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	:	**AP310-M**
FCC ID	:	**RE7-AP310M**
STANDARD	:	**FCC Part 15 Subpart E**
CLASSIFICATION	:	**Unlicensed National Information Infrastructure (UNII)**

The product was received on Aug. 20, 2010 and completely tested on Sep. 17, 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

Anderson Chiu / Deputy Manager

Testing Laboratory
1190

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

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR082031B	Rev. 01	Initial issue of report	Sep. 06, 2010
FR082031B	Rev. 02	Update report for revised model name	Sep. 09, 2010
FR082301B	Rev. 03	Update report for Added the CH48 and CH46 data	Sep. 20, 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	≤ 17, 24, 30 dBm (depend on band)	Pass	-
3.3	15.407(a)	A9.2	Power Spectral Density	≤ 4, 11, 17 dBm (depend on band)	Pass	-
3.4	15.407(b)	A9.3	Frequency Band Edges	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	-
3.5	15.407(b)	A9.3	Spurious Emission	EIRP < -27 dBm/MHz	Pass	-
3.6	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 4.0 dB at 0.43 MHz
3.7	15.407(b)	A9.3	Transmitter Radiated Emission	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 1.22 dB at 5150.00 MHz
3.8	15.407(b)	A9.3	Peak Excursion Ratio	≤ 13dB	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	AP310-M
FCC ID	RE7-AP310M
Tx/Rx Frequency Range	5150 MHz ~ 5250 MHz
Maximum Output Power to Antenna	802.11a : 15.71 dBm / 0.037 W 802.11n (BW 20MHz) : 15.51 dBm / 0.036 W 802.11n (BW 40MHz) : 16.23 dBm / 0.042 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**	AS123-F
	Antenna Type	Dipole Antenna
	Antenna Gain	2.0 dBi for WLAN (2.4G) ; 3.0 dBi for WLAN (5G)

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 1st 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.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	POE	PHIHONG	POE20U-560(G)	N/A	N/A	N/A

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)	Channel	Freq. (MHz)
36	5180	40	5200	44	5220	48	5240

802.11n (BW 40MHz) Carrier Frequency Channel			
Channel	Freq. (MHz)	Channel	Freq. (MHz)
38	5190	46	5230

2.2 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: 9Mbps							
			6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 36	5180 MHz	A	15.50	15.52	15.52	15.52	15.46	15.47	15.45	15.40
CH 40	5200 MHz	A	15.10	15.31	15.19	15.16	15.28	15.01	15.18	15.06
CH 48	5240 MHz	A	15.03	14.72	14.97	14.89	14.80	14.85	14.68	14.69
CH 36	5180 MHz	B	15.29	15.35	15.30	15.15	15.19	15.17	15.12	15.02
CH 40	5200 MHz	B	15.67	15.64	15.54	15.42	15.58	15.59	15.51	15.52
CH 48	5240 MHz	B	15.69	**15.71**	15.43	15.57	15.35	15.19	15.32	15.20
CH 36	5180 MHz	C	15.24	15.12	15.26	15.06	15.02	15.09	14.99	14.98
CH 40	5200 MHz	C	15.20	15.13	15.20	15.31	15.18	15.10	15.01	15.12
CH 48	5240 MHz	C	15.27	15.26	15.25	15.44	15.33	15.17	15.26	15.15

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	15.45	15.50	15.44	15.49	15.38	15.38	15.33	15.31
CH 40	5200 MHz	A+B+C	15.28	15.14	15.03	15.00	15.03	14.91	14.89	14.89
CH 48	5240 MHz	A+B+C	**15.51**	15.40	15.24	15.27	15.20	15.17	15.09	15.07
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	15.44	15.44	15.40	15.30	15.27	15.14	15.18	15.19
CH 40	5200 MHz	A+B+C	15.08	15.04	15.01	14.93	14.89	14.85	14.81	14.80
CH 48	5240 MHz	A+B+C	15.19	15.15	15.16	15.20	15.03	15.01	14.89	14.90

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	14.82	14.80	14.72	14.64	14.61	14.56	14.55	14.46
CH 46	5230 MHz	A+B+C	**16.23**	16.02	15.95	15.91	15.86	15.85	15.85	15.85
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	14.72	14.69	14.56	14.53	14.47	14.39	14.31	14.31
CH 46	5230 MHz	A+B+C	15.92	15.99	15.92	15.86	15.80	15.76	15.70	15.68

Remark:

1. 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*LOG (10^ (chain A/10) + 10^ (chain B/10) + 10^ (chain C/10)).
2. The EUT is programmed to transmit signals continuously for all testing.
3. The data rates of WLAN 802.11a/n were set in 9Mbps 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.
4. SISO stands for single input and single output. It means that only one chain transmits signals at a time.
5. 3Tx is one type of MIMO, which means that three chains transmit signals at the same time.

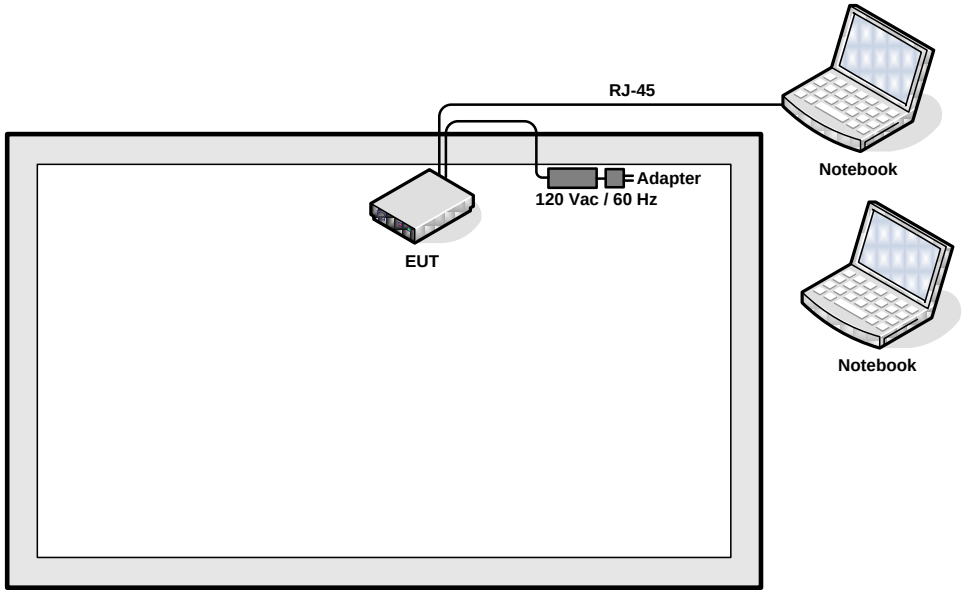
2.3 Test Mode

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).

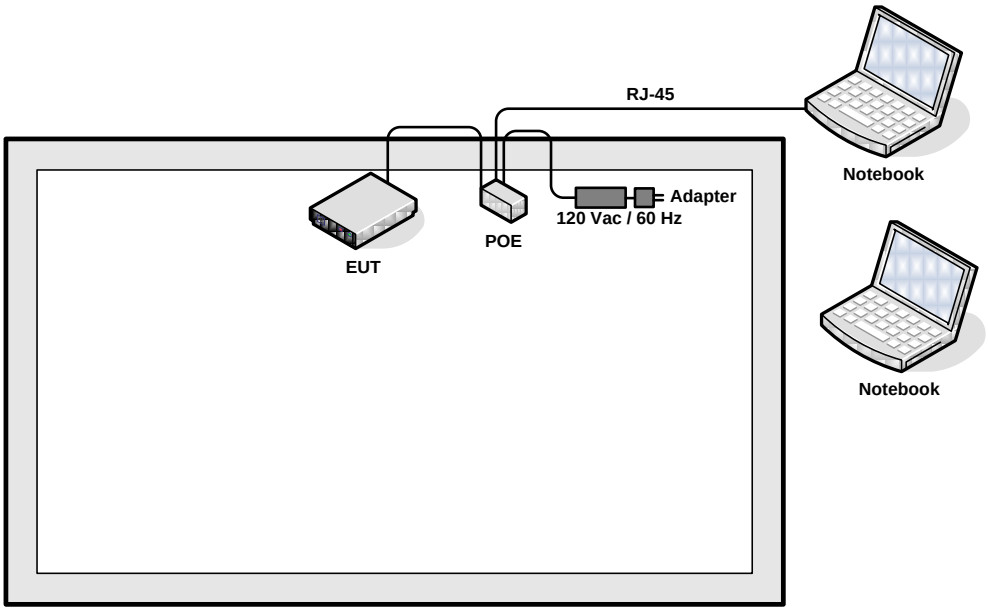
	Test Cases
Test Item	**802.11a/n (Modulation : OFDM)**
Conducted TCs	■ Mode 1: 802.11a_CH36_5180 MHz ■ Mode 2: 802.11a_CH40_5200 MHz ■ Mode 3: 802.11a_CH48_5240 MHz ■ Mode 4: 802.11n_CH36_5180 MHz (BW 20M) ■ Mode 5: 802.11n_CH40_5200 MHz (BW 20M) ■ Mode 6: 802.11n_CH48_5240 MHz (BW 20M) ■ Mode 7: 802.11n_CH38_5190 MHz (BW 40M) ■ Mode 8: 802.11n_CH46_5230 MHz (BW 40M)
Radiated TCs	■ Mode 1: 802.11a_CH36_5180 MHz ■ Mode 2: 802.11a_CH40_5200 MHz ■ Mode 3: 802.11a_CH48_5240 MHz ■ Mode 4: 802.11n_CH36_5180 MHz (BW 20M) ■ Mode 5: 802.11n_CH40_5200 MHz (BW 20M) ■ Mode 6: 802.11n_CH48_5240 MHz (BW 20M) ■ Mode 7: 802.11n_CH38_5190 MHz (BW 40M) ■ Mode 8: 802.11n_CH46_5230 MHz (BW 40M)
AC Conducted Emission	■ Mode 1: WLAN (5G) Link + LAN Link + Adapter ■ Mode 2: WLAN (5G) Link + LAN Link + Adapter + POE
Remark: The worst case of AC conducted emission is mode 1; only the test data of it was reported.	

2.4 Connection Diagram of Test System

<EUT with Adapter Mode>



<EUT with POE and Adapter Mode>



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 Bandwidth Measurement

3.1.1 Limit of 26dB 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. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log B.

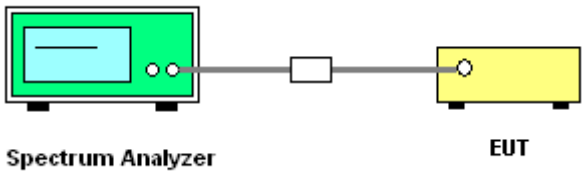
3.1.2 Measuring Instruments

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 :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

Channel	Frequency (MHz)	802.11a 26dB Bandwidth (MHz)	Pass/Fail
		Chain B	
36	5180	24.64	Pass
40	5200	24.24	Pass
48	5240	20.32	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz, 3Tx) 26dB Bandwidth (MHz)	Pass/Fail
		Chain A+B+C	
36	5180	24.16	Pass
40	5200	24.24	Pass
48	5240	23.36	Pass

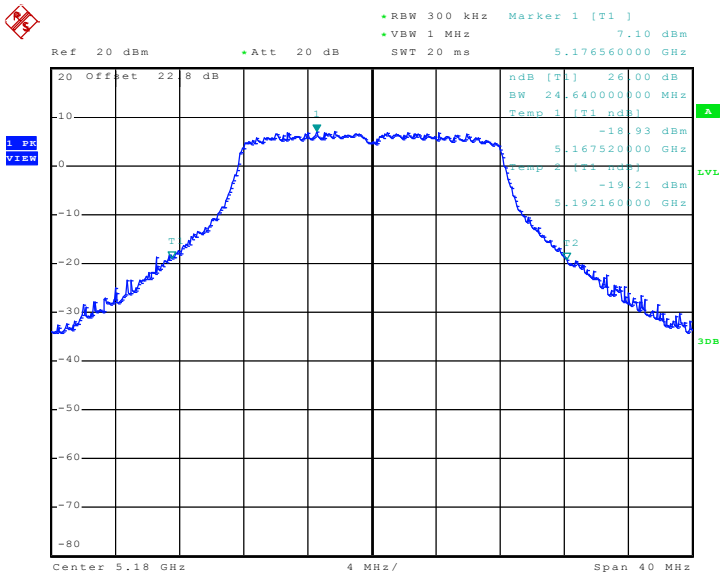
Test Mode :	Mode 7, 8	Temperature :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

Channel	Frequency (MHz)	802.11n (BW 40MHz, 3Tx) 26dB Bandwidth (MHz)	Pass/Fail
		Chain A+B+C	
38	5190	48.80	Pass
46	5230	46.56	Pass

3.1.6 Test Result of 26dB Bandwidth Plots

Mode 01:

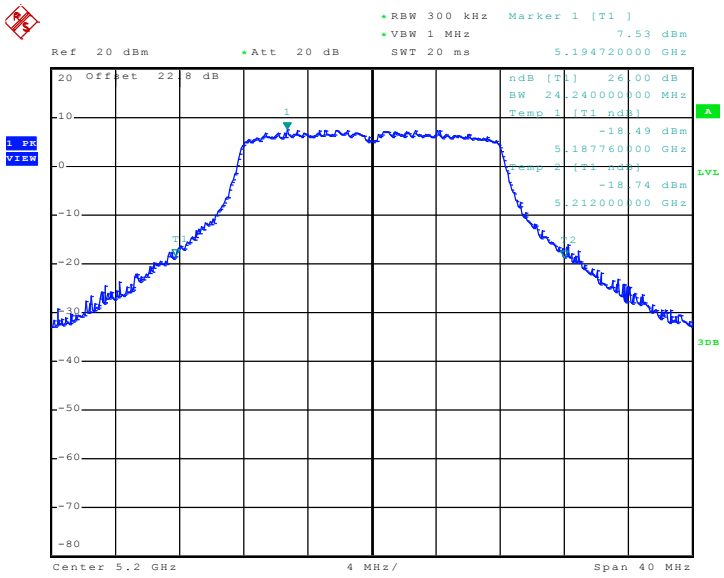
26 dB Bandwidth Plot on 802.11a Channel 36 – Chain B



Date: 28.AUG.2010 04:09:09

Mode 02:

26 dB Bandwidth Plot on 802.11a Channel 40 – Chain B



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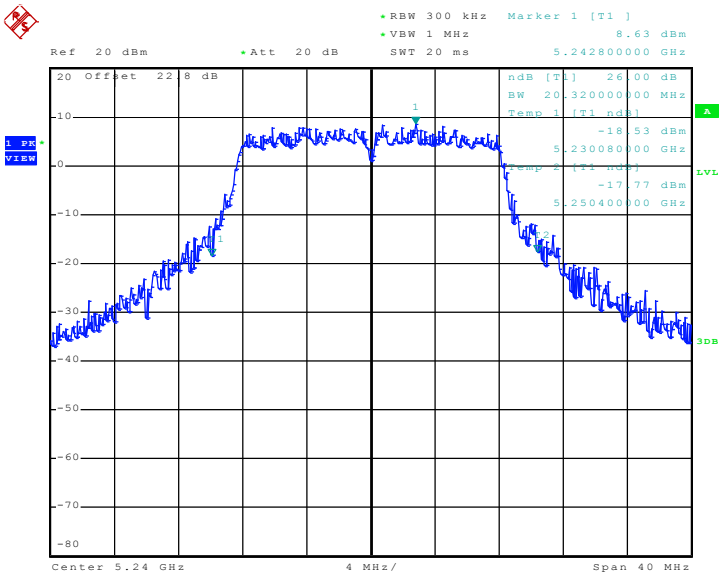
Mode 03:

26 dB Bandwidth Plot on 802.11a Channel 48 – Chain B



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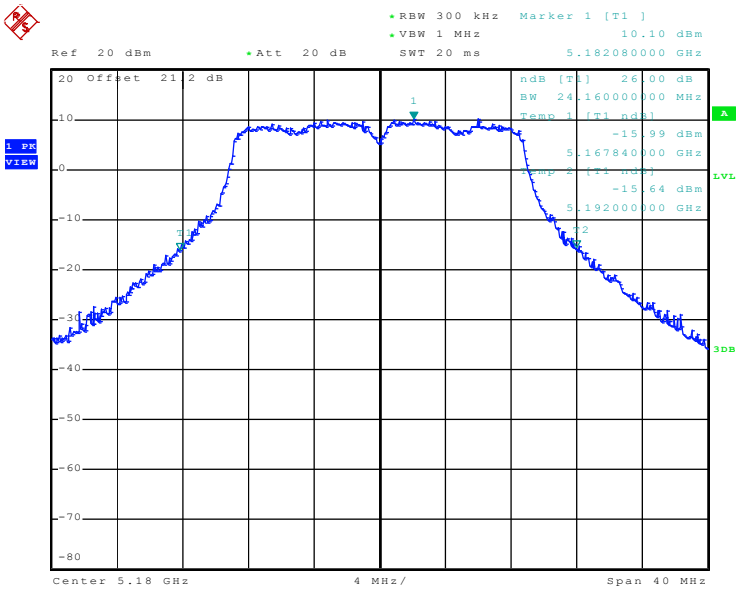
Mode 4 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 36 - Chain A+B+C



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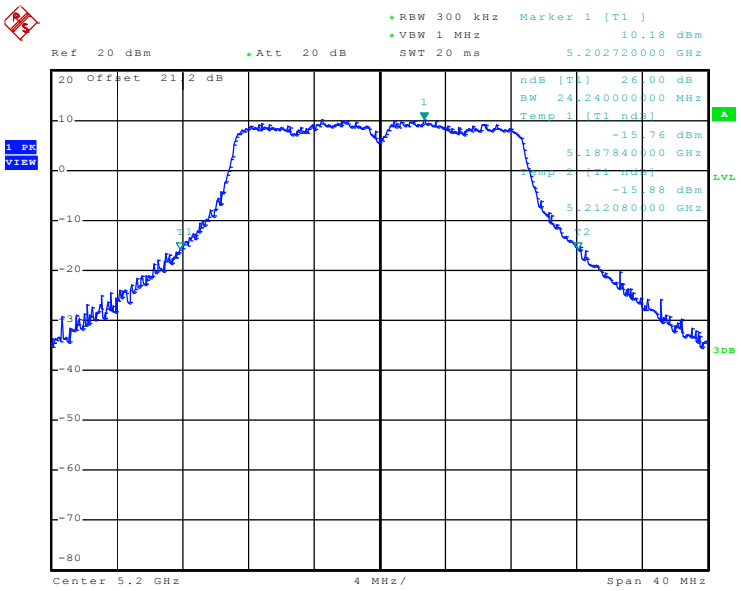
Mode 5 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 40

