

FCC/IC RF Test Report

APPLICANT : Atheros Communications, Inc.
EQUIPMENT : AR5BHB116 2x2 802.11n PCIe module
BRAND NAME : Atheros
MODEL NAME : AR5BHB116
FCC ID : PPD-AR5BHB116
IC : 4104A-AR5BHB116
STANDARD : FCC Part 15 Subpart C §15.247
IC RSS-210 Issue 7
CLASSIFICATION : Digital Transmission System (DTS)

The WiFi module was tested on extended card inserted to a host laptop PC.

The product was received on Aug. 06, 2010 and completely tested on Sep. 05, 2010. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shows 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.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR080603A	Rev. 01	Initial issue of report	Sep. 16, 2010

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth Measurement	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	Gen 4.4.1	99% Bandwidth Measurement	-	N/A	-
3.2	15.247(e)	A8.2(b)	Power Spectral Density Measurement	$\leq 8\text{dBm}$	Pass	-
3.3	-	-	Average Power Measurement	-	N/A	-
3.4	15.247(b)	A8.4	Peak Power Measurement	$\leq 30\text{dBm}$	Pass	-
3.5	15.247(d)	A8.5	Conducted Spurious Emission Measurement	$< 20\text{ dBc}$	Pass	-
3.6	15.247(d)	A8.5	Band Edges Measurement	$\leq 20\text{dBc}$	Pass	-
3.7	15.247(d)	A8.5	Radiated Emission Measurement	15.209(a) & 15.247(d)	Pass	Under limit 0.5 dB at 11650 MHz
3.8	15.207	Gen 7.2.2	AC Conducted Emission Measurement	15.207(a)	Pass	Under limit 15.7 dB at 0.198 MHz

1 General Description

1.1 Applicant

Atheros Communications, Inc.
1700 Technology Drive, San Jose, CA 95110

1.2 Manufacturer

Atheros Communications, Inc.
1700 Technology Drive, San Jose, CA 95110

1.3 Testing Site Facilities

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	03CH05-HY	TW1022/4086B-1

1.4 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
- ♦ RSS-210 Issue 7
- ♦ FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ♦ ANSI C63.4-2003

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.

1.5 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Vostro 3400	E2K24GBRL	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

2 Equipment Under Test

2.1 General Information of EUT

Product Feature & Specification	
Equipment	AR5BHB116 2x2 802.11n PCIe module
Brand Name	Atheros
Model Name	AR5BHB116
FCC ID	PPD-AR5BHB116
IC	4104A-AR5BHB116
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
Beam-Forming	This device supports beam-forming technology
Type of Antenna Connector	IPEX
HW Version	051
Test SW Version	1.8
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Engineering Prototype

Remark:

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

2.2 Maximum Output Power

The device has the maximum average conducted power as below:

Frequency Range (MHz)	Mode	2.4G band RF Power (dBm)		
		Chain 0	Chain 1	Total Power
2412 ~ 2462	802.11b	17.12	16.98	20.06
2412 ~ 2462	802.11g	16.90	16.68	19.80
2412 ~ 2462	802.11n HT-20	16.12	15.92	19.03
2412 ~ 2462	802.11n HT-40	13.00	12.90	15.96

Frequency Range (MHz)	Mode	5.8G band RF Power (dBm)		
		Chain 0	Chain 1	Total Power
5745 ~ 5825	802.11a	14.92	16.33	18.69
5745 ~ 5825	802.11n HT-20	14.98	16.28	18.69
5755 ~ 5795	802.11n HT-40	15.70	15.68	18.70

The device has the maximum peak conducted power as below:

Frequency Range (MHz)	Mode	2.4G band RF Power (dBm)		
		Chain 0	Chain 1	Total Power
2412 ~ 2462	802.11b	20.78	19.45	23.18
2412 ~ 2462	802.11g	24.15	24.21	27.19
2412 ~ 2462	802.11n HT-20	23.87	23.82	26.86
2412 ~ 2462	802.11n HT-40	22.04	21.31	24.70

Frequency Range (MHz)	Mode	5.8G band RF Power (dBm)		
		Chain 0	Chain 1	Total Power
5745 ~ 5825	802.11a	20.46	20.89	23.69
5745 ~ 5825	802.11n HT-20	20.55	20.95	23.76
5755 ~ 5795	802.11n HT-40	20.49	20.43	23.47

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

2.3 Antenna Information

The device is 2x2 configuration and 2 PIFA antennas are utilized for radiation emission testing. The antenna composite gain on different frequency range is shown in the following table:

Brand / Model Name	Type	Frequency Range (MHz)	Antenna Gain (dBi)	Composite Gain (dBi)
Winstron Neweb Corporation / EBJ Main + EBJ Aux.	PIFA	2400 ~ 2500	3.0/3.62	6.33
Winstron Neweb Corporation / EBJ Main + EBJ Main	PIFA	5725 ~ 5850	4.76	7.77



2.4 Worst-case Configuration and Test Mode

The 2x2 configuration was used for conducted and radiated testing in this report. The WiFi module was tested as a modular. The module was tested outside of the laptop via an extender.

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).

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, 5.5 Mb/s, CCK Modulation:

802.11g mode, 20 MHz Channel Bandwidth, 9 Mb/s, OFDM Modulation:

802.11a mode, 20 MHz Channel Bandwidth, 9 Mb/s, OFDM Modulation;

802.11n HT20 mode, 20 MHz Channel Bandwidth, MCS0, 6.5 Mb/s, OFDM Modulation;

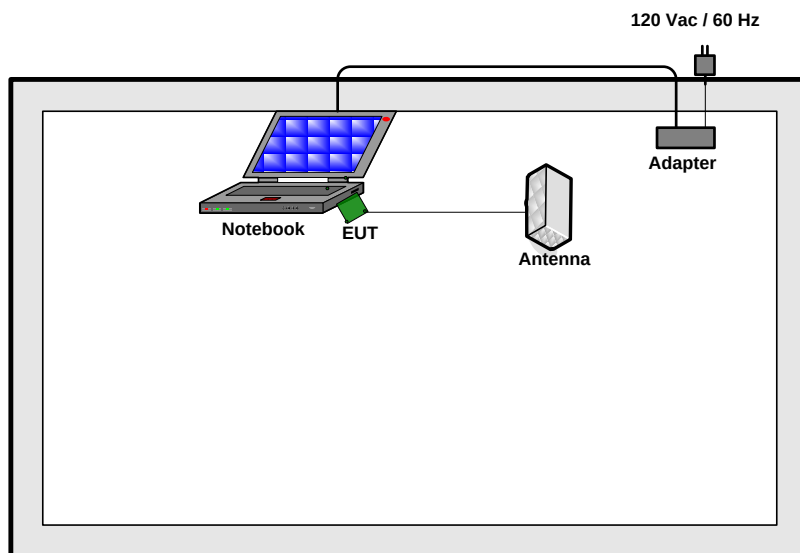
802.11n HT40 mode, 40 MHz Channel Bandwidth, MCS0, 13.5 Mb/s, OFDM Modulation;

In addition, the radiated emission power is higher when Beam Forming is on, thus, all the radiated emission tests were performed with Beam Forming on; plus, the composite antenna gains were taken into the consideration for calculating transmit power limits; therefore, all the data listed in this report will adhere to both Beam Forming and non Beam Forming cases.

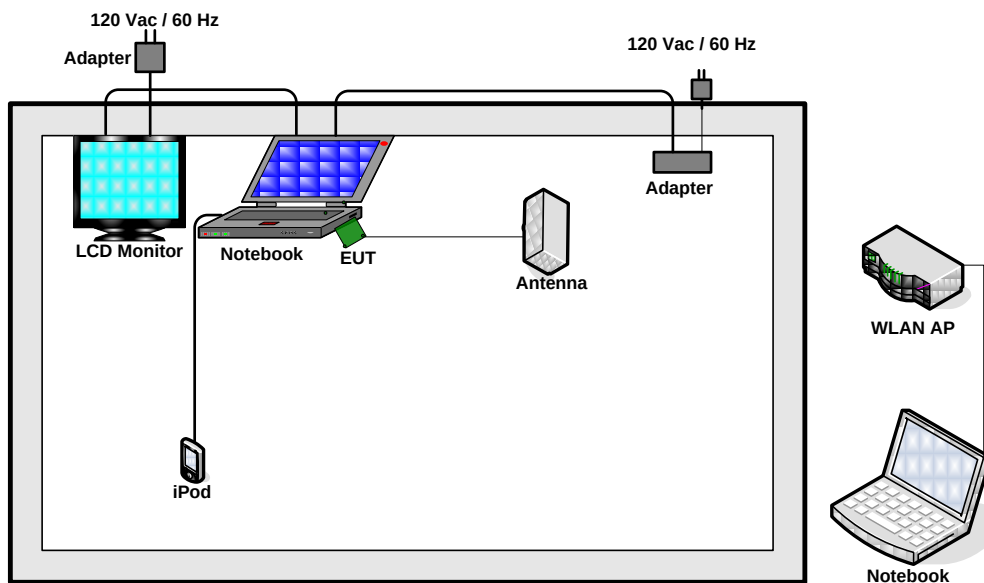
This device has been evaluated as module of mobile device, as well as portable device. Therefore, for radiated spurious emission, the EUT antenna has been tested in X, Y and Z axis to simulate mobile and portable position. The worst case position is Y-axis, only data from Y-axis was recorded in this report.

2.5 Connection Diagram of Test System

<WLAN Tx Mode>



< AC Conducted Emission Mode>



2.6 Test Software

The programmed RF utility "art2_ver_1_8" is installed in notebook 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.

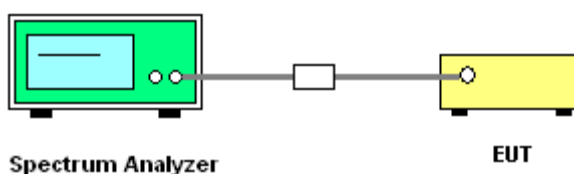
3.1.2 Measuring Instruments

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 :	802.11b L/M/H channel	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain 0		
01	2412	10.04	0.5	Pass
06	2437	10.04	0.5	Pass
11	2462	10.04	0.5	Pass

Test Mode :	802.11g L/M/H channel	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain 1		
01	2412	16.36	0.5	Pass
06	2437	16.36	0.5	Pass
11	2462	16.36	0.5	Pass

Note: Testing on Chain 0 or Chain 1 is based on higher power chain.

Test Mode :	802.11n (HT-20) L/M/H channel at 2.4G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain 0		
01	2412	17.60	0.5	Pass
06	2437	17.60	0.5	Pass
11	2462	17.56	0.5	Pass

Test Mode :	802.11n (HT-40) L/M/H channel at 2.4G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-40, 2Tx) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain 0		
03	2422	36.48	0.5	Pass
06	2437	36.40	0.5	Pass
09	2452	36.48	0.5	Pass

Note: Testing on Chain 0 or Chain 1 is based on higher power chain.

Test Mode :	802.11a L/M/H channels	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain 1		
149	5745	16.36	0.5	Pass
157	5785	16.36	0.5	Pass
165	5825	16.32	0.5	Pass

Test Mode :	802.11n (HT-20) L/M/H channels at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain 1		
149	5745	17.56	0.5	Pass
157	5785	17.60	0.5	Pass
165	5825	17.60	0.5	Pass

Test Mode :	802.11n (HT-40) L/M/H channels at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-40, 2Tx) 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Chain 0		
151	5755	36.32	0.5	Pass
159	5795	36.32	0.5	Pass

Note: Testing on Chain 0 or Chain 1 is based on higher power chain.

3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	802.11b L/M/H channel	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11b 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain 0	
01	2412	13.76	N/A
06	2437	13.76	N/A
11	2462	13.84	N/A

Test Mode :	802.11g L/M/H channel	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11g 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain 1	
01	2412	16.96	N/A
06	2437	17.52	N/A
11	2462	16.96	N/A

Note: Testing on Chain 0 or Chain 1 is based on higher power chain.

Test Mode :	802.11n (HT-20) L/M/H channel at 2.4G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain 0	
01	2412	18.40	N/A
06	2437	18.72	N/A
11	2462	18.32	N/A

Test Mode :	802.11n (HT-40) L/M/H channel at 2.4G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-40, 2Tx) 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain 0	
03	2422	39.36	N/A
06	2437	39.36	N/A
09	2452	39.84	N/A

Note: Testing on Chain 0 or Chain 1 is based on higher power chain.

Test Mode :	802.11a L/M/H channel	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain 1	
149	5745	19.76	N/A
157	5785	19.36	N/A
165	5825	22.88	N/A

Test Mode :	802.11n (HT-20) L/M/H channel at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain 1	
149	5745	21.28	N/A
157	5785	23.36	N/A
165	5825	23.28	N/A

Test Mode :	802.11n (HT-40) L/M/H channel at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

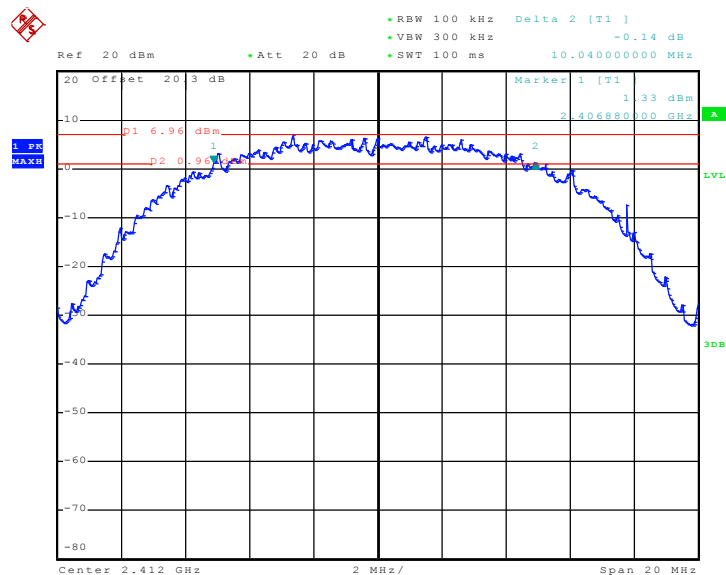
Channel	Frequency (MHz)	802.11n (HT-40, 2Tx) 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain 0	
151	5755	41.44	N/A
159	5795	41.28	N/A

Note: Testing on Chain 0 or Chain 1 is based on higher power chain.



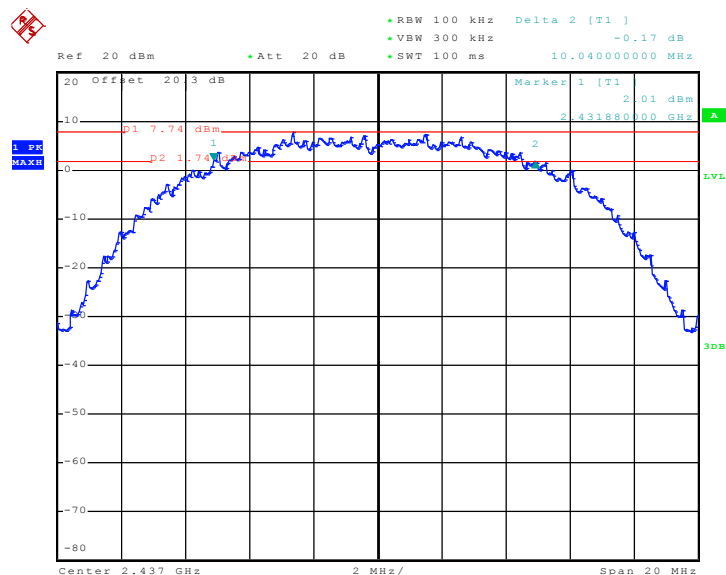
3.1.7 Test Result of 6dB Bandwidth Plots

6 dB Bandwidth Plot on 802.11b Channel 01 - Chain 0



Date: 3.SEP.2010 19:50:43

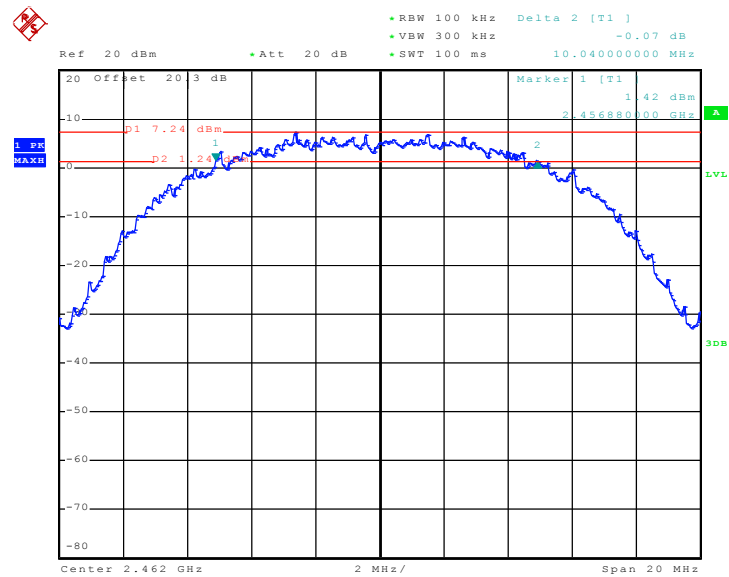
6 dB Bandwidth Plot on 802.11b Channel 06 - Chain 0



Date: 3.SEP.2010 20:18:05

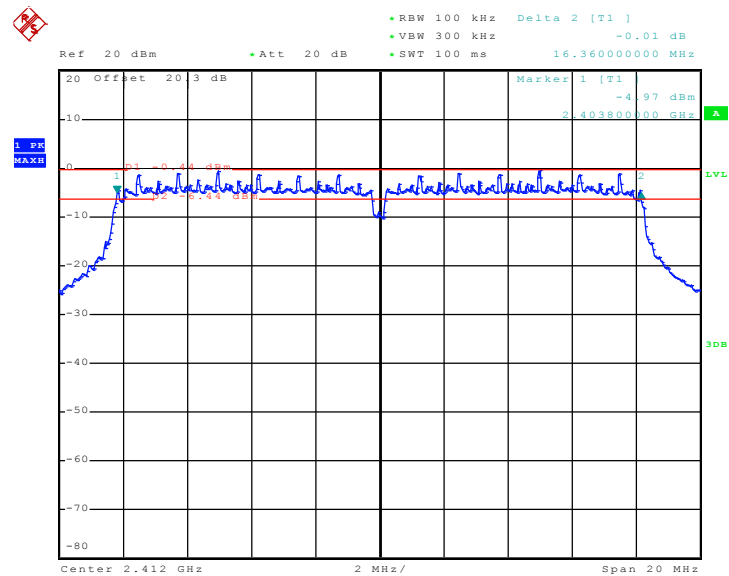


6 dB Bandwidth Plot on 802.11b Channel 11 - Chain 0



Date: 3.SEP.2010 20:15:11

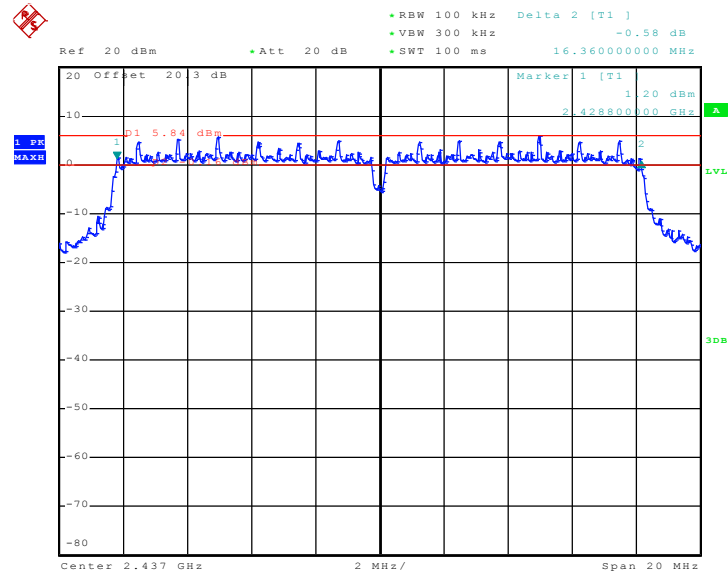
6 dB Bandwidth Plot on 802.11g Channel 01 - Chain 1



Date: 3.SEP.2010 20:26:04

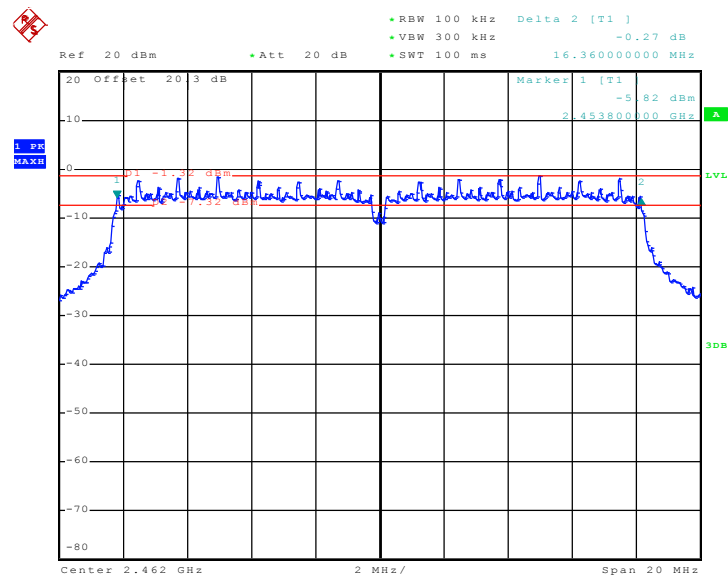


6 dB Bandwidth Plot on 802.11g Channel 06 - Chain 1



Date: 3.SEP.2010 20:28:35

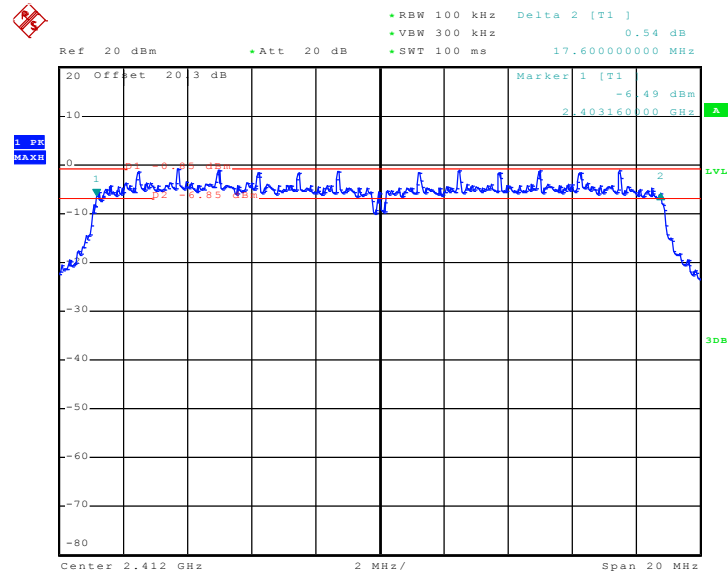
6 dB Bandwidth Plot on 802.11g Channel 11 - Chain 1



Date: 3.SEP.2010 20:29:58

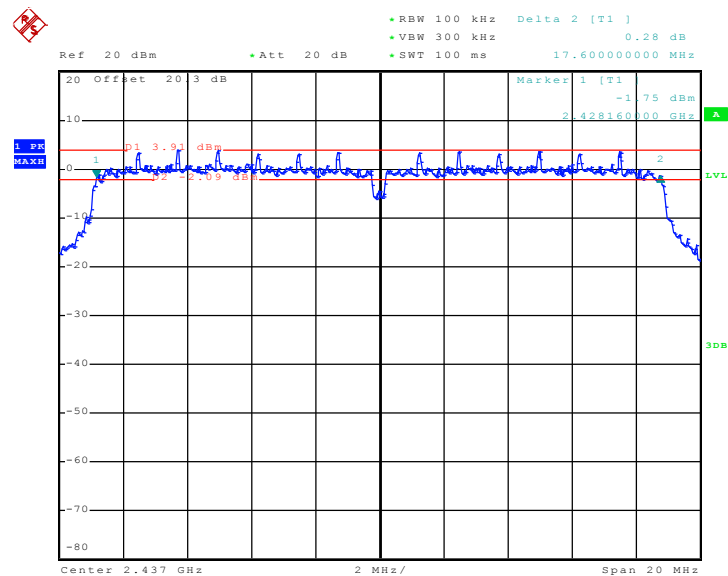


6 dB Bandwidth Plot on 802.11n (HT-20) Channel 01 - Chain 0



Date: 4.SEP.2010 03:21:49

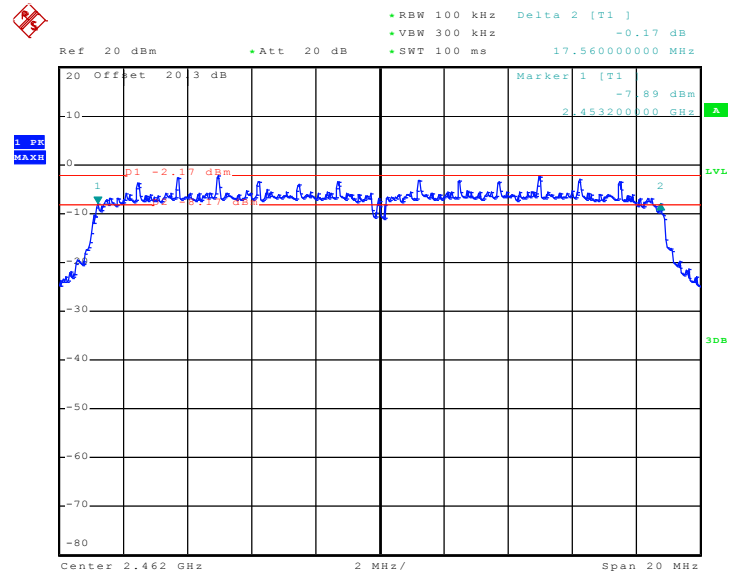
6 dB Bandwidth Plot on 802.11n (HT-20) Channel 06 - Chain 0



Date: 4.SEP.2010 03:24:09

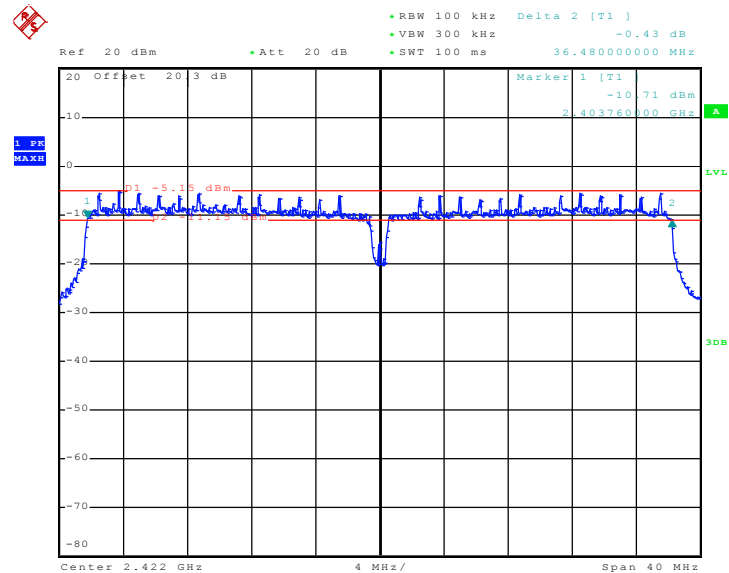


6 dB Bandwidth Plot on 802.11n (HT-20) Channel 11 - Chain 0



Date: 4.SEP.2010 03:25:03

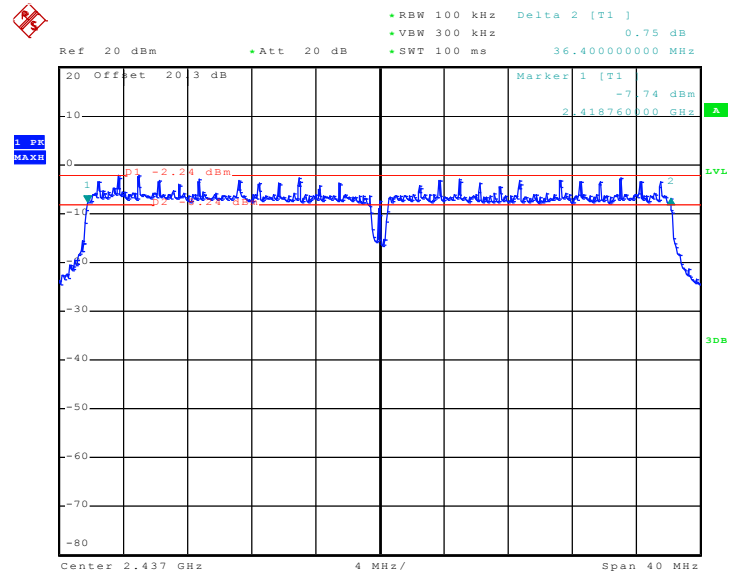
6 dB Bandwidth Plot on 802.11n (HT-40) Channel 03 - Chain 0



Date: 4.SEP.2010 03:33:37

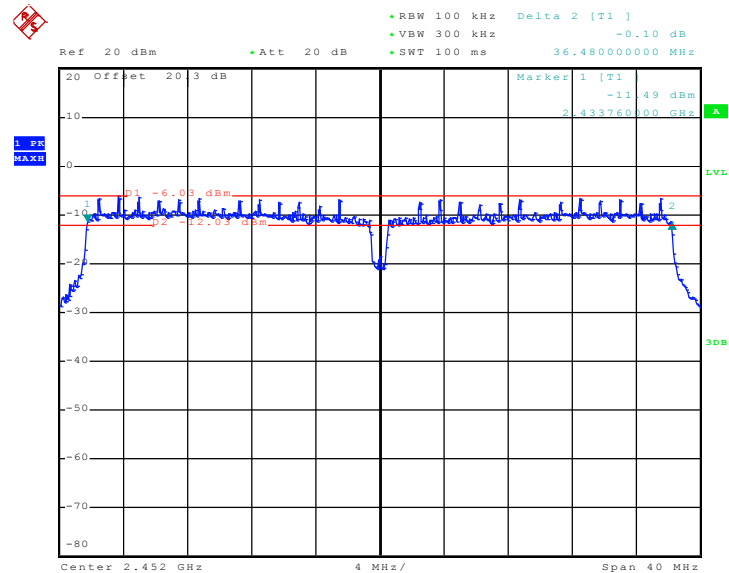


6 dB Bandwidth Plot on 802.11n (HT-40) Channel 06 - Chain 0



Date: 4.SEP.2010 03:37:11

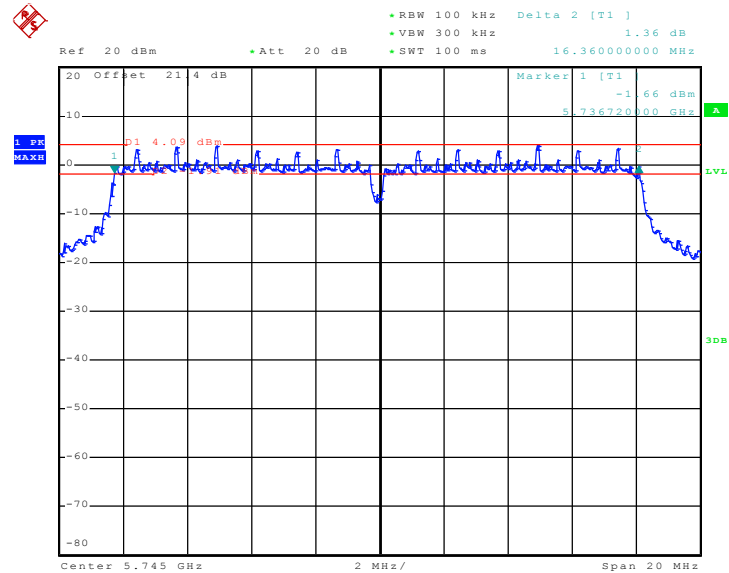
6 dB Bandwidth Plot on 802.11n (HT-40) Channel 09 - Chain 0



