



SPORTON International Inc.

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FCC RADIO TEST REPORT

Applicant's company	MitraStar Technology Corporation
Applicant Address	No. 6, Innovation Rd II, Science-Based Industrial, Hsin-Chu, Taiwan
FCC ID	ZMYAM525
Manufacturer's company (1)	MitraStar Technology Corporation
Manufacturer Address	No. 6, Innovation Rd II, Hsinchu Science Park, Hsinchu 30076, Taiwan
Manufacturer's company (2)	WuXi MitraStar Technology Co. Ltd
Manufacturer Address	60#-E, Minshan Road, Wuxi New district Jangsu, P.R.C.

Product Name	MoCA to Wireless / Ethernet bridge
Brand Name	Pace
Model No.	AM525
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5350MHz / 5470 ~ 5725MHz / 5725 ~ 5850 MHz
Received Date	Nov. 30, 2015
Final Test Date	Jan. 11, 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.

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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 v01r01, KDB662911 D01 v02r01, KDB644545 D03 v01.

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



1. VERIFICATION OF COMPLIANCE

Product Name : MoCA to Wireless / Ethernet bridge
Brand Name : Pace
Model No. : AM525
Applicant : MitraStar Technology Corporation
Test Rule Part(s) : 47 CFR FCC Part 15 Subpart E § 15.407

Sportun International as requested by the applicant to evaluate the EMC performance of the product sample received on Nov. 30, 2015 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.

A handwritten signature in blue ink that reads "Sam Chen".

Sam Chen
SPORTON INTERNATIONAL INC.



2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	Rule Section	Description of Test	Result	Under Limit
4.1	15.207	AC Power Line Conducted Emissions	Complies	7.48 dB
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	0.01 dB
4.5	15.407(a)	Power Spectral Density	Complies	0.02 dB
4.6	15.407(b)	Radiated Emissions	Complies	0.84 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.02 dB
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 power adapter
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 ~ 5350MHz / 5470 ~ 5725MHz / 5725 ~ 5850 MHz
Channel Number	25 for 20MHz bandwidth ; 12 for 40MHz bandwidth 6 for 80MHz bandwidth
Channel Band Width (99%)	<u>For non-beamforming function:</u> Band 1: IEEE 802.11a: 17.63 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.46 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 73.52 MHz Band 2: IEEE 802.11a: 17.28 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.41 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 34.88 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.10 MHz Band 3: IEEE 802.11a: 17.02 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.15 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.61 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.96 MHz Band 4: IEEE 802.11a: 17.54 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.58 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.77 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.67 MHz

	<p><u>For beamforming function:</u></p> <p>Band 1:</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT20): 18.41 MHz</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT40): 37.19 MHz</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT80): 75.25 MHz</p> <p>Band 2:</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT20): 18.23 MHz</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT40): 36.76 MHz</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT80): 75.25 MHz</p> <p>Band 3:</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT20): 17.97 MHz</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT40): 37.05 MHz</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT80): 75.54 MHz</p> <p>Band 4:</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT20): 18.15 MHz</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT40): 37.48 MHz</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT80): 75.54 MHz</p>
Maximum Conducted Output Power	<p><u>For non-beamforming function:</u></p> <p>Band 1:</p> <p>IEEE 802.11a: 26.15 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 26.31 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 26.60 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 21.31 dBm</p> <p>Band 2:</p> <p>IEEE 802.11a: 22.14 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 22.26 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 23.87 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 22.30 dBm</p> <p>Band 3:</p> <p>IEEE 802.11a: 22.30 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 22.36 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 23.96 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 23.74 dBm</p> <p>Band 4:</p> <p>IEEE 802.11a: 26.00 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 25.89 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 26.30 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 22.44 dBm</p>

	<p><u>For beamforming function:</u></p> <p>Band 1:</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT20): 26.31 dBm</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT40): 26.60 dBm</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT80): 22.12 dBm</p> <p>Band 2:</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT20): 23.72 dBm</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT40): 23.97 dBm</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT80): 22.30 dBm</p> <p>Band 3:</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT20): 23.78 dBm</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT40): 23.96 dBm</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT80): 23.72 dBm</p> <p>Band 4:</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT20): 25.89 dBm</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT40): 26.30 dBm</p> <p>IEEE 802.11ac MCS0/Nss2 (VHT80): 22.18 dBm</p>
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3
Note: The EUT supports Master in 2.4GHz, 5GHz band 1, band 4 / Client without radar detection in 5GHz band 1~band 4 / Repeater in 2.4GHz, 5GHz band 1~band 4.	

Items	Description	
Communication Mode	<input checked="" type="checkbox"/> IP Based (Load Based)	<input type="checkbox"/> Frame Based
TPC Function	<input checked="" type="checkbox"/> With TPC	<input type="checkbox"/> Without TPC
Weather Band (5600~5650MHz)	<input checked="" type="checkbox"/> With 5600~5650MHz	<input type="checkbox"/> Without 5600~5650MHz
Beamforming Function	<input checked="" type="checkbox"/> With beamforming	<input type="checkbox"/> Without beamforming
	The product has beamforming function for 802.11n/ac in 5GHz. For 802.11ac: The beamforming function supports MCS 0-9/Nss2-4.	
Operate Condition	<input checked="" type="checkbox"/> Indoor	<input type="checkbox"/> Outdoor

Antenna and Band width

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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS	
<u>For non-beamforming function:</u>	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
<u>For beamforming function:</u>	802.11n (HT20)	4	MCS 0-31
	802.11n (HT40)	4	MCS 0-31
	802.11ac (VHT20)	4	MCS 0-9/Nss2-4
	802.11ac (VHT40)	4	MCS 0-9/Nss2-4
	802.11ac (VHT80)	4	MCS 0-9/Nss2-4
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

Power	Brand	Model No.	Rating
Adapter	PI	AD2027310	Input: 100-120Vac, 50/60Hz, 680mA Output: 12Vdc, 1.5A
Others			
LAN cable	1.8 meter, non-shielded, w/o ferrite core		

3.3. Table for Filed Antenna

Ant.	Brand	Model No.	Type	Connector	Gain (dBi)				
					2.4GHz	5GHz B1	5GHz B2	5GHz B3	5GHz B4
1	Whayu	C1597-510063-A	Dipole	N/A	1.8	-	-	-	-
2	Whayu	C1597-510064-A	Dipole	N/A	2.0	-	-	-	-
3	Whayu	C1597-510065-A	Dipole	I-PEX	-	1.70	1.67	1.59	1.42
4	Whayu	C1597-510066-A	Dipole	I-PEX	-	1.70	1.67	1.59	1.42
5	Whayu	C1597-510067-A	Dipole	I-PEX	-	1.70	1.67	1.59	1.42
6	Whayu	C1597-510068-A	Dipole	I-PEX	-	1.70	1.67	1.59	1.42

Note: The EUT has six antennas.

Ant. 1 and Ant. 2 for 2.4GHz WLAN function use, Ant. 3~Ant. 6 for 5GHz WLAN function use.

For 2.4GHz WLAN function:

For IEEE 802.11b/g mode (1TX, 1RX):

Only Chain 1 can be used as transmitting/receiving functions.

For IEEE 802.11n mode (1TX, 1RX / 2TX, 2RX):

The EUT can support both 1TX and 2TX functions.

For 1TX function:

Both Chain 1 and Chain 2 support transmit and receive functions, but only one of them will be used at one time.

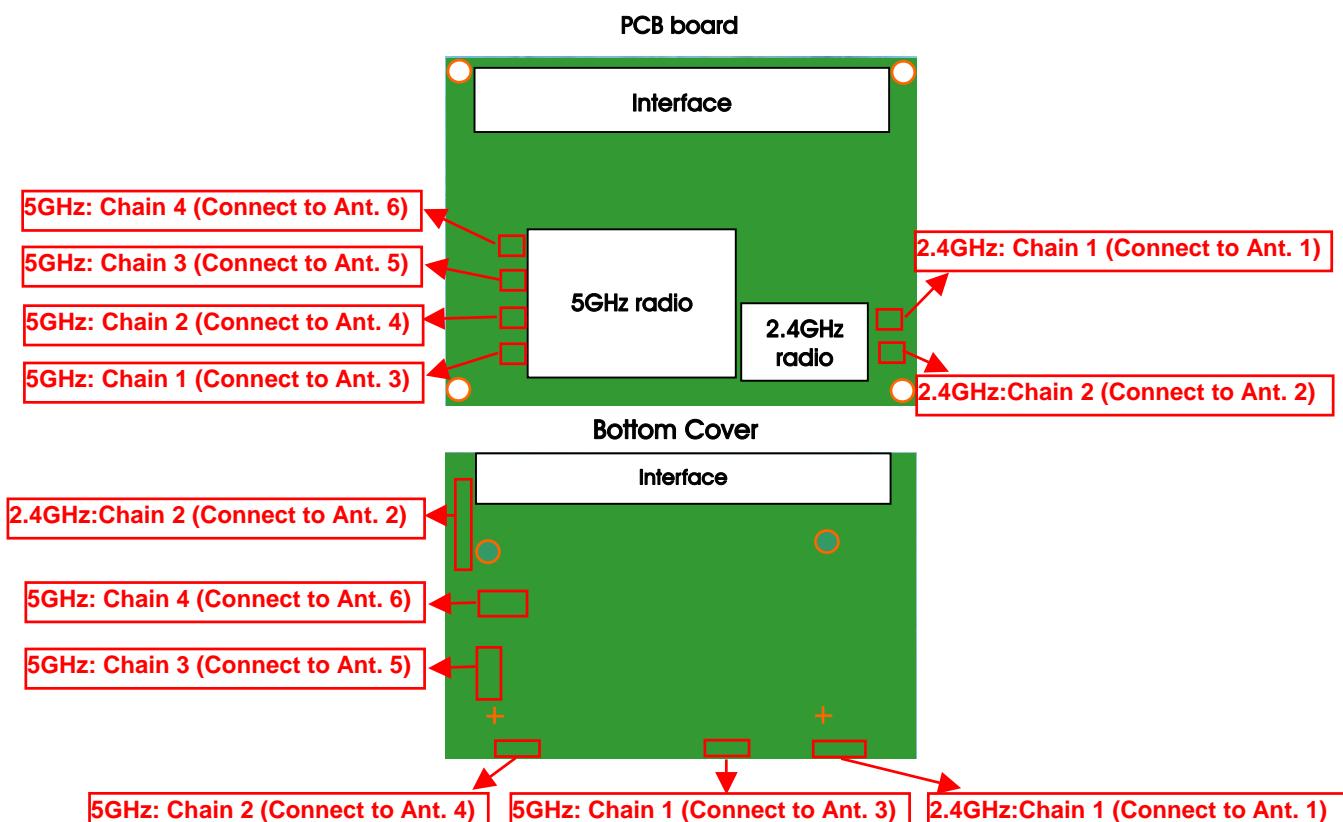
For 2TX function:

Chain 1 and Chain 2 could transmit/receive simultaneously.

For 5GHz WLAN function:

For IEEE 802.11a/n/ac mode (4TX, 4RX):

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



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144, 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 38, 46, 54, 62, 102, 110, 118, 126, 134, 142, 151, 159.

For 80MHz bandwidth systems, use Channel 42, 58, 106, 122, 138, 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz	-	-
5250~5350 MHz Band 2	52	5260 MHz	60	5300 MHz
	54	5270 MHz	62	5310 MHz
	56	5280 MHz	64	5320 MHz
	58	5290 MHz	-	-
5470~5725 MHz Band 3	100	5500 MHz	124	5620 MHz
	102	5510 MHz	126	5630 MHz
	104	5520 MHz	128	5640 MHz
	106	5530 MHz	132	5660 MHz
	108	5540 MHz	134	5670 MHz
	110	5550 MHz	136	5680 MHz
	112	5560 MHz	138	5690 MHz
	116	5580 MHz	140	5700 MHz
	118	5590 MHz	142	5710 MHz
	120	5600 MHz	144	5720 MHz
5725~5850 MHz Band 4	122	5610 MHz	-	-
	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 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	<u>For non-beamforming function:</u>				
	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/122/138/ 155	1+2+3+4
	<u>For beamforming function:</u>				
	11ac VHT20	Band 1~4	MCS0/Nss2	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss2	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss2	42/58/106/122/138/ 155	1+2+3+4

Power Spectral Density	For non-beamforming function:				
	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/122/138/ 155	1+2+3+4
	For beamforming function:				
	11ac VHT20	Band 1~4	MCS0/Nss2	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss2	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss2	42/58/106/122/138/ 155	1+2+3+4
	For non-beamforming function:				
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/122/138/ 155	1+2+3+4
	For beamforming function:				
	11ac VHT20	Band 1~4	MCS0/Nss2	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss2	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss2	42/58/106/122/138/ 155	1+2+3+4
	For non-beamforming function:				
	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4

6dB Spectrum Bandwidth Measurement	For non-beamforming function:				
	11a/BPSK	Band 4	6Mbps	144/149/157/165	1+2+3+4
	11ac VHT20	Band 4	MCS0/Nss1	144/149/157/165	1+2+3+4
	11ac VHT40	Band 4	MCS0/Nss1	142/151/159	1+2+3+4
	11ac VHT80	Band 4	MCS0/Nss1	138/155	1+2+3+4
	For beamforming function:				
	11ac VHT20	Band 4	MCS0/Nss2	144/149/157/165	1+2+3+4
	11ac VHT40	Band 4	MCS0/Nss2	142/151/159	1+2+3+4
	11ac VHT80	Band 4	MCS0/Nss2	138/155	1+2+3+4
	Radiated Emission Below 1GHz	CTX	-	-	-
Radiated Emission Above 1GHz	For non-beamforming function:				
	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/122/138/ 155	1+2+3+4
	For beamforming function:				
	11ac VHT20	Band 1~4	MCS0/Nss2	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss2	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss2	42/58/106/122/138/ 155	1+2+3+4

Band Edge Emission	For non-beamforming function:				
	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/122/138/ 155	1+2+3+4
	For beamforming function:				
	11ac VHT20	Band 1~4	MCS0/Nss2	36/40/48/52/60/64 /100/116/140/144/ 149/157/165	1+2+3+4
	11ac VHT40	Band 1~4	MCS0/Nss2	38/46/54/62/102/ 110/134/142/151/ 159	1+2+3+4
	11ac VHT80	Band 1~4	MCS0/Nss2	42/58/106/122/138/ 155	1+2+3+4
Frequency Stability	20 MHz	Band 1~4	-	40/60/116/157	1
	40 MHz	Band 1~4	-	38/62/110/151	1
	80 MHz	Band 1~4	-	42/58/106/155	1

Note: 1. The EUT can only be used at Y axis position.

2. 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.

The following test modes were performed for all tests:

For AC Power Line Conducted Emissions test:

Mode 1. 2.4GHz WLAN function

Mode 2. 5GHz WLAN function

Mode 1 is the worst case, so it was selected to record in this test report.

For Radiated Emission below 1GHz test:

Mode 1. 2.4GHz WLAN function

Mode 2. 5GHz WLAN function

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

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

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA5O2010) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

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

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

3.7. Table for Supporting Units

For Test Site No: 03CH01-CB (below 1GHz) and TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

For Test Site No: 03CH01-CB (above 1GHz)

For non-beamforming function:

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

For beamforming function:

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
RX Device	Quantenna	NA	NA
Notebook	DELL	E4300	DoC

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC

3.8. Table for Parameters of Test Software Setting

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

For non-beamforming function:

Test Software Version		DOS											
Mode	Test Frequency (MHz)												
	NCB: 20MHz												
	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	21	21	21	16	16	16	16	16	16	16.5	21	21	21
802.11ac MCS0/Nss1 VHT20	20.5	21	21	16	16	16	16	16	16	16.5	19	21	21
Mode	NCB: 40MHz												
802.11ac MCS0/Nss1 VHT40	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	5755 MHz	5795 MHz			
	16.5	21	17.5	17	17	17.5	18	18	18	17.5	21		
Mode	NCB: 80MHz												
802.11ac MCS0/Nss1 VHT80	5210 MHz		5290 MHz		5530 MHz		5610 MHz		5690 MHz		5775 MHz		
	15		16		16		18		18.5		16.5		

For beamforming function:

Test Software Version		DOS											
Mode	Test Frequency (MHz)												
	NCB: 20MHz												
	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz	5745 MHz	5785 MHz	5825 MHz
802.11ac MCS0/Nss2 VHT20	19.5	21	21	18	18	18	18	18	18	18	18	21	21
Mode	NCB: 40MHz												
802.11ac MCS0/Nss2 VHT40	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	5755 MHz	5795 MHz			
	16.5	21	18	17	16	18	18	18	18	16.5	21		
Mode	NCB: 80MHz												
802.11ac MCS0/Nss2 VHT80	5210 MHz		5290 MHz		5530 MHz		5610 MHz		5690 MHz		5775 MHz		
	16		16		16		18		18		16		

3.9. EUT Operation during Test

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

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

The program was executed as follows:

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

3.10. Duty Cycle

For non-beamforming function:

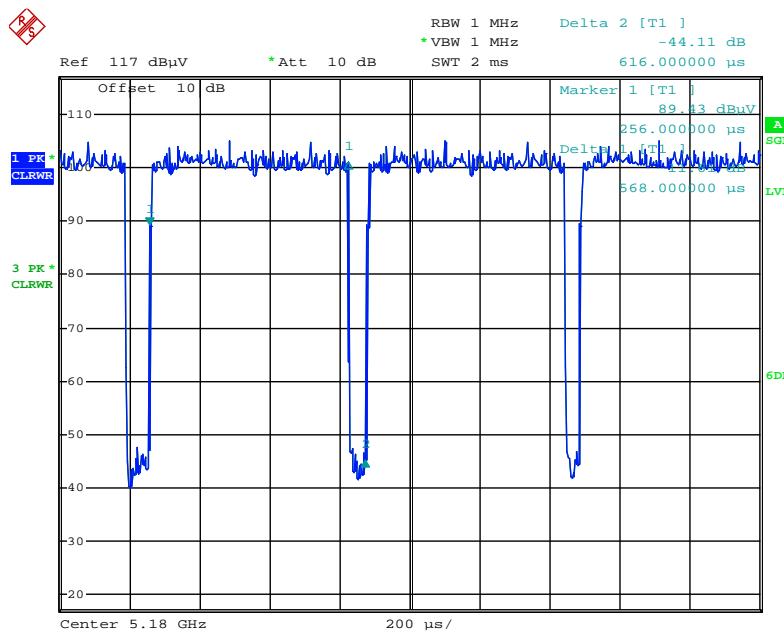
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	0.568	0.616	92.21	0.35	1.76
802.11ac MCS0/Nss1 VHT20	5.000	5.040	99.21	0.03	0.01
802.11ac MCS0/Nss1 VHT40	2.432	2.480	98.06	0.08	0.01
802.11ac MCS0/Nss1 VHT80	1.146	1.200	95.50	0.20	0.87

For beamforming function:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss2 VHT20	1.780	1.980	89.90%	0.46	0.56
802.11ac MCS0/Nss2 VHT40	0.888	0.948	93.67%	0.28	1.13
802.11ac MCS0/Nss2 VHT80	1.600	1.654	96.74%	0.14	0.63

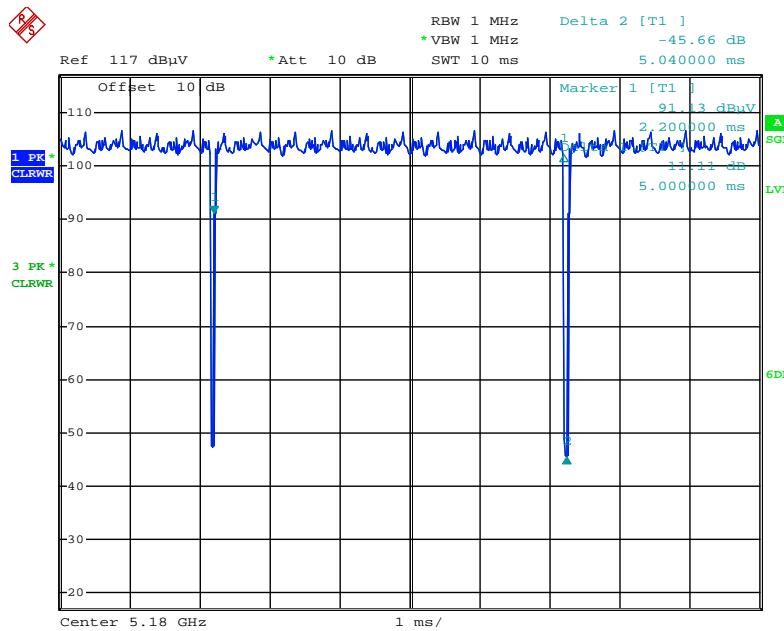
For non-beamforming function:

IEEE 802.11a



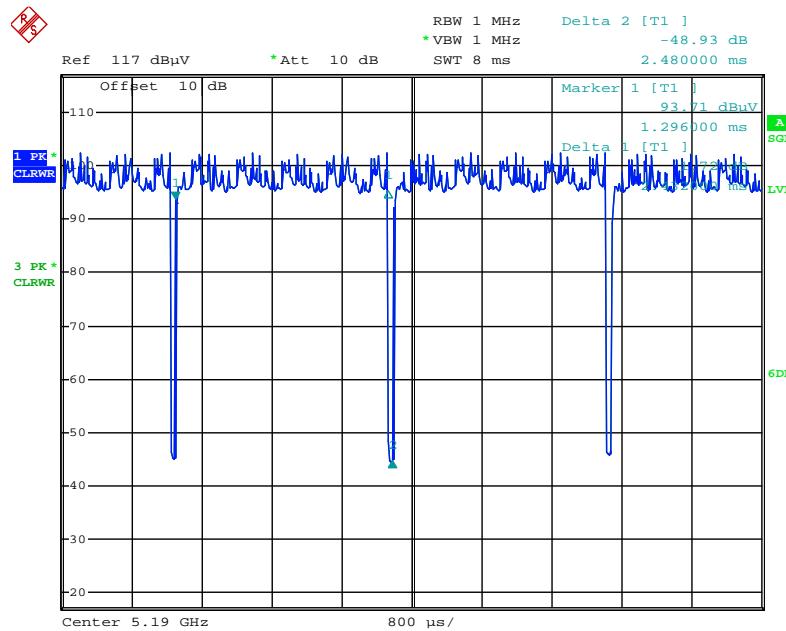
Date: 18.DEC.2015 16:13:24

IEEE 802.11ac MCS0/Nss1 VHT20



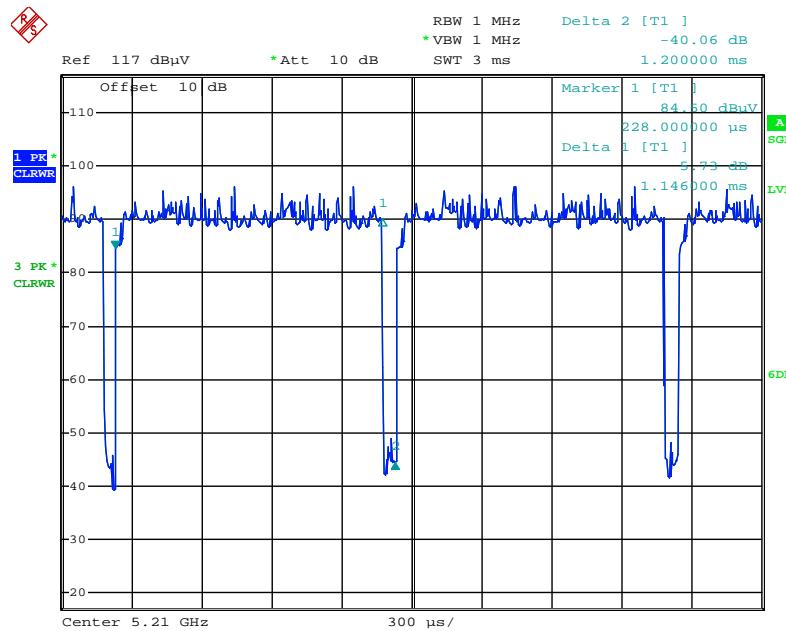
Date: 18.DEC.2015 18:10:09

IEEE 802.11ac MCS0/Nss1 VHT40



Date: 18.DEC.2015 20:51:18

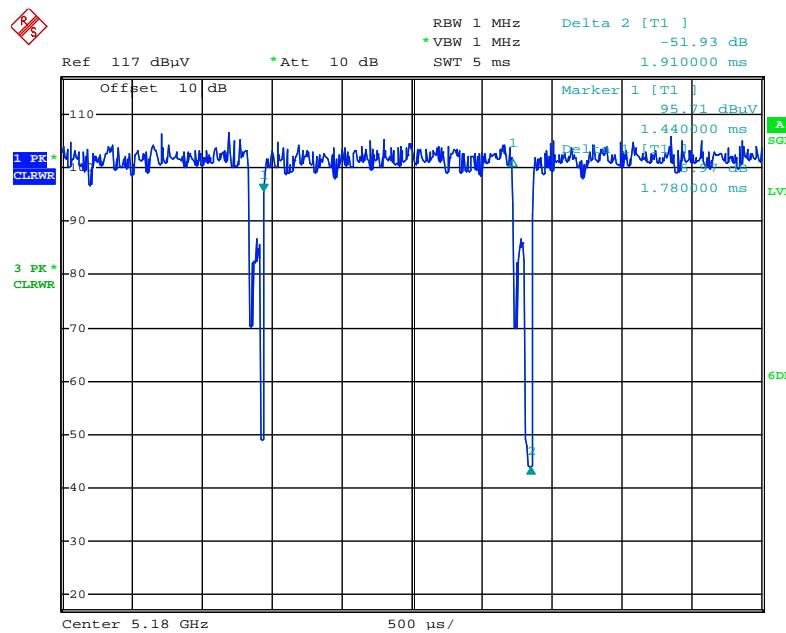
IEEE 802.11ac MCS0/Nss1 VHT80



Date: 18.DEC.2015 15:03:14

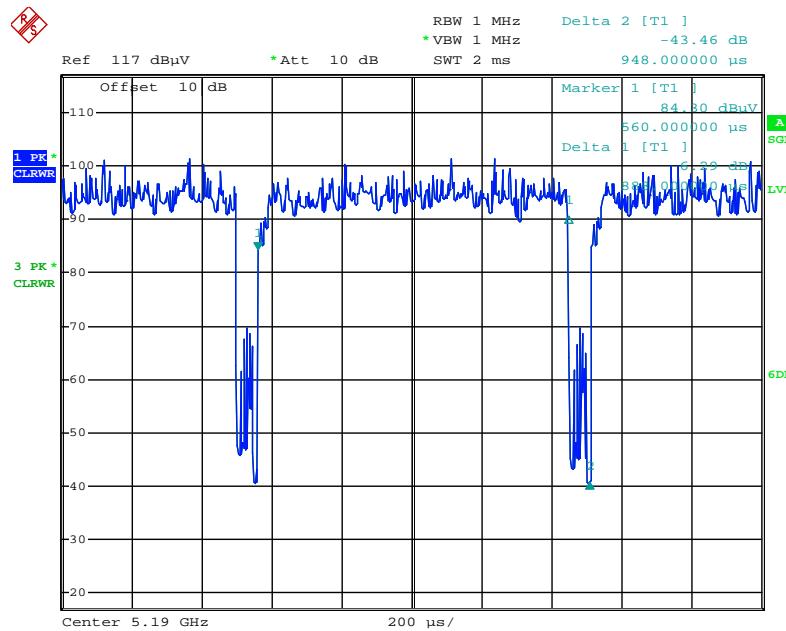
For beamforming function:

IEEE 802.11ac MCS0/Nss2 VHT20



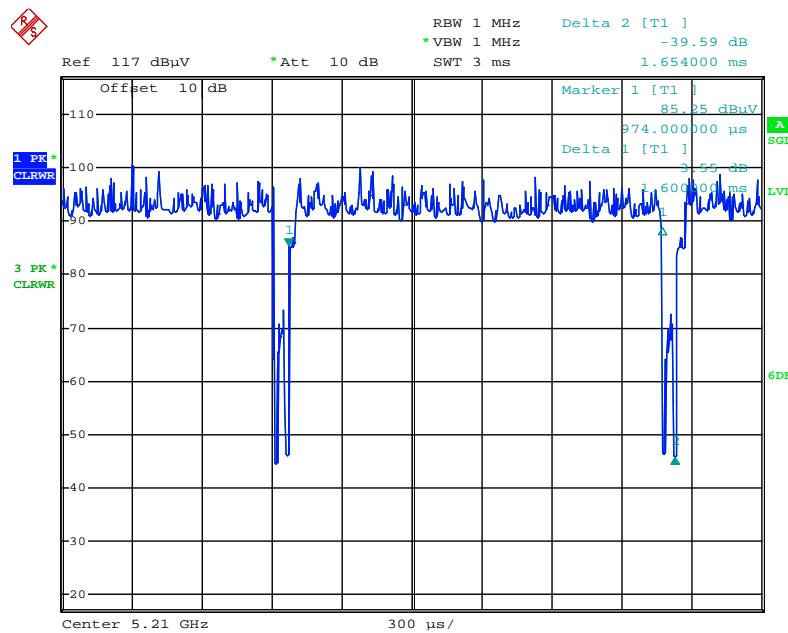
Date: 17.DEC.2015 16:14:46

IEEE 802.11ac MCS0/Nss2 VHT40



Date: 17.DEC.2015 13:24:03

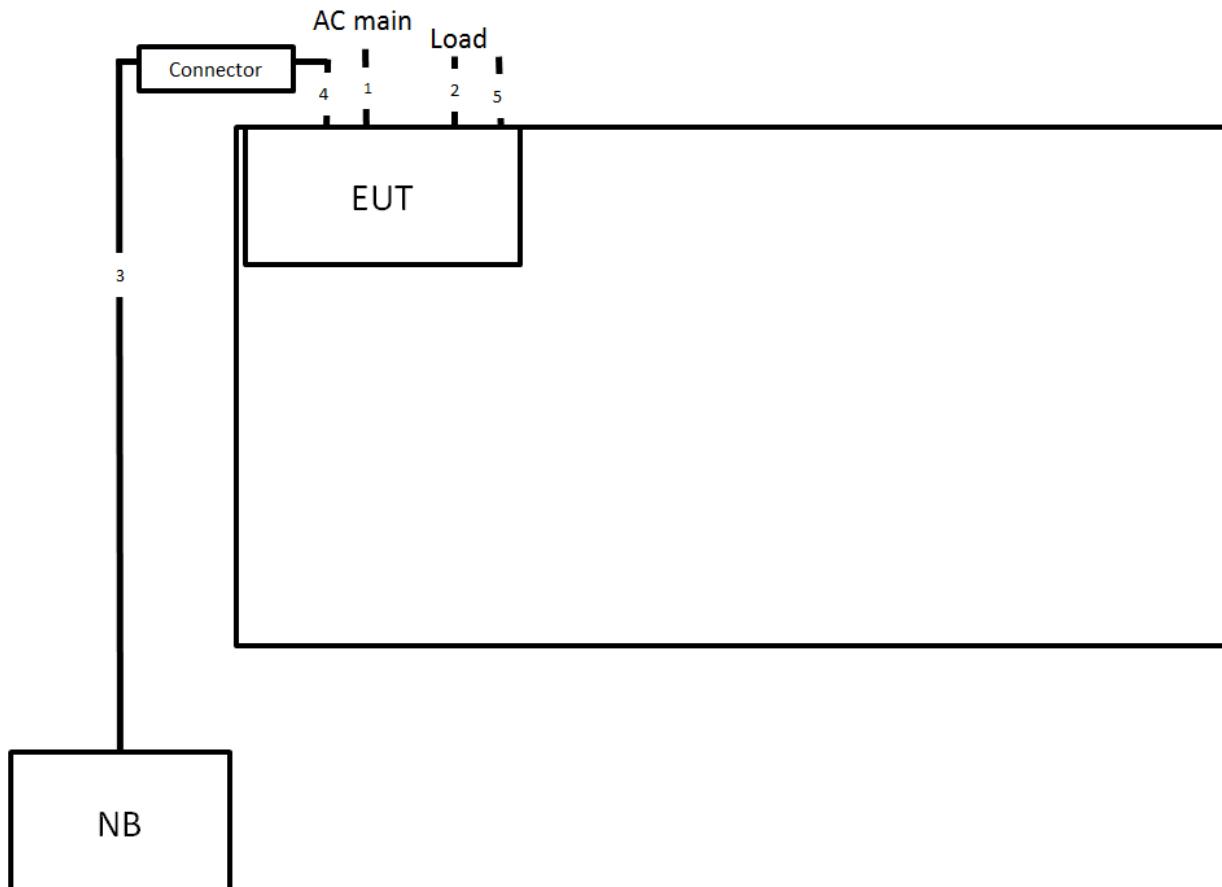
IEEE 802.11ac MCS0/Nss2 VHT80



Date: 16.DEC.2015 23:32:35

3.11. Test Configurations

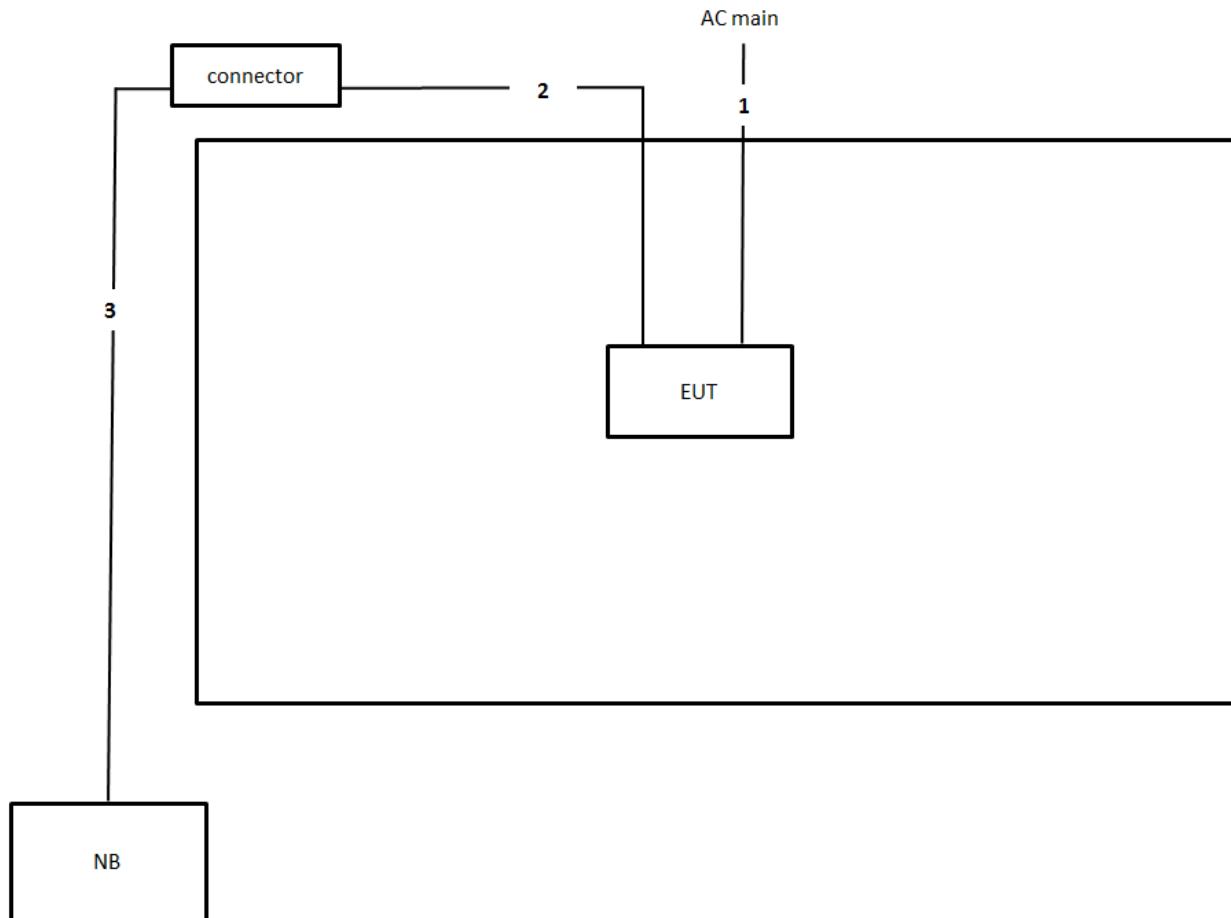
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	1.5m
3	RJ-45 cable	No	10m
4	LAN cable	No	1.8m
5	Coaxial cable	Yes	1.5m

3.11.2. Radiation Emissions Test Configuration

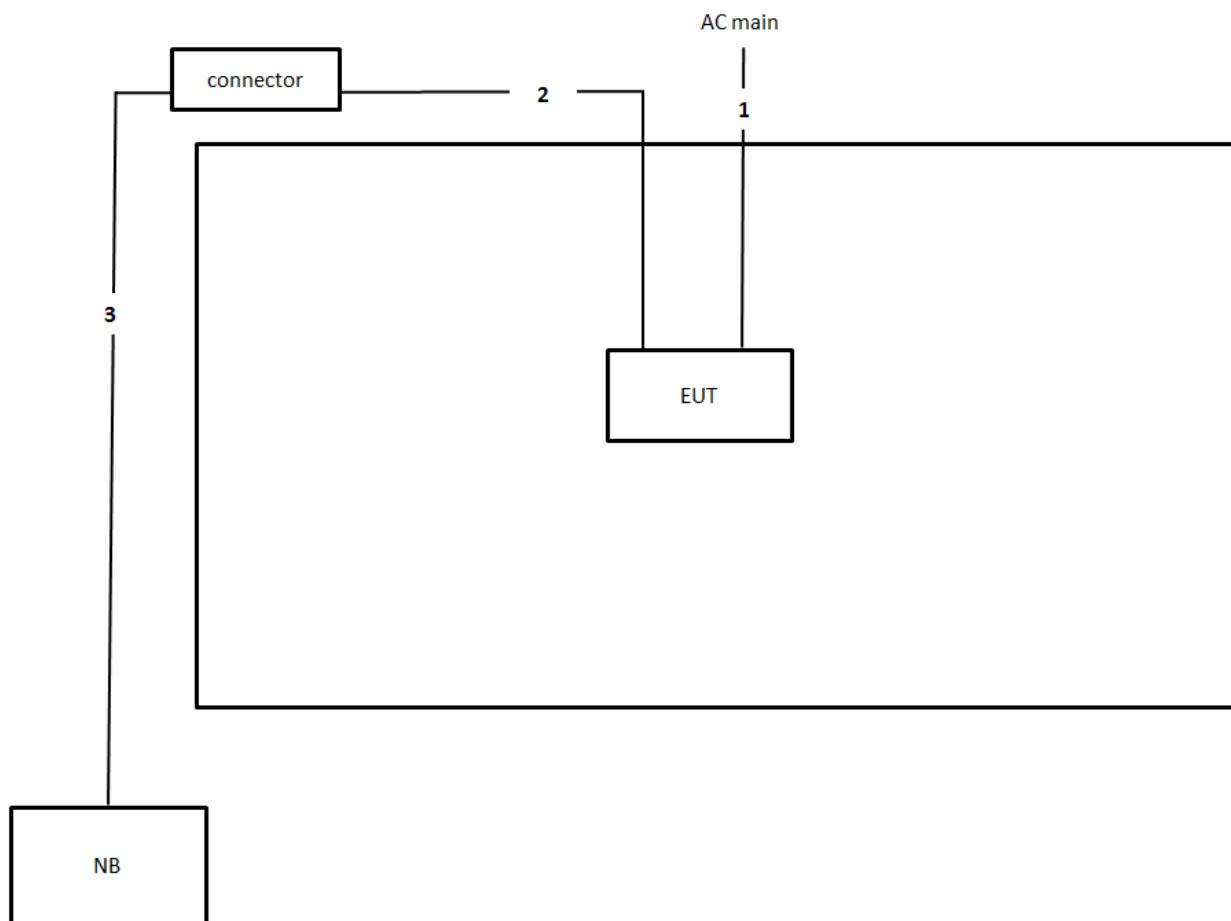
Test Configuration: 30MHz ~1GHz



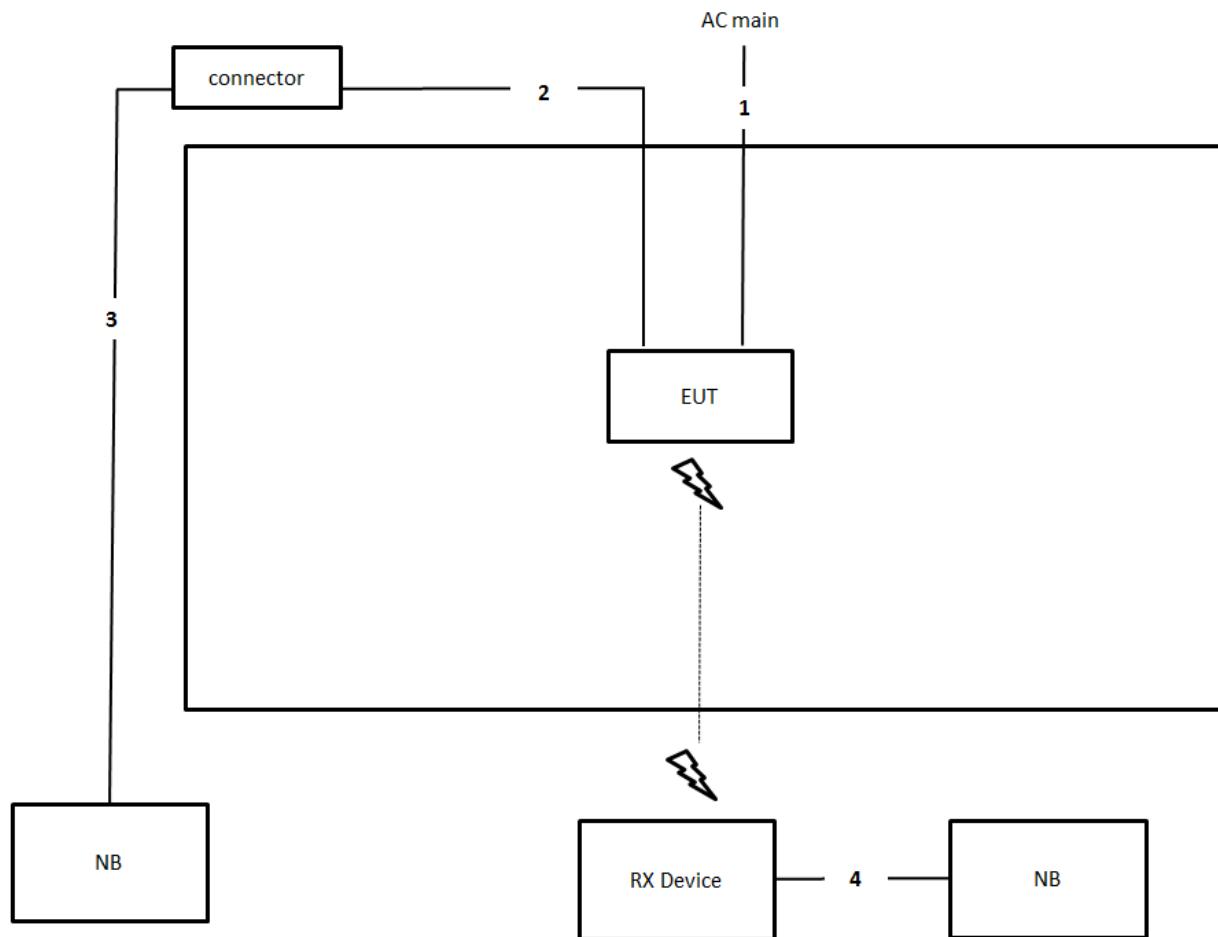
Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	LAN cable	No	1.8m
3	RJ-45 cable	No	10m

Test Configuration: above 1GHz

For non-beamforming function:



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	LAN cable	No	1.8m
3	RJ-45 cable	No	10m

For beamforming function:


Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	LAN cable	No	1.8m
3	RJ-45 cable	No	10m
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

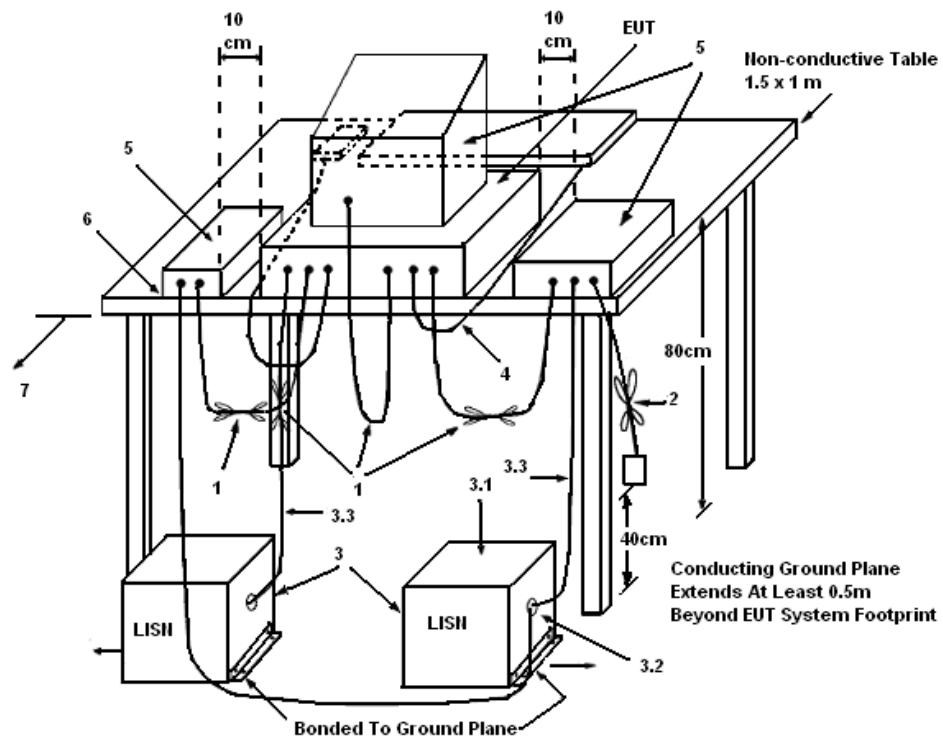
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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 50Ω . LISN can be placed on top of, or immediately beneath, reference ground plane.
 - (3.1) All other equipment powered from additional LISN(s).
 - (3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
 - (3.3) LISN at least 80 cm from nearest part of EUT chassis.
- (4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
- (5) Non-EUT components of EUT system being tested.
- (6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
- (7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

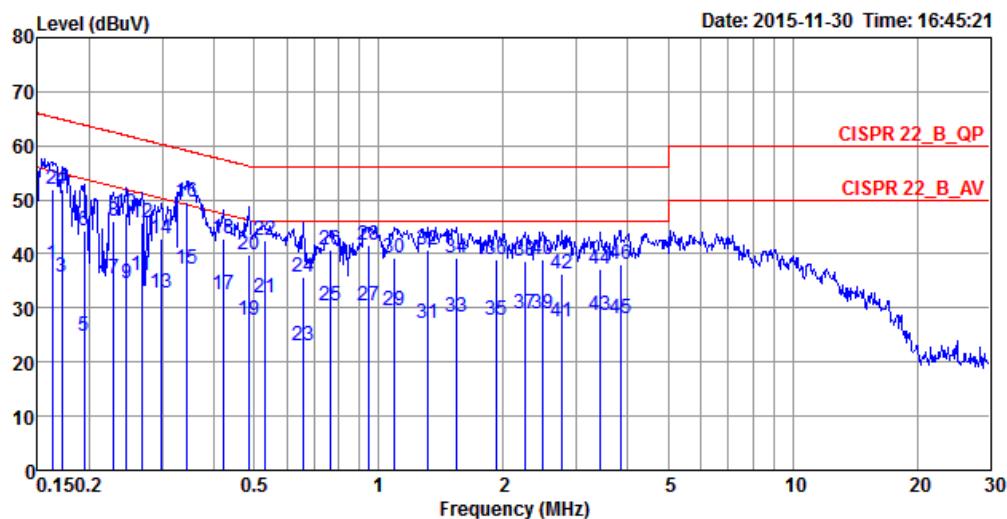
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

4.1.7. Results of AC Power Line Conducted Emissions Measurement

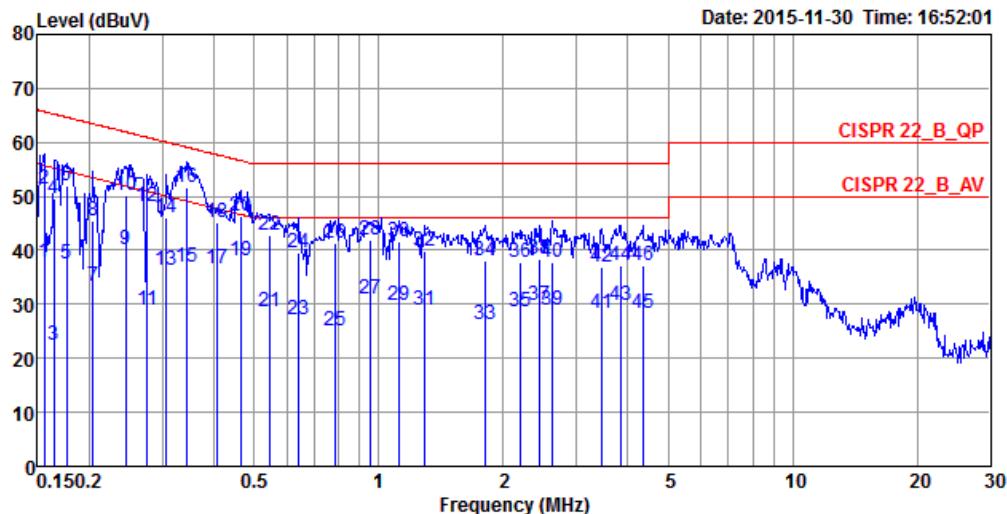
Temperature	25°C	Humidity	58%
Test Engineer	Parody Lin	Phase	Line
Configuration	CTX	Test Mode	Mode 1



Freq	Level	Over	Limit	Read	LISN	Cable	Pol/Phase	Remark
		MHz	dBuV	dB	dBuV	dBuV		
1	0.1624	38.04	-17.30	55.34	28.09	9.93	0.02	LINE Average
2	0.1624	51.87	-13.47	65.34	41.92	9.93	0.02	LINE QP
3	0.1712	35.70	-19.20	54.90	25.75	9.93	0.02	LINE Average
4	0.1712	51.92	-12.98	64.90	41.97	9.93	0.02	LINE QP
5	0.1945	24.87	-28.97	53.84	14.92	9.93	0.02	LINE Average
6	0.1945	44.38	-19.46	63.84	34.43	9.93	0.02	LINE QP
7	0.2292	35.35	-17.13	52.48	25.39	9.93	0.03	LINE Average
8	0.2292	45.97	-16.51	62.48	36.01	9.93	0.03	LINE QP
9	0.2455	34.55	-17.36	51.91	24.59	9.93	0.03	LINE Average
10	0.2455	47.63	-14.28	61.91	37.67	9.93	0.03	LINE QP
11	0.2672	36.14	-15.06	51.20	26.18	9.93	0.03	LINE Average
12	0.2672	45.80	-15.40	61.20	35.84	9.93	0.03	LINE QP
13	0.2987	32.64	-17.64	50.28	22.67	9.93	0.04	LINE Average
14	0.2987	42.68	-17.60	60.28	32.71	9.93	0.04	LINE QP
15	0.3428	37.10	-12.03	49.13	27.13	9.93	0.04	LINE Average
16	0.3428	49.69	-9.44	59.13	39.72	9.93	0.04	LINE QP
17	0.4215	32.56	-14.86	47.42	22.59	9.93	0.04	LINE Average

Freq	Level	Over	Limit	Read	LISN	Cable	Pol/Phase	Remark
		Limit	Line	Level	Factor	Loss		
	MHz	dBuV	dB	dBuV	dBuV	dB		
18	0.4215	42.72	-14.70	57.42	32.75	9.93	0.04	LINE QP
19	0.4863	27.61	-18.62	46.23	17.63	9.94	0.04	LINE Average
20	0.4863	39.85	-16.38	56.23	29.87	9.94	0.04	LINE QP
21	0.5293	31.81	-14.19	46.00	21.83	9.94	0.04	LINE Average
22	0.5293	42.47	-13.53	56.00	32.49	9.94	0.04	LINE QP
23	0.6578	23.04	-22.96	46.00	13.05	9.95	0.04	LINE Average
24	0.6578	35.68	-20.32	56.00	25.69	9.95	0.04	LINE QP
25	0.7670	30.40	-15.60	46.00	20.42	9.95	0.03	LINE Average
26	0.7670	40.82	-15.18	56.00	30.84	9.95	0.03	LINE QP
27	0.9431	30.54	-15.46	46.00	20.53	9.96	0.05	LINE Average
28	0.9431	41.71	-14.29	56.00	31.70	9.96	0.05	LINE QP
29	1.0939	29.66	-16.34	46.00	19.65	9.96	0.05	LINE Average
30	1.0939	39.38	-16.62	56.00	29.37	9.96	0.05	LINE QP
31	1.3168	27.08	-18.92	46.00	17.06	9.97	0.05	LINE Average
32	1.3168	40.61	-15.39	56.00	30.59	9.97	0.05	LINE QP
33	1.5436	28.41	-17.59	46.00	18.37	9.98	0.06	LINE Average
34	1.5436	39.14	-16.86	56.00	29.10	9.98	0.06	LINE QP
35	1.9182	27.67	-18.33	46.00	17.62	9.99	0.06	LINE Average
36	1.9182	38.99	-17.01	56.00	28.94	9.99	0.06	LINE QP
37	2.2606	28.85	-17.15	46.00	18.79	10.00	0.06	LINE Average
38	2.2606	38.65	-17.35	56.00	28.59	10.00	0.06	LINE QP
39	2.4868	28.93	-17.07	46.00	18.88	10.00	0.05	LINE Average
40	2.4868	38.85	-17.15	56.00	28.80	10.00	0.05	LINE QP
41	2.7794	27.35	-18.65	46.00	17.30	10.00	0.05	LINE Average
42	2.7794	36.44	-19.56	56.00	26.39	10.00	0.05	LINE QP
43	3.4356	28.57	-17.43	46.00	18.50	10.01	0.06	LINE Average
44	3.4356	37.16	-18.84	56.00	27.09	10.01	0.06	LINE QP
45	3.8399	28.17	-17.83	46.00	18.08	10.02	0.07	LINE Average
46	3.8399	38.17	-17.83	56.00	28.08	10.02	0.07	LINE QP

