



FCC RF Test Report

APPLICANT : Meru Networks Inc.
EQUIPMENT : Multi Radio 802.11a/b/g/n Wireless LAN Access Point
BRAND NAME : Meru Networks Inc.
MODEL NAME : AP302, AP310, AP311, AP320
FCC ID : RE7-AP300
STANDARD : FCC Part 15 Subpart E
CLASSIFICATION : Unlicensed National Information Infrastructure (UNII)

The product was received on Jul. 12, 2010 and completely tested on Sep. 09, 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 shown 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



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FCC ID : RE7-AP300

Page Number : 1 of 119

Report Issued Date : Sep. 09, 2010

Report Version : Rev. 01



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR9D2415-02B	Rev. 01	Initial issue of report	Sep. 09, 2010

**SUMMARY OF TEST RESULT**

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	A9.2	26dB Bandwidth	-	Pass	-
3.2	15.407(a)	A9.2	Maximum Conducted Output Power	$\leq 17, 24, 30$ dBm (depend on band)	Pass	-
3.3	15.407(a)	A9.2	Power Spectral Density	$\leq 4, 11, 17$ dBm (depend on band)	Pass	-
3.4	15.407(b)	A9.3	Frequency Band Edges	$\leq -17, -27$ dBm (depend on band)&15.209(a)	Pass	-
3.5	15.407(b)	A9.3	Spurious Emission	$\leq -17, -27$ dBm (depend on band)&15.209(a)	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 4.1 dB at 15.126 MHz
3.7	15.407(b)	A9.3	Transmitter Radiated Emission	$\leq -17, -27$ dBm (depend on band)&15.209(a)	Pass	Under limit 0.58 dB at 48.90 MHz
3.8	15.407(b)	A9.3	Peak Excursion Ratio	≤ 13 dB	Pass	-
3.9	15.407(c)	A9.5	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.10	15.407(g)	A9.5	Frequency Stability	Within Operation Band	Pass	-
3.11	15.203 & 15.407(a)	A9.2	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Meru Networks Inc.
894 Ross Drive Sunnyvale, CA 94089 USA

1.2 Manufacturer

Universal Scientific Industrial (Shanghai)
No. 1558, Zhang Dong Road, Zhangjiang Hi-Tech Park, Shanghai 201203, P.R. China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Multi Radio 802.11a/b/g/n Wireless LAN Access Point
Brand Name	Meru Networks Inc.
Model Name	AP302, AP310, AP311, AP320
FCC ID	RE7-AP300
Tx/Rx Frequency Range	5150 MHz ~ 5250 MHz
Maximum Output Power to Antenna	802.11a : 6.32 dBm / 0.004 W 802.11n (BW 20MHz) : 6.18 dBm / 0.004 W 802.11n (BW 40MHz) : 8.43 dBm / 0.007 W
HW Version	AP300
SW Version	3.6.1-41
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Production Unit



Antenna Information		
Antenna 1	Model Name	S245112PT
	Antenna Type	Panel Antenna
	Antenna Gain	10.9 dBi for WLAN (2.4G) ; 13.5 dBi for WLAN (5G)
Antenna 2	Model Name	S24517PT
	Antenna Type	Panel Antenna
	Antenna Gain	8 dBi for WLAN (2.4G) ; 10.7 dBi for WLAN (5G)
Antenna 3	Model Name	T24130P10006GT
	Antenna Type	Panel Antenna
	Antenna Gain	13 dBi for WLAN (2.4G)

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 Unlicensed National Information Infrastructure (UNII).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	TW1022/4086B-1

1.5 Applied Standards

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

- ♦ FCC Part 15 Subpart E
- ♦ FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
- ♦ ANSI C63.4-2003
- ♦ IC RSS-210 Issued 7

Remark:

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

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	AC Adapter	UMEC	UP0251P-05PA	N/A	N/A	Unshielded, 1.8 m
2.	POE	PHIHONG	POE20U-560(G)	N/A	N/A	N/A
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m



2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

802.11a and 802.11n (BW 20MHz) Carrier Frequency Channel					
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
36	5180	40	5200	44	5220

Remark: The channel 48 (5240MHz) was disabled by manufacturer.

802.11n (BW 40MHz) Carrier Frequency Channel			
Channel	Freq. (MHz)	Channel	Freq. (MHz)
38	5190	44	5220

Remark: The channel 46 (5230MHz) was disabled by manufacturer.

2.2 Pre-Scanned RF Power

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

Channel	Frequency	Chain	5GHz 802.11a RF Power (dBm)							
			Data Rate							
			6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 36	5180 MHz	A	9.1	9.05	9.08	9.08	8.99	8.95	8.87	8.87
CH 40	5200 MHz	A	9.05	9.04	9.04	9.05	9.07	9.06	9.02	9.03
CH 44	5220 MHz	A	9.02	9.05	8.8	8.61	8.6	8.67	8.68	8.57
CH 36	5180 MHz	B	9.01	9.02	8.91	8.8	8.6	8.62	8.6	8.61
CH 40	5200 MHz	B	9.08	9.08	9.06	9.04	9.02	9	9.01	8.98
CH 44	5220 MHz	B	8.9	8.95	8.81	8.51	8.7	8.52	8.6	8.53
CH 36	5180 MHz	C	8.67	8.65	8.64	8.59	8.58	8.53	8.54	8.47
CH 40	5200 MHz	C	9.09	9.02	9.05	9.04	8.99	8.94	8.93	8.91
CH 44	5220 MHz	C	8.74	8.6	8.59	8.59	8.56	8.54	8.55	8.51

Channel	Frequency	Chain	5GHz 802.11n (BW 20MHz) RF Power (dBm)							
			Data Rate							
			6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 36	5180 MHz	A+B+C	10.05	9.87	9.83	9.77	9.69	9.62	9.62	9.54
CH 40	5200 MHz	A+B+C	9.80	9.71	9.63	9.61	9.50	9.48	9.43	9.42
CH 44	5220 MHz	A+B+C	9.79	9.68	9.59	9.52	9.47	9.41	9.39	9.38
Channel	Frequency	Chain	13 Mbps	26 Mbps	39 Mbps	52 Mbps	78 Mbps	104 Mbps	117 Mbps	130 Mbps
CH 36	5180 MHz	A+B+C	9.80	9.69	9.62	9.56	9.49	9.48	9.43	9.40
CH 40	5200 MHz	A+B+C	9.62	9.59	9.46	9.43	9.41	9.38	9.32	9.26
CH 44	5220 MHz	A+B+C	9.51	9.46	9.41	9.35	9.29	9.23	9.20	9.19



Channel	Frequency	Chain	5GHz 802.11n (BW 40MHz) RF Power (dBm)							
			Data Rate							
			13.5 Mbps	27 Mbps	40.5 Mbps	54 Mbps	81 Mbps	108 Mbps	121.5 Mbps	135.0 Mbps
CH 38	5190 MHz	A+B+C	11.76	11.70	11.63	11.55	11.50	11.46	11.41	11.41
CH 44	5220 MHz	A+B+C	11.54	11.38	11.33	11.30	11.32	11.22	11.25	11.20
Channel	Frequency	Chain	27 Mbps	54 Mbps	81 Mbps	108 Mbps	162 Mbps	216 Mbps	243 Mbps	270 Mbps
CH 38	5190 MHz	A+B+C	11.66	11.56	11.53	11.47	10.49	11.31	11.35	11.32
CH 44	5220 MHz	A+B+C	11.47	11.45	11.37	11.31	11.19	11.14	11.11	11.12

Remark:

1. The pre-scanned RF power was measured by power meter.
2. Chain A+B+C was tested by combiner, and the chain A, B and C was tested individually and calculated with the formula of $10 \cdot \text{LOG} (10^{\text{chain A}/10} + 10^{\text{chain B}/10} + 10^{\text{chain C}/10})$.
3. The EUT is programmed to transmit signals continuously for all testing.
4. The data rates of WLAN 802.11a/n were set in 6Mbps for 802.11a, 6.5Mbps for 802.11n (BW 20MHz), 13.5Mbps for 802.11n (BW 40MHz) for all the test cases due to the highest RF output power.

2.3 Test Mode

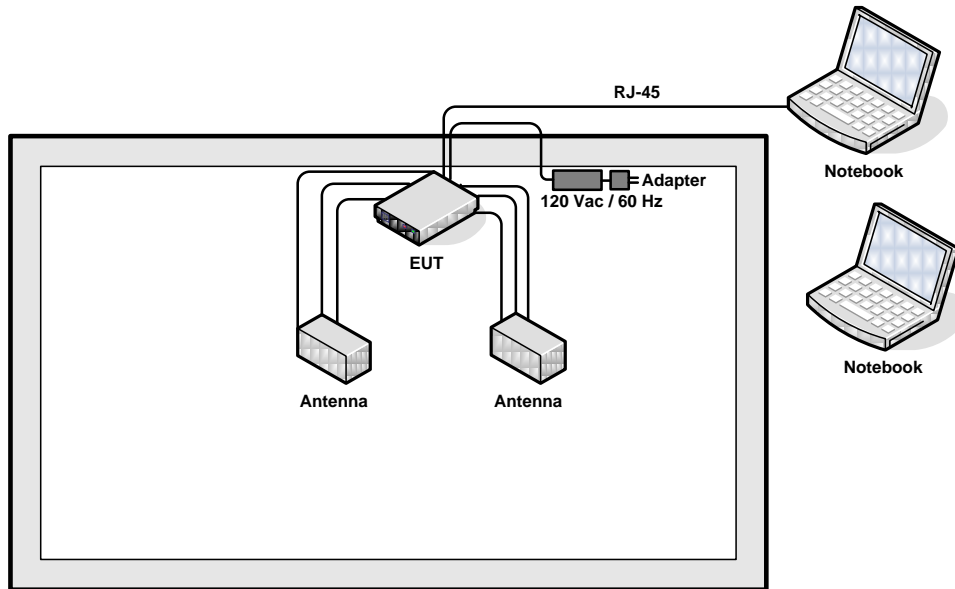
The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Cases	
Test Item	802.11a/n (Modulation : OFDM)
Conducted TCs	<ul style="list-style-type: none"> ■ Mode 1: 802.11a_CH36_5180 MHz ■ Mode 2: 802.11a_CH40_5200 MHz ■ Mode 3: 802.11a_CH44_5220 MHz ■ Mode 4: 802.11n_CH36_5180 MHz (BW 20M) ■ Mode 5: 802.11n_CH40_5200 MHz (BW 20M) ■ Mode 6: 802.11n_CH44_5220 MHz (BW 20M) ■ Mode 7: 802.11n_CH38_5190 MHz (BW 40M) ■ Mode 8: 802.11n_CH44_5220 MHz (BW 40M)
Radiated TCs	<ul style="list-style-type: none"> ■ Mode 1: 802.11a_CH36_5180 MHz + WLAN 1 ■ Mode 2: 802.11a_CH40_5200 MHz + WLAN 1 ■ Mode 3: 802.11a_CH44_5220 MHz + WLAN 1 ■ Mode 4: 802.11n_CH36_5180 MHz (BW 20M) + WLAN 1 ■ Mode 5: 802.11n_CH40_5200 MHz (BW 20M) + WLAN 1 ■ Mode 6: 802.11n_CH44_5220 MHz (BW 20M) + WLAN 1 ■ Mode 7: 802.11n_CH38_5190 MHz (BW 40M) + WLAN 1 ■ Mode 8: 802.11n_CH44_5220 MHz (BW 40M) + WLAN 1 ■ Mode 9: 802.11n_CH38_5190 MHz (BW 40M) + WLAN 2 ■ Mode 10: 802.11n_CH38_5190 MHz (BW 40M) + WLAN 1 + WLAN 2
AC Conducted Emission	Mode 1 : WLAN 1 (5G) Link + WLAN 2 (5G) Link + LAN Link + Adapter Mode 2 : WLAN 1 (5G) Link + WLAN 2 (5G) Link + POE + LAN Link + Adapter
Remark:	
<ol style="list-style-type: none"> 1. The worst case of AC conducted emission is mode 2; only the test data of it was reported. 2. The EUT has two modules which have the same design, and they can transmit simultaneously. 3. Only antenna 1 was used for all tests due to the highest antenna gain. 	

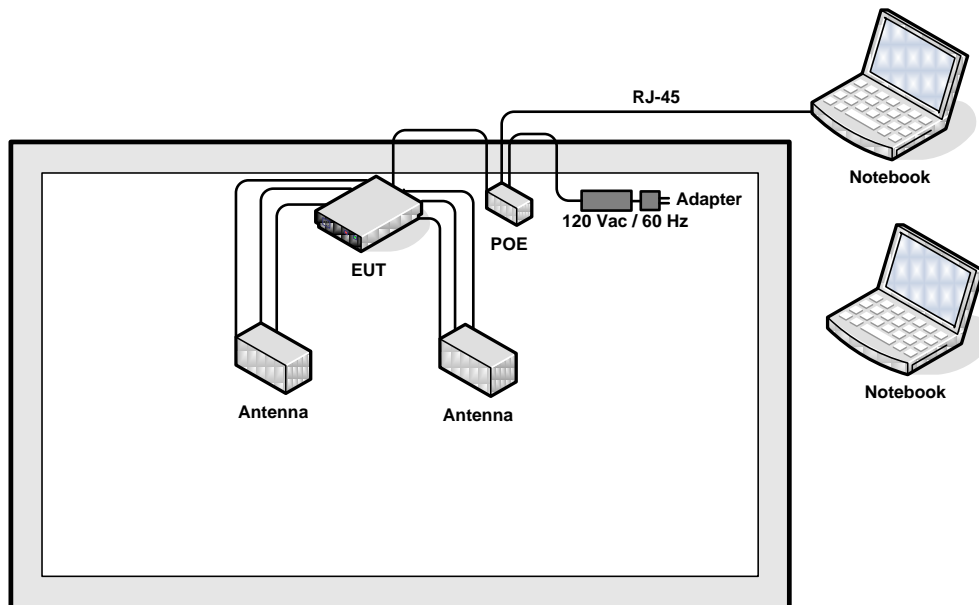
2.4 Connection Diagram of Test System

<Conduction Test>

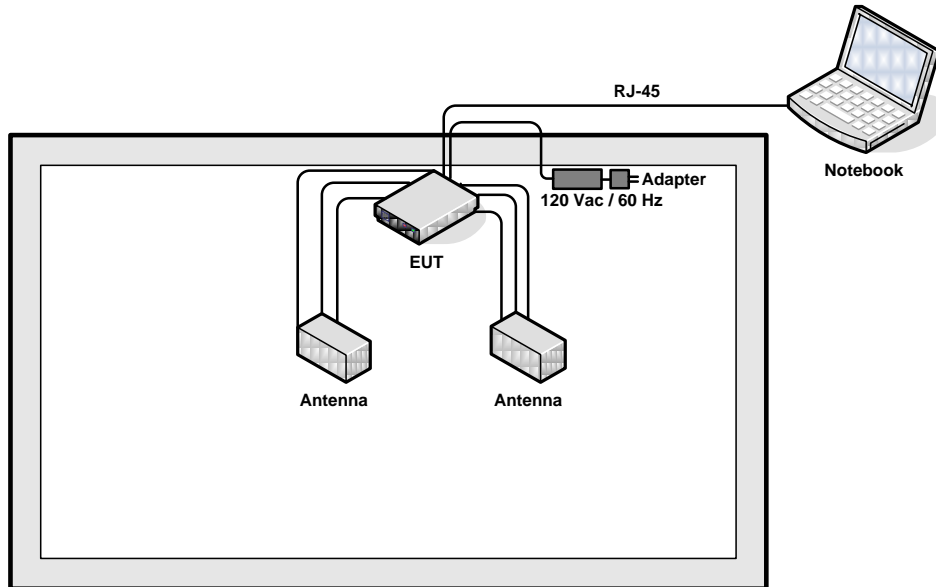
EUT with Adapter Mode



EUT with POE and Adapter Mode



<Radiation Test>



2.5 RF Utility

The programmed RF Utility 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 26dB & 99% Bandwidth Measurement

3.1.1 Limit of 26dB & 99% Bandwidth

There is no restriction limits for bandwidth. The maximum conducted output power can be limited by measured emission bandwidth (B). For the band 5.15~5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B.

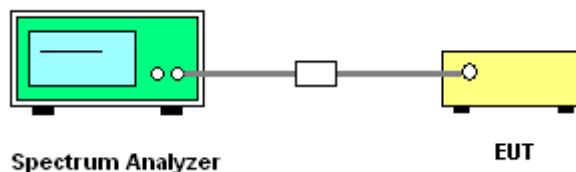
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC Public Notice DA 02-2138 (Measurement Guidelines of UNII).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Read RBW and repeat measurement as needed until the RBW/BW ratio is approximately 1%.
4. Use a RBW = approximately 1% of the emission bandwidth; Set the VBW > RBW; Use a peak detector.
5. Measure the maximum width of the emission that is 26 dB relative to the peak of the emission and 99% occupied bandwidth.

3.1.4 Test Setup



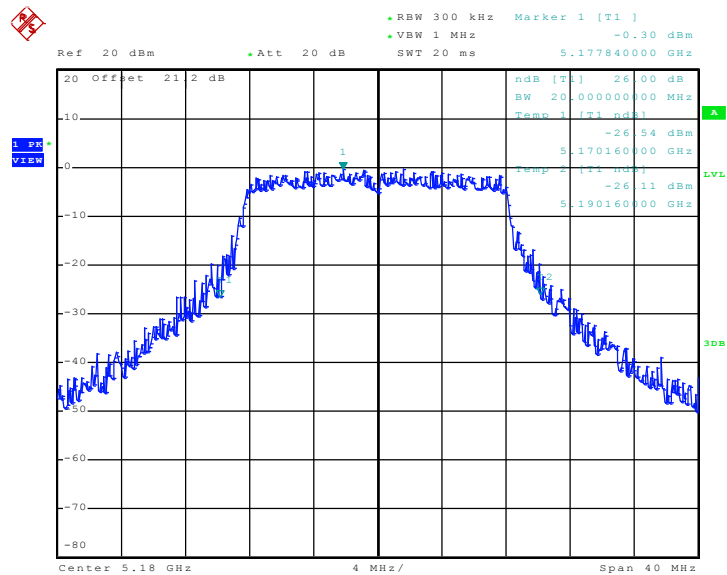


3.1.5 Test Result of 26dB Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a 26dB Bandwidth (MHz)	Pass/Fail
		Chain A	
36	5180	24.00	Pass
40	5200	24.56	Pass
44	5220	24.56	Pass

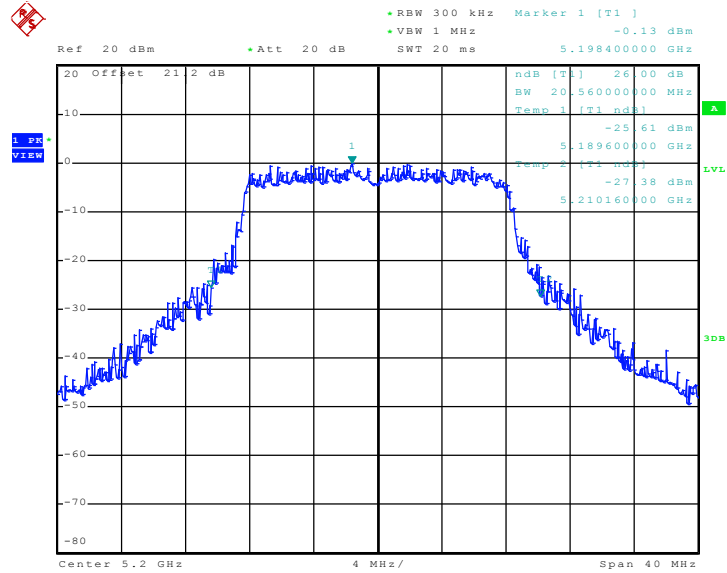
Mode 1 : 26dB Bandwidth Plot on 802.11a Channel 36 - Chain A



Date: 24.AUG.2010 16:19:31

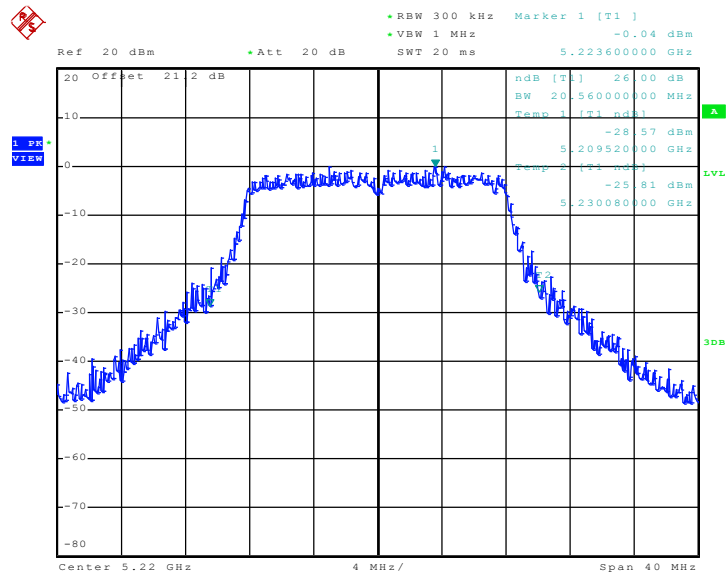


Mode 2 : 26dB Bandwidth Plot on 802.11a Channel 40 - Chain A



Date: 24.AUG.2010 16:20:08

Mode 3 : 26dB Bandwidth Plot on 802.11a Channel 44 - Chain A



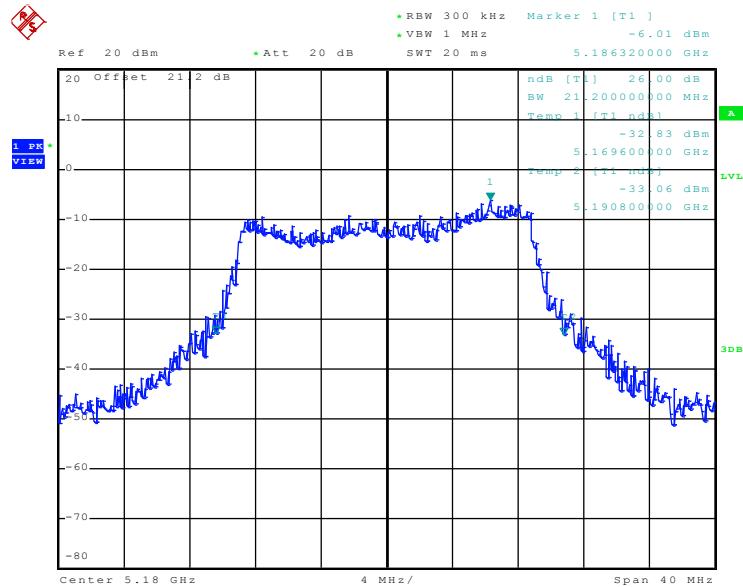
Date: 24.AUG.2010 16:20:45



Test Mode :	Mode 4, 5, 6	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 20MHz, 3Tx) 26dB Bandwidth (MHz)			Pass/Fail
		Chain A+B+C(A)	Chain A+B+C(B)	Chain A+B+C(C)	
36	5180	21.20	21.44	20.96	Pass
40	5200	20.32	20.24	22.16	Pass
44	5220	21.68	21.44	21.36	Pass

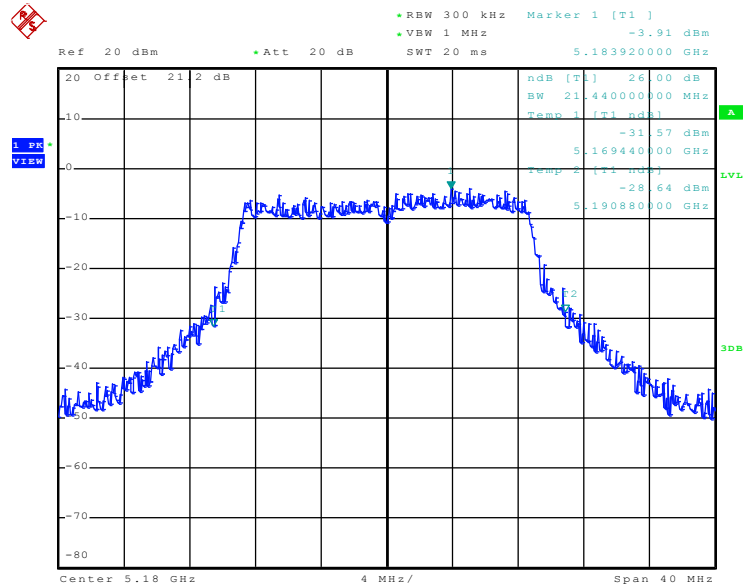
Mode 4 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 36
- Chain A+B+C(A)



Date: 24.AUG.2010 15:24:46

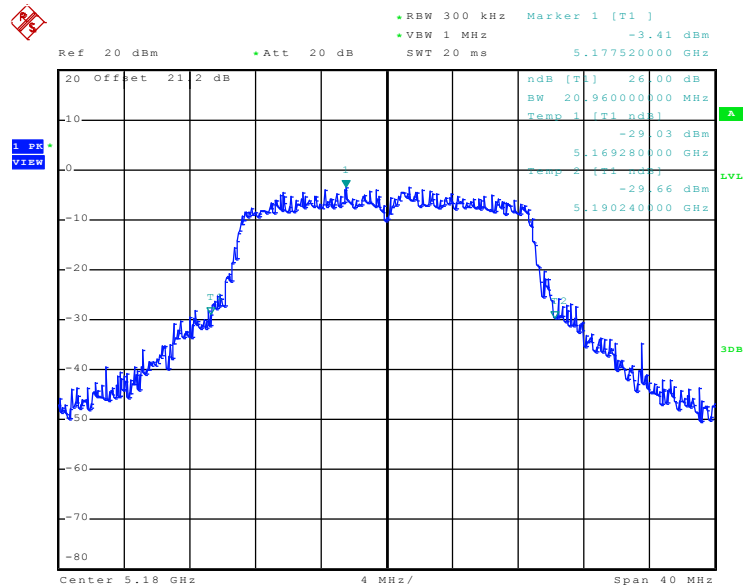


Mode 4 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 36
- Chain A+B+C(B)



Date: 24.AUG.2010 15:32:01

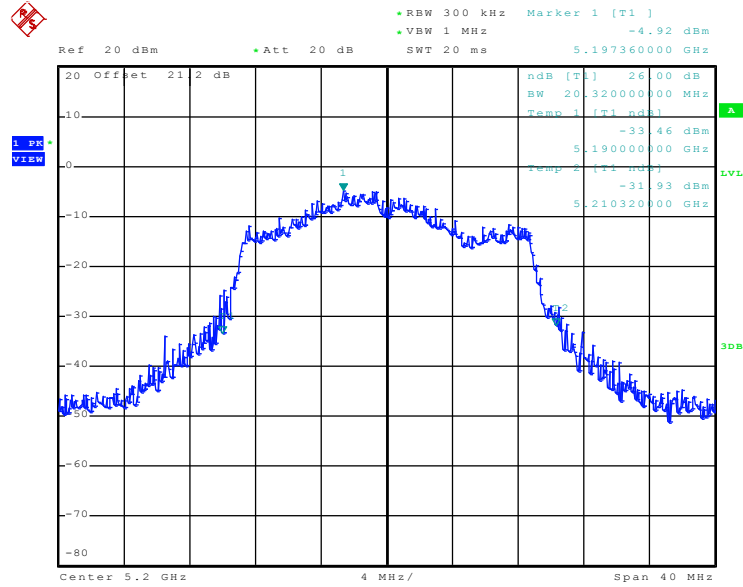
Mode 4 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 36
- Chain A+B+C(C)