Date: 4.SEP.2010 03:38:19

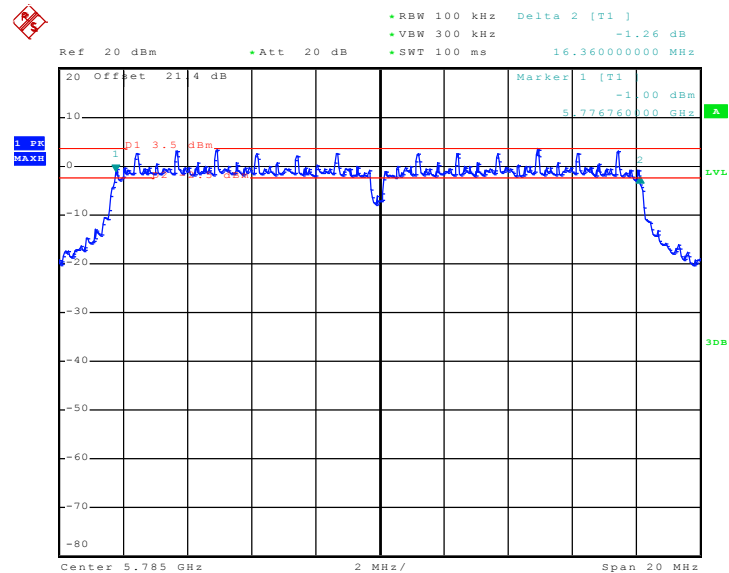


6 dB Bandwidth Plot on 802.11a Channel 149 - Chain 1



Date: 3.SEP.2010 21:07:20

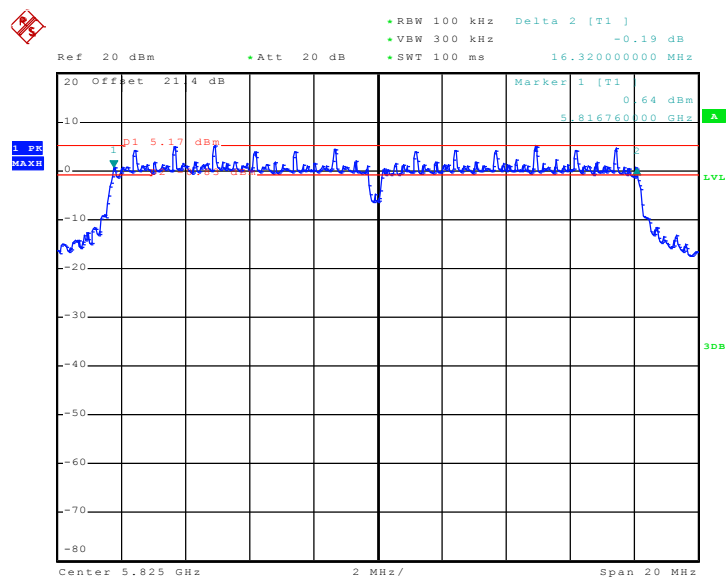
6 dB Bandwidth Plot on 802.11a Channel 157 - Chain 1



Date: 3.SEP.2010 21:58:52

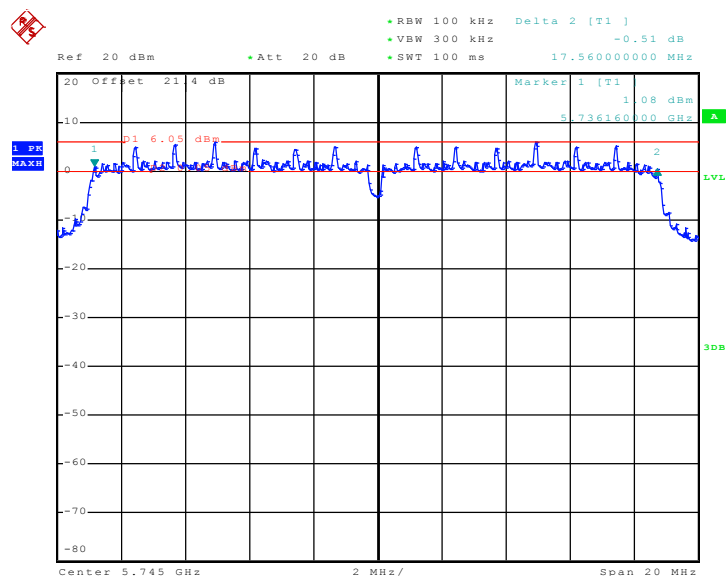


6 dB Bandwidth Plot on 802.11a Channel 165 - Chain 1



Date: 3.SEP.2010 22:00:11

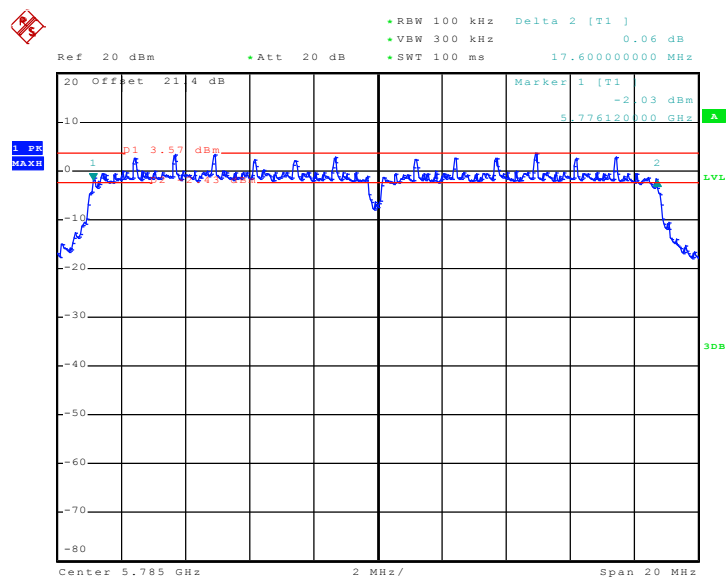
6 dB Bandwidth Plot on 802.11n (HT-20) Channel 149 - Chain 1



Date: 4.SEP.2010 01:29:43

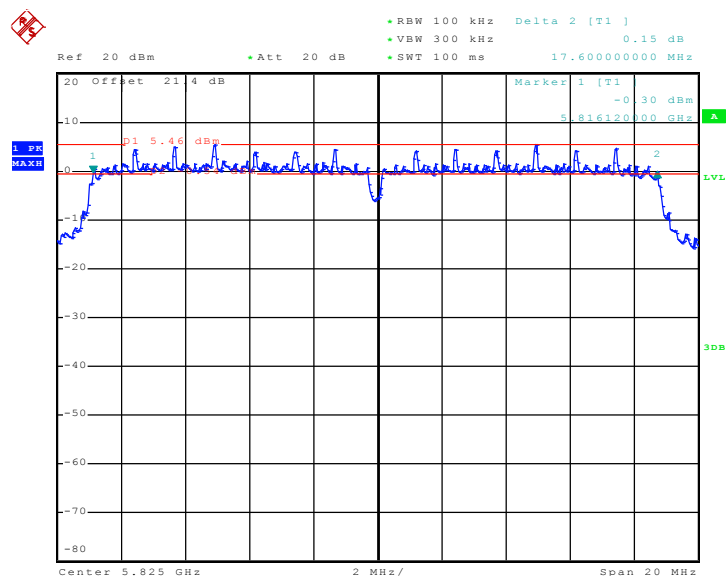


6 dB Bandwidth Plot on 802.11n (HT-20) Channel 157 - Chain 1



Date: 4.SEP.2010 02:59:44

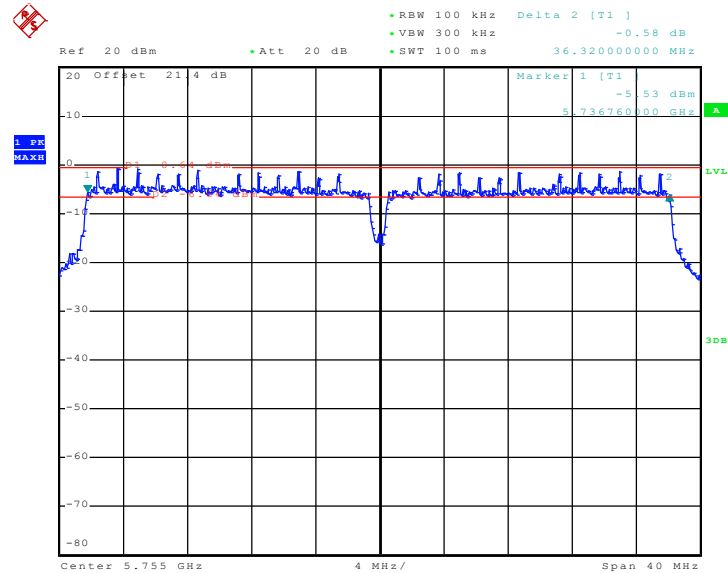
6 dB Bandwidth Plot on 802.11n (HT-20) Channel 165 - Chain 1



Date: 4.SEP.2010 03:01:20

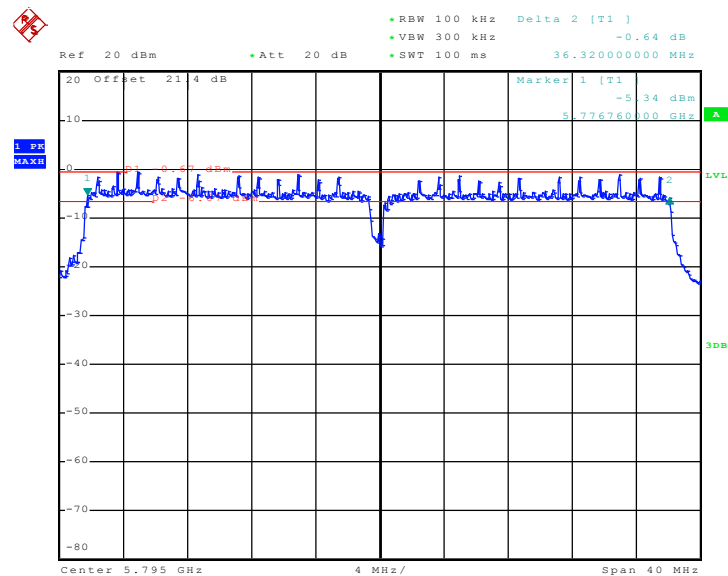


6 dB Bandwidth Plot on 802.11n (HT-40) Channel 151 - Chain 0



Date: 4.SEP.2010 01:10:51

6 dB Bandwidth Plot on 802.11n (HT-40) Channel 159 - Chain 0

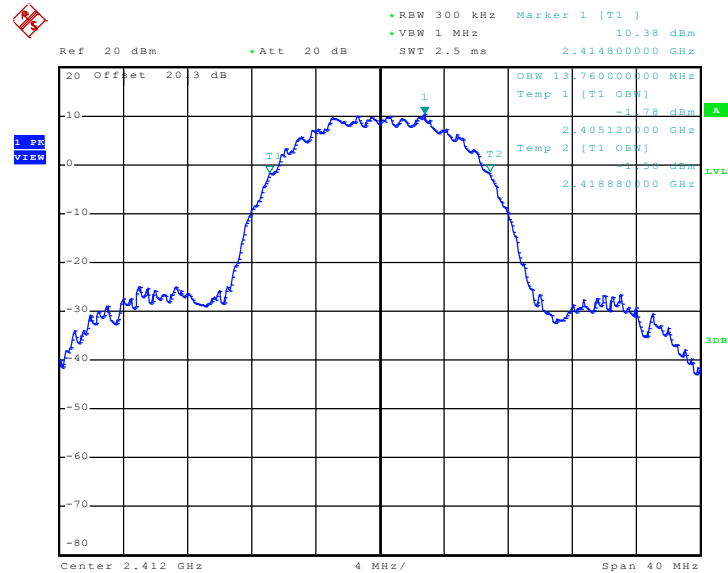


Date: 4.SEP.2010 01:15:11



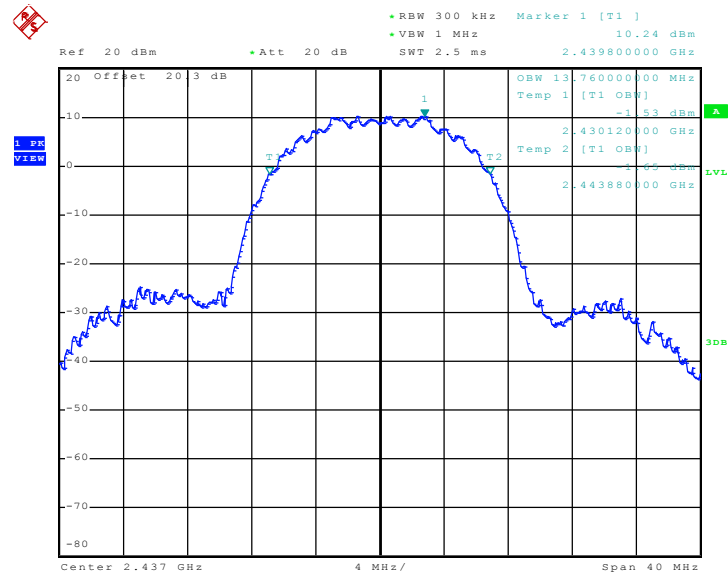
3.1.8 Test Result of 99% Bandwidth Plots

99% Bandwidth Plot on 802.11b Channel 01 - Chain 0



Date: 28.AUG.2010 02:18:39

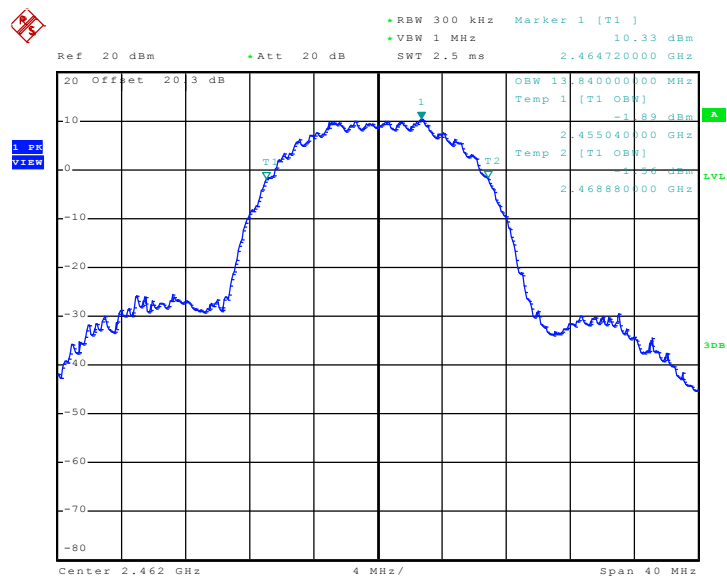
99% Bandwidth Plot on 802.11b Channel 06 - Chain 0



Date: 28.AUG.2010 02:19:25

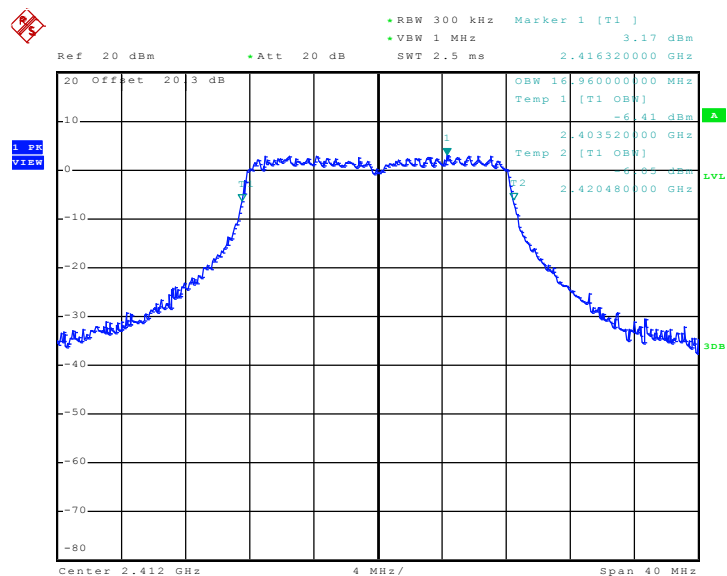


99% Bandwidth Plot on 802.11b Channel 11 - Chain 0



Date: 28.AUG.2010 02:21:55

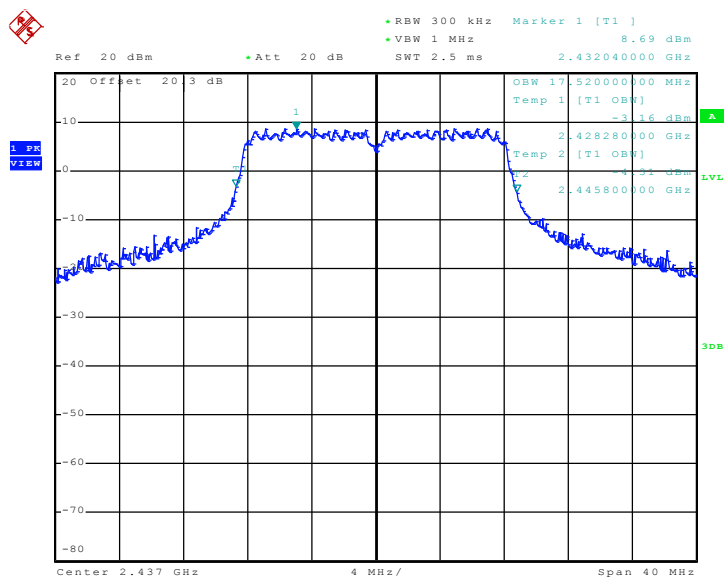
99% Bandwidth Plot on 802.11g Channel 01 - Chain 1



Date: 28.AUG.2010 02:25:12

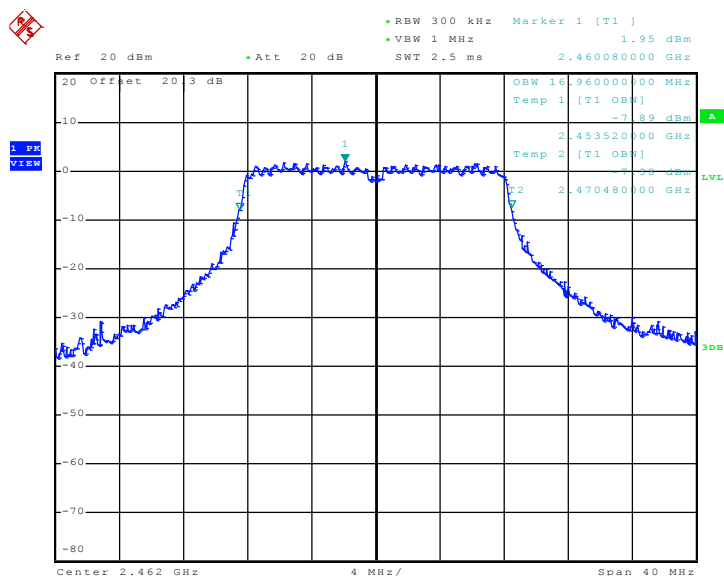


99% Bandwidth Plot on 802.11g Channel 06 - Chain 1



Date: 28.AUG.2010 02:25:56

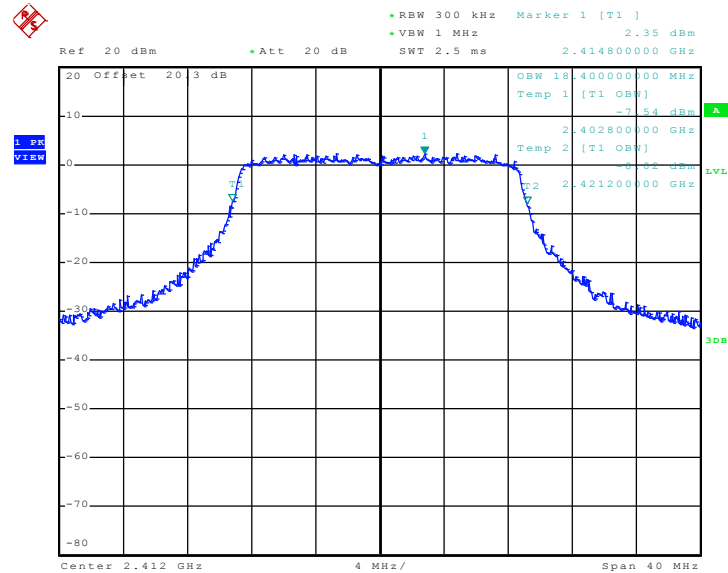
99% Bandwidth Plot on 802.11g Channel 11 - Chain 1



Date: 28.AUG.2010 02:28:26

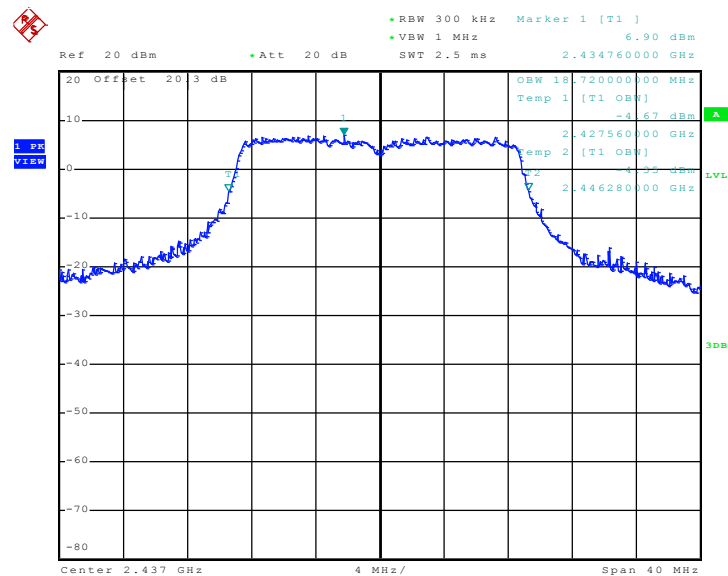


99% Bandwidth Plot on 802.11n (HT-20) Channel 01 - Chain 0



Date: 28.AUG.2010 02:32:55

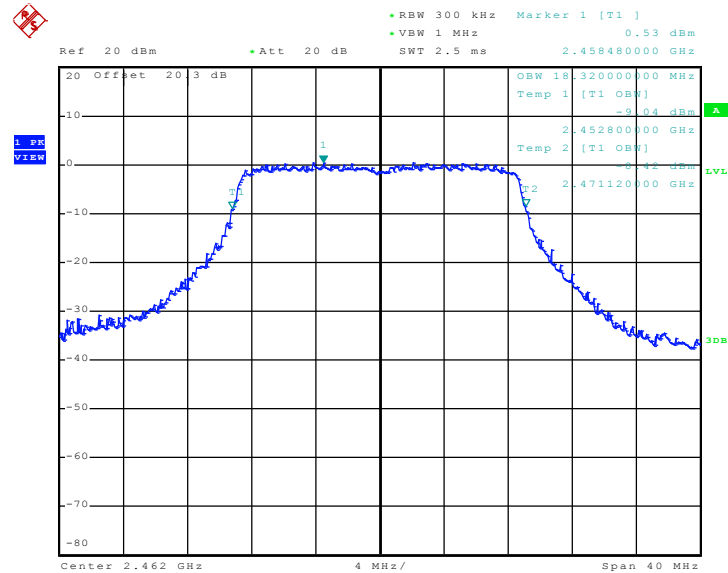
99% Bandwidth Plot on 802.11n (HT-20) Channel 06 - Chain 0



Date: 28.AUG.2010 02:35:19

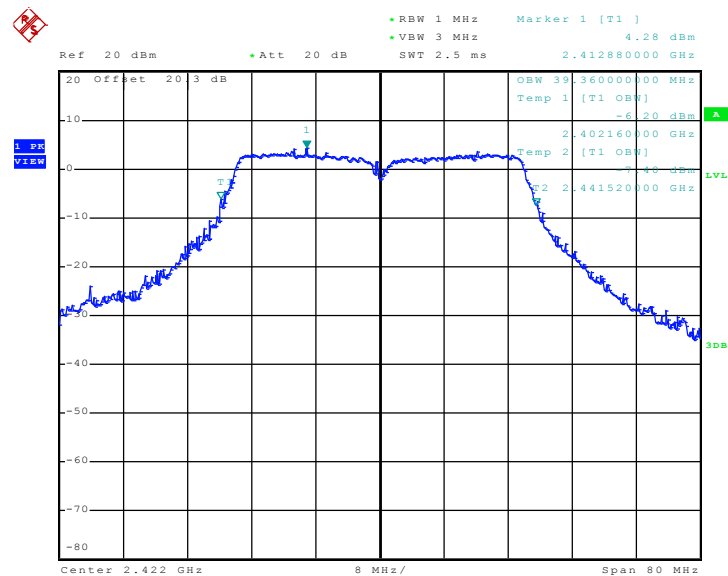


99% Bandwidth Plot on 802.11n (HT-20) Channel 11 - Chain 0



Date: 28.AUG.2010 02:36:06

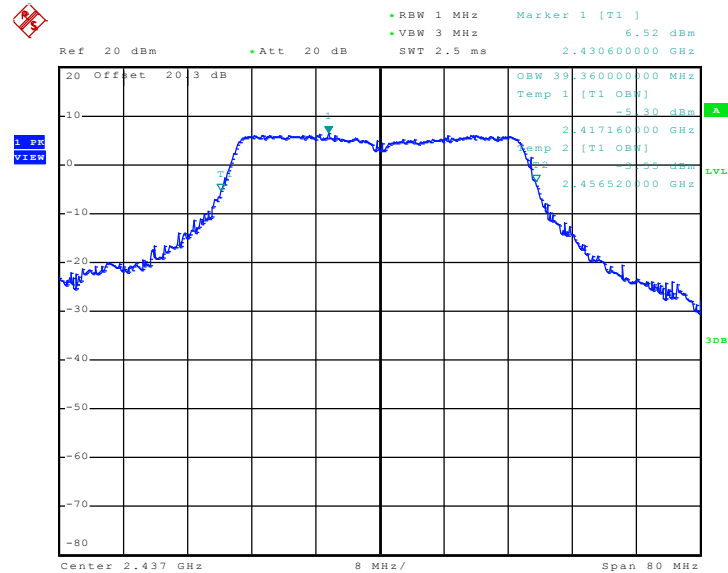
99% Bandwidth Plot on 802.11n (HT-40) Channel 03 - Chain 0



Date: 28.AUG.2010 02:14:14

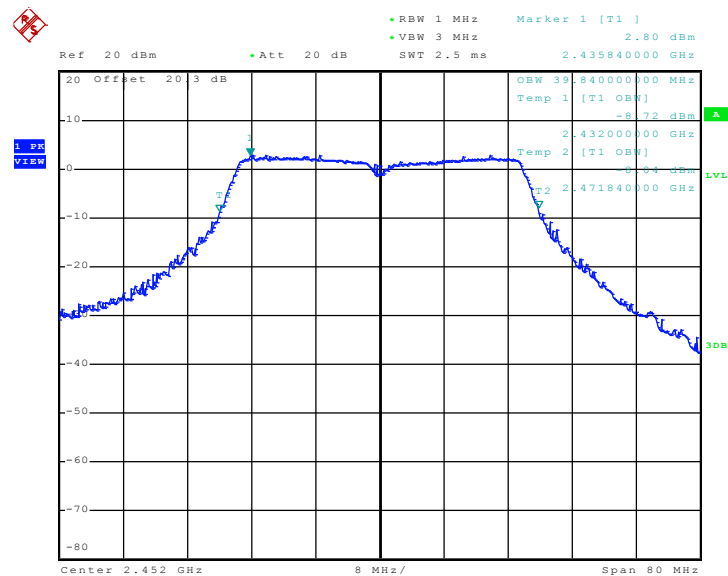


99% Bandwidth Plot on 802.11n (HT-40) Channel 06 - Chain 0



Date: 28.AUG.2010 02:13:22

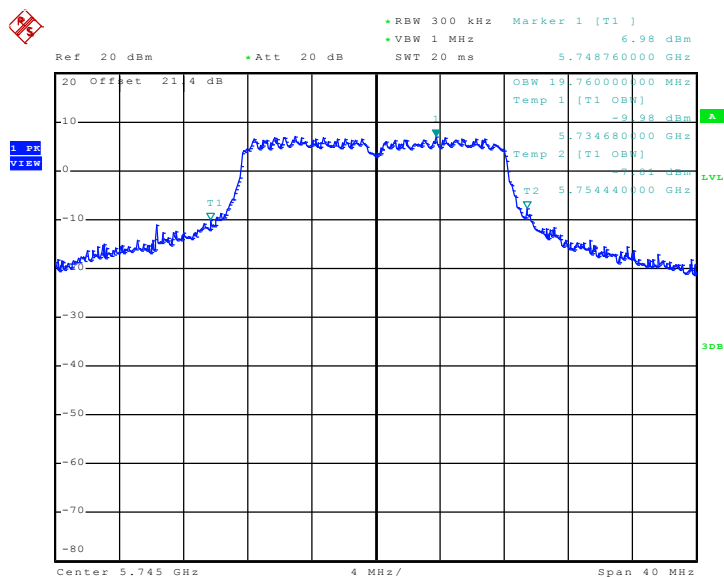
99% Bandwidth Plot on 802.11n (HT-40) Channel 09 - Chain 0



Date: 28.AUG.2010 02:10:25

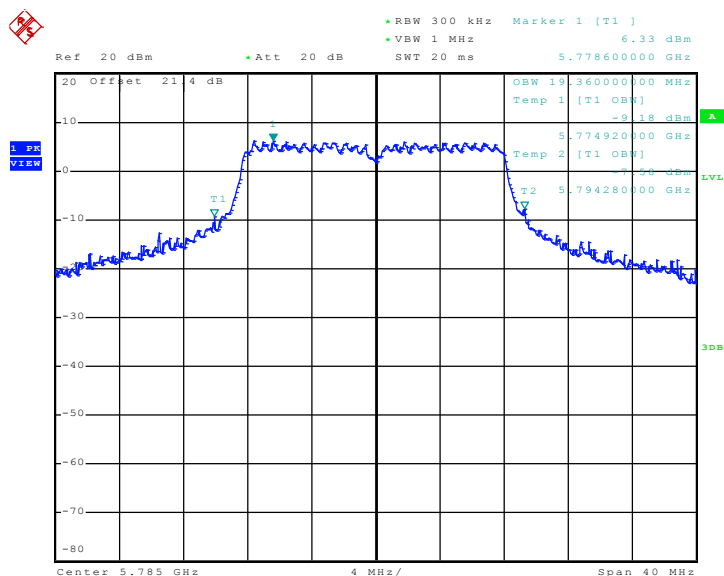


99% Bandwidth Plot on 802.11a Channel 149 - Chain 1



Date: 28.AUG.2010 02:50:11

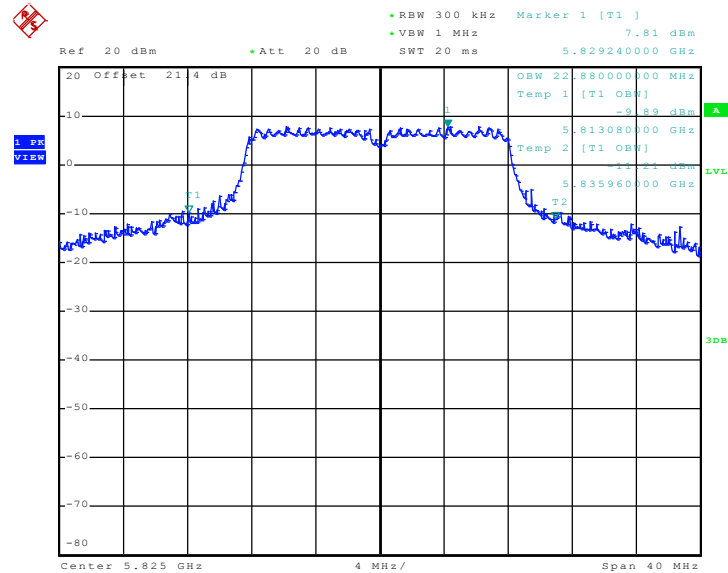
99% Bandwidth Plot on 802.11a Channel 157 - Chain 1



