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FCC RADIO TEST REPORT

Applicant's company	**Broadcom Corporation**
Applicant Address	190 Mathilda Place Sunnyvale CA 94086 U.S.A.
FCC ID	**QDS-BRCM1082**
Manufacturer's company	**Broadcom Corporation**
Manufacturer Address	190 Mathilda Place Sunnyvale CA 94086 U.S.A.

Product Name	802.11abgn/11ac WLAN + Bluetooth PCI-E Mini Card
Brand Name	Broadcom
Model No.	BCM94360HMB
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5350MHz / 5470 ~ 5725MHz
Received Date	Mar. 12, 2014
Final Test Date	May 06, 2014
Submission Type	Original Equipment
Operating Mode	Client (without radar detection function)

Statement

Test result included is for the IEEE 802.11n and IEEE 802.11a/ac of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2009**, **47 CFR FCC Part 15 Subpart E, KDB 789033 D01 v01r03, KDB 662911 D01 v02r01, KDB644545 D01v01r02.**

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR431243AB	Rev. 01	Initial issue of report	May 15, 2014

Certificate No.: CB10305022

1. CERTIFICATE OF COMPLIANCE

Product Name	:	802.11abgn/11ac WLAN + Bluetooth PCI-E Mini Card
Brand Name	:	Broadcom
Model No.	:	BCM94360HMB
Applicant	:	Broadcom Corporation
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Mar. 12, 2014 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen
SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	14.49 dB
4.2	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies	-
4.3	15.407(a)	Maximum Conducted Output Power	Complies	0.01 dB
4.4	15.407(a)	Power Spectral Density	Complies	0.03 dB
4.5	15.407(a)	Peak Excursion	Complies	2.11 dB
4.6	15.407(b)	Radiated Emissions	Complies	4.50 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.04 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n/ac

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From host system
Modulation	see the below table for IEEE 802.11n/ac
Data Modulation	For 802.11n: OFDM (BPSK / QPSK / 16QAM / 64QAM) For 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n/ac
Frequency Range	5150 ~ 5350MHz / 5470 ~ 5725MHz
Channel Number	20 for 20MHz bandwidth ; 10 for 40MHz bandwidth 5 for 80MHz bandwidth
Channel Band Width (99%)	For non-beamforming mode: 802.11ac MCS0/Nss1 (VHT20): 18.08 MHz ; 802.11ac MCS0/Nss1 (VHT40): 49.60 MHz ; 802.11ac MCS0/Nss1 (VHT80): 110.08 MHz For beamforming mode: 802.11ac MCS0/Nss1 (VHT20): 18.08 MHz ; 802.11ac MCS0/Nss1 (VHT40): 36.80 MHz ; 802.11ac MCS0/Nss1 (VHT80): 76.80 MHz
Maximum Conducted Output Power	For non-beamforming mode: Band 1: 802.11ac MCS0/Nss1 (VHT20): 14.50 dBm ; 802.11ac MCS0/Nss1 (VHT40): 16.89 dBm ; 802.11ac MCS0/Nss1 (VHT80): 16.69 dBm Band 2: 802.11ac MCS0/Nss1 (VHT20): 19.59 dBm ; 802.11ac MCS0/Nss1 (VHT40): 22.56 dBm ; 802.11ac MCS0/Nss1 (VHT80): 18.28 dBm Band 3: 802.11ac MCS0/Nss1 (VHT20): 19.42 dBm ; 802.11ac MCS0/Nss1 (VHT40): 23.22 dBm ; 802.11ac MCS0/Nss1 (VHT80): 23.69 dBm

	For beamforming mode: Band 1: 802.11ac MCS0/Nss1 (VHT20): 14.31 dBm ; 802.11ac MCS0/Nss1 (VHT40): 14.10 dBm ; 802.11ac MCS0/Nss1 (VHT80): 14.06 dBm Band 2: 802.11ac MCS0/Nss1 (VHT20): 19.59 dBm ; 802.11ac MCS0/Nss1 (VHT40): 19.62 dBm ; 802.11ac MCS0/Nss1 (VHT80): 16.93 dBm Band 3: 802.11ac MCS0/Nss1 (VHT20): 19.42 dBm ; 802.11ac MCS0/Nss1 (VHT40): 19.18 dBm ; 802.11ac MCS0/Nss1 (VHT80): 19.24 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

IEEE 802.11a

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From host system
Modulation	OFDM for IEEE 802.11a
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	OFDM (6/9/12/18/24/36/48/54)
Frequency Range	5150 ~ 5350MHz / 5470 ~ 5725MHz
Channel Number	20
Channel Band Width (99%)	11a: 17.12 MHz
Maximum Conducted Output Power	Band 1: 14.56 dBm ; Band 2: 19.60 dBm ; Band 3: 19.54 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
TPC Function	☒ With TPC	☐ Without TPC
Weather Band (5600~5650MHz)	☒ With 5600~5650MHz	☐ Without 5600~5650MHz
Beamforming Function	☒ With beamforming	☐ Without beamforming

Note: 1. The product has beamforming function for 802.11n/ac VHT20 VHT40 VHT8 in 5GHz.

2. The MIMO transmission mode is correlated.

Antenna and Band width

Antenna	Three (TX)		
Band width Mode	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X
IEEE 802.11n	V	V	X
IEEE 802.11ac	V	V	V

Note: The product has beamforming function for 802.11n/ac VHT20 VHT40 VHT80 in 5GHz.

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	3	MCS 0-23
802.11n (HT40)	3	MCS 0-23
802.11ac (VHT20)	3	MCS 0-9/Nss1-3
802.11ac (VHT40)	3	MCS 0-9/Nss1-3
802.11ac (VHT80)	3	MCS 0-9/Nss1-3

Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40.

Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT support VHT20, VHT40 and VHT80.

Note 3: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Set	Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)				
						2.4G	5G B1	5G B2	5G B3	5G B4
1	1	Hitachi	HMT05/HFT17-DL07	WLAN/BT antenna	IPEX A13	3.9	3.9	5.6	5.8	5.8
	2	Hitachi	HMT05/HFT17-DL07	WLAN/BT antenna	IPEX A13	3.9	3.9	5.6	5.8	5.8
	3	Hitachi	HMT05/HFT17-DL07	WLAN/BT antenna	IPEX A13	3.9	3.9	5.6	5.8	5.8

Note: There are three antennas for this set.

<For 2.4GHz Band>

For IEEE 802.11b/g/n mode (3TX/3RX)

Chain 1, Chain 2 and Chain 3 can be used as transmitting/receiving antenna.

Chain 1, Chain 2 and Chain 3 could transmit/receive simultaneously.

<For 5GHz Band>

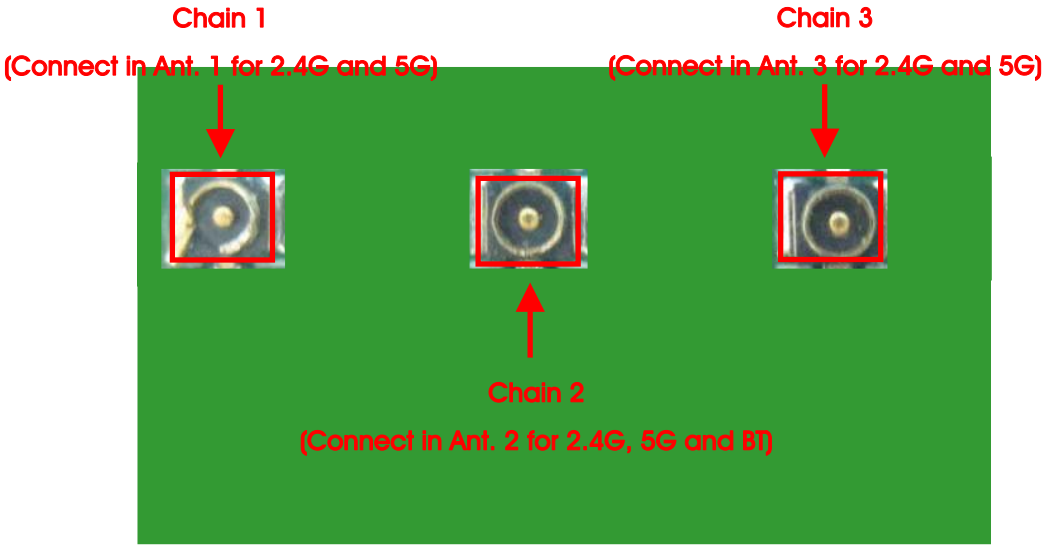
For IEEE 802.11a/n/ac mode (3TX/3RX)

Chain 1, Chain 2 and Chain 3 can be used as transmitting/receiving antenna.

Chain 1, Chain 2 and Chain 3 could transmit/receive simultaneously.

For Bluetooth mode (1TX/1RX)

Only Chain 2 can be used as transmitting/receiving antenna.



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144.

For 40MHz bandwidth systems, use Channel 38, 46, 54, 62, 102, 110, 118, 126, 134, 142.

For 80MHz bandwidth systems, use Channel 42, 58, 106, 122, 138.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz	-	-
5250~5350 MHz Band 2	52	5260 MHz	60	5300 MHz
	54	5270 MHz	62	5310 MHz
	56	5280 MHz	64	5320 MHz
	58	5290 MHz	-	-
5470~5725 MHz Band 3	100	5500 MHz	124	5620 MHz
	102	5510 MHz	126	5630 MHz
	104	5520 MHz	128	5640 MHz
	106	5530 MHz	132	5660 MHz
	108	5540 MHz	134	5670 MHz
	110	5550 MHz	136	5680 MHz
	112	5560 MHz	138	5690 MHz
	116	5580 MHz	140	5700 MHz
	118	5590 MHz	142	5710 MHz
	120	5600 MHz	144	5720 MHz
	122	5610 MHz	-	-

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	Normal Link		-	-	-
Max. Conducted Output Power	11ac VHT20	Band 1-3	MCS0/Nss1	36/40/48/52/60/64/ 100/116/140/144	1+2+3
	11ac VHT40	Band 1-3	MCS0/Nss1	38/46/54/62/102/ 110/134/142	1+2+3
	11ac VHT80	Band 1-3	MCS0/Nss1	42/58/106/122/138	1+2+3
	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64/ 100/116/140/144	1+2+3
Power Spectral Density	11ac VHT20	Band 1-3	MCS0/Nss1	36/40/48/52/60/64/ 100/116/140/144	1+2+3
	11ac VHT40	Band 1-3	MCS0/Nss1	38/46/54/62/102/ 110/134/142	1+2+3
	11ac VHT80	Band 1-3	MCS0/Nss1	42/58/106/122/138	1+2+3
	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64/ 100/116/140/144	1+2+3
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	11ac VHT20	Band 1-3	MCS0/Nss1	36/40/48/52/60/64/ 100/116/140/144	1+2+3
	11ac VHT40	Band 1-3	MCS0/Nss1	38/46/54/62/102/ 110/134/142	1+2+3
	11ac VHT80	Band 1-3	MCS0/Nss1	42/58/106/122/138	1+2+3
	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64/ 100/116/140/144	1+2+3
Peak Excursion	11ac VHT20	Band 1-3	MCS0/Nss1	36/40/48/52/60/64/ 100/116/140/144	1+2+3
	11ac VHT40	Band 1-3	MCS0/Nss1	38/46/54/62/102/ 110/134/142	1+2+3
	11ac VHT80	Band 1-3	MCS0/Nss1	42/58/106/122/138	1+2+3
	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64/ 100/116/140/144	1+2+3
Radiated Emission Below 1GHz	Normal Link		-	-	-

Radiated Emission Above 1GHz	11ac VHT20	Band 1-3	MCS0/Nss1	36/40/48/52/60/64/100/116/140/144	1+2+3
	11ac VHT40	Band 1-3	MCS0/Nss1	38/46/54/62/102/110/134/142	1+2+3
	11ac VHT80	Band 1-3	MCS0/Nss1	42/58/106/122/138	1+2+3
	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64/100/116/140/144	1+2+3
Band Edge Emission	11ac VHT20	Band 1-3	MCS0/Nss1	36/40/48/52/60/64/100/116/140/144	1+2+3
	11ac VHT40	Band 1-3	MCS0/Nss1	38/46/54/62/102/110/134/142	1+2+3
	11ac VHT80	Band 1-3	MCS0/Nss1	42/58/106/122/138	1+2+3
	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64/100/116/140/144	1+2+3
Frequency Stability	Un-modulation		-	40/60/100	1+2+3

Note: VHT20/VHT40 covers HT20/HT40, due to same modulation.

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. 2.4GHz WLAN Function + Bluetooth Function

Mode 2. 5GHz WLAN Function + Bluetooth Function

Mode 2 is the worst case, so it was selected to record in this test report.

For Radiated Emission Below 1GHz test:

Mode 1. 2.4GHz WLAN function + Bluetooth function

Mode 2. 5GHz WLAN function + Bluetooth function

Mode 2 is the worst case, so it was selected to record in this test report.

For Radiated Emission Above 1GHz test:

Mode 1. CTX-EUT

For Co-location test:

Mode 1. 2.4GHz WLAN function + Bluetooth function

Mode 2. 5GHz WLAN function + Bluetooth function

For Co-location MPE and Radiated Emission Co-location Test:

The EUT could be applied 2.4GHz / 5GHz with WLAN function and Bluetooth function; therefore Co-location Maximum Permissible Exposure (please refer to Appendix B) and Radiated Emission Co-location (please refer to Appendix C) tests are added for simultaneously transmit between 2.4GHz / 5GHz WLAN function and Bluetooth function.

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC).

3.7. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
AP Router	Planex	GW-AP54SGX	KA220030603014-1
NB	DELL	E6430	DoC
802.11abgn/11ac WLAN + Bluetooth PCI-E Mini Card (Device)	Broadcom	BCM94360HMB	QDS-BRCM1082
NB	DELL	E6510	N/A
Mouse	Logitech	M-U0026	DoC
Earphone	SHYARO CHI	MIC-04	N/A
Test Fixture*2	Broadcom	BCM9MC2EC	N/A

For Test Site No: 03CH01-CB

Radiated Emission 30MHz~1GHz test

Support Unit	Brand	Model	FCC ID
Wireless AP	Netgear	R7000	PY313200233
NB	DELL	E4300	RSE-TG233
802.11abgn/11ac WLAN + Bluetooth PCI-E Mini Card (Device)	Broadcom	BCM94360HMB	QDS-BRCM1082
NB	DELL	M1340	E2K4965AGNM
Mouse	Logitech	M-B0001	HC238HR00XY
Earphone	E-BOOKI	E-EPC040	N/A
Test Fixture*2	Broadcom	BCM9MC2EC	N/A

Radiated Emission above 1GHz test (For Non-Beamforming Mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	RSE-TG233
Test Fixture	Broadcom	BCM9MC2EC	N/A

Radiated Emission above 1GHz test (For Beamforming Mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	RSE-TG233
Test Fixture	Broadcom	BCM9MC2EC	N/A
Wireless AP	Netgear	R7000	PY313200233

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC

3.8. Table for Parameters of Test Software Setting

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. 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.

For non-beamforming mode:

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT20

Test Software Version	Manual Tool Version : 2.0.1.6									
Frequency	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
MCS0/Nss1 VHT20	42	42	41	63	63	63	63	63	65	65

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT40

Test Software Version	Manual Tool Version : 2.0.1.6							
Frequency	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz
MCS0/Nss1 VHT40	51	52	75	57	58	75	68	78

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT80

Test Software Version	Manual Tool Version : 2.0.1.6				
Frequency	5210 MHz	5290 MHz	5530 MHz	5610 MHz	5690 MHz
MCS0/Nss1 VHT80	48	55	56	72	80

Power Parameters of IEEE 802.11a

Test Software Version	Manual Tool Version : 2.0.1.6									
Frequency	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	42	41	41	63	62	62	63	63	65	65

For beamforming mode:

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT20

Test Software Version	Manual Tool Version : 2.0.1.6									
Frequency	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
MCS0/Nss1 VHT20	41	41	41	63	63	63	63	63	65	60

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT40

Test Software Version	Manual Tool Version : 2.0.1.6							
Frequency	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz
MCS0/Nss1 VHT40	40	40	65	45	55	62	62	62

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT80

Test Software Version	Manual Tool Version : 2.0.1.6				
Frequency	5210 MHz	5290 MHz	5530 MHz	5610 MHz	5690 MHz
MCS0/Nss1 VHT80	40	52	55	62	62

3.9. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN 7 were executed.

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under DOS.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by Wireless AP and transmit duty cycle no less 98%

3.10. Test Signal Duty Cycle

For non-beamforming mode:

Band	Mode	TX-on (ms)	TX-on+TX-off (ms)	TX-on/(TX-on+TX-off)x100= Duty cycle (%)	Duty Factor (dB)
5G	802.11ac MCS0/Nss1 VHT20	1.930	1.950	98.97	0.045
	802.11ac MCS0/Nss1 VHT40	0.950	0.970	97.94	0.090
	802.11ac MCS0/Nss1 VHT80	0.462	0.482	95.85	0.184
	802.11a	2.070	2.080	99.52	0.021

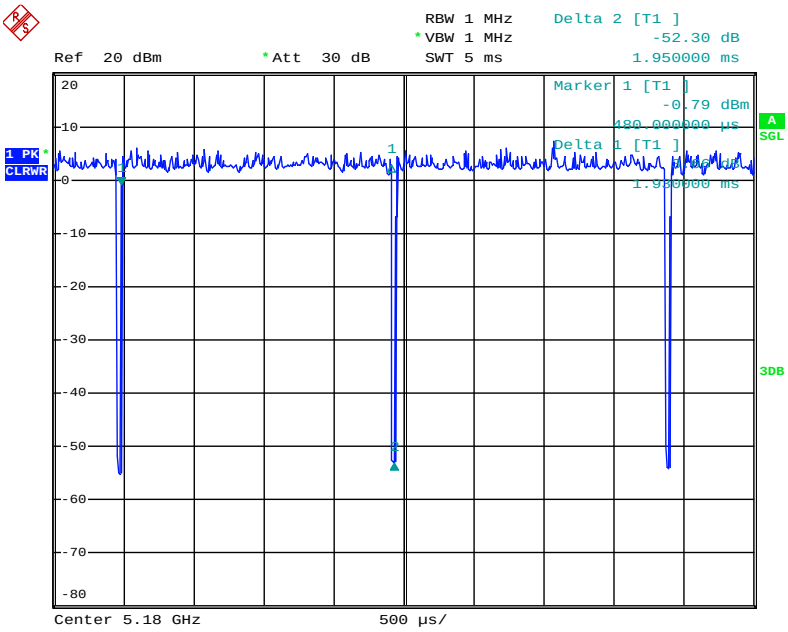
For beamforming mode:

Band	Mode	TX-on (ms)	TX-on+TX-off (ms)	TX-on/(TX-on+TX-off)x100= Duty cycle (%)	Duty Factor (dB)
5G	802.11ac MCS0/Nss1 VHT20	1.841	1.928	95.49	0.200
	802.11ac MCS0/Nss1 VHT40	0.942	1.014	92.90	0.320
	802.11ac MCS0/Nss1 VHT80	0.449	0.486	92.54	0.337

3.11. Duty Cycle

For non-beamforming mode:

IEEE 802.11ac MCS0/Nss1 VHT20



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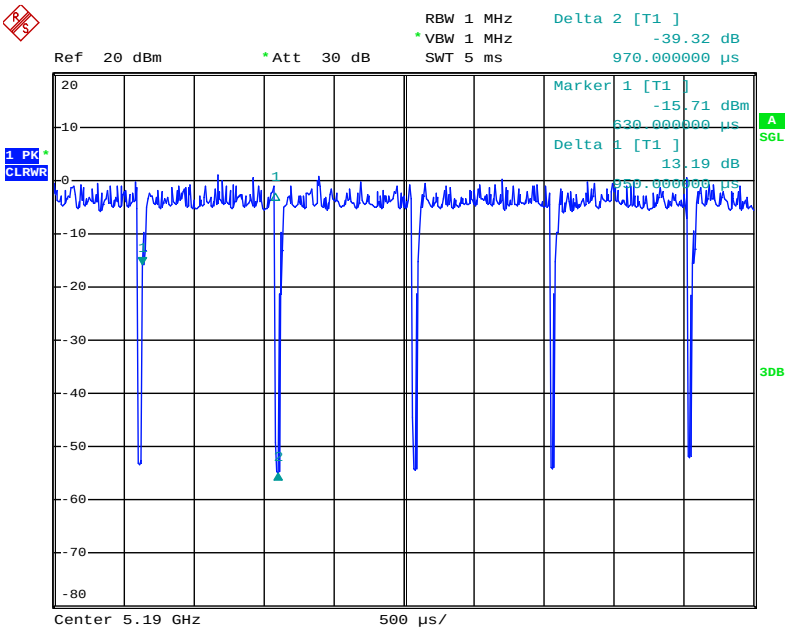
IEEE 802.11ac MCS0/Nss1 VHT40



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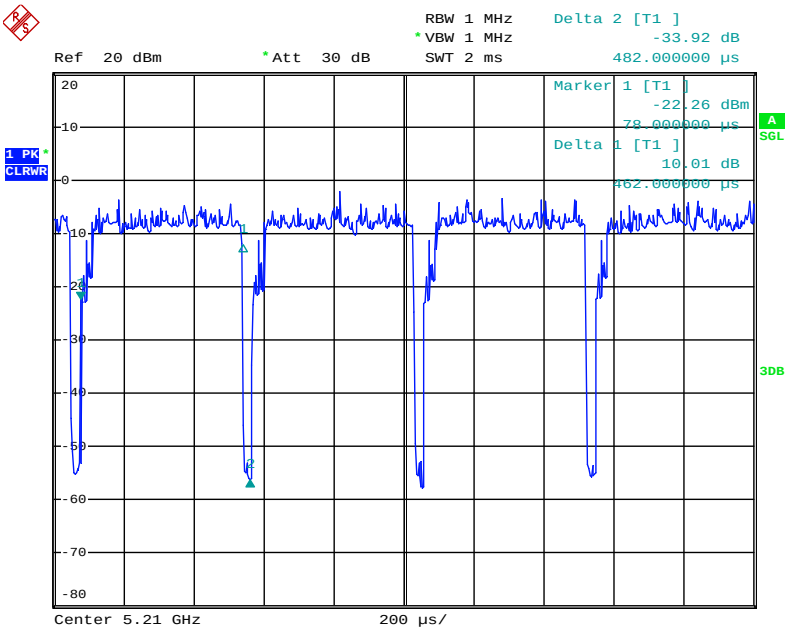
IEEE 802.11ac MCS0/Nss1 VHT80



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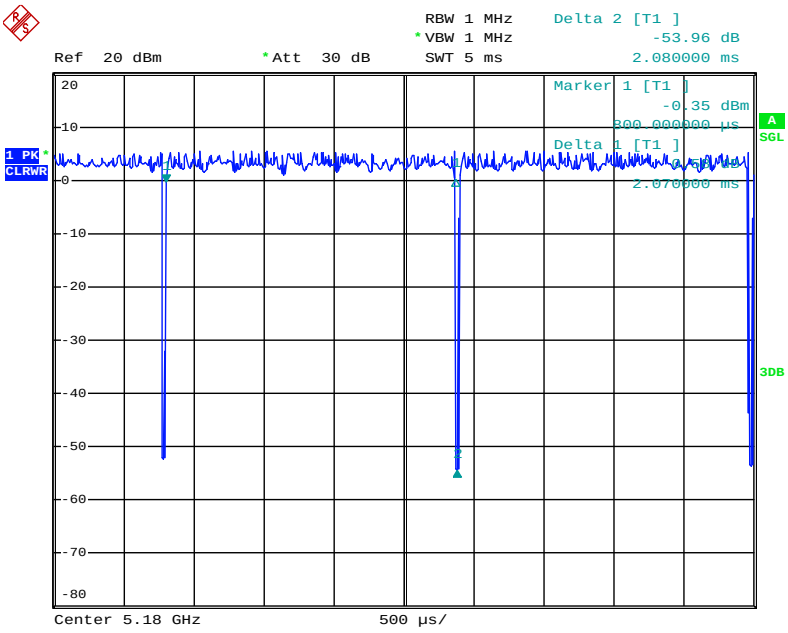
IEEE 802.11a



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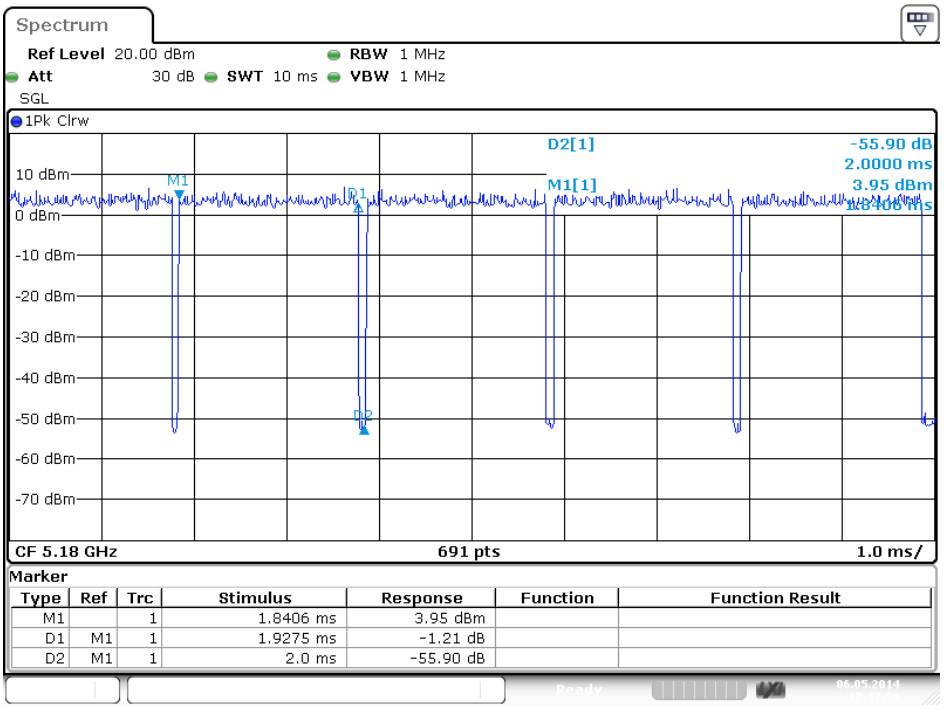
For beamforming mode:

IEEE 802.11ac MCS0/Nss1 VHT20



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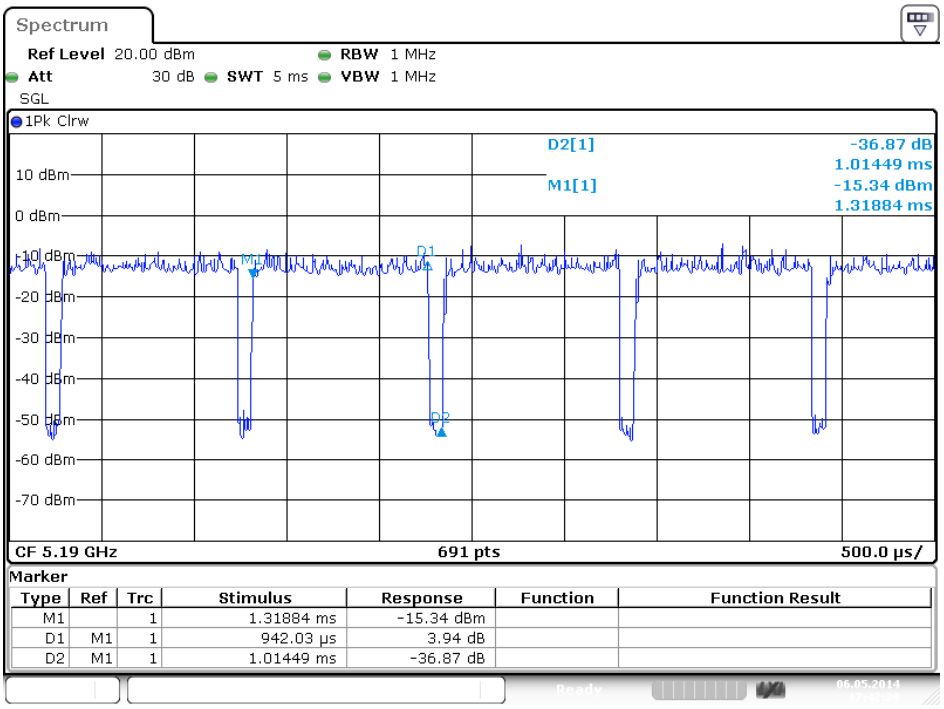
IEEE 802.11ac MCS0/Nss1 VHT40



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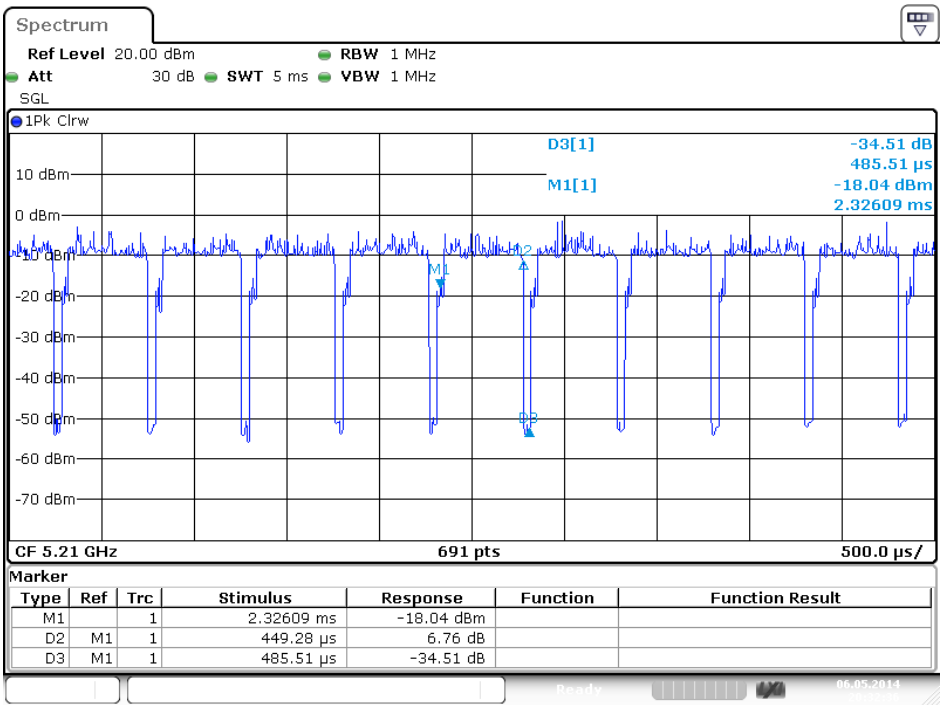
IEEE 802.11ac MCS0/Nss1 VHT80

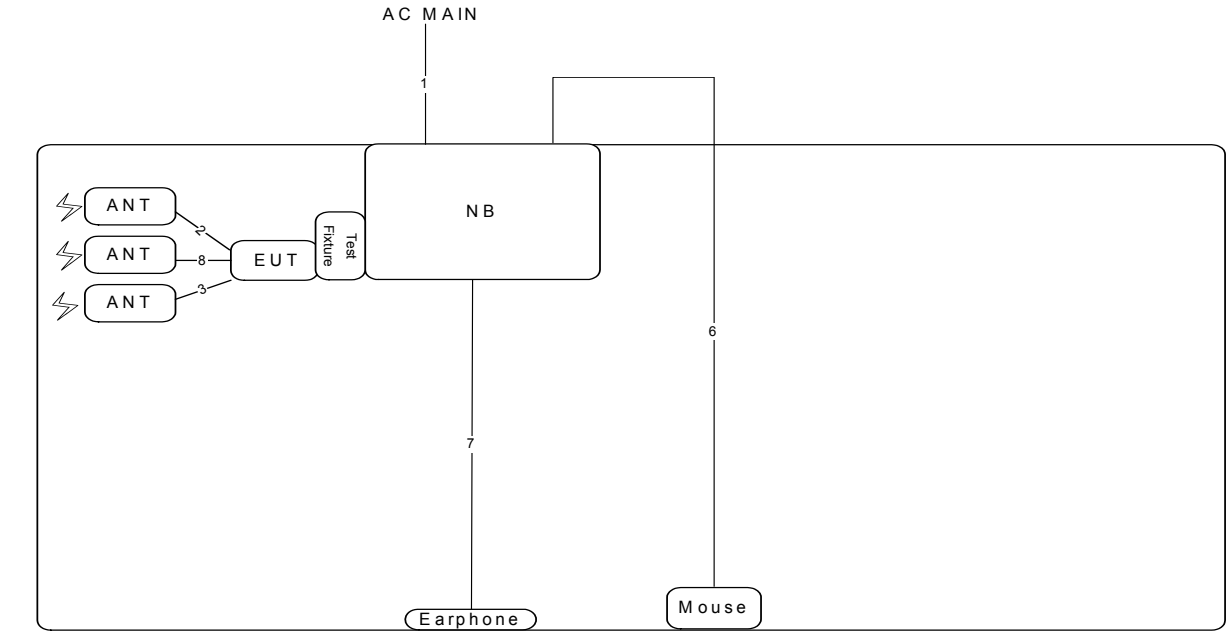


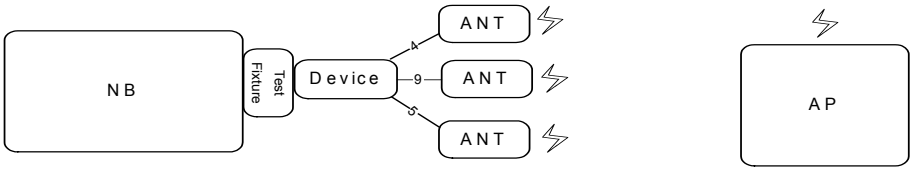
Date: 6.MAY.2014 20:32:36

3.12. Test Configurations

3.12.1. AC Power Line Conduction Emissions Test Configuration

Test Mode: Mode 2

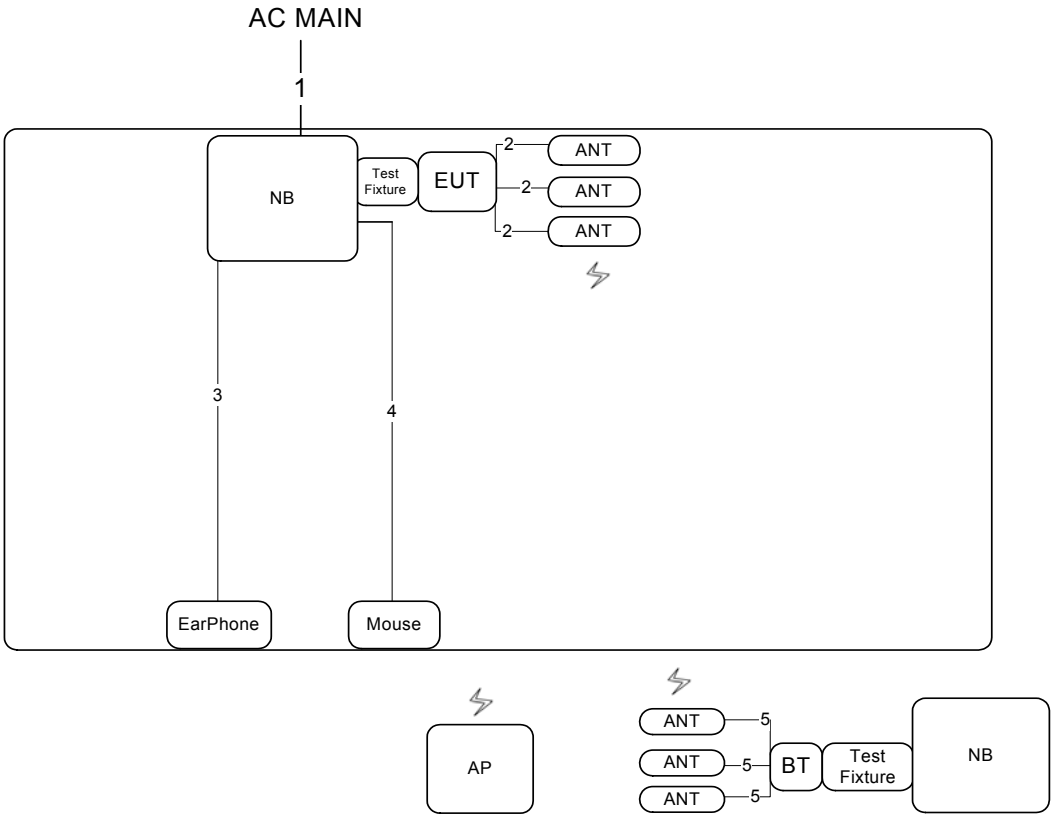




Item	Connection	Shield	Length
1	Power cable	No	2.6m
2	ANT cable	Yes	0.2m
3	ANT cable	Yes	0.2m
4	ANT cable	Yes	0.2m
5	ANT cable	Yes	0.2m
6	USB cable	Yes	1.8m
7	Audio cable	No	1.5m
8	ANT cable	Yes	0.2m
9	ANT cable	Yes	0.2m

3.12.2. Radiation Emissions Test Configuration

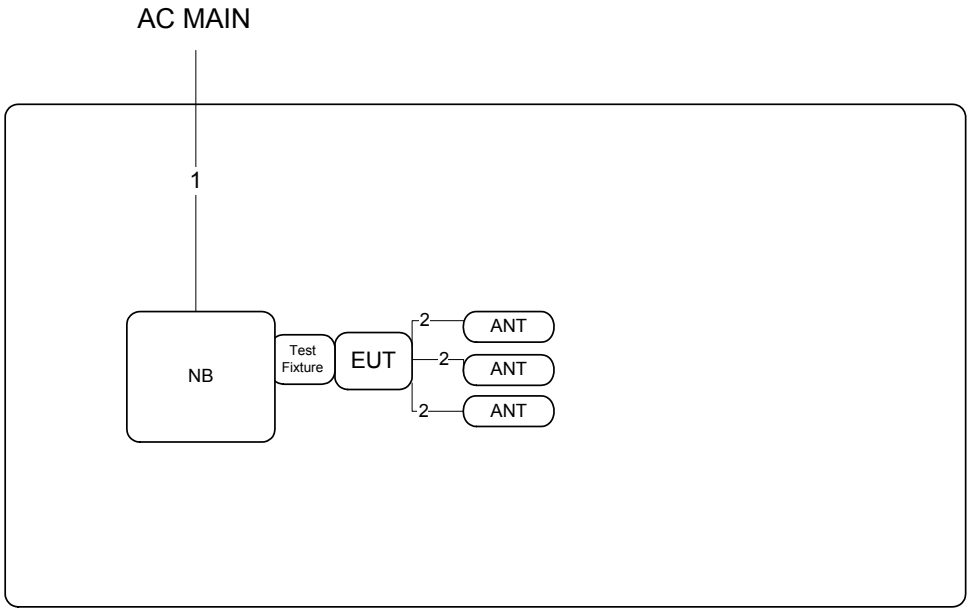
Test Configuration: 30MHz~1GHz / Test Mode 2



Item	Connection	Shield	Length
1	Power cable	No	2.6m
2	ANT cable*3	Yes	0.2m
3	Audio cable	No	1.1m
4	USB cable	Yes	1.8m
5	ANT cable*3	Yes	0.2m

For Non-Beamforming Mode

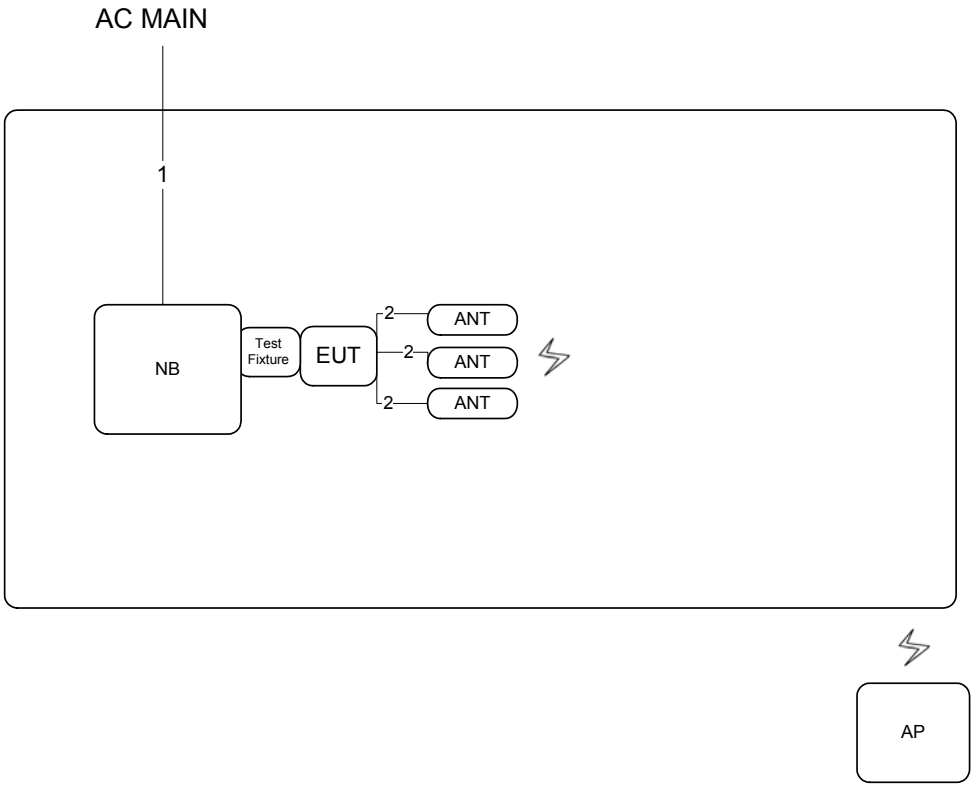
Test Configuration: above 1GHz



Item	Connection	Shield	Length
1	Power cable	No	1.8m
2	ANT cable*3	Yes	0.2m

For Beamforming Mode

Test Configuration: above 1GHz



Item	Connection	Shield	Length
1	Power cable	No	1.8m
2	ANT cable*3	Yes	0.2m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product that is designed to connect to the 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 below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

