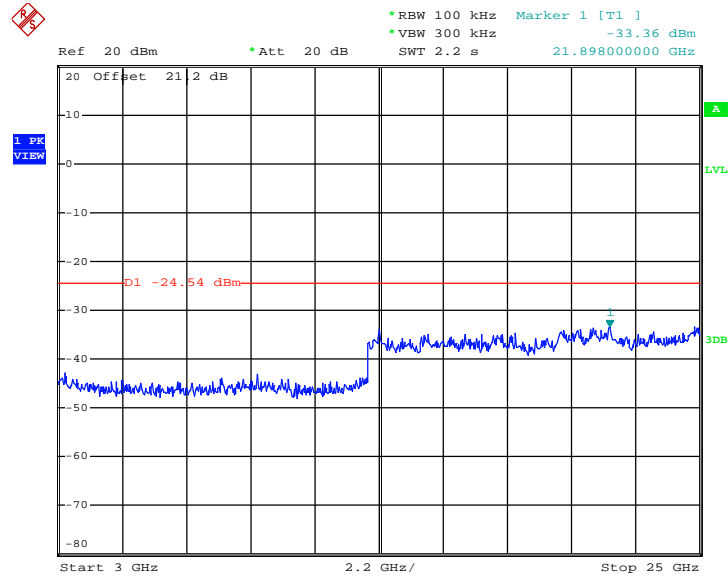
**Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 09 between 30 MHz~3 GHz - Chain A**



Date: 12.NOV.2011 01:18:15

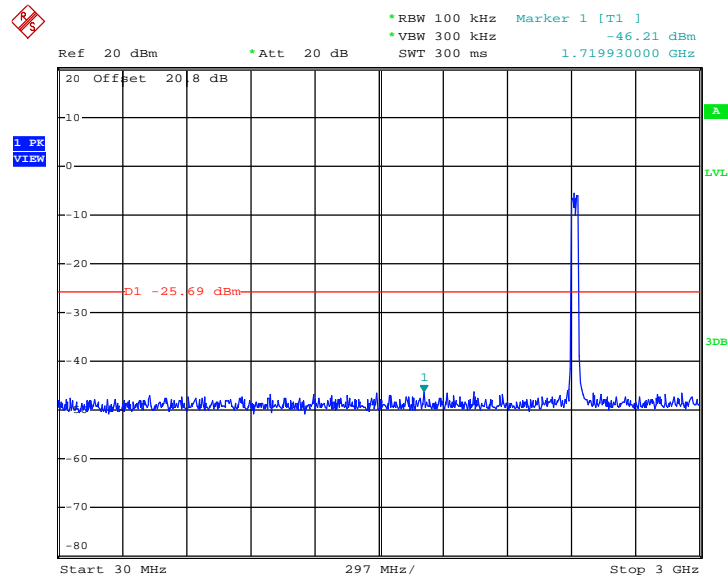


Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 09 between 3 GHz~25 GHz - Chain A



Date: 12.NOV.2011 01:18:32

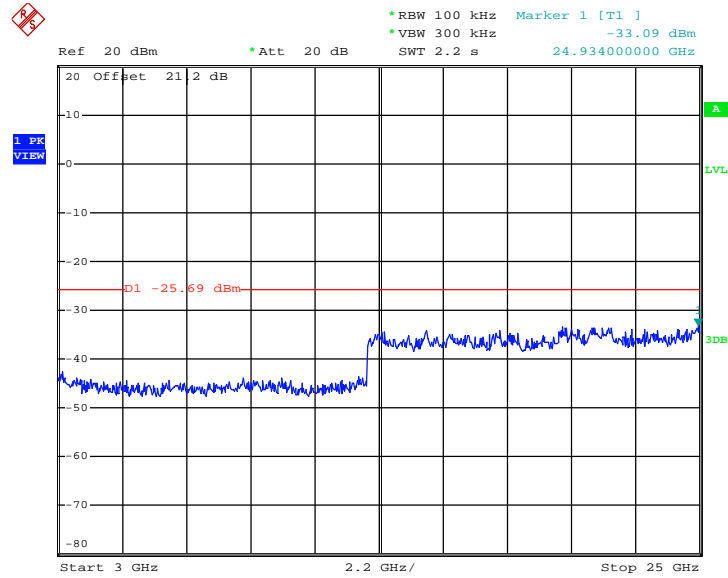
Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 03 between 30 MHz~3 GHz - Chain B



Date: 14.NOV.2011 14:44:24

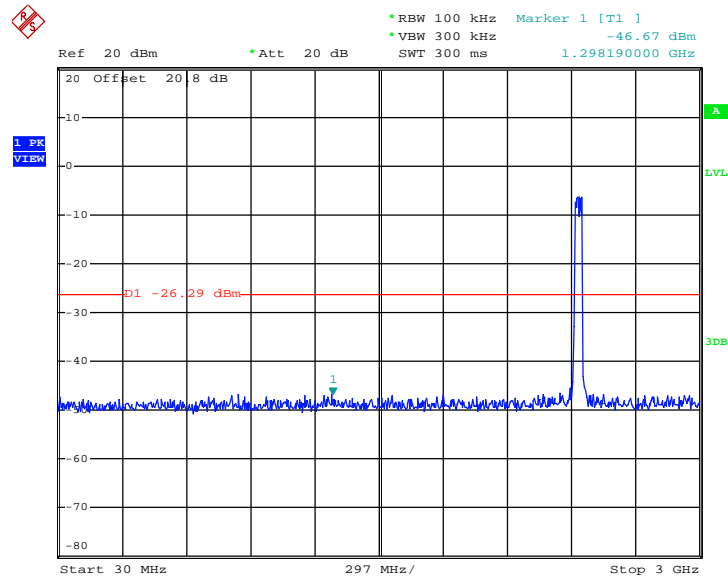


**Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 03 between 3 GHz~25 GHz - Chain B**



Date: 14.NOV.2011 14:44:41

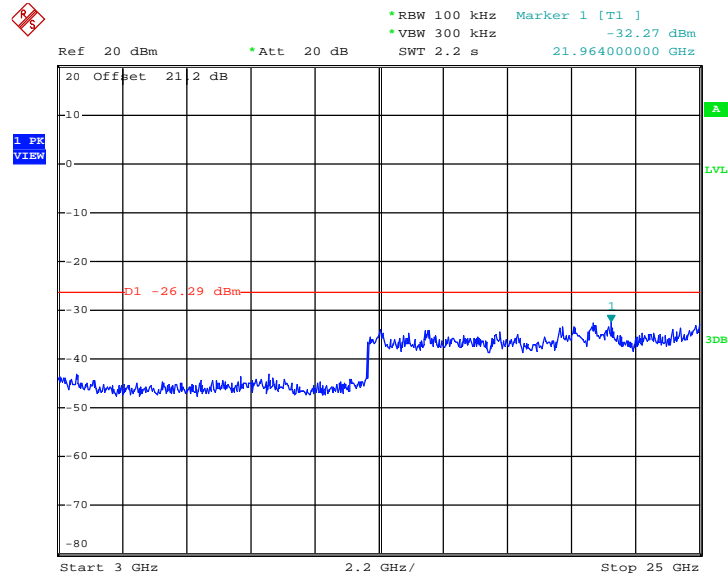
**Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 06 between 30 MHz~3 GHz - Chain B**



Date: 14.NOV.2011 14:59:04

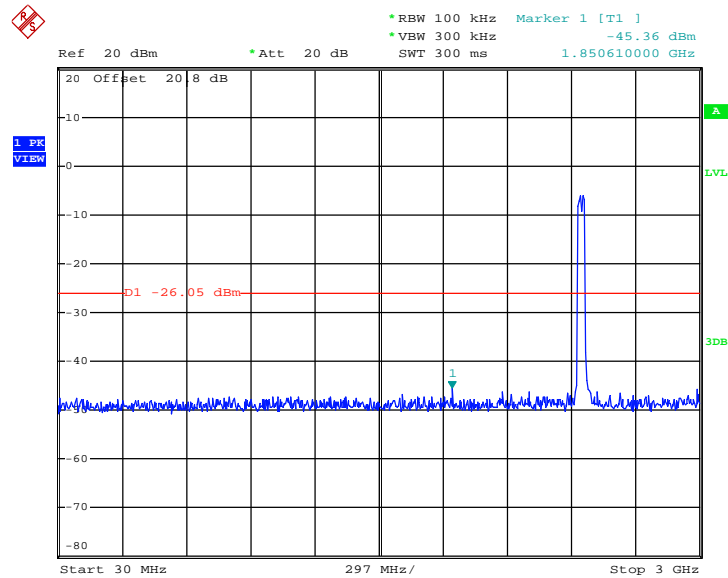


Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 06 between 3 GHz~25 GHz - Chain B



Date: 14.NOV.2011 14:59:21

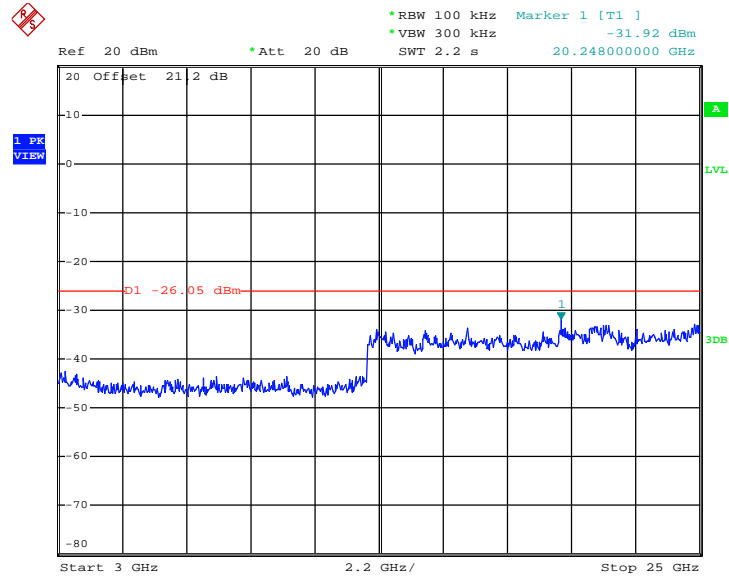
Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 09 between 30 MHz~3 GHz - Chain B



Date: 14.NOV.2011 15:12:04



Conducted Spurious Emission Plot on 802.11n (BW 40MHz)  
Channel 09 between 3 GHz~25 GHz - Chain B



Date: 14.NOV.2011 15:12:21

## 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.

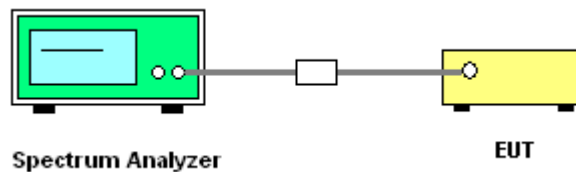
### 3.5.2 Measuring Instruments

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 :	Pinkston Tu	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A				
01	2412	3.19			8	Pass
06	2437	3.83			8	Pass
11	2462	3.59			8	Pass

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

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A				
01	2412	-14.22			8	Pass
06	2437	-13.82			8	Pass
11	2462	-13.72			8	Pass

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

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A	Chain B	Chain A+B		
01	2412	-16.58	-18.05	-14.24	8	Pass
06	2437	-16.49	-18.19	-14.25	8	Pass
11	2462	-16.53	-18.59	-14.43	8	Pass

**Note:** Each chain was measured individually and calculated with the formula of  $10 \cdot \text{LOG} (10^{\text{(chain A/10)} + 10^{\text{(chain B/10)}})$ .



