FCC RADIO TEST REPORT

Applicant's company	**ASUSTeK COMPUTER INC.**
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FCC ID	**MSQ-RTGZ00**
Manufacturer's company	**ASKEY TECHNOLOGY (JIANG SU) LTD**
Manufacturer Address	NO1388, Jiao Tong Road, Wujiang Economic Technological Development Area Jiangsu Province 215200 China
Manufacturer's company	**Compal Networking (KunShan) Co., LTD.**
Manufacturer Address	No. 520, Nabbang Rd., Economic & Technical Development Zone Kunshan, Jiangsu Province China

Product Name	Wireless-AC5300 Tri-band Gigabit Router
Brand Name	ASUS
Model No.	RT-AC5300, RT-AC5300R, RT-AC5300W, RT-AC5300P, RT-AC95U, RT-AC96U
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Apr. 28, 2015
Final Test Date	May 22, 2015
Submission Type	Original Equipment

Statement

Test result included is only for the IEEE 802.11b/g, 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 C63.10-2009**, **47 CFR FCC Part 15 Subpart C**, **KDB 558074 D01 v03r02**, **KDB 662911 D01 v02r01**, **KDB644545 D01 v01r02.**

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

Note: Using 1.5m table as an alternative was permitted by the FCC per TCBC conference call of Dec. 02, 2014.

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR532637AA	Rev. 01	Initial issue of report	May 26, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	Wireless-AC5300 Tri-band Gigabit Router
Brand Name	:	ASUS
Model No.	:	RT-AC5300, RT-AC5300R, RT-AC5300W, RT-AC5300P, RT-AC95U, RT-AC96U
Applicant	:	ASUSTeK COMPUTER INC.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.247

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Apr. 28, 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 C				
Part	Rule Section	Description of Test	Result	Under Limit
4.1	15.207	AC Power Line Conducted Emissions	Complies	14.61 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	0.02 dB
4.3	15.247(e)	Power Spectral Density	Complies	0.88 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	2.04 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.02 dB
4.7	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 802.11b: DSSS IEEE 802.11a/g: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11b: DSSS (BPSK / QPSK / CCK) IEEE 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM, 1024QAM)
Data Rate (Mbps)	IEEE 802.11b: DSSS (1/ 2/ 5.5/11) IEEE 802.11a/g: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Channel Number	For 2.4GHz Band: 11 for 20MHz bandwidth ; 7 for 40MHz bandwidth For 5GHz Band: 5 for 20MHz bandwidth ; 2 for 40MHz bandwidth 1 for 80MHz bandwidth

Channel Band Width (99%)	**EUT: Version 1** For non-beamforming function: For 2.4GHz Band: IEEE 802.11b: 10.51 MHz IEEE 802.11g: 16.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.45 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.61 MHz For 5GHz Band: IEEE 802.11a: 23.79 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 25.70 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 49.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz For beamforming function: For 2.4GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.71 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.04 MHz IEEE 802.11ac MCS0/Nss2 (VHT20): 17.71 MHz For 5GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.14 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz IEEE 802.11ac MCS0/Nss2 (VHT20): 18.49 MHz IEEE 802.11ac MCS0/Nss2 (VHT40): 37.77 MHz IEEE 802.11ac MCS0/Nss2 (VHT80): 77.27 MHz

	EUT: Version 2 <u>For non-beamforming function:</u> For 2.4GHz Band: IEEE 802.11b: 10.41 MHz IEEE 802.11g: 15.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 16.93 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.75 MHz For 5GHz Band: IEEE 802.11a: 26.74 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 26.22 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 50.50 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz <u>For beamforming function:</u> For 2.4GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.71 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz IEEE 802.11ac MCS0/Nss2 (VHT20): 17.71 MHz For 5GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.14 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz IEEE 802.11ac MCS0/Nss2 (VHT20): 19.27 MHz IEEE 802.11ac MCS0/Nss2 (VHT40): 37.91 MHz IEEE 802.11ac MCS0/Nss2 (VHT80): 76.41 MHz

Maximum Conducted Output Power	**EUT: Version 1** For non-beamforming function: For 2.4GHz Band: IEEE 802.11b: 29.78 dBm IEEE 802.11g: 29.85 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.83 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.87 dBm For 5GHz Band: IEEE 802.11a: 29.86 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.87 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 29.78 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 27.23 dBm For beamforming function: For 2.4GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 27.56 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.06 dBm IEEE 802.11ac MCS0/Nss2 (VHT20): 29.87 dBm For 5GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 26.42 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.41 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 26.45 dBm IEEE 802.11ac MCS0/Nss2 (VHT20): 29.44 dBm IEEE 802.11ac MCS0/Nss2 (VHT40): 29.40 dBm IEEE 802.11ac MCS0/Nss2 (VHT80): 29.39 dBm

	EUT: Version 2 For non-beamforming function: For 2.4GHz Band: IEEE 802.11b: 29.98 dBm IEEE 802.11g: 29.72 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.84 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 24.91 dBm For 5GHz Band: IEEE 802.11a: 29.90 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.88 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 29.80 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 28.02 dBm For beamforming function: For 2.4GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 27.50 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.11 dBm IEEE 802.11ac MCS0/Nss2 (VHT20): 29.93 dBm For 5GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 26.38 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.46 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 26.45 dBm IEEE 802.11ac MCS0/Nss2 (VHT20): 29.44 dBm IEEE 802.11ac MCS0/Nss2 (VHT40): 29.40 dBm IEEE 802.11ac MCS0/Nss2 (VHT80): 28.39 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☒ With beamforming	☐ Without beamforming

Note: The product has beamforming function for 802.11n and 802.11ac.

Antenna and Band width

Antenna		Four (TX)		
Band width Mode		20 MHz	40 MHz	80 MHz
2.4G	IEEE 802.11b	V	X	X
	IEEE 802.11g	V	X	X
	IEEE 802.11n	V	V	X
	IEEE 802.11ac	V	V	X
5G	IEEE 802.11a	V	X	X
	IEEE 802.11n	V	V	X
	IEEE 802.11ac	V	V	V

IEEE 802.11n/ac Spec.

Protocol		Number of Transmit Chains (NTX)	Data Rate / MCS
2.4G	802.11n (HT20)	4	MCS 0-31
	802.11n (HT40)	4	MCS 0-31
	802.11ac (VHT20)	4	MCS 0-11/Nss1-4
	802.11ac (VHT40)	4	MCS 0-11/Nss1-4
5G	802.11n (HT20)	4	MCS 0-31
	802.11n (HT40)	4	MCS 0-31
	802.11ac (VHT20)	4	MCS 0-11/Nss1-4
	802.11ac (VHT40)	4	MCS 0-11/Nss1-4
	802.11ac (VHT80)	4	MCS 0-11/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 for 2.4GHz, and supports VHT20, VHT40, VHT80 for 5GHz.

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 1	ASUS	ADP-65DW B	Input:100-240Vac, 50-60Hz, 1.5A Output: 19Vdc, 3.42A
Adapter 2	ASUS	AD887320	Input:100-240Vac, 50-60Hz, 1.5A Output: 19Vdc, 3.42A
Adapter 3	ASUS	PA-1650-93	Input:100-240Vac, 50-60Hz, 1.7A Output: 19Vdc, 3.42A
Other			
RJ-45 cable*1: Shielded, 1.5m			

3.3. Table for Filed Antenna

Set	Brand	Part No.	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	PSA	RFDPA131000SBLB805	Dipole Antenna	Reversed-SMA	2.32	3.47

Note: 1. The EUT has one set of antenna, and each set contains eight antennas.

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

3. The EUT had two versions, theirs measure information as below:

3.4. Table for Carrier Frequencies

For 2.4GHz Band:

There are two bandwidth systems.

For 20MHz bandwidth systems, use Channel 1~Channel 11.

For 40MHz bandwidth systems, use Channel 3~Channel 9.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400~2483.5MHz	1	2412 MHz	7	2442 MHz
	2	2417 MHz	8	2447 MHz
	3	2422 MHz	9	2452 MHz
	4	2427 MHz	10	2457 MHz
	5	2432 MHz	11	2462 MHz
	6	2437 MHz	-	-

For 5GHz Band:

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 149, 153, 157, 161, 165.

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

For 80MHz bandwidth systems, use Channel 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5725~5850 MHz Band 4	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 Mode

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.

For 2.4GHz Band:

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	CTX	-	-	-
Maximum Conducted Output Power	Non-beamforming function			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	11ac VHT20	MCS0/Nss2	6	1+2+3+4
Power Spectral Density	Non-beamforming function			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	11ac VHT20	MCS0/Nss2	6	1+2+3+4
6dB Spectrum Bandwidth	Non-beamforming function			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	11ac VHT20	MCS0/Nss2	6	1+2+3+4
Radiated Emissions Below 1GHz	CTX	-	-	-

Radiated Emissions Above 1GHz	Non-beamforming function			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	11ac VHT20	MCS0/Nss2	6	1+2+3+4
Band Edge Emissions	Non-beamforming function			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	11ac VHT20	MCS0/Nss2	6	1+2+3+4

For 5GHz Band:

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	CTX	-	-	-
Maximum Conducted Output Power	Non-beamforming function			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	11ac VHT20	MCS0/Nss2	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss2	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss2	155	1+2+3+4
Power Spectral Density	Non-beamforming function			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	11ac VHT20	MCS0/Nss2	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss2	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss2	155	1+2+3+4

6dB Spectrum Bandwidth	Non-beamforming function			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	11ac VHT20	MCS0/Nss2	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss2	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss2	155	1+2+3+4
Radiated Emissions Below 1GHz	CTX	-	-	-
Radiated Emissions Above 1GHz	Non-beamforming function			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	11ac VHT20	MCS0/Nss2	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss2	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss2	155	1+2+3+4

Band Edge Emissions	Non-beamforming function			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	Beamforming function			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	11ac VHT20	MCS0/Nss2	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss2	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss2	155	1+2+3+4

Note: 1. There are two functions of EUT, one is beamforming function, and the other is non-beamforming function for 802.11n and 802.11ac. All test results were recorded in the report.

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

3. The EUT is used for laying only.

The following test modes were performed for all tests:

For AC Power Line Conducted Emissions test:

Mode 1. EUT 1 + Adapter 1 with 2.4GHz WLAN function

Mode 2. EUT 1 + Adapter 1 with 5GHz Band 1 WLAN function

Mode 3. EUT 1 + Adapter 1 with 5GHz Band 4 WLAN function

Mode 1 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4~5 will follow this same test mode.

Mode 4. EUT 1 + Adapter 2 with 2.4GHz WLAN function

Mode 5. EUT 1 + Adapter 3 with 2.4GHz WLAN function

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

For Radiated Emissions Below 1GHz test:

Mode 1. EUT 1 + Adapter 1 with 2.4GHz WLAN function

Mode 2. EUT 1 + Adapter 1 with 5GHz Band 1 WLAN function

Mode 3. EUT 1 + Adapter 1 with 5GHz Band 4 WLAN function

Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4~5 will follow this same test mode.

Mode 4. EUT 1 + Adapter 2 with 5GHz Band 4 WLAN function

Mode 5. EUT 1 + Adapter 3 with 5GHz Band 4 WLAN function

Mode 5 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, 5GHz Band 1 WLAN function and 5GHz Band 4 WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to Appendix B) and Radiated Emission Co-location (please refer to Appendix C) tests are added for simultaneously transmit between 2.4GHz WLAN function, 5GHz Band 1 WLAN function and 5GHz Band 4 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.
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 List

1. The model numbers in the following table are all refer to the identical product.

Model No.	Description
RT-AC5300	The models are identical except for the model numbers as marketing strategy.
RT-AC5300R	
RT-AC5300W	
RT-AC5300P	
RT-AC95U	
RT-AC96U	

2. The EUT has two types which are identical to each other in all aspects except for the following table:

Type	Description	Remark
1	The EUT has total LAN ports amounted to eight ports.	EUT 1
2	The EUT has total LAN ports amounted to four ports.	EUT 2

Note: Only the most complex mode for EUT 1 was performed for all the tests and recorded in this report.

3.8. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC

For Test Site No: 03CH01-CB

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
Notebook	DELL	E4300	DoC
RX Device	Broadcom	Bcm4366	DoC

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

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.

EUT: Version 1

For non-beamforming function:

For 2.4GHz Band

Test Software Version	MTOOL 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	98	98	98	-	-	-
802.11g	80	97	88	-	-	-
802.11ac MCS0/Nss1 VHT20	82	97	82	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	59	72	65

For 5GHz Band

Test Software Version	MTOOL 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	5775 MHz
802.11a	99	99	99	-	-	-
802.11ac MCS0/Nss1 VHT20	99	99	99	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	92	99	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	90

For beamforming function:

For 2.4GHz Band

Test Software Version	MTOOL 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11ac MCS0/Nss1 VHT20	76	88	77	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	58	70	63
802.11ac MCS0/Nss2 VHT20	-	97	-	-	-	-

For 5GHz Band

Test Software Version	MTOOL 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	5775 MHz
802.11ac MCS0/Nss1 VHT20	84	86	86	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	84	86	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	86
802.11ac MCS0/Nss2 VHT20	97	97	97	-	-	-
802.11ac MCS0/Nss2 VHT40	-	-	-	94	97	-
802.11ac MCS0/Nss2 VHT80	-	-	-	-	-	97

EUT: Version 2

For non-beamforming function:

For 2.4GHz Band

Test Software Version	MTOOL 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	97	97	98	-	-	-
802.11g	86	97	91	-	-	-
802.11ac MCS0/Nss1 VHT20	82	98	82	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	61	77	67

For 5GHz Band

Test Software Version	MTOOL 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	5775 MHz
802.11a	103	102	101	-	-	-
802.11ac MCS0/Nss1 VHT20	103	102	100	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	99	100	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	94

For beamforming function:

For 2.4GHz Band

Test Software Version	MTOOL 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11ac MCS0/Nss1 VHT20	75	88	78	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	62	70	64
802.11ac MCS0/Nss2 VHT20	-	96	-	-	-	-

For 5GHz Band

Test Software Version	MTOOL 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	5775 MHz
802.11ac MCS0/Nss1 VHT20	87	86	84	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	87	86	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	87
802.11ac MCS0/Nss2 VHT20	99	98	98	-	-	-
802.11ac MCS0/Nss2 VHT40	-	-	-	99	98	-
802.11ac MCS0/Nss2 VHT80	-	-	-	-	-	95

3.10. 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%

3.11. Duty Cycle

EUT: Version 1

For non-beamforming function:

Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11b	1.000	1.000	100.00	0.00	0.01
	802.11g	2.040	2.100	97.14	0.13	0.49
	802.11n MCS0/Nss1 HT20	1.910	1.940	98.45	0.07	0.01
	802.11n MCS0/Nss1 HT40	0.924	0.985	93.81	0.28	1.08
5G	802.11a	0.420	0.488	86.07	0.65	2.38
	802.11ac MCS0/Nss1 VHT20	2.040	2.080	98.08	0.08	0.01
	802.11ac MCS0/Nss1 VHT40	1.910	1.940	98.45	0.07	0.01
	802.11ac MCS0/Nss1 VHT80	0.922	0.992	92.94	0.32	1.08

For beamforming function:

Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11ac MCS0/Nss1 VHT20	3.820	4.180	91.39	0.39	0.26
	802.11ac MCS0/Nss1 VHT40	4.560	5.300	86.04	0.65	0.22
	802.11ac MCS0/Nss2 VHT20	4.800	5.080	94.49	0.25	0.21
5G	802.11ac MCS0/Nss1 VHT20	3.820	4.240	90.09	0.45	0.26
	802.11ac MCS0/Nss1 VHT40	4.560	5.300	86.04	0.65	0.22
	802.11ac MCS0/Nss1 VHT80	5.600	7.000	80.00	0.97	0.18
	802.11ac MCS0/Nss2 VHT20	4.780	5.080	94.09	0.26	0.21
	802.11ac MCS0/Nss2 VHT40	5.060	5.480	92.34	0.35	0.20
	802.11ac MCS0/Nss2 VHT80	5.300	6.220	85.21	0.70	0.19

EUT: Version 2

For non-beamforming function:

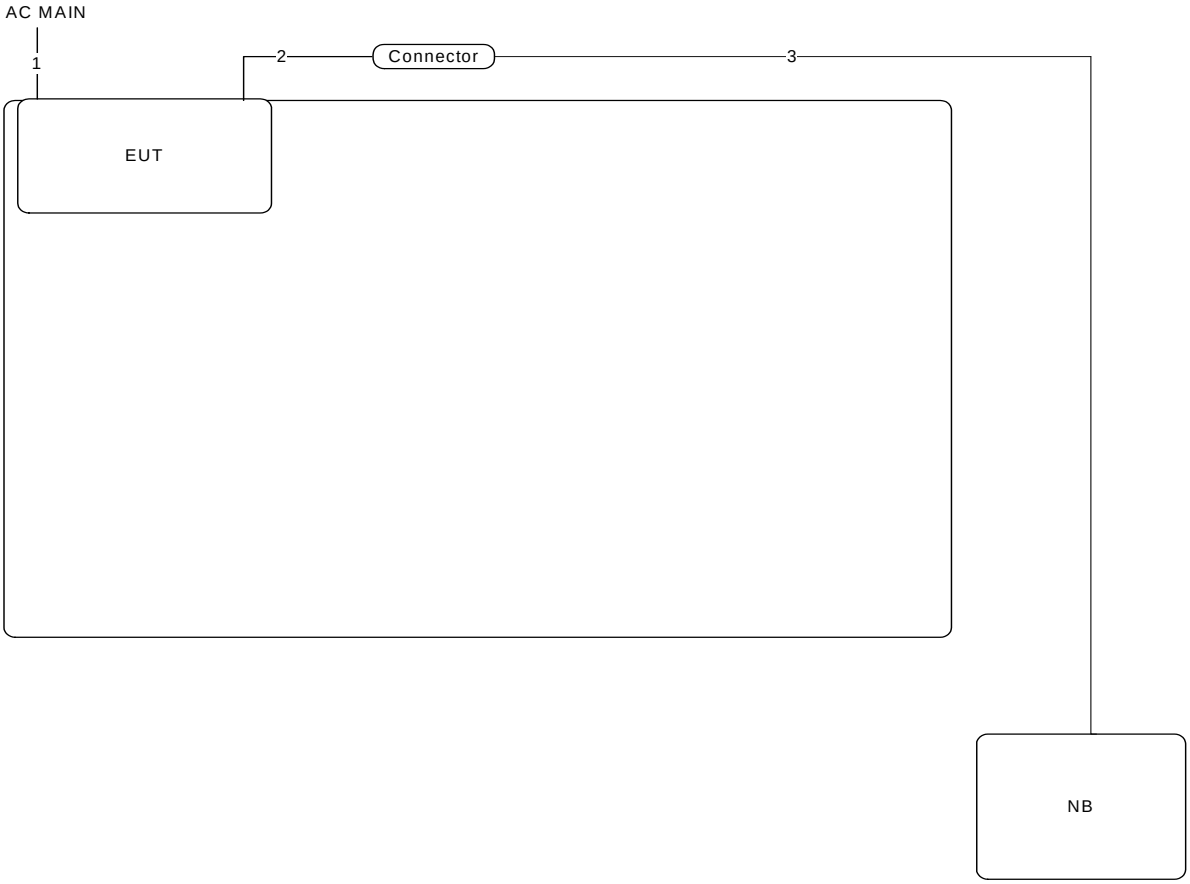
Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11b	1.000	1.000	100.00	0.00	0.01
	802.11g	2.056	2.100	97.90	0.09	0.49
	802.11n MCS0/Nss1 HT20	1.917	1.946	98.51	0.07	0.01
	802.11n MCS0/Nss1 HT40	0.922	0.977	94.36	0.25	1.08
5G	802.11a	2.059	2.083	98.84	0.05	0.01
	802.11ac MCS0/Nss1 VHT20	1.923	1.939	99.17	0.04	0.01
	802.11ac MCS0/Nss1 VHT40	0.914	1.045	87.46	0.58	1.09
	802.11ac MCS0/Nss1 VHT80	0.425	0.489	86.91	0.61	2.35

For beamforming function:

Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11ac MCS0/Nss1 VHT20	3.818	4.094	93.26	0.30	0.26
	802.11ac MCS0/Nss1 VHT40	4.550	4.910	92.67	0.33	0.22
	802.11ac MCS0/Nss2 VHT20	3.840	4.160	92.31	0.35	0.26
5G	802.11ac MCS0/Nss1 VHT20	3.846	4.191	91.78	0.37	0.26
	802.11ac MCS0/Nss1 VHT40	4.585	5.012	91.48	0.39	0.22
	802.11ac MCS0/Nss1 VHT80	5.090	5.446	93.47	0.29	0.20
	802.11ac MCS0/Nss2 VHT20	3.840	4.160	92.31	0.35	0.26
	802.11ac MCS0/Nss2 VHT40	4.590	4.980	92.17	0.35	0.22
	802.11ac MCS0/Nss2 VHT80	5.070	5.340	94.94	0.23	0.20

3.12. Test Configurations

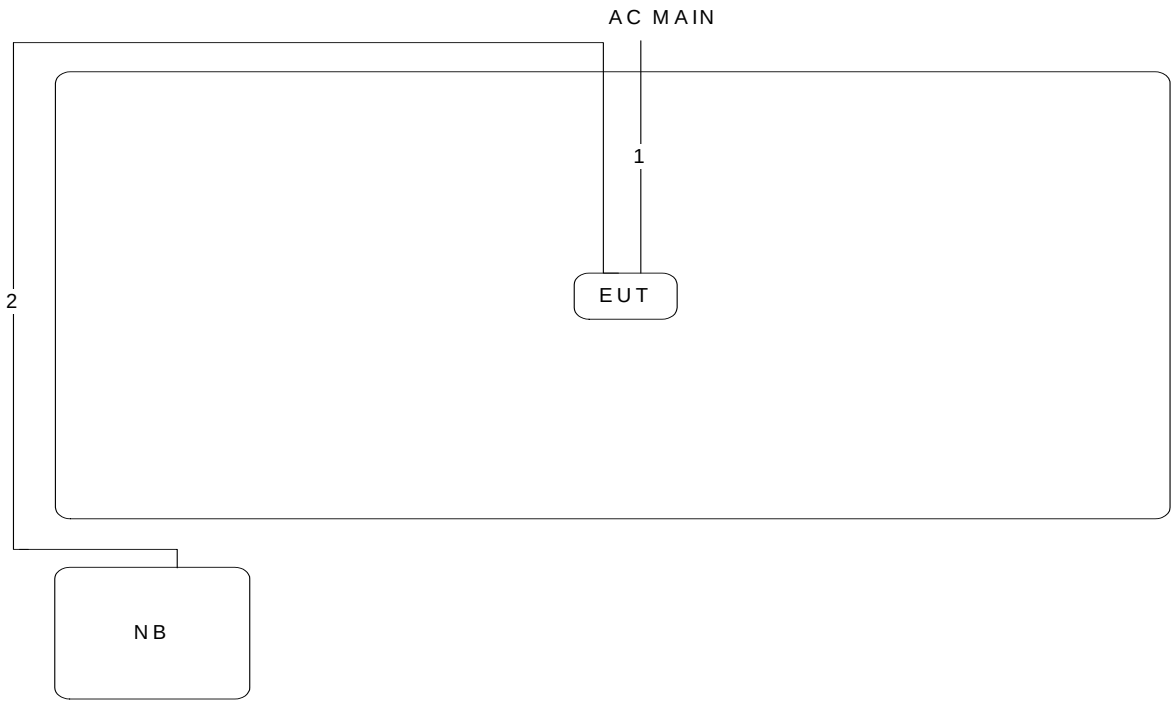
3.12.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.3m
2	RJ-45 cable	Yes	1.5m
3	RJ-45 cable	No	10m

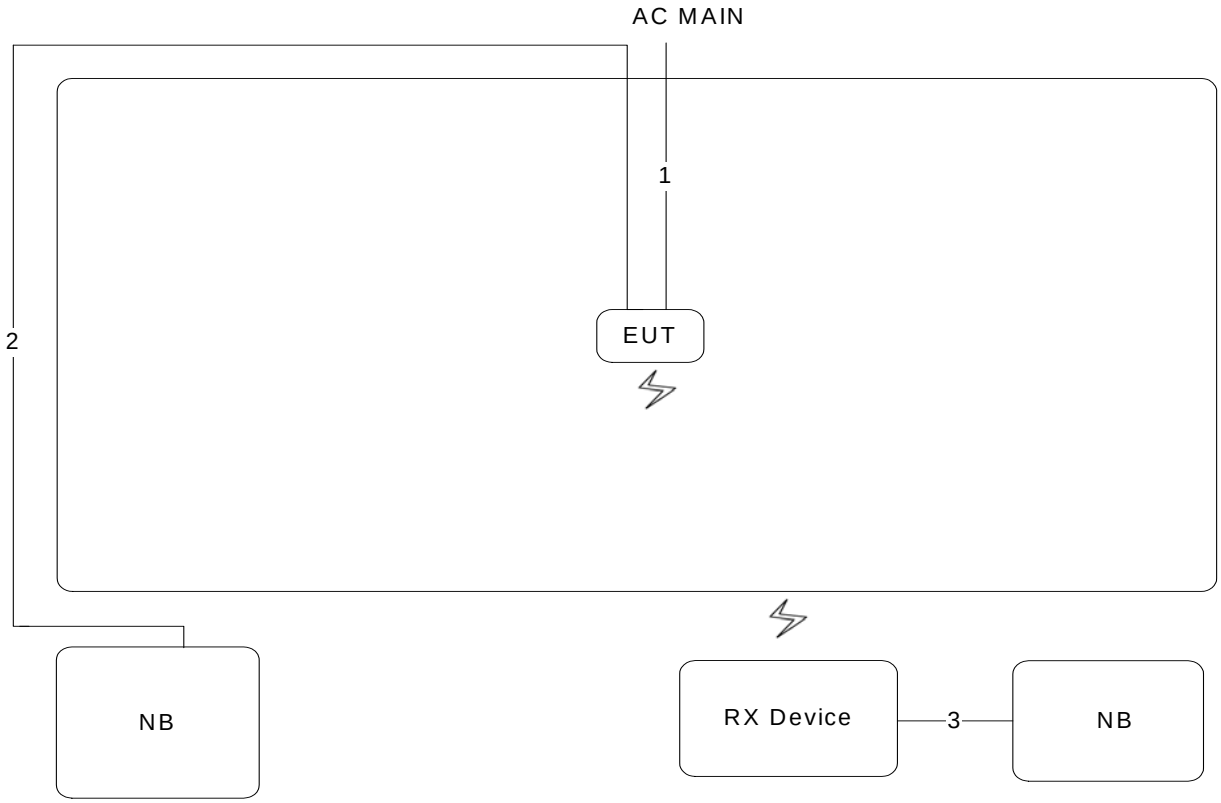
3.12.2. Radiation Emissions Test Configuration

For non-beamforming function:



Item	Connection	Shielded	Length
1	Power cable	No	2.3m
2	RJ-45 cable	No	10m

For beamforming function:



Item	Connection	Shielded	Length
1	Power cable	No	2.3m
2	RJ-45 cable	No	10m

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

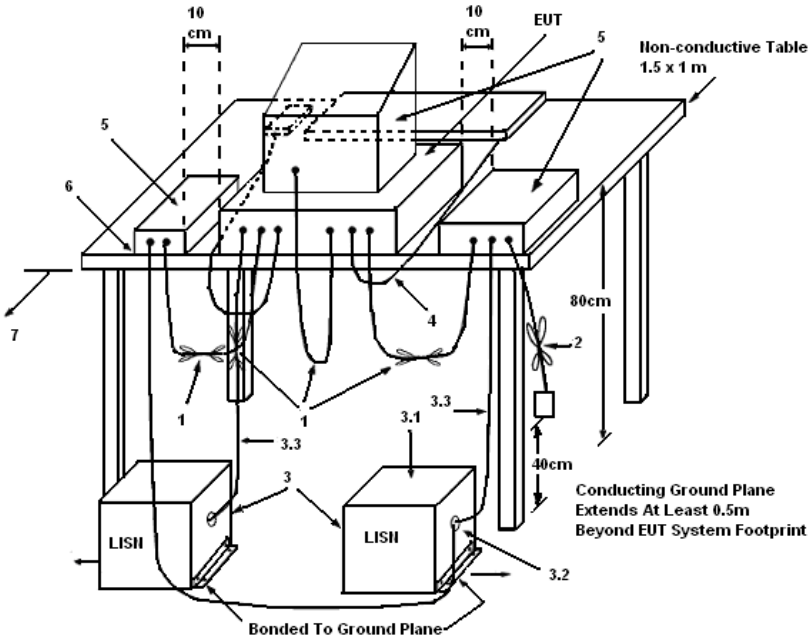
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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.

4.1.4. Test Setup Layout



LEGEND:

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

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

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

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

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

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

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

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

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

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

4.1.5. Test Deviation

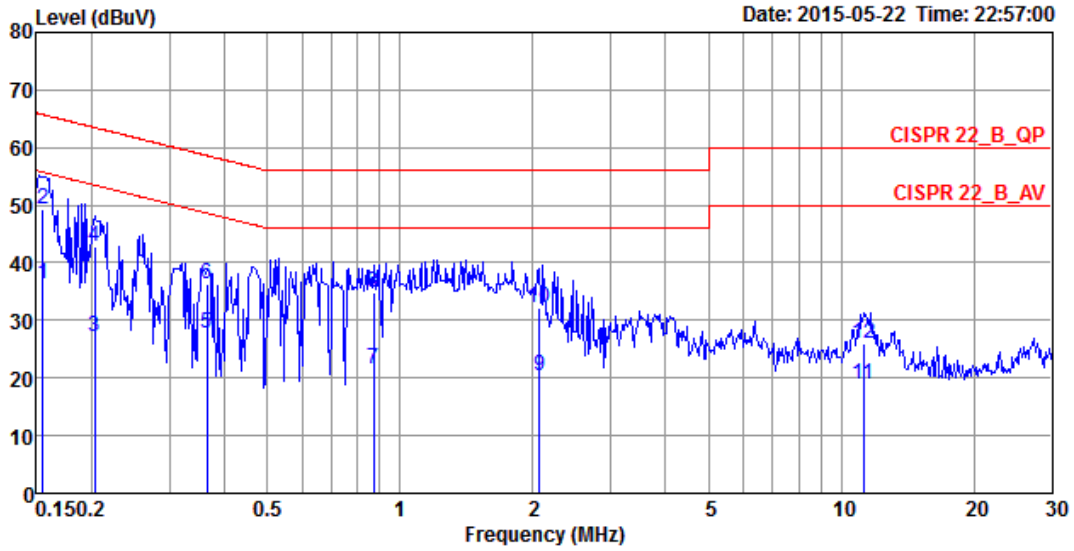
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

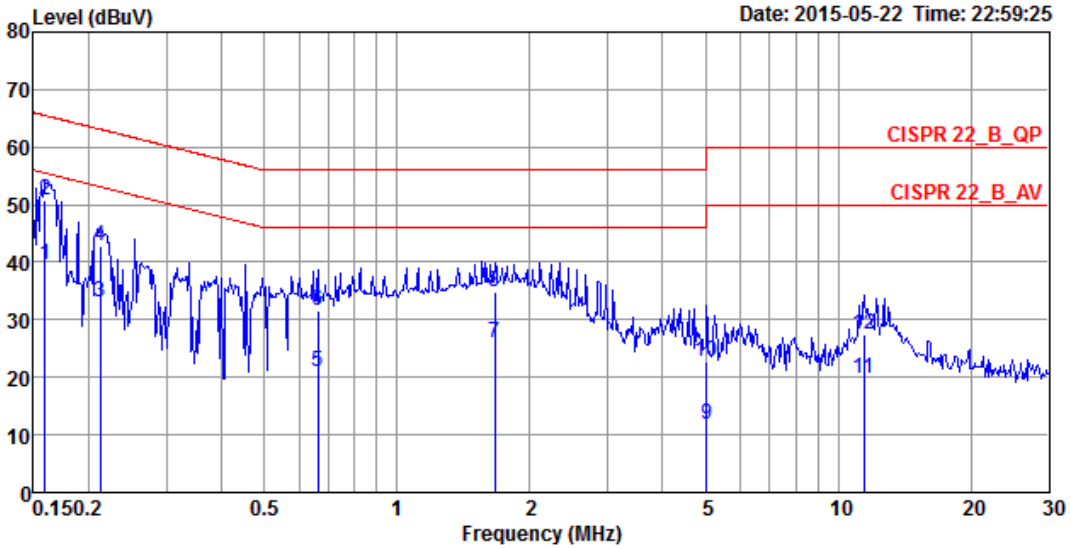
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Line
Configuration	CTX	Test Mode	Mode 1
Test EUT	EUT: Version 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.15	36.33	-19.41	55.74	26.38	9.93	0.02	LINE	Average
2	0.15	49.43	-16.31	65.74	39.48	9.93	0.02	LINE	QP
3	0.20	27.29	-26.20	53.49	17.34	9.93	0.02	LINE	Average
4	0.20	42.91	-20.58	63.49	32.96	9.93	0.02	LINE	QP
5	0.37	27.88	-20.73	48.61	17.91	9.93	0.04	LINE	Average
6	0.37	36.29	-22.32	58.61	26.32	9.93	0.04	LINE	QP
7	0.87	21.68	-24.32	46.00	11.67	9.96	0.05	LINE	Average
8	0.87	34.86	-21.14	56.00	24.85	9.96	0.05	LINE	QP
9	2.07	20.47	-25.53	46.00	10.42	9.99	0.06	LINE	Average
10	2.07	32.19	-23.81	56.00	22.14	9.99	0.06	LINE	QP
11	11.26	18.79	-31.21	50.00	8.32	10.22	0.25	LINE	Average
12	11.26	26.05	-33.95	60.00	15.58	10.22	0.25	LINE	QP

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1
Test EUT	EUT: Version 1		

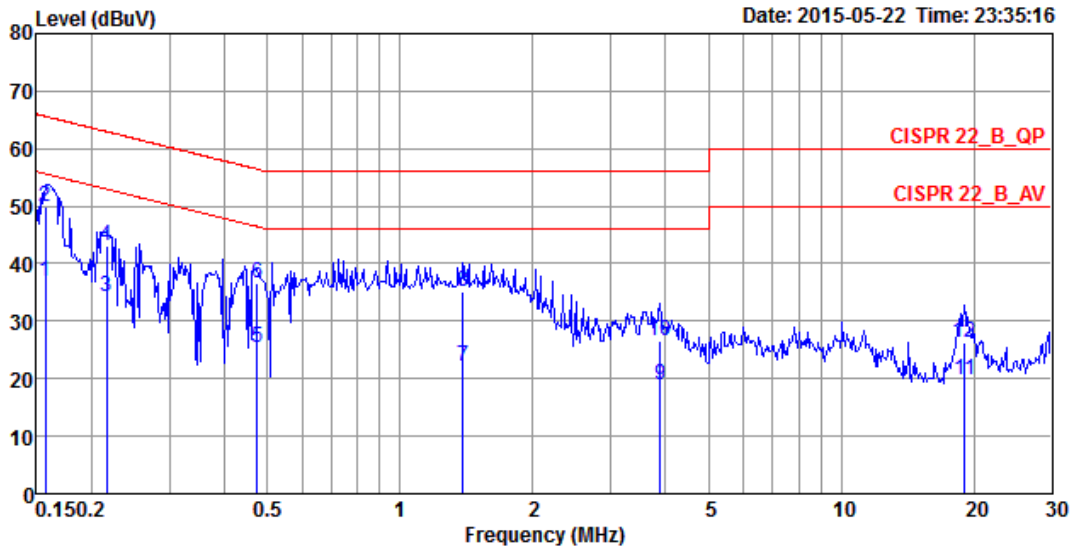


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.16	39.51	-16.01	55.52	29.71	9.78	0.02	NEUTRAL	Average
2	0.16	50.90	-14.62	65.52	41.10	9.78	0.02	NEUTRAL	QP
3	0.21	32.98	-20.12	53.10	23.17	9.79	0.02	NEUTRAL	Average
4	0.21	42.75	-20.35	63.10	32.94	9.79	0.02	NEUTRAL	QP
5	0.66	20.96	-25.04	46.00	11.12	9.80	0.04	NEUTRAL	Average
6	0.66	31.58	-24.42	56.00	21.74	9.80	0.04	NEUTRAL	QP
7	1.66	26.01	-19.99	46.00	16.12	9.83	0.06	NEUTRAL	Average
8	1.66	34.90	-21.10	56.00	25.01	9.83	0.06	NEUTRAL	QP
9	5.03	11.67	-38.33	50.00	1.67	9.90	0.10	NEUTRAL	Average
10	5.03	22.59	-37.41	60.00	12.59	9.90	0.10	NEUTRAL	QP
11	11.44	19.85	-30.15	50.00	9.56	10.04	0.25	NEUTRAL	Average
12	11.44	27.51	-32.49	60.00	17.22	10.04	0.25	NEUTRAL	QP

Note:

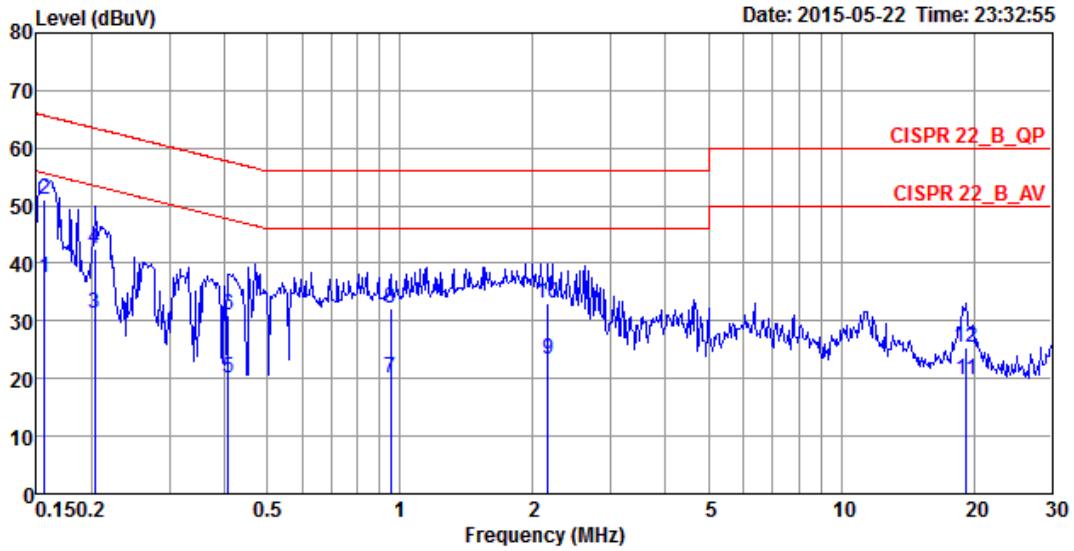
Level = Read Level + LISN Factor + Cable Loss.

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Line
Configuration	CTX	Test Mode	Mode 1
Test EUT	EUT: Version 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.16	36.86	-18.74	55.60	26.91	9.93	0.02	LINE	Average
2	0.16	49.89	-15.71	65.60	39.94	9.93	0.02	LINE	QP
3	0.22	34.35	-18.61	52.96	24.40	9.93	0.02	LINE	Average
4	0.22	43.03	-19.93	62.96	33.08	9.93	0.02	LINE	QP
5	0.47	25.29	-21.16	46.45	15.31	9.94	0.04	LINE	Average
6	0.47	36.54	-19.91	56.45	26.56	9.94	0.04	LINE	QP
7	1.39	22.00	-24.00	46.00	11.98	9.97	0.05	LINE	Average
8	1.39	34.99	-21.01	56.00	24.97	9.97	0.05	LINE	QP
9	3.88	18.82	-27.18	46.00	8.73	10.02	0.07	LINE	Average
10	3.88	26.70	-29.30	56.00	16.61	10.02	0.07	LINE	QP
11	19.02	19.73	-30.27	50.00	9.04	10.42	0.27	LINE	Average
12	19.02	26.17	-33.83	60.00	15.48	10.42	0.27	LINE	QP

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1
Test EUT	EUT: Version 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.16	37.60	-18.05	55.65	27.80	9.78	0.02	NEUTRAL	Average
2	0.16	51.04	-14.61	65.65	41.24	9.78	0.02	NEUTRAL	QP
3	0.20	31.24	-22.25	53.49	21.43	9.79	0.02	NEUTRAL	Average
4	0.20	42.42	-21.07	63.49	32.61	9.79	0.02	NEUTRAL	QP
5	0.41	20.18	-27.50	47.68	10.35	9.79	0.04	NEUTRAL	Average
6	0.41	31.07	-26.61	57.68	21.24	9.79	0.04	NEUTRAL	QP
7	0.95	20.02	-25.98	46.00	10.16	9.81	0.05	NEUTRAL	Average
8	0.95	32.24	-23.76	56.00	22.38	9.81	0.05	NEUTRAL	QP
9	2.17	23.22	-22.78	46.00	13.32	9.84	0.06	NEUTRAL	Average
10	2.17	33.19	-22.81	56.00	23.29	9.84	0.06	NEUTRAL	QP
11	19.22	19.86	-30.14	50.00	9.42	10.17	0.27	NEUTRAL	Average
12	19.22	25.30	-34.70	60.00	14.86	10.17	0.27	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi. Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter output power.

