

FCC RF Test Report

APPLICANT : Hewlett-Packard Company
EQUIPMENT : 2x2 802.11a/b/g/n - BT Combo SDIO module
BRAND NAME : hp
MODEL NAME : HSTNN-QR03
FCC ID : B94HNQR03
STANDARD : FCC Part 15 Subpart E
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Aug. 23, 2012 and completely tested on Sep. 07, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR282317D	Rev. 01	Initial issue of report	Sep. 18, 2012
FR282317D	Rev. 02	Update report for section 1.3 and antenna information	Oct. 03, 2012

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	A9.2	26dB & 99% 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(a)(6)	A9.3	Peak Excursion Ratio	≤ 13dB	Pass	-
3.5	15.407(b)	A9.3	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 0.37 dB at 5149.45 MHz
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 13.70 dB at 0.198 MHz
3.7	15.407(c)	A9.5	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	A9.2	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Hewlett-Packard Company

3000 Hanover Street, Palo Alto, California 94304, USA

1.2 Manufacturer

Qualcomm Atheros

1700 Technology Drive, San Jose, CA95110, United States

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	2x2 802.11a/b/g/n - BT Combo SDIO module
Brand Name	hp
Model Name	HSTNN-QR03
FCC ID	B94HNQR03
EUT supports Radios application	WLAN 11abgn / Bluetooth
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Product Specification subjective to this standard				
Tx/Rx Channel Frequency Range		5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5700 MHz		
Maximum Output Power		<5180 MHz ~ 5240 MHz> 802.11a : 15.17 dBm / 0.0329 W 802.11n HT20(400GI): 14.98 dBm / 0.0315 W 802.11n HT20(800GI): 15.10 dBm / 0.0324 W 802.11n HT40(400GI): 13.87 dBm / 0.0244 W 802.11n HT40(800GI): 14.02 dBm / 0.0252 W <5260 MHz ~ 5320 MHz> 802.11a : 15.02 dBm / 0.0318 W 802.11n HT20(400GI): 14.98 dBm / 0.0315 W 802.11n HT20(800GI): 15.17 dBm / 0.0329 W 802.11n HT40(400GI): 13.95 dBm / 0.0248 W 802.11n HT40(800GI): 13.96 dBm / 0.0249 W <5500 MHz ~ 5700 MHz > 802.11a : 14.92 dBm / 0.0310 W 802.11n HT20(400GI): 14.74 dBm / 0.0298 W 802.11n HT20(800GI): 14.99 dBm / 0.0316 W 802.11n HT40(400GI): 14.00 dBm / 0.0251 W 802.11n HT40(800GI): 14.11 dBm / 0.0258 W		
Antenna Type		<5150 MHz ~ 5250 MHz> PIFA Antenna with gain 3.08 dBi <5250 MHz ~ 5350 MHz> PIFA Antenna with gain 3.08 dBi <5470 MHz ~ 5725 MHz> PIFA Antenna with gain 4.76 dBi		
Type of Modulation		OFDM (BPSK / QPSK / 16QAM / 64QAM)		
Antenna Function for Transmitter				
	SISO		MIMO	
	Ant. 0	Ant.1	Ant. 0	Ant.1
802.11 a	Yes	No	Yes	Yes
802.11 n	Yes	No	Yes	Yes

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.
	TH02-HY	CO05-HY	03CH05-HY	722060/4086B-1

1.5 Applied Standards

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

- FCC Part 15 Subpart E
- FCC KDB 789033 D01 General UNII Test Procedures v01r01
- ANSI C63.4-2003 and ANSI C63.10-2009
- IC RSS-210 Issued 8
- IC RSS-Gen Issue 3

Remark:

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

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	LCD Monitor	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
3.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 KHz to 30 MHz) and radiated emission (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane for Band III & Y plane for BandI/BandII) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

For 802.11n GI 800/400 ns conducted power mode, the worst case were fall on 800ns, so all test items were tested by using GI 800ns mode.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5150-5250 MHz Band 1	36	5180	44	5220
	38	5190	46	5230
	40	5200	48	5240

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5250-5350 MHz Band 2	52	5260	60	5300
	54	5270	62	5310
	56	5280	64	5320

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5470-5725 MHz Band 3	100	5500	116	5580
	102	5510	132	5660
	104	5520	134	5670
	108	5540	136	5680
	110	5550	140	5700
	112	5560		

Note: The above Frequency and Channel in boldface were 802.11n HT40.

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and antenna configurations as following table and the highest power data rates were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

<MIMO Ant. 0+1>

Avg Power (dBm)									
5GHz 802.11a									
Channel	Frequency	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180 MHz	15.17	14.93	14.83	14.78	14.67	14.66	14.71	14.61
CH 116	5580 MHz	14.92	14.69	14.51	14.49	14.47	14.38	14.25	13.93

Avg Power (dBm)									
5GHz 802.11a/n HT20 mode									
Channel	Frequency	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 64	5320 MHz	15.17	15.14	15.10	14.93	14.99	14.95	14.84	14.71
CH 116	5580 MHz	14.99	14.84	14.78	14.61	14.51	14.41	14.35	14.19
Channel	Frequency	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
CH 64	5320 MHz	14.44	13.93	13.75	14.03	13.97	13.77	13.81	13.79
CH 116	5580 MHz	14.12	13.47	13.55	13.59	13.74	13.77	13.83	13.86

Avg Power (dBm)									
5GHz 802.11a/n HT40 mode									
Channel	Frequency	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 46	5230 MHz	14.02	13.91	13.93	13.83	13.82	13.88	13.83	13.78
CH 134	5670 MHz	14.11	13.99	13.96	13.82	13.84	13.74	13.66	13.64
Channel	Frequency	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
CH 46	5230 MHz	12.87	12.71	12.95	12.95	13.14	13.44	13.19	13.06
CH 134	5670 MHz	13.04	12.86	13.05	13.00	13.17	13.29	13.12	13.10

Note: MIMO Ant 0+1 is a calculated result from sum of the power MIMO Ant 0 and MIMO Ant 1.

Antenna Information

Brand / Model Name	Type	Frequency Range (MHz)	Antenna Gain (dBi)	Directional Gain (dBi)
Wistron Neweb Corporation / EBJ Aux. + EBJ Aux.	PIFA	5150 ~ 5350	3.08	6.09
Wistron Neweb Corporation / EBJ Main + EBJ Main	PIFA	5470 ~ 5725	4.76	7.77

	Antenna port 0	Antenna port 1	Note
1X1+BT	11a/b/g/n(MCS0~7)	BT	WLAN/BT concurrent
2X2+BT	11a/b/g/n(MCS0~15)	11a/b/g/n(MCS0~15) +BT	WLAN/BT timely share Antenna port 1
2X2 WLAN only	11a/b/g/n(MCS0~15)	11a/b/g/n(MCS0~15)	
2X2 WLAN 5G+BT	11a/n(MCS0~15)	11a/n(MCS0~15)+BT	WLAN/BT concurrent

2.3 Test Mode

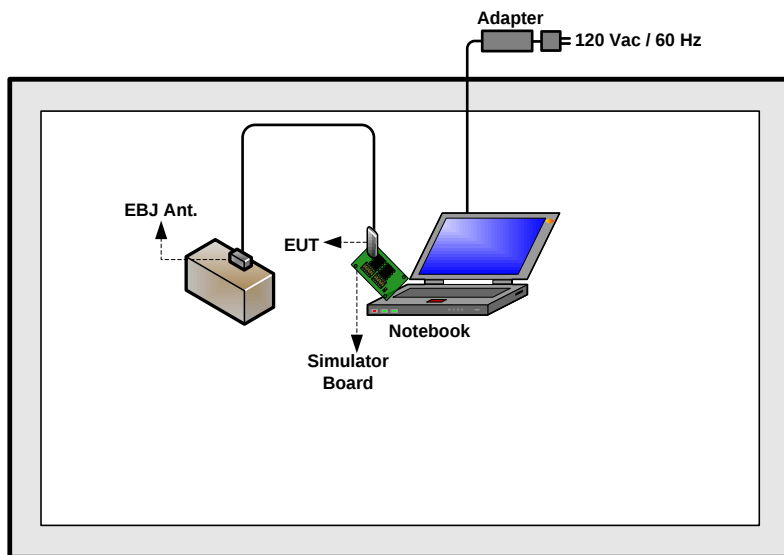
Final results of test modes, data rates and test channels are shown as following table.

Test Cases				
Conducted TCs	Test Items	Mode	Data rate	Test Channel
	26dB and 99% BW Power Spectral Density	802.11a	6 Mbps	L/M/H
		802.11n HT20	6.5 Mbps	L/M/H
		802.11n HT40	13.5 Mbps	L/M/H
	Output Power	802.11a	6 Mbps	L/M/H
		802.11n HT20	6.5 Mbps	L/M/H
		802.11n HT40	13.5 Mbps	L/M/H
	Peak Excursion	802.11a	6 Mbps	L/M/H
		802.11n HT20	6.5 Mbps	L/M/H
		802.11n HT40	13.5 Mbps	L/M/H
	Frequency Stability	802.11a	6 Mbps	L/M/H
		802.11n HT20	6.5 Mbps	L/M/H
		802.11n HT40	13.5 Mbps	L/M/H
Radiated TCs	Radiated Band Edge	802.11a	6 Mbps	L/H
		802.11n HT20	6.5 Mbps	L/H
		802.11n HT40	13.5 Mbps	L/H
	Radiated Spurious Emission	802.11a	6 Mbps	L/M/H
		802.11n HT20	6.5 Mbps	L/M/H
		802.11n HT40	13.5 Mbps	L/M/H
AC Conducted Emission	Mode 1 : WLAN(5G) Tx + EBJ Ant.			

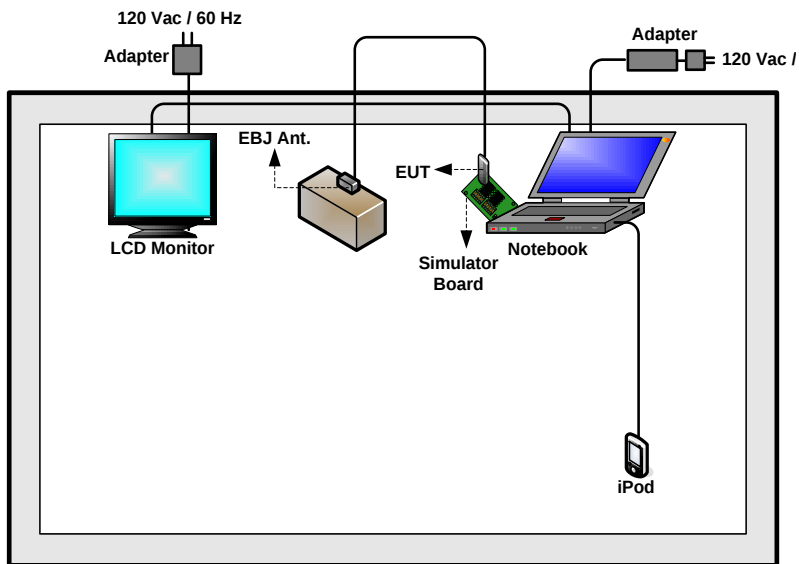
Ch. #		Band I : 5150-5250 MHz		Band II : 5250-5350 MHz		Band III : 5470-5725 MHz	
		802.11a, 802.11n HT20	802.11n HT40	802.11a, 802.11n HT20	802.11n HT40	802.11a, 802.11n HT20	802.11n HT40
L	Low	36	38	52	54	100	102
M	Middle	44		60		116	110
H	High	48	46	64	62	140	134

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<EUT with Notebook Mode>



3 Test Result

3.1 26dB & 99% Bandwidth Measurement

3.1.1 Description 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. 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.

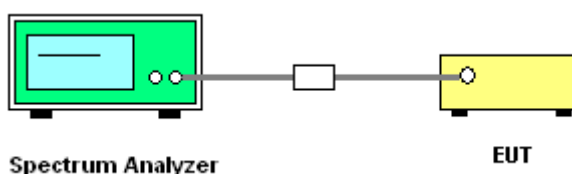
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r01.
Section D) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

3.1.4 Test Setup



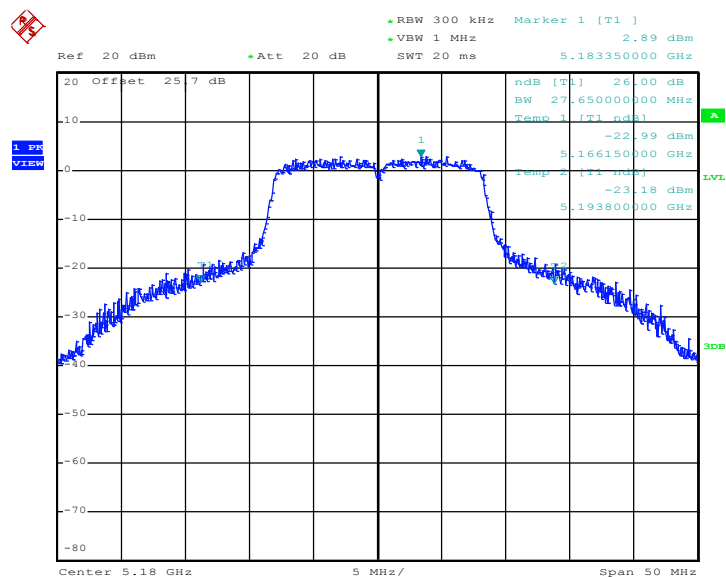
3.1.5 Test Result of 26dB Bandwidth

Test Mode :	802.11a	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%

Channel	Frequency (MHz)	802.11a 26dB Bandwidth (MHz)		Pass/Fail
		Ant. 0+1(0)	Ant. 0+1(1)	
36	5180	27.650	27.850	N/A
44	5220	28.200	29.350	N/A
48	5240	25.250	29.550	N/A
52	5260	25.700	30.300	N/A
60	5300	28.650	33.750	N/A
64	5320	28.600	33.950	N/A
100	5500	26.100	26.750	N/A
116	5580	34.350	34.600	N/A
140	5700	29.750	27.600	N/A

802.11a –Ant. 0+1(0)

26 dB Bandwidth Plot on 802.11a Channel 36

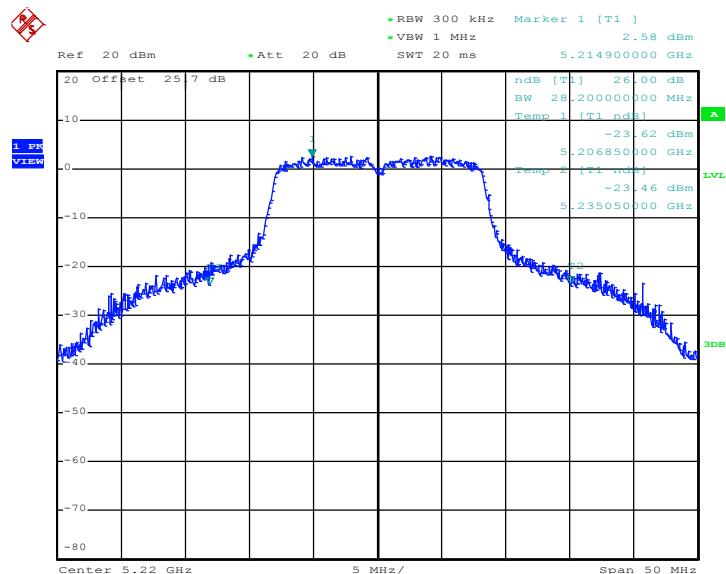


Date: 6.SEP.2012 10:59:26



802.11a –Ant. 0+1(0)

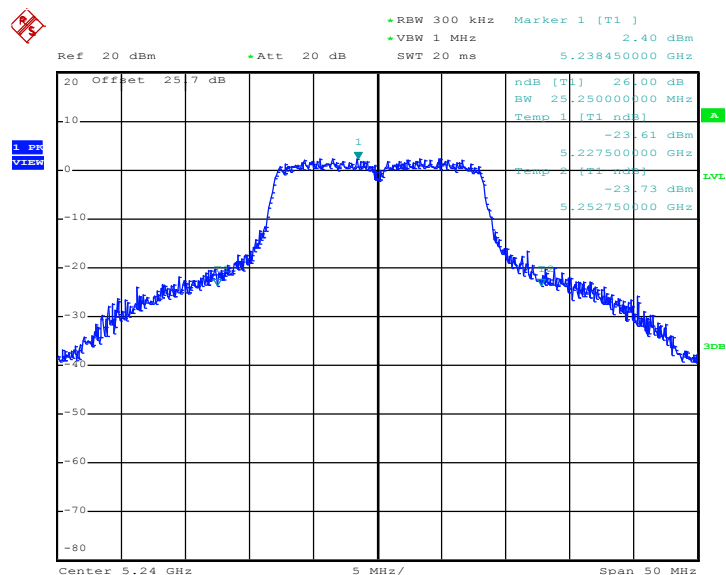
26 dB Bandwidth Plot on 802.11a Channel 44



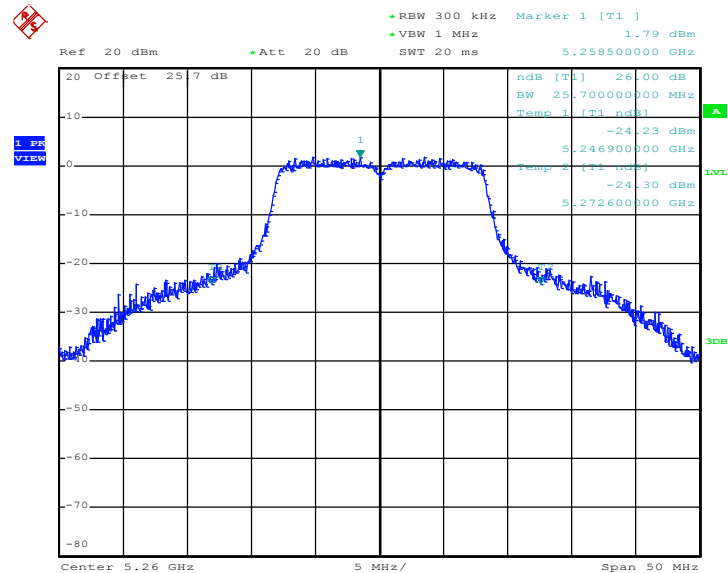
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802.11a –Ant. 0+1(0)

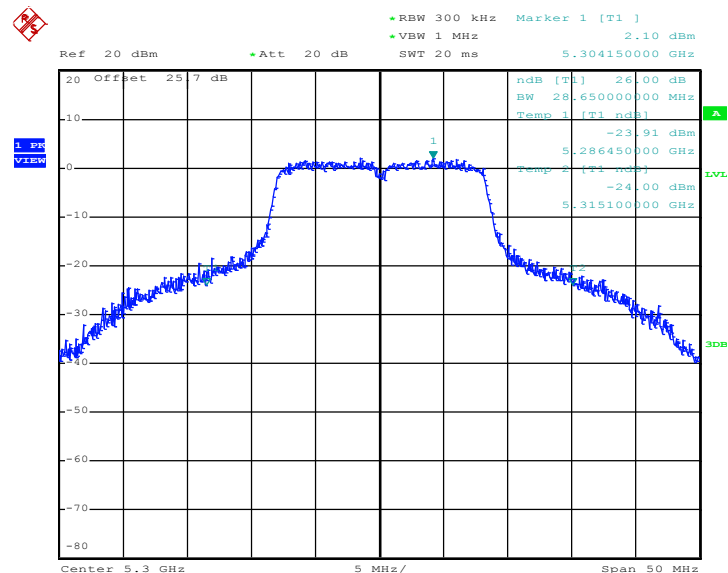
26 dB Bandwidth Plot on 802.11a Channel 48



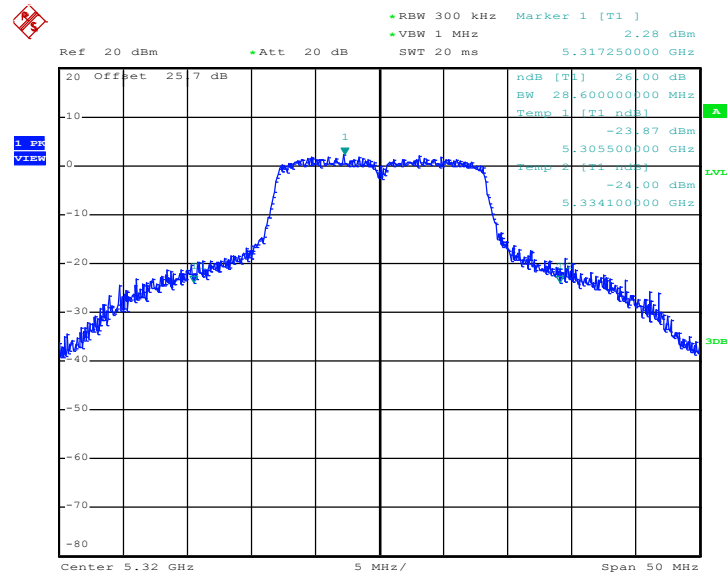
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802.11a –Ant. 0+1(0)
26 dB Bandwidth Plot on 802.11a Channel 52


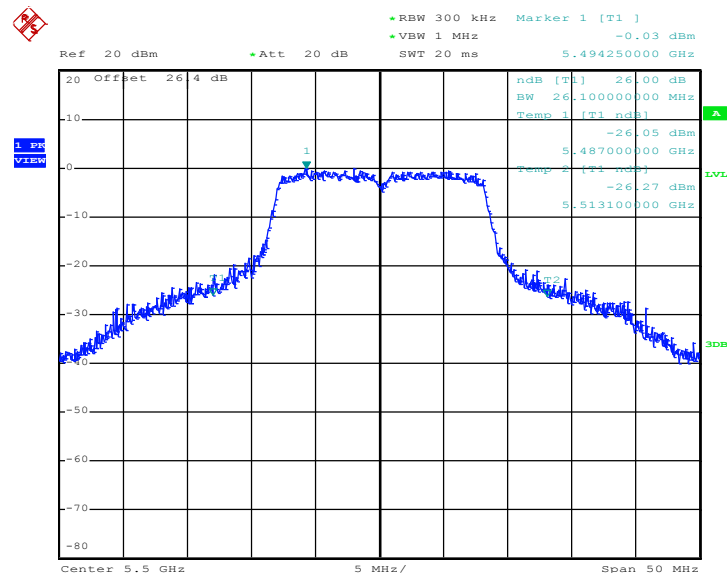
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802.11a –Ant. 0+1(0)
26 dB Bandwidth Plot on 802.11a Channel 60


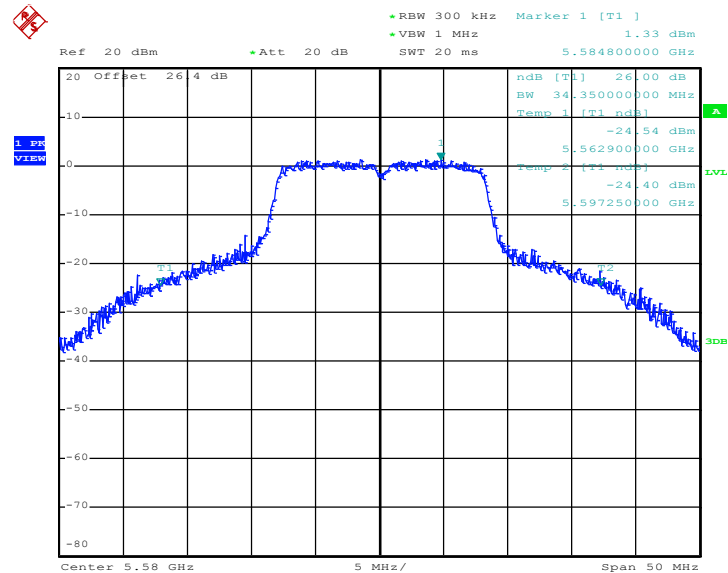
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802.11a –Ant. 0+1(0)
26 dB Bandwidth Plot on 802.11a Channel 64


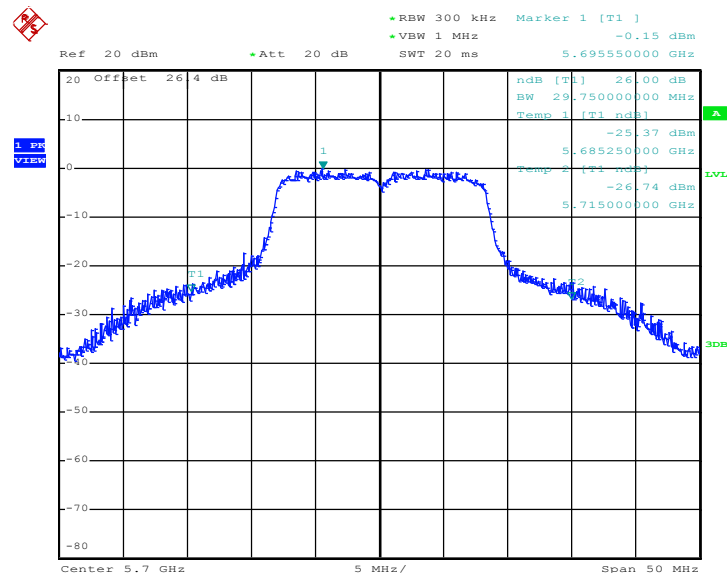
Date: 6.SEP.2012 11:45:32

802.11a –Ant. 0+1(0)
26 dB Bandwidth Plot on 802.11a Channel 100


Date: 6.SEP.2012 11:46:37

802.11a –Ant. 0+1(0)
26 dB Bandwidth Plot on 802.11a Channel 116


Date: 6.SEP.2012 11:54:00

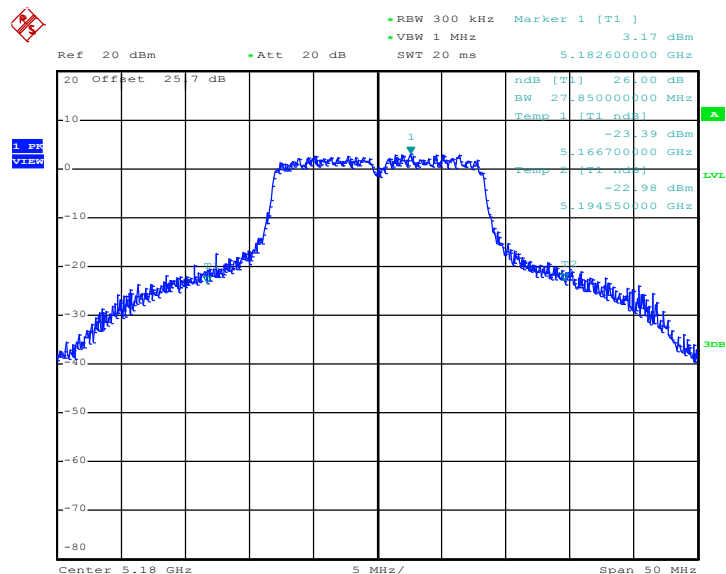
802.11a – Ant. 0+1(0)
26 dB Bandwidth Plot on 802.11a Channel 140


Date: 6.SEP.2012 12:00:56



802.11a –Ant. 0+1(1)

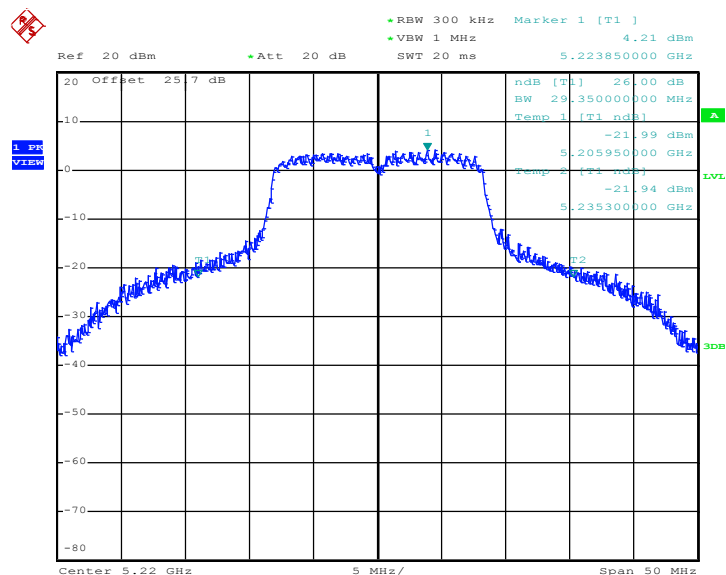
26 dB Bandwidth Plot on 802.11a Channel 36



Date: 6.SEP.2012 11:14:52

802.11a – Ant. 0+1(1)

26 dB Bandwidth Plot on 802.11a Channel 44

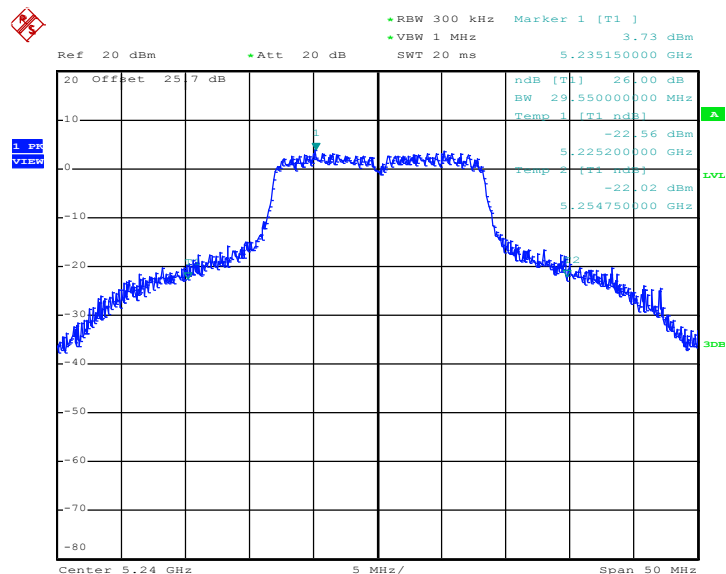


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802.11a – Ant. 0+1(1)

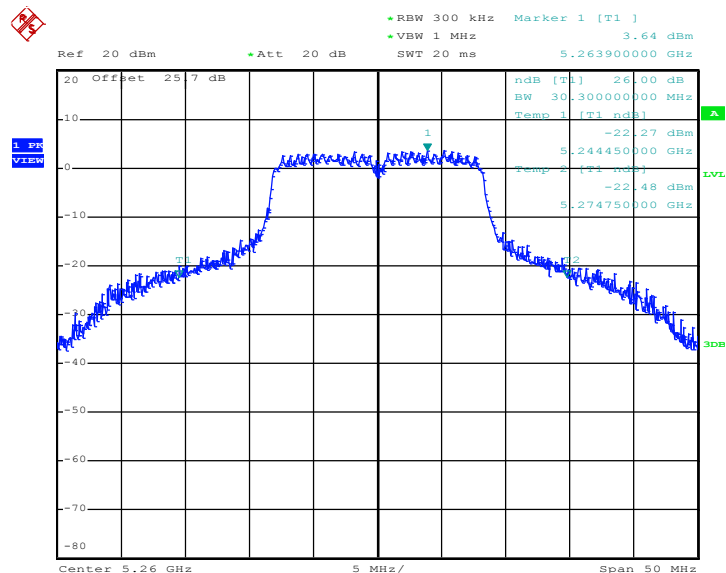
26 dB Bandwidth Plot on 802.11a Channel 48



Date: 6.SEP.2012 11:26:57

802.11a –Ant 0+1 (1)

26 dB Bandwidth Plot on 802.11a Channel 52

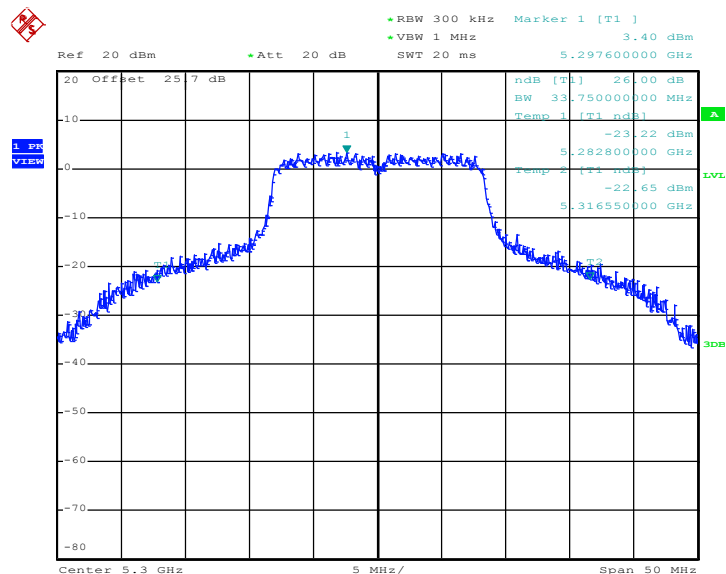


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802.11a –Ant. 0+1(1)

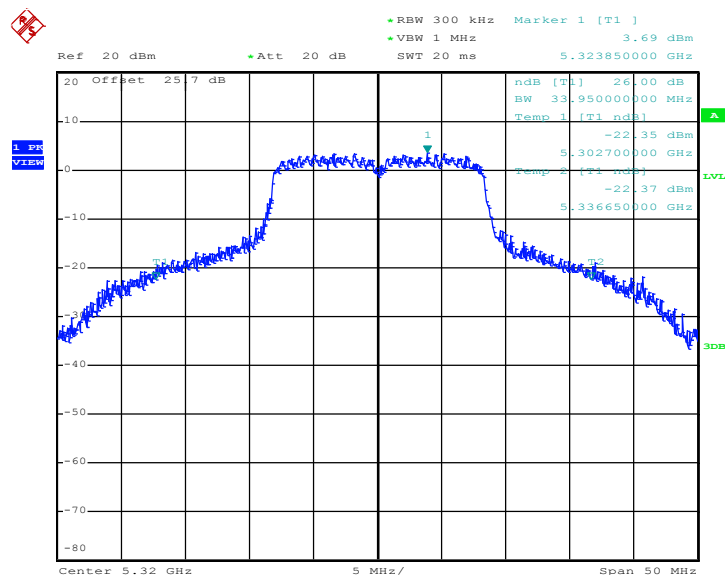
26 dB Bandwidth Plot on 802.11a Channel 60



Date: 6.SEP.2012 11:37:21

802.11a –Ant. 0+1(1)

26 dB Bandwidth Plot on 802.11a Channel 64

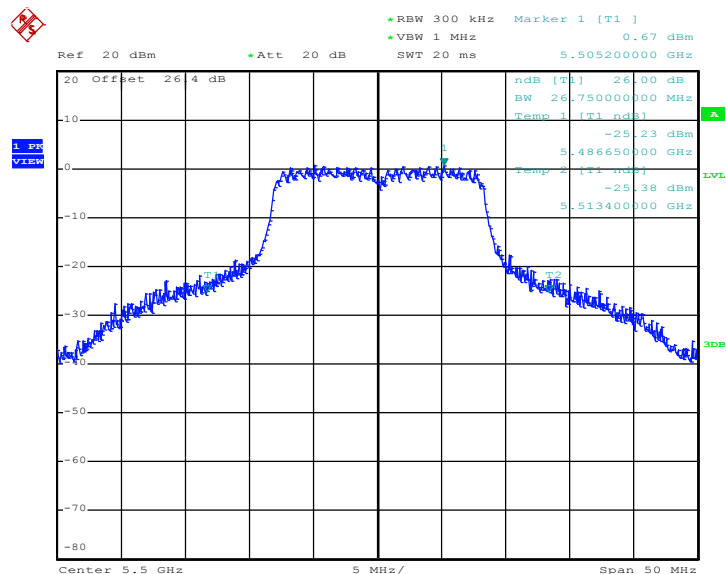


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802.11a –Ant. 0+1(1)

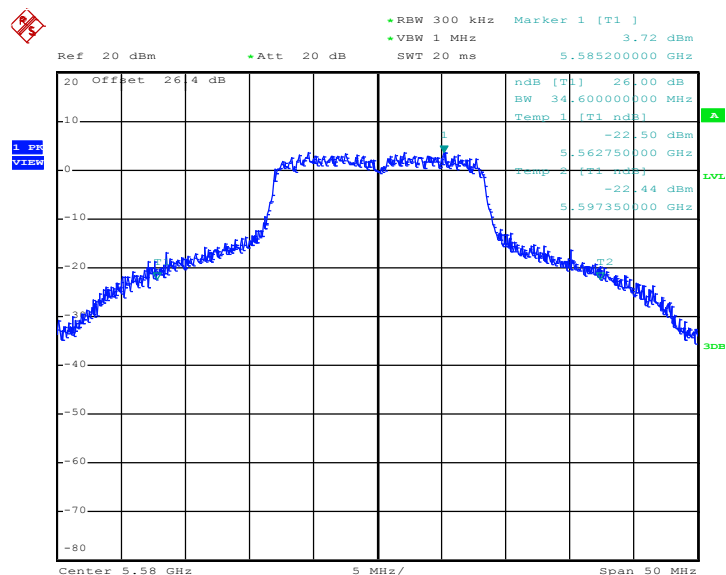
26 dB Bandwidth Plot on 802.11a Channel 100



Date: 6.SEP.2012 11:48:36

802.11a –Ant. 0+1(1)

26 dB Bandwidth Plot on 802.11a Channel 116

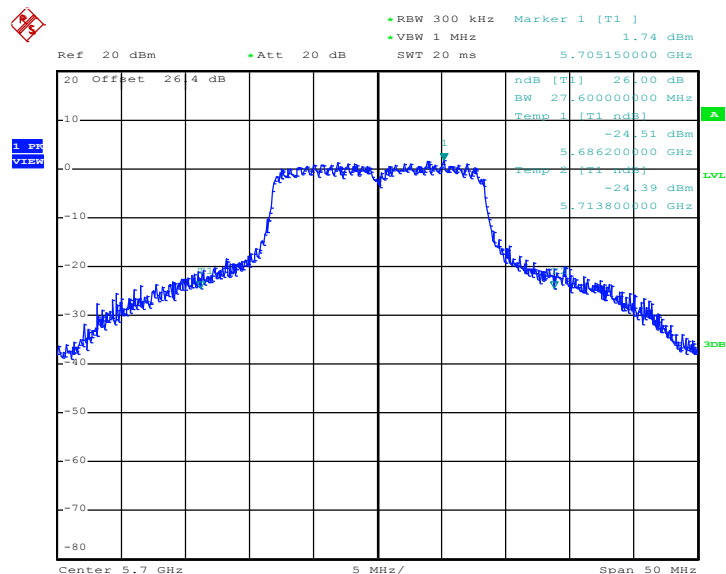


Date: 6.SEP.2012 11:58:06



802.11a –Ant. 0+1(1)

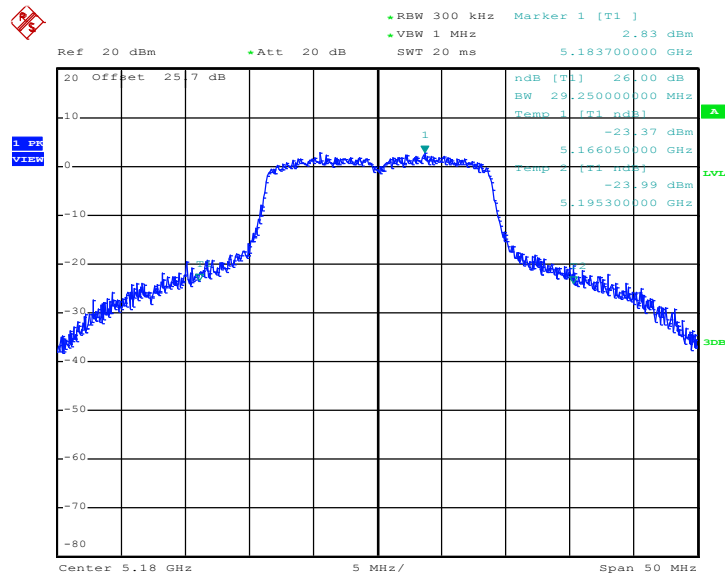
26 dB Bandwidth Plot on 802.11a Channel 140



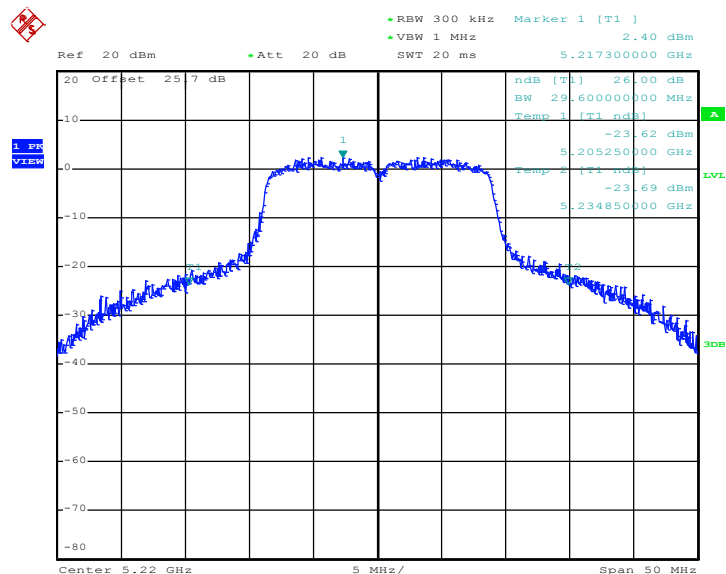
Date: 6.SEP.2012 11:58:42

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%

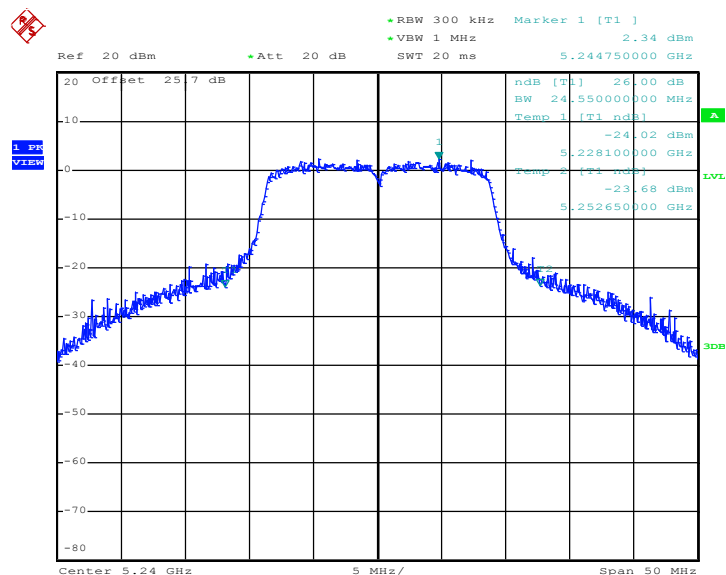
Channel	Frequency (MHz)	802.11n HT20 26dB Bandwidth (MHz)		Pass/Fail
		Ant. 0+1(0)	Ant. 0+1(1)	
36	5180	29.250	26.800	N/A
44	5220	29.600	29.450	N/A
48	5240	24.550	31.450	N/A
52	5260	26.100	31.750	N/A
60	5300	29.500	32.550	N/A
64	5320	28.250	28.100	N/A
100	5500	30.150	28.650	N/A
116	5580	34.850	35.250	N/A
140	5700	23.950	23.850	N/A