Date: 28.AUG.2010 02:53:29

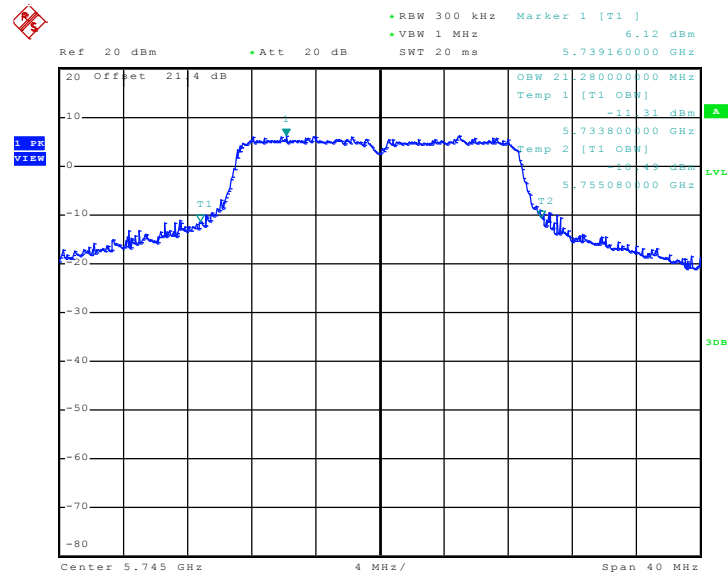


99% Bandwidth Plot on 802.11a Channel 165 - Chain 1



Date: 28.AUG.2010 02:55:10

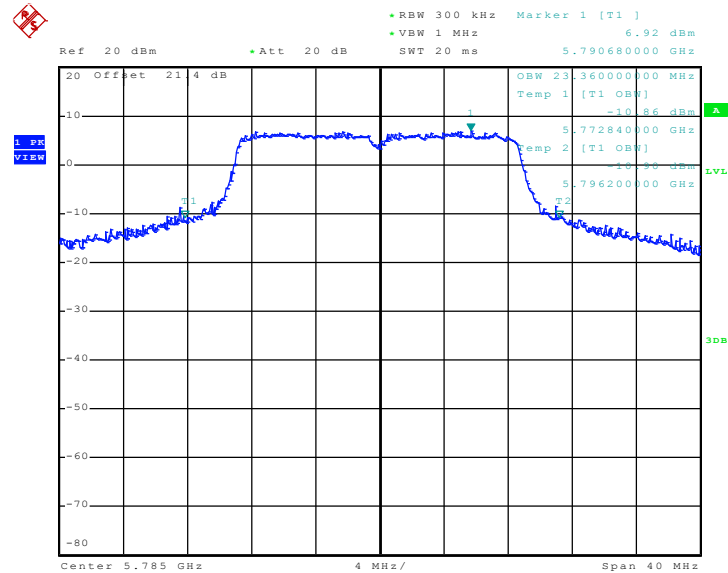
99% Bandwidth Plot on 802.11n (HT-20) Channel 149 - Chain 1



Date: 28.AUG.2010 03:04:16

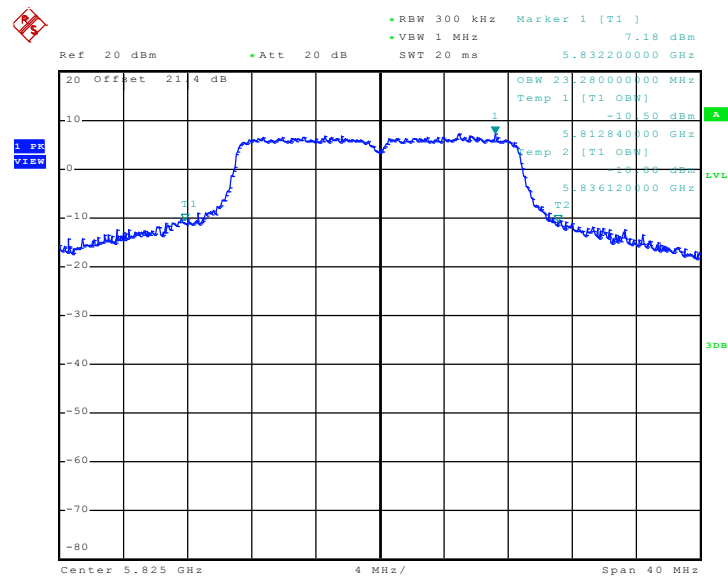


99% Bandwidth Plot on 802.11n (HT-20) Channel 157 - Chain 1



Date: 28.AUG.2010 03:05:38

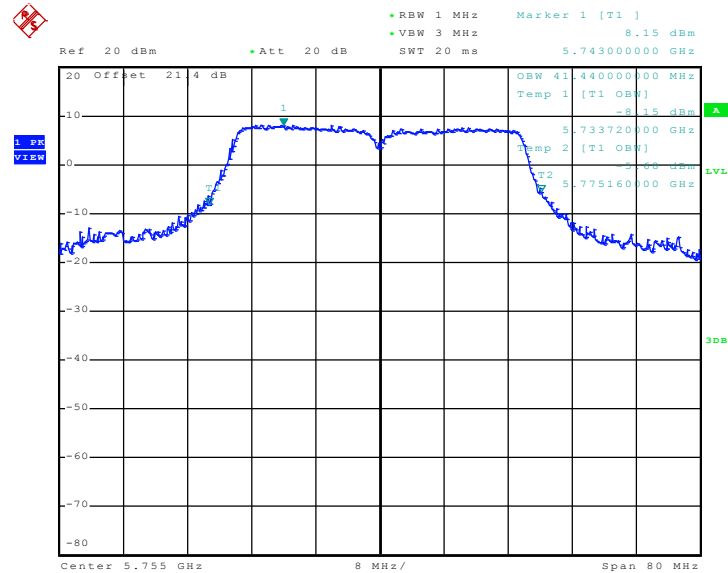
99% Bandwidth Plot on 802.11n (HT-20) Channel 165 - Chain 1



Date: 28.AUG.2010 03:08:20

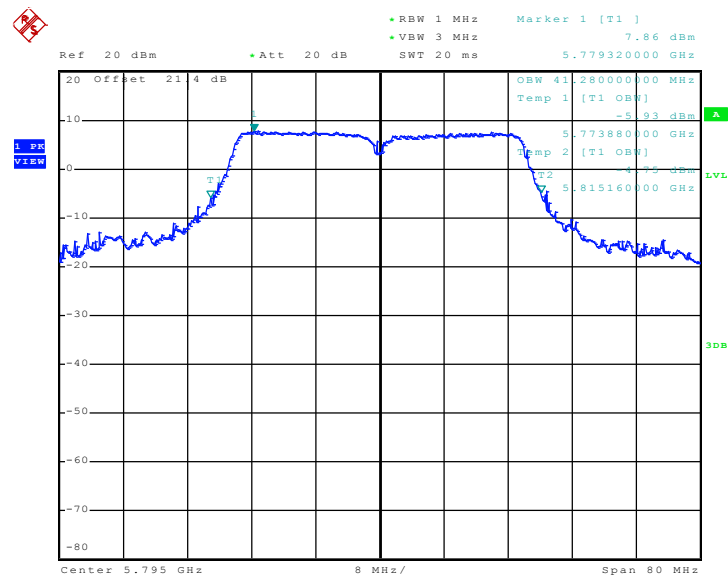


99% Bandwidth Plot on 802.11n (HT-40) Channel 151 - Chain 0



Date: 28.AUG.2010 03:14:13

99% Bandwidth Plot on 802.11n (HT-40) Channel 159 - Chain 0



Date: 28.AUG.2010 03:15:02

3.2 Power Spectral Density Measurement

3.2.1 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.

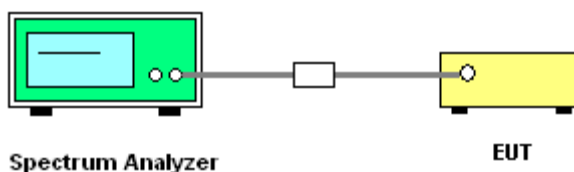
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 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.

3.2.4 Test Setup



3.2.5 Test Result of Power Spectral Density

Test Mode :	802.11b L/M/H channel	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11b Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Summation		
01	2412	-6.79	-8.72	-4.64	7.67	Pass
06	2437	-8.17	-8.19	-5.17	7.67	Pass
11	2462	-8.64	-8.89	-5.75	7.67	Pass

Note: The maximum composite antenna gain is 6.33 dBi; therefore the limit is 7.67 dBm.

Test Mode :	802.11g L/M/H channels	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11g Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Summation		
01	2412	-8.09	-6.83	-4.40	7.67	Pass
06	2437	-8.63	-8.28	-5.44	7.67	Pass
11	2462	-10.89	-10.93	-7.90	7.67	Pass

Note: The maximum composite antenna gain is 6.33 dBi; therefore the limit is 7.67 dBm.

Test Mode :	802.11n (HT-20) L/M/H channel at 2.4G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Summation		
01	2412	-8.2	-7.37	-4.75	7.67	Pass
06	2437	-9.67	-9.89	-6.77	7.67	Pass
11	2462	-9.15	-12.88	-7.62	7.67	Pass

Note: The maximum composite antenna gain is 6.33 dBi; therefore the limit is 7.67 dBm.

Test Mode :	802.11n (HT-40) L/M/H channel at 2.4G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-40, 2Tx) Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Summation		
03	2422	-10.26	-8.61	-6.35	7.67	Pass
06	2437	-8.79	-10.92	-6.72	7.67	Pass
09	2452	-20.44	-20.85	-17.63	7.67	Pass

Note: The maximum composite antenna gain is 6.33 dBi; therefore the limit is 7.67 dBm.

Test Mode :	802.11 a L/M/H channel	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Summation		
149	5745	-11.28	-8.33	-6.55	6.23	Pass
157	5785	-9.63	-8.97	-6.28	6.23	Pass
165	5825	-9.93	-9.08	-6.47	6.23	Pass

Note: The maximum composite antenna gain is 7.77 dBi; therefore the limit is 6.23 dBm.

Test Mode :	802.11n (HT-20) L/M/H channel at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Summation		
149	5745	-11.57	-8.82	-6.97	6.23	Pass
157	5785	-10.2	-9.37	-6.75	6.23	Pass
165	5825	-10.1	-9.68	-6.87	6.23	Pass

Note: The maximum composite antenna gain is 7.77 dBi; therefore the limit is 6.23 dBm.

Test Mode :	802.11n (HT-40) L/M/H channel at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

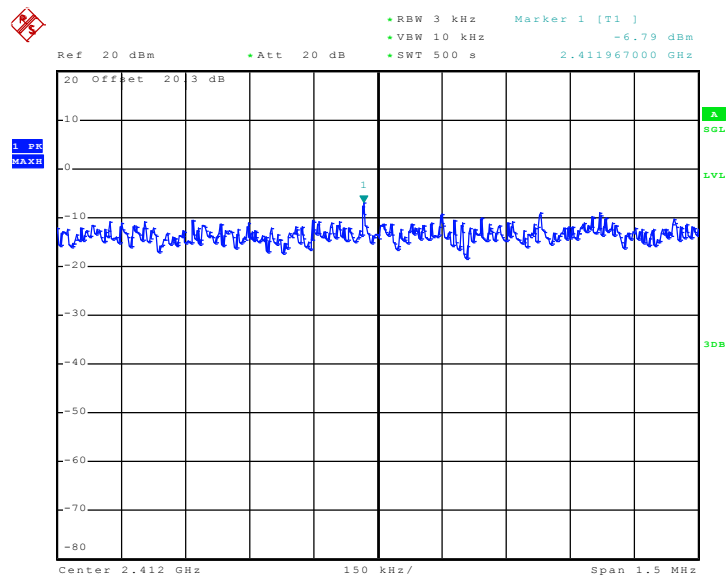
Channel	Frequency (MHz)	802.11n (HT-40, 2Tx) Measured PSD (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Summation		
151	5755	-14.88	-13.12	-10.90	6.23	Pass
159	5795	-14.21	-12.71	-10.39	6.23	Pass

Note: The maximum composite antenna gain is 7.77 dBi; therefore the limit is 6.23 dBm.



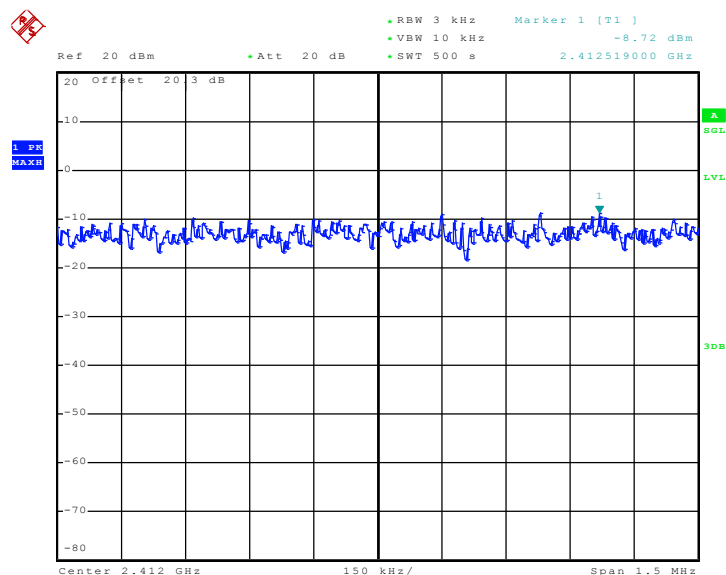
3.2.6 Test Result of Power Spectral Density Plots

PSD Plot on 802.11b Channel 01 - Chain 0



Date: 27.AUG.2010 16:31:22

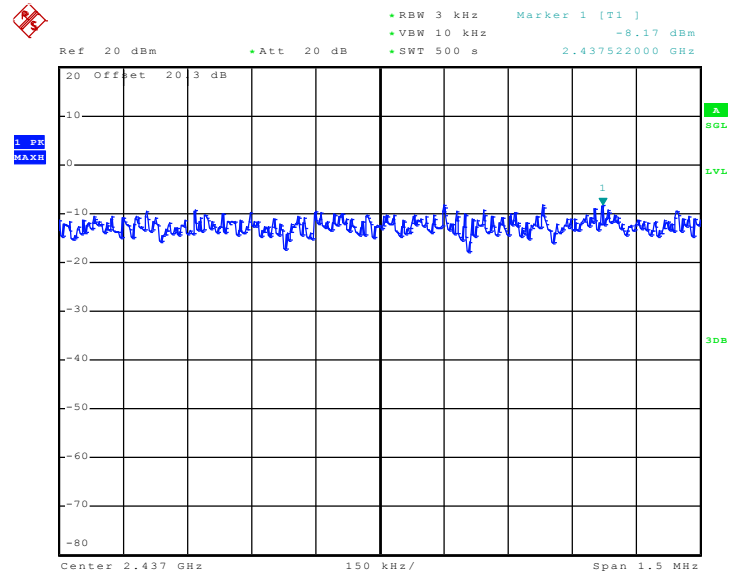
PSD Plot on 802.11b Channel 01 - Chain 1



Date: 27.AUG.2010 16:40:40

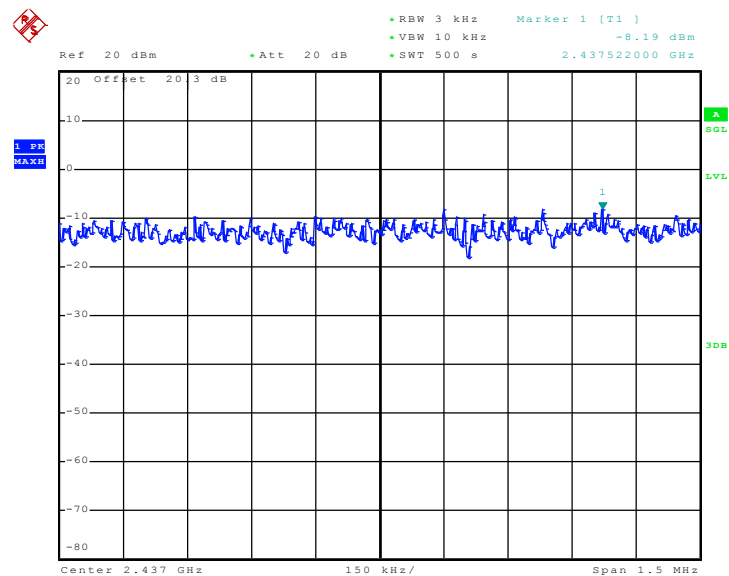


PSD Plot on 802.11b Channel 06 - Chain 0



Date: 27.AUG.2010 16:22:15

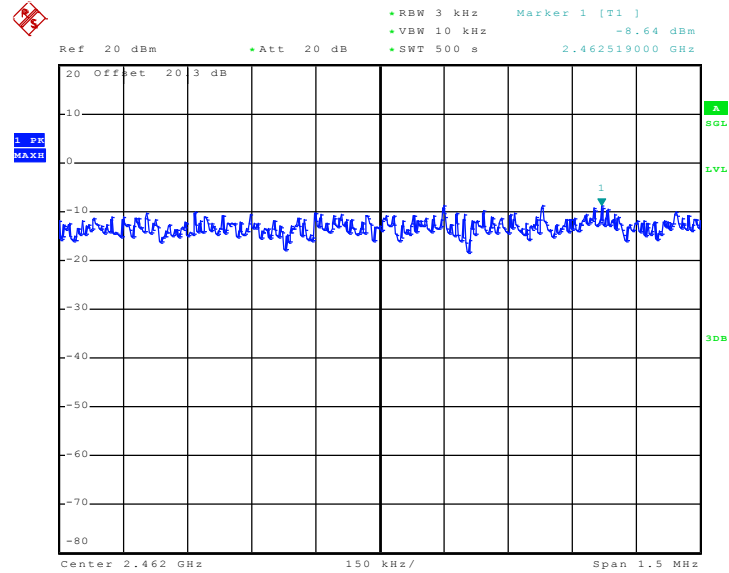
PSD Plot on 802.11b Channel 06 - Chain 1



Date: 27.AUG.2010 16:51:27

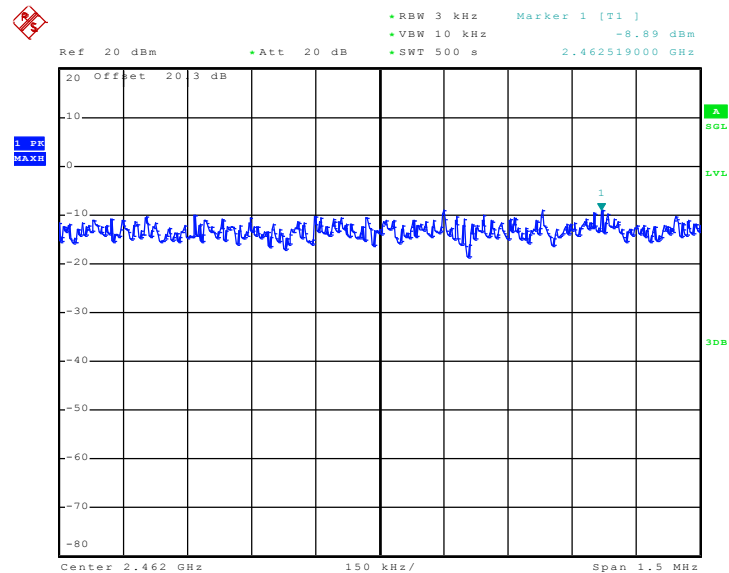


PSD Plot on 802.11b Channel 11 - Chain 0



Date: 27.AUG.2010 16:13:11

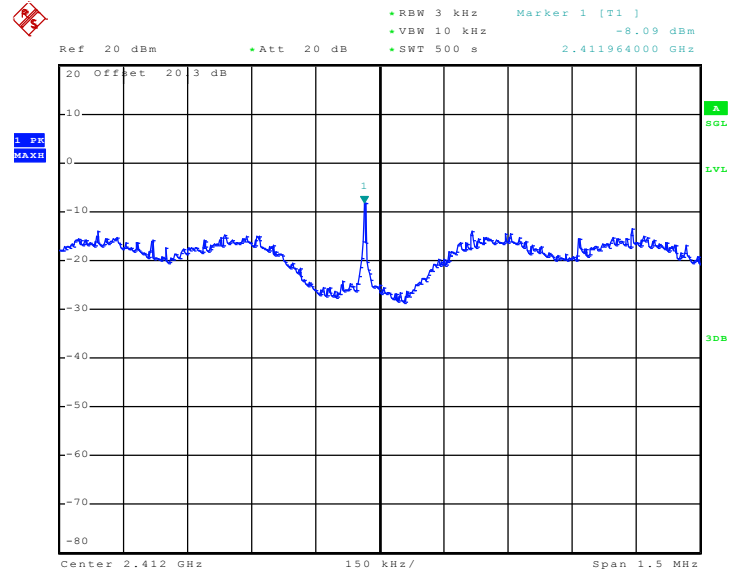
PSD Plot on 802.11b Channel 11 - Chain 1



Date: 27.AUG.2010 17:01:01

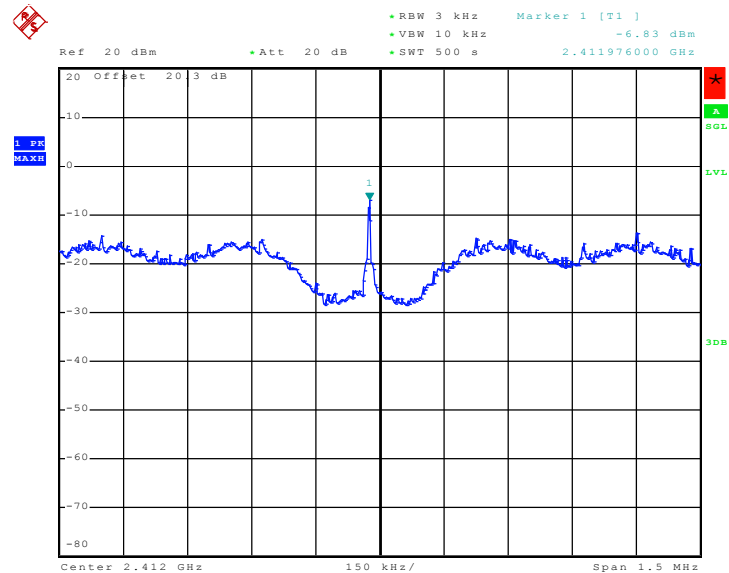


PSD Plot on 802.11g Channel 01 - Chain 0



Date: 27.AUG.2010 17:37:20

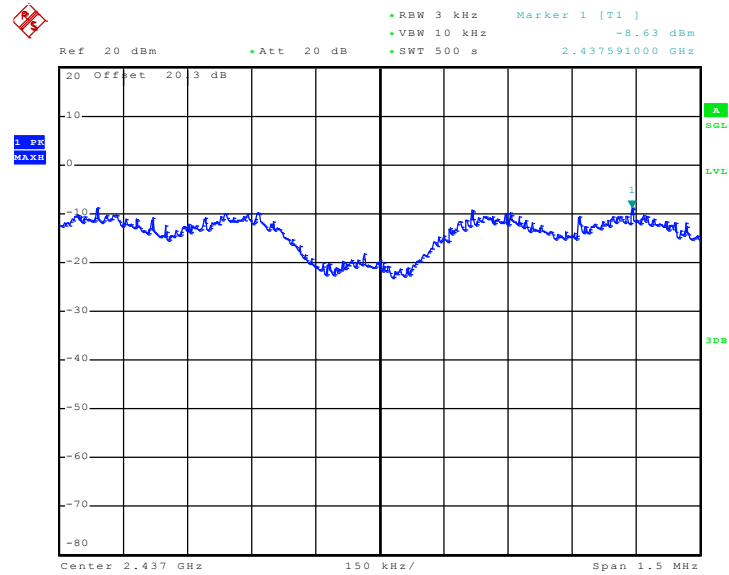
PSD Plot on 802.11g Channel 01 - Chain 1



Date: 4.SEP.2010 18:03:28

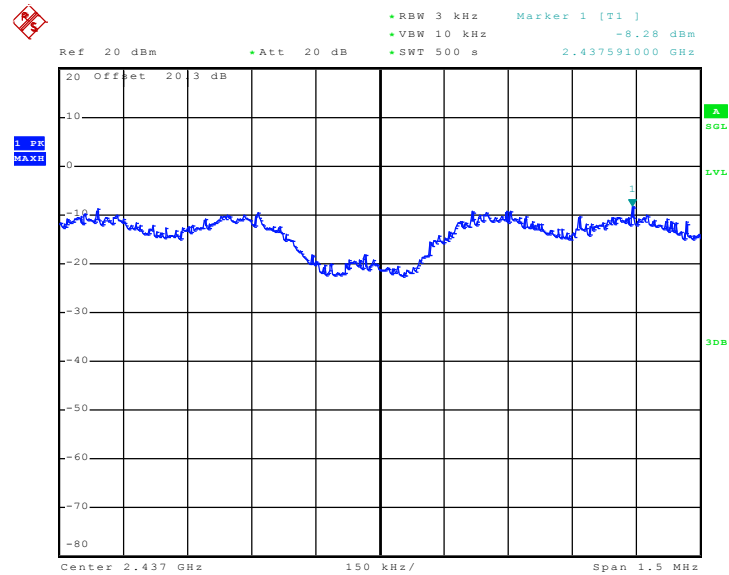


PSD Plot on 802.11g Channel 06 - Chain 0



Date: 27.AUG.2010 17:46:14

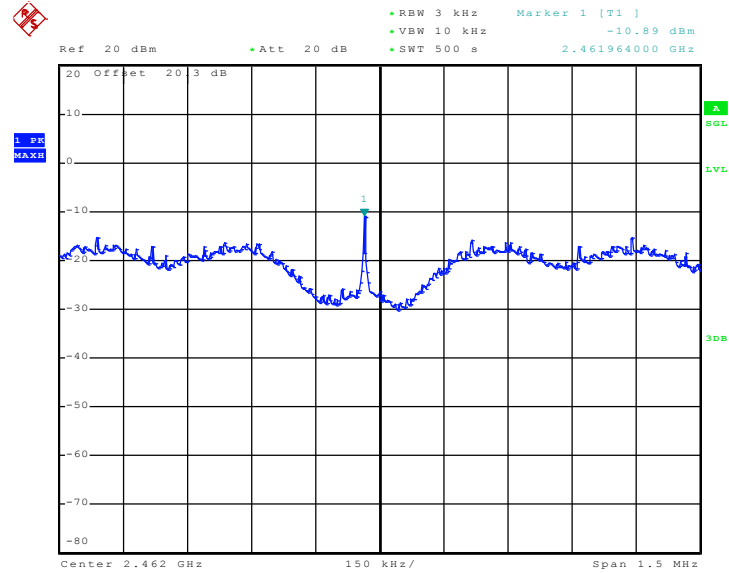
PSD Plot on 802.11g Channel 06 - Chain 1



Date: 27.AUG.2010 17:19:12

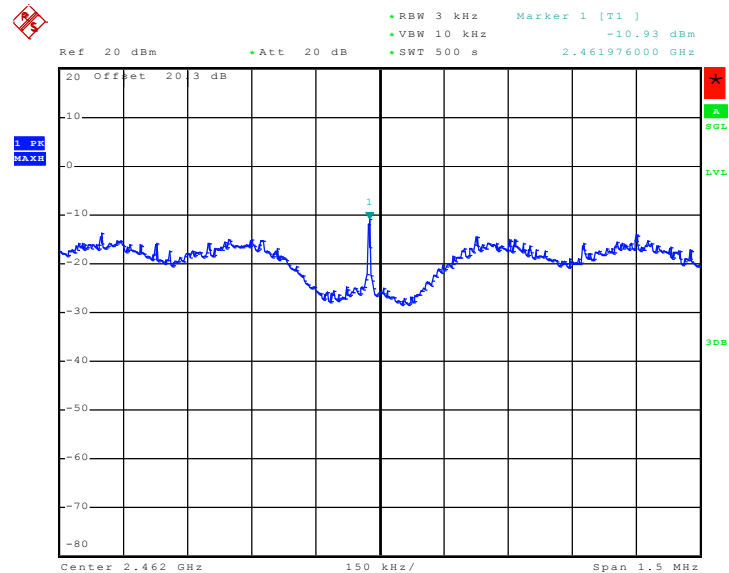


PSD Plot on 802.11g Channel 11 - Chain 0

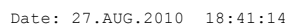


Date: 27.AUG.2010 17:55:12

PSD Plot on 802.11g Channel 11 - Chain 1



Date: 4.SEP.2010 18:29:18

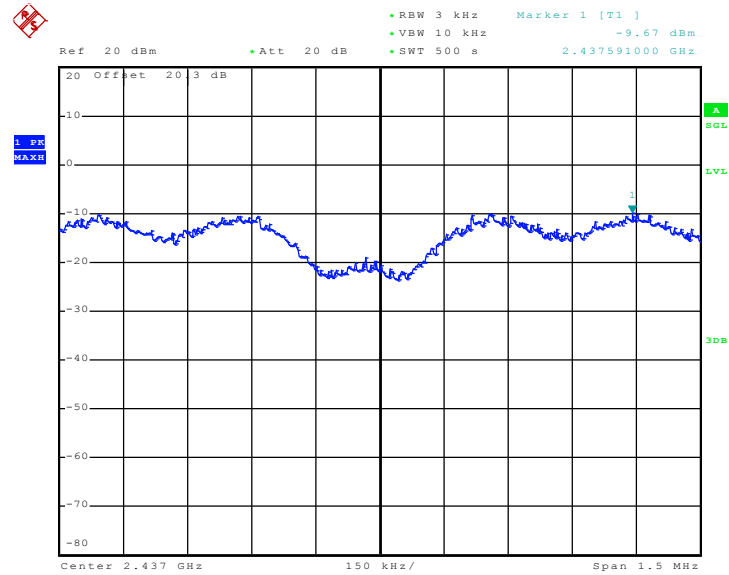


PSD Plot on 802.11n (HT-20) Channel 01 - Chain 1



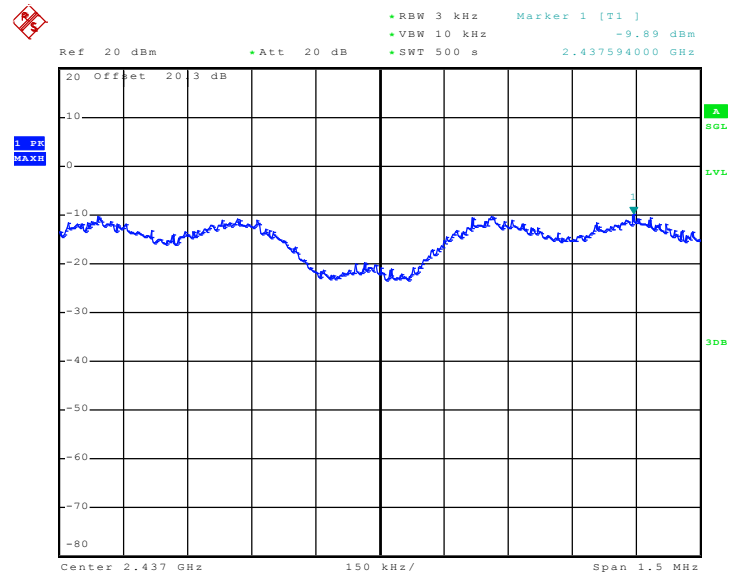


PSD Plot on 802.11n (HT-20) Channel 06 - Chain 0



Date: 27.AUG.2010 18:53:16

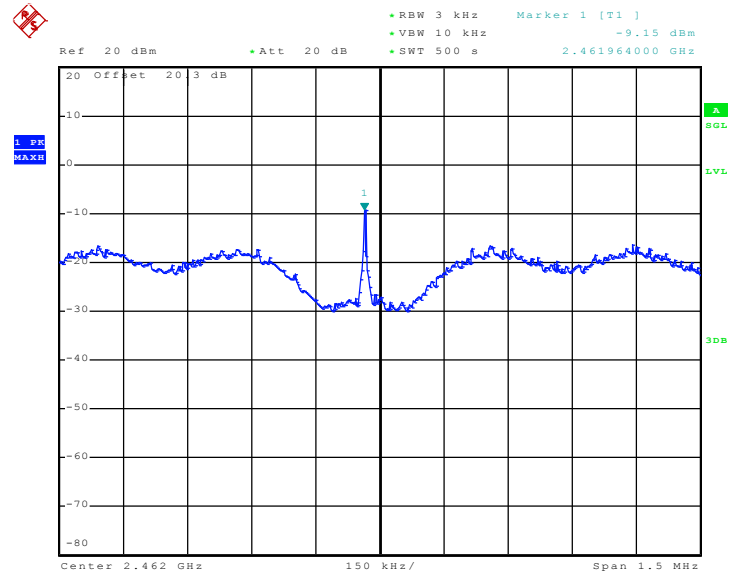
PSD Plot on 802.11n (HT-20) Channel 06 - Chain 1



