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FCC RADIO TEST REPORT

Applicant's company	Extreme Networks, Inc.
Applicant Address	9 Northeastern Blvd. Salem, NH 03079 USA
FCC ID	QXO-4411AC
Manufacturer's company	Senao Networks, Inc.
Manufacturer Address	3F, No. 529, Chung Cheng Rd., Hsintien, Taipei, Taiwan

Product Name	Wireless 802.11a/AC+ b/g/n Access Point
Brand Name	Extreme Networks
Model No.	31012, 31014, 31013, 31015
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5250 ~ 5350MHz / 5470 ~ 5725MHz
Received Date	Oct. 15, 2015
Final Test Date	Nov. 30, 2015
Submission Type	Original Equipment

Statement

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

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

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013, 47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01, KDB662911 D01 v02r01, KDB644545 D03 v01.**

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



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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR541527-04AE	Rev. 01	Initial issue of report	Jan. 13, 2016

1. VERIFICATION OF COMPLIANCE

Product Name : Wireless 802.11a/AC+ b/g/n Access Point
Brand Name : Extreme Networks
Model No. : 31012, 31014, 31013, 31015
Applicant : Extreme Networks, Inc.
Test Rule Part(s) : 47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Oct. 15, 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.



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	3.06 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	0.03 dB
4.5	15.407(a)	Power Spectral Density	Complies	0.01 dB
4.6	15.407(b)	Radiated Emissions	Complies	1.07 dB
4.7	15.407(b)	Band Edge Emissions	Complies	1.01 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 or PoE
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5250 ~ 5350MHz / 5470 ~ 5725MHz
Channel Number	16 for 20MHz bandwidth ; 8 for 40MHz bandwidth 4 for 80MHz bandwidth
Channel Band Width (99%)	Mode 1: EUT 1 + Set 1 Ceiling Mount Omni Antenna / 7 dBi Band 2: IEEE 802.11a: 16.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.80 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 34.88 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.10 MHz Band 3: IEEE 802.11a: 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.10 MHz Mode 2: EUT 1 + Set 2 Sector Antenna / 6.5 dBi Band 2: IEEE 802.11a: 16.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 34.88 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.10 MHz Band 3: IEEE 802.11a: 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.80 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 34.44 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.67 MHz

	Mode 3: EUT 1 + Set 3 Sector Antenna / 5.5 dBi Band 2: IEEE 802.11a: 16.85 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.17 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 73.81 MHz Band 3: IEEE 802.11a: 16.85 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.18 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.39 MHz Mode 4: EUT 1 + Set 4 Sector Antenna / 7.5 dBi Band 2: IEEE 802.11a: 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.60 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.39 MHz Band 3: IEEE 802.11a: 16.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.63 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz Mode 5: EUT 1 + Set 5 Sector Antenna / 4.5 dBi Band 2: IEEE 802.11a: 16.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.17 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 73.81 MHz Band 3: IEEE 802.11a: 16.85 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.18 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.38 MHz
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	Mode 6: EUT 1 + Set 6 Sector Antenna / 4 dBi Band 2: IEEE 802.11a: 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.80 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.17 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.67 MHz Band 3: IEEE 802.11a: 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.80 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.75 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.67 MHz Mode 7: EUT 1 + Set 9 Dipole Antenna / 4.67 dBi Band 2: IEEE 802.11a: 16.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.80 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.02 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.67 MHz Band 3: IEEE 802.11a: 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.71 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.75 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.67 MHz Mode 8: EUT 2 + Set 10 PIFA Antenna / Chain1:5.84 dBi, Chain2:5.50 dBi, Chain3:5.84 dBi, Chain4:5.65 dBi Band 2: IEEE 802.11a: 16.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.45 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz Band 3: IEEE 802.11a: 16.41 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.45 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz
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Maximum Conducted Output Power	Mode 1: EUT 1 + Set 1 Ceiling Mount Omni Antenna / 7 dBi Band 2: IEEE 802.11a: 19.76 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 19.79 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 22.55 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.82 dBm Band 3: IEEE 802.11a: 19.68 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 19.84 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 22.73 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 22.89 dBm Mode 2: EUT 1 + Set 2 Sector Antenna / 6.5 dBi Band 2: IEEE 802.11a: 20.92 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 20.67 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.43 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.14 dBm Band 3: IEEE 802.11a: 20.83 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 20.76 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.45 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.32 dBm Mode 3: EUT 1 + Set 3 Sector Antenna / 5.5 dBi Band 2: IEEE 802.11a: 21.68 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 21.62 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.93 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 19.36 dBm Band 3: IEEE 802.11a: 21.61 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 21.76 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.95 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.97 dBm Mode 4: EUT 1 + Set 4 Sector Antenna / 7.5 dBi Band 2: IEEE 802.11a: 19.51 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 19.38 dBm
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	IEEE 802.11ac MCS0/Nss1 (VHT40): 22.24 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.51 dBm Band 3: IEEE 802.11a: 19.42 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 19.21 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 22.46 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 22.25 dBm Mode 5: EUT 1 + Set 5 Sector Antenna / 4.5 dBi Band 2: IEEE 802.11a: 22.68 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 22.78 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.93 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 19.93 dBm Band 3: IEEE 802.11a: 22.58 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 22.76 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.95 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.81 dBm Mode 6: EUT 1 + Set 6 Sector Antenna / 4 dBi Band 2: IEEE 802.11a: 22.91 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 22.99 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.93 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.82 dBm Band 3: IEEE 802.11a: 22.80 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 22.65 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.76 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.81 dBm Mode 7: EUT 1 + Set 9 Dipole Antenna / 4.67 dBi Band 2: IEEE 802.11a: 19.14 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 19.27 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 22.24 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.14 dBm Band 3: IEEE 802.11a: 19.03 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 19.32 dBm
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	IEEE 802.11ac MCS0/Nss1 (VHT40): 22.11 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.81 dBm Mode 8: EUT 2 + Set 10 PIFA Antenna / Chain1:5.84 dBi, Chain2:5.50 dBi, Chain3:5.84 dBi, Chain4:5.65 dBi Band 2: IEEE 802.11a: 18.45 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 18.28 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.14 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.46 dBm Band 3: IEEE 802.11a: 18.67 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 18.36 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.35 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.95 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
TPC Function	☒ With TPC	☐ Without TPC
Weather Band (5600~5650MHz)	☒ With 5600~5650MHz	☐ Without 5600~5650MHz
Operating Mode	☐ Outdoor access point	
	☒ Indoor access point	
	☐ Fixed point-to-point access points	
	☐ Mobile and portable client devices	

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
802.11n (HT20)	4	MCS 0-31
802.11n (HT40)	4	MCS 0-31
802.11ac (VHT20)	4	MCS 0-9/Nss1-4
802.11ac (VHT40)	4	MCS 0-9/Nss1-4
802.11ac (VHT80)	4	MCS 0-9/Nss1-4

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

Then EUT supports HT20 and HT40.

Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40 and VHT80 in 5GHz.

Note 3: Modulation modes consist of below configuration:

HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Set.	Brand Holder	Model Number (Part No.)	Extreme Part No. (Short Description)	Antenna Type	Connector	Polarized Antenna	Gain (dBi)	
							2.4GHz	5GHz
1	PCTEL Inc.	WS-AI-DQ04360	WS-AI-DQ04360 (WS-AI-DQ04360)	Ceiling Mount Omni	RP SMA Male	V	4	7
2	PCTEL Inc.	908403-10	30705 (WS-AI-DE07025)	Sector Antenna	RP SMA Male	V	7.5	6.5
3	PCTEL Inc.	908400-10	30702 (WS-AI-DQ05120)	Sector Antenna	RP SMA Male	V	5.5	5.5
4	PCTEL Inc.	908405-10	30707 (WS-AI-DE10055)	Sector Antenna	RP SMA Male	V	10.5	7.5
5	PCTEL Inc.	908404-10	30706 (WS-AI-5Q05025)	Sector Antenna	RP SMA Male	V	-	4.5
6	PCTEL Inc.	908401-10	30703 (WS-AI-5Q04060)	Sector Antenna	RP SMA Male	V	-	4
7	PCTEL Inc.	908402-10	30704 (WS-AI-2Q05060)	Sector Antenna	RP SMA Male	V	5	-
8	Master Wave Technology Co., Ltd.	98152MRSX015	30709 (WS-ANT-2DIP-4)	Dipole Antenna	RP SMA Male	X	4.66	-
9	Master Wave Technology Co., Ltd.	98152URSX009	30710 (WS-ANT-5DIP-4)	Dipole Antenna	RP SMA Male	X	-	4.67
10	Senao Networks, Inc.	AP3935i	-	PIFA Antenna	IPEX	X	Note 1	

Note1:

Set.	Antenna Gain (dBi)							
	2.4GHz				5GHz			
	Chain 1	Chain 2	Chain 3	Chain 4	Chain 1	Chain 2	Chain 3	Chain 4
10	3.81	3.75	3.98	3.47	5.84	5.50	5.84	5.65

Note2:

The EUT has ten sets of antennas.

<For 2.4GHz Function>

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

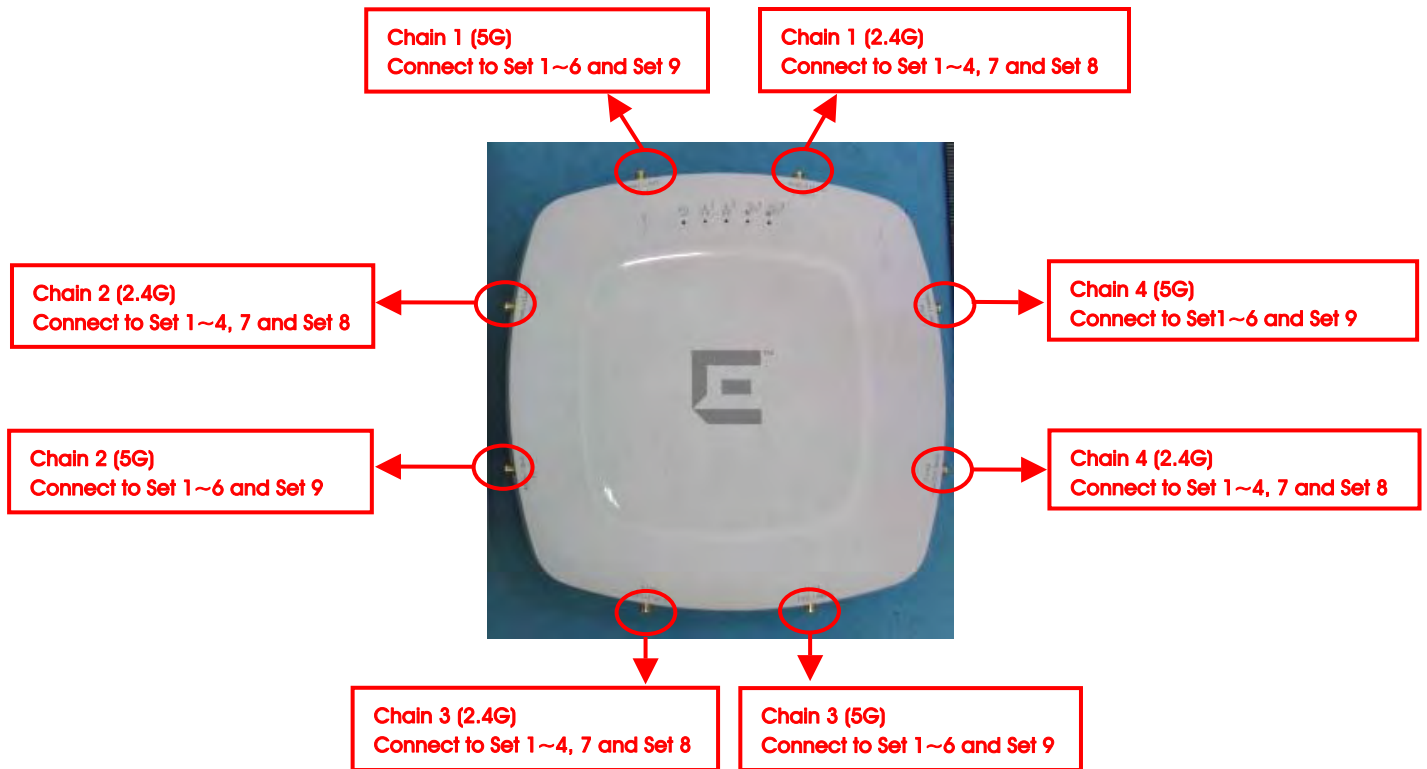
Chain 1, Chain 2, Chain 3 and Chain 4 could transmit/receive simultaneously.

<For 5GHz Function>

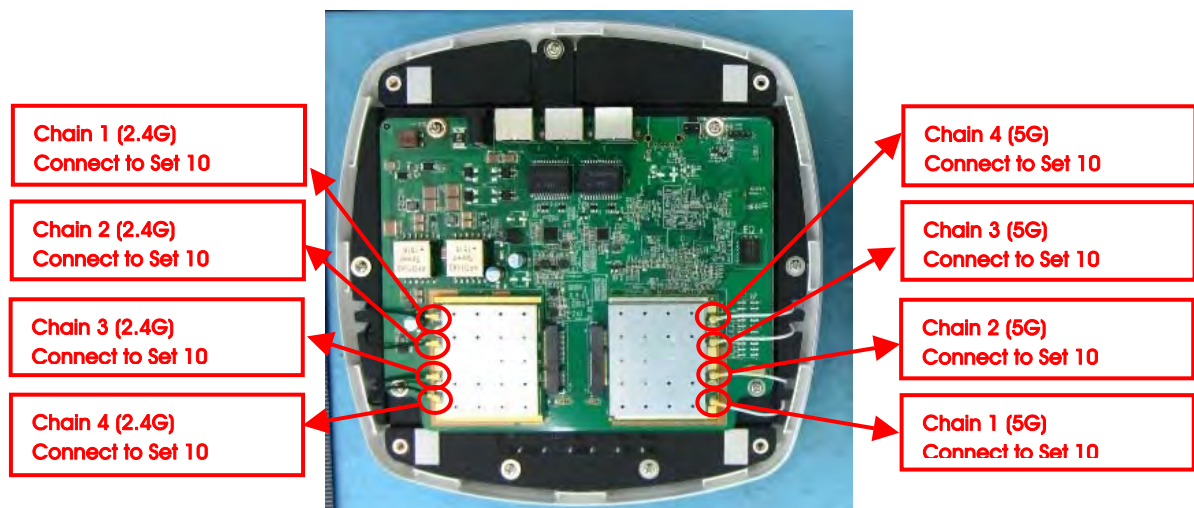
For IEEE 802.11a/n/ac mode (4TX, 4RX):

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

For EUT 1:



For EUT 2:



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

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

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

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

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

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Chain
AC Power Line Conducted Emissions	Normal Link		-	-	-
Max. Conducted Output Power	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/ 134/142	1+2+3+4
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122/138	1+2+3+4
Power Spectral Density	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/ 134/142	1+2+3+4
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122/138	1+2+3+4
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/ 134/142	1+2+3+4
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122/138	1+2+3+4
6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 3	6Mbps	144	1+2+3+4
	11ac VHT20	Band 3	MCS0/Nss1	144	1+2+3+4
	11ac VHT40	Band 3	MCS0/Nss1	142	1+2+3+4
	11ac VHT80	Band 3	MCS0/Nss1	138	1+2+3+4

Radiated Emissions 9kHz~1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/ 134/142	1+2+3+4
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122/138	1+2+3+4
Band Edge Emission	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/ 116/140/144	1+2+3+4
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/ 134/142	1+2+3+4
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122/138	1+2+3+4
Frequency Stability	20 MHz	Band 2-3	-	60/116	3, 4
	40 MHz	Band 2-3	-	62/110	3, 4
	80 MHz	Band 2-3	-	58/106	3, 4

Note1: 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.

Note2:

The adapter are for measurement only, would not be marketed.

The adapter information as below:

Power	Brand	Model
Adapter	Powertron Electronics Corp.	PA1024-120IB200

Note3: All the specification of test configurations and test modes were based on customer's request.

Note4: The console port can not be used by end user. It is generally used for updating FW by professional installer.

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link - EUT 1 + Adapter

Mode 2. Normal Link - EUT 2 + Adapter

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

For Radiated Emission Below 1GHz test:

Mode 1. Place EUT 1 in Y axis + Set 4 + Adapter

Mode 2. Place EUT 1 in Z axis + Set 4 + Adapter

Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3~5 will follow this same test mode.

Mode 3. Place EUT 1 in Z axis + Set 4 + PoE

Mode 4. Place EUT 2 in Z axis + Set 10 + Adapter

Mode 5. Place EUT 2 in Z axis + Set 10 + PoE

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

For Radiated Emission test Above 1GHz:

The Mode 1~6 and Mode 8 was performed at Y axis and Z axis position. Y axis has been evaluated to be the worst case, thus measurement will follow this same test mode.

The Mode 7 was performed at Y axis and Z axis position. Z axis has been evaluated to be the worst case, thus measurement will follow this same test mode.

Mode 1. Place EUT 1 in Y axis + Set 1

Mode 2. Place EUT 1 in Y axis + Set 2

Mode 3. Place EUT 1 in Y axis + Set 3

Mode 4. Place EUT 1 in Y axis + Set 4

Mode 5. Place EUT 1 in Y axis + Set 5

Mode 6. Place EUT 1 in Y axis + Set 6

Mode 7. Place EUT 1 in Z axis + Set 9

Mode 8. Place EUT 2 in Y axis + Set 10

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 FA541527-01AB) 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 Multiple Listing

The model names are identical to each other in all aspects except for the following table:

Equipment	EUT	Product Name	Model Name	Internal Antenna	External Antenna	Equipped Antenna
Wireless 802.11a/AC+ b/g/n Access Point	1	WS-AP3935e-FCC	31014	X	V	Set 1~9
		WS-AP3935e-ROW	31015			
	2	WS-AP3935i-FCC	31012	V	X	Set 10
		WS-AP3935i-ROW	31013			

Note: Different model names for EUT 1 (31014 and 31015) and EUT 2 (31012 and 31013) served as marketing strategy.

3.8. Table for Supporting Units

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

Support Unit	Brand	Model	FCC ID
Notebook*4	DELL	E4300	DoC
Adapter	Powertron Electronics Corp.	PA1024-120IB200	N/A

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

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
Adapter	Powertron Electronics Corp.	PA1024-120IB200	N/A

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
Notebook*4	DELL	E6430	DoC
Adapter	Powertron Electronics Corp.	PA1024-120IB200	N/A

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
Adapter	Powertron Electronics Corp.	PA1024-120IB200	N/A

3.9. 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.

Mode 1: EUT 1 + Set 1 Ceiling Mount Omni Antenna / 7 dBi

Test Software Version	QCA VER3.0.144.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	14.5	14.5	14.5	14	14	14.5	15
802.11ac MCS0/Nss1 VHT20	14.5	14.5	14.5	14	14.5	15	15
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	16.5	12.5	14.5	16	16.5	16.5	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz	5530 MHz	5610 MHz	5690 MHz			
	12.5	10.5	17	17			

Mode 2: EUT 1 + Set 2 Sector Antenna / 6.5 dBi

Test Software Version	QCA VER3.0.144.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	15.5	15.5	15.5	15	15	15.5	15.5
802.11ac MCS0/Nss1 VHT20	15.5	15.5	15.5	15	15	15.5	15.5
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	18	12.5	11.5	17	17.5	17	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz	5530 MHz	5610 MHz	5690 MHz			
	10.5	10	17.5	17.5			

Mode 3: EUT 1 + Set 3 Sector Antenna / 5.5 dBi

Test Software Version	QCA VER3.0.144.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	16.5	16.5	16.5	16	16	16.5	15.5
802.11ac MCS0/Nss1 VHT20	16.5	16.5	17	16	16.5	16.5	15.5
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	18.5	14.5	15	17.5	18	17.5	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz		5690 MHz
	13.5		12		18		18

Mode 4: EUT 1 + Set 4 Sector Antenna / 7.5 dBi

Test Software Version	QCA VER3.0.144.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	13.5	13.5	13.5	13.5	13.5	13.5	14
802.11ac MCS0/Nss1 VHT20	13.5	13.5	13.5	13.5	13.5	13.5	14.5
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	15.5	10.5	13.5	16	16	16.5	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz		5690 MHz
	10.5		10.5		16.5		17

Mode 5: EUT 1 + Set 5 Sector Antenna / 4.5 dBi

Test Software Version	QCA VER3.0.144.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	17.5	17.5	17.5	17	17	17.5	16.5
802.11ac MCS0/Nss1 VHT20	17.5	17.5	17.5	17	17.5	17.5	16.5
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	18.5	15	14	17.5	18	17.5	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz		5690 MHz
	14		13		18		18

Mode 6: EUT 1 + Set 6 Sector Antenna / 4 dBi

Test Software Version	QCA VER3.0.144.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	18	17.5	17.5	17.5	17.5	17	17
802.11ac MCS0/Nss1 VHT20	18.5	18	17	17.5	17.5	15.5	17.5
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	18.5	12.5	12.5	17.5	17	17.5	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz		5690 MHz
	11.5		12.5		16.5		18

Mode 7: EUT 1 + Set 9 Dipole Antenna / 4.67 dBi

Test Software Version	QCA VER3.0.144.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	14	14	14	13.5	13.5	14	14.5
802.11ac MCS0/Nss1 VHT20	14	14	14	13.5	14	14.5	14.5
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	16	13	15.5	15.5	16	16.5	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz		5690 MHz
	11.5		11		18		18

Mode 8: EUT 2 + Set 10 PIFA Antenna / Chain1:5.84 dBi, Chain2:5.50 dBi, Chain3:5.84 dBi, Chain4:5.65 dBi

Test Software Version	QCA VER3.0.144.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	12	12	13	13	12	12	13
802.11ac MCS0/Nss1 VHT20	12.5	12.5	12.5	12.5	12.5	12.5	13
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	14.5	11.5	14.5	14.5	14.5	15	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz		5690 MHz
	12		11		17		18.5

3.10. EUT Operation during Test

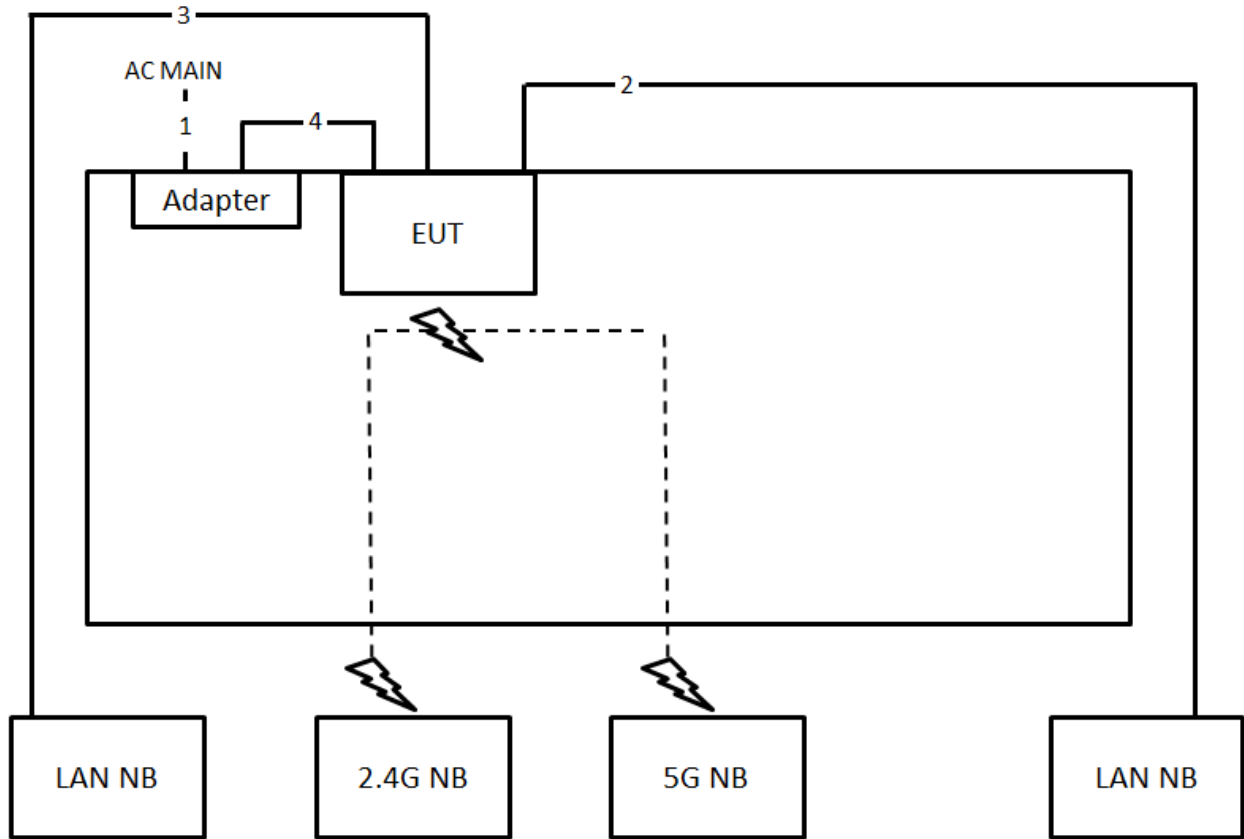
The EUT was programmed to be in continuously transmitting mode.

3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	4.974	5.064	98.22	0.08	0.01
802.11ac MCS0/Nss1 VHT20	2.320	2.420	95.87	0.18	0.43
802.11ac MCS0/Nss1 VHT40	1.110	1.200	92.50	0.34	0.90
802.11ac MCS0/Nss1 VHT80	2.058	2.128	96.71	0.15	0.49

3.12. Test Configurations

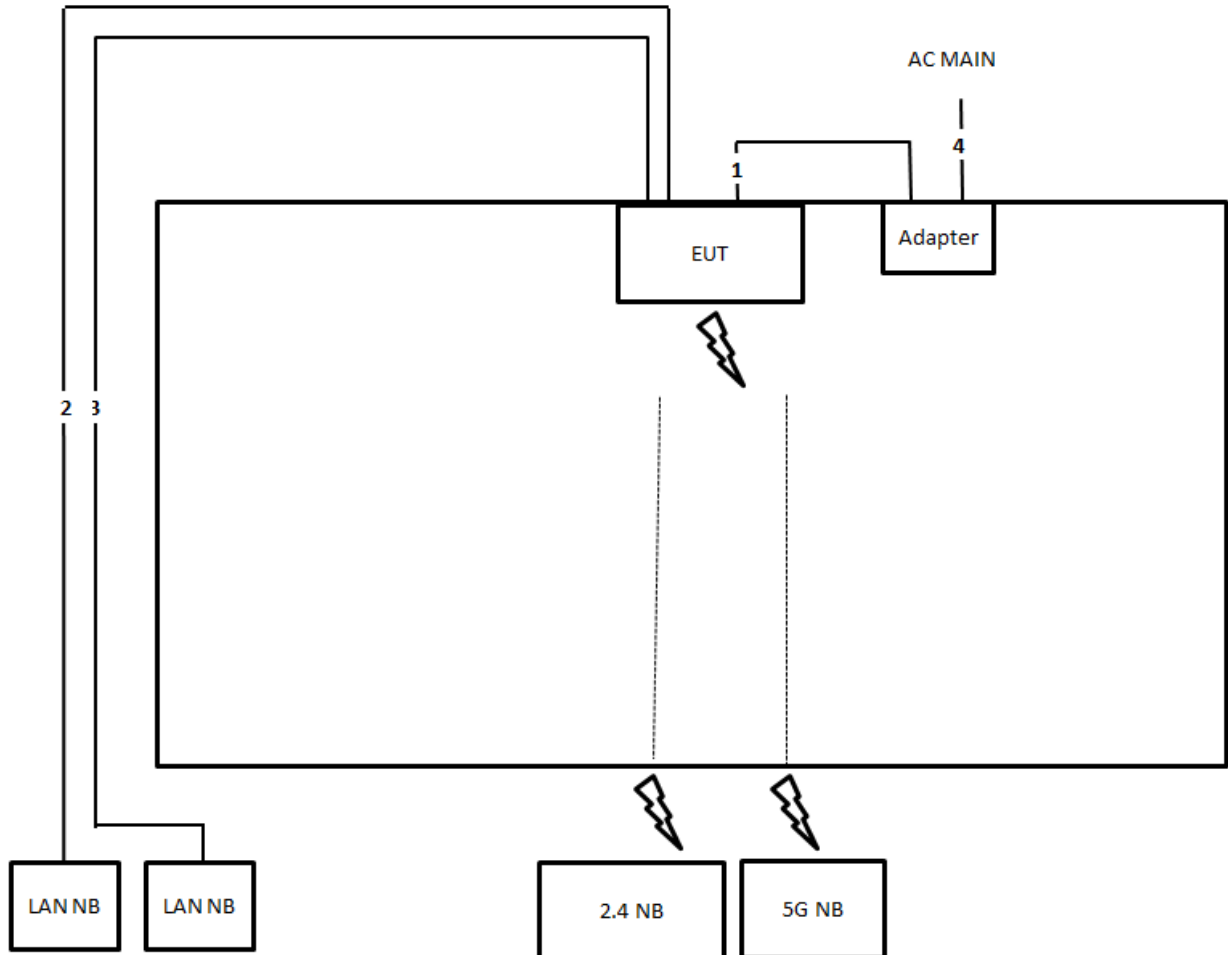
3.12.1.AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length(m)
1	AC Power cable	No	1.8
2	RJ-45 cable	No	10
3	RJ-45 cable	No	10
4	DC Power cable	No	1.2

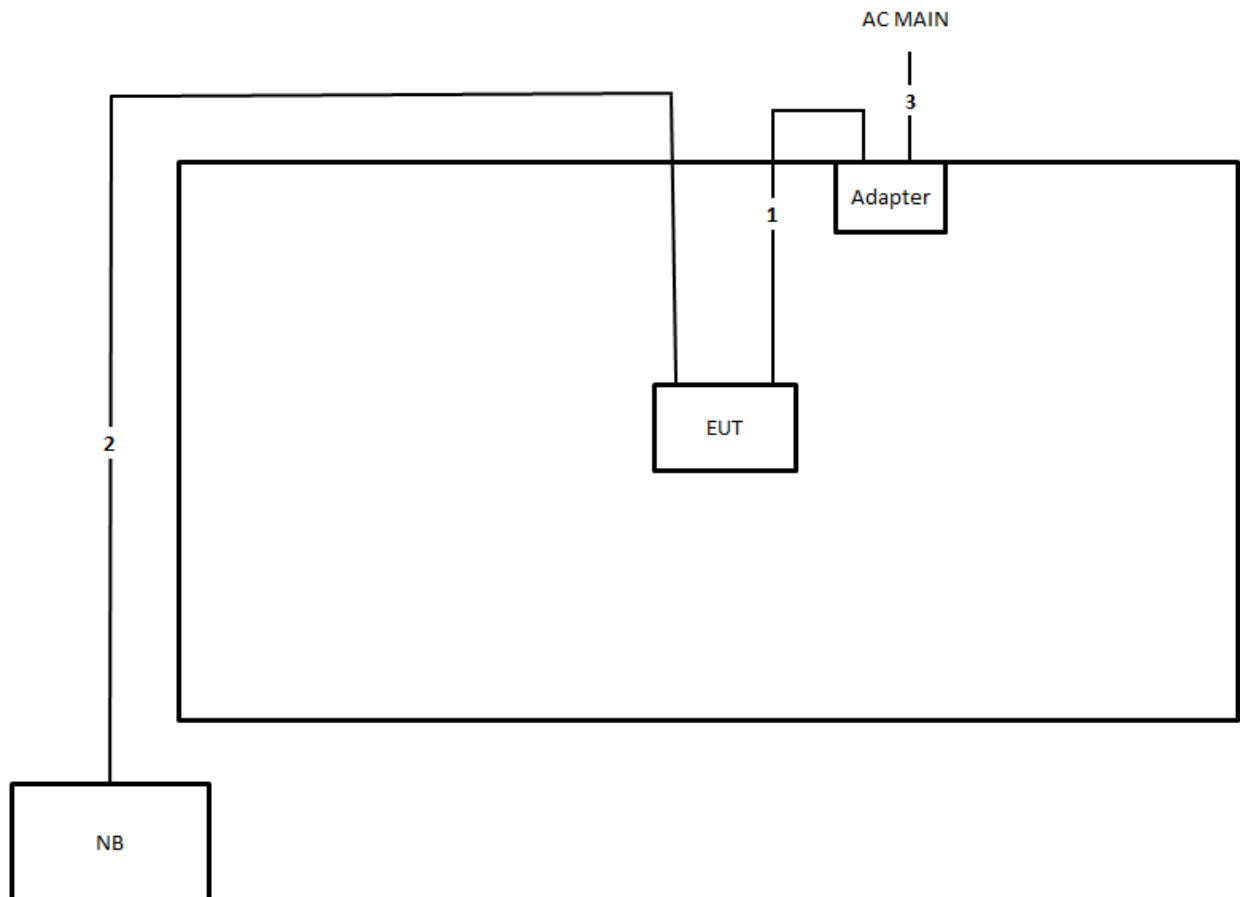
3.12.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



Item	Connection	Shielded	Length(m)
1	DC Power cable	No	1.2
2	RJ-45 cable	No	10
3	RJ-45 cable	No	10
4	AC Power cable	No	1.8

Test Configuration: above 1GHz



Item	Connection	Shielded	Length(m)
1	DC Power cable	No	1.2
2	RJ-45 cable	No	10
3	AC Power cable	No	1.8

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product which is designed to be connected 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.