Test Mode :	Mode 10, 11, 12	Temperature :	24~26°C
Test Engineer :	Pinkston Tu	Relative Humidity :	50~53%

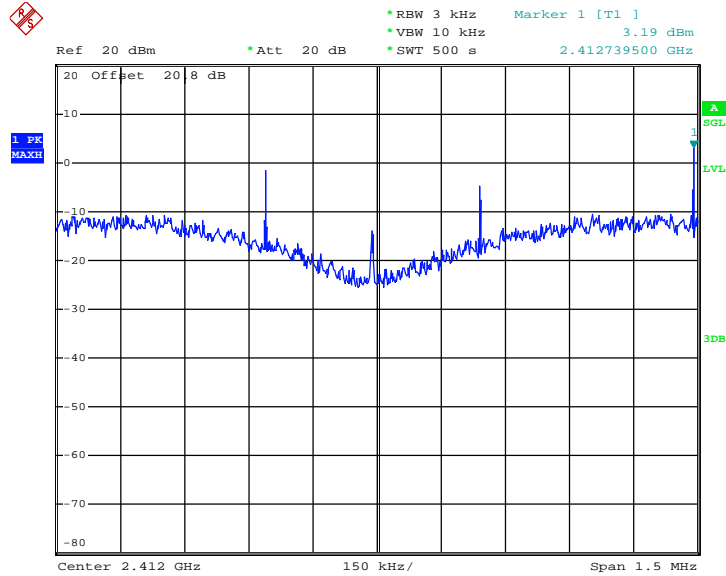
Channel	Frequency (MHz)	802.11n (BW 40MHz) Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain A	Chain B	Chain A+B		
03	2422	-20.95	-21.13	-18.03	8	Pass
06	2437	-18.95	-21.46	-17.02	8	Pass
09	2452	-19.73	-21.43	-17.49	8	Pass

**Note:** Each chain was measured individually and calculated with the formula of  $10 \cdot \text{LOG} (10^{\text{chain A}/10} + 10^{\text{chain B}/10})$ .



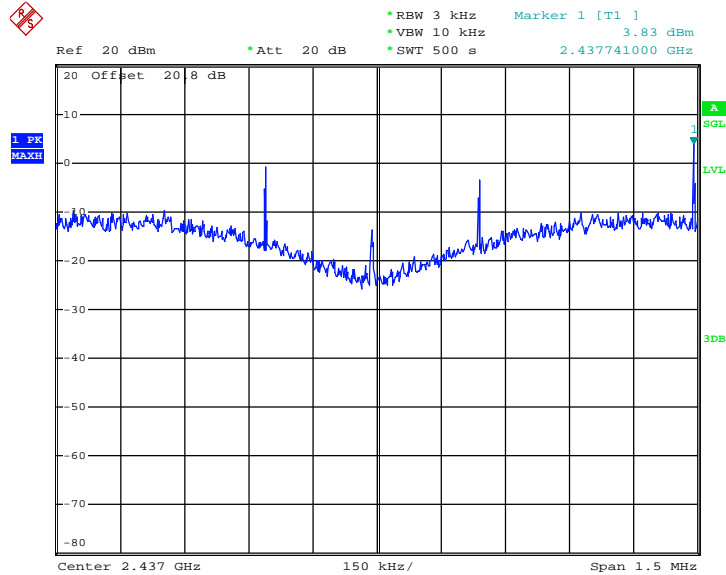
### 3.5.6 Test Result of Power Spectral Density Plots

PSD Plot on 802.11b Channel 01 – Chain A



Date: 12.NOV.2011 01:51:48

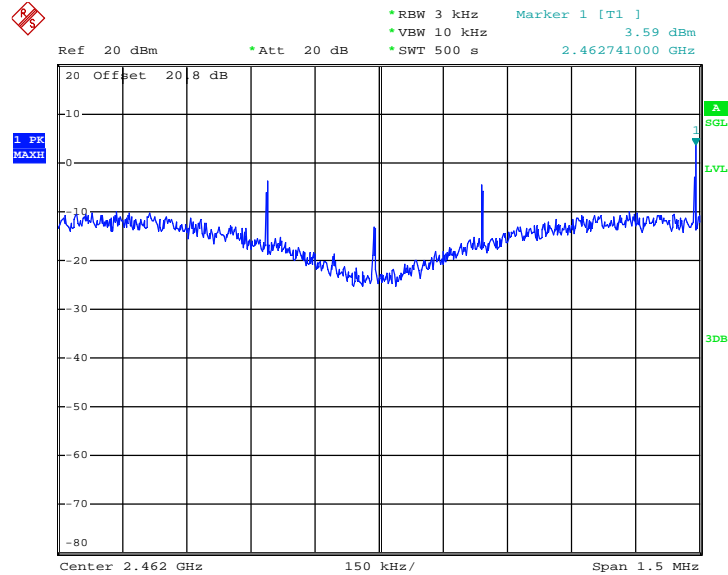
PSD Plot on 802.11b Channel 06 – Chain A



Date: 11.NOV.2011 21:41:20

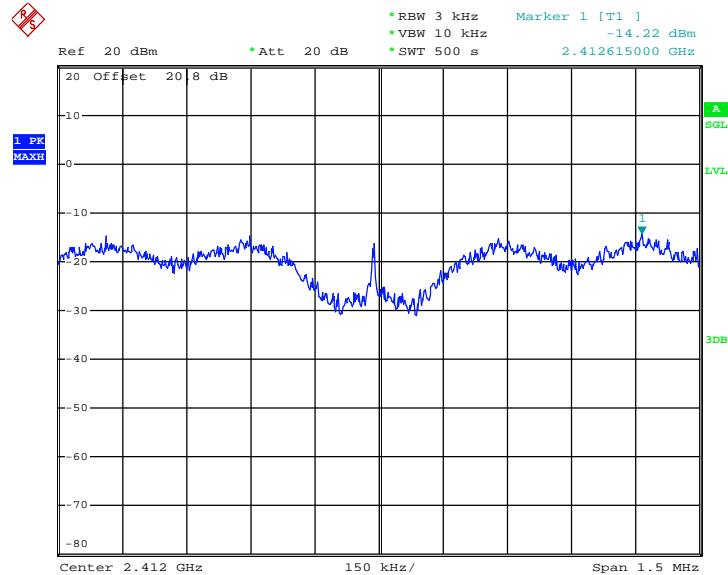


PSD Plot on 802.11b Channel 11 – Chain A



Date: 11.NOV.2011 21:57:18

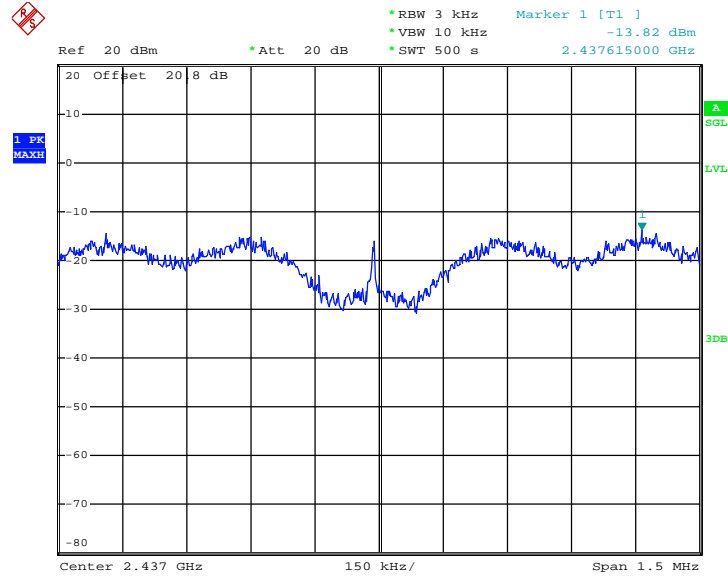
PSD Plot on 802.11g Channel 01 – Chain A



Date: 11.NOV.2011 22:11:55

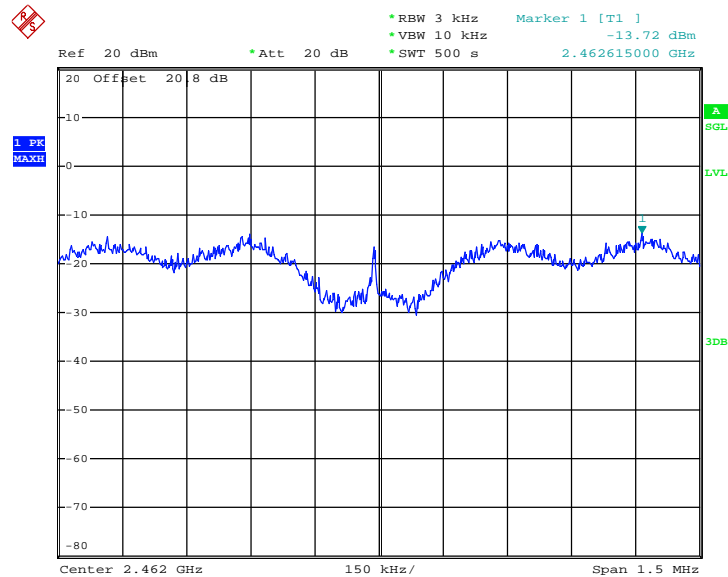


PSD Plot on 802.11g Channel 06 – Chain A



Date: 11.NOV.2011 22:25:10

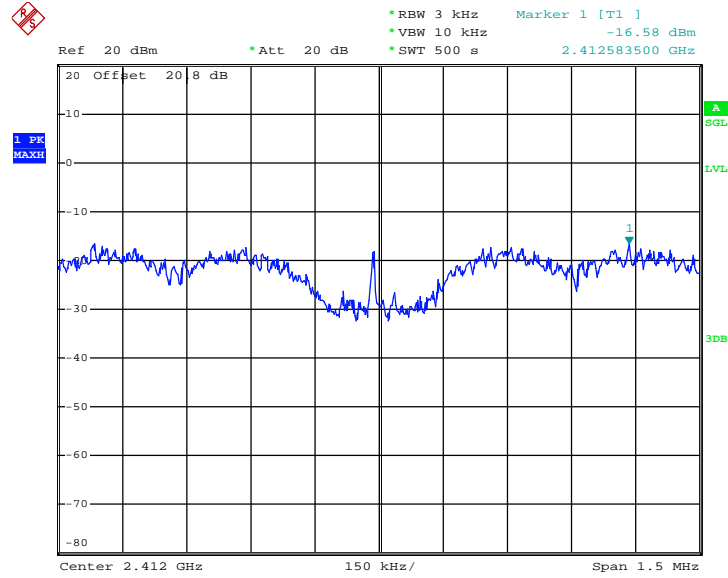
PSD Plot on 802.11g Channel 11 – Chain A



