

FCC RF Test Report

APPLICANT : Honeywell International Inc.
EQUIPMENT : 99EX Mobile computer
BRAND NAME : Honeywell
MODEL NAME : 99EX
FCC ID : HD599EXLW
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

The product was received on Dec. 06, 2010 and completely tested on Jan. 15, 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:



Anderson Chiu / Deputy Manager



SPORTON INTERNATIONAL INC.

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

TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant	5
1.2 Manufacturer	5
1.3 Feature of Equipment Under Test	5
1.4 Testing Site	6
1.5 Applied Standards	6
1.6 Ancillary Equipment List	7
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	8
2.1 RF Power	8
2.2 Test Mode	10
2.3 Connection Diagram of Test System	11
2.4 RF Utility	11
3 TEST RESULT	12
3.1 6dB and 99% Bandwidth Measurement	12
3.2 Output Power Measurement	33
3.3 Band Edges Measurement	36
3.4 Spurious Emission Measurement	46
3.5 Power Spectral Density Measurement	62
3.6 AC Conducted Emission Measurement	73
3.7 Radiated Emission Measurement	77
3.8 Antenna Requirements	110
4 LIST OF MEASURING EQUIPMENT	111
5 UNCERTAINTY OF EVALUATION	112
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR0D0904-01B	Rev. 01	Initial issue of report	Feb. 23, 2011

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	Gen 4.4.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	$< 20\text{ dBc}$	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}$	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 15.8 dB at 0.414 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 9.03 dB at 2487.40 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Honeywell International Inc.

9680 Old Bailes Road, Fort Mill, SC 29707 USA

1.2 Manufacturer

Honeywell International Inc.

9680 Old Bailes Road, Fort Mill, SC 29707 USA

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	99EX Mobile computer
Brand Name	Honeywell
Model Name	99EX
FCC ID	HD599EXLW
Tx/Rx Frequency Range	802.11b/g/n : 2400 MHz ~ 2483.5 MHz 802.11a/n : 5725 MHz ~ 5850 MHz
Channel Spacing	802.11b/g : 5 MHz 802.11a : 20 MHz
Maximum Output Power to Antenna	<2400 MHz ~ 2483.5 MHz> 802.11b : 19.67 dBm (0.093 W) 802.11g : 24.06 dBm (0.255 W) 802.11n (BW 20MHz) : 24.10 dBm (0.257 W) <5725 MHz ~ 5850 MHz> 802.11a : 22.69 dBm (0.186 W) 802.11n (BW 20MHz) : 22.65 dBm (0.184 W)
Antenna Type	802.11b/g/n : PIFA Antenna with gain 2.5 dBi 802.11a/n : PIFA Antenna with gain 3.5 dBi
HW Version	5
SW Version	25.02
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit

Remark:

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

1.4 Testing Site

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

1.5 Applied Standards

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

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

Remark:

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

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
4.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
6.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
7.	Cradle	Honeywell	99EX-HB	N/A	N/A	N/A
8.	Adapter	ENG	3A-902DB12	N/A	N/A	N/A
9.	USB Cable	N/A	N/A	N/A	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Power

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

Channel	Frequency	802.11b RF Power (dBm)			
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
CH 01	2412 MHz	19.55	-	-	-
CH 06	2437 MHz	19.67	19.65	19.41	19.41
CH 11	2462 MHz	19.61	-	-	-

Channel	Frequency	802.11g RF Power (dBm)							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	21.65	-	-	-	-	-	-	-
CH 06	2437 MHz	24.06	24.04	24.01	23.99	23.54	23.54	22.62	22.75
CH 11	2462 MHz	22.52	-	-	-	-	-	-	-

Channel	Frequency	802.11n (BW 20MHz) RF Power (dBm)							
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 01	2412 MHz	21.18	-	-	-	-	-	-	-
CH 06	2437 MHz	24.10	23.92	23.94	23.52	23.20	23.38	22.77	21.59
CH 11	2462 MHz	21.59	-	-	-	-	-	-	-

Channel	Frequency	802.11a RF Power (dBm)							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH149	5745 MHz	22.69	22.62	22.48	22.30	22.10	21.98	21.51	21.68
CH157	5785 MHz	22.50	22.41	22.24	22.21	22.37	22.14	21.55	21.78
CH165	5825 MHz	22.39	22.31	22.23	22.08	22.10	22.03	21.54	21.24

Channel	Frequency	802.11n (BW 20MHz) RF Power (dBm)							
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH149	5745 MHz	22.65	22.60	22.33	22.17	22.04	22.00	21.39	20.70
CH157	5785 MHz	22.50	22.30	22.37	22.06	22.07	22.07	21.35	21.18
CH165	5825 MHz	22.32	22.14	22.00	21.72	22.09	21.93	21.47	21.17

Remark: The EUT is programmed to transmit signals continuously for all testing.

2.2 Test Mode

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

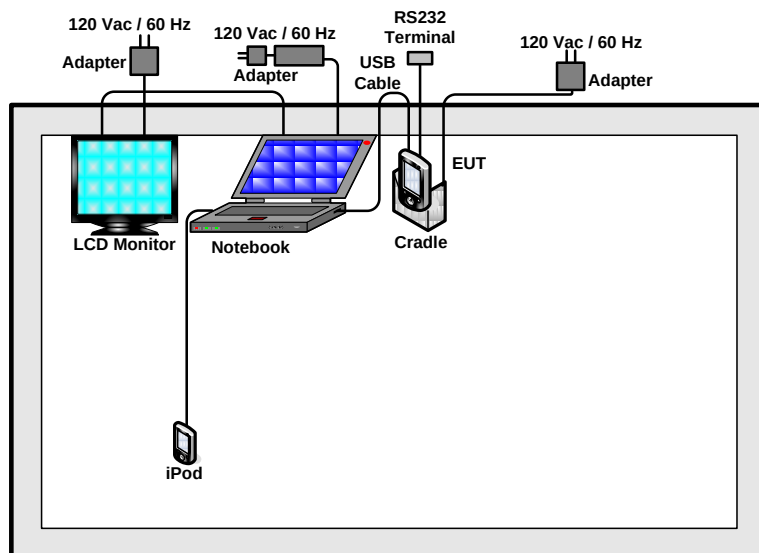
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

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

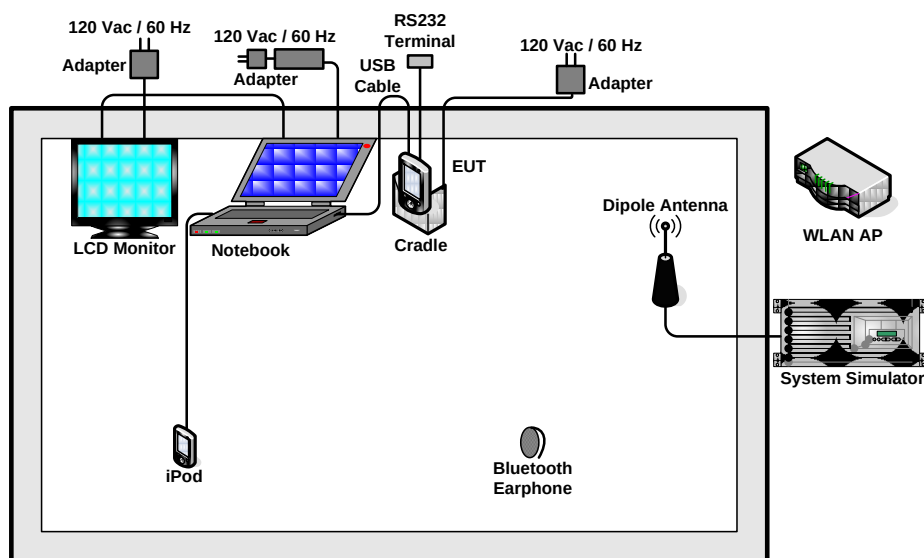
Test Cases		
Test Item	802.11b (Modulation : DSSS) 802.11g/n (Modulation : OFDM)	802.11a/n (Modulation : OFDM)
Conducted TCs	Mode 1: 802.11b_CH01_2412 MHz Mode 2: 802.11b_CH06_2437 MHz Mode 3: 802.11b_CH11_2462 MHz Mode 4: 802.11g_CH01_2412 MHz Mode 5: 802.11g_CH06_2437 MHz Mode 6: 802.11g_CH11_2462 MHz Mode 7: 802.11n_CH01_2412 MHz (BW 20M) Mode 8: 802.11n_CH06_2437 MHz (BW 20M) Mode 9: 802.11n_CH11_2462 MHz (BW 20M)	Mode 10: 802.11a_CH149_5745 MHz Mode 11: 802.11a_CH157_5785 MHz Mode 12: 802.11a_CH165_5825 MHz Mode 13: 802.11n_CH149_5745 MHz (BW 20M) Mode 14: 802.11n_CH157_5785 MHz (BW 20M) Mode 15: 802.11n_CH165_5825 MHz (BW 20M)
Radiated TCs	Mode 1: 802.11b_CH01_2412 MHz + TC Mode 2: 802.11b_CH06_2437 MHz + TC Mode 3: 802.11b_CH11_2462 MHz + TC Mode 4: 802.11g_CH01_2412 MHz + TC Mode 5: 802.11g_CH06_2437 MHz + TC Mode 6: 802.11g_CH11_2462 MHz + TC Mode 7: 802.11n_CH01_2412 MHz (BW 20M) + TC Mode 8: 802.11n_CH06_2437 MHz (BW 20M) + TC Mode 9: 802.11n_CH11_2462 MHz (BW 20M) + TC	Mode 10: 802.11a_CH149_5745 MHz + TC Mode 11: 802.11a_CH157_5785 MHz + TC Mode 12: 802.11a_CH165_5825 MHz + TC Mode 13: 802.11n_CH149_5745 MHz (BW 20M) + TC Mode 14: 802.11n_CH157_5785 MHz (BW 20M) + TC Mode 15: 802.11n_CH165_5825 MHz (BW 20M) + TC
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + MPEG4 + Scanner + Cradle + Adapter + RS232 Terminal + USB Cable (Link with Notebook)	
Remark: TC stands for Test Configuration, and consists of USB cable, RS232 terminal, cradle, and adapter.		

2.3 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.4 RF Utility

The programmed RF utility "TI1273 WLAN FCC" 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.

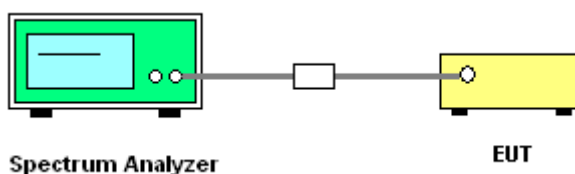
3.1.2 Measuring Instruments

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 1~3	Temperature :	22~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	9.04	0.5	Pass
06	2437	9.04	0.5	Pass
11	2462	9.04	0.5	Pass

Test Mode :	Mode 4~6	Temperature :	22~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.64	0.5	Pass
06	2437	15.66	0.5	Pass
11	2462	15.66	0.5	Pass

Test Mode :	Mode 7~9	Temperature :	22~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
01	2412	15.80	0.5	Pass
06	2437	16.50	0.5	Pass
11	2462	15.32	0.5	Pass

Test Mode :	Mode 10~12	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11a 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	15.65	0.5	Pass
157	5785	15.50	0.5	Pass
165	5825	15.30	0.5	Pass

Test Mode :	Mode 13~15	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MH) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
149	5745	15.30	0.5	Pass
157	5785	15.60	0.5	Pass
165	5825	15.15	0.5	Pass

3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1~3	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	14.08	Pass
06	2437	14.12	Pass
11	2462	14.16	Pass

Test Mode :	Mode 4~6	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	18.72	Pass
06	2437	19.00	Pass
11	2462	18.68	Pass

Test Mode :	Mode 7~9	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
01	2412	19.76	Pass
06	2437	19.92	Pass
11	2462	19.68	Pass

Test Mode :	Mode 10~12	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

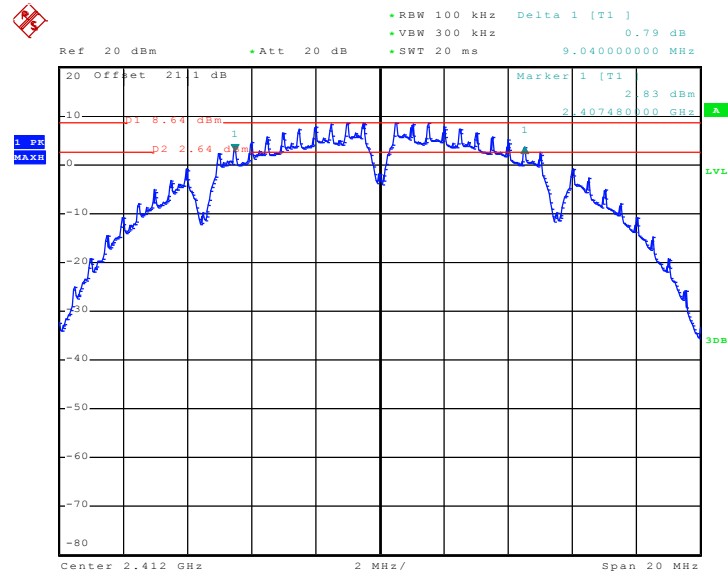
Channel	Frequency (MHz)	802.11a 99% Occupied Bandwidth (MHz)	Pass/Fail
149	5745	19.30	Pass
157	5785	19.25	Pass
165	5825	19.40	Pass

Test Mode :	Mode 13~15	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MHz) 99% Occupied Bandwidth (MHz)	Pass/Fail
149	5745	20.35	Pass
157	5785	20.35	Pass
165	5825	20.35	Pass

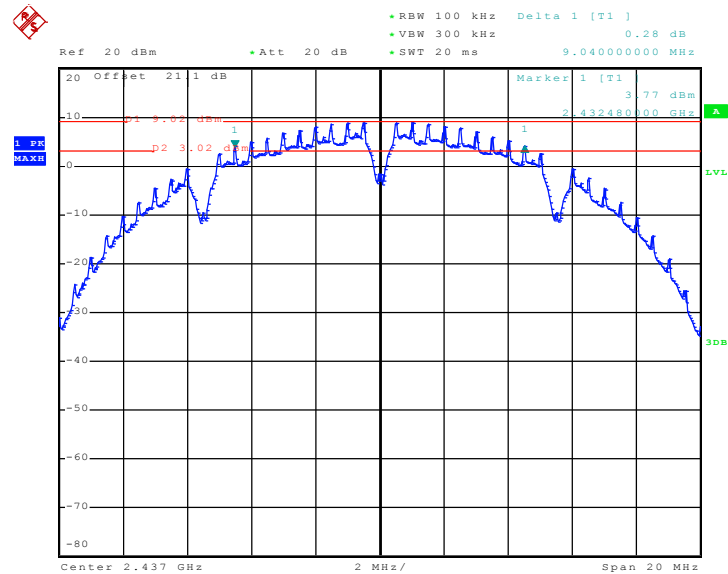
3.1.7 Test Result of 6dB Bandwidth Plots

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



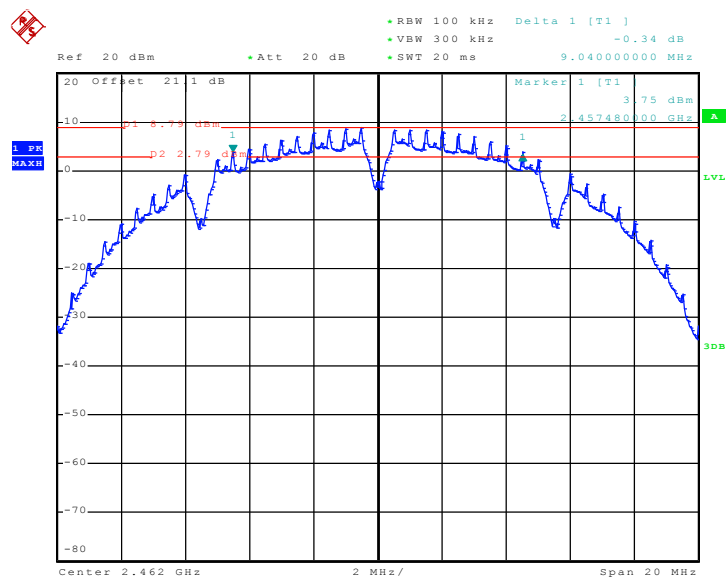
Date: 9.DEC.2010 11:11:03

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



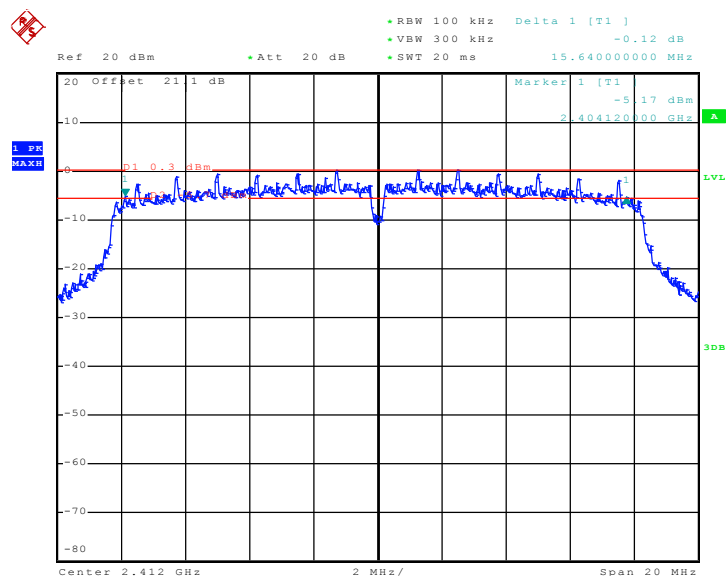
Date: 9.DEC.2010 11:26:06

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



Date: 9.DEC.2010 11:37:38

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



Date: 9.DEC.2010 11:59:48



Ref 20 dBm Att 20 dB RBW 100 kHz VBW 300 kHz SWT 20 ms Delta 1 [T1] 0.26 dB

Marker 1 [T1] -0.57 dBm 2.42910000 GHz

1. PK MARK

20 Offset 21.1 dB

01 5.37 dBm

2.437 GHz

2.42910000 GHz

Center 2.437 GHz 2 MHz/ Span 20 MHz

Date: 9.DEC.2010 12:34:46

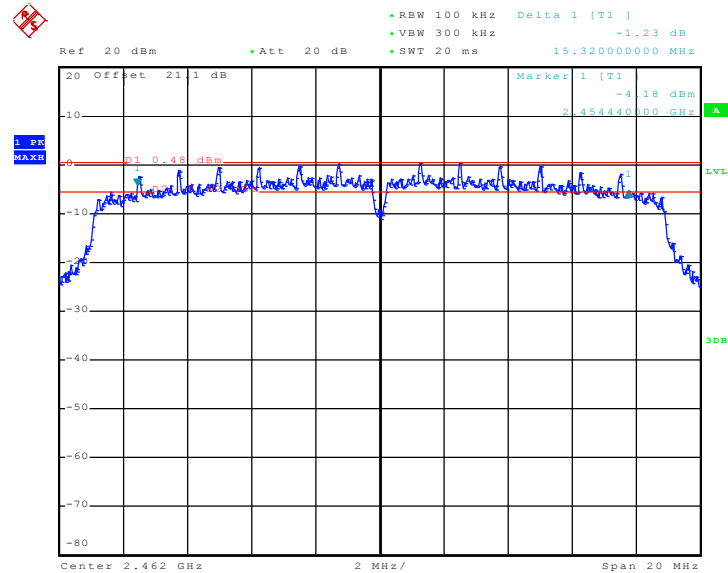
[illegible]