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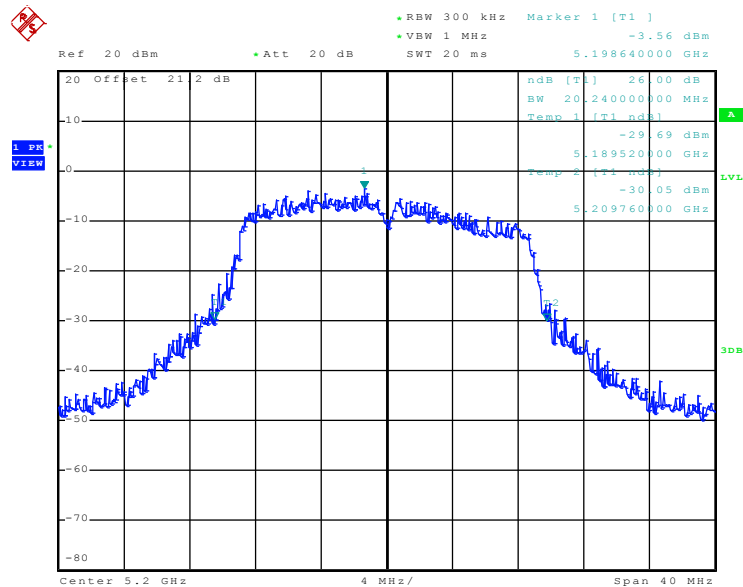


Mode 5 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 40
- Chain A+B+C(A)



Date: 24.AUG.2010 15:25:43

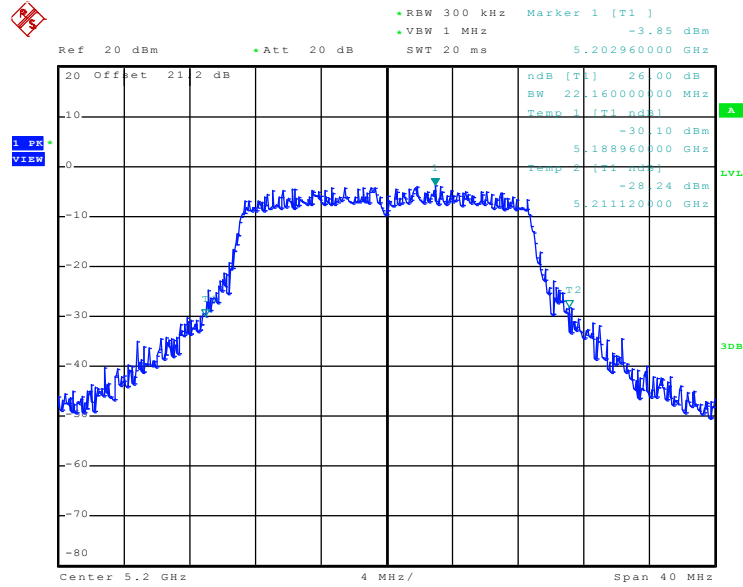
Mode 5 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 40
- Chain A+B+C(B)



Date: 24.AUG.2010 15:31:30

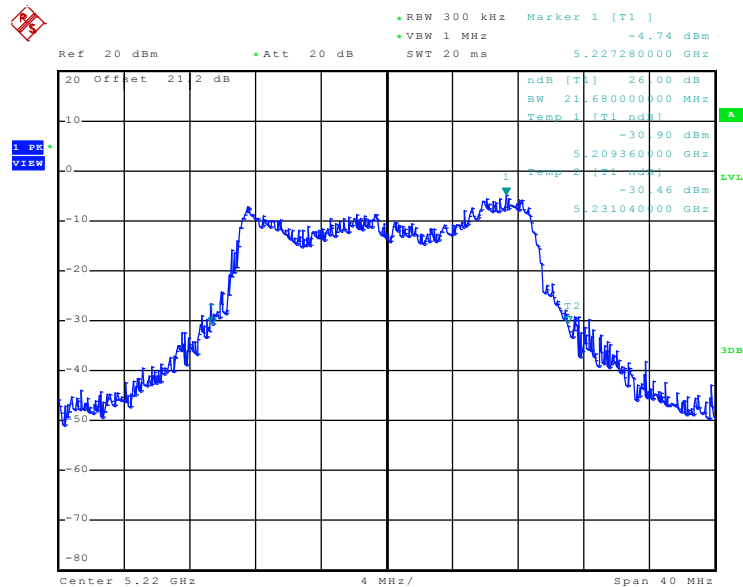


Mode 5 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 40
- Chain A+B+C(C)



Date: 24.AUG.2010 15:34:15

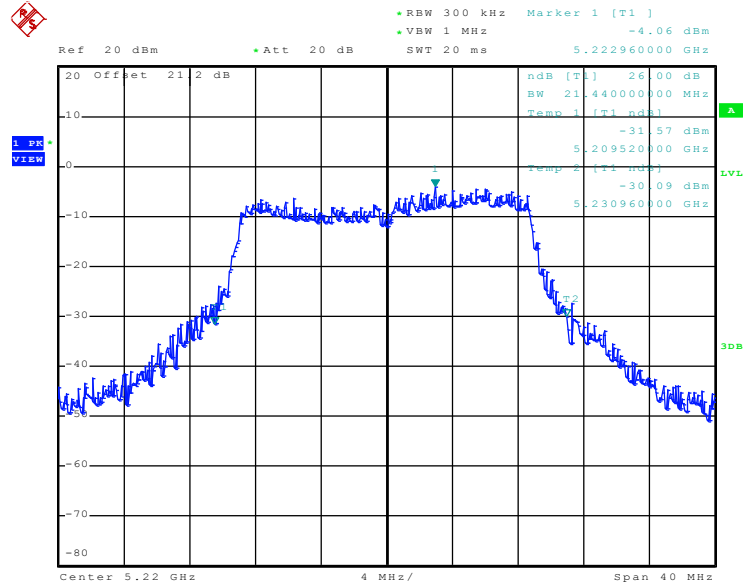
Mode 6 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 44
- Chain A+B+C(A)



Date: 24.AUG.2010 15:26:42

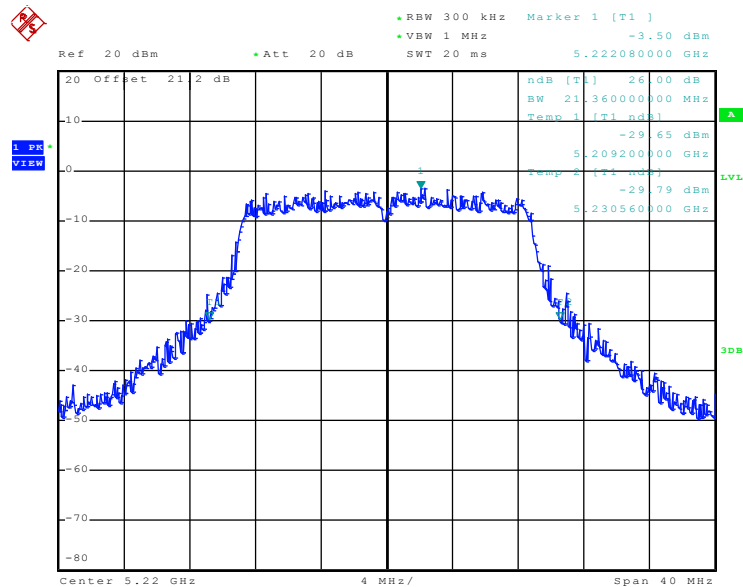


Mode 6 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 44
- Chain A+B+C(B)



Date: 24.AUG.2010 15:30:53

Mode 6 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 44
- Chain A+B+C(C)



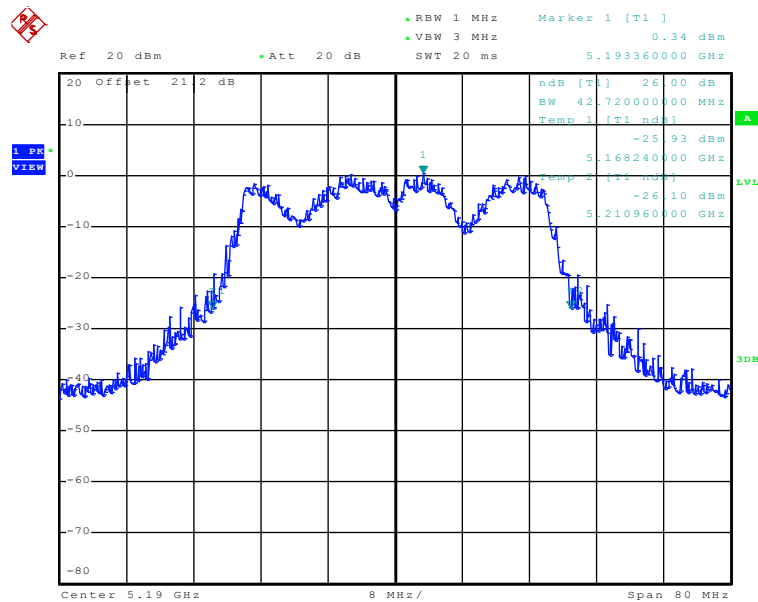
Date: 24.AUG.2010 15:34:56



Test Mode :	Mode 7, 8	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 40MHz, 3Tx) 26dB Bandwidth (MHz)			Pass/Fail
		Chain A+B+C(A)	Chain A+B+C(B)	Chain A+B+C(C)	
38	5190	42.72	44.16	44.00	Pass
44	5220	40.80	43.36	44.80	Pass

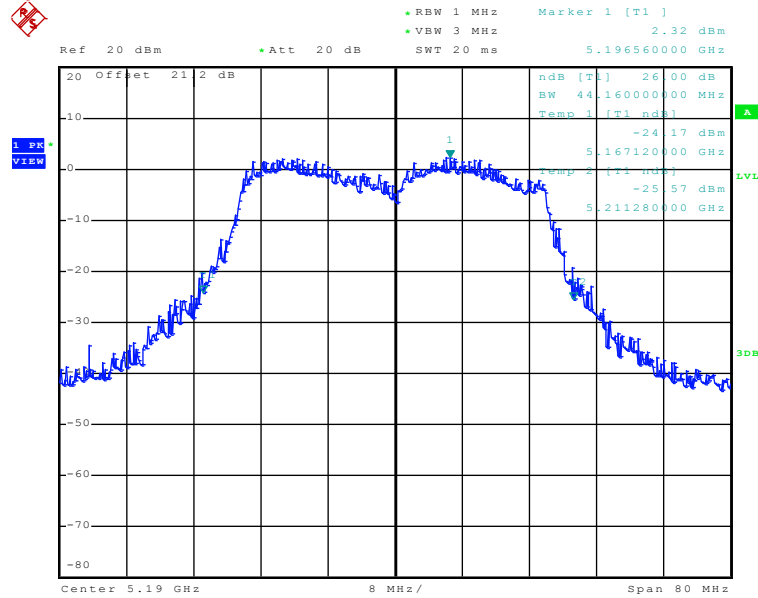
Mode 7 : 26dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C(A)



Date: 24.AUG.2010 14:25:44

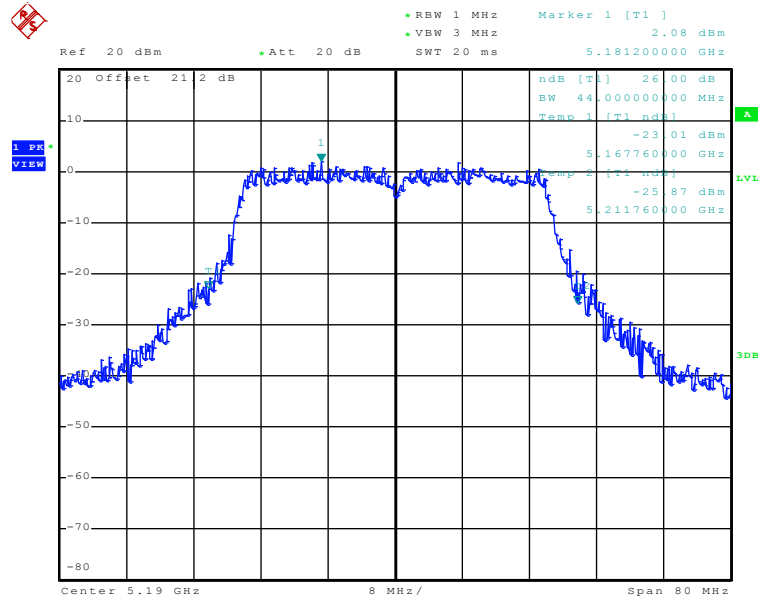


Mode 7 : 26dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C(B)



Date: 24.AUG.2010 14:27:29

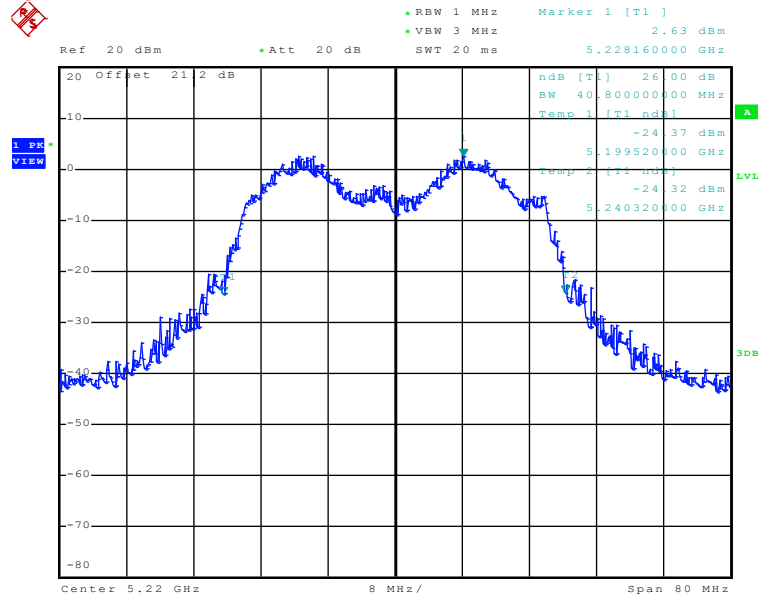
Mode 7 : 26dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C(C)



Date: 24.AUG.2010 14:18:51

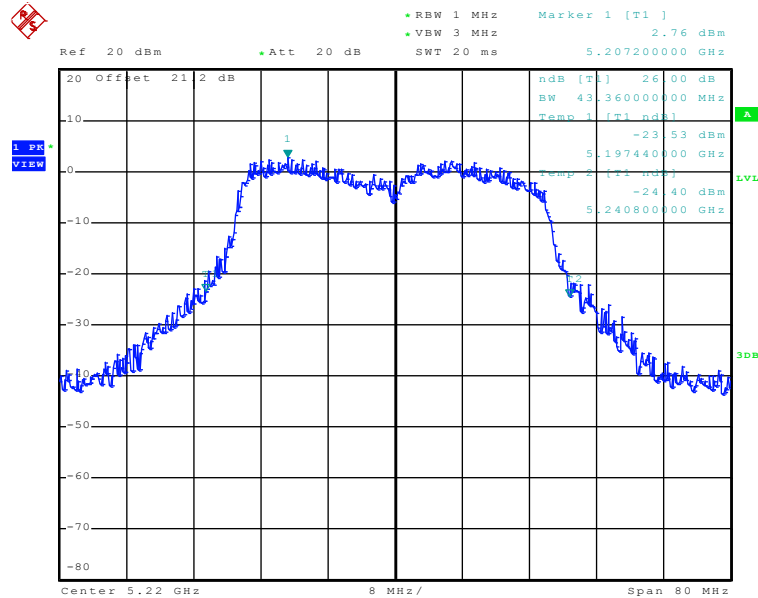


Mode 8 : 26dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 44 - Chain A+B+C(A)



Date: 24.AUG.2010 14:31:31

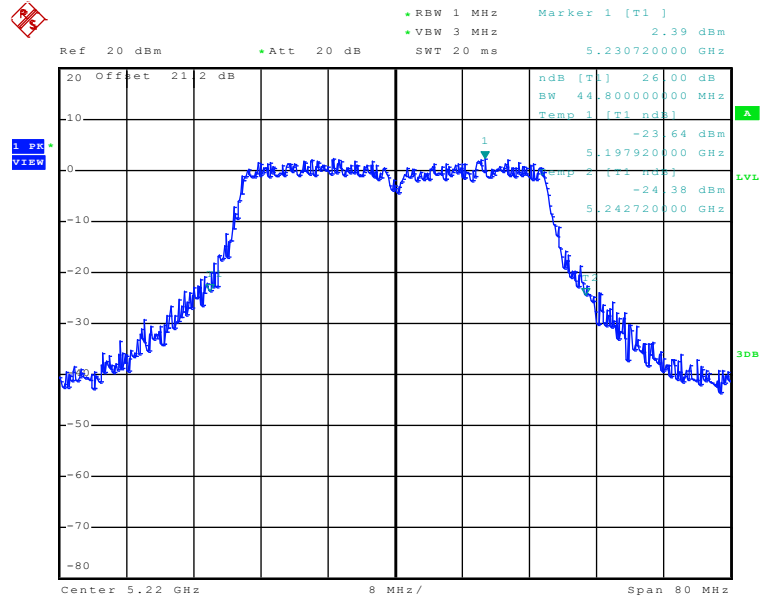
Mode 8 : 26dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 44 - Chain A+B+C(B)



Date: 24.AUG.2010 14:29:48



Mode 8 : 26dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 44 - Chain A+B+C(C)



Date: 24.AUG.2010 14:33:08

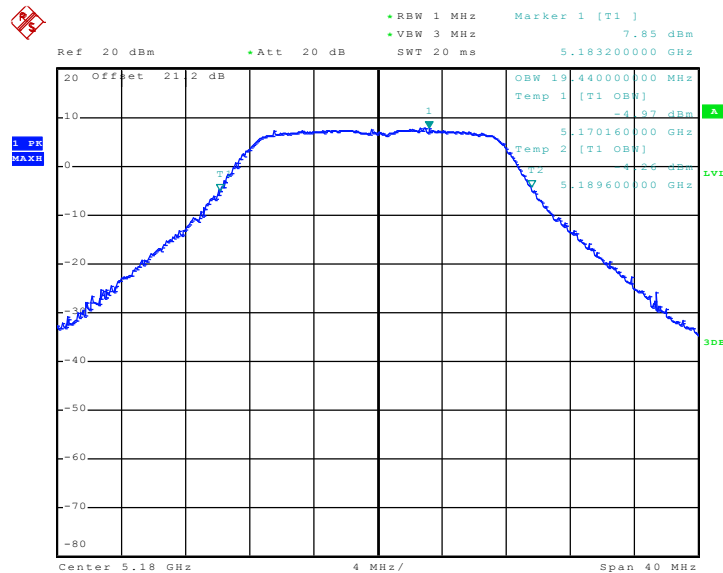


3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	Mode 1, 2, 3	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain A	
36	5180	19.44	Pass
40	5200	19.44	Pass
44	5220	19.36	Pass

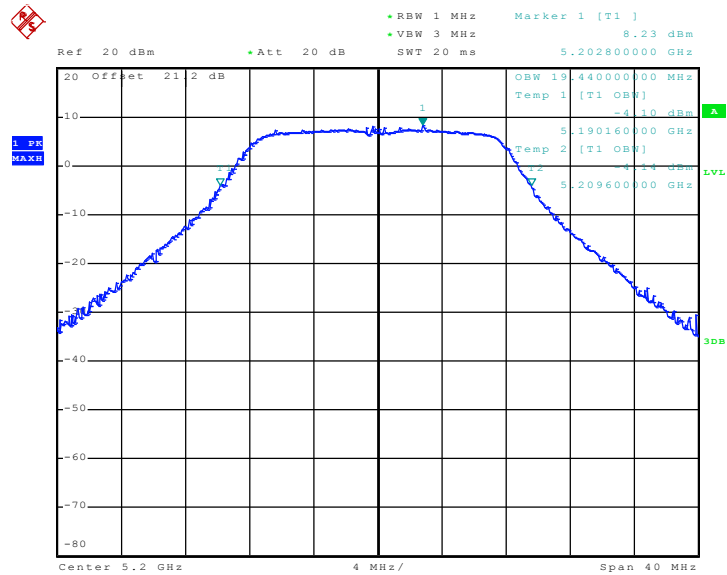
Mode 1 : 99% Occupied Bandwidth Plot on 802.11a Channel 36 - Chain A



Date: 17.AUG.2010 15:06:49

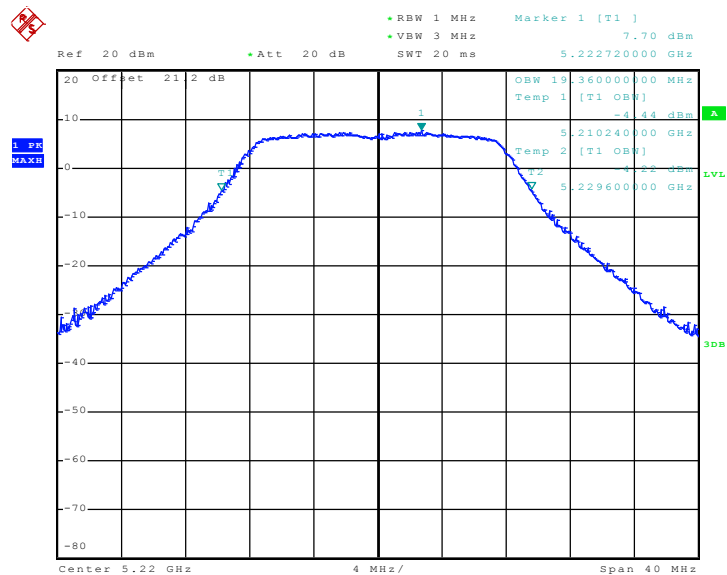


Mode 2 : 99% Occupied Bandwidth Plot on 802.11a Channel 40 -
Chain A



Date: 17.AUG.2010 17:17:26

Mode 3 : 99% Occupied Bandwidth Plot on 802.11a Channel 44 -
Chain A



Date: 17.AUG.2010 17:18:00

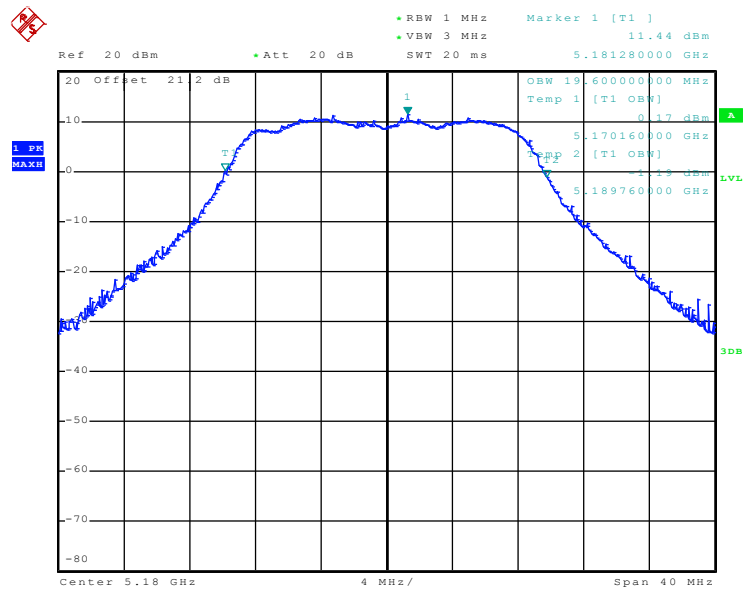


Test Mode :	Mode 4, 5, 6	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 20MHz, 3Tx) 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain A+B+C	
36	5180	19.60	Pass
40	5200	19.60	Pass
44	5220	19.44	Pass

Mode 4 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz)

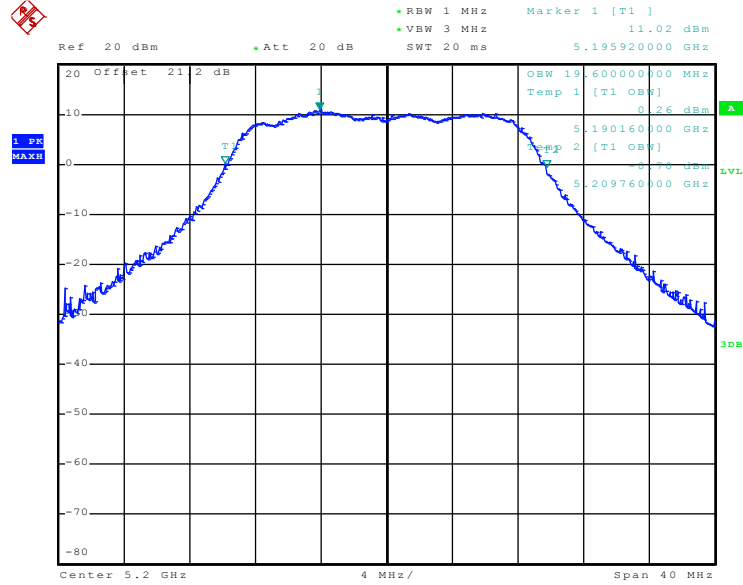
Channel 36 - Chain A+B+C



Date: 17.AUG.2010 21:48:03

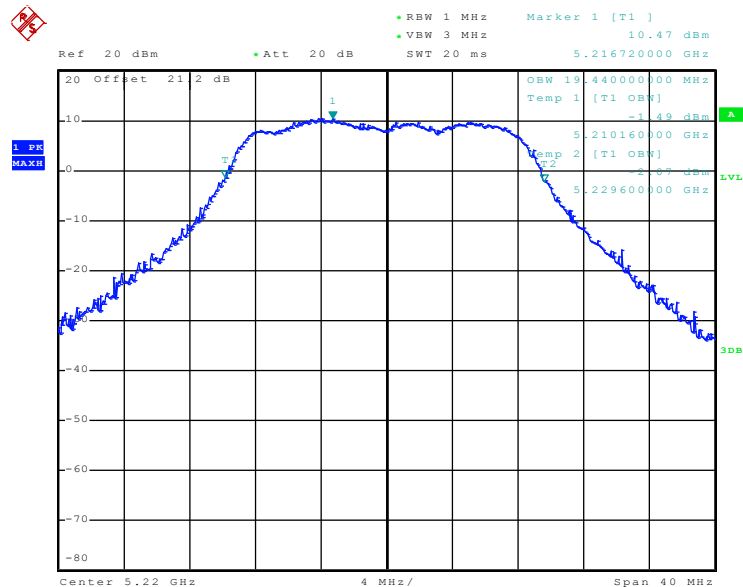


Mode 5 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz)
Channel 40 - Chain A+B+C



