

FCC RF Test Report

APPLICANT : Motorola Solutions, Inc.
EQUIPMENT : CONCIERGE HUB
BRAND NAME : Motorola
MODEL NAME : CCHUB1
FCC ID : UZ7CCHUB1
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Dec. 14, 2012 and completely tested on Dec. 22, 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
FR2D1407C	Rev. 01	Initial issue of report	Feb. 22, 2013



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	RSS-210 A9.2	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	RSS-210 A9.2	Maximum Conducted Output Power	≤ 17, 24, 30 dBm (depend on band)	Pass	-
3.3	15.407(a)	RSS-210 A9.2	Power Spectral Density	≤ 4, 11, 17 dBm (depend on band)	Pass	-
3.4	15.407(a)(6)	RSS-210 A9.3	Peak Excursion Ratio	≤ 13dB	Pass	-
3.5	15.407(b)	RSS-210 A9.3	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 6.84 dB at 30.270 MHz
3.6	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 17.89 dB at 0.169 MHz
3.7	15.407(g)	RSS-210 A9.5	Frequency Stability	Within Operation Band	Pass	-
3.8	15.407(c)	RSS-210 A9.5	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.9	15.203 & 15.407(a)	RSS-210 A9.2	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Motorola Solutions, Inc.

One Motorola Plaza, Holtsville, NY 11742-1300 USA

1.2 Manufacturer

Motorola Solutions, Inc.

One Motorola Plaza, Holtsville, NY 11742-1300 USA

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	CONCIERGE HUB
Brand Name	Motorola
Model Name	CCHUB1
FCC ID	UZ7CCHUB1
EUT supports Radios application	WLAN 11abgn / Bluetooth 2.1
HW Version	EV2 (Rev 3.0)
SW Version	90-4A117-DEV-0600-00-EV-112712
FW Version	3.0.31
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.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5580 MHz 5660 MHz ~ 5700 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> 802.11a : 12.20 dBm / 0.0166 W 802.11n HT20 : 12.13 dBm / 0.0163 W <5260 MHz ~ 5320 MHz> 802.11a : 12.23 dBm / 0.0167 W 802.11n HT20 : 12.12 dBm / 0.0163 W <5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz> 802.11a : 12.08 dBm / 0.0161 W 802.11n HT20 : 12.26 dBm / 0.0168 W
99% Occupied Bandwidth	<5180 MHz ~ 5240 MHz> 802.11a : 17.55 MHz 802.11n HT20 : 18.80 MHz <5260 MHz ~ 5320 MHz> 802.11a : 17.60 MHz 802.11n HT20 : 18.75 MHz <5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz> 802.11a : 17.70 MHz 802.11n HT20 : 18.80 MHz
Antenna Type	<5180 MHz ~ 5240 MHz> PCB Antenna with gain 4.90 dBi <5260 MHz ~ 5320 MHz> PCB Antenna with gain 4.90 dBi <5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz> PCB Antenna with gain 4.65 dBi
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 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



1.6 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 v01r02
- ♦ ANSI C63.4-2003 and ANSI C63.10-2009
- ♦ IC RSS-210 Issued 8
- ♦ IC RSS-Gen Issue 3
- ♦ NOTICE 2012-DRS0126

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.
3. Per the section 2.2.3 of Notice of 2012-DRS0126, " Receivers Excluded from Industry Canada Requirements", only radiocommunication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements.

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).

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.

2.1 Carrier Frequency 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)
5470-5600 MHz And 5650-5725 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		

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.

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 36	5180 MHz	12.14	12.08	12.03	11.96	11.80	11.72	11.65	11.62
CH 44	5220 MHz	11.97	11.45	11.37	11.23	11.16	11.08	11.05	10.97
CH 48	5240 MHz	12.01	11.40	11.27	11.24	11.14	11.09	11.02	11.01
CH 52	5260 MHz	12.17	12.12	12.07	11.94	11.82	11.77	11.56	11.59
CH 60	5300 MHz	11.95	11.32	11.32	11.25	11.14	11.01	11.00	10.91
CH 64	5320 MHz	11.96	11.43	11.34	11.28	11.20	11.11	11.02	11.01
CH 100	5500 MHz	11.82	11.28	11.37	11.21	11.13	11.02	10.95	10.93
CH 116	5580 MHz	12.02	11.94	11.88	11.78	11.63	11.62	11.48	11.40
CH 140	5700 MHz	11.92	11.36	11.35	11.29	11.16	11.06	10.60	10.58
Duty Cycle (%)		98.57	97.74	97.22	95.68	94.37	92.69	90.10	88.94
Duty Cycle Offset		0.06	0.10	0.12	0.19	0.25	0.33	0.45	0.51
CH 36	5180 MHz	12.20	12.18	12.15	12.15	12.05	12.05	12.10	12.13
CH 44	5220 MHz	12.03	11.55	11.49	11.42	11.41	11.41	11.50	11.48
CH 48	5240 MHz	12.07	11.50	11.39	11.43	11.39	11.42	11.47	11.52
CH 52	5260 MHz	12.23	12.22	12.19	12.13	12.07	12.10	12.01	12.10
CH 60	5300 MHz	12.01	11.42	11.44	11.44	11.39	11.34	11.45	11.42
CH 64	5320 MHz	12.02	11.53	11.46	11.47	11.45	11.44	11.47	11.52
CH 100	5500 MHz	11.88	11.38	11.49	11.40	11.38	11.35	11.40	11.44
CH 116	5580 MHz	12.08	12.04	12.00	11.97	11.88	11.95	11.93	11.91
CH 140	5700 MHz	11.98	11.46	11.47	11.48	11.41	11.39	11.05	11.09



Channel	Frequency	5GHz 802.11n HT20 mode							
		Data Rate							
		6.5 Mbps	13 Mbps	19.5 Mbps	26 Mbps	39 Mbps	52 Mbps	58.5 Mbps	65 Mbps
CH 36	5180 MHz	12.06	11.92	11.89	11.82	11.72	11.56	11.52	11.49
CH 44	5220 MHz	11.89	11.45	11.22	11.27	11.16	11.05	11.01	11.09
CH 48	5240 MHz	11.93	11.27	11.17	11.20	11.05	10.99	10.85	10.98
CH 52	5260 MHz	12.01	11.42	11.43	11.42	11.34	11.09	11.15	11.12
CH 60	5300 MHz	11.98	11.32	11.24	11.23	11.12	11.07	11.02	11.01
CH 64	5320 MHz	12.05	11.81	11.79	11.72	11.56	11.46	11.38	11.33
CH 100	5500 MHz	12.19	12.07	11.98	11.96	11.82	11.73	11.69	11.61
CH 116	5580 MHz	11.90	11.46	11.43	11.36	11.28	11.11	11.08	10.66
CH 140	5700 MHz	11.76	11.20	11.13	11.20	11.07	10.44	10.45	9.51
Duty Cycle (%)		98.31	96.54	94.97	94.31	91.36	89.00	87.96	87.06
Duty Cycle Offset		0.07	0.15	0.22	0.25	0.39	0.51	0.56	0.60
CH 36	5180 MHz	12.13	12.07	12.11	12.07	12.11	12.07	12.08	12.09
CH 44	5220 MHz	11.96	11.60	11.44	11.52	11.55	11.56	11.57	11.69
CH 48	5240 MHz	12.00	11.42	11.39	11.45	11.44	11.50	11.41	11.58
CH 52	5260 MHz	12.08	11.57	11.65	11.67	11.73	11.60	11.71	11.72
CH 60	5300 MHz	12.05	11.47	11.46	11.48	11.51	11.58	11.58	11.61
CH 64	5320 MHz	12.12	11.96	12.01	11.97	11.95	11.97	11.94	11.93
CH 100	5500 MHz	12.26	12.22	12.20	12.21	12.21	12.24	12.25	12.21
CH 116	5580 MHz	11.97	11.61	11.65	11.61	11.67	11.62	11.64	11.26
CH 140	5700 MHz	11.83	11.35	11.35	11.45	11.46	10.95	11.01	10.11



2.3 Test Mode

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

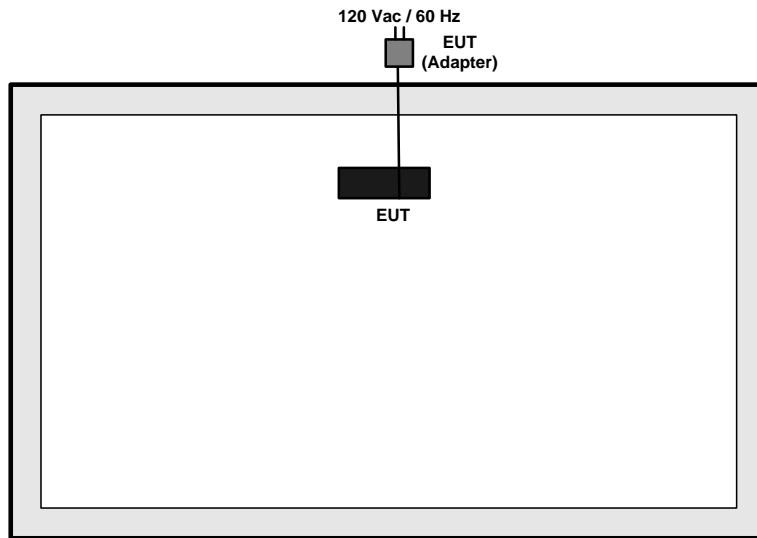
Test Cases				
	Test Items	Mode	Data rate	Test Channel
	Conducted TCs	26dB and 99% BW Power Spectral Density	802.11a	6 Mbps
802.11n HT20			6.5 Mbps	L/M/H
Output Power		802.11a	6 Mbps	L/M/H
		802.11n HT20	6.5 Mbps	L/M/H
Peak Excursion		802.11a	6 Mbps	L/M/H
		802.11n HT20	6.5 Mbps	L/M/H
Frequency Stability	802.11a	6 Mbps	L/M/H	
	802.11n HT20	6.5 Mbps	L/M/H	
Radiated TCs	Radiated Band Edge	802.11a	6 Mbps	L/H
		802.11n HT20	6.5 Mbps	L/H
	Radiated Spurious Emission	802.11a	6 Mbps	L/M/H
		802.11n HT20	6.5 Mbps	L/M/H
AC Conducted Emission	Mode 1 : WLAN Link + Bluetooth Link + MSR (Barcode Scanner) + Scanner (Touch Screen) + MPEG4 + Earphone (Audio In) + Camera (Video) + SD Card (Data Copy) + USB flash drive (Data Copy) + RJ45 Load			

Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5600 MHz and 5650-5725MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

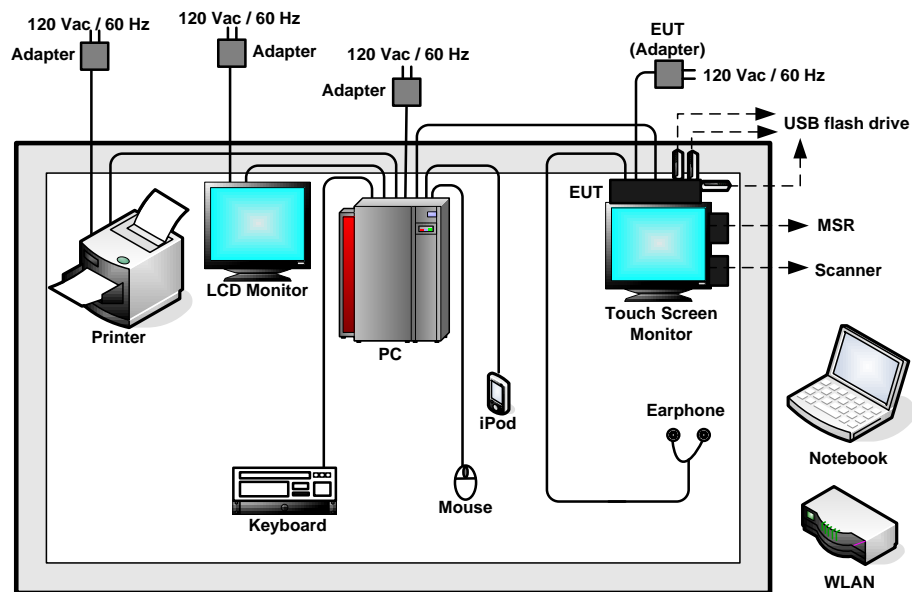
Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5600 MHz and 5650-5725MHz
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	AP	BUFFALO	WHR-HP-G54	FDI-09101577-0	N/A	N/A
2.	Bluetooth Earphone	NOKIA	BH-102	PYAHS-107W	N/A	N/A
3.	PC	DELL	DCTA	FCC DoC	N/A	Unshielded, 1.8 m
4.	PC	ASUS	AS-D795	FCC DoC	N/A	Unshielded, 1.8 m
5.	LCD Monitor	DELL	2410f	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
6.	Touch Screen Monitor	PLANAR	PX2230MW	FCC DoC	D-Shielded, 1.5m	Braid-Shielded, 0.3m
7.	CRT Monitor	SONY	GDM-17SE2T	AK8GDM17SE2T	D-Shielded, 1.15m	Unshielded, 1.8 m
8.	Printer	EPSON	C2642A	B94C2642X	Shielded, 1.8 m	Unshielded, 1.8 m
9.	(USB) Keyboard	DELL	SK-8175	FCC DoC	AL-F-Shielded, 1.8m	N/A
10.	(PS2) Keyboard	COMPAQ	6511-VA	FCC DoC	AL-F-Shielded, 1.6m	N/A
11.	USB Mouse	DELL	MOC5UO	FCC DoC	AL-F-Shielded, 1.85m	N/A
12.	Mouse	COMPAQ	M-S69	FCC DoC	AL-F-Shielded, 1.7m	N/A
13.	iPod	APPLE	A1137	FCC DoC	D-Shielded, 1.0m	N/A
14.	Earphone	Tsannkuen 3C	MIC03	N/A	Unshielded, 1.8 m	N/A
15.	USB Dongle	D-Link	DWL-G132	KA2DWLG132A1	N/A	N/A
16.	MSR	Motorola	IDRE-335133B	FCC DoC	D-Shielded, 1.9m	N/A
17.	Scanner	Motorola	CCSCN1	N/A	D-Shielded, 2m	N/A
18.	USB flash drive	Transcend	8G	N/A	N/A	N/A
19.	SD Card	SanDisk	32G	N/A	N/A	N/A
20.	IC Card	TAIWAN COOPERATIV E BANK	ATM Card	N/A	N/A	N/A



2.6 Description of RF Function Operation Test Setup

The programmed RF utility “AT Command” was installed in Notebook make the EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$



3 Test Result

3.1 26dB & 99% Bandwidth Measurement

3.1.1 Description of Bandwidth Measurement

There is no restriction limits for bandwidth. The maximum conducted output power can be limited by measured emission bandwidth (B). For the band 5150-5250 MHz, 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 bands 5250-5350 MHz and 5470-5600 MHz and 5650-5725MHz, the maximum conducted output power shall not exceed 250 mW (24dBm) or 11 + 10log B, dBm, whichever power is less.

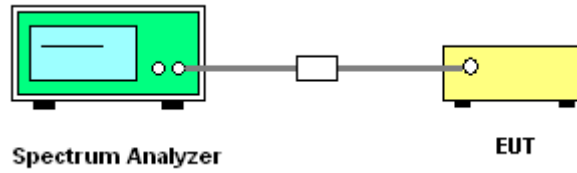
3.1.2 Measuring Instruments

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 v01r02.
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%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW) $\geq 3 * RBW$.
8. Measure and record the results in the test report.

3.1.4 Test Setup



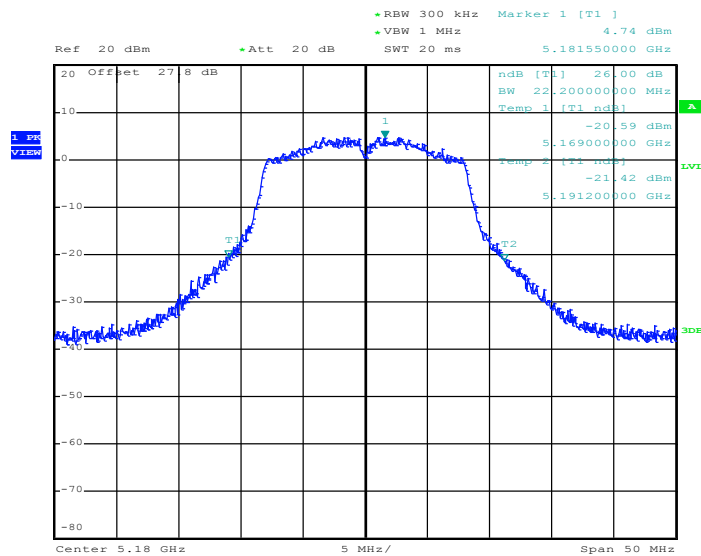


3.1.5 Test Result of 26dB Bandwidth Plots

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

Band	Channel	Frequency (MHz)	802.11a 26dB Bandwidth (MHz)	Pass/Fail
NII Band 1	36	5180	22.20	N/A
	44	5220	22.20	N/A
	48	5240	22.20	N/A
NII Band 2	52	5260	22.05	N/A
	60	5300	22.10	N/A
	64	5320	21.95	N/A
NII Band 3	100	5500	21.60	N/A
	116	5580	21.55	N/A
	140	5700	22.00	N/A

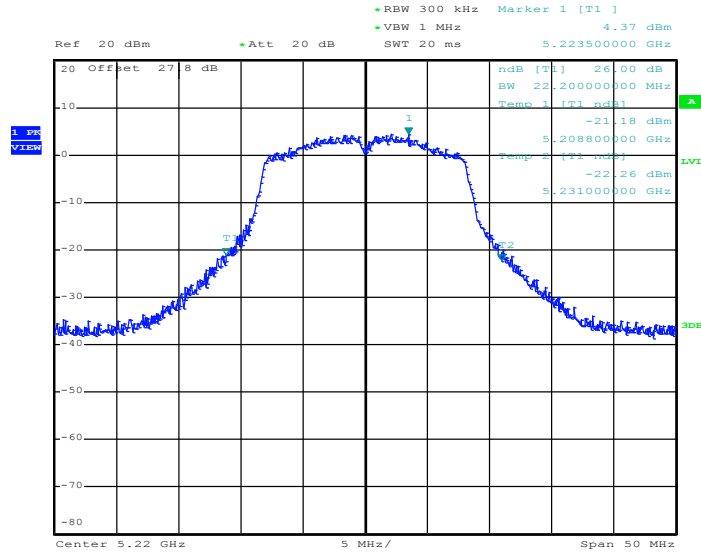
26 dB Bandwidth Plot on 802.11a Channel 36



Date: 20.DEC.2012 22:57:33

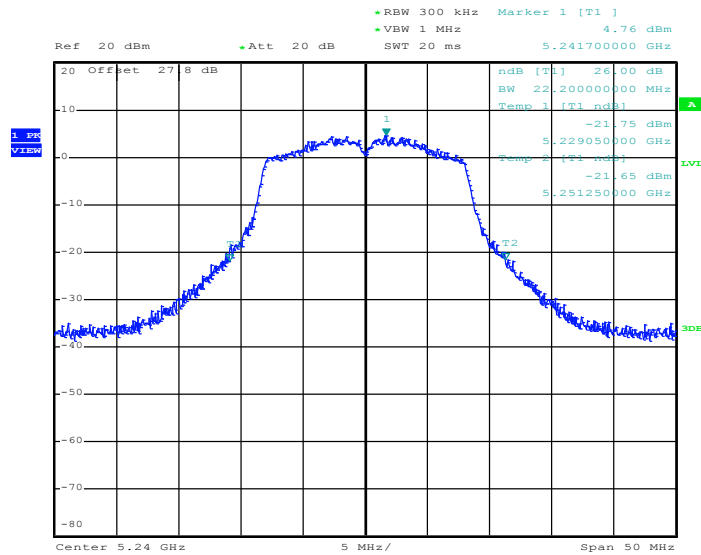


26 dB Bandwidth Plot on 802.11a Channel 44



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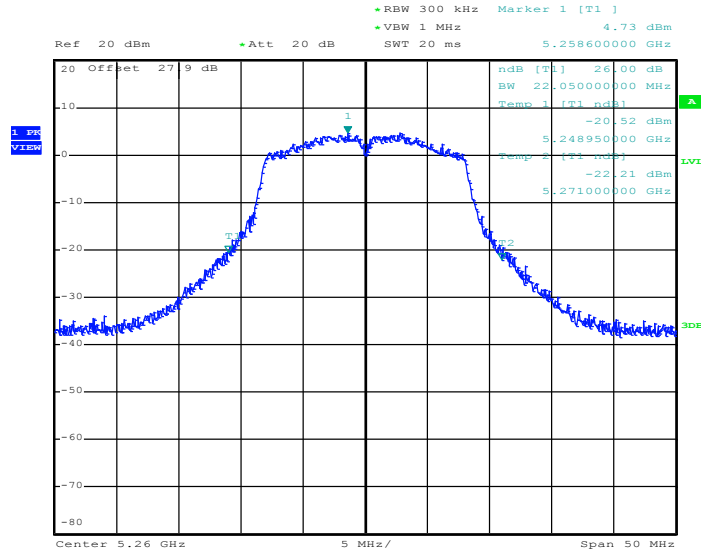
26 dB Bandwidth Plot on 802.11a Channel 48