Temperature	25°C	Humidity	58%
Test Engineer	Parody Lin	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1



Freq	Level	Over Limit	Limit Line	Read Level	LISN		Cable Loss	Pol/Phase	Remark
					MHz	dBuV	dB	dBuV	dB
1	0.1557	37.64	-18.05	55.69	27.84	9.78	0.02	NEUTRAL	Average
2	0.1557	51.43	-14.26	65.69	41.63	9.78	0.02	NEUTRAL	QP
3	0.1641	22.53	-32.72	55.25	12.73	9.78	0.02	NEUTRAL	Average
4	0.1641	49.60	-15.65	65.25	39.80	9.78	0.02	NEUTRAL	QP
5	0.1758	37.47	-17.21	54.68	27.66	9.79	0.02	NEUTRAL	Average
6	0.1758	51.91	-12.77	64.68	42.10	9.79	0.02	NEUTRAL	QP
7	0.2040	33.38	-20.07	53.45	23.57	9.79	0.02	NEUTRAL	Average
8	0.2040	45.43	-18.02	63.45	35.62	9.79	0.02	NEUTRAL	QP
9	0.2442	40.28	-11.67	51.95	30.46	9.79	0.03	NEUTRAL	Average
10	0.2442	50.19	-11.76	61.95	40.37	9.79	0.03	NEUTRAL	QP
11	0.2759	28.92	-22.02	50.94	19.09	9.79	0.04	NEUTRAL	Average
12	0.2759	48.18	-12.76	60.94	38.35	9.79	0.04	NEUTRAL	QP
13	0.3067	36.20	-13.86	50.06	26.37	9.79	0.04	NEUTRAL	Average
14	0.3067	45.98	-14.08	60.06	36.15	9.79	0.04	NEUTRAL	QP
15	0.3428	36.88	-12.25	49.13	27.05	9.79	0.04	NEUTRAL	Average
16	0.3428	51.65	-7.48	59.13	41.82	9.79	0.04	NEUTRAL	QP
17	0.4083	36.70	-10.98	47.68	26.87	9.79	0.04	NEUTRAL	Average

	Freq	Level	Over Limit	Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
18	0.4083	45.17	-12.51	57.68	35.34	9.79	0.04	NEUTRAL	QP
19	0.4637	38.15	-8.48	46.63	28.32	9.79	0.04	NEUTRAL	Average
20	0.4637	46.34	-10.29	56.63	36.51	9.79	0.04	NEUTRAL	QP
21	0.5436	28.63	-17.37	46.00	18.79	9.80	0.04	NEUTRAL	Average
22	0.5436	42.79	-13.21	56.00	32.95	9.80	0.04	NEUTRAL	QP
23	0.6372	27.11	-18.89	46.00	17.27	9.80	0.04	NEUTRAL	Average
24	0.6372	39.58	-16.42	56.00	29.74	9.80	0.04	NEUTRAL	QP
25	0.7876	25.03	-20.97	46.00	15.20	9.80	0.03	NEUTRAL	Average
26	0.7876	41.32	-14.68	56.00	31.49	9.80	0.03	NEUTRAL	QP
27	0.9531	31.06	-14.94	46.00	21.20	9.81	0.05	NEUTRAL	Average
28	0.9531	41.78	-14.22	56.00	31.92	9.81	0.05	NEUTRAL	QP
29	1.1173	29.95	-16.05	46.00	20.09	9.81	0.05	NEUTRAL	Average
30	1.1173	41.57	-14.43	56.00	31.71	9.81	0.05	NEUTRAL	QP
31	1.2960	28.84	-17.16	46.00	18.97	9.82	0.05	NEUTRAL	Average
32	1.2960	39.90	-16.10	56.00	30.03	9.82	0.05	NEUTRAL	QP
33	1.8096	26.17	-19.83	46.00	16.27	9.84	0.06	NEUTRAL	Average
34	1.8096	38.21	-17.79	56.00	28.31	9.84	0.06	NEUTRAL	QP
35	2.2015	28.57	-17.43	46.00	18.67	9.84	0.06	NEUTRAL	Average
36	2.2015	37.75	-18.25	56.00	27.85	9.84	0.06	NEUTRAL	QP
37	2.4476	29.84	-16.16	46.00	19.94	9.85	0.05	NEUTRAL	Average
38	2.4476	38.32	-17.68	56.00	28.42	9.85	0.05	NEUTRAL	QP
39	2.6360	29.05	-16.95	46.00	19.15	9.85	0.05	NEUTRAL	Average
40	2.6360	37.91	-18.09	56.00	28.01	9.85	0.05	NEUTRAL	QP
41	3.4538	28.28	-17.72	46.00	18.36	9.86	0.06	NEUTRAL	Average
42	3.4538	36.94	-19.06	56.00	27.02	9.86	0.06	NEUTRAL	QP
43	3.8399	29.76	-16.24	46.00	19.82	9.87	0.07	NEUTRAL	Average
44	3.8399	37.10	-18.90	56.00	27.16	9.87	0.07	NEUTRAL	QP
45	4.3376	28.27	-17.73	46.00	18.31	9.88	0.08	NEUTRAL	Average
46	4.3376	37.16	-18.84	56.00	27.20	9.88	0.08	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

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

26dB Bandwidth	
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RBW	Approximately 1% of the emission bandwidth
VBW	VBW > RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	Setting
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	$\geq 3 \times$ 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	21°C	Humidity	46%
Test Engineer	Lucas Huang	Test Function	Non-beamforming function

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	23.30	17.37
	5200 MHz	23.30	17.45
	5240 MHz	23.22	17.63
	5260 MHz	20.43	17.28
	5300 MHz	20.43	17.19
	5320 MHz	20.17	17.19
	5500 MHz	20.61	17.02
	5580 MHz	20.78	17.02
	5700 MHz	21.13	17.02
	5745 MHz	27.65	17.54
	5785 MHz	27.57	17.54
	5825 MHz	28.78	17.45
802.11ac	5180 MHz	22.00	18.49
	5200 MHz	22.35	18.49
	5240 MHz	22.70	18.76
	5260 MHz	22.00	18.41
	5300 MHz	21.74	18.15
	5320 MHz	21.04	18.15
	5500 MHz	21.83	18.06
	5580 MHz	22.17	18.15
	5700 MHz	22.52	18.06
	5745 MHz	23.13	18.23
	5785 MHz	28.35	18.49
	5825 MHz	27.30	18.58
MCS0/Nss1 VHT20	5180 MHz	22.00	18.49
	5200 MHz	22.35	18.49
	5240 MHz	22.70	18.76
	5260 MHz	22.00	18.41
	5300 MHz	21.74	18.15
	5320 MHz	21.04	18.15
	5500 MHz	21.83	18.06
	5580 MHz	22.17	18.15
	5700 MHz	22.52	18.06
	5745 MHz	23.13	18.23
	5785 MHz	28.35	18.49
	5825 MHz	27.30	18.58

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT40	5190 MHz	40.00	34.01
	5230 MHz	62.75	35.46
	5270 MHz	40.87	34.88
	5310 MHz	40.15	34.01
	5510 MHz	42.03	36.47
	5550 MHz	42.03	36.47
	5670 MHz	41.88	36.61
	5755 MHz	42.32	36.76
	5795 MHz	70.00	37.77
802.11ac MCS0/Nss1 VHT80	5210 MHz	141.16	73.52
	5290 MHz	80.00	74.10
	5530 MHz	79.71	74.96
	5610 MHz	93.33	74.96
	5775 MHz	79.42	74.67

Straddle Channel

Mode	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII 2C 26dB BW (MHz)	UNII 3 26dB BW (MHz)	UNII 2C 99% BW (MHz)	UNII 3 99% BW (MHz)
802.11a	5720 MHz	20.17	16.41	5709.83	5711.58	15.17	5.00	13.42	2.99
802.11ac MCS0/Nss1 VHT20	5720 MHz	20.43	17.37	5709.30	5711.06	15.70	4.74	13.94	3.42
802.11ac MCS0/Nss1 VHT40	5710 MHz	43.77	37.92	5688.55	5690.90	36.45	7.32	34.10	3.81
802.11ac MCS0/Nss1 VHT80	5690 MHz	83.48	75.83	5649.13	5651.80	75.87	7.61	73.20	2.63



Temperature	21°C	Humidity	46%
Test Engineer	Lucas Huang	Test Function	Beamforming function

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss2 VHT20	5180 MHz	23.48	18.23
	5200 MHz	24.09	18.23
	5240 MHz	24.87	18.41
	5260 MHz	23.48	18.06
	5300 MHz	23.39	18.23
	5320 MHz	23.65	18.15
	5500 MHz	22.87	17.97
	5580 MHz	23.04	17.97
	5700 MHz	23.57	17.97
	5745 MHz	23.39	18.06
802.11ac MCS0/Nss2 VHT40	5785 MHz	26.70	18.15
	5825 MHz	25.74	18.15
	5190 MHz	42.75	36.76
	5230 MHz	55.80	37.19
	5270 MHz	42.61	36.76
	5310 MHz	43.04	36.76
	5510 MHz	43.48	37.05
	5550 MHz	42.75	37.05
	5670 MHz	43.19	37.05
802.11ac MCS0/Nss2 VHT80	5755 MHz	43.48	37.19
	5795 MHz	62.46	37.48
	5210 MHz	80.58	75.25
	5290 MHz	80.58	75.25
	5530 MHz	81.74	75.54
	5610 MHz	80.58	75.54
	5775 MHz	81.74	75.54

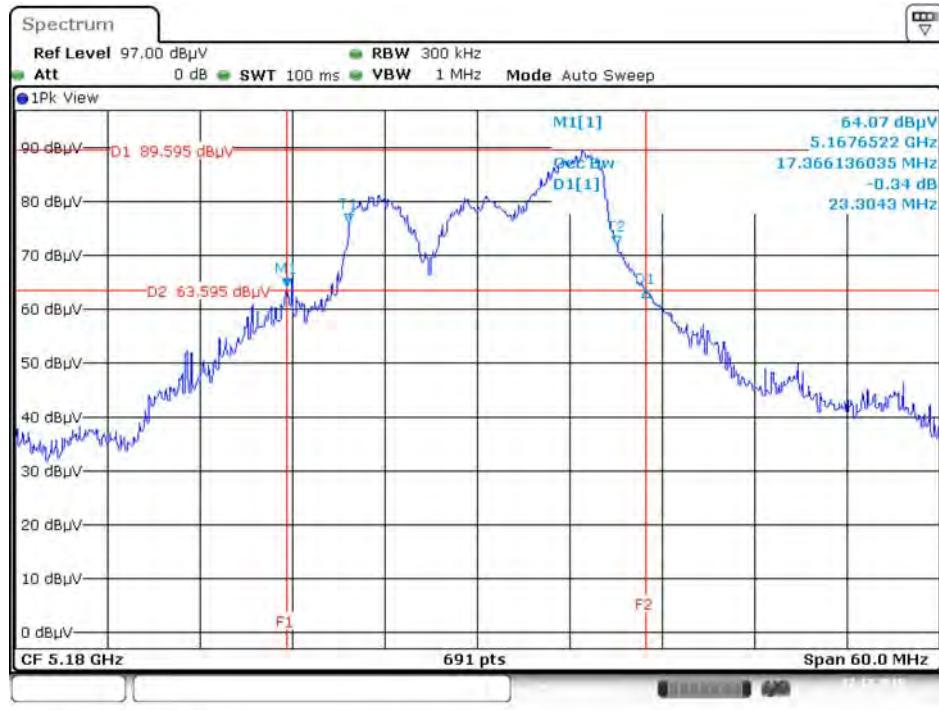


Straddle Channel

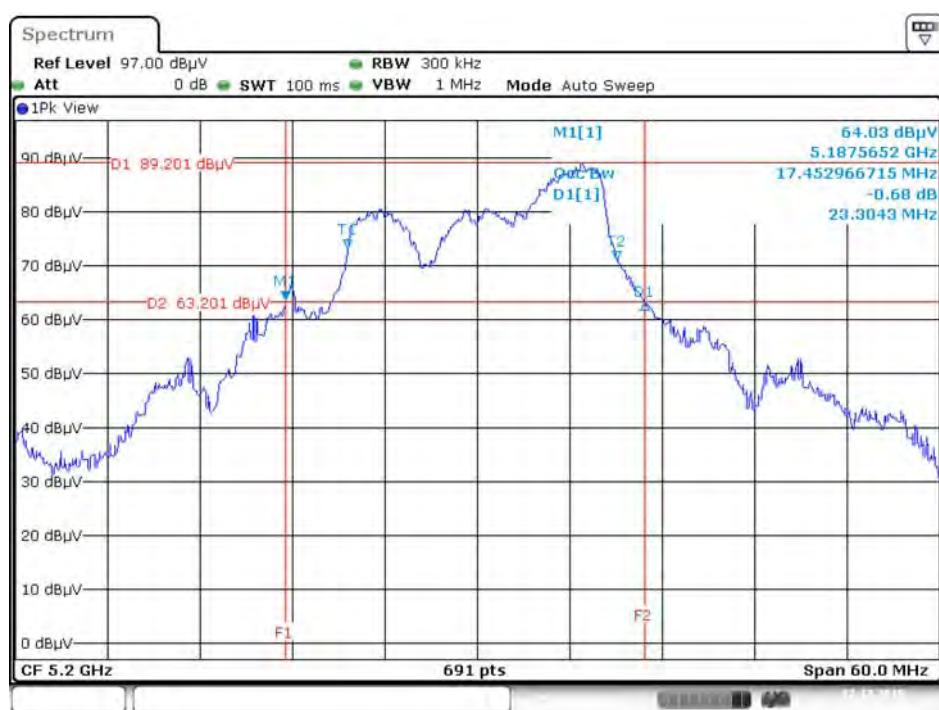
Mode	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII 2C 26dB BW (MHz)	UNII 3 26dB BW (MHz)	UNII 2C 99% BW (MHz)	UNII 3 99% BW (MHz)
802.11ac MCS0/Nss2 VHT20	5720 MHz	23.83	18.15	5708.35	5710.88	16.65	7.17	14.12	4.03
802.11ac MCS0/Nss2 VHT40	5710 MHz	43.48	37.19	5688.12	5691.19	36.88	6.59	33.81	3.38
802.11ac MCS0/Nss2 VHT80	5690 MHz	83.48	75.54	5647.97	5652.08	77.03	6.45	72.92	2.63

For non-beamforming function:

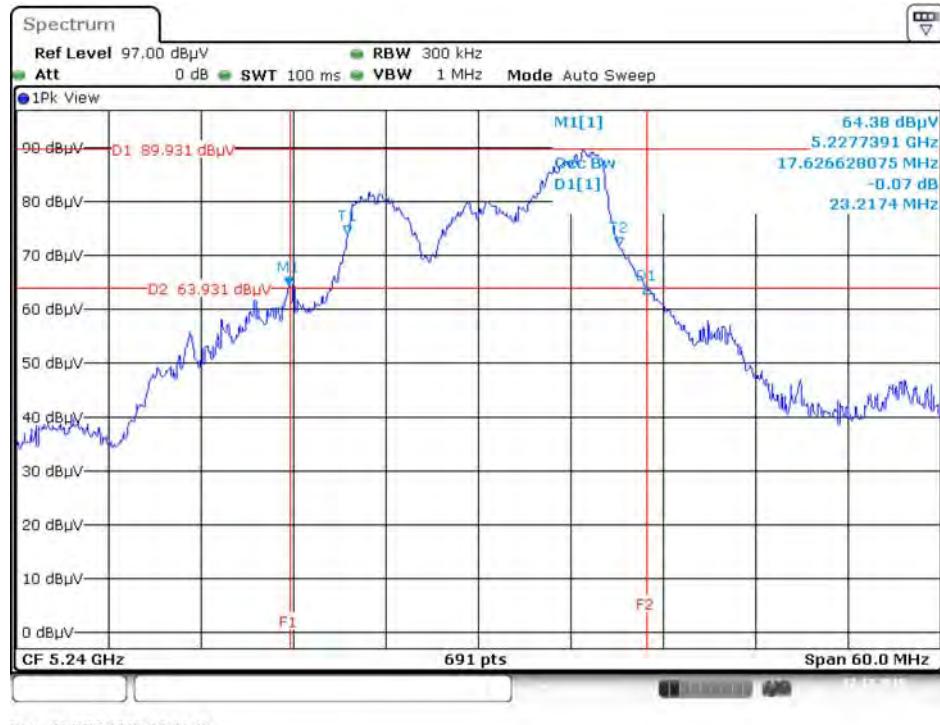
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



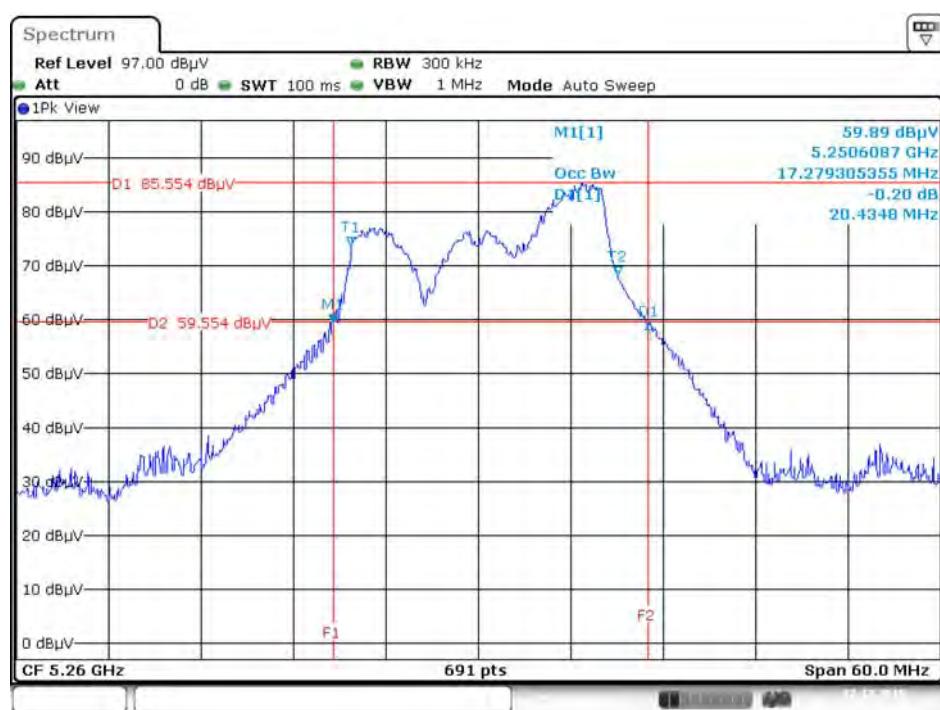
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



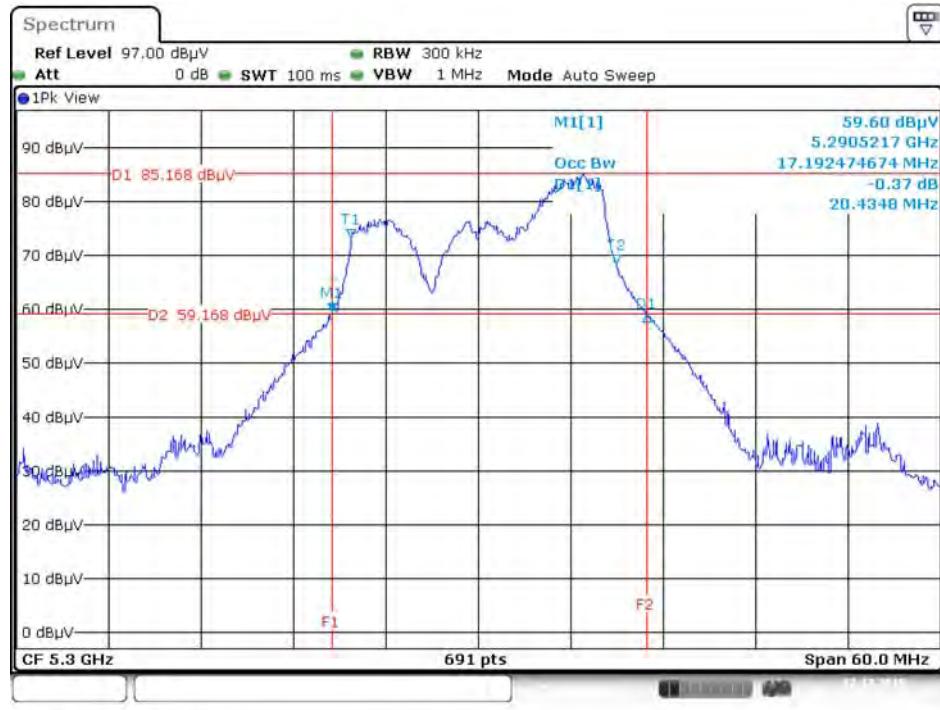
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



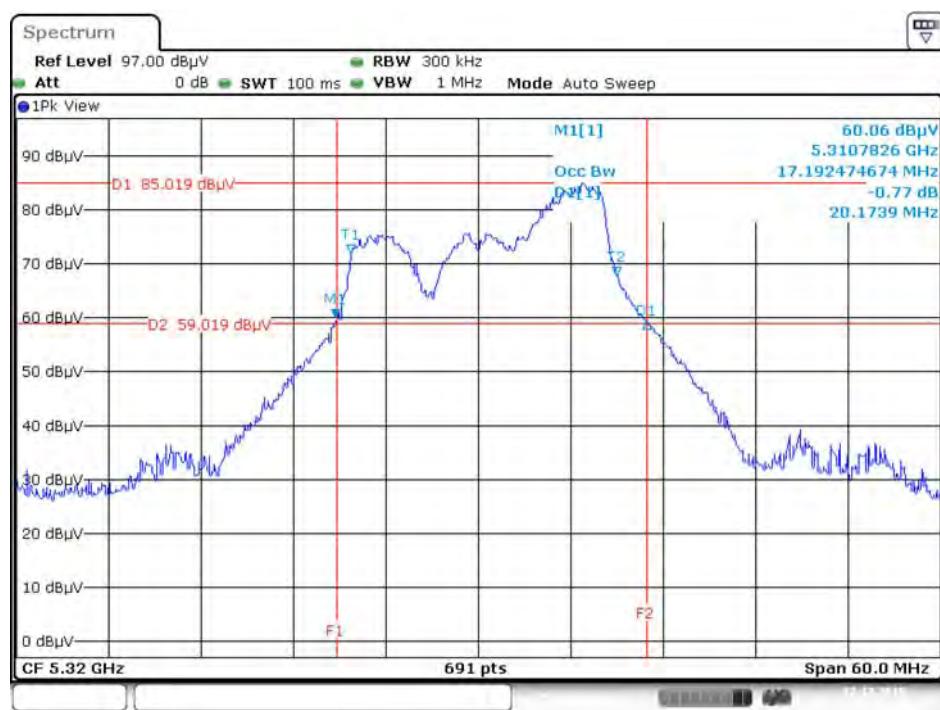
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5260 MHz



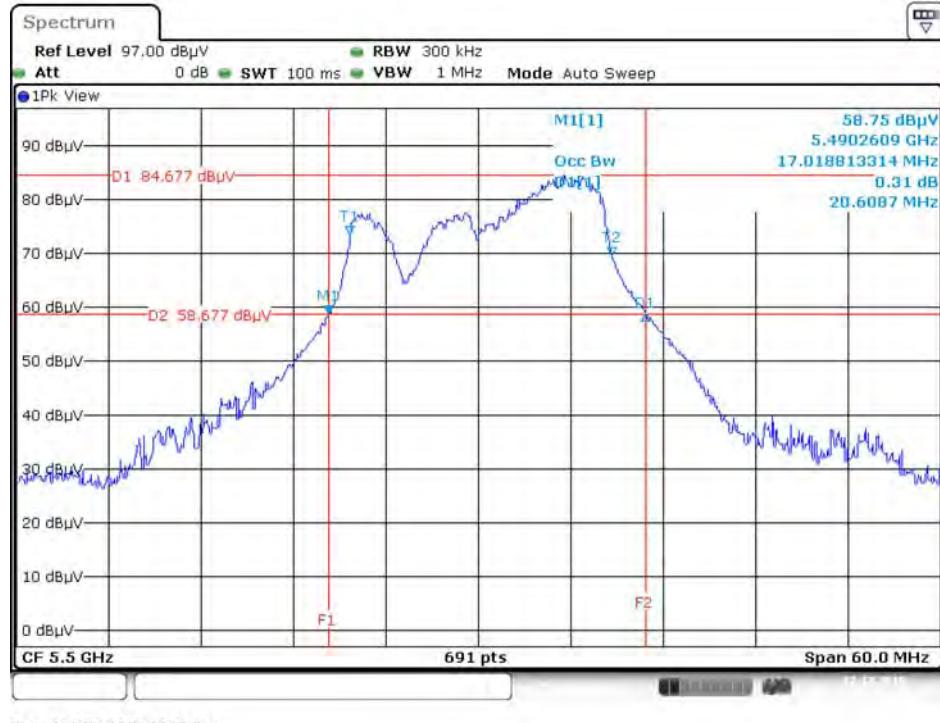
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5300 MHz



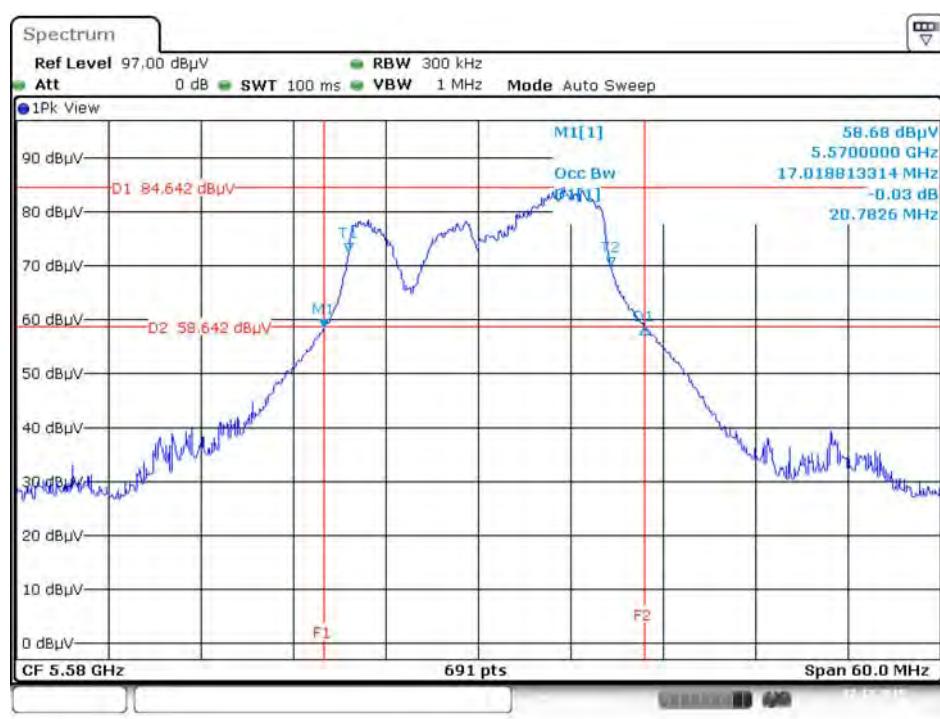
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5320 MHz



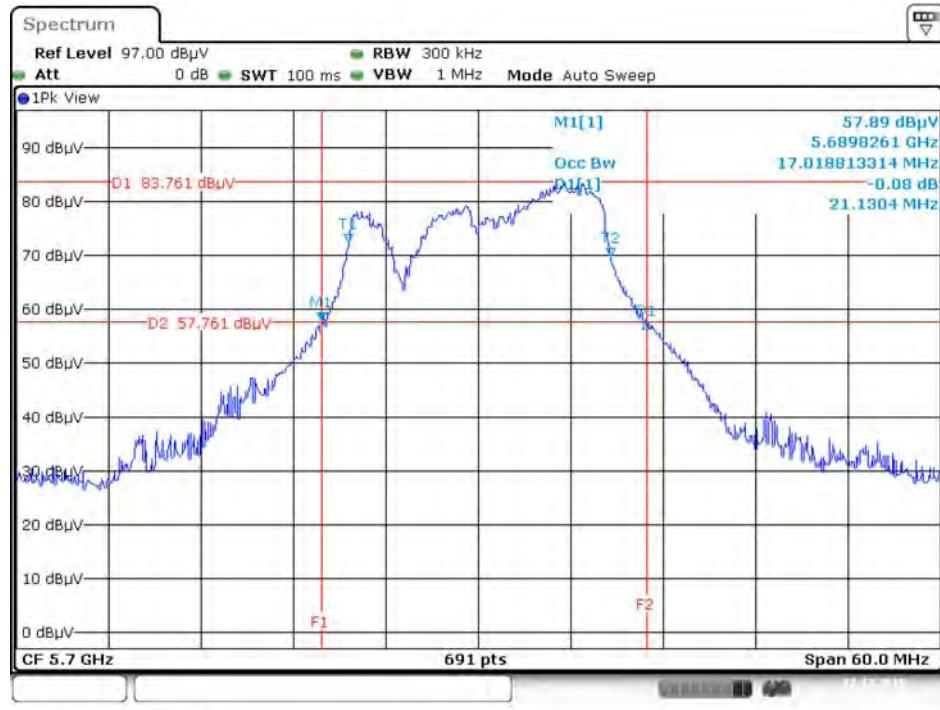
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5500 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5580 MHz

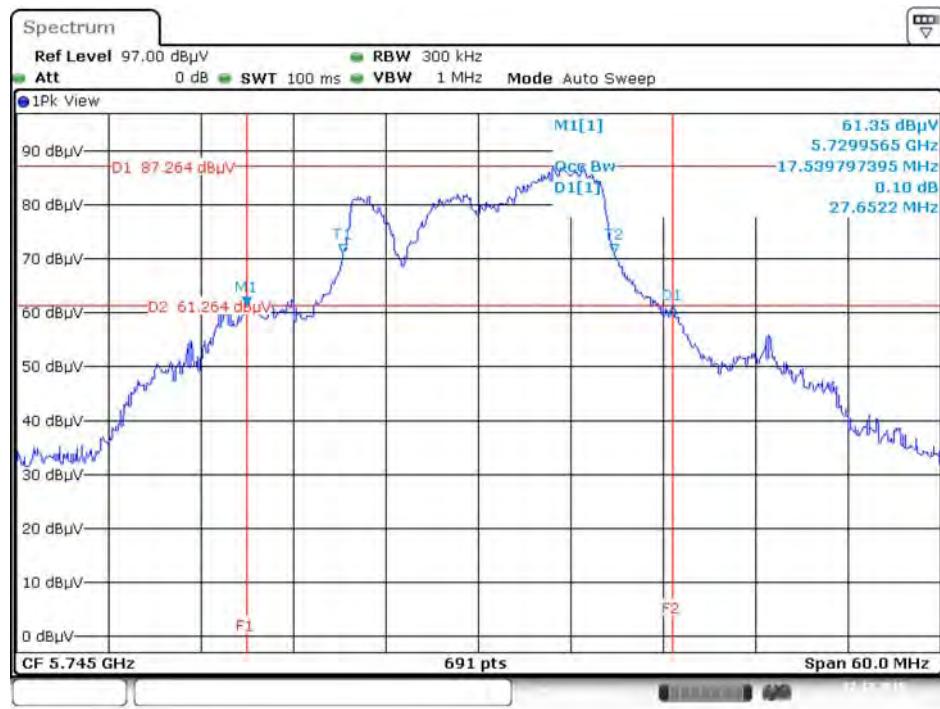


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5700 MHz



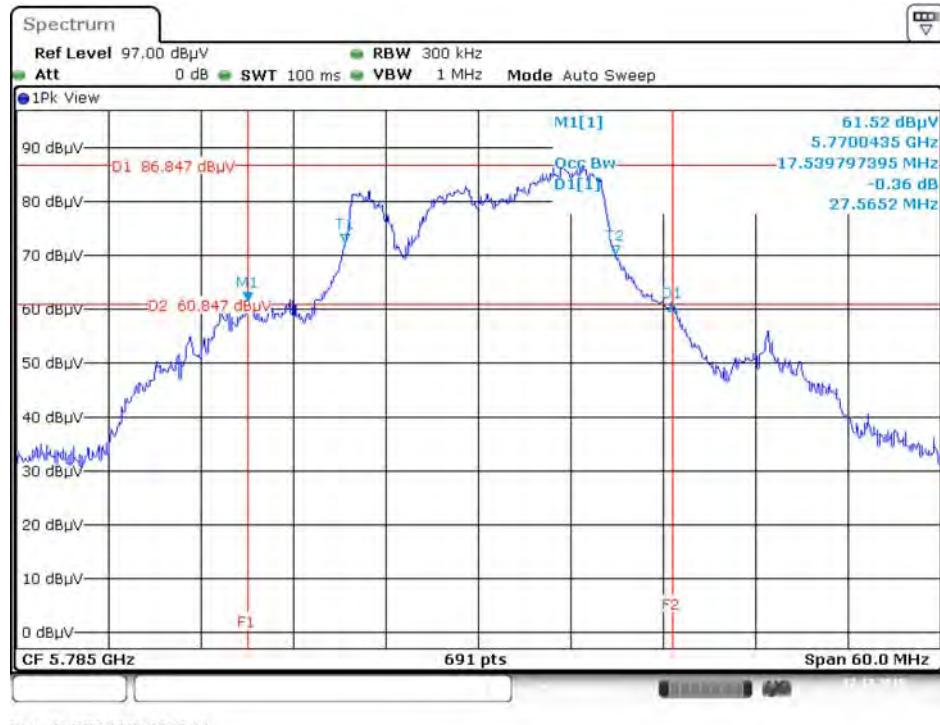
Date: 22.DEC.2015 20:56:22

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



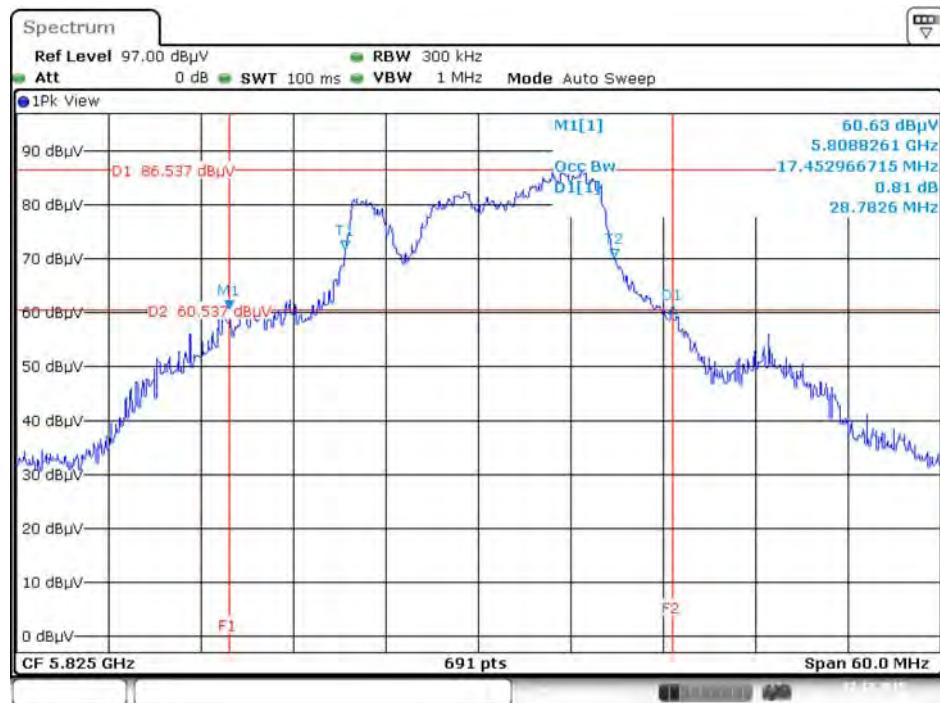
Date: 22.DEC.2015 20:53:40

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



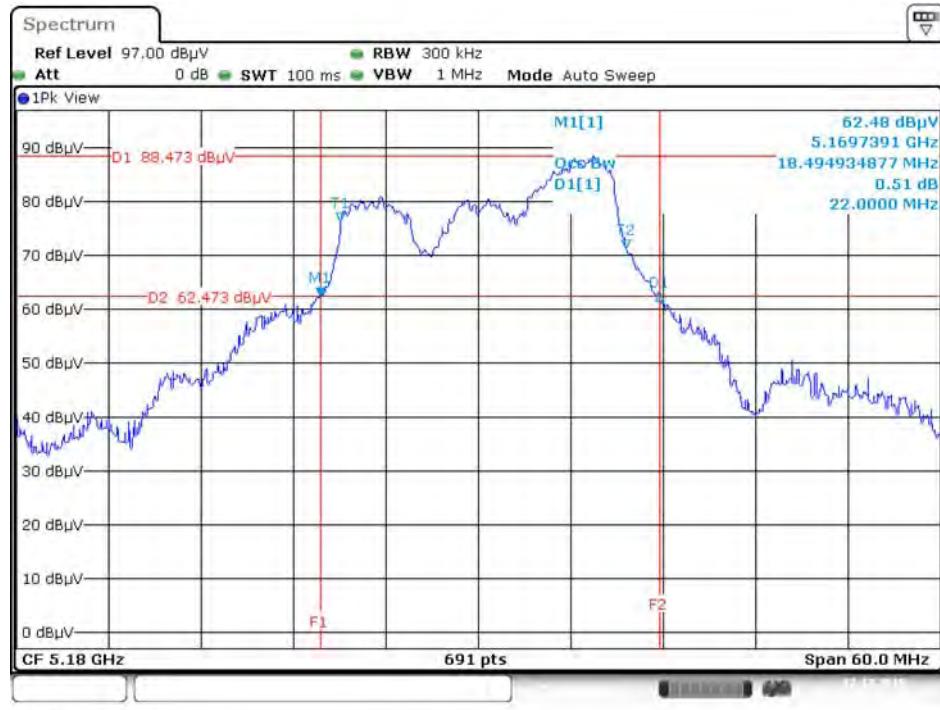
Date: 22.DEC.2015 20:53:24

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



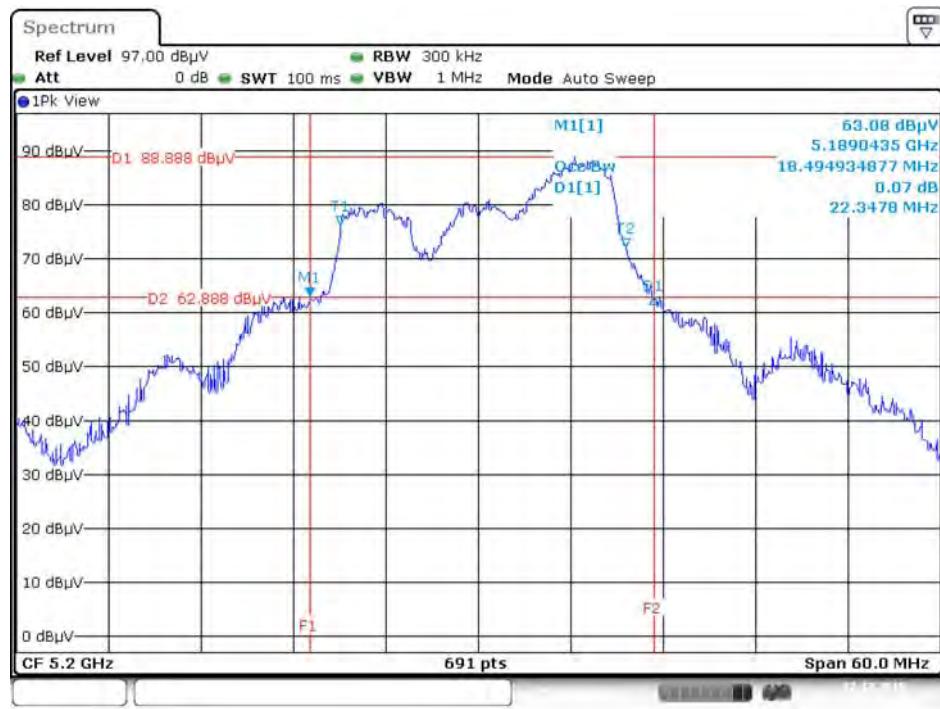
Date: 22.DEC.2015 20:53:55

**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**



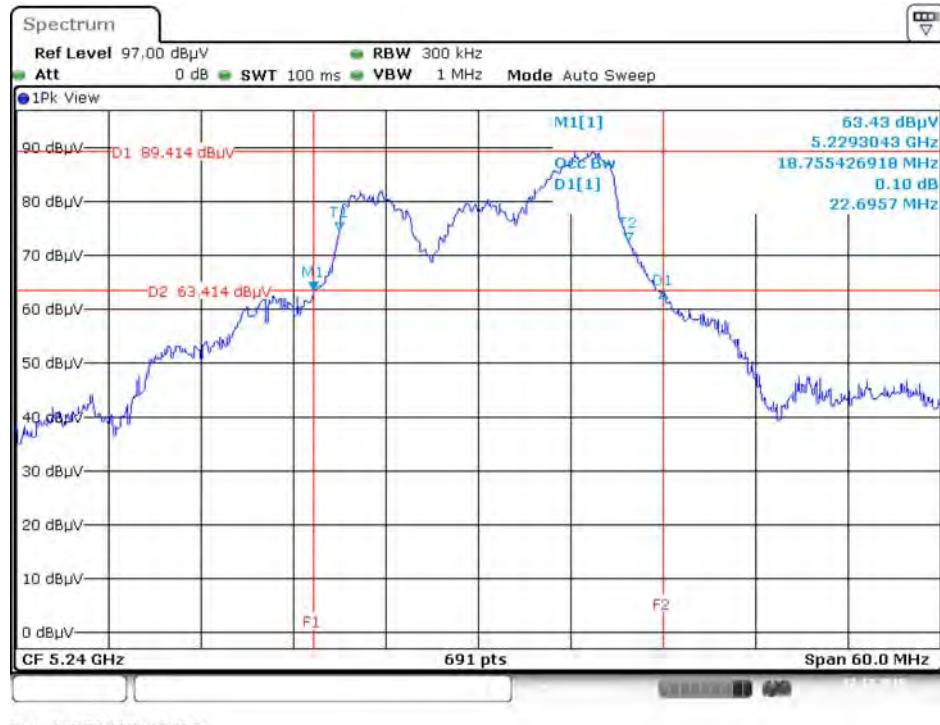
Date: 22.DEC.2015 20:58:44

**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**



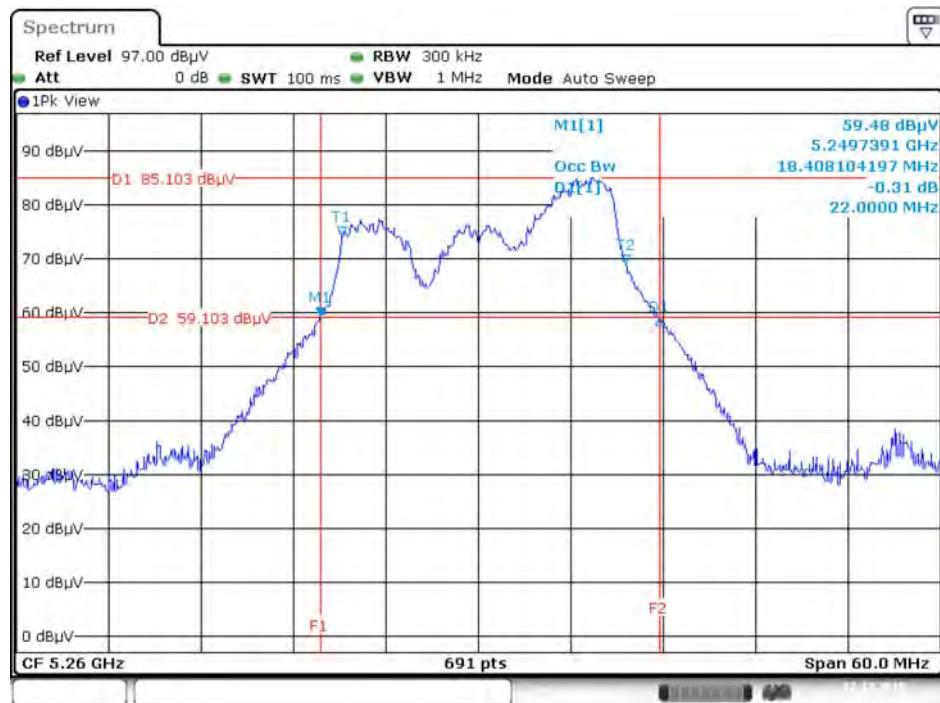
Date: 22.DEC.2015 20:59:10

**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**



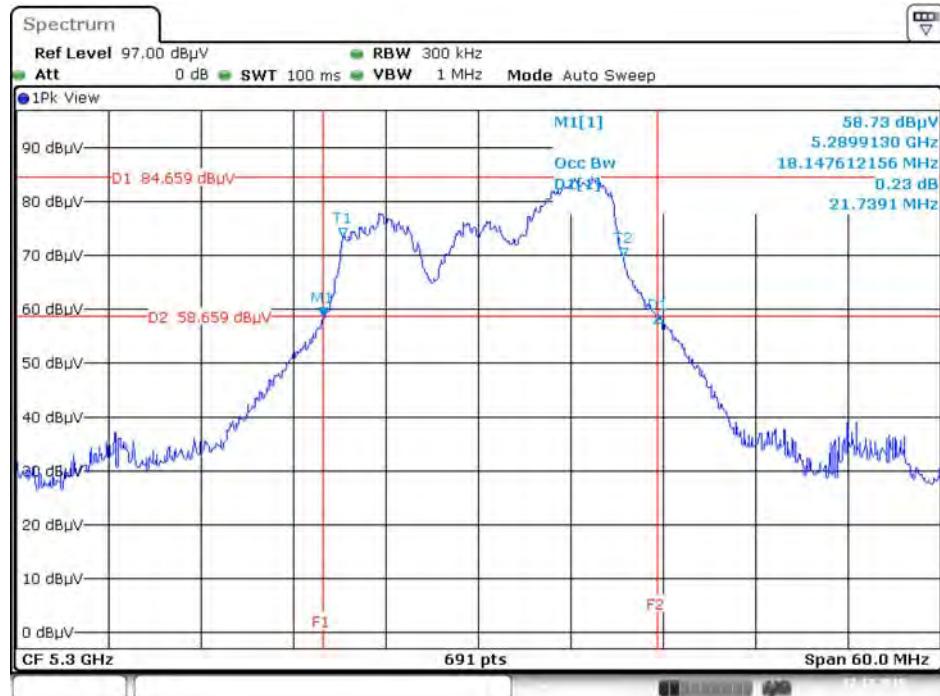
Date: 22.DEC.2015 20:59:31

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5260 MHz**

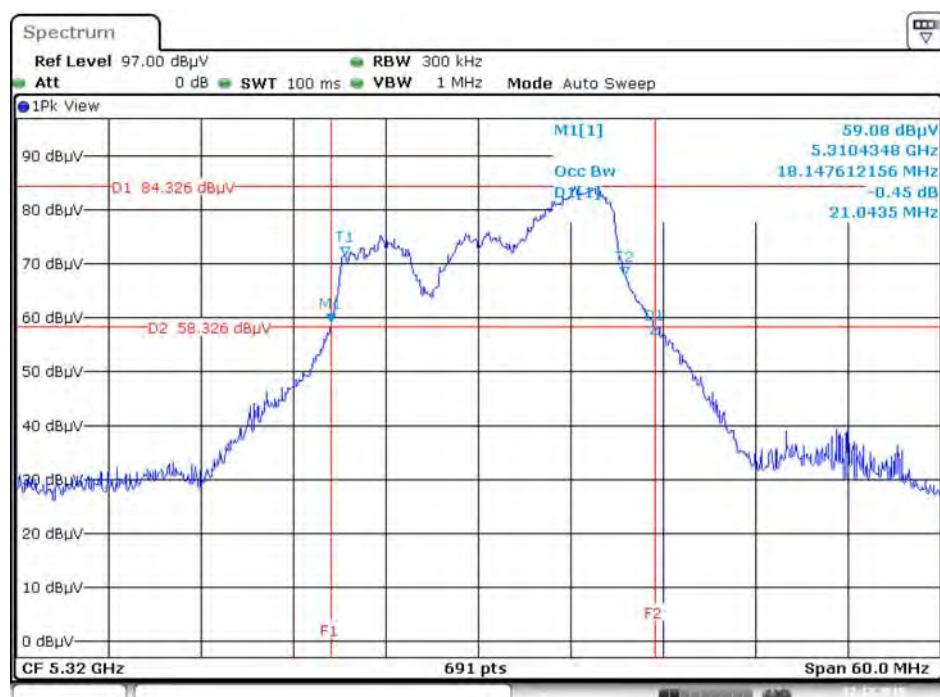


Date: 22.DEC.2015 20:59:52

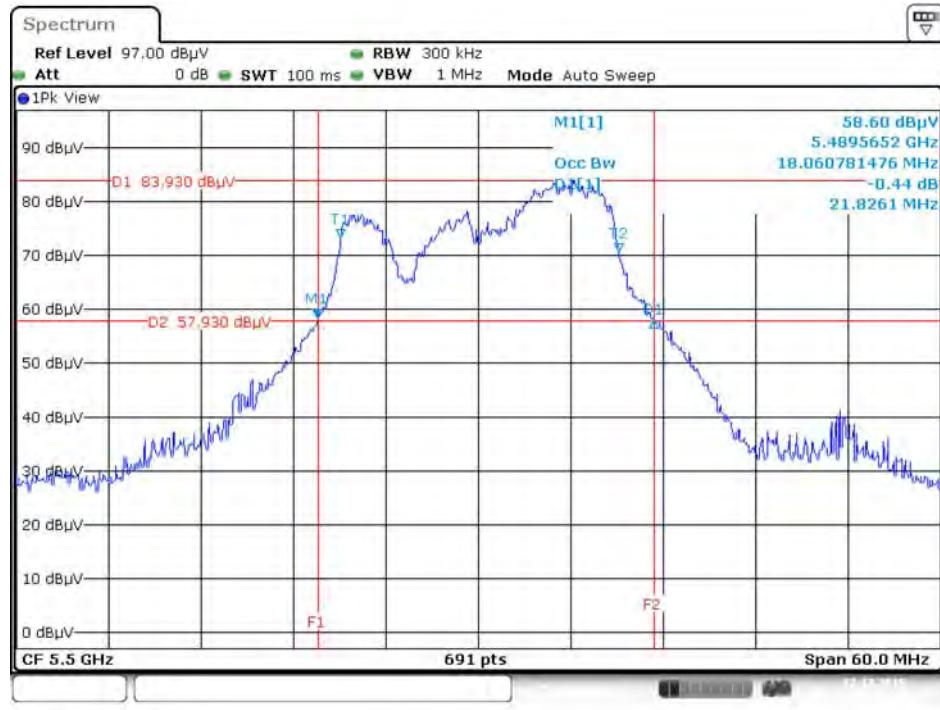
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5300 MHz**



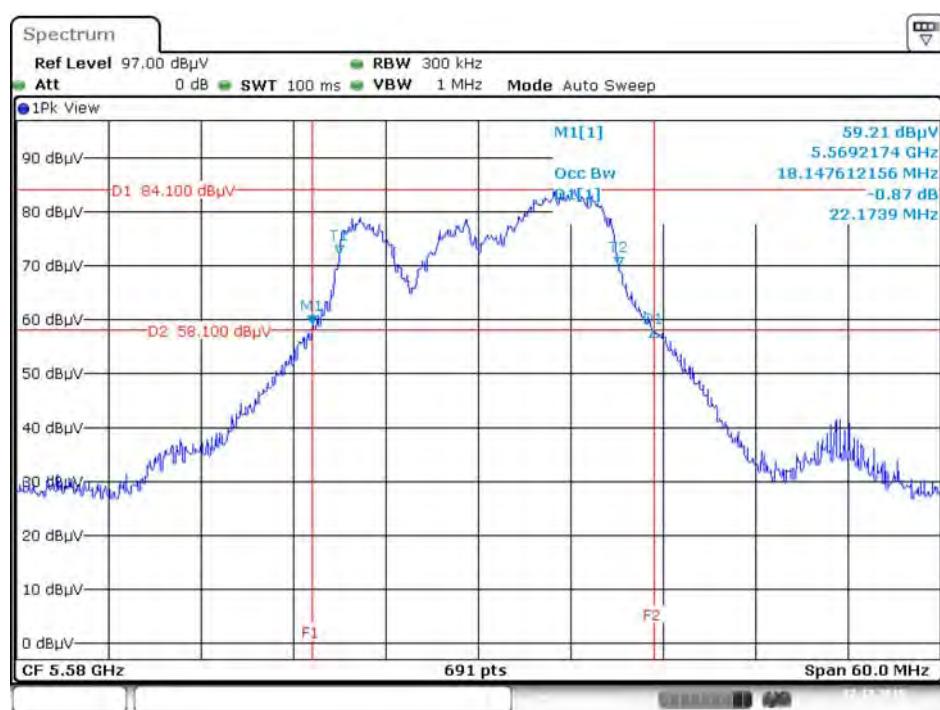
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5320 MHz**



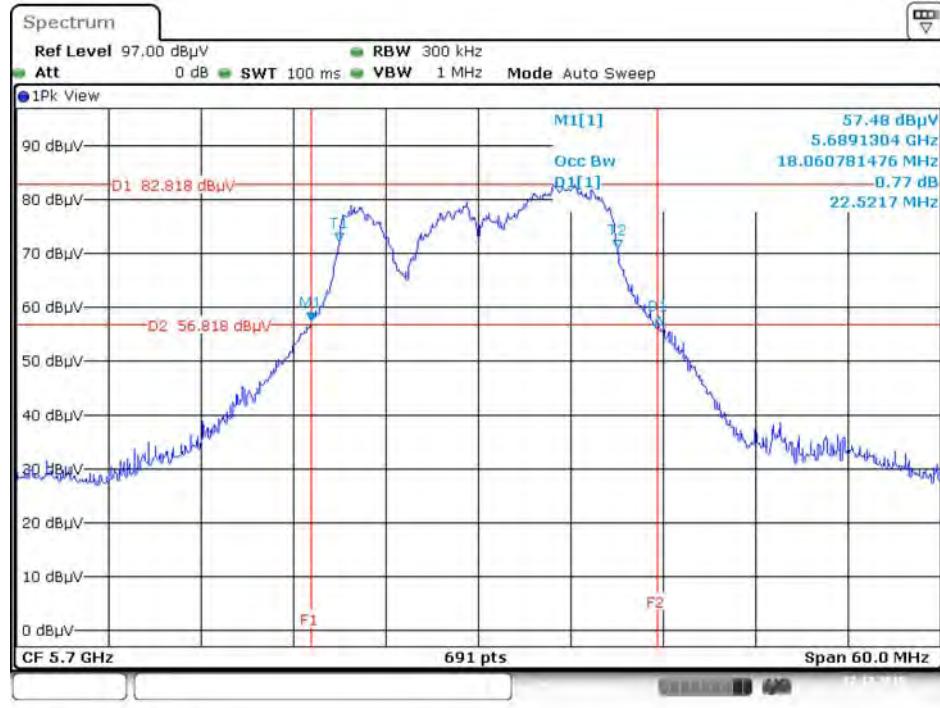
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5500 MHz**