802.11n HT20 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 36


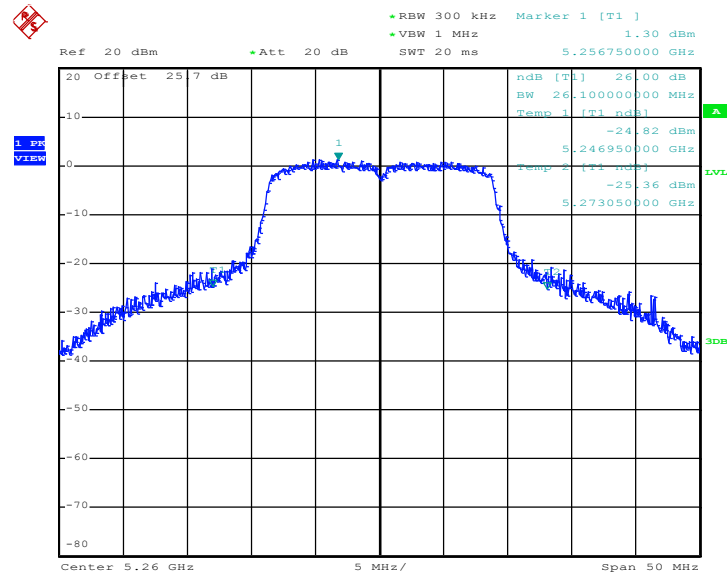
Date: 6.SEP.2012 14:31:03

802.11n HT20 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 44


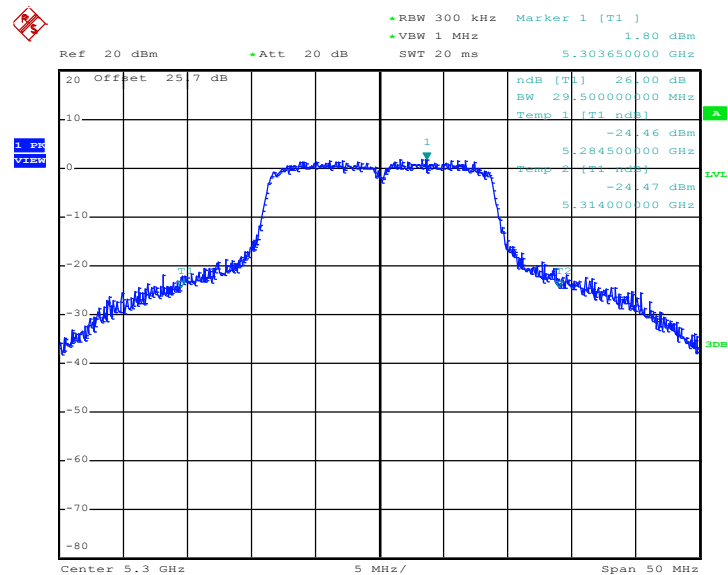
Date: 6.SEP.2012 14:28:39

802.11n HT20 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 48


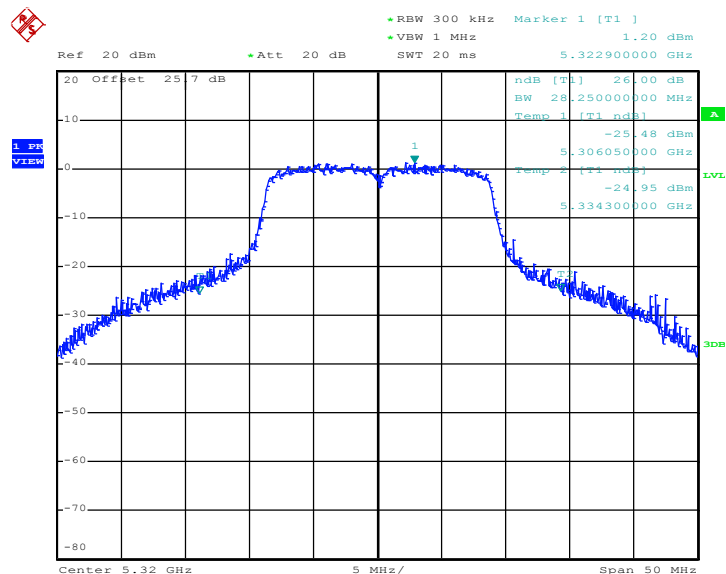
Date: 6.SEP.2012 14:22:20

802.11n HT20 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 52


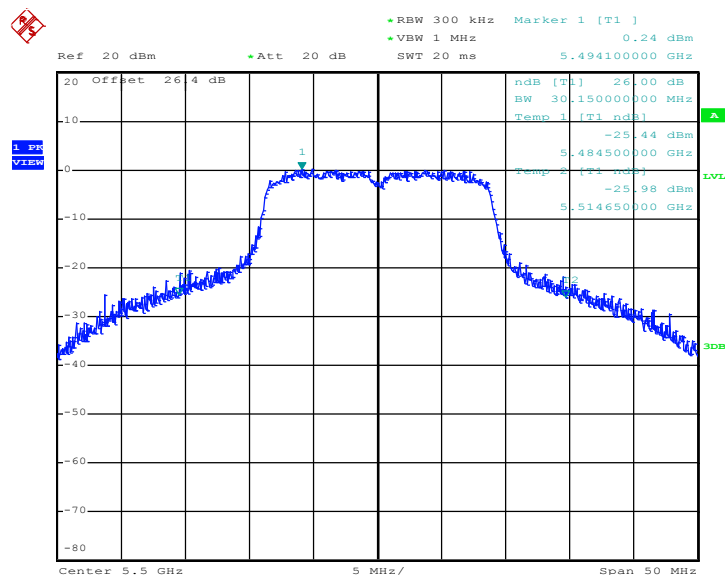
Date: 6.SEP.2012 14:19:44

802.11n HT20 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 60


Date: 6.SEP.2012 14:11:11

802.11n HT20 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 64


Date: 6.SEP.2012 14:06:19

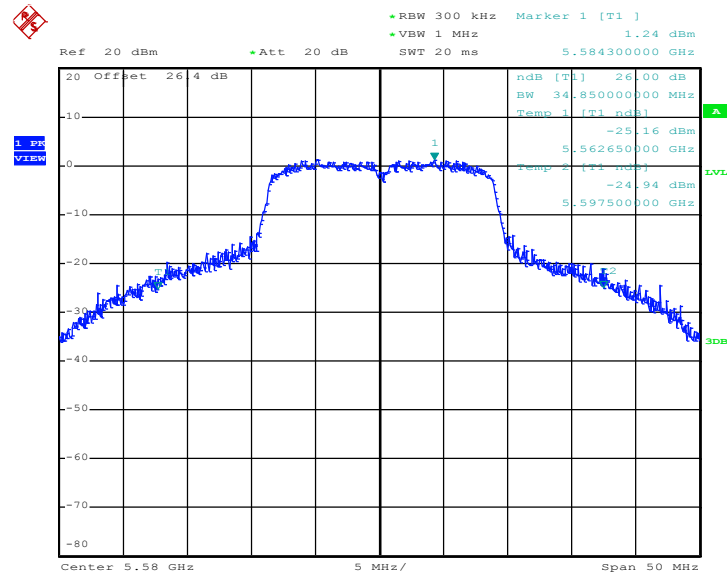
802.11n HT20 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 100


Date: 6.SEP.2012 13:56:23



802.11n HT20 –Ant. 0+1(0)

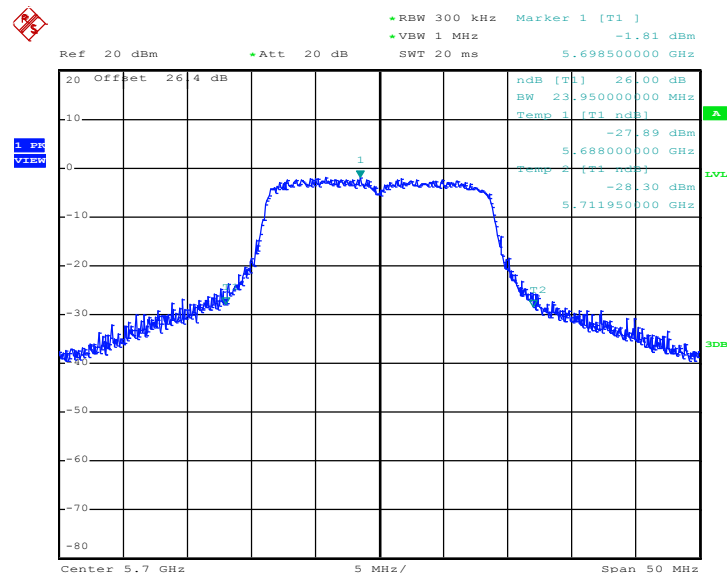
26 dB Bandwidth Plot on Channel 116



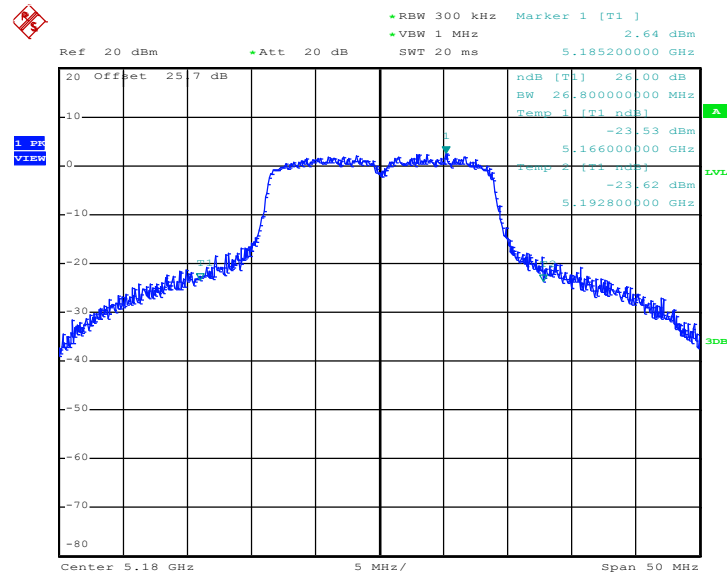
Date: 6.SEP.2012 13:53:05

802.11n HT20 –Ant. 0+1(0)

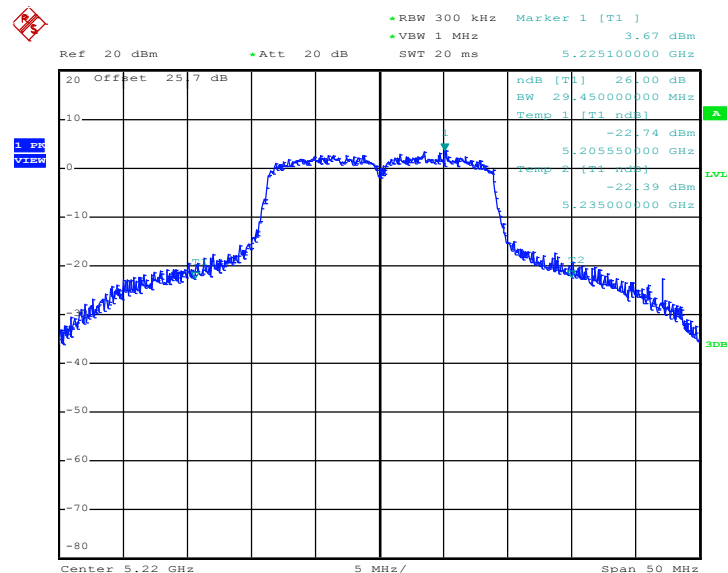
26 dB Bandwidth Plot on Channel 140



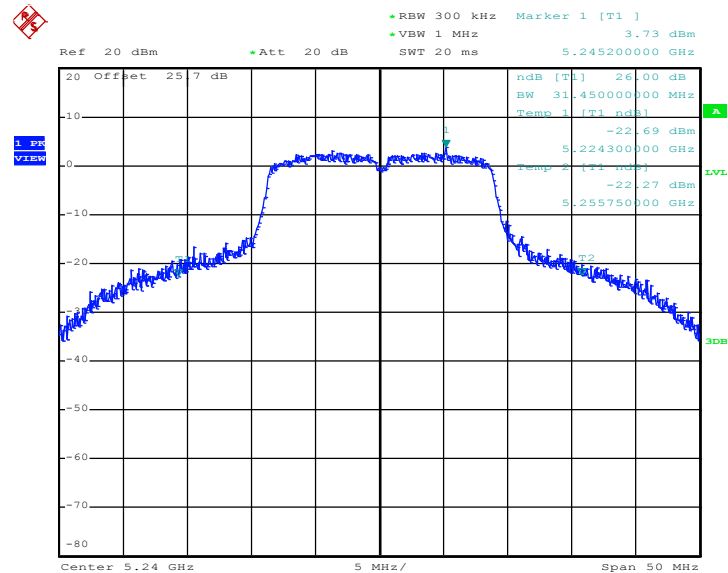
Date: 6.SEP.2012 13:35:24

802.11n HT20 –Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 36


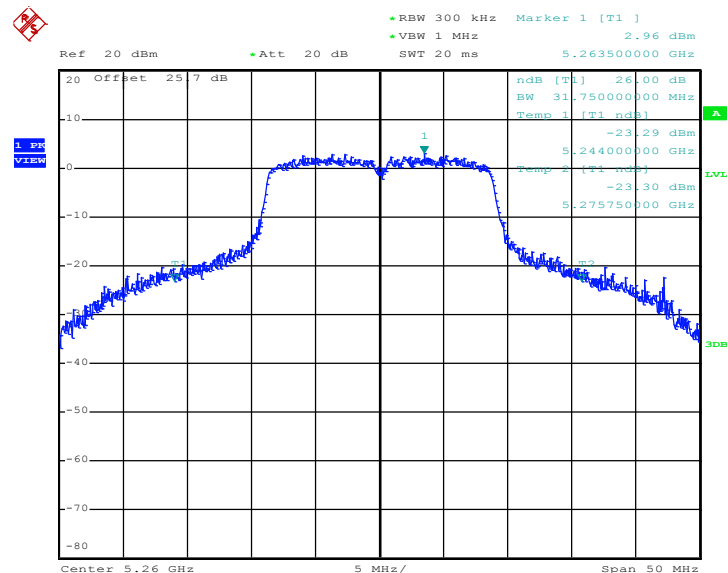
Date: 6.SEP.2012 14:34:28

802.11n HT20 – Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 44


Date: 6.SEP.2012 14:26:39

802.11n HT20 –Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 48


Date: 6.SEP.2012 14:24:32

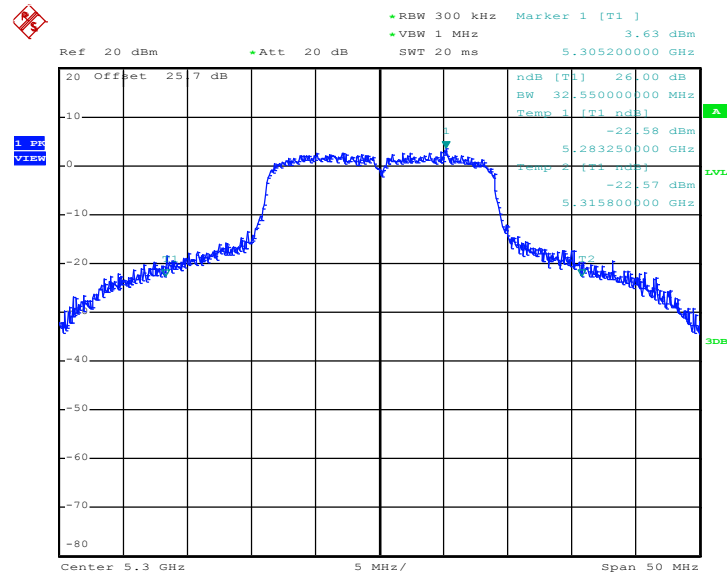
802.11n HT20 –Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 52


Date: 6.SEP.2012 14:17:31



802.11n HT20 –Ant. 0+1(1)

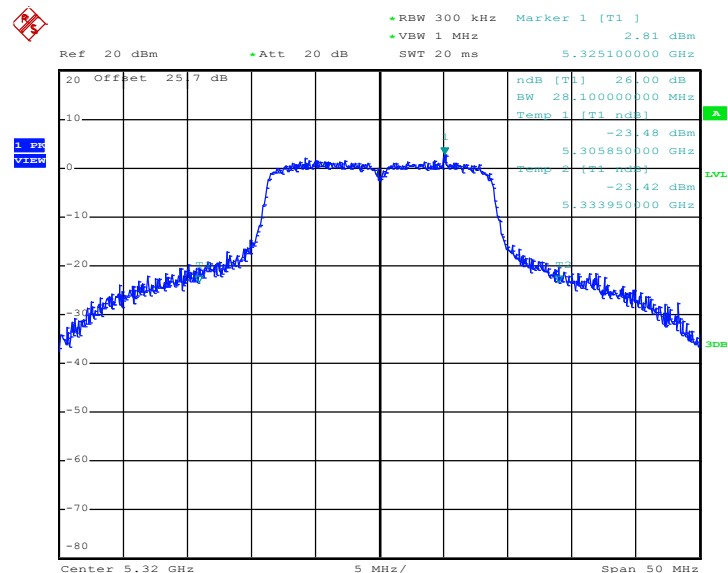
26 dB Bandwidth Plot on Channel 60



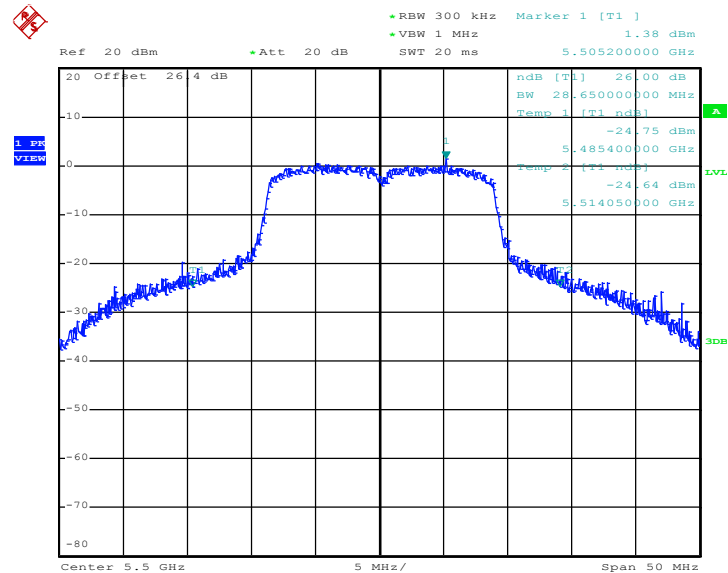
Date: 6.SEP.2012 14:13:24

802.11n HT20 –Ant. 0+1(1)

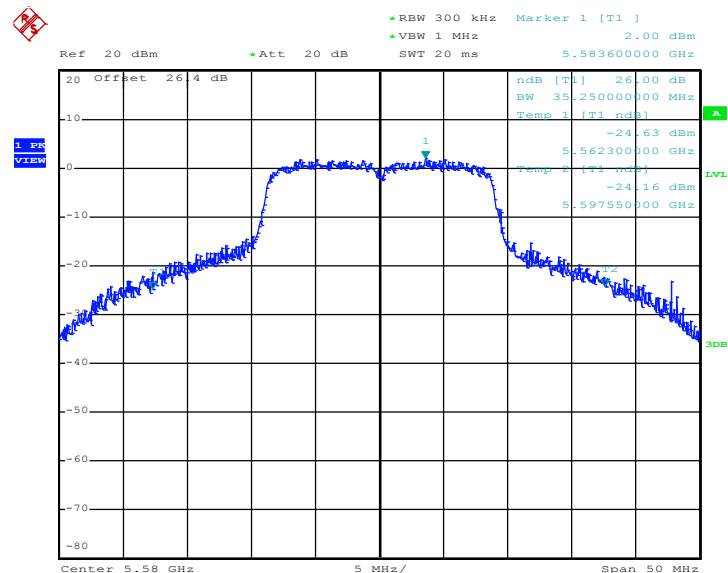
26 dB Bandwidth Plot on Channel 64



Date: 6.SEP.2012 14:03:57

802.11n HT20 –Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 100


Date: 6.SEP.2012 14:00:24

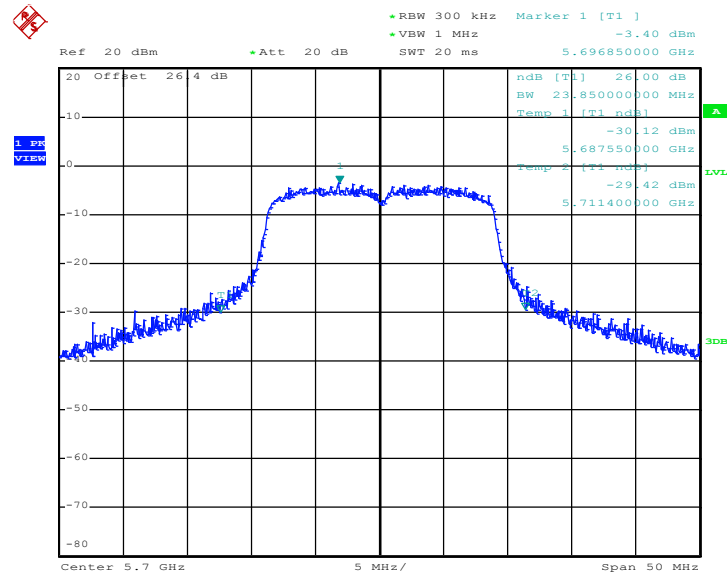
802.11n HT20 –Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 116


Date: 6.SEP.2012 13:48:55



802.11n HT20 –Ant. 0+1(1)

26 dB Bandwidth Plot on Channel 140

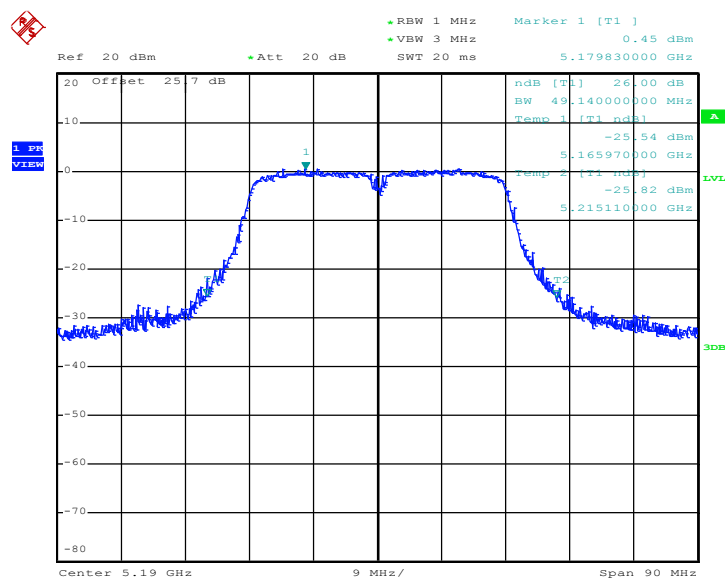


Date: 6.SEP.2012 13:44:42



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%

Channel	Frequency (MHz)	802.11n HT40 26dB Bandwidth (MHz)		Pass/Fail
		Ant. 0+1(0)	Ant. 0+1(1)	
38	5190	49.140	49.500	N/A
46	5230	53.370	63.720	N/A
54	5270	49.770	63.540	N/A
62	5310	49.500	50.850	N/A
102	5510	49.950	48.690	N/A
110	5550	69.120	78.840	N/A
134	5670	71.100	80.100	N/A

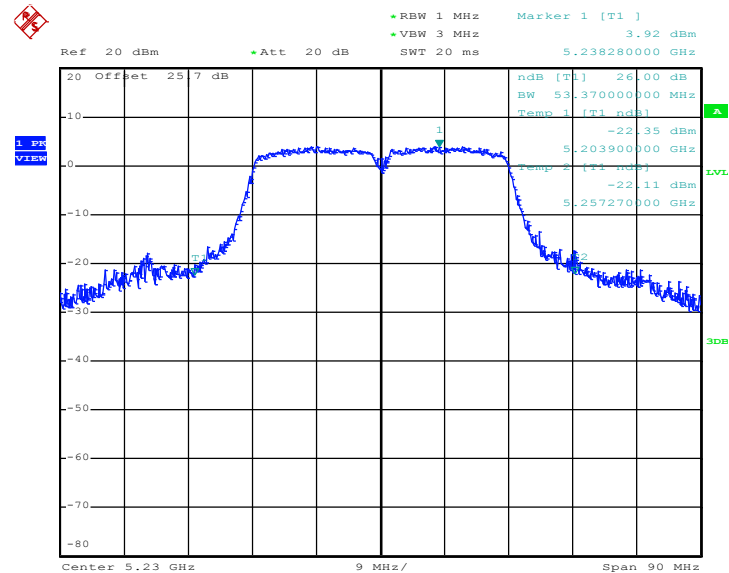
802.11n HT40 –Ant. 0+1(0)**26 dB Bandwidth Plot on Channel 38**

Date: 6.SEP.2012 14:42:41



802.11n HT40 –Ant. 0+1(0)

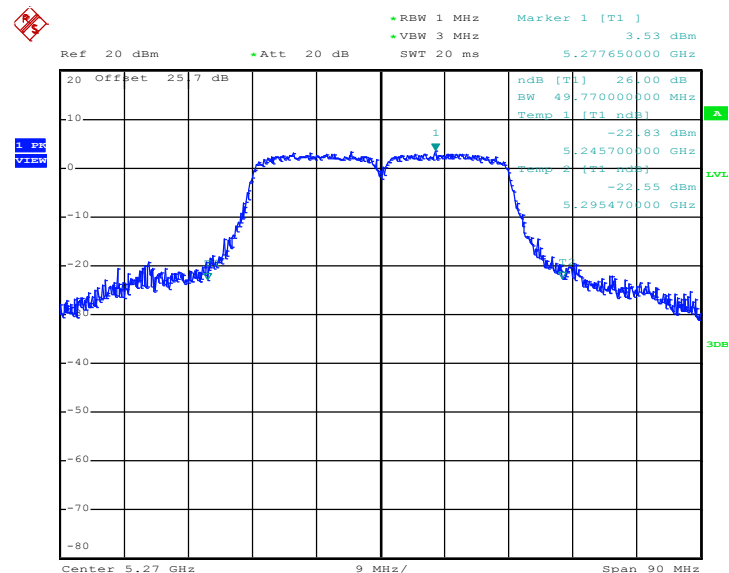
26 dB Bandwidth Plot on Channel 46



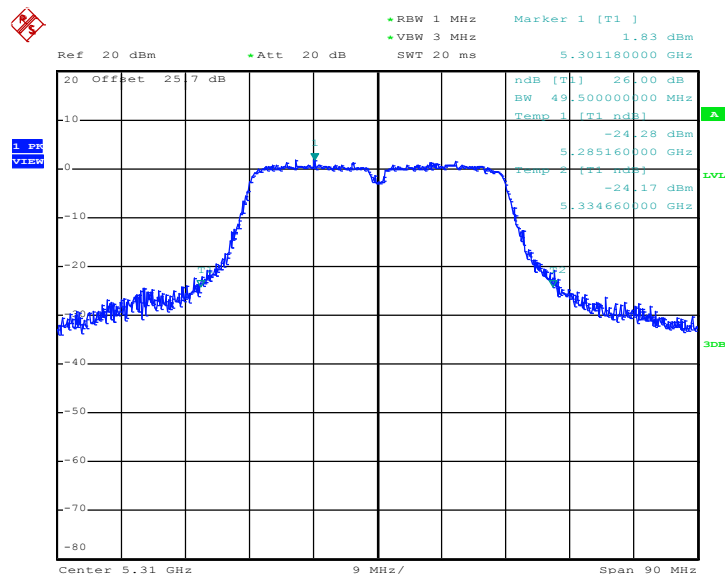
Date: 6.SEP.2012 14:44:52

802.11n HT40 –Ant. 0+1(0)

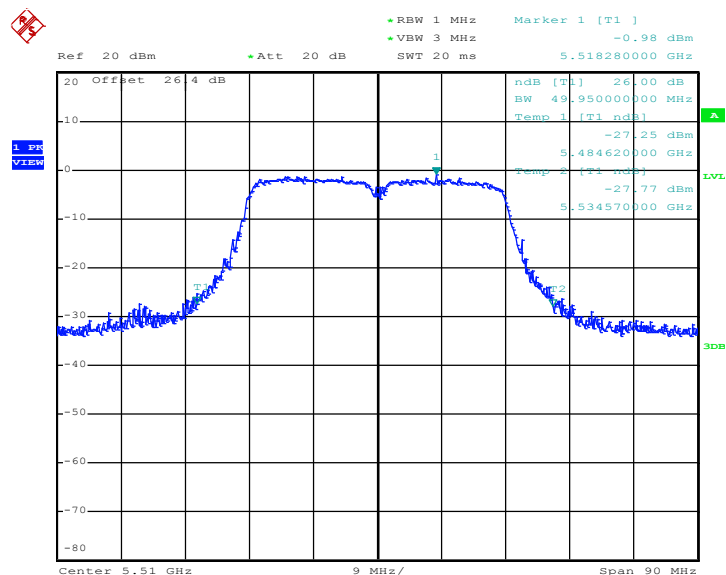
26 dB Bandwidth Plot on Channel 54



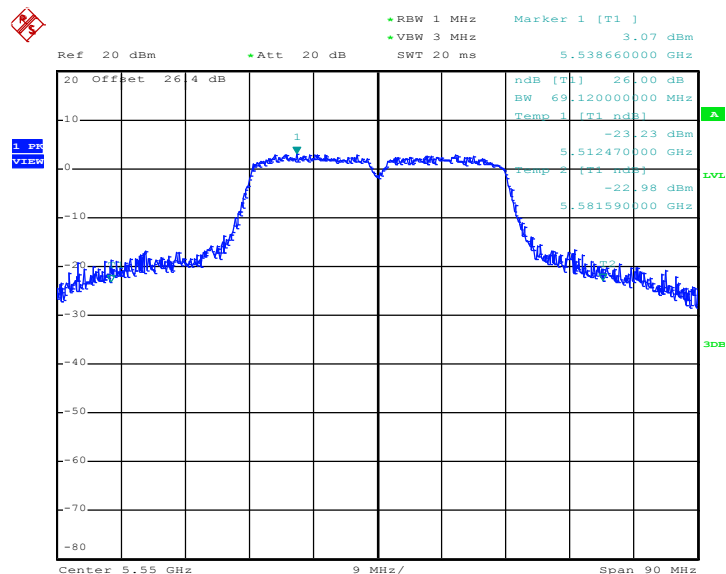
Date: 6.SEP.2012 14:52:08

802.11n HT40 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 62


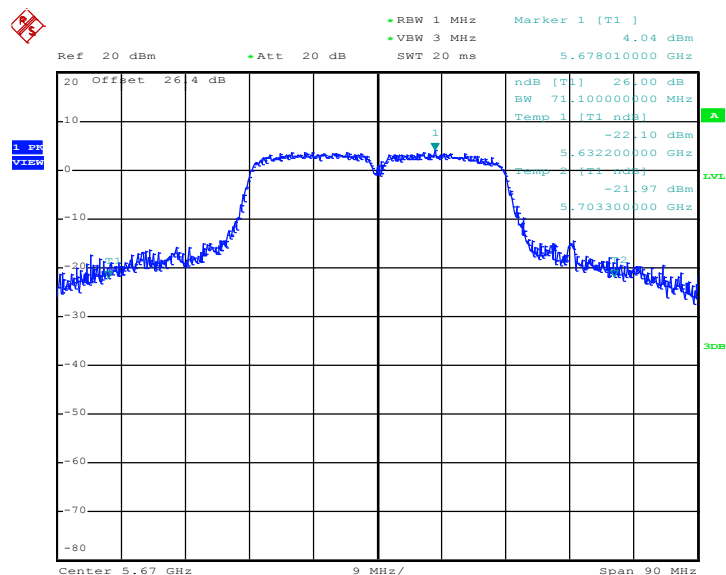
Date: 6.SEP.2012 14:56:46

802.11n HT40 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 102


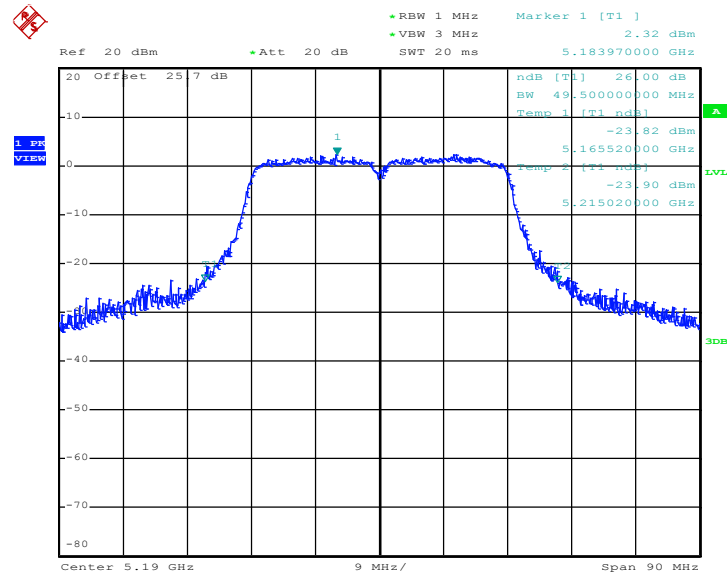
Date: 6.SEP.2012 15:04:55

802.11n HT40 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 110


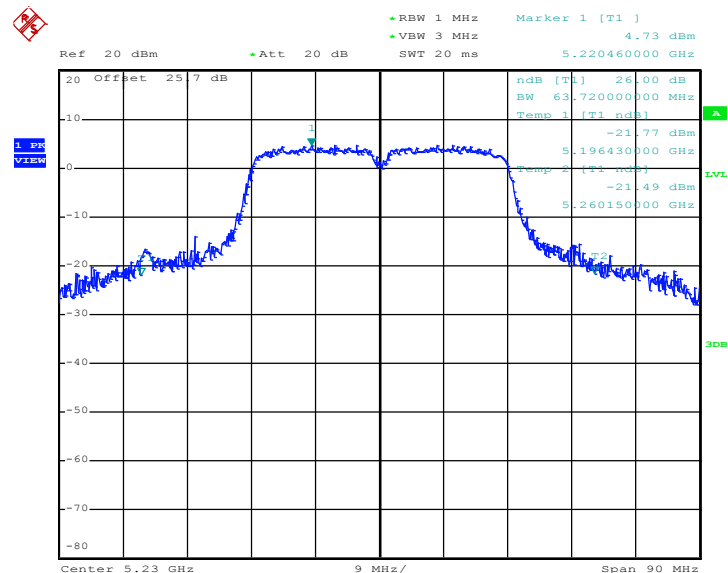
Date: 6.SEP.2012 15:14:53

802.11n HT40 –Ant. 0+1(0)
26 dB Bandwidth Plot on Channel 134


Date: 6.SEP.2012 15:21:17

802.11n HT40 – Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 38


Date: 6.SEP.2012 14:40:38

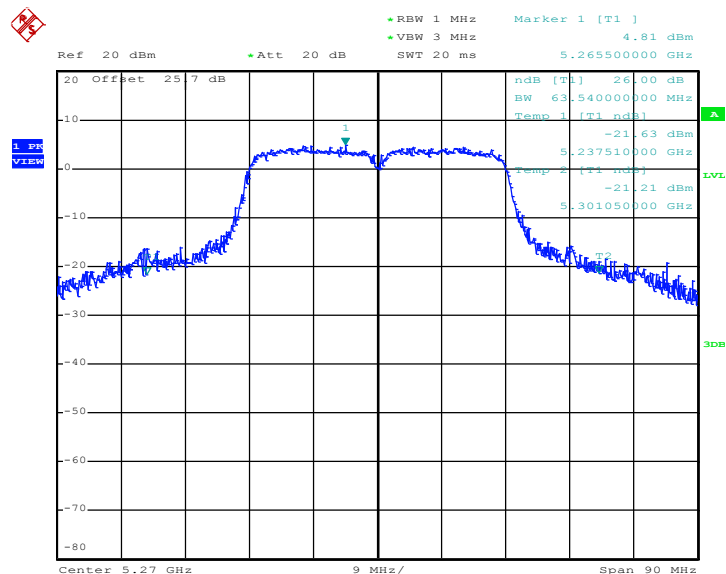
802.11n HT40 –Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 46


Date: 6.SEP.2012 14:47:34



802.11n HT40 –Ant. 0+1(1)

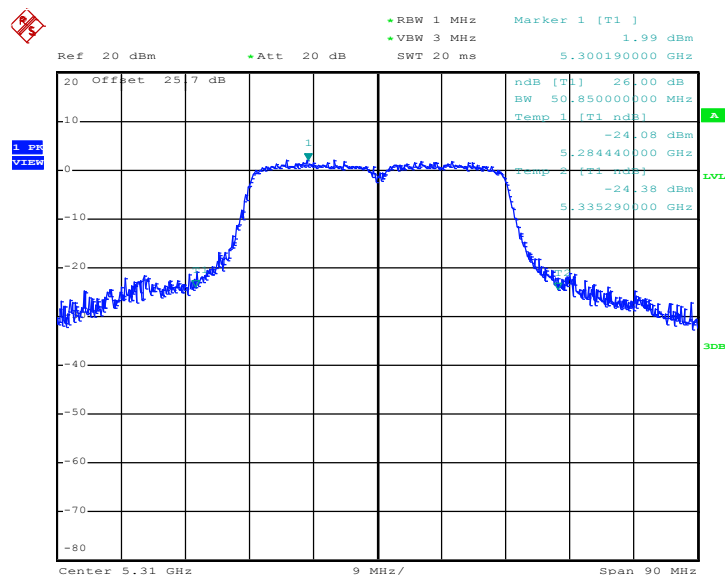
26 dB Bandwidth Plot on Channel 54



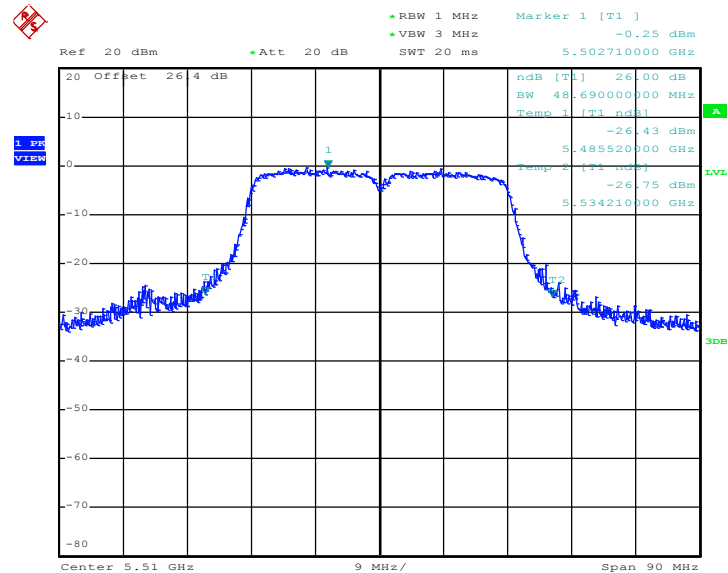
Date: 6.SEP.2012 14:50:07

802.11n HT40 –Ant. 0+1(1)

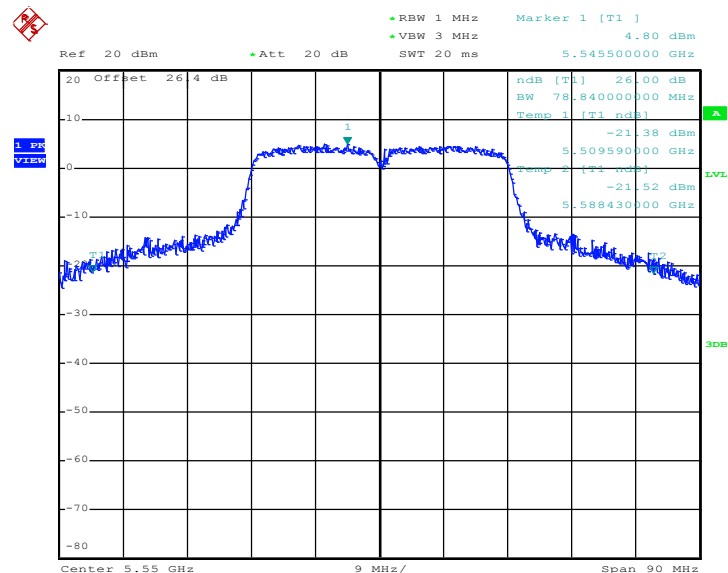
26 dB Bandwidth Plot on Channel 62



Date: 6.SEP.2012 14:59:00

802.11n HT40 –Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 102


Date: 6.SEP.2012 15:08:21

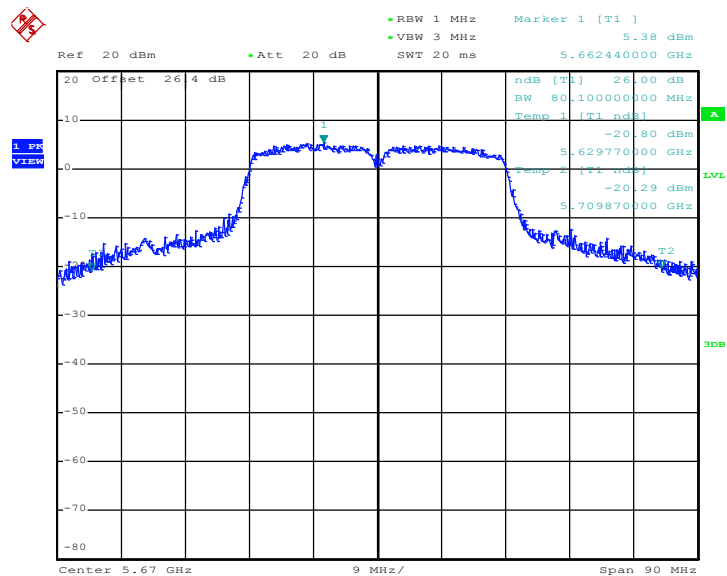
802.11n HT40 –Ant. 0+1(1)
26 dB Bandwidth Plot on Channel 110


Date: 6.SEP.2012 15:17:17



802.11n HT40 –Ant. 0+1(1)

26 dB Bandwidth Plot on Channel 134



Date: 6.SEP.2012 15:22:59

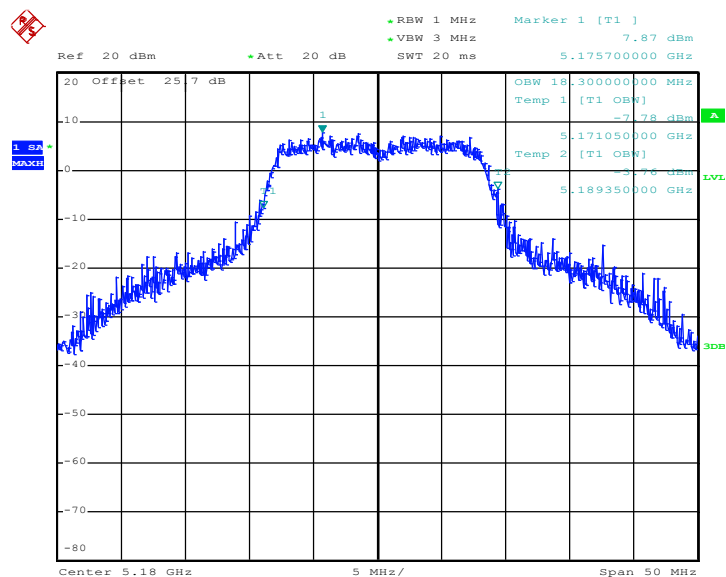
3.1.6 Test Result of 99% Occupied Bandwidth

Test Mode :	802.11a	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%

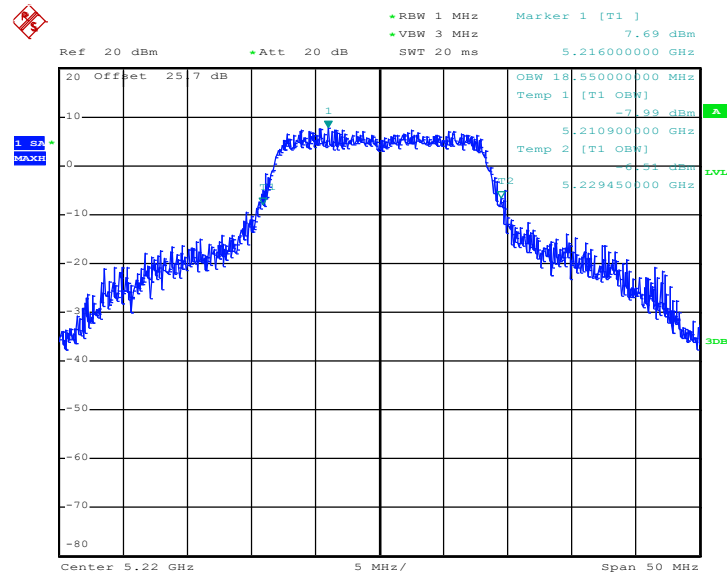
Channel	Frequency (MHz)	802.11a 99% Occupied Bandwidth (MHz)		Pass/Fail
		Ant. 0+1(0)	Ant. 0+1(1)	
36	5180	18.3000	18.3000	N/A
44	5220	18.5500	18.8000	N/A
48	5240	18.1500	18.9000	N/A
52	5260	18.1000	18.7000	N/A
60	5300	18.5000	19.7000	N/A
64	5320	18.7500	20.2500	N/A
100	5500	18.2000	18.2500	N/A
116	5580	18.7000	20.7000	N/A
140	5700	18.6000	18.7000	N/A

802.11a –Ant. 0+1(0)

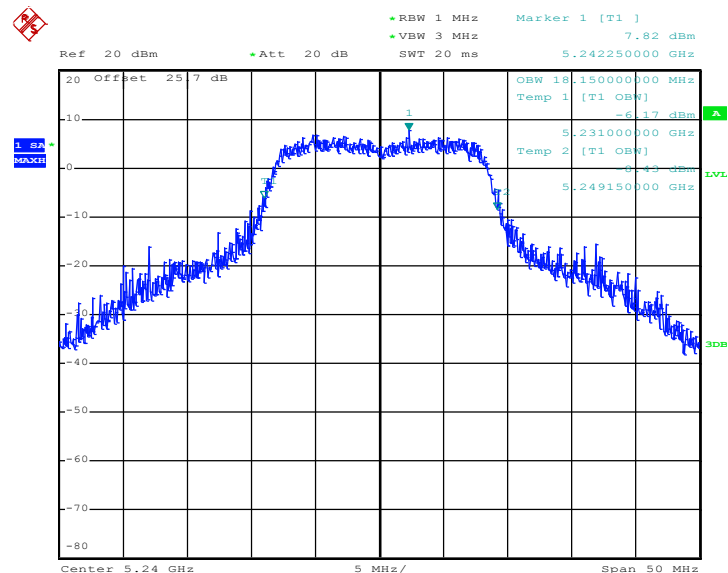
99% Occupied Bandwidth Plot on 802.11a Channel 36