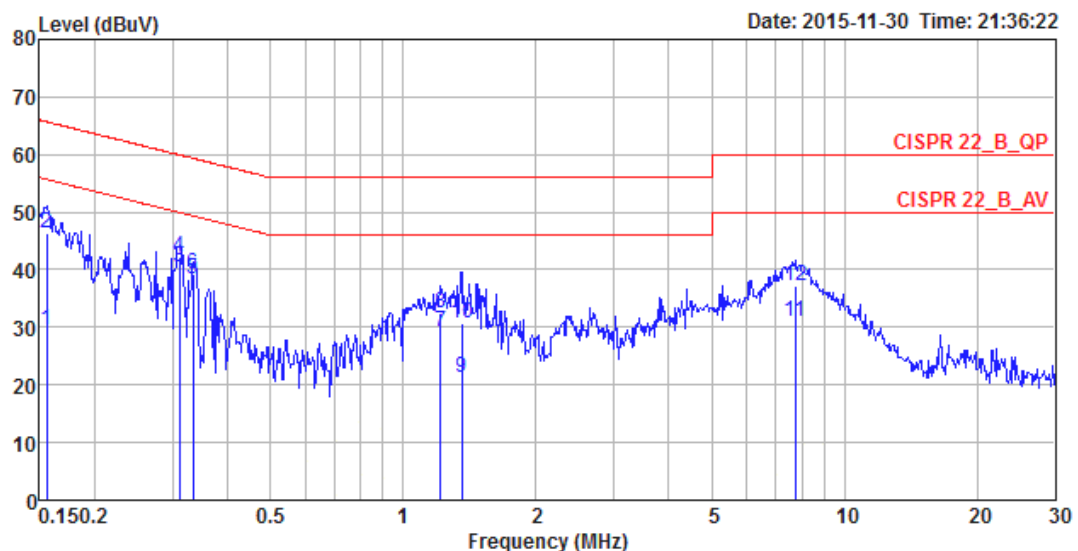
- (1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- (2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- (3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω . LISN can be placed on top of, or immediately beneath, reference ground plane.
- (3.1) All other equipment powered from additional LISN(s).
- (3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
- (3.3) LISN at least 80 cm from nearest part of EUT chassis.
- (4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
- (5) Non-EUT components of EUT system being tested.
- (6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
- (7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

There is no deviation with the original standard.

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

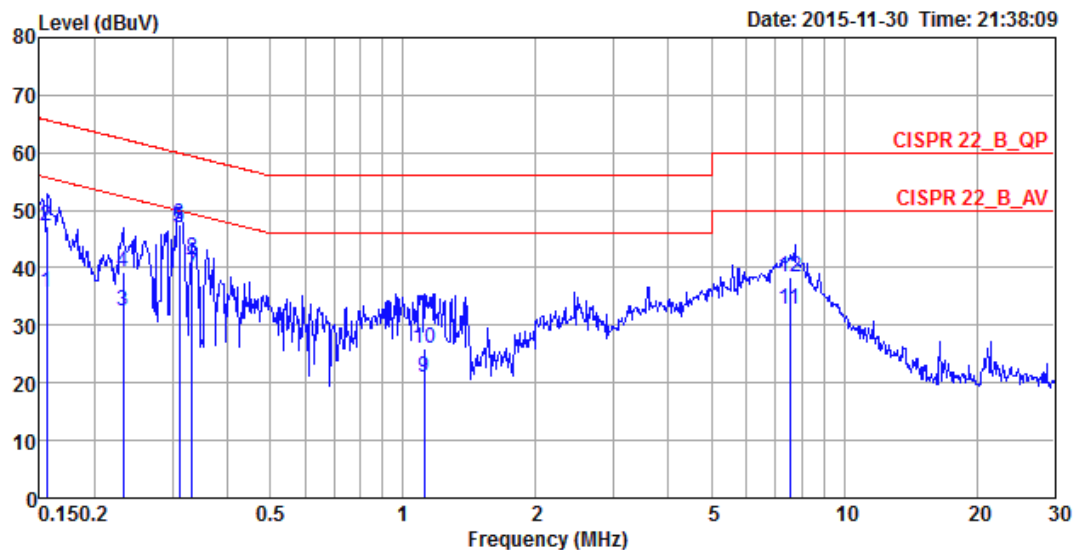
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23°C	Humidity	58%
Test Engineer	Hank Yang	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1557	29.44	-26.25	55.69	19.49	9.93	0.02	LINE	Average
2	0.1557	46.44	-19.25	65.69	36.49	9.93	0.02	LINE	QP
3	0.3116	40.33	-9.60	49.93	30.36	9.93	0.04	LINE	Average
4	0.3116	42.23	-17.70	59.93	32.26	9.93	0.04	LINE	QP
5	0.3338	38.35	-11.00	49.35	28.38	9.93	0.04	LINE	Average
6	0.3338	39.29	-20.06	59.35	29.32	9.93	0.04	LINE	QP
7	1.2162	29.29	-16.71	46.00	19.27	9.97	0.05	LINE	Average
8	1.2162	32.49	-23.51	56.00	22.47	9.97	0.05	LINE	QP
9	1.3593	21.40	-24.60	46.00	11.38	9.97	0.05	LINE	Average
10	1.3593	30.60	-25.40	56.00	20.58	9.97	0.05	LINE	QP
11	7.7278	31.10	-18.90	50.00	20.82	10.13	0.15	LINE	Average
12	7.7278	37.22	-22.78	60.00	26.94	10.13	0.15	LINE	QP

Temperature	23°C	Humidity	58%
Test Engineer	Hank Yang	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over	Limit	Read	LISN	Cable	Pol/Phase	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss		
			dB	dBuV	dBuV	dB	dB		
1	0.1557	35.77	-19.92	55.69	25.97	9.78	0.02	NEUTRAL	Average
2	0.1557	47.34	-18.35	65.69	37.54	9.78	0.02	NEUTRAL	QP
3	0.2316	32.40	-19.99	52.39	22.58	9.79	0.03	NEUTRAL	Average
4	0.2316	39.12	-23.27	62.39	29.30	9.79	0.03	NEUTRAL	QP
5	0.3116	46.87	-3.06	49.93	37.04	9.79	0.04	NEUTRAL	Average
6	0.3116	47.56	-12.37	59.93	37.73	9.79	0.04	NEUTRAL	QP
7	0.3321	38.91	-10.49	49.40	29.08	9.79	0.04	NEUTRAL	Average
8	0.3321	41.56	-17.84	59.40	31.73	9.79	0.04	NEUTRAL	QP
9	1.1173	20.91	-25.09	46.00	11.05	9.81	0.05	NEUTRAL	Average
10	1.1173	25.86	-30.14	56.00	16.00	9.81	0.05	NEUTRAL	QP
11	7.5258	32.84	-17.16	50.00	22.72	9.97	0.15	NEUTRAL	Average
12	7.5258	38.45	-21.55	60.00	28.33	9.97	0.15	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	$\geq 3 \times \text{RBW}$
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	25°C	Humidity	50%
Test Engineer	Eddie Weng & Lucas Huang		
Test Mode	Mode 1: EUT 1 + Set 1 Ceiling Mount Omni Antenna / 7 dBi		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	20.17	16.59
	5300 MHz	18.78	16.76
	5320 MHz	18.96	16.67
	5500 MHz	18.87	16.58
	5580 MHz	19.65	16.67
	5700 MHz	19.39	16.50
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.09	17.71
	5300 MHz	19.91	17.80
	5320 MHz	20.00	17.80
	5500 MHz	20.96	17.89
	5580 MHz	20.70	17.80
	5700 MHz	19.91	17.63
802.11ac MCS0/Nss1 VHT40	5270 MHz	38.55	34.88
	5310 MHz	38.41	34.30
	5510 MHz	38.99	34.88
	5550 MHz	38.99	35.02
	5670 MHz	39.42	35.89
802.11ac MCS0/Nss1 VHT80	5290 MHz	82.03	74.10
	5530 MHz	82.03	74.10
	5610 MHz	82.61	73.81

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	18.78	15.72	5709.91	5711.58	15.09	3.70	13.42	2.29
802.11ac MCS0/Nss1 VHT20	5720 MHz	20.00	17.63	5709.74	5710.97	15.26	4.74	14.03	3.60
802.11ac MCS0/Nss1 VHT40	5710 MHz	38.70	33.72	5690.00	5691.91	35.00	3.70	33.09	0.63
802.11ac MCS0/Nss1 VHT80	5690 MHz	82.61	73.23	5648.84	5651.80	76.16	6.45	73.20	0.02

Temperature	25°C	Humidity	50%
Test Engineer	Eddie Weng & Lucas Huang		
Test Mode	Mode 2: EUT 1 + Set 2 Sector Antenna / 6.5 dBi		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	19.48	16.76
	5300 MHz	18.87	16.67
	5320 MHz	19.04	16.67
	5500 MHz	18.87	16.58
	5580 MHz	19.13	16.67
	5700 MHz	19.04	16.67
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.35	17.89
	5300 MHz	19.39	17.63
	5320 MHz	20.00	17.71
	5500 MHz	19.91	17.71
	5580 MHz	19.91	17.71
	5700 MHz	20.17	17.80
802.11ac MCS0/Nss1 VHT40	5270 MHz	38.84	34.88
	5310 MHz	38.41	34.30
	5510 MHz	38.84	34.44
	5550 MHz	38.55	33.57
	5670 MHz	38.84	34.44
802.11ac MCS0/Nss1 VHT80	5290 MHz	81.45	74.10
	5530 MHz	82.03	74.67
	5610 MHz	81.74	73.23

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	19.30	16.50	5710.26	5711.75	14.74	4.57	13.25	3.25
802.11ac MCS0/Nss1 VHT20	5720 MHz	20.17	17.63	5709.91	5711.14	15.09	5.09	13.86	3.77
802.11ac MCS0/Nss1 VHT40	5710 MHz	40.29	35.89	5689.86	5692.06	35.15	5.14	32.94	2.95
802.11ac MCS0/Nss1 VHT80	5690 MHz	83.77	75.83	5647.68	5652.08	77.32	6.45	72.92	2.92

Temperature	25°C	Humidity	50%
Test Engineer	Eddie Weng & Lucas Huang		
Test Mode	Mode 3: EUT 1 + Set 3 Sector Antenna / 5.5 dBi		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	20.26	16.76
	5300 MHz	20.00	16.85
	5320 MHz	19.13	16.76
	5500 MHz	21.04	16.85
	5580 MHz	19.48	16.76
	5700 MHz	19.48	16.50
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.61	17.80
	5300 MHz	20.00	17.89
	5320 MHz	20.44	17.89
	5500 MHz	21.74	17.89
	5580 MHz	21.04	17.80
	5700 MHz	20.09	17.63
802.11ac MCS0/Nss1 VHT40	5270 MHz	39.13	35.17
	5310 MHz	38.41	34.01
	5510 MHz	39.28	35.46
	5550 MHz	39.28	35.31
	5670 MHz	44.64	36.18
802.11ac MCS0/Nss1 VHT80	5290 MHz	82.90	73.81
	5530 MHz	81.74	74.10
	5610 MHz	82.90	74.39

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	19.13	16.58	5710.52	5711.75	14.48	4.65	13.25	3.33
802.11ac MCS0/Nss1 VHT20	5720 MHz	20.00	17.71	5710.00	5711.14	15.00	5.00	13.86	3.86
802.11ac MCS0/Nss1 VHT40	5710 MHz	39.42	35.75	5690.29	5692.20	34.71	4.71	32.80	2.95
802.11ac MCS0/Nss1 VHT80	5690 MHz	82.32	75.83	5648.55	5652.08	76.45	5.87	72.92	2.92

Temperature	25°C	Humidity	50%
Test Engineer	Eddie Weng & Lucas Huang		
Test Mode	Mode 4: EUT 1 + Set 4 Sector Antenna / 7.5 dBi		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	18.70	16.50
	5300 MHz	19.74	16.67
	5320 MHz	19.57	16.59
	5500 MHz	18.96	16.32
	5580 MHz	18.26	16.15
	5700 MHz	18.35	16.32
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.09	17.80
	5300 MHz	20.26	17.89
	5320 MHz	20.44	17.80
	5500 MHz	19.91	17.63
	5580 MHz	19.57	17.54
	5700 MHz	19.74	17.45
802.11ac MCS0/Nss1 VHT40	5270 MHz	39.28	35.60
	5310 MHz	39.13	35.60
	5510 MHz	39.86	36.32
	5550 MHz	40.00	36.32
	5670 MHz	39.28	36.04
802.11ac MCS0/Nss1 VHT80	5290 MHz	83.77	74.39
	5530 MHz	83.77	76.41
	5610 MHz	83.77	76.41

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	18.87	16.67	5710.17	5711.40	14.83	4.04	13.60	3.08
802.11ac MCS0/Nss1 VHT20	5720 MHz	19.74	17.80	5709.74	5710.97	15.26	4.48	14.03	3.77
802.11ac MCS0/Nss1 VHT40	5710 MHz	38.70	35.02	5691.01	5692.78	33.99	4.71	32.22	2.80
802.11ac MCS0/Nss1 VHT80	5690 MHz	80.58	74.67	5650.00	5653.24	75.00	5.58	71.76	2.92

Temperature	25°C	Humidity	50%
Test Engineer	Eddie Weng & Lucas Huang		
Test Mode	Mode 5: EUT 1 + Set 5 Sector Antenna / 4.5 dBi		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	20.26	16.76
	5300 MHz	19.83	16.67
	5320 MHz	19.74	16.67
	5500 MHz	21.91	16.85
	5580 MHz	20.17	16.76
	5700 MHz	19.91	16.67
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.52	17.80
	5300 MHz	20.35	17.89
	5320 MHz	20.87	17.80
	5500 MHz	21.39	17.89
	5580 MHz	21.13	17.80
	5700 MHz	20.17	17.71
802.11ac MCS0/Nss1 VHT40	5270 MHz	39.13	35.17
	5310 MHz	38.26	34.15
	5510 MHz	39.13	34.88
	5550 MHz	39.28	35.31
	5670 MHz	44.64	36.18
802.11ac MCS0/Nss1 VHT80	5290 MHz	80.87	73.81
	5530 MHz	82.61	74.10
	5610 MHz	82.90	74.38

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	19.13	16.58	5710.52	5711.75	14.48	4.65	13.25	3.33
802.11ac MCS0/Nss1 VHT20	5720 MHz	20.00	17.71	5710.00	5711.11	15.00	5.00	13.89	3.83
802.11ac MCS0/Nss1 VHT40	5710 MHz	39.57	35.74	5690.15	5692.06	34.85	4.71	32.94	2.80
802.11ac MCS0/Nss1 VHT80	5690 MHz	82.32	75.83	5648.51	5652.08	76.49	5.83	72.92	2.92

Temperature	25°C	Humidity	50%
Test Engineer	Eddie Weng & Lucas Huang		
Test Mode	Mode 6: EUT 1 + Set 6 Sector Antenna / 4 dBi		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	20.09	16.67
	5300 MHz	19.83	16.67
	5320 MHz	19.74	16.67
	5500 MHz	19.22	16.67
	5580 MHz	19.74	16.67
	5700 MHz	18.87	16.50
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.87	17.80
	5300 MHz	20.52	17.71
	5320 MHz	20.26	17.71
	5500 MHz	20.35	17.80
	5580 MHz	20.35	17.80
	5700 MHz	19.65	17.63
802.11ac MCS0/Nss1 VHT40	5270 MHz	39.13	35.17
	5310 MHz	39.13	34.59
	5510 MHz	39.28	35.46
	5550 MHz	38.99	35.02
	5670 MHz	39.28	35.75
802.11ac MCS0/Nss1 VHT80	5290 MHz	82.61	74.67
	5530 MHz	81.74	74.67
	5610 MHz	82.32	72.94

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	19.22	16.50	5710.43	5711.75	14.57	4.65	13.25	3.25
802.11ac MCS0/Nss1 VHT20	5720 MHz	20.09	17.71	5710.00	5711.14	15.00	5.09	13.86	3.86
802.11ac MCS0/Nss1 VHT40	5710 MHz	39.57	35.75	5690.15	5692.06	34.85	4.71	32.94	2.80
802.11ac MCS0/Nss1 VHT80	5690 MHz	82.32	75.83	5648.55	5652.08	76.45	5.87	72.92	2.92

Temperature	25°C	Humidity	50%
Test Engineer	Eddie Weng & Lucas Huang		
Test Mode	Mode 7: EUT 1 + Set 9 Dipole Antenna / 4.67 dBi		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	20.09	16.76
	5300 MHz	19.48	16.67
	5320 MHz	19.48	16.67
	5500 MHz	19.30	16.58
	5580 MHz	19.65	16.67
	5700 MHz	18.87	16.50
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.43	17.80
	5300 MHz	20.26	17.71
	5320 MHz	20.17	17.71
	5500 MHz	20.00	17.71
	5580 MHz	20.26	17.71
	5700 MHz	18.61	16.50
802.11ac MCS0/Nss1 VHT40	5270 MHz	38.84	35.02
	5310 MHz	39.42	34.73
	5510 MHz	39.57	35.46
	5550 MHz	39.28	35.02
	5670 MHz	39.42	35.75
802.11ac MCS0/Nss1 VHT80	5290 MHz	82.61	74.67
	5530 MHz	81.74	74.67
	5610 MHz	82.61	72.94

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	19.30	16.50	5710.26	5711.75	14.74	4.57	13.25	3.25
802.11ac MCS0/Nss1 VHT20	5720 MHz	20.17	17.63	5709.91	5711.14	15.09	5.09	13.86	3.77
802.11ac MCS0/Nss1 VHT40	5710 MHz	40.29	35.89	5689.86	5692.06	35.15	5.14	32.94	2.95
802.11ac MCS0/Nss1 VHT80	5690 MHz	82.32	75.83	5648.55	5652.08	76.45	5.87	72.92	2.92

Temperature	25°C	Humidity	50%
Test Engineer	Eddie Weng & Lucas Huang		
Test Mode	Mode 8: EUT 2 + Set 10 PIFA Antenna / Chain1:5.84 dBi, Chain2:5.50 dBi, Chain3:5.84 dBi, Chain4:5.65 dBi		

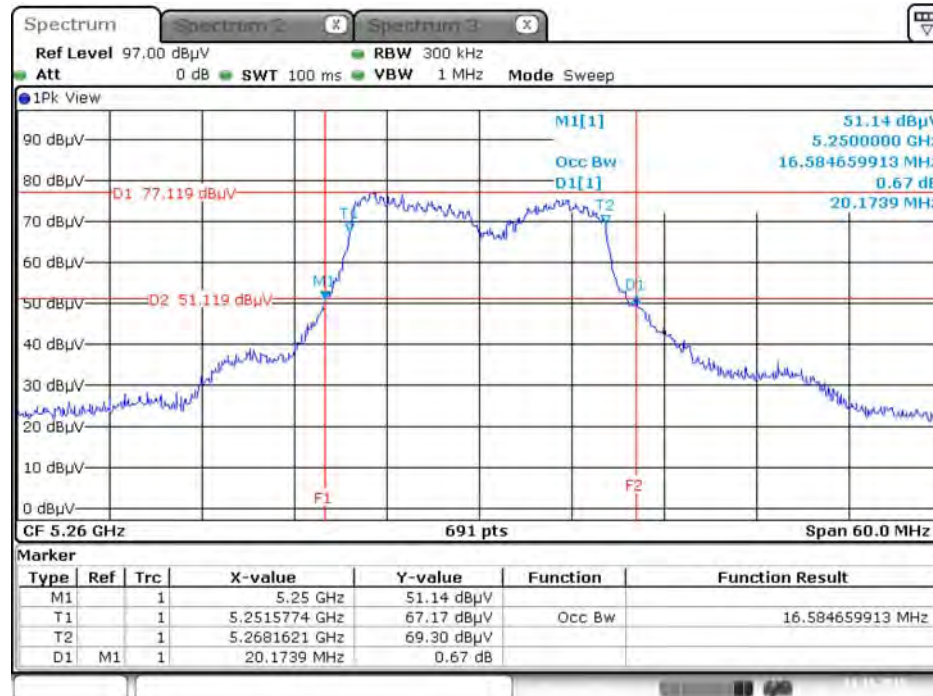
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	18.43	16.32
	5300 MHz	18.61	16.32
	5320 MHz	18.35	16.15
	5500 MHz	18.52	16.41
	5580 MHz	18.35	16.15
	5700 MHz	18.35	16.32
802.11ac MCS0/Nss1 VHT20	5260 MHz	19.13	17.37
	5300 MHz	19.13	17.37
	5320 MHz	19.13	17.45
	5500 MHz	19.22	17.37
	5580 MHz	19.48	17.45
	5700 MHz	19.39	17.45
802.11ac MCS0/Nss1 VHT40	5270 MHz	39.71	36.32
	5310 MHz	39.57	36.18
	5510 MHz	40.14	36.32
	5550 MHz	40.00	36.32
	5670 MHz	40.00	36.32
802.11ac MCS0/Nss1 VHT80	5290 MHz	83.48	75.83
	5530 MHz	84.06	75.54
	5610 MHz	84.06	76.12

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	18.35	16.24	5710.70	5711.84	14.30	4.04	13.16	3.08
802.11ac MCS0/Nss1 VHT20	5720 MHz	18.96	17.19	5710.35	5711.23	14.65	4.30	13.77	3.42
802.11ac MCS0/Nss1 VHT40	5710 MHz	40.29	36.47	5689.86	5691.91	35.15	5.14	33.09	3.38
802.11ac MCS0/Nss1 VHT80	5690 MHz	84.93	76.41	5647.39	5651.80	77.61	7.32	73.20	3.21

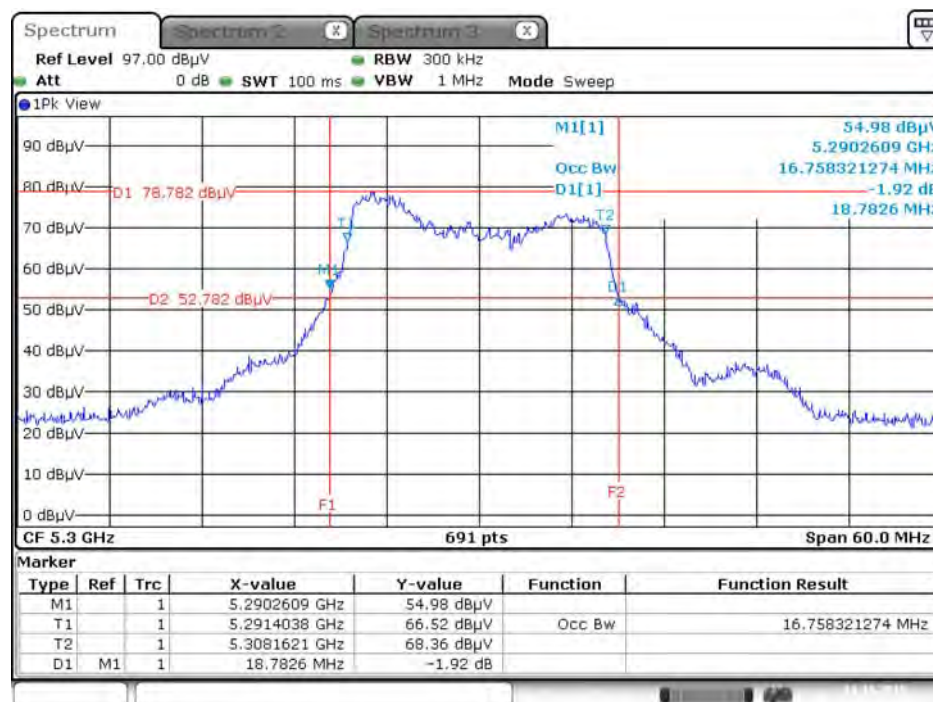
Mode 1: EUT 1 + Set 1 Ceiling Mount Omni Antenna / 7 dBi

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



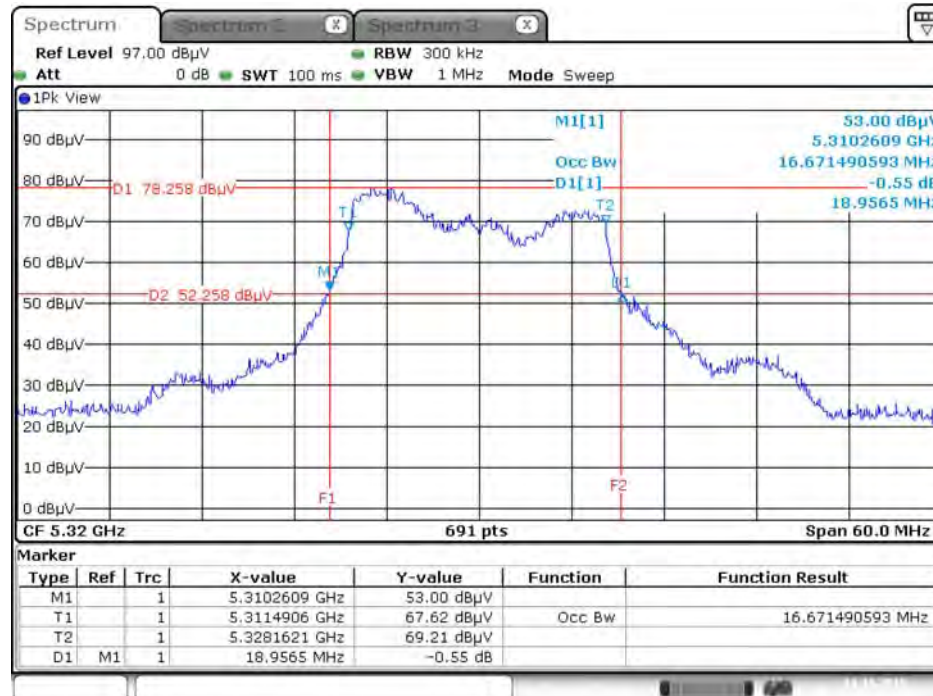
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2
+ Chain 3 + Chain 4 / 5300 MHz