4.2.2. Measuring Instruments and Setting

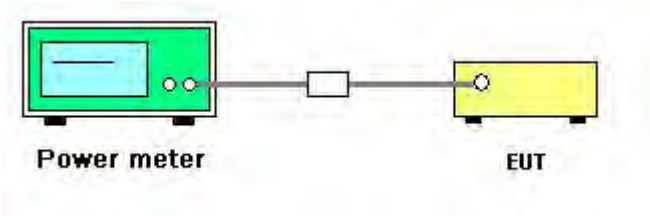
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	Average

4.2.3. Test Procedures

1. Test procedures refer KDB 558074 D01 v03r02 section 9.2.3.2 Measurement using a power meter (PM).
2. Multiple antenna system was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
3. This procedure provides an alternative for determining the RMS output power using a broadband RF average power meter with a thermocouple detector.

4.2.4. Test Setup Layout



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 Maximum Conducted Output Power

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test Date	May 13, 2015
Test EUT / Function	EUT: Version 1 / Non-beamforming function		

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11b	2412 MHz	23.99	23.78	23.91	23.31	29.78	30.00	Complies
	2437 MHz	23.95	23.62	23.85	23.25	29.70	30.00	Complies
	2462 MHz	23.85	23.63	23.77	23.29	29.66	30.00	Complies
802.11g	2412 MHz	20.32	20.04	20.28	19.68	26.11	30.00	Complies
	2437 MHz	24.04	23.89	24.02	23.31	29.85	30.00	Complies
	2462 MHz	22.01	21.87	21.94	21.63	27.89	30.00	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	20.35	20.13	20.27	19.67	26.13	30.00	Complies
	2437 MHz	24.03	23.86	24.05	23.27	29.83	30.00	Complies
	2462 MHz	20.51	20.21	20.26	19.94	26.26	30.00	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	14.62	14.46	14.52	14.14	20.46	30.00	Complies
	2437 MHz	17.92	17.89	18.02	17.57	23.87	30.00	Complies
	2452 MHz	16.26	16.11	16.29	15.74	22.13	30.00	Complies

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5745 MHz	24.05	23.83	23.79	23.66	29.86	30.00	Complies
	5785 MHz	24.21	23.78	23.63	23.55	29.82	30.00	Complies
	5825 MHz	24.25	24.19	23.84	22.79	29.83	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	24.15	23.42	24.11	23.58	29.85	30.00	Complies
	5785 MHz	24.07	24.01	23.47	23.54	29.80	30.00	Complies
	5825 MHz	24.37	24.35	23.75	22.72	29.87	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	22.13	21.67	22.15	22.36	28.11	30.00	Complies
	5795 MHz	24.03	23.48	23.77	23.74	29.78	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	21.44	21.01	21.07	21.29	27.23	30.00	Complies

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test Date	May 19, 2015
Test EUT / Function	EUT: Version 1 / Beamforming function		

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	2412 MHz	19.12	18.81	19.03	18.75	24.95	27.66	Complies
	2437 MHz	21.69	21.52	21.53	21.42	27.56	27.66	Complies
	2462 MHz	19.27	19.11	19.16	18.71	25.09	27.66	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	14.11	13.98	14.25	14.23	20.16	27.66	Complies
	2437 MHz	17.03	16.97	17.03	17.14	23.06	27.66	Complies
	2452 MHz	15.52	15.28	15.24	15.29	21.35	27.66	Complies
802.11ac MCS0/Nss2 VHT20	2437 MHz	23.91	23.83	23.86	23.79	29.87	30.00	Complies

Note: 1. 802.11ac MCS0/Nss1 VHT20/40: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.34dBi >6dBi, so limit=30 – (8.34 – 6)=27.66dBm.

2. 802.11ac MCS0/Nss2 VHT20: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.33dBi <6dBi, so the limit doesn't reduce.

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	20.46	20.18	20.44	20.43	26.40	26.51	Complies
	5785 MHz	20.13	20.48	20.01	20.65	26.35	26.51	Complies
	5825 MHz	20.32	21.14	20.16	19.86	26.42	26.51	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	20.48	20.19	20.26	20.38	26.35	26.51	Complies
	5795 MHz	20.33	20.79	20.15	20.27	26.41	26.51	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	20.29	20.57	20.41	20.45	26.45	26.51	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	23.46	23.41	23.42	23.37	29.44	29.52	Complies
	5785 MHz	23.14	23.74	23.06	23.41	29.37	29.52	Complies
	5825 MHz	23.32	23.97	23.11	22.86	29.36	29.52	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	22.74	22.69	22.72	22.89	28.78	29.52	Complies
	5795 MHz	23.11	23.65	23.26	23.48	29.40	29.52	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	23.08	23.59	23.31	23.47	29.39	29.52	Complies

Note: 1. 802.11ac MCS0/Nss1 VHT20/40/80: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.49dBi >6dBi,

so limit=30 – (9.49 – 6)=26.51dBm.

2. 802.11ac MCS0/Nss2 VHT20: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.48dBi >6dBi, so

limit=30 – (6.48 – 6)=29.52dBm.

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test Date	May 13, 2015
Test EUT / Function	EUT: Version 2 / Non-beamforming function		

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11b	2412 MHz	23.83	23.85	23.96	23.77	29.87	30.00	Complies
	2437 MHz	23.88	23.59	23.93	23.85	29.84	30.00	Complies
	2462 MHz	24.01	23.72	24.07	24.01	29.98	30.00	Complies
802.11g	2412 MHz	21.13	20.95	21.22	21.07	27.11	30.00	Complies
	2437 MHz	23.74	23.57	23.72	23.77	29.72	30.00	Complies
	2462 MHz	22.19	21.97	22.26	22.53	28.26	30.00	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	20.15	19.79	20.05	20.04	26.03	30.00	Complies
	2437 MHz	24.09	23.63	23.77	23.79	29.84	30.00	Complies
	2462 MHz	20.18	19.84	19.96	20.06	26.03	30.00	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	14.74	14.76	15.12	14.96	20.92	30.00	Complies
	2437 MHz	18.82	18.65	19.09	18.97	24.91	30.00	Complies
	2452 MHz	16.17	16.03	16.43	16.56	22.32	30.00	Complies

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5745 MHz	23.87	23.83	22.99	24.20	29.77	30.00	Complies
	5785 MHz	23.93	23.78	23.66	23.98	29.86	30.00	Complies
	5825 MHz	24.30	24.23	23.88	22.98	29.90	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	23.89	24.03	23.29	24.17	29.88	30.00	Complies
	5785 MHz	23.99	23.71	23.60	23.79	29.80	30.00	Complies
	5825 MHz	24.17	24.07	23.78	23.14	29.83	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	22.95	22.90	22.65	23.51	29.03	30.00	Complies
	5795 MHz	23.87	23.65	23.92	23.66	29.80	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	22.21	21.78	21.84	22.15	28.02	30.00	Complies

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test Date	May 18, 2015
Test EUT / Function	EUT: Version 2 / Beamforming function		

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	2412 MHz	18.26	18.31	18.32	18.04	24.25	27.66	Complies
	2437 MHz	21.66	21.43	21.54	21.26	27.50	27.66	Complies
	2462 MHz	19.13	18.98	19.14	19.01	25.09	27.66	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	15.03	14.96	15.06	15.11	21.06	27.66	Complies
	2437 MHz	17.01	17.03	17.27	17.06	23.11	27.66	Complies
	2452 MHz	15.88	15.63	15.62	15.56	21.69	27.66	Complies
802.11ac MCS0/Nss2 VHT20	2437 MHz	24.02	23.88	24.13	23.59	29.93	30.00	Complies

Note: 1. 802.11ac MCS0/Nss1 VHT20/40: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.34dBi >6dBi, so limit=30 – (8.34 – 6)=27.66dBm.

2. 802.11ac MCS0/Nss2 VHT20: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.33dBi <6dBi, so the limit doesn't reduce.

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	20.04	20.38	20.06	20.81	26.35	26.51	Complies
	5785 MHz	20.63	20.16	20.42	20.19	26.37	26.51	Complies
	5825 MHz	20.77	20.73	20.40	19.42	26.38	26.51	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	20.33	19.89	20.51	20.88	26.44	26.51	Complies
	5795 MHz	20.78	20.16	20.73	20.04	26.46	26.51	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	20.38	20.17	20.77	20.36	26.45	26.51	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	23.32	23.39	23.22	23.62	29.41	29.52	Complies
	5785 MHz	23.61	23.19	23.41	23.18	29.37	29.52	Complies
	5825 MHz	23.72	23.85	23.48	22.48	29.44	29.52	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	23.18	23.09	23.48	23.75	29.40	29.52	Complies
	5795 MHz	23.47	23.14	23.67	23.05	29.36	29.52	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	22.39	21.96	22.63	22.48	28.39	29.52	Complies

Note: 1. 802.11ac MCS0/Nss1 VHT20/40/80: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.49dBi >6dBi,

so limit=30 – (9.49 – 6)=26.51dBm.

2. 802.11ac MCS0/Nss2 VHT20: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.48dBi >6dBi, so

limit=30 – (6.48 – 6)=29.52dBm.

4.3. Power Spectral Density Measurement

4.3.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

4.3.2. Measuring Instruments and Setting

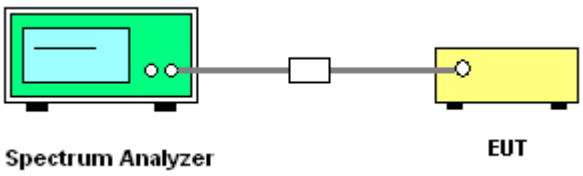
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RBW	3 kHz ≤ RBW ≤ 100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple

4.3.3. Test Procedures

1. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 10.2 Method PKPSD (peak PSD) and KDB 662911 D01 v02r01 section In-Band Power Spectral Density (PSD) Measurements option (b) Measure and sum spectral maximal across the outputs.
2. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
4. Use the peak marker function to determine the maximum level in any 3 kHz band segment within the fundamental EBW.
5. The resulting PSD level must be ≤ 8 dBm.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Power Spectral Density

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test EUT / Function	EUT: Version 1 / Non-beamforming function

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11b	2412 MHz	-7.63	-7.73	-7.53	-7.76	-1.64	5.66	Complies
	2437 MHz	-7.22	-7.85	-8.08	-7.87	-1.72	5.66	Complies
	2462 MHz	-7.38	-7.29	-7.86	-7.96	-1.59	5.66	Complies
802.11g	2412 MHz	-2.79	-3.24	-3.06	-2.44	3.15	5.66	Complies
	2437 MHz	-9.36	-9.83	-9.16	-9.84	-3.52	5.66	Complies
	2462 MHz	-1.50	-1.42	-1.41	-0.67	4.78	5.66	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	-2.61	-3.37	-2.54	-2.23	3.35	5.66	Complies
	2437 MHz	-10.32	-9.99	-10.73	-10.35	-4.32	5.66	Complies
	2462 MHz	-3.64	-2.58	-2.74	-3.22	3.00	5.66	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	-11.99	-10.68	-12.73	-12.11	-5.79	5.66	Complies
	2437 MHz	-8.95	-9.00	-9.12	-9.98	-3.22	5.66	Complies
	2452 MHz	-10.32	-10.60	-11.02	-11.46	-4.81	5.66	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.34dBi >6dBi, so limit=8 – (8.34 – 6)=5.66dBm/3kHz.

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5745 MHz	-10.44	-10.58	-10.38	-10.44	-4.44	4.51	Complies
	5785 MHz	-10.76	-10.02	-11.06	-11.11	-4.69	4.51	Complies
	5825 MHz	-10.51	-9.62	-10.97	-11.09	-4.49	4.51	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	-11.10	-11.97	-10.99	-11.27	-5.30	4.51	Complies
	5785 MHz	-12.69	-10.85	-11.78	-11.82	-5.72	4.51	Complies
	5825 MHz	-11.22	-10.42	-11.97	-11.96	-5.32	4.51	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-5.45	-6.20	-5.06	-4.15	0.87	4.51	Complies
	5795 MHz	-3.63	-3.34	-3.84	-3.27	2.51	4.51	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-8.75	-8.56	-9.11	-9.38	-2.92	4.51	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.49dBi >6dBi, so limit=8 – (9.49 – 6)=4.51dBm/3kHz.

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test EUT / Function	EUT: Version 1 / Beamforming function

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	2412 MHz	-15.24	-15.45	-15.51	-15.64	-9.44	5.66	Complies
	2437 MHz	-12.57	-12.51	-12.44	-12.81	-6.56	5.66	Complies
	2462 MHz	-15.08	-15.06	-14.85	-14.96	-8.97	5.66	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	-23.81	-23.75	-23.67	-23.76	-17.73	5.66	Complies
	2437 MHz	-20.50	-20.68	-20.76	-20.65	-14.63	5.66	Complies
	2452 MHz	-23.07	-23.13	-23.02	-23.20	-17.08	5.66	Complies
802.11ac MCS0/Nss2 VHT20	2437 MHz	-10.55	-10.54	-10.42	-10.59	-4.50	8.00	Complies

Note: 1. 802.11ac MCS0/Nss1 VHT20/40: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.34dBi >6dBi, so limit=8 – (8.34 – 6)=5.66dBm/3kHz.

2. 802.11ac MCS0/Nss2 VHT20: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.33dBi <6dBi, so the limit doesn't reduce.

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	-15.25	-15.18	-15.27	-15.19	-9.20	4.51	Complies
	5785 MHz	-15.52	-15.47	-15.54	-15.56	-9.50	4.51	Complies
	5825 MHz	-15.40	-15.23	-15.34	-15.22	-9.28	4.51	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-18.45	-18.36	-18.31	-18.27	-12.33	4.51	Complies
	5795 MHz	-18.19	-18.14	-18.21	-18.22	-12.17	4.51	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-21.27	-21.48	-21.49	-21.33	-15.37	4.51	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	-12.00	-12.07	-11.69	-11.86	-5.88	7.52	Complies
	5785 MHz	-12.55	-12.53	-12.46	-12.40	-6.46	7.52	Complies
	5825 MHz	-11.90	-12.12	-12.09	-12.14	-6.04	7.52	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	-15.64	-15.63	-15.71	-15.93	-9.71	7.52	Complies
	5795 MHz	-15.13	-15.22	-15.28	-15.25	-9.20	7.52	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	-18.85	-18.74	-18.84	-18.76	-12.78	7.52	Complies

Note: 1. 802.11ac MCS0/Nss1 VHT20/40/80: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.49dBi >6dBi,

so limit=8 – (9.49 – 6)=4.51dBm/3kHz.

2. 802.11ac MCS0/Nss2 VHT20: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.48dBi >6dBi, so

limit=8 – (6.48 – 6)=7.52dBm/3kHz.

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test EUT / Function	EUT: Version 2 / Non-beamforming function

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11b	2412 MHz	-8.10	-8.33	-8.21	-8.29	-2.21	5.66	Complies
	2437 MHz	-8.15	-8.40	-8.25	-8.34	-2.26	5.66	Complies
	2462 MHz	-8.14	-8.16	-8.15	-8.01	-2.09	5.66	Complies
802.11g	2412 MHz	-12.28	-12.60	-12.31	-12.52	-6.40	5.66	Complies
	2437 MHz	-10.06	-10.26	-10.31	-10.13	-4.17	5.66	Complies
	2462 MHz	-11.36	-11.69	-11.57	-11.62	-5.54	5.66	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	-14.21	-14.45	-14.49	-14.70	-8.44	5.66	Complies
	2437 MHz	-10.59	-11.24	-11.03	-10.90	-4.91	5.66	Complies
	2462 MHz	-14.43	-14.82	-14.51	-14.49	-8.54	5.66	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	-24.10	-23.90	-23.68	-23.79	-17.84	5.66	Complies
	2437 MHz	-20.10	-19.86	-19.86	-19.70	-13.86	5.66	Complies
	2452 MHz	-22.43	-22.65	-22.31	-22.37	-16.42	5.66	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.34dBi >6dBi, so limit=8 – (8.34 – 6)=5.66dBm/3kHz.

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5745 MHz	-11.14	-10.25	-11.09	-10.27	-4.65	4.51	Complies
	5785 MHz	-10.86	-10.64	-10.71	-10.96	-4.77	4.51	Complies
	5825 MHz	-10.25	-10.05	-10.27	-11.66	-4.49	4.51	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	-11.70	-11.28	-11.76	-11.46	-5.53	4.51	Complies
	5785 MHz	-11.67	-11.51	-11.71	-11.65	-5.61	4.51	Complies
	5825 MHz	-11.29	-11.17	-11.66	-12.74	-5.65	4.51	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-15.51	-15.49	-15.29	-15.07	-9.32	4.51	Complies
	5795 MHz	-14.68	-14.49	-14.15	-14.63	-8.46	4.51	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-19.46	-19.24	-19.46	-19.39	-13.37	4.51	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.49dBi >6dBi, so limit=8 – (9.49 – 6)=4.51dBm/3kHz.

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test EUT / Function	EUT: Version 2 / Beamforming function

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	2412 MHz	-15.55	-15.93	-15.66	-15.75	-9.70	5.66	Complies
	2437 MHz	-12.19	-12.84	-12.46	-12.64	-6.51	5.66	Complies
	2462 MHz	-14.66	-15.31	-14.69	-15.28	-8.95	5.66	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	-23.12	-22.98	-22.51	-22.91	-16.85	5.66	Complies
	2437 MHz	-21.21	-21.37	-20.75	-20.87	-15.02	5.66	Complies
	2452 MHz	-22.48	-22.71	-22.68	-23.05	-16.70	5.66	Complies
802.11ac MCS0/Nss2 VHT20	2437 MHz	-10.24	-11.04	-11.17	-10.56	-4.72	8.00	Complies

Note: 1. 802.11ac MCS0/Nss1 VHT20/40: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.34dBi >6dBi, so limit=8 – (8.34 – 6)=5.66dBm/3kHz.

2. 802.11ac MCS0/Nss2 VHT20: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.33dBi <6dBi, so the limit doesn't reduce.

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	-15.21	-15.08	-15.90	-14.88	-9.23	4.51	Complies
	5785 MHz	-14.77	-15.29	-15.57	-15.28	-9.20	4.51	Complies
	5825 MHz	-14.78	-14.54	-15.43	-15.50	-9.02	4.51	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-17.64	-17.80	-17.93	-17.83	-11.78	4.51	Complies
	5795 MHz	-18.43	-17.61	-17.90	-17.64	-11.86	4.51	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-21.40	-20.79	-20.60	-20.85	-14.88	4.51	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	-12.48	-12.30	-12.81	-12.47	-6.49	7.52	Complies
	5785 MHz	-12.15	-12.47	-11.97	-12.37	-6.22	7.52	Complies
	5825 MHz	-11.26	-11.55	-11.98	-12.20	-5.71	7.52	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	-14.93	-14.67	-14.47	-14.63	-8.65	7.52	Complies
	5795 MHz	-14.43	-14.48	-14.18	-14.34	-8.34	7.52	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	-19.04	-19.03	-19.04	-18.93	-12.99	7.52	Complies

Note: 1. 802.11ac MCS0/Nss1 VHT20/40/80: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.49dBi >6dBi,

so limit=8 – (9.49 – 6)=4.51dBm/3kHz.

2. 802.11ac MCS0/Nss2 VHT20: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.48dBi >6dBi, so

limit=8 – (6.48 – 6)=7.52dBm/3kHz.

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

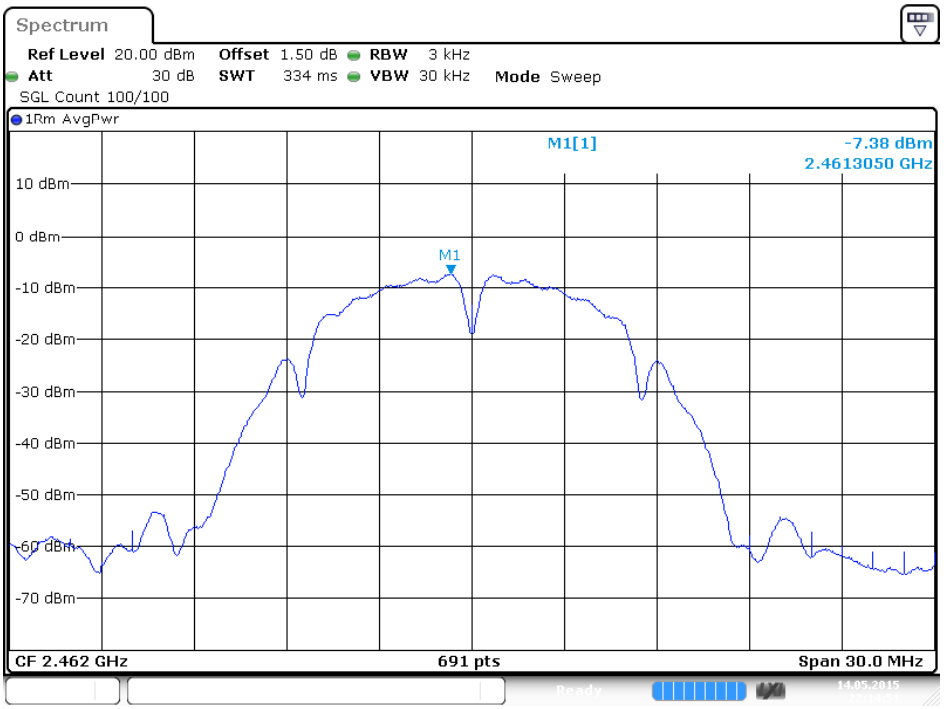
For plots, only the channel with worse result was shown.

EUT: Version 1

For non-beamforming function:

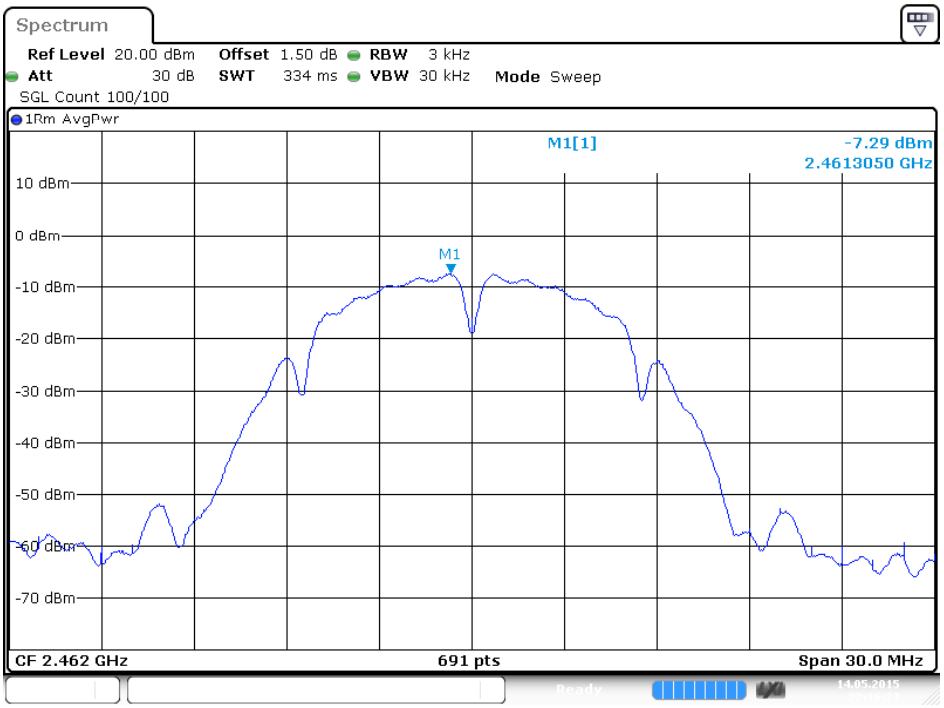
For 2.4GHz Band

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 1



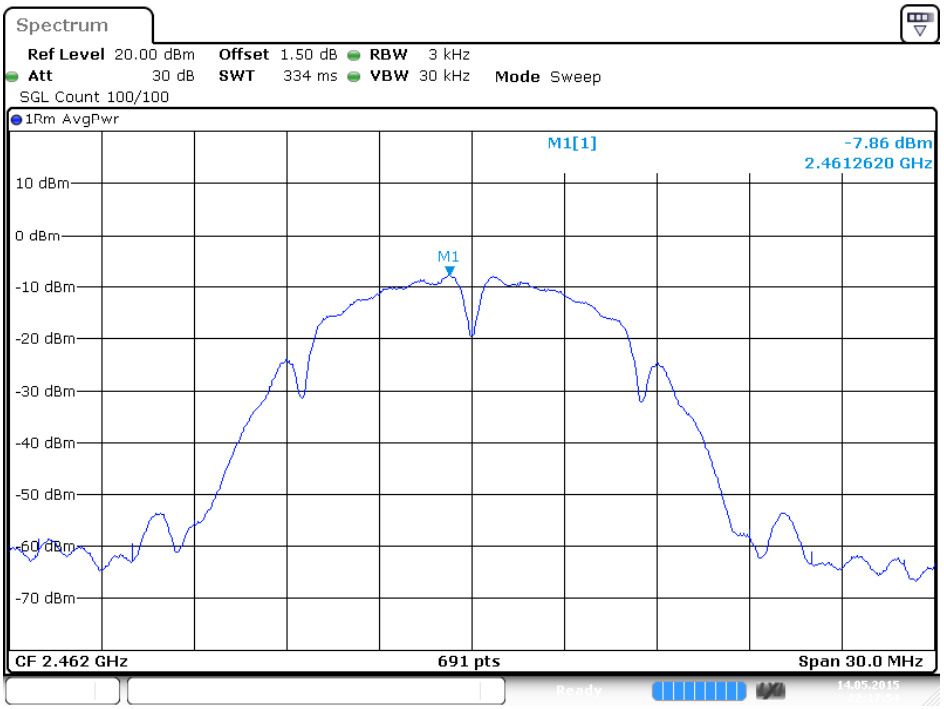
Date:14.MAY.2015 22:14:51

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 2



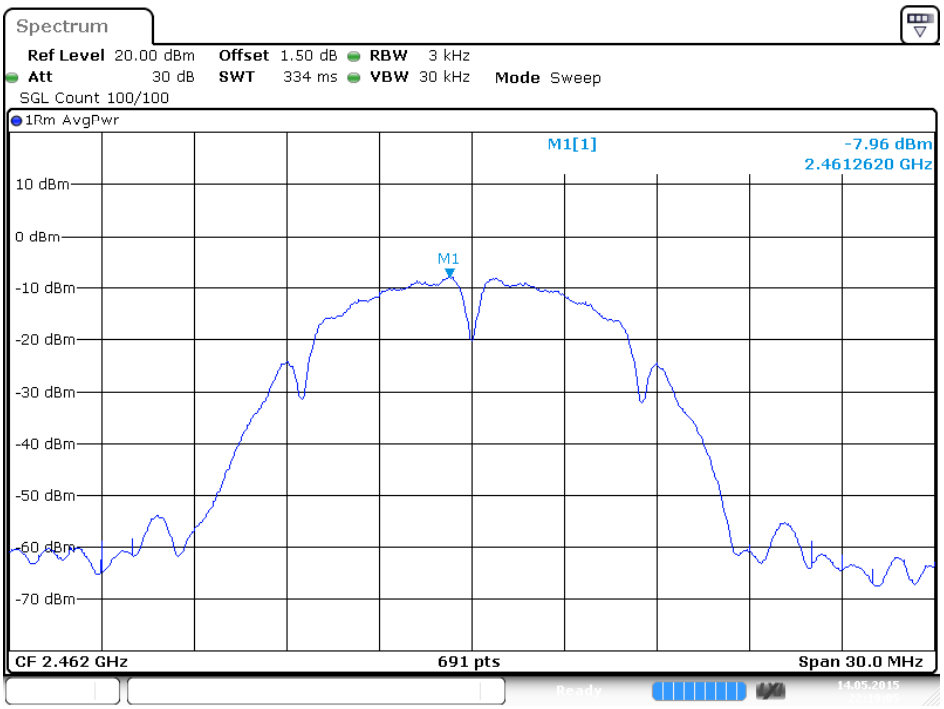
Date:14.MAY.2015 22:16:23

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 3



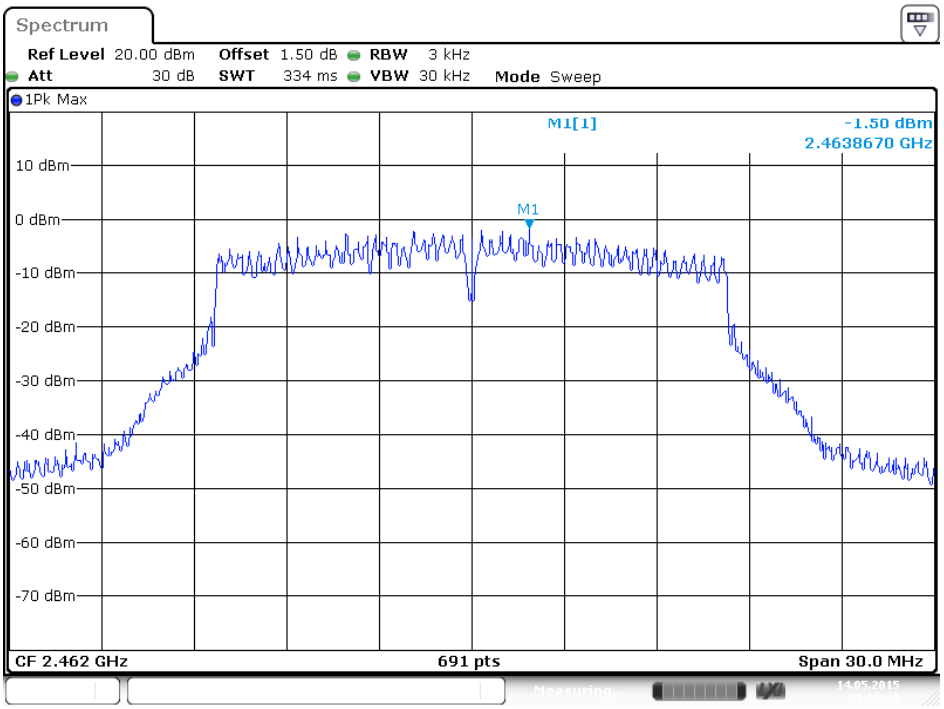
Date:14.MAY.2015 22:17:54

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 4



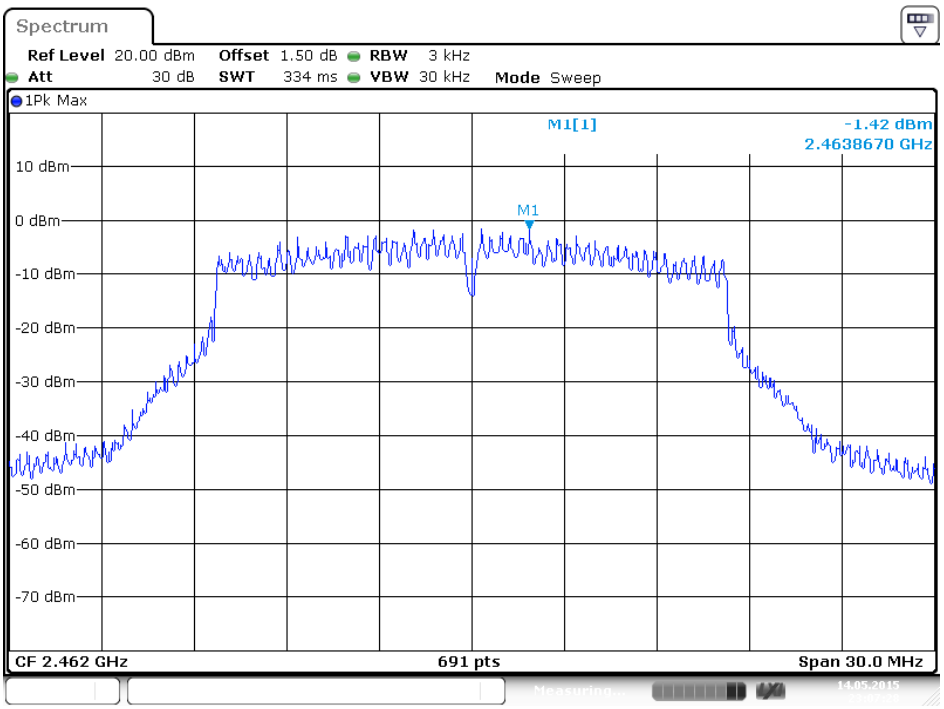
Date:14.MAY.2015 22:19:05

Power Density Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 1



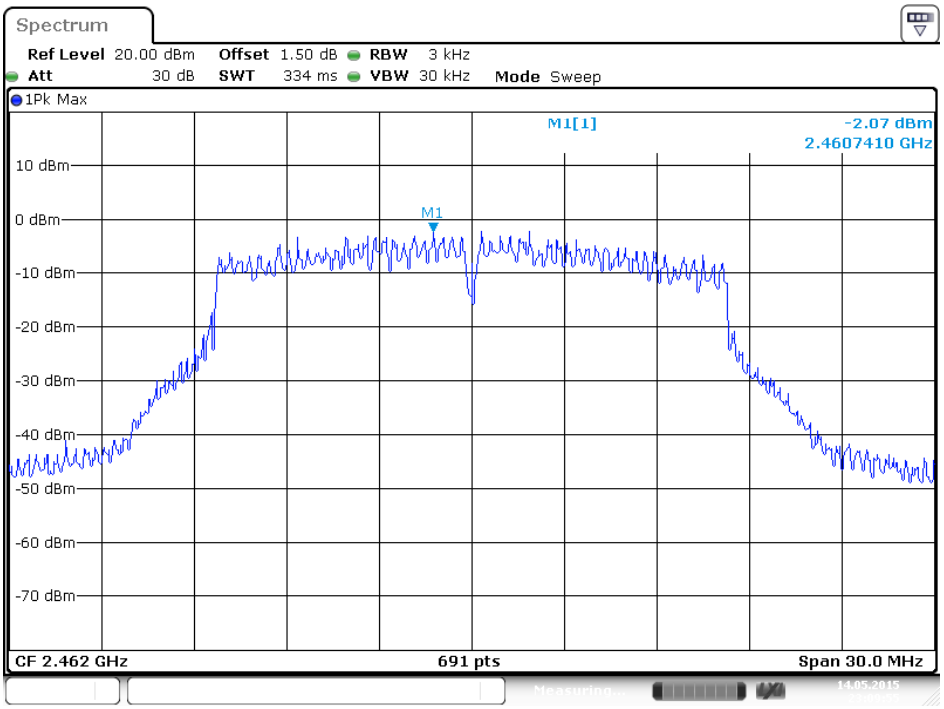
Date:14.MAY.2015 23:08:40

Power Density Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 2



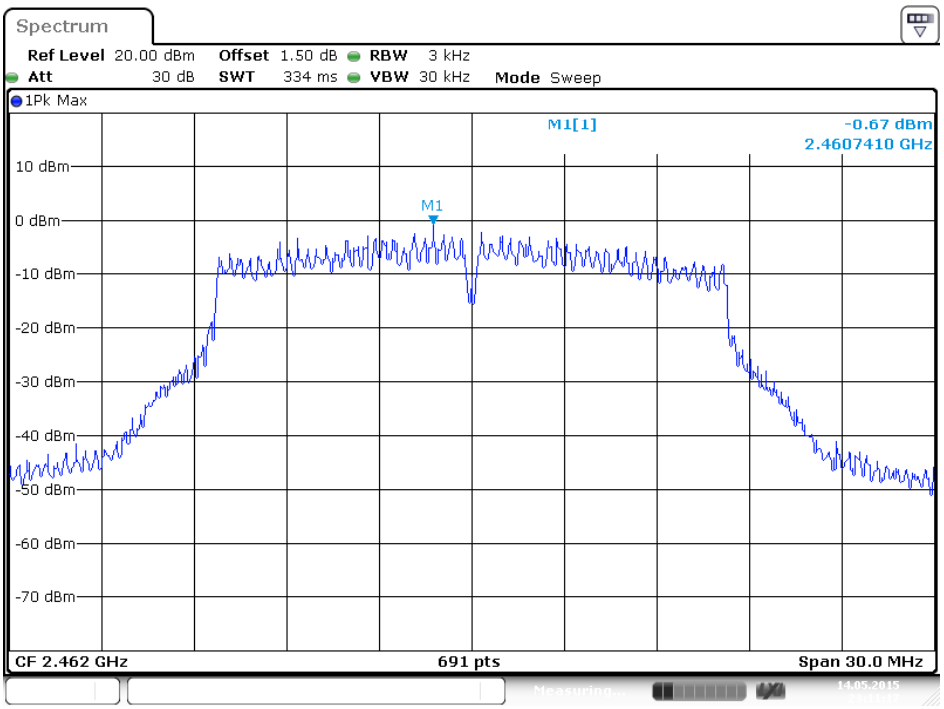
Date:14.MAY.2015 23:07:28

Power Density Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 3



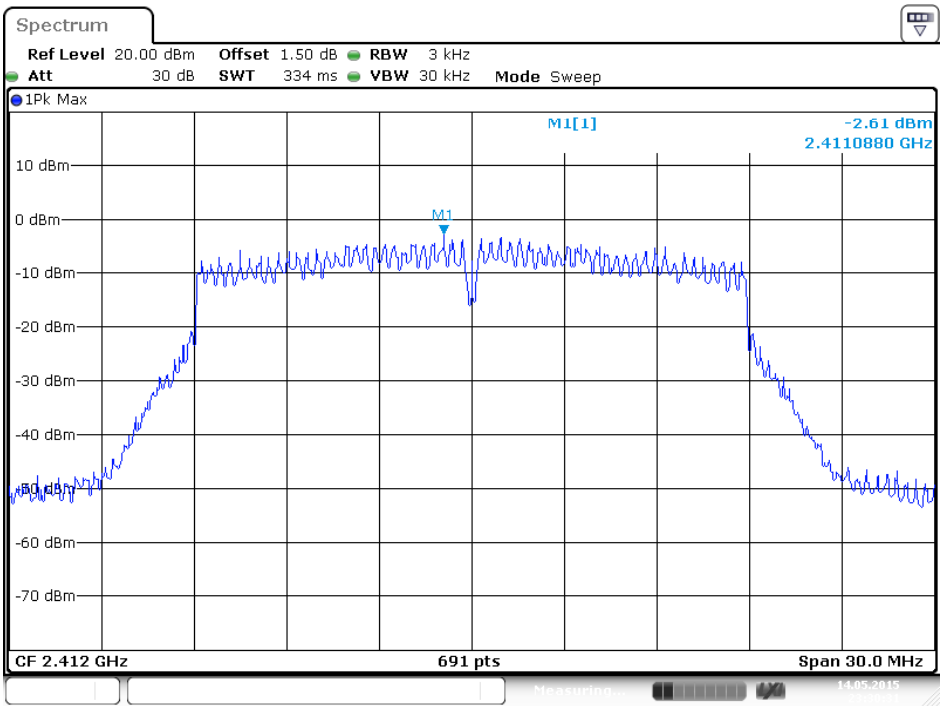
Date:14.MAY.2015 23:09:55

Power Density Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 4



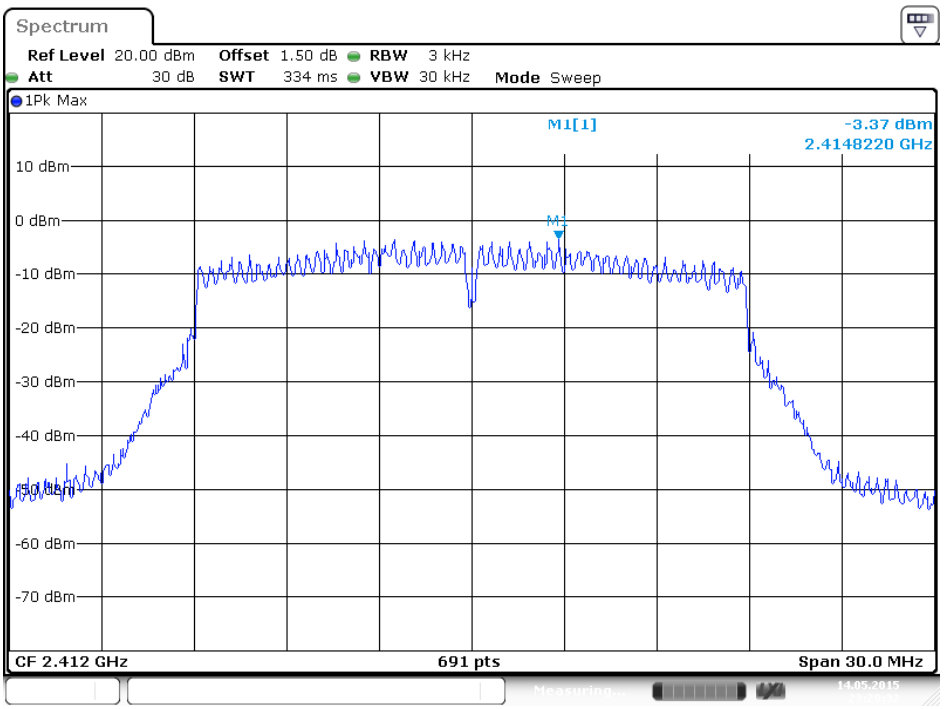
Date:14.MAY.2015 23:11:17

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2412 MHz / Chain 1



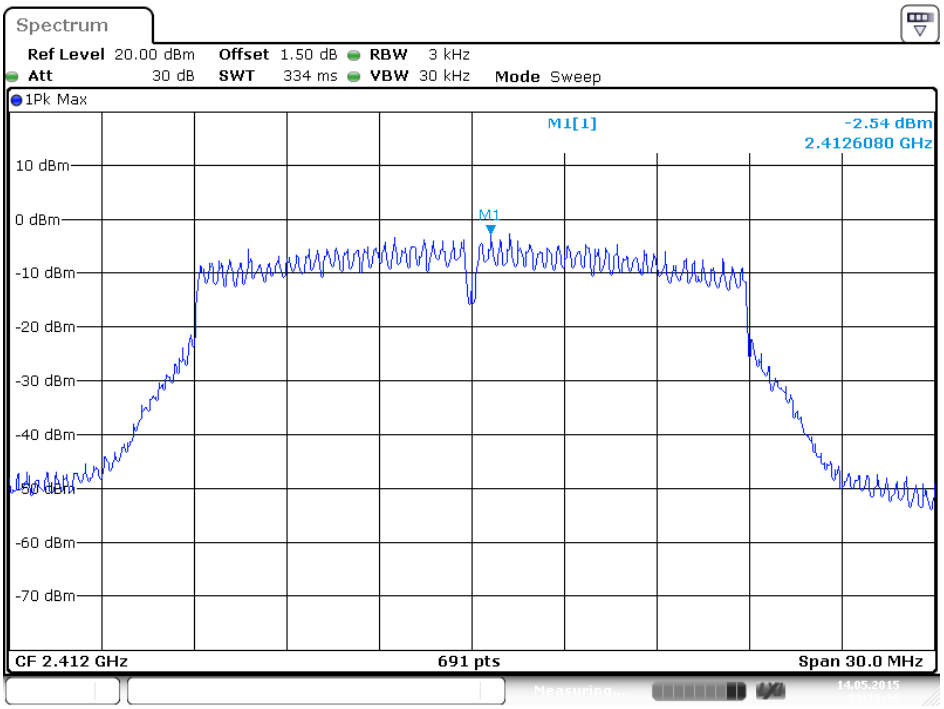
Date:14.MAY.2015 23:30:31

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2412 MHz / Chain 2



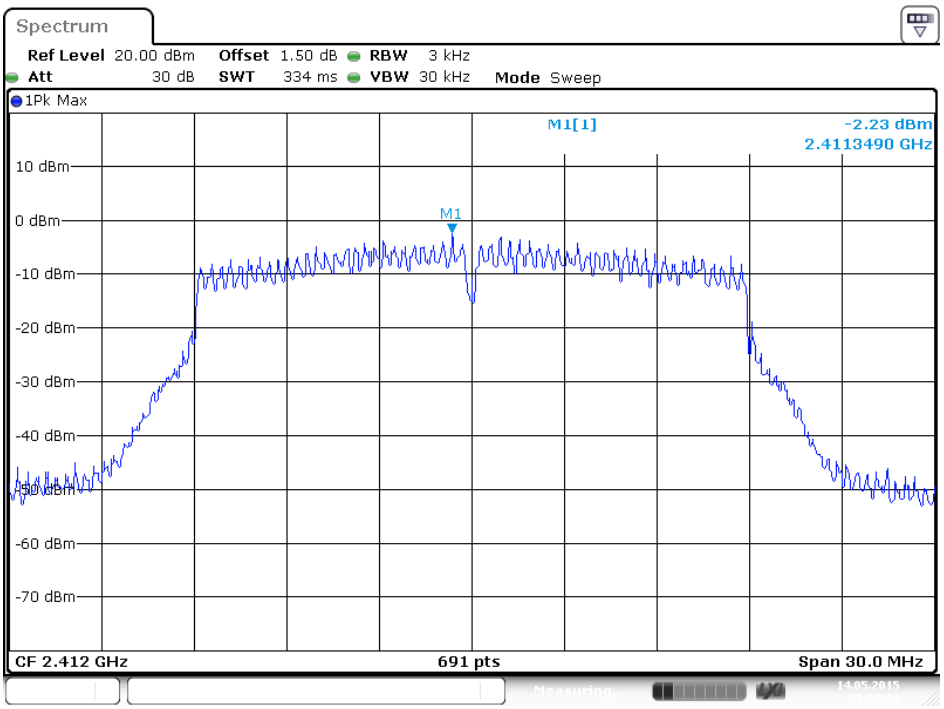
Date:14.MAY.2015 23:29:32

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2412 MHz / Chain 3



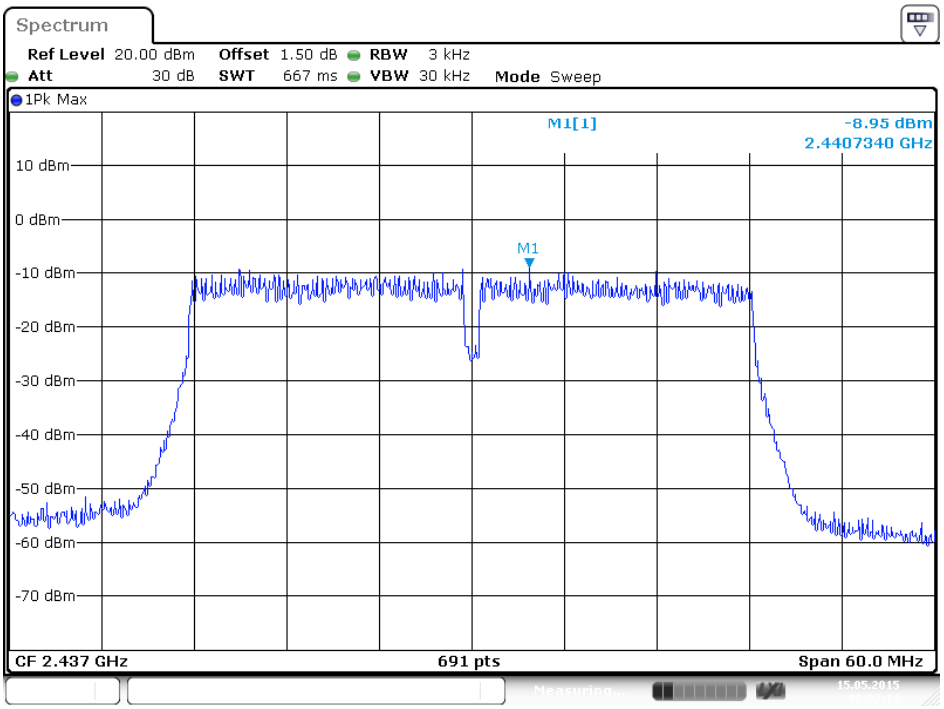
Date:14.MAY.2015 23:28:37

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2412 MHz / Chain 4



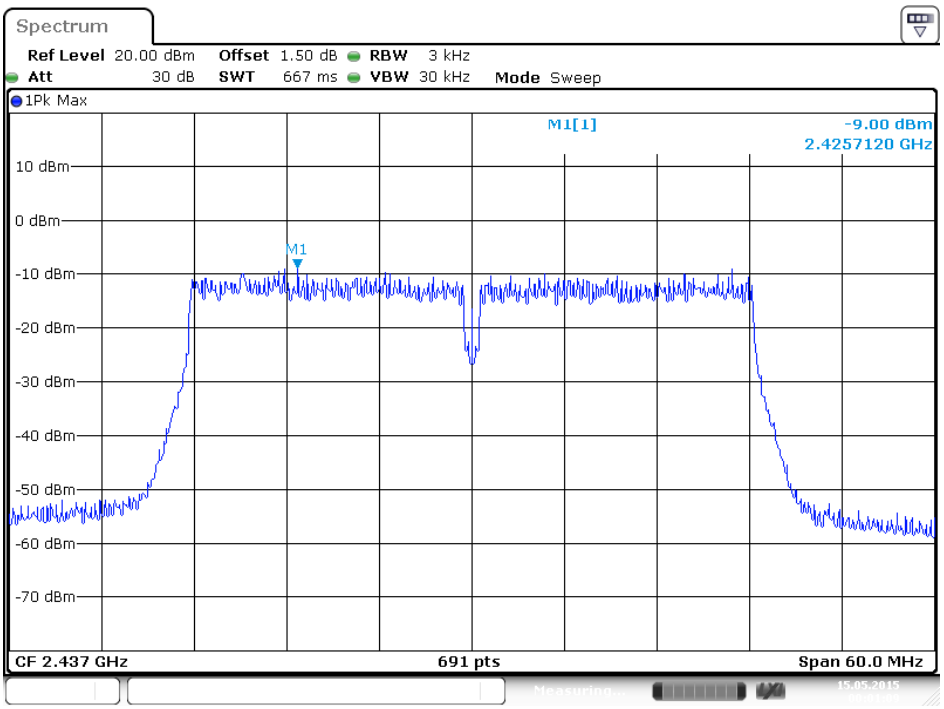
Date:14.MAY.2015 23:27:32

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1



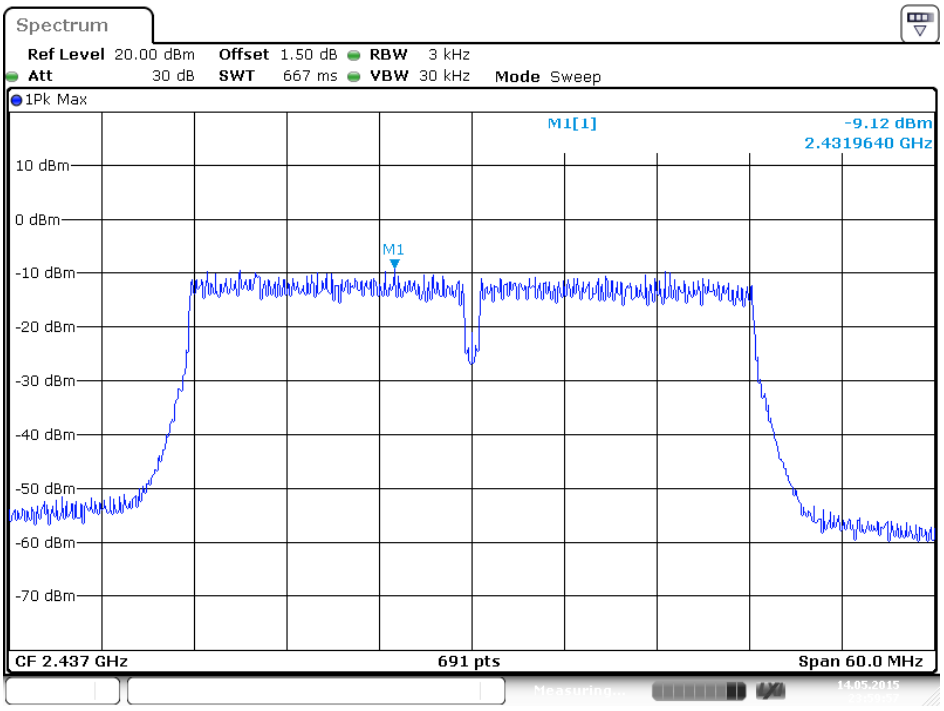
Date:15.MAY.2015 00:02:14

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 2



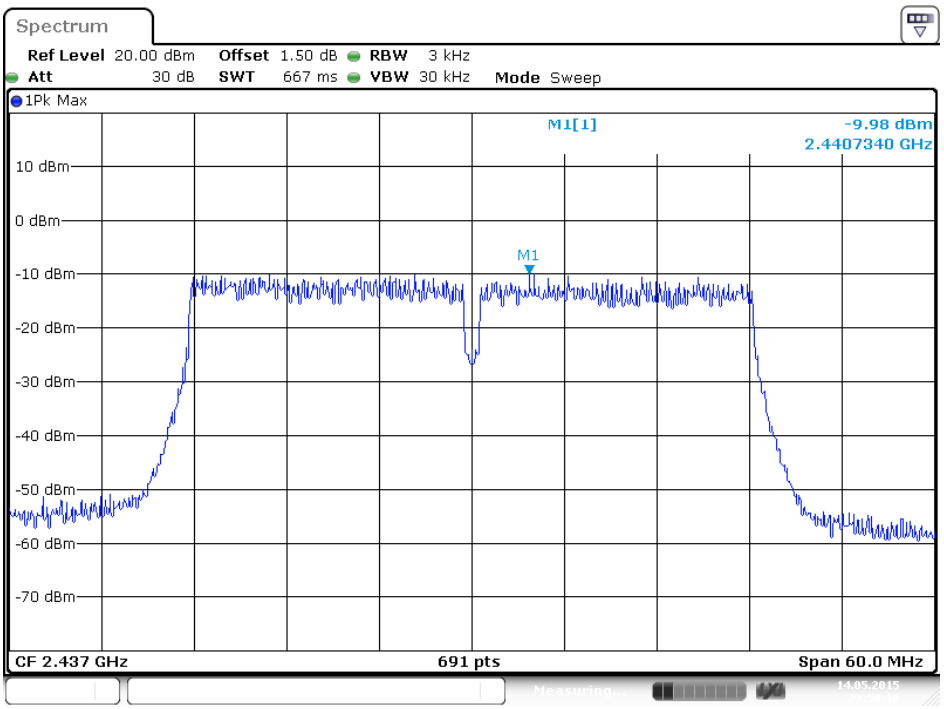
Date:15.MAY.2015 00:01:09

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 3



Date:14.MAY.2015 23:59:58

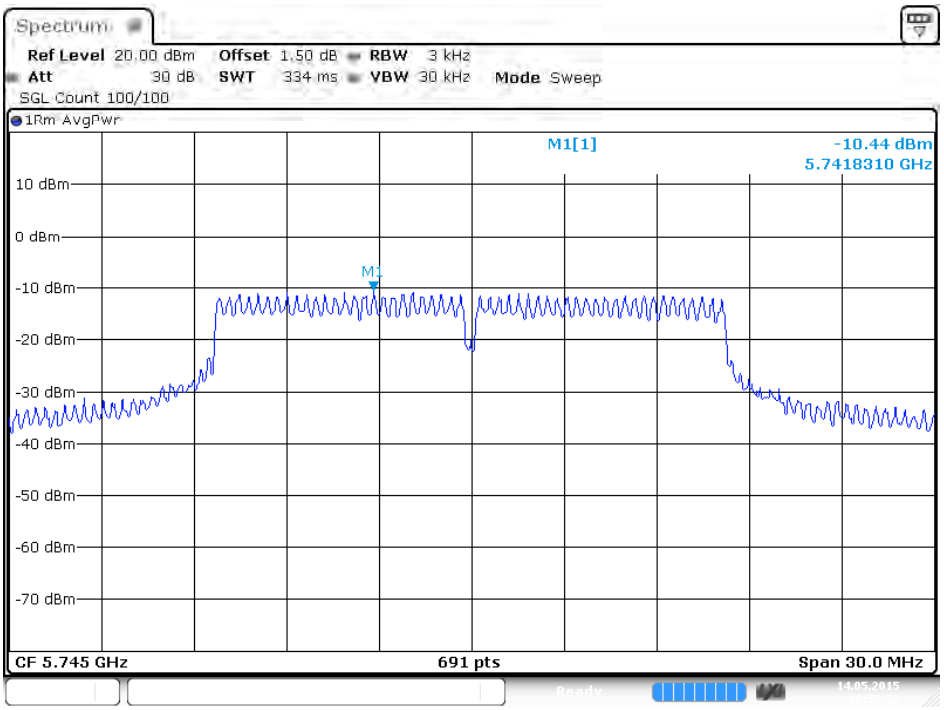
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 4