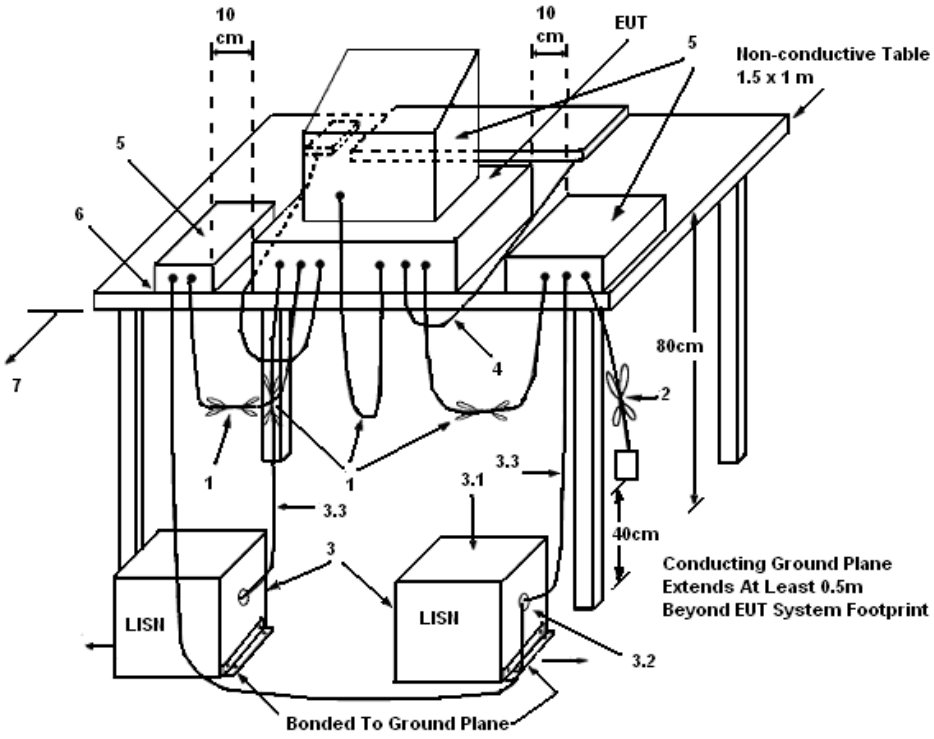
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

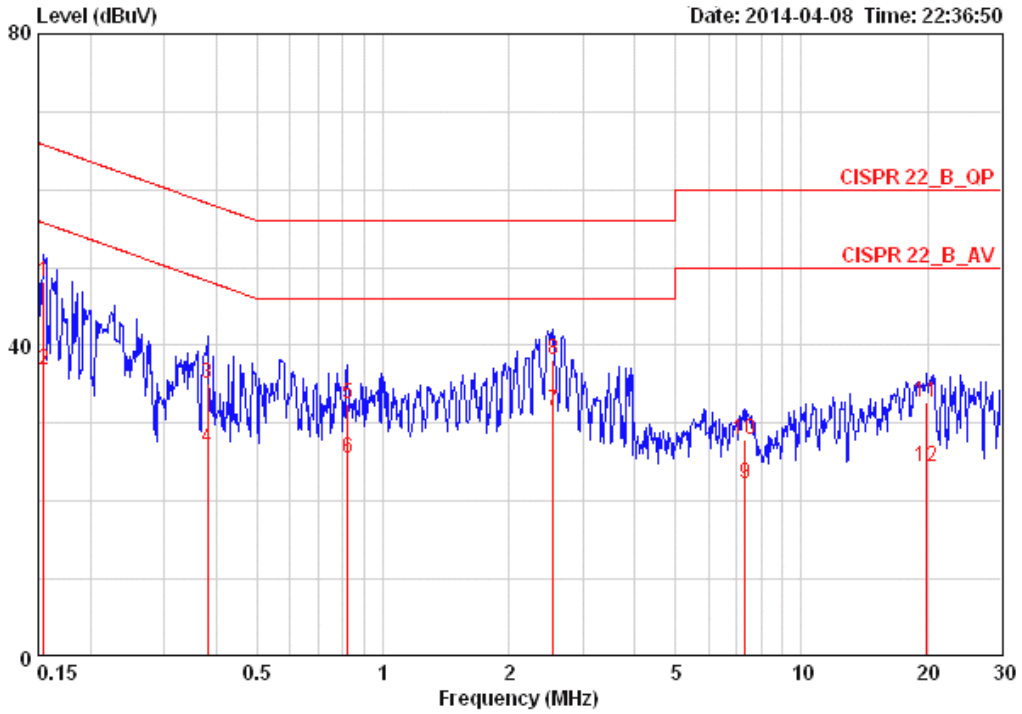
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

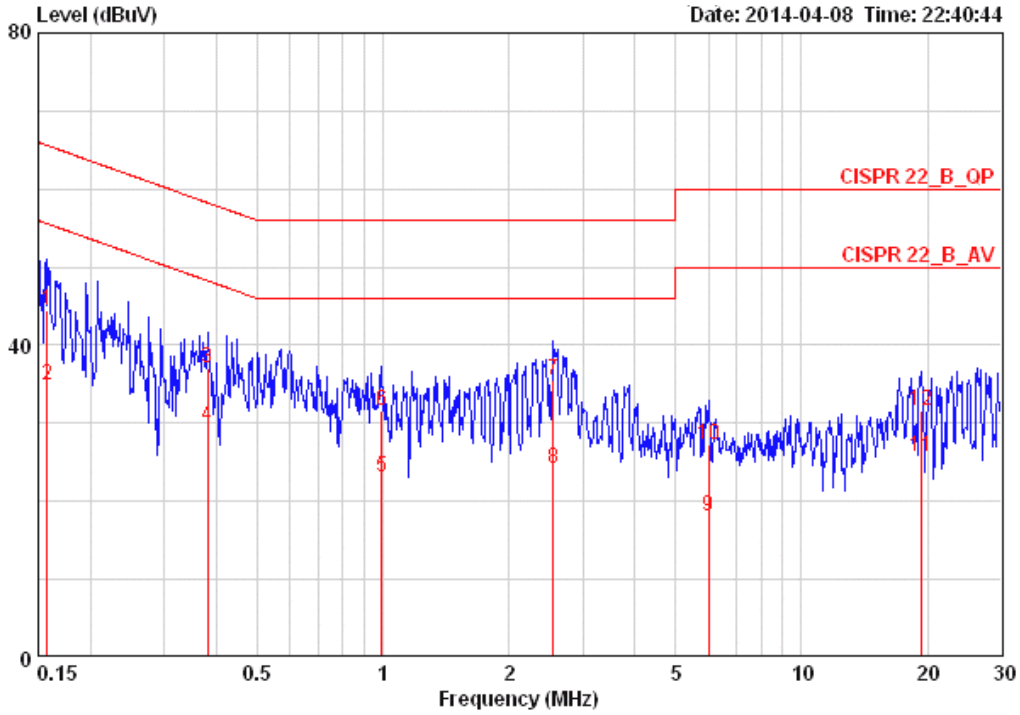
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	25°C	Humidity	52%
Test Engineer	Parody Lin	Phase	Line
Configuration	Normal Link / Mode 2		



	Freq	Level	Over Limit	Limit Line	LISN Factor	Read Level	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dB	dBuV	dB		
1	0.15485	48.09	-17.64	65.74	0.15	47.76	0.18	LINE	QP
2	0.15485	36.89	-18.84	55.74	0.15	36.56	0.18	LINE	AVERAGE
3	0.38113	35.03	-23.22	58.25	0.15	34.68	0.20	LINE	QP
4	0.38113	26.72	-21.53	48.25	0.15	26.37	0.20	LINE	AVERAGE
5	0.82172	32.46	-23.54	56.00	0.16	32.10	0.20	LINE	QP
6	0.82172	25.51	-20.49	46.00	0.16	25.15	0.20	LINE	AVERAGE
7 @	2.554	31.51	-14.49	46.00	0.22	31.05	0.24	LINE	AVERAGE
8	2.554	38.06	-17.94	56.00	0.22	37.60	0.24	LINE	QP
9	7.329	22.32	-27.68	50.00	0.33	21.69	0.30	LINE	AVERAGE
10	7.329	27.94	-32.06	60.00	0.33	27.31	0.30	LINE	QP
11	19.950	32.76	-27.24	60.00	0.60	31.66	0.50	LINE	QP
12	19.950	24.41	-25.59	50.00	0.60	23.31	0.50	LINE	AVERAGE

Temperature	25°C	Humidity	52%
Test Engineer	Parody Lin	Phase	Neutral
Configuration	Normal Link / Mode 2		



	Freq	Level	Over Limit	Limit Line	LISN Factor	Read Level	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dB	dBuV	dB		
1	0.15733	44.53	-21.07	65.60	0.07	44.28	0.18	NEUTRAL	QP
2	0.15733	34.81	-20.79	55.60	0.07	34.56	0.18	NEUTRAL	AVERAGE
3	0.38113	37.11	-21.14	58.25	0.07	36.84	0.20	NEUTRAL	QP
4	0.38113	29.57	-18.68	48.25	0.07	29.30	0.20	NEUTRAL	AVERAGE
5	0.99440	23.06	-22.94	46.00	0.08	22.83	0.15	NEUTRAL	AVERAGE
6	0.99440	31.53	-24.47	56.00	0.08	31.30	0.15	NEUTRAL	QP
7	2.554	35.64	-20.36	56.00	0.12	35.28	0.24	NEUTRAL	QP
8	2.554	24.29	-21.71	46.00	0.12	23.93	0.24	NEUTRAL	AVERAGE
9	5.993	18.15	-31.85	50.00	0.18	17.64	0.33	NEUTRAL	AVERAGE
10	5.993	27.20	-32.80	60.00	0.18	26.69	0.33	NEUTRAL	QP
11	19.326	25.76	-24.24	50.00	0.44	24.82	0.50	NEUTRAL	AVERAGE
12	19.326	31.65	-28.35	60.00	0.44	30.71	0.50	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

26dB Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RBW	Approximately 1% of the emission bandwidth
VBW	VBW > RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	**Setting**
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold

4.2.3. Test Procedures

For Radiated 26dB Bandwidth and 99% Occupied Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. 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%.

4.2.4. Test Setup Layout

For Radiated 26dB Bandwidth and 99% Occupied Bandwidth Measurement:

This test setup layout is the same as that shown in section 4.6.4.

4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of 26dB Bandwidth and 99% Occupied Bandwidth

Temperature	20°C	Humidity	52%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a /ac

For non-beamforming mode:

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	20.16	17.92
40	5200 MHz	20.00	17.92
48	5240 MHz	20.32	17.92
52	5260 MHz	21.28	17.92
60	5300 MHz	21.12	18.08
64	5320 MHz	21.60	18.08
100	5500 MHz	21.28	18.08
116	5580 MHz	21.12	17.92
140	5700 MHz	21.60	18.08
144	5720 MHz	21.28	18.08

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	38.40	36.48
46	5230 MHz	39.04	35.84
54	5270 MHz	73.60	39.36
62	5310 MHz	39.04	36.48
102	5510 MHz	39.04	36.48
110	5550 MHz	70.40	37.44
134	5670 MHz	52.80	36.48
142	5710 MHz	79.68	49.60

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
42	5210 MHz	81.92	75.52
58	5290 MHz	81.28	76.16
106	5530 MHz	81.28	76.80
122	5610 MHz	141.44	77.44
138	5690 MHz	181.76	110.08

Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	20.00	16.96
40	5200 MHz	19.84	16.96
48	5240 MHz	20.00	16.96
52	5260 MHz	20.80	17.12
60	5300 MHz	20.16	17.12
64	5320 MHz	20.32	17.12
100	5500 MHz	20.16	17.12
116	5580 MHz	20.16	17.12
140	5700 MHz	20.16	17.12
144	5720 MHz	20.48	17.12

Temperature	20°C	Humidity	52%
Test Engineer	Cliff Chang	Configurations	IEEE 802.11ac

For beamforming mode:

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	20.64	18.08
40	5200 MHz	20.32	17.92
48	5240 MHz	20.32	17.92
52	5260 MHz	20.80	18.08
60	5300 MHz	20.48	18.08
64	5320 MHz	20.48	17.92
100	5500 MHz	20.32	18.08
116	5580 MHz	20.48	17.92
140	5700 MHz	20.48	18.08
144	5720 MHz	20.48	18.08

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3

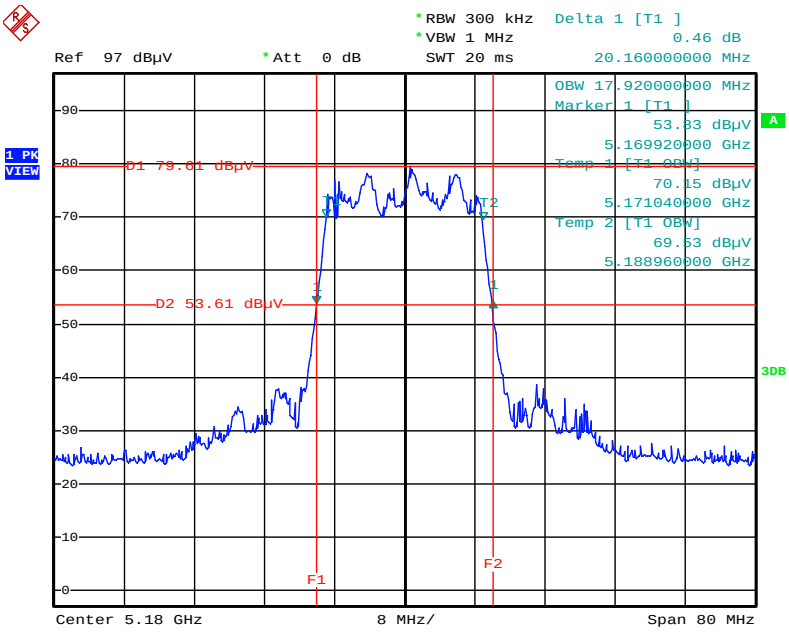
Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	38.72	36.48
46	5230 MHz	39.36	36.48
54	5270 MHz	58.56	36.80
62	5310 MHz	39.04	36.80
102	5510 MHz	39.04	36.48
110	5550 MHz	42.56	36.48
134	5670 MHz	40.96	36.80
142	5710 MHz	42.88	36.80

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
42	5210 MHz	81.28	76.16
58	5290 MHz	81.28	76.16
106	5530 MHz	81.92	76.80
122	5610 MHz	81.92	76.80
138	5690 MHz	89.60	76.80

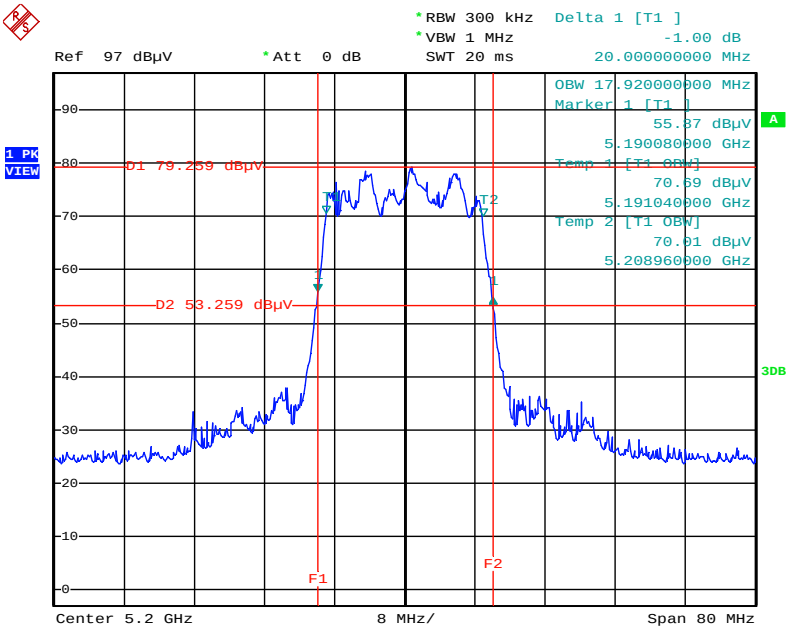
For non-beamforming mode:

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5180 MHz



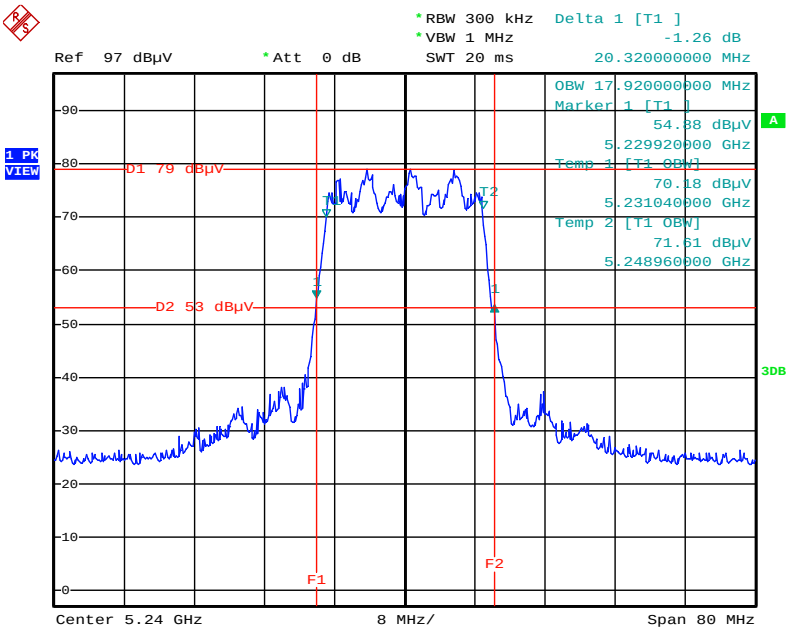
Date: 25.APR.2014 15:16:18

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5200 MHz



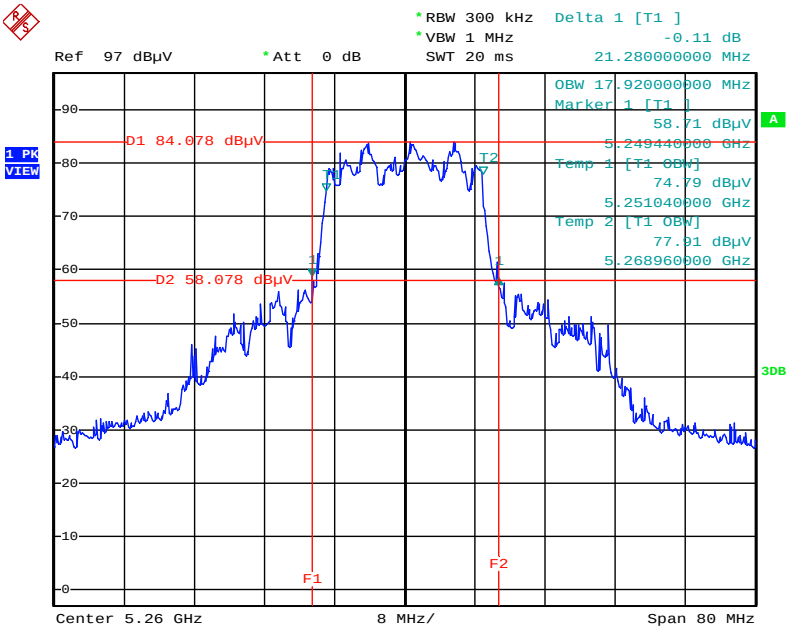
Date: 25.APR.2014 15:15:58

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5240 MHz



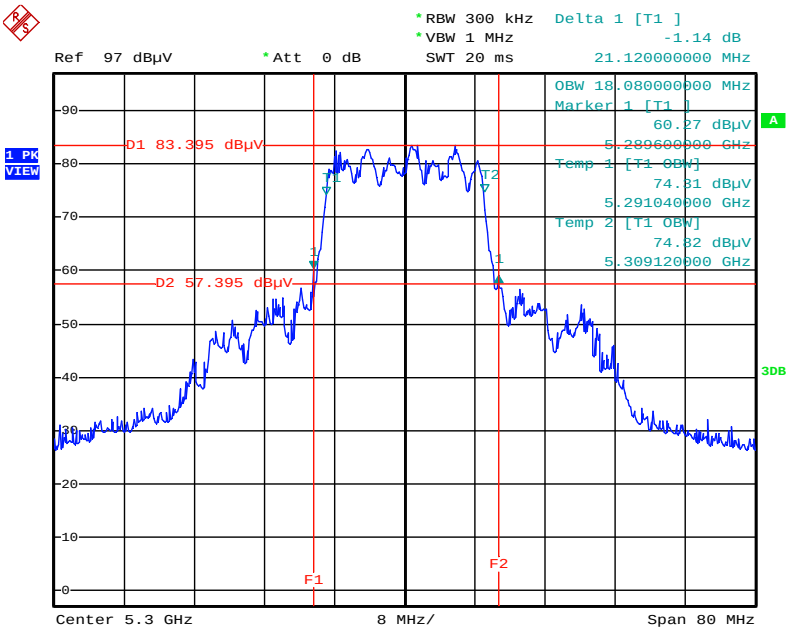
Date: 25.APR.2014 15:15:39

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5260 MHz



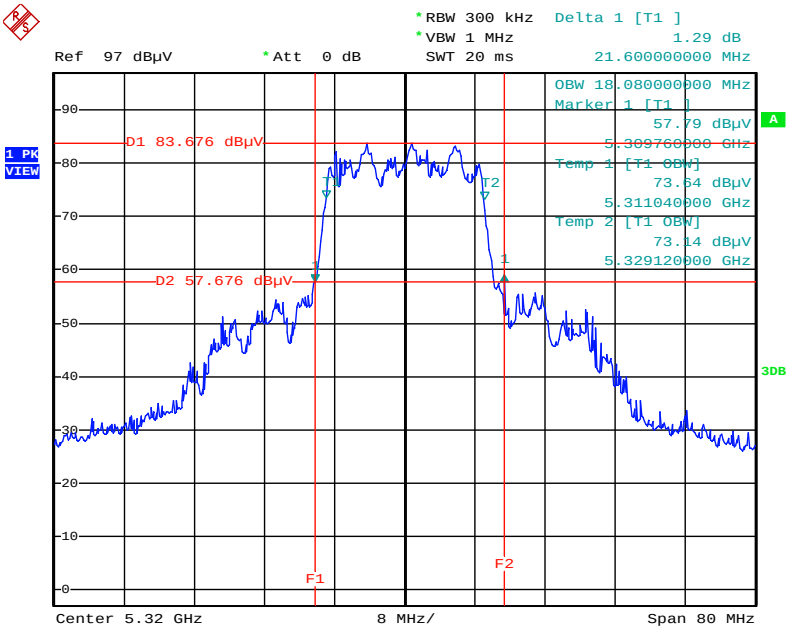
Date: 25.APR.2014 15:14:54

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5300 MHz



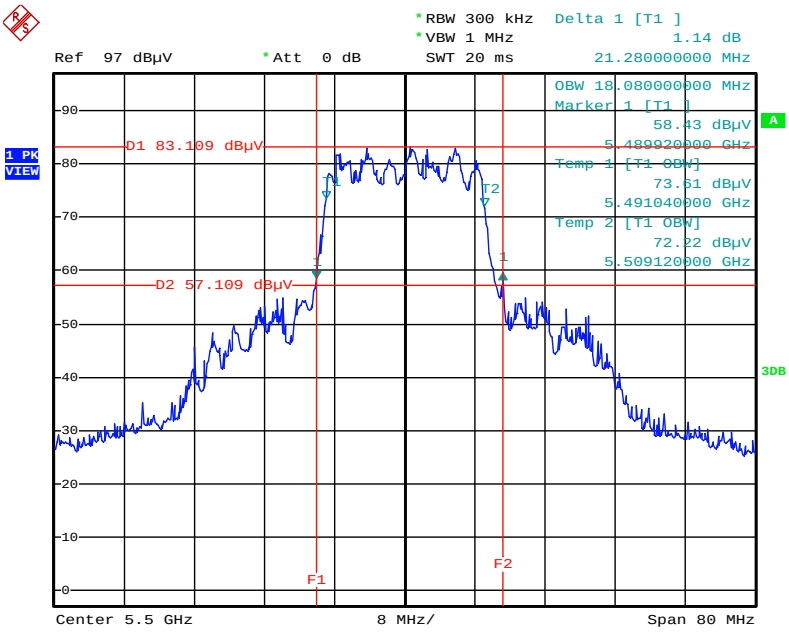
Date: 25.APR.2014 15:14:18

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5320 MHz



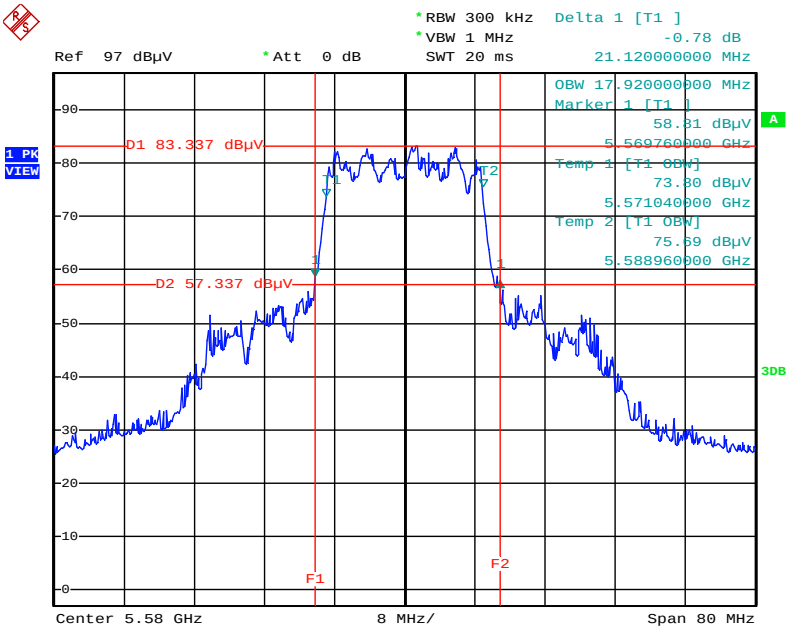
Date: 25.APR.2014 15:13:49

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5500 MHz



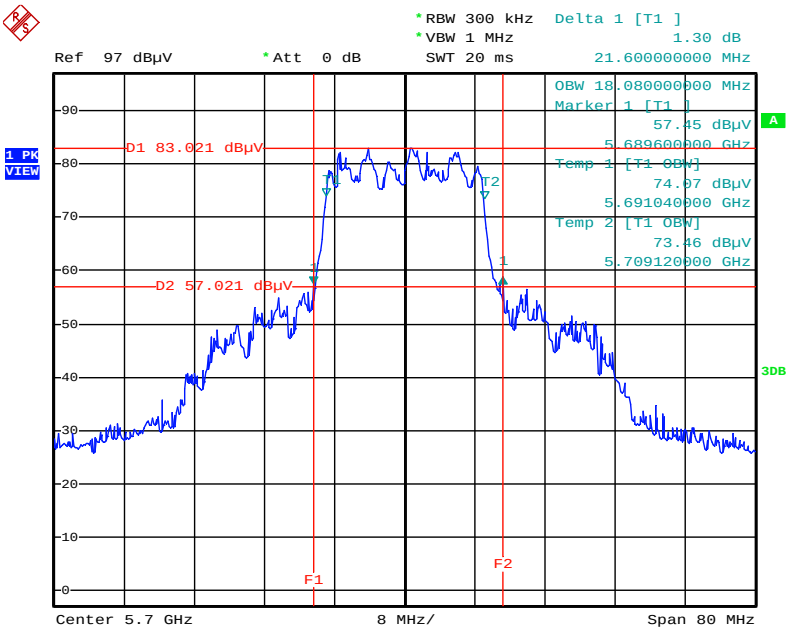
Date: 25.APR.2014 15:13:07

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5580 MHz



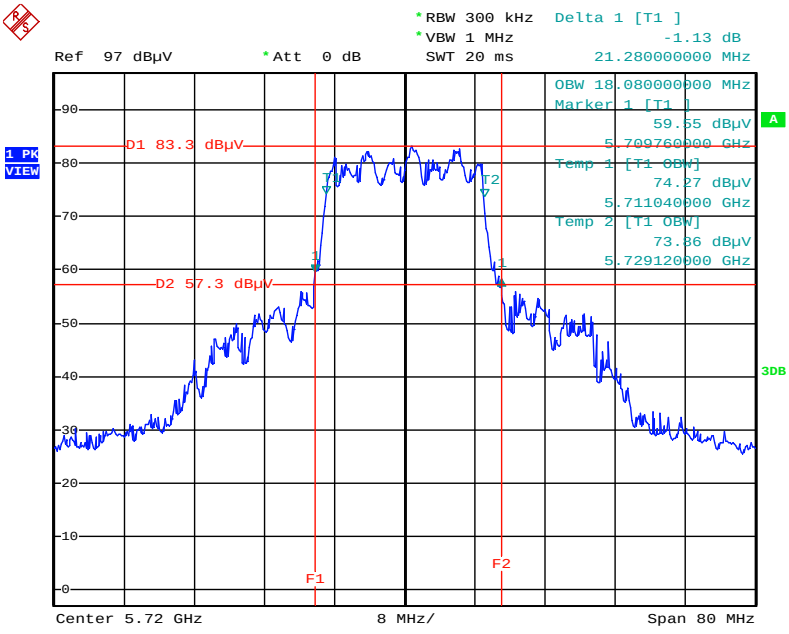
Date: 25.APR.2014 15:12:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5700 MHz



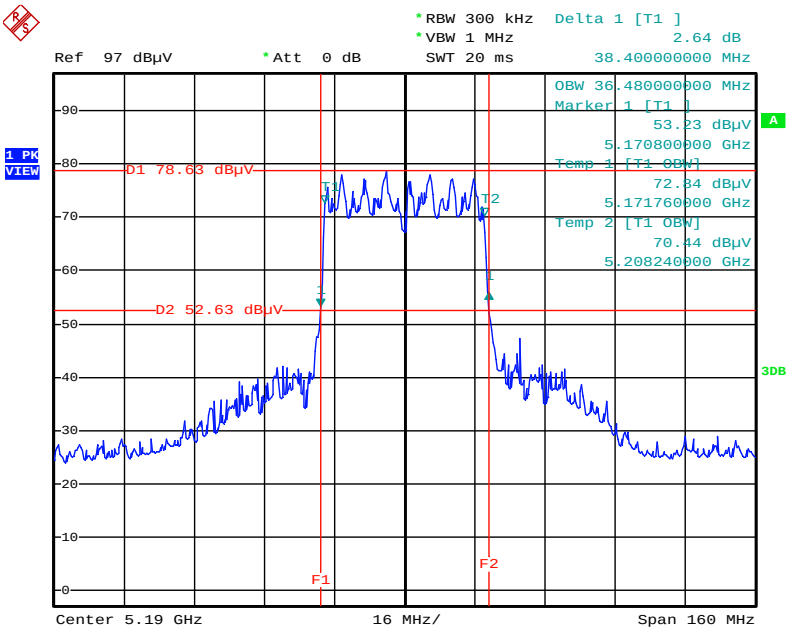
Date: 25.APR.2014 15:11:49

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5720 MHz



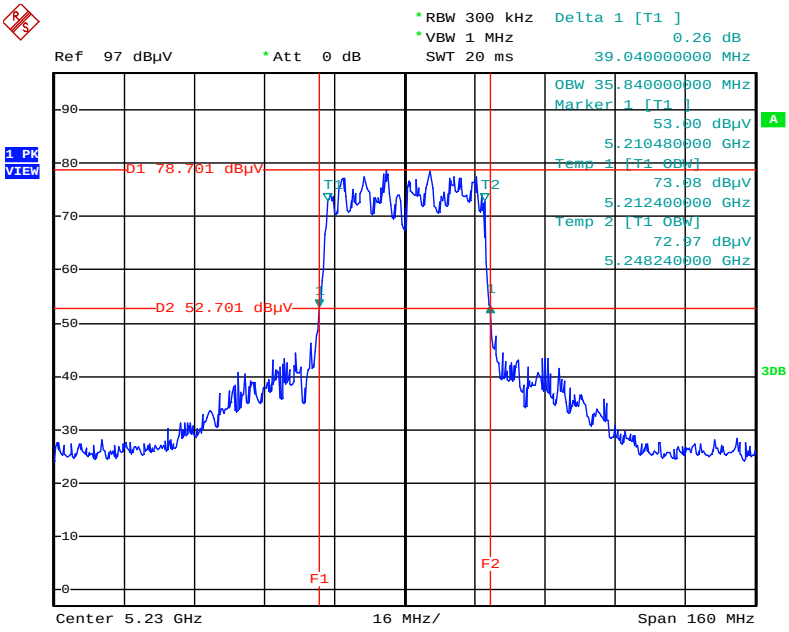
Date: 25.APR.2014 15:12:10

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5190 MHz



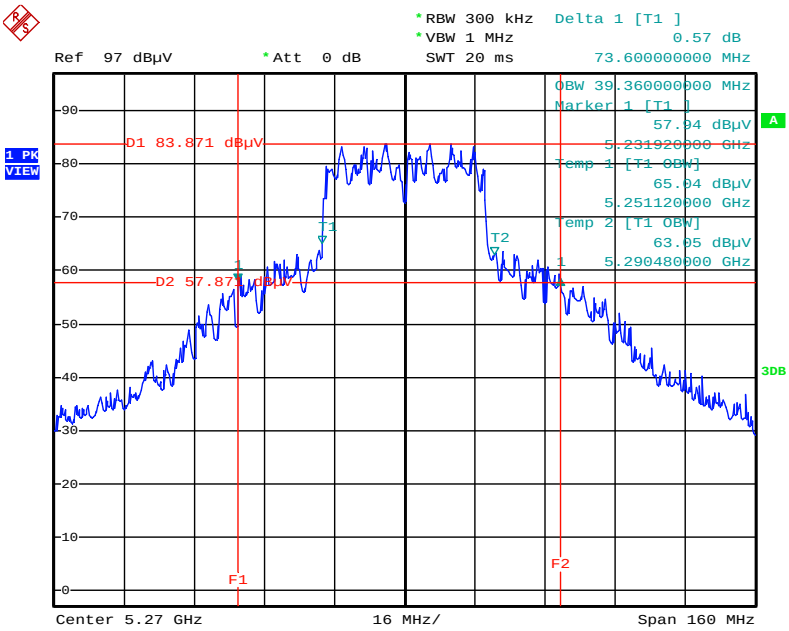
Date: 25.APR.2014 15:16:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5230 MHz



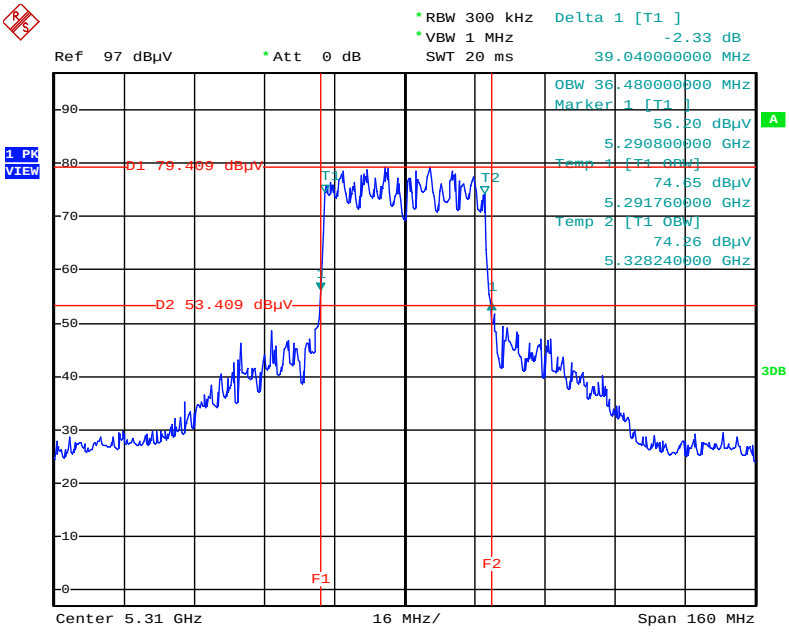
Date: 25.APR.2014 15:17:19

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5270 MHz



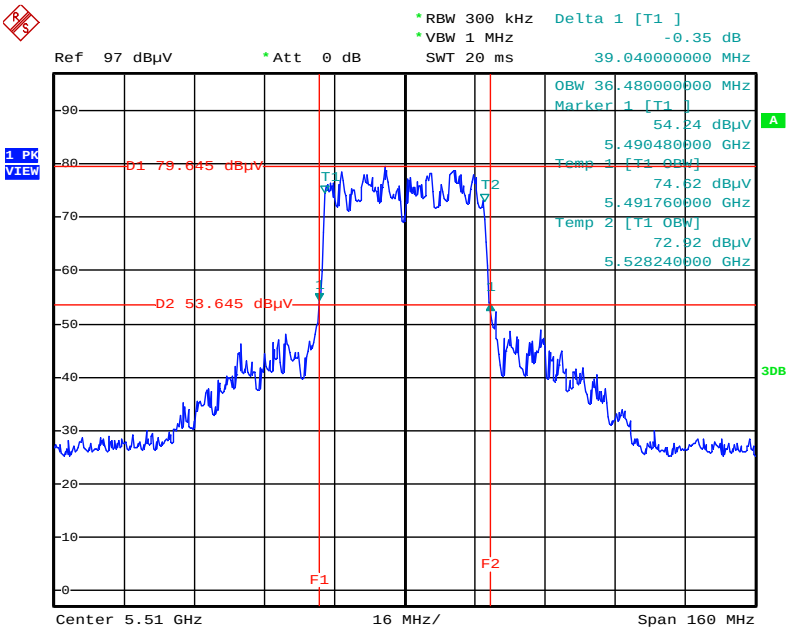
Date: 25.APR.2014 15:17:40

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5310 MHz



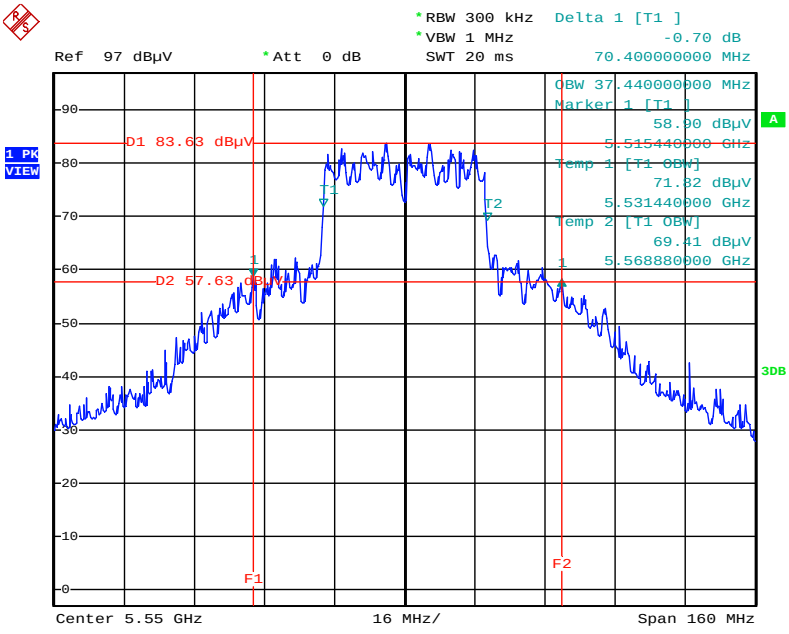
Date: 25.APR.2014 15:18:06

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5510 MHz



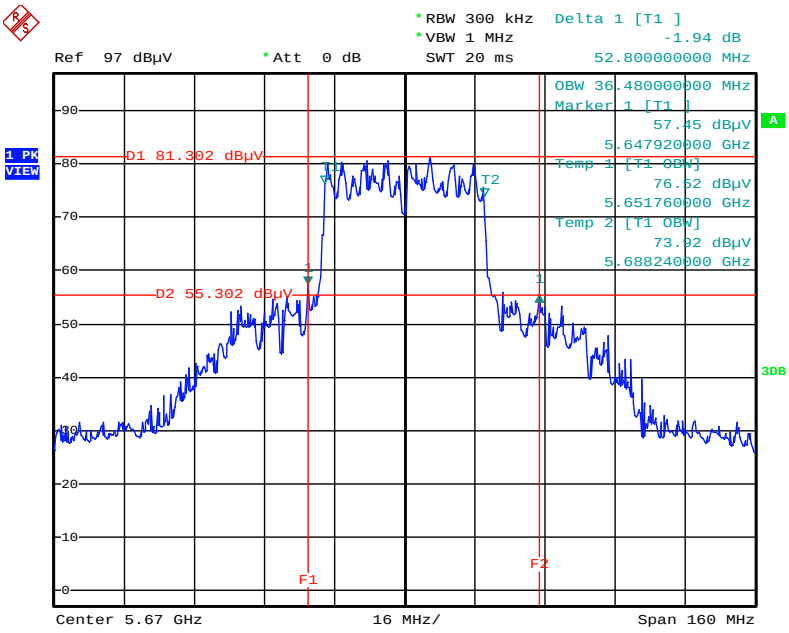
Date: 25.APR.2014 15:18:30

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5550 MHz



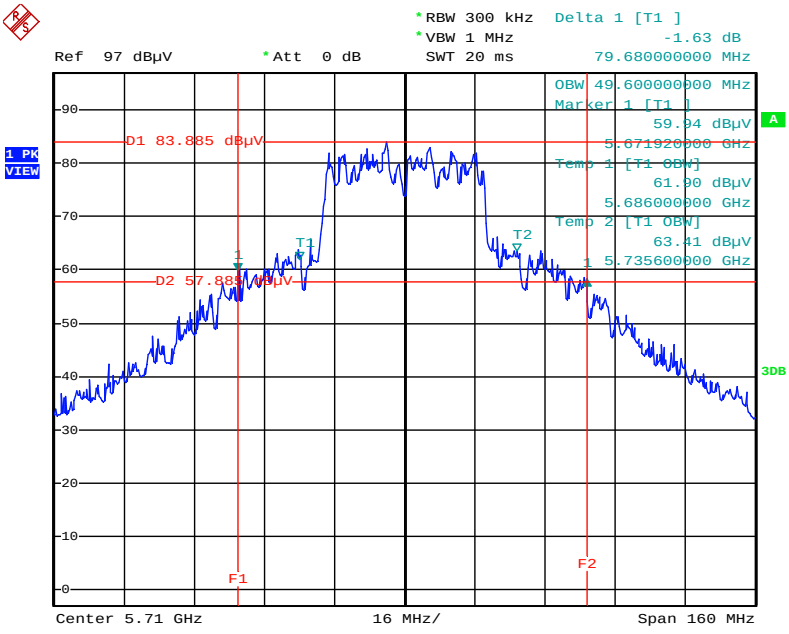
Date: 25.APR.2014 15:18:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5670 MHz



