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FCC RADIO TEST REPORT

Applicant's company	**Ubiquiti Networks, Inc.**
Applicant Address	2580 Orchard Parkway San Jose, CA 95131
FCC ID	**SWX-UAPACHD**
Manufacturer's company	**Ubiquiti Networks, Inc.**
Manufacturer Address	2580 Orchard Parkway San Jose, CA 95131

Product Name	UniFi Access Point
Brand Name	UBIQUITI
Model No.	UAP-AC-SHD, UAP-AC-HD
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250MHz / 5725 ~ 5850 MHz
Received Date	Jun. 17, 2016
Final Test Date	Nov. 04, 2016
Submission Type	Original Equipment

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 C63.10-2013**, **47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01r03, KDB662911 D01 v02r01, KDB644545 D03 v01, ET Docket No. 13–49; FCC 16–24.**

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

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR661623-02AB	Rev. 01	Initial issue of report	Nov. 09, 2016
FR661623-02AB	Rev. 02	Adding a Model Name: UAP-AC-SHD	Nov. 14, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	UniFi Access Point
Brand Name	:	UBIQUITI
Model No.	:	UAP-AC-SHD, UAP-AC-HD
Applicant	:	Ubiquiti Networks, Inc.
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 Jun. 17, 2016 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**
4.1	15.207	AC Power Line Conducted Emissions	Complies
4.2	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies
4.3	15.407(e)	6dB Spectrum Bandwidth	Complies
4.4	15.407(a)	Maximum Conducted Output Power	Complies
4.5	15.407(a)	Power Spectral Density	Complies
4.6	15.407(b)	Radiated Emissions	Complies
4.7	15.407(b)	Band Edge Emissions	Complies
4.8	15.407(g)	Frequency Stability	Complies
4.9	15.203	Antenna Requirements	Complies

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (4TX, 4RX)
Radio Type	Intentional Transceiver
Power Type	From PoE
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5150 ~ 5250MHz / 5725 ~ 5850 MHz
Channel Number	9 for 20MHz bandwidth ; 4 for 40MHz bandwidth 2 for 80MHz bandwidth
Channel Bandwidth (99%)	**For non-beamforming mode** **For indoor use master B1 and indoor, outdoor use B4** U-NII-1: IEEE 802.11a: 15.72 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 16.50 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.54 MHz U-NII-3: IEEE 802.11a: 24.14 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 25.88 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 44.86 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz **For indoor use slave without radar detection B1** U-NII-1: IEEE 802.11a: 15.46 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 16.41 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.54 MHz **For outdoor use master B1** U-NII-1: IEEE 802.11a: 15.54 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 16.32 MHz

	IEEE 802.11ac MCS0/Nss1 (VHT40): 36.03 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.54 MHz **For indoor use master** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 159.57 MHz U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 79.13 MHz **For indoor use slave without radar detection** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 159.57 MHz U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 78.84 MHz **For outdoor use master** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 159.13 MHz U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 78.26 MHz **For beamforming mode** **For indoor use master B1 and indoor, outdoor use B4** U-NII-1: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.05 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz U-NII-3: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.15 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.05 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz **For indoor use slave without radar detection B1** U-NII-1: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz **For outdoor use master B1** U-NII-1: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz **For indoor use master**

	U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 160.00 MHz U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 80.29 MHz **For indoor use slave without radar detection** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 160.00 MHz U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 80.00 MHz **For outdoor use master** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 160.00 MHz U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 80.00 MHz
Maximum Conducted Output Power	**For Non-beamforming mode** **For indoor use master B1 and indoor, outdoor use B4** U-NII-1: IEEE 802.11a: 24.32 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 24.14 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.15 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 20.57 dBm U-NII-3: IEEE 802.11a: 29.04 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 28.91 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 28.66 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.72 dBm **For indoor use slave without radar detection B1** U-NII-1: IEEE 802.11a: 18.35 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 18.24 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.20 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 20.57 dBm **For outdoor use master B1** U-NII-1: IEEE 802.11a: 14.98 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 14.75 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 14.78 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 14.76 dBm

	For indoor use master U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 18.32 dBm U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 18.52 dBm **For indoor use slave without radar detection** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 18.32 dBm U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 18.52 dBm **For outdoor use master** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 14.70 dBm U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 14.63 dBm **For beamforming mode** **For indoor use master B1 and indoor, outdoor use B4** U-NII-1: IEEE 802.11ac MCS0/Nss1 (VHT20): 23.74 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.82 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 22.36 dBm U-NII-3: IEEE 802.11ac MCS0/Nss1 (VHT20): 23.43 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.47 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.48 dBm **For indoor use slave without radar detection B1** U-NII-1: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.54 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 17.71 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.36 dBm **For outdoor use master B1** U-NII-1: IEEE 802.11ac MCS0/Nss1 (VHT20): 8.65 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 8.46 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 8.33 dBm **For indoor use master** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 18.50 dBm

	U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 18.42 dBm **For indoor use slave without radar detection** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 18.50 dBm U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 18.42 dBm **For outdoor use master** U-NII-1: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 11.86 dBm U-NII-3: IEEE 802.11ac MCS0/Nss2 (VHT80+80): 11.41 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
Beamforming Function	☒ With beamforming	☐ Without beamforming

Note: The EUT has beamforming function for 802.11n/ac.

Antenna and Bandwidth

Antenna	Four (TX)		
Bandwidth 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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	4	MCS 0-31
802.11n (HT40)	4	MCS 0-31
802.11ac (VHT20)	4	MCS 0-9/Nss1-4
802.11ac (VHT40)	4	MCS 0-9/Nss1-4
802.11ac (VHT80)	4	MCS 0-9/Nss1-4
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40. Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports 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

Support Unit	Brand	Model	Rating
PoE	UBIQUITI	GP-H480-050G	Input: 100-240V~50/60Hz, MAX 0.75A(0.75A) Output: 48V, 0.5A(0.5A)
Others			
Power cable*1, Non-shielded, 0.6m			

3.3. Table for Filed Antenna

For 2.4GHz WLAN function

Ant.	Brand	Model Name	Antenna Type	Connector	TX/RX Gain (dBi)
1	-	-	PIFA Antenna	N/A	3
2	-	-	PIFA Antenna	N/A	3

For 5GHz WLAN function

Ant.	Brand	Model Name	Antenna Type	Connector	TX/RX Gain (dBi)
3	-	-	PIFA Antenna	N/A	4
4	-	-	PIFA Antenna	N/A	4

For Bluetooth function

Ant.	Brand	Model Name	Antenna Type	Connector	TX/RX Gain (dBi)
5	-	-	PIFA Antenna	N/A	1

For RX function

Ant.	Brand	Model Name	Antenna Type	Connector	RX Gain (dBi)	
					2.4GHz	5GHz
6	-	-	PIFA Antenna	N/A	1	2

Note: The EUT has six antennas.

For 2.4GHz WLAN function

IEEE 802.11b/g/n/ac mode (4TX/4RX):

Chain 1 and Chain 2 connect to Ant. 1.

Chain 3 and Chain 4 connect to Ant. 2.

Chain 1, Chain 2, Chain 3 and Chain 4 can be used as transmitting/receiving antenna.

Chain 1, Chain 2, Chain 3 and Chain 4 could transmit/receive simultaneously.

For 5GHz WLAN function

IEEE 802.11a/n/ac mode (4TX/4RX): The module has four chains.

Chain 1 and Chain 2 connect to Ant. 3.

Chain 3 and Chain 4 connect to Ant. 4.

Chain 1, Chain 2, Chain 3 and Chain 4 can be used as transmitting/receiving antenna.

Chain 1, Chain 2, Chain 3 and Chain 4 could transmit/receive simultaneously.

For Bluetooth function: The module has one chain only.

Chain 1 connects to Ant. 5.

Chain 1 can be used as transmitting/receiving antenna.

Chain 1 could transmit/receive simultaneously.

For RX function: The module has one chain only.

Chain 1 connects to Ant. 6.

Only Chain 1 can be used as receiving antenna.

3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 38, 46, 151, 159.

For 80MHz bandwidth systems, use Channel 42, 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz U-NII-1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz	-	-
5725~5850 MHz U-NII-3	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz

3.5. Table for 80+80 MHz Mode

Type	Channel No.	Frequency
1	42+155	5210+5775 MHz

Note: The EUT supports Non-beamforming mode and beamforming mode.

3.6. 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	CTX		-	-	-
Max. Conducted Output Power	**For non-beamforming mode**				
	For B1 indoor use master and B4 indoor, outdoor use				
	11a/BPSK	U-NII-1& U-NII-3	6Mbps	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4
	For B1 indoor use slave without radar detection, B1 outdoor use master				
	11a/BPSK	U-NII-1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	U-NII-1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	U-NII-1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	U-NII-1	MCS0/Nss1	42	1+2+3+4
	For beamforming mode				
	For B1 indoor use master and B4 indoor, outdoor use master				
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4
	For B1 indoor use slave without radar detection, B1 outdoor use master				
	11ac VHT20	U-NII-1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	U-NII-1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	U-NII-1	MCS0/Nss1	42	1+2+3+4

Power Spectral Density	**For non-beamforming mode**				
	For B1 indoor use master and B4 indoor, outdoor use				
	11a/BPSK	U-NII-1& U-NII-3	6Mbps	36/40/48//149/ 157/165	1+2+3+4
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4
	For B1 indoor use slave without radar detection, B1 outdoor use master				
	11a/BPSK	U-NII-1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	U-NII-1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	U-NII-1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	U-NII-1	MCS0/Nss1	42	1+2+3+4
	For beamforming mode				
	For B1 indoor use master and B4 indoor, outdoor use master				
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4
	For B1 indoor use slave without radar detection, B1 outdoor use master				
	11ac VHT20	U-NII-1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	U-NII-1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	U-NII-1	MCS0/Nss1	42	1+2+3+4

26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	**For non-beamforming mode**				
	For B1 indoor use master and B4 indoor, outdoor use				
	11a/BPSK	U-NII-1& U-NII-3	6Mbps	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4
	For B1 indoor use slave without radar detection, B1 outdoor use master				
	11a/BPSK	U-NII-1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	U-NII-1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	U-NII-1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	U-NII-1	MCS0/Nss1	42	1+2+3+4
	For beamforming mode				
	For B1 indoor use master and B4 indoor, outdoor use master				
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4
	For B1 indoor use slave without radar detection, B1 outdoor use master				
	11ac VHT20	U-NII-1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	U-NII-1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	U-NII-1	MCS0/Nss1	42	1+2+3+4
6dB Spectrum Bandwidth Measurement	**For non-beamforming mode**				
	11a/BPSK	U-NII-3	6Mbps	149/157/165	1+2+3+4
	11ac VHT20	U-NII-3	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	U-NII-3	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	U-NII-3	MCS0/Nss1	155	1+2+3+4
	For beamforming mode				
	11ac VHT20	U-NII-3	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	U-NII-3	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	U-NII-3	MCS0/Nss1	155	1+2+3+4

Radiated Emission Below 1GHz	CTX		-	-	-
Radiated Emission Above 1GHz	**For non-beamforming mode**				
	11a/BPSK	U-NII-1& U-NII-3	6Mbps	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48//149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4
	For beamforming mode				
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4
Band Edge Emission	**For non-beamforming mode**				
	11a/BPSK	U-NII-1& U-NII-3	6Mbps	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4
	For beamforming mode				
	11ac VHT20	U-NII-1& U-NII-3	MCS0/Nss1	36/40/48/149/ 157/165	1+2+3+4
	11ac VHT40	U-NII-1& U-NII-3	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	U-NII-1& U-NII-3	MCS0/Nss1	42/155	1+2+3+4

Frequency Stability	20 MHz	U-NII-1& U-NII-3	-	40/157	1
	40 MHz	U-NII-1& U-NII-3	-	38/151	1
	80 MHz	U-NII-1& U-NII-3	-	42/155	1

Note 1: VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

Note 2: There are two modes of EUT, one is beamforming mode, and the other is non-beamforming mode for 802.11n/ac. All test results were recorded in the report.

Note 3: The EUT supports P to M and P to P operating mode. After evaluating, the P to M is the worst operating mode. And it was tested and recorded in the report.

802.11ac MCS0/Nss2 VHT80+80

Test Items	Mode		Data Rate	Type	Channel	Chain
Max. Conducted Output Power Power Spectral Density 26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement Radiated Emission Above 1GHz Band Edge Emission	11ac VHT80+80	U-NII-1& U-NII-3	MCS0/Nss2	For indoor use master		
				1	42	1+2
					155	3+4
				For indoor use slave without radar detection, outdoor use master B1		
				1	42	1+2
					155	3+4
6dB Spectrum Bandwidth Measurement	11ac VHT80+80	U-NII-3	MCS0/Nss2	For indoor use master		
				1	42	-
					155	3+4
				For indoor use slave without radar detection, outdoor use master B1		
				1	42	-
					155	3+4

Note: The EUT supports beamforming mode supports type 1 for master and slave without radar detection. The test mode as above, the type of slave without radar detection and outdoor master has been covered by indoor master.

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. CTX - 2.4GHz

Mode 2. CTX - 5GHz

Mode 3. CTX - Bluetooth

Mode 1 generated the worst test result, so it was recorded in this report.

For Radiated Emission test (Below 1GHz):

Mode 1. CTX - 5GHz at Z-axis

Mode 2. CTX - 5GHz at Y-axis

Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 ~ 4 will follow this same test mode.

Mode 3. CTX - 2.4GHz at Y-axis

Mode 4. CTX - Bluetooth at Y-axis

Mode 2 generated the worst test result, so it was recorded in this report.

For Radiated Emission test (Above 1GHz):

The EUT can be placed in Y-axis and Z-axis. After evaluating, The worst case was found at Z-axis, so it's recorded in this report.

Mode 1. CTX at Z-axis

For Co-location MPE Test:

The EUT could be applied with 2.4GHz WLAN function, 5GHz WLAN function and Bluetooth function; therefore Co-location Maximum Permissible Exposure (Please refer to FA661623-02) tests are added for simultaneously transmit between 2.4GHz WLAN function, 5GHz WLAN function and Bluetooth function.

3.7. 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 Designation No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D	-
CO02-CB	Conduction	Hsin Chu	TW0006	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.8. Table for Multiple Listing

The model names as below

Brand Name	Model Name	2.4GHz/5GHz WLAN function	2.4GHz/5GHz RX function	Bluetooth function
UBIQUITI	UAP-AC-SHD	O	O	O
	UAP-AC-HD	O	X	X

Note: The Model UAP-AC-SHD was selected to test and recorded in the report.

3.9. Table for Supporting Units

For Test Site No: CO02-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC

For Test Site No: 03CH01-CB

<For below 1GHz test and above 1GHz test non-beamforming mode>

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

<For above 1GHz test beamforming mode>

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
RX Device	UBIQUITI	UAP-AC-HD	SWX-UAPACHD

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

3.10. 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

For indoor use master B1 and indoor, outdoor use B4

Test Software Version	QCA v3.0.197.0					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	16.5	16.5	16.5	21	21	21
802.11ac MCS0/Nss1 VHT20	16.5	16.5	16.5	21	21	21
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	15.5		18.5		20	21
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	11.5				16.5	

For indoor use slave without radar detection B1

Test Software Version	QCA v3.0.197.0		
Mode	Test Frequency (MHz)		
	NCB: 20MHz		
	5180 MHz	5200 MHz	5240 MHz
802.11a	10.5	10.5	10.5
802.11ac MCS0/Nss1 VHT20	10.5	10.5	10.5
Mode	NCB: 40MHz		
802.11ac MCS0/Nss1 VHT40	5190 MHz	5230 MHz	
	13.5	13.5	
Mode	NCB: 80MHz		
802.11ac MCS0/Nss1 VHT80	5210 MHz		
	11.5		

For outdoor use master B1

Test Software Version	QCA v3.0.197.0		
Mode	Test Frequency (MHz)		
	NCB: 20MHz		
	5180 MHz	5200 MHz	5240 MHz
802.11a	6.5	6.5	6.5
802.11ac MCS0/Nss1 VHT20	6.5	6.5	6.5
Mode	NCB: 40MHz		
802.11ac MCS0/Nss1 VHT40	5190 MHz	5230 MHz	
	6.5	6.5	
Mode	NCB: 80MHz		
802.11ac MCS0/Nss1 VHT80	5210 MHz		
	6.5		

802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection.

Test Software Version	QCA v3.0.197.0
Mode	NCB: 80MHz+80MHz
802.11ac MCS0/Nss2 VHT80+80	Type 1
	5210+5775 MHz
	13.5

For outdoor use master B1

Test Software Version	QCA v3.0.197.0
Mode	NCB: 80MHz+80MHz
802.11ac MCS0/Nss2 VHT80+80	Type 1
	5210+5775 MHz
	9.5

For beamforming mode

For indoor use master B1 and indoor, outdoor use B4

Test Software Version	QCA v3.0.197.0					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11ac MCS0/Nss1 VHT20	22	22	22	22.5	22.5	22.5
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	22		22		22.5	22.5
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	21.5				22	

For indoor use slave without radar detection B1

Test Software Version	QCA v3.0.197.0		
Mode	Test Frequency (MHz)		
	NCB: 20MHz		
	5180 MHz	5200 MHz	5240 MHz
802.11ac MCS0/Nss1 VHT20	16.5	16.5	16.5
Mode	NCB: 40MHz		
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz
	16.5		16.5
Mode	NCB: 80MHz		
802.11ac MCS0/Nss1 VHT80	5210 MHz		
	16.5		

For outdoor use master B1

Test Software Version	QCA v3.0.197.0		
Mode	Test Frequency (MHz)		
	NCB: 20MHz		
	5180 MHz	5200 MHz	5240 MHz
802.11ac MCS0/Nss1 VHT20	7	7	7
Mode	NCB: 40MHz		
802.11ac MCS0/Nss1 VHT40	5190 MHz	5230 MHz	
	7.5	7.5	
Mode	NCB: 80MHz		
802.11ac MCS0/Nss1 VHT80	5210 MHz		
	7.5		

802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection

Test Software Version	QCA v3.0.197.0
Mode	NCB: 80MHz+80MHz
802.11ac MCS0/Nss2 VHT80+80	Type 1
	5210+5775 MHz
	21

For outdoor use master B1

Test Software Version	QCA
Mode	NCB: 80MHz+80MHz
802.11ac MCS0/Nss2 VHT80+80	Type 1
	5210+5775 MHz
	14

3.11. 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 Telnet.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by RX Deviec and transmit duty cycle no less 98%

3.12. Duty Cycle

For non-beamforming mode:

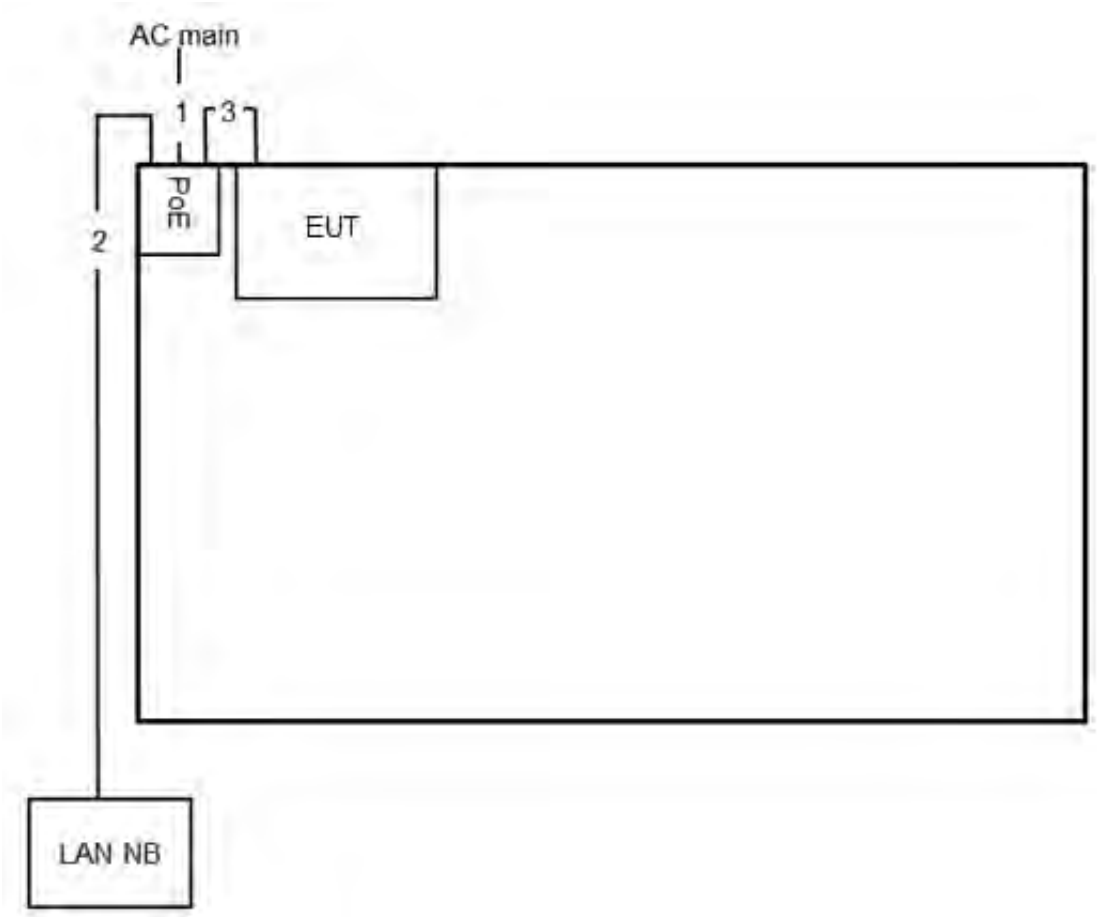
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Min. VBW (kHz)
802.11a	2.020	2.140	94.39	0.25	0.50
802.11ac MCS0/Nss1 VHT20	5.000	5.100	98.04	0.09	0.01
802.11ac MCS0/Nss1 VHT40	2.320	2.540	91.34	0.39	0.43
802.11ac MCS0/Nss1 VHT80	1.136	1.224	92.81	0.32	0.88
802.11ac MCS0/Nss2 VHT80+80	2.210	2.310	95.67	0.19	0.45

For beamforming mode:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Min. VBW (kHz)
802.11ac MCS0/Nss1 VHT20	1.751	1.925	90.96	0.41	0.57
802.11ac MCS0/Nss1 VHT40	1.664	1.854	89.75	0.47	0.60
802.11ac MCS0/Nss1 VHT80	1.915	2.105	90.97	0.41	0.52
802.11ac MCS0/Nss2 VHT80+80	1.764	1.944	90.74	0.42	0.57

3.13. Test Configurations

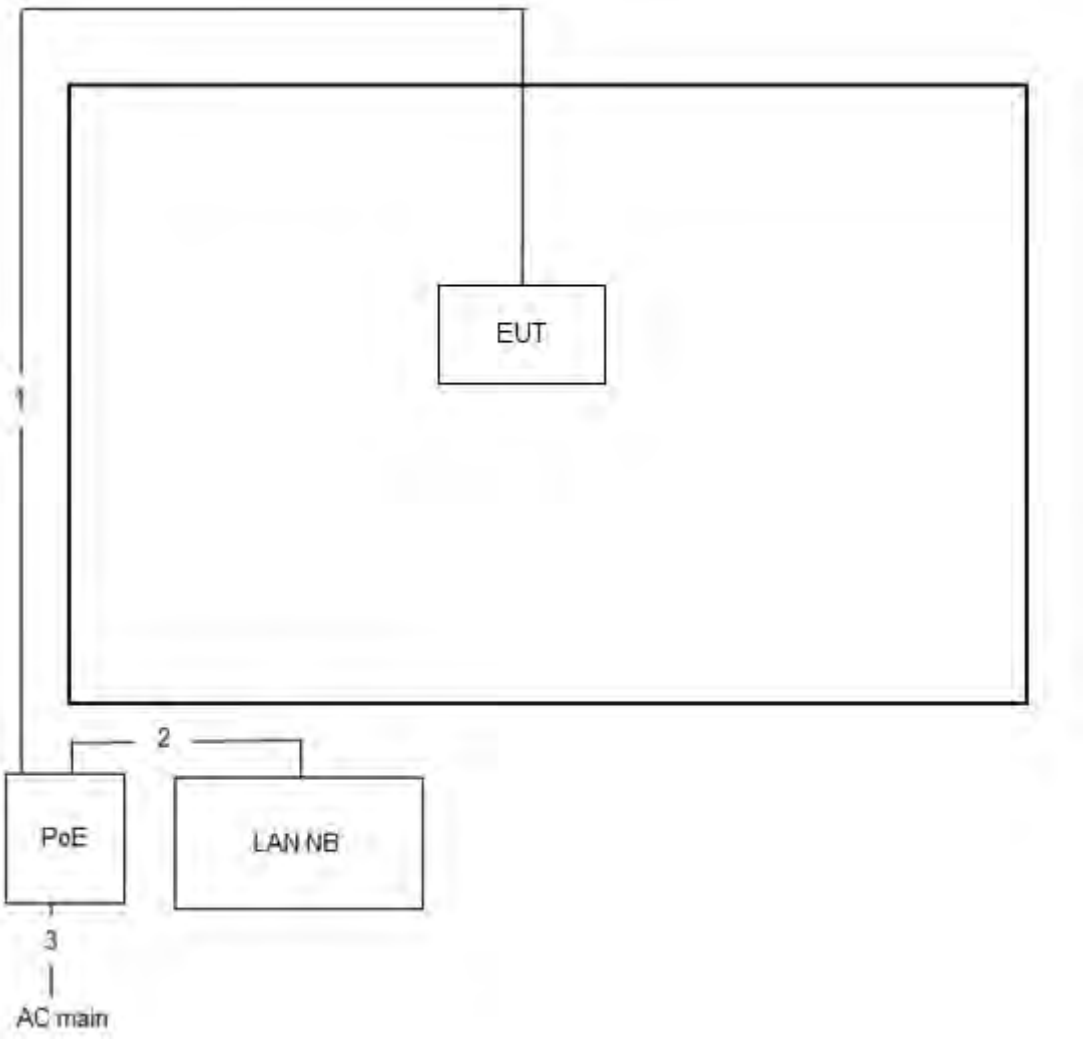
3.13.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	0.6m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	1m

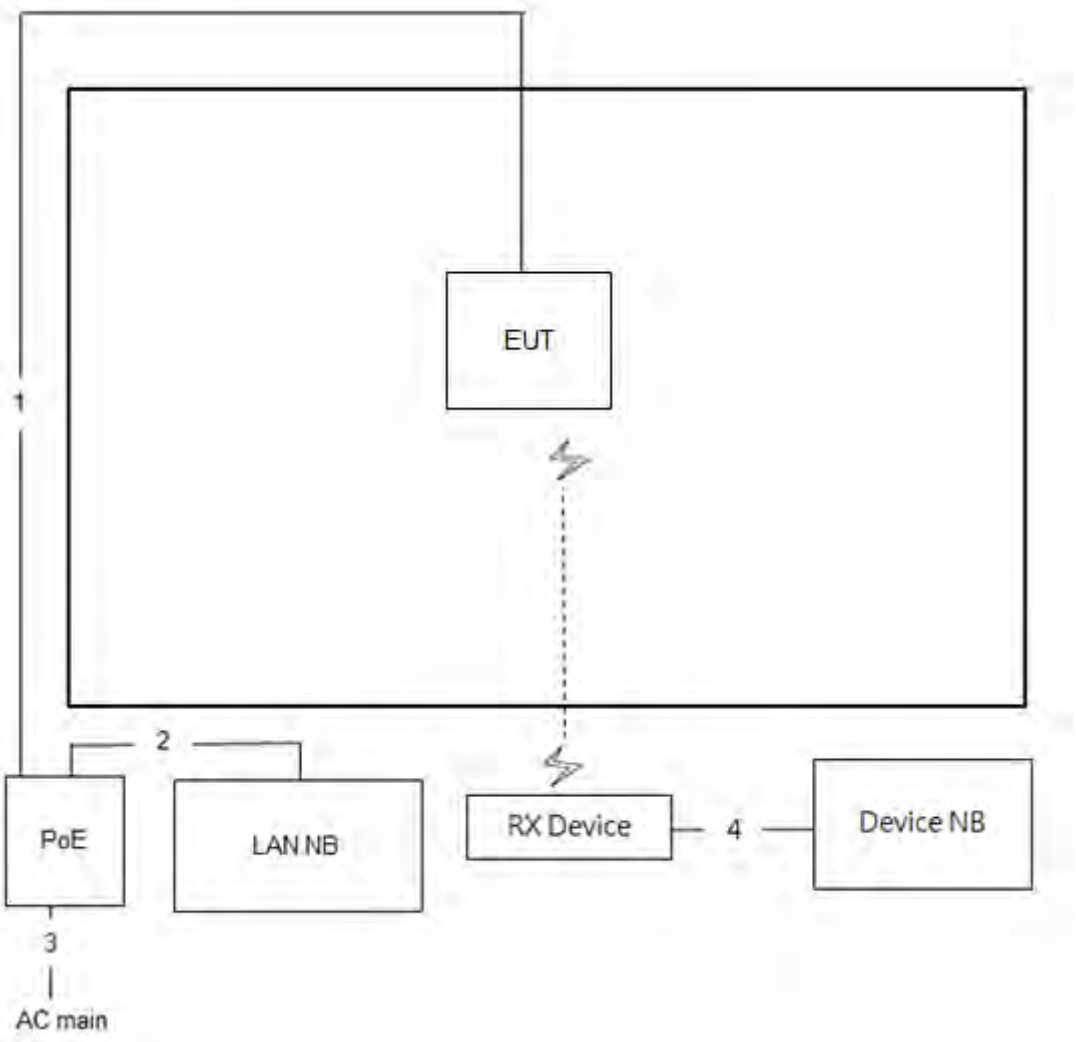
3.13.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz ~1GHz and above 1GHz test non-beamforming mode



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	1.5m
3	Power cable	No	0.6m

Test Configuration: above 1GHz beamforming mode



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	1.5m
3	Power cable	No	0.6m
4	RJ-45 cable	No	1.5m

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

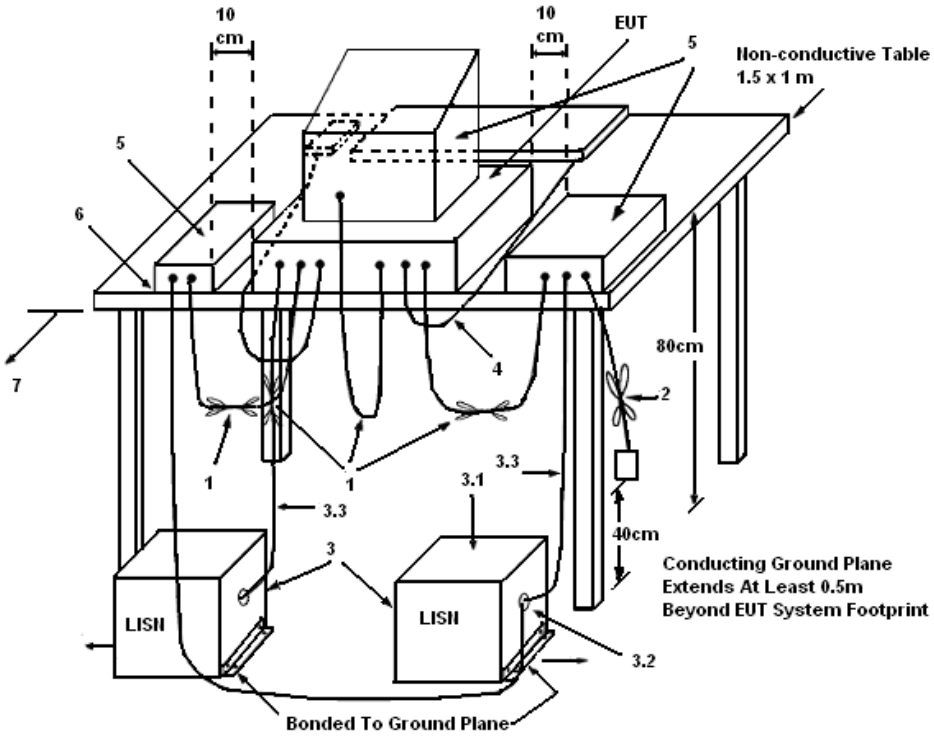
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

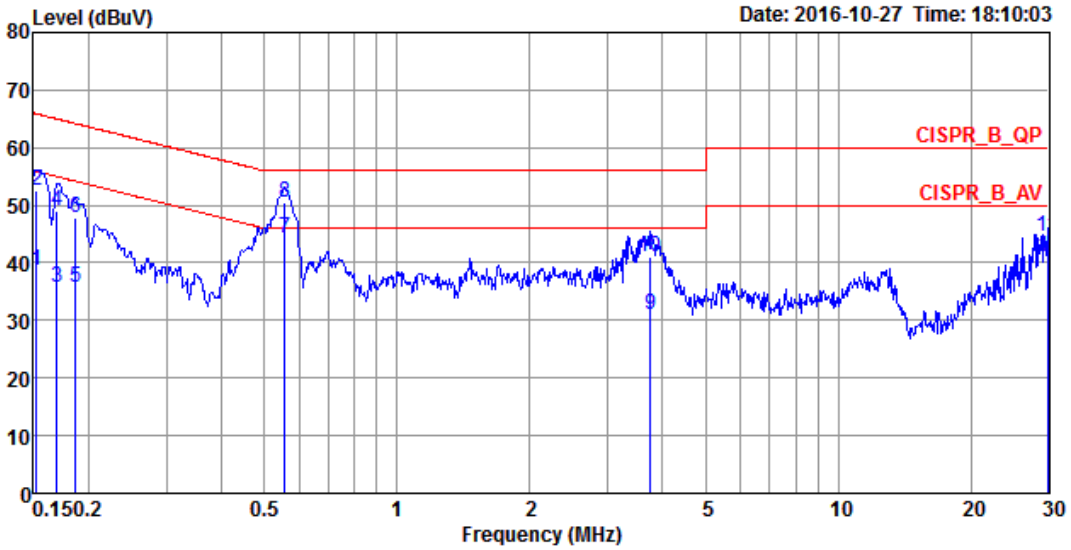
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

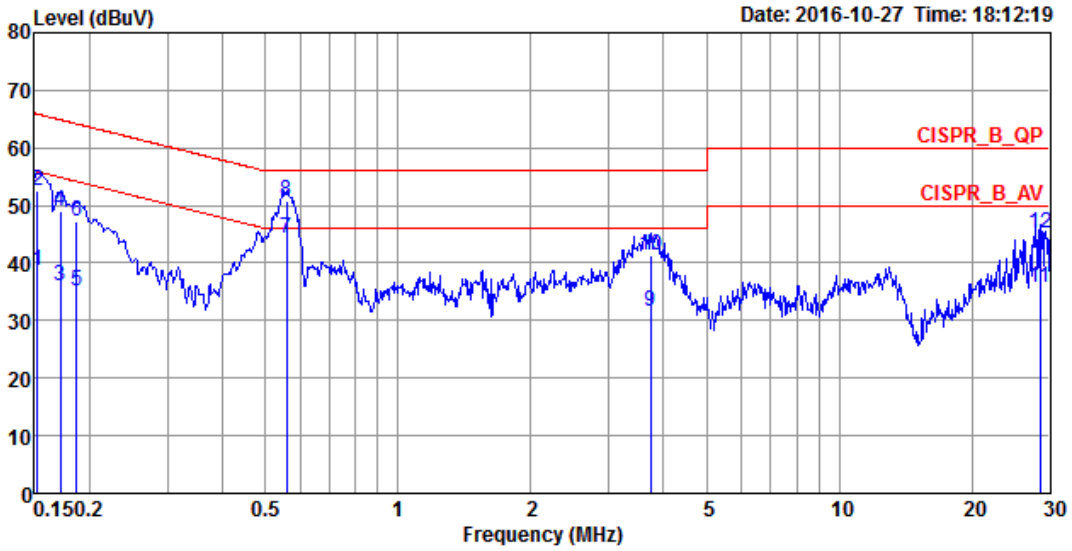
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	22°C	Humidity	52%
Test Engineer	Ryo Fan/Edison Lin	Phase	Line
Configuration	CTX	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1524	38.78	-17.09	55.87	28.66	9.96	0.16	Average	LINE
2	0.1524	52.53	-13.34	65.87	42.41	9.96	0.16	QP	LINE
3	0.1694	35.72	-19.27	54.99	25.60	9.96	0.16	Average	LINE
4	0.1694	48.87	-16.12	64.99	38.75	9.96	0.16	QP	LINE
5	0.1864	35.63	-18.57	54.20	25.50	9.95	0.18	Average	LINE
6	0.1864	47.71	-16.49	64.20	37.58	9.95	0.18	QP	LINE
7	0.5552	44.20	-1.80	46.00	33.98	10.02	0.20	Average	LINE
8	0.5552	50.62	-5.38	56.00	40.40	10.02	0.20	QP	LINE
9	3.7594	30.93	-15.07	46.00	20.50	10.11	0.32	Average	LINE
10	3.7594	41.05	-14.95	56.00	30.62	10.11	0.32	QP	LINE
11	29.8956	40.92	-9.08	50.00	29.97	10.35	0.60	Average	LINE
12	29.8956	44.47	-15.53	60.00	33.52	10.35	0.60	QP	LINE

Temperature	22°C	Humidity	52%
Test Engineer	Ryo Fan/Edison Lin	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1524	38.56	-17.31	55.87	28.44	9.96	0.16	Average	NEUTRAL
2	0.1524	52.64	-13.23	65.87	42.52	9.96	0.16	QP	NEUTRAL
3	0.1712	36.10	-18.80	54.90	25.98	9.96	0.16	Average	NEUTRAL
4	0.1712	49.01	-15.89	64.90	38.89	9.96	0.16	QP	NEUTRAL
5	0.1864	35.27	-18.93	54.20	25.13	9.96	0.18	Average	NEUTRAL
6	0.1864	47.19	-17.01	64.20	37.05	9.96	0.18	QP	NEUTRAL
7	0.5581	44.23	-1.77	46.00	34.06	9.97	0.20	Average	NEUTRAL
8	0.5581	50.78	-5.22	56.00	40.61	9.97	0.20	QP	NEUTRAL
9	3.7395	31.64	-14.36	46.00	21.30	10.02	0.32	Average	NEUTRAL
10	3.7395	41.40	-14.60	56.00	31.06	10.02	0.32	QP	NEUTRAL
11	28.5122	35.76	-14.24	50.00	24.85	10.34	0.57	Average	NEUTRAL
12	28.5122	45.14	-14.86	60.00	34.23	10.34	0.57	QP	NEUTRAL

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	22°C	Humidity	54%
Test Engineer	Gary Chu		

For non-beamforming mode

For indoor use master B1 and indoor, outdoor use B4

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	17.22	15.72
	5200 MHz	17.22	15.11
	5240 MHz	17.04	14.94
	5745 MHz	26.78	15.63
	5785 MHz	27.22	22.06
	5825 MHz	35.39	24.14
802.11ac MCS0/Nss1 VHT20	5180 MHz	18.52	16.50
	5200 MHz	18.44	16.15
	5240 MHz	18.35	15.80
	5745 MHz	33.65	16.76
	5785 MHz	33.13	21.62
	5825 MHz	34.70	25.88
802.11ac MCS0/Nss1 VHT40	5190 MHz	39.28	35.75
	5230 MHz	38.84	35.89
	5755 MHz	45.36	36.90
	5795 MHz	83.48	44.86
802.11ac MCS0/Nss1 VHT80	5210 MHz	79.13	75.54
	5775 MHz	79.42	75.83

For indoor use slave without radar detection B1

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	17.30	15.46
	5200 MHz	17.39	15.37
	5240 MHz	17.13	15.20
802.11ac MCS0/Nss1 VHT20	5180 MHz	18.44	16.41
	5200 MHz	18.44	16.24
	5240 MHz	18.35	15.89
802.11ac MCS0/Nss1 VHT40	5190 MHz	38.70	35.60
	5230 MHz	39.13	35.89
802.11ac MCS0/Nss1 VHT80	5210 MHz	79.13	75.54

For outdoor use master B1

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	17.48	15.54
	5200 MHz	17.39	15.37
	5240 MHz	17.04	15.02
802.11ac MCS0/Nss1 VHT20	5180 MHz	18.26	16.32
	5200 MHz	18.43	16.15
	5240 MHz	18.26	15.63
802.11ac MCS0/Nss1 VHT40	5190 MHz	38.99	35.75
	5230 MHz	39.13	36.03
802.11ac MCS0/Nss1 VHT80	5210 MHz	79.42	75.54

802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection

Type	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB Total BW (MHz)
1	5210 MHz	80.00	76.12	158.84
	5775 MHz	78.84	74.96	

For outdoor use master B1

Type	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB Total BW (MHz)
1	5210 MHz	80.00	76.41	158.26
	5775 MHz	78.26	71.20	

For beamforming mode

For indoor use master B1 and indoor, outdoor use B4

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5180 MHz	22.78	18.06
	5200 MHz	23.13	17.97
	5240 MHz	21.74	17.89
	5745 MHz	21.39	17.97
	5785 MHz	21.74	17.97
	5825 MHz	25.30	18.15
802.11ac MCS0/Nss1 VHT40	5190 MHz	45.94	37.05
	5230 MHz	45.51	36.76
	5755 MHz	47.25	37.05
	5795 MHz	47.25	37.05
802.11ac MCS0/Nss1 VHT80	5210 MHz	100.87	76.12
	5775 MHz	99.13	76.41

For indoor use slave without radar detection B1

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.83	17.89
	5200 MHz	21.22	17.97
	5240 MHz	21.65	17.89
802.11ac MCS0/Nss1 VHT40	5190 MHz	44.78	36.90
	5230 MHz	45.07	36.90
802.11ac MCS0/Nss1 VHT80	5210 MHz	85.80	76.41

For outdoor use master B1

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5180 MHz	22.26	17.97
	5200 MHz	21.57	17.89
	5240 MHz	21.74	17.89
802.11ac MCS0/Nss1 VHT40	5190 MHz	44.93	36.90
	5230 MHz	44.93	36.76
802.11ac MCS0/Nss1 VHT80	5210 MHz	84.93	76.41

802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection

Type	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB Total BW (MHz)
1	5210 MHz	80.00	76.12	160.00
	5775 MHz	80.00	76.12	

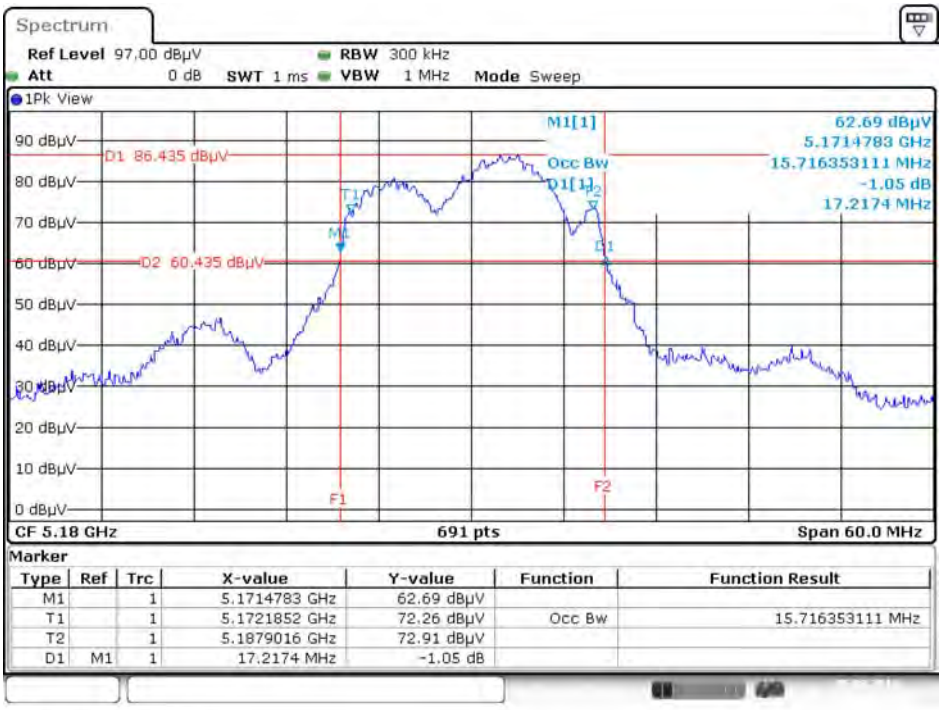
For outdoor use master B1

Type	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB Total BW (MHz)
1	5210 MHz	78.84	76.12	158.84
	5775 MHz	80.00	76.12	

For non-beamforming mode

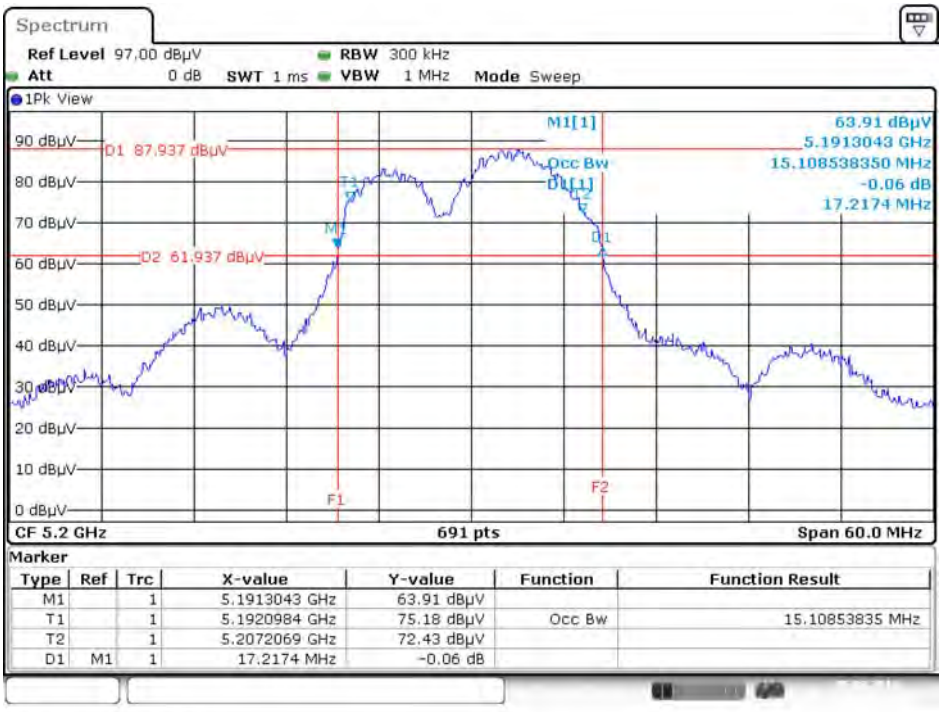
For indoor use master B1 and indoor, outdoor use B4

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



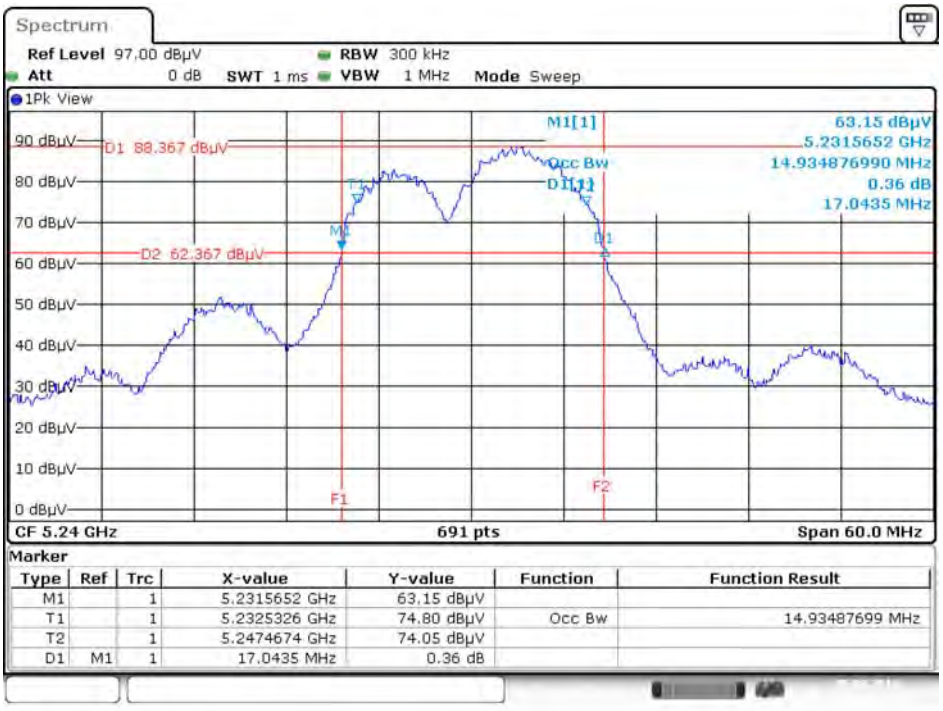
Date: 5.AUG.2016 11:20:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



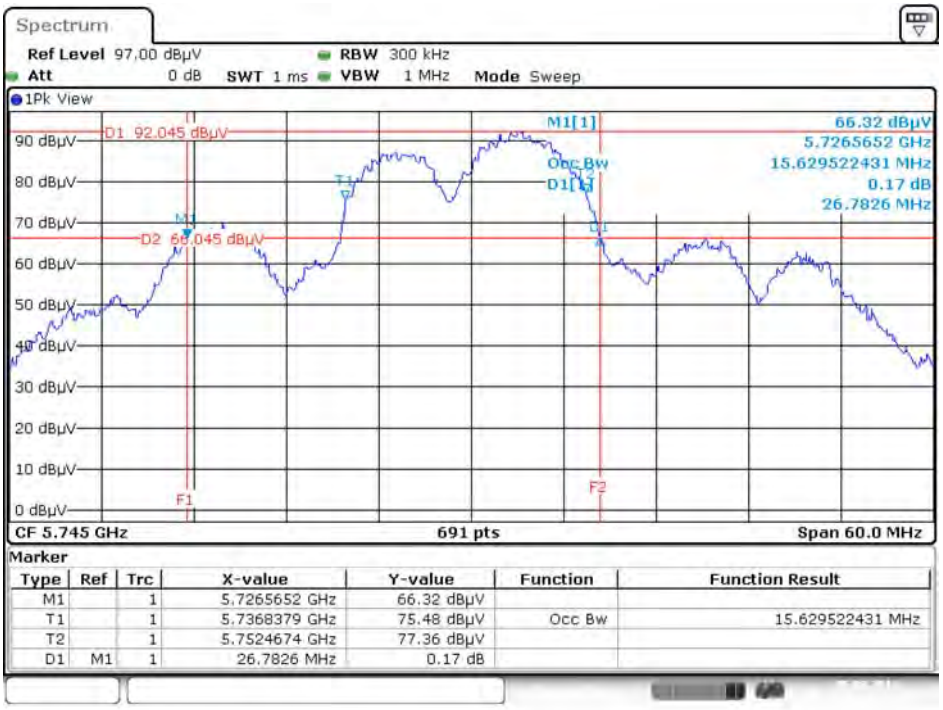
Date: 5.AUG.2016 11:35:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