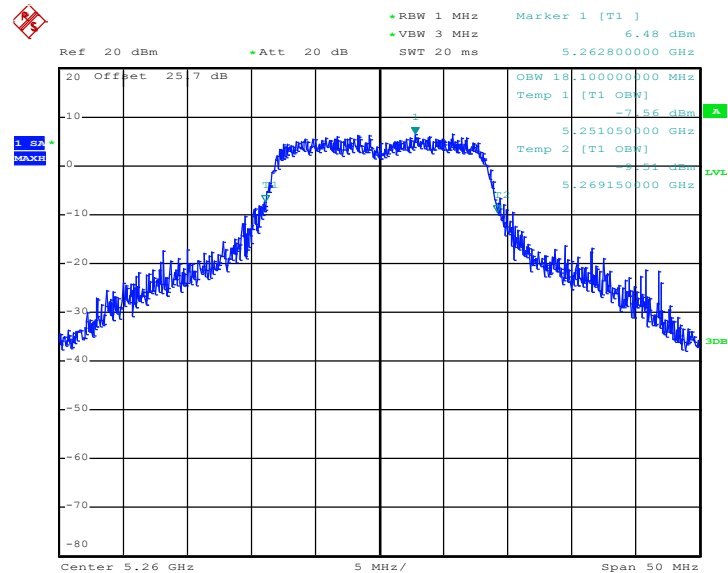
Date: 6.SEP.2012 11:14:08

802.11a –Ant. 0+1(0)
99% Occupied Bandwidth Plot on 802.11a Channel 44


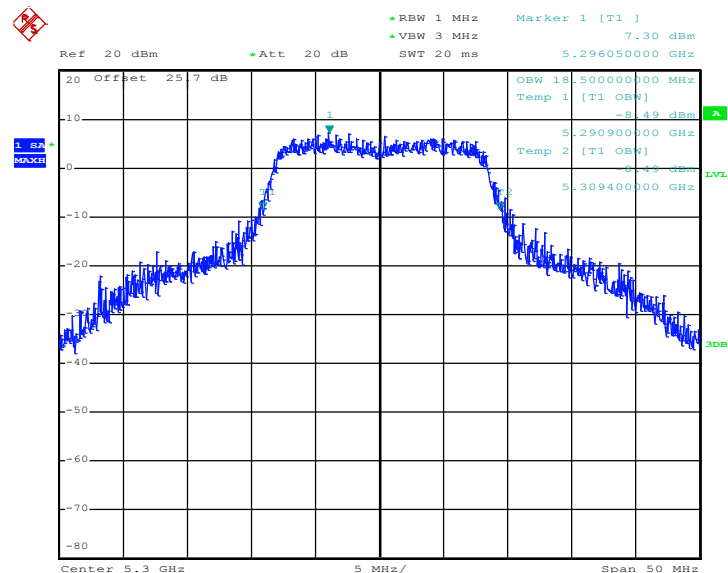
Date: 6.SEP.2012 11:24:03

802.11a –Ant. 0+1(0)
99% Occupied Bandwidth Plot on 802.11a Channel 48


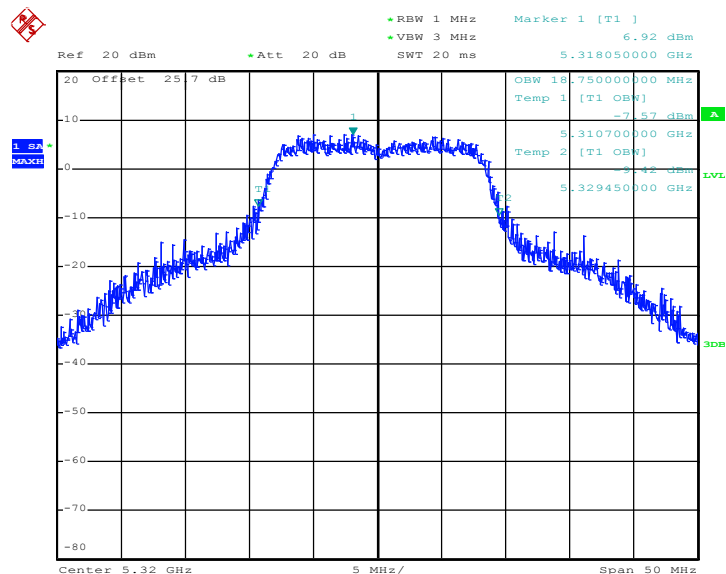
Date: 6.SEP.2012 11:26:40

802.11a –Ant. 0+1(0)
99% Occupied Bandwidth Plot on 802.11a Channel 52


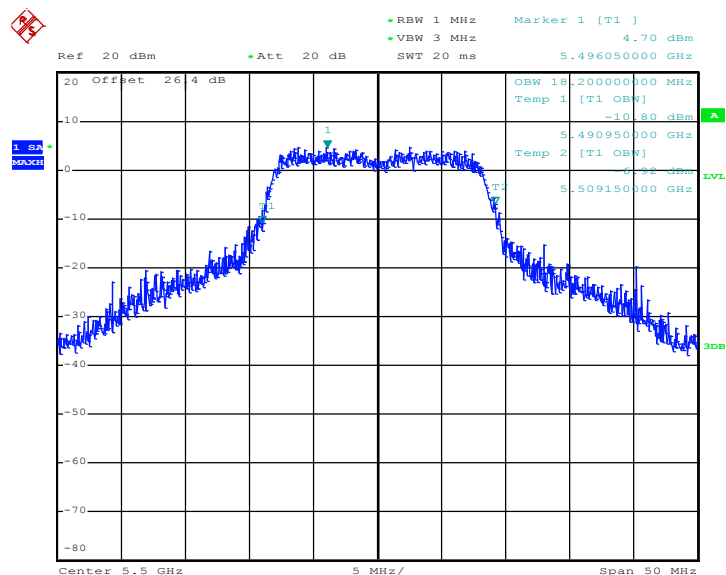
Date: 6.SEP.2012 11:33:49

802.11a –Ant. 0+1(0)
99% Occupied Bandwidth Plot on 802.11a Channel 60


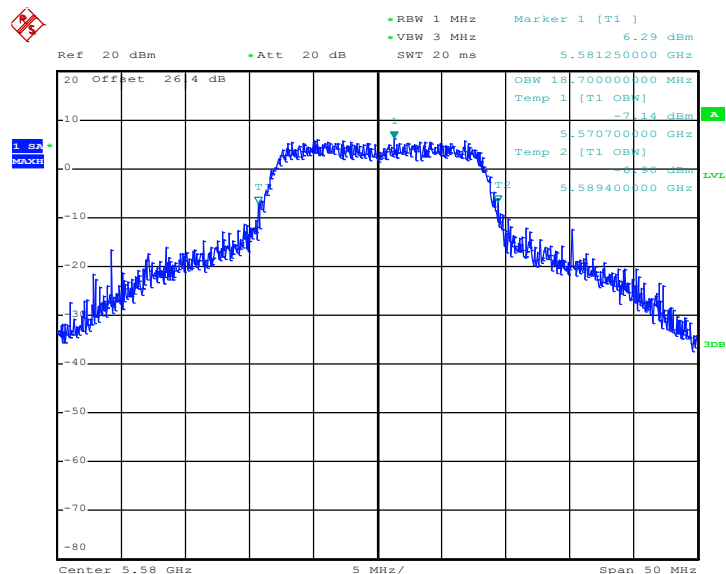
Date: 6.SEP.2012 11:36:49

802.11a –Ant. 0+1(0)
99% Occupied Bandwidth Plot on 802.11a Channel 64


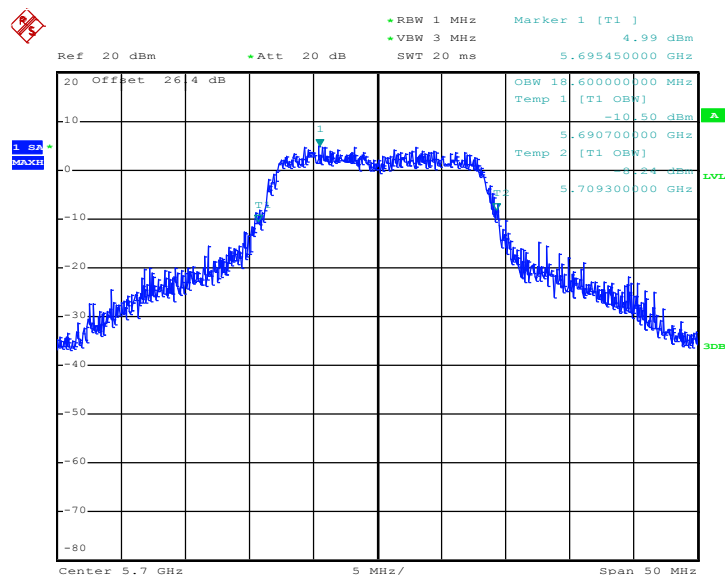
Date: 6.SEP.2012 11:45:05

802.11a –Ant. 0+1(0)
99% Occupied Bandwidth Plot on 802.11a Channel 100


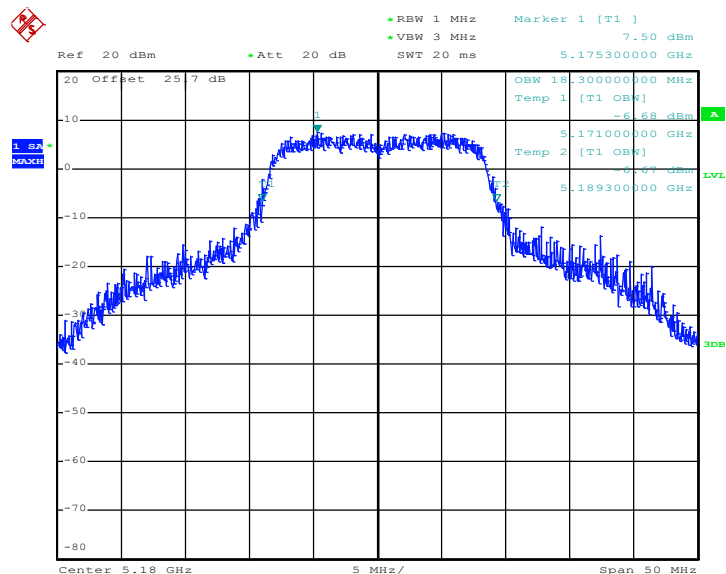
Date: 6.SEP.2012 11:48:22

802.11a –Ant. 0+1(0)
99% Occupied Bandwidth Plot on 802.11a Channel 116


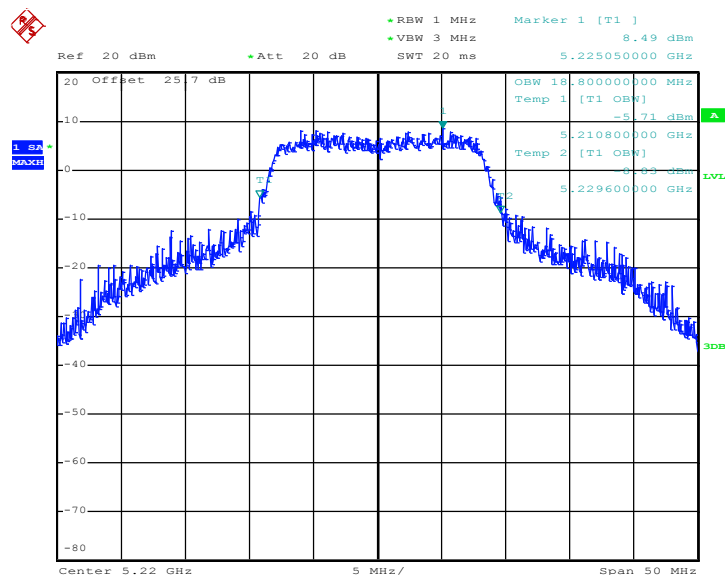
Date: 6.SEP.2012 11:57:53

802.11a –Ant. 0+1(0)
99% Occupied Bandwidth Plot on 802.11a Channel 140


Date: 6.SEP.2012 12:03:33

802.11a –Ant. 0+1(1)
99% Occupied Bandwidth Plot on 802.11a Channel 36


Date: 6.SEP.2012 11:16:39

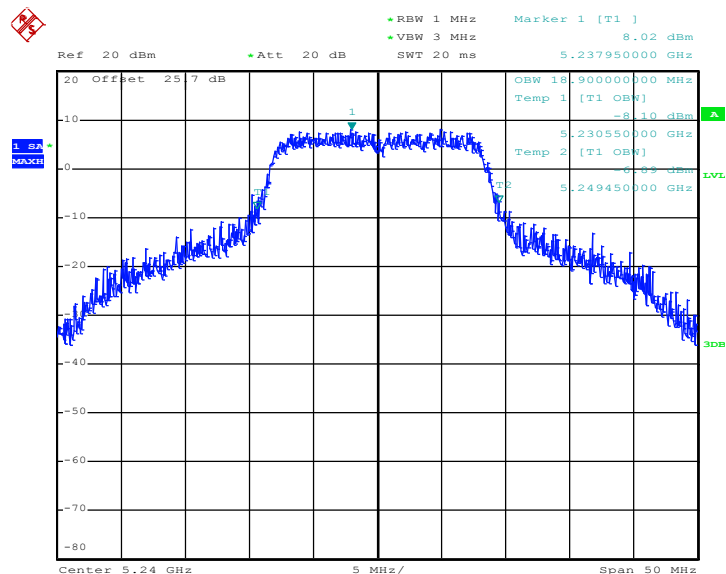
802.11a –Ant. 0+1(1)
99% Occupied Bandwidth Plot on 802.11a Channel 44


Date: 6.SEP.2012 11:21:10



802.11a –Ant. 0+1(1)

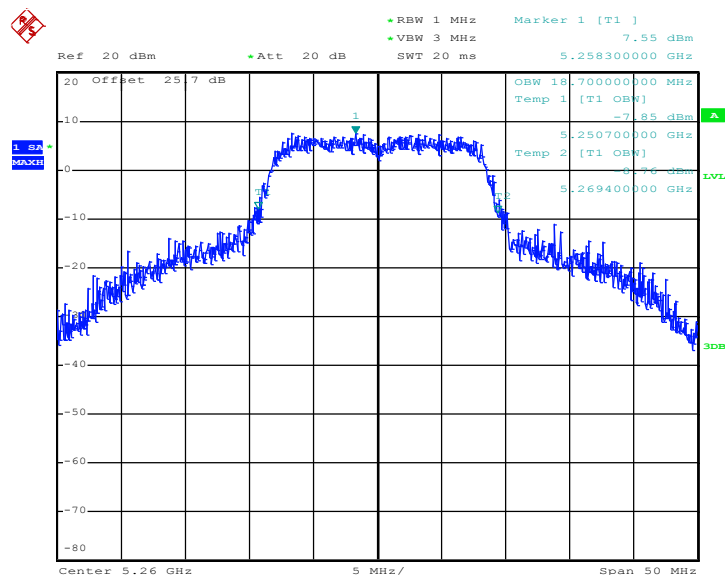
99% Occupied Bandwidth Plot on 802.11a Channel 48



Date: 6.SEP.2012 11:29:04

802.11a –Ant. 0+1(1)

99% Occupied Bandwidth Plot on 802.11a Channel 52

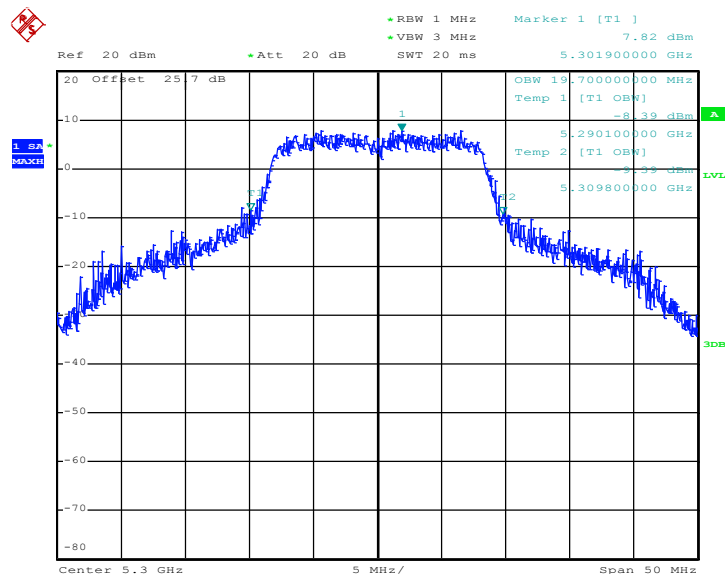


Date: 6.SEP.2012 11:31:41



802.11a –Ant. 0+1(1)

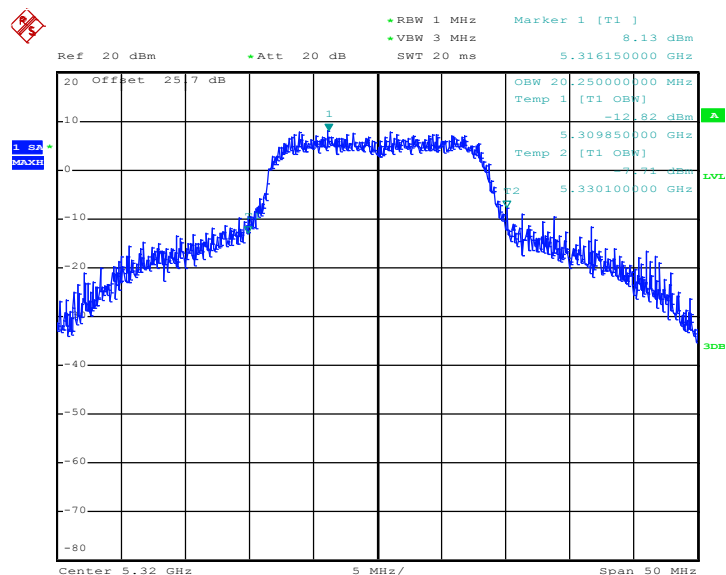
99% Occupied Bandwidth Plot on 802.11a Channel 60



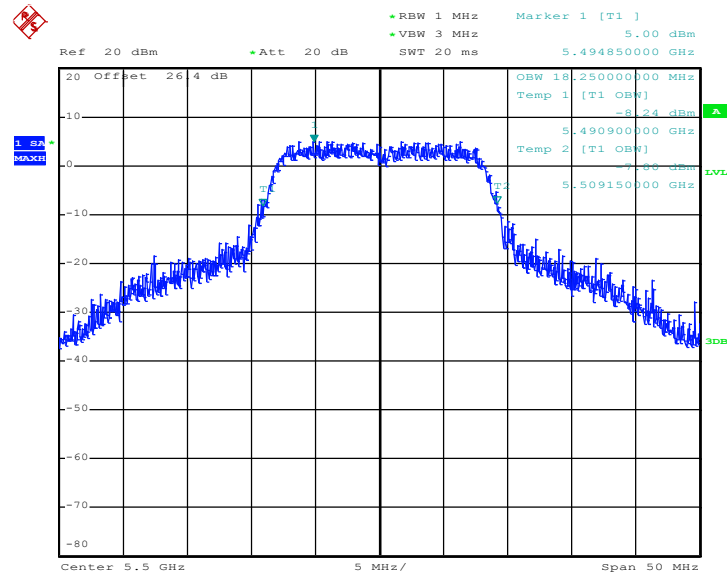
Date: 6.SEP.2012 11:39:07

802.11a –Ant. 0+1(1)

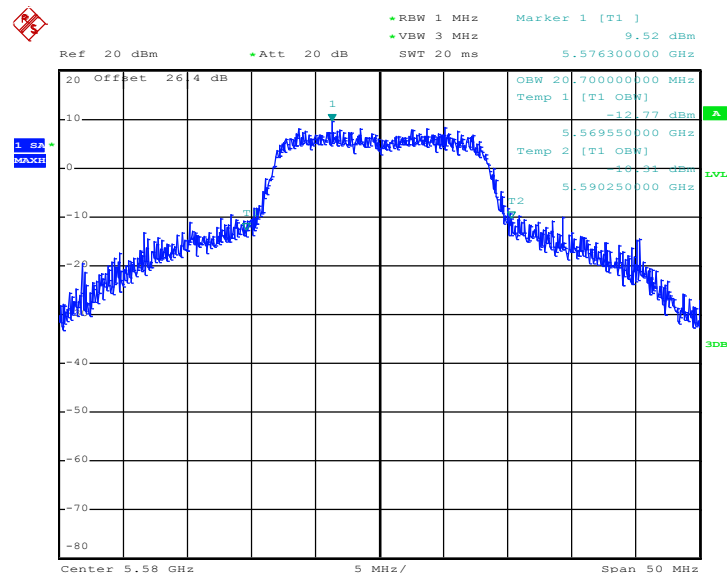
99% Occupied Bandwidth Plot on 802.11a Channel 64



Date: 6.SEP.2012 11:42:21

802.11a –Ant. 0+1(1)
99% Occupied Bandwidth Plot on 802.11a Channel 100


Date: 6.SEP.2012 11:50:40

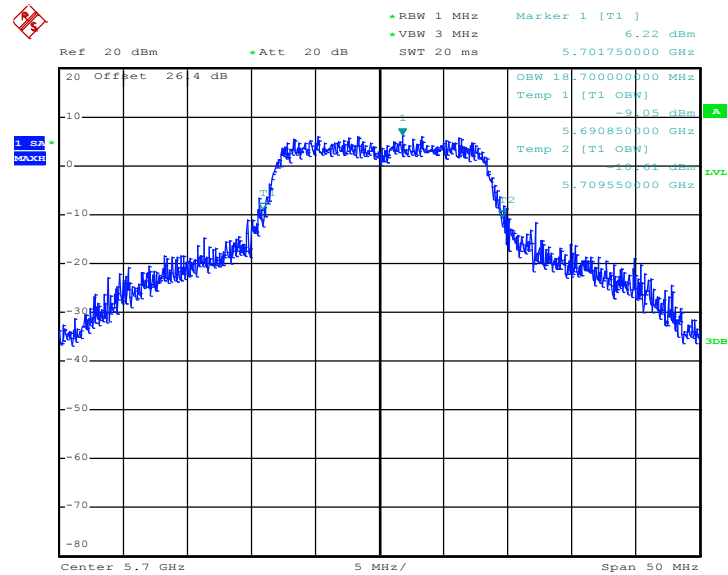
802.11a –Ant. 0+1(1)
99% Occupied Bandwidth Plot on 802.11a Channel 116


Date: 6.SEP.2012 11:53:42



802.11a –Ant. 0+1(1)

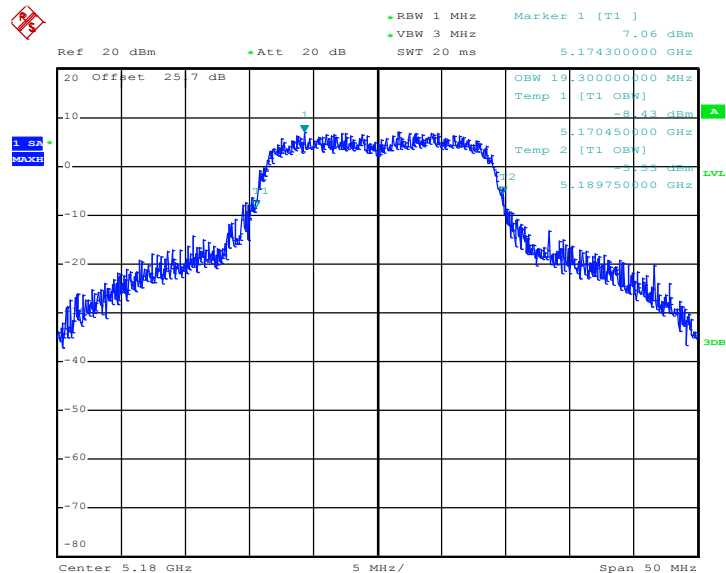
99% Occupied Bandwidth Plot on 802.11a Channel 140



Date: 6.SEP.2012 12:00:39

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%

Channel	Frequency (MHz)	802.11n HT20 99% Occupied Bandwidth (MHz)		Pass/Fail
		Ant. 0+1(0)	Ant. 0+1(1)	
36	5180	19.3000	19.1000	N/A
44	5220	19.0500	19.5500	N/A
48	5240	19.1500	19.8000	N/A
52	5260	18.9000	19.6500	N/A
60	5300	19.2000	20.0500	N/A
64	5320	19.1500	19.5000	N/A
100	5500	19.4000	19.5000	N/A
116	5580	19.8500	20.1000	N/A
140	5700	18.8500	18.9000	N/A

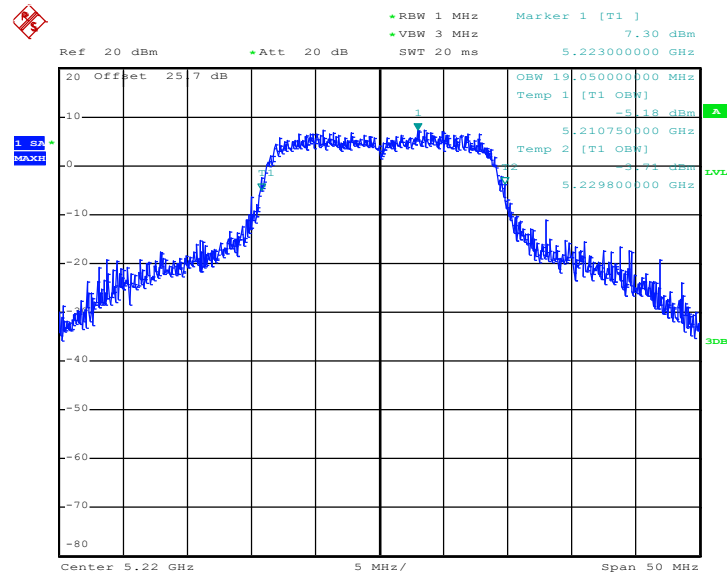
802.11n HT20 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 36


Date: 6.SEP.2012 14:34:16



802.11n HT20 –Ant. 0+1(0)

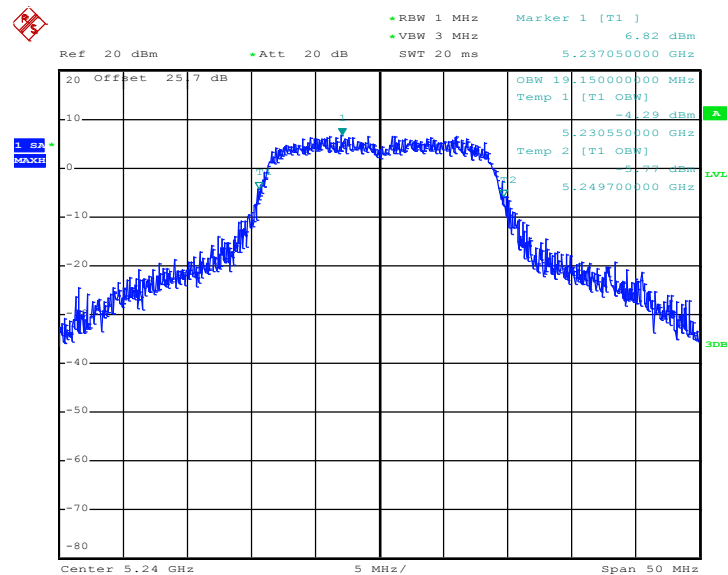
99% Occupied Bandwidth Plot on Channel 44



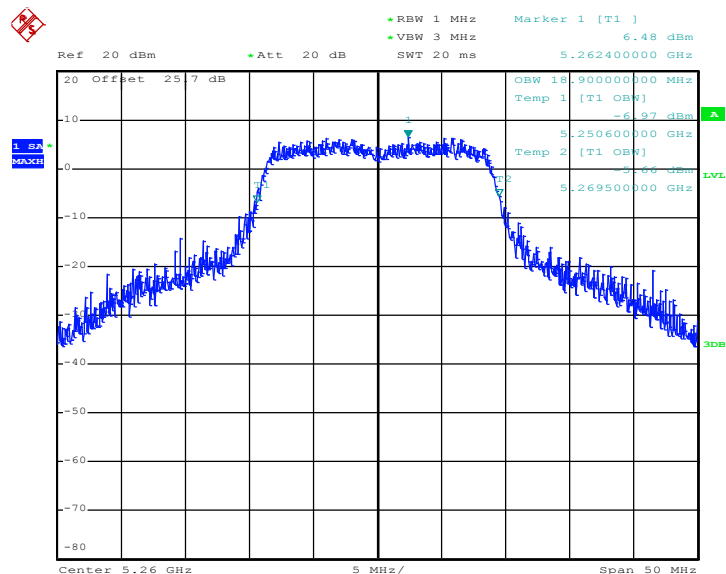
Date: 6.SEP.2012 14:30:19

802.11n HT20 –Ant. 0+1(0)

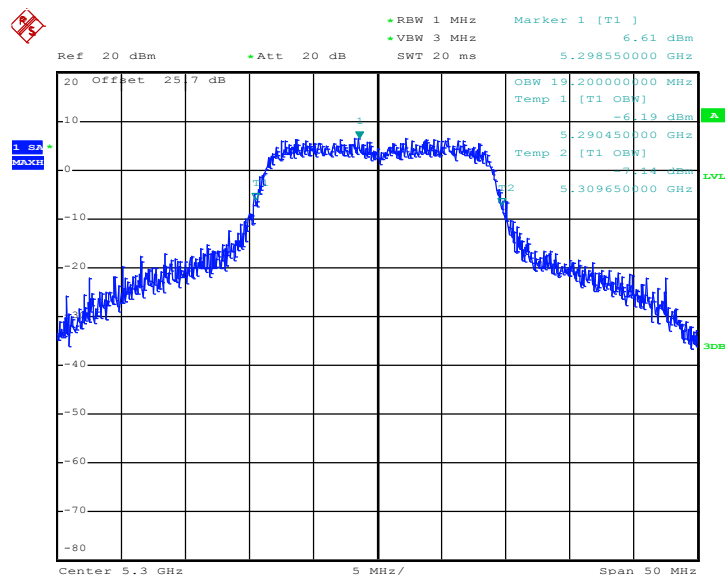
99% Occupied Bandwidth Plot on Channel 48



Date: 6.SEP.2012 14:24:21

802.11n HT20 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 52


Date: 6.SEP.2012 14:21:18

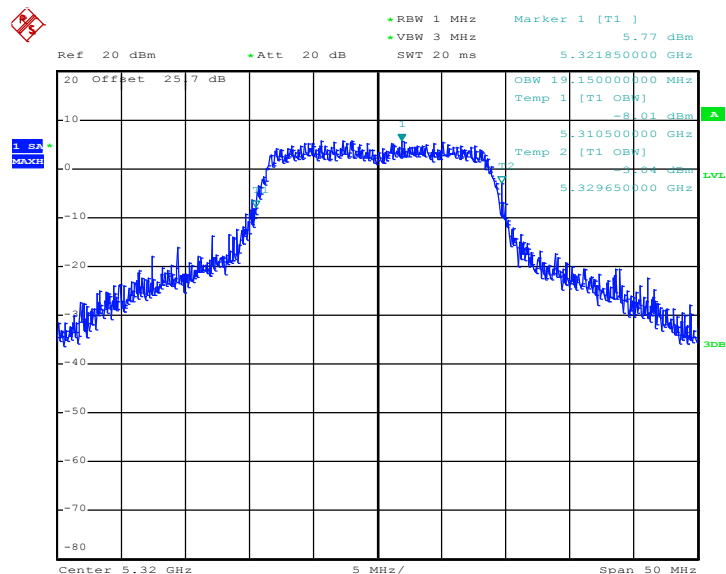
802.11n HT20 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 60


Date: 6.SEP.2012 14:13:09



802.11n HT20 –Ant. 0+1(0)

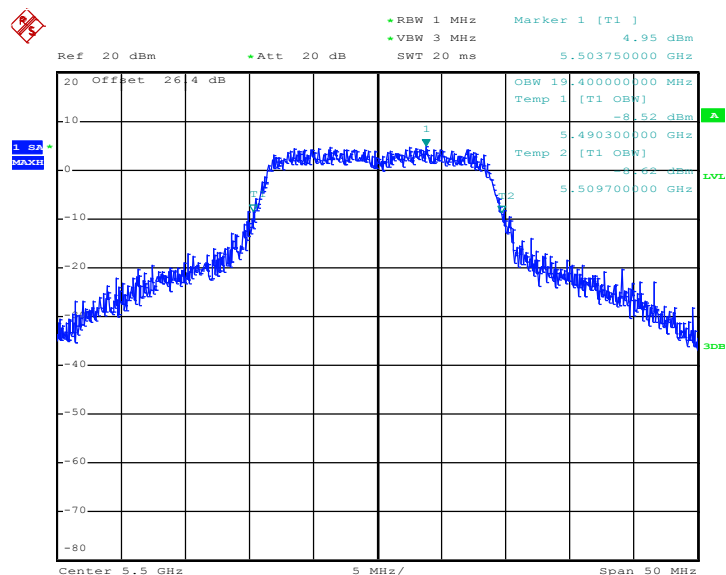
99% Occupied Bandwidth Plot on Channel 64



Date: 6.SEP.2012 14:08:38

802.11n HT20 –Ant. 0+1(0)

99% Occupied Bandwidth Plot on Channel 100

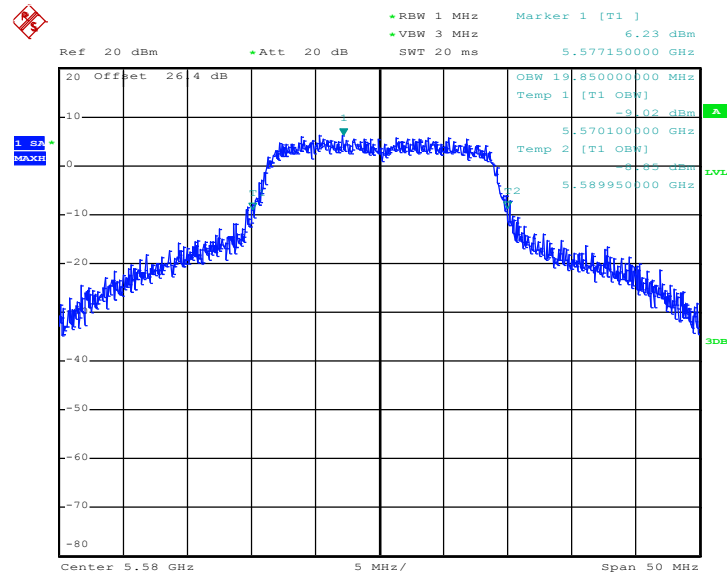


Date: 6.SEP.2012 13:58:41



802.11n HT20 –Ant. 0+1(0)

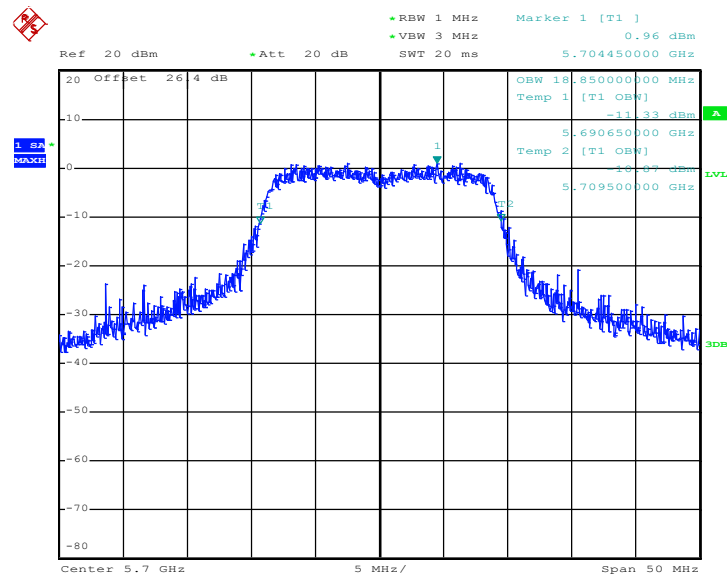
99% Occupied Bandwidth Plot on Channel 116



Date: 6.SEP.2012 13:55:16

802.11n HT20 –Ant. 0+1(0)

99% Occupied Bandwidth Plot on Channel 140

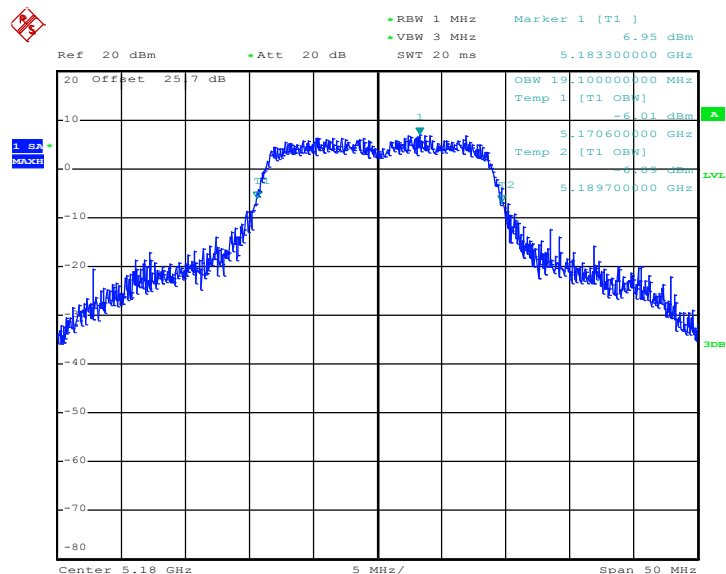


Date: 6.SEP.2012 13:44:13



802.11n HT20 –Ant. 0+1(1)

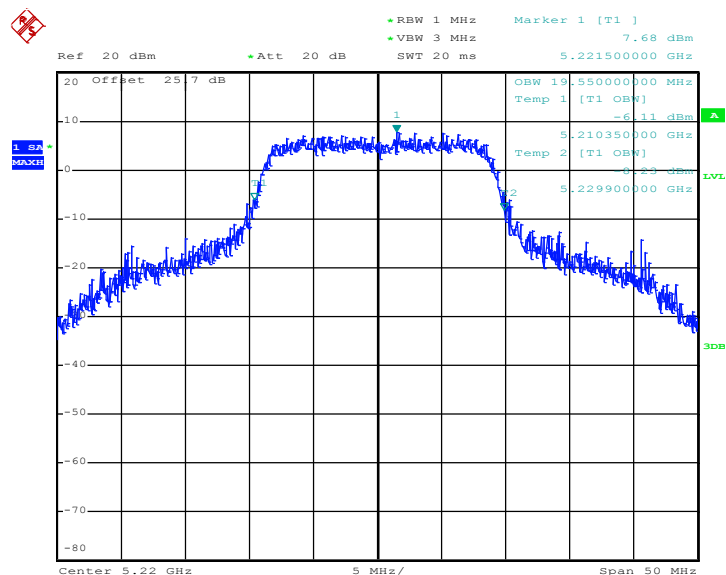
99% Occupied Bandwidth Plot on Channel 36



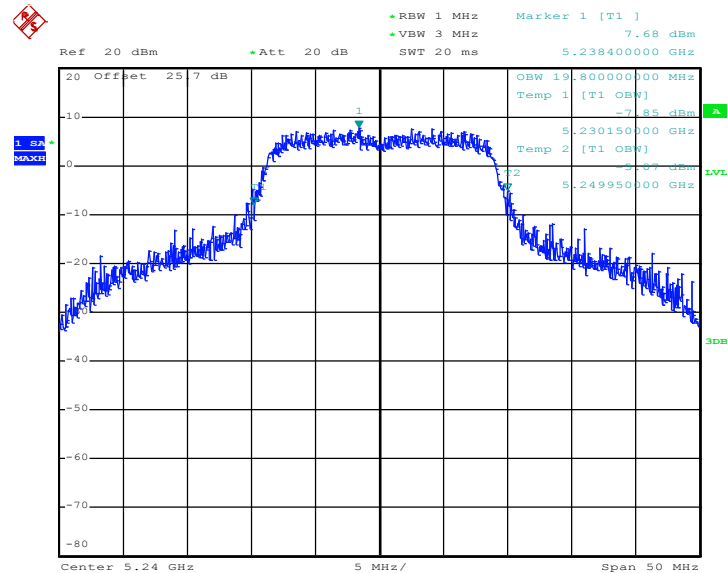
Date: 6.SEP.2012 14:36:54

802.11n HT20 –Ant. 0+1(1)

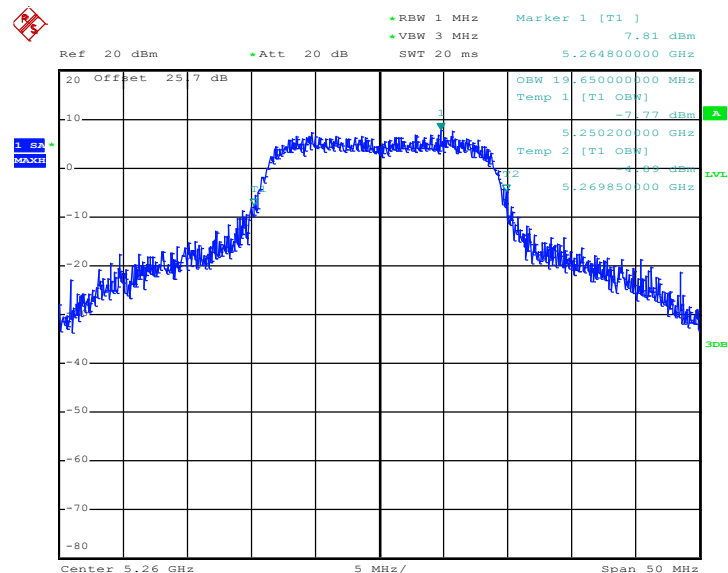
99% Occupied Bandwidth Plot on Channel 44



Date: 6.SEP.2012 14:28:26

802.11n HT20 –Ant. 0+1(1)
99% Occupied Bandwidth Plot on Channel 48


Date: 6.SEP.2012 14:26:13

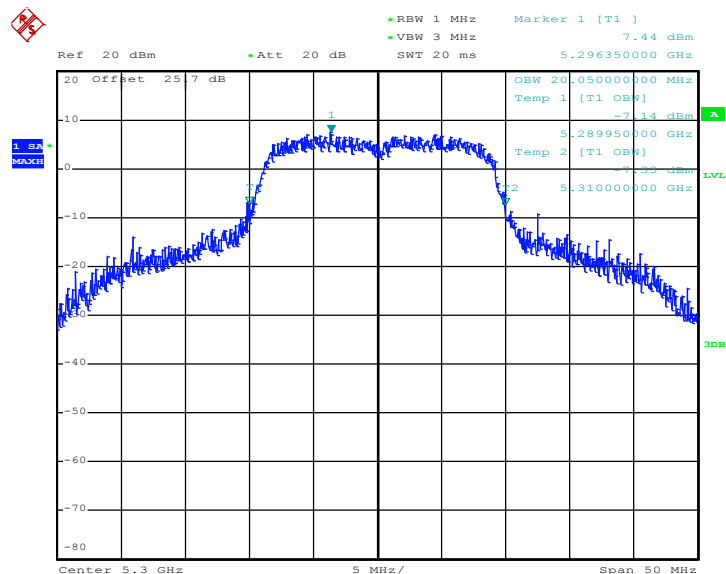
802.11n HT20 –Ant. 0+1(1)
99% Occupied Bandwidth Plot on Channel 52


Date: 6.SEP.2012 14:19:29



802.11n HT20 –Ant. 0+1(1)

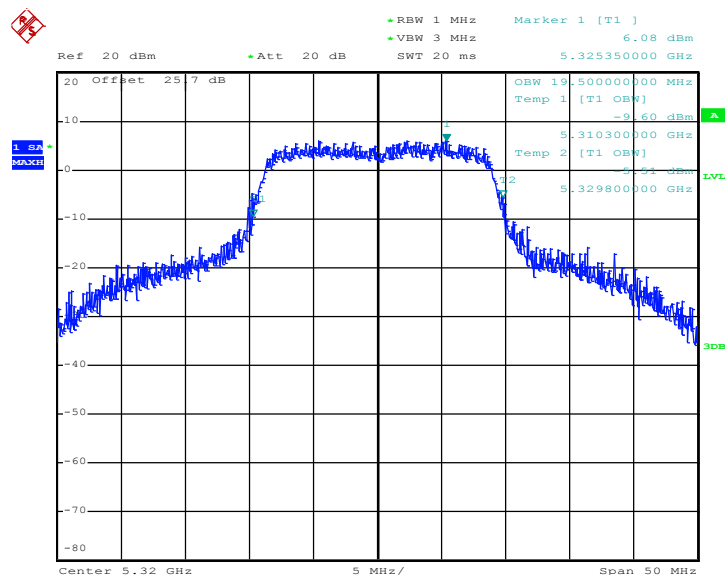
99% Occupied Bandwidth Plot on Channel 60