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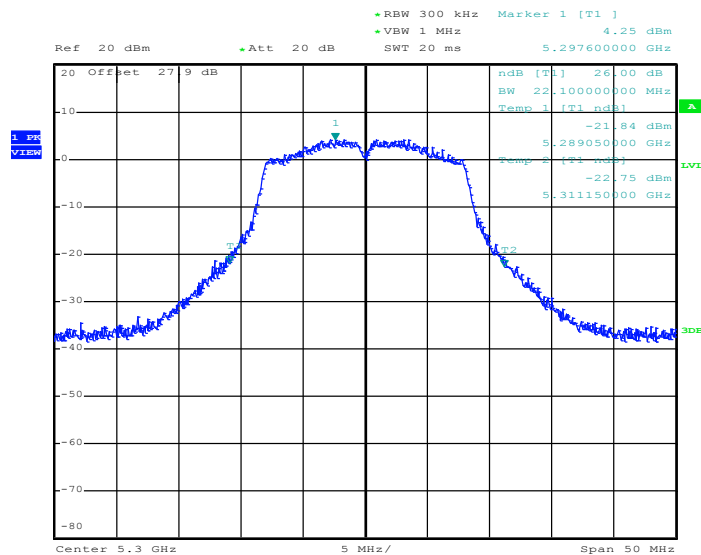


26 dB Bandwidth Plot on 802.11a Channel 52



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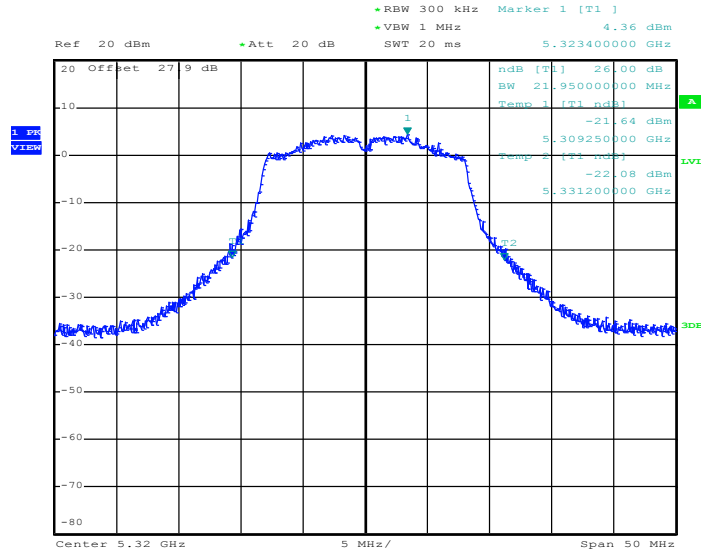
26 dB Bandwidth Plot on 802.11a Channel 60



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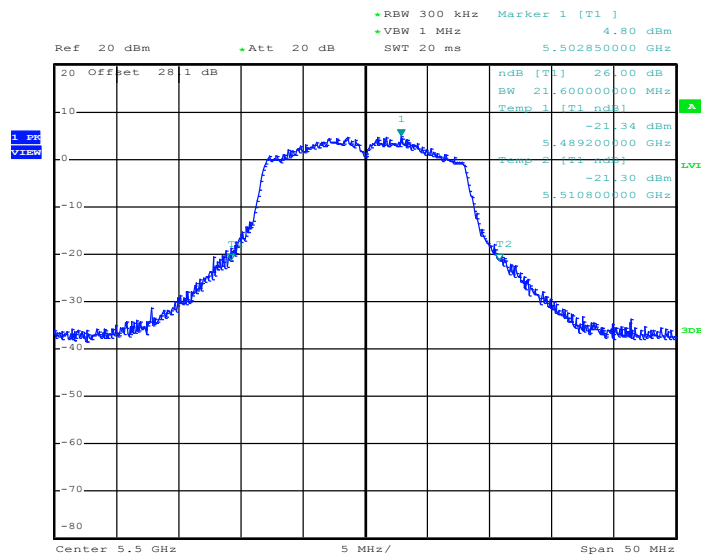


26 dB Bandwidth Plot on 802.11a Channel 64



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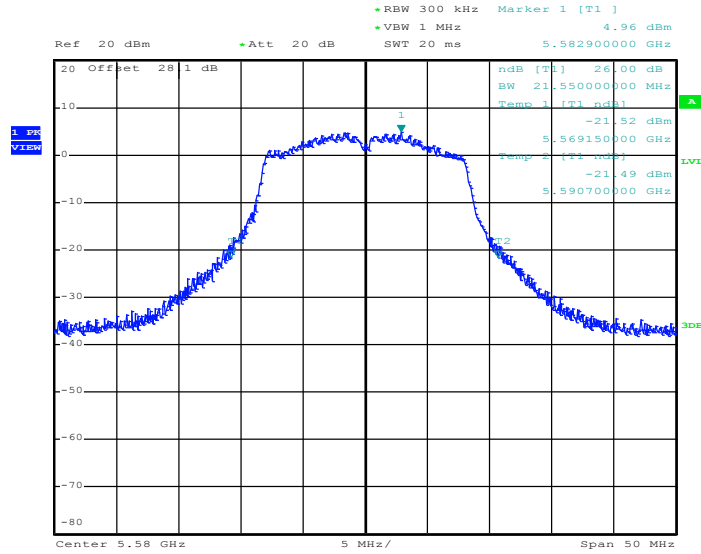
26 dB Bandwidth Plot on 802.11a Channel 100



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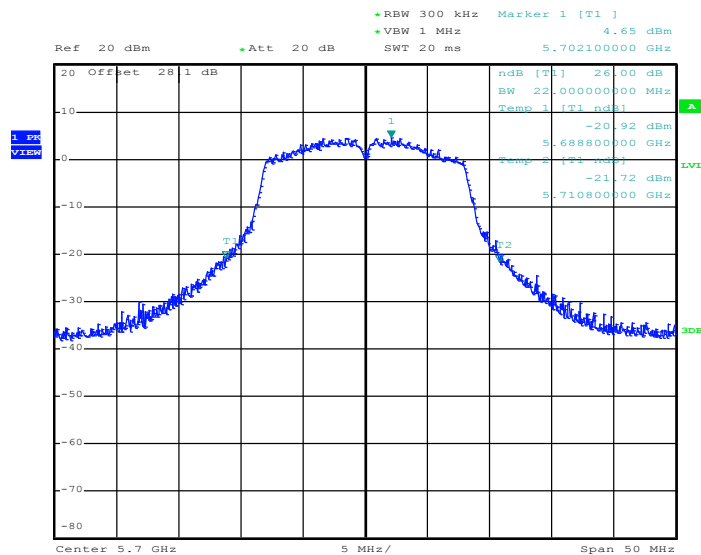


26 dB Bandwidth Plot on 802.11a Channel 116



Date: 20.DEC.2012 23:22:19

26 dB Bandwidth Plot on 802.11a Channel 140



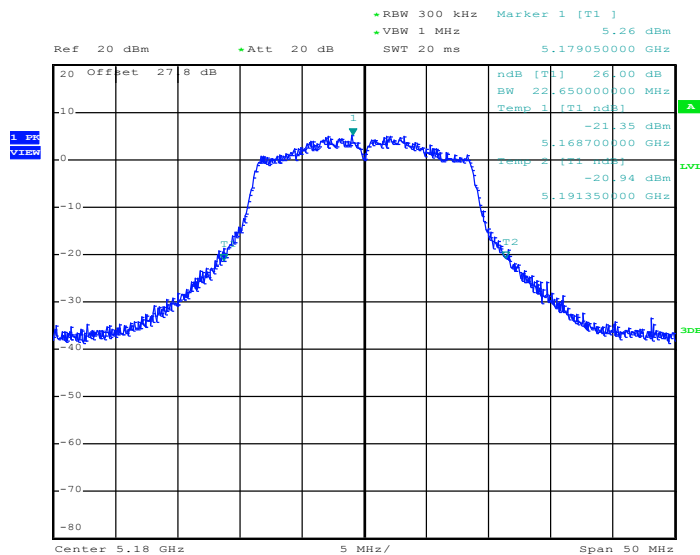
Date: 20.DEC.2012 23:25:15



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

Band	Channel	Frequency (MHz)	802.11n HT20 26dB Bandwidth (MHz)	Pass/Fail
NII Band 1	36	5180	22.65	N/A
	44	5220	22.70	N/A
	48	5240	22.85	N/A
NII Band 2	52	5260	22.40	N/A
	60	5300	21.95	N/A
	64	5320	22.45	N/A
NII Band 3	100	5500	21.95	N/A
	116	5580	22.95	N/A
	140	5700	22.80	N/A

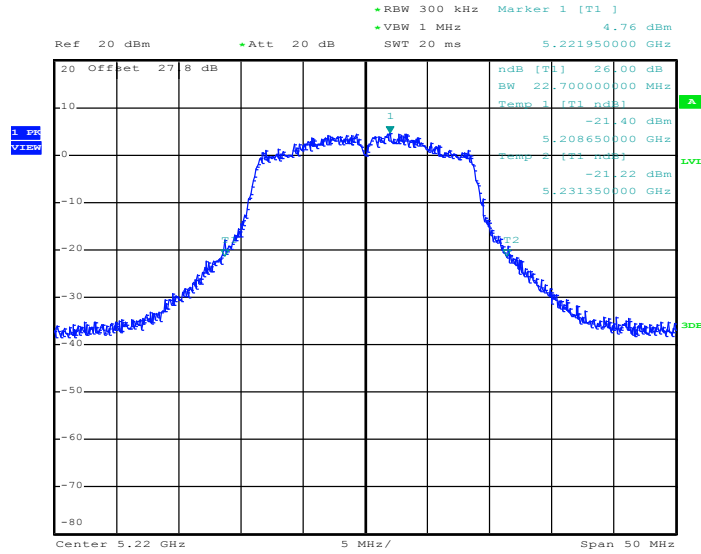
26 dB Bandwidth Plot on 802.11n HT20 Channel 36



Date: 20.DEC.2012 23:48:37

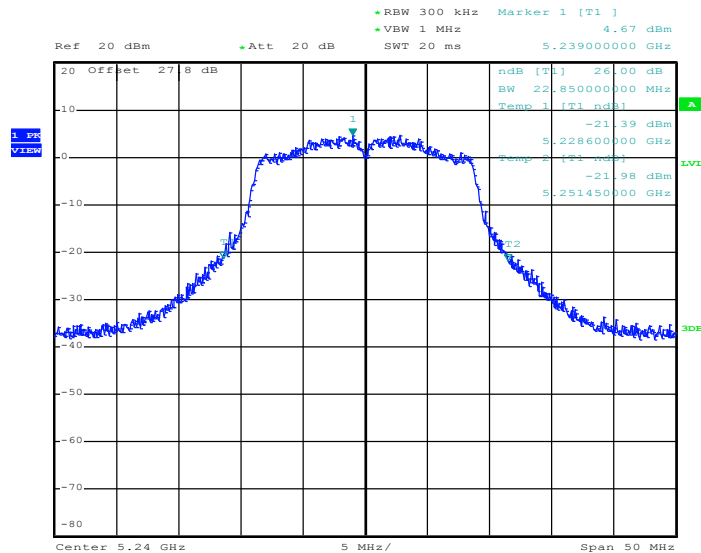


26 dB Bandwidth Plot on 802.11n HT20 Channel 44



Date: 20.DEC.2012 23:46:39

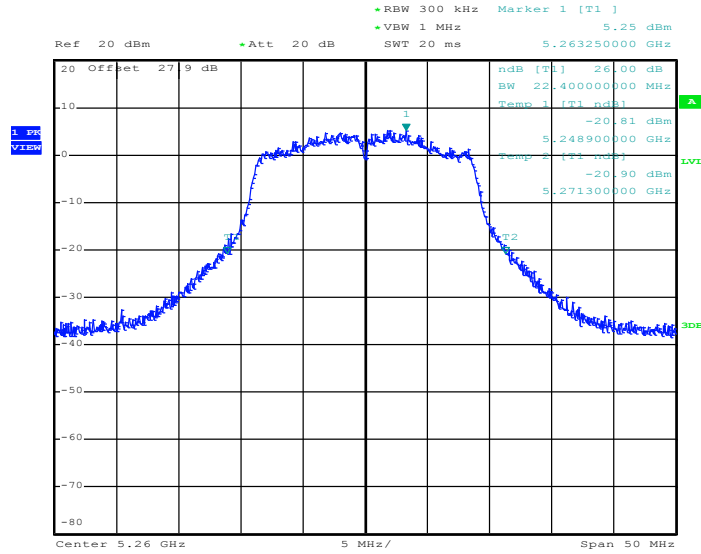
26 dB Bandwidth Plot on 802.11n HT20 Channel 48



Date: 20.DEC.2012 23:44:39

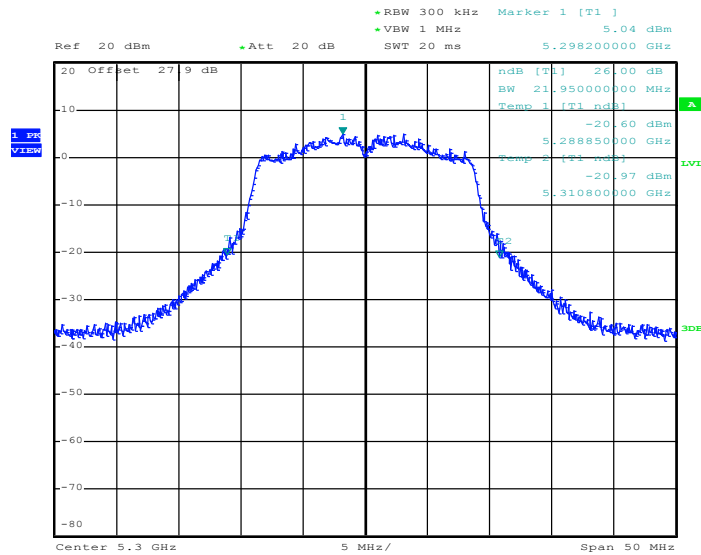


26 dB Bandwidth Plot on 802.11n HT20 Channel 52



Date: 20.DEC.2012 23:42:40

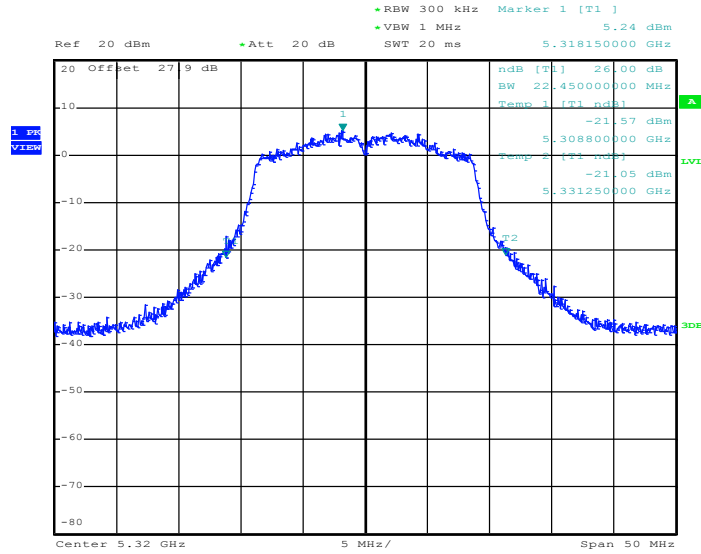
26 dB Bandwidth Plot on 802.11n HT20 Channel 60



Date: 20.DEC.2012 23:40:17

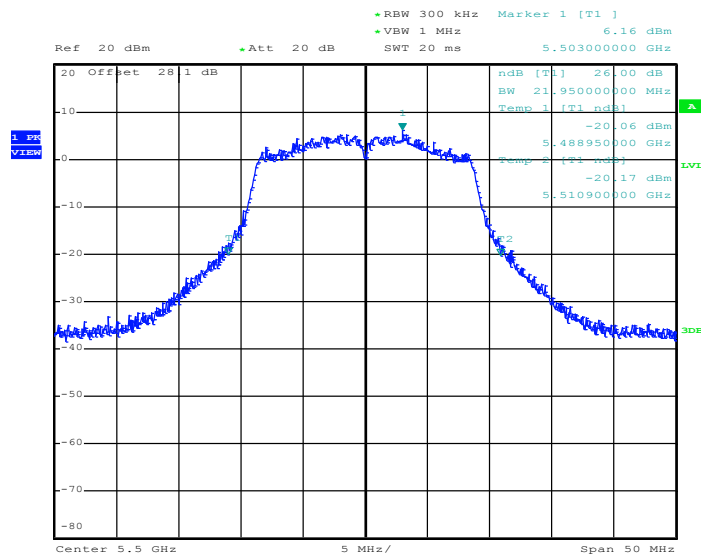


26 dB Bandwidth Plot on 802.11n HT20 Channel 64



Date: 20.DEC.2012 23:37:33

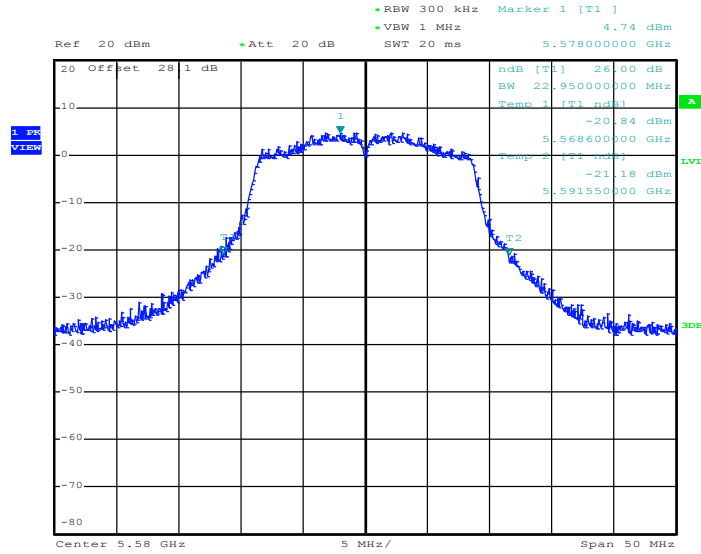
26 dB Bandwidth Plot on 802.11n HT20 Channel 100