Date: 27.AUG.2010 19:50:05

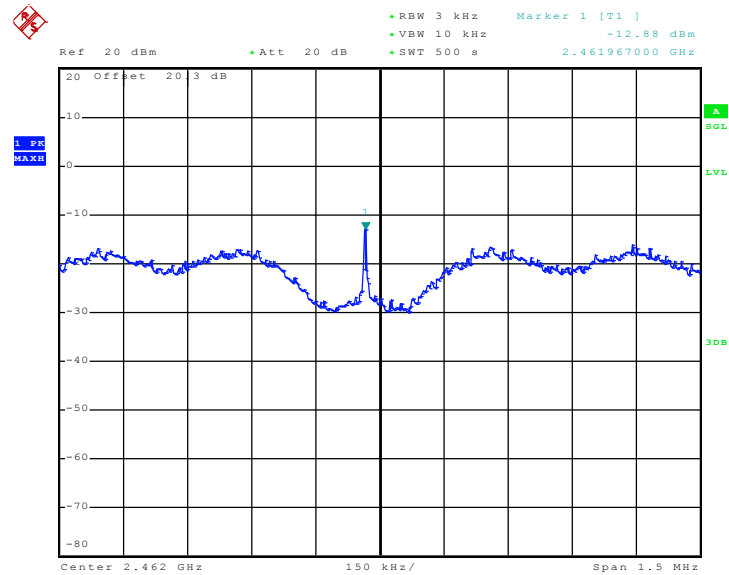


PSD Plot on 802.11n (HT-20) Channel 11 - Chain 0



Date: 27.AUG.2010 19:04:38

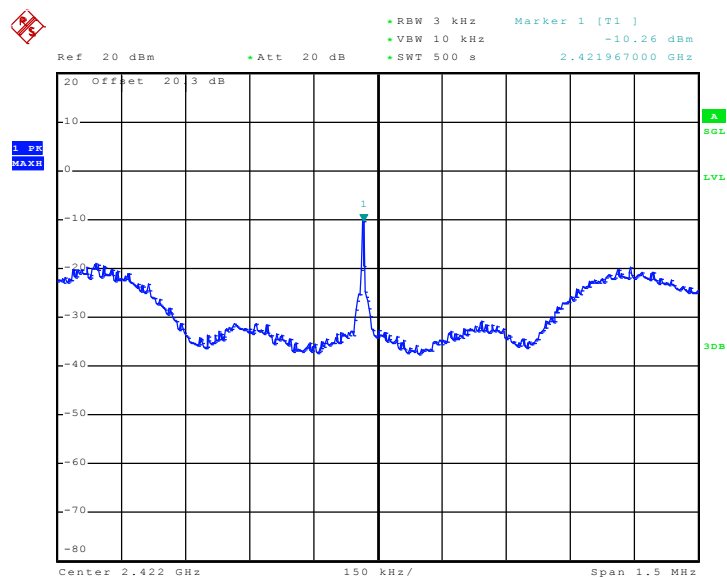
PSD Plot on 802.11n (HT-20) Channel 11 - Chain 1



Date: 27.AUG.2010 19:40:49

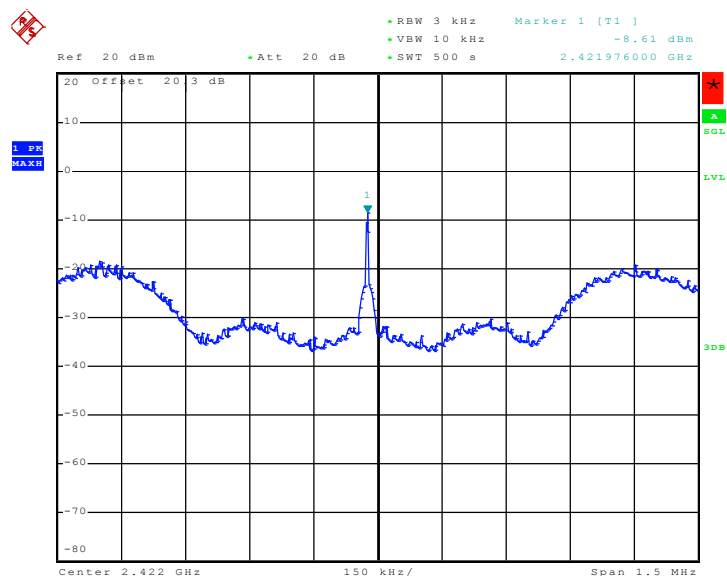


PSD Plot on 802.11n (HT-40) Channel 03 - Chain 0



Date: 28.AUG.2010 00:37:33

PSD Plot on 802.11n (HT-40) Channel 03 - Chain 1



Date: 4.SEP.2010 17:49:22



Report No. : FR080603A

Ref 20 dBm Att 20 dB RBW 3 kHz VBW 10 kHz SWT 500 s Marker 1 [T1] -8.79 dBm 2.436967000 GHz

Offset 20.3 dB

1.5 VPK
MARK

1

Center 2.437 GHz 150 kHz/ Span 1.5 MHz

Date: 28.AUG.2010 01:16:21

Ref 20 dBm Att 20 dB RBW 3 kHz VBW 10 kHz SWT 500 s Marker 1 [T1] -10.92 dBm 2.436975400 GHz

20 Offset 20 3 dB

1 Vpk CLRWR

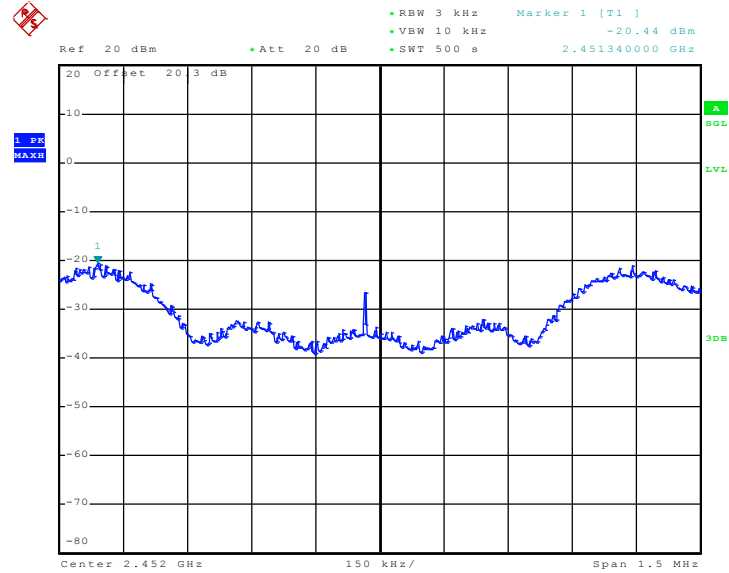
1

2.437 GHz 150 kHz/ Span 1.5 MHz

Date: 4.SEP.2010 16:38:38

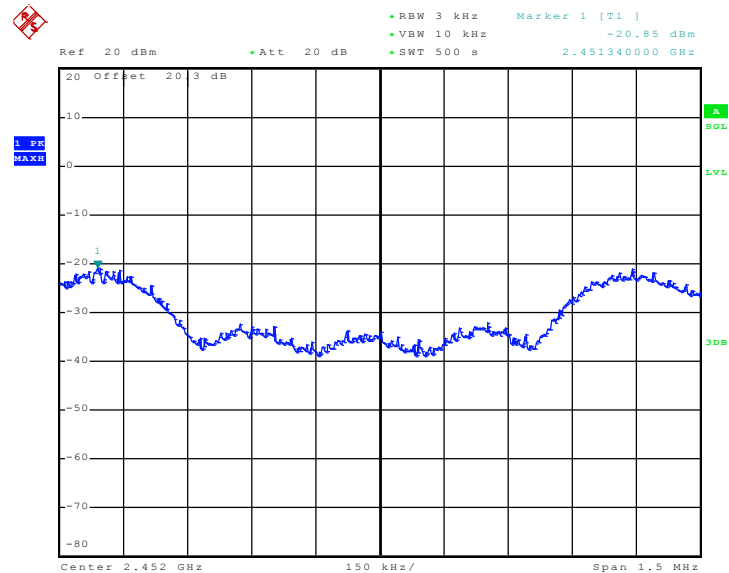


PSD Plot on 802.11n (HT-40) Channel 09 - Chain 0



Date: 28.AUG.2010 01:25:53

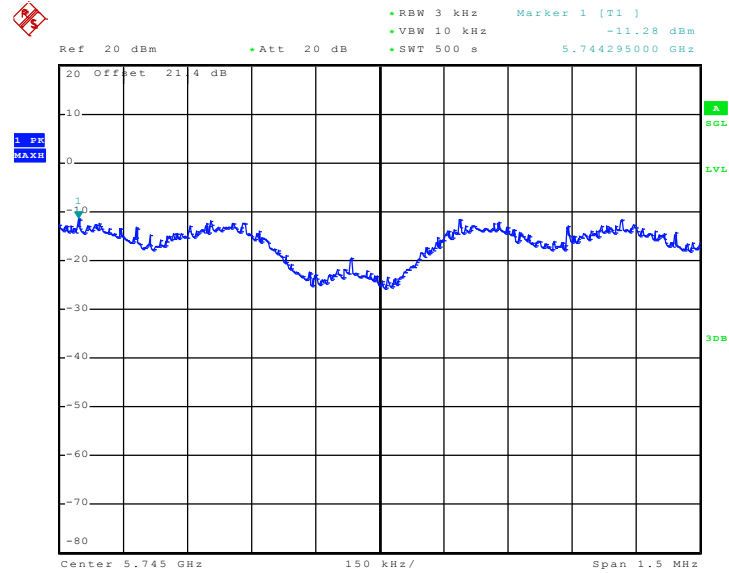
PSD Plot on 802.11n (HT-40) Channel 09 - Chain 1



Date: 28.AUG.2010 01:35:18

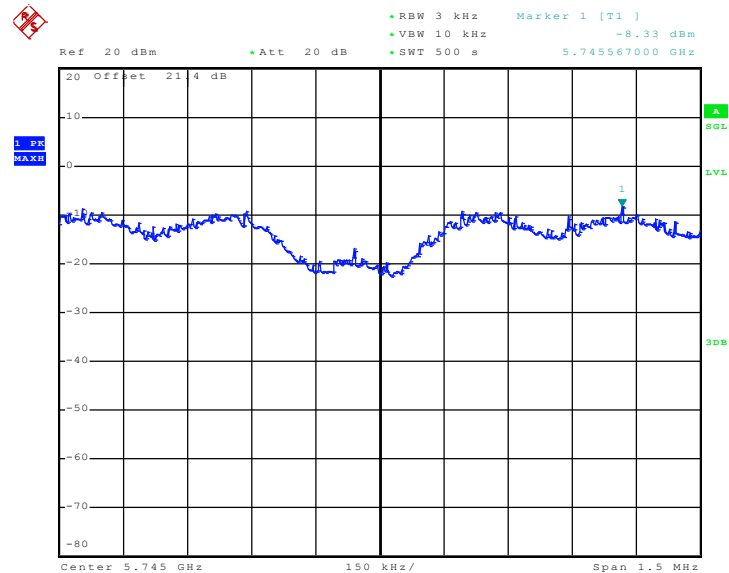


PSD Plot on 802.11a Channel 149 - Chain 0



Date: 27.AUG.2010 21:14:07

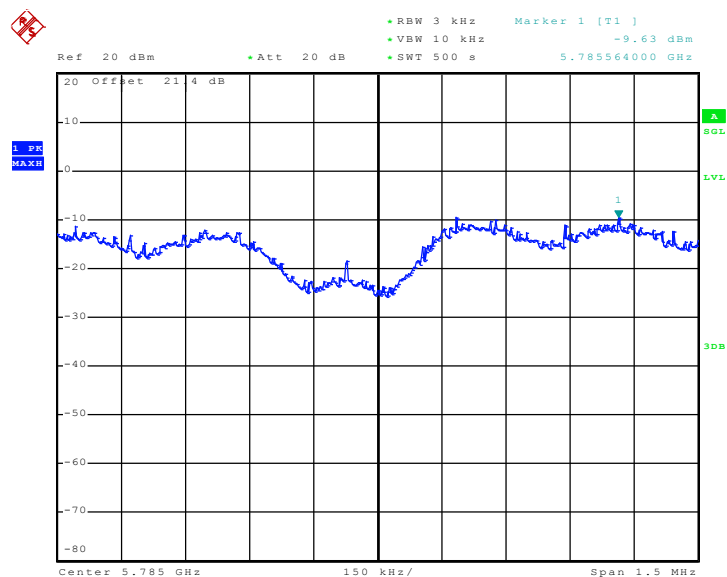
PSD Plot on 802.11a Channel 149 - Chain 1



Date: 27.AUG.2010 20:58:39

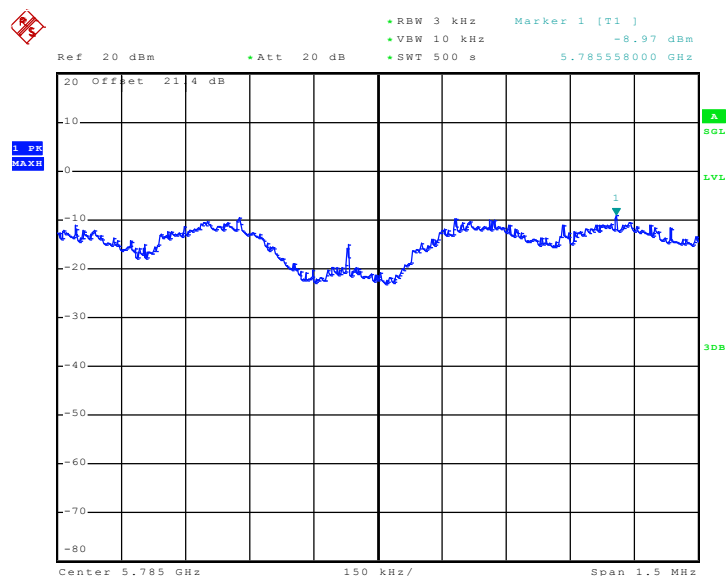


PSD Plot on 802.11a Channel 157 - Chain 0



Date: 27.AUG.2010 21:24:06

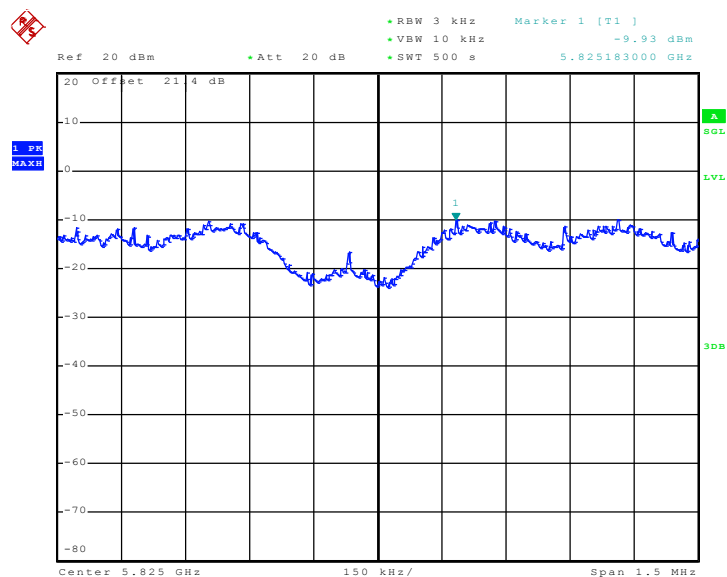
PSD Plot on 802.11a Channel 157 - Chain 1



Date: 27.AUG.2010 20:49:27

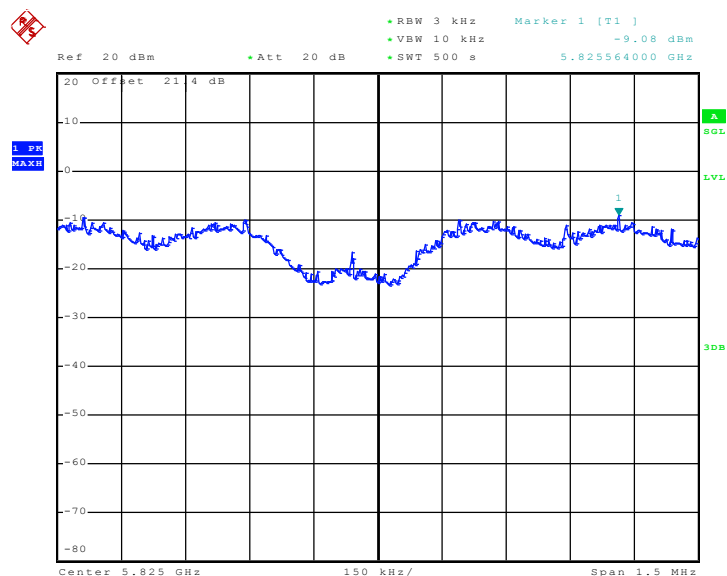


PSD Plot on 802.11a Channel 165 - Chain 0



Date: 27.AUG.2010 21:35:11

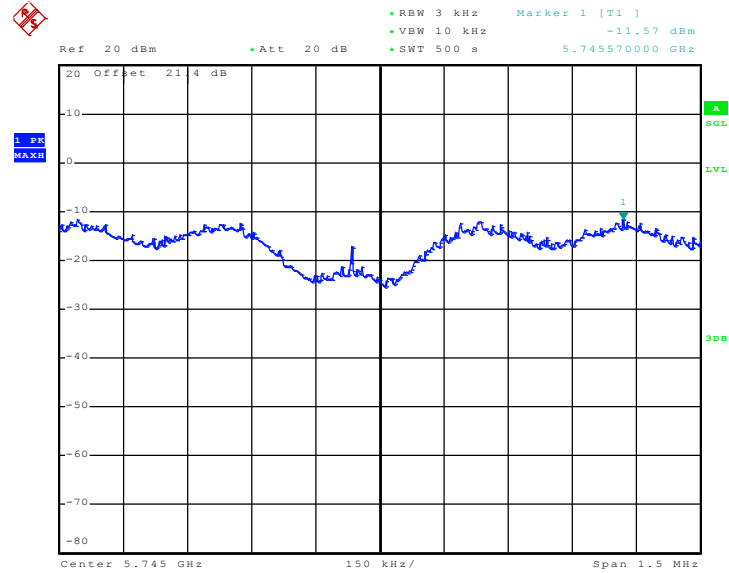
PSD Plot on 802.11a Channel 165 - Chain 1



Date: 27.AUG.2010 20:40:11

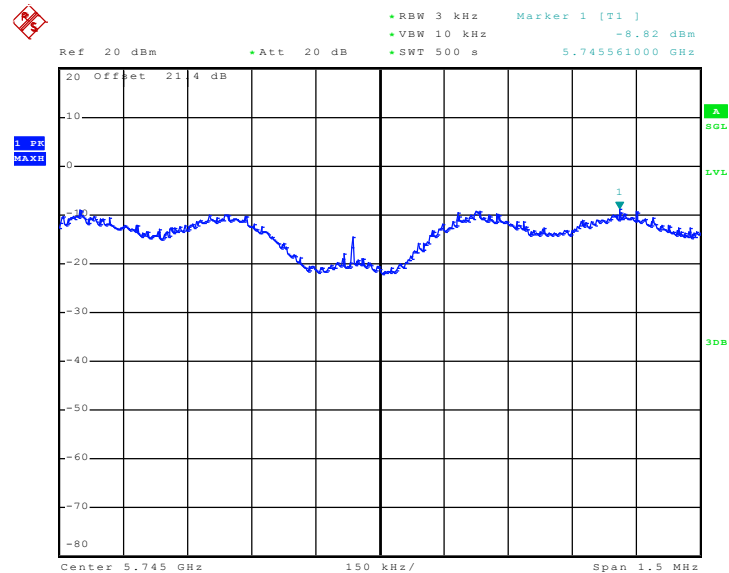


PSD Plot on 802.11n (HT-20) Channel 149 - Chain 0



Date: 27.AUG.2010 22:15:45

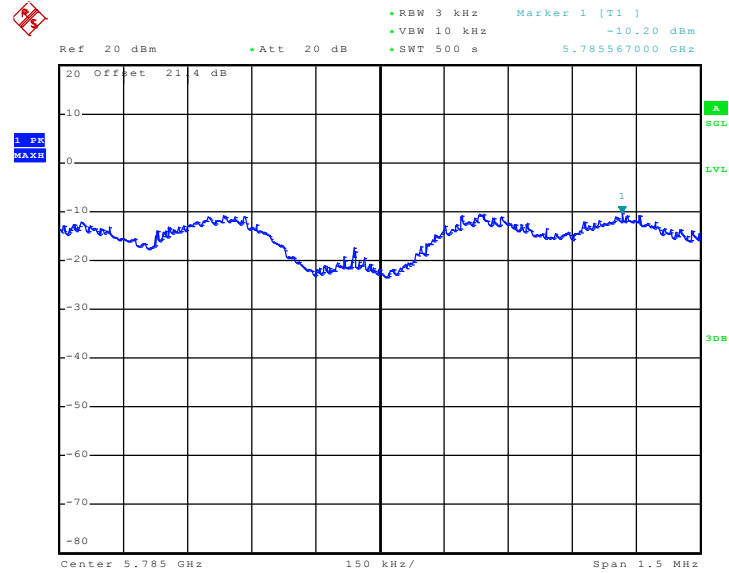
PSD Plot on 802.11n (HT-20) Channel 149 - Chain 1



Date: 27.AUG.2010 22:25:07

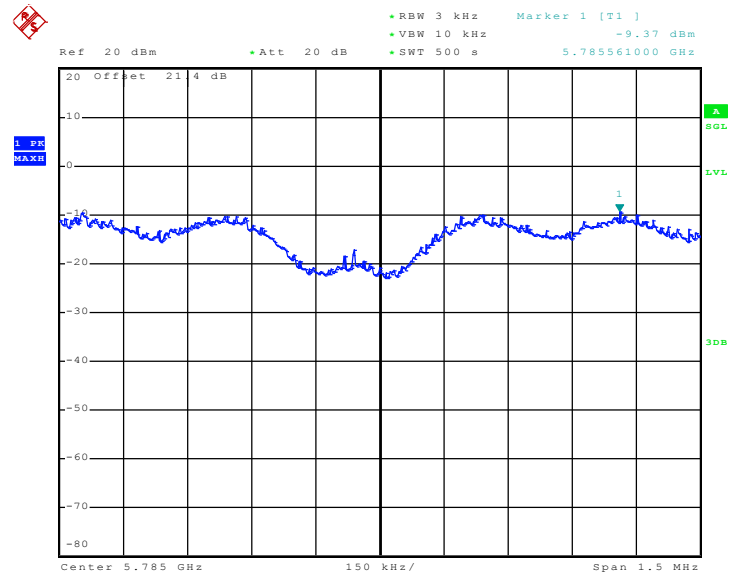


PSD Plot on 802.11n (HT-20) Channel 157 - Chain 0



Date: 27.AUG.2010 22:06:11

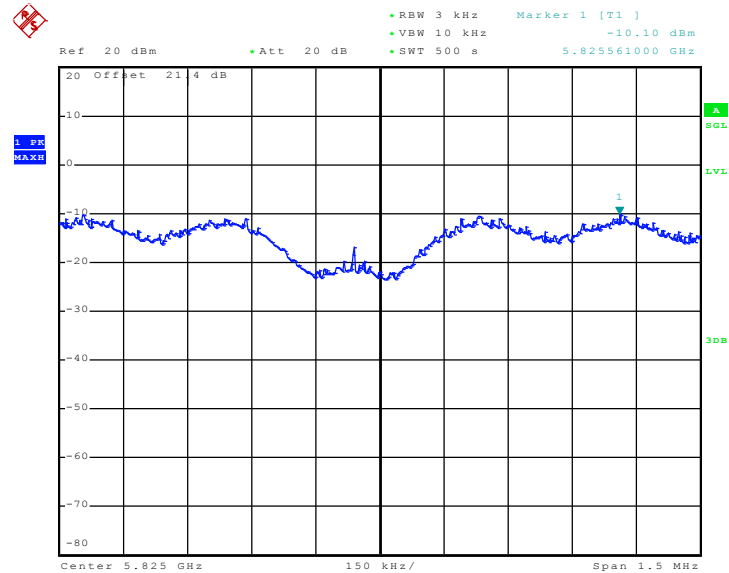
PSD Plot on 802.11n (HT-20) Channel 157 - Chain 1



Date: 27.AUG.2010 22:34:18

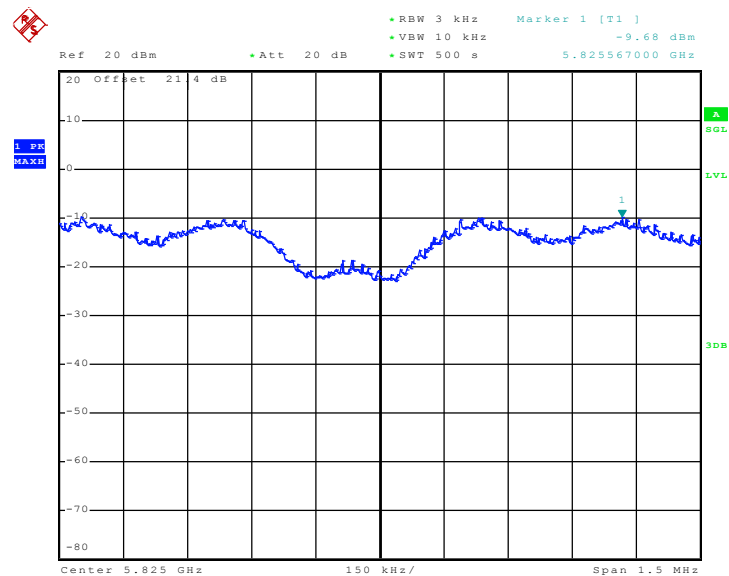


PSD Plot on 802.11n (HT-20) Channel 165 - Chain 0



Date: 27.AUG.2010 21:53:07

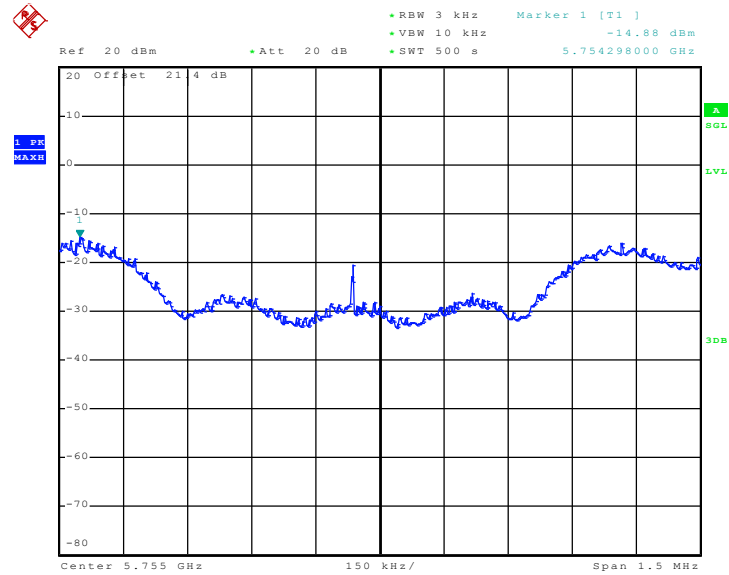
PSD Plot on 802.11n (HT-20) Channel 165 - Chain 1



Date: 27.AUG.2010 22:43:11

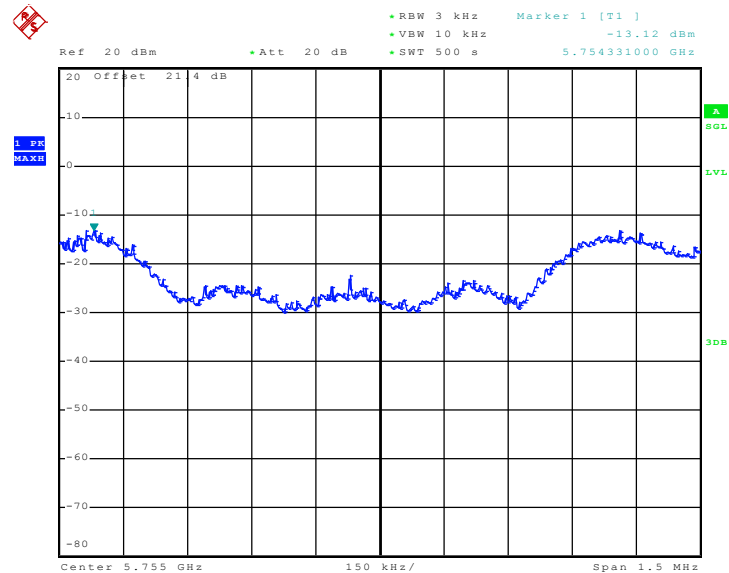


PSD Plot on 802.11n (HT-40) Channel 151 - Chain 0



Date: 27.AUG.2010 23:52:40

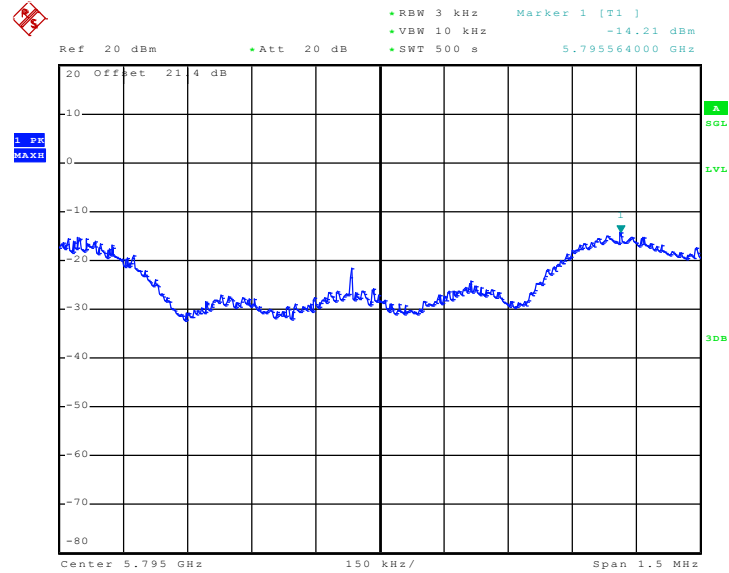
PSD Plot on 802.11n (HT-40) Channel 151 - Chain 1



Date: 28.AUG.2010 00:02:00

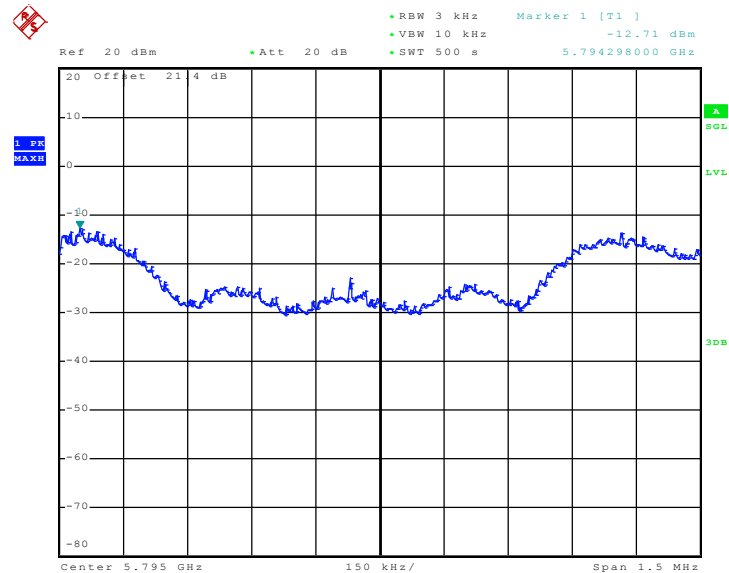


PSD Plot on 802.11n (HT-40) Channel 159 - Chain 0



Date: 28.AUG.2010 00:27:21

PSD Plot on 802.11n (HT-40) Channel 159 - Chain 1



Date: 28.AUG.2010 00:17:44

3.3 Average Power Measurement

3.3.1 Limit of Average Power

None; for reporting purposes only.