- Chain A+B+C



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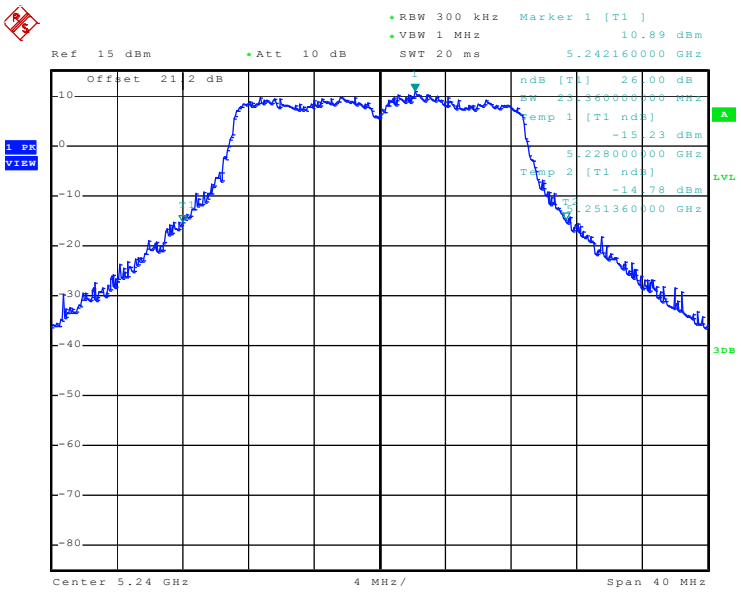
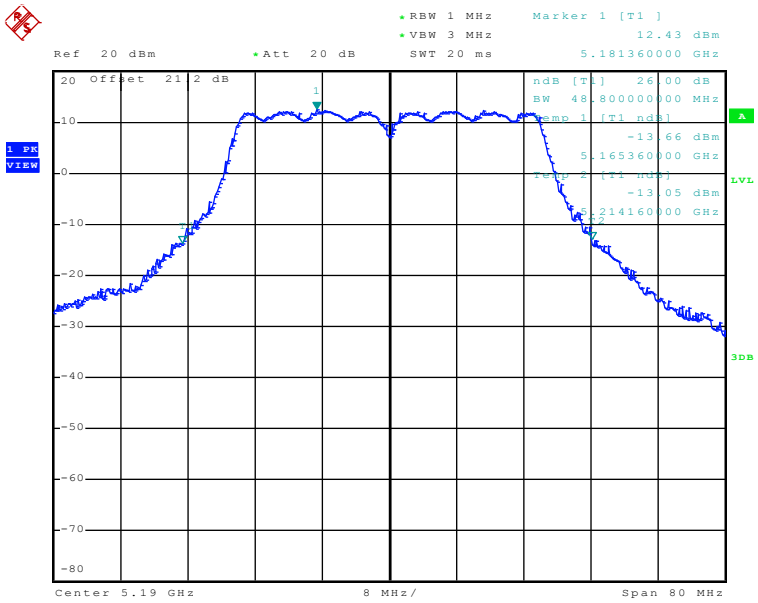
Mode 6 : 26dB Bandwidth Plot on 802.11n (BW 20MHz) Channel 48

- Chain A+B+C



Date: 17.SEP.2010 10:58:25

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



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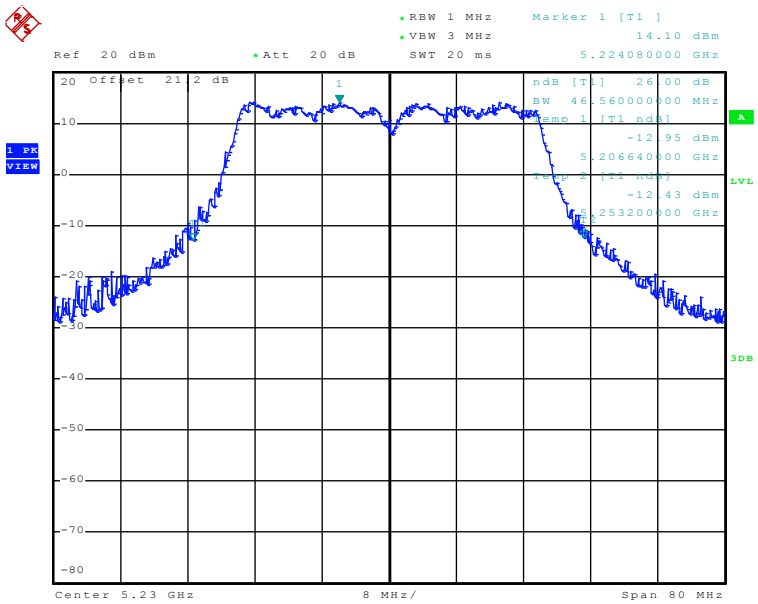
Mode 8 : 26dB Bandwidth Plot on 802.11n (BW 40MHz) Channel 46 - Chain A+B+C



Date: 17.SEP.2010 13:33:14

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 dBm + 10log 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.

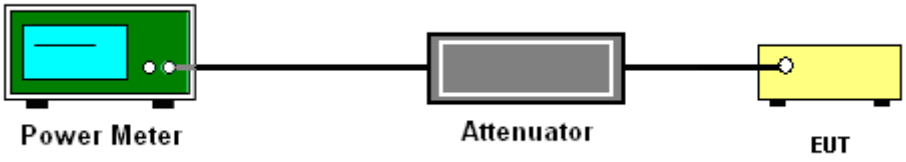
3.2.2 Measuring Instruments

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 power meter 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

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
		Chain B		
36	5180	15.35	17	Pass
40	5200	15.64	17	Pass
48	5240	15.71	17	Pass

Test Mode :	Mode 4, 5, 6	**Temperature :**	25~27℃
Test Engineer :	Mac Lin	**Relative Humidity :**	45~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz, 3Tx) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
		Chain A+B+C		
36	5180	15.45	17	Pass
40	5200	15.28	17	Pass
48	5240	15.51	17	Pass

Test Mode :	Mode 7, 8	**Temperature :**	25~27℃
Test Engineer :	Mac Lin	**Relative Humidity :**	45~48%

Channel	Frequency (MHz)	802.11n (BW 40MHz, 3Tx) Measured Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
		Chain A+B+C		
38	5190	14.82	17	Pass
46	5230	16.23	17	Pass

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.

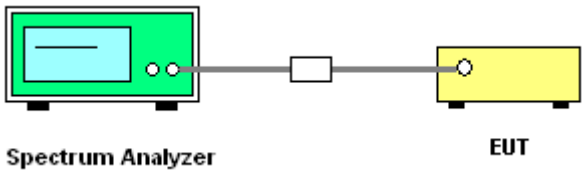
3.3.2 Measuring Instruments

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 :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

Channel	Frequency (MHz)	802.11a Measured PSD (dBm)	Max. Limits (dBm)	Pass/Fail
		Chain B		
36	5180	1.49	4	Pass
40	5200	2.28	4	Pass
48	5240	2.04	4	Pass

Test Mode :	Mode 4, 5, 6	Temperature :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

Channel	Frequency (MHz)	802.11n (BW 20MHz, 3Tx) Measured PSD (dBm)				Max. Limits (dBm)	Pass/Fail
		Chain A	Chain B	Chain C	Chain A+B+C		
36	5180	-3.05	-3.79	-3.60	1.30	4	Pass
40	5200	-3.44	-3.17	-3.92	1.27	4	Pass
48	5240	-3.32	-2.86	-4.16	1.36	4	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*LOG (10^ (chain A/10) + 10^ (chain B/10) + 10^ (chain C/10)).

Test Mode :	Mode 7, 8	Temperature :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

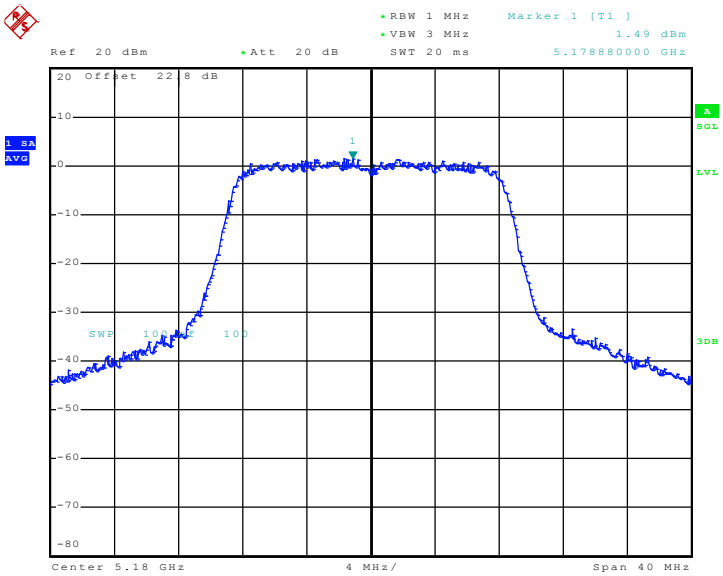
Channel	Frequency (MHz)	802.11n (BW 40MHz, 3Tx) Measured PSD (dBm)				Max. Limits (dBm)	Pass/Fail
		Chain A	Chain B	Chain C	Chain A+B+C		
38	5190	-5.88	-5.76	-6.02	-1.11	4	Pass
46	5230	-5.64	-5.02	-5.49	-0.60	4	Pass

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*LOG (10^ (chain A/10) + 10^ (chain B/10) + 10^ (chain C/10)).

3.3.6 Test Result of Power Spectral Density Plots

Mode 01:

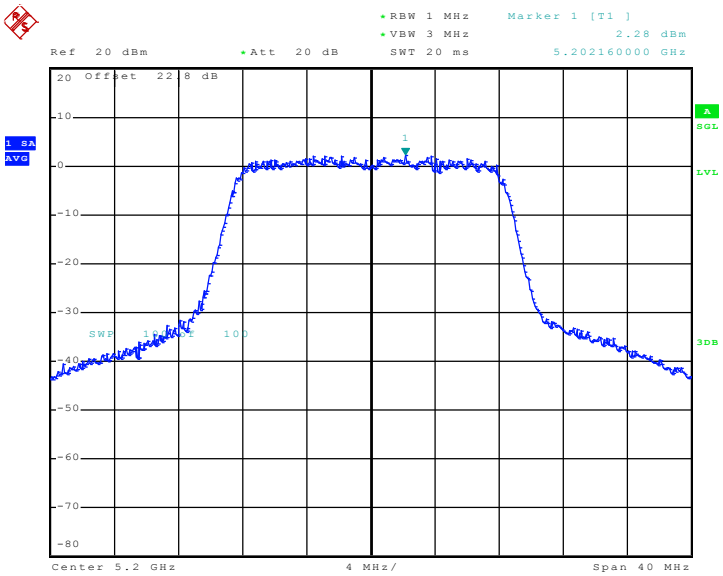
PSD Plot on 802.11a Channel 36 – Chain B



Date: 27.AUG.2010 11:05:12

Mode 02:

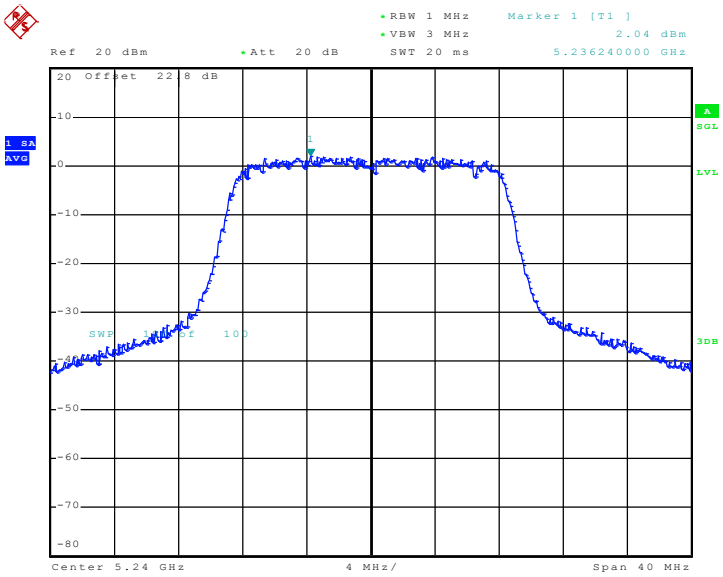
PSD Plot on 802.11a Channel 40 – Chain B



Date: 27.AUG.2010 11:06:12

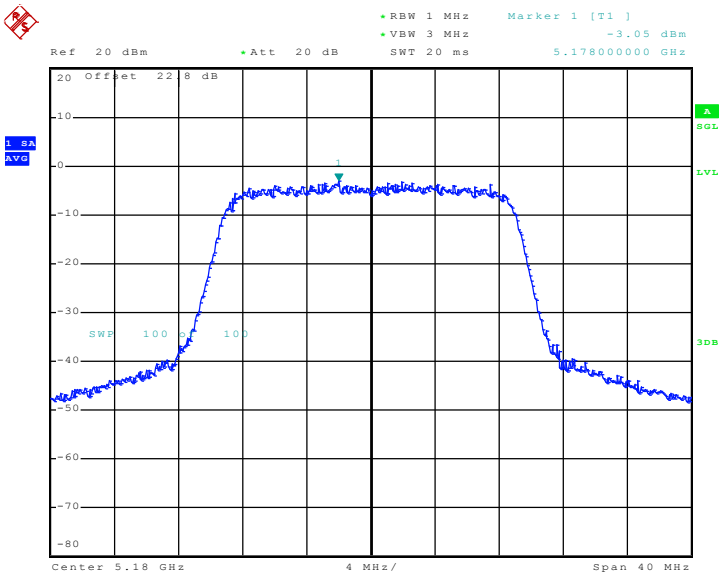
Mode 03:

PSD Plot on 802.11a Channel 48 – Chain B



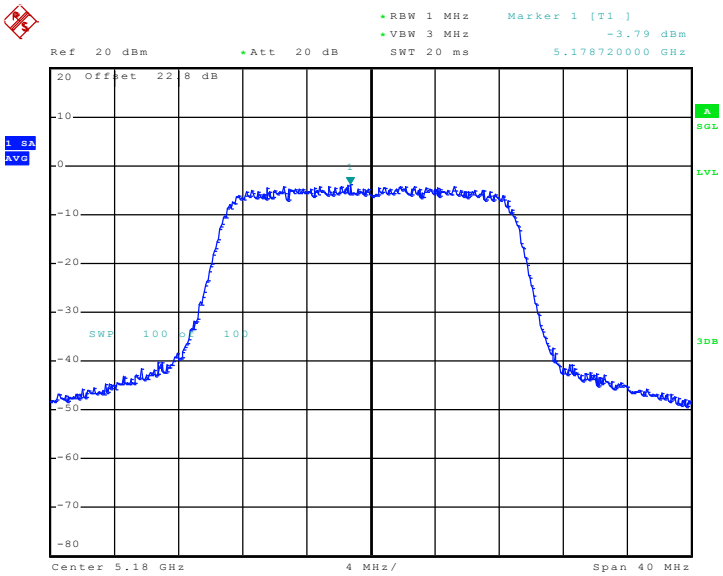
Date: 17.SEP.2010 11:31:13

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



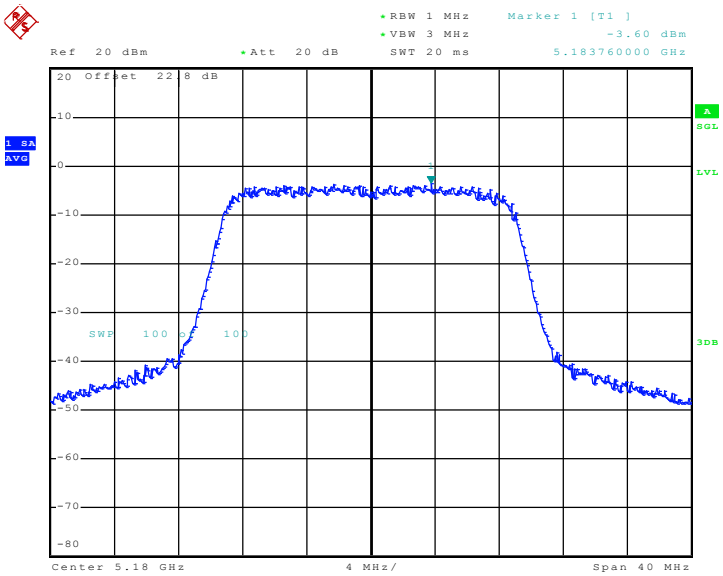
Date: 27.AUG.2010 11:15:47

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



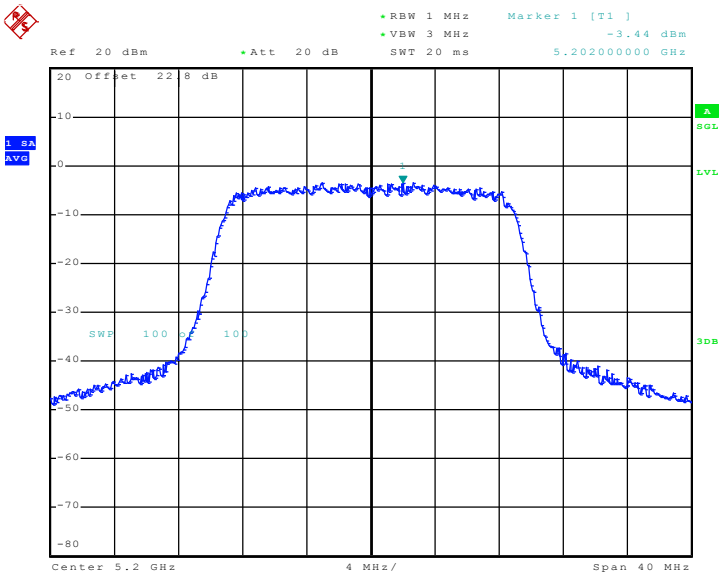
Date: 27.AUG.2010 11:21:09

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



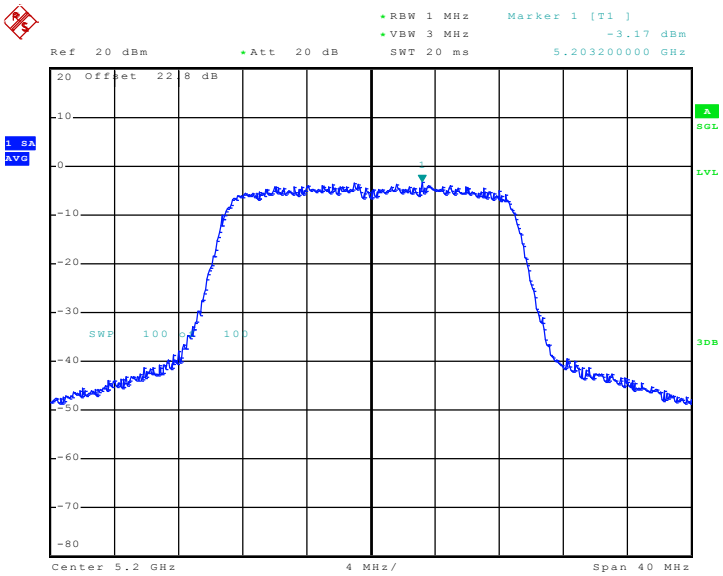
Date: 27.AUG.2010 11:23:58

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



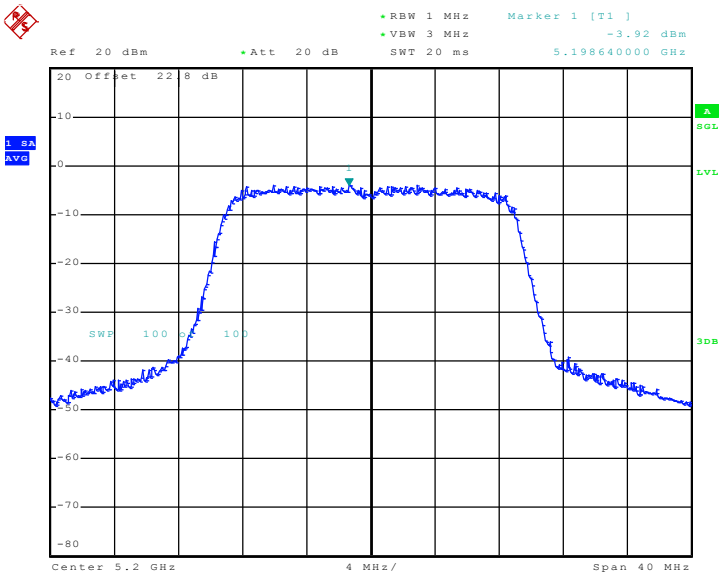
Date: 27.AUG.2010 11:16:39

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



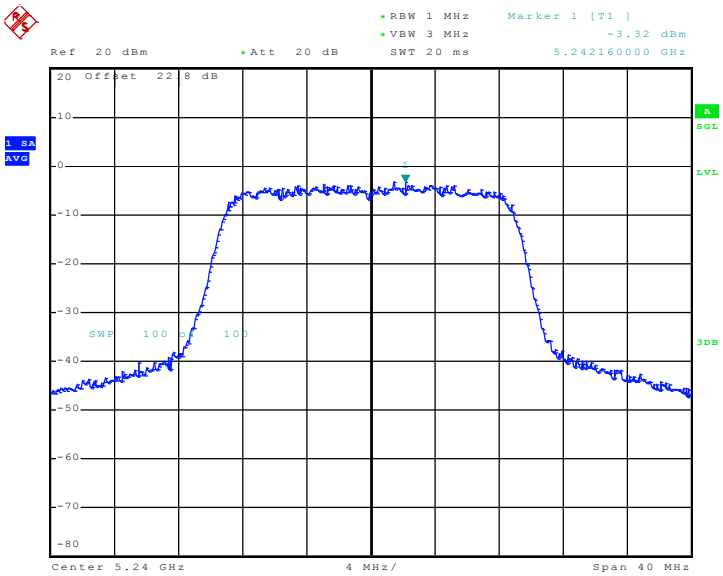
Date: 27.AUG.2010 11:20:11

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



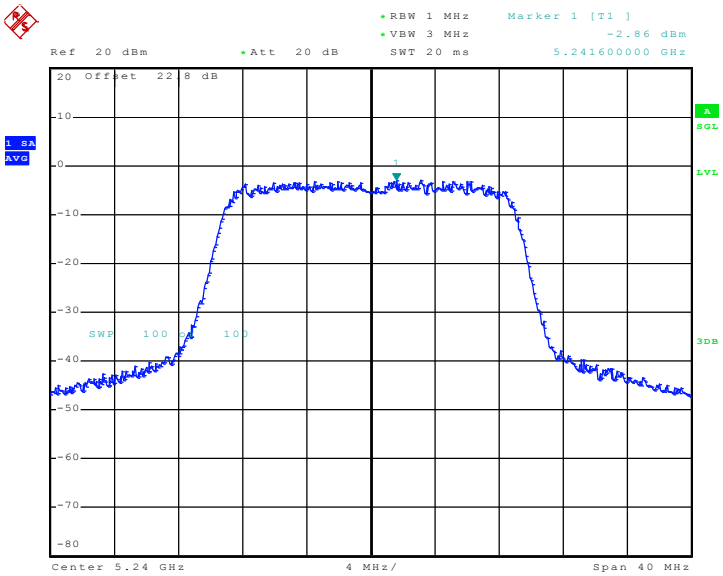
Date: 27.AUG.2010 11:24:44

Mode 6 : PSD Plot on 802.11n (BW 20MHz) Channel 48 - Chain A



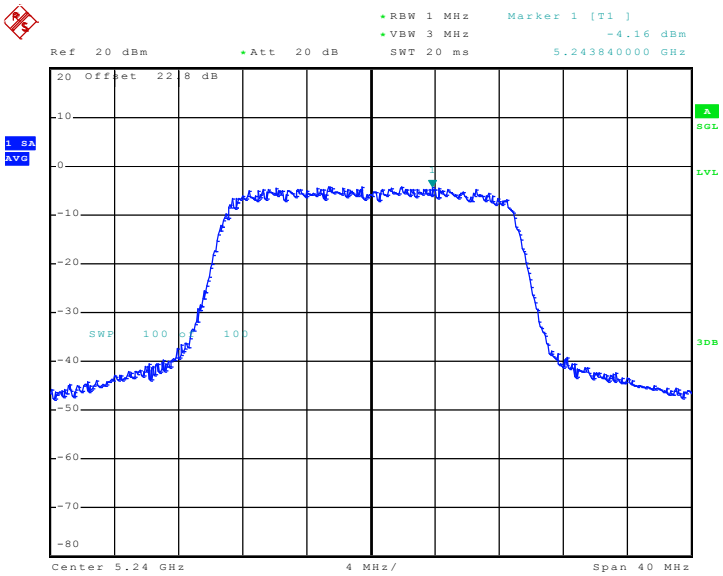
Date: 17.SEP.2010 11:20:38

Mode 6 : PSD Plot on 802.11n (BW 20MHz) Channel 48 - Chain B



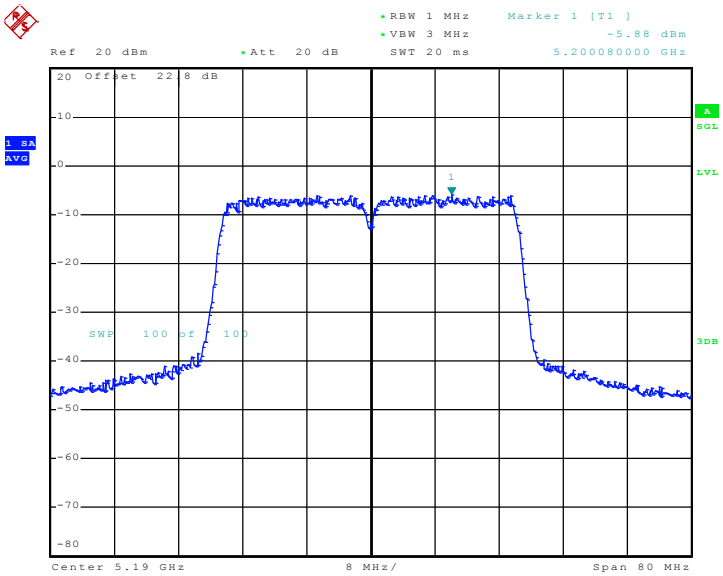
Date: 17.SEP.2010 11:21:32

Mode 6 : PSD Plot on 802.11n (BW 20MHz) Channel 48 - Chain C



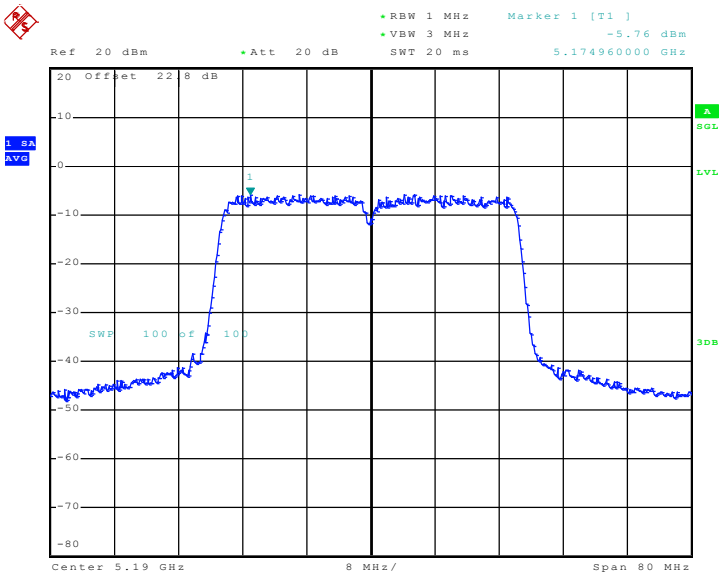
Date: 17.SEP.2010 11:22:27

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



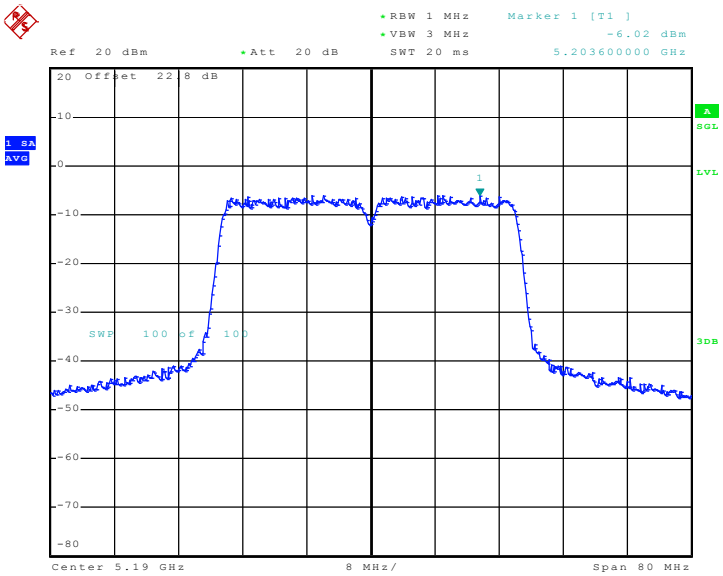
Date: 27.AUG.2010 21:32:39

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



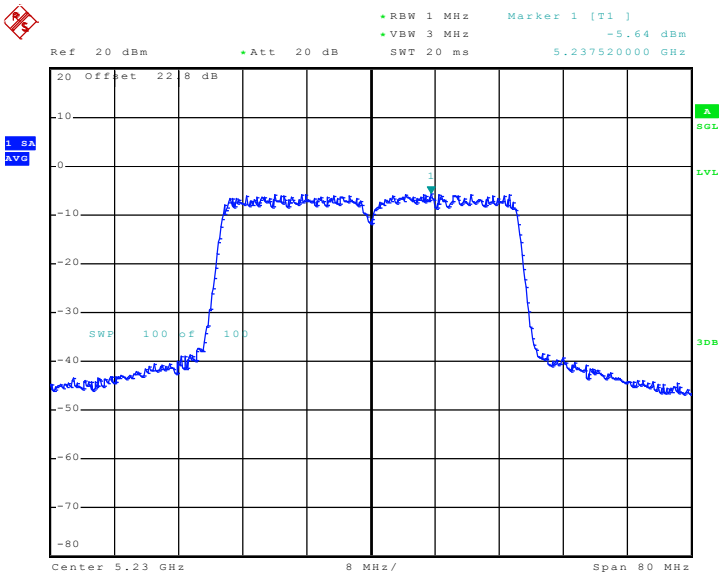
Date: 27.AUG.2010 21:33:25

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



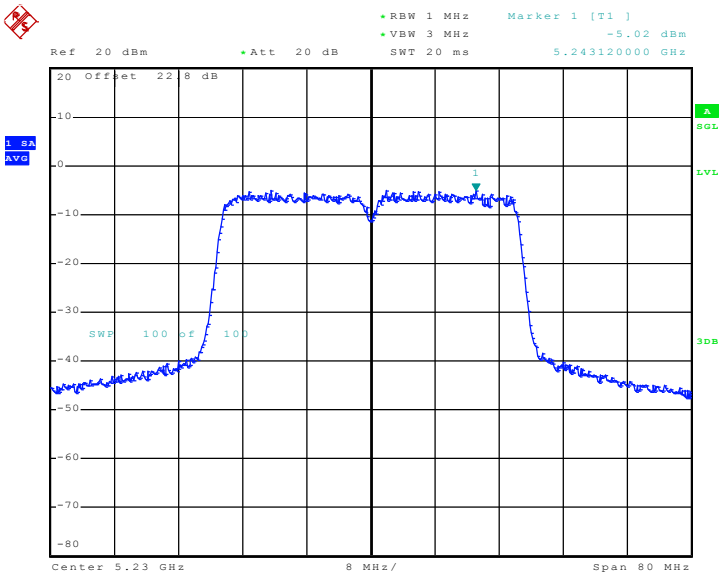
Date: 27.AUG.2010 21:34:27

Mode 8 : PSD Plot on 802.11n (BW 40MHz) Channel 46 - Chain A



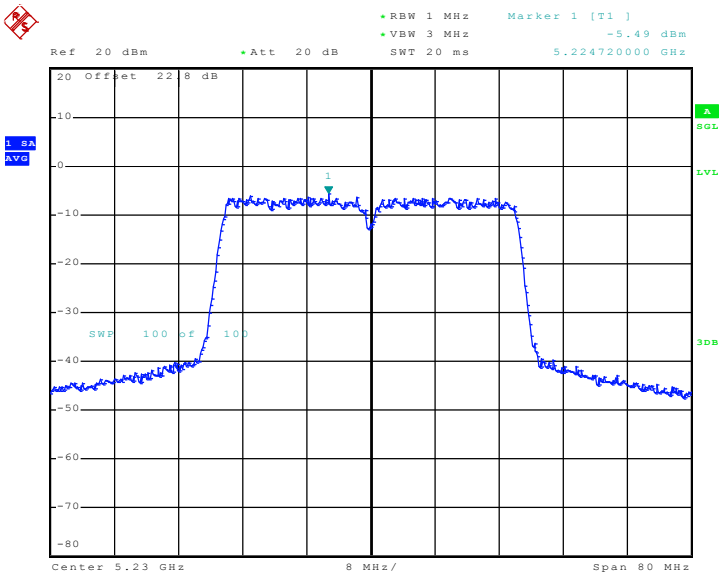
Date: 17.SEP.2010 11:38:50

Mode 8 : PSD Plot on 802.11n (BW 40MHz) Channel 46 - Chain B



Date: 17.SEP.2010 11:37:47

Mode 8 : PSD Plot on 802.11n (BW 40MHz) Channel 46 - Chain C



Date: 17.SEP.2010 11:40:31

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

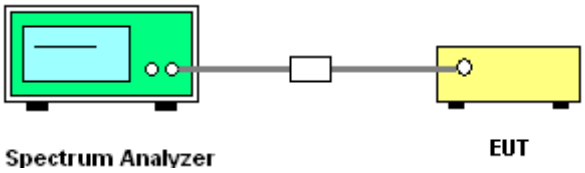
See list of measuring instruments of this test report.

3.4.3 Test Procedures

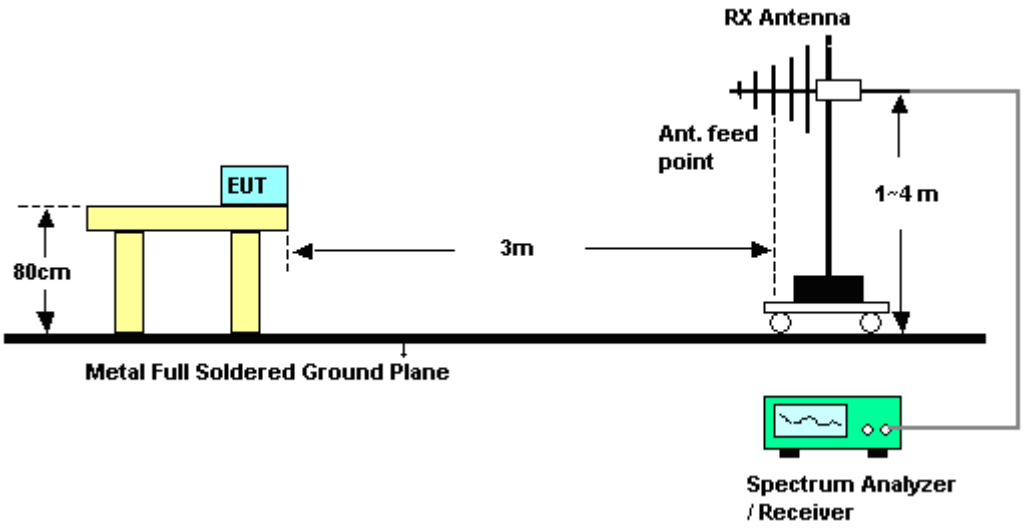
1. Set both RBW and VBW of spectrum analyzer to 1MHz with convenient frequency span including 1MHz bandwidth from band edge.
2. The band edges was measured and recorded.