Date: 9.DEC.2010 14:30:36

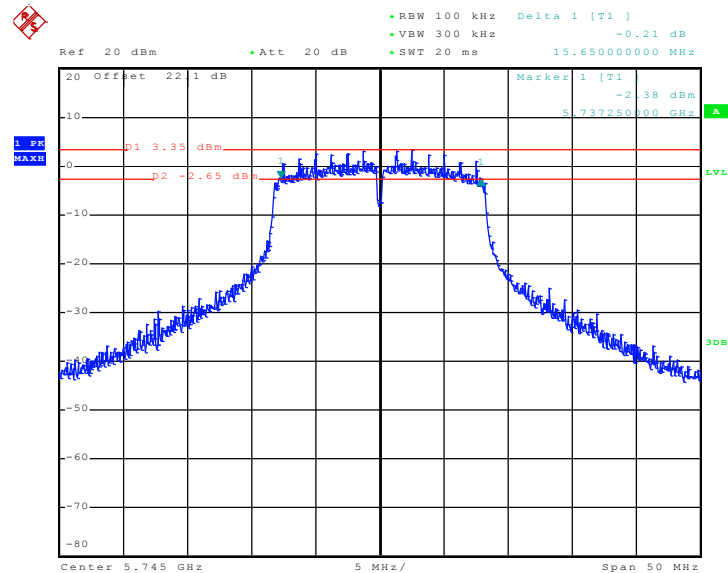


Mode 8 : 6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 06

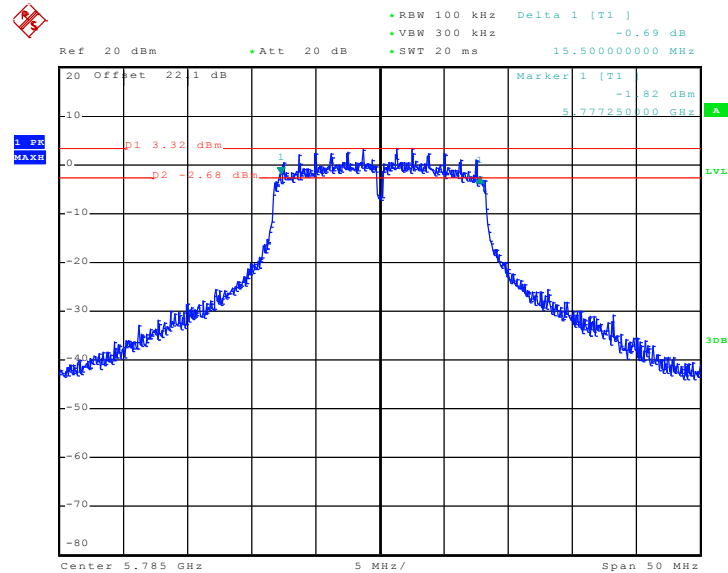


Mode 9 : 6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 11


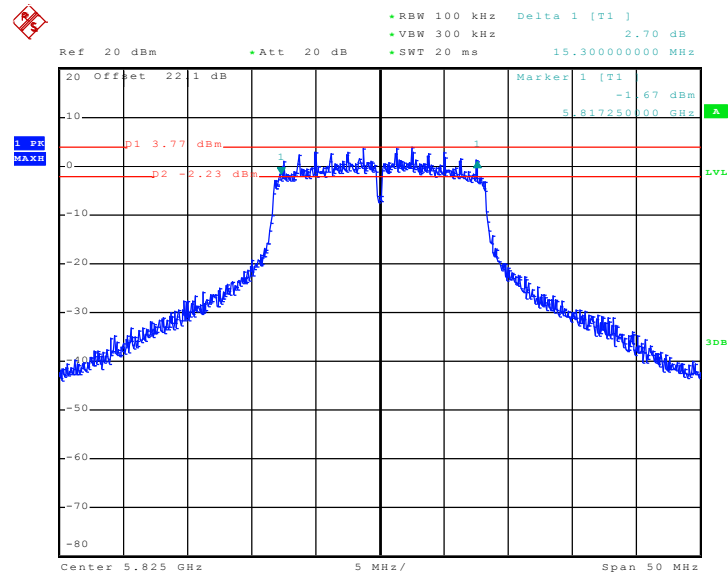
Date: 9.DEC.2010 14:10:52

Mode 10: 6 dB Bandwidth Plot on 802.11a Channel 149


Date: 9.DEC.2010 14:51:29

Mode 11: 6 dB Bandwidth Plot on 802.11a Channel 157


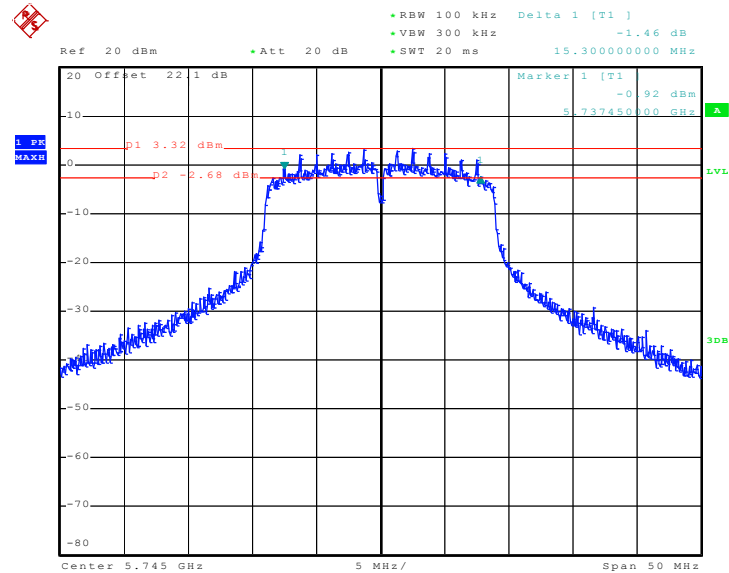
Date: 9.DEC.2010 15:13:36

Mode 12: 6 dB Bandwidth Plot on 802.11a Channel 165


Date: 9.DEC.2010 15:26:14

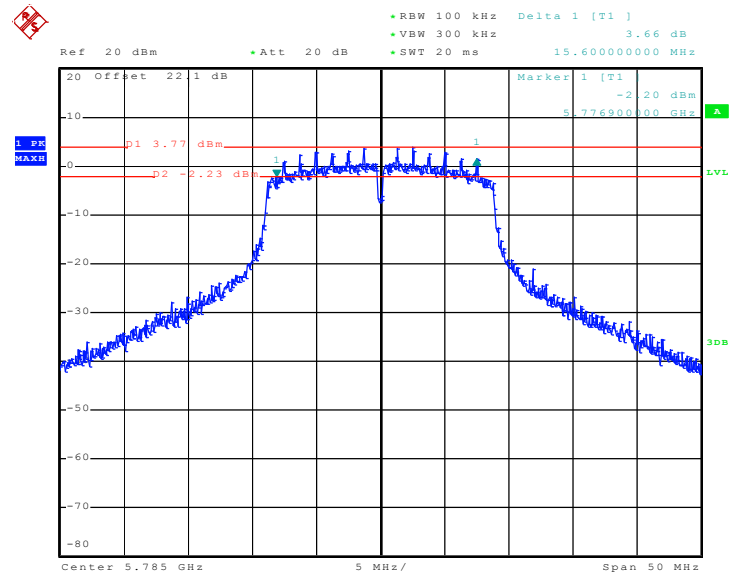


Mode 13: 6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 149



Date: 9.DEC.2010 15:39:46

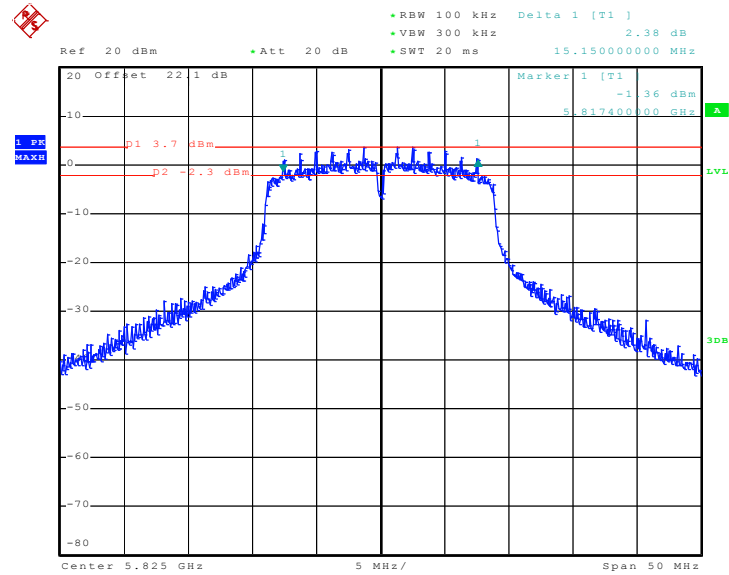
Mode 14: 6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 157



Date: 9.DEC.2010 15:43:23



Mode 15: 6 dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 165

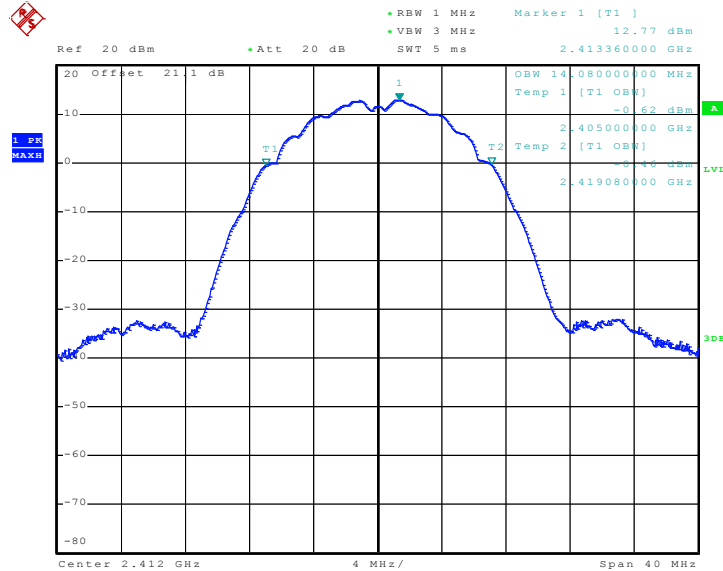


Date: 9.DEC.2010 15:46:34



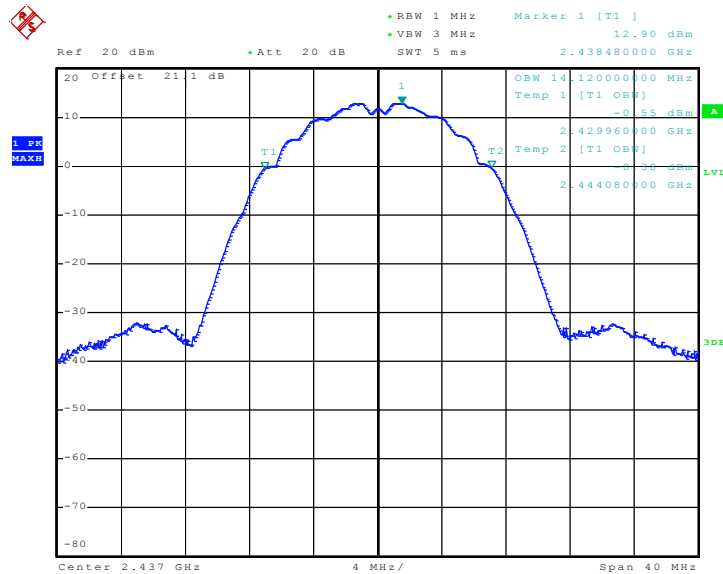
3.1.8 Test Result of 99% Bandwidth Plots

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

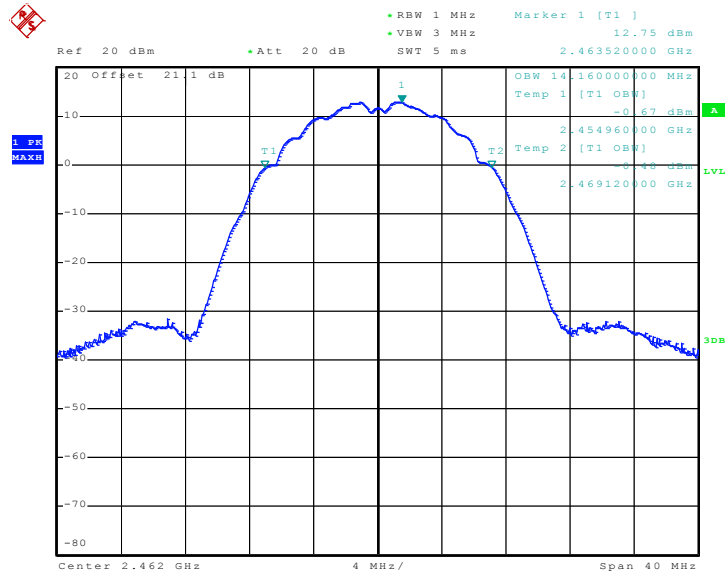


Date: 9.DEC.2010 11:13:19

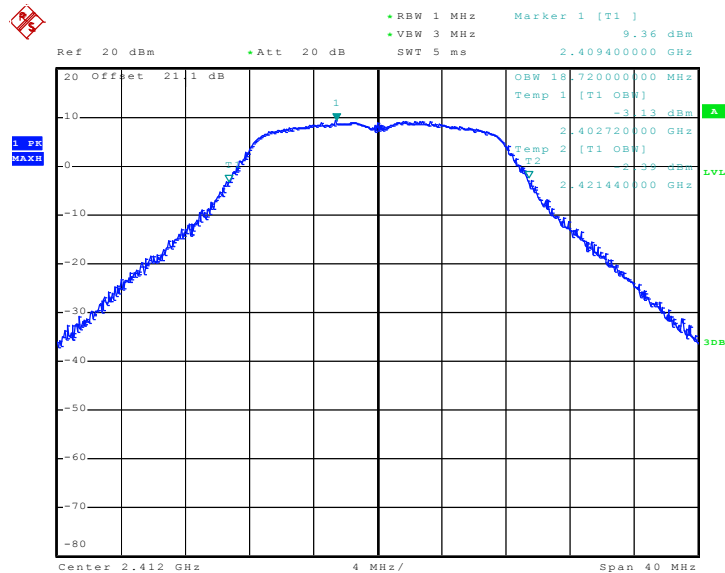
Mode 2 : 99% Occupied Bandwidth Plot on 802.11b Channel 06



Date: 9.DEC.2010 11:26:37

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


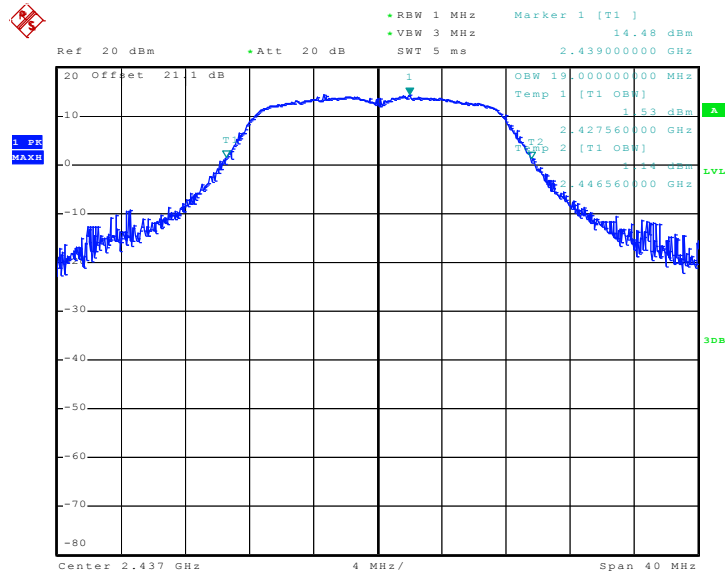
Date: 9.DEC.2010 11:39:02

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


Date: 9.DEC.2010 12:01:39

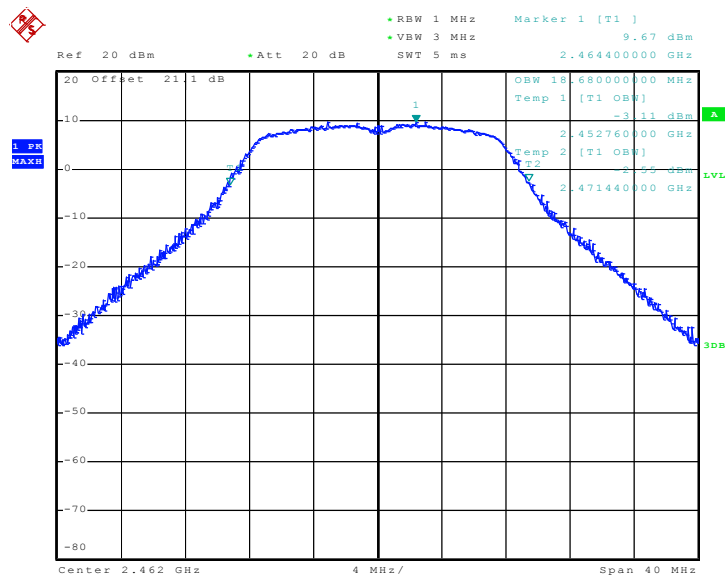


Mode 5 : 99% Occupied Bandwidth Plot on 802.11g Channel 06



Date: 9.DEC.2010 12:35:29

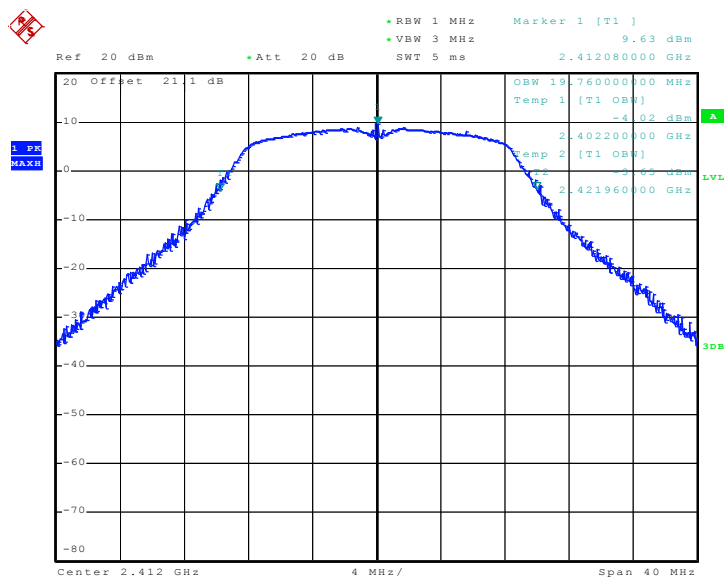
Mode 6 : 99% Occupied Bandwidth Plot on 802.11g Channel 11



Date: 9.DEC.2010 13:32:39

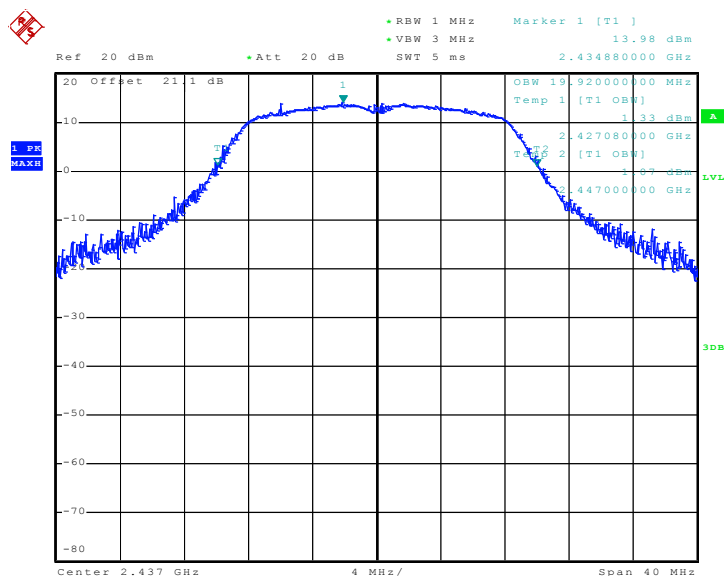


Mode 7 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 01



Date: 9.DEC.2010 13:47:58

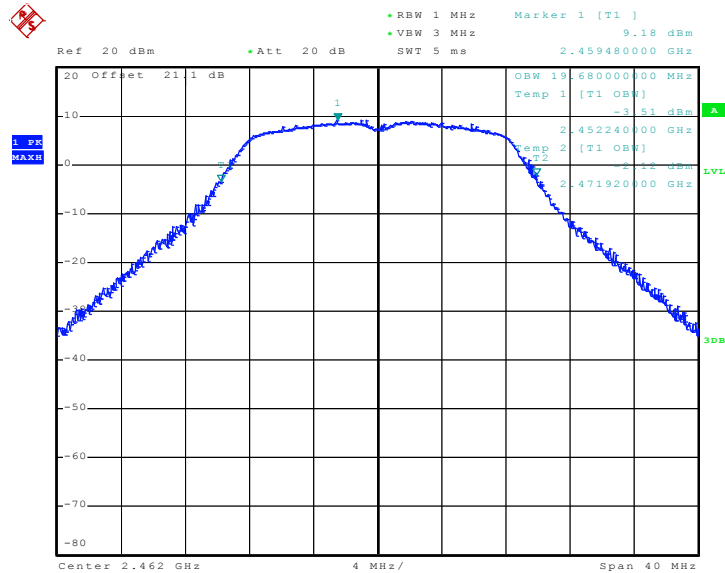
Mode 8 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 06



Date: 9.DEC.2010 14:08:22

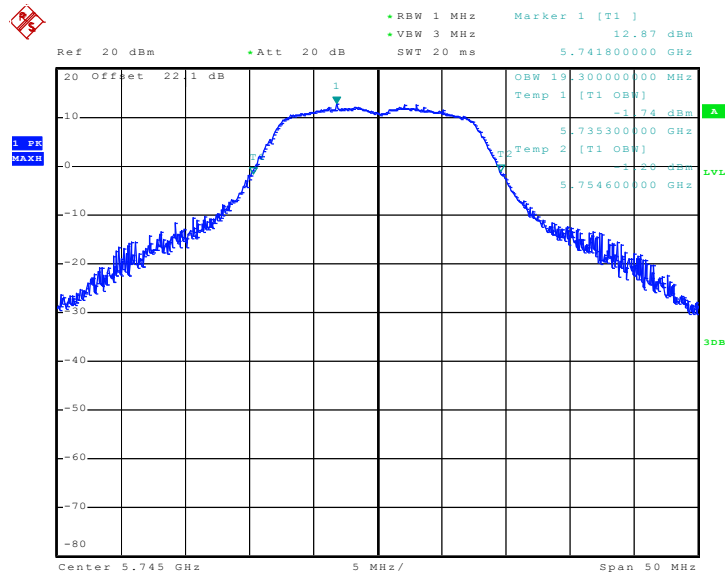


Mode 9 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 11



Date: 9.DEC.2010 14:11:22

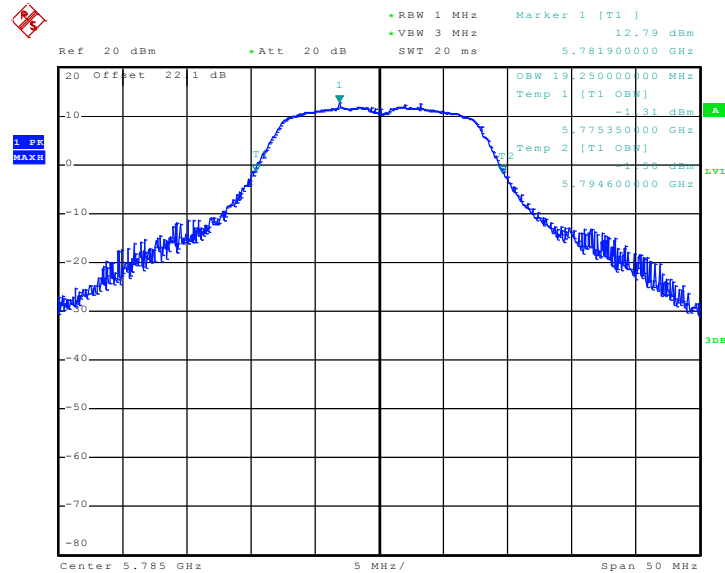
Mode 10: 99% Occupied Bandwidth Plot on 802.11a Channel 149