Date: 20.DEC.2012 23:34:42

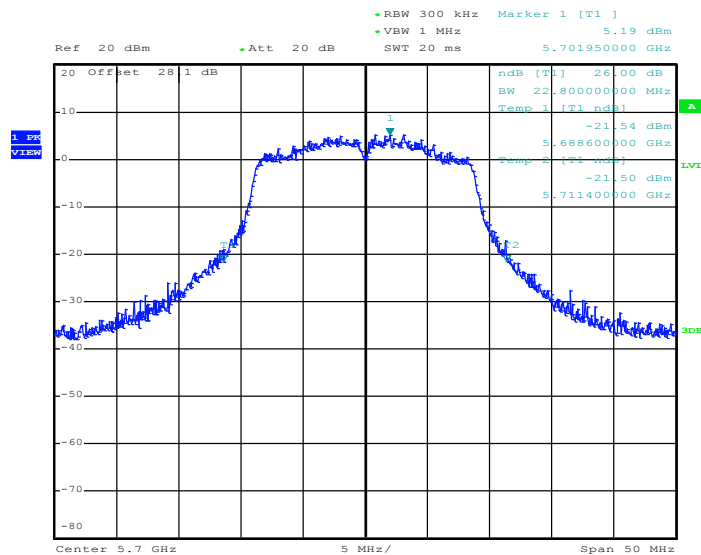


26 dB Bandwidth Plot on 802.11n HT20 Channel 116



Date: 20.DEC.2012 23:31:59

26 dB Bandwidth Plot on 802.11n HT20 Channel 140



Date: 20.DEC.2012 23:28:22

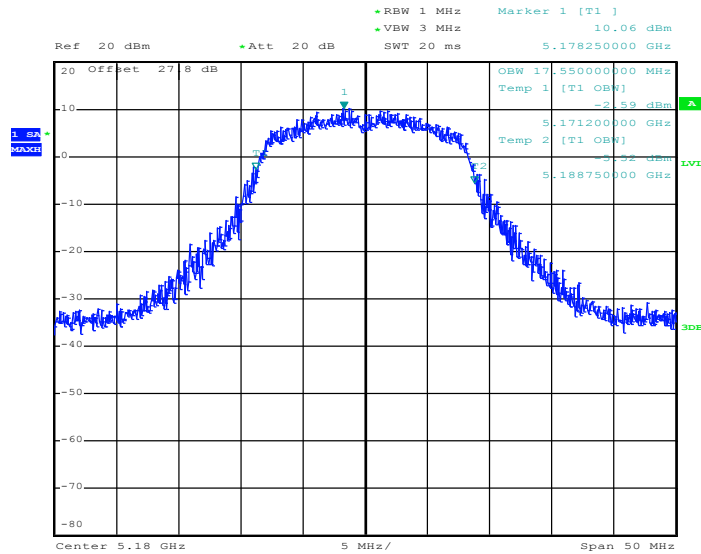


3.1.6 Test Result of 99% Occupied Bandwidth Plots

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

Band	Channel	Frequency (MHz)	802.11a 99% Occupied Bandwidth (MHz)	Pass/Fail
NII Band 1	36	5180	17.55	N/A
	44	5220	17.50	N/A
	48	5240	17.55	N/A
NII Band 2	52	5260	17.55	N/A
	60	5300	17.60	N/A
	64	5320	17.45	N/A
NII Band 3	100	5500	17.60	N/A
	116	5580	17.70	N/A
	140	5700	17.50	N/A

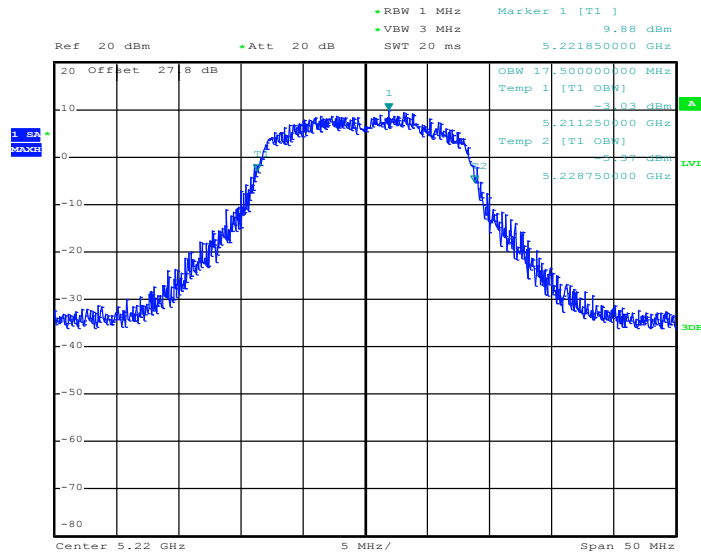
99% Occupied Bandwidth Plot on 802.11a Channel 36



Date: 20.DEC.2012 22:59:28

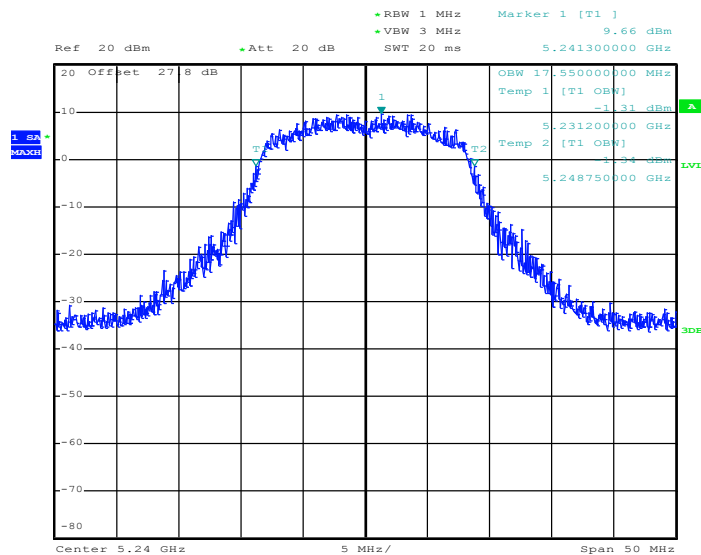


99% Occupied Bandwidth Plot on 802.11a Channel 44



Date: 20.DEC.2012 23:04:52

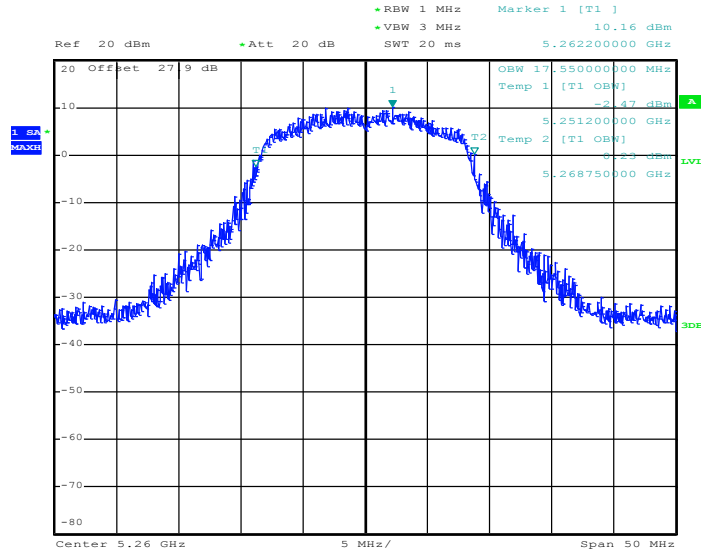
99% Occupied Bandwidth Plot on 802.11a Channel 48



Date: 20.DEC.2012 23:09:14

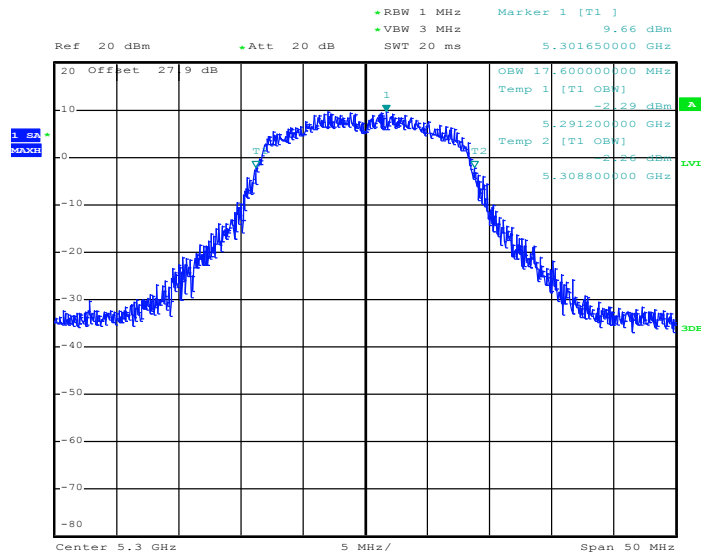


99% Occupied Bandwidth Plot on 802.11a Channel 52



Date: 20.DEC.2012 23:12:33

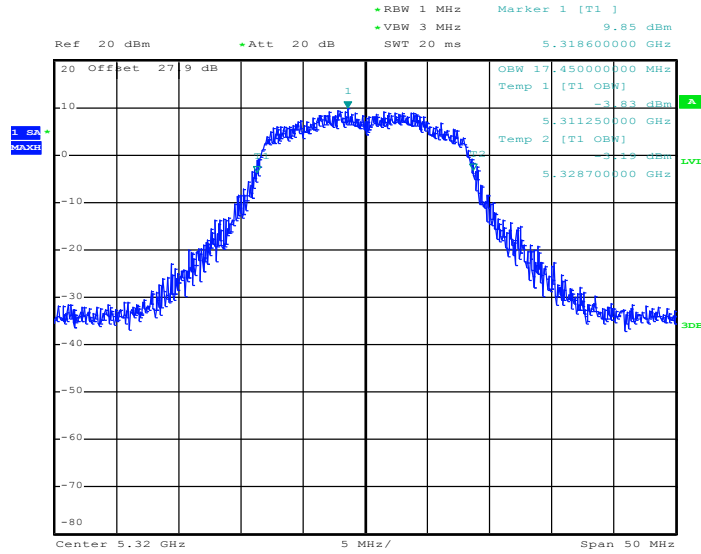
99% Occupied Bandwidth Plot on 802.11a Channel 60



Date: 20.DEC.2012 23:15:50

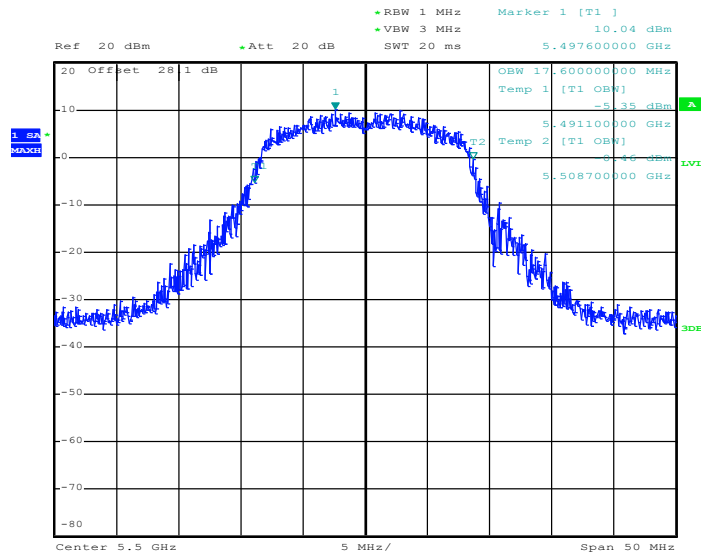


99% Occupied Bandwidth Plot on 802.11a Channel 64



Date: 20.DEC.2012 23:18:34

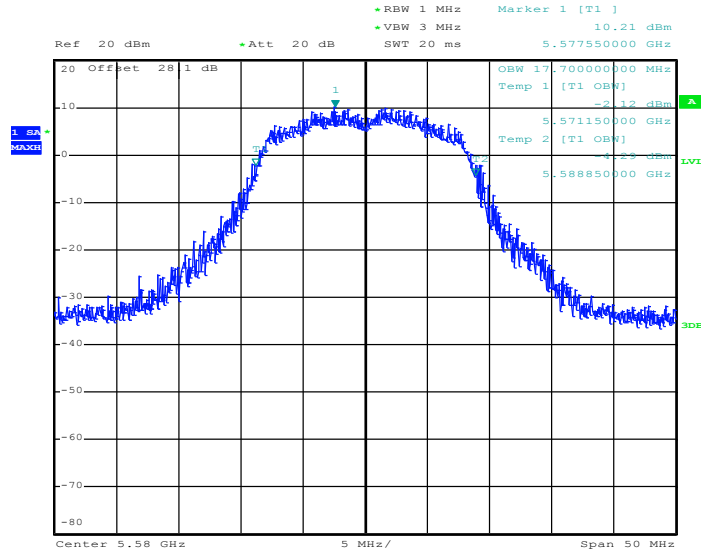
99% Occupied Bandwidth Plot on 802.11a Channel 100



Date: 20.DEC.2012 23:21:48

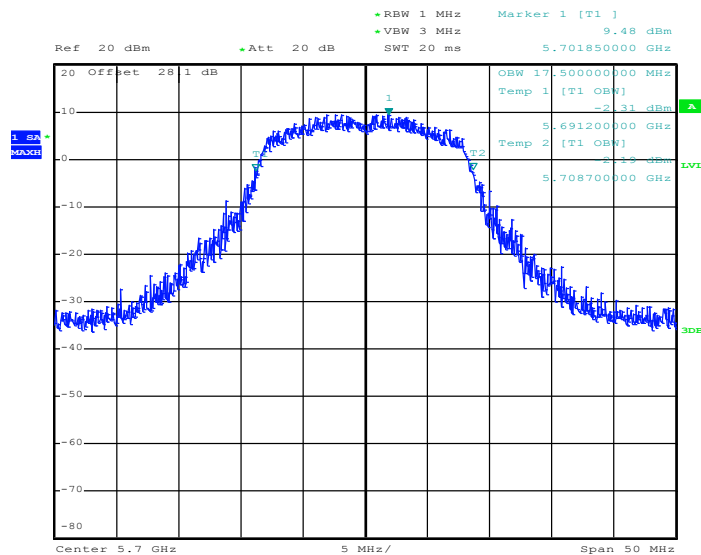


99% Occupied Bandwidth Plot on 802.11a Channel 116



Date: 20.DEC.2012 23:24:11

99% Occupied Bandwidth Plot on 802.11a Channel 140



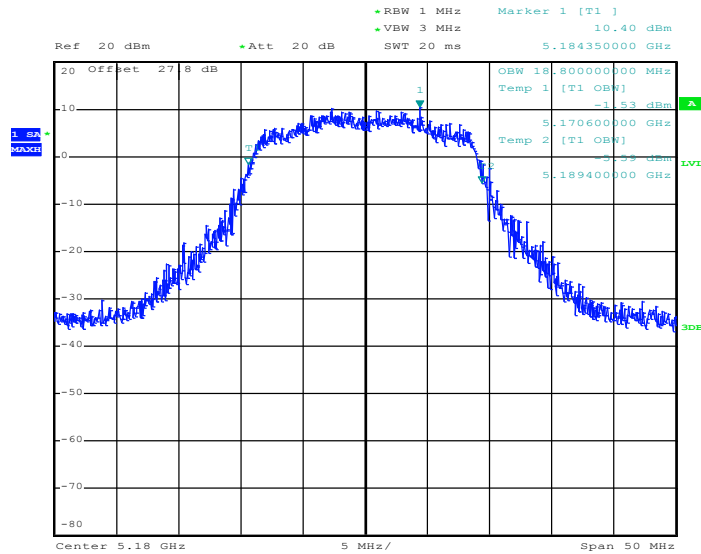
Date: 20.DEC.2012 23:26:42



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

Band	Channel	Frequency (MHz)	802.11n HT20 99% Occupied Bandwidth (MHz)	Pass/Fail
NII Band 1	36	5180	18.80	N/A
	44	5220	18.75	N/A
	48	5240	18.60	N/A
NII Band 2	52	5260	18.65	N/A
	60	5300	18.75	N/A
	64	5320	18.65	N/A
NII Band 3	100	5500	18.65	N/A
	116	5580	18.80	N/A
	140	5700	18.65	N/A

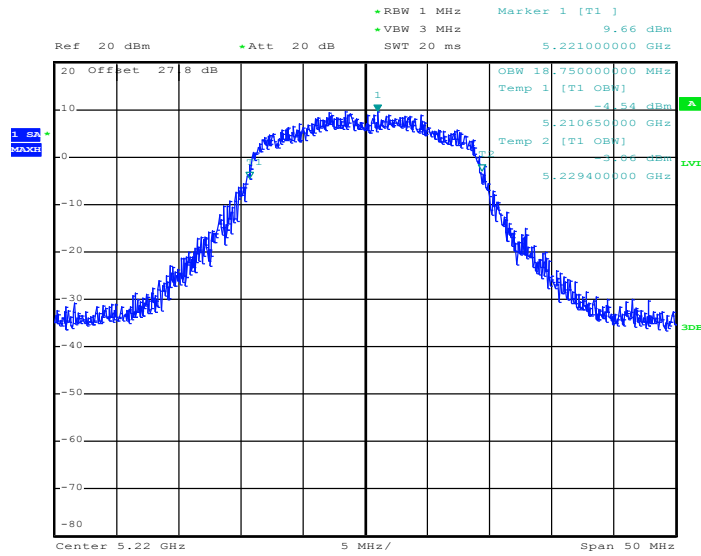
99% Occupied Bandwidth Plot on 802.11n HT20 Channel 36



Date: 20.DEC.2012 23:50:32

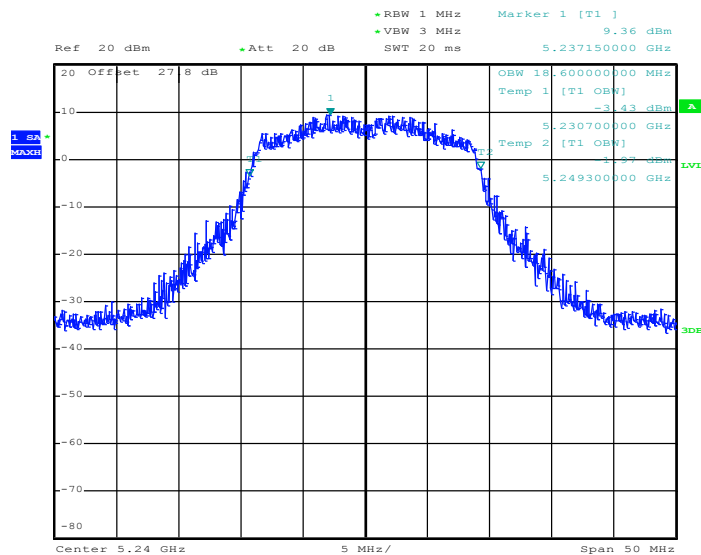


99% Occupied Bandwidth Plot on 802.11n HT20 Channel 44



Date: 20.DEC.2012 23:48:23

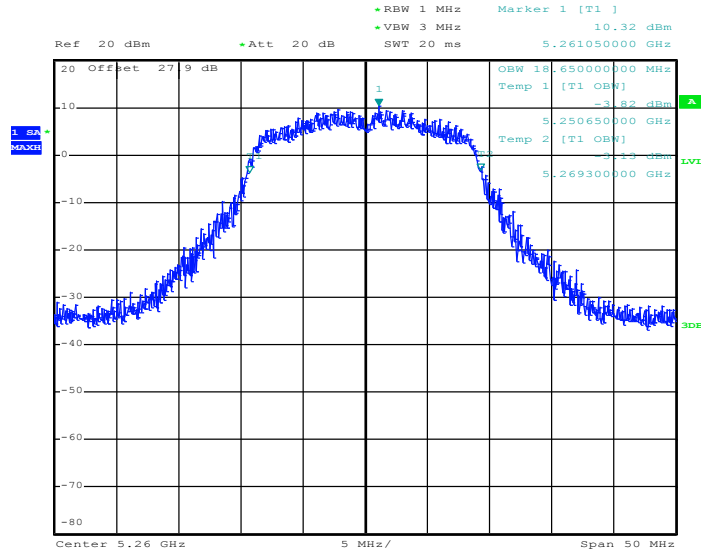
99% Occupied Bandwidth Plot on 802.11n HT20 Channel 48



Date: 20.DEC.2012 23:46:24

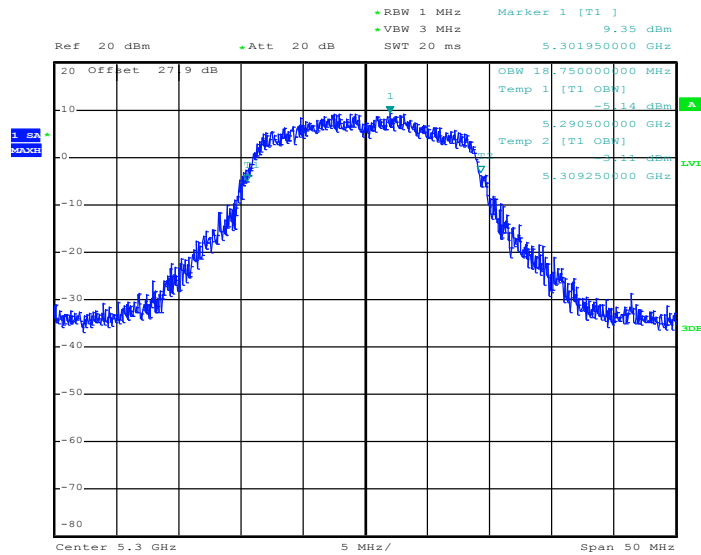


99% Occupied Bandwidth Plot on 802.11n HT20 Channel 52



Date: 20.DEC.2012 23:44:16

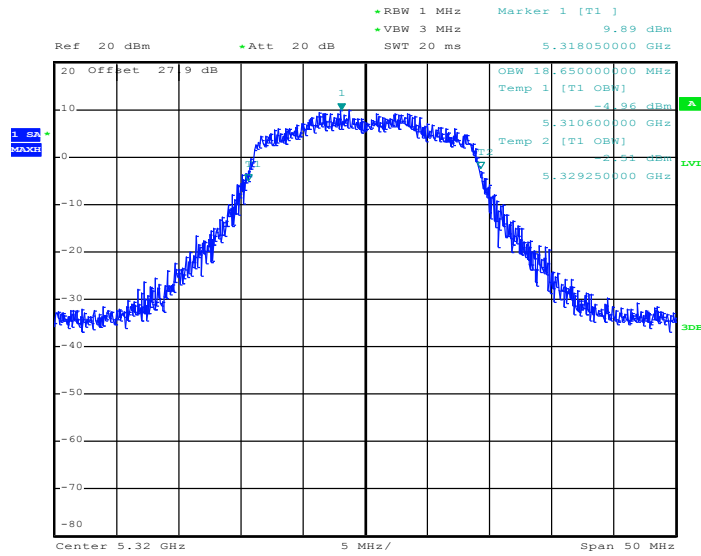
99% Occupied Bandwidth Plot on 802.11n HT20 Channel 60