Date: 11.NOV.2011 22:38:28

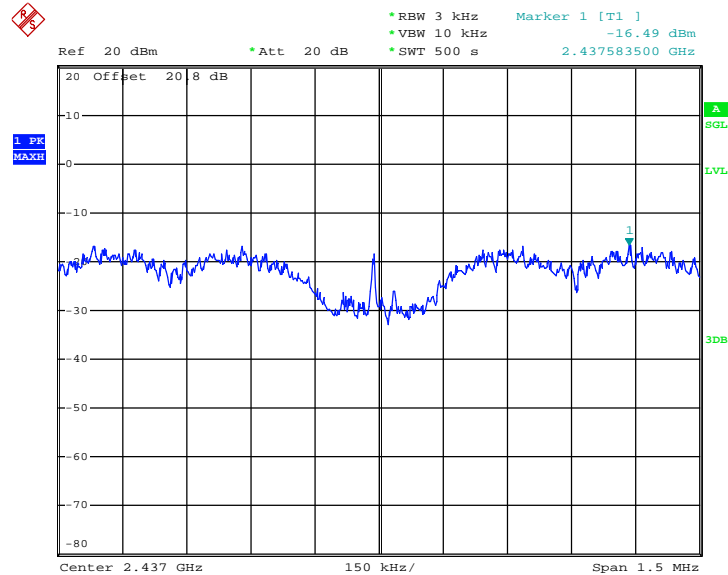


PSD Plot on 802.11n (BW 20MHz) Channel 01 – Chain A



Date: 11.NOV.2011 23:07:47

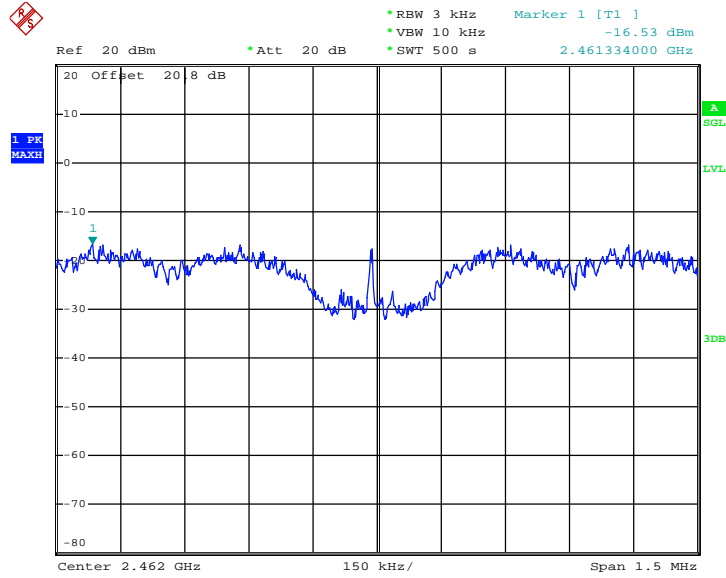
PSD Plot on 802.11n (BW 20MHz) Channel 06 – Chain A



Date: 11.NOV.2011 23:20:21

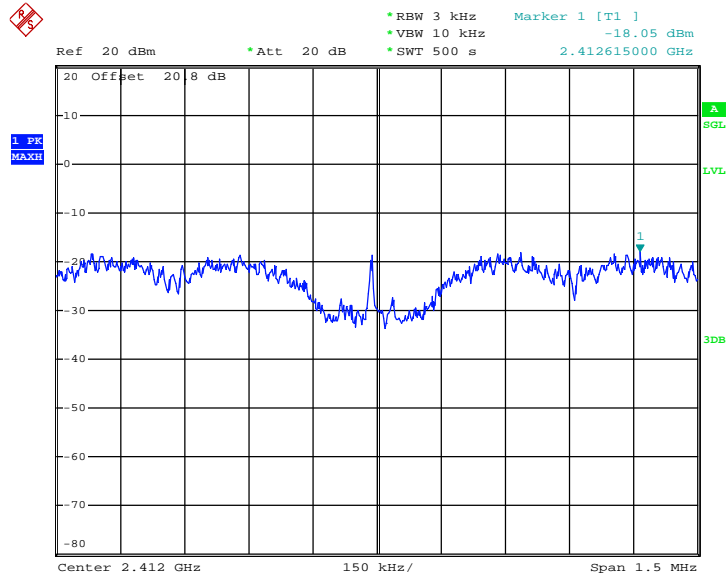


PSD Plot on 802.11n (BW 20MHz) Channel 11 – Chain A



Date: 11.NOV.2011 23:33:56

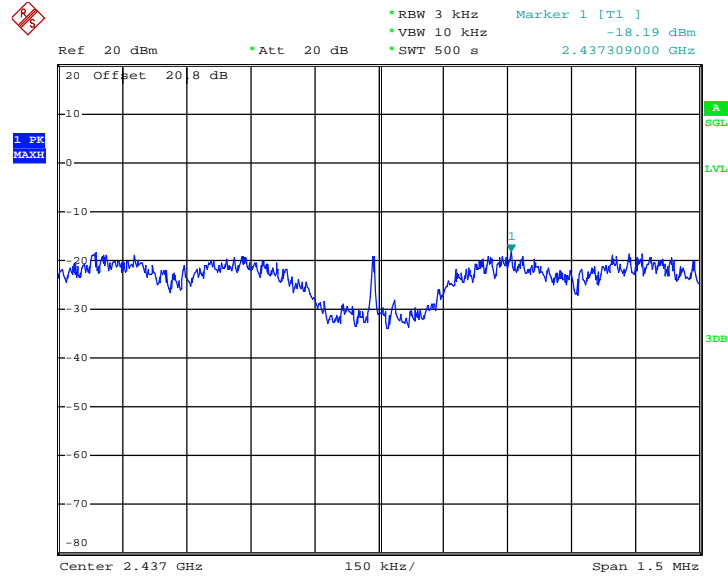
PSD Plot on 802.11n (BW 20MHz) Channel 01 – Chain B