Date: 9.DEC.2010 14:53:56

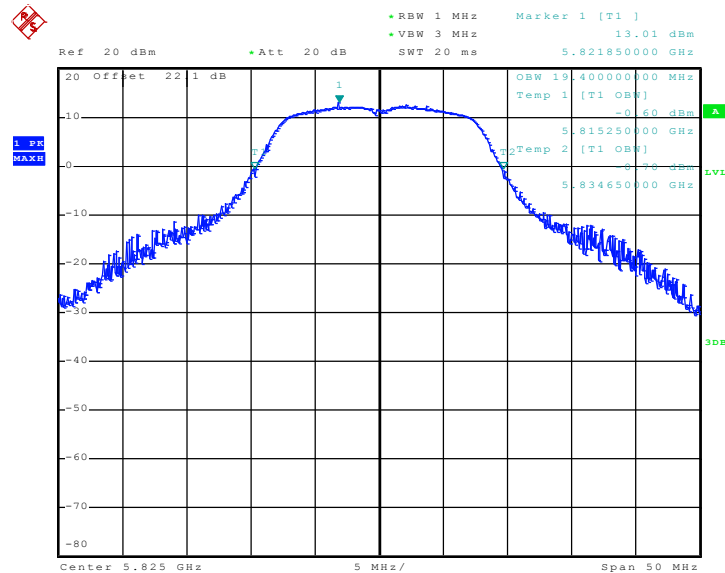


Mode 11: 99% Occupied Bandwidth Plot on 802.11a Channel 157

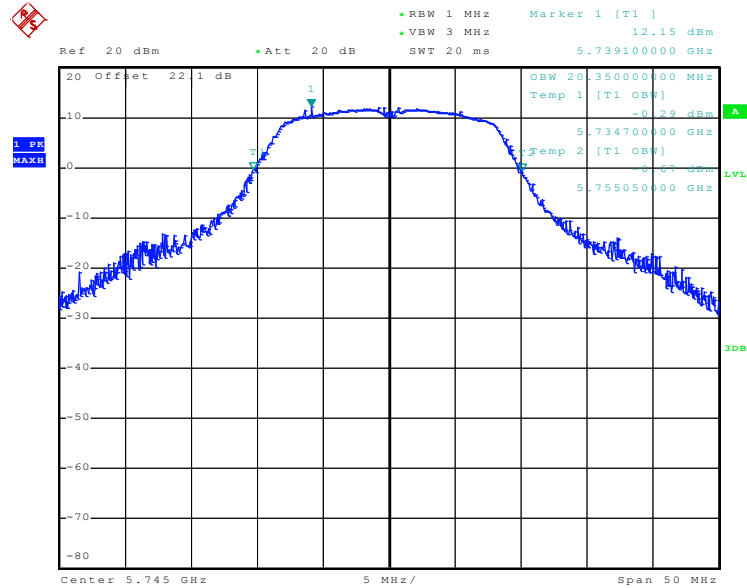


Date: 9.DEC.2010 15:14:18

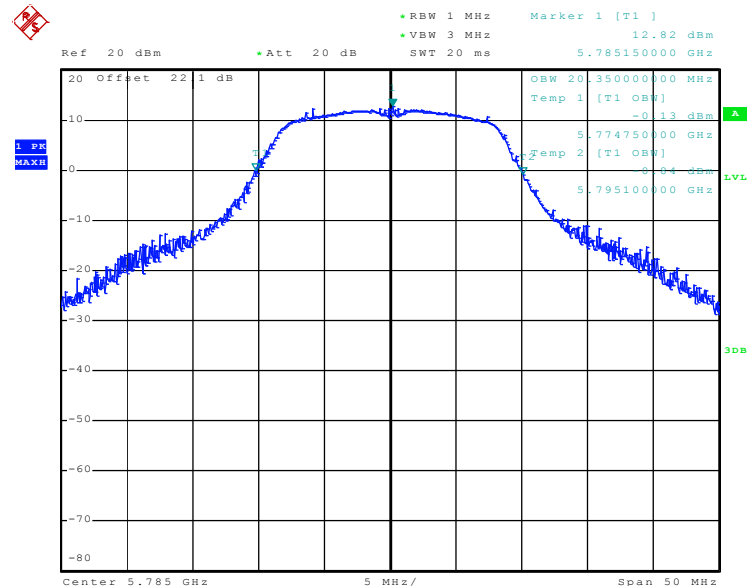
Mode 12: 99% Occupied Bandwidth Plot on 802.11a Channel 165



Date: 9.DEC.2010 15:27:22

Mode 13: 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 149


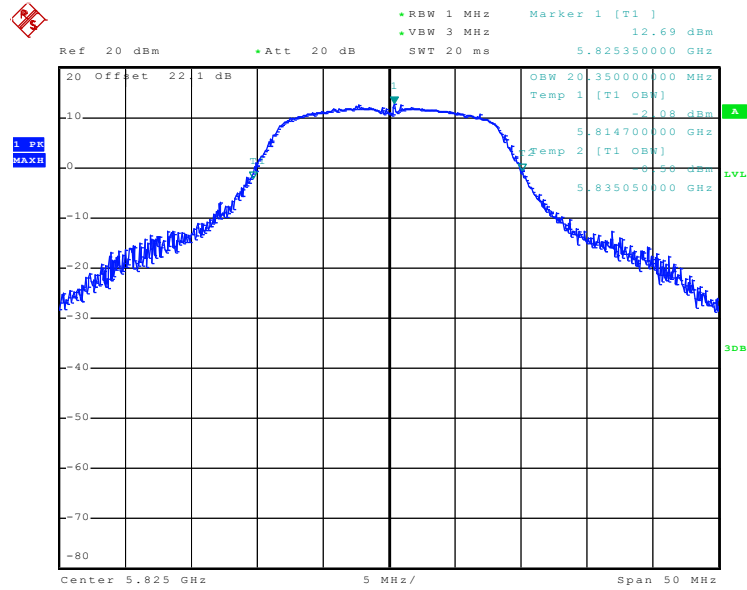
Date: 9.DEC.2010 15:40:46

Mode 14: 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 157


Date: 9.DEC.2010 15:43:54



Mode 15: 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz) Channel 165



Date: 9.DEC.2010 15:47:33

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.

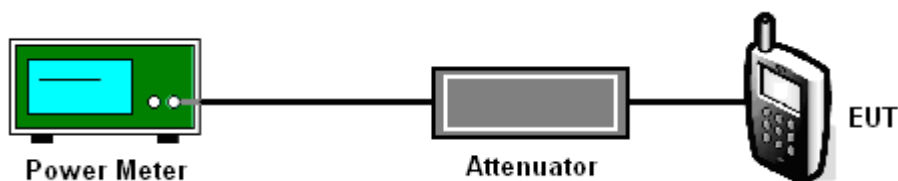
3.2.2 Measuring Instruments

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 1~3	Temperature :	22~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	19.55	30	Pass
06	2437	19.67	30	Pass
11	2462	19.61	30	Pass

Test Mode :	Mode 4~6	Temperature :	22~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.65	30	Pass
06	2437	24.06	30	Pass
11	2462	22.52	30	Pass

Test Mode :	Mode 7~9	Temperature :	22~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	21.18	30	Pass
06	2437	24.10	30	Pass
11	2462	21.59	30	Pass

Test Mode :	Mode 10~12	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	22.69	30	Pass
157	5785	22.50	30	Pass
165	5825	22.39	30	Pass

Test Mode :	Mode 13~15	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	22.65	30	Pass
157	5785	22.50	30	Pass
165	5825	22.32	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

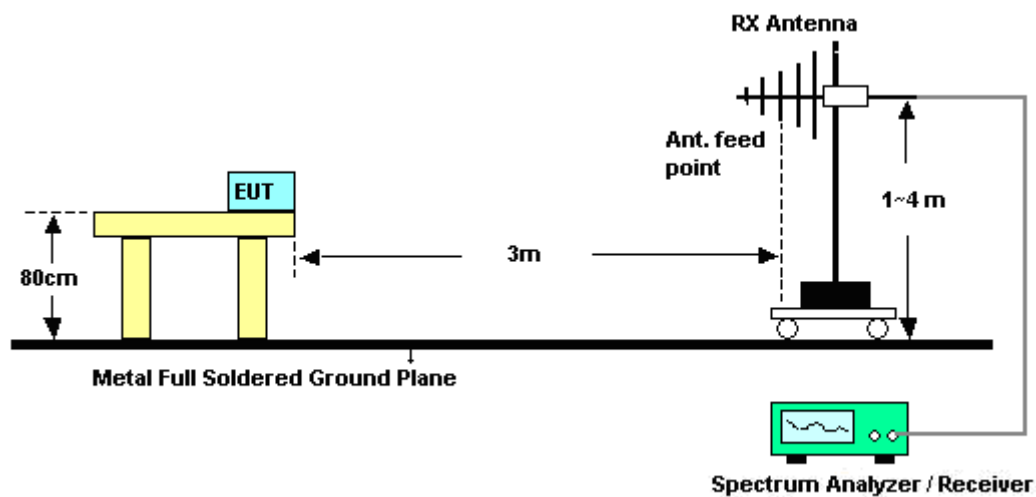
See list of measuring instruments of this test report.

3.3.3 Test Procedures

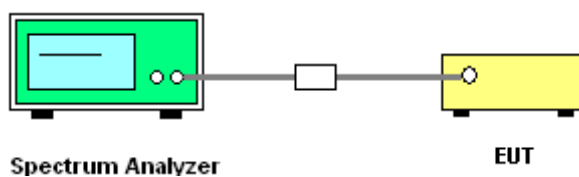
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band 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 :	22~23°C
Test Band :	802.11b	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	Ivan Jiang

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
2383.53	53.39	-20.61	74.00	49.05	32.16	6.03	33.85	100	356	Peak
2383.53	42.66	-11.34	54.00	38.32	32.16	6.03	33.85	100	356	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
2311.09	52.92	-21.08	74.00	48.75	32.07	5.92	33.82	116	29	Peak
2311.09	40.49	-13.51	54.00	36.32	32.07	5.92	33.82	116	29	Average

Test Mode :	Mode 3	Temperature :	22~23°C
Test Band :	802.11b	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	Ivan Jiang

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
2487.40	54.56	-19.44	74.00	50.00	32.28	6.18	33.90	129.00	273.00	Peak
2487.40	44.97	-9.03	54.00	40.41	32.28	6.18	33.90	129.00	273.00	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	49.06	-24.94	74.00	44.50	32.28	6.18	33.90	200.00	337.00	Peak
2486.13	38.50	-15.50	54.00	33.94	32.28	6.18	33.90	200.00	337.00	Average



Test Mode :	Mode 4	Temperature :	22~23°C
Test Band :	802.11g	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	Ivan Jiang

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
2389.42	58.59	-15.41	74.00	54.23	32.18	6.03	33.85	100	356	Peak
2389.42	40.27	-13.73	54.00	35.91	32.18	6.03	33.85	100	356	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	53.24	-20.76	74.00	48.88	32.18	6.03	33.85	113	29	Peak
2389.61	37.04	-16.96	54.00	32.68	32.18	6.03	33.85	113	29	Average

Test Mode :	Mode 6	Temperature :	22~23°C
Test Band :	802.11g	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	Ivan Jiang

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
2483.50	60.57	-13.43	74.00	56.01	32.28	6.18	33.90	129	272	Peak
2483.50	41.43	-12.57	54.00	36.87	32.28	6.18	33.90	129	272	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
2483.50	51.82	-22.18	74.00	47.26	32.28	6.18	33.90	196	337	Peak
2483.50	37.07	-16.93	54.00	32.51	32.28	6.18	33.90	196	337	Average



Test Mode :	Mode 7	Temperature :	22~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~52%
Test Channel :	01	Test Engineer :	Ivan Jiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	57.12	-16.88	74.00	52.76	32.18	6.03	33.85	100	356	Peak
2389.61	41.37	-12.63	54.00	37.01	32.18	6.03	33.85	100	356	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	53.88	-20.12	74.00	49.52	32.18	6.03	33.85	119	85	Peak
2389.61	38.86	-15.14	54.00	34.50	32.18	6.03	33.85	119	85	Average

Test Mode :	Mode 9	Temperature :	22~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	50~52%
Test Channel :	11	Test Engineer :	Ivan Jiang

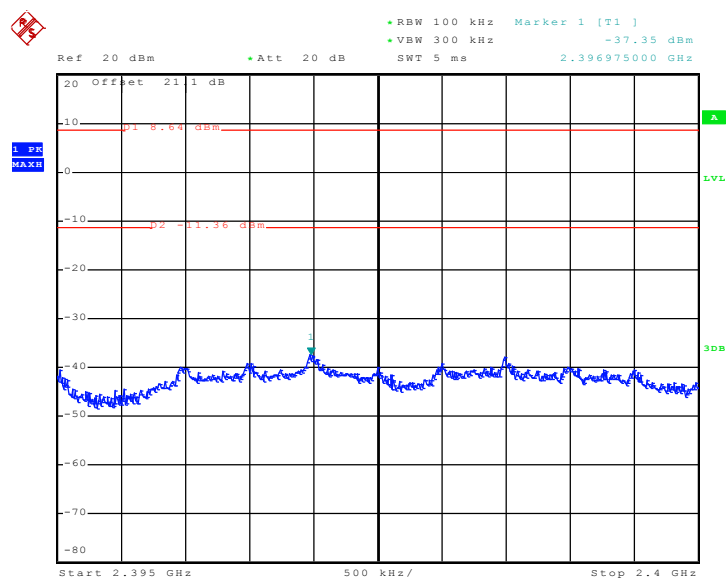
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	59.53	-14.47	74.00	54.97	32.28	6.18	33.90	128	268	Peak
2483.85	42.10	-11.90	54.00	37.54	32.28	6.18	33.90	128	268	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
2485.18	50.43	-23.57	74.00	45.87	32.28	6.18	33.90	101	356	Peak
2485.18	35.91	-18.09	54.00	31.35	32.28	6.18	33.90	101	356	Average

3.3.7 Test Result of Conducted Band Edges

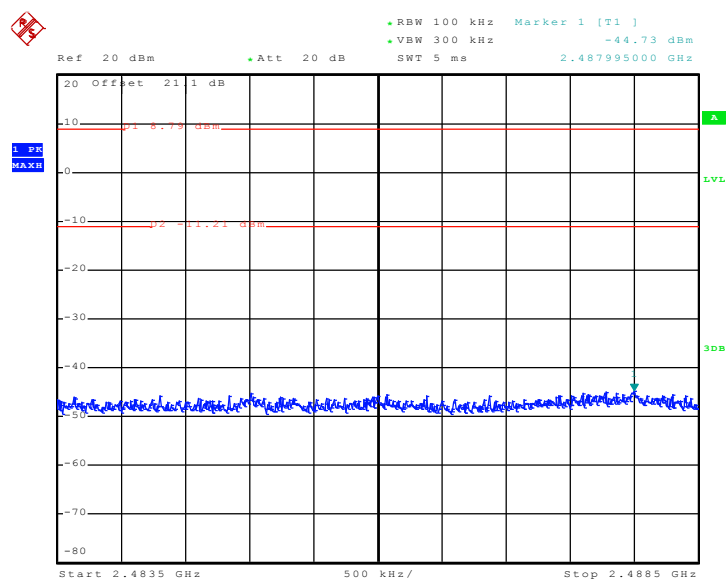
Test Mode :	Mode 1 and 3	Temperature :	22~24℃
Test Band :	802.11b	Relative Humidity :	40~43%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11b Channel 01



Date: 9.DEC.2010 11:12:27

High Band Edge Plot on 802.11b Channel 11

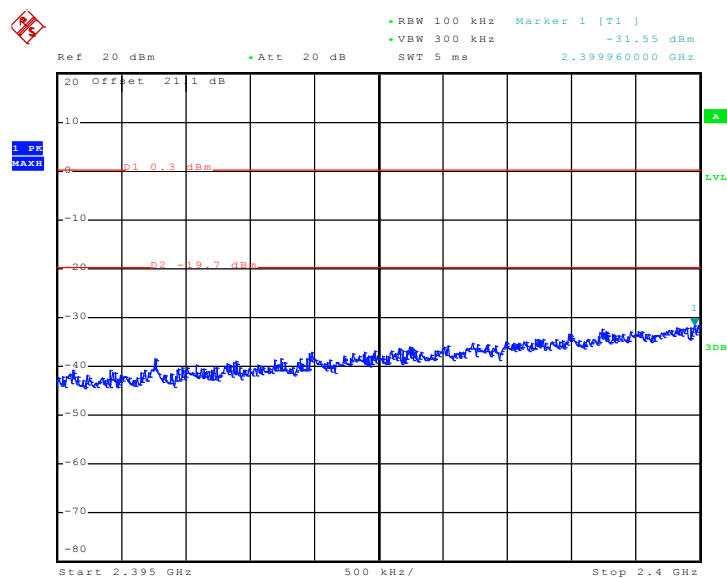


Date: 9.DEC.2010 11:38:36



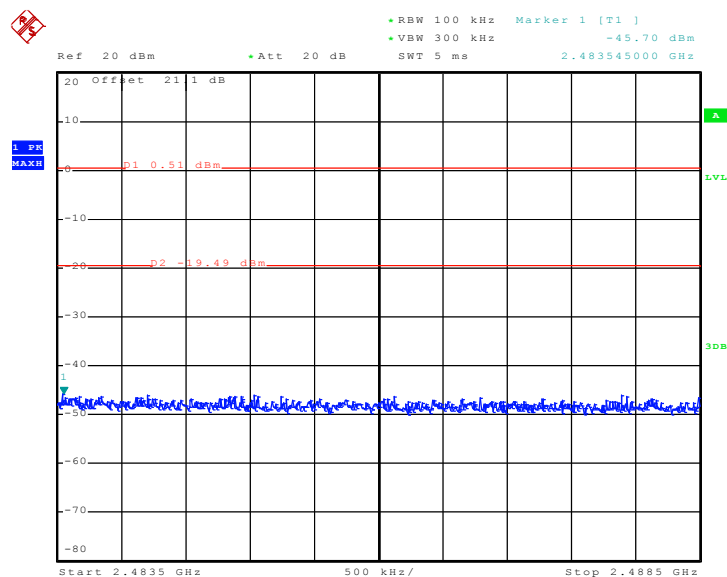
Test Mode :	Mode 4 and 6	Temperature :	22~24°C
Test Band :	802.11g	Relative Humidity :	40~43%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11g Channel 01



Date: 9.DEC.2010 12:01:13

High Band Edge Plot on 802.11g Channel 11

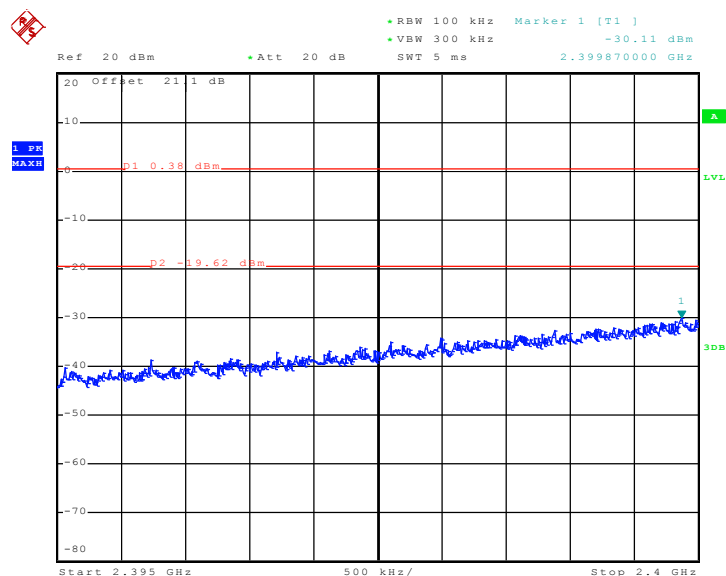


Date: 9.DEC.2010 14:31:27



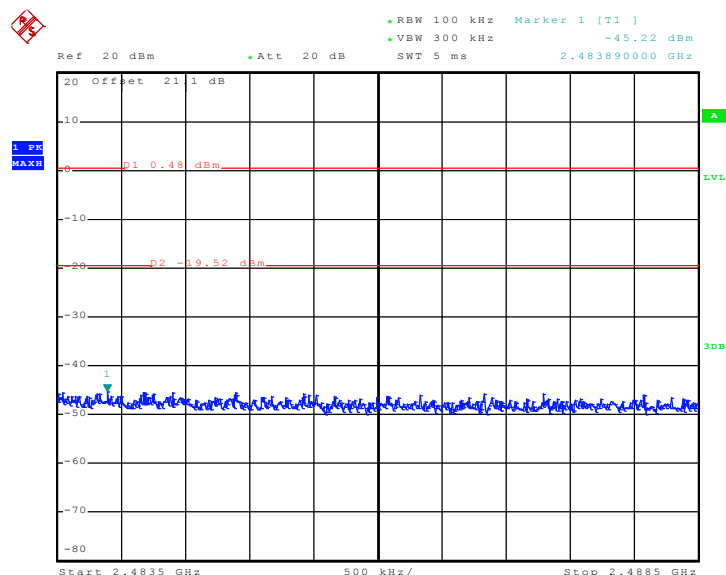
Test Mode :	Mode 7 and 9	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~43%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

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



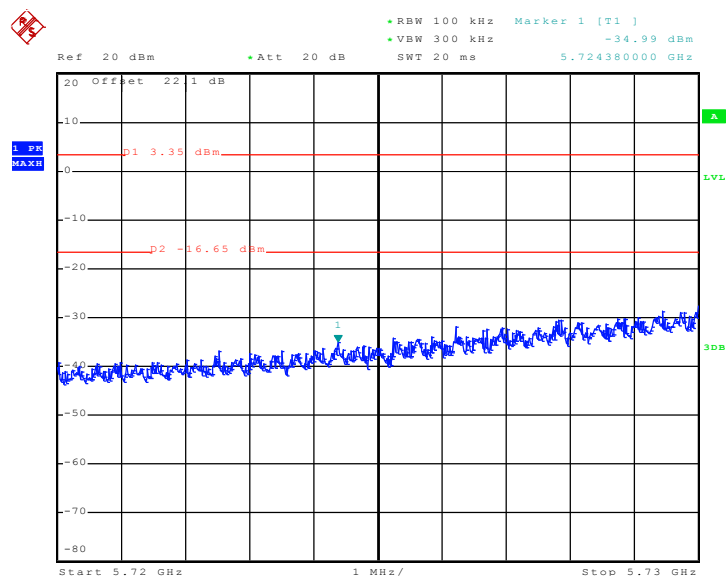
Date: 9.DECEMBER.2010 13:47:31

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

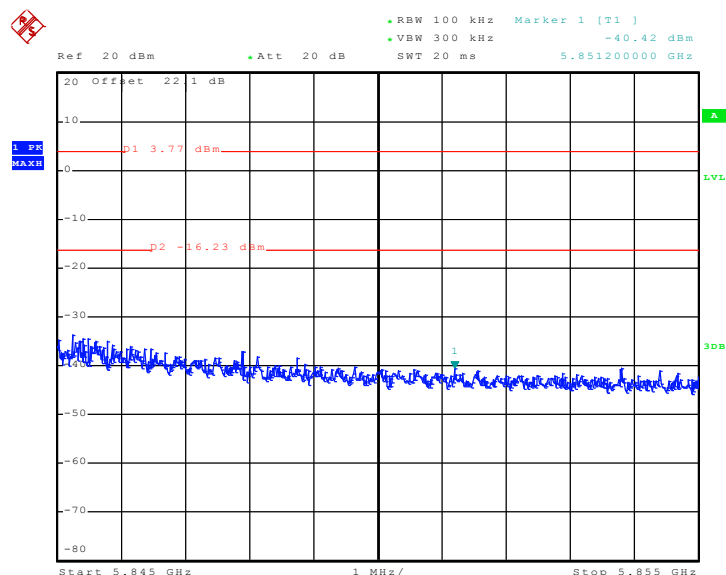


Date: 9.DECEMBER.2010 14:12:07

Test Mode :	Mode 10 and 12	Temperature :	22~24°C
Test Band :	802.11a	Relative Humidity :	40~43%
Test Channel :	149 and 165	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11a Channel 149