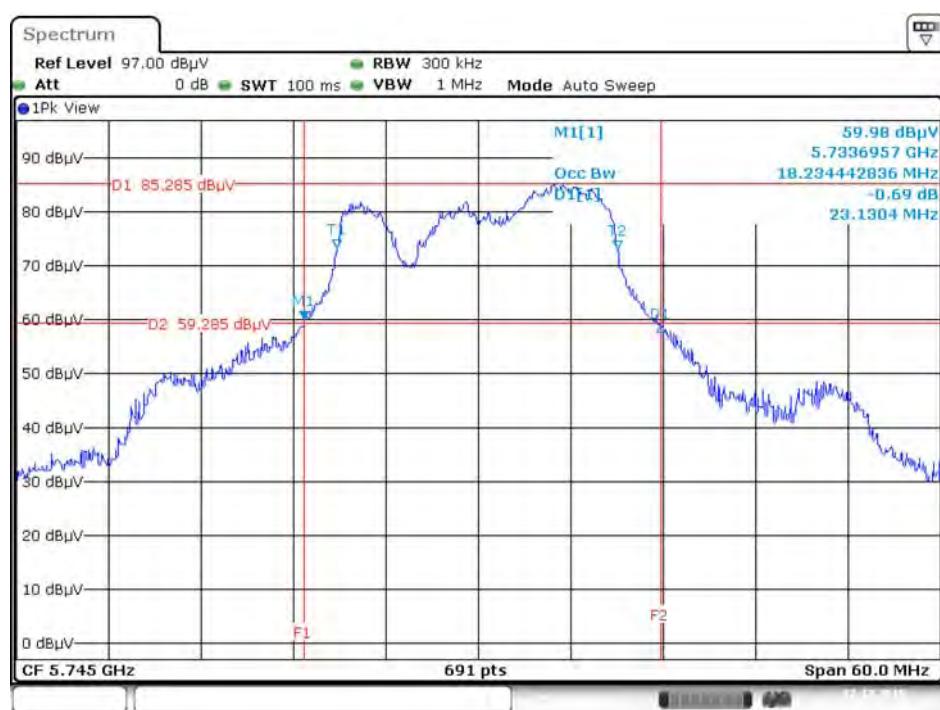
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5580 MHz**



**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5700 MHz**



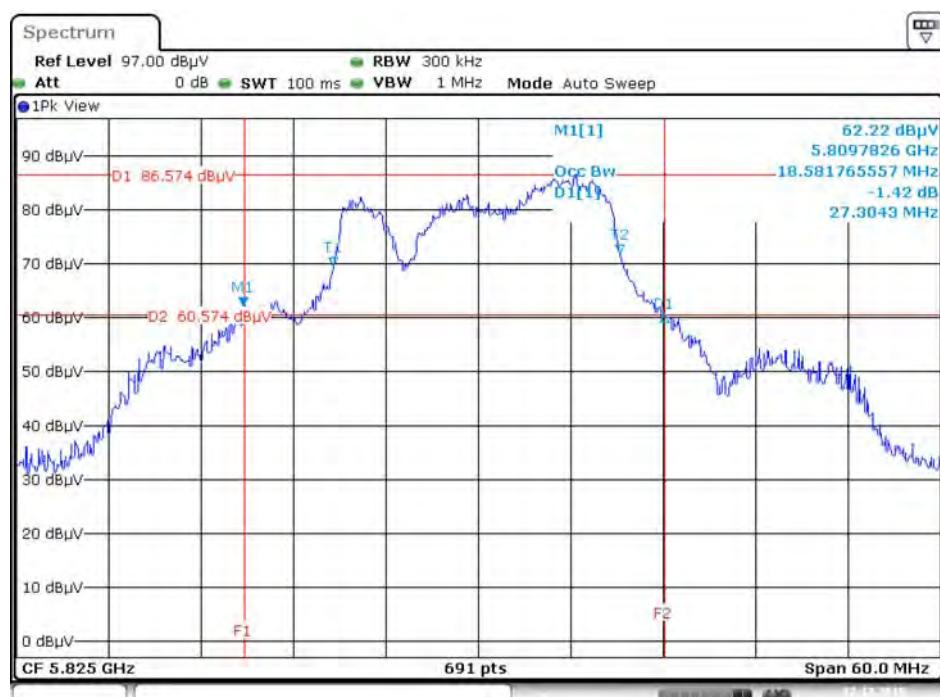
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz**



**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**



**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**

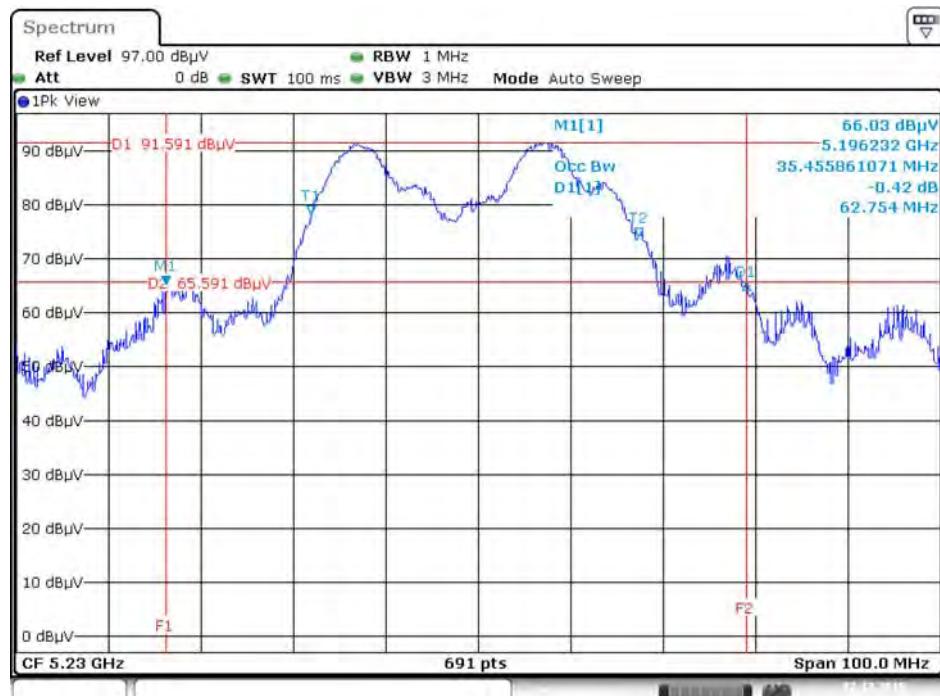


**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz**



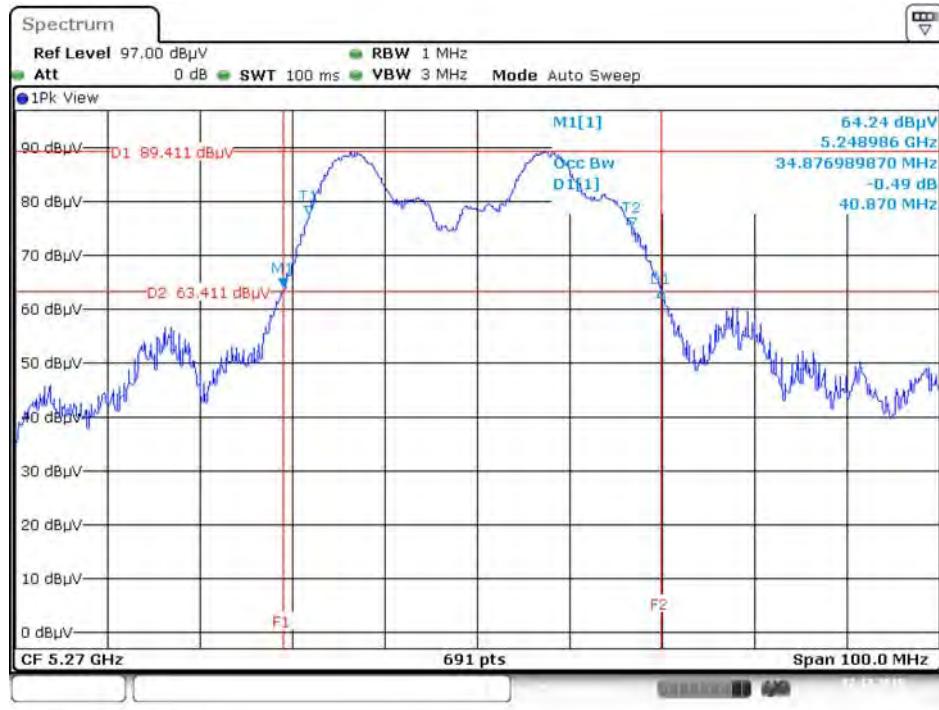
Date: 22.DEC.2015 21:04:19

**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**

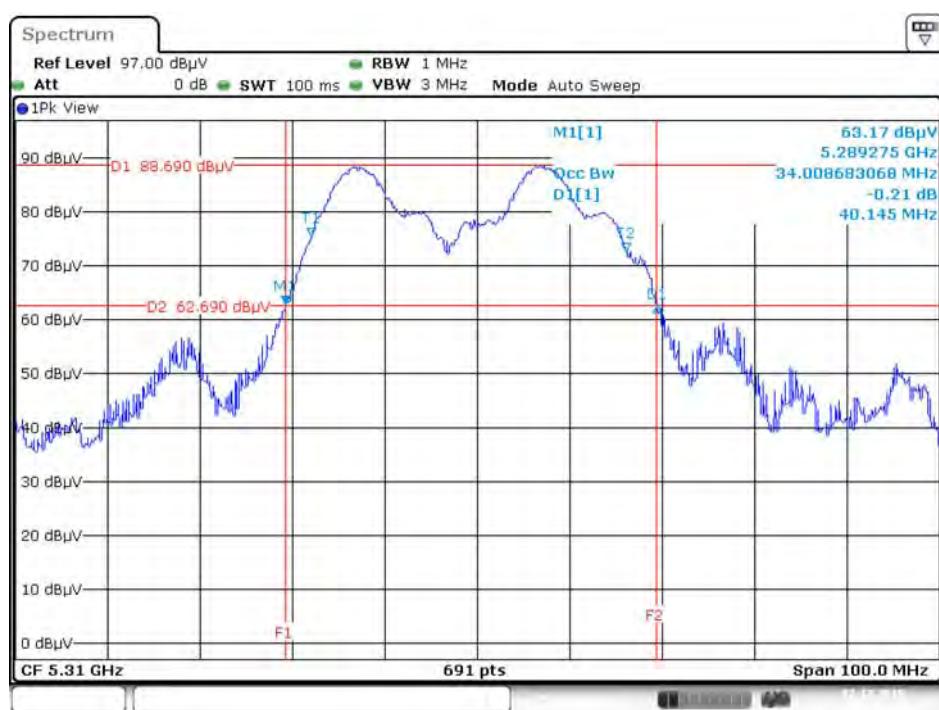


Date: 22.DEC.2015 21:04:50

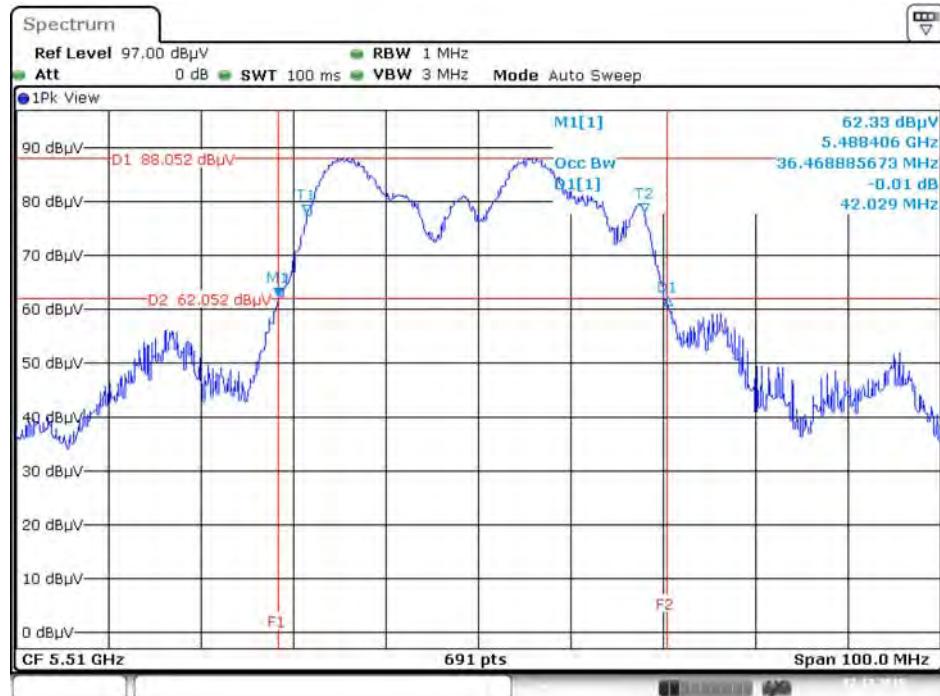
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5270 MHz**



**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5310 MHz**

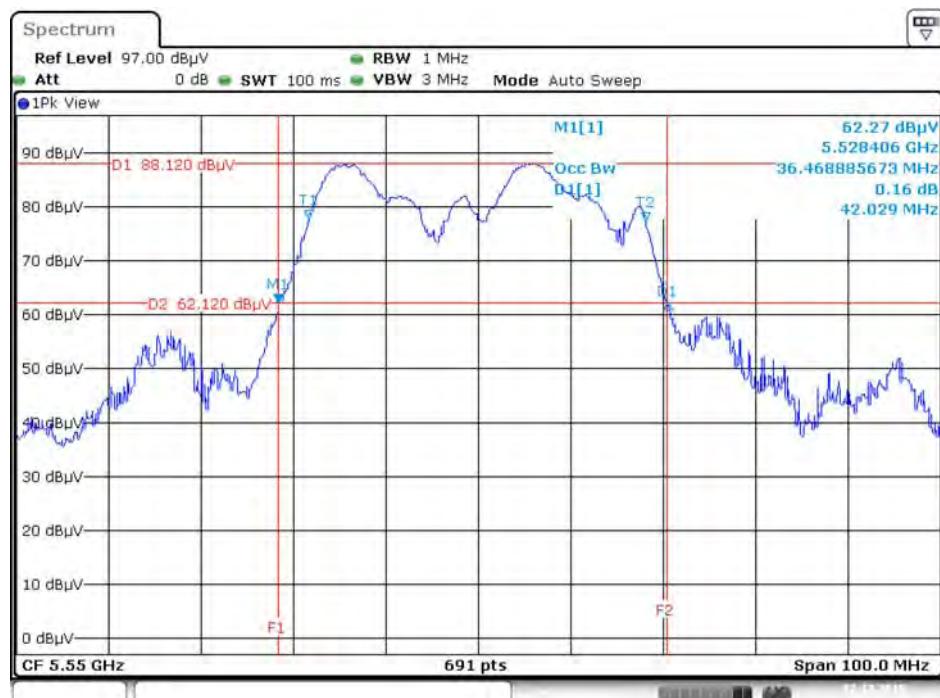


**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5510 MHz**



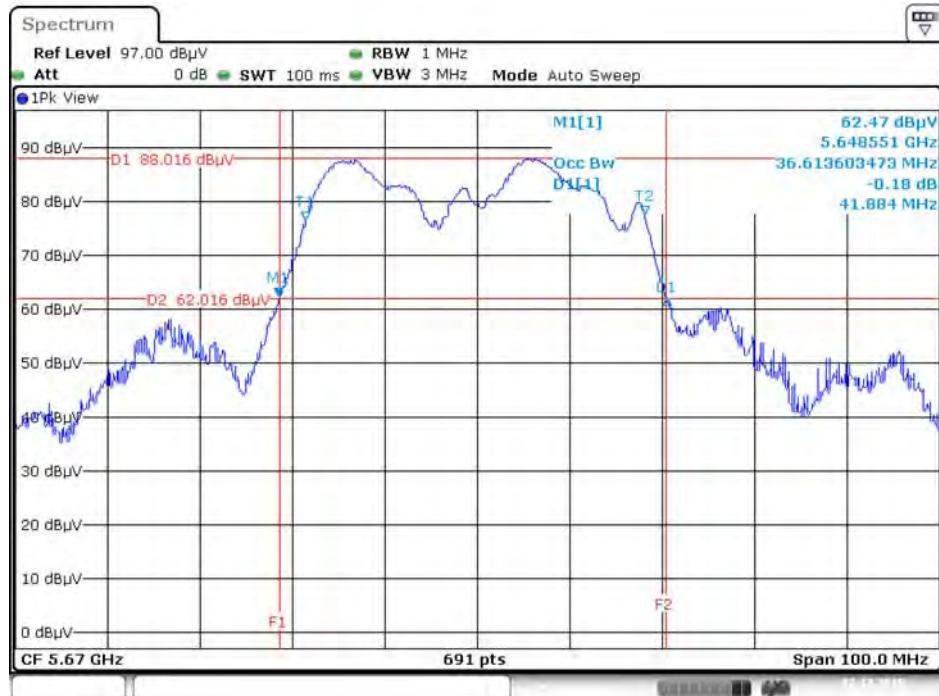
Date: 22.DEC.2015 21:06:11

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5550 MHz**



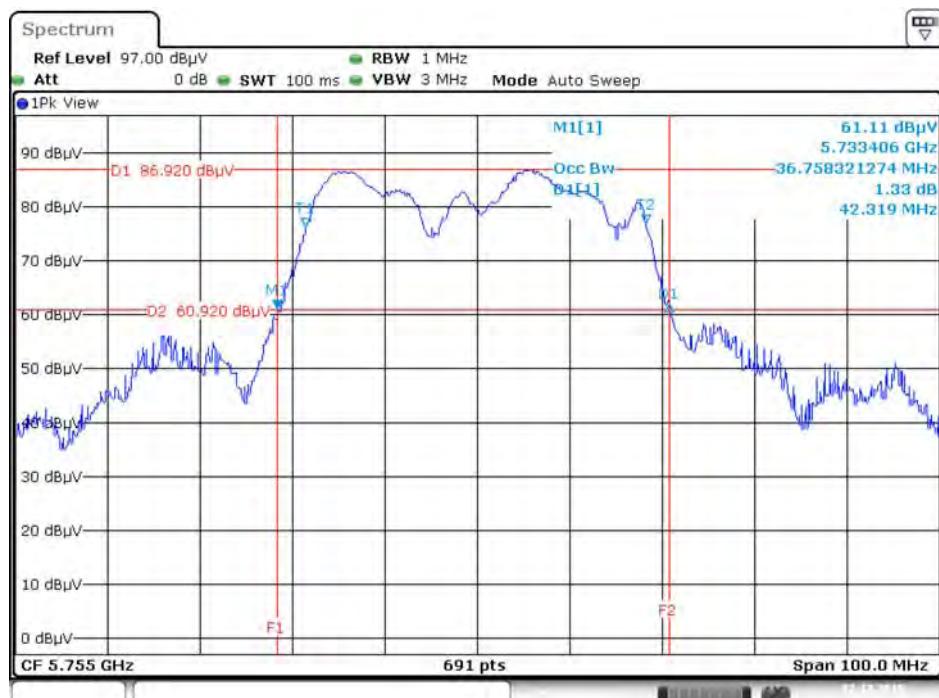
Date: 22.DEC.2015 21:06:33

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5670 MHz**



Date: 22.DEC.2015 21:06:57

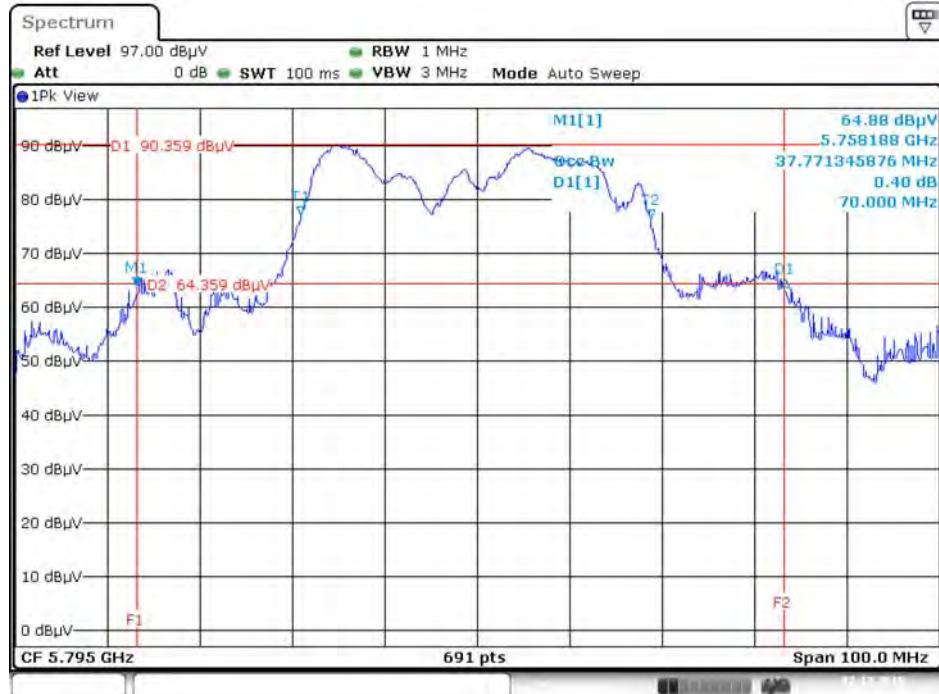
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5755 MHz**



Date: 22.DEC.2015 21:07:24

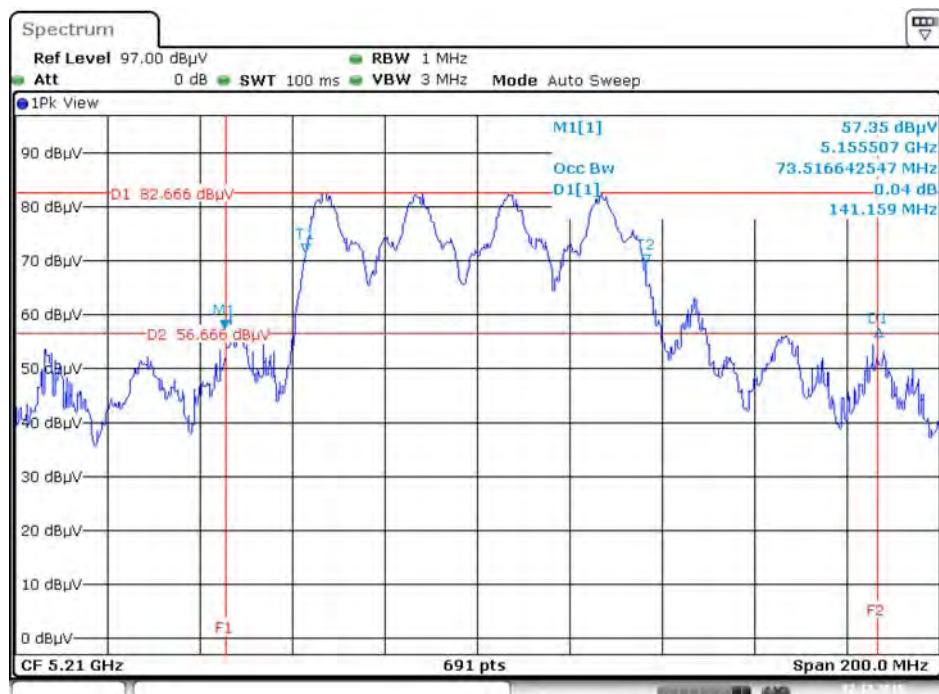


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



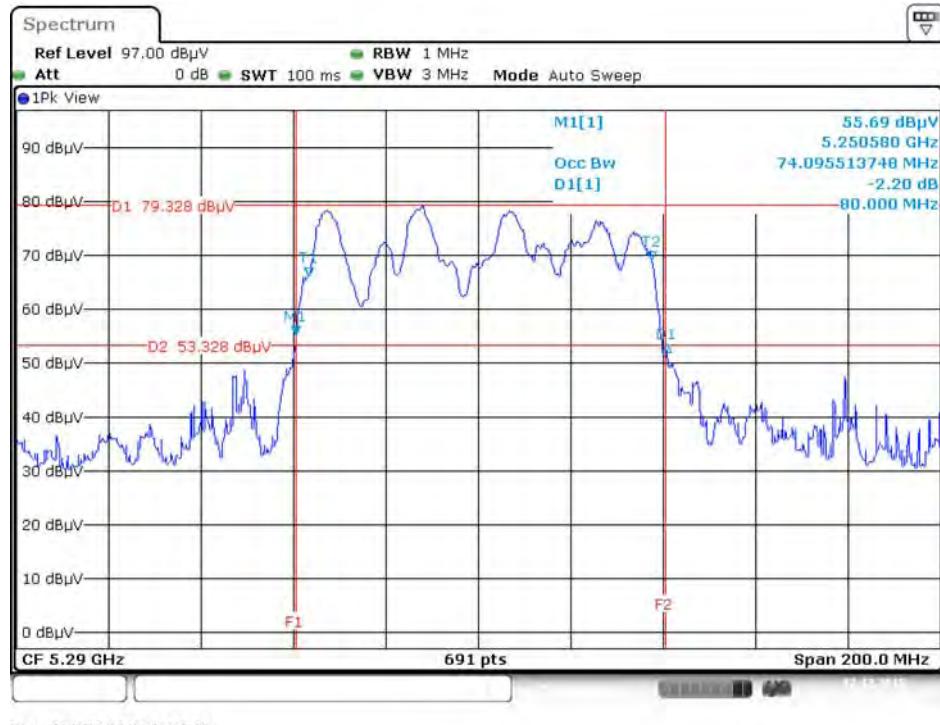
Date: 22.DEC.2015 21:08:03

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



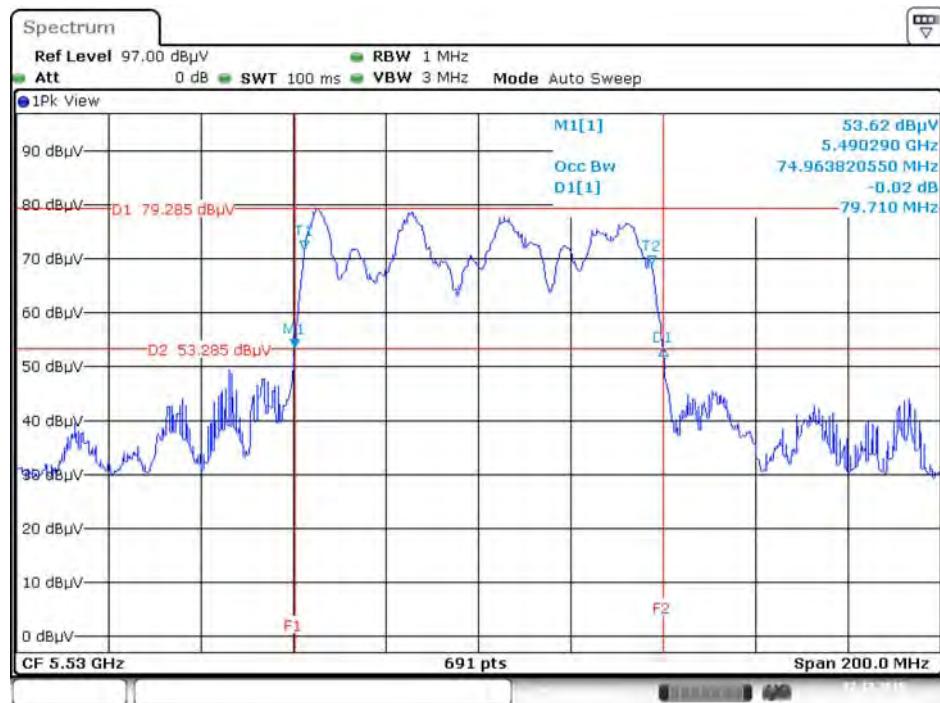
Date: 22 DEC 2015 21:12:01

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5290 MHz



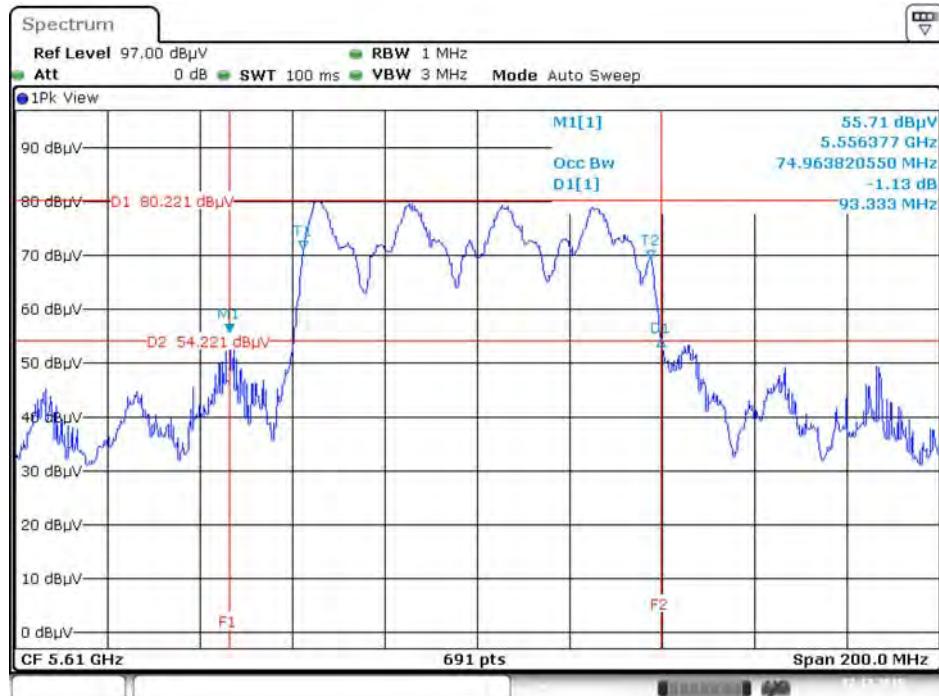
Date: 22.DEC.2015 21:12:25

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5530 MHz

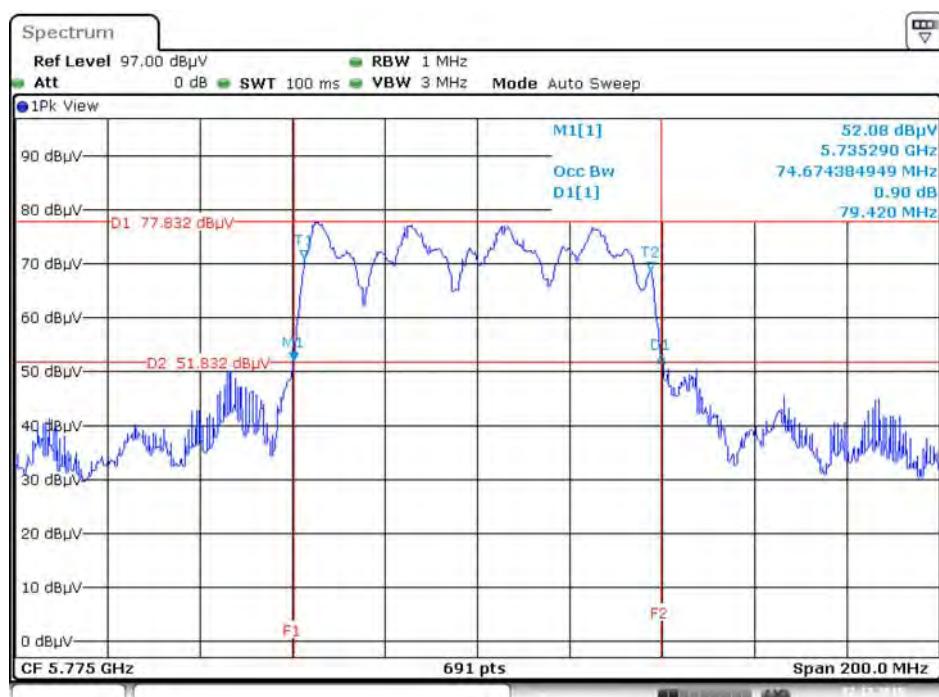


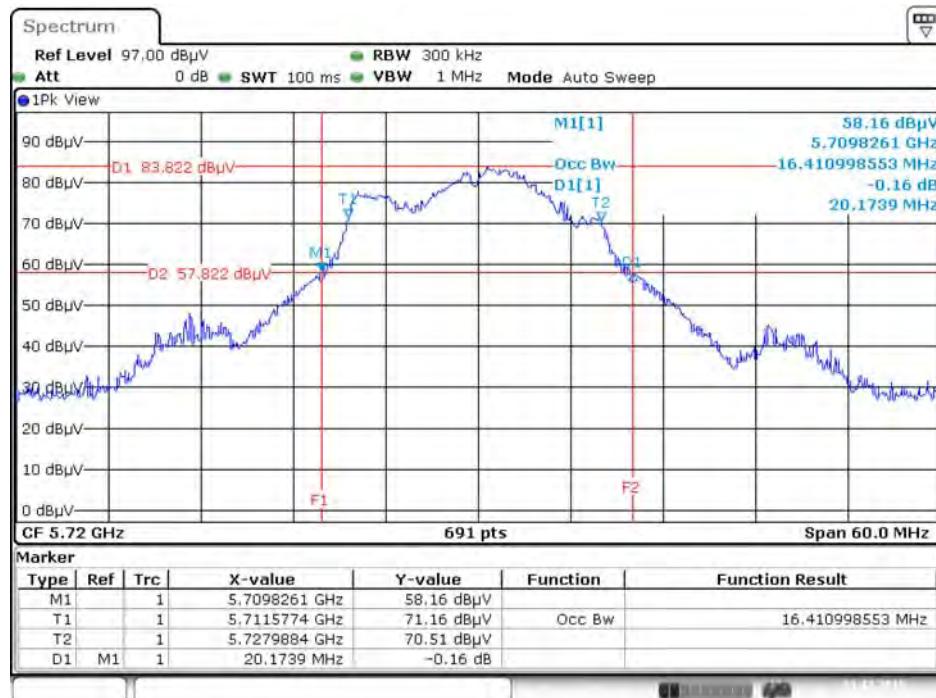
Date: 22.DEC.2015 21:12:46

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5610 MHz**

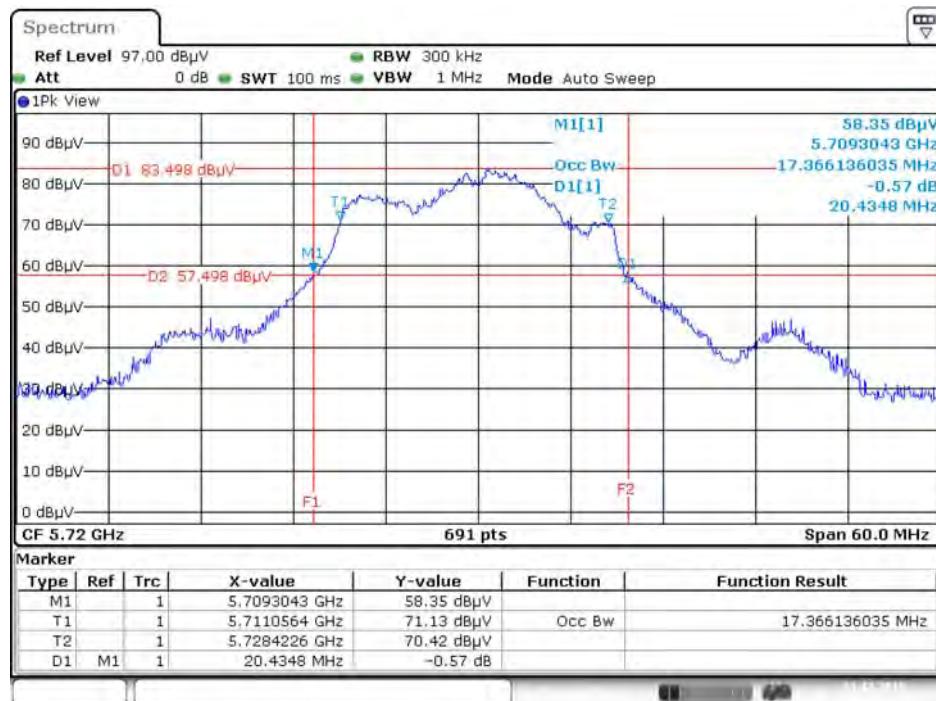


**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz**



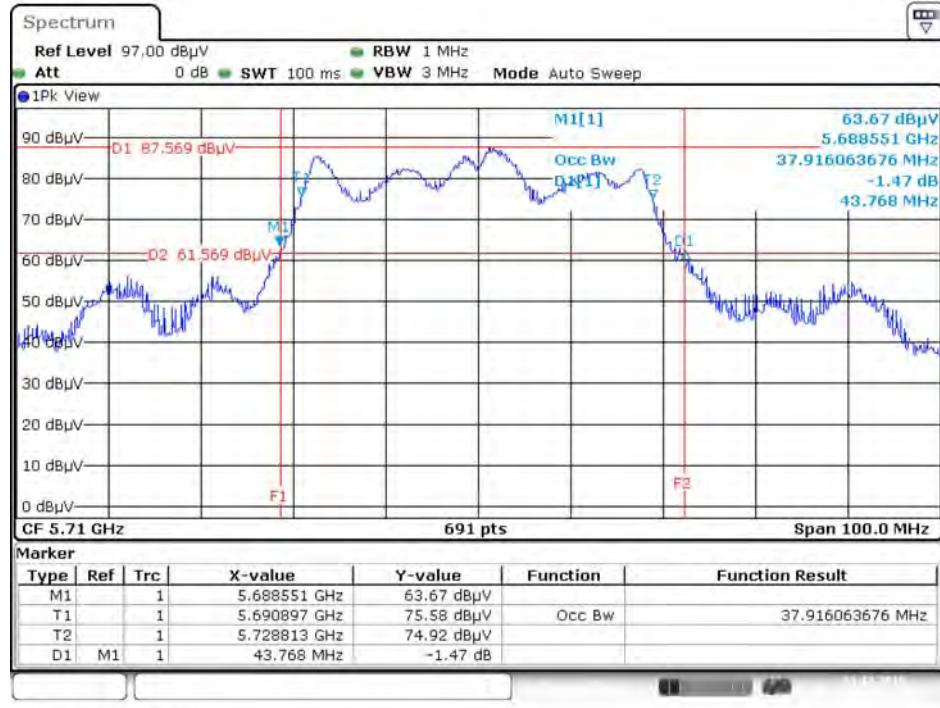
Straddle Channel**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz**

Date: 21.DEC.2015 21:21:33

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz

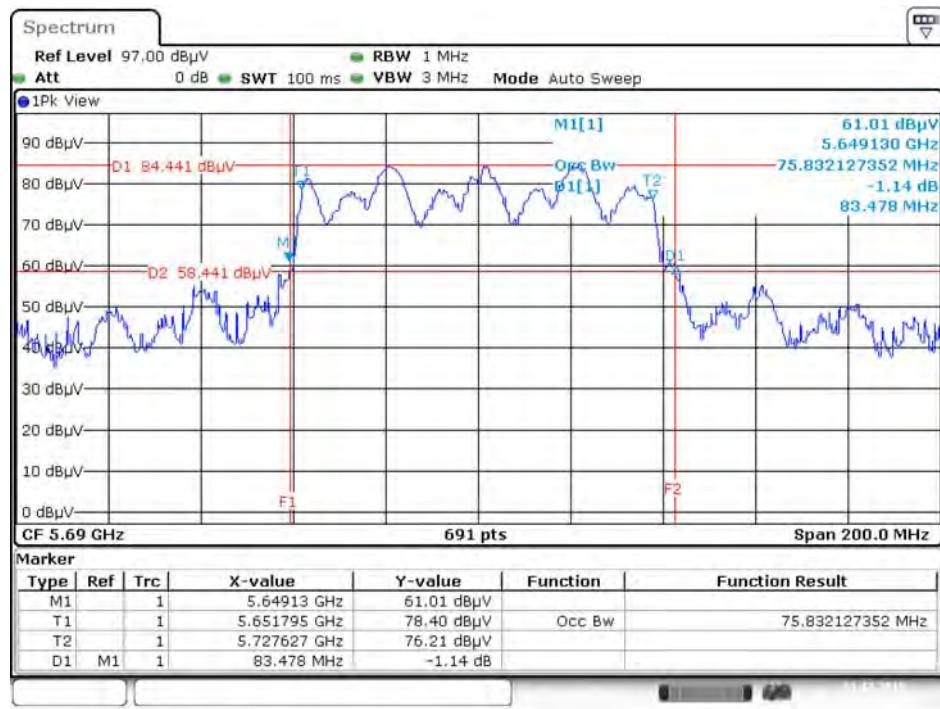
Date: 21.DEC.2015 21:21:12

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5710 MHz



Date: 21.DEC.2015 21:20:39

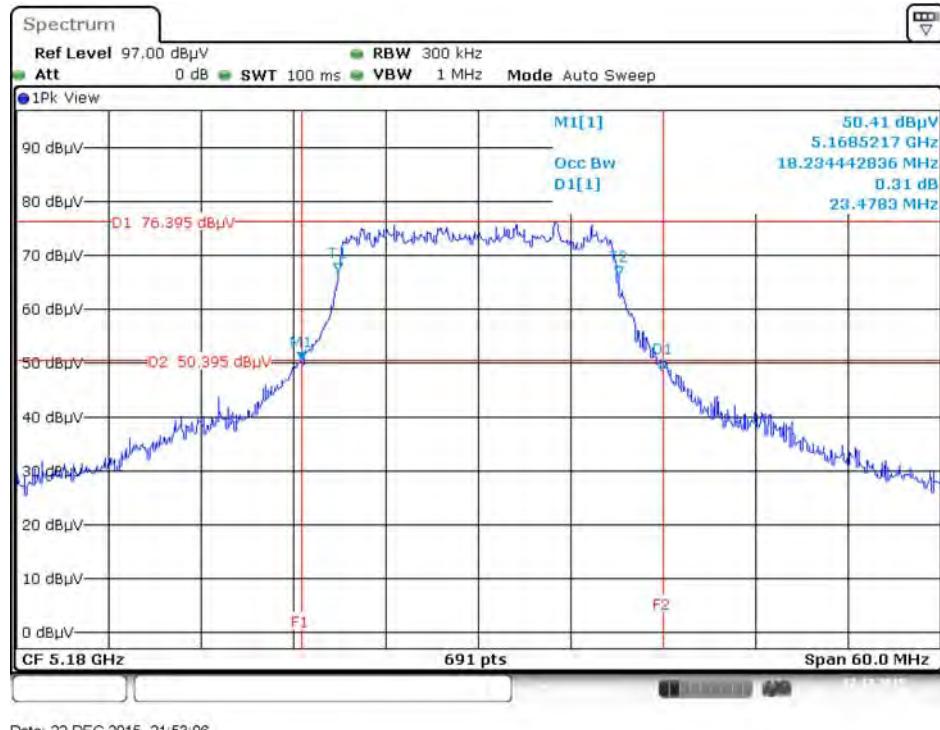
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5690 MHz



Date: 21.DEC.2015 21:20:08

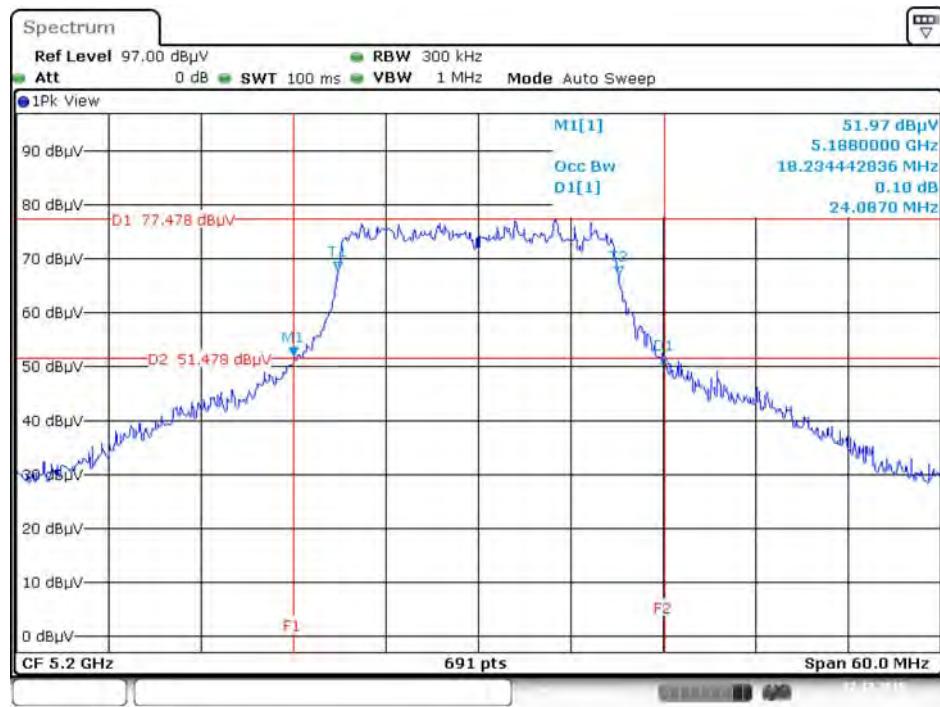
For beamforming function:

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



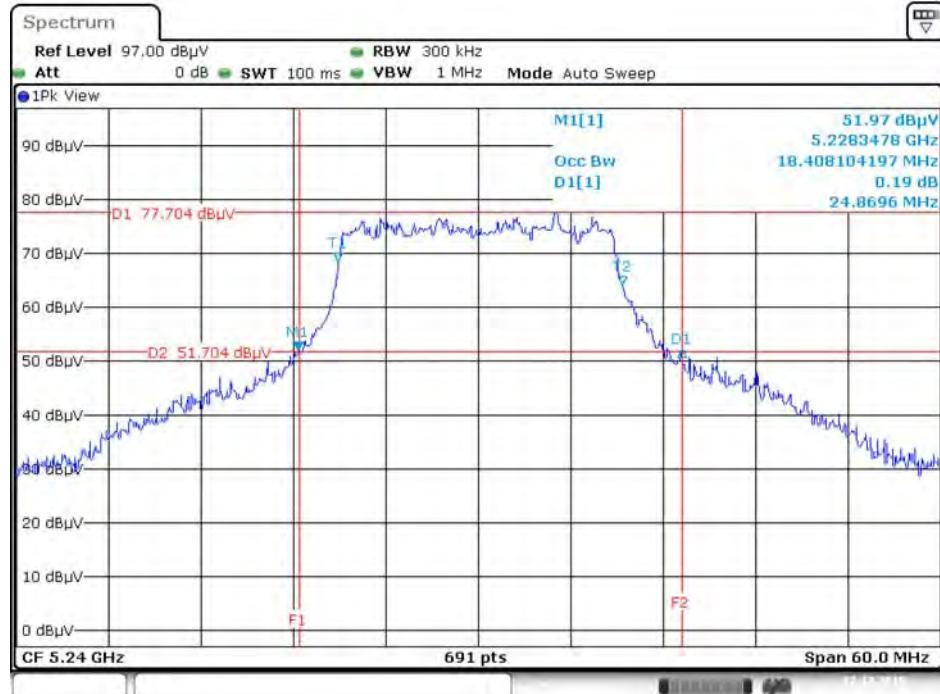
Date: 22.DEC.2015 21:53:06

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



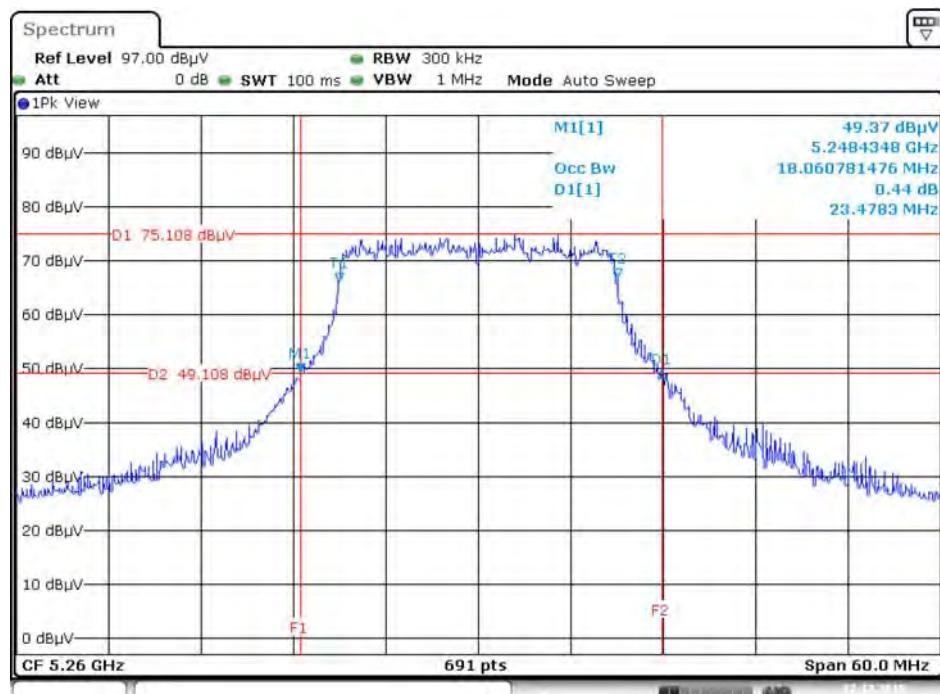
Date: 22.DEC.2015 21:53:28

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz**



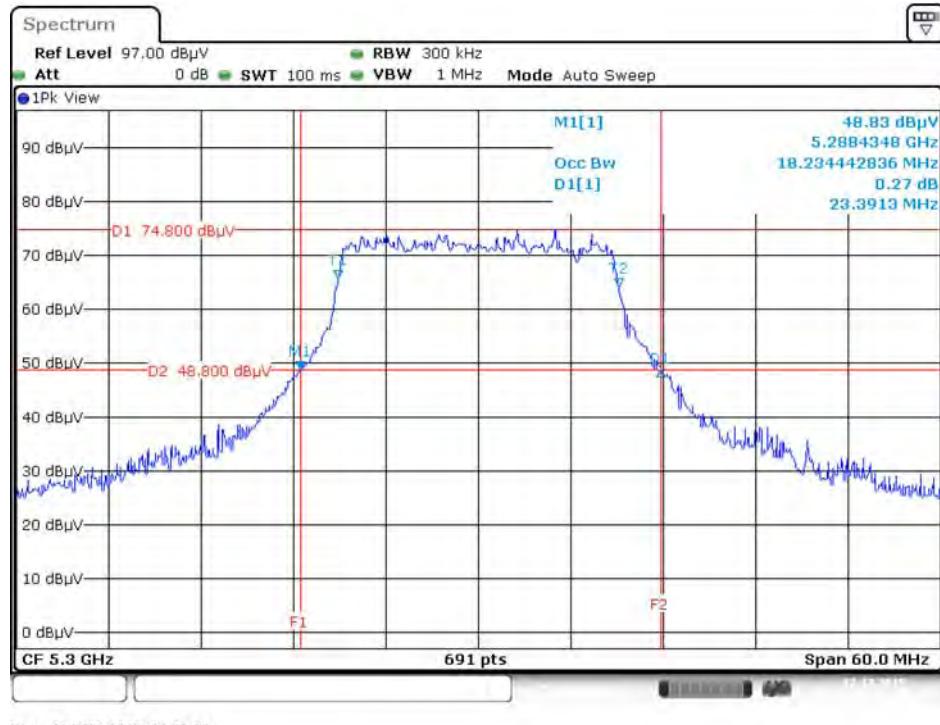
Date: 22.DEC.2015 21:53:47

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5260 MHz**

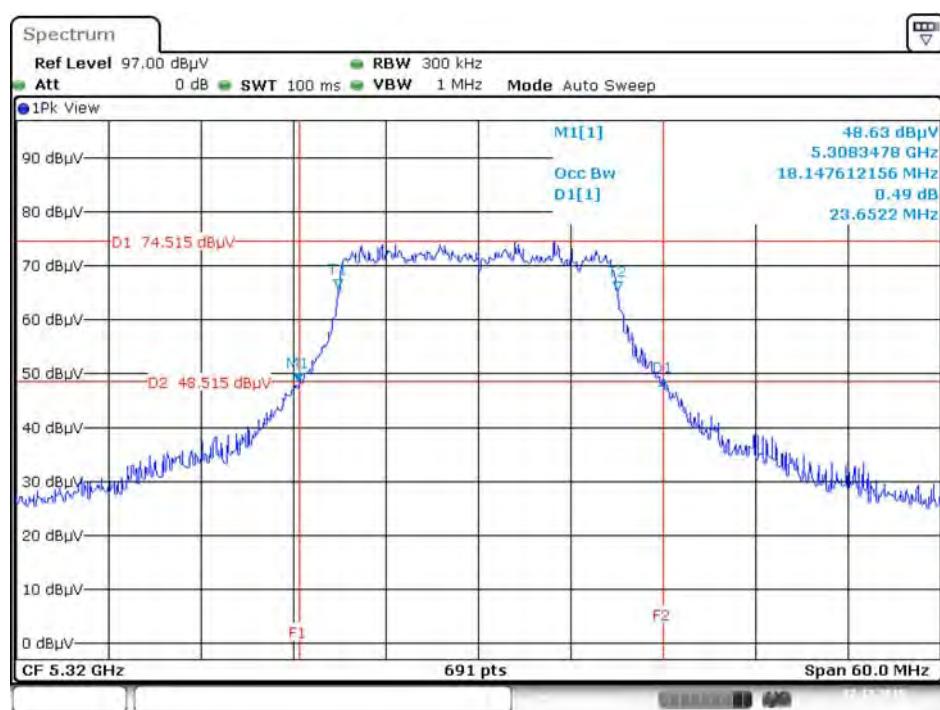


Date: 22.DEC.2015 21:54:45

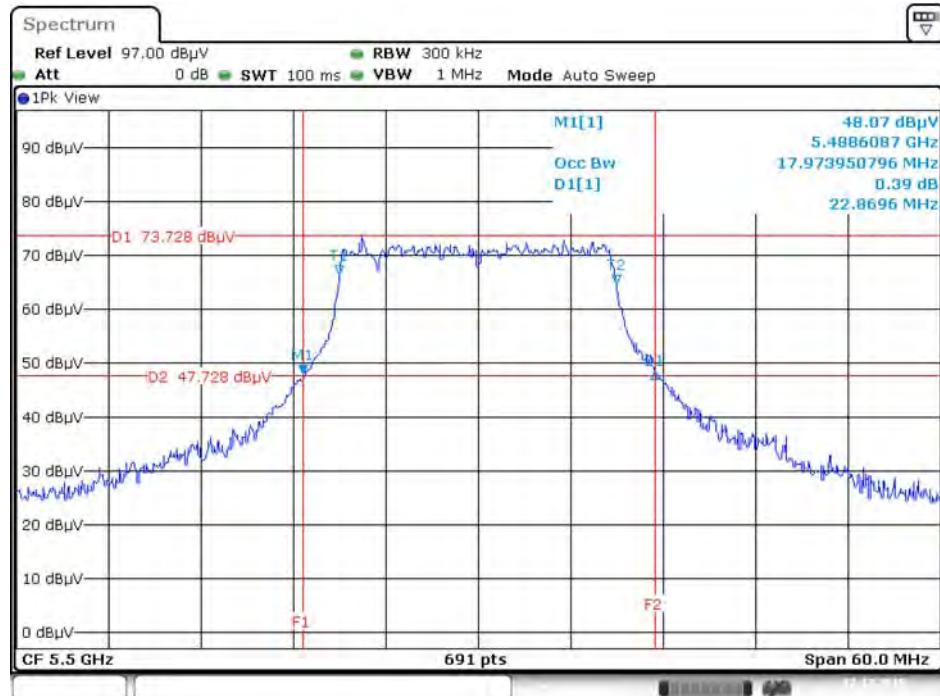
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5300 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5320 MHz