Date: 14.NOV.2011 13:48:36

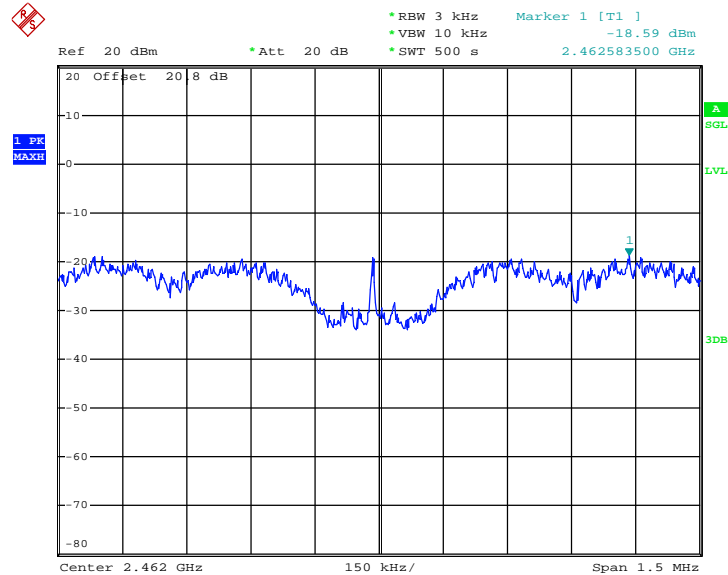


PSD Plot on 802.11n (BW 20MHz) Channel 06 – Chain B



Date: 14.NOV.2011 14:03:10

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

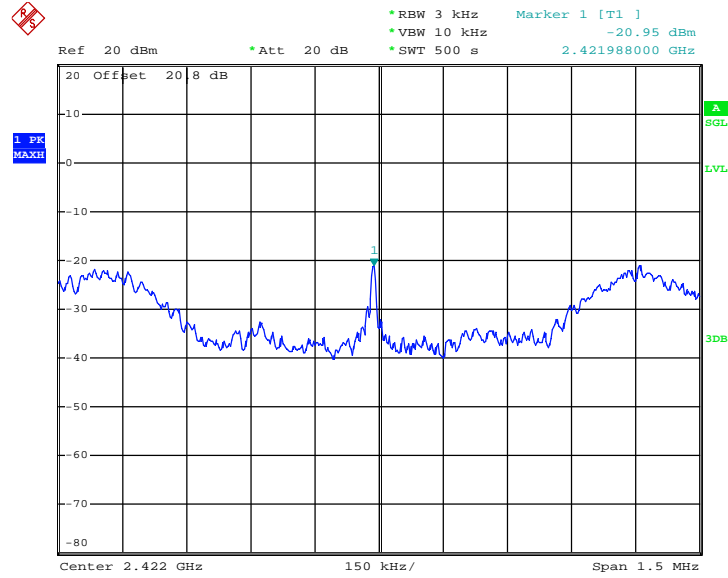


Date: 14.NOV.2011 14:16:10



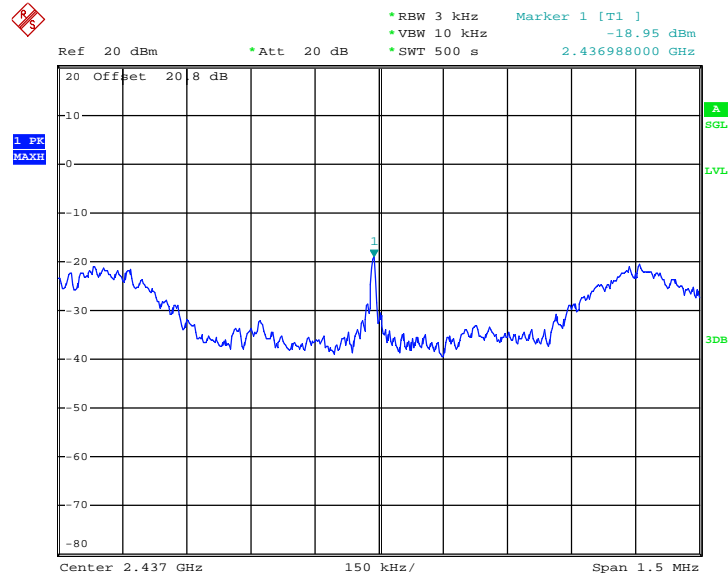


PSD Plot on 802.11n (BW 40MHz) Channel 03 – Chain A



Date: 12.NOV.2011 00:51:56

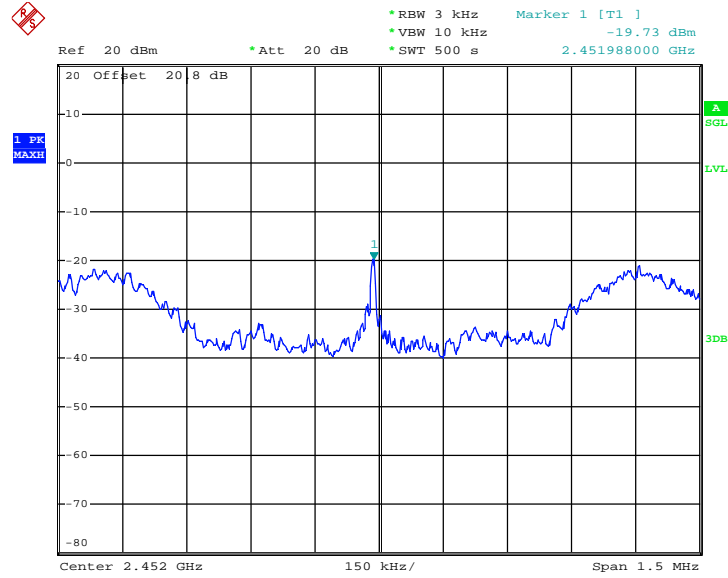
PSD Plot on 802.11n (BW 40MHz) Channel 06 – Chain A



Date: 12.NOV.2011 01:04:15

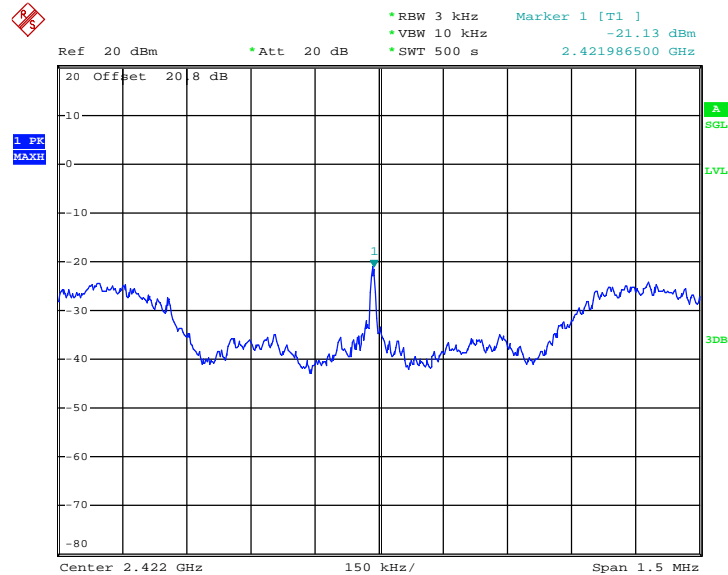


PSD Plot on 802.11n (BW 40MHz) Channel 09 – Chain A



Date: 12.NOV.2011 01:17:53

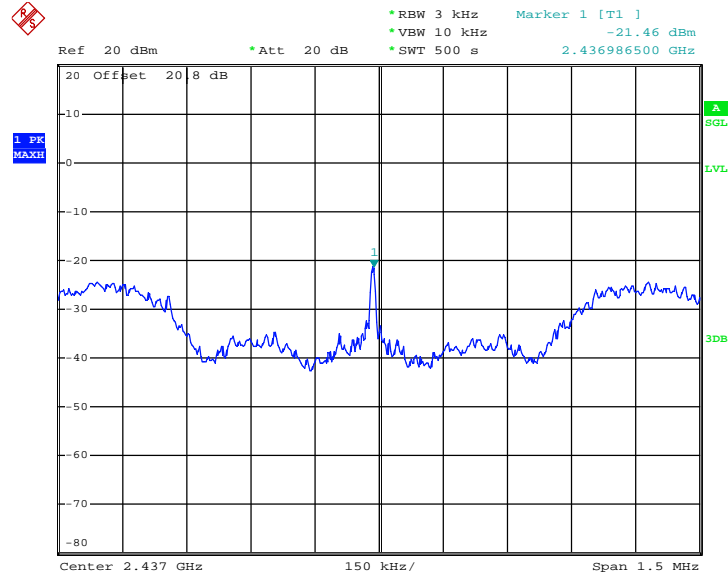
PSD Plot on 802.11n (BW 40MHz) Channel 03 – Chain B



Date: 14.NOV.2011 14:44:03

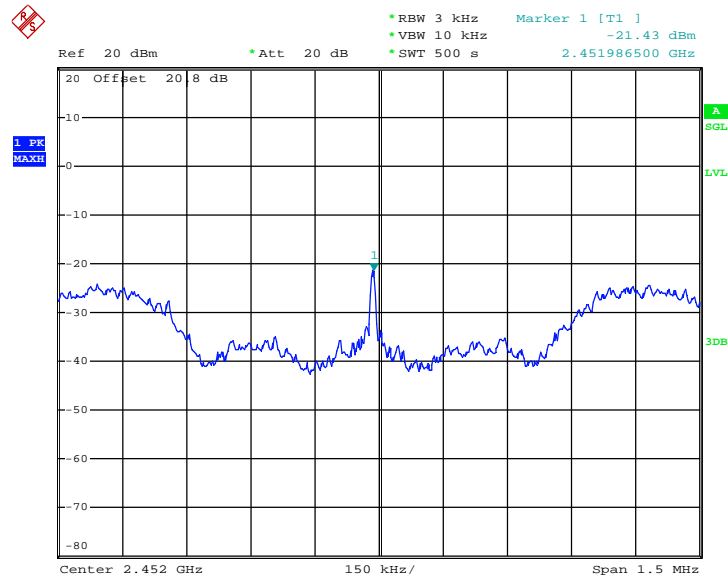


PSD Plot on 802.11n (BW 40MHz) Channel 06 – Chain B



Date: 14.NOV.2011 14:58:43

PSD Plot on 802.11n (BW 40MHz) Channel 09 – Chain B



Date: 14.NOV.2011 15:11:43

### 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.

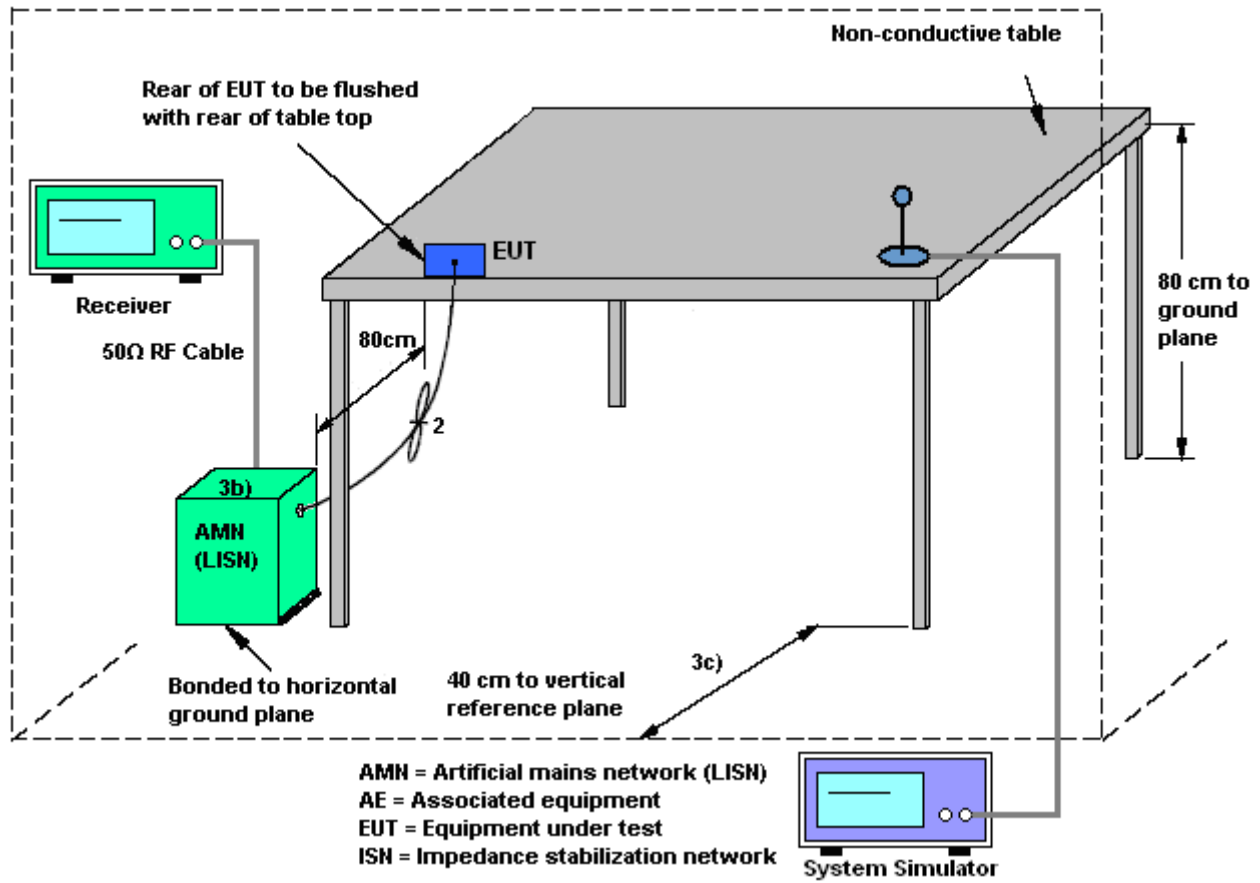
#### 3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.6.3 Test Procedures