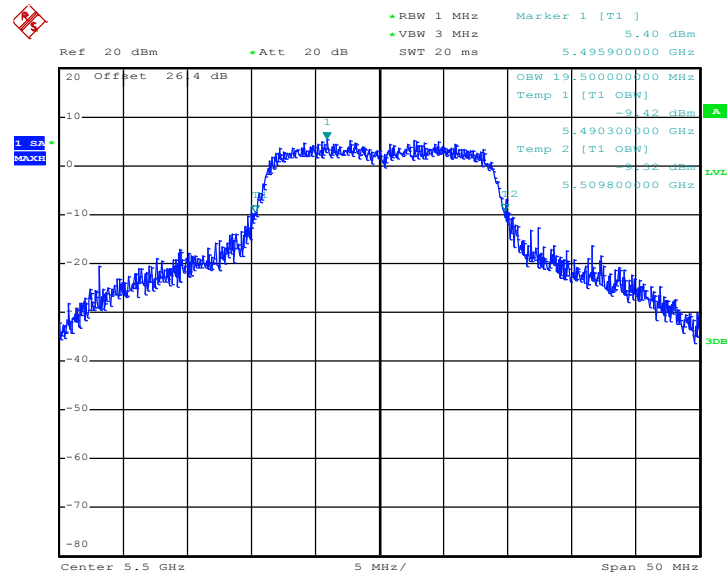
Date: 6.SEP.2012 14:16:25

802.11n HT20 –Ant. 0+1(1)

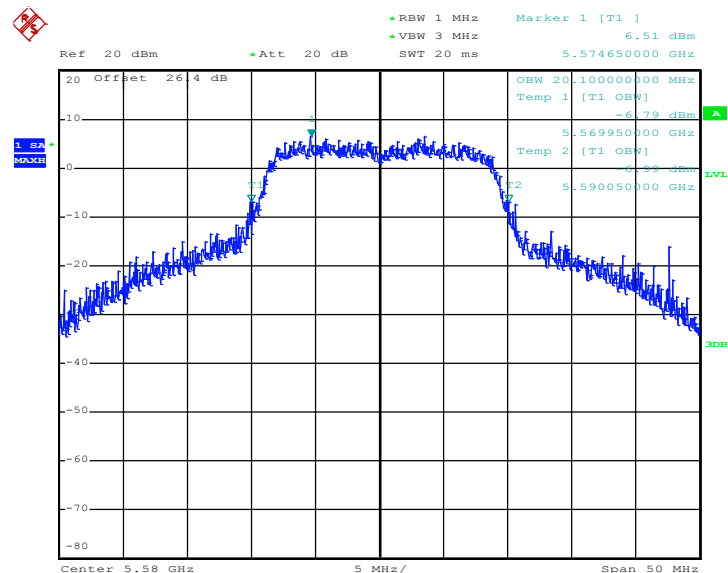
99% Occupied Bandwidth Plot on Channel 64



Date: 6.SEP.2012 14:05:54

802.11n HT20 –Ant. 0+1(1)
99% Occupied Bandwidth Plot on Channel 100


Date: 6.SEP.2012 14:02:43

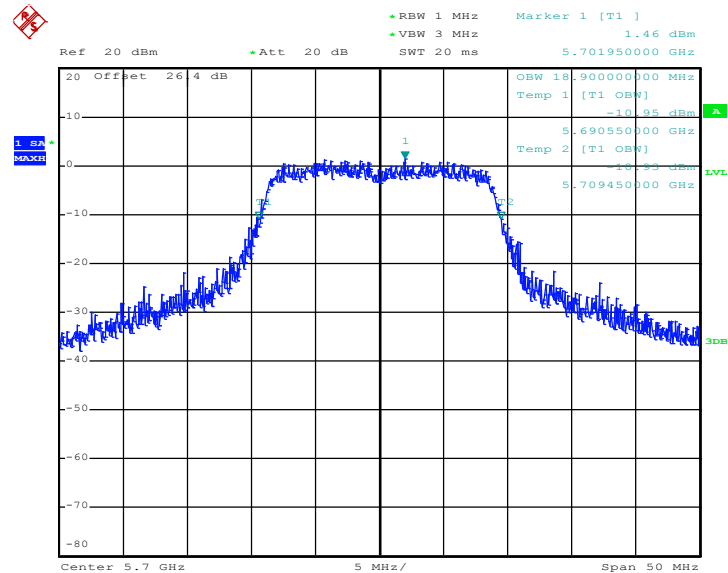
802.11n HT20 –Ant. 0+1(1)
99% Occupied Bandwidth Plot on Channel 116


Date: 6.SEP.2012 13:52:40



802.11n HT20 –Ant. 0+1(1)

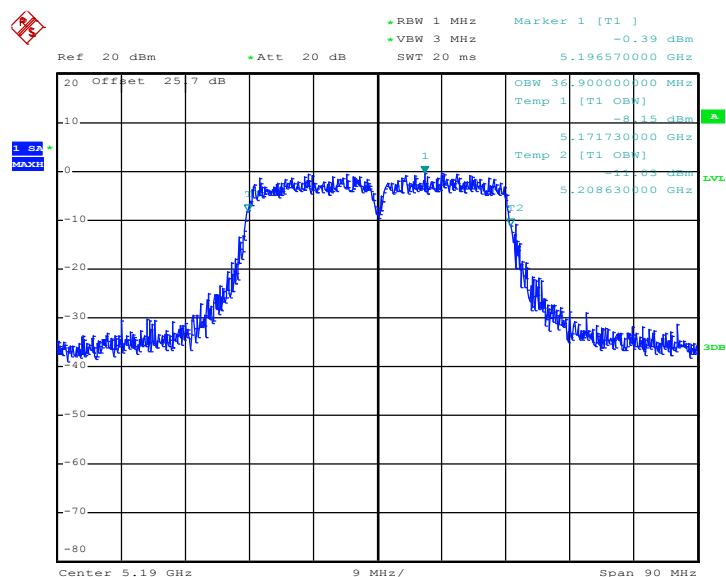
99% Occupied Bandwidth Plot on Channel 140



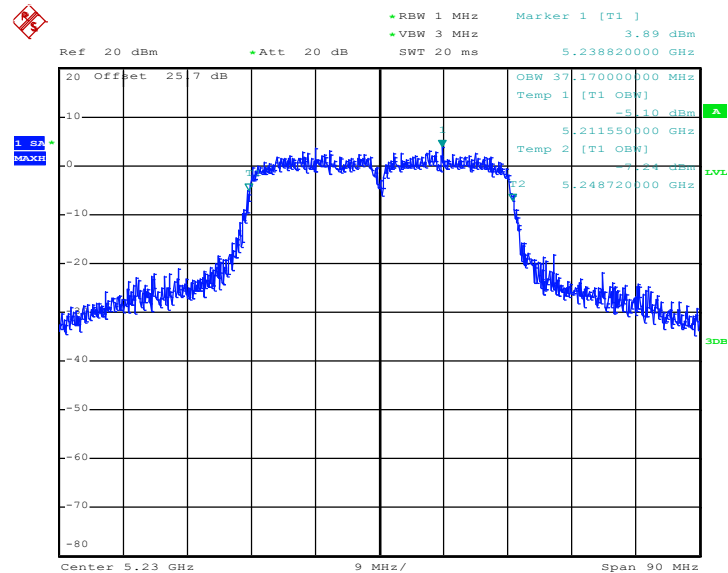
Date: 6.SEP.2012 13:47:48

Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%

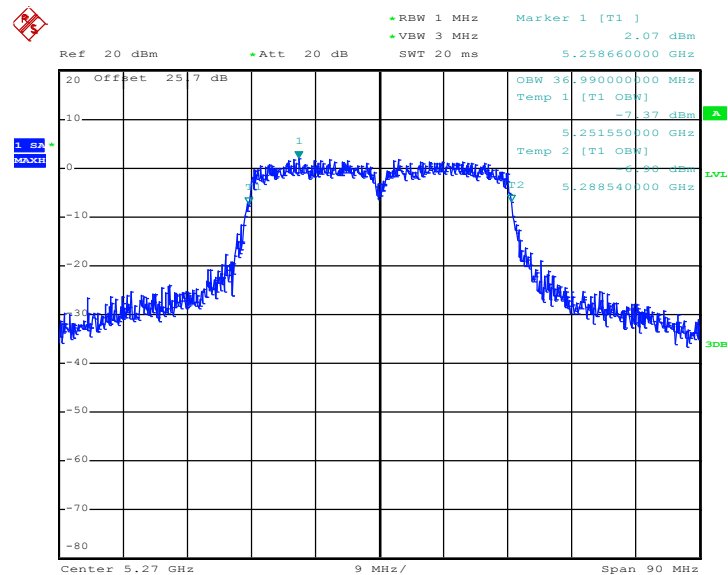
Channel	Frequency (MHz)	802.11n HT40 99% Occupied Bandwidth (MHz)		Pass/Fail
		Ant. 0+1(0)	Ant. 0+1(1)	
38	5190	36.9000	36.9000	N/A
46	5230	37.1700	37.2600	N/A
54	5270	36.9900	37.5300	N/A
62	5310	36.9900	36.9000	N/A
102	5510	36.9900	36.9900	N/A
110	5550	37.8000	39.8700	N/A
134	5670	38.2500	41.2200	N/A

802.11n HT40 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 38


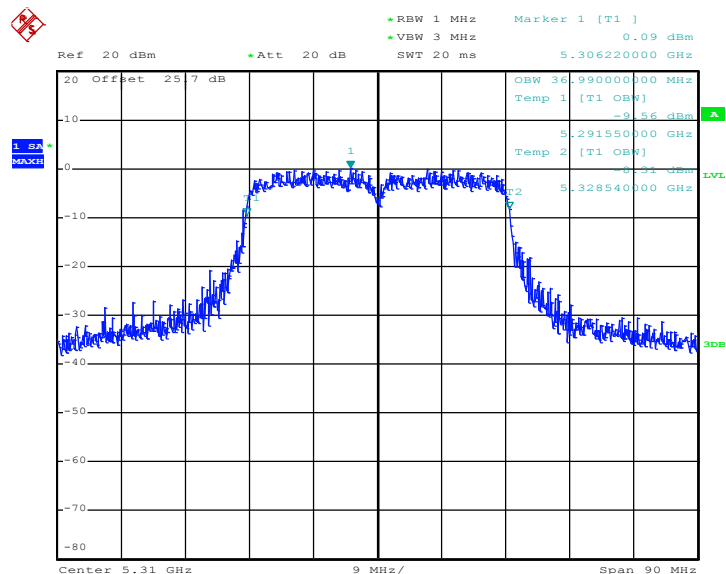
Date: 6.SEP.2012 14:44:22

802.11n HT40 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 46


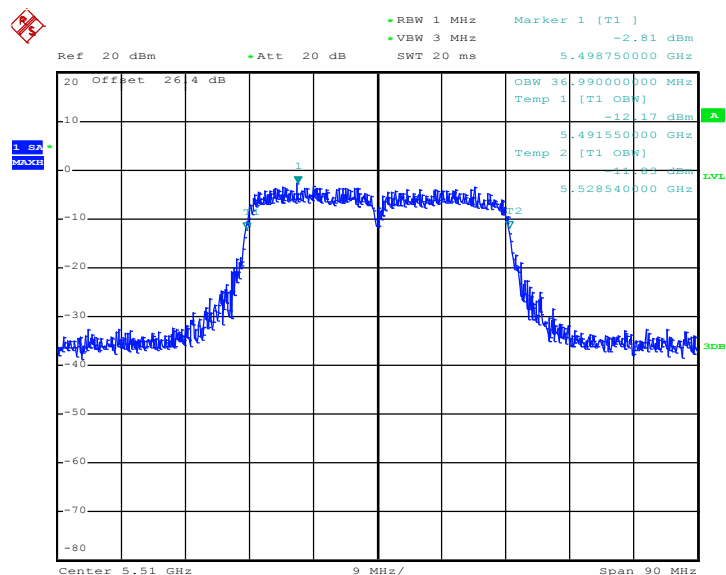
Date: 6.SEP.2012 14:47:06

802.11n HT40 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 54


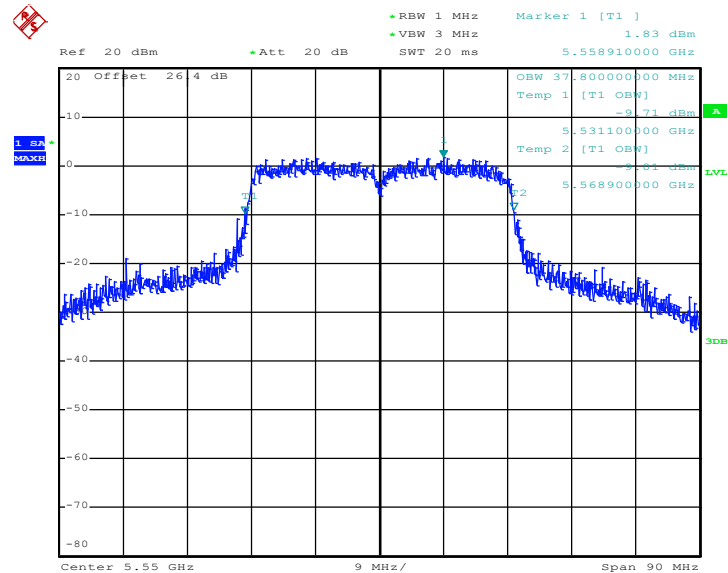
Date: 6.SEP.2012 14:53:37

802.11n HT40 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 62


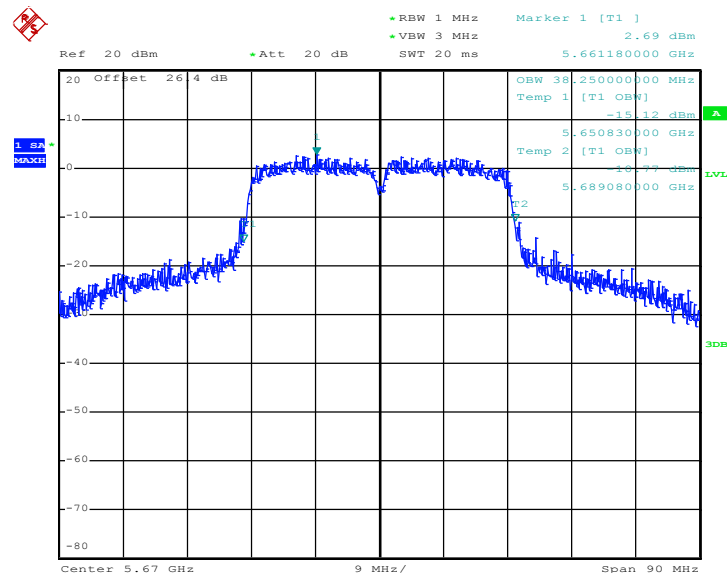
Date: 6.SEP.2012 14:58:40

802.11n HT40 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 102


Date: 6.SEP.2012 15:08:09

802.11n HT40 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 110


Date: 6.SEP.2012 15:16:59

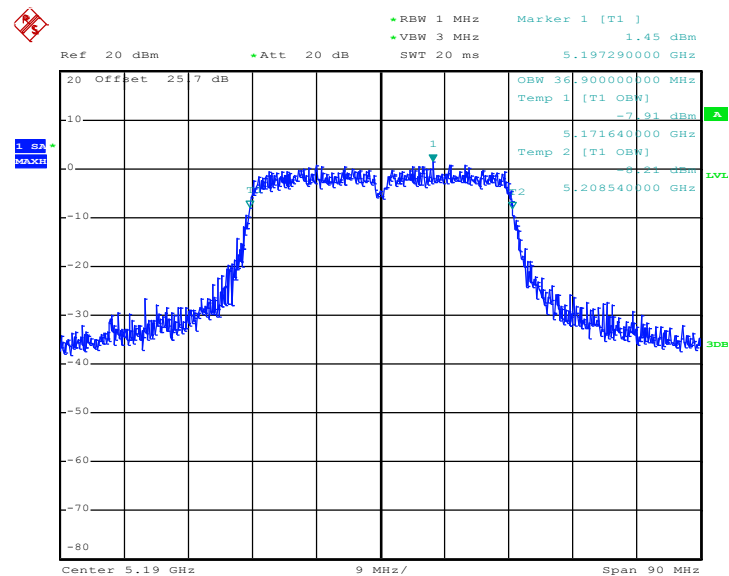
802.11n HT40 –Ant. 0+1(0)
99% Occupied Bandwidth Plot on Channel 134


Date: 6.SEP.2012 15:22:47



802.11n HT40 –Ant. 0+1(1)

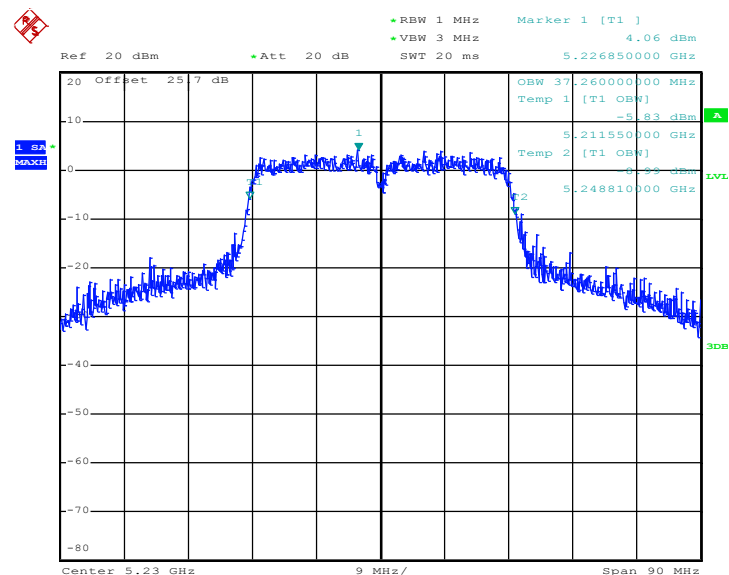
99% Occupied Bandwidth Plot on Channel 38



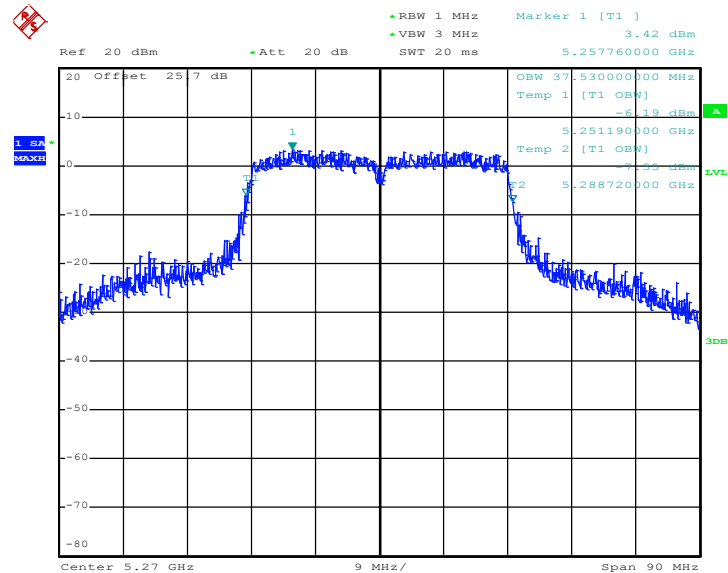
Date: 6.SEP.2012 14:42:23

802.11n HT40 –Ant. 0+1(1)

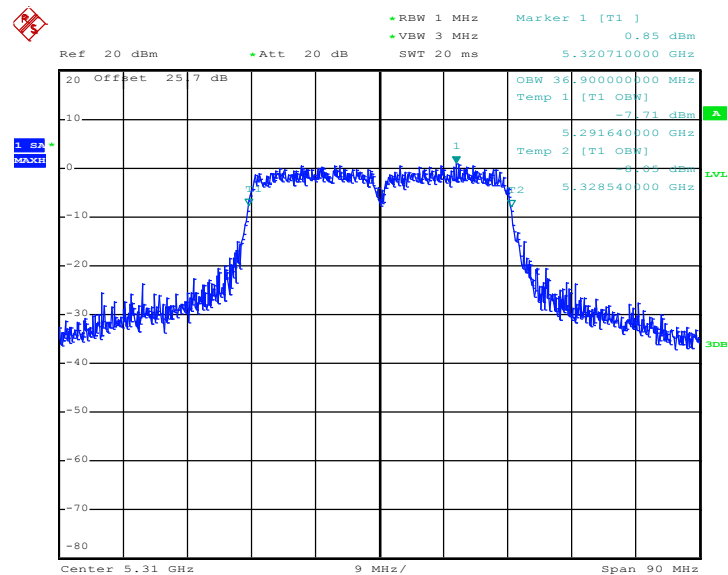
99% Occupied Bandwidth Plot on Channel 46



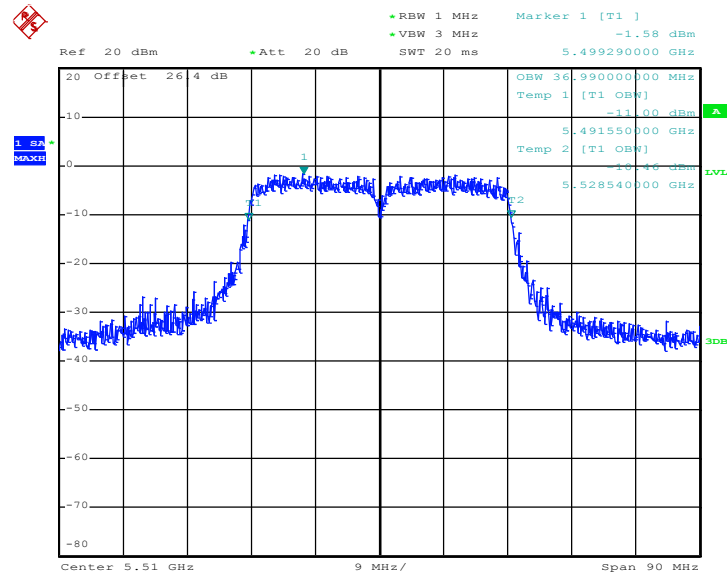
Date: 6.SEP.2012 14:49:12

802.11n HT40 –Ant. 0+1(1)
99% Occupied Bandwidth Plot on Channel 54


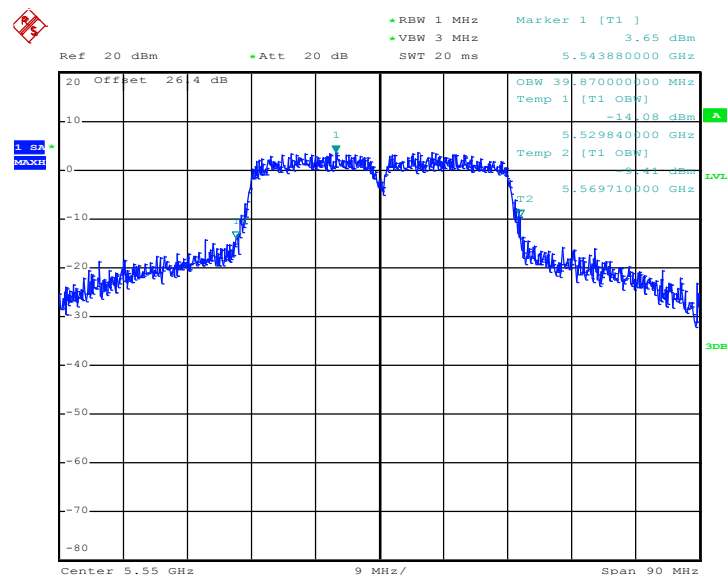
Date: 6.SEP.2012 14:51:53

802.11n HT40 –Ant. 0+1(1)
99% Occupied Bandwidth Plot on Channel 62


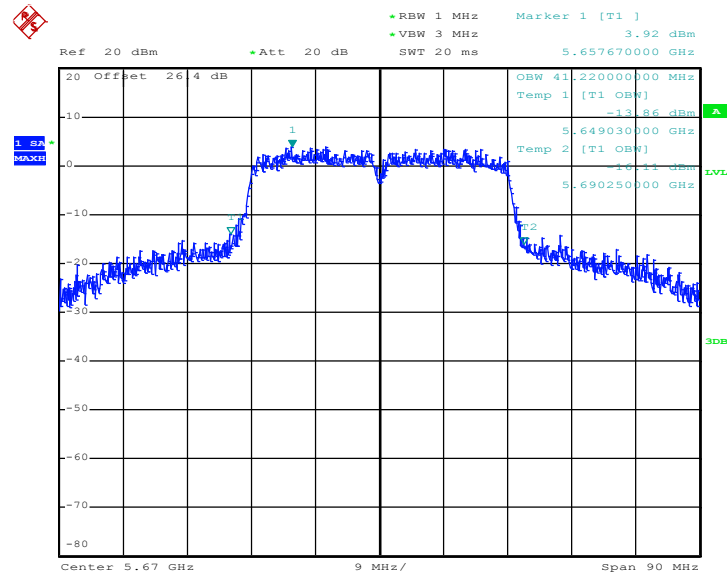
Date: 6.SEP.2012 15:00:33

802.11n HT40 –Ant. 0+1(1)
99% Occupied Bandwidth Plot on Channel 102


Date: 6.SEP.2012 15:10:03

802.11n HT40 –Ant. 0+1(1)
99% Occupied Bandwidth Plot on Channel 110


Date: 6.SEP.2012 15:19:39

802.11n HT40 –Ant. 0+1(1)
99% Occupied Bandwidth Plot on Channel 134


Date: 6.SEP.2012 15:24:13

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 1-MHz. If transmitting antenna directional gain is greater than 6 dBi, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or $11 \text{ dBm} + 10\log B$, where B is the 26 dB emissions bandwidth in 1-MHz. If transmitting antenna directional gain is greater than 6 dBi, the peak output power 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.

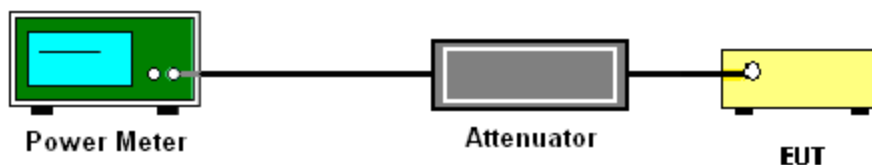
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D01 General UNII Test Procedures v01r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%
Duty Cycle	96.94% for MIMO Ant 0 98.35% for MIMO Ant 1	Duty Factor	0.13dB for MIMO Ant 0 0.07dB for MIMO Ant 1

Channel	Frequency (MHz)	802.11a Output Power (dBm)					Max. Limits (dBm)	Pass /Fail
		Measured		Final				
		MIMO Ant 0+1 (0)	MIMO Ant 0+1 (1)	MIMO Ant 0+1 (0)	MIMO Ant 0+1 (1)	MIMO Ant 0+1		
36	5180	11.96	12.15	12.09	12.22	15.17	16.91	Pass
44	5220	11.40	12.31	11.53	12.38	14.99	16.91	Pass
48	5240	11.53	12.36	11.66	12.43	15.08	16.91	Pass
52	5260	11.43	12.15	11.56	12.22	14.92	23.91	Pass
60	5300	11.69	12.12	11.82	12.19	15.02	23.91	Pass
64	5320	11.54	12.05	11.67	12.12	14.91	23.91	Pass
100	5500	9.32	9.89	9.45	9.96	12.73	22.23	Pass
116	5580	11.32	12.25	11.45	12.32	14.92	22.23	Pass
140	5700	9.51	10.07	9.64	10.14	12.91	22.23	Pass

Note:

1. Transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. The final result is corrected the duty factor with measured result which has been offset the cable loss in power meter.
3. SISO Ant 0 power setting = MIMO Ant 0+1(0) power setting

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%
Duty Cycle	97.72% for MIMO Ant 0 97.72% for MIMO Ant 1	Duty Factor	0.10dB for MIMO Ant 0 0.10dB for MIMO Ant 1

Channel	Frequency (MHz)	802.11n HT20 Output Power (dBm)					Max. Limits (dBm)	Pass /Fail
		Measured		Final				
		MIMO Ant 0+1 (0)	MIMO Ant 0+1 (1)	MIMO Ant 0+1 (0)	MIMO Ant 0+1 (1)	MIMO Ant 0+1		
36	5180	11.72	12.25	11.82	12.35	15.10	16.91	Pass
44	5220	11.43	12.44	11.53	12.54	15.07	16.91	Pass
48	5240	11.28	12.13	11.38	12.23	14.84	16.91	Pass
52	5260	11.46	12.25	11.56	12.35	14.98	23.91	Pass
60	5300	11.73	12.27	11.83	12.37	15.12	23.91	Pass
64	5320	11.91	12.20	12.01	12.30	15.17	23.91	Pass
100	5500	9.70	10.31	9.80	10.41	13.13	22.23	Pass
116	5580	11.35	12.35	11.45	12.45	14.99	22.23	Pass
140	5700	6.33	7.49	6.43	7.59	10.06	22.23	Pass

Note:

1. Transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. The final result is corrected the duty factor with measured result which has been offset the cable loss in power meter.
3. SISO Ant 0 power setting = MIMO Ant 0+1(0) power setting

Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%
Duty Cycle	95.44% for MIMO Ant 0 96.07% for MIMO Ant 1	Duty Factor	0.20dB for MIMO Ant 0 0.17dB for MIMO Ant 1

Channel	Frequency (MHz)	802.11n HT40 Output Power (dBm)					Max. Limits (dBm)	Pass /Fail
		Measured		Final				
		MIMO Ant 0+1 (0)	MIMO Ant 0+1 (1)	MIMO Ant 0+1 (0)	MIMO Ant 0+1 (1)	MIMO Ant 0+1		
38	5190	7.93	8.00	8.13	8.17	11.16	16.91	Pass
46	5230	10.50	11.12	10.70	11.29	14.02	16.91	Pass
54	5270	10.25	11.22	10.45	11.39	13.96	23.91	Pass
62	5310	7.70	8.46	7.90	8.63	11.29	23.91	Pass
102	5510	6.17	7.01	6.37	7.18	9.81	22.23	Pass
110	5550	10.36	11.00	10.56	11.17	13.89	22.23	Pass
134	5670	10.42	11.35	10.62	11.52	14.11	22.23	Pass

Note:

1. Transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. The final result is corrected the duty factor with measured result which has been offset the cable loss in power meter.
3. SISO Ant 0 power setting = MIMO Ant 0+1(0) power setting

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 1-MHz band. For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1-MHz 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 testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r01.

Section E) Peak power spectral density (PPSD).

Note: Though the rule refers to “peak power spectral density”, the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission.

Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. The testing follows Method SA-2 of FCC KDB 789033 D01 General UNII Test Procedures v01r01.
 - Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 1 MHz.
 - Set VBW $\geq$ 3 MHz.
 - Number of points in sweep $\geq$ 2 Span / RBW.
 - Sweep time = auto.
 - Detector = sample
 - Trace average at least 100 traces in power averaging mode.
 - Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and

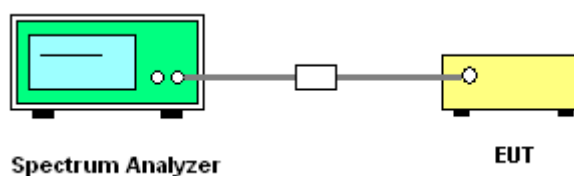
record it.

4. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v01r01.

Method (1): Measure and sum the spectra across the outputs.

The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

3.3.4 Test Setup



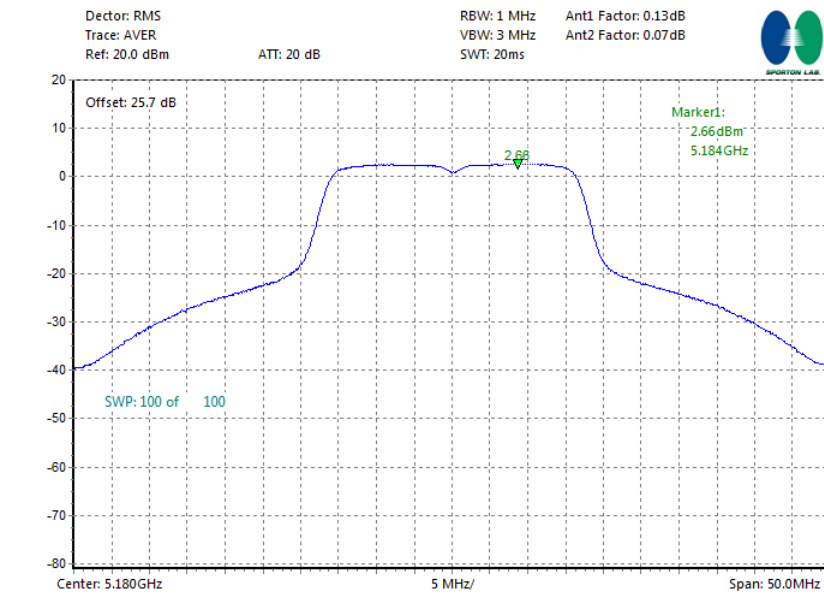
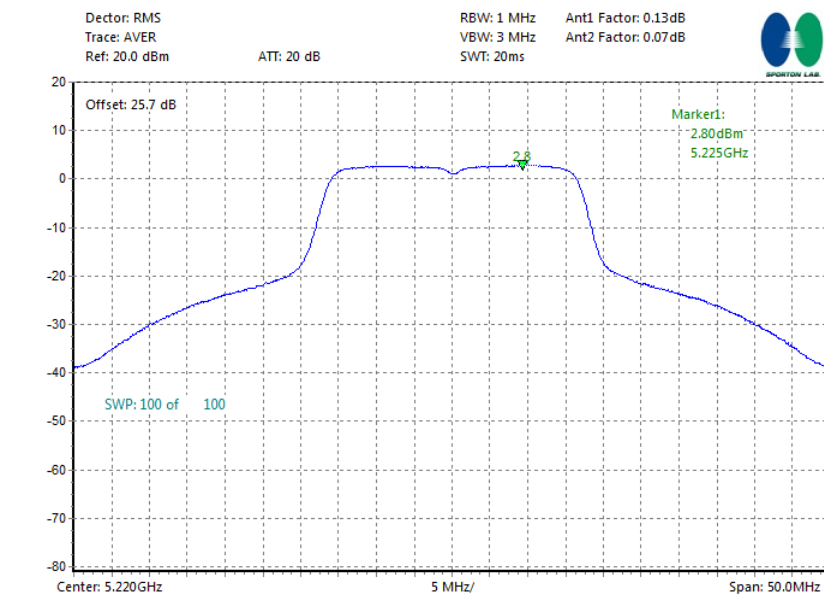
3.3.5 Test Result of Power Spectral Density

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%
Duty Cycle	96.94% for MIMO Ant 0 98.35% for MIMO Ant 1	Duty Factor	0.13dB for MIMO Ant 0 0.07dB for MIMO Ant 1

Channel	Frequency (MHz)	802.11a PSD (dBm)			Max. Limits (dBm)	Pass /Fail
		Measured		Final		
		MIMO Ant 0+1 (0)	MIMO Ant 0+1 (1)	MIMO Ant 0+1		
36	5180	-0.040	-0.440	2.660	3.91	Pass
44	5220	-0.080	-0.040	2.800	3.91	Pass
48	5240	-0.730	0.020	2.540	3.91	Pass
52	5260	-1.220	-0.450	2.070	9.23	Pass
60	5300	-0.940	-0.160	2.370	9.23	Pass
64	5320	-0.220	-0.520	2.530	9.23	Pass
100	5500	-4.410	-3.210	-0.890	9.23	Pass
116	5580	-1.480	0.180	2.320	9.23	Pass
140	5700	-3.290	-2.210	0.110	9.23	Pass

Note:

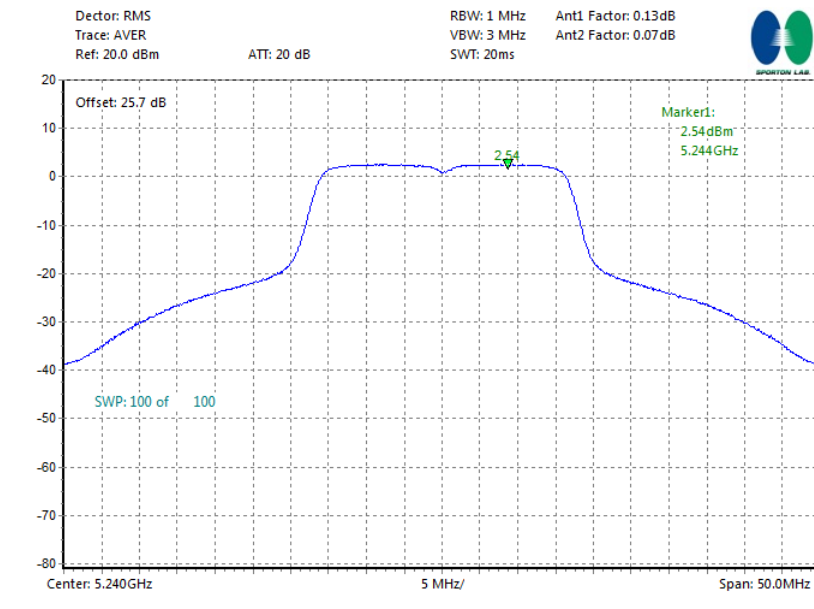
1. Transmitting antennas of directional gain greater than 6 dBi are used, the power density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. Result of Final PSD equals to Measured PSD adds the duty factor.
3. Final MIMO Ant 0+1 is the bin-by-bin combination result from MIMO Ant 0 and MIMO Ant 1.

802.11a - Ant 0+1
PSD Plot on Channel 36

802.11a - Ant 0+1
PSD Plot on Channel 44




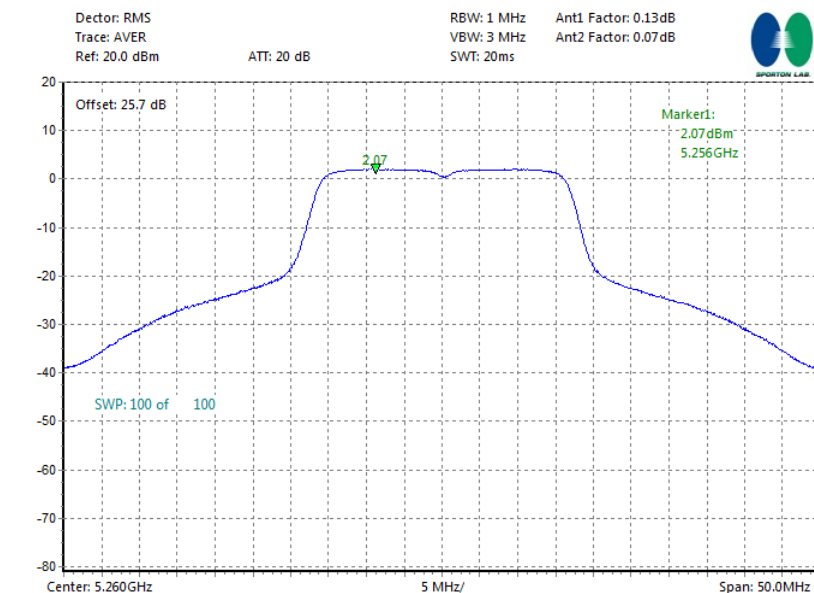
802.11a - Ant 0+1

PSD Plot on Channel 48



802.11a - Ant 0+1

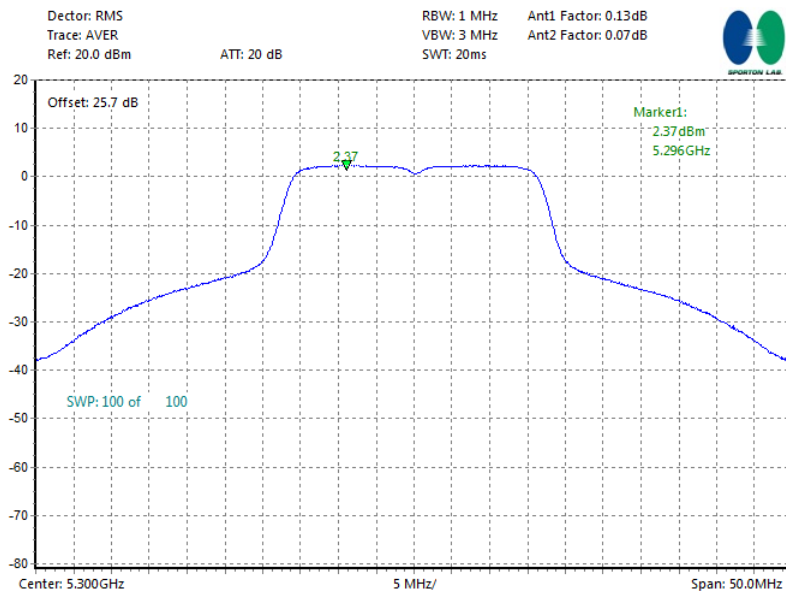
PSD Plot on Channel 52





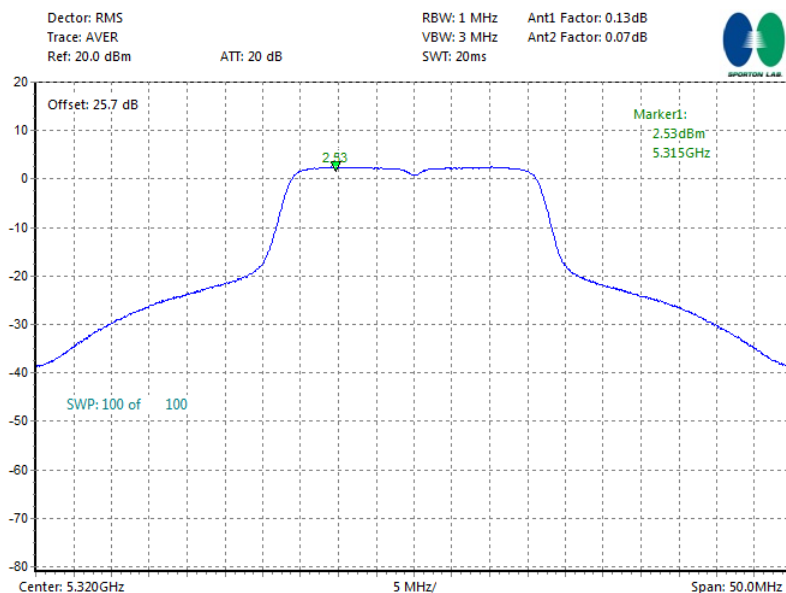
802.11a - Ant 0+1

PSD Plot on Channel 60



802.11a - Ant 0+1

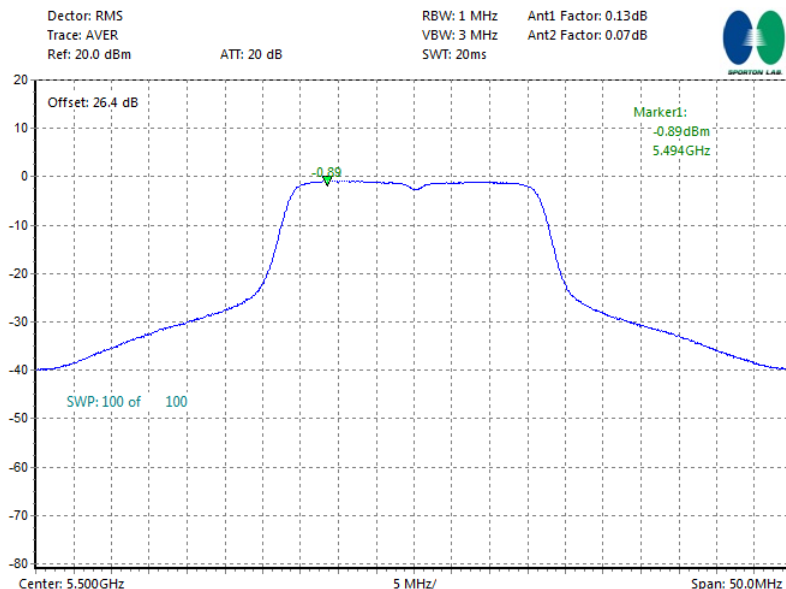
PSD Plot on Channel 64





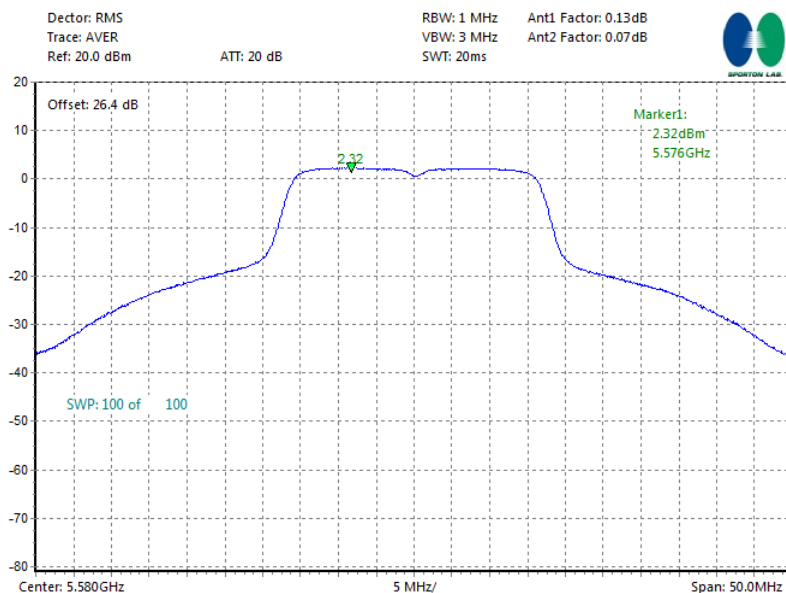
802.11a - Ant 0+1

PSD Plot on Channel 100



802.11a - Ant 0+1

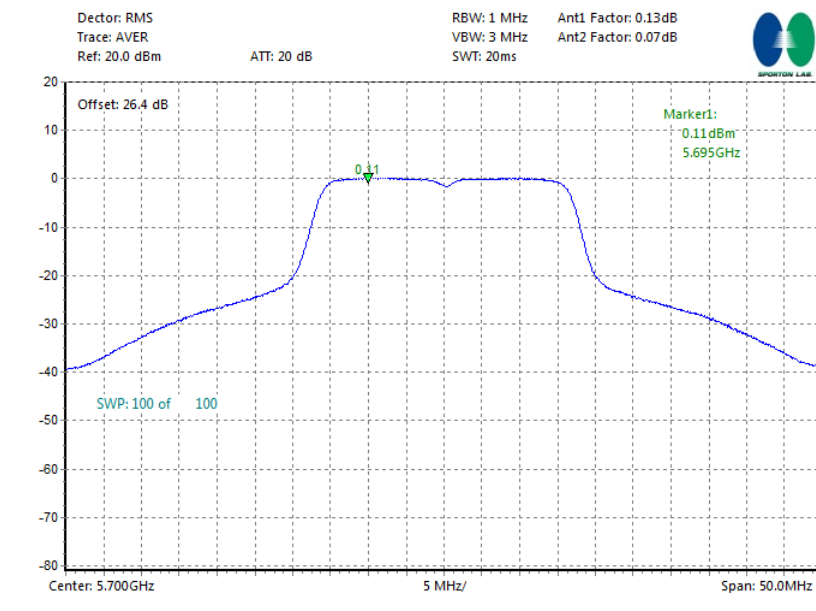
PSD Plot on Channel 116





802.11a - Ant 0+1

PSD Plot on Channel 140

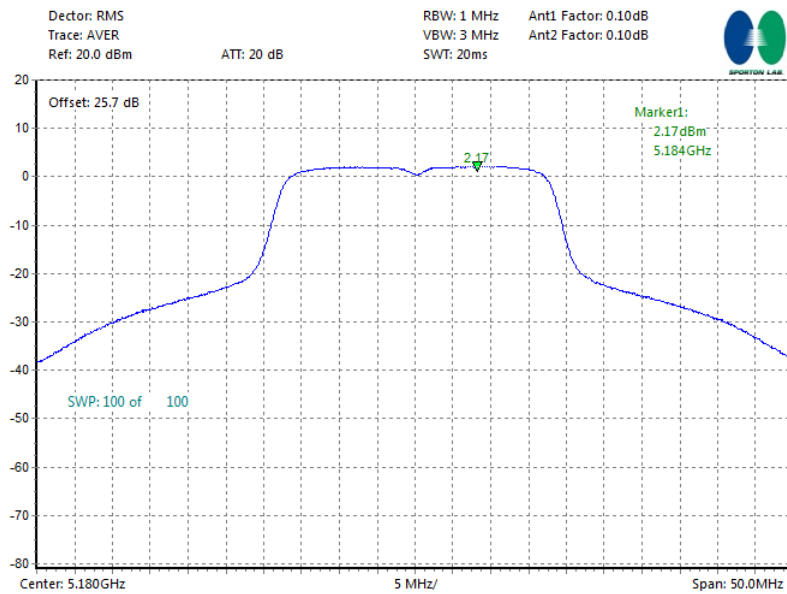
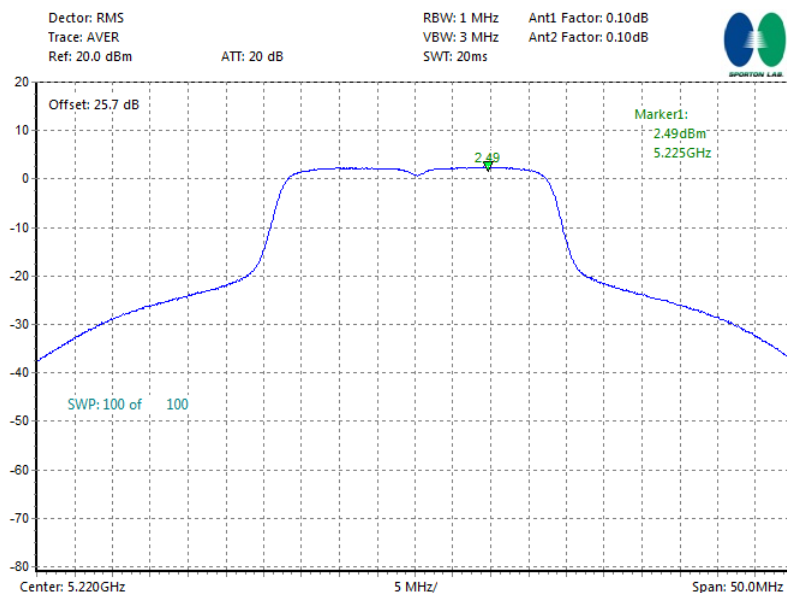


Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%
Duty Cycle:	97.72% for MIMO Ant 0 97.72% for MIMO Ant 1	Duty Factor:	0.10dB for MIMO Ant 0 0.10dB for MIMO Ant 1

Channel	Frequency (MHz)	802.11n HT20 PSD (dBm)			Max. Limits (dBm)	Pass /Fail
		Measured		Final		
		MIMO Ant 0+1 (0)	MIMO Ant 0+1 (1)	MIMO Ant 0+1		
36	5180	-0.540	-0.910	2.170	3.91	Pass
44	5220	-0.340	-0.420	2.490	3.91	Pass
48	5240	-1.100	-0.360	2.090	3.91	Pass
52	5260	-1.560	-0.770	1.730	9.23	Pass
60	5300	-1.280	-0.540	1.950	9.23	Pass
64	5320	-1.140	-0.460	2.090	9.23	Pass
100	5500	-2.920	-2.310	0.290	9.23	Pass
116	5580	-1.460	0.080	2.250	9.23	Pass
140	5700	-6.400	-3.280	-1.680	9.23	Pass

Note:

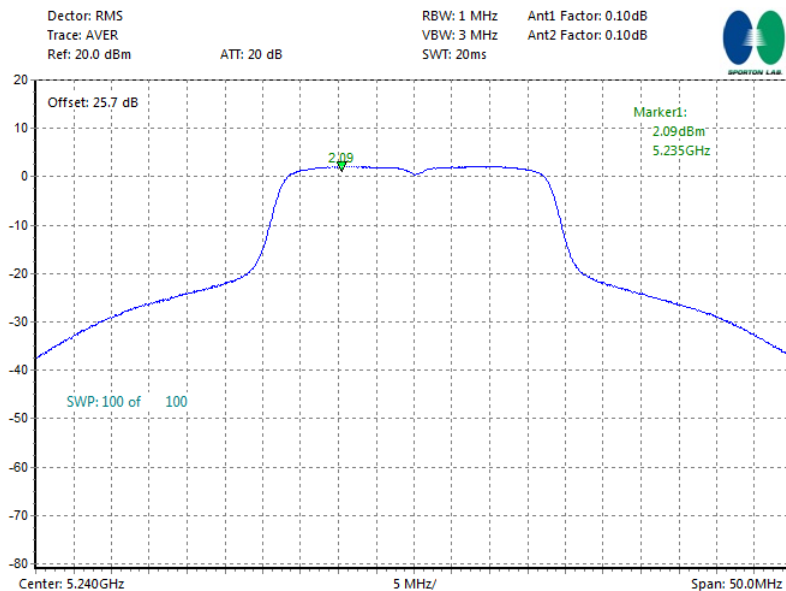
1. Transmitting antennas of directional gain greater than 6 dBi are used, the power density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. Result of Final PSD equals to Measured PSD adds the duty factor.
3. Final MIMO Ant 0+1 is the bin-by-bin combination result from MIMO Ant 0 and MIMO Ant 1.

802.11n HT20 - Ant 0+1
PSD Plot on Channel 36

802.11n HT20 - Ant 0+1
PSD Plot on Channel 44




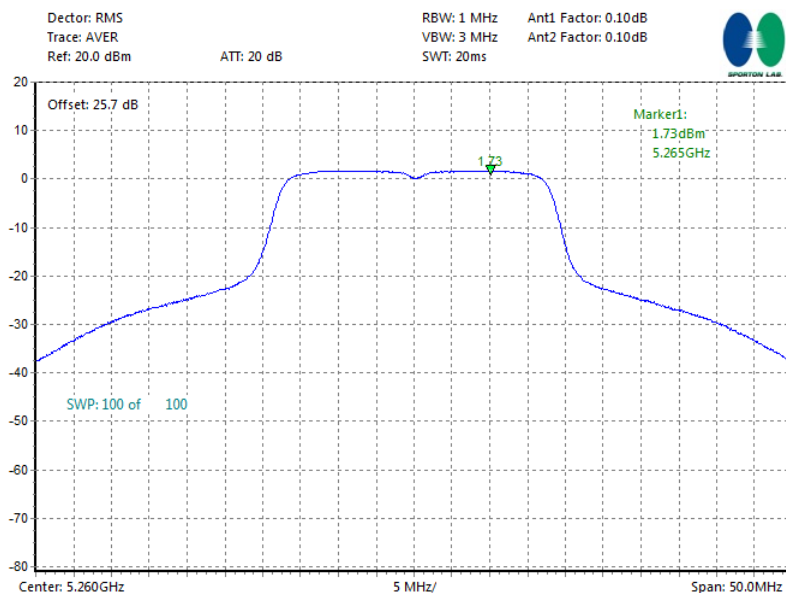
802.11n HT20 - Ant 0+1

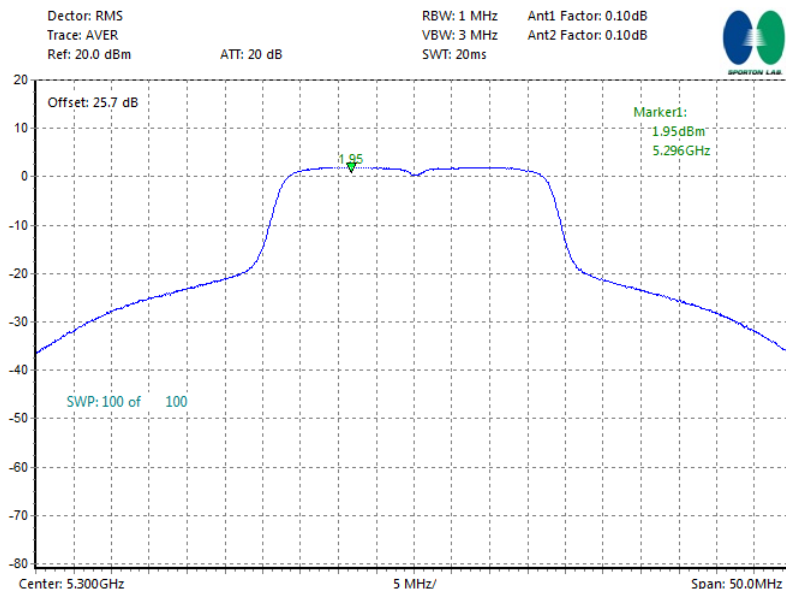
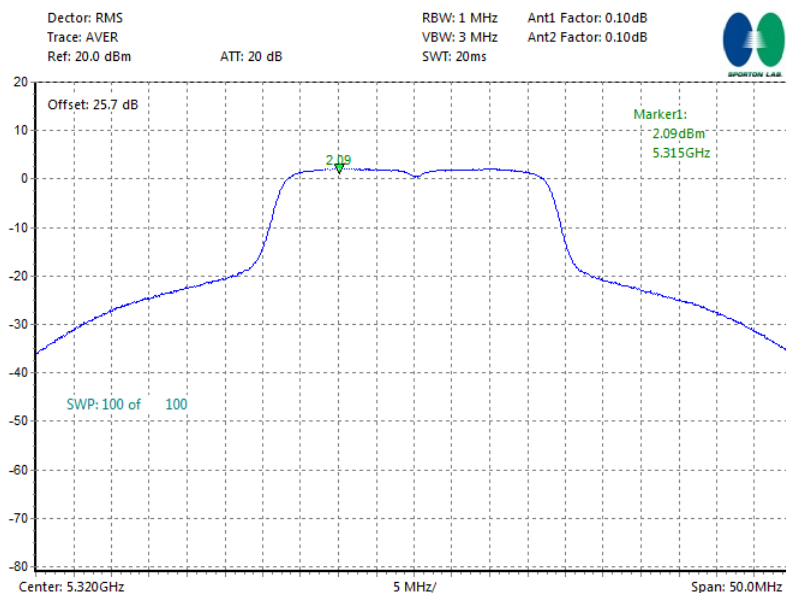
PSD Plot on Channel 48

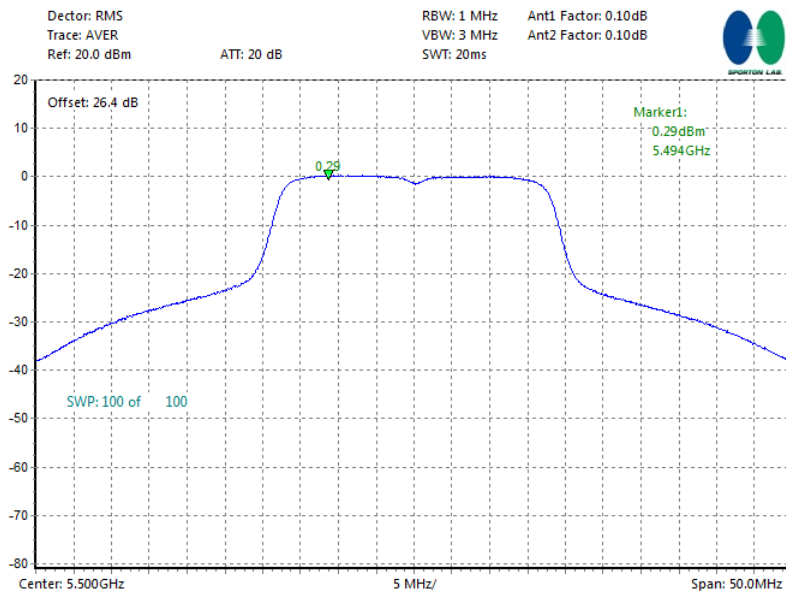
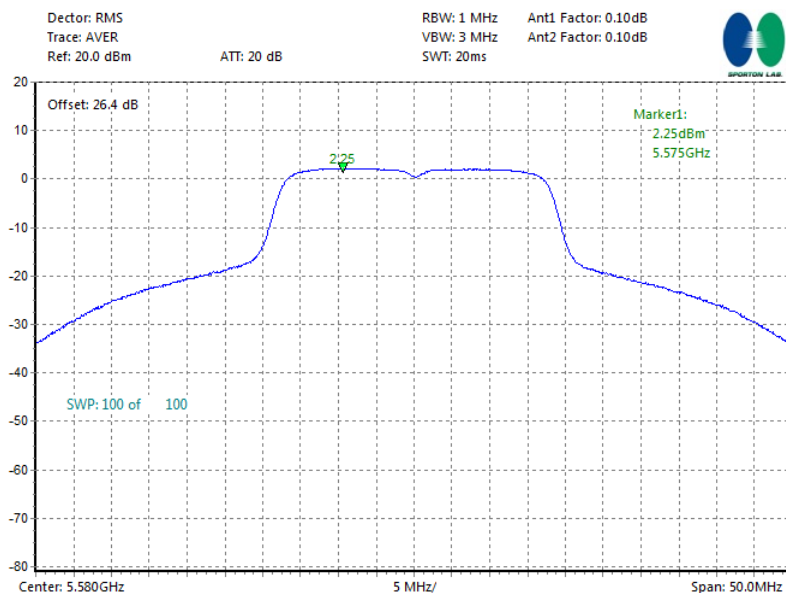


802.11n HT20 - Ant 0+1

PSD Plot on Channel 52

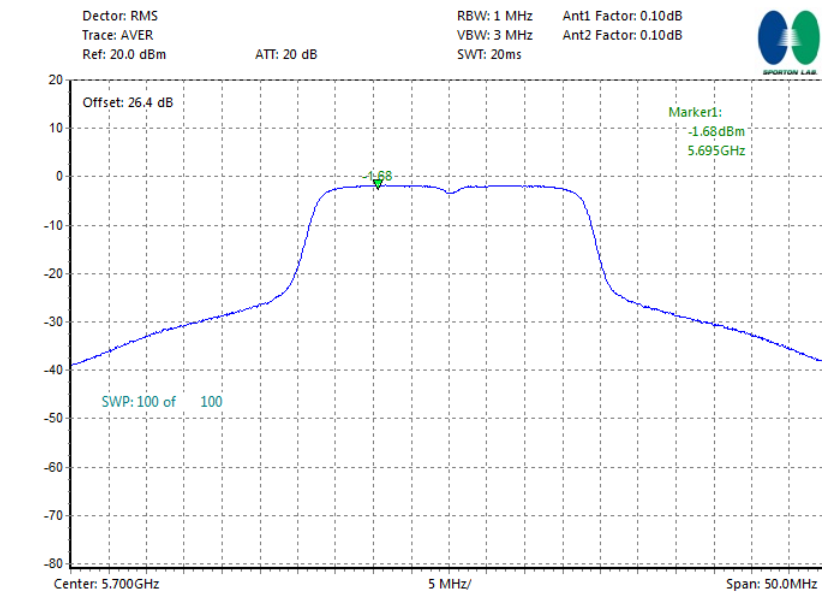


802.11n HT20 - Ant 0+1
PSD Plot on Channel 60

802.11n HT20 - Ant 0+1
PSD Plot on Channel 64


802.11n HT20 - Ant 0+1
PSD Plot on Channel 100

802.11n HT20 - Ant 0+1
PSD Plot on Channel 116


802.11n HT20 - Ant 0+1

PSD Plot on Channel 140



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%
Duty Cycle:	95.44% for MIMO Ant 0 96.07% for MIMO Ant 1	Duty Factor:	0.20dB for MIMO Ant 0 0.17dB for MIMO Ant 1

Channel	Frequency (MHz)	802.11n HT40 PSD (dBm)			Max. Limits (dBm)	Pass /Fail
		Measured		Final		
		MIMO Ant 0+1 (0)	MIMO Ant 0+1 (1)	MIMO Ant 0+1		
38	5190	-7.450	-7.170	-4.560	3.91	Pass
46	5230	-4.760	-4.280	-1.760	3.91	Pass
54	5270	-6.070	-4.670	-2.510	9.23	Pass
62	5310	-8.220	-7.370	-4.990	9.23	Pass
102	5510	-10.880	-9.500	-7.320	9.23	Pass
110	5550	-5.910	-4.250	-2.210	9.23	Pass
134	5670	-5.400	-4.020	-1.880	9.23	Pass

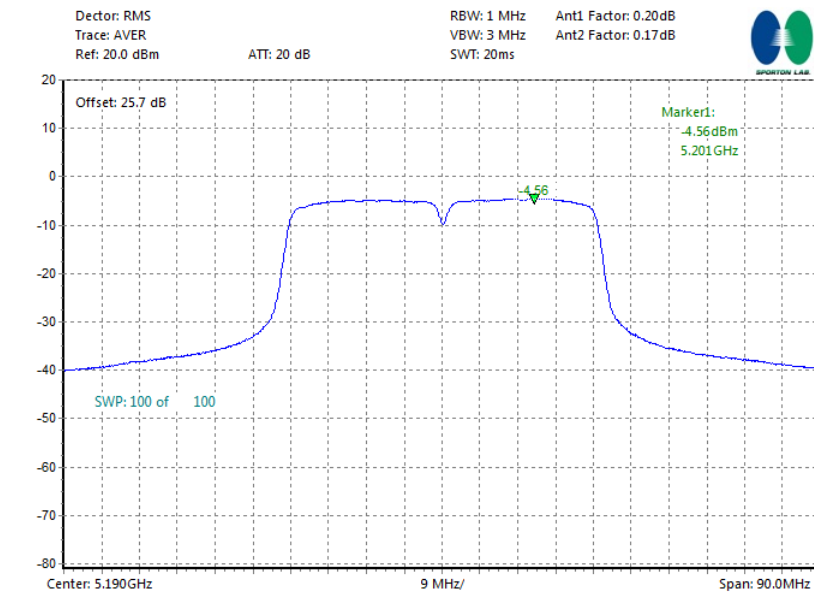
Note:

1. Transmitting antennas of directional gain greater than 6 dBi are used, the power density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. Result of Final PSD equals to Measured PSD adds the duty factor.
3. Final MIMO Ant 0+1 is the bin-by-bin combination result from MIMO Ant 1 and MIMO Ant 1.



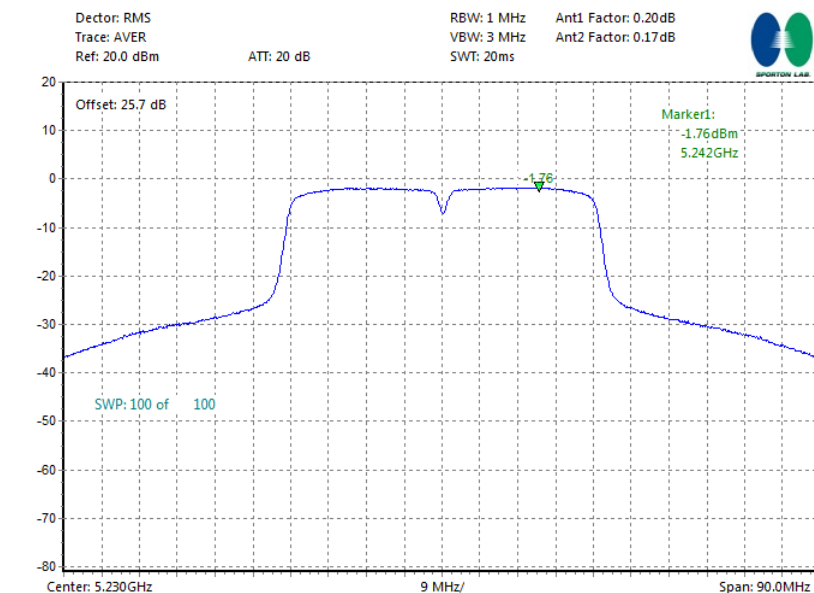
802.11n HT40 – Ant. 0+1

PSD Plot on Channel 38



802.11n HT40 – Ant. 0+1

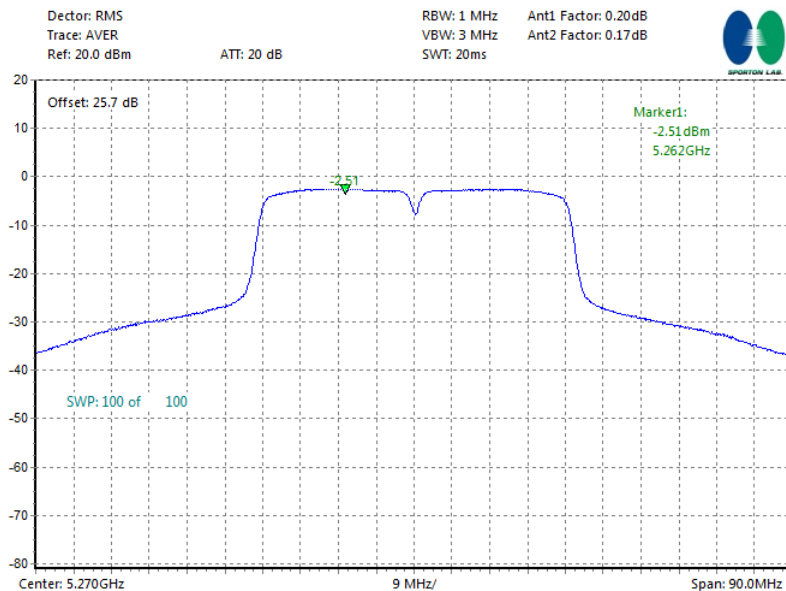
PSD Plot on Channel 46





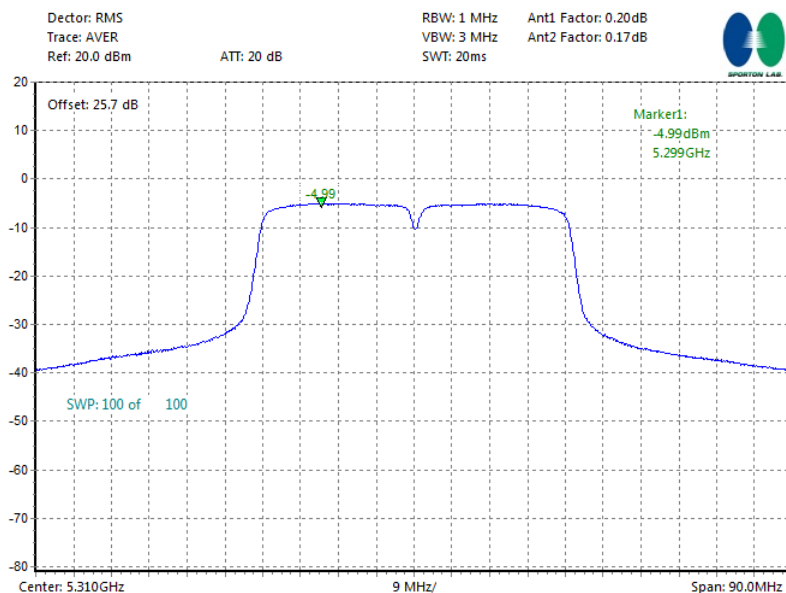
802.11n HT40 –Ant. 0+1

PSD Plot on Channel 54



802.11n HT40 –Ant. 0+1

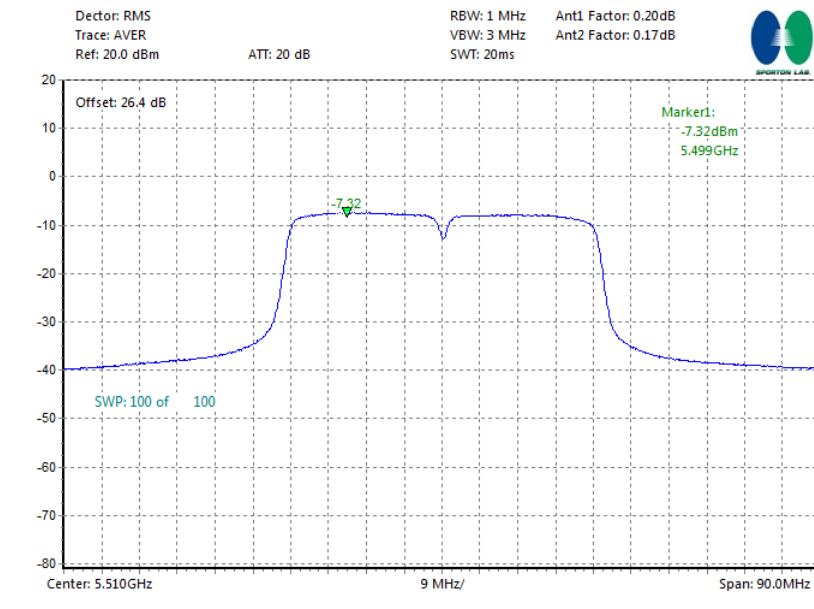
PSD Plot on Channel 62





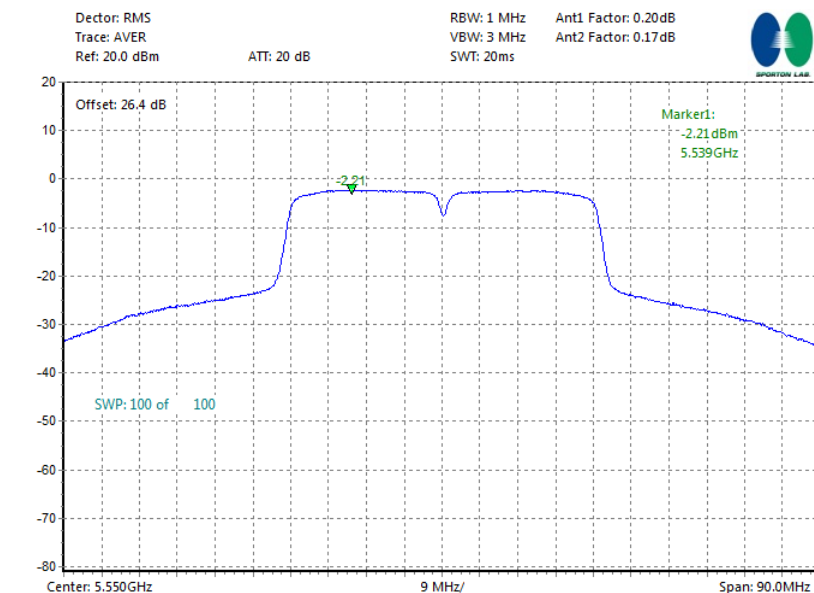
802.11n HT40 –Ant. 0+1

PSD Plot on Channel 102



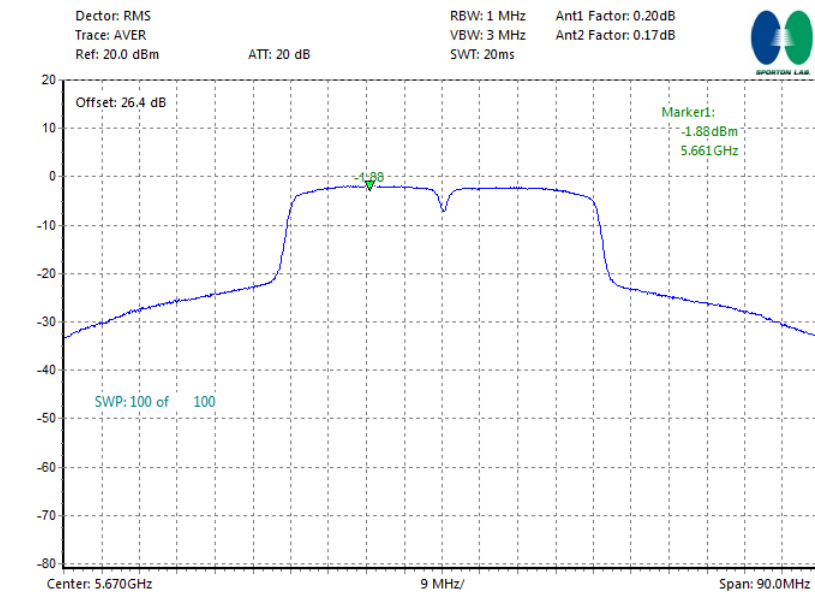
802.11n HT40 –Ant. 0+1

PSD Plot on Channel 110



802.11n HT40 –Ant. 0+1

PSD Plot on Channel 134



3.4 Peak Excursion Ratio Measurement

3.4.1 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.

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

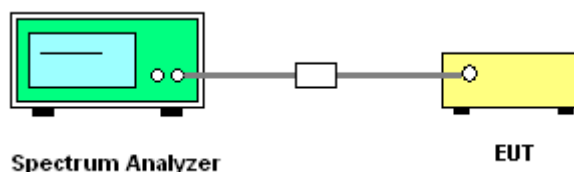
3.4.3 Test Procedures

The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r01.

Section F) Peak excursion measurement

1. The transmitter output is connected to the spectrum analyzer.
2. Set the spectrum analyzer span to view the entire emission bandwidth.
3. Find the maximum of the peak-max-hold spectrum.
 - *Set RBW = 1MHz.
 - *Set VBW $\geq$ 3MHz.
 - *Detector = peak.
 - *Trace mode = max-hold.
 - *Allow the sweeps to continue until the trace stabilizes.
 - *Use the peak search function to find the peak of the spectrum.
4. Use the procedure found under section 3.3 to measure the PPSD.
5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

3.4.4 Test Setup

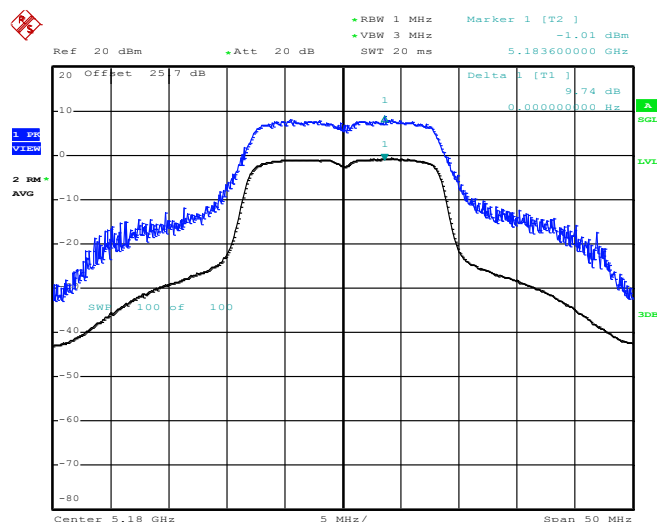


3.4.5 Test Result of Peak Excursion Ratio

Test Mode :	802.11a	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%

802.11a–Ant. 0+1(0)

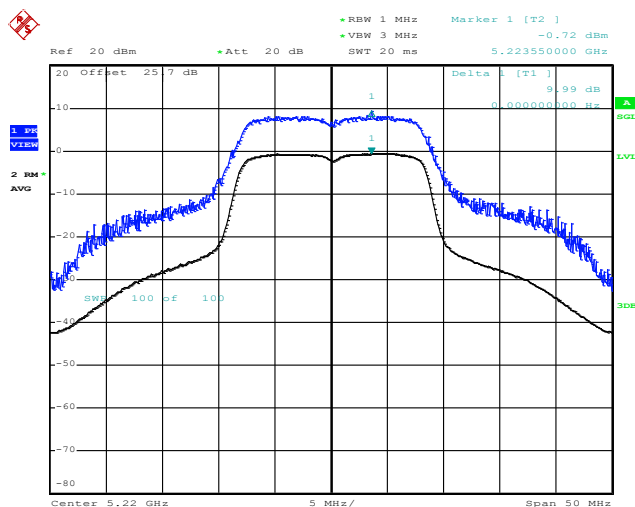
Peak Excursion Ratio Plot on Channel 36



Date: 6.SEP.2012 11:07:42

802.11a–Ant. 0+1(0)

Peak Excursion Ratio Plot on Channel 44

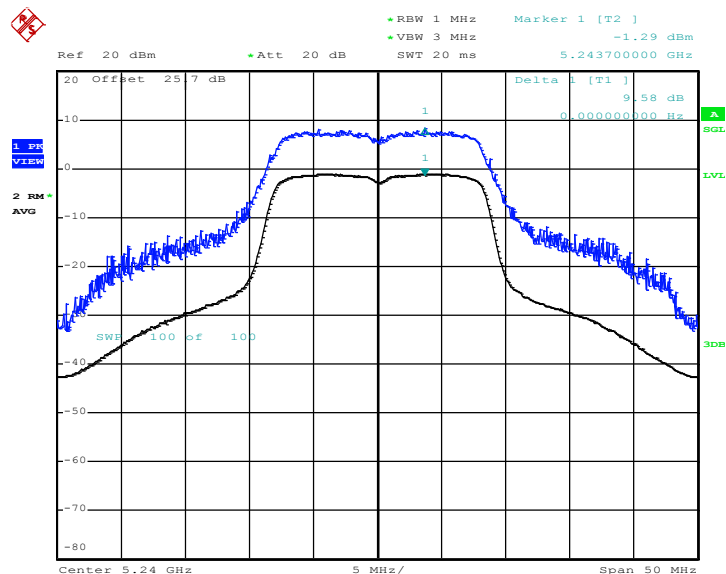


Date: 6.SEP.2012 11:22:16



802.11a-Ant. 0+1(0)

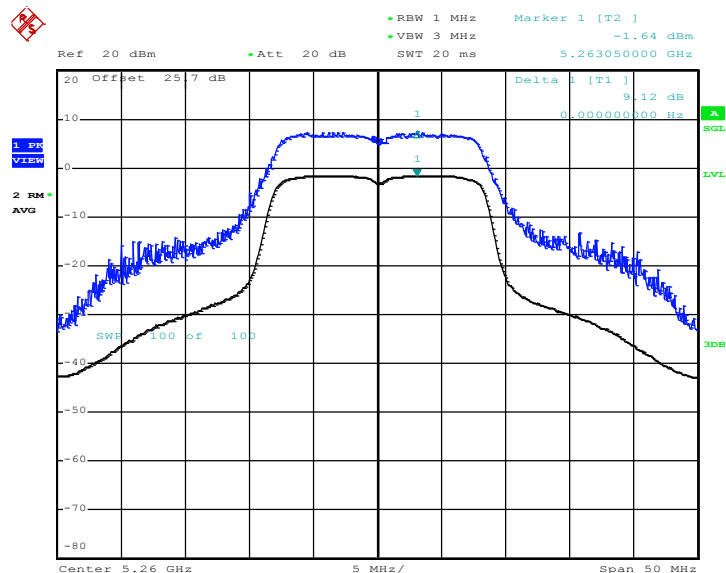
Peak Excursion Ratio Plot on Channel 48



Date: 6.SEP.2012 11:25:46

802.11a-Ant. 0+1(0)

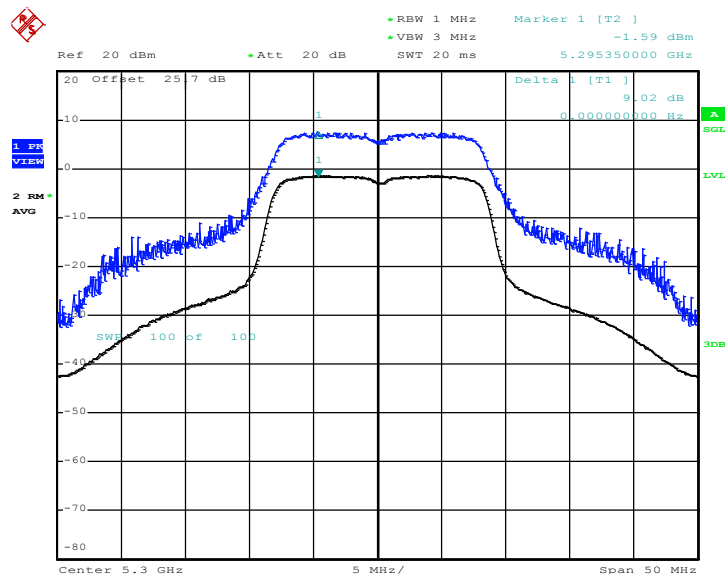
Peak Excursion Ratio Plot on Channel 52



Date: 6.SEP.2012 11:32:40

802.11a-Ant. 0+1(0)

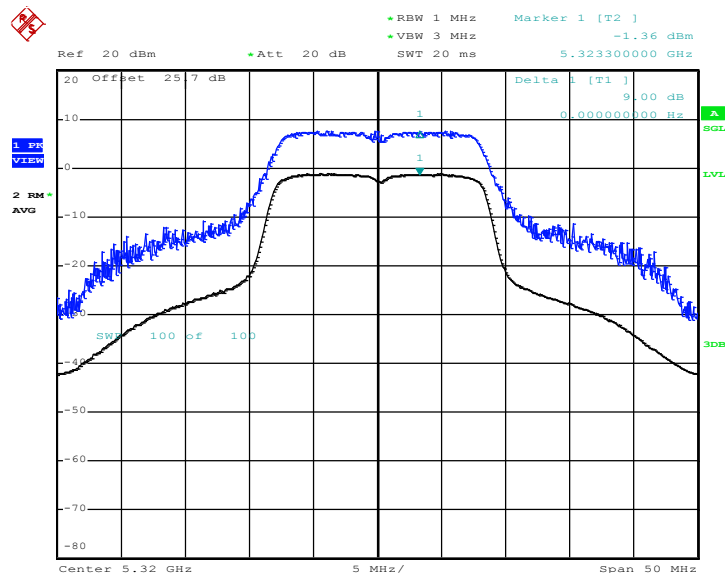
Peak Excursion Ratio Plot on Channel 60



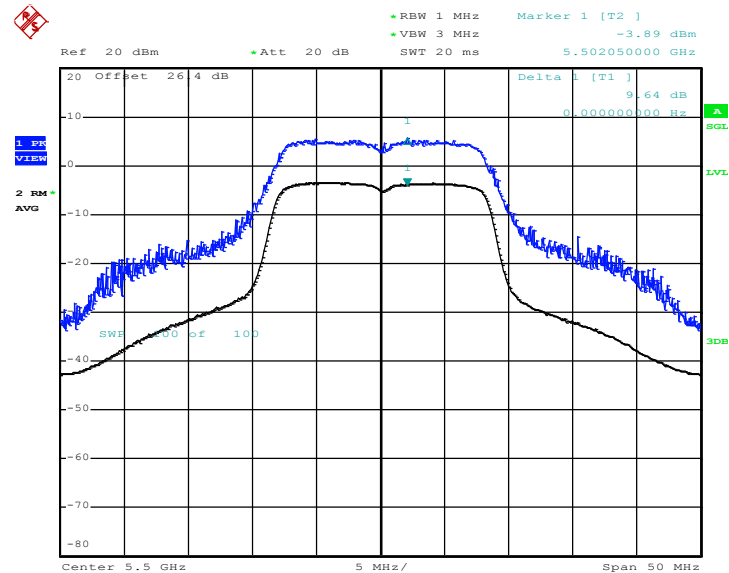
Date: 6.SEP.2012 11:35:37

802.11a-Ant. 0+1(0)