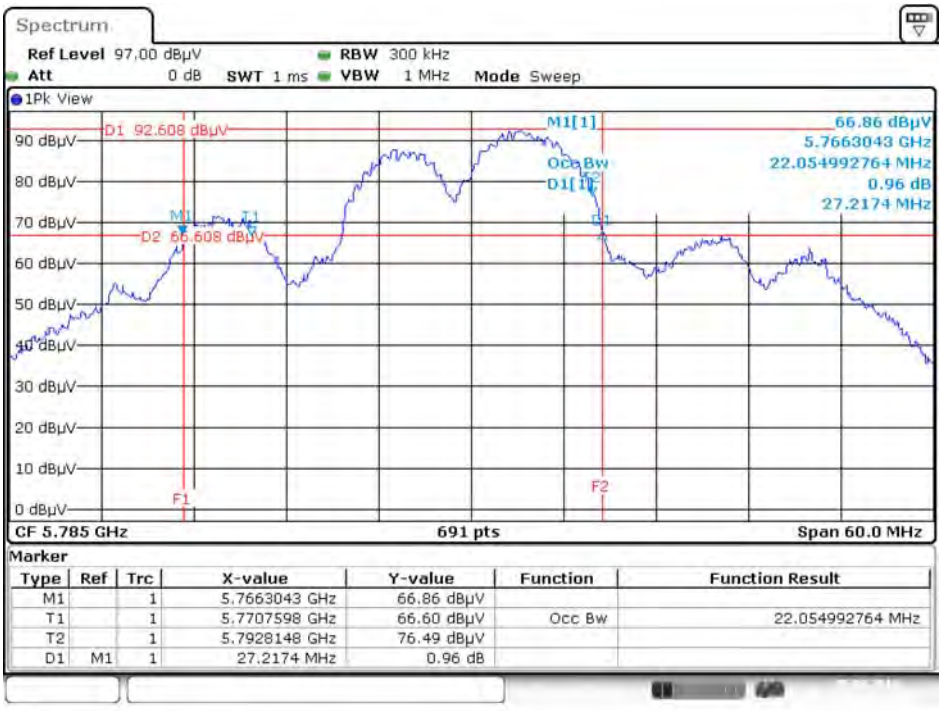
Date: 5.AUG.2016 11:44:35

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



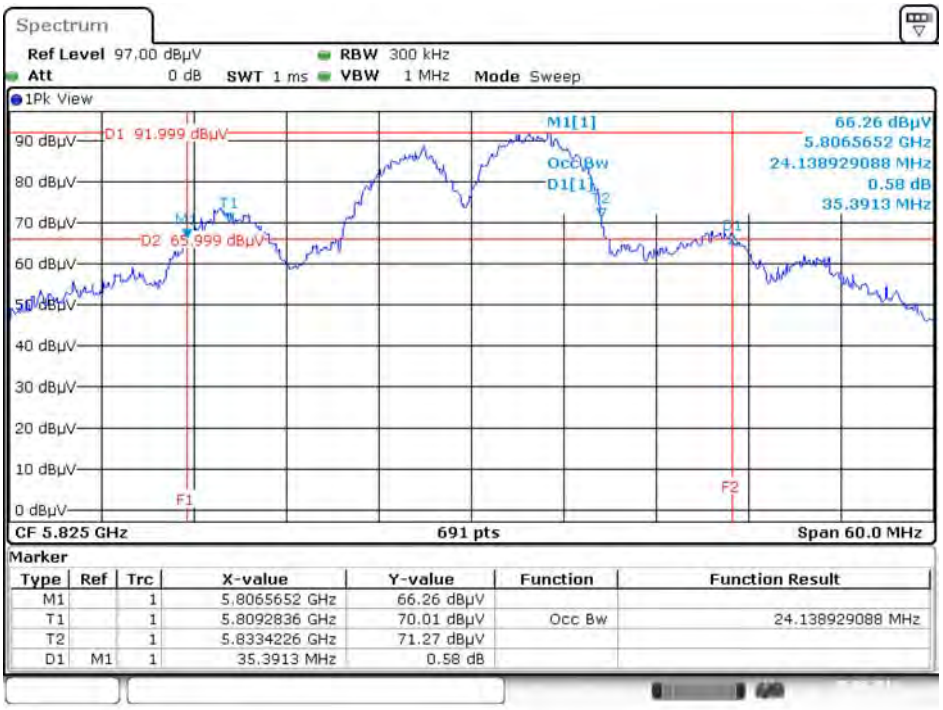
Date: 5.AUG.2016 11:47:52

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



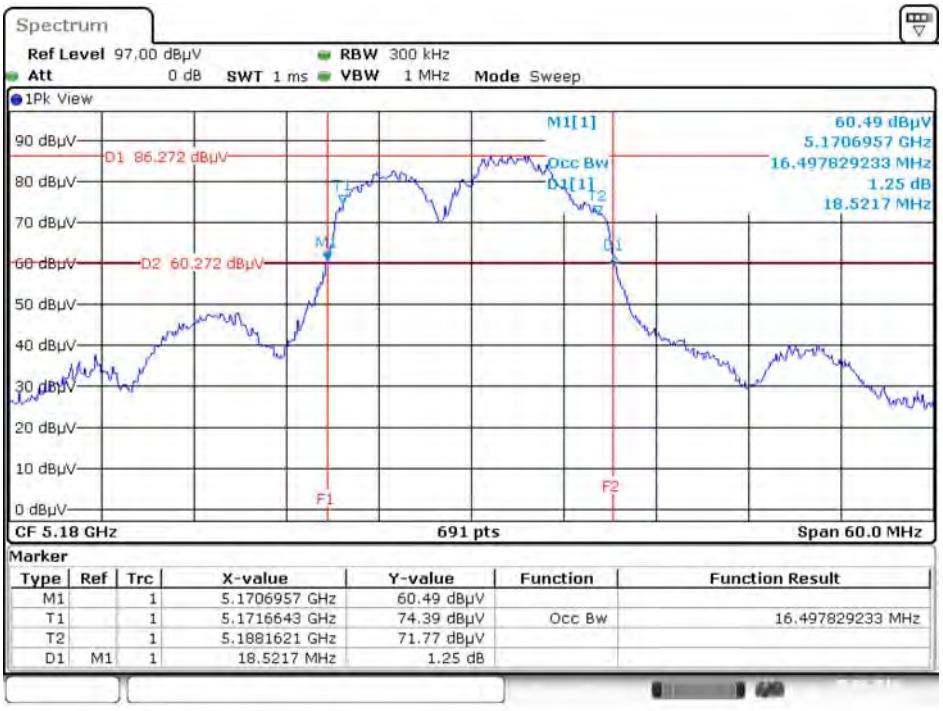
Date: 5.AUG.2016 11:48:24

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



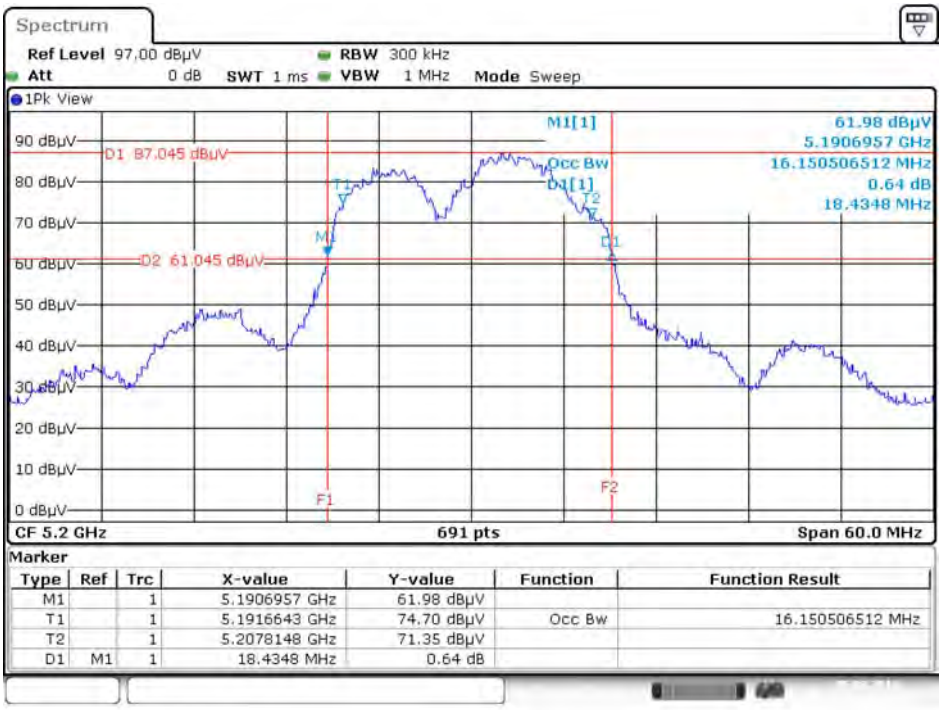
Date: 5.AUG.2016 11:48:44

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



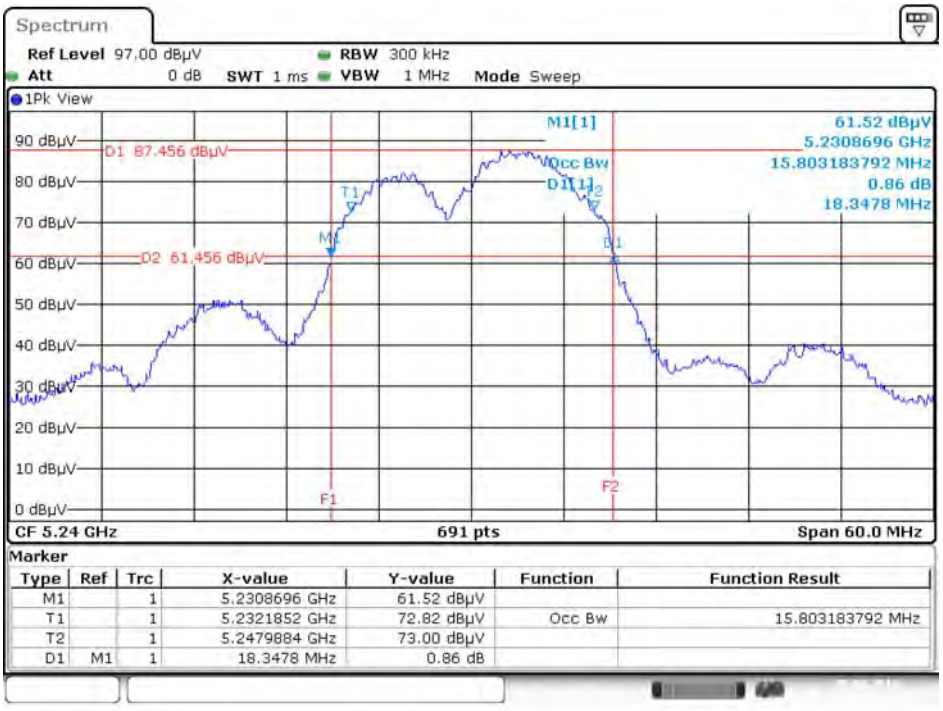
Date: 5.AUG.2016 11:50:12

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



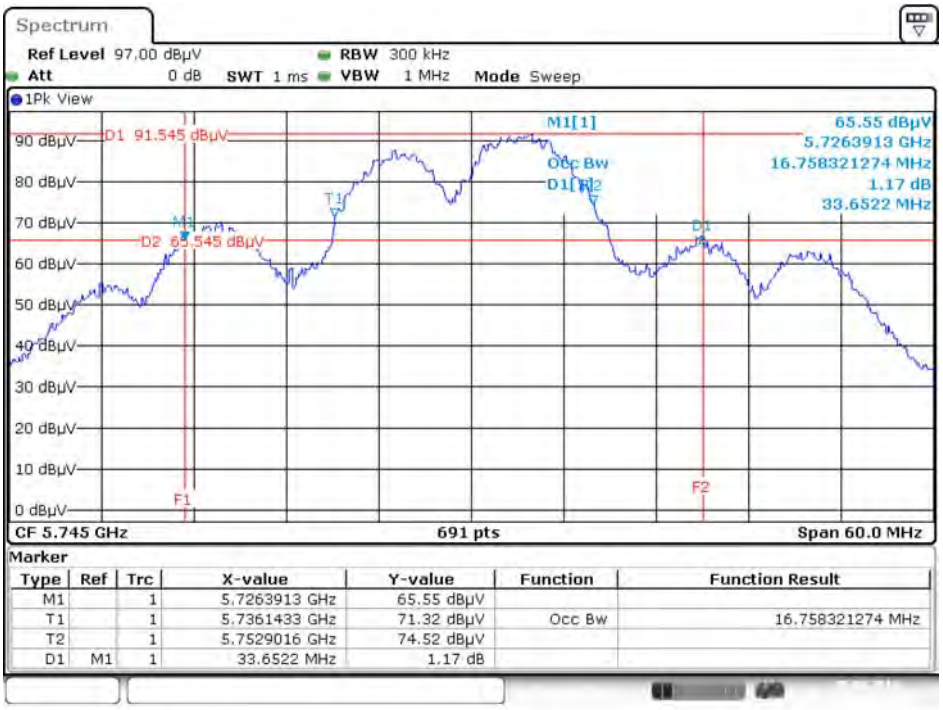
Date: 5.AUG.2016 11:50:45

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



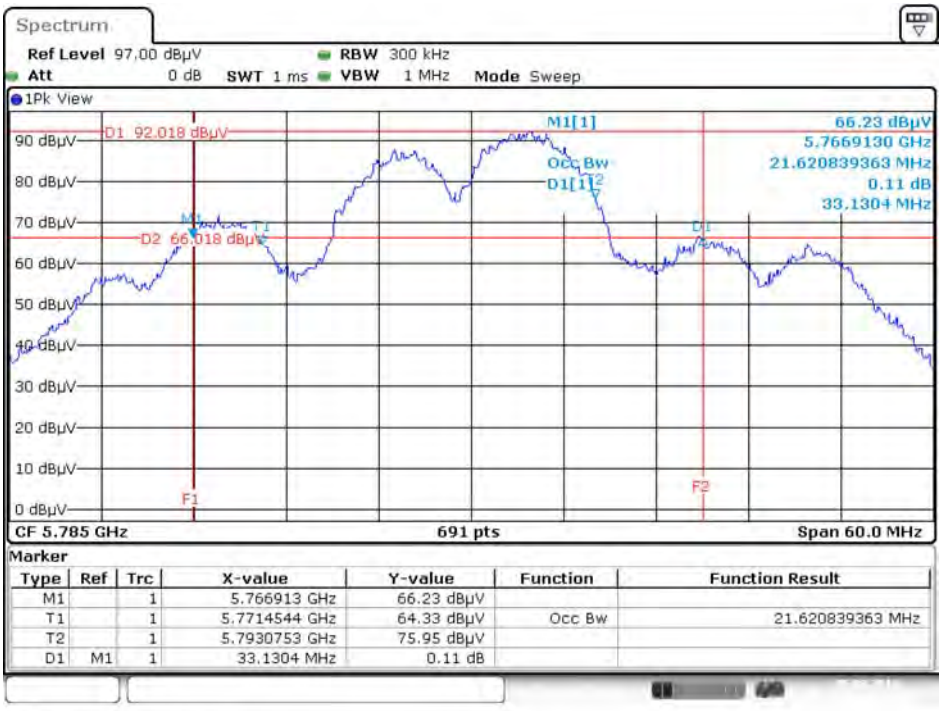
Date: 5.AUG.2016 11:51:45

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



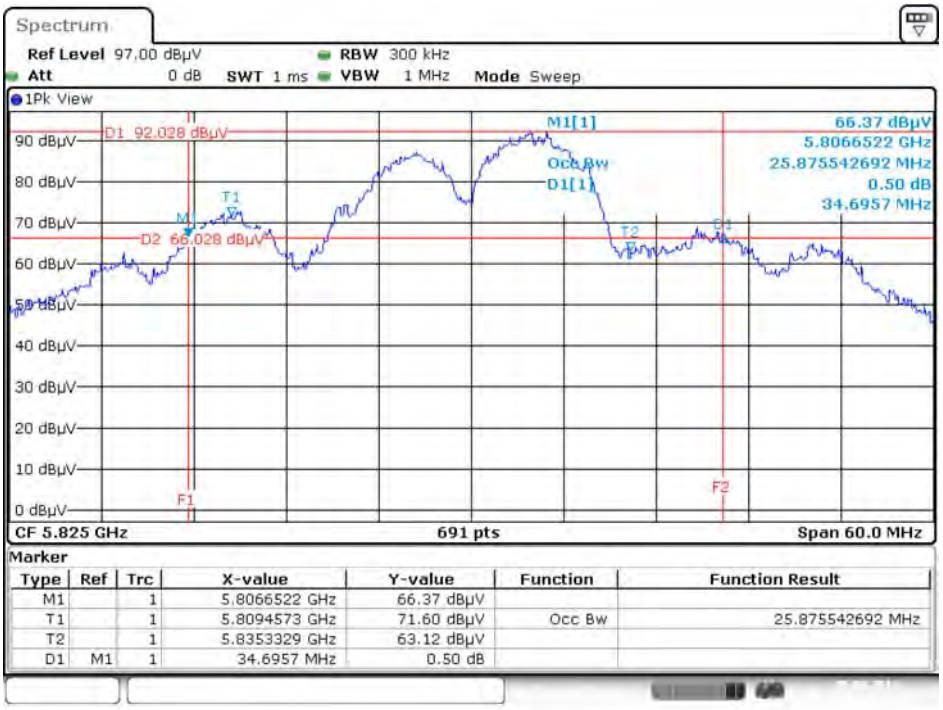
Date: 5.AUG.2016 11:56:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



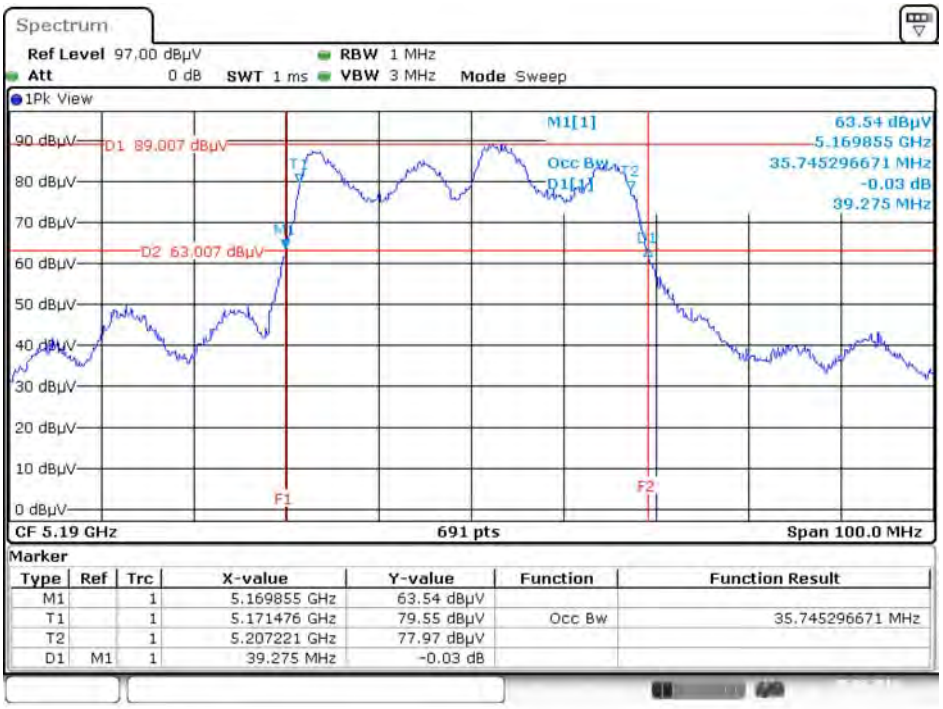
Date: 5.AUG.2016 11:56:29

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



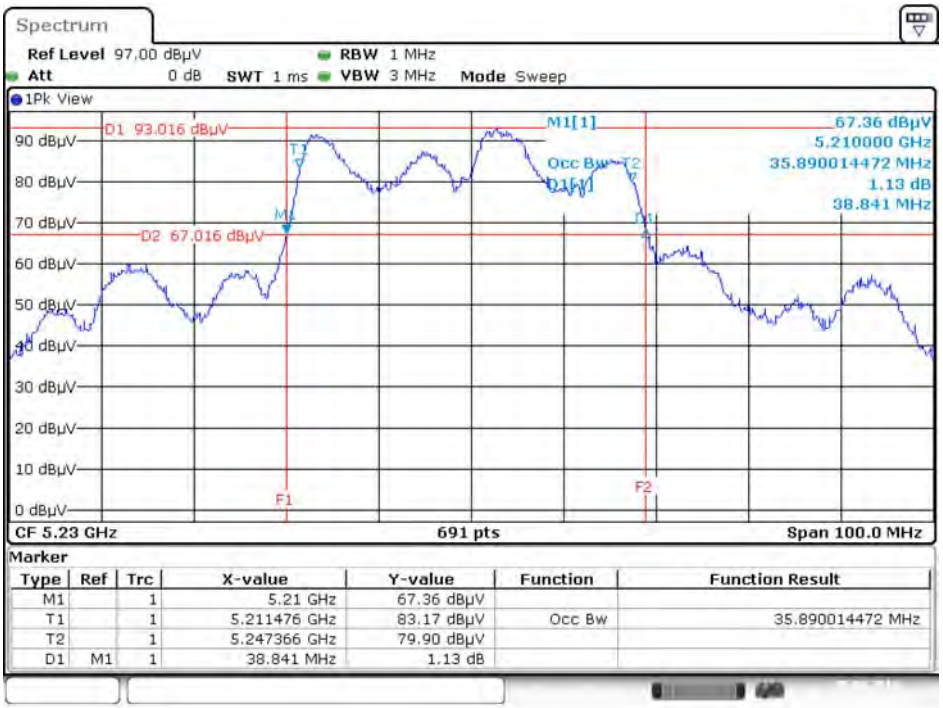
Date: 5.AUG.2016 11:56:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



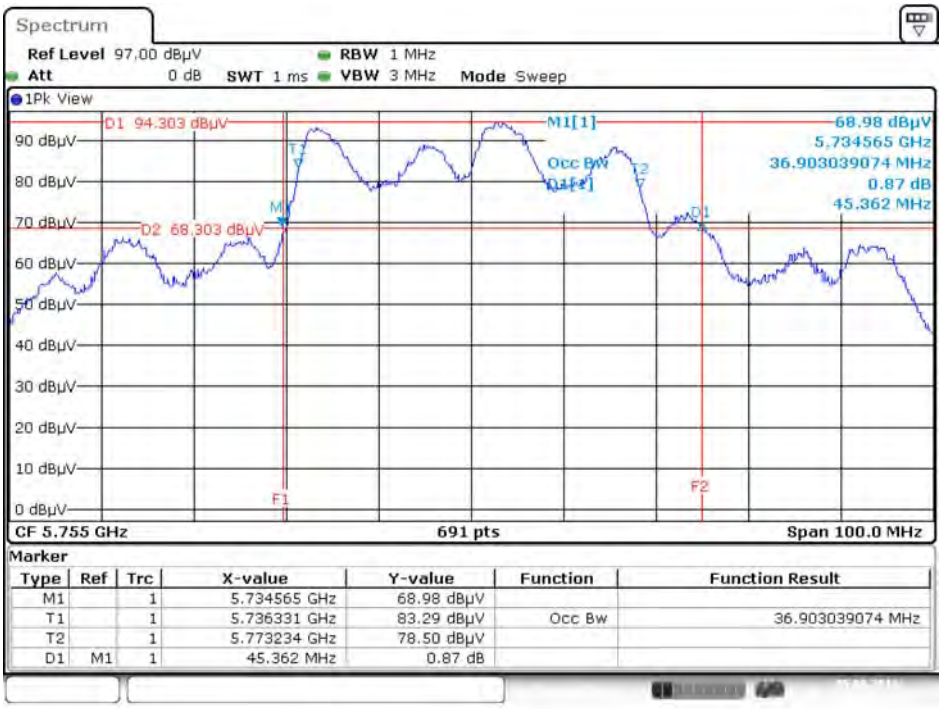
Date: 5.AUG.2016 11:57:42

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



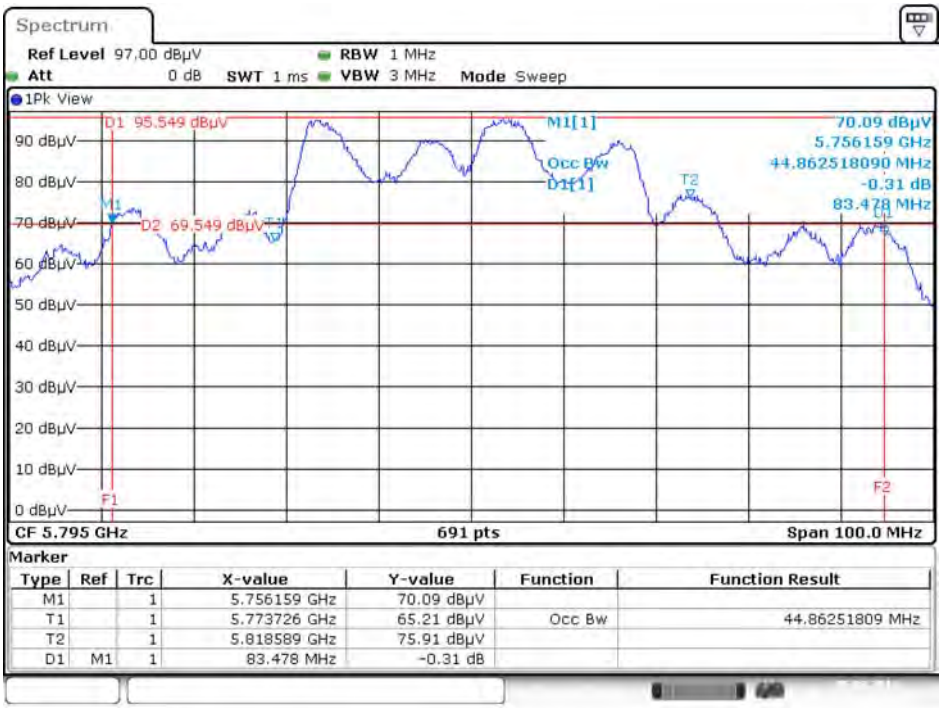
Date: 5.AUG.2016 11:58:02

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5755 MHz



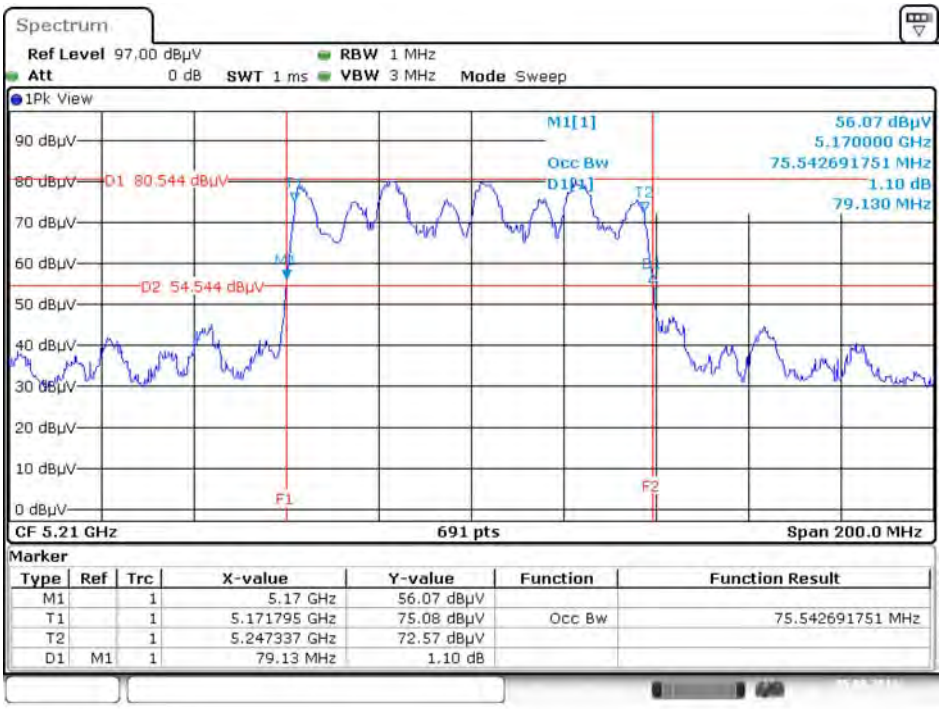
Date: 5.AUG.2016 12:02:06

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



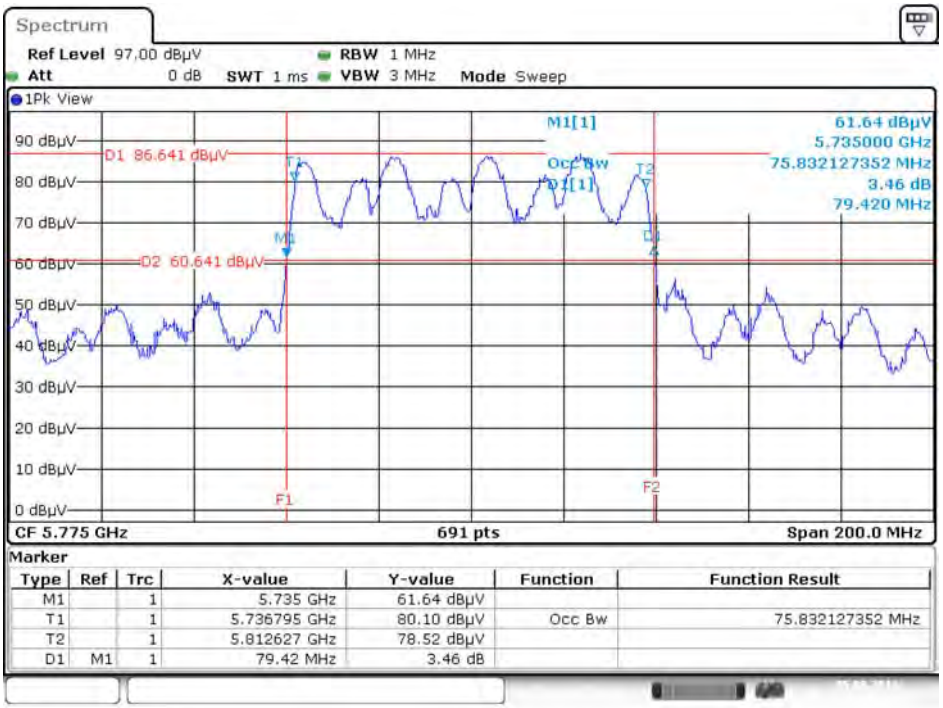
Date: 5.AUG.2016 12:03:01

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



Date: 5.AUG.2016 12:03:56

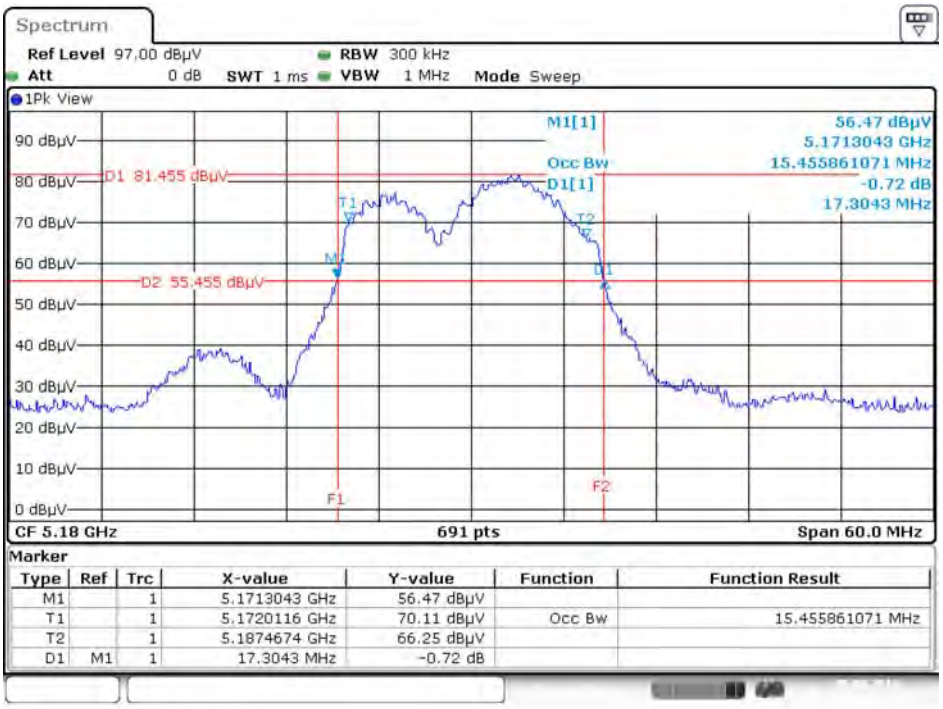
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



Date: 5.AUG.2016 12:05:57

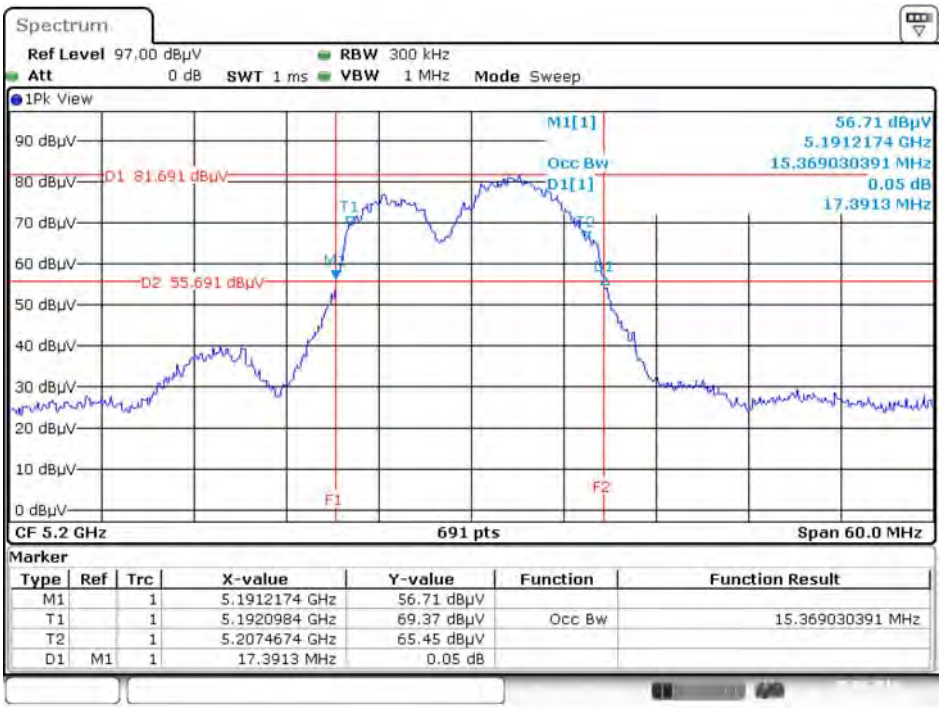
For indoor use slave without radar detection B1

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



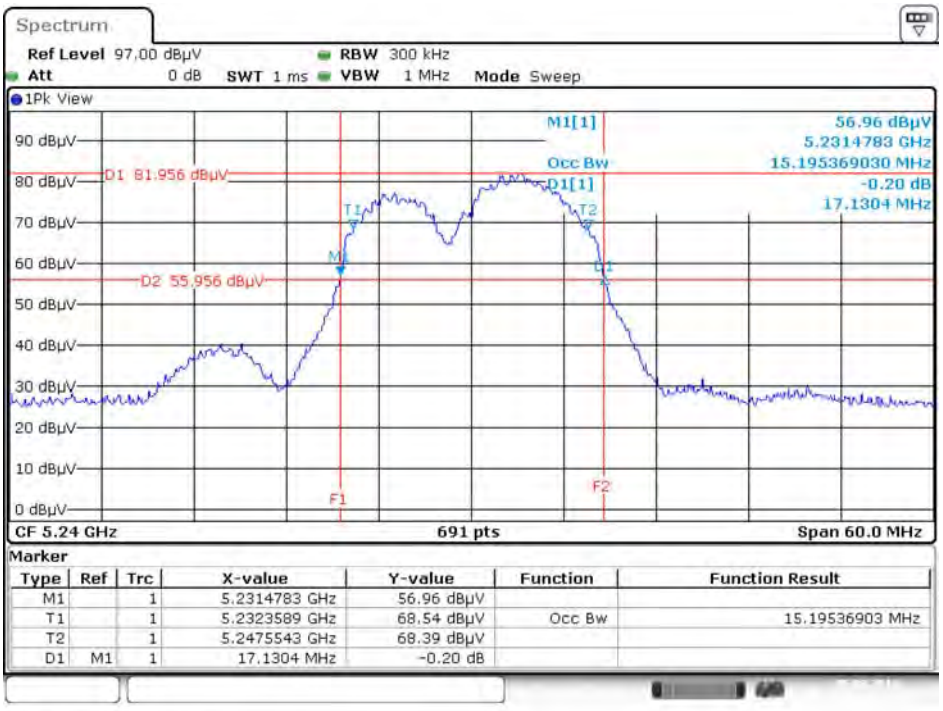
Date: 5.AUG.2016 16:32:38

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



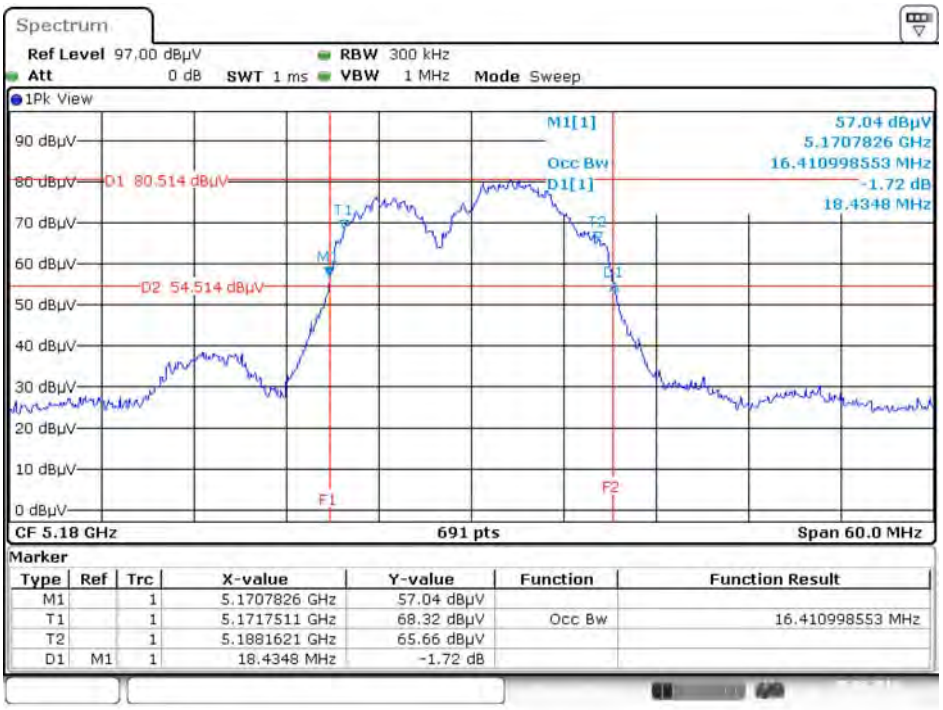
Date: 5.AUG.2016 16:33:07

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



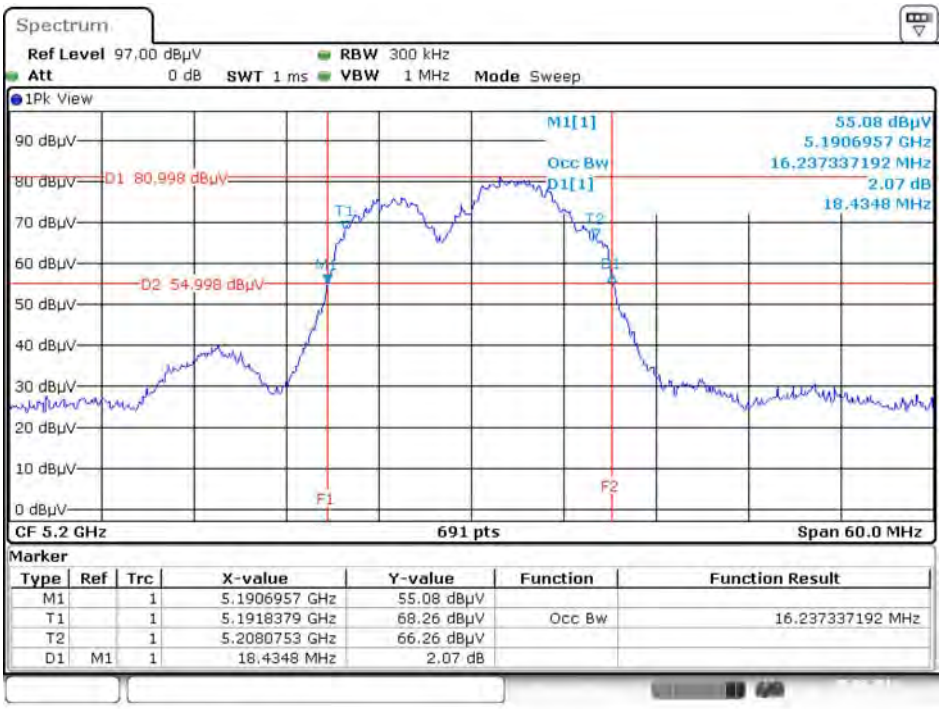
Date: 5.AUG.2016 16:34:35

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



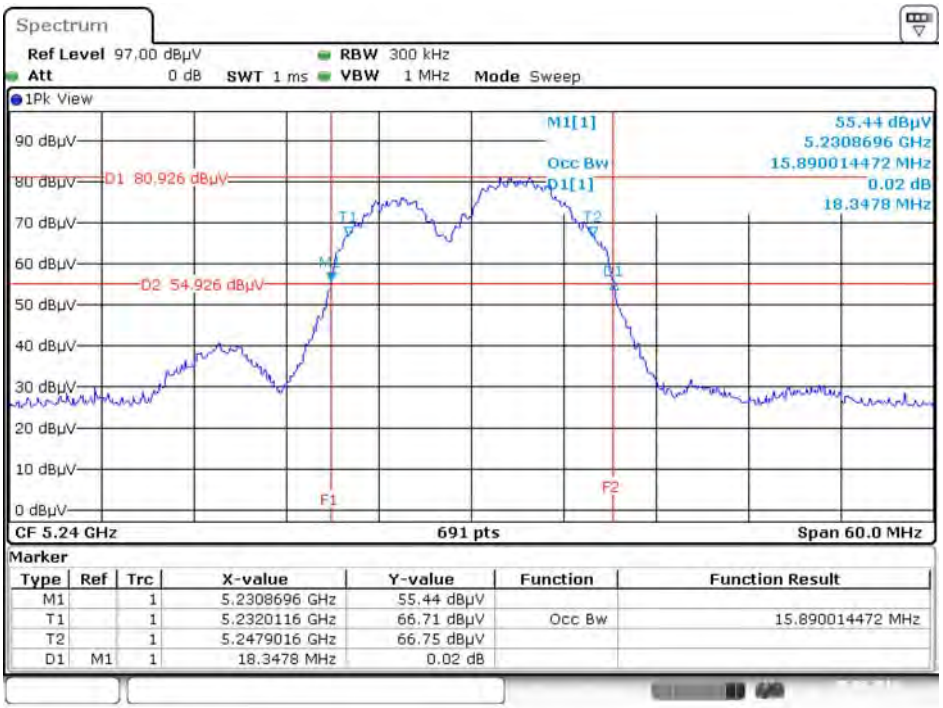
Date: 5.AUG.2016 16:35:39

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



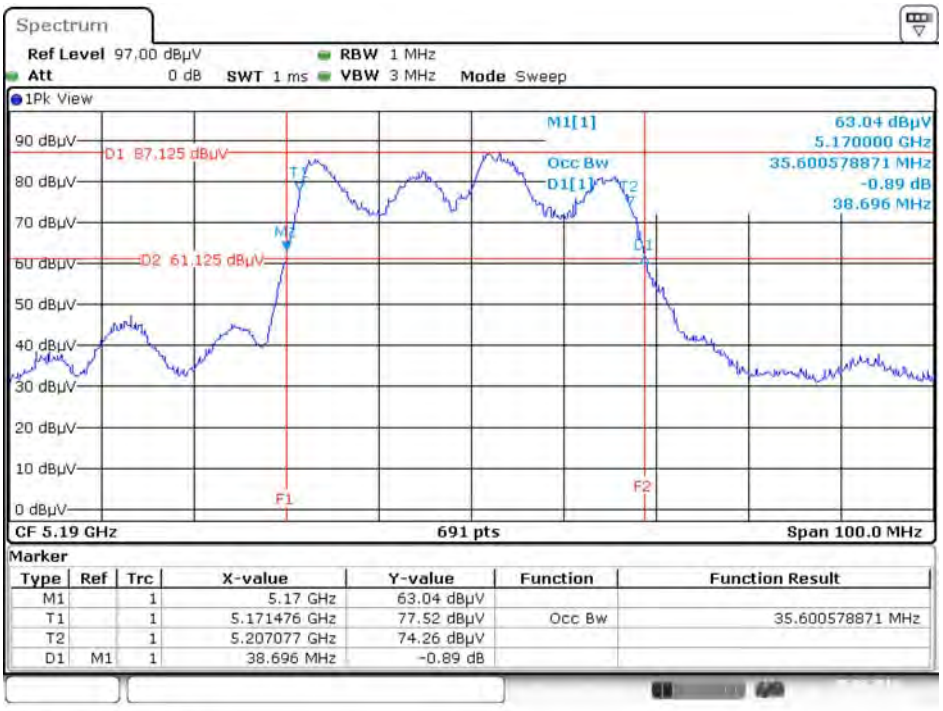
Date: 5.AUG.2016 16:35:58

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



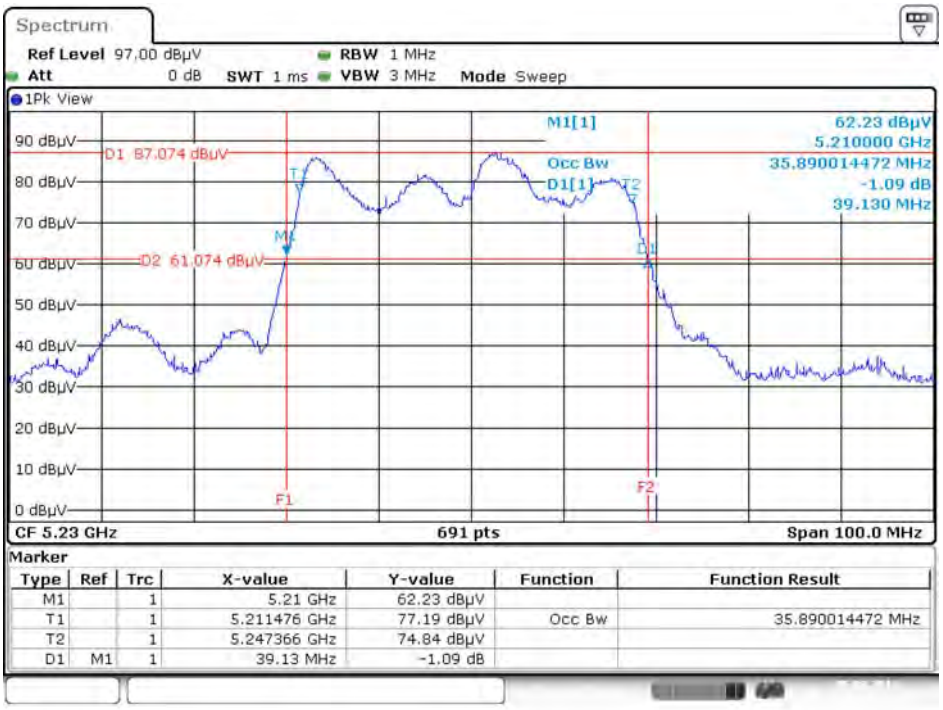
Date: 5.AUG.2016 16:33:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



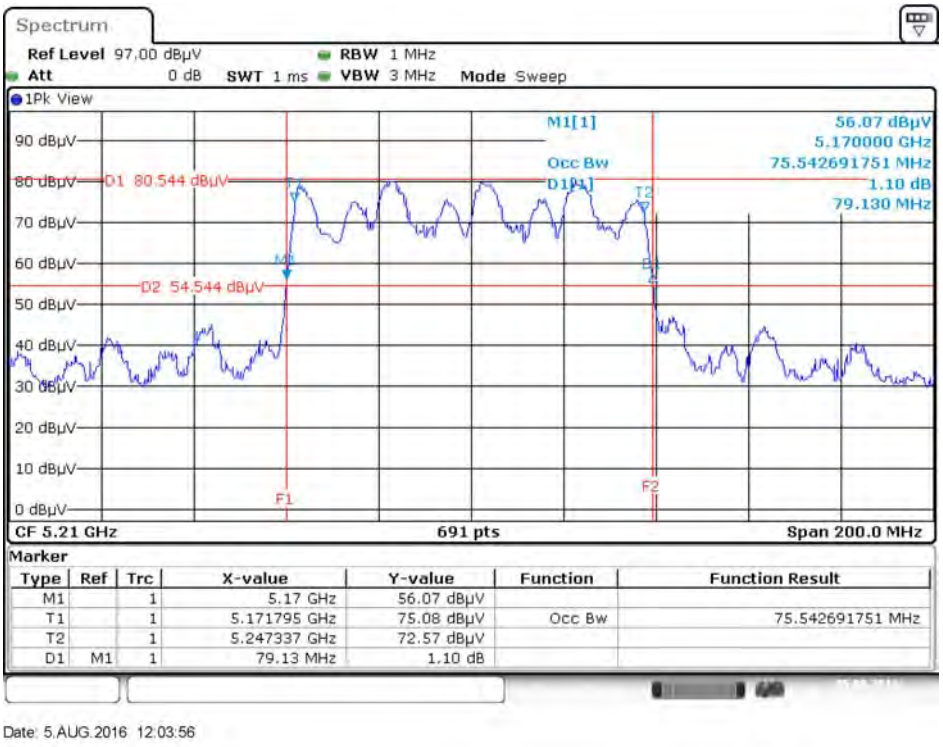
Date: 5.AUG.2016 16:37:09

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



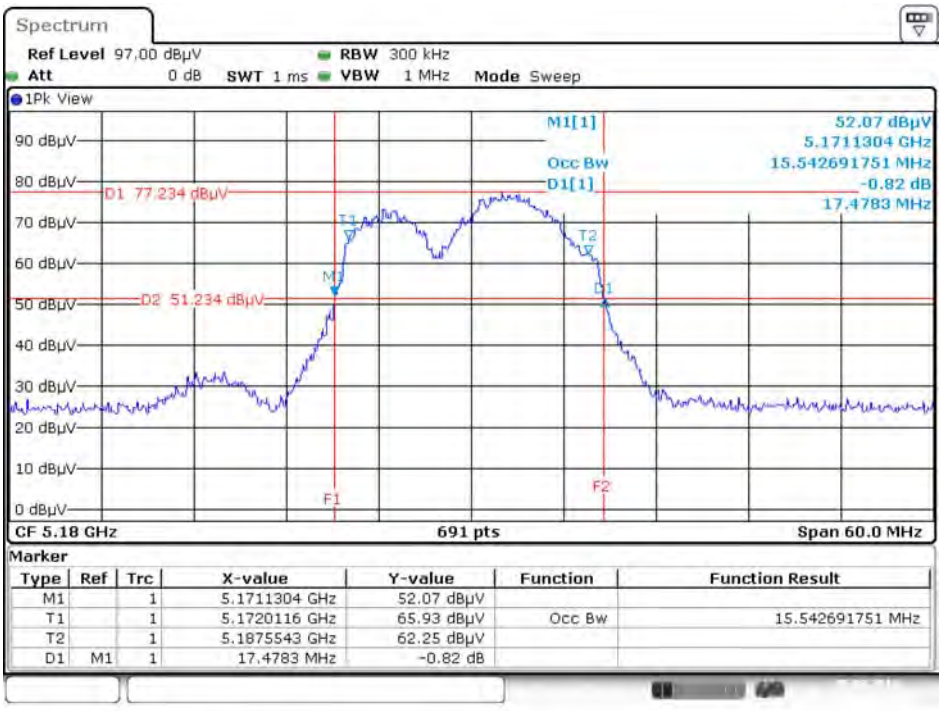
Date: 5.AUG.2016 16:37:31

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



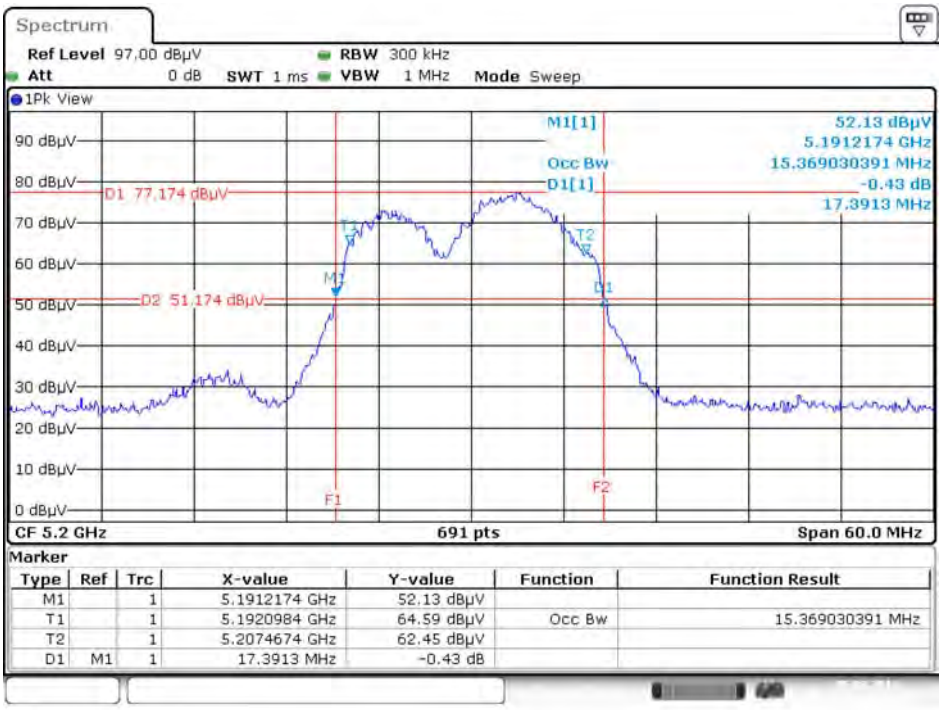
For outdoor use master B1

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



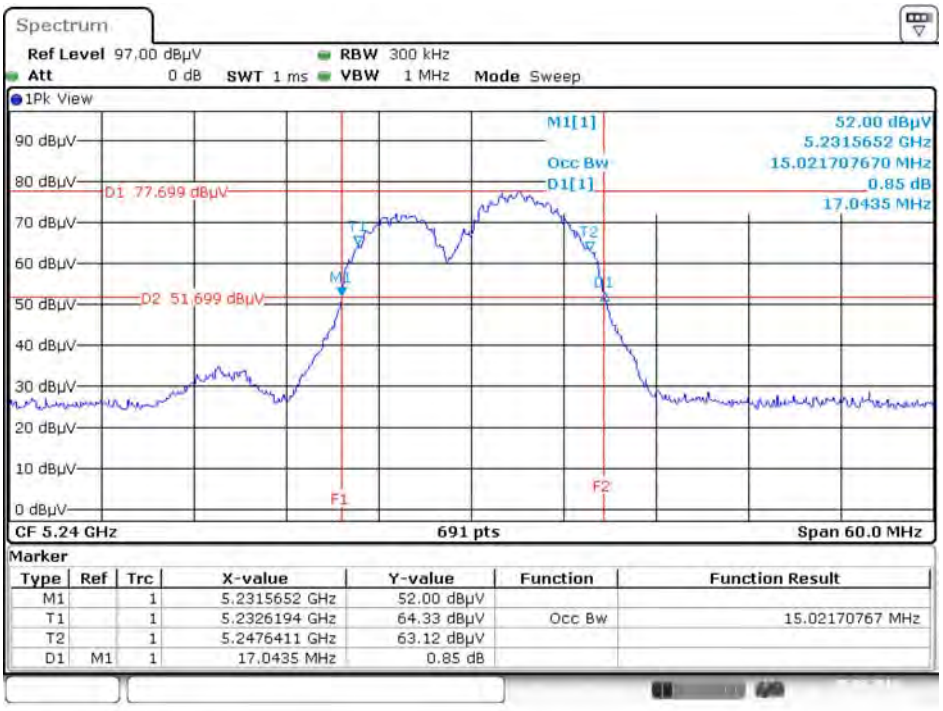
Date: 5.AUG.2016 19:34:59

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



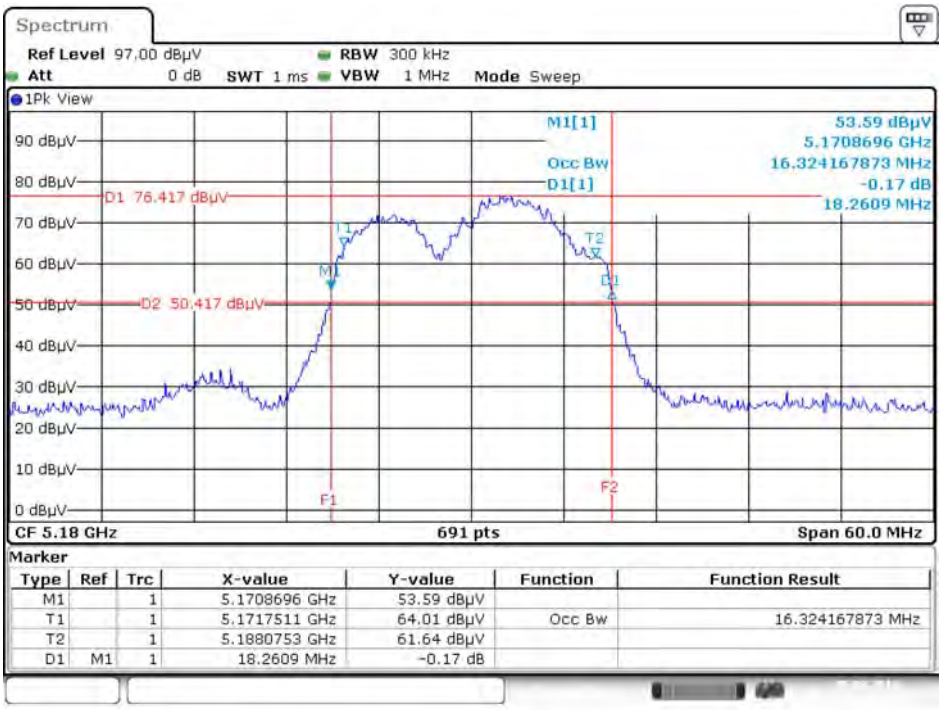
Date: 5.AUG.2016 19:36:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