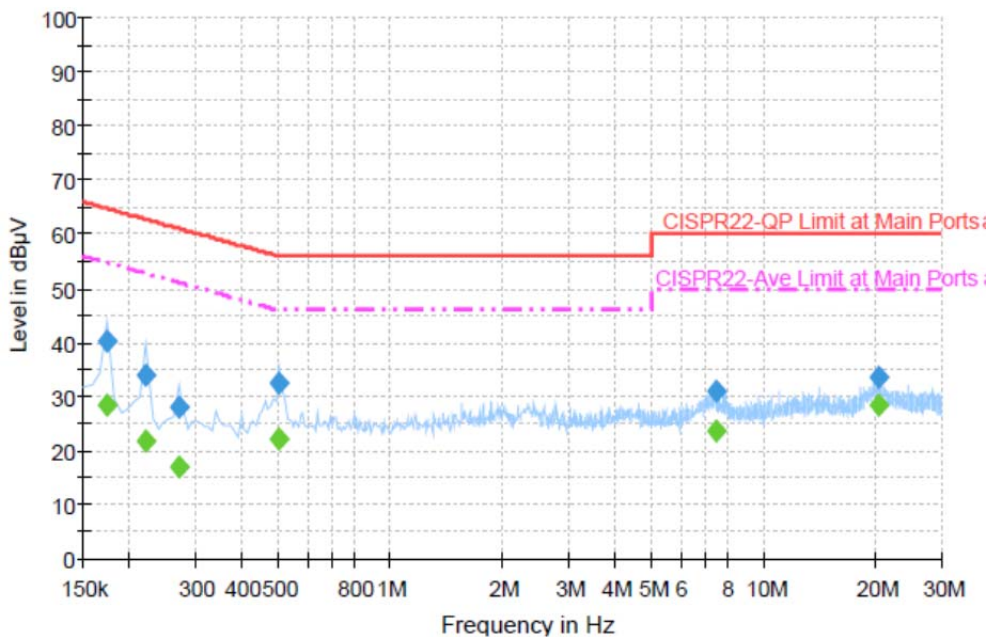
4. The testing follows the guidelines in ANSI C63.4-2003.
5. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
6. Connect EUT to the power mains through a line impedance stabilization network (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 (GPRS 8) Idle + WLAN Link + WAN Link + LAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



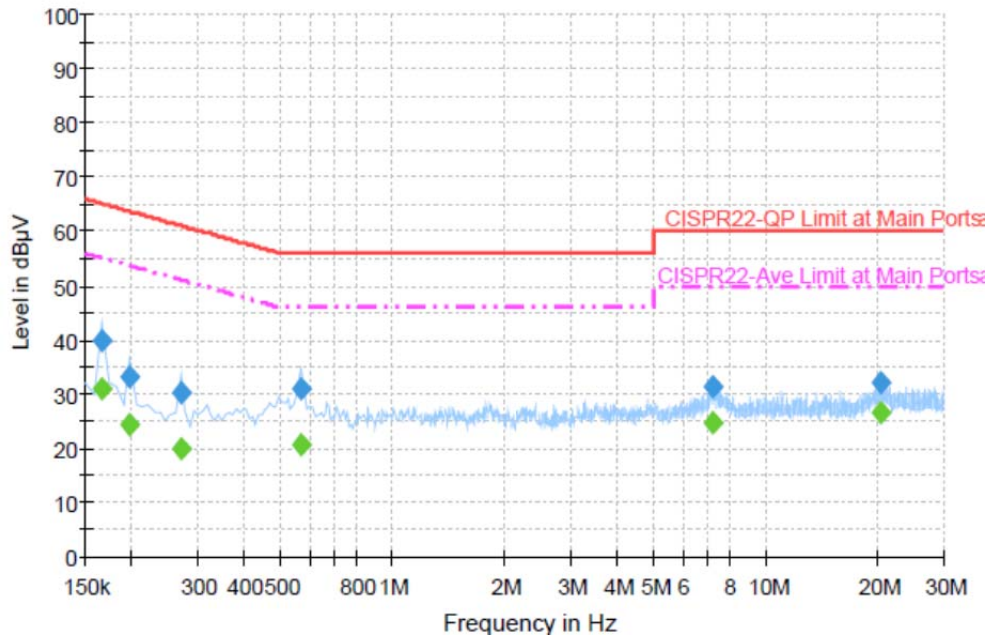
#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	40.2	Off	L1	19.3	24.6	64.8
0.222000	34.1	Off	L1	19.3	28.6	62.7
0.270000	28.0	Off	L1	19.3	33.1	61.1
0.502000	32.6	Off	L1	19.3	23.4	56.0
7.438000	31.0	Off	L1	19.5	29.0	60.0
20.422000	33.6	Off	L1	19.8	26.4	60.0

#### Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	28.5	Off	L1	19.3	26.3	54.8
0.222000	21.9	Off	L1	19.3	30.8	52.7
0.270000	17.1	Off	L1	19.3	34.0	51.1
0.502000	22.1	Off	L1	19.3	23.9	46.0
7.438000	23.5	Off	L1	19.5	26.5	50.0
20.422000	28.6	Off	L1	19.8	21.4	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 (GPRS 8) Idle + WLAN Link + WAN Link + LAN 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)
0.166000	39.7	Off	N	19.3	25.5	65.2
0.198000	33.2	Off	N	19.3	30.5	63.7
0.270000	30.1	Off	N	19.3	31.0	61.1
0.566000	31.1	Off	N	19.3	24.9	56.0
7.182000	31.4	Off	N	19.5	28.6	60.0
20.254000	32.3	Off	N	19.9	27.7	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	31.0	Off	N	19.3	24.2	55.2
0.198000	24.5	Off	N	19.3	29.2	53.7
0.270000	20.1	Off	N	19.3	31.0	51.1
0.566000	20.6	Off	N	19.3	25.4	46.0
7.182000	24.9	Off	N	19.5	25.1	50.0
20.254000	26.5	Off	N	19.9	23.5	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.

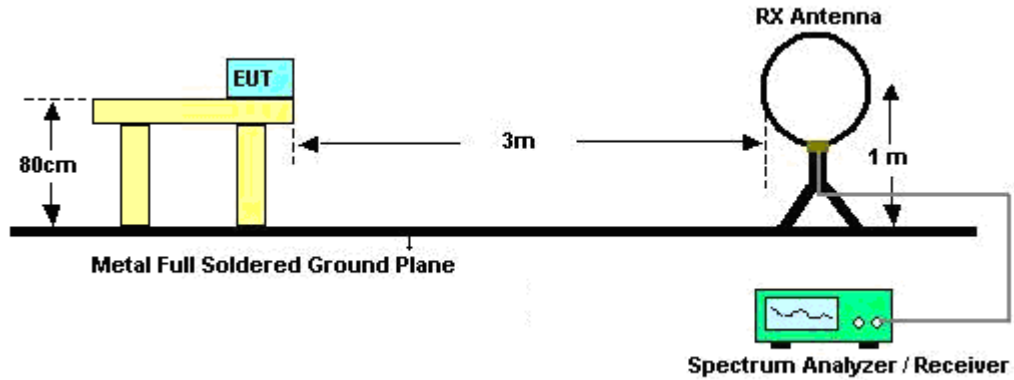
#### 3.7.3 Test Procedures

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.

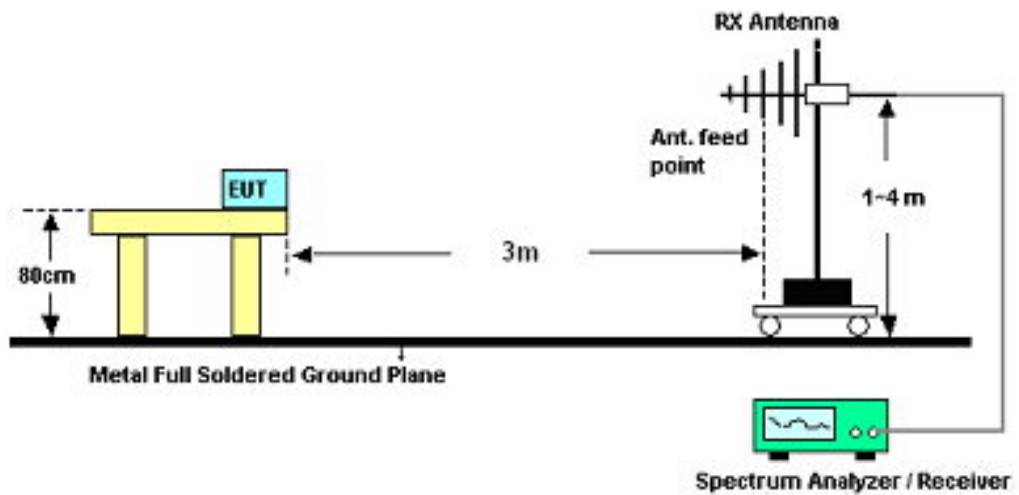


### 3.7.4 Test Setup

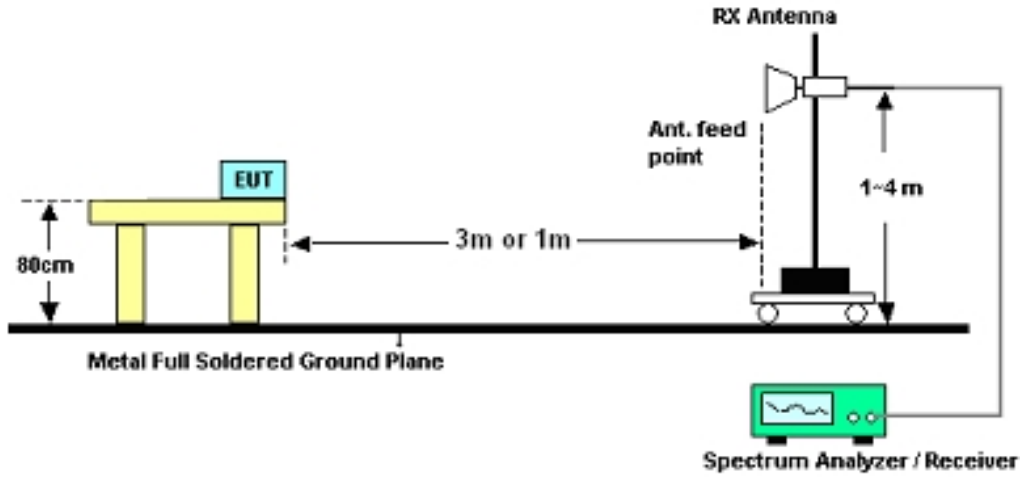
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