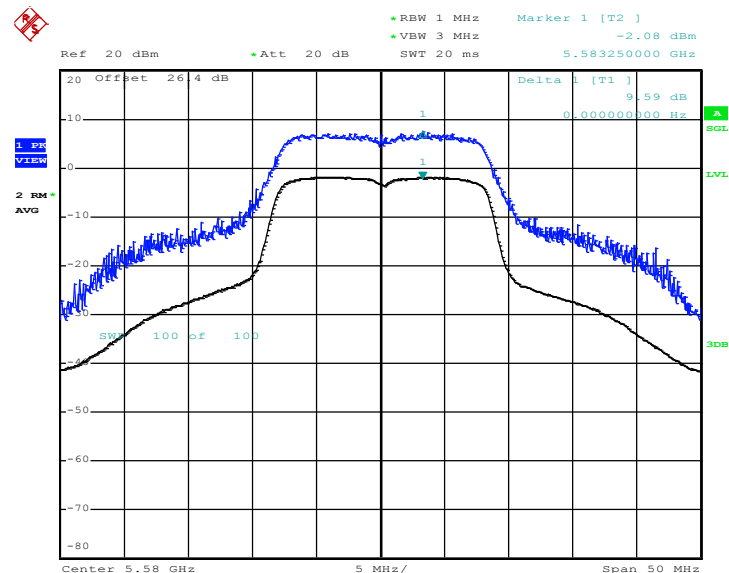
Peak Excursion Ratio Plot on Channel 64



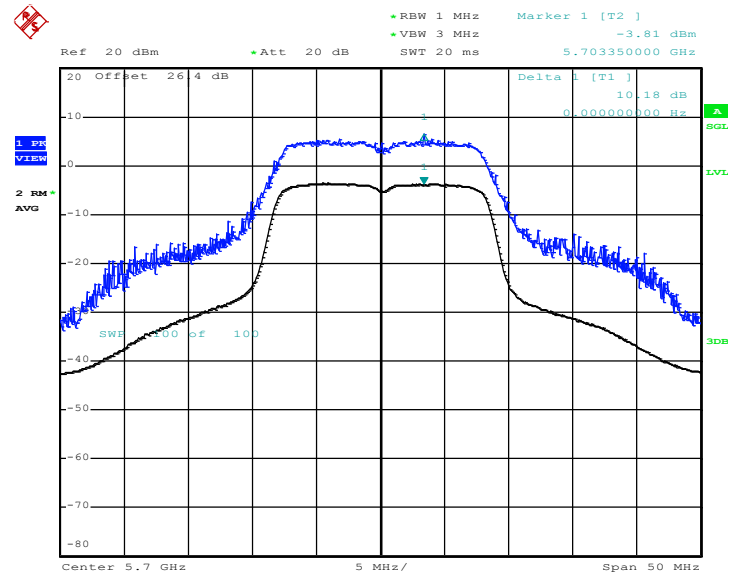
Date: 6.SEP.2012 11:43:45

802.11a-Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 100


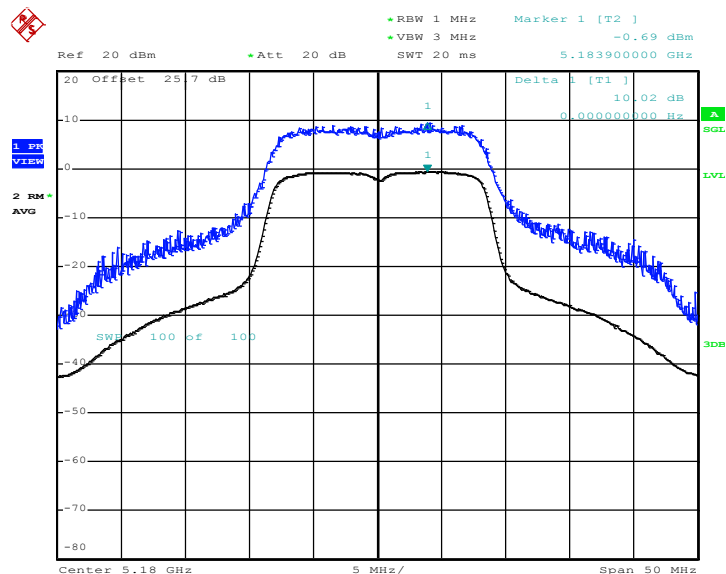
Date: 6.SEP.2012 11:47:18

802.11a-Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 116


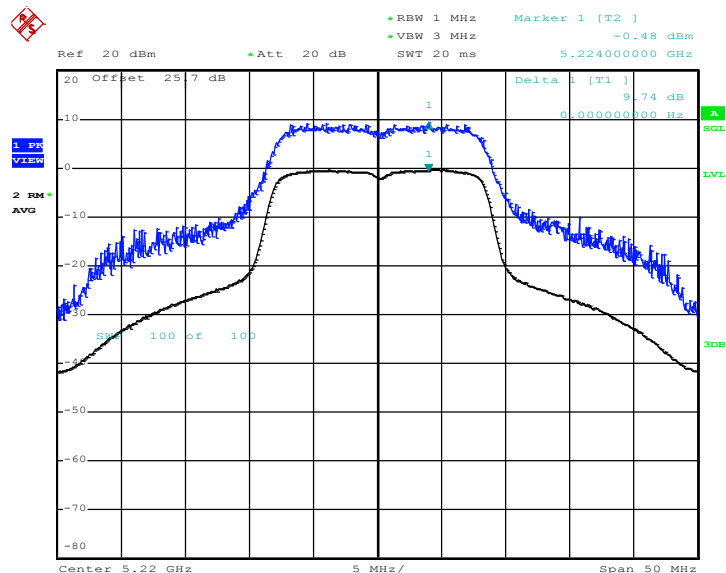
Date: 6.SEP.2012 11:54:51

802.11a-Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 140


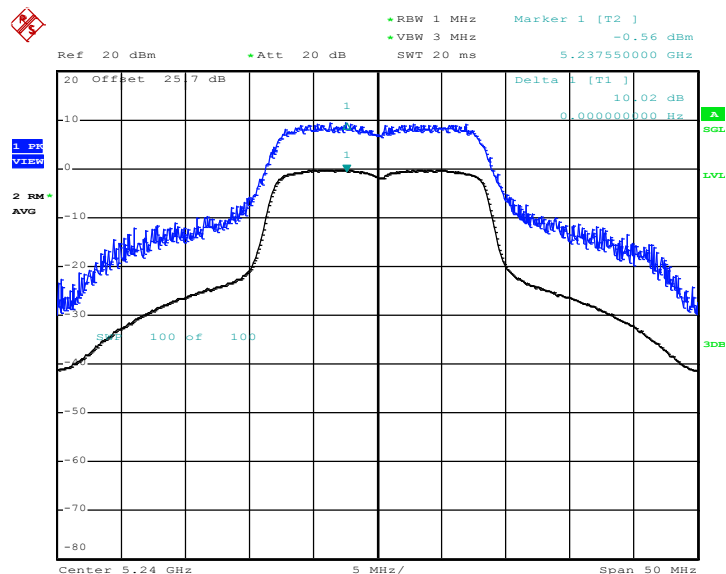
Date: 6.SEP.2012 12:01:52

802.11a-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 36


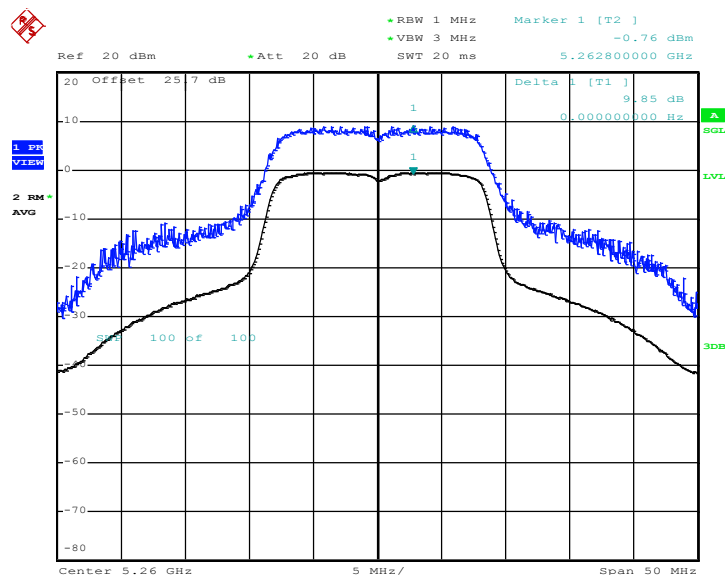
Date: 6.SEP.2012 11:15:31

802.11a-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 44


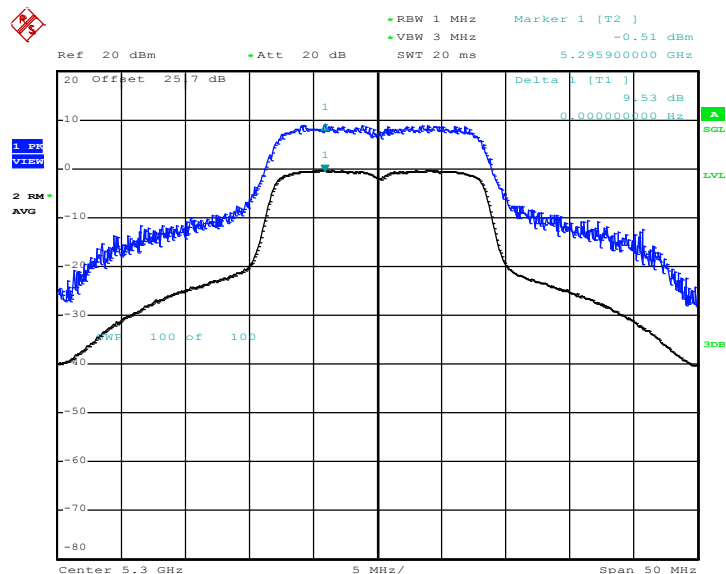
Date: 6.SEP.2012 11:19:55

802.11a-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 48


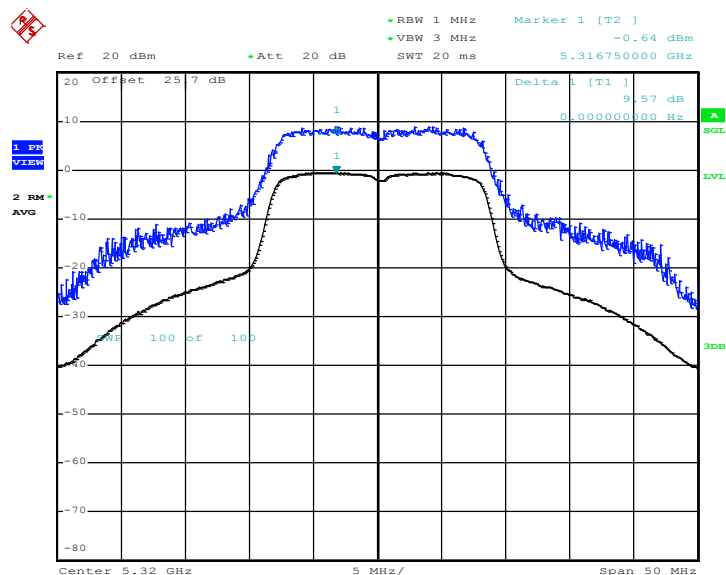
Date: 6.SEP.2012 11:27:33

802.11a-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 52


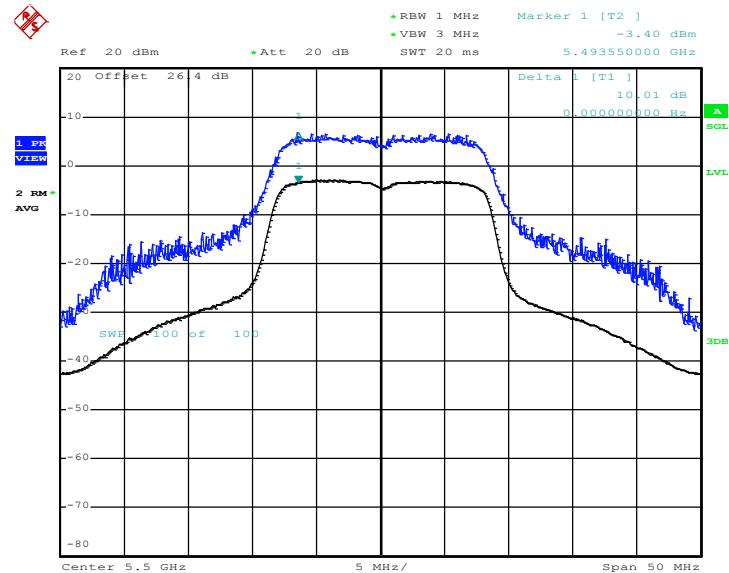
Date: 6.SEP.2012 11:30:23

802.11a-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 60


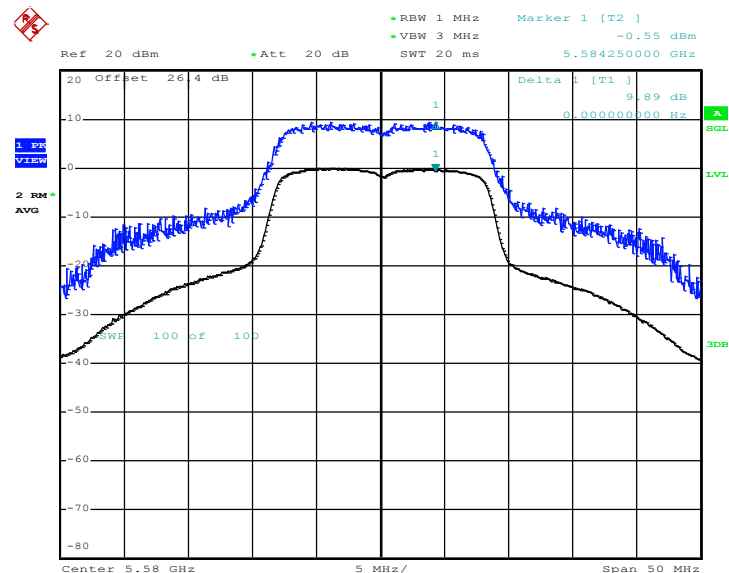
Date: 6.SEP.2012 11:37:57

802.11a-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 64


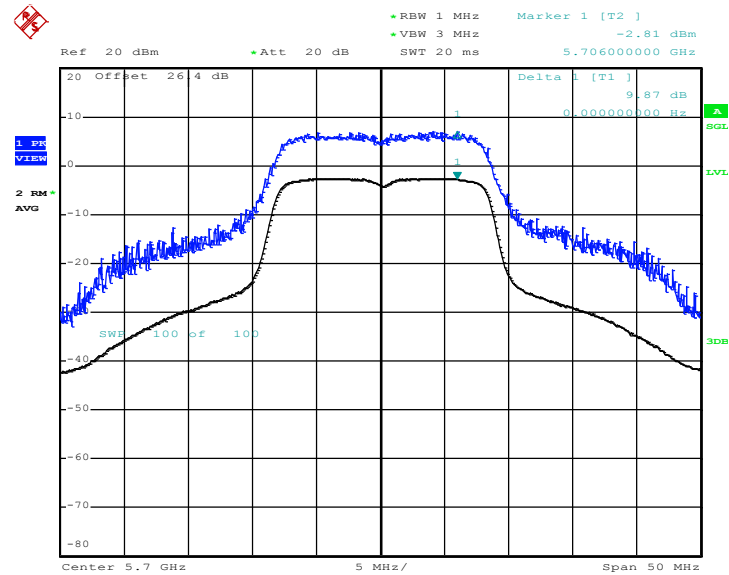
Date: 6.SEP.2012 11:41:13

802.11a-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 100


Date: 6.SEP.2012 11:49:25

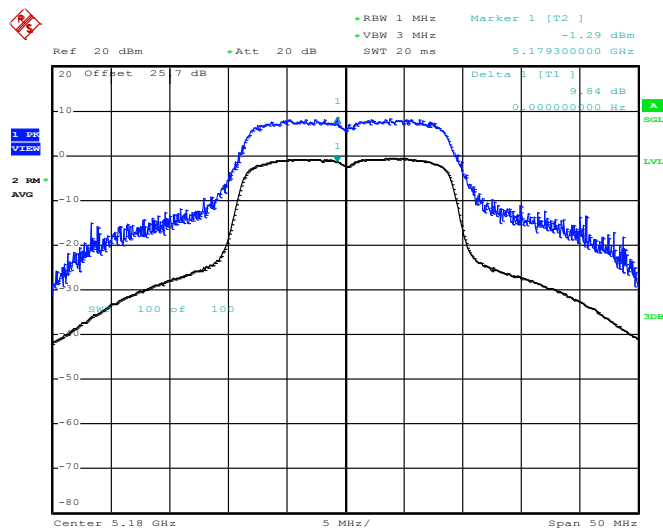
802.11a-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 116


Date: 6.SEP.2012 11:52:11

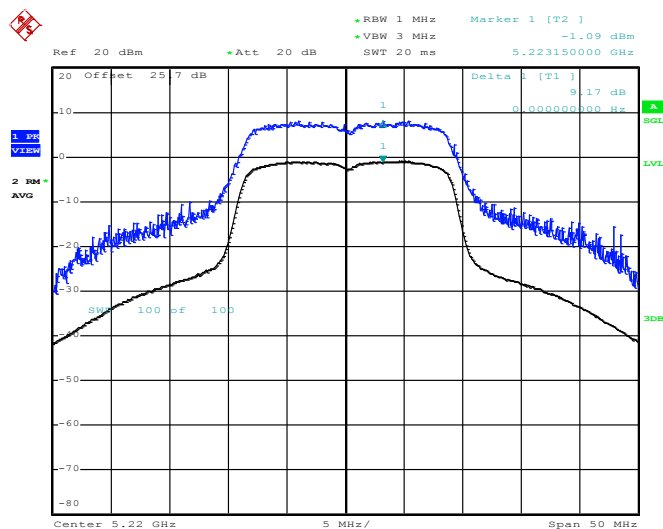
802.11a-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 140


Date: 6.SEP.2012 11:59:30

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%

802.11n HT20–Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 36


Date: 6.SEP.2012 14:33:06

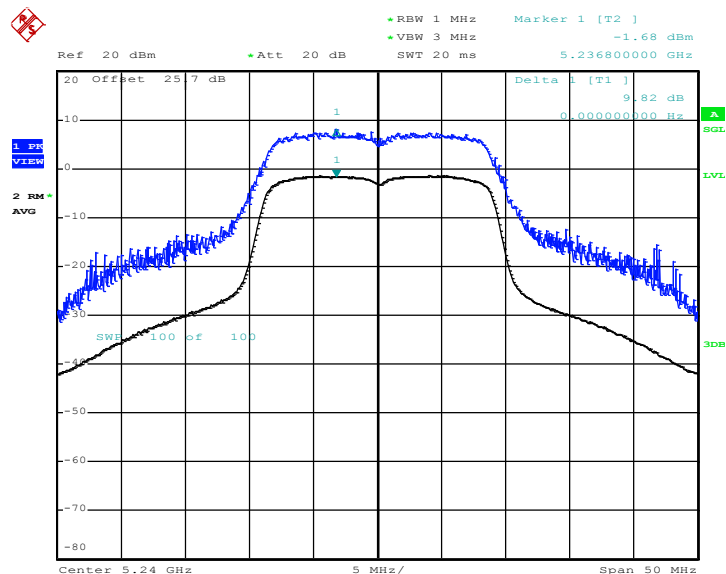
802.11n HT20–Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 44


Date: 6.SEP.2012 14:29:19



802.11n HT20-Ant. 0+1(0)

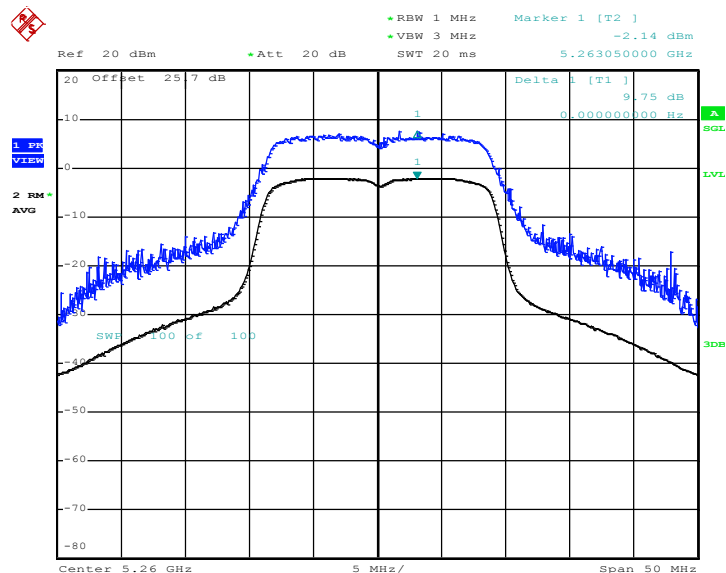
Peak Excursion Ratio Plot on Channel 48



Date: 6.SEP.2012 14:23:10

802.11n HT20-Ant. 0+1(0)

Peak Excursion Ratio Plot on Channel 52

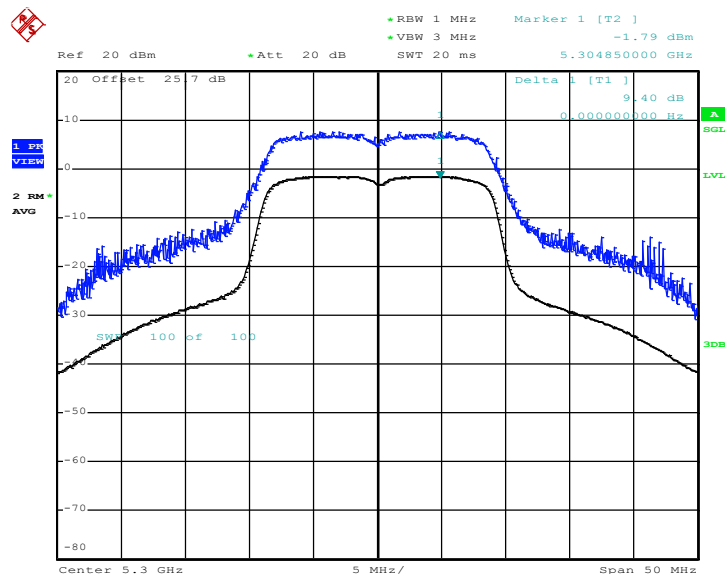


Date: 6.SEP.2012 14:20:25



802.11n HT20-Ant. 0+1(0)

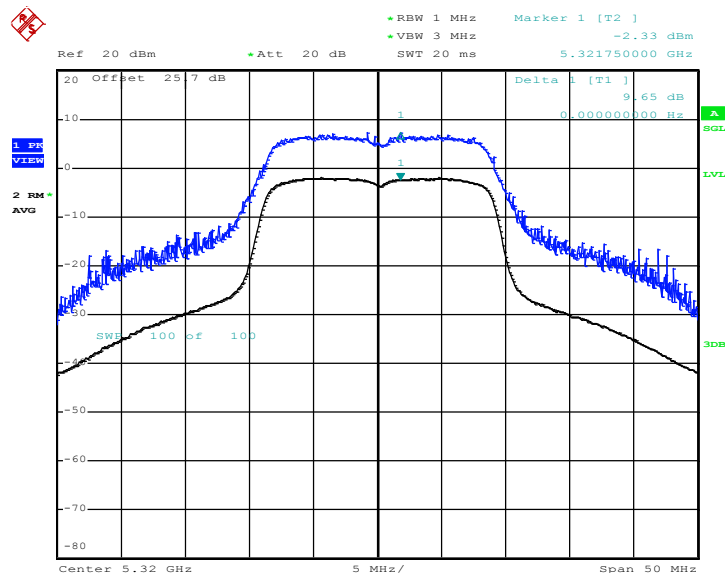
Peak Excursion Ratio Plot on Channel 60



Date: 6.SEP.2012 14:11:54

802.11n HT20-Ant. 0+1(0)

Peak Excursion Ratio Plot on Channel 64

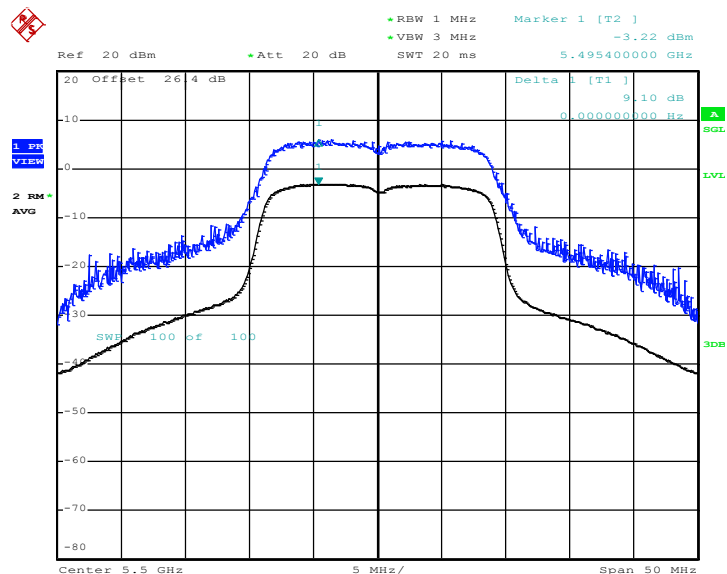


Date: 6.SEP.2012 14:07:24



802.11n HT20-Ant. 0+1(0)

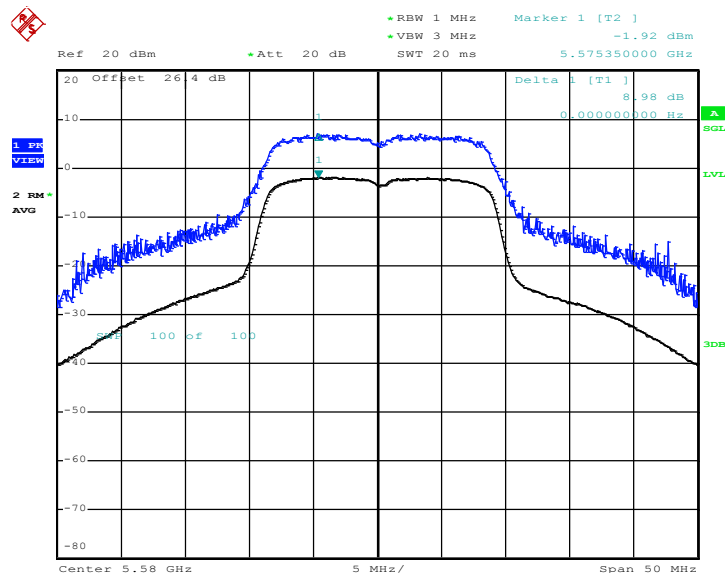
Peak Excursion Ratio Plot on Channel 100



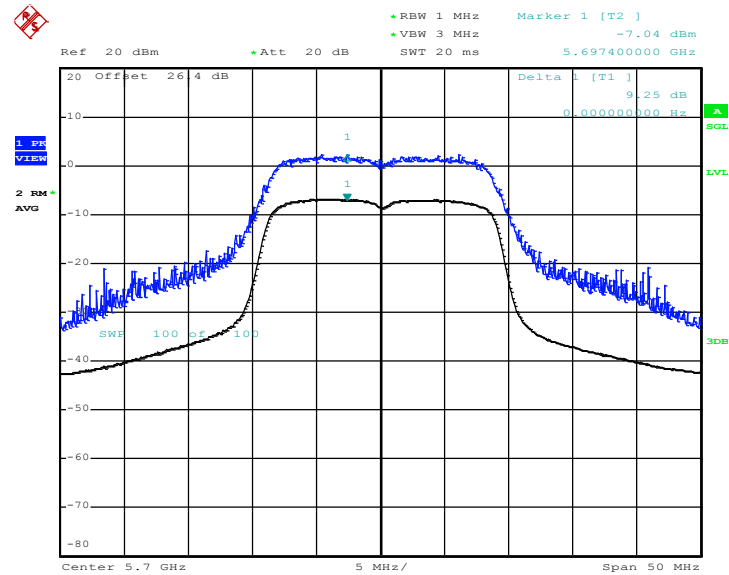
Date: 6.SEP.2012 13:57:23

802.11n HT20-Ant. 0+1(0)

Peak Excursion Ratio Plot on Channel 116



Date: 6.SEP.2012 13:54:01

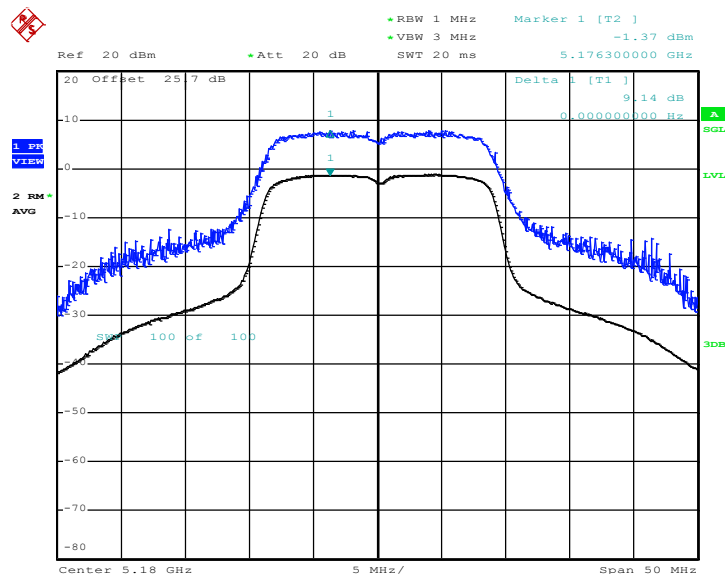
802.11n HT20-Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 140


Date: 6.SEP.2012 13:43:24



802.11n HT20-Ant. 0+1(1)

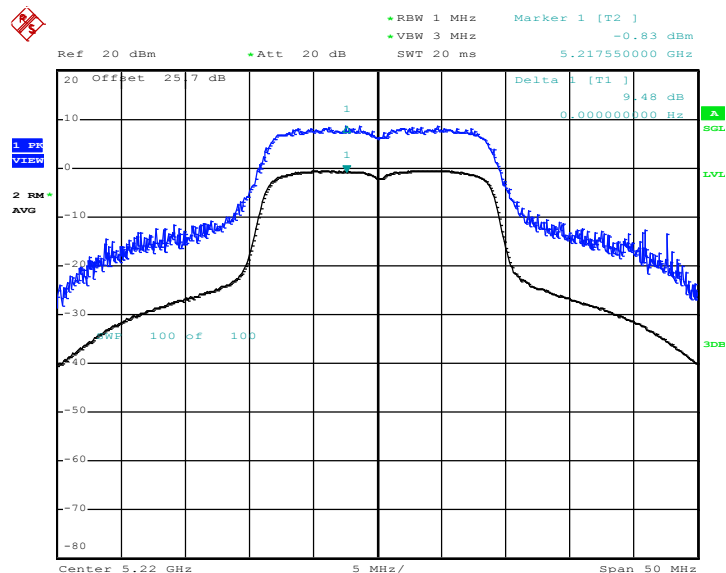
Peak Excursion Ratio Plot on Channel 36



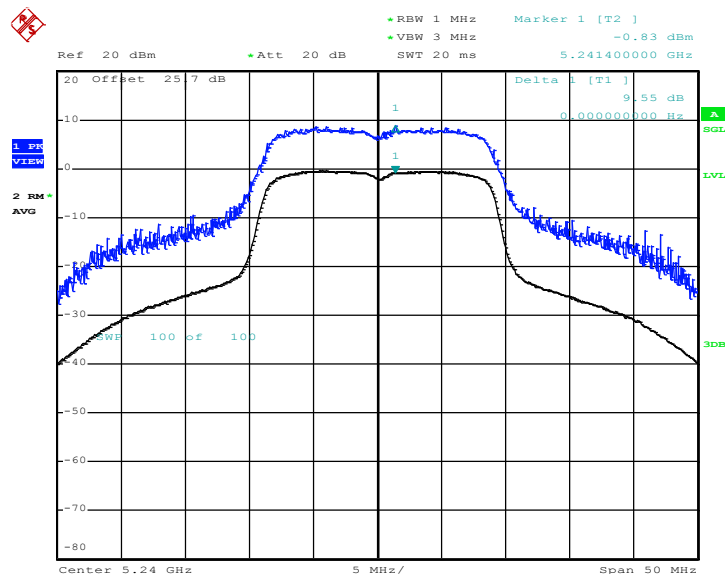
Date: 6.SEP.2012 14:35:34

802.11n HT20-Ant. 0+1(1)

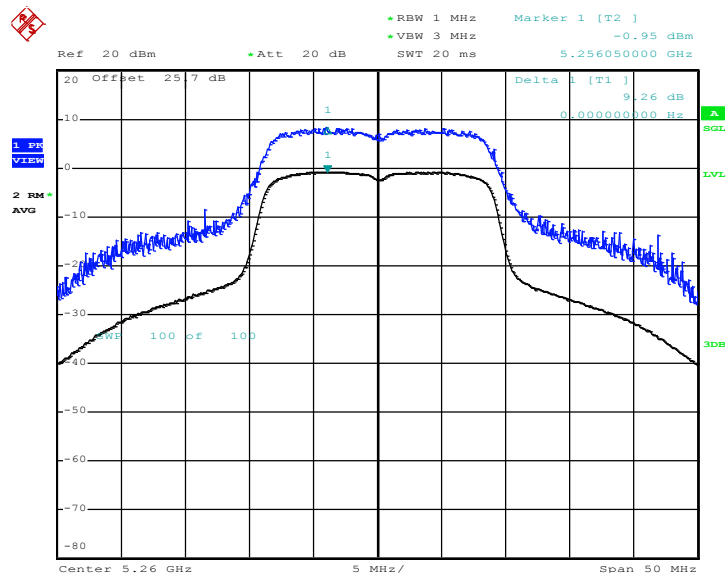
Peak Excursion Ratio Plot on Channel 44



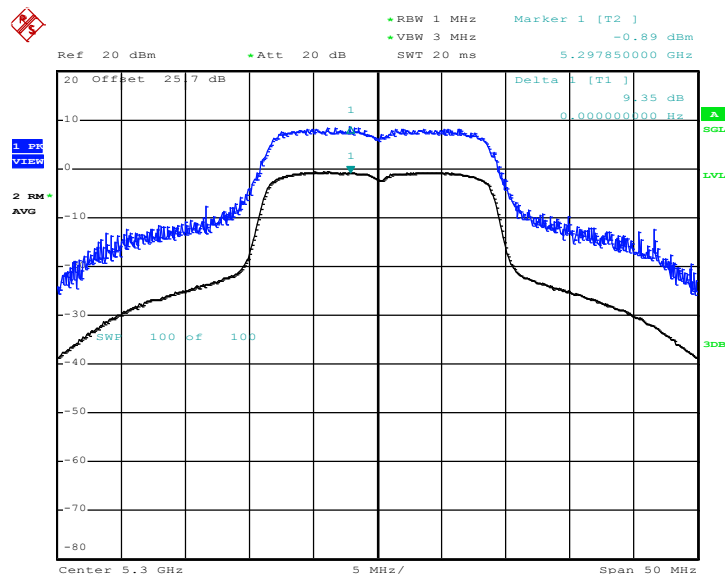
Date: 6.SEP.2012 14:27:18

802.11n HT20-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 48


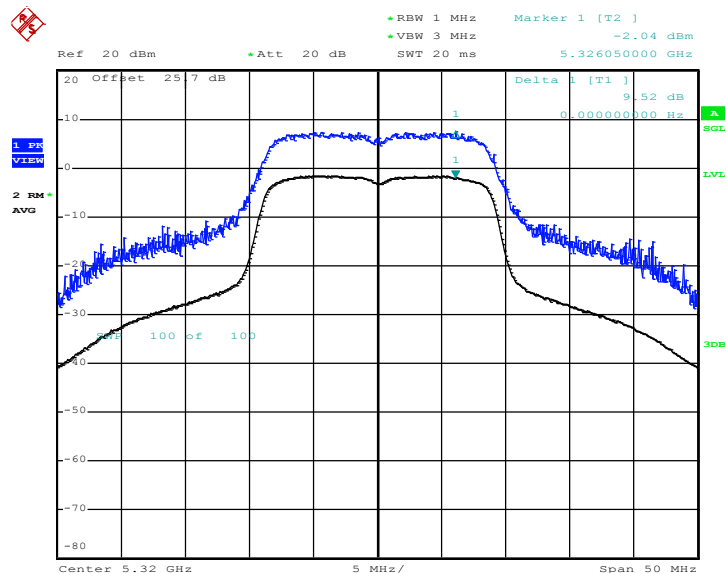
Date: 6.SEP.2012 14:25:17

802.11n HT20-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 52


Date: 6.SEP.2012 14:18:16

802.11n HT20-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 60


Date: 6.SEP.2012 14:14:36

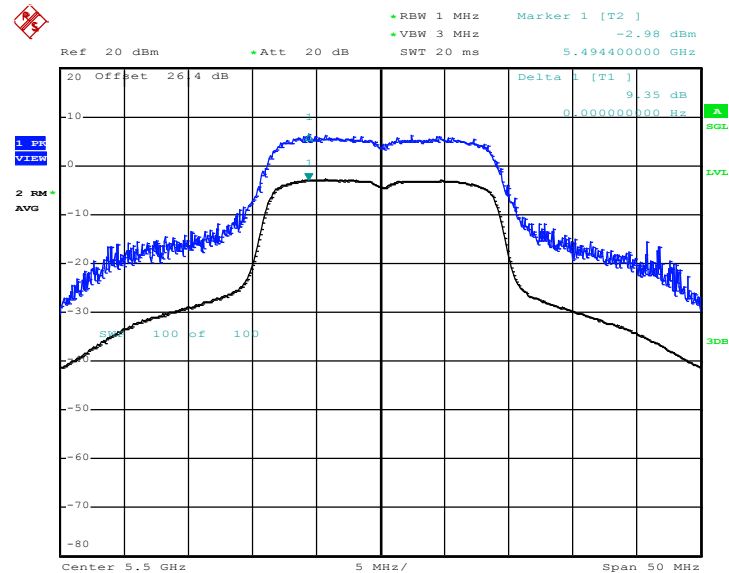
802.11n HT20-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 64


Date: 6.SEP.2012 14:04:38



802.11n HT20-Ant. 0+1(1)

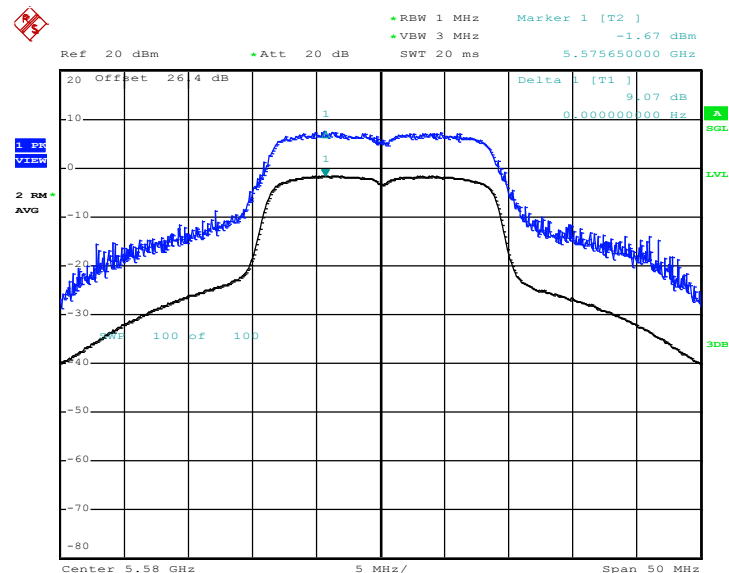
Peak Excursion Ratio Plot on Channel 100



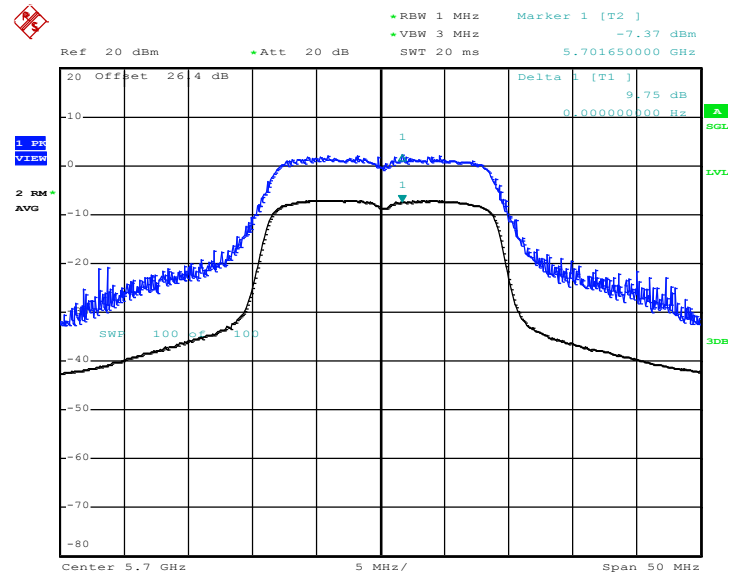
Date: 6.SEP.2012 14:01:04

802.11n HT20-Ant. 0+1(1)

Peak Excursion Ratio Plot on Channel 116

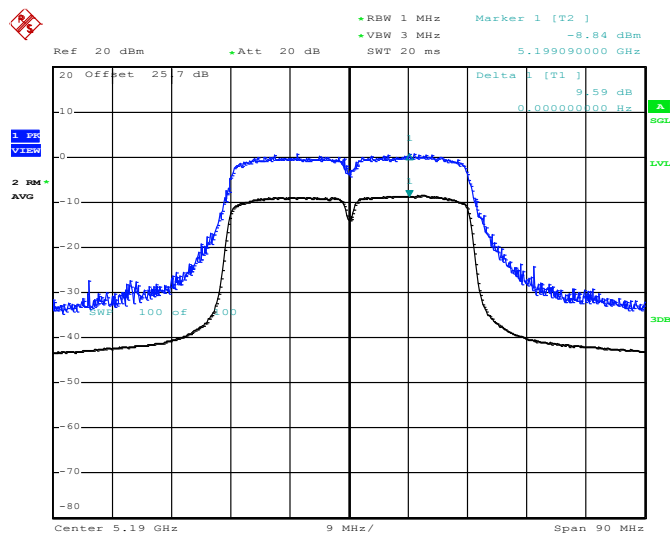


Date: 6.SEP.2012 13:49:50

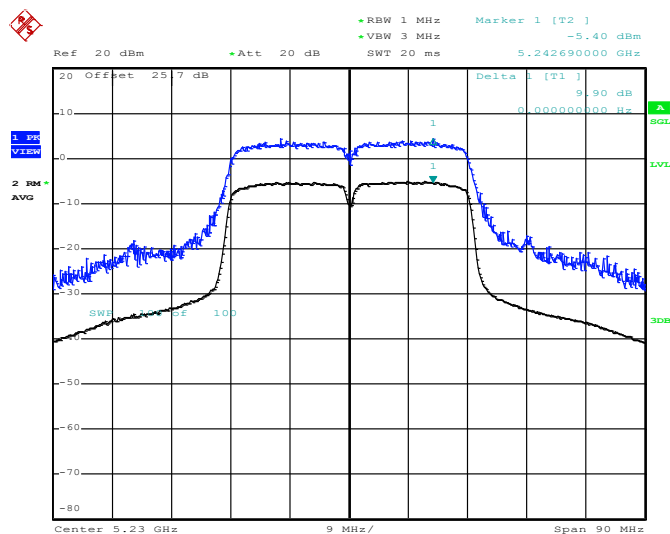
802.11n HT20-Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 140


Date: 6.SEP.2012 13:45:38

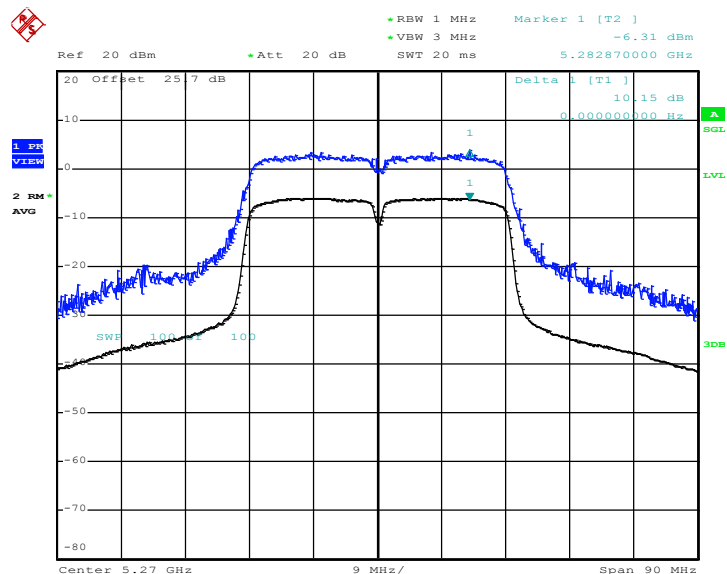
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Kenny Chen	Relative Humidity :	45~49%