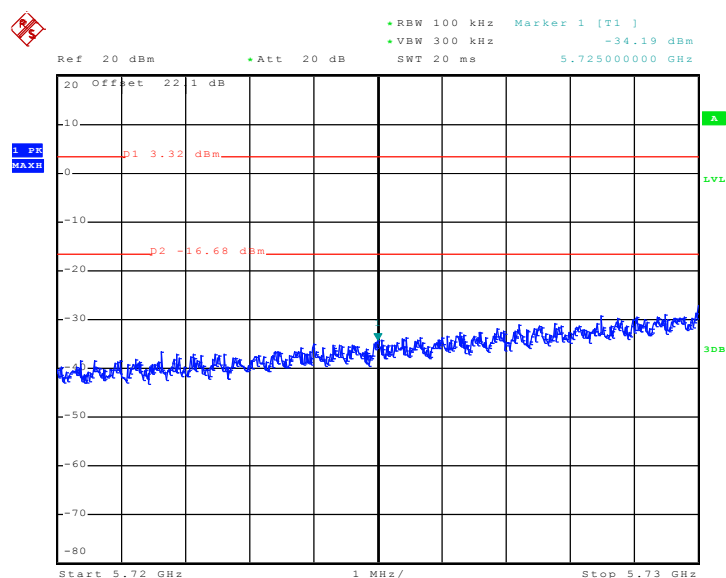
Date: 9.DEC.2010 14:51:58

High Band Edge Plot on 802.11a Channel 165


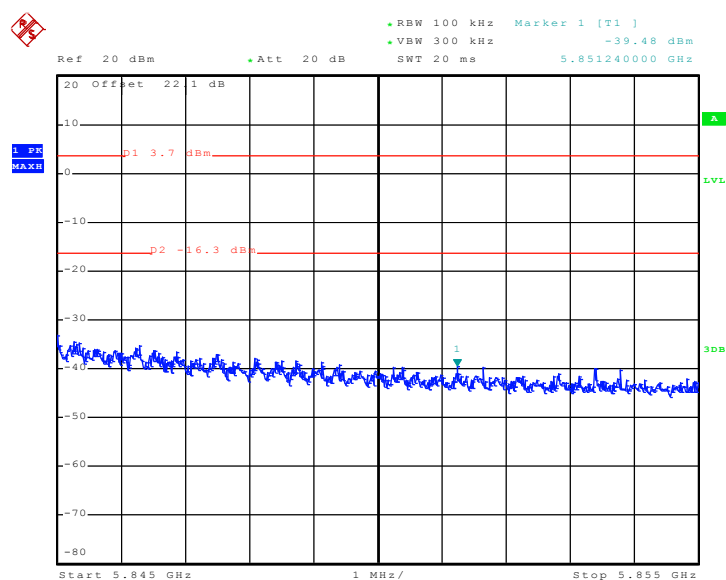
Date: 9.DEC.2010 15:26:56



Test Mode :	Mode 13 and 15	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~43%
Test Channel :	149 and 165	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11n (BW 20MHz) Channel 149

Date: 9.DEC.2010 15:40:20

High Band Edge Plot on 802.11n (BW 20MHz) Channel 165

Date: 9.DEC.2010 15:47:07

3.4 Spurious Emission Measurement

3.4.1 Limit of Spurious Emission Measurement

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

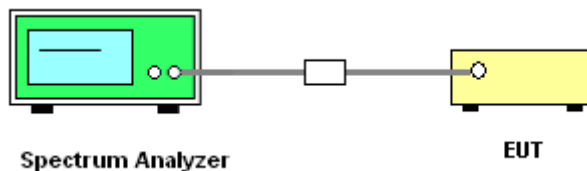
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedure

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

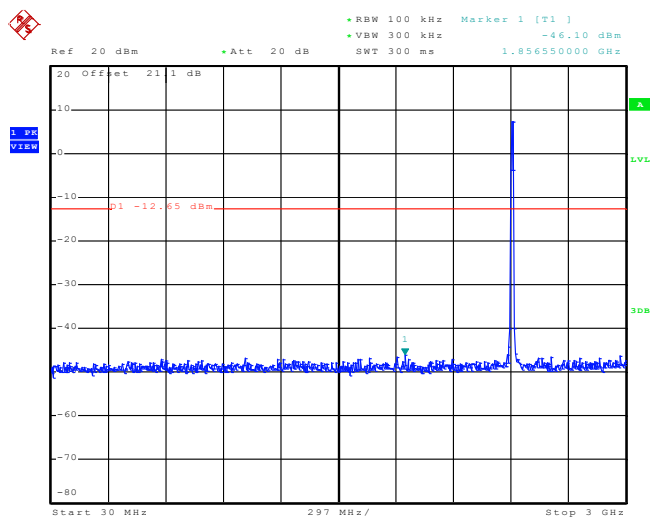
3.4.4 Test Setup



3.4.5 Test Result

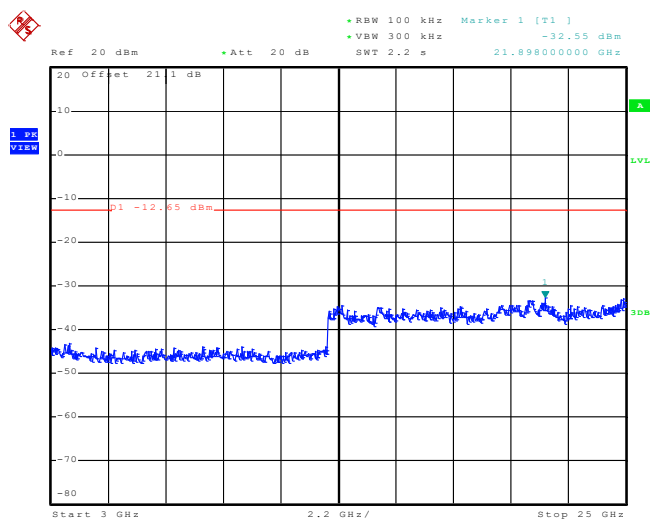
Test Mode :	Mode 1~3	Temperature :	22~24°C
Test Band :	802.11b	Relative Humidity :	40~43%
Test Channel :	01, 06, 11	Test Engineer :	Ken Hsu

Mode 1: Conducted Spurious Emission Plot on 802.11b between 30 MHz~3 GHz



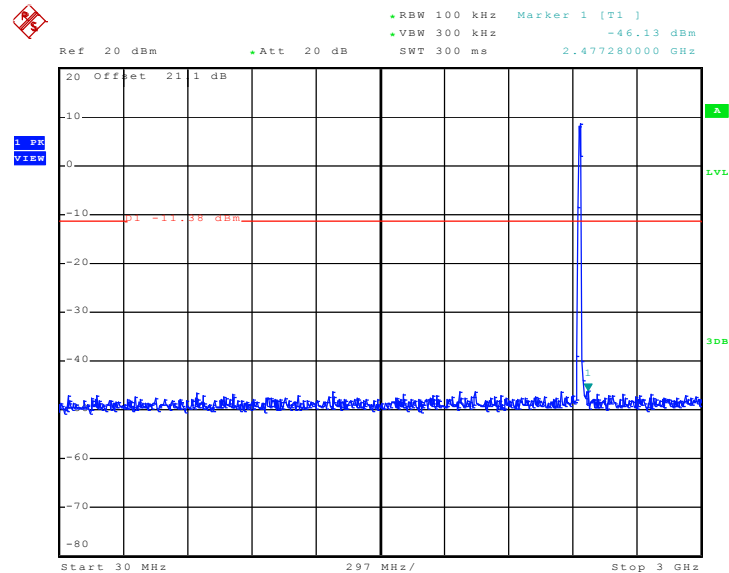
Date: 9.DEC.2010 14:23:20

Mode 1: Conducted Spurious Emission Plot on 802.11b between 3 GHz ~25 GHz



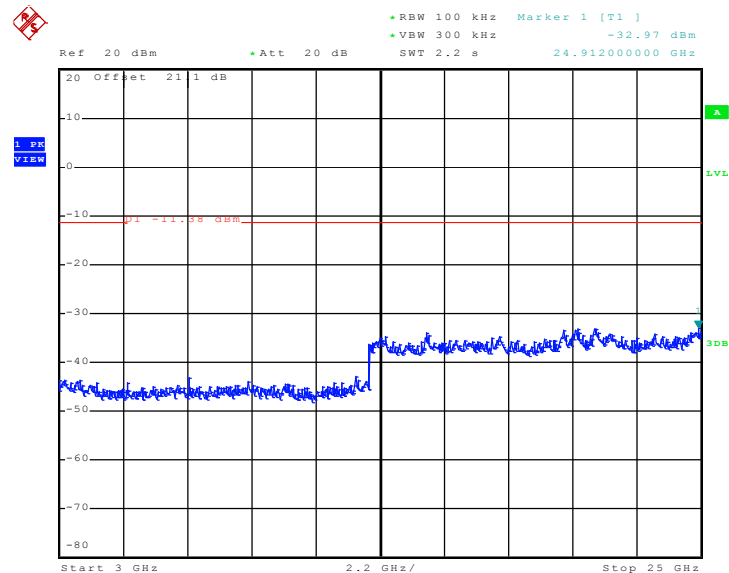
Date: 9.DEC.2010 14:23:38

**Mode 2: Conducted Spurious Emission Plot on
802.11b between 30 MHz~3 GHz**



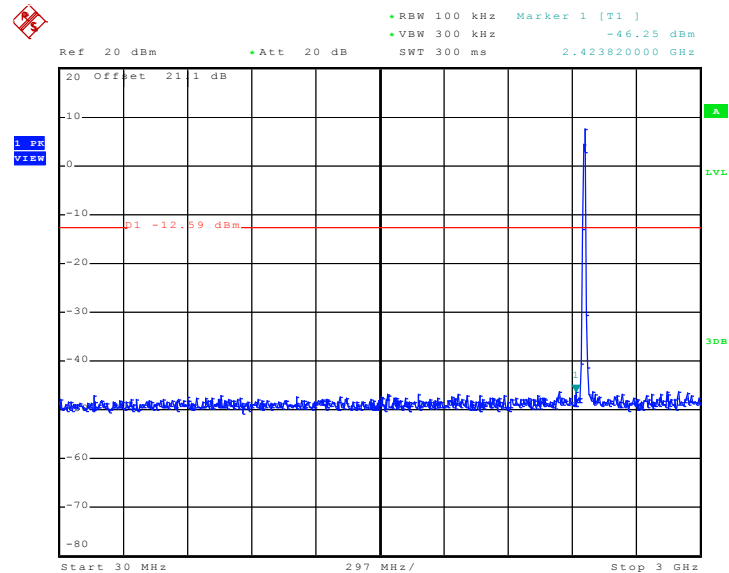
Date: 9.DEC.2010 14:24:10

**Mode 2: Conducted Spurious Emission Plot on
802.11b between 3 GHz ~ 25 GHz**



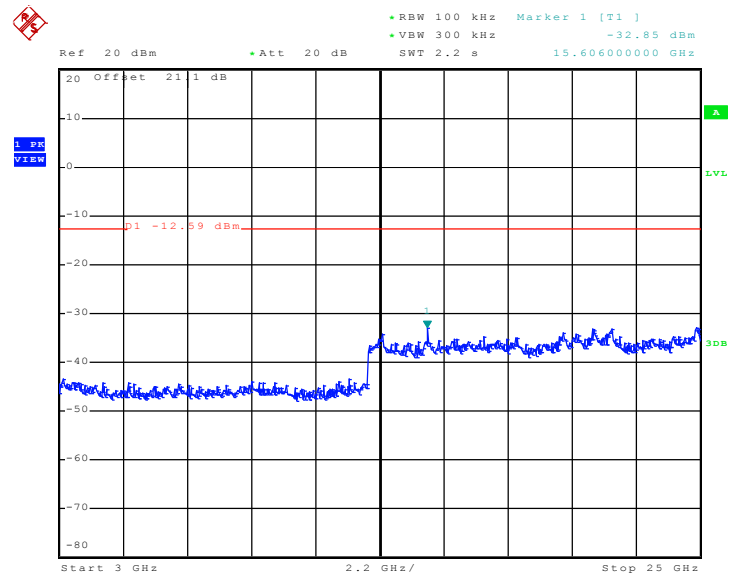
Date: 9.DEC.2010 14:24:27

**Mode 3: Conducted Spurious Emission Plot on
802.11b between 30 MHz~3 GHz**



Date: 9.DEC.2010 14:25:01

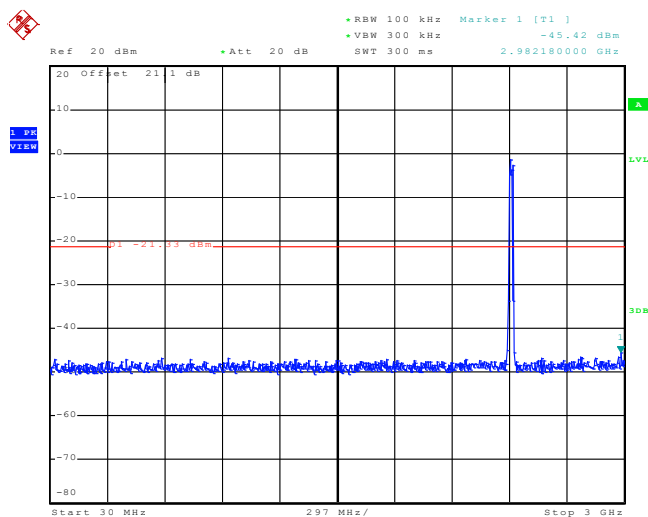
**Mode 3: Conducted Spurious Emission Plot on
802.11b between 3 GHz ~25 GHz**



Date: 9.DEC.2010 14:25:18

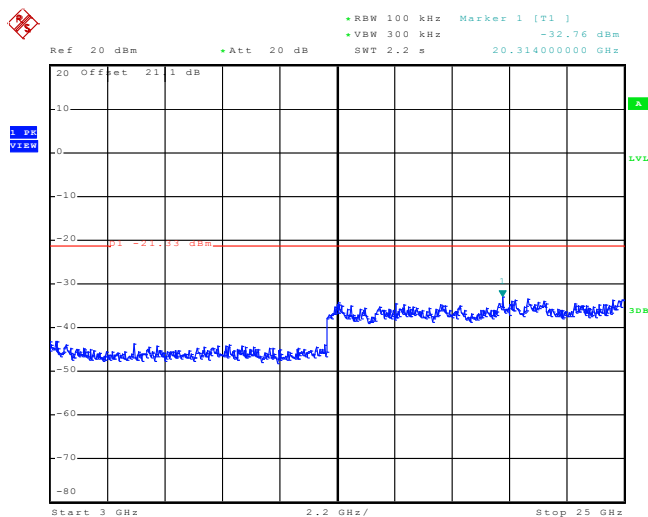
Test Mode :	Mode 4~6	Temperature :	22~24℃
Test Band :	802.11g	Relative Humidity :	40~43%
Test Channel :	01, 06, 11	Test Engineer :	Ken Hsu

**Mode 4: Conducted Spurious Emission Plot on
802.11g between 30 MHz~3 GHz**



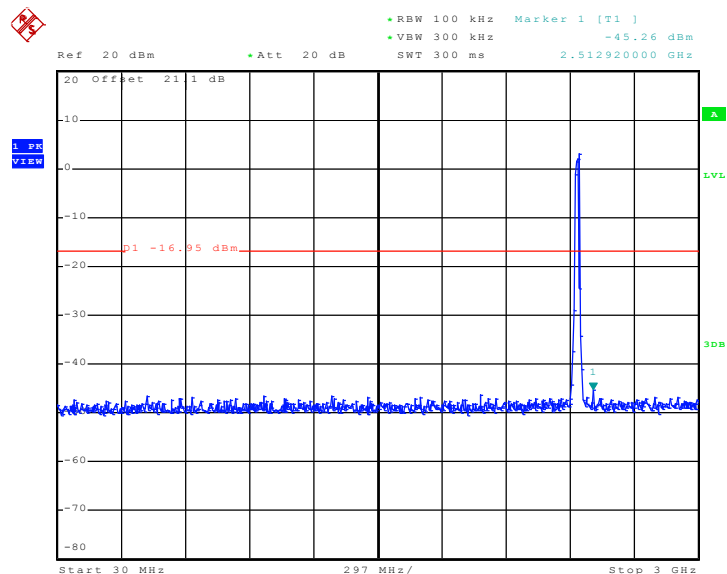
Date: 9.DEC.2010 14:26:40

**Mode 4: Conducted Spurious Emission Plot on
802.11g between 3 GHz ~ 25 GHz**



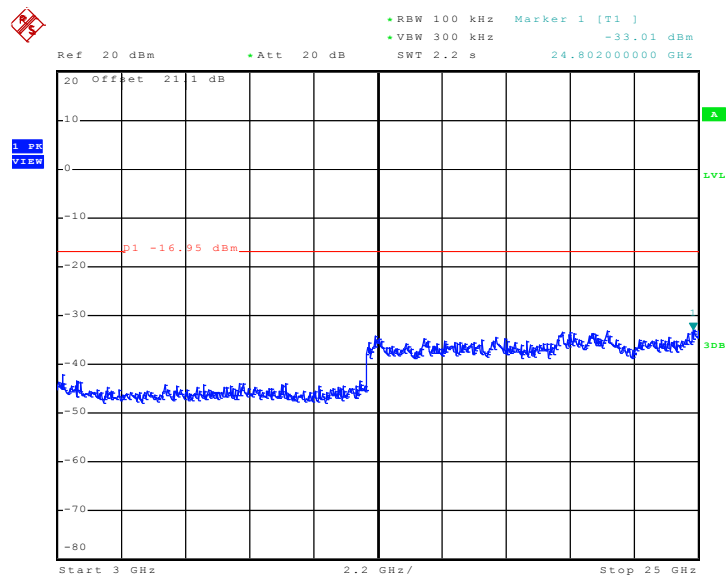
Date: 9.DEC.2010 14:26:57

**Mode 5: Conducted Spurious Emission Plot on
802.11g between 30 MHz~3 GHz**



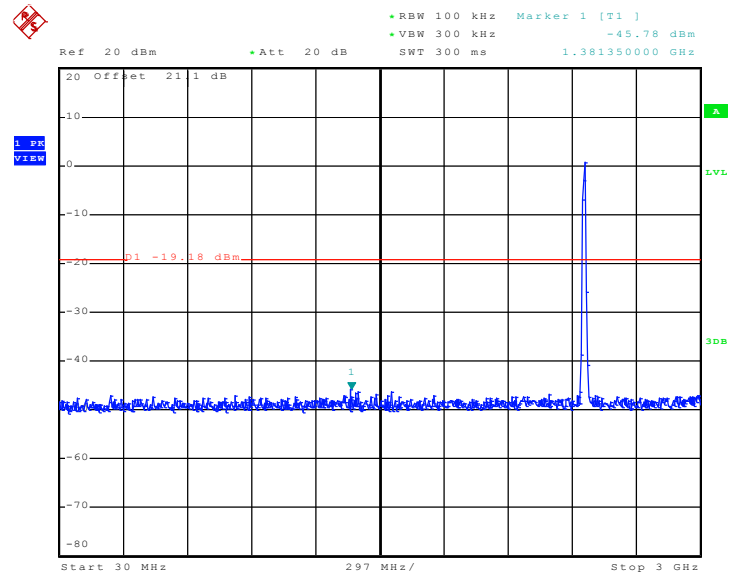
Date: 9.DEC.2010 14:27:52

**Mode 5: Conducted Spurious Emission Plot on
802.11g between 3 GHz ~ 25 GHz**



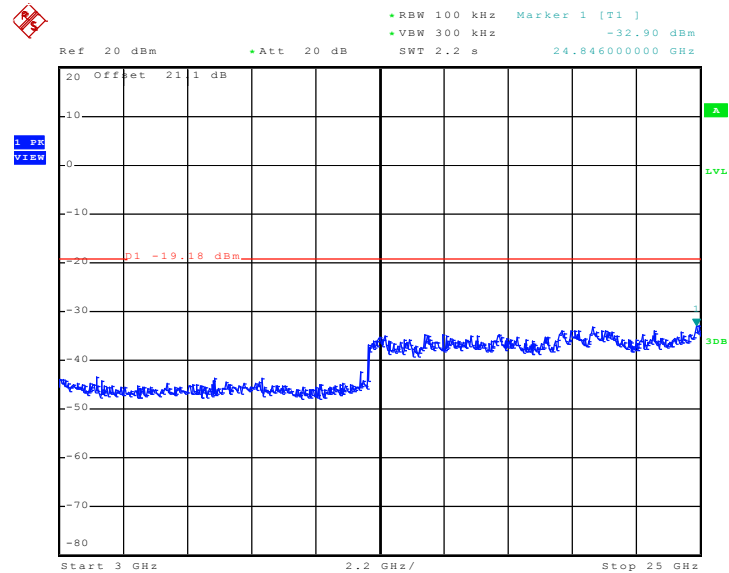
Date: 9.DEC.2010 14:28:09

**Mode 6: Conducted Spurious Emission Plot on
802.11g between 30 MHz~3 GHz**



Date: 9.DEC.2010 14:28:47

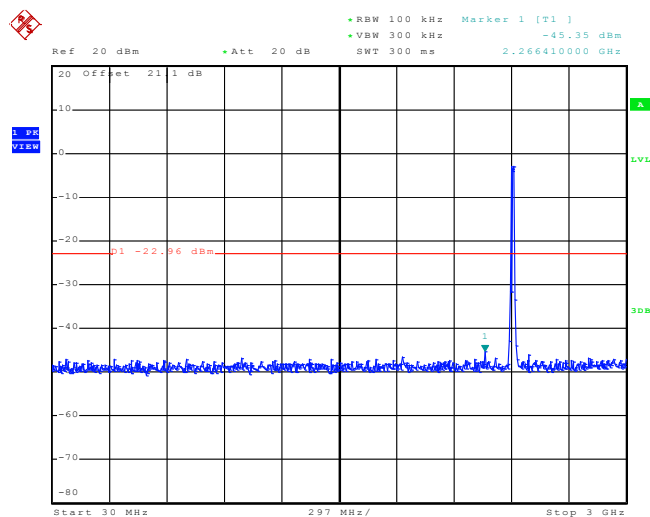
**Mode 6: Conducted Spurious Emission Plot on
802.11g between 3 GHz ~ 25 GHz**



Date: 9.DEC.2010 14:29:04

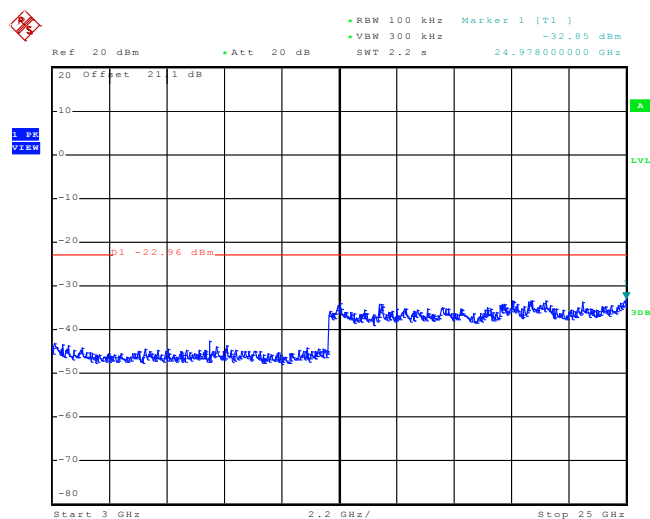
Test Mode :	Mode 7~9	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~43%
Test Channel :	01, 06, 11	Test Engineer :	Ken Hsu