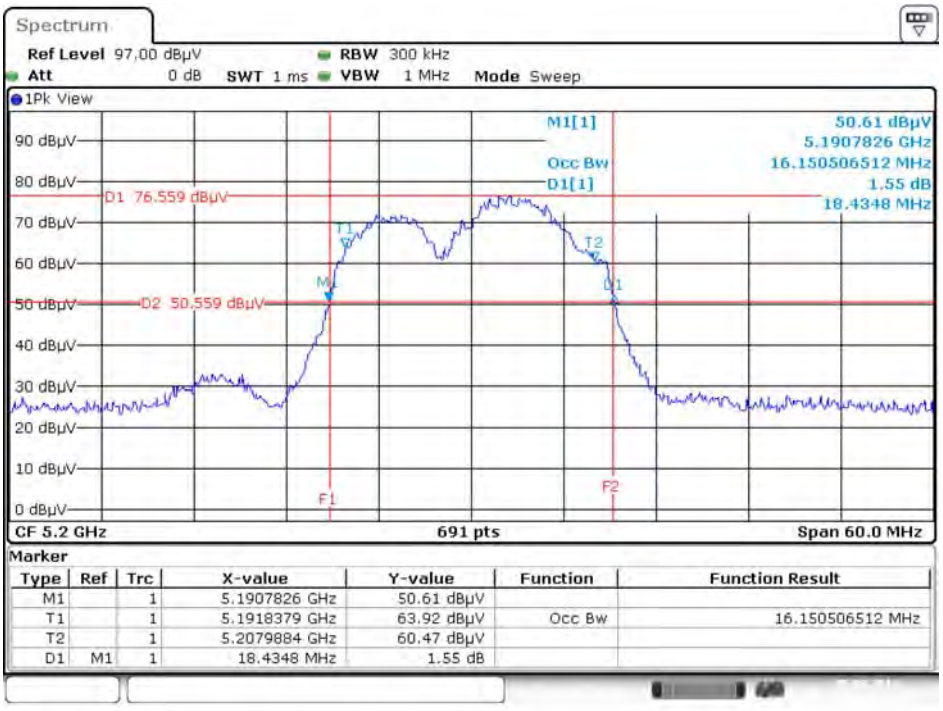
Date: 5.AUG.2016 19:38:24

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



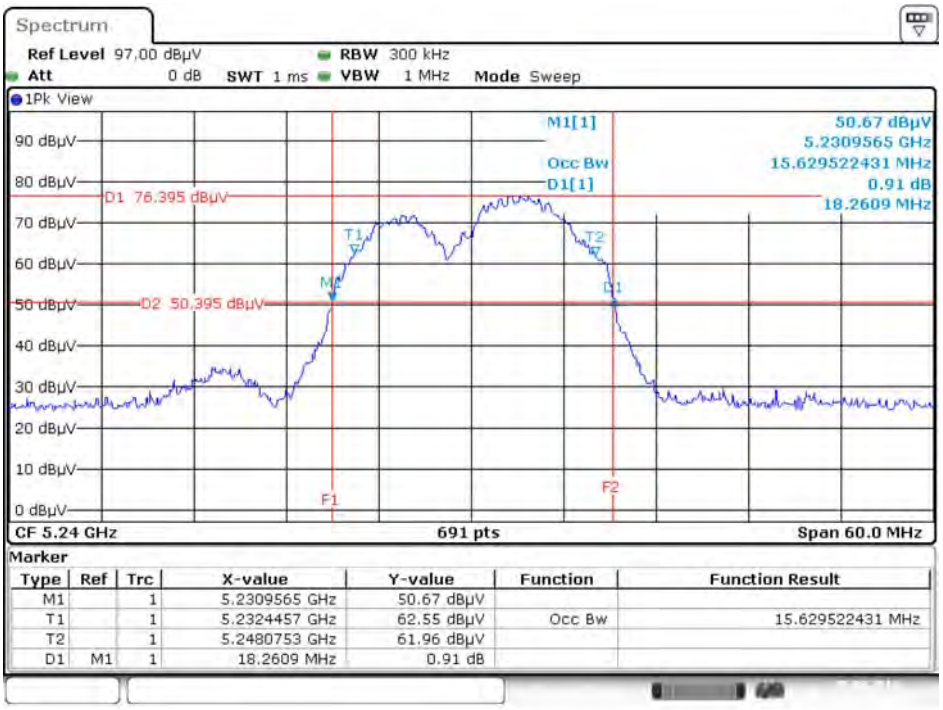
Date: 5.AUG.2016 19:41:52

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



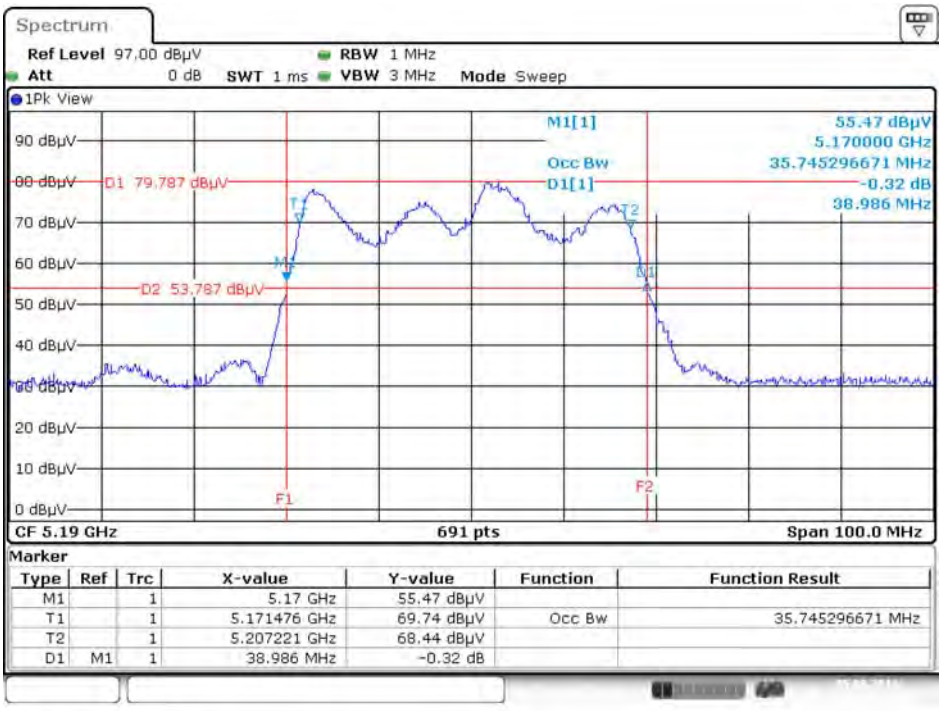
Date: 5.AUG.2016 19:48:54

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



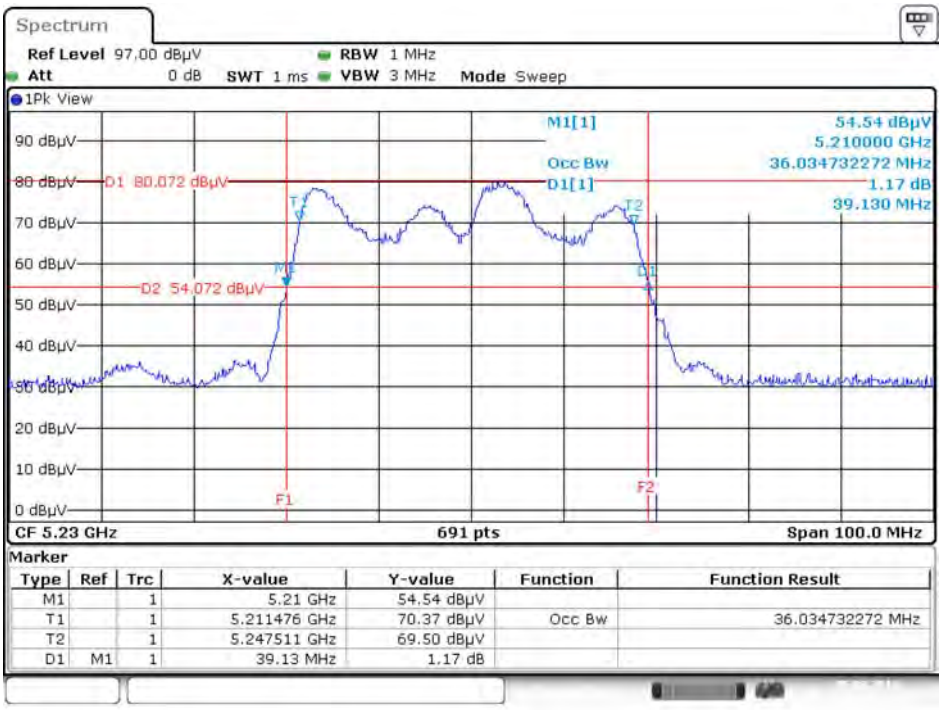
Date: 5.AUG.2016 19:52:03

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



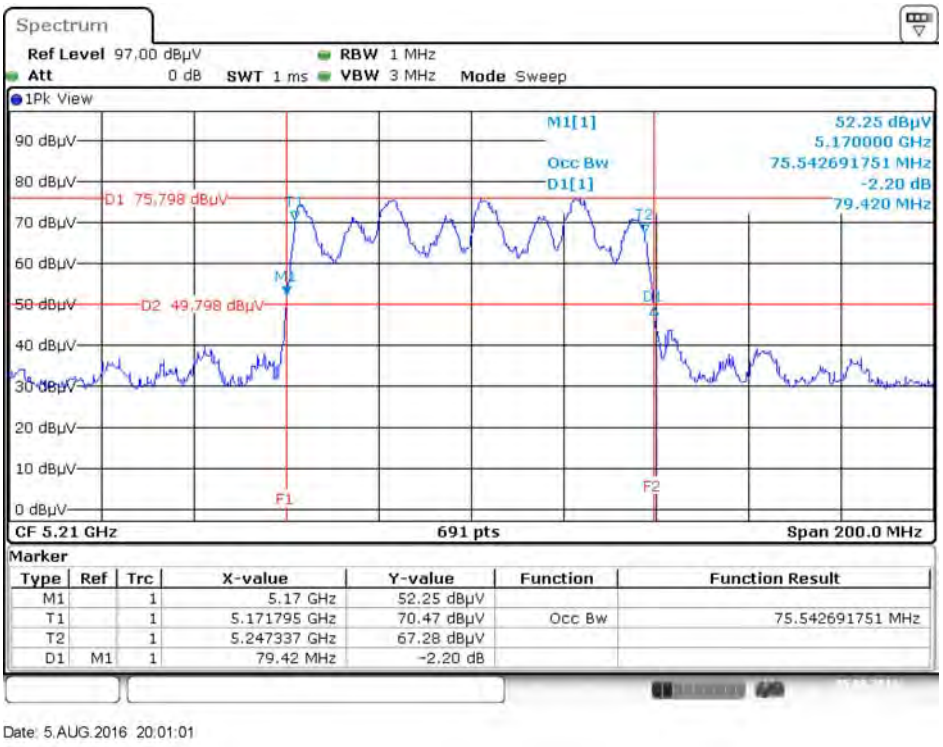
Date: 5.AUG.2016 19:55:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



Date: 5.AUG.2016 19:58:12

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz

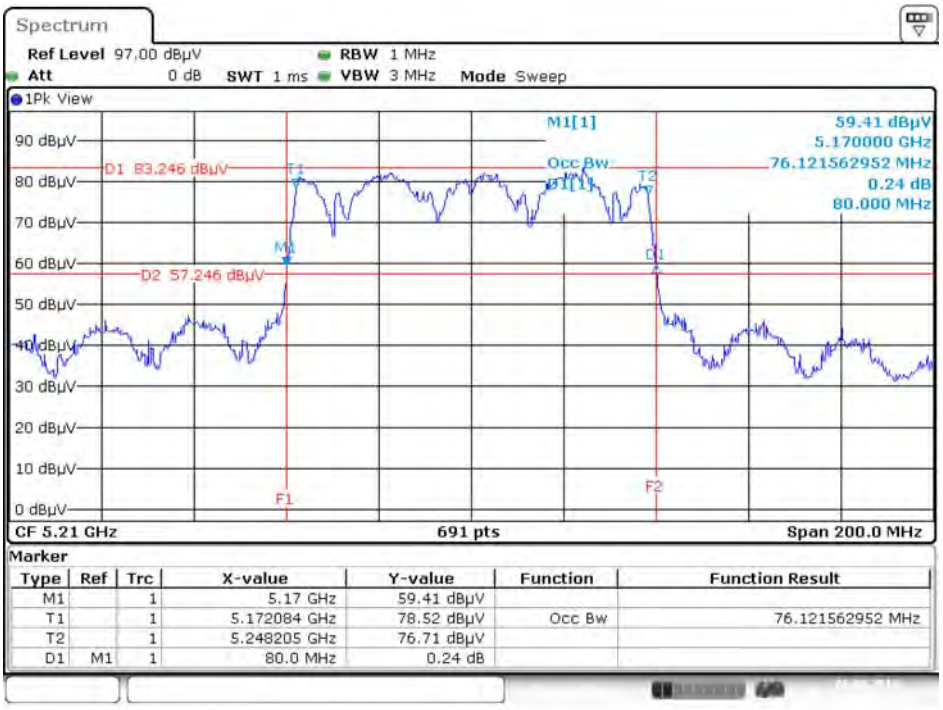


802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection

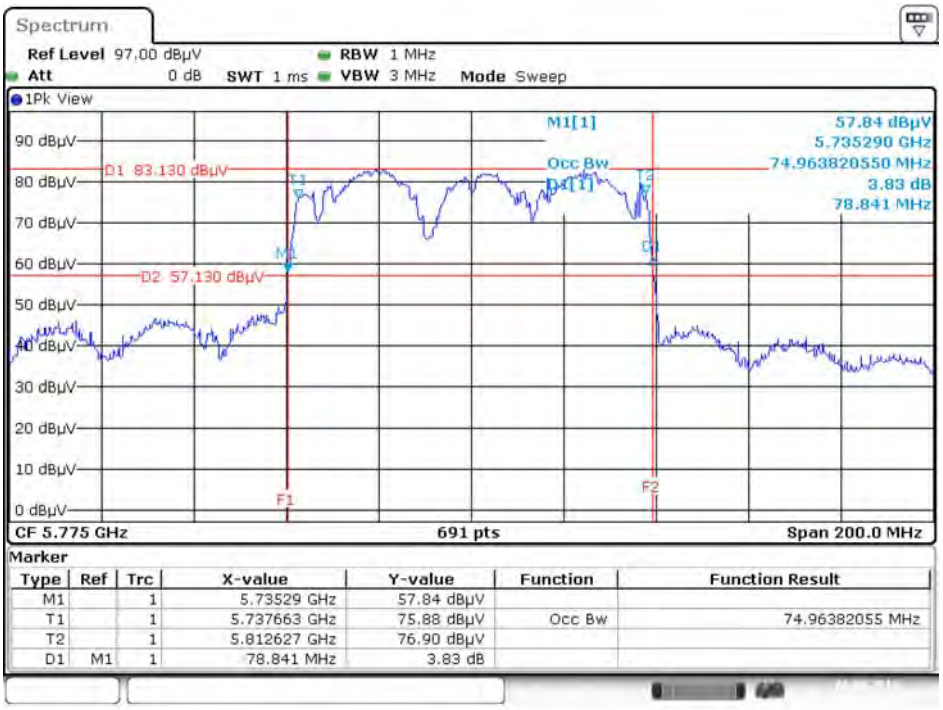
Type 1

26dB Bandwidth and 99% Occupied Bandwidth Plot on Chain 1 + Chain 2 / 5210 MHz



Date: 6.AUG.2016 15:06:06

26dB Bandwidth and 99% Occupied Bandwidth Plot on Chain 3 + Chain 4 / 5775 MHz

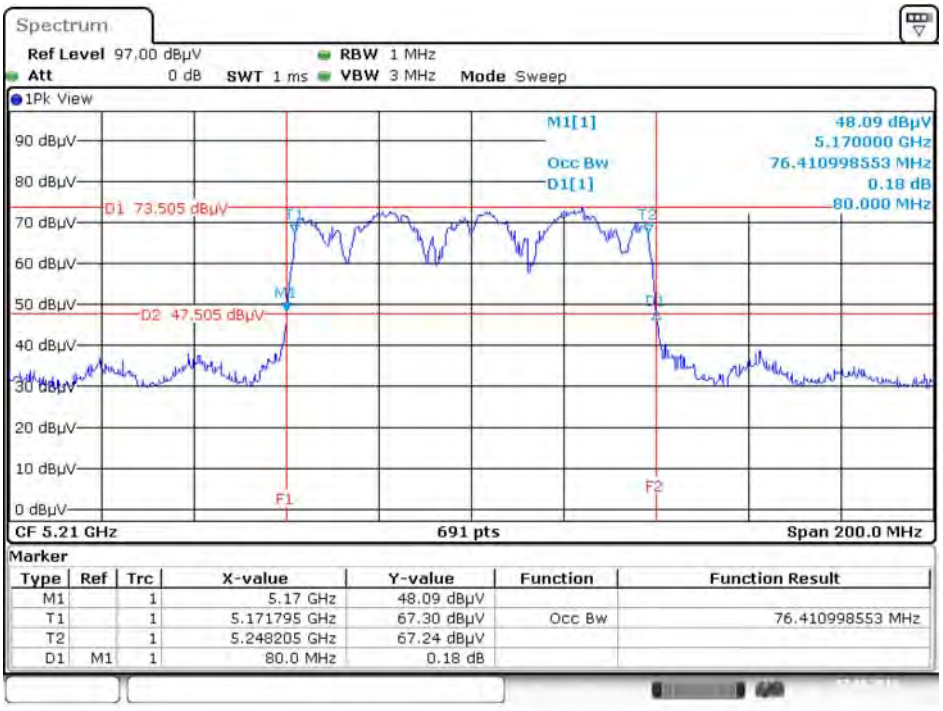


Date: 6.AUG.2016 15:16:28

For outdoor use master B1

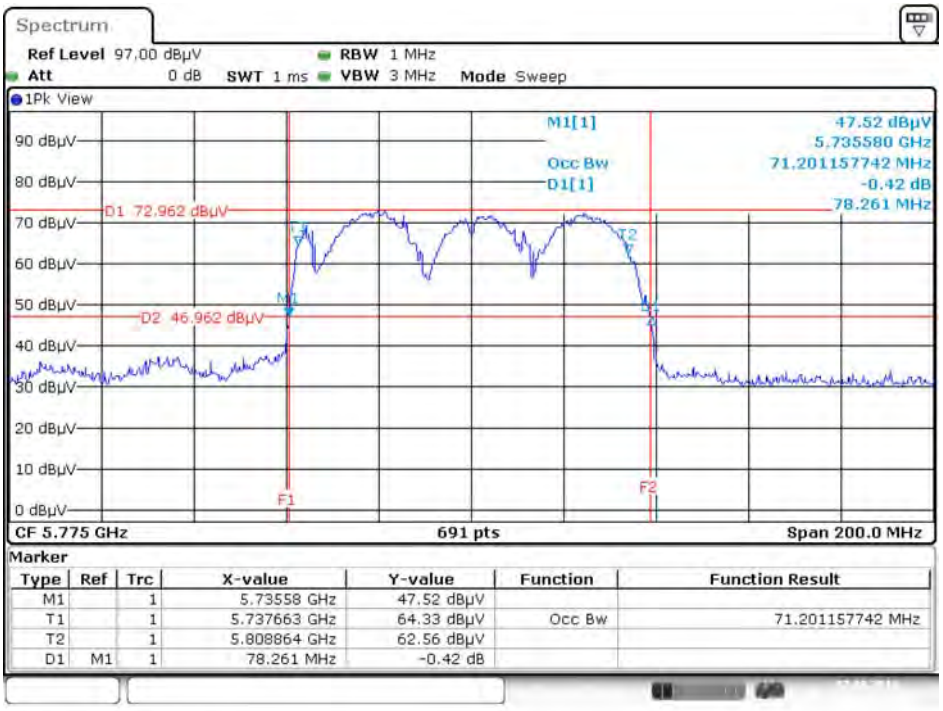
Type 1

26dB Bandwidth and 99% Occupied Bandwidth Plot on Chain 1 + Chain 2 / 5210 MHz



Date: 7.AUG.2016 11:37:34

26dB Bandwidth and 99% Occupied Bandwidth Plot on Chain 3 + Chain 4 / 5775 MHz

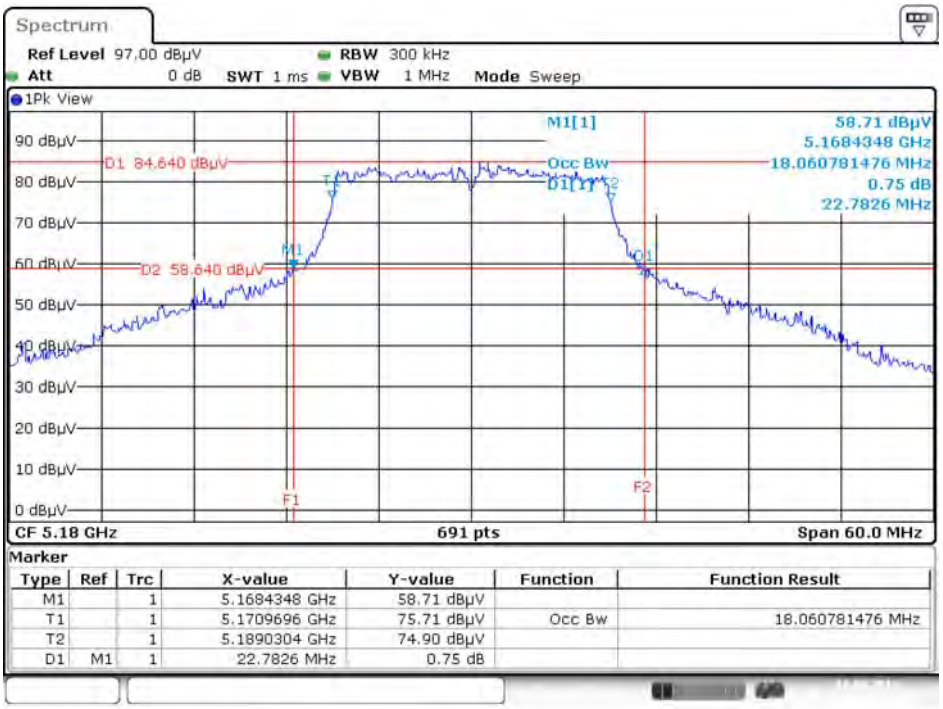


Date: 7.AUG.2016 11:52:00

For beamforming mode

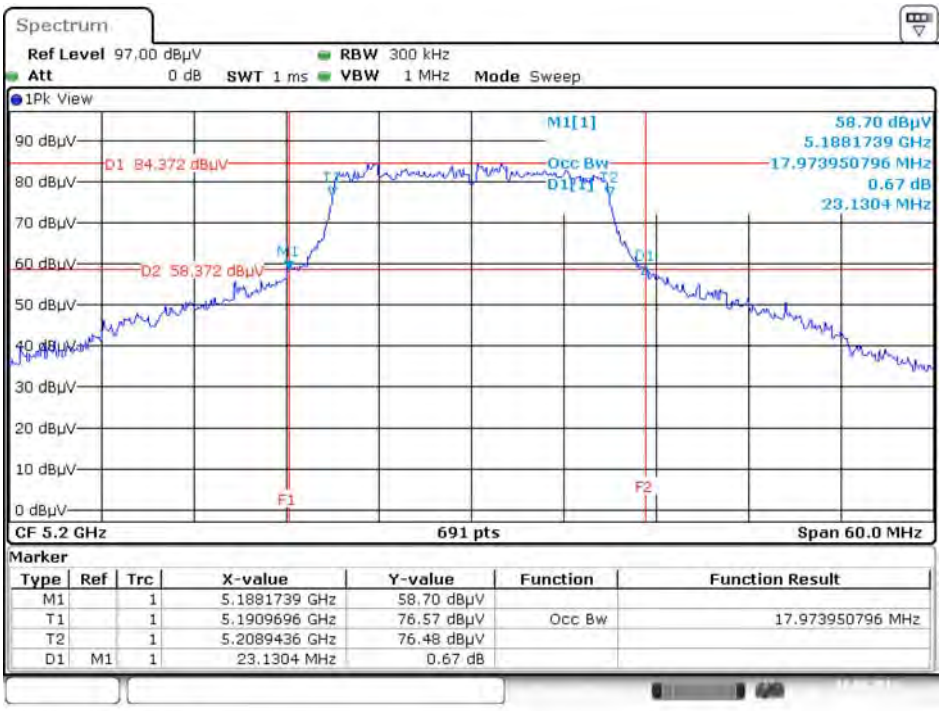
For indoor use master B1 and indoor, outdoor use B4

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



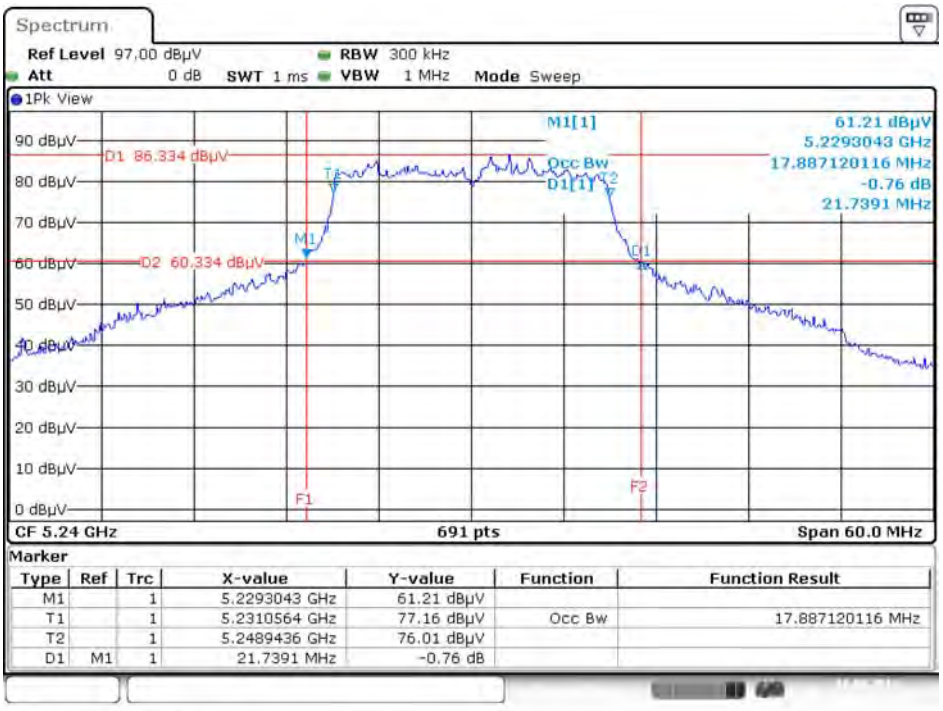
Date: 10.AUG.2016 00:06:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



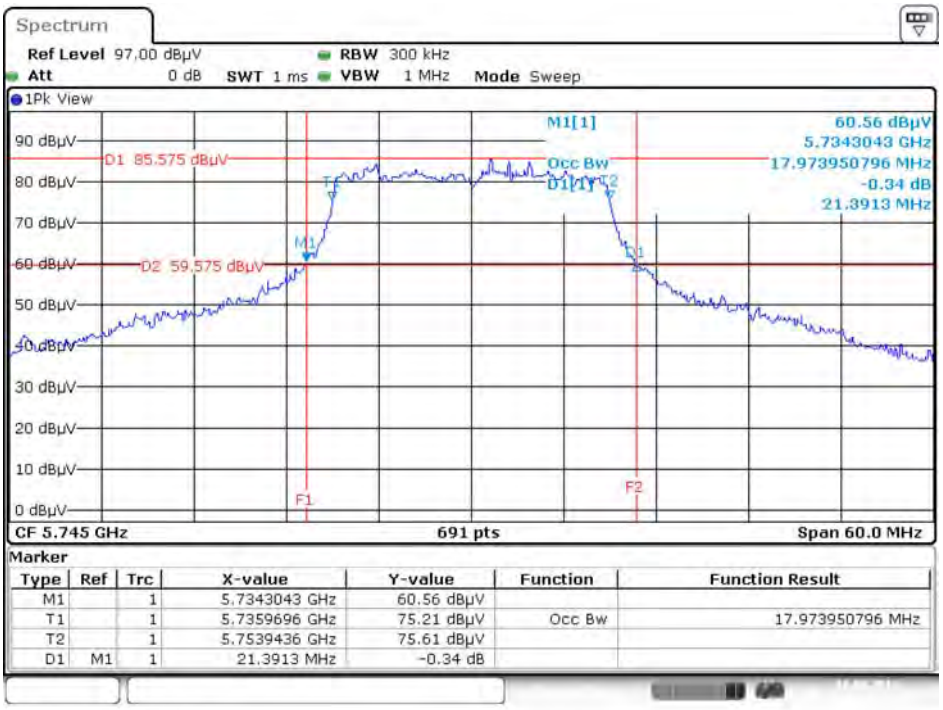
Date: 10.AUG.2016 00:07:40

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



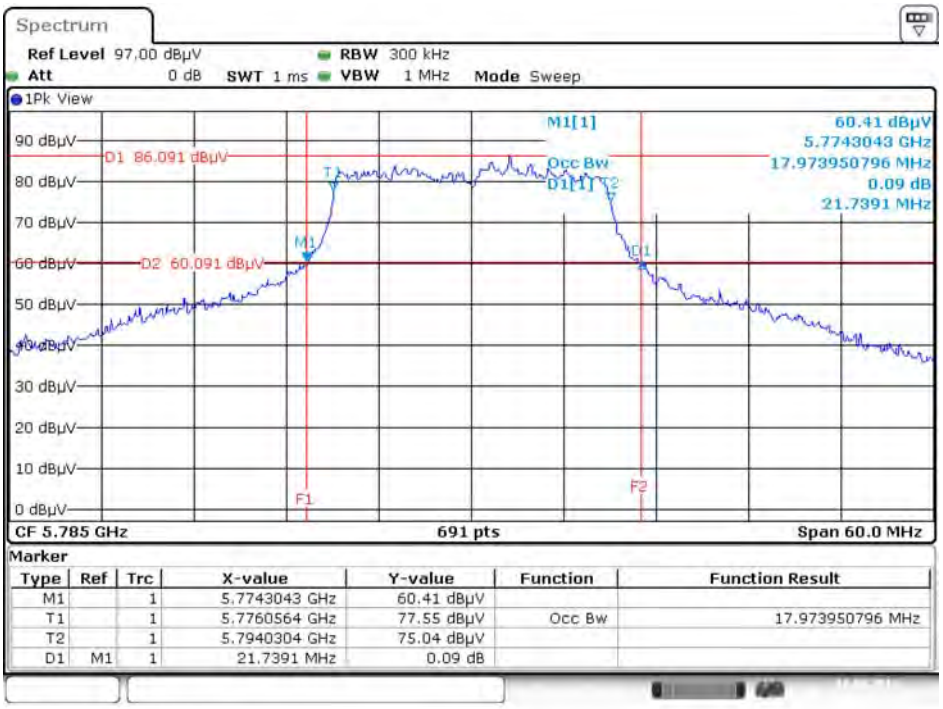
Date: 10.AUG.2016 00:12:11

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



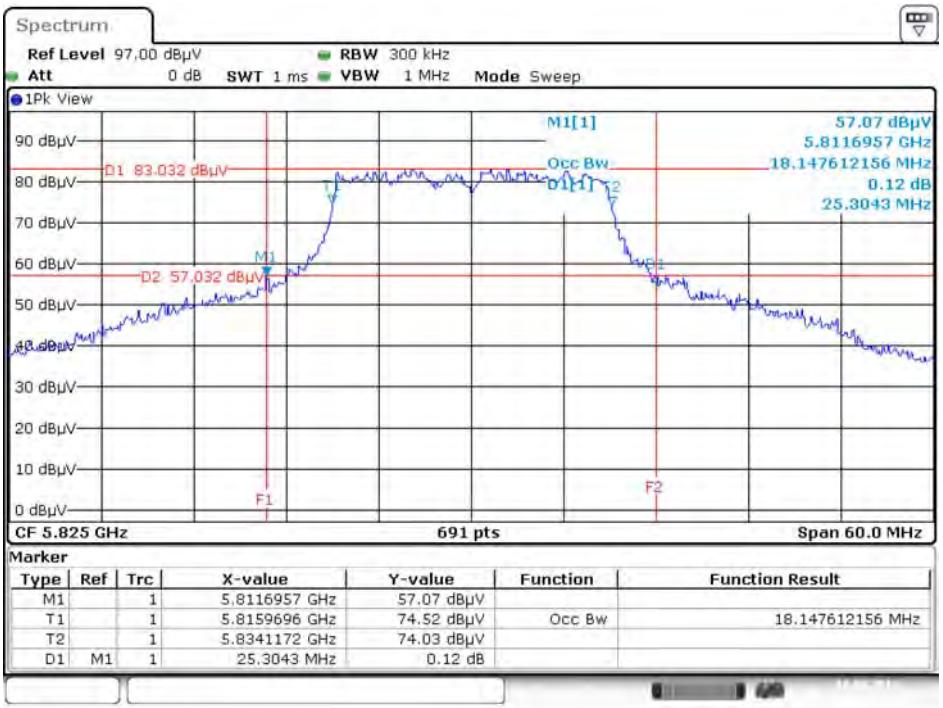
Date: 10.AUG.2016 00:23:07

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



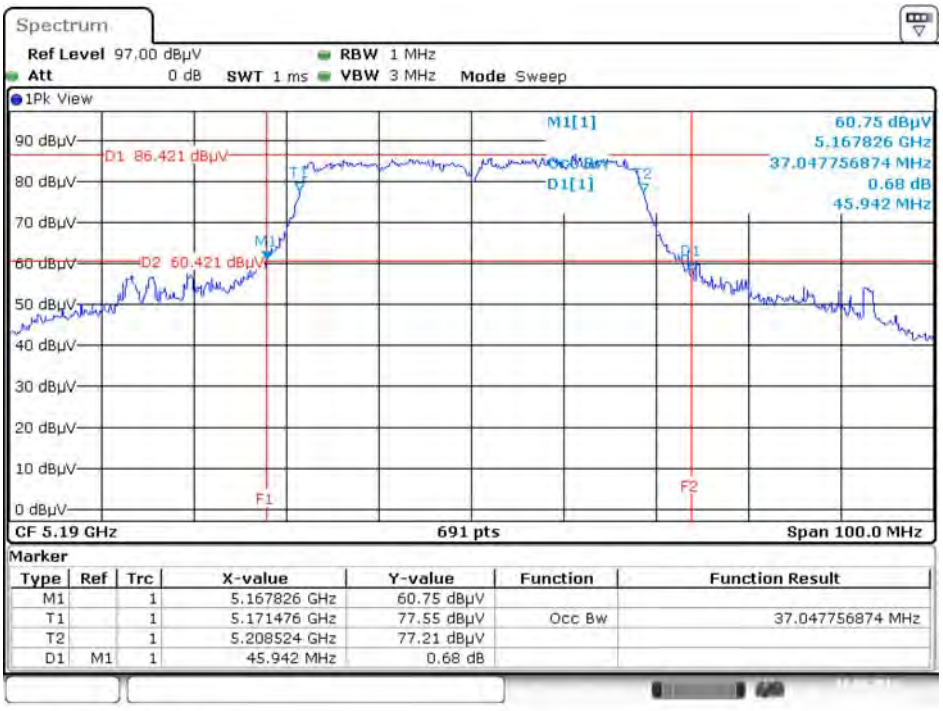
Date: 10.AUG.2016 00:24:49

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



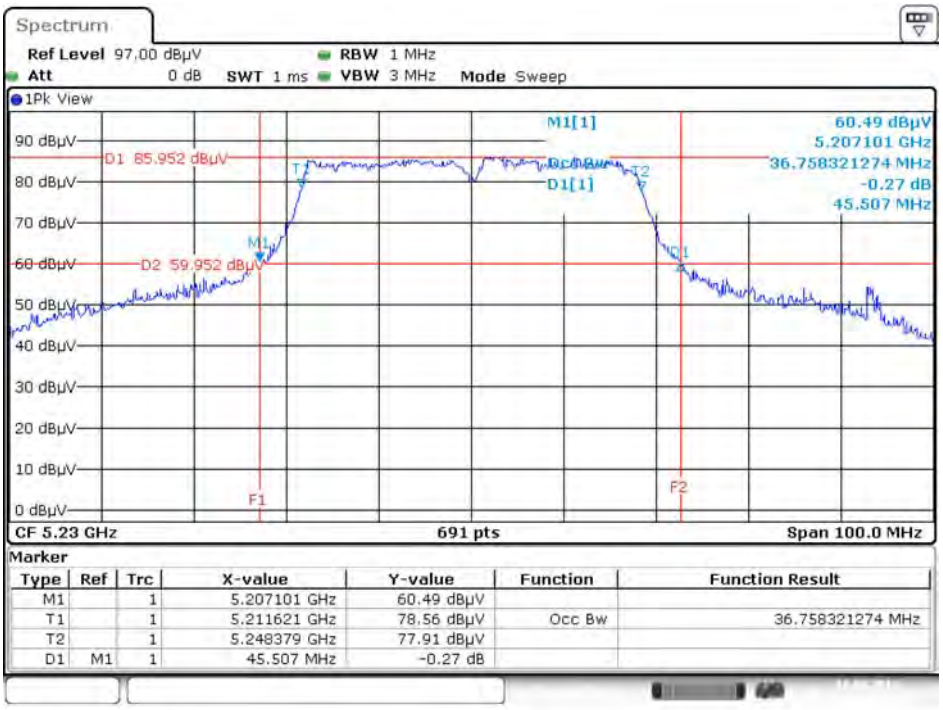
Date: 10.AUG.2016 00:26:53

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



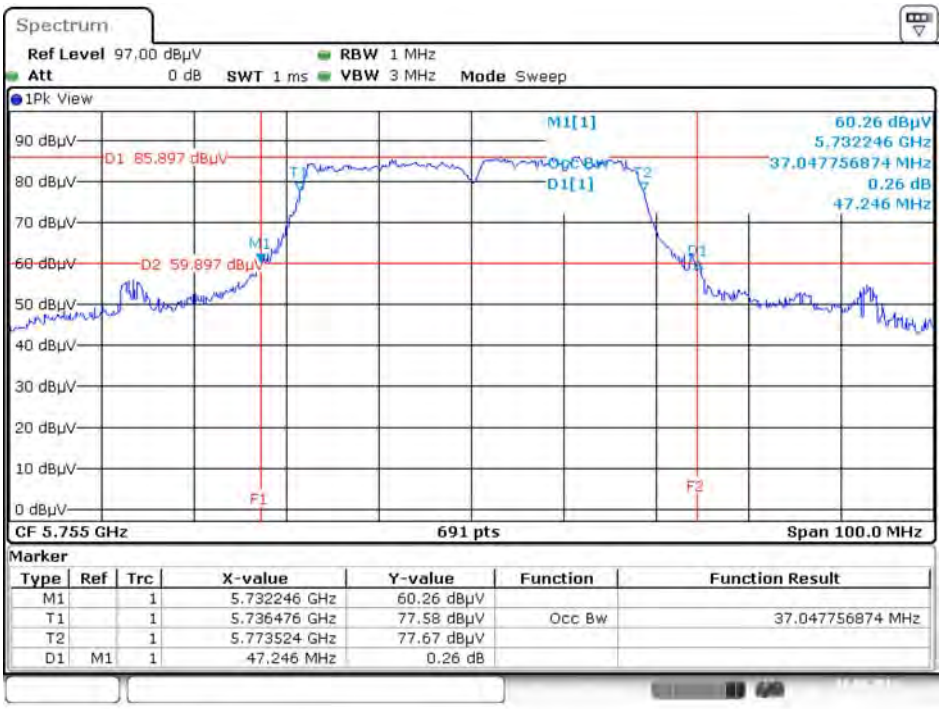
Date: 10.AUG.2016 01:08:46

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



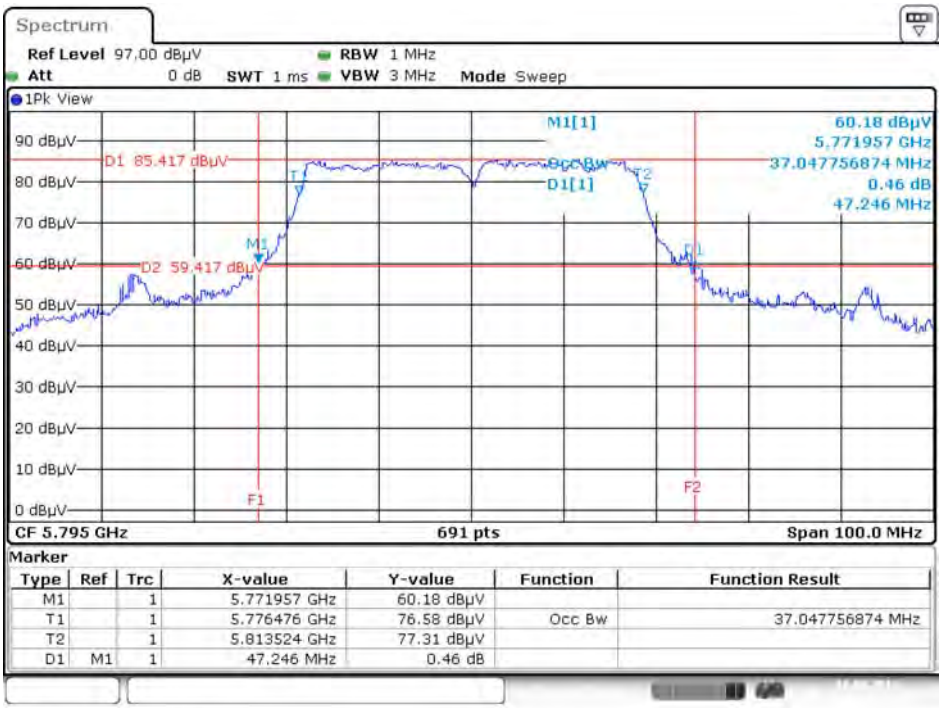
Date: 10.AUG.2016 01:09:52

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5755 MHz



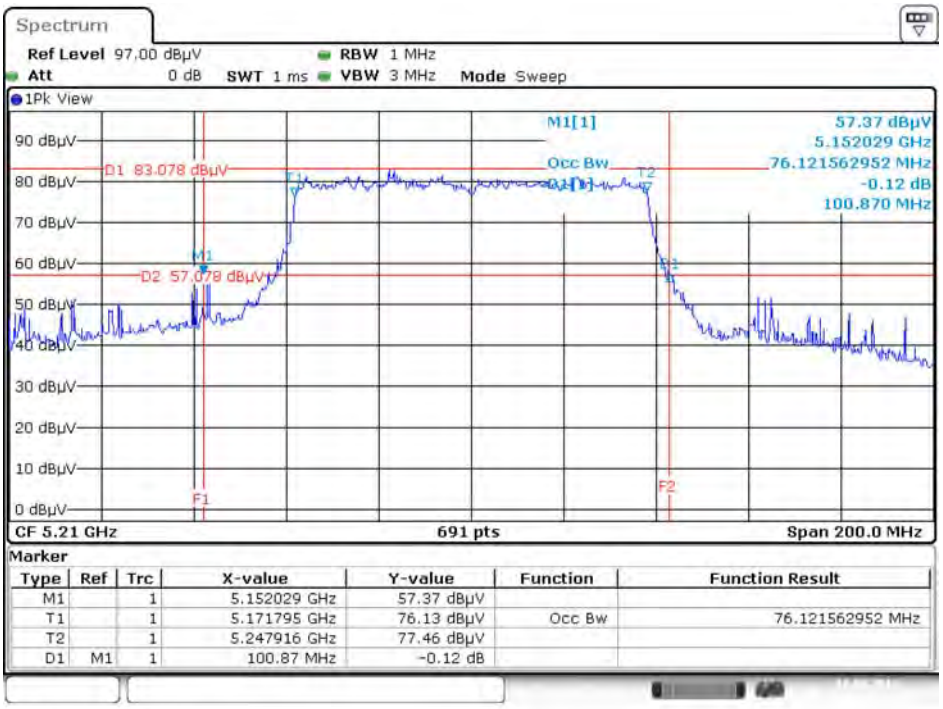
Date: 10.AUG.2016 01:20:32

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



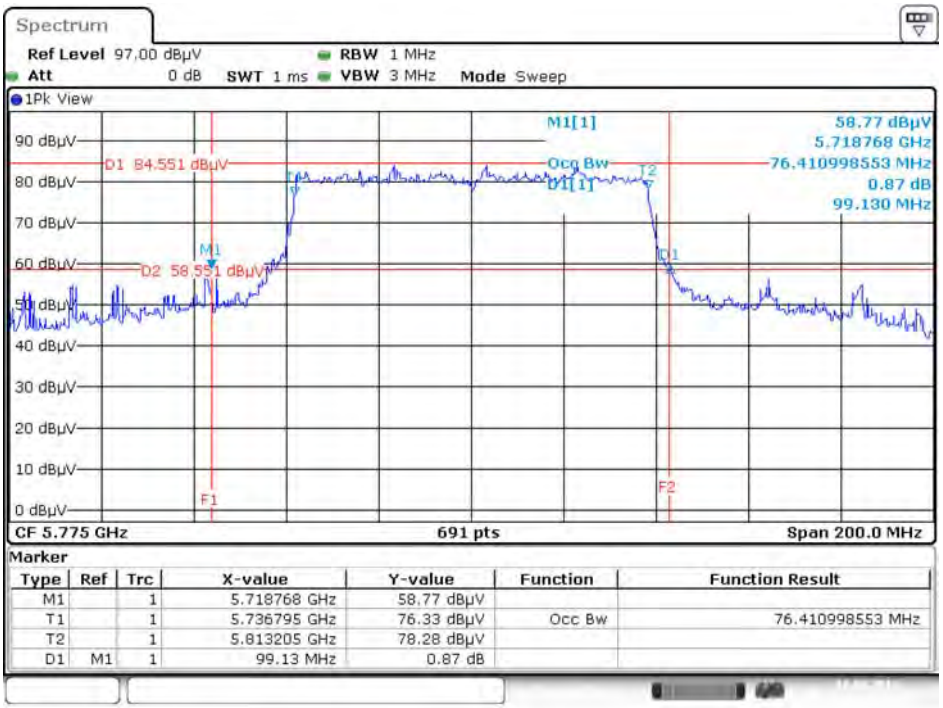
Date: 10.AUG.2016 01:22:25

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



Date: 10.AUG.2016 01:25:18

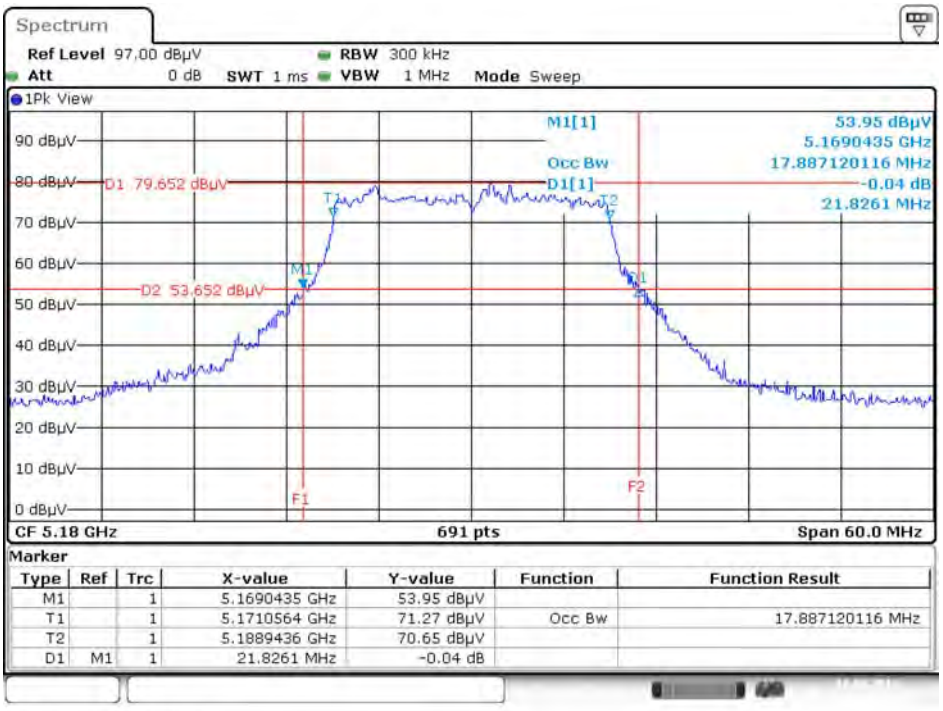
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



Date: 10.AUG.2016 01:34:51

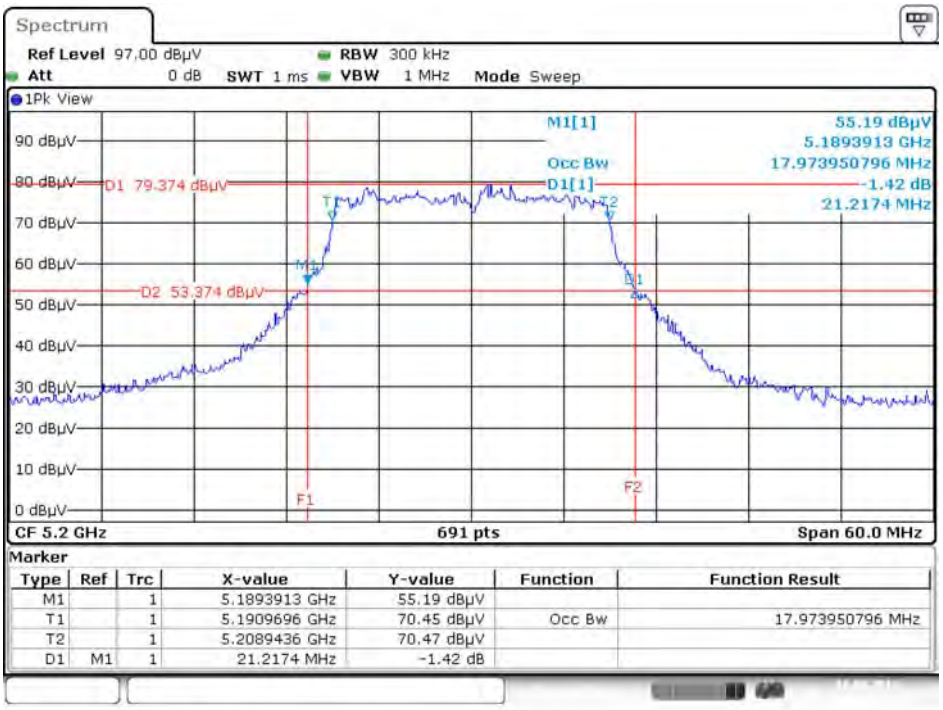
For indoor use slave without radar detection B1