Date: 20.DEC.2012 23:42:15

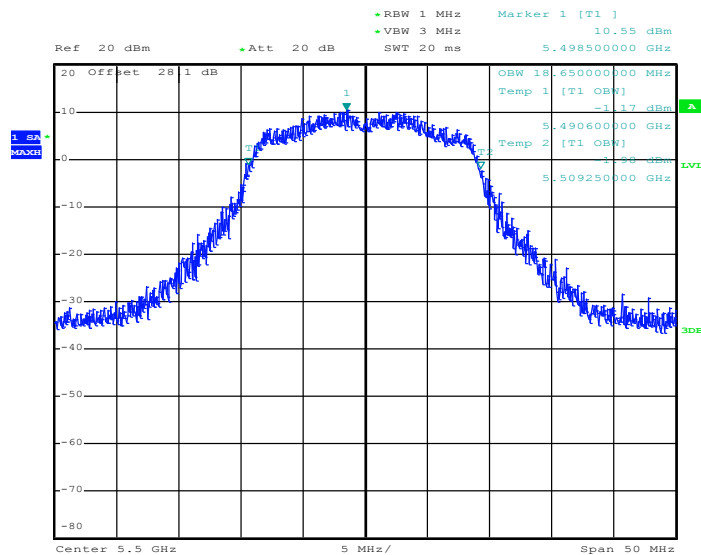


99% Occupied Bandwidth Plot on 802.11n HT20 Channel 64



Date: 20.DEC.2012 23:39:37

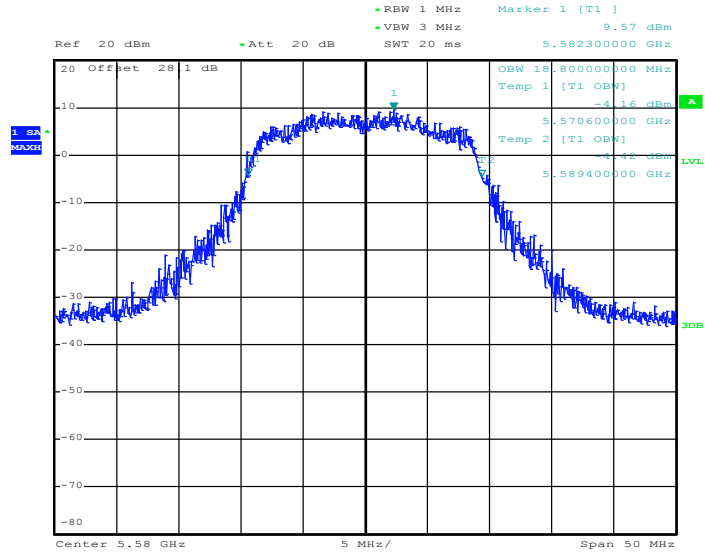
99% Occupied Bandwidth Plot on 802.11n HT20 Channel 100



Date: 20.DEC.2012 23:36:46

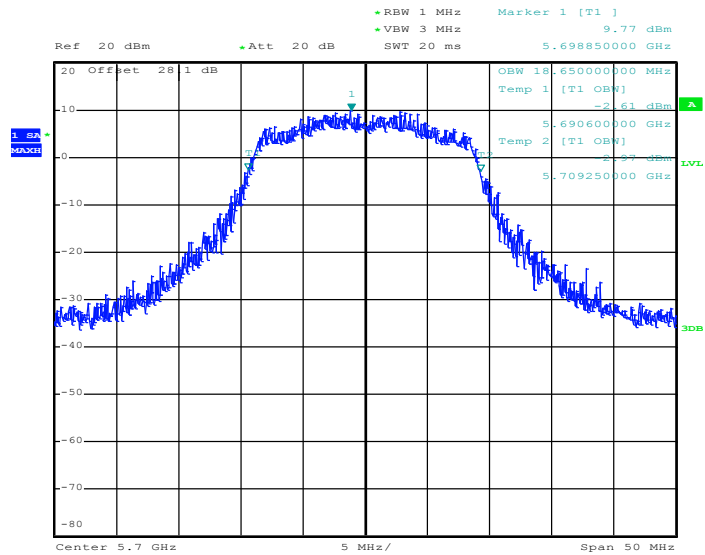


99% Occupied Bandwidth Plot on 802.11n HT20 Channel 116



Date: 20.DEC.2012 23:34:01

99% Occupied Bandwidth Plot on 802.11n HT20 Channel 140



Date: 20.DEC.2012 23:30:23

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5150-5250 MHz, 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 maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the bands 5250-5350 MHz and 5470-5600 MHz and 5650-5725 MHz, 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 maximum conducted 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.

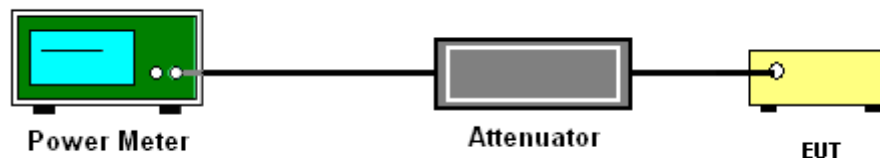
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D01 General UNII Test Procedures v01r02.

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°C
Test Engineer :	Book Lin	Relative Humidity :	45~49%
Duty Cycle :	98.57%	Duty Factor :	0.06dB

Band	Channel	Frequency (MHz)	802.11a Output Power (dBm)		Max. Limits (dBm)	Pass/Fail
			Measured	Final		
NII Band 1	36	5180	12.14	12.20	17	Pass
	44	5220	11.97	12.03	17	Pass
	48	5240	12.01	12.07	17	Pass
NII Band 2	52	5260	12.17	12.23	24	Pass
	60	5300	11.95	12.01	24	Pass
	64	5320	11.96	12.02	24	Pass
NII Band 3	100	5500	11.82	11.88	24	Pass
	116	5580	12.02	12.08	24	Pass
	140	5700	11.92	11.98	24	Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the band 5150-5250 MHz, the maximum conducted output power shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log (26dB BW)
3. For the 5250-5350 MHz and 5470-5600MHz and 5650-5725MHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log (26dB BW).



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	45~49%
Duty Cycle :	98.31%	Duty Factor :	0.07dB

Band	Channel	Frequency (MHz)	802.11a Output Power (dBm)		Max. Limits (dBm)	Pass/Fail
			Measured	Final		
NII Band 1	36	5180	12.06	12.13	17	Pass
	44	5220	11.89	11.96	17	Pass
	48	5240	11.93	12.00	17	Pass
NII Band 2	52	5260	12.01	12.08	24	Pass
	60	5300	11.98	12.05	24	Pass
	64	5320	12.05	12.12	24	Pass
NII Band 3	100	5500	12.19	12.26	24	Pass
	116	5580	11.90	11.97	24	Pass
	140	5700	11.76	11.83	24	Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the band 5150-5250 MHz, the maximum conducted output power shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log (26dB BW)
3. For the 5250-5350 MHz and 5470-5600MHz and 5650-5725MHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log (26dB BW).



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5150-5250 MHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. For the bands 5250-5350 MHz and 5470-5600 and 5650-5725 MHz, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antenna directional gain is greater than 6 dBi, 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 v01r02.

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.

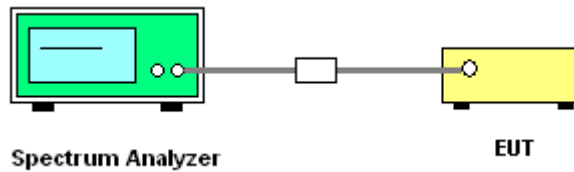
Method SA-2

(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 v01r02.
 - 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.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

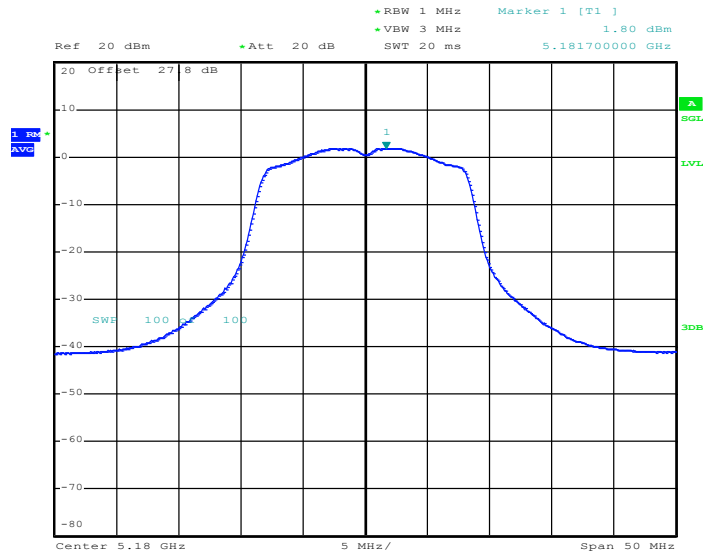
Test Mode :	802.11a	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	45~49%
Duty Cycle :	98.57%	Duty Factor :	0.06dB

Band	Channel	Frequency (MHz)	802.11a PSD (dBm)		Max. Limits (dBm)	Pass/Fail
			Measured	Final		
NII Band 1	36	5180	1.80	1.86	4	Pass
	44	5220	1.64	1.70	4	Pass
	48	5240	1.55	1.61	4	Pass
NII Band 2	52	5260	1.78	1.84	11	Pass
	60	5300	1.52	1.58	11	Pass
	64	5320	1.53	1.59	11	Pass
NII Band 3	100	5500	1.74	1.80	11	Pass
	116	5580	1.71	1.77	11	Pass
	140	5700	1.72	1.78	11	Pass

Note: Result of Final PSD equals to Measured PSD adds the duty factor.

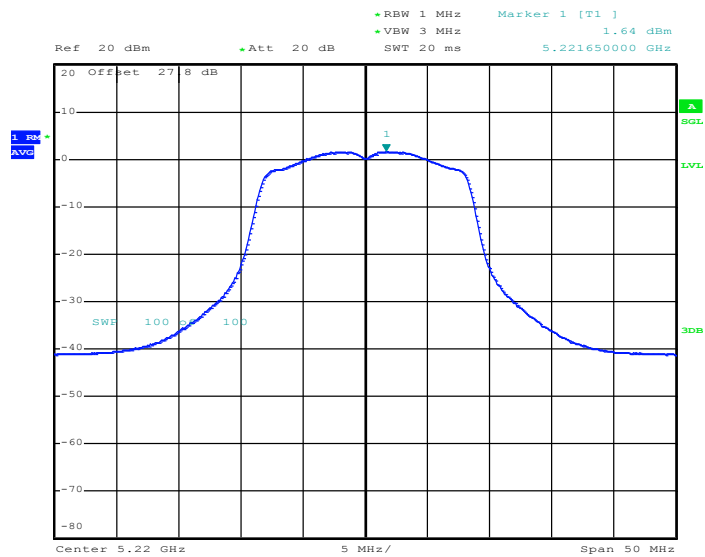


PSD Plot on 802.11a Channel 36



Date: 20.DEC.2012 22:57:48

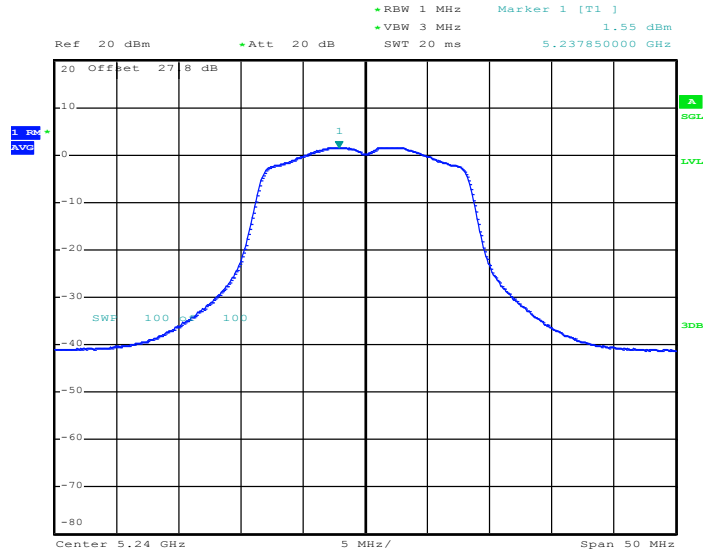
PSD Plot on 802.11a Channel 44



Date: 20.DEC.2012 23:01:29

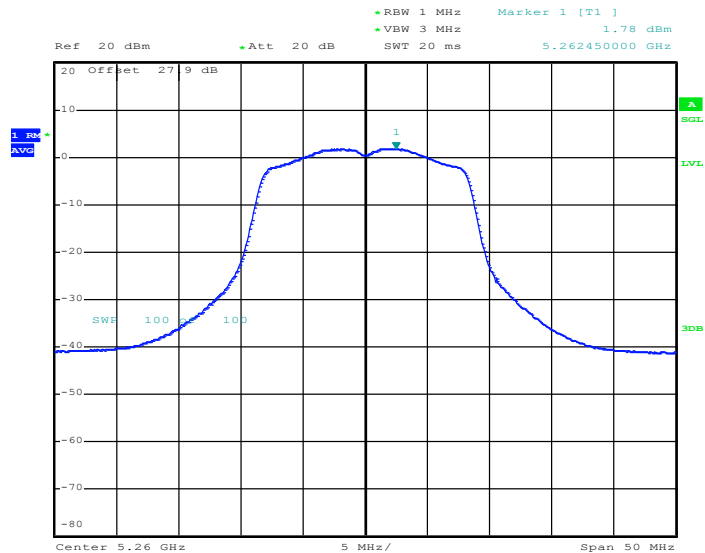


PSD Plot on 802.11a Channel 48



Date: 20.DEC.2012 23:07:40

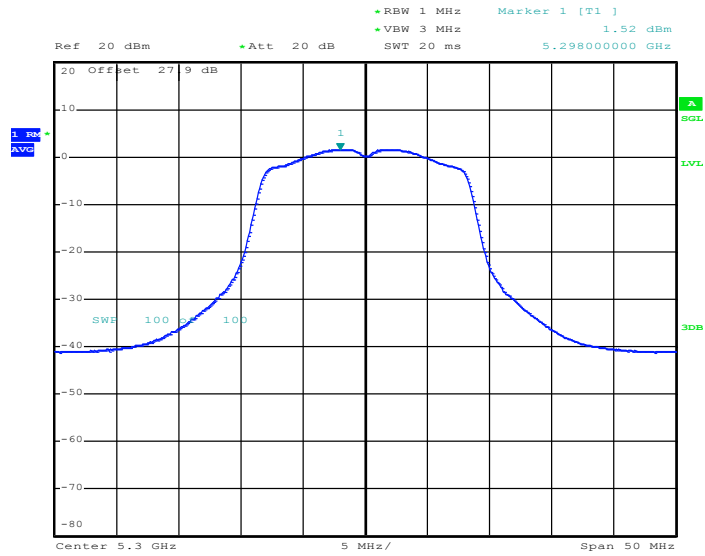
PSD Plot on 802.11a Channel 52



Date: 20.DEC.2012 23:10:56

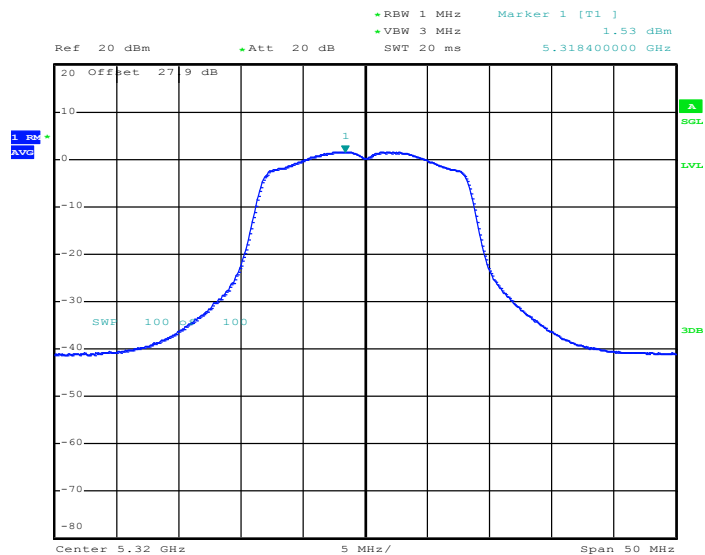


PSD Plot on 802.11a Channel 60



Date: 20.DEC.2012 23:13:30

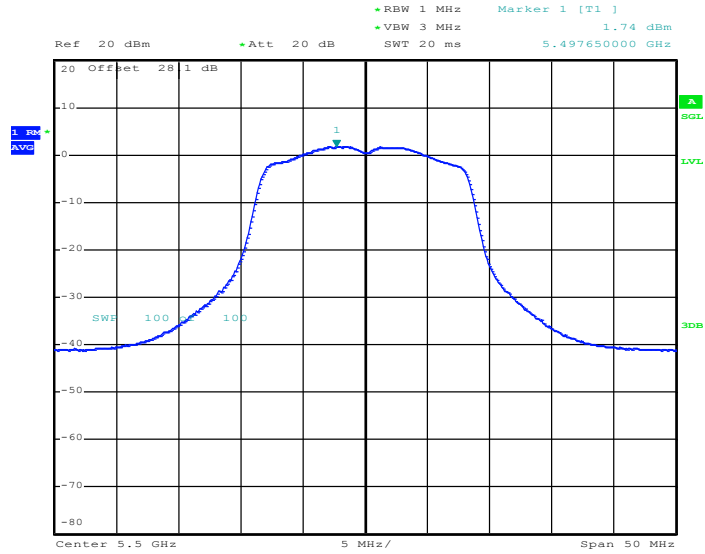
PSD Plot on 802.11a Channel 64



Date: 20.DEC.2012 23:16:37

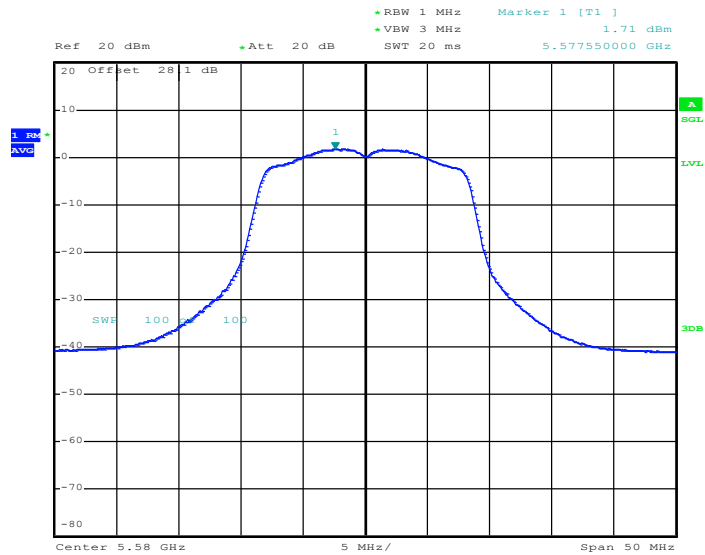


PSD Plot on 802.11a Channel 100



Date: 20.DEC.2012 23:19:34

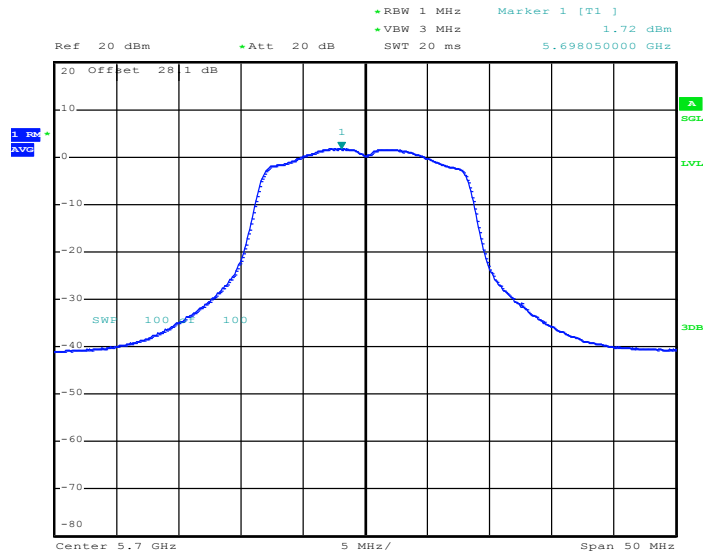
PSD Plot on 802.11a Channel 116



Date: 20.DEC.2012 23:22:34



PSD Plot on 802.11a Channel 140



Date: 20.DEC.2012 23:25:30

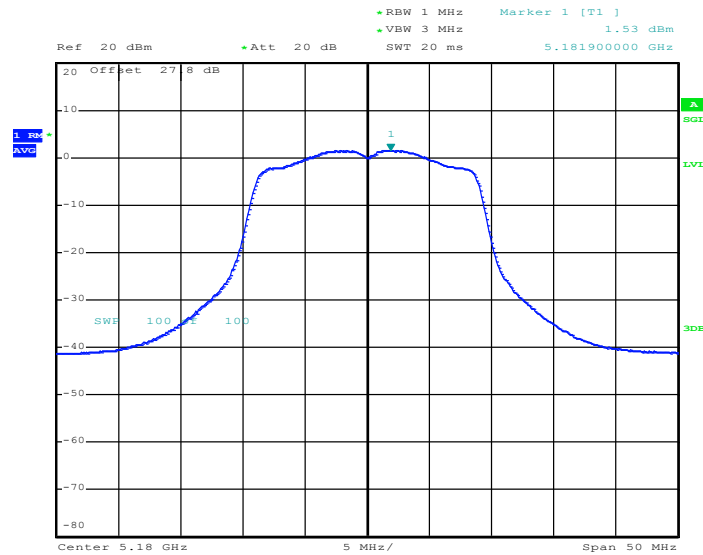


Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	45~49%
Duty Cycle:	98.31%	Duty Factor:	0.07dB