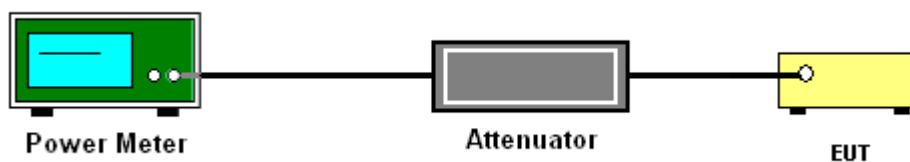
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The RF output of EUT was connected to the power meter by a low loss cable.
2. Measure the power by power meter.

3.3.4 Test Setup



3.3.5 Test Result of Average Power

Test Mode :	802.11b L/M/H channels	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)		
		Chain 0	Chain 1	Total Power
01	2412	16.84	16.80	19.83
06	2437	17.12	16.98	20.06
11	2462	17.05	16.60	19.84

Test Mode :	802.11g L/M/H channels	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)		
		Chain 0	Chain 1	Total Power
01	2412	11.05	10.60	13.84
06	2437	16.90	16.68	19.80
11	2462	10.63	10.05	13.36

Test Mode :	802.11n (HT-20) L/M/H channels at 2.4G band	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) Measured Output Power (dBm)		
		Chain 0	Chain 1	Total power
01	2412	11.33	11.08	14.22
06	2437	16.12	15.92	19.03
11	2462	10.26	9.76	13.03

Test Mode :	802.11n (HT-40) L/M/H channels at 2.4G band	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-40, 2Tx) Measured Output Power (dBm)		
		Chain 0	Chain 1	Total power
03	2422	9.84	9.42	12.65
06	2437	13.00	12.90	15.96
09	2452	9.52	9.35	11.24

Test Mode :	802.11a L/M/H channels	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)		
		Chain 0	Chain 1	Total Power
149	5745	14.92	16.33	18.69
157	5785	14.90	14.62	17.77
165	5825	14.30	14.69	17.51

Test Mode :	802.11n (HT-20) L/M/H channels at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) Measured Output Power (dBm)		
		Chain 0	Chain 1	Total Power
149	5745	14.98	16.28	18.69
157	5785	15.10	15.13	18.13
165	5825	14.30	14.68	17.50

Test Mode :	802.11n (HT-40) L/M/H channels at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-40) Measured Output Power (dBm)		
		Chain 0	Chain 1	Total Power
151	5755	15.70	15.68	18.70
159	5795	15.39	14.92	18.17

3.4 Peak Power Measurement

3.4.1 Limit of Peak 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 P-to-M operation, the limit has to be reduced by 1dB for every 1dB that the directional gain of the antenna exceeds 6dBi.

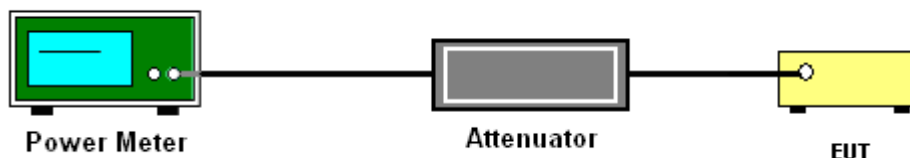
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

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

3.4.4 Test Setup



3.4.5 Test Result of Peak Power

Test Mode :	802.11b L/M/H channels	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11b Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Total Power		
01	2412	19.66	18.64	22.19	29.67	Pass
06	2437	20.78	19.45	23.18	29.67	Pass
11	2462	20.67	18.91	22.89	29.67	Pass

Note: The maximum composite antenna gain is 6.33 dBi; therefore the limit is 29.67 dBm.

Test Mode :	802.11g L/M/H channels	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11g Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Total Power		
01	2412	20.74	20.25	23.51	29.67	Pass
06	2437	24.15	24.21	27.19	29.67	Pass
11	2462	20.37	18.94	22.72	29.67	Pass

Note: The maximum composite antenna gain is 6.33 dBi; therefore the limit is 29.67 dBm.

Test Mode :	802.11n (HT-20) L/M/H channels at 2.4G band	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Total power		
01	2412	20.61	20.33	23.48	29.67	Pass
06	2437	23.87	23.82	26.86	29.67	Pass
11	2462	19.38	18.42	21.94	29.67	Pass

Note: The maximum composite antenna gain is 6.33 dBi; therefore the limit is 29.67 dBm.

Test Mode :	802.11n (HT-40) L/M/H channels at 2.4G band	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-40, 2Tx) Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Total power		
03	2422	19.15	18.57	21.88	29.67	Pass
06	2437	22.04	21.31	24.70	29.67	Pass
09	2452	18.61	18.23	21.43	29.67	Pass

Note: The maximum composite antenna gain is 6.33 dBi; therefore the limit is 29.67 dBm.

Test Mode :	802.11a L/M/H channels	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Total Power		
149	5745	20.46	20.89	23.69	28.23	Pass
157	5785	20.48	20.50	23.50	28.23	Pass
165	5825	20.24	20.33	23.30	28.23	Pass

Note: The maximum composite antenna gain is 7.77 dBi; therefore the limit is 28.23 dBm.

Test Mode :	802.11n (HT-20) L/M/H channels at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-20, 2Tx) Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Total Power		
149	5745	20.55	20.95	23.76	28.23	Pass
157	5785	20.38	20.41	23.41	28.23	Pass
165	5825	20.12	20.22	23.18	28.23	Pass

Note: The maximum composite antenna gain is 7.77 dBi; therefore the limit is 28.23 dBm.

Test Mode :	802.11n (HT-40) L/M/H channels at 5.8G band	Temperature :	19~21℃
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (HT-40) Measured Output Power (dBm)			Max. Limits (dBm)	Pass/Fail
		Chain 0	Chain 1	Total Power		
151	5755	20.49	20.43	23.47	28.23	Pass
159	5795	20.23	20.24	23.25	28.23	Pass

Note: The maximum composite antenna gain is 7.77 dBi; therefore the limit is 28.23 dBm.

3.5 Conducted Spurious Emission Measurement

3.5.1 Limit of Spurious Emission Measurement

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

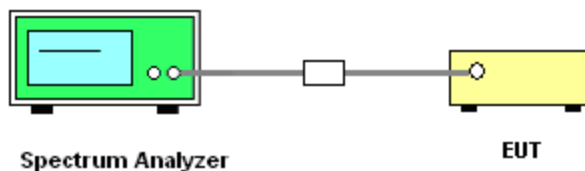
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 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.

3.5.4 Test Setup





Test Mode :	802.11b L/M/H channels	Temperature :	19~21℃
Test Band :	802.11b	Relative Humidity :	44~46%
Test Channel :	01, 06, 11	Test Engineer :	Ken Hsu

Ref 20 dBm Att 20 dB SWT 2.6 s 22.000620000 GHz

• RBW 100 kHz Marker 1 [T1] -35.41 dBm
• VBW 300 kHz

20 Offset 16.5 dB

10

0

-10

-20

-30

-40

-50

-60

-70

-80

Start 30 MHz 2.597 GHz/ Stop 26 GHz

1

-35.41 dBm

1

3 dB

20

10

0

-10

-20

-30

-40

-50

-60

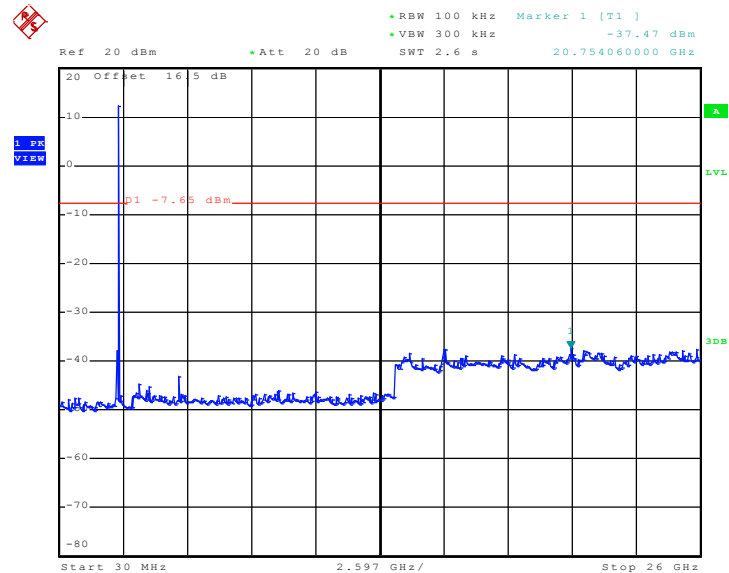
-70

-80

Start 30 MHz 2.597 GHz/ Stop 26 GHz

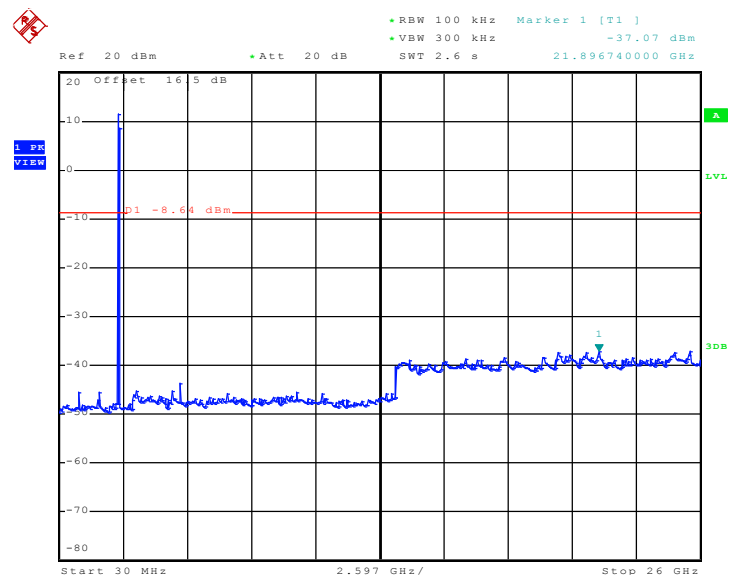
Date: 4.SEP.2010 03:49:37

Conducted Spurious Emission Plot on 802.11b Channel 06 - Chain 0 + Chain 1



Date: 4.SEP.2010 03:50:23

Conducted Spurious Emission Plot on 802.11b Channel 11 - Chain 0 + Chain 1

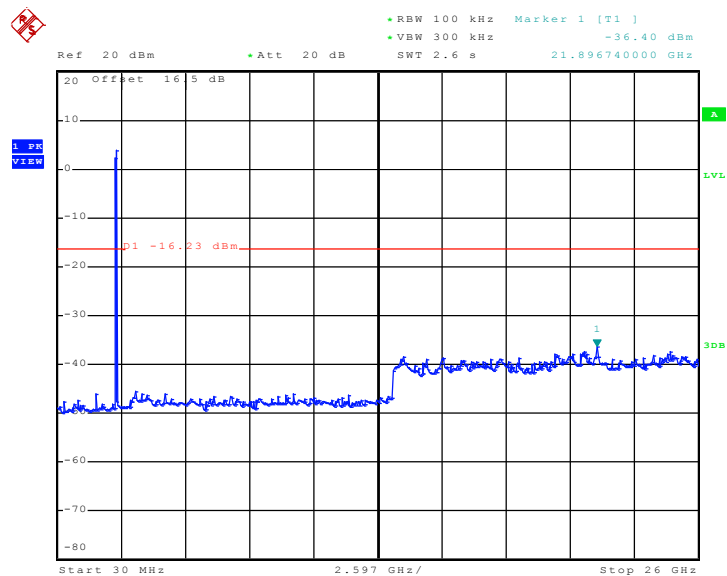


Date: 4.SEP.2010 03:51:29



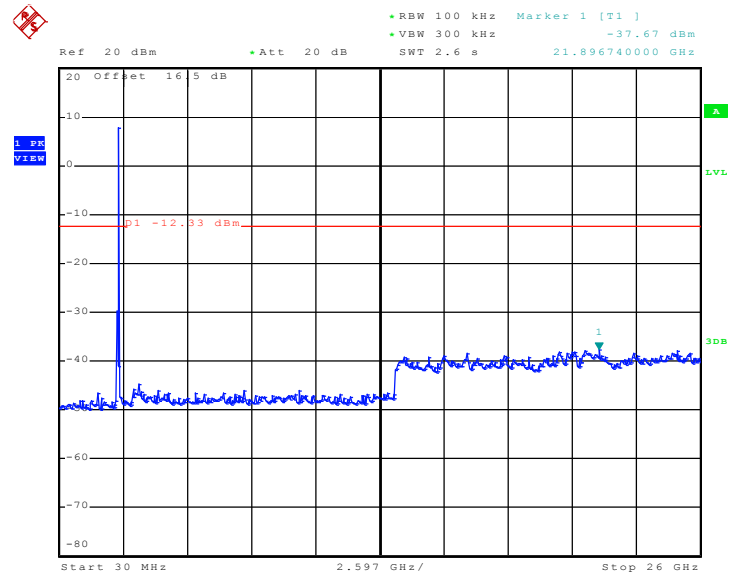
Test Mode :	802.11g L/M/H channels	Temperature :	19~21℃
Test Band :	802.11g	Relative Humidity :	44~46%
Test Channel :	01, 06, 11	Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot on
802.11g Channel 01 - Chain 0 + Chain 1



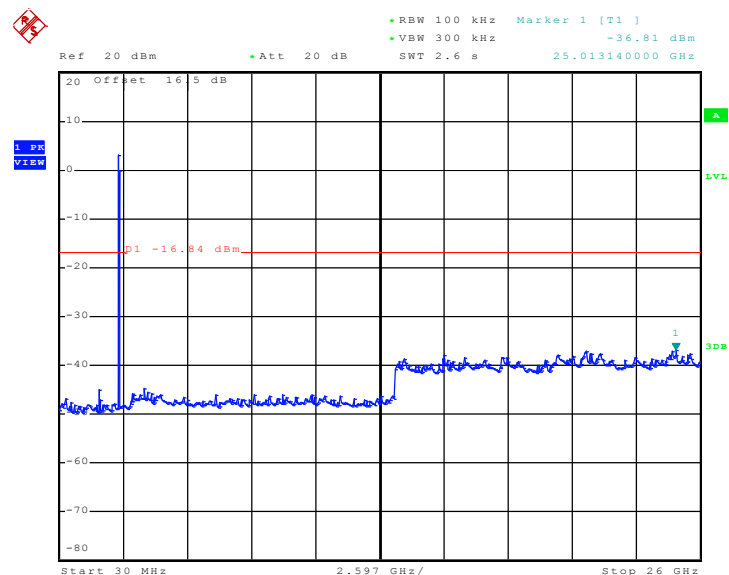
Date: 4.SEP.2010 03:52:30

Conducted Spurious Emission Plot on 802.11g Channel 06 - Chain 0 + Chain 1



Date: 4.SEP.2010 03:53:18

Conducted Spurious Emission Plot on 802.11g Channel 11 - Chain 0 + Chain 1

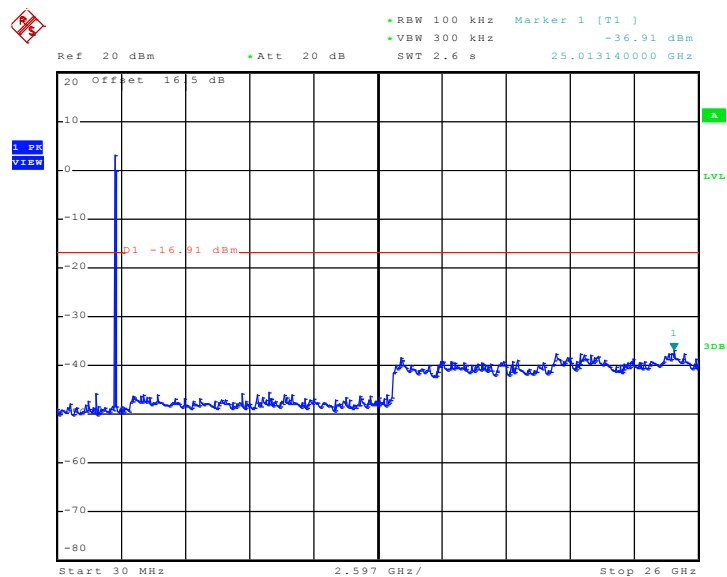


Date: 4.SEP.2010 03:54:20



Test Mode :	802.11n (HT-20) L/M/H channel at 2.4G band	Temperature :	19~21℃
Test Band :	802.11n (HT-20)	Relative Humidity :	44~46%
Test Channel :	01, 06, 11	Test Engineer :	Ken Hsu

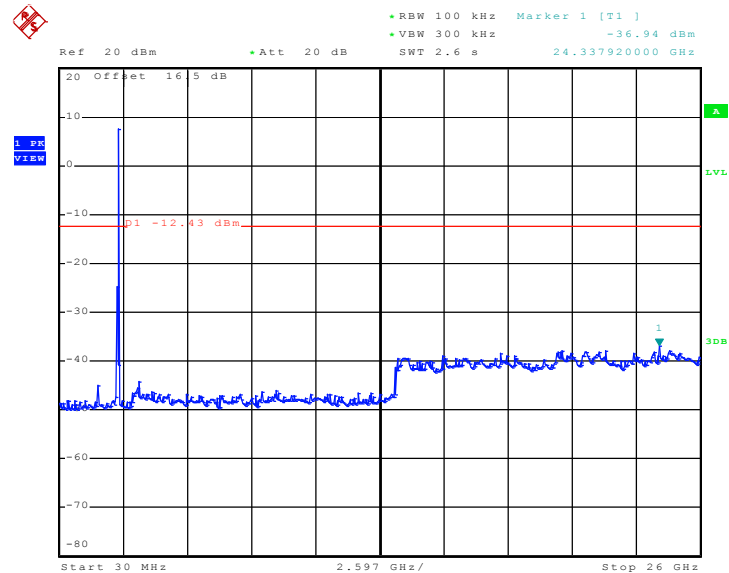
Conducted Spurious Emission Plot on
802.11n (HT-20) Channel 01 - Chain 0 + Chain 1



Date: 4.SEP.2010 03:55:25

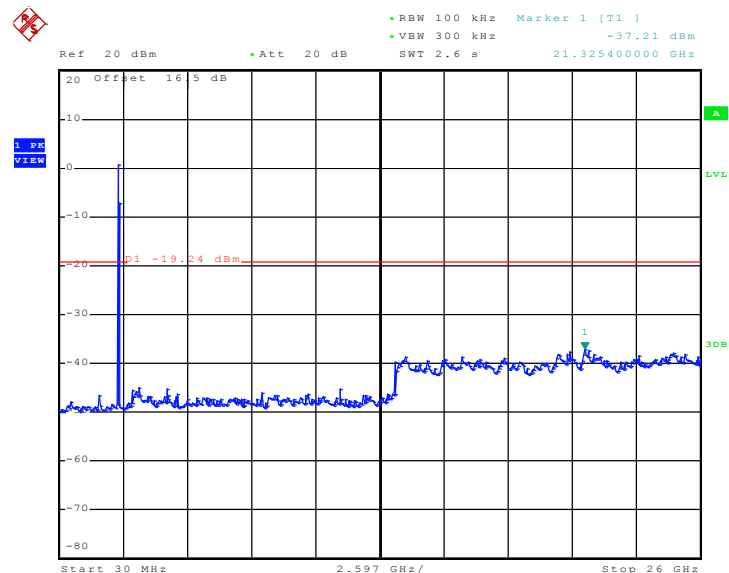


Conducted Spurious Emission Plot on
802.11n (HT-20) Channel 06 - Chain 0 + Chain 1



Date: 4.SEP.2010 03:56:03

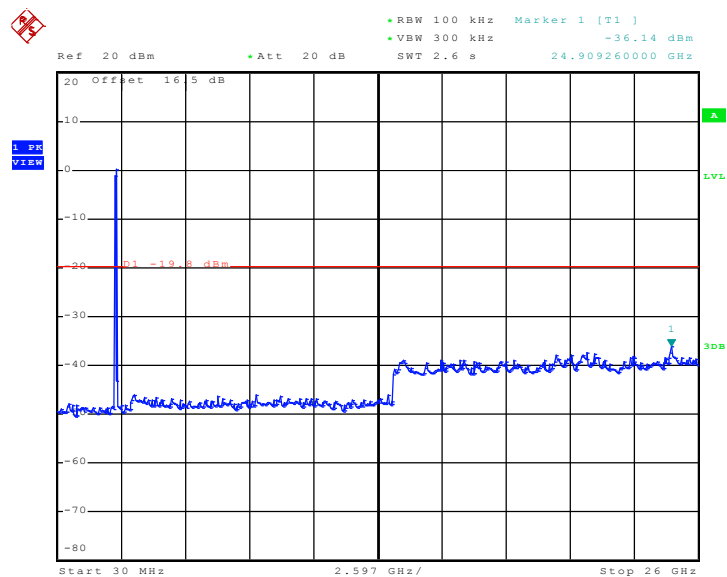
Conducted Spurious Emission Plot on
802.11n (HT-20) Channel 11 - Chain 0 + Chain 1



Date: 4.SEP.2010 03:56:45

Test Mode :	802.11n (HT-40) L/M/H channel at 2.4G band	Temperature :	19~21℃
Test Band :	802.11n (HT-40)	Relative Humidity :	44~46%
Test Channel :	03, 06, 09	Test Engineer :	Ken Hsu

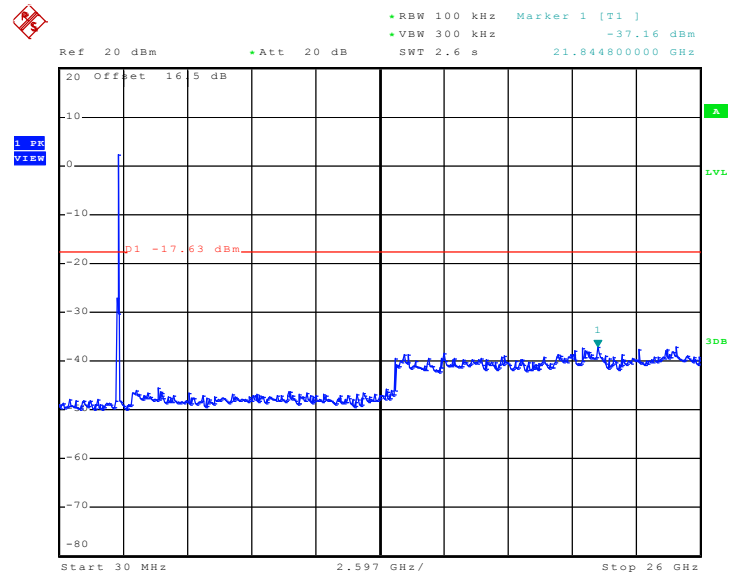
**Conducted Spurious Emission Plot on
802.11n (HT-40) Channel 03 - Chain 0 + Chain 1**



Date: 4.SEP.2010 03:57:37

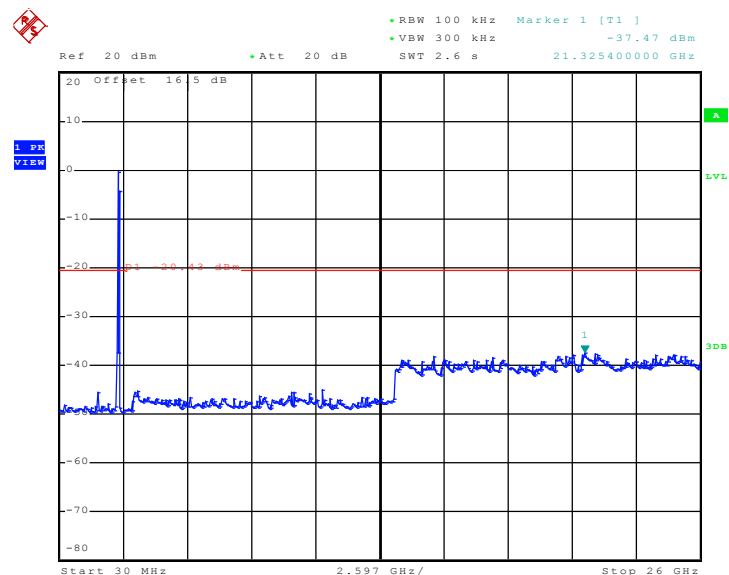


Conducted Spurious Emission Plot on
802.11n (HT-40) Channel 06 - Chain 0 + Chain 1



Date: 4.SEP.2010 03:58:14

Conducted Spurious Emission Plot on
802.11n (HT-40) Channel 09 - Chain 0 + Chain 1

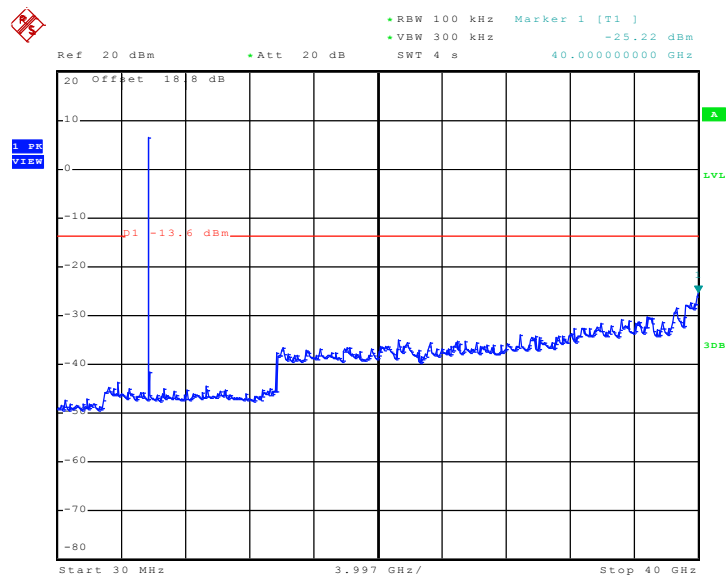


Date: 4.SEP.2010 03:59:04



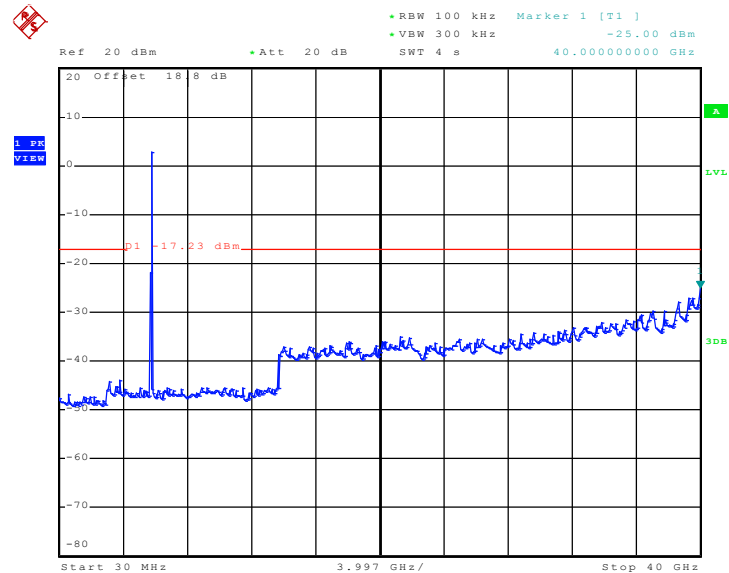
Test Mode :	802.11a L/M/H channels	Temperature :	19~21°C
Test Band :	802.11a	Relative Humidity :	44~46%
Test Channel :	149, 157, 165	Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot on
802.11a Channel 149 - Chain 0 + Chain 1