Date: 17.AUG.2010 21:47:08

Mode 6 : 99% Occupied Bandwidth Plot on 802.11n (BW 20MHz)
Channel 44 - Chain A+B+C



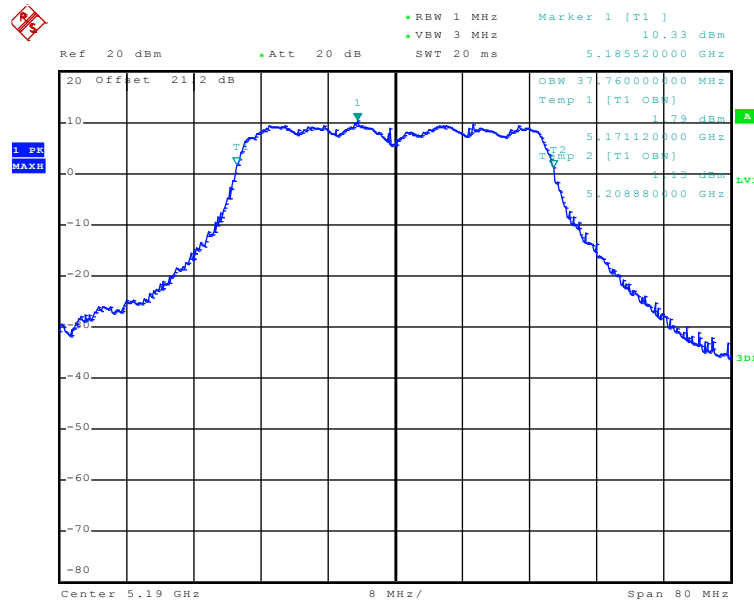
Date: 17.AUG.2010 21:45:56



Test Mode :	Mode 7, 8	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 40MHz, 3Tx) 99% Occupied Bandwidth (MHz)	Pass/Fail
		Chain A+B+C	
38	5190	37.76	Pass
44	5220	37.44	Pass

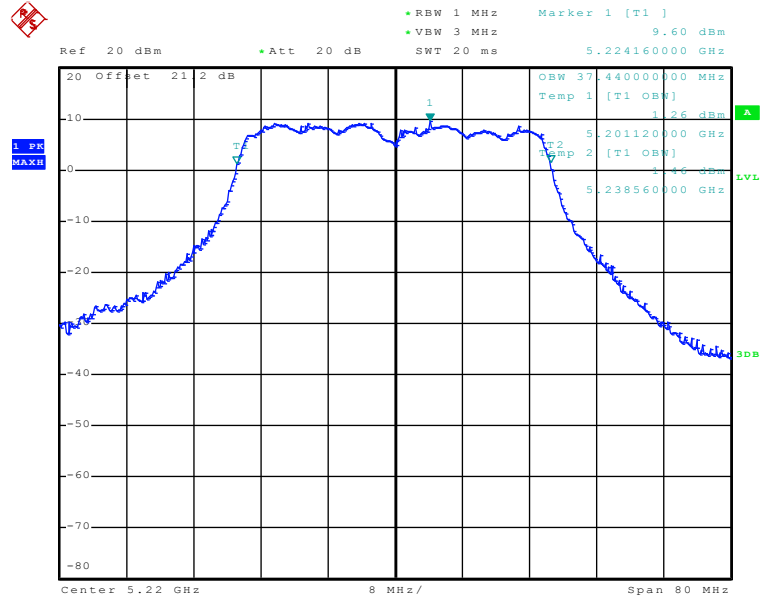
**Mode 7 : 99% Occupied Bandwidth Plot on 802.11n (BW 40MHz)
Channel 38 - Chain A+B+C**



Date: 18.AUG.2010 00:53:19



Mode 8 : 99% Occupied Bandwidth Plot on 802.11n (BW 40MHz)
Channel 44 - Chain A+B+C



Date: 18.AUG.2010 00:54:20

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5.15~5.25 GHz, the maximum conducted output power shall not exceed the lesser of 50 mW (17dBm) or $4 \text{ dBm} + 10\log B$, where B is the 26 dB emissions bandwidth in MHz. If transmitting antenna directional gain is greater than 6 dBi, the peak output power and power density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

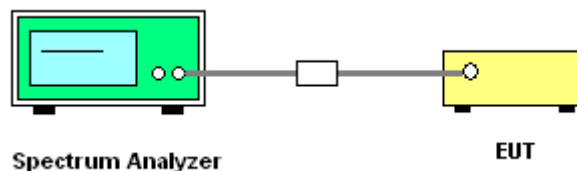
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC Public Notice DA 02-2138 (Measurement Guidelines of UNII).
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Measure the power and record it.

3.2.4 Test Setup





3.2.5 Test Result of Maximum Conducted Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
		Chain A		
36	5180	6.26	9.5	Pass
40	5200	6.32	9.5	Pass
44	5220	6.02	9.5	Pass

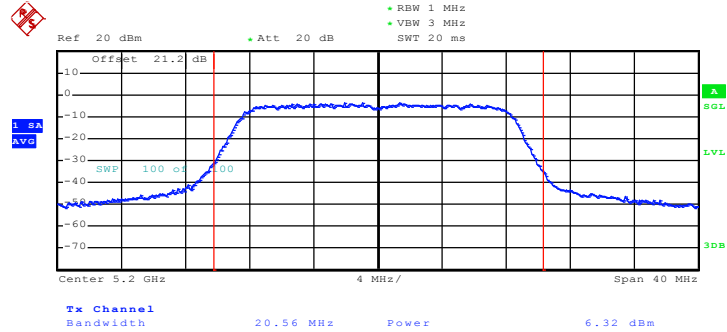
Mode 1 : Output Power Plot on 802.11a Channel 36 - Chain A



Date: 24.AUG.2010 16:24:56

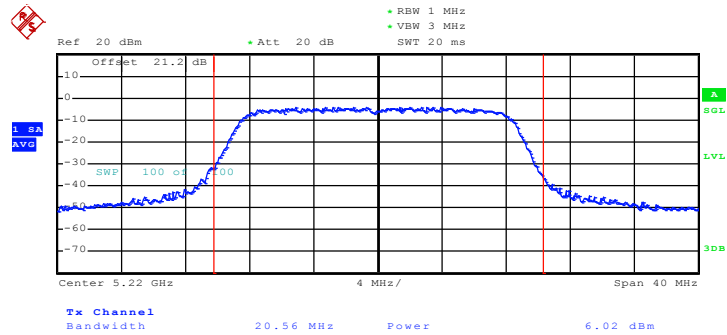


Mode 2 : Output Power Plot on 802.11a Channel 40 - Chain A



Date: 24.AUG.2010 16:26:26

Mode 3 : Output Power Plot on 802.11a Channel 44 - Chain A



Date: 24.AUG.2010 16:28:25

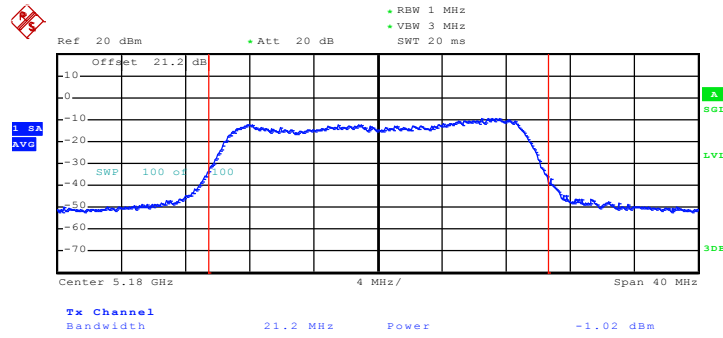


Test Mode :	Mode 4, 5, 6	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 20MHz, 3Tx) Measured Output Power (dBm)				Max. Limits (dBm)	Pass/Fail
		Chain A+B+C(A)	Chain A+B+C(B)	Chain A+B+C(C)	Chain A+B+C		
36	5180	-1.02	2.09	2.41	6.18	9.5	Pass
40	5200	-1.79	1.93	2.67	6.10	9.5	Pass
44	5220	0.13	1.08	2.43	6.09	9.5	Pass

Note: Chain A+B+C was tested by combiner, and the chain A, B and C was tested individually and calculated with the formula of $10 \cdot \text{LOG} (10^{\text{chain A}/10} + 10^{\text{chain B}/10} + 10^{\text{chain C}/10})$.

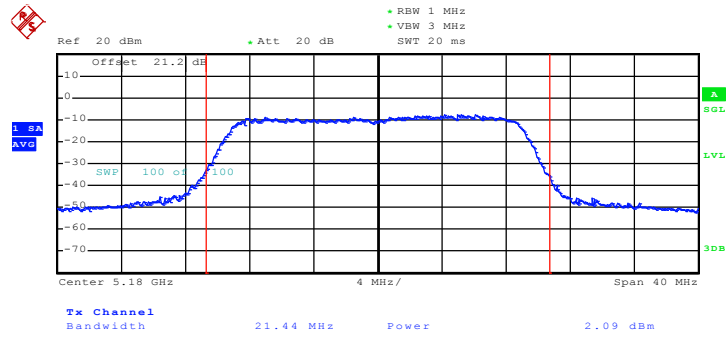
Mode 4 : Output Power Plot on 802.11n (BW 20MHz) Channel 36 - Chain A+B+C(A)



Date: 24.AUG.2010 15:38:22

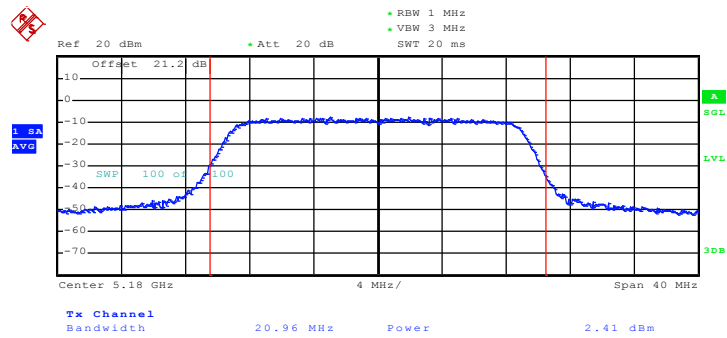


Mode 4 : Output Power Plot on 802.11n (BW 20MHz) Channel 36 - Chain A+B+C(B)



Date: 24.AUG.2010 15:44:14

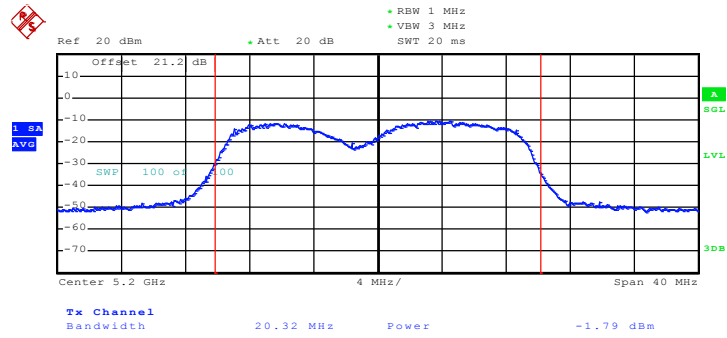
Mode 4 : Output Power Plot on 802.11n (BW 20MHz) Channel 36 - Chain A+B+C(C)



Date: 24.AUG.2010 15:46:56

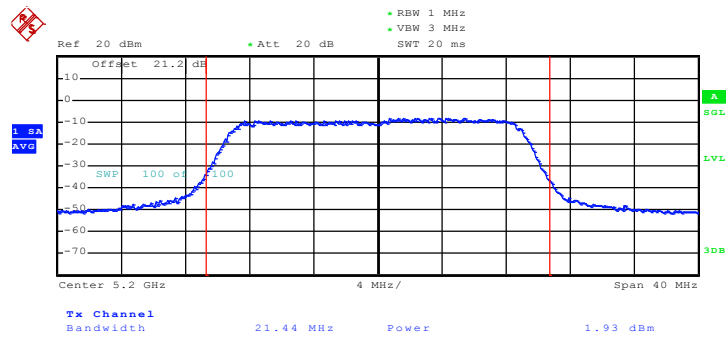


Mode 5 : Output Power Plot on 802.11n (BW 20MHz) Channel 40 - Chain A+B+C(A)



Date: 24.AUG.2010 15:39:50

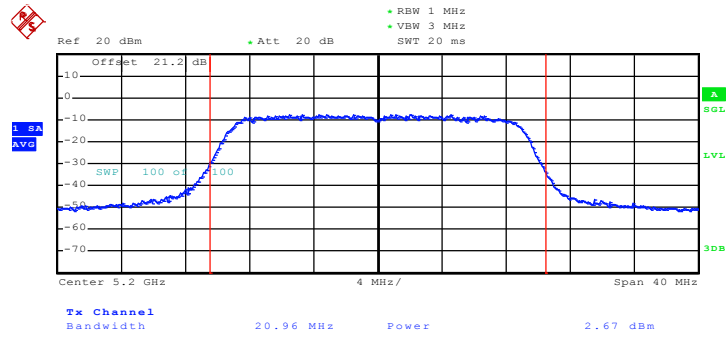
Mode 5 : Output Power Plot on 802.11n (BW 20MHz) Channel 40 - Chain A+B+C(B)



Date: 24.AUG.2010 15:43:14

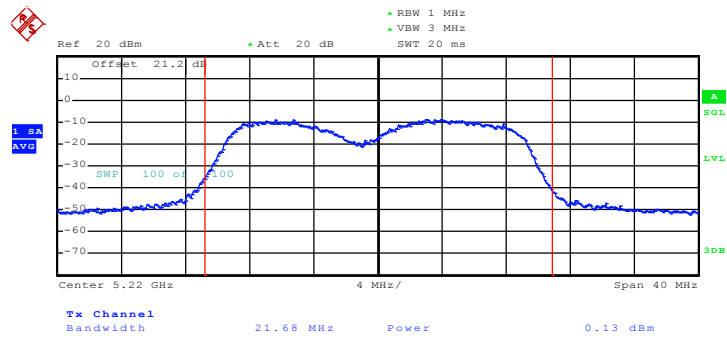


Mode 5 : Output Power Plot on 802.11n (BW 20MHz) Channel 40 - Chain A+B+C(C)



Date: 24.AUG.2010 15:47:25

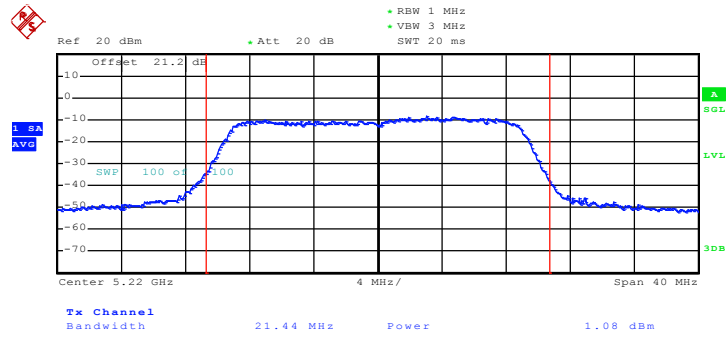
Mode 6 : Output Power Plot on 802.11n (BW 20MHz) Channel 44 - Chain A+B+C(A)



Date: 24.AUG.2010 15:40:44

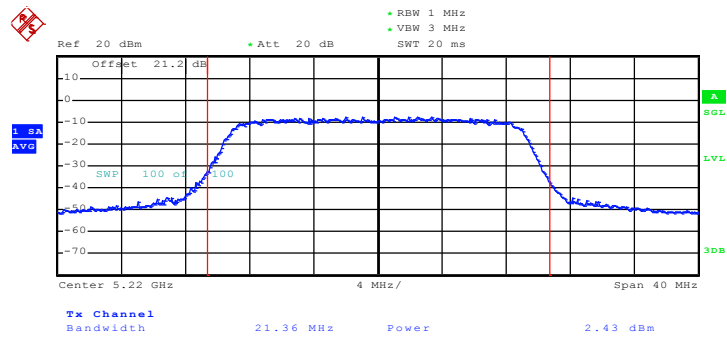


Mode 6 : Output Power Plot on 802.11n (BW 20MHz) Channel 44 - Chain A+B+C(B)



Date: 24.AUG.2010 15:42:22

Mode 6 : Output Power Plot on 802.11n (BW 20MHz) Channel 44 - Chain A+B+C(C)



Date: 24.AUG.2010 16:09:59

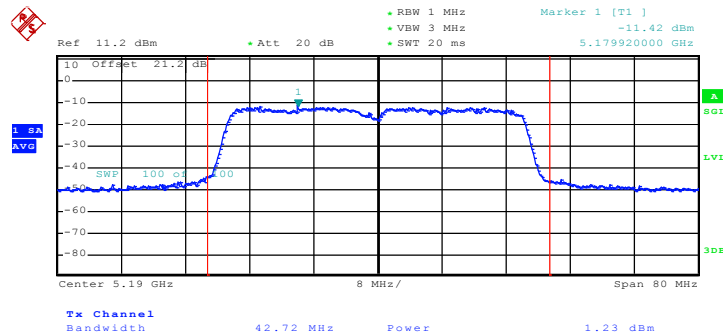


Test Mode :	Mode 7, 8	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 40MHz, 3Tx) Measured Output Power (dBm)				Max. Limits (dBm)	Pass/Fail
		Chain A+B+C(A)	Chain A+B+C(B)	Chain A+B+C(C)	Chain A+B+C		
38	5190	1.23	4.51	4.49	8.43	9.5	Pass
44	5220	0.37	4.14	4.62	8.18	9.5	Pass

Note: Chain A+B+C was tested by combiner, and the chain A, B and C was tested individually and calculated with the formula of $10 \cdot \text{LOG} (10^{(\text{chain A}/10)} + 10^{(\text{chain B}/10)} + 10^{(\text{chain C}/10)})$.

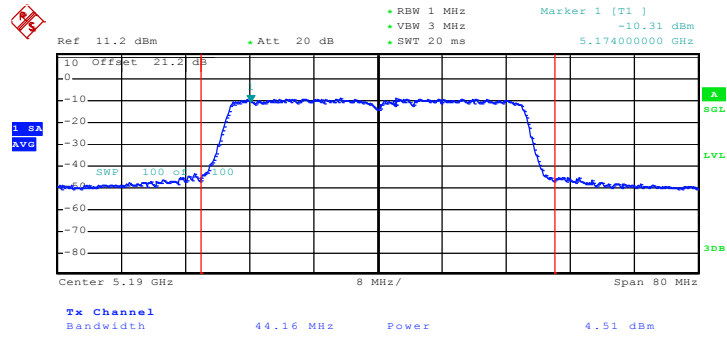
Mode 7 : Output Power Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C(A)



Date: 8.SEP.2010 18:49:08

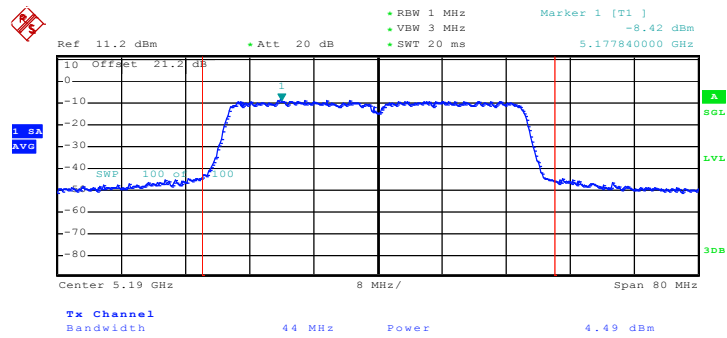


Mode 7 : Output Power Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C(B)



Date: 8.SEP.2010 18:51:49

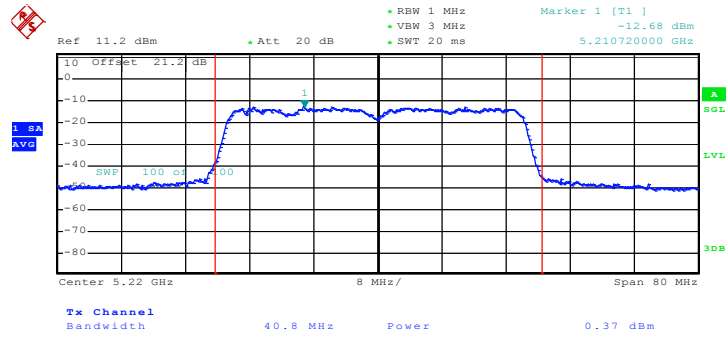
Mode 7 : Output Power Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C(C)



Date: 8.SEP.2010 18:56:28

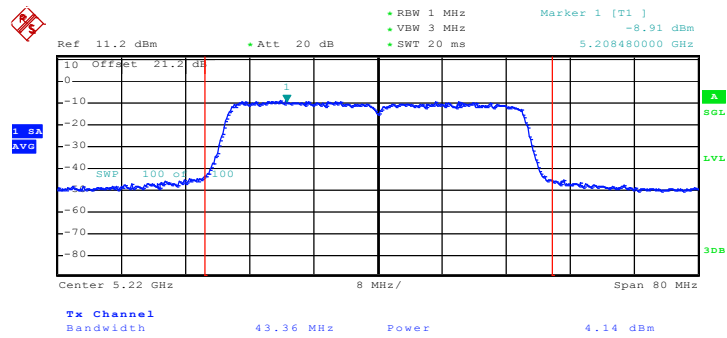


Mode 8 : Output Power Plot on 802.11n (BW 40MHz) Channel 44 - Chain A+B+C(A)



Date: 8.SEP.2010 19:02:03

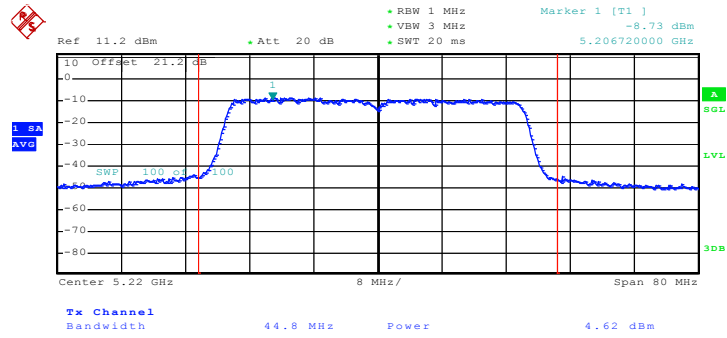
Mode 8 : Output Power Plot on 802.11n (BW 40MHz) Channel 44 - Chain A+B+C(B)



Date: 8.SEP.2010 19:00:20



Mode 8 : Output Power Plot on 802.11n (BW 40MHz) Channel 44 - Chain A+B+C(C)



Date: 8.SEP.2010 18:58:57

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.15–5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1MHz band. If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

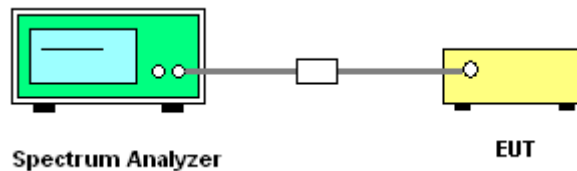
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

The transmitter output is connected to the spectrum analyzer. According to the method 3 of DA-02-2138, the resolution bandwidth is set to 1 MHz, video bandwidth is 3MHz, trace average 100 traces in power averaging mode, and sample detection is used, and the analyzer is set for video averaging.

3.3.4 Test Setup



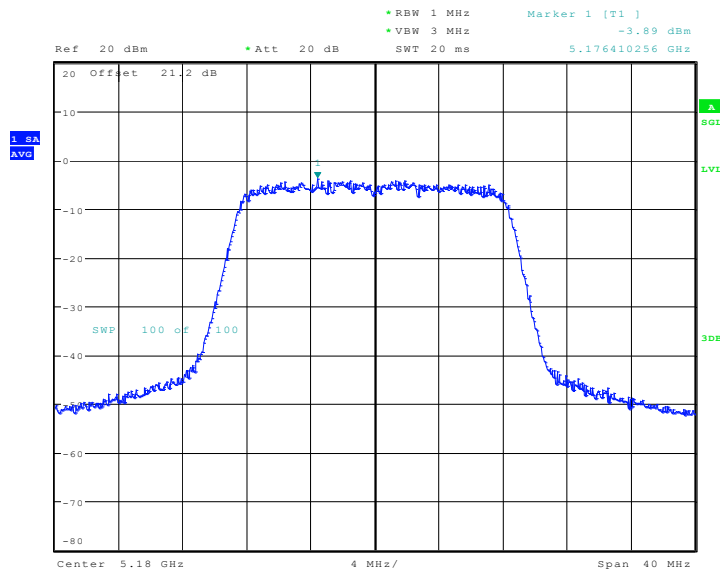


3.3.5 Test Result of Power Spectral Density

Test Mode :	Mode 1, 2, 3	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
		Chain A		
36	5180	-3.89	-3.5	Pass
40	5200	-3.73	-3.5	Pass
44	5220	-3.91	-3.5	Pass

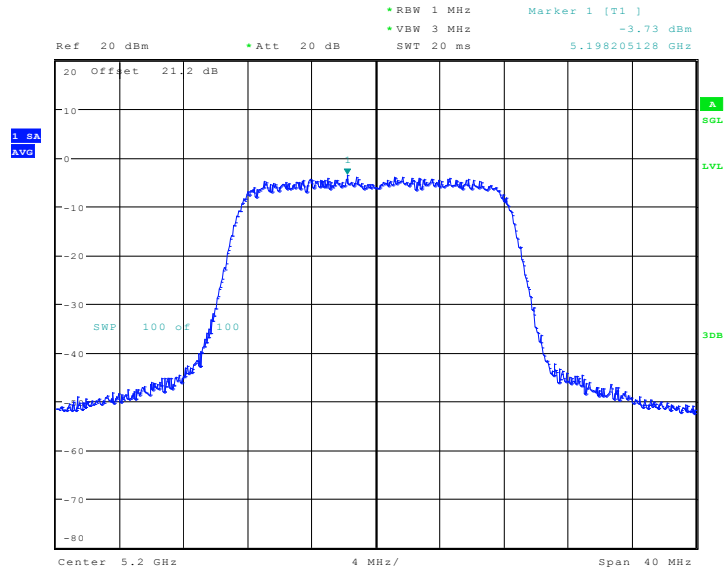
Mode 1 : PSD Plot on 802.11a Channel 36 - Chain A



Date: 14.AUG.2010 01:18:16

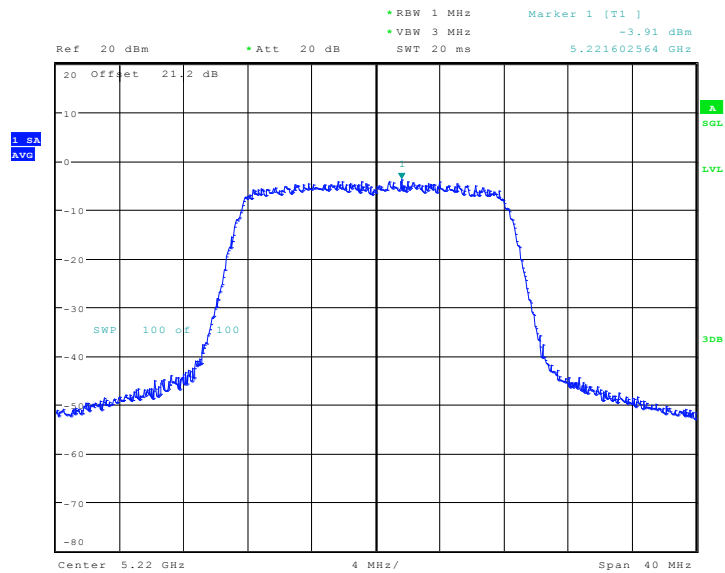


Mode 2 : PSD Plot on 802.11a Channel 40 - Chain A



Date: 14.AUG.2010 01:18:55

Mode 3 : PSD Plot on 802.11a Channel 44 - Chain A



Date: 14.AUG.2010 01:19:44

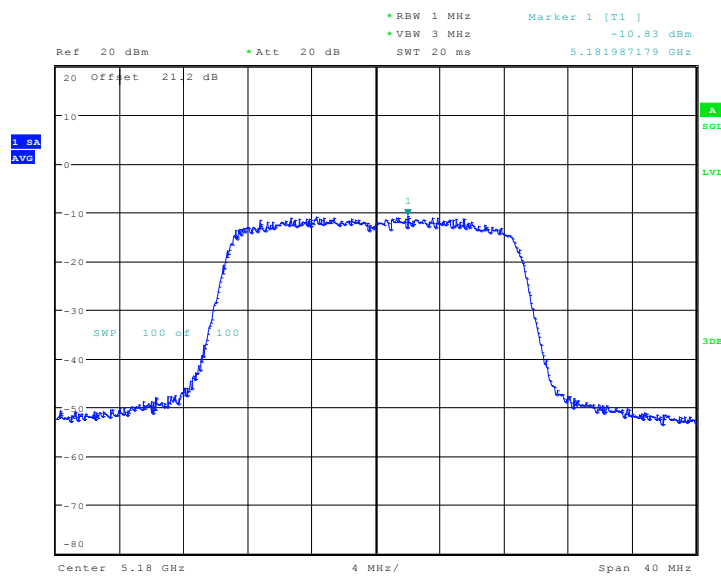


Test Mode :	Mode 4, 5, 6	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 20MHz, 3Tx) Measured PSD (dBm)				Max. Limits (dBm)	Pass/Fail
		Chain A+B+C(A)	Chain A+B+C(B)	Chain A+B+C(C)	Chain A+B+C		
36	5180	-10.83	-7.52	-7.35	-3.53	-3.5	Pass
40	5200	-10.98	-8.16	-7.12	-3.70	-3.5	Pass
44	5220	-11.34	-8.39	-6.58	-3.58	-3.5	Pass

Note: Chain A+B+C was tested by combiner, and the chain A, B and C was tested individually and calculated with the formula of $10 \cdot \text{LOG} (10^{\text{chain A}/10} + 10^{\text{chain B}/10} + 10^{\text{chain C}/10})$.