Date:14.MAY.2015 23:58:18

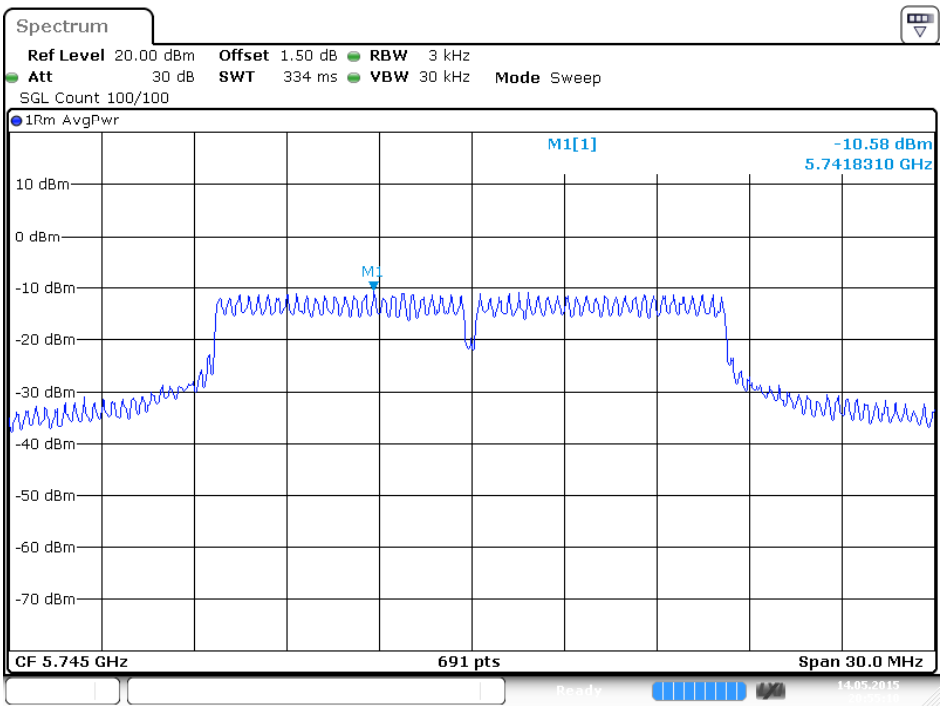
For 5GHz Band

Power Density Plot on Configuration IEEE 802.11a / 5745 MHz / Chain 1



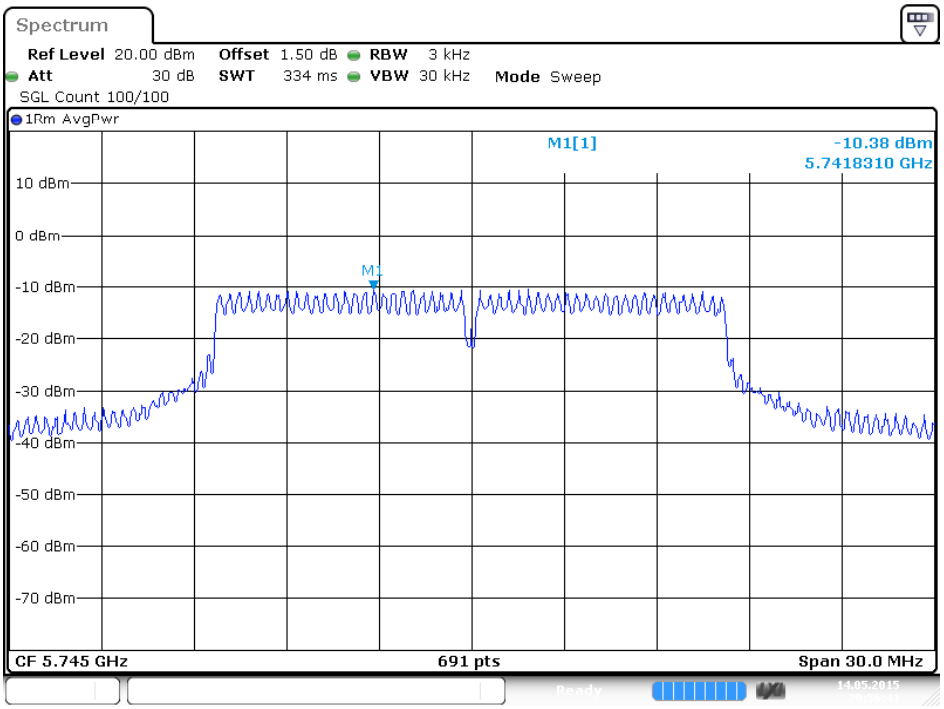
Date:14.MAY.2015 20:52:52

Power Density Plot on Configuration IEEE 802.11a / 5745 MHz / Chain 2



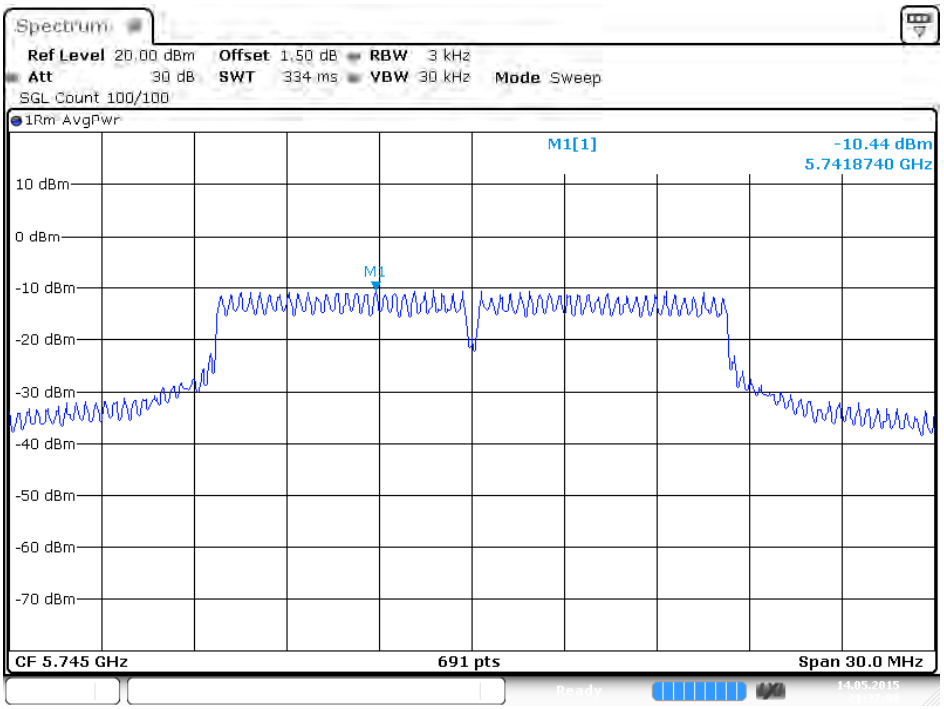
Date:14.MAY.2015 20:55:11

Power Density Plot on Configuration IEEE 802.11a / 5745 MHz / Chain 3



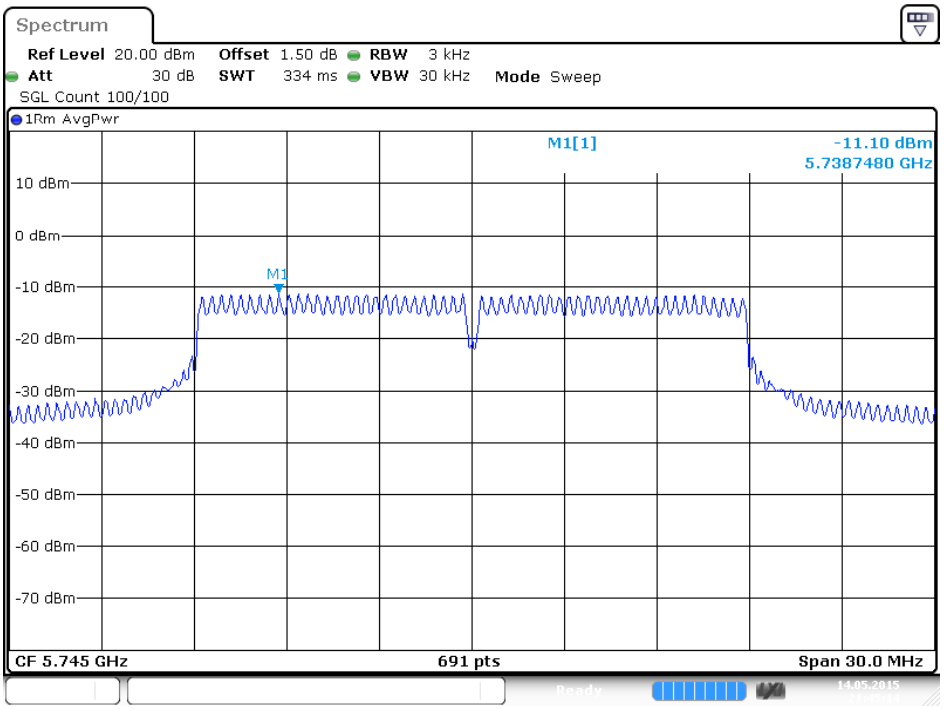
Date:14.MAY.2015 20:56:42

Power Density Plot on Configuration IEEE 802.11a / 5745 MHz / Chain 4



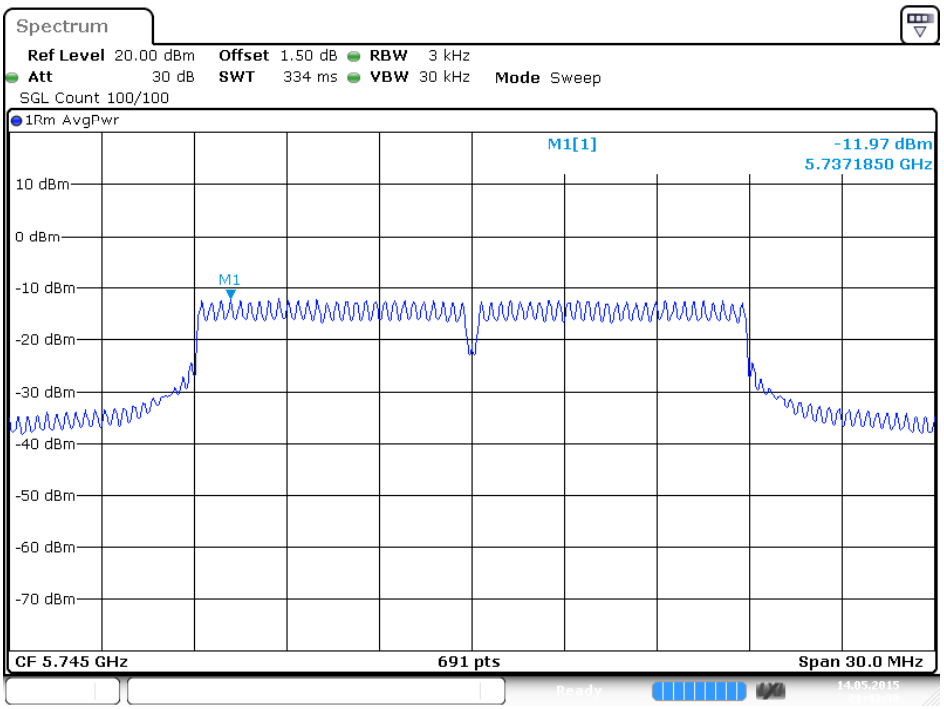
Date:14.MAY.2015 21:37:00

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 1



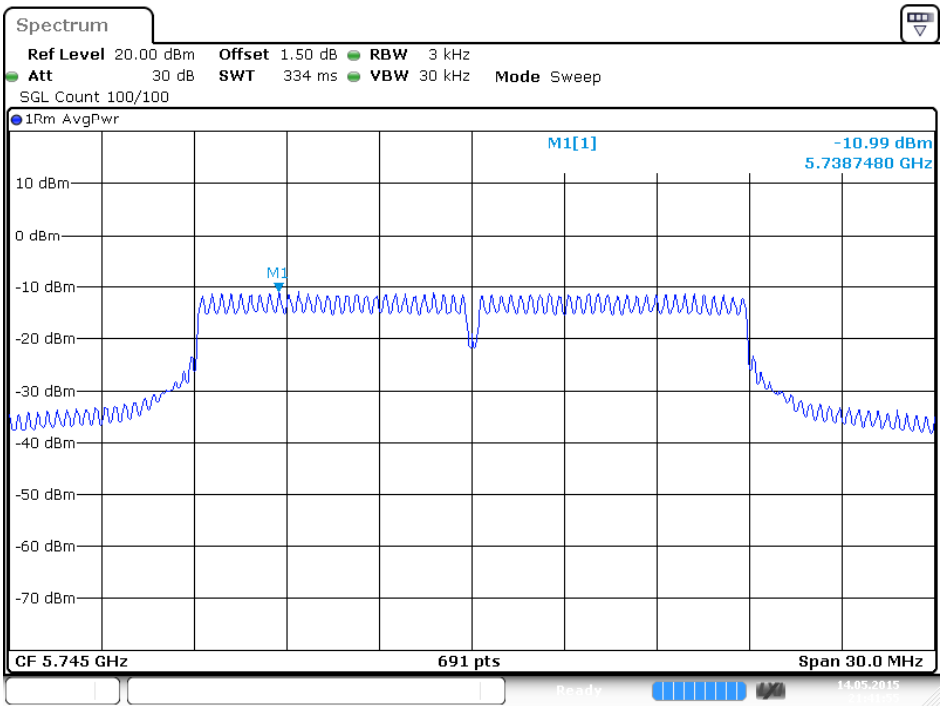
Date:14.MAY.2015 21:45:14

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 2



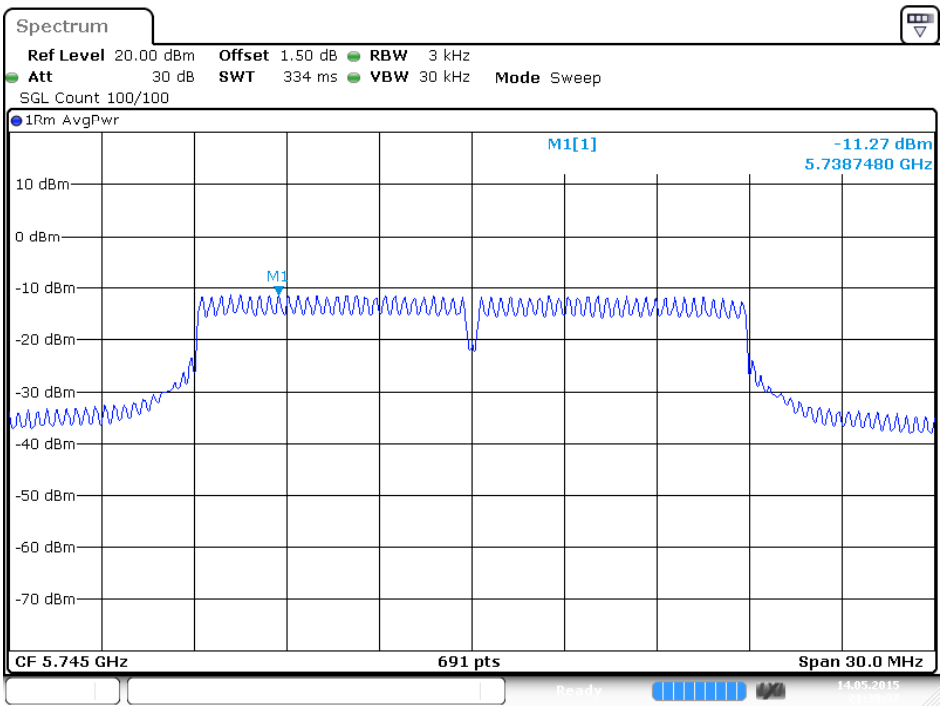
Date:14.MAY.2015 21:43:30

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 3



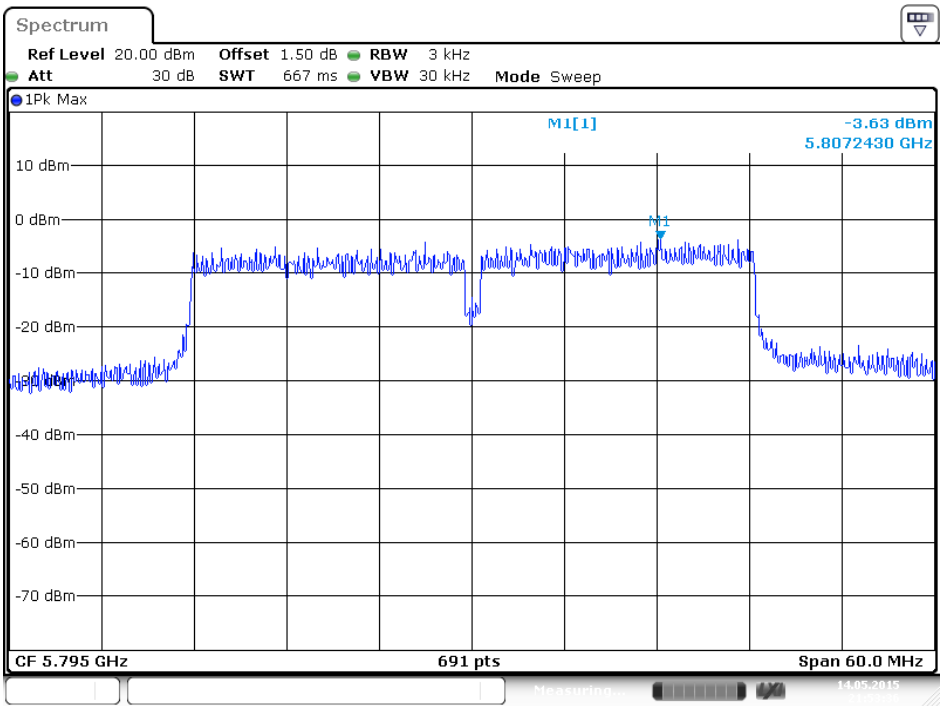
Date:14.MAY.2015 21:41:55

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 4



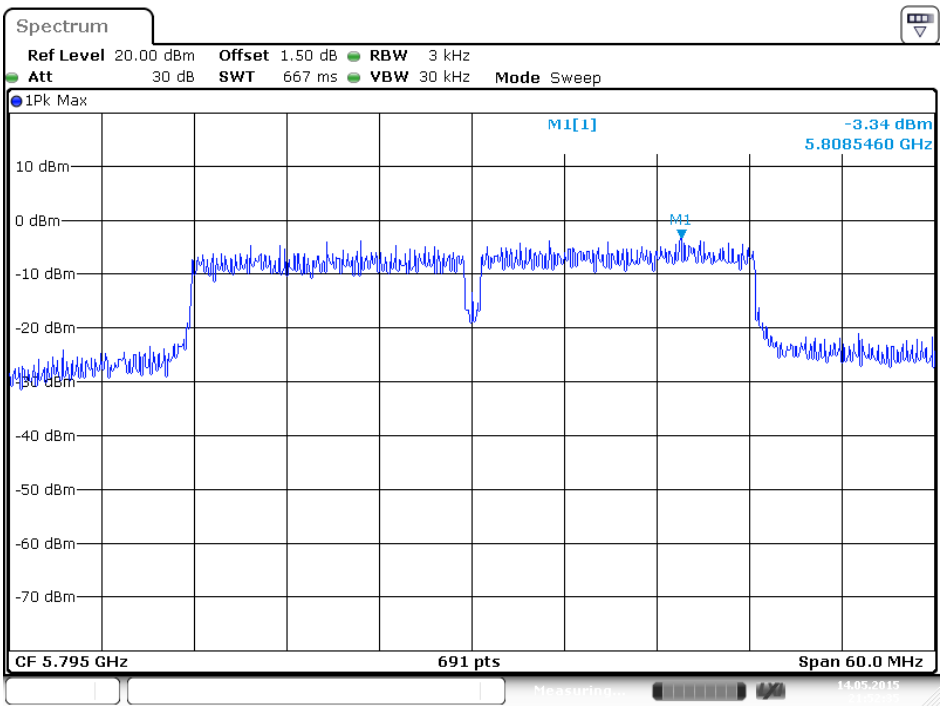
Date:14.MAY.2015 21:39:37

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



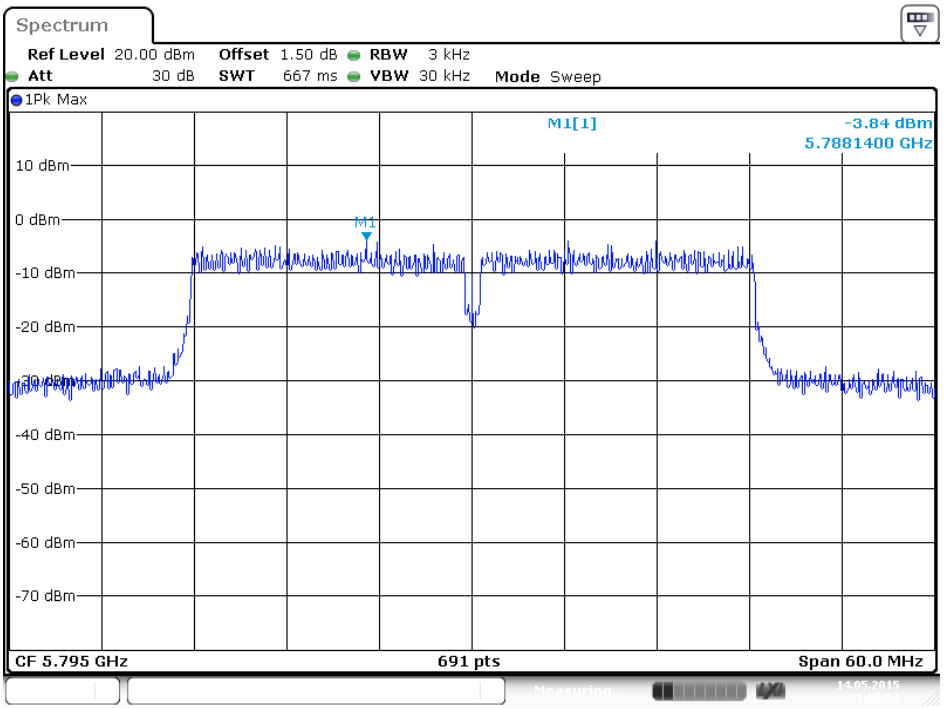
Date:14.MAY.2015 21:53:36

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



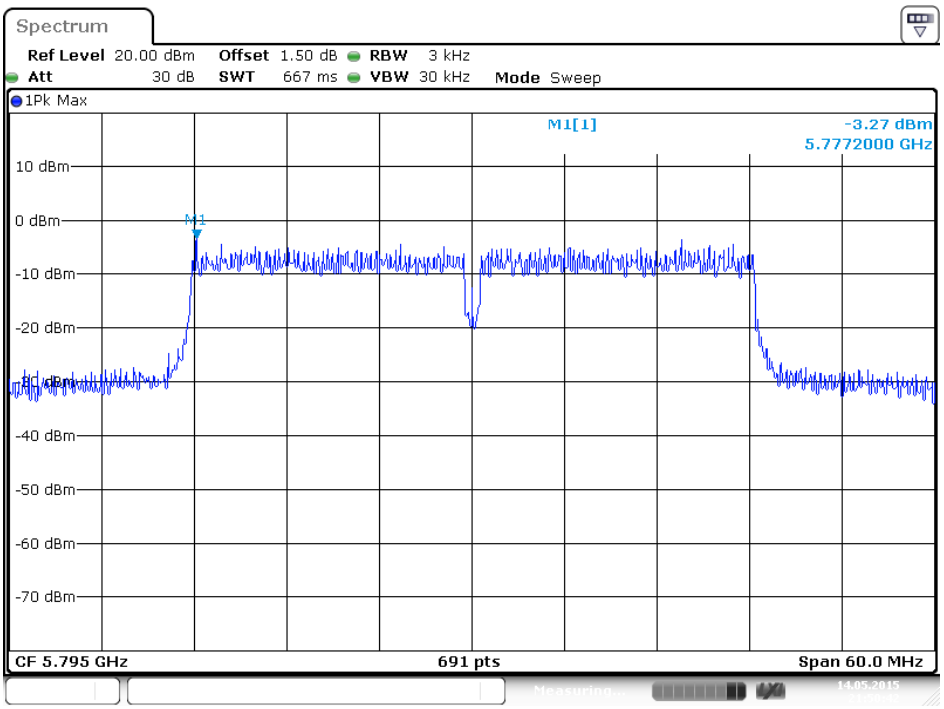
Date:14.MAY.2015 21:52:35

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



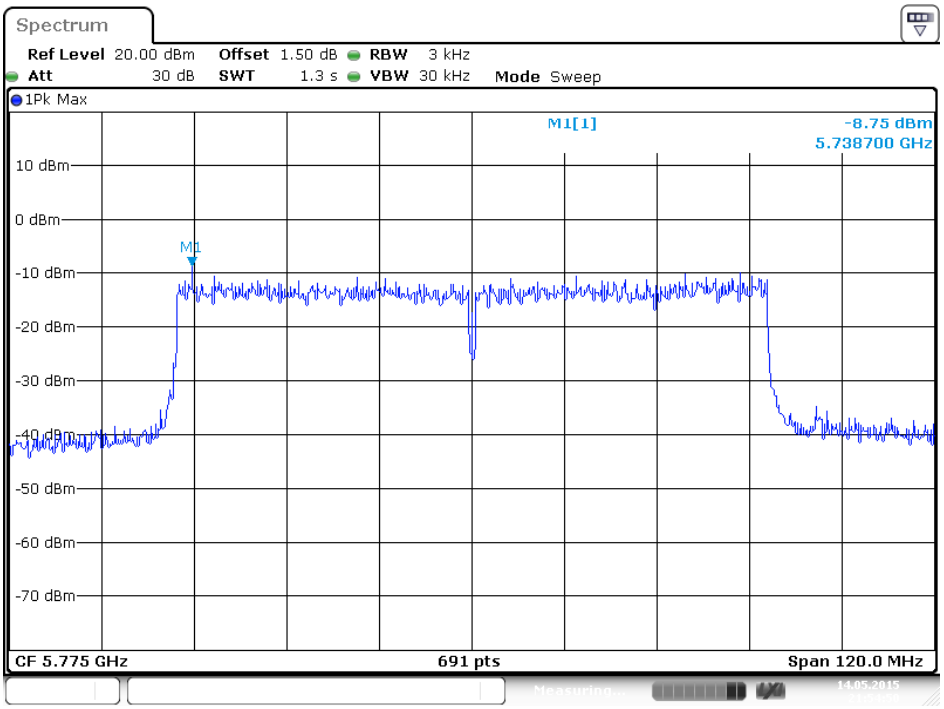
Date:14.MAY.2015 21:51:34

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



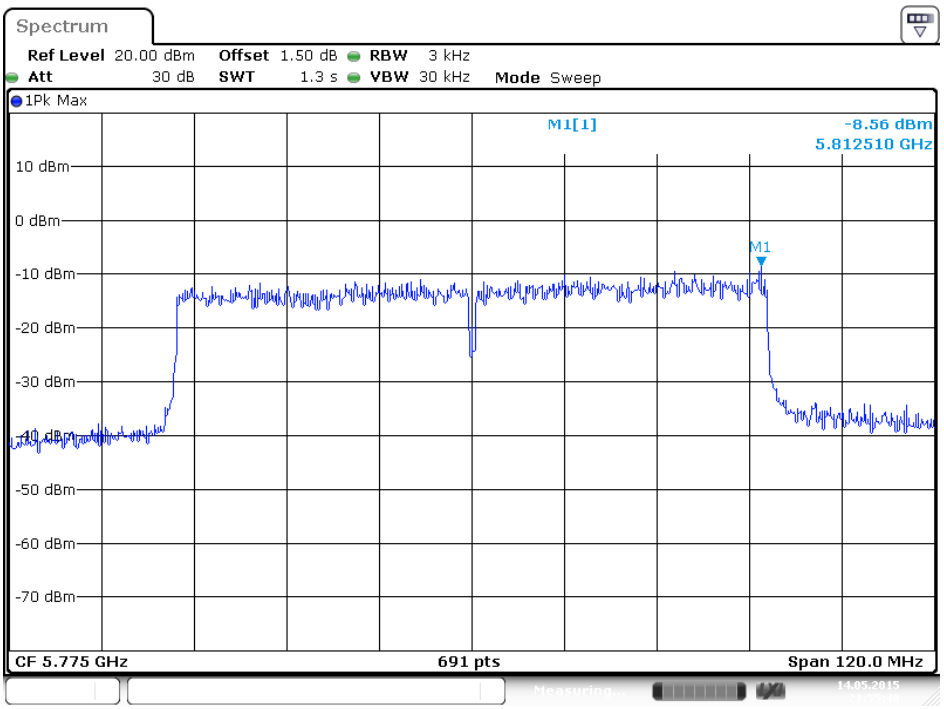
Date:14.MAY.2015 21:50:42

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



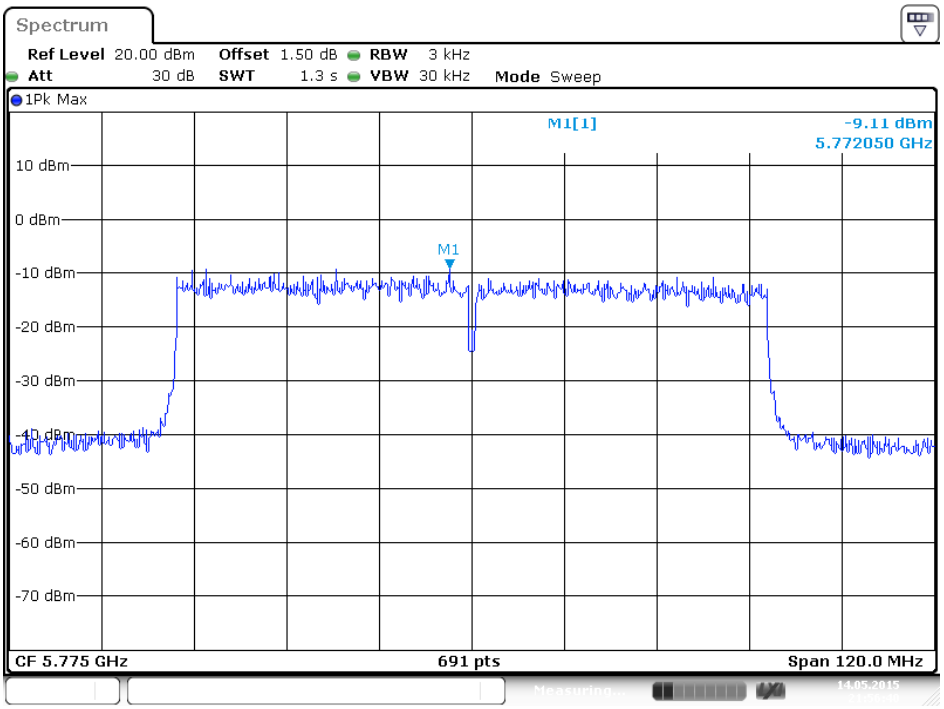
Date:14.MAY.2015 21:54:49

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



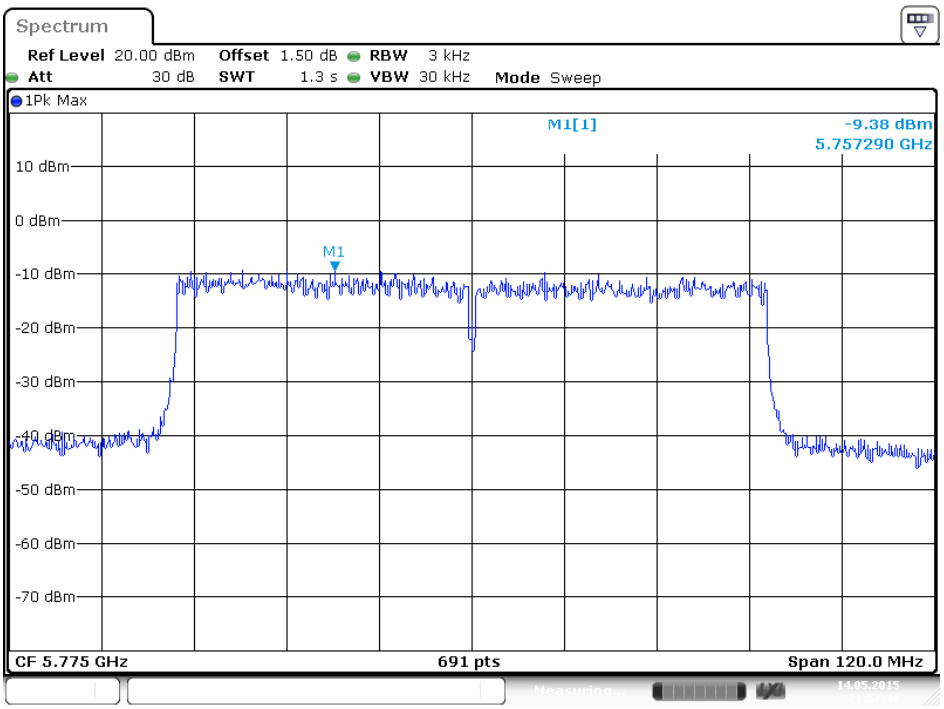
Date:14.MAY.2015 21:55:40

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



Date:14.MAY.2015 21:56:40

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



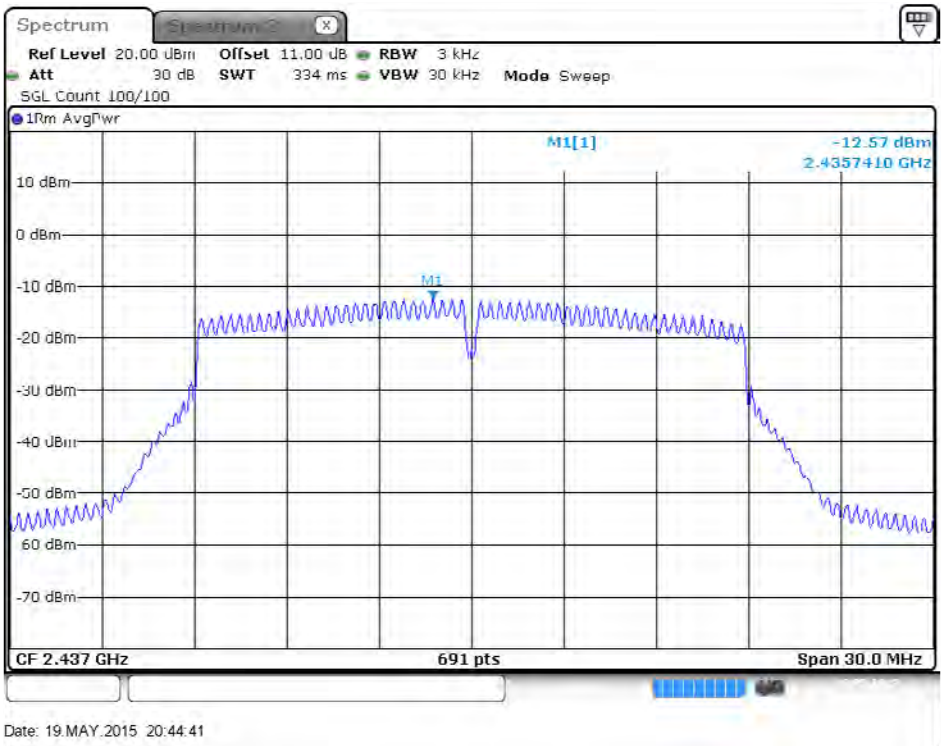
Date:14.MAY.2015 21:57:48

EUT: Version 1

For beamforming function:

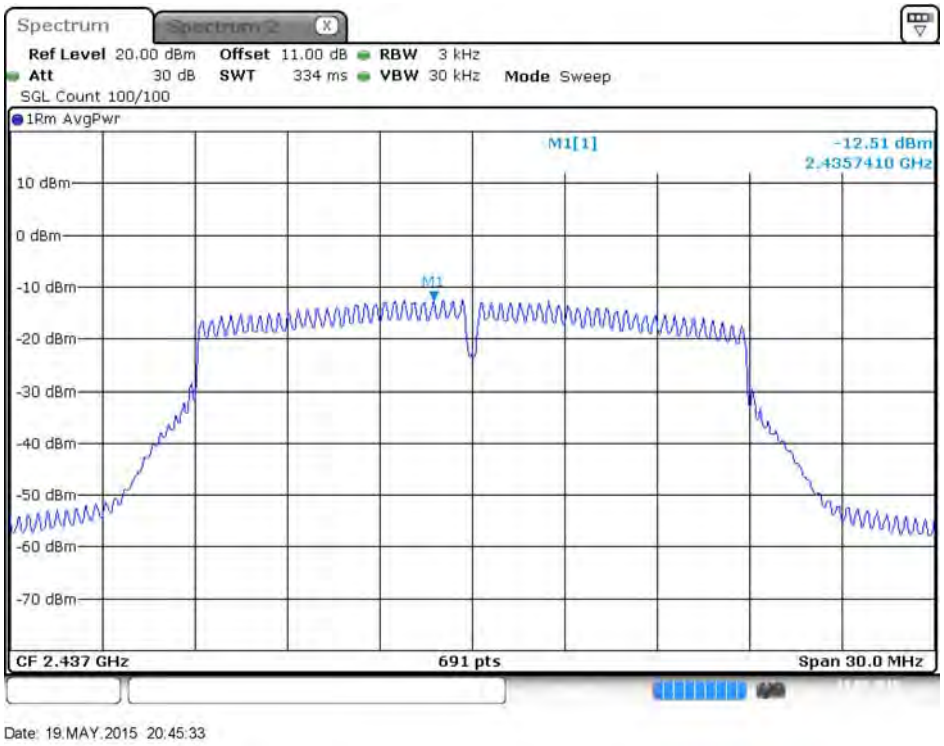
For 2.4GHz Band

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1



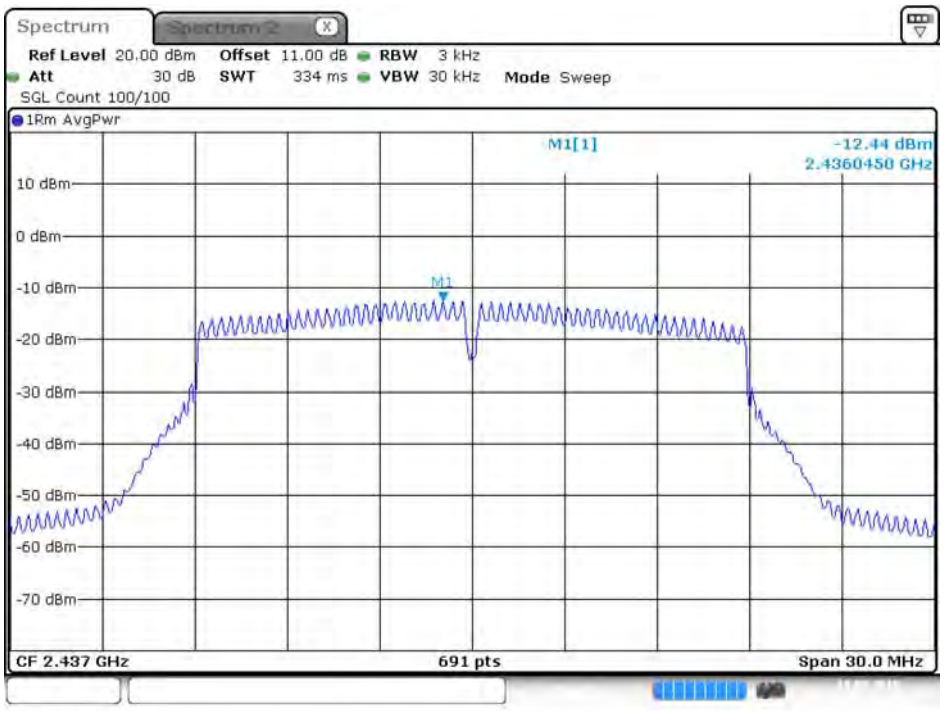
Date: 19.MAY.2015 20:44:41

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 2



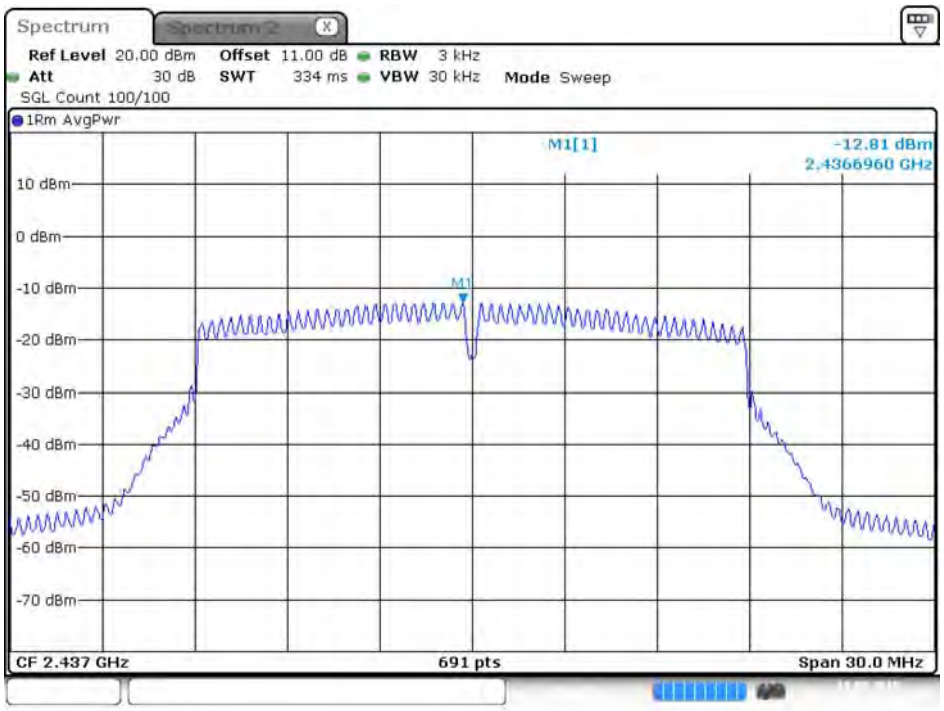
Date: 19.MAY.2015 20:45:33

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 3



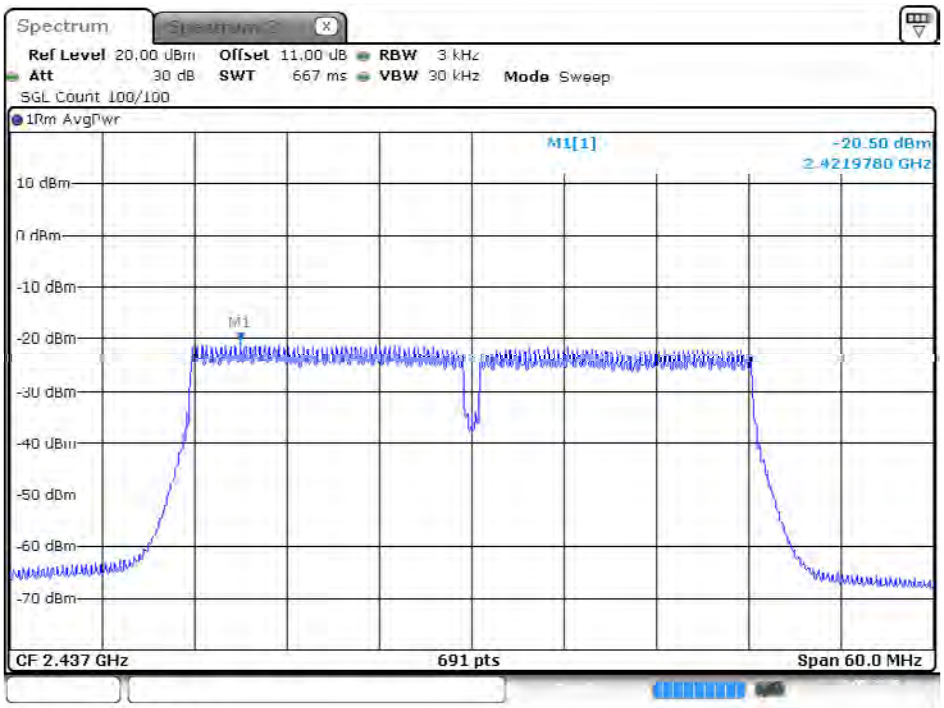
Date: 19.MAY.2015 20:46:31

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 4



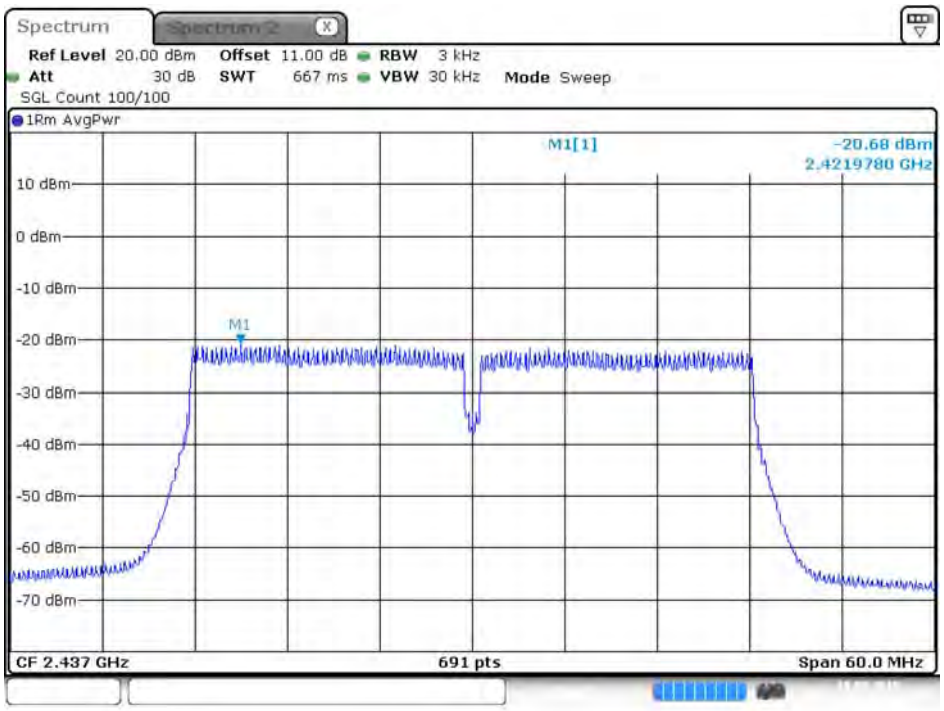
Date: 19.MAY.2015 20:47:22

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1



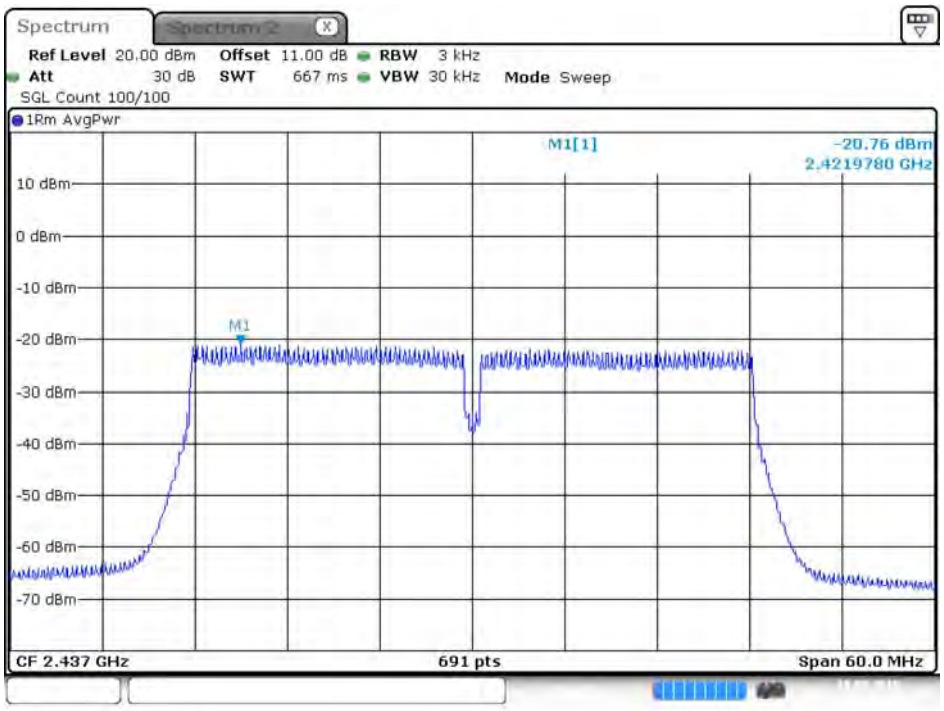
Date: 19.MAY.2015 21:08:35

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 2



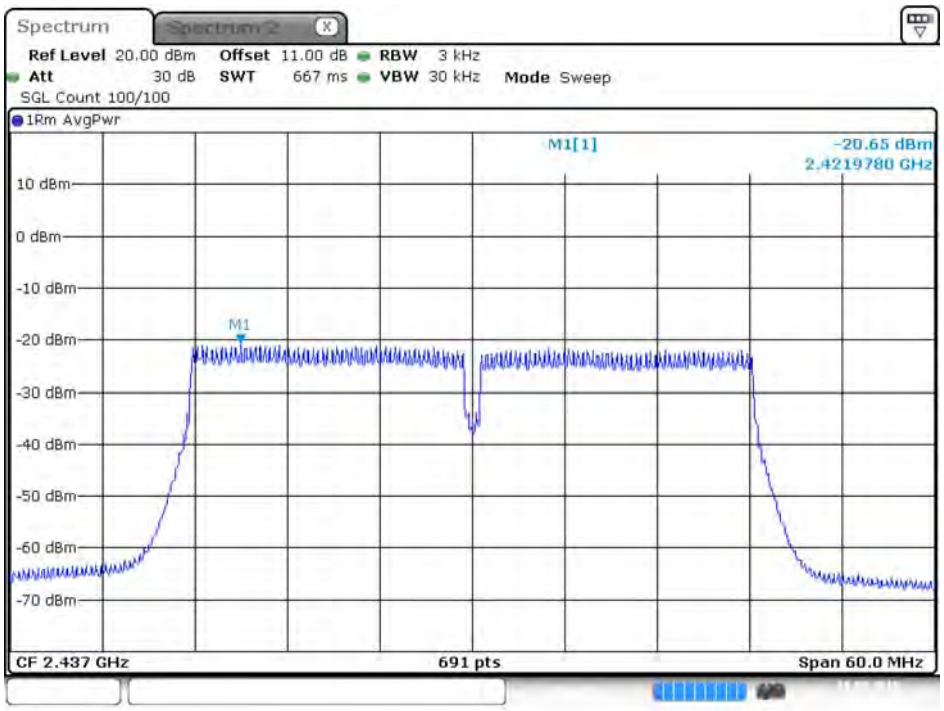
Date: 19.MAY.2015 21:10:01

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 3



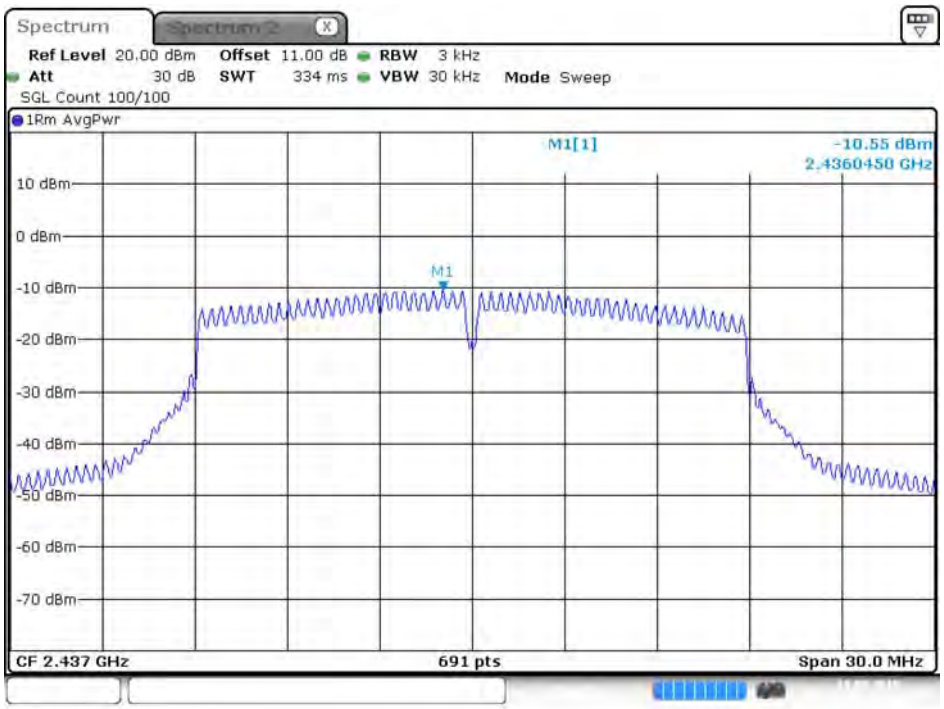
Date: 19.MAY.2015 21:11:45

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 4



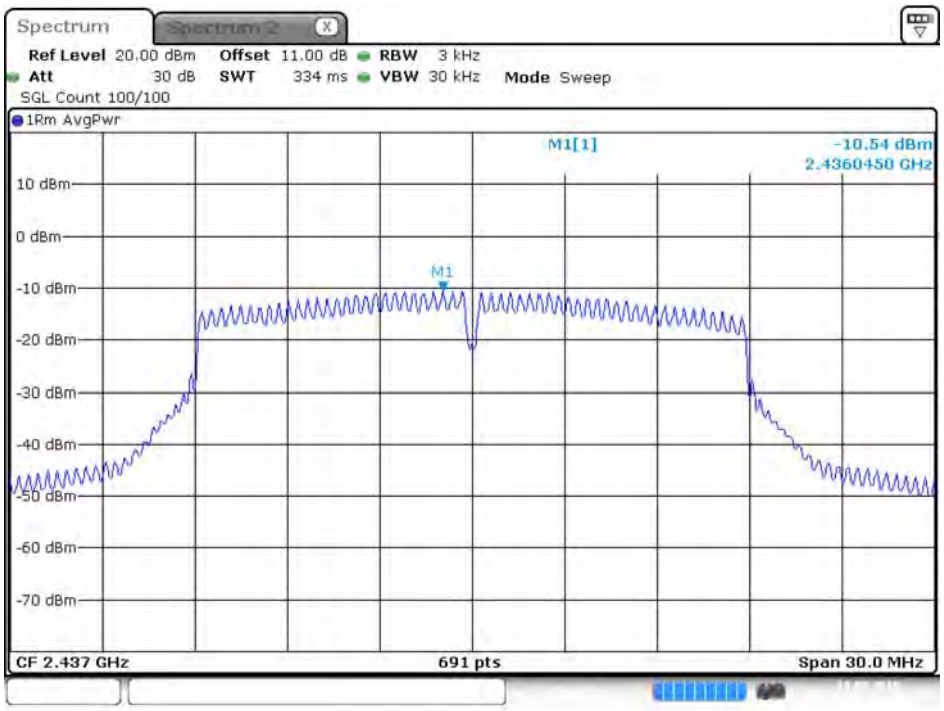
Date: 19.MAY.2015 21:14:53

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 1



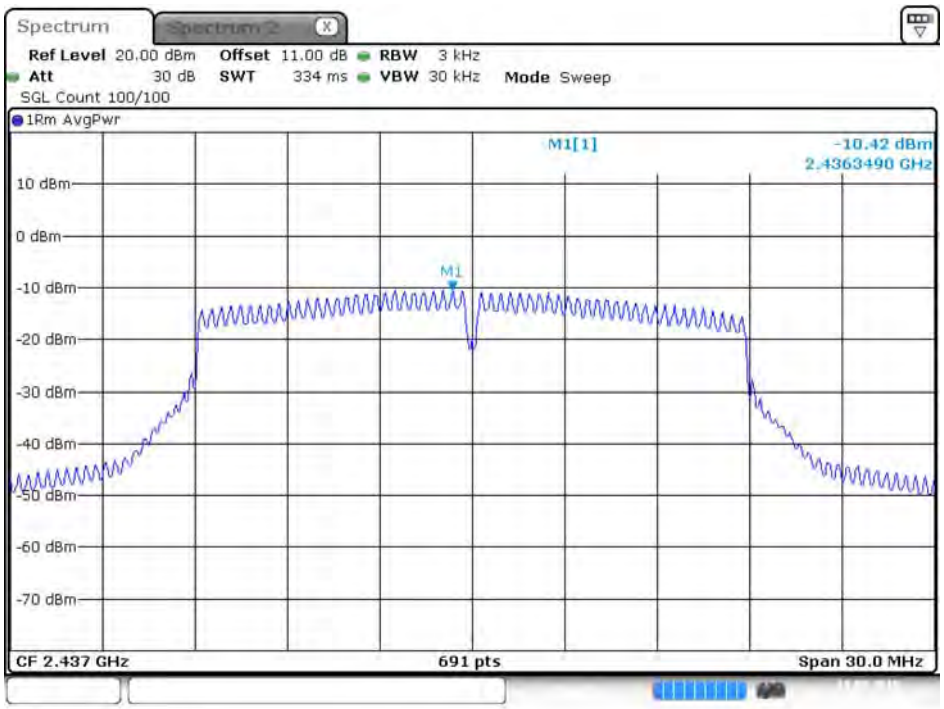
Date: 19.MAY.2015 20:49:04

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 2



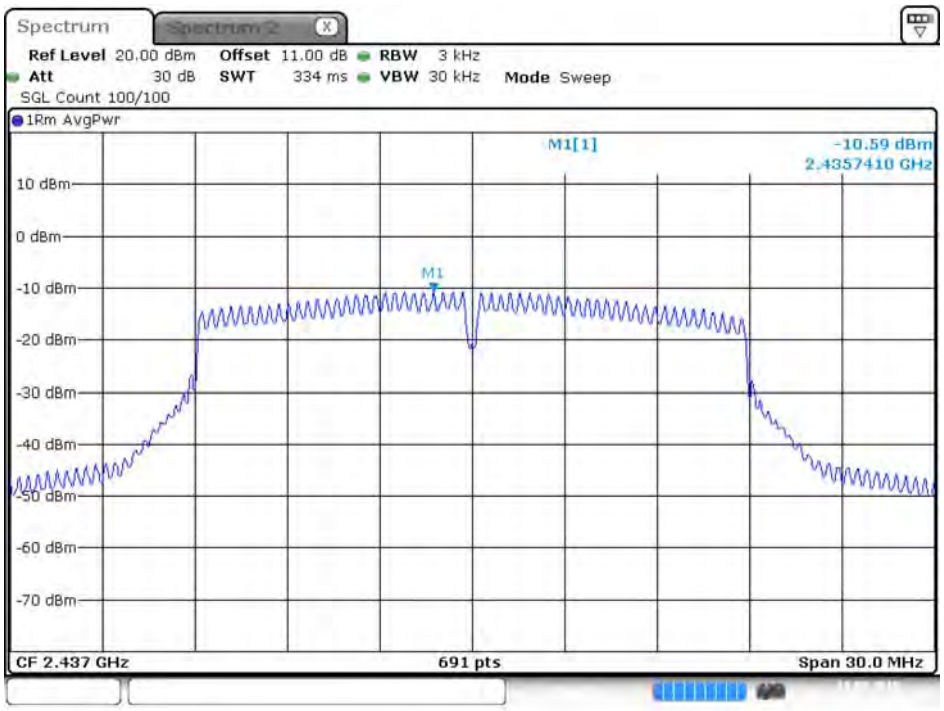
Date: 19.MAY.2015 20:50:17

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 3



Date: 19.MAY.2015 20:51:20

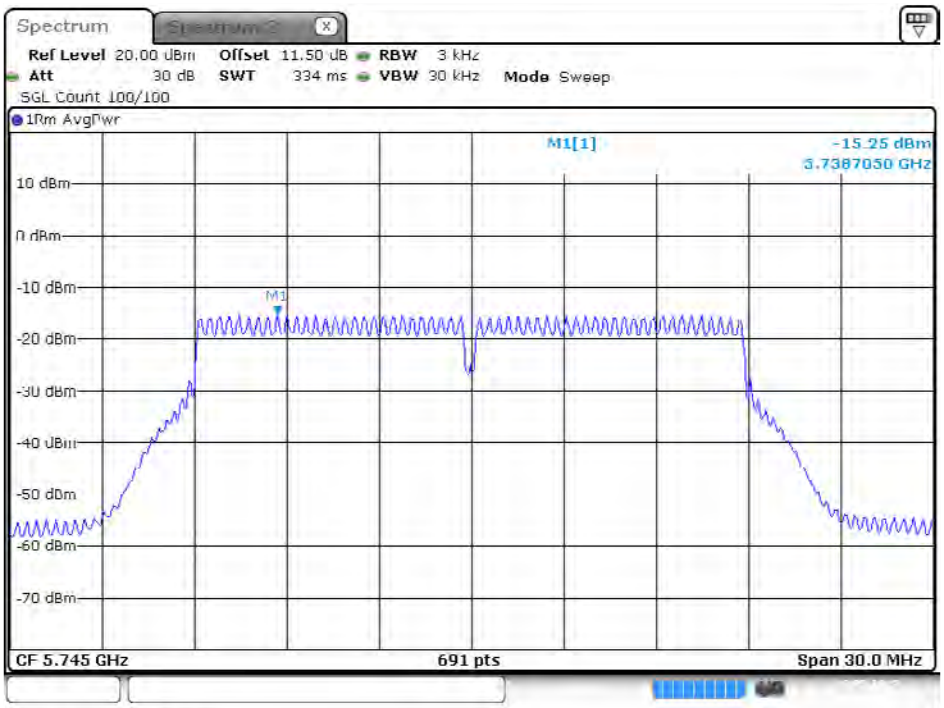
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 4