**Mode 7: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 30 MHz~3 GHz**



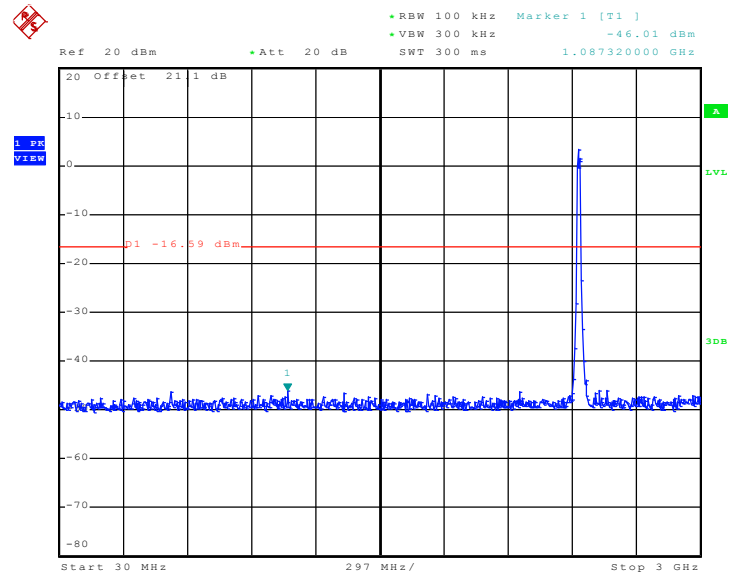
Date: 9.DEC.2010 14:33:32

**Mode 7: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 3 GHz ~ 25 GHz**



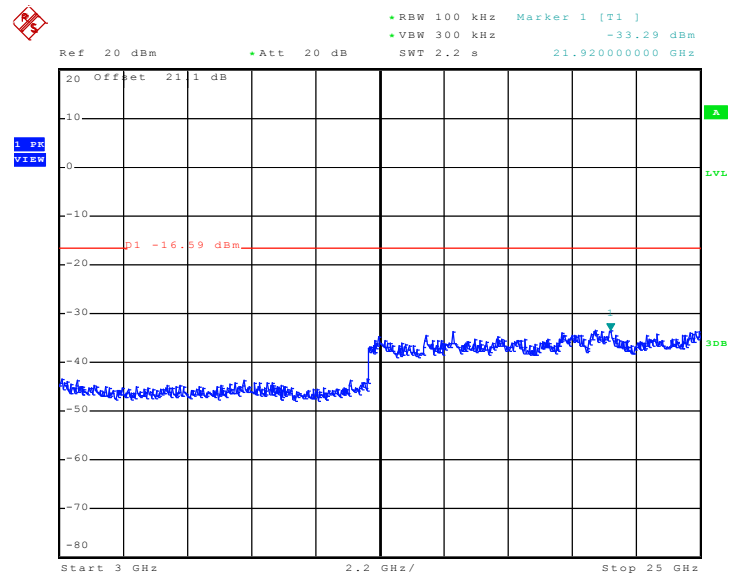
Date: 9.DEC.2010 14:33:49

**Mode 8: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 30 MHz~3 GHz**



Date: 9.DEC.2010 14:36:18

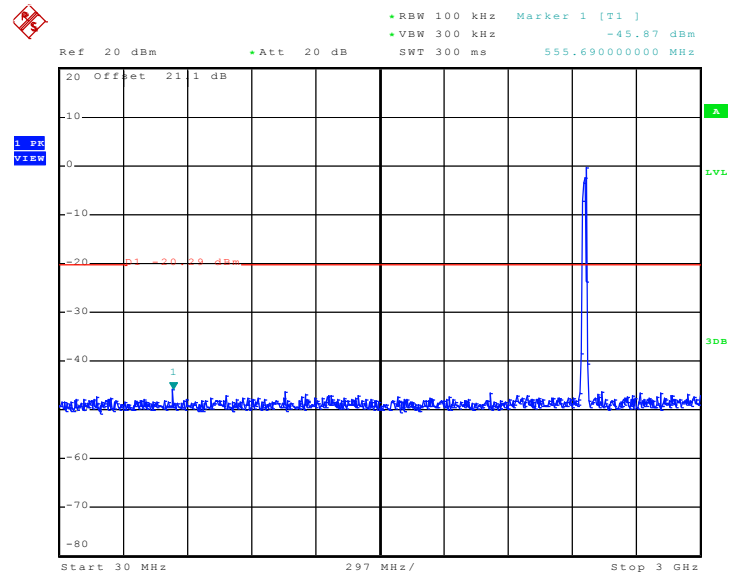
**Mode 8: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 3 GHz ~ 25 GHz**



Date: 9.DEC.2010 14:36:35

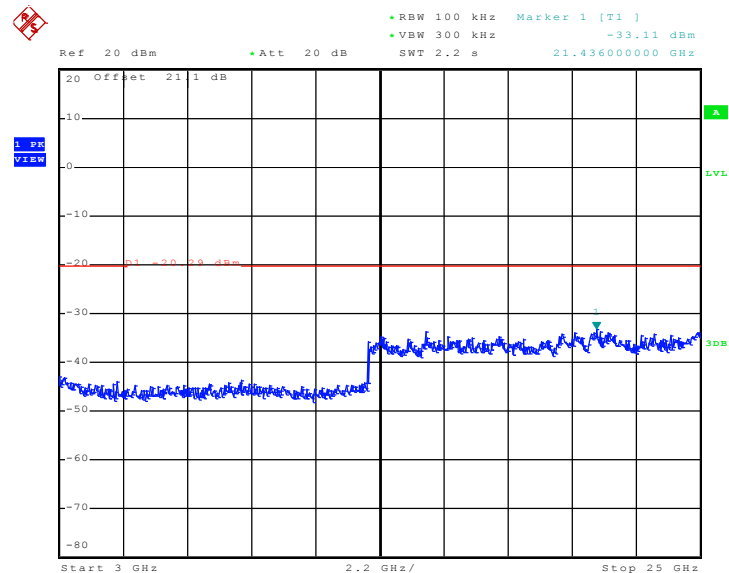


Mode 9: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 30 MHz~3 GHz



Date: 9.DEC.2010 14:35:03

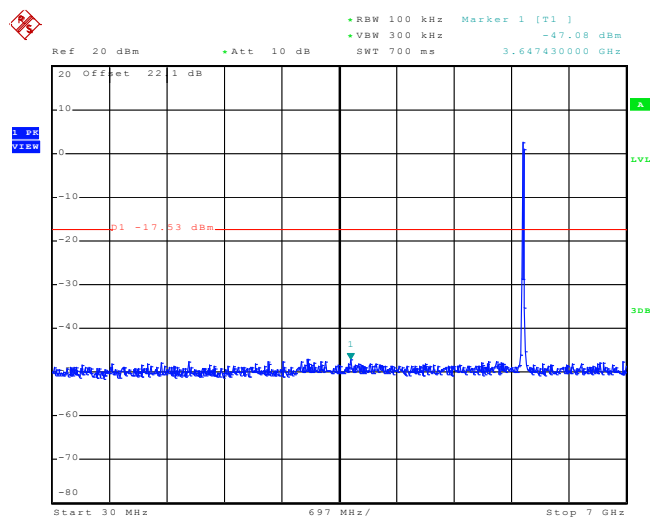
Mode 9: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 3 GHz ~ 25 GHz



Date: 9.DEC.2010 14:35:21

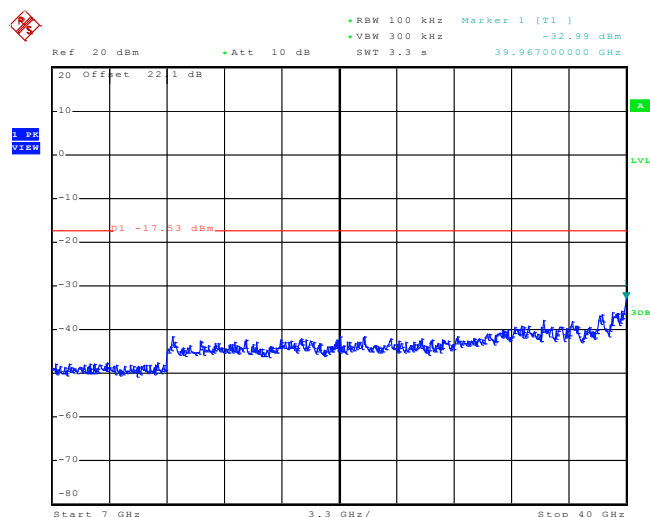
Test Mode :	Mode 10~12	Temperature :	22~24°C
Test Band :	802.11a	Relative Humidity :	40~43%
Test Channel :	149, 157, 165	Test Engineer :	Ken Hsu

**Mode 10: Conducted Spurious Emission Plot on
802.11a between 30 MHz~7 GHz**



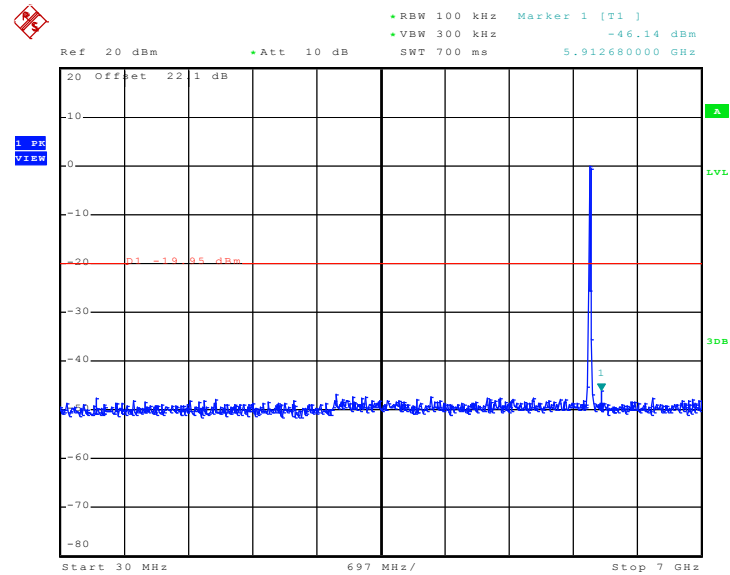
Date: 9.DEC.2010 15:11:20

**Mode 10: Conducted Spurious Emission Plot on
802.11a between 7 GHz ~ 40GHz**



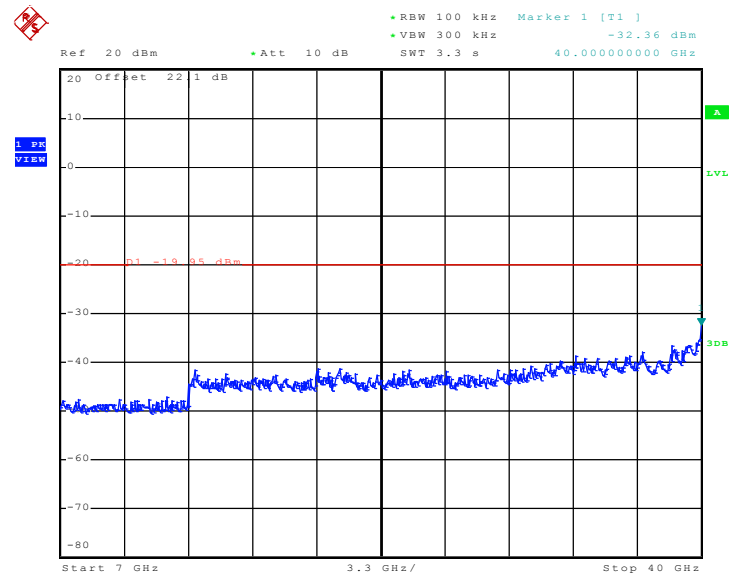
Date: 9.DEC.2010 15:11:37

**Mode 11: Conducted Spurious Emission Plot on
802.11a between 30 MHz~7 GHz**



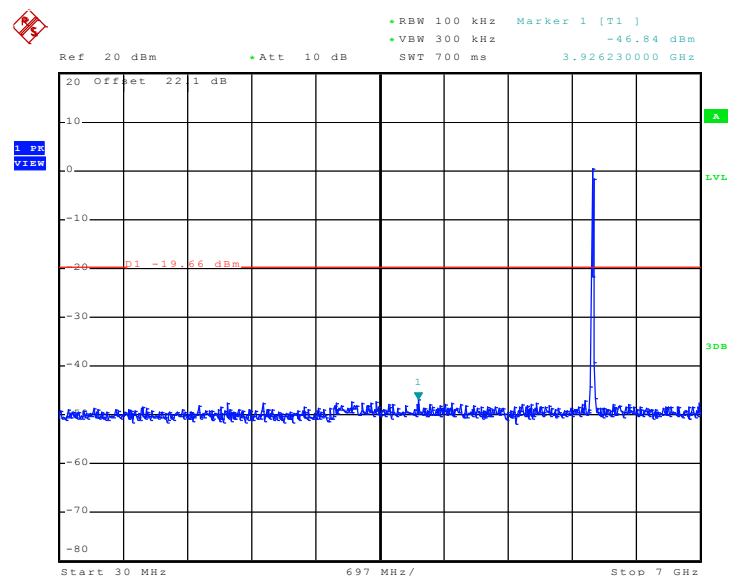
Date: 9.DEC.2010 15:14:39

**Mode 11: Conducted Spurious Emission Plot on
802.11a between 7 GHz ~ 40GHz**



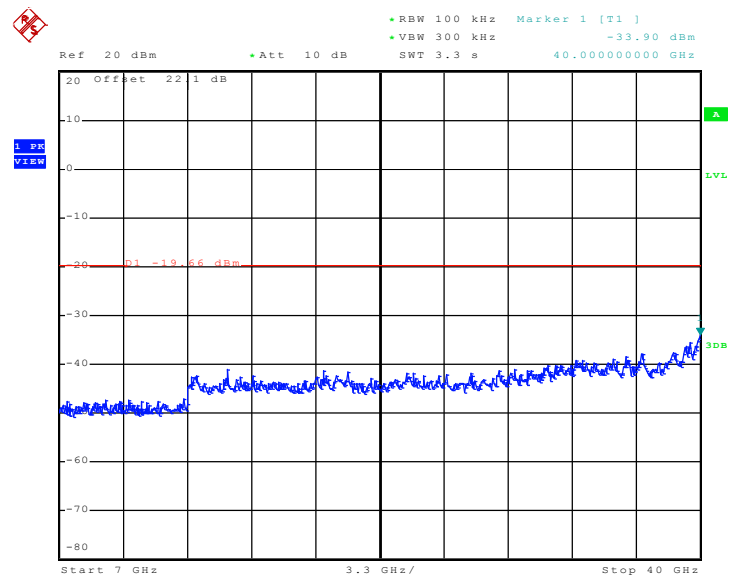
Date: 9.DEC.2010 15:14:57

**Mode 12: Conducted Spurious Emission Plot on
802.11a between 30 MHz~7 GHz**



Date: 9.DEC.2010 15:27:44

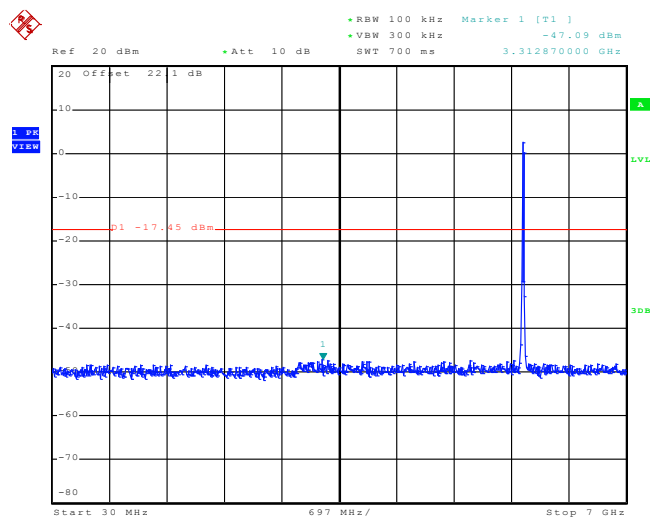
**Mode 12: Conducted Spurious Emission Plot on
802.11a between 7 GHz ~ 40GHz**



Date: 9.DEC.2010 15:28:02

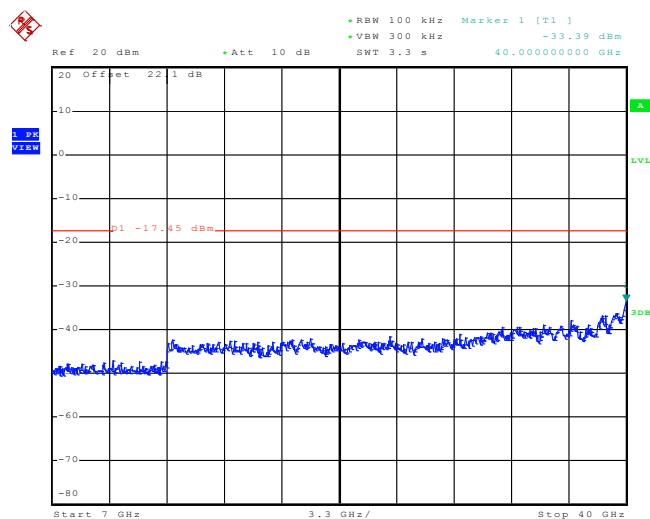
Test Mode :	Mode 13~15	Temperature :	22~24°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	40~43%
Test Channel :	149, 157, 165	Test Engineer :	Ken Hsu

**Mode 13: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 30 MHz~7 GHz**



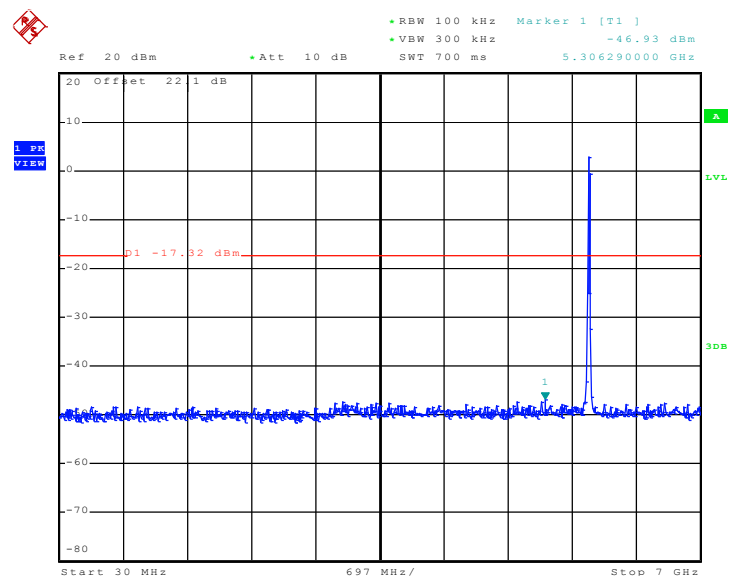
Date: 9.DEC.2010 15:41:08

**Mode 13: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 7 GHz ~ 40GHz**



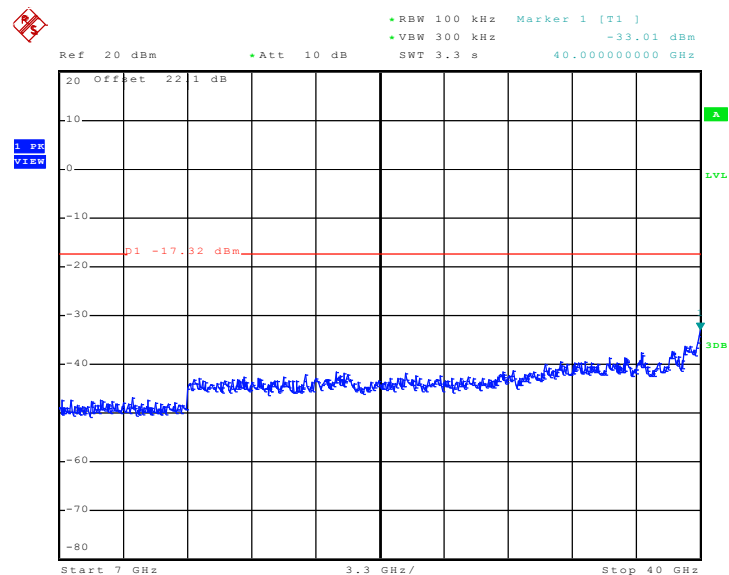
Date: 9.DEC.2010 15:41:25

**Mode 14: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 30 MHz~7 GHz**



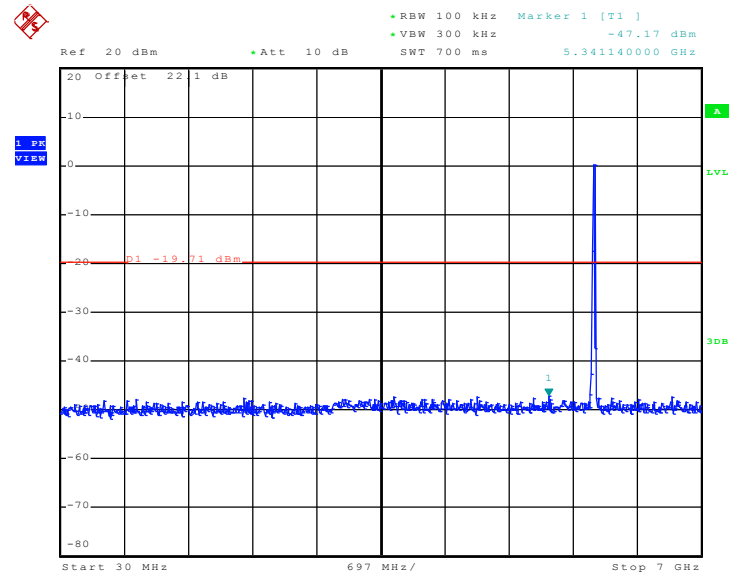
Date: 9.DEC.2010 15:44:16

**Mode 14: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 7 GHz ~ 40GHz**



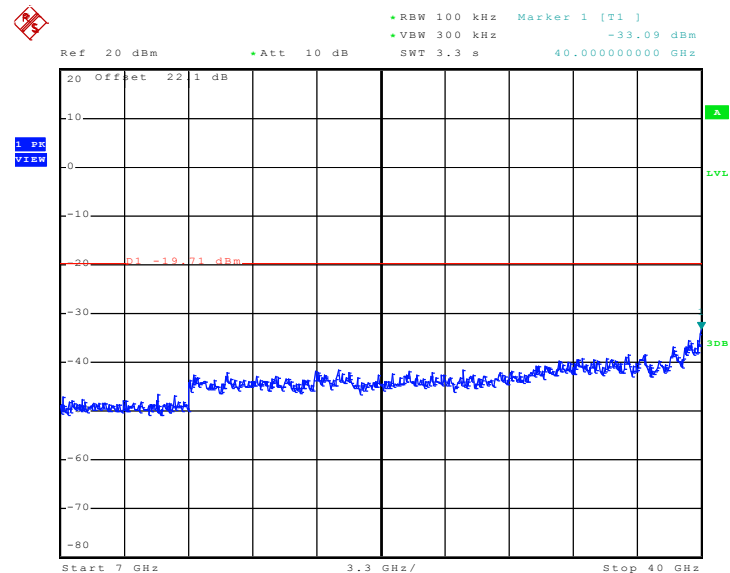
Date: 9.DEC.2010 15:44:33

**Mode 15: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 30 MHz~7 GHz**



Date: 9.DEC.2010 15:47:55

**Mode 15: Conducted Spurious Emission Plot on
802.11n (BW 20MHz) between 7 GHz ~ 40GHz**



Date: 9.DEC.2010 15:48:12

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.