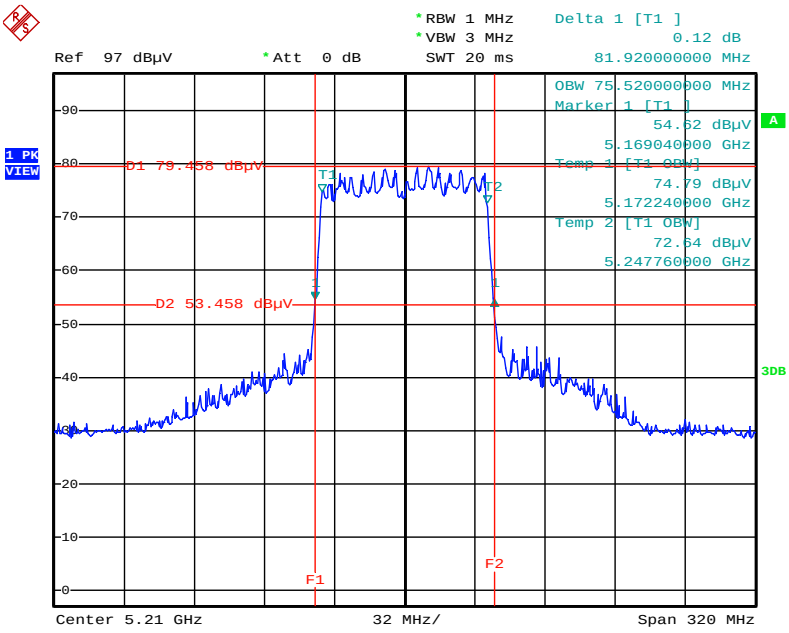
Date: 25.APR.2014 15:19:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5710 MHz



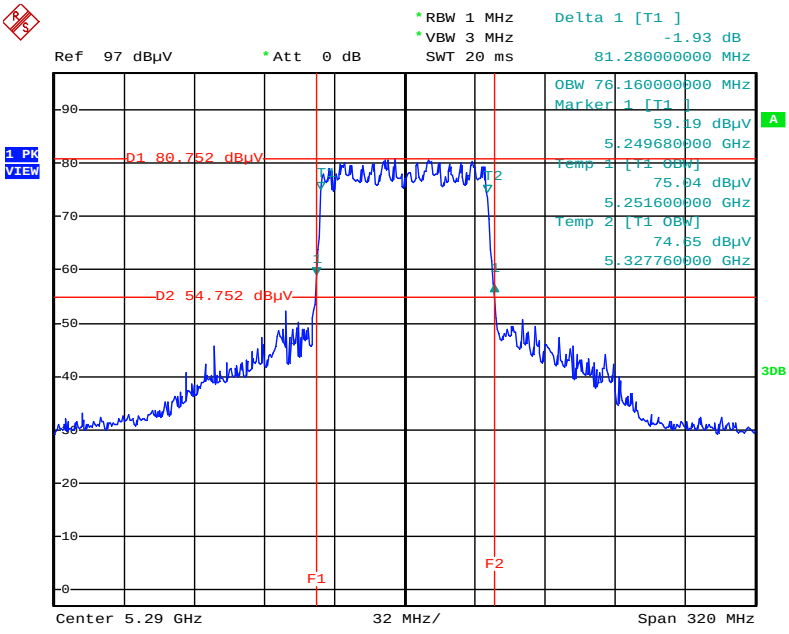
Date: 25.APR.2014 15:20:10

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5210 MHz



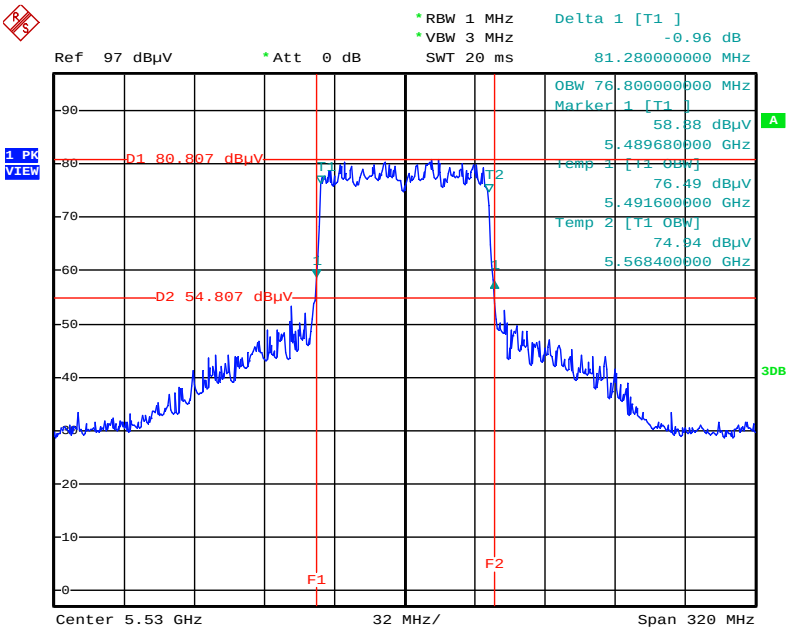
Date: 25.APR.2014 15:20:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5290 MHz



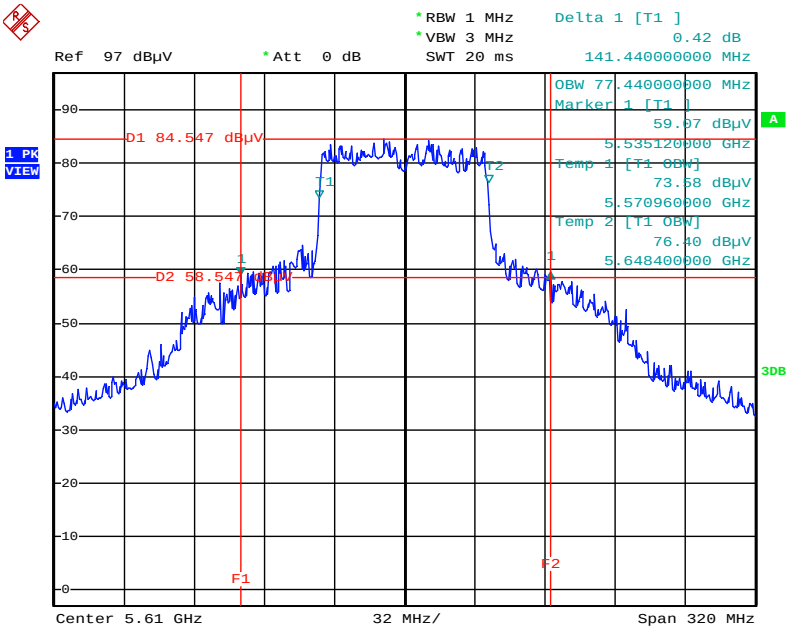
Date: 25.APR.2014 15:21:12

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5530 MHz



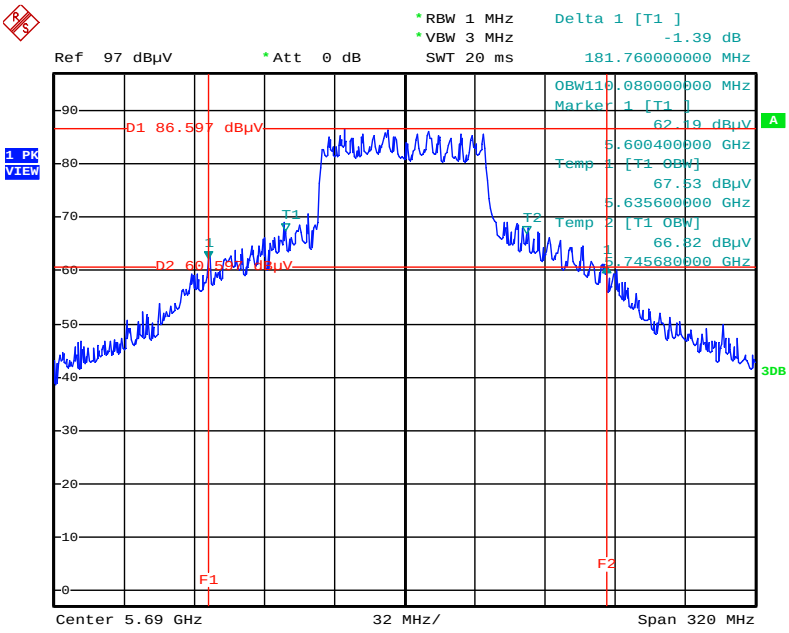
Date: 25.APR.2014 15:21:36

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5610 MHz



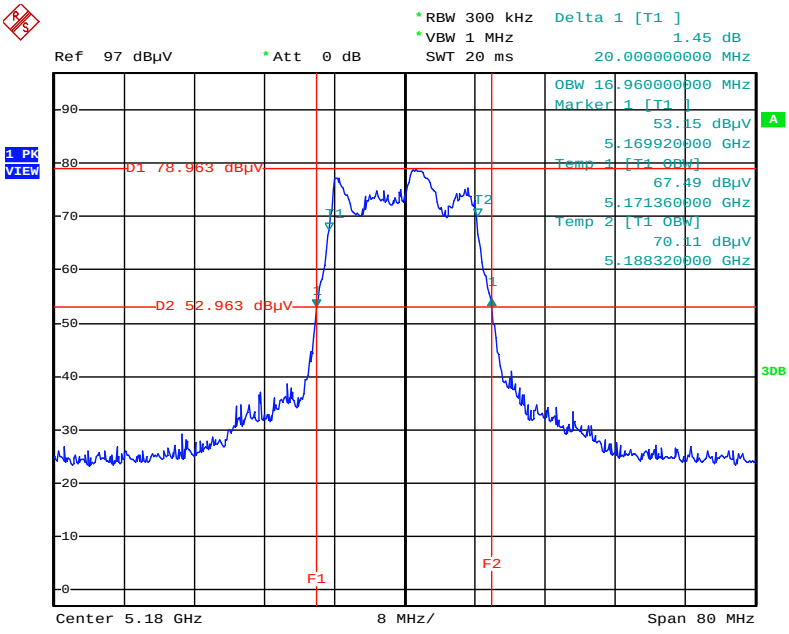
Date: 25.APR.2014 15:22:45

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5690 MHz



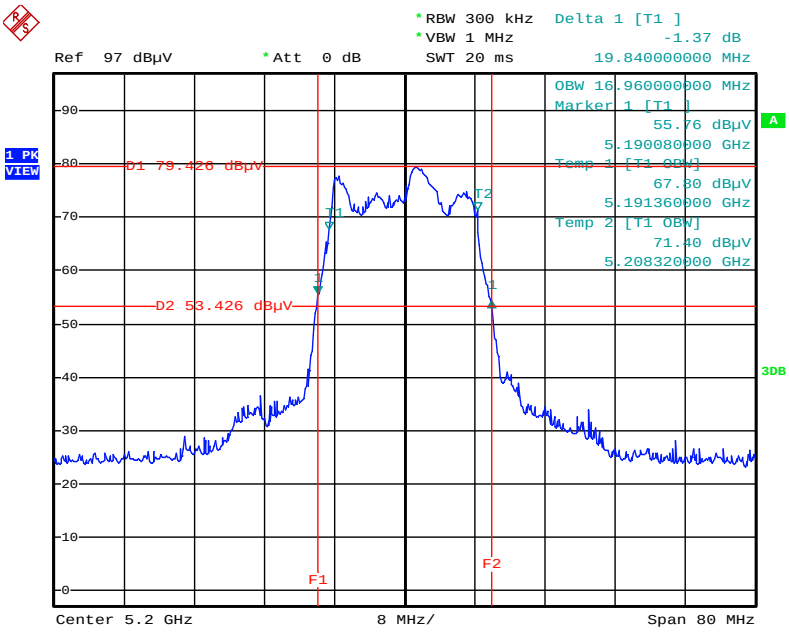
Date: 25.APR.2014 15:23:16

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5180 MHz



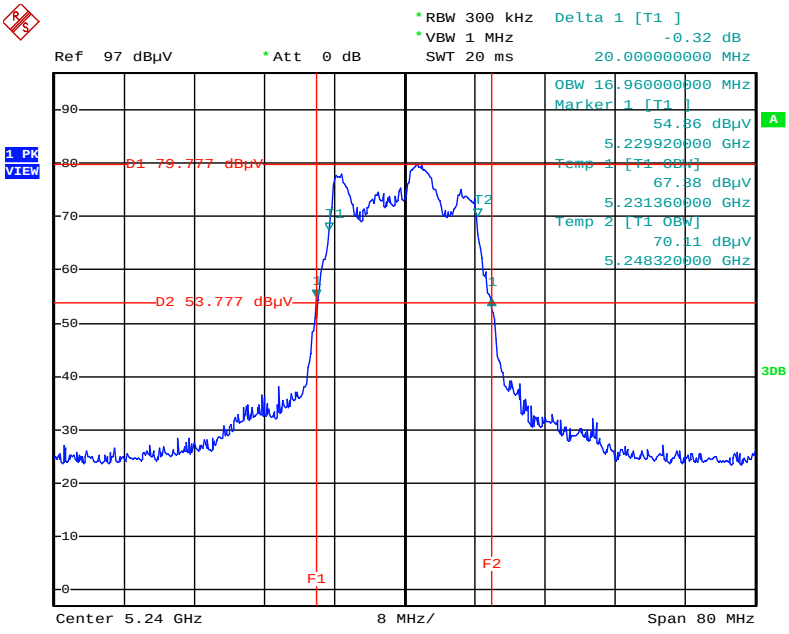
Date: 25.APR.2014 15:05:27

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5200 MHz



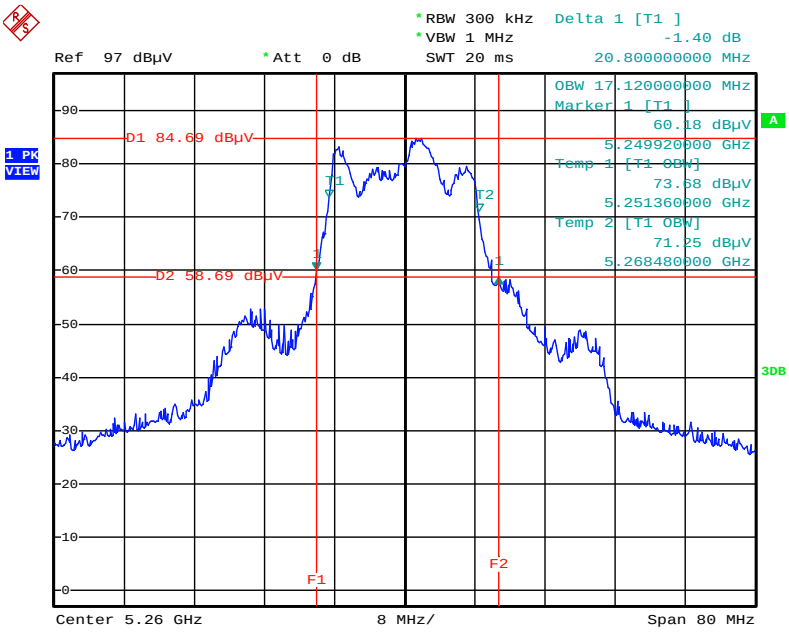
Date: 25.APR.2014 15:06:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5240 MHz



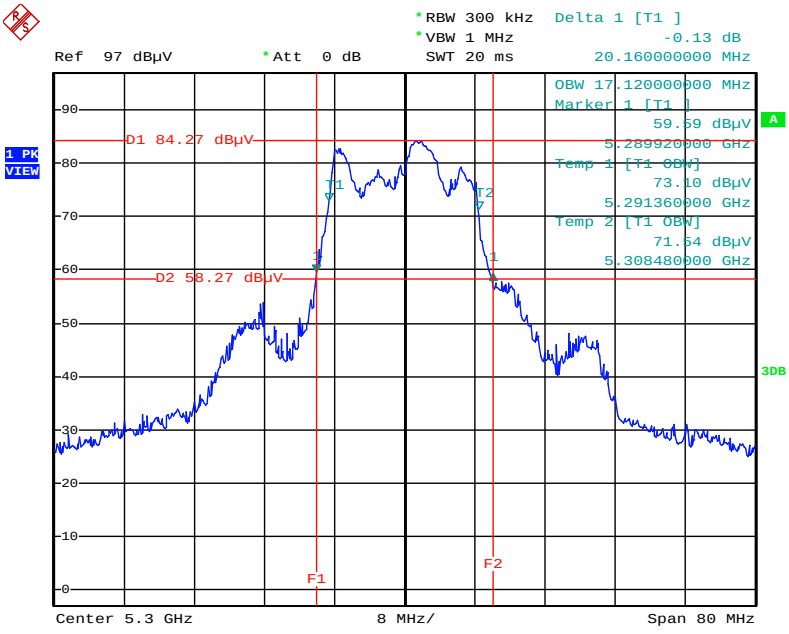
Date: 25.APR.2014 15:06:32

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5260 MHz



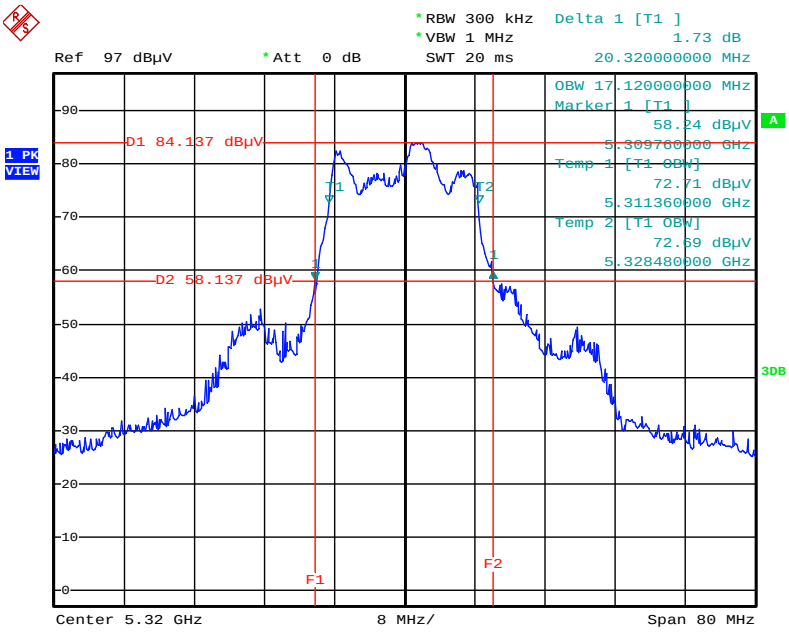
Date: 25.APR.2014 15:07:02

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5300 MHz



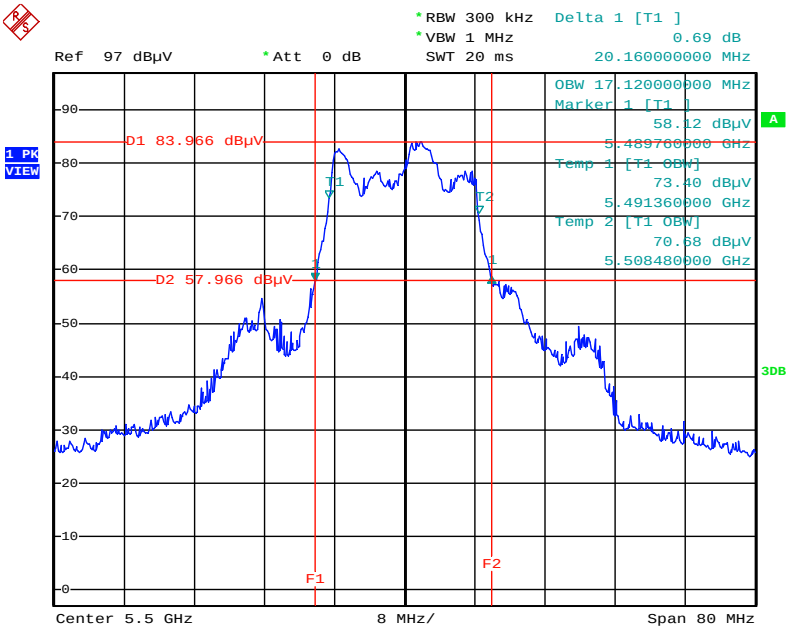
Date: 25.APR.2014 15:07:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5320 MHz



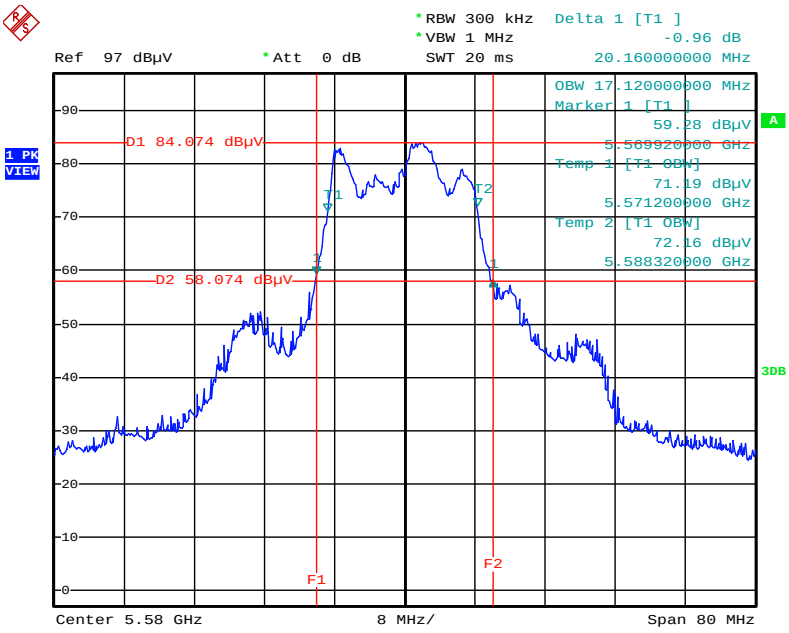
Date: 25.APR.2014 15:08:28

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5500 MHz



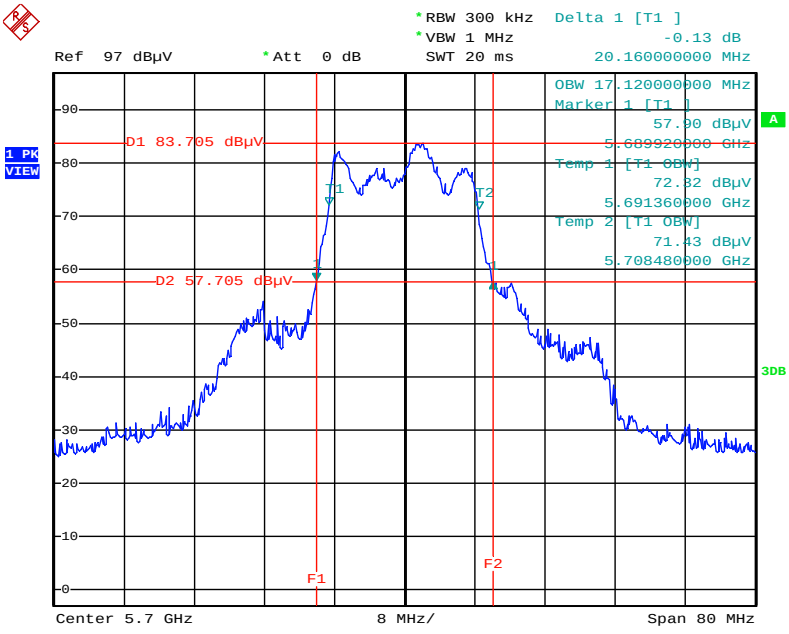
Date: 25.APR.2014 15:09:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5580 MHz



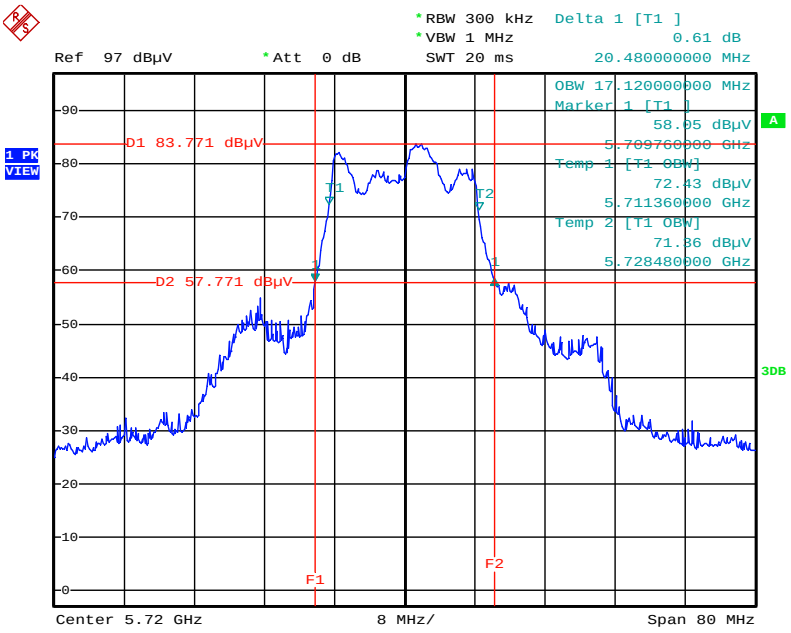
Date: 25.APR.2014 15:09:38

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5700 MHz



Date: 25.APR.2014 15:10:04

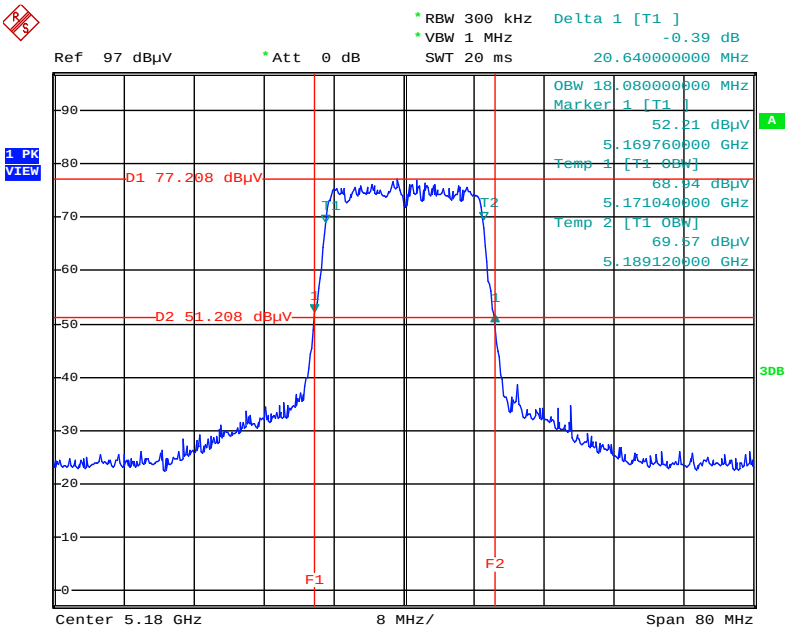
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5720 MHz



Date: 25.APR.2014 15:10:54

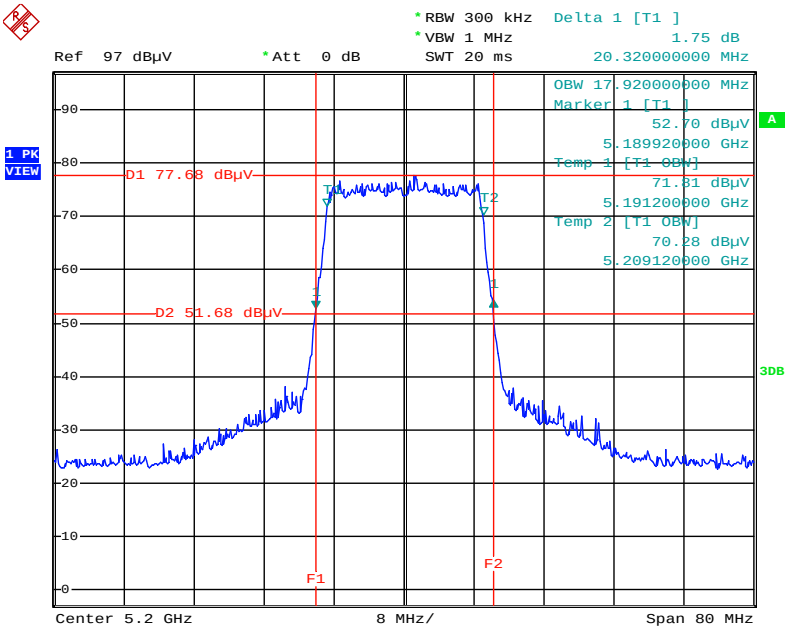
For beamforming mode:

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5180 MHz



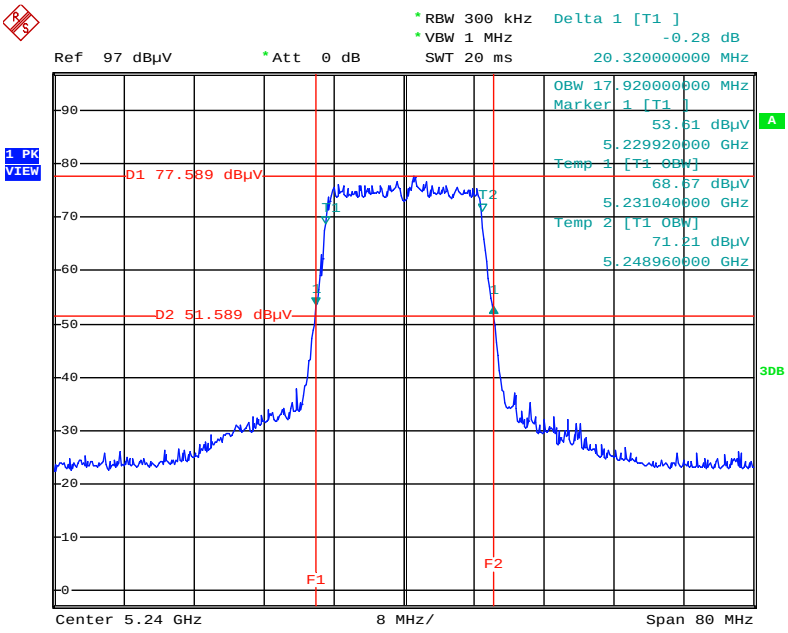
Date: 26.APR.2014 02:17:24

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5200 MHz



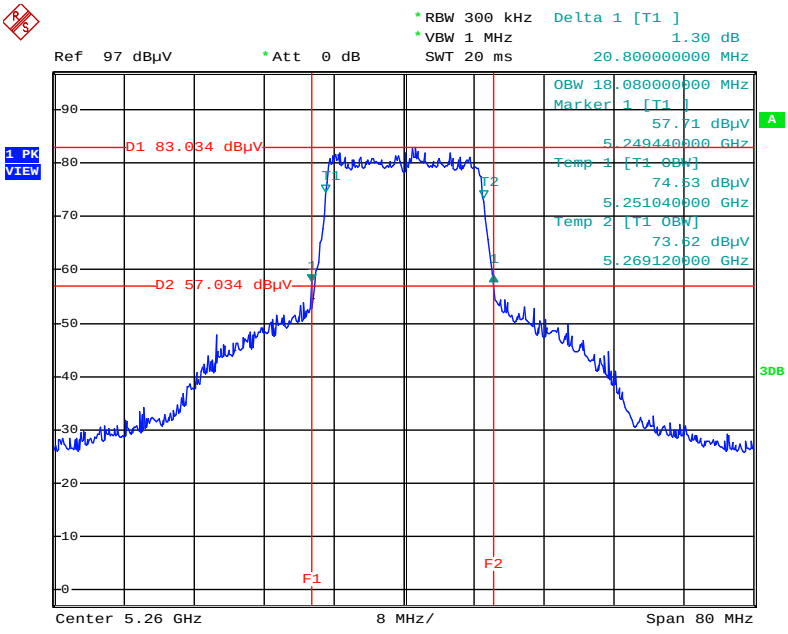
Date: 26.APR.2014 02:28:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5240 MHz



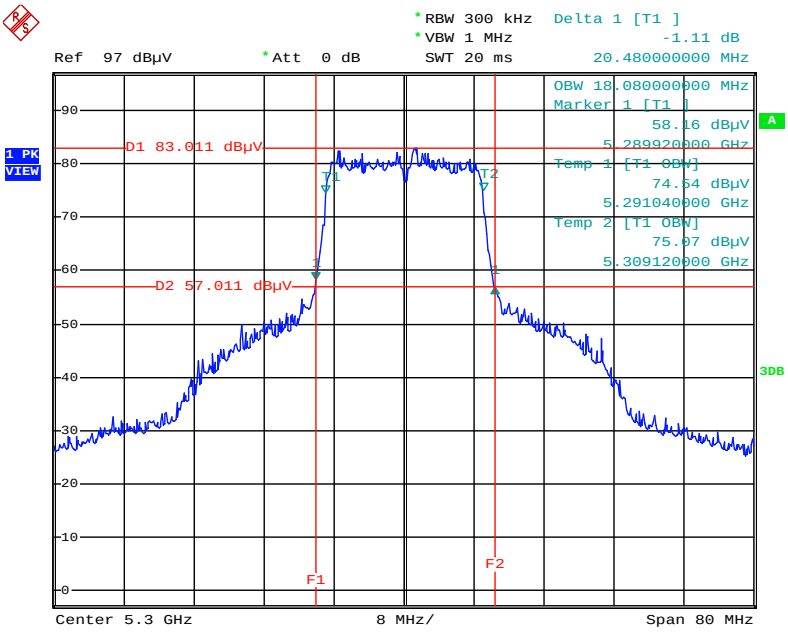
Date: 26.APR.2014 02:31:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5260 MHz



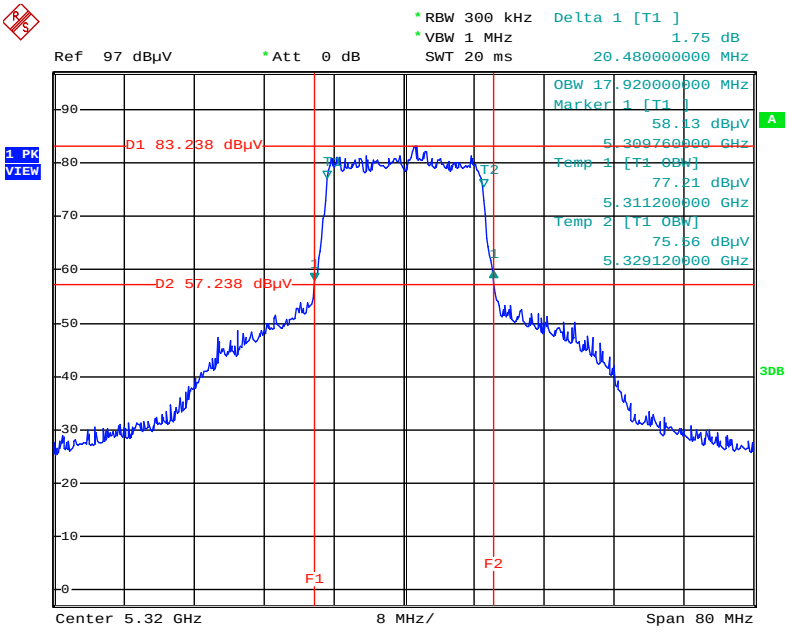
Date: 26.APR.2014 02:32:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5300 MHz