3.4.4 Test Setup

<Conducted>



<Radiated>



3.4.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	48~49%
Test Channel :	36	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	58.79	-15.21	74	49.78	34.25	9.41	34.65	142	302	Peak
5150	42.72	-11.28	54	33.71	34.25	9.41	34.65	142	302	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	63.74	-10.26	74	54.73	34.25	9.41	34.65	100	310	Peak
5150	46.45	-7.55	54	37.44	34.25	9.41	34.65	100	310	Average

Test Mode :	Mode 3	Temperature :	24~26°C
Test Band :	802.11a	Relative Humidity :	48~49%
Test Channel :	48	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350	49.79	-24.21	74	41	34.45	9.74	35.4	102	324	Peak
5350	38.8	-15.2	54	30.01	34.45	9.74	35.4	102	324	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	52.45	-21.55	74	43.66	34.45	9.74	35.4	116	15	Peak
5350	40.66	-13.34	54	31.87	34.45	9.74	35.4	116	15	Average

Test Mode :	Mode 4	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~49%
Test Channel :	36	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	53.77	-20.23	74	44.76	34.25	9.41	34.65	139	302	Peak
5150	40.57	-13.43	54	31.56	34.25	9.41	34.65	139	302	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	60.48	-13.52	74	51.47	34.25	9.41	34.65	111	307	Peak
5150	43.07	-10.93	54	34.06	34.25	9.41	34.65	111	307	Average

Test Mode :	Mode 6	Temperature :	24~26°C
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	48~49%
Test Channel :	48	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350	50.28	-23.72	74	41.49	34.45	9.74	35.4	189	35	Peak
5350	38.69	-15.31	54	29.9	34.45	9.74	35.4	189	35	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	50.61	-23.39	74	41.82	34.45	9.74	35.4	100	68	Peak
5350	39.56	-14.44	54	30.77	34.45	9.74	35.4	100	68	Average

Test Mode :	Mode 7	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~49%
Test Channel :	38	Test Engineer :	Ivan Chiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5150	62.46	-11.54	74	53.45	34.25	9.41	34.65	142	303	Peak
5150	46.39	-7.61	54	37.38	34.25	9.41	34.65	142	303	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	71.85	-2.15	74	62.84	34.25	9.41	34.65	100	60	Peak
5150	52.78	-1.22	54	43.77	34.25	9.41	34.65	100	60	Average

Test Mode :	Mode 8	Temperature :	24~26°C
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	48~49%
Test Channel :	46	Test Engineer :	Ivan Chiang

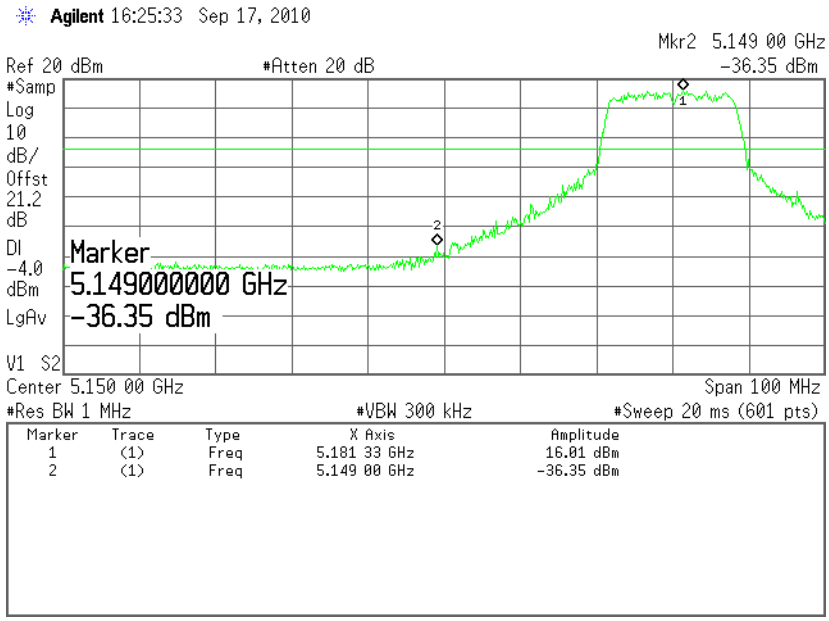
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350	50.66	-23.34	74	41.87	34.45	9.74	35.4	172	33	Peak
5350	38.82	-15.18	54	30.03	34.45	9.74	35.4	172	33	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350	59.54	-14.46	74	50.75	34.45	9.74	35.4	100	68	Peak
5350	47.62	-6.38	54	38.83	34.45	9.74	35.4	100	68	Average

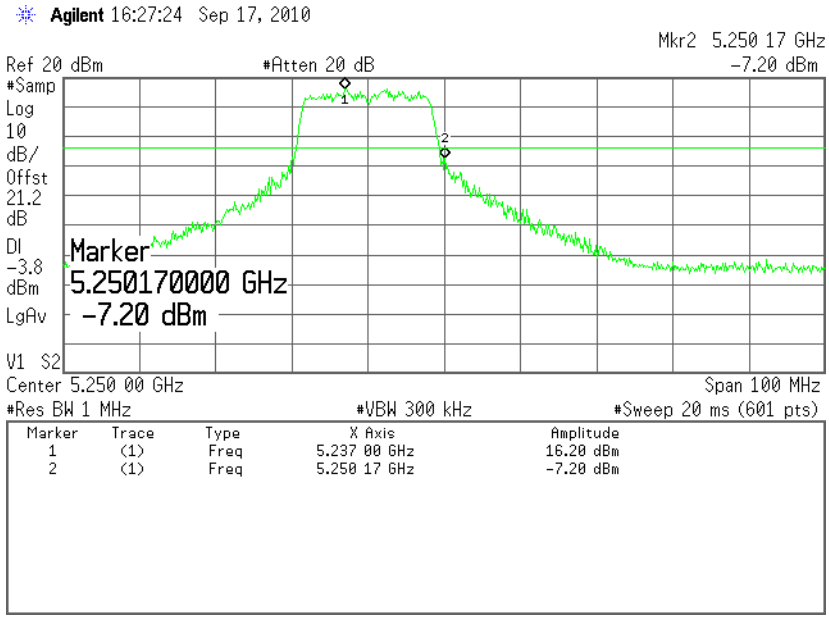
3.4.6 Test Result of Conducted Band Edges

Test Mode :	Mode 1 and Mode 3	Temperature :	25~27℃
Test Band :	802.11a	Relative Humidity :	45~48%
Test Channel :	36 and 48	Test Engineer :	Mac Lin

Mode 1 : Low Band Edge Plot on Channel 36 – Chain B

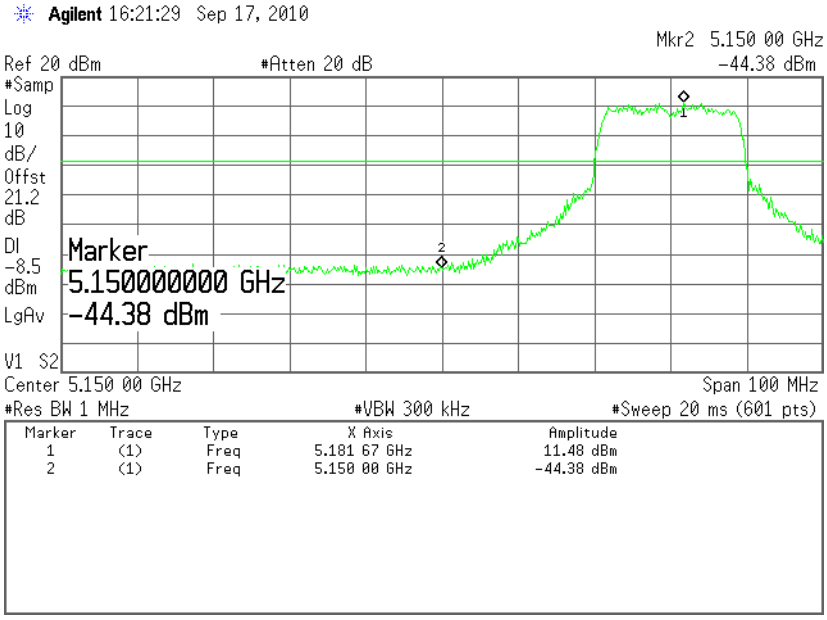


Mode 3 : High Band Edge Plot on Channel 48 – Chain B

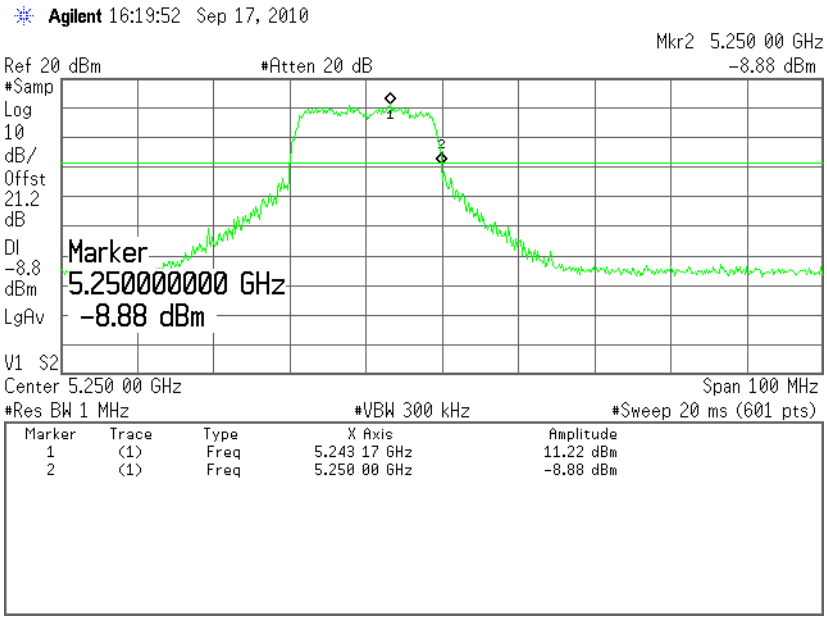


Test Mode :	Mode 4 and Mode 6	Temperature :	25~27℃
Test Band :	802.11n (BW 20MHz)	Relative Humidity :	45~48%
Test Channel :	36 and 48	Test Engineer :	Mac Lin

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

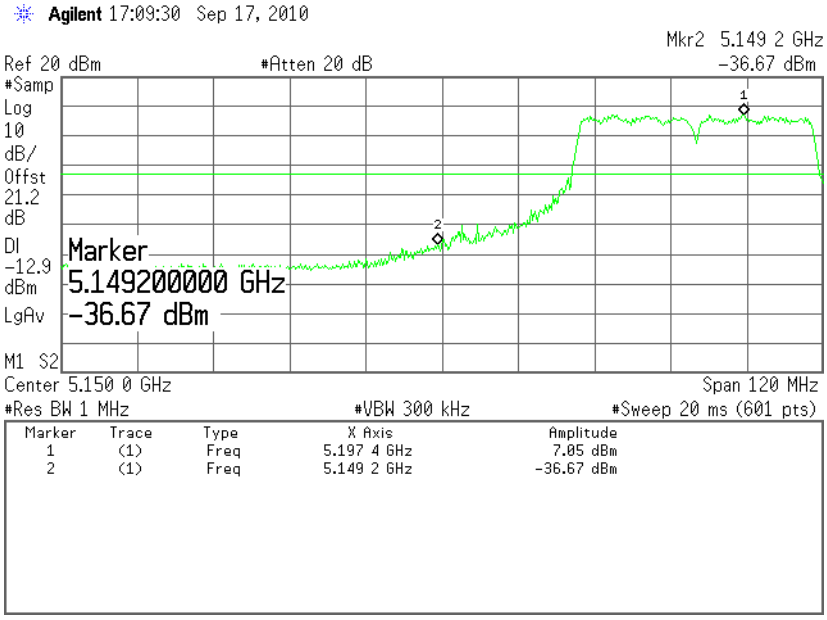


Mode 6 : High Band Edge Plot on Channel 48 – Chain A+B+C

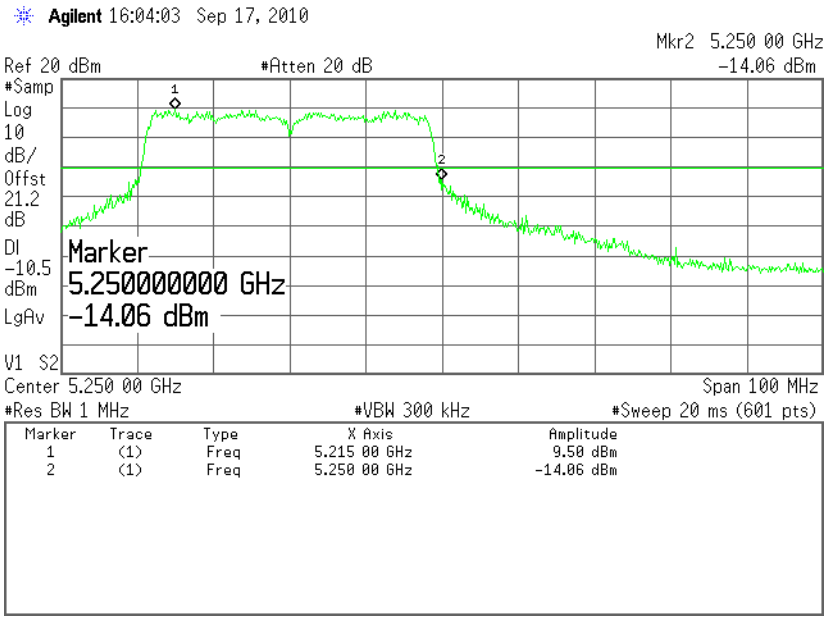


Test Mode :	Mode 7 and Mode 8	Temperature :	25~27℃
Test Band :	802.11n (BW 40MHz)	Relative Humidity :	45~48%
Test Channel :	38 and 46	Test Engineer :	Mac Lin

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



Mode 8 : High Band Edge Plot on Channel 46 – Chain A+B+C



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.

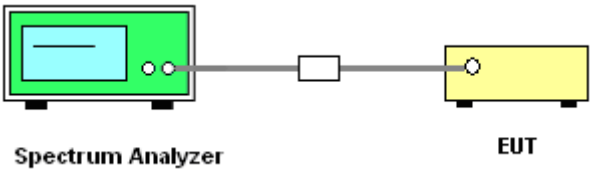
3.5.2 Measuring Instruments

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.

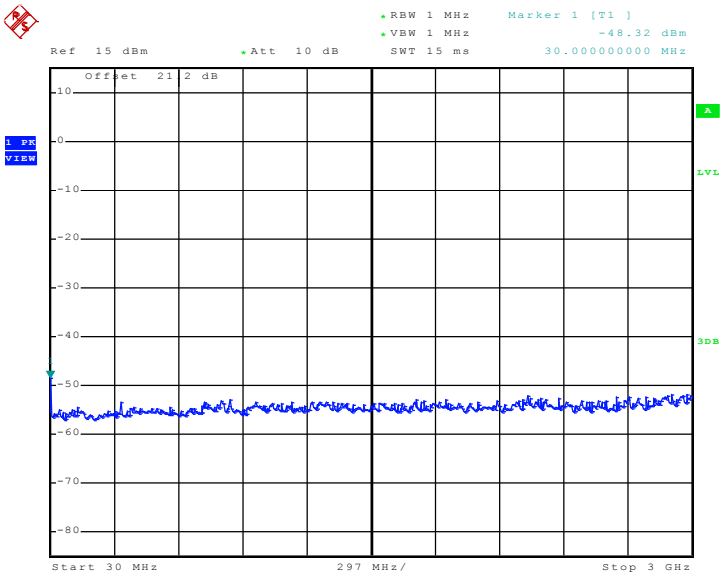
3.5.4 Test Setup



3.5.5 Test Result

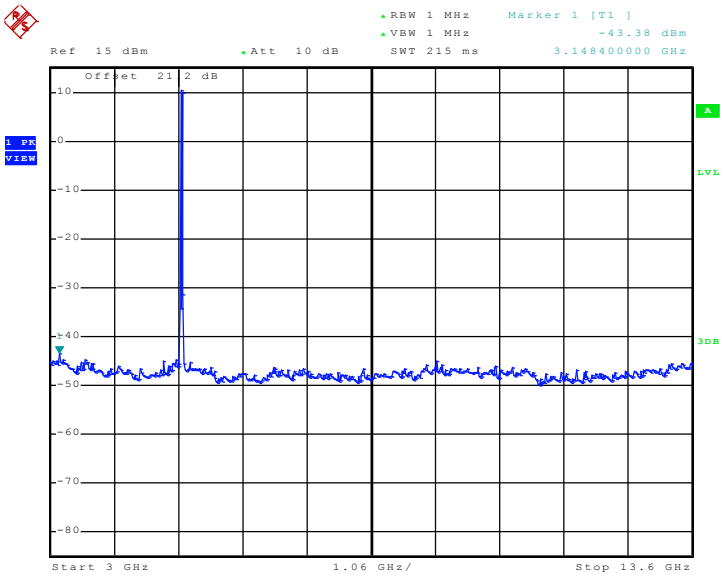
Test Mode :	Mode 1, 2, 3	Temperature :	25~27℃
Test Band :	802.11a	Relative Humidity :	45~48%
Test Channel :	36, 40, 48	Test Engineer :	Mac Lin