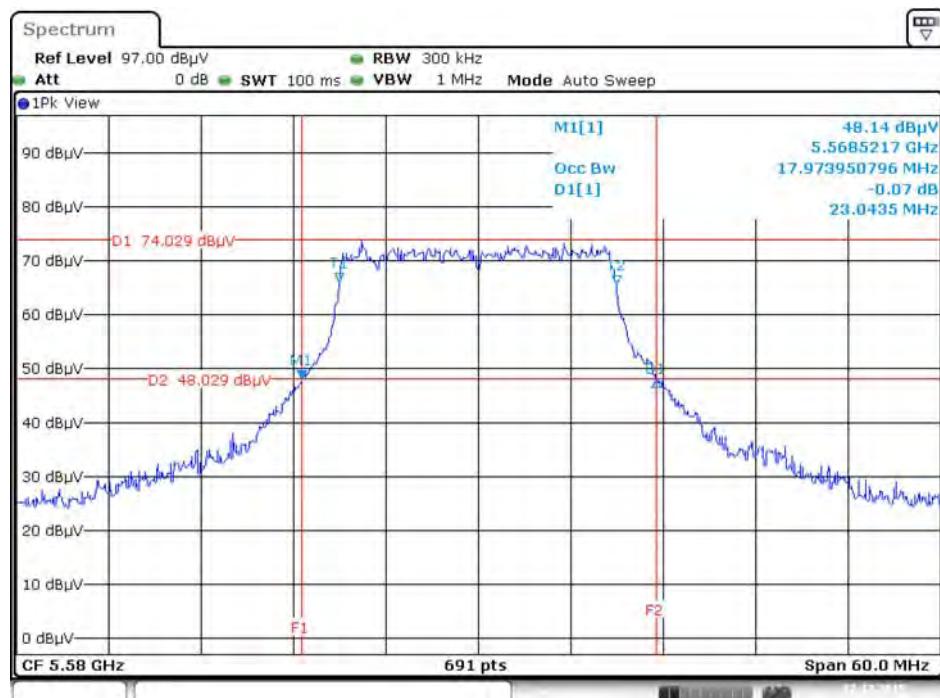


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5500 MHz



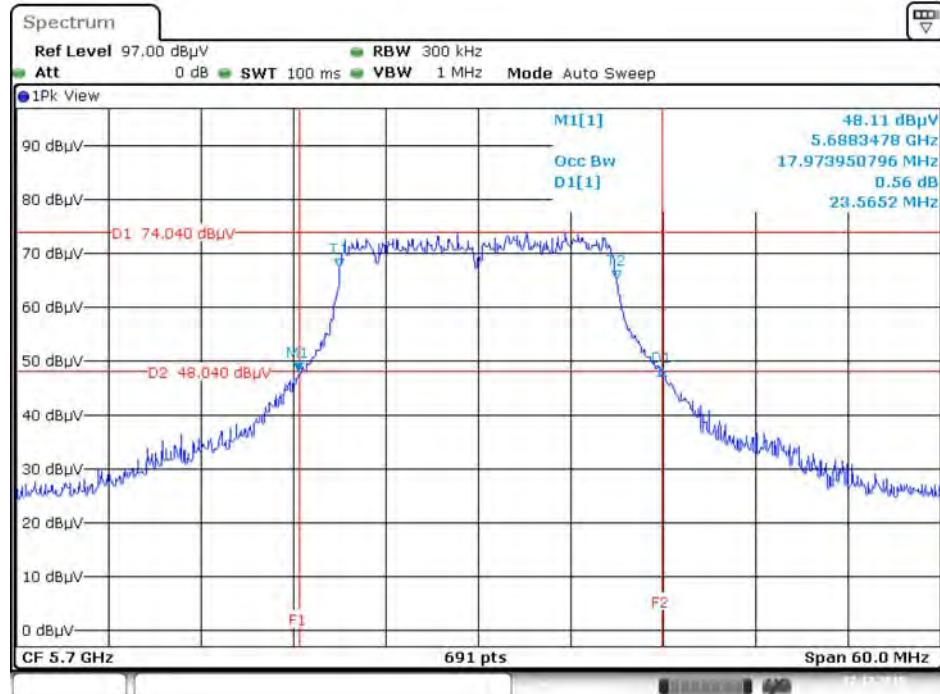
Date: 22.DEC.2015 21:55:46

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5580 MHz

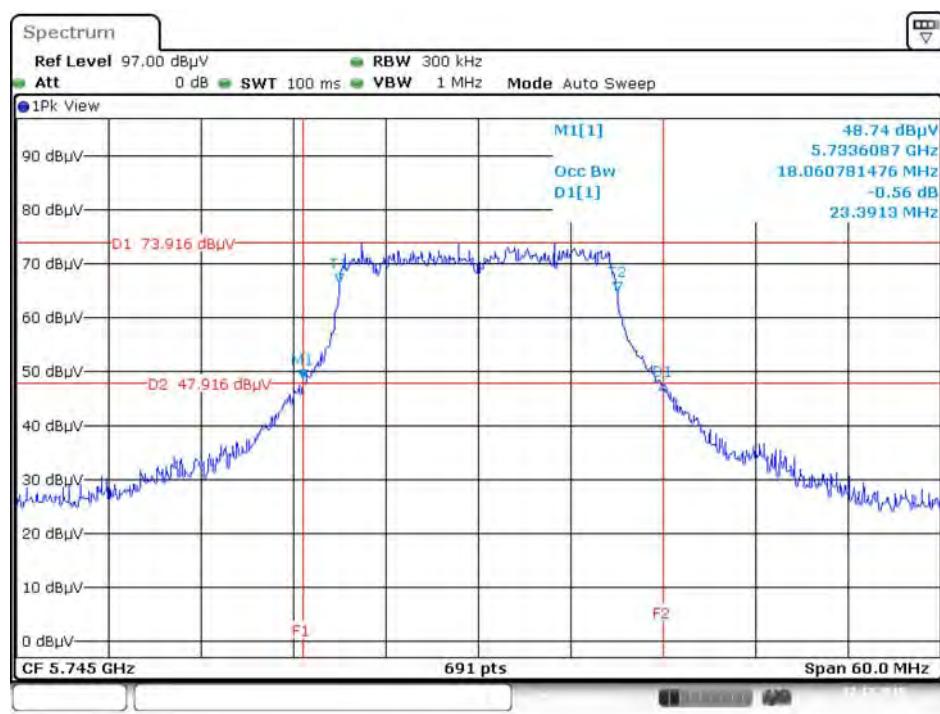


Date: 22.DEC.2015 21:56:05

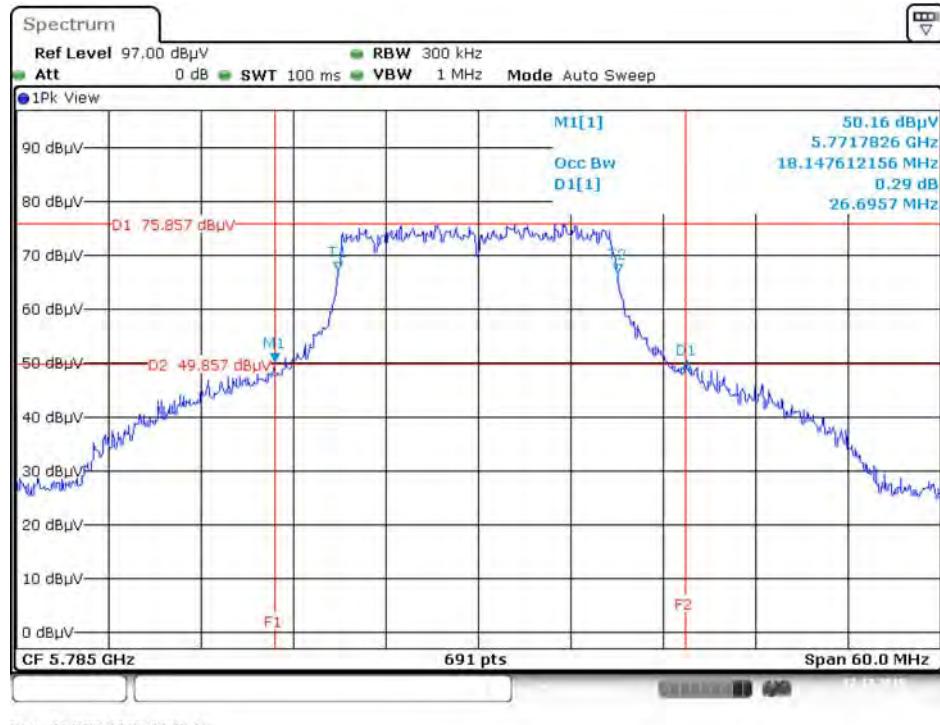
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5700 MHz**



**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz**

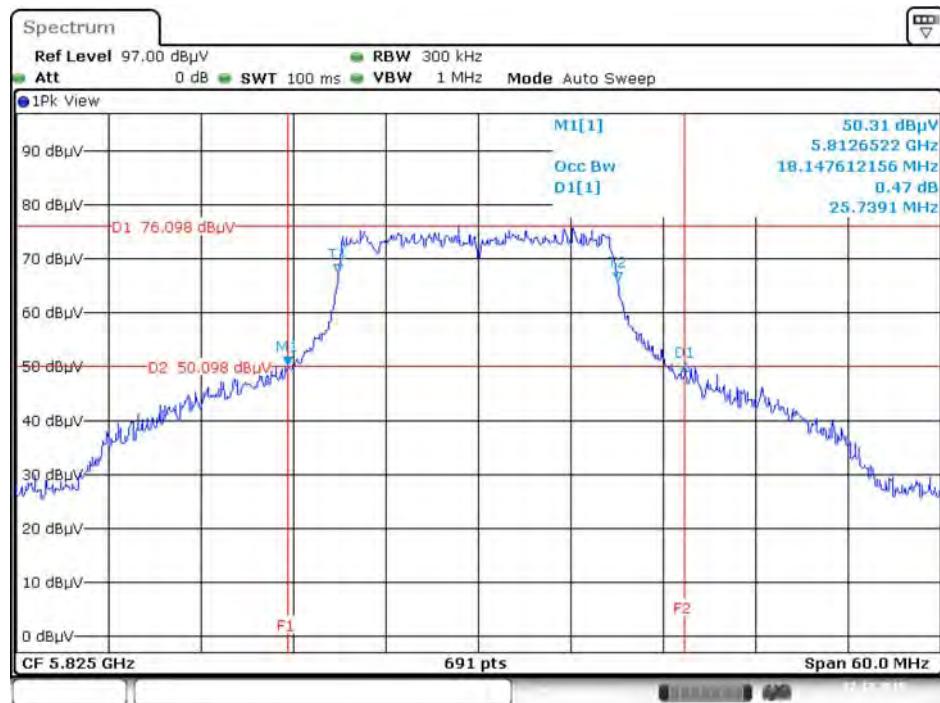


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



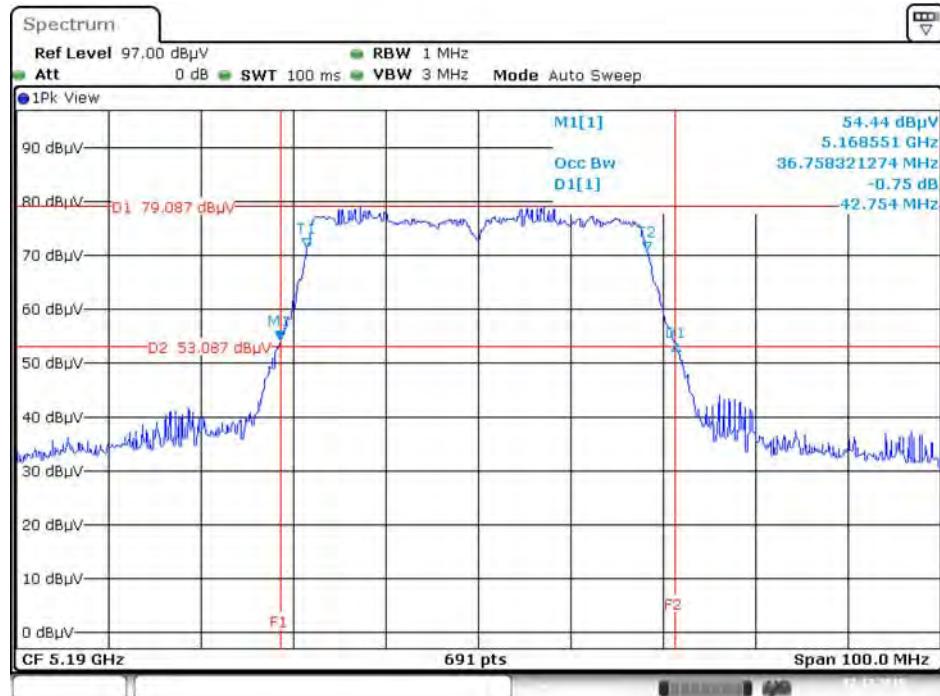
Date: 22.DEC.2015 21:57:28

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



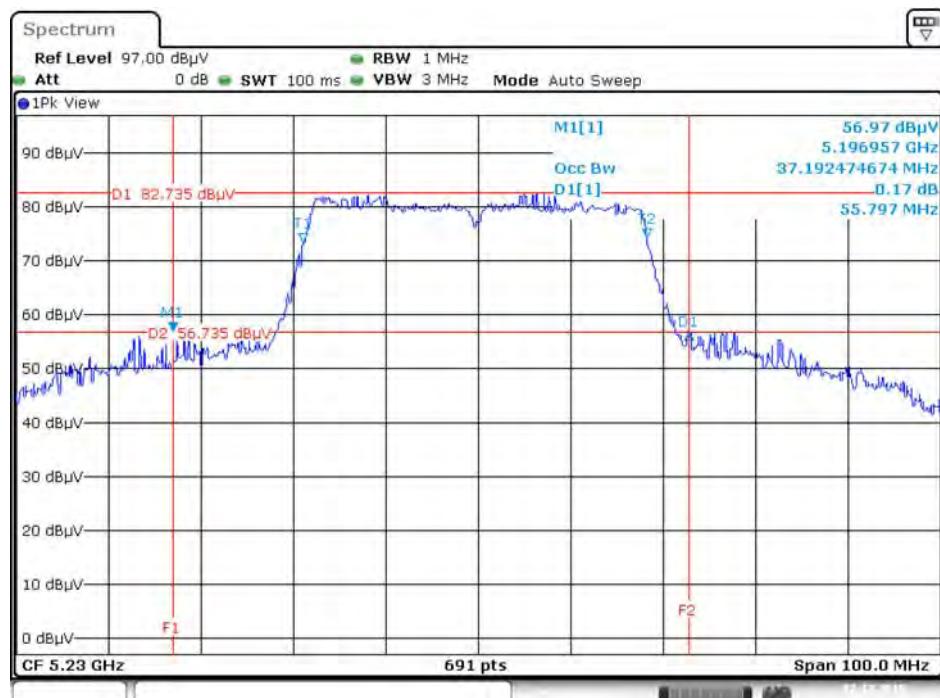
Date: 22.DEC.2015 21:57:47

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz**



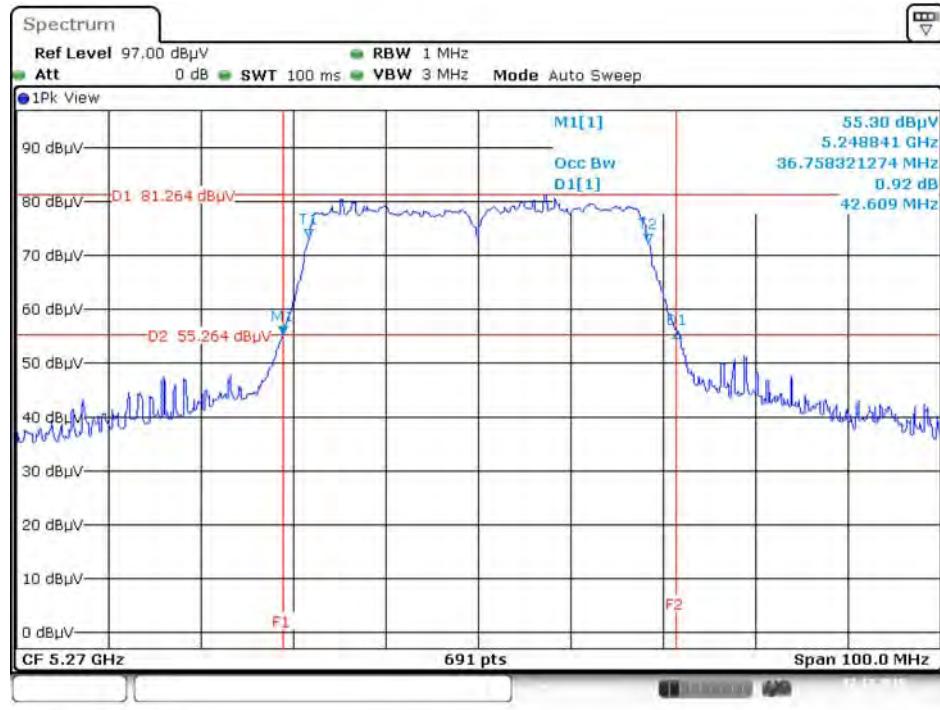
Date: 22.DEC.2015 21:46:44

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz**

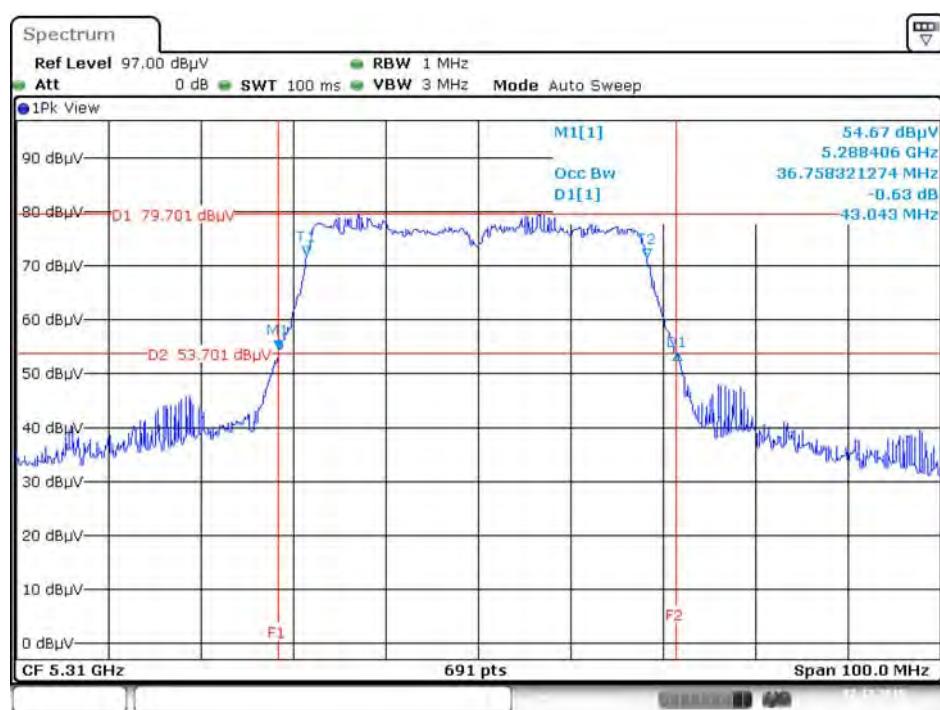


Date: 22.DEC.2015 21:47:13

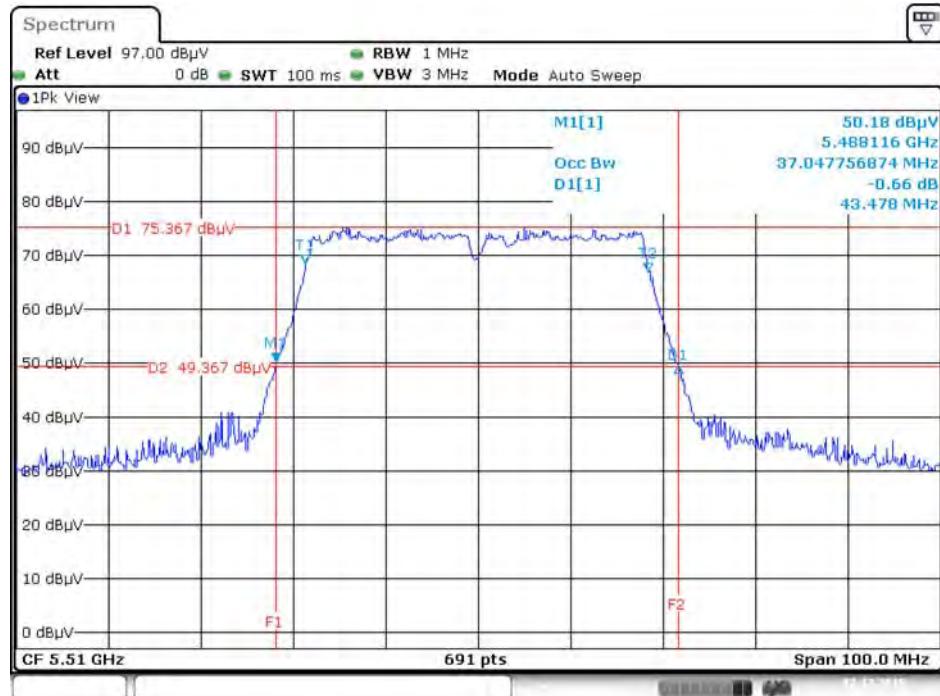
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5270 MHz**



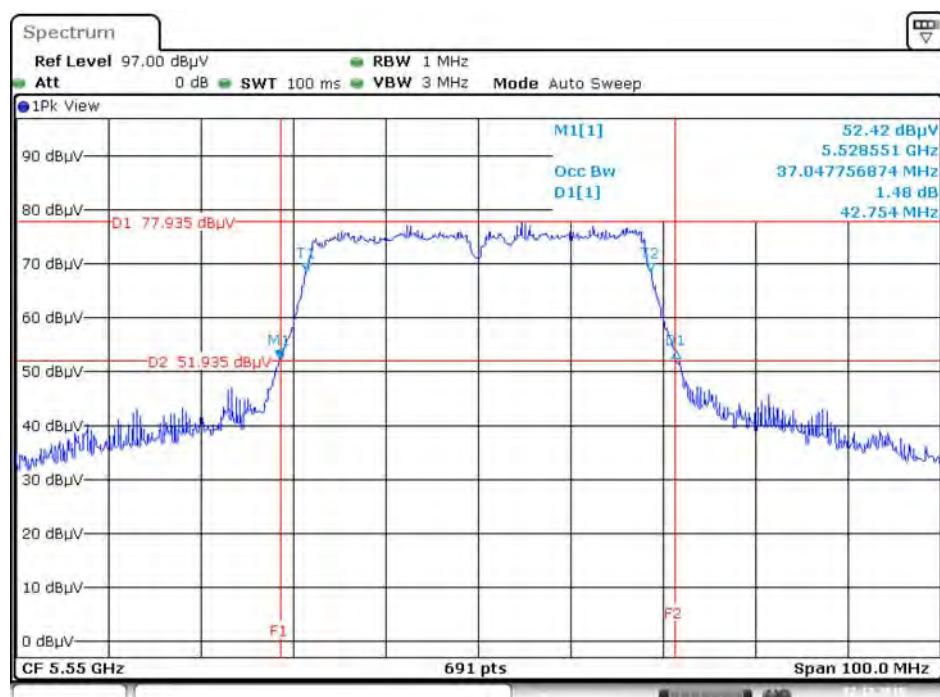
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5310 MHz**



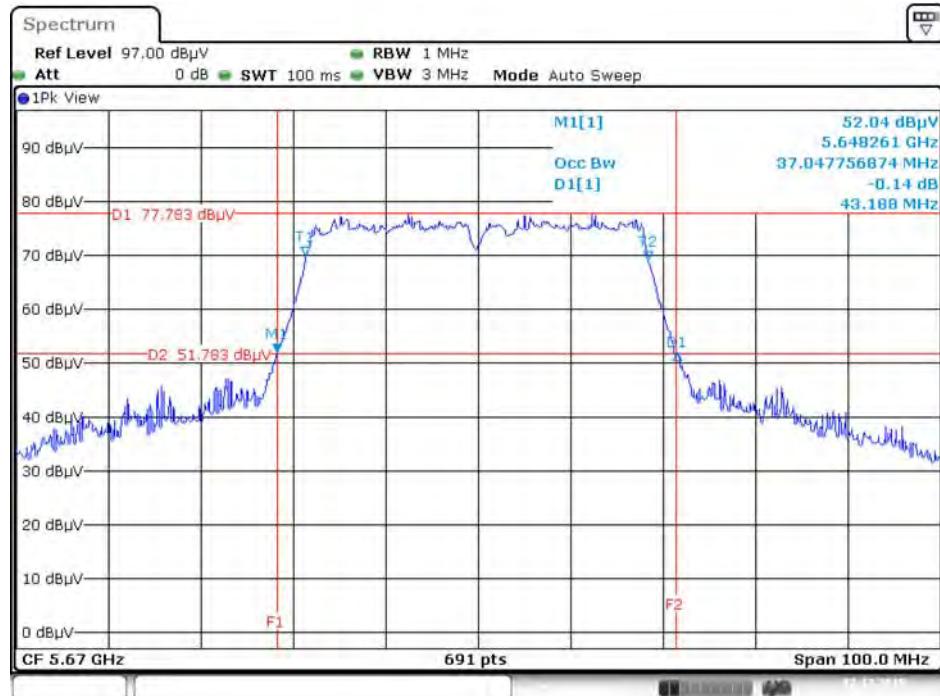
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5510 MHz**



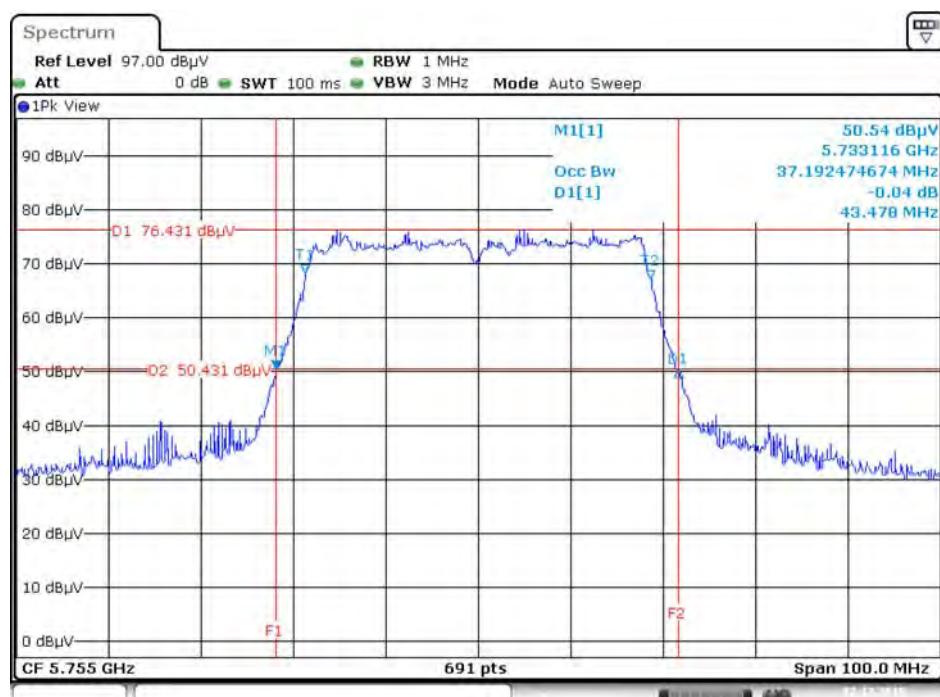
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5550 MHz**



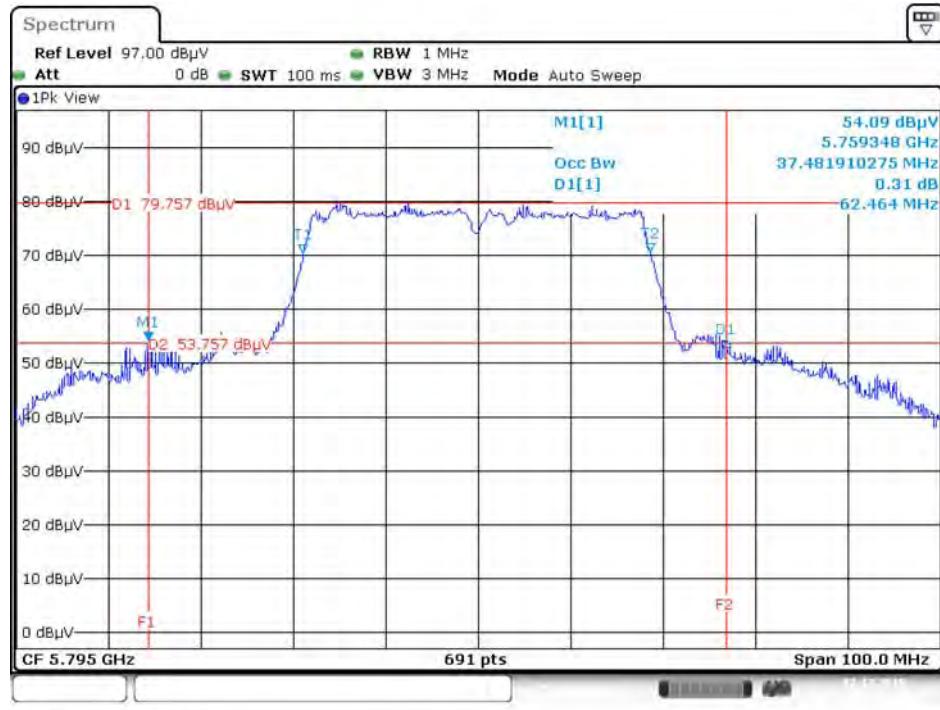
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5670 MHz**



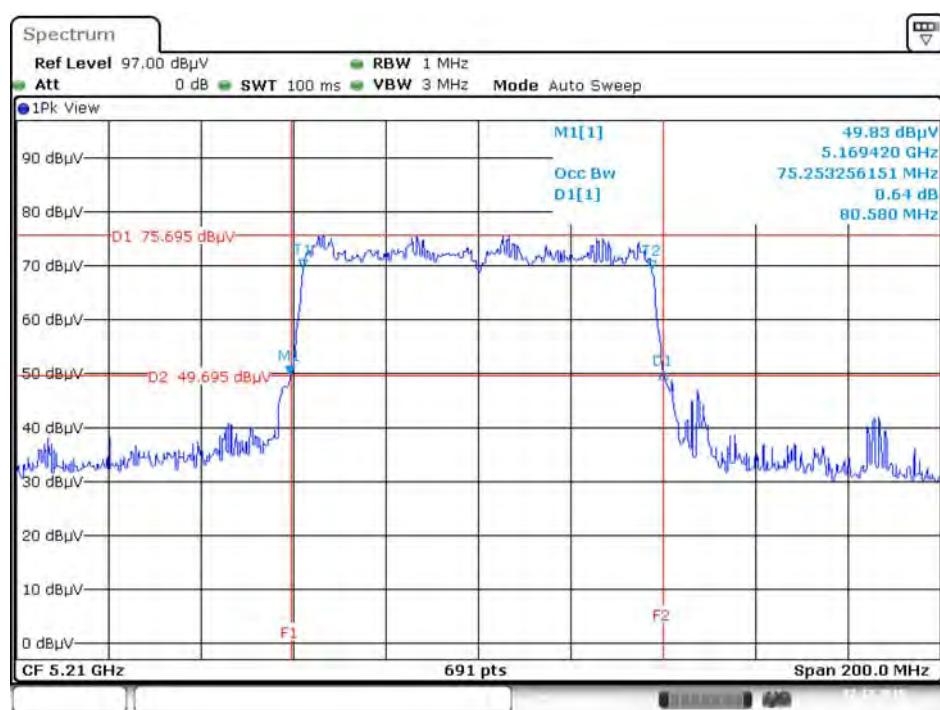
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5755 MHz**



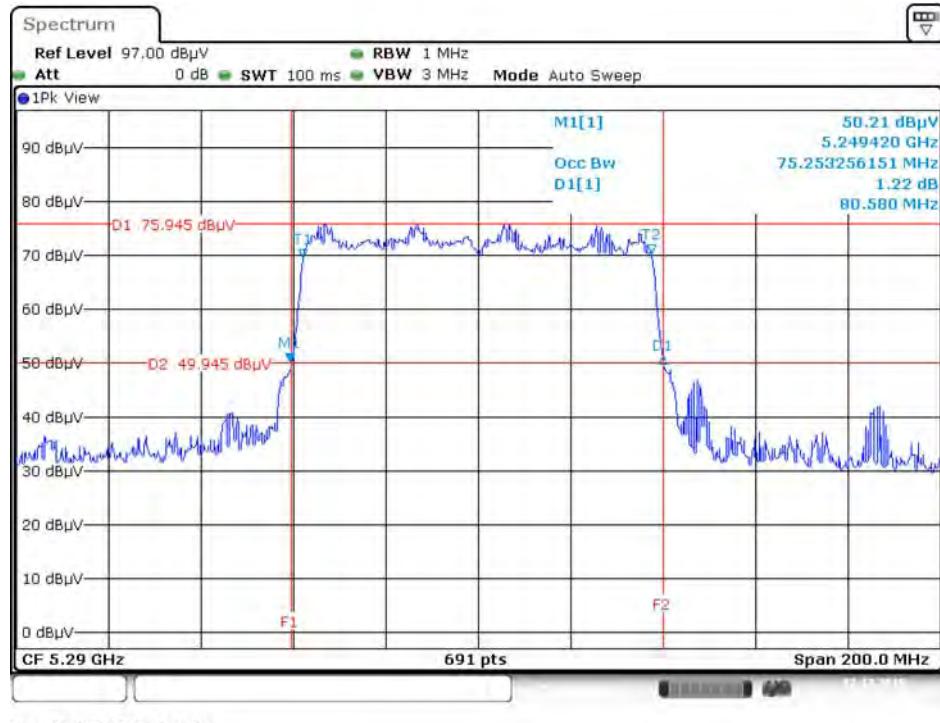
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



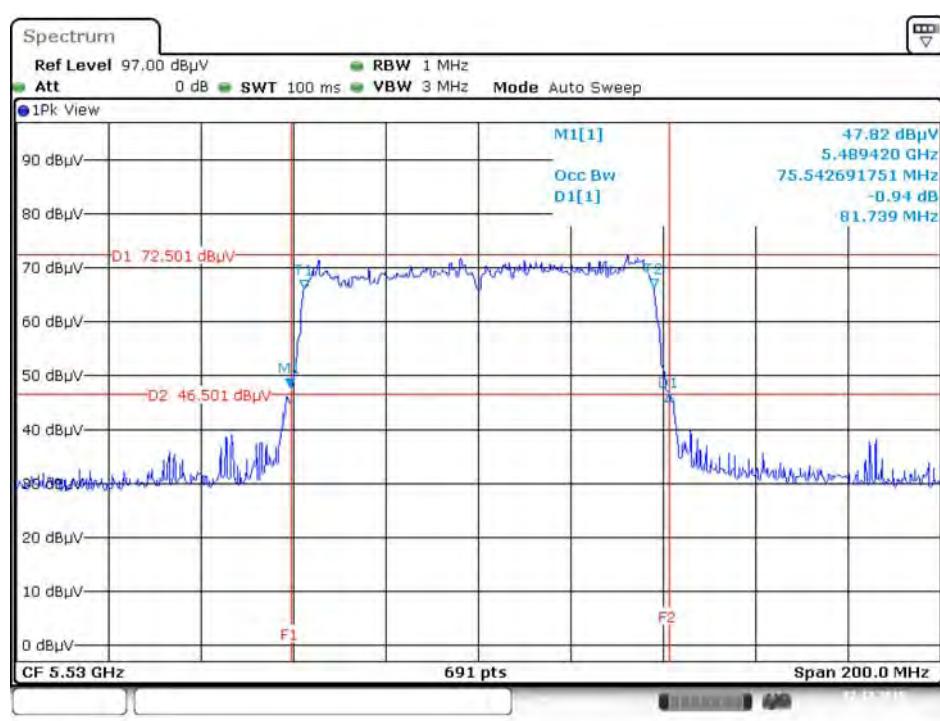
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5290 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5530 MHz

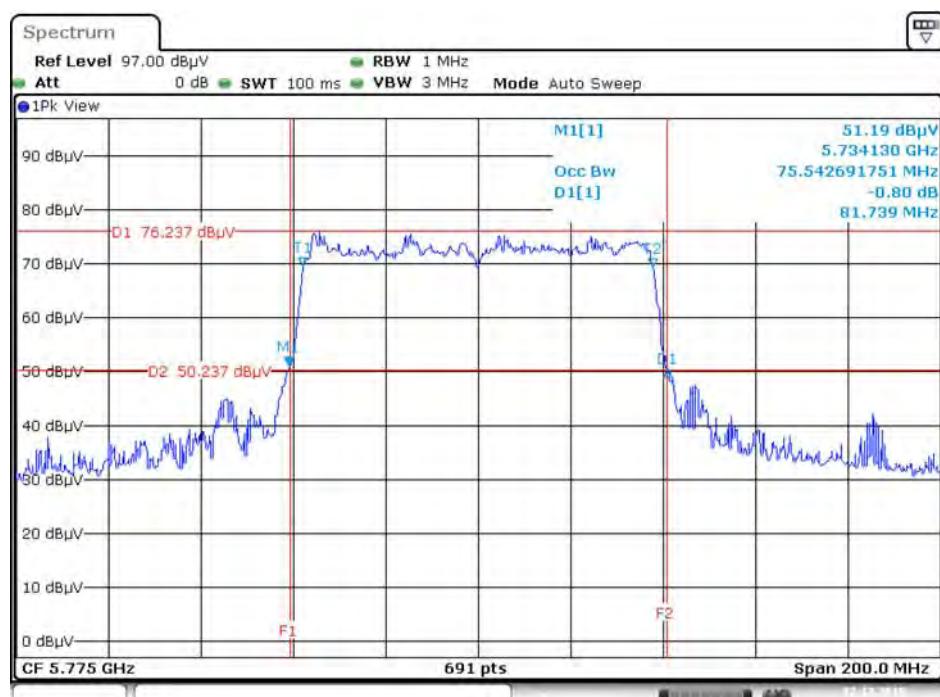


**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5610 MHz**



Date: 22.DEC.2015 21:44:17

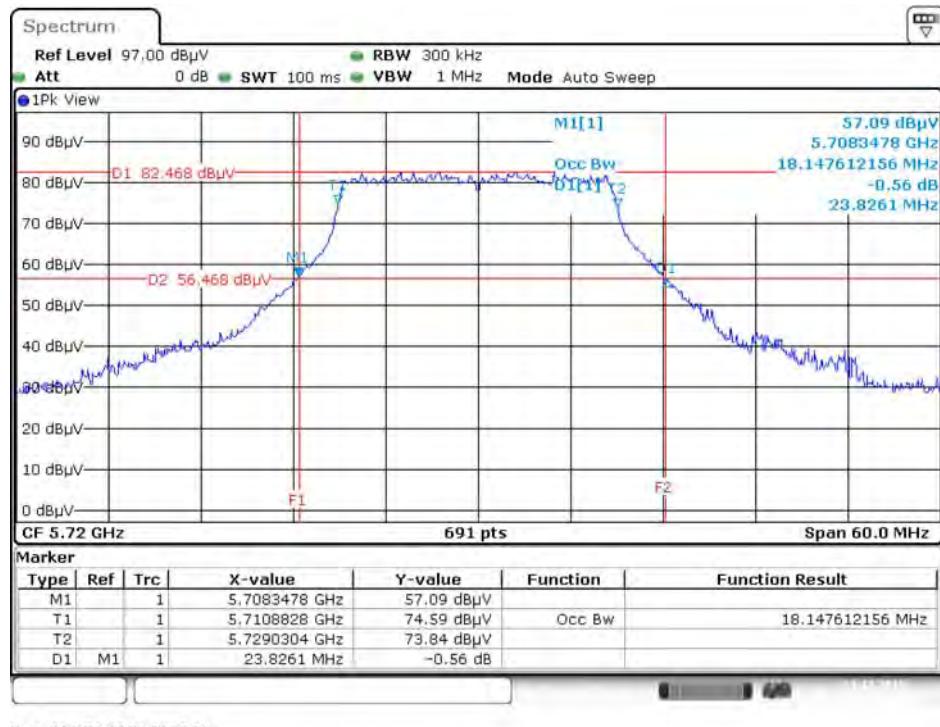
**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 /
Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz**



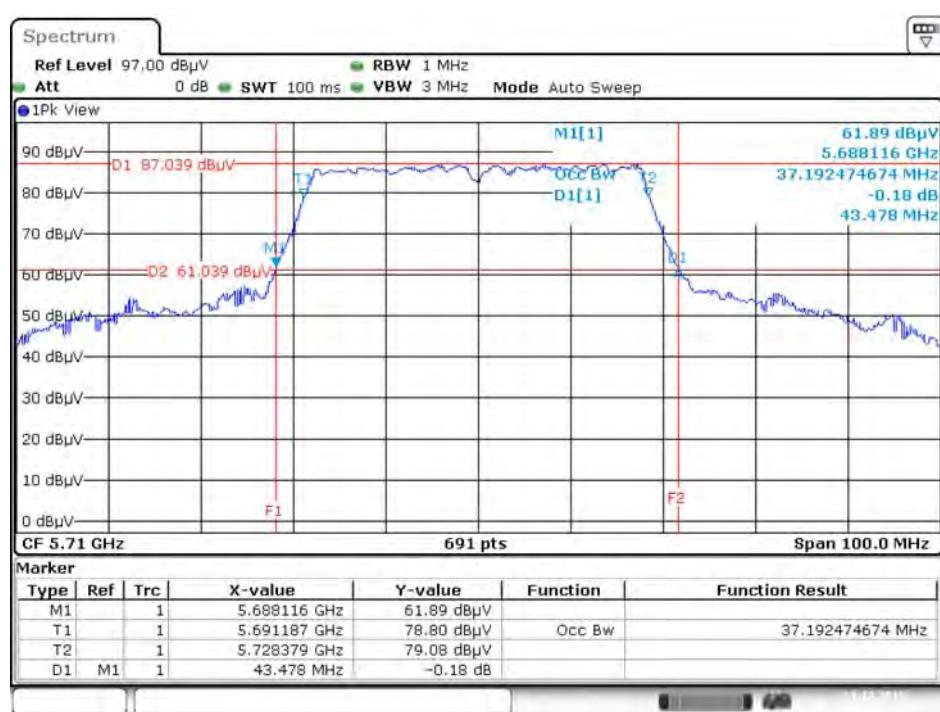
Date: 22.DEC.2015 21:44:45

Straddle Channel

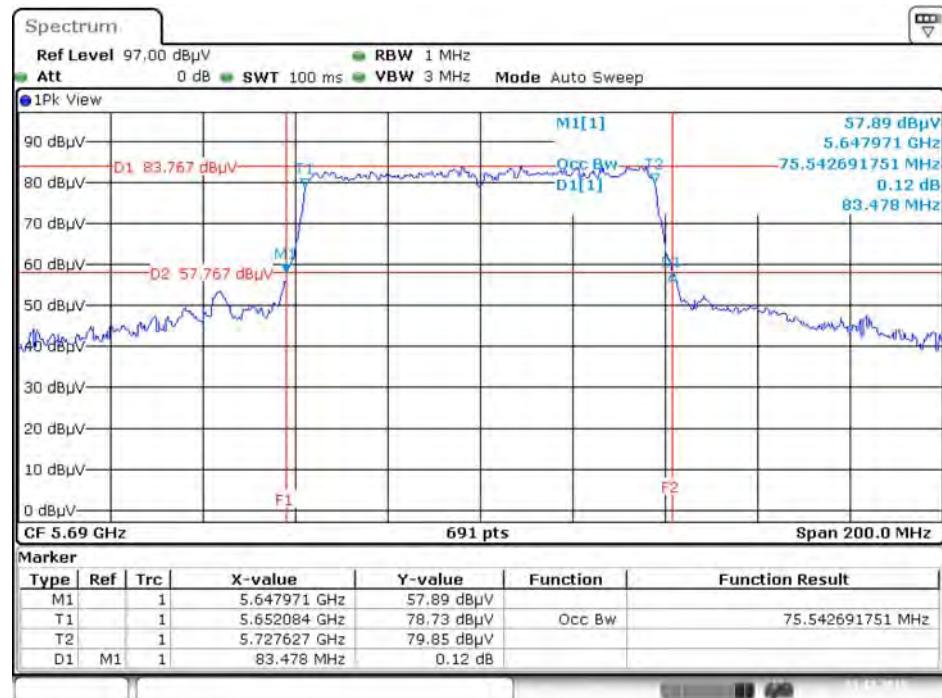
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5710 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5690 MHz



Date: 21.DEC.2015 22:27:16

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	$\geq 3 \times RBW$
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 v01r01 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	21°C	Humidity	46%
Test Engineer	Lucas Huang	Test Function	Non-beamforming function

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	4.12	500	Complies
	5785 MHz	15.42	500	Complies
	5825 MHz	15.25	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	16.29	500	Complies
	5785 MHz	17.51	500	Complies
	5825 MHz	17.57	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	34.09	500	Complies
	5795 MHz	27.83	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	70.44	500	Complies

Straddle Channel

Mode	Frequency	6dB BW (MHz)	6dB BW M1 (MHz)	UNII 3 BW (MHz)	Min. Limit (kHz)	Test Result
802.11a	5720 MHz	15.71	5712.35	3.06	500	Complies
802.11ac MCS0/Nss1 VHT20	5720 MHz	17.28	5711.42	3.70	500	Complies
802.11ac MCS0/Nss1 VHT40	5710 MHz	36.29	5691.80	3.09	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	73.33	5654.35	2.68	500	Complies

Temperature	21°C	Humidity	46%
Test Engineer	Lucas Huang	Test Function	Beamforming function

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss2 VHT20	5745 MHz	13.74	500	Complies
	5785 MHz	17.57	500	Complies
	5825 MHz	17.57	500	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	35.83	500	Complies
	5795 MHz	35.25	500	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	75.07	500	Complies

Straddle Channel

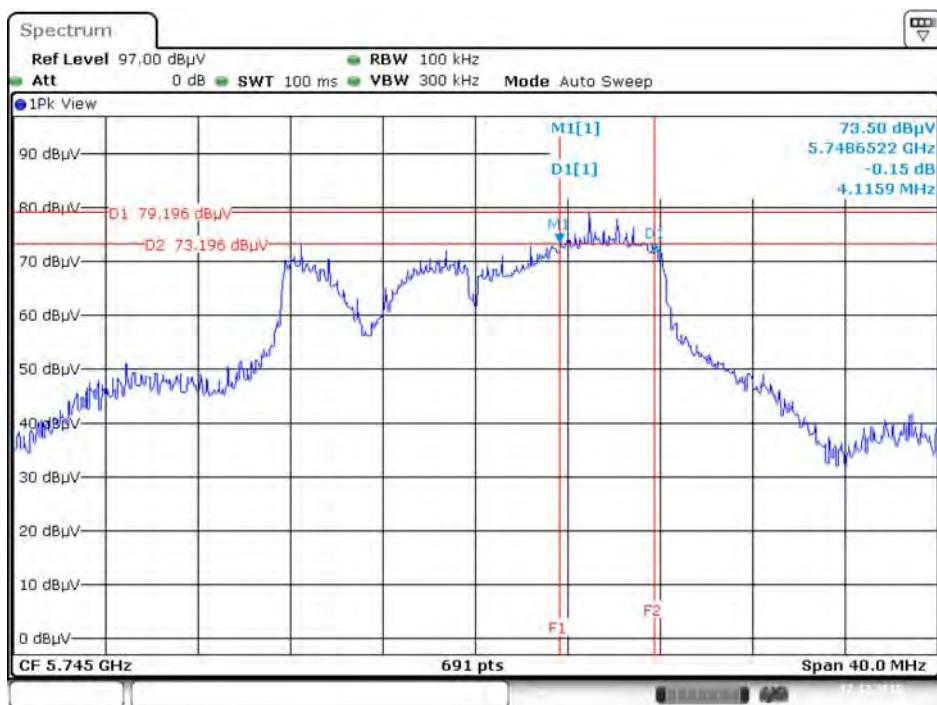
Mode	Frequency	6dB BW (MHz)	6dB BW M1 (MHz)	UNII 3 BW (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss2 VHT20	5720 MHz	17.68	5711.07	3.75	500	Complies
802.11ac MCS0/Nss2 VHT40	5710 MHz	35.36	5692.03	2.39	500	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	75.65	5652.32	2.97	500	Complies

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

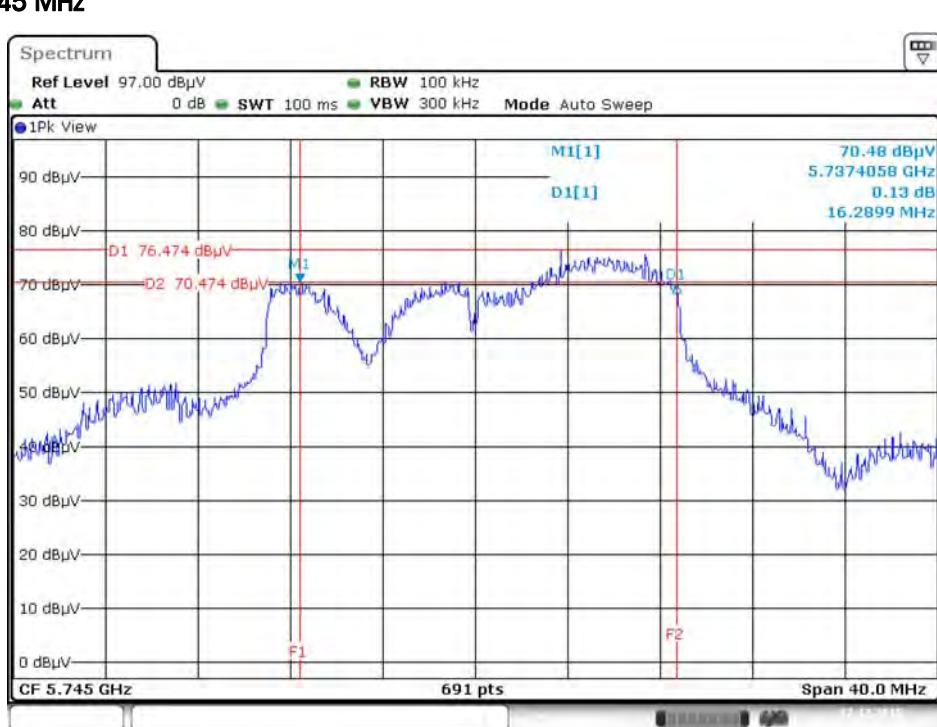
For plots, only the channel with worse result was shown.