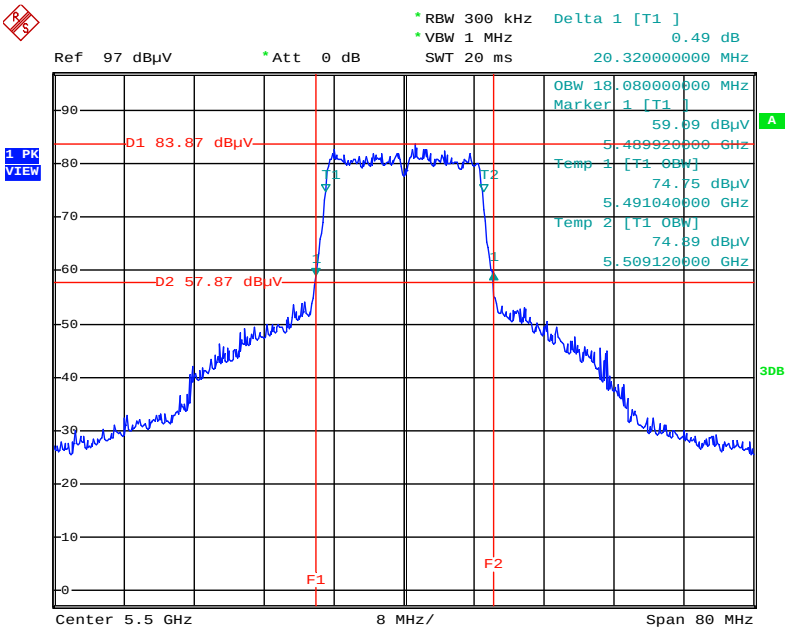
Date: 26.APR.2014 02:33:30

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5320 MHz



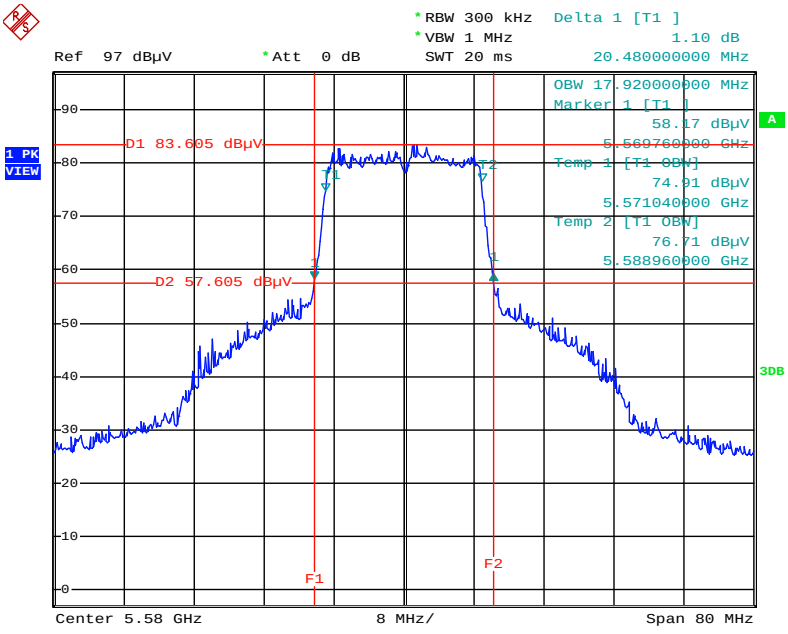
Date: 26.APR.2014 02:34:09

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5500 MHz



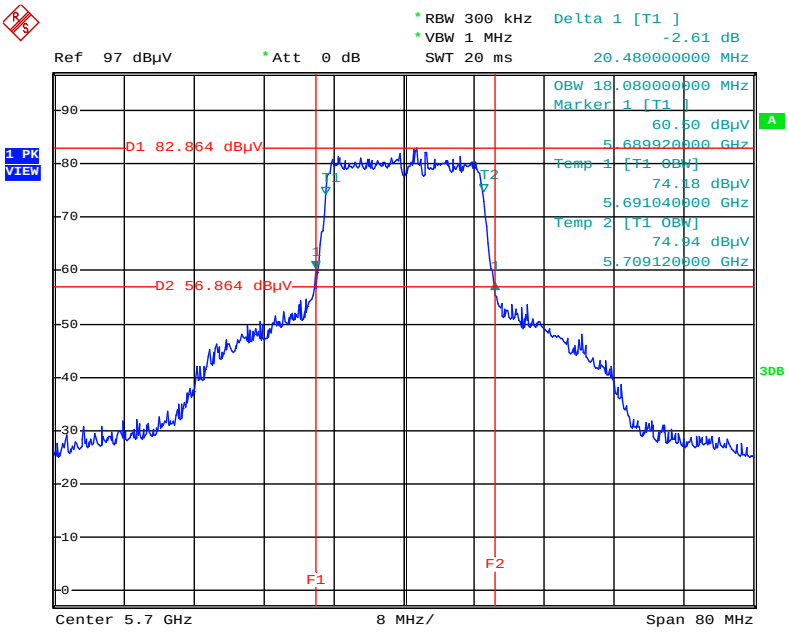
Date: 26.APR.2014 02:35:49

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5580 MHz



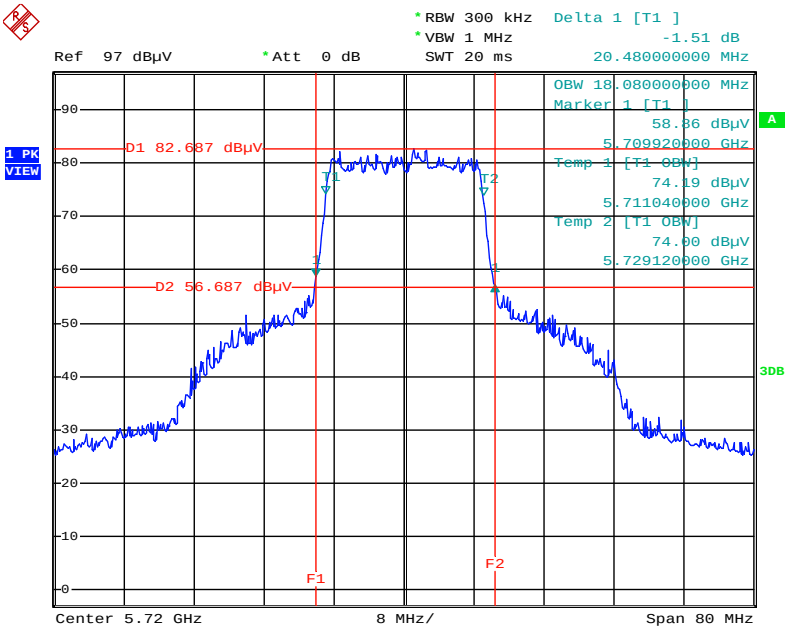
Date: 26.APR.2014 02:36:36

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5700 MHz



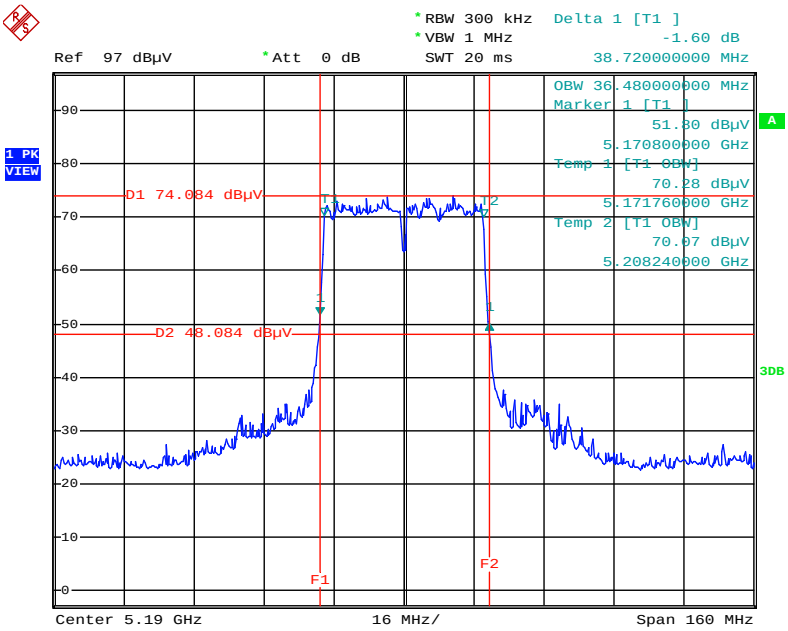
Date: 26.APR.2014 02:38:16

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5720 MHz



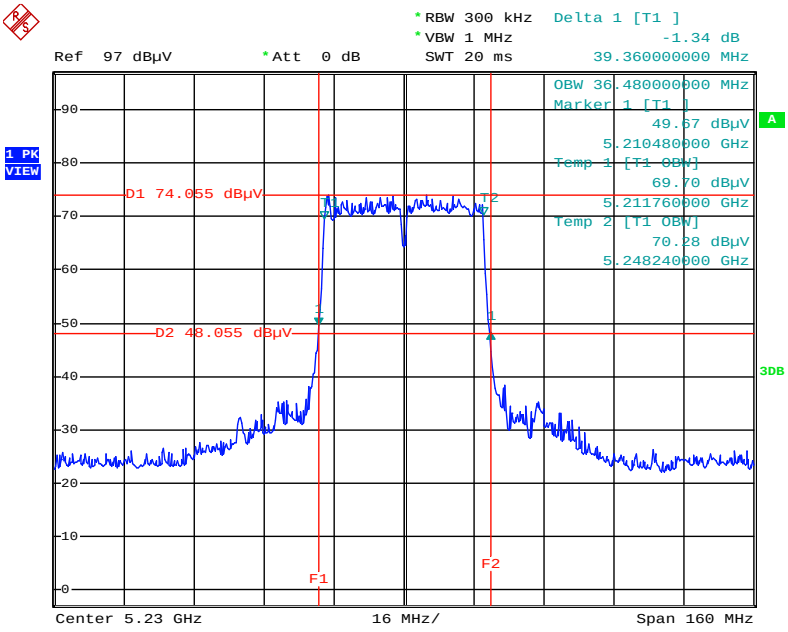
Date: 26.APR.2014 02:39:22

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5190 MHz



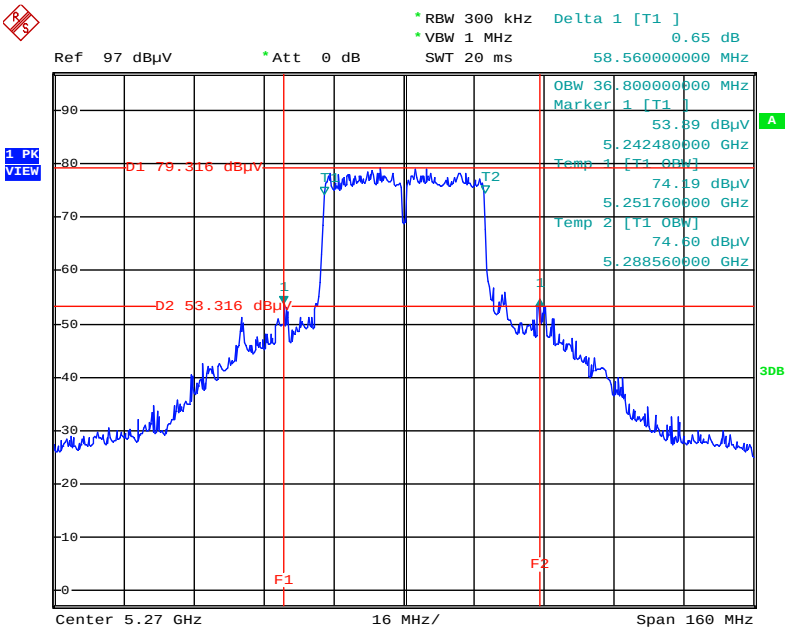
Date: 26.APR.2014 02:40:54

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5230 MHz



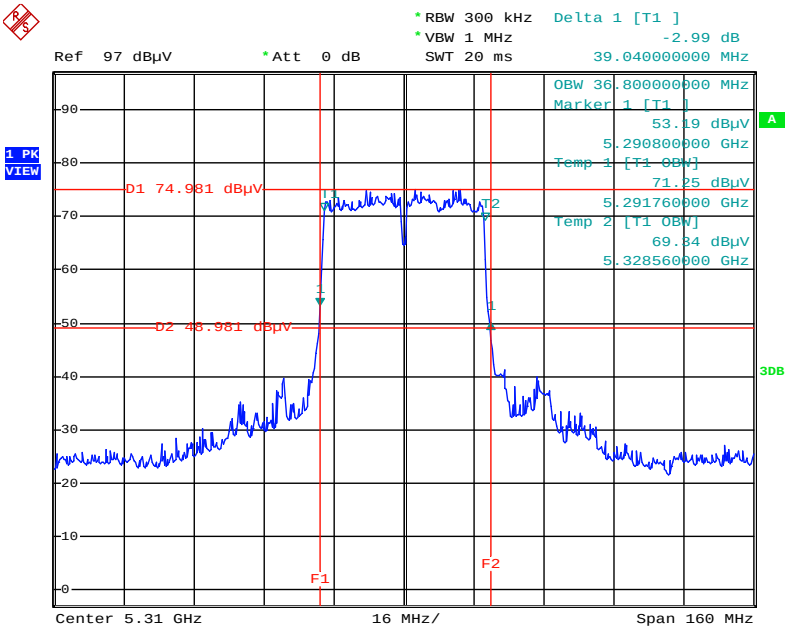
Date: 26.APR.2014 02:41:53

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5270 MHz



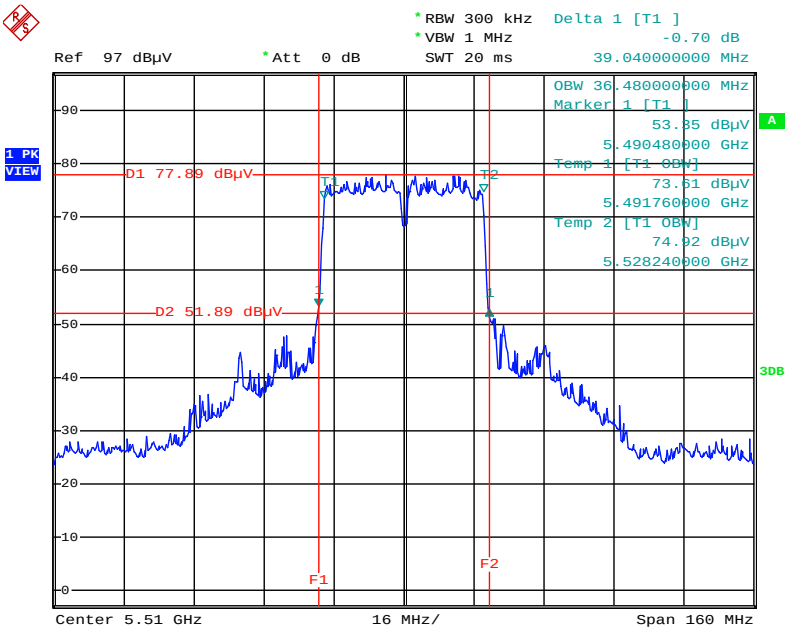
Date: 26.APR.2014 02:46:31

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5310 MHz



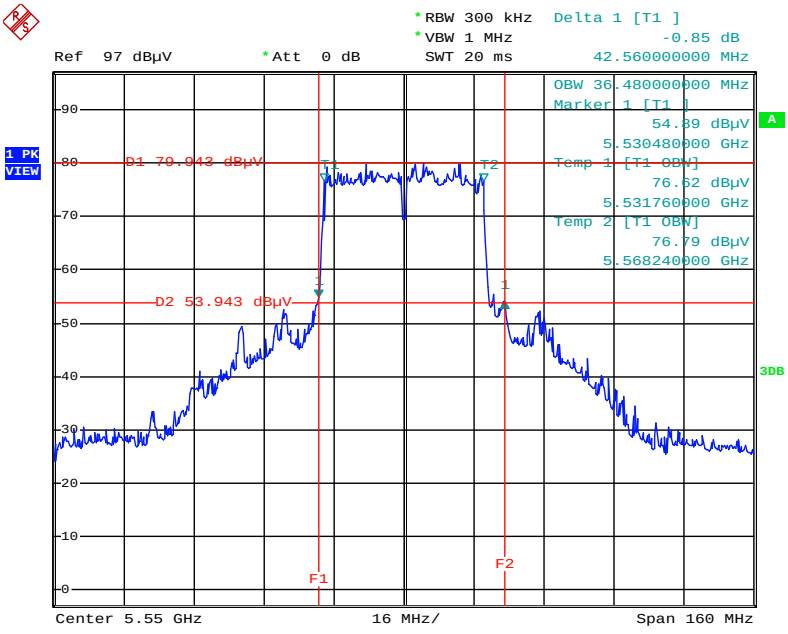
Date: 26.APR.2014 02:50:14

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5510 MHz



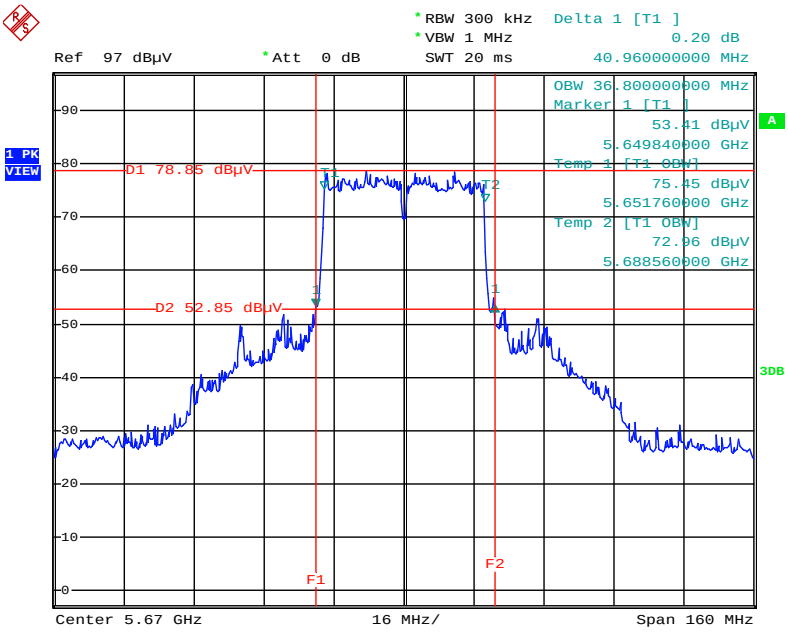
Date: 26.APR.2014 02:49:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5550 MHz



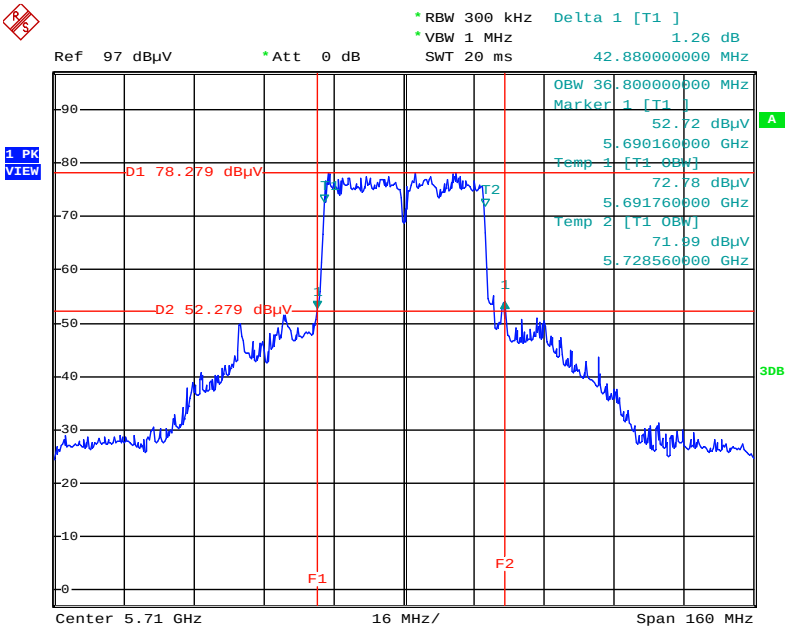
Date: 26.APR.2014 02:51:36

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5670 MHz



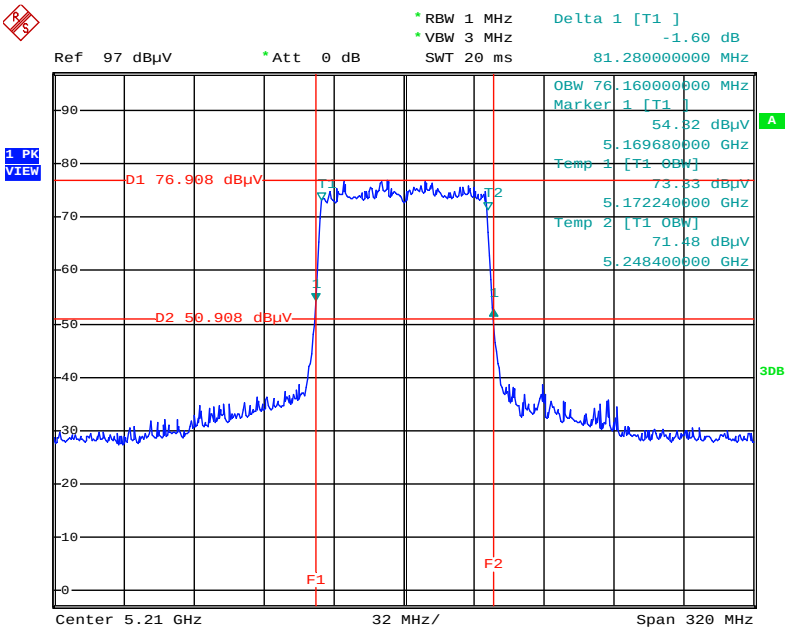
Date: 26.APR.2014 02:52:34

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5710 MHz



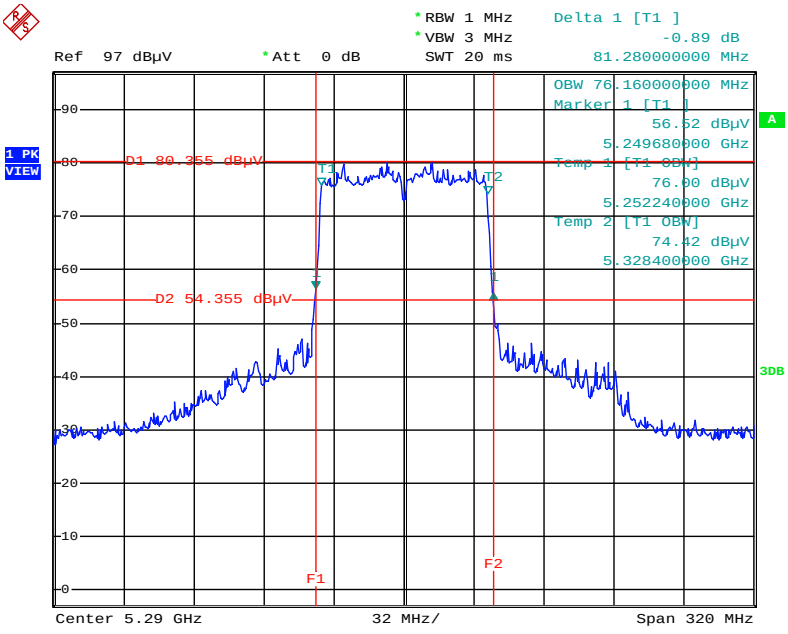
Date: 26.APR.2014 02:53:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5210 MHz



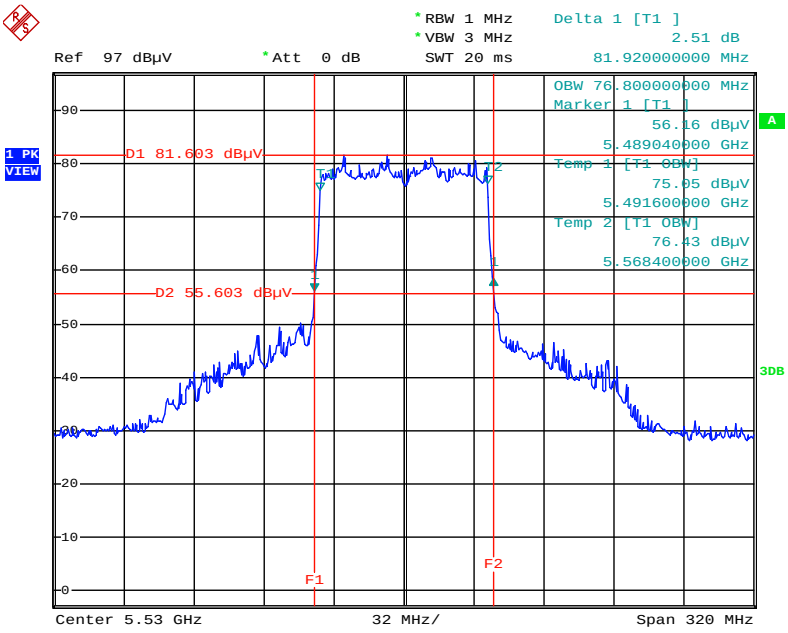
Date: 26.APR.2014 02:55:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5290 MHz



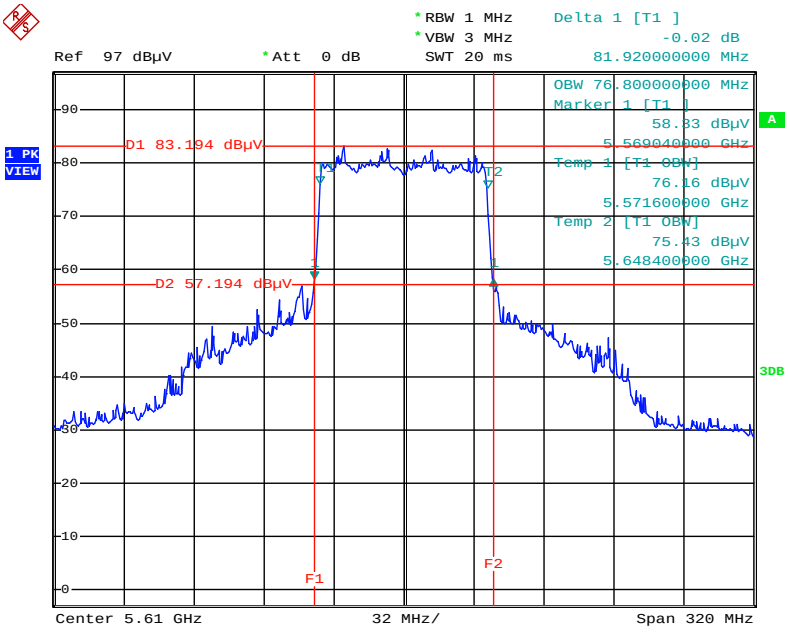
Date: 26.APR.2014 02:56:26

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5530 MHz



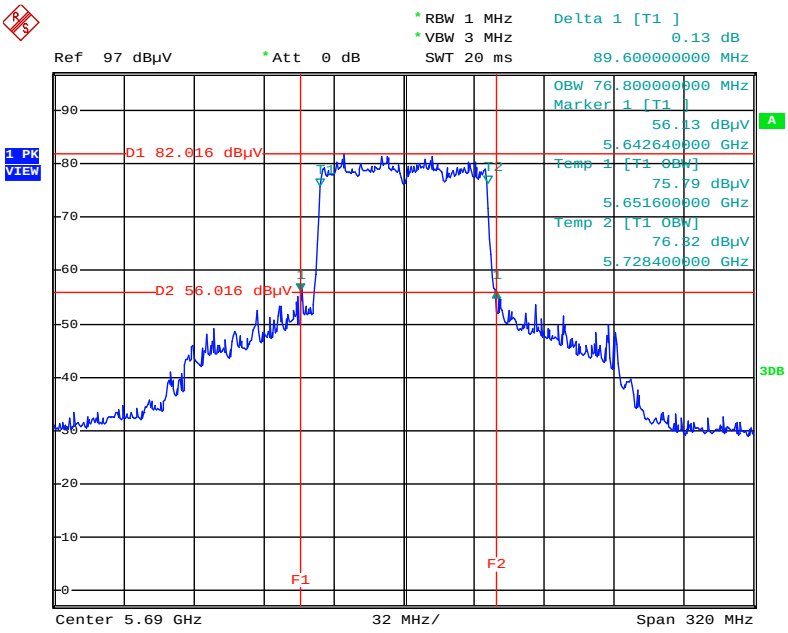
Date: 26.APR.2014 02:58:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5610 MHz



Date: 26.APR.2014 02:59:44

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5690 MHz



Date: 26.APR.2014 03:00:36

4.3. Maximum Conducted Output Power Measurement

4.3.1. Limit

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

For the 5.25-5.35 GHz and 5.470-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725~5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 17 dBm in any 1ŕMHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain up to 23 dBi without any corresponding reduction in the transmitter peak output power or peak power spectral density. For fixed, point-to-point U-NII transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in peak transmitter power and peak power spectral density for each 1 dB of antenna gain in excess of 23 dBi would be required.

4.3.2. Measuring Instruments and Setting

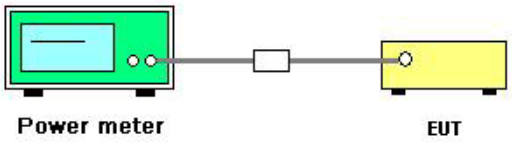
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB 789033 D01 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E,section (E) Maximum conducted output power =>(3) Method PM (Measurement using an RF average power meter) Multiple antenna systems was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
3. When measuring maximum conducted output power with multiple antenna systems,add every result of the values by mathematic formula.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Maximum Conducted Output Power

Temperature	20°C	Humidity	52%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a /ac
Test Date	Apr. 25, 2014		

For non-beamforming mode:

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Duty Factor	Conducted Power (dBm)				Max. Limit (dBm)	Result
			Chain 1	Chain 2	Chain 3	Total		
36	5180 MHz	0.04	9.45	10.06	9.66	14.50	17.00	Complies
40	5200 MHz		9.29	10.15	9.63	14.48	17.00	Complies
48	5240 MHz		9.09	10.10	9.36	14.31	17.00	Complies
52	5260 MHz		14.38	15.22	14.58	19.51	24.00	Complies
60	5300 MHz		14.32	15.29	14.78	19.59	24.00	Complies
64	5320 MHz		14.25	15.12	14.42	19.38	24.00	Complies
100	5500 MHz		14.12	14.87	14.46	19.27	24.00	Complies
116	5580 MHz		14.19	14.73	14.25	19.17	24.00	Complies
140	5700 MHz		14.58	14.60	14.75	19.42	24.00	Complies
144	5720 MHz		14.57	14.53	14.77	19.40	24.00	Complies

Straddle channel complies with output power limit of Band 3 & Band4										
CH	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII B3 BW (MHz)	UNII B4 BW (MHz)	Total Conducted Output Power (dBm)	UNII B3 Limit (dBm)	UNII B4 Limit (dBm)	Result
144	21.28	18.08	5709.76	5711.04	15.24	6.04	19.40	22.83	24.81	Complies

Note:

UNII B3 limit: 24dBm or 11+10log(B)

UNII B4 limit: 30dBm or 17+10log(B)

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Duty Factor	Conducted Power (dBm)				Max. Limit (dBm)	Result
			Chain 1	Chain 2	Chain 3	Total		
38	5190 MHz	0.09	11.58	12.59	11.86	16.80	17.00	Complies
46	5230 MHz		11.66	12.70	11.92	16.89	17.00	Complies
54	5270 MHz		17.11	18.54	17.58	22.56	24.00	Complies
62	5310 MHz		12.98	15.13	13.42	18.72	24.00	Complies
102	5510 MHz		12.83	14.24	13.43	18.31	24.00	Complies
110	5550 MHz		17.16	18.86	16.98	22.52	24.00	Complies
134	5670 MHz		15.66	17.28	15.56	21.01	24.00	Complies
142	5710 MHz		17.74	19.72	17.55	23.22	24.00	Complies

Straddle channel complies with output power limit of Band 3 & Band4										
CH	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII B3 BW (MHz)	UNII B4 BW (MHz)	Total Conducted Output Power (dBm)	UNII B3 Limit (dBm)	UNII B4 Limit (dBm)	Result
142	79.68	49.60	5671.93	5686.00	53.07	26.61	23.22	24.00	30.00	Complies

Note:

UNII B3 limit: 24dBm or 11+10log(B)

UNII B4 limit: 30dBm or 17+10log(B)

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Duty Factor	Conducted Power (dBm)				Max. Limit (dBm)	Result
			Chain 1	Chain 2	Chain 3	Total		
42	5210 MHz	0.18	11.19	12.78	11.62	16.69	17.00	Complies
58	5290 MHz		12.62	14.55	13.11	18.28	24.00	Complies
106	5530 MHz		13.01	14.55	13.00	18.35	24.00	Complies
122	5610 MHz		16.48	17.96	16.45	21.79	24.00	Complies
138	5690 MHz		18.54	19.71	18.38	23.69	24.00	Complies

Straddle channel complies with output power limit of Band 3 & Band4										
CH	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII B3 BW (MHz)	UNII B4 BW (MHz)	Total Conducted Output Power (dBm)	UNII B3 Limit (dBm)	UNII B4 Limit (dBm)	Result
138	181.76	110.08	5600.40	5635.60	124.60	57.16	23.69	24.00	30.00	Complies

Note:

UNII B3 limit: 24dBm or 11+10log(B)

UNII B4 limit: 30dBm or 17+10log(B)

Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Duty Factor	Conducted Power (dBm)				Max. Limit (dBm)	Result
			Chain 1	Chain 2	Chain 3	Total		
36	5180 MHz	0.02	9.58	10.05	9.72	14.56	17.00	Complies
40	5200 MHz		9.15	9.81	9.31	14.20	16.98	Complies
48	5240 MHz		8.89	9.95	9.41	14.21	17.00	Complies
52	5260 MHz		14.56	15.05	14.86	19.60	24.00	Complies
60	5300 MHz		14.17	15.12	14.51	19.39	24.00	Complies
64	5320 MHz		14.05	15.18	14.52	19.38	24.00	Complies
100	5500 MHz		14.22	15.11	14.58	19.42	24.00	Complies
116	5580 MHz		14.34	15.08	14.52	19.43	24.00	Complies
140	5700 MHz		14.63	14.89	14.77	19.54	24.00	Complies
144	5720 MHz		14.74	14.68	14.82	19.52	24.00	Complies

Note: Conducted output power limit=4+10log(B)

CH 40 limit=4+10log(19.84)=16.98dBm < 17dBm, so the power limit=16.98dBm

Straddle channel complies with output power limit of Band 3 & Band4										
CH	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII B3 BW (MHz)	UNII B4 BW (MHz)	Total Conducted Output Power (dBm)	UNII B3 Limit (dBm)	UNII B4 Limit (dBm)	Result
144	20.48	17.12	5709.76	5711.36	15.24	5.24	19.52	22.83	24.19	Complies

Note:

UNII B3 limit: 24dBm or 11+10log(B)

UNII B4 limit: 30dBm or 17+10log(B)

Temperature	20°C	Humidity	52%
Test Engineer	Cliff Chang	Configurations	IEEE 802.11ac
Test Date	Apr. 25, 2014		

For beamforming mode:

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Duty Factor	Conducted Power (dBm)				Max. Limit (dBm)	Result
			Chain 1	Chain 2	Chain 3	Total		
36	5180 MHz	0.04	9.21	9.78	9.46	14.26	14.33	Complies
40	5200 MHz		9.19	9.92	9.43	14.30	14.33	Complies
48	5240 MHz		9.09	10.10	9.36	14.31	14.33	Complies
52	5260 MHz		14.38	15.22	14.58	19.51	19.63	Complies
60	5300 MHz		14.32	15.29	14.78	19.59	19.63	Complies
64	5320 MHz		14.25	15.12	14.42	19.38	19.63	Complies
100	5500 MHz		14.12	14.87	14.46	19.27	19.43	Complies
116	5580 MHz		14.19	14.73	14.25	19.17	19.43	Complies
140	5700 MHz		14.58	14.60	14.75	19.42	19.43	Complies
144	5720 MHz		13.20	13.87	13.04	18.16	18.21	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi > 6dBi, so Band 1 limit=17-(8.67-6)=14.33dBm/MHz

=10.37dBi > 6dBi, so Band 2 limit=24-(10.37-6)=19.63dBm/MHz

=10.57dBi > 6dBi, so Band 3 limit=24-(10.57-6)=19.43dBm/MHz

=10.57dBi >6dBi, so CH144 limit=24 or 11+10log(15.08)-(10.57-6)=18.21dBm

Straddle channel complies with output power limit of Band 3 & Band4										
CH	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII B3 BW (MHz)	UNII B4 BW (MHz)	Total Conducted Output Power (dBm)	UNII B3 Limit (dBm)	UNII B4 Limit (dBm)	Result
144	20.48	18.08	5709.92	5711.04	15.08	5.40	18.16	18.21	19.75	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =10.57dBi >6dBi

UNII B3 limit=24 or 11+10log(15.08)-(10.57-6)=18.21dBm

UNII B4 limit=30 or 17+10log(5.40)-(10.57-6)=19.75dBm

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Duty Factor	Conducted Power (dBm)				Max. Limit (dBm)	Result
			Chain 1	Chain 2	Chain 3	Total		
38	5190 MHz	0.09	8.51	10.15	9.17	14.10	14.33	Complies
46	5230 MHz		8.39	10.16	9.01	14.02	14.33	Complies
54	5270 MHz		13.93	15.87	14.52	19.62	19.63	Complies
62	5310 MHz		9.38	11.16	10.19	15.08	19.63	Complies
102	5510 MHz		11.81	13.65	12.38	17.45	19.43	Complies
110	5550 MHz		13.66	15.40	13.93	19.17	19.43	Complies
134	5670 MHz		13.65	15.34	13.85	19.12	19.43	Complies
142	5710 MHz		13.58	15.48	13.91	19.18	19.43	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi > 6dBi, so Band 1 limit=17-(8.67-6)=14.33dBm/MHz

=10.37dBi > 6dBi, so Band 2 limit=24-(10.37-6)=19.63dBm/MHz

=10.57dBi > 6dBi, so Band 3 limit=24-(10.57-6)=19.43dBm/MHz

Straddle channel complies with output power limit of Band 3 & Band4										
CH	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII B3 BW (MHz)	UNII B4 BW (MHz)	Total Conducted Output Power (dBm)	UNII B3 Limit (dBm)	UNII B4 Limit (dBm)	Result
142	42.88	36.8	5690.16	5691.76	34.84	8.04	19.18	19.43	21.48	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =10.57dBi >6dBi

UNII B3 limit=24 or 11+10log(34.84)-(10.57-6)=19.43dBm

UNII B4 limit=30 or 17+10log(8.04)-(10.57-6)=21.48dBm

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Duty Factor	Conducted Power (dBm)				Max. Limit (dBm)	Result
			Chain 1	Chain 2	Chain 3	Total		
42	5210 MHz	0.18	8.62	10.02	9.11	14.06	14.33	Complies
58	5290 MHz		11.54	13.05	11.71	16.93	19.63	Complies
106	5530 MHz		12.07	13.58	12.32	17.48	19.43	Complies
122	5610 MHz		13.92	15.46	13.83	19.24	19.43	Complies
138	5690 MHz		13.82	15.25	14.05	19.19	19.43	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi > 6dBi, so Band 1 limit=17-(8.67-6)=14.33dBm/MHz

=10.37dBi > 6dBi, so Band 2 limit=24-(10.37-6)=19.63dBm/MHz

=10.57dBi > 6dBi, so Band 3 limit=24-(10.57-6)=19.43dBm/MHz

Straddle channel complies with output power limit of Band 3 & Band4										
CH	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII B3 BW (MHz)	UNII B4 BW (MHz)	Total Conducted Output Power (dBm)	UNII B3 Limit (dBm)	UNII B4 Limit (dBm)	Result
138	89.60	76.8	5642.64	5651.6	82.36	7.24	19.19	19.43	21.03	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$ =10.57dBi >6dBi

UNII B3 limit=24 or 11+10log(82.36)-(10.57-6)=19.43dBm

UNII B4 limit=30 or 17+10log(7.24)-(10.57-6)=21.03dBm

4.4. Power Spectral Density Measurement

4.4.1. Limit

The power spectral density is defined as the highest level of power in dBm per MHz generated by the transmitter within the power envelope. The following table is power spectral density limits and decrease power density limit rule refer to section 4.3.1.

Frequency Range	Power Spectral Density limit (dBm/MHz)
5.15~5.25 GHz	4
5.25-5.35 GHz	11
5.470-5.725 GHz	11

4.4.2. Measuring Instruments and Setting

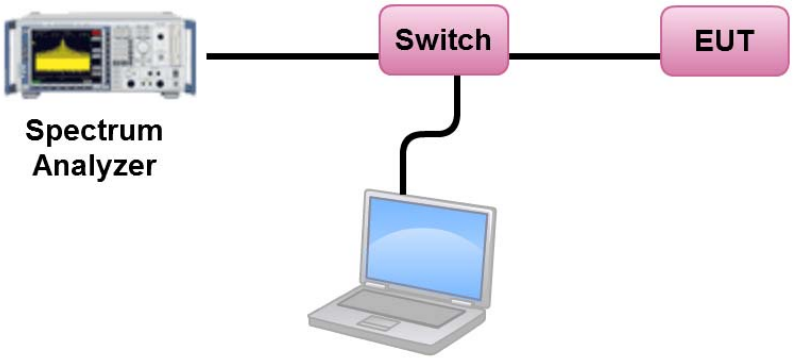
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1000 kHz
VBW	3000 kHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB 789033 D01 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E,section (C) Maximum conducted output power => (d) Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).
3. Multiple antenna systems was performed in accordance KDB 662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements (a) Measure and sum the spectra across the outputs.
4. When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Power Spectral Density

Temperature	20°C	Humidity	52%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a /ac
Test Date	Apr. 25, 2014		

For non-beamforming mode:

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	1.12	1.33	Complies
40	5200 MHz	1.25	1.33	Complies
48	5240 MHz	1.30	1.33	Complies
52	5260 MHz	6.38	6.63	Complies
60	5300 MHz	6.52	6.63	Complies
64	5320 MHz	6.43	6.63	Complies
100	5500 MHz	6.19	6.43	Complies
116	5580 MHz	6.35	6.43	Complies
140	5700 MHz	6.17	6.43	Complies
144	5720 MHz	6.11	6.43	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi >6dBi,So Band1 Limit =4-(8.67-6)=1.33dBm/MHz

=10.37dBi >6dBi,So Band2 Limit =11-(10.37-6)=6.63dBm/MHz

=10.57dBi >6dBi,So Band3 Limit =11-(10.57-6)=6.43dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	0.46	1.33	Complies
46	5230 MHz	0.88	1.33	Complies
54	5270 MHz	6.31	6.63	Complies
62	5310 MHz	2.40	6.63	Complies
102	5510 MHz	2.27	6.43	Complies
110	5550 MHz	6.20	6.43	Complies
134	5670 MHz	3.84	6.43	Complies
142	5710 MHz	6.19	6.43	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi >6dBi,So Band1 Limit =4-(8.67-6)=1.33dBm/MHz

=10.37dBi >6dBi,So Band2 Limit =11-(10.37-6)=6.63dBm/MHz

=10.57dBi >6dBi,So Band3 Limit =11-(10.57-6)=6.43dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-3.01	1.33	Complies
58	5290 MHz	-1.00	6.63	Complies
106	5530 MHz	-0.70	6.43	Complies
122	5610 MHz	2.49	6.43	Complies
138	5690 MHz	4.17	6.43	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi >6dBi,So Band1 Limit =4-(8.67-6)=1.33dBm/MHz

=10.37dBi >6dBi,So Band2 Limit =11-(10.37-6)=6.63dBm/MHz

=10.57dBi >6dBi,So Band3 Limit =11-(10.57-6)=6.43dBm/MHz

Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	1.25	1.33	Complies
40	5200 MHz	1.18	1.33	Complies
48	5240 MHz	1.21	1.33	Complies
52	5260 MHz	6.33	6.63	Complies
60	5300 MHz	6.33	6.63	Complies
64	5320 MHz	6.52	6.63	Complies
100	5500 MHz	6.26	6.43	Complies
116	5580 MHz	6.28	6.43	Complies
140	5700 MHz	6.22	6.43	Complies
144	5720 MHz	6.16	6.43	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi >6dBi,So Band1 Limit =4-(8.67-6)=1.33dBm/MHz

=10.37dBi >6dBi,So Band2 Limit =11-(10.37-6)=6.63dBm/MHz

=10.57dBi >6dBi,So Band3 Limit =11-(10.57-6)=6.43dBm/MHz

Temperature	20°C	Humidity	52%
Test Engineer	Cliff Chang	Configurations	IEEE 802.11ac
Test Date	Apr. 25, 2014		

For beamforming mode:

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	1.12	1.33	Complies
40	5200 MHz	1.25	1.33	Complies
48	5240 MHz	1.30	1.33	Complies
52	5260 MHz	6.38	6.63	Complies
60	5300 MHz	6.52	6.63	Complies
64	5320 MHz	6.43	6.63	Complies
100	5500 MHz	6.19	6.43	Complies
116	5580 MHz	6.35	6.43	Complies
140	5700 MHz	6.17	6.43	Complies
144	5720 MHz	6.11	6.43	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi >6dBi,So Band1 Limit =4-(8.67-6)=1.33dBm/MHz

=10.37dBi >6dBi,So Band2 Limit =11-(10.37-6)=6.63dBm/MHz

=10.57dBi >6dBi,So Band3 Limit =11-(10.57-6)=6.43dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-2.68	1.33	Complies
46	5230 MHz	-2.16	1.33	Complies
54	5270 MHz	3.06	6.63	Complies
62	5310 MHz	-0.33	6.63	Complies
102	5510 MHz	1.49	6.43	Complies
110	5550 MHz	3.18	6.43	Complies
134	5670 MHz	2.46	6.43	Complies
142	5710 MHz	2.34	6.43	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi >6dBi,So Band1 Limit =4-(8.67-6)=1.33dBm/MHz

=10.37dBi >6dBi,So Band2 Limit =11-(10.37-6)=6.63dBm/MHz

=10.57dBi >6dBi,So Band3 Limit =11-(10.57-6)=6.43dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-5.01	1.33	Complies
58	5290 MHz	-2.06	6.63	Complies
106	5530 MHz	-1.30	6.43	Complies
122	5610 MHz	0.40	6.43	Complies
138	5690 MHz	-0.17	6.43	Complies

Note: $Directional\ gain = G_{ANT} + 10\ log(N_{ANT}/N_{SS})$

=8.67dBi >6dBi,So Band1 Limit =4-(8.67-6)=1.33dBm/MHz

=10.37dBi >6dBi,So Band2 Limit =11-(10.37-6)=6.63dBm/MHz

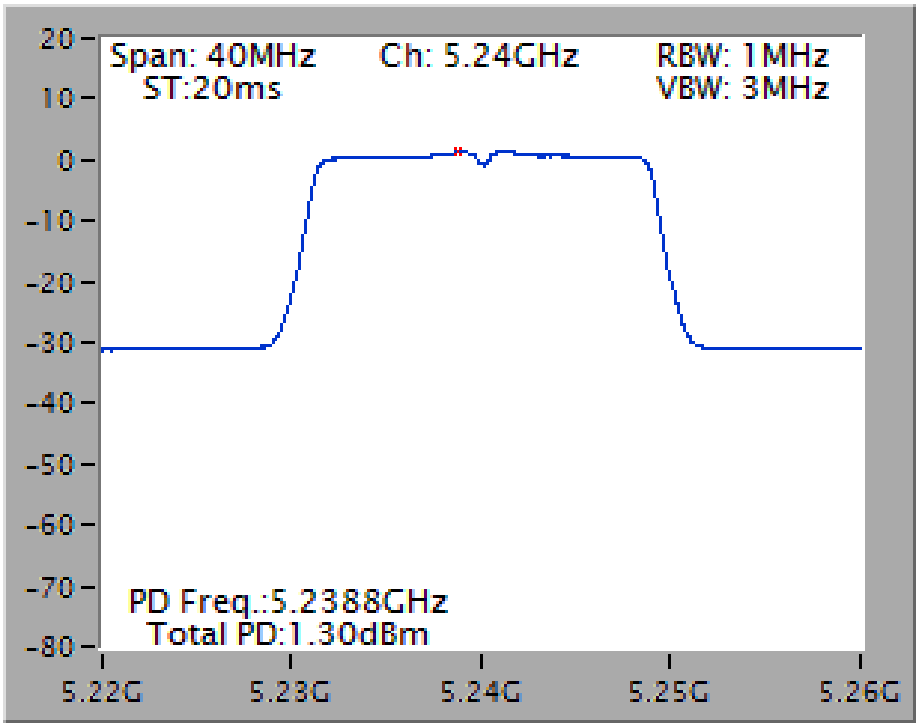
=10.57dBi >6dBi,So Band3 Limit =11-(10.57-6)=6.43dBm/MHz

Note: All the test values were listed in the report.