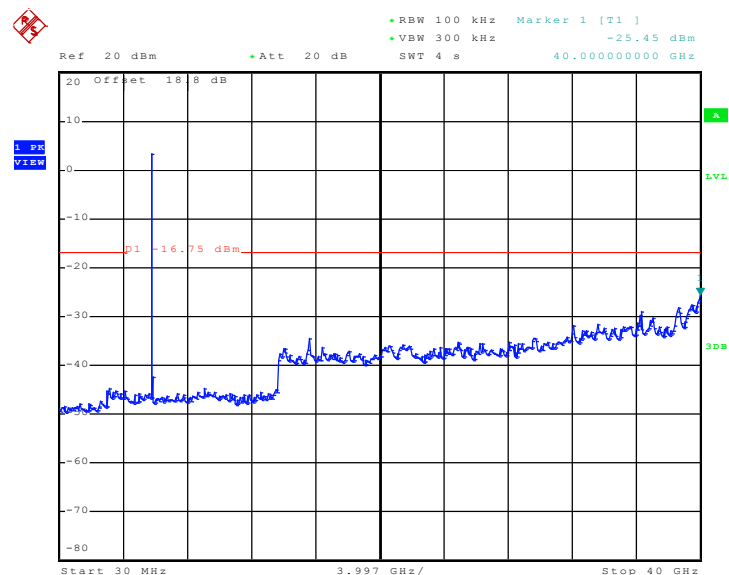
Date: 4.SEP.2010 04:03:41

Conducted Spurious Emission Plot on 802.11a Channel 157 - Chain 0 + Chain 1



Date: 4.SEP.2010 04:05:04

Conducted Spurious Emission Plot on 802.11a Channel 165 - Chain 0 + Chain 1

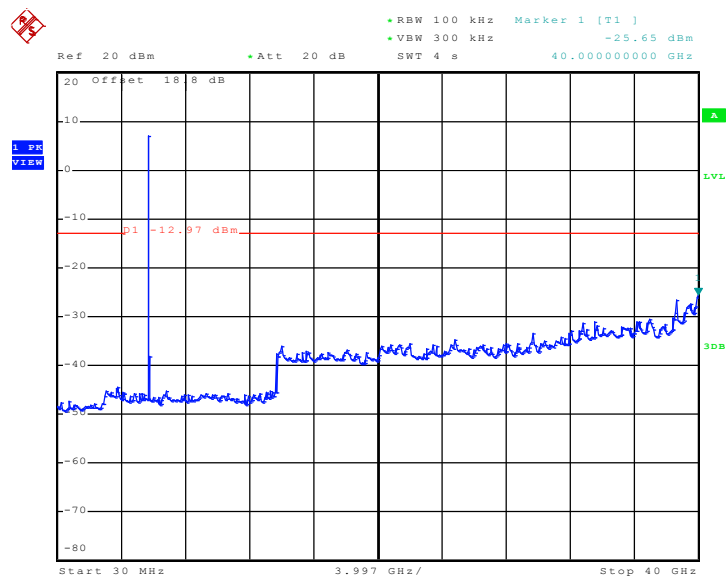


Date: 4.SEP.2010 04:05:52



Test Mode :	802.11n (HT-20) L/M/H channel at 5.8G band	Temperature :	19~21℃
Test Band :	802.11n (HT-20)	Relative Humidity :	44~46%
Test Channel :	149, 157, 165	Test Engineer :	Ken Hsu

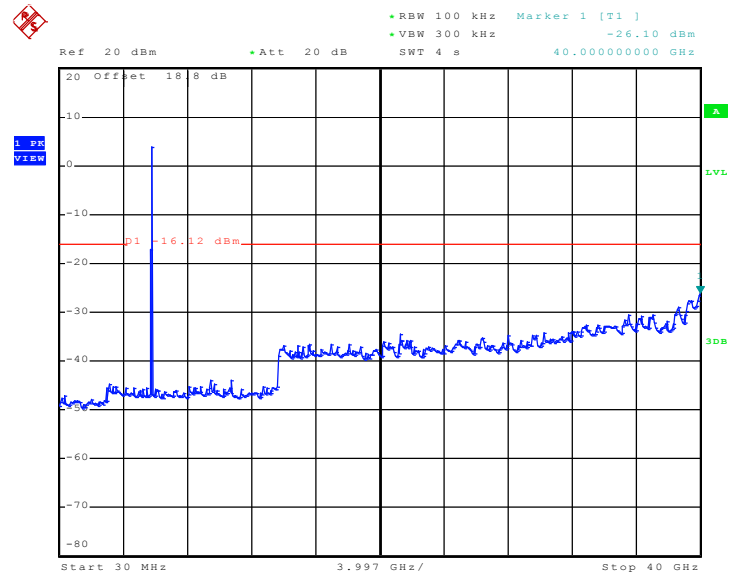
Conducted Spurious Emission Plot on
802.11n (HT-20) Channel 149 - Chain 0 + Chain 1



Date: 4.SEP.2010 04:08:36

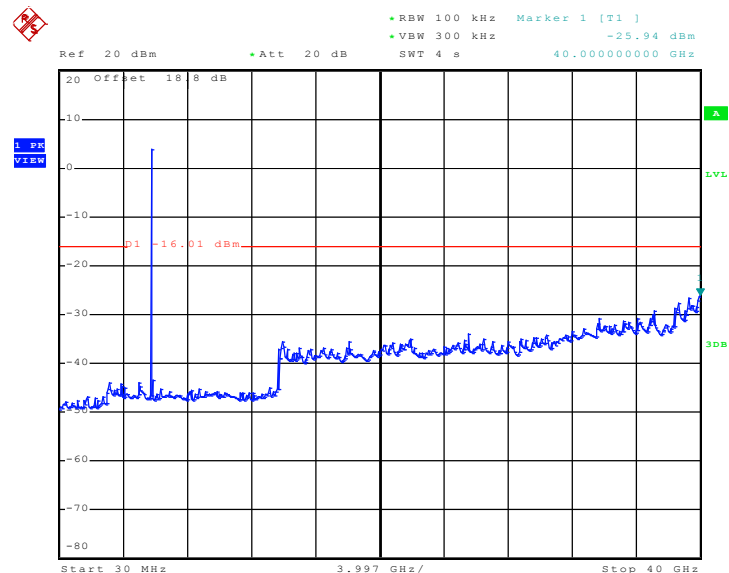


Conducted Spurious Emission Plot on
802.11n (HT-20) Channel 157 - Chain 0 + Chain 1



Date: 4.SEP.2010 04:07:52

Conducted Spurious Emission Plot on
802.11n (HT-20) Channel 165 - Chain 0 + Chain 1

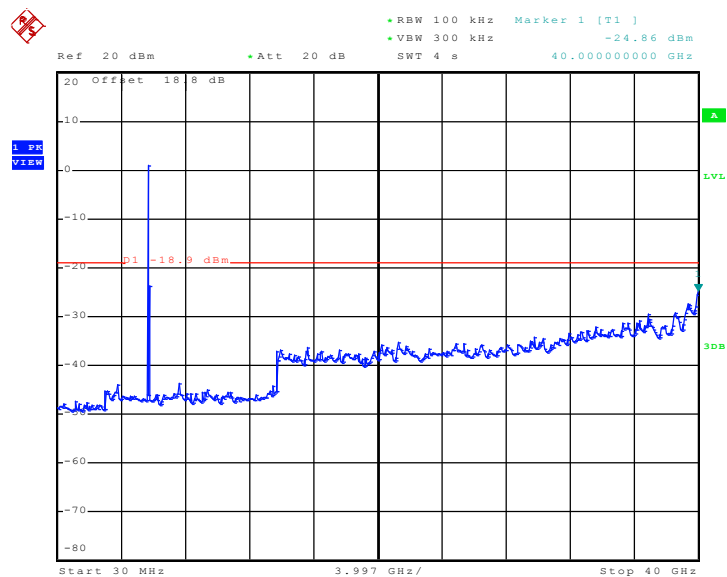


Date: 4.SEP.2010 04:07:04

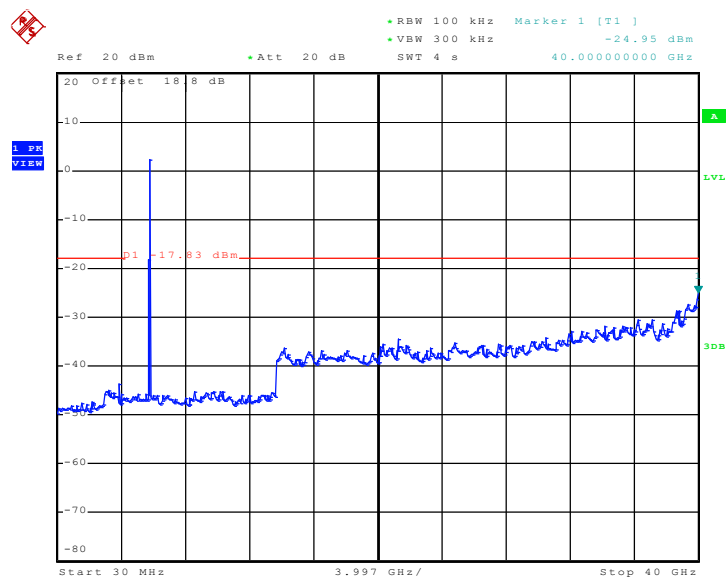


Test Mode :	802.11n (HT-40) L/M/H channel at 5.8G band	Temperature :	19~21℃
Test Band :	802.11n (HT-40)	Relative Humidity :	44~46%
Test Channel :	151 and 159	Test Engineer :	Ken Hsu

Conducted Spurious Emission Plot on
802.11n (HT-40) Channel 151 - Chain 0 + Chain 1



Date: 4.SEP.2010 04:10:40



Date: 4.SEP.2010 04:11:32

3.6 Band Edges Measurement

3.6.1 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.

3.6.2 Measuring Instruments

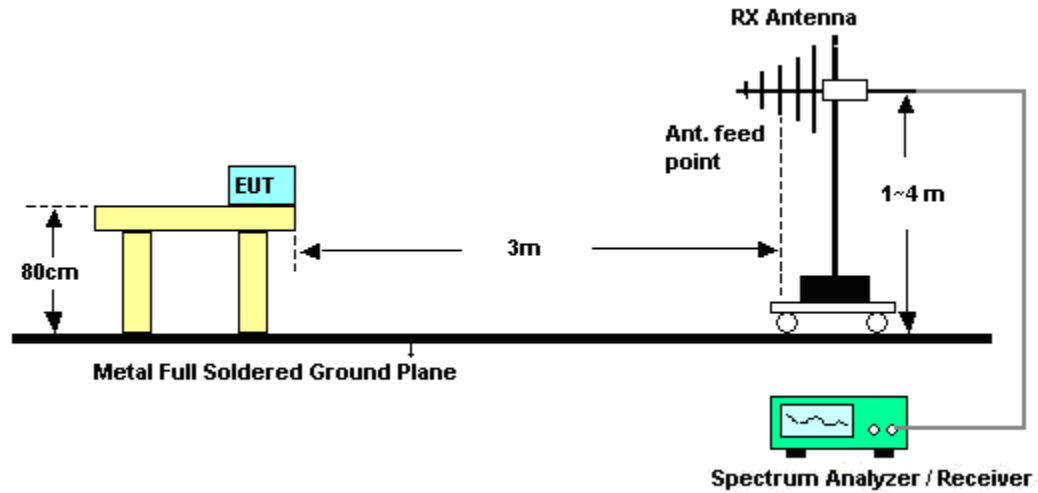
See list of measuring instruments of this test report.

3.6.3 Test Procedures

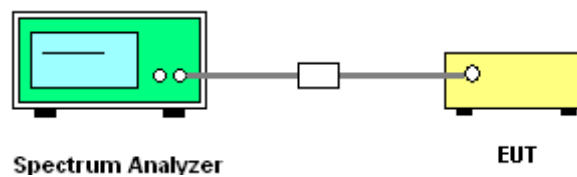
1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band 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).

3.6.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.6.5 Test Result of Radiated Band Edges

Test Mode :	802.11 b L channel	Temperature :	25~26°C
Test Band :	802.11b	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2385.81	64.32	-9.68	74	62.53	31.86	4.47	34.54	100	187	Peak
2385.81	45.15	-8.85	54	43.36	31.86	4.47	34.54	100	187	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386	67.45	-6.55	74	65.66	31.86	4.47	34.54	137	127	Peak
2386	47.86	-6.14	54	46.07	31.86	4.47	34.54	137	127	Average

Test Mode :	802.11b H channel	Temperature :	25~26°C
Test Band :	802.11b	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2488.22	57.74	-16.26	74	55.68	32	4.59	34.53	123	162	Peak
2488.22	42.71	-11.29	54	40.65	32	4.59	34.53	123	162	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
2488.03	61.43	-12.57	74	59.37	32	4.59	34.53	123	162	Peak
2488.03	43.65	-10.35	54	41.59	32	4.59	34.53	123	162	Average



Test Mode :	802.11g L channel	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.04	65.95	-8.05	74	64.16	31.86	4.47	34.54	100	166	Peak
2389.04	51.26	-2.74	54	49.47	31.86	4.47	34.54	100	166	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	73.05	-0.95	74	68.85	31.7	6.03	33.53	100	180	Peak
2390	51.33	-2.67	54	47.13	31.7	6.03	33.53	100	180	Average

Test Mode :	802.11g H channel	Temperature :	25~26°C
Test Band :	802.11g	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	66.99	-7.01	74	64.95	31.98	4.59	34.53	100	161	Peak
2483.66	48.63	-5.37	54	46.59	31.98	4.59	34.53	100	161	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	73.38	-0.62	74	68.98	31.78	6.18	33.56	100	6	Peak
2483.5	51.61	-2.39	54	47.21	31.78	6.18	33.56	100	6	Average



Test Mode :	802.11n (HT-20) L channel at 2.4G band	Temperature :	25~26°C
Test Band :	802.11n (HT-20)	Relative Humidity :	43~44%
Test Channel :	01	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	69.72	-4.28	74	67.9	31.86	4.5	34.54	100	166	Peak
2389.99	51.22	-2.78	54	49.4	31.86	4.5	34.54	100	166	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	73.23	-0.77	74	69.03	31.7	6.03	33.53	100	9	Peak
2390	52.37	-1.63	54	48.17	31.7	6.03	33.53	100	9	Average

Test Mode :	802.11n (HT-20) H channel at 2.4G band	Temperature :	25~26°C
Test Band :	802.11n (HT-20)	Relative Humidity :	43~44%
Test Channel :	11	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.04	68.55	-5.45	74	66.51	31.98	4.59	34.53	100	161	Peak
2484.04	49.43	-4.57	54	47.39	31.98	4.59	34.53	100	161	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	73.14	-0.86	74	68.74	31.78	6.18	33.56	100	6	Peak
2483.5	51.68	-2.32	54	47.28	31.78	6.18	33.56	100	6	Average



Test Mode :	802.11n (HT-40) L channel at 2.4G band	Temperature :	25~26°C
Test Band :	802.11n (HT-40)	Relative Humidity :	43~44%
Test Channel :	03	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.8	68.48	-5.52	74	66.66	31.86	4.5	34.54	100	166	Peak
2389.8	51.19	-2.81	54	49.37	31.86	4.5	34.54	100	166	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	73.04	-0.96	74	68.84	31.7	6.03	33.53	100	6	Peak
2390	53.47	-0.53	54	49.27	31.7	6.03	33.53	100	6	Average

Test Mode :	802.11n (HT-40) H channel at 2.4G band	Temperature :	25~26°C
Test Band :	802.11n (HT-40)	Relative Humidity :	43~44%
Test Channel :	09	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	67.54	-6.46	74	65.5	31.98	4.59	34.53	123	166	Peak
2483.66	48.82	-5.18	54	46.78	31.98	4.59	34.53	123	166	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	73.22	-0.78	74	68.82	31.78	6.18	33.56	100	23	Peak
2483.5	53.03	-0.97	54	48.63	31.78	6.18	33.56	100	23	Average



Test Mode :	802.11a L channel	Temperature :	25~26°C
Test Band :	802.11a	Relative Humidity :	43~44%
Test Channel :	149	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	70.5	-3.66	74.16	61.6	34.82	9.92	35.84	100	243	Peak

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
5725	81.61	-6.65	88.26	72.71	34.82	9.92	35.84	100	243	Peak

Test Mode :	802.11a H channel	Temperature :	25~26°C
Test Band :	802.11a	Relative Humidity :	43~44%
Test Channel :	165	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850	58.78	-14.86	73.64	49.74	34.94	9.87	35.77	100	266	Peak

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
5850	67.16	-19.8	86.96	58.12	34.94	9.87	35.77	100	266	Peak



Test Mode :	802.11n (HT-20) L channel at 5.8G band	Temperature :	25~26°C
Test Band :	802.11n (HT-20)	Relative Humidity :	43~44%
Test Channel :	149	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	69.07	-3.89	72.96	60.17	34.82	9.92	35.84	100	243	Peak

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
5725	83.58	-4.94	88.52	74.68	34.82	9.92	35.84	100	243	Peak

Test Mode :	802.11n (HT-20) H channel at 5.8G band	Temperature :	25~26°C
Test Band :	802.11n (HT-20)	Relative Humidity :	43~44%
Test Channel :	165	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850	58.31	-15.87	74.18	49.27	34.94	9.87	35.77	100	266	Peak

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
5850	71.4	-15.06	86.46	62.36	34.94	9.87	35.77	100	266	Peak



Test Mode :	802.11n (HT-40) L channel at 5.8G band	Temperature :	25~26°C
Test Band :	802.11n (HT-40)	Relative Humidity :	43~44%
Test Channel :	151	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	67.59	-2.39	69.98	58.69	34.82	9.92	35.84	100	242	Peak

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
5725	81.52	-4.03	85.55	72.62	34.82	9.92	35.84	100	242	Peak

Test Mode :	802.11n (HT-40) H channel at 5.8G band	Temperature :	25~26°C
Test Band :	802.11n (HT-40)	Relative Humidity :	43~44%
Test Channel :	159	Test Engineer :	Kay Wu

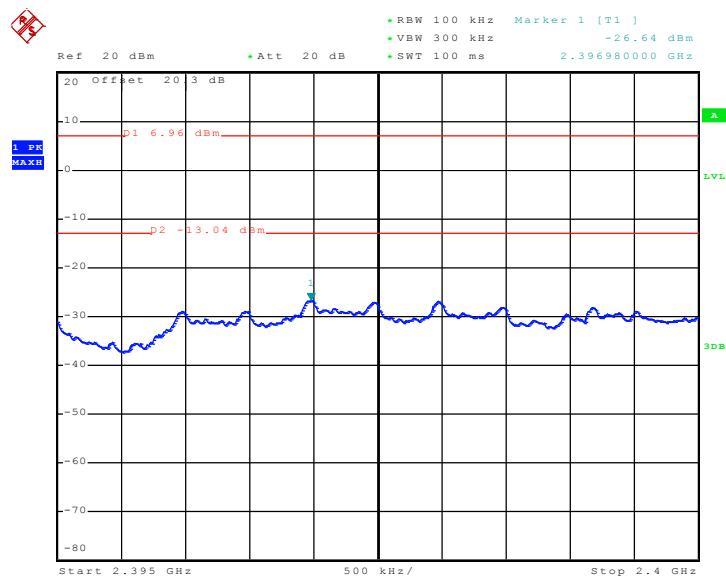
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Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850	53.54	-14.44	67.98	44.5	34.94	9.87	35.77	100	242	Peak

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
5850	63.37	-22.54	85.91	54.33	34.94	9.87	35.77	100	242	Peak

3.6.6 Test Result of Conducted Band Edges

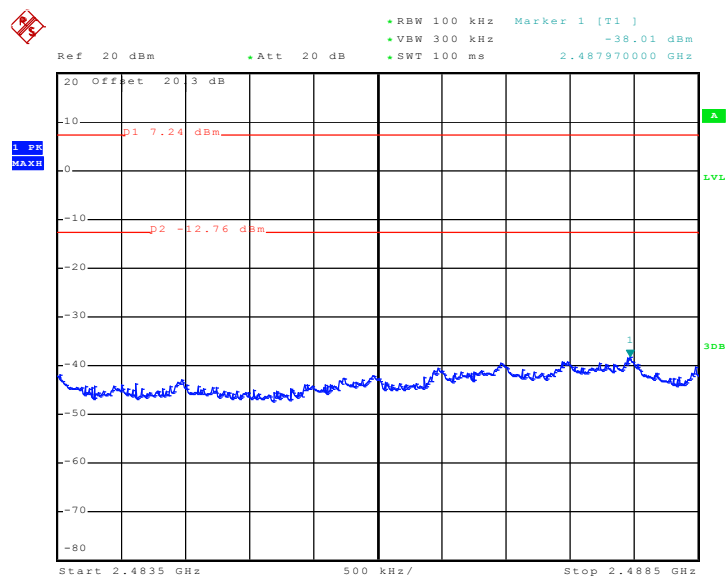
Test Mode :	802.11b L and H channel	Temperature :	19~21℃
Test Band :	802.11b	Relative Humidity :	44~46%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11b Channel 01- Chain 0



Date: 3.SEP.2010 19:52:36

High Band Edge Plot on 802.11b Channel 11- Chain 0

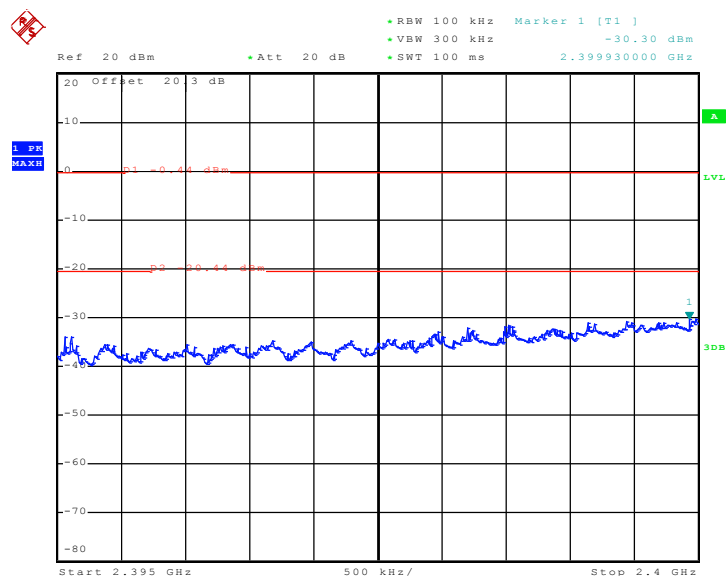


Date: 3.SEP.2010 20:16:01



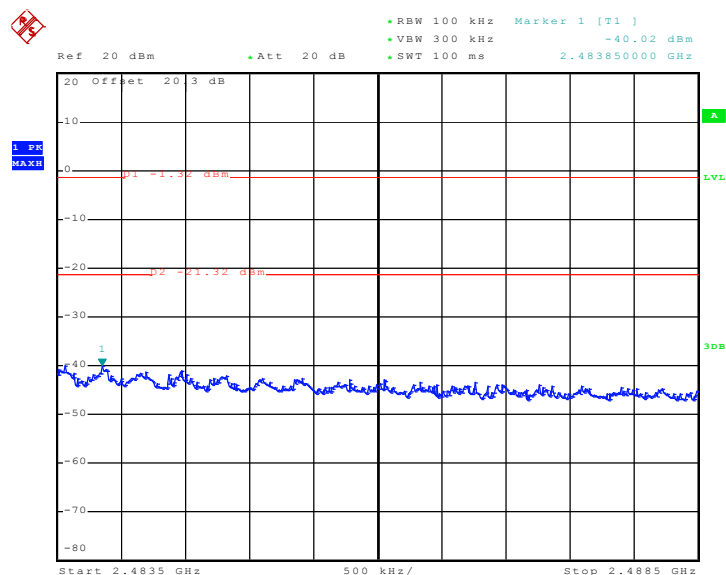
Test Mode :	802.11g L and H channels	Temperature :	19~21°C
Test Band :	802.11g	Relative Humidity :	44~46%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11g Channel 01- Chain 1



Date: 3.SEP.2010 20:26:37

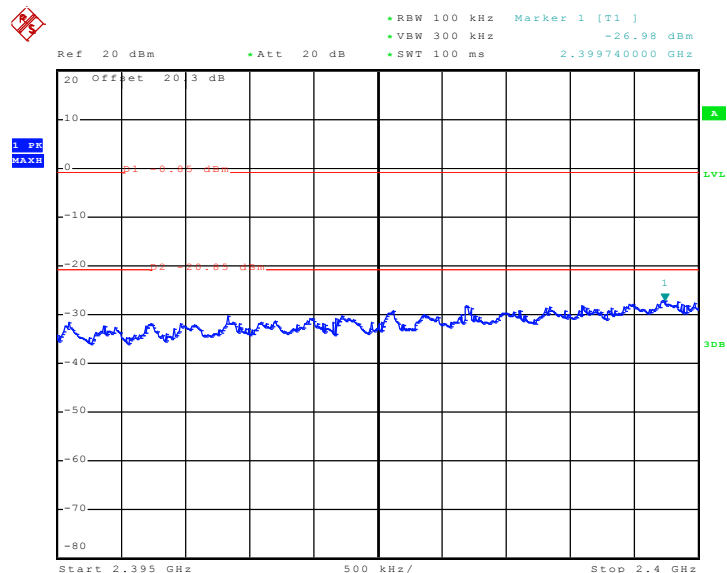
High Band Edge Plot on 802.11g Channel 11- Chain 1



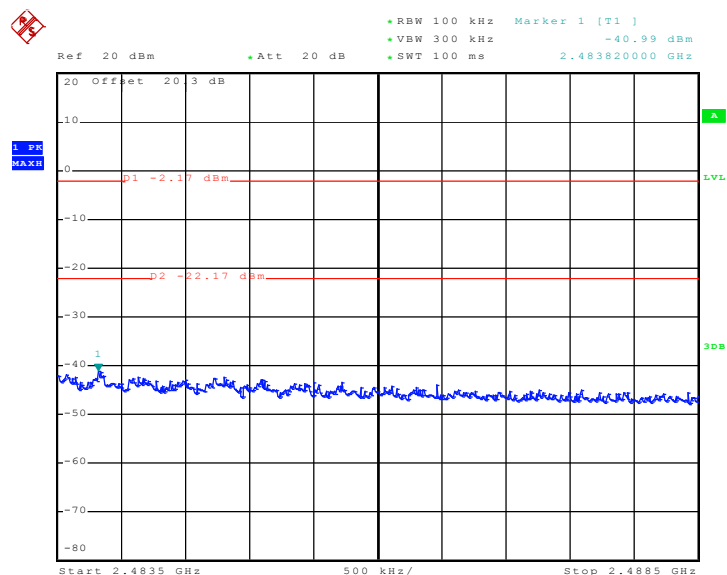
Date: 3.SEP.2010 20:30:35



Test Mode :	802.11n (HT-20) L and H channel at 2.4G band	Temperature :	19~21℃
Test Band :	802.11n (HT-20)	Relative Humidity :	44~46%
Test Channel :	01 and 11	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11n Channel 01- Chain 0

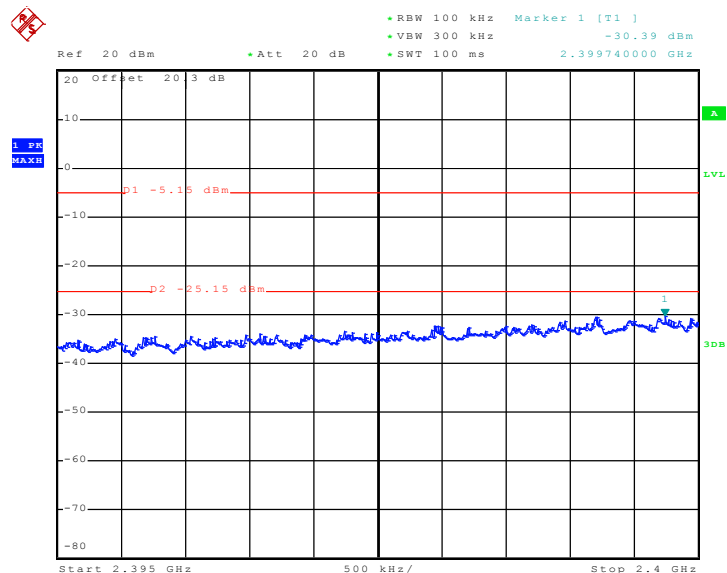
Date: 4.SEP.2010 03:22:25

High Band Edge Plot on 802.11n Channel 11- Chain 0

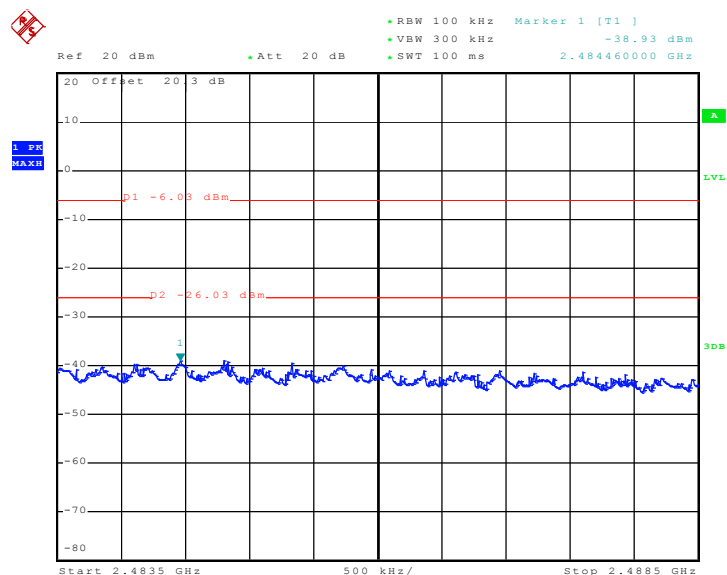
Date: 4.SEP.2010 03:25:39



Test Mode :	802.11n (HT-40) L and H channel at 2.4G band	Temperature :	19~21℃
Test Band :	802.11n (HT-40)	Relative Humidity :	44~46%
Test Channel :	03 and 09	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11n Channel 03- Chain 0

Date: 4.SEP.2010 03:34:12

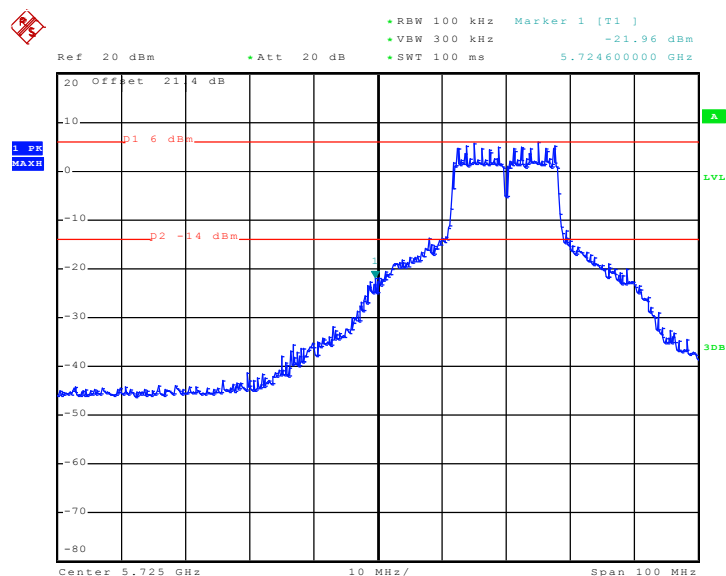
High Band Edge Plot on 802.11n Channel 09- Chain 0