Date: 19.MAY.2015 20:52:13

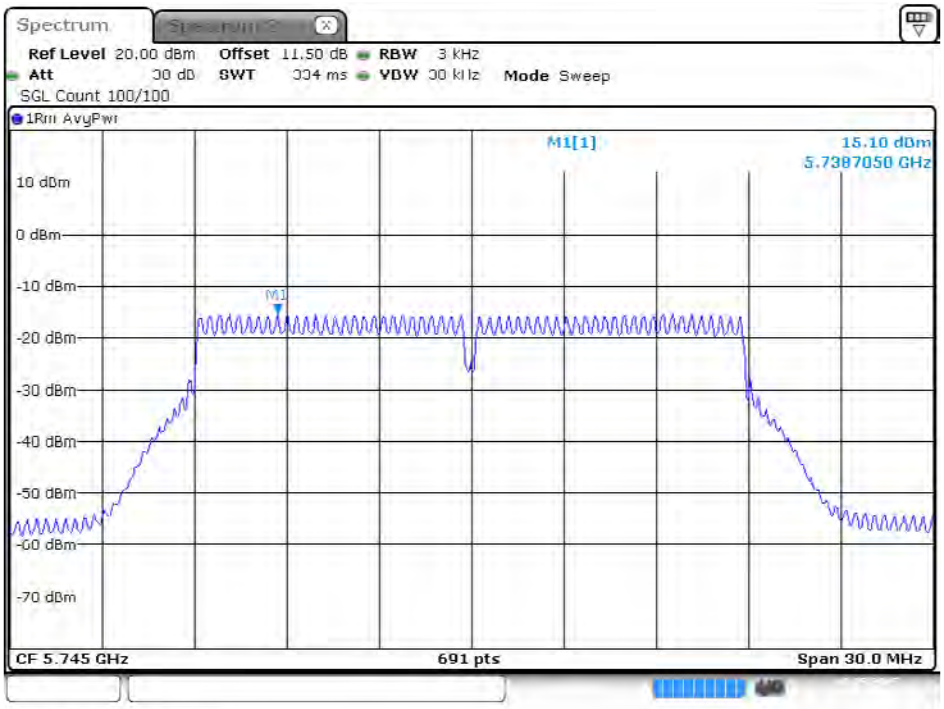
For 5GHz Band

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 1



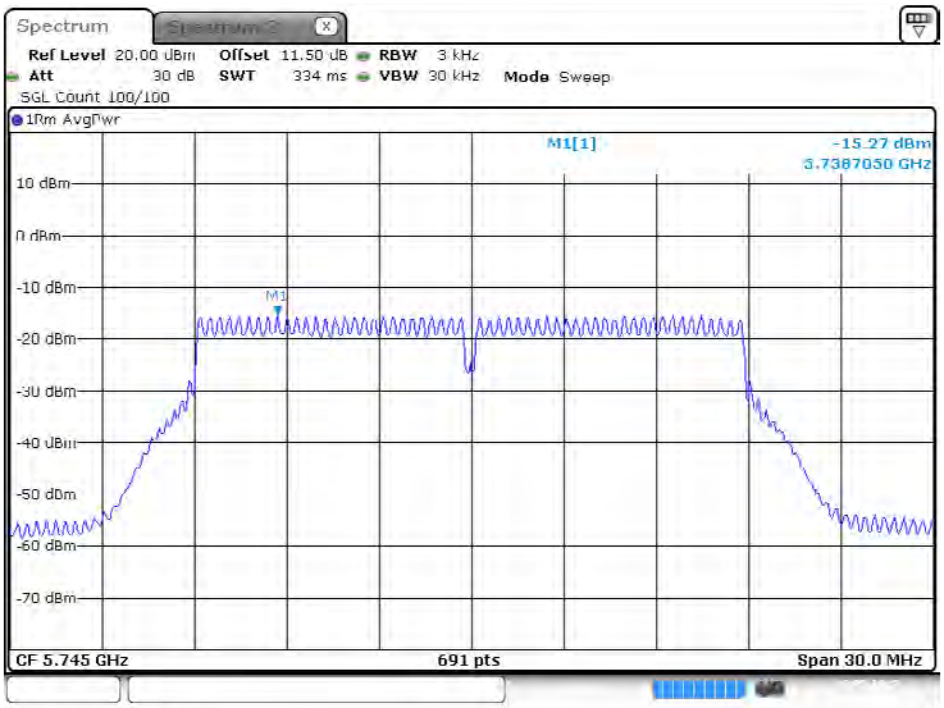
Date: 19.MAY.2015 21:26:36

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 2



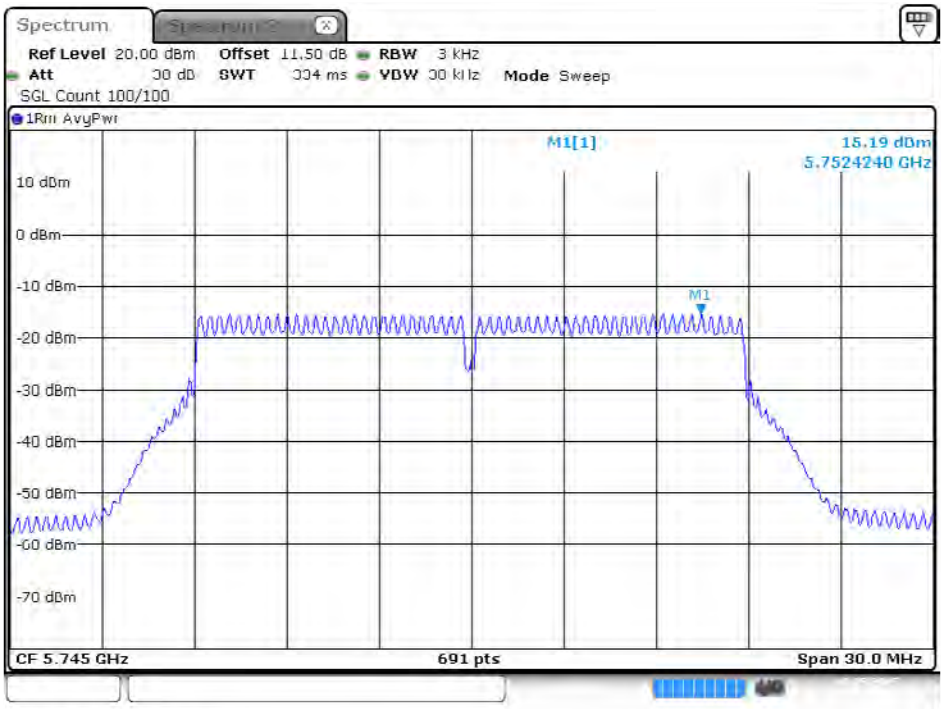
Date: 19.MAY.2015 21:27:37

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 3



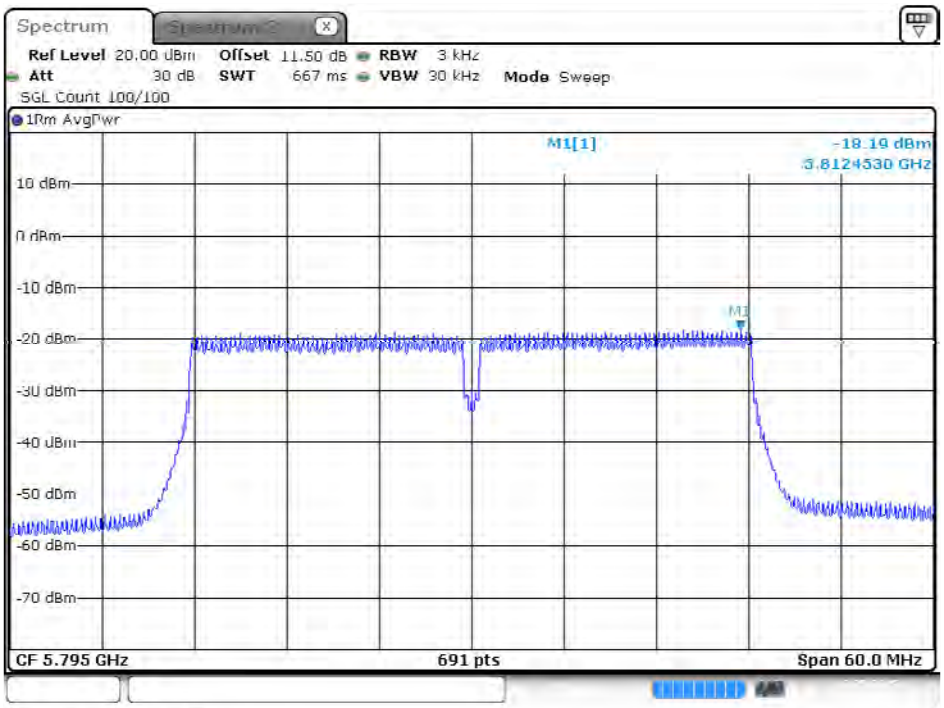
Date: 19.MAY.2015 21:28:49

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 4



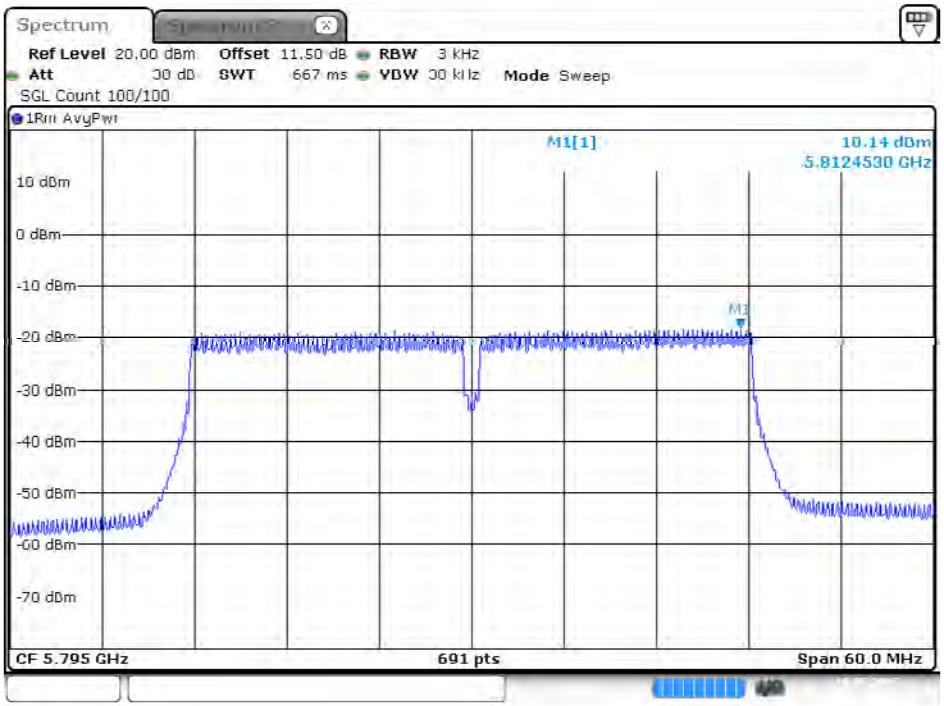
Date: 19.MAY.2015 21:30:30

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



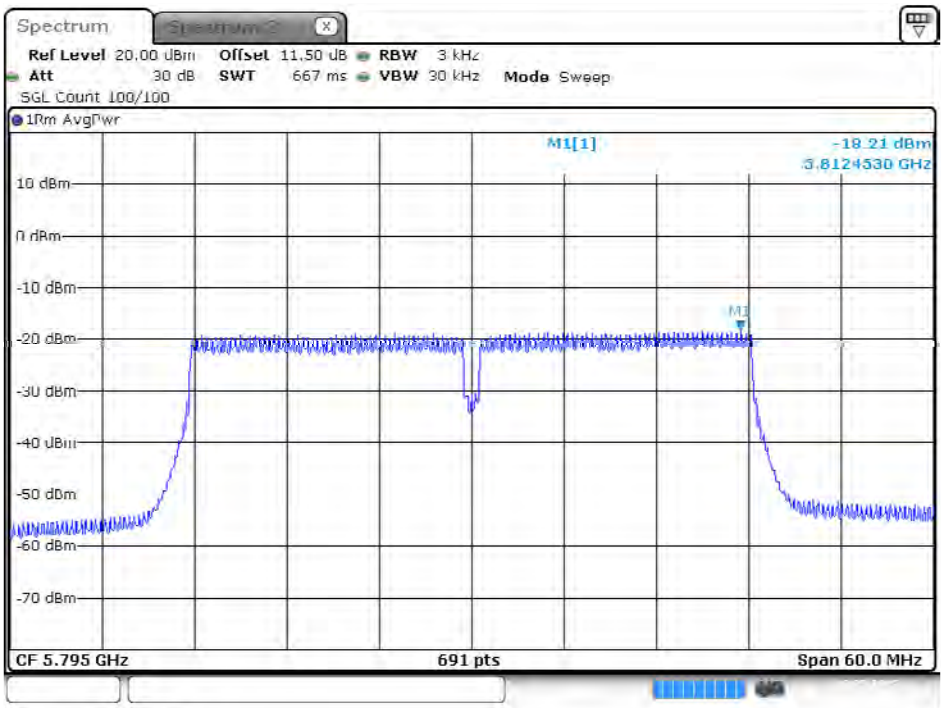
Date: 19.MAY.2015 21:52:30

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



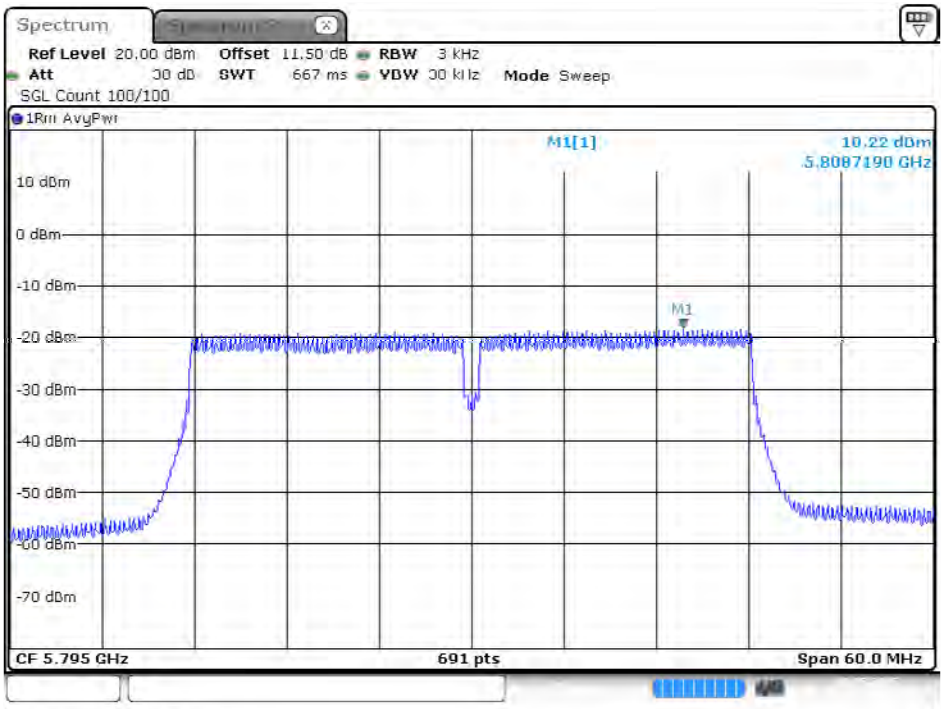
Date: 19.MAY.2015 21:54:02

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



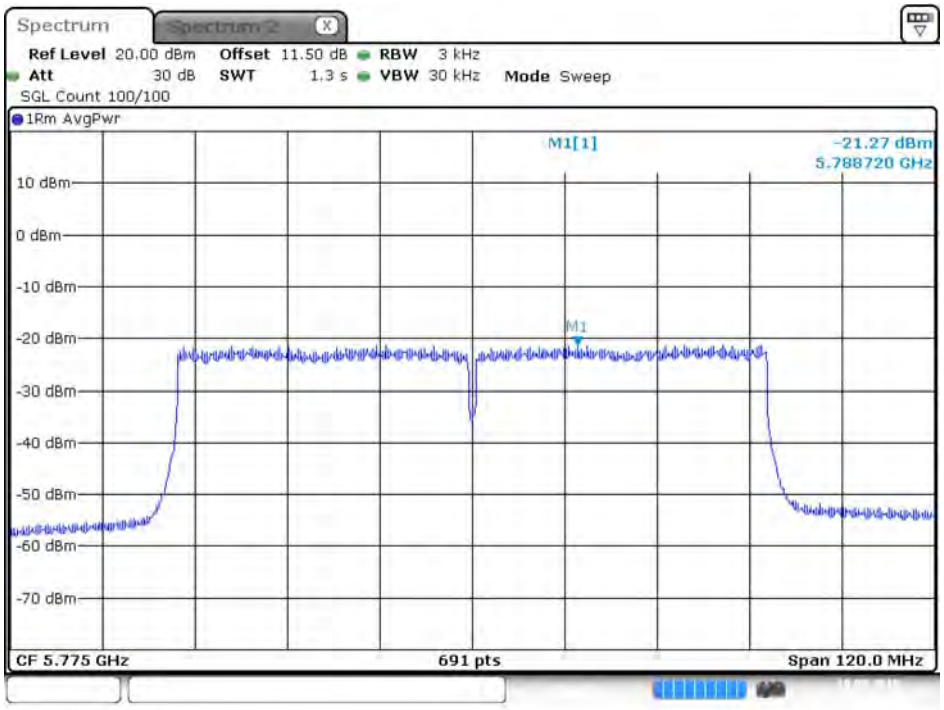
Date: 19.MAY.2015 21:55:29

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



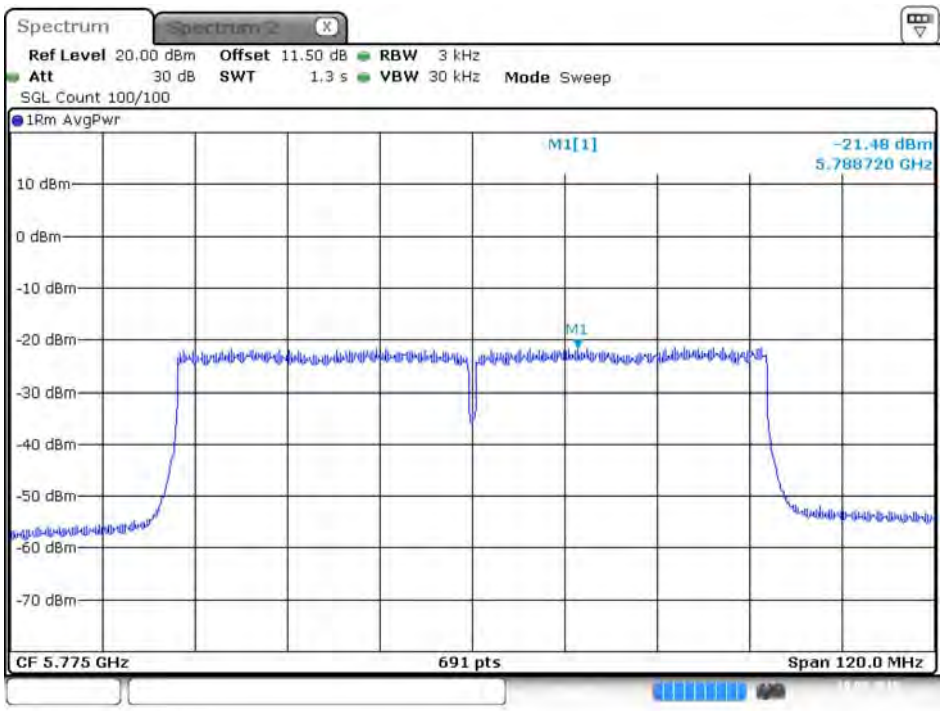
Date: 19.MAY.2015 22:03:25

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



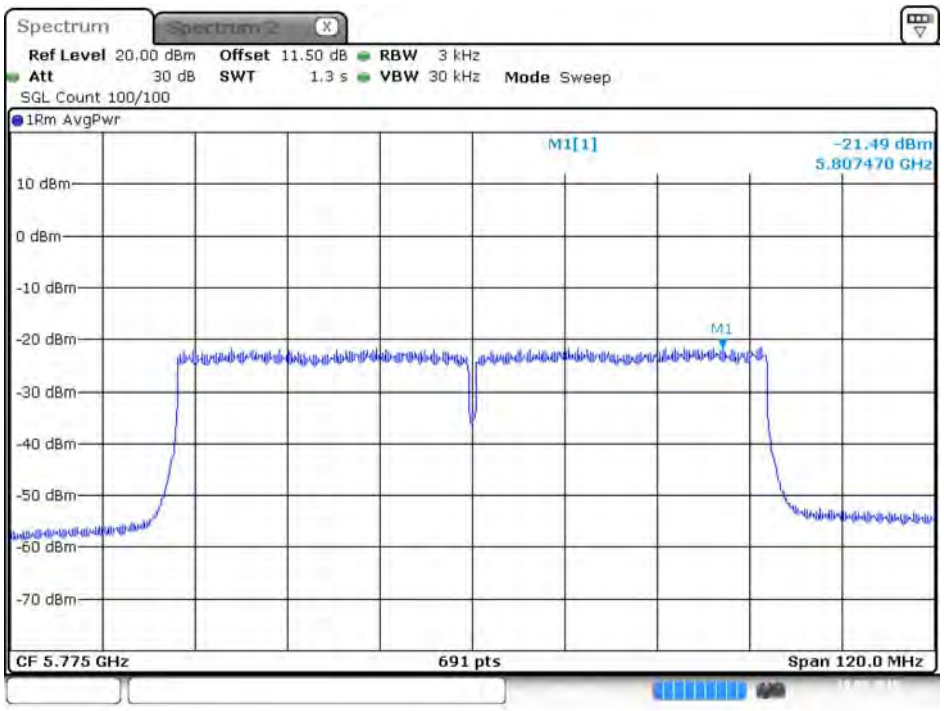
Date: 19.MAY.2015 22:07:38

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



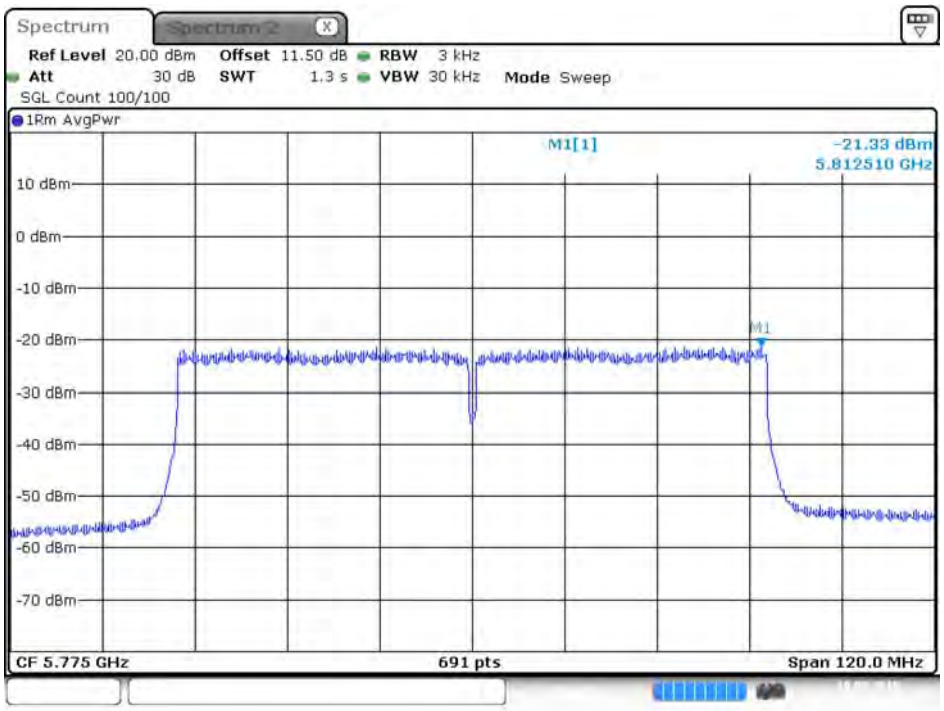
Date: 19.MAY.2015 22:12:37

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



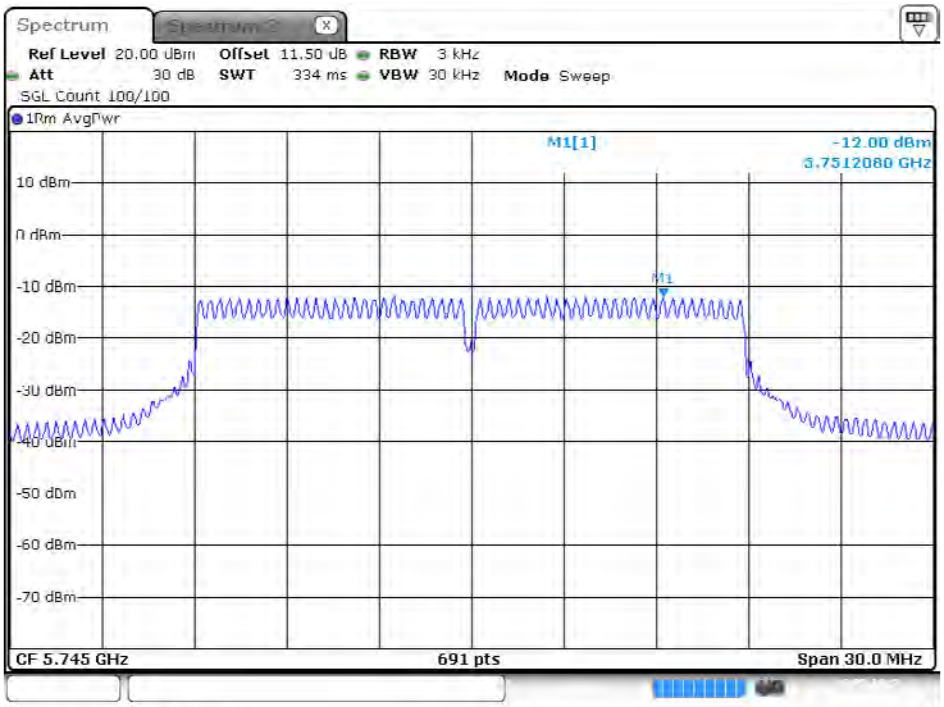
Date: 19.MAY.2015 22:19:21

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



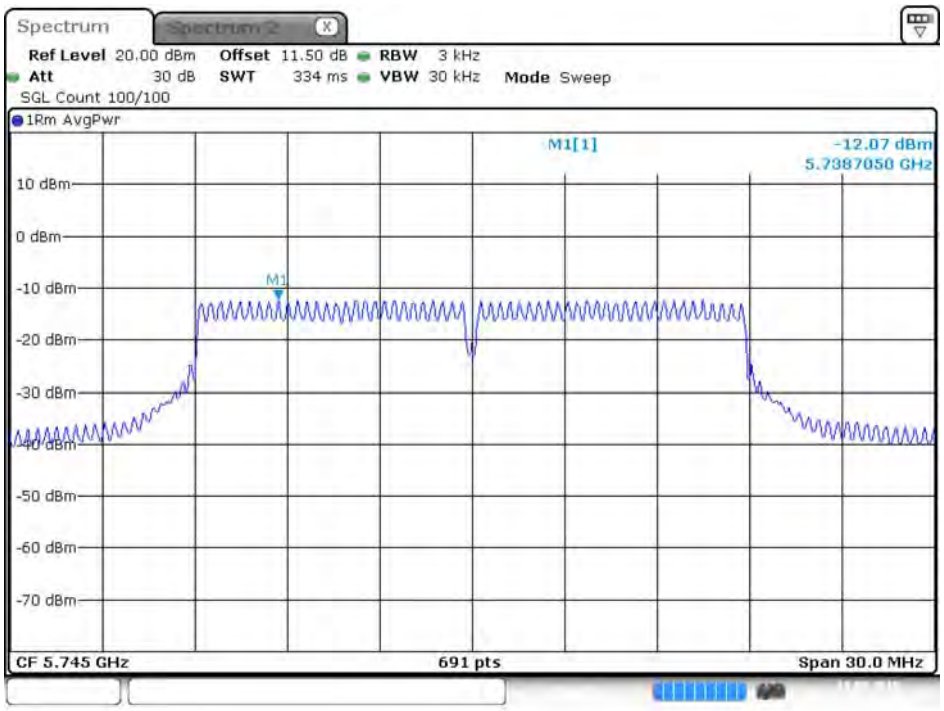
Date: 19.MAY.2015 22:28:32

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 5745 MHz / Chain 1



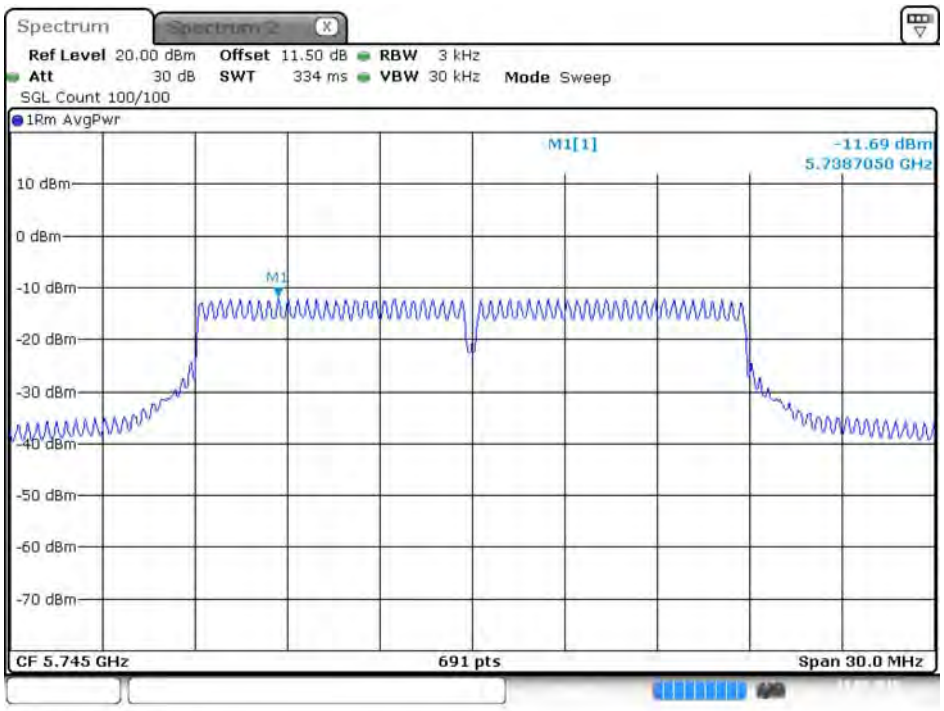
Date: 19.MAY.2015 22:43:23

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 5745 MHz / Chain 2



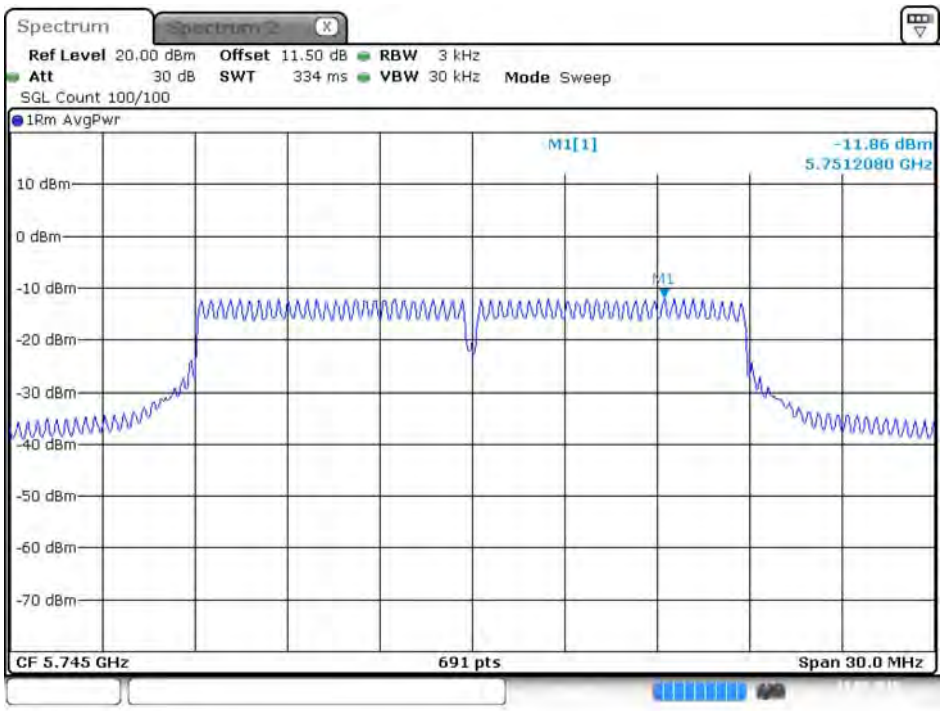
Date: 19.MAY.2015 22:44:43

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 5745 MHz / Chain 3



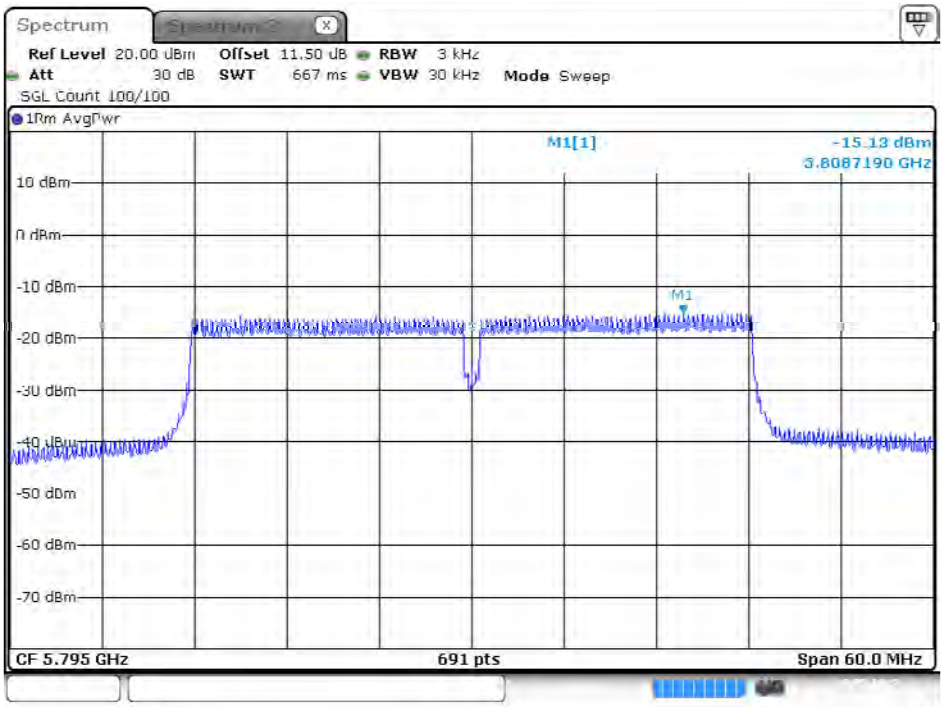
Date: 19.MAY.2015 22:48:03

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 5745 MHz / Chain 4



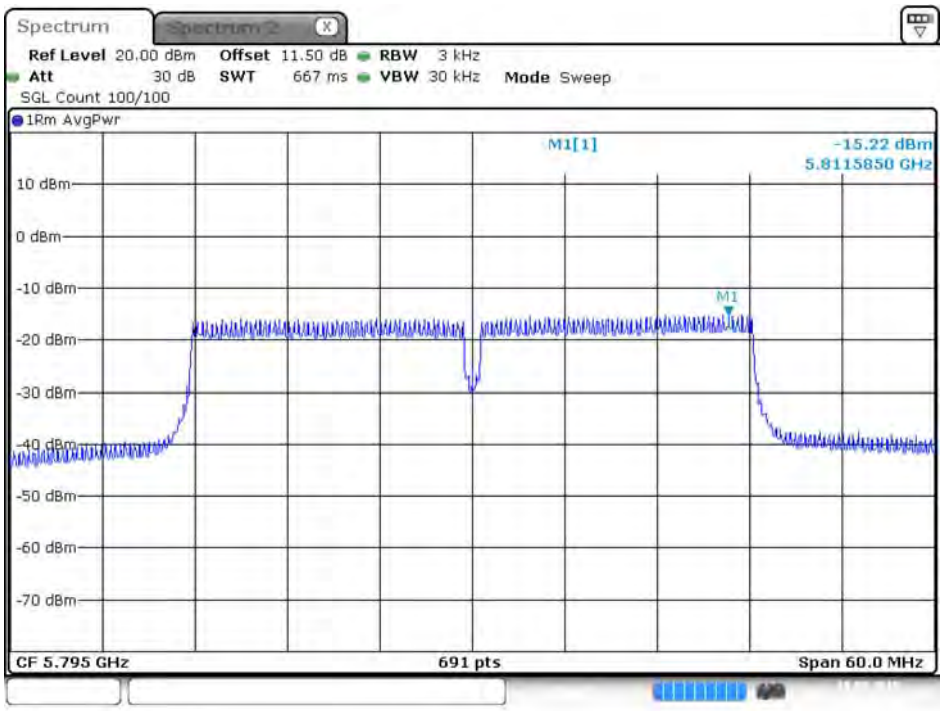
Date: 19.MAY.2015 22:49:38

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



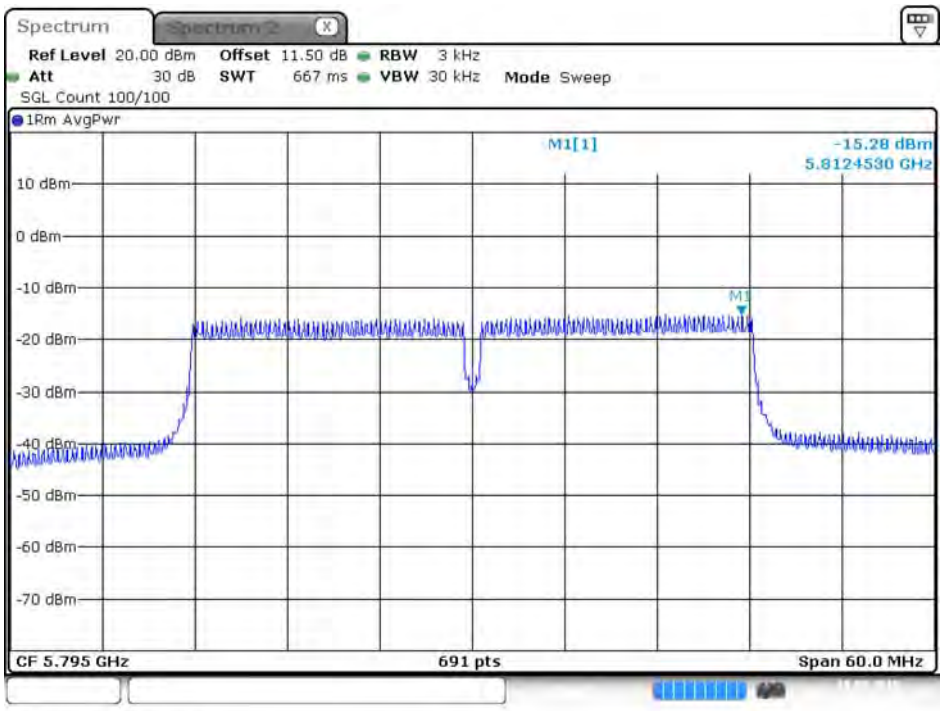
Date: 19.MAY.2015 23:17:57

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



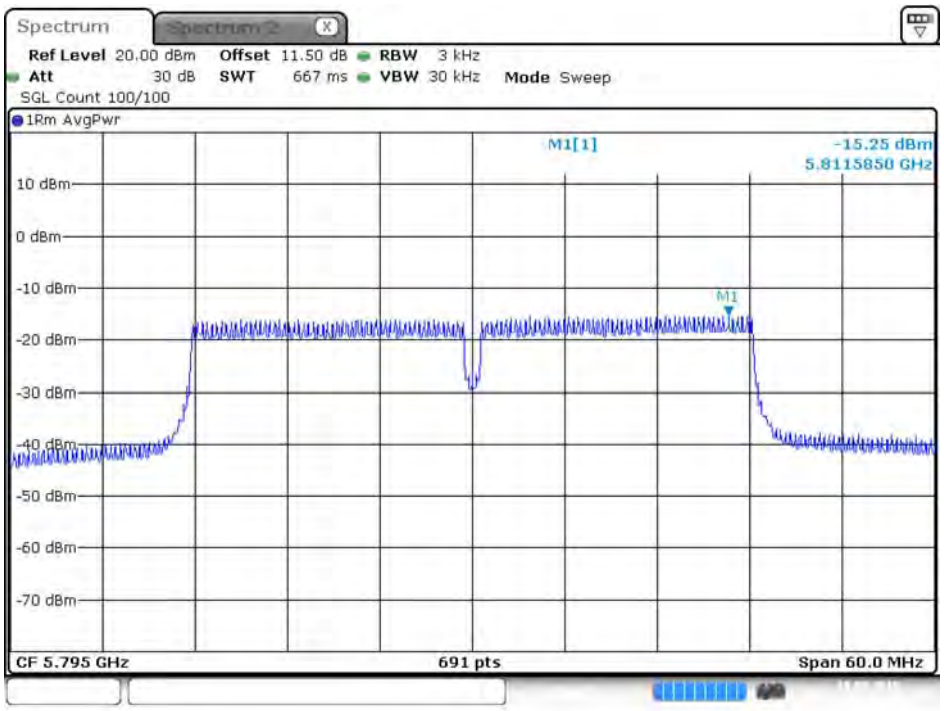
Date: 19.MAY.2015 23:19:42

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



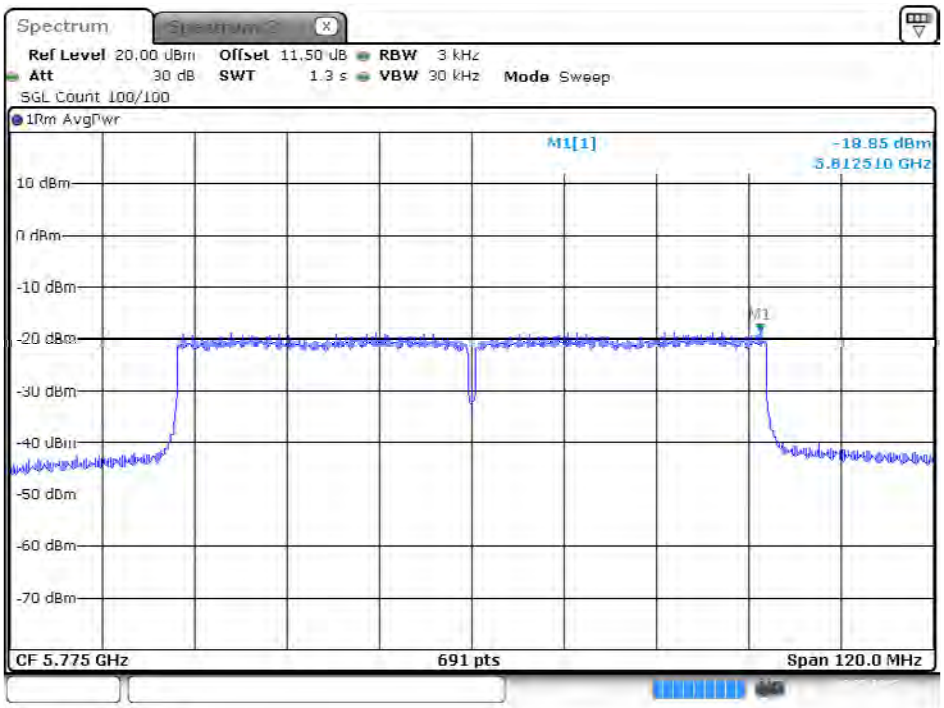
Date: 19.MAY.2015 23:21:45

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



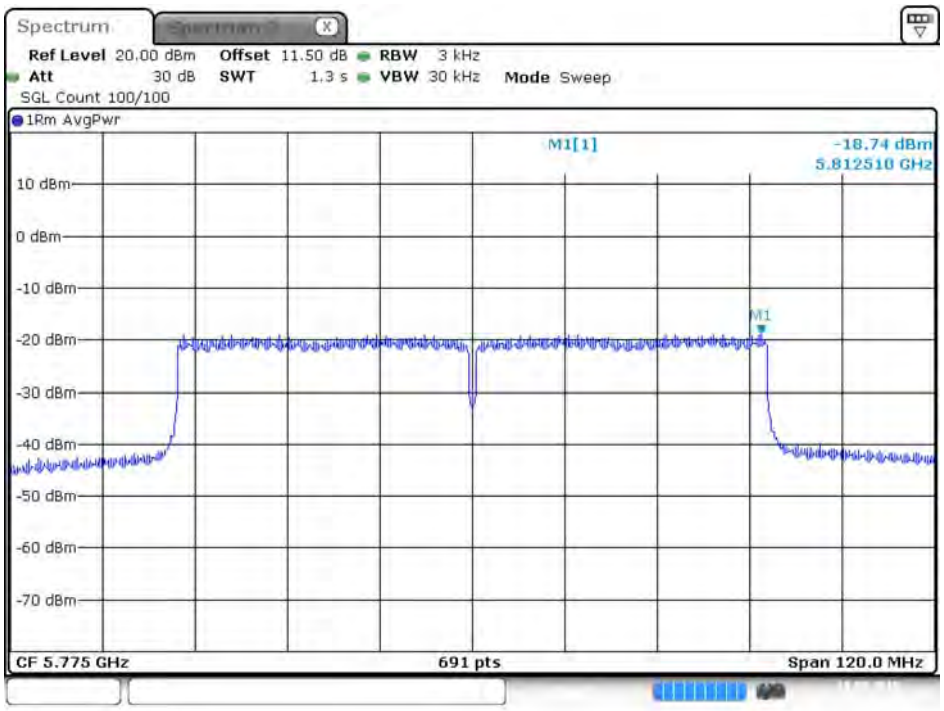
Date: 19.MAY.2015 23:23:36

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



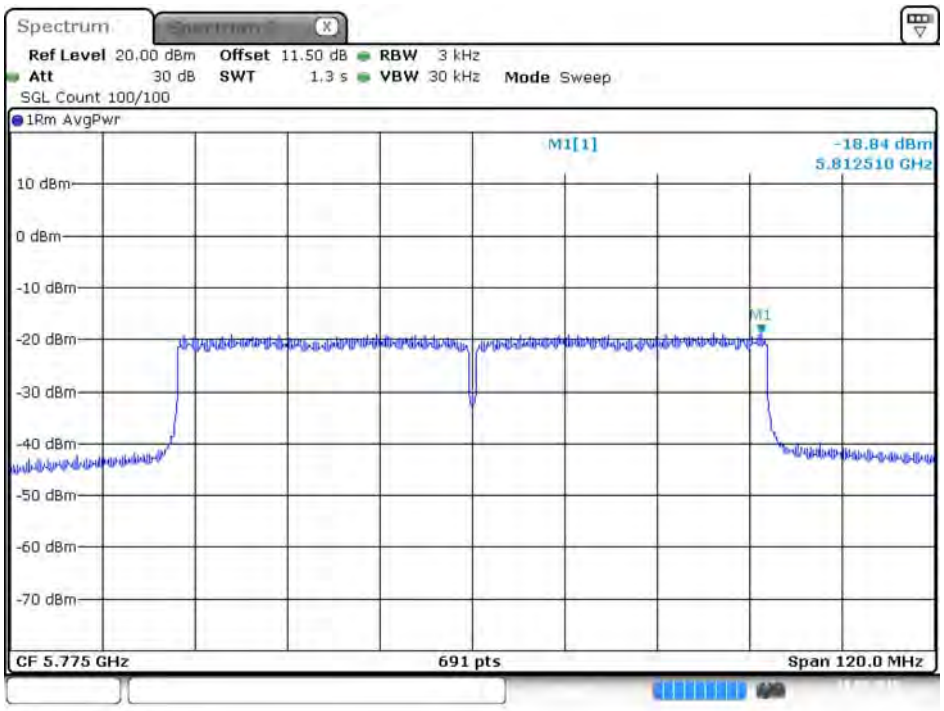
Date: 19.MAY.2015 23:30:01

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



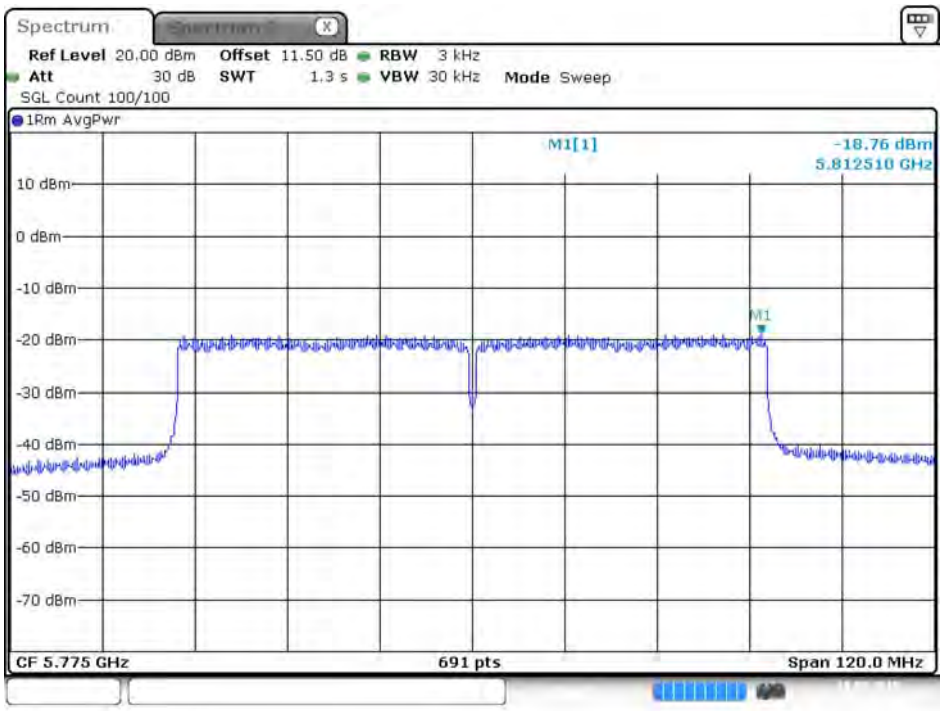
Date: 19.MAY.2015 23:35:28

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



Date: 19.MAY.2015 23:38:23

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



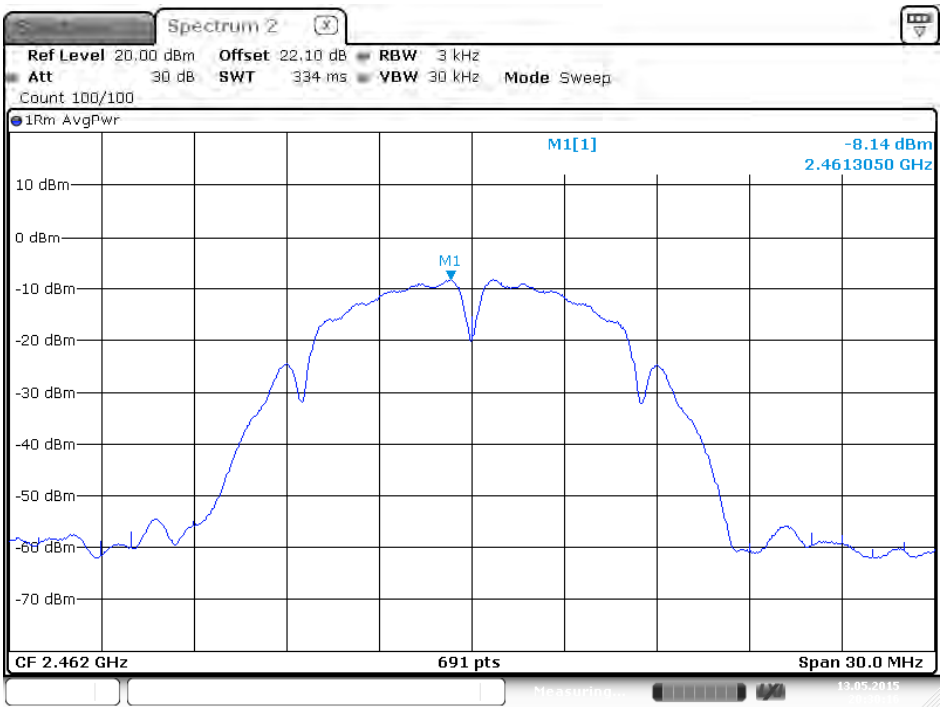
Date: 19.MAY.2015 23:46:04

EUT: Version 2

For non-beamforming function:

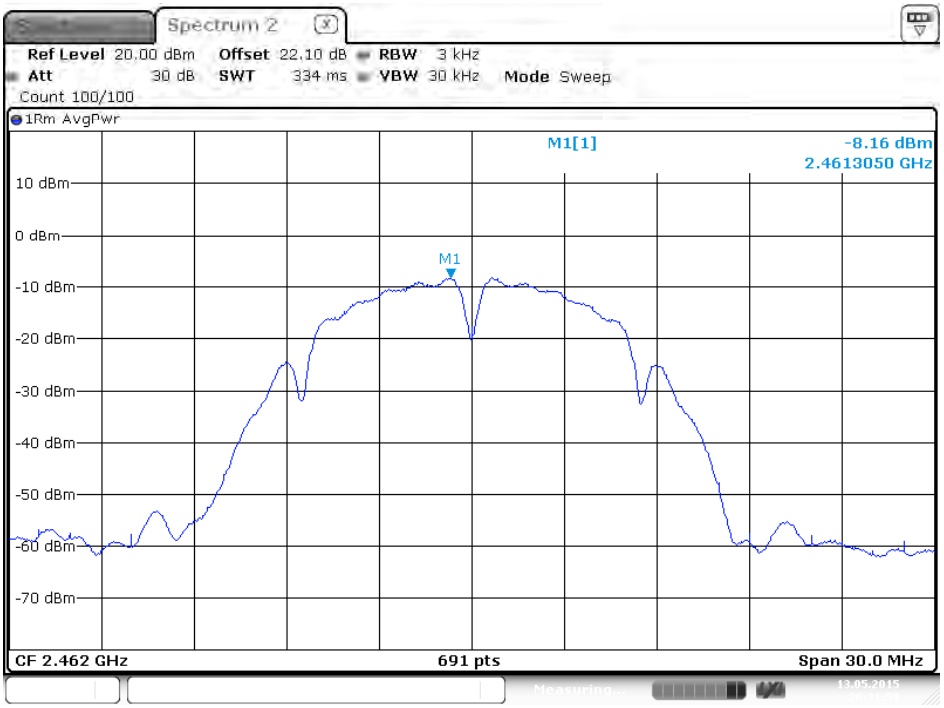
For 2.4GHz Band

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 1



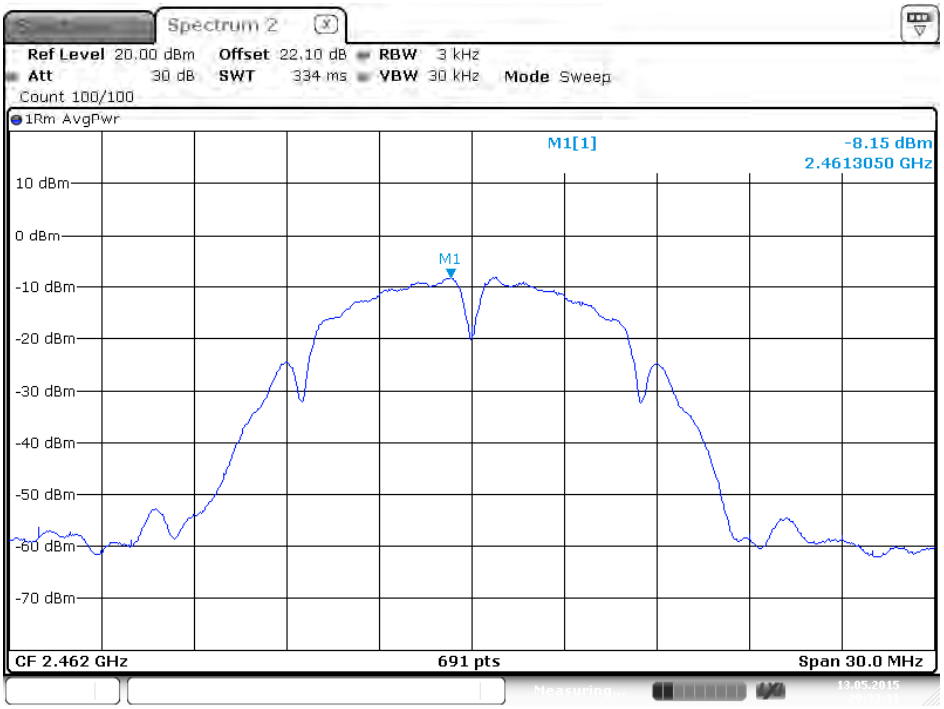
Date:13MAY.2015 20:30:16

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 2



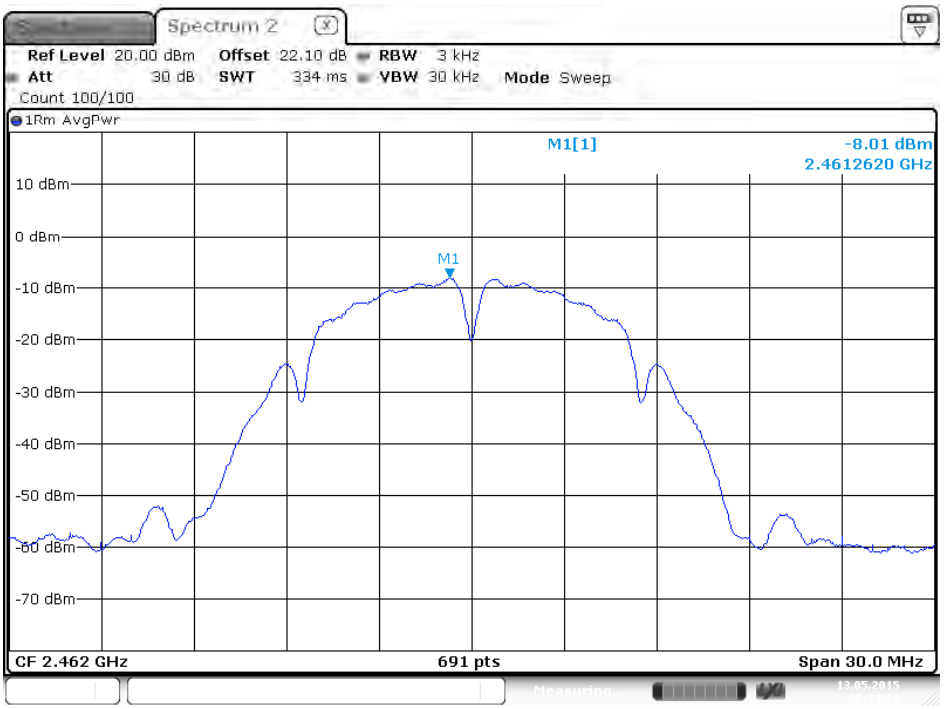
Date:13MAY.2015 20:31:59

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 3



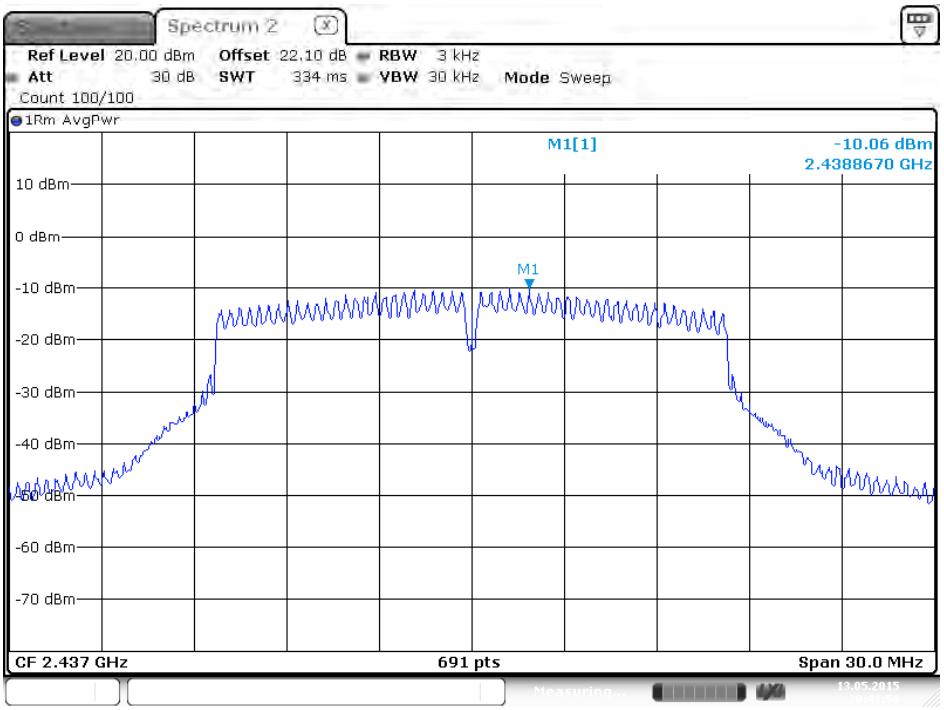
Date:13.MAY.2015 20:33:11

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 4



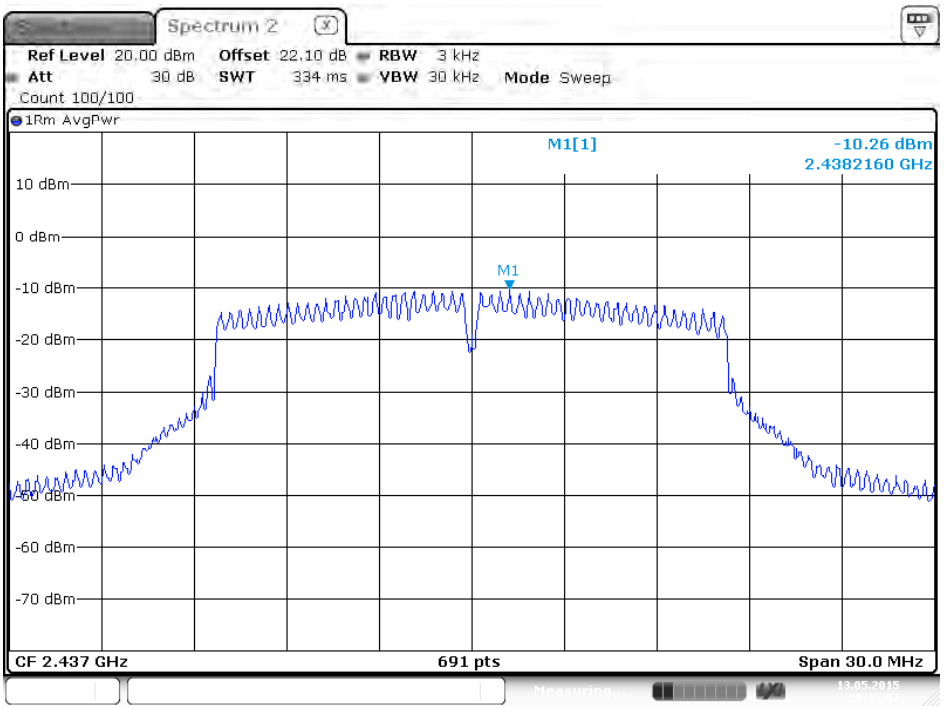
Date:13.MAY.2015 20:34:16

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 1



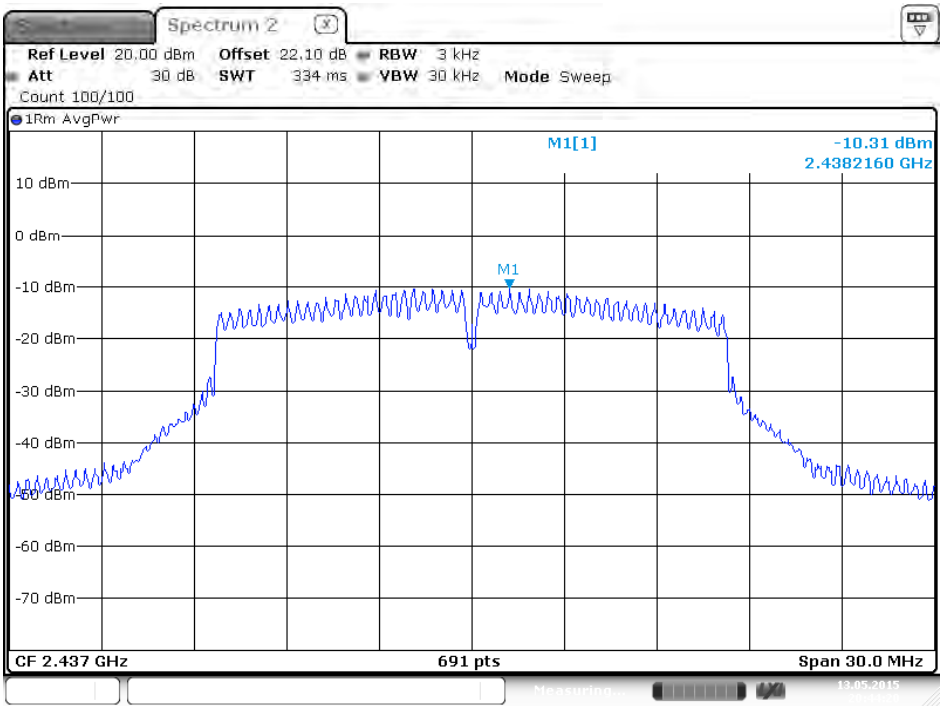
Date:13.MAY.2015 20:41:50

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 2



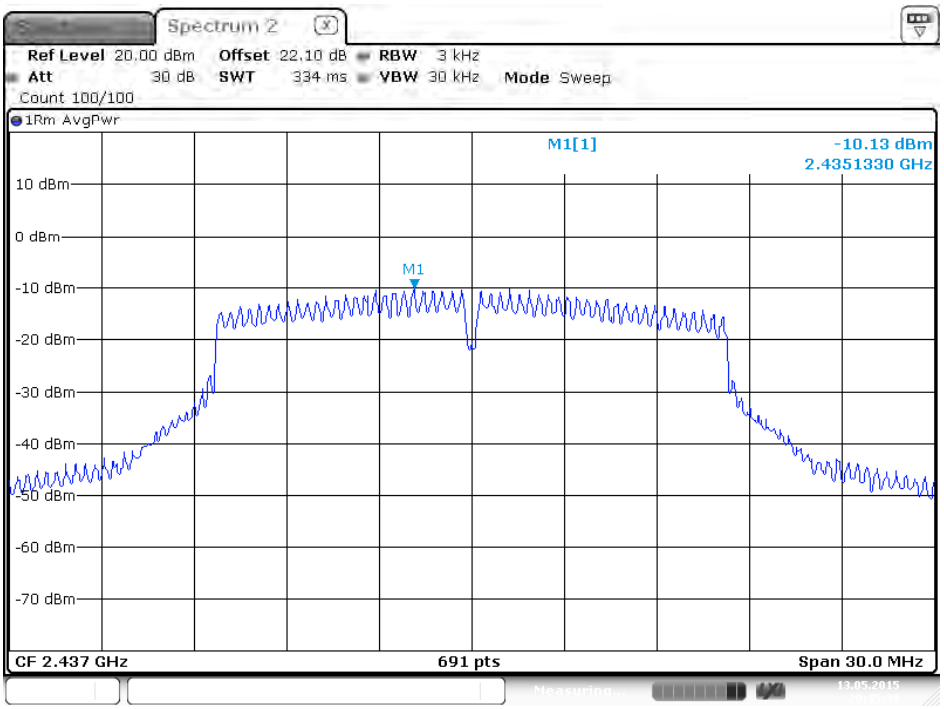
Date:13.MAY.2015 20:43:08

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 3



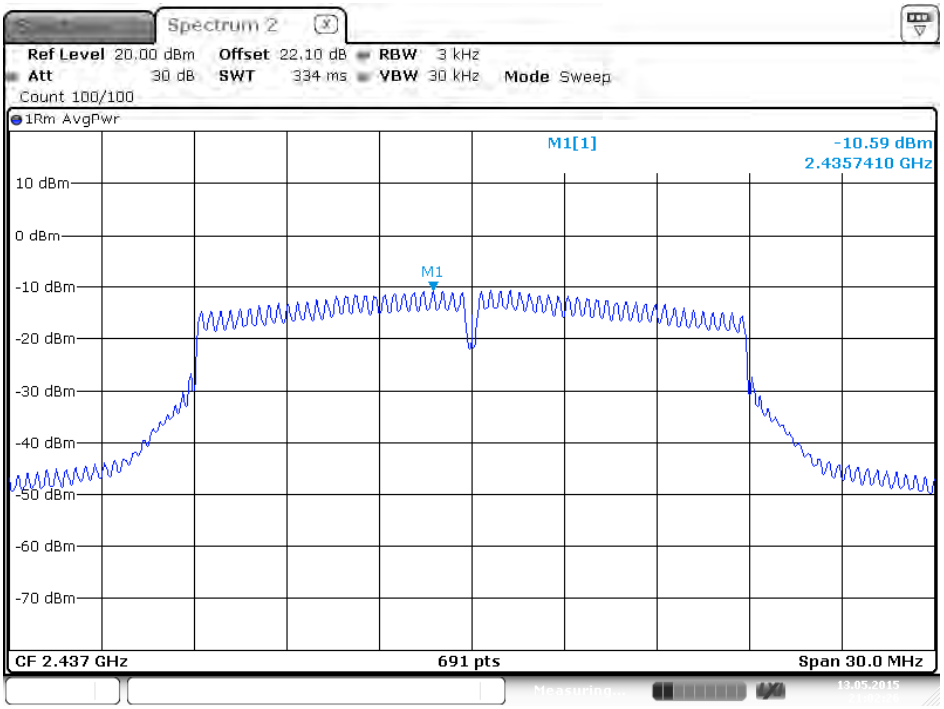
Date:13.MAY.2015 20:44:21

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 4



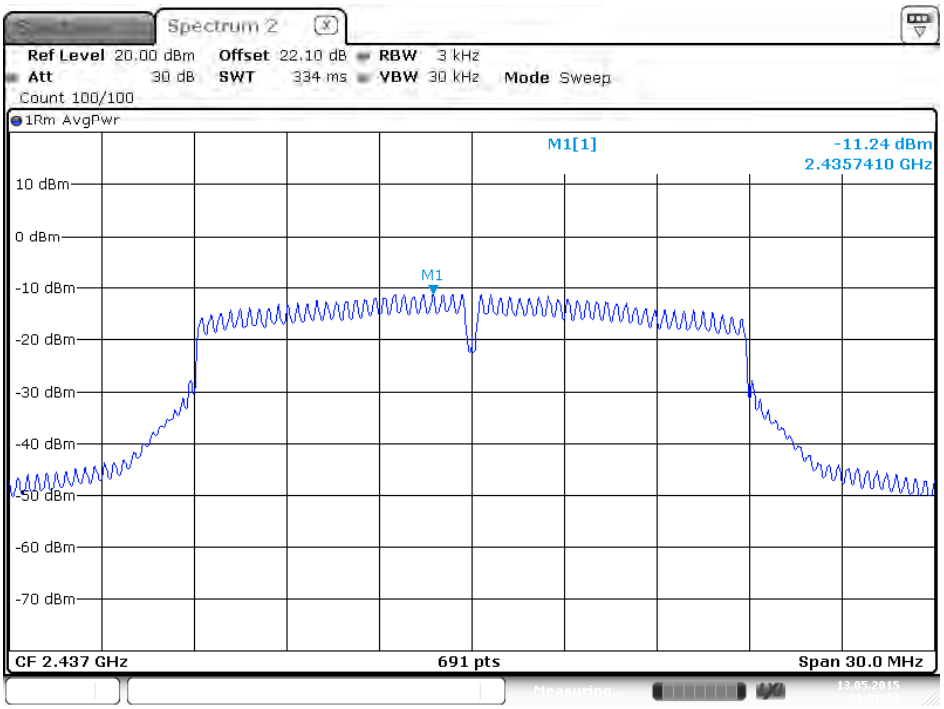
Date:13.MAY.2015 20:45:40

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1



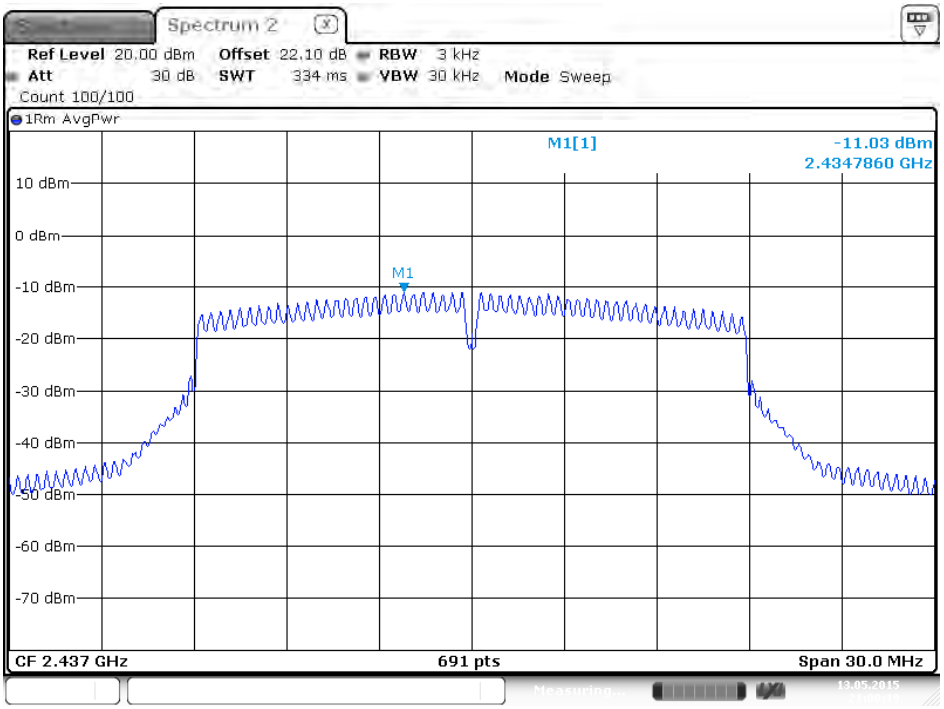
Date:13.MAY.2015 21:02:26

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 2



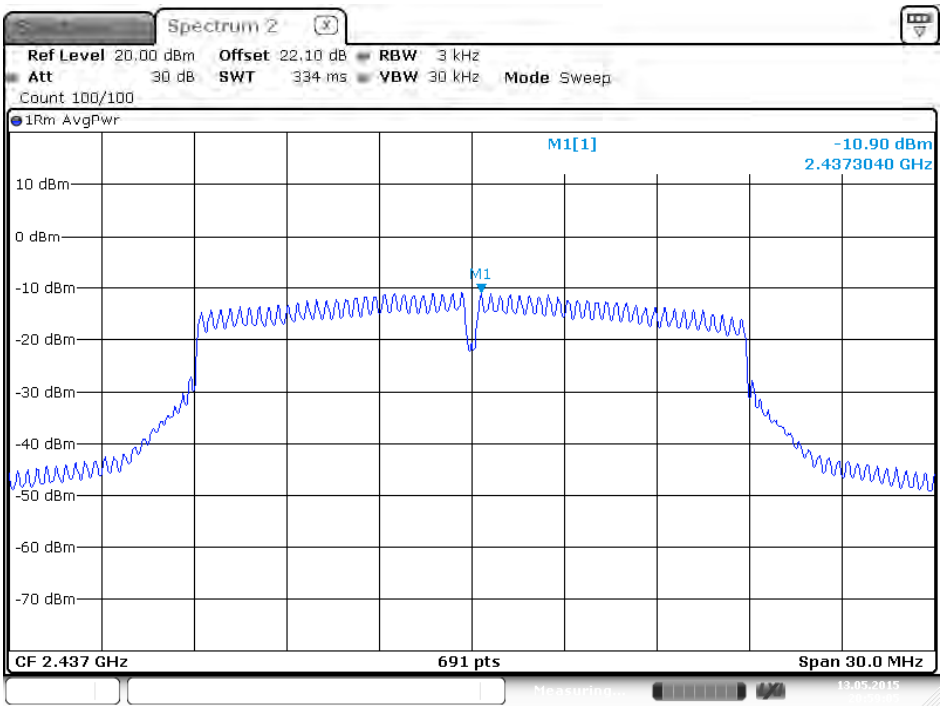
Date:13.MAY.2015 21:01:24

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 3



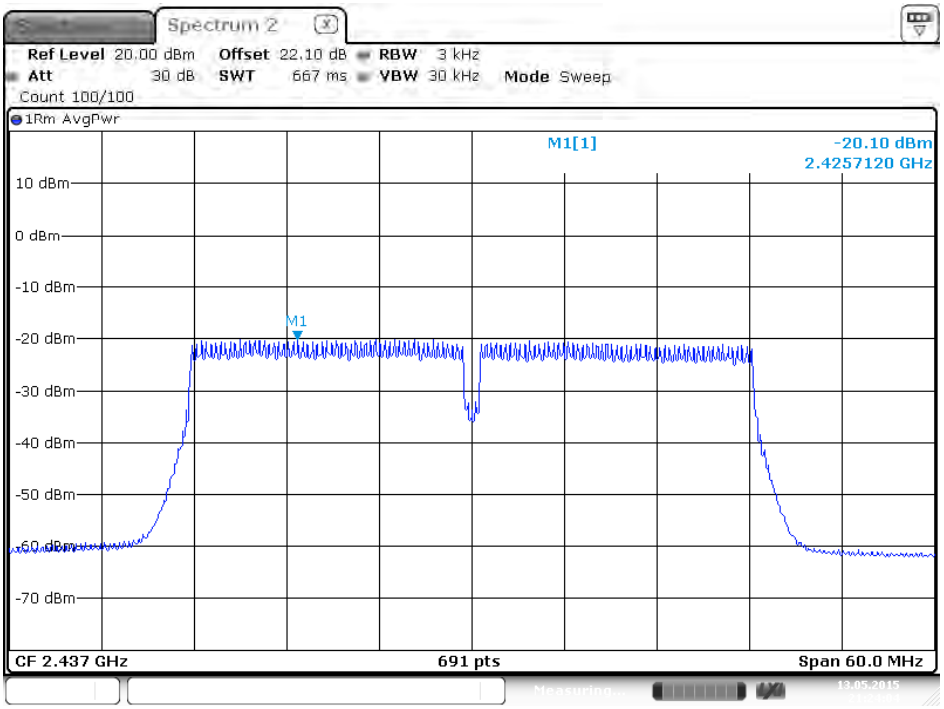
Date:13.MAY.2015 21:00:19

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 4



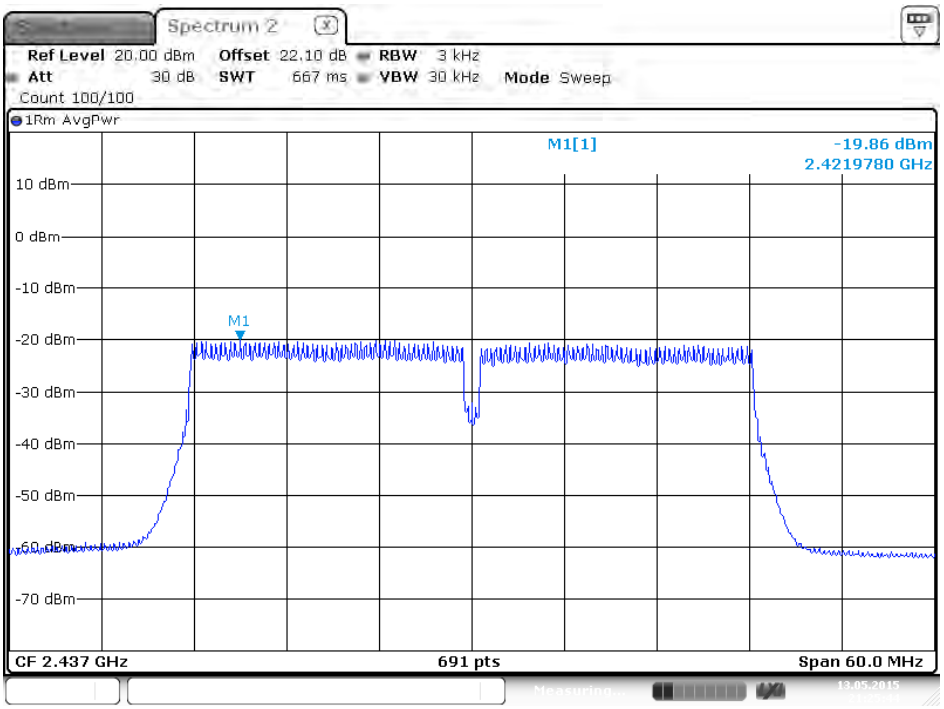
Date:13.MAY.2015 20:59:05

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1



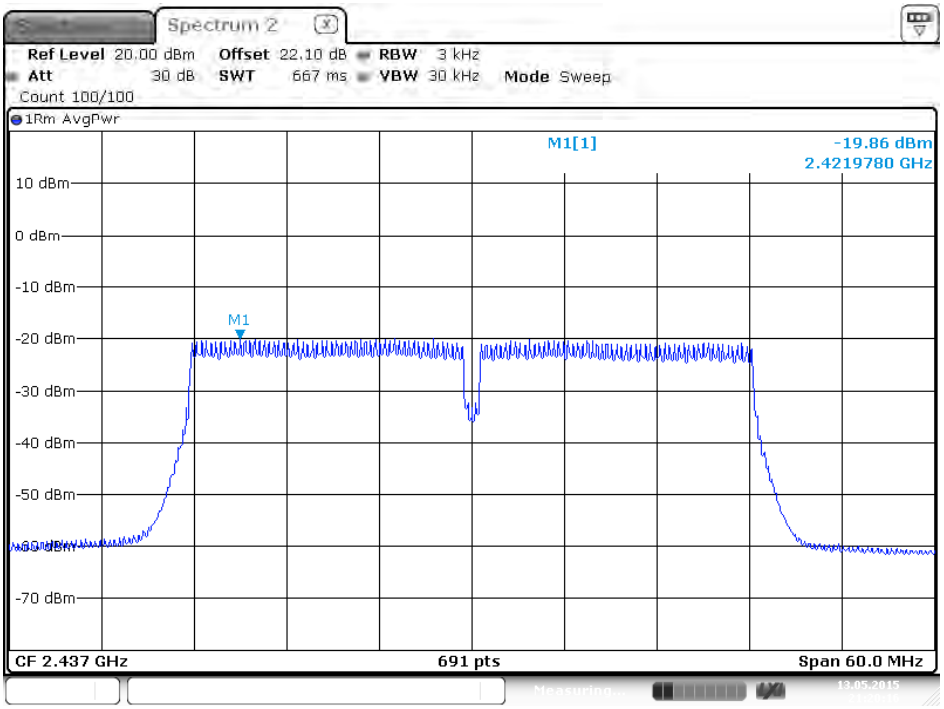
Date:13.MAY.2015 21:24:04

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 2



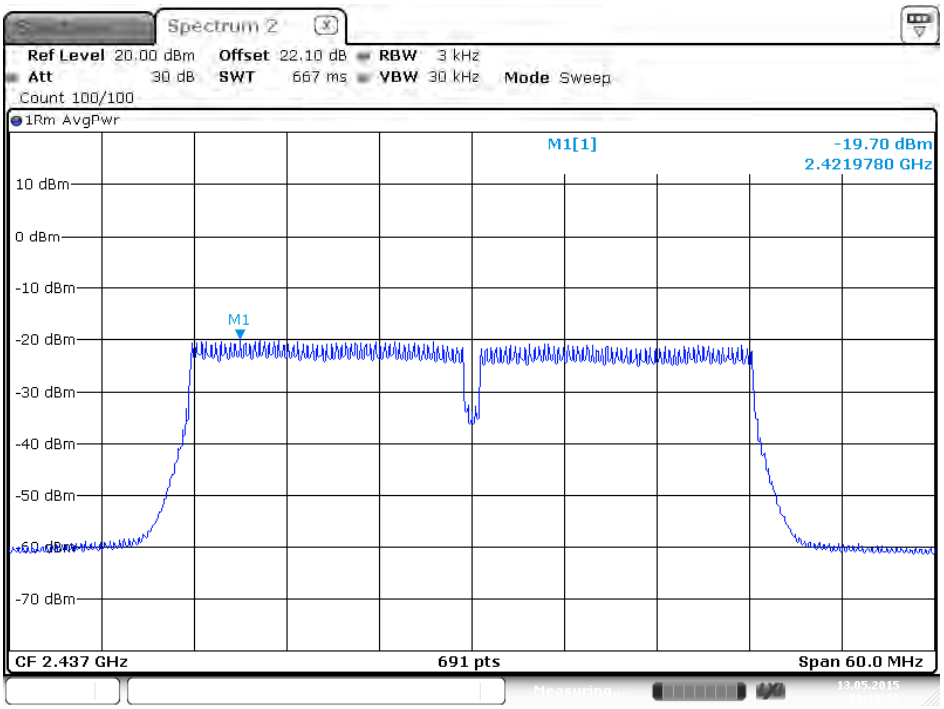
Date:13.MAY.2015 21:25:44

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 3



Date:13.MAY.2015 21:20:16

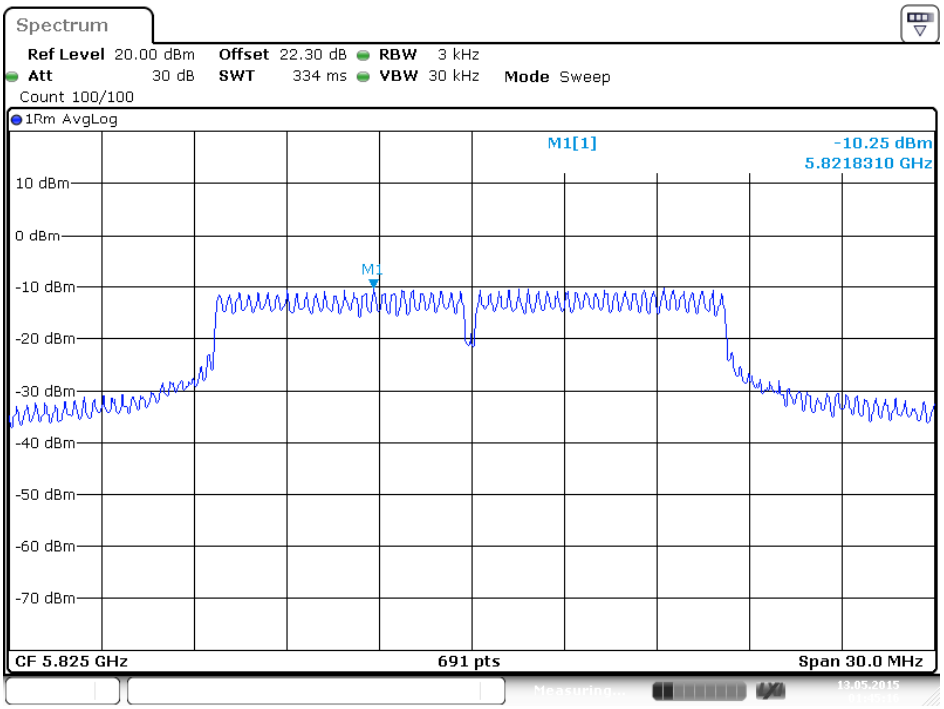
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 4