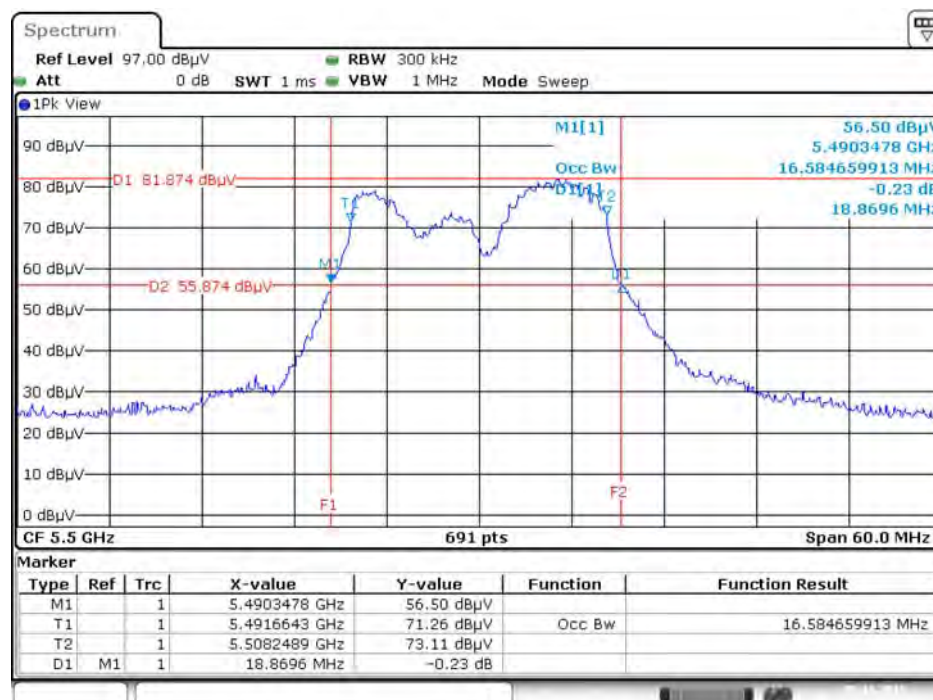
Date: 11.NOV.2015 00:46:04

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



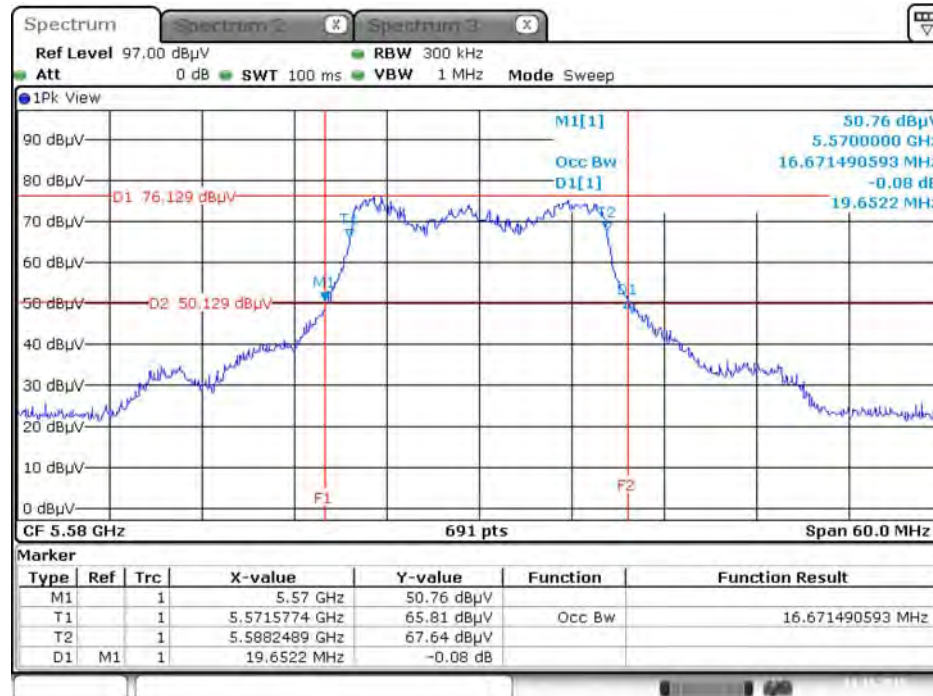
Date: 11.NOV.2015 00:46:28

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



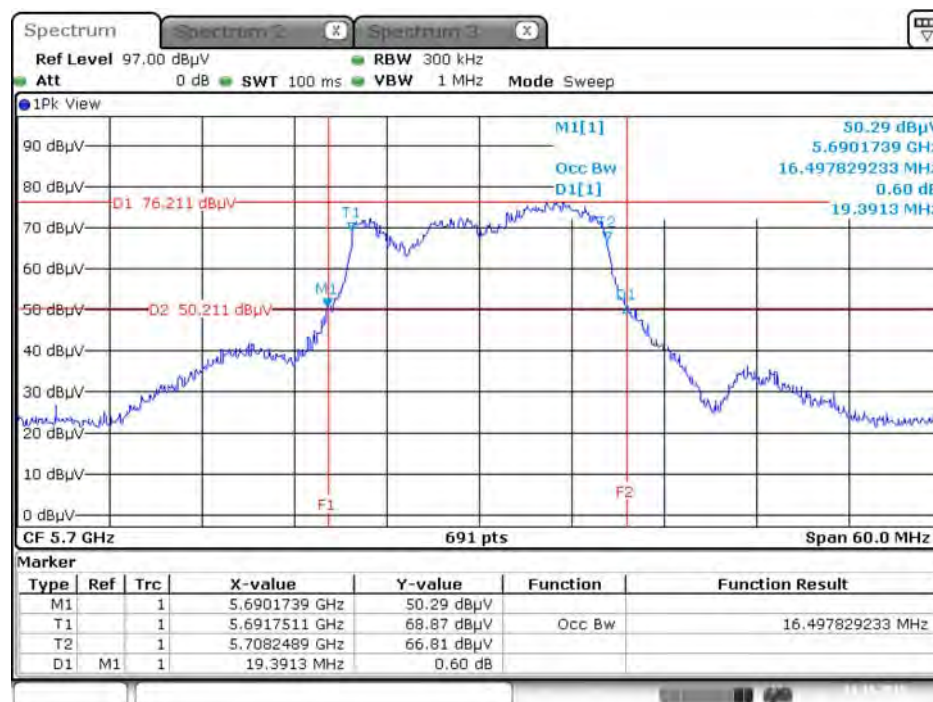
Date: 5.NOV.2015 16:39:52

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



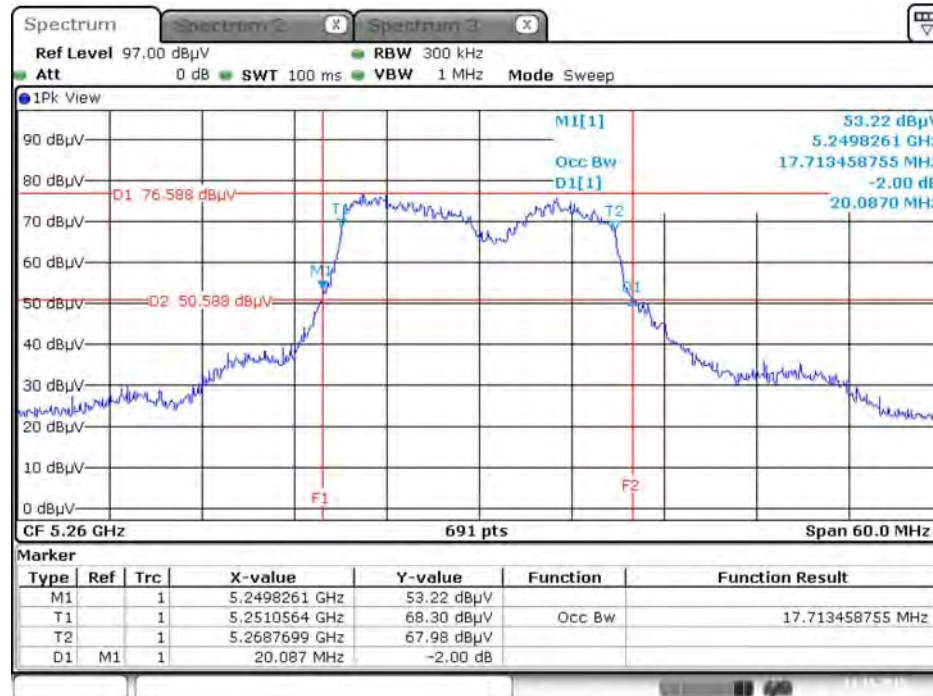
Date: 11.NOV.2015 00:47:48

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



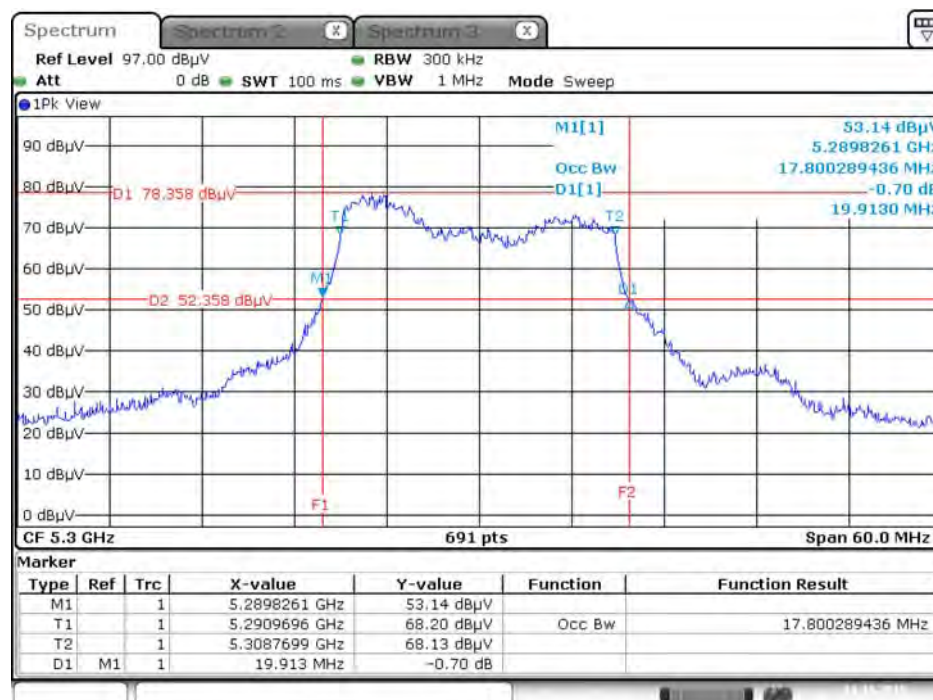
Date: 11.NOV.2015 00:48:21

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



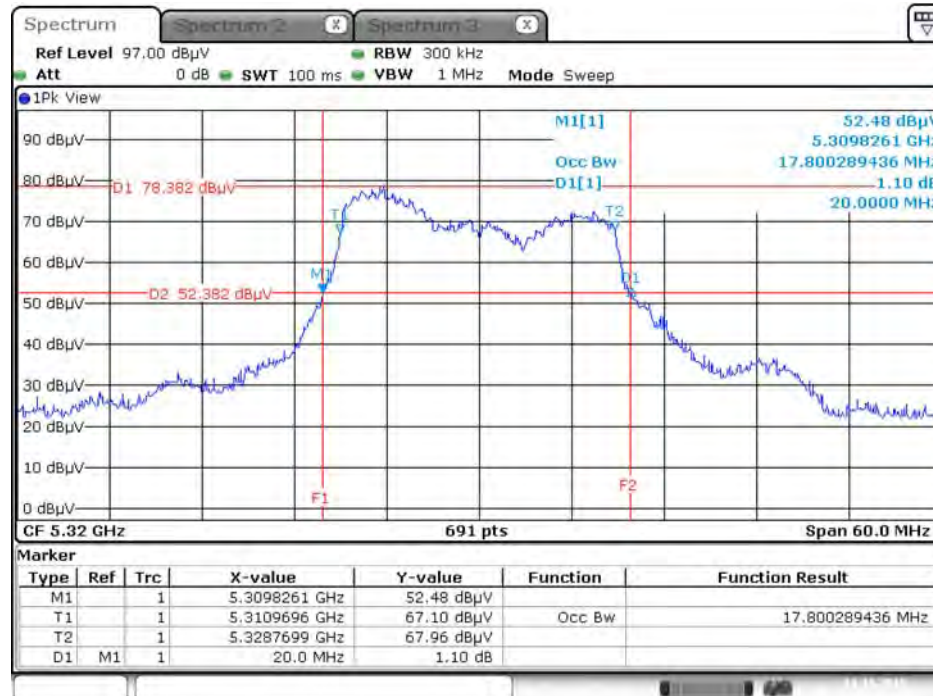
Date: 11.NOV.2015 00:52:09

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



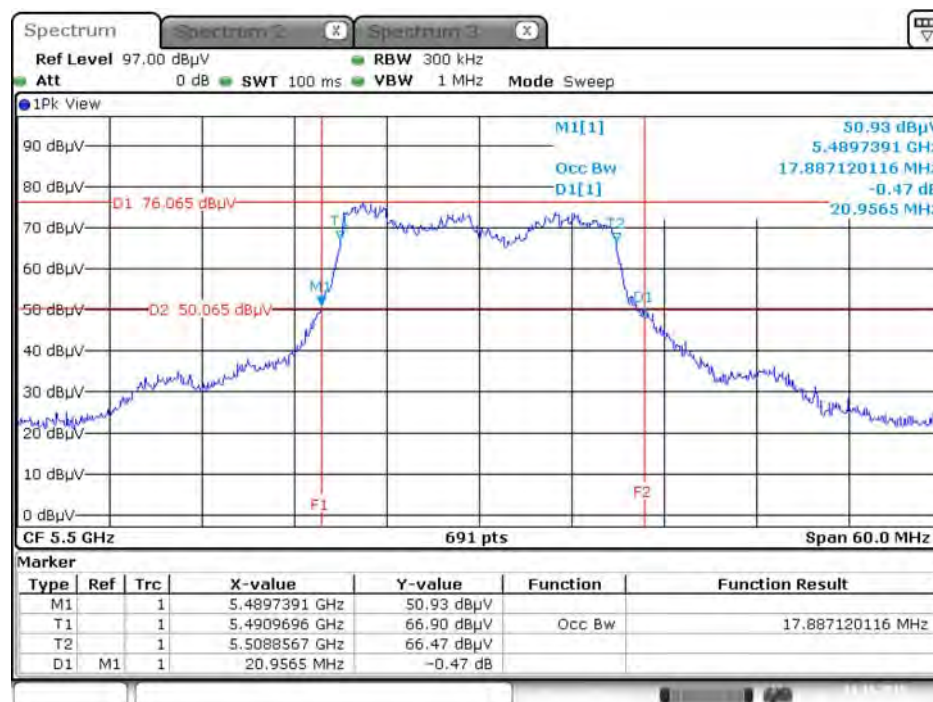
Date: 11.NOV.2015 00:52:50

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



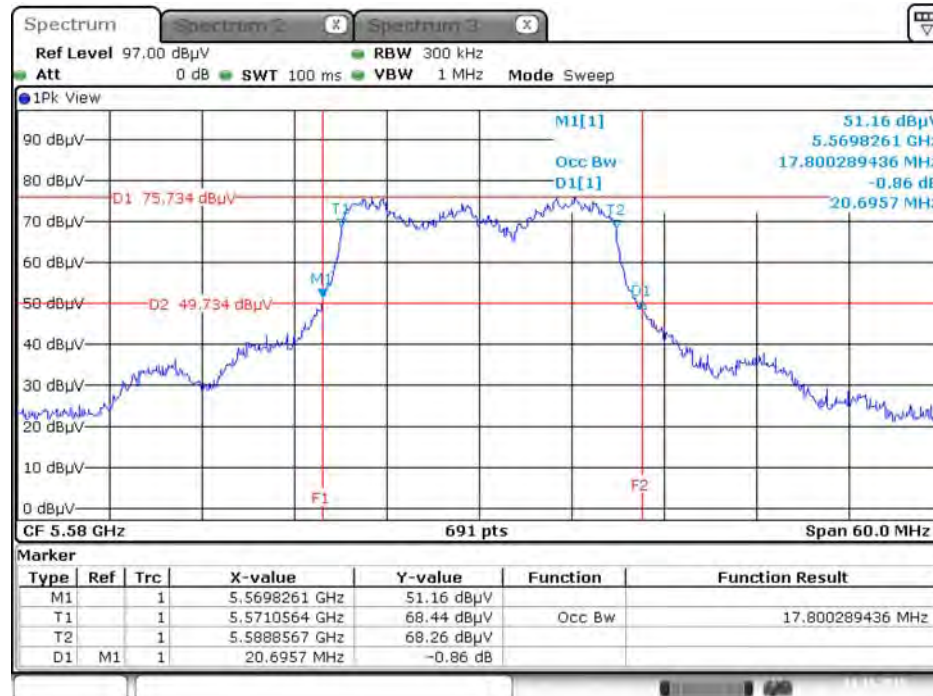
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5500 MHz



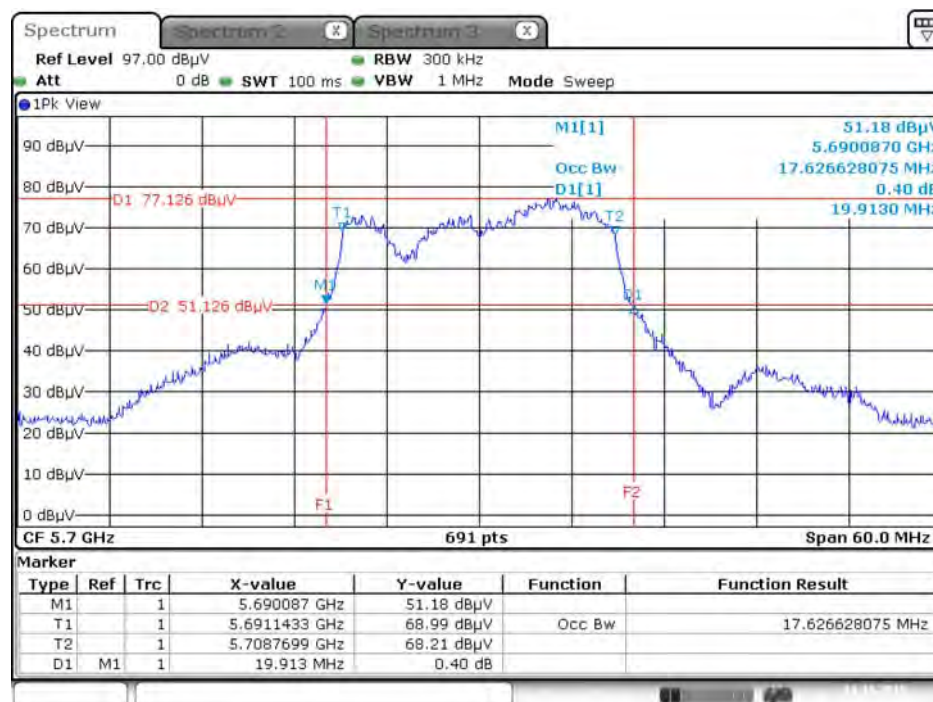
Date: 11.NOV.2015 00:53:54

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



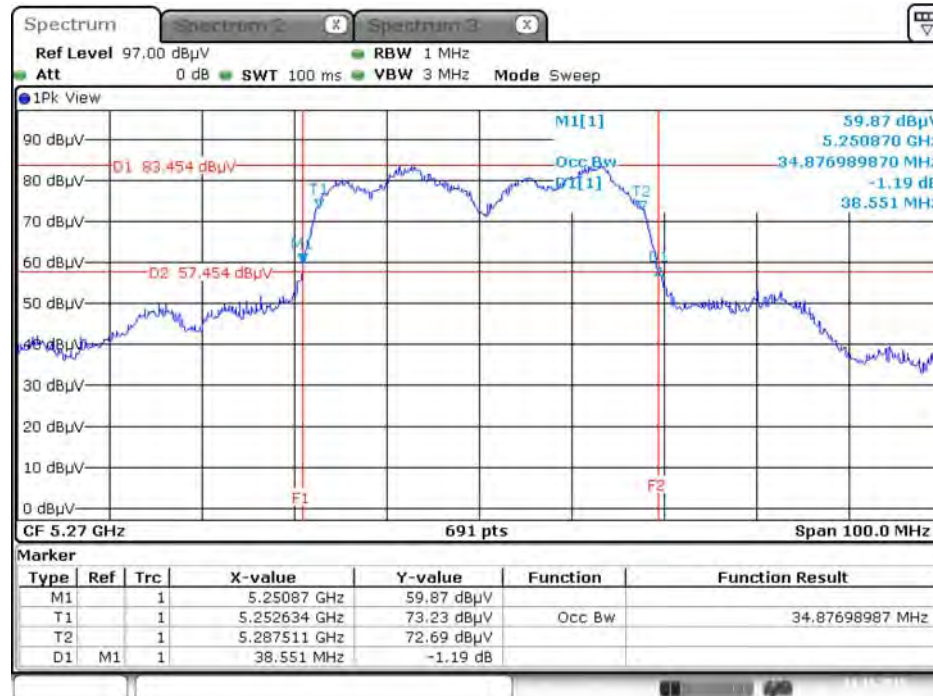
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5700 MHz



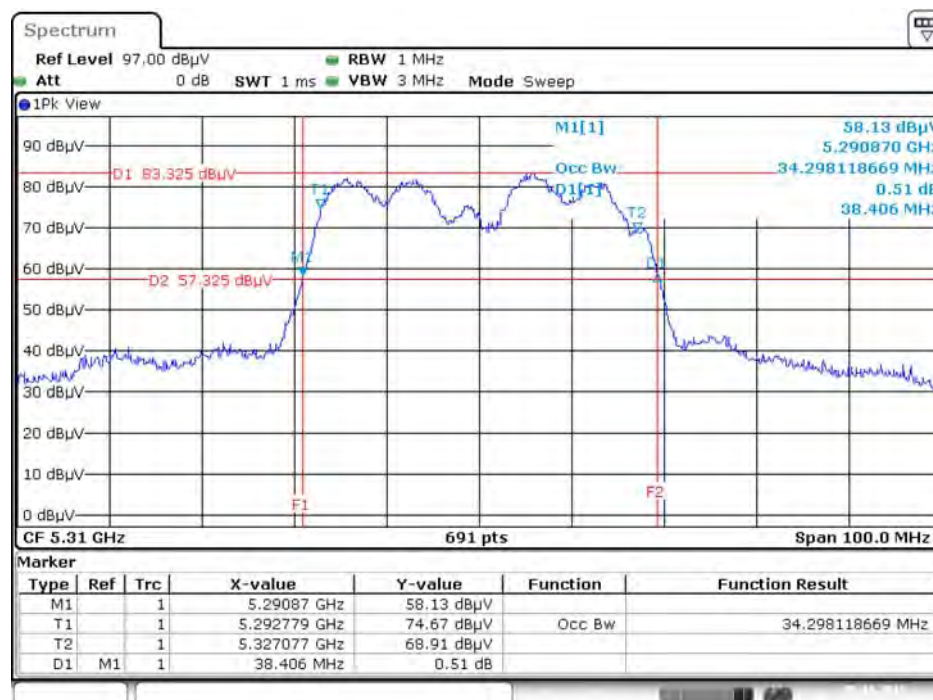
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5270 MHz



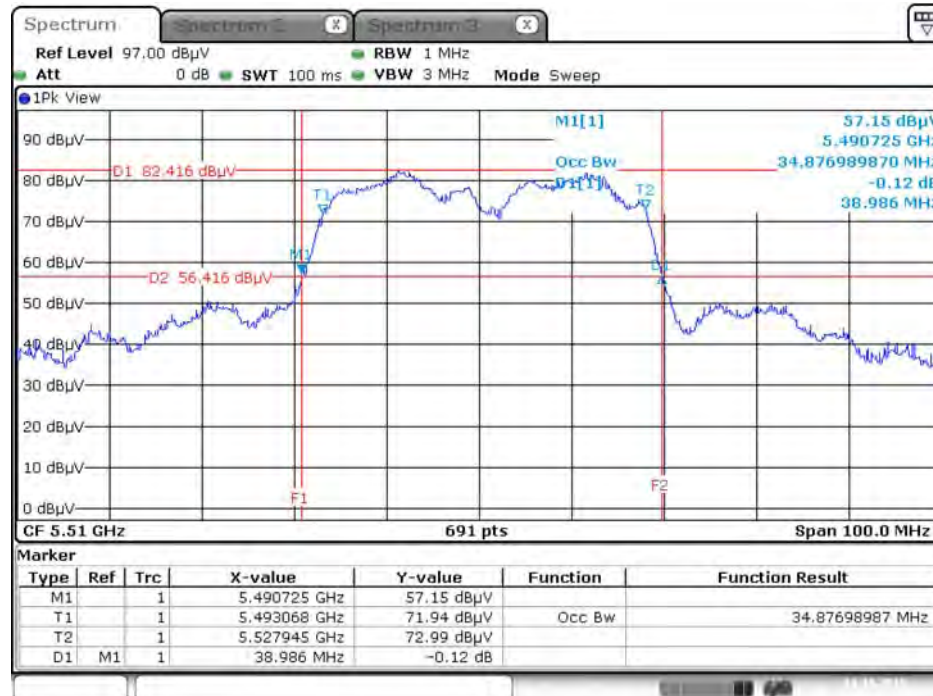
Date: 11.NOV.2015 00:56:08

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



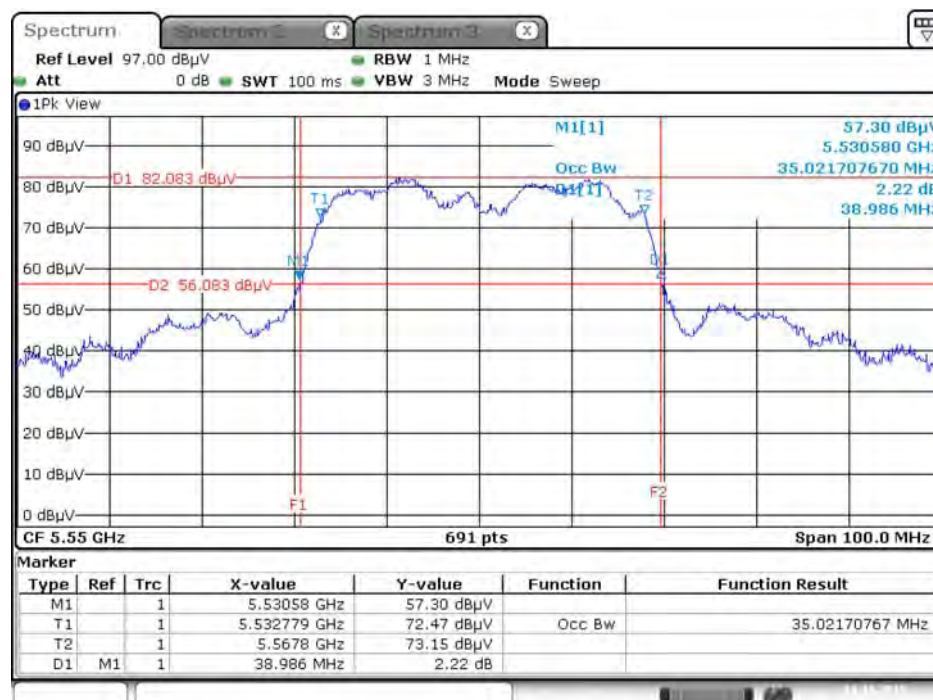
Date: 5.NOV.2015 16:59:42

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



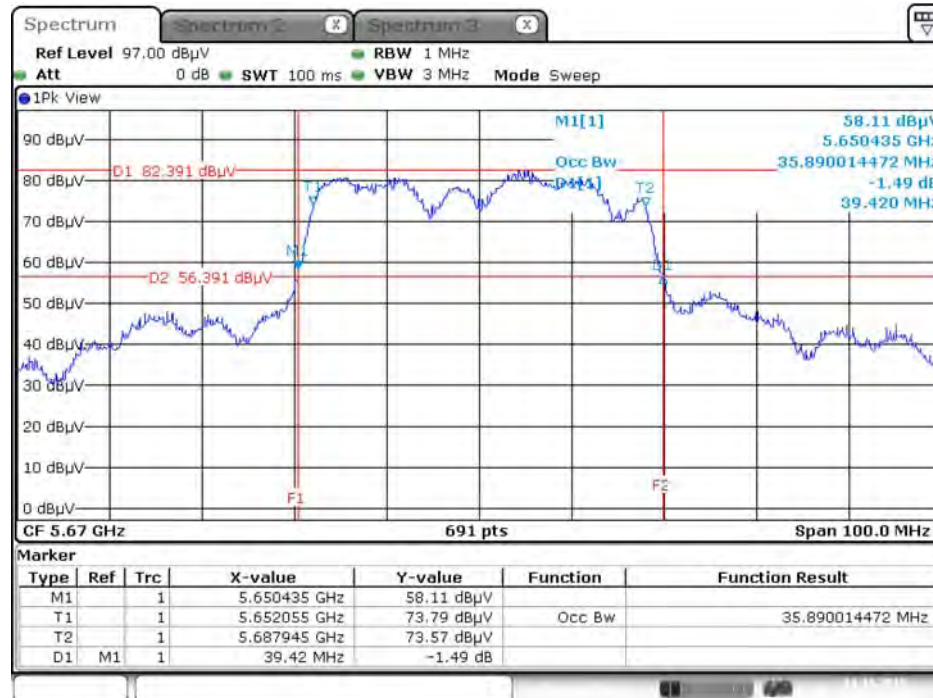
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5550 MHz



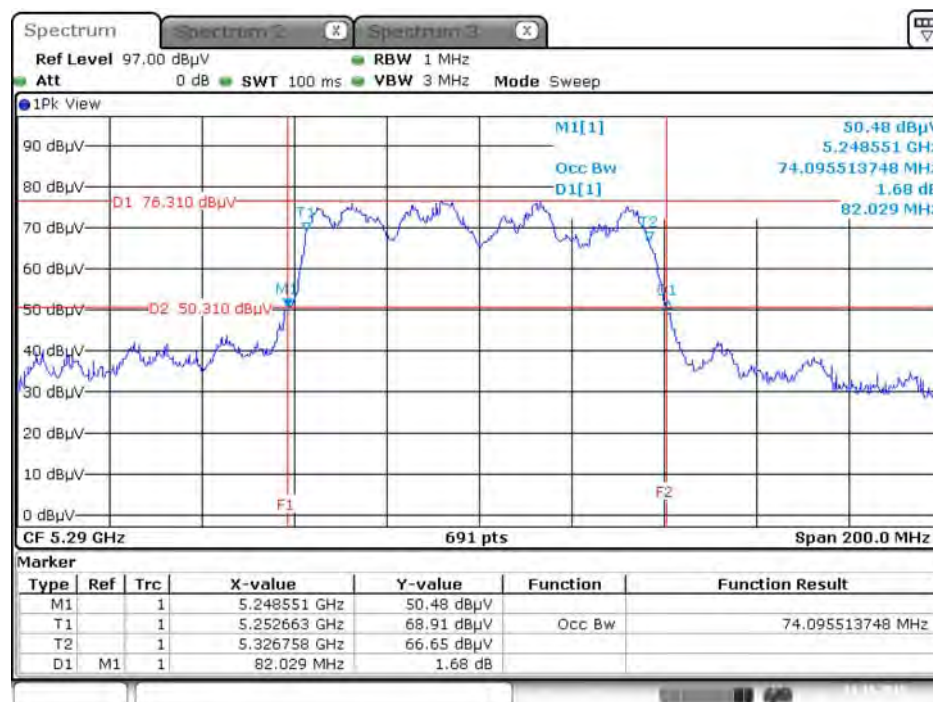
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5670 MHz



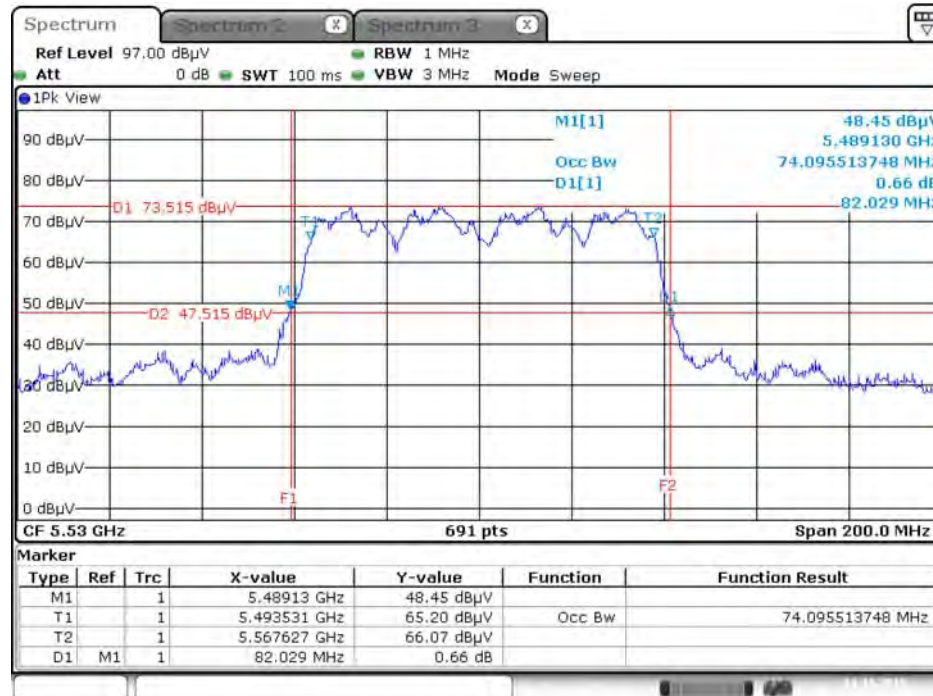
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5290 MHz



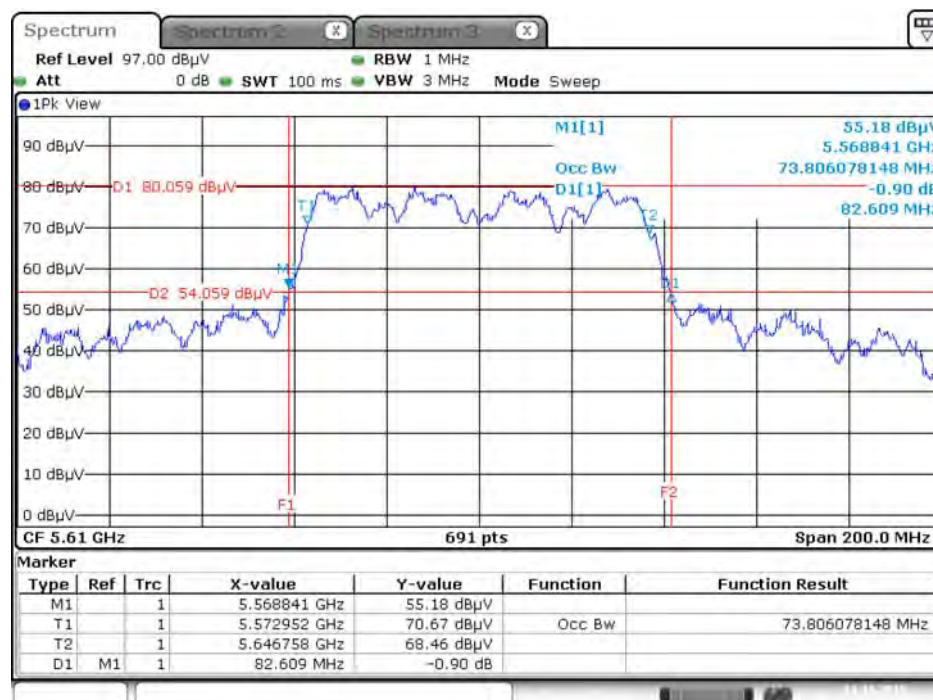
Date: 11.NOV.2015 01:00:43

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: 11.NOV.2015 01:01:57

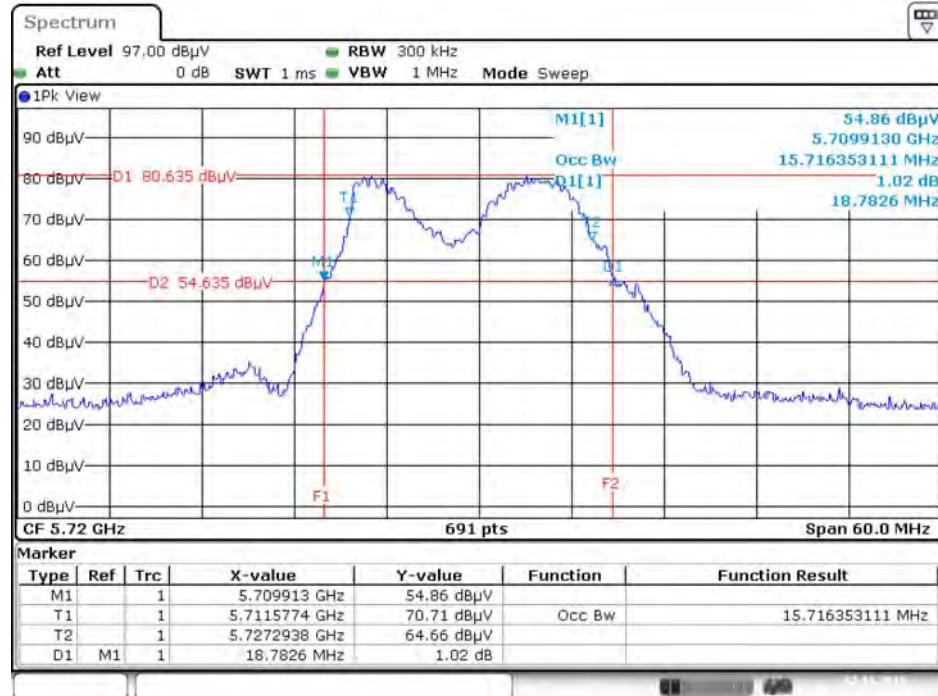
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5610 MHz



Date: 11.NOV.2015 01:02:57

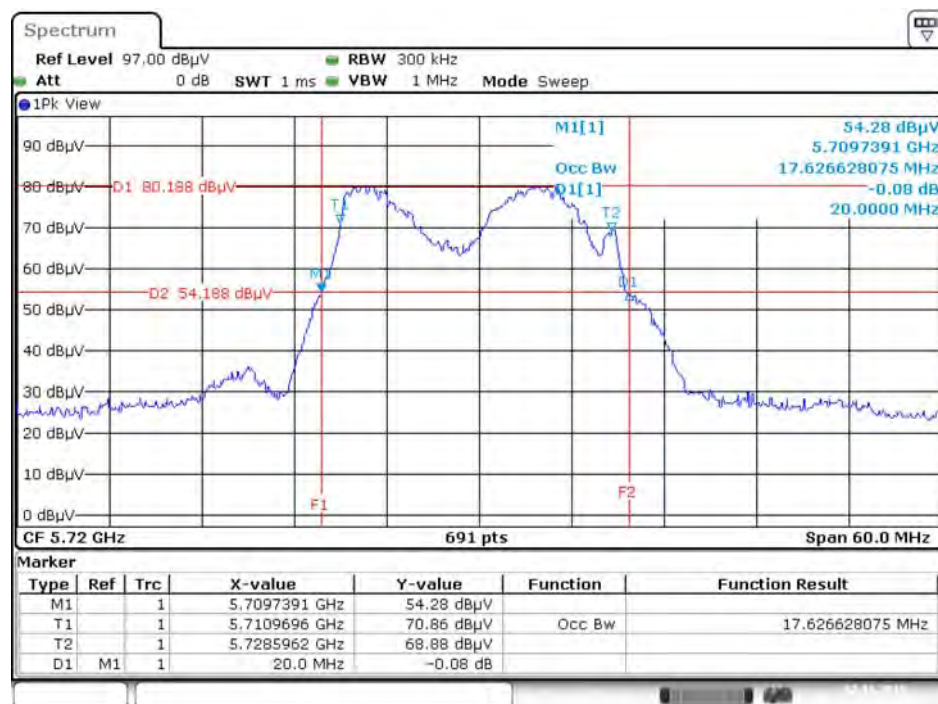
Straddle Channel

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



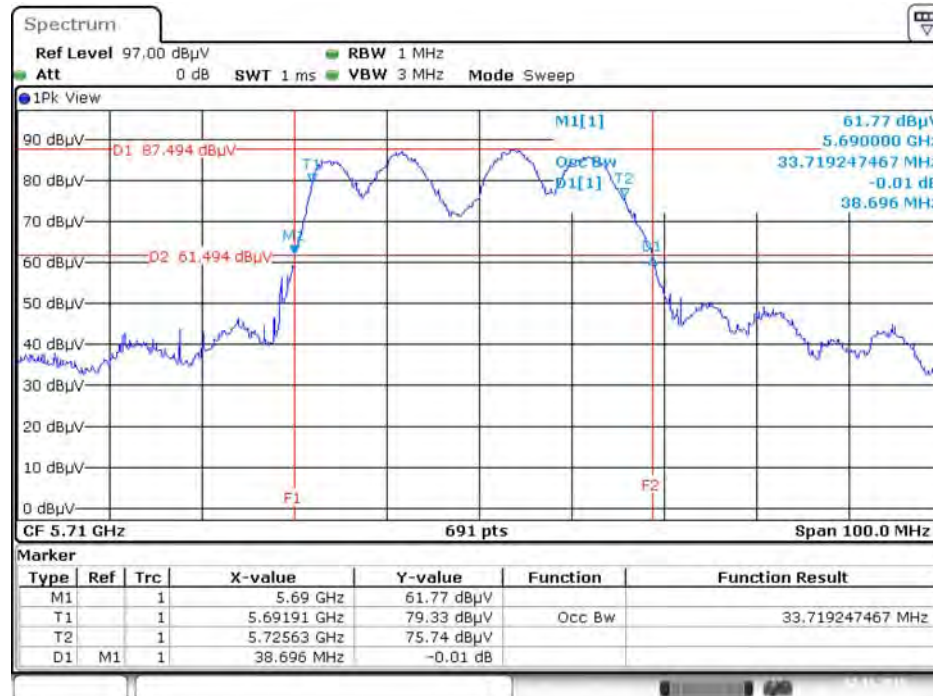
Date: 2.NOV.2015 16:48:57

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



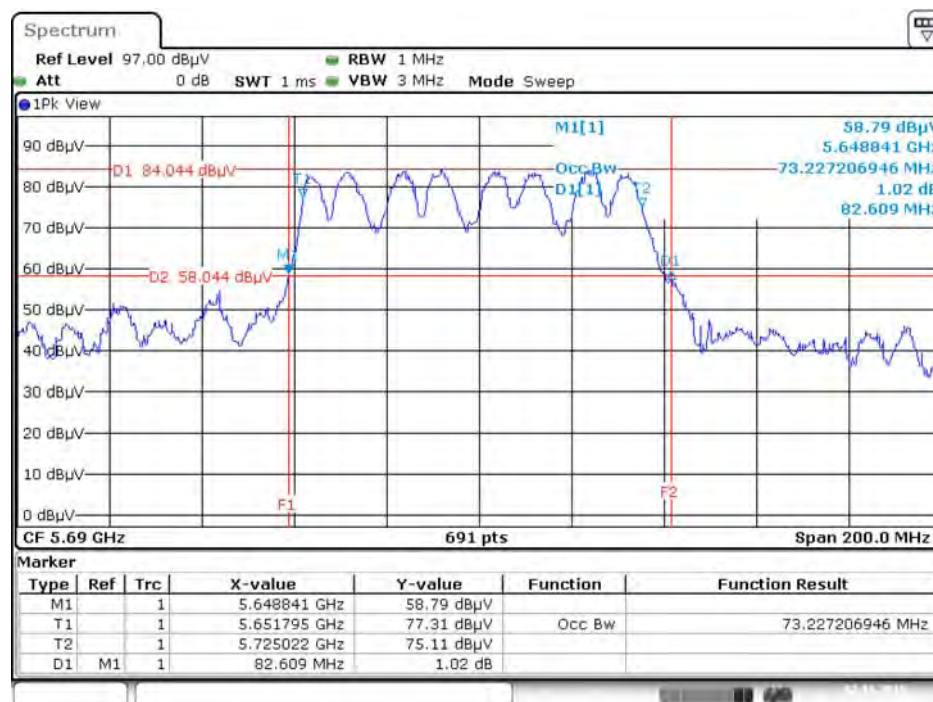
Date: 2.NOV.2015 16:52:31

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: 2.NOV.2015 16:53:46

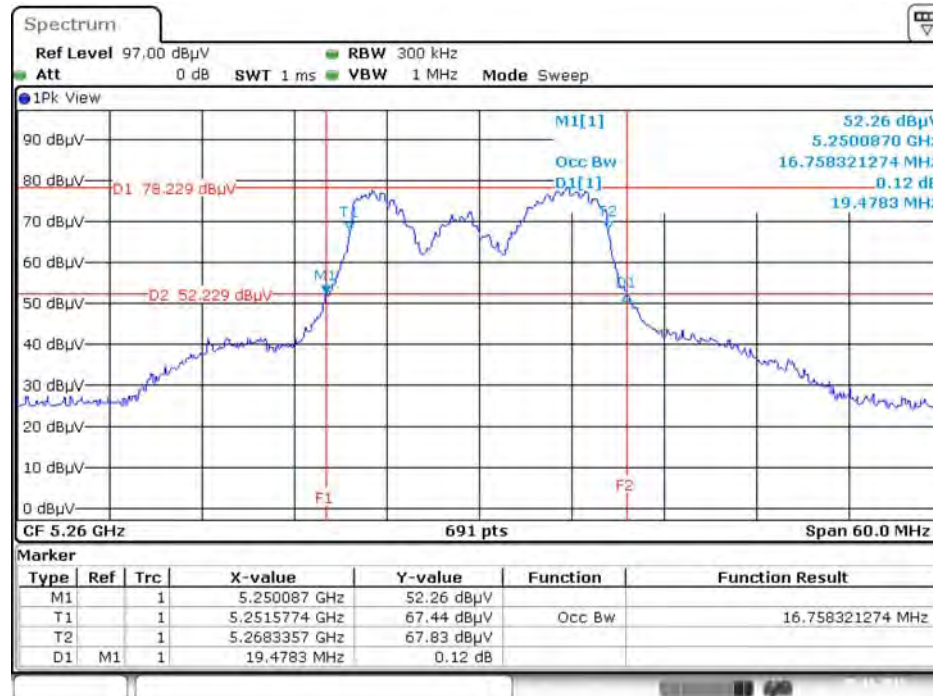
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5690 MHz