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



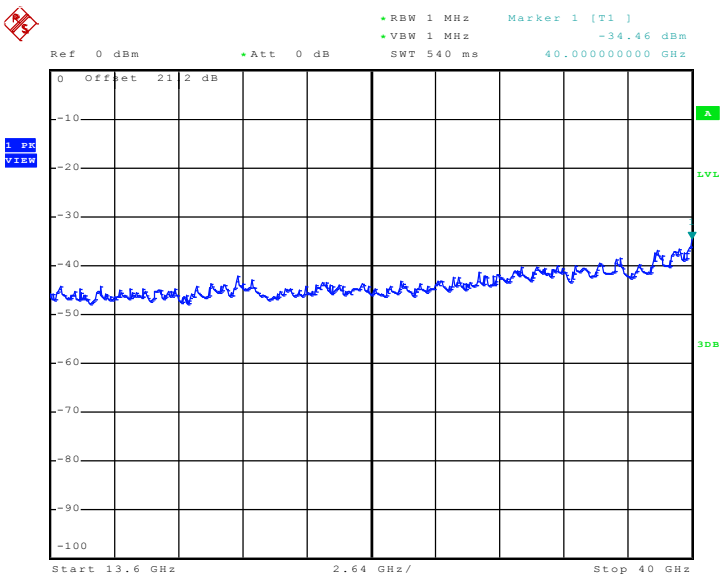
Date: 27.AUG.2010 19:29:08

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



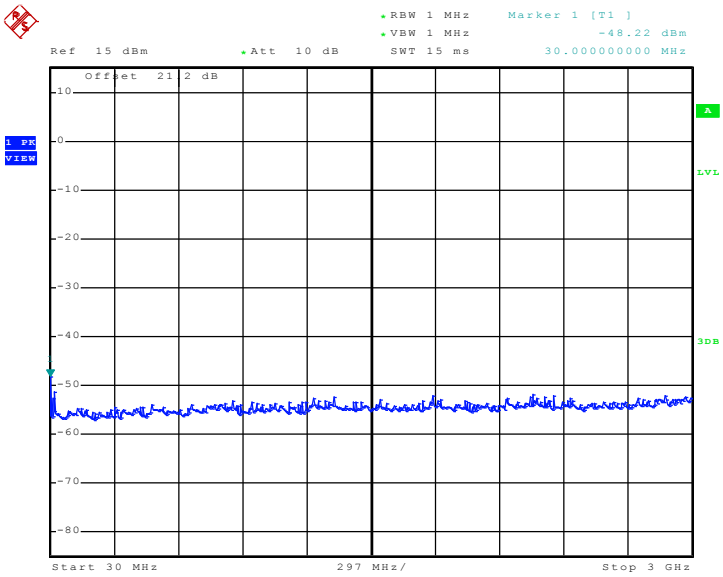
Date: 27.AUG.2010 19:29:20

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



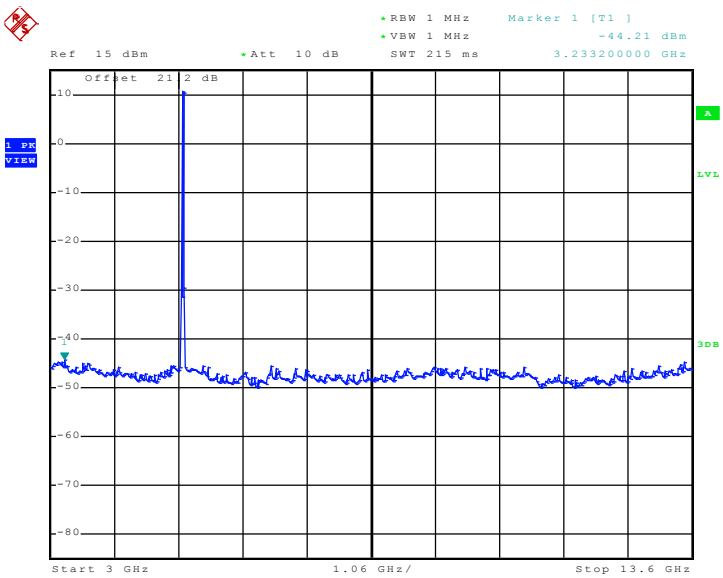
Date: 27.AUG.2010 19:29:33

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



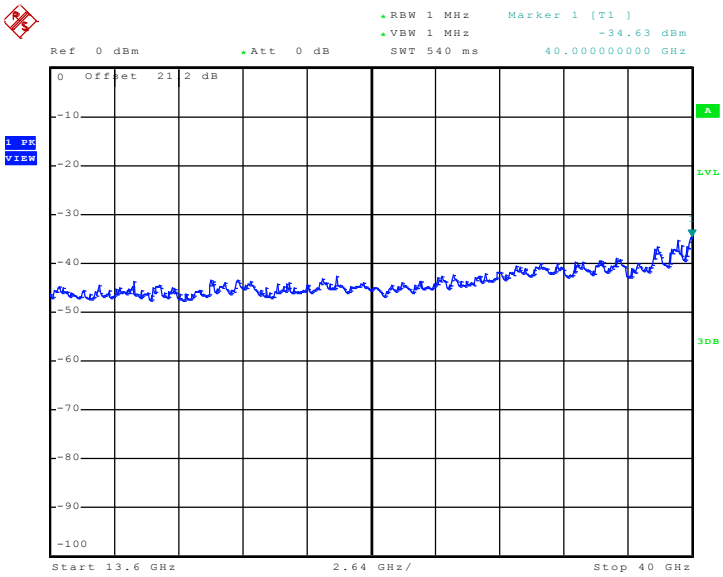
Date: 27.AUG.2010 19:29:51

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



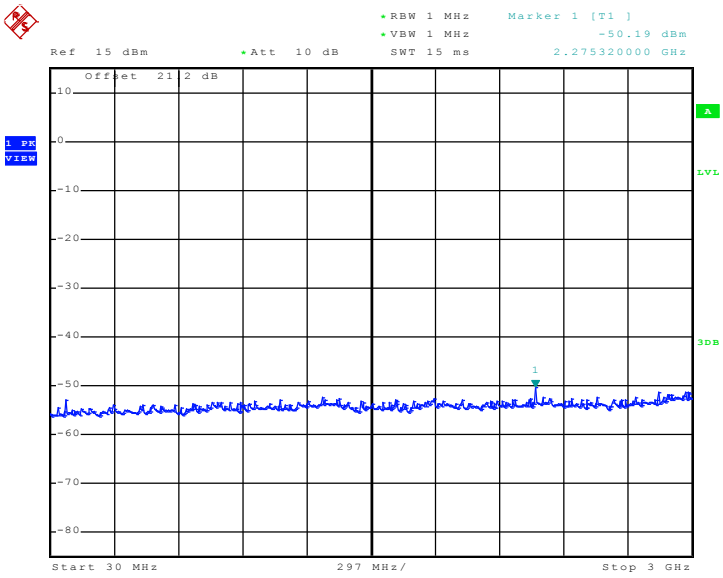
Date: 27.AUG.2010 19:30:04

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



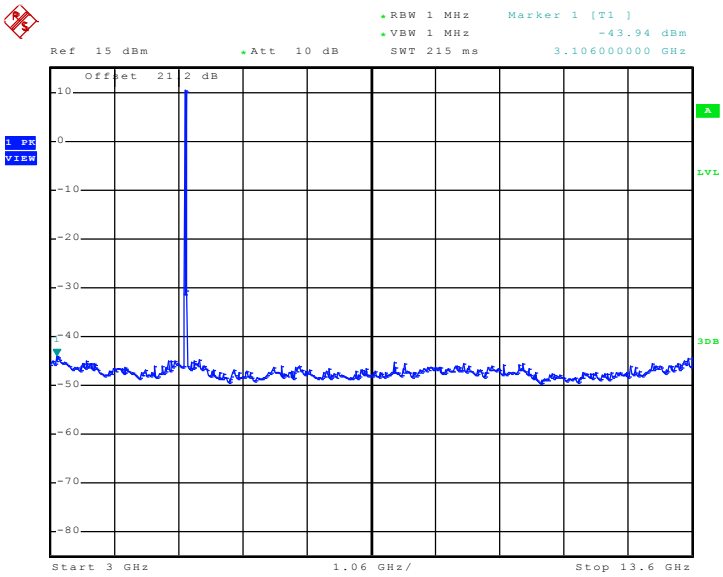
Date: 27.AUG.2010 19:30:16

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



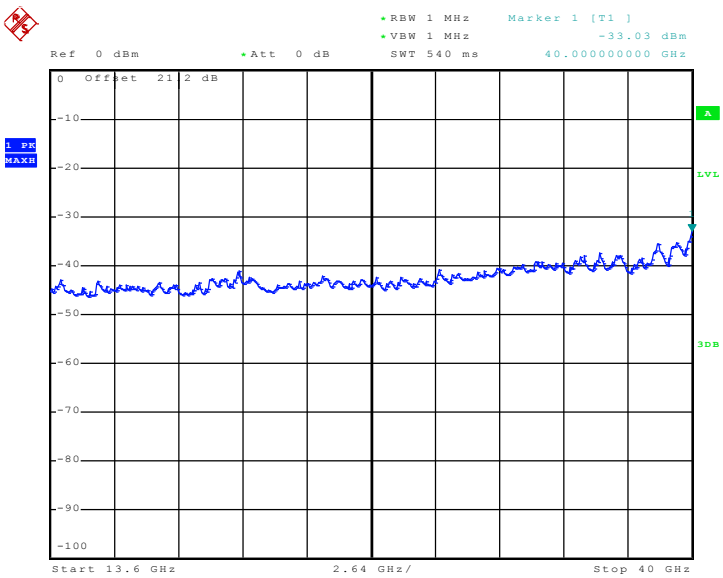
Date: 17.SEP.2010 10:08:09

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



Date: 17.SEP.2010 10:06:38

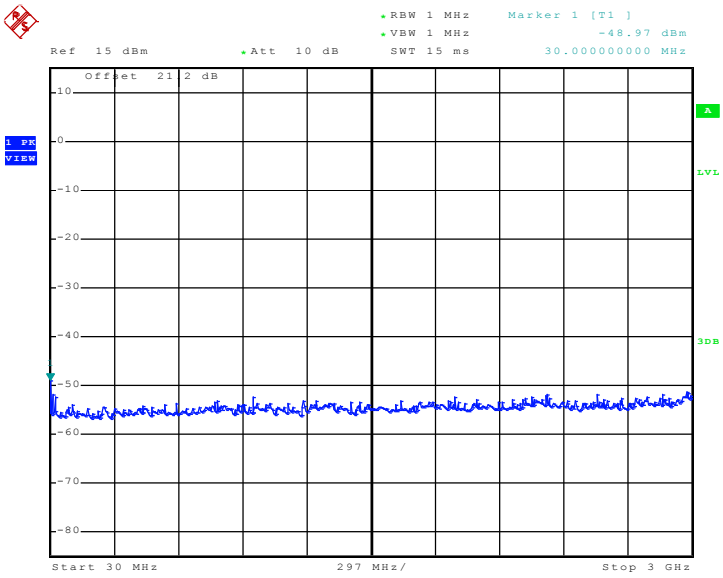
Mode 3: Conducted Spurious Emission Plot between 13.6 GHz ~ 40 GHz - Chain B



Date: 17.SEP.2010 10:05:15

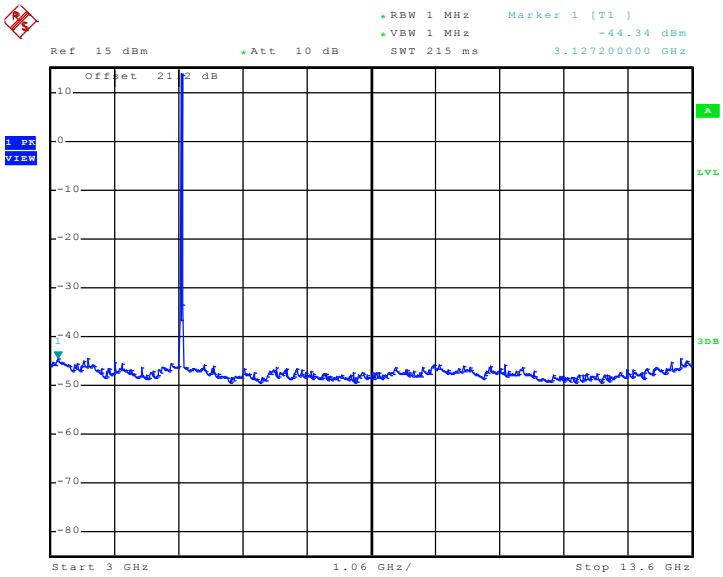
Test Mode :	Mode 4, 5, 6	**Temperature :**	25~27℃
Test Band :	802.11n (BW 20MHz)	**Relative Humidity :**	45~48%
Test Channel :	36, 40, 48	**Test Engineer :**	Mac Lin

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



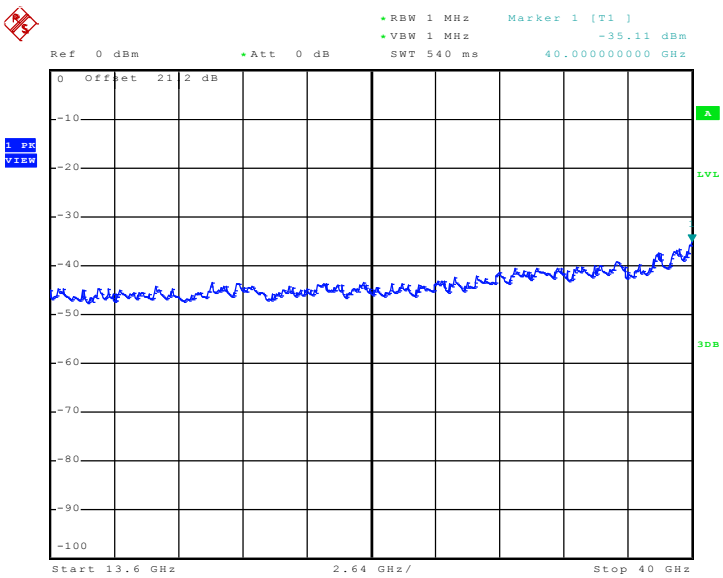
Date: 27.AUG.2010 20:10:35

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



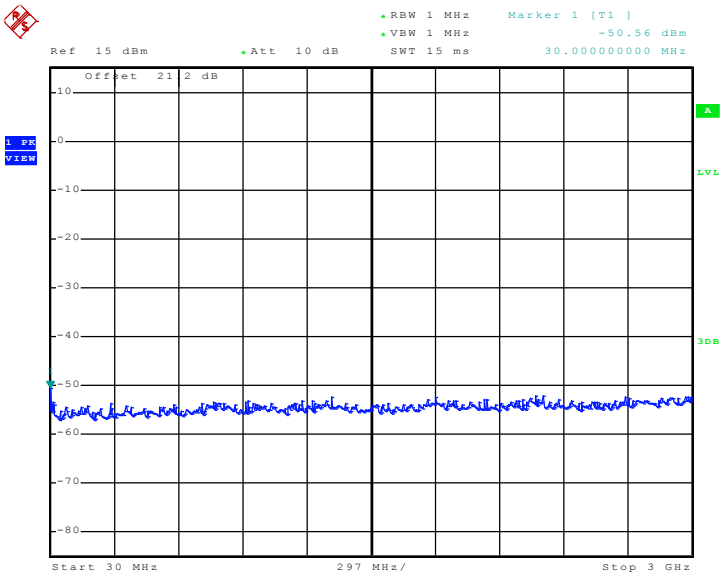
Date: 27.AUG.2010 20:10:48

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



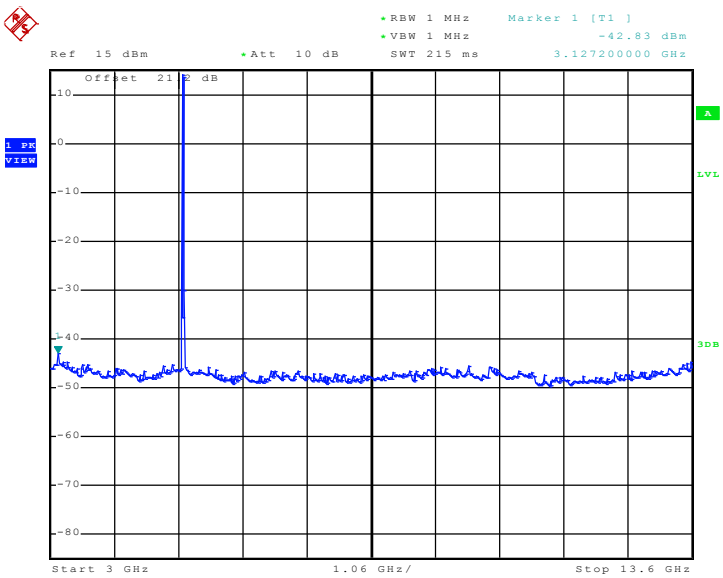
Date: 27.AUG.2010 20:11:00

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



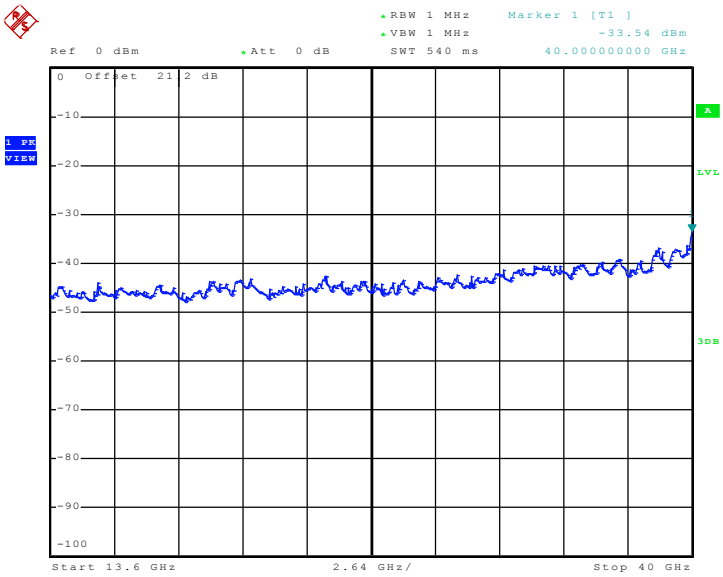
Date: 27.AUG.2010 20:11:23

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



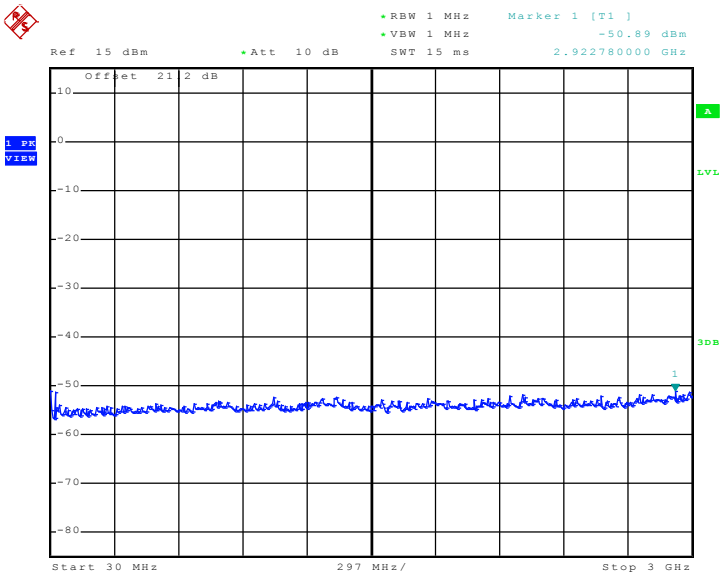
Date: 27.AUG.2010 20:11:35

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



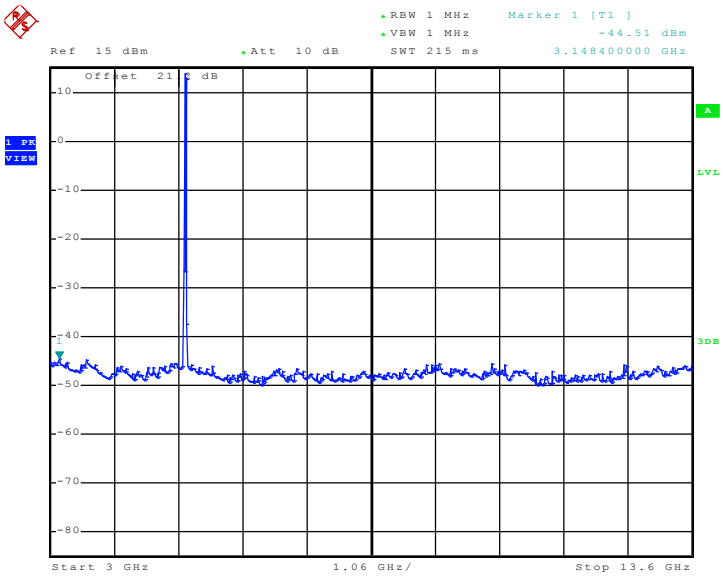
Date: 27.AUG.2010 20:11:48

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



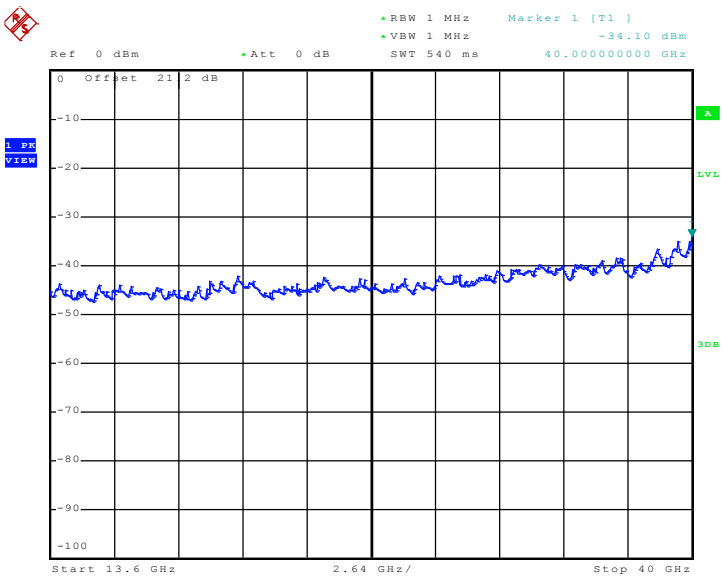
Date: 17.SEP.2010 10:37:28

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



Date: 17.SEP.2010 10:36:35

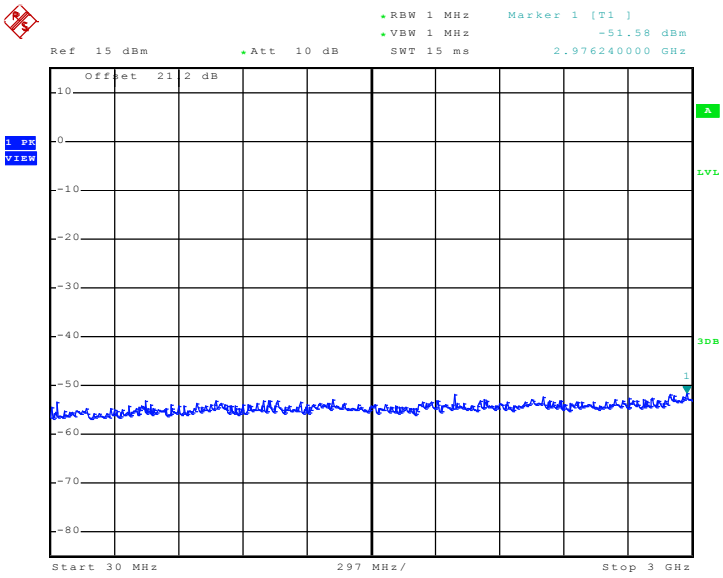
Mode 6: Conducted Spurious Emission Plot between 13.6 GHz ~ 40 GHz - Chain A+B+C