Band	Channel	Frequency (MHz)	802.11n HT20 PSD (dBm)		Max. Limits (dBm)	Pass/Fail
			Measured	Final		
NII Band 1	36	5180	1.53	1.60	4	Pass
	44	5220	1.19	1.26	4	Pass
	48	5240	1.20	1.27	4	Pass
NII Band 2	52	5260	1.43	1.50	11	Pass
	60	5300	1.16	1.23	11	Pass
	64	5320	1.24	1.31	11	Pass
NII Band 3	100	5500	1.96	2.03	11	Pass
	116	5580	1.40	1.47	11	Pass
	140	5700	1.42	1.49	11	Pass

Note: Result of Final PSD equals to Measured PSD adds the duty factor.

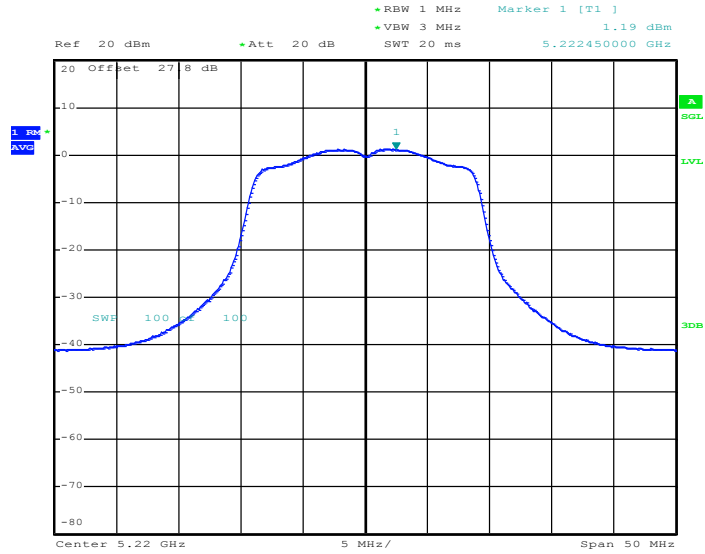
PSD Plot on 802.11n HT20 channel 36



Date: 20.DEC.2012 23:48:53

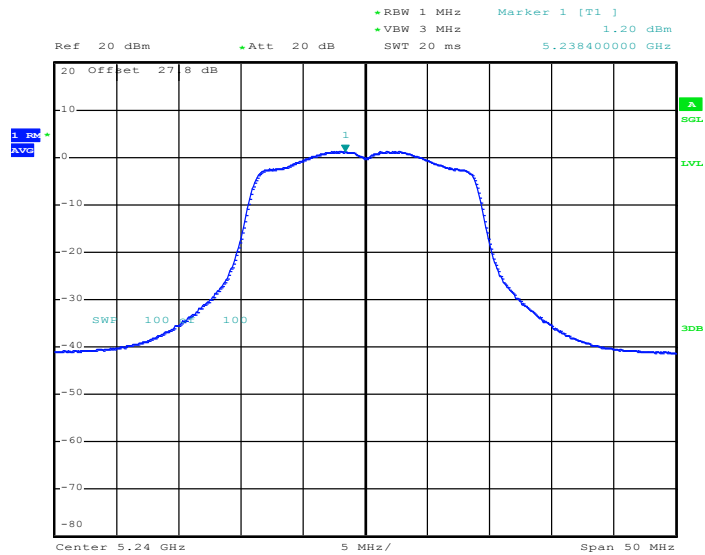


PSD Plot on 802.11n HT20 Channel 44



Date: 20.DEC.2012 23:46:55

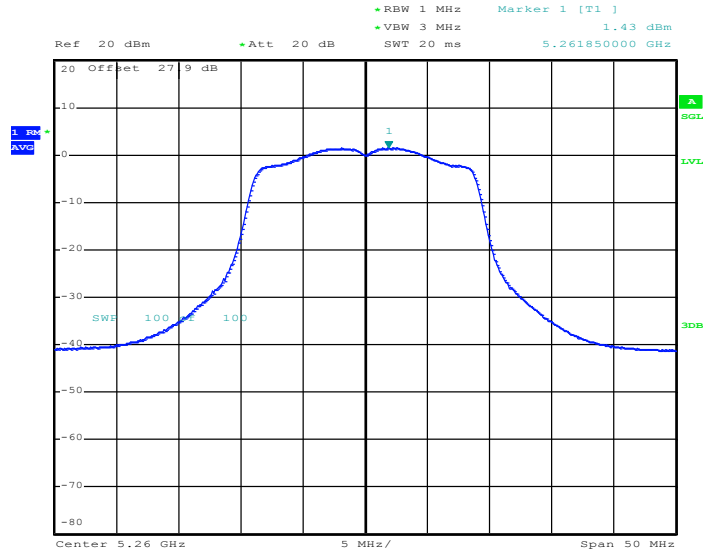
PSD Plot on 802.11n HT20 Channel 48



Date: 20.DEC.2012 23:44:55

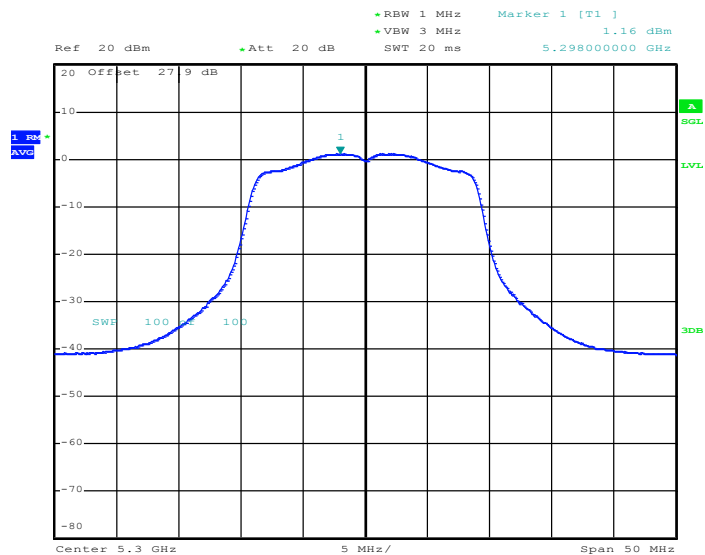


PSD Plot on 802.11n HT20 Channel 52



Date: 20.DEC.2012 23:42:55

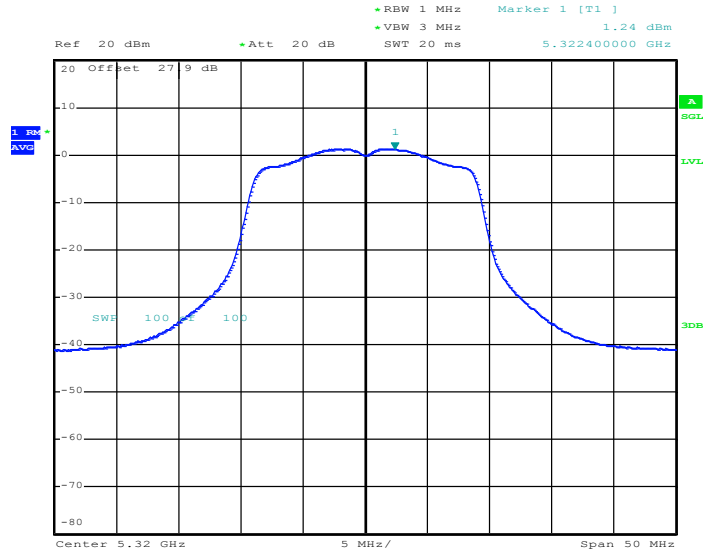
PSD Plot on 802.11n HT20 Channel 60



Date: 20.DEC.2012 23:40:32

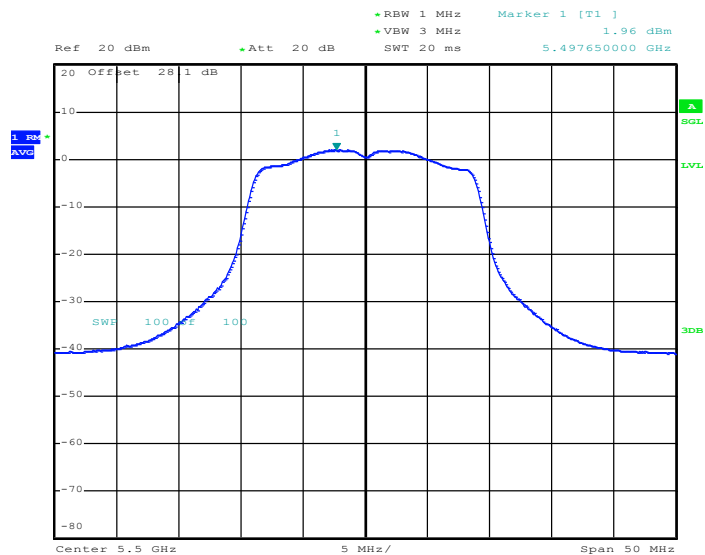


PSD Plot on 802.11n HT20 Channel 64



Date: 20.DEC.2012 23:37:48

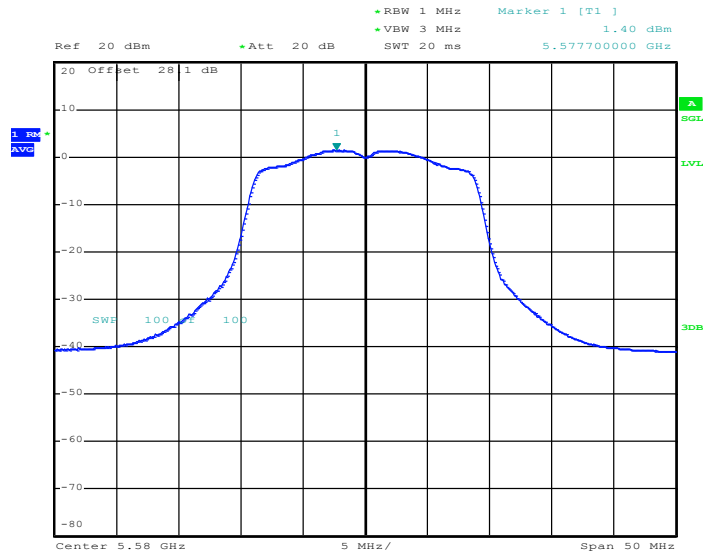
PSD Plot on 802.11n HT20 Channel 100



Date: 20.DEC.2012 23:34:57

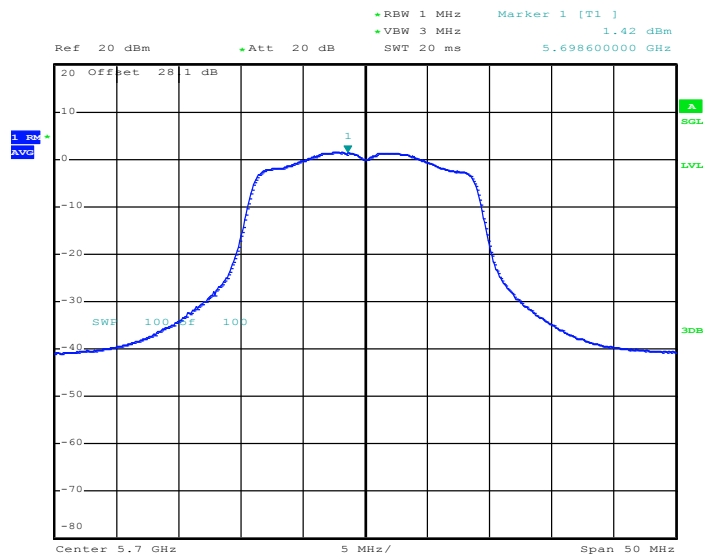


PSD Plot on 802.11n HT20 Channel 116



Date: 20.DEC.2012 23:32:14

PSD Plot on 802.11n HT20 Channel 140



Date: 20.DEC.2012 23:28:37

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.

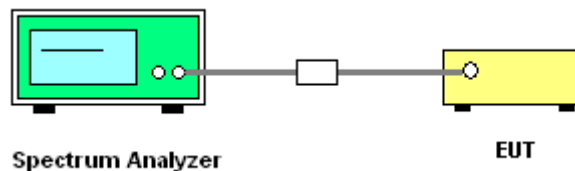
3.4.3 Test Procedures

The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r02.

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

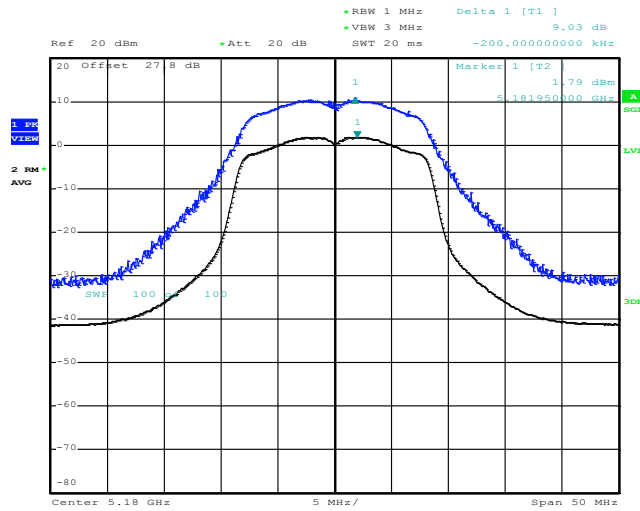




3.4.5 Test Result of Peak Excursion Ratio

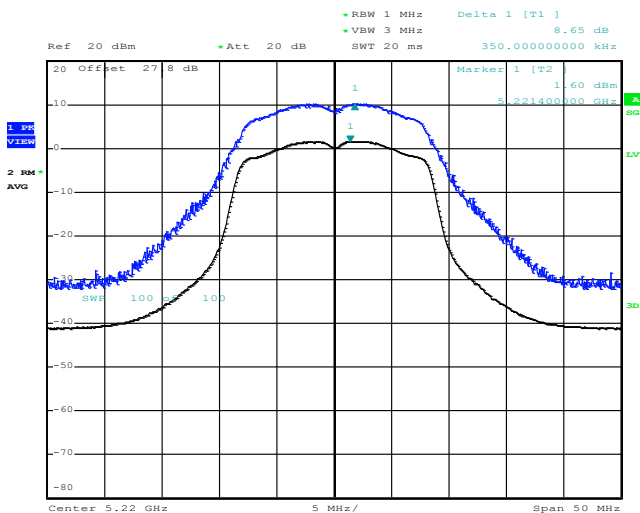
Test Mode :	802.11a	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Peak Excursion Ratio Plot on 802.11a Channel 36



Date: 20.DEC.2012 22:58:05

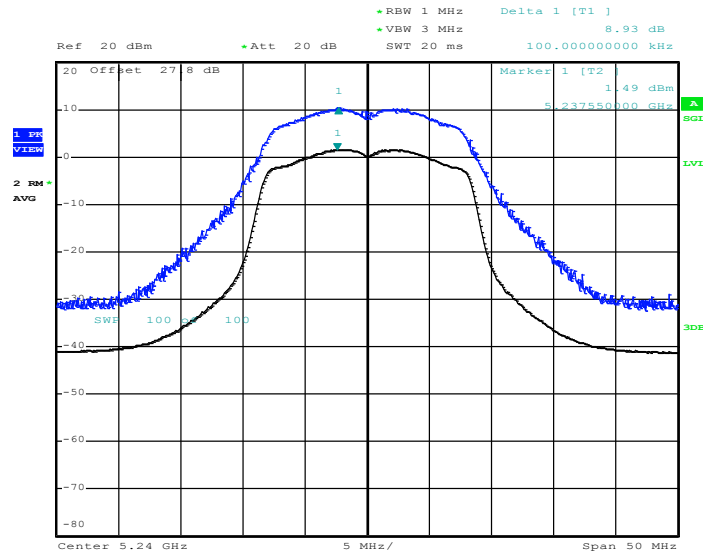
Peak Excursion Ratio Plot on 802.11a Channel 44



Date: 20.DEC.2012 23:01:46

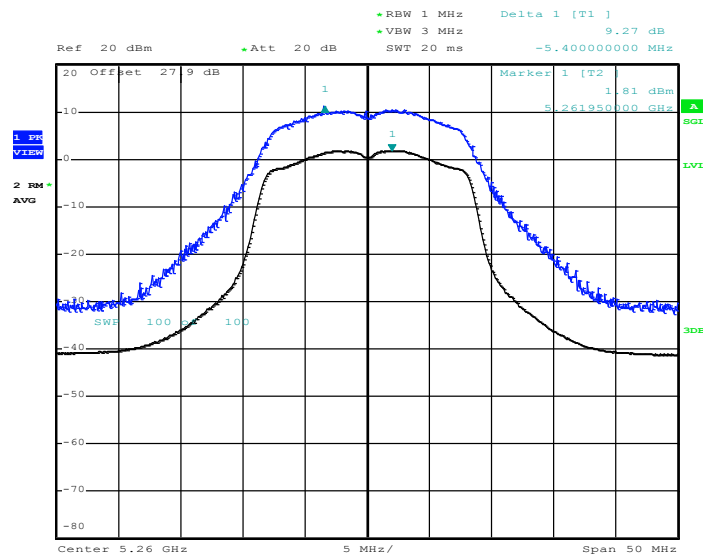


Peak Excursion Ratio Plot on 802.11a Channel 48



Date: 20.DEC.2012 23:07:57

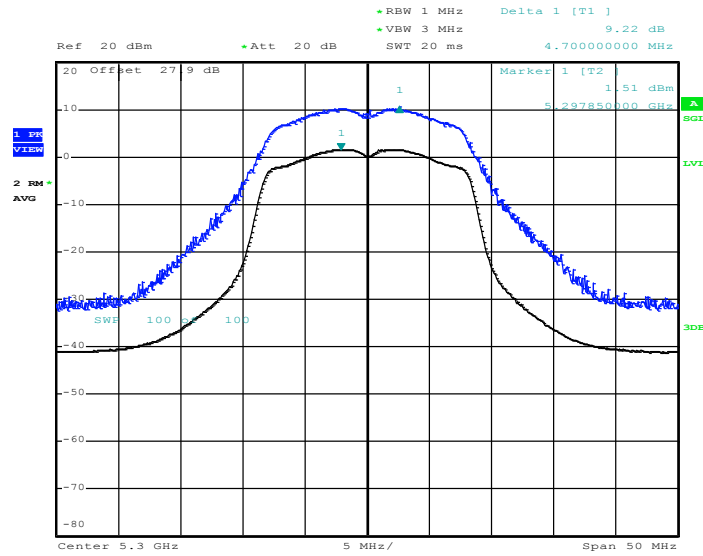
Peak Excursion Ratio Plot on 802.11a Channel 52