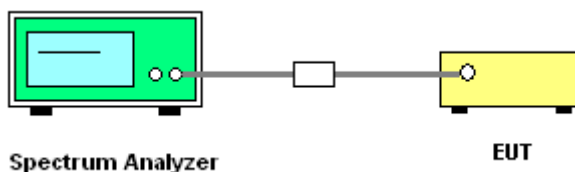
3.5.2 Measuring Instruments

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 1~3	Temperature :	22~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-3.99	8	Pass
06	2437	-3.80	8	Pass
11	2462	-4.14	8	Pass

Test Mode :	Mode 4~ 6	Temperature :	22~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-13.07	8	Pass
06	2437	-8.08	8	Pass
11	2462	-13.00	8	Pass

Test Mode :	Mode 7~9	Temperature :	22~24°C
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
01	2412	-12.87	8	Pass
06	2437	-7.93	8	Pass
11	2462	-12.75	8	Pass

Test Mode :	Mode 10~12	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11a Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	-10.24	8	Pass
157	5785	-10.31	8	Pass
165	5825	-9.93	8	Pass

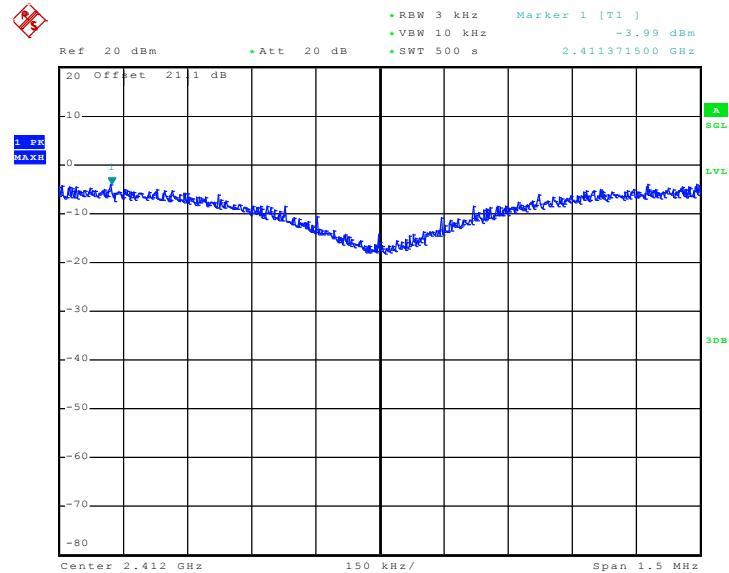
Test Mode :	Mode 13~15	Temperature :	22~24℃
Test Engineer :	Ken Hsu	Relative Humidity :	40~43%

Channel	Frequency (MHz)	802.11n (BW 20MHz) Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
149	5745	-9.99	8	Pass
157	5785	-9.45	8	Pass
165	5825	-9.60	8	Pass



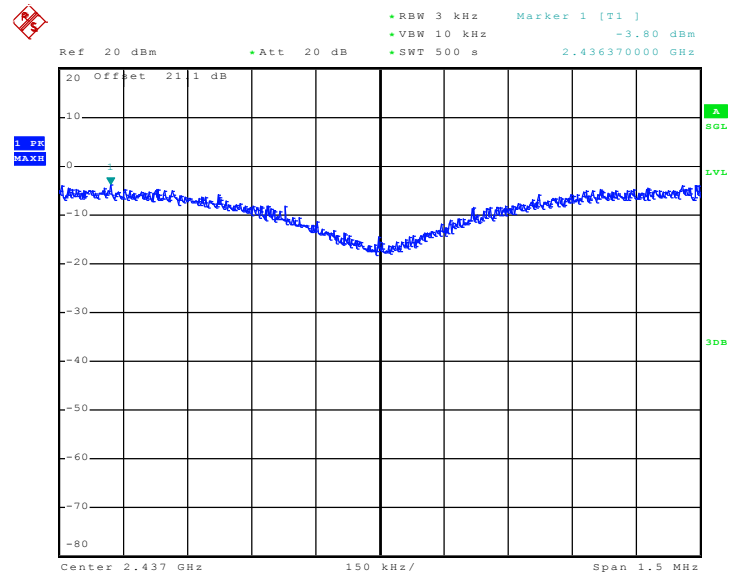
3.5.6 Test Result of Power Spectral Density Plots

Mode 1 : PSD Plot on 802.11b Channel 01



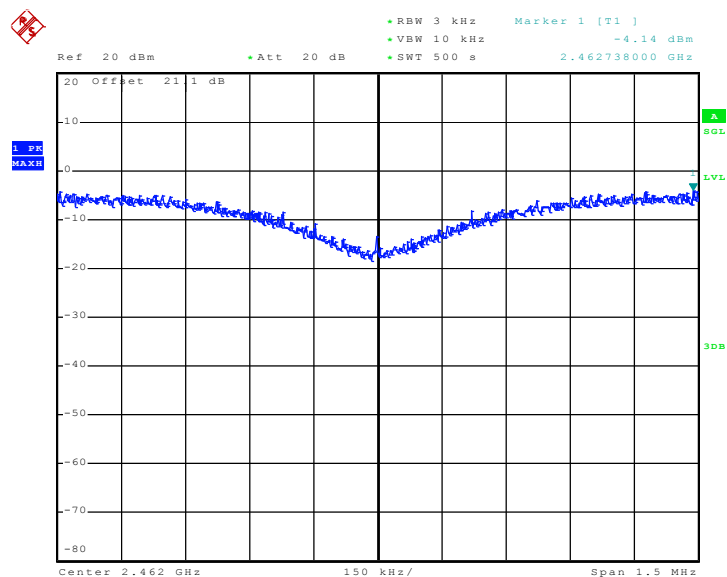
Date: 9.DEC.2010 11:22:47

Mode 2 : PSD Plot on 802.11b Channel 06



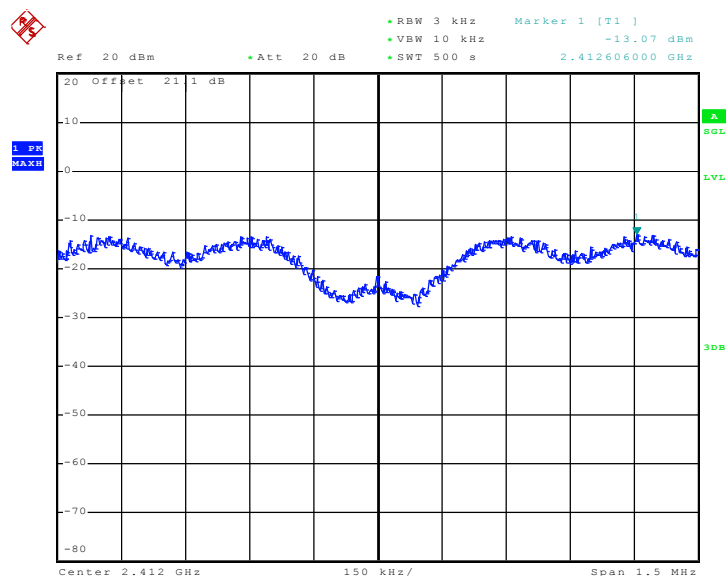
Date: 9.DEC.2010 11:35:51

Mode 3 : PSD Plot on 802.11b Channel 11

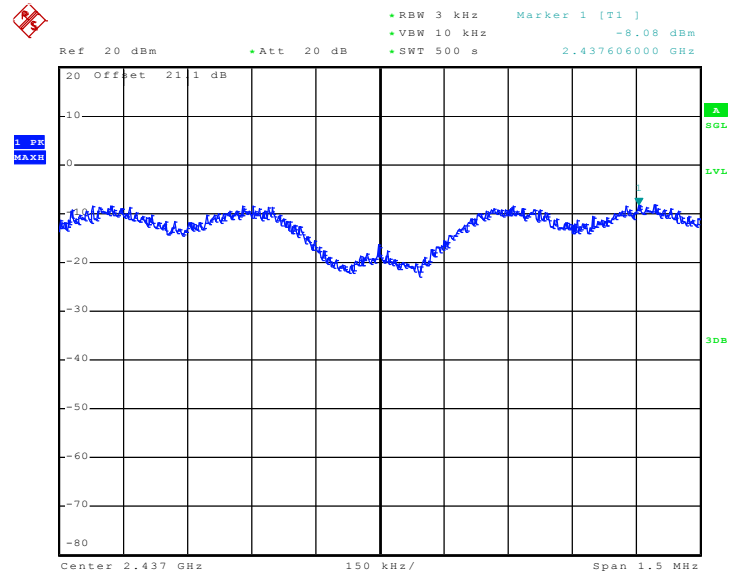


Date: 9.DEC.2010 11:47:48

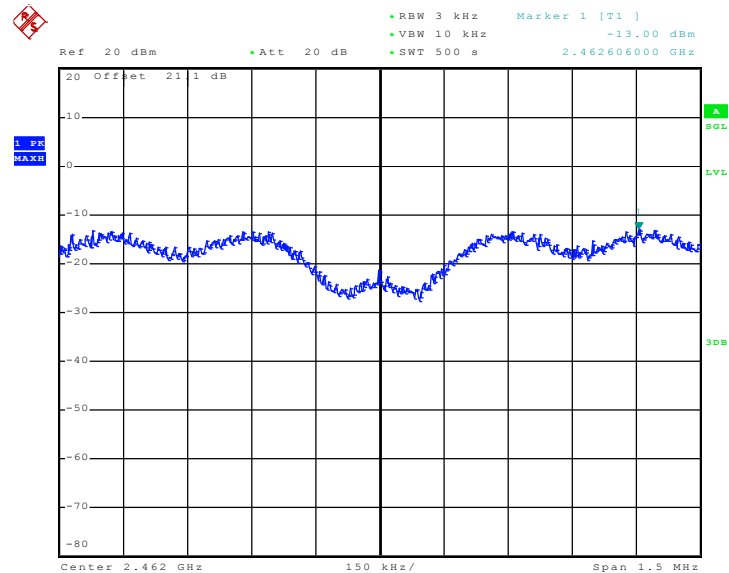
Mode 4 : PSD Plot on 802.11g Channel 01



Date: 9.DEC.2010 12:31:37

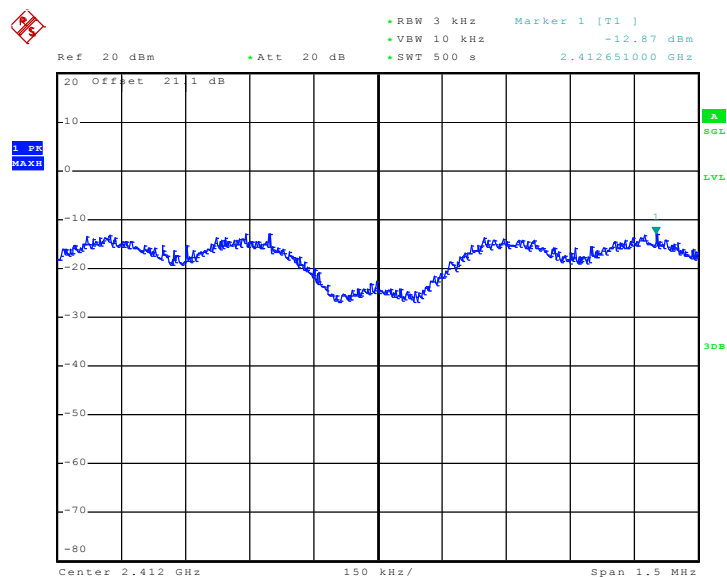
Mode 5 : PSD Plot on 802.11g Channel 06


Date: 9.DEC.2010 13:11:11

Mode 6 : PSD Plot on 802.11g Channel 11


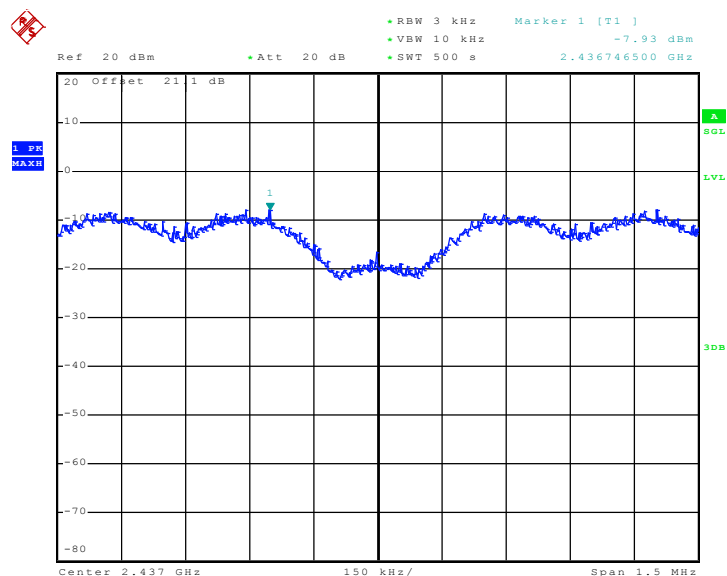
Date: 9.DEC.2010 13:30:32

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

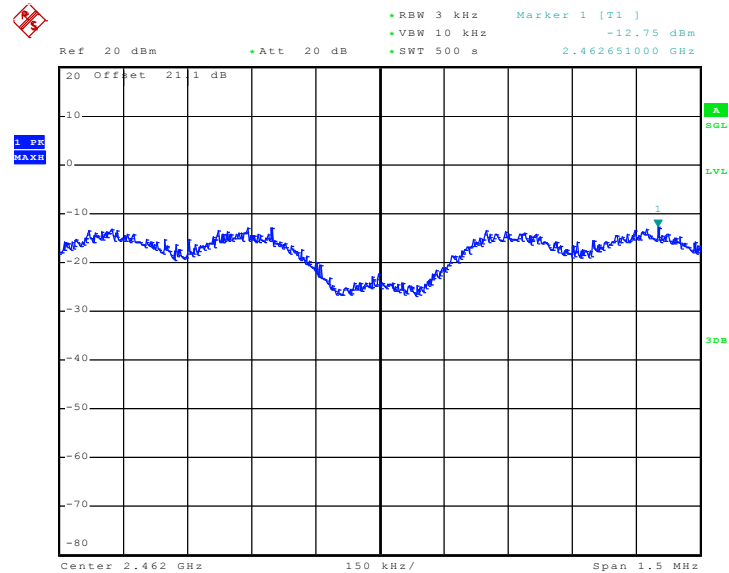


Date: 9.DEC.2010 13:56:32

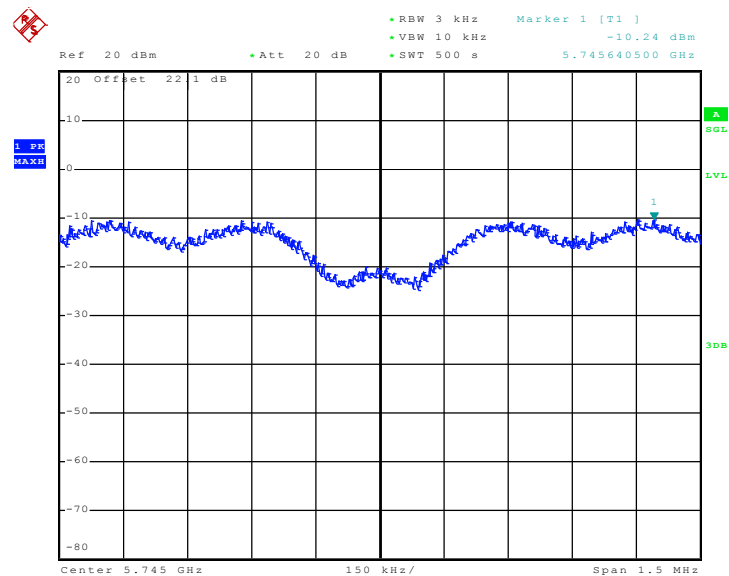
Mode 8 : PSD Plot on 802.11n (BW 20MHz) Channel 06



Date: 9.DEC.2010 14:47:13

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


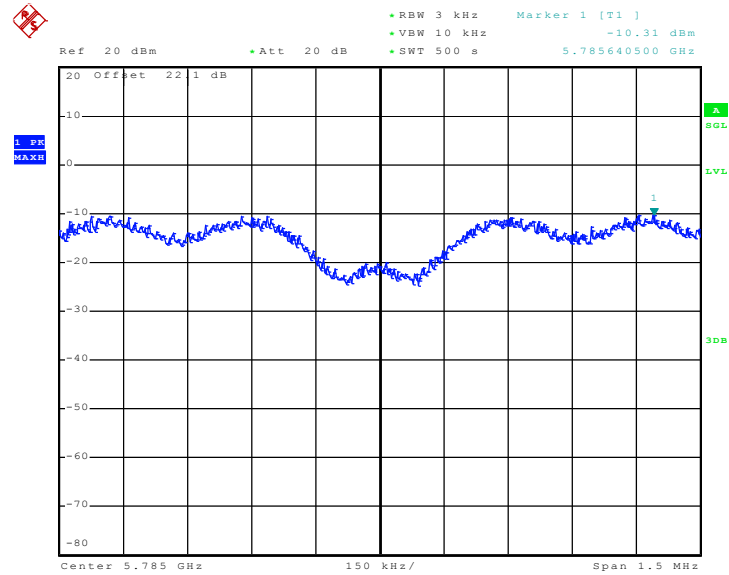
Date: 9.DEC.2010 14:21:25

Mode 10: PSD Plot on 802.11a Channel 149


Date: 9.DEC.2010 15:04:40

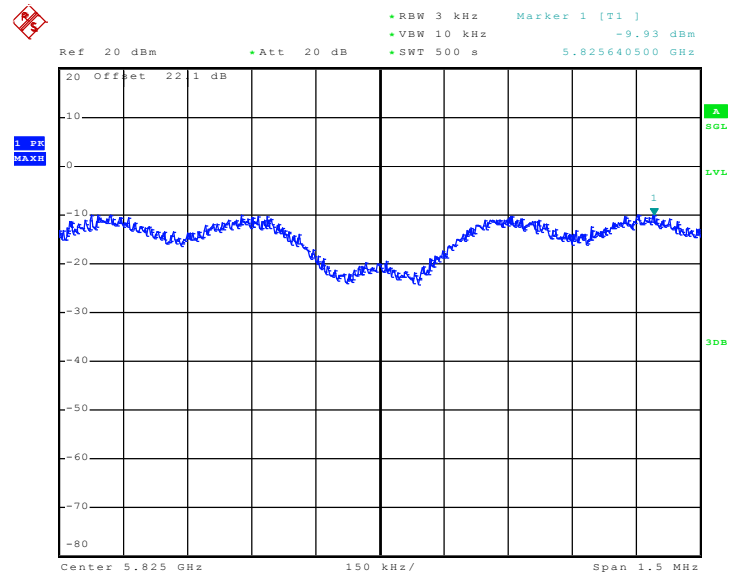


Mode 11: PSD Plot on 802.11a Channel 157



Date: 9.DEC.2010 15:24:26

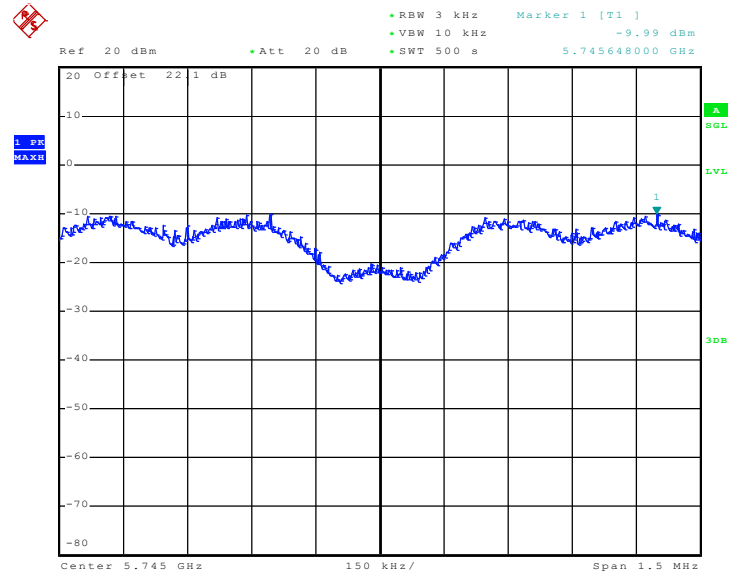
Mode 12: PSD Plot on 802.11a Channel 165



Date: 9.DEC.2010 15:36:55

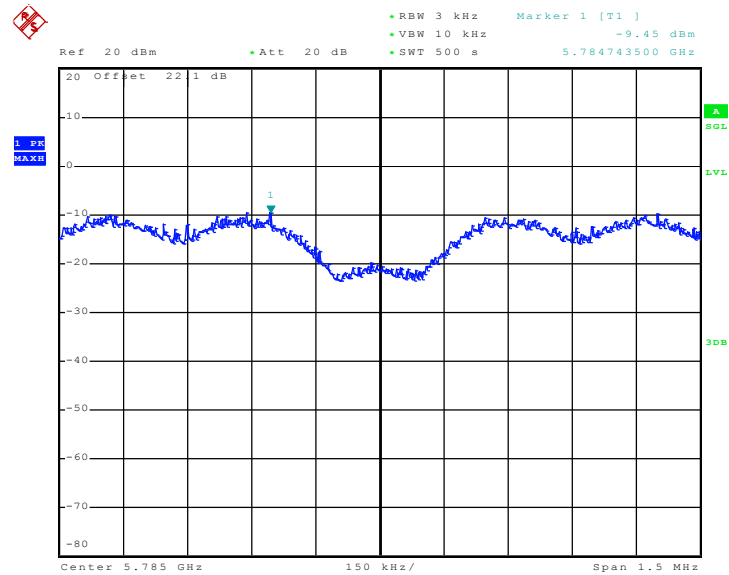


Mode 13: PSD Plot on 802.11n (BW 20MHz) Channel 149



Date: 9.DEC.2010 15:57:19

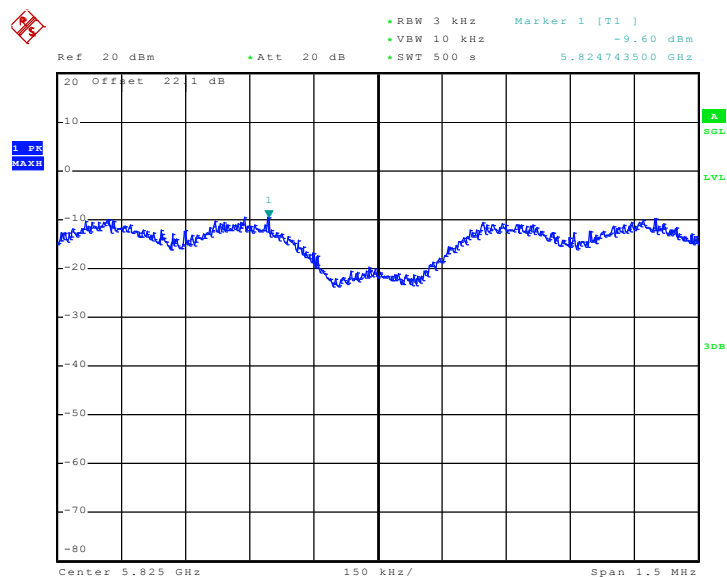
Mode 14: PSD Plot on 802.11n (BW 20MHz) Channel 157



Date: 9.DEC.2010 16:06:20



Mode 15: PSD Plot on 802.11n (BW 20MHz) Channel 165



Date: 9.DEC.2010 16:16:27

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.