For non-beamforming function:

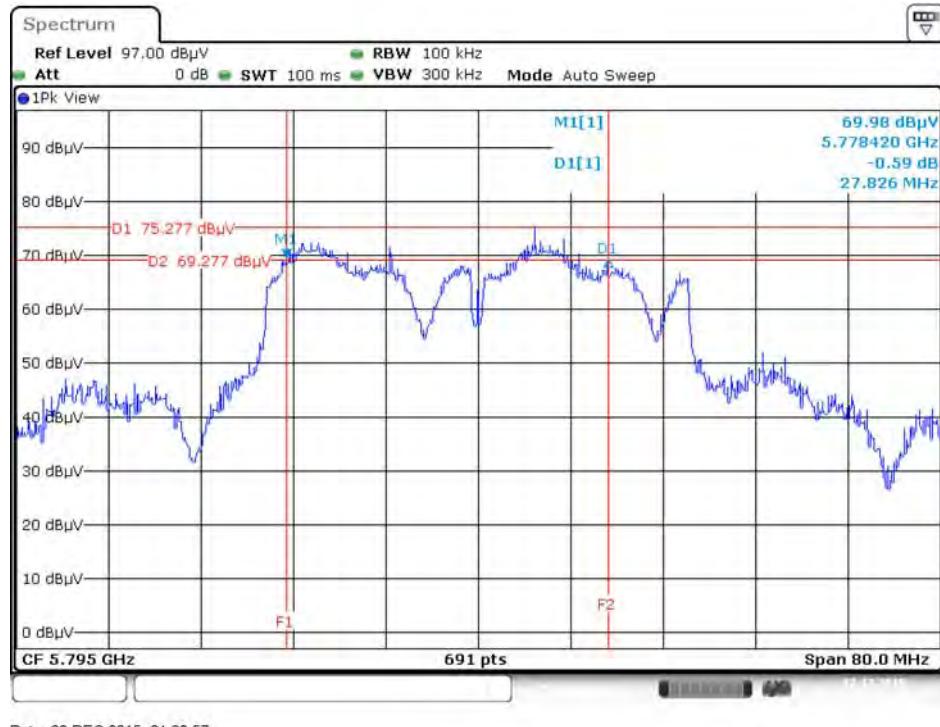
6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



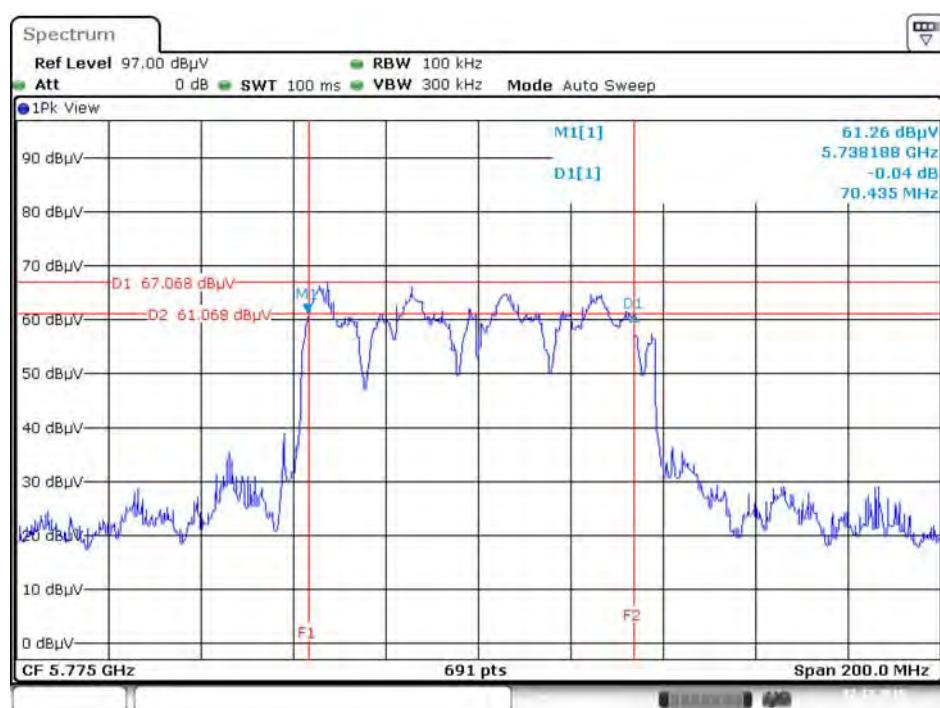
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



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

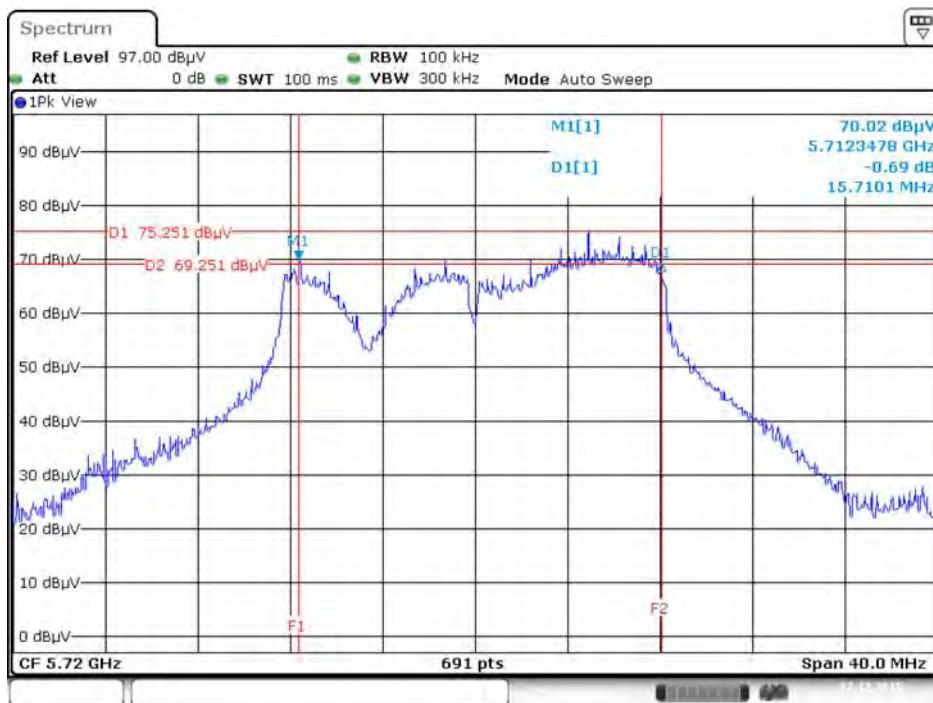


6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz

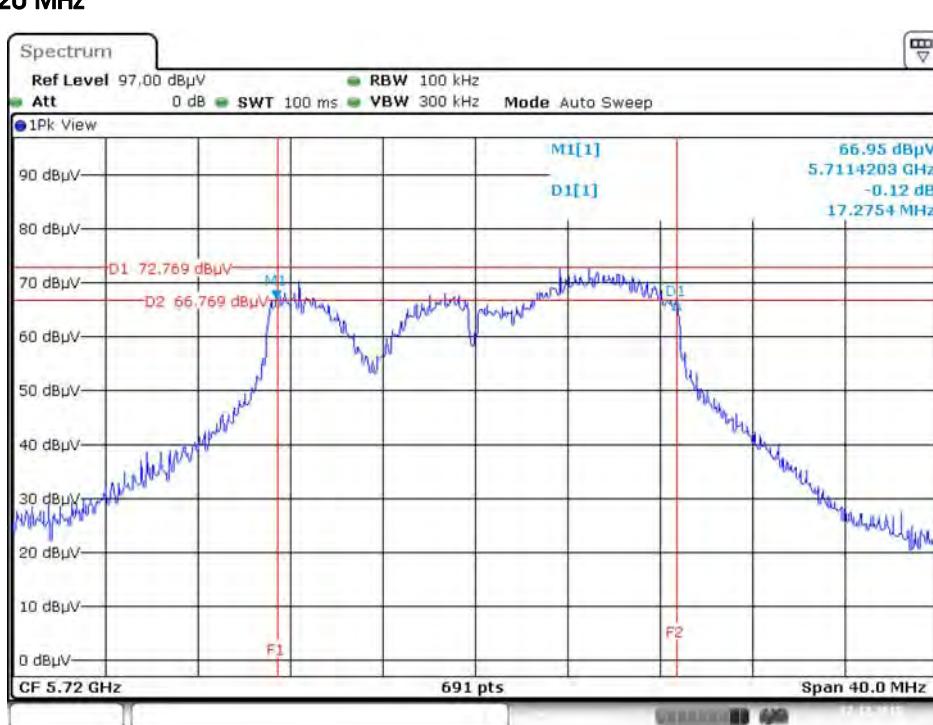


Straddle Channel

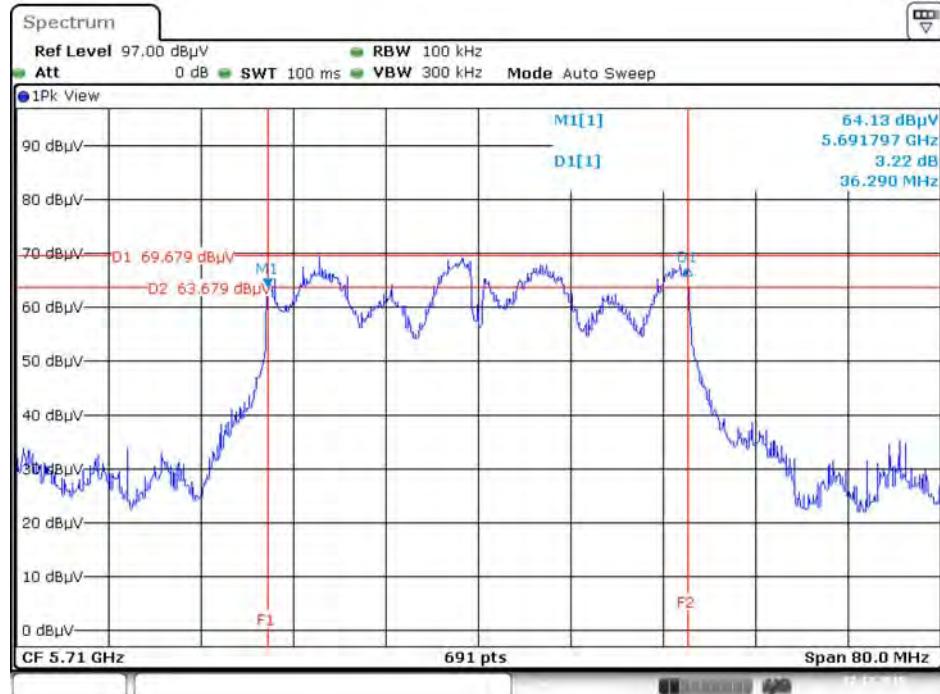
6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz

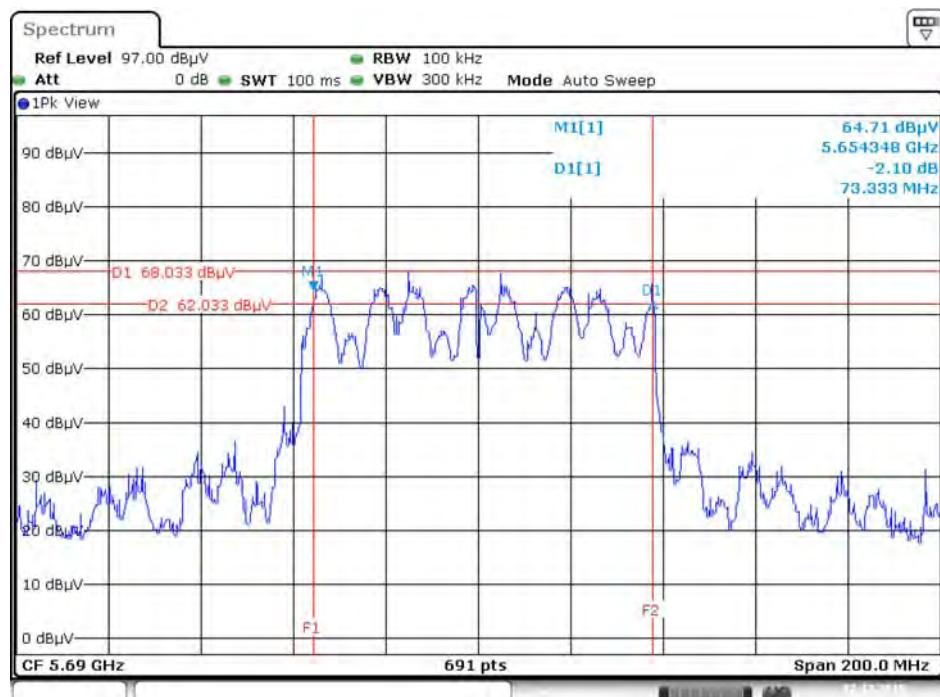


6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5710 MHz



Date: 22.DEC.2015 21:25:52

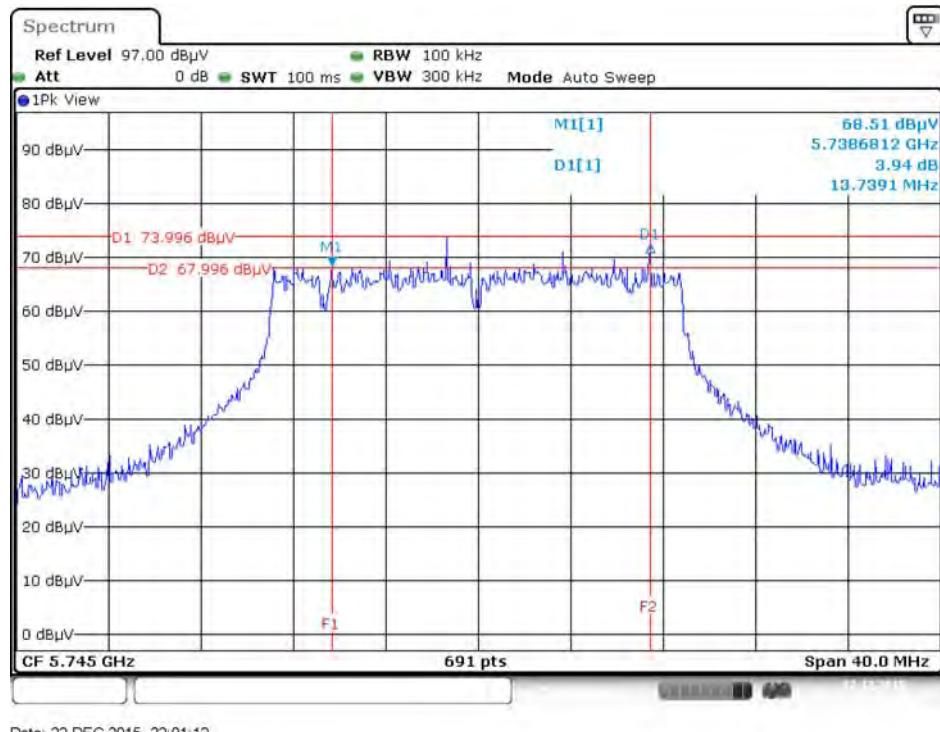
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 + Chain 4 / 5690 MHz



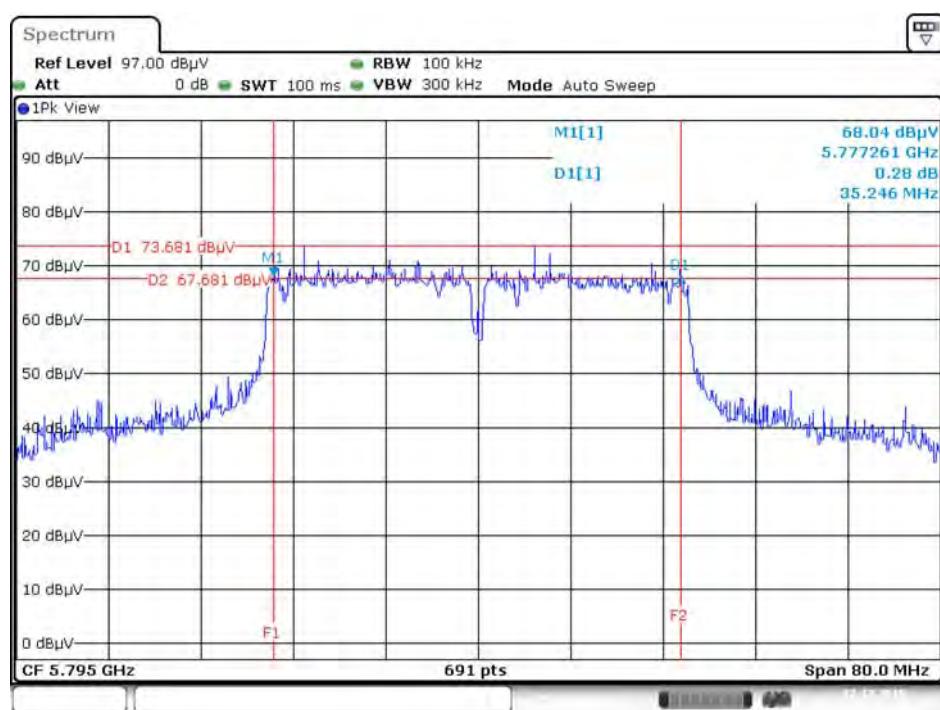
Date: 22.DEC.2015 21:26:52

For beamforming function:

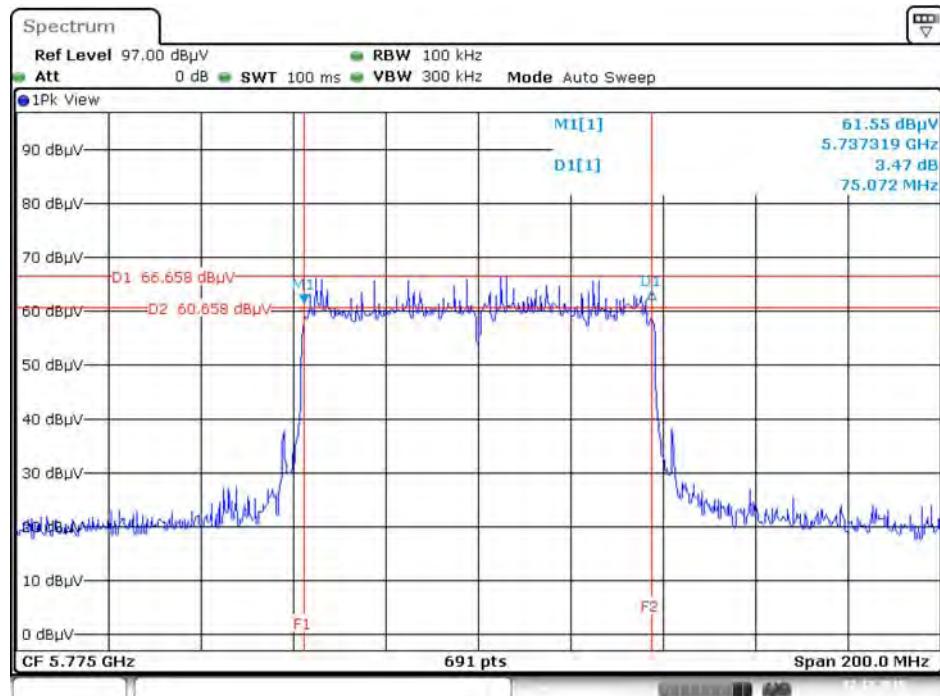
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



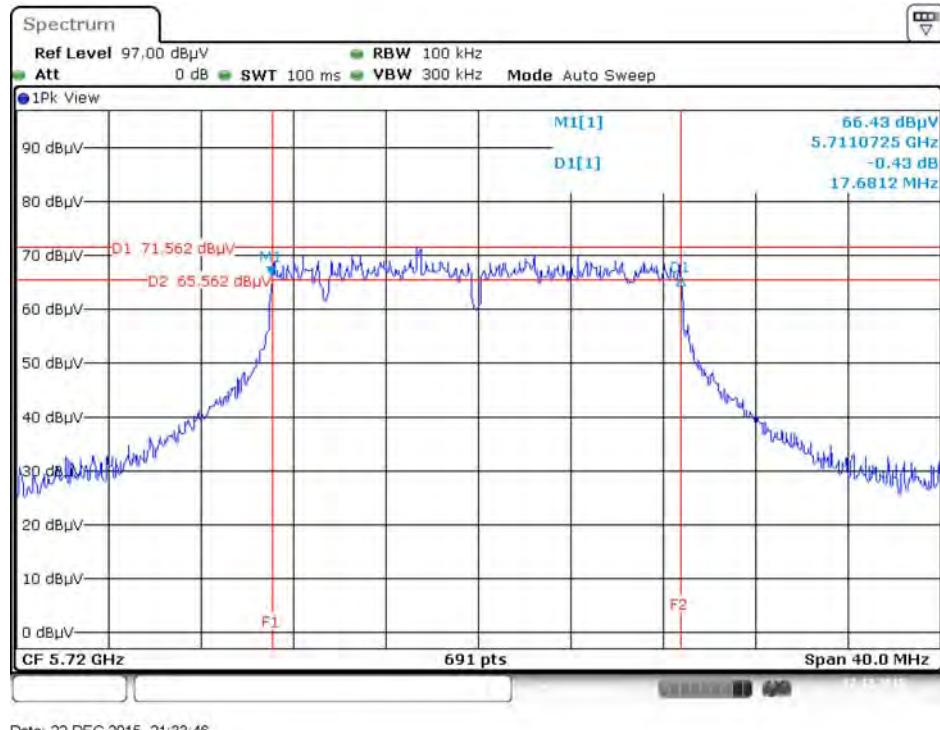
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



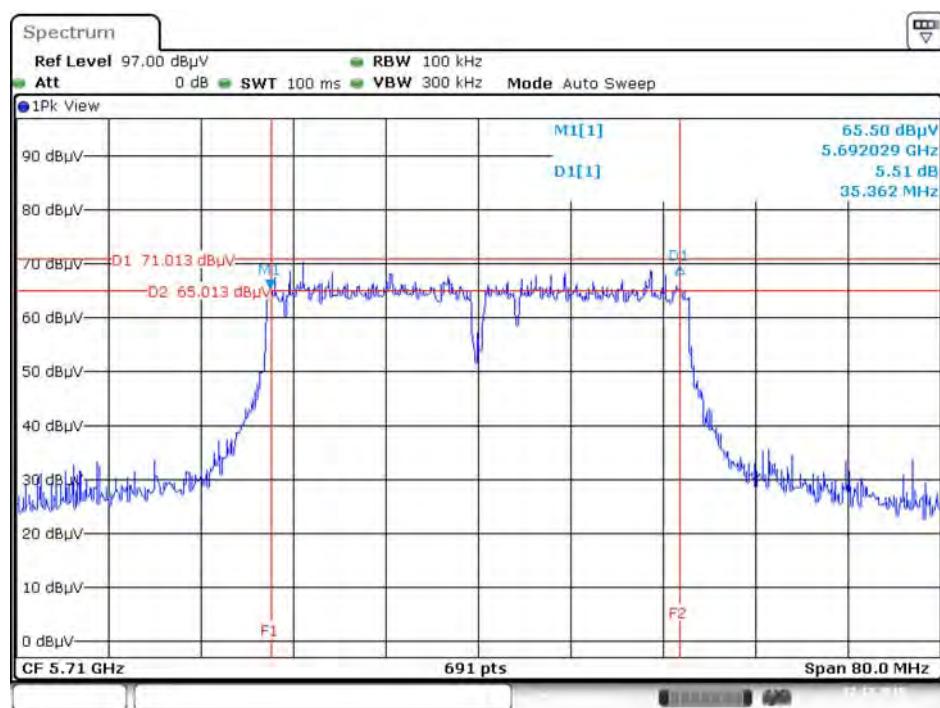
Date: 22.DEC.2015 22:05:03

Straddle Channel

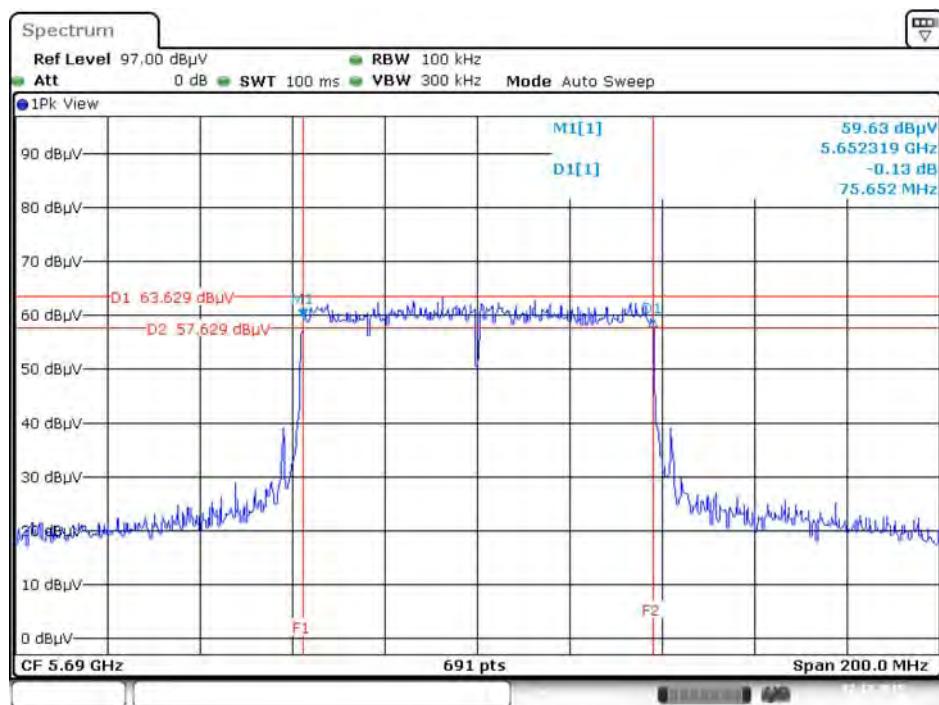
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5710 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 3 + Chain 4 / 5690 MHz



Date: 22.DEC.2015 21:40:06

4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

Frequency Band		Limit
<input checked="" type="checkbox"/> 5.15~5.25 GHz		
Operating Mode		
<input type="checkbox"/>	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).
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Mobile and portable 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.

<input checked="" type="checkbox"/>	5.25-5.35 GHz	The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm $10 \log B$, where B is the 26 dB emission bandwidth in megahertz. 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.
<input checked="" type="checkbox"/>	5.470-5.725 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.
<input checked="" type="checkbox"/>	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 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

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

4.4.3. Test Procedures

For straddle channel:

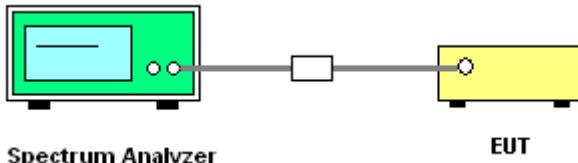
1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with FCC Public Notice DA 02-2138, August 30, 2002

For other channel:

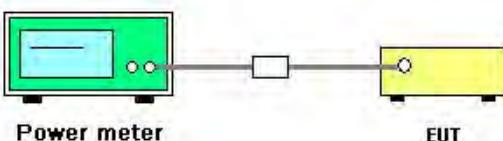
1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power 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

For straddle channel:



For other channel:



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	21°C	Humidity	46%
Test Engineer	Lucas Huang	Test Function	Non-beamforming function
Test Date	Dec. 21, 2015		

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5180 MHz	20.64	19.93	20.47	18.98	26.07	30.00	Complies
	5200 MHz	20.47	19.74	20.45	19.66	26.12	30.00	Complies
	5240 MHz	20.27	19.98	20.35	19.91	26.15	30.00	Complies
	5260 MHz	16.24	15.93	15.95	16.18	22.10	23.98	Complies
	5300 MHz	16.36	15.77	16.05	16.07	22.09	23.98	Complies
	5320 MHz	16.43	15.72	16.52	15.75	22.14	23.98	Complies
	5500 MHz	16.33	16.34	16.32	16.12	22.30	23.98	Complies
	5580 MHz	15.75	16.23	15.93	15.96	21.99	23.98	Complies
	5700 MHz	15.99	16.36	16.65	16.01	22.28	23.98	Complies
	5745 MHz	19.85	20.15	20.30	19.58	26.00	30.00	Complies
	5785 MHz	19.84	19.93	20.11	19.24	25.81	30.00	Complies
	5825 MHz	19.67	19.62	19.85	19.12	25.59	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	20.22	19.38	19.95	19.56	25.81	30.00	Complies
	5200 MHz	20.53	19.88	20.47	20.25	26.31	30.00	Complies
	5240 MHz	20.34	19.85	20.22	20.17	26.17	30.00	Complies
	5260 MHz	16.26	15.80	16.05	15.91	22.03	23.98	Complies
	5300 MHz	16.23	15.85	16.27	15.76	22.05	23.98	Complies
	5320 MHz	16.44	16.04	16.45	15.99	22.26	23.98	Complies
	5500 MHz	16.16	16.72	16.38	16.05	22.36	23.98	Complies
	5580 MHz	16.03	16.35	16.05	15.83	22.09	23.98	Complies
	5700 MHz	15.97	15.94	15.65	15.97	21.91	23.98	Complies
	5745 MHz	18.27	18.45	18.81	18.33	24.49	30.00	Complies
	5785 MHz	19.84	19.78	20.34	19.48	25.89	30.00	Complies
	5825 MHz	19.88	19.51	20.21	19.27	25.75	30.00	Complies

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT40	5190 MHz	17.23	16.41	17.11	16.76	22.91	30.00	Complies
	5230 MHz	20.89	20.23	20.76	20.41	26.60	30.00	Complies
	5270 MHz	18.12	17.63	17.78	17.84	23.87	23.98	Complies
	5310 MHz	17.66	17.10	17.55	17.06	23.37	23.98	Complies
	5510 MHz	17.14	17.94	17.67	17.10	23.50	23.98	Complies
	5550 MHz	17.79	17.87	17.78	17.61	23.78	23.98	Complies
	5670 MHz	18.02	18.34	17.86	17.51	23.96	23.98	Complies
	5755 MHz	17.42	17.52	17.85	17.36	23.56	30.00	Complies
	5795 MHz	20.23	20.14	20.56	20.16	26.30	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	15.47	14.88	15.55	15.23	21.31	30.00	Complies
	5290 MHz	16.65	15.65	16.55	16.18	22.30	23.98	Complies
	5530 MHz	16.31	16.39	16.27	15.94	22.25	23.98	Complies
	5610 MHz	17.67	17.91	17.73	17.54	23.74	23.98	Complies
	5775 MHz	16.31	16.49	16.78	16.06	22.44	30.00	Complies

Straddle Channel

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5720 MHz (UNII 2C)	15.77	15.56	16.03	15.54	21.75	22.81	Complies
	5720 MHz (UNII 3)	9.96	9.79	11.01	9.51	16.13	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5720 MHz (UNII 2C)	15.14	15.21	15.70	15.30	21.36	22.96	Complies
	5720 MHz (UNII 3)	9.88	10.00	11.11	9.65	16.22	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5710 MHz (UNII 2C)	17.81	17.82	17.94	17.39	23.77	23.98	Complies
	5710 MHz (UNII 3)	7.52	7.77	7.18	7.04	13.41	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5690 MHz (UNII 2C)	17.77	17.92	17.72	17.40	23.73	23.98	Complies
	5690 MHz (UNII 3)	3.93	4.27	5.53	3.43	10.38	30.00	Complies

Note: The power limit=23.98dBm or $11+10\log(B)$.

1. 802.11a 5720 MHz (UNII 2C) power limit= $11+10*\log(15.17)=22.81$ dBm < 23.98 dBm, so limit=22.81 dBm.
2. 802.11ac MCS0/Nss1 VHT20 5720 MHz (UNII 2C) power limit= $11+10*\log(15.70)=22.96$ dBm < 23.98 dBm, so limit=22.96 dBm.

Temperature	21°C		Humidity		46%	
Test Engineer	Lucas Huang		Test Function		Beamforming function	
Test Date	Dec. 21, 2015 / Dec. 22, 2015					

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss2 VHT20	5180 MHz	19.41	18.61	19.12	18.84	25.03	30.00	Complies
	5200 MHz	20.53	19.88	20.47	20.25	26.31	30.00	Complies
	5240 MHz	20.34	19.85	20.22	20.17	26.17	30.00	Complies
	5260 MHz	17.78	17.32	17.52	17.46	23.54	23.98	Complies
	5300 MHz	18.07	17.21	17.81	17.65	23.72	23.98	Complies
	5320 MHz	17.81	17.43	17.43	17.43	23.55	23.98	Complies
	5500 MHz	17.33	17.88	17.83	17.42	23.64	23.98	Complies
	5580 MHz	17.34	17.92	17.62	17.46	23.61	23.98	Complies
	5700 MHz	17.25	18.02	18.32	17.35	23.78	23.98	Complies
	5745 MHz	17.46	17.92	17.96	17.28	23.69	30.00	Complies
	5785 MHz	19.84	19.78	20.34	19.48	25.89	30.00	Complies
802.11ac MCS0/Nss2 VHT40	5825 MHz	19.88	19.51	20.21	19.27	25.75	30.00	Complies
	5190 MHz	17.23	16.41	17.11	16.76	22.91	30.00	Complies
	5230 MHz	20.89	20.23	20.76	20.41	26.60	30.00	Complies
	5270 MHz	18.03	17.81	17.91	18.05	23.97	23.98	Complies
	5310 MHz	17.16	16.81	16.92	16.77	22.94	23.98	Complies
	5510 MHz	16.15	16.46	16.43	15.89	22.26	23.98	Complies
	5550 MHz	17.58	18.21	18.01	17.94	23.96	23.98	Complies
	5670 MHz	17.58	17.95	18.23	17.72	23.90	23.98	Complies
	5755 MHz	16.78	17.78	17.02	16.63	23.10	30.00	Complies
802.11ac MCS0/Nss2 VHT80	5795 MHz	20.23	20.14	20.56	20.16	26.30	30.00	Complies
	5210 MHz	16.26	15.81	16.28	16.02	22.12	30.00	Complies
	5290 MHz	16.65	15.65	16.55	16.18	22.30	23.98	Complies
	5530 MHz	16.31	16.39	16.27	15.94	22.25	23.98	Complies
	5610 MHz	17.43	18.10	17.85	17.39	23.72	23.98	Complies
	5775 MHz	16.55	15.83	15.98	16.24	22.18	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For band 1 directional gain=4.71dB_i<6dB_i, so the limit doesn't reduce.
2. For band 2 directional gain=4.69dB_i<6dB_i, so the limit doesn't reduce.
3. For band 3 directional gain=4.60dB_i<6dB_i, so the limit doesn't reduce.
4. For band 4 directional gain=4.43dB_i<6dB_i, so the limit doesn't reduce.

Straddle Channel

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss2 VHT20	5720 MHz (UNII 2C)	16.60	16.92	17.22	15.97	22.72	23.21	Complies
	5720 MHz (UNII 3)	11.11	11.61	11.80	10.41	17.29	30.00	Complies
802.11ac MCS0/Nss2 VHT40	5710 MHz (UNII 2C)	17.61	18.21	18.40	17.09	23.88	23.98	Complies
	5710 MHz (UNII 3)	7.40	8.25	8.34	6.96	13.80	30.00	Complies
802.11ac MCS0/Nss2 VHT80	5690 MHz (UNII 2C)	17.22	17.99	17.66	16.68	23.44	23.98	Complies
	5690 MHz (UNII 3)	3.29	4.31	3.87	2.70	9.61	30.00	Complies

Note: 1. The power limit=23.98dBm or $11+10\log(B)$.

802.11ac MCS0/Nss2 VHT20 5720 MHz (UNII 2C) power limit= $11+10*\log(16.65)=23.21$ dBm < 23.98 dBm, so

limit=23.21 dBm

$$2. \text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}} \left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$$

- (1) 802.11ac MCS0/Nss2 VHT40 5710 MHz (UNII 2C) directional gain=4.60dBi<6dBi, so the limit doesn't reduce.
- (2) 802.11ac MCS0/Nss2 VHT80 5690 MHz (UNII 2C) directional gain=4.60dBi<6dBi, so the limit doesn't reduce.
- (3) 802.11ac MCS0/Nss2 VHT20 5720 MHz (UNII 3) directional gain=4.43dBi<6dBi, so the limit doesn't reduce.
- (4) 802.11ac MCS0/Nss2 VHT40 5710 MHz (UNII 3) directional gain=4.43dBi<6dBi, so the limit doesn't reduce.
- (5) 802.11ac MCS0/Nss2 VHT80 5690 MHz (UNII 3) directional gain=4.43dBi<6dBi, so the limit doesn't reduce.

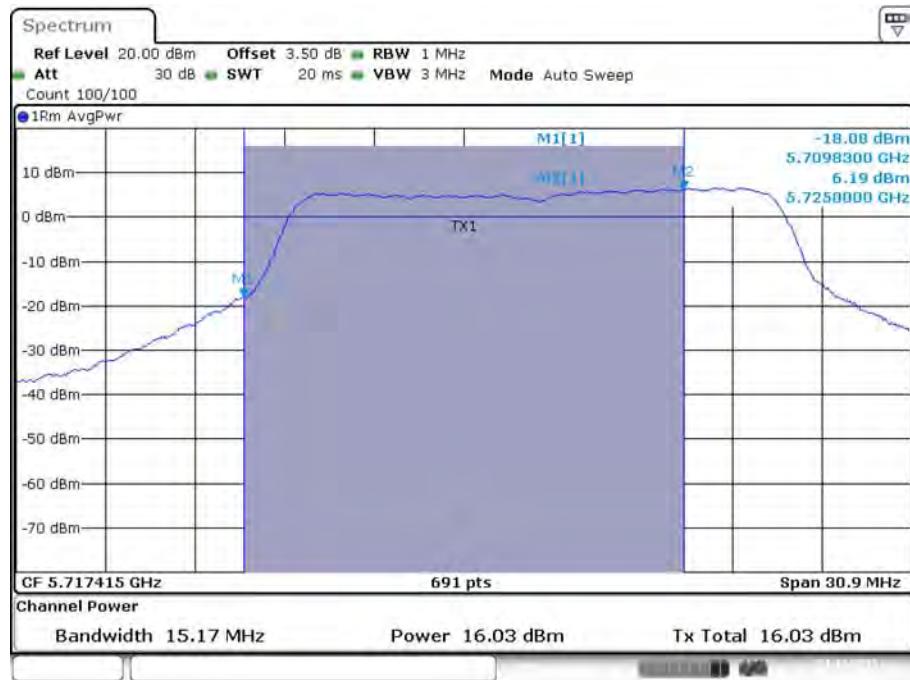
Note: All the test values were listed in the report.

For plots, only the straddle channel result was shown.

For non-beamforming function:
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 2C)

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz (UNII 2C)


Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 3 / 5720 MHz (UNII 2C)



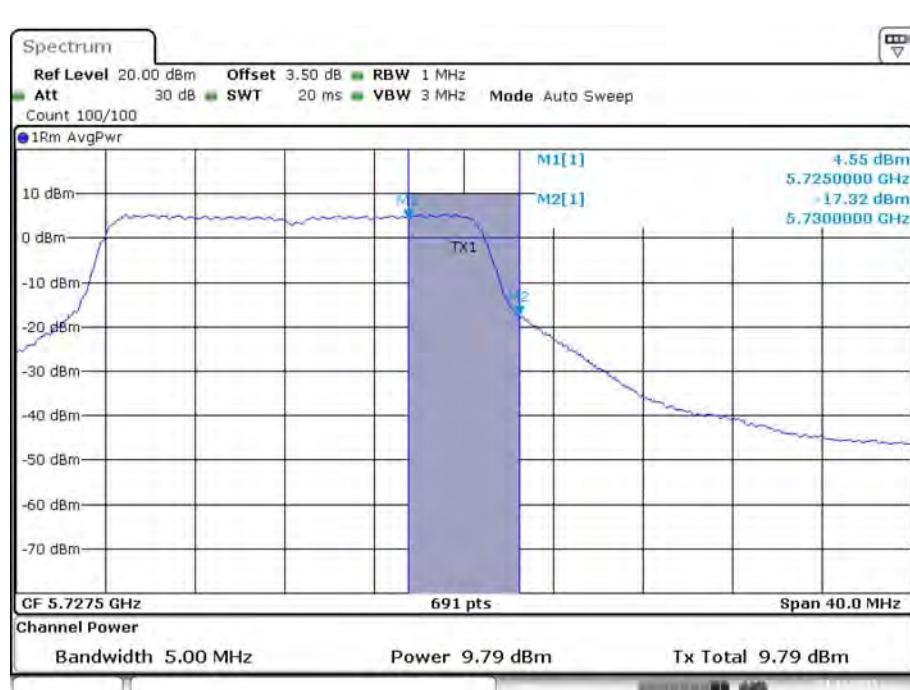
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 4 / 5720 MHz (UNII 2C)



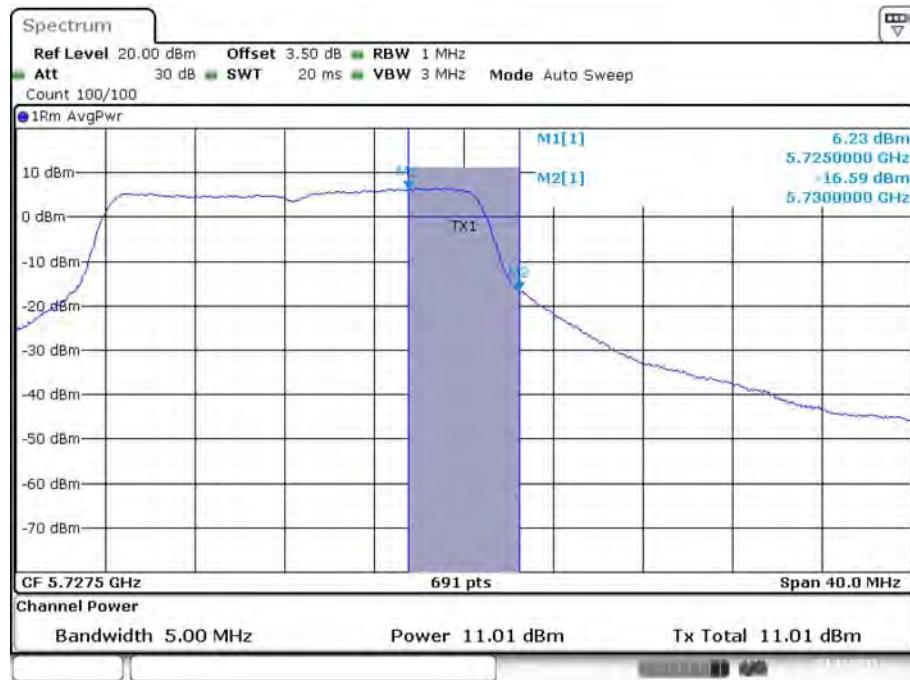
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 3)



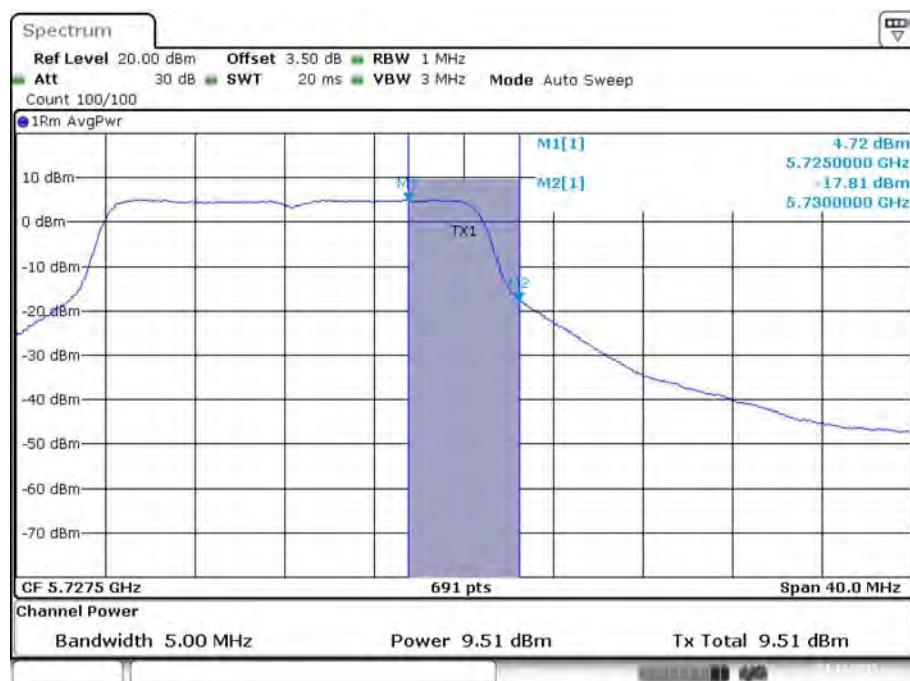
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz (UNII 3)



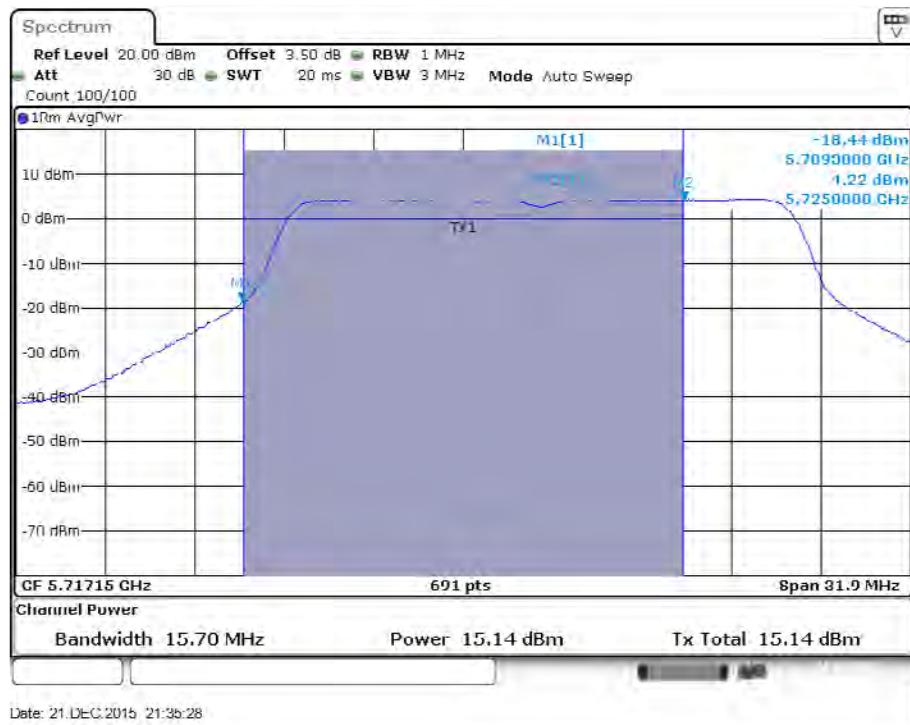
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 3 / 5720 MHz (UNII 3)



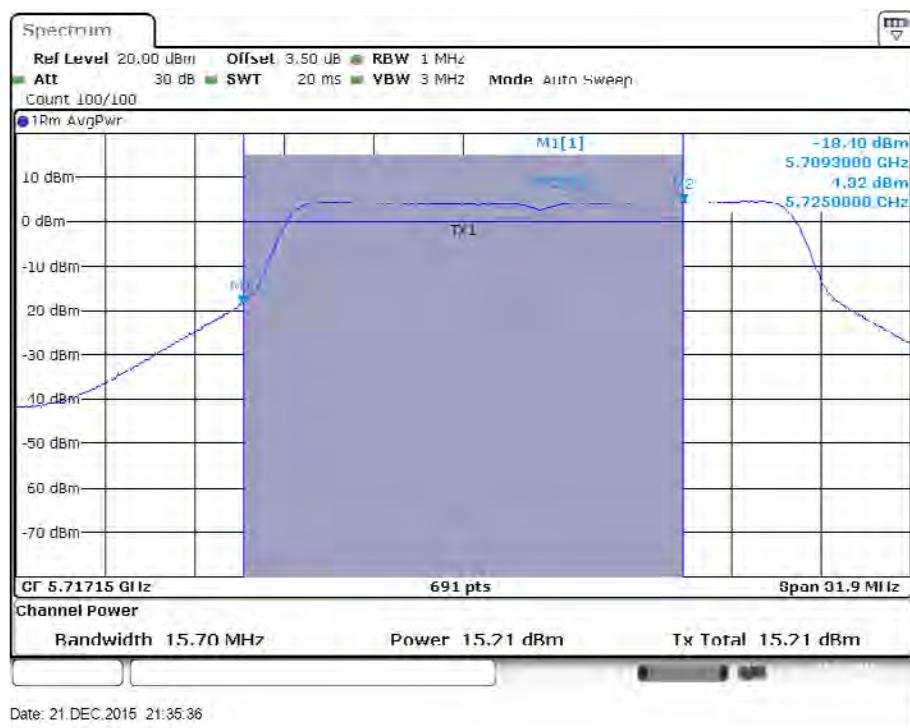
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 4 / 5720 MHz (UNII 3)



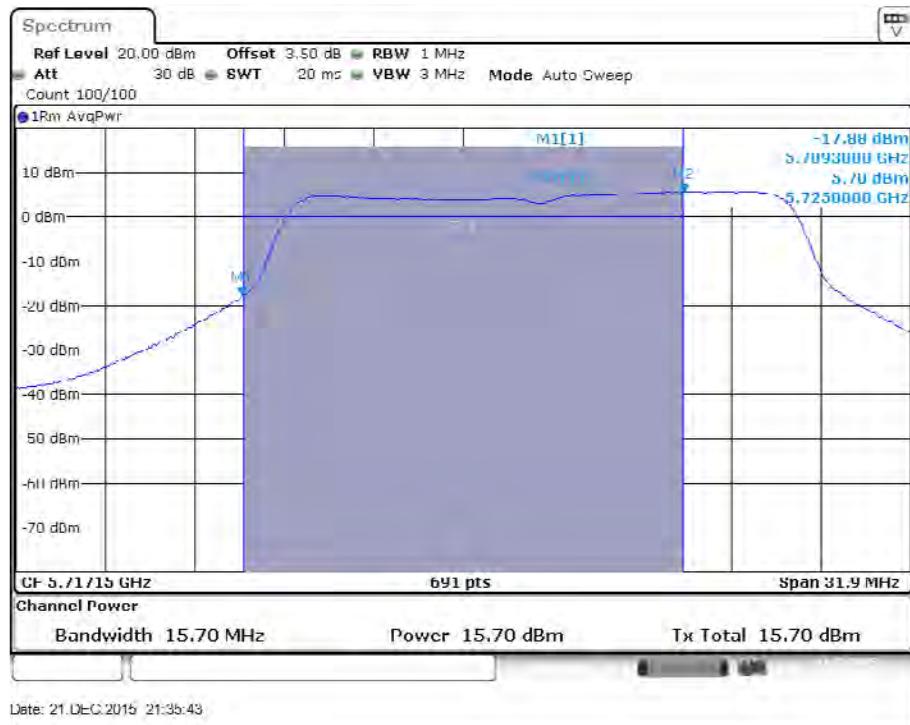
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 2C)



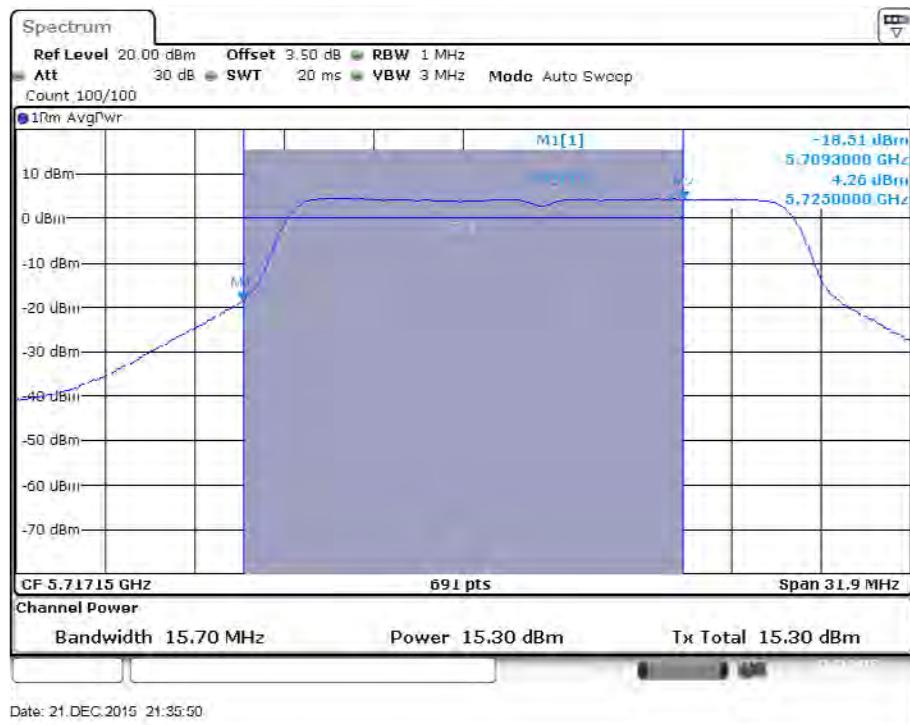
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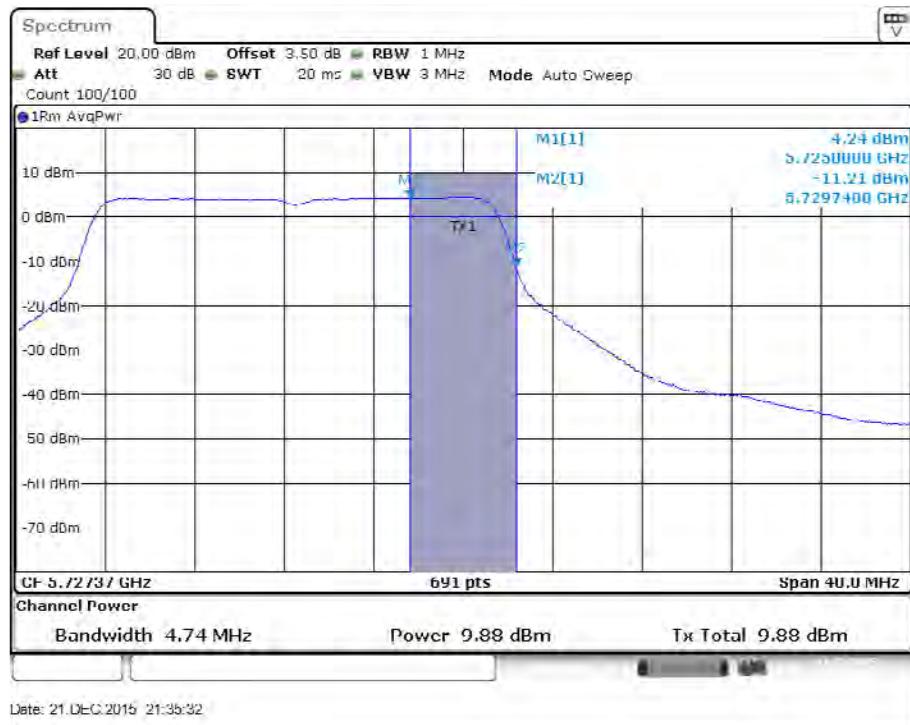
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 / 5720 MHz (UNII 2C)