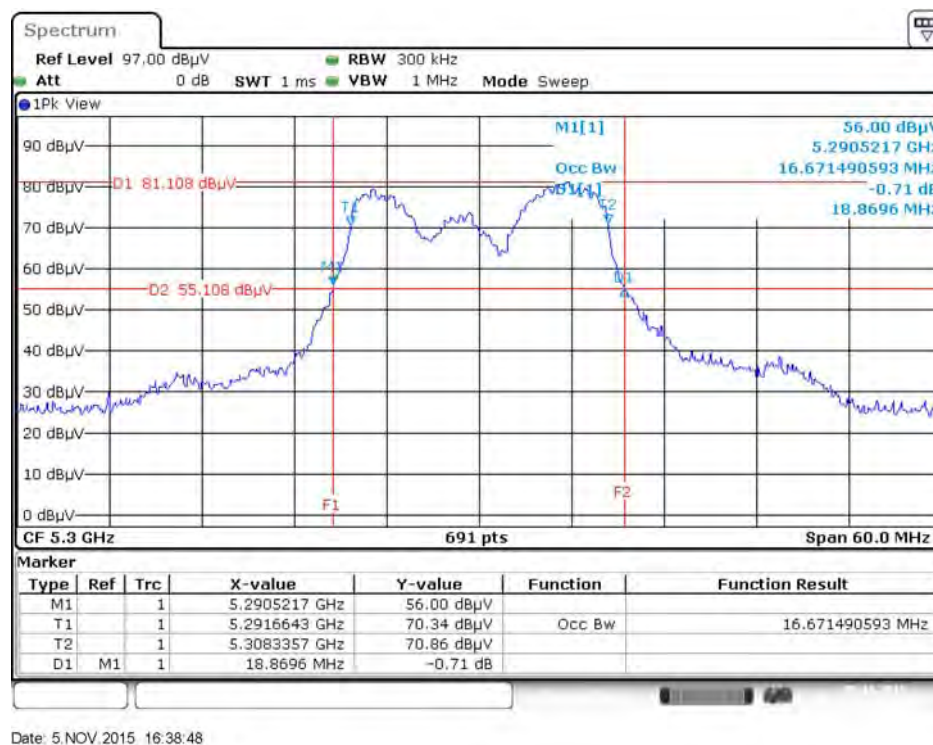
Date: 2.NOV.2015 16:54:53

Mode 2: EUT 1 + Set 2 Sector Antenna / 6.5 dBi

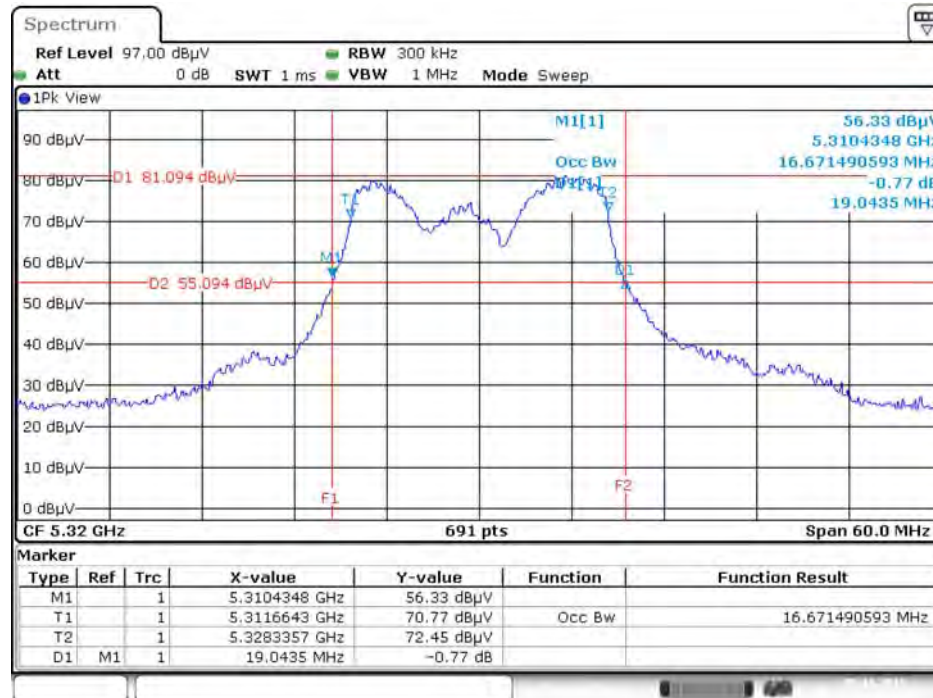
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2
+ Chain 3 + Chain 4 / 5260 MHz