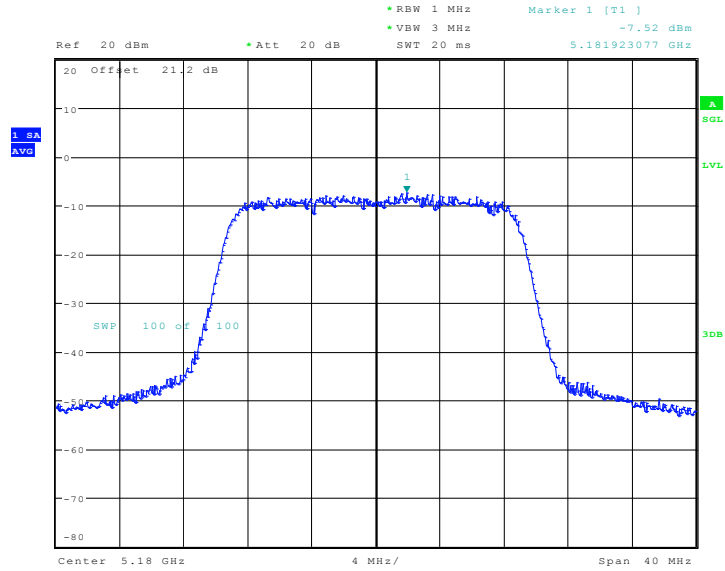
Mode 4 : PSD Plot on 802.11n (BW 20MHz) Channel 36 - Chain A+B+C(A)



Date: 14.AUG.2010 01:06:54

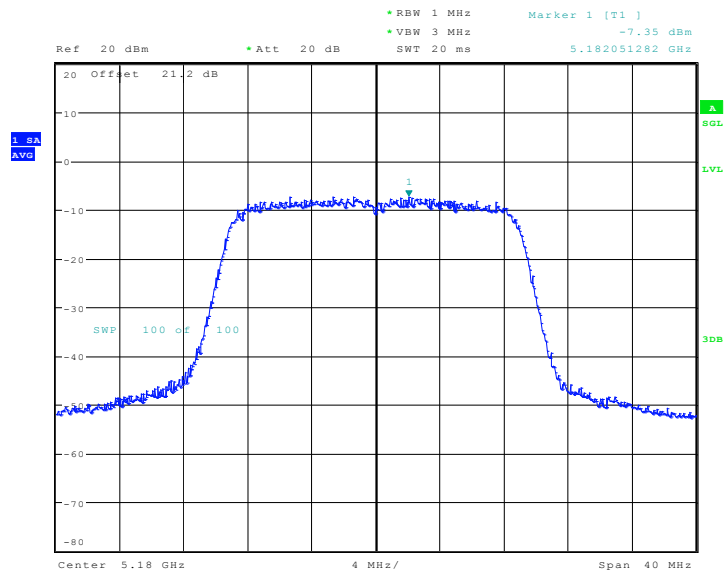


Mode 4 : PSD Plot on 802.11n (BW 20MHz) Channel 36 - Chain A+B+C(B)



Date: 14.AUG.2010 01:08:52

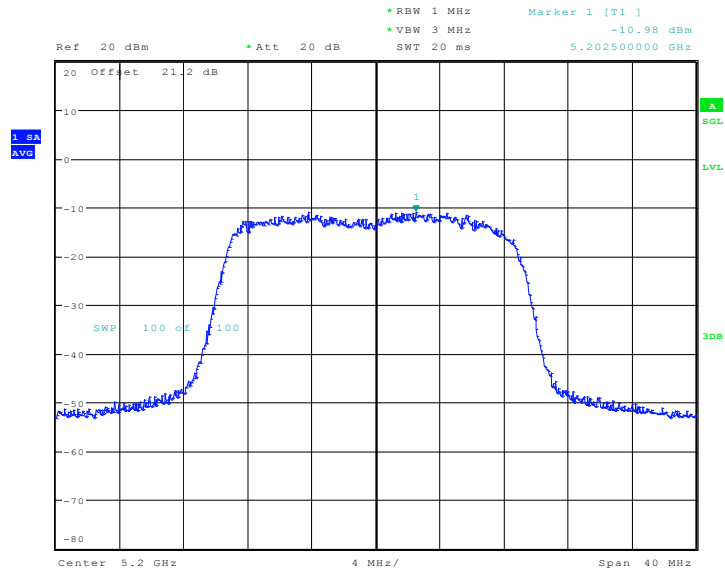
Mode 4 : PSD Plot on 802.11n (BW 20MHz) Channel 36 - Chain A+B+C(C)



Date: 14.AUG.2010 01:12:16

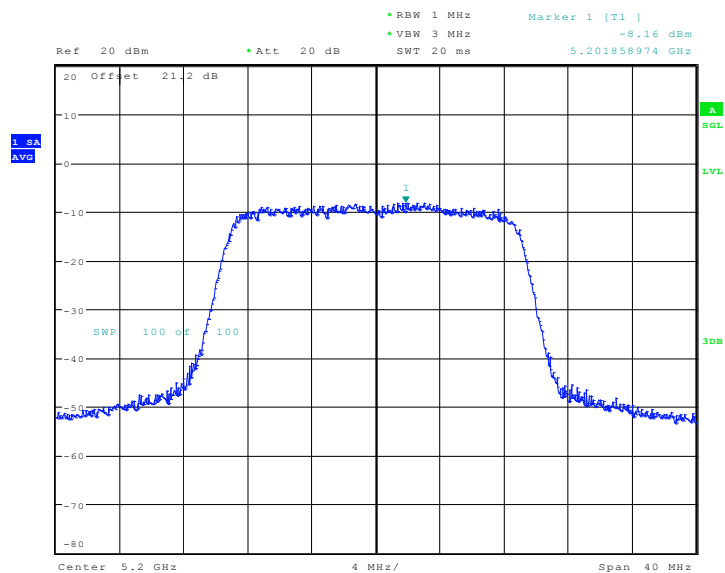


Mode 5 : PSD Plot on 802.11n (BW 20MHz) Channel 40 - Chain A+B+C(A)



Date: 14.AUG.2010 01:06:22

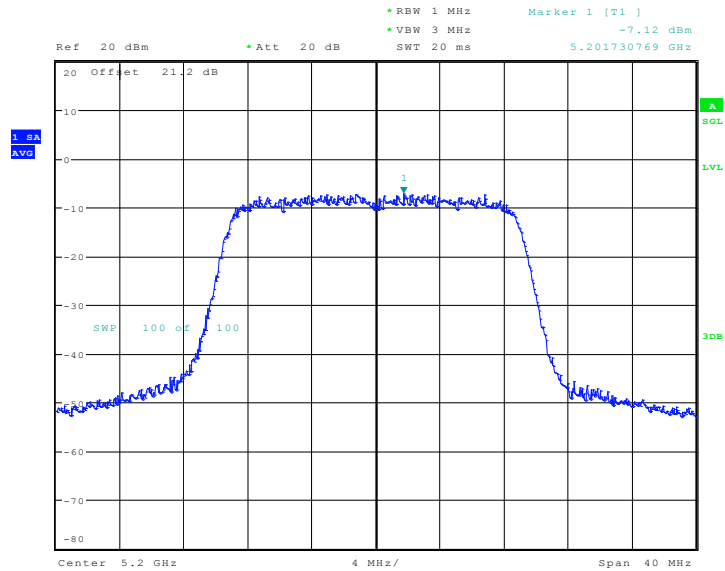
Mode 5 : PSD Plot on 802.11n (BW 20MHz) Channel 40 - Chain A+B+C(B)



Date: 14.AUG.2010 01:09:26

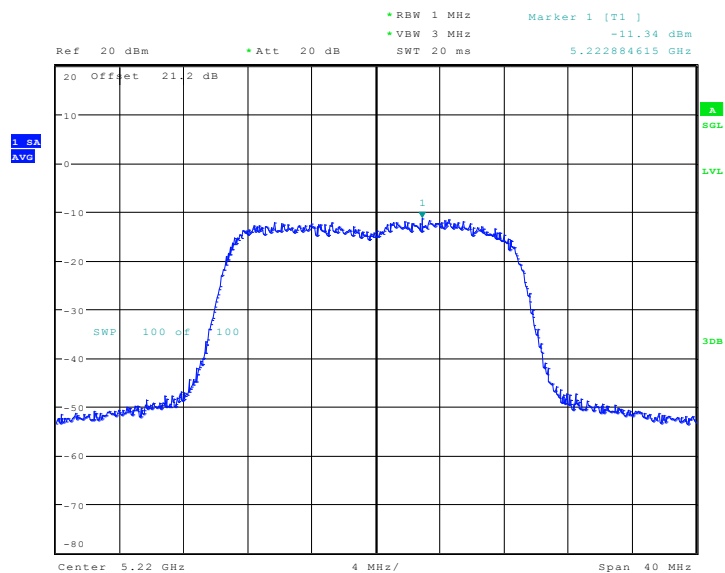


Mode 5 : PSD Plot on 802.11n (BW 20MHz) Channel 40 - Chain A+B+C(C)



Date: 14.AUG.2010 01:11:42

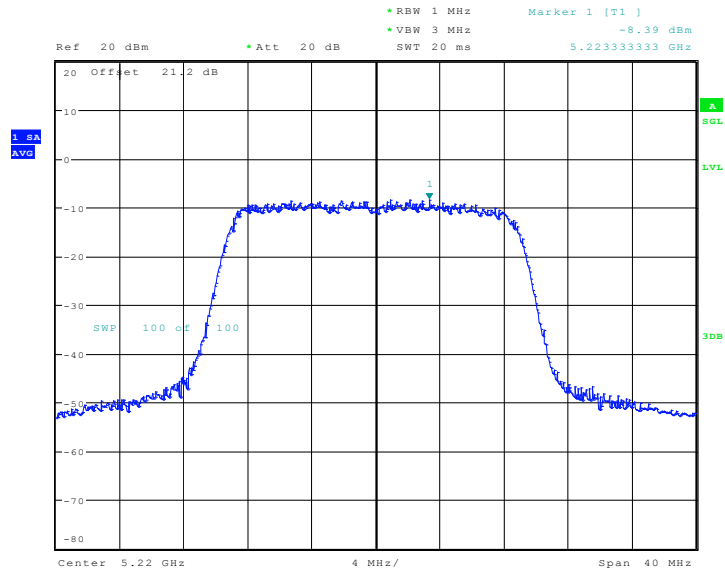
Mode 6 : PSD Plot on 802.11n (BW 20MHz) Channel 44 - Chain A+B+C(A)



Date: 14.AUG.2010 01:05:54

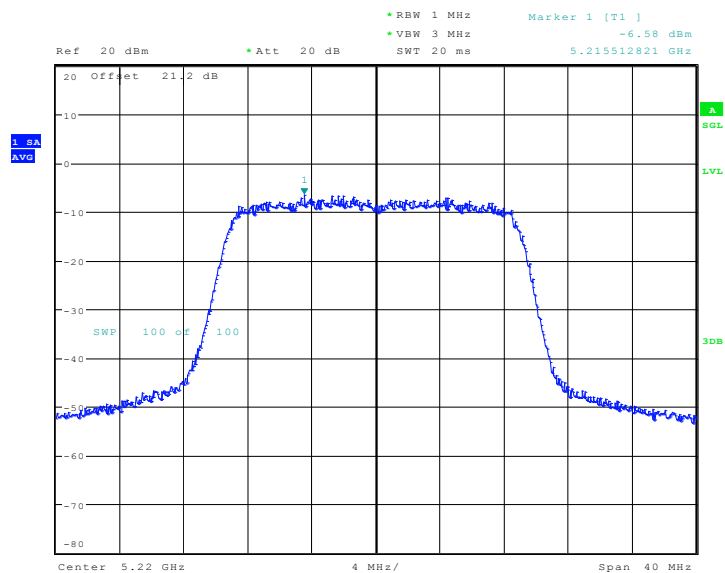


Mode 6 : PSD Plot on 802.11n (BW 20MHz) Channel 44 - Chain A+B+C(B)



Date: 14.AUG.2010 01:10:06

Mode 6 : PSD Plot on 802.11n (BW 20MHz) Channel 44 - Chain A+B+C(C)



Date: 14.AUG.2010 01:11:11

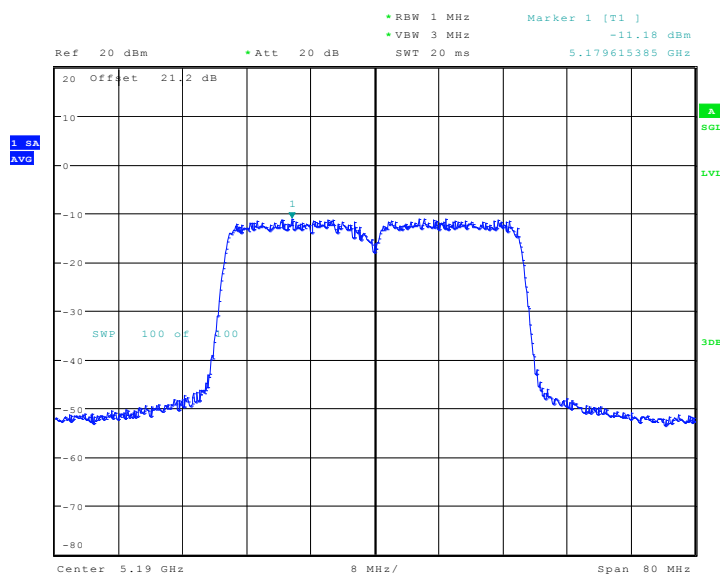


Test Mode :	Mode 7, 8	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 40MHz, 3Tx) Measured PSD (dBm)				Max. Limits (dBm)	Pass/Fail
		Chain A+B+C(A)	Chain A+B+C(B)	Chain A+B+C(C)	Chain A+B+C		
38	5190	-11.18	-7.86	-7.82	-3.92	-3.5	Pass
44	5220	-11.03	-8.41	-7.48	-3.96	-3.5	Pass

Note: Chain A+B+C was tested by combiner, and the chain A, B and C was tested individually and calculated with the formula of $10 \cdot \text{LOG} (10^{\text{chain A}/10} + 10^{\text{chain B}/10} + 10^{\text{chain C}/10})$.

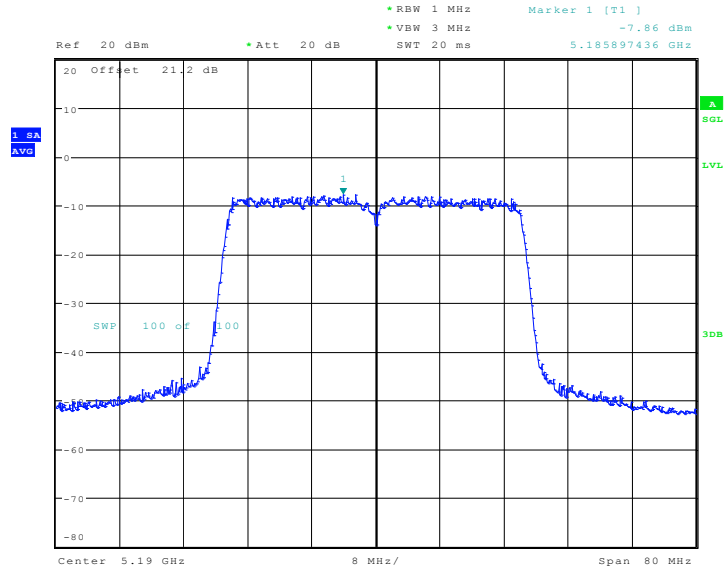
Mode 7 : PSD Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C(A)



Date: 14.AUG.2010 00:28:58

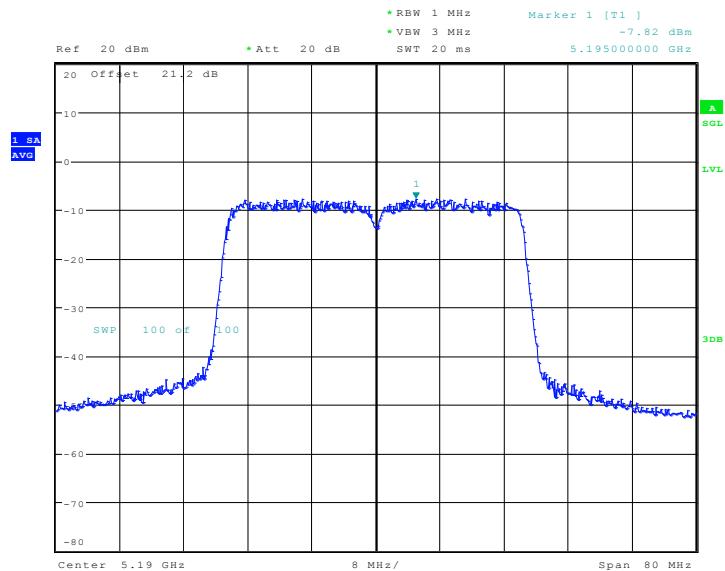


Mode 7 : PSD Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C(B)



Date: 14.AUG.2010 00:26:24

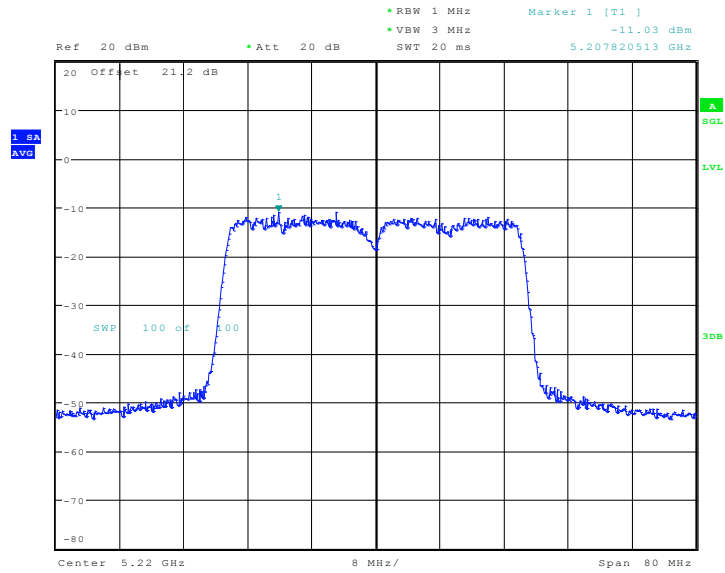
Mode 7 : PSD Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C(C)



Date: 14.AUG.2010 00:30:44

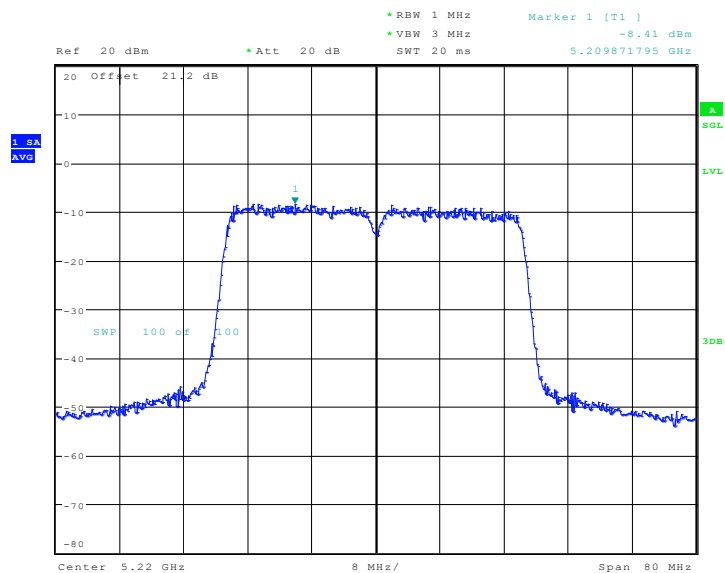


Mode 8 : PSD Plot on 802.11n (BW 40MHz) Channel 44 - Chain A+B+C(A)



Date: 14.AUG.2010 00:40:50

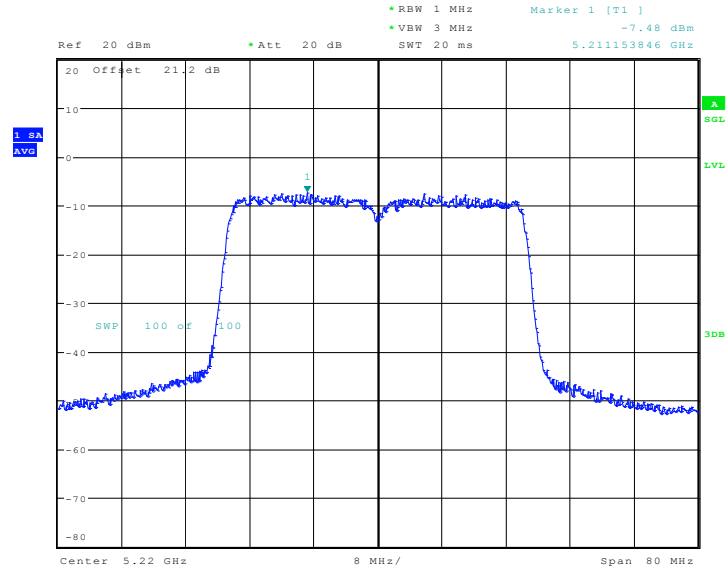
Mode 8 : PSD Plot on 802.11n (BW 40MHz) Channel 44 - Chain A+B+C(B)



Date: 14.AUG.2010 00:38:50



Mode 8 : PSD Plot on 802.11n (BW 40MHz) Channel 44 - Chain A+B+C(C)



Date: 14.AUG.2010 00:37:05

3.4 Band Edges Measurement

3.4.1 Limit of Band Edges

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band.
- (2) The provisions of Section 15.205 Restricted bands of operation of this part apply to intentional radiators operating under this section.

3.4.2 Measuring Instruments

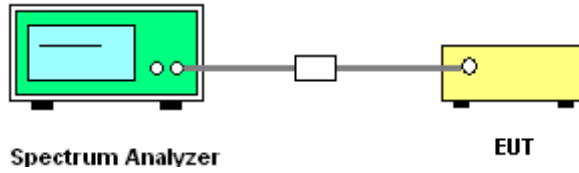
See list of measuring instruments of this test report.

3.4.3 Test Procedures

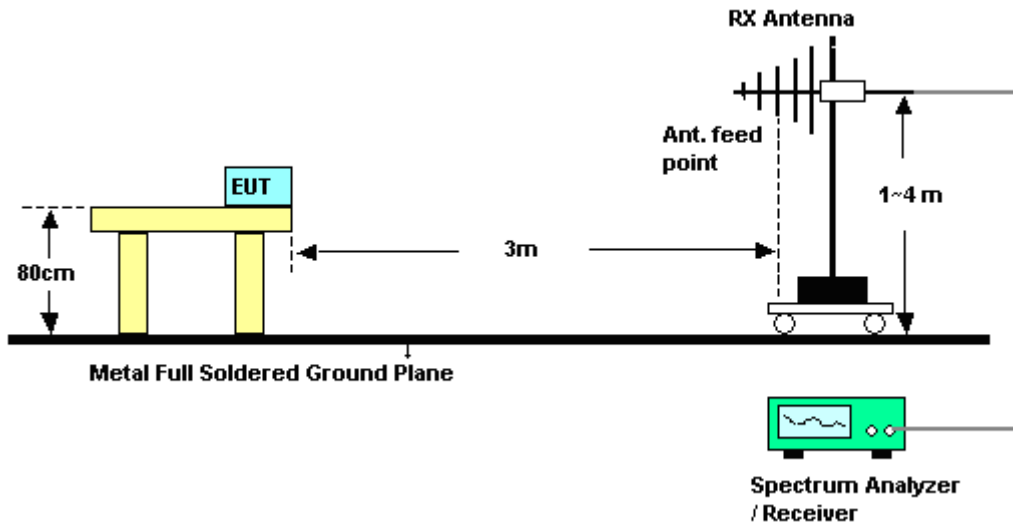
1. Set both RBW and VBW of spectrum analyzer to 1MHz with convenient frequency span including 1MHz bandwidth from band edge.
2. The band edges was measured and recorded.