Test Engineer :	Eric Shih	Temperature :	23~25°C	
		Relative Humidity :	51~53%	
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 :	23~25°C
Test Channel :	01	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	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
127.74	29.38	-14.12	43.5	47.9	11.8	1.38	31.7	-	-	Peak
211.98	24.14	-19.36	43.5	45.12	8.94	1.71	31.63	-	-	Peak
256.26	36.07	-9.93	46	52.71	13.18	1.87	31.69	-	-	Peak
383.3	39.19	-6.81	46	53.51	15.09	2.35	31.76	117	98	Peak
511.4	35.8	-10.2	46	47.19	17.7	2.71	31.8	-	-	Peak
895.7	35.72	-10.28	46	42.9	20.7	3.74	31.62	-	-	Peak
2386.38	54	-20	74	51.09	31.9	5.4	34.39	103	40	Peak
2386.38	44.4	-9.6	54	41.49	31.9	5.4	34.39	103	40	Average
2412	106.41	-	-	103.46	31.91	5.43	34.39	103	40	Peak
2412	102.57	-	-	99.62	31.91	5.43	34.39	103	40	Average
2486	51.09	-22.91	74	47.96	31.98	5.52	34.37	103	40	Peak
2486	41.81	-12.19	54	38.68	31.98	5.52	34.37	103	40	Average
4824	50.16	-23.84	74	63.65	34.4	7.96	55.85	102	65	Peak



Test Mode :	Mode 1	Temperature :	23~25°C
Test Channel :	01	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	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
57.81	35.62	-4.38	40	59.82	6.54	0.94	31.68	123	74	Peak
127.74	36.82	-6.68	43.5	55.34	11.8	1.38	31.7	-	-	Peak
256.26	30.75	-15.25	46	47.39	13.18	1.87	31.69	-	-	Peak
383.3	37.8	-8.2	46	52.12	15.09	2.35	31.76	-	-	Peak
640.2	39.4	-6.6	46	49.18	19.2	3.02	32	-	-	Peak
769	36.94	-9.06	46	45.75	19.9	3.35	32.06	-	-	Peak
2330.33	40.81	-13.19	54	38.08	31.83	5.31	34.41	107	146	Average
2330.33	50.85	-23.15	74	48.12	31.83	5.31	34.41	107	146	Peak
2412	97.89	-	-	94.94	31.91	5.43	34.39	107	146	Average
2412	102.11	-	-	99.16	31.91	5.43	34.39	107	146	Peak
2492	49.16	-24.84	74	46.01	32	5.52	34.37	107	146	Peak
2492	37.31	-16.69	54	34.16	32	5.52	34.37	107	146	Average
4824	47.37	-26.63	74	60.86	34.4	7.96	55.85	109	87	Peak



Test Mode :	Mode 2	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	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
127.74	29.46	-14.04	43.5	47.98	11.8	1.38	31.7	-	-	Peak
250.05	27.11	-18.89	46	44.51	12.4	1.85	31.65	-	-	Peak
256.26	34.8	-11.2	46	51.44	13.18	1.87	31.69	-	-	Peak
383.3	39.99	-6.01	46	54.31	15.09	2.35	31.76	114	32	Peak
511.4	34.9	-11.1	46	46.29	17.7	2.71	31.8	-	-	Peak
895.7	34.65	-11.35	46	41.83	20.7	3.74	31.62	-	-	Peak
2358	54.05	-19.95	74	51.22	31.86	5.37	34.4	102	36	Peak
2358	45.12	-8.88	54	42.29	31.86	5.37	34.4	102	36	Average
2437	107.55	-	-	104.52	31.95	5.46	34.38	102	36	Peak
2437	103.29	-	-	100.26	31.95	5.46	34.38	102	36	Average
2484	49.35	-24.65	74	46.22	31.98	5.52	34.37	102	36	Peak
2484	37.81	-16.19	54	34.68	31.98	5.52	34.37	102	36	Average
4874	46.68	-27.32	74	60.18	34.37	8	55.87	123	89	Peak



Test Mode :	Mode 2	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	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
57.81	36.86	-3.14	40	61.06	6.54	0.94	31.68	-	-	Peak
127.74	37.14	-6.36	43.5	55.66	11.8	1.38	31.7	-	-	Peak
256.26	30.75	-15.25	46	47.39	13.18	1.87	31.69	-	-	Peak
383.3	37.78	-8.22	46	52.1	15.09	2.35	31.76	-	-	Peak
640.2	42.88	-3.12	46	52.66	19.2	3.02	32	125	41	Peak
766.9	37.29	-8.71	46	46.1	19.9	3.35	32.06	-	-	Peak
2358	49.82	-24.18	74	46.99	31.86	5.37	34.4	104	151	Peak
2358	39.82	-14.18	54	36.99	31.86	5.37	34.4	104	151	Average
2437	103.9	-	-	100.89	31.93	5.46	34.38	104	151	Peak
2437	100.07	-	-	97.04	31.95	5.46	34.38	104	151	Average
2492	48.18	-25.82	74	45.03	32	5.52	34.37	104	151	Peak
2492	36.32	-17.68	54	33.17	32	5.52	34.37	104	151	Average



Test Mode :	Mode 3	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	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
127.74	29.37	-14.13	43.5	47.89	11.8	1.38	31.7	-	-	Peak
250.05	26.52	-19.48	46	43.92	12.4	1.85	31.65	-	-	Peak
256.26	31.4	-14.6	46	48.04	13.18	1.87	31.69	-	-	Peak
383.3	39.67	-6.33	46	53.99	15.09	2.35	31.76	118	69	Peak
511.4	37.19	-8.81	46	48.58	17.7	2.71	31.8	-	-	Peak
895.7	35	-11	46	42.18	20.7	3.74	31.62	-	-	Peak
2380	52.28	-21.72	74	49.39	31.88	5.4	34.39	100	34	Peak
2380	44.07	-9.93	54	41.18	31.88	5.4	34.39	100	34	Average
2462	105.68	-	-	102.6	31.97	5.49	34.38	100	34	Peak
2462	101.54	-	-	98.46	31.97	5.49	34.38	100	34	Average
2485.18	51.11	-22.89	74	47.98	31.98	5.52	34.37	100	34	Peak
2485.18	40.29	-13.71	54	37.16	31.98	5.52	34.37	100	34	Average
4924	47	-27	74	60.52	34.34	8.04	55.9	103	78	Peak



Test Mode :	Mode 3	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level (dBuV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
59.7	35.21	-4.79	40	59.64	6.3	0.96	31.69	116	51	Peak
127.74	37.74	-5.76	43.5	56.26	11.8	1.38	31.7	-	-	Peak
256.26	32.48	-13.52	46	49.12	13.18	1.87	31.69	-	-	Peak
383.3	38.44	-7.56	46	52.76	15.09	2.35	31.76	-	-	Peak
640.2	41.05	-4.95	46	50.83	19.2	3.02	32	-	-	Peak
766.9	39.73	-6.27	46	48.54	19.9	3.35	32.06	-	-	Peak
2382	49.59	-24.41	74	46.7	31.88	5.4	34.39	101	146	Peak
2382	39.95	-14.05	54	37.06	31.88	5.4	34.39	101	146	Average
2462	101.59	-	-	98.51	31.97	5.49	34.38	101	146	Peak
2462	97.46	-	-	94.38	31.97	5.49	34.38	101	146	Average
2484.61	49.4	-24.6	74	46.27	31.98	5.52	34.37	101	146	Peak
2484.61	37.74	-16.26	54	34.61	31.98	5.52	34.37	101	146	Average
4824	46.24	-27.76	74	59.76	34.34	8.04	55.9	119	187	Peak





<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
42.69	25.84	-14.16	40	45.77	10.96	0.81	31.7	-	-	Peak
127.74	29.61	-13.89	43.5	48.13	11.8	1.38	31.7	-	-	Peak
256.26	34.16	-11.84	46	50.8	13.18	1.87	31.69	-	-	Peak
383.3	39.27	-6.73	46	53.59	15.09	2.35	31.76	154	87	Peak
511.4	35.86	-10.14	46	47.25	17.7	2.71	31.8	-	-	Peak
895.7	34.78	-11.22	46	41.96	20.7	3.74	31.62	-	-	Peak
2359.4	43	-11	54	40.17	31.86	5.37	34.4	103	34	Average
2359.4	54.2	-19.8	74	51.37	31.86	5.37	34.4	103	34	Peak
2412	92.75	-	-	89.8	31.91	5.43	34.39	103	34	Average
2412	104.04	-	-	101.09	31.91	5.43	34.39	103	34	Peak
2486	49.47	-24.53	74	46.34	31.98	5.52	34.37	103	34	Peak
2486	36.89	-17.11	54	33.76	31.98	5.52	34.37	103	34	Average



<b>Test Mode :</b>	Mode 4	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
58.89	35.09	-4.91	40	59.41	6.42	0.95	31.69	124	36	Peak
127.74	37.04	-6.46	43.5	55.56	11.8	1.38	31.7	-	-	Peak
256.26	32.48	-13.52	46	49.12	13.18	1.87	31.69	-	-	Peak
383.3	37.78	-8.22	46	52.1	15.09	2.35	31.76	-	-	Peak
640.2	40.28	-5.72	46	50.06	19.2	3.02	32	-	-	Peak
766.9	39.14	-6.86	46	47.95	19.9	3.35	32.06	-	-	Peak
2379.73	36.25	-17.75	54	33.4	31.88	5.37	34.4	100	23	Average
2379.73	48.32	-25.68	74	45.47	31.88	5.37	34.4	100	23	Peak
2412	86.94	-	-	83.99	31.91	5.43	34.39	100	23	Average
2412	98.72	-	-	95.77	31.91	5.43	34.39	100	23	Peak
2500	45.44	-28.56	74	42.29	32	5.52	34.37	100	23	Peak
2500	33.08	-20.92	54	29.93	32	5.52	34.37	100	23	Average