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



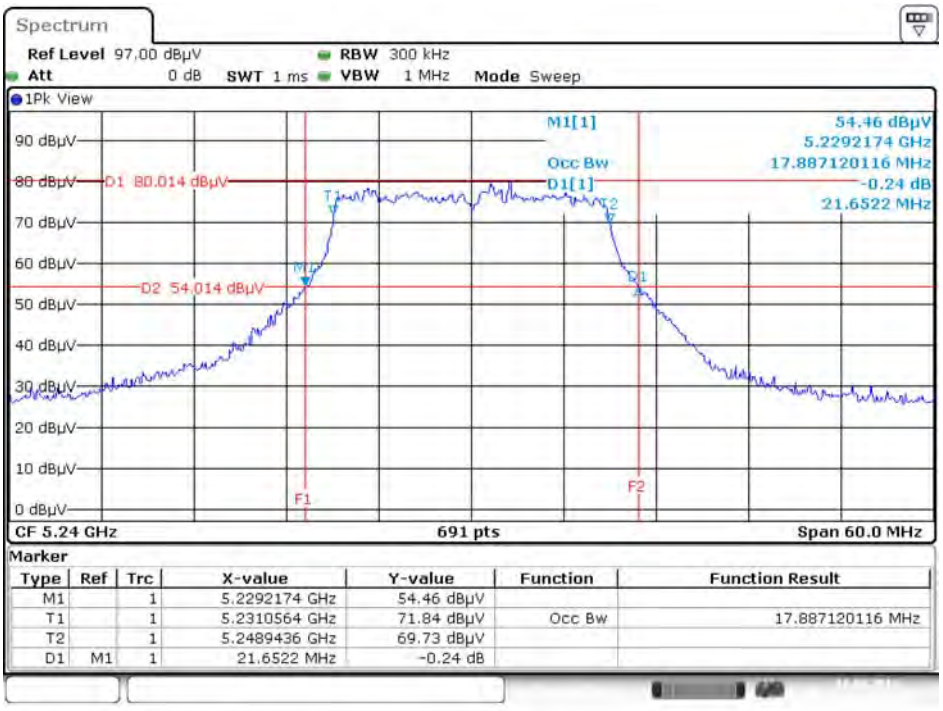
Date: 10.AUG.2016 02:06:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



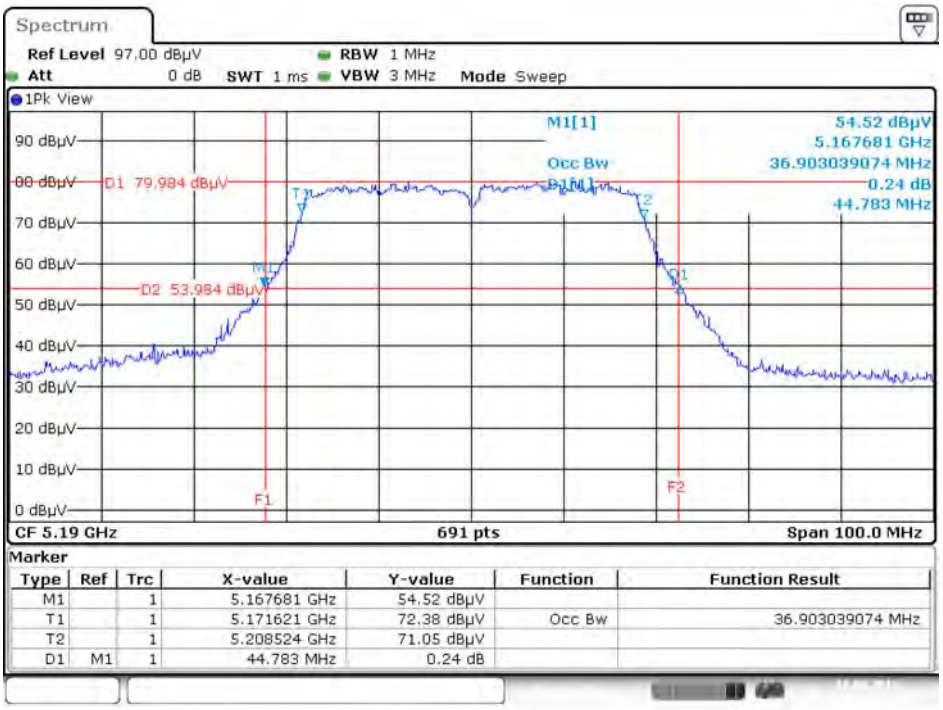
Date: 10.AUG.2016 02:08:45

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



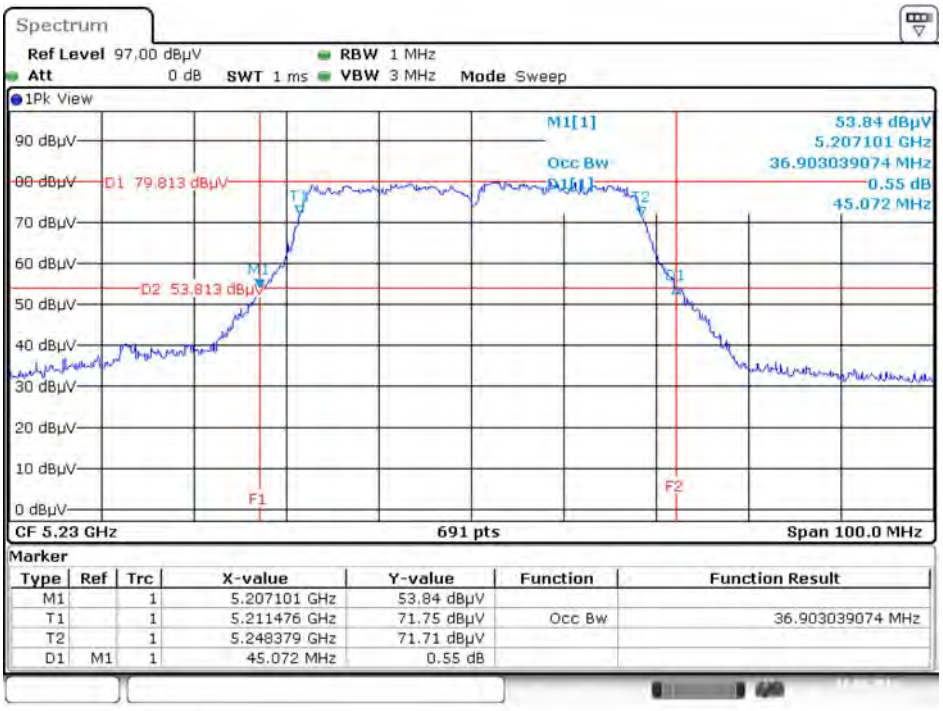
Date: 10.AUG.2016 02:10:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



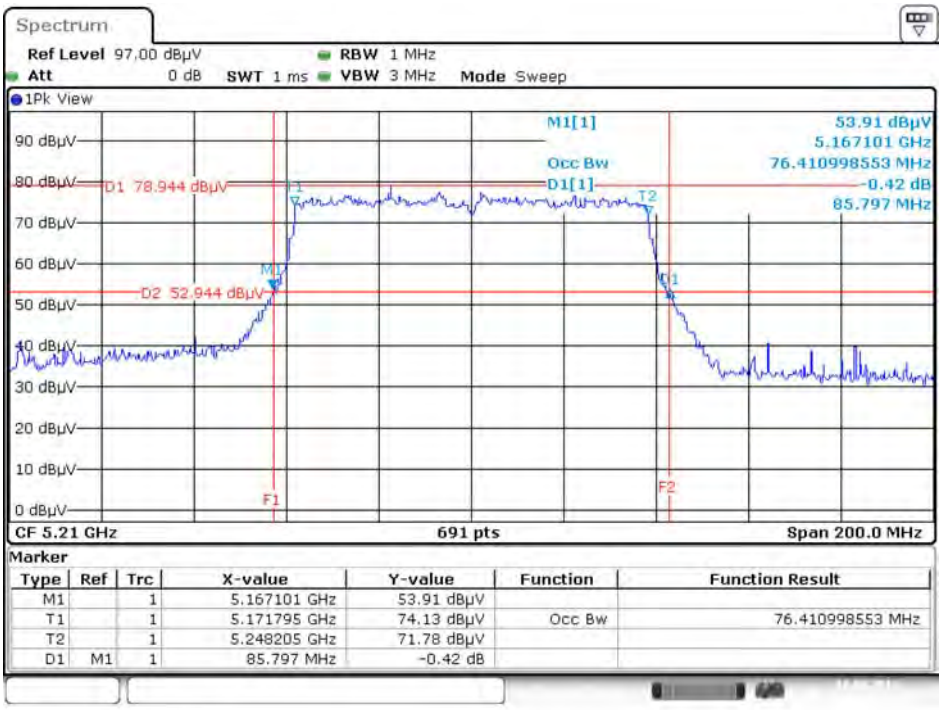
Date: 10.AUG.2016 02:17:44

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



Date: 10.AUG.2016 02:19:22

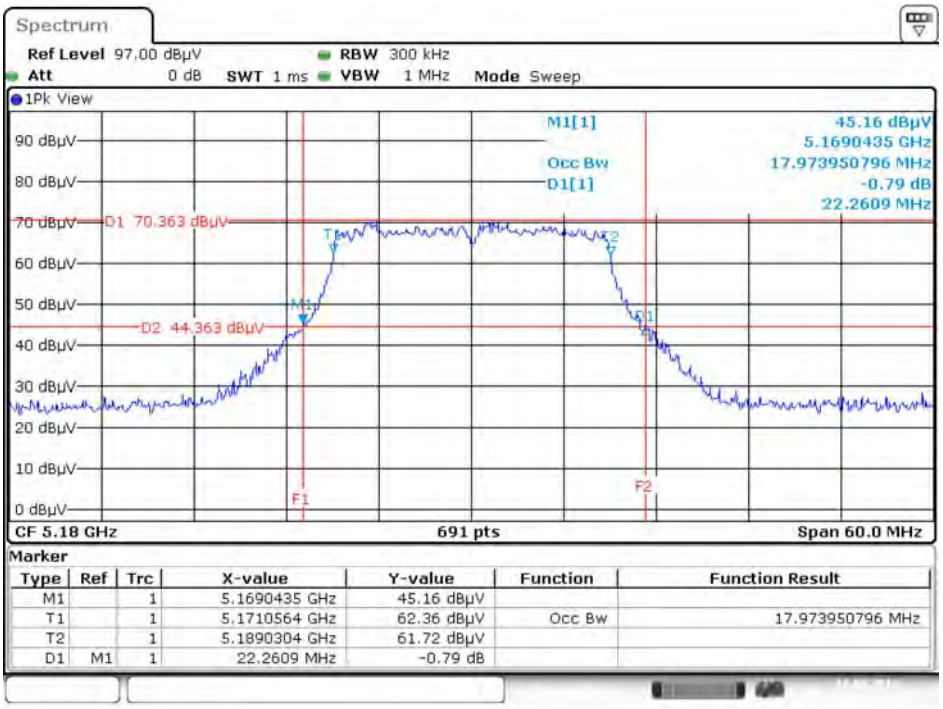
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



Date: 10.AUG.2016 02:22:03

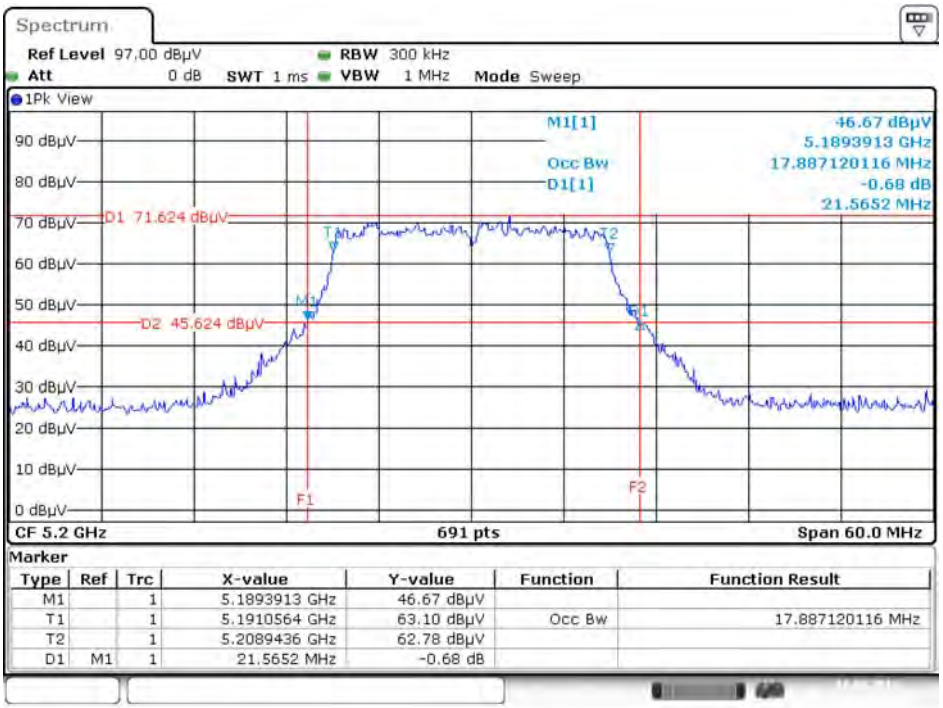
For outdoor use master B1

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



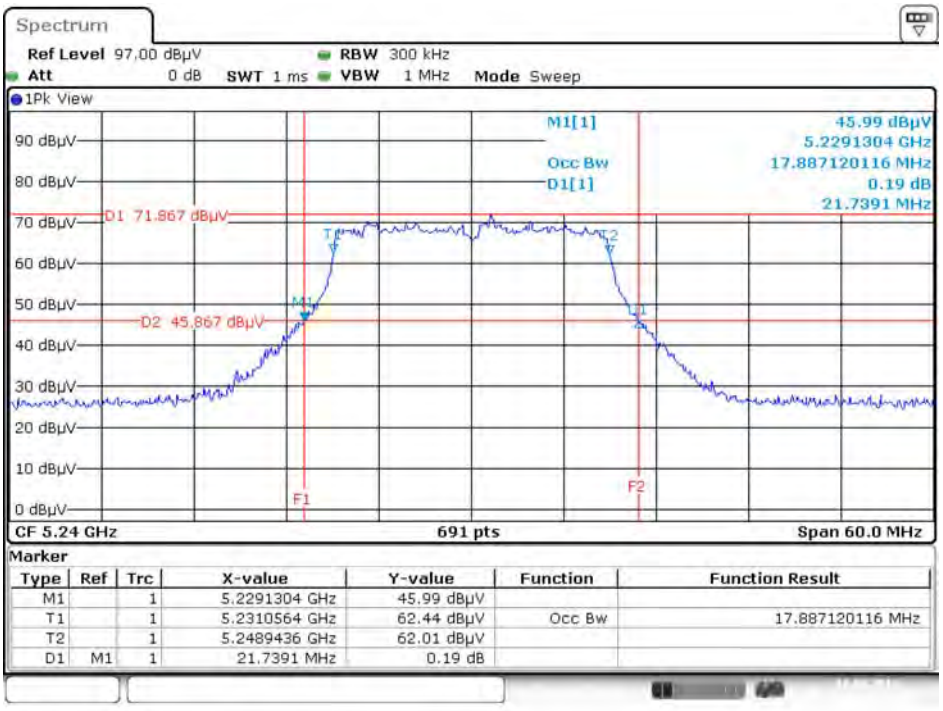
Date: 10.AUG.2016 02:29:39

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



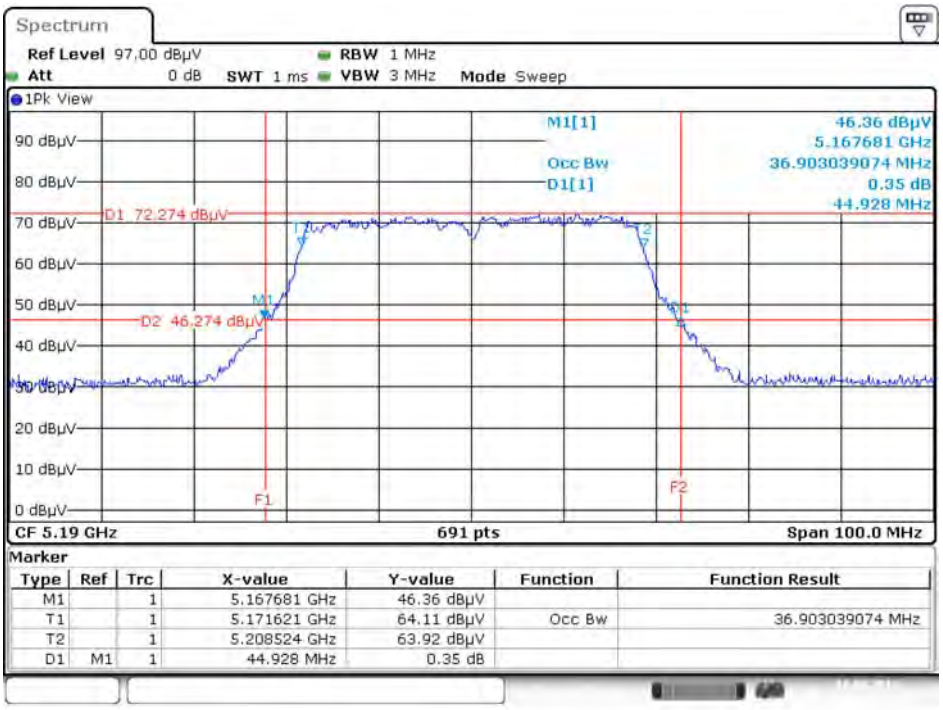
Date: 10.AUG.2016 02:30:52

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



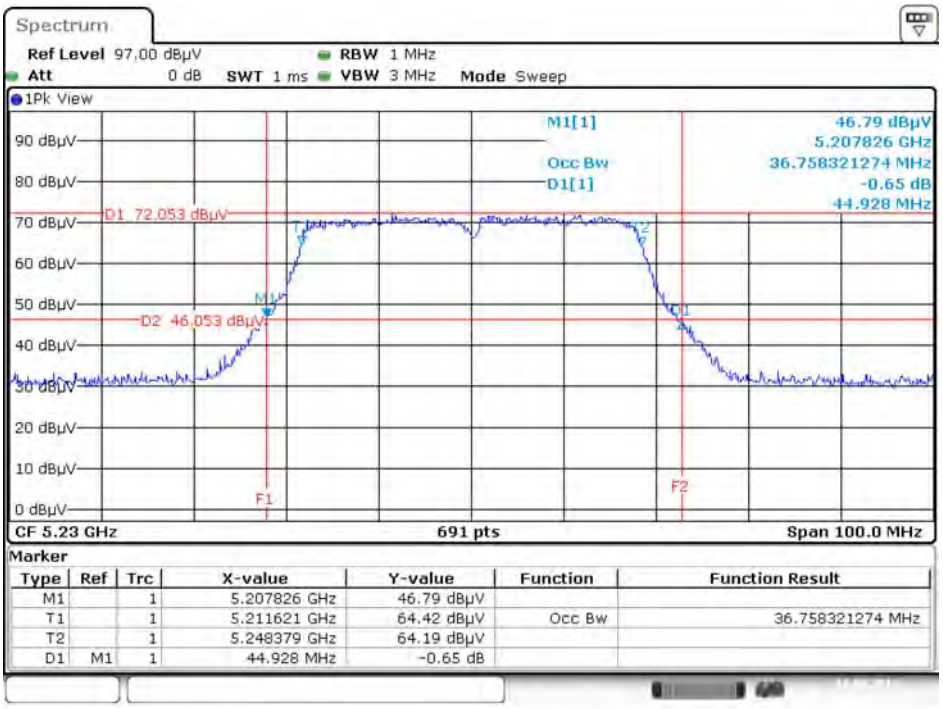
Date: 10.AUG.2016 02:33:14

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



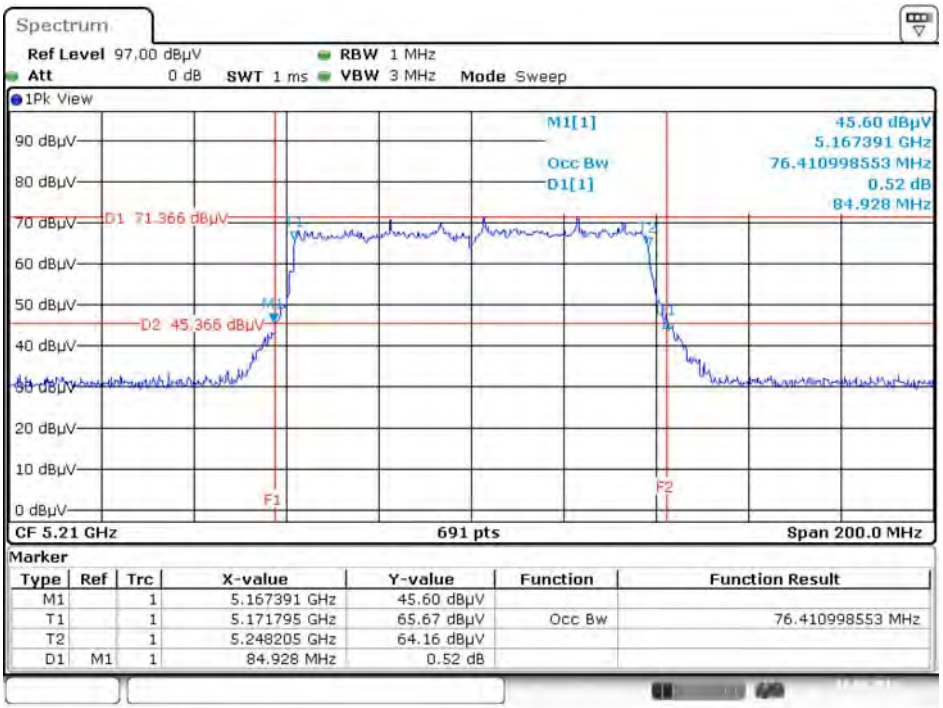
Date: 10.AUG.2016 02:36:14

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



Date: 10.AUG.2016 02:37:54

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



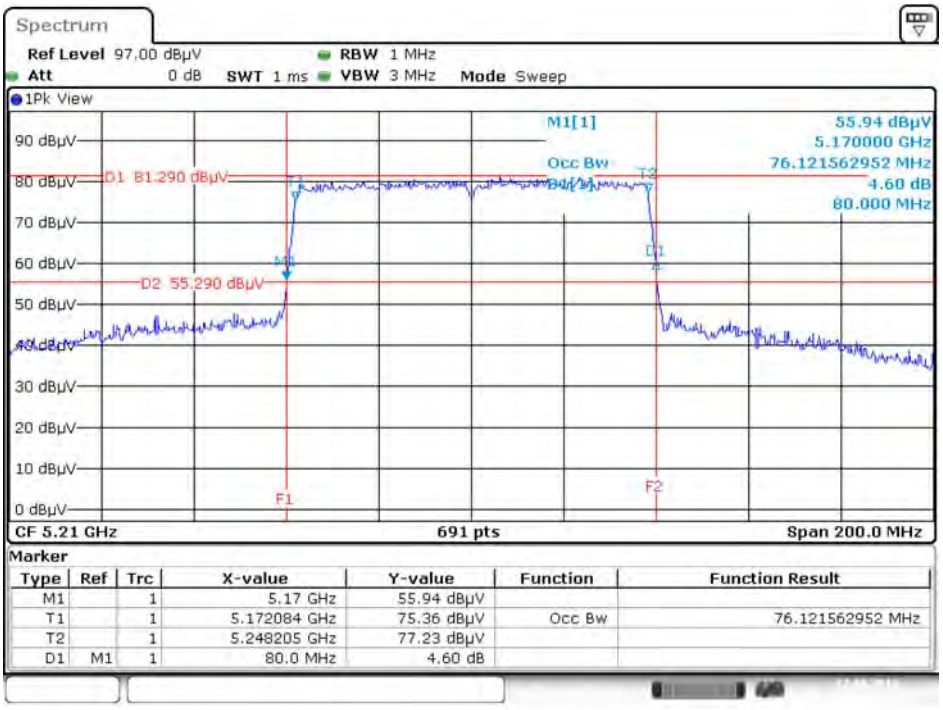
Date: 10.AUG.2016 02:40:29

802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection

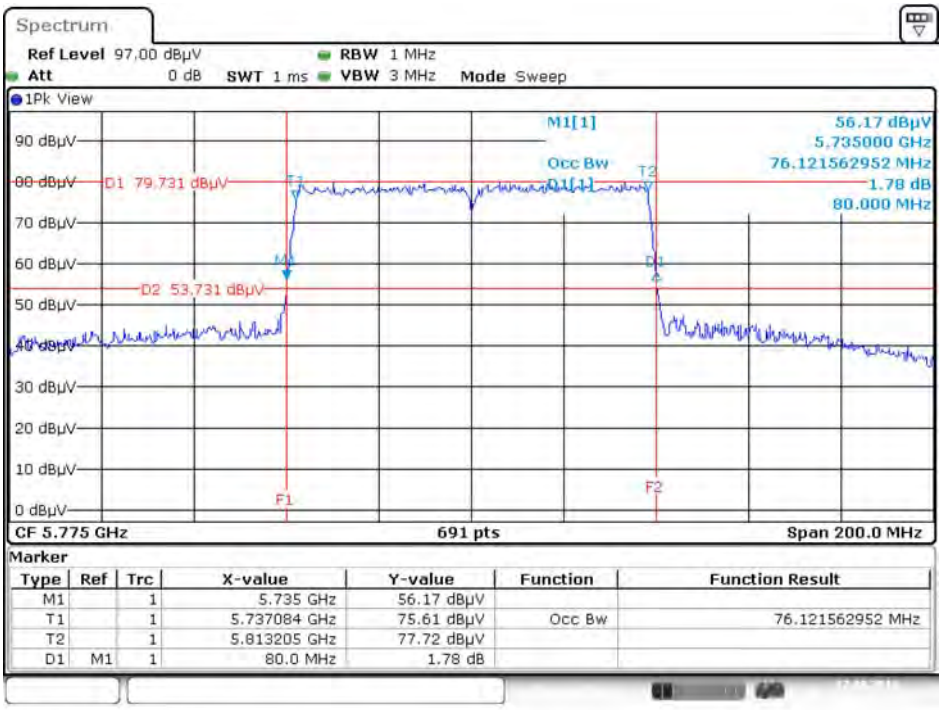
Type 1

26dB Bandwidth and 99% Occupied Bandwidth Plot on Chain 1 + Chain 2 / 5210 MHz



Date: 17.AUG.2016 11:08:07

26dB Bandwidth and 99% Occupied Bandwidth Plot on Chain 3 + Chain 4 / 5775 MHz

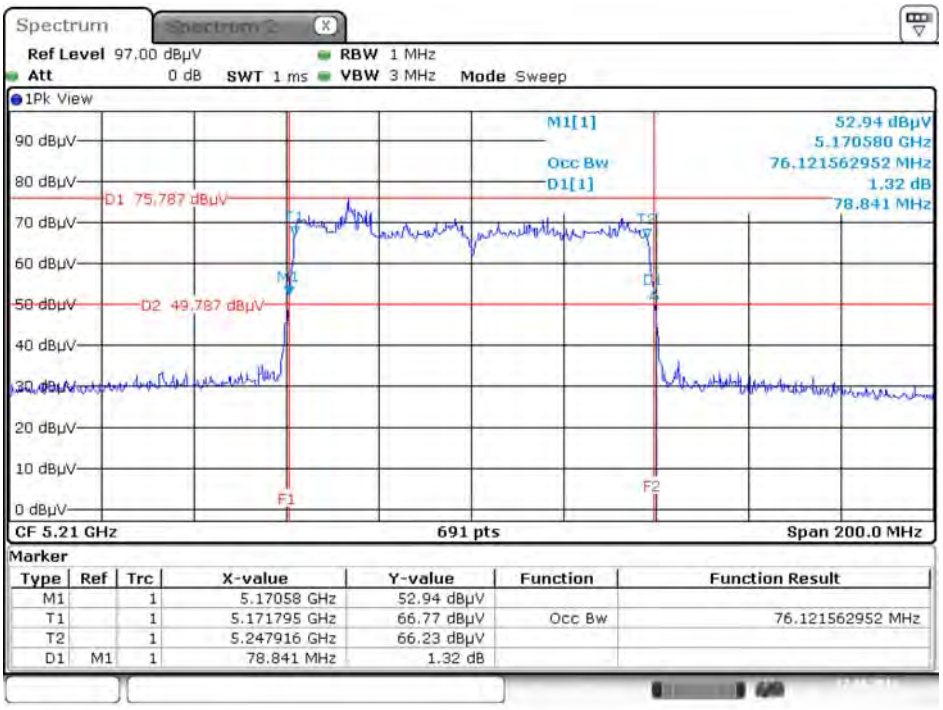


Date: 17.AUG.2016 11:14:37

For outdoor use master B1

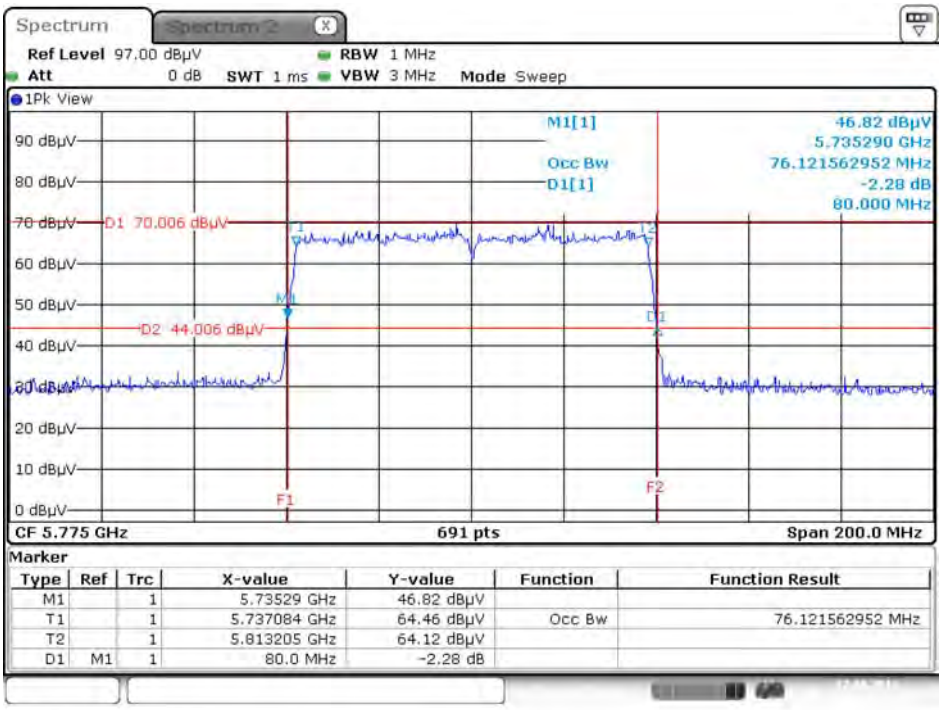
Type 1

26dB Bandwidth and 99% Occupied Bandwidth Plot on Chain 1 + Chain 2 / 5210 MHz



Date: 17.AUG.2016 16:28:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Chain 3 + Chain 4 / 5775 MHz



Date: 17.AUG.2016 16:36:48

4.3. 6dB Spectrum Bandwidth Measurement

4.3.1. Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

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 spectrum analyzer.

6dB Spectrum Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB789033 D02 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth.
3. Multiple antenna system was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.3.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

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

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 6dB Spectrum Bandwidth

Temperature	22°C	Humidity	54%
Test Engineer	Gary Chu		

For non-beamforming mode

For indoor, outdoor use master and slave without radar detection

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	3.88	500	Complies
	5785 MHz	3.77	500	Complies
	5825 MHz	10.73	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	12.00	500	Complies
	5785 MHz	11.71	500	Complies
	5825 MHz	11.77	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	34.55	500	Complies
	5795 MHz	32.81	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.36	500	Complies

802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection

Type	Frequency	6dB BW (MHz)	Min. Limit (kHz)	Test Result
1	5210 MHz	-		
	5775 MHz	70.15	500	Complies

For outdoor use master B1

Type	Frequency	6dB BW (MHz)	Min. Limit (kHz)	Test Result
1	5210 MHz	-		
	5775 MHz	73.91	500	Complies

For beamforming mode

For indoor, outdoor use master and slave without radar detection

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.74	500	Complies
	5785 MHz	17.74	500	Complies
	5825 MHz	17.28	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	33.97	500	Complies
	5795 MHz	32.70	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	74.20	500	Complies

802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection

Type	Frequency	6dB BW (MHz)	Min. Limit (kHz)	Test Result
1	5210 MHz	-		
	5775 MHz	73.91	500	Complies

For outdoor use master B1

Type	Frequency	6dB BW (MHz)	Min. Limit (kHz)	Test Result
1	5210 MHz	-		
	5775 MHz	74.78	500	Complies

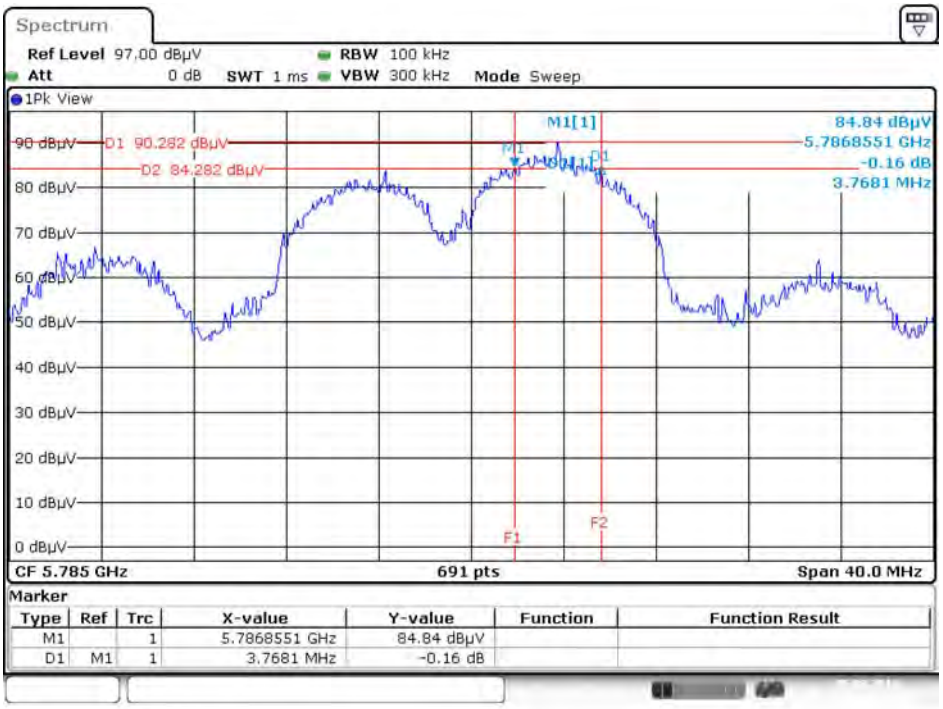
Note: All the test values were listed in the report.

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

For non-beamforming mode

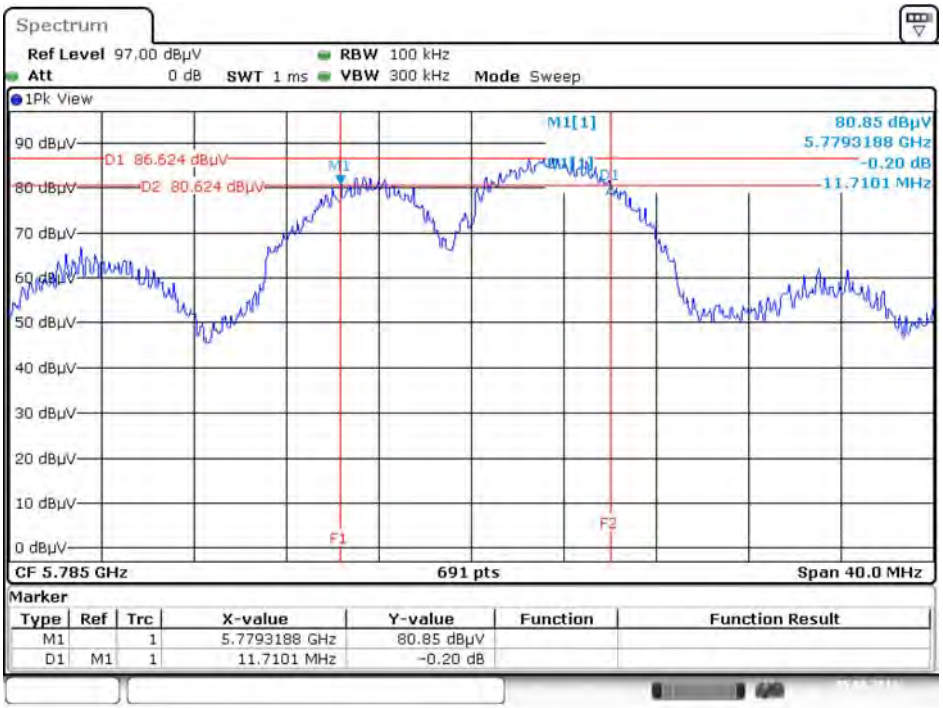
For indoor, outdoor use master and slave without radar detection

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



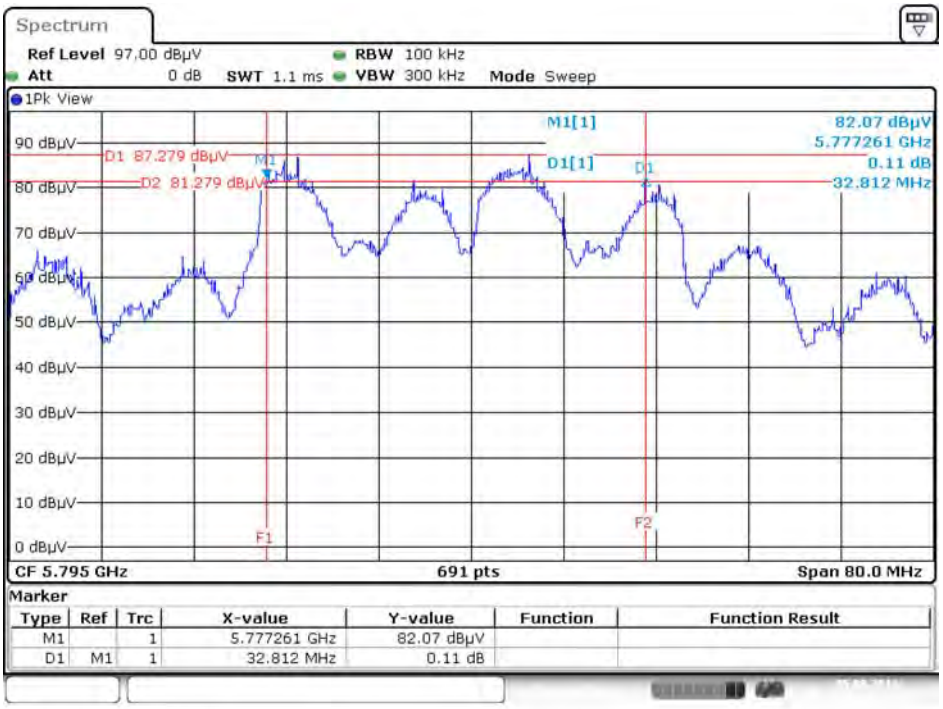
Date: 5.AUG.2016 13:45:08

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



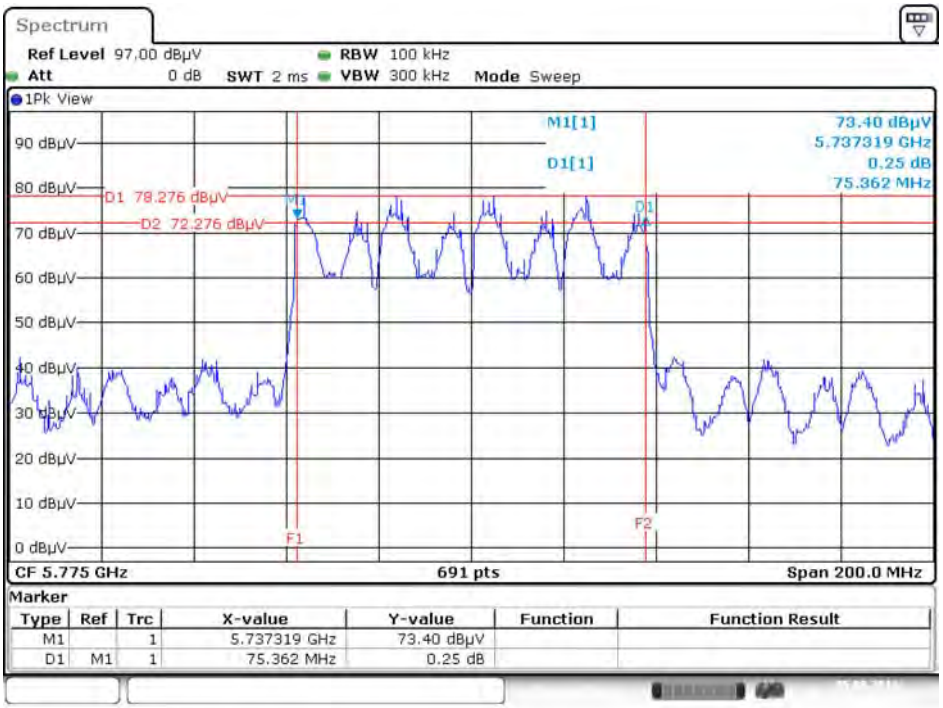
Date: 5.AUG.2016 13:47:09

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



Date: 5.AUG.2016 13:49:08

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



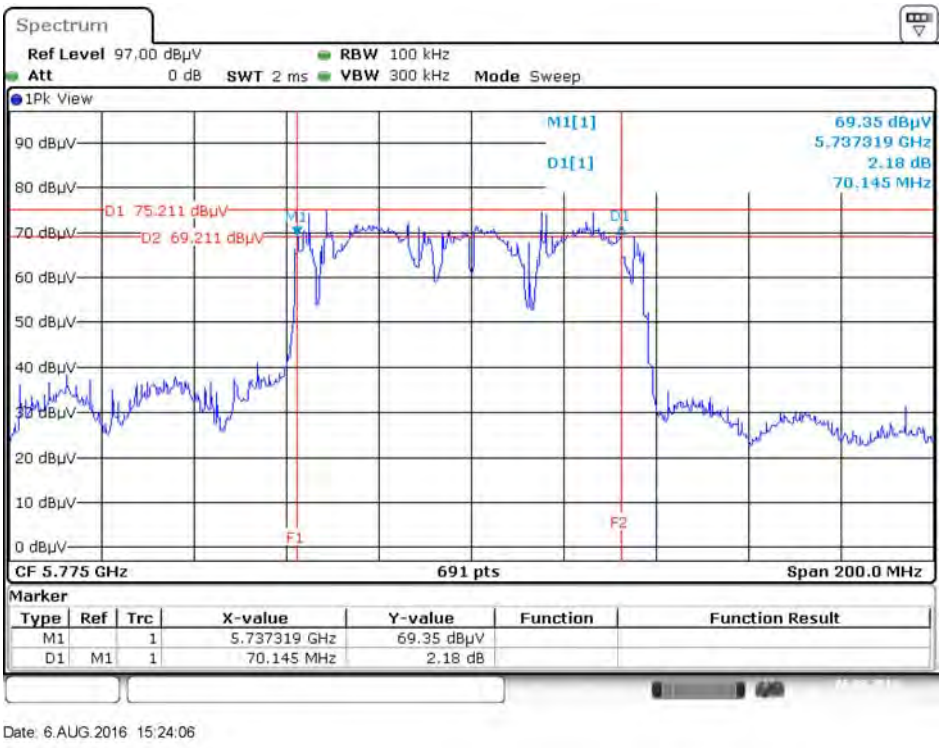
Date: 5.AUG.2016 13:50:02

802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection

Type 1

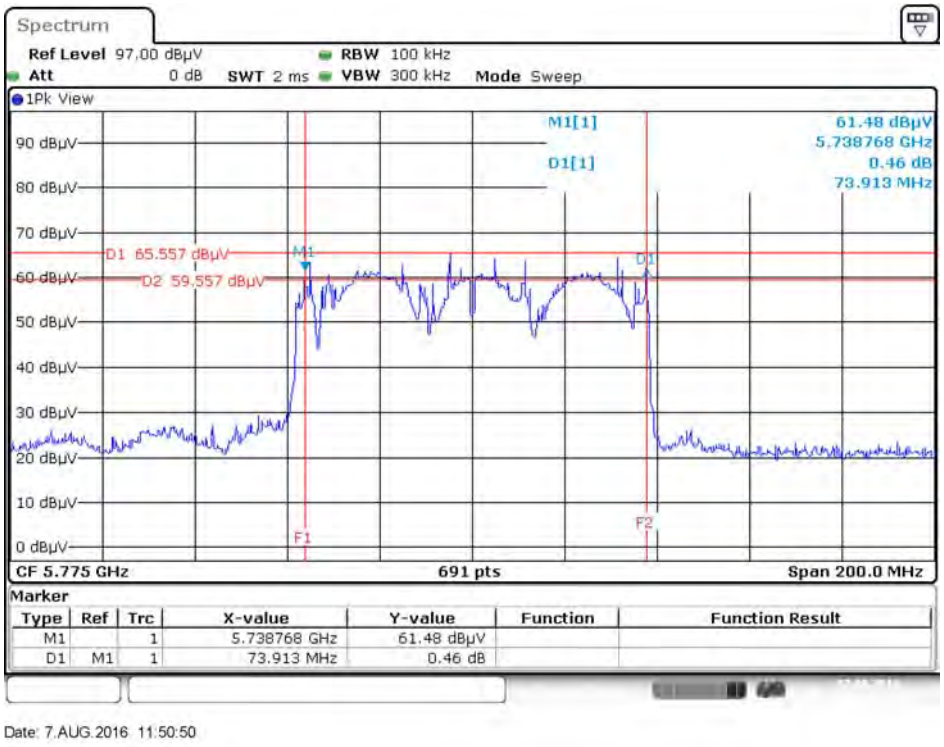
6 dB Bandwidth Plot on Chain 3 + Chain 4 / 5775 MHz



For outdoor use master B1

Type 1

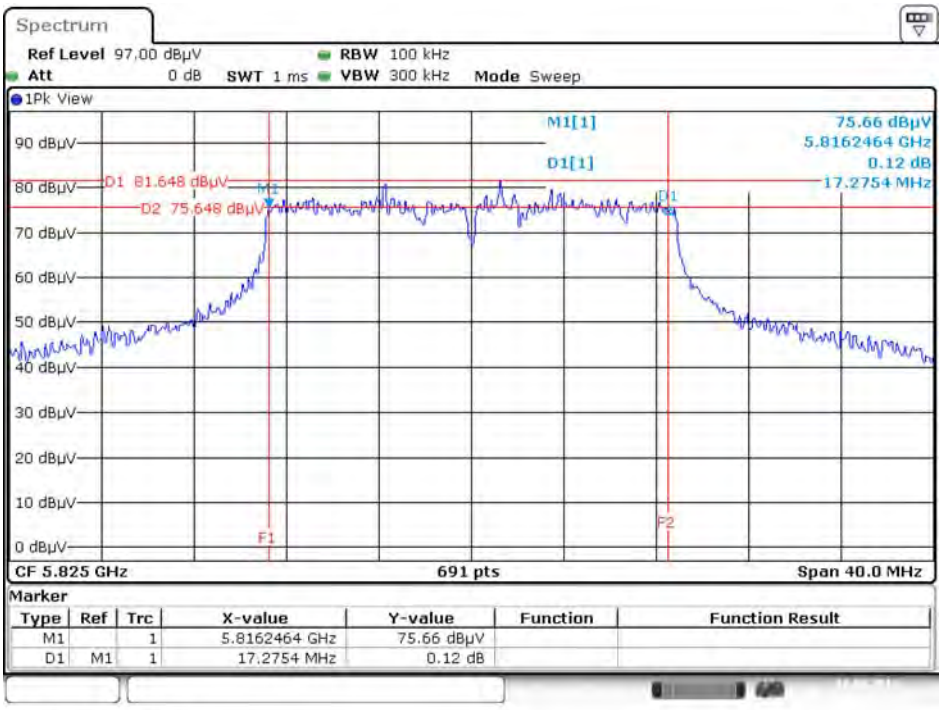
6 dB Bandwidth Plot on Chain 3 + Chain 4 / 5775 MHz



For beamforming mode

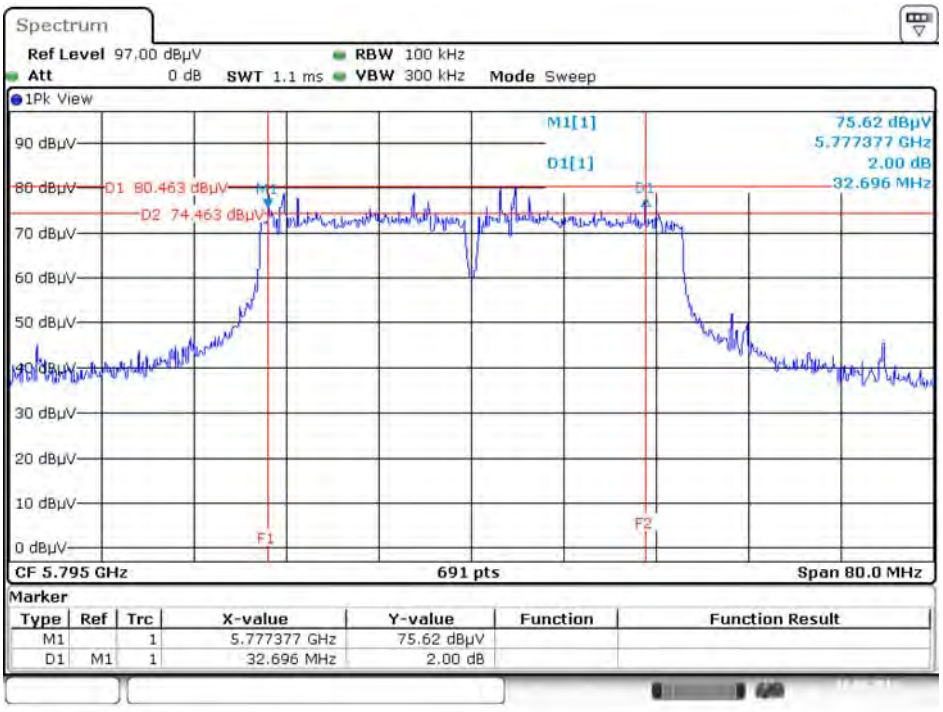
For indoor, outdoor use master and slave without radar detection

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



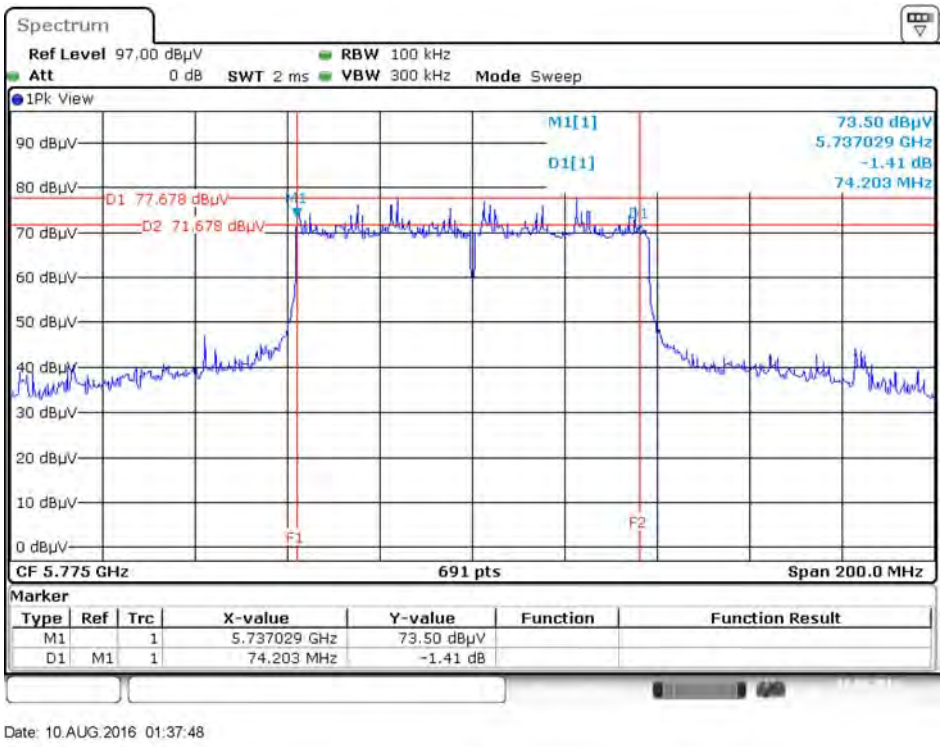
Date: 10.AUG.2016 01:48:45

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



Date: 10.AUG.2016 01:41:23

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz

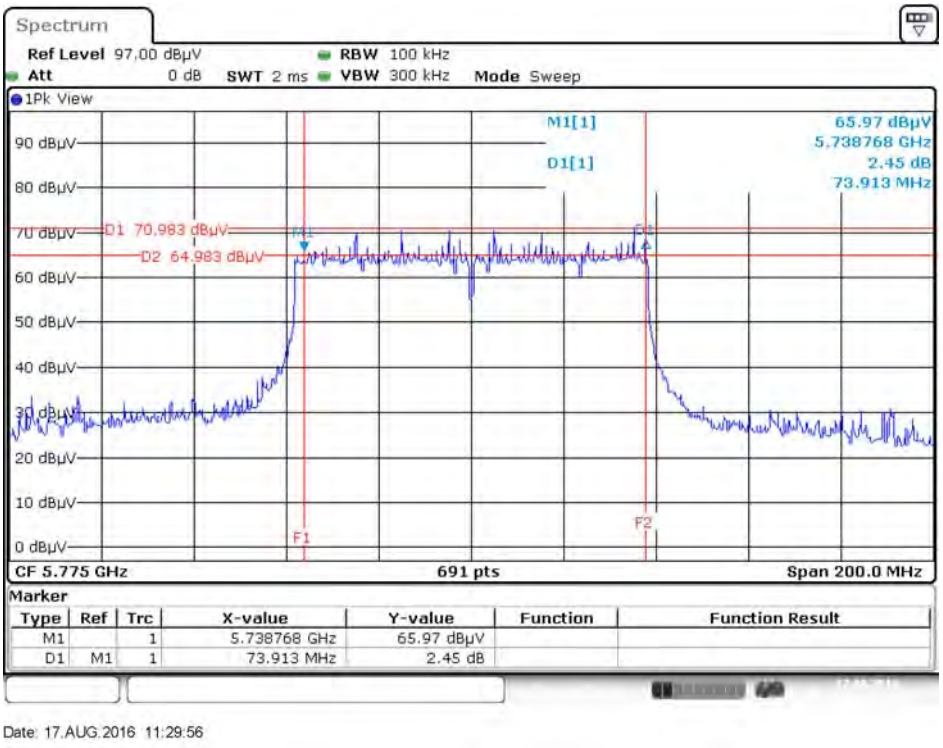


802.11ac MCS0/Nss2 VHT80+80

For indoor use master and slave without radar detection

Type 1

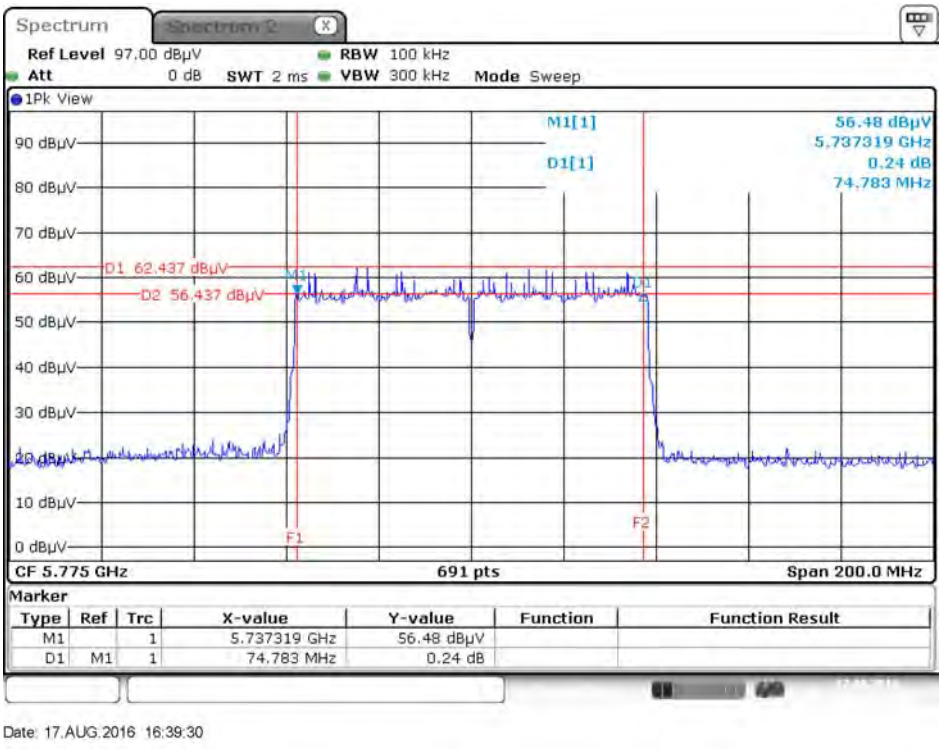
6 dB Bandwidth Plot on Chain 3 + Chain 4 / 5775 MHz



For outdoor use master B1

Type 1

6 dB Bandwidth Plot on Chain 3 + Chain 4 / 5775 MHz



4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

Frequency Band			Limit
☒	5.15~5.25 GHz		
	Operating Mode		
	☒	Outdoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
	☒	Indoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
	☐	Fixed point-to-point access points	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.
	☒	Client devices	The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

☒	5.725~5.85 GHz	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum 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 greater than 6 dBi without any corresponding reduction in transmitter conducted power.

4.4.2. Measuring Instruments and Setting

For other channel

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

For straddle channel

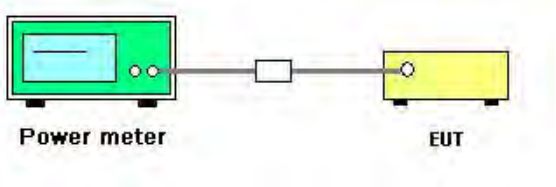
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 count 100
Sweep Time	Auto

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems,add every result of the values by mathematic formula.

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 Maximum Conducted Output Power

Temperature	22°C	Humidity	54%
Test Engineer	Gary Chu		

For non-beamforming mode

For indoor use master B1 and indoor, outdoor use B4

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5180 MHz	18.25	18.39	18.03	18.41	24.29	30.00	Complies
	5200 MHz	18.28	18.34	18.16	18.43	24.32	30.00	Complies
	5240 MHz	18.32	18.45	18.15	18.28	24.32	30.00	Complies
	5745 MHz	22.56	22.89	23.04	23.54	29.04	30.00	Complies
	5785 MHz	22.07	22.83	23.47	22.43	28.75	30.00	Complies
	5825 MHz	22.34	23.12	23.93	22.45	29.03	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	17.88	18.27	18.16	17.92	24.08	30.00	Complies
	5200 MHz	17.82	18.19	18.11	17.93	24.04	30.00	Complies
	5240 MHz	17.94	18.32	18.17	18.02	24.14	30.00	Complies
	5745 MHz	22.05	22.31	22.97	22.36	28.46	30.00	Complies
	5785 MHz	21.66	22.74	23.18	22.31	28.53	30.00	Complies
	5825 MHz	22.13	22.89	23.93	22.37	28.91	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	16.93	17.16	17.07	17.04	23.07	30.00	Complies
	5230 MHz	20.01	20.27	20.15	20.08	26.15	30.00	Complies
	5755 MHz	20.85	21.33	21.96	21.27	27.39	30.00	Complies
	5795 MHz	21.94	22.75	23.37	22.36	28.66	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	14.26	14.81	14.46	14.63	20.57	30.00	Complies
	5775 MHz	17.17	17.74	18.18	17.65	23.72	30.00	Complies

For indoor use slave without radar detection B1

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5180 MHz	12.22	12.41	12.16	12.36	18.31	23.98	Complies
	5200 MHz	12.24	12.42	12.25	12.37	18.34	23.98	Complies
	5240 MHz	12.25	12.38	12.41	12.26	18.35	23.98	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	11.86	12.29	12.03	12.12	18.10	23.98	Complies
	5200 MHz	11.77	12.24	12.07	12.05	18.06	23.98	Complies
	5240 MHz	12.08	12.45	12.14	12.21	18.24	23.98	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	15.02	15.21	15.09	15.04	21.11	23.98	Complies
	5230 MHz	15.07	15.28	15.22	15.13	21.20	23.98	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	14.26	14.81	14.46	14.63	20.57	23.98	Complies

For outdoor use master B1

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5180 MHz	8.86	8.72	9.02	8.99	14.92	30.00	Complies
	5200 MHz	8.9	8.86	9.09	9.00	14.98	30.00	Complies
	5240 MHz	8.71	8.66	8.81	9.02	14.82	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	8.76	8.82	8.64	8.71	14.75	30.00	Complies
	5200 MHz	8.78	8.83	8.53	8.61	14.71	30.00	Complies
	5240 MHz	8.82	8.53	8.69	8.88	14.75	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	8.84	8.56	8.76	8.78	14.76	30.00	Complies
	5230 MHz	8.64	8.63	8.91	8.85	14.78	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	8.64	8.67	8.89	8.76	14.76	30.00	Complies

802.11ac MCS0/Nss2 VHT80+80

For indoor use master

Type	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
1	5210 MHz	15.16	15.45	-	-	18.32	30.00	Complies
	5775 MHz	-	-	15.23	15.77	18.52	30.00	Complies

For indoor use slave without radar detection B1

Type	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
1	5210 MHz	15.16	15.45	-	-	18.32	23.98	Complies
	5775 MHz	-	-	15.23	15.77	18.52	30.00	Complies

For outdoor use master B1

Type	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
1	5210 MHz	11.66	11.71	-	-	14.70	30.00	Complies
	5775 MHz	-	-	11.36	11.87	14.63	30.00	Complies

For beamforming mode

For indoor use master B1 and indoor, outdoor use B4

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5180 MHz	17.51	17.85	17.52	17.87	23.71	25.98	Complies
	5200 MHz	17.57	17.84	17.49	17.95	23.74	25.98	Complies
	5240 MHz	17.64	17.86	17.56	17.61	23.69	25.98	Complies
	5745 MHz	16.71	17.31	17.05	17.64	23.21	25.98	Complies
	5785 MHz	16.85	17.35	17.13	17.95	23.36	25.98	Complies
	5825 MHz	16.81	17.48	17.18	18.07	23.43	25.98	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	17.63	17.98	17.66	17.72	23.77	25.98	Complies
	5230 MHz	17.65	18.01	17.85	17.67	23.82	25.98	Complies
	5755 MHz	17.46	16.78	17.55	17.93	23.47	25.98	Complies
	5795 MHz	16.79	17.18	17.63	17.56	23.32	25.98	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	16.24	16.62	16.44	16.03	22.36	25.98	Complies
	5775 MHz	17.03	16.88	17.4	18.37	23.48	25.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi>6dBi, so B1 B4 limit =30-(10.02-6)=25.98dBm.

For indoor use slave without radar detection B1

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5180 MHz	11.21	11.88	11.45	11.33	17.50	19.96	Complies
	5200 MHz	11.63	11.29	11.48	11.43	17.48	19.96	Complies
	5240 MHz	11.79	11.44	11.51	11.31	17.54	19.96	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	11.89	11.93	11.45	11.48	17.71	19.96	Complies
	5230 MHz	11.96	11.38	11.56	11.39	17.60	19.96	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	11.24	11.62	11.44	11.03	17.36	19.96	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi>6dBi, so limit =23.98-(10.02-6)=19.96dBm.

For outdoor use master B1

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5180 MHz	2.53	2.61	2.72	2.66	8.65	25.98	Complies
	5200 MHz	2.45	2.64	2.55	2.69	8.60	25.98	Complies
	5240 MHz	2.58	2.68	2.75	2.52	8.65	25.98	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	1.96	2.23	2.09	2.37	8.19	25.98	Complies
	5230 MHz	2.68	2.41	2.52	2.12	8.46	25.98	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	2.09	2.62	2.21	2.29	8.33	25.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi>6dBi, so limit =30-(10.02-6)=25.98dBm.

802.11ac MCS0/Nss2 VHT80+80

For indoor use master

Type	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
1	5210 MHz	15.71	15.26	-	-	18.50	28.99	Complies
	5775 MHz	-	-	15.02	15.76	18.42	28.99	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi>6dBi, so limit =30-(7.01-6)=28.99dBm.

For indoor use slave without radar detection B1

Type	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
1	5210 MHz	15.71	15.26	-	-	18.50	22.97	Complies
	5775 MHz	-	-	15.02	15.76	18.42	28.99	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi>6dBi, so limit =23.98-(7.01-6)=22.97dBm.

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi>6dBi, so limit =30-(7.01-6)=28.99dBm.

For outdoor use master B1

Type	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
1	5210 MHz	8.93	8.76	-	-	11.86	28.99	Complies
	5775 MHz	-	-	8.23	8.56	11.41	28.99	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi>6dBi, so limit =30-(7.01-6)=28.99dBm

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

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

4.5. Power Spectral Density Measurement

4.5.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.4.1.

Frequency Band			Limit
☒	5.15~5.25 GHz		
	Operating Mode		
	☒	Outdoor access point	17 dBm/MHz
	☒	Indoor access point	17 dBm/MHz
	☐	Fixed point-to-point access points	17 dBm/MHz
	☒	Mobile and portable client devices	11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

4.5.2. Measuring Instruments and Setting

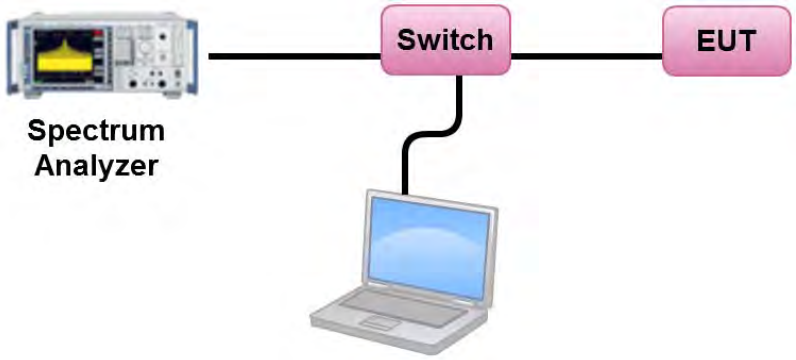
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1000 kHz
VBW	3000 kHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times
Note: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.	

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements and sum the spectra across the outputs.
4. For 5.725~5.85 GHz, the measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.5.4. Test Setup Layout



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 Power Spectral Density

Temperature	22°C	Humidity	54%
Test Engineer	Gary Chu		

For non-beamforming mode

For indoor use master B1 and indoor, outdoor use B4

Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	10.92	12.98	Complies
40	5200 MHz	10.92	12.98	Complies
48	5240 MHz	10.96	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	15.87	-3.01	12.86	25.98	Complies
157	5785 MHz	15.61	-3.01	12.60	25.98	Complies
165	5825 MHz	15.74	-3.01	12.73	25.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so B4 limit =30-(10.02-6)=25.98dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	10.87	12.98	Complies
40	5200 MHz	10.89	12.98	Complies
48	5240 MHz	10.80	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	15.10	-3.01	12.09	25.98	Complies
157	5785 MHz	15.43	-3.01	12.42	25.98	Complies
165	5825 MHz	15.50	-3.01	12.49	25.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B4 limit =30-(10.02-6)=25.98dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	6.88	12.98	Complies
46	5230 MHz	9.94	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	11.02	-3.01	8.01	25.98	Complies
159	5795 MHz	12.63	-3.01	9.62	25.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so B4 limit =30-(10.02-6)=25.98dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-1.39	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	4.60	-3.01	1.59	25.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B4 limit =30-(10.02-6)=25.98dBm/500kHz.

For indoor use slave without radar detection B1

Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	4.97	6.98	Complies
40	5200 MHz	4.86	6.98	Complies
48	5240 MHz	4.90	6.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	4.69	6.98	Complies
40	5200 MHz	4.64	6.98	Complies
48	5240 MHz	4.77	6.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	4.91	6.98	Complies
46	5230 MHz	4.83	6.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-1.39	6.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =11-(10.02-6)=6.98dBm/MHz.

For outdoor use master B1

Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	1.69	12.98	Complies
40	5200 MHz	1.76	12.98	Complies
48	5240 MHz	1.59	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	1.53	12.98	Complies
40	5200 MHz	1.46	12.98	Complies
48	5240 MHz	1.51	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-1.50	12.98	Complies
46	5230 MHz	-1.47	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-4.34	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

802.11ac MCS0/Nss2 VHT80+80

For indoor use master

Type	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Max. Limit (dBm/MHz)	Result
1	5210 MHz	-0.79	-			15.99	Complies
	5775 MHz	-0.71	-3.01	-3.72	28.99	-	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit=17-(7.01-6)=15.99dBm/MHz.

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit =30-(7.01-6)=28.99dBm/500kHz.

For indoor use slave without radar detection B1

Type	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Max. Limit (dBm/MHz)	Result
1	5210 MHz	-0.79	-			9.99	Complies
	5775 MHz	-0.71	-3.01	-3.72	28.99	-	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit=11-(7.01-6)=9.99dBm/MHz.

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit =30-(7.01-6)=28.99dBm/500kHz.

For outdoor use master B1

Type	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Max. Limit (dBm/MHz)	Result
1	5210 MHz	-4.51	-			15.99	Complies
	5775 MHz	-4.76	-3.01	-7.77	28.99	-	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit=17-(7.01-6)=15.99dBm/MHz.

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit =30-(7.01-6)=28.99dBm/500kHz.

For beamforming mode

For indoor use master B1 and indoor, outdoor use B4

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	10.36	12.98	Complies
40	5200 MHz	10.41	12.98	Complies
48	5240 MHz	10.31	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	9.92	-3.01	6.91	25.98	Complies
157	5785 MHz	10.02	-3.01	7.01	25.98	Complies
165	5825 MHz	10.08	-3.01	7.07	25.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B4 limit =30-(10.02-6)=25.98dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	7.46	12.98	Complies
46	5230 MHz	7.54	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	7.21	-3.01	4.20	25.98	Complies
159	5795 MHz	7.06	-3.01	4.05	25.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B4 limit =30-(10.02-6)=25.98dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	5.25	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B1 limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	4.27	-3.01	1.26	25.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi, so B4 limit =30-(10.02-6)=25.98dBm/500kHz.

For indoor use slave without radar detection B1

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	4.13	6.98	Complies
40	5200 MHz	4.10	6.98	Complies
48	5240 MHz	4.20	6.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	1.42	6.98	Complies
46	5230 MHz	1.34	6.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-1.79	6.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =11-(10.02-6)=6.98dBm/MHz.

For outdoor use master B1

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	-4.52	12.98	Complies
40	5200 MHz	-4.55	12.98	Complies
48	5240 MHz	-4.52	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =17-(10.02-6)=12.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-7.94	12.98	Complies
46	5230 MHz	-7.74	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =17-(10.02-6)=12.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-10.77	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi, so limit =17-(10.02-6)=12.98dBm/MHz.

802.11ac MCS0/Nss2 VHT80+80

For indoor use master

Type	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Max. Limit (dBm/MHz)	Result
1	5210 MHz	-0.68	-			15.99	Complies
	5775 MHz	-1.05	-3.01	-4.06	28.99	-	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit=17-(7.01-6)=15.99dBm/MHz.

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit =30-(7.01-6)=28.99dBm/500kHz.

For indoor use slave without radar detection B1

Type	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Max. Limit (dBm/MHz)	Result
1	5210 MHz	-0.68	-			9.99	Complies
	5775 MHz	-1.05	-3.01	-4.06	28.99	-	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit=11-(7.01-6)=9.99dBm/MHz.

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit =30-(7.01-6)=28.99dBm/500kHz.

For outdoor use master B1

Type	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Max. Limit (dBm/MHz)	Result
1	5210 MHz	-7.42	-			15.99	Complies
	5775 MHz	-7.77	-3.01	-10.78	28.99	-	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit=17-(7.01-6)=15.99dBm/MHz.

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.01dBi, so limit =30-(7.01-6)=28.99dBm/500kHz.

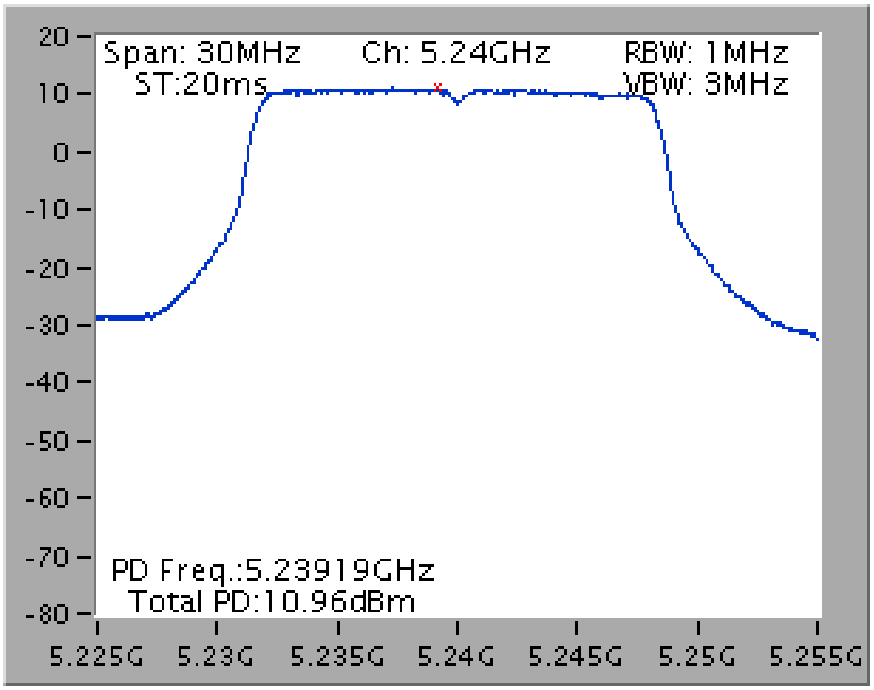
Note: All the test values were listed in the report.

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

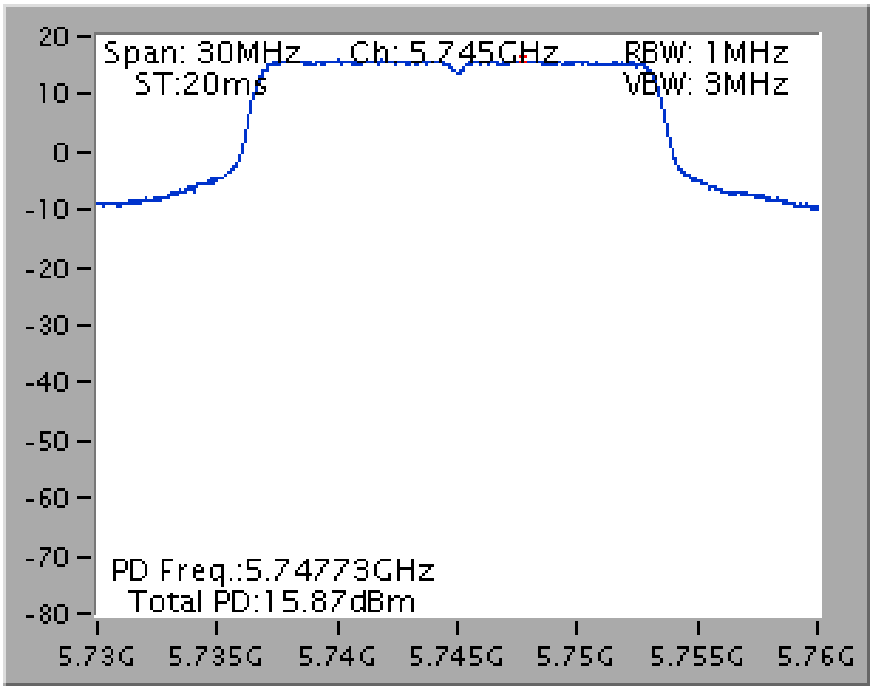
For non-beamforming mode

For indoor use master B1 and indoor, outdoor use B4

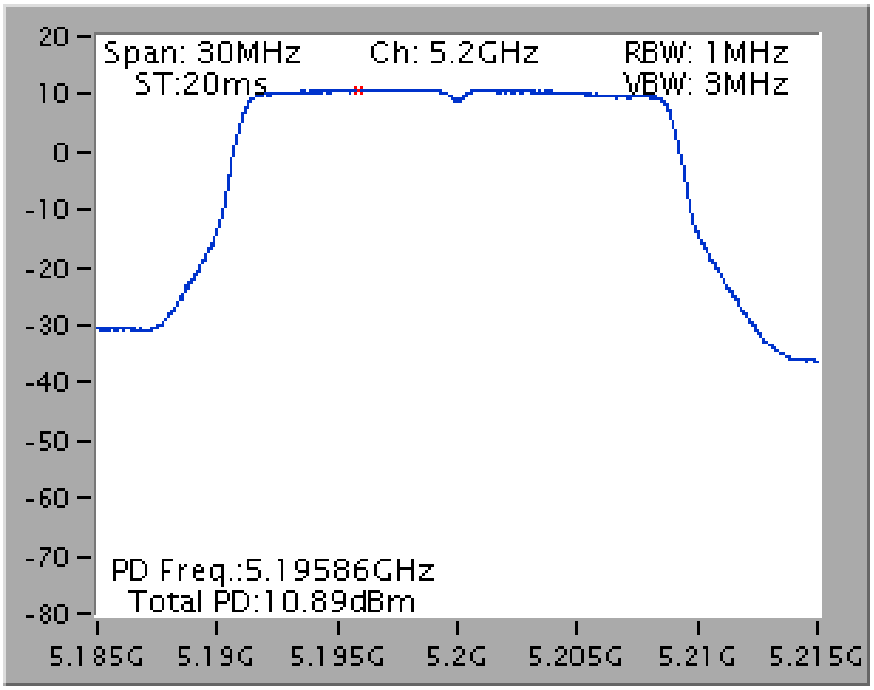
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



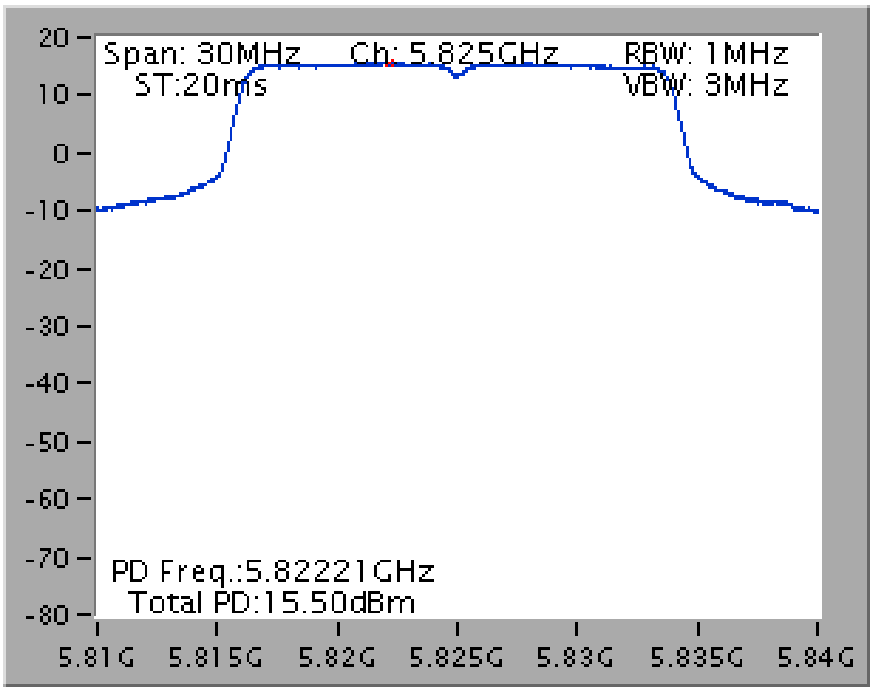
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



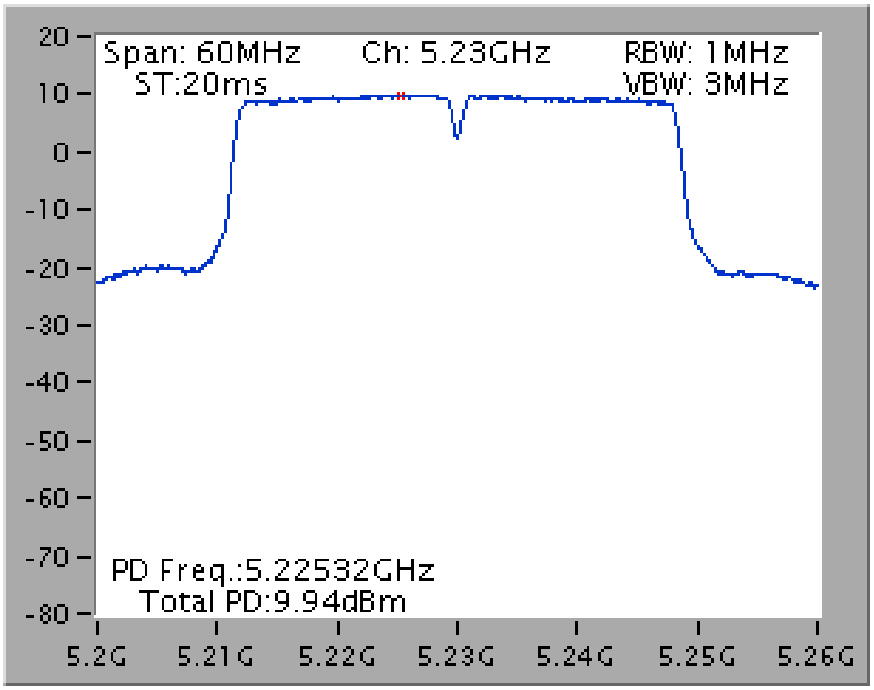
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



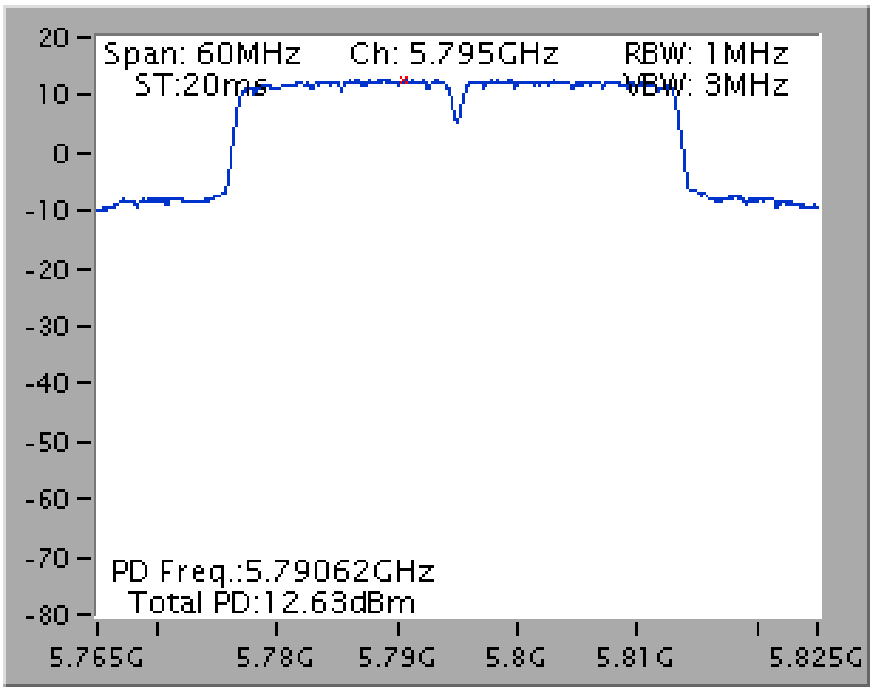
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



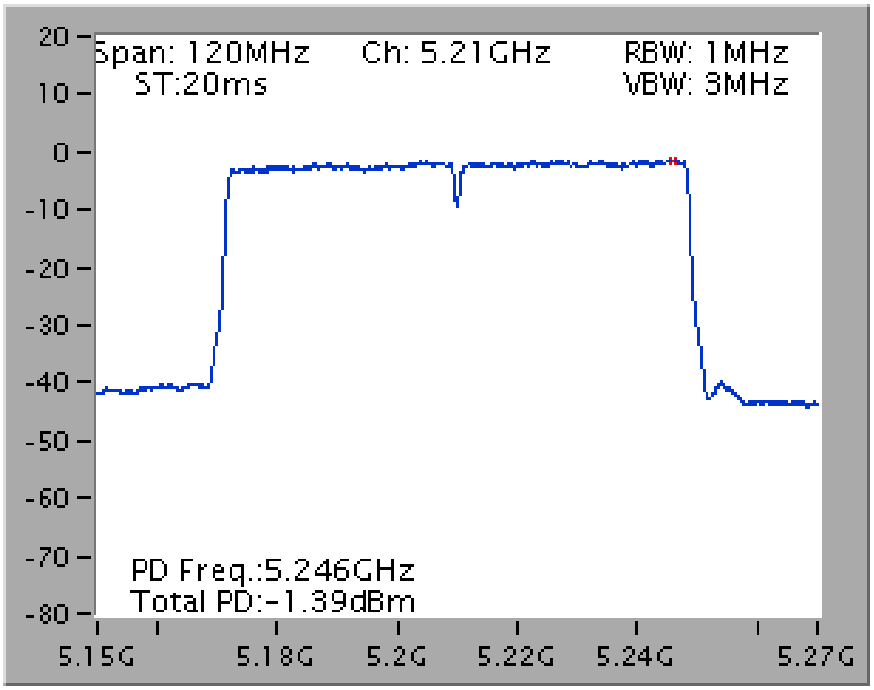
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



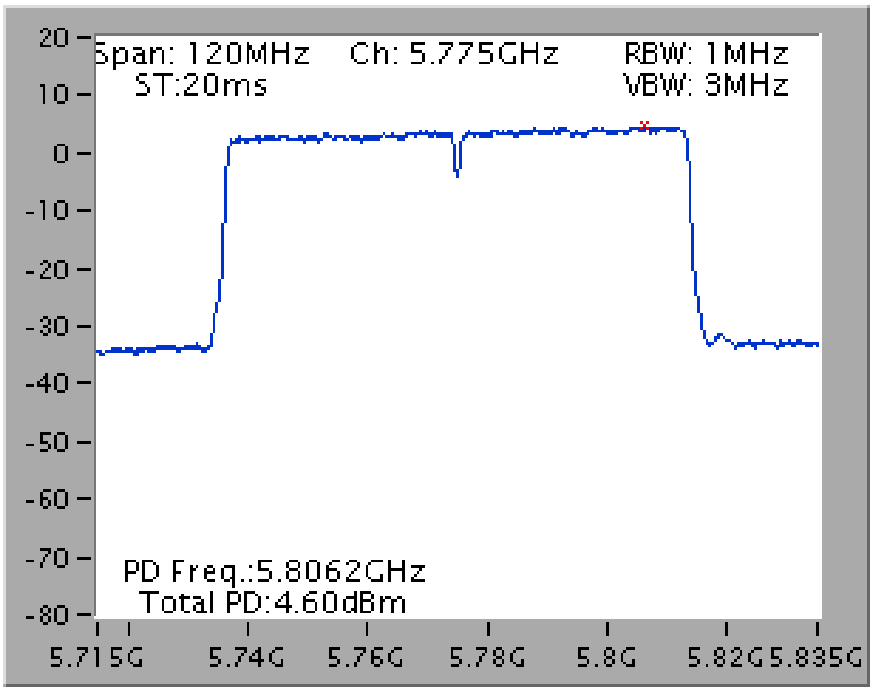
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz

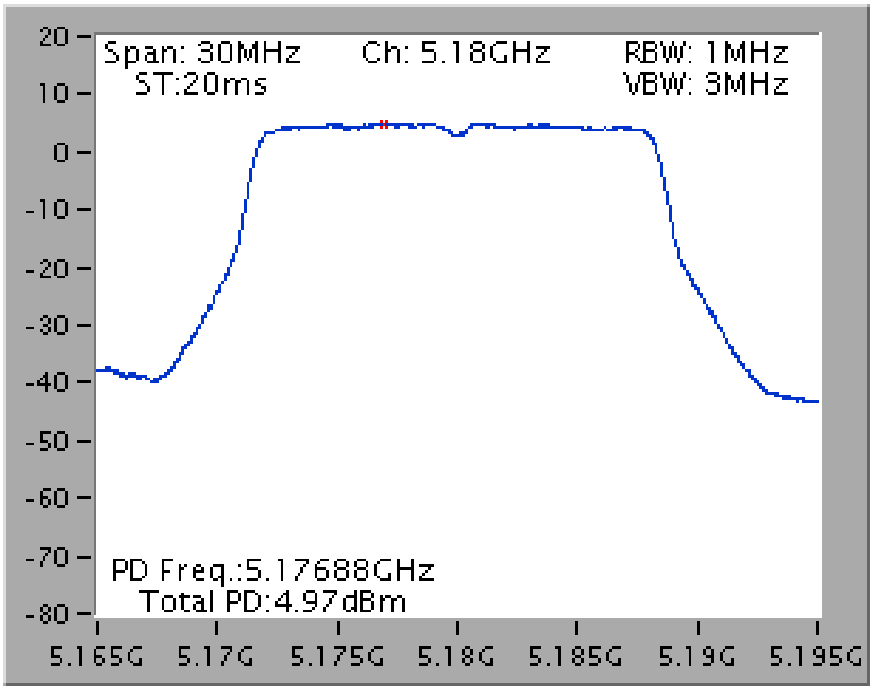


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz

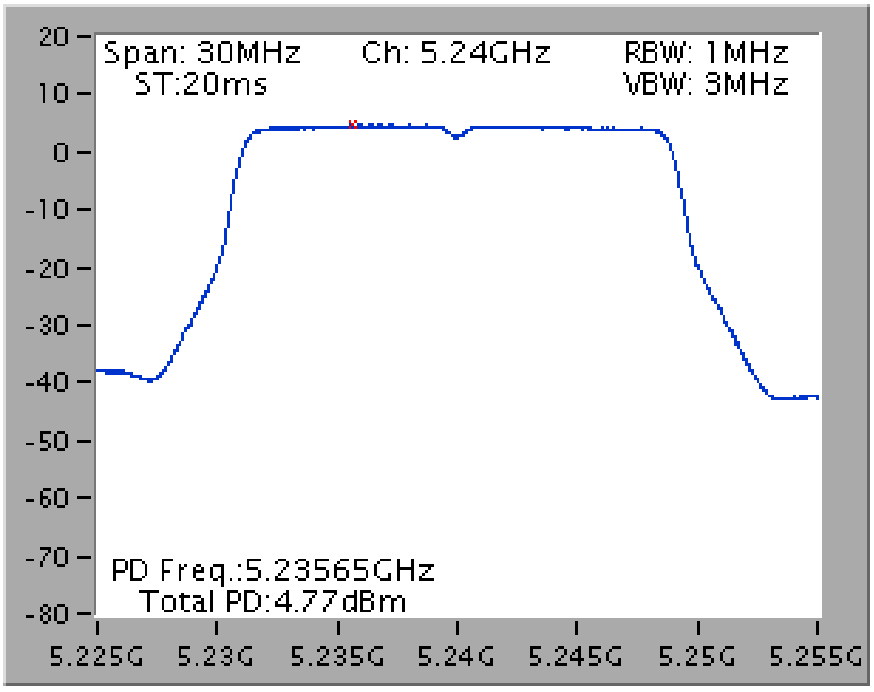


For indoor use slave without radar detection B1

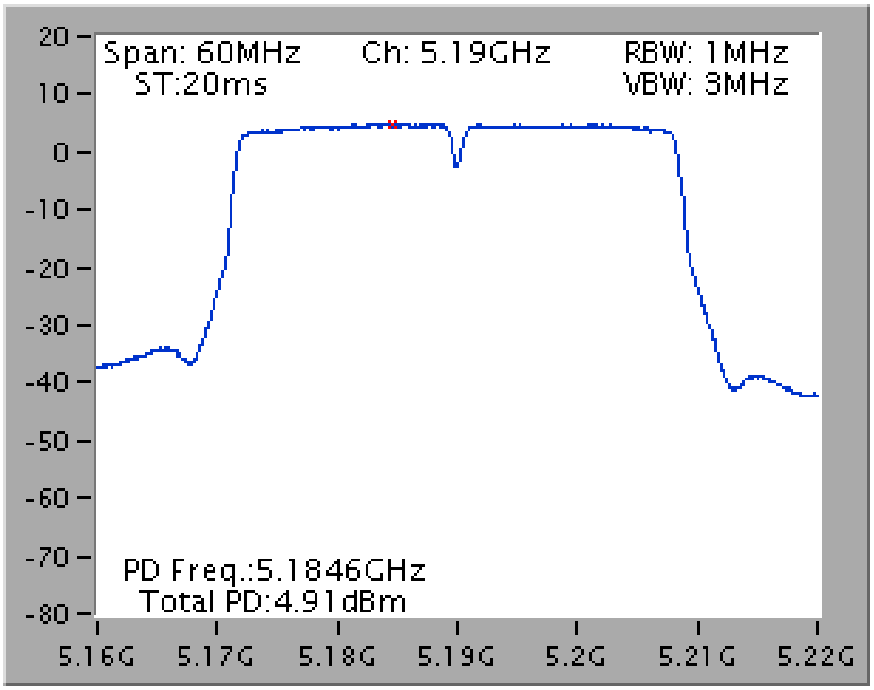
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



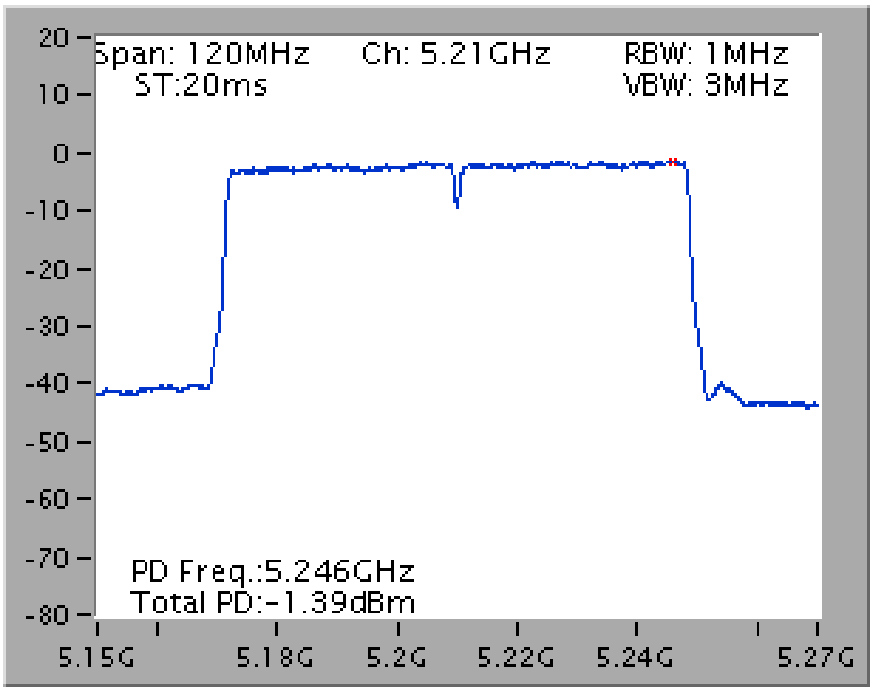
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz

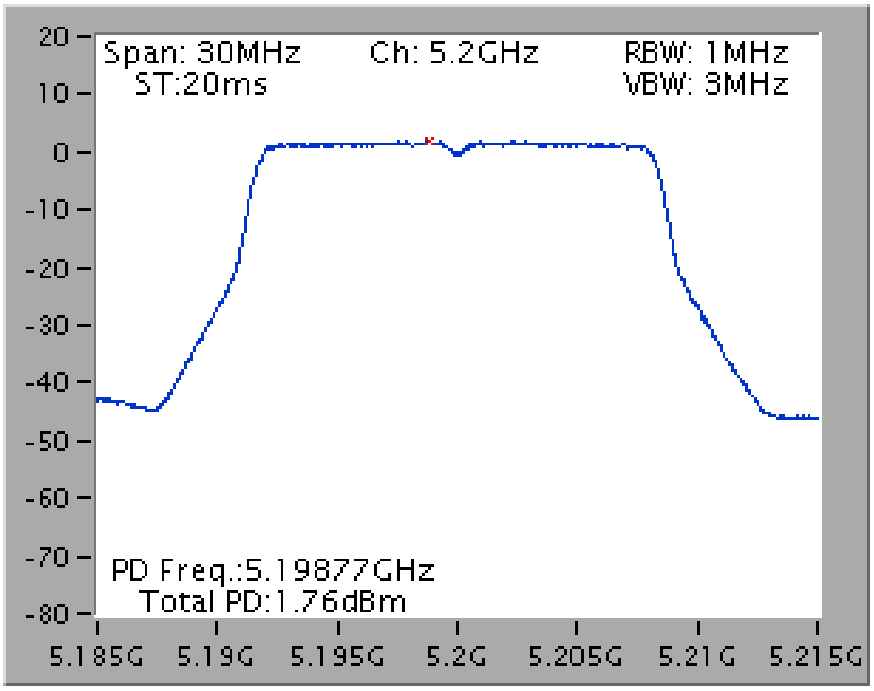


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz

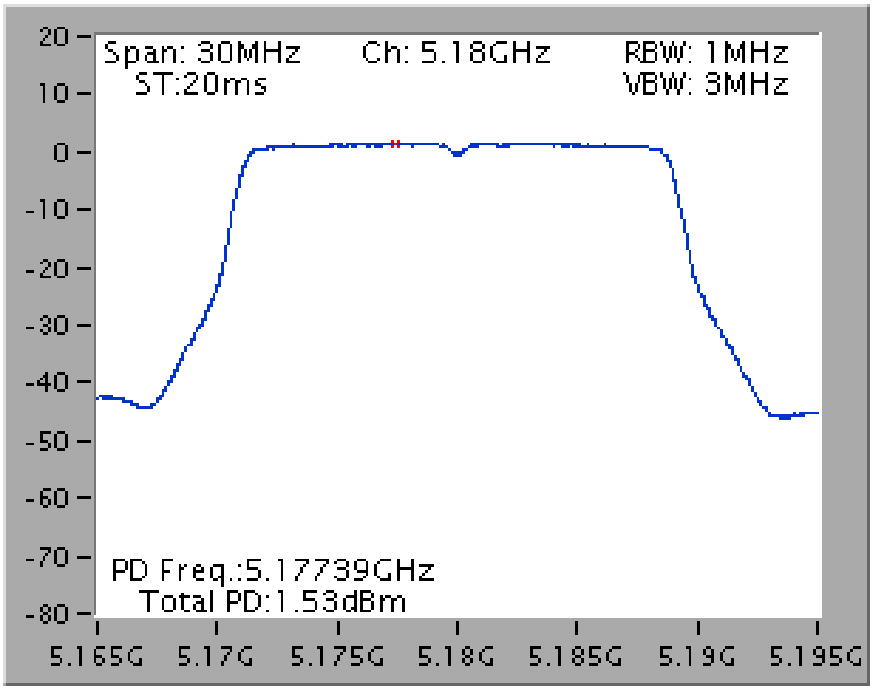


For outdoor use master B1

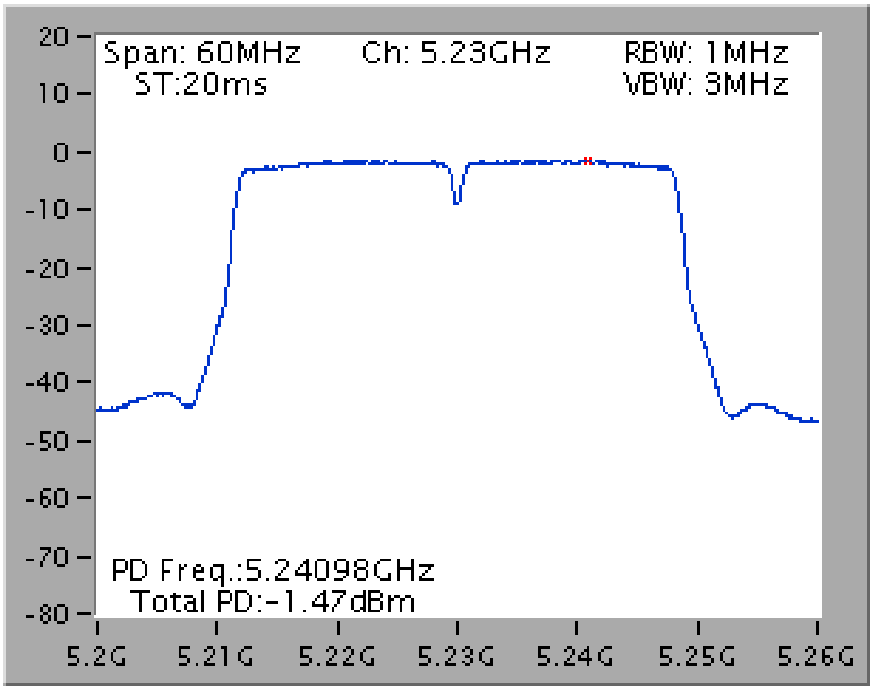
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



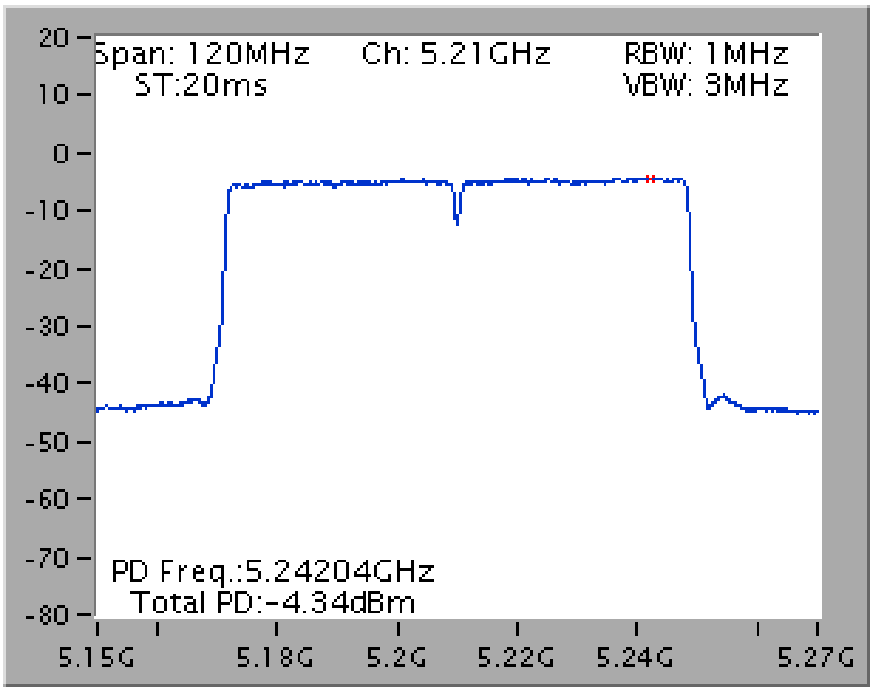
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz

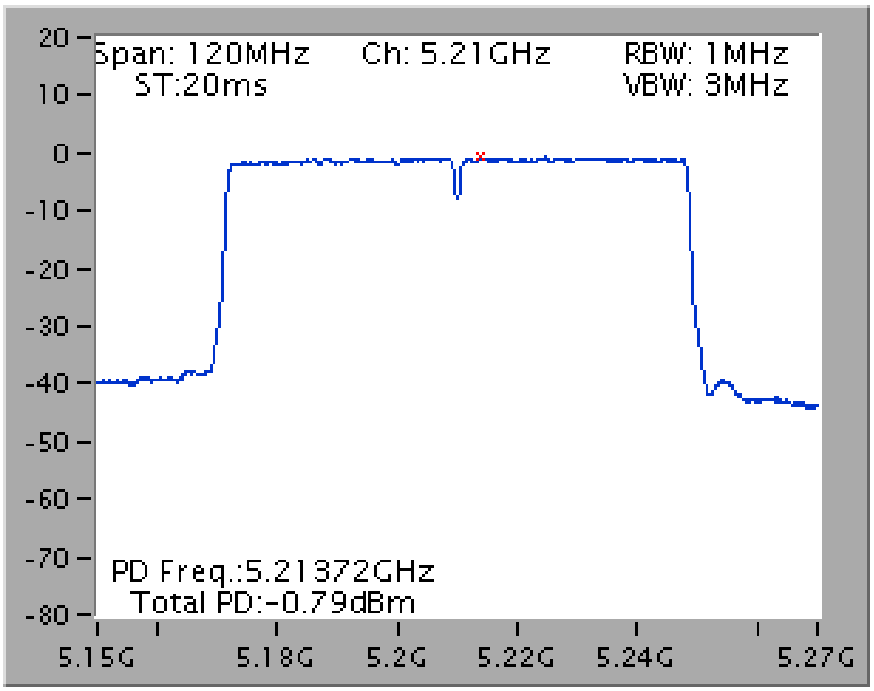


802.11ac MCS0/Nss2 VHT80+80

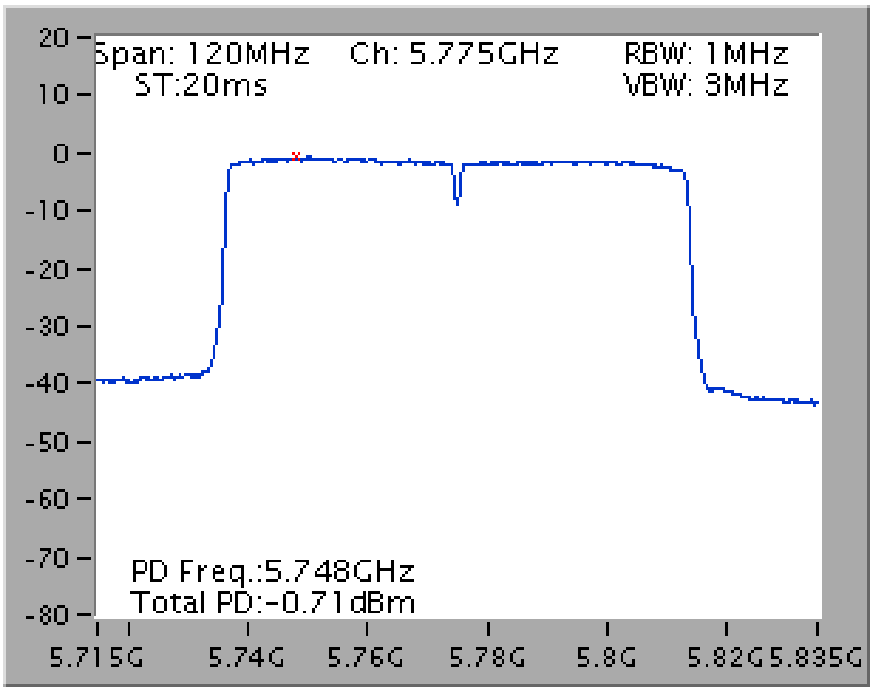
For indoor use master and slave without radar detection

Type 1

Power Density Plot on Chain 1 + Chain 2 / 5210 MHz



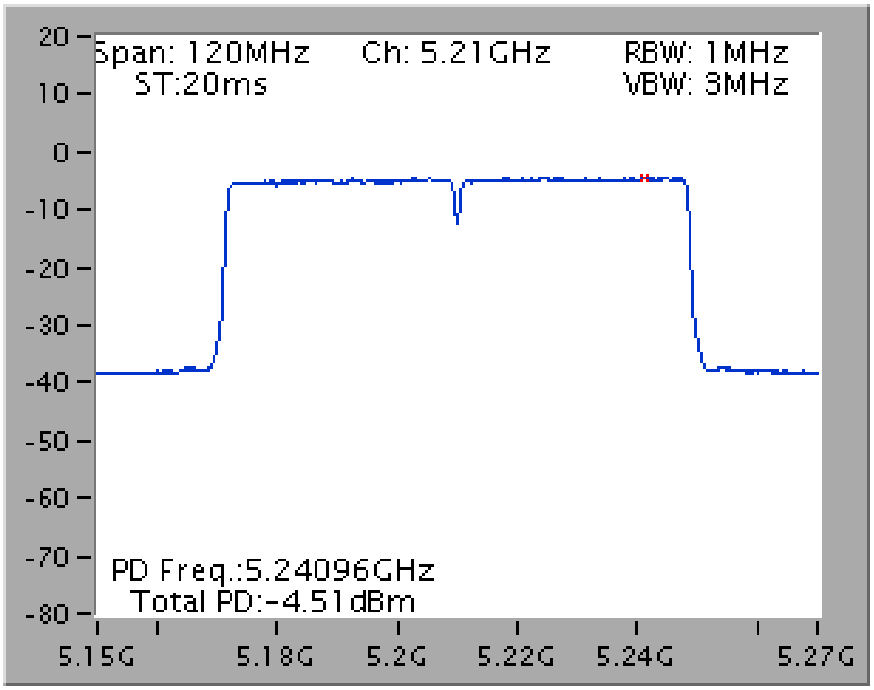
Power Density Plot on Chain 3 + Chain 4 / 5775 MHz



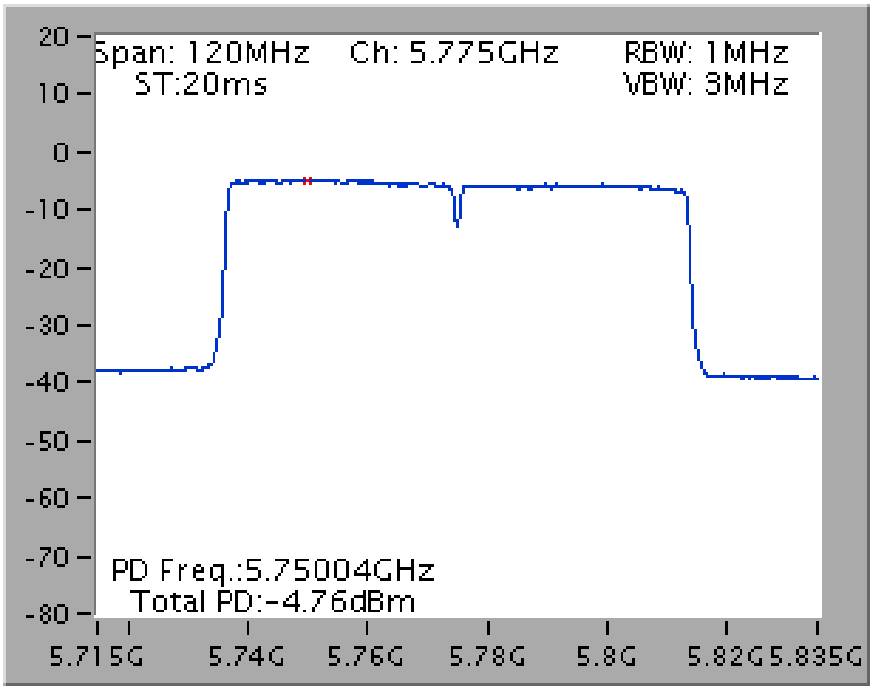
For outdoor use master B1

Type 1

Power Density Plot on Chain 1 + Chain 2 / 5210 MHz



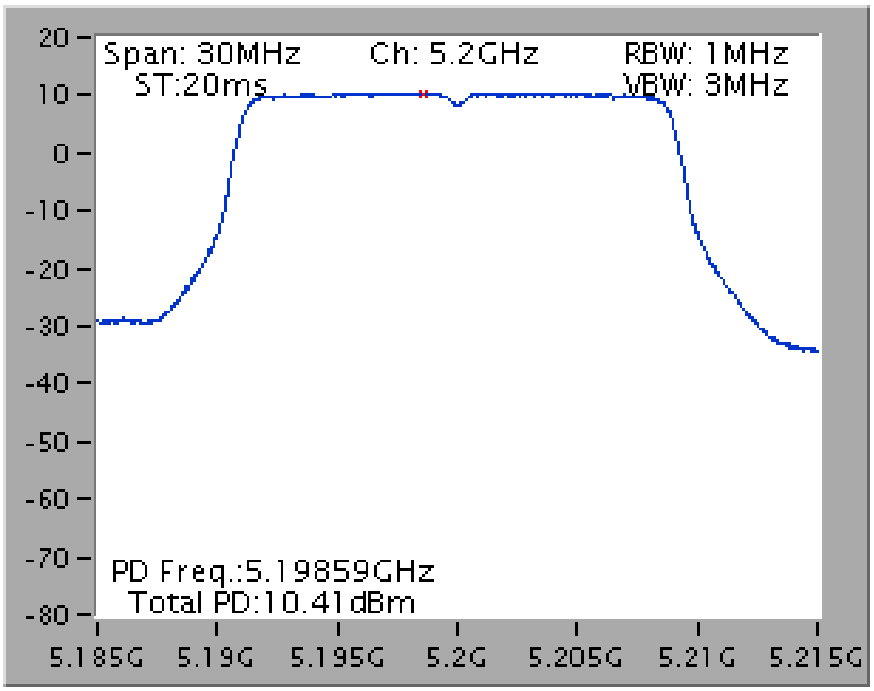
Power Density Plot on Chain 3 + Chain 4 / 5775 MHz



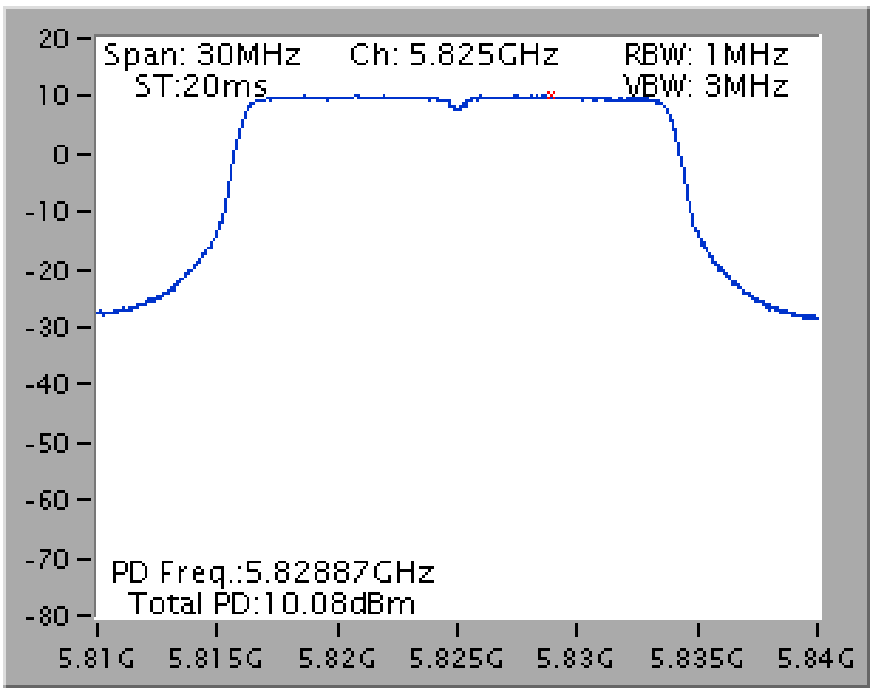
For beamforming mode

For indoor use master B1 and indoor, outdoor use B4

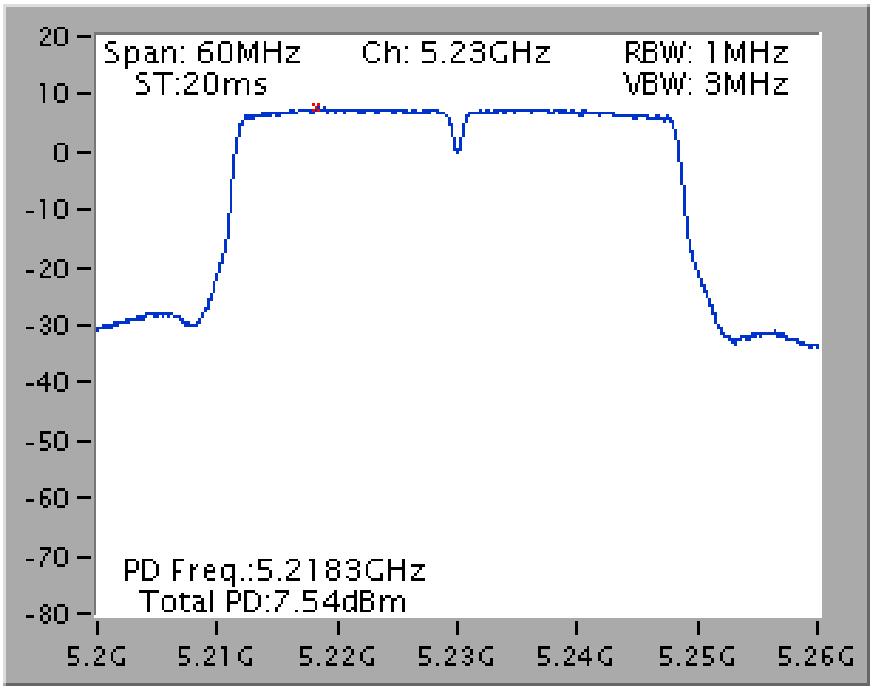
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



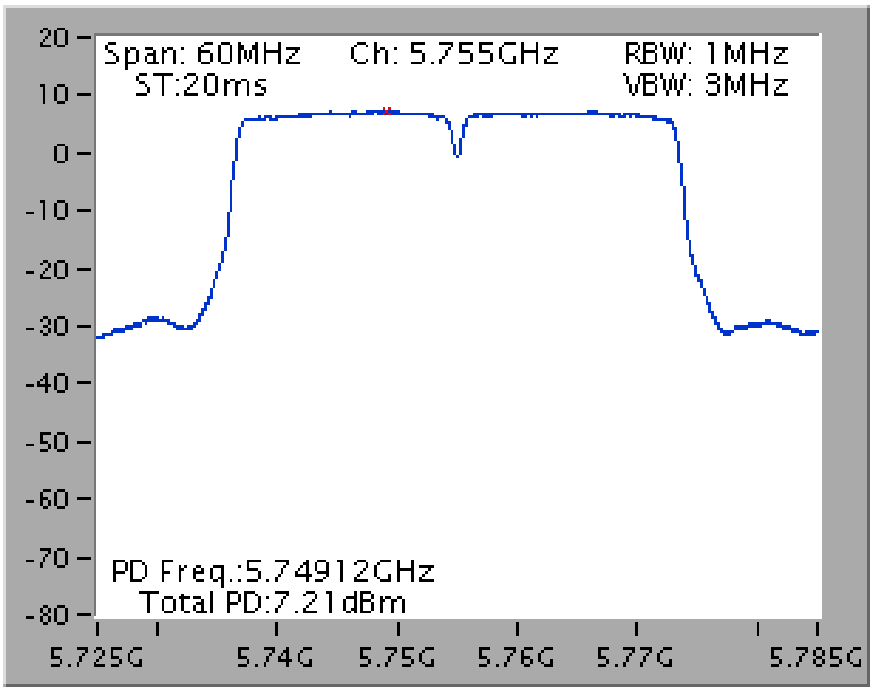
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



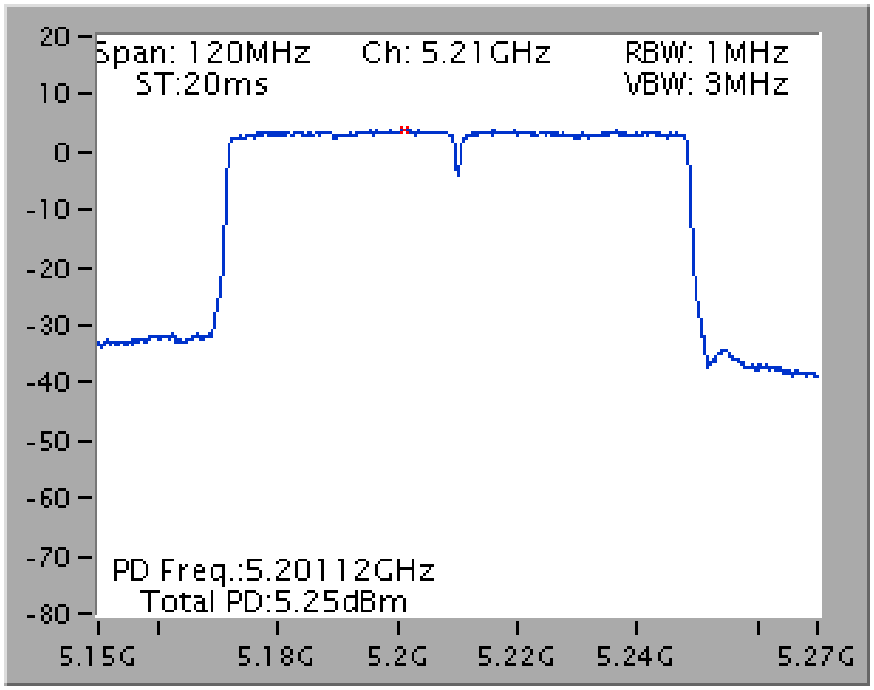
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



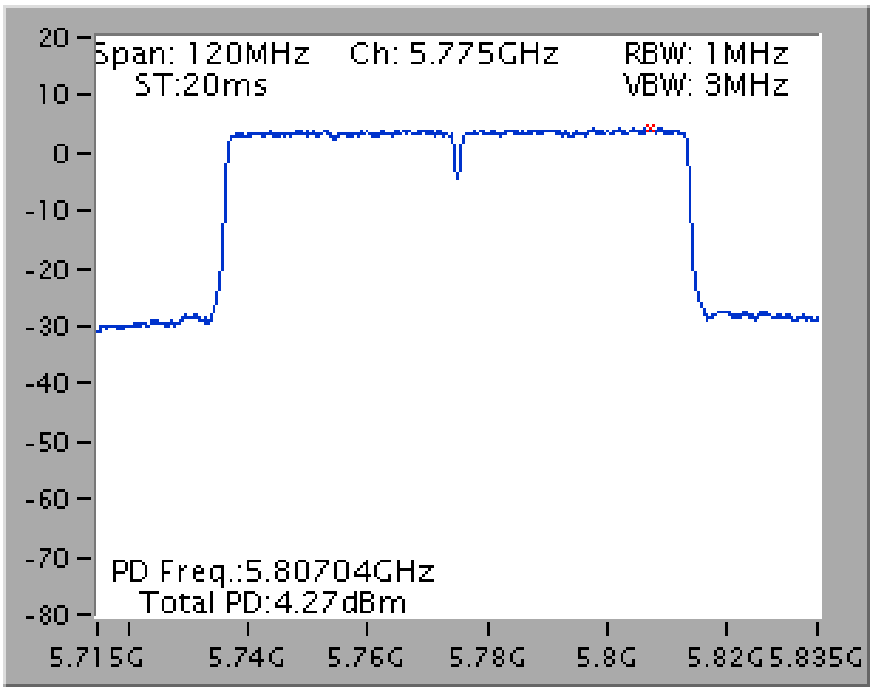
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5755 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz

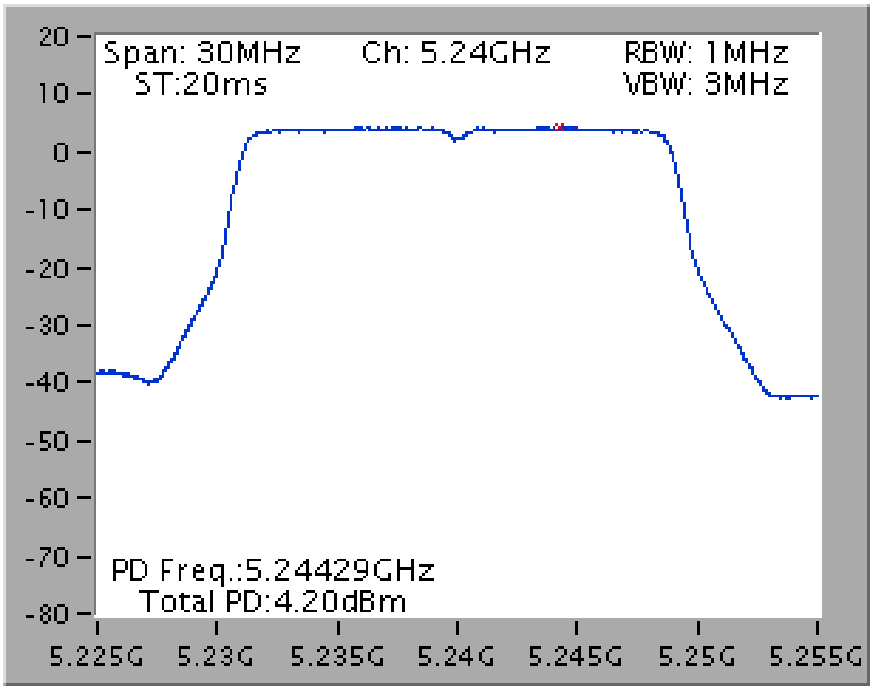


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz

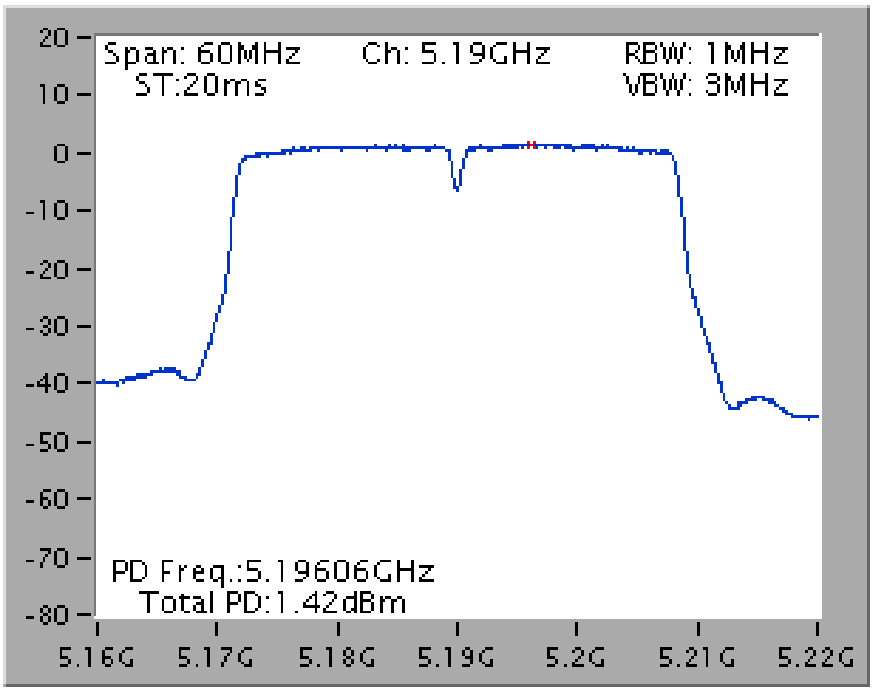


For indoor use slave without radar detection B1

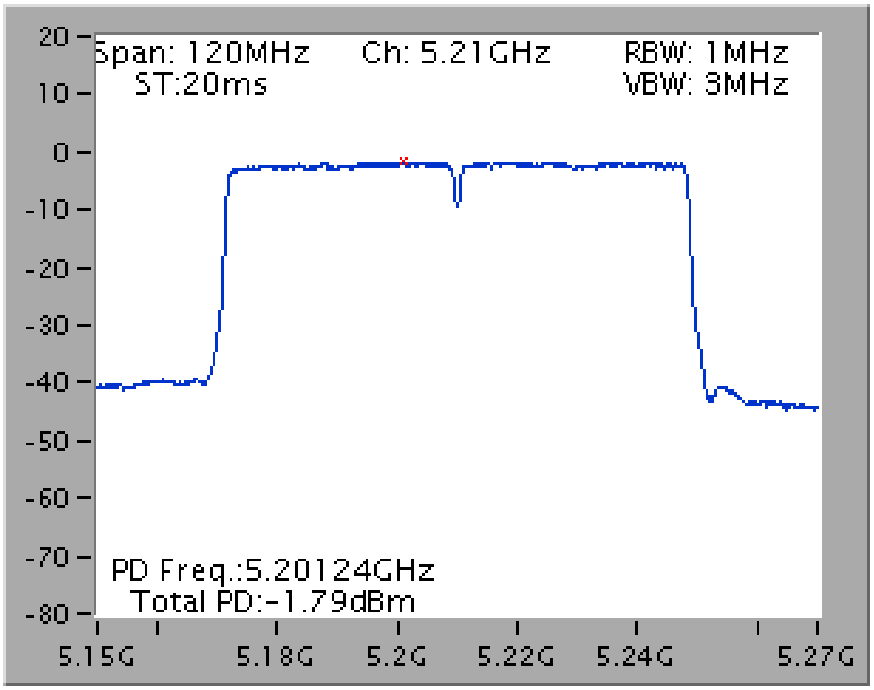
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz

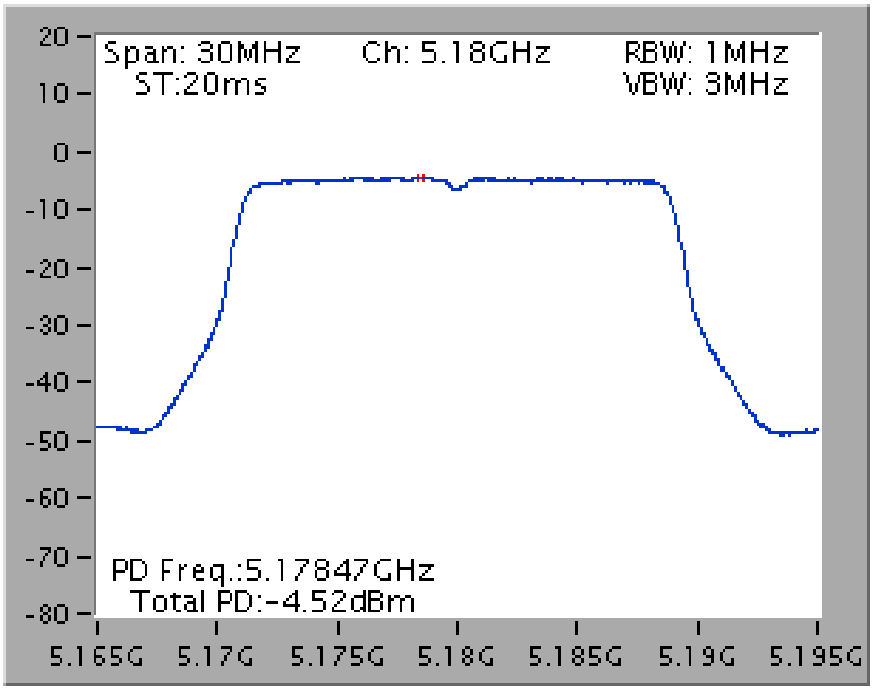


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz

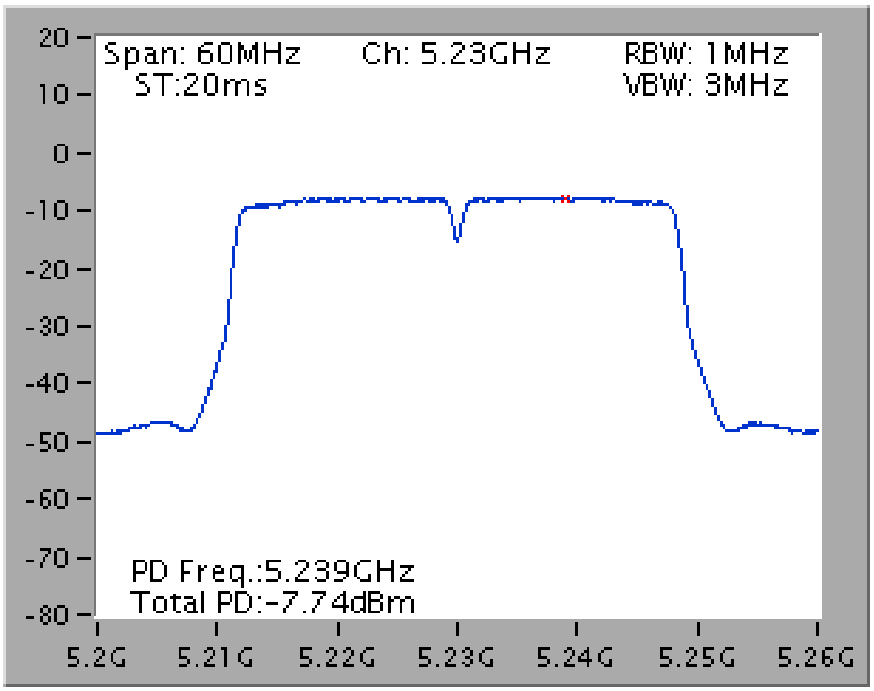


For outdoor use master B1

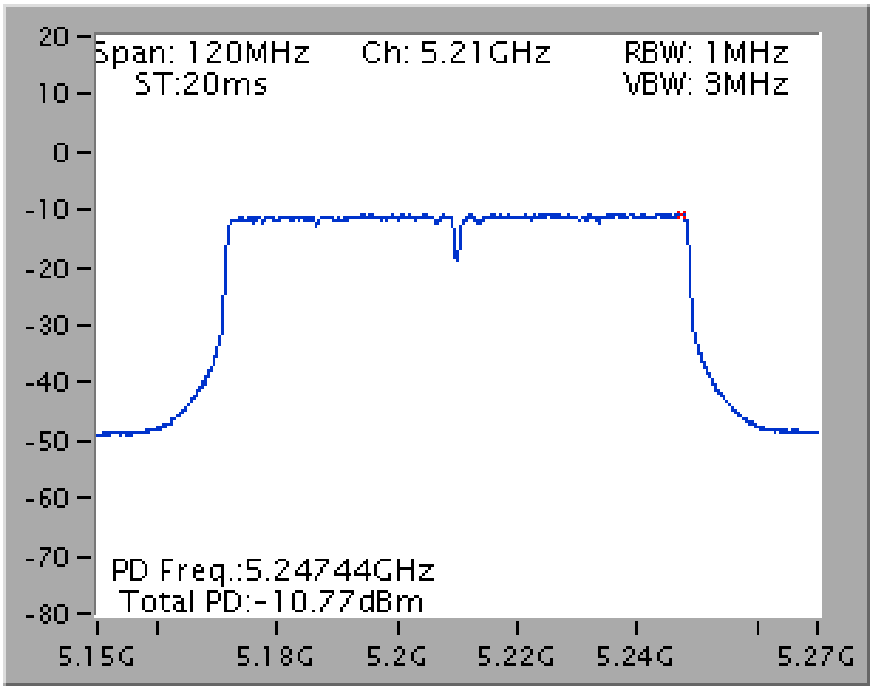
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz

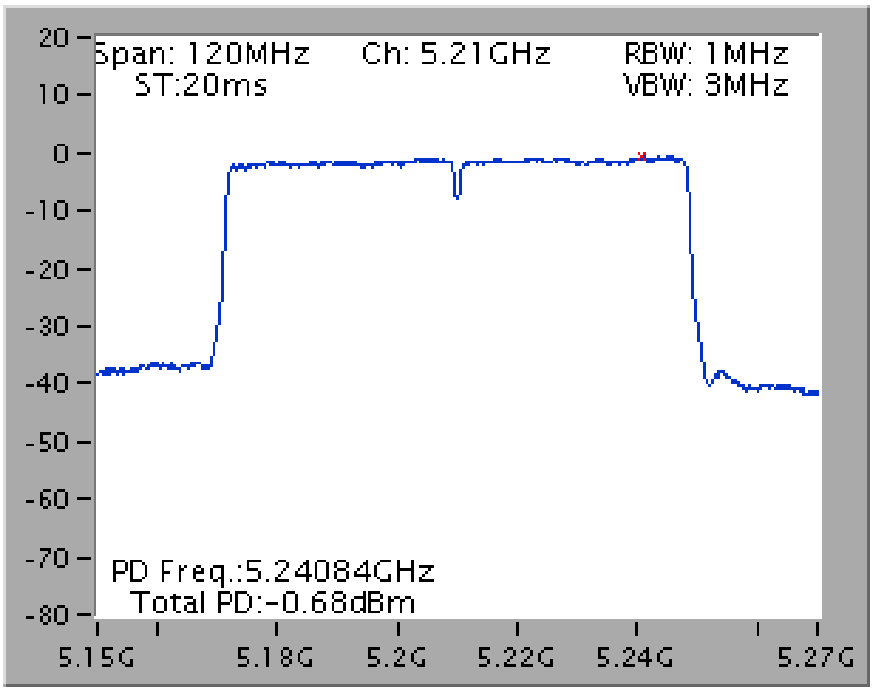


802.11ac MCS0/Nss2 VHT80+80

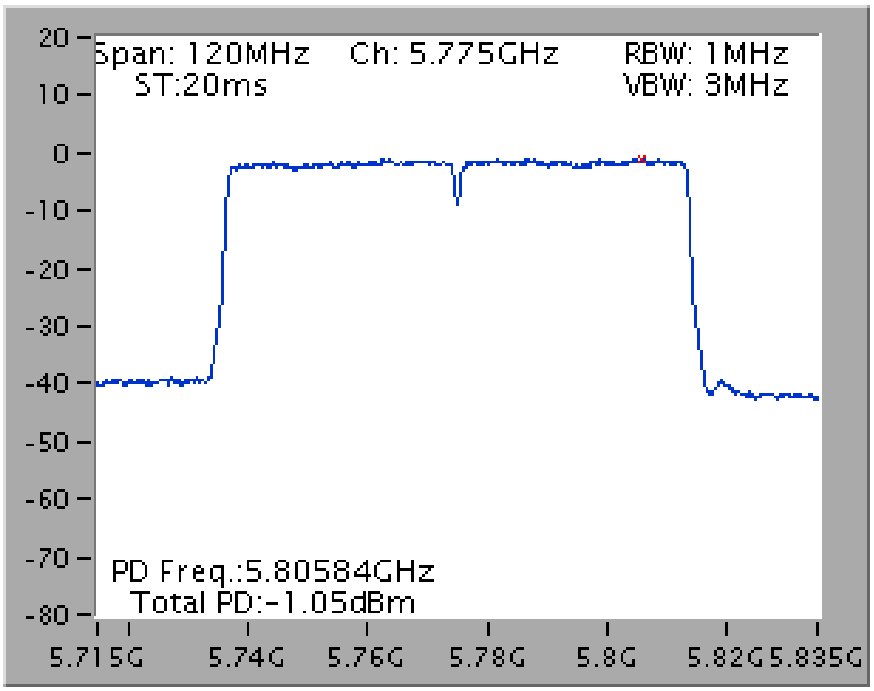
For indoor use master and slave without radar detection

Type 1

Power Density Plot on Chain 1 + Chain 2 / 5210 MHz



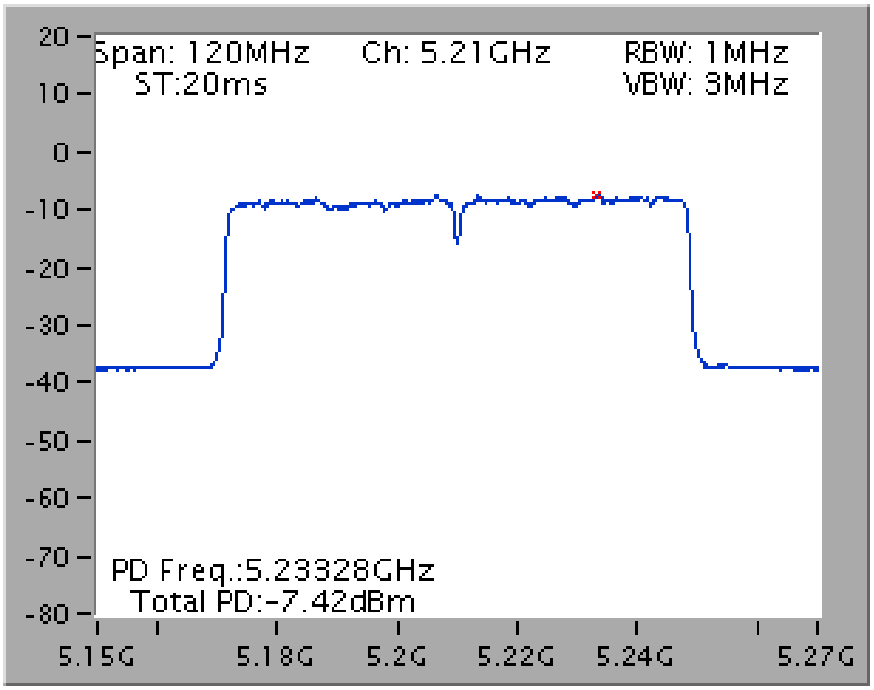
Power Density Plot on Chain 3 + Chain 4 / 5775 MHz



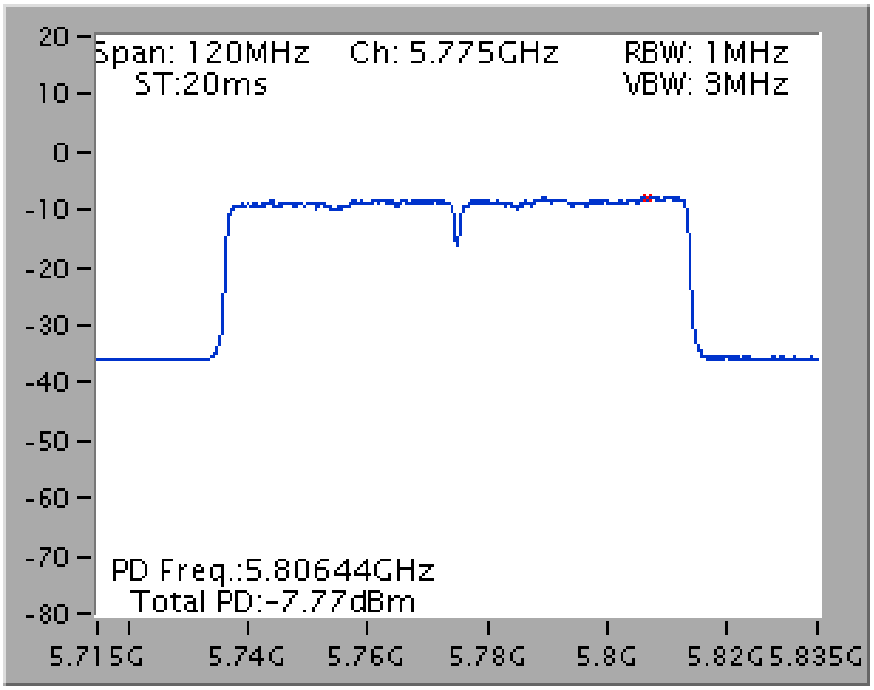
For outdoor use master B1

Type 1

Power Density Plot on Chain 1 + Chain 2 / 5210 MHz



Power Density Plot on Chain 3 + Chain 4 / 5775 MHz



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 an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

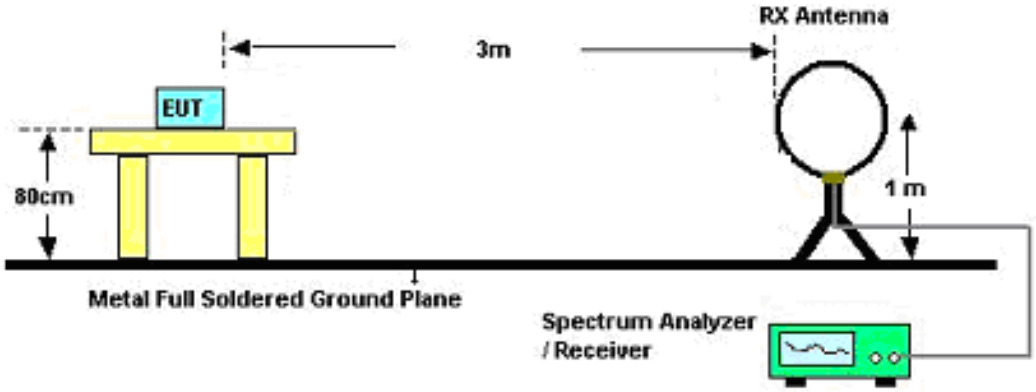
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

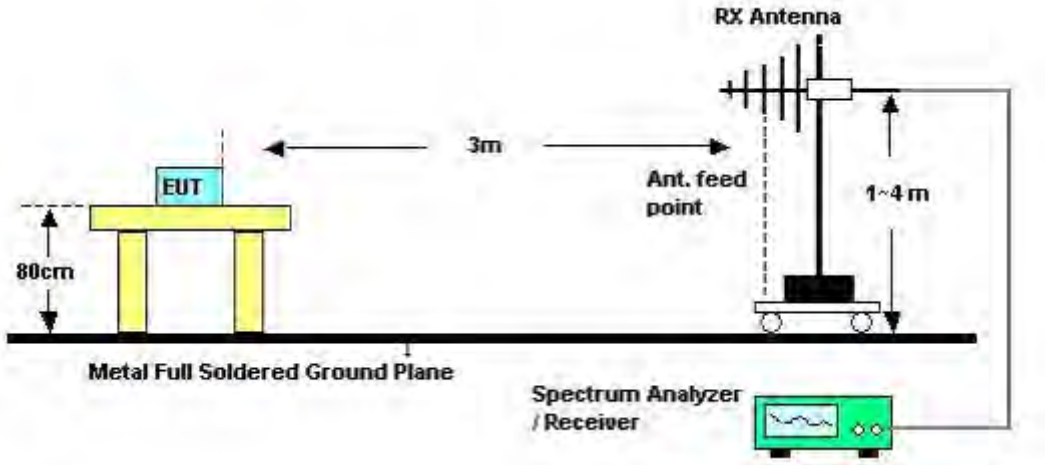
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting 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 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. 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.
8. 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.
9. 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

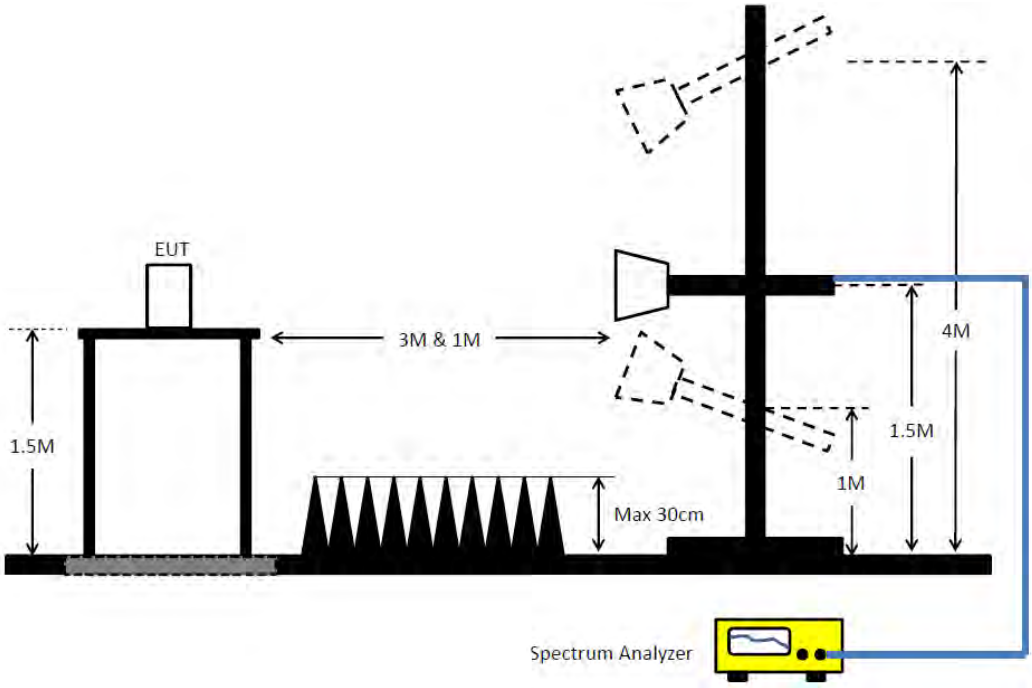
For Radiated Emissions: 9kHz ~30MHz



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	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	CTX
Test Date	Nov. 04, 2016	Test Mode	Mode 2

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.

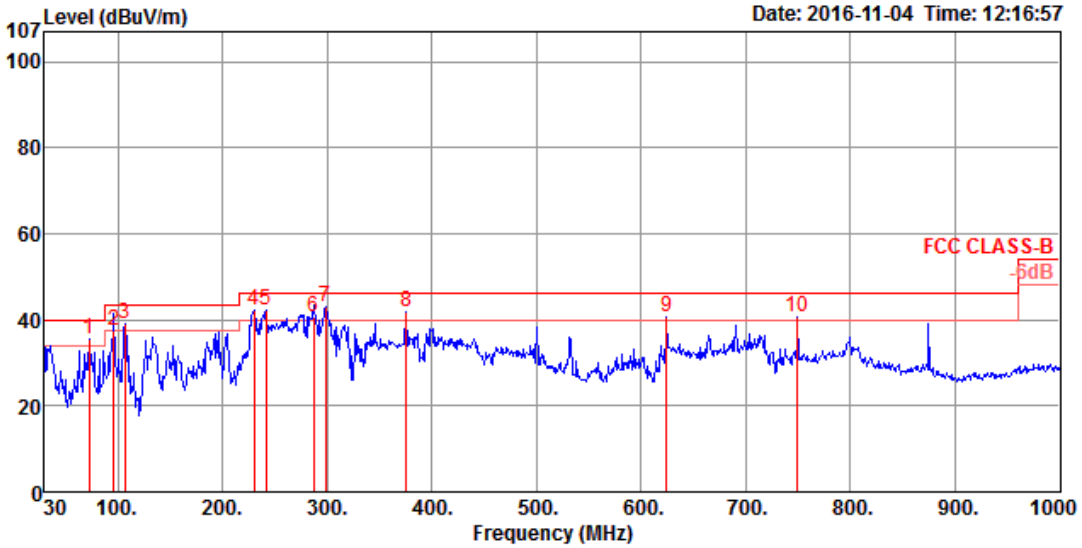
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

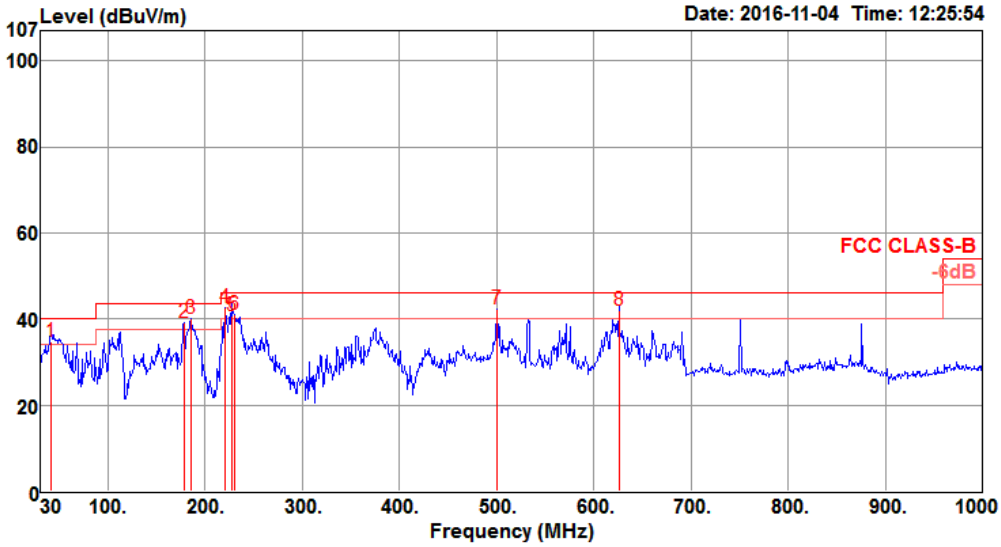
Temperature	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	CTX
Test Mode	Mode 2		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 @	72.68	35.36	40.00	-4.64	53.74	0.75	12.71	31.84	200	258	Peak	HORIZONTAL
2	95.96	37.48	43.50	-6.02	52.16	0.87	16.30	31.85	200	322	QP	HORIZONTAL
3 @	106.63	39.01	43.50	-4.49	52.19	0.87	17.81	31.86	200	331	Peak	HORIZONTAL
4 @	229.82	42.40	46.00	-3.60	56.17	1.21	17.00	31.98	125	74	Peak	HORIZONTAL
5 @	241.46	42.40	46.00	-3.60	55.00	1.23	18.12	31.95	150	235	Peak	HORIZONTAL
6 @	287.05	40.49	46.00	-5.51	51.82	1.34	19.37	32.04	125	236	QP	HORIZONTAL
7 @	298.69	42.95	46.00	-3.05	54.03	1.37	19.56	32.01	125	260	Peak	HORIZONTAL
8 @	375.32	41.75	46.00	-4.25	50.64	1.50	21.73	32.12	100	98	Peak	HORIZONTAL
9 @	624.61	40.74	46.00	-5.26	46.06	1.97	25.16	32.45	125	125	Peak	HORIZONTAL
10 @	749.74	40.68	46.00	-5.32	45.07	2.19	26.00	32.58	150	241	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	41.64	34.86	40.00	-5.14	47.26	0.56	18.71	31.67	100	229	QP	VERTICAL
2	178.41	39.19	43.50	-4.31	54.53	1.06	15.54	31.94	100	132	Peak	VERTICAL
3	185.20	40.17	43.50	-3.33	55.60	1.08	15.45	31.96	100	147	Peak	VERTICAL
4	220.12	42.51	46.00	-3.49	56.98	1.18	16.30	31.95	200	310	Peak	VERTICAL
5	226.91	40.75	46.00	-5.25	54.74	1.20	16.78	31.97	200	270	QP	VERTICAL
6	229.82	41.04	46.00	-4.96	54.81	1.21	17.00	31.98	200	181	Peak	VERTICAL
7	500.45	42.30	46.00	-3.70	49.13	1.76	23.73	32.32	100	144	Peak	VERTICAL
8	625.58	41.99	46.00	-4.01	47.31	1.97	25.16	32.45	100	40	QP	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.

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

For non-beamforming mode

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15530.36	47.81	54.00	-6.19	31.11	12.06	38.13	33.49	164	180	Average	HORIZONTAL
2	15534.84	61.18	74.00	-12.82	44.48	12.06	38.13	33.49	164	180	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15530.00	47.99	54.00	-6.01	31.29	12.06	38.13	33.49	149	109	Average	VERTICAL
2	15542.68	61.98	74.00	-12.02	45.28	12.06	38.13	33.49	149	109	Peak	VERTICAL

Temperature	22℃	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10397.40	64.04	68.20	-4.16	49.53	9.54	38.54	33.57	213	118	Peak	HORIZONTAL
2	15592.30	60.51	74.00	-13.49	43.90	12.09	38.05	33.53	256	207	Peak	HORIZONTAL
3	15623.90	47.75	54.00	-6.25	31.24	12.11	37.98	33.58	256	207	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10396.40	68.07	68.20	-0.13	53.58	9.54	38.54	33.59	235	361	Peak	VERTICAL
2	15589.30	60.68	74.00	-13.32	44.07	12.09	38.05	33.53	194	213	Peak	VERTICAL
3	15596.00	48.13	54.00	-5.87	31.52	12.09	38.05	33.53	194	213	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15723.80	61.17	74.00	-12.83	44.85	12.15	37.84	33.67	233	281	Peak	HORIZONTAL
2	15733.50	48.46	54.00	-5.54	32.14	12.15	37.84	33.67	233	281	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15718.20	48.51	54.00	-5.49	32.19	12.15	37.84	33.67	234	45	Average	VERTICAL
2	15743.00	61.27	74.00	-12.73	45.00	12.18	37.76	33.67	234	45	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Oct. 18, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11491.48	56.61	74.00	-17.39	40.49	10.10	39.20	33.18	176	149	Peak	HORIZONTAL
2	11491.98	44.42	54.00	-9.58	28.30	10.10	39.20	33.18	176	149	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11492.40	56.78	74.00	-17.22	40.66	10.10	39.20	33.18	200	170	Peak	VERTICAL
2	11493.20	44.52	54.00	-9.48	28.40	10.10	39.20	33.18	200	170	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11546.00	58.01	74.00	-15.99	41.88	10.12	39.20	33.19	239	200	Peak	HORIZONTAL
2	11551.30	45.65	54.00	-8.35	29.52	10.13	39.20	33.20	239	200	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11548.40	58.12	74.00	-15.88	42.00	10.12	39.20	33.20	262	91	Peak	VERTICAL
2	11572.60	46.02	54.00	-7.98	29.89	10.13	39.20	33.20	262	91	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11644.60	45.43	54.00	-8.57	29.29	10.16	39.20	33.22	148	291	Average	HORIZONTAL
2	11651.68	57.99	74.00	-16.01	41.83	10.18	39.20	33.22	148	291	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11645.52	58.01	74.00	-15.99	41.87	10.16	39.20	33.22	193	102	Peak	VERTICAL
2	11648.68	45.73	54.00	-8.27	29.59	10.16	39.20	33.22	193	102	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15540.64	61.27	74.00	-12.73	44.57	12.06	38.13	33.49	182	262	Peak	HORIZONTAL
2	15546.52	47.95	54.00	-6.05	31.25	12.06	38.13	33.49	182	262	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15530.00	61.24	74.00	-12.76	44.54	12.06	38.13	33.49	146	78	Peak	VERTICAL
2	15530.12	47.94	54.00	-6.06	31.24	12.06	38.13	33.49	146	78	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10396.80	64.34	68.20	-3.86	49.85	9.54	38.54	33.59	224	116	Peak	HORIZONTAL
2	15617.60	47.24	54.00	-6.76	30.73	12.11	37.98	33.58	191	290	Average	HORIZONTAL
3	15621.90	59.74	74.00	-14.26	43.23	12.11	37.98	33.58	191	290	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10398.16	67.82	68.20	-0.38	53.31	9.54	38.54	33.57	103	289	Peak	VERTICAL
2	15595.10	47.46	54.00	-6.54	30.85	12.09	38.05	33.53	185	18	Average	VERTICAL
3	15621.00	60.45	74.00	-13.55	43.94	12.11	37.98	33.58	185	18	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15709.60	60.21	74.00	-13.79	43.84	12.15	37.84	33.62	232	279	Peak	HORIZONTAL
2	15712.80	47.68	54.00	-6.32	31.36	12.15	37.84	33.67	232	279	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15709.90	47.86	54.00	-6.14	31.49	12.15	37.84	33.62	261	48	Average	VERTICAL
2	15729.00	60.39	74.00	-13.61	44.07	12.15	37.84	33.67	261	48	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11490.00	57.95	74.00	-16.05	41.83	10.10	39.20	33.18	117	128	Peak	HORIZONTAL
2	11497.00	45.52	54.00	-8.48	29.40	10.10	39.20	33.18	117	128	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11474.70	57.94	74.00	-16.06	41.89	10.08	39.15	33.18	220	283	Peak	VERTICAL
2	11495.90	45.70	54.00	-8.30	29.58	10.10	39.20	33.18	220	283	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11561.76	45.21	54.00	-8.79	29.08	10.13	39.20	33.20	159	257	Average	HORIZONTAL
2	11573.20	58.11	74.00	-15.89	41.98	10.13	39.20	33.20	159	257	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11562.04	46.05	54.00	-7.95	29.92	10.13	39.20	33.20	176	176	Average	VERTICAL
2	11570.36	58.63	74.00	-15.37	42.50	10.13	39.20	33.20	176	176	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Oct. 18, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11642.52	58.40	74.00	-15.60	42.26	10.16	39.20	33.22	198	138	Peak	HORIZONTAL
2	11654.12	45.40	54.00	-8.60	29.24	10.18	39.20	33.22	198	138	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11653.52	57.95	74.00	-16.05	41.79	10.18	39.20	33.22	269	187	Peak	VERTICAL
2	11654.04	45.55	54.00	-8.45	29.39	10.18	39.20	33.22	269	187	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15561.52	46.95	54.00	-7.05	30.34	12.09	38.05	33.53	256	155	Average	HORIZONTAL
2	15578.24	59.74	74.00	-14.26	43.13	12.09	38.05	33.53	256	155	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15565.76	60.04	74.00	-13.96	43.43	12.09	38.05	33.53	191	233	Peak	VERTICAL
2	15570.44	47.02	54.00	-6.98	30.41	12.09	38.05	33.53	191	233	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15684.64	47.22	54.00	-6.78	30.80	12.13	37.91	33.62	199	282	Average	HORIZONTAL
2	15696.52	60.01	74.00	-13.99	43.64	12.15	37.84	33.62	199	282	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15686.12	61.06	74.00	-12.94	44.64	12.13	37.91	33.62	151	108	Peak	VERTICAL
2	15689.76	47.45	54.00	-6.55	31.03	12.13	37.91	33.62	151	108	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11504.44	44.96	54.00	-9.04	28.84	10.10	39.20	33.18	136	236	Average	HORIZONTAL
2	11509.40	57.95	74.00	-16.05	41.84	10.10	39.20	33.19	136	236	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11511.48	45.49	54.00	-8.51	29.38	10.10	39.20	33.19	156	90	Average	VERTICAL
2	11515.84	58.34	74.00	-15.66	42.23	10.10	39.20	33.19	156	90	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Brain Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Oct. 18, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11604.88	58.52	74.00	-15.48	42.38	10.15	39.20	33.21	188	234	Peak	HORIZONTAL
2	11608.88	45.12	54.00	-8.88	28.98	10.15	39.20	33.21	188	234	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11606.64	57.42	74.00	-16.58	41.28	10.15	39.20	33.21	237	307	Peak	VERTICAL
2	11626.32	45.31	54.00	-8.69	29.17	10.16	39.20	33.22	237	307	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 22, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15633.03	59.57	74.00	-14.43	43.06	12.11	37.98	33.58	143	211	Peak	HORIZONTAL
2	15634.20	45.47	54.00	-8.53	28.96	12.11	37.98	33.58	143	211	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15631.28	45.50	54.00	-8.50	28.99	12.11	37.98	33.58	203	91	Average	VERTICAL
2	15633.24	59.45	74.00	-14.55	42.94	12.11	37.98	33.58	203	91	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Brain Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Oct. 18, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.80	57.69	74.00	-16.31	41.56	10.13	39.20	33.20	187	143	Peak	HORIZONTAL
2	11588.72	45.23	54.00	-8.77	29.09	10.15	39.20	33.21	187	143	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11575.76	45.07	54.00	-8.93	28.94	10.13	39.20	33.20	157	86	Average	VERTICAL
2	11578.32	57.42	74.00	-16.58	41.29	10.13	39.20	33.20	157	86	Peak	VERTICAL

802.11ac MCS0/Nss2 VHT80+80

Temperature	22°C	Humidity	54%
Test Engineer	Brain Sun	Configurations	IEEE 802.11ac MCS0/Nss2 VHT80+80 Type 1/ CH 42+155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Oct. 19, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10419.77	56.51	74.00	-17.49	42.02	9.55	38.51	33.57	212	54	Peak	HORIZONTAL
2	10420.09	43.60	54.00	-10.40	29.11	9.55	38.51	33.57	212	54	Average	HORIZONTAL
3	15629.32	48.60	54.00	-5.40	32.09	12.11	37.98	33.58	246	340	Average	HORIZONTAL
4	15630.10	61.19	74.00	-12.81	44.68	12.11	37.98	33.58	246	340	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10420.24	56.11	74.00	-17.89	41.62	9.55	38.51	33.57	239	148	Peak	VERTICAL
2	10420.42	43.74	54.00	-10.26	29.25	9.55	38.51	33.57	239	148	Average	VERTICAL
3	15629.78	61.52	74.00	-12.48	45.01	12.11	37.98	33.58	228	245	Peak	VERTICAL
4	15630.79	48.45	54.00	-5.55	31.94	12.11	37.98	33.58	228	245	Average	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	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15536.10	47.74	54.00	-6.26	31.05	13.38	38.45	35.14	216	203	Average	HORIZONTAL
2	15540.22	61.46	74.00	-12.54	44.77	13.38	38.45	35.14	216	203	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15535.54	47.78	54.00	-6.22	31.09	13.38	38.45	35.14	218	130	Average	VERTICAL
2	15535.78	60.44	74.00	-13.56	43.75	13.38	38.45	35.14	218	130	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Brain Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Oct. 20, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15595.00	48.07	54.00	-5.93	31.46	12.09	38.05	33.53	139	146	Average	HORIZONTAL
2	15595.00	59.27	74.00	-14.73	42.66	12.09	38.05	33.53	139	146	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15595.00	47.50	54.00	-6.50	30.89	12.09	38.05	33.53	156	190	Average	VERTICAL
2	15595.00	58.43	74.00	-15.57	41.82	12.09	38.05	33.53	156	190	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15715.64	46.99	54.00	-7.01	30.61	13.39	38.23	35.24	142	298	Average	HORIZONTAL
2	15723.22	59.98	74.00	-14.02	43.60	13.39	38.23	35.24	142	298	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15715.02	47.28	54.00	-6.72	30.90	13.39	38.23	35.24	138	263	Average	VERTICAL
2	15723.34	59.18	74.00	-14.82	42.80	13.39	38.23	35.24	138	263	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11485.40	43.40	54.00	-10.60	27.70	10.75	39.70	34.75	157	269	Average	HORIZONTAL
2	11487.16	56.75	74.00	-17.25	41.05	10.75	39.70	34.75	157	269	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11485.90	43.60	54.00	-10.40	27.90	10.75	39.70	34.75	160	321	Average	VERTICAL
2	11490.88	56.25	74.00	-17.75	40.55	10.75	39.70	34.75	160	321	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11566.16	44.54	54.00	-9.46	28.89	10.76	39.65	34.76	153	49	Average	HORIZONTAL
2	11569.38	56.19	74.00	-17.81	40.54	10.76	39.65	34.76	153	49	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11565.84	43.91	54.00	-10.09	28.26	10.76	39.65	34.76	150	200	Average	VERTICAL
2	11571.02	56.88	74.00	-17.12	41.23	10.76	39.65	34.76	150	200	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11645.84	43.86	54.00	-10.14	28.27	10.77	39.59	34.77	147	149	Average	HORIZONTAL
2	11647.72	56.97	74.00	-17.03	41.38	10.77	39.59	34.77	147	149	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11648.80	43.80	54.00	-10.20	28.21	10.77	39.59	34.77	145	42	Average	VERTICAL
2	11649.82	56.90	74.00	-17.10	41.31	10.77	39.59	34.77	145	42	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15566.04	47.19	54.00	-6.81	30.58	13.38	38.39	35.16	141	86	Average	HORIZONTAL
2	15572.26	60.49	74.00	-13.51	43.88	13.38	38.39	35.16	141	86	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15570.16	59.69	74.00	-14.31	43.08	13.38	38.39	35.16	140	158	Peak	VERTICAL
2	15573.82	46.91	54.00	-7.09	30.30	13.38	38.39	35.16	140	158	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Brain Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Oct. 20, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15685.00	44.28	54.00	-9.72	27.86	12.13	37.91	33.62	158	143	Average	HORIZONTAL
2	15685.00	55.90	74.00	-18.10	39.48	12.13	37.91	33.62	158	143	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15685.00	44.85	54.00	-9.15	28.43	12.13	37.91	33.62	171	99	Average	VERTICAL
2	15685.00	55.80	74.00	-18.20	39.38	12.13	37.91	33.62	171	99	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11505.50	56.05	74.00	-17.95	40.35	10.75	39.70	34.75	117	188	Peak	HORIZONTAL
2	11513.00	44.42	54.00	-9.58	28.72	10.75	39.70	34.75	117	188	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11505.38	43.39	54.00	-10.61	27.69	10.75	39.70	34.75	115	6	Average	VERTICAL
2	11509.96	57.17	74.00	-16.83	41.47	10.75	39.70	34.75	115	6	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11590.76	43.77	54.00	-10.23	28.16	10.76	39.62	34.77	184	231	Average	HORIZONTAL
2	11591.50	56.83	74.00	-17.17	41.22	10.76	39.62	34.77	184	231	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11593.60	44.83	54.00	-9.17	29.22	10.76	39.62	34.77	182	179	Average	VERTICAL
2	11594.92	55.96	74.00	-18.04	40.35	10.76	39.62	34.77	182	179	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 22, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15630.03	47.42	54.00	-6.58	30.91	12.11	37.98	33.58	197	118	Average	HORIZONTAL
2	15630.69	60.11	74.00	-13.89	43.60	12.11	37.98	33.58	197	118	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15627.77	60.10	74.00	-13.90	43.59	12.11	37.98	33.58	153	231	Peak	VERTICAL
2	15630.72	47.43	54.00	-6.57	30.92	12.11	37.98	33.58	153	231	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Oct. 20, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11545.00	43.11	54.00	-10.89	26.98	10.12	39.20	33.19	194	104	Average	HORIZONTAL
2	11545.82	56.38	74.00	-17.62	40.25	10.12	39.20	33.19	194	104	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11545.12	43.41	54.00	-10.59	27.28	10.12	39.20	33.19	159	198	Average	VERTICAL
2	11554.42	56.12	74.00	-17.88	39.99	10.13	39.20	33.20	159	198	Peak	VERTICAL

802.11ac MCS0/Nss2 VHT80+80

Temperature	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss2 VHT80+80 Type 1 / CH 42+155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15629.16	46.37	54.00	-7.63	29.84	13.38	38.34	35.19	195	234	Average	HORIZONTAL
2	15630.69	59.85	74.00	-14.15	43.32	13.38	38.34	35.19	195	234	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15630.36	60.29	74.00	-13.71	43.76	13.38	38.34	35.19	144	183	Peak	VERTICAL
2	15630.98	46.43	54.00	-7.57	29.90	13.38	38.34	35.19	144	183	Average	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 an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for Peak

4.7.3. Test Procedures

The test procedure is the same as section 4.6.3.