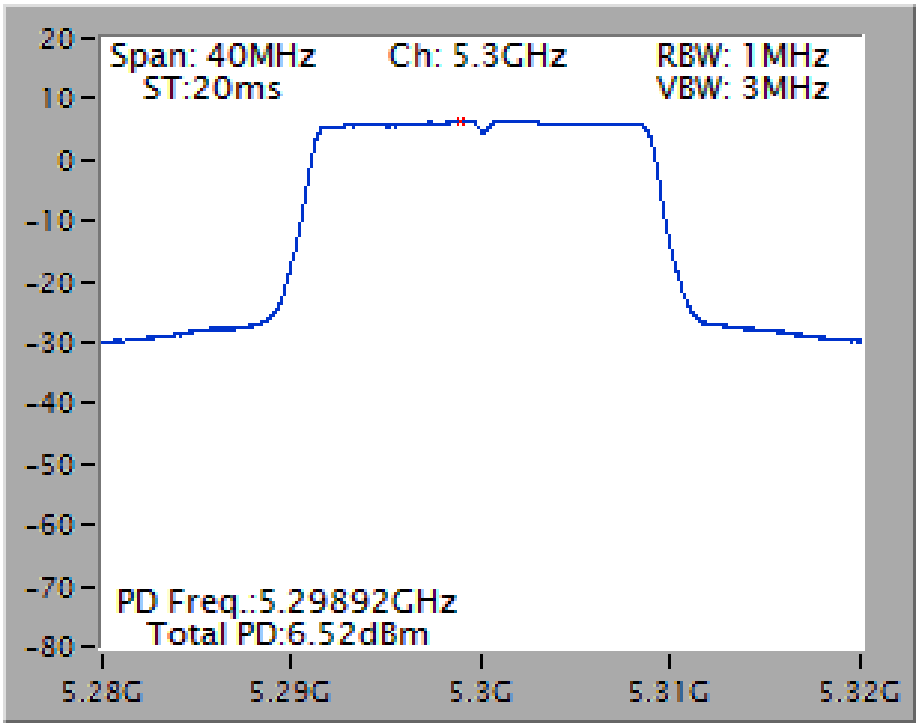
For plots, only the channel with worse result was shown.

For non-beamforming mode:

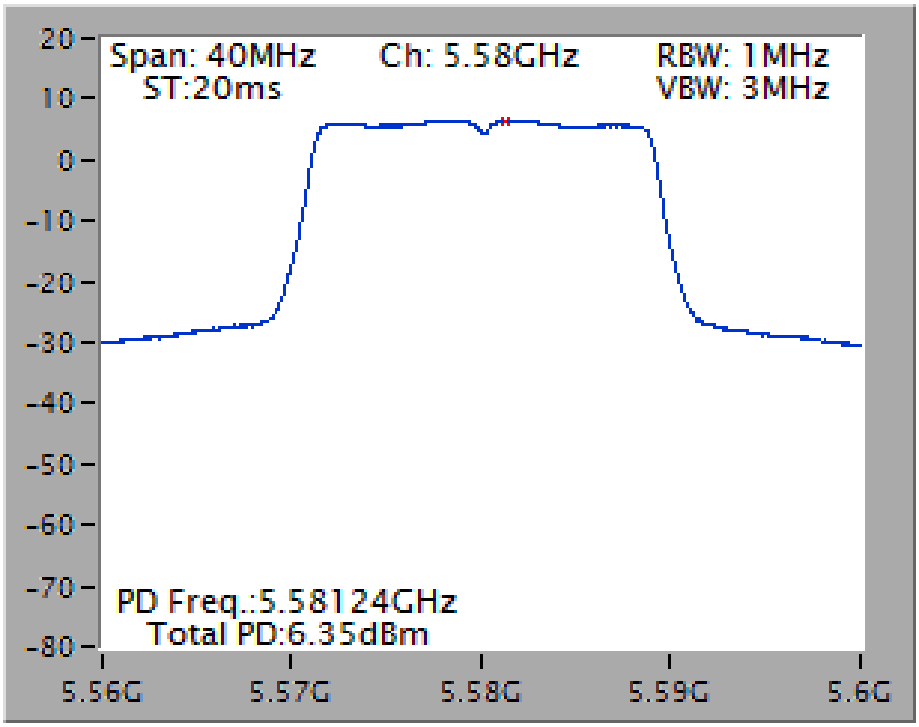
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5240 MHz



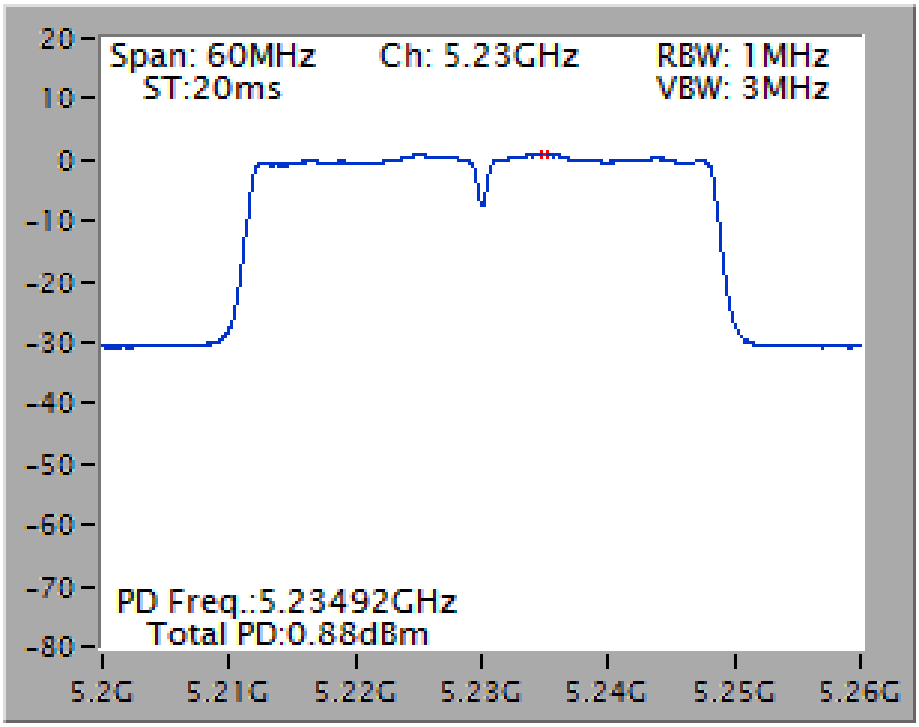
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5300 MHz



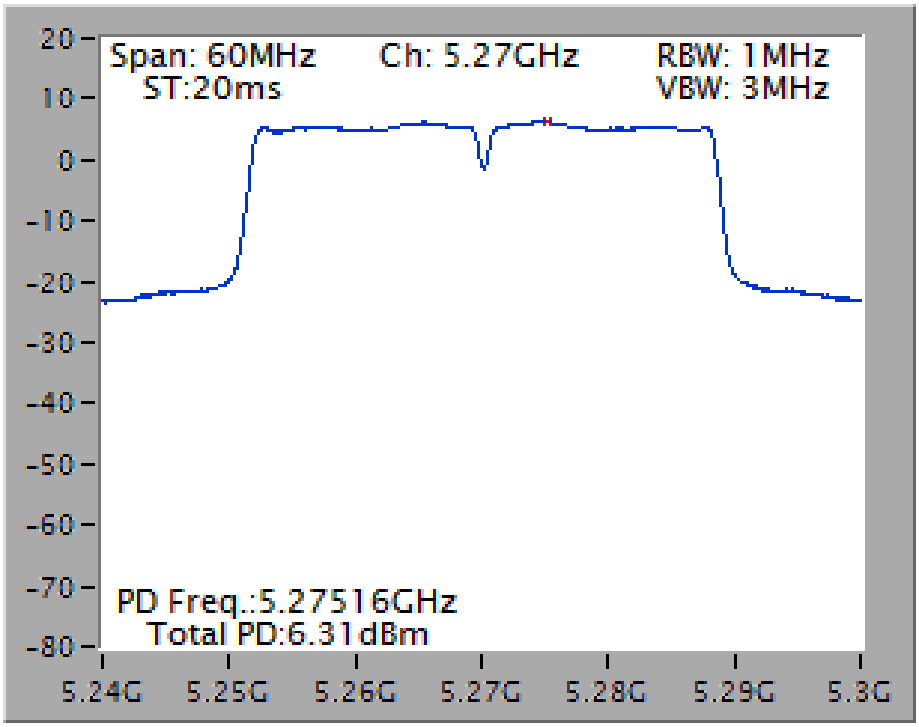
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5580 MHz



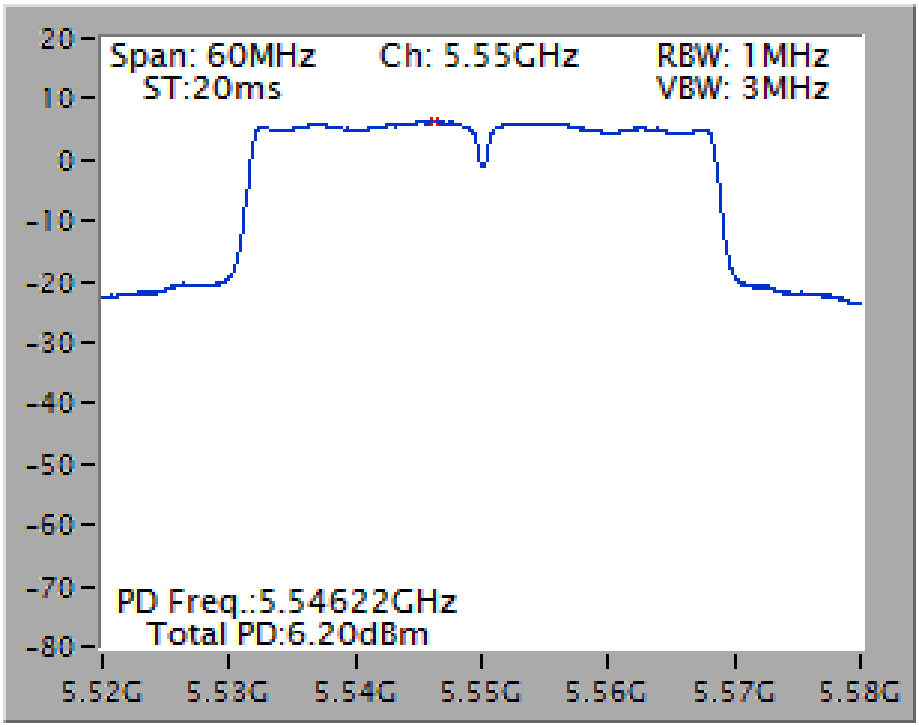
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5230 MHz



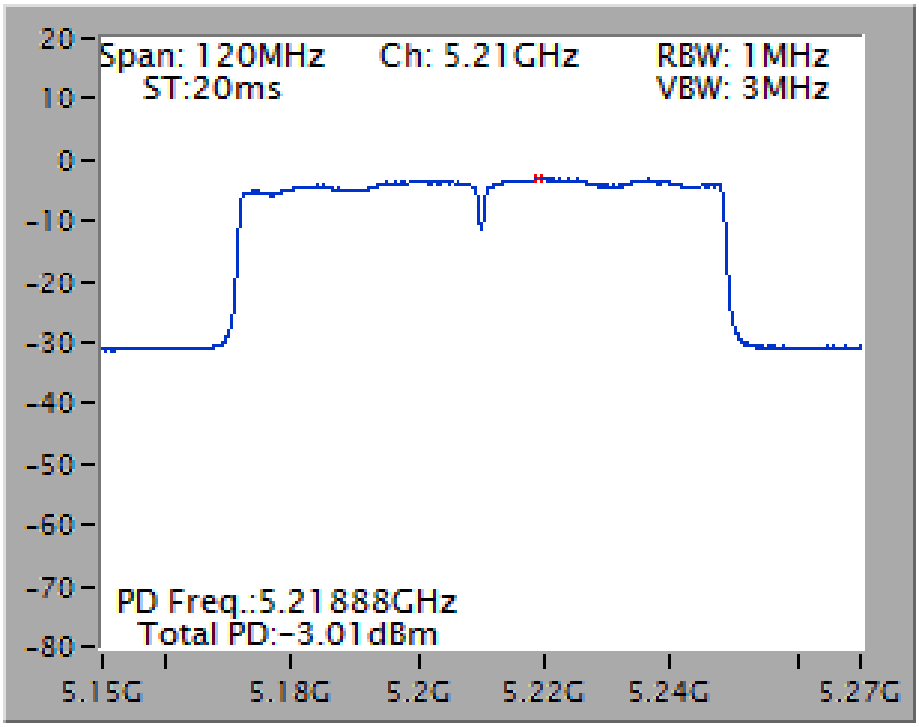
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5270 MHz



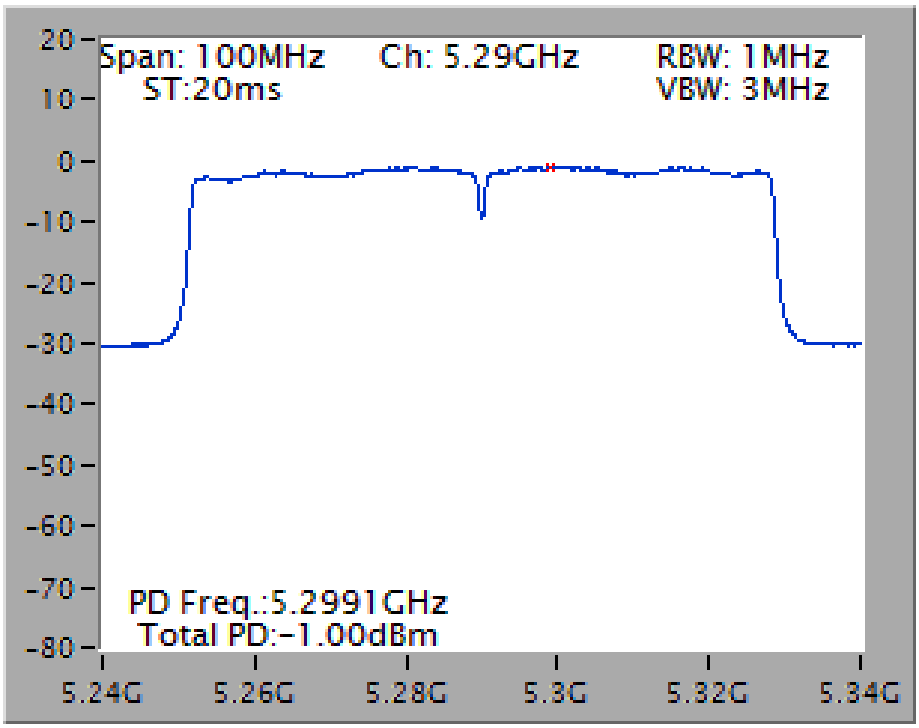
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5550 MHz



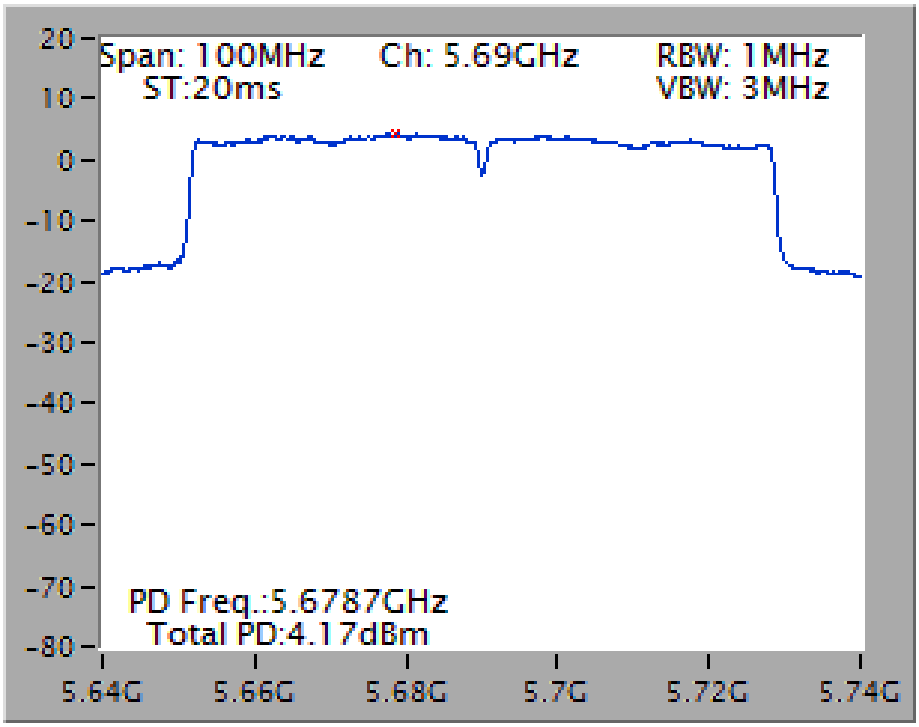
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5210 MHz



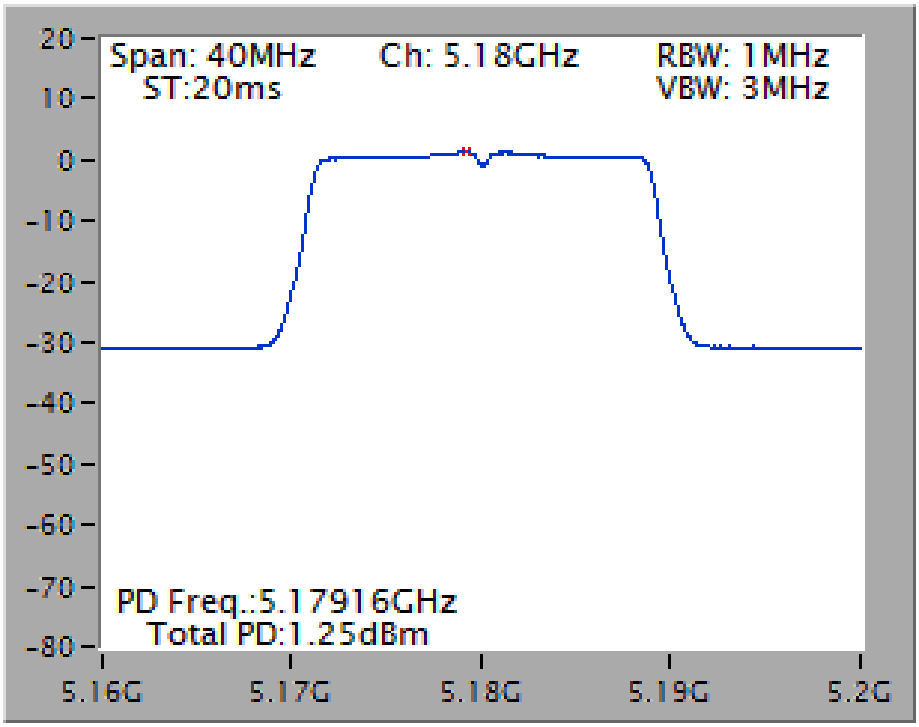
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5290 MHz



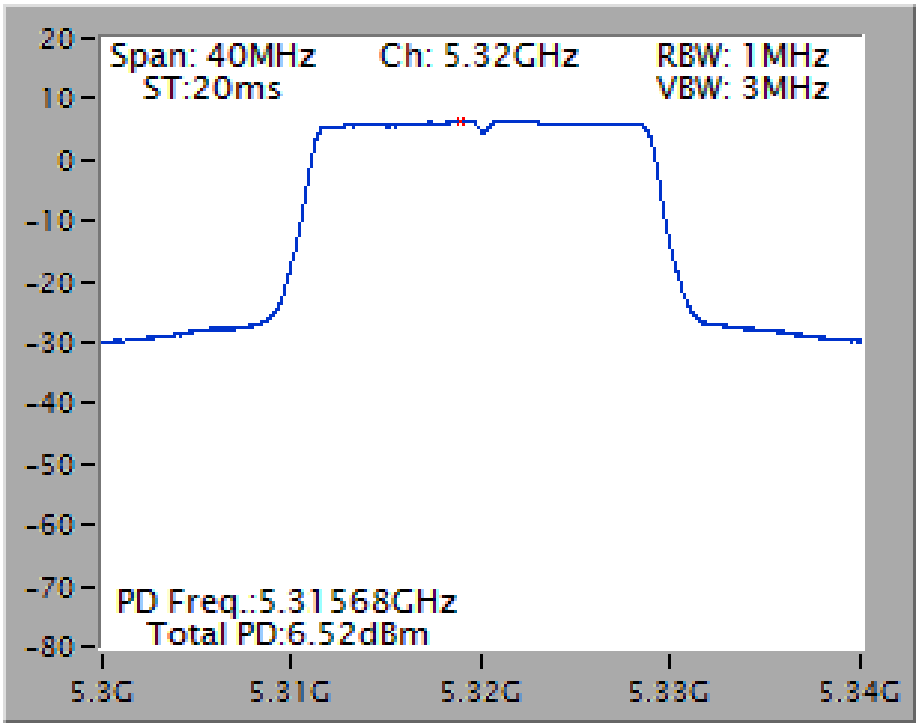
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5690 MHz



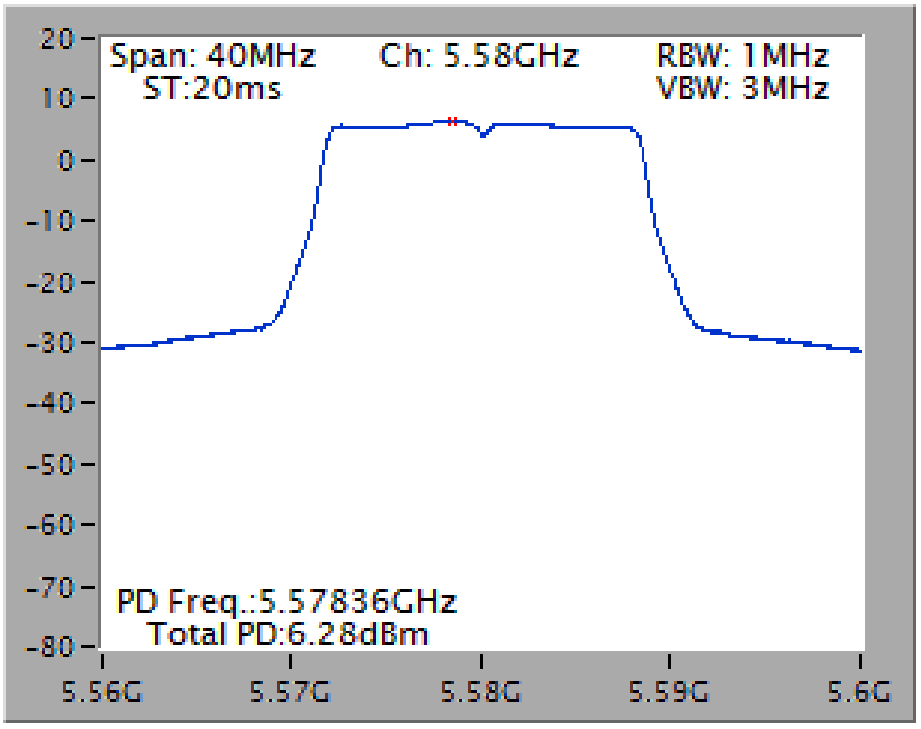
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5180 MHz



Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5320 MHz

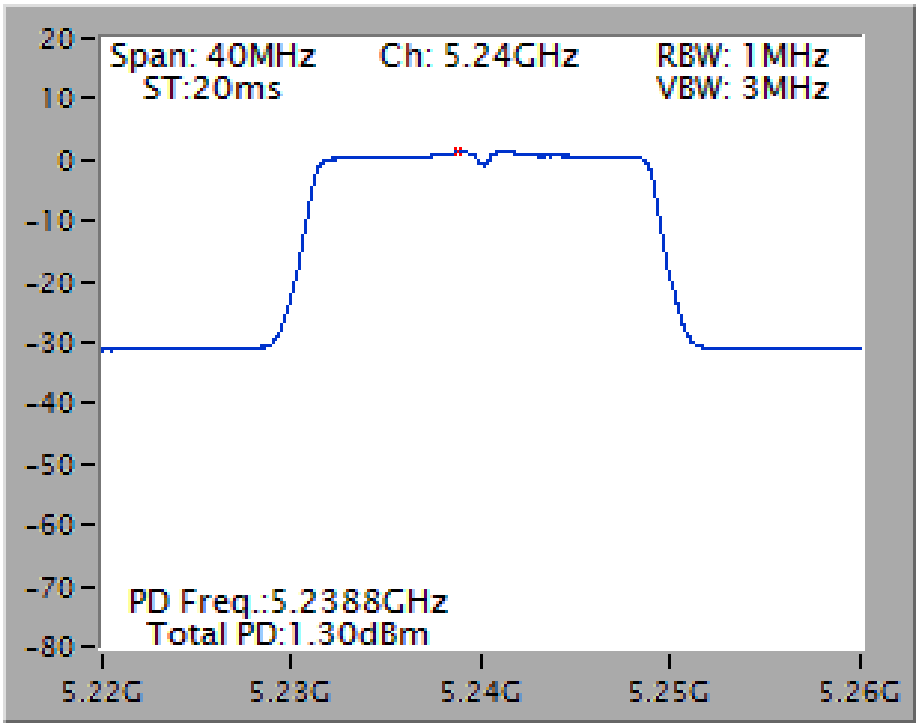


Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5580 MHz

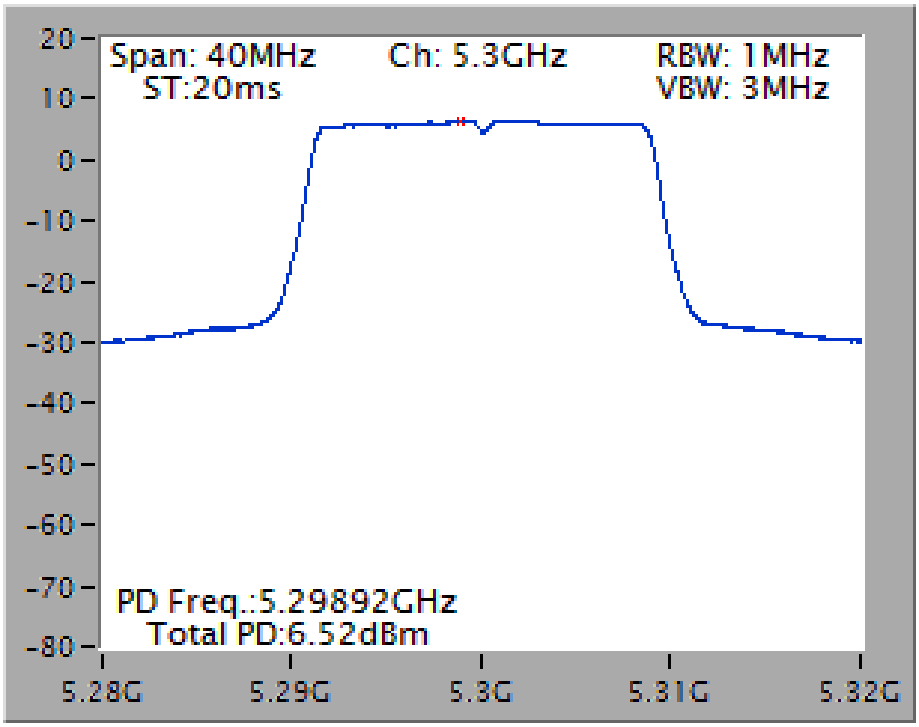


For beamforming mode:

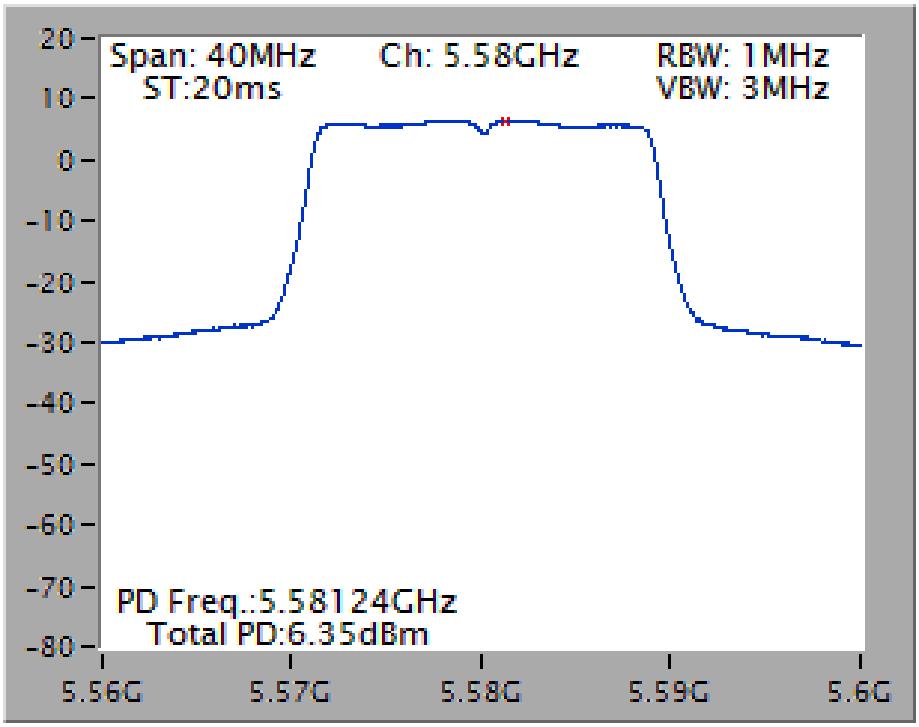
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5240 MHz



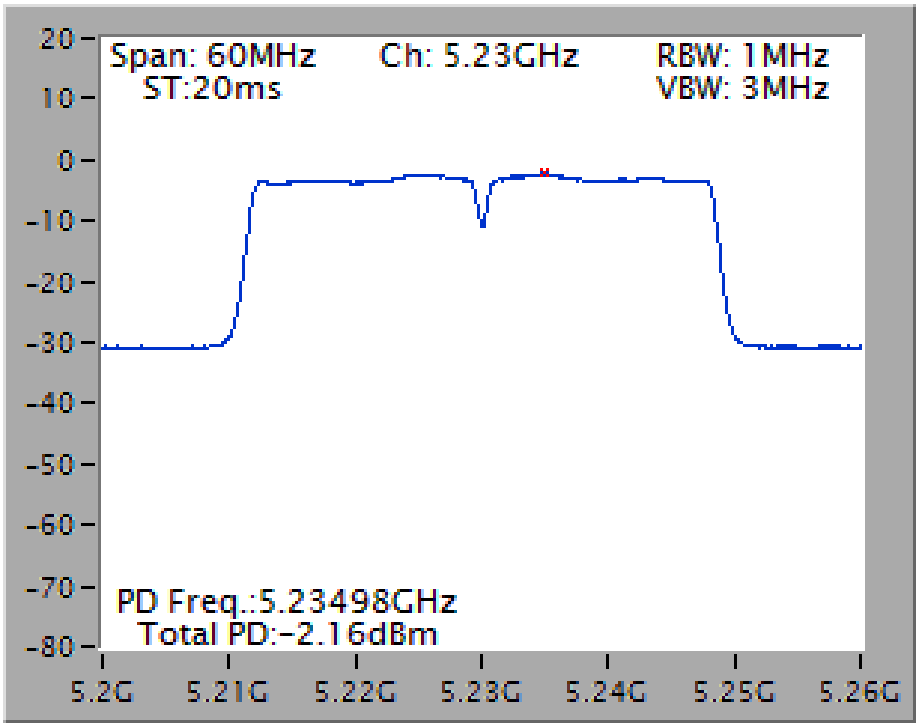
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5300 MHz



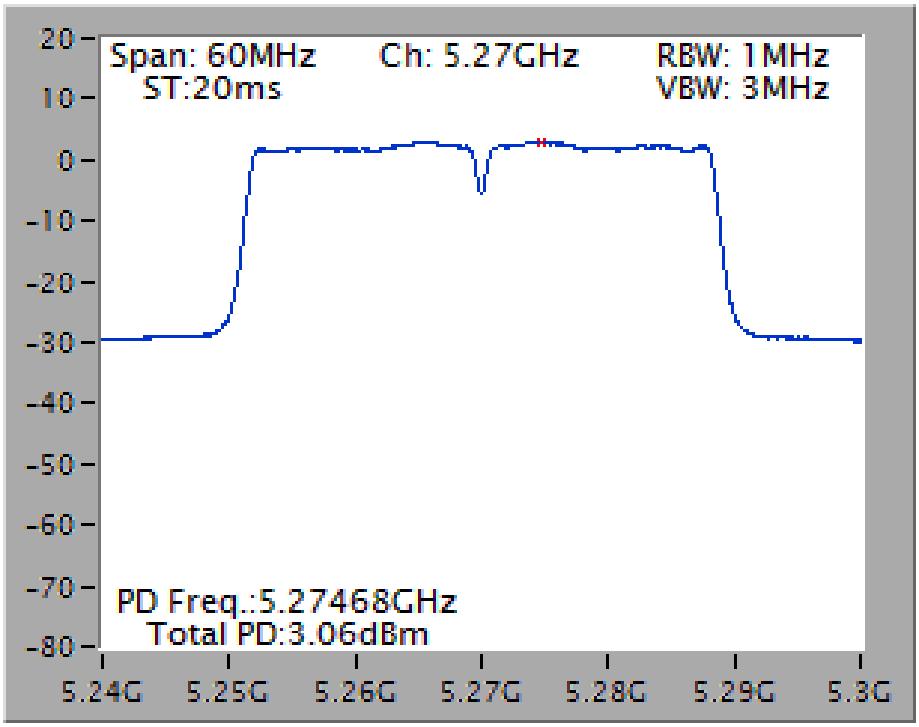
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5580 MHz



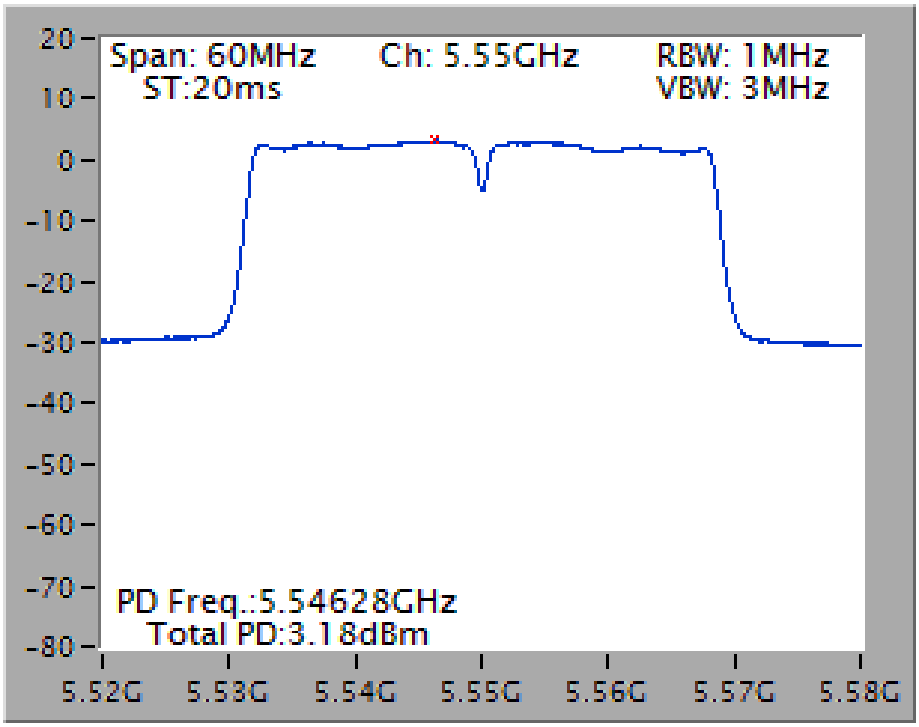
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5230 MHz



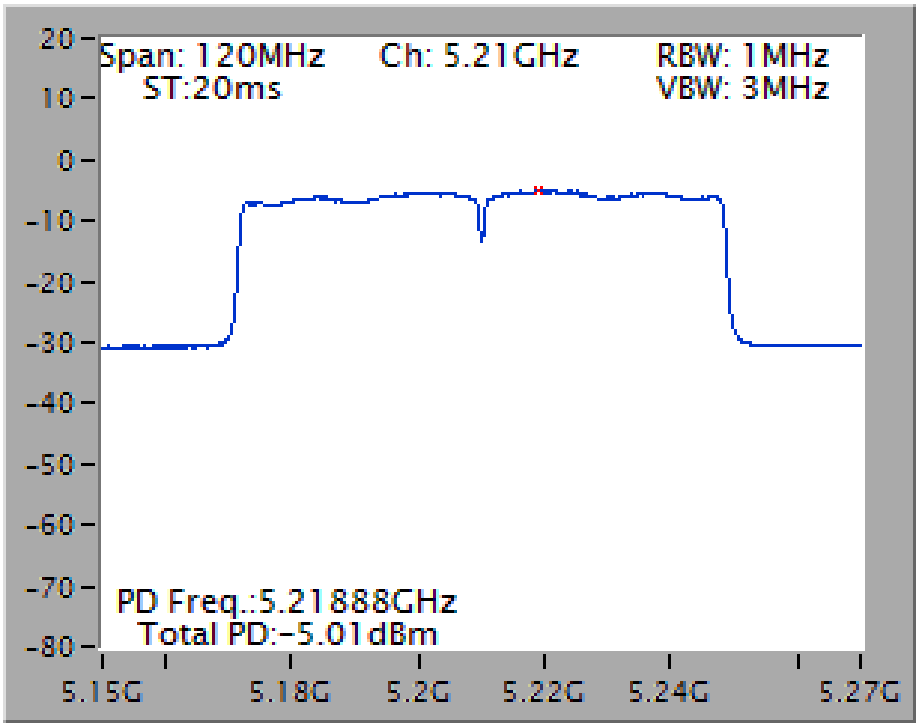
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5270 MHz



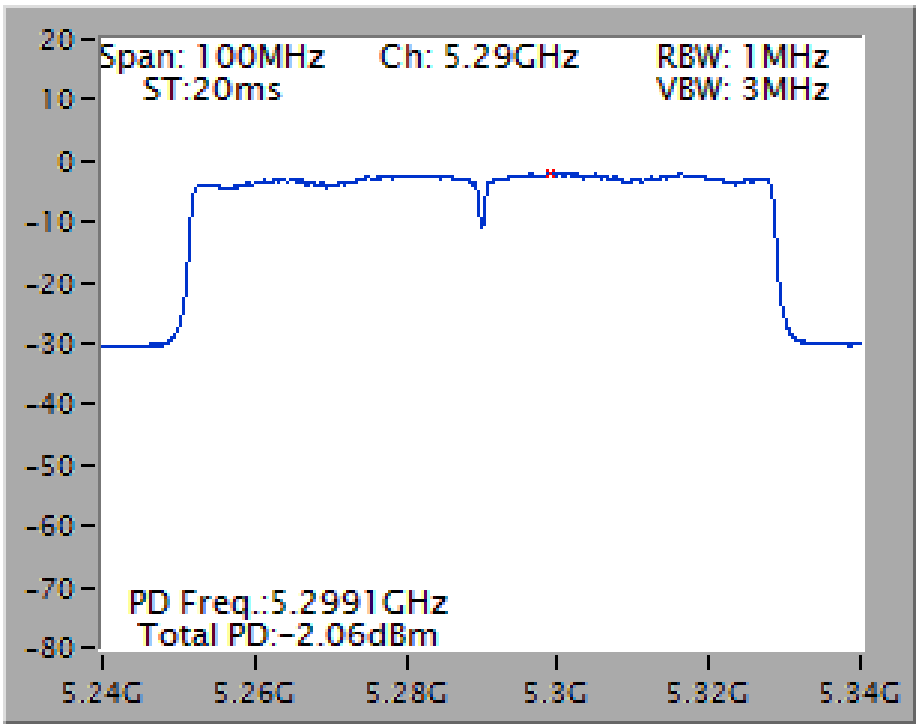
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5550 MHz



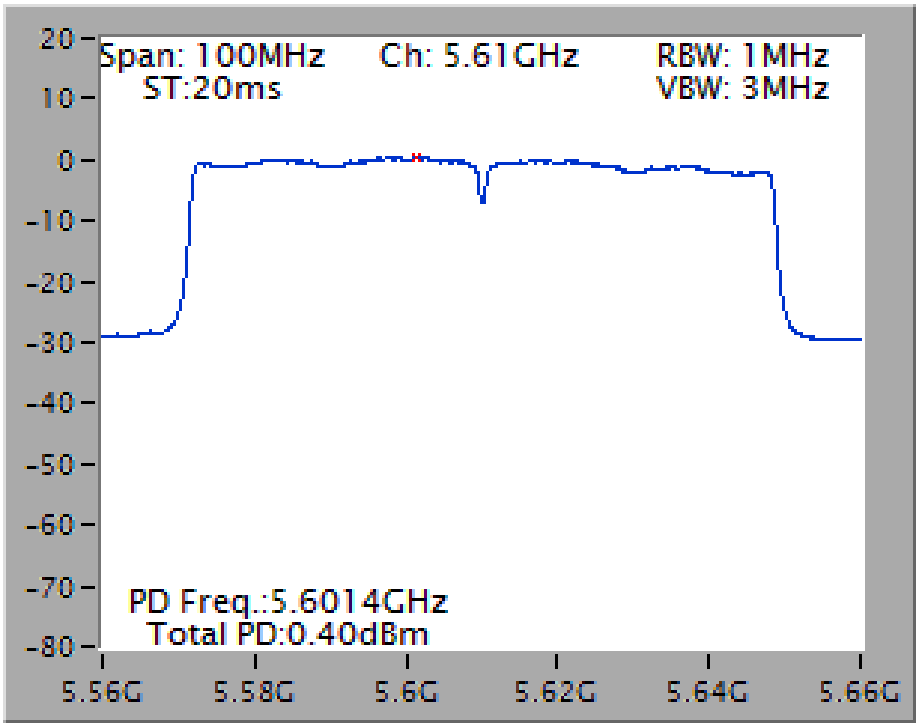
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5210 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5290 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5610 MHz



4.5. Peak Excursion Measurement

4.5.1. Limit

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 emissions bandwidth whichever is less.