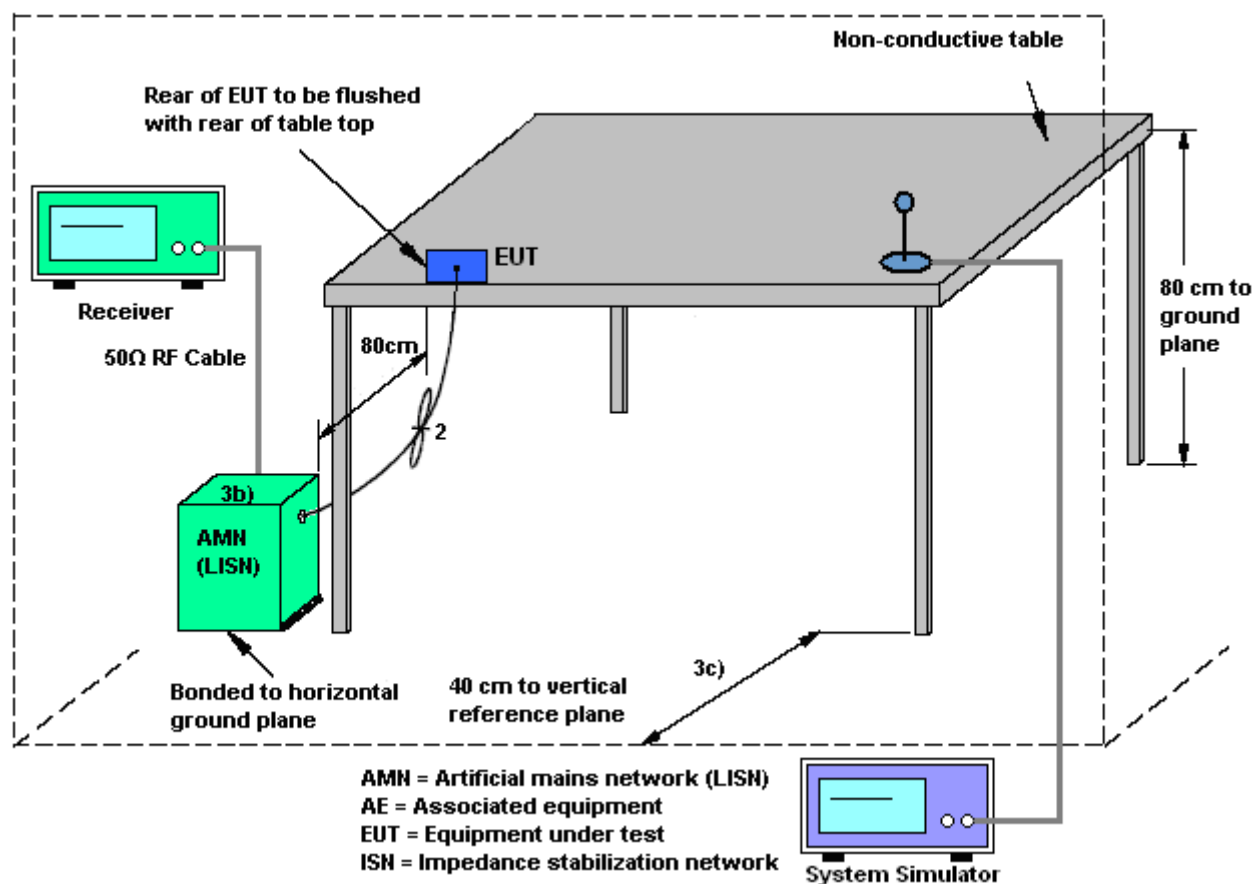
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

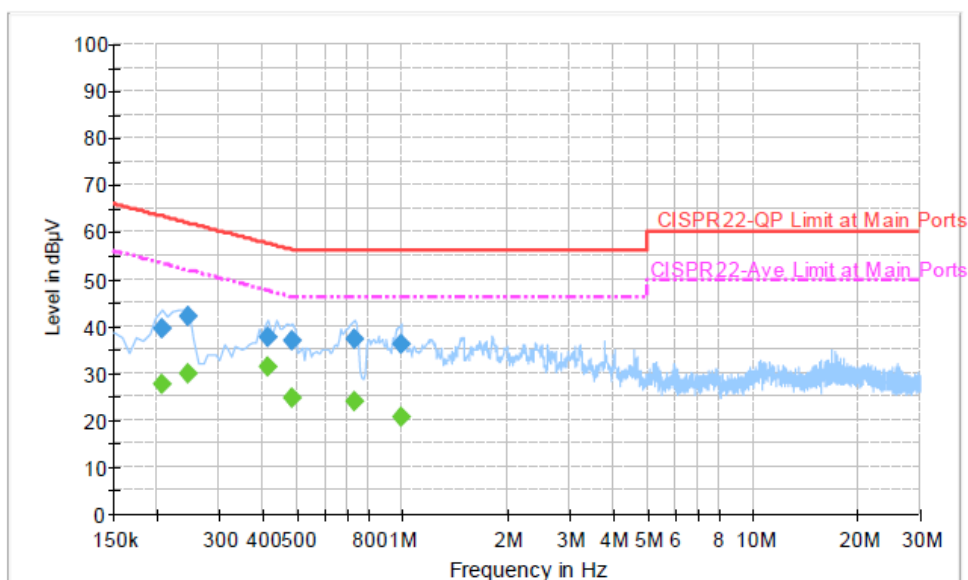
4. The testing follows the guidelines in ANSI C63.4-2003.
5. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
6. Connect EUT to the power mains through a line impedance stabilization network (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℃
Test Engineer :	Novic Jiang	Relative Humidity :	42~44%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + MPEG4 + Scanner + Cradle + Adapter + RS232 Terminal + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



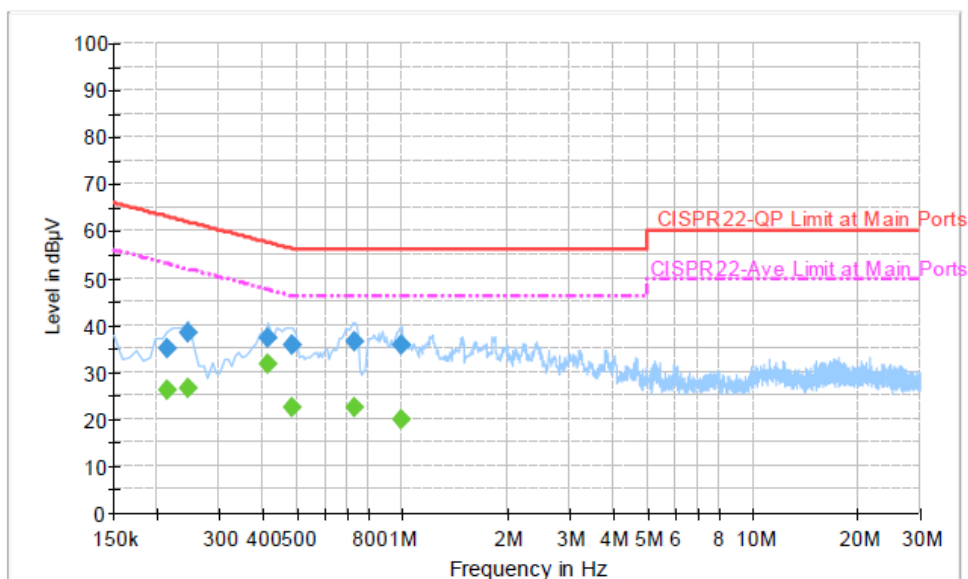
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.206000	39.6	Off	L1	19.3	23.8	63.4
0.246000	42.2	Off	L1	19.4	19.7	61.9
0.414000	37.7	Off	L1	19.4	19.9	57.6
0.486000	36.8	Off	L1	19.4	19.4	56.2
0.734000	37.3	Off	L1	19.4	18.7	56.0
0.990000	36.2	Off	L1	19.4	19.8	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.206000	27.7	Off	L1	19.3	25.7	53.4
0.246000	30.0	Off	L1	19.4	21.9	51.9
0.414000	31.2	Off	L1	19.4	16.4	47.6
0.486000	24.7	Off	L1	19.4	21.5	46.2
0.734000	24.0	Off	L1	19.4	22.0	46.0
0.990000	20.8	Off	L1	19.4	25.2	46.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	42~44%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + MPEG4 + Scanner + Cradle + Adapter + RS232 Terminal + USB Cable (Link with Notebook)		
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)
0.214000	35.1	Off	N	19.4	27.9	63.0
0.246000	38.3	Off	N	19.4	23.6	61.9
0.414000	37.1	Off	N	19.4	20.5	57.6
0.486000	35.9	Off	N	19.4	20.3	56.2
0.734000	36.7	Off	N	19.4	19.3	56.0
0.990000	35.9	Off	N	19.4	20.1	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.214000	26.1	Off	N	19.4	26.9	53.0
0.246000	26.6	Off	N	19.4	25.3	51.9
0.414000	31.8	Off	N	19.4	15.8	47.6
0.486000	22.6	Off	N	19.4	23.6	46.2
0.734000	22.4	Off	N	19.4	23.6	46.0
0.990000	20.0	Off	N	19.4	26.0	46.0

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

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

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

3.7.2 Measuring Instruments

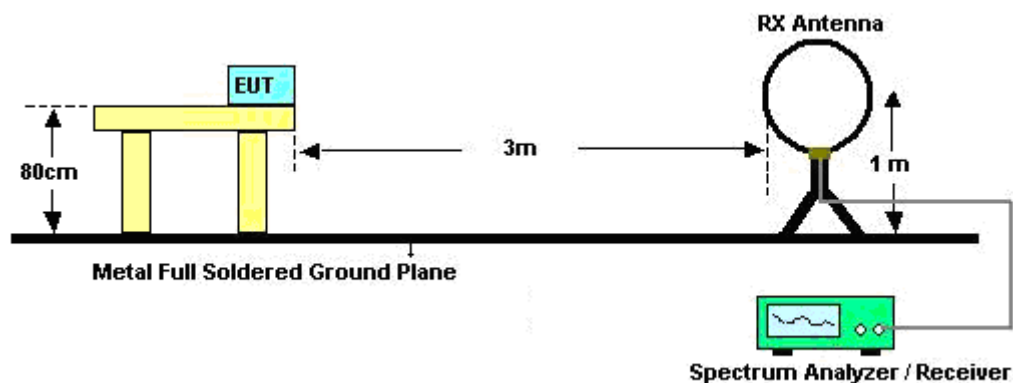
See list of measuring instruments of this test report.

3.7.3 Test Procedures

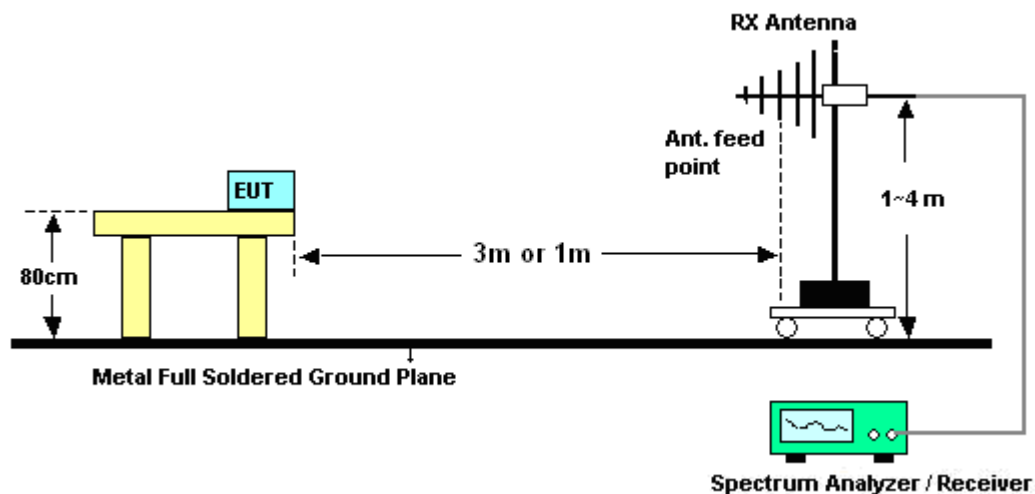
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep =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

3.7.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



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

Test Engineer :	Ivan Jiang	Temperature :	22~23℃	
		Relative Humidity :	50~52%	

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 ~ 10th Harmonic)

Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
180.66	20.69	-22.81	43.50	41.93	9.04	1.25	31.53	-	-	Peak
214.41	25.81	-17.69	43.50	45.77	10.13	1.38	31.47	125	331	Peak
264.90	23.76	-22.24	46.00	40.64	12.90	1.62	31.40	-	-	Peak
805.40	23.82	-22.18	46.00	28.82	22.53	3.15	30.68	-	-	Peak
917.40	25.66	-20.34	46.00	29.08	23.85	3.38	30.65	-	-	Peak
979.00	25.86	-28.14	54.00	28.33	24.62	3.49	30.58	-	-	Peak
2383.53	42.66	-11.34	54.00	38.32	32.16	6.03	33.85	100	356	Average
2383.53	53.39	-20.61	74.00	49.05	32.16	6.03	33.85	100	356	Peak
2412.00	104.58	-	-	100.18	32.20	6.07	33.87	100	356	Peak
2412.00	100.70	-	-	96.30	32.20	6.07	33.87	100	356	Average
2494.00	34.68	-19.32	54.00	30.10	32.30	6.18	33.90	100	356	Average
2494.00	54.85	-19.15	74.00	50.27	32.30	6.18	33.90	100	356	Peak



Test Mode :	Mode 1	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
73.74	25.85	-14.15	40.00	49.91	6.63	0.85	31.54	129	45	Peak
133.41	26.64	-16.86	43.50	45.45	11.58	1.17	31.56	-	-	Peak
213.33	26.33	-17.17	43.50	46.36	10.06	1.38	31.47	-	-	Peak
579.30	24.18	-21.82	46.00	33.06	19.44	2.63	30.95	-	-	Peak
786.50	24.05	-21.95	46.00	29.36	22.26	3.12	30.69	-	-	Peak
954.50	26.78	-19.22	46.00	29.57	24.32	3.46	30.57	-	-	Peak
2311.09	40.49	-13.51	54.00	36.32	32.07	5.92	33.82	116	29	Average
2311.09	52.92	-21.08	74.00	48.75	32.07	5.92	33.82	116	29	Peak
2412.00	102.87	-	-	98.47	32.20	6.07	33.87	116	29	Peak
2412.00	98.90	-	-	94.50	32.20	6.07	33.87	116	29	Average
2486.00	33.58	-20.42	54.00	29.02	32.28	6.18	33.90	116	29	Average
2486.00	45.13	-28.87	74.00	40.57	32.28	6.18	33.90	116	29	Peak



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
180.66	19.55	-23.95	43.50	40.79	9.04	1.25	31.53	-	-	Peak
214.41	25.91	-17.59	43.50	45.87	10.13	1.38	31.47	132	66	Peak
287.85	22.65	-23.35	46.00	39.03	13.27	1.68	31.33	-	-	Peak
803.30	24.15	-21.85	46.00	29.18	22.50	3.15	30.68	-	-	Peak
870.50	25.05	-20.95	46.00	29.19	23.28	3.30	30.72	-	-	Peak
995.80	26.87	-27.13	54.00	29.10	24.84	3.51	30.58	-	-	Peak
2358.00	53.47	-20.53	74.00	49.19	32.13	5.99	33.84	103	291	Peak
2358.00	37.19	-16.81	54.00	32.91	32.13	5.99	33.84	103	291	Average
2437.00	106.97	-	-	102.50	32.24	6.11	33.88	103	291	Peak
2437.00	103.04	-	-	98.57	32.24	6.11	33.88	103	291	Average
2486.00	48.08	-25.92	74.00	43.52	32.28	6.18	33.90	103	291	Peak
2486.00	35.78	-18.22	54.00	31.22	32.28	6.18	33.90	103	291	Average



Test Mode :	Mode 2	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
73.74	26.33	-13.67	40.00	50.39	6.63	0.85	31.54	108	351	Peak
134.22	25.46	-18.04	43.50	44.27	11.58	1.17	31.56	-	-	Peak
216.30	23.85	-22.15	46.00	43.64	10.27	1.40	31.46	-	-	Peak
632.50	23.56	-22.44	46.00	31.53	20.13	2.79	30.89	-	-	Peak
805.40	24.58	-21.42	46.00	29.58	22.53	3.15	30.68	-	-	Peak
993.70	26.01	-27.99	54.00	28.27	24.82	3.50	30.58	-	-	Peak
2374.00	45.70	-28.30	74.00	41.39	32.16	5.99	33.84	114	78	Peak
2374.00	34.18	-19.82	54.00	29.87	32.16	5.99	33.84	114	78	Average
2437.00	104.12	-	-	99.65	32.24	6.11	33.88	114	78	Peak
2437.00	100.03	-	-	95.56	32.24	6.11	33.88	114	78	Average
2484.00	46.79	-27.21	74.00	42.23	32.28	6.18	33.90	114	78	Peak
2484.00	34.69	-19.31	54.00	30.13	32.28	6.18	33.90	114	78	Average



Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
181.74	20.29	-23.21	43.50	41.53	9.04	1.25	31.53	-	-	Peak
214.41	24.91	-18.59	43.50	44.87	10.13	1.38	31.47	163.00	234.00	Peak
294.33	21.56	-24.44	46.00	37.78	13.38	1.73	31.33	-	-	Peak
761.30	22.79	-23.21	46.00	28.55	21.86	3.08	30.70	-	-	Peak
845.30	24.88	-21.12	46.00	29.35	23.00	3.26	30.73	-	-	Peak
987.40	26.50	-27.50	54.00	28.85	24.73	3.50	30.58	-	-	Peak
2380.00	49.66	-24.34	74.00	45.32	32.16	6.03	33.85	129.00	273.00	Peak
2380.00	34.73	-19.27	54.00	30.39	32.16	6.03	33.85	129.00	273.00	Average
2462.00	108.91	-	-	104.40	32.26	6.14	33.89	129.00	273.00	Peak
2462.00	104.99	-	-	100.48	32.26	6.14	33.89	129.00	273.00	Average
2487.40	44.97	-9.03	54.00	40.41	32.28	6.18	33.90	129.00	273.00	Average
2487.40	54.56	-19.44	74.00	50.00	32.28	6.18	33.90	129.00	273.00	Peak



Test Mode :	Mode 3	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
74.01	25.96	-14.04	40.00	50.52	6.63	0.85	31.54	105.00	194.00	Peak
118.02	25.97	-17.53	43.50	45.08	11.36	1.09	31.56	-	-	Peak
179.85	23.83	-19.67	43.50	45.00	9.11	1.25	31.53	-	-	Peak
691.30	24.87	-21.13	46.00	31.99	20.79	2.92	30.83	-	-	Peak
856.50	24.47	-21.53	46.00	28.80	23.12	3.28	30.73	-	-	Peak
965.00	26.48	-27.52	54.00	29.12	24.45	3.48	30.57	-	-	Peak
2358.00	45.36	-28.64	74.00	41.08	32.13	5.99	33.84	200.00	337.00	Peak
2358.00	33.74	-20.26	54.00	29.46	32.13	5.99	33.84	200.00	337.00	Average
2462.00	102.68	-	-	98.17	32.26	6.14	33.89	200.00	337.00	Peak
2462.00	98.80	-	-	94.29	32.26	6.14	33.89	200.00	337.00	Average
2486.13	38.50	-15.50	54.00	33.94	32.28	6.18	33.90	200.00	337.00	Average
2486.13	49.06	-24.94	74.00	44.50	32.28	6.18	33.90	200.00	337.00	Peak



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
176.34	19.97	-23.53	43.50	40.93	9.33	1.24	31.53	-	-	Peak
214.41	24.61	-18.89	43.50	44.57	10.13	1.38	31.47	121	159	Peak
288.93	20.71	-25.29	46.00	37.05	13.29	1.69	31.32	-	-	Peak
808.90	24.28	-21.72	46.00	29.24	22.57	3.16	30.69	-	-	Peak
914.60	25.71	-20.29	46.00	29.18	23.81	3.38	30.66	-	-	Peak
998.60	26.88	-27.12	54.00	29.07	24.88	3.51	30.58	-	-	Peak
2389.42	40.27	-13.73	54.00	35.91	32.18	6.03	33.85	100	356	Average
2389.42	58.59	-15.41	74.00	54.23	32.18	6.03	33.85	100	356	Peak
2412.00	100.92	-	-	96.52	32.20	6.07	33.87	100	356	Peak
2412.00	90.18	-	-	85.78	32.20	6.07	33.87	100	356	Average
2492.00	33.64	-20.36	54.00	29.06	32.30	6.18	33.90	100	356	Average
2492.00	50.33	-23.67	74.00	45.75	32.30	6.18	33.90	100	356	Peak



Test Mode :	Mode 4	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
74.82	25.85	-14.15	40.00	-49.82	6.71	0.85	31.54	140	205	Peak
135.30	26.41	-17.09	43.50	45.20	11.59	1.18	31.56	-	-	Peak
180.66	24.61	-18.89	43.50	45.85	9.04	1.25	31.53	-	-	Peak
617.80	25.37	-20.63	46.00	33.56	19.97	2.74	30.90	-	-	Peak
757.80	24.74	-21.26	46.00	30.57	21.80	3.07	30.70	-	-	Peak
956.60	26.38	-19.62	46.00	29.14	24.34	3.47	30.57	-	-	Peak
2389.61	37.04	-16.96	54.00	32.68	32.18	6.03	33.85	113	29	Average
2389.61	53.24	-20.76	74.00	48.88	32.18	6.03	33.85	113	29	Peak
2412.00	99.73	-	-	95.33	32.20	6.07	33.87	113	29	Peak
2412.00	89.63	-	-	85.23	32.20	6.07	33.87	113	29	Average
2492.00	33.40	-20.60	54.00	28.82	32.30	6.18	33.90	113	29	Average
2492.00	46.15	-27.85	74.00	41.57	32.30	6.18	33.90	113	29	Peak



Test Mode :	Mode 5	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
180.93	19.63	-23.87	43.50	40.87	9.04	1.25	31.53	-	-	Peak
214.41	24.83	-18.67	43.50	44.79	10.13	1.38	31.47	141	226	Peak
255.18	23.89	-22.11	46.00	41.00	12.75	1.56	31.42	-	-	Peak
733.30	23.13	-22.87	46.00	29.44	21.41	3.02	30.74	-	-	Peak
915.30	25.79	-20.21	46.00	29.24	23.83	3.38	30.66	-	-	Peak
985.30	26.37	-27.63	54.00	28.74	24.71	3.50	30.58	-	-	Peak
2358.00	46.86	-27.14	74.00	42.58	32.13	5.99	33.84	102	290	Peak
2358.00	34.07	-19.93	54.00	29.79	32.13	5.99	33.84	102	290	Average
2437.00	103.01	-	-	98.54	32.24	6.11	33.88	102	290	Peak
2437.00	92.54	-	-	88.07	32.24	6.11	33.88	102	290	Average
2484.00	47.51	-26.49	74.00	42.95	32.28	6.18	33.90	102	290	Peak
2484.00	34.12	-19.88	54.00	29.56	32.28	6.18	33.90	102	290	Average