Date: 20.DEC.2012 23:11:13

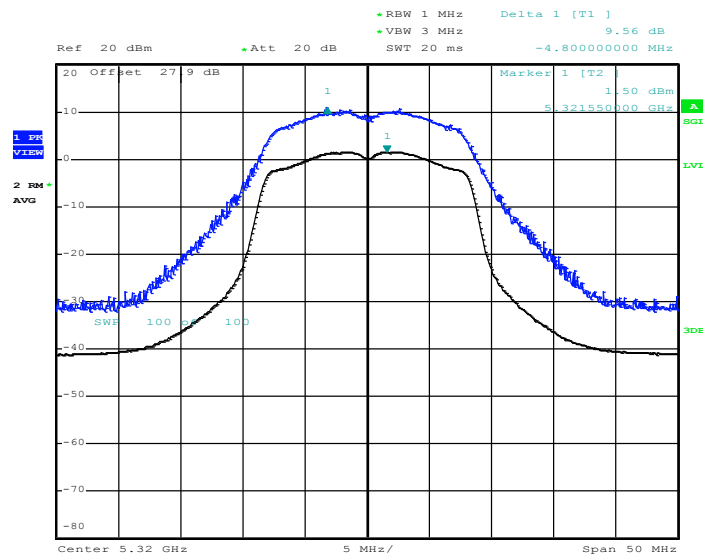


Peak Excursion Ratio Plot on 802.11a Channel 60



Date: 20.DEC.2012 23:13:46

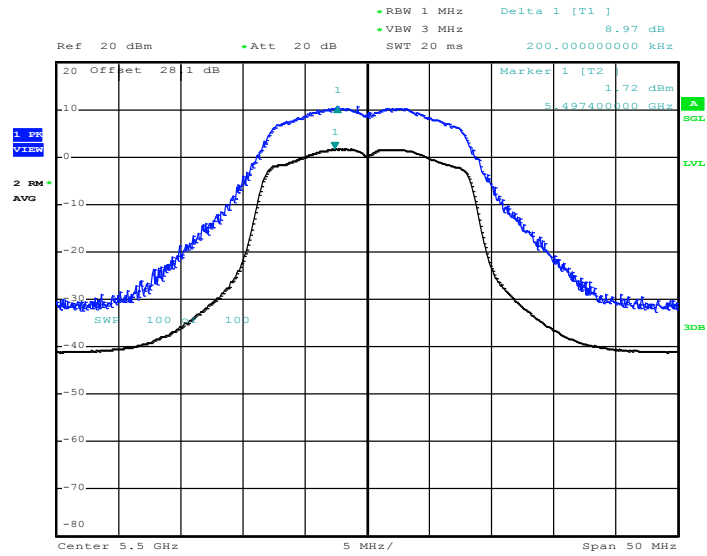
Peak Excursion Ratio Plot on 802.11a Channel 64



Date: 20.DEC.2012 23:16:53

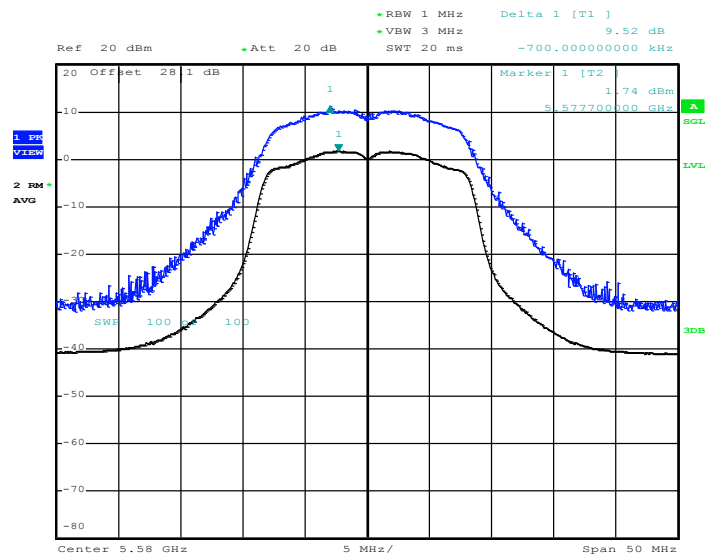


Peak Excursion Ratio Plot on 802.11a Channel 100



Date: 20.DEC.2012 23:19:50

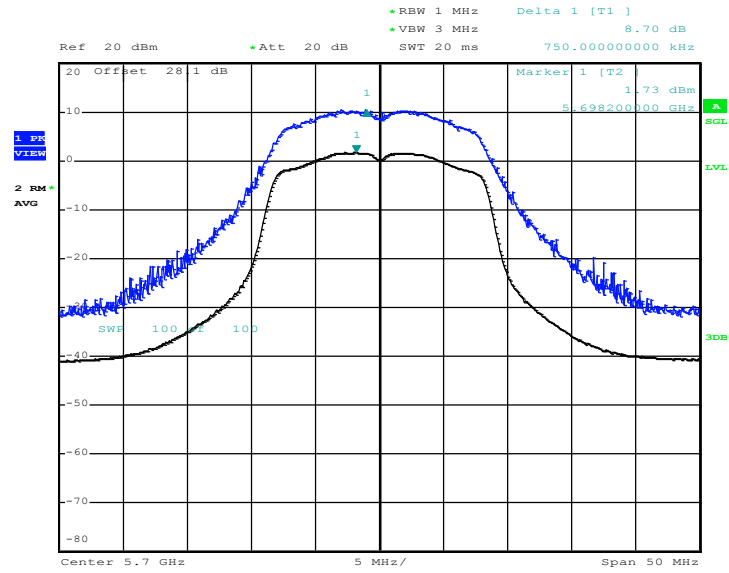
Peak Excursion Ratio Plot on 802.11a Channel 116



Date: 20.DEC.2012 23:22:50



Peak Excursion Ratio Plot on 802.11a Channel 140

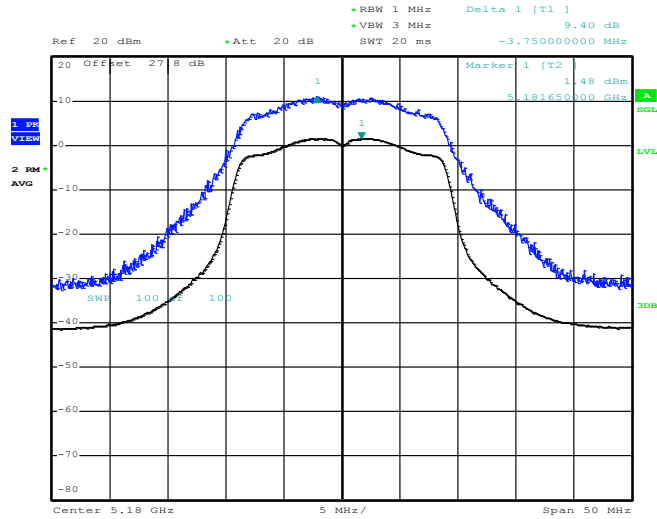


Date: 20.DEC.2012 23:25:47



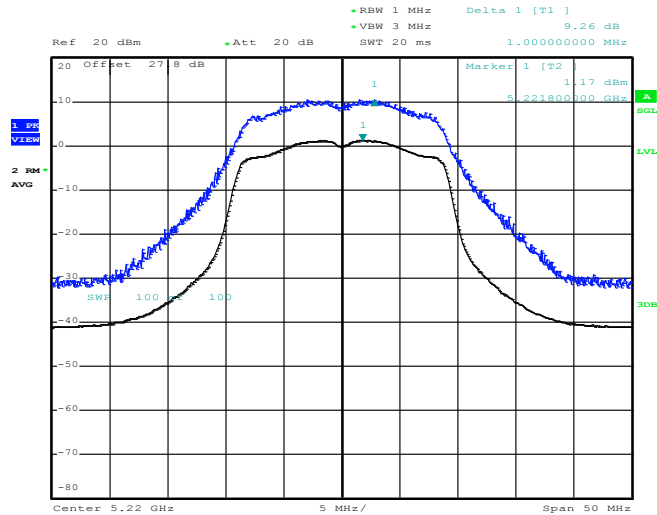
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Peak Excursion Ratio Plot on 802.11n HT20 Channel 36



Date: 20.DEC.2012 23:49:09

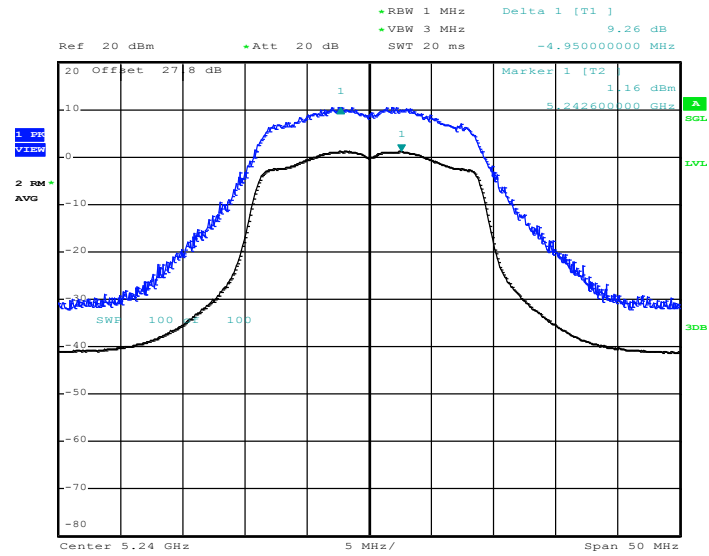
Peak Excursion Ratio Plot on 802.11n HT20 Channel 44



Date: 20.DEC.2012 23:47:11

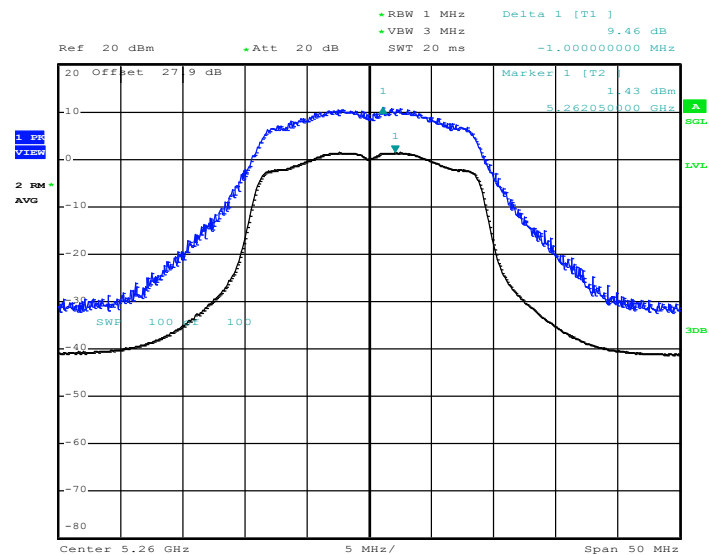


Peak Excursion Ratio Plot on 802.11n HT20 Channel 48



Date: 20.DEC.2012 23:45:11

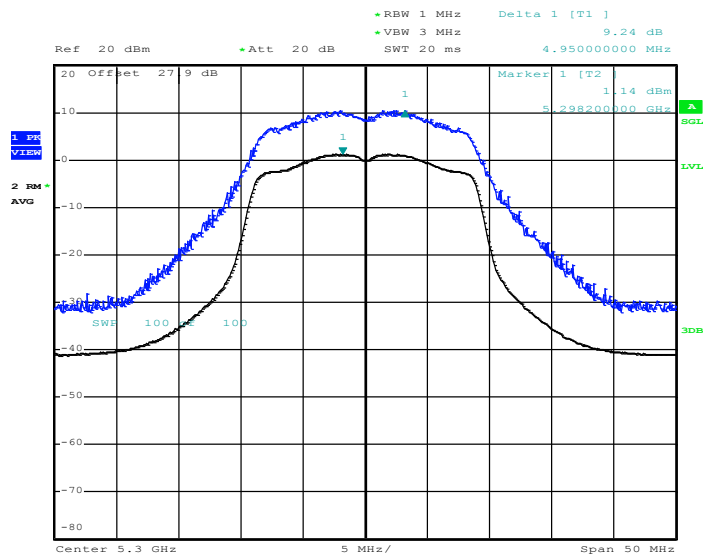
Peak Excursion Ratio Plot on 802.11n HT20 Channel 52



Date: 20.DEC.2012 23:43:12

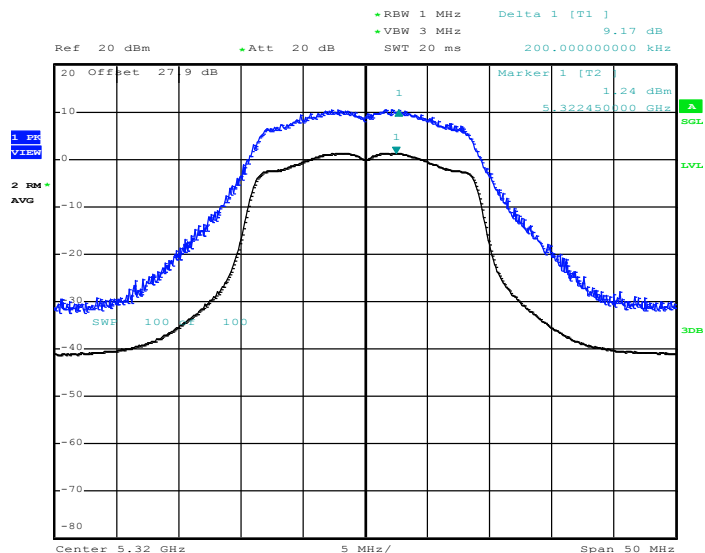


Peak Excursion Ratio Plot on 802.11n HT20 Channel 60



Date: 20.DEC.2012 23:40:49

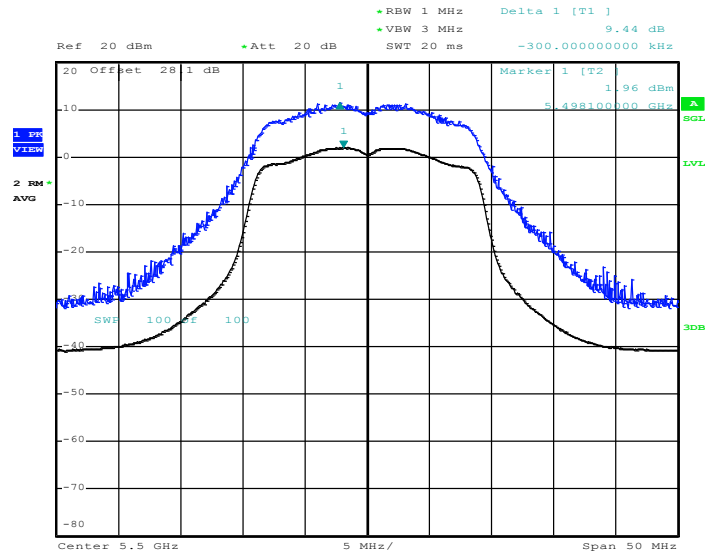
Peak Excursion Ratio Plot on 802.11n HT20 Channel 64



Date: 20.DEC.2012 23:38:05

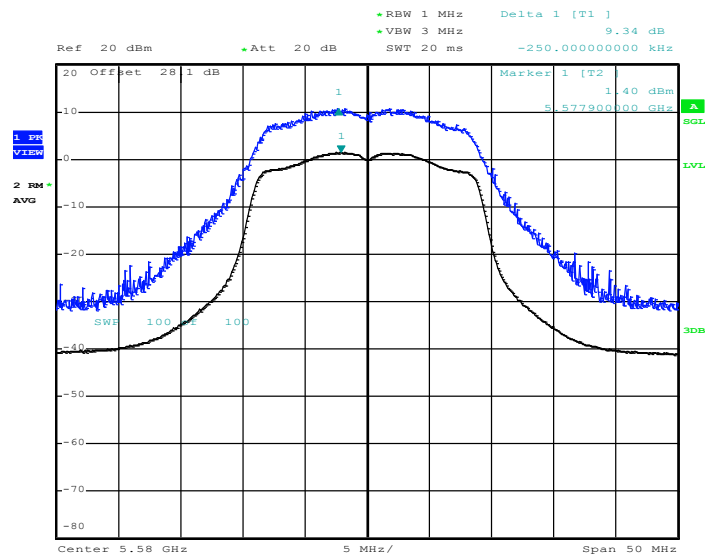


Peak Excursion Ratio Plot on 802.11n HT20 Channel 100



Date: 20.DEC.2012 23:35:14

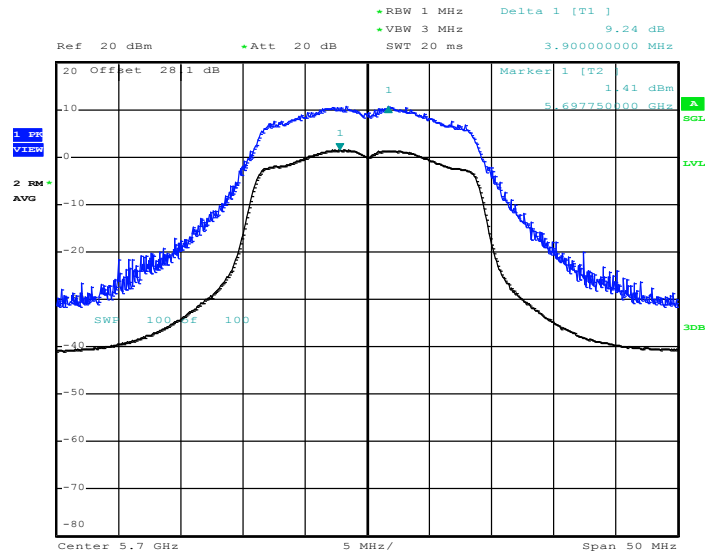
Peak Excursion Ratio Plot on 802.11n HT20 Channel 116



Date: 20.DEC.2012 23:32:30



Peak Excursion Ratio Plot on 802.11n HT20 Channel 140



Date: 20.DEC.2012 23:28:54

3.5 Unwanted Radiated Emission 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 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz 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.

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

EIRP (dBm)	Field Strength at 3m (dBμV/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 v01r02.

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 ≥ 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.

Band	Duty Cycle(%)	T(us)	1/T(KHz)	VBW Setting
802.11a	98.57	-	-	10Hz
802.11n HT20	98.31	-	-	10Hz

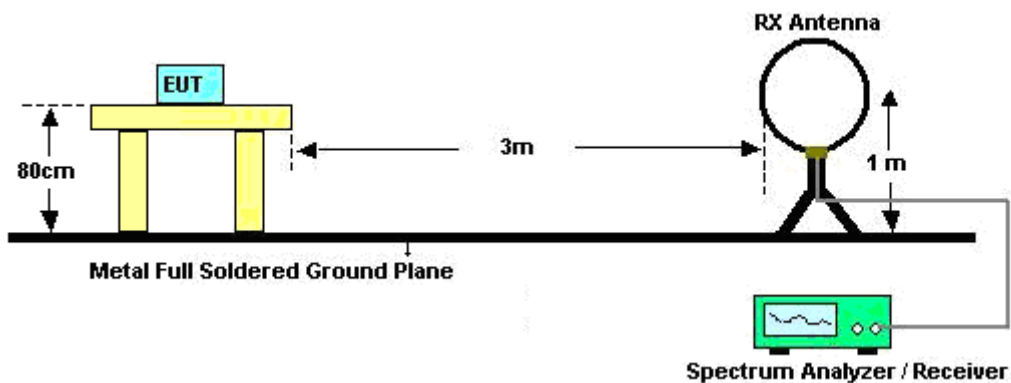
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four

meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.