Date: 17.SEP.2010 10:34:47

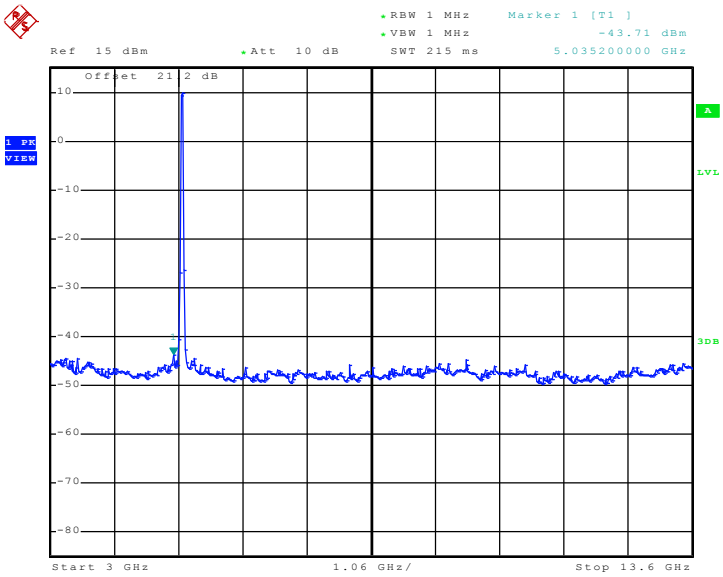
Test Mode :	Mode 7, 8	**Temperature :**	25~27℃
Test Band :	802.11n (BW 40MHz)	**Relative Humidity :**	45~48%
Test Channel :	38, 46	**Test Engineer :**	Mac Lin

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



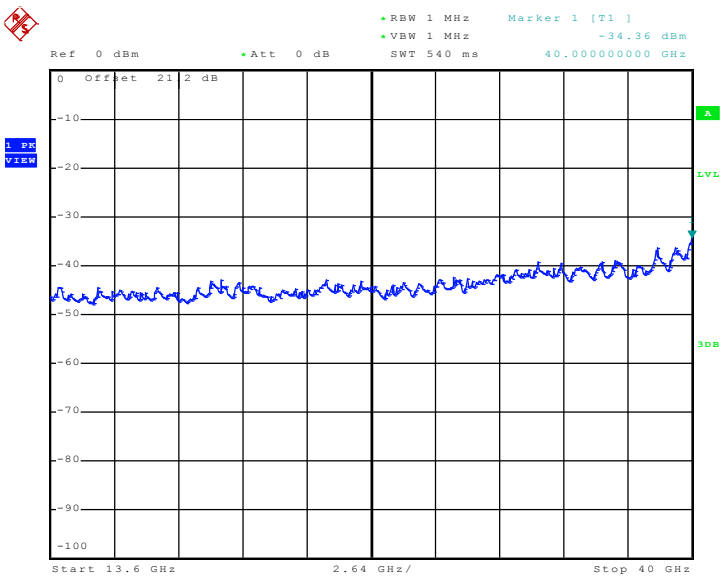
Date: 27.AUG.2010 20:20:41

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



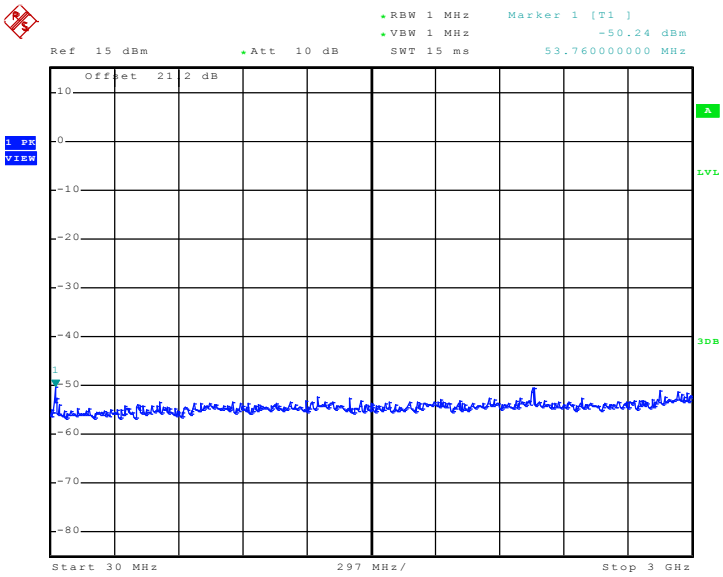
Date: 27.AUG.2010 20:20:53

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



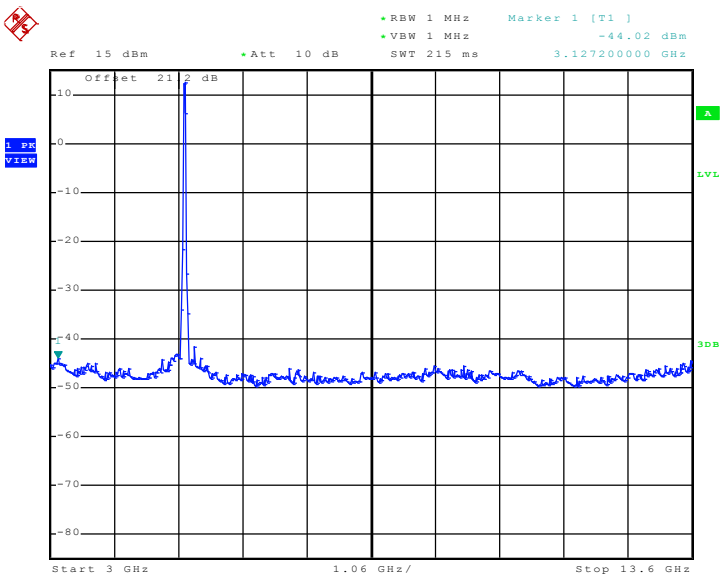
Date: 27.AUG.2010 20:21:06

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



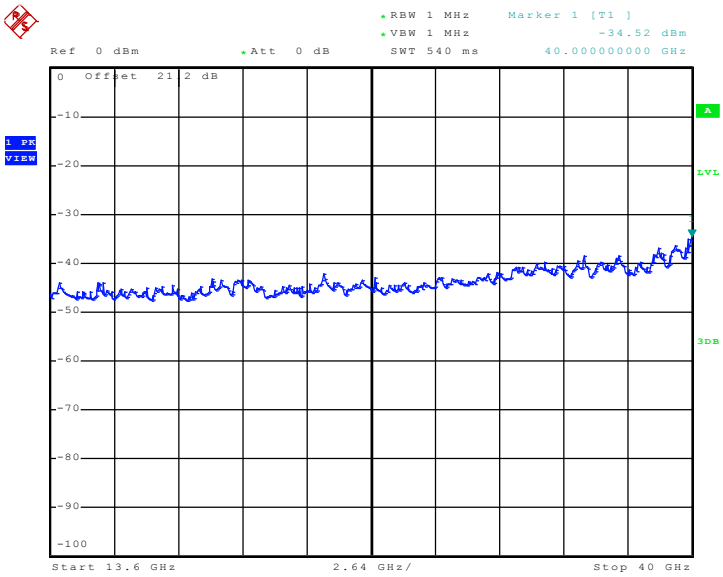
Date: 17.SEP.2010 13:45:37

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



Date: 17.SEP.2010 13:46:44

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



Date: 17.SEP.2010 13:47:38

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.

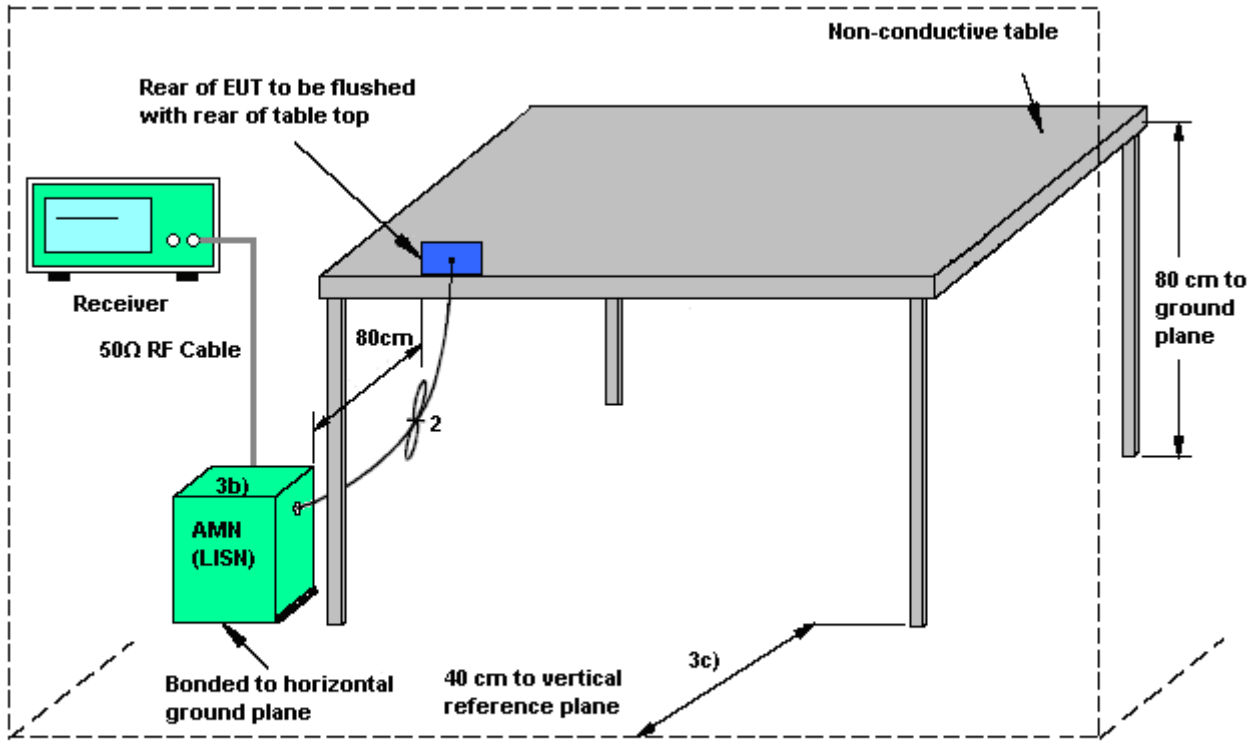
3.6.2 Measuring Instruments

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.

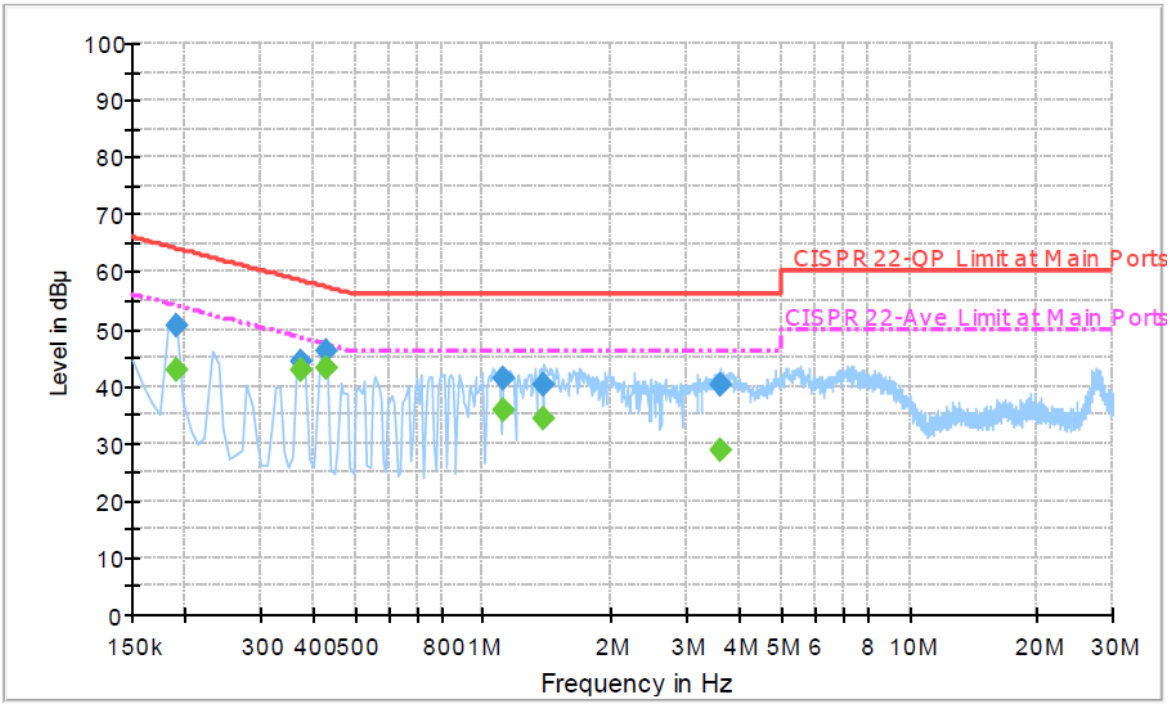
3.6.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.6.5 Test Result of AC Conducted Emission

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



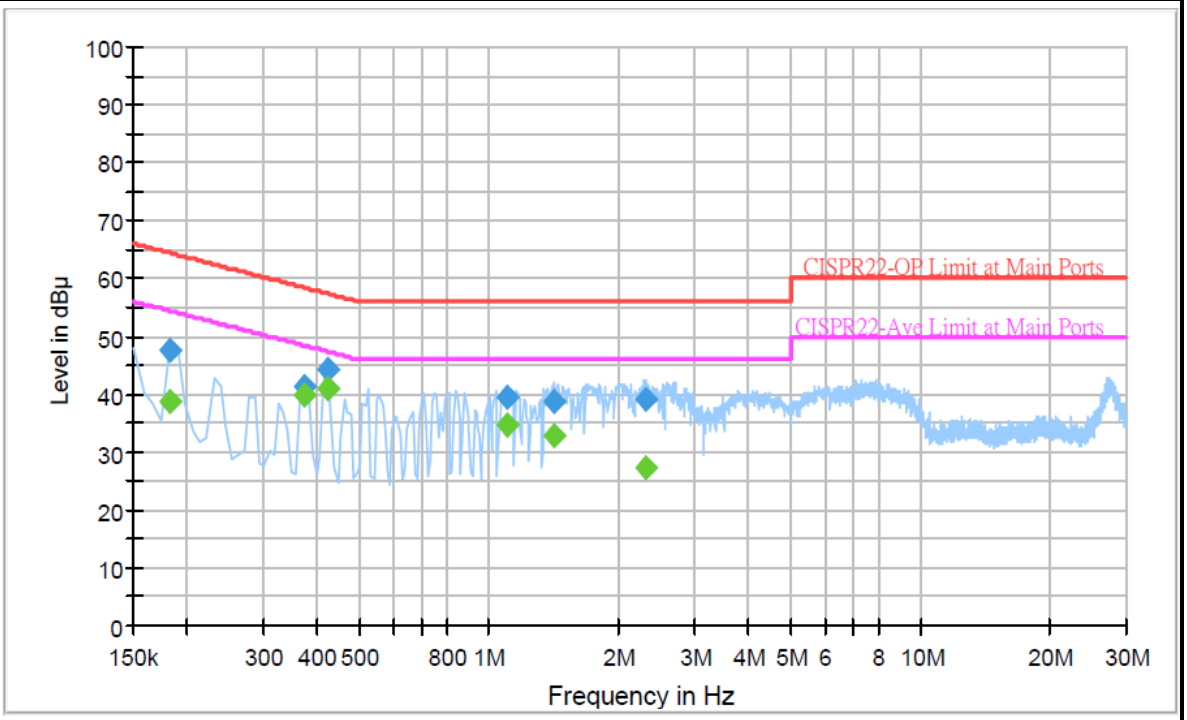
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	50.4	Off	L1	19.4	13.6	64.0
0.374000	44.4	Off	L1	19.4	14.0	58.4
0.430000	46.1	Off	L1	19.4	11.2	57.3
1.118000	41.3	Off	L1	19.4	14.7	56.0
1.390000	40.2	Off	L1	19.4	15.8	56.0
3.606000	40.3	Off	L1	19.5	15.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190000	42.7	Off	L1	19.4	11.3	54.0
0.374000	42.7	Off	L1	19.4	5.7	48.4
0.430000	43.3	Off	L1	19.4	4.0	47.3
1.118000	35.7	Off	L1	19.4	10.3	46.0
1.390000	34.5	Off	L1	19.4	11.5	46.0
3.606000	28.8	Off	L1	19.5	17.2	46.0

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



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	47.6	Off	N	19.4	16.8	64.4
0.374000	41.2	Off	N	19.4	17.2	58.4
0.422000	44.3	Off	N	19.4	13.1	57.4
1.102000	39.5	Off	N	19.4	16.5	56.0
1.414000	38.9	Off	N	19.4	17.1	56.0
2.302000	39.2	Off	N	19.5	16.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	38.6	Off	N	19.4	15.8	54.4
0.374000	39.8	Off	N	19.4	8.6	48.4
0.422000	40.8	Off	N	19.4	6.6	47.4
1.102000	34.7	Off	N	19.4	11.3	46.0
1.414000	32.9	Off	N	19.4	13.1	46.0
2.302000	27.2	Off	N	19.5	18.8	46.0

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

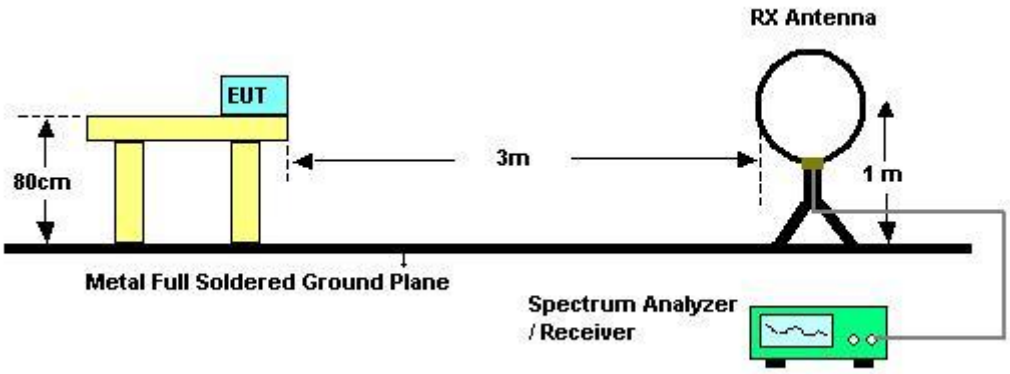
See list of measuring instruments of this test report.