4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1MHz (Peak Trace) / 1MHz (Average Trace)
VBW	≥ 3MHz (Peak Trace) / ≥ 3MHz (Average Trace)
Detector	Peak (Peak Trace) / RMS (Average Trace)
Trace	Trace: Max hold (Peak Trace) / Trace Average Sweep Count 100 (Average Trace)
Sweep Time	AUTO

4.5.3. Test Procedures

1. Trace A, Set RBW =1MHz, VBW = 3MHz, Span >26dB bandwidth, Max. hold.
2. Delta Mark trace A Maximum frequency and trace B same frequency.
3. Repeat the above procedure until measurements for all frequencies were complete.
4. Testing each modulation mode on a single channel in single operating band at single output port. All signal types need test (DSSS, OFDM). All modulation types need test (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM). All bandwidth modes need test.

4.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.4.4.

4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Peak Excursion

Temperature	20°C	Humidity	52%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a /ac

For non-beamforming mode:

Configuration IEEE 802.11ac VHT20 / Chain 1 + Chain 2 + Chain 3

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BSPK(MCS0)	5180MHz	9.20	13	Complies
QPSK(MCS1)	5180MHz	9.67	13	Complies
16QAM(MCS3)	5180MHz	9.49	13	Complies
64QAM(MCS5)	5180MHz	9.28	13	Complies
256QAM(MCS8)	5180MHz	9.82	13	Complies
BSPK(MCS0)	5300MHz	9.49	13	Complies
QPSK(MCS1)	5300MHz	8.71	13	Complies
16QAM(MCS3)	5300MHz	9.06	13	Complies
64QAM(MCS5)	5300MHz	8.78	13	Complies
256QAM(MCS8)	5300MHz	9.67	13	Complies
BSPK(MCS0)	5700MHz	8.84	13	Complies
QPSK(MCS1)	5700MHz	8.79	13	Complies
16QAM(MCS3)	5700MHz	8.63	13	Complies
64QAM(MCS5)	5700MHz	8.89	13	Complies
256QAM(MCS8)	5700MHz	9.64	13	Complies

Configuration IEEE 802.11ac VHT40 / Chain 1 + Chain 2 + Chain 3

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BSPK(MCS0)	5230MHz	9.27	13	Complies
QPSK(MCS1)	5230MHz	9.03	13	Complies
16QAM(MCS3)	5230MHz	9.28	13	Complies
64QAM(MCS5)	5230MHz	9.77	13	Complies
256QAM(MCS8)	5230MHz	9.60	13	Complies
BSPK(MCS0)	5270MHz	9.16	13	Complies
QPSK(MCS1)	5270MHz	9.04	13	Complies
16QAM(MCS3)	5270MHz	8.92	13	Complies
64QAM(MCS5)	5270MHz	9.97	13	Complies
256QAM(MCS8)	5270MHz	9.96	13	Complies
BSPK(MCS0)	5710MHz	9.20	13	Complies
QPSK(MCS1)	5710MHz	9.21	13	Complies
16QAM(MCS3)	5710MHz	8.58	13	Complies
64QAM(MCS5)	5710MHz	8.87	13	Complies
256QAM(MCS8)	5710MHz	9.11	13	Complies

Configuration IEEE 802.11ac VHT80 / Chain 1 + Chain 2 + Chain 3

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BSPK(MCS0)	5210MHz	8.94	13	Complies
QPSK(MCS1)	5210MHz	9.48	13	Complies
16QAM(MCS3)	5210MHz	9.74	13	Complies
64QAM(MCS5)	5210MHz	9.24	13	Complies
256QAM(MCS8)	5210MHz	10.89	13	Complies
BSPK(MCS0)	5290MHz	8.95	13	Complies
QPSK(MCS1)	5290MHz	9.11	13	Complies
16QAM(MCS3)	5290MHz	8.87	13	Complies
64QAM(MCS5)	5290MHz	9.54	13	Complies
256QAM(MCS8)	5290MHz	9.31	13	Complies
BSPK(MCS0)	5690MHz	9.83	13	Complies
QPSK(MCS1)	5690MHz	9.14	13	Complies
16QAM(MCS3)	5690MHz	9.30	13	Complies
64QAM(MCS5)	5690MHz	9.52	13	Complies
256QAM(MCS8)	5690MHz	9.53	13	Complies

Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BSPK(6Mbps)	5180MHz	8.39	13	Complies
QPSK(12Mbps)	5180MHz	8.37	13	Complies
16QAM(24Mbps)	5180MHz	8.62	13	Complies
64QAM(48Mbps)	5180MHz	8.75	13	Complies
BSPK(6Mbps)	5260MHz	8.23	13	Complies
QPSK(12Mbps)	5260MHz	8.43	13	Complies
16QAM(24Mbps)	5260MHz	8.51	13	Complies
64QAM(48Mbps)	5260MHz	8.86	13	Complies
BSPK(6Mbps)	5700MHz	8.27	13	Complies
QPSK(12Mbps)	5700MHz	8.33	13	Complies
16QAM(24Mbps)	5700MHz	8.00	13	Complies
64QAM(48Mbps)	5700MHz	8.62	13	Complies

Temperature	20°C	Humidity	52%
Test Engineer	Cliff Chang	Configurations	IEEE 802.11ac

For beamforming mode:

Configuration IEEE 802.11ac VHT20 / Chain 1 + Chain 2 + Chain 3

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BSPK(MCS0)	5240MHz	8.59	13	Complies
QPSK(MCS1)	5240MHz	9.15	13	Complies
16QAM(MCS3)	5240MHz	9.26	13	Complies
64QAM(MCS5)	5240MHz	9.45	13	Complies
256QAM(MCS8)	5240MHz	10.19	13	Complies
BSPK(MCS0)	5300MHz	8.40	13	Complies
QPSK(MCS1)	5300MHz	9.04	13	Complies
16QAM(MCS3)	5300MHz	9.32	13	Complies
64QAM(MCS5)	5300MHz	9.43	13	Complies
256QAM(MCS8)	5300MHz	9.57	13	Complies
BSPK(MCS0)	5700MHz	8.46	13	Complies
QPSK(MCS1)	5700MHz	8.73	13	Complies
16QAM(MCS3)	5700MHz	9.07	13	Complies
64QAM(MCS5)	5700MHz	9.13	13	Complies
256QAM(MCS8)	5700MHz	9.72	13	Complies

Configuration IEEE 802.11ac VHT40 / Chain 1 + Chain 2 + Chain 3

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BSPK(MCS0)	5190MHz	8.69	13	Complies
QPSK(MCS1)	5190MHz	8.73	13	Complies
16QAM(MCS3)	5190MHz	9.18	13	Complies
64QAM(MCS5)	5190MHz	9.47	13	Complies
256QAM(MCS8)	5190MHz	9.81	13	Complies
BSPK(MCS0)	5270MHz	8.91	13	Complies
QPSK(MCS1)	5270MHz	9.37	13	Complies
16QAM(MCS3)	5270MHz	9.45	13	Complies
64QAM(MCS5)	5270MHz	9.84	13	Complies
256QAM(MCS8)	5270MHz	10.00	13	Complies
BSPK(MCS0)	5710MHz	8.37	13	Complies
QPSK(MCS1)	5710MHz	9.50	13	Complies
16QAM(MCS3)	5710MHz	9.60	13	Complies
64QAM(MCS5)	5710MHz	9.90	13	Complies
256QAM(MCS8)	5710MHz	9.99	13	Complies

Configuration IEEE 802.11ac VHT80 / Chain 1 + Chain 2 + Chain 3

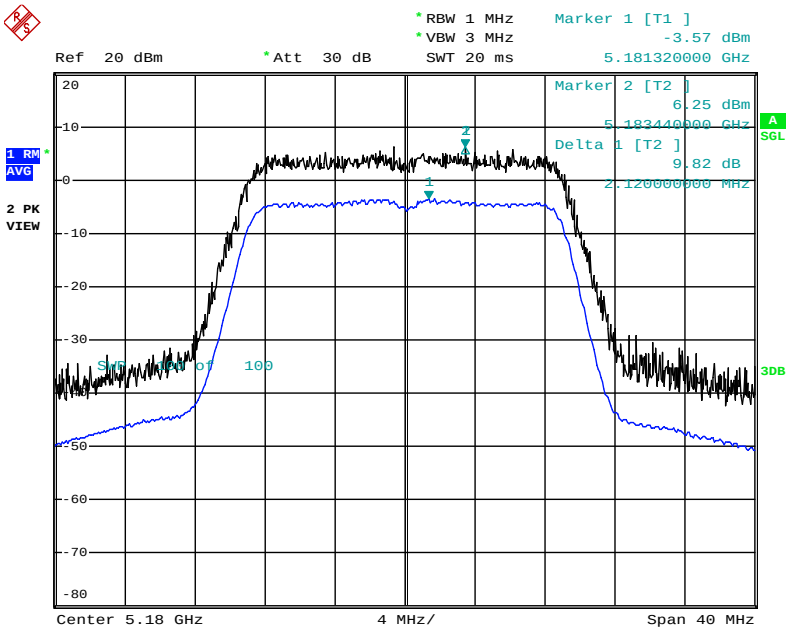
Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BSPK(MCS0)	5210MHz	8.66	13	Complies
QPSK(MCS1)	5210MHz	8.96	13	Complies
16QAM(MCS3)	5210MHz	8.99	13	Complies
64QAM(MCS5)	5210MHz	9.59	13	Complies
256QAM(MCS8)	5210MHz	10.69	13	Complies
BSPK(MCS0)	5290MHz	8.31	13	Complies
QPSK(MCS1)	5290MHz	8.82	13	Complies
16QAM(MCS3)	5290MHz	9.21	13	Complies
64QAM(MCS5)	5290MHz	9.34	13	Complies
256QAM(MCS8)	5290MHz	9.79	13	Complies
BSPK(MCS0)	5610MHz	9.02	13	Complies
QPSK(MCS1)	5610MHz	9.18	13	Complies
16QAM(MCS3)	5610MHz	9.32	13	Complies
64QAM(MCS5)	5610MHz	9.56	13	Complies
256QAM(MCS8)	5610MHz	9.69	13	Complies

Note: All the test values were listed in the report.

For plots, only the modulation with worse result was shown.

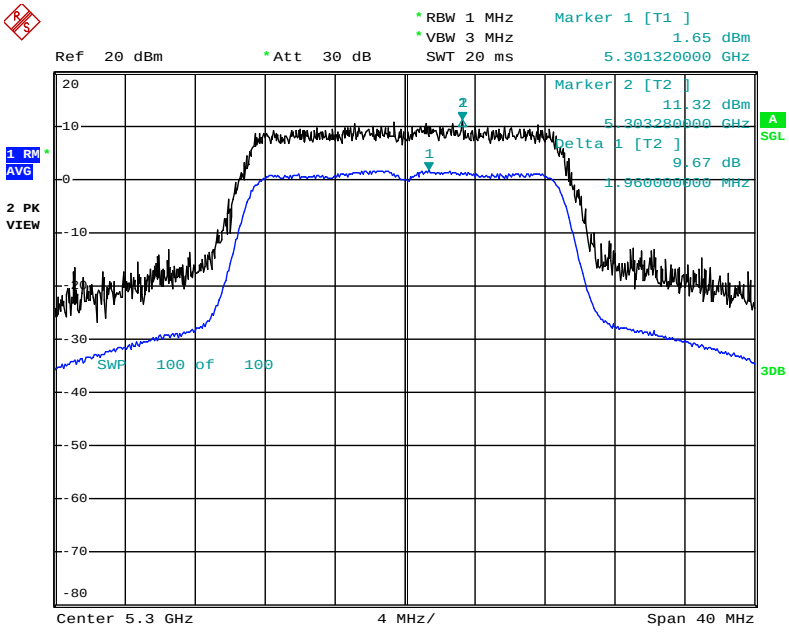
For non-beamforming mode:

Peak Excursion Plot on Configuration IEEE 802.11ac VHT20 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5180 MHz



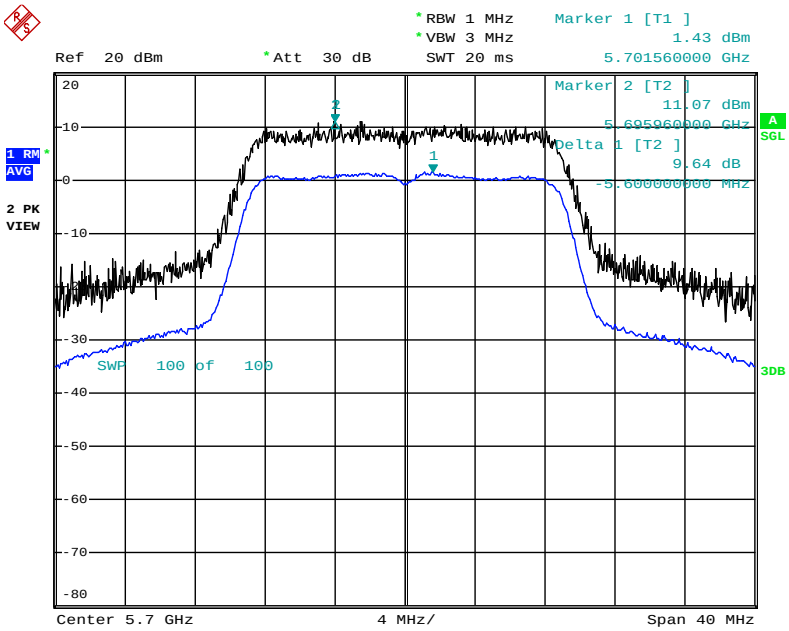
Date: 25.APR.2014 21:14:13

Peak Excursion Plot on Configuration IEEE 802.11ac VHT20 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5300 MHz



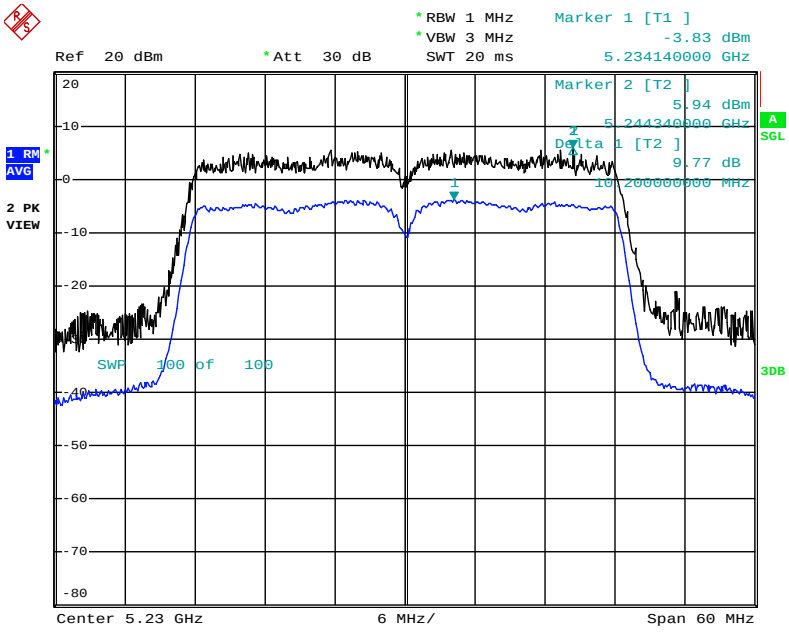
Date: 25.APR.2014 21:15:08

Peak Excursion Plot on Configuration IEEE 802.11ac VHT20 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5700 MHz



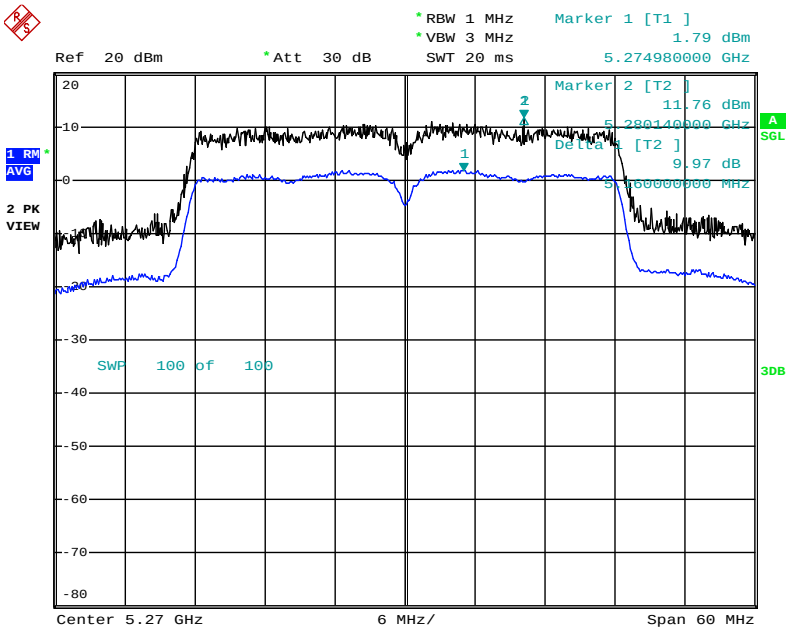
Date: 25.APR.2014 21:19:42

Peak Excursion Plot on Configuration IEEE 802.11ac VHT40 / Chain 1 + Chain 2 + Chain 3 / 64QAM(MCS5) / 5230 MHz



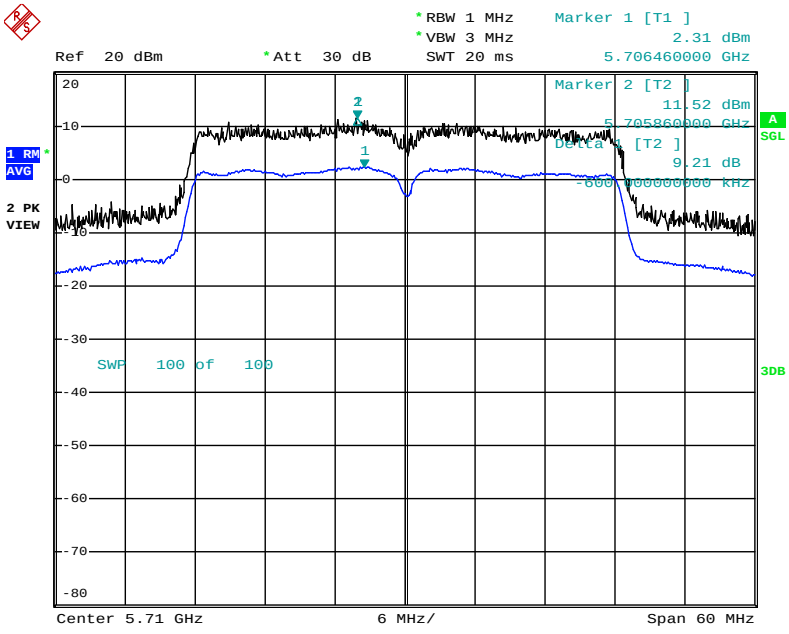
Date: 25.APR.2014 21:22:20

Peak Excursion Plot on Configuration IEEE 802.11ac VHT40 / Chain 1 + Chain 2 + Chain 3 / 64QAM(MCS5) / 5270 MHz



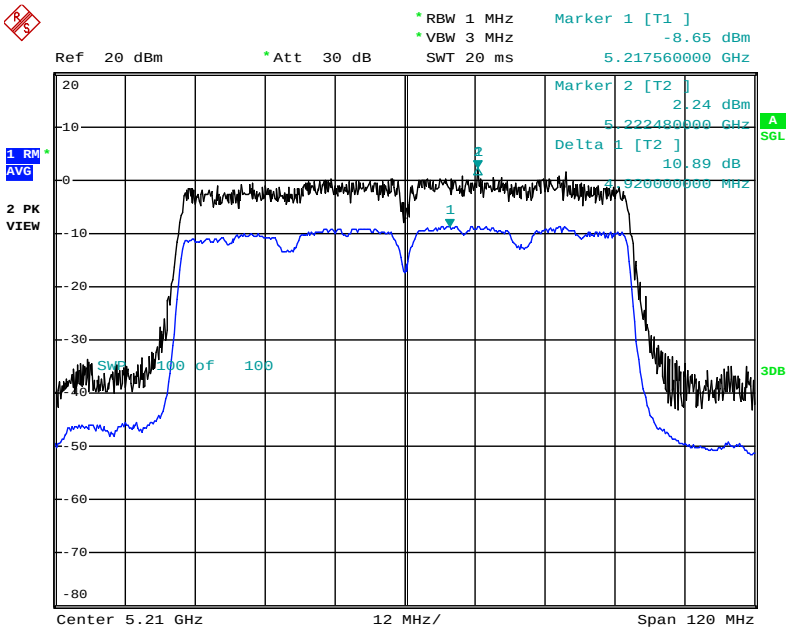
Date: 25.APR.2014 21:24:19

Peak Excursion Plot on Configuration IEEE 802.11ac VHT40 / Chain 1 + Chain 2 + Chain 3 / QPSK(MCS1) / 5710 MHz



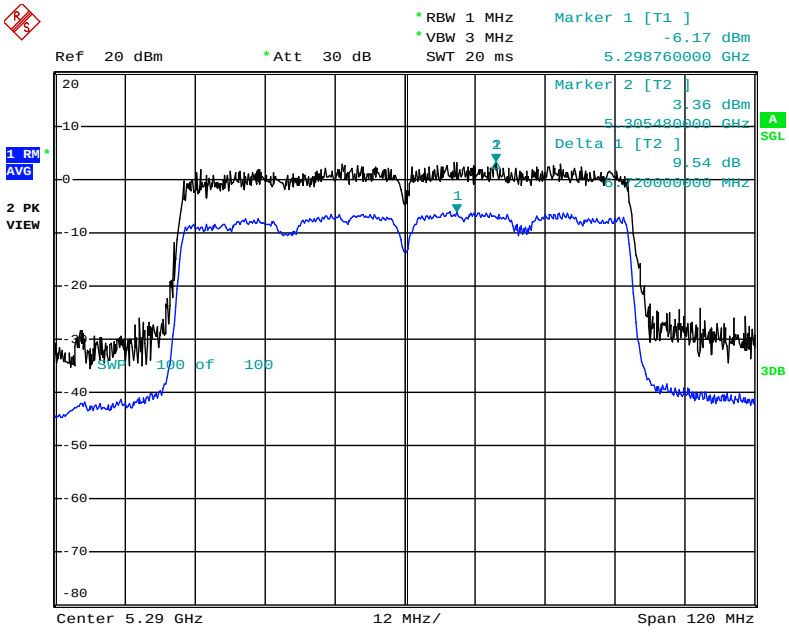
Date: 25.APR.2014 21:27:01

Peak Excursion Plot on Configuration IEEE 802.11ac VHT80 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5210 MHz



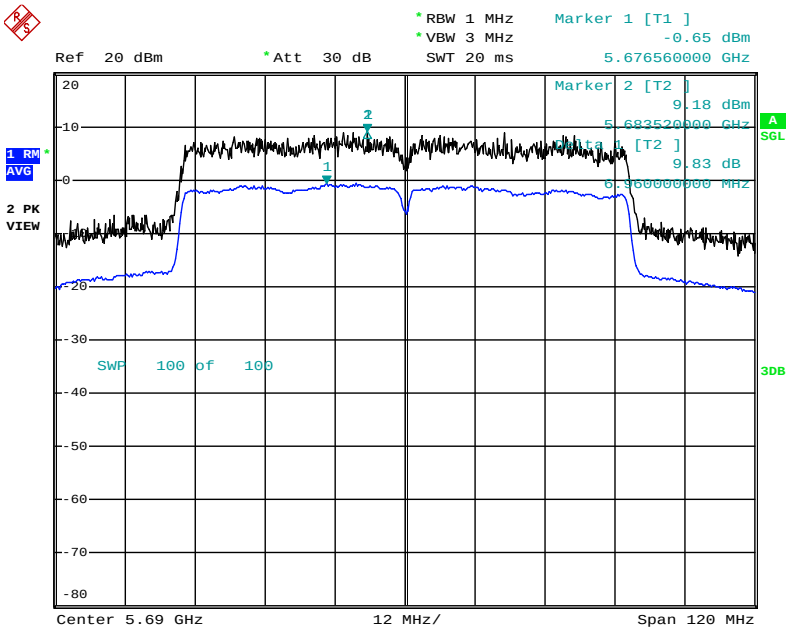
Date: 25.APR.2014 21:36:11

Peak Excursion Plot on Configuration IEEE 802.11ac VHT80 / Chain 1 + Chain 2 + Chain 3 / 64QAM(MCS5) / 5290 MHz



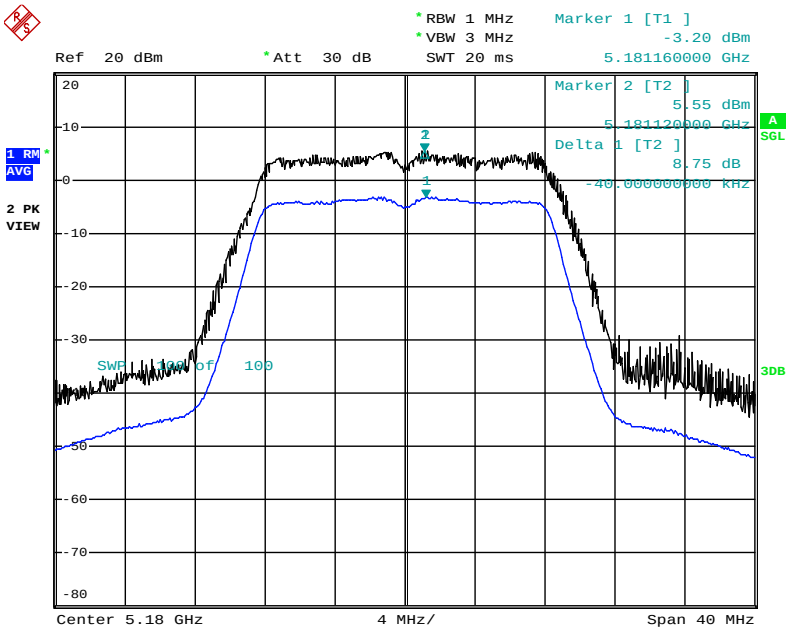
Date: 25.APR.2014 21:40:53

Peak Excursion Plot on Configuration IEEE 802.11ac VHT80 / Chain 1 + Chain 2 + Chain 3 / BSPK(MCS0) / 5690 MHz



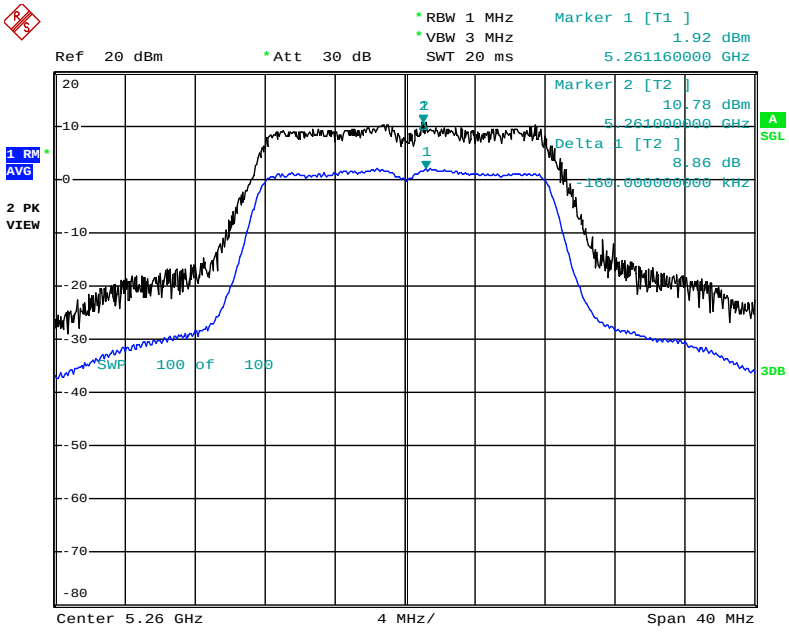
Date: 25.APR.2014 21:44:33

Peak Excursion Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 64QAM(48Mbps) / 5180 MHz



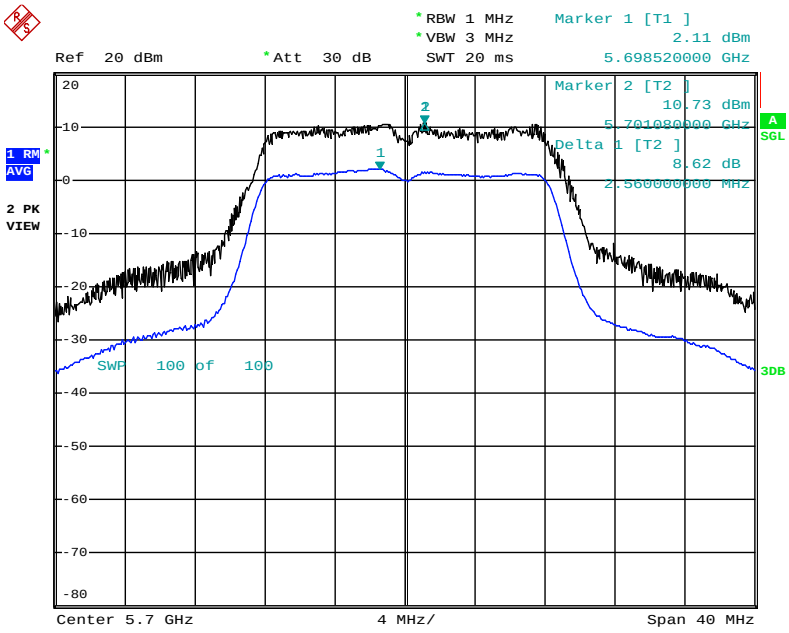
Date: 25.APR.2014 21:05:01

Peak Excursion Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 64QAM(48Mbps) / 5260 MHz



Date: 25.APR.2014 21:06:01

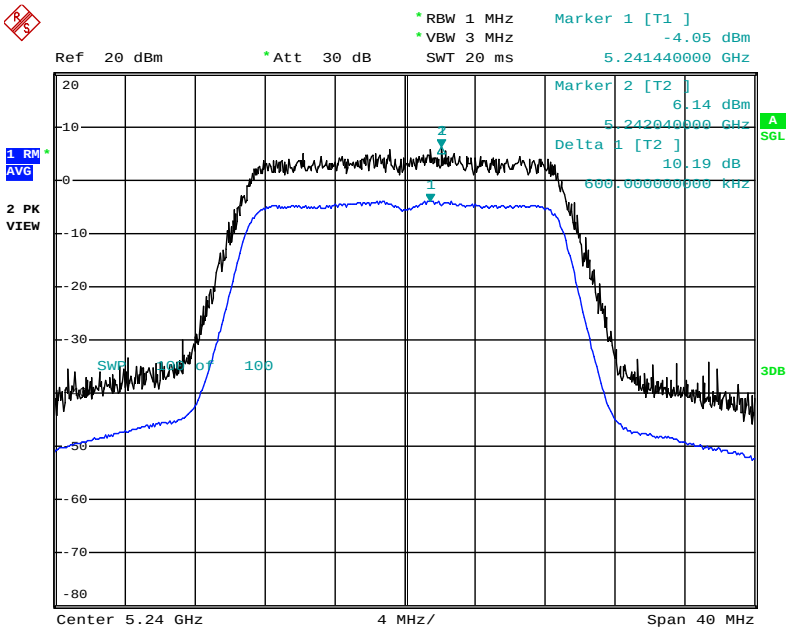
Peak Excursion Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 64QAM(48Mbps) / 5700 MHz



Date: 25.APR.2014 21:09:50

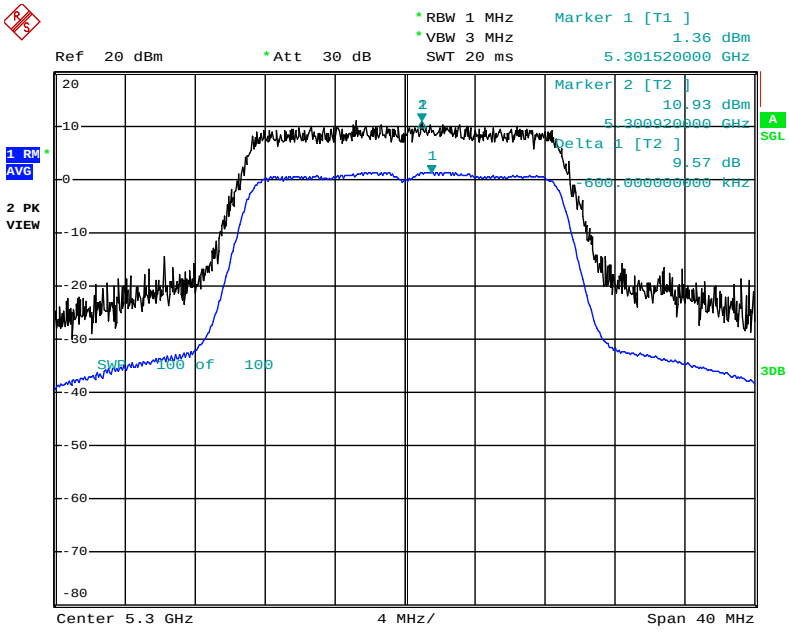
For beamforming mode:

Peak Excursion Plot on Configuration IEEE 802.11ac VHT20 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5240 MHz



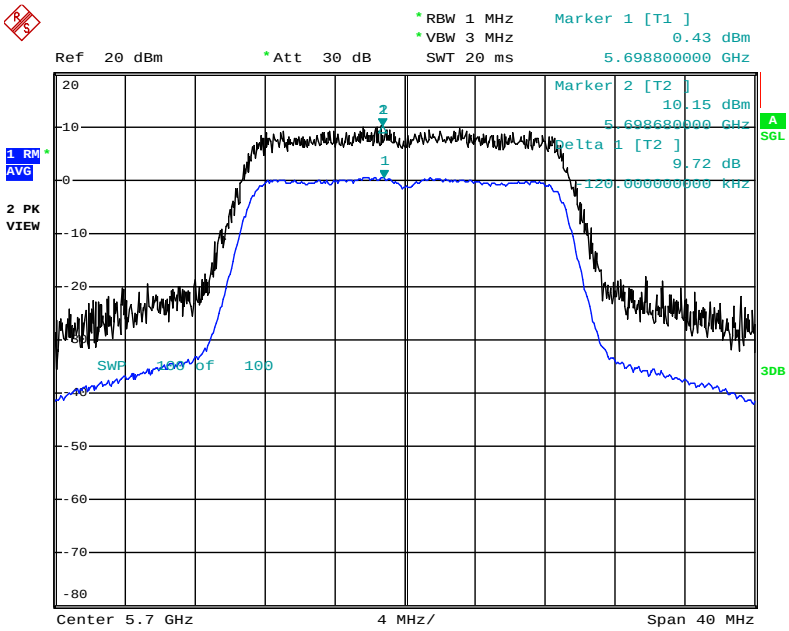
Date: 26.APR.2014 03:17:57

Peak Excursion Plot on Configuration IEEE 802.11ac VHT20 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5300 MHz



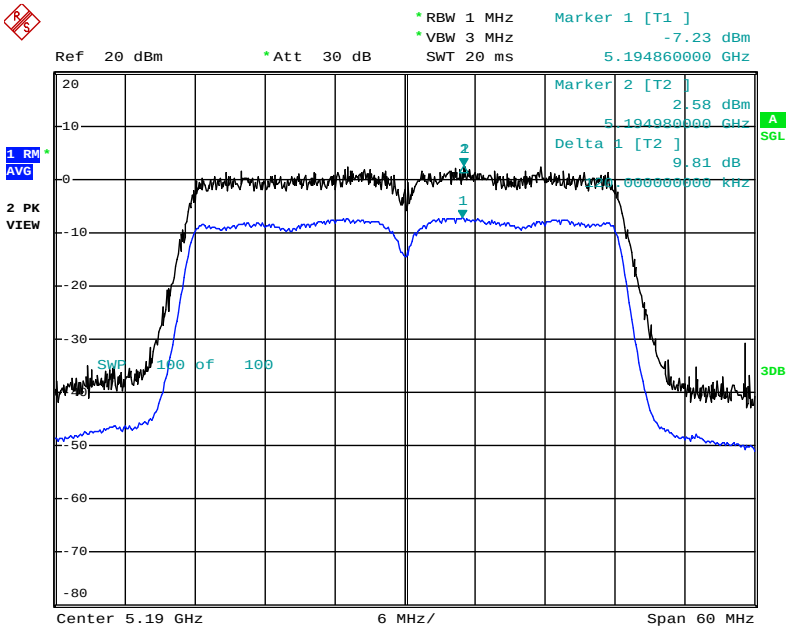
Date: 26.APR.2014 03:25:06

Peak Excursion Plot on Configuration IEEE 802.11ac VHT20 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5700 MHz



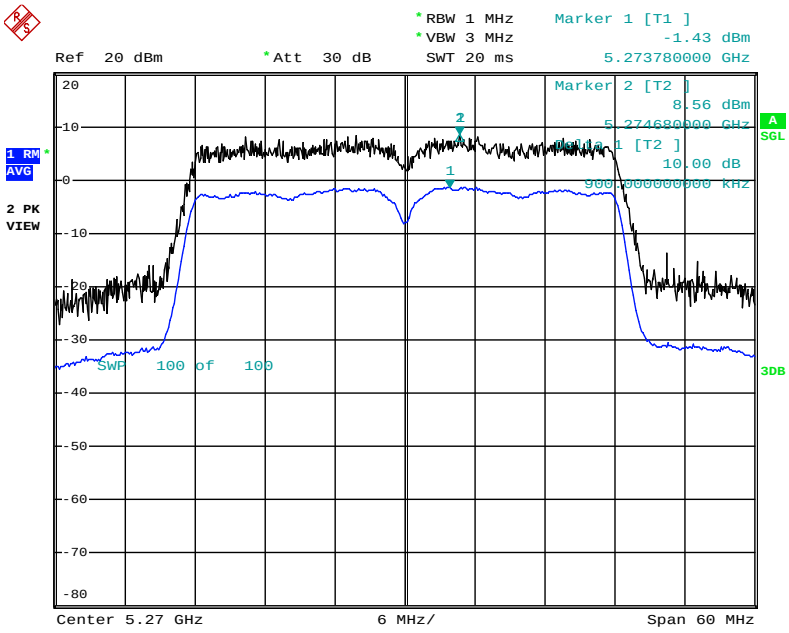
Date: 26.APR.2014 04:15:05

Peak Excursion Plot on Configuration IEEE 802.11ac VHT40 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5190 MHz



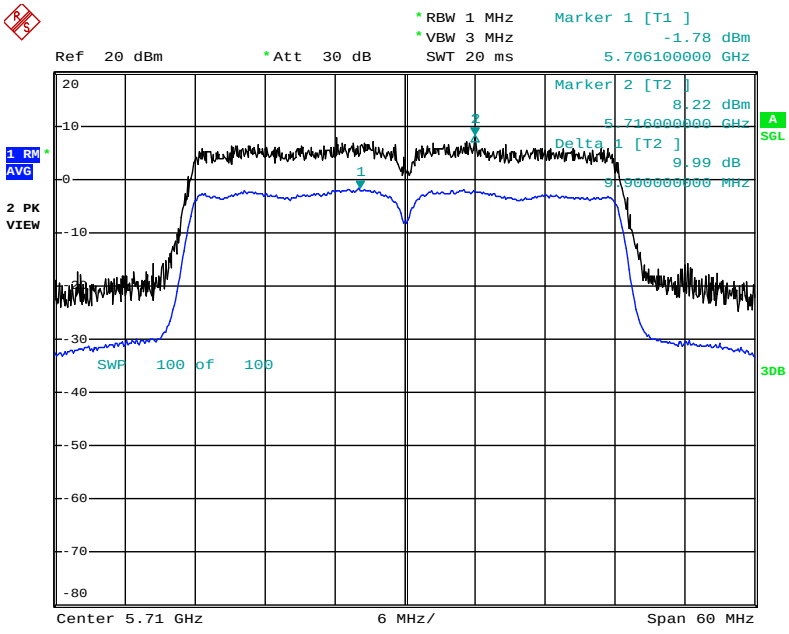
Date: 26.APR.2014 03:34:02

Peak Excursion Plot on Configuration IEEE 802.11ac VHT40 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5270 MHz