Date: 4.SEP.2010 03:38:53



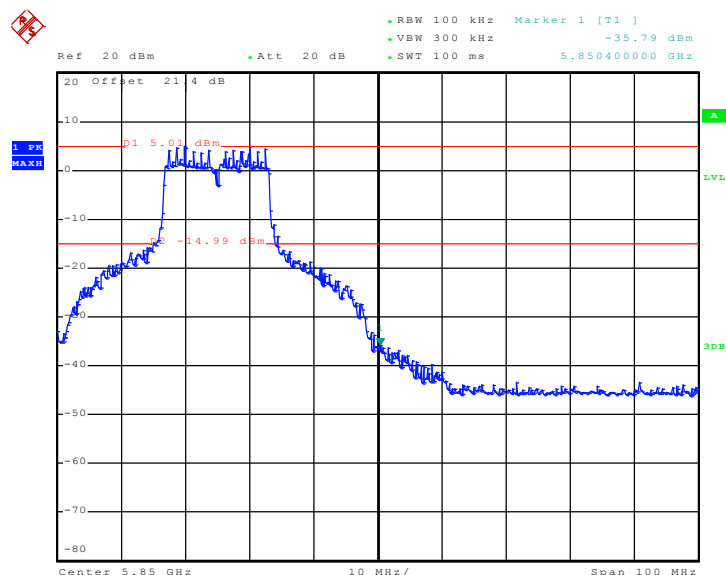
Test Mode :	802.11a L and H channel	Temperature :	19~21°C
Test Band :	802.11a	Relative Humidity :	44~46%
Test Channel :	149 and 165	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11a Channel 149- Chain 1



Date: 3.SEP.2010 22:02:18

High Band Edge Plot on 802.11a Channel 165- Chain 1

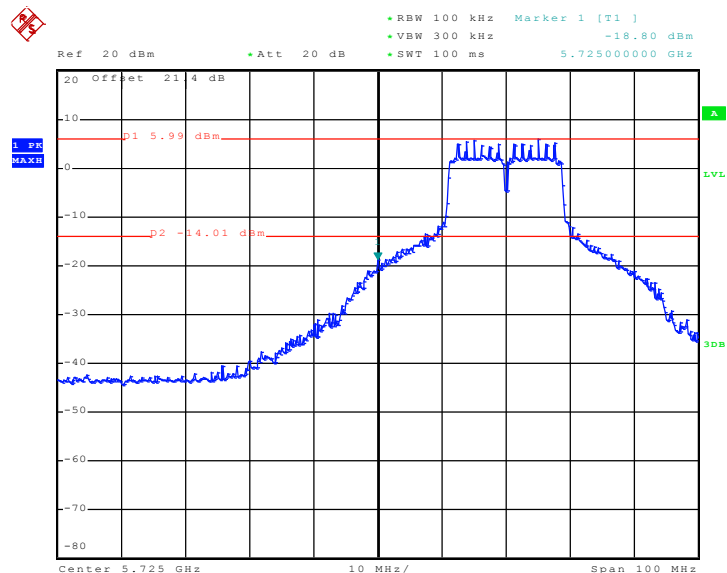


Date: 3.SEP.2010 22:01:25



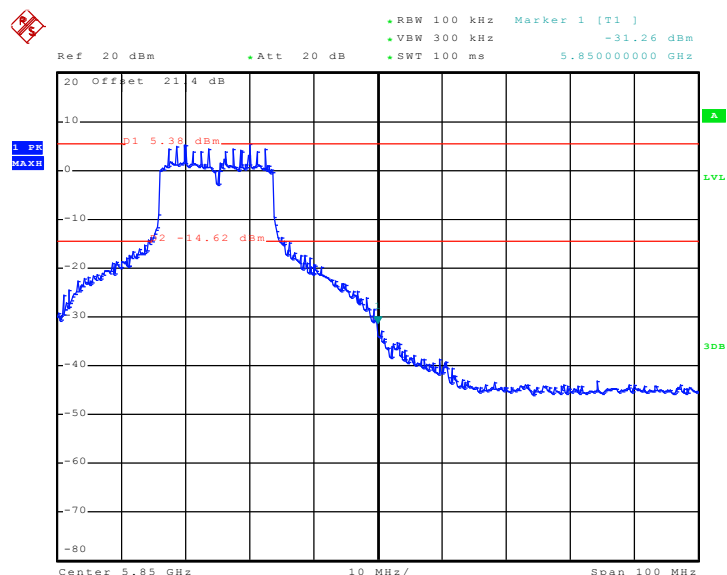
Test Mode :	802.11n (HT-20) L and H channel at 5.8G band	Temperature :	19~21℃
Test Band :	802.11n (HT-20)	Relative Humidity :	44~46%
Test Channel :	149 and 165	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11n Channel 149- Chain 1



Date: 4.SEP.2010 02:58:01

High Band Edge Plot on 802.11n Channel 165- Chain 1

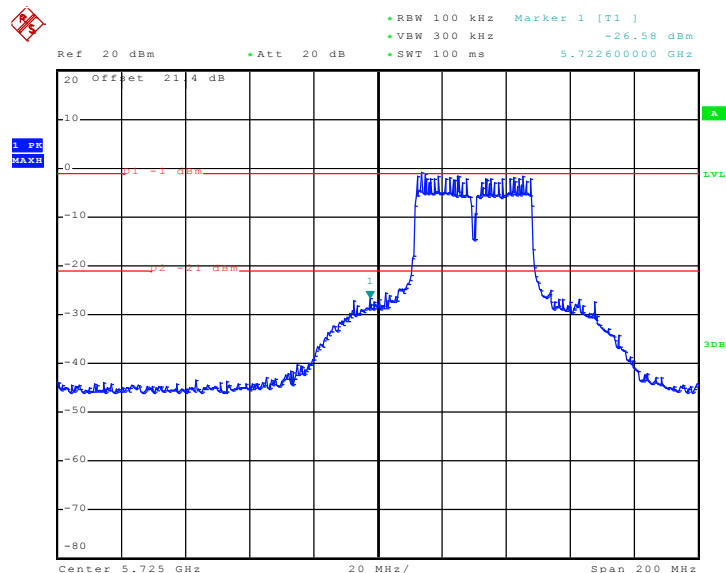


Date: 4.SEP.2010 03:02:55



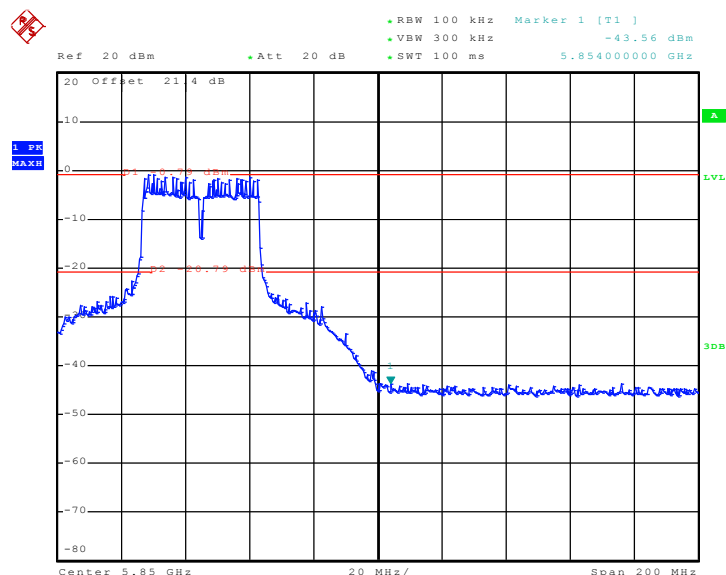
Test Mode :	802.11n (HT-40) L and H channel at 5.8G band	Temperature :	19~21℃
Test Band :	802.11n (HT-40)	Relative Humidity :	44~46%
Test Channel :	151 and 159	Test Engineer :	Ken Hsu

Low Band Edge Plot on 802.11n Channel 151- Chain 0



Date: 4.SEP.2010 01:13:15

High Band Edge Plot on 802.11n Channel 159- Chain 0



Date: 4.SEP.2010 01:16:41

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

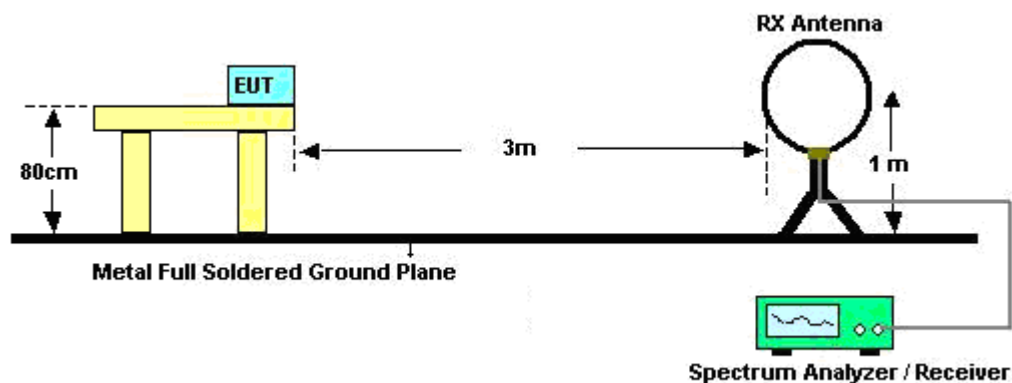
See list of measuring instruments of this test report.

3.7.3 Test Procedures

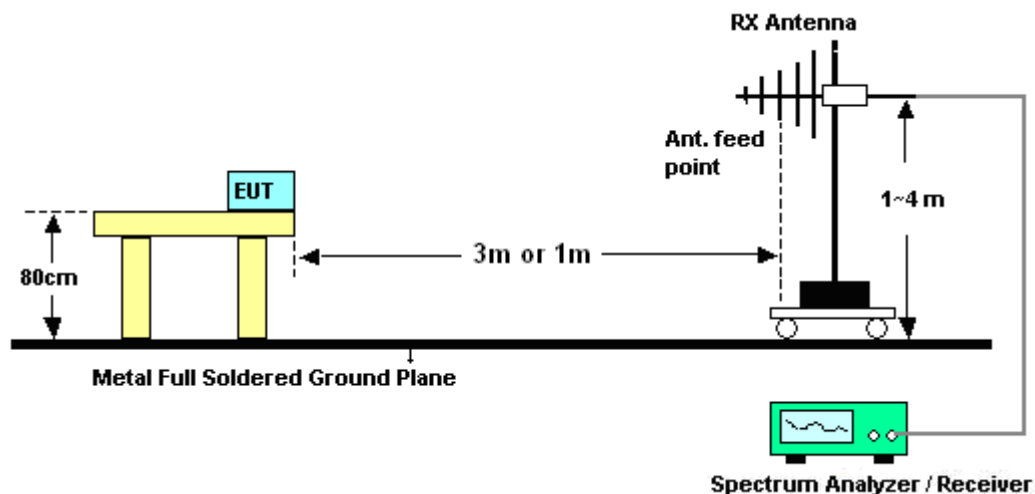
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = 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 :	Kay Wu	Temperature :	25~26°C	
		Relative Humidity :	43~44%	

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 ~ 1GHz)

Test Mode :	802.11b M channel	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	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
99.66	35.24	-8.26	43.5	54.67	11.2	0.95	31.58	-	-	Peak
199.29	42.04	-1.46	43.5	62.58	9.65	1.26	31.45	145	360	QP
298.92	40.42	-5.58	46	56.59	13.56	1.55	31.28	-	-	Peak
497.4	39.62	-6.38	46	50.58	18.08	2.04	31.08	-	-	Peak
797	37.13	-8.87	46	44.35	20.75	2.57	30.54	-	-	Peak
896.4	36.64	-9.36	46	43.4	21.02	2.7	30.48	-	-	Peak



Test Mode :	802.11b M channel	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	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
105.6	28.95	-14.55	43.5	47.62	11.92	0.95	31.54	-	-	Peak
200.1	36.38	-7.12	43.5	56.94	9.63	1.26	31.45	-	-	Peak
298.92	40.09	-5.91	46	56.26	13.56	1.55	31.28	-	-	Peak
300	38.46	-7.54	46	54.6	13.58	1.55	31.27	-	-	Peak
498.1	42.5	-3.5	46	53.46	18.08	2.04	31.08	100	45	Peak
700.4	29.16	-16.84	46	37.51	19.97	2.4	30.72	-	-	Peak



Test Mode :	802.11n (HT-20) L channel at 5.8G band	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	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
99.93	35.96	-7.54	43.5	55.39	11.2	0.95	31.58	-	-	Peak
199.02	42.46	-1.04	43.5	63.05	9.6	1.26	31.45	136	0	QP
298.92	42.29	-3.71	46	58.46	13.56	1.55	31.28	-	-	Peak
498.1	41.69	-4.31	46	52.65	18.08	2.04	31.08	-	-	Peak
622	40.17	-5.83	46	49.31	19.44	2.25	30.83	-	-	Peak
800.5	37.78	-8.22	46	45	20.75	2.57	30.54	-	-	Peak



Test Mode :	802.11n (HT-20) L channel at 5.8G band	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	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
99.66	29.55	-13.95	43.5	48.98	11.2	0.95	31.58	-	-	Peak
200.1	36.97	-6.53	43.5	57.53	9.63	1.26	31.45	-	-	Peak
298.92	41.17	-4.83	46	57.34	13.56	1.55	31.28	-	-	Peak
498.1	42.03	-3.97	46	52.99	18.08	2.04	31.08	-	-	Peak
624.8	42.42	-3.58	46	51.53	19.46	2.25	30.82	100	174	Peak
746.6	33.93	-12.07	46	41.31	20.66	2.51	30.55	-	-	Peak

3.7.7 Test Result of Radiated Emission (1GHz ~ 10th Harmonic)

Test Mode :	802.11b L channel	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2385.81	45.15	-8.85	54	43.36	31.86	4.47	34.54	100	187	Average
2385.81	64.32	-9.68	74	62.53	31.86	4.47	34.54	100	187	Peak
2412	107.41	-	-	105.57	31.88	4.5	34.54	100	187	Average
2412	115.91	-	-	114.07	31.88	4.5	34.54	100	187	Peak
2488	40.15	-13.85	54	38.09	32	4.59	34.53	100	187	Average
2488	51.62	-22.38	74	49.56	32	4.59	34.53	100	187	Peak
4824	45.36	-8.64	54	60.59	33.9	6.44	55.57	200	133	Average
4824	54.15	-19.85	74	69.38	33.9	6.44	55.57	200	133	Peak
7236	44.91	-9.09	54	57.98	35.65	8.05	56.77	144	150	Average
7236	53.67	-20.33	74	66.74	35.66	8.03	56.76	144	150	Peak



Test Mode :	802.11b L channel	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386	47.86	-6.14	54	46.07	31.86	4.47	34.54	137	127	Average
2386	67.45	-6.55	74	65.66	31.86	4.47	34.54	137	127	Peak
2412	109.13	-	-	107.29	31.88	4.5	34.54	137	127	Average
2412	117.89	-	-	116.05	31.88	4.5	34.54	137	127	Peak
2498	40.07	-13.93	54	37.98	32	4.62	34.53	137	127	Average
2498	51.5	-22.5	74	49.41	32	4.62	34.53	137	127	Peak
4824	44.69	-9.31	54	59.92	33.9	6.44	55.57	100	145	Average
4824	53.74	-20.26	74	68.97	33.9	6.44	55.57	100	145	Peak
7236	46.67	-7.33	54	59.74	35.65	8.05	56.77	102	284	Average
7236	55	-19	74	68.07	35.65	8.05	56.77	102	284	Peak



Test Mode :	802.11b M channel	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	41.18	-12.82	54	39.36	31.86	4.5	34.54	100	164	Average
2390	52.15	-21.85	74	50.33	31.86	4.5	34.54	100	164	Peak
2437	105.1	-	-	103.18	31.93	4.53	34.54	100	164	Average
2437	114.56	-	-	112.64	31.93	4.53	34.54	100	164	Peak
2490	39.99	-14.01	54	37.9	32	4.62	34.53	100	164	Average
2490	49.25	-24.75	74	47.16	32	4.62	34.53	100	164	Peak
4874	50.33	-23.67	74	65.53	33.9	6.49	55.59	200	155	Peak
7311	44.26	-9.74	54	57.32	35.64	8.1	56.8	123	210	Average
7311	53.71	-20.29	74	66.79	35.64	8.08	56.8	123	210	Peak



Test Mode :	802.11b M channel	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	42.92	-11.08	54	41.1	31.86	4.5	34.54	100	164	Average
2390	56.6	-17.4	74	54.78	31.86	4.5	34.54	100	164	Peak
2437	107.77	-	-	105.85	31.93	4.53	34.54	100	164	Average
2437	116.31	-	-	114.36	31.93	4.56	34.54	100	164	Peak
2486	40.31	-13.69	54	38.27	31.98	4.59	34.53	100	164	Average
2486	56.52	-17.48	74	54.48	31.98	4.59	34.53	100	164	Peak
4874	43.62	-10.38	54	58.82	33.9	6.49	55.59	100	222	Average
4874	52.55	-21.45	74	67.75	33.9	6.49	55.59	100	222	Peak
7311	46.26	-7.74	54	59.32	35.64	8.1	56.8	100	283	Average
7311	55.78	-18.22	74	68.86	35.63	8.1	56.81	100	283	Peak



Test Mode :	802.11b H channel	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386	43.4	-10.6	54	41.61	31.86	4.47	34.54	123	162	Average
2386	52.5	-21.5	74	50.71	31.86	4.47	34.54	123	162	Peak
2462	104.51	-	-	102.53	31.95	4.56	34.53	123	162	Average
2462	113.79	-	-	111.78	31.95	4.59	34.53	123	162	Peak
2488.22	42.71	-11.29	54	40.65	32	4.59	34.53	123	162	Average
2488.22	57.74	-16.26	74	55.68	32	4.59	34.53	123	162	Peak
4924	48.83	-25.17	74	64	33.9	6.54	55.61	198	100	Peak
7386	40.87	-13.13	54	53.94	35.62	8.15	56.84	133	160	Average
7386	50.6	-23.4	74	63.67	35.62	8.14	56.83	133	160	Peak



Test Mode :	802.11b H channel	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2376	44.65	-9.35	54	42.89	31.83	4.47	34.54	123	162	Average
2376	55.56	-18.44	74	53.8	31.83	4.47	34.54	123	162	Peak
2462	107.83	-	-	105.85	31.95	4.56	34.53	123	162	Average
2462	116.16	-	-	114.15	31.95	4.59	34.53	123	162	Peak
2488.03	43.65	-10.35	54	41.59	32	4.59	34.53	123	162	Average
2488.03	61.43	-12.57	74	59.37	32	4.59	34.53	123	162	Peak
4924	49.76	-24.24	74	64.93	33.9	6.54	55.61	100	111	Peak
7386	41.36	-12.64	54	54.43	35.62	8.15	56.84	101	23	Average
7386	51.12	-22.88	74	64.19	35.62	8.14	56.83	101	23	Peak



Test Mode :	802.11g L channel	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.04	51.26	-2.74	54	49.47	31.86	4.47	34.54	100	166	Average
2389.04	65.95	-8.05	74	64.16	31.86	4.47	34.54	100	166	Peak
2412	92.02	-	-	90.18	31.88	4.5	34.54	100	166	Average
2412	104.02	-	-	102.18	31.88	4.5	34.54	100	166	Peak
2498	38.91	-15.09	54	36.82	32	4.62	34.53	100	166	Average
2498	49.96	-24.04	74	47.87	32	4.62	34.53	100	166	Peak
4824	47.17	-26.83	74	62.4	33.9	6.44	55.57	200	133	Peak
7311	49.24	-24.76	74	62.32	35.64	8.08	56.8	144	150	Peak



Test Mode :	802.11g L channel	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	51.33	-2.67	54	47.13	31.7	6.03	33.53	100	180	Average
2390	73.05	-0.95	74	68.85	31.7	6.03	33.53	100	180	Peak
2412	93.75	-	-	89.51	31.71	6.07	33.54	100	180	Average
2412	106.99	-	-	102.75	31.71	6.07	33.54	100	180	Peak
2494	38.53	-15.47	54	34.12	31.8	6.18	33.57	100	180	Average
2494	54.09	-19.91	74	49.68	31.8	6.18	33.57	100	180	Peak
4824	47.31	-26.69	74	62.54	33.9	6.44	55.57	100	145	Peak
7236	49.65	-24.35	74	62.74	35.65	8.03	56.77	102	284	Peak



Test Mode :	802.11g M channel	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	41.68	-12.32	54	39.86	31.86	4.5	34.54	100	164	Average
2390	57.49	-16.51	74	55.67	31.86	4.5	34.54	100	164	Peak
2437	99.46	-	-	97.54	31.93	4.53	34.54	100	164	Average
2437	111.64	-	-	109.69	31.93	4.56	34.54	100	164	Peak
2484	40.21	-13.79	54	38.17	31.98	4.59	34.53	100	164	Average
2484	59.34	-14.66	74	57.3	31.98	4.59	34.53	100	164	Peak
4874	40.22	-13.78	54	55.42	33.9	6.49	55.59	200	155	Average
4874	55.35	-18.65	74	70.55	33.9	6.49	55.59	200	155	Peak
7311	42.63	-11.37	54	55.69	35.64	8.1	56.8	123	210	Average
7311	57.16	-16.84	74	70.24	35.64	8.08	56.8	123	210	Peak



Test Mode :	802.11g M channel	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	42.26	-11.74	54	38.06	31.7	6.03	33.53	100	24	Average
2390	59.5	-14.5	74	55.3	31.7	6.03	33.53	100	24	Peak
2437	100.72	-	-	96.41	31.75	6.11	33.55	100	24	Average
2437	113.22	-	-	108.91	31.75	6.11	33.55	100	24	Peak
2484	42.88	-11.12	54	38.48	31.78	6.18	33.56	100	24	Average
2484	57.29	-16.71	74	52.89	31.78	6.18	33.56	100	24	Peak
4874	41.98	-12.02	54	57.18	33.9	6.49	55.59	100	122	Average
4874	56.91	-17.09	74	72.11	33.9	6.49	55.59	100	122	Peak
7311	44.53	-9.47	54	57.59	35.64	8.1	56.8	100	283	Average
7311	59.1	-14.9	74	72.16	35.64	8.1	56.8	100	283	Peak



Test Mode :	802.11g H channel	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2376	39.69	-14.31	54	37.93	31.83	4.47	34.54	100	161	Average
2376	49.63	-24.37	74	47.87	31.83	4.47	34.54	100	161	Peak
2462	94.52	-	-	92.54	31.95	4.56	34.53	100	161	Average
2462	107.96	-	-	105.95	31.95	4.59	34.53	100	161	Peak
2483.66	48.63	-5.37	54	46.59	31.98	4.59	34.53	100	161	Average
2483.66	66.99	-7.01	74	64.95	31.98	4.59	34.53	100	161	Peak



Test Mode :	802.11g H channel	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	36.89	-17.11	54	32.69	31.7	6.03	33.53	100	6	Average
2390	49.56	-24.44	74	45.36	31.7	6.03	33.53	100	6	Peak
2462	95.65	-	-	91.3	31.77	6.14	33.56	100	6	Average
2462	108.07	-	-	103.72	31.77	6.14	33.56	100	6	Peak
2483.5	51.61	-2.39	54	47.21	31.78	6.18	33.56	100	6	Average
2483.5	73.38	-0.62	74	68.98	31.78	6.18	33.56	100	6	Peak

Test Mode :	802.11n (HT-20) L channel at 2.4G band	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	51.22	-2.78	54	49.4	31.86	4.5	34.54	100	166	Average
2389.99	69.72	-4.28	74	67.9	31.86	4.5	34.54	100	166	Peak
2412	92.31	-	-	90.47	31.88	4.5	34.54	100	166	Average
2412	104.17	-	-	102.33	31.88	4.5	34.54	100	166	Peak
2498	38.97	-15.03	54	36.88	32	4.62	34.53	100	166	Average
2498	49.49	-24.51	74	47.4	32	4.62	34.53	100	166	Peak

Test Mode :	802.11n (HT-20) L channel at 2.4G band	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2412 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	52.37	-1.63	54	48.17	31.7	6.03	33.53	100	9	Average
2390	73.23	-0.77	74	69.03	31.7	6.03	33.53	100	9	Peak
2412	94.89	-	-	90.65	31.71	6.07	33.54	100	9	Average
2412	106.42	-	-	102.18	31.71	6.07	33.54	100	9	Peak
2494	37.24	-16.76	54	32.83	31.8	6.18	33.57	100	9	Average
2494	49.67	-24.33	74	45.26	31.8	6.18	33.57	100	9	Peak
4824	48.75	-25.25	74	63.98	33.9	6.44	55.57	100	145	Peak
7236	50.43	-23.57	74	63.5	35.65	8.05	56.77	102	284	Peak



Test Mode :	802.11n (HT-20) M channel at 2.4G band	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386	46.12	-7.88	54	44.33	31.86	4.47	34.54	100	164	Average
2386	55.46	-18.54	74	53.67	31.86	4.47	34.54	100	164	Peak
2437	99.31	-	-	97.39	31.93	4.53	34.54	100	164	Average
2437	111.07	-	-	109.18	31.9	4.53	34.54	100	164	Peak
2484	44.3	-9.7	54	42.26	31.98	4.59	34.53	100	164	Average
2484	54.81	-19.19	74	52.77	31.98	4.59	34.53	100	164	Peak
4874	37.84	-16.16	54	53.04	33.9	6.49	55.59	200	155	Average
4874	51.56	-22.44	74	66.76	33.9	6.49	55.59	200	155	Peak
7311	39.88	-14.12	54	52.94	35.64	8.1	56.8	123	210	Average
7311	53.18	-20.82	74	66.26	35.64	8.08	56.8	123	210	Peak

Test Mode :	802.11n (HT-20) M channel at 2.4G band	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2382	39.17	-14.83	54	34.99	31.68	6.03	33.53	100	24	Average
2382	59.85	-14.15	74	55.67	31.68	6.03	33.53	100	24	Peak
2437	101.08	-	-	96.77	31.75	6.11	33.55	100	24	Average
2437	112.88	-	-	108.57	31.75	6.11	33.55	100	24	Peak
2484	43.89	-10.11	54	39.49	31.78	6.18	33.56	100	24	Average
2484	58.1	-15.9	74	53.7	31.78	6.18	33.56	100	24	Peak
4874	39.69	-14.31	54	54.89	33.9	6.49	55.59	100	122	Average
4874	53.34	-20.66	74	68.54	33.9	6.49	55.59	100	122	Peak
7311	42.51	-11.49	54	55.57	35.64	8.1	56.8	100	283	Average
7311	56.85	-17.15	74	69.93	35.64	8.08	56.8	100	283	Peak

Test Mode :	802.11n (HT-20) H channel at 2.4G band	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2354	37.95	-16.05	54	36.25	31.81	4.44	34.55	100	161	Average
2354	48.85	-25.15	74	47.15	31.81	4.44	34.55	100	161	Peak
2462	93.57	-	-	91.59	31.95	4.56	34.53	100	161	Average
2462	105.96	-	-	103.95	31.95	4.59	34.53	100	161	Peak
2484.04	49.43	-4.57	54	47.39	31.98	4.59	34.53	100	161	Average
2484.04	68.55	-5.45	74	66.51	31.98	4.59	34.53	100	161	Peak

Test Mode :	802.11n (HT-20) H channel at 2.4G band	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2462 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	37.05	-16.95	54	32.85	31.7	6.03	33.53	100	6	Average
2390	48.22	-25.78	74	44.02	31.7	6.03	33.53	100	6	Peak
2462	94.31	-	-	89.96	31.77	6.14	33.56	100	6	Average
2462	106.33	-	-	101.98	31.77	6.14	33.56	100	6	Peak
2483.5	51.68	-2.32	54	47.28	31.78	6.18	33.56	100	6	Average
2483.5	73.14	-0.86	74	68.74	31.78	6.18	33.56	100	6	Peak

Test Mode :	802.11n (HT-40) L channel at 2.4G band	Temperature :	25~26°C
Test Channel :	03	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
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
2389.8	51.19	-2.81	54	49.37	31.86	4.5	34.54	100	166	Average
2389.8	68.48	-5.52	74	66.66	31.86	4.5	34.54	100	166	Peak
2422	88.39	-	-	86.5	31.9	4.53	34.54	100	166	Average
2422	100.28	-	-	98.44	31.88	4.5	34.54	100	166	Peak
2494	38.97	-15.03	54	36.88	32	4.62	34.53	100	166	Average
2494	48.75	-25.25	74	46.66	32	4.62	34.53	100	166	Peak

Test Mode :	802.11n (HT-40) L channel at 2.4G band	Temperature :	25~26°C
Test Channel :	03	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	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
2390	53.47	-0.53	54	49.27	31.7	6.03	33.53	100	6	Average
2390	73.04	-0.96	74	68.84	31.7	6.03	33.53	100	6	Peak
2422	89.64	-	-	85.39	31.73	6.07	33.55	100	6	Average
2422	102.24	-	-	98	31.71	6.07	33.54	100	6	Peak
2484	40.16	-13.84	54	35.76	31.78	6.18	33.56	100	6	Average
2484	54.73	-19.27	74	50.33	31.78	6.18	33.56	100	6	Peak

Test Mode :	802.11n (HT-40) M channel at 2.4G band	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388	50.99	-3.01	54	49.2	31.86	4.47	34.54	100	164	Average
2388	70.91	-3.09	74	69.12	31.86	4.47	34.54	100	164	Peak
2437	93.22	-	-	91.3	31.93	4.53	34.54	100	164	Average
2437	105.98	-	-	104.09	31.9	4.53	34.54	100	164	Peak
2484	49.88	-4.12	54	47.84	31.98	4.59	34.53	100	164	Average
2484	65.87	-8.13	74	63.83	31.98	4.59	34.53	100	164	Peak

Test Mode :	802.11n (HT-40) M channel at 2.4G band	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	2437 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	51.76	-2.24	54	47.56	31.7	6.03	33.53	100	23	Average
2390	73.21	-0.79	74	69.01	31.7	6.03	33.53	100	23	Peak
2437	94.01	-	-	89.7	31.75	6.11	33.55	100	23	Average
2437	107.07	-	-	102.72	31.77	6.14	33.56	100	23	Peak
2483.5	52.59	-1.41	54	48.19	31.78	6.18	33.56	100	23	Average
2483.5	72.77	-1.23	74	68.37	31.78	6.18	33.56	100	23	Peak
4874	46.92	-27.08	74	62.12	33.9	6.49	55.59	100	122	Peak
7311	49.62	-24.38	74	62.7	35.64	8.08	56.8	100	283	Peak

Test Mode :	802.11n (HT-40) H channel at 2.4G band	Temperature :	25~26°C
Test Channel :	09	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	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
2390	43.94	-10.06	54	42.12	31.86	4.5	34.54	123	166	Average
2390	57.74	-16.26	74	55.92	31.86	4.5	34.54	123	166	Peak
2452	88.52	-	-	86.57	31.93	4.56	34.54	123	166	Average
2452	101.71	-	-	99.73	31.95	4.56	34.53	123	166	Peak
2483.66	48.82	-5.18	54	46.78	31.98	4.59	34.53	123	166	Average
2483.66	67.54	-6.46	74	65.5	31.98	4.59	34.53	123	166	Peak

Test Mode :	802.11n (HT-40) H channel at 2.4G band	Temperature :	25~26°C
Test Channel :	09	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
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
2390	37.45	-16.55	54	33.25	31.7	6.03	33.53	100	23	Average
2390	50.87	-23.13	74	46.67	31.7	6.03	33.53	100	23	Peak
2452	57.33	-	-	53.02	31.75	6.11	33.55	100	23	Average
2452	103.82	-	-	99.47	31.77	6.14	33.56	100	23	Peak
2483.5	53.03	-0.97	54	48.63	31.78	6.18	33.56	100	23	Average
2483.5	73.22	-0.78	74	68.82	31.78	6.18	33.56	100	23	Peak