3.7.3 Test Procedures

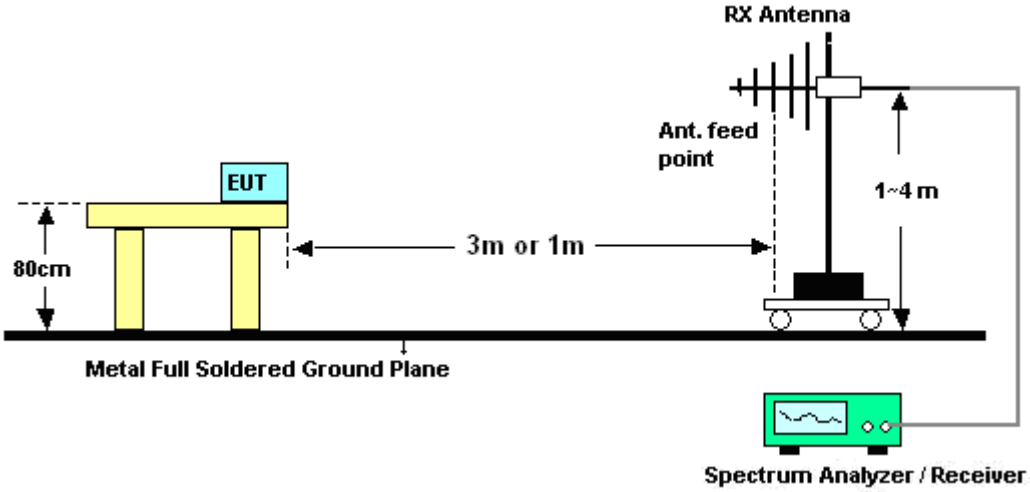
1. The testing follows the guidelines in FCC Public Notice DA 02-2138, (Measurement Guidelines of UNII)
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna 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	24~26°C	Humidity	48~49%
Test Engineer	Ivan Chiang		

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 (specific distance / 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 :**	24~26°C
Test Channel :	36	**Relative Humidity :**	48~49%
Test Engineer :	Ivan Chiang	**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
30.81	28.9	-11.1	40	40.87	18.95	0.54	31.46	-	-	Peak
128.82	30.83	-12.67	43.5	49.48	11.78	1.14	31.57	-	-	Peak
250.05	35.7	-10.3	46	52.81	12.77	1.53	31.41	-	-	Peak
624.1	37.54	-8.46	46	45.43	20.25	2.76	30.9	108	199	Peak
803.3	30.89	-15.11	46	36.17	22.25	3.15	30.68	-	-	Peak
875.4	30.57	-15.43	46	35.02	22.95	3.31	30.71	-	-	Peak
5150	42.72	-11.28	54	33.71	34.25	9.41	34.65	142	302	Average
5150	58.79	-15.21	74	49.78	34.25	9.41	34.65	142	302	Peak
5180	96.29	-	-	87.33	34.28	9.45	34.77	142	302	Average
5180	106.76	-	-	97.8	34.28	9.45	34.77	142	302	Peak
5350	50.82	-23.18	74	42.03	34.45	9.74	35.4	142	302	Peak
5350	39.3	-14.7	54	30.51	34.45	9.74	35.4	142	302	Average
8276	55.73	-18.27	74	43.35	35.56	10.92	34.1	101	247	Peak
8276	40.8	-13.2	54	28.42	35.56	10.92	34.1	101	247	Average

Test Mode :	Mode 1	Temperature :	24~26°C
Test Channel :	36	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	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
31.89	36.82	-3.18	40	49.33	18.4	0.55	31.46	132	140	Peak
47.82	31.02	-8.98	40	52.42	9.45	0.67	31.52	-	-	Peak
250.05	33.99	-12.01	46	51.1	12.77	1.53	31.41	-	-	Peak
624.1	34.91	-11.09	46	42.8	20.25	2.76	30.9	-	-	Peak
718.6	33.35	-12.65	46	40.06	21.09	2.98	30.78	-	-	Peak
799.8	34.37	-11.63	46	39.69	22.22	3.14	30.68	-	-	Peak
5150	46.45	-7.55	54	37.44	34.25	9.41	34.65	100	310	Average
5150	63.74	-10.26	74	54.73	34.25	9.41	34.65	100	310	Peak
5180	101.79	-	-	92.83	34.28	9.45	34.77	100	310	Average
5180	111.29	-	-	102.33	34.28	9.45	34.77	100	310	Peak
5350	51.34	-22.66	74	42.55	34.45	9.74	35.4	100	310	Peak
5350	40.16	-13.84	54	31.37	34.45	9.74	35.4	100	310	Average
8404	56.88	-17.12	74	44.43	35.58	10.96	34.09	115	210	Peak
8404	41.87	-12.13	54	29.42	35.58	10.96	34.09	115	210	Average

Test Mode :	Mode 2	Temperature :	24~26°C
Test Channel :	40	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	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
31.62	29.42	-10.58	40	41.93	18.4	0.55	31.46	-	-	Peak
128.82	30.86	-12.64	43.5	49.51	11.78	1.14	31.57	-	-	Peak
250.05	35.92	-10.08	46	53.03	12.77	1.53	31.41	-	-	Peak
624.1	37.59	-8.41	46	45.48	20.25	2.76	30.9	102	177	Peak
750.1	30.96	-15.04	46	37.08	21.52	3.06	30.7	-	-	Peak
799.8	31.31	-14.69	46	36.63	22.22	3.14	30.68	-	-	Peak
5150	51.34	-22.66	74	42.33	34.25	9.41	34.65	142	302	Peak
5150	40.06	-13.94	54	31.05	34.25	9.41	34.65	142	302	Average
5200	107.55	-	-	98.6	34.3	9.49	34.84	142	302	Peak
5200	97.88	-	-	88.93	34.3	9.49	34.84	142	302	Average
5350	51.77	-22.23	74	42.98	34.45	9.74	35.4	142	302	Peak
5350	39.33	-14.67	54	30.54	34.45	9.74	35.4	142	302	Average
8268	56.03	-17.97	74	43.65	35.56	10.92	34.1	100	311	Peak
8268	41.38	-12.62	54	29	35.56	10.92	34.1	100	311	Average

Test Mode :	Mode 2	Temperature :	24~26°C
Test Channel :	40	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	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
30.81	36.01	-3.99	40	47.98	18.95	0.54	31.46	100	251	Peak
47.82	31.81	-8.19	40	53.21	9.45	0.67	31.52	-	-	Peak
250.05	33.91	-12.09	46	51.02	12.77	1.53	31.41	-	-	Peak
624.1	34.43	-11.57	46	42.32	20.25	2.76	30.9	-	-	Peak
708.1	33.13	-12.87	46	40.02	20.95	2.96	30.8	-	-	Peak
799.8	34.04	-11.96	46	39.36	22.22	3.14	30.68	-	-	Peak
5150	52.96	-21.04	74	43.95	34.25	9.41	34.65	100	312	Peak
5150	41.65	-12.35	54	32.64	34.25	9.41	34.65	100	312	Average
5200	110.32	-	-	101.37	34.3	9.49	34.84	100	312	Peak
5200	101.49	-	-	92.54	34.3	9.49	34.84	100	312	Average
5350	55.08	-18.92	74	46.29	34.45	9.74	35.4	100	312	Peak
5350	39.63	-14.37	54	30.84	34.45	9.74	35.4	100	312	Average
8364	55.92	-18.08	74	43.49	35.57	10.95	34.09	104	77	Peak
8364	42.11	-11.89	54	29.68	35.57	10.95	34.09	104	77	Average

Test Mode :	Mode 3	Temperature :	24~26°C
Test Channel :	48	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	5240 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	27.92	-12.08	40	39.34	19.51	0.53	31.46	-	-	Peak
125.85	27.31	-16.19	43.5	45.95	11.8	1.13	31.57	-	-	Peak
250.05	35.65	-10.35	46	52.76	12.77	1.53	31.41	100	224	Peak
624.1	33.49	-12.51	46	41.38	20.25	2.76	30.9	-	-	Peak
747.3	30.24	-15.76	46	36.42	21.48	3.05	30.71	-	-	Peak
802.6	31.85	-14.15	46	37.14	22.24	3.15	30.68	-	-	Peak
5150	39.52	-14.48	54	30.51	34.25	9.41	34.65	102	324	Average
5150	50.17	-23.83	74	41.16	34.25	9.41	34.65	102	324	Peak
5240	91.37	-	-	82.43	34.33	9.57	34.96	102	324	Average
5240	101.35	-	-	92.41	34.33	9.57	34.96	102	324	Peak
5350	49.79	-24.21	74	41	34.45	9.74	35.4	102	324	Peak
5350	38.8	-15.2	54	30.01	34.45	9.74	35.4	102	324	Average
8286	55.51	-18.49	74	43.12	35.56	10.93	34.1	100	200	Peak
8286	41.25	-12.75	54	28.86	35.56	10.93	34.1	100	200	Average

Test Mode :	Mode 3	Temperature :	24~26°C
Test Channel :	48	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5240 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	36.67	-3.33	40	48.09	19.51	0.53	31.46	126	301	Peak
98.85	30.7	-12.8	43.5	51.06	10.19	0.99	31.54	-	-	Peak
250.05	34.37	-11.63	46	51.48	12.77	1.53	31.41	-	-	Peak
624.1	34.47	-11.53	46	42.36	20.25	2.76	30.9	-	-	Peak
718.6	34.61	-11.39	46	41.32	21.09	2.98	30.78	-	-	Peak
799.8	34.82	-11.18	46	40.14	22.22	3.14	30.68	-	-	Peak
5150	40.11	-13.89	54	31.1	34.25	9.41	34.65	116	15	Average
5150	52.4	-21.6	74	43.39	34.25	9.41	34.65	116	15	Peak
5240	102.08	-	-	93.14	34.33	9.57	34.96	116	15	Average
5240	109.75	-	-	100.81	34.33	9.57	34.96	116	15	Peak
5350	52.45	-21.55	74	43.66	34.45	9.74	35.4	116	15	Peak
5350	40.66	-13.34	54	31.87	34.45	9.74	35.4	116	15	Average
8452	56.3	-17.7	74	43.82	35.59	10.98	34.09	128	100	Peak
8452	41.85	-12.15	54	29.37	35.59	10.98	34.09	128	100	Average

Test Mode :	Mode 4	Temperature :	24~26°C
Test Channel :	36	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	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
30.81	23.85	-16.15	40	35.82	18.95	0.54	31.46	-	-	Peak
122.34	28.11	-15.39	43.5	46.5	12.06	1.11	31.56	-	-	Peak
250.05	35.64	-10.36	46	52.75	12.77	1.53	31.41	100	122	Peak
624.1	33.27	-12.73	46	41.16	20.25	2.76	30.9	-	-	Peak
800.5	31.45	-14.55	46	36.77	22.22	3.14	30.68	-	-	Peak
875.4	30.58	-15.42	46	35.03	22.95	3.31	30.71	-	-	Peak
5150	40.57	-13.43	54	31.56	34.25	9.41	34.65	139	302	Average
5150	53.77	-20.23	74	44.76	34.25	9.41	34.65	139	302	Peak
5180	94.87	-	-	85.91	34.28	9.45	34.77	139	302	Average
5180	109.88	-	-	100.92	34.28	9.45	34.77	139	302	Peak
5350	50.94	-23.06	74	42.15	34.45	9.74	35.4	139	302	Peak
5350	39.34	-14.66	54	30.55	34.45	9.74	35.4	139	302	Average
8244	54.63	-19.37	74	42.28	35.55	10.91	34.11	100	91	Peak
8244	40.98	-13.02	54	28.63	35.55	10.91	34.11	100	91	Average

Test Mode :	Mode 4	Temperature :	24~26°C
Test Channel :	36	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	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
30.54	36.92	-3.08	40	48.89	18.95	0.54	31.46	142	276	Peak
100.74	30.32	-13.18	43.5	50.43	10.43	1	31.54	-	-	Peak
250.05	33.98	-12.02	46	51.09	12.77	1.53	31.41	-	-	Peak
624.1	34.81	-11.19	46	42.7	20.25	2.76	30.9	-	-	Peak
772.5	34.14	-11.86	46	39.9	21.83	3.1	30.69	-	-	Peak
797.7	34.42	-11.58	46	39.78	22.18	3.14	30.68	-	-	Peak
5150	43.07	-10.93	54	34.06	34.25	9.41	34.65	111	307	Average
5150	60.48	-13.52	74	51.47	34.25	9.41	34.65	111	307	Peak
5180	100.5	-	-	91.54	34.28	9.45	34.77	111	307	Average
5180	115.9	-	-	106.94	34.28	9.45	34.77	111	307	Peak
5350	52.17	-21.83	74	43.38	34.45	9.74	35.4	111	307	Peak
5350	40.23	-13.77	54	31.44	34.45	9.74	35.4	111	307	Average
8316	56.26	-17.74	74	43.86	35.56	10.94	34.1	106	287	Peak
8316	41.91	-12.09	54	29.51	35.56	10.94	34.1	106	287	Average

Test Mode :	Mode 5	Temperature :	24~26°C
Test Channel :	40	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	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
30.54	29.3	-10.7	40	41.27	18.95	0.54	31.46	-	-	Peak
128.01	30.14	-13.36	43.5	48.78	11.79	1.14	31.57	-	-	Peak
250.05	35.44	-10.56	46	52.55	12.77	1.53	31.41	-	-	Peak
624.1	37.98	-8.02	46	45.87	20.25	2.76	30.9	100	244	Peak
750.1	30.71	-15.29	46	36.83	21.52	3.06	30.7	-	-	Peak
805.4	32	-14	46	37.26	22.27	3.15	30.68	-	-	Peak
5150	50.37	-23.63	74	41.36	34.25	9.41	34.65	121	303	Peak
5150	39.63	-14.37	54	30.62	34.25	9.41	34.65	121	303	Average
5200	108.97	-	-	100.02	34.3	9.49	34.84	121	303	Peak
5200	93.85	-	-	84.9	34.3	9.49	34.84	121	303	Average
5350	50.89	-23.11	74	42.1	34.45	9.74	35.4	121	303	Peak
5350	39.49	-14.51	54	30.7	34.45	9.74	35.4	121	303	Average
8260	55.45	-18.55	74	43.09	35.55	10.91	34.1	102	341	Peak
8260	41.08	-12.92	54	28.72	35.55	10.91	34.1	102	341	Average

Test Mode :	Mode 5	Temperature :	24~26°C
Test Channel :	40	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	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
30.81	36.64	-3.36	40	48.61	18.95	0.54	31.46	117	306	Peak
47.82	31.84	-8.16	40	53.24	9.45	0.67	31.52	-	-	Peak
250.05	33.85	-12.15	46	50.96	12.77	1.53	31.41	-	-	Peak
624.1	34.51	-11.49	46	42.4	20.25	2.76	30.9	-	-	Peak
724.9	34.72	-11.28	46	41.31	21.17	3	30.76	-	-	Peak
813.8	34.28	-11.72	46	39.44	22.35	3.18	30.69	-	-	Peak
5150	53.31	-20.69	74	44.3	34.25	9.41	34.65	100	59	Peak
5150	41.75	-12.25	54	32.74	34.25	9.41	34.65	100	59	Average
5200	116.32	-	-	107.37	34.3	9.49	34.84	100	59	Peak
5200	101.28	-	-	92.33	34.3	9.49	34.84	100	59	Average
5350	39.47	-14.53	54	30.68	34.45	9.74	35.4	100	59	Average
5350	51.35	-22.65	74	42.56	34.45	9.74	35.4	100	59	Peak
8388	55.97	-18.03	74	43.52	35.58	10.96	34.09	112	201	Peak
8388	41.62	-12.38	54	29.17	35.58	10.96	34.09	112	201	Average

Test Mode :	Mode 6	Temperature :	24~26°C
Test Channel :	48	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	5240 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	30.79	-9.21	40	42.21	19.51	0.53	31.46	120	103	Peak
121.26	28.93	-14.57	43.5	47.23	12.15	1.11	31.56	-	-	Peak
250.05	29.39	-16.61	46	46.5	12.77	1.53	31.41	-	-	Peak
624.1	33.46	-12.54	46	41.35	20.25	2.76	30.9	-	-	Peak
799.8	31.77	-14.23	46	37.09	22.22	3.14	30.68	-	-	Peak
875.4	30.68	-15.32	46	35.13	22.95	3.31	30.71	-	-	Peak
5150	39.01	-14.99	54	30	34.25	9.41	34.65	189	35	Average
5150	50.7	-23.3	74	41.69	34.25	9.41	34.65	189	35	Peak
5240	90.4	-	-	81.46	34.33	9.57	34.96	189	35	Average
5240	103.52	-	-	94.58	34.33	9.57	34.96	189	35	Peak
5350	50.28	-23.72	74	41.49	34.45	9.74	35.4	189	35	Peak
5350	38.69	-15.31	54	29.9	34.45	9.74	35.4	189	35	Average
8284	55.15	-18.85	74	42.76	35.56	10.93	34.1	106	152	Peak
8284	40.79	-13.21	54	28.4	35.56	10.93	34.1	106	152	Average

Test Mode :	Mode 6	Temperature :	24~26°C
Test Channel :	48	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5240 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	36.08	-3.92	40	47.5	19.51	0.53	31.46	100	159	Peak
96.42	32.34	-11.16	43.5	53.13	9.76	0.98	31.53	-	-	Peak
250.05	35.88	-10.12	46	52.99	12.77	1.53	31.41	-	-	Peak
624.1	31.15	-14.85	46	39.04	20.25	2.76	30.9	-	-	Peak
750.1	33.52	-12.48	46	39.64	21.52	3.06	30.7	-	-	Peak
794.9	34.63	-11.37	46	40.03	22.15	3.13	30.68	-	-	Peak
5150	40.42	-13.58	54	31.41	34.25	9.41	34.65	100	68	Average
5150	52.47	-21.53	74	43.46	34.25	9.41	34.65	100	68	Peak
5240	99.68	-	-	90.74	34.33	9.57	34.96	100	68	Average
5240	114.48	-	-	105.54	34.33	9.57	34.96	100	68	Peak
5350	50.61	-23.39	74	41.82	34.45	9.74	35.4	100	68	Peak
5350	39.56	-14.44	54	30.77	34.45	9.74	35.4	100	68	Average
8436	56.21	-17.79	74	43.73	35.59	10.98	34.09	100	88	Peak
8436	41.87	-12.13	54	29.39	35.59	10.98	34.09	100	88	Average