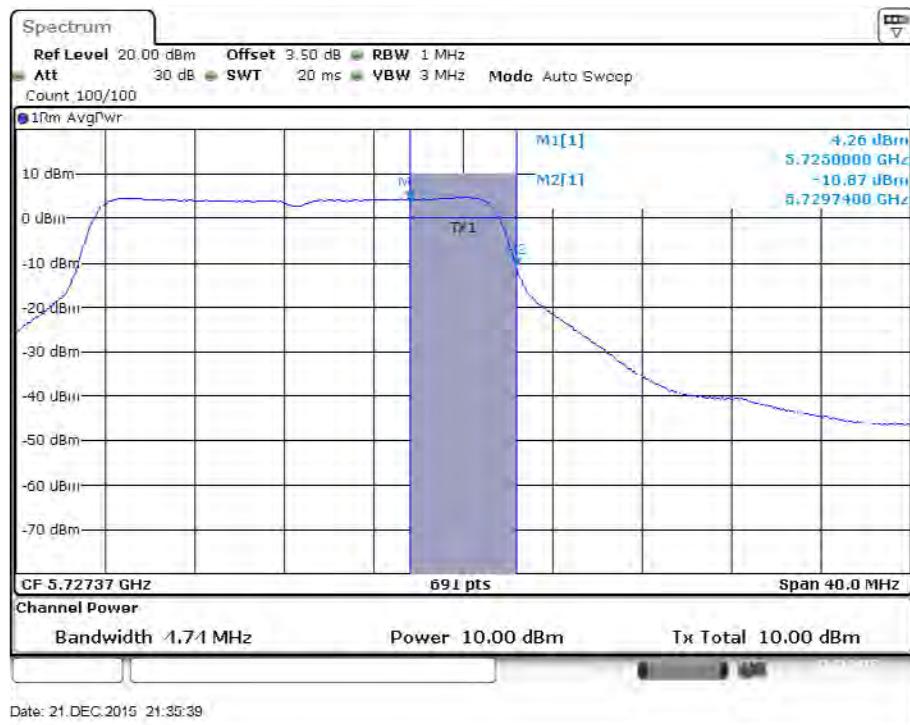
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 / 5720 MHz (UNII 2C)



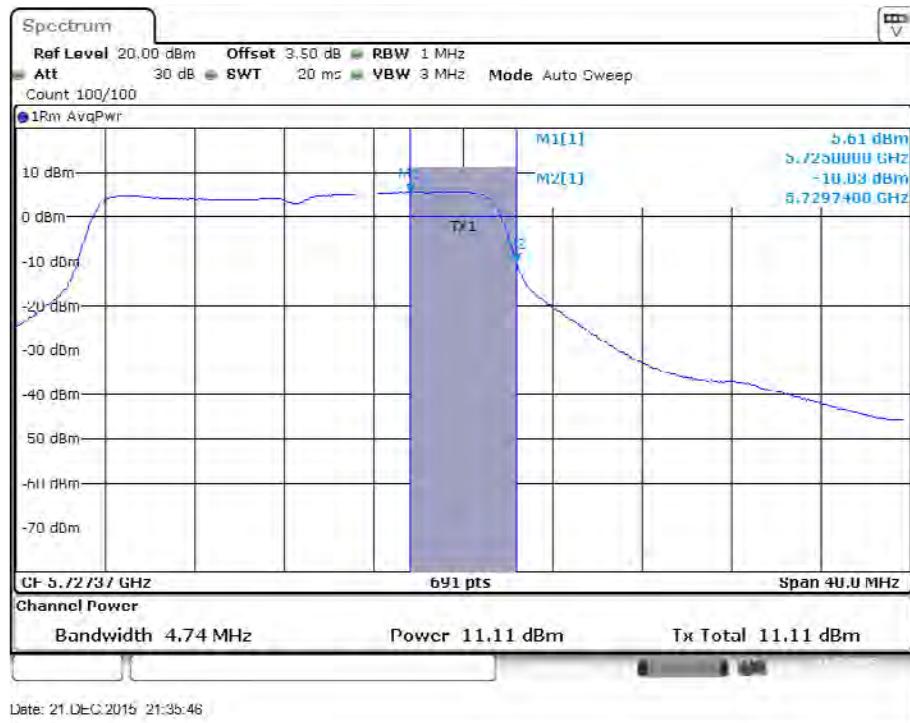
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 3)



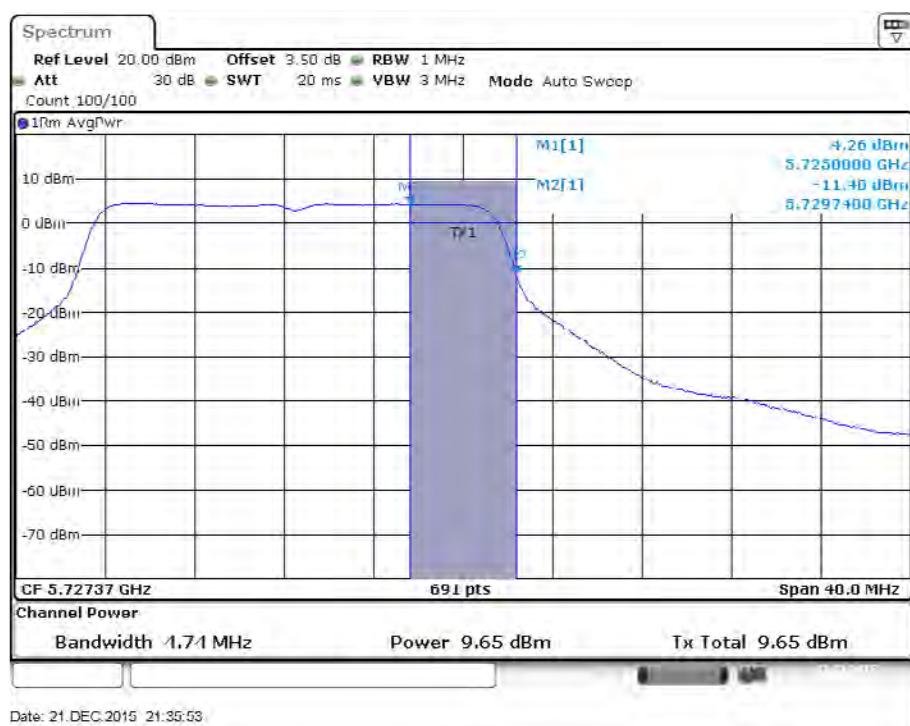
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz (UNII 3)



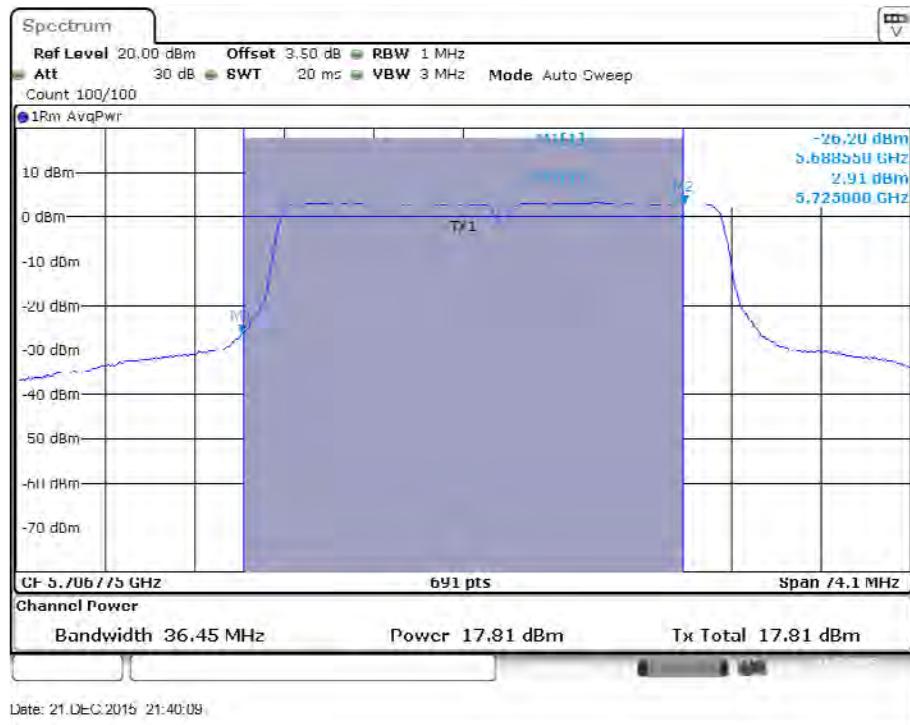
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 / 5720 MHz (UNII 3)



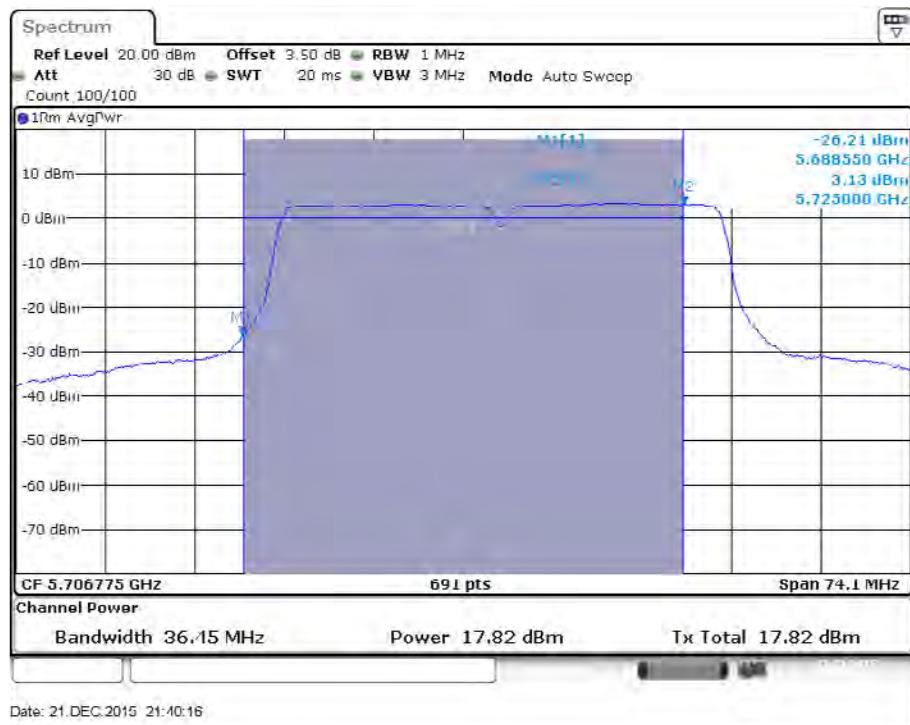
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 / 5720 MHz (UNII 3)



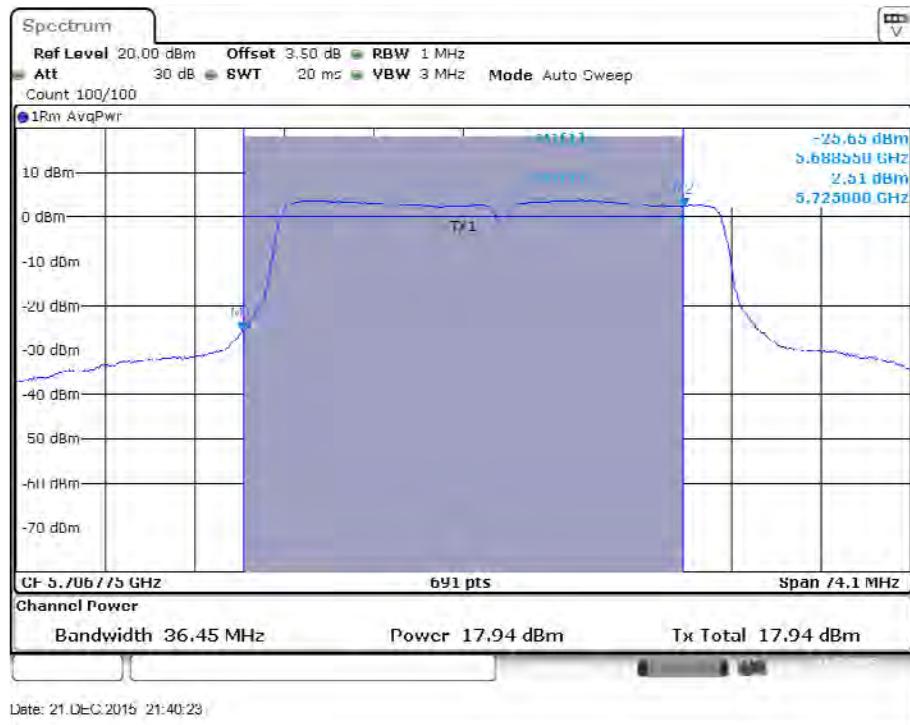
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 2C)



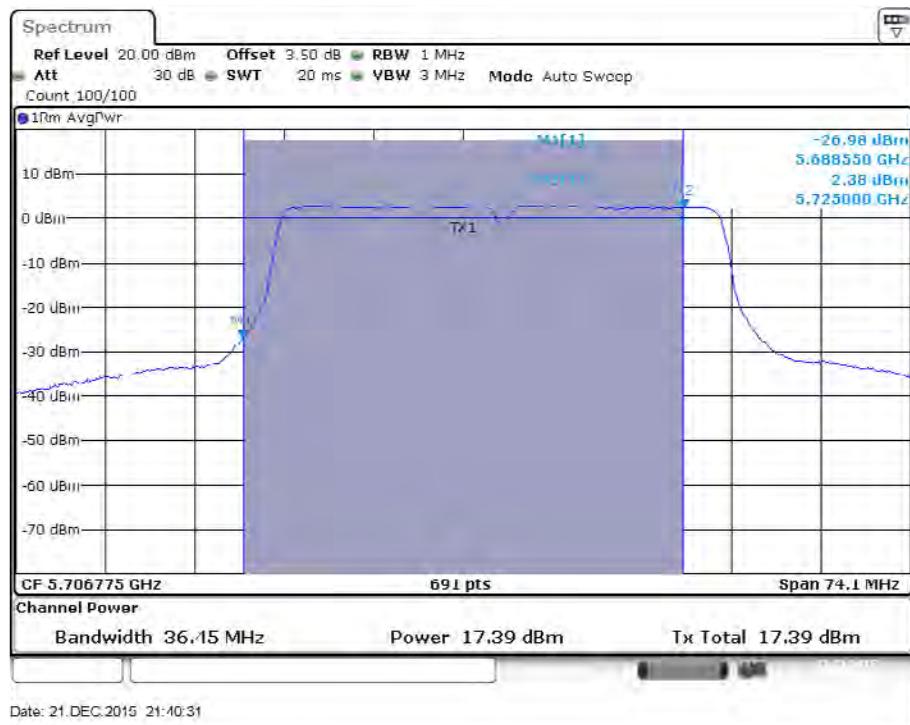
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 2C)



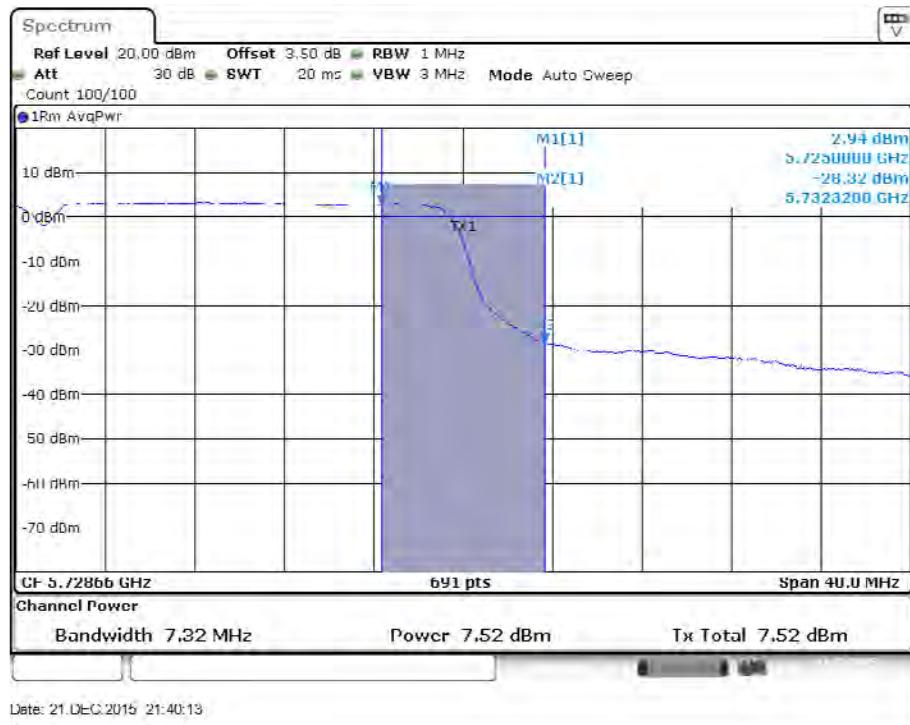
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 / 5710 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 / 5710 MHz (UNII 2C)



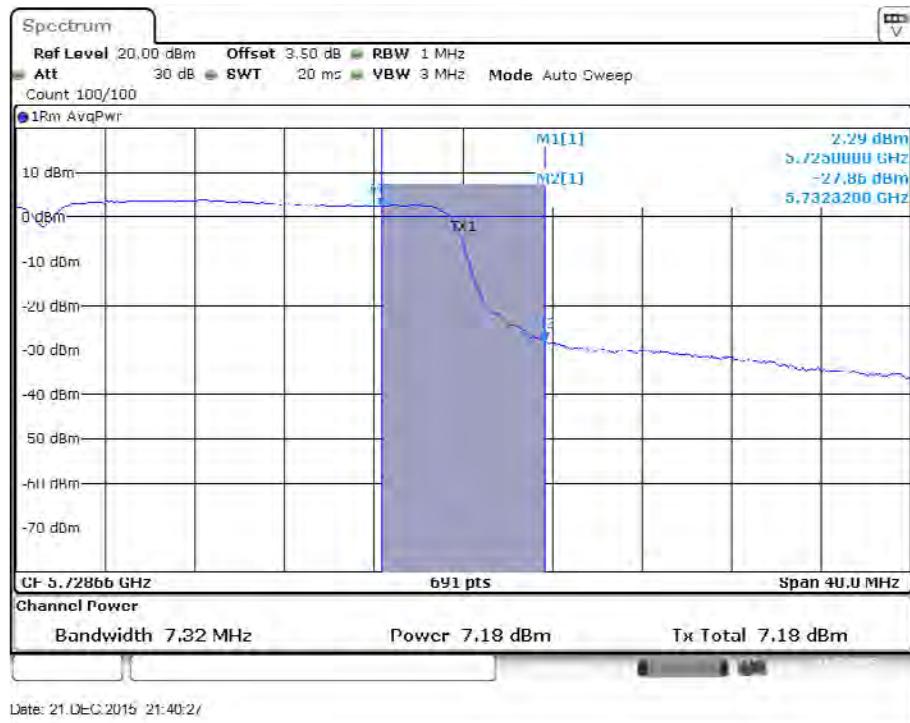
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 3)



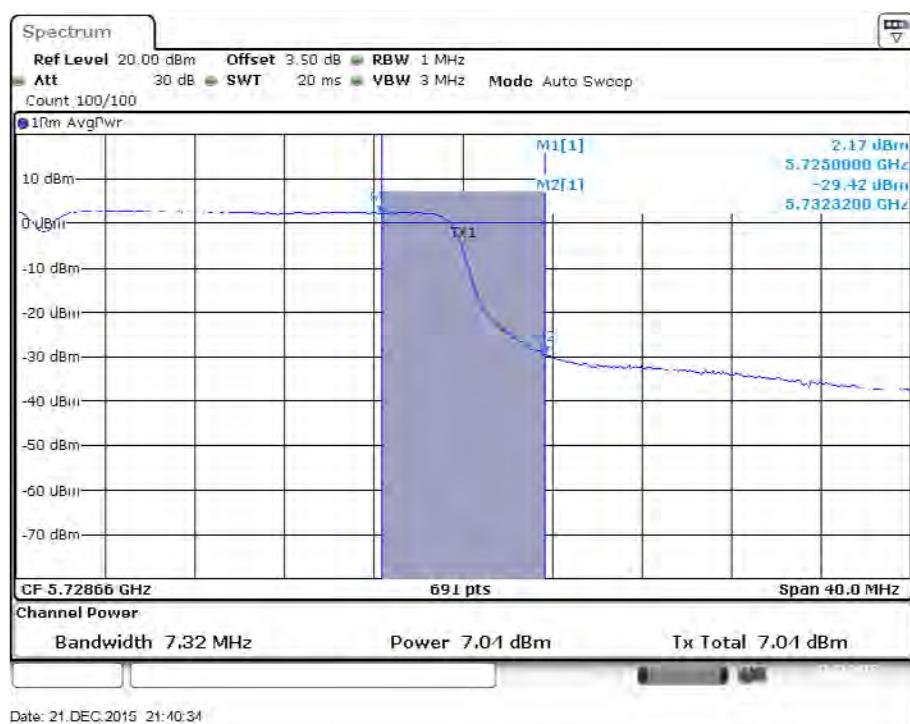
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 3)



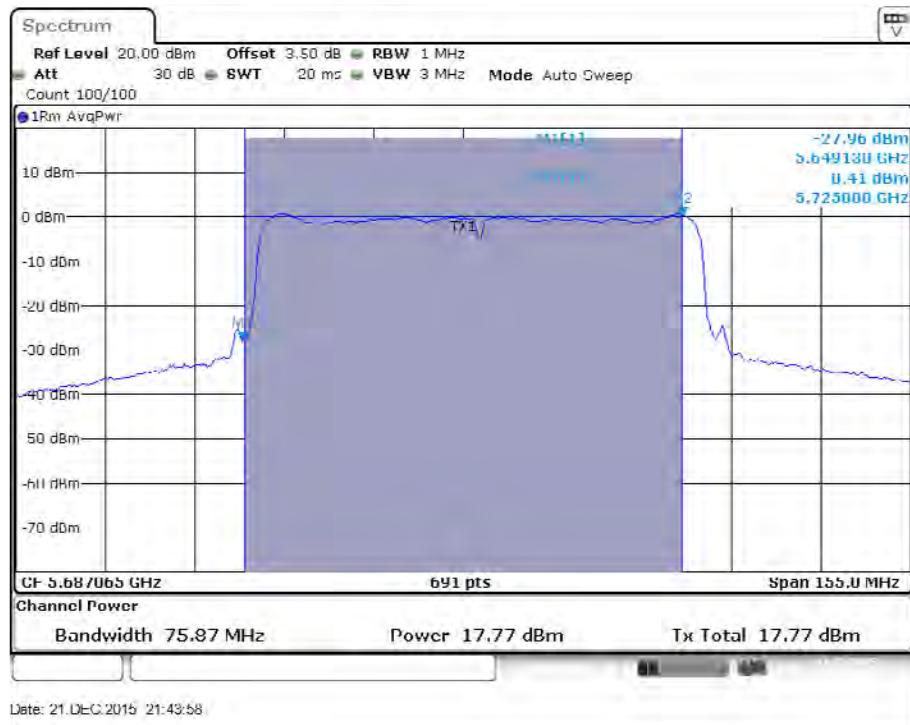
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 / 5710 MHz (UNII 3)



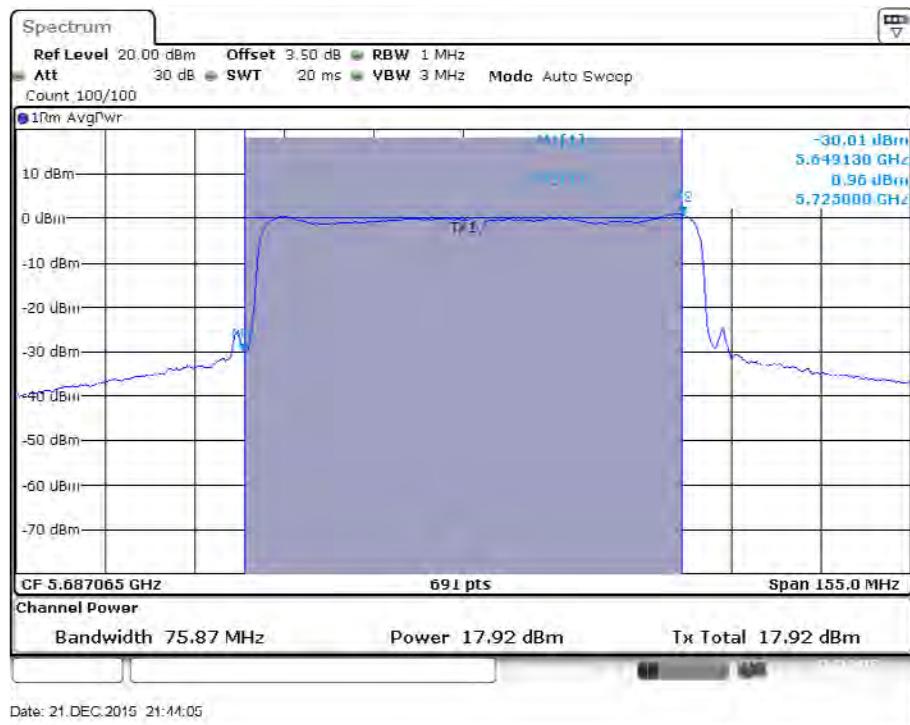
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 / 5710 MHz (UNII 3)



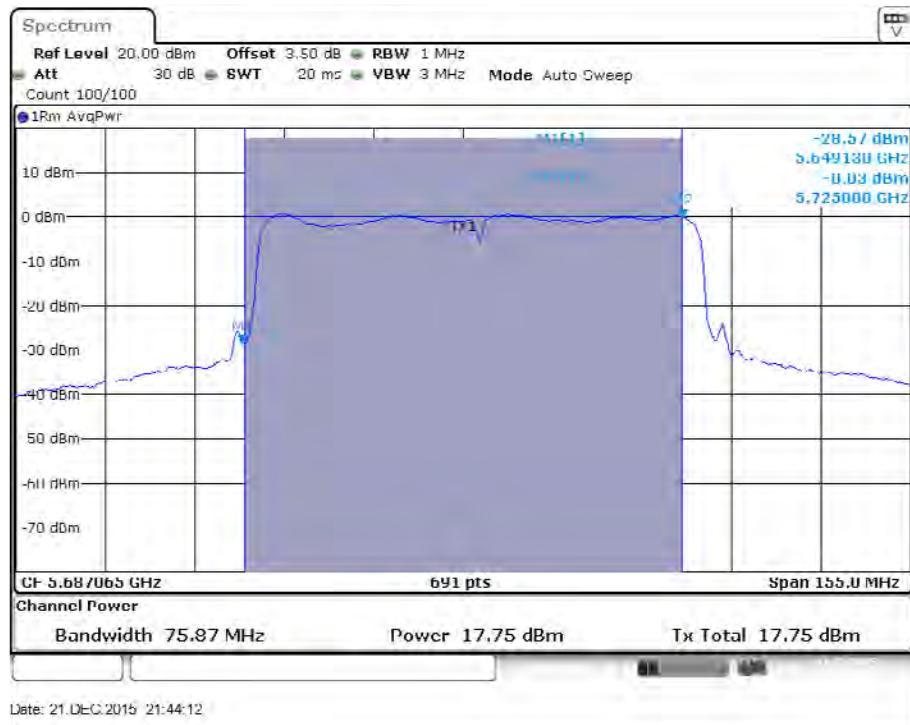
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 2C)



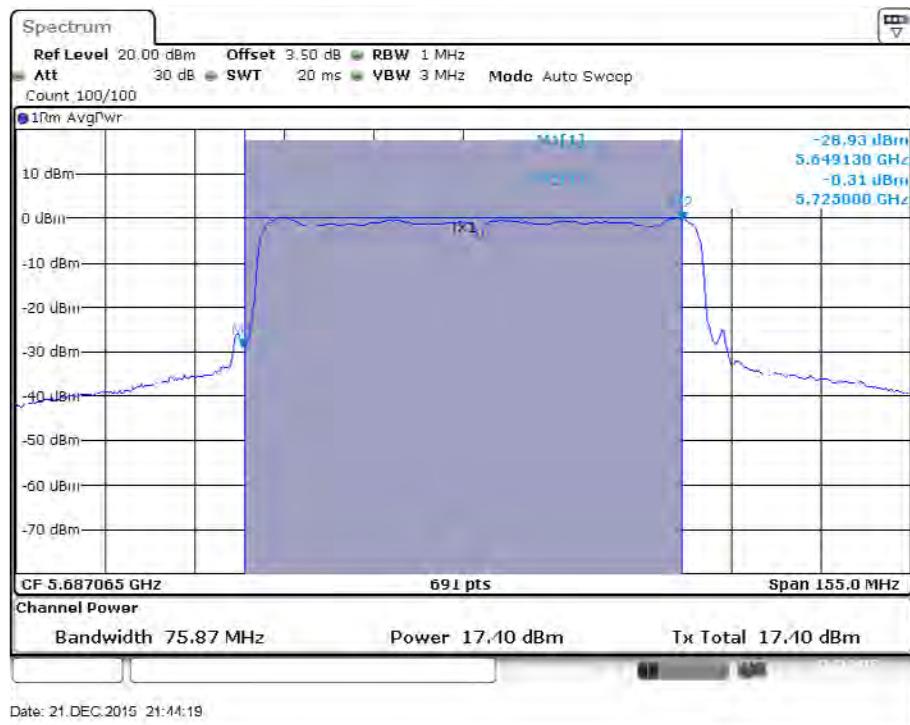
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 2C)



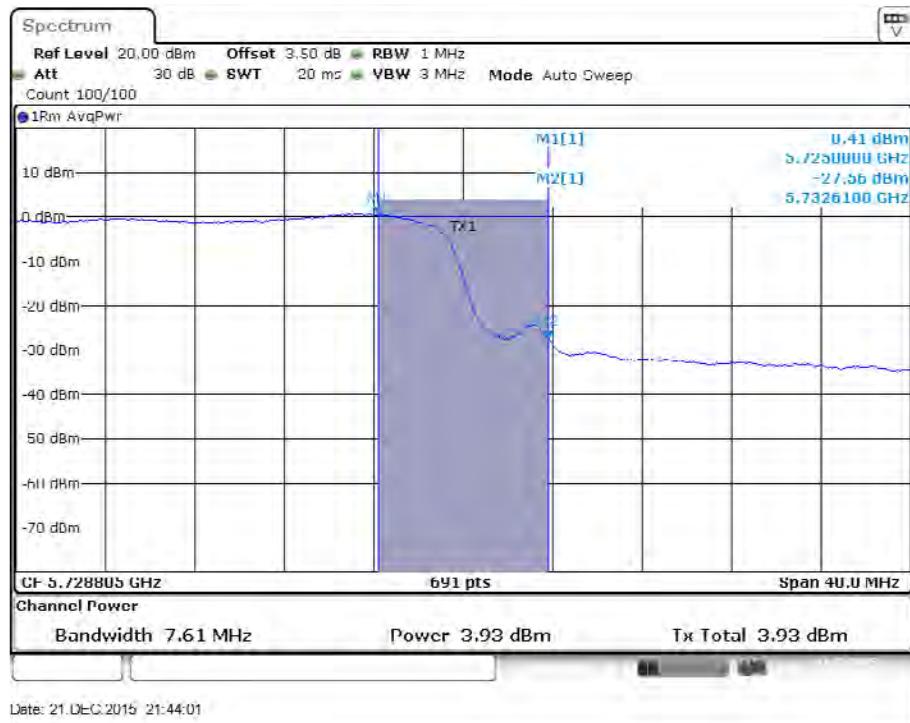
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 / 5690 MHz (UNII 2C)



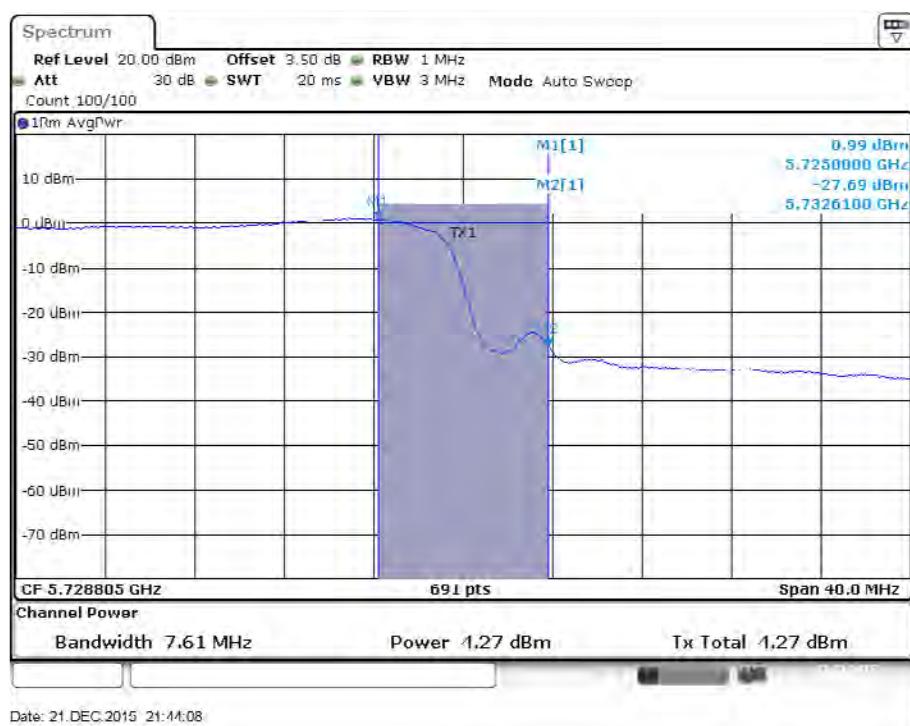
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 / 5690 MHz (UNII 2C)



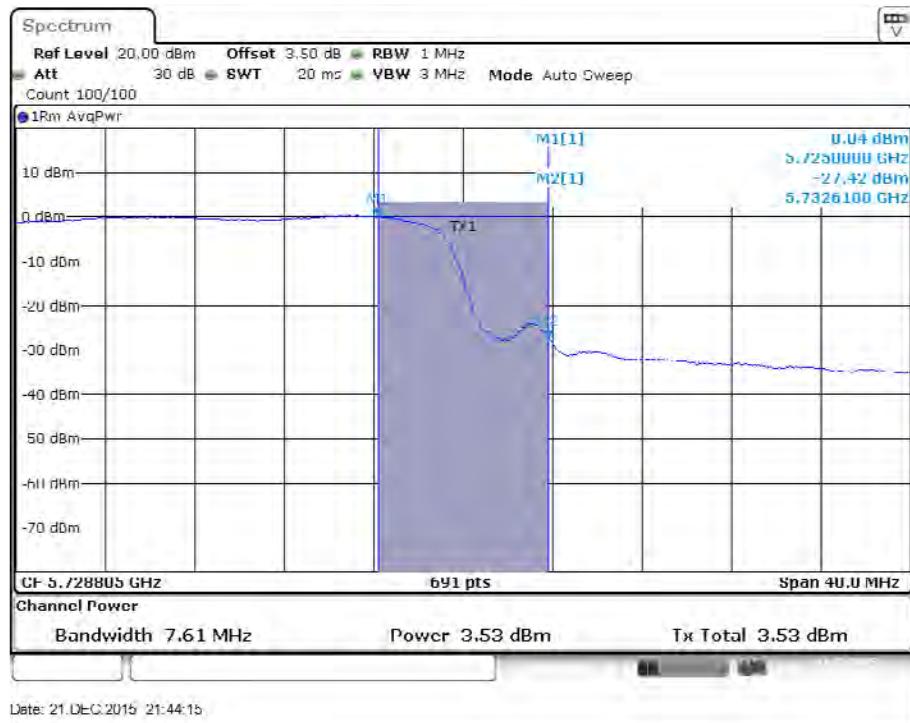
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 3)



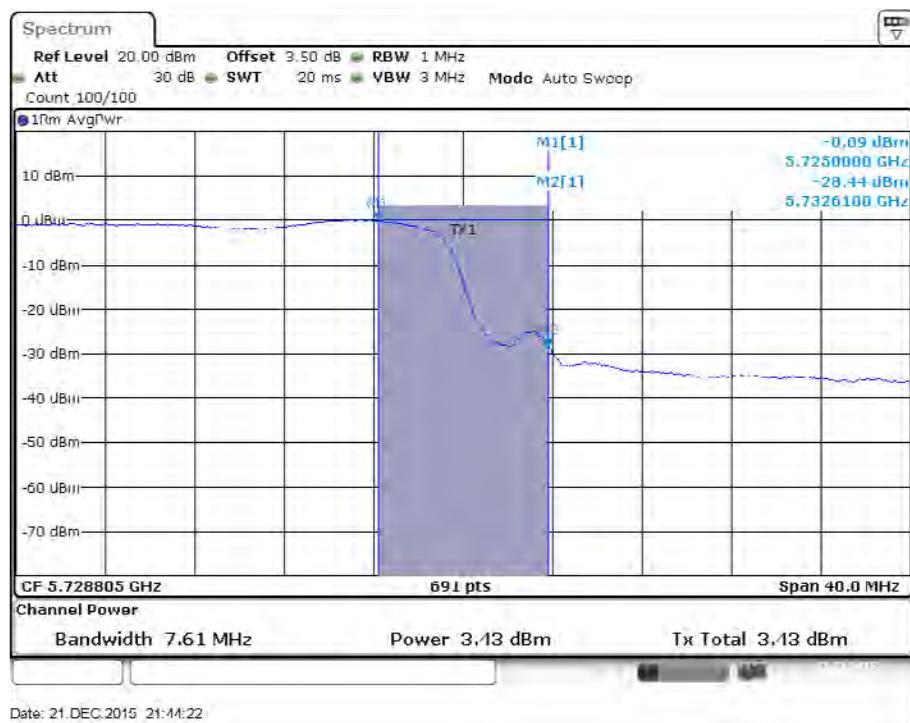
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 / 5690 MHz (UNII 3)

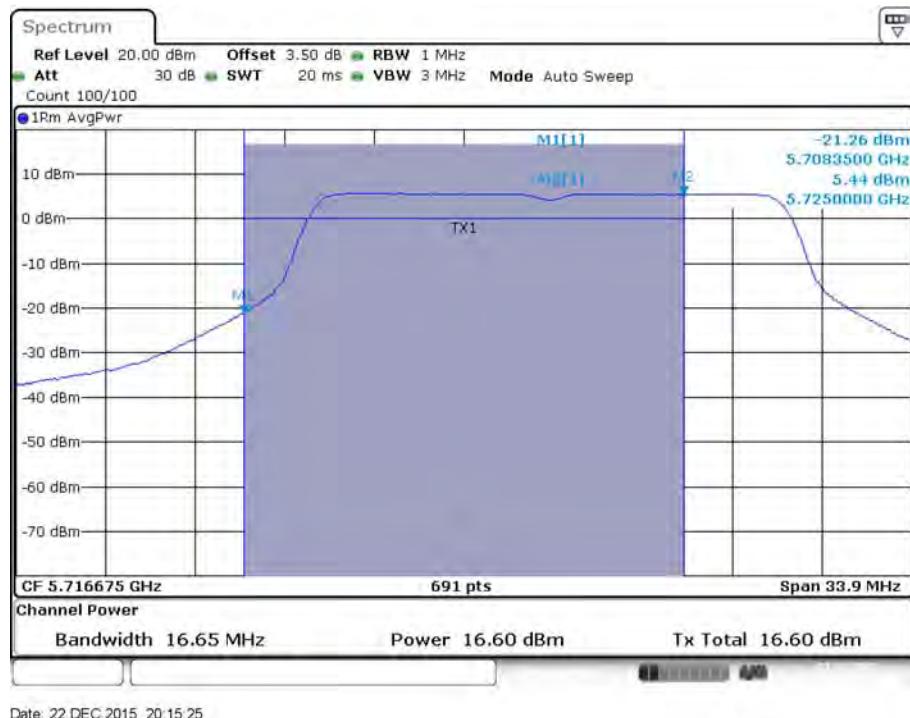


Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 / 5690 MHz (UNII 3)

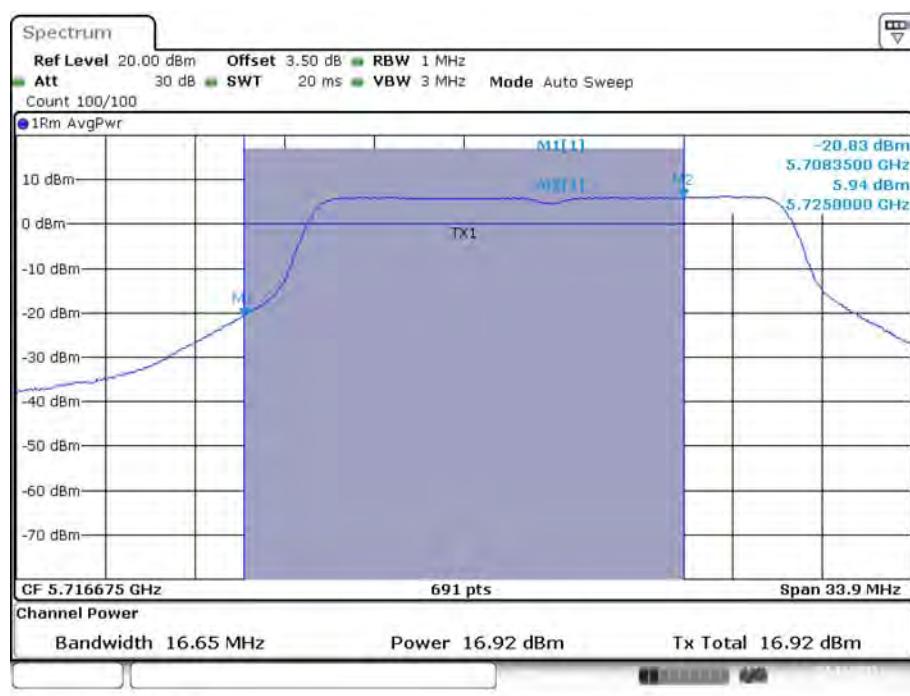


For beamforming function:

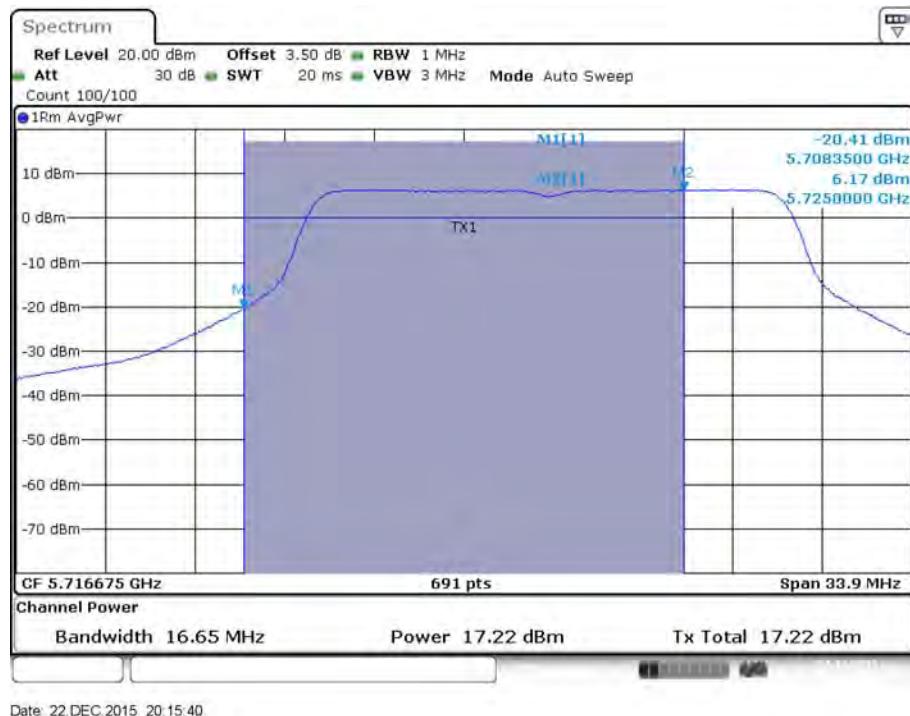
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 / 5720 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 2 / 5720 MHz (UNII 2C)



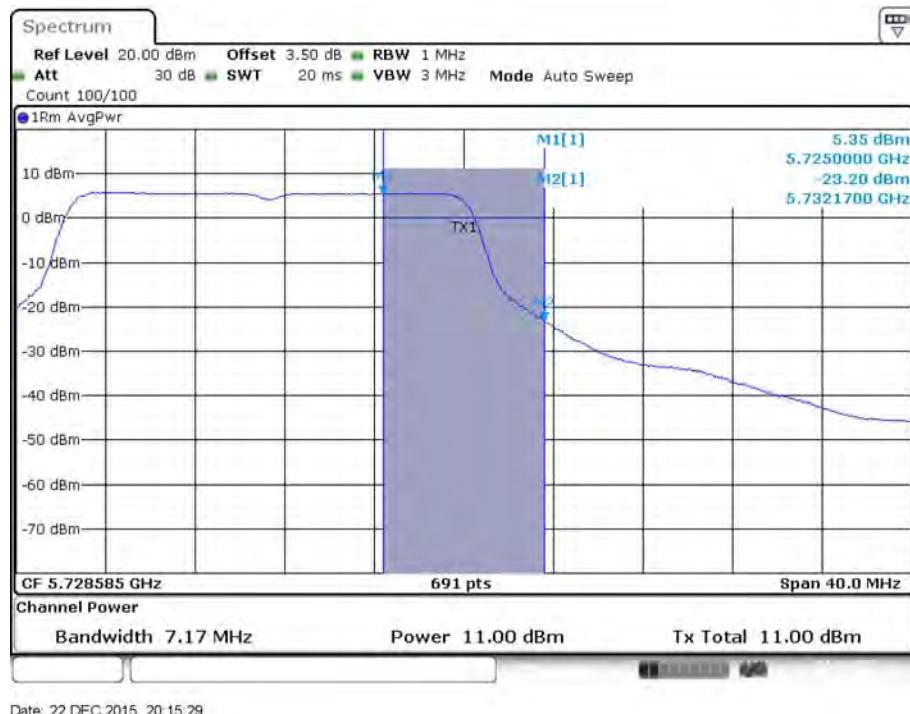
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 3 / 5720 MHz (UNII 2C)



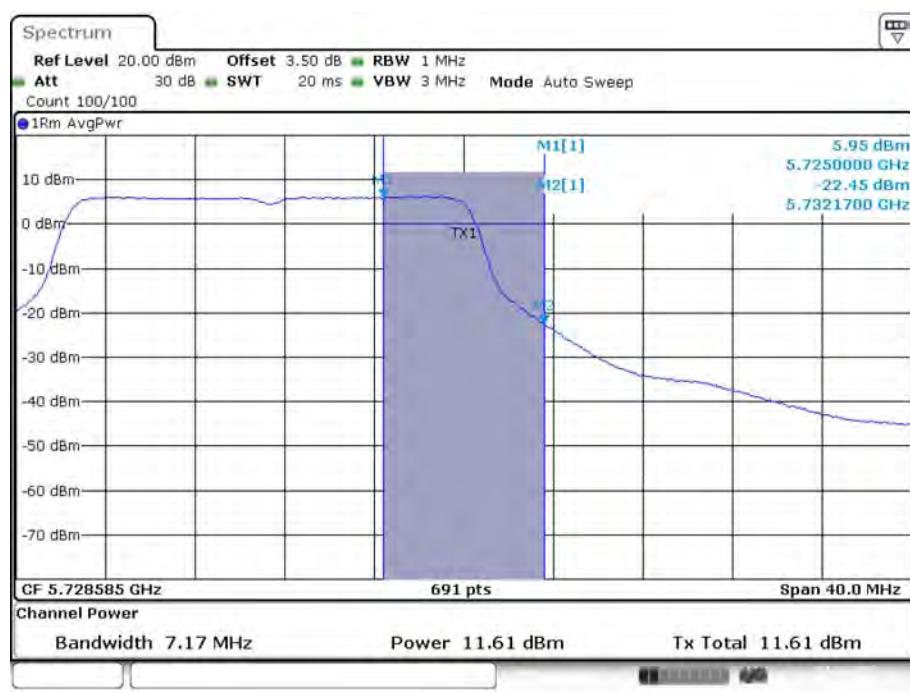
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 4 / 5720 MHz (UNII 2C)



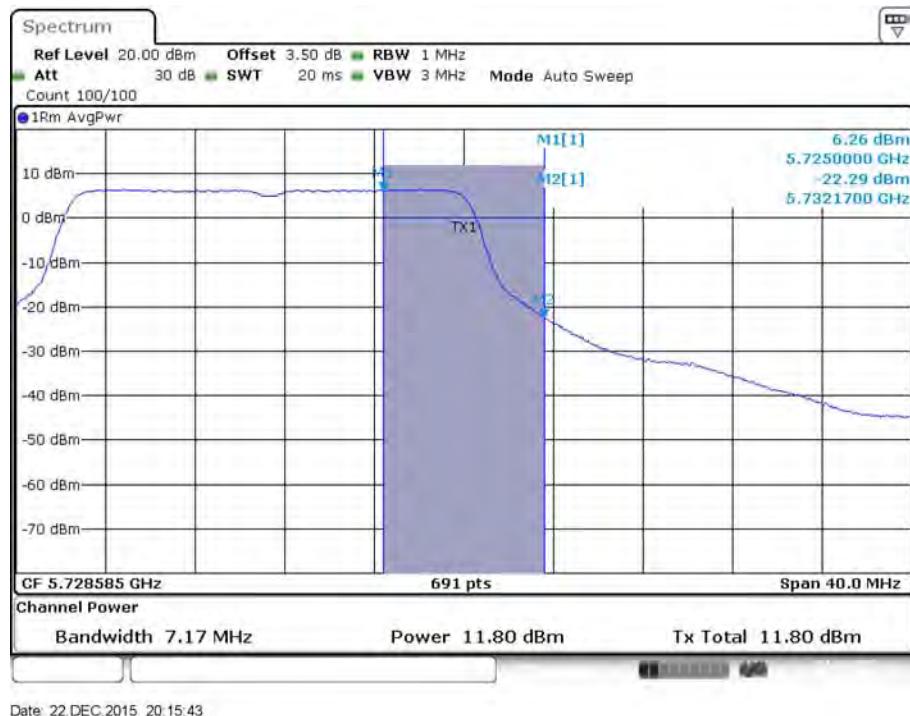
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 / 5720 MHz (UNII 3)



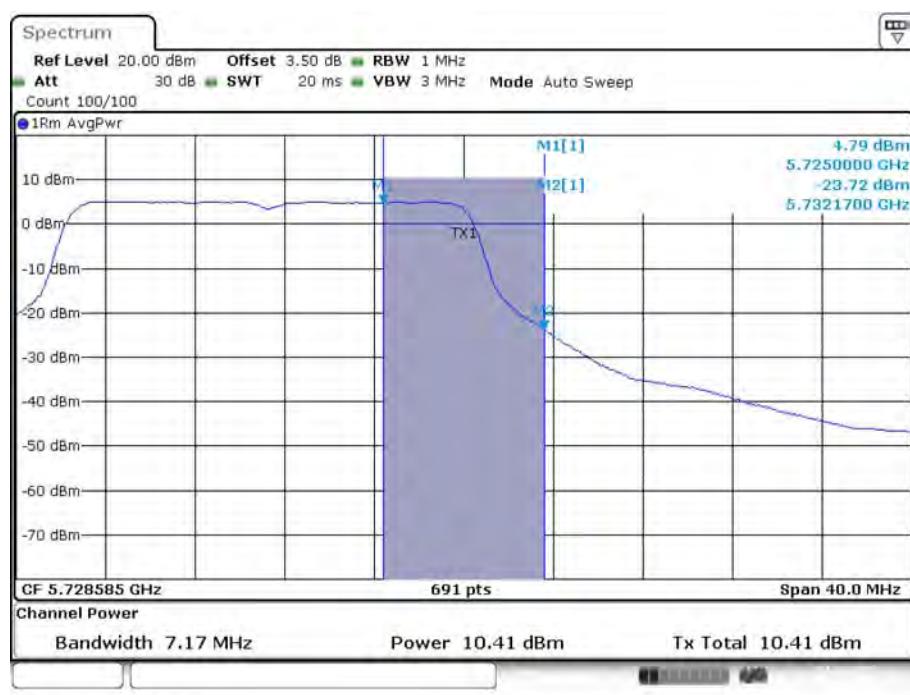
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 2 / 5720 MHz (UNII 3)



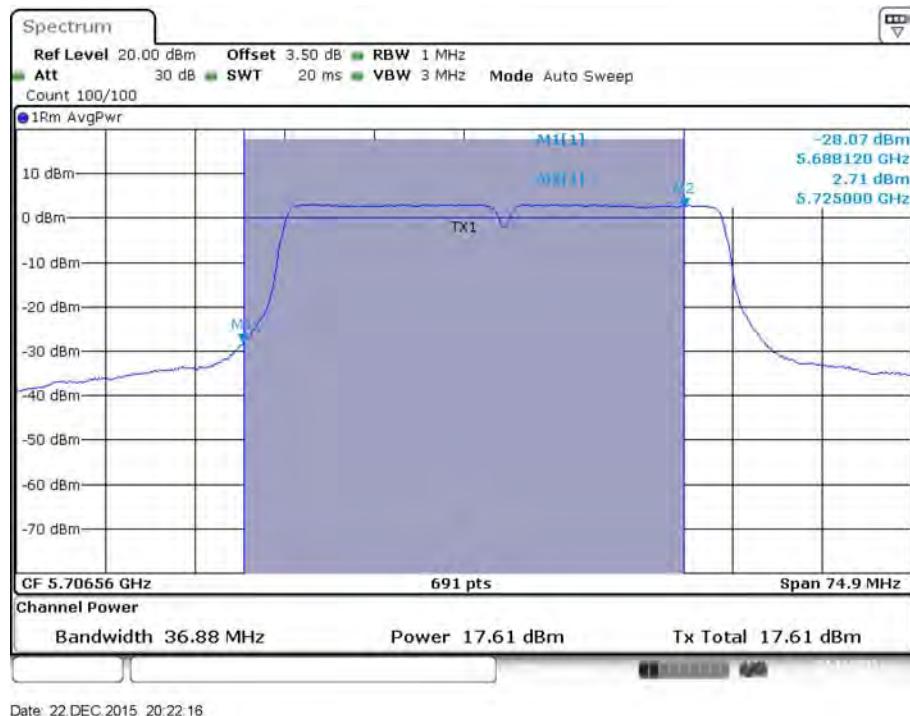
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 3 / 5720 MHz (UNII 3)