Test Mode :	802.11a L channel	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5745 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17235 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	70.5	-3.66	74.16	61.6	34.82	9.92	35.84	100	243	Peak
5745	82.59	-	-	73.67	34.84	9.91	35.83	100	243	Average
5745	94.16	-	-	85.24	34.84	9.91	35.83	100	243	Peak
5850	49.15	-25.01	74.16	40.11	34.94	9.87	35.77	100	243	Peak
11490	44.94	-9.06	54	75.06	-9.7	13.14	33.56	136	4	Average
11490	60.15	-13.85	74	90.27	-9.7	13.14	33.56	136	4	Peak
17235	46.89	-27.27	74.16	73.5	-8.65	14.37	32.33	136	4	Peak

Test Mode :	802.11a L channel	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5745 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17235 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	81.61	-6.65	88.26	72.71	34.82	9.92	35.84	100	243	Peak
5745	96.43	-	-	87.51	34.84	9.91	35.83	100	243	Average
5745	108.26	-	-	99.34	34.84	9.91	35.83	100	243	Peak
5850	49.24	-39.02	88.26	40.2	34.94	9.87	35.77	100	243	Peak
11490	53.41	-0.59	54	83.53	-9.7	13.14	33.56	136	4	Average
11490	68.46	-5.54	74	98.58	-9.7	13.14	33.56	136	4	Peak
17235	45.56	-42.7	88.26	72.16	-8.65	14.38	32.33	136	4	Peak



Test Mode :	802.11a M channel	Temperature :	25~26°C
Test Channel :	157	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5785 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17355 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	49.13	-18.86	67.99	40.23	34.82	9.92	35.84	100	243	Peak
5785	76.49	-	-	67.52	34.88	9.9	35.81	100	243	Average
5785	87.99	-	-	79.02	34.88	9.9	35.81	100	243	Peak
5850	48.85	-19.14	67.99	39.81	34.94	9.87	35.77	100	243	Peak
11570	43.21	-10.79	54	73.45	-9.8	13.17	33.61	137	5	Average
11570	58.09	-15.91	74	88.33	-9.8	13.17	33.61	137	5	Peak
17355	46.92	-21.07	67.99	73.49	-8.67	14.42	32.32	137	5	Peak

Test Mode :	802.11a M channel	Temperature :	25~26°C
Test Channel :	157	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5785 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17355 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	50.62	-37.81	88.43	41.72	34.82	9.92	35.84	100	243	Peak
5785	96.44	-	-	87.47	34.88	9.9	35.81	100	243	Average
5785	108.43	-	-	99.45	34.89	9.89	35.8	100	243	Peak
5850	49.15	-39.28	88.43	40.11	34.94	9.87	35.77	100	243	Peak
11570	51.14	-2.86	54	81.38	-9.8	13.17	33.61	137	5	Average
11570	66.02	-7.98	74	96.22	-9.78	13.17	33.59	137	5	Peak
17355	42.36	-46.07	88.43	68.93	-8.67	14.42	32.32	137	5	Peak

Test Mode :	802.11a H channel	Temperature :	25~26°C
Test Channel :	165	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5825 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17475 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	50	-23.64	73.64	41.1	34.82	9.92	35.84	100	266	Peak
5825	82.11	-	-	73.08	34.93	9.88	35.78	100	266	Average
5825	93.64	-	-	84.61	34.93	9.88	35.78	100	266	Peak
5850	58.78	-14.86	73.64	49.74	34.94	9.87	35.77	100	266	Peak
11650	47.31	-6.69	54	77.65	-9.91	13.22	33.65	138	6	Average
11650	64.13	-9.87	74	94.47	-9.91	13.22	33.65	138	6	Peak
17475	48.66	-24.98	73.64	75.2	-8.7	14.46	32.3	138	6	Peak

Test Mode :	802.11a H channel	Temperature :	25~26°C
Test Channel :	165	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5825 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17475 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	50.33	-36.63	86.96	41.43	34.82	9.92	35.84	100	266	Peak
5825	94.78	-	-	85.75	34.93	9.88	35.78	100	266	Average
5825	106.96	-	-	97.93	34.93	9.88	35.78	100	266	Peak
5850	67.16	-19.8	86.96	58.12	34.94	9.87	35.77	100	266	Peak
11650	53.49	-0.51	54	83.83	-9.91	13.22	33.65	138	6	Average
11650	69.39	-4.61	74	99.73	-9.91	13.22	33.65	138	6	Peak
17475	49.81	-37.15	86.96	76.35	-8.7	14.46	32.3	138	6	Peak

Test Mode :	802.11n (HT-20) L channel at 5.8G band	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5745 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17235 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	69.07	-3.89	72.96	60.17	34.82	9.92	35.84	100	243	Peak
5745	82.34	-	-	73.42	34.84	9.91	35.83	100	243	Average
5745	92.96	-	-	84.04	34.84	9.91	35.83	100	243	Peak
5850	49.32	-23.64	72.96	40.28	34.94	9.87	35.77	100	243	Peak
11490	43.87	-10.13	54	73.99	-9.7	13.14	33.56	136	4	Average
11490	59.18	-14.82	74	89.29	-9.69	13.14	33.56	136	4	Peak
17235	51.74	-21.22	72.96	78.35	-8.65	14.37	32.33	136	4	Peak

Test Mode :	802.11n (HT-20) L channel at 5.8G band	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5745 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17235 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	83.58	-4.94	88.52	74.68	34.82	9.92	35.84	100	243	Peak
5745	97.16	-	-	88.24	34.84	9.91	35.83	100	243	Average
5745	108.52	-	-	99.6	34.84	9.91	35.83	100	243	Peak
5850	50.03	-38.49	88.52	40.99	34.94	9.87	35.77	100	243	Peak
11490	53.49	-0.51	54	83.61	-9.7	13.14	33.56	136	4	Average
11490	68.54	-5.46	74	98.66	-9.7	13.14	33.56	136	4	Peak
17235	47.47	-41.05	88.52	74.07	-8.65	14.38	32.33	136	4	Peak

Test Mode :	802.11n (HT-20) M channel at 5.8G band	Temperature :	25~26°C
Test Channel :	157	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5785 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17355 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	49.27	-18.07	67.34	40.37	34.82	9.92	35.84	100	243	Peak
5785	77	-	-	68.03	34.88	9.9	35.81	100	243	Average
5785	87.34	-	-	78.36	34.89	9.89	35.8	100	243	Peak
5850	49.19	-18.15	67.34	40.15	34.94	9.87	35.77	100	243	Peak
11570	41.47	-12.53	54	71.71	-9.8	13.17	33.61	137	5	Average
11570	57	-17	74	87.2	-9.78	13.17	33.59	137	5	Peak
17355	46.4	-20.94	67.34	72.98	-8.67	14.41	32.32	137	5	Peak

Test Mode :	802.11n (HT-20) M channel at 5.8G band	Temperature :	25~26°C
Test Channel :	157	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5785 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17355 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	49.94	-38.62	88.56	41.04	34.82	9.92	35.84	100	243	Peak
5785	96.97	-	-	88	34.88	9.9	35.81	100	243	Average
5785	108.56	-	-	99.59	34.88	9.9	35.81	100	243	Peak
5850	49.14	-39.42	88.56	40.1	34.94	9.87	35.77	100	243	Peak
11570	51.11	-2.89	54	81.35	-9.8	13.17	33.61	137	5	Average
11570	66.2	-7.8	74	96.4	-9.78	13.17	33.59	137	5	Peak
17355	41.87	-46.69	88.56	68.44	-8.67	14.42	32.32	137	5	Peak

Test Mode :	802.11n (HT-20) H channel at 5.8G band	Temperature :	25~26°C
Test Channel :	165	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5825 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17475 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	48.76	-25.42	74.18	39.86	34.82	9.92	35.84	100	266	Peak
5825	83.27	-	-	74.24	34.93	9.88	35.78	100	266	Average
5825	94.18	-	-	85.15	34.93	9.88	35.78	100	266	Peak
5850	58.31	-15.87	74.18	49.27	34.94	9.87	35.77	100	266	Peak
11650	45.75	-8.25	54	76.09	-9.91	13.22	33.65	138	6	Average
11650	60.75	-13.25	74	91.11	-9.92	13.22	33.66	138	6	Peak
17475	47.46	-26.72	74.18	74	-8.7	14.46	32.3	138	6	Peak

Test Mode :	802.11n (HT-20) H channel at 5.8G band	Temperature :	25~26°C
Test Channel :	165	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5825 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17475 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	49.26	-37.2	86.46	40.36	34.82	9.92	35.84	100	266	Peak
5825	94.87	-	-	85.84	34.93	9.88	35.78	100	266	Average
5825	106.46	-	-	97.43	34.93	9.88	35.78	100	266	Peak
5850	71.4	-15.06	86.46	62.36	34.94	9.87	35.77	100	266	Peak
11650	53.5	-0.5	54	83.84	-9.91	13.22	33.65	138	6	Average
11650	67.76	-6.24	74	98.1	-9.91	13.22	33.65	138	6	Peak
17475	51.94	-34.52	86.46	78.48	-8.7	14.46	32.3	138	6	Peak



Test Mode :	802.11n (HT-40) L channel at 5.8G band	Temperature :	25~26°C
Test Channel :	151	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5755 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17265 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	67.59	-2.39	69.98	58.69	34.82	9.92	35.84	100	242	Peak
5755	78.9	-	-	69.95	34.86	9.91	35.82	100	242	Average
5755	89.98	-	-	81.08	34.82	9.92	35.84	100	242	Peak
5850	49.2	-20.78	69.98	40.16	34.94	9.87	35.77	100	242	Peak
11510	41.36	-12.64	54	71.49	-9.71	13.14	33.56	137	5	Average
11510	56.39	-17.61	74	86.51	-9.7	13.14	33.56	137	5	Peak
17265	47.3	-22.68	69.98	73.89	-8.65	14.39	32.33	137	5	Peak

Test Mode :	802.11n (HT-40) L channel at 5.8G band	Temperature :	25~26°C
Test Channel :	151	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5755 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17265 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	81.52	-4.03	85.55	72.62	34.82	9.92	35.84	100	242	Peak
5755	92.83	-	-	83.88	34.86	9.91	35.82	100	242	Average
5755	105.55	-	-	96.58	34.88	9.9	35.81	100	242	Peak
5850	50.54	-35.01	85.55	41.5	34.94	9.87	35.77	100	242	Peak
11510	51.48	-2.52	54	81.61	-9.71	13.14	33.56	137	5	Average
11510	65.92	-8.08	74	96.04	-9.7	13.14	33.56	137	5	Peak
17265	43.95	-41.6	85.55	70.55	-8.65	14.38	32.33	137	5	Peak



Test Mode :	802.11n (HT-40) H channel at 5.8G band	Temperature :	25~26°C
Test Channel :	159	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	1. 5795 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17385 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	53.92	-14.06	67.98	45.02	34.82	9.92	35.84	100	242	Peak
5795	76.59	-	-	67.61	34.89	9.89	35.8	100	242	Average
5795	87.98	-	-	78.97	34.91	9.89	35.79	100	242	Peak
5850	53.54	-14.44	67.98	44.5	34.94	9.87	35.77	100	242	Peak
11590	43.54	-10.46	54	73.81	-9.83	13.18	33.62	138	6	Average
11590	57.22	-16.78	74	87.49	-9.83	13.18	33.62	138	6	Peak
17385	45.45	-22.53	67.98	72.01	-8.68	14.43	32.31	138	6	Peak



Test Mode :	802.11n (HT-40) H channel at 5.8G band	Temperature :	25~26°C
Test Channel :	159	Relative Humidity :	43~44%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	1. 5795 MHz is Fundamental Signals which can be ignored. 2. 5725 MHz, 5850 MHz and 17385 MHz are not within a restricted band.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	65.93	-19.98	85.91	57.03	34.82	9.92	35.84	100	242	Peak
5795	93.74	-	-	84.76	34.89	9.89	35.8	100	242	Average
5795	105.91	-	-	96.94	34.88	9.9	35.81	100	242	Peak
5850	63.37	-22.54	85.91	54.33	34.94	9.87	35.77	100	242	Peak
11590	50.97	-3.03	54	81.24	-9.83	13.18	33.62	138	6	Average
11590	66.49	-7.51	74	96.76	-9.83	13.18	33.62	138	6	Peak
17385	43.9	-42.01	85.91	70.46	-8.68	14.43	32.31	138	6	Peak

3.8 AC Conducted Emission Measurement

3.8.1 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.

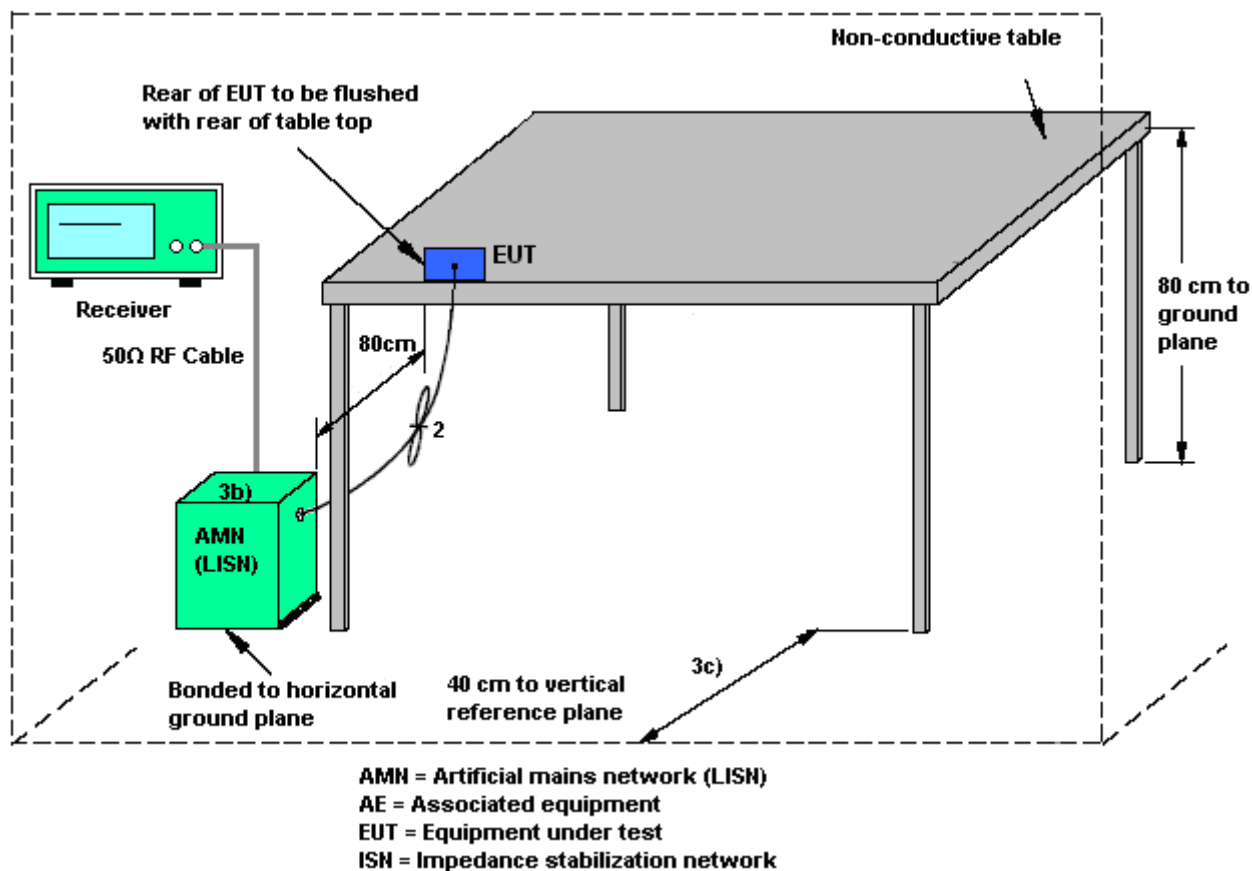
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures

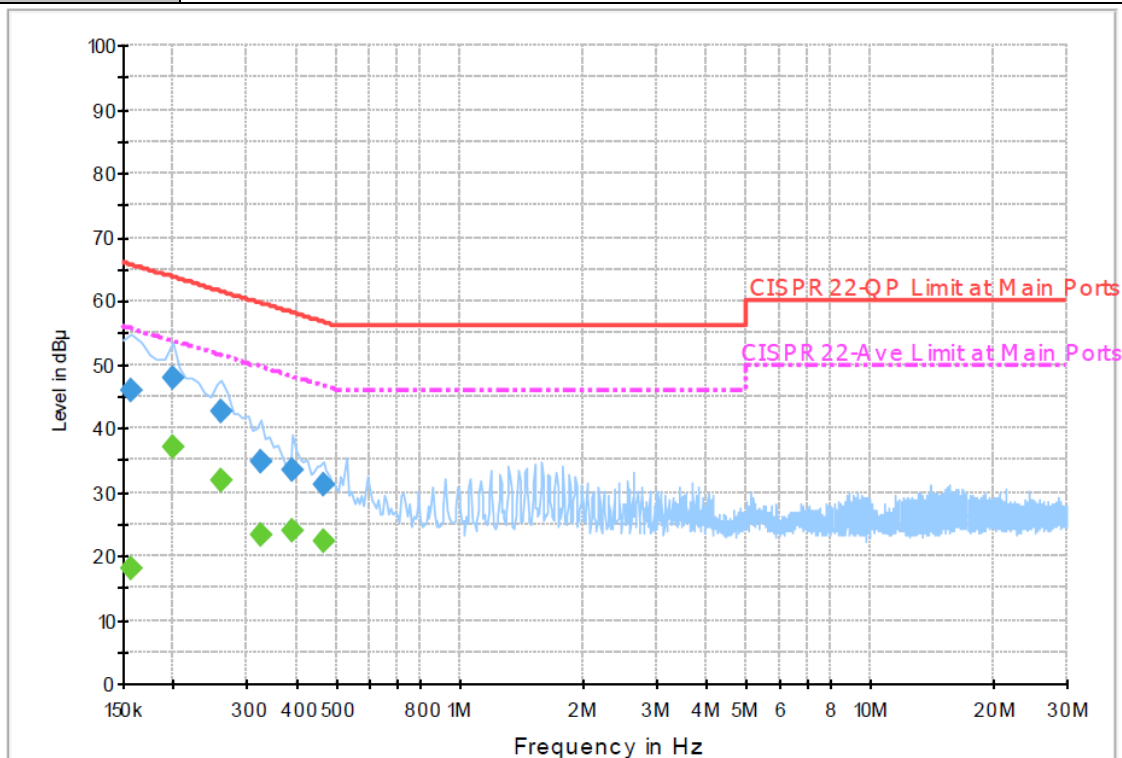
4. The testing follows the guidelines in ANSI C63.4-2003.
5. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
6. Connect EUT to the power mains through a line impedance stabilization network (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.

3.8.4 Test Setup



3.8.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Novic Jiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link (2.4G)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



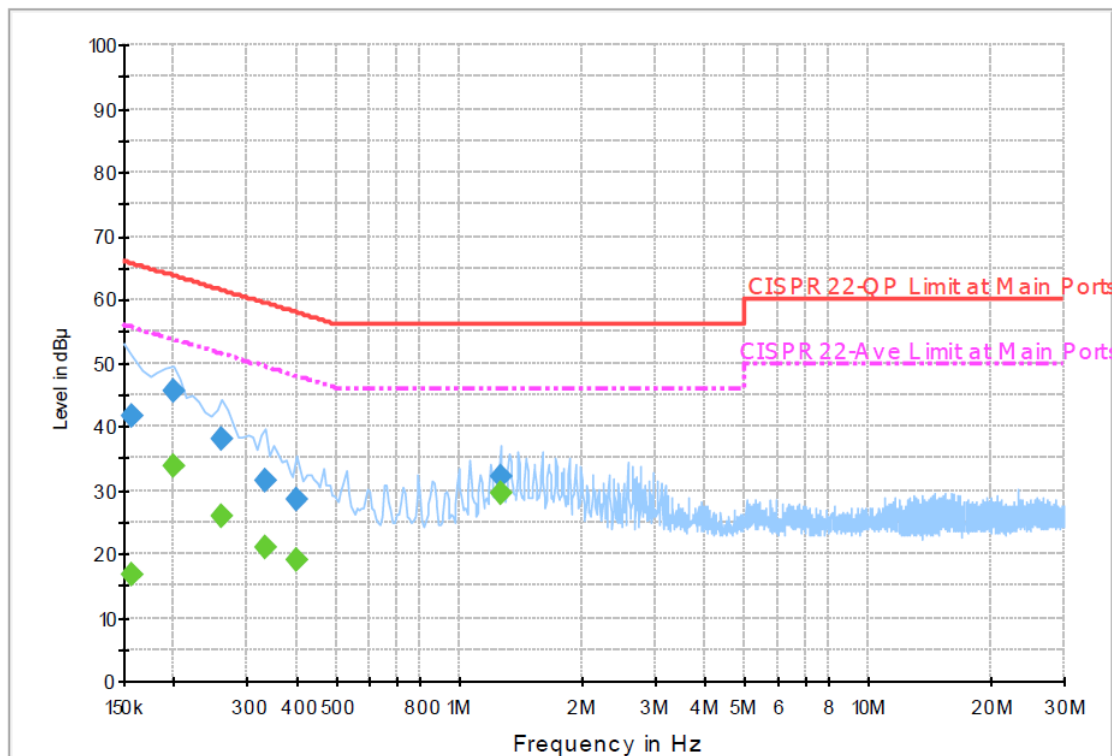
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	45.8	Off	L1	19.5	19.8	65.6
0.198000	48.0	Off	L1	19.5	15.7	63.7
0.262000	42.7	Off	L1	19.4	18.7	61.4
0.326000	34.7	Off	L1	19.4	24.9	59.6
0.390000	33.6	Off	L1	19.4	24.5	58.1
0.462000	31.0	Off	L1	19.4	25.7	56.7

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	18.1	Off	L1	19.5	37.5	55.6
0.198000	37.2	Off	L1	19.5	16.5	53.7
0.262000	31.8	Off	L1	19.4	19.6	51.4
0.326000	23.3	Off	L1	19.4	26.3	49.6
0.390000	23.9	Off	L1	19.4	24.2	48.1
0.462000	22.2	Off	L1	19.4	24.5	46.7

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link (2.4G)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

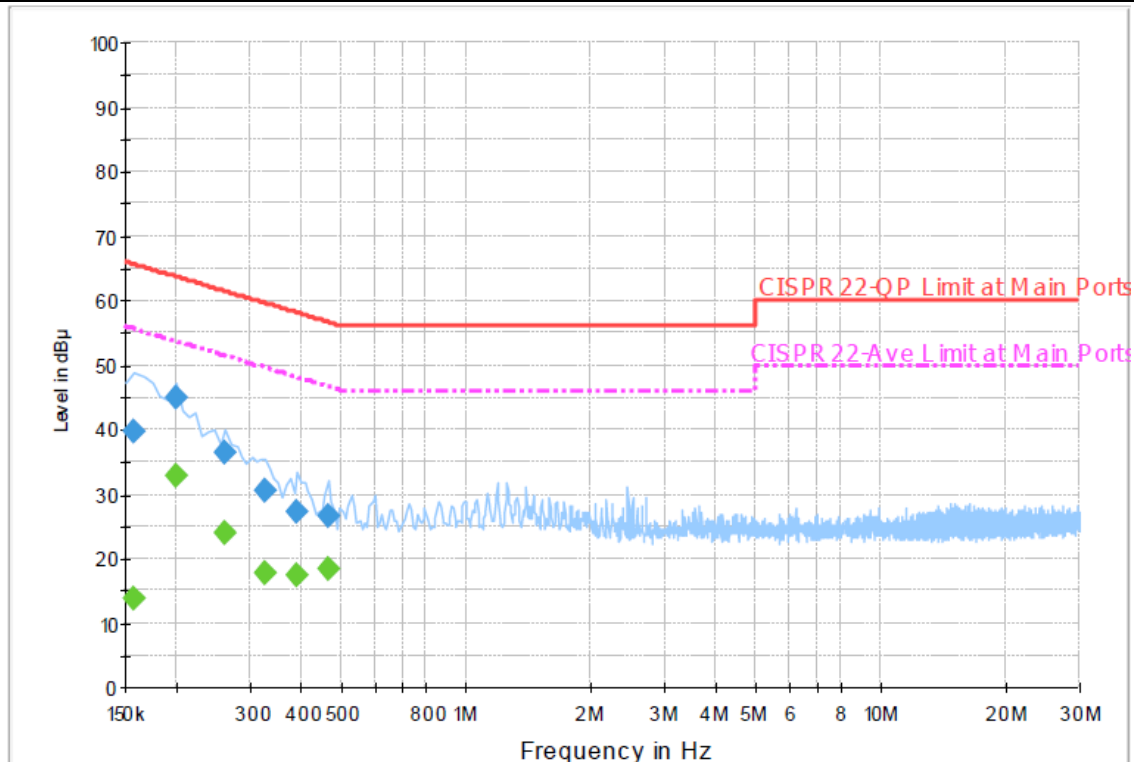

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	41.5	Off	N	19.5	24.1	65.6
0.198000	45.5	Off	N	19.5	18.2	63.7
0.262000	37.9	Off	N	19.4	23.5	61.4
0.334000	31.4	Off	N	19.5	28.0	59.4
0.398000	28.6	Off	N	19.4	29.3	57.9
1.254000	32.0	Off	N	19.5	24.0	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	16.7	Off	N	19.5	38.9	55.6
0.198000	33.7	Off	N	19.5	20.0	53.7
0.262000	25.9	Off	N	19.4	25.5	51.4
0.334000	20.9	Off	N	19.5	28.5	49.4
0.398000	19.1	Off	N	19.4	28.8	47.9
1.254000	29.4	Off	N	19.5	16.6	46.0

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link (5G)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

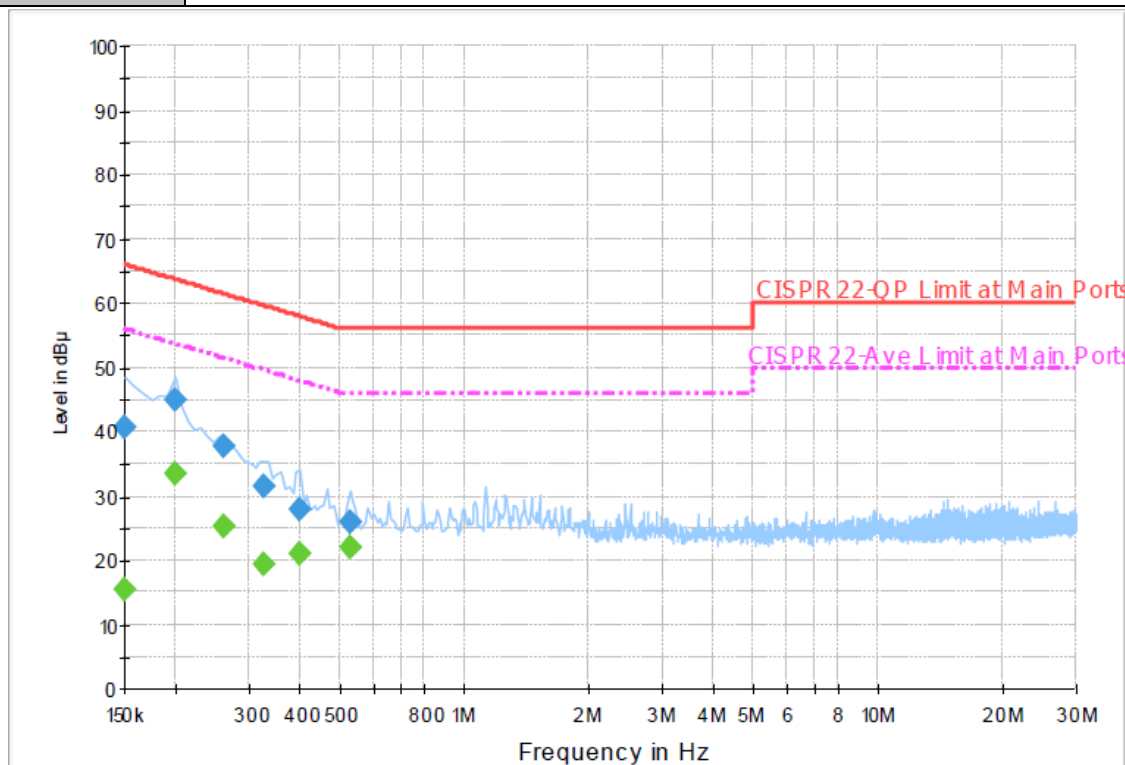

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	39.6	Off	L1	19.5	26.0	65.6
0.198000	44.9	Off	L1	19.5	18.8	63.7
0.262000	36.5	Off	L1	19.4	24.9	61.4
0.326000	30.6	Off	L1	19.4	29.0	59.6
0.390000	27.2	Off	L1	19.4	30.9	58.1
0.462000	26.5	Off	L1	19.4	30.2	56.7

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	13.9	Off	L1	19.5	41.7	55.6
0.198000	32.7	Off	L1	19.5	21.0	53.7
0.262000	23.8	Off	L1	19.4	27.6	51.4
0.326000	17.6	Off	L1	19.4	32.0	49.6
0.390000	17.3	Off	L1	19.4	30.8	48.1
0.462000	18.4	Off	L1	19.4	28.3	46.7

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link (5G)		
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)
0.150000	40.5	Off	N	19.5	25.5	66.0
0.198000	45.0	Off	N	19.5	18.7	63.7
0.262000	37.9	Off	N	19.4	23.5	61.4
0.326000	31.4	Off	N	19.5	28.2	59.6
0.398000	27.8	Off	N	19.4	30.1	57.9
0.526000	26.0	Off	N	19.5	30.0	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	15.2	Off	N	19.5	40.8	56.0
0.198000	33.4	Off	N	19.5	20.3	53.7
0.262000	25.2	Off	N	19.4	26.2	51.4
0.326000	19.3	Off	N	19.5	30.3	49.6
0.398000	21.0	Off	N	19.4	26.9	47.9
0.526000	22.0	Off	N	19.5	24.0	46.0

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. 17, 2009	Sep. 16, 2010	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 10, 2009	Sep. 09, 2010	Conducted (TH02-HY)
EMI Test Receive	R&S	ESU	100211	9KHz – 2.75GHz	May 28, 2010	May 27, 2011	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 20, 2009	Oct. 19, 2010	Radiation (03CH05-HY)
Amplifier	COM-POWER	PA-103	161069	1KHz - 1GHz	Mar. 29, 2010	Mar. 28, 2011	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Nov. 11, 2009	Nov. 10, 2010	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 - 360 degree	N/A	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m - 4 m	N/A	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	00066584	1GHz ~ 18GHz	Aug. 05, 2010	Aug. 04, 2011	Radiation (03CH05-HY)
Horn Antenna	Training Research	AH-0801	95119	8GHz~18GHz	Nov. 02, 2009	Nov. 01, 2010	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH05-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. Antenna Requirement

➤ **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.

➤ **Antenna Connected Construction**

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

➤ **Composite Antenna Gain**

The antenna peak gain of EUT is more than 6 dBi. Therefore, it is must to reduce maximum peak output power limit.



Appendix B. Photographs of EUT

Please refer to Sporton report number EP080603 as below.