Test Mode :	Mode 7	Temperature :	24~26°C
Test Channel :	38	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	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
47.82	28.55	-11.45	40	49.95	9.45	0.67	31.52	-	-	Peak
120.18	28.43	-15.07	43.5	46.66	12.23	1.1	31.56	-	-	Peak
250.05	34.75	-11.25	46	51.86	12.77	1.53	31.41	112	190	Peak
624.1	28.61	-17.39	46	36.5	20.25	2.76	30.9	-	-	Peak
732.6	28.27	-17.73	46	34.71	21.28	3.02	30.74	-	-	Peak
799.8	31.97	-14.03	46	37.29	22.22	3.14	30.68	-	-	Peak
5150	46.39	-7.61	54	37.38	34.25	9.41	34.65	142	303	Average
5150	62.46	-11.54	74	53.45	34.25	9.41	34.65	142	303	Peak
5190	91.46	-	-	82.46	34.28	9.49	34.77	142	303	Average
5190	104.04	-	-	95.04	34.28	9.49	34.77	142	303	Peak
5350	50.77	-23.23	74	41.98	34.45	9.74	35.4	142	303	Peak
5350	39.53	-14.47	54	30.74	34.45	9.74	35.4	142	303	Average
8316	55.45	-18.55	74	43.05	35.56	10.94	34.1	105	228	Peak
8316	41.01	-12.99	54	28.61	35.56	10.94	34.1	105	228	Average

Test Mode :	Mode 7	Temperature :	24~26°C
Test Channel :	38	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	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
30.27	36.83	-3.17	40	48.25	19.51	0.53	31.46	108	286	Peak
95.61	32.01	-11.49	43.5	52.8	9.76	0.98	31.53	-	-	Peak
250.05	34.84	-11.16	46	51.95	12.77	1.53	31.41	-	-	Peak
624.1	34.57	-11.43	46	42.46	20.25	2.76	30.9	-	-	Peak
716.5	33.26	-12.74	46	39.99	21.07	2.98	30.78	-	-	Peak
803.3	34.21	-11.79	46	39.49	22.25	3.15	30.68	-	-	Peak
5150	52.78	-1.22	54	43.77	34.25	9.41	34.65	100	60	Average
5150	71.85	-2.15	74	62.84	34.25	9.41	34.65	100	60	Peak
5190	97.79	-	-	88.79	34.28	9.49	34.77	100	60	Average
5190	111.58	-	-	102.58	34.28	9.49	34.77	100	60	Peak
5350	52.09	-21.91	74	43.3	34.45	9.74	35.4	100	60	Peak
5350	40.01	-13.99	54	31.22	34.45	9.74	35.4	100	60	Average
8332	56.29	-17.71	74	43.87	35.57	10.95	34.1	100	314	Peak
8332	41.95	-12.05	54	29.53	35.57	10.95	34.1	100	314	Average

Test Mode :	Mode 8	Temperature :	24~26°C
Test Channel :	46	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	Polarization :	Horizontal
Remark :	5230 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
47.01	29.09	-10.91	40	50.49	9.45	0.67	31.52	100	204	Peak
121.26	28.63	-14.87	43.5	46.93	12.15	1.11	31.56	-	-	Peak
250.05	29.8	-16.2	46	46.91	12.77	1.53	31.41	-	-	Peak
624.1	28.01	-17.99	46	35.9	20.25	2.76	30.9	-	-	Peak
750.1	29.74	-16.26	46	35.86	21.52	3.06	30.7	-	-	Peak
797.7	31.79	-14.21	46	37.15	22.18	3.14	30.68	-	-	Peak
5150	39.4	-14.6	54	30.39	34.25	9.41	34.65	172	33	Average
5150	50.88	-23.12	74	41.87	34.25	9.41	34.65	172	33	Peak
5230	89.58	-	-	80.68	34.33	9.53	34.96	172	33	Average
5230	101.11	-	-	92.21	34.33	9.53	34.96	172	33	Peak
5350	50.66	-23.34	74	41.87	34.45	9.74	35.4	172	33	Peak
5350	38.82	-15.18	54	30.03	34.45	9.74	35.4	172	33	Average
8276	54.94	-19.06	74	42.56	35.56	10.92	34.1	100	148	Peak
8276	40.53	-13.47	54	28.15	35.56	10.92	34.1	100	148	Average

Test Mode :	Mode 8	Temperature :	24~26°C
Test Channel :	46	Relative Humidity :	48~49%
Test Engineer :	Ivan Chiang	Polarization :	Vertical
Remark :	5230 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
30.81	36.43	-3.57	40	48.4	18.95	0.54	31.46	134	251	Peak
95.61	32.12	-11.38	43.5	52.91	9.76	0.98	31.53	-	-	Peak
250.05	33.64	-12.36	46	50.75	12.77	1.53	31.41	-	-	Peak
624.1	31.62	-14.38	46	39.51	20.25	2.76	30.9	-	-	Peak
699.7	32.12	-13.88	46	39.17	20.83	2.94	30.82	-	-	Peak
797.7	35.72	-10.28	46	41.08	22.18	3.14	30.68	-	-	Peak
5150	48.43	-5.57	54	39.42	34.25	9.41	34.65	100	68	Average
5150	60.42	-13.58	74	51.41	34.25	9.41	34.65	100	68	Peak
5230	111.18	-	-	102.28	34.33	9.53	34.96	100	68	Peak
5230	97.36	-	-	88.46	34.33	9.53	34.96	100	68	Average
5350	59.54	-14.46	74	50.75	34.45	9.74	35.4	100	68	Peak
5350	47.62	-6.38	54	38.83	34.45	9.74	35.4	100	68	Average
8372	55.73	-18.27	74	43.29	35.58	10.95	34.09	105	262	Peak
8372	41.23	-12.77	54	28.79	35.58	10.95	34.09	105	262	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

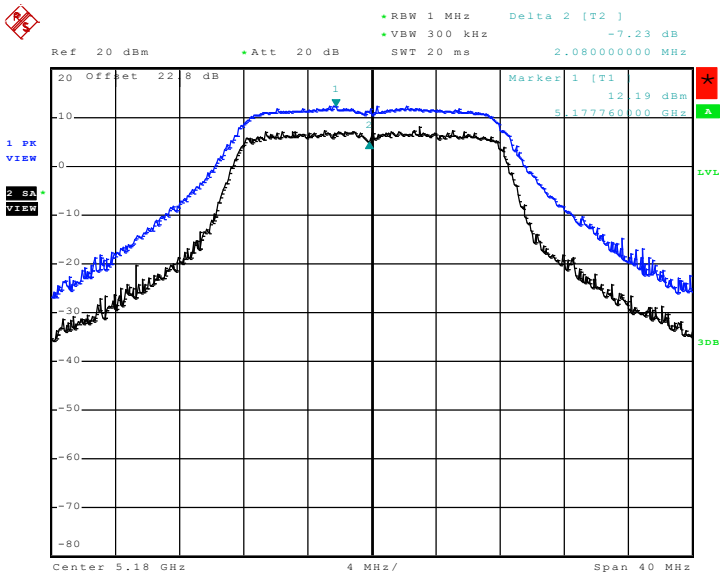
1. The transmitter output is connected to the spectrum analyzer.
2. The resolution bandwidth is set to and maintained at 1 MHz. The video bandwidth is set to 3 MHz.
3. Trace A is set peak detector and to Max Hold, then to View. Then the detector is readjusted to sample detector, max hold to run for 60 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

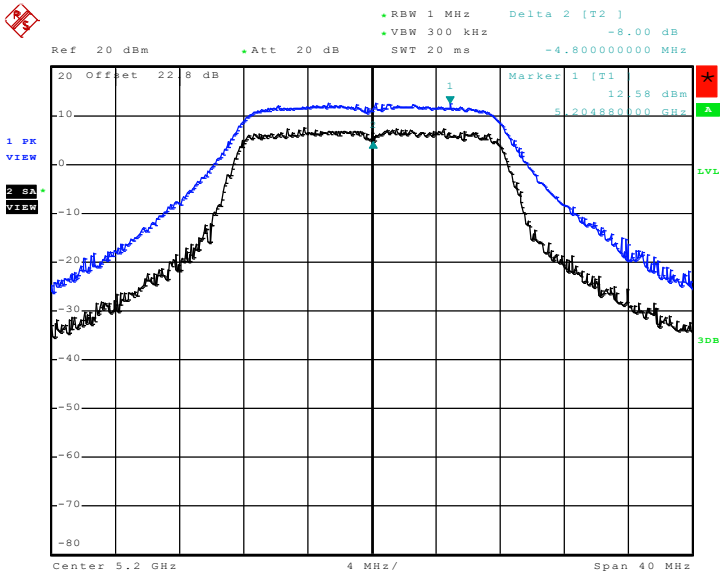
Test Mode :	Mode 1, 2, 3	Temperature :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

Mode 1 :
Peak Excursion Ratio Plot on 802.11a Channel 36 – Chain B



Date: 28.AUG.2010 01:36:14

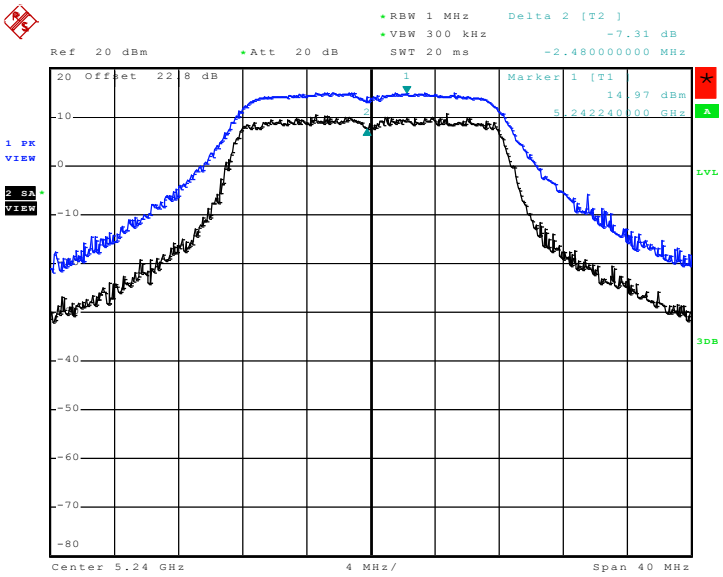
Mode 2 :
Peak Excursion Ratio Plot on 802.11a Channel 40 – Chain B



Date: 28.AUG.2010 01:37:51

Mode 3 :

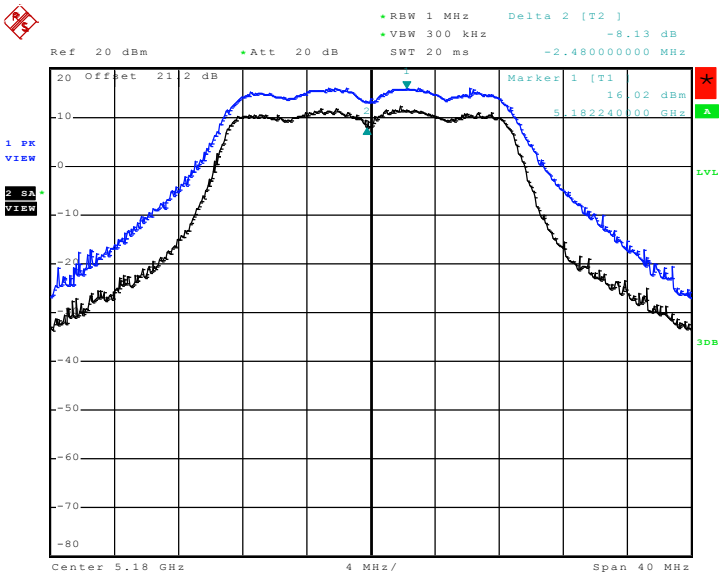
Peak Excursion Ratio Plot on 802.11a Channel 48 – Chain B



Date: 17.SEP.2010 09:38:40

Mode 4 :

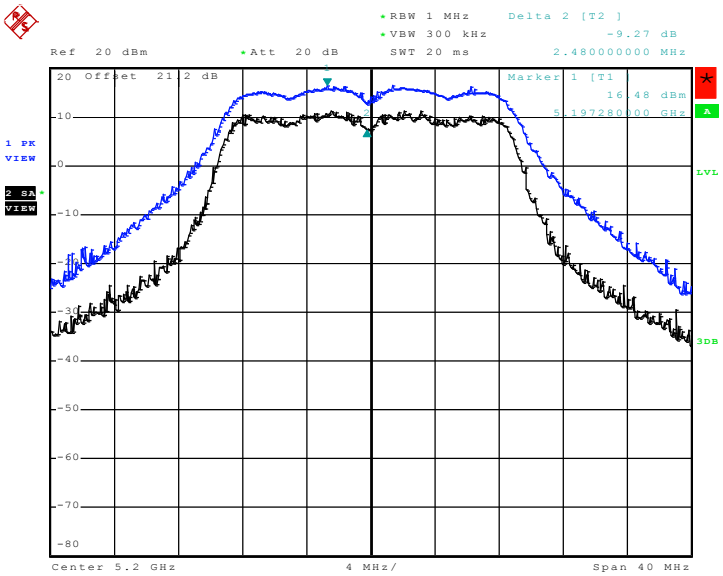
Peak Excursion Ratio Plot on 802.11n (BW 20MHz) Channel 36 - Chain A+B+C



Date: 28.AUG.2010 02:58:03

Mode 5 :

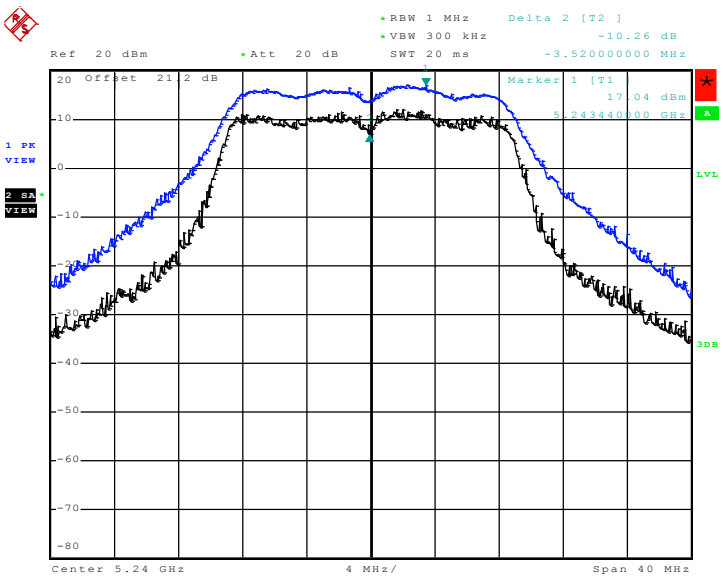
Peak Excursion Ratio Plot on 802.11n (BW 20MHz) Channel 40 - Chain A+B+C



Date: 28.AUG.2010 03:01:28

Mode 6 :

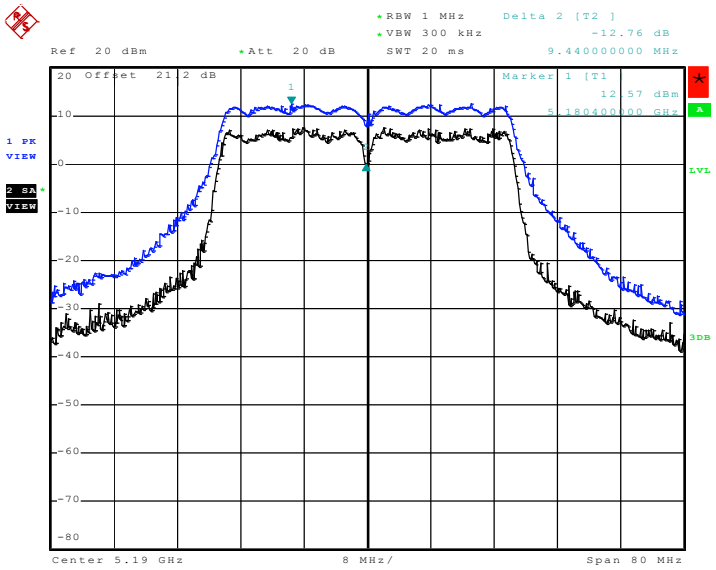
Peak Excursion Ratio Plot on 802.11n (BW 20MHz) Channel 48 - Chain A+B+C



Date: 17.SEP.2010 11:06:52

Mode 7 :

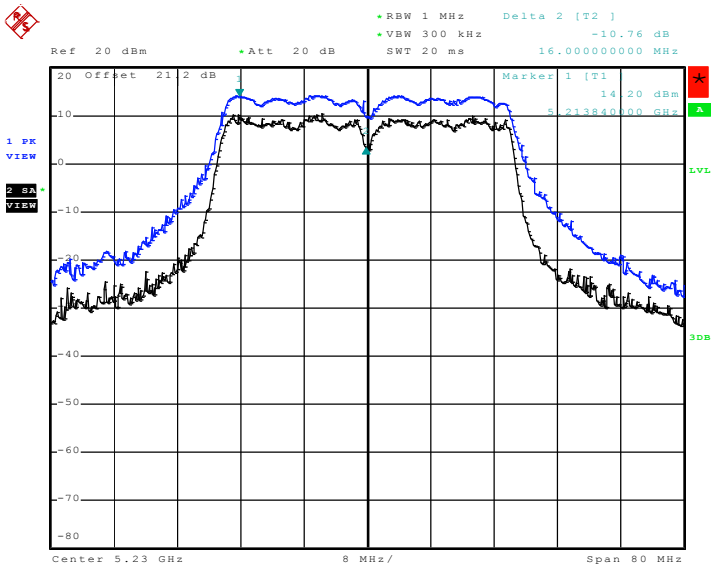
Peak Excursion Ratio Plot on 802.11n (BW 40MHz) Channel 38 - Chain A+B+C



Date: 28.AUG.2010 03:51:19

Mode 8 :

Peak Excursion Ratio Plot on 802.11n (BW 40MHz) Channel 46 - Chain A+B+C



Date: 17.SEP.2010 13:43:35

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.

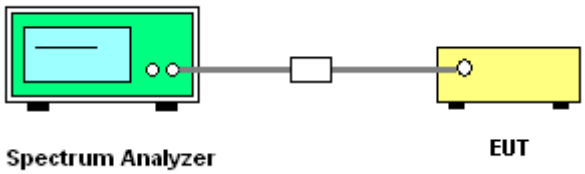
3.10.2 Measuring Instruments

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 :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

Channel	Frequency (MHz)	802.11a		
		Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
36	5180	5171.68	5188.28	-3.86
40	5200	5191.68	5208.28	-3.85
48	5240	5231.68	5248.28	-3.82

Test Mode :	Mode 4, 5, 6	Temperature :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

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	5191.04	5208.88	-7.69
48	5240	5231.04	5248.88	-7.63

Test Mode :	Mode 7, 8	Temperature :	25~27℃
Test Engineer :	Mac Lin	Relative Humidity :	45~48%

Channel	Frequency (MHz)	802.11n (BW 40MHz)		
		Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
38	5190	5171.60	5208.32	-7.71
46	5230	5211.68	5248.32	0.00

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 Dipole Antenna with reverse SMA connector and it is considered to meet antenna requirement of FCC.

3.11.3 Antenna Gain

The antenna gain is less than 6 dBi. Therefore, it is not necessary 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.32 dB.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 Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(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 Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP082031 as below.