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

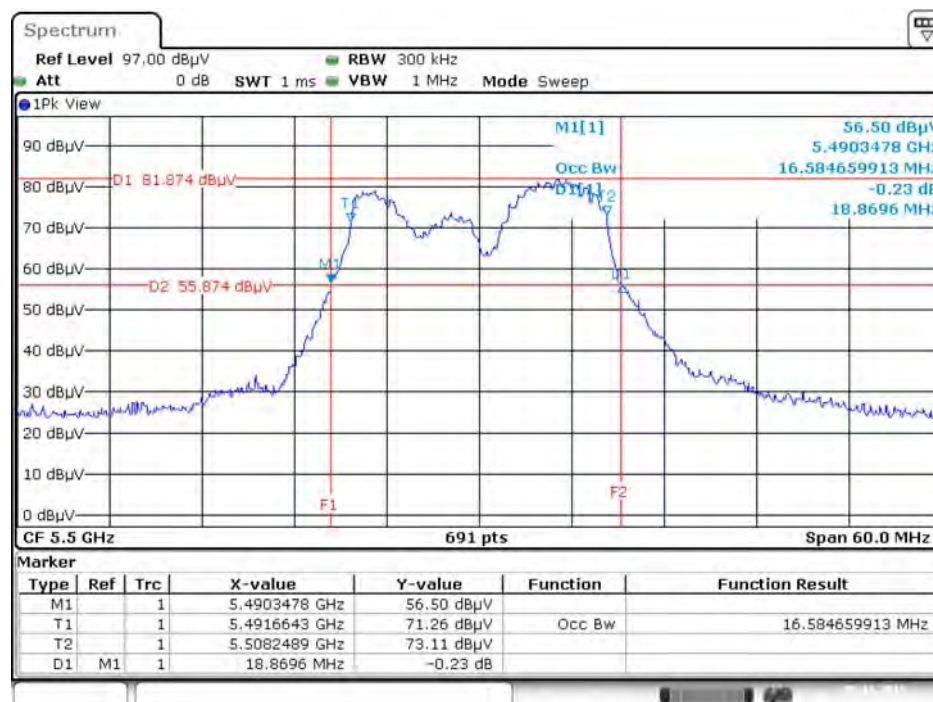


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5320 MHz



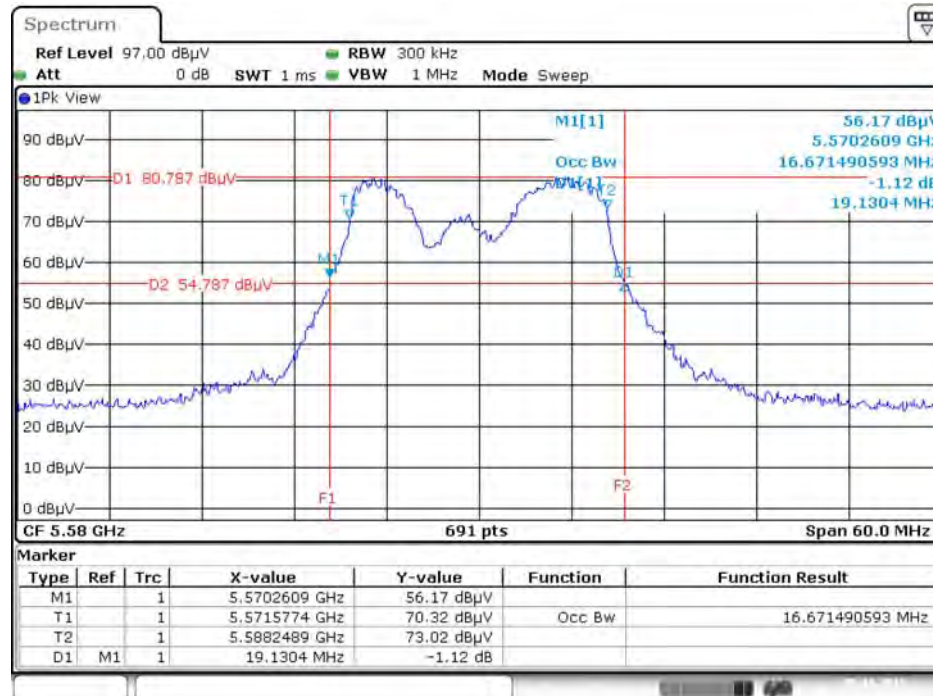
Date: 5 NOV. 2015 16:39:04

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



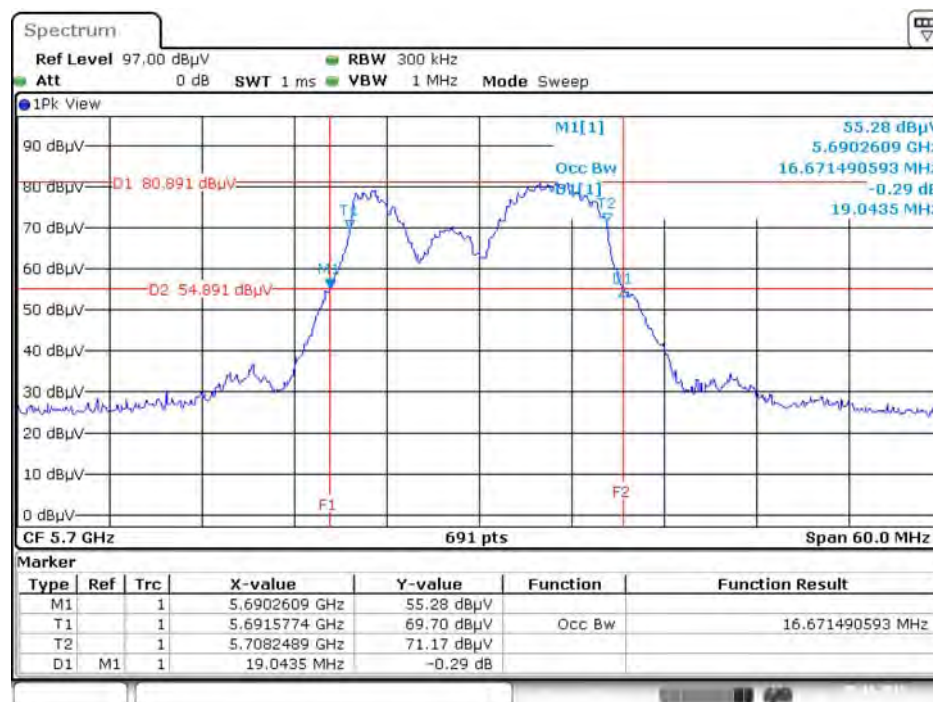
Date: 5 NOV. 2015 16:39:52

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



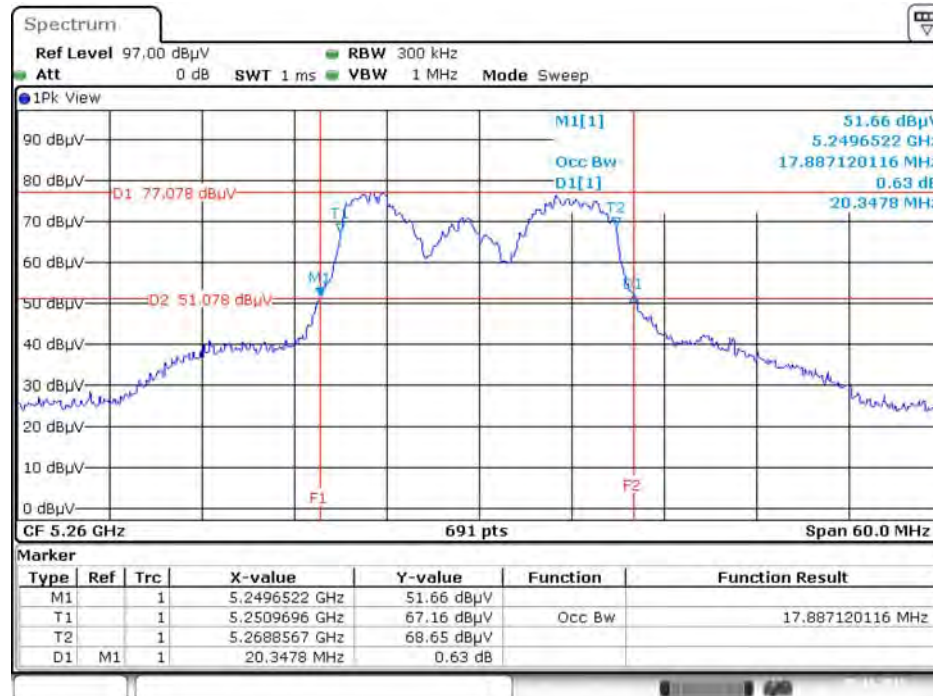
Date: 5 NOV. 2015 16:40:08

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



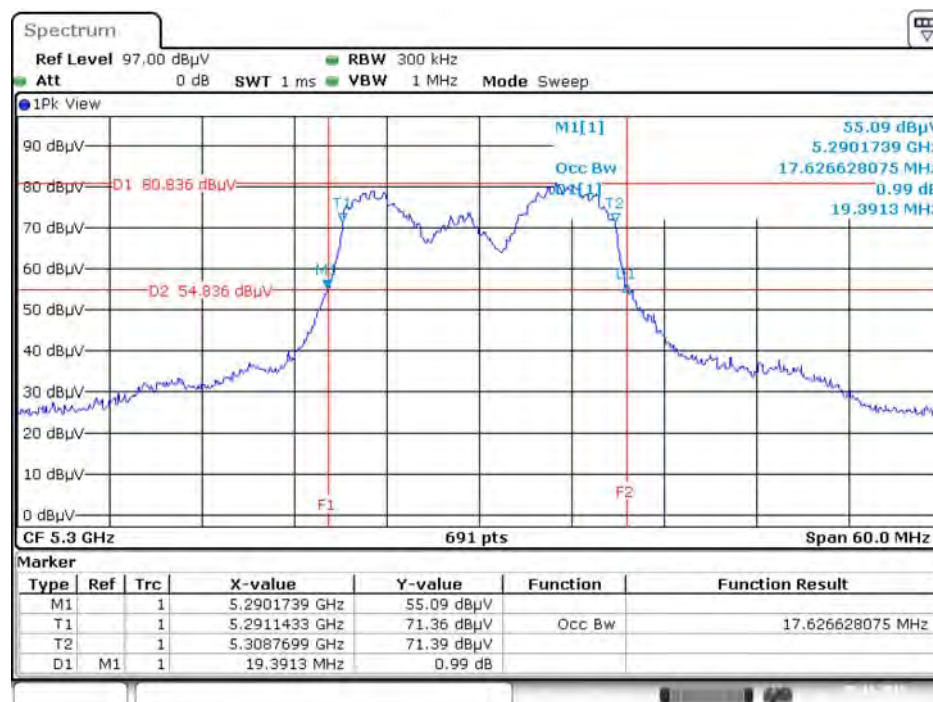
Date: 5 NOV. 2015 16:40:29

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



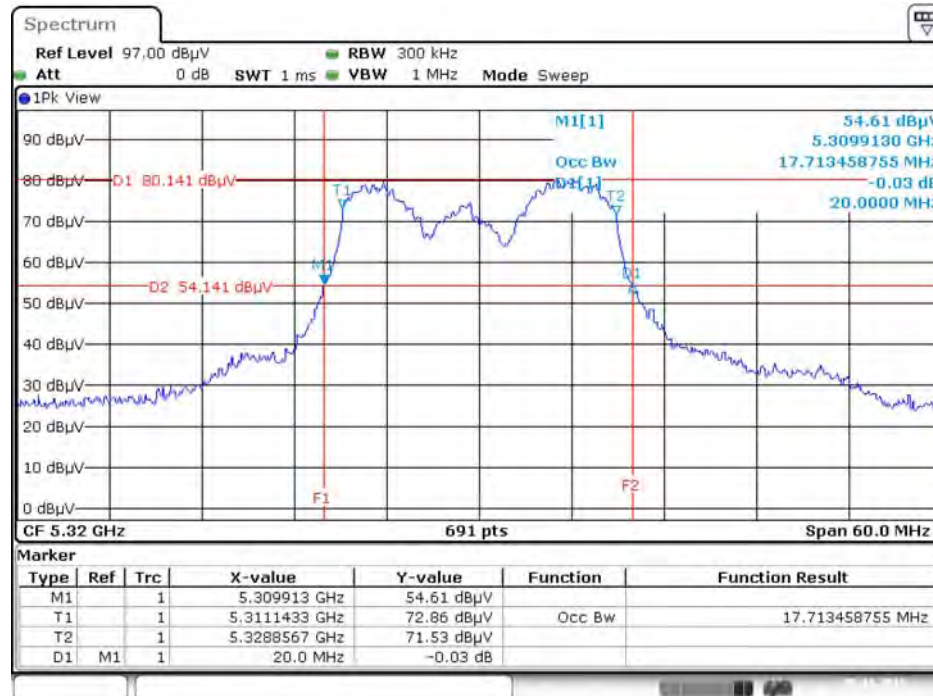
Date: 5 NOV. 2015 16:51:26

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



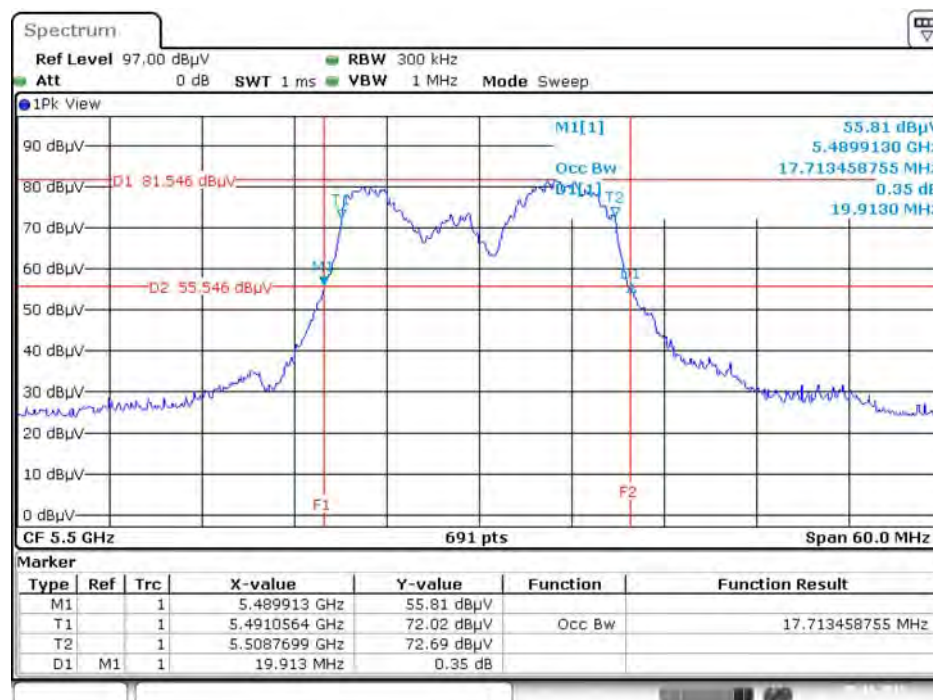
Date: 5 NOV. 2015 16:51:52

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



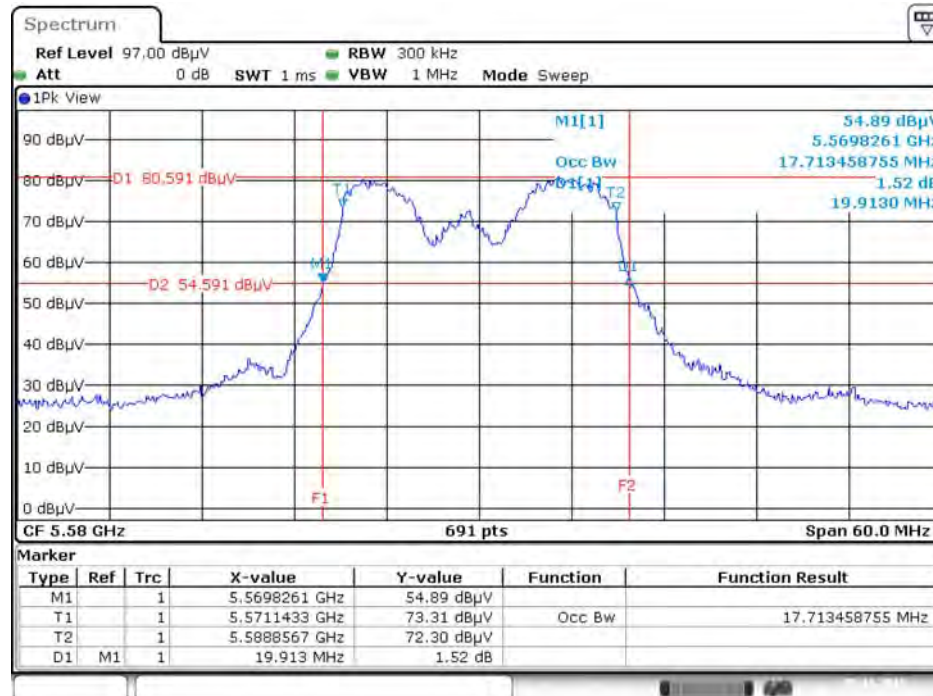
Date: 5 NOV. 2015 16:52:33

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



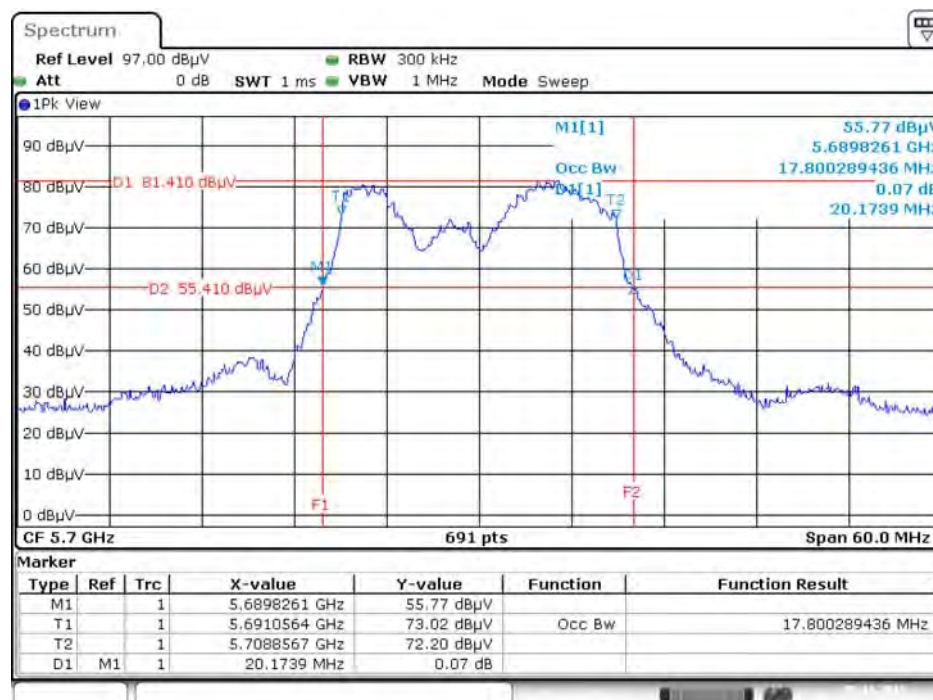
Date: 5 NOV. 2015 16:52:50

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



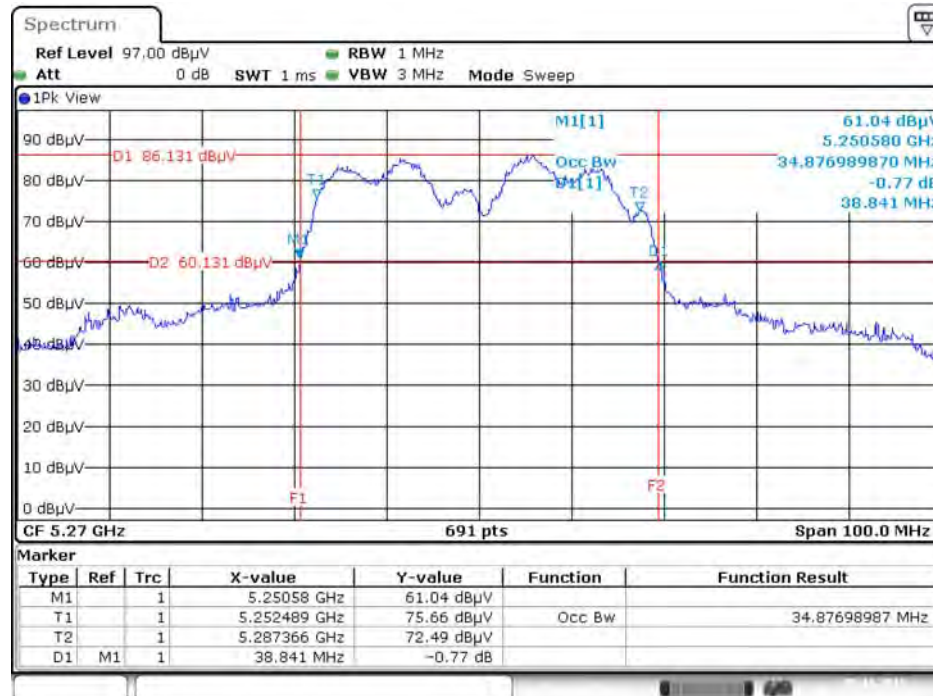
Date: 5 NOV. 2015 16:53:18

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



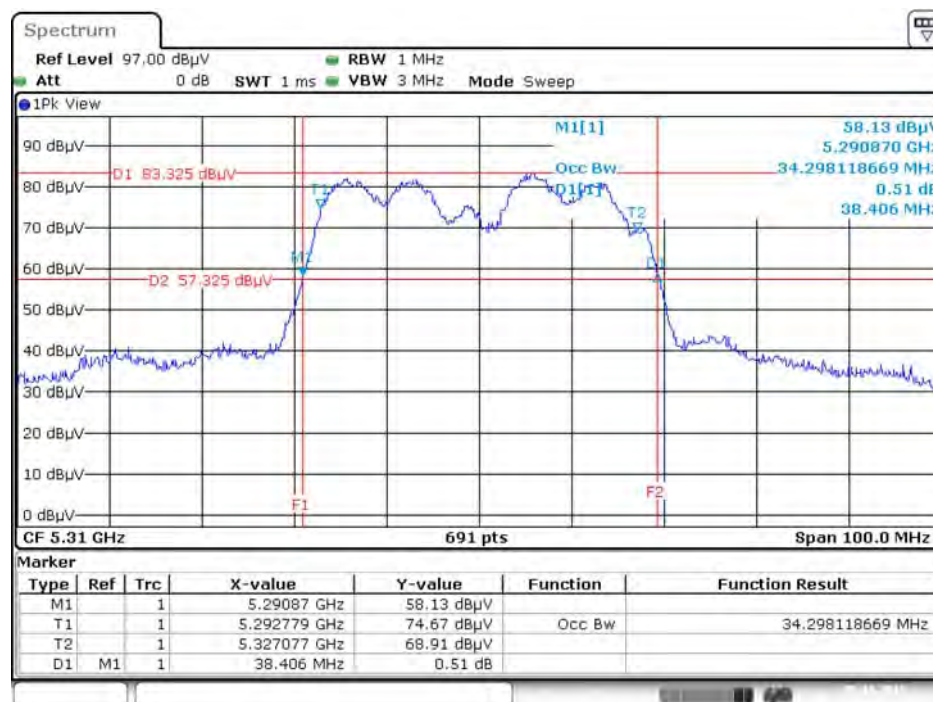
Date: 5 NOV. 2015 16:53:42

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



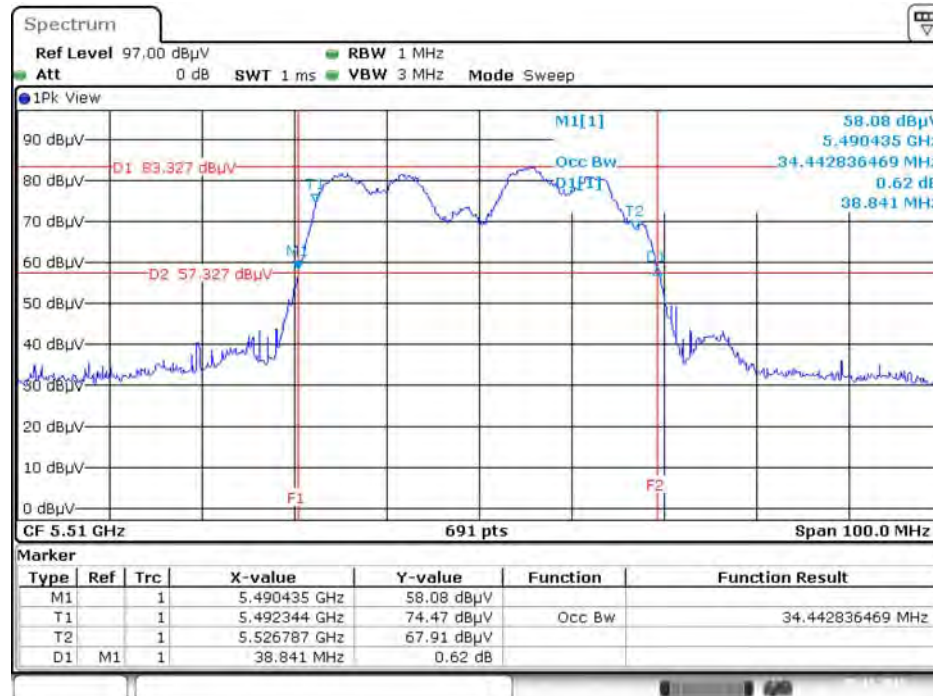
Date: 5 NOV. 2015 16:59:23

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



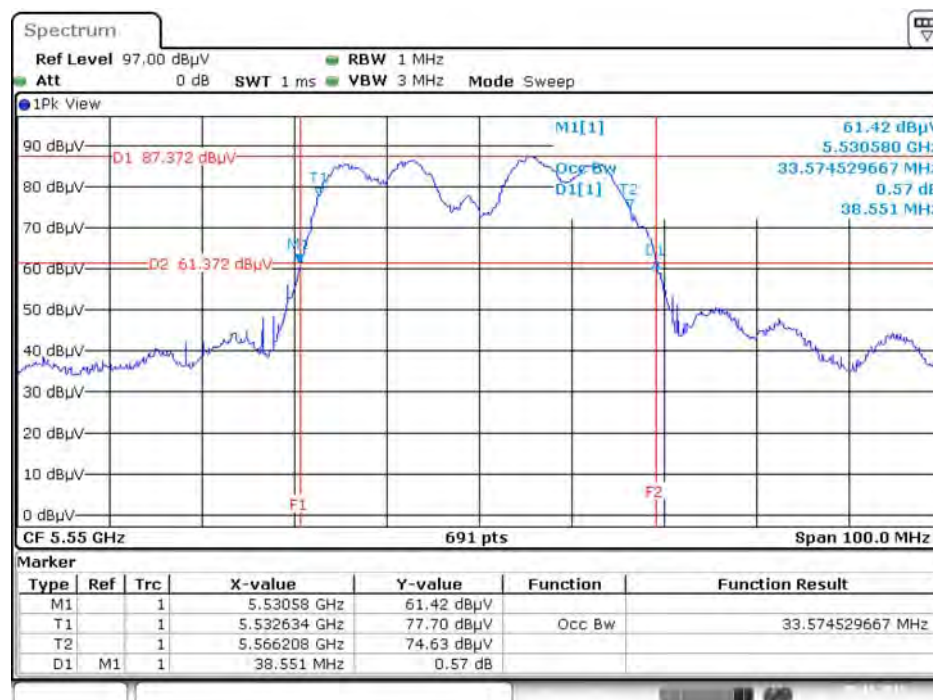
Date: 5 NOV. 2015 16:59:42

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



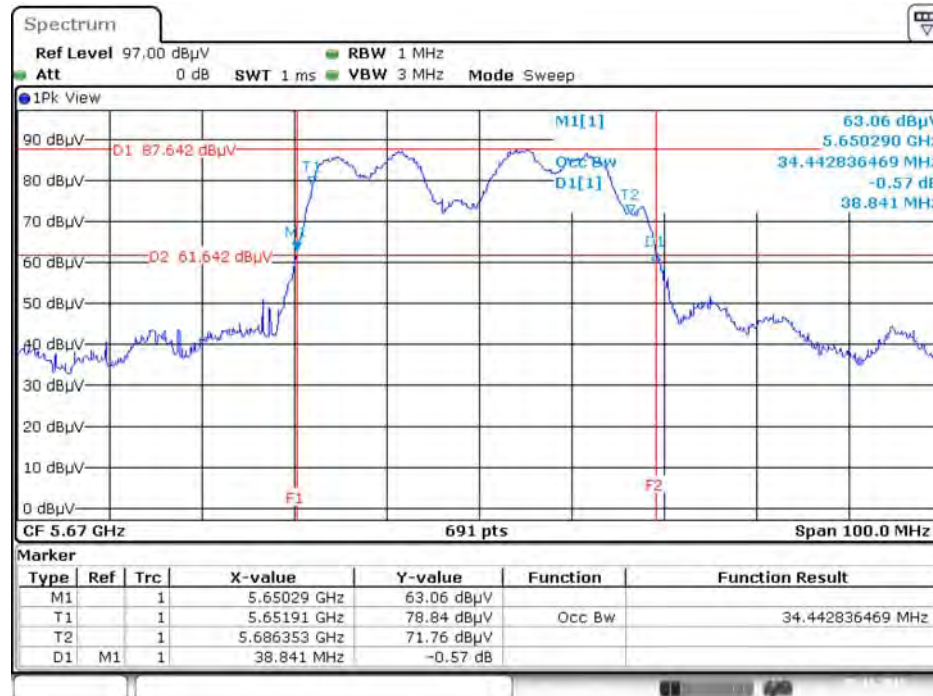
Date: 5.NOV.2015 17:00:10

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



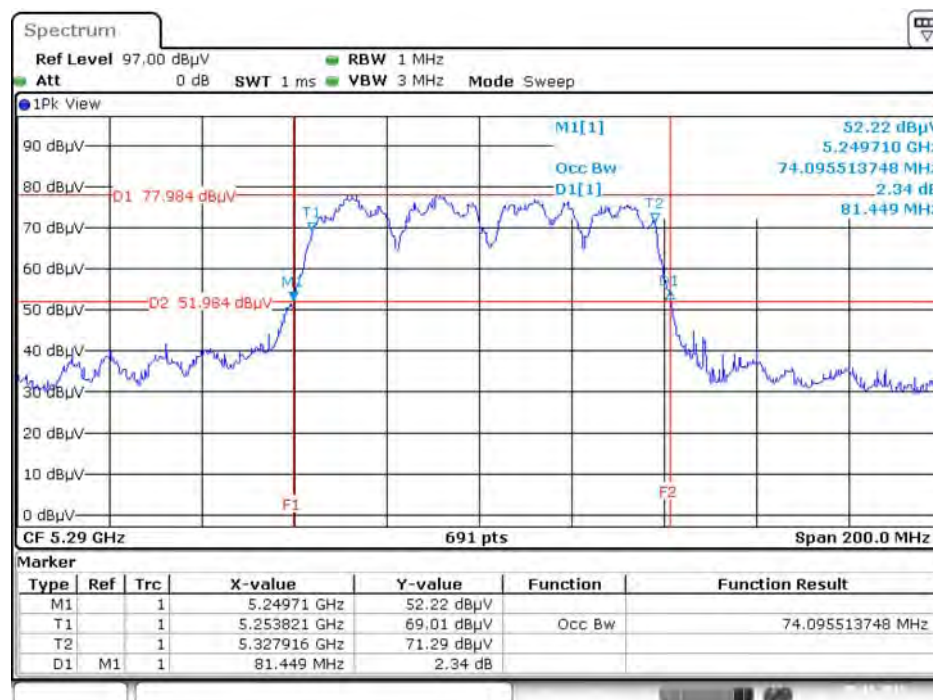
Date: 5.NOV.2015 17:00:45

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



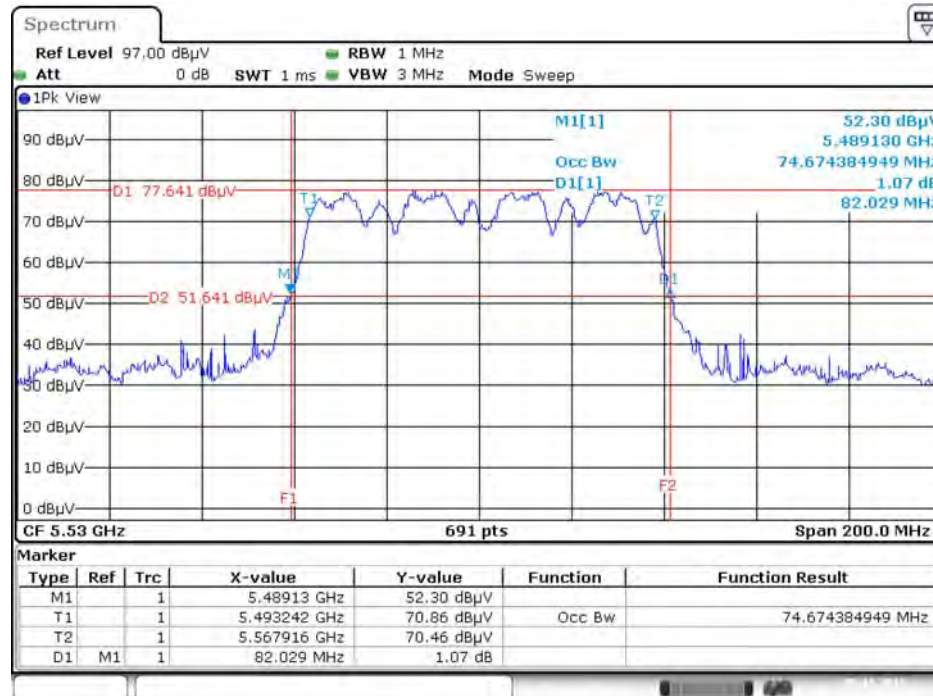
Date: 5.NOV.2015 17:01:14

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



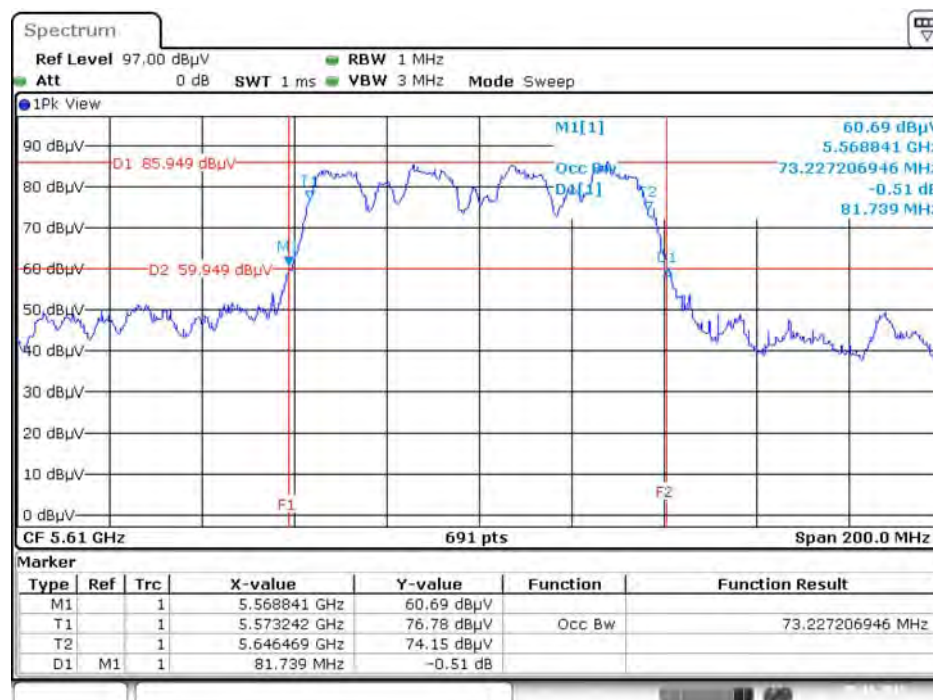
Date: 5.NOV.2015 17:06:25

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: 5.NOV.2015 17:06:47

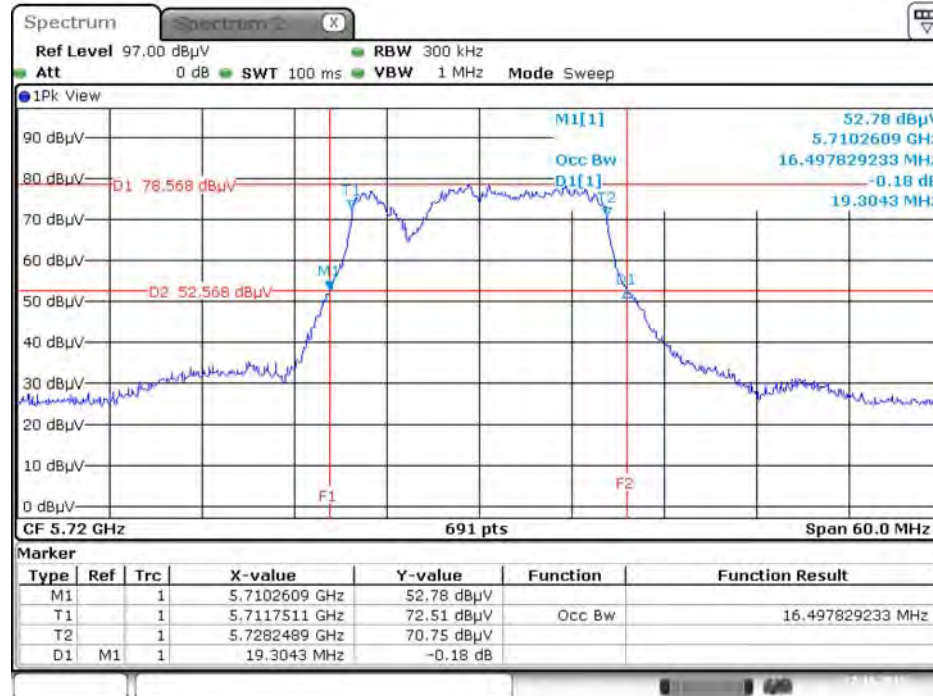
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5610 MHz



Date: 5.NOV.2015 17:07:24

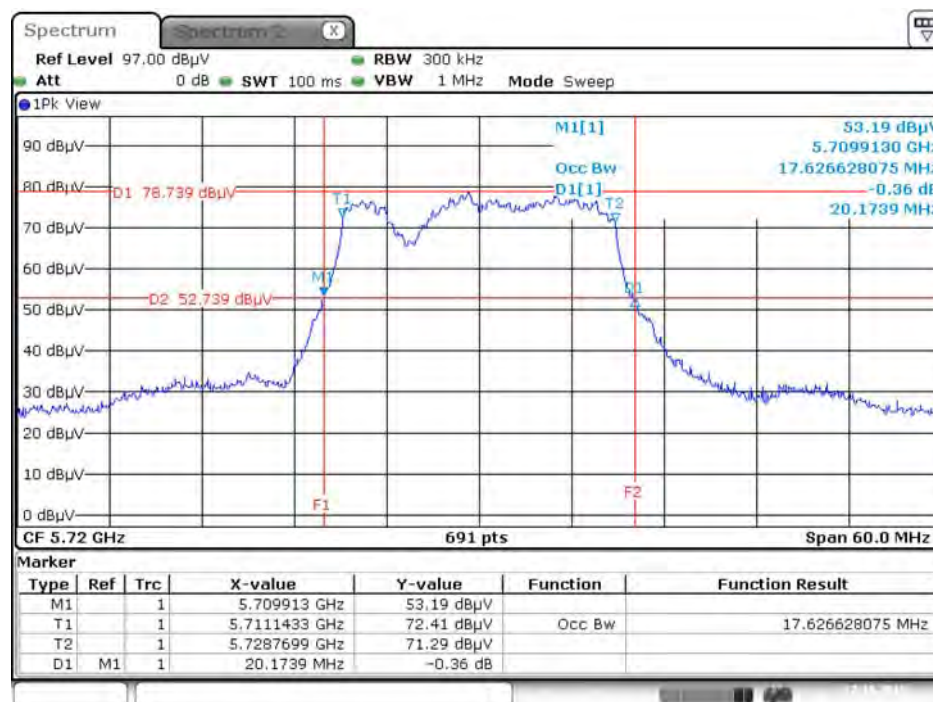
Straddle Channel

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



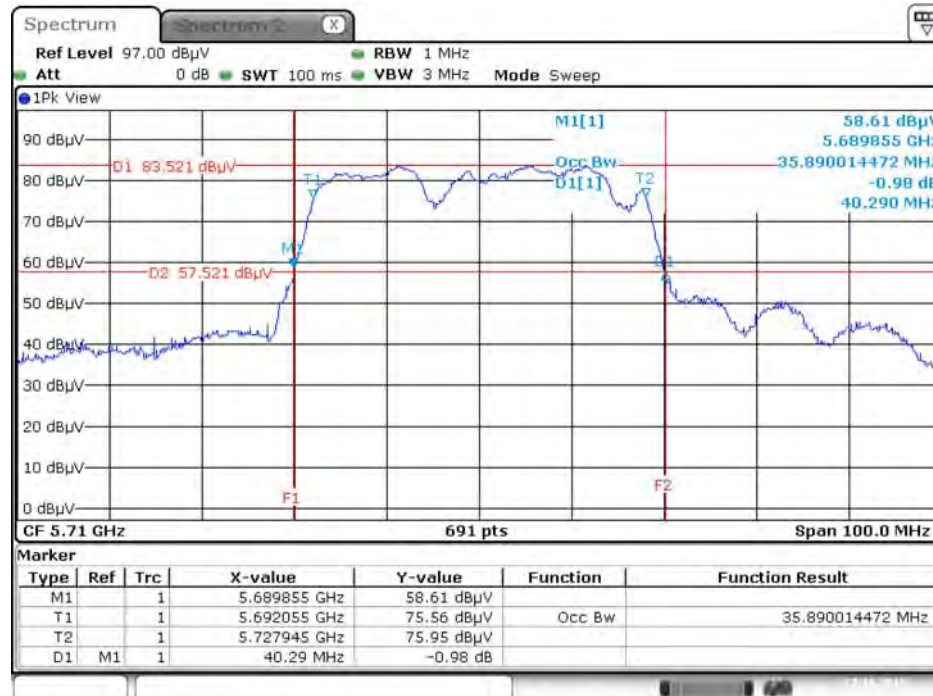
Date: 27.OCT.2015 00:02:49

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



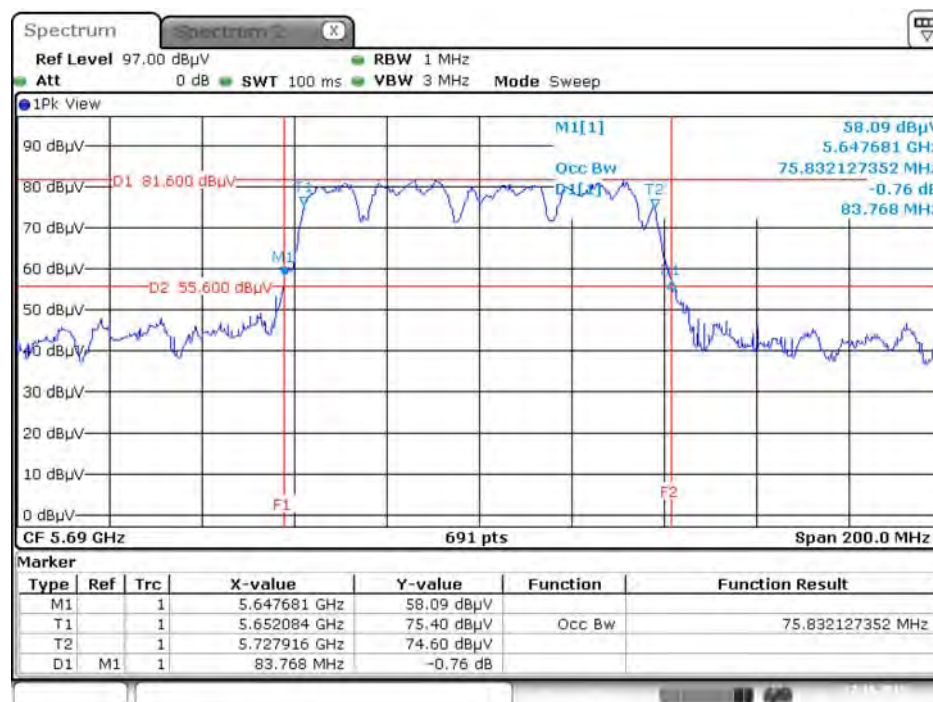
Date: 27.OCT.2015 00:03:42

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: 27.OCT.2015 00:04:18

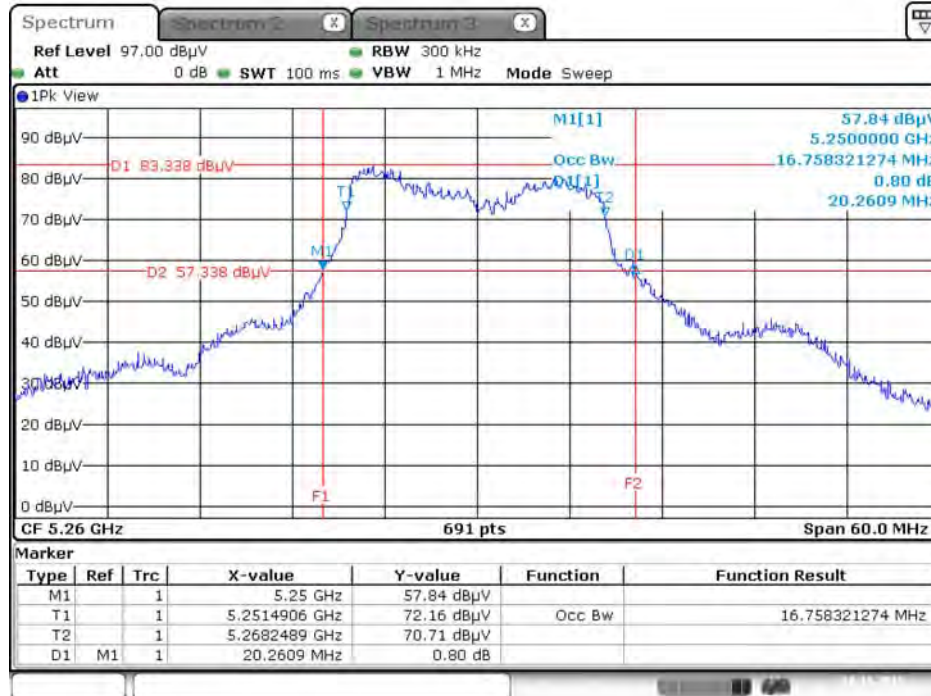
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5690 MHz



Date: 27.OCT.2015 00:04:56

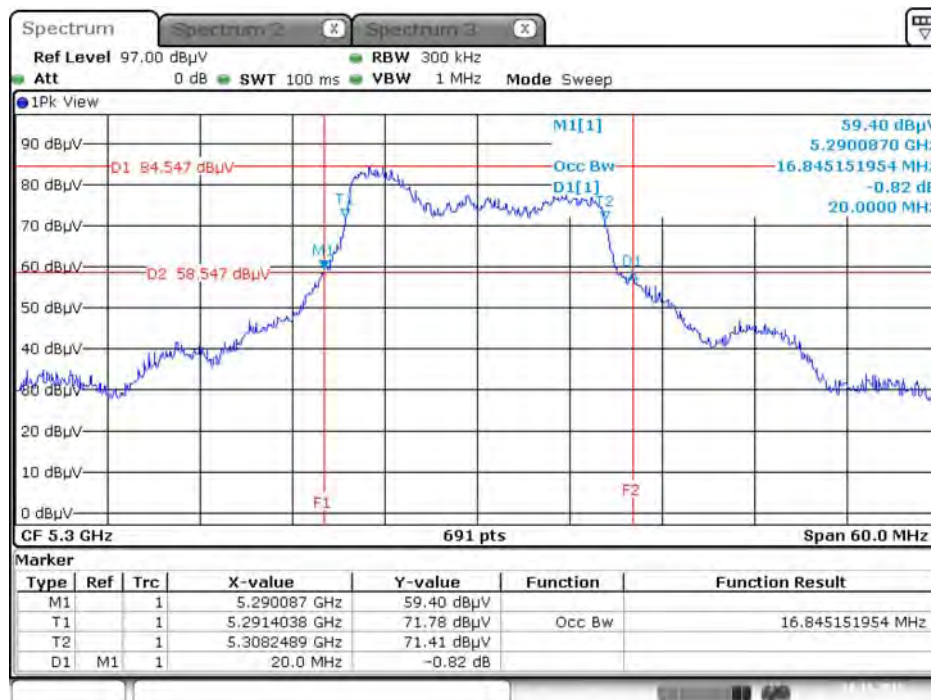
Mode 3: EUT 1 + Set 3 Sector Antenna / 5.5 dBi