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
42.69	24.79	-15.21	40	44.72	10.96	0.81	31.7	-	-	Peak
127.74	29.63	-13.87	43.5	48.15	11.8	1.38	31.7	-	-	Peak
256.26	34.15	-11.85	46	50.79	13.18	1.87	31.69	-	-	Peak
383.3	39.52	-6.48	46	53.84	15.09	2.35	31.76	131	54	Peak
511.4	34.47	-11.53	46	45.86	17.7	2.71	31.8	-	-	Peak
895.7	34.62	-11.38	46	41.8	20.7	3.74	31.62	-	-	Peak
2382	50.95	-23.05	74	48.06	31.88	5.4	34.39	100	36	Peak
2382	40.57	-13.43	54	37.68	31.88	5.4	34.39	100	36	Average
2437	104.69	-	-	101.68	31.93	5.46	34.38	100	36	Peak
2437	92.74	-	-	89.71	31.95	5.46	34.38	100	36	Average
2492	52.11	-21.89	74	48.96	32	5.52	34.37	100	36	Peak
2492	40.48	-13.52	54	37.33	32	5.52	34.37	100	36	Average



<b>Test Mode :</b>	Mode 5	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
57.81	34.92	-5.08	40	59.12	6.54	0.94	31.68	-	-	Peak
127.74	37.1	-6.4	43.5	55.62	11.8	1.38	31.7	-	-	Peak
256.26	30.9	-15.1	46	47.54	13.18	1.87	31.69	-	-	Peak
383.3	38.46	-7.54	46	52.78	15.09	2.35	31.76	-	-	Peak
640.2	41.59	-4.41	46	51.37	19.2	3.02	32	135	96	Peak
766.9	38.76	-7.24	46	47.57	19.9	3.35	32.06	-	-	Peak
2382	49.54	-24.46	74	46.65	31.88	5.4	34.39	102	153	Peak
2382	38.96	-15.04	54	36.07	31.88	5.4	34.39	102	153	Average
2437	100.69	-	-	97.68	31.93	5.46	34.38	102	153	Peak
2437	89.2	-	-	86.17	31.95	5.46	34.38	102	153	Average
2492	48.49	-25.51	74	45.34	32	5.52	34.37	102	153	Peak
2492	37.6	-16.4	54	34.45	32	5.52	34.37	102	153	Average



<b>Test Mode :</b>	Mode 6	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
43.5	25.5	-14.5	40	46.01	10.38	0.81	31.7	-	-	Peak
127.74	29.9	-13.6	43.5	48.42	11.8	1.38	31.7	-	-	Peak
256.26	35.78	-10.22	46	52.42	13.18	1.87	31.69	-	-	Peak
383.3	39.39	-6.61	46	53.71	15.09	2.35	31.76	118	21	Peak
511.4	36.91	-9.09	46	48.3	17.7	2.71	31.8	-	-	Peak
895.7	34.51	-11.49	46	41.69	20.7	3.74	31.62	-	-	Peak
2388	51.86	-22.14	74	48.95	31.9	5.4	34.39	100	33	Peak
2388	39.89	-14.11	54	36.98	31.9	5.4	34.39	100	33	Average
2462	102.77	-	-	99.69	31.97	5.49	34.38	100	33	Peak
2462	91.86	-	-	88.78	31.97	5.49	34.38	100	33	Average
2483.5	55.12	-18.88	74	51.99	31.98	5.52	34.37	100	33	Peak
2483.5	37.49	-16.51	54	34.36	31.98	5.52	34.37	100	33	Average



Test Mode :	Mode 6	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
59.7	35.12	-4.88	40	59.55	6.3	0.96	31.69	129	65	Peak
127.74	37.14	-6.36	43.5	55.66	11.8	1.38	31.7	-	-	Peak
256.26	30.86	-15.14	46	47.5	13.18	1.87	31.69	-	-	Peak
383.3	37.8	-8.2	46	52.12	15.09	2.35	31.76	-	-	Peak
640.2	40.81	-5.19	46	50.59	19.2	3.02	32	-	-	Peak
766.9	39.04	-6.96	46	47.85	19.9	3.35	32.06	-	-	Peak
2382	49.69	-24.31	74	46.8	31.88	5.4	34.39	104	166	Peak
2382	37.54	-16.46	54	34.65	31.88	5.4	34.39	104	166	Average
2462	99.24	-	-	96.16	31.97	5.49	34.38	104	166	Peak
2462	87.1	-	-	84.02	31.97	5.49	34.38	104	166	Average
2486.13	51	-23	74	47.87	31.98	5.52	34.37	104	166	Peak
2486.13	35.31	-18.69	54	32.18	31.98	5.52	34.37	104	166	Average



<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
2389.99	41.12	-12.88	54	38.21	31.9	5.4	34.39	101	40	Average
2389.99	66.45	-7.55	74	63.54	31.9	5.4	34.39	101	40	Peak
2412	90.75	-	-	87.8	31.91	5.43	34.39	101	40	Average
2412	103.61	-	-	100.66	31.91	5.43	34.39	101	40	Peak
2494	49.95	-24.05	74	46.8	32	5.52	34.37	101	40	Peak
2494	37.18	-16.82	54	34.03	32	5.52	34.37	101	40	Average

<b>Test Mode :</b>	Mode 7	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
2389.99	38.14	-15.86	54	35.23	31.9	5.4	34.39	102	161	Average
2389.99	64.24	-9.76	74	61.33	31.9	5.4	34.39	102	161	Peak
2412	87.46	-	-	84.51	31.91	5.43	34.39	102	161	Average
2412	100.89	-	-	97.94	31.91	5.43	34.39	102	161	Peak
2492	49.23	-24.77	74	46.08	32	5.52	34.37	102	161	Peak
2492	36.58	-17.42	54	33.43	32	5.52	34.37	102	161	Average



<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
2388	55.63	-18.37	74	52.72	31.9	5.4	34.39	101	36	Peak
2388	41.78	-12.22	54	38.87	31.9	5.4	34.39	101	36	Average
2437	103.37	-	-	100.34	31.95	5.46	34.38	101	36	Peak
2437	90.04	-	-	87.01	31.95	5.46	34.38	101	36	Average
2492	51.21	-22.79	74	48.06	32	5.52	34.37	101	36	Peak
2492	39.6	-14.4	54	36.45	32	5.52	34.37	101	36	Average

<b>Test Mode :</b>	Mode 8	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
2390	54.03	-19.97	74	51.12	31.9	5.4	34.39	101	156	Peak
2390	37.99	-16.01	54	35.08	31.9	5.4	34.39	101	156	Average
2437	100.9	-	-	97.87	31.95	5.46	34.38	101	156	Peak
2437	87.27	-	-	84.24	31.95	5.46	34.38	101	156	Average
2492	50.39	-23.61	74	47.24	32	5.52	34.37	101	156	Peak
2492	38.84	-15.16	54	35.69	32	5.52	34.37	101	156	Average





<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
2390	50.92	-23.08	74	48.01	31.9	5.4	34.39	100	34	Peak
2390	40.03	-13.97	54	37.12	31.9	5.4	34.39	100	34	Average
2462	103.58	-	-	100.5	31.97	5.49	34.38	100	34	Peak
2462	90.52	-	-	87.44	31.97	5.49	34.38	100	34	Average
2487.46	57.65	-16.35	74	54.52	31.98	5.52	34.37	100	34	Peak
2487.46	38.71	-15.29	54	35.58	31.98	5.52	34.37	100	34	Average

<b>Test Mode :</b>	Mode 9	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
2388	49.17	-24.83	74	46.26	31.9	5.4	34.39	102	155	Peak
2388	36.6	-17.4	54	33.69	31.9	5.4	34.39	102	155	Average
2462	100.22	-	-	97.14	31.97	5.49	34.38	102	155	Peak
2462	87.2	-	-	84.12	31.97	5.49	34.38	102	155	Average
2488.41	56.28	-17.72	74	53.13	32	5.52	34.37	102	155	Peak
2488.41	35.94	-18.06	54	32.79	32	5.52	34.37	102	155	Average



<b>Test Mode :</b>	Mode 10	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2422 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
127.74	28.59	-14.91	43.5	47.11	11.8	1.38	31.7	-	-	Peak
250.05	26.03	-19.97	46	43.43	12.4	1.85	31.65	-	-	Peak
256.26	35.21	-10.79	46	51.85	13.18	1.87	31.69	-	-	Peak
383.3	39.35	-6.65	46	53.67	15.09	2.35	31.76	118	34	Peak
511.4	36.46	-9.54	46	47.85	17.7	2.71	31.8	-	-	Peak
895.7	34.91	-11.09	46	42.09	20.7	3.74	31.62	-	-	Peak
2389.99	42.92	-11.08	54	40.01	31.9	5.4	34.39	104	39	Average
2389.99	66.72	-7.28	74	63.81	31.9	5.4	34.39	104	39	Peak
2422	79.9	-	-	76.93	31.93	5.43	34.39	104	39	Average
2422	101.28	-	-	98.33	31.91	5.43	34.39	104	39	Peak
2484	53.9	-20.1	74	50.77	31.98	5.52	34.37	104	39	Peak
2484	35.28	-18.72	54	32.15	31.98	5.52	34.37	104	39	Average



Test Mode :	Mode 10	Temperature :	23~25°C
Test Channel :	03	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	2422 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
58.89	35.33	-4.67	40	59.65	6.42	0.95	31.69	141	78	Peak
127.74	37.52	-5.98	43.5	56.04	11.8	1.38	31.7	-	-	Peak
256.26	28.28	-17.72	46	44.92	13.18	1.87	31.69	-	-	Peak
383.3	38.35	-7.65	46	52.67	15.09	2.35	31.76	-	-	Peak
640.2	40.93	-5.07	46	50.71	19.2	3.02	32	-	-	Peak
766.9	37.31	-8.69	46	46.12	19.9	3.35	32.06	-	-	Peak
2389.99	39.3	-14.7	54	36.39	31.9	5.4	34.39	102	150	Average
2389.99	62.05	-11.95	74	59.14	31.9	5.4	34.39	102	150	Peak
2422	77.08	-	-	74.11	31.93	5.43	34.39	102	150	Average
2422	98.89	-	-	95.88	31.93	5.46	34.38	102	150	Peak
2484	54.9	-19.1	74	51.77	31.98	5.52	34.37	102	150	Peak
2484	35.22	-18.78	54	32.09	31.98	5.52	34.37	102	150	Average