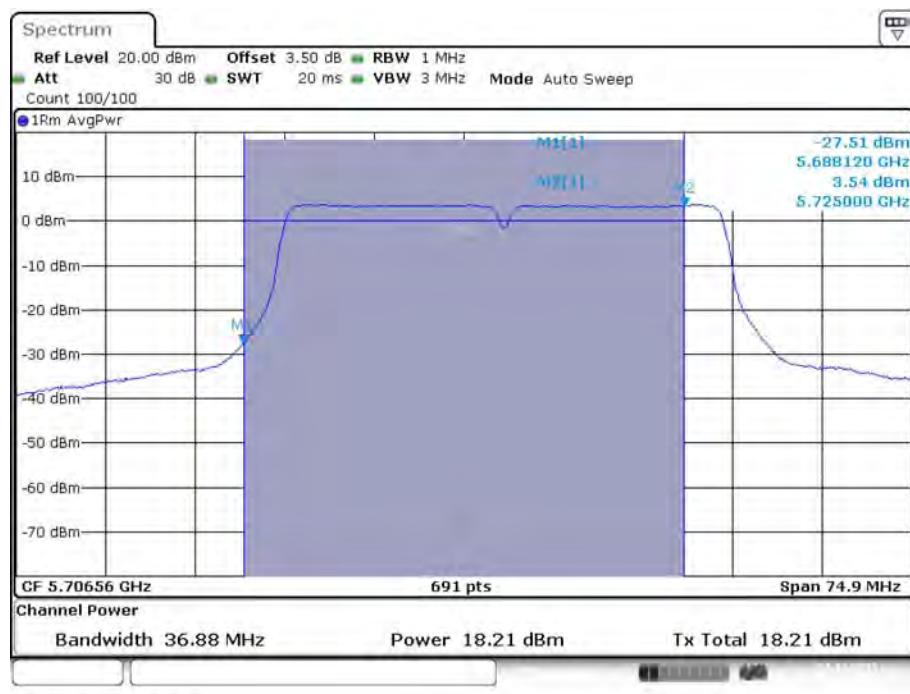
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 4 / 5720 MHz (UNII 3)



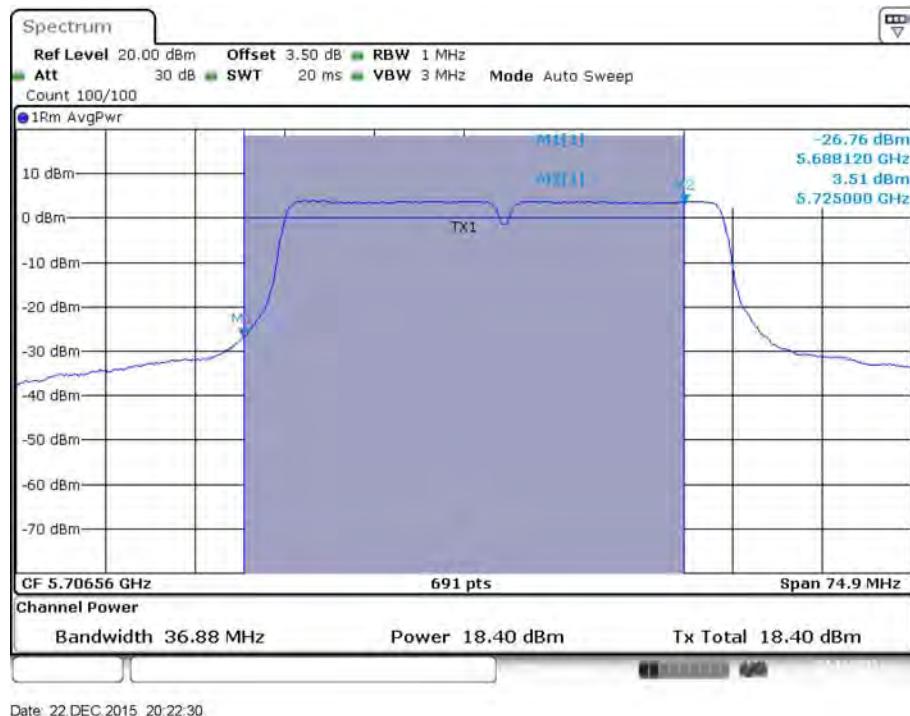
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 / 5710 MHz (UNII 2C)



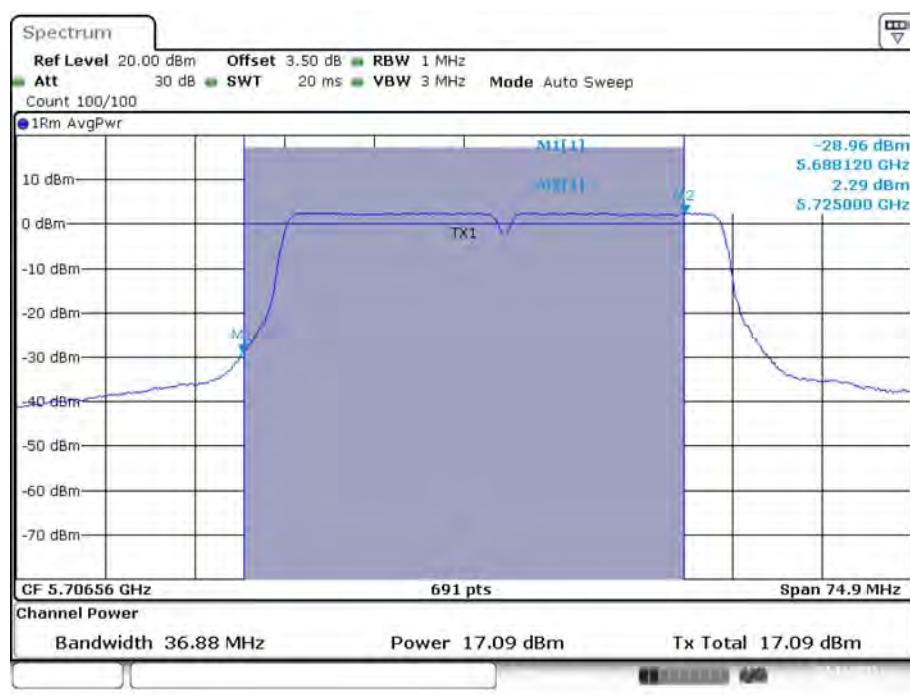
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 2 / 5710 MHz (UNII 2C)



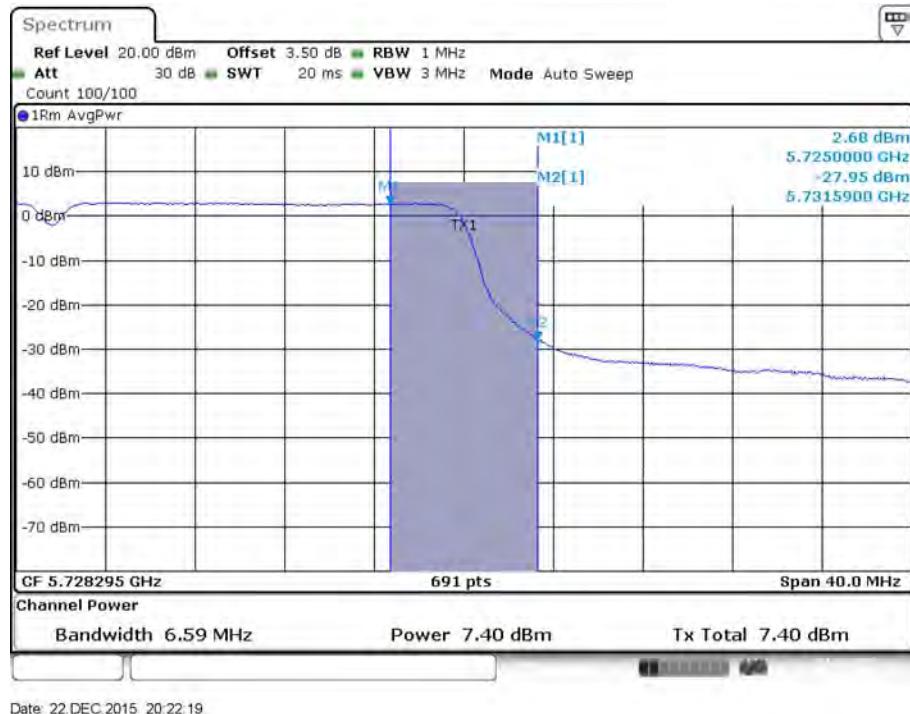
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 3 / 5710 MHz (UNII 2C)



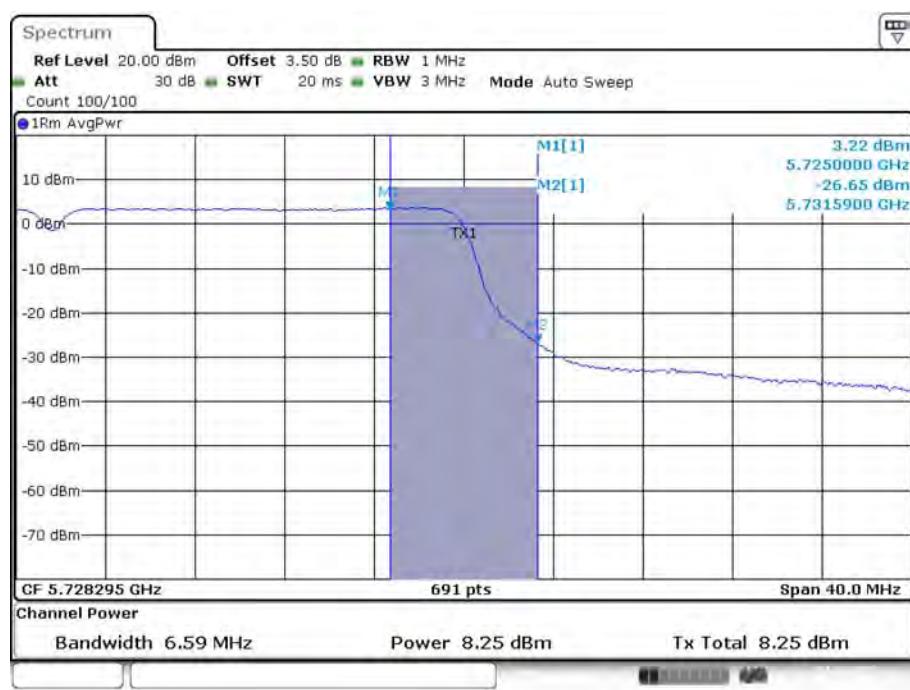
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 4 / 5710 MHz (UNII 2C)



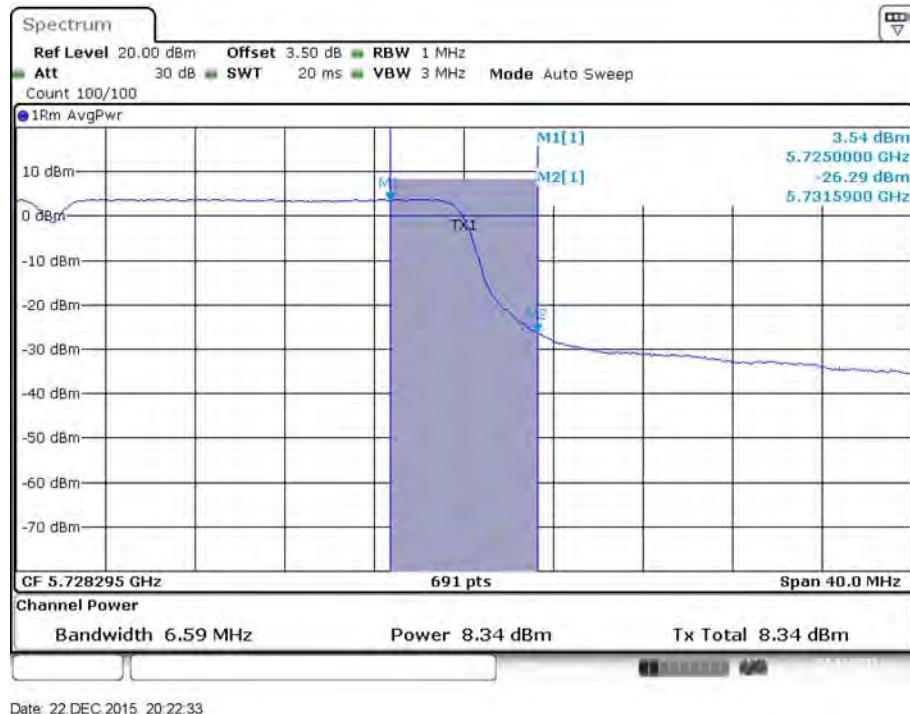
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 / 5710 MHz (UNII 3)



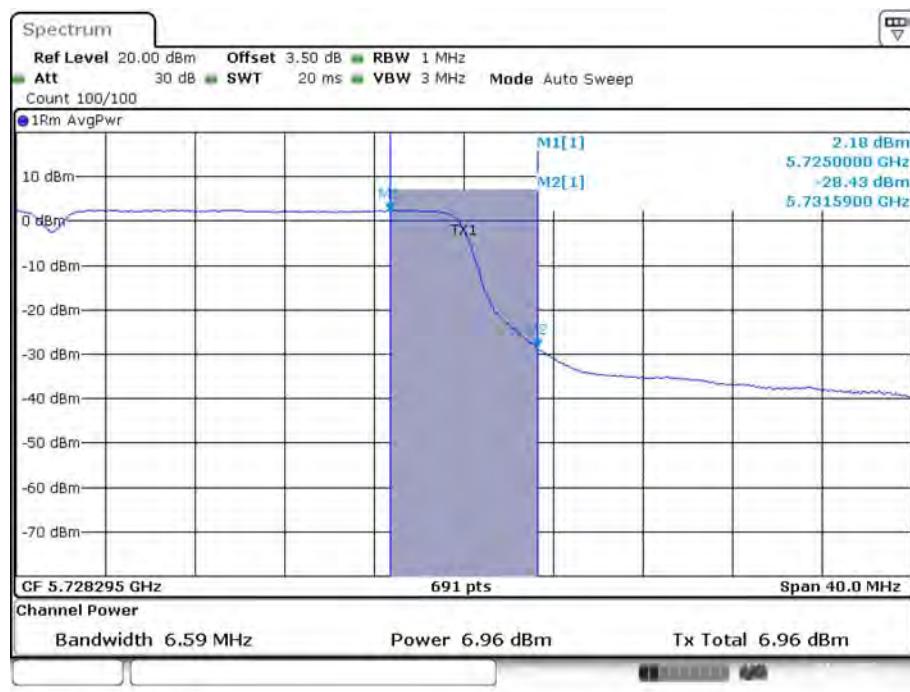
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 2 / 5710 MHz (UNII 3)



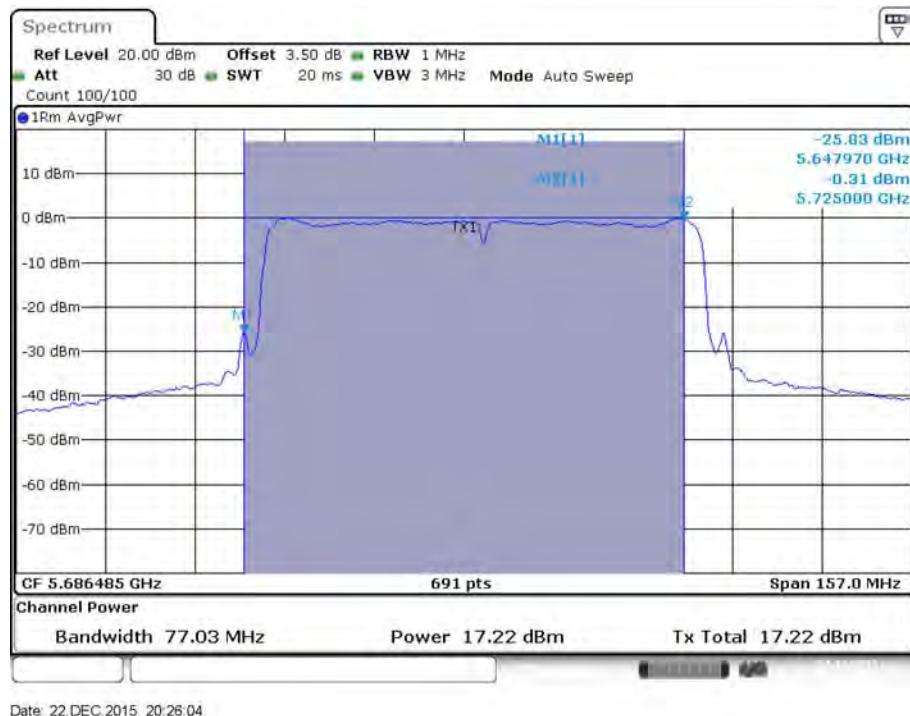
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 3 / 5710 MHz (UNII 3)



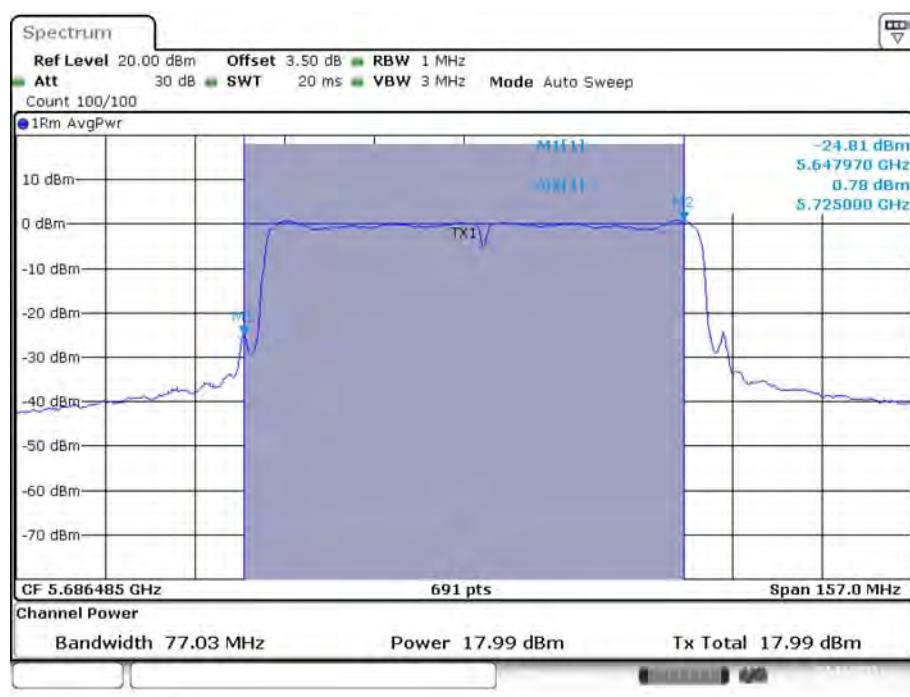
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 4 / 5710 MHz (UNII 3)



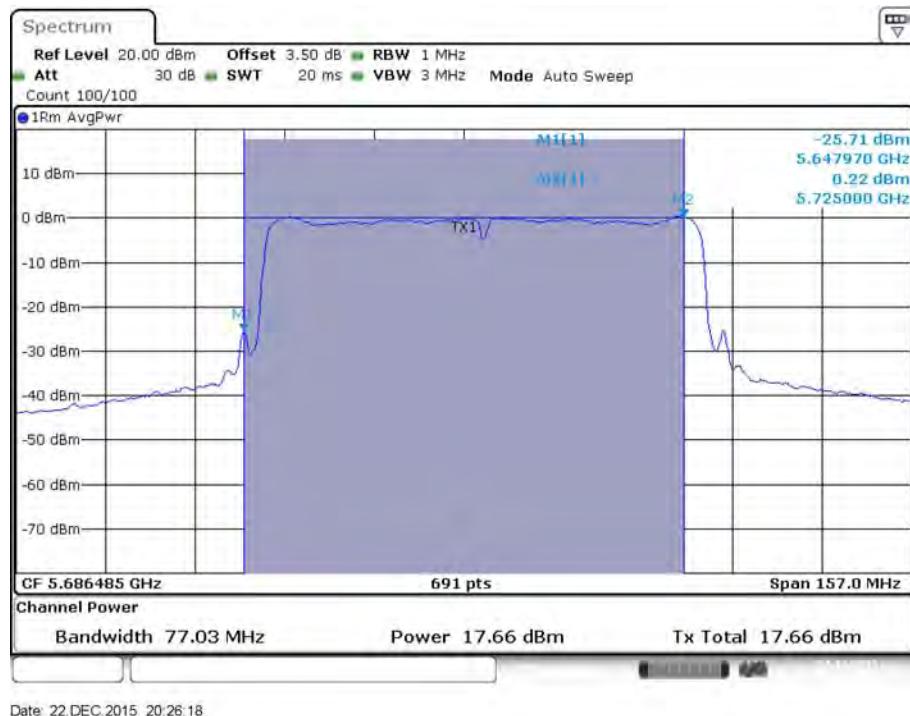
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 1 / 5690 MHz (UNII 2C)



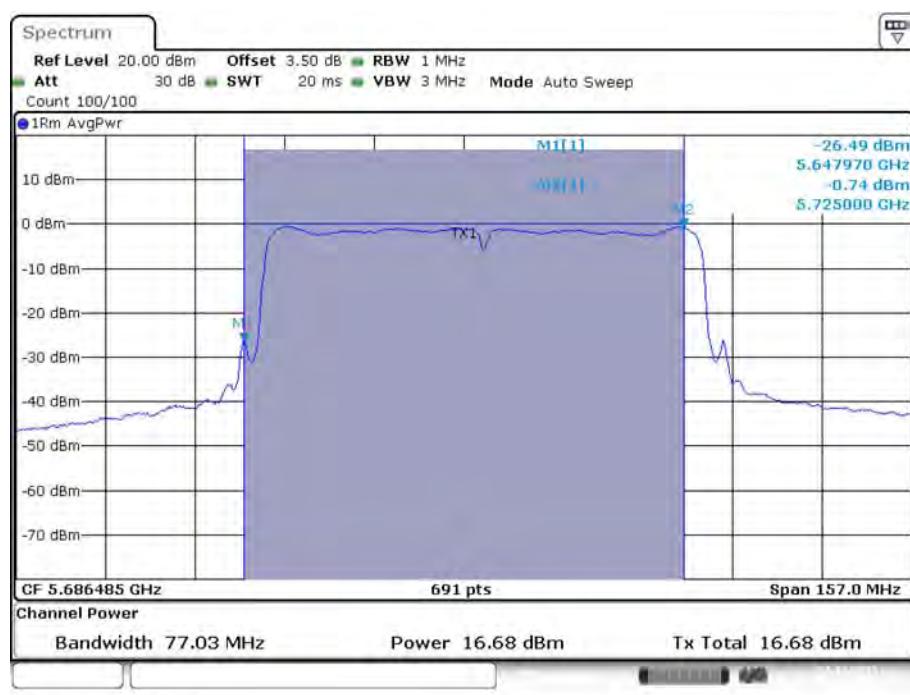
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 2 / 5690 MHz (UNII 2C)



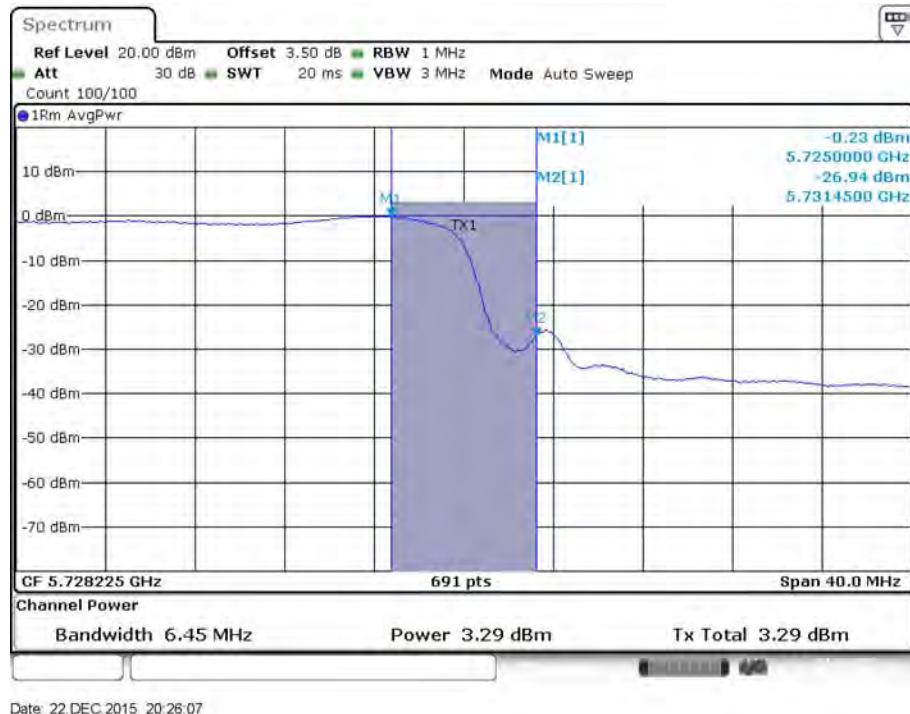
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 3 / 5690 MHz (UNII 2C)



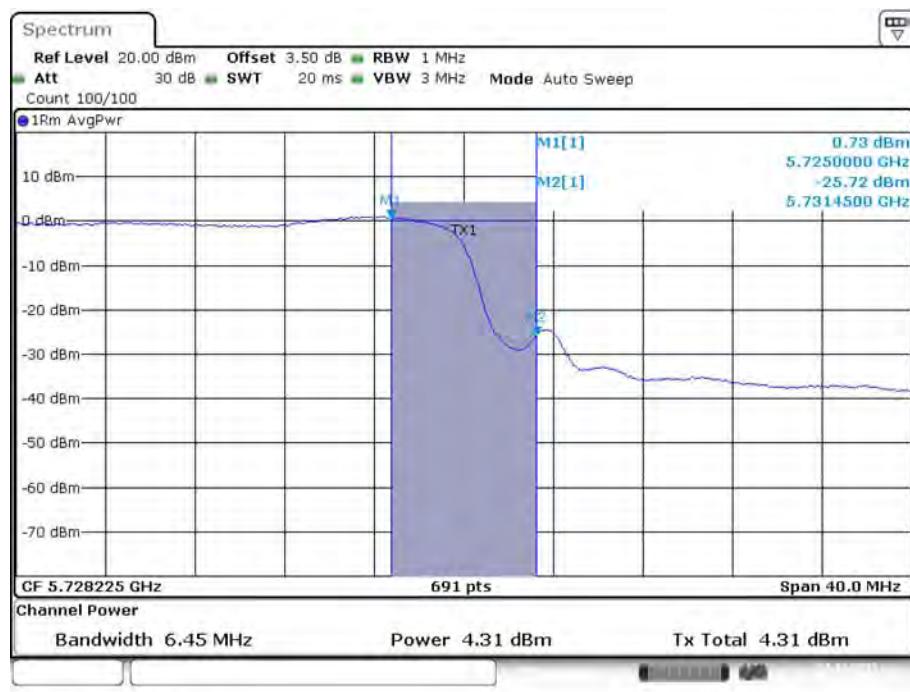
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 4 / 5690 MHz (UNII 2C)



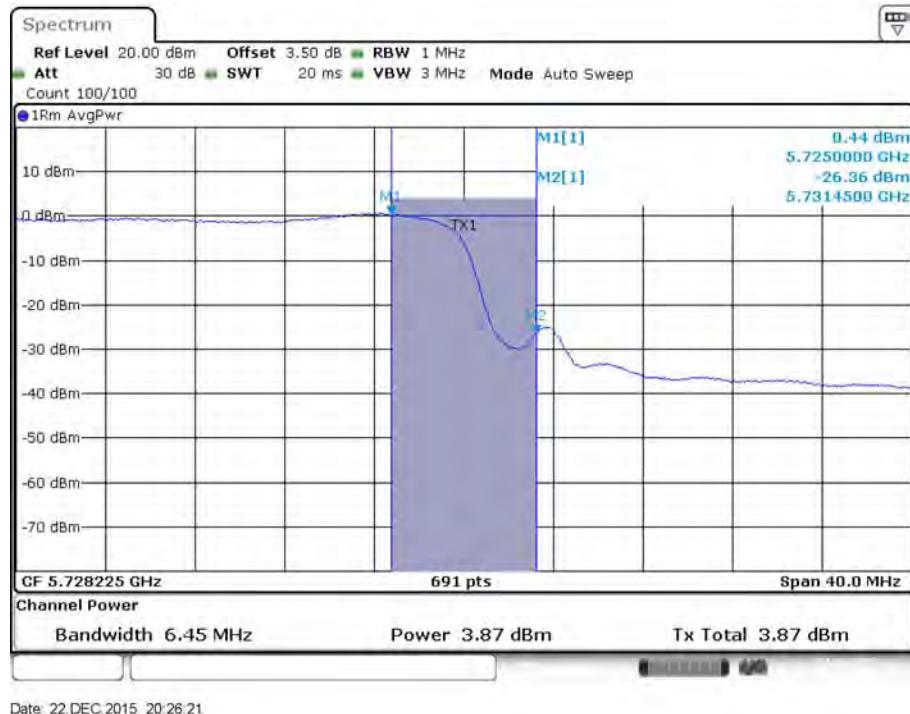
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 1 / 5690 MHz (UNII 3)



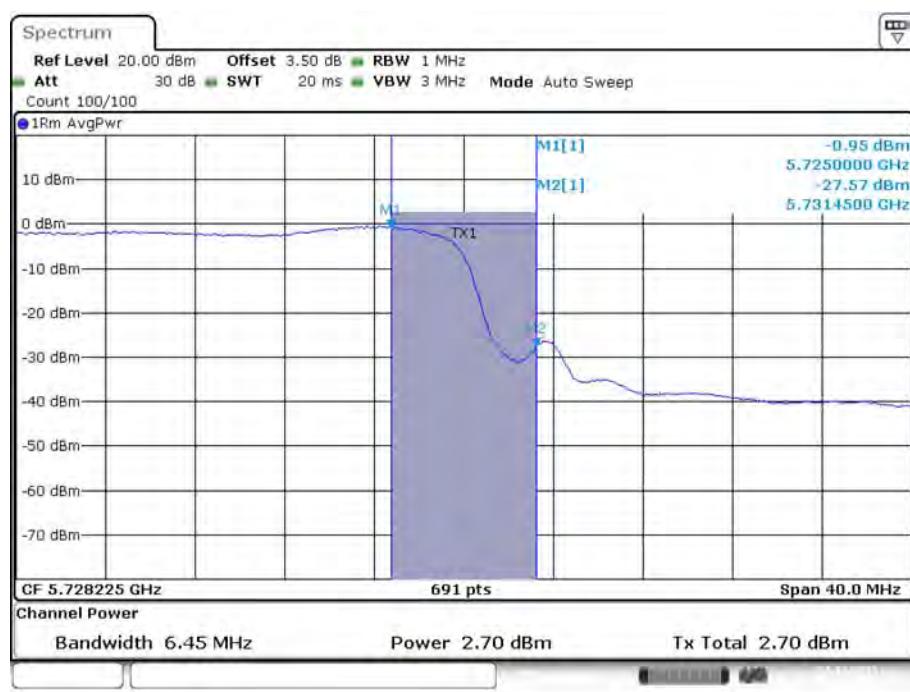
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 2 / 5690 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 3 / 5690 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 4 / 5690 MHz (UNII 3)



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
<input checked="" type="checkbox"/> 5.15~5.25 GHz	
Operating Mode	
<input type="checkbox"/> Outdoor access point	17 dBm/MHz
<input checked="" type="checkbox"/> Indoor access point	17 dBm/MHz
<input type="checkbox"/> Fixed point-to-point access points	17 dBm/MHz
<input type="checkbox"/> Mobile and portable client devices	11 dBm/MHz
<input checked="" type="checkbox"/> 5.25-5.35 GHz	11 dBm/MHz
<input checked="" type="checkbox"/> 5.470-5.725 GHz	11 dBm/MHz
<input checked="" type="checkbox"/> 5.725~5.85 GHz	30 dBm/500kHz

4.5.2. Measuring Instruments and Setting

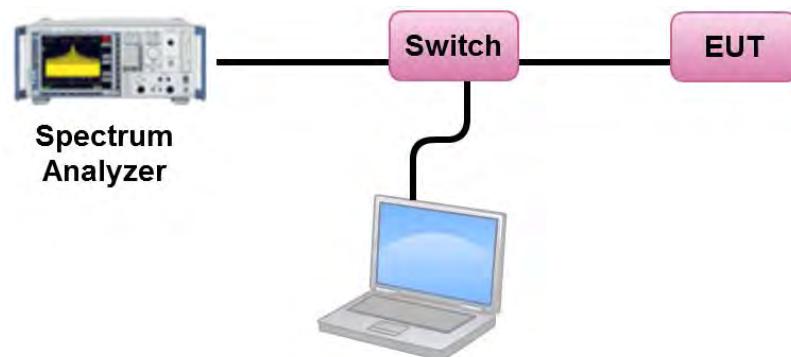
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 $10\log(500\text{kHz}/\text{RBW})$ 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 v01r01 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 (a) Measure and sum the spectra across the outputs.
4. When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.
5. For 5.725~5.85 GHz, the measured result of PSD level must add $10\log(500\text{kHz}/\text{RBW})$ and the final result should $\leq 30 \text{ dBm}$.

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	21°C	Humidity	46%
Test Engineer	Lucas Huang	Test Function	Non-beamforming function
Test Date	Dec. 21, 2015		

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	12.95		15.28		Complies
40	5200 MHz	13.11		15.28		Complies
48	5240 MHz	12.94		15.28		Complies
52	5260 MHz	8.96		9.31		Complies
60	5300 MHz	9.07		9.31		Complies
64	5320 MHz	9.16		9.31		Complies
100	5500 MHz	9.21		9.39		Complies
116	5580 MHz	9.17		9.39		Complies
140	5700 MHz	9.33		9.39		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	13.15	-3.01	10.14	28.56	Complies
157	5785 MHz	12.81	-3.01	9.80	28.56	Complies
165	5825 MHz	12.76	-3.01	9.75	28.56	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{k=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right]$

- For band 1 directional gain=7.72dB_i>6dB_i, so limit=17-(7.72-6)=15.28dBm/MHz.
- For band 2 directional gain=7.69dB_i>6dB_i, so limit=11-(7.69-6)=9.31dBm/MHz.
- For band 3 directional gain=7.61dB_i>6dB_i, so limit=11-(7.61-6)=9.39dBm/MHz.
- For band 4 directional gain=7.44dB_i>6dB_i, so limit=30-(7.44-6)=28.56dBm/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	12.97		15.28		Complies
40	5200 MHz	13.51		15.28		Complies
48	5240 MHz	13.42		15.28		Complies
52	5260 MHz	9.13		9.31		Complies
60	5300 MHz	8.91		9.31		Complies
64	5320 MHz	9.17		9.31		Complies
100	5500 MHz	9.18		9.39		Complies
116	5580 MHz	9.05		9.39		Complies
140	5700 MHz	9.30		9.39		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	11.54	-3.01	8.53	28.56	Complies
157	5785 MHz	12.65	-3.01	9.64	28.56	Complies
165	5825 MHz	12.54	-3.01	9.53	28.56	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{K=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right]$

1. For band 1 directional gain=7.72dB_i>6dB_i, so limit=17-(7.72-6)=15.28dBm/MHz.
2. For band 2 directional gain=7.69dB_i>6dB_i, so limit=11-(7.69-6)=9.31dBm/MHz.
3. For band 3 directional gain=7.61dB_i>6dB_i, so limit=11-(7.61-6)=9.39dBm/MHz.
4. For band 4 directional gain=7.44dB_i>6dB_i, so limit=30-(7.44-6)=28.56dBm/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	6.82		15.28		Complies
46	5230 MHz	10.40		15.28		Complies
54	5270 MHz	7.60		9.31		Complies
62	5310 MHz	6.90		9.31		Complies
102	5510 MHz	6.87		9.39		Complies
110	5550 MHz	7.27		9.39		Complies
134	5670 MHz	7.65		9.39		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	7.32	-3.01	4.31	28.56	Complies
159	5795 MHz	7.56	-3.01	4.55	28.56	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For band 1 directional gain=7.72dB_i>6dB_i, so limit=17-(7.72-6)=15.28dBm/MHz.
2. For band 2 directional gain=7.69dB_i>6dB_i, so limit=11-(7.69-6)=9.31dBm/MHz.
3. For band 3 directional gain=7.61dB_i>6dB_i, so limit=11-(7.61-6)=9.39dBm/MHz.
4. For band 4 directional gain=7.44dB_i>6dB_i, so limit=30-(7.44-6)=28.56dBm/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	2.88		15.28		Complies
58	5290 MHz	3.61		9.31		Complies
106	5530 MHz	3.60		9.39		Complies
122	5610 MHz	4.52		9.39		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	3.54	-3.01	0.53	28.56	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For band 1 directional gain=7.72dB_i>6dB_i, so limit=17-(7.72-6)=15.28dBm/MHz.
2. For band 2 directional gain=7.69dB_i>6dB_i, so limit=11-(7.69-6)=9.31dBm/MHz.
3. For band 3 directional gain=7.61dB_i>6dB_i, so limit=11-(7.61-6)=9.39dBm/MHz.
4. For band 4 directional gain=7.44dB_i>6dB_i, so limit=30-(7.44-6)=28.56dBm/500kHz.

Straddle Channel

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

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
144	5720 MHz (UNII 2C)	9.37		9.39		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	9.62	-3.01	6.61	28.56	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For (UNII 2C) directional gain=7.61dB_i>6dB_i, so limit=11 – (7.61 – 6)=9.39dBm/MHz.
2. For(UNII 3) directional gain=7.44dB_i>6dB_i, so limit=30 – (7.44 – 6)=28.56dBm/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
144	5720 MHz (UNII 2C)	9.23		9.39		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	9.34	-3.01	6.33	28.56	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For (UNII 2C) directional gain=7.61dB_i>6dB_i, so limit=11 – (7.61 – 6)=9.39dBm/MHz.
2. For(UNII 3) directional gain=7.44dB_i>6dB_i, so limit=30 – (7.44 – 6)=28.56dBm/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
142	5710 MHz (UNII 2C)	7.92		9.39		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
142	5710 MHz (UNII 3)	7.44	-3.01	4.43	28.56	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

- For (UNII 2C) directional gain=7.61dB_i>6dB_i, so limit=11 – (7.61 – 6)=9.39dBm/MHz.
- For(UNII 3) directional gain=7.44dB_i>6dB_i, so limit=30 – (7.44 – 6)=28.56dBm/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
138	5690 MHz (UNII 2C)	5.12		9.39		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
138	5690 MHz (UNII 3)	4.89	-3.01	1.88	28.56	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

- For (UNII 2C) directional gain=7.61dB_i>6dB_i, so limit=11 – (7.61 – 6)=9.39dBm/MHz.
- For(UNII 3) directional gain=7.44dB_i>6dB_i, so limit=30 – (7.44 – 6)=28.56dBm/500kHz.

Temperature	21°C	Humidity	46%
Test Engineer	Lucas Huang	Test Function	Beamforming function
Test Date	Dec. 21, 2015		

Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
36	5180 MHz	11.53		17.00		Complies
40	5200 MHz	13.51		17.00		Complies
48	5240 MHz	13.42		17.00		Complies
52	5260 MHz	10.65		11.00		Complies
60	5300 MHz	10.82		11.00		Complies
64	5320 MHz	10.63		11.00		Complies
100	5500 MHz	10.62		11.00		Complies
116	5580 MHz	10.73		11.00		Complies
140	5700 MHz	10.55		11.00		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	10.29	-3.01	7.28	30.00	Complies
157	5785 MHz	12.65	-3.01	9.64	30.00	Complies
165	5825 MHz	12.54	-3.01	9.53	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For band 1 directional gain=4.71dBi<6dBi, so the limit doesn't reduce.
2. For band 2 directional gain=4.68dBi<6dBi, so the limit doesn't reduce.
3. For band 3 directional gain=4.60dBi<6dBi, so the limit doesn't reduce.
4. For band 4 directional gain=4.43dBi<6dBi, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
38	5190 MHz	6.82		17.00		Complies
46	5230 MHz	10.40		17.00		Complies
54	5270 MHz	8.53		11.00		Complies
62	5310 MHz	7.40		11.00		Complies
102	5510 MHz	8.41		11.00		Complies
110	5550 MHz	8.48		11.00		Complies
134	5670 MHz	7.52		11.00		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	6.39	-3.01	3.38	30.00	Complies
159	5795 MHz	7.56	-3.01	4.55	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For band 1 directional gain=4.71dBi<6dBi, so the limit doesn't reduce.
2. For band 2 directional gain=4.68dBi<6dBi, so the limit doesn't reduce.
3. For band 3 directional gain=4.60dBi<6dBi, so the limit doesn't reduce.
4. For band 4 directional gain=4.43dBi<6dBi, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
42	5210 MHz	3.43		17.00		Complies
58	5290 MHz	4.23		11.00		Complies
106	5530 MHz	4.25		11.00		Complies
122	5610 MHz	5.51		11.00		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	3.09	-3.01	0.08	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For band 1 directional gain=4.71dBi<6dBi, so the limit doesn't reduce.
2. For band 2 directional gain=4.68dBi<6dBi, so the limit doesn't reduce.
3. For band 3 directional gain=4.60dBi<6dBi, so the limit doesn't reduce.
4. For band 4 directional gain=4.43dBi<6dBi, so the limit doesn't reduce.

Straddle Channel

Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
144	5720 MHz (UNII 2C)	10.57		11.00		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	10.34	-3.01	7.33	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For (UNII 2C) directional gain=4.60dB_i<6dB_i, so the limit doesn't reduce.
2. For (UNII 3) directional gain=4.43dB_i<6dB_i, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
142	5710 MHz (UNII 2C)	8.30		11.00		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
142	5710 MHz (UNII 3)	8.14	-3.01	5.13	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

1. For (UNII 2C) directional gain=4.60dB_i<6dB_i, so the limit doesn't reduce.
2. For (UNII 3) directional gain=4.43dB_i<6dB_i, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
138	5690 MHz (UNII 2C)	4.82		11.00		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
138	5690 MHz (UNII 3)	4.75	-3.01	1.74	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

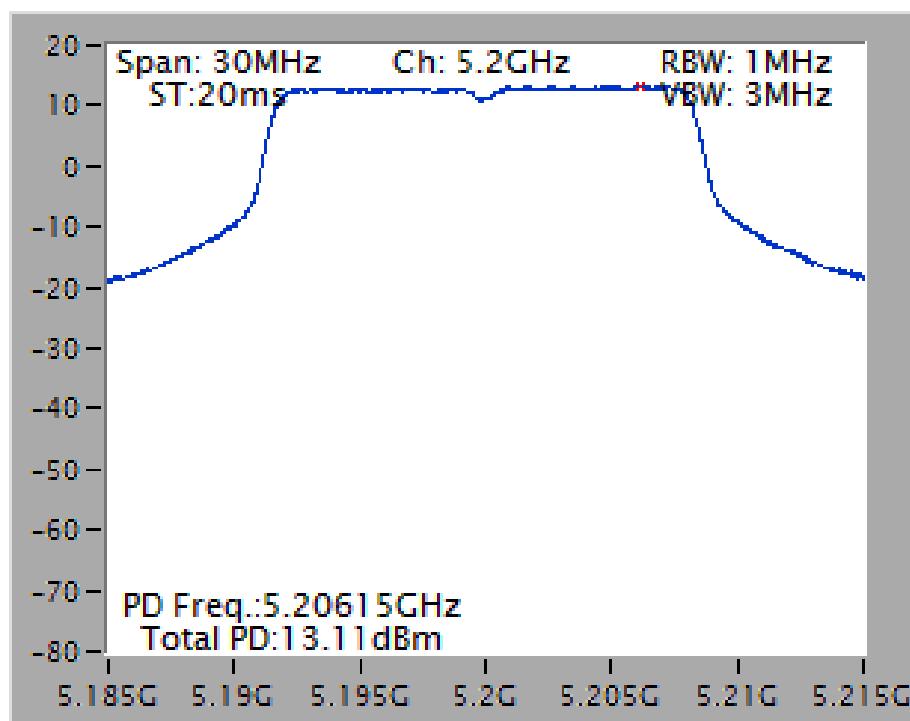
1. For (UNII 2C) directional gain=4.60dB_i<6dB_i, so the limit doesn't reduce.
2. For (UNII 3) directional gain=4.43dB_i<6dB_i, so the limit doesn't reduce.

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

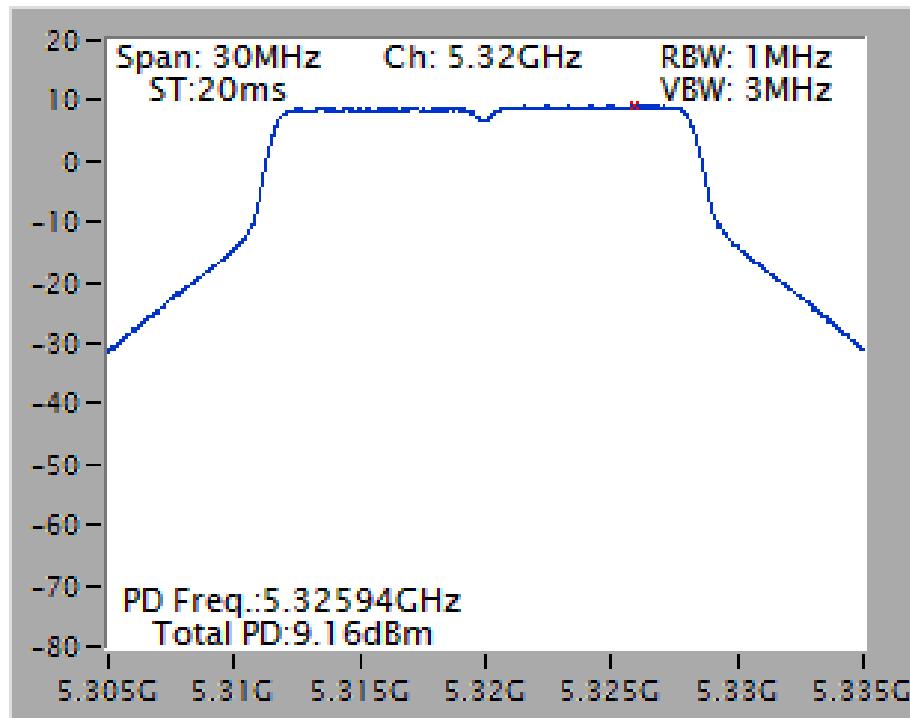
For plots, only the channel with worse result was shown.

For non-beamforming function:

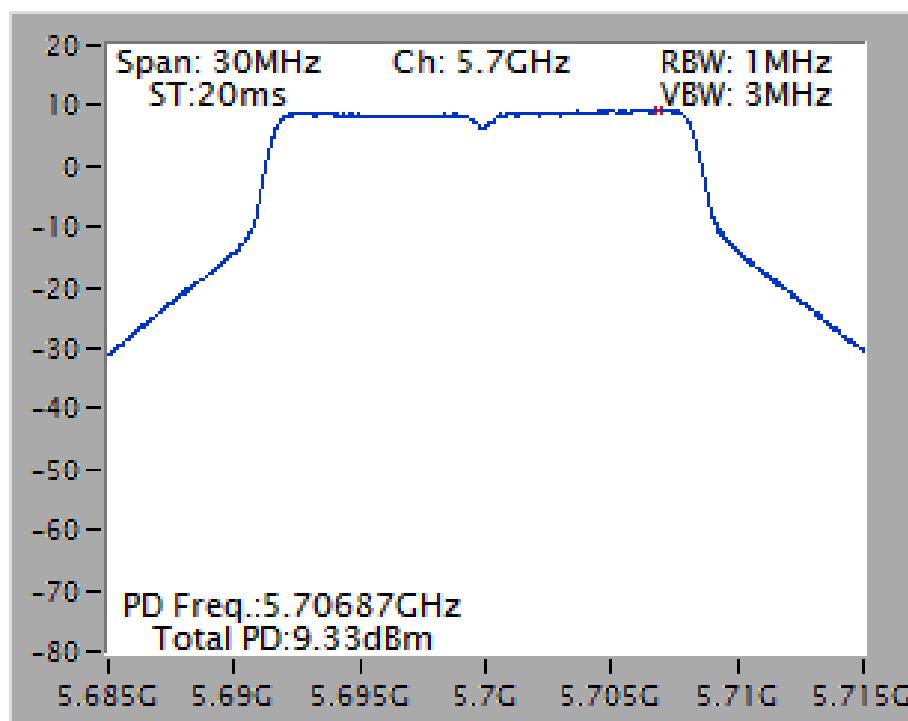
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



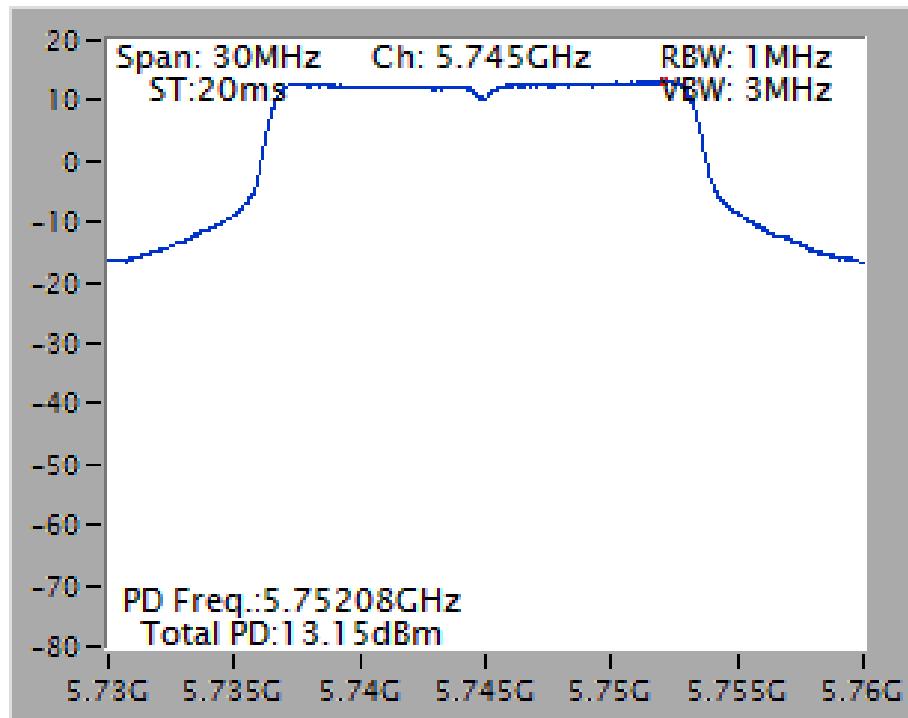
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5320 MHz



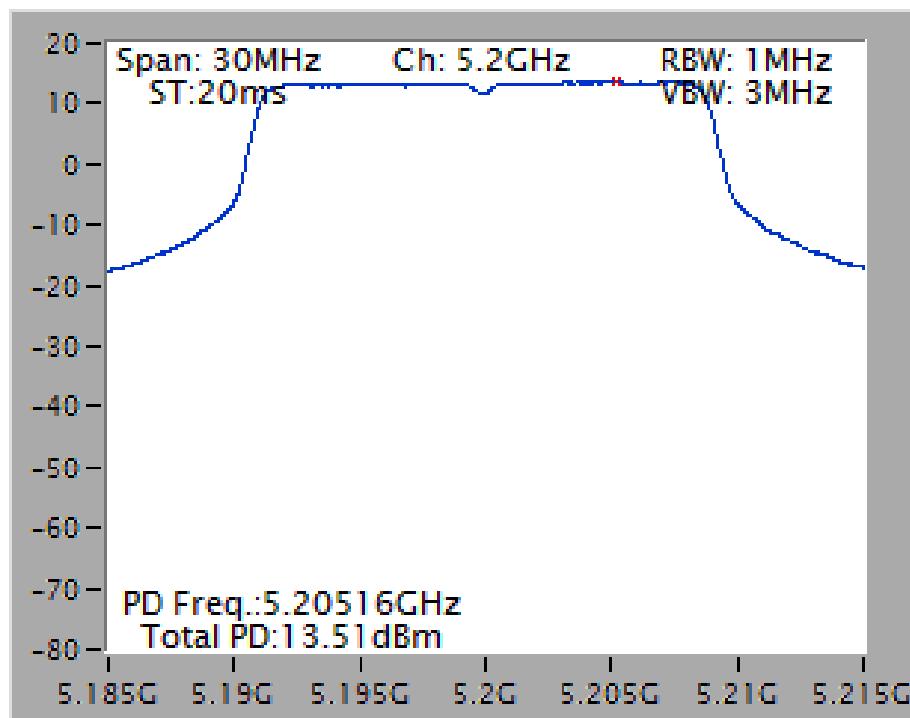
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5700 MHz



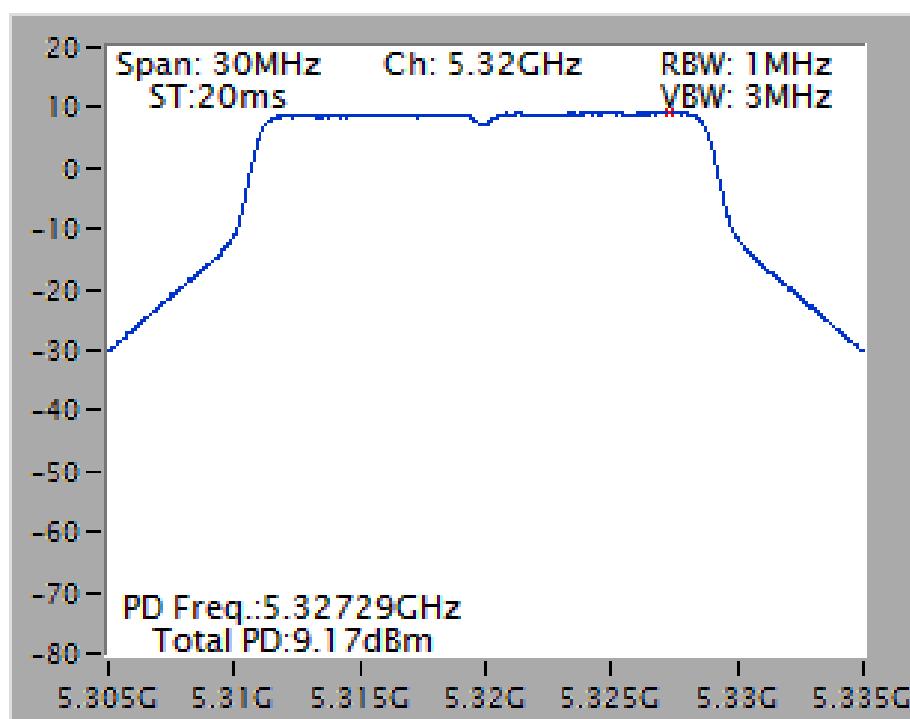
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