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:

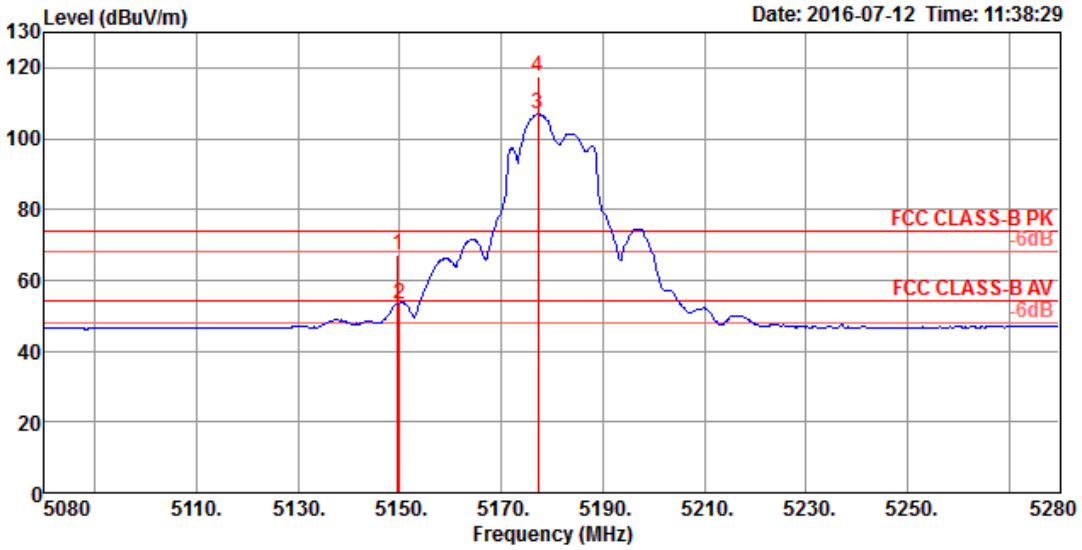
The EUT was programmed to be in beamforming transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

For non-beamforming mode

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4

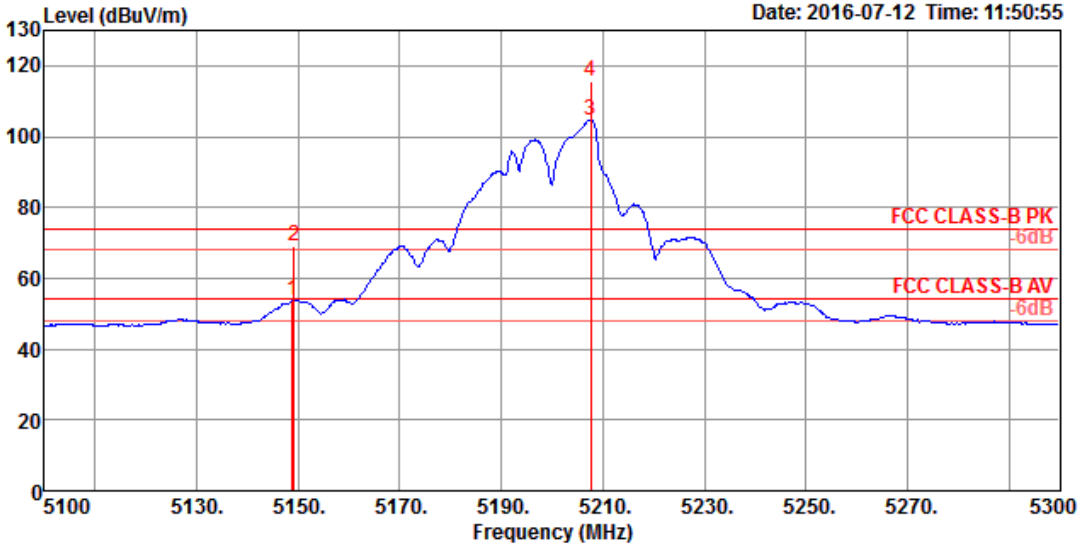
Channel 36



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.60	67.03	74.00	-6.97	59.81	7.34	31.52	31.64	291	330	Peak	VERTICAL
2	5150.00	53.40	54.00	-0.60	46.18	7.34	31.52	31.64	291	330	Average	VERTICAL
3 0	5177.20	106.78			99.50	7.37	31.55	31.64	291	330	Average	VERTICAL
4 0	5177.20	117.46			110.18	7.37	31.55	31.64	291	330	Peak	VERTICAL

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

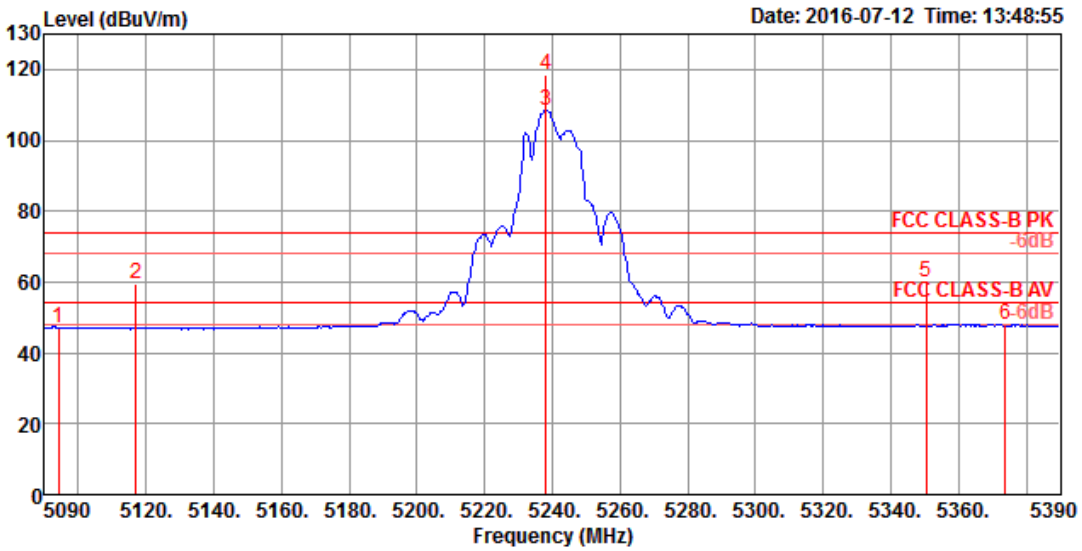
Channel 40



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.80	53.52	54.00	-0.48	46.30	7.34	31.52	31.64	264	110	Average	HORIZONTAL
2	5149.20	69.31	74.00	-4.69	62.09	7.34	31.52	31.64	264	110	Peak	HORIZONTAL
3 0	5207.60	104.58			97.24	7.41	31.57	31.64	264	110	Average	HORIZONTAL
4 0	5207.60	115.74			108.40	7.41	31.57	31.64	264	110	Peak	HORIZONTAL

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

Channel 48

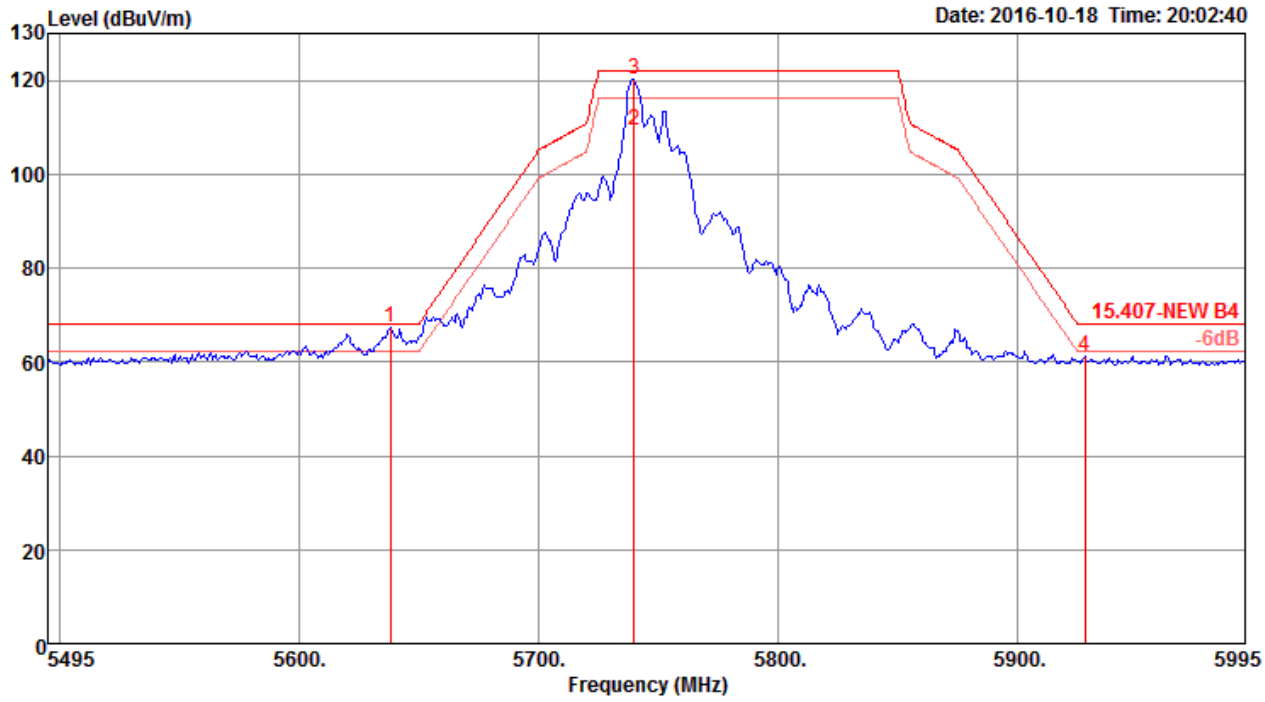


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5094.20	46.83	54.00	-7.17	39.74	7.27	31.47	31.65	283	332	Average	VERTICAL
2	5117.00	59.40	74.00	-14.60	52.25	7.30	31.50	31.65	283	332	Peak	VERTICAL
3 0	5238.20	108.28			100.88	7.45	31.59	31.64	283	332	Average	VERTICAL
4 0	5238.20	118.61			111.21	7.45	31.59	31.64	283	332	Peak	VERTICAL
5	5350.40	59.92	74.00	-14.08	52.26	7.60	31.68	31.62	283	332	Peak	VERTICAL
6	5373.80	47.92	54.00	-6.08	40.20	7.64	31.70	31.62	283	332	Average	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang & Brian Sun	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4

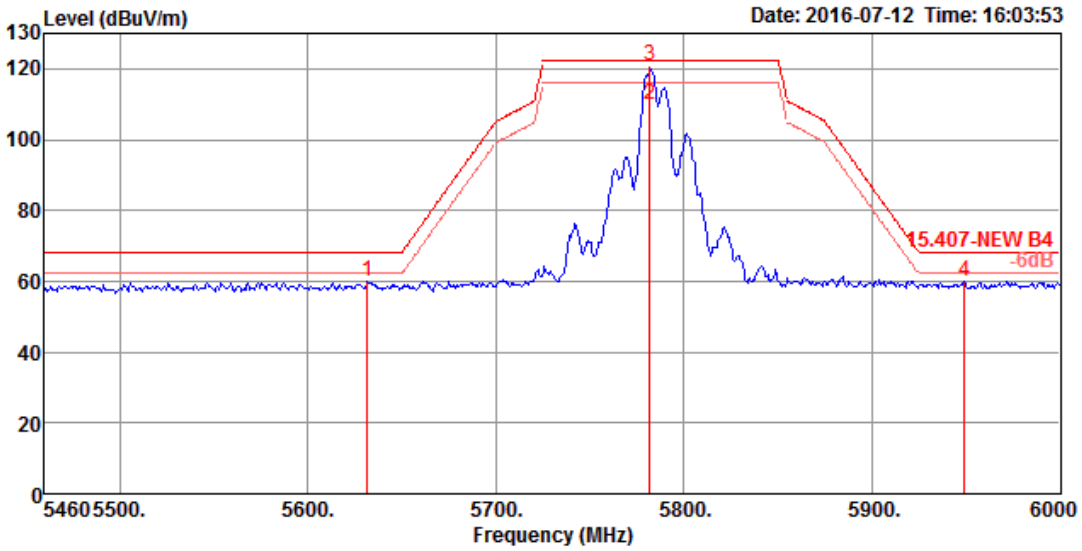
Channel 149



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5638.00	67.26	68.20	-0.94	59.07	6.78	34.38	32.97	238	231	Peak	VERTICAL
2	5740.00	109.46			101.10	6.90	34.45	32.99	238	231	Average	VERTICAL
3	5740.00	120.35			111.99	6.90	34.45	32.99	238	231	Peak	VERTICAL
4	5928.00	61.33	68.20	-6.87	52.83	6.98	34.56	33.04	238	231	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

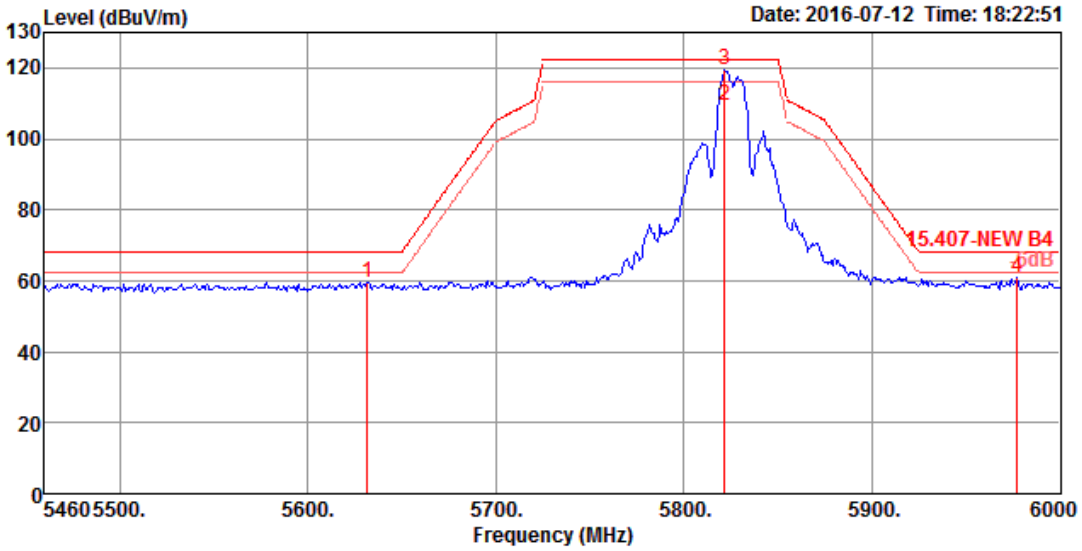
Channel 157



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5631.72	59.84	68.20	-8.36	51.90	7.64	31.96	31.66	205	120	Peak	VERTICAL
2	5781.84	109.88			101.67	7.79	32.14	31.72	205	120	Average	VERTICAL
3	5781.84	120.77			112.56	7.79	32.14	31.72	205	120	Peak	VERTICAL
4	5949.24	60.14	68.20	-8.06	51.69	7.90	32.34	31.79	205	120	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

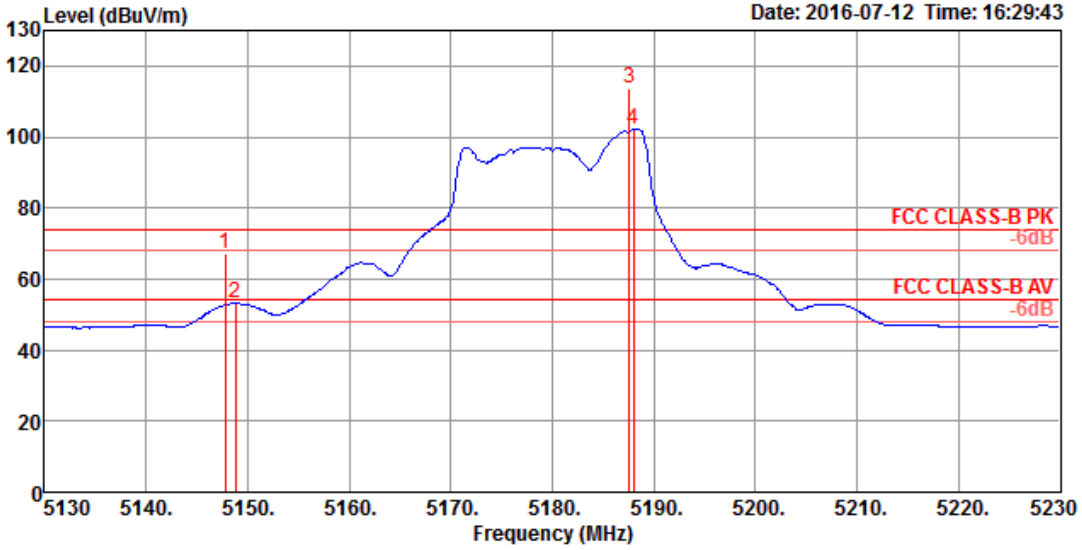


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5631.72	59.70	68.20	-8.50	51.76	7.64	31.96	31.66	300	128	Peak	VERTICAL
2	5821.80	109.25			100.99	7.82	32.18	31.74	300	128	Average	VERTICAL
3	5821.80	119.24			110.98	7.82	32.18	31.74	300	128	Peak	VERTICAL
4	5977.32	60.87	68.20	-7.33	52.37	7.92	32.38	31.80	300	128	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4

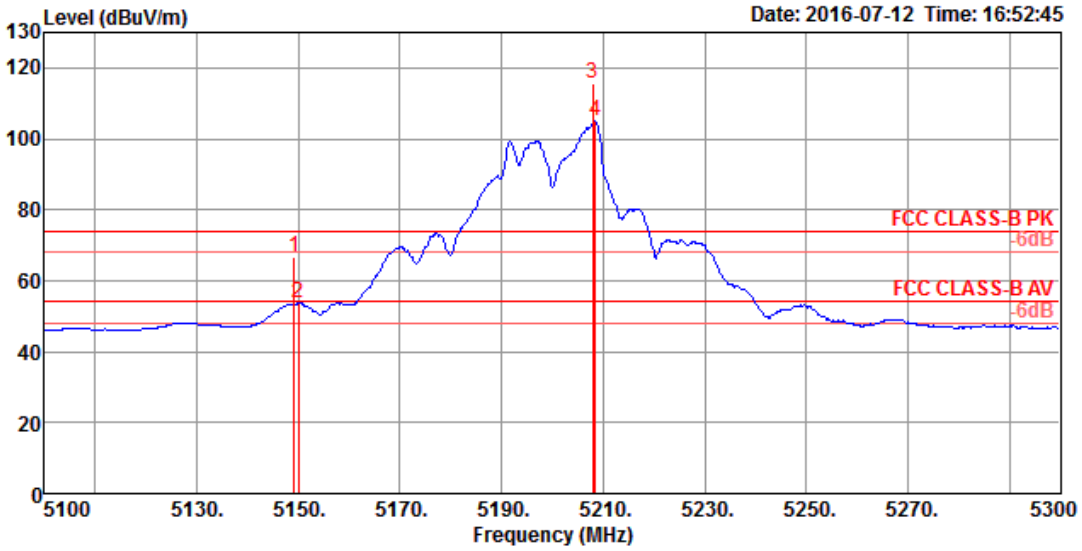
Channel 36



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5147.80	67.19	74.00	-6.81	59.97	7.34	31.52	31.64	204	38	Peak	VERTICAL
2	5148.80	53.25	54.00	-0.75	46.03	7.34	31.52	31.64	204	38	Average	VERTICAL
3 0	5187.60	113.88			106.57	7.39	31.56	31.64	204	38	Peak	VERTICAL
4 0	5188.00	102.31			95.00	7.39	31.56	31.64	204	38	Average	VERTICAL

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

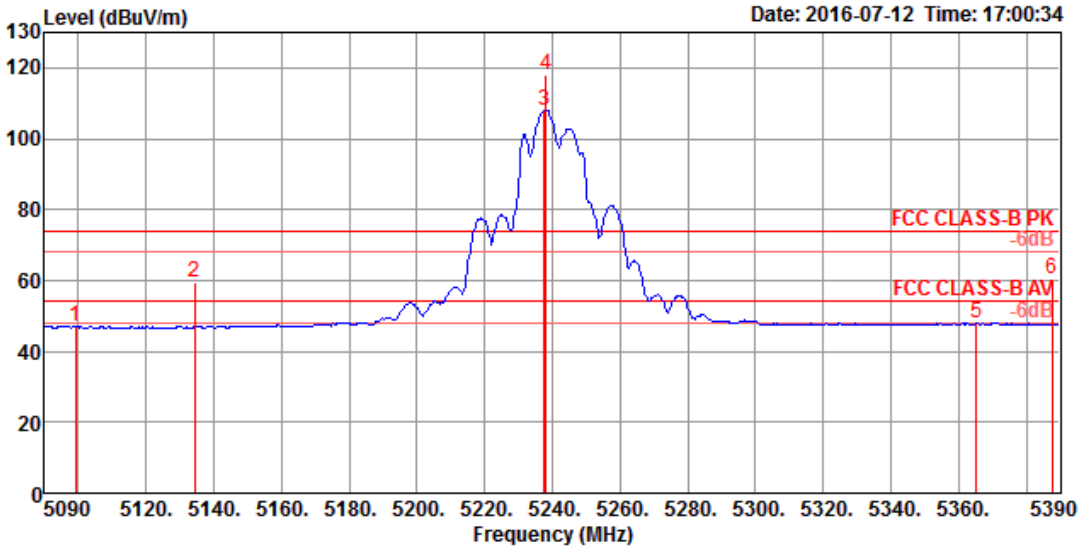
Channel 40



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.20	66.56	74.00	-7.44	59.34	7.34	31.52	31.64	272	115	Peak	HORIZONTAL
2	5150.00	53.67	54.00	-0.33	46.45	7.34	31.52	31.64	272	115	Average	HORIZONTAL
3 0	5208.00	115.63			108.29	7.41	31.57	31.64	272	115	Peak	HORIZONTAL
4 0	5208.40	104.88			97.54	7.41	31.57	31.64	272	115	Average	HORIZONTAL

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

Channel 48

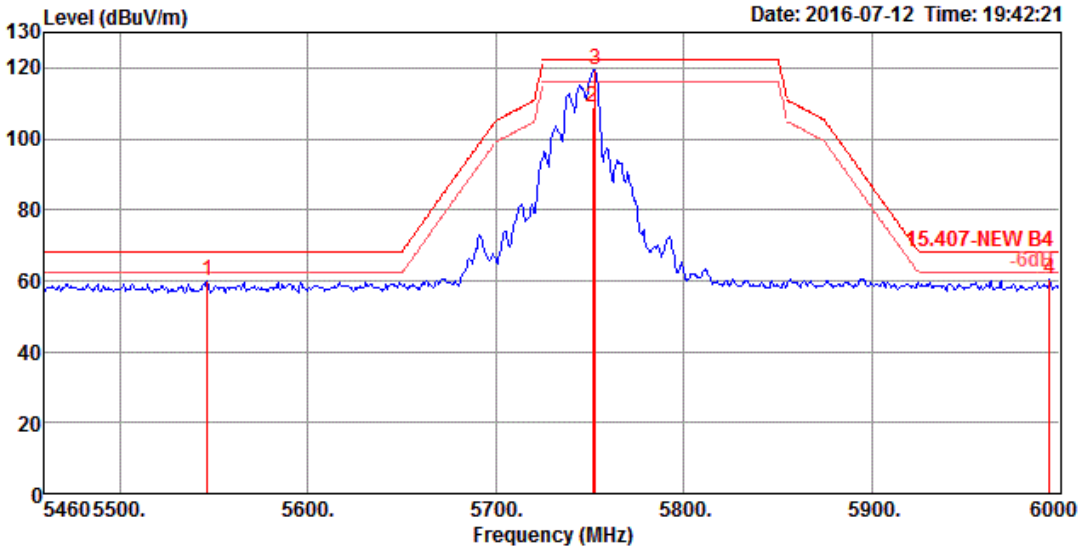


		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1		5099.00	47.21	54.00	-6.79	40.10	7.28	31.48	31.65	300	325	Average	VERTICAL
2		5134.40	59.63	74.00	-14.37	52.45	7.32	31.51	31.65	300	325	Peak	VERTICAL
3	0	5237.60	108.15			100.75	7.45	31.59	31.64	300	325	Average	VERTICAL
4	0	5238.20	117.97			110.57	7.45	31.59	31.64	300	325	Peak	VERTICAL
5		5365.40	48.02	54.00	-5.98	40.33	7.62	31.69	31.62	300	325	Average	VERTICAL
6		5387.60	60.21	74.00	-13.79	52.45	7.66	31.72	31.62	300	325	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang & Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4

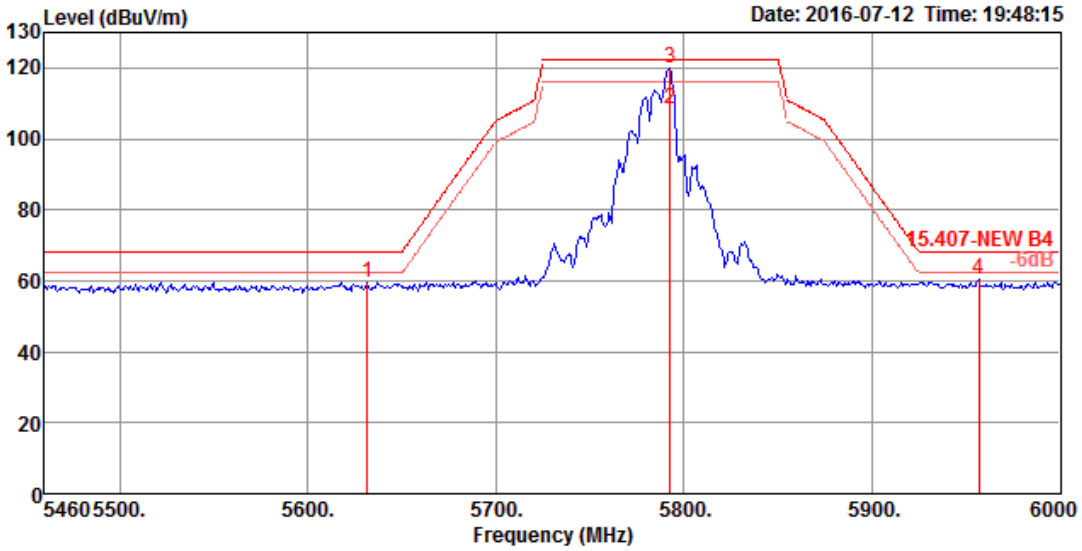
Channel 149



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5546.40	60.18	68.20	-8.02	52.33	7.62	31.86	31.63	300	165	Peak	VERTICAL
2	5751.60	109.07			100.92	7.76	32.10	31.71	300	165	Average	VERTICAL
3	5752.68	119.61			111.46	7.76	32.10	31.71	300	165	Peak	VERTICAL
4	5994.60	60.43	68.20	-7.77	51.90	7.93	32.40	31.80	300	165	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

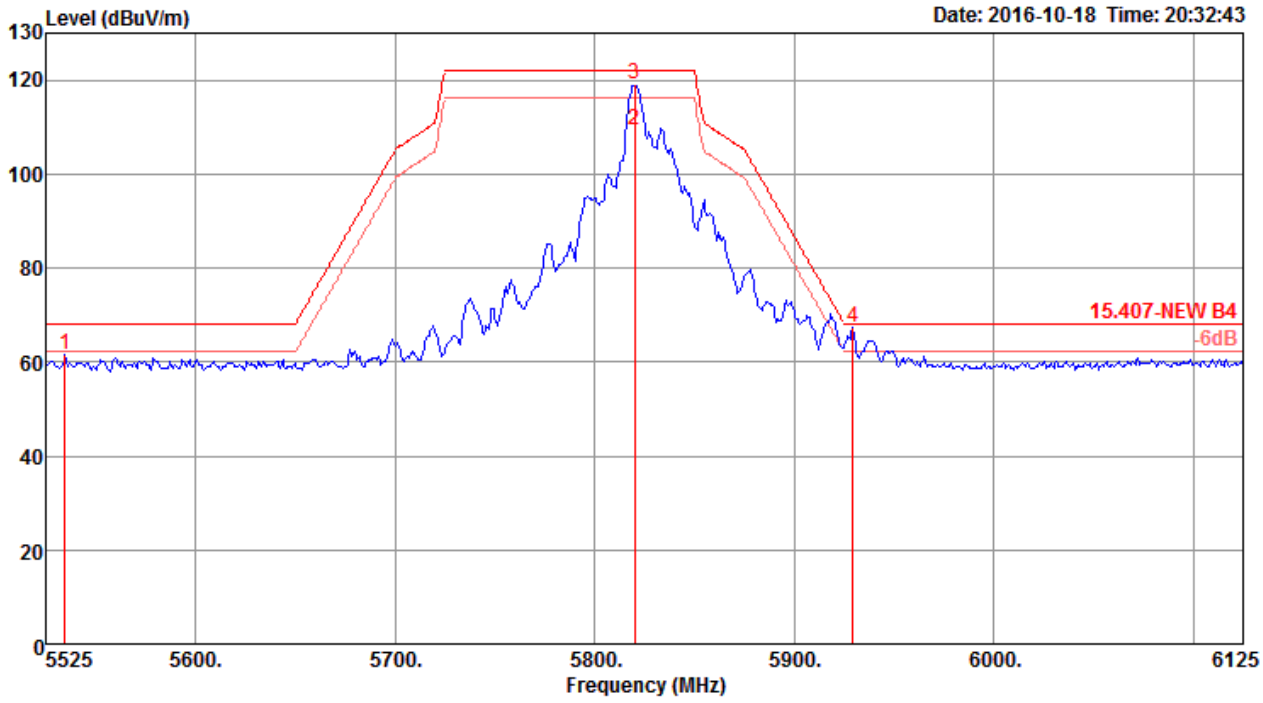
Channel 157



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5631.72	59.72	68.20	-8.48	51.78	7.64	31.96	31.66	300	170	Peak	VERTICAL
2	5792.64	108.52			100.28	7.81	32.16	31.73	300	170	Average	VERTICAL
3	5792.64	119.84			111.60	7.81	32.16	31.73	300	170	Peak	VERTICAL
4	5956.80	60.55	68.20	-7.65	52.11	7.90	32.34	31.80	300	170	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

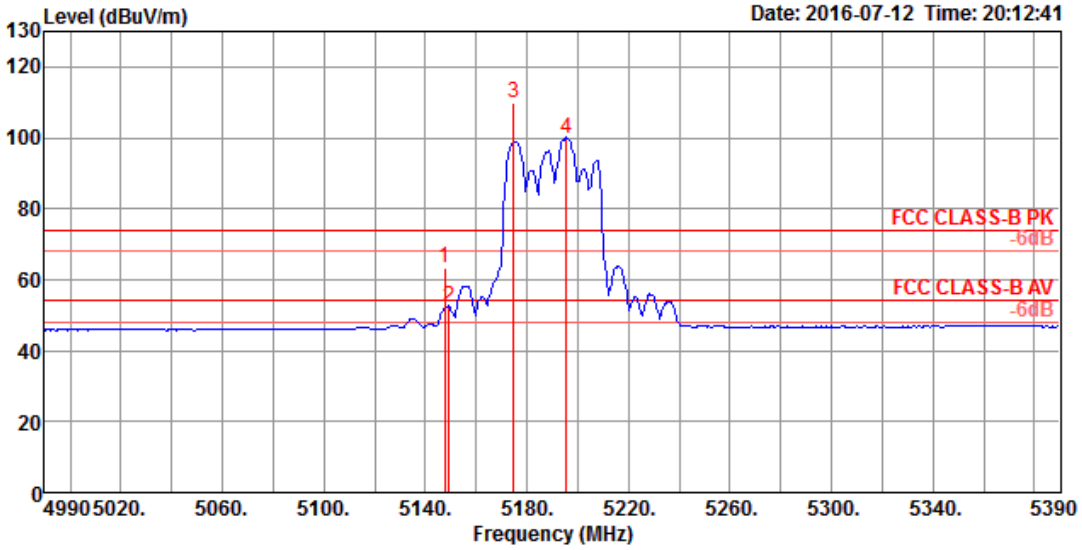


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5534.60	61.62	68.20	-6.58	53.52	6.72	34.32	32.94	232	233	Peak	VERTICAL
2	5820.00	109.21			100.78	6.95	34.49	33.01	232	233	Average	VERTICAL
3	5820.20	119.02			110.59	6.95	34.49	33.01	232	233	Peak	VERTICAL
4	5929.40	67.23	68.20	-0.97	58.73	6.98	34.56	33.04	232	233	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4

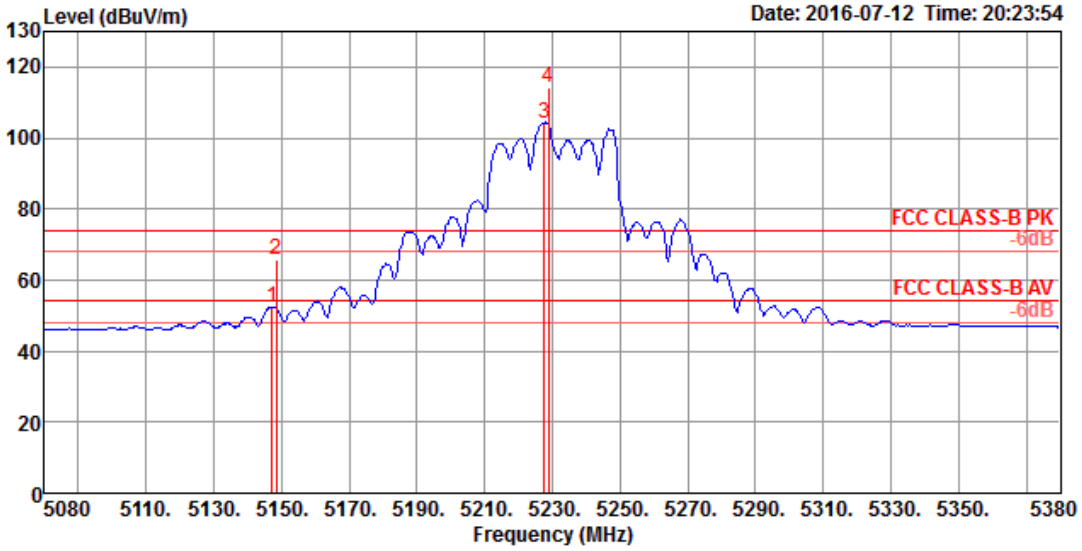
Channel 38



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5147.60	63.29	74.00	-10.71	56.07	7.34	31.52	31.64	300	164	Peak	VERTICAL
2	5149.20	52.52	54.00	-1.48	45.30	7.34	31.52	31.64	300	164	Average	VERTICAL
3 0	5174.80	109.86			102.58	7.37	31.55	31.64	300	164	Peak	VERTICAL
4 0	5195.60	100.01			92.70	7.39	31.56	31.64	300	164	Average	VERTICAL

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

Channel 46

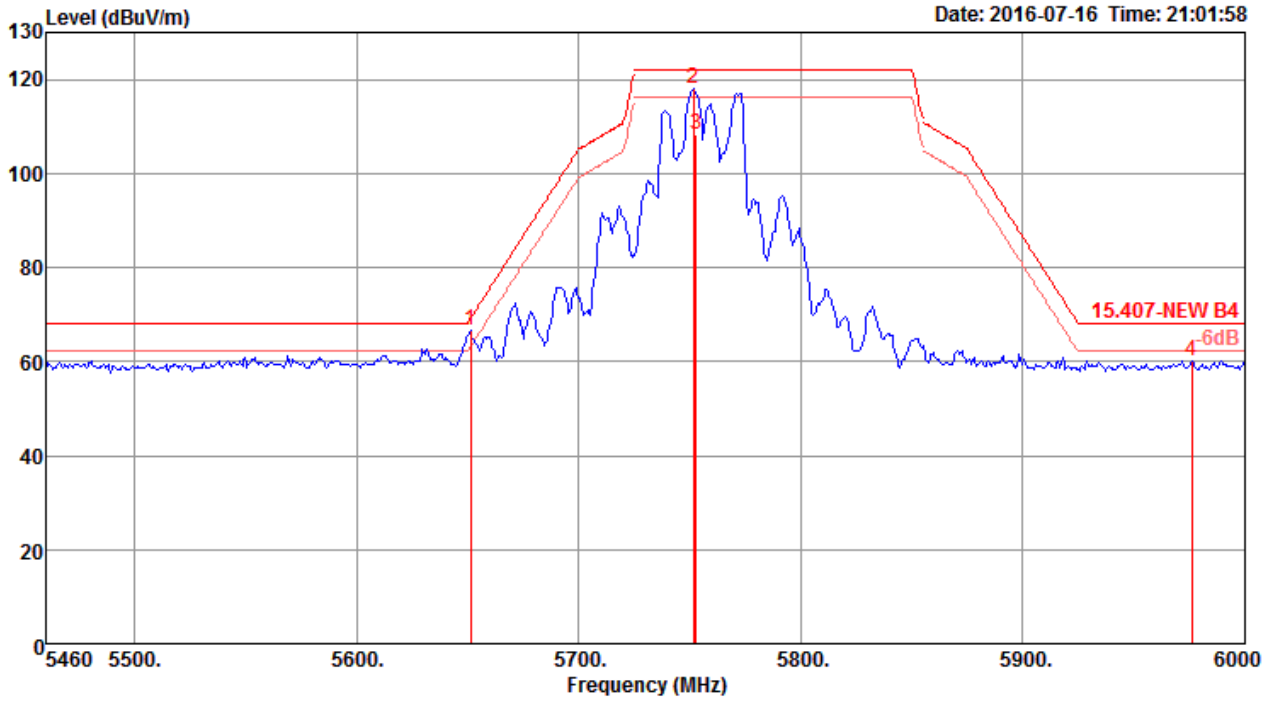


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5147.20	52.31	54.00	-1.69	45.09	7.34	31.52	31.64	300	328	Average	VERTICAL
2	5148.40	65.76	74.00	-8.24	58.54	7.34	31.52	31.64	300	328	Peak	VERTICAL
3 0	5227.60	104.30			96.93	7.43	31.58	31.64	300	328	Average	VERTICAL
4 0	5228.80	114.15			106.78	7.43	31.58	31.64	300	328	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang & Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4

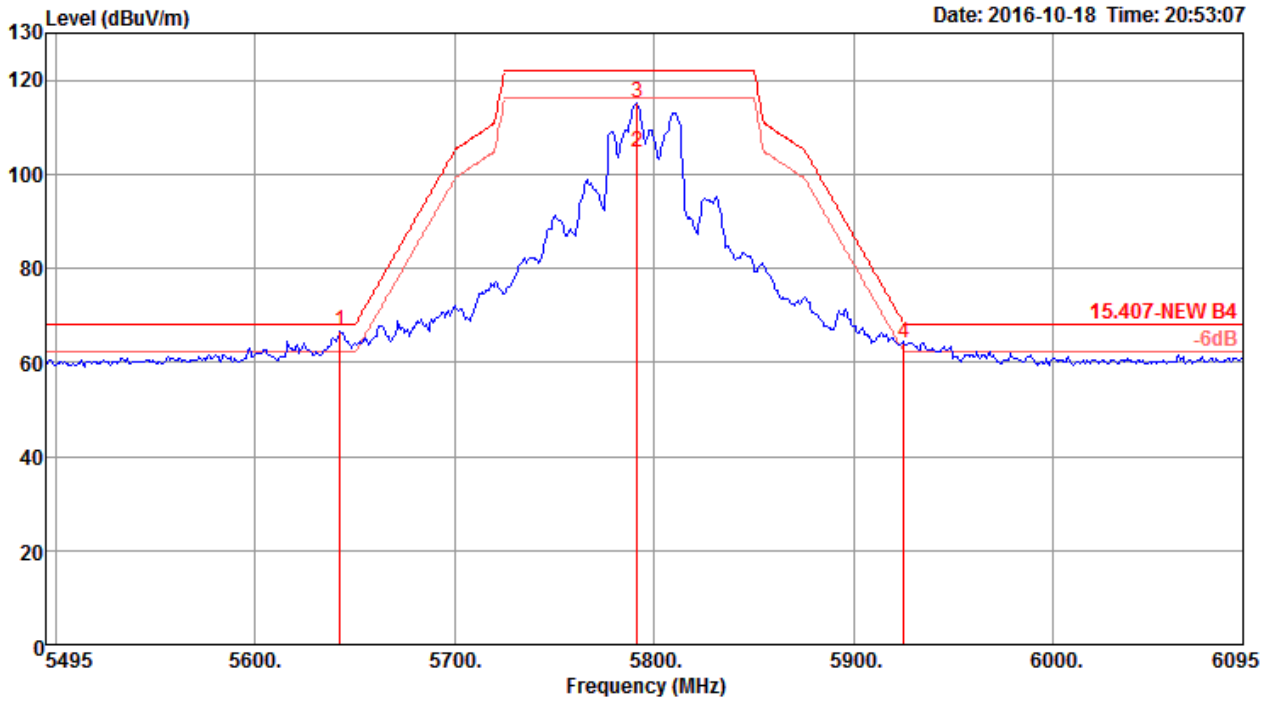
Channel 151



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5651.16	66.56	69.06	-2.50	58.34	6.80	34.39	32.97	224	127	Peak	VERTICAL
2	5751.60	118.23			109.88	6.90	34.45	33.00	224	127	Peak	VERTICAL
3	5752.68	108.17			99.82	6.90	34.45	33.00	224	127	Average	VERTICAL
4	5976.24	60.15	68.20	-8.05	51.62	7.00	34.59	33.06	224	127	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5755 MHz.