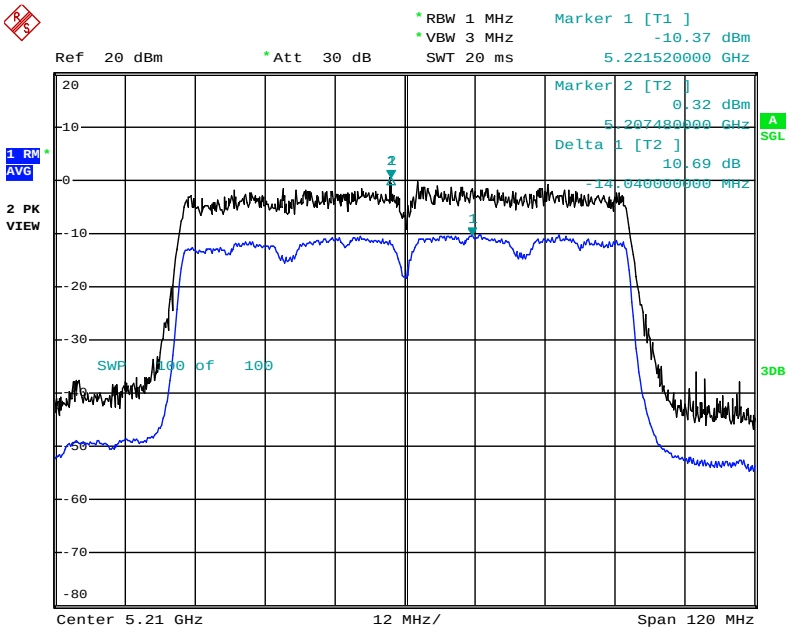
Date: 26.APR.2014 03:39:34

Peak Excursion Plot on Configuration IEEE 802.11ac VHT40 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5710 MHz



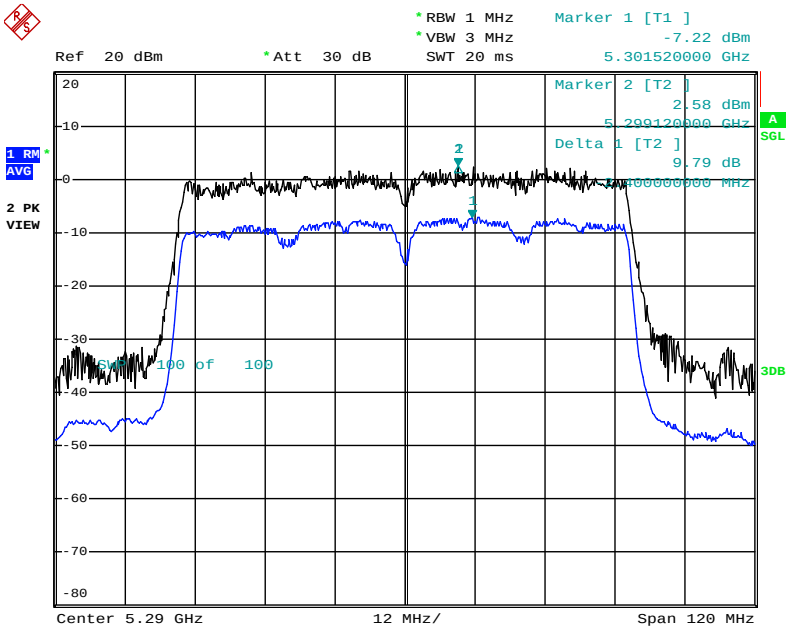
Date: 26.APR.2014 04:19:42

Peak Excursion Plot on Configuration IEEE 802.11ac VHT80 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5210 MHz



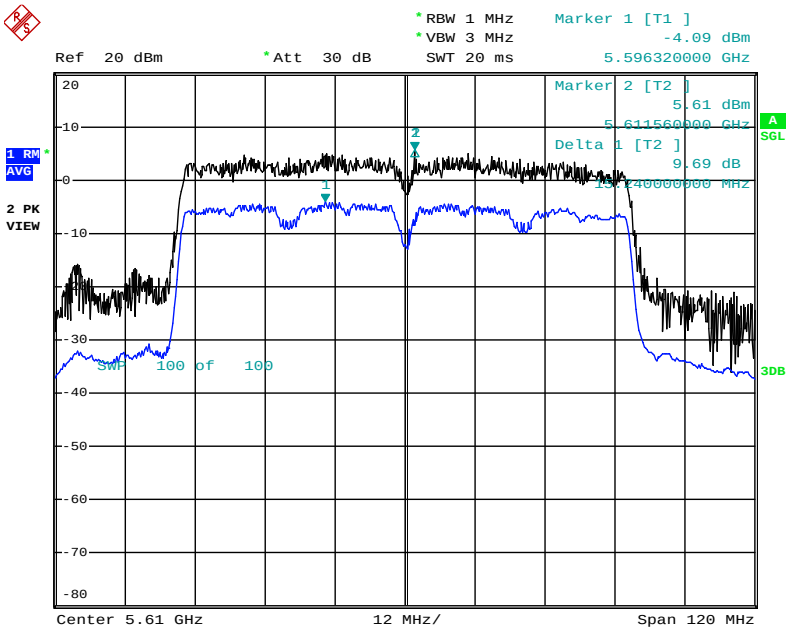
Date: 26.APR.2014 03:53:08

Peak Excursion Plot on Configuration IEEE 802.11ac VHT80 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5290 MHz



Date: 26.APR.2014 03:57:59

Peak Excursion Plot on Configuration IEEE 802.11ac VHT80 / Chain 1 + Chain 2 + Chain 3 / 256QAM(MCS8) / 5610 MHz



Date: 26.APR.2014 04:43:34

4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed a -27dBm peak limit or average 54dBuV/m and peak 74dBuV/m limits. For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.470-5.725 GHz band shall not exceed a -27dBm peak limit or average 54dBuV/m and peak 74dBuV/m limits. For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBuV/m at 3m). In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, Please refer to below table for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

For non-beamforming mode:

Mode	On Time(ms)	On+Off Time(ms)	Duty Cycle(%)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	1.930	1.950	98.97	0.01
802.11ac MCS0/Nss1 VHT40	0.950	0.970	97.94	1.05
802.11ac MCS0/Nss1 VHT80	0.462	0.482	95.85	2.16
802.11a	2.070	2.080	99.52	0.01

For beamforming mode:

Mode	On Time(ms)	On+Off Time(ms)	Duty Cycle(%)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	1.841	1.928	95.49	0.54
802.11ac MCS0/Nss1 VHT40	0.942	1.014	92.90	1.06
802.11ac MCS0/Nss1 VHT80	0.449	0.486	92.54	2.23

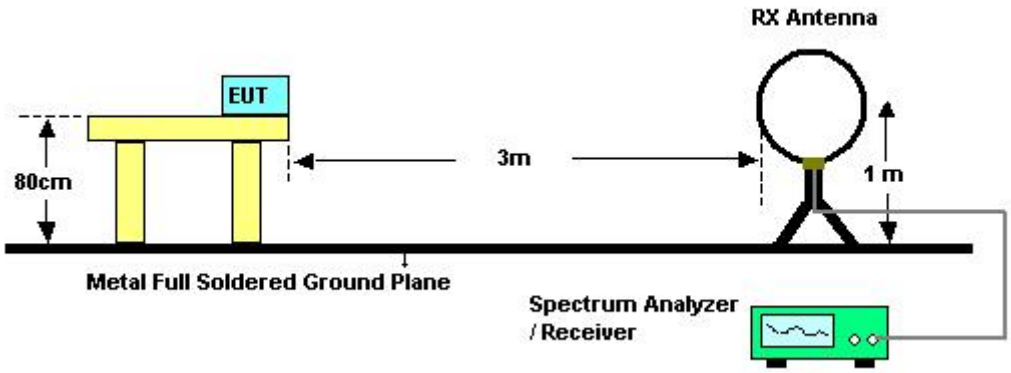
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

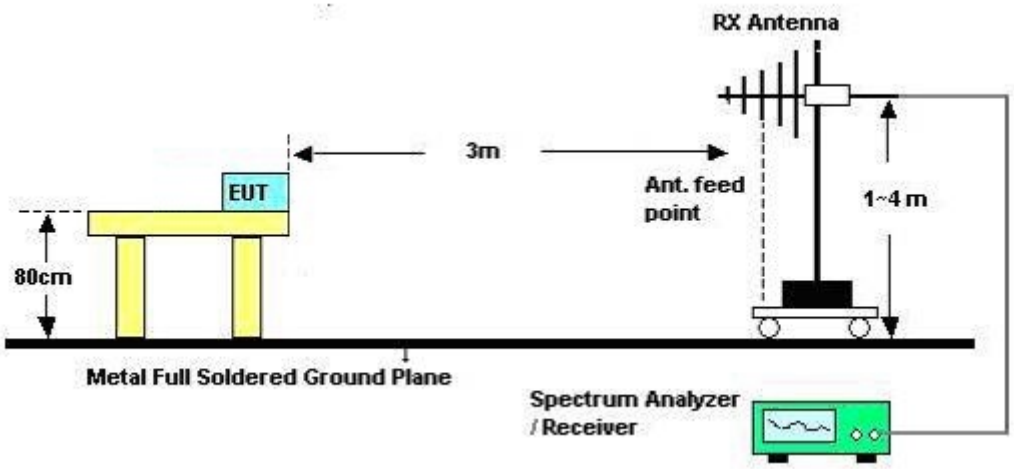
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.6.4. Test Setup Layout

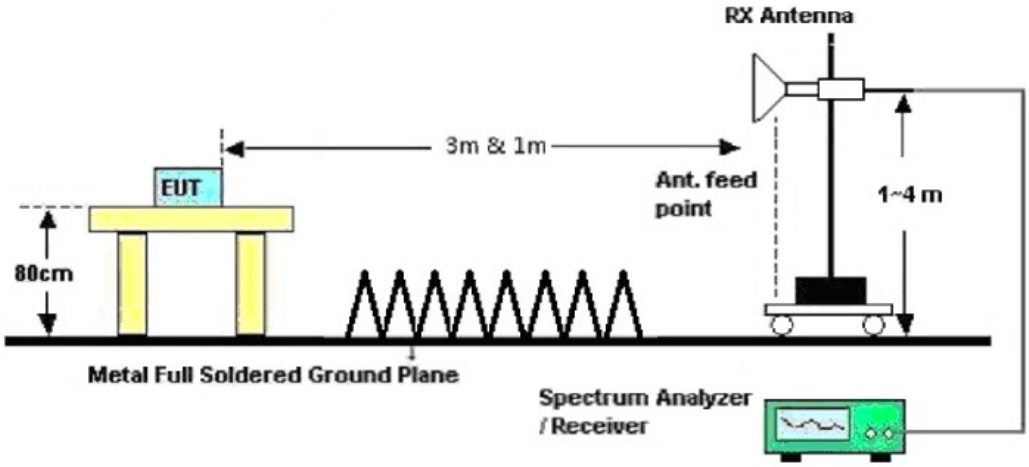
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

For Non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

4.6.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	Normal Link / Mode 2
Test Date	Apr. 04, 2014		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

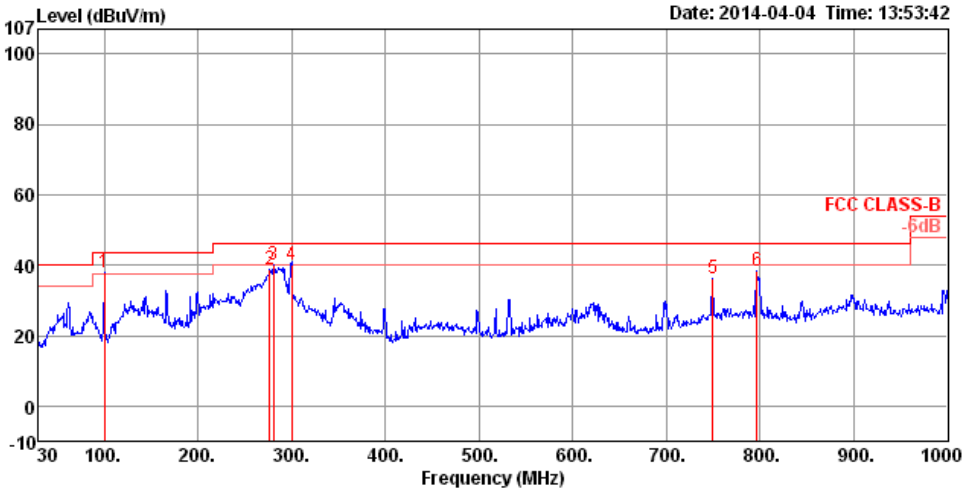
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.6.8. Results of Radiated Emissions (30MHz~1GHz)

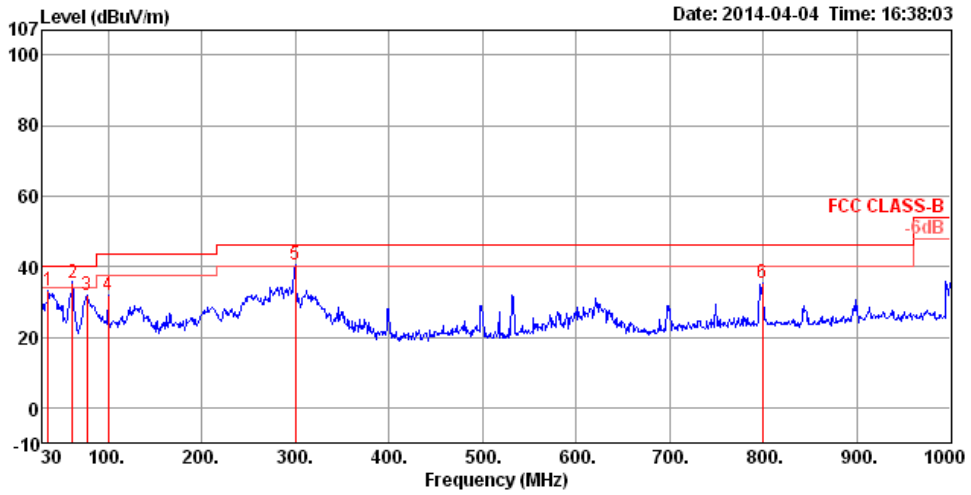
Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	Normal Link / Mode 2

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	99.84	37.75	43.50	-5.75	57.87	1.18	10.31	31.61	300	138	HORIZONTAL	Peak
2	276.38	38.72	46.00	-7.28	55.79	2.01	12.47	31.55	125	308	HORIZONTAL	Peak
3	280.26	39.88	46.00	-6.12	56.85	2.02	12.56	31.55	125	300	HORIZONTAL	Peak
4	299.66	40.07	46.00	-5.93	56.34	2.13	13.02	31.42	125	197	HORIZONTAL	Peak
5	749.74	36.05	46.00	-9.95	44.20	3.53	19.69	31.37	150	308	HORIZONTAL	Peak
6	796.30	38.49	46.00	-7.51	46.36	3.66	19.75	31.28	150	15	HORIZONTAL	Peak

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	35.82	33.27	40.00	-6.73	49.83	0.70	14.62	31.88	100	193	VERTICAL	Peak
2	62.01	35.50	40.00	-4.50	61.57	0.91	4.82	31.80	300	357	VERTICAL	Peak
3	77.53	31.68	40.00	-8.32	55.82	1.03	6.53	31.70	150	272	VERTICAL	Peak
4	99.84	31.68	43.50	-11.82	51.80	1.18	10.31	31.61	100	193	VERTICAL	Peak
5	299.66	40.41	46.00	-5.59	56.68	2.13	13.02	31.42	200	125	VERTICAL	Peak
6	799.21	35.31	46.00	-10.69	43.15	3.67	19.76	31.27	100	275	VERTICAL	Peak

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6.9. Results for Radiated Emissions (1GHz~40GHz)

For non-beamforming mode:

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15539.59	44.02	54.00	-9.98	30.72	10.77	38.12	35.59	Average	100	103	HORIZONTAL
2	15539.85	56.47	74.00	-17.53	43.17	10.77	38.12	35.59	Peak	100	103	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15540.04	56.83	74.00	-17.17	43.53	10.77	38.12	35.59	Peak	100	303	VERTICAL
2	15540.18	43.83	54.00	-10.17	30.53	10.77	38.12	35.59	Average	100	303	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15599.71	56.41	74.00	-17.59	43.17	10.78	38.04	35.58	Peak	115	242	HORIZONTAL
2	15599.81	44.01	54.00	-9.99	30.77	10.78	38.04	35.58	Average	115	242	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15599.51	43.77	54.00	-10.23	30.53	10.78	38.04	35.58	Average	100	333	VERTICAL
2	15599.87	56.37	74.00	-17.63	43.13	10.78	38.04	35.58	Peak	100	333	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15720.35	55.58	74.00	-18.42	42.50	10.79	37.85	35.56	Peak	100	278	HORIZONTAL
2	15720.48	43.30	54.00	-10.70	30.22	10.79	37.85	35.56	Average	100	278	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15719.70	56.04	74.00	-17.96	42.96	10.79	37.85	35.56	Peak	100	84	VERTICAL
2	15719.84	43.08	54.00	-10.92	30.00	10.79	37.85	35.56	Average	100	84	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15779.54	55.92	74.00	-18.08	42.91	10.80	37.75	35.54	Peak	100	297	HORIZONTAL
2	15780.12	43.35	54.00	-10.65	30.34	10.80	37.75	35.54	Average	100	297	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15779.64	56.59	74.00	-17.41	43.58	10.80	37.75	35.54	Peak	100	128	VERTICAL
2	15780.22	43.14	54.00	-10.86	30.13	10.80	37.75	35.54	Average	100	128	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10600.02	44.83	54.00	-9.17	31.43	8.64	39.90	35.14	Average	115	254	HORIZONTAL
2	10600.03	58.37	74.00	-15.63	44.97	8.64	39.90	35.14	Peak	115	254	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10600.84	59.40	74.00	-14.60	46.00	8.64	39.90	35.14	Peak	103	243	VERTICAL
2	10601.31	46.09	54.00	-7.91	32.69	8.64	39.90	35.14	Average	103	243	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	10640.08	40.76	54.00	-13.24	30.77	6.59	38.37	34.97	Average	190	100	HORIZONTAL
2	10640.99	53.27	74.00	-20.73	43.28	6.59	38.37	34.97	Peak	190	100	HORIZONTAL
3	15961.98	55.06	74.00	-18.94	43.83	8.00	38.33	35.10	Peak	84	100	HORIZONTAL
4	15962.29	42.35	54.00	-11.65	31.12	8.00	38.33	35.10	Average	84	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	10640.46	53.41	74.00	-20.59	43.42	6.59	38.37	34.97	Peak	168	100	VERTICAL
2	10640.86	41.14	54.00	-12.86	31.15	6.59	38.37	34.97	Average	168	100	VERTICAL
3	15958.66	55.62	74.00	-18.38	44.39	8.00	38.33	35.10	Peak	192	100	VERTICAL
4	15959.17	42.46	54.00	-11.54	31.23	8.00	38.33	35.10	Average	192	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	10993.33	41.74	54.00	-12.26	31.69	6.46	38.30	34.71	Average	139	100	HORIZONTAL
2	10998.78	54.83	74.00	-19.17	44.78	6.46	38.30	34.71	Peak	139	100	HORIZONTAL
3	16495.22	45.09	54.00	-8.91	31.92	8.03	39.94	34.80	Average	335	100	HORIZONTAL
4	16500.67	57.36	74.00	-16.64	44.12	8.04	40.00	34.80	Peak	335	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	10994.01	54.12	74.00	-19.88	44.07	6.46	38.30	34.71	Peak	138	100	VERTICAL
2	11000.48	42.58	54.00	-11.42	32.53	6.46	38.30	34.71	Average	138	100	VERTICAL
3	16495.00	45.10	54.00	-8.90	31.93	8.03	39.94	34.80	Average	276	100	VERTICAL
4	16498.62	57.45	74.00	-16.55	44.21	8.04	40.00	34.80	Peak	276	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11159.68	57.33	74.00	-16.67	43.68	9.04	39.50	34.89	Peak	108	74	HORIZONTAL
2	11159.98	44.65	54.00	-9.35	31.00	9.04	39.50	34.89	Average	108	74	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11162.60	55.69	74.00	-18.31	42.04	9.04	39.50	34.89	Peak	110	246	VERTICAL
2	11163.10	44.47	54.00	-9.53	30.82	9.04	39.50	34.89	Average	110	246	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11396.06	53.28	74.00	-20.72	42.96	6.69	38.30	34.67	Peak	200	100	HORIZONTAL
2	11398.93	40.92	54.00	-13.08	30.60	6.69	38.30	34.67	Average	200	100	HORIZONTAL
3	17097.23	45.85	54.00	-8.15	30.30	8.07	41.42	33.94	Average	91	0	HORIZONTAL
4	17104.97	58.56	74.00	-15.44	43.01	8.07	41.42	33.94	Peak	91	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11401.76	54.20	74.00	-19.80	43.88	6.69	38.30	34.67	Peak	76	100	VERTICAL
2	11402.08	40.96	54.00	-13.04	30.64	6.69	38.30	34.67	Average	76	100	VERTICAL
3	17094.58	45.93	54.00	-8.07	30.38	8.07	41.42	33.94	Average	214	100	VERTICAL
4	17106.19	58.12	74.00	-15.88	42.57	8.07	41.42	33.94	Peak	214	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11439.97	40.63	54.00	-13.37	26.98	9.21	39.50	35.06	Average	100	188	HORIZONTAL
2	11439.98	52.52	74.00	-21.48	38.87	9.21	39.50	35.06	Peak	100	188	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11439.59	54.66	74.00	-19.34	41.01	9.21	39.50	35.06	Peak	123	5	VERTICAL
2	11439.98	41.95	54.00	-12.05	28.30	9.21	39.50	35.06	Average	123	5	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15569.93	43.58	54.00	-10.42	30.29	10.78	38.09	35.58	Average	100	131	HORIZONTAL
2	15569.97	56.24	74.00	-17.76	42.95	10.78	38.09	35.58	Peak	100	131	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15569.83	56.45	74.00	-17.55	43.16	10.78	38.09	35.58	Peak	100	287	VERTICAL
2	15569.98	43.95	54.00	-10.05	30.66	10.78	38.09	35.58	Average	100	287	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15690.06	42.84	54.00	-11.16	29.70	10.79	37.91	35.56	Average	100	355	HORIZONTAL
2	15690.49	55.63	74.00	-18.37	42.49	10.79	37.91	35.56	Peak	100	355	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15689.78	42.92	54.00	-11.08	29.78	10.79	37.91	35.56	Average	100	172	VERTICAL
2	15690.13	55.02	74.00	-18.98	41.88	10.79	37.91	35.56	Peak	100	172	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15810.16	43.01	54.00	-10.99	30.03	10.80	37.72	35.54	Average	100	136	HORIZONTAL
2	15810.21	55.65	74.00	-18.35	42.67	10.80	37.72	35.54	Peak	100	136	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15810.16	56.13	74.00	-17.87	43.15	10.80	37.72	35.54	Peak	100	221	VERTICAL
2	15810.35	43.06	54.00	-10.94	30.08	10.80	37.72	35.54	Average	100	221	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10619.85	41.56	54.00	-12.44	28.15	8.65	39.88	35.12	Average	100	325	HORIZONTAL
2	10620.38	54.70	74.00	-19.30	41.29	8.65	39.88	35.12	Peak	100	325	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10620.17	55.36	74.00	-18.64	41.95	8.65	39.88	35.12	Peak	100	179	VERTICAL
2	10620.23	41.70	54.00	-12.30	28.29	8.65	39.88	35.12	Average	100	179	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11020.24	40.84	74.00	-33.16	27.21	8.94	39.50	34.81	Peak	100	75	HORIZONTAL
2	11020.42	40.77	54.00	-13.23	27.14	8.94	39.50	34.81	Average	100	75	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11019.89	53.59	74.00	-20.41	39.96	8.94	39.50	34.81	Peak	100	215	VERTICAL
2	11020.37	41.03	54.00	-12.97	27.40	8.94	39.50	34.81	Average	100	215	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11100.60	43.29	54.00	-10.71	29.66	8.99	39.50	34.86	Average	100	252	HORIZONTAL
2	11102.10	55.77	74.00	-18.23	42.14	8.99	39.50	34.86	Peak	100	252	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11101.10	57.18	74.00	-16.82	43.55	8.99	39.50	34.86	Peak	101	2	VERTICAL
2	11101.30	45.21	54.00	-8.79	31.58	8.99	39.50	34.86	Average	101	2	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11340.18	40.20	54.00	-13.80	26.55	9.14	39.50	34.99	Average	100	232	HORIZONTAL
2	11340.39	52.76	74.00	-21.24	39.11	9.14	39.50	34.99	Peak	100	232	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11340.15	40.64	54.00	-13.36	26.99	9.14	39.50	34.99	Average	100	131	VERTICAL
2	11340.34	52.93	74.00	-21.07	39.28	9.14	39.50	34.99	Peak	100	131	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11419.72	53.07	74.00	-20.93	39.43	9.20	39.50	35.06	Peak	100	244	HORIZONTAL
2	11419.90	40.67	54.00	-13.33	27.03	9.20	39.50	35.06	Average	100	244	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11419.95	53.48	74.00	-20.52	39.84	9.20	39.50	35.06	Peak	112	6	VERTICAL
2	11419.97	41.38	54.00	-12.62	27.74	9.20	39.50	35.06	Average	112	6	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15629.52	43.24	54.00	-10.76	30.04	10.78	37.99	35.57	Average	100	243	HORIZONTAL
2	15629.78	55.85	74.00	-18.15	42.65	10.78	37.99	35.57	Peak	100	243	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15629.73	55.98	74.00	-18.02	42.78	10.78	37.99	35.57	Peak	100	134	VERTICAL
2	15630.49	43.34	54.00	-10.66	30.14	10.78	37.99	35.57	Average	100	134	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15869.85	43.18	54.00	-10.82	30.29	10.81	37.61	35.53	Average	100	276	HORIZONTAL
2	15870.32	55.76	74.00	-18.24	42.87	10.81	37.61	35.53	Peak	100	276	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15869.57	43.43	54.00	-10.57	30.54	10.81	37.61	35.53	Average	100	188	VERTICAL
2	15870.43	55.87	74.00	-18.13	42.98	10.81	37.61	35.53	Peak	100	188	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11060.44	54.09	74.00	-19.91	40.45	8.97	39.50	34.83	Peak	100	118	HORIZONTAL
2	11060.50	41.47	54.00	-12.53	27.83	8.97	39.50	34.83	Average	100	118	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11059.62	54.22	74.00	-19.78	40.58	8.97	39.50	34.83	Peak	100	198	VERTICAL
2	11060.44	41.92	54.00	-12.08	28.28	8.97	39.50	34.83	Average	100	198	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11219.98	54.93	74.00	-19.07	41.29	9.07	39.50	34.93	Peak	100	250	HORIZONTAL
2	11220.13	42.12	54.00	-11.88	28.48	9.07	39.50	34.93	Average	100	250	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11219.86	42.46	54.00	-11.54	28.82	9.07	39.50	34.93	Average	100	173	VERTICAL
2	11220.31	55.05	74.00	-18.95	41.41	9.07	39.50	34.93	Peak	100	173	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11379.63	40.32	54.00	-13.68	26.66	9.18	39.50	35.02	Average	100	193	HORIZONTAL
2	11380.50	53.24	74.00	-20.76	39.58	9.18	39.50	35.02	Peak	100	193	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11380.18	53.11	74.00	-20.89	39.45	9.18	39.50	35.02	Peak	118	37	VERTICAL
2	11380.19	40.97	54.00	-13.03	27.31	9.18	39.50	35.02	Average	118	37	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15539.58	43.87	54.00	-10.13	30.57	10.77	38.12	35.59	Average	100	132	HORIZONTAL
2	15540.32	56.17	74.00	-17.83	42.87	10.77	38.12	35.59	Peak	100	132	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15539.99	43.83	54.00	-10.17	30.53	10.77	38.12	35.59	Average	100	285	VERTICAL
2	15540.41	56.63	74.00	-17.37	43.33	10.77	38.12	35.59	Peak	100	285	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15599.83	43.49	54.00	-10.51	30.25	10.78	38.04	35.58	Average	100	144	HORIZONTAL
2	15600.25	56.73	74.00	-17.27	43.49	10.78	38.04	35.58	Peak	100	144	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15599.52	43.80	54.00	-10.20	30.56	10.78	38.04	35.58	Average	100	259	VERTICAL
2	15599.71	57.25	74.00	-16.75	44.01	10.78	38.04	35.58	Peak	100	259	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15719.50	55.87	74.00	-18.13	42.79	10.79	37.85	35.56	Peak	100	71	HORIZONTAL
2	15720.08	43.54	54.00	-10.46	30.46	10.79	37.85	35.56	Average	100	71	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15722.52	55.55	74.00	-18.45	42.47	10.79	37.85	35.56	Peak	100	199	VERTICAL
2	15725.32	43.28	54.00	-10.72	30.22	10.79	37.83	35.56	Average	100	199	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 52 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15779.94	55.69	74.00	-18.31	42.68	10.80	37.75	35.54	Peak	100	302	HORIZONTAL
2	15780.01	43.61	54.00	-10.39	30.60	10.80	37.75	35.54	Average	100	302	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15780.43	56.30	74.00	-17.70	43.29	10.80	37.75	35.54	Peak	100	152	VERTICAL
2	15780.50	43.36	54.00	-10.64	30.35	10.80	37.75	35.54	Average	100	152	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 60 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10606.30	57.18	74.00	-16.82	43.76	8.64	39.90	35.12	Peak	112	296	HORIZONTAL
2	10606.70	44.72	54.00	-9.28	31.30	8.64	39.90	35.12	Average	112	296	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10600.30	57.30	74.00	-16.70	43.90	8.64	39.90	35.14	Peak	119	6	VERTICAL
2	10601.00	46.49	54.00	-7.51	33.09	8.64	39.90	35.14	Average	119	6	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 64 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10639.68	54.73	74.00	-19.27	41.30	8.66	39.86	35.09	Peak	100	150	HORIZONTAL
2	10639.94	41.70	54.00	-12.30	28.27	8.66	39.86	35.09	Average	100	150	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10640.04	42.67	54.00	-11.33	29.24	8.66	39.86	35.09	Average	100	161	VERTICAL
2	10640.36	54.25	74.00	-19.75	40.82	8.66	39.86	35.09	Peak	100	161	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 100 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10999.88	52.84	74.00	-21.16	39.21	8.93	39.50	34.80	Peak	100	105	HORIZONTAL
2	11000.47	41.28	54.00	-12.72	27.65	8.93	39.50	34.80	Average	100	105	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10999.81	53.85	74.00	-20.15	40.22	8.93	39.50	34.80	Peak	115	243	VERTICAL
2	11000.11	41.65	54.00	-12.35	28.02	8.93	39.50	34.80	Average	115	243	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 116 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11160.76	57.22	74.00	-16.78	43.57	9.04	39.50	34.89	Peak	105	39	HORIZONTAL
2	11161.07	43.79	54.00	-10.21	30.14	9.04	39.50	34.89	Average	105	39	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11163.30	60.82	74.00	-13.18	47.18	9.04	39.50	34.90	Peak	141	358	VERTICAL
2	11163.70	47.79	54.00	-6.21	34.15	9.04	39.50	34.90	Average	141	358	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 140 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11399.54	40.46	54.00	-13.54	26.81	9.19	39.50	35.04	Average	100	252	HORIZONTAL
2	11400.27	53.11	74.00	-20.89	39.46	9.19	39.50	35.04	Peak	100	252	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11399.51	53.35	74.00	-20.65	39.70	9.19	39.50	35.04	Peak	120	138	VERTICAL
2	11399.98	40.63	54.00	-13.37	26.98	9.19	39.50	35.04	Average	120	138	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 144 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11439.52	40.24	54.00	-13.76	26.59	9.21	39.50	35.06	Average	100	247	HORIZONTAL
2	11440.25	52.48	74.00	-21.52	38.83	9.21	39.50	35.06	Peak	100	247	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11440.08	41.34	54.00	-12.66	27.69	9.21	39.50	35.06	Average	118	6	VERTICAL
2	11440.46	53.86	74.00	-20.14	40.21	9.21	39.50	35.06	Peak	118	6	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

For beamforming mode:

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15542.38	55.60	74.00	-18.40	40.97	10.37	38.78	34.52	100	231	HORIZONTAL	Peak
2	15542.81	45.37	54.00	-8.63	30.74	10.37	38.78	34.52	100	231	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15535.91	45.26	54.00	-8.74	30.62	10.37	38.78	34.51	100	119	VERTICAL	Average
2	15541.65	57.47	74.00	-16.53	42.84	10.37	38.78	34.52	100	119	VERTICAL	Peak

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15599.47	57.31	74.00	-16.69	42.77	10.36	38.77	34.59	100	271	HORIZONTAL	Peak
2	15602.25	46.03	54.00	-7.97	31.51	10.36	38.75	34.59	100	271	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15598.06	57.18	74.00	-16.82	42.64	10.36	38.77	34.59	100	180	VERTICAL	Peak
2	15601.83	46.44	54.00	-7.56	31.92	10.36	38.75	34.59	100	180	VERTICAL	Average

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15721.23	57.15	74.00	-16.85	42.81	10.36	38.72	34.74	100	214	HORIZONTAL	Peak
2	15721.39	45.87	54.00	-8.13	31.53	10.36	38.72	34.74	100	214	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15720.67	44.31	54.00	-9.69	29.97	10.36	38.72	34.74	100	22	VERTICAL	Average
2	15720.67	56.31	74.00	-17.69	41.97	10.36	38.72	34.74	100	22	VERTICAL	Peak

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15778.96	57.09	74.00	-16.91	42.85	10.35	38.70	34.81	100	238	HORIZONTAL	Peak
2	15780.71	45.66	54.00	-8.34	31.43	10.35	38.70	34.82	100	238	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15780.71	56.31	74.00	-17.69	42.08	10.35	38.70	34.82	100	335	VERTICAL	Peak
2	15781.89	44.44	54.00	-9.56	30.17	10.35	38.74	34.82	100	335	VERTICAL	Average

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10600.63	50.25	74.00	-23.75	37.73	8.47	38.91	34.86	100	244	HORIZONTAL	Peak
2	10600.81	43.01	54.00	-10.99	30.49	8.47	38.91	34.86	100	244	HORIZONTAL	Average
3	15898.53	46.28	54.00	-7.72	32.07	10.35	38.82	34.96	100	292	HORIZONTAL	Average
4	15900.10	57.55	74.00	-16.45	43.35	10.35	38.82	34.97	100	292	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10601.33	45.88	54.00	-8.12	33.36	8.47	38.91	34.86	100	63	VERTICAL	Average
2	10602.01	56.62	74.00	-17.38	44.10	8.47	38.91	34.86	100	63	VERTICAL	Peak
3	15898.53	56.38	74.00	-17.62	42.17	10.35	38.82	34.96	100	150	VERTICAL	Peak
4	15899.29	43.84	54.00	-10.16	29.63	10.35	38.82	34.96	100	150	VERTICAL	Average

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10638.08	52.15	74.00	-21.85	39.57	8.49	38.95	34.86	100	76	HORIZONTAL	Peak
2	10641.08	41.17	54.00	-12.83	28.58	8.50	38.95	34.86	100	76	HORIZONTAL	Average
3	15957.74	56.26	74.00	-17.74	42.10	10.34	38.86	35.04	100	294	HORIZONTAL	Peak
4	15959.42	44.25	54.00	-9.75	30.09	10.34	38.86	35.04	100	294	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10638.26	52.37	74.00	-21.63	39.79	8.49	38.95	34.86	100	62	VERTICAL	Peak
2	10639.26	41.04	54.00	-12.96	28.46	8.49	38.95	34.86	100	62	VERTICAL	Average
3	15960.31	55.84	74.00	-18.16	41.68	10.34	38.86	35.04	100	2	VERTICAL	Peak
4	15962.04	46.89	54.00	-7.11	32.73	10.34	38.86	35.04	100	2	VERTICAL	Average

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10999.71	53.86	74.00	-20.14	40.90	8.71	39.10	34.85	100	122	HORIZONTAL	Peak
2	11000.68	42.81	54.00	-11.19	29.85	8.71	39.10	34.85	100	122	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11000.92	44.97	54.00	-9.03	32.01	8.71	39.10	34.85	100	274	VERTICAL	Average
2	11001.01	56.72	74.00	-17.28	43.76	8.71	39.10	34.85	100	274	VERTICAL	Peak

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11161.07	44.55	54.00	-9.45	31.46	8.84	39.10	34.85	147	277	HORIZONTAL	Average
2	11161.68	56.04	74.00	-17.96	42.95	8.84	39.10	34.85	147	277	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11160.10	58.22	74.00	-15.78	45.13	8.84	39.10	34.85	100	116	VERTICAL	Peak
2	11160.82	47.31	54.00	-6.69	34.22	8.84	39.10	34.85	100	116	VERTICAL	Average

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11400.78	41.51	54.00	-12.49	28.24	9.02	39.10	34.85	147	89	HORIZONTAL	Average
2	11401.96	53.07	74.00	-20.93	39.80	9.02	39.10	34.85	147	89	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11397.62	41.63	54.00	-12.37	28.36	9.02	39.10	34.85	147	240	VERTICAL	Average
2	11400.20	54.17	74.00	-19.83	40.90	9.02	39.10	34.85	147	240	VERTICAL	Peak

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11439.97	43.26	54.00	-10.74	29.96	9.05	39.10	34.85	100	125	HORIZONTAL	Average
2	11442.10	54.71	74.00	-19.29	41.40	9.06	39.10	34.85	100	125	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11438.57	43.63	54.00	-10.37	30.33	9.05	39.10	34.85	100	234	VERTICAL	Average
2	11438.66	54.19	74.00	-19.81	40.89	9.05	39.10	34.85	100	234	VERTICAL	Peak

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15567.70	55.41	74.00	-18.59	40.82	10.37	38.77	34.55	100	122	HORIZONTAL	Peak
2	15571.98	44.01	54.00	-9.99	29.42	10.37	38.77	34.55	100	122	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15571.98	56.68	74.00	-17.32	42.09	10.37	38.77	34.55	100	160	VERTICAL	Peak
2	15572.08	44.23	54.00	-9.77	29.65	10.37	38.77	34.56	100	160	VERTICAL	Average

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15687.54	55.75	74.00	-18.25	41.36	10.36	38.73	34.70	100	114	HORIZONTAL	Peak
2	15689.84	43.73	54.00	-10.27	29.34	10.36	38.73	34.70	100	114	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15691.05	55.87	74.00	-18.13	41.49	10.36	38.72	34.70	100	103	VERTICAL	Peak
2	15692.08	45.21	54.00	-8.79	30.84	10.36	38.72	34.71	100	103	VERTICAL	Average

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15810.91	56.82	74.00	-17.18	42.58	10.35	38.74	34.85	100	136	HORIZONTAL	Peak
2	15811.02	44.48	54.00	-9.52	30.24	10.35	38.74	34.85	100	136	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15807.67	56.09	74.00	-17.91	41.85	10.35	38.74	34.85	100	207	VERTICAL	Peak
2	15811.18	46.13	54.00	-7.87	31.89	10.35	38.74	34.85	100	207	VERTICAL	Average

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10620.41	51.69	74.00	-22.31	39.16	8.48	38.91	34.86	100	85	HORIZONTAL	Peak
2	10621.11	39.71	54.00	-14.29	27.18	8.48	38.91	34.86	100	85	HORIZONTAL	Average
3	15928.55	43.43	54.00	-10.57	29.23	10.34	38.86	35.00	100	247	HORIZONTAL	Average
4	15929.12	55.82	74.00	-18.18	41.62	10.34	38.86	35.00	100	247	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10618.15	52.01	74.00	-21.99	39.48	8.48	38.91	34.86	100	152	VERTICAL	Peak
2	10620.13	39.75	54.00	-14.25	27.22	8.48	38.91	34.86	100	152	VERTICAL	Average
3	15927.64	54.90	74.00	-19.10	40.70	10.34	38.86	35.00	100	58	VERTICAL	Peak
4	15931.95	43.61	54.00	-10.39	29.41	10.34	38.86	35.00	100	58	VERTICAL	Average

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11019.13	52.38	74.00	-21.62	43.33	5.02	39.01	34.98	Peak	100	278	HORIZONTAL
2	11022.30	39.81	54.00	-14.19	30.74	5.02	39.03	34.98	Average	100	278	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11019.95	51.02	74.00	-22.98	41.97	5.02	39.01	34.98	Peak	100	159	VERTICAL
2	11020.43	40.84	54.00	-13.16	31.79	5.02	39.01	34.98	Average	100	159	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11099.60	53.59	74.00	-20.41	44.47	5.03	39.08	34.99	Peak	100	273	HORIZONTAL
2	11100.27	40.73	54.00	-13.27	31.61	5.03	39.08	34.99	Average	100	273	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11099.65	52.15	74.00	-21.85	43.03	5.03	39.08	34.99	Peak	100	45	VERTICAL
2	11101.72	42.84	54.00	-11.16	33.72	5.03	39.08	34.99	Average	100	45	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11338.18	50.81	74.00	-23.19	41.49	5.08	39.27	35.03	Peak	100	198	HORIZONTAL
2	11342.24	39.83	54.00	-14.17	30.50	5.09	39.27	35.03	Average	100	198	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11340.03	61.49	74.00	-12.51	52.17	5.08	39.27	35.03	Peak	100	292	VERTICAL
2	11340.42	40.24	54.00	-13.76	30.91	5.09	39.27	35.03	Average	100	292	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11337.73	50.37	74.00	-23.63	41.05	5.08	39.27	35.03	Peak	100	277	HORIZONTAL
2	11342.24	37.69	54.00	-16.31	28.36	5.09	39.27	35.03	Average	100	277	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11340.72	43.00	54.00	-11.00	33.67	5.09	39.27	35.03	Average	100	323	VERTICAL
2	11342.20	50.16	74.00	-23.84	40.83	5.09	39.27	35.03	Peak	100	323	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15632.16	40.64	54.00	-13.36	31.38	6.14	38.31	35.19	Average	100	140	HORIZONTAL
2	15632.16	53.01	74.00	-20.99	43.75	6.14	38.31	35.19	Peak	100	140	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15631.19	53.22	74.00	-20.78	43.96	6.14	38.31	35.19	Peak	100	64	VERTICAL
2	15632.00	40.60	54.00	-13.40	31.34	6.14	38.31	35.19	Average	100	64	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15868.49	39.66	54.00	-14.34	30.81	6.14	37.97	35.26	Average	100	80	HORIZONTAL
2	15870.71	52.80	74.00	-21.20	43.95	6.14	37.97	35.26	Peak	100	80	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15868.19	40.04	54.00	-13.96	31.19	6.14	37.97	35.26	Average	100	136	VERTICAL
2	15871.82	51.96	74.00	-22.04	43.11	6.14	37.97	35.26	Peak	100	136	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11058.15	50.21	74.00	-23.79	41.13	5.02	39.05	34.99	Peak	100	197	HORIZONTAL
2	11060.66	37.78	54.00	-16.22	28.69	5.03	39.05	34.99	Average	100	197	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11058.13	37.87	54.00	-16.13	28.79	5.02	39.05	34.99	Average	100	313	VERTICAL
2	11061.84	49.98	74.00	-24.02	40.89	5.03	39.05	34.99	Peak	100	313	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11217.99	37.64	54.00	-16.36	28.42	5.06	39.17	35.01	Average	100	140	HORIZONTAL
2	11218.86	50.19	74.00	-23.81	40.97	5.06	39.17	35.01	Peak	100	140	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11218.28	50.73	74.00	-23.27	41.51	5.06	39.17	35.01	Peak	100	259	VERTICAL
2	11220.48	37.87	54.00	-16.13	28.65	5.06	39.17	35.01	Average	100	259	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11416.16	38.47	54.00	-15.53	29.08	5.10	39.33	35.04	Average	100	97	HORIZONTAL
2	11416.96	51.32	74.00	-22.68	41.93	5.10	39.33	35.04	Peak	100	97	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11415.84	44.51	54.00	-9.49	35.12	5.10	39.33	35.04	Average	100	188	VERTICAL
2	11416.16	61.59	74.00	-12.41	52.20	5.10	39.33	35.04	Peak	100	188	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.7. Band Edge Emissions Measurement

4.7.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed a -27dBm peak limit or average 54dBuV/m and peak 74dBuV/m limits. For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.470-5.725 GHz band shall not exceed a -27dBm peak limit or average 54dBuV/m and peak 74dBuV/m limits. For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBuV/m at 3m). In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

4.7.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, Please refer to below table for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for Peak

For non-beamforming mode:

Mode	On Time(ms)	On+Off Time(ms)	Duty Cycle(%)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	1.930	1.950	98.97	0.01
802.11ac MCS0/Nss1 VHT40	0.950	0.970	97.94	1.05
802.11ac MCS0/Nss1 VHT80	0.462	0.482	95.85	2.16
802.11a	2.070	2.080	99.52	0.01

For beamforming mode:

Mode	On Time(ms)	On+Off Time(ms)	Duty Cycle(%)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	1.841	1.928	95.49	0.54
802.11ac MCS0/Nss1 VHT40	0.942	1.014	92.90	1.06
802.11ac MCS0/Nss1 VHT80	0.449	0.486	92.54	2.23

4.7.3. Test Procedures

1. The test procedure is the same as section 4.6.3, only the frequency range investigated is limited to 100MHz around bandedges.