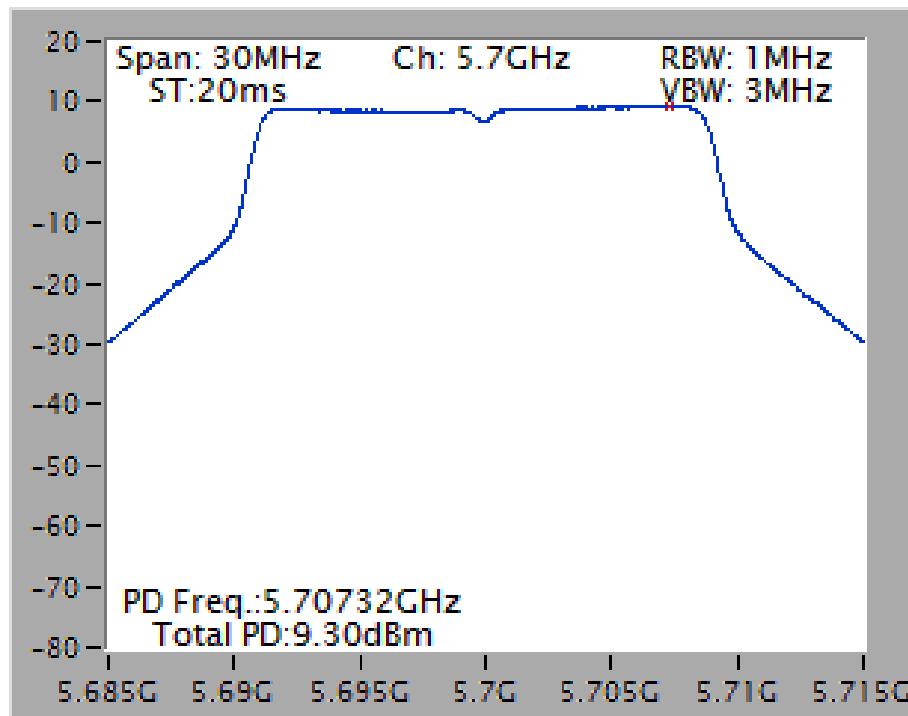
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



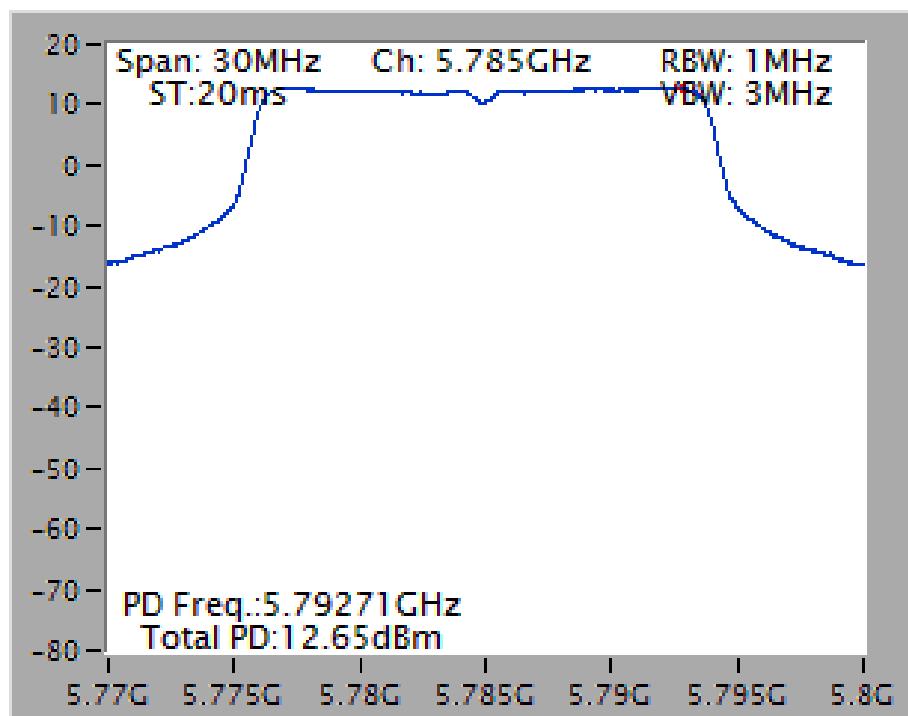
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5320 MHz



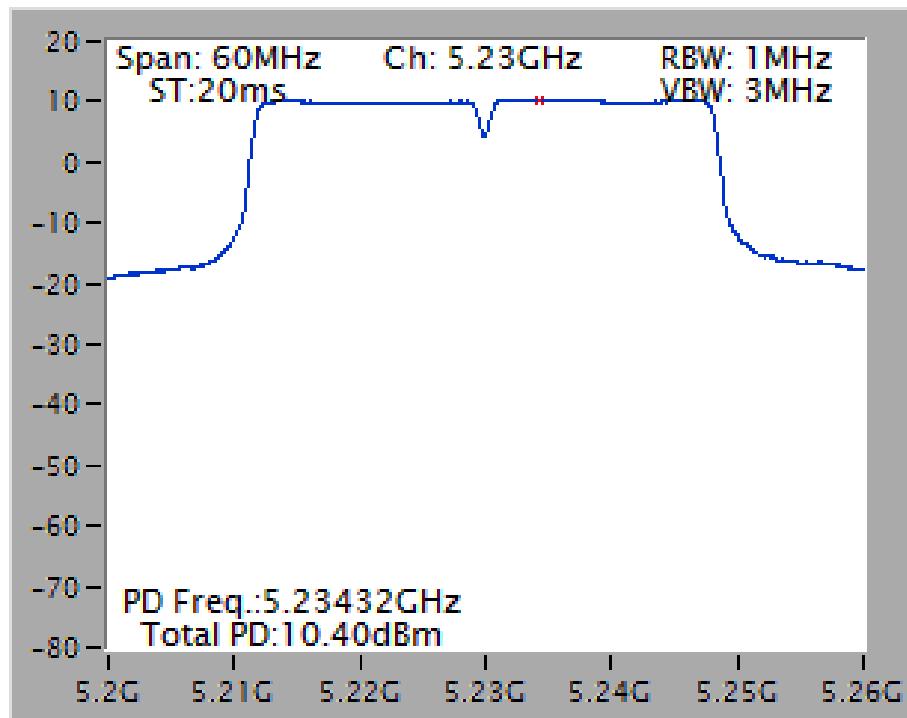
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5700 MHz



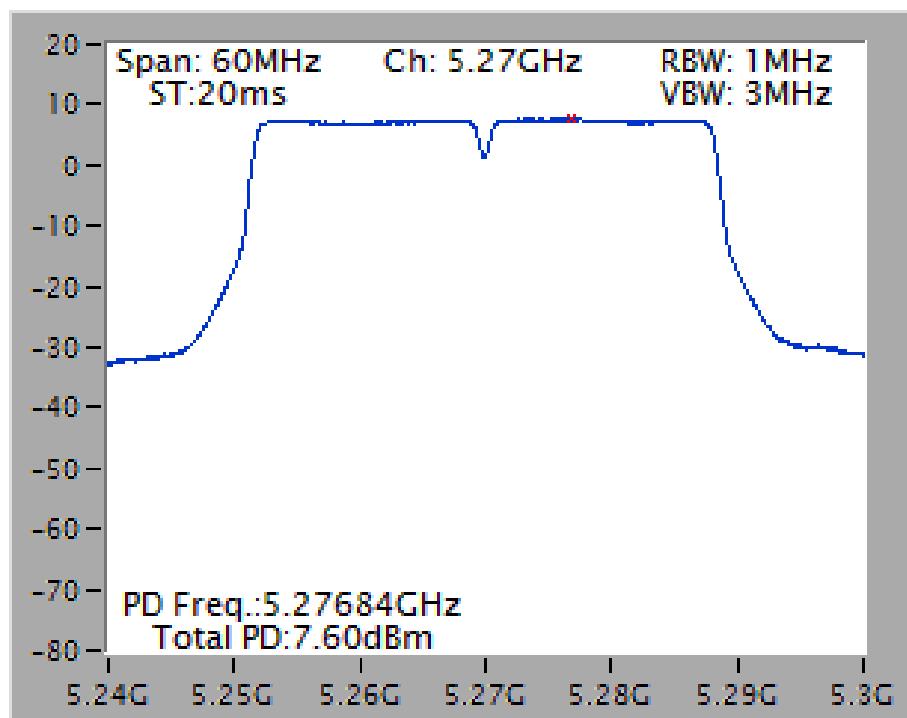
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



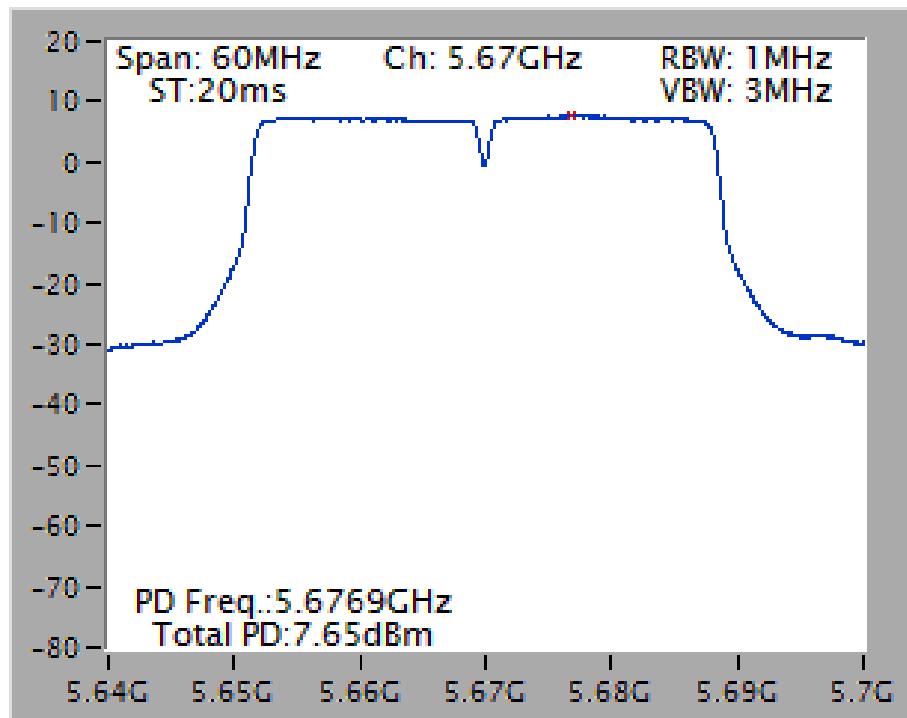
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



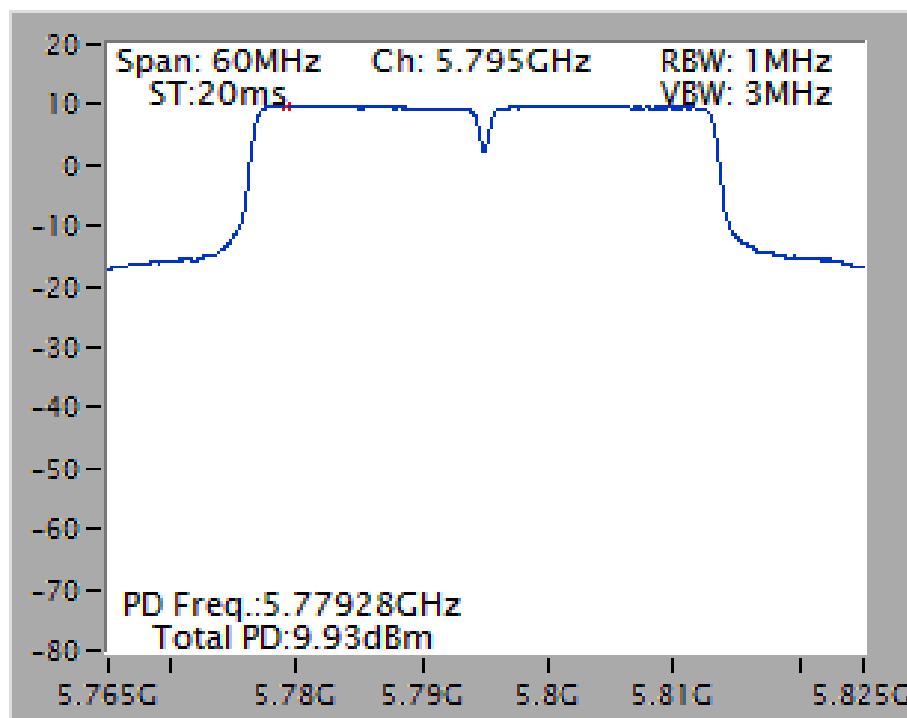
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5270 MHz



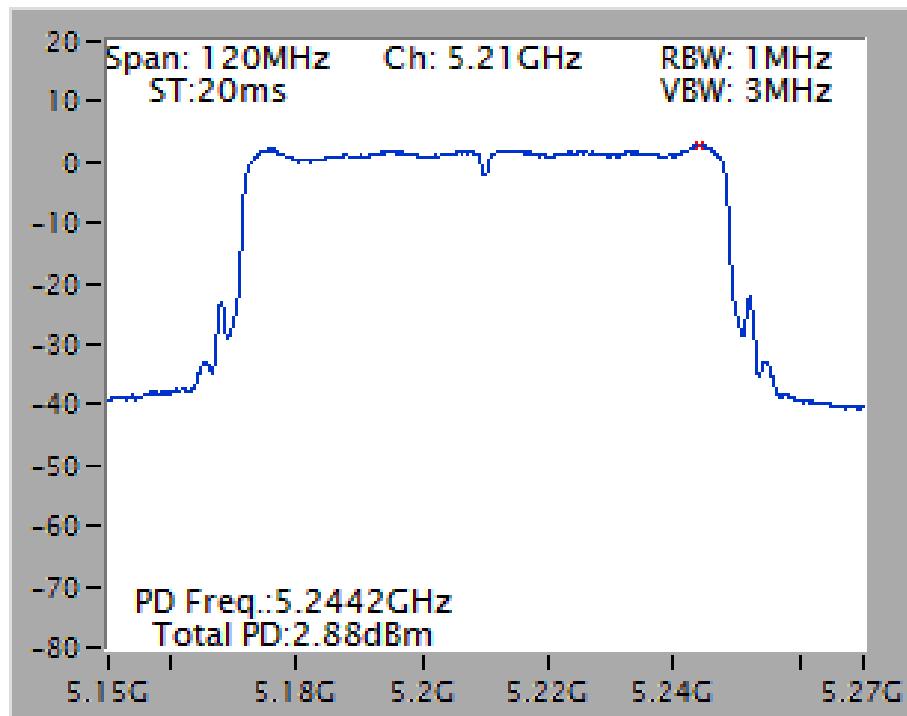
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5670 MHz



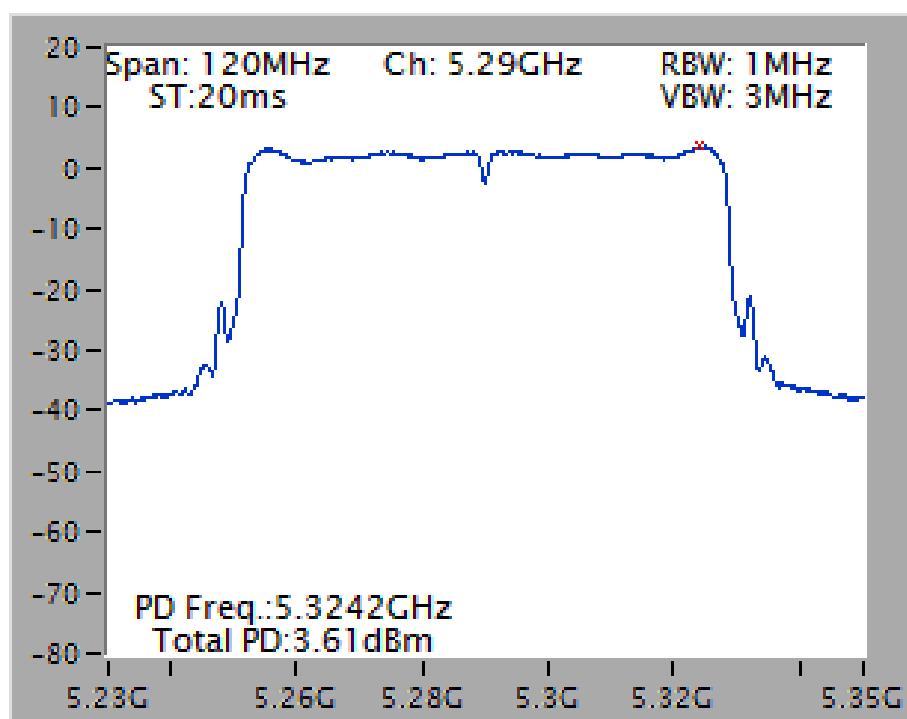
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



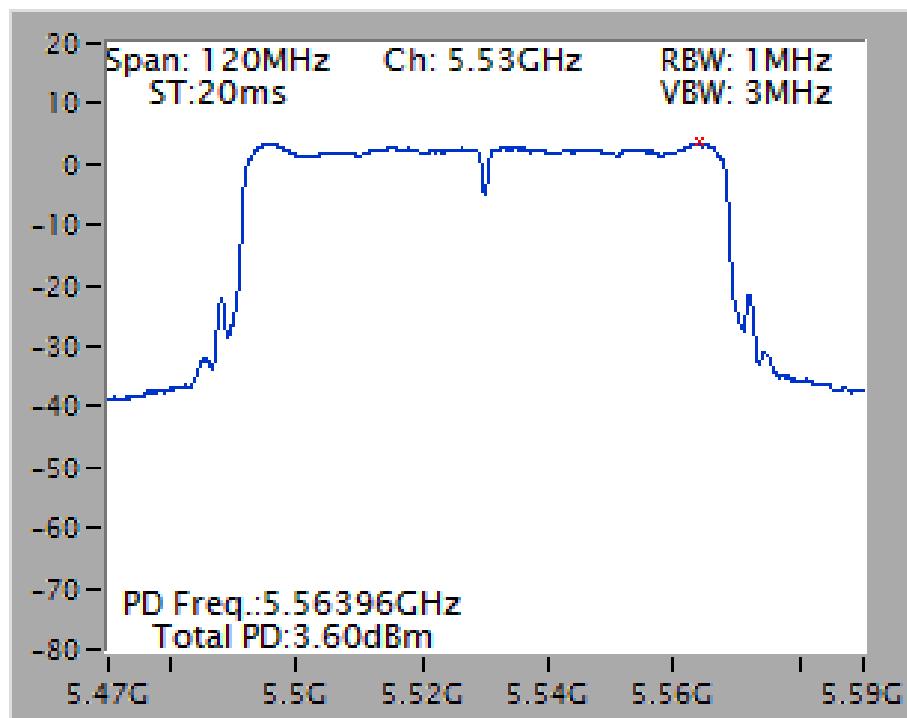
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



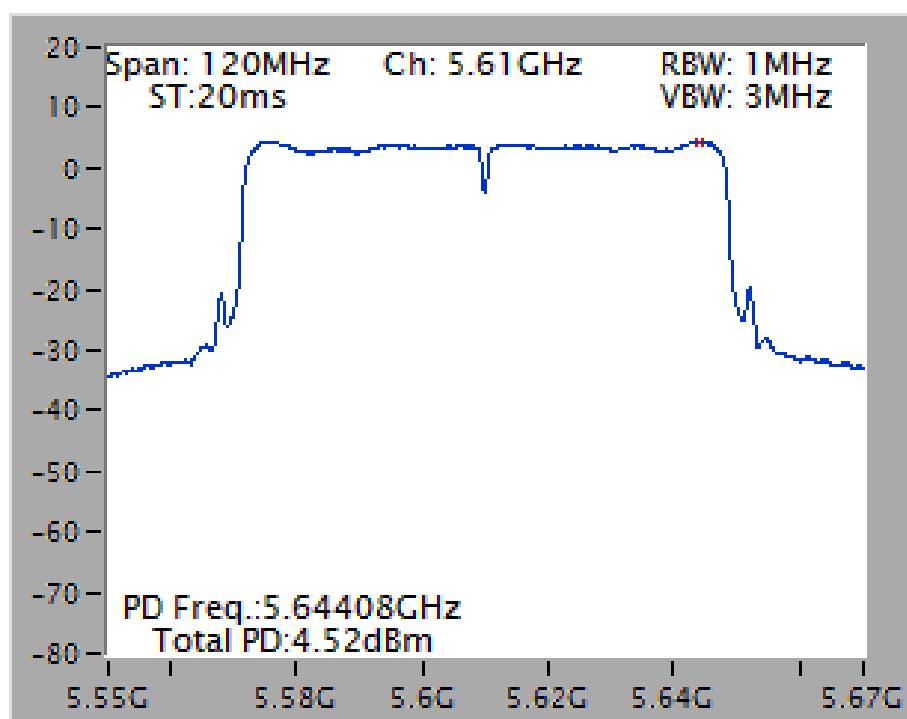
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5290 MHz



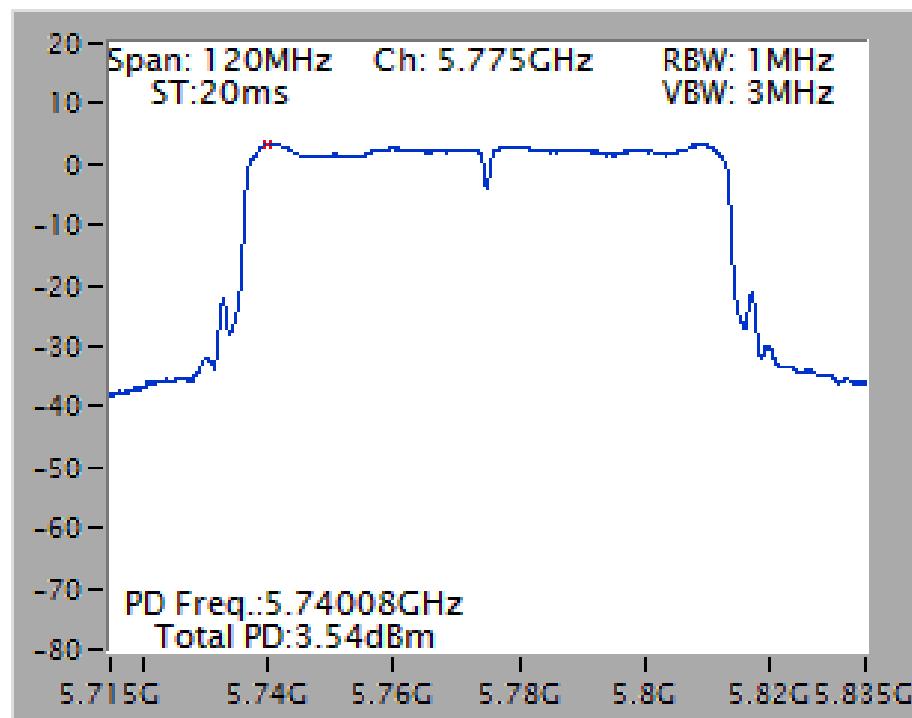
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5530 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5610 MHz

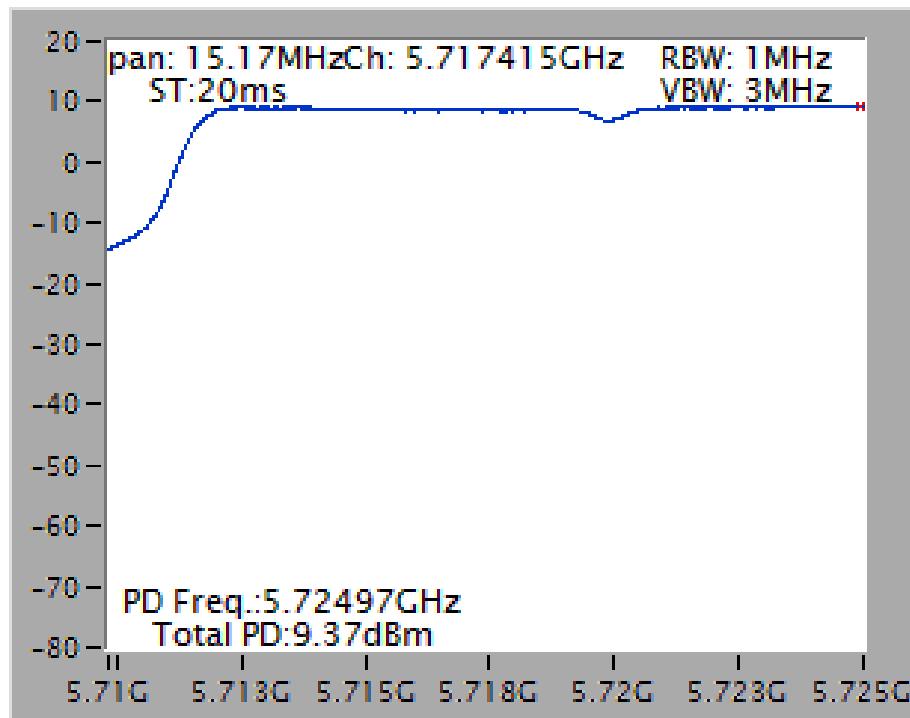


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz

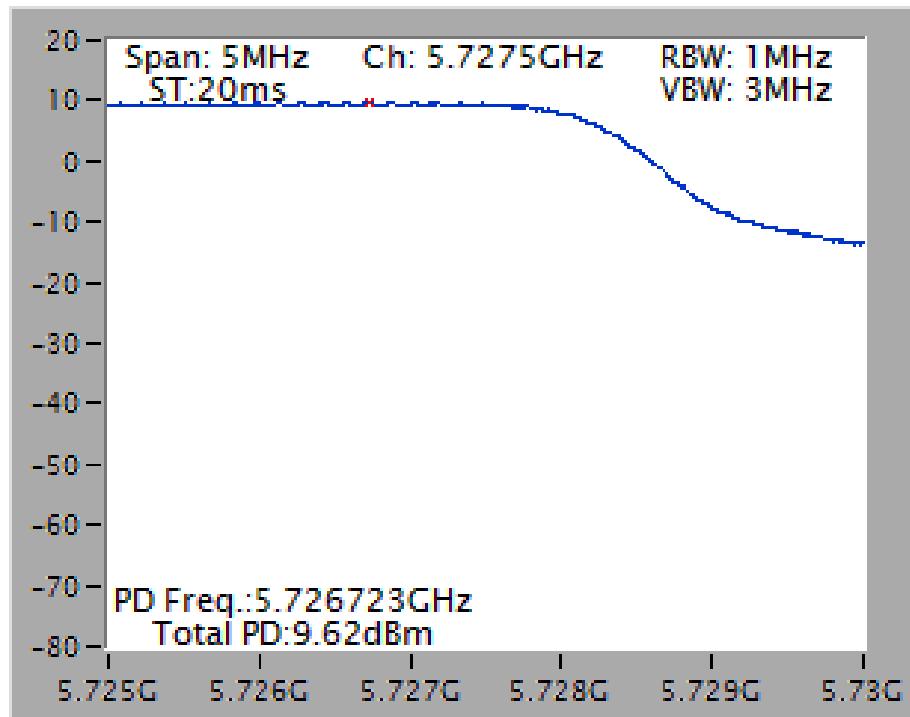


Straddle Channel

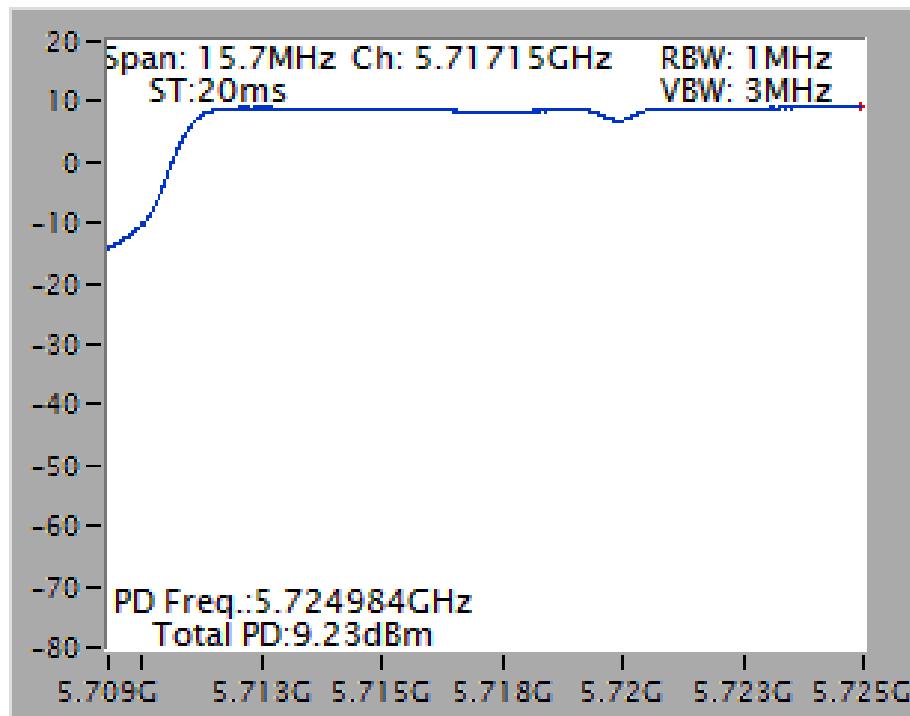
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz
(UNII 2C)



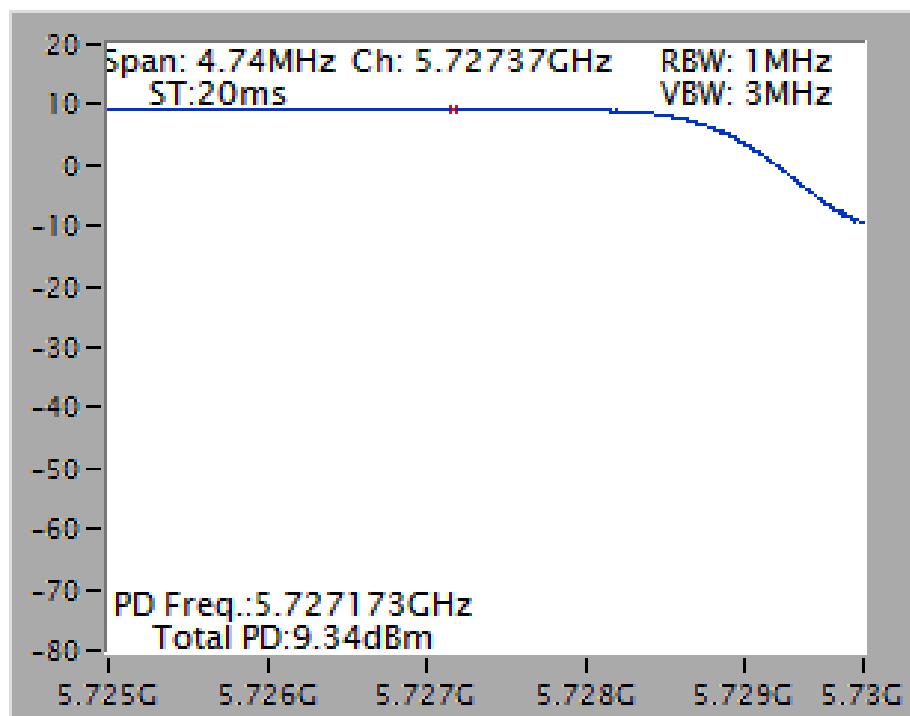
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz
(UNII 3)



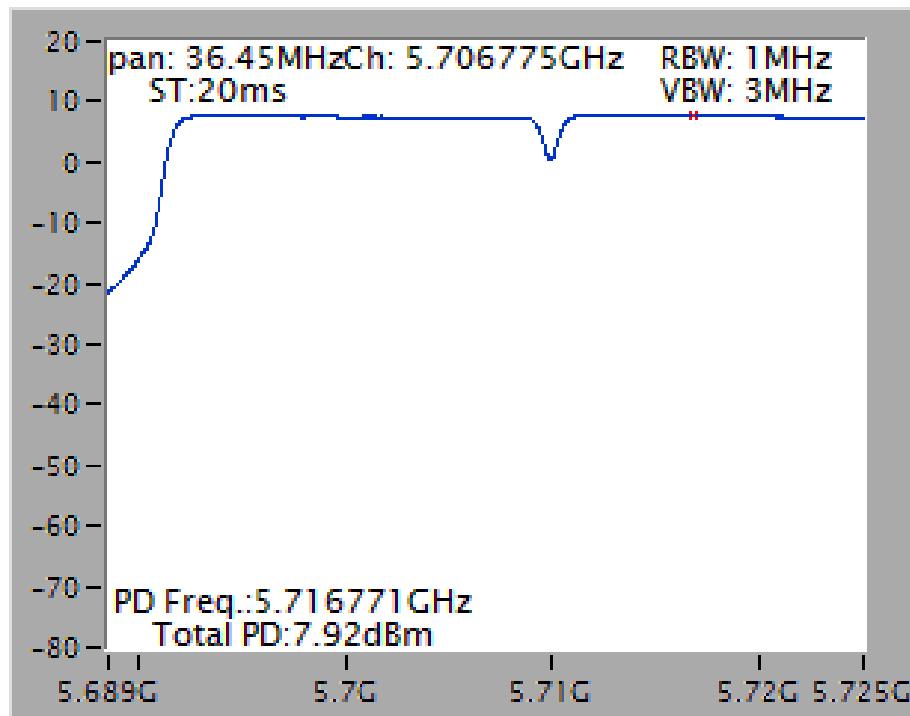
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz (UNII 2C)



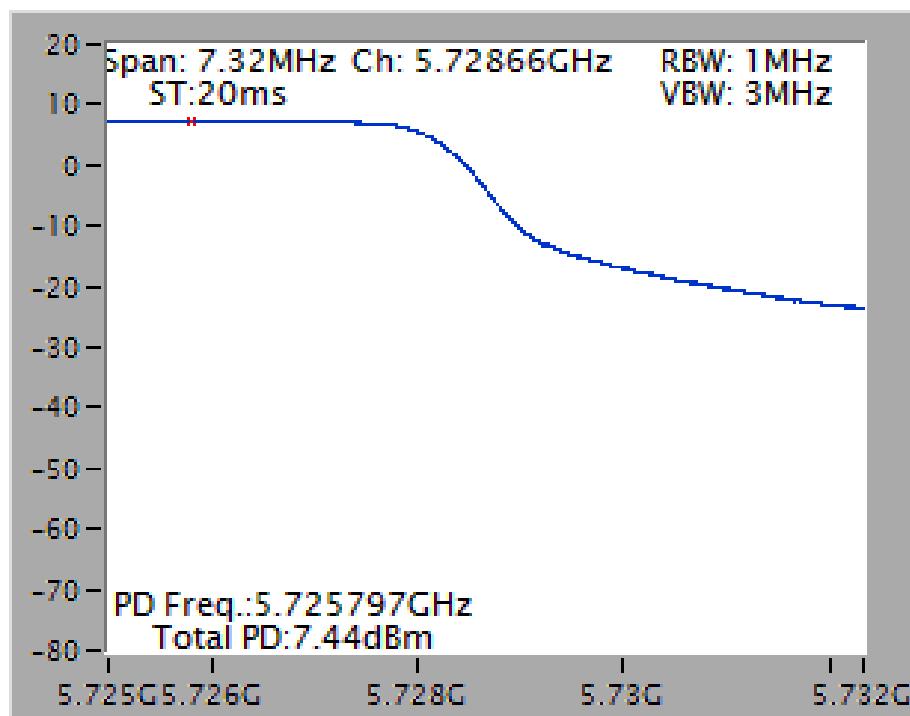
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5720 MHz (UNII 3)



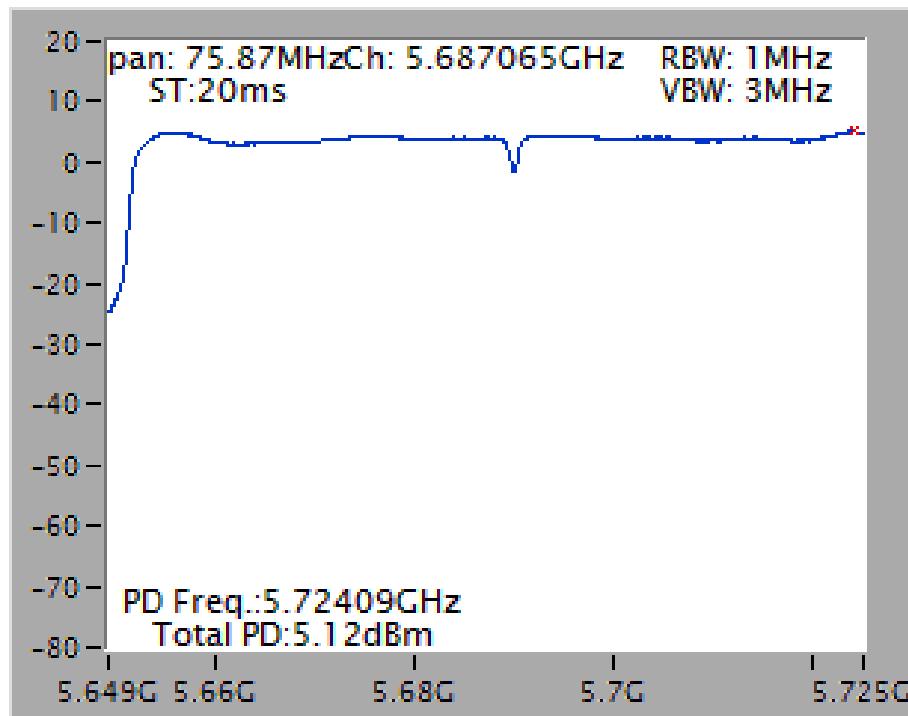
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5710 MHz (UNII 2C)



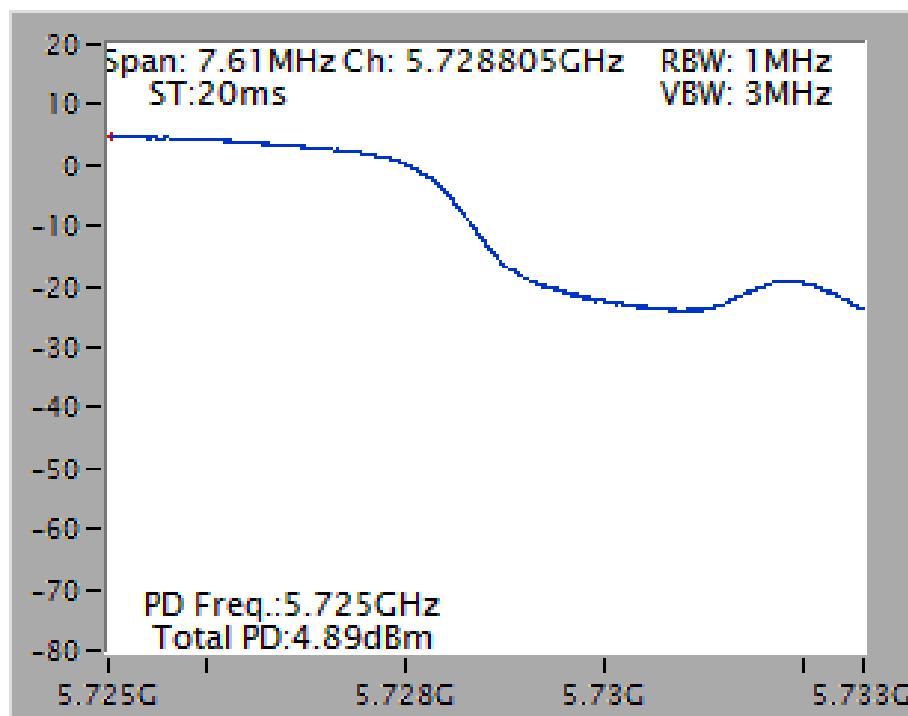
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5710 MHz (UNII 3)



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5690 MHz (UNII 2C)

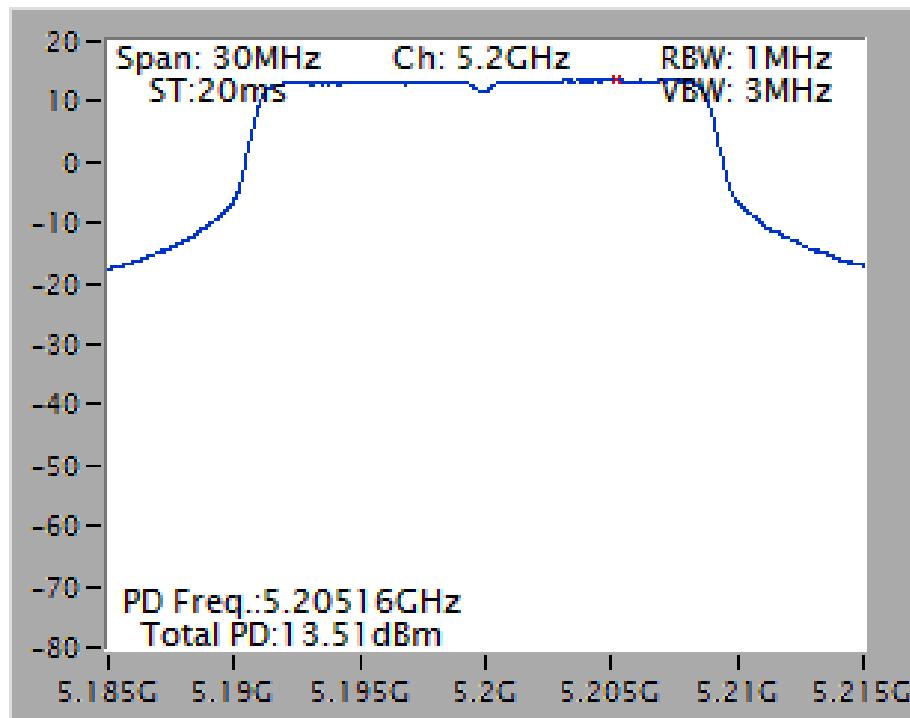


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5690 MHz (UNII 3)

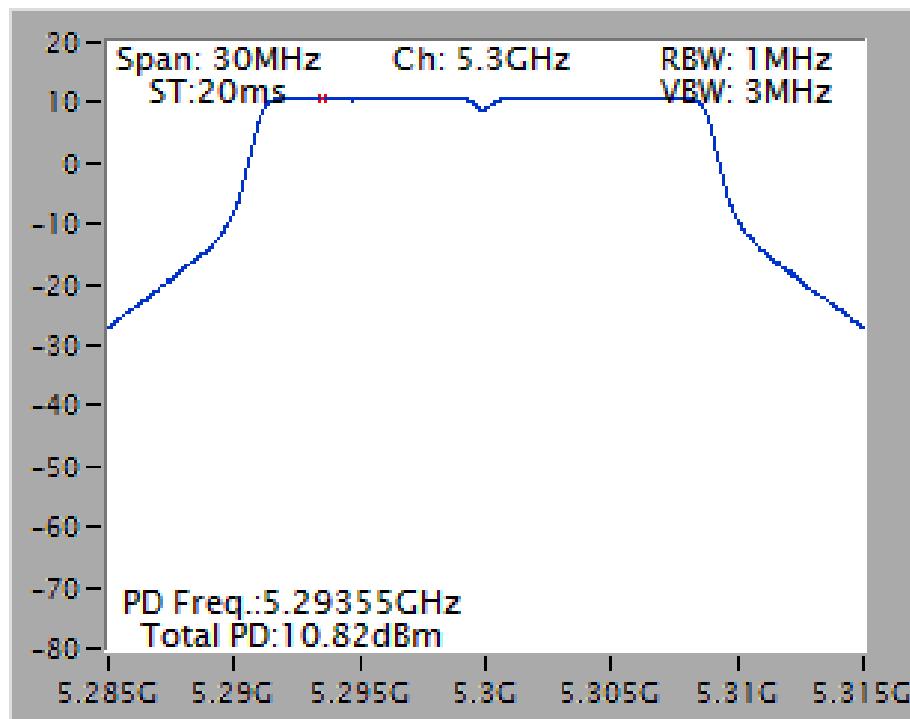


For beamforming function:

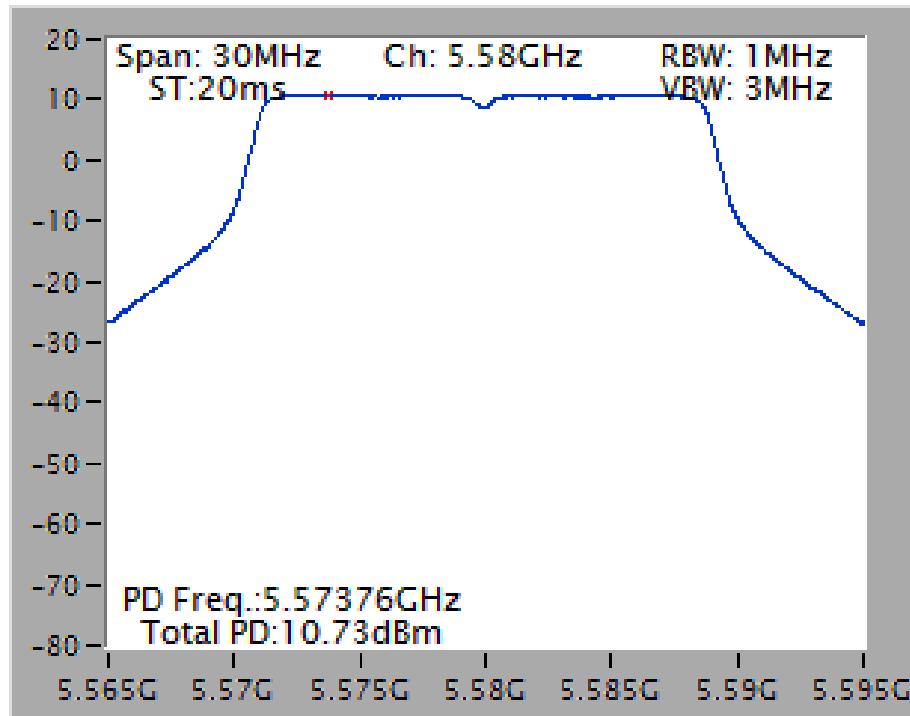
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



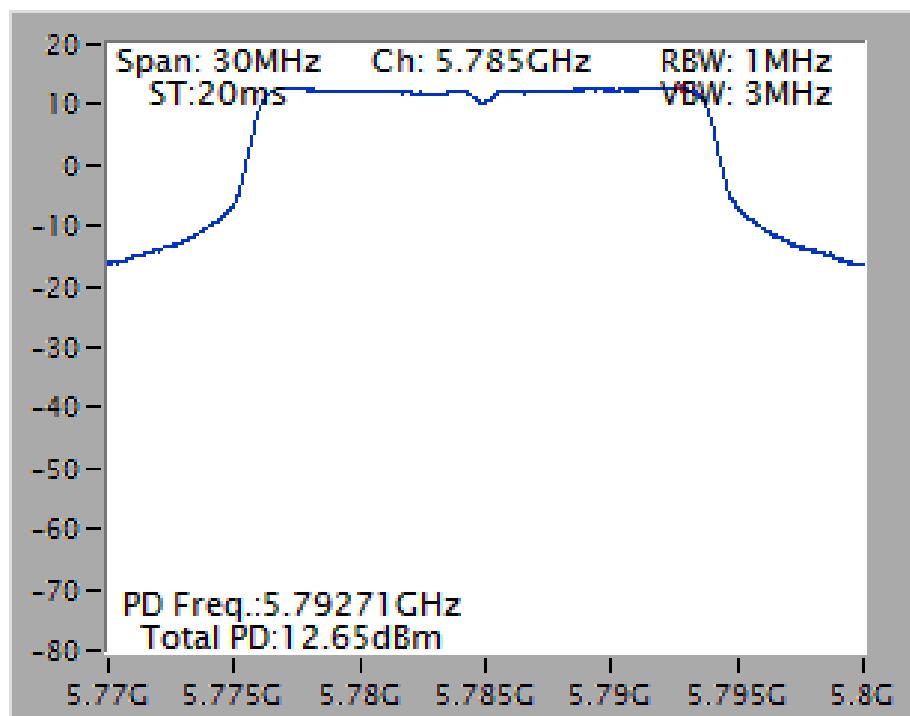
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5300 MHz



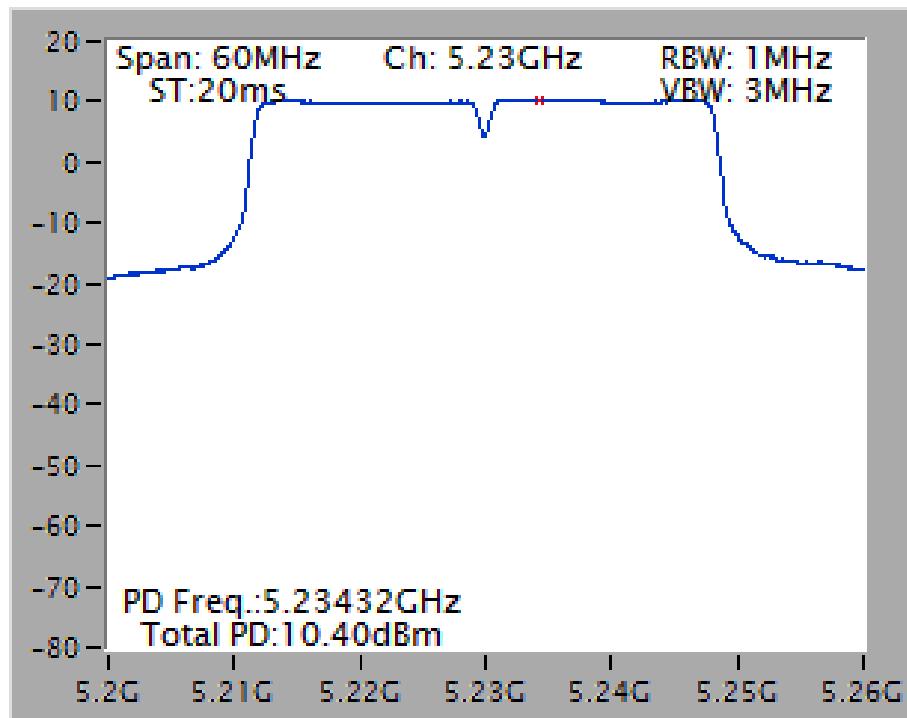
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5580 MHz



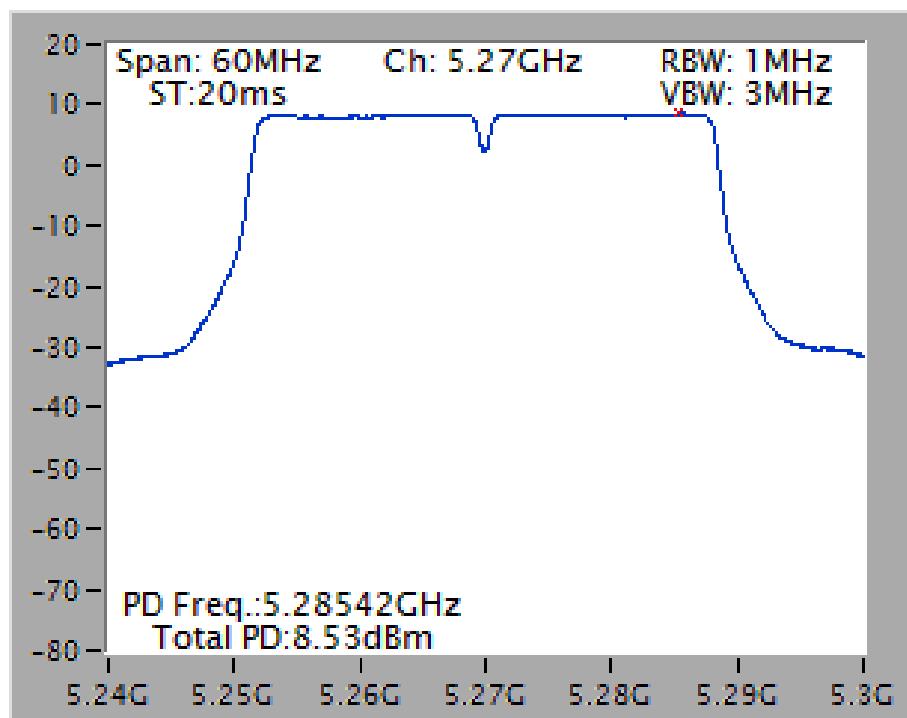
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



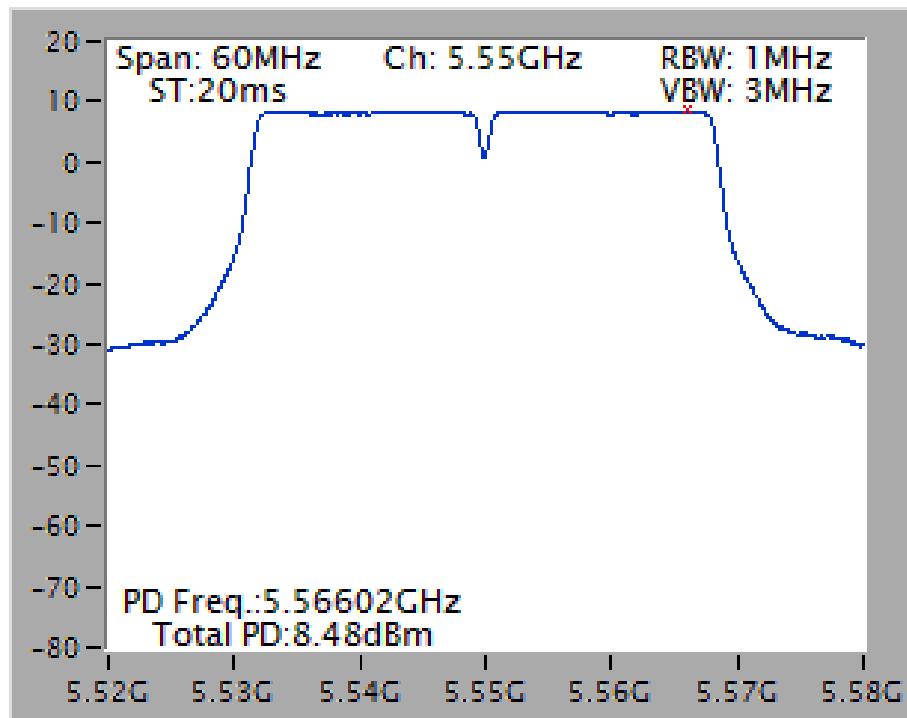
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5270 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5500 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz