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



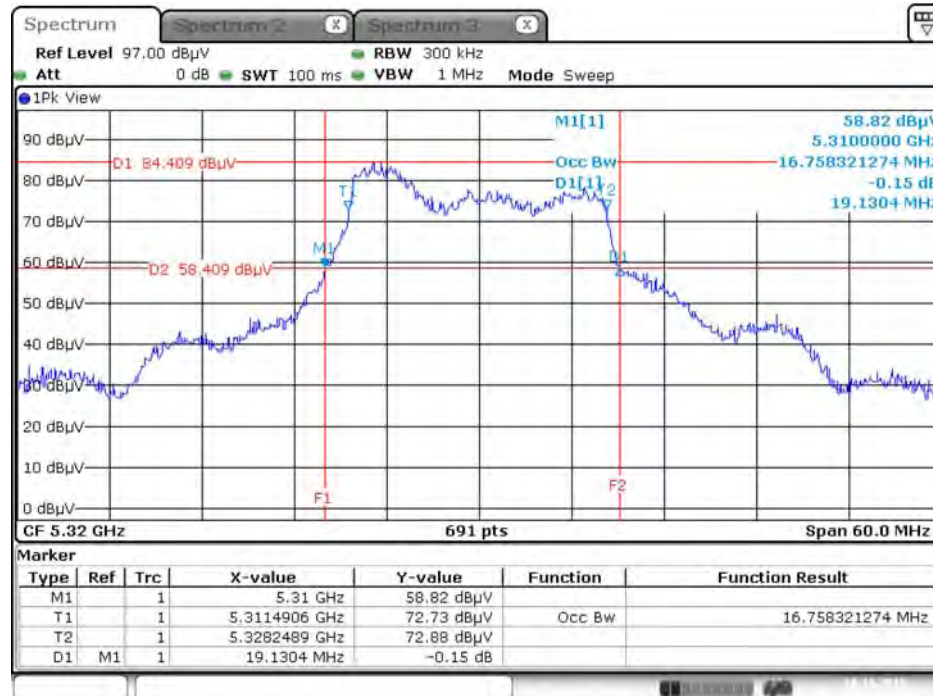
Date: 10.NOV.2015 20:09:27

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



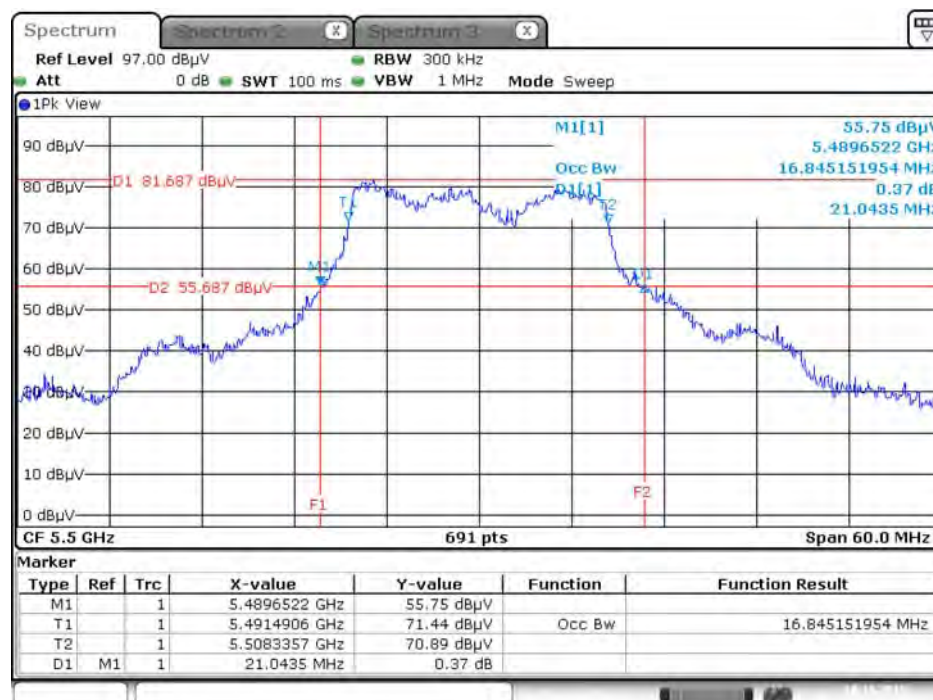
Date: 10.NOV.2015 20:09:57

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



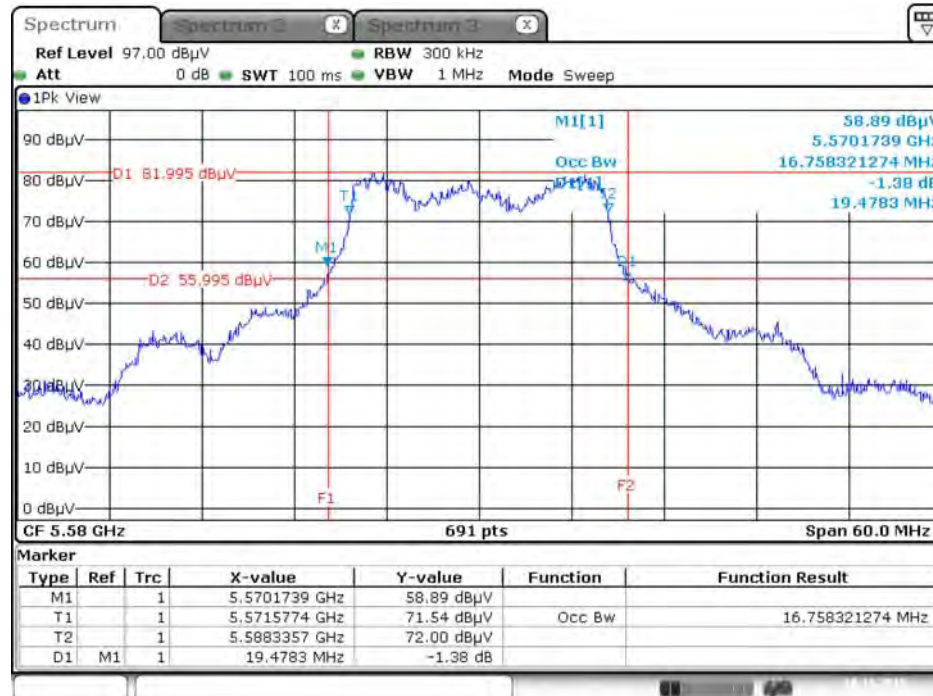
Date: 10.NOV.2015 20:10:22

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



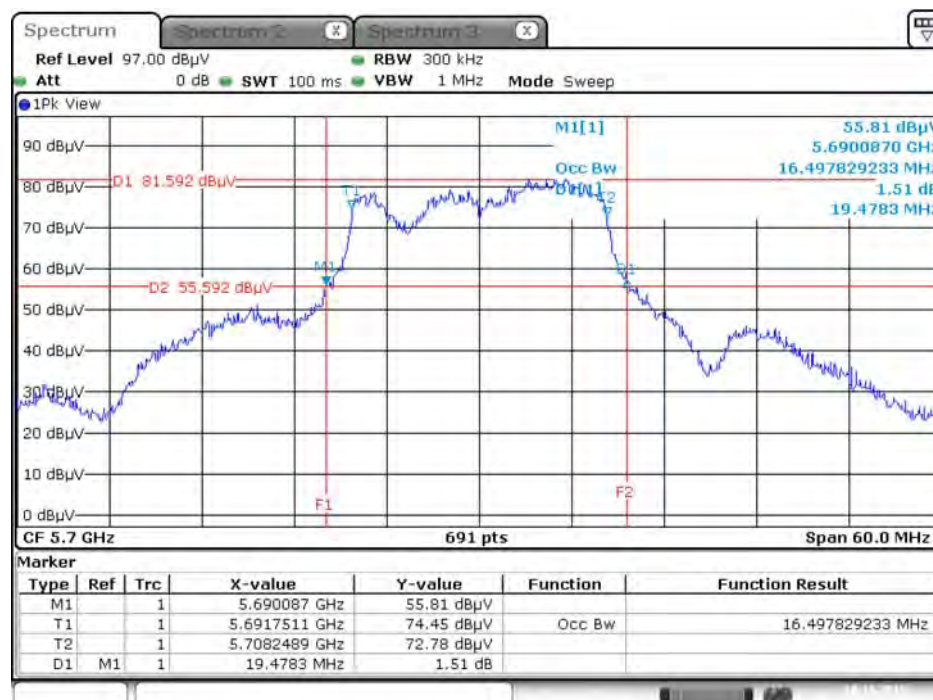
Date: 10.NOV.2015 20:11:03

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



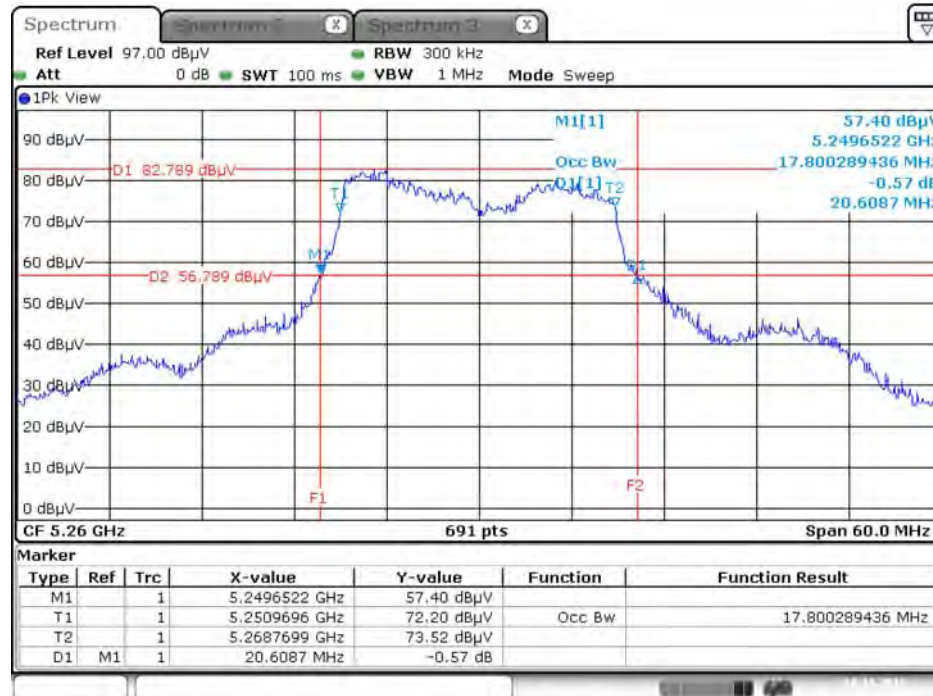
Date: 10.NOV.2015 20:11:32

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



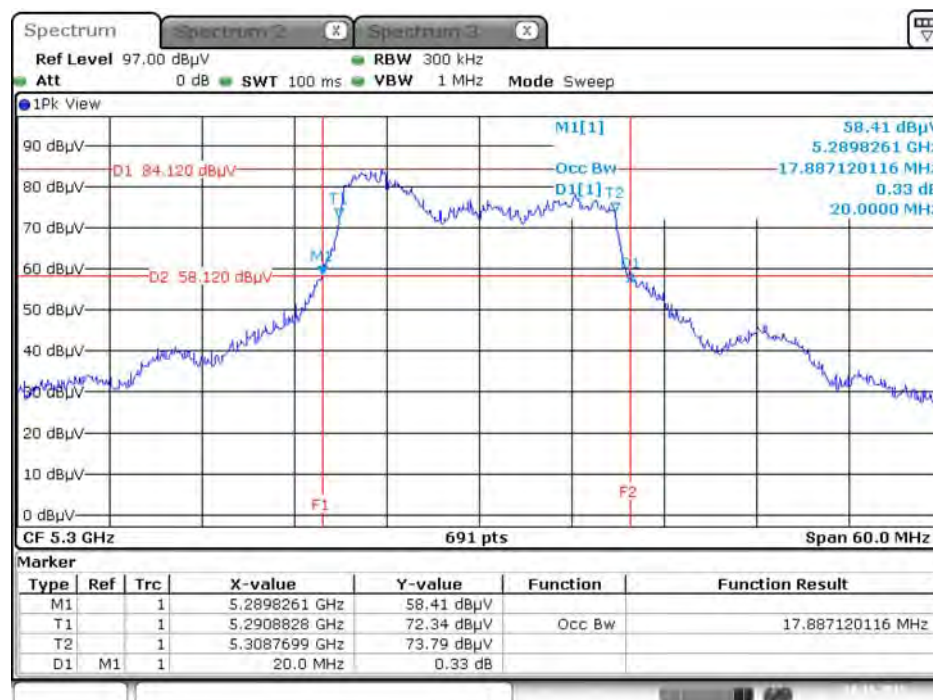
Date: 10.NOV.2015 20:12:05

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



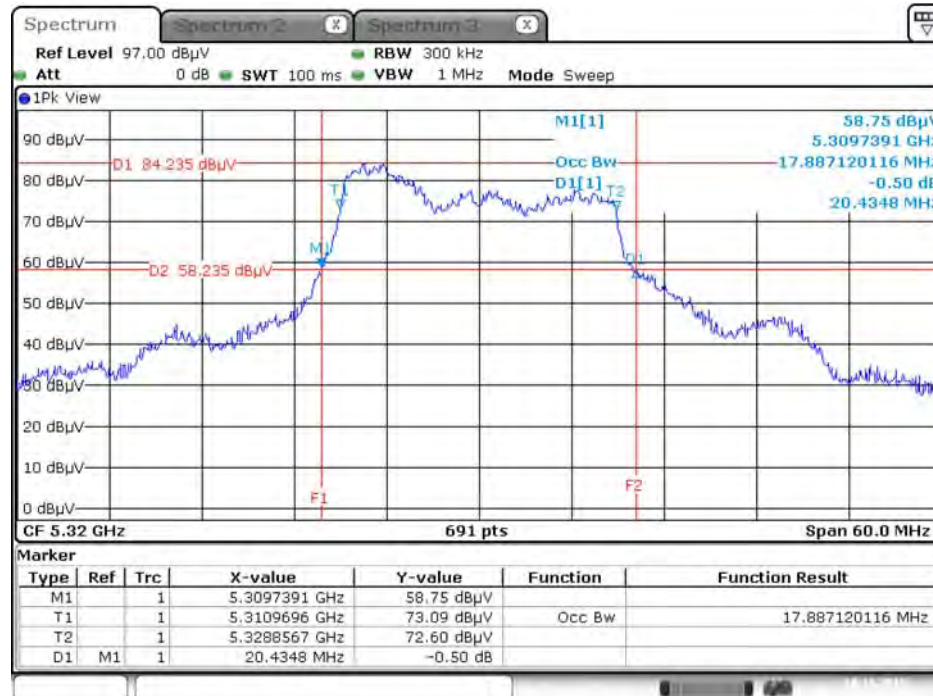
Date: 10.NOV.2015 20:14:55

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



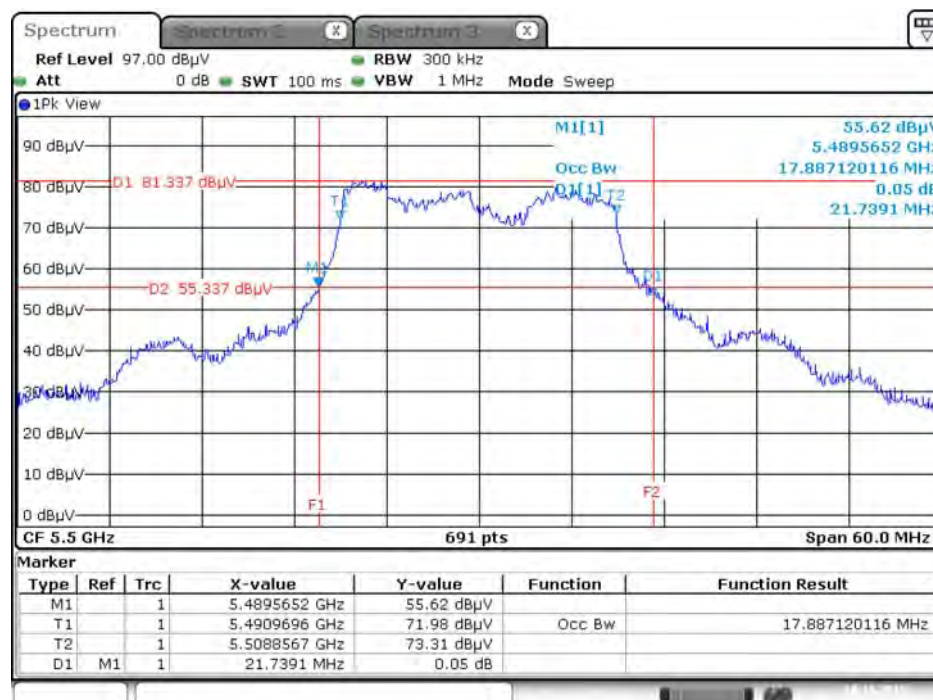
Date: 10.NOV.2015 20:15:35

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



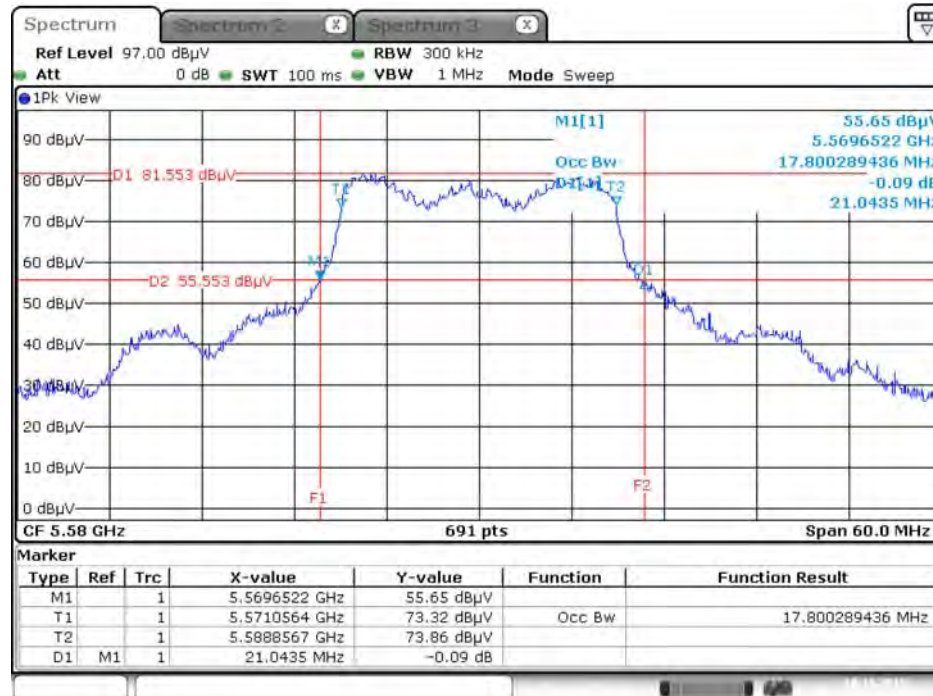
Date: 10.NOV.2015 20:16:21

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



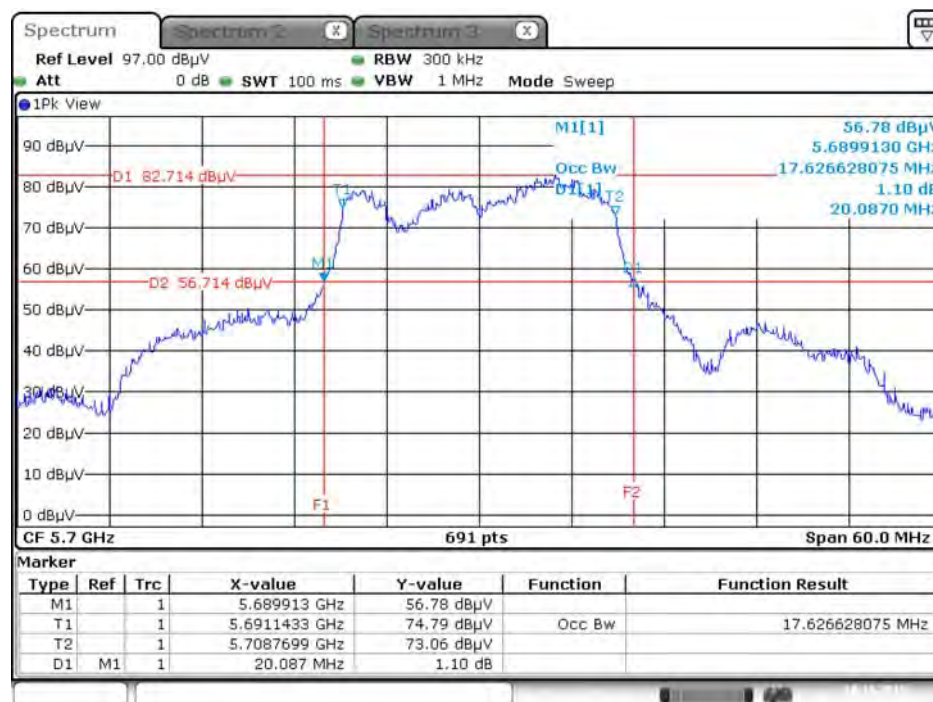
Date: 10.NOV.2015 20:26:20

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



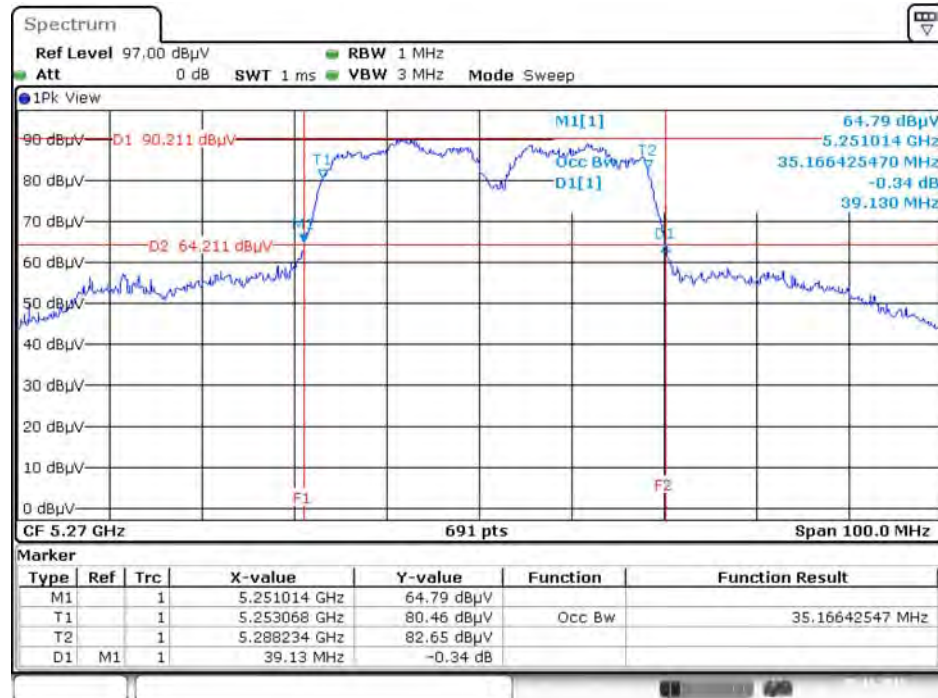
Date: 10.NOV.2015 20:28:01

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



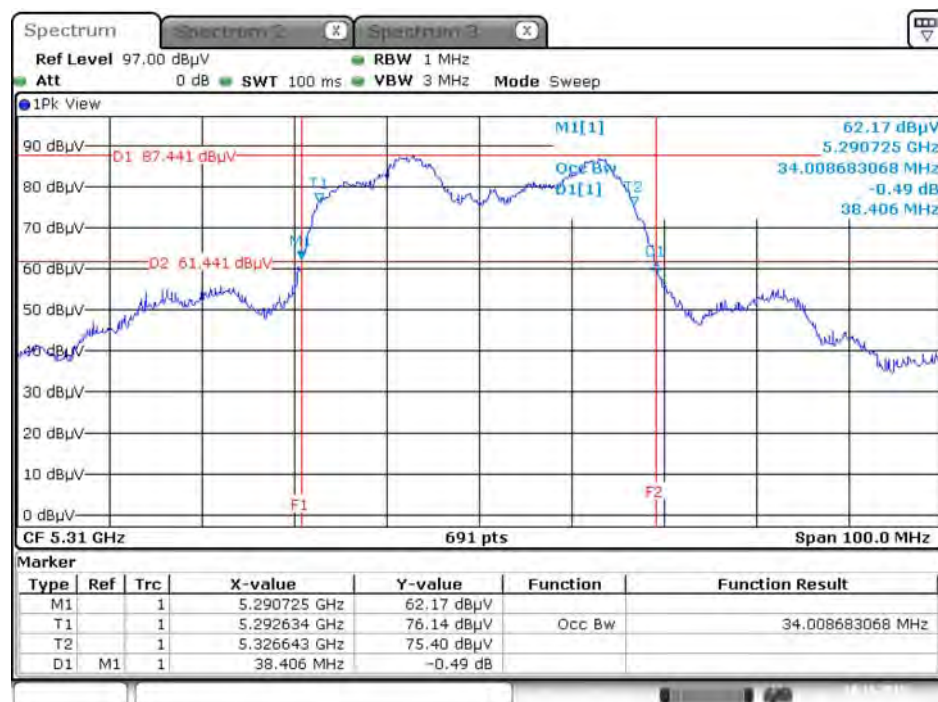
Date: 10.NOV.2015 20:28:55

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



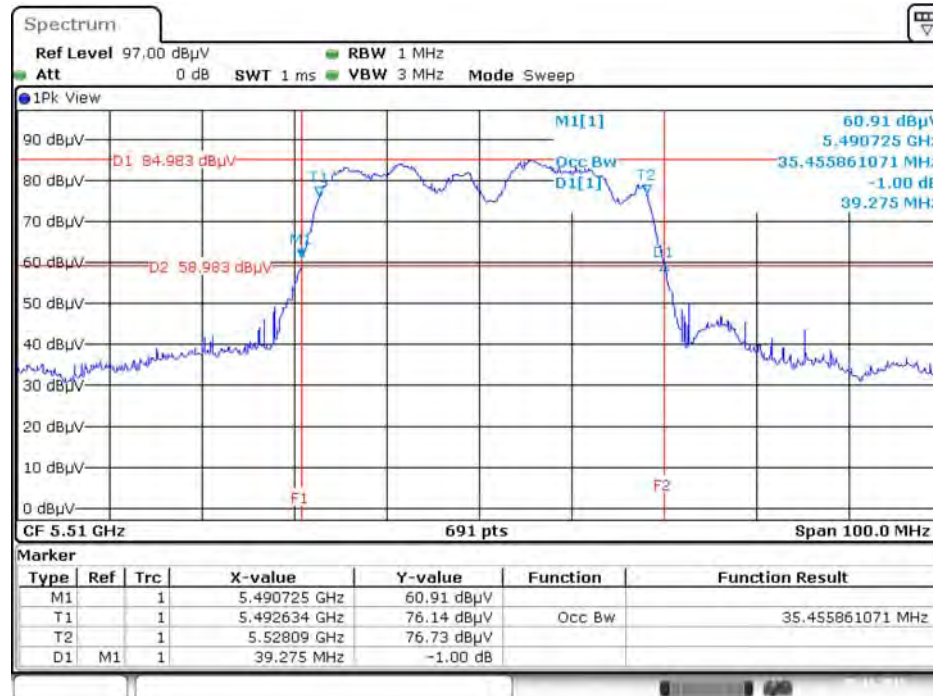
Date: 5 NOV. 2015 14:20:15

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



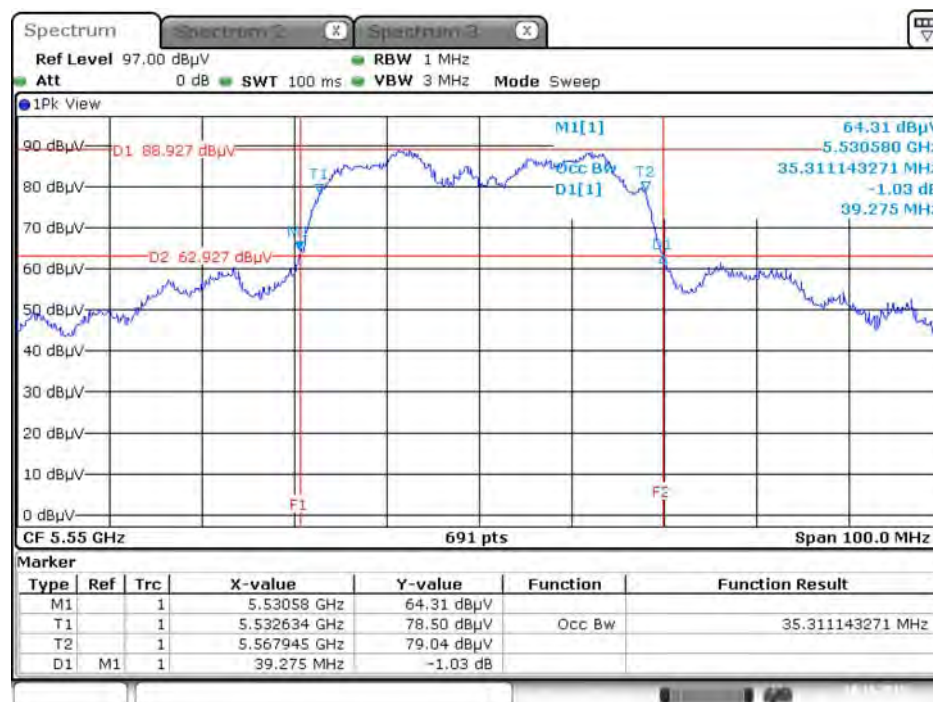
Date: 10 NOV. 2015 20:33:15

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



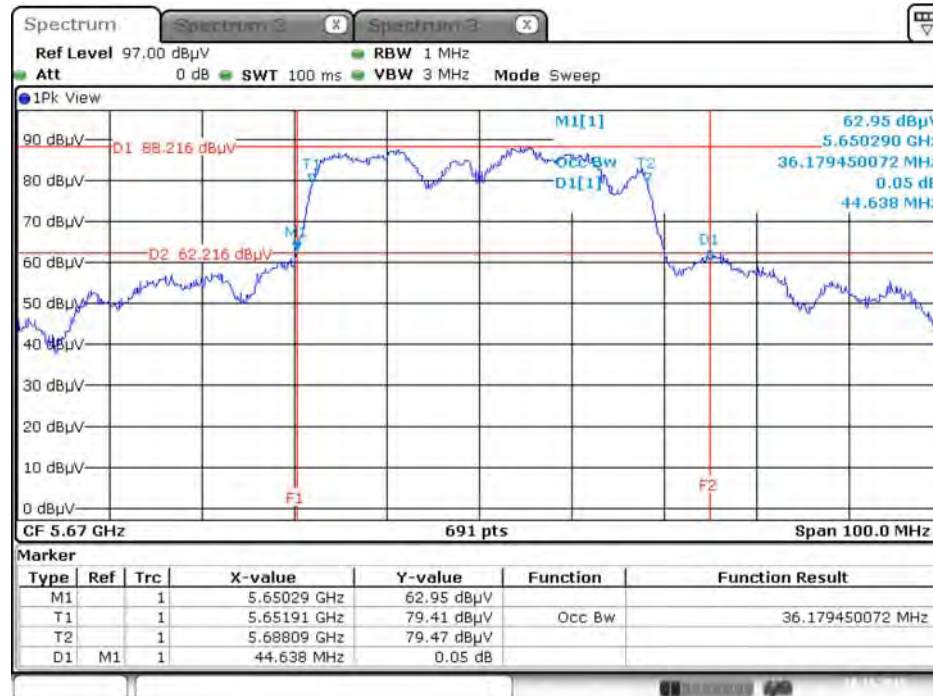
Date: 5 NOV. 2015 14:21:26

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



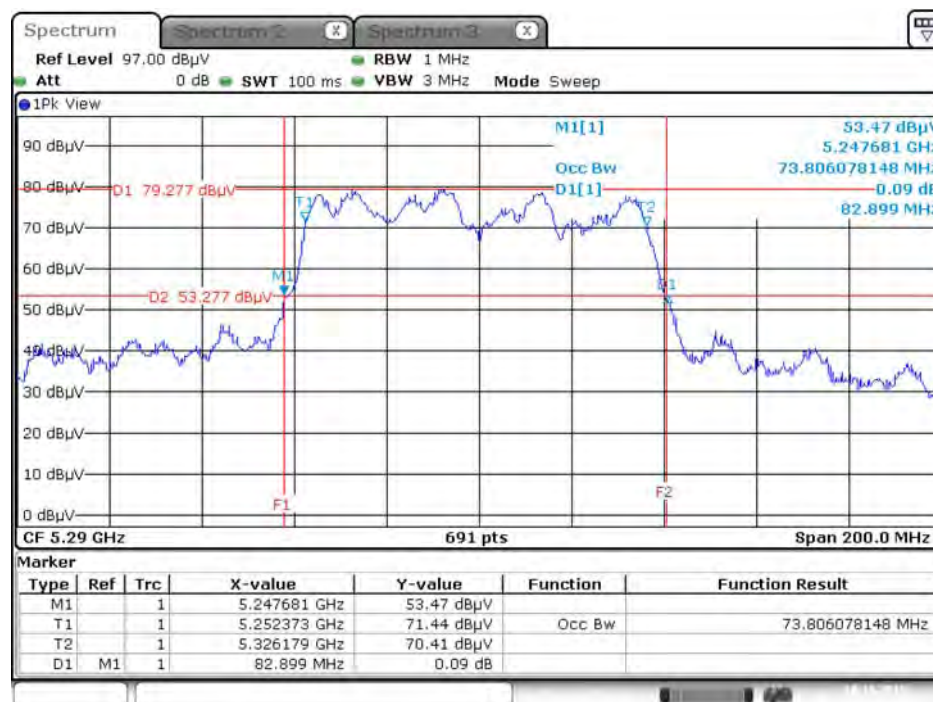
Date: 10 NOV. 2015 20:33:58

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



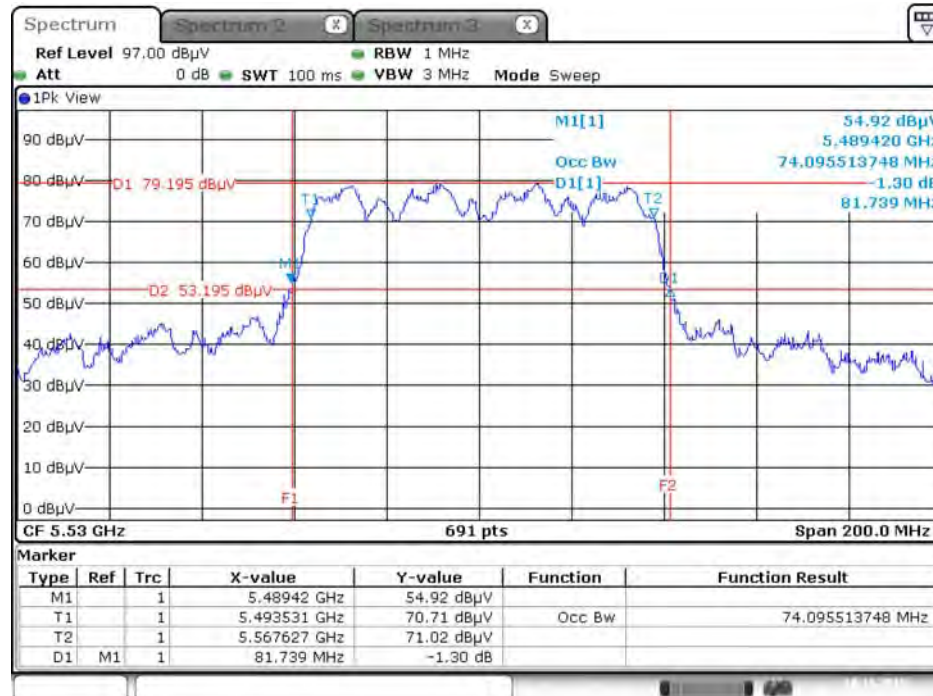
Date: 10.NOV.2015 20:34:47

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



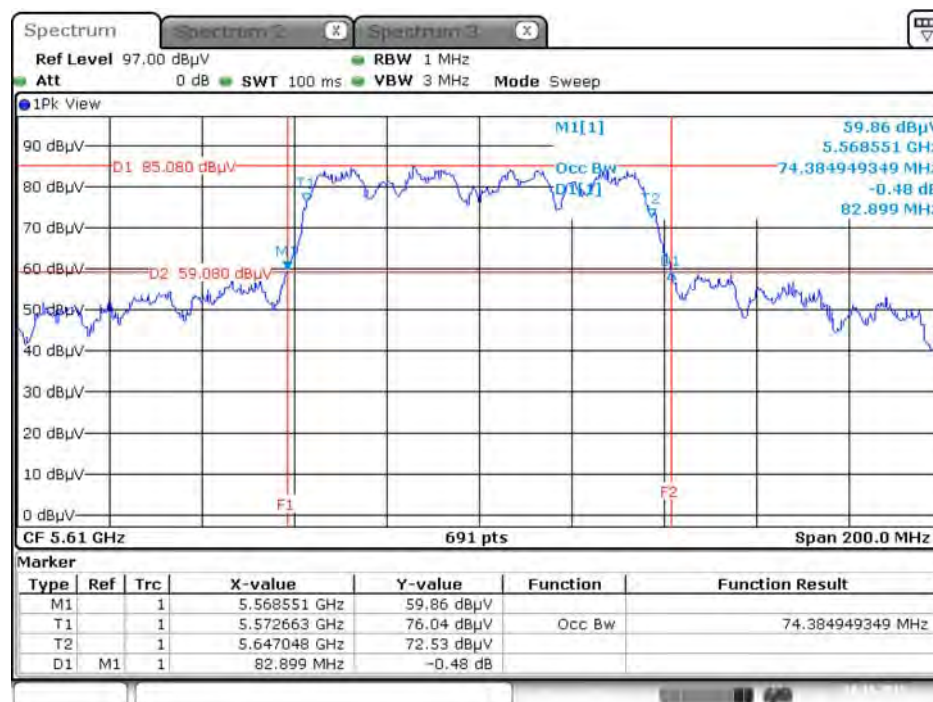
Date: 10.NOV.2015 20:38:38

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: 10.NOV.2015 20:39:15

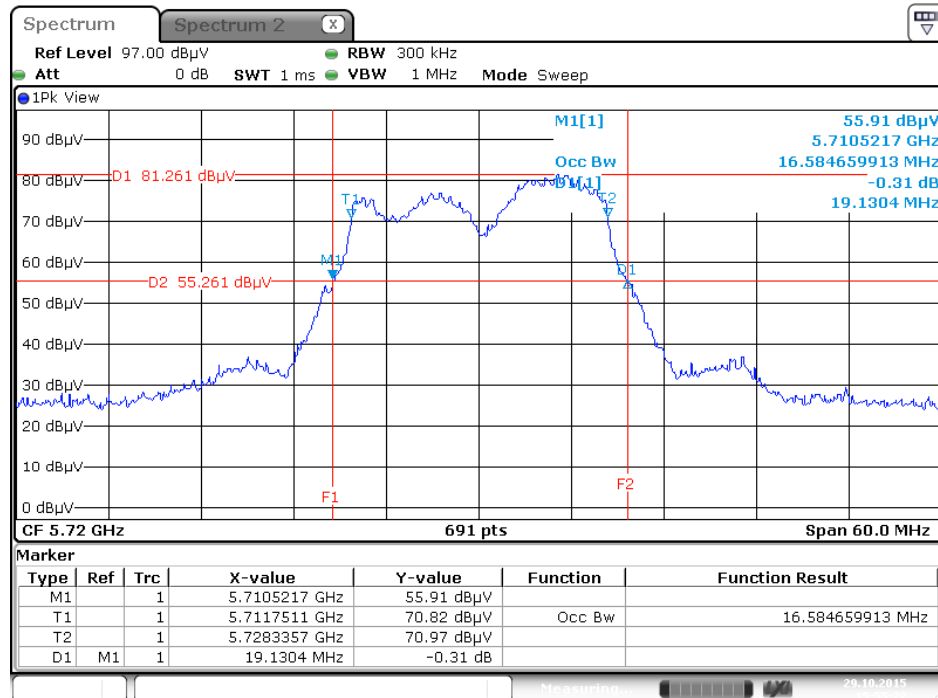
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5610 MHz



Date: 10.NOV.2015 20:39:52

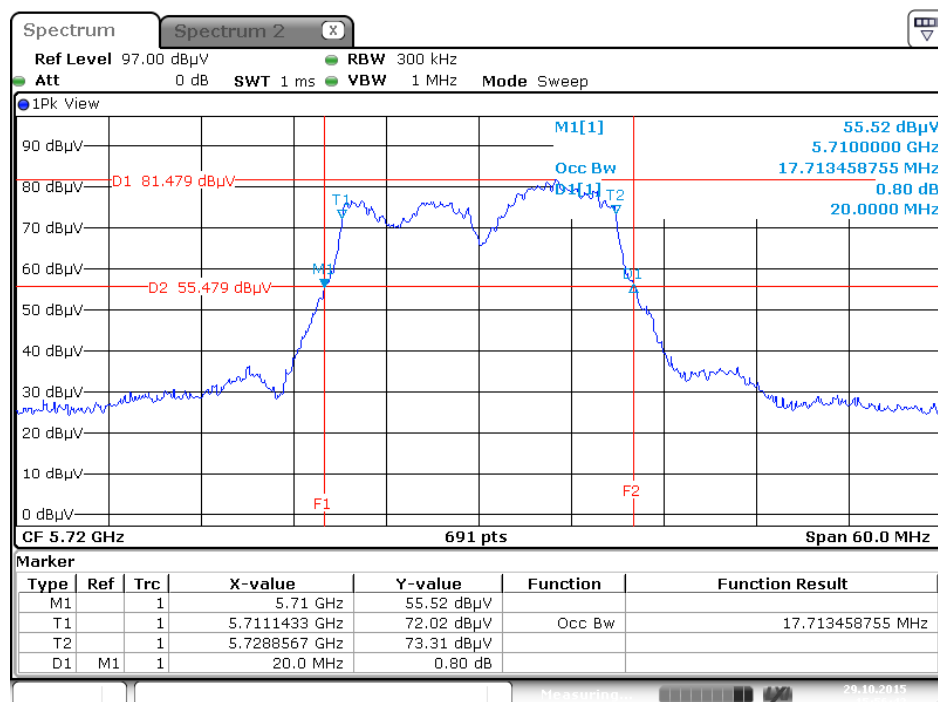
Straddle Channel

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



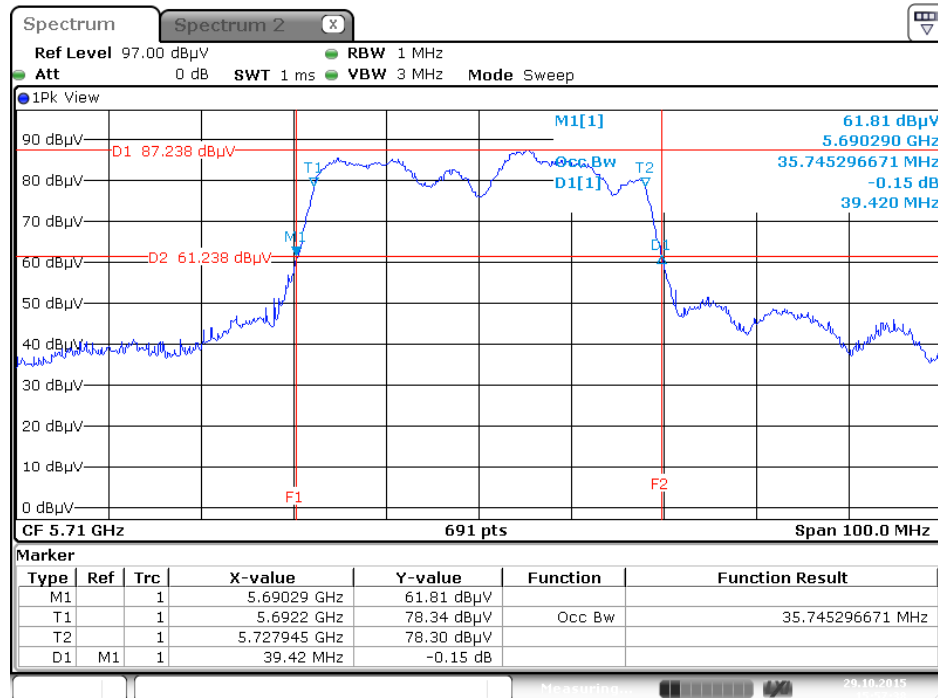
Date: 29.OCT.2015 15:55:23

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



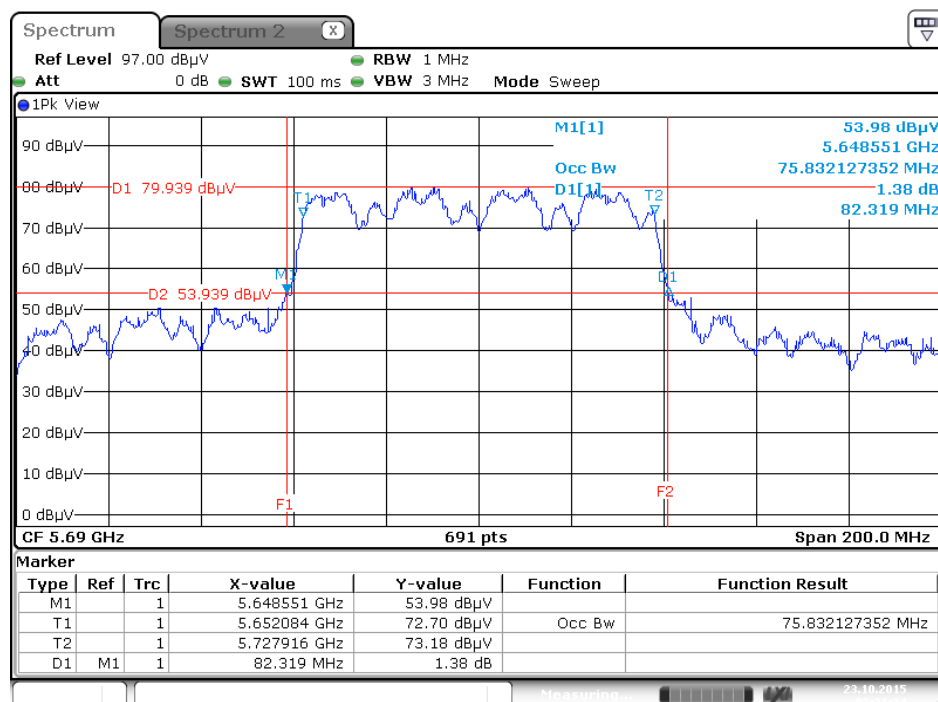
Date: 29.OCT.2015 15:56:43

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: 29.OCT.2015 15:57:38

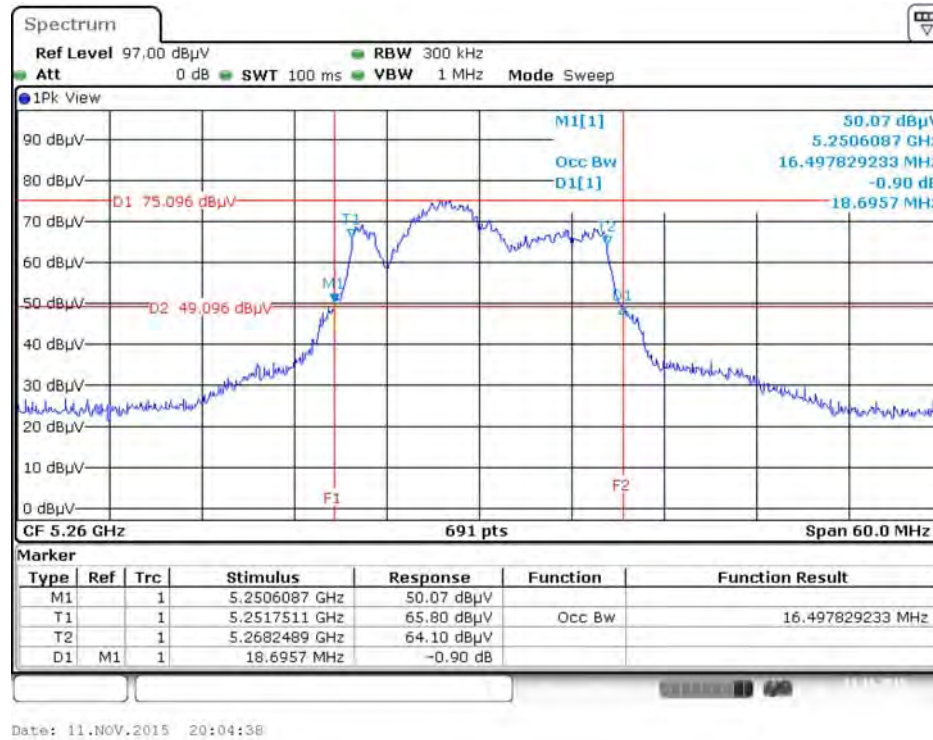
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5690 MHz