3.4.4 Test Setup

<Conducted>



<Radiated>





3.4.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	21~23°C
Test Band :	802.11a	Relative Humidity :	48~50%
Test Channel :	36	Test Engineer :	Elvis Chen and 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
5150	57.42	-16.58	74	48.31	34.35	9.41	34.65	136	0	Peak
5150	45.11	-8.89	54	36	34.35	9.41	34.65	136	0	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
5150	50.78	-23.22	74	41.67	34.35	9.41	34.65	100	0	Peak
5150	39.24	-14.76	54	30.13	34.35	9.41	34.65	100	0	Average

Test Mode :	Mode 3	Temperature :	21~23°C
Test Band :	802.11a	Relative Humidity :	48~50%
Test Channel :	44	Test Engineer :	Elvis Chen and 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
5350	52.46	-21.54	74	43.57	34.55	9.74	35.4	148	4	Peak
5350	40.9	-13.1	54	32.01	34.55	9.74	35.4	148	4	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
5350	50.4	-23.6	74	41.51	34.55	9.74	35.4	100	12	Peak
5350	38.8	-15.2	54	29.91	34.55	9.74	35.4	100	12	Average



Test Mode :	Mode 4	Temperature :	21~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~50%
Test Channel :	36	Test Engineer :	Elvis Chen and 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
5150	56.8	-17.2	74	47.69	34.35	9.41	34.65	148	0	Peak
5150	44.67	-9.33	54	35.56	34.35	9.41	34.65	148	0	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
5150	53.08	-20.92	74	43.97	34.35	9.41	34.65	136	0	Peak
5150	41.55	-12.45	54	32.44	34.35	9.41	34.65	136	0	Average

Test Mode :	Mode 6	Temperature :	21~23°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~50%
Test Channel :	44	Test Engineer :	Elvis Chen and 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
5350	52.72	-21.28	74	43.83	34.55	9.74	35.4	147	0	Peak
5350	41.38	-12.62	54	32.49	34.55	9.74	35.4	147	0	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
5350	52.69	-21.31	74	43.8	34.55	9.74	35.4	136	357	Peak
5350	40.28	-13.72	54	31.39	34.55	9.74	35.4	136	357	Average



Test Mode :	Mode 7	Temperature :	21~23°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~50%
Test Channel :	38	Test Engineer :	Elvis Chen and 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
5150	72.41	-1.59	74	63.3	34.35	9.41	34.65	139	0	Peak
5150	51.46	-2.54	54	42.35	34.35	9.41	34.65	139	0	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
5150	70.2	-3.8	74	61.09	34.35	9.41	34.65	130	357	Peak
5150	51.82	-2.18	54	42.71	34.35	9.41	34.65	130	357	Average

Test Mode :	Mode 8	Temperature :	21~23°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~50%
Test Channel :	44	Test Engineer :	Elvis Chen and 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
5350	54.32	-19.68	74	45.43	34.55	9.74	35.4	146	0	Peak
5350	42.5	-11.5	54	33.61	34.55	9.74	35.4	146	0	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
5350	53.14	-20.86	74	44.25	34.55	9.74	35.4	134	358	Peak
5350	41.97	-12.03	54	33.08	34.55	9.74	35.4	134	358	Average



Test Mode :	Mode 9	Temperature :	21~23°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~50%
Test Channel :	38	Test Engineer :	Elvis Chen and 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
5150	72.93	-1.07	74	63.82	34.35	9.41	34.65	117	0	Peak
5150	51.9	-2.1	54	42.79	34.35	9.41	34.65	117	0	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
5150	72.26	-1.74	74	63.15	34.35	9.41	34.65	121	355	Peak
5150	52.44	-1.56	54	43.33	34.35	9.41	34.65	121	355	Average

Test Mode :	Mode 10	Temperature :	21~23°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~50%
Test Channel :	38	Test Engineer :	Elvis Chen and 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
5150	68.08	-5.92	74	58.97	34.35	9.41	34.65	100	0	Peak
5150	52.86	-1.14	54	43.75	34.35	9.41	34.65	100	0	Average

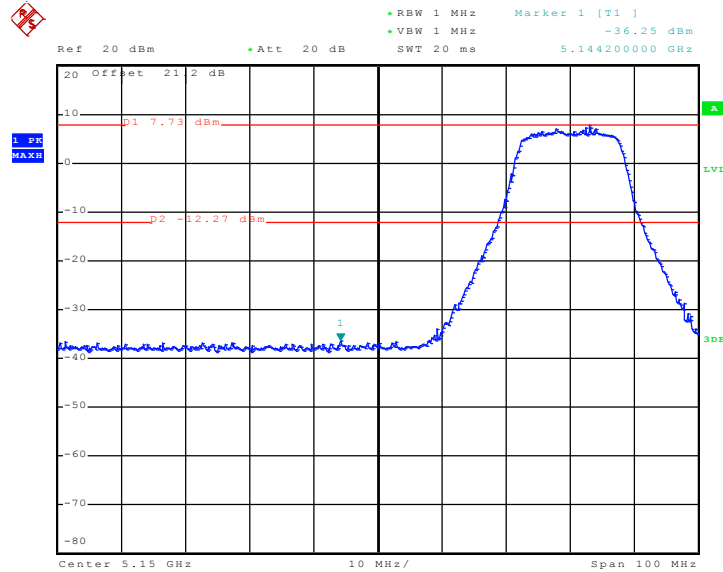
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	67.62	-6.38	74	58.51	34.35	9.41	34.65	100	352	Peak
5150	51.74	-2.26	54	42.63	34.35	9.41	34.65	100	352	Average



3.4.6 Test Result of Conducted Band Edges

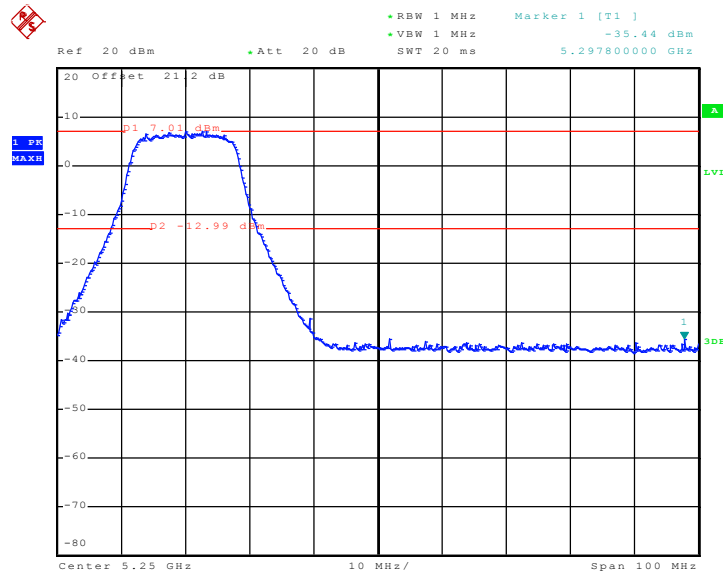
Test Mode :	Mode 1 and 3	Temperature :	19~21°C
Test Band :	802.11a	Relative Humidity :	44~46%
Test Channel :	36 and 44	Test Engineer :	Ken Hsu

Mode 1 : Low Band Edge Plot on Channel 36 - Chain A



Date: 17.AUG.2010 15:09:06

Mode 3 : High Band Edge Plot on Channel 44 - Chain A

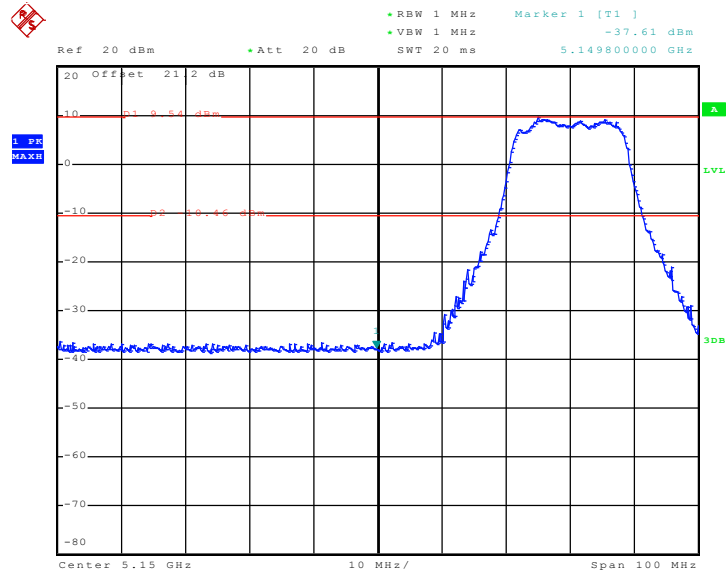


Date: 17.AUG.2010 15:11:15



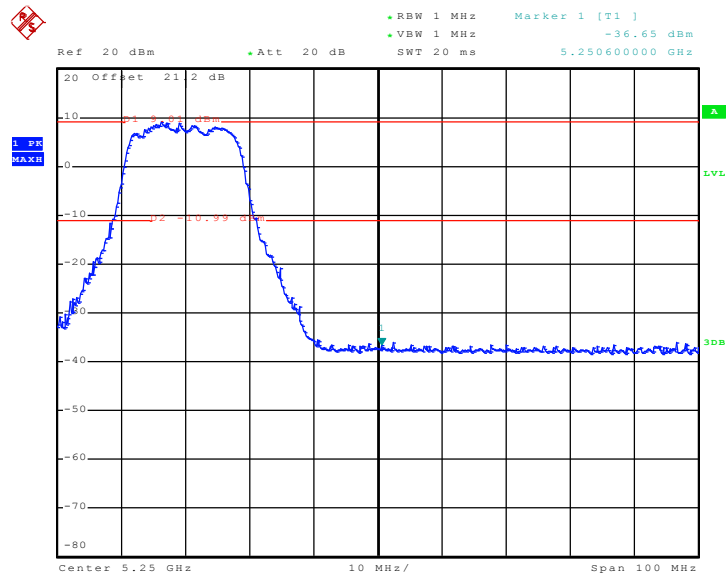
Test Mode :	Mode 4 and 6	Temperature :	19~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	44~46%
Test Channel :	36 and 44	Test Engineer :	Ken Hsu

Mode 4 : Low Band Edge Plot on Channel 36 - Chain A+B+C



Date: 17.AUG.2010 21:13:34

Mode 6 : High Band Edge Plot on Channel 44 - Chain A+B+C

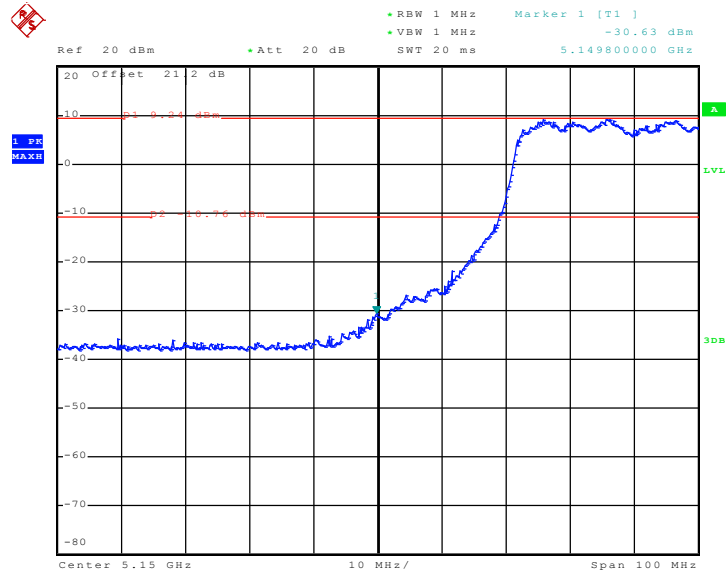


Date: 17.AUG.2010 21:11:31



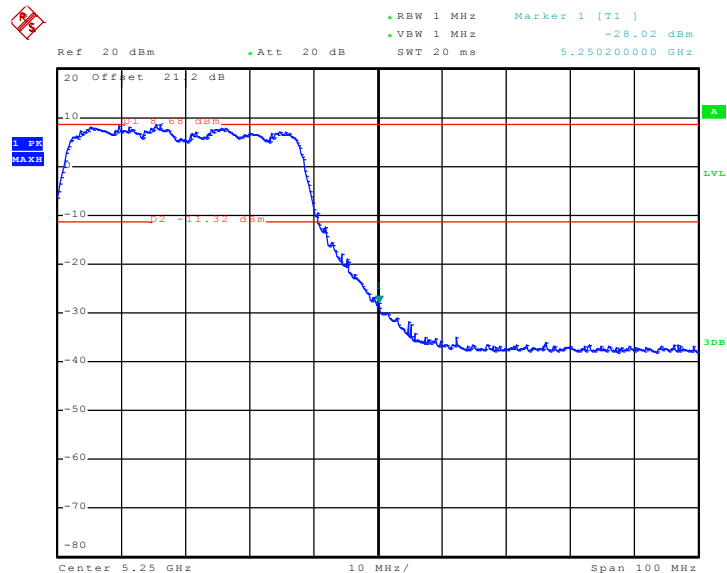
Test Mode :	Mode 7 and 8	Temperature :	19~21°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	44~46%
Test Channel :	38 and 44	Test Engineer :	Ken Hsu

Mode 7 : Low Band Edge Plot on Channel 38 - Chain A+B+C



Date: 18.AUG.2010 00:51:27

Mode 8 : High Band Edge Plot on Channel 44 - Chain A+B+C



Date: 18.AUG.2010 00:48:41

3.5 Spurious Emission

3.5.1 Limit of Spurious Emission Measurement

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

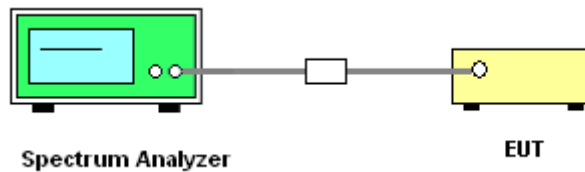
3.5.2 Measuring Instruments

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 = VBW = 1 MHz, Video bandwidth (VBW), scan from 30 MHz to 40 GHz.

3.5.4 Test Setup



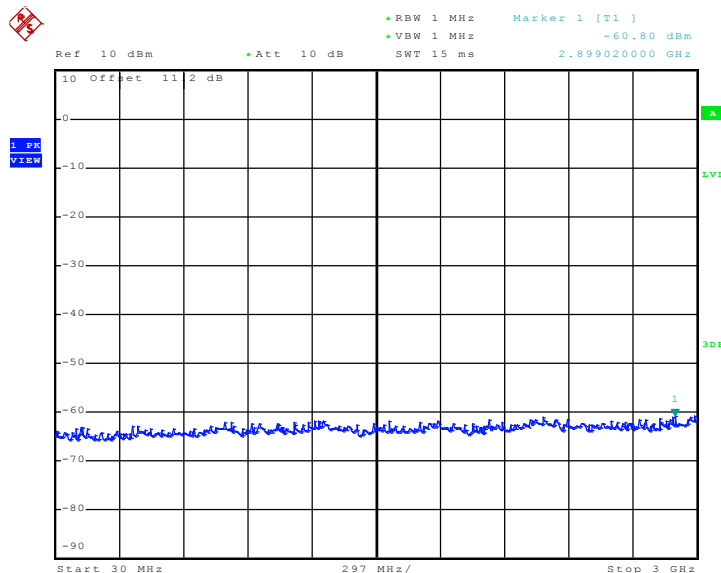


3.5.5 Test Result

Test Mode :	Mode 1, 2, 3	Temperature :	19~21°C
Test Band :	802.11a	Relative Humidity :	44~46%
Test Channel :	36, 40, 44	Test Engineer :	Ken Hsu

Channel	Frequency (MHz)	Chain	Frequency (MHz)	Level (dBm)	Antenna Gain (dBi)	EIRP Test Result (dBm)	Limit (dBm)
36	5180	A	2899.02	-60.8	13.50	-47.30	-27
			6900.8	-50.21	13.50	-36.71	
			39894.4	-41.92	13.50	-28.42	
40	5200	A	1954.56	-57.27	13.50	-43.77	-27
			5692.4	-49.49	13.50	-35.99	
			39894.4	-41.67	13.50	-28.17	
44	5220	A	1954.56	-60.34	13.50	-46.84	-27
			5120	-50.36	13.50	-36.86	
			40000	-41.24	13.50	-27.74	

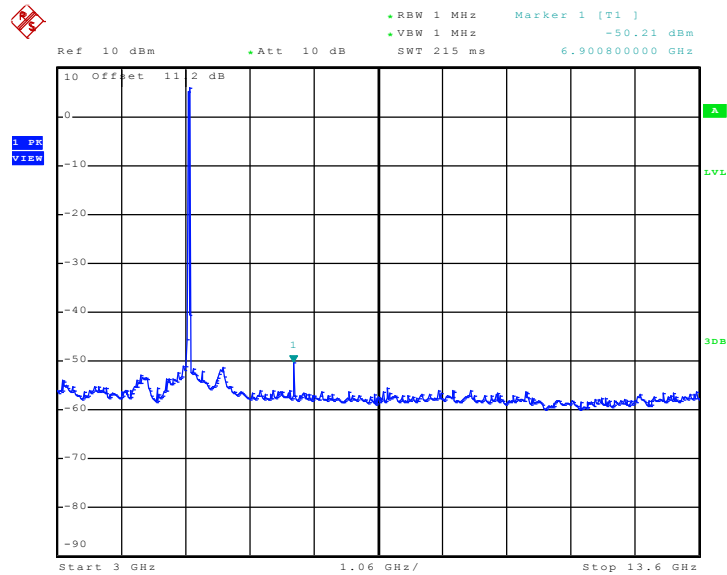
Mode 1: Conducted Spurious Emission Plot between 30 MHz ~ 3 GHz - Chain A



Date: 17.AUG.2010 18:33:36

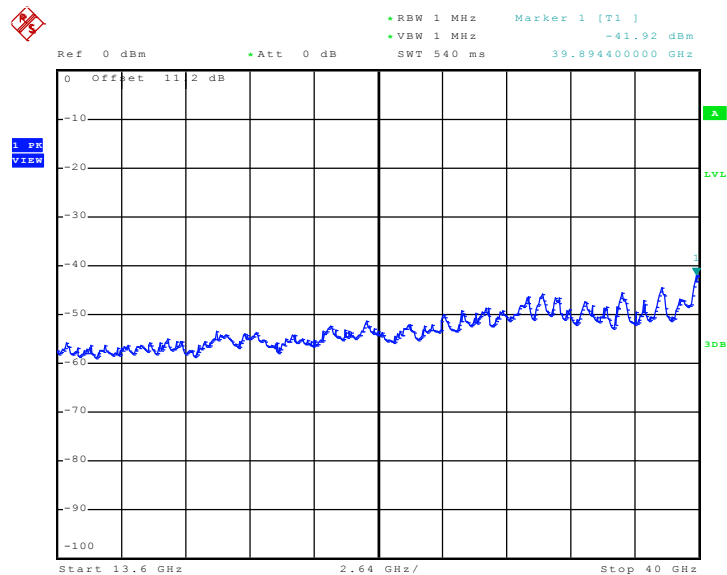


Mode 1: Conducted Spurious Emission Plot between
3 GHz ~ 13.6 GHz - Chain A



Date: 17.AUG.2010 18:33:48

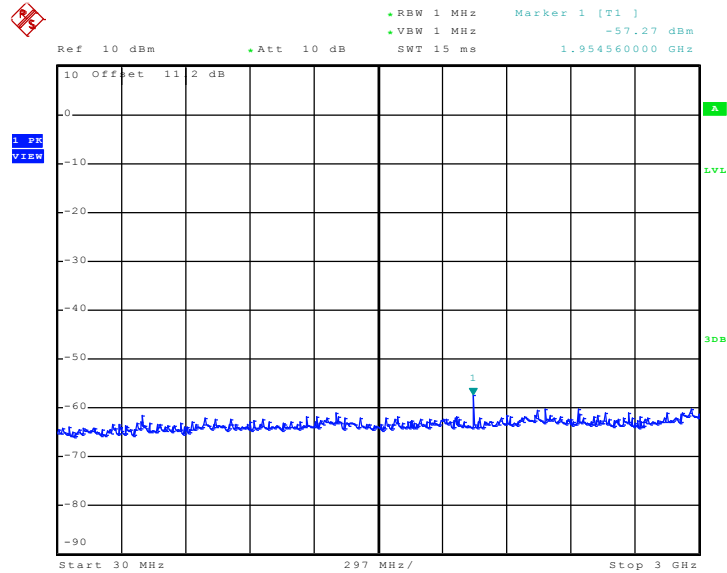
Mode 1: Conducted Spurious Emission Plot between
13.6 GHz ~ 40 GHz - Chain A



Date: 17.AUG.2010 19:19:37

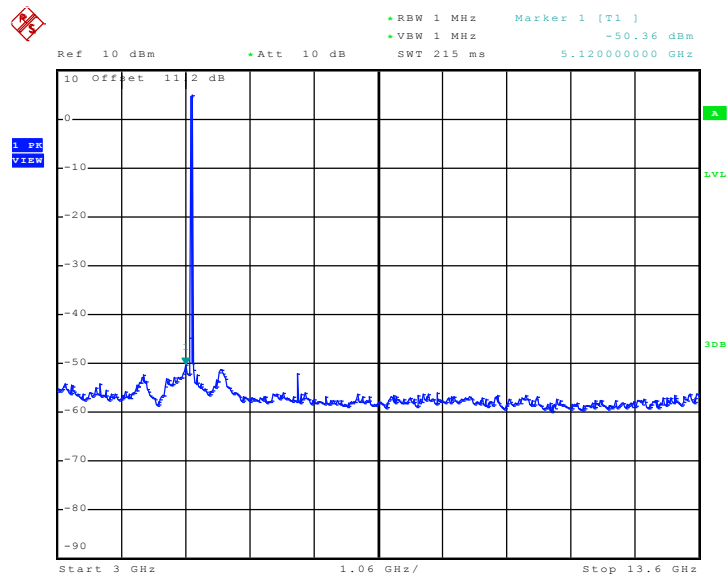


Mode 2: Conducted Spurious Emission Plot between
30 MHz ~ 3 GHz - Chain A



Date: 17.AUG.2010 18:34:38

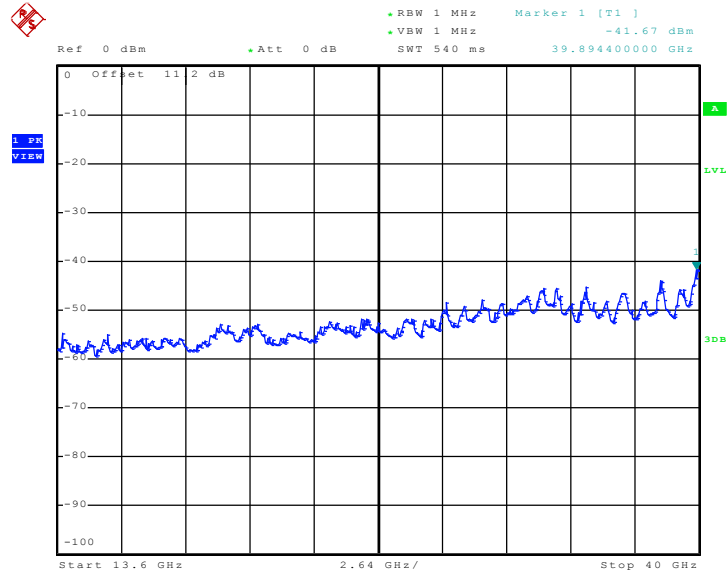
Mode 2: Conducted Spurious Emission Plot between
3 GHz ~ 13.6 GHz - Chain A



Date: 17.AUG.2010 18:35:41

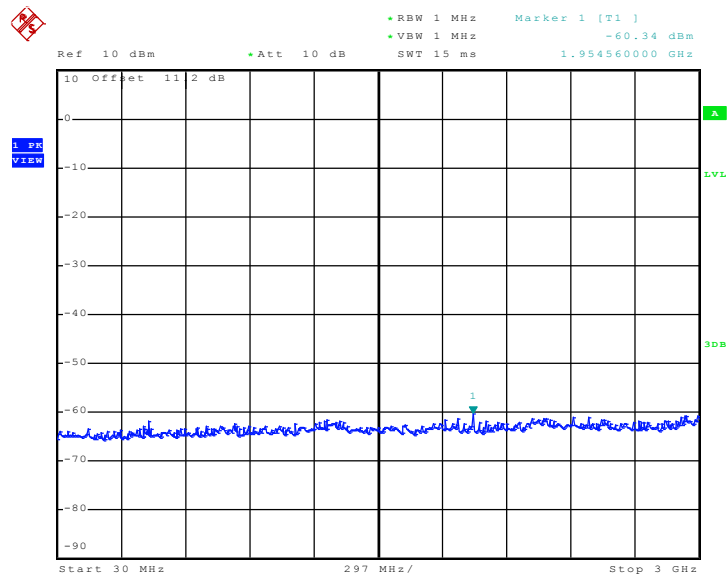


Mode 2: Conducted Spurious Emission Plot between
13.6 GHz ~ 40 GHz - Chain A



Date: 17.AUG.2010 18:35:02

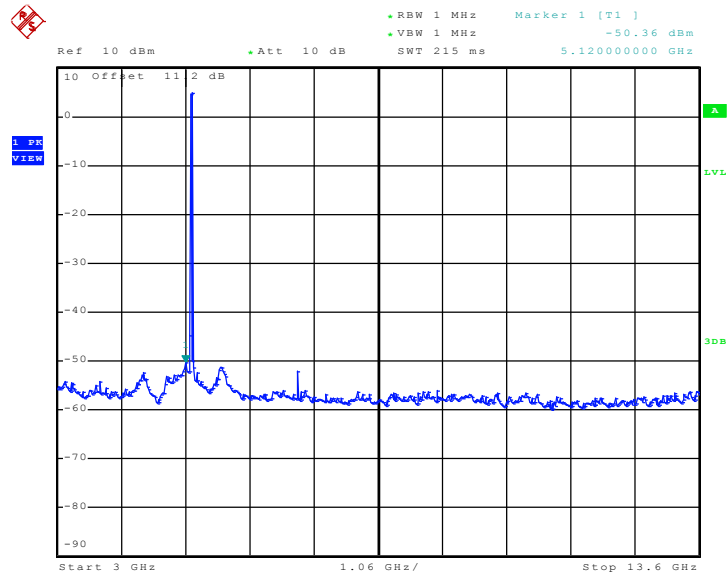
Mode 3: Conducted Spurious Emission Plot between
30 MHz ~ 3 GHz - Chain A