4.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

For Non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

For non-beamforming mode:

Temperature	24℃	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014 ~ Apr. 14, 2014		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5148.72	73.87	74.00	-0.13	36.39	4.34	33.14	0.00	Peak	220	100	HORIZONTAL
2	5150.00	53.84	54.00	-0.16	16.36	4.34	33.14	0.00	Average	220	100	HORIZONTAL
3	5180.64	103.00			65.45	4.36	33.19	0.00	Average	220	100	HORIZONTAL
4	5186.09	113.10			75.55	4.36	33.19	0.00	Peak	220	100	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5147.00	65.54	74.00	-8.46	25.40	6.13	34.01	0.00	Peak	102	348	VERTICAL
2	5150.00	50.28	54.00	-3.72	10.14	6.13	34.01	0.00	Average	102	348	VERTICAL
3	5199.00	117.02			76.75	6.16	34.11	0.00	Peak	102	348	VERTICAL
4	5205.00	107.94			67.67	6.16	34.11	0.00	Average	102	348	VERTICAL
5	5356.00	60.66	74.00	-13.34	19.98	6.26	34.42	0.00	Peak	102	348	VERTICAL
6	5358.00	50.76	54.00	-3.24	10.08	6.26	34.42	0.00	Average	102	348	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5073.00	57.57	74.00	-16.43	17.64	6.09	33.84	0.00	Peak	103	354	VERTICAL
2	5079.00	45.78	54.00	-8.22	5.82	6.09	33.87	0.00	Average	103	354	VERTICAL
3	5235.00	119.01			78.65	6.18	34.18	0.00	Peak	103	354	VERTICAL
4	5239.00	108.98			68.62	6.18	34.18	0.00	Average	103	354	VERTICAL
5	5398.00	48.64	54.00	-5.36	7.86	6.29	34.49	0.00	Average	103	354	VERTICAL
6	5398.00	60.10	74.00	-13.90	19.32	6.29	34.49	0.00	Peak	103	354	VERTICAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014 ~ Apr. 14, 2014		

Channel 52

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5098.00	44.02	54.00	-9.98	4.01	6.10	33.91	0.00	Average	113	345	VERTICAL
2	5147.00	54.71	74.00	-19.29	14.57	6.13	34.01	0.00	Peak	113	345	VERTICAL
3	5260.00	109.06			68.63	6.21	34.22	0.00	Average	113	345	VERTICAL
4	5260.00	117.68			77.25	6.21	34.22	0.00	Peak	113	345	VERTICAL
5	5413.00	48.70	54.00	-5.30	7.86	6.31	34.53	0.00	Average	113	345	VERTICAL
6	5413.00	58.31	74.00	-15.69	17.47	6.31	34.53	0.00	Peak	113	345	VERTICAL

Item 3, 4 are the fundamental frequency at 5260 MHz.

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5298.80	110.36			69.81	6.23	34.32	0.00	Average	102	187	VERTICAL
2	5299.40	119.74			79.19	6.23	34.32	0.00	Peak	102	187	VERTICAL
3	5353.00	70.88	74.00	-3.12	30.20	6.26	34.42	0.00	Peak	102	187	VERTICAL
4	5378.20	53.09	54.00	-0.91	12.35	6.28	34.46	0.00	Average	102	187	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	Cm	
1	5320.64	100.91			63.05	4.45	33.41	0.00	Average	351	100	HORIZONTAL
2	5320.96	111.96			74.10	4.45	33.41	0.00	Peak	351	100	HORIZONTAL
3	5350.00	73.48	74.00	-0.52	35.55	4.47	33.46	0.00	Peak	351	100	HORIZONTAL
4	5350.00	50.71	54.00	-3.29	12.78	4.47	33.46	0.00	Average	351	100	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 116 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014 ~ Apr. 14, 2014		

Channel 100

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5422.18	61.09	74.00	-12.91	23.00	4.52	33.57	0.00	Peak	213	103	VERTICAL
2	5422.50	49.16	54.00	-4.84	11.07	4.52	33.57	0.00	Average	213	103	VERTICAL
3	5469.04	73.36	74.00	-0.64	35.16	4.55	33.65	0.00	Peak	213	103	VERTICAL
4	5470.00	52.03	54.00	-1.97	13.83	4.55	33.65	0.00	Average	213	103	VERTICAL
5	5497.44	115.35			77.08	4.57	33.70	0.00	Peak	213	103	VERTICAL
6	5497.44	103.72			65.45	4.57	33.70	0.00	Average	213	103	VERTICAL

Item 5, 6 are the fundamental frequency at 5500 MHz.

Channel 116

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5412.00	59.12	74.00	-14.88	18.28	6.31	34.53	0.00	Peak	100	238	VERTICAL
2	5422.00	49.07	54.00	-4.93	8.20	6.31	34.56	0.00	Average	100	238	VERTICAL
3	5470.00	44.76	54.00	-9.24	3.75	6.34	34.67	0.00	Average	100	238	VERTICAL
4	5470.00	55.34	74.00	-18.66	14.33	6.34	34.67	0.00	Peak	100	238	VERTICAL
5	5582.00	106.72			65.56	6.39	34.77	0.00	Average	100	238	VERTICAL
6	5582.00	116.51			75.35	6.39	34.77	0.00	Peak	100	238	VERTICAL

Item 5, 6 are the fundamental frequency at 5580 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140, 144 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014 ~ Apr. 14, 2014		

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5698.08	103.17			64.20	4.70	34.27	0.00	Average	330	110	VERTICAL
2	5702.56	114.44			75.41	4.71	34.32	0.00	Peak	330	110	VERTICAL
3	5725.00	73.73	74.00	-0.27	34.64	4.72	34.37	0.00	Peak	330	110	VERTICAL
4	5725.00	53.59	54.00	-0.41	14.50	4.72	34.37	0.00	Average	330	110	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

Channel 144

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5716.00	108.00			66.69	6.44	34.87	0.00	Average	104	332	VERTICAL
2	5716.00	117.35			76.04	6.44	34.87	0.00	Peak	104	332	VERTICAL
3	5873.00	50.03	54.00	-3.97	8.54	6.50	34.99	0.00	Average	104	332	VERTICAL
4	5884.00	60.21	74.00	-13.79	18.70	6.50	35.01	0.00	Peak	104	332	VERTICAL

Item 1, 2 are the fundamental frequency at 5720 MHz

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014 ~ Apr. 12, 2014		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5148.72	72.27	74.00	-1.73	34.79	4.34	33.14	0.00	Peak	8	127	VERTICAL
2	5149.04	53.56	54.00	-0.44	16.08	4.34	33.14	0.00	Average	8	127	VERTICAL
3	5194.17	96.00			58.41	4.37	33.22	0.00	Average	8	127	VERTICAL
4	5194.49	107.58			69.99	4.37	33.22	0.00	Peak	8	127	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5146.80	48.03	54.00	-5.97	7.89	6.13	34.01	0.00	Average	110	305	HORIZONTAL
2	5147.20	60.16	74.00	-13.84	20.02	6.13	34.01	0.00	Peak	110	305	HORIZONTAL
3	5232.00	98.71			58.35	6.18	34.18	0.00	Average	110	305	HORIZONTAL
4	5232.00	110.86			70.50	6.18	34.18	0.00	Peak	110	305	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	24℃	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014 ~ Apr. 12, 2014		

Channel 54

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5257.20	104.83			64.41	6.20	34.22	0.00	Average	103	357	VERTICAL
2	5257.20	116.05			75.63	6.20	34.22	0.00	Peak	103	357	VERTICAL
3	5350.40	72.33	74.00	-1.67	31.65	6.26	34.42	0.00	Peak	103	357	VERTICAL
4	5352.40	53.31	54.00	-0.69	12.63	6.26	34.42	0.00	Average	103	357	VERTICAL

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5314.49	108.28			70.42	4.45	33.41	0.00	Peak	4	101	VERTICAL
2	5314.81	97.33			59.47	4.45	33.41	0.00	Average	4	101	VERTICAL
3	5350.00	69.51	74.00	-4.49	31.58	4.47	33.46	0.00	Peak	4	101	VERTICAL
4	5350.00	53.33	54.00	-0.67	15.40	4.47	33.46	0.00	Average	4	101	VERTICAL

Item 1, 2 are the fundamental frequency at 5310 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110/ Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 12, 2014		

Channel 102

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5460.00	48.71	54.00	-5.29	7.75	6.33	34.63	0.00	Average	121	291	VERTICAL
2	5460.00	63.83	74.00	-10.17	22.87	6.33	34.63	0.00	Peak	121	291	VERTICAL
3	5467.20	53.55	54.00	-0.45	12.54	6.34	34.67	0.00	Average	121	291	VERTICAL
4	5467.60	68.94	74.00	-5.06	27.93	6.34	34.67	0.00	Peak	121	291	VERTICAL
5	5496.80	109.74			68.68	6.36	34.70	0.00	Peak	121	291	VERTICAL
6	5517.20	98.18			57.10	6.37	34.71	0.00	Average	121	291	VERTICAL

Item 5, 6 are the fundamental frequency at 5510 MHz.

Channel 110

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5451.00	66.11	74.00	-7.89	25.15	6.33	34.63	0.00	Peak	113	3	VERTICAL
2	5460.00	50.28	54.00	-3.72	9.32	6.33	34.63	0.00	Average	113	3	VERTICAL
3	5470.00	53.15	54.00	-0.85	12.14	6.34	34.67	0.00	Average	113	3	VERTICAL
4	5470.00	69.53	74.00	-4.47	28.52	6.34	34.67	0.00	Peak	113	3	VERTICAL
5	5546.40	105.29			64.18	6.37	34.74	0.00	Average	113	3	VERTICAL
6	5547.00	116.81			75.70	6.37	34.74	0.00	Peak	113	3	VERTICAL

Item 5, 6 are the fundamental frequency at 5550 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134, 142 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014 ~ Apr. 14, 2014		

Channel 134

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5664.55	99.88			61.04	4.67	34.17	0.00	Average	211	126	VERTICAL
2	5674.49	112.19			73.29	4.68	34.22	0.00	Peak	211	126	VERTICAL
3	5725.00	73.58	74.00	-0.42	34.49	4.72	34.37	0.00	Peak	211	126	VERTICAL
4	5725.00	52.37	54.00	-1.63	13.28	4.72	34.37	0.00	Average	211	126	VERTICAL

Item 1, 2 are the fundamental frequency at 5670 MHz.

Channel 142

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5706.00	104.41			63.10	6.44	34.87	0.00	Average	111	248	VERTICAL
2	5706.00	113.85			72.54	6.44	34.87	0.00	Peak	111	248	VERTICAL
3	5866.00	50.32	54.00	-3.68	8.83	6.50	34.99	0.00	Average	111	248	VERTICAL
4	5866.00	60.72	74.00	-13.28	19.23	6.50	34.99	0.00	Peak	111	248	VERTICAL

Item 1, 2 are the fundamental frequency at 5710 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 58, 106 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 28, 2014		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5150.00	71.63	74.00	-2.37	34.15	4.34	33.14	0.00	Peak	356	104	VERTICAL
2	5150.00	53.69	54.00	-0.31	16.21	4.34	33.14	0.00	Average	356	104	VERTICAL
3	5219.62	104.60			66.97	4.38	33.25	0.00	Peak	356	104	VERTICAL
4	5219.62	91.79			54.16	4.38	33.25	0.00	Average	356	104	VERTICAL
5	5350.00	52.83	74.00	-21.17	14.90	4.47	33.46	0.00	Peak	356	104	VERTICAL
6	5350.00	40.82	54.00	-13.18	2.89	4.47	33.46	0.00	Average	356	104	VERTICAL

Item 3, 4 are the fundamental frequency at 5210 MHz.

Channel 58

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5119.55	52.30	74.00	-21.70	14.89	4.32	33.09	0.00	Peak	5	102	VERTICAL
2	5119.55	39.59	54.00	-14.41	2.18	4.32	33.09	0.00	Average	5	102	VERTICAL
3	5279.58	104.58			66.80	4.43	33.35	0.00	Peak	5	102	VERTICAL
4	5299.62	92.05			54.23	4.44	33.38	0.00	Average	5	102	VERTICAL
5	5350.00	68.83	74.00	-5.17	30.90	4.47	33.46	0.00	Peak	5	102	VERTICAL
6	5350.00	53.70	54.00	-0.30	15.77	4.47	33.46	0.00	Average	5	102	VERTICAL

Item 3, 4 are the fundamental frequency at 5290 MHz.

Channel 106

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5441.57	69.17	74.00	-4.83	31.05	4.53	33.59	0.00	Peak	211	100	VERTICAL
2	5456.80	50.94	54.00	-3.06	12.78	4.54	33.62	0.00	Average	211	100	VERTICAL
3	5467.60	71.08	74.00	-2.92	32.88	4.55	33.65	0.00	Peak	211	100	VERTICAL
4	5467.60	53.70	54.00	-0.30	15.50	4.55	33.65	0.00	Average	211	100	VERTICAL
5	5537.21	92.47			54.08	4.59	33.80	0.00	Average	211	100	VERTICAL
6	5538.01	105.80			67.41	4.59	33.80	0.00	Peak	211	100	VERTICAL
7	5725.00	41.78	54.00	-12.22	2.69	4.72	34.37	0.00	Average	211	100	VERTICAL
8	5728.21	53.34	74.00	-20.66	14.25	4.72	34.37	0.00	Peak	211	100	VERTICAL

Item 5, 6 are the fundamental frequency at 5530 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122, 138 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Channel 122

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5601.00	95.63			54.45	6.40	34.78	0.00	Average	106	246	VERTICAL
2	5605.00	108.81			67.62	6.40	34.79	0.00	Peak	106	246	VERTICAL
3	5726.00	53.25	54.00	-0.75	11.91	6.45	34.89	0.00	Average	106	246	VERTICAL
4	5727.00	71.48	74.00	-2.52	30.14	6.45	34.89	0.00	Peak	106	246	VERTICAL

Item 1, 2 are the fundamental frequency at 5610 MHz.

Channel 138

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5663.00	109.13			67.88	6.42	34.83	0.00	Peak	106	252	VERTICAL
2	5701.00	96.78			55.48	6.44	34.86	0.00	Average	106	252	VERTICAL
3	5826.00	53.72	54.00	-0.28	12.27	6.48	34.97	0.00	Average	106	252	VERTICAL
4	5834.00	68.59	74.00	-5.41	27.14	6.48	34.97	0.00	Peak	106	252	VERTICAL

Item 1, 2 are the fundamental frequency at 5690 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	53.55	54.00	-0.45	13.41	6.13	34.01	0.00	Average	103	355	VERTICAL
2	5150.00	71.72	74.00	-2.28	31.58	6.13	34.01	0.00	Peak	103	355	VERTICAL
3	5179.20	104.62			64.39	6.15	34.08	0.00	Average	103	355	VERTICAL
4	5179.20	115.03			74.80	6.15	34.08	0.00	Peak	103	355	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5119.00	49.94	54.00	-4.06	9.89	6.11	33.94	0.00	Average	103	353	VERTICAL
2	5149.00	67.14	74.00	-6.86	27.00	6.13	34.01	0.00	Peak	103	353	VERTICAL
3	5199.00	107.93			67.66	6.16	34.11	0.00	Average	103	353	VERTICAL
4	5199.00	117.34			77.07	6.16	34.11	0.00	Peak	103	353	VERTICAL
5	5353.00	49.29	54.00	-4.71	8.61	6.26	34.42	0.00	Average	103	353	VERTICAL
6	5358.00	61.17	74.00	-12.83	20.49	6.26	34.42	0.00	Peak	103	353	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5083.00	43.62	54.00	-10.38	3.66	6.09	33.87	0.00	Average	112	240	HORIZONTAL
2	5085.00	54.54	74.00	-19.46	14.58	6.09	33.87	0.00	Peak	112	240	HORIZONTAL
3	5243.00	105.42			65.04	6.20	34.18	0.00	Average	112	240	HORIZONTAL
4	5243.00	115.29			74.91	6.20	34.18	0.00	Peak	112	240	HORIZONTAL
5	5393.00	57.76	74.00	-16.24	16.99	6.28	34.49	0.00	Peak	112	240	HORIZONTAL
6	5403.00	47.44	54.00	-6.56	6.62	6.29	34.53	0.00	Average	112	240	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 52, 60, 64 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Channel 52

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5098.00	44.77	54.00	-9.23	4.76	6.10	33.91	0.00	Average	100	346	VERTICAL
2	5099.00	55.19	74.00	-18.81	15.18	6.10	33.91	0.00	Peak	100	346	VERTICAL
3	5259.00	118.00			77.57	6.21	34.22	0.00	Peak	100	346	VERTICAL
4	5260.00	109.01			68.58	6.21	34.22	0.00	Average	100	346	VERTICAL
5	5422.00	49.68	54.00	-4.32	8.81	6.31	34.56	0.00	Average	100	346	VERTICAL
6	5422.00	59.47	74.00	-14.53	18.60	6.31	34.56	0.00	Peak	100	346	VERTICAL

Item 3, 4 are the fundamental frequency at 5260 MHz.

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5304.00	121.21			80.66	6.23	34.32	0.00	Peak	102	187	VERTICAL
2	5304.40	108.89			68.34	6.23	34.32	0.00	Average	102	187	VERTICAL
3	5352.00	67.73	74.00	-6.27	27.05	6.26	34.42	0.00	Peak	102	187	VERTICAL
4	5383.20	53.13	54.00	-0.87	12.36	6.28	34.49	0.00	Average	102	187	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5323.60	105.64			65.04	6.24	34.36	0.00	Average	114	187	VERTICAL
2	5324.40	116.23			75.63	6.24	34.36	0.00	Peak	114	187	VERTICAL
3	5350.00	53.74	54.00	-0.26	13.06	6.26	34.42	0.00	Average	114	187	VERTICAL
4	5352.00	70.48	74.00	-3.52	29.80	6.26	34.42	0.00	Peak	114	187	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 100, 116 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Channel 100

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5418.80	52.01	54.00	-1.99	11.14	6.31	34.56	0.00	Average	100	242	VERTICAL
2	5458.00	63.06	74.00	-10.94	22.10	6.33	34.63	0.00	Peak	100	242	VERTICAL
3	5469.20	53.52	54.00	-0.48	12.51	6.34	34.67	0.00	Average	100	242	VERTICAL
4	5469.60	71.89	74.00	-2.11	30.88	6.34	34.67	0.00	Peak	100	242	VERTICAL
5	5498.40	107.06			66.00	6.36	34.70	0.00	Average	100	242	VERTICAL
6	5498.40	116.76			75.70	6.36	34.70	0.00	Peak	100	242	VERTICAL

Item 5, 6 are the fundamental frequency at 5500 MHz.

Channel 116

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5418.00	48.93	54.00	-5.07	8.06	6.31	34.56	0.00	Average	112	267	VERTICAL
2	5428.00	60.85	74.00	-13.15	19.98	6.31	34.56	0.00	Peak	112	267	VERTICAL
3	5467.00	45.02	54.00	-8.98	4.05	6.34	34.63	0.00	Average	112	267	VERTICAL
4	5470.00	56.69	74.00	-17.31	15.68	6.34	34.67	0.00	Peak	112	267	VERTICAL
5	5577.00	118.07			76.91	6.39	34.77	0.00	Peak	112	267	VERTICAL
6	5578.00	107.74			66.58	6.39	34.77	0.00	Average	112	267	VERTICAL

Item 5, 6 are the fundamental frequency at 5580 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11a CH 140, 144 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 14, 2014		

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5697.00	104.14			62.85	6.43	34.86	0.00	Average	107	264	VERTICAL
2	5697.00	113.50			72.21	6.43	34.86	0.00	Peak	107	264	VERTICAL
3	5725.00	67.77	74.00	-6.23	26.43	6.45	34.89	0.00	Peak	107	264	VERTICAL
4	5786.80	53.11	54.00	-0.89	11.71	6.47	34.93	0.00	Average	107	264	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

Channel 144

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5721.00	108.64			67.32	6.45	34.87	0.00	Average	102	333	VERTICAL
2	5722.00	117.74			76.42	6.45	34.87	0.00	Peak	102	333	VERTICAL
3	5873.00	49.91	54.00	-4.09	8.42	6.50	34.99	0.00	Average	102	333	VERTICAL
4	5884.00	59.96	74.00	-14.04	18.45	6.50	35.01	0.00	Peak	102	333	VERTICAL

Item 1, 2 are the fundamental frequency at 5720 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

For beamforming mode:

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 15, 2014		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5147.76	71.58	74.00	-2.42	68.95	3.43	34.11	34.91	Peak	165	355	VERTICAL
2	5150.00	53.96	54.00	-0.04	51.33	3.43	34.11	34.91	Average	165	355	VERTICAL
3	5179.68	114.70			112.01	3.44	34.16	34.91	Peak	165	355	VERTICAL
4	5181.28	108.63			105.94	3.44	34.16	34.91	Average	165	355	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5111.86	52.96	54.00	-1.04	50.38	3.42	34.06	34.90	Average	100	140	VERTICAL
2	5149.68	69.28	74.00	-4.72	66.65	3.43	34.11	34.91	Peak	100	140	VERTICAL
3	5191.67	108.40			105.69	3.44	34.18	34.91	Average	100	140	VERTICAL
4	5193.27	117.21			114.50	3.44	34.18	34.91	Peak	100	140	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5071.47	45.65	54.00	-8.35	43.15	3.41	33.99	34.90	Average	115	82	HORIZONTAL
2	5071.47	55.33	74.00	-18.67	52.83	3.41	33.99	34.90	Peak	115	82	HORIZONTAL
3	5232.79	107.31			104.53	3.46	34.23	34.91	Average	115	82	HORIZONTAL
4	5235.99	116.23			113.45	3.46	34.23	34.91	Peak	115	82	HORIZONTAL
5	5393.27	47.76	54.00	-6.24	44.74	3.50	34.44	34.92	Average	115	82	HORIZONTAL
6	5393.27	57.27	74.00	-16.73	54.25	3.50	34.44	34.92	Peak	115	82	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 16, 2014		

Channel 52

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5092.31	43.73	54.00	-10.27	41.18	3.41	34.04	34.90	Average	119	103	HORIZONTAL
2	5101.28	56.44	74.00	-17.56	53.88	3.42	34.04	34.90	Peak	119	103	HORIZONTAL
3	5263.21	103.45			100.63	3.46	34.27	34.91	Average	119	103	HORIZONTAL
4	5266.41	115.23			112.41	3.46	34.27	34.91	Average	119	103	HORIZONTAL
5	5412.82	47.29	54.00	-6.71	44.22	3.51	34.48	34.92	Average	119	103	HORIZONTAL
6	5413.46	59.77	74.00	-14.23	56.70	3.51	34.48	34.92	Peak	119	103	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5260 MHz.

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5147.44	44.61	54.00	-9.39	41.98	3.43	34.11	34.91	Average	132	173	VERTICAL
2	5148.72	55.59	74.00	-18.41	52.96	3.43	34.11	34.91	Peak	132	173	VERTICAL
3	5301.92	119.53			116.64	3.48	34.32	34.91	Peak	132	173	VERTICAL
4	5302.56	107.46			104.57	3.48	34.32	34.91	Average	132	173	VERTICAL
5	5350.00	63.79	74.00	-10.21	60.82	3.49	34.39	34.91	Peak	132	173	VERTICAL
6	5378.85	49.00	54.00	-5.00	45.98	3.50	34.44	34.92	Average	132	173	VERTICAL

Item 3, 4 are the fundamental frequency at 5300 MHz.

Channel 64

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5313.27	102.71			99.80	3.48	34.34	34.91	Average	106	51	HORIZONTAL
2	5313.59	113.92			111.01	3.48	34.34	34.91	Peak	106	51	HORIZONTAL
3	5350.00	53.90	54.00	-0.10	50.93	3.49	34.39	34.91	Average	106	51	HORIZONTAL
4	5350.00	72.74	74.00	-1.26	69.77	3.49	34.39	34.91	Peak	106	51	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 140, 144 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 16, 2014		

Channel 100

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5418.33	52.01	54.00	-1.99	48.94	3.51	34.48	34.92	Average	100	359	VERTICAL
2	5418.65	63.79	74.00	-10.21	60.72	3.51	34.48	34.92	Peak	100	359	VERTICAL
3	5469.36	73.49	74.00	-0.51	70.34	3.52	34.55	34.92	Peak	100	359	VERTICAL
4	5469.68	53.75	54.00	-0.25	50.60	3.52	34.55	34.92	Average	100	359	VERTICAL
5	5503.85	106.60			103.38	3.54	34.60	34.92	Average	100	359	VERTICAL
6	5503.85	119.31			116.09	3.54	34.60	34.92	Peak	100	359	VERTICAL

Item 5, 6 are the fundamental frequency at 5500 MHz.

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5700.96	115.65			112.32	3.59	34.68	34.94	Peak	101	97	VERTICAL
2	5701.92	104.68			101.35	3.59	34.68	34.94	Average	101	97	VERTICAL
3	5725.00	53.70	54.00	-0.30	50.35	3.60	34.69	34.94	Average	101	97	VERTICAL
4	5725.00	70.85	74.00	-3.15	67.50	3.60	34.69	34.94	Peak	101	97	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

Channel 144

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5718.72	108.08			104.73	3.60	34.69	34.94	Average	102	97	VERTICAL
2	5719.36	120.05			116.70	3.60	34.69	34.94	Peak	102	97	VERTICAL
3	5878.85	50.17	54.00	-3.83	46.72	3.65	34.75	34.95	Average	102	97	VERTICAL
4	5878.85	62.31	74.00	-11.69	58.86	3.65	34.75	34.95	Peak	102	97	VERTICAL

Item 1, 2 are the fundamental frequency at 5720 MHz

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 16, 2014 ~ Apr. 17, 2014		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5147.12	71.28	74.00	-2.72	68.65	3.43	34.11	34.91	Peak	117	50	HORIZONTAL
2	5150.00	53.69	54.00	-0.31	51.06	3.43	34.11	34.91	Average	117	50	HORIZONTAL
3	5196.73	94.88			92.16	3.45	34.18	34.91	Average	117	50	HORIZONTAL
4	5196.73	105.83			103.11	3.45	34.18	34.91	Peak	117	50	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.60	70.38	74.00	-3.62	66.78	5.99	33.02	35.41	102	196	VERTICAL	Peak
2	5150.00	53.28	54.00	-0.72	49.68	5.99	33.02	35.41	102	196	VERTICAL	Average
3	5224.00	102.26			98.58	6.04	33.08	35.44	102	196	VERTICAL	Average
4	5224.40	113.20			109.52	6.04	33.08	35.44	102	196	VERTICAL	Peak

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 17, 2014		

Channel 54

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5262.60	113.22			109.46	6.06	33.15	35.45	152	190	VERTICAL	Peak
2	5264.80	101.16			97.41	6.06	33.15	35.46	152	190	VERTICAL	Average
3	5350.00	52.99	54.00	-1.01	48.97	6.11	33.40	35.49	152	190	VERTICAL	Average
4	5353.60	68.91	74.00	-5.09	64.88	6.12	33.40	35.49	152	190	VERTICAL	Peak

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5325.60	103.99			100.02	6.10	33.35	35.48	104	218	HORIZONTAL	Peak
2	5328.00	93.00			89.03	6.10	33.35	35.48	104	218	HORIZONTAL	Average
3	5350.00	53.41	54.00	-0.59	49.39	6.11	33.40	35.49	104	218	HORIZONTAL	Average
4	5352.20	72.40	74.00	-1.60	68.38	6.11	33.40	35.49	104	218	HORIZONTAL	Peak

Item 1, 2 are the fundamental frequency at 5310 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110/ Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Channel 102

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5458.80	65.05	74.00	-8.95	61.92	3.52	34.53	34.92	Peak	100	230	HORIZONTAL
2	5460.00	47.58	54.00	-6.42	44.45	3.52	34.53	34.92	Average	100	230	HORIZONTAL
3	5469.20	72.54	74.00	-1.46	69.39	3.52	34.55	34.92	Peak	100	230	HORIZONTAL
4	5470.00	53.70	54.00	-0.30	50.55	3.52	34.55	34.92	Average	100	230	HORIZONTAL
5	5514.00	98.16			94.93	3.54	34.61	34.92	Average	100	230	HORIZONTAL
6	5514.40	109.39			106.16	3.54	34.61	34.92	Peak	100	230	HORIZONTAL

Item 5, 6 are the fundamental frequency at 5510 MHz.

Channel 110

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5458.80	64.11	74.00	-9.89	60.98	3.52	34.53	34.92	Peak	100	189	VERTICAL
2	5460.00	51.64	54.00	-2.36	48.51	3.52	34.53	34.92	Average	100	189	VERTICAL
3	5466.00	53.11	54.00	-0.89	49.96	3.52	34.55	34.92	Average	100	189	VERTICAL
4	5469.20	68.68	74.00	-5.32	65.53	3.52	34.55	34.92	Peak	100	189	VERTICAL
5	5554.40	104.00			100.76	3.55	34.62	34.93	Average	100	189	VERTICAL
6	5554.80	115.98			112.74	3.55	34.62	34.93	Peak	100	189	VERTICAL

Item 5, 6 are the fundamental frequency at 5550 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134, 142 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Channel 134

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5674.00	99.45			96.12	3.59	34.67	34.93	Average	100	145	VERTICAL
2	5681.60	111.71			108.39	3.59	34.67	34.94	Peak	100	145	VERTICAL
3	5725.00	53.78	54.00	-0.22	50.43	3.60	34.69	34.94	Average	100	145	VERTICAL
4	5725.00	70.53	74.00	-3.47	67.18	3.60	34.69	34.94	Peak	100	145	VERTICAL

Item 1, 2 are the fundamental frequency at 5670 MHz.

Channel 142

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5716.00	103.48			100.14	3.60	34.68	34.94	Average	117	267	HORIZONTAL
2	5716.00	114.21			110.87	3.60	34.68	34.94	Peak	117	267	HORIZONTAL
3	5855.00	59.92	74.00	-14.08	56.49	3.64	34.74	34.95	Peak	117	267	HORIZONTAL
4	5865.00	48.11	54.00	-5.89	44.67	3.65	34.74	34.95	Average	117	267	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5710 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 58, 106 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5126.00	68.99	74.00	-5.01	66.38	3.43	34.09	34.91	Peak	100	8	VERTICAL
2	5139.00	53.49	54.00	-0.51	50.88	3.43	34.09	34.91	Average	100	8	VERTICAL
3	5219.00	104.91			102.17	3.45	34.20	34.91	Peak	100	8	VERTICAL
4	5222.00	94.69			91.94	3.46	34.20	34.91	Average	100	8	VERTICAL
5	5385.00	61.97	74.00	-12.03	58.95	3.50	34.44	34.92	Peak	100	8	VERTICAL
6	5385.50	43.98	54.00	-10.02	40.96	3.50	34.44	34.92	Average	100	8	VERTICAL

Item 3, 4 are the fundamental frequency at 5210 MHz.

Channel 58

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5144.00	55.87	74.00	-18.13	53.24	3.43	34.11	34.91	Peak	100	291	HORIZONTAL
2	5150.00	43.33	54.00	-10.67	40.70	3.43	34.11	34.91	Average	100	291	HORIZONTAL
3	5312.00	101.65			98.74	3.48	34.34	34.91	Peak	100	291	HORIZONTAL
4	5313.00	88.60			85.69	3.48	34.34	34.91	Average	100	291	HORIZONTAL
5	5351.00	53.83	54.00	-0.17	50.86	3.49	34.39	34.91	Average	100	291	HORIZONTAL
6	5358.00	69.32	74.00	-4.68	66.35	3.49	34.39	34.91	Peak	100	291	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5290 MHz.

Channel 106

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5445.00	66.75	74.00	-7.25	63.64	3.52	34.51	34.92	Peak	100	224	HORIZONTAL
2	5460.00	51.72	54.00	-2.28	48.59	3.52	34.53	34.92	Average	100	224	HORIZONTAL
3	5466.00	69.04	74.00	-4.96	65.89	3.52	34.55	34.92	Peak	100	224	HORIZONTAL
4	5470.00	53.34	54.00	-0.66	50.19	3.52	34.55	34.92	Average	100	224	HORIZONTAL
5	5520.00	104.27			101.04	3.54	34.61	34.92	Peak	100	224	HORIZONTAL
6	5543.00	90.86			87.62	3.55	34.61	34.92	Average	100	224	HORIZONTAL
7	5725.00	43.42	54.00	-10.58	40.07	3.60	34.69	34.94	Average	100	224	HORIZONTAL
8	5738.00	55.41	74.00	-18.59	52.04	3.61	34.70	34.94	Peak	100	224	HORIZONTAL

Item 5, 6 are the fundamental frequency at 5530 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	David Tseng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122, 138 / Chain 1 + Chain 2 + Chain 3
Test Date	Apr. 18, 2014		

Channel 122

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5421.00	55.59	74.00	-18.41	52.52	3.51	34.48	34.92	Peak	100	275	HORIZONTAL
2	5442.00	44.83	54.00	-9.17	41.72	3.52	34.51	34.92	Average	100	275	HORIZONTAL
3	5461.00	60.19	74.00	-13.81	57.06	3.52	34.53	34.92	Peak	100	275	HORIZONTAL
4	5470.00	46.04	54.00	-7.96	42.89	3.52	34.55	34.92	Average	100	275	HORIZONTAL
5	5625.00	96.87			93.58	3.57	34.65	34.93	Average	100	275	HORIZONTAL
6	5626.00	110.45			107.16	3.57	34.65	34.93	Peak	100	275	HORIZONTAL
7	5732.00	53.61	54.00	-0.39	50.25	3.61	34.69	34.94	Average	100	275	HORIZONTAL
8	5734.00	69.53	74.00	-4.47	66.17	3.61	34.69	34.94	Peak	100	275	HORIZONTAL

Item 5, 6 are the fundamental frequency at 5610 MHz.

Channel 138

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5697.00	98.15			94.82	3.59	34.68	34.94	Average	100	188	VERTICAL
2	5700.00	111.53			108.20	3.59	34.68	34.94	Peak	100	188	VERTICAL
3	5825.00	53.82	54.00	-0.18	50.41	3.63	34.73	34.95	Average	100	188	VERTICAL
4	5833.00	71.69	74.00	-2.31	68.27	3.64	34.73	34.95	Peak	100	188	VERTICAL

Item 1, 2 are the fundamental frequency at 5690 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

4.8. Frequency Stability Measurement

4.8.1. Limit

In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

4.8.2. Measuring Instruments and Setting

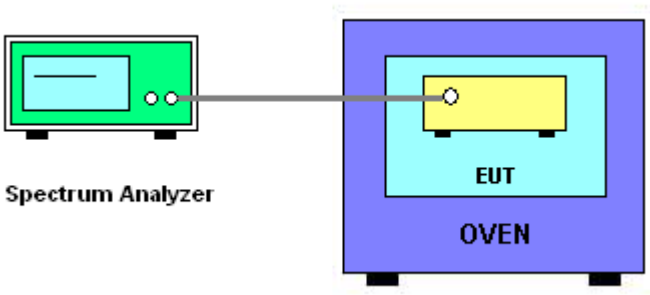
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RBW	10 kHz
VBW	10 kHz
Sweep Time	Auto

4.8.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is 0°C~70°C.

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

4.8.7. Test Result of Frequency Stability

Temperature	20°C	Humidity	52%
Test Engineer	Benson Peng	Test Date	Apr. 25, 2014

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)		
(V)	5200 MHz	5300 MHz	5500 MHz
126.50	5200.0730	5300.0672	5500.0700
110.00	5200.0732	5300.0678	5500.0702
93.50	5200.0738	5300.0688	5500.0722
Max. Deviation (MHz)	**0.073800**	**0.068800**	**0.072200**
Max. Deviation (ppm)	**14.19**	**12.98**	**13.13**

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)		
(°C)	5200 MHz	5300 MHz	5500 MHz
0	5200.0720	5300.0674	5500.0706
10	5200.0722	5300.0670	5500.0692
20	5200.0732	5300.0678	5500.0702
30	5200.0730	5300.0680	5500.0714
40	5200.0738	5300.0688	5500.0728
50	5200.0742	5300.0676	5500.0732
60	5200.0767	5300.0687	5500.0767
70	5200.0766	5300.0667	5500.0766
Max. Deviation (MHz)	**0.076700**	**0.068800**	**0.076700**
Max. Deviation (ppm)	**14.75**	**12.98**	**13.95**

4.9. Antenna Requirements

4.9.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.9.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9 kHz ~ 2.75 GHz	Apr. 12, 2013	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150 kHz ~ 100 MHz	Nov. 23, 2013	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 11, 2013	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150 kHz ~ 30 MHz	Dec. 04, 2013	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Apr. 16, 2013	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Nov. 05, 2012*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 01, 2013	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Dec. 17, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 12, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Dec. 16, 2013	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Oct. 23, 2013	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100019	9kHz~40GHz	Dec. 02, 2013	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Dec. 12, 2013	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N.C.R	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9kHz~40GHz	Nov. 29, 2013	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 04, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

"*" Calibration Interval of instruments listed above is two years.

N.C.R. means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

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

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	0.026	dB	normal(k=2)	0.013
Cable loss	0.002	dB	normal(k=2)	0.001
AMN/LISN specification	1.200	dB	normal(k=2)	0.600
Mismatch Receiver VSWR 1= AMN/LISN VSWR 2=	-0.080	dB	U-shaped	0.060
Combined standard uncertainty Uc(y)				1.2
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				2.4

Uncertainty of Radiated Emission Measurement (30MHz ~ 1,000MHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	±0.173	dB	k=1	0.086
Cable loss	±0.174	dB	k=2	0.087
Antenna gain	±0.169	dB	k=2	0.084
Site imperfection	±0.433	dB	Triangular	0.214
Pre-amplifier gain	±0.366	dB	k=2	0.183
Transmitter antenna	±1.200	dB	Rectangular	0.600
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				1.778
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				3.555

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	±0.191	dB	k=1	0.095
Cable loss	±0.169	dB	k=2	0.084
Antenna gain	±0.191	dB	k=2	0.096
Site imperfection	±0.582	dB	Triangular	0.291
Pre-amplifier gain	±0.304	dB	k=2	0.152
Transmitter antenna	±1.200	dB	Rectangular	0.600
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				1.839
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				3.678

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	±0.186	dB	k=1	0.093
Cable loss	±0.167	dB	k=2	0.083
Antenna gain	±0.190	dB	k=2	0.095
Site imperfection	±0.488	dB	Triangular	0.244
Pre-amplifier gain	±0.269	dB	k=2	0.134
Transmitter antenna	±1.200	dB	Rectangular	0.600
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				1.771
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				3.541

Uncertainty of Conducted Emission Measurement

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Cable loss	±0.038	dB	k=2	0.019
Attenuator	±0.047	dB	k=2	0.024
Power Meter specification	±0.300	dB	Triangular	0.150
Power Sensor specification	±0.300	dB	Rectangular	0.150
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				0.863
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				1.726