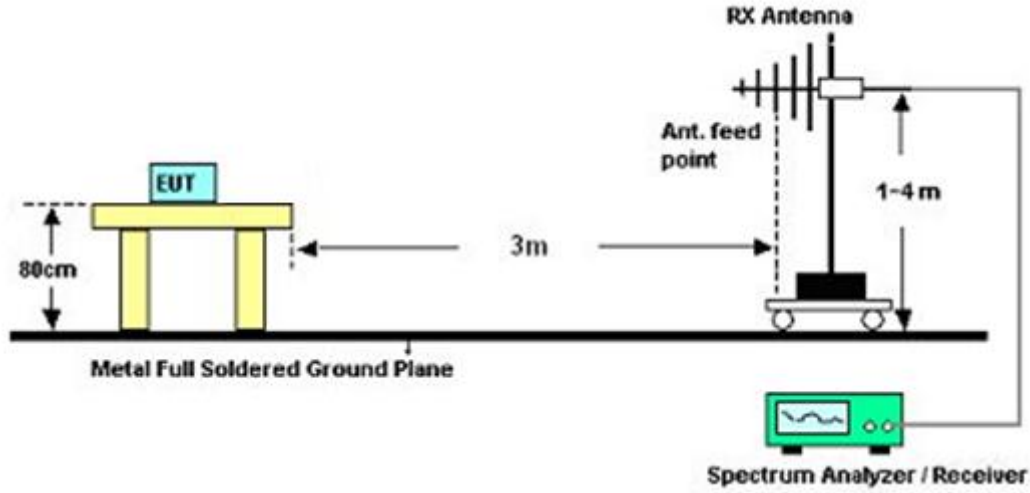
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, 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

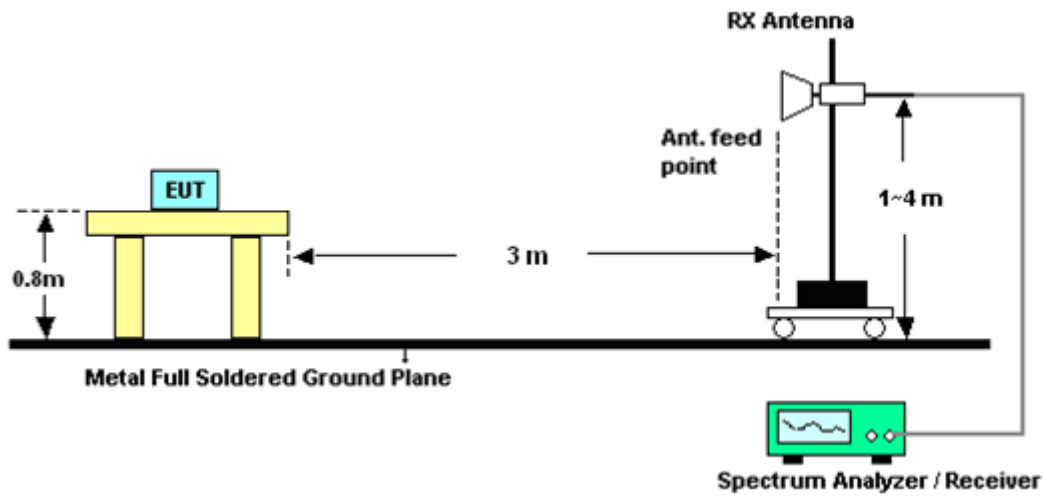
For radiated emissions below 30MHz



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

3.5.6.1 Test Result of Radiated Band Edges

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5150	53.19	-20.81	74	47.19	34.45	6.69	35.14	103	236	Peak
5150	39.54	-14.46	54	33.54	34.45	6.69	35.14	103	236	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
5148.5	58.05	-15.95	74	52.05	34.45	6.69	35.14	110	182	Peak
5150	44.38	-9.62	54	38.38	34.45	6.69	35.14	110	182	Average



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5078.15	50.03	-23.97	74	44.23	34.38	6.64	35.22	101	237	Peak
5147.75	36.65	-17.35	54	30.65	34.45	6.69	35.14	101	237	Average
5386.85	51.6	-22.4	74	44.97	34.68	6.86	34.91	101	237	Peak
5382.34	37.74	-16.26	54	31.11	34.68	6.86	34.91	101	237	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
5146.4	50.6	-23.4	74	44.6	34.45	6.69	35.14	108	185	Peak
5146.1	37.03	-16.97	54	31.03	34.45	6.69	35.14	108	185	Average
5417.54	51.72	-22.28	74	45	34.72	6.88	34.88	108	185	Peak
5390.59	38.47	-15.53	54	31.84	34.68	6.86	34.91	108	185	Average



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	52	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5036.3	50.05	-23.95	74	44.38	34.33	6.61	35.27	100	238	Peak
5147.3	36.56	-17.44	54	30.56	34.45	6.69	35.14	100	238	Average
5416.55	52.12	-21.88	74	45.4	34.72	6.88	34.88	100	238	Peak
5351.87	37.86	-16.14	54	31.31	34.65	6.83	34.93	100	238	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
5144.45	50.07	-23.93	74	44.07	34.45	6.69	35.14	108	183	Peak
5144.15	37.09	-16.91	54	31.09	34.45	6.69	35.14	108	183	Average
5387.07	51.69	-22.31	74	45.06	34.68	6.86	34.91	108	183	Peak
5360.34	38.39	-15.61	54	31.82	34.65	6.85	34.93	108	183	Average

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5350.22	53.87	-20.13	74	47.32	34.65	6.83	34.93	100	227	Peak
5350	40.85	-13.15	54	34.3	34.65	6.83	34.93	100	227	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
5350.22	54.08	-19.92	74	47.53	34.65	6.83	34.93	108	183	Peak
5350	41.33	-12.67	54	34.78	34.65	6.83	34.93	108	183	Average



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5467.12	54.41	-19.59	74	47.55	34.77	6.92	34.83	108	238	Peak
5470	40.83	-13.17	54	33.97	34.77	6.92	34.83	108	238	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
5468.56	56.45	-17.55	74	49.59	34.77	6.92	34.83	103	178	Peak
5470	42.96	-11.04	54	36.1	34.77	6.92	34.83	103	178	Average

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5725.72	62.12	-11.88	74	54.73	35.07	7.17	34.85	115	234	Peak
5725	44.4	-9.6	54	37.01	35.07	7.17	34.85	115	234	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
5727.16	63.51	-10.49	74	56.12	35.07	7.17	34.85	111	174	Peak
5725	45.4	-8.6	54	38.01	35.07	7.17	34.85	111	174	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5148.2	54.87	-19.13	74	48.87	34.45	6.69	35.14	102	240	Peak
5150	41.89	-12.11	54	35.89	34.45	6.69	35.14	102	240	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
5147.3	57.96	-16.04	74	51.96	34.45	6.69	35.14	109	184	Peak
5150	43.82	-10.18	54	37.82	34.45	6.69	35.14	109	184	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5148.2	50.08	-23.92	74	44.08	34.45	6.69	35.14	101	234	Peak
5147.6	36.56	-17.44	54	30.56	34.45	6.69	35.14	101	234	Average
5389.82	51.21	-22.79	74	44.58	34.68	6.86	34.91	101	234	Peak
5380.91	37.42	-16.58	54	30.79	34.68	6.86	34.91	101	234	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
5092.4	50.34	-23.66	74	44.5	34.4	6.66	35.22	109	181	Peak
5145.05	37.1	-16.9	54	31.1	34.45	6.69	35.14	109	181	Average
5383.44	51.5	-22.5	74	44.87	34.68	6.86	34.91	109	181	Peak
5391.91	37.7	-16.3	54	31.07	34.68	6.86	34.91	109	181	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	52	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5050.1	49.66	-24.34	74	43.94	34.35	6.62	35.25	100	236	Peak
5146.1	36.06	-17.94	54	30.06	34.45	6.69	35.14	100	236	Average
5357.26	51.08	-22.92	74	44.51	34.65	6.85	34.93	100	236	Peak
5394	37.15	-16.85	54	30.52	34.68	6.86	34.91	100	236	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
5148.2	50.57	-23.43	74	44.57	34.45	6.69	35.14	108	183	Peak
5143.85	37.13	-16.87	54	31.13	34.45	6.69	35.14	108	183	Average
5431.73	51.6	-22.4	74	44.82	34.73	6.9	34.85	108	183	Peak
5360.78	38.12	-15.88	54	31.53	34.67	6.85	34.93	108	183	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5350.22	55.03	-18.97	74	48.48	34.65	6.83	34.93	100	234	Peak
5350	40.8	-13.2	54	34.25	34.65	6.83	34.93	100	234	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	55.98	-18.02	74	49.43	34.65	6.83	34.93	107	181	Peak
5350	41.55	-12.45	54	35	34.65	6.83	34.93	107	181	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5469.68	56.92	-17.08	74	50.06	34.77	6.92	34.83	108	239	Peak
5470	41.54	-12.46	54	34.68	34.77	6.92	34.83	108	239	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
5468.72	59.4	-14.6	74	52.54	34.77	6.92	34.83	103	179	Peak
5470	43.56	-10.44	54	36.7	34.77	6.92	34.83	103	179	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	54~56%
Test Engineer :	David Ke		

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
5725.32	63.28	-10.72	74	55.89	35.07	7.17	34.85	103	228	Peak
5725	44.63	-9.37	54	37.24	35.07	7.17	34.85	103	228	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
5726.2	64.23	-9.77	74	56.84	35.07	7.17	34.85	110	168	Peak
5725	45.44	-8.56	54	38.05	35.07	7.17	34.85	110	168	Average



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

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5182 MHz is fundamental signal which can be ignored.. 2. 7770 MHz and 10362 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5182	95.31	-	-	89.24	34.48	6.71	35.12	103	236	Average
5182	106.79	-	-	100.72	34.48	6.71	35.12	103	236	Peak
7770	46.19	-27.81	74	59.5	36.05	8.82	58.18	100	0	Peak
10362	44.07	-29.93	74	52.3	37.72	9.71	55.66	100	0	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5182 MHz is fundamental signal which can be ignored.. 2. 7770 MHz and 10362 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5182	97.97	-	-	91.9	34.48	6.71	35.12	110	182	Average
5182	109.54	-	-	103.47	34.48	6.71	35.12	110	182	Peak
7770	47.01	-26.99	74	60.32	36.05	8.82	58.18	100	0	Peak
10362	44.26	-29.74	74	52.49	37.72	9.71	55.66	100	0	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	44	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5218 MHz is fundamental signal which can be ignored.. 2. 7830 MHz and 10437 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5218	94.98	-	-	88.81	34.52	6.74	35.09	102	237	Average
5218	106.42	-	-	100.25	34.52	6.74	35.09	102	237	Peak
7830	45.15	-28.85	74	58.4	36.07	8.83	58.15	100	0	Peak
10437	45.51	-28.49	74	53.65	37.76	9.75	55.65	100	0	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	44	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5218 MHz is fundamental signal which can be ignored.. 2. 7830 MHz and 10437 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5218	97.68	-	-	91.51	34.52	6.74	35.09	109	184	Average
5218	109.2	-	-	103.03	34.52	6.74	35.09	109	184	Peak
7830	47.78	-26.22	74	61.03	36.07	8.83	58.15	100	0	Peak
10443	44.08	-29.92	74	52.22	37.76	9.75	55.65	100	0	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5238 MHz is fundamental signal which can be ignored.. 2. 7860 MHz and 10482 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5238	95.4	-	-	89.17	34.53	6.76	35.06	101	237	Average
5238	107.2	-	-	100.97	34.53	6.76	35.06	101	237	Peak
7860	45.03	-28.97	74	58.25	36.07	8.84	58.13	100	0	Peak
10482	44.18	-29.82	74	52.24	37.79	9.78	55.63	100	0	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5242 MHz is fundamental signal which can be ignored.. 2. 7860 MHz and 10479 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5242	97.28	-	-	91.03	34.55	6.76	35.06	108	185	Average
5242	108.85	-	-	102.6	34.55	6.76	35.06	108	185	Peak
7860	47.96	-26.04	74	61.18	36.07	8.84	58.13	100	0	Peak
10479	46.28	-27.72	74	54.34	37.79	9.78	55.63	100	0	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	52	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5262 MHz is fundamental signal which can be ignored.. 2. 7890 MHz and 10521 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5262	95.03	-	-	88.72	34.57	6.78	35.04	100	238	Average
5262	106.5	-	-	100.19	34.57	6.78	35.04	100	238	Peak
7890	44.69	-29.31	74	57.89	36.08	8.84	58.12	100	0	Peak
10521	44.93	-29.07	74	52.94	37.81	9.81	55.63	100	0	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	52	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5258 MHz is fundamental signal which can be ignored.. 2. 7890 MHz and 10521 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5258	97.79	-	-	91.52	34.55	6.76	35.04	108	183	Average
5258	109.29	-	-	103.02	34.55	6.76	35.04	108	183	Peak
7890	46.53	-27.47	74	59.73	36.08	8.84	58.12	100	0	Peak
10521	45.23	-28.77	74	53.24	37.81	9.81	55.63	100	0	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	60	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	<ol style="list-style-type: none"> 5302 MHz is fundamental signal which can be ignored.. 7950 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
5302	94.32	-	-	87.9	34.6	6.8	34.98	100	232	Average
5302	105.83	-	-	99.41	34.6	6.8	34.98	100	232	Peak
7950	46.79	-27.21	74	59.93	36.09	8.86	58.09	100	0	Peak
10602	44.14	-29.86	74	52.05	37.84	9.85	55.6	100	0	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	60	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 5302 MHz is fundamental signal which can be ignored.. 7950 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
5302	97.09	-	-	90.67	34.6	6.8	34.98	108	183	Average
5302	108.44	-	-	102.02	34.6	6.8	34.98	108	183	Peak
7950	48.11	-25.89	74	61.25	36.09	8.86	58.09	100	0	Peak
10602	44.81	-29.19	74	52.72	37.84	9.85	55.6	100	0	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	<ol style="list-style-type: none"> 5322 MHz is fundamental signal which can be ignored.. 7980 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
5322	94.54	-	-	88.09	34.62	6.81	34.98	100	227	Average
5322	106.29	-	-	99.84	34.62	6.81	34.98	100	227	Peak
7980	47.26	-26.74	74	60.38	36.1	8.86	58.08	100	0	Peak
10644	46	-28	74	53.85	37.86	9.88	55.59	100	0	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 5316 MHz is fundamental signal which can be ignored.. 7980 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
5316	97.01	-	-	90.56	34.62	6.81	34.98	108	183	Average
5316	108.59	-	-	102.14	34.62	6.81	34.98	108	183	Peak
7980	48.23	-25.77	74	61.35	36.1	8.86	58.08	100	0	Peak
10641	45.2	-28.8	74	53.05	37.86	9.88	55.59	100	0	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5502 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
5502	95.46	-	-	88.52	34.8	6.95	34.81	108	238	Average
5502	107.5	-	-	100.56	34.8	6.95	34.81	108	238	Peak
8250	46.46	-27.54	74	58.7	36.15	9.12	57.51	100	0	Peak
11001	44.47	-29.53	74	51.85	38	10.11	55.49	100	0	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5498 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
5498	97.64	-	-	90.71	34.8	6.93	34.8	103	178	Average
5498	108.9	-	-	101.97	34.8	6.93	34.8	103	178	Peak
8250	47.04	-26.96	74	59.28	36.15	9.12	57.51	100	0	Peak
11001	45.26	-28.74	74	52.64	38	10.11	55.49	100	0	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	116	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5582 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
5582	96.63	-	-	89.53	34.9	7.02	34.82	145	240	Average
5582	108.86	-	-	101.76	34.9	7.02	34.82	145	240	Peak
8370	44.2	-29.8	74	55.96	36.18	9.25	57.19	100	0	Peak
11160	44.69	-29.31	74	51.75	38.17	10.16	55.39	100	0	Peak

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	116	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5582 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
5582	97.81	-	-	90.71	34.9	7.02	34.82	104	175	Average
5582	109.2	-	-	102.1	34.9	7.02	34.82	104	175	Peak
8370	46.43	-27.57	74	58.19	36.18	9.25	57.19	100	0	Peak
11160	46.27	-27.73	74	53.33	38.17	10.16	55.39	100	0	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 8550 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
30.27	32.65	-7.35	40	44.89	18.7	0.7	31.64	100	101	Peak
49.17	22.58	-17.42	40	44.28	8.93	0.8	31.43	-	-	Peak
281.1	22.94	-23.06	46	39.54	12.83	1.74	31.17	-	-	Peak
419.7	26.48	-19.52	46	38.98	16.5	2.06	31.06	-	-	Peak
540.1	25.62	-20.38	46	35.78	18.5	2.31	30.97	-	-	Peak
659.8	23.1	-22.9	46	30.33	20.3	2.6	30.13	-	-	Peak
5700	97.29	-	-	89.95	35.03	7.15	34.84	115	234	Average
5700	109.41	-	-	102.07	35.03	7.15	34.84	115	234	Peak
8550	46.62	-27.38	74	57.81	36.24	9.39	56.82	100	0	Peak
11400	45.26	-28.74	74	51.89	38.4	10.23	55.26	100	0	Peak



Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5698 MHz is fundamental signal which can be ignored. 2. 8550 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
33.24	20.37	-19.63	40	34.2	17.08	0.72	31.63	100	181	Peak
55.38	13.74	-26.26	40	37.85	6.6	0.83	31.54	-	-	Peak
217.92	20.25	-25.75	46	40.48	9.24	1.53	31	-	-	Peak
479.9	22.19	-23.81	46	33.1	17.6	2.19	30.7	-	-	Peak
600.3	25.19	-20.81	46	33.47	19.7	2.42	30.4	-	-	Peak
761.3	25.38	-20.62	46	30.62	22.1	2.77	30.11	-	-	Peak
5698	97.38	-	-	90.04	35.03	7.15	34.84	111	174	Average
5698	109.78	-	-	102.44	35.03	7.15	34.84	111	174	Peak
8550	46.77	-27.23	74	57.96	36.24	9.39	56.82	100	0	Peak
11400	45.83	-28.17	74	52.46	38.4	10.23	55.26	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5182 MHz is fundamental signal which can be ignored.. 2. 7770 MHz and 10362 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5182	94.21	-	-	88.14	34.48	6.71	35.12	102	240	Average
5182	106.88	-	-	100.81	34.48	6.71	35.12	102	240	Peak
7770	45.39	-28.61	74	58.7	36.05	8.82	58.18	100	0	Peak
10362	44.67	-29.33	74	52.9	37.72	9.71	55.66	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5176 MHz is fundamental signal which can be ignored.. 2. 7770 MHz and 10362 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5176	96.9	-	-	90.83	34.48	6.71	35.12	109	184	Average
5176	109.28	-	-	103.21	34.48	6.71	35.12	109	184	Peak
7770	46.35	-27.65	74	59.66	36.05	8.82	58.18	100	0	Peak
10362	44.45	-29.55	74	52.68	37.72	9.71	55.66	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	44	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5216 MHz is fundamental signal which can be ignored.. 2. 7830 MHz and 10440 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5216	94.1	-	-	87.93	34.52	6.74	35.09	101	240	Average
5216	106.03	-	-	99.86	34.52	6.74	35.09	101	240	Peak
7830	45.32	-28.68	74	58.57	36.07	8.83	58.15	100	0	Peak
10440	44.49	-29.51	74	52.63	37.76	9.75	55.65	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	44	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5218 MHz is fundamental signal which can be ignored.. 2. 7830 MHz and 10440 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5218	96.75	-	-	90.58	34.52	6.74	35.09	109	183	Average
5218	109.54	-	-	103.37	34.52	6.74	35.09	109	183	Peak
7830	47.62	-26.38	74	60.87	36.07	8.83	58.15	100	0	Peak
10440	44.48	-29.52	74	52.62	37.76	9.75	55.65	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5238 MHz is fundamental signal which can be ignored.. 2. 7860 MHz and 10482 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5238	94.64	-	-	88.41	34.53	6.76	35.06	101	234	Average
5238	106.85	-	-	100.62	34.53	6.76	35.06	101	234	Peak
7860	44.64	-29.36	74	57.86	36.07	8.84	58.13	100	0	Peak
10482	46.08	-27.92	74	54.14	37.79	9.78	55.63	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5242 MHz is fundamental signal which can be ignored.. 2. 7860 MHz and 10482 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5242	96.83	-	-	90.58	34.55	6.76	35.06	109	181	Average
5242	109.15	-	-	102.9	34.55	6.76	35.06	109	181	Peak
7860	47.65	-26.35	74	60.87	36.07	8.84	58.13	100	0	Peak
10482	45.11	-28.89	74	53.17	37.79	9.78	55.63	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	52	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5258 MHz is fundamental signal which can be ignored.. 2. 7890 MHz and 10524 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5258	94.36	-	-	88.09	34.55	6.76	35.04	100	236	Average
5258	106.53	-	-	100.26	34.55	6.76	35.04	100	236	Peak
7890	45.31	-28.69	74	58.51	36.08	8.84	58.12	100	0	Peak
10524	45.27	-28.73	74	53.28	37.81	9.81	55.63	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	52	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5258 MHz is fundamental signal which can be ignored.. 2. 7890 MHz and 10521 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5258	96.91	-	-	90.64	34.55	6.76	35.04	108	183	Average
5258	109.15	-	-	102.88	34.55	6.76	35.04	108	183	Peak
7890	46.8	-27.2	74	60	36.08	8.84	58.12	100	0	Peak
10521	44.83	-29.17	74	52.84	37.81	9.81	55.63	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	60	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5302 MHz is fundamental signal which can be ignored.. 2. 7950 MHz and 10599 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209.		