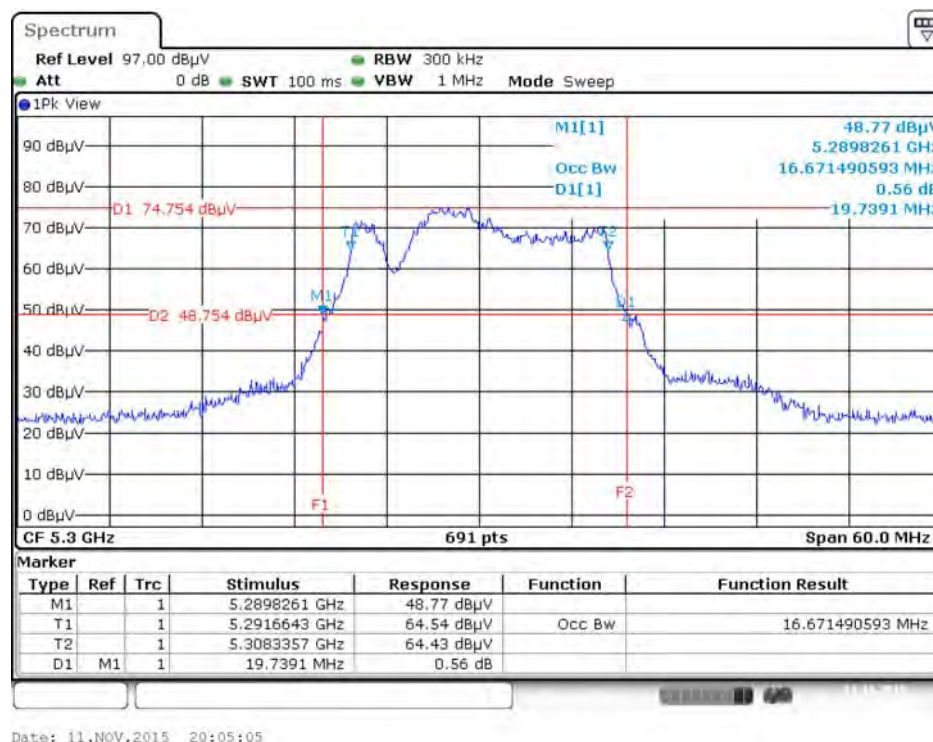
Date: 23.OCT.2015 02:31:24

Mode 4: EUT 1 + Set 4 Sector Antenna / 7.5 dBi

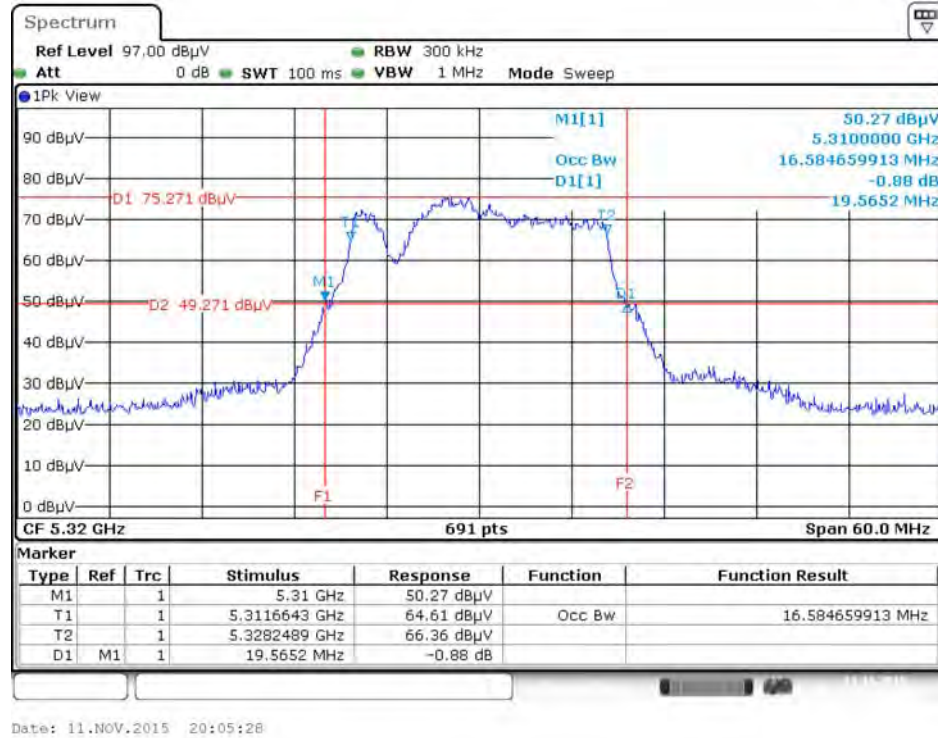
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2
+ Chain 3 + Chain 4 / 5260 MHz



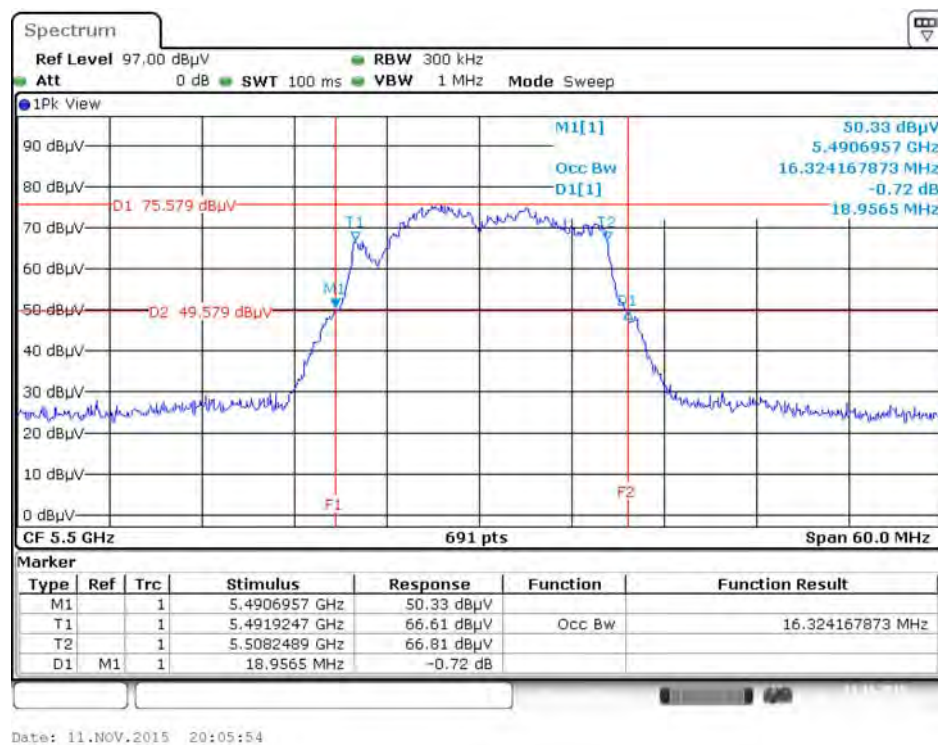
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2
+ Chain 3 + Chain 4 / 5300 MHz



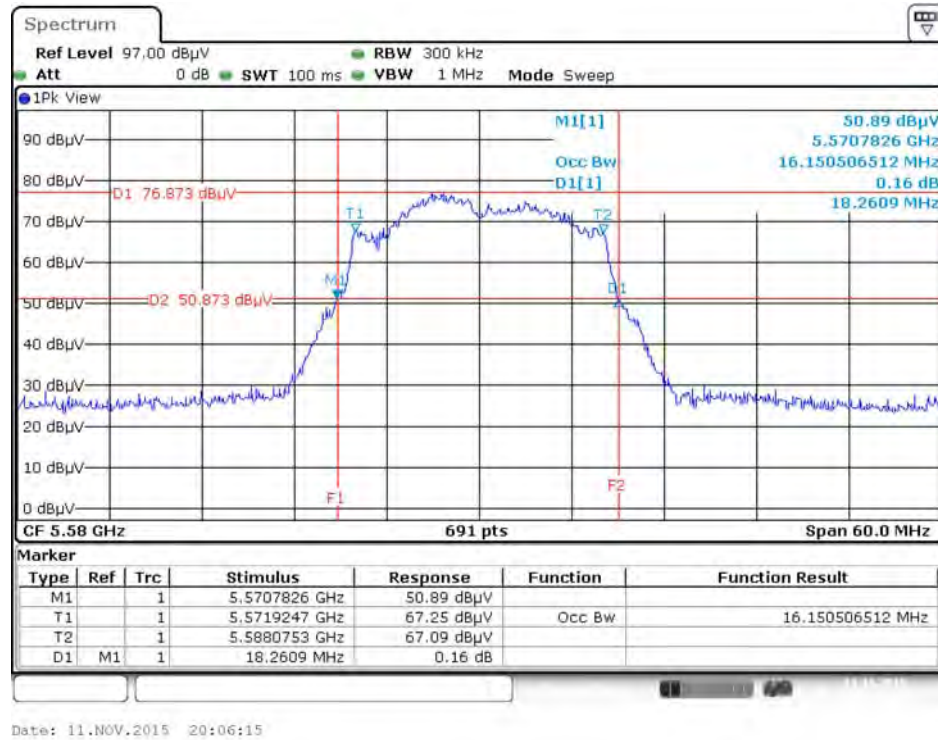
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5320 MHz



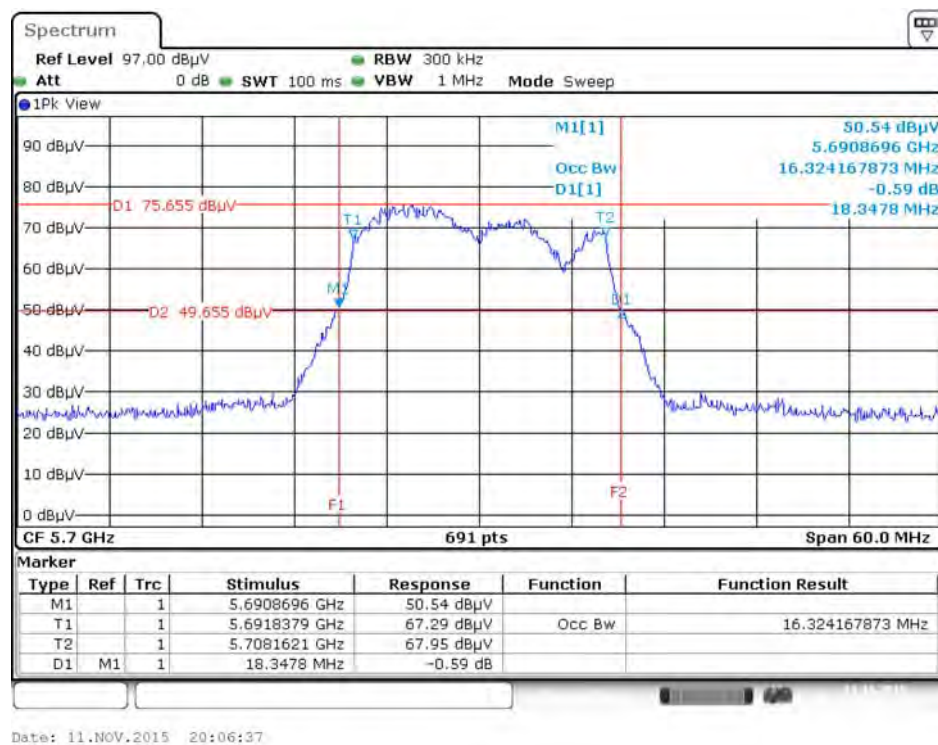
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5500 MHz



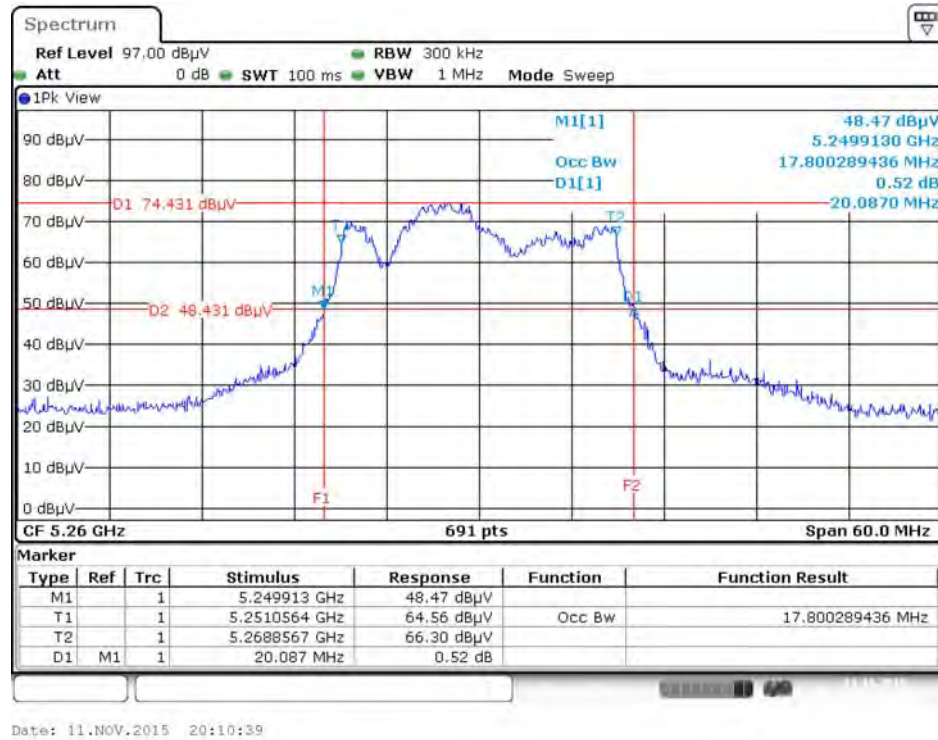
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2
+ Chain 3 + Chain 4 / 5580 MHz



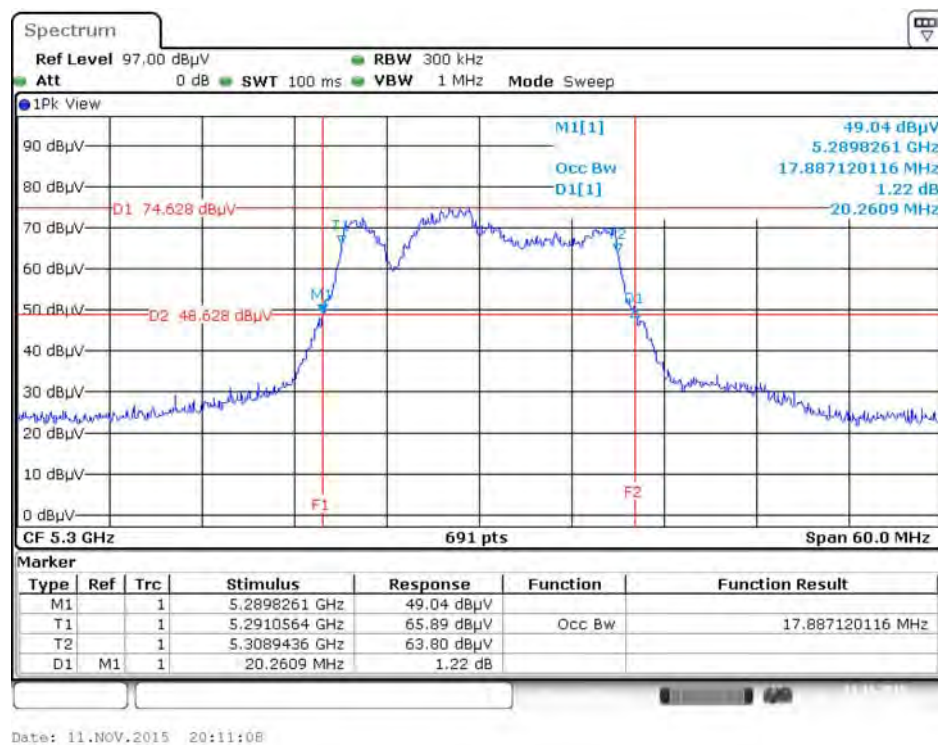
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2
+ Chain 3 + Chain 4 / 5700 MHz



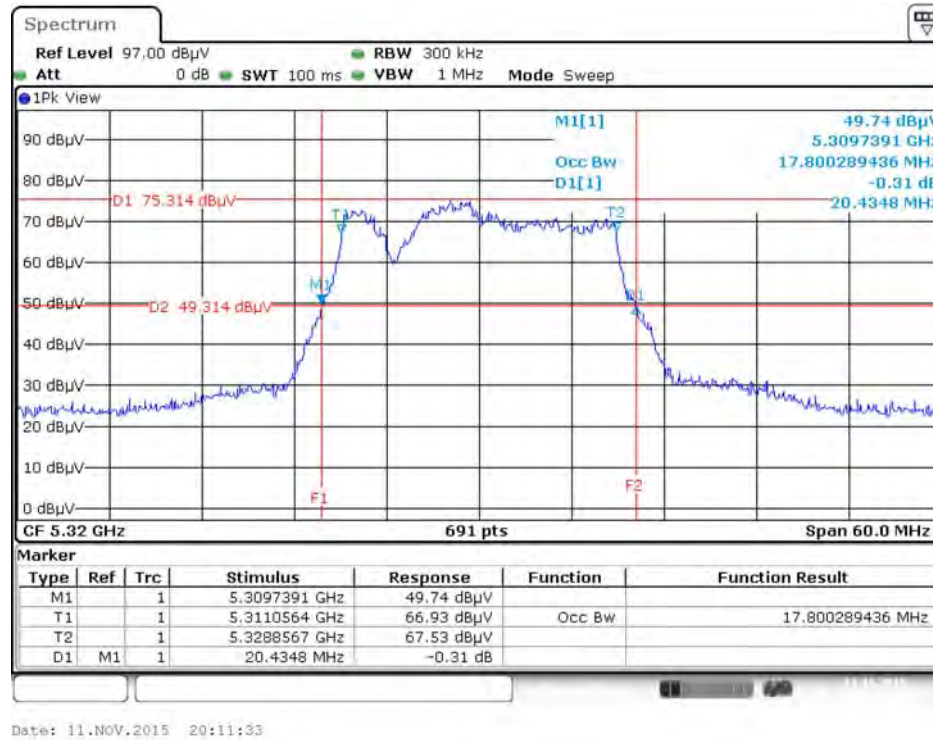
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5260 MHz



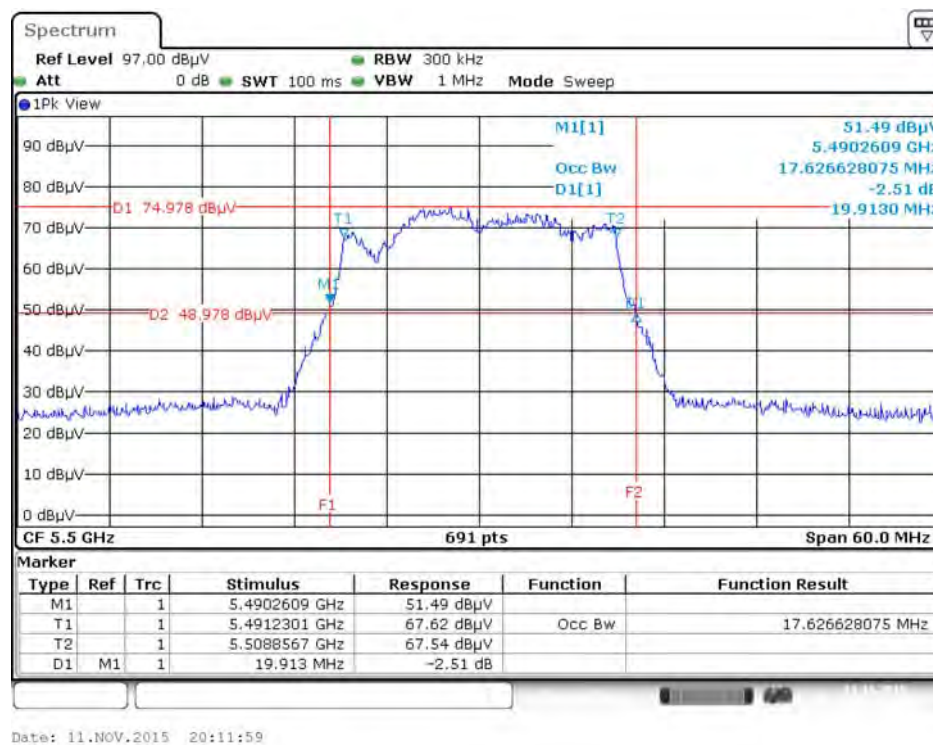
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5300 MHz



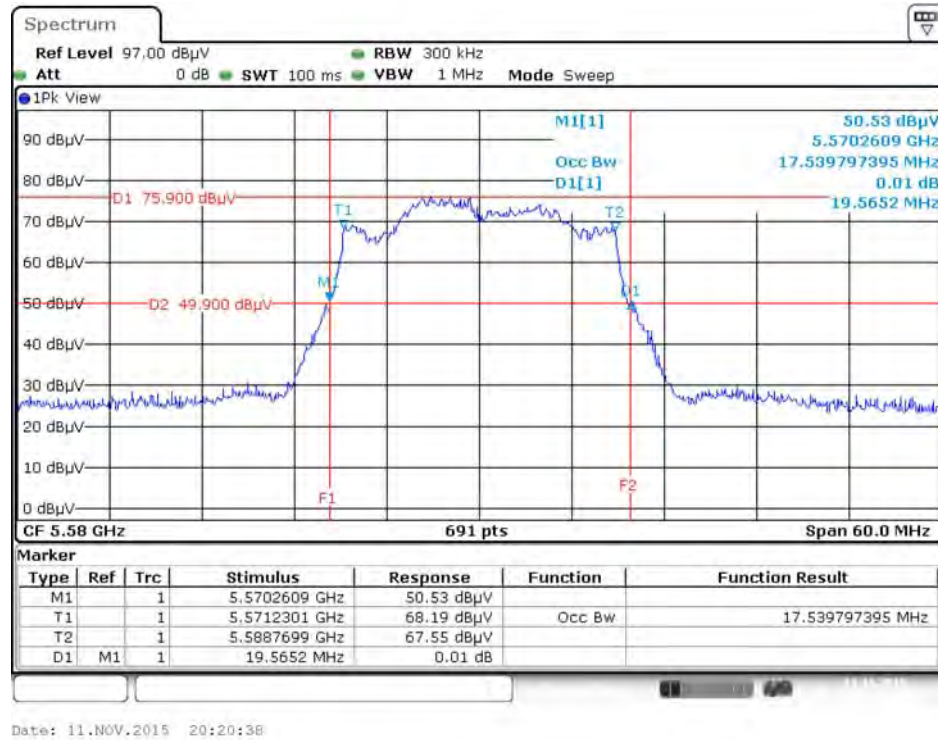
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5320 MHz



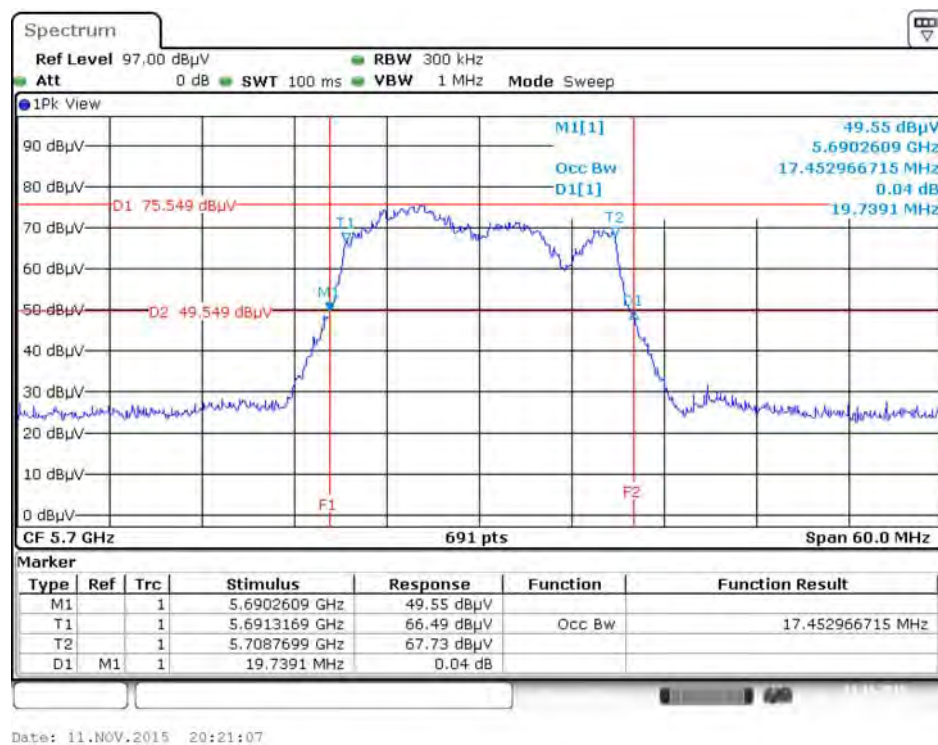
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5500 MHz



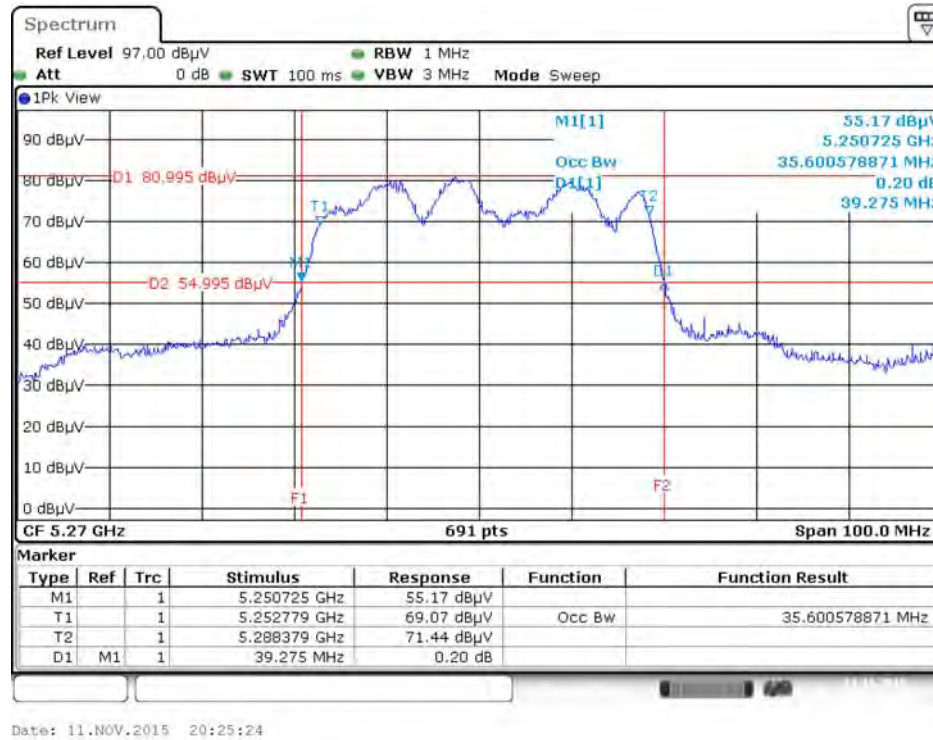
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5580 MHz



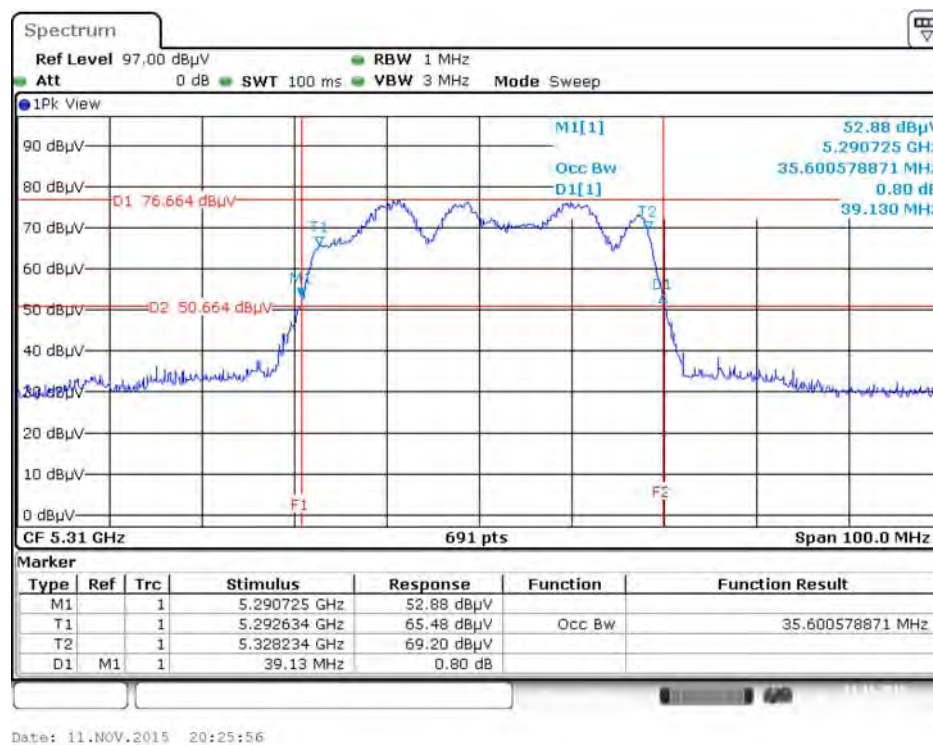
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5700 MHz