Date: 17.AUG.2010 18:35:29

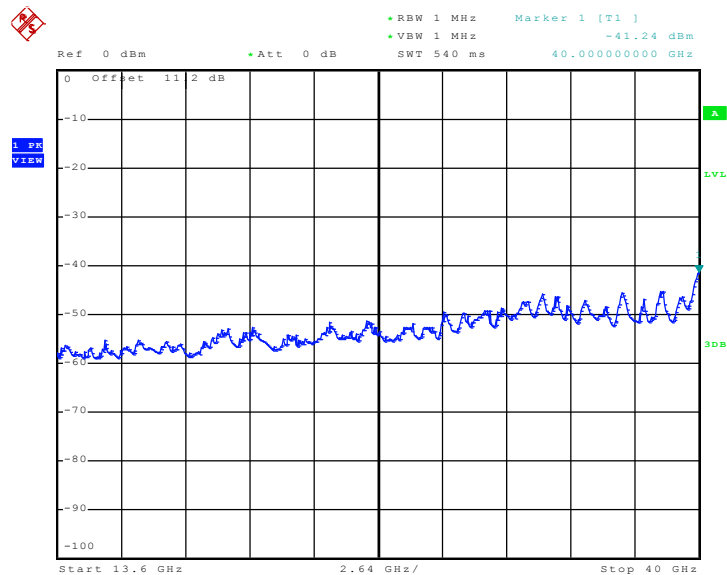


**Mode 3: Conducted Spurious Emission Plot between
3 GHz ~ 13.6 GHz - Chain A**



Date: 17.AUG.2010 18:35:41

**Mode 3: Conducted Spurious Emission Plot between
13.6 GHz ~ 40 GHz - Chain A**



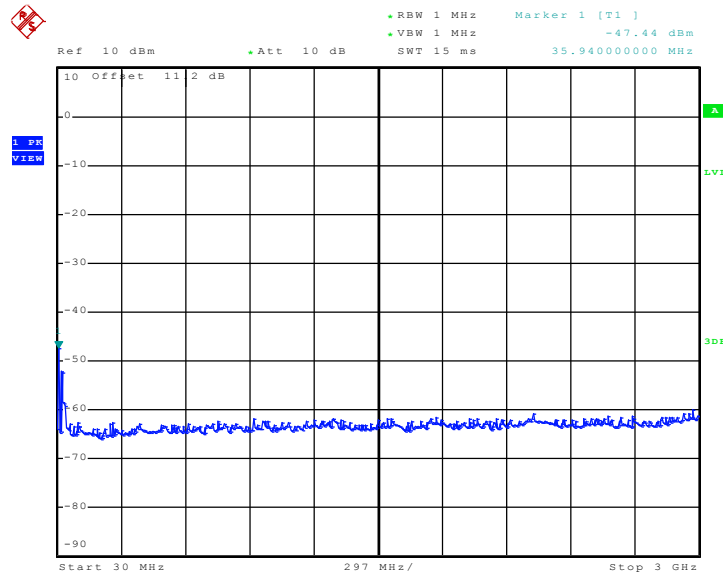
Date: 17.AUG.2010 18:35:53



Test Mode :	Mode 4, 5, 6	Temperature :	19~21°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	44~46%
Test Channel :	36, 40, 44	Test Engineer :	Ken Hsu

Channel	Frequency (MHz)	Chain	Frequency (MHz)	Level (dBm)	Antenna Gain (dBi)	EIRP Test Result (dBm)	Limit (dBm)
36	5180	A+B+C	35.94	-47.44	13.50	-33.94	-27
			6900.8	-48.29	13.50	-34.79	
			40000	-43.06	13.50	-29.56	
40	5200	A+B+C	47.82	-50.85	13.50	-37.35	-27
			5692.4	-46.15	13.50	-32.65	
			40000	-41.06	13.50	-27.56	
44	5220	A+B+C	30	-48.32	13.50	-34.82	-27
			5586.4	-45.9	13.50	-32.4	
			40000	-41.18	13.50	-27.68	

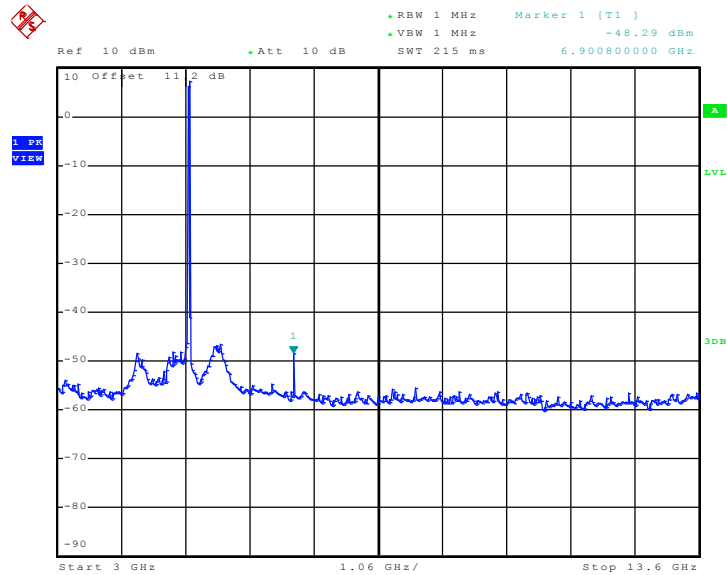
Mode 4: Conducted Spurious Emission Plot between 30 MHz ~ 3 GHz - Chain A+B+C



Date: 17.AUG.2010 22:48:30

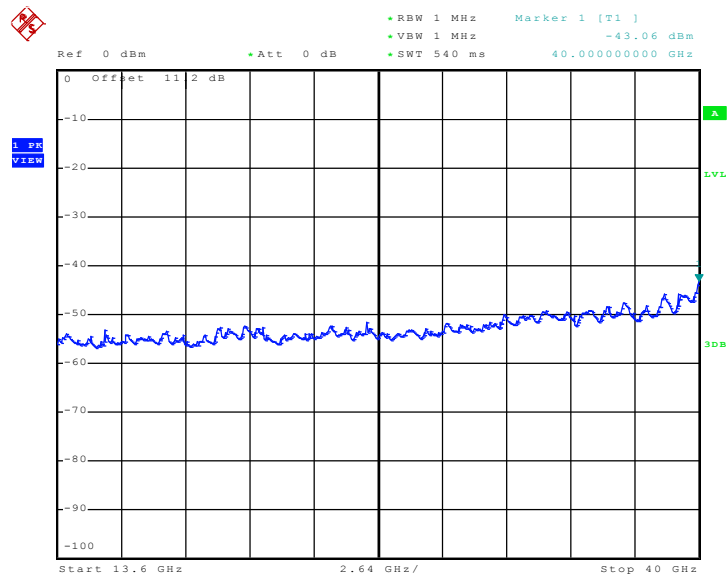


**Mode 4: Conducted Spurious Emission Plot between
3 GHz ~ 13.6 GHz - Chain A+B+C**



Date: 17.AUG.2010 23:03:29

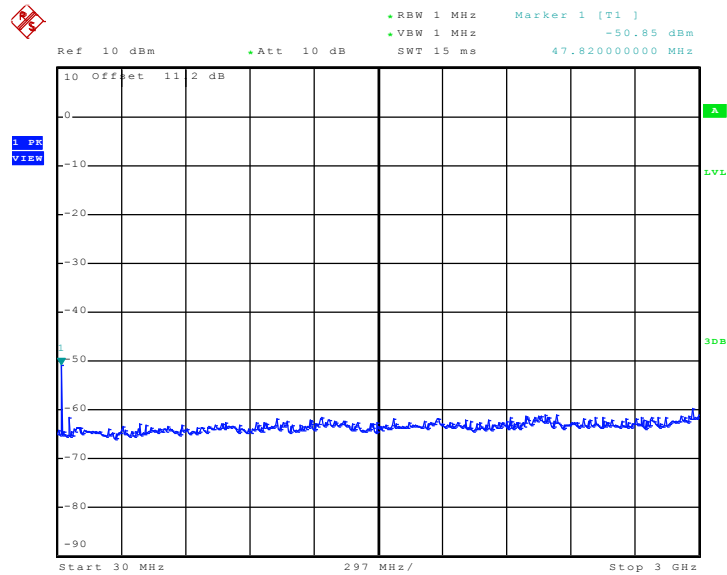
**Mode 4: Conducted Spurious Emission Plot between
13.6 GHz ~ 40 GHz - Chain A+B+C**



Date: 18.AUG.2010 08:16:32

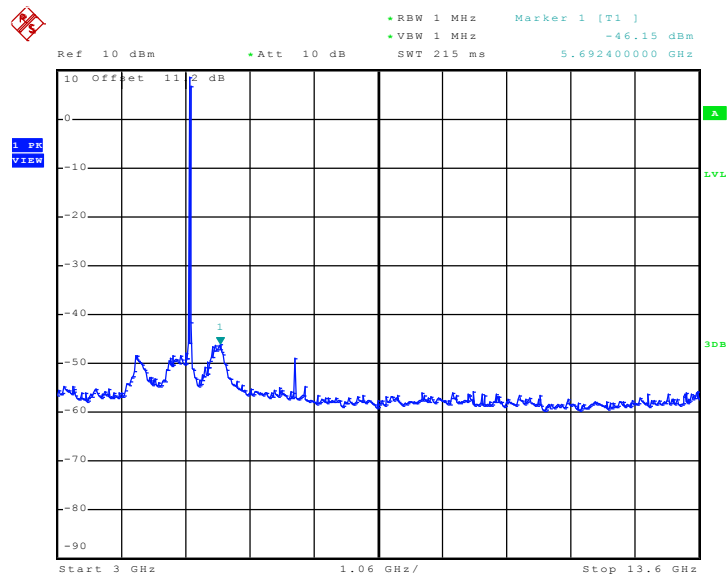


**Mode 5: Conducted Spurious Emission Plot between
30 MHz ~ 3 GHz - Chain A+B+C**



Date: 17.AUG.2010 22:49:28

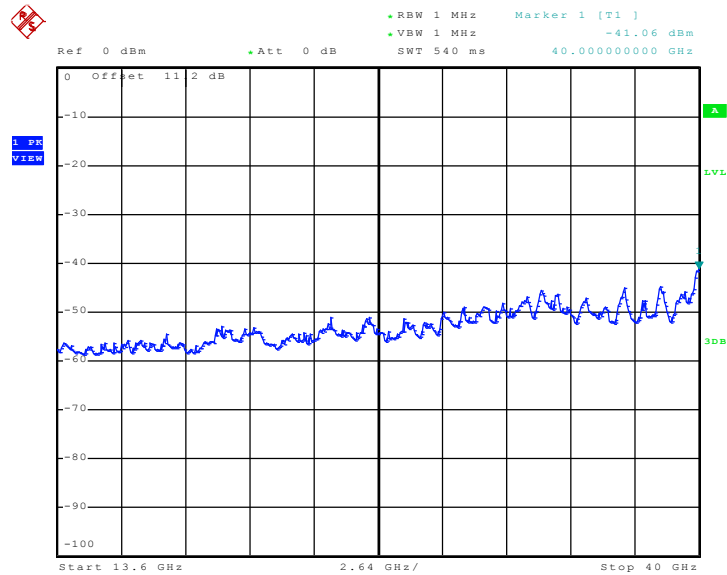
**Mode 5: Conducted Spurious Emission Plot between
3 GHz ~ 13.6 GHz - Chain A+B+C**



Date: 17.AUG.2010 22:49:40

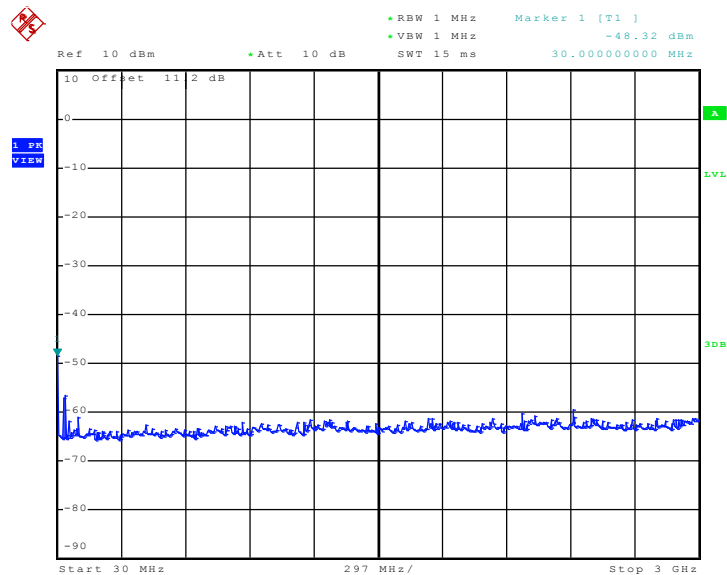


**Mode 5: Conducted Spurious Emission Plot between
13.6 GHz ~ 40 GHz - Chain A+B+C**



Date: 17.AUG.2010 22:49:52

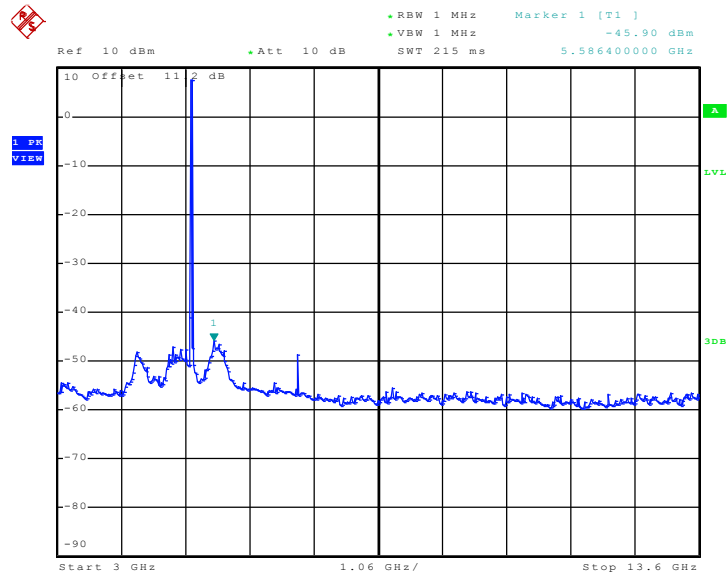
**Mode 6: Conducted Spurious Emission Plot between
30 MHz ~ 3 GHz - Chain A+B+C**



Date: 17.AUG.2010 22:50:16

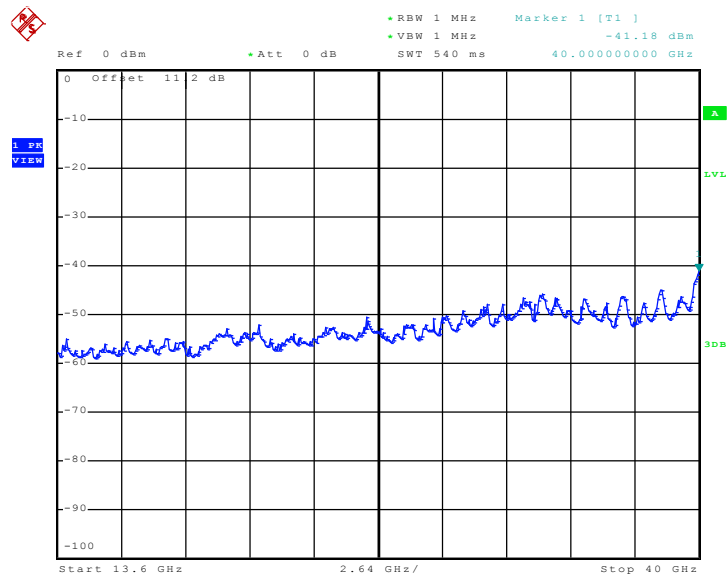


**Mode 6: Conducted Spurious Emission Plot between
3 GHz ~ 13.6 GHz - Chain A+B+C**



Date: 17.AUG.2010 22:50:28

**Mode 6: Conducted Spurious Emission Plot between
13.6 GHz ~ 40 GHz - Chain A+B+C**



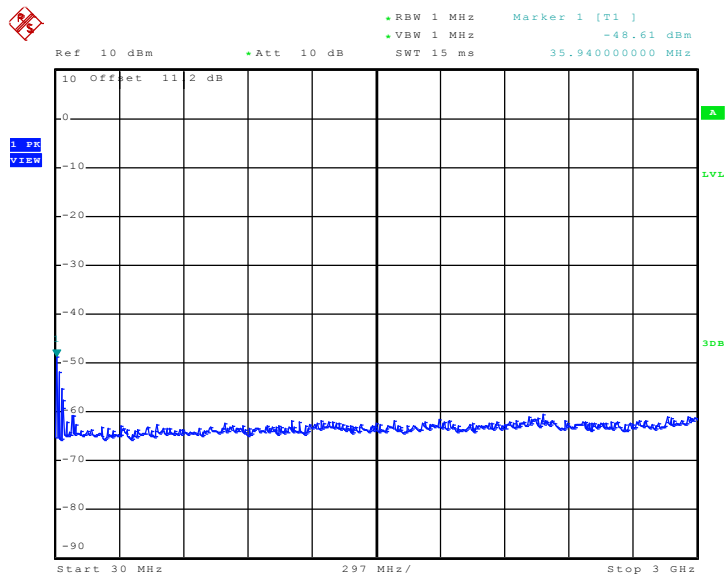
Date: 17.AUG.2010 22:50:39



Test Mode :	Mode 7, 8	Temperature :	19~21°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	44~46%
Test Channel :	38, 44	Test Engineer :	Ken Hsu

Channel	Frequency (MHz)	Chain	Frequency (MHz)	Level (dBm)	Antenna Gain (dBi)	EIRP Test Result (dBm)	Limit (dBm)
38	5190	A+B+C	35.94	-48.61	13.50	-35.11	-27
			5586.4	-40.67	13.50	-27.17	
			39947.2	-43.15	13.50	-29.65	
44	5220	A+B+C	30	-47.68	13.50	-34.18	-27
			5607.6	-41.62	13.50	-28.12	
			39894.4	-41.33	13.50	-27.83	

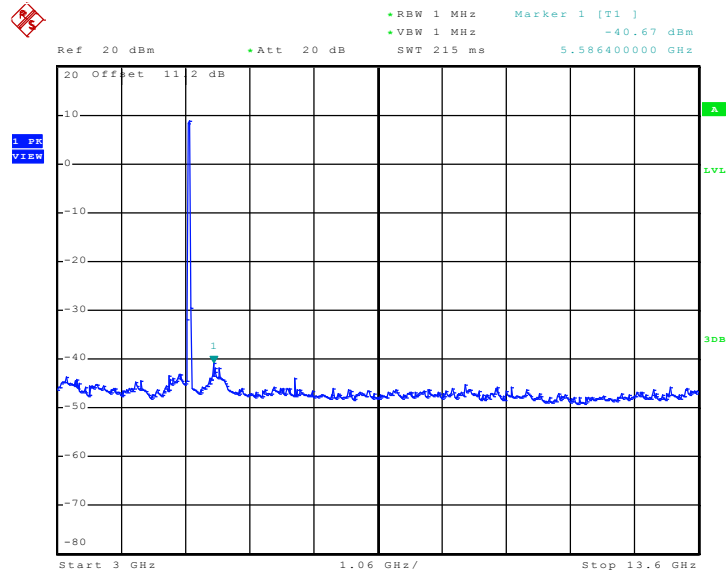
Mode 7: Conducted Spurious Emission Plot between 30 MHz ~ 3 GHz - Chain A+B+C



Date: 18.AUG.2010 01:08:59

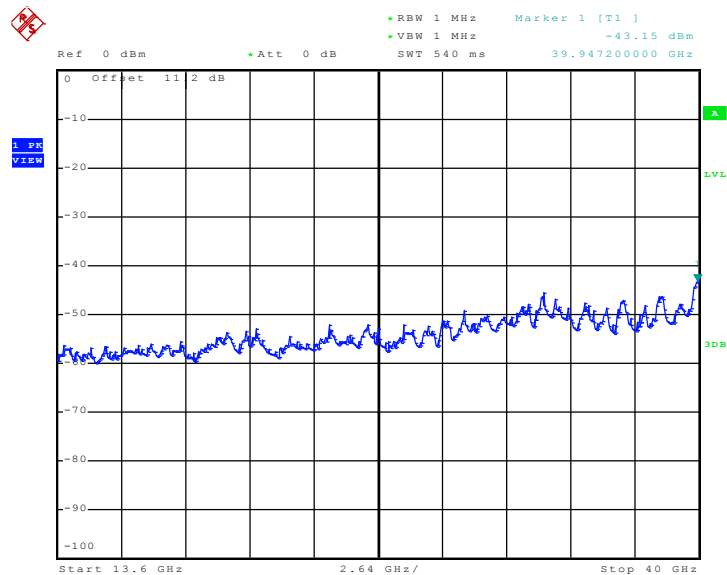


**Mode 7: Conducted Spurious Emission Plot between
3 GHz ~ 13.6 GHz - Chain A+B+C**



Date: 18.AUG.2010 01:53:39

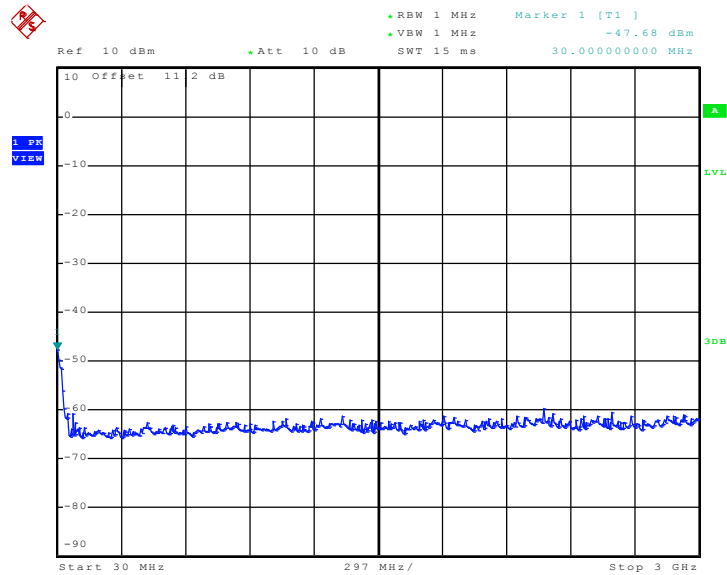
**Mode 7: Conducted Spurious Emission Plot between
13.6 GHz ~ 40 GHz - Chain A+B+C**



Date: 18.AUG.2010 01:58:17

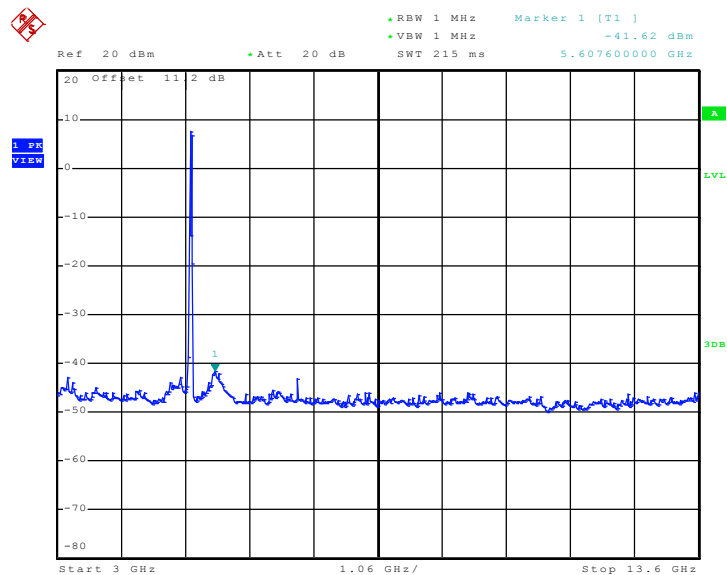


**Mode 8: Conducted Spurious Emission Plot between
30 MHz ~ 3 GHz - Chain A+B+C**



Date: 18.AUG.2010 01:10:47

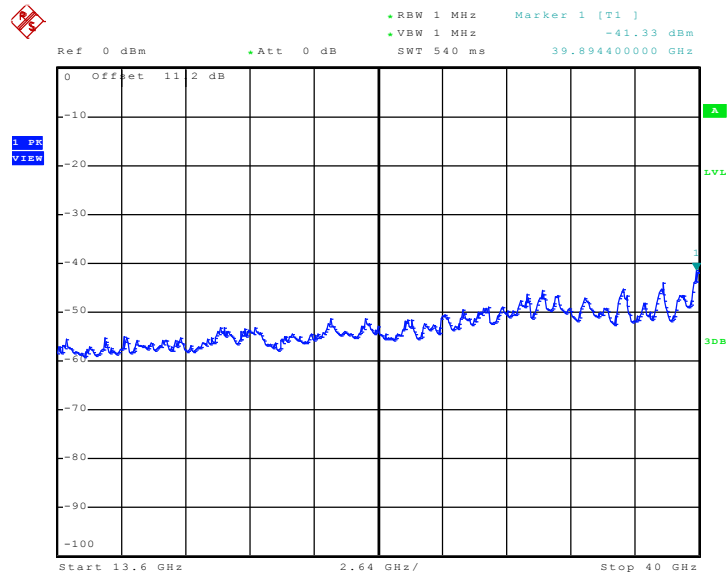
**Mode 8: Conducted Spurious Emission Plot between
3 GHz ~ 13.6 GHz - Chain A+B+C**



Date: 18.AUG.2010 01:46:03



Mode 8: Conducted Spurious Emission Plot between
13.6 GHz ~ 40 GHz - Chain A+B+C



Date: 18.AUG.2010 01:11:11

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

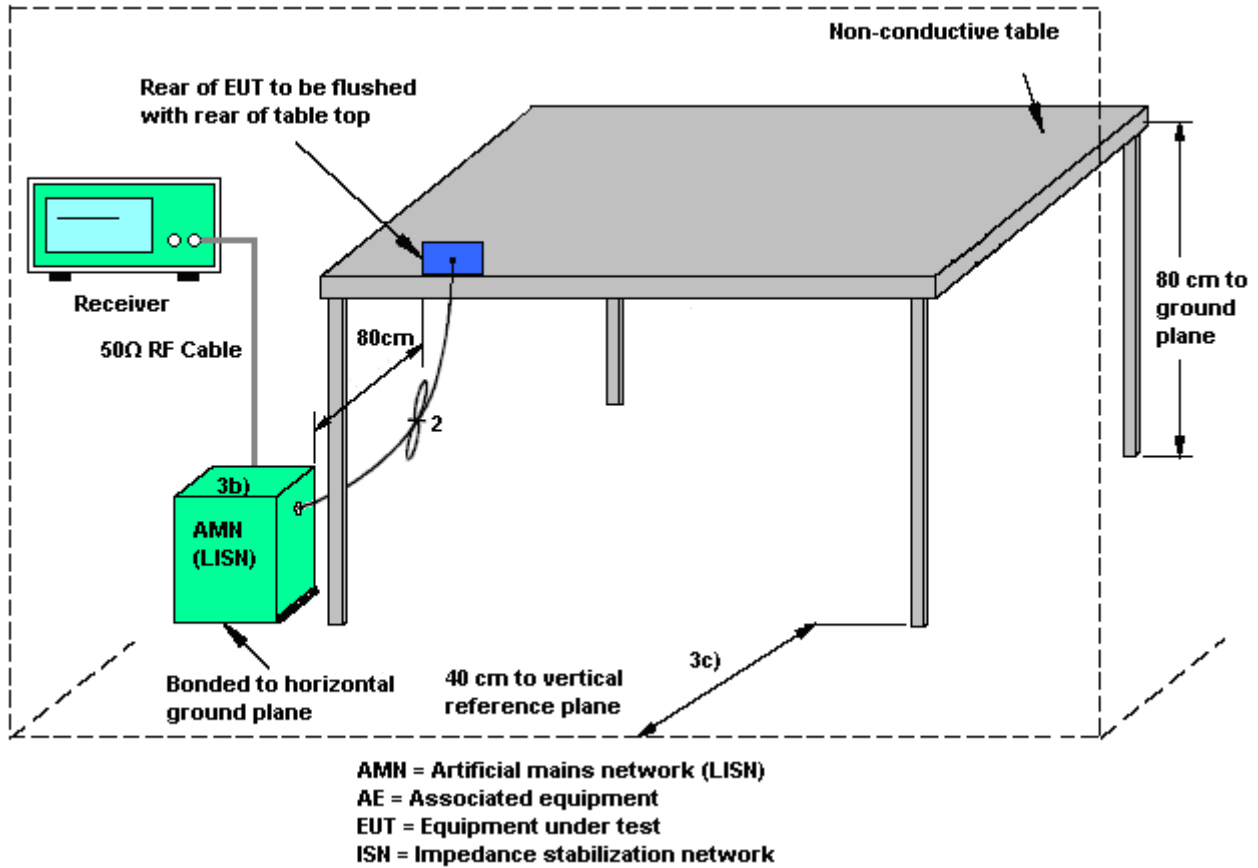
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

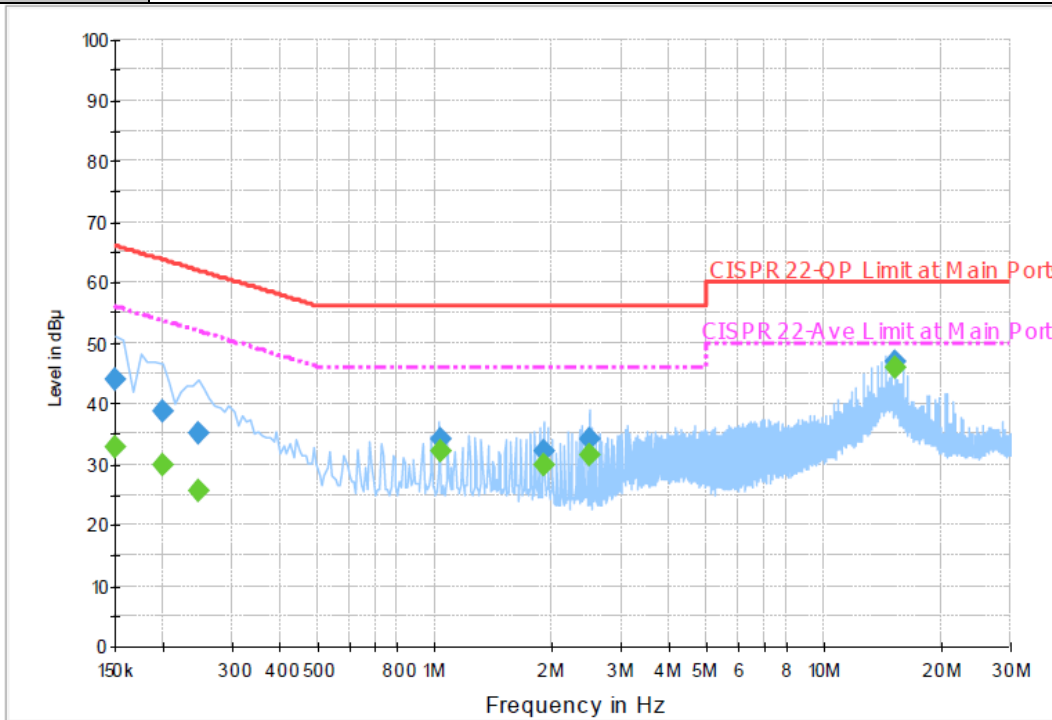
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	42~44%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN 1 (5G) Link + WLAN 2 (5G) Link + POE + LAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



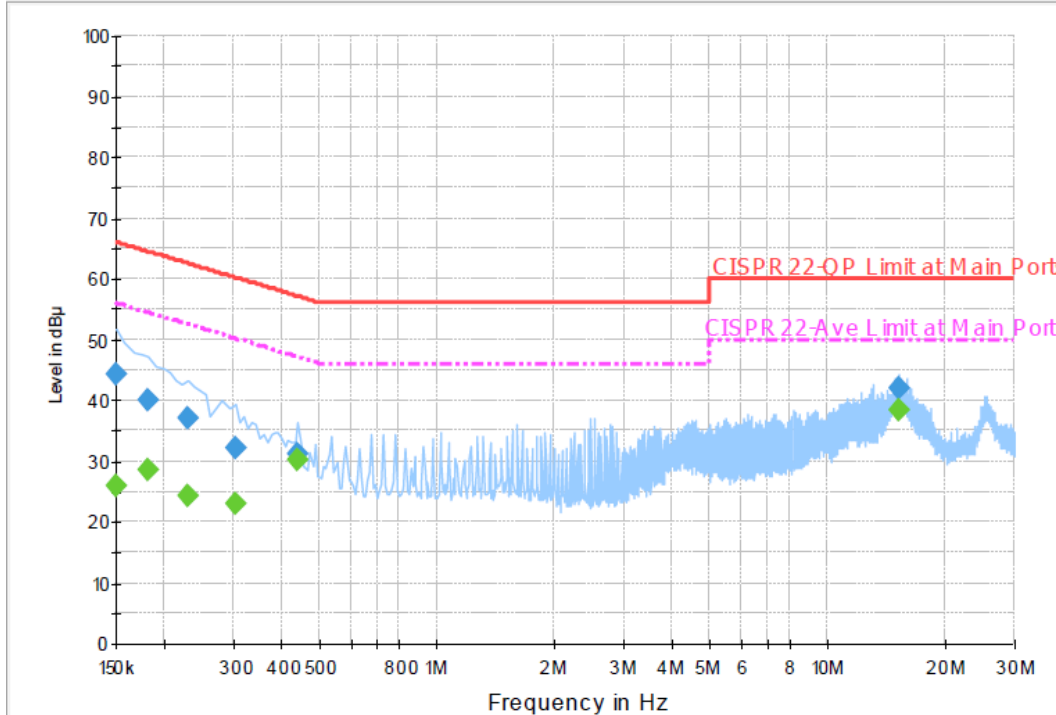
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	43.8	Off	L1	19.5	22.2	66.0
0.198000	38.6	Off	L1	19.5	25.1	63.7
0.246000	34.9	Off	L1	19.5	27.0	61.9
1.030000	34.0	Off	L1	19.4	22.0	56.0
1.894000	32.0	Off	L1	19.5	24.0	56.0
2.478000	34.1	Off	L1	19.5	21.9	56.0
15.126000	47.0	Off	L1	19.7	13.0	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	32.9	Off	L1	19.5	23.1	56.0
0.198000	29.8	Off	L1	19.5	23.9	53.7
0.246000	25.5	Off	L1	19.5	26.4	51.9
1.030000	32.0	Off	L1	19.4	14.0	46.0
1.894000	30.0	Off	L1	19.5	16.0	46.0
2.478000	31.5	Off	L1	19.5	14.5	46.0
15.126000	45.9	Off	L1	19.7	4.1	50.0

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	42~44%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN 1 (5G) Link + WLAN 2 (5G) Link + POE + LAN Link + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	44.3	Off	N	19.5	21.7	66.0
0.182000	40.1	Off	N	19.5	24.3	64.4
0.230000	37.1	Off	N	19.5	25.3	62.4
0.302000	32.1	Off	N	19.5	28.1	60.2
0.438000	31.1	Off	N	19.4	26.0	57.1
15.118000	41.8	Off	N	19.7	18.2	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	26.0	Off	N	19.5	30.0	56.0
0.182000	28.6	Off	N	19.5	25.8	54.4
0.230000	24.4	Off	N	19.5	28.0	52.4
0.302000	23.0	Off	N	19.5	27.2	50.2
0.438000	30.2	Off	N	19.4	16.9	47.1
15.118000	38.4	Off	N	19.7	11.6	50.0

3.7 Radiated Emission Measurement

3.7.1 Limit of Radiated Emission

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.

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

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band.
- (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (4) The provisions of Section 15.205 Restricted bands of operation of this part apply to intentional radiators operating under this section.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

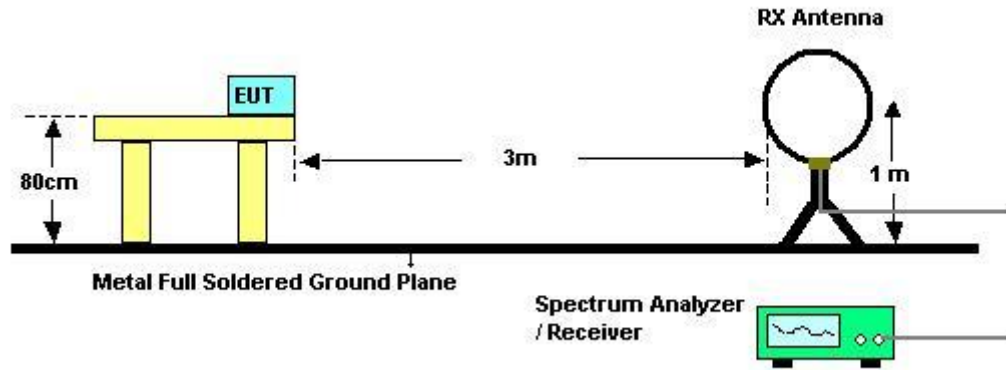


3.7.3 Test Procedures

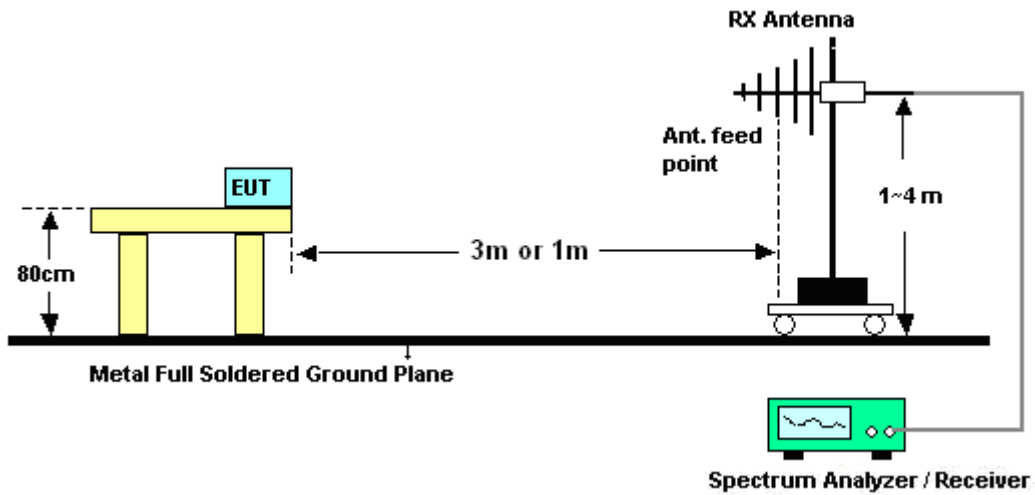
1. The testing follows the guidelines in FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest radiation.
5. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
6. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
7. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
8. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
9. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

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)

Temperature	23~24°C	Humidity	45~48%
Test Engineer	Cona Huang		

Freq. (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 ~ 25GHz)

Test Mode :	Mode 1	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	5180 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
48.9	37.65	-2.35	40	59.54	8.96	0.68	31.53	112	334	Peak
128.01	31.54	-11.96	43.5	50.18	11.79	1.14	31.57	-	-	Peak
180.93	22.11	-21.39	43.5	43.36	9.03	1.25	31.53	-	-	Peak
469.4	19.21	-26.79	46	30.39	17.54	2.35	31.07	-	-	Peak
582.1	28.93	-17.07	46	37.51	19.72	2.64	30.94	-	-	Peak
757.8	25.52	-20.48	46	31.52	21.63	3.07	30.7	-	-	Peak
5150	45.11	-8.89	54	36	34.35	9.41	34.65	136	0	Average
5150	57.42	-16.58	74	48.31	34.35	9.41	34.65	136	0	Peak
5180	105.09	-	-	96.03	34.38	9.45	34.77	136	0	Average
5180	114.71	-	-	105.65	34.38	9.45	34.77	136	0	Peak
5350	41.85	-12.15	54	32.96	34.55	9.74	35.4	136	0	Average
5350	53.38	-20.62	74	44.49	34.55	9.74	35.4	136	0	Peak
8290	54.72	-19.28	74	41.89	36	10.93	34.1	100	146	Peak
8290	40.9	-13.1	54	28.07	36	10.93	34.1	100	146	Average



Test Mode :	Mode 1	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5180 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	36.86	-3.14	40	48.28	19.51	0.53	31.46	120	132	Peak
134.22	31.73	-11.77	43.5	50.38	11.74	1.17	31.56	-	-	Peak
275.7	21.11	-24.89	46	37.71	13.12	1.64	31.36	-	-	Peak
419.7	18.66	-27.34	46	31.07	16.53	2.21	31.15	-	-	Peak
609.4	31.07	-14.93	46	39.12	20.14	2.72	30.91	-	-	Peak
960.1	32.07	-21.93	54	35.08	24.09	3.47	30.57	-	-	Peak
5150	39.24	-14.76	54	30.13	34.35	9.41	34.65	100	0	Average
5150	50.78	-23.22	74	41.67	34.35	9.41	34.65	100	0	Peak
5180	101.71	-	-	92.65	34.38	9.45	34.77	100	0	Peak
5180	92.41	-	-	83.35	34.38	9.45	34.77	100	0	Average
5350	51.59	-22.41	74	42.7	34.55	9.74	35.4	100	0	Peak
5350	38.81	-15.19	54	29.92	34.55	9.74	35.4	100	0	Average
8308	55.27	-18.73	74	42.44	36	10.93	34.1	100	150	Peak
8308	41.45	-12.55	54	28.62	36	10.93	34.1	100	150	Average



Test Mode :	Mode 2	Temperature :	21~23°C
Test Channel :	40	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	5200 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
48.9	38.47	-1.53	40	60.36	8.96	0.68	31.53	141	103	Peak
125.31	30.07	-13.43	43.5	48.7	11.81	1.12	31.56	-	-	Peak
193.89	18.88	-24.62	43.5	40.21	8.87	1.3	31.5	-	-	Peak
318.9	20.22	-25.78	46	35.76	13.97	1.81	31.32	-	-	Peak
447	18.92	-27.08	46	30.65	17.09	2.29	31.11	-	-	Peak
624.1	29.61	-16.39	46	37.5	20.25	2.76	30.9	-	-	Peak
5150	43.86	-10.14	54	34.75	34.35	9.41	34.65	148	0	Average
5150	55.6	-18.4	74	46.49	34.35	9.41	34.65	148	0	Peak
5200	104.14	-	-	95.09	34.4	9.49	34.84	148	0	Average
5200	113.26	-	-	104.21	34.4	9.49	34.84	148	0	Peak
5350	53.17	-20.83	74	44.28	34.55	9.74	35.4	148	0	Peak
5350	41.43	-12.57	54	32.54	34.55	9.74	35.4	148	0	Average
8214	53.98	-20.02	74	41.19	36	10.9	34.11	100	44	Peak
8214	40.96	-13.04	54	28.17	36	10.9	34.11	100	44	Average



Test Mode :	Mode 2	Temperature :	21~23°C
Test Channel :	40	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5200 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	35.75	-4.25	40	47.17	19.51	0.53	31.46	104	77	Peak
134.22	31.93	-11.57	43.5	50.58	11.74	1.17	31.56	-	-	Peak
275.97	21.49	-24.51	46	38.07	13.14	1.64	31.36	-	-	Peak
500.2	28.47	-17.53	46	38.91	18.18	2.45	31.07	-	-	Peak
598.2	31.73	-14.27	46	39.94	20.03	2.68	30.92	-	-	Peak
803.3	26.58	-19.42	46	31.86	22.25	3.15	30.68	-	-	Peak
5150	50.1	-23.9	74	40.99	34.35	9.41	34.65	100	13	Peak
5150	39.14	-14.86	54	30.03	34.35	9.41	34.65	100	13	Average
5200	101.53	-	-	92.48	34.4	9.49	34.84	100	13	Peak
5200	93.62	-	-	84.57	34.4	9.49	34.84	100	13	Average
5350	49.22	-24.78	74	40.33	34.55	9.74	35.4	100	13	Peak
5350	38.78	-15.22	54	29.89	34.55	9.74	35.4	100	13	Average
8222	54.09	-19.91	74	41.3	36	10.9	34.11	100	99	Peak
8222	41.67	-12.33	54	28.88	36	10.9	34.11	100	99	Average



Test Mode :	Mode 3	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	5220 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
48.9	37.93	-2.07	40	59.82	8.96	0.68	31.53	149	211	Peak
126.66	31.1	-12.4	43.5	49.74	11.8	1.13	31.57	-	-	Peak
259.77	22.62	-23.38	46	39.54	12.91	1.59	31.42	-	-	Peak
374.2	25.7	-20.3	46	39.42	15.44	2.09	31.25	-	-	Peak
565.3	27.76	-18.24	46	36.72	19.41	2.59	30.96	-	-	Peak
763.4	24.95	-21.05	46	30.85	21.71	3.08	30.69	-	-	Peak
5150	43.55	-10.45	54	34.44	34.35	9.41	34.65	148	4	Average
5150	55.11	-18.89	74	46	34.35	9.41	34.65	148	4	Peak
5220	101.98	-	-	92.93	34.42	9.53	34.9	148	4	Average
5220	111.79	-	-	102.74	34.42	9.53	34.9	148	4	Peak
5350	52.46	-21.54	74	43.57	34.55	9.74	35.4	148	4	Peak
5350	40.9	-13.1	54	32.01	34.55	9.74	35.4	148	4	Average
8374	54.92	-19.08	74	42.06	36	10.95	34.09	100	155	Peak
8374	41.63	-12.37	54	28.77	36	10.95	34.09	100	155	Average



Test Mode :	Mode 3	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5220 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	36.55	-3.45	40	47.97	19.51	0.53	31.46	104	89	Peak
119.1	30.55	-12.95	43.5	48.87	12.14	1.1	31.56	-	-	Peak
264.9	21.47	-24.53	46	38.28	12.97	1.62	31.4	-	-	Peak
467.3	20.07	-25.93	46	31.3	17.5	2.34	31.07	-	-	Peak
589.8	29.37	-16.63	46	37.77	19.87	2.66	30.93	-	-	Peak
965.7	32.34	-21.66	54	35.25	24.18	3.48	30.57	-	-	Peak
5150	39.15	-14.85	54	30.04	34.35	9.41	34.65	100	12	Average
5150	51.63	-22.37	74	42.52	34.35	9.41	34.65	100	12	Peak
5220	99.11	-	-	90.06	34.42	9.53	34.9	100	12	Peak
5220	90.24	-	-	81.19	34.42	9.53	34.9	100	12	Average
5350	50.4	-23.6	74	41.51	34.55	9.74	35.4	100	12	Peak
5350	38.8	-15.2	54	29.91	34.55	9.74	35.4	100	12	Average
8340	56.32	-17.68	74	43.47	36	10.95	34.1	100	161	Peak
8340	41.97	-12.03	54	29.12	36	10.95	34.1	100	161	Average



Test Mode :	Mode 4	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	518 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
48.9	38.87	-1.13	40	60.76	8.96	0.68	31.53	129	311	Peak
126.66	31.59	-11.91	43.5	50.23	11.8	1.13	31.57	-	-	Peak
265.98	21.64	-24.36	46	38.42	12.99	1.62	31.39	-	-	Peak
427.4	24.93	-21.07	46	37.14	16.69	2.24	31.14	-	-	Peak
585.6	27.51	-18.49	46	36.01	19.79	2.65	30.94	-	-	Peak
758.5	24.57	-21.43	46	30.56	21.64	3.07	30.7	-	-	Peak
5150	44.67	-9.33	54	35.56	34.35	9.41	34.65	148	0	Average
5150	56.8	-17.2	74	47.69	34.35	9.41	34.65	148	0	Peak
5180	113.93	-	-	104.87	34.38	9.45	34.77	148	0	Peak
5180	102.3	-	-	93.24	34.38	9.45	34.77	148	0	Average
5350	54.1	-19.9	74	45.21	34.55	9.74	35.4	148	0	Peak
5350	41.37	-12.63	54	32.48	34.55	9.74	35.4	148	0	Average
8248	54.66	-19.34	74	41.86	36	10.91	34.11	100	166	Peak
8248	41.02	-12.98	54	28.22	36	10.91	34.11	100	166	Average



Test Mode :	Mode 4	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5180 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
48.9	38.91	-1.09	40	60.8	8.96	0.68	31.53	135	197	Peak
107.49	30.32	-13.18	43.5	49.77	11.06	1.04	31.55	-	-	Peak
213.33	21.6	-21.9	43.5	42.66	9.03	1.38	31.47	-	-	Peak
500.2	28.59	-17.41	46	39.03	18.18	2.45	31.07	-	-	Peak
598.2	30.48	-15.52	46	38.69	20.03	2.68	30.92	-	-	Peak
954.5	32.78	-13.22	46	35.89	24	3.46	30.57	-	-	Peak
5150	41.55	-12.45	54	32.44	34.35	9.41	34.65	136	0	Average
5150	53.08	-20.92	74	43.97	34.35	9.41	34.65	136	0	Peak
5180	107.63	-	-	98.57	34.38	9.45	34.77	136	0	Peak
5180	97.93	-	-	88.87	34.38	9.45	34.77	136	0	Average
5350	51.2	-22.8	74	42.31	34.55	9.74	35.4	136	0	Peak
5350	40.21	-13.79	54	31.32	34.55	9.74	35.4	136	0	Average
8440	54.83	-19.17	74	41.94	36	10.98	34.09	100	200	Peak
8440	41.39	-12.61	54	28.5	36	10.98	34.09	100	200	Average



Test Mode :	Mode 5	Temperature :	21~23°C
Test Channel :	40	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	5200 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
52.14	32.17	-7.83	40	55.43	7.57	0.71	31.54	122	210	Peak
128.82	31.02	-12.48	43.5	49.67	11.78	1.14	31.57	-	-	Peak
271.65	17.11	-28.89	46	33.77	13.07	1.64	31.37	-	-	Peak
416.2	18.66	-27.34	46	31.17	16.45	2.2	31.16	-	-	Peak
500.2	27.16	-18.84	46	37.6	18.18	2.45	31.07	-	-	Peak
752.9	25.15	-20.85	46	31.23	21.56	3.06	30.7	-	-	Peak
5150	44.9	-9.1	54	35.79	34.35	9.41	34.65	100	0	Average
5150	56.72	-17.28	74	47.61	34.35	9.41	34.65	100	0	Peak
5200	113.6	-	-	104.55	34.4	9.49	34.84	100	0	Peak
5200	102.31	-	-	93.26	34.4	9.49	34.84	100	0	Average
5350	54.79	-19.21	74	45.9	34.55	9.74	35.4	100	0	Peak
5350	43.22	-10.78	54	34.33	34.55	9.74	35.4	100	0	Average
8366	55.34	-18.66	74	42.48	36	10.95	34.09	100	68	Peak
8366	41.67	-12.33	54	28.81	36	10.95	34.09	100	68	Average



Test Mode :	Mode 5	Temperature :	21~23°C
Test Channel :	40	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5200 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
48.63	37.51	-2.49	40	59.4	8.96	0.68	31.53	111	82	Peak
107.49	30.55	-12.95	43.5	50	11.06	1.04	31.55	-	-	Peak
180.66	26.24	-17.26	43.5	47.48	9.04	1.25	31.53	-	-	Peak
374.2	21.81	-24.19	46	35.53	15.44	2.09	31.25	-	-	Peak
592.6	26.66	-19.34	46	35	19.92	2.67	30.93	-	-	Peak
764.1	26.15	-19.85	46	32.04	21.72	3.08	30.69	-	-	Peak
5150	41.52	-12.48	54	32.41	34.35	9.41	34.65	124	358	Average
5150	53.36	-20.64	74	44.25	34.35	9.41	34.65	124	358	Peak
5200	109.3	-	-	100.25	34.4	9.49	34.84	124	358	Peak
5200	99.17	-	-	90.12	34.4	9.49	34.84	124	358	Average
5350	51.58	-22.42	74	42.69	34.55	9.74	35.4	124	358	Peak
5350	40.5	-13.5	54	31.61	34.55	9.74	35.4	124	358	Average
8352	54.39	-19.61	74	41.54	36	10.95	34.1	100	231	Peak
8352	41.87	-12.13	54	29.02	36	10.95	34.1	100	231	Average



Test Mode :	Mode 6	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	5220 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
48.9	38.83	-1.17	40	60.72	8.96	0.68	31.53	125	196	Peak
92.37	25.8	-17.7	43.5	47.19	9.17	0.96	31.52	-	-	Peak
129.09	30.99	-12.51	43.5	49.64	11.78	1.14	31.57	-	-	Peak
312.6	21.77	-24.23	46	37.51	13.79	1.79	31.32	-	-	Peak
559	24.15	-21.85	46	33.27	19.28	2.57	30.97	-	-	Peak
699	24.01	-21.99	46	31.06	20.83	2.94	30.82	-	-	Peak
5150	44.31	-9.69	54	35.2	34.35	9.41	34.65	147	0	Average
5150	56.14	-17.86	74	47.03	34.35	9.41	34.65	147	0	Peak
5220	112.05	-	-	103	34.42	9.53	34.9	147	0	Peak
5220	100.48	-	-	91.43	34.42	9.53	34.9	147	0	Average
5350	52.72	-21.28	74	43.83	34.55	9.74	35.4	147	0	Peak
5350	41.38	-12.62	54	32.49	34.55	9.74	35.4	147	0	Average
8240	54.55	-19.45	74	41.75	36	10.91	34.11	100	108	Peak
8240	40.67	-13.33	54	27.87	36	10.91	34.11	100	108	Average



Test Mode :	Mode 6	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5220 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	35.71	-4.29	40	47.13	19.51	0.53	31.46	119	93	Peak
107.49	30.68	-12.82	43.5	50.13	11.06	1.04	31.55	-	-	Peak
170.13	30	-13.5	43.5	50.62	9.67	1.23	31.52	-	-	Peak
556.2	22.35	-23.65	46	31.52	19.23	2.57	30.97	-	-	Peak
624.1	33.35	-12.65	46	41.24	20.25	2.76	30.9	-	-	Peak
833.4	26.39	-19.61	46	31.33	22.54	3.23	30.71	-	-	Peak
5150	41.45	-12.55	54	32.34	34.35	9.41	34.65	136	357	Average
5150	53.12	-20.88	74	44.01	34.35	9.41	34.65	136	357	Peak
5220	107.97	-	-	98.92	34.42	9.53	34.9	136	357	Peak
5220	98.21	-	-	89.16	34.42	9.53	34.9	136	357	Average
5350	52.69	-21.31	74	43.8	34.55	9.74	35.4	136	357	Peak
5350	40.28	-13.72	54	31.39	34.55	9.74	35.4	136	357	Average
8376	54.72	-19.28	74	41.86	36	10.95	34.09	100	224	Peak
8376	41.36	-12.64	54	28.5	36	10.95	34.09	100	224	Average



Test Mode :	Mode 7	Temperature :	21~23°C
Test Channel :	38	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	5190 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
51.06	33.94	-6.06	40	57	7.77	0.71	31.54	114	223	Peak
124.5	29.78	-13.72	43.5	48.33	11.89	1.12	31.56	-	-	Peak
186.33	21.01	-22.49	43.5	42.29	8.97	1.27	31.52	-	-	Peak
349.7	18.77	-27.23	46	33.28	14.8	1.97	31.28	-	-	Peak
550.6	21.94	-24.06	46	31.24	19.13	2.55	30.98	-	-	Peak
778.1	24.62	-21.38	46	30.3	21.91	3.1	30.69	-	-	Peak
5150	72.41	-1.59	74	63.3	34.35	9.41	34.65	139	0	Peak
5150	51.46	-2.54	54	42.35	34.35	9.41	34.65	139	0	Average
5190	116.24	-	-	107.14	34.38	9.49	34.77	139	0	Peak
5190	102.33	-	-	93.23	34.38	9.49	34.77	139	0	Average
5350	43.63	-10.37	54	34.74	34.55	9.74	35.4	139	0	Average
5350	54.26	-19.74	74	45.37	34.55	9.74	35.4	139	0	Peak
8234	54.28	-19.72	74	41.49	36	10.9	34.11	100	134	Peak
8234	40.84	-13.16	54	28.05	36	10.9	34.11	100	134	Average



Test Mode :	Mode 7	Temperature :	21~23°C
Test Channel :	38	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5190 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	36.4	-3.6	40	47.82	19.51	0.53	31.46	141	337	Peak
121.53	29.72	-13.78	43.5	48.02	12.15	1.11	31.56	-	-	Peak
194.7	21.62	-21.88	43.5	42.95	8.86	1.3	31.49	-	-	Peak
310.5	21.11	-24.89	46	36.9	13.74	1.79	31.32	-	-	Peak
609.4	29.27	-16.73	46	37.32	20.14	2.72	30.91	-	-	Peak
850.2	26.72	-19.28	46	31.48	22.7	3.27	30.73	-	-	Peak
5150	70.2	-3.8	74	61.09	34.35	9.41	34.65	130	357	Peak
5150	51.82	-2.18	54	42.71	34.35	9.41	34.65	130	357	Average
5190	98.2	-	-	89.1	34.38	9.49	34.77	130	357	Average
5190	109.22	-	-	100.12	34.38	9.49	34.77	130	357	Peak
5350	54.92	-19.08	74	46.03	34.55	9.74	35.4	130	357	Peak
5350	43.62	-10.38	54	34.73	34.55	9.74	35.4	130	357	Average
8378	54.57	-19.43	74	41.71	36	10.95	34.09	102	171	Peak
8378	41.53	-12.47	54	28.67	36	10.95	34.09	102	171	Average



Test Mode :	Mode 8	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	5220 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.69	28.05	-11.95	40	46.73	12.18	0.64	31.5	132	318	Peak
92.37	25.38	-18.12	43.5	46.77	9.17	0.96	31.52	-	-	Peak
212.25	15.92	-27.58	43.5	37	9.02	1.37	31.47	-	-	Peak
374.2	26.45	-19.55	46	40.17	15.44	2.09	31.25	-	-	Peak
624.1	28.98	-17.02	46	36.87	20.25	2.76	30.9	-	-	Peak
962.2	32.16	-21.84	54	35.14	24.12	3.47	30.57	-	-	Peak
5150	45.76	-8.24	54	36.65	34.35	9.41	34.65	146	0	Average
5150	57.23	-16.77	74	48.12	34.35	9.41	34.65	146	0	Peak
5220	100.13	-	-	91.08	34.42	9.53	34.9	146	0	Average
5220	113.44	-	-	104.39	34.42	9.53	34.9	146	0	Peak
5350	54.32	-19.68	74	45.43	34.55	9.74	35.4	146	0	Peak
5350	42.5	-11.5	54	33.61	34.55	9.74	35.4	146	0	Average
8236	54.62	-19.38	74	41.82	36	10.91	34.11	100	207	Peak
8236	40.91	-13.09	54	28.11	36	10.91	34.11	100	207	Average



Test Mode :	Mode 8	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5220 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
48.9	39.42	-0.58	40	61.31	8.96	0.68	31.53	112	84	Peak
118.29	30.28	-13.22	43.5	48.7	12.05	1.09	31.56	-	-	Peak
250.05	27.25	-18.75	46	44.36	12.77	1.53	31.41	-	-	Peak
310.5	19.87	-26.13	46	35.66	13.74	1.79	31.32	-	-	Peak
584.2	26.74	-19.26	46	35.28	19.76	2.64	30.94	-	-	Peak
797	25.48	-20.52	46	30.84	22.18	3.14	30.68	-	-	Peak
5150	43.21	-10.79	54	34.1	34.35	9.41	34.65	134	358	Average
5150	55.18	-18.82	74	46.07	34.35	9.41	34.65	134	358	Peak
5220	98.33	-	-	89.28	34.42	9.53	34.9	134	358	Average
5220	108.73	-	-	99.68	34.42	9.53	34.9	134	358	Peak
5350	53.14	-20.86	74	44.25	34.55	9.74	35.4	134	358	Peak
5350	41.97	-12.03	54	33.08	34.55	9.74	35.4	134	358	Average
8310	54.79	-19.21	74	41.95	36	10.94	34.1	100	114	Peak
8310	41.22	-12.78	54	28.38	36	10.94	34.1	100	114	Average



Test Mode :	Mode 9	Temperature :	21~23°C
Test Channel :	38	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	5190 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
50.25	34.7	-5.3	40	57.56	7.98	0.7	31.54	126	189	Peak
91.29	24.06	-19.44	43.5	45.6	9.03	0.95	31.52	-	-	Peak
263.82	21.57	-24.43	46	38.4	12.96	1.61	31.4	-	-	Peak
374.2	27.1	-18.9	46	40.82	15.44	2.09	31.25	-	-	Peak
578.6	25.88	-20.12	46	34.53	19.67	2.63	30.95	-	-	Peak
830.6	26.37	-19.63	46	31.35	22.51	3.22	30.71	-	-	Peak
5150	72.93	-1.07	74	63.82	34.35	9.41	34.65	117	0	Peak
5150	51.9	-2.1	54	42.79	34.35	9.41	34.65	117	0	Average
5190	100.26	-	-	91.16	34.38	9.49	34.77	117	0	Average
5190	113.37	-	-	104.27	34.38	9.49	34.77	117	0	Peak
5350	57.64	-16.36	74	48.75	34.55	9.74	35.4	117	0	Peak
5350	45.64	-8.36	54	36.75	34.55	9.74	35.4	117	0	Average
8302	55.77	-18.23	74	42.94	36	10.93	34.1	101	144	Peak
8302	41.77	-12.23	54	28.94	36	10.93	34.1	101	144	Average



Test Mode :	Mode 9	Temperature :	21~23°C
Test Channel :	38	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5190 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	36.62	-3.38	40	48.04	19.51	0.53	31.46	120	122	Peak
119.1	30.31	-13.19	43.5	48.63	12.14	1.1	31.56	-	-	Peak
257.34	22.88	-23.12	46	39.87	12.86	1.57	31.42	-	-	Peak
374.2	21.1	-24.9	46	34.82	15.44	2.09	31.25	-	-	Peak
607.3	28.5	-17.5	46	36.58	20.12	2.71	30.91	-	-	Peak
946.1	32.7	-13.3	46	35.96	23.87	3.45	30.58	-	-	Peak
5150	72.26	-1.74	74	63.15	34.35	9.41	34.65	121	355	Peak
5150	52.44	-1.56	54	43.33	34.35	9.41	34.65	121	355	Average
5190	100.13	-	-	91.03	34.38	9.49	34.77	121	355	Average
5190	110.5	-	-	101.4	34.38	9.49	34.77	121	355	Peak
5350	55.53	-18.47	74	46.64	34.55	9.74	35.4	121	355	Peak
5350	43.9	-10.1	54	35.01	34.55	9.74	35.4	121	355	Average
8404	55.26	-18.74	74	42.39	36	10.96	34.09	100	314	Peak
8404	41.52	-12.48	54	28.65	36	10.96	34.09	100	314	Average



Test Mode :	Mode 10	Temperature :	21~23°C
Test Channel :	38	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Horizontal
Remark :	5190 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
48.9	37.56	-2.44	40	59.45	8.96	0.68	31.53	118	93	Peak
130.98	31.02	-12.48	43.5	49.67	11.77	1.15	31.57	-	-	Peak
229.26	16.98	-29.02	46	36.75	10.2	1.47	31.44	-	-	Peak
343.4	18.47	-27.53	46	33.23	14.62	1.92	31.3	-	-	Peak
587.7	27.36	-18.64	46	35.81	19.83	2.65	30.93	-	-	Peak
830.6	25.37	-20.63	46	30.35	22.51	3.22	30.71	-	-	Peak
5150	52.86	-1.14	54	43.75	34.35	9.41	34.65	100	0	Average
5150	68.08	-5.92	74	58.97	34.35	9.41	34.65	100	0	Peak
5190	100.55	-	-	91.45	34.38	9.49	34.77	100	0	Average
5190	113.98	-	-	104.88	34.38	9.49	34.77	100	0	Peak
5350	49.41	-4.59	54	40.52	34.55	9.74	35.4	100	0	Average
5350	61.4	-12.6	74	52.51	34.55	9.74	35.4	100	0	Peak
8190	55.07	-18.93	74	42.29	36	10.89	34.11	100	121	Peak
8190	41.19	-12.81	54	28.41	36	10.89	34.11	100	121	Average



Test Mode :	Mode 10	Temperature :	21~23°C
Test Channel :	38	Relative Humidity :	48~50%
Test Engineer :	Elvis Chen and Kay Wu	Polarization :	Vertical
Remark :	5190 MHz is Fundamental Signals which can be ignored.		

Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.5	31.08	-8.92	40	50.39	11.55	0.64	31.5	120	134	Peak
101.82	27.47	-16.03	43.5	47.49	10.52	1	31.54	-	-	Peak
184.17	26.26	-17.24	43.5	47.53	8.99	1.26	31.52	-	-	Peak
405.7	18.09	-27.91	46	30.87	16.23	2.16	31.17	-	-	Peak
579.3	25.51	-20.49	46	34.16	19.67	2.63	30.95	-	-	Peak
855.8	26.95	-19.05	46	31.65	22.75	3.28	30.73	-	-	Peak
5150	51.74	-2.26	54	42.63	34.35	9.41	34.65	100	352	Average
5150	67.62	-6.38	74	58.51	34.35	9.41	34.65	100	352	Peak
5190	98.62	-	-	89.52	34.38	9.49	34.77	100	352	Average
5190	109.66	-	-	100.56	34.38	9.49	34.77	100	352	Peak
5350	49.39	-4.61	54	40.5	34.55	9.74	35.4	100	352	Average
5350	60.88	-13.12	74	51.99	34.55	9.74	35.4	100	352	Peak
8260	55.2	-18.8	74	42.39	36	10.91	34.1	100	81	Peak
8260	41.68	-12.32	54	28.87	36	10.91	34.1	100	81	Average

3.8 Peak Excursion Ratio Measurement

3.8.1 Limit of Peak Excursion Ratio

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

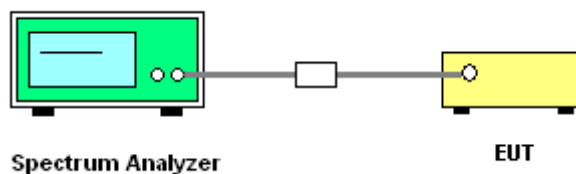
3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures

1. The transmitter output is connected to the spectrum analyzer.
2. The resolution bandwidth is set to and maintained at 1 MHz. The video bandwidth is set to 3 MHz.
3. Trace A is set peak detector and to Max Hold, then to View. Then the detector is readjusted to sample detector, max hold to run for 60 seconds, and the signal under this measurement condition is captured in Trace B in Accordance with the method 3 of DA-02-2138.
4. The difference between the traces is investigated. The marker is placed at the frequency, which shows the largest difference. The amplitude delta between the traces at this frequency is the peak excursion.

3.8.4 Test Setup

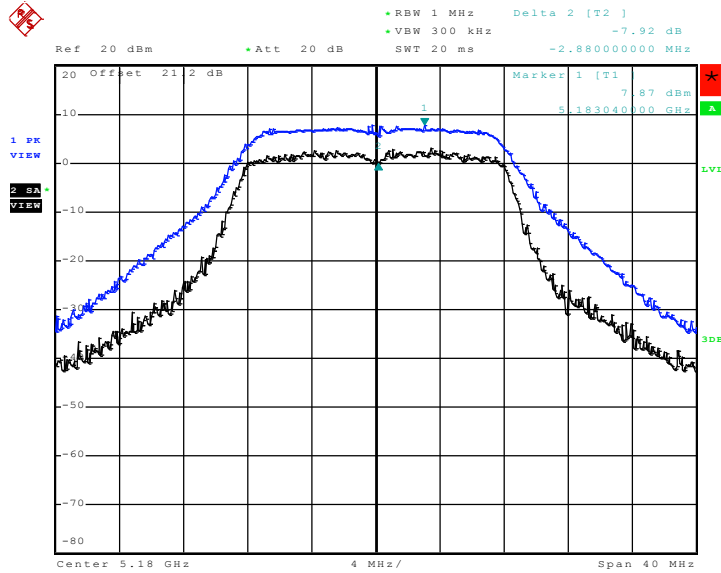




3.8.5 Test Result of Peak Excursion Ratio

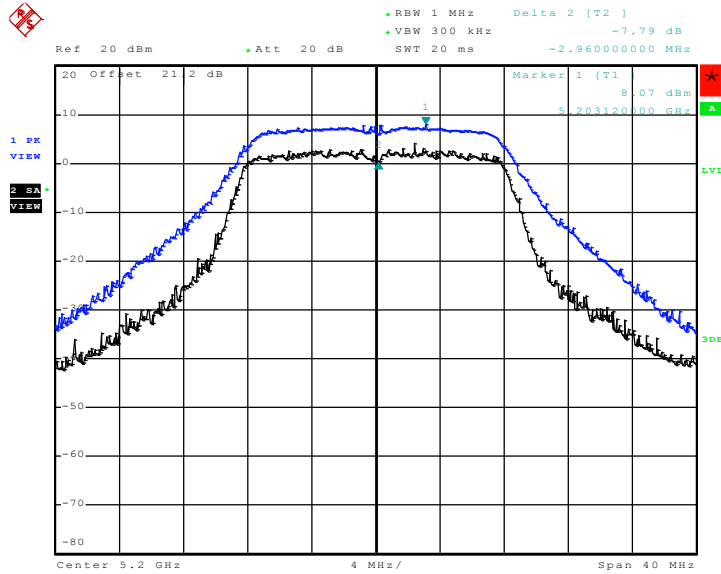
Test Mode :	Mode 1~8	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Mode 1 :
Peak Excursion Ratio Plot on 802.11a Channel 36 - Chain A



Date: 17.AUG.2010 15:55:36

Mode 2 :
Peak Excursion Ratio Plot on 802.11a Channel 40 - Chain A

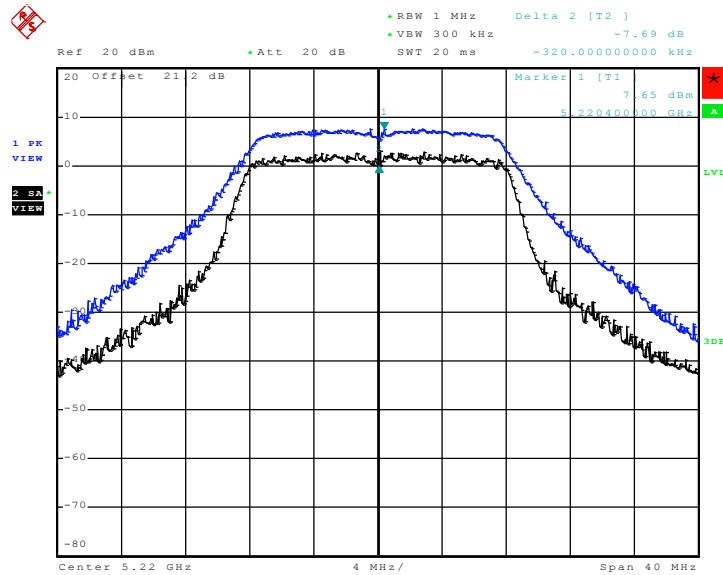


Date: 17.AUG.2010 15:45:14



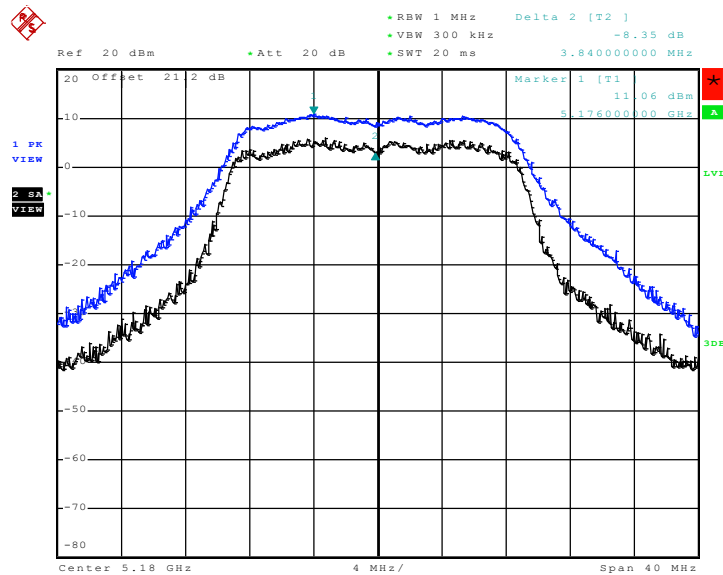
Mode 3 :

Peak Excursion Ratio Plot on 802.11a Channel 44 - Chain A



Date: 17.AUG.2010 15:46:52

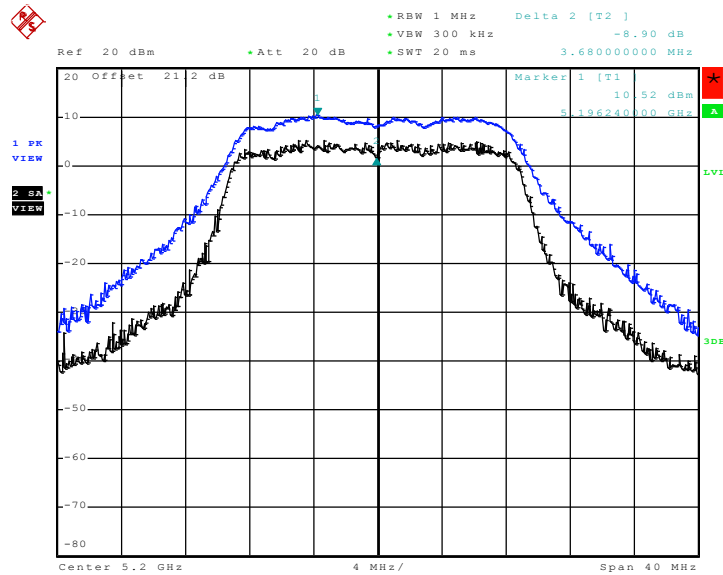
Mode 4 : Peak Excursion Ratio Plot on 802.11n (BW 20MHz)
Channel 36 - Chain A+B+C



Date: 17.AUG.2010 21:53:20

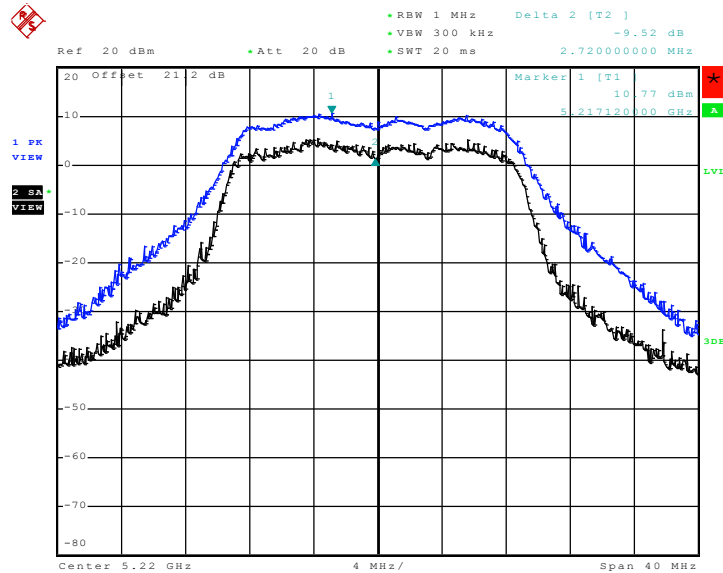


Mode 5 : Peak Excursion Ratio Plot on 802.11n (BW 20MHz)
Channel 40 - Chain A+B+C



Date: 17.AUG.2010 21:54:50

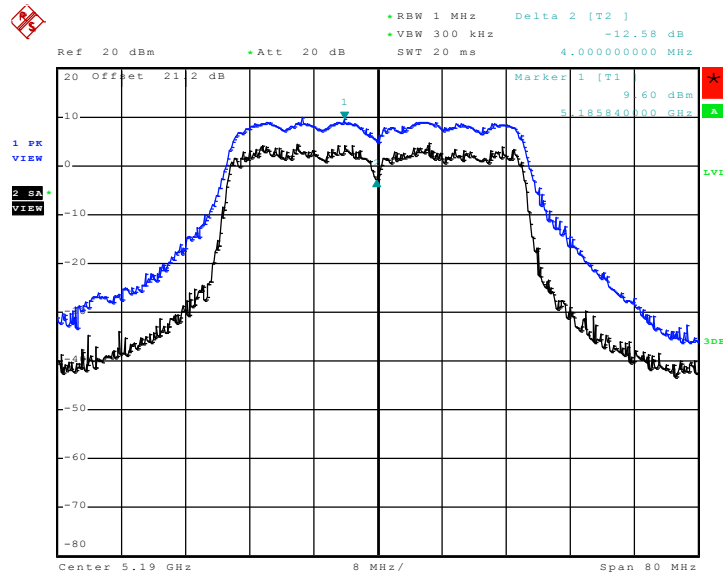
Mode 6 : Peak Excursion Ratio Plot on 802.11n (BW 20MHz)
Channel 44 - Chain A+B+C



Date: 17.AUG.2010 21:57:02

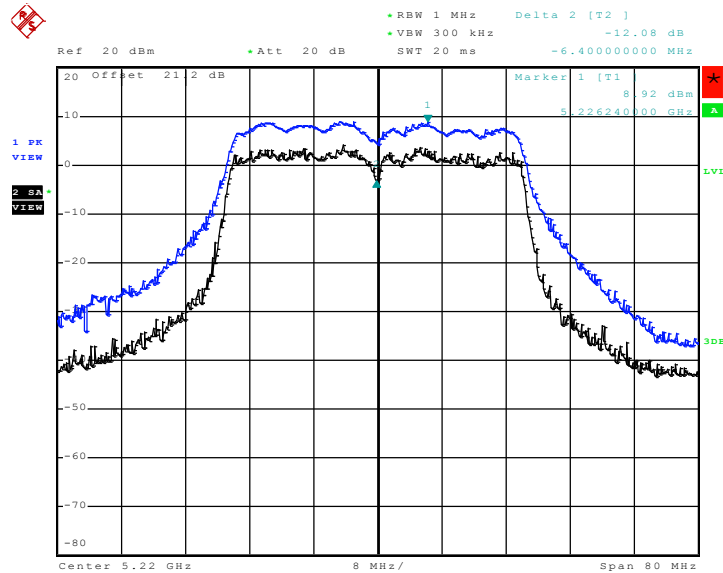


Mode 7 : Peak Excursion Ratio Plot on 802.11n (BW 40MHz)
Channel 38 - Chain A+B+C



Date: 18.AUG.2010 01:00:44

Mode 8 : Peak Excursion Ratio Plot on 802.11n (BW 40MHz)
Channel 44 - Chain A+B+C



Date: 18.AUG.2010 00:58:48



3.9 Automatically Discontinue Transmission

3.9.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

3.9.3 Test Result of Automatically Discontinue Transmission

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.10 Frequency Stability Measurement

3.10.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

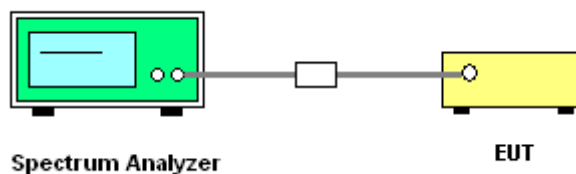
3.10.2 Measuring Instruments

See list of measuring instruments of this test report.

3.10.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

3.10.4 Test Setup





3.10.5 Test Result of Frequency Stability

Test Mode :	Mode 1, 2, 3	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11a		
		Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
36	5180	5171.68	5188.28	-3.86
40	5200	5191.64	5208.28	-7.69
44	5220	5211.64	5228.28	-7.66

Test Mode :	Mode 4, 5, 6	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 20MHz)		
		Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
36	5180	5171.04	5188.88	-7.72
40	5200	5191.00	5208.88	-11.54
44	5220	5211.04	5228.84	-11.49

Test Mode :	Mode 7, 8	Temperature :	19~21°C
Test Engineer :	Ken Hsu	Relative Humidity :	44~46%

Channel	Frequency (MHz)	802.11n (BW 40MHz)		
		Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
38	5190	5171.6	5208.24	-15.41
44	5220	5201.60	5238.24	-15.33



3.11 Antenna Requirements

3.11.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.11.2 Antenna Connected Construction

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

3.11.3 Antenna Gain

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



4 List of Measuring Equipments

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)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB.GAIN	Mar. 27, 2010	Mar. 26, 2011	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		



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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP9D2415-02 as below.