Test Mode :	Mode 5	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
115.86	26.26	-17.24	43.50	45.54	11.20	1.08	31.56	-	-	Peak
214.14	26.08	-17.42	43.50	46.04	10.13	1.38	31.47	-	-	Peak
297.57	28.85	-17.15	46.00	45.00	13.43	1.75	31.33	158	269	Peak
632.50	23.69	-22.31	46.00	31.66	20.13	2.79	30.89	-	-	Peak
853.70	24.80	-21.20	46.00	29.16	23.09	3.28	30.73	-	-	Peak
982.50	27.18	-26.82	54.00	29.60	24.67	3.49	30.58	-	-	Peak
2374.00	46.50	-27.50	74.00	42.19	32.16	5.99	33.84	114	78	Peak
2374.00	33.81	-20.19	54.00	29.50	32.16	5.99	33.84	114	78	Average
2437.00	100.93	-	-	96.46	32.24	6.11	33.88	114	78	Peak
2437.00	90.06	-	-	85.59	32.24	6.11	33.88	114	78	Average
2486.00	46.12	-27.88	74.00	41.56	32.28	6.18	33.90	114	78	Peak
2486.00	33.67	-20.33	54.00	29.11	32.28	6.18	33.90	114	78	Average



Test Mode :	Mode 6	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	2462 MHz are 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
180.93	20.31	-23.19	43.50	41.55	9.04	1.25	31.53	-	-	Peak
216.30	26.87	-19.13	46.00	46.66	10.27	1.40	31.46	113	208	Peak
294.33	21.48	-24.52	46.00	37.70	13.38	1.73	31.33	-	-	Peak
713.70	22.22	-23.78	46.00	28.94	21.10	2.97	30.79	-	-	Peak
928.60	25.36	-20.64	46.00	28.60	23.98	3.41	30.63	-	-	Peak
976.20	26.35	-27.65	54.00	28.86	24.58	3.49	30.58	-	-	Peak
2382.00	46.40	-27.60	74.00	42.06	32.16	6.03	33.85	129	272	Peak
2382.00	33.93	-20.07	54.00	29.59	32.16	6.03	33.85	129	272	Average
2462.00	105.51	-	-	101.00	32.26	6.14	33.89	129	272	Peak
2462.00	94.38	-	-	89.87	32.26	6.14	33.89	129	272	Average
2483.50	41.43	-12.57	54.00	36.87	32.28	6.18	33.90	129	272	Average
2483.50	60.57	-13.43	74.00	56.01	32.28	6.18	33.90	129	272	Peak



Test Mode :	Mode 6	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
118.29	27.47	-16.03	43.50	46.58	11.36	1.09	31.56	138	338	Peak
134.22	26.34	-17.16	43.50	45.15	11.58	1.17	31.56	-	-	Peak
215.22	25.65	-17.85	43.50	45.53	10.20	1.39	31.47	-	-	Peak
640.90	23.86	-22.14	46.00	31.70	20.23	2.81	30.88	-	-	Peak
791.40	24.80	-21.20	46.00	30.02	22.33	3.13	30.68	-	-	Peak
979.00	26.12	-27.88	54.00	28.59	24.62	3.49	30.58	-	-	Peak
2334.00	46.26	-27.74	74.00	42.05	32.09	5.95	33.83	196	337	Peak
2334.00	33.59	-20.41	54.00	29.38	32.09	5.95	33.83	196	337	Average
2462.00	98.50	-	-	93.99	32.26	6.14	33.89	196	337	Peak
2462.00	88.05	-	-	83.54	32.26	6.14	33.89	196	337	Average
2483.50	37.07	-16.93	54.00	32.51	32.28	6.18	33.90	196	337	Average
2483.50	51.82	-22.18	74.00	47.26	32.28	6.18	33.90	196	337	Peak



Test Mode :	Mode 7	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
173.37	19.62	-23.88	43.50	40.37	9.53	1.24	31.52	-	-	Peak
214.14	25.75	-17.75	43.50	45.71	10.13	1.38	31.47	160	349	Peak
284.61	20.30	-25.70	46.00	36.77	13.21	1.66	31.34	-	-	Peak
668.20	22.18	-23.82	46.00	29.62	20.53	2.88	30.85	-	-	Peak
850.90	24.91	-21.09	46.00	29.31	23.06	3.27	30.73	-	-	Peak
951.00	25.86	-20.14	46.00	28.70	24.27	3.46	30.57	-	-	Peak
2389.61	41.37	-12.63	54.00	37.01	32.18	6.03	33.85	100	356	Average
2389.61	57.12	-16.88	74.00	52.76	32.18	6.03	33.85	100	356	Peak
2412.00	100.24	-	-	95.84	32.20	6.07	33.87	100	356	Peak
2412.00	89.76	-	-	85.36	32.20	6.07	33.87	100	356	Average
2494.00	33.78	-20.22	54.00	29.20	32.30	6.18	33.90	100	356	Average
2494.00	49.73	-24.27	74.00	45.15	32.30	6.18	33.90	100	356	Peak



Test Mode :	Mode 7	Temperature :	22~23°C
Test Channel :	01	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
74.01	26.81	-13.19	40.00	50.87	6.63	0.85	31.54	100	342	Peak
215.22	25.99	-17.51	43.50	45.87	10.20	1.39	31.47	-	-	Peak
240.33	26.25	-19.75	46.00	44.16	11.98	1.53	31.42	-	-	Peak
674.50	23.90	-22.10	46.00	31.26	20.60	2.89	30.85	-	-	Peak
859.30	25.18	-20.82	46.00	29.46	23.16	3.28	30.72	-	-	Peak
984.60	26.25	-27.75	54.00	28.65	24.69	3.49	30.58	-	-	Peak
2389.61	38.86	-15.14	54.00	34.50	32.18	6.03	33.85	119	85	Average
2389.61	53.88	-20.12	74.00	49.52	32.18	6.03	33.85	119	85	Peak
2412.00	99.49	-	-	95.09	32.20	6.07	33.87	119	85	Peak
2412.00	88.80	-	-	84.40	32.20	6.07	33.87	119	85	Average
2486.00	33.32	-20.68	54.00	28.76	32.28	6.18	33.90	119	85	Average
2486.00	46.64	-27.36	74.00	42.08	32.28	6.18	33.90	119	85	Peak



Test Mode :	Mode 8	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
180.66	20.08	-23.42	43.50	41.32	9.04	1.25	31.53	-	-	Peak
214.14	25.09	-18.41	43.50	45.05	10.13	1.38	31.47	151	332	Peak
276.78	21.43	-24.57	46.00	38.06	13.09	1.64	31.36	-	-	Peak
621.30	20.83	-25.17	46.00	28.97	20.01	2.75	30.90	-	-	Peak
803.30	25.50	-20.50	46.00	30.53	22.50	3.15	30.68	-	-	Peak
984.60	26.88	-27.12	54.00	29.28	24.69	3.49	30.58	-	-	Peak
2388.00	53.92	-20.08	74.00	49.56	32.18	6.03	33.85	102	291	Peak
2388.00	36.20	-17.80	54.00	31.84	32.18	6.03	33.85	102	291	Average
2437.00	107.17	-	-	102.70	32.24	6.11	33.88	102	291	Peak
2437.00	97.00	-	-	92.53	32.24	6.11	33.88	102	291	Average
2484.00	52.58	-21.42	74.00	48.02	32.28	6.18	33.90	102	291	Peak
2484.00	36.36	-17.64	54.00	31.80	32.28	6.18	33.90	102	291	Average



Test Mode :	Mode 8	Temperature :	22~23°C
Test Channel :	06	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
74.01	25.84	-14.16	40.00	49.90	6.63	0.85	31.54	163	117	Peak
135.30	26.97	-16.53	43.50	45.76	11.59	1.18	31.56	-	-	Peak
210.09	25.96	-17.54	43.50	46.21	9.86	1.36	31.47	-	-	Peak
643.00	23.24	-22.76	46.00	31.05	20.25	2.82	30.88	-	-	Peak
890.10	25.48	-20.52	46.00	29.34	23.52	3.33	30.71	-	-	Peak
996.50	26.39	-27.61	54.00	28.62	24.84	3.51	30.58	-	-	Peak
2390.00	53.75	-20.25	74.00	49.39	32.18	6.03	33.85	118	83	Peak
2390.00	35.07	-18.93	54.00	30.71	32.18	6.03	33.85	118	83	Average
2437.00	104.33	-	-	99.86	32.24	6.11	33.88	118	83	Peak
2437.00	93.92	-	-	89.45	32.24	6.11	33.88	118	83	Average
2492.00	47.60	-26.40	74.00	43.02	32.30	6.18	33.90	118	83	Peak
2492.00	34.11	-19.89	54.00	29.53	32.30	6.18	33.90	118	83	Average



Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
176.61	20.02	-23.48	43.50	40.98	9.33	1.24	31.53	-	-	Peak
214.41	24.83	-18.67	43.50	44.79	10.13	1.38	31.47	168	231	Peak
267.06	21.28	-24.72	46.00	38.12	12.93	1.62	31.39	-	-	Peak
696.90	22.65	-23.35	46.00	29.68	20.86	2.93	30.82	-	-	Peak
859.30	24.25	-21.75	46.00	28.53	23.16	3.28	30.72	-	-	Peak
990.20	26.16	-27.84	54.00	28.47	24.77	3.50	30.58	-	-	Peak
2364.00	46.08	-27.92	74.00	41.80	32.13	5.99	33.84	128	268	Peak
2364.00	33.20	-20.80	54.00	28.92	32.13	5.99	33.84	128	268	Average
2462.00	103.65	-	-	99.14	32.26	6.14	33.89	128	268	Peak
2462.00	93.72	-	-	89.21	32.26	6.14	33.89	128	268	Average
2483.85	59.53	-14.47	74.00	54.97	32.28	6.18	33.90	128	268	Peak
2483.85	42.10	-11.90	54.00	37.54	32.28	6.18	33.90	128	268	Average



Test Mode :	Mode 9	Temperature :	22~23°C
Test Channel :	11	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	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
74.82	25.73	-14.27	40.00	49.71	6.71	0.85	31.54	111	69	Peak
134.49	26.96	-16.54	43.50	45.76	11.59	1.17	31.56	-	-	Peak
238.98	27.75	-18.25	46.00	45.80	11.85	1.52	31.42	-	-	Peak
691.30	23.48	-22.52	46.00	30.60	20.79	2.92	30.83	-	-	Peak
836.20	24.69	-21.31	46.00	29.29	22.89	3.23	30.72	-	-	Peak
996.50	26.38	-27.62	54.00	28.61	24.84	3.51	30.58	-	-	Peak
2310.00	45.33	-28.67	74.00	41.16	32.07	5.92	33.82	101	356	Peak
2310.00	32.81	-21.19	54.00	28.64	32.07	5.92	33.82	101	356	Average
2462.00	96.33	-	-	91.82	32.26	6.14	33.89	101	356	Peak
2462.00	86.25	-	-	81.74	32.26	6.14	33.89	101	356	Average
2485.18	50.43	-23.57	74.00	45.87	32.28	6.18	33.90	101	356	Peak
2485.18	35.91	-18.09	54.00	31.35	32.28	6.18	33.90	101	356	Average



Test Mode :	Mode 10	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
214.41	26.14	-17.36	43.50	46.10	10.13	1.38	31.47	166	289	Peak
235.74	23.06	-22.94	46.00	41.34	11.64	1.51	31.43	-	-	Peak
290.01	20.22	-25.78	46.00	36.54	13.31	1.69	31.32	-	-	Peak
797.00	23.32	-22.68	46.00	28.44	22.42	3.14	30.68	-	-	Peak
864.20	24.85	-21.15	46.00	29.07	23.21	3.29	30.72	-	-	Peak
965.00	26.60	-27.40	54.00	29.24	24.45	3.48	30.57	-	-	Peak
5745.00	112.20	-	-	100.66	34.84	9.91	33.21	167	267	Peak
5745.00	100.83	-	-	89.29	34.84	9.91	33.21	167	267	Average



Test Mode :	Mode 10	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
74.82	25.58	-14.42	40.00	49.56	6.71	0.85	31.54	115	320	Peak
135.30	25.85	-17.65	43.50	44.64	11.59	1.18	31.56	-	-	Peak
210.90	24.79	-18.71	43.50	45.04	9.86	1.36	31.47	-	-	Peak
612.20	24.04	-21.96	46.00	32.32	19.90	2.73	30.91	-	-	Peak
842.50	24.54	-21.46	46.00	29.04	22.97	3.25	30.72	-	-	Peak
979.00	26.93	-27.07	54.00	29.40	24.62	3.49	30.58	-	-	Peak
5745.00	98.77	-	-	87.23	34.84	9.91	33.21	100	269	Average
5745.00	110.85	-	-	99.31	34.84	9.91	33.21	100	269	Peak



Test Mode :	Mode 11	Temperature :	22~23°C
Test Channel :	157	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
179.85	20.92	-22.58	43.50	42.09	9.11	1.25	31.53	-	-	Peak
215.22	25.92	-17.58	43.50	45.80	10.20	1.39	31.47	156	337	Peak
285.42	20.41	-25.59	46.00	36.85	13.23	1.66	31.33	-	-	Peak
699.70	22.82	-23.18	46.00	29.82	20.88	2.94	30.82	-	-	Peak
856.50	24.95	-21.05	46.00	29.28	23.12	3.28	30.73	-	-	Peak
976.90	27.01	-26.99	54.00	29.50	24.60	3.49	30.58	-	-	Peak
5785.00	113.86	-	-	102.31	34.88	9.90	33.23	168	268	Peak
5785.00	103.33	-	-	91.78	34.88	9.90	33.23	168	268	Average



Test Mode :	Mode 11	Temperature :	22~23°C
Test Channel :	157	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
74.82	25.88	-14.12	40.00	49.86	6.71	0.85	31.54	189	17	Peak
230.61	27.11	-18.89	46.00	45.76	11.30	1.49	31.44	-	-	Peak
267.33	28.08	-17.92	46.00	44.88	12.95	1.63	31.38	-	-	Peak
576.50	23.73	-22.27	46.00	32.66	19.40	2.62	30.95	-	-	Peak
881.70	25.16	-20.84	46.00	29.14	23.42	3.31	30.71	-	-	Peak
981.80	26.63	-27.37	54.00	29.06	24.66	3.49	30.58	-	-	Peak
5785.00	112.60	-	-	101.05	34.88	9.90	33.23	100	272	Peak
5785.00	102.37	-	-	90.82	34.88	9.90	33.23	100	272	Average



Test Mode :	Mode 12	Temperature :	22~23°C
Test Channel :	165	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
181.74	19.69	-23.81	43.50	40.93	9.04	1.25	31.53	-	-	Peak
214.14	26.50	-17.00	43.50	46.46	10.13	1.38	31.47	111	16	Peak
270.30	22.54	-23.46	46.00	39.27	13.00	1.64	31.37	-	-	Peak
741.70	22.60	-23.40	46.00	28.73	21.55	3.04	30.72	-	-	Peak
861.40	24.70	-21.30	46.00	28.95	23.18	3.29	30.72	-	-	Peak
987.40	26.07	-27.93	54.00	28.42	24.73	3.50	30.58	-	-	Peak
5825.00	112.90	-	-	101.38	34.93	9.88	33.29	165	270	Peak
5825.00	102.60	-	-	91.08	34.93	9.88	33.29	165	270	Average



Test Mode :	Mode 12	Temperature :	22~23°C
Test Channel :	165	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
115.86	26.01	-17.49	43.50	45.29	11.20	1.08	31.56	-	-	Peak
134.49	26.04	-17.46	43.50	44.84	11.59	1.17	31.56	138	226	Peak
262.74	27.19	-18.81	46.00	44.12	12.87	1.61	31.41	-	-	Peak
690.60	23.86	-22.14	46.00	30.99	20.78	2.92	30.83	-	-	Peak
833.40	25.14	-20.86	46.00	29.77	22.85	3.23	30.71	-	-	Peak
974.10	26.13	-27.87	54.00	28.66	24.56	3.48	30.57	-	-	Peak
5825.00	112.10	-	-	100.58	34.93	9.88	33.29	100	268	Peak
5825.00	102.51	-	-	90.99	34.93	9.88	33.29	100	268	Average



Test Mode :	Mode 13	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
180.66	20.28	-23.22	43.50	41.52	9.04	1.25	31.53	-	-	Peak
213.33	25.05	-18.45	43.50	45.08	10.06	1.38	31.47	105	222	Peak
284.34	21.68	-24.32	46.00	38.15	13.21	1.66	31.34	-	-	Peak
685.00	22.36	-23.64	46.00	29.57	20.72	2.91	30.84	-	-	Peak
805.40	25.47	-20.53	46.00	30.47	22.53	3.15	30.68	-	-	Peak
1000.00	27.01	-26.99	54.00	29.19	24.89	3.51	30.58	-	-	Peak
5745.00	111.42	-	-	99.88	34.84	9.91	33.21	169	254	Peak
5745.00	101.10	-	-	89.56	34.84	9.91	33.21	169	254	Average
17235.00	57.42	-34.00	91.42	54.88	41.87	14.37	53.70	100	0	Peak



Test Mode :	Mode 13	Temperature :	22~23°C
Test Channel :	149	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	5745 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
74.82	25.39	-14.61	40.00	49.37	6.71	0.85	31.54	133	54	Peak
115.86	25.72	-17.78	43.50	45.00	11.20	1.08	31.56	-	-	Peak
259.77	26.95	-19.05	46.00	43.96	12.82	1.59	31.42	-	-	Peak
791.40	22.78	-23.22	46.00	28.00	22.33	3.13	30.68	-	-	Peak
906.90	24.77	-21.23	46.00	28.37	23.72	3.36	30.68	-	-	Peak
971.30	25.44	-28.56	54.00	28.01	24.52	3.48	30.57	-	-	Peak
5745.00	111.00	-	-	99.46	34.84	9.91	33.21	102	269	Peak
5745.00	100.26	-	-	88.72	34.84	9.91	33.21	102	269	Average
17235.00	56.76	-34.24	91.00	54.22	41.87	14.37	53.70	100	0	Peak



Test Mode :	Mode 14	Temperature :	22~23°C
Test Channel :	157	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.70	17.99	-22.01	40.00	33.10	15.80	0.56	31.47	-	-	Peak
179.85	19.46	-24.04	43.50	40.63	9.11	1.25	31.53	-	-	Peak
214.41	25.01	-18.49	43.50	44.97	10.13	1.38	31.47	150	179	Peak
646.50	21.86	-24.14	46.00	29.61	20.29	2.83	30.87	-	-	Peak
811.00	25.00	-21.00	46.00	29.93	22.59	3.17	30.69	-	-	Peak
979.00	26.01	-27.99	54.00	28.48	24.62	3.49	30.58	-	-	Peak
5785.00	112.87	-	-	101.32	34.88	9.90	33.23	167	255	Peak
5785.00	102.23	-	-	90.68	34.88	9.90	33.23	167	255	Average
17355.00	57.33	-35.54	92.87	55.05	41.75	14.41	53.88	100	0	Peak



Test Mode :	Mode 14	Temperature :	22~23°C
Test Channel :	157	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	5785 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
74.01	26.34	-13.66	40.00	50.40	6.63	0.85	31.54	150	266	Peak
134.49	26.58	-16.92	43.50	45.38	11.59	1.17	31.56	-	-	Peak
284.61	29.41	-16.59	46.00	45.88	13.21	1.66	31.34	-	-	Peak
631.80	24.21	-21.79	46.00	32.20	20.12	2.78	30.89	-	-	Peak
864.20	24.78	-21.22	46.00	29.00	23.21	3.29	30.72	-	-	Peak
982.50	25.96	-28.04	54.00	28.38	24.67	3.49	30.58	-	-	Peak
5785.00	112.51	-	-	100.99	34.89	9.89	33.26	100	268	Peak
5785.00	101.78	-	-	90.23	34.88	9.90	33.23	100	268	Average
17355.00	57.95	-34.56	92.51	55.67	41.75	14.41	53.88	100	0	Peak



Test Mode :	Mode 15	Temperature :	22~23°C
Test Channel :	165	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
174.45	21.57	-21.93	43.50	42.38	9.47	1.24	31.52	-	-	Peak
214.41	25.25	-18.25	43.50	45.21	10.13	1.38	31.47	-	-	Peak
236.82	28.88	-17.12	46.00	47.09	11.71	1.51	31.43	113	278	Peak
388.20	24.14	-21.86	46.00	37.04	16.20	2.12	31.22	-	-	Peak
750.10	24.87	-21.13	46.00	30.84	21.67	3.06	30.70	-	-	Peak
926.50	26.25	-19.75	46.00	29.52	23.96	3.40	30.63	-	-	Peak
5825.00	113.28	-	-	101.76	34.93	9.88	33.29	165	252	Peak
5825.00	102.96	-	-	91.44	34.93	9.88	33.29	165	252	Average
17475.00	57.39	-35.89	93.28	55.36	41.63	14.45	54.05	100	0	Peak



Test Mode :	Mode 15	Temperature :	22~23°C
Test Channel :	165	Relative Humidity :	50~52%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	5825 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
74.82	25.76	-14.24	40.00	49.74	6.71	0.85	31.54	130	59	Peak
103.17	29.25	-14.25	43.50	49.74	10.04	1.01	31.54	-	-	Peak
209.82	27.52	-15.98	43.50	47.84	9.79	1.36	31.47	-	-	Peak
595.40	23.36	-22.64	46.00	31.91	19.70	2.68	30.93	-	-	Peak
741.00	25.94	-20.06	46.00	32.09	21.53	3.04	30.72	-	-	Peak
974.10	26.18	-27.82	54.00	28.71	24.56	3.48	30.57	-	-	Peak
5825.00	113.09	-	-	101.57	34.93	9.88	33.29	100	268	Peak
5825.00	102.81	-	-	91.29	34.93	9.88	33.29	100	268	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 PIFA Antenna and it is considered to meet antenna requirement.

3.8.3 Antenna Gain

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101329	9kHz~30GHz	Apr. 26, 2010	Apr. 25, 2011	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 13, 2010	Sep. 12, 2011	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 14, 2010	Sep. 13, 2011	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 16, 2010	Aug. 15, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz – 30MHz	Dec. 03, 2010	Dec. 02, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz – 30MHz	Dec. 01, 2010	Nov. 30, 2011	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117997	N/A	May 14, 2009	May 13, 2011	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 03, 2010	Dec. 02, 2011	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB.GAIN	Mar. 27, 2010	Mar. 26, 2011	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)

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
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

Uncertainty of Radiated Emission Measurement (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
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

Uncertainty of Radiated Emission Measurement (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
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP0D0904-01 as below.