802.11n HT40–Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 38


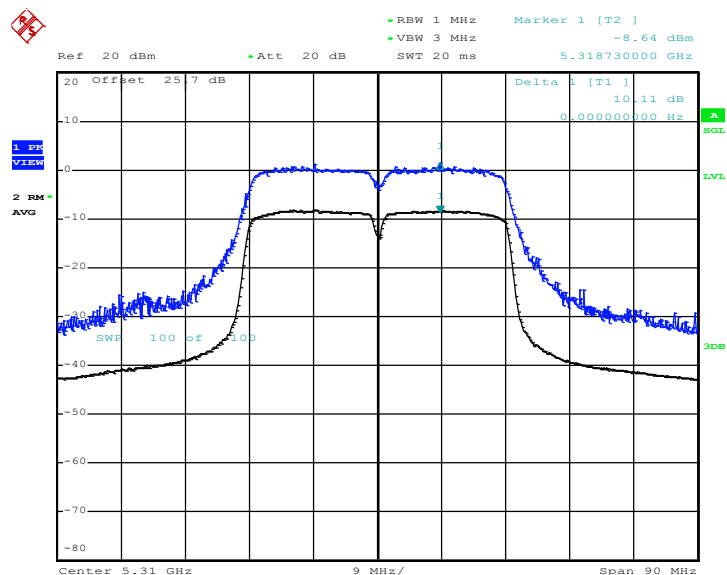
Date: 6.SEP.2012 14:43:20

802.11n HT40–Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 46


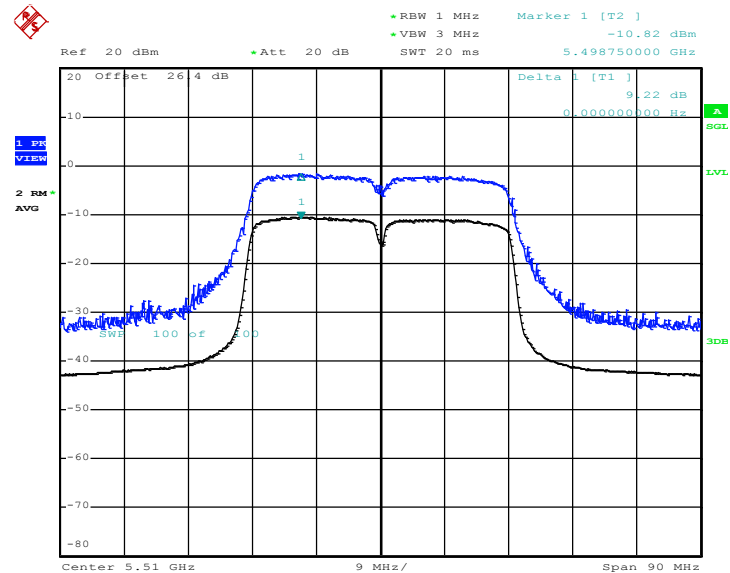
Date: 6.SEP.2012 14:45:45

802.11n HT40–Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 54


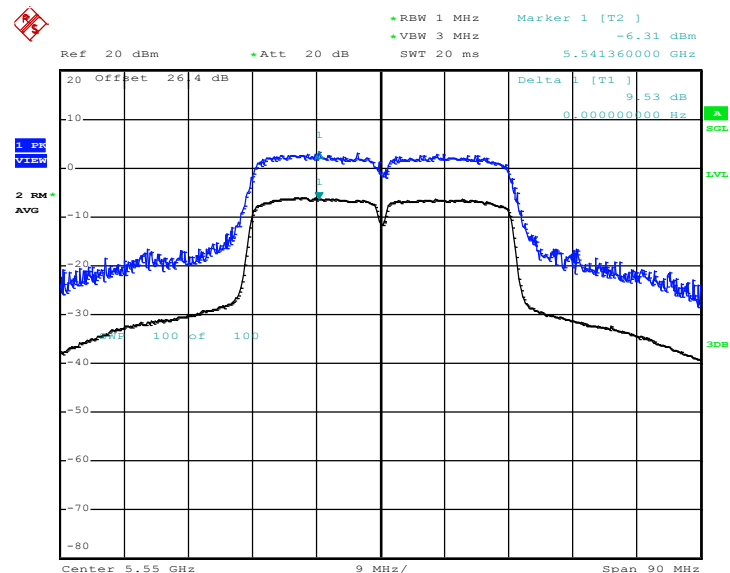
Date: 6.SEP.2012 14:52:30

802.11n HT40–Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 62


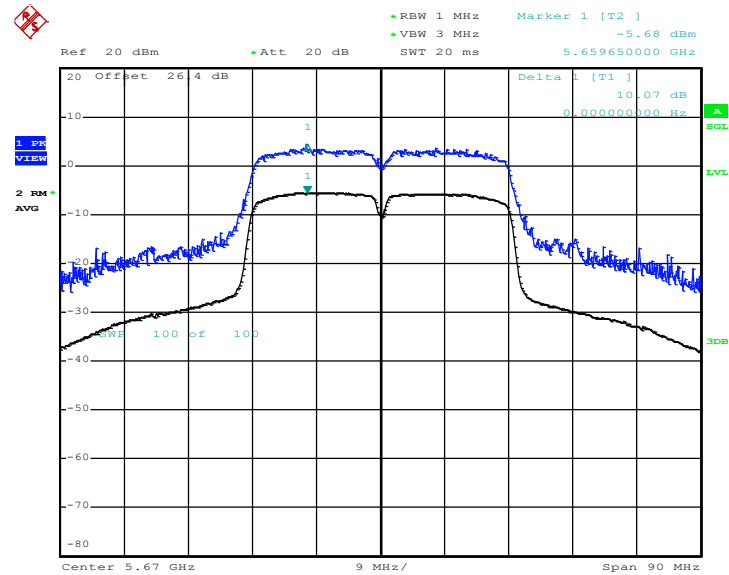
Date: 6.SEP.2012 14:57:41

802.11n HT40–Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 102


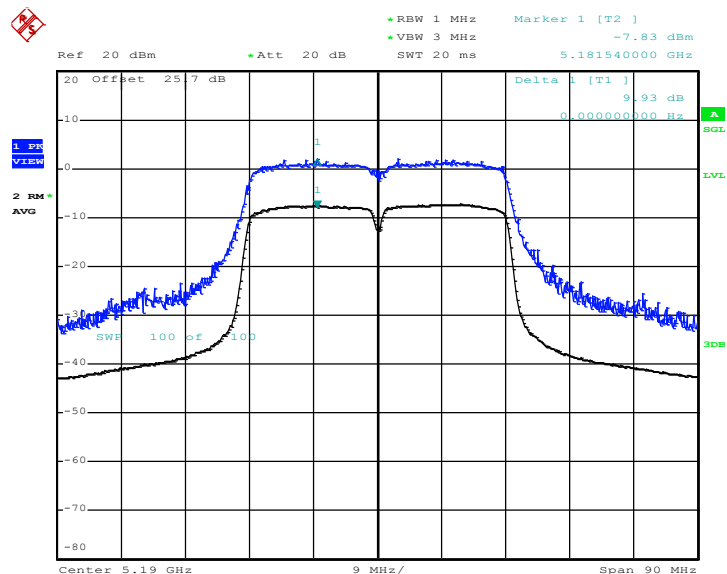
Date: 6.SEP.2012 15:05:27

802.11n HT40–Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 110


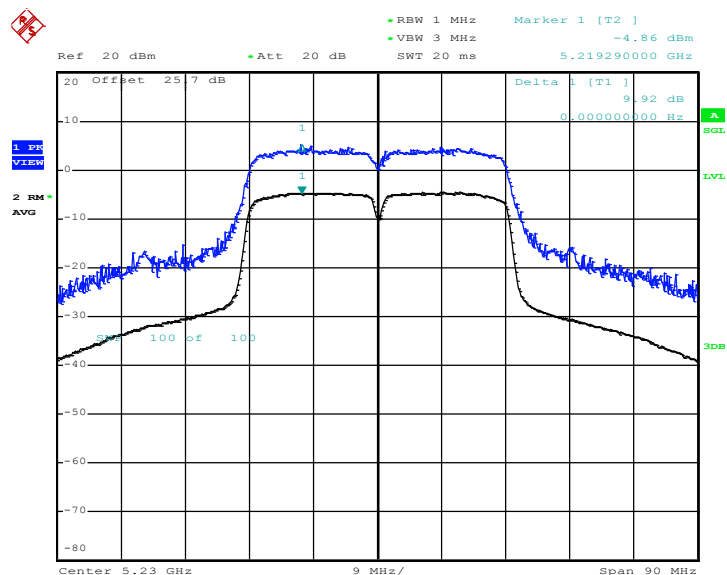
Date: 6.SEP.2012 15:15:33

802.11n HT40–Ant. 0+1(0)
Peak Excursion Ratio Plot on Channel 134


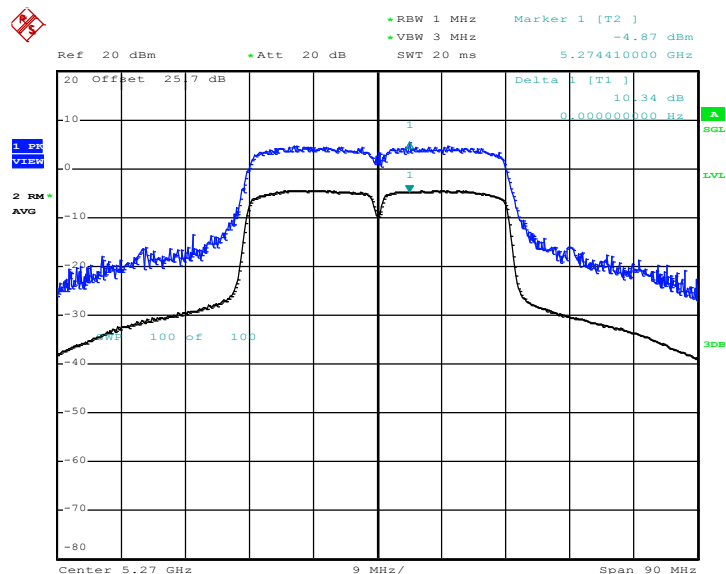
Date: 6.SEP.2012 15:21:36

802.11n HT40–Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 38


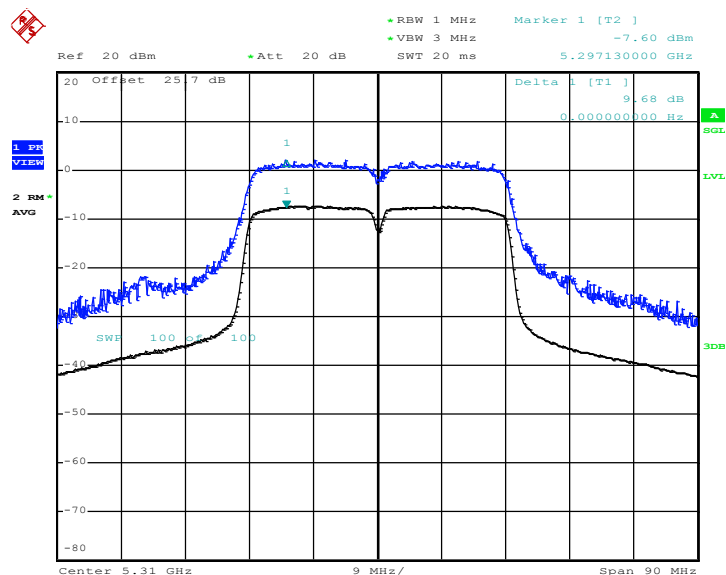
Date: 6.SEP.2012 14:41:23

802.11n HT40–Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 46


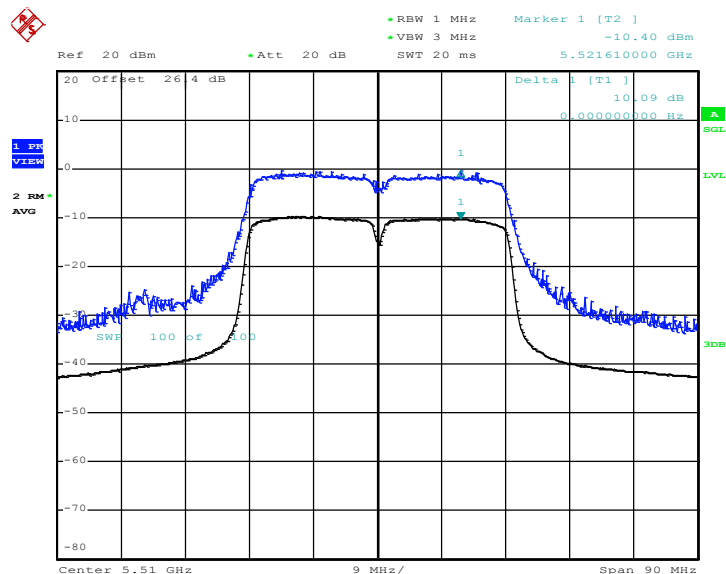
Date: 6.SEP.2012 14:48:21

802.11n HT40–Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 54


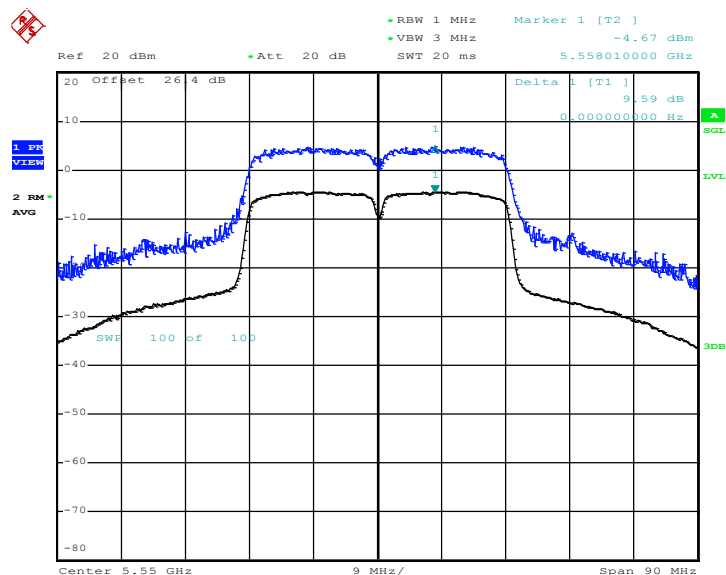
Date: 6.SEP.2012 14:50:30

802.11n HT40–Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 62


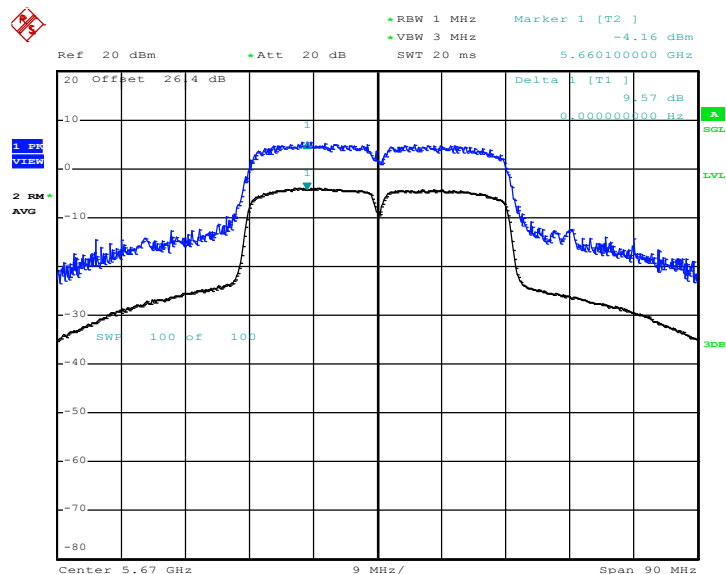
Date: 6.SEP.2012 14:59:33

802.11n HT40–Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 102


Date: 6.SEP.2012 15:08:56

802.11n HT40–Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 110


Date: 6.SEP.2012 15:17:58

802.11n HT40–Ant. 0+1(1)
Peak Excursion Ratio Plot on Channel 134


Date: 6.SEP.2012 15:23:19

3.5 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.5.1 Limit of Unwanted Emissions

- (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 –27dBm/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.

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.

- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

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

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \text{ } \mu\text{V/m, where P is the eirp (Watts)}$$

EIRP (dBm)	Field Strength at 3m (dBuV/m)
-17	78.3
- 27	68.3

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows the guidelines in fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement and FCC KDB 789033 D01 General UNII Test Procedures v01r01.

Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 KHz
- VBW = 300 KHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- The setting follows the G) 5) of FCC KDB 789033.
- RBW = 1 MHz
- VBW $\geq$ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

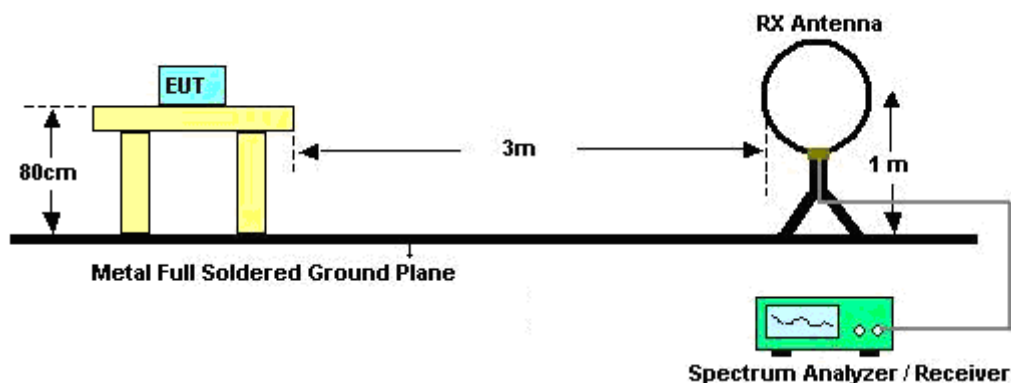
- The setting follows G) 6) of FCC KDB 789033.
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Antenna	Band	Duty Cycle(%)	T(us)	1/T(KHz)	VBW Setting
0+1(0)	802.11a	96.94	2030.00	0.493	1KHz
0+1(1)	802.11a	98.35	2030.00	0.493	1KHz
0+1(0)	802.11n HT20	97.72	1886.00	0.530	1KHz
0+1(1)	802.11n HT20	97.72	1890.00	0.529	1KHz
01+(0)	802.11n HT40	95.44	920.00	1.087	3KHz
0+1(1)	802.11n HT40	96.07	928.00	1.078	3KHz

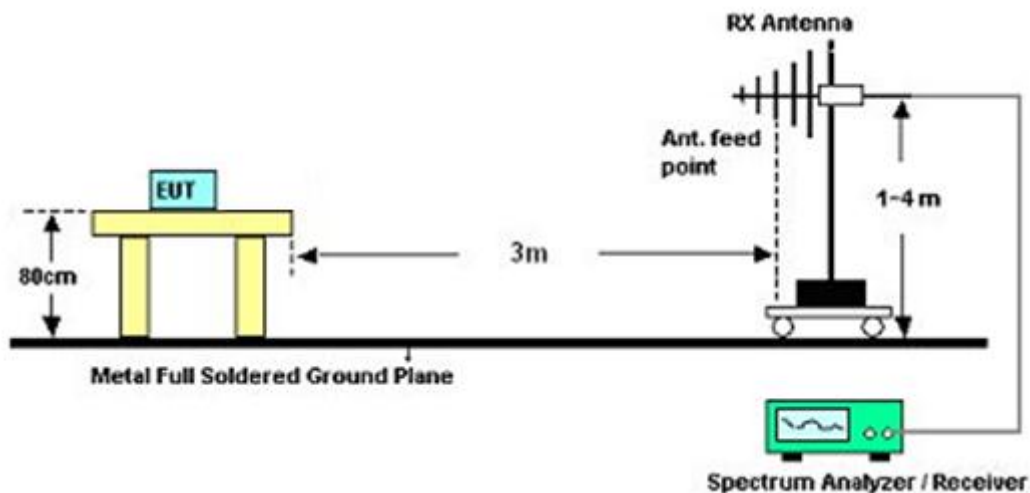
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. 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.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. 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 peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.5.4 Test Setup

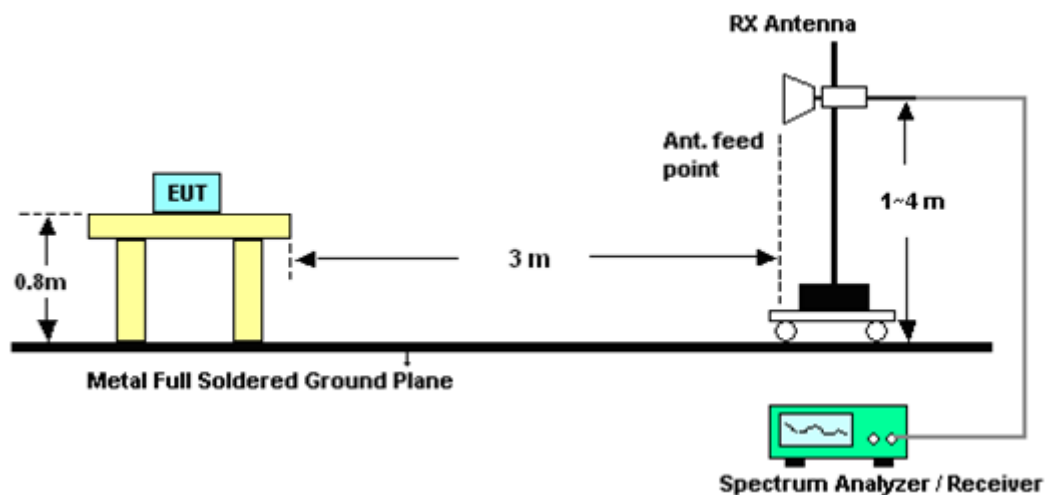
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.5.6 Test Result of Radiated Band Edges

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.3	70.07	-3.93	74	64.07	34.45	6.69	35.14	108	95	Peak
5149.9	43.92	-10.08	54	37.92	34.45	6.69	35.14	108	95	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5149.65	63.51	-10.49	74	57.51	34.45	6.69	35.14	110	273	Peak
5149.8	41.7	-12.3	54	35.7	34.45	6.69	35.14	110	273	Average

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5107.35	51.47	-22.53	74	45.58	34.42	6.66	35.19	124	25	Peak
5141.65	39.32	-14.68	54	33.35	34.45	6.69	35.17	124	25	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350.85	51.91	-22.09	74	45.36	34.65	6.83	34.93	124	25	Peak
5363.25	39.54	-14.46	54	32.95	34.67	6.85	34.93	124	25	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5109.45	50.96	-23.04	74	45.07	34.42	6.66	35.19	189	340	Peak
5149.3	38.99	-15.01	54	32.99	34.45	6.69	35.14	189	340	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5354.85	51.82	-22.18	74	45.27	34.65	6.83	34.93	189	340	Peak
5395.8	39.45	-14.55	54	32.8	34.7	6.86	34.91	189	340	Average

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.55	51.34	-22.66	74	45.34	34.45	6.69	35.14	100	25	Peak
5150	39.37	-14.63	54	33.37	34.45	6.69	35.14	100	25	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5365.5	51.48	-22.52	74	44.89	34.67	6.85	34.93	100	25	Peak
5361.15	39.79	-14.21	54	33.2	34.67	6.85	34.93	100	25	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5145.45	51.46	-22.54	74	45.46	34.45	6.69	35.14	190	340	Peak
5141.8	39	-15	54	33.03	34.45	6.69	35.17	190	340	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5377.05	51.73	-22.27	74	45.12	34.67	6.85	34.91	190	340	Peak
5399.9	39.46	-14.54	54	32.78	34.7	6.86	34.88	190	340	Average



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350.4	70.07	-3.93	74	63.52	34.65	6.83	34.93	100	22	Peak
5350.1	45.17	-8.83	54	38.62	34.65	6.83	34.93	100	22	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5352.85	63.72	-10.28	74	57.17	34.65	6.83	34.93	113	312	Peak
5350.3	43.33	-10.67	54	36.78	34.65	6.83	34.93	113	312	Average



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5455.12	54.47	-19.53	74	47.63	34.75	6.92	34.83	100	128	Peak
5470	58.57	-9.73	68.3	51.71	34.77	6.92	34.83	100	128	Peak
5453.52	41.69	-12.31	54	34.85	34.75	6.92	34.83	100	128	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5452.24	54.25	-19.75	74	47.41	34.75	6.92	34.83	104	240	Peak
5470	60.53	-7.77	68.3	53.67	34.77	6.92	34.83	104	240	Peak
5453.52	41.62	-12.38	54	34.78	34.75	6.92	34.83	104	240	Average

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	64.55	-3.75	68.3	57.16	35.07	7.17	34.85	105	131	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	66.9	-1.4	68.3	59.51	35.07	7.17	34.85	102	94	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5149.3	67.99	-6.01	74	61.99	34.45	6.69	35.14	128	18	Peak
5148.6	45.65	-8.35	54	39.65	34.45	6.69	35.14	128	18	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5149.7	66.52	-7.48	74	60.52	34.45	6.69	35.14	100	205	Peak
5149.7	42.08	-11.92	54	36.08	34.45	6.69	35.14	100	205	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5145.7	51.4	-22.6	74	45.4	34.45	6.69	35.14	126	15	Peak
5141.95	39.36	-14.64	54	33.39	34.45	6.69	35.17	126	15	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5397.15	52.13	-21.87	74	45.48	34.7	6.86	34.91	126	15	Peak
5351.05	39.94	-14.06	54	33.39	34.65	6.83	34.93	126	15	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5105.05	51.07	-22.93	74	45.2	34.4	6.66	35.19	127	212	Peak
5149.85	39.07	-14.93	54	33.07	34.45	6.69	35.14	127	212	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5354	51.69	-22.31	74	45.14	34.65	6.83	34.93	127	212	Peak
5394.35	39.63	-14.37	54	33	34.68	6.86	34.91	127	212	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5135.55	51	-23	74	45.06	34.43	6.68	35.17	126	39	Peak
5149.85	39.19	-14.81	54	33.19	34.45	6.69	35.14	126	39	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5361.8	51.89	-22.11	74	45.3	34.67	6.85	34.93	126	39	Peak
5369.25	39.86	-14.14	54	33.27	34.67	6.85	34.93	126	39	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5141.2	51.18	-22.82	74	45.21	34.45	6.69	35.17	100	218	Peak
5149.65	39.03	-14.97	54	33.03	34.45	6.69	35.14	100	218	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5356.6	52	-22	74	45.43	34.65	6.85	34.93	100	218	Peak
5392.55	39.52	-14.48	54	32.89	34.68	6.86	34.91	100	218	Average



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350.9	68.1	-5.9	74	61.55	34.65	6.83	34.93	150	37	Peak
5350.05	46.4	-7.6	54	39.85	34.65	6.83	34.93	150	37	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350.4	59	-15	74	52.45	34.65	6.83	34.93	100	256	Peak
5350	41.72	-12.28	54	35.17	34.65	6.83	34.93	100	256	Average



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5455.6	56.84	-17.16	74	50	34.75	6.92	34.83	100	130	Peak
5470	56.02	-12.28	68.3	49.16	34.77	6.92	34.83	100	130	Peak
5445.84	41.18	-12.82	54	34.38	34.75	6.9	34.85	100	130	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5458.4	53.22	-20.78	74	46.38	34.75	6.92	34.83	107	76	Peak
5470	57.94	-10.36	68.3	51.08	34.77	6.92	34.83	107	76	Peak
5454.8	41.21	-12.79	54	34.37	34.75	6.92	34.83	107	76	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	67.33	-0.97	68.3	59.94	35.07	7.17	34.85	106	133	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	67.71	-0.59	68.3	60.32	35.07	7.17	34.85	100	138	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	38	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.75	71.46	-2.54	74	65.46	34.45	6.69	35.14	142	39	Peak
5149.45	53.63	-0.37	54	47.63	34.45	6.69	35.14	142	39	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5391.55	52.36	-21.64	74	45.73	34.68	6.86	34.91	142	39	Peak
5357.3	40.17	-13.83	54	33.6	34.65	6.85	34.93	142	39	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.75	65.86	-8.14	74	59.86	34.45	6.69	35.14	100	212	Peak
5150	49.55	-4.45	54	43.55	34.45	6.69	35.14	100	212	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350.5	51.05	-22.95	74	44.5	34.65	6.83	34.93	100	212	Peak
5391	40.06	-13.94	54	33.43	34.68	6.86	34.91	100	212	Average

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	46	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.35	52.4	-21.6	74	46.4	34.45	6.69	35.14	155	42	Peak
5143.55	40.27	-13.73	54	34.3	34.45	6.69	35.17	155	42	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5386.85	51.3	-22.7	74	44.67	34.68	6.86	34.91	155	42	Peak
5396.6	40.19	-13.81	54	33.54	34.7	6.86	34.91	155	42	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5137.35	51.09	-22.91	74	45.15	34.43	6.68	35.17	100	190	Peak
5140.1	39.72	-14.28	54	33.75	34.45	6.69	35.17	100	190	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5392.8	51.91	-22.09	74	45.28	34.68	6.86	34.91	100	190	Peak
5396.8	40.23	-13.77	54	33.58	34.7	6.86	34.91	100	190	Average

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	54	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5141.85	51.26	-22.74	74	45.29	34.45	6.69	35.17	127	42	Peak
5146.95	40.01	-13.99	54	34.01	34.45	6.69	35.14	127	42	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5355.9	53.74	-20.26	74	47.19	34.65	6.83	34.93	127	42	Peak
5357.45	40.76	-13.24	54	34.19	34.65	6.85	34.93	127	42	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5141.85	50.69	-23.31	74	44.72	34.45	6.69	35.17	107	191	Peak
5149.1	39.56	-14.44	54	33.56	34.45	6.69	35.14	107	191	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5359.95	51.71	-22.29	74	45.14	34.65	6.85	34.93	107	191	Peak
5363.35	40.16	-13.84	54	33.57	34.67	6.85	34.93	107	191	Average

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	62	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5134	51.3	-22.7	74	45.36	34.43	6.68	35.17	164	41	Peak
5149.05	39.82	-14.18	54	33.82	34.45	6.69	35.14	164	41	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350.1	70.11	-3.89	74	63.56	34.65	6.83	34.93	164	41	Peak
5350.15	52.77	-1.23	54	46.22	34.65	6.83	34.93	164	41	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5140.3	50.95	-23.05	74	44.98	34.45	6.69	35.17	106	192	Peak
5130.7	39.65	-14.35	54	33.71	34.43	6.68	35.17	106	192	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5354.55	64.2	-9.8	74	57.65	34.65	6.83	34.93	106	192	Peak
5350.6	46.9	-7.1	54	40.35	34.65	6.83	34.93	106	192	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	102	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5460	59.37	-14.63	74	52.53	34.75	6.92	34.83	110	131	Peak
5470	62.12	-6.18	68.3	55.26	34.77	6.92	34.83	110	131	Peak
5459.92	41.99	-12.01	54	35.15	34.75	6.92	34.83	110	131	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	50.03	-18.27	68.3	42.64	35.07	7.17	34.85	110	131	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5459.52	58.83	-15.17	74	51.99	34.75	6.92	34.83	106	81	Peak
5470	65.1	-3.2	68.3	58.24	34.77	6.92	34.83	106	81	Peak
5460	42.77	-11.23	54	35.93	34.75	6.92	34.83	106	81	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	50.81	-17.49	68.3	43.42	35.07	7.17	34.85	106	81	Peak



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	134	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5458.4	52.59	-21.41	74	45.75	34.75	6.92	34.83	107	133	Peak
5470	48.58	-19.72	68.3	41.72	34.77	6.92	34.83	107	133	Peak
5448.48	40.6	-13.4	54	33.8	34.75	6.9	34.85	107	133	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	64.22	-4.08	68.3	56.83	35.07	7.17	34.85	107	133	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5438.4	51.75	-22.25	74	44.97	34.73	6.9	34.85	102	100	Peak
5470	49.39	-18.91	68.3	42.53	34.77	6.92	34.83	102	100	Peak
5453.28	40.42	-13.58	54	33.58	34.75	6.92	34.83	102	100	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	66.66	-1.64	68.3	59.27	35.07	7.17	34.85	102	100	Peak



Test Mode :	802.11n HT40 (co-location)	Temperature :	23~25°C
Test Channel :	38	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5149.85	65.74	-8.26	74	59.74	34.45	6.69	35.14	108	90	Peak
5149.95	48.11	-5.89	54	42.11	34.45	6.69	35.14	108	90	Average

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5391.65	51.57	-22.43	74	44.94	34.68	6.86	34.91	108	90	Peak
5387.6	40.22	-13.78	54	33.59	34.68	6.86	34.91	108	90	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.05	65.69	-8.31	74	59.69	34.45	6.69	35.14	101	86	Peak
5149.5	50.01	-3.99	54	44.01	34.45	6.69	35.14	101	86	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5381.15	53.02	-20.98	74	46.39	34.68	6.86	34.91	101	86	Peak
5388.8	40.49	-13.51	54	33.86	34.68	6.86	34.91	101	86	Average

Test Mode :	Bluetooth 2.1(co-location)	Temperature :	23~25°C
Test Channel :	78	Relative Humidity :	44~47%
Test Engineer :	David Yang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	65.08	-8.92	74	63.97	32.28	4.64	35.81	121	303	Peak
2483.5	29.59	-24.41	54							Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	58.37	-15.63	74	57.26	32.28	4.64	35.81	102	30	Peak
2483.5	22.88	-31.12	54							Average

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.69dB) derived from $20\log(\text{dwell time}/100\text{ms})$.

For example: Average level = 65.08 dBuV/m – 35.49 (dB) = 29.59dBuV/m.

3.5.7 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 MHz is not within a restricted band, and its limit line is 68.3dBuV/m. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	97.25	-	-	91.18	34.48	6.71	35.12	108	95	Average
5180	110.15	-	-	104.08	34.48	6.71	35.12	108	95	Peak
10360	49.09	-19.21	68.3	57.32	37.72	9.71	55.66	100	0	Peak
15540	45.25	-28.75	74	51.21	40.11	11.93	58	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 MHz is not within a restricted band, and its limit line is 68.3dBuV/m. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	92.75	-	-	86.68	34.48	6.71	35.12	110	273	Average
5180	104.93	-	-	98.86	34.48	6.71	35.12	110	273	Peak
10360	53.56	-14.74	68.3	61.79	37.72	9.71	55.66	100	0	Peak
15540	46.13	-27.87	74	52.09	40.11	11.93	58	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5220 MHz is fundamental signal which can be ignored. 2. 10440 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5220	97.31	-	-	91.14	34.52	6.74	35.09	112	26	Average
5220	110.33	-	-	104.16	34.52	6.74	35.09	112	26	Peak
10440	53.36	-14.94	68.3	61.5	37.76	9.75	55.65	100	0	Peak
15660	46.23	-27.77	74	51.97	40.13	11.87	57.74	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5220 MHz is fundamental signal which can be ignored. 2. 10440 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5220	91.76	-	-	85.59	34.52	6.74	35.09	133	271	Average
5220	104.83	-	-	98.63	34.52	6.74	35.06	133	271	Peak
10440	58.6	-9.7	68.3	66.74	37.76	9.75	55.65	100	0	Peak
15660	46.7	-27.3	74	52.44	40.13	11.87	57.74	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5240 MHz is fundamental signal which can be ignored. 2. 10480 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5240	96.4	-	-	90.17	34.53	6.76	35.06	124	25	Average
5240	110.02	-	-	103.81	34.53	6.74	35.06	124	25	Peak
10480	53.75	-14.55	68.3	61.81	37.79	9.78	55.63	100	0	Peak
15720	45.17	-28.83	74	50.77	40.14	11.85	57.59	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5240 MHz is fundamental signal which can be ignored. 2. 10480 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5240	91.55	-	-	85.32	34.53	6.76	35.06	189	340	Average
5240	104.13	-	-	97.88	34.55	6.76	35.06	189	340	Peak
10480	58.44	-9.86	68.3	66.5	37.79	9.78	55.63	100	0	Peak
15720	45.97	-28.03	74	51.57	40.14	11.85	57.59	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10520 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5260	96.28	-	-	89.97	34.57	6.78	35.04	100	25	Average
5260	109.29	-	-	103.02	34.55	6.76	35.04	100	25	Peak
10520	53.5	-14.8	68.3	61.51	37.81	9.81	55.63	100	0	Peak
15780	47.06	-26.94	74	52.57	40.16	11.81	57.48	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10520 MHz is not within a restricted band. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5260	91.05	-	-	84.74	34.57	6.78	35.04	190	340	Average
5260	104.4	-	-	98.13	34.55	6.76	35.04	190	340	Peak
10520	57.91	-10.39	68.3	65.92	37.81	9.81	55.63	100	0	Peak
15780	46.68	-27.32	74	52.19	40.16	11.81	57.48	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5300 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5300	95.87	-	-	89.45	34.6	6.8	34.98	100	24	Average
5300	109.98	-	-	103.59	34.6	6.8	35.01	100	24	Peak
10600	42.82	-11.18	54	50.73	37.84	9.85	55.6	166	24	Average
10600	53.54	-20.46	74	61.45	37.84	9.85	55.6	166	24	Peak
15900	45.47	-28.53	74	50.75	40.18	11.76	57.22	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5300 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5300	90.42	-	-	84	34.6	6.8	34.98	200	299	Average
5300	104.83	-	-	98.44	34.6	6.8	35.01	200	299	Peak
10600	47.17	-6.83	54	55.08	37.84	9.85	55.6	113	323	Average
10600	59.86	-14.14	74	67.77	37.84	9.85	55.6	113	323	Peak
15900	45.58	-28.42	74	50.86	40.18	11.76	57.22	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5320 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	94.76	-	-	88.31	34.62	6.81	34.98	100	22	Average
5320	109.12	-	-	102.67	34.62	6.81	34.98	100	22	Peak
10640	42.89	-11.11	54	50.74	37.86	9.88	55.59	151	28	Average
10640	54.11	-19.89	74	61.96	37.86	9.88	55.59	151	28	Peak
15960	47.14	-26.86	74	52.29	40.19	11.73	57.07	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5320 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	90.71	-	-	84.26	34.62	6.81	34.98	113	312	Average
5320	103.39	-	-	96.94	34.62	6.81	34.98	113	312	Peak
10640	46.26	-7.74	54	54.11	37.86	9.88	55.59	107	327	Average
10640	58.1	-15.9	74	65.95	37.86	9.88	55.59	107	327	Peak
15960	47.14	-26.86	74	52.29	40.19	11.73	57.07	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	5500 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5500	91.23	-	-	84.28	34.8	6.95	34.8	100	128	Average
5500	104.29	-	-	97.34	34.8	6.95	34.8	100	128	Peak
10998	38	-16	54	45.38	38	10.11	55.49	100	77	Average
10998	51.15	-22.85	74	58.53	38	10.11	55.49	100	77	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	5500 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5500	92.06	-	-	85.11	34.8	6.95	34.8	104	240	Average
5500	105.7	-	-	98.75	34.8	6.95	34.8	104	240	Peak
11001	44.36	-9.64	54	51.74	38	10.11	55.49	100	204	Average
11001	56.46	-17.54	74	63.84	38	10.11	55.49	100	204	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	5580 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5580	92.23	-	-	85.15	34.88	7.02	34.82	100	128	Average
5580	105.93	-	-	98.85	34.88	7.02	34.82	100	128	Peak
11160	42.05	-11.95	54	49.11	38.17	10.16	55.39	100	142	Average
11160	54.63	-19.37	74	61.69	38.17	10.16	55.39	100	142	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	5580 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5580	93.3	-	-	86.22	34.88	7.02	34.82	107	50	Average
5580	106.88	-	-	99.8	34.88	7.02	34.82	107	50	Peak
11163	48.42	-5.58	54	55.48	38.17	10.16	55.39	100	161	Average
11163	62.3	-11.7	74	69.36	38.17	10.16	55.39	100	161	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. " * " are 25MHz harmonics and from extender card which is provided by Applicant, declared to ignore those signal due to not from WiFi module. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
74.82	43.62	*	40	67.36	6.7	0.96	31.4	-	-	Peak
99.93	42.69	*	43.5	63.14	9.9	1.09	31.44	-	-	Peak
124.77	60.87	*	43.5	79.19	11.8	1.22	31.34	-	-	Peak
143.94	39.31	-4.19	43.5	58.13	11.17	1.27	31.26	-	-	Peak
149.88	63.99	*	43.5	82.77	11.2	1.27	31.25	-	-	Peak
155.01	39.72	-3.78	43.5	58.75	10.9	1.31	31.24	133	246	Peak
162.3	38.35	-5.15	43.5	57.85	10.34	1.35	31.19	-	-	Peak
174.72	63.13	*	43.5	83.68	9.1	1.38	31.03	-	-	Peak
199.29	57.03	*	43.5	77.59	9.1	1.46	31.12	-	-	Peak
224.94	59.33	*	46	78.96	9.75	1.56	30.94	-	-	Peak
248.97	51.97	*	46	68.72	12.49	1.66	30.9	-	-	Peak
274.08	57.99	*	46	74.44	12.95	1.72	31.12	-	-	Peak
298.92	56.46	*	46	72.25	13.39	1.78	30.96	-	-	Peak
323.1	47.19	*	46	62.7	13.59	1.84	30.94	-	-	Peak
349.7	43.69	*	46	58.39	14.5	1.9	31.1	-	-	Peak
374.9	43.48	*	46	57.48	15.05	1.96	31.01	-	-	Peak
399.4	54.35	*	46	67.54	16	2.01	31.2	-	-	Peak
424.6	60.33	*	46	72.64	16.65	2.08	31.04	-	-	Peak
435.8	38	-8	46	50.08	16.81	2.1	30.99	-	-	Peak
449.8	61.01	*	46	72.66	17.2	2.14	30.99	-	-	Peak
460.3	39.77	-6.23	46	51.19	17.42	2.16	31	-	-	Peak
475	66.18	*	46	77.12	17.65	2.18	30.77	-	-	Peak
485.5	38.89	-7.11	46	49.54	17.82	2.2	30.67	-	-	Peak



Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
498.1	52.24	*	46	62.54	18.06	2.23	30.59	-	-	Peak
522.6	50.15	*	46	60.34	18.33	2.28	30.8	-	-	Peak
547.8	39.6	*	46	48.73	19.58	2.33	31.04	-	-	Peak
574.4	38.7	*	46	47.21	19.86	2.37	30.74	-	-	Peak
599.6	36.65	*	46	44.75	19.89	2.42	30.41	-	-	Peak
624.8	54.07	*	46	61.28	20.55	2.5	30.26	-	-	Peak
649.3	31.88	*	46	39.08	20.33	2.59	30.12	-	-	Peak
672.4	54.55	*	46	61.77	20.32	2.62	30.16	-	-	Peak
696.9	37.97	*	46	44.85	20.67	2.65	30.2	-	-	Peak
724.9	48.52	*	46	54.24	21.78	2.7	30.2	-	-	Peak
746.6	45.96	*	46	51.04	22.37	2.74	30.19	-	-	Peak
774.6	36.2	*	46	41.26	22.15	2.79	30	-	-	Peak
799.8	47.38	*	46	52.26	22.1	2.83	29.81	-	-	Peak
825	48.29	*	46	52.29	22.87	2.88	29.75	-	-	Peak
846.7	43.42	*	46	46.84	23.37	2.91	29.7	-	-	Peak
871.2	46.24	*	46	50	23.1	2.96	29.82	-	-	Peak
896.4	36.73	*	46	40.49	23.22	3	29.98	-	-	Peak
921.6	44.62	*	46	47.71	23.93	3.03	30.05	-	-	Peak
946.1	31.99	*	46	34.31	24.72	3.06	30.1	-	-	Peak
971.3	40.48	*	54	42.24	25.08	3.14	29.98	-	-	Peak
5700	94.54	-	-	87.2	35.03	7.15	34.84	105	131	Average
5700	108.03	-	-	100.69	35.03	7.15	34.84	105	131	Peak
11400	48.05	-25.95	74	54.68	38.4	10.23	55.26	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. " * " are 25MHz harmonics and from extender card which is provided by Applicant, declared to ignore those signal due to not from WiFi module.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	34.96	-5.04	40	48.11	17.76	0.72	31.63	100	208	Peak
74.82	37.05	*	40	60.79	6.7	0.96	31.4	-	-	Peak
99.93	38.07	*	43.5	58.52	9.9	1.09	31.44	-	-	Peak
124.77	54.91	*	43.5	73.23	11.8	1.22	31.34	-	-	Peak
145.56	34.1	-9.4	43.5	52.99	11.1	1.27	31.26	-	-	Peak
149.88	59.26	*	43.5	78.04	11.2	1.27	31.25	-	-	Peak
162.3	34.22	-9.28	43.5	53.72	10.34	1.35	31.19	-	-	Peak
174.99	62.23	*	43.5	82.78	9.1	1.38	31.03	-	-	Peak
199.29	51.57	*	43.5	72.13	9.1	1.46	31.12	-	-	Peak
224.94	50.51	*	46	70.14	9.75	1.56	30.94	-	-	Peak
249.78	45.13	*	46	61.77	12.6	1.66	30.9	-	-	Peak
274.89	50.76	*	46	67.22	12.95	1.72	31.13	-	-	Peak
300	51.29	*	46	67.05	13.4	1.78	30.94	-	-	Peak
324.5	47.01	*	46	62.47	13.65	1.84	30.95	-	-	Peak
349.7	41.96	*	46	56.66	14.5	1.9	31.1	-	-	Peak
374.9	45.24	*	46	59.24	15.05	1.96	31.01	-	-	Peak
399.4	51.49	*	46	64.68	16	2.01	31.2	-	-	Peak
423.2	57.19	*	46	69.54	16.63	2.07	31.05	-	-	Peak
435.1	34.42	-11.58	46	46.5	16.81	2.1	30.99	-	-	Peak
449.8	58.54	*	46	70.19	17.2	2.14	30.99	-	-	Peak
460.3	37.06	-8.94	46	48.48	17.42	2.16	31	-	-	Peak
474.3	62.05	*	46	73.02	17.64	2.18	30.79	-	-	Peak
486.9	35.49	-10.51	46	46.1	17.84	2.21	30.66	-	-	Peak