Channel 159

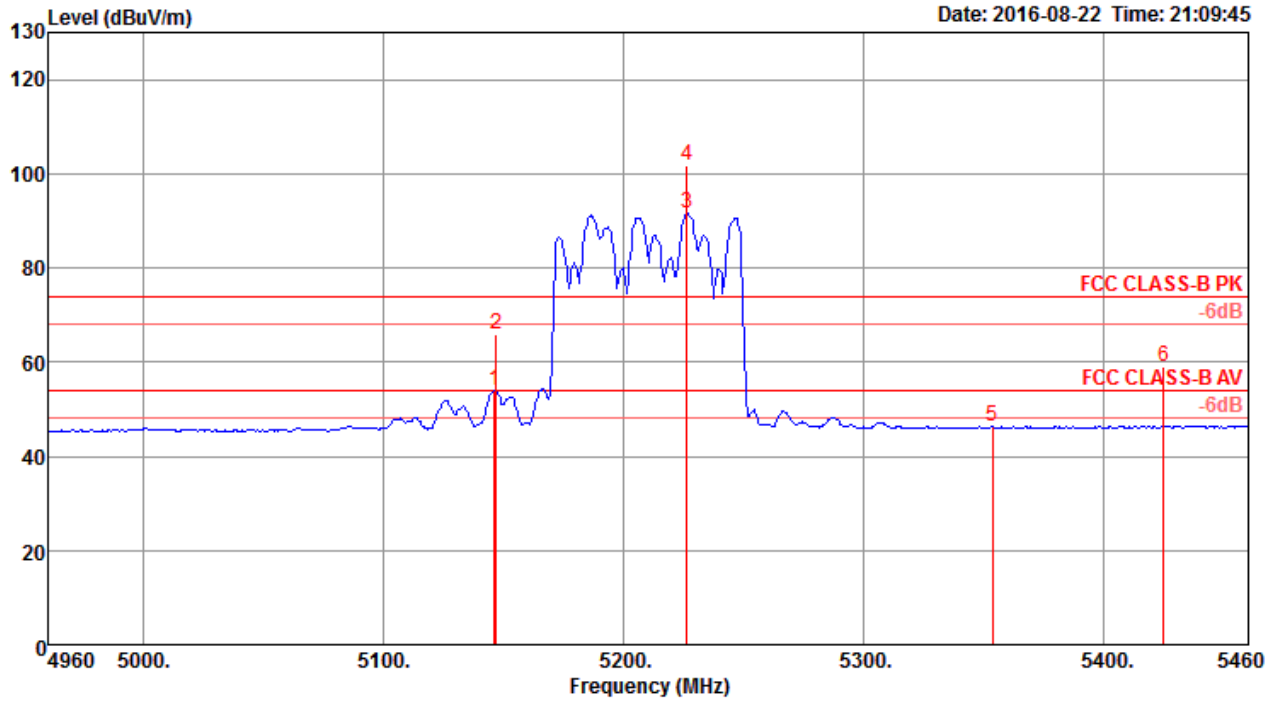


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5642.60	66.51	68.20	-1.69	58.29	6.80	34.39	32.97	236	194	Peak	VERTICAL
2	5791.40	104.53			96.11	6.95	34.48	33.01	236	194	Average	VERTICAL
3	5791.40	115.01			106.59	6.95	34.48	33.01	236	194	Peak	VERTICAL
4	5925.20	64.17	68.20	-4.03	55.67	6.98	34.56	33.04	236	194	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5795 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel 42

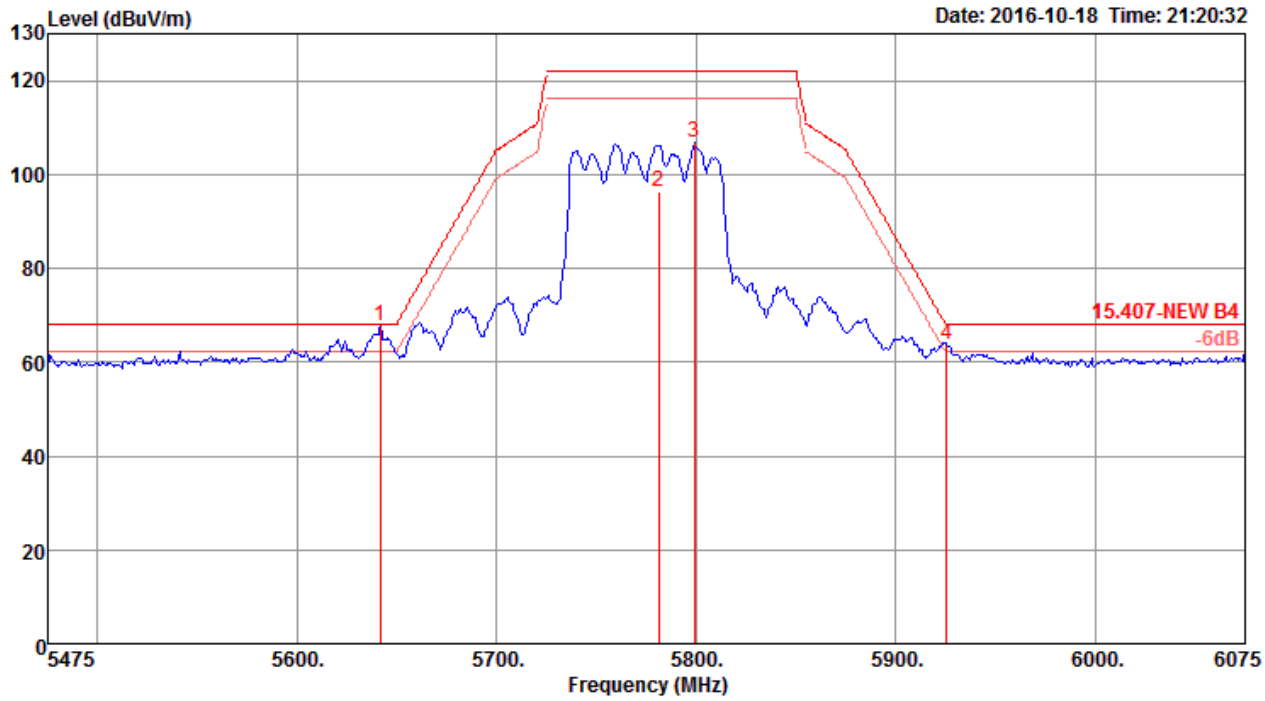


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.90	53.88	54.00	-0.12	46.62	6.44	33.74	32.92	257	358	Average	VERTICAL
2	5146.70	65.78	74.00	-8.22	58.52	6.44	33.74	32.92	257	358	Peak	VERTICAL
3	5226.03	91.60			84.15	6.51	33.86	32.92	257	358	Average	VERTICAL
4	5226.03	101.73			94.28	6.51	33.86	32.92	257	358	Peak	VERTICAL
5	5353.43	46.44	54.00	-7.56	38.69	6.61	34.06	32.92	257	358	Average	VERTICAL
6	5424.74	59.08	74.00	-14.92	51.16	6.67	34.18	32.93	257	358	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel 155



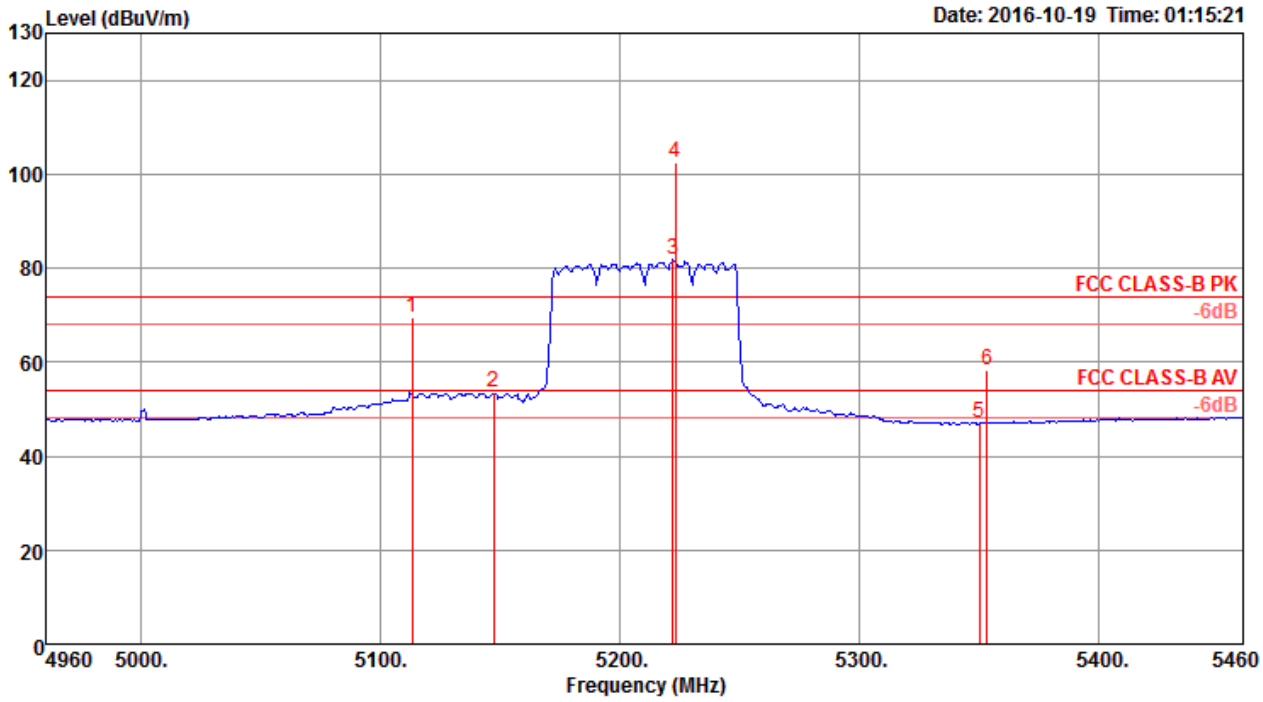
	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5641.80	67.85	68.20	-0.35	59.63	6.80	34.39	32.97	227	131	Peak	HORIZONTAL
2	5781.00	96.33			87.93	6.93	34.47	33.00	227	131	Average	HORIZONTAL
3	5799.00	106.84			98.42	6.95	34.48	33.01	227	131	Peak	HORIZONTAL
4	5925.60	63.77	68.20	-4.43	55.27	6.98	34.56	33.04	227	131	Peak	HORIZONTAL

Item 2, 3 are the fundamental frequency at 5775 MHz.

802.11ac MCS0/Nss2 VHT80+80

Temperature	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss2 VHT80+80 Type 1/ CH 42+155 / Chain 1 + Chain 2 + Chain 3 + Chain 4

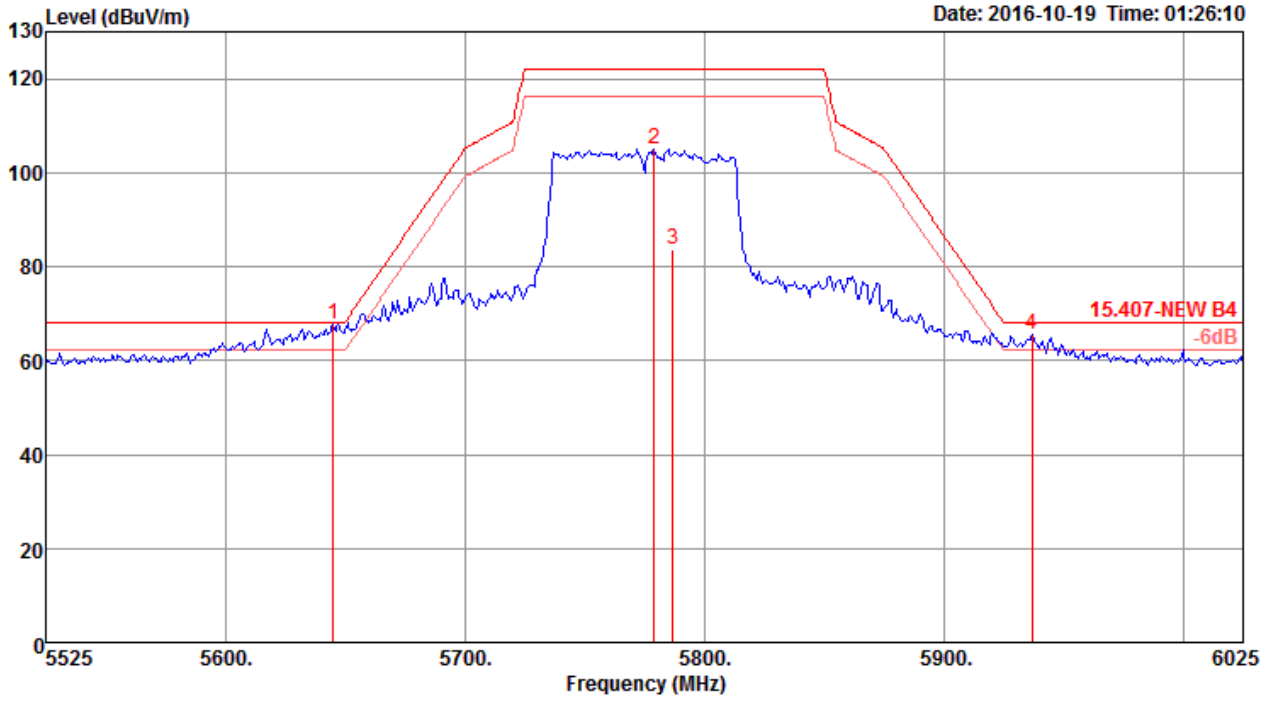
Channel 42



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5113.00	69.62	74.00	-4.38	62.43	6.41	33.69	32.91	148	29	Peak	VERTICAL
2	5147.00	53.75	54.00	-0.25	46.49	6.44	33.74	32.92	148	29	Average	VERTICAL
3	5222.00	81.78			74.33	6.51	33.86	32.92	148	29	Average	VERTICAL
4	5223.00	102.53			95.08	6.51	33.86	32.92	148	29	Peak	VERTICAL
5	5350.00	47.05	54.00	-6.95	39.30	6.61	34.06	32.92	148	29	Average	VERTICAL
6	5353.00	58.39	74.00	-15.61	50.64	6.61	34.06	32.92	148	29	Peak	VERTICAL

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

Channel 155



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5645.00	67.77	68.20	-0.43	59.55	6.80	34.39	32.97	171	27	Peak	VERTICAL
2	5779.00	104.94			96.54	6.93	34.47	33.00	171	27	Peak	VERTICAL
3	5787.00	83.49			75.10	6.93	34.47	33.01	171	27	Average	VERTICAL
4	5937.00	65.69	68.20	-2.51	57.20	6.98	34.56	33.05	171	27	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5775 MHz.

Note:

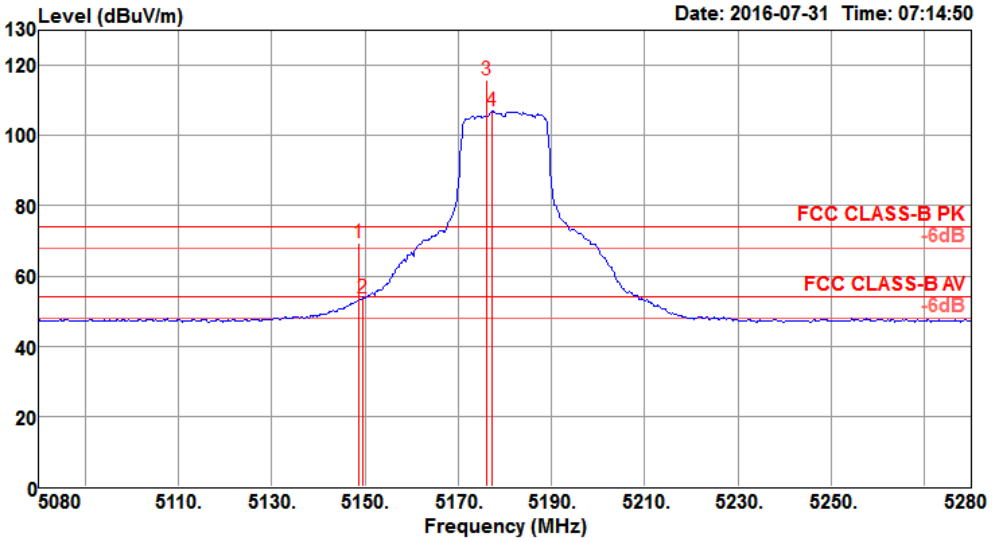
Emission level (dBuV/m) = 20 log Emission level (uV/m)

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

For beamforming mode

Temperature	22℃	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang & Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4

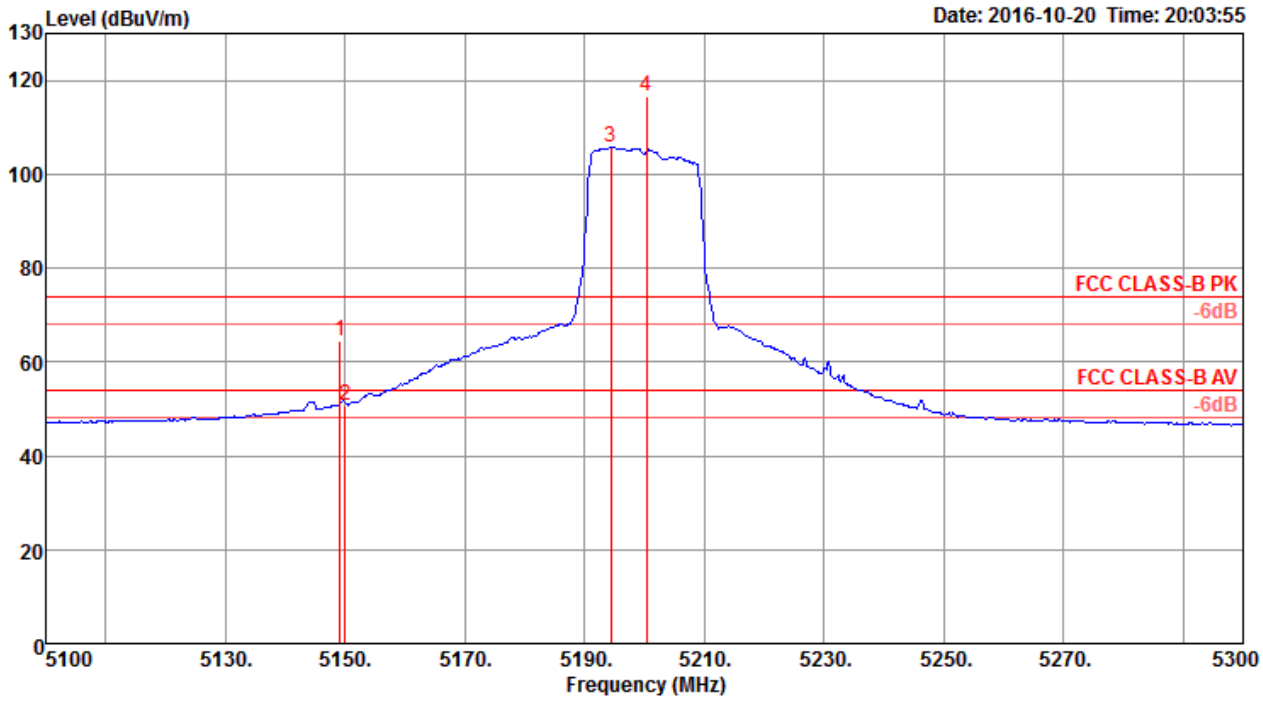
Channel 36



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.80	69.26	74.00	-4.74	61.84	7.48	34.85	34.91	270	219	Peak	VERTICAL
2	5149.60	53.89	54.00	-0.11	46.47	7.48	34.85	34.91	270	219	Average	VERTICAL
3	5176.00	115.67			108.22	7.48	34.88	34.91	270	219	Peak	VERTICAL
4	5177.20	106.86			99.41	7.48	34.88	34.91	270	219	Average	VERTICAL

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

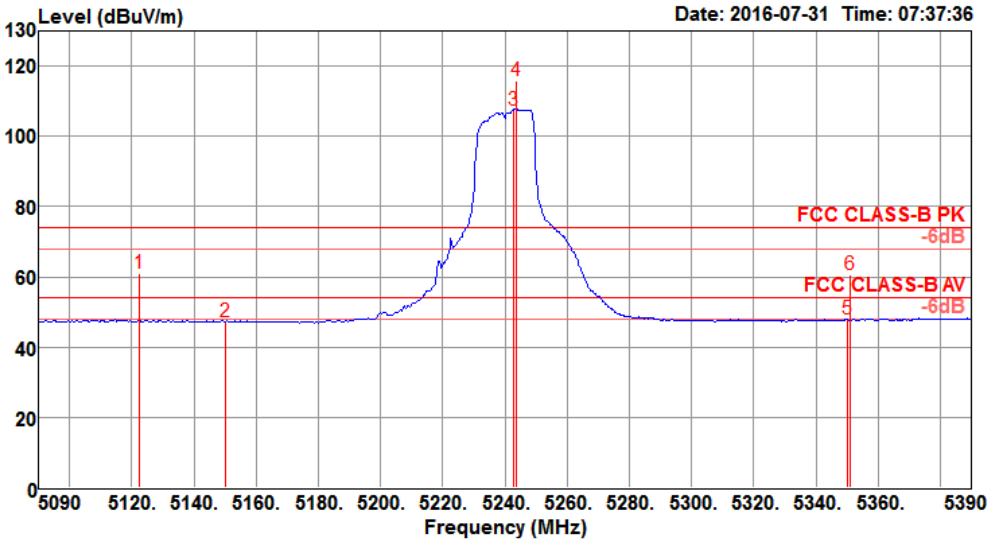
Channel 40



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.20	64.53	74.00	-9.47	57.27	6.44	33.74	32.92	288	70	Peak	HORIZONTAL
2	5150.00	50.82	54.00	-3.18	43.56	6.44	33.74	32.92	288	70	Average	HORIZONTAL
3	5194.40	105.77			98.39	6.48	33.82	32.92	288	70	Average	HORIZONTAL
4	5200.40	116.67			109.29	6.48	33.82	32.92	288	70	Peak	HORIZONTAL

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

Channel 48

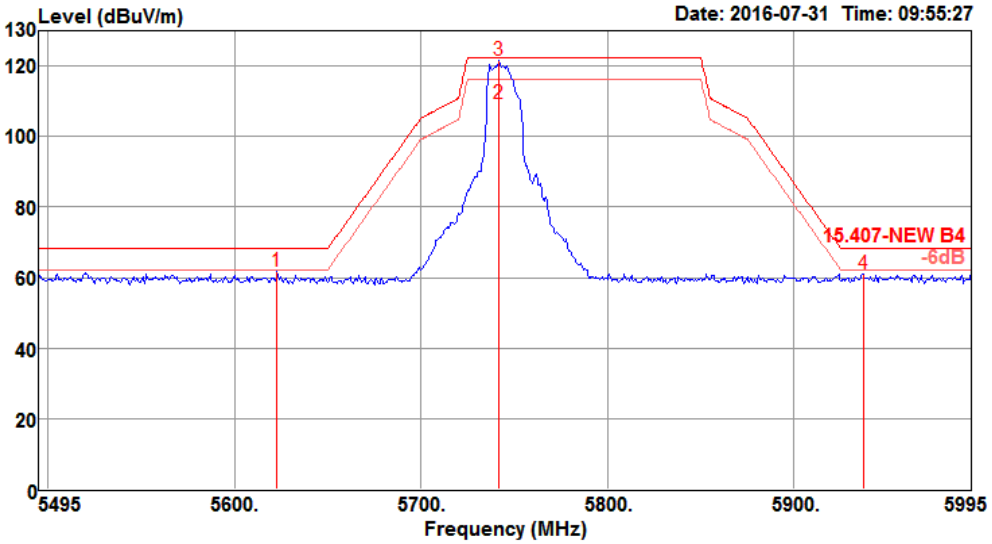


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5122.40	61.06	74.00	-12.94	53.66	7.48	34.82	34.90	282	165	Peak	VERTICAL
2	5150.00	47.11	54.00	-6.89	39.69	7.48	34.85	34.91	282	165	Average	VERTICAL
3	5243.00	107.51			99.98	7.50	34.94	34.91	282	165	Average	VERTICAL
4	5243.60	115.72			108.19	7.50	34.94	34.91	282	165	Peak	VERTICAL
5	5350.00	48.02	54.00	-5.98	40.32	7.56	35.05	34.91	282	165	Average	VERTICAL
6	5351.00	60.73	74.00	-13.27	53.03	7.56	35.05	34.91	282	165	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4

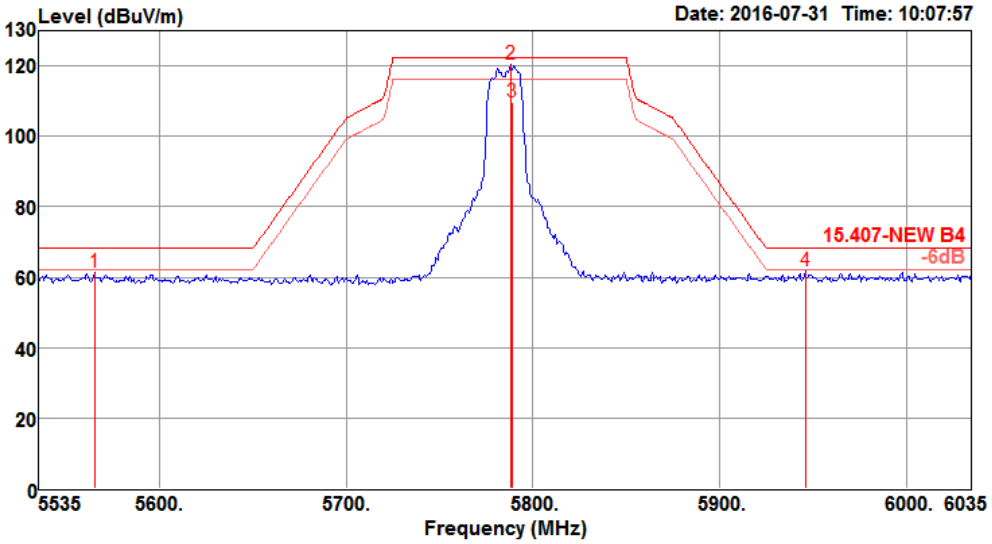
Channel 149



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5623.00	61.80	68.20	-6.40	53.59	7.92	35.22	34.93	297	183	Peak	VERTICAL
2	5742.00	109.23			101.15	7.77	35.25	34.94	297	183	Average	VERTICAL
3	5742.00	121.53			113.45	7.77	35.25	34.94	297	183	Peak	VERTICAL
4	5937.00	61.01	68.20	-7.19	52.74	7.94	35.29	34.96	297	183	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

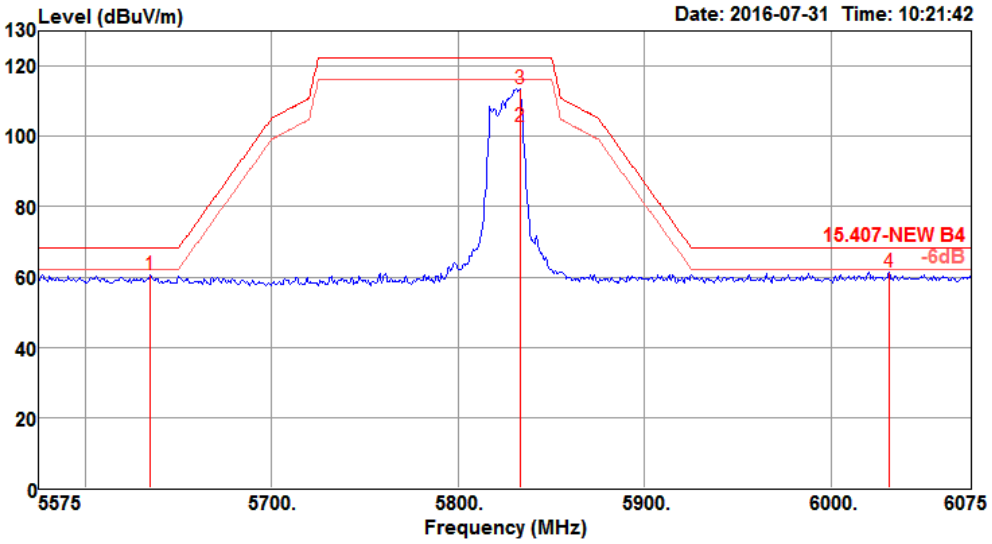
Channel 157



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5565.00	61.40	68.20	-6.80	53.24	7.88	35.21	34.93	299	184	Peak	VERTICAL
2	5788.00	120.27			112.23	7.73	35.26	34.95	299	184	Peak	VERTICAL
3	5789.00	109.67			101.65	7.71	35.26	34.95	299	184	Average	VERTICAL
4	5946.00	61.61	68.20	-6.59	53.32	7.97	35.29	34.97	299	184	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

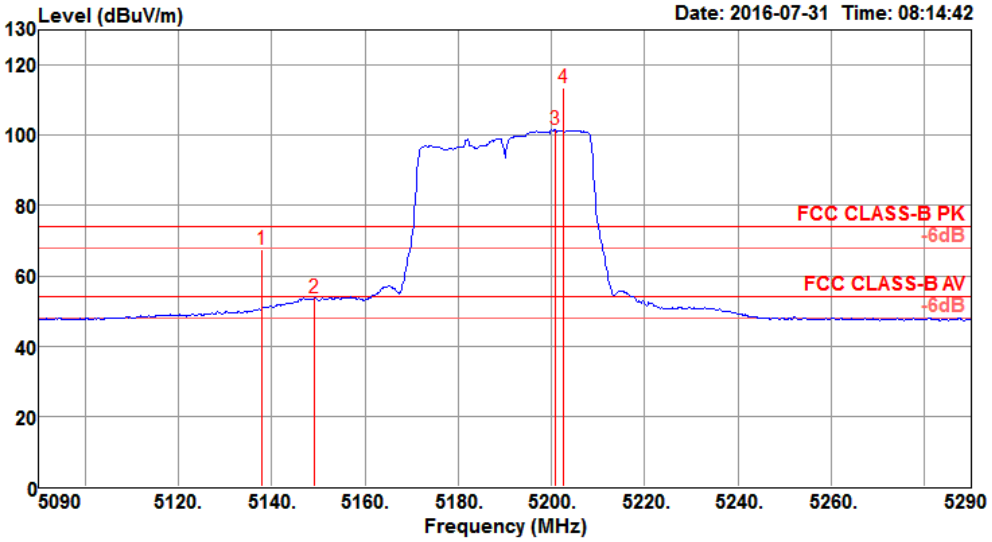


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5635.00	60.79	68.20	-7.41	52.59	7.90	35.23	34.93	280	107	Peak	HORIZONTAL
2	5833.00	102.67			94.58	7.77	35.27	34.95	280	107	Average	HORIZONTAL
3	5833.00	113.62			105.53	7.77	35.27	34.95	280	107	Peak	HORIZONTAL
4	6031.00	61.42	68.20	-6.78	52.99	8.09	35.31	34.97	280	107	Peak	HORIZONTAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang & Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4

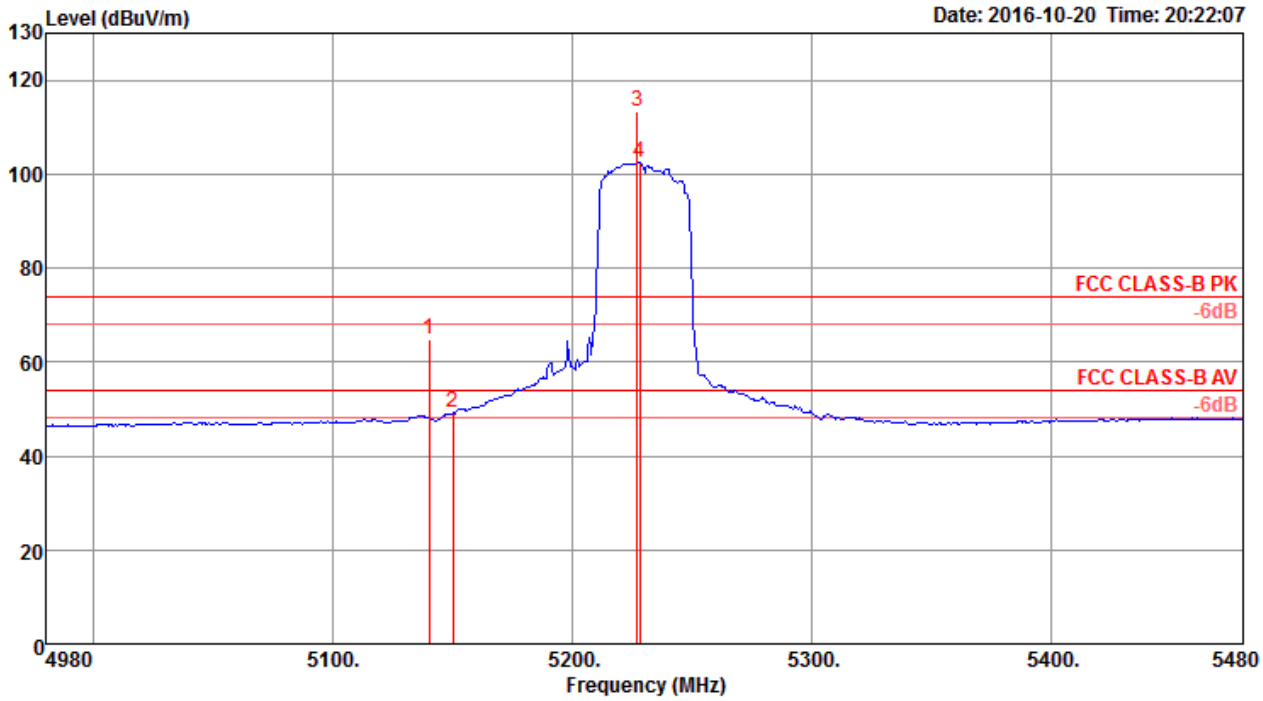
Channel 38



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5138.00	67.70	74.00	-6.30	60.29	7.48	34.84	34.91	273	170	Peak	VERTICAL
2	5149.20	53.56	54.00	-0.44	46.14	7.48	34.85	34.91	273	170	Average	VERTICAL
3	5200.80	101.51			94.04	7.48	34.90	34.91	273	170	Average	VERTICAL
4	5202.40	113.37			105.88	7.49	34.91	34.91	273	170	Peak	VERTICAL

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

Channel 46

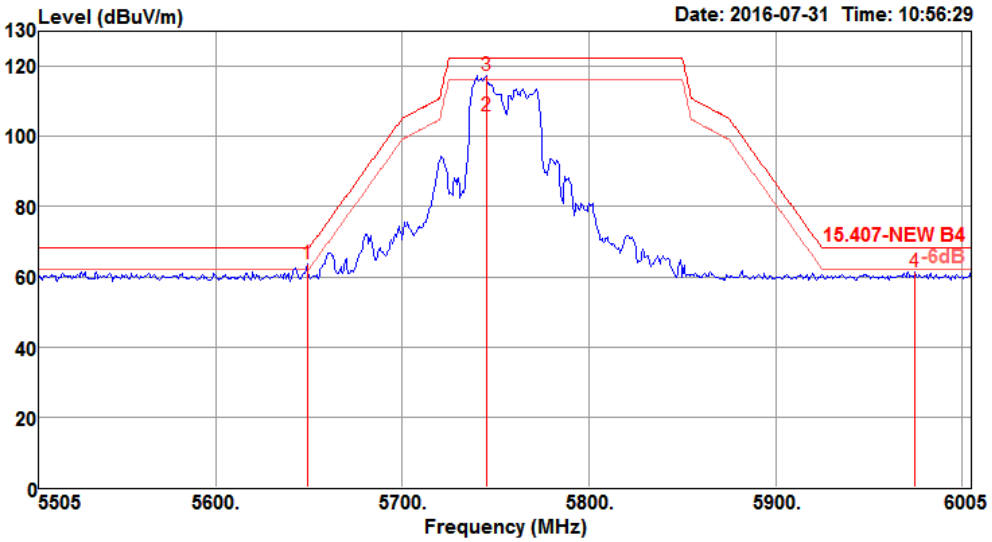


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5140.00	64.99	74.00	-9.01	57.76	6.43	33.72	32.92	252	206	Peak	VERTICAL
2	5150.00	49.26	54.00	-4.74	42.00	6.44	33.74	32.92	252	206	Average	VERTICAL
3	5227.00	113.42			105.97	6.51	33.86	32.92	252	206	Peak	VERTICAL
4	5228.00	102.37			94.92	6.51	33.86	32.92	252	206	Average	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4

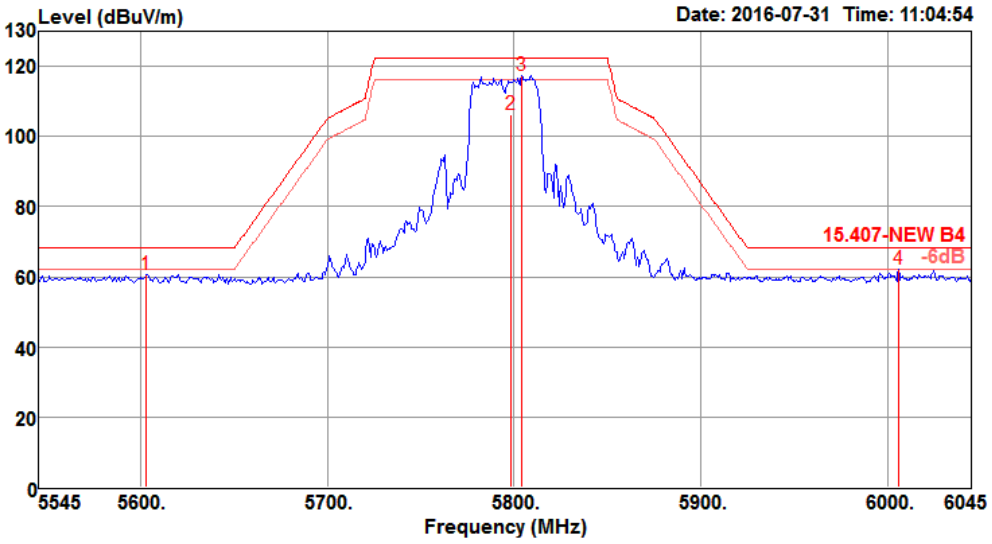
Channel 151



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5649.00	63.79	68.20	-4.41	55.61	7.88	35.23	34.93	283	188	Peak	VERTICAL
2	5745.00	105.69			97.61	7.77	35.25	34.94	283	188	Average	VERTICAL
3	5745.00	117.46			109.38	7.77	35.25	34.94	283	188	Peak	VERTICAL
4	5975.00	61.27	68.20	-6.93	52.96	7.99	35.29	34.97	283	188	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5755 MHz.

Channel 159

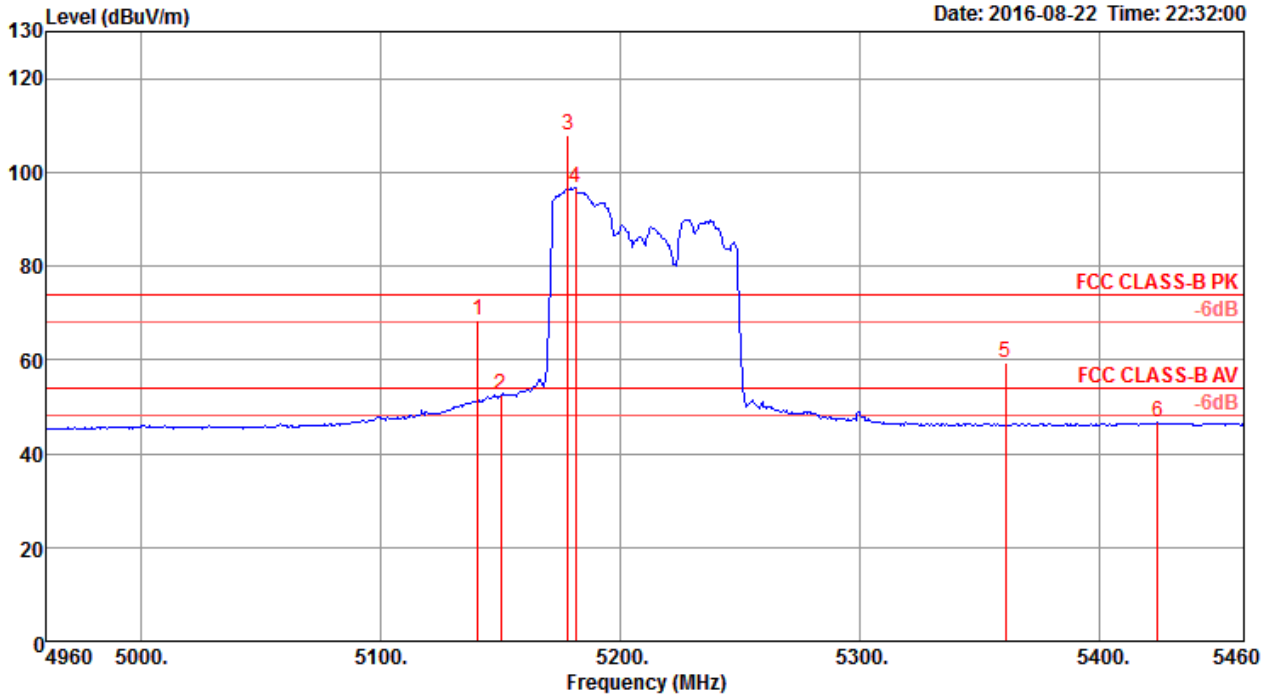


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5603.00	60.73	68.20	-7.47	52.50	7.94	35.22	34.93	283	184	Peak	VERTICAL
2	5798.00	106.20			98.18	7.71	35.26	34.95	283	184	Average	VERTICAL
3	5804.00	117.38			109.36	7.71	35.26	34.95	283	184	Peak	VERTICAL
4	6006.00	62.06	68.20	-6.14	53.68	8.05	35.30	34.97	283	184	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5795 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel 42

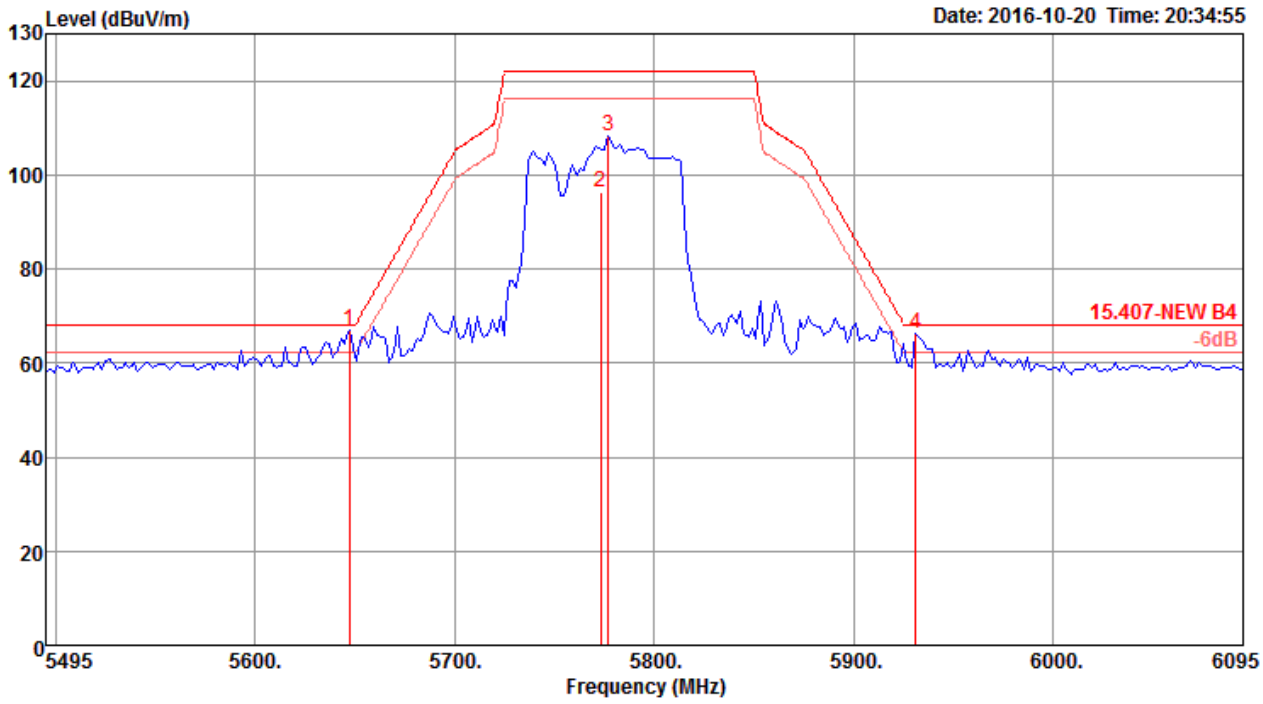


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5140.29	68.27	74.00	-5.73	61.04	6.43	33.72	32.92	222	348	Peak	VERTICAL
2	5150.00	52.55	54.00	-1.45	45.29	6.44	33.74	32.92	222	348	Average	VERTICAL
3	5177.95	107.91			100.57	6.47	33.79	32.92	222	348	Peak	VERTICAL
4	5181.15	96.57			89.23	6.47	33.79	32.92	222	348	Average	VERTICAL
5	5360.64	59.32	74.00	-14.68	51.54	6.62	34.08	32.92	222	348	Peak	VERTICAL
6	5423.94	46.57	54.00	-7.43	38.65	6.67	34.18	32.93	222	348	Average	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel 155



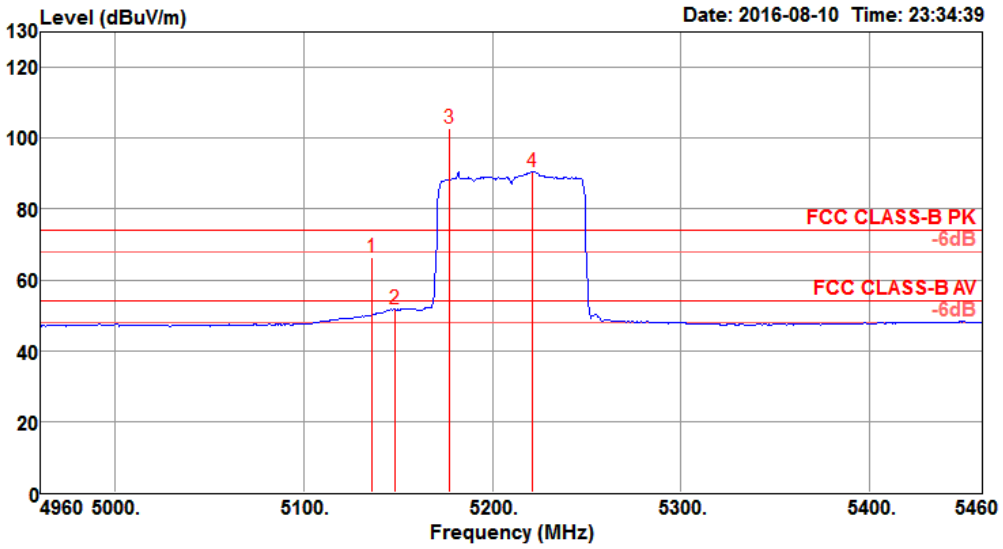
	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5647.00	66.98	68.20	-1.22	58.76	6.80	34.39	32.97	274	77	Peak	HORIZONTAL
2	5773.00	96.40			88.00	6.93	34.47	33.00	274	77	Average	HORIZONTAL
3	5777.00	108.10			99.70	6.93	34.47	33.00	274	77	Peak	HORIZONTAL
4	5931.00	66.17	68.20	-2.03	57.67	6.98	34.56	33.04	274	77	Peak	HORIZONTAL

Item 2, 3 are the fundamental frequency at 5775 MHz.

802.11ac MCS0/Nss2 VHT80+80

Temperature	22°C	Humidity	54%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss2 VHT80+80 Type 1/ CH 42+155 / Chain 1 + Chain 2 + Chain 3 + Chain 4

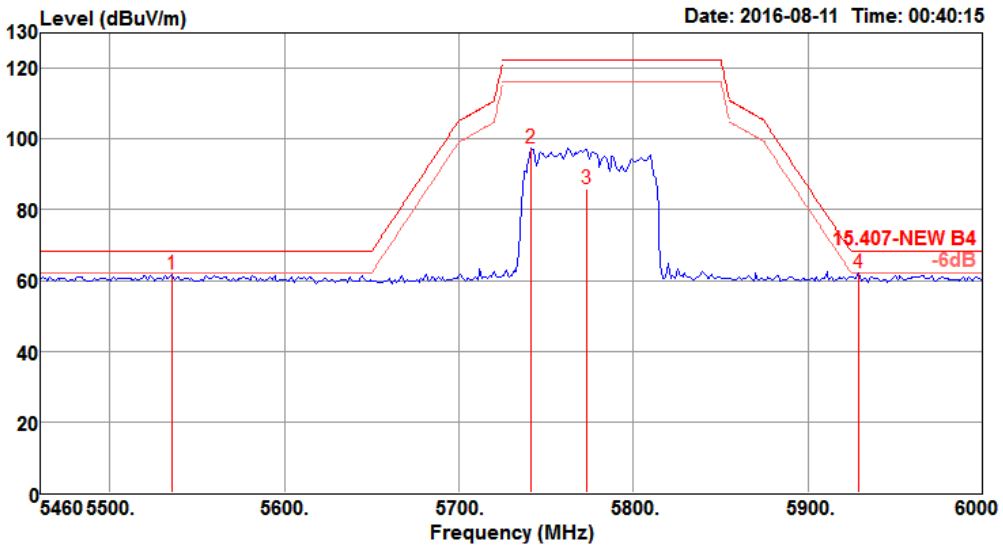
Channel 42



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5136.00	66.54	74.00	-7.46	59.13	7.48	34.84	34.91	102	359	Peak	VERTICAL
2	5148.00	51.87	54.00	-2.13	44.45	7.48	34.85	34.91	102	359	Average	VERTICAL
3	5177.00	102.90			95.45	7.48	34.88	34.91	102	359	Peak	VERTICAL
4	5221.00	90.68			83.16	7.50	34.93	34.91	102	359	Average	VERTICAL

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

Channel 155



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5535.60	61.66	68.20	-6.54	53.54	7.83	35.21	34.92	103	251	Peak	HORIZONTAL
2	5741.40	97.29			89.21	7.77	35.25	34.94	103	251	Peak	HORIZONTAL
3	5773.60	85.75			77.71	7.73	35.26	34.95	103	251	Average	HORIZONTAL
4	5929.00	62.12	68.20	-6.08	53.85	7.94	35.29	34.96	103	251	Peak	HORIZONTAL

Item 2, 3 are the fundamental frequency at 5775 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

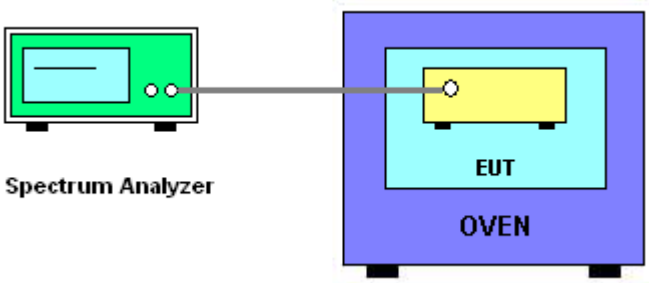
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
7. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
8. Extreme temperature is -10°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	22°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Aug. 05, 2016

Mode: 20 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9823	5199.9818	5199.9810	5199.9809
110.00	5199.9822	5199.9817	5199.9812	5199.9809
93.50	5199.9812	5199.9806	5199.9804	5199.9799
Max. Deviation (MHz)	0.0188	0.0194	0.0196	0.0201
Max. Deviation (ppm)	3.62	3.73	3.77	3.87
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-10	5199.9834	5199.9831	5199.9826	5199.9817
0	5199.9830	5199.9827	5199.9820	5199.9810
10	5199.9824	5199.9822	5199.9819	5199.9813
20	5199.9822	5199.9812	5199.9805	5199.9798
30	5199.9813	5199.9808	5199.9801	5199.9795
40	5199.9804	5199.9800	5199.9790	5199.9783
50	5199.9799	5199.9789	5199.9782	5199.9772
60	5199.9785	5199.9778	5199.9769	5199.9760
70	5199.9789	5199.9783	5199.9776	5199.9769
Max. Deviation (MHz)	0.0211	0.0217	0.0224	0.0231
Max. Deviation (ppm)	4.05	4.17	4.30	4.44
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9829	5784.9822	5784.9820	5784.9811
110.00	5784.9822	5784.9815	5784.9813	5784.9804
93.50	5784.9819	5784.9810	5784.9803	5784.9801
Max. Deviation (MHz)	0.0181	0.0190	0.0197	0.0199
Max. Deviation (ppm)	3.13	3.28	3.41	3.44
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-10	5784.9854	5784.9845	5784.9836	5784.9833
0	5784.9848	5784.9841	5784.9837	5784.9835
10	5784.9832	5784.9830	5784.9821	5784.9818
20	5784.9822	5784.9820	5784.9815	5784.9805
30	5784.9813	5784.9808	5784.9800	5784.9797
40	5784.9803	5784.9800	5784.9791	5784.9789
50	5784.9811	5784.9807	5784.9805	5784.9799
60	5784.9804	5784.9803	5784.9799	5784.9796
70	5784.9800	5784.9797	5784.9795	5784.9793
Max. Deviation (MHz)	0.0200	0.0203	0.0209	0.0211
Max. Deviation (ppm)	3.45	3.50	3.61	3.64
Result	Complies			

Mode: 40 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9832	5189.9831	5189.9828	5189.9823
110.00	5189.9822	5189.9812	5189.9806	5189.9803
93.50	5189.9820	5189.9817	5189.9816	5189.9814
Max. Deviation (MHz)	0.0180	0.0188	0.0194	0.0197
Max. Deviation (ppm)	3.47	3.62	3.74	3.80
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-10	5189.9847	5189.9843	5189.9839	5189.9831
0	5189.9838	5189.9829	5189.9825	5189.9816
10	5189.9837	5189.9831	5189.9830	5189.9823
20	5189.9822	5189.9816	5189.9806	5189.9802
30	5189.9813	5189.9803	5189.9797	5189.9794
40	5189.9799	5189.9795	5189.9791	5189.9788
50	5189.9799	5189.9795	5189.9790	5189.9789
60	5189.9794	5189.9793	5189.9786	5189.9782
70	5189.9781	5189.9771	5189.9767	5189.9763
Max. Deviation (MHz)	0.0219	0.0229	0.0233	0.0237
Max. Deviation (ppm)	4.21	4.41	4.48	4.56
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9824	5754.9822	5754.9813	5754.9804
110.00	5754.9822	5754.9814	5754.9806	5754.9803
93.50	5754.9818	5754.9816	5754.9810	5754.9800
Max. Deviation (MHz)	0.0182	0.0186	0.0194	0.0200
Max. Deviation (ppm)	3.16	3.23	3.37	3.48
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-10	5754.9858	5754.9848	5754.9842	5754.9836
0	5754.9838	5754.9834	5754.9828	5754.9825
10	5754.9833	5754.9825	5754.9822	5754.9812
20	5754.9822	5754.9814	5754.9810	5754.9808
30	5754.9813	5754.9808	5754.9803	5754.9794
40	5754.9811	5754.9808	5754.9803	5754.9794
50	5754.9804	5754.9799	5754.9791	5754.9783
60	5754.9806	5754.9801	5754.9793	5754.9789
70	5754.9802	5754.9796	5754.9795	5754.9789
Max. Deviation (MHz)	0.0198	0.0204	0.0205	0.0211
Max. Deviation (ppm)	3.44	3.54	3.56	3.66
Result	Complies			

Mode: 80 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5209.9828	5209.9822	5209.9818	5209.9815
110.00	5209.9822	5209.9820	5209.9813	5209.9812
93.50	5209.9817	5209.9812	5209.9811	5209.9808
Max. Deviation (MHz)	0.0183	0.0188	0.0189	0.0192
Max. Deviation (ppm)	3.51	3.61	3.63	3.69
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-10	5209.9833	5209.9832	5209.9825	5209.9815
0	5209.9828	5209.9824	5209.9822	5209.9816
10	5209.9824	5209.9818	5209.9808	5209.9806
20	5209.9822	5209.9816	5209.9810	5209.9800
30	5209.9813	5209.9804	5209.9803	5209.9802
40	5209.9800	5209.9793	5209.9792	5209.9789
50	5209.9805	5209.9802	5209.9797	5209.9793
60	5209.9805	5209.9797	5209.9794	5209.9790
70	5209.9780	5209.9775	5209.9765	5209.9763
Max. Deviation (MHz)	0.0220	0.0225	0.0235	0.0237
Max. Deviation (ppm)	4.22	4.31	4.50	4.54
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9825	5774.9817	5774.9812	5774.9811
110.00	5774.9822	5774.9813	5774.9806	5774.9800
93.50	5774.9817	5774.9808	5774.9805	5774.9802
Max. Deviation (MHz)	0.0183	0.0192	0.0195	0.0200
Max. Deviation (ppm)	3.17	3.32	3.38	3.46
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-10	5774.9859	5774.9856	5774.9847	5774.9838
0	5774.9839	5774.9832	5774.9829	5774.9823
10	5774.9833	5774.9825	5774.9815	5774.9805
20	5774.9822	5774.9816	5774.9812	5774.9807
30	5774.9813	5774.9809	5774.9799	5774.9797
40	5774.9802	5774.9801	5774.9796	5774.9792
50	5774.9796	5774.9787	5774.9782	5774.9775
60	5774.9807	5774.9800	5774.9796	5774.9787
70	5774.9787	5774.9781	5774.9777	5774.9774
Max. Deviation (MHz)	0.0213	0.0219	0.0223	0.0226
Max. Deviation (ppm)	3.68	3.79	3.86	3.91
Result	Complies			

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
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Nov. 16, 2015	Conduction (CO02-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 13, 2015	Conduction (CO02-CB)
EMI Receiver	Agilent	N9038A	MY52260140	9kHz ~ 8.4GHz	Jan. 18, 2016	Conduction (CO02-CB)
COND Cable	Woken	Cable	01	0.15MHz ~ 30MHz	Dec. 01, 2015	Conduction (CO02-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO02-CB)
Pulse Limiter	Schwarzbeck	VTSD 9561F	9561-F073	9kHz ~ 30MHz	Sep. 29, 2016	Conduction (CO02-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
BILOG ANTENNA	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	Aug. 30, 2016	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP-40	100019	9kHz ~ 40GHz	Apr. 21, 2016	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-l0-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%