Test Mode :	Mode 11	Temperature :	23~25°C
Test Channel :	06	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	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
127.74	28.54	-14.96	43.5	47.06	11.8	1.38	31.7	-	-	Peak
250.05	26.34	-19.66	46	43.74	12.4	1.85	31.65	-	-	Peak
256.26	36.79	-9.21	46	53.43	13.18	1.87	31.69	-	-	Peak
383.3	39.72	-6.28	46	54.04	15.09	2.35	31.76	162	54	Peak
511.4	34.78	-11.22	46	46.17	17.7	2.71	31.8	-	-	Peak
895.7	34.89	-11.11	46	42.07	20.7	3.74	31.62	-	-	Peak
2390	56.7	-17.3	74	53.79	31.9	5.4	34.39	100	35	Peak
2390	39.94	-14.06	54	37.03	31.9	5.4	34.39	100	35	Average
2437	102.28	-	-	99.27	31.93	5.46	34.38	100	35	Peak
2437	80.09	-	-	77.06	31.95	5.46	34.38	100	35	Average
2484	57.02	-16.98	74	53.89	31.98	5.52	34.37	100	35	Peak
2484	36.02	-17.98	54	32.89	31.98	5.52	34.37	100	35	Average



<b>Test Mode :</b>	Mode 11	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
58.62	34.42	-5.58	40	58.73	6.42	0.95	31.68	-	-	Peak
127.74	36.59	-6.91	43.5	55.11	11.8	1.38	31.7	-	-	Peak
256.26	32.79	-13.21	46	49.43	13.18	1.87	31.69	-	-	Peak
383.3	37.88	-8.12	46	52.2	15.09	2.35	31.76	-	-	Peak
640.2	40.7	-5.3	46	50.48	19.2	3.02	32	126	59	Peak
769	38.16	-7.84	46	46.97	19.9	3.35	32.06	-	-	Peak
2390	53.66	-20.34	74	50.75	31.9	5.4	34.39	102	149	Peak
2390	38.19	-15.81	54	35.28	31.9	5.4	34.39	102	149	Average
2437	98.16	-	-	95.15	31.93	5.46	34.38	102	149	Peak
2437	77.36	-	-	74.33	31.95	5.46	34.38	102	149	Average
2484	57.65	-16.35	74	54.52	31.98	5.52	34.37	102	149	Peak
2484	35.5	-18.5	54	32.37	31.98	5.52	34.37	102	149	Average



Test Mode :	Mode 12	Temperature :	23~25°C
Test Channel :	09	Relative Humidity :	51~53%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	2452 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
42.69	25.52	-14.48	40	45.45	10.96	0.81	31.7	-	-	Peak
127.74	29.87	-13.63	43.5	48.39	11.8	1.38	31.7	-	-	Peak
256.26	31.21	-14.79	46	47.85	13.18	1.87	31.69	-	-	Peak
383.3	40.93	-5.07	46	55.25	15.09	2.35	31.76	138	43	Peak
511.4	36.93	-9.07	46	48.32	17.7	2.71	31.8	-	-	Peak
769	33.29	-12.71	46	42.1	19.9	3.35	32.06	-	-	Peak
2390	53.24	-20.76	74	50.33	31.9	5.4	34.39	103	37	Peak
2390	41.19	-12.81	54	38.28	31.9	5.4	34.39	103	37	Average
2452	101.16	-	-	98.13	31.95	5.46	34.38	103	37	Peak
2452	79.46	-	-	76.43	31.95	5.46	34.38	103	37	Average
2484.42	67.84	-6.16	74	64.71	31.98	5.52	34.37	103	37	Peak
2484.42	41	-13	54	37.87	31.98	5.52	34.37	103	37	Average



<b>Test Mode :</b>	Mode 12	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2452 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
58.89	36.8	-3.2	40	61.12	6.42	0.95	31.69	152	74	Peak
127.74	36.67	-6.83	43.5	55.19	11.8	1.38	31.7	-	-	Peak
256.26	30.41	-15.59	46	47.05	13.18	1.87	31.69	-	-	Peak
383.3	38	-8	46	52.32	15.09	2.35	31.76	-	-	Peak
640.2	40.79	-5.21	46	50.57	19.2	3.02	32	-	-	Peak
769	38.59	-7.41	46	47.4	19.9	3.35	32.06	-	-	Peak
2390	50.63	-23.37	74	47.72	31.9	5.4	34.39	102	155	Peak
2390	36.49	-17.51	54	33.58	31.9	5.4	34.39	102	155	Average
2452	98.35	-	-	95.32	31.95	5.46	34.38	102	155	Peak
2452	76.9	-	-	73.87	31.95	5.46	34.38	102	155	Average
2484.61	65.19	-8.81	74	62.06	31.98	5.52	34.37	102	155	Peak
2484.61	39.26	-14.74	54	36.13	31.98	5.52	34.37	102	155	Average



<b>Test Mode :</b>	Mode 13	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
2358	59.4	-14.6	74	56.57	31.86	5.37	34.4	158	139	Peak
2358	50.52	-3.48	54	47.69	31.86	5.37	34.4	158	139	Average
2437	107.08	-	-	104.05	31.95	5.46	34.38	158	139	Peak
2437	99.97	-	-	96.94	31.95	5.46	34.38	158	139	Average
2484	49.44	-24.56	74	46.31	31.98	5.52	34.37	158	139	Peak
2484	37.11	-16.89	54	33.98	31.98	5.52	34.37	158	139	Average

<b>Test Mode :</b>	Mode 13	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<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
2358	52.28	-21.72	74	49.45	31.86	5.37	34.4	103	207	Peak
2358	43.99	-10.01	54	41.16	31.86	5.37	34.4	103	207	Average
2437	103.19	-	-	100.18	31.93	5.46	34.38	103	207	Peak
2437	99.36	-	-	96.33	31.95	5.46	34.38	103	207	Average
2500	48.66	-25.34	74	45.51	32	5.52	34.37	103	207	Peak
2500	37.81	-16.19	54	34.66	32	5.52	34.37	103	207	Average





<b>Test Mode :</b>	Mode 14	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2452 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2382	50.75	-23.25	74	47.86	31.88	5.4	34.39	101	36	Peak
2382	37.4	-16.6	54	34.51	31.88	5.4	34.39	101	36	Average
2452	98.45	-	-	95.42	31.95	5.46	34.38	101	36	Peak
2452	78.83	-	-	75.8	31.95	5.46	34.38	101	36	Average
2483.85	69.06	-4.94	74	65.93	31.98	5.52	34.37	101	36	Peak
2483.85	40.98	-13.02	54	37.85	31.98	5.52	34.37	101	36	Average

<b>Test Mode :</b>	Mode 14	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2452 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2382	49.02	-24.98	74	46.13	31.88	5.4	34.39	104	148	Peak
2382	34.85	-19.15	54	31.96	31.88	5.4	34.39	104	148	Average
2452	95.9	-	-	92.82	31.97	5.49	34.38	104	148	Peak
2452	76.36	-	-	73.33	31.95	5.46	34.38	104	148	Average
2483.85	65.5	-8.5	74	62.37	31.98	5.52	34.37	104	148	Peak
2483.85	38.7	-15.3	54	35.57	31.98	5.52	34.37	104	148	Average



<b>Test Mode :</b>	Mode 15	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	2452 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2388	58.07	-15.93	74	55.16	31.9	5.4	34.39	122	128	Peak
2388	42.5	-11.5	54	39.59	31.9	5.4	34.39	122	128	Average
2452	101.19	-	-	98.18	31.93	5.46	34.38	122	128	Peak
2452	81.12	-	-	78.09	31.95	5.46	34.38	122	128	Average
2483.85	68.12	-5.88	74	64.99	31.98	5.52	34.37	122	128	Peak
2483.85	42.23	-11.77	54	39.1	31.98	5.52	34.37	122	128	Average

<b>Test Mode :</b>	Mode 15	<b>Temperature :</b>	23~25°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	51~53%
<b>Test Engineer :</b>	Eric Shih	<b>Polarization :</b>	Vertical
<b>Remark :</b>	2452 MHz is Fundamental Signals which can be ignored.		

Frequency ( MHz )	Level ( dBuV/m )	Over Limit ( dB )	Limit Line ( dBuV/m )	Read Level ( dBuV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2390	52.84	-21.16	74	49.93	31.9	5.4	34.39	103	206	Peak
2390	39.8	-14.2	54	36.89	31.9	5.4	34.39	103	206	Average
2452	98.9	-	-	95.87	31.95	5.46	34.38	103	206	Peak
2452	78.42	-	-	75.39	31.95	5.46	34.38	103	206	Average
2484.42	64.44	-9.56	74	61.31	31.98	5.52	34.37	103	206	Peak
2484.42	39.47	-14.53	54	36.34	31.98	5.52	34.37	103	206	Average



## **3.8 Antenna Requirements**

### **3.8.1 Standard Applicable**

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

### **3.8.2 Antenna Connected Construction**

The antennas type used in this product is PCB Antenna without connector and it is considered to meet antenna requirement.

### **3.8.3 Antenna Gain**

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



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 13, 2011	Nov. 11, 2011 ~ Nov. 14, 2011	Jun. 12, 2012	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 18, 2011	Nov. 11, 2011 ~ Nov. 14, 2011	Sep. 17, 2012	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 18, 2011	Nov. 11, 2011 ~ Nov. 14, 2011	Sep. 17, 2012	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Feb. 18, 2011	Nov. 11, 2011 ~ Nov. 14, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	N/A	Feb. 18, 2011	Nov. 11, 2011 ~ Nov. 14, 2011	Feb. 17, 2012	Conducted (TH02-HY)
Bluetooth Base Station	R&S	CBT32	100519	N/A	Jun. 01, 2011	Nov. 11, 2011 ~ Nov. 14, 2011	May 31, 2012	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCI 7	100724	9kHz~7GHz	Aug. 22, 2011	Nov. 08, 2011	Aug. 21, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz - 30MHz	Dec. 03, 2010	Nov. 08, 2011	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz - 30MHz	Dec. 01, 2010	Nov. 08, 2011	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Nov. 08, 2011	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	114256	N/A	Feb. 15, 2011	Nov. 08, 2011	Feb. 14, 2012	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 27, 2011	Nov. 15, 2011 ~ Nov. 16, 2011	Oct. 26, 2012	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz-1000MHz	May 10, 2011	Nov. 15, 2011 ~ Nov. 16, 2011	May 09, 2012	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Oct. 22, 2011	Nov. 15, 2011 ~ Nov. 16, 2011	Oct. 21, 2012	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Aug. 01, 2011	Nov. 15, 2011 ~ Nov. 16, 2011	Jul. 31, 2012	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 21, 2011	Nov. 15, 2011 ~ Nov. 16, 2011	Oct. 20, 2012	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Apr. 14, 2011	Nov. 15, 2011 ~ Nov. 16, 2011	Apr. 13, 2012	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 14, 2011	Nov. 15, 2011 ~ Nov. 16, 2011	Apr. 13, 2012	Radiation (03CH06-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 <math>U_c(y)</math></b>	<b>2.36</b>				
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>4.72</b>				



## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP1O2734 as below.