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
498.1	51.59	*	46	61.89	18.06	2.23	30.59	-	-	Peak
522.6	51.09	*	46	61.28	18.33	2.28	30.8	-	-	Peak
547.8	39.98	*	46	49.11	19.58	2.33	31.04	-	-	Peak
574.4	44.76	*	46	53.27	19.86	2.37	30.74	-	-	Peak
597.5	37.66	*	46	45.82	19.87	2.41	30.44	-	-	Peak
624.8	53.8	*	46	61.01	20.55	2.5	30.26	-	-	Peak
647.2	31.7	*	46	38.86	20.39	2.58	30.13	-	-	Peak
674.5	52.18	*	46	59.38	20.34	2.62	30.16	-	-	Peak
699.7	32.13	*	46	39	20.69	2.65	30.21	-	-	Peak
722.1	44.3	*	46	50.09	21.71	2.7	30.2	-	-	Peak
750.1	39.18	*	46	44.22	22.4	2.75	30.19	-	-	Peak
774.6	30.36	*	46	35.42	22.15	2.79	30	-	-	Peak
799.8	40.28	*	46	45.16	22.1	2.83	29.81	-	-	Peak
825	43.24	*	46	47.24	22.87	2.88	29.75	-	-	Peak
846.7	40.89	*	46	44.31	23.37	2.91	29.7	-	-	Peak
871.9	41.07	*	46	44.84	23.1	2.96	29.83	-	-	Peak
896.4	33.17	*	46	36.93	23.22	3	29.98	-	-	Peak
921.6	41.78	*	46	44.87	23.93	3.03	30.05	-	-	Peak
974.8	39.36	*	54	41.18	25	3.15	29.97	-	-	Peak
5700	96.23	-	-	88.89	35.03	7.15	34.84	102	94	Average
5700	109.22	-	-	101.88	35.03	7.15	34.84	102	94	Peak
11403	40.26	-13.74	54	46.89	38.4	10.23	55.26	100	15	Average
11403	51.54	-22.46	74	58.17	38.4	10.23	55.26	100	15	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10356 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	95.66	-	-	89.59	34.48	6.71	35.12	128	18	Average
5180	110.07	-	-	104	34.48	6.71	35.12	128	18	Peak
10356	50.82	-17.48	68.3	59.07	37.71	9.71	55.67	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	90.52	-	-	84.45	34.48	6.71	35.12	100	205	Average
5180	104.92	-	-	98.85	34.48	6.71	35.12	100	205	Peak
10359	55.12	-13.18	68.3	63.35	37.72	9.71	55.66	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5220 MHz is fundamental signal which can be ignored. 2. 10437 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5220	95.42	-	-	89.25	34.52	6.74	35.09	129	22	Average
5220	110.11	-	-	103.94	34.52	6.74	35.09	129	22	Peak
10437	54.34	-13.96	68.3	62.48	37.76	9.75	55.65	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5220 MHz is fundamental signal which can be ignored. 2. 10443 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5220	89.95	-	-	83.78	34.52	6.74	35.09	129	222	Average
5220	104.12	-	-	97.95	34.52	6.74	35.09	129	222	Peak
10443	58.49	-9.81	68.3	66.63	37.76	9.75	55.65	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5240 MHz is fundamental signal which can be ignored. 2. 10473 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5240	95.33	-	-	89.1	34.53	6.76	35.06	126	15	Average
5240	108.69	-	-	102.46	34.53	6.76	35.06	126	15	Peak
10473	56.8	-11.5	68.3	64.88	37.78	9.78	55.64	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5240 MHz is fundamental signal which can be ignored. 2. 10482 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5240	89.51	-	-	83.28	34.53	6.76	35.06	127	212	Average
5240	103.14	-	-	96.91	34.53	6.76	35.06	127	212	Peak
10482	58.94	-9.36	68.3	67	37.79	9.78	55.63	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10524 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5260	94.52	-	-	88.21	34.57	6.78	35.04	126	39	Average
5260	108.62	-	-	102.31	34.57	6.78	35.04	126	39	Peak
10524	54.59	-13.71	68.3	62.6	37.81	9.81	55.63	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10521 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5260	87.59	-	-	81.28	34.57	6.78	35.04	100	218	Average
5260	101.27	-	-	94.96	34.57	6.78	35.04	100	218	Peak
10521	60.17	-8.13	68.3	68.18	37.81	9.81	55.63	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	5300 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5300	94.93	-	-	88.51	34.6	6.8	34.98	113	17	Average
5300	108.67	-	-	102.25	34.6	6.8	34.98	113	17	Peak
10608	43.11	-10.89	54	51.02	37.84	9.85	55.6	100	227	Average
10608	54.97	-19.03	74	62.88	37.84	9.85	55.6	100	227	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	5300 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5300	87.25	-	-	80.83	34.6	6.8	34.98	100	197	Average
5300	102.28	-	-	95.86	34.6	6.8	34.98	100	197	Peak
10605	46.11	-7.89	54	54.02	37.84	9.85	55.6	105	146	Average
10605	57.2	-16.8	74	65.11	37.84	9.85	55.6	105	146	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	5320 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	94.61	-	-	88.16	34.62	6.81	34.98	150	37	Average
5320	108.54	-	-	102.09	34.62	6.81	34.98	150	37	Peak
10644	42.77	-11.23	54	50.62	37.86	9.88	55.59	100	228	Average
10644	54.68	-19.32	74	62.53	37.86	9.88	55.59	100	228	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	5320 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	87.22	-	-	80.77	34.62	6.81	34.98	100	256	Average
5320	101.94	-	-	95.49	34.62	6.81	34.98	100	256	Peak
10641	42.53	-11.47	54	50.38	37.86	9.88	55.59	100	177	Average
10641	55.17	-18.83	74	63.02	37.86	9.88	55.59	100	177	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	5500 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5500	89.94	-	-	82.99	34.8	6.95	34.8	100	130	Average
5500	103.6	-	-	96.65	34.8	6.95	34.8	100	130	Peak
11004	38.37	-15.63	54	45.75	38	10.11	55.49	100	80	Average
11004	51.55	-22.45	74	58.93	38	10.11	55.49	100	80	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	5500 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5500	91.01	-	-	84.06	34.8	6.95	34.8	107	76	Average
5500	104.86	-	-	97.91	34.8	6.95	34.8	107	76	Peak
11001	42.76	-11.24	54	50.14	38	10.11	55.49	100	204	Average
11001	56.15	-17.85	74	63.53	38	10.11	55.49	100	204	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	5580 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5580	92.55	-	-	85.47	34.88	7.02	34.82	100	131	Average
5580	106.3	-	-	99.22	34.88	7.02	34.82	100	131	Peak
11163	42.51	-11.49	54	49.57	38.17	10.16	55.39	100	142	Average
11163	55.43	-18.57	74	62.49	38.17	10.16	55.39	100	142	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	5580 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5580	92.71	-	-	85.63	34.88	7.02	34.82	105	74	Average
5580	107.16	-	-	100.08	34.88	7.02	34.82	105	74	Peak
11160	49.37	-4.63	54	56.43	38.17	10.16	55.39	100	163	Average
11160	61.96	-12.04	74	69.02	38.17	10.16	55.39	100	163	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. “ * ” are 25MHz harmonics and from extender card which is provided by Applicant, declared to ignore those signal due to not from WiFi module. 3. All other emission found more than 20dB below limit line is not reported.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
74.82	43.58	*	40	67.32	6.7	0.96	31.4	-	-	Peak
99.93	42.75	*	43.5	63.2	9.9	1.09	31.44	-	-	Peak
124.77	60.95	*	43.5	79.27	11.8	1.22	31.34	-	-	Peak
143.4	39.46	-4.04	43.5	58.28	11.17	1.27	31.26	-	-	Peak
149.88	63.88	*	43.5	82.66	11.2	1.27	31.25	-	-	Peak
155.01	38.49	-5.01	43.5	57.52	10.9	1.31	31.24	-	-	Peak
161.76	40.05	-3.45	43.5	59.56	10.34	1.35	31.2	110	208	Peak
174.99	63.13	*	43.5	83.68	9.1	1.38	31.03	-	-	Peak
199.29	57.17	*	43.5	77.73	9.1	1.46	31.12	-	-	Peak
224.94	59.32	*	46	78.95	9.75	1.56	30.94	-	-	Peak
250.05	52.31	*	46	68.95	12.6	1.66	30.9	-	-	Peak
274.08	57.97	*	46	74.42	12.95	1.72	31.12	-	-	Peak
300	56.79	*	46	72.55	13.4	1.78	30.94	-	-	Peak
323.1	47.3	*	46	62.81	13.59	1.84	30.94	-	-	Peak
349.7	43.34	*	46	58.04	14.5	1.9	31.1	-	-	Peak
374.9	43.43	*	46	57.43	15.05	1.96	31.01	-	-	Peak
399.4	54.35	*	46	67.54	16	2.01	31.2	-	-	Peak
424.6	60.19	*	46	72.5	16.65	2.08	31.04	-	-	Peak
437.2	37.27	-8.73	46	49.29	16.85	2.11	30.98	-	-	Peak
449.8	60.96	*	46	72.61	17.2	2.14	30.99	-	-	Peak
460.3	39.72	-6.28	46	51.14	17.42	2.16	31	-	-	Peak
475	66.39	*	46	77.33	17.65	2.18	30.77	-	-	Peak
485.5	38.35	-7.65	46	49	17.82	2.2	30.67	-	-	Peak
498.1	52.21	*	46	62.51	18.06	2.23	30.59	-	-	Peak



Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
522.6	49.88	*	46	60.07	18.33	2.28	30.8	-	-	Peak
547.8	39.58	*	46	48.71	19.58	2.33	31.04	-	-	Peak
574.4	39.45	*	46	47.96	19.86	2.37	30.74	-	-	Peak
599.6	36.39	*	46	44.49	19.89	2.42	30.41	-	-	Peak
624.8	54.08	*	46	61.29	20.55	2.5	30.26	-	-	Peak
647.2	32.33	*	46	39.49	20.39	2.58	30.13	-	-	Peak
672.4	54.61	*	46	61.83	20.32	2.62	30.16	-	-	Peak
699.7	37.63	*	46	44.5	20.69	2.65	30.21	-	-	Peak
722.1	48.58	*	46	54.37	21.71	2.7	30.2	-	-	Peak
749.4	46.48	*	46	51.52	22.4	2.75	30.19	-	-	Peak
774.6	36.9	*	46	41.96	22.15	2.79	30	-	-	Peak
796.3	47.7	*	46	52.7	22.02	2.82	29.84	-	-	Peak
821.5	48.3	*	46	52.5	22.69	2.87	29.76	-	-	Peak
846.7	43.6	*	46	47.02	23.37	2.91	29.7	-	-	Peak
874.7	46.98	*	46	50.75	23.1	2.97	29.84	-	-	Peak
899.9	37.53	*	46	41.22	23.3	3.01	30	-	-	Peak
925.1	44.75	*	46	47.72	24.05	3.04	30.06	-	-	Peak
949.6	31.57	*	46	33.82	24.8	3.06	30.11	-	-	Peak
971.3	41.63	*	54	43.39	25.08	3.14	29.98	-	-	Peak
5700	92.02	-	-	84.68	35.03	7.15	34.84	106	133	Average
5700	106.54	-	-	99.2	35.03	7.15	34.84	106	133	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1.5700 MHz is fundamental signal which can be ignored. 2.. " * " are 25MHz harmonics and from extender card which is provided by Applicant, declared to ignore those signal due to not from WiFi module. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	35.26	-4.74	40	48.41	17.76	0.72	31.63	110	189	Peak
74.82	35.02	*	40	58.76	6.7	0.96	31.4	-	-	Peak
99.93	36.06	*	43.5	56.51	9.9	1.09	31.44	-	-	Peak
124.77	54.88	*	43.5	73.2	11.8	1.22	31.34	-	-	Peak
145.29	33.84	-9.66	43.5	52.73	11.1	1.27	31.26	-	-	Peak
149.88	59.48	*	43.5	78.26	11.2	1.27	31.25	-	-	Peak
162.3	34.27	-9.23	43.5	53.77	10.34	1.35	31.19	-	-	Peak
174.99	62.52	*	43.5	83.07	9.1	1.38	31.03	-	-	Peak
199.29	51.69	*	43.5	72.25	9.1	1.46	31.12	-	-	Peak
224.94	50.44	*	46	70.07	9.75	1.56	30.94	-	-	Peak
249.78	45.21	*	46	61.85	12.6	1.66	30.9	-	-	Peak
274.08	50.42	*	46	66.87	12.95	1.72	31.12	-	-	Peak
298.92	51.18	*	46	66.97	13.39	1.78	30.96	-	-	Peak
323.1	47.09	*	46	62.6	13.59	1.84	30.94	-	-	Peak
349.7	41.98	*	46	56.68	14.5	1.9	31.1	-	-	Peak
374.9	45.1	*	46	59.1	15.05	1.96	31.01	-	-	Peak
399.4	51.65	*	46	64.84	16	2.01	31.2	-	-	Peak
424.6	58.19	*	46	70.5	16.65	2.08	31.04	-	-	Peak
435.8	34.94	-11.06	46	47.02	16.81	2.1	30.99	-	-	Peak
449.8	58.64	*	46	70.29	17.2	2.14	30.99	-	-	Peak
460.3	37.68	-8.32	46	49.1	17.42	2.16	31	-	-	Peak
474.3	62.13	*	46	73.1	17.64	2.18	30.79	-	-	Peak
485.5	34.74	-11.26	46	45.39	17.82	2.2	30.67	-	-	Peak

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
498.1	51.46	*	46	61.76	18.06	2.23	30.59	-	-	Peak
522.6	51.03	*	46	61.22	18.33	2.28	30.8	-	-	Peak
547.8	40.14	*	46	49.27	19.58	2.33	31.04	-	-	Peak
574.4	44.51	*	46	53.02	19.86	2.37	30.74	-	-	Peak
599.6	37.29	*	46	45.39	19.89	2.42	30.41	-	-	Peak
624.8	53.52	*	46	60.73	20.55	2.5	30.26	-	-	Peak
647.2	31.61	*	46	38.77	20.39	2.58	30.13	-	-	Peak
674.5	52.67	*	46	59.87	20.34	2.62	30.16	-	-	Peak
696.9	32.38	*	46	39.26	20.67	2.65	30.2	-	-	Peak
722.1	44.18	*	46	49.97	21.71	2.7	30.2	-	-	Peak
750.1	39.81	*	46	44.85	22.4	2.75	30.19	-	-	Peak
774.6	30.45	*	46	35.51	22.15	2.79	30	-	-	Peak
799.8	41.74	*	46	46.62	22.1	2.83	29.81	-	-	Peak
825	43.99	*	46	47.99	22.87	2.88	29.75	-	-	Peak
846.7	41.54	*	46	44.96	23.37	2.91	29.7	-	-	Peak
874.7	42.57	*	46	46.34	23.1	2.97	29.84	-	-	Peak
899.9	33.75	*	46	37.44	23.3	3.01	30	-	-	Peak
921.6	42.08	*	46	45.17	23.93	3.03	30.05	-	-	Peak
971.3	39.35	*	54	41.11	25.08	3.14	29.98	-	-	Peak
5700	93.67	-	-	86.33	35.03	7.15	34.84	100	138	Average
5700	107.08	-	-	99.74	35.03	7.15	34.84	100	138	Peak
11403	50.29	-23.71	74	56.92	38.4	10.23	55.26	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	38	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1.5190 MHz is fundamental signal which can be ignored. 2.. " * " are 25MHz harmonics and from extender card which is provided by Applicant, declared to ignore those signal due to not from WiFi module. 3. All other emission found more than 20dB below limit line is not reported.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
74.82	43.55	*	40	67.29	6.7	0.96	31.4	-	-	Peak
99.93	43.03	*	43.5	63.48	9.9	1.09	31.44	-	-	Peak
124.77	60.89	*	43.5	79.21	11.8	1.22	31.34	-	-	Peak
143.94	39.53	-3.97	43.5	58.35	11.17	1.27	31.26	100	325	Peak
149.88	64.11	*	43.5	82.89	11.2	1.27	31.25	-	-	Peak
154.2	39.52	-3.98	43.5	58.5	10.96	1.3	31.24	-	-	Peak
162.3	38.98	-4.52	43.5	58.48	10.34	1.35	31.19	-	-	Peak
174.99	63.21	*	43.5	83.76	9.1	1.38	31.03	-	-	Peak
199.29	57.34	*	43.5	77.9	9.1	1.46	31.12	-	-	Peak
224.94	59.41	*	46	79.04	9.75	1.56	30.94	-	-	Peak
250.05	51.95	*	46	68.59	12.6	1.66	30.9	-	-	Peak
274.08	57.99	*	46	74.44	12.95	1.72	31.12	-	-	Peak
298.92	56.61	*	46	72.4	13.39	1.78	30.96	-	-	Peak
324.5	46.96	*	46	62.42	13.65	1.84	30.95	-	-	Peak
348.3	43.11	*	46	57.9	14.42	1.9	31.11	-	-	Peak
374.9	43.19	*	46	57.19	15.05	1.96	31.01	-	-	Peak
398	53.51	*	46	66.79	15.9	2.01	31.19	-	-	Peak
424.6	60.52	*	46	72.83	16.65	2.08	31.04	-	-	Peak
435.1	37.94	-8.06	46	50.02	16.81	2.1	30.99	-	-	Peak
449.8	61.26	*	46	72.91	17.2	2.14	30.99	-	-	Peak
460.3	39.93	-6.07	46	51.35	17.42	2.16	31	-	-	Peak
472.9	66.31	*	46	77.31	17.63	2.18	30.81	-	-	Peak
485.5	38.54	-7.46	46	49.19	17.82	2.2	30.67	-	-	Peak

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
498.1	52.1	*	46	62.4	18.06	2.23	30.59	-	-	Peak
522.6	50.12	*	46	60.31	18.33	2.28	30.8	-	-	Peak
549.9	39.56	*	46	48.49	19.8	2.33	31.06	-	-	Peak
574.4	39	*	46	47.51	19.86	2.37	30.74	-	-	Peak
599.6	36.11	*	46	44.21	19.89	2.42	30.41	-	-	Peak
624.8	54.07	*	46	61.28	20.55	2.5	30.26	-	-	Peak
650	32.12	*	46	39.34	20.3	2.59	30.11	-	-	Peak
674.5	54.89	*	46	62.09	20.34	2.62	30.16	-	-	Peak
696.9	37.88	*	46	44.76	20.67	2.65	30.2	-	-	Peak
722.1	48.76	*	46	54.55	21.71	2.7	30.2	-	-	Peak
749.4	45.99	*	46	51.03	22.4	2.75	30.19	-	-	Peak
771.8	35.2	*	46	40.26	22.18	2.79	30.03	-	-	Peak
799.8	46.76	*	46	51.64	22.1	2.83	29.81	-	-	Peak
821.5	48.22	*	46	52.42	22.69	2.87	29.76	-	-	Peak
846.7	44.01	*	46	47.43	23.37	2.91	29.7	-	-	Peak
871.2	47.09	*	46	50.85	23.1	2.96	29.82	-	-	Peak
899.9	37.76	*	46	41.45	23.3	3.01	30	-	-	Peak
921.6	44.06	*	46	47.15	23.93	3.03	30.05	-	-	Peak
949.6	30.25	*	46	32.5	24.8	3.06	30.11	-	-	Peak
971.3	40.58	*	54	42.34	25.08	3.14	29.98	-	-	Peak
5190	93.58	-	-	87.49	34.48	6.73	35.12	142	39	Average
5190	102.78	-	-	96.69	34.48	6.73	35.12	142	39	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	38	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	3.5190 MHz is fundamental signal which can be ignored. 2.10386 MHz is not within a restricted band 3.. " * " are 25MHz harmonics and from extender card which is provided by Applicant, declared to ignore those signal due to not from WiFi module.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
33.24	35.01	-4.99	40	48.16	17.76	0.72	31.63	112	321	Peak
74.82	37.22	*	40	60.96	6.7	0.96	31.4	-	-	Peak
99.93	37.93	*	43.5	58.38	9.9	1.09	31.44	-	-	Peak
124.77	54.75	*	43.5	73.07	11.8	1.22	31.34	-	-	Peak
143.94	33.6	-9.9	43.5	52.42	11.17	1.27	31.26	-	-	Peak
149.88	59.19	*	43.5	77.97	11.2	1.27	31.25	-	-	Peak
161.76	33.55	-9.95	43.5	53.06	10.34	1.35	31.2	-	-	Peak
174.99	62.22	*	43.5	82.77	9.1	1.38	31.03	-	-	Peak
199.29	51.37	*	43.5	71.93	9.1	1.46	31.12	-	-	Peak
224.94	50.62	*	46	70.25	9.75	1.56	30.94	-	-	Peak
250.05	45.54	*	46	62.18	12.6	1.66	30.9	-	-	Peak
274.08	50.33	*	46	66.78	12.95	1.72	31.12	-	-	Peak
300	51.18	*	46	66.94	13.4	1.78	30.94	-	-	Peak
324.5	46.84	*	46	62.3	13.65	1.84	30.95	-	-	Peak
349.7	42.01	*	46	56.71	14.5	1.9	31.1	-	-	Peak
374.2	44.84	*	46	58.89	15.02	1.95	31.02	-	-	Peak
399.4	51	*	46	64.19	16	2.01	31.2	-	-	Peak
424.6	58.69	*	46	71	16.65	2.08	31.04	-	-	Peak
437.2	35.06	-10.94	46	47.08	16.85	2.11	30.98	-	-	Peak
449.8	59.41	*	46	71.06	17.2	2.14	30.99	-	-	Peak
460.3	36.81	-9.19	46	48.23	17.42	2.16	31	-	-	Peak
472.9	61.99	*	46	72.99	17.63	2.18	30.81	-	-	Peak
485.5	35.35	-10.65	46	46	17.82	2.2	30.67	-	-	Peak



Frequency (MHz)	Level (dB μ V/m)	Over Limit (dB)	Limit Line (dB μ V/m)	Read Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
498.1	51.07	*	46	61.37	18.06	2.23	30.59	-	-	Peak
522.6	51.05	*	46	61.24	18.33	2.28	30.8	-	-	Peak
549.9	39.78	*	46	48.71	19.8	2.33	31.06	-	-	Peak
574.4	45.08	*	46	53.59	19.86	2.37	30.74	-	-	Peak
599.6	37.5	*	46	45.6	19.89	2.42	30.41	-	-	Peak
624.8	53.62	*	46	60.83	20.55	2.5	30.26	-	-	Peak
647.2	31.01	*	46	38.17	20.39	2.58	30.13	-	-	Peak
674.5	52.42	*	46	59.62	20.34	2.62	30.16	-	-	Peak
699.7	32.21	*	46	39.08	20.69	2.65	30.21	-	-	Peak
722.1	44.72	*	46	50.51	21.71	2.7	30.2	-	-	Peak
749.4	39.03	*	46	44.07	22.4	2.75	30.19	-	-	Peak
774.6	30.33	*	46	35.39	22.15	2.79	30	-	-	Peak
799.8	40.46	*	46	45.34	22.1	2.83	29.81	-	-	Peak
825	43.22	*	46	47.22	22.87	2.88	29.75	-	-	Peak
846.7	41.01	*	46	44.43	23.37	2.91	29.7	-	-	Peak
874.7	41.41	*	46	45.18	23.1	2.97	29.84	-	-	Peak
899.9	33.34	*	46	37.03	23.3	3.01	30	-	-	Peak
925.1	42.57	*	46	45.54	24.05	3.04	30.06	-	-	Peak
946.1	29.65	*	46	31.97	24.72	3.06	30.1	-	-	Peak
971.3	40.2	*	54	41.96	25.08	3.14	29.98	-	-	Peak
5190	87.75	-	-	81.66	34.48	6.73	35.12	100	212	Average
5190	97.24	-	-	91.15	34.48	6.73	35.12	100	212	Peak
10386	46.12	-22.18	68.3	54.32	37.73	9.73	55.66	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	46	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5230 MHz is fundamental signal which can be ignored. 2. 10464 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5230	95.58	-	-	89.37	34.53	6.74	35.06	155	42	Average
5230	104.79	-	-	98.58	34.53	6.74	35.06	155	42	Peak
10464	51.08	-17.22	68.3	59.18	37.78	9.76	55.64	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	46	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5230 MHz is fundamental signal which can be ignored. 2. 10461 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5230	88.45	-	-	82.24	34.53	6.74	35.06	100	190	Average
5230	98.1	-	-	91.89	34.53	6.74	35.06	100	190	Peak
10461	52.23	-16.07	68.3	60.33	37.78	9.76	55.64	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	54	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5270 MHz is fundamental signal which can be ignored. 2. 10542 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5270	95.94	-	-	89.63	34.57	6.78	35.04	127	42	Average
5270	105.31	-	-	99	34.57	6.78	35.04	127	42	Peak
10542	50.51	-17.79	68.3	58.5	37.81	9.82	55.62	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	54	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5270 MHz is fundamental signal which can be ignored. 2. 10545 MHz is not within a restricted band.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5270	90.16	-	-	83.85	34.57	6.78	35.04	107	191	Average
5270	99.62	-	-	93.31	34.57	6.78	35.04	107	191	Peak
10545	51.6	-16.7	68.3	59.59	37.81	9.82	55.62	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	62	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5310 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5310	92.83	-	-	86.38	34.62	6.81	34.98	164	41	Average
5310	102.19	-	-	95.74	34.62	6.81	34.98	164	41	Peak
10623	47.41	-26.59	74	55.29	37.85	9.87	55.6	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	62	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5310 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5310	86.74	-	-	80.29	34.62	6.81	34.98	106	192	Average
5310	96.35	-	-	89.9	34.62	6.81	34.98	106	192	Peak
10635	47.49	-26.51	74	55.35	37.86	9.87	55.59	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	102	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5510 MHz is fundamental signal which can be ignored. 2. All other emission found more than 20dB below limit line is not reported.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5510	88.89	-	-	81.95	34.8	6.95	34.81	110	131	Average
5510	97.83	-	-	90.89	34.8	6.95	34.81	110	131	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	102	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1. 5510 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5510	89.49	-	-	82.55	34.8	6.95	34.81	106	81	Average
5510	98.99	-	-	92.05	34.8	6.95	34.81	106	81	Peak
11025	48.74	-25.26	74	56.06	38.03	10.12	55.47	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	110	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5510 MHz is fundamental signal which can be ignored. 2. All other emission found more than 20dB below limit line is not reported.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5550	92.78	-	-	85.73	34.86	7	34.81	100	131	Average
5550	102.44	-	-	95.39	34.86	7	34.81	100	131	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	110	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	5550 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5550	93.41	-	-	86.36	34.86	7	34.81	105	53	Average
5550	103.72	-	-	96.67	34.86	7	34.81	105	53	Peak
11100	45.61	-8.39	54	52.8	38.1	10.14	55.43	100	171	Average
11100	55.43	-18.57	74	62.62	38.1	10.14	55.43	100	171	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	134	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1. 5670 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5670	96.92	-	-	89.62	35.01	7.12	34.83	107	133	Average
5670	106.13	-	-	98.83	35.01	7.12	34.83	107	133	Peak
11343	50.47	-23.53	74	57.22	38.33	10.22	55.3	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	134	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	5670 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5670	97.77	-	-	90.47	35.01	7.12	34.83	102	100	Average
5670	107.63	-	-	100.33	35.01	7.12	34.83	102	100	Peak
11343	44.68	-9.32	54	51.43	38.33	10.22	55.3	158	162	Average
11343	53.97	-20.03	74	60.72	38.33	10.22	55.3	158	162	Peak

Test Mode :	802.11n HT40 + Bluetooth2.1	Temperature :	23~25°C
Test Channel :	38 + 78	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Horizontal
Remark :	1.2480MHz & 5190 MHz are fundamental signals which can be ignored. 2..“ * ” are 25MHz harmonics and from extender card which is provided by Applicant, declared to ignore those signal due to not from WiFi module. 3.All other emission found more than 20dB below limit line is not reported.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
74.82	43.71	*	40	67.45	6.7	0.96	31.4			Peak
99.93	42.84	*	43.5	63.29	9.9	1.09	31.44			Peak
124.77	60.95	*	43.5	79.27	11.8	1.22	31.34			Peak
146.1	39.51	-3.99	43.5	58.38	11.12	1.27	31.26			Peak
149.88	63.9	*	43.5	82.68	11.2	1.27	31.25			Peak
153.66	39.84	-3.66	43.5	58.77	11.02	1.29	31.24	100	305	Peak
169.05	39.3	-4.2	43.5	59.43	9.62	1.36	31.11			Peak
174.99	63.09	19.59	43.5	83.64	9.1	1.38	31.03			Peak
199.29	57.19	*	43.5	77.75	9.1	1.46	31.12			Peak
224.94	58.9	*	46	78.53	9.75	1.56	30.94			Peak
249.78	51.75	*	46	68.39	12.6	1.66	30.9			Peak
274.08	57.68	*	46	74.13	12.95	1.72	31.12			Peak
298.92	55.58	*	46	71.37	13.39	1.78	30.96			Peak
323.1	47.06	*	46	62.57	13.59	1.84	30.94			Peak
349.7	43.33	*	46	58.03	14.5	1.9	31.1			Peak
374.9	43.57	*	46	57.57	15.05	1.96	31.01			Peak
399.4	52.83	*	46	66.02	16	2.01	31.2			Peak
424.6	61.18	*	46	73.49	16.65	2.08	31.04			Peak
435.8	39.23	-6.77	46	51.31	16.81	2.1	30.99			Peak
449.8	62.65	*	46	74.3	17.2	2.14	30.99			Peak
460.3	40.74	-5.26	46	52.16	17.42	2.16	31			Peak
475	66.25	*	46	77.19	17.65	2.18	30.77			Peak
485.5	38.75	-7.25	46	49.4	17.82	2.2	30.67			Peak

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
498.1	50.88	*	46	61.18	18.06	2.23	30.59			Peak
522.6	49.26	*	46	59.45	18.33	2.28	30.8			Peak
549.9	38.84	*	46	47.77	19.8	2.33	31.06			Peak
574.4	39.41	*	46	47.92	19.86	2.37	30.74			Peak
599.6	36.07	*	46	44.17	19.89	2.42	30.41			Peak
624.8	54.51	*	46	61.72	20.55	2.5	30.26			Peak
650	32.41	*	46	39.63	20.3	2.59	30.11			Peak
674.5	54.89	*	46	62.09	20.34	2.62	30.16			Peak
696.9	38	*	46	44.88	20.67	2.65	30.2			Peak
722.1	48.22	*	46	54.01	21.71	2.7	30.2			Peak
749.4	45.93	*	46	50.97	22.4	2.75	30.19			Peak
774.6	37.82	*	46	42.88	22.15	2.79	30			Peak
799.8	47.97	*	46	52.85	22.1	2.83	29.81			Peak
825	48.74	*	46	52.74	22.87	2.88	29.75			Peak
846.7	43.95	*	46	47.37	23.37	2.91	29.7			Peak
874.7	48.61	*	46	52.38	23.1	2.97	29.84			Peak
899.9	38.34	*	46	42.03	23.3	3.01	30			Peak
921.6	46.43	*	46	49.52	23.93	3.03	30.05			Peak
946.1	30.82	*	46	33.14	24.72	3.06	30.1			Peak
971.3	41.51	*	54	43.27	25.08	3.14	29.98			Peak
2480	107.4			106.29	32.28	4.64	35.81	121	303	Peak
2480	71.91									Average
4962	46.5	-27.5	74	64.29	34.29	6.57	58.65	100	0	Peak
4962	11.01	-42.99	54							Average
5190	89.5			83.41	34.48	6.73	35.12	108	90	Average
5190	98.65			92.56	34.48	6.73	35.12	108	90	Peak

Test Mode :	802.11n HT40 + Bluetooth2.1	Temperature :	23~25°C
Test Channel :	38 + 78	Relative Humidity :	44~47%
Test Engineer :	David Yang	Polarization :	Vertical
Remark :	1.2480MHz & 5190MHz are fundamental signals which can be ignored. 2.“ * ” are 25MHz harmonics and from extender card which is provided by Applicant, declared to ignore those signal due to not from WiFi module. 3. All other emission found more than 20dB below limit line is not reported.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	35.11	-4.89	40	48.26	17.76	0.72	31.63	112	246	Peak
74.55	36.99	*	40	60.73	6.7	0.96	31.4			Peak
99.66	37.93	*	43.5	58.38	9.9	1.09	31.44			Peak
124.77	55.06	*	43.5	73.38	11.8	1.22	31.34			Peak
143.94	33.92	-9.58	43.5	52.74	11.17	1.27	31.26			Peak
149.88	59.18	*	43.5	77.96	11.2	1.27	31.25			Peak
162.03	34.99	-8.51	43.5	54.49	10.34	1.35	31.19			Peak
174.18	62.32	*	43.5	82.89	9.1	1.38	31.05			Peak
199.29	51.5	*	43.5	72.06	9.1	1.46	31.12			Peak
224.94	50.29	*	46	69.92	9.75	1.56	30.94			Peak
249.78	44.87	*	46	61.51	12.6	1.66	30.9			Peak
274.89	50.47	*	46	66.93	12.95	1.72	31.13			Peak
300	51.4	*	46	67.16	13.4	1.78	30.94			Peak
323.1	46.89	*	46	62.4	13.59	1.84	30.94			Peak
349.7	41.69	*	46	56.39	14.5	1.9	31.1			Peak
374.9	45.43	*	46	59.43	15.05	1.96	31.01			Peak
399.4	51.14	*	46	64.33	16	2.01	31.2			Peak
424.6	57.71	*	46	70.02	16.65	2.08	31.04			Peak
449.8	58.78	*	46	70.43	17.2	2.14	30.99			Peak
460.3	37.26	-8.74	46	48.68	17.42	2.16	31			Peak
472.9	62.23	*	46	73.23	17.63	2.18	30.81			Peak
485.5	36.03	-9.97	46	46.68	17.82	2.2	30.67			Peak
497.4	51.1	*	46	61.42	18.05	2.22	30.59			Peak



Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
510	31.11	-14.89	46	41.33	18.2	2.25	30.67			Peak
522.6	51.25	*	46	61.44	18.33	2.28	30.8			Peak
547.8	39.86	*	46	48.99	19.58	2.33	31.04			Peak
574.4	44.53	*	46	53.04	19.86	2.37	30.74			Peak
599.6	37.49	*	46	45.59	19.89	2.42	30.41			Peak
624.8	53.47	*	46	60.68	20.55	2.5	30.26			Peak
650	31.44	*	46	38.66	20.3	2.59	30.11			Peak
674.5	52.42	*	46	59.62	20.34	2.62	30.16			Peak
696.9	33.1	*	46	39.98	20.67	2.65	30.2			Peak
722.1	43.91	*	46	49.7	21.71	2.7	30.2			Peak
750.1	39.56	*	46	44.6	22.4	2.75	30.19			Peak
774.6	30	*	46	35.06	22.15	2.79	30			Peak
796.3	41.01	*	46	46.01	22.02	2.82	29.84			Peak
825	43.23	*	46	47.23	22.87	2.88	29.75			Peak
846.7	41.26	*	46	44.68	23.37	2.91	29.7			Peak
871.2	41.46	*	46	45.22	23.1	2.96	29.82			Peak
896.4	33.37	*	46	37.13	23.22	3	29.98			Peak
925.1	43.12	*	46	46.09	24.05	3.04	30.06			Peak
946.1	29.35	*	46	31.67	24.72	3.06	30.1			Peak
971.3	40.54	*	54	42.3	25.08	3.14	29.98			Peak
2480	100.42			99.31	32.28	4.64	35.81	102	30	Peak
2480	64.93									Average
4962	44.81	-29.19	74	62.6	34.29	6.57	58.65	100	0	Peak
4962	9.32	-44.68	54							Average
5190	93.4			87.31	34.48	6.73	35.12	101	86	Average
5190	102.3			96.21	34.48	6.73	35.12	101	86	Peak

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.

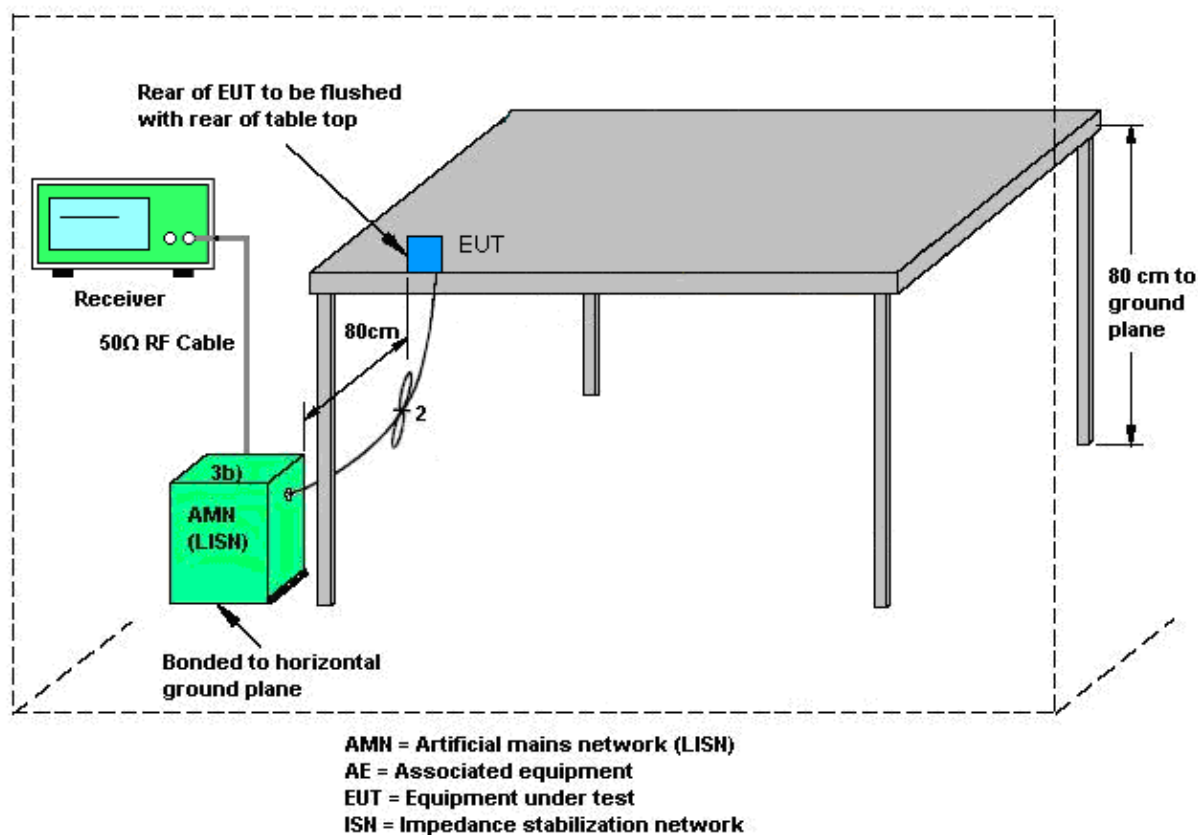
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

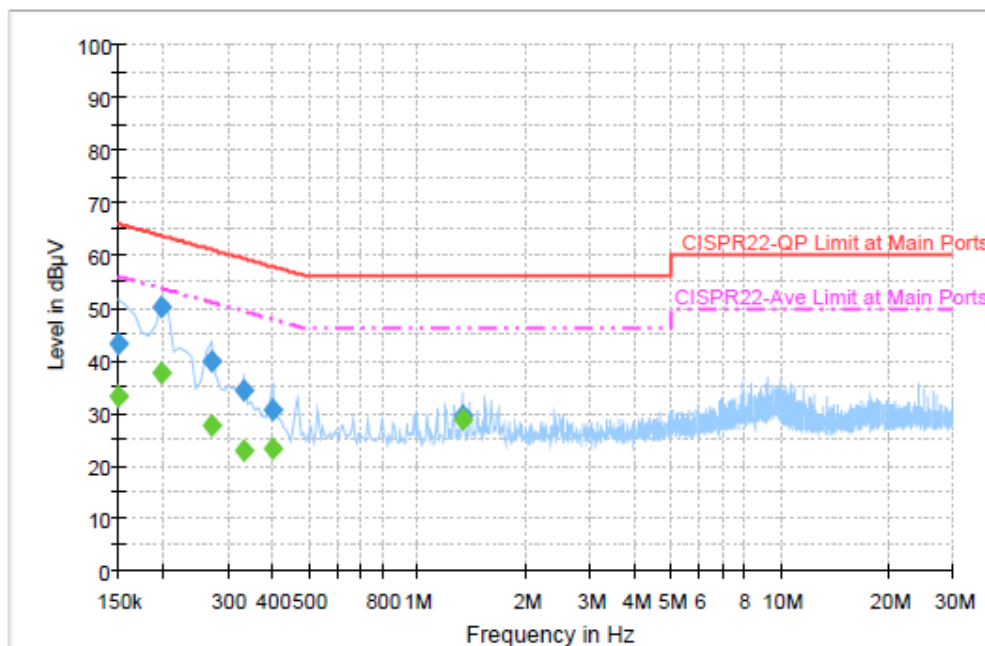
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 test site requirement.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a 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 1	Temperature :	20~22℃
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN(5G) Tx + EBJ Ant.		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



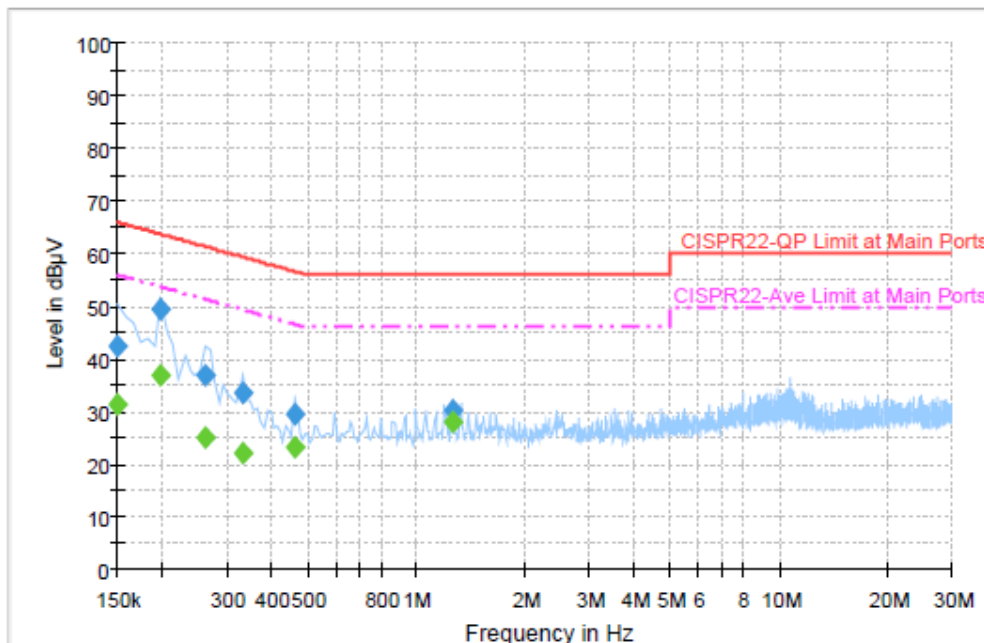
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	43.2	Off	L1	19.4	22.8	66.0
0.198000	50.0	Off	L1	19.3	13.7	63.7
0.270000	39.8	Off	L1	19.3	21.3	61.1
0.334000	34.4	Off	L1	19.4	25.0	59.4
0.398000	30.5	Off	L1	19.5	27.4	57.9
1.334000	29.5	Off	L1	19.4	26.5	56.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	33.3	Off	L1	19.4	22.7	56.0
0.198000	37.6	Off	L1	19.3	16.1	53.7
0.270000	27.8	Off	L1	19.3	23.3	51.1
0.334000	22.7	Off	L1	19.4	26.7	49.4
0.398000	23.1	Off	L1	19.5	24.8	47.9
1.334000	28.7	Off	L1	19.4	17.3	46.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN(5G) Tx + EBJ Ant.		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	42.4	Off	N	19.4	23.6	66.0
0.198000	49.6	Off	N	19.3	14.1	63.7
0.262000	37.0	Off	N	19.4	24.4	61.4
0.334000	33.5	Off	N	19.4	25.9	59.4
0.462000	29.6	Off	N	19.3	27.1	56.7
1.262000	30.1	Off	N	19.5	25.9	56.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	31.3	Off	N	19.4	24.7	56.0
0.198000	37.0	Off	N	19.3	16.7	53.7
0.262000	25.1	Off	N	19.4	26.3	51.4
0.334000	22.0	Off	N	19.4	27.4	49.4
0.462000	23.4	Off	N	19.3	23.3	46.7
1.262000	28.1	Off	N	19.5	17.9	46.0

3.7 Automatically Discontinue Transmission

3.7.1 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.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 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.

3.8 Antenna Requirements

3.8.1 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.

3.8.2 Antenna Connected Construction

Non-standard connector used.

3.8.3 Antenna Gain

The EUT supports correlated MIMO mode as following table. The composite antenna gain for Band I and Band II are 6.09 dBi, and antenna gain for Band III is 7.77 dBi which are over 6dBi. Therefore, it is necessary to reduce maximum peak output power and power density limit by 0.09dB and 1.77dB respectively.

	Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5725 MHz
ANT 0 GAIN (dBi)	3.08	3.08	4.76
ANT 1 GAIN (dBi)	3.08	3.08	4.76
COMPOSITE GAIN (dBi)	6.09	6.09	7.77

FCC KDB 662911 D01 Multiple Transmitter Output v01r01

Unequal antenna gains, with equal transmit powers.

For antenna gains given by $G_1, G_2, \dots, G_N$ dBi.

If transmit signals are *correlated*, then

Directional gain = $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})/N]$ dBi

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Aug. 29, 2012 ~ Sep. 06, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 18, 2011	Aug. 29, 2012 ~ Sep. 06, 2012	Sep. 17, 2012	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 18, 2011	Aug. 29, 2012 ~ Sep. 06, 2012	Sep. 17, 2012	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Sep. 07, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Sep. 07, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Sep. 07, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Sep. 07, 2012	N/A	Conduction (CO05-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Aug. 31, 2012 ~ Sep. 07, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 2GHz	Oct. 22, 2011	Aug. 31, 2012 ~ Sep. 07, 2012	Oct. 21, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Aug. 31, 2012 ~ Sep. 07, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Aug. 31, 2012 ~ Sep. 07, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Aug. 31, 2012 ~ Sep. 07, 2012	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103A	161075	10Hz ~ 1000MHz Gain:32dB	Feb. 27, 2012	Aug. 31, 2012 ~ Sep. 07, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	159087	1GHz~18GHz	Feb. 27, 2012	Aug. 31, 2012 ~ Sep. 07, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Aug. 28, 2012	Aug. 31, 2012 ~ Sep. 07, 2012	Aug. 27, 2013	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	15GHz ~ 40GHz	Oct. 21, 2011	Aug. 31, 2012 ~ Sep. 07, 2012	Oct. 20, 2012	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Aug. 31, 2012 ~ Sep. 07, 2012	Jul. 02, 2014	Radiation (03CH05-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.26
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Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.54
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Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.72
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Appendix A. Photographs of EUT

Please refer to Sporton report number EP282317 as below.