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
5302	93.81	-	-	87.39	34.6	6.8	34.98	112	235	Average
5302	105.75	-	-	99.33	34.6	6.8	34.98	112	235	Peak
7950	47.74	-26.26	74	60.88	36.09	8.86	58.09	100	0	Peak
10599	43.73	-30.27	74	51.64	37.84	9.85	55.6	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	60	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5302 MHz is fundamental signal which can be ignored.. 2. 7950 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
5302	96.23	-	-	89.81	34.6	6.8	34.98	107	183	Average
5302	108.1	-	-	101.68	34.6	6.8	34.98	107	183	Peak
7950	48.11	-25.89	74	61.25	36.09	8.86	58.09	100	0	Peak
10602	44.76	-29.24	74	52.67	37.84	9.85	55.6	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	<ol style="list-style-type: none"> 5318 MHz is fundamental signal which can be ignored.. 7980 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
5318	94.08	-	-	87.63	34.62	6.81	34.98	100	234	Average
5318	106.13	-	-	99.68	34.62	6.81	34.98	100	234	Peak
7980	47.39	-26.61	74	60.51	36.1	8.86	58.08	100	0	Peak
10641	45.08	-28.92	74	52.93	37.86	9.88	55.59	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	64	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 5320 MHz is fundamental signal which can be ignored.. 7980 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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	96.23	-	-	89.78	34.62	6.81	34.98	107	181	Average
5320	108.75	-	-	102.3	34.62	6.81	34.98	107	181	Peak
7980	47.62	-26.38	74	60.74	36.1	8.86	58.08	100	0	Peak
10641	45.56	-28.44	74	53.41	37.86	9.88	55.59	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5502 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
5502	95.86	-	-	88.92	34.8	6.95	34.81	108	239	Average
5502	107.78	-	-	100.84	34.8	6.95	34.81	108	239	Peak
8250	46.58	-27.42	74	58.82	36.15	9.12	57.51	100	0	Peak
11001	44.45	-29.55	74	51.83	38	10.11	55.49	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	100	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5498 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
5498	97.85	-	-	90.92	34.8	6.93	34.8	103	179	Average
5498	109.48	-	-	102.55	34.8	6.93	34.8	103	179	Peak
8250	48.63	-25.37	74	60.87	36.15	9.12	57.51	100	0	Peak
11001	45.18	-28.82	74	52.56	38	10.11	55.49	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	116	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5578 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
5578	96.19	-	-	89.11	34.88	7.02	34.82	105	232	Average
5578	107.93	-	-	100.85	34.88	7.02	34.82	105	232	Peak
8370	44.23	-29.77	74	55.99	36.18	9.25	57.19	100	0	Peak
11160	45.87	-28.13	74	52.93	38.17	10.16	55.39	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	116	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5582 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
5582	97.74	-	-	90.64	34.9	7.02	34.82	102	176	Average
5582	109.48	-	-	102.38	34.9	7.02	34.82	102	176	Peak
8370	46.16	-27.84	74	57.92	36.18	9.25	57.19	100	0	Peak
11163	45.51	-28.49	74	52.57	38.17	10.16	55.39	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Horizontal
Remark :	1. 5704 MHz is fundamental signal which can be ignored. 2. 8550 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
30.27	33.16	-6.84	40	45.4	18.7	0.7	31.64	117	198	Peak
42.42	31.73	-8.27	40	50.51	12.02	0.76	31.56	-	-	Peak
281.1	22.26	-23.74	46	38.86	12.83	1.74	31.17	-	-	Peak
419.7	25.53	-20.47	46	38.03	16.5	2.06	31.06	-	-	Peak
540.1	26.97	-19.03	46	37.13	18.5	2.31	30.97	-	-	Peak
780.2	25.96	-20.04	46	31.02	22.1	2.8	29.96	-	-	Peak
5704	96.78	-	-	89.42	35.05	7.15	34.84	103	228	Average
5704	108.65	-	-	101.29	35.05	7.15	34.84	103	228	Peak
8550	46.82	-27.18	74	58.01	36.24	9.39	56.82	100	0	Peak
11403	45.32	-28.68	74	51.95	38.4	10.23	55.26	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	140	Relative Humidity :	54~56%
Test Engineer :	David Ke	Polarization :	Vertical
Remark :	1. 5698 MHz is fundamental signal which can be ignored. 2. 8550 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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
30.54	20.6	-19.4	40	33.37	18.16	0.71	31.64	100	185	Peak
208.74	21.56	-21.94	43.5	42.29	8.96	1.49	31.18	-	-	Peak
242.22	17.86	-28.14	46	35.64	11.53	1.63	30.94	-	-	Peak
540.1	23.29	-22.71	46	33.45	18.5	2.31	30.97	-	-	Peak
600.3	24.93	-21.07	46	33.21	19.7	2.42	30.4	-	-	Peak
787.9	24.43	-21.57	46	29.58	21.95	2.81	29.91	-	-	Peak
5698	97.65	-	-	90.31	35.03	7.15	34.84	110	168	Average
5698	109.77	-	-	102.43	35.03	7.15	34.84	110	168	Peak
8550	46.69	-27.31	74	57.88	36.24	9.39	56.82	100	0	Peak
11397	45.7	-28.3	74	52.33	38.4	10.23	55.26	100	0	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 (dB μ V)	
	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.

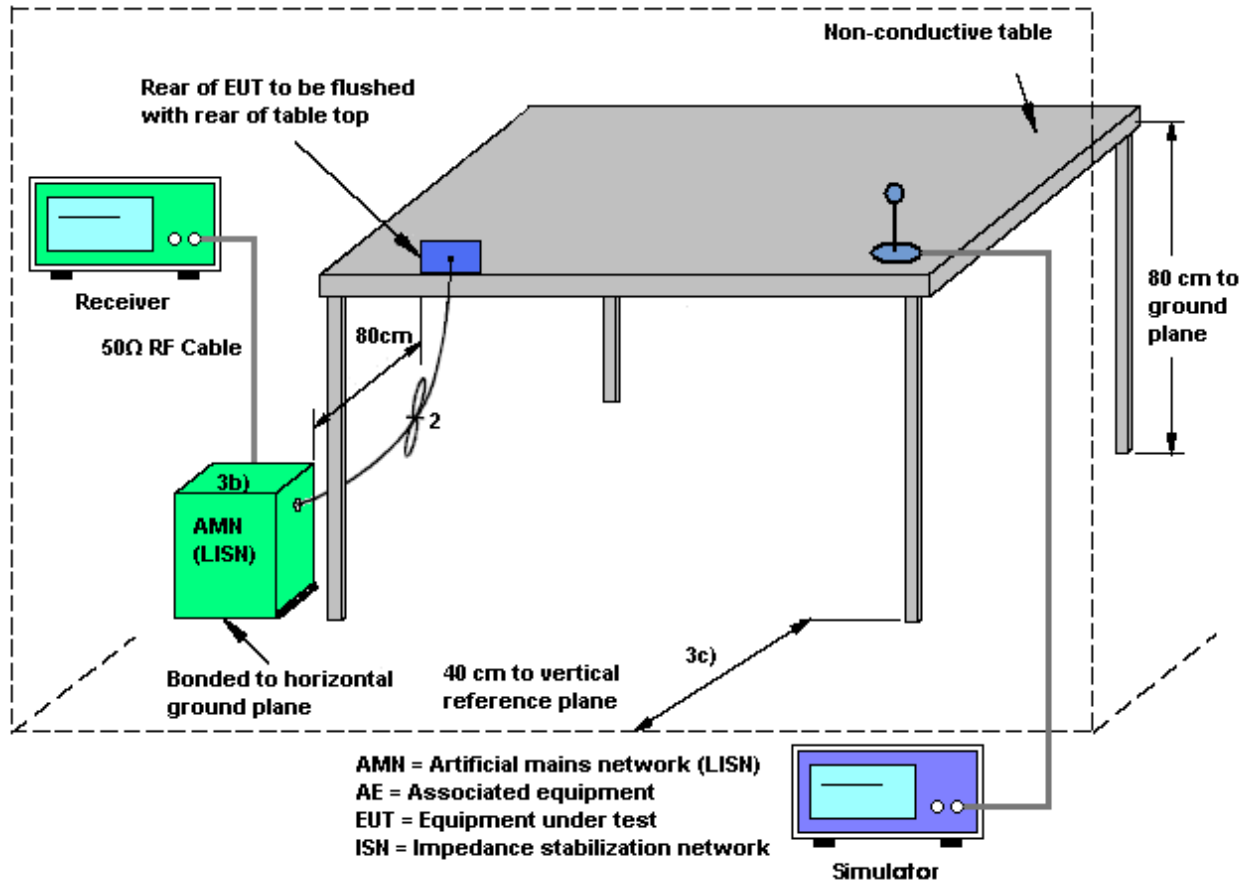
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

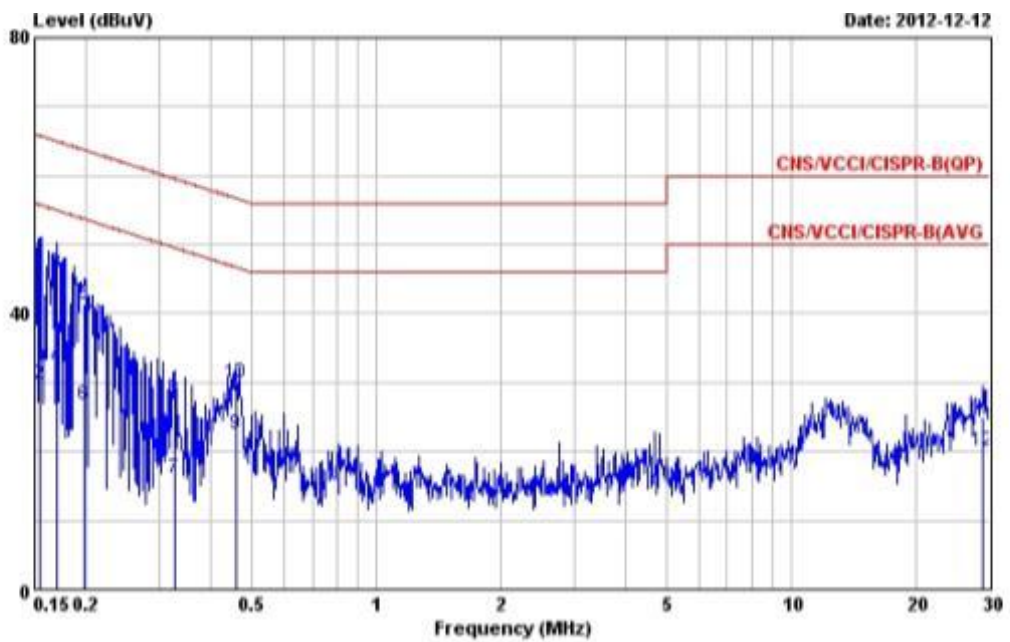
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 test site requirement.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a 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 :	24°C
Test Engineer :	Peter Lin	Relative Humidity :	48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN Link + Bluetooth Link + MSR (Barcode Scanner) + Scanner (Touch Screen) + MPEG4 + Earphone (Audio In) + Camera (Video) + SD Card (Data Copy) + USB flash drive (Data Copy) + RJ45 Load		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



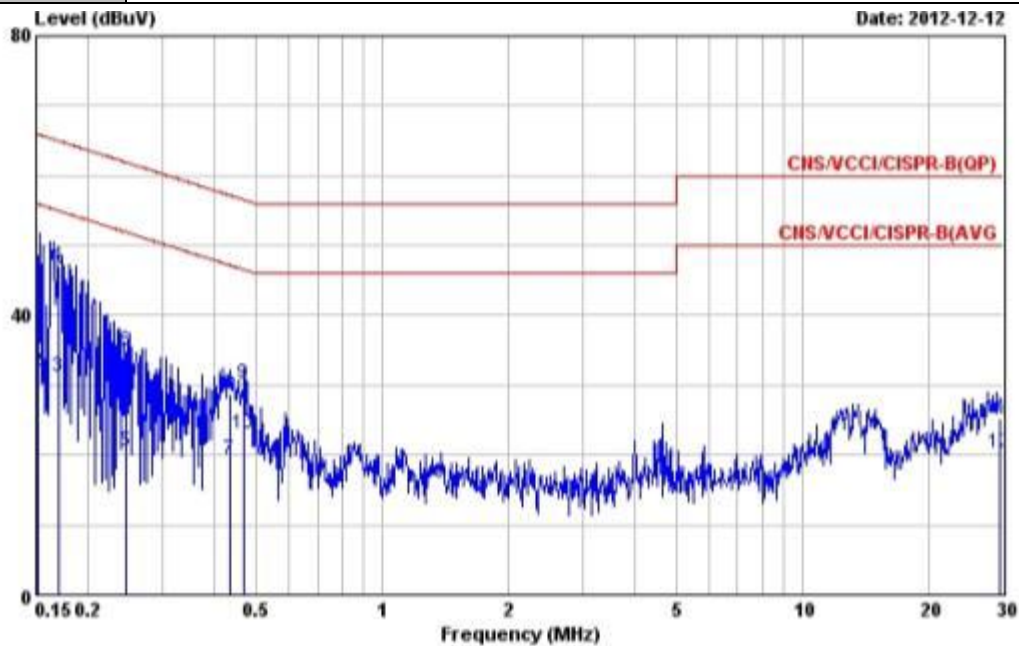
Site : CO01-LK
 Condition : LISN NNB-2/16Z 99081 LINE

POWER : 120VAC/60Hz
 MEMO : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 @	0.154	47.45	-18.33	65.78	47.27	0.14	0.04	QP
2 @	0.154	29.68	-26.10	55.78	29.50	0.14	0.04	Average
3 @	0.170	45.75	-19.21	64.96	45.57	0.14	0.04	QP
4 @	0.170	32.08	-22.88	54.96	31.90	0.14	0.04	Average
5 @	0.198	41.45	-22.24	63.69	41.27	0.14	0.04	QP
6 @	0.198	26.82	-26.87	53.69	26.64	0.14	0.04	Average
7 @	0.325	16.15	-33.43	49.58	15.95	0.15	0.05	Average
8 @	0.325	27.60	-31.98	59.58	27.40	0.15	0.05	QP
9 @	0.459	22.66	-24.05	46.71	22.42	0.15	0.09	Average
10 @	0.459	29.90	-26.81	56.71	29.66	0.15	0.09	QP
11 @	28.910	25.09	-34.91	60.00	23.95	0.54	0.60	QP
12 @	28.910	19.99	-30.01	50.00	18.85	0.54	0.60	Average



Test Mode :	Mode 1	Temperature :	24°C
Test Engineer :	Peter Lin	Relative Humidity :	48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN Link + Bluetooth Link + MSR (Barcode Scanner) + Scanner (Touch Screen) + MPEG4 + Earphone (Audio In) + Camera (Video) + SD Card (Data Copy) + USB flash drive (Data Copy) + RJ45 Load		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-LK
 Condition : LISN NNB-2/16Z 99081 NEUTRAL

POWER : 120VAC/60Hz
 MEMO : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.152	47.59	-18.30	65.89	47.40	0.15	0.04	QP
2	0.152	31.99	-23.90	55.89	31.80	0.15	0.04	Average
3	0.169	31.13	-23.88	55.01	30.94	0.15	0.04	Average
4	0.169	47.12	-17.89	65.01	46.93	0.15	0.04	QP
5	0.245	20.51	-31.43	51.94	20.32	0.15	0.04	Average
6	0.245	34.86	-27.08	61.94	34.67	0.15	0.04	QP
7	0.433	19.41	-27.78	47.19	19.19	0.15	0.07	Average
8	0.433	28.73	-28.46	57.19	28.51	0.15	0.07	QP
9	0.469	30.25	-26.28	56.53	30.01	0.15	0.09	QP
10	0.469	23.09	-23.44	46.53	22.85	0.15	0.09	Average
11	29.370	25.29	-34.71	60.00	24.05	0.64	0.60	QP
12	29.370	20.23	-29.77	50.00	18.99	0.64	0.60	Average

3.7 Frequency Stability Measurement

3.7.1 Limit of Frequency Stability

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

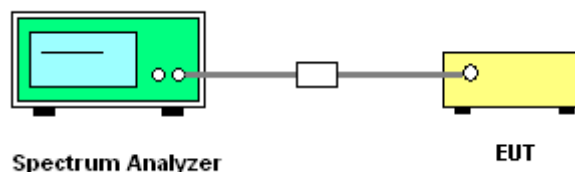
3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedures

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

3.7.4 Test Setup





3.7.5 Test Result of Frequency Stability

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

Band	Channel	Frequency (MHz)	Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
NII Band 1	36	5180	5171.80	5188.20	0.00
	44	5220	5211.85	5228.15	0.00
	48	5240	5231.80	5248.20	0.00
NII Band 2	52	5260	5251.80	5268.20	0.00
	60	5300	5291.80	5308.20	0.00
	64	5320	5311.80	5328.20	0.00
NII Band 3	100	5500	5491.80	5508.20	0.00
	116	5580	5571.80	5588.15	-4.48
	140	5700	5691.80	5708.20	0.00

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

Band	Channel	Frequency (MHz)	Low Frequency (Fl)	High Frequency (Fh)	Frequency Stability (ppm)
NII Band 1	36	5180	5171.20	5188.90	9.65
	44	5220	5211.20	5228.85	4.79
	48	5240	5231.20	5248.80	0.00
NII Band 2	52	5260	5251.25	5268.75	0.00
	60	5300	5291.15	5308.85	0.00
	64	5320	5311.25	5328.75	0.00
NII Band 3	100	5500	5491.10	5508.80	-9.09
	116	5580	5571.15	5588.75	-8.96
	140	5700	5691.20	5708.80	0.00



3.8 Automatically Discontinue Transmission

3.8.1 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.

3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 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.



3.9 Antenna Requirements

3.9.1 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.

3.9.2 Antenna Connected Construction

Non-standard connector used.

3.9.3 Antenna Gain

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



4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Dec. 18, 2012 ~ Dec. 20, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Sep. 08, 2012	Dec. 18, 2012 ~ Dec. 20, 2012	Sep. 07, 2013	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Sep. 08, 2012	Dec. 18, 2012 ~ Dec. 20, 2012	Sep. 07, 2013	Conducted (TH02-HY)
Test Receiver	R&S	ESCS 30	838251/004	9 kHz ~ 2.75 GHz	Feb. 02, 2012	Dec. 12, 2012	Feb. 01, 2013	Conduction (CO01-LK)
LISN	R&S	NNB-2/16Z	99081	9 kHz ~ 30 MHz	Apr. 11, 2012	Dec. 12, 2012	Apr. 10, 2013	Conduction (CO01-LK)
RF Cable-CON	Suhner Switzerland	RG223/U	CB017	9 kHz ~ 30 MHz	Nov. 01, 2012	Dec. 12, 2012	Oct. 31, 2013	Conduction (CO01-LK)
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 14, 2012	Dec. 21, 2012 ~ Dec. 22, 2012	Dec. 13, 2013	Radiation (03CH05-HY)
Bilog Antenna	Schaffner	CBL6111C	2725	30MHz~2GHz	Oct. 06, 2012	Dec. 21, 2012 ~ Dec. 22, 2012	Oct. 05, 2013	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Dec. 21, 2012 ~ Dec. 22, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Dec. 21, 2012 ~ Dec. 22, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Dec. 21, 2012 ~ Dec. 22, 2012	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Aug. 28, 2012	Dec. 21, 2012 ~ Dec. 22, 2012	Aug. 27, 2013	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Sep. 28, 2012	Dec. 21, 2012 ~ Dec. 22, 2012	Sep. 27, 2013	Radiation (03CH05-HY)
Pre Amplifier	COM-POWER	PA-103	161075	10-1000MHz. 32dB.GAIN	Feb. 27, 2012	Dec. 21, 2012 ~ Dec. 22, 2012	Feb. 26, 2013	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Dec. 21, 2012 ~ Dec. 22, 2012	Jul. 02, 2013	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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