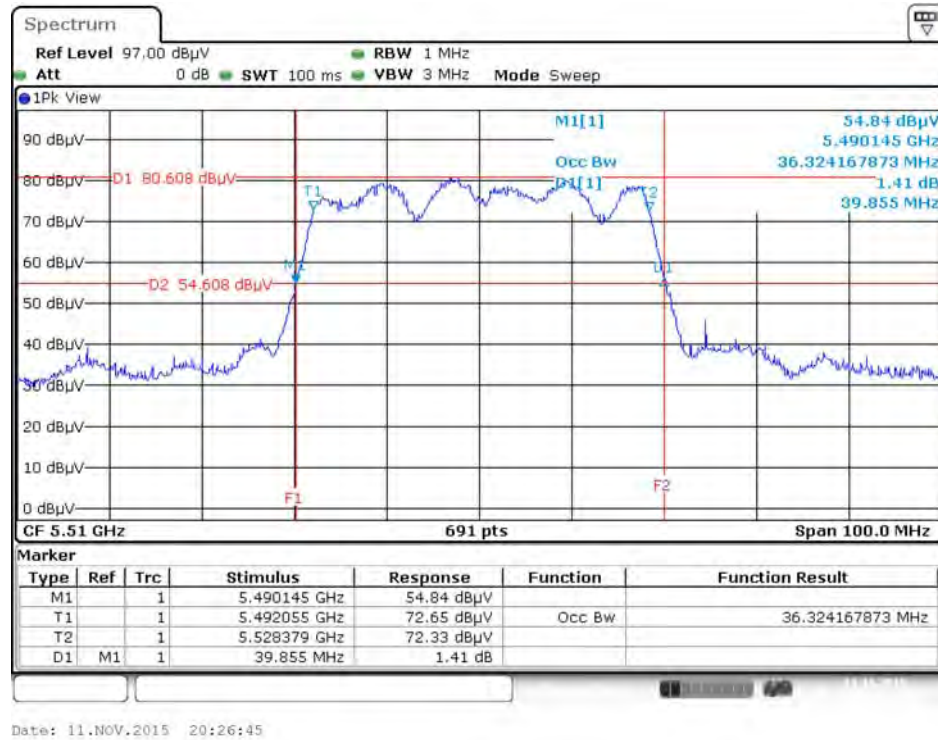
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5270 MHz



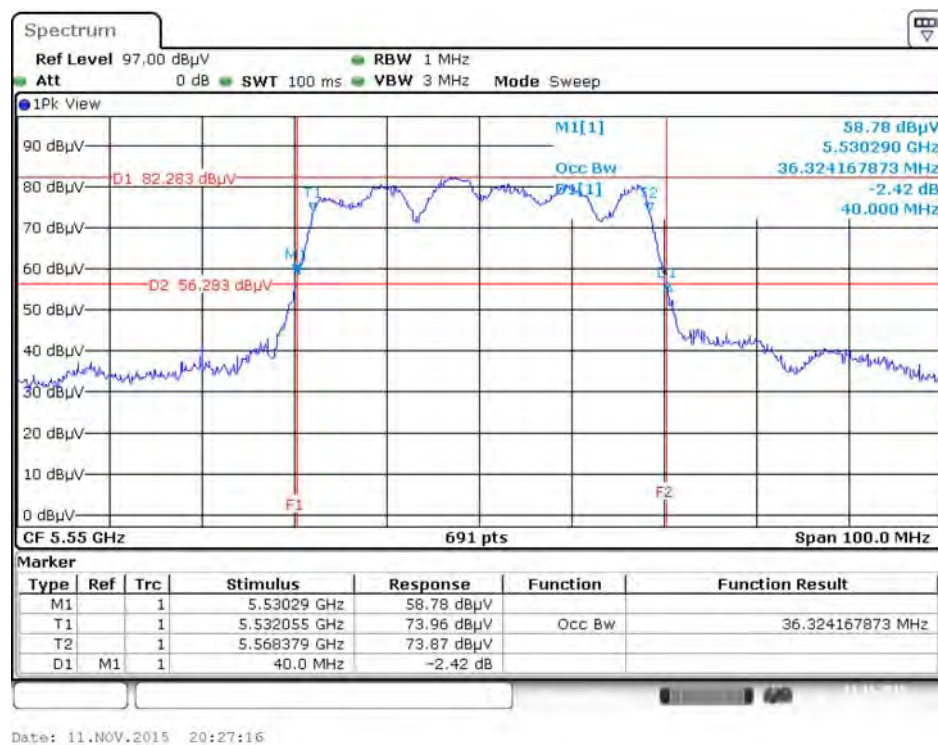
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5310 MHz



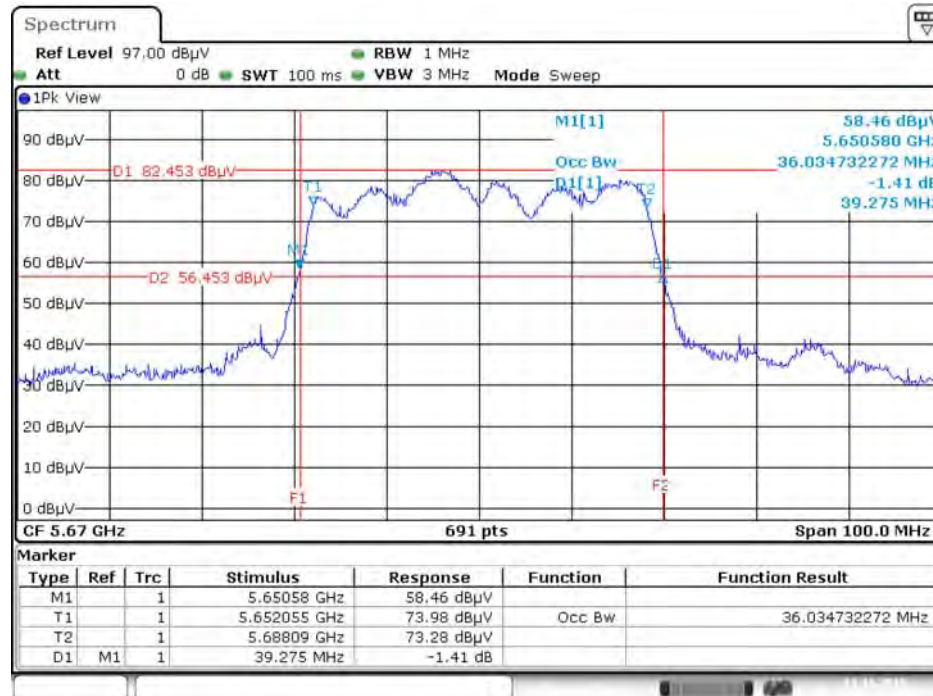
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5510 MHz



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

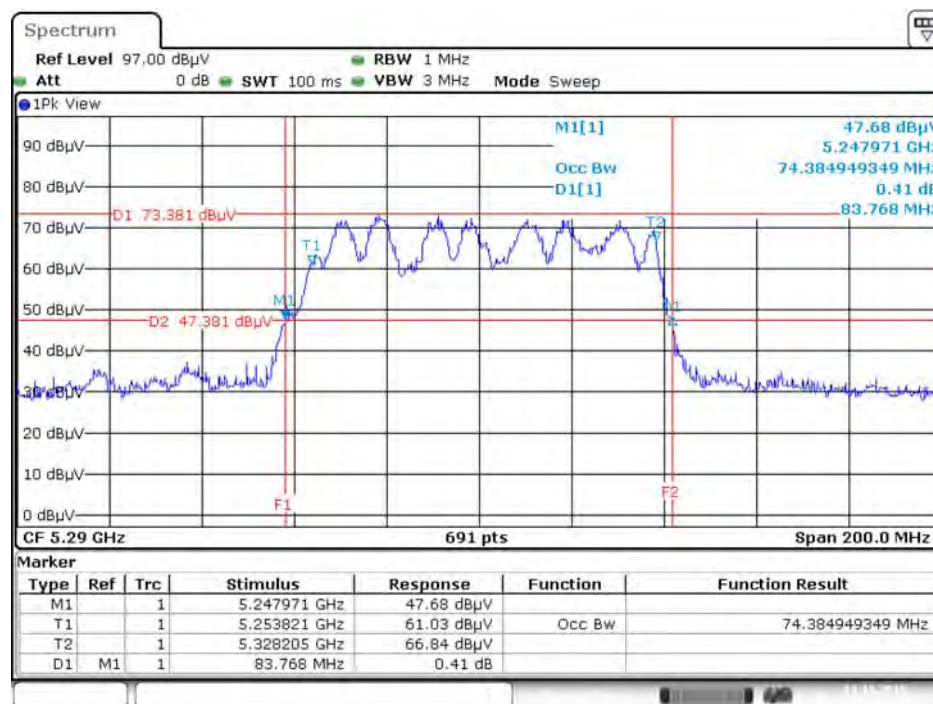


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5670 MHz



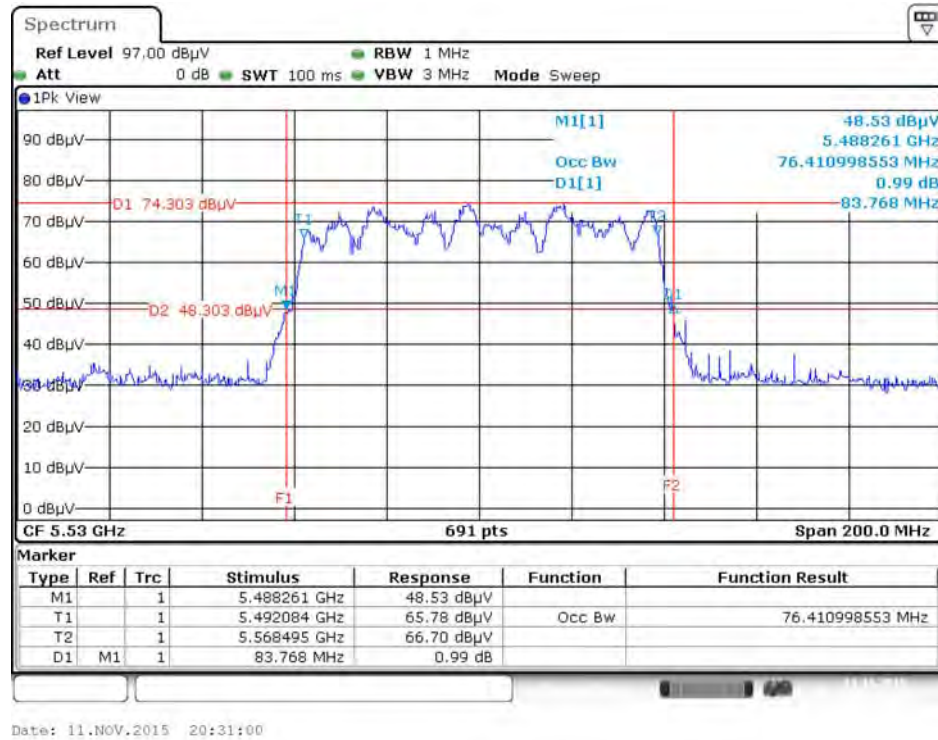
Date: 11.NOV.2015 20:27:48

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

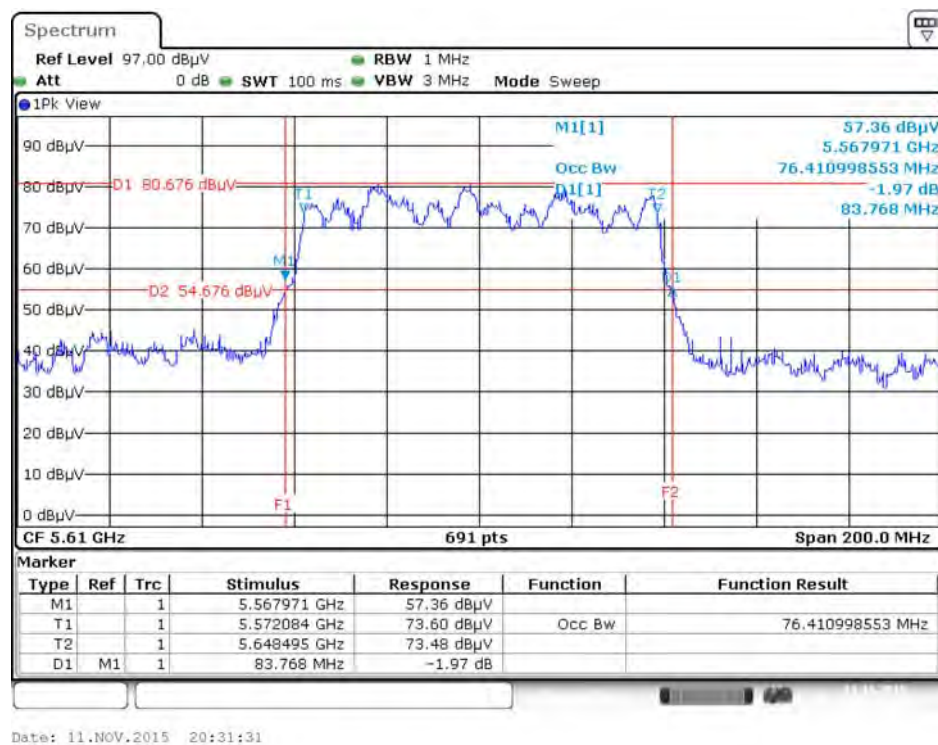


Date: 11.NOV.2015 20:30:35

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

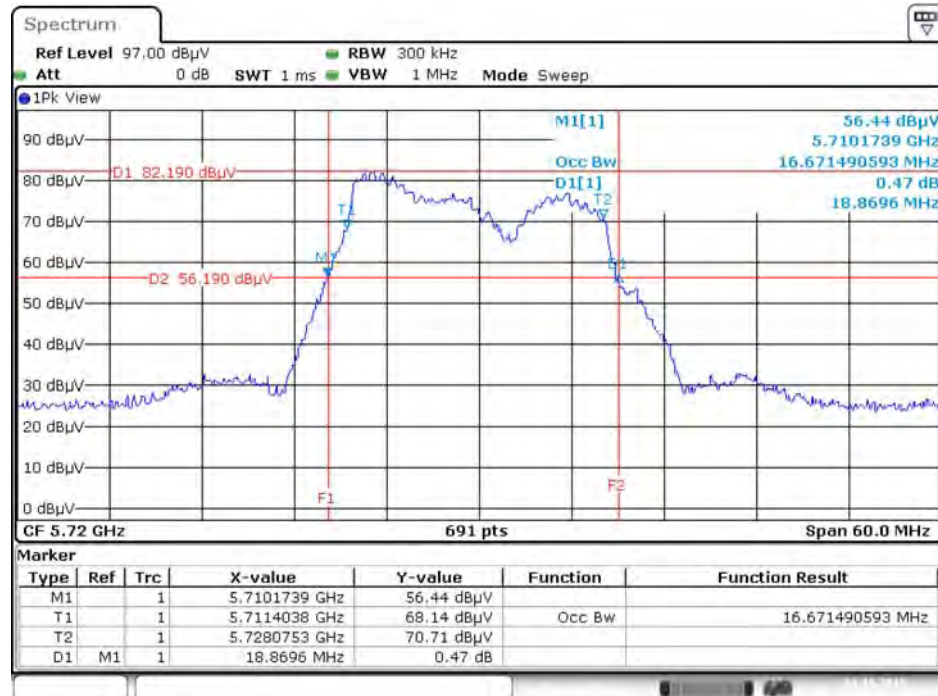


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5610 MHz



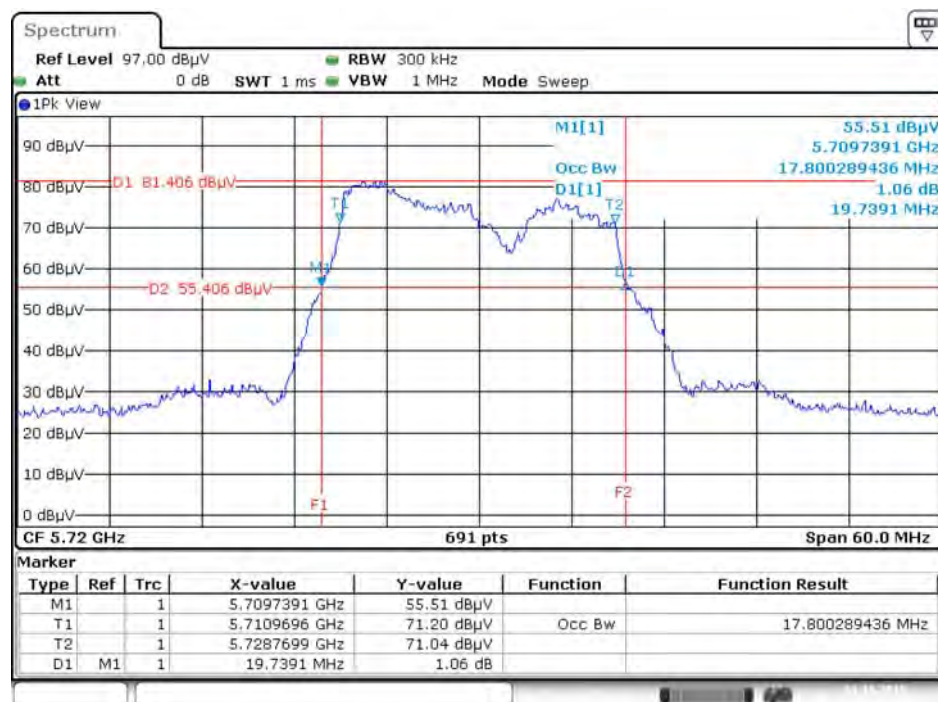
Straddle Channel

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



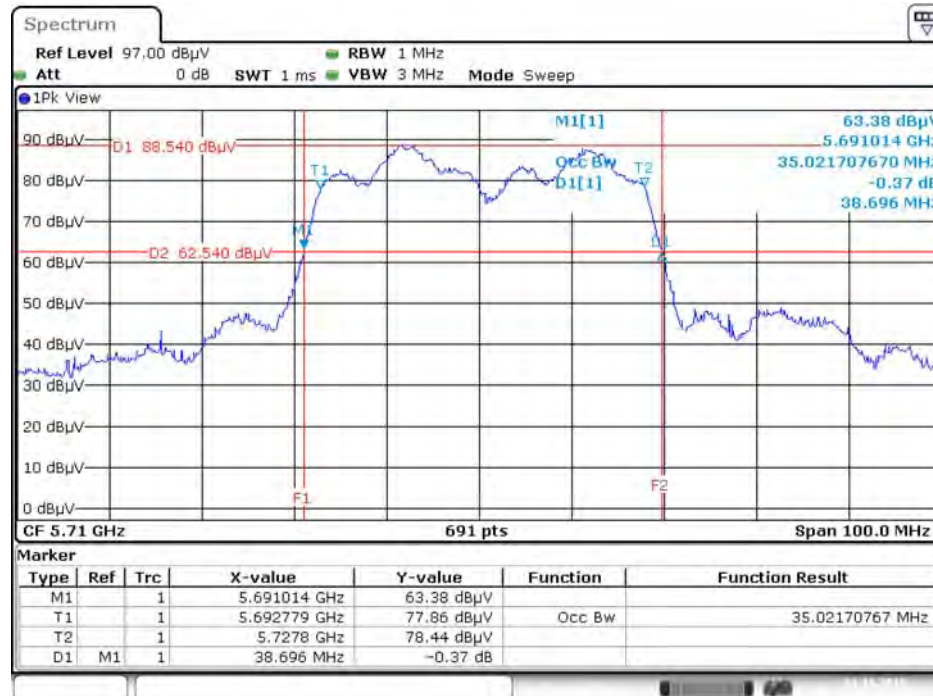
Date: 1.NOV.2015 03:41:46

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



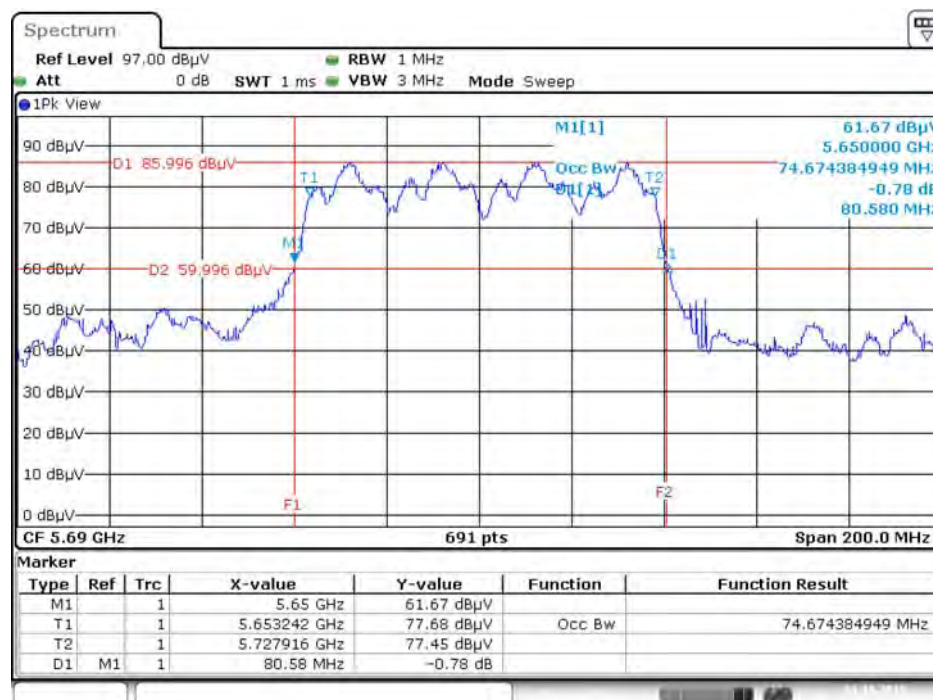
Date: 1.NOV.2015 03:42:28

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: 1.NOV.2015 03:43:36

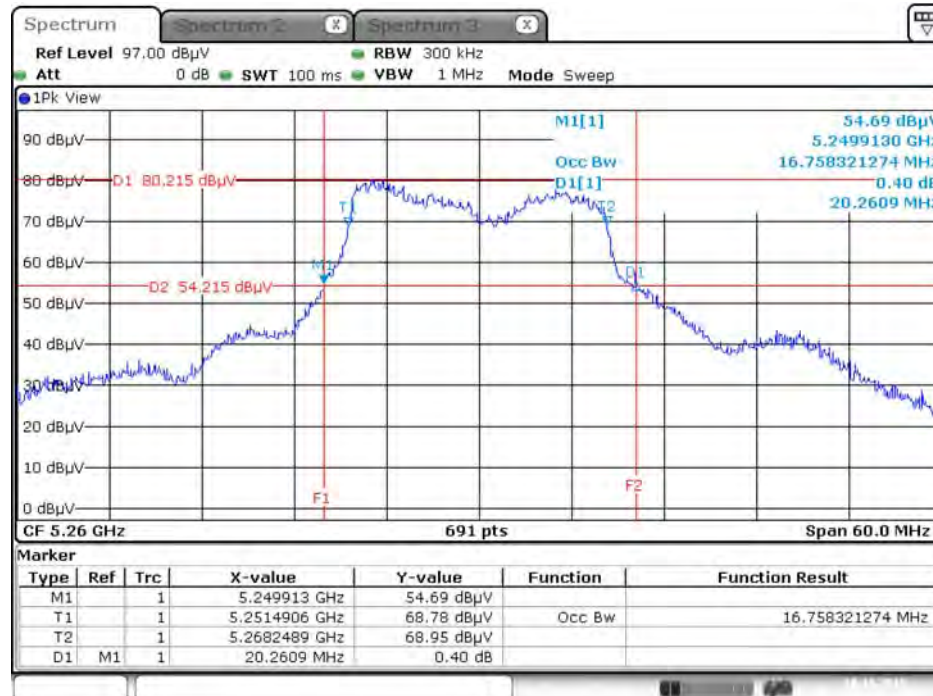
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5690 MHz



Date: 1.NOV.2015 03:38:55

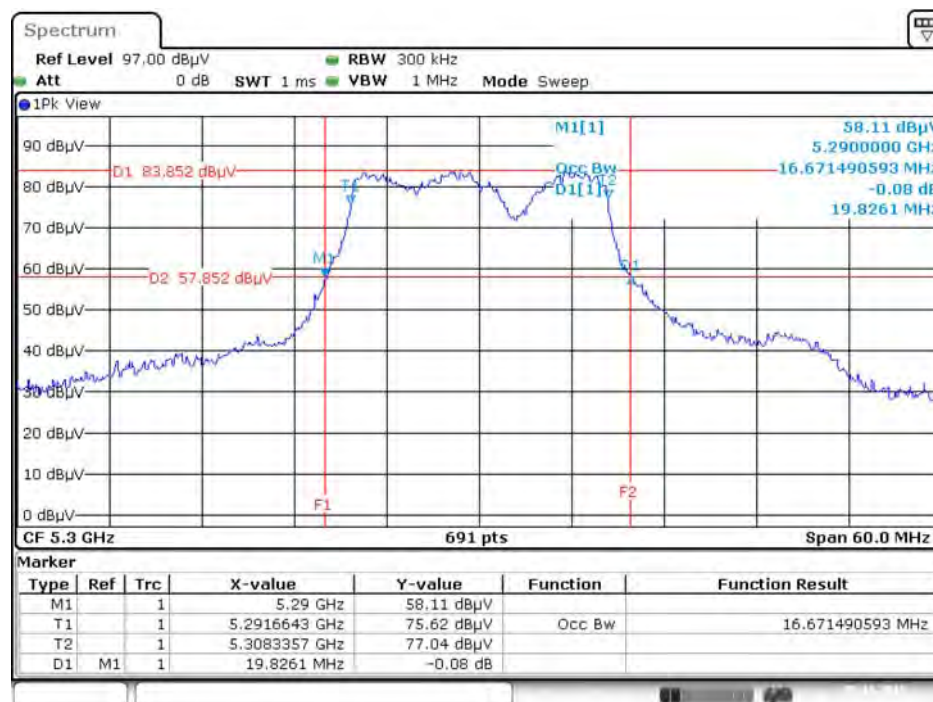
Mode 5: EUT 1 + Set 5 Sector Antenna / 4.5 dBi

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



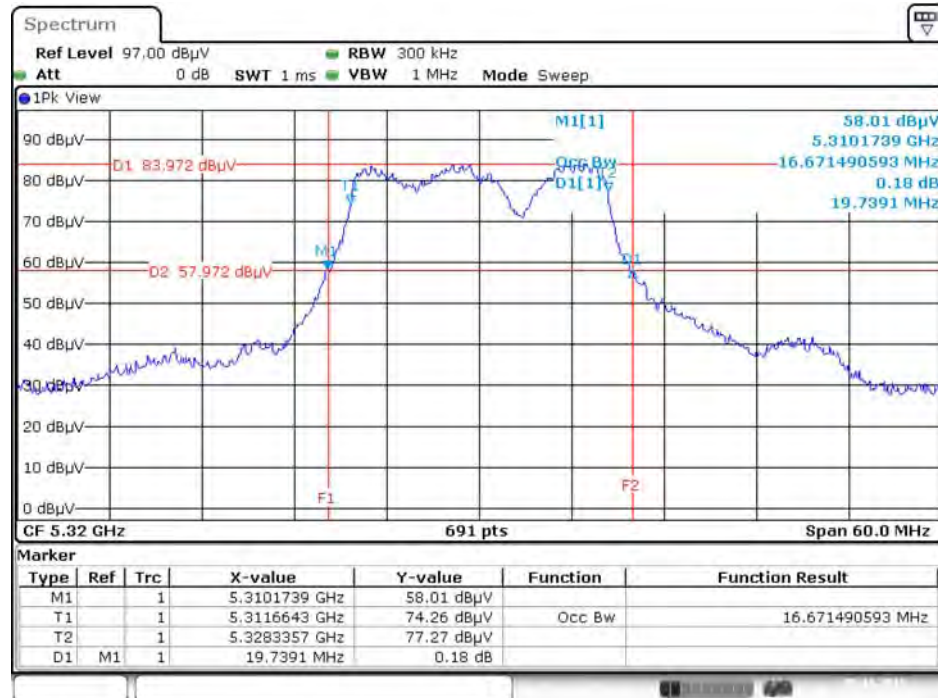
Date: 10.NOV.2015 23:56:18

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

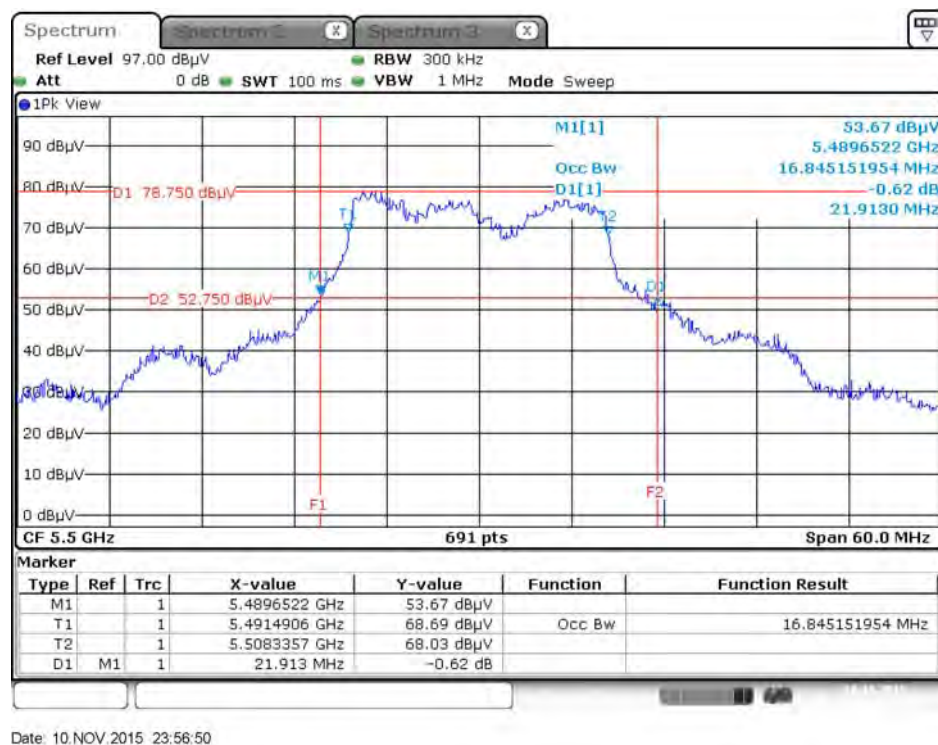


Date: 5.NOV.2015 13:58:43

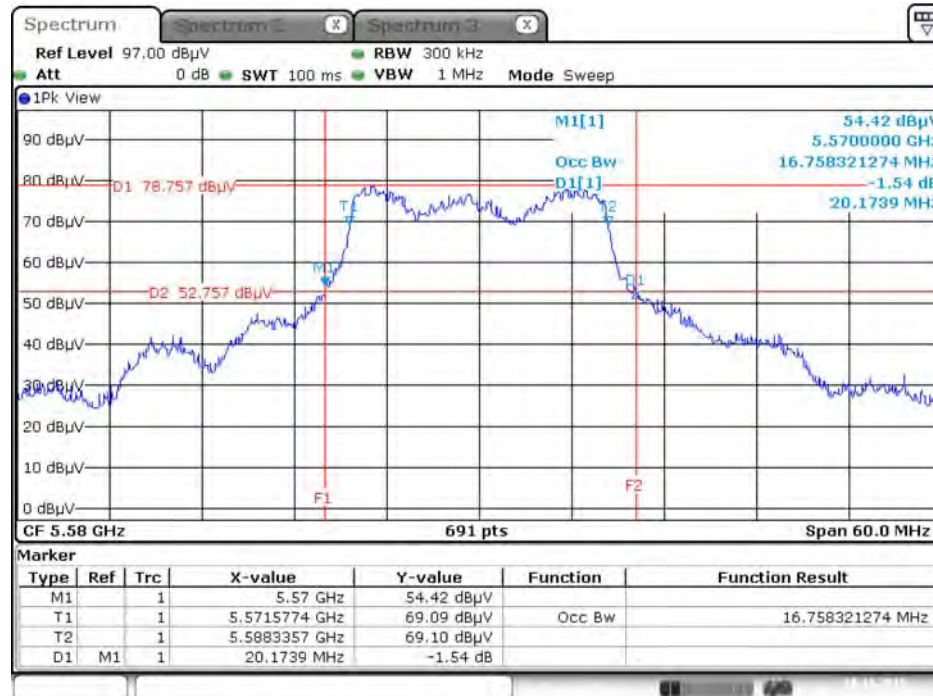
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5320 MHz



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

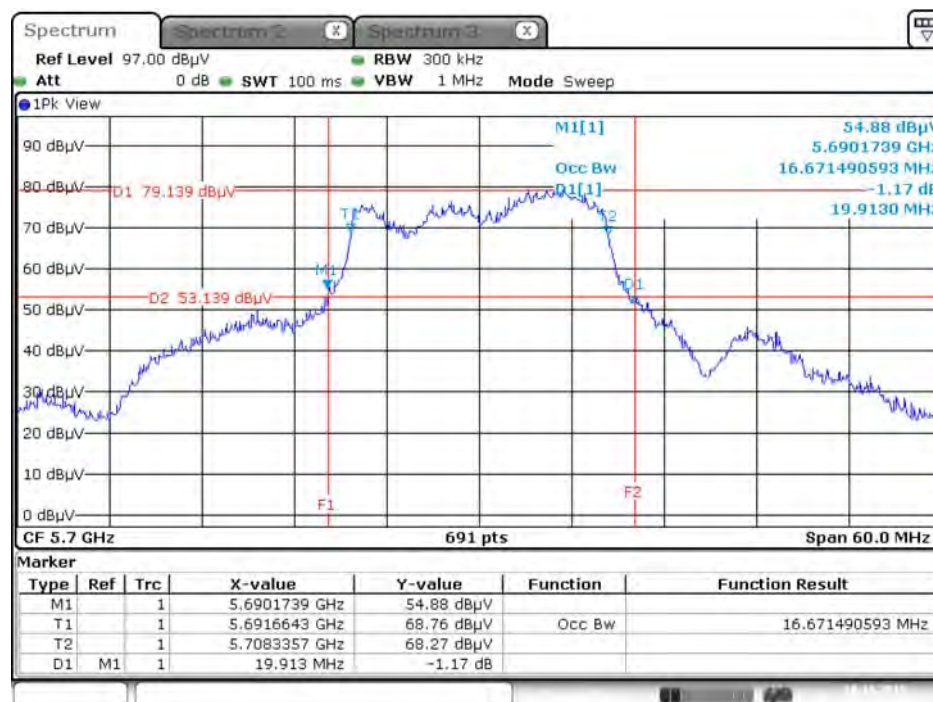


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5580 MHz



Date: 10.NOV.2015 23:57:22

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



Date: 10.NOV.2015 23:57:56