Date:13.MAY.2015 21:18:21

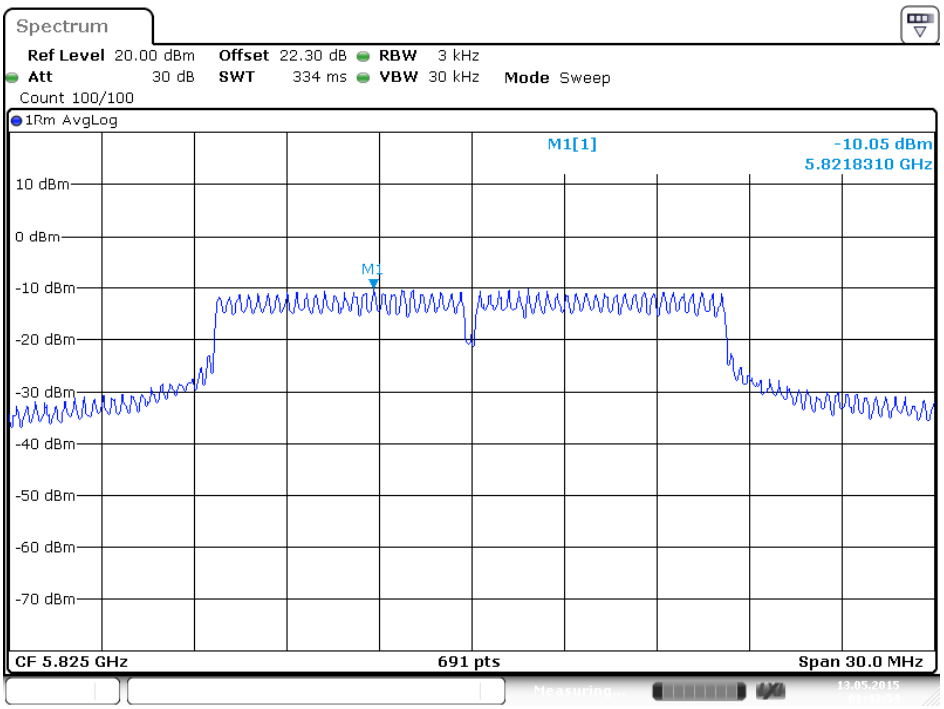
For 5GHz Band

Power Density Plot on Configuration IEEE 802.11a / 5825 MHz / Chain 1



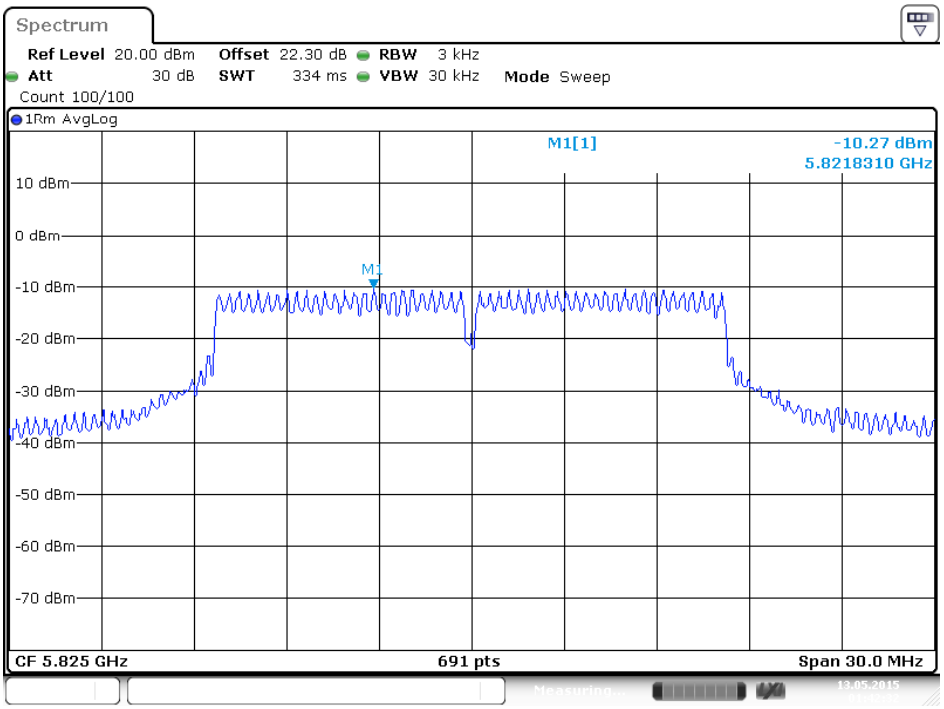
Date:13.MAY.2015 01:45:17

Power Density Plot on Configuration IEEE 802.11a / 5825 MHz / Chain 2



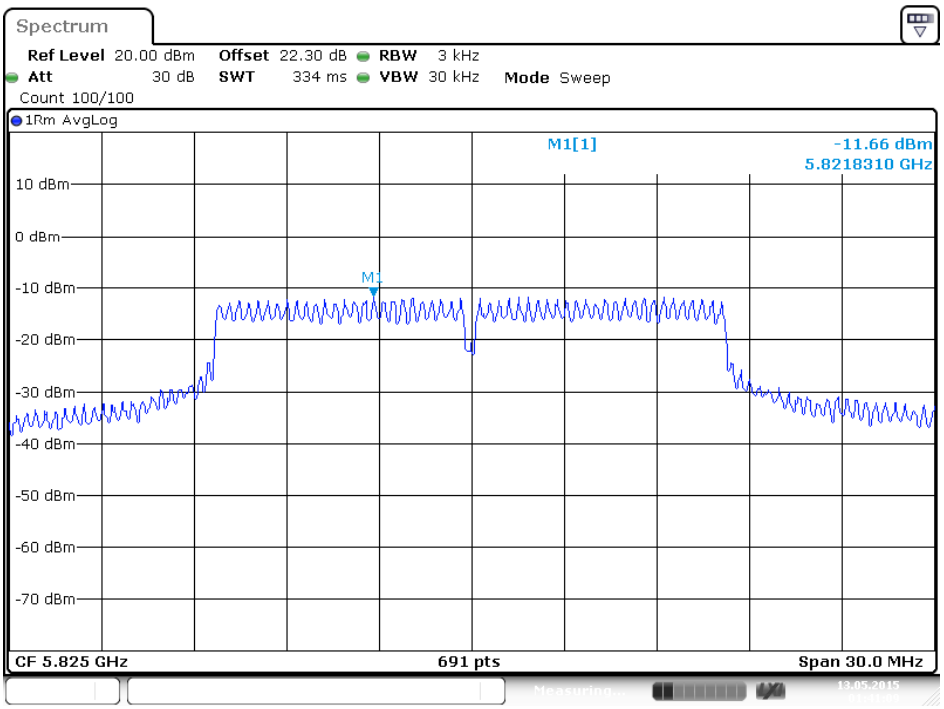
Date:13.MAY.2015 01:43:54

Power Density Plot on Configuration IEEE 802.11a / 5825 MHz / Chain 3



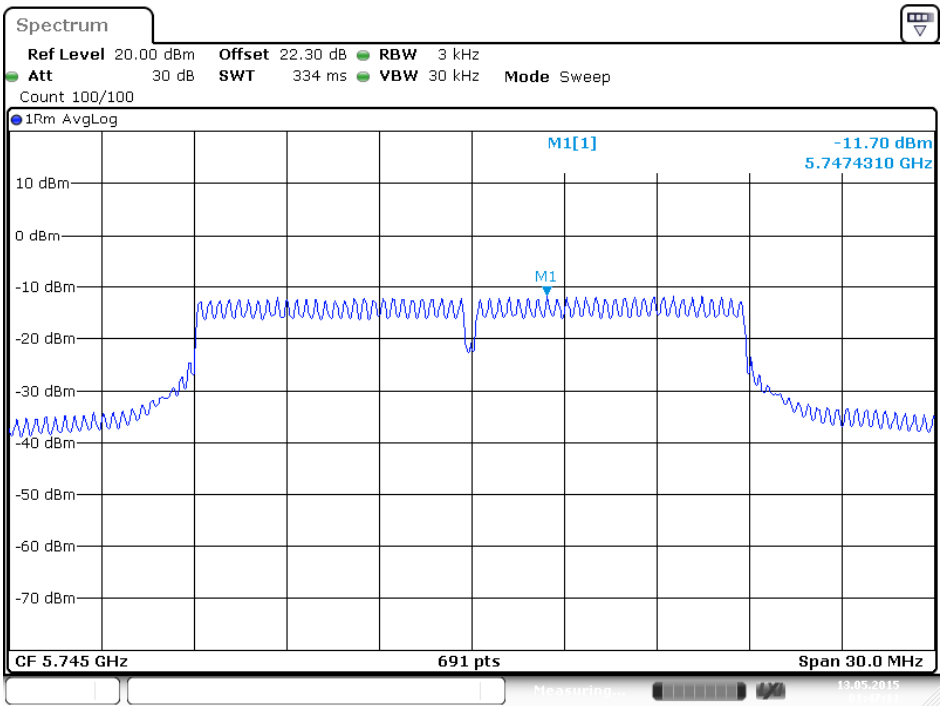
Date:13.MAY.2015 01:42:32

Power Density Plot on Configuration IEEE 802.11a / 5825 MHz / Chain 4



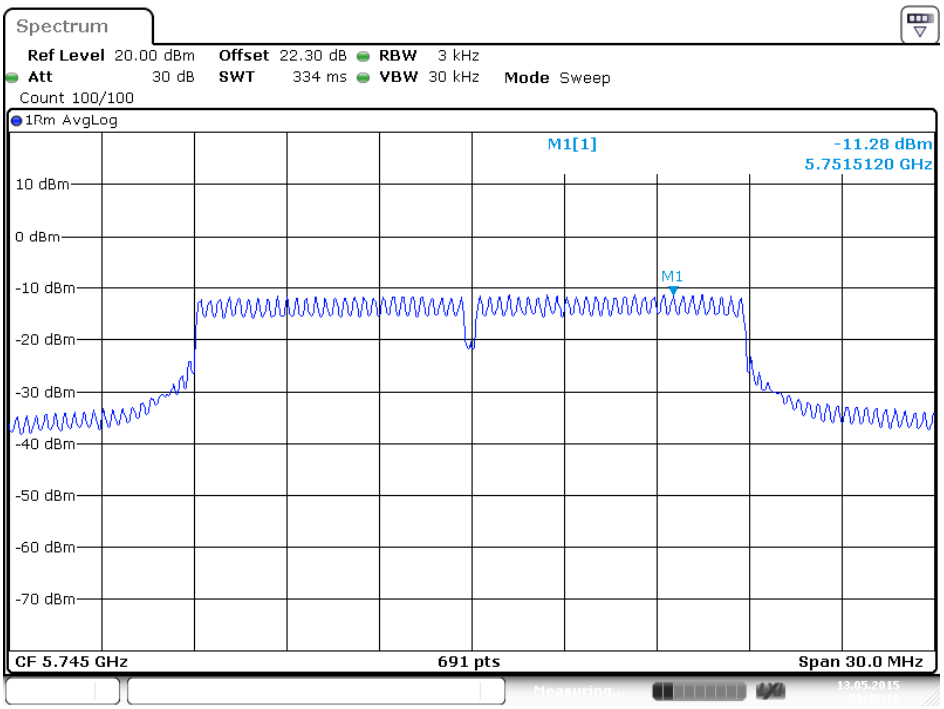
Date:13.MAY.2015 01:41:09

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 1



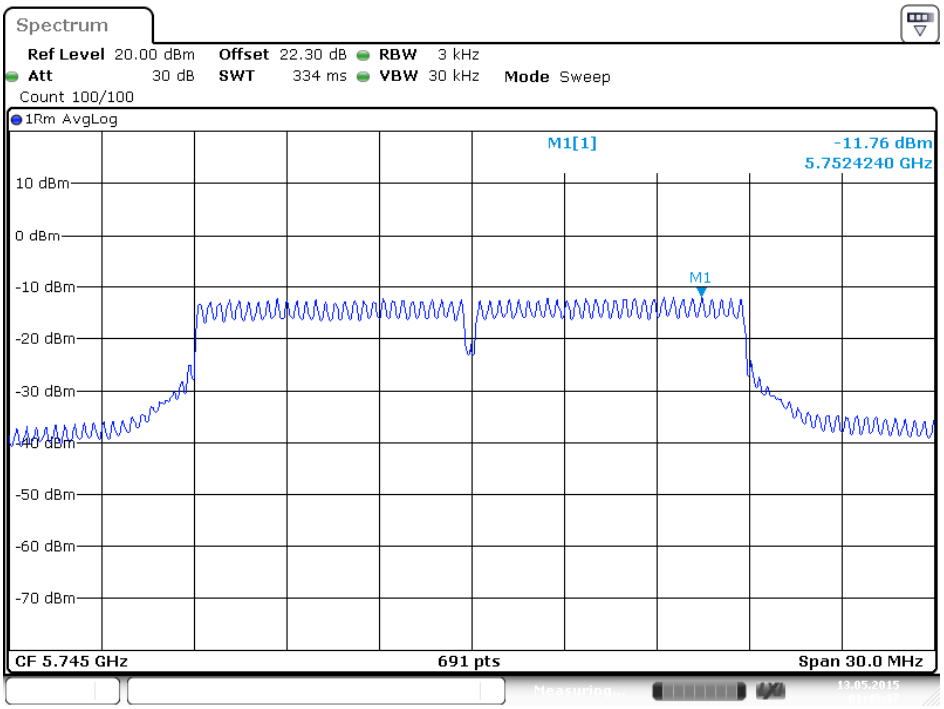
Date:13.MAY.2015 01:47:11

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 2



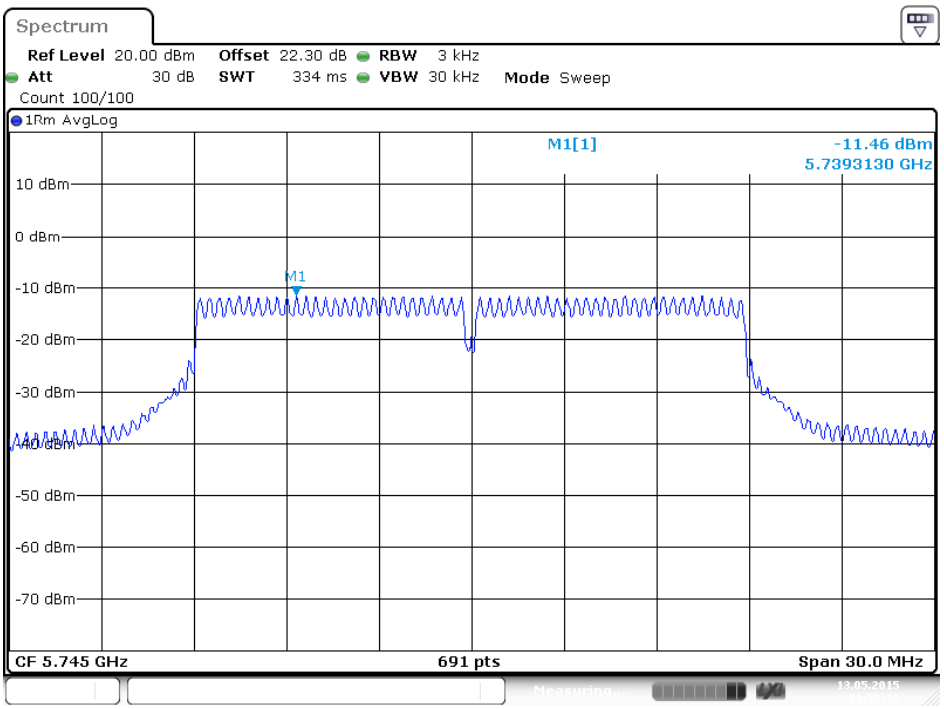
Date:13.MAY.2015 01:48:17

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 3



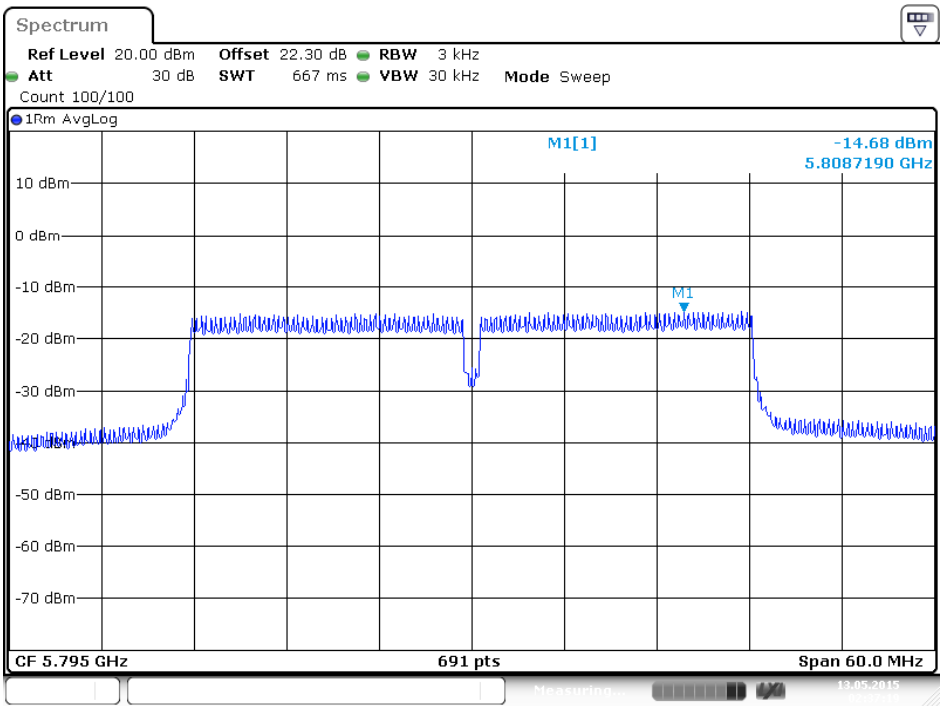
Date:13.MAY.2015 01:49:18

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 4



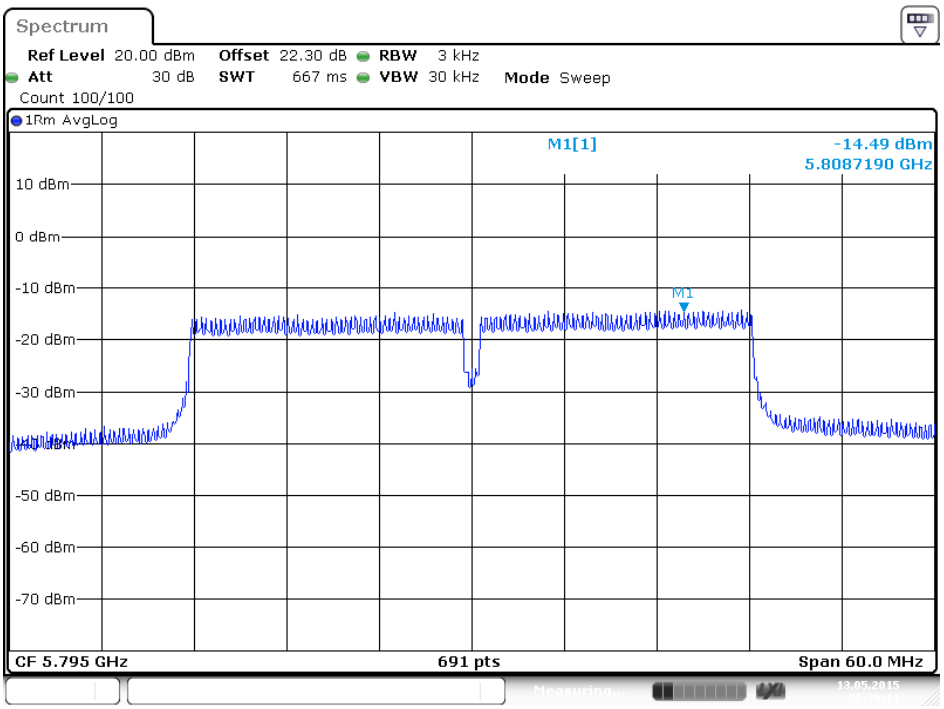
Date:13.MAY.2015 01:50:38

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



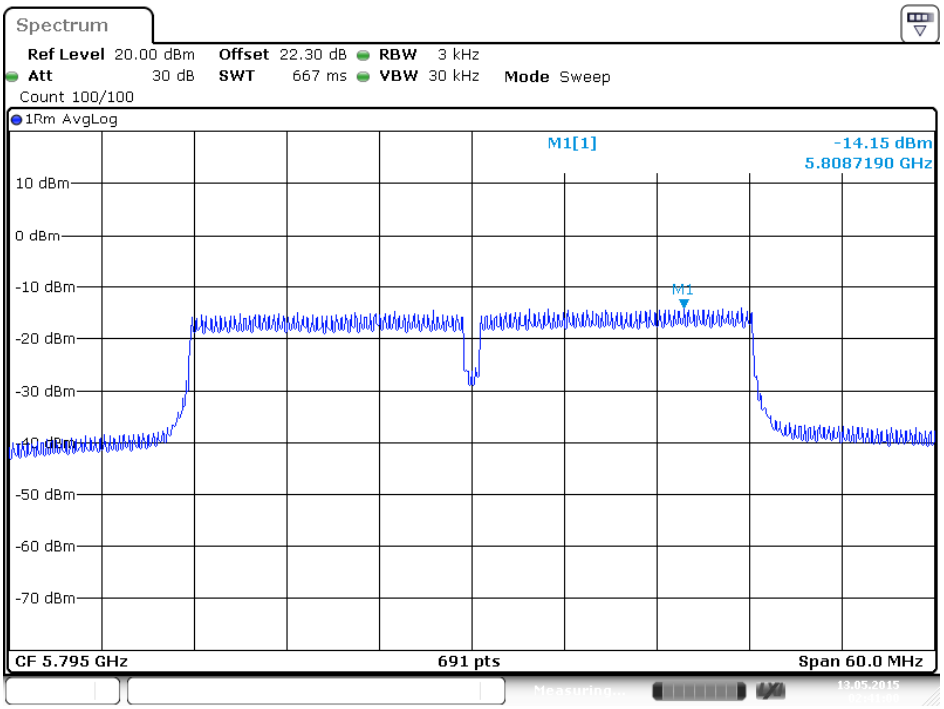
Date:13.MAY.2015 02:37:19

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



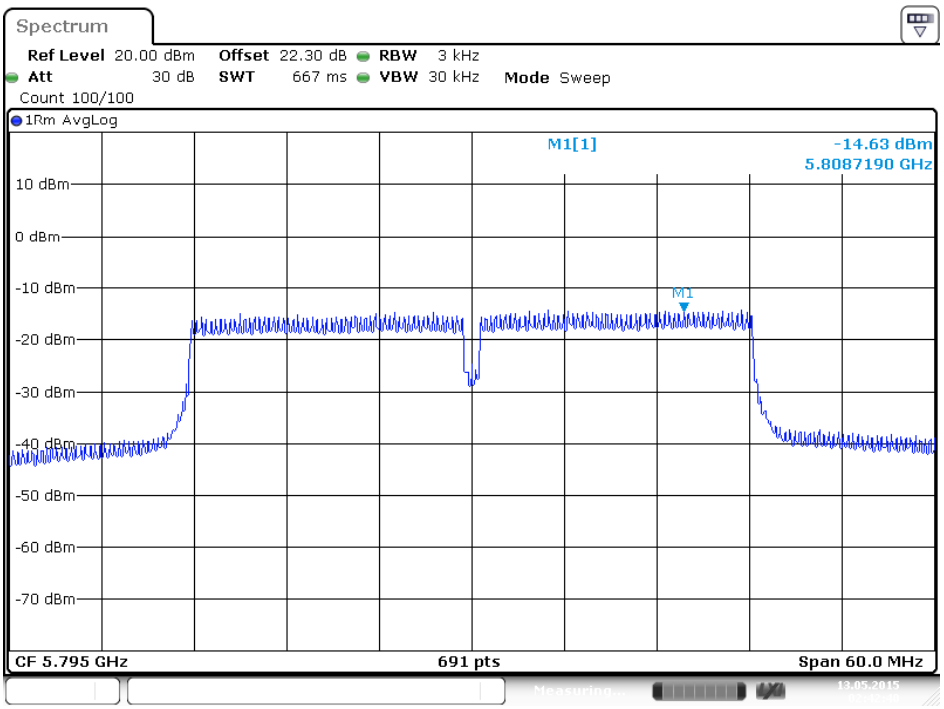
Date:13.MAY.2015 02:39:11

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



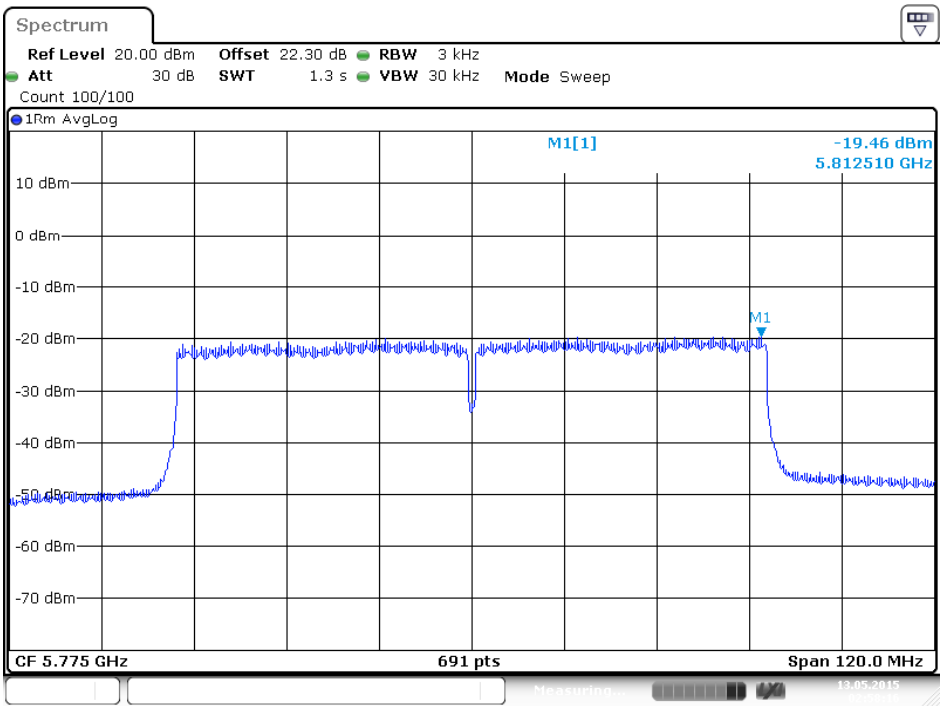
Date:13.MAY.2015 02:41:00

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



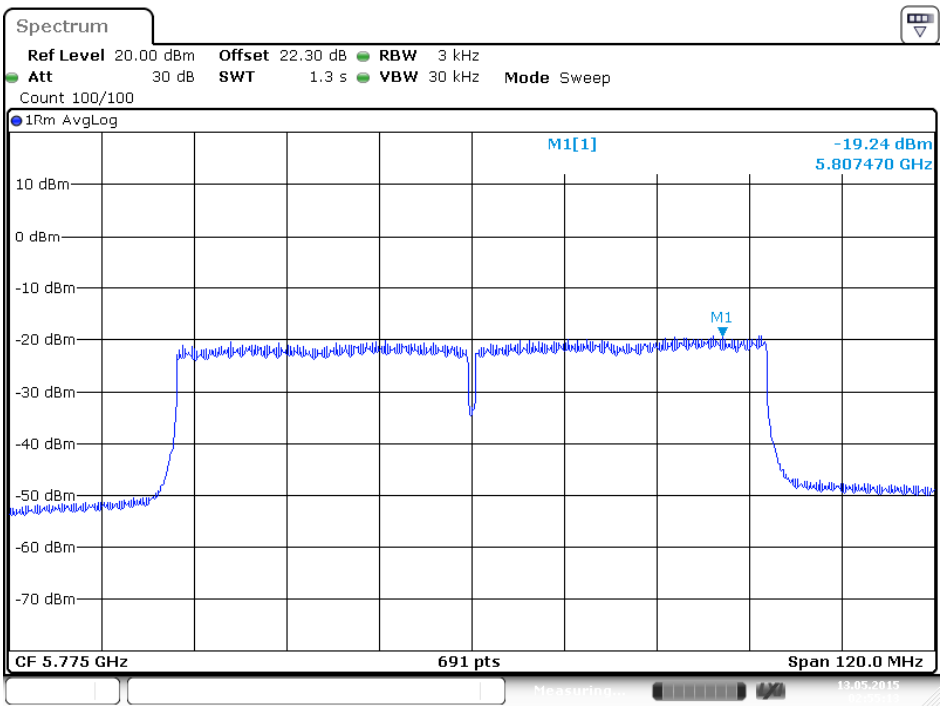
Date:13.MAY.2015 02:42:40

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



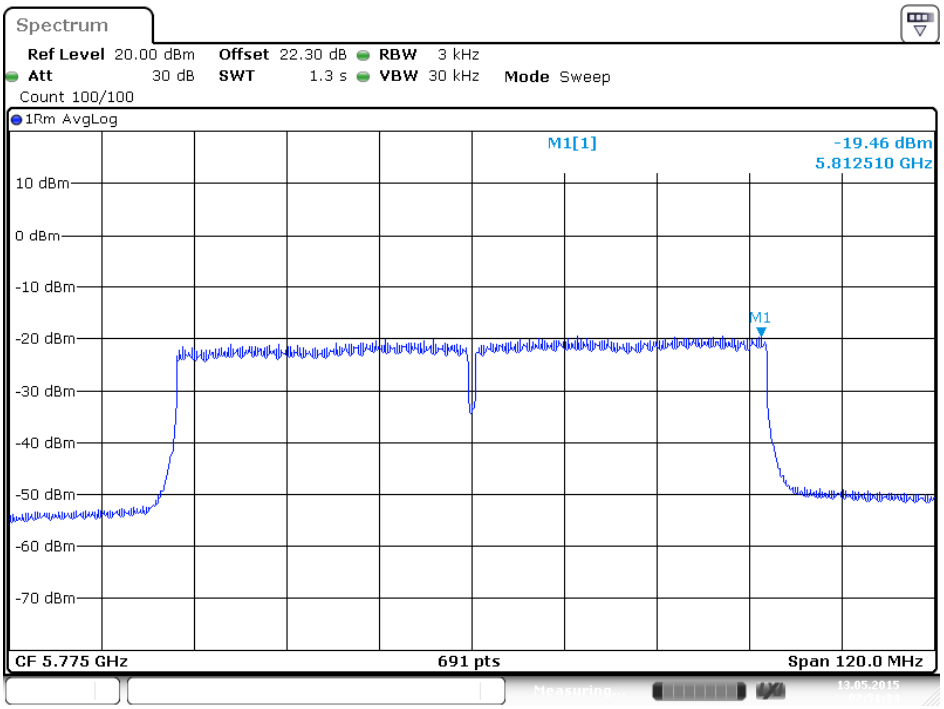
Date:13.MAY.2015 02:58:15

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



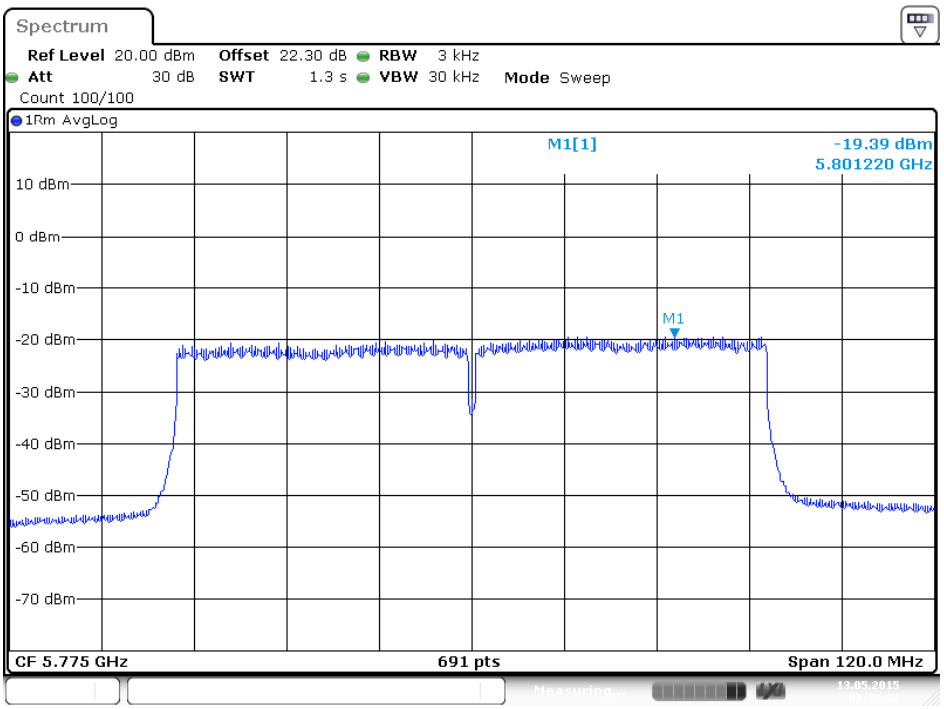
Date:13.MAY.2015 02:55:13

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



Date:13.MAY.2015 02:51:34

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



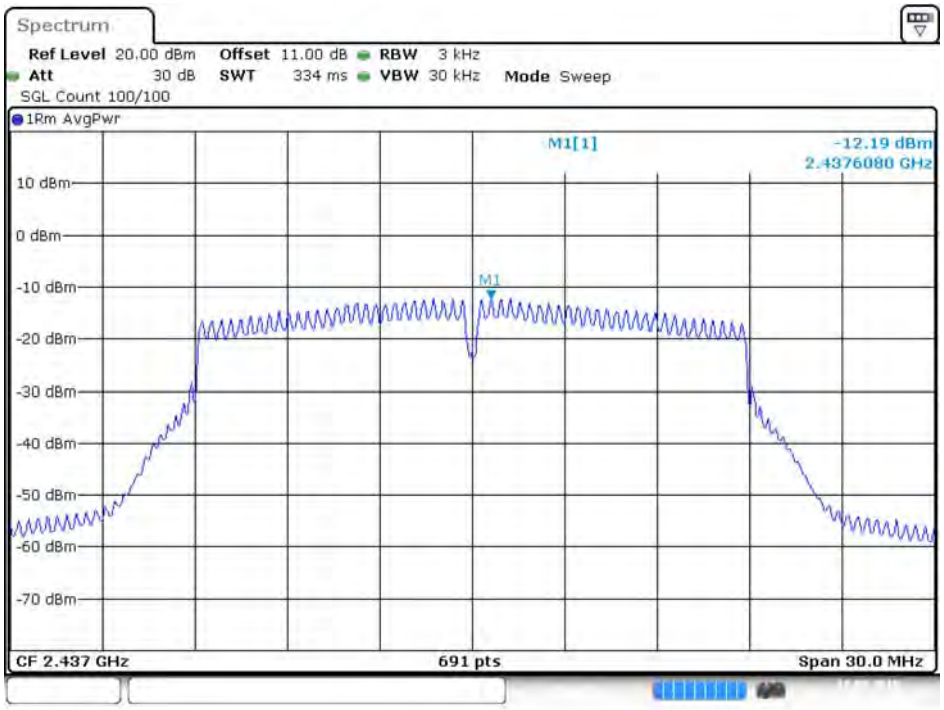
Date:13.MAY.2015 02:48:37

EUT: Version 2

For beamforming function:

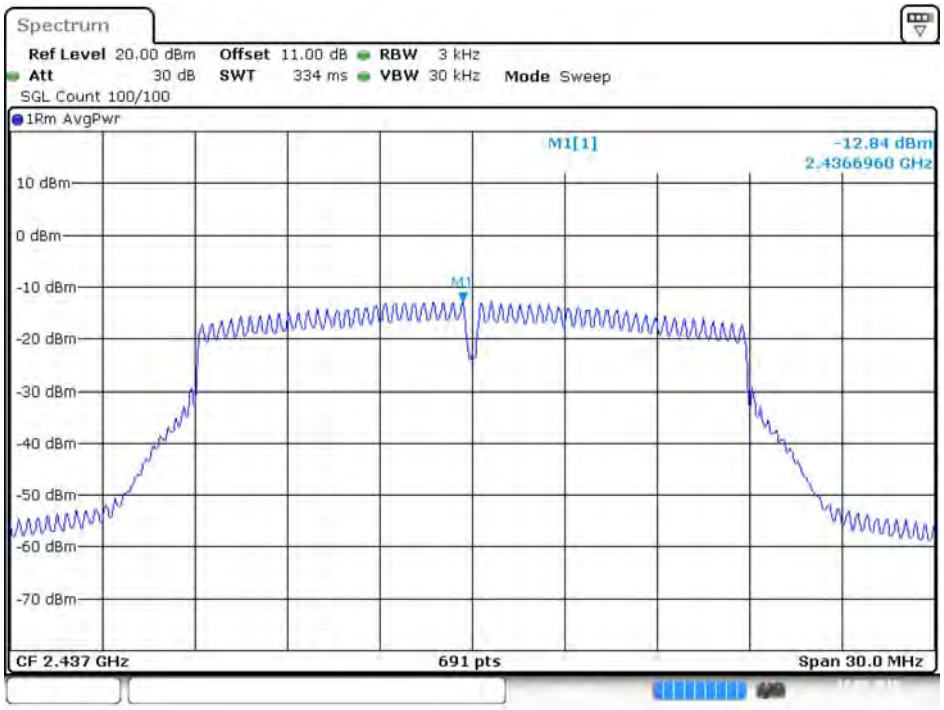
For 2.4GHz Band

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1



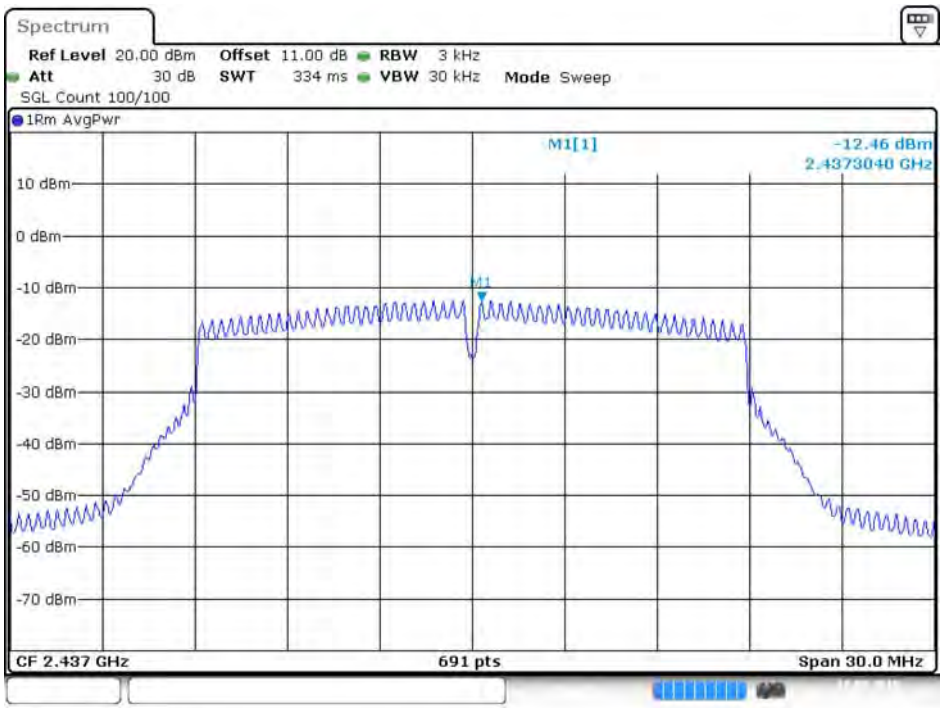
Date: 18.MAY.2015 18:18:51

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 2



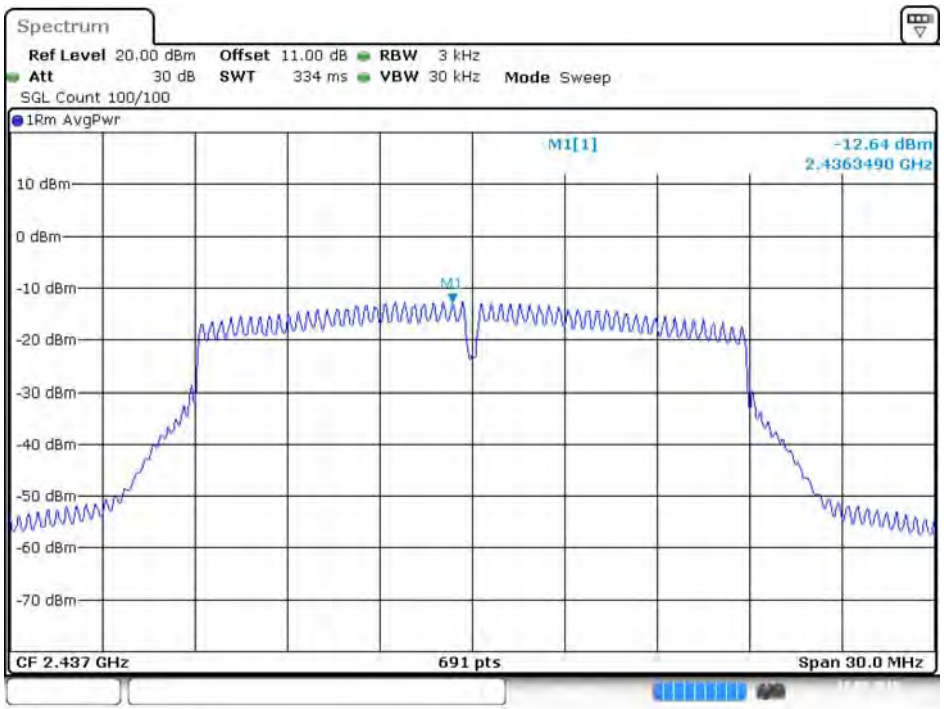
Date: 18.MAY.2015 18:17:33

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 3



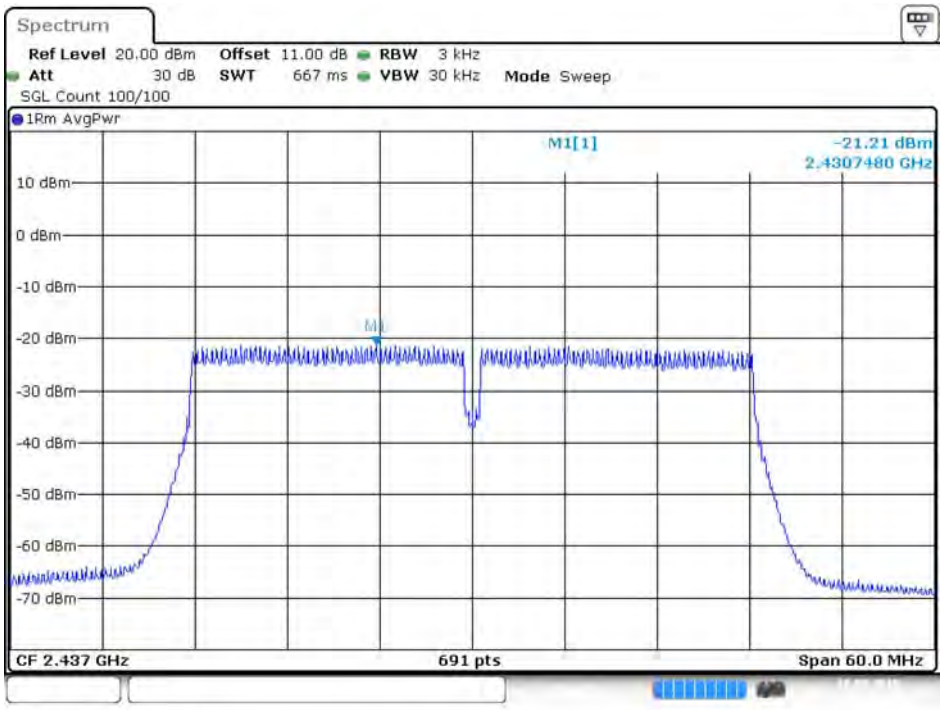
Date: 18.MAY.2015 18:16:23

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 4



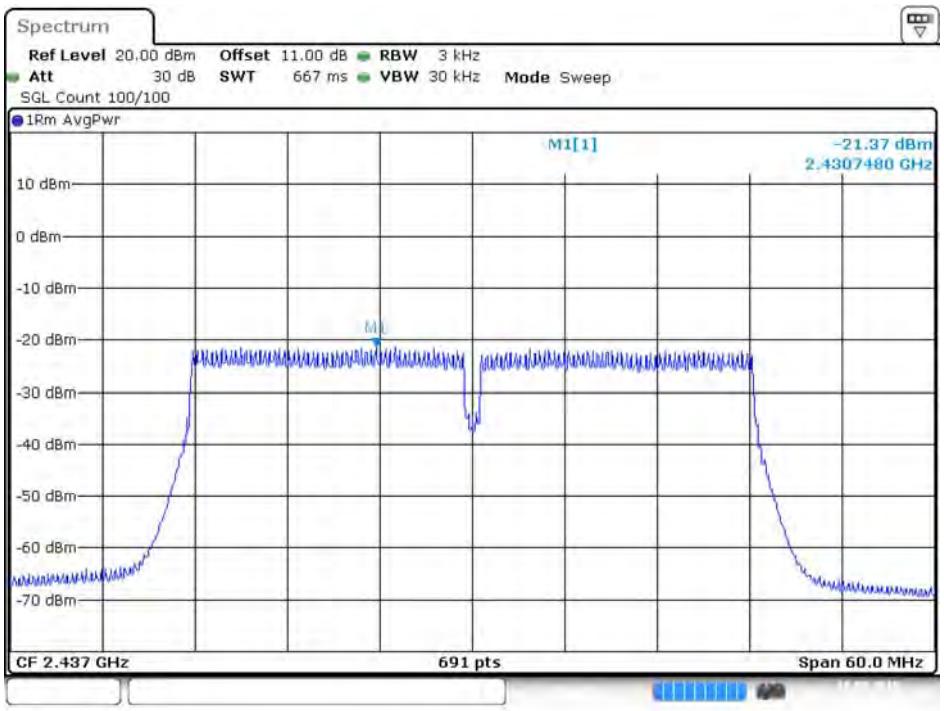
Date: 18.MAY.2015 18:15:10

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1



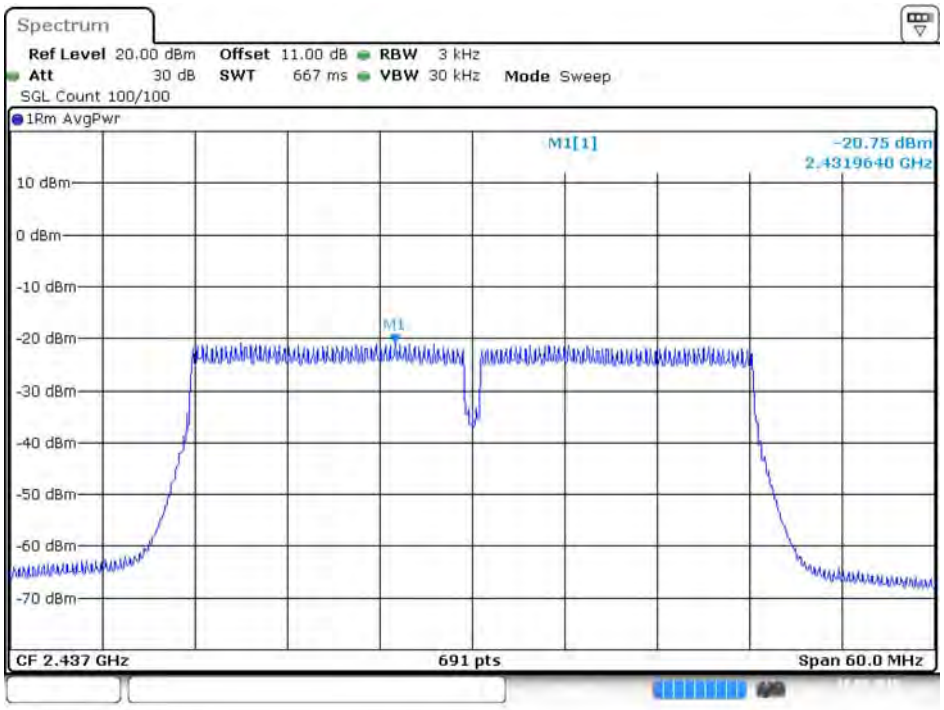
Date: 18.MAY.2015 19:21:49

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 2



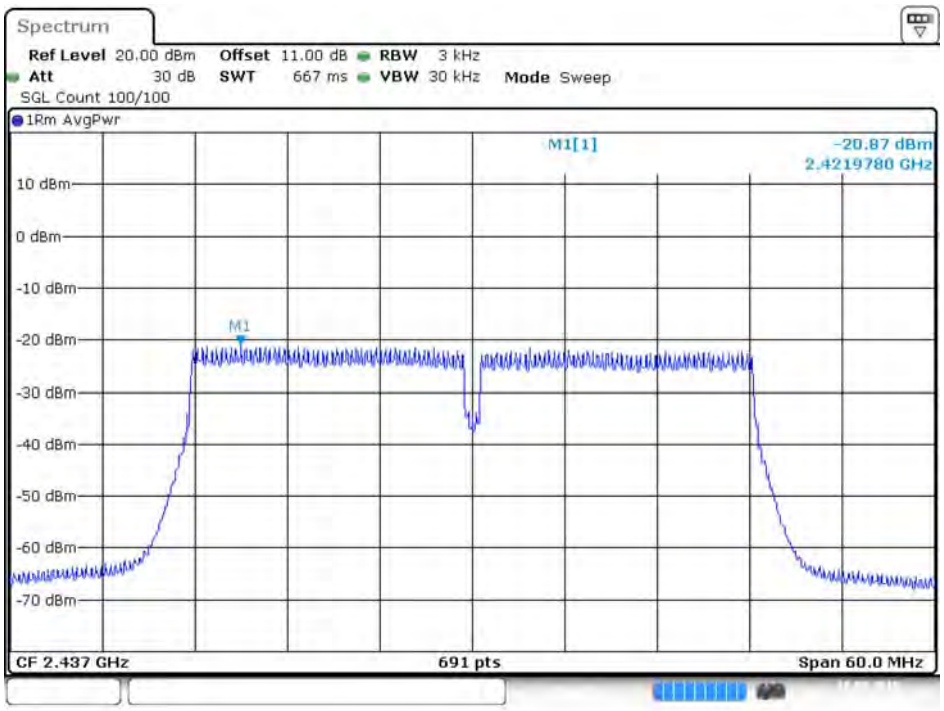
Date: 18.MAY.2015 19:18:58

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 3



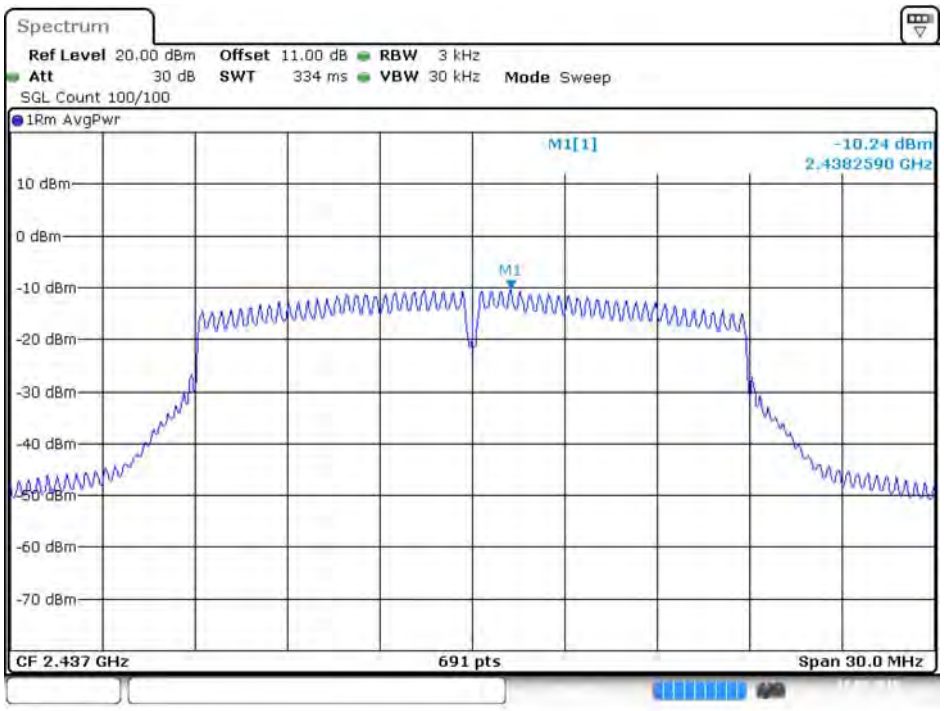
Date: 18.MAY.2015 19:16:31

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 4



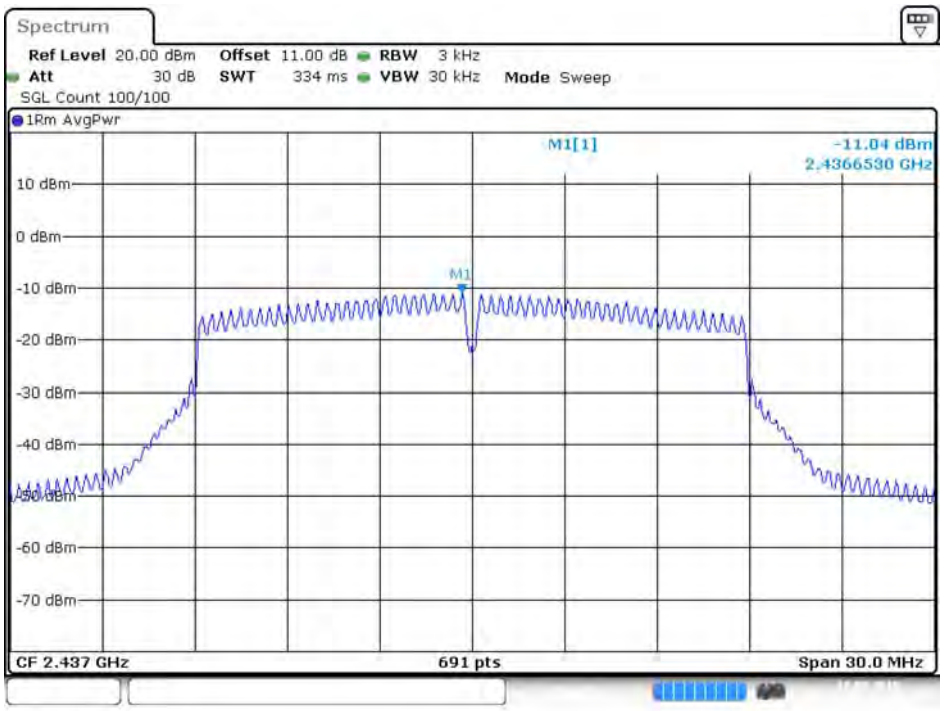
Date: 18.MAY.2015 19:13:38

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 1



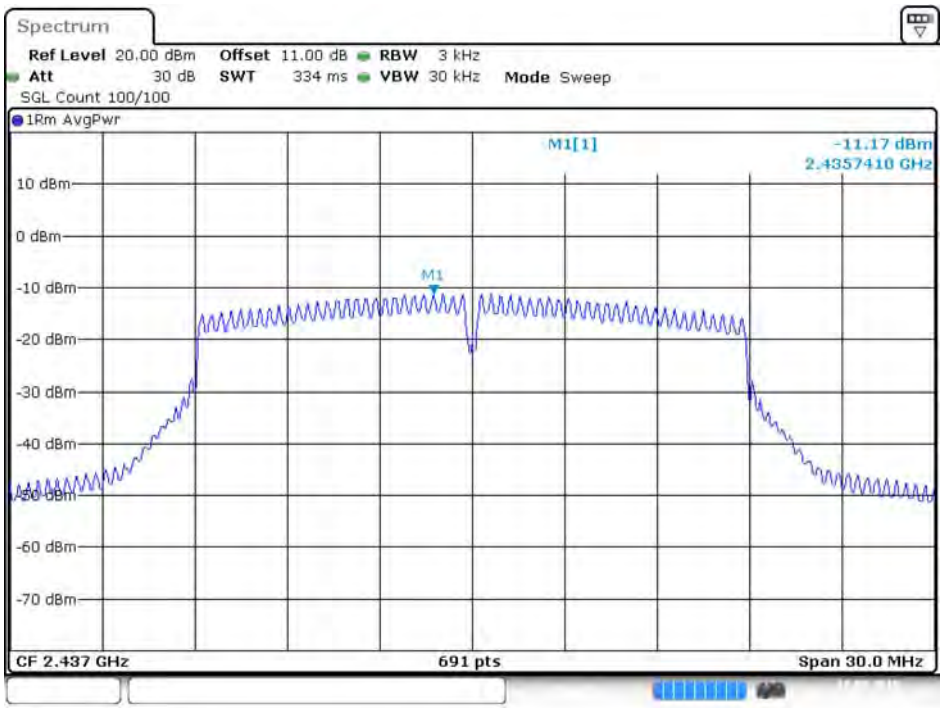
Date: 18.MAY.2015 18:20:06

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 2



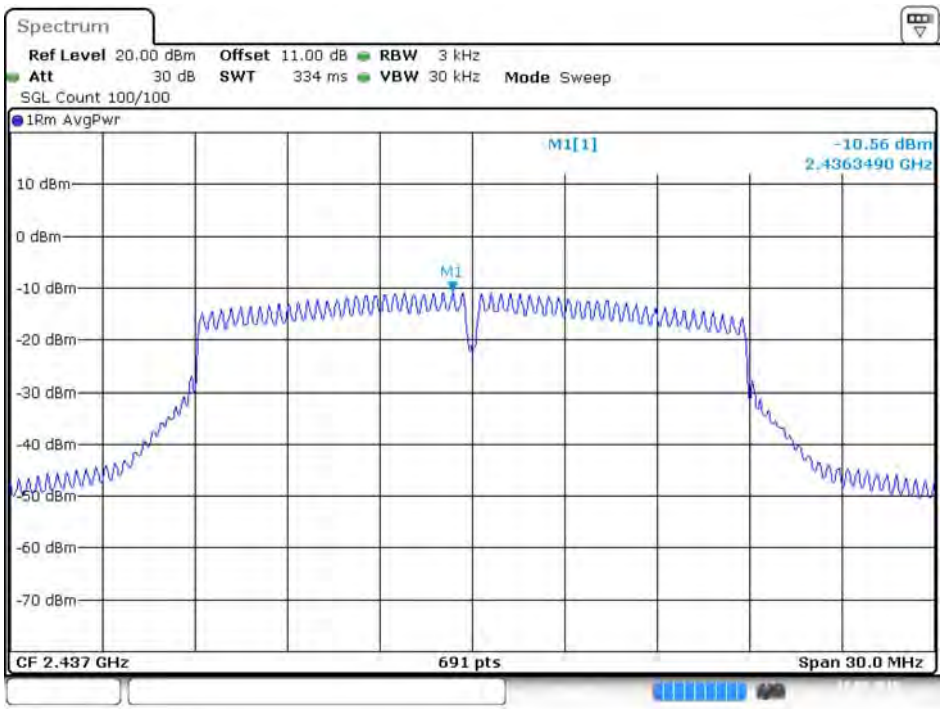
Date: 18.MAY.2015 18:21:34

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 3



Date: 18.MAY.2015 18:22:44

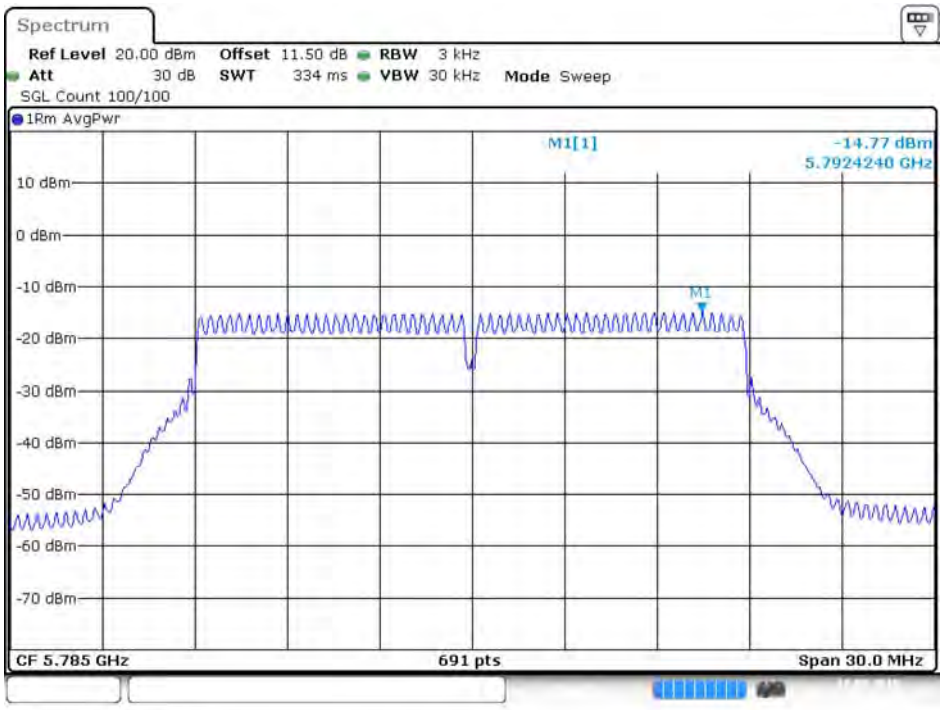
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 4



Date: 18.MAY.2015 18:25:05

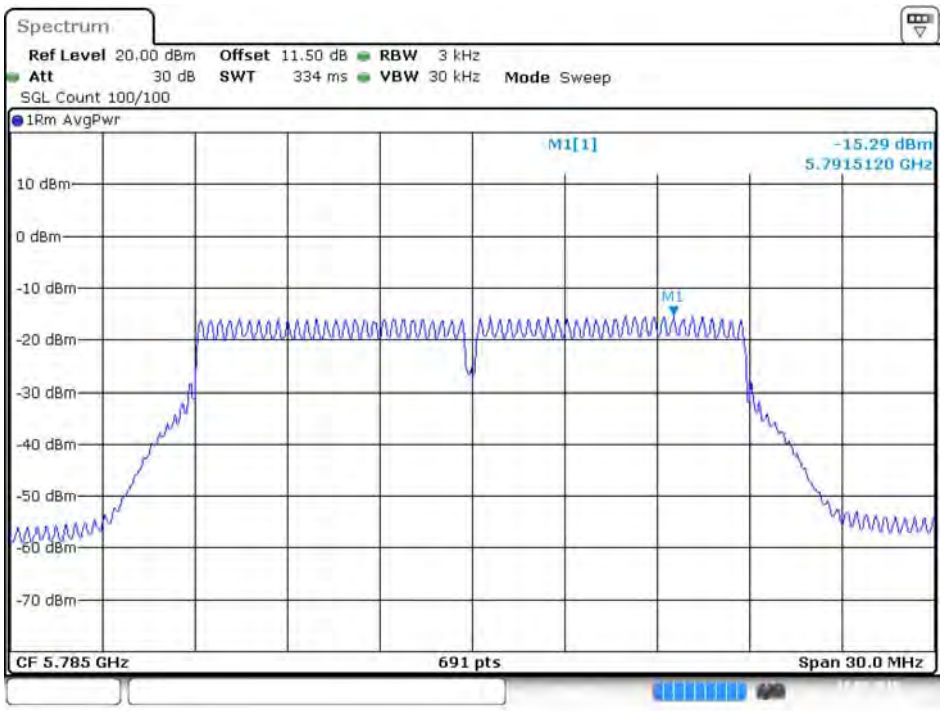
For 5GHz Band

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



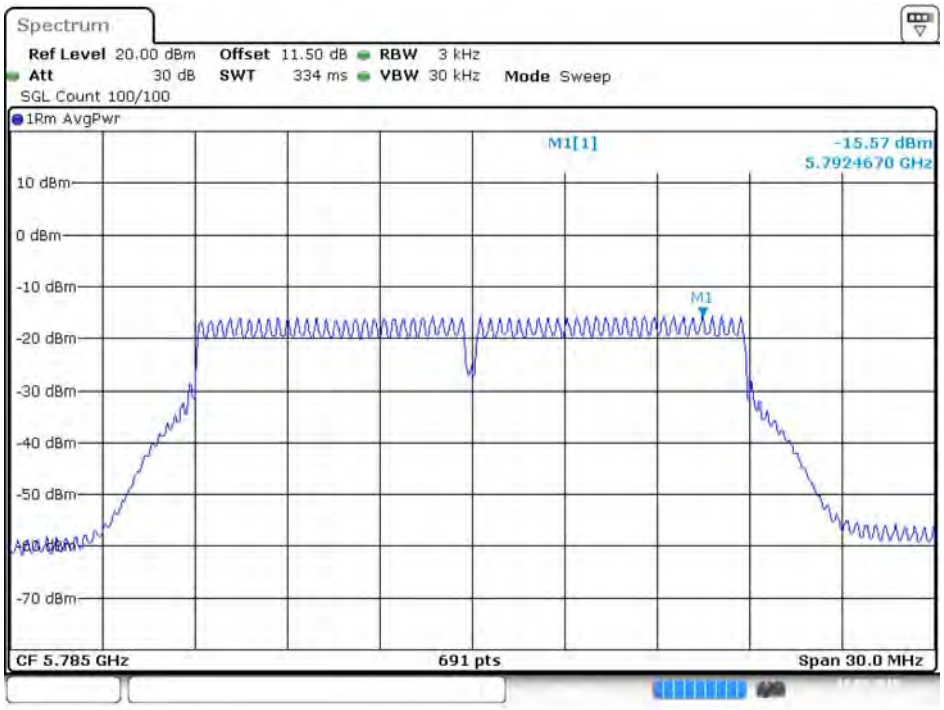
Date: 18.MAY.2015 17:00:07

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



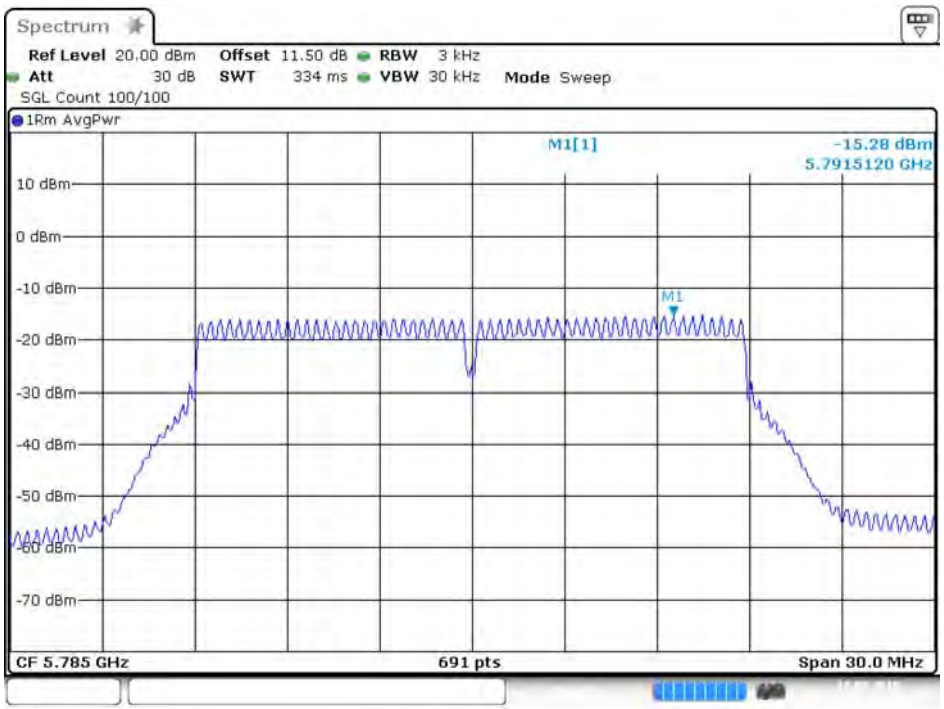
Date: 18.MAY.2015 16:58:09

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



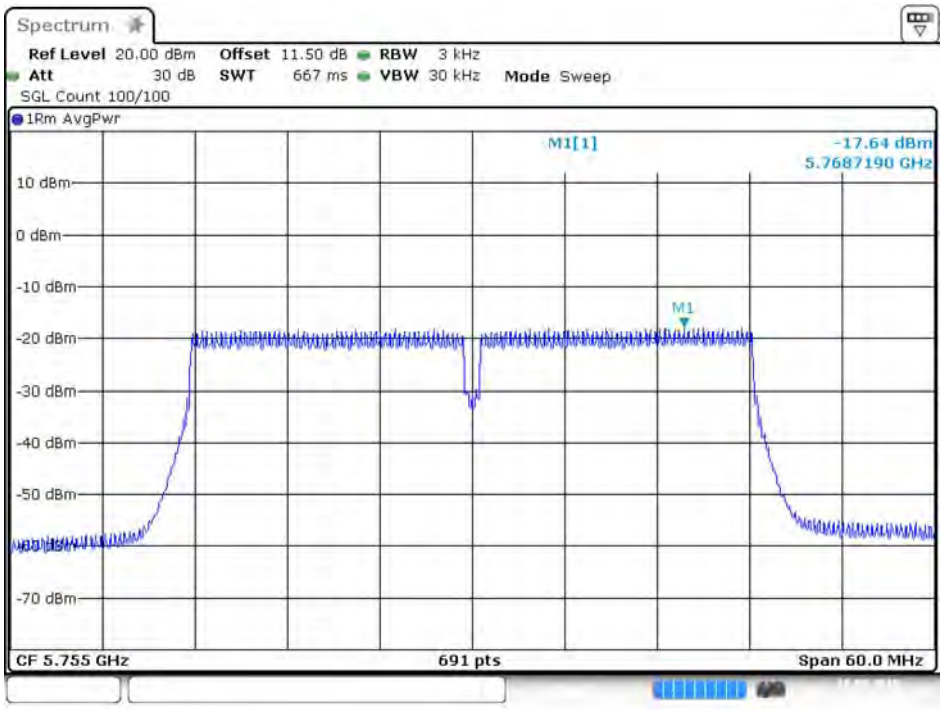
Date: 18.MAY.2015 16:56:07

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



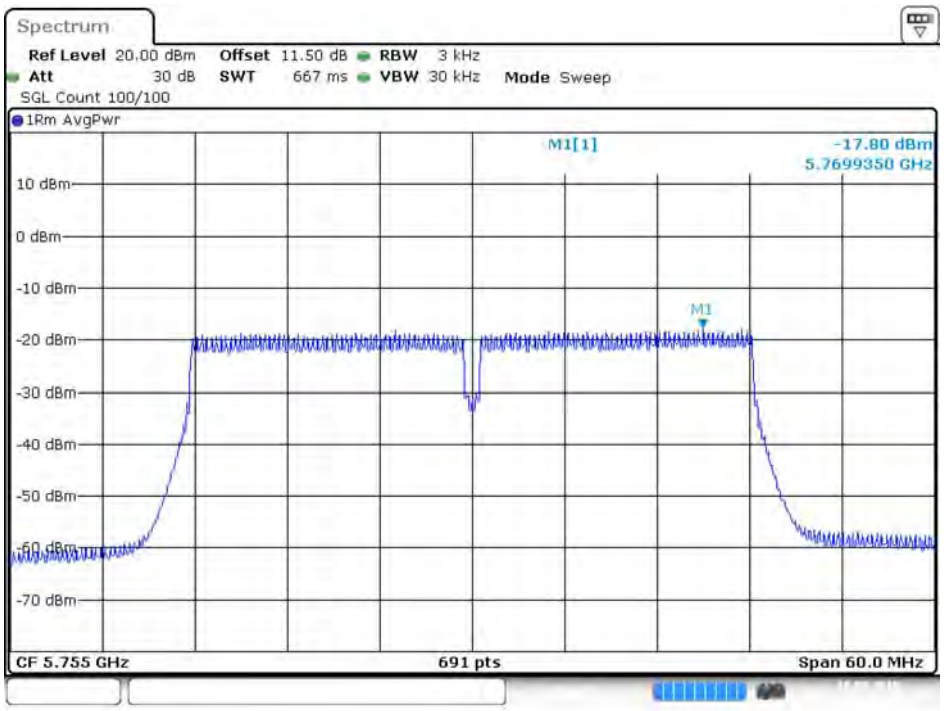
Date: 18.MAY.2015 16:54:19

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



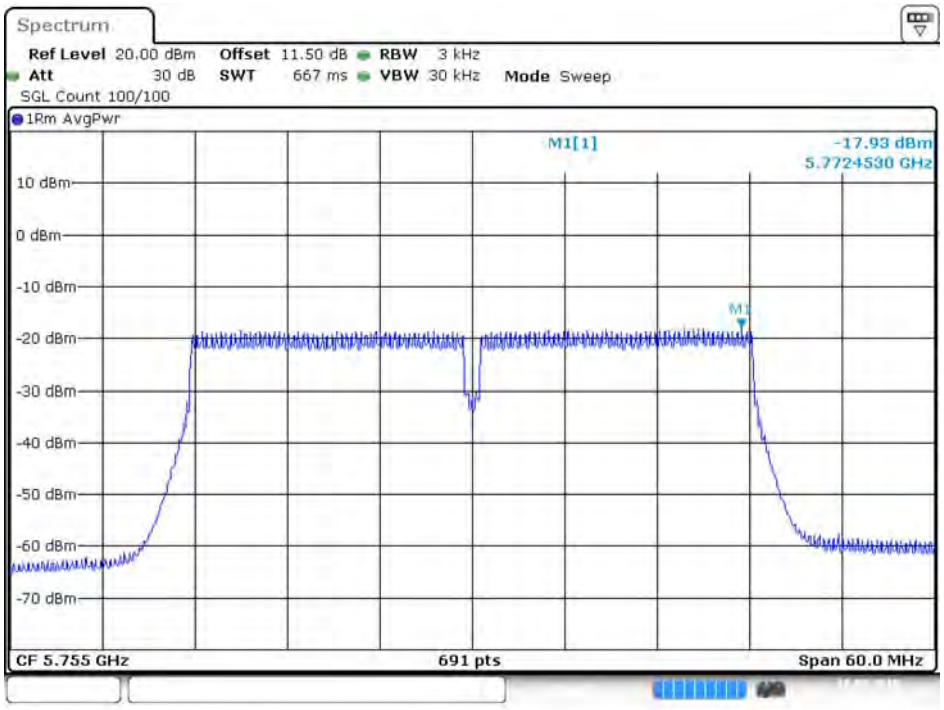
Date: 18.MAY.2015 16:29:09

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



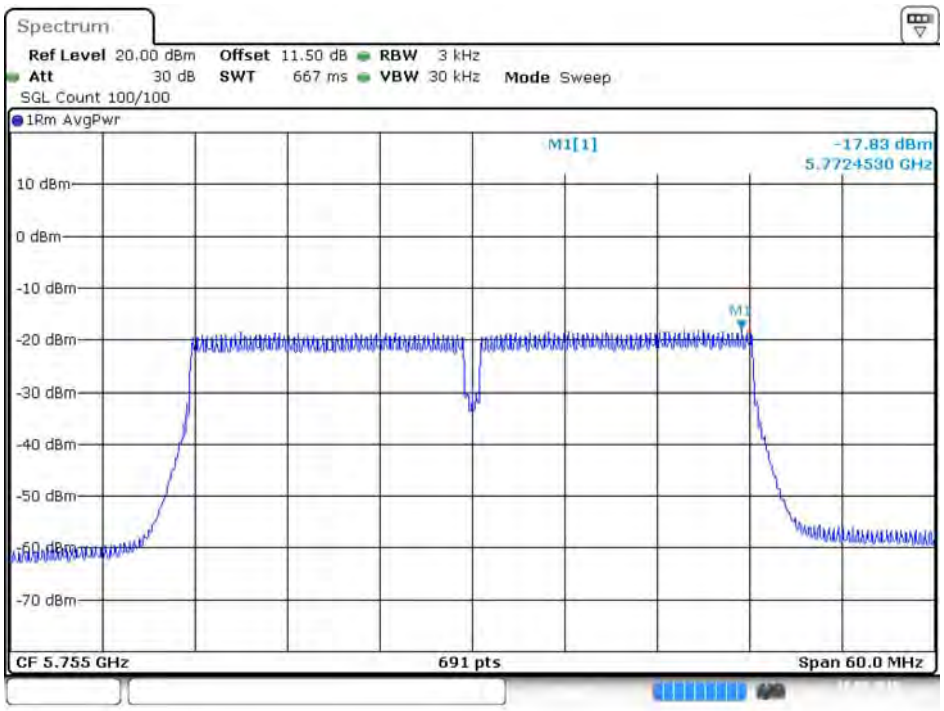
Date: 18.MAY.2015 16:31:57

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



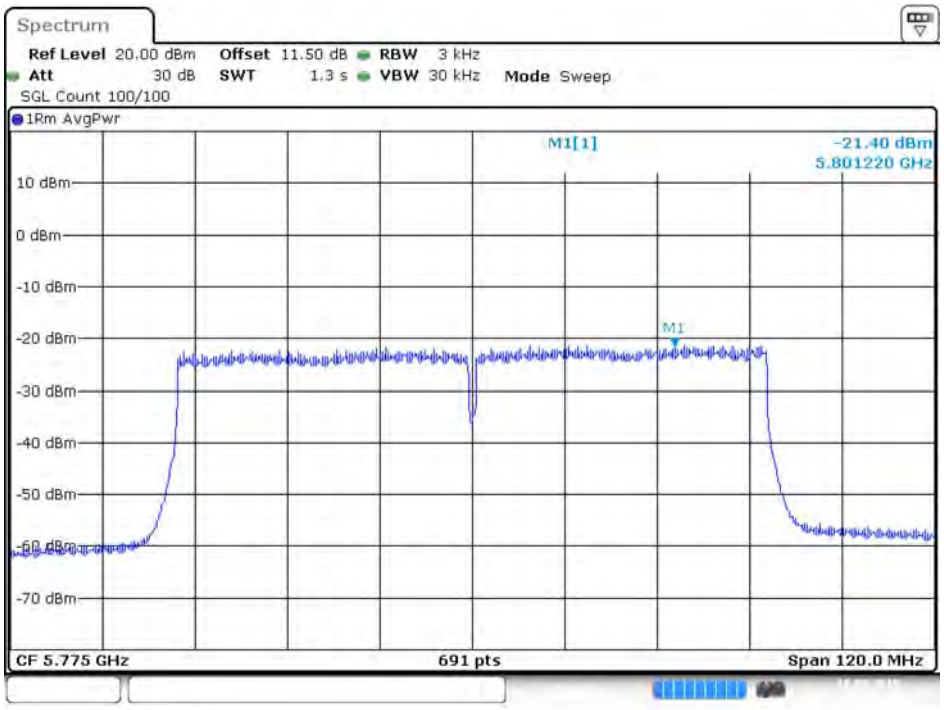
Date: 18.MAY.2015 16:36:24

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



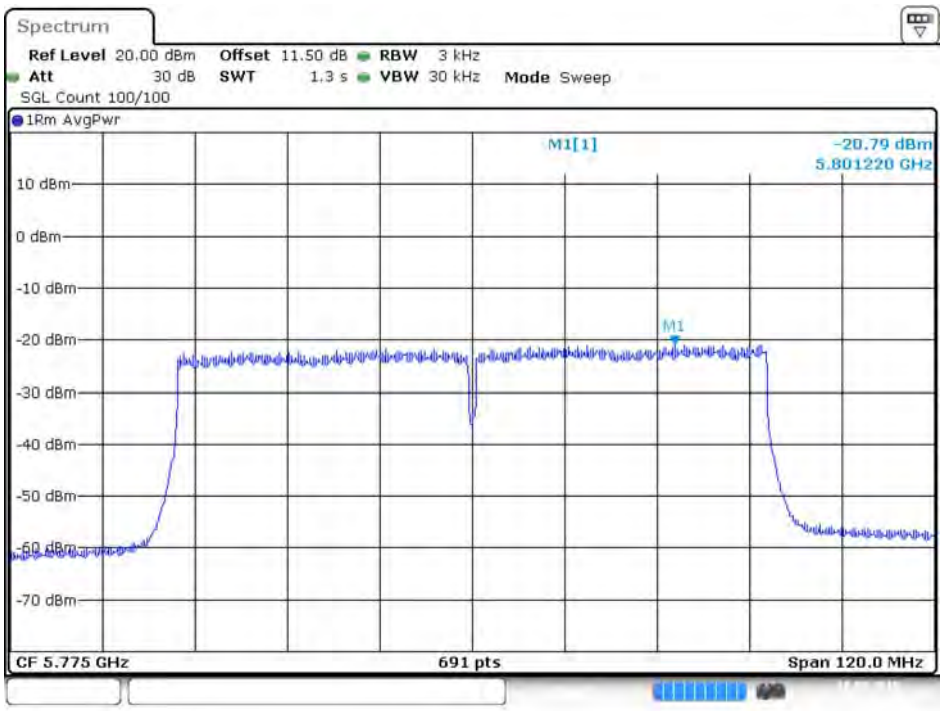
Date: 18.MAY.2015 16:38:30

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



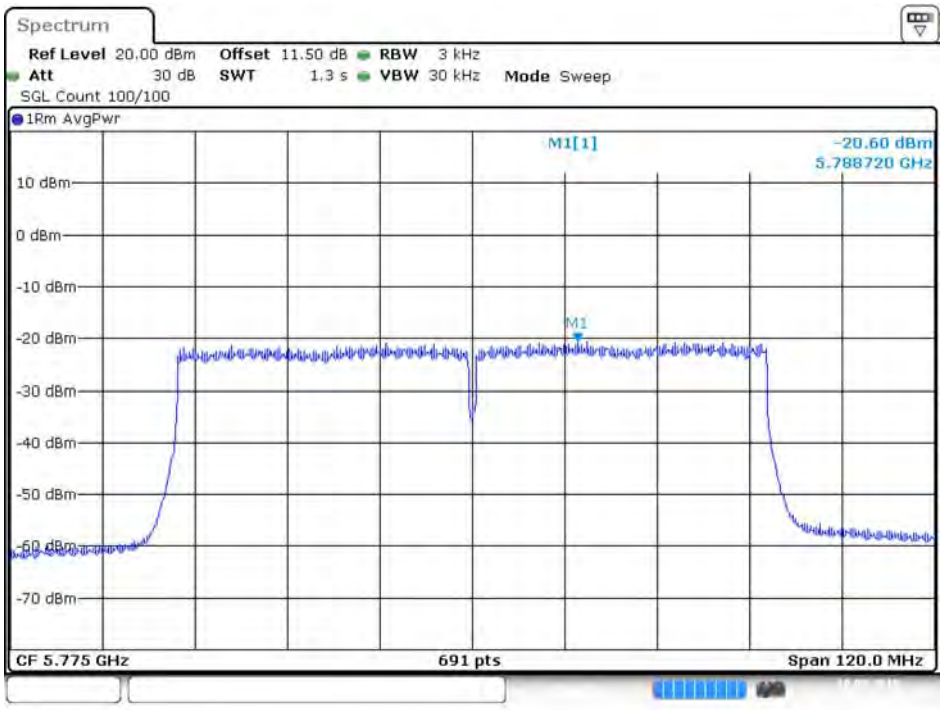
Date: 18.MAY.2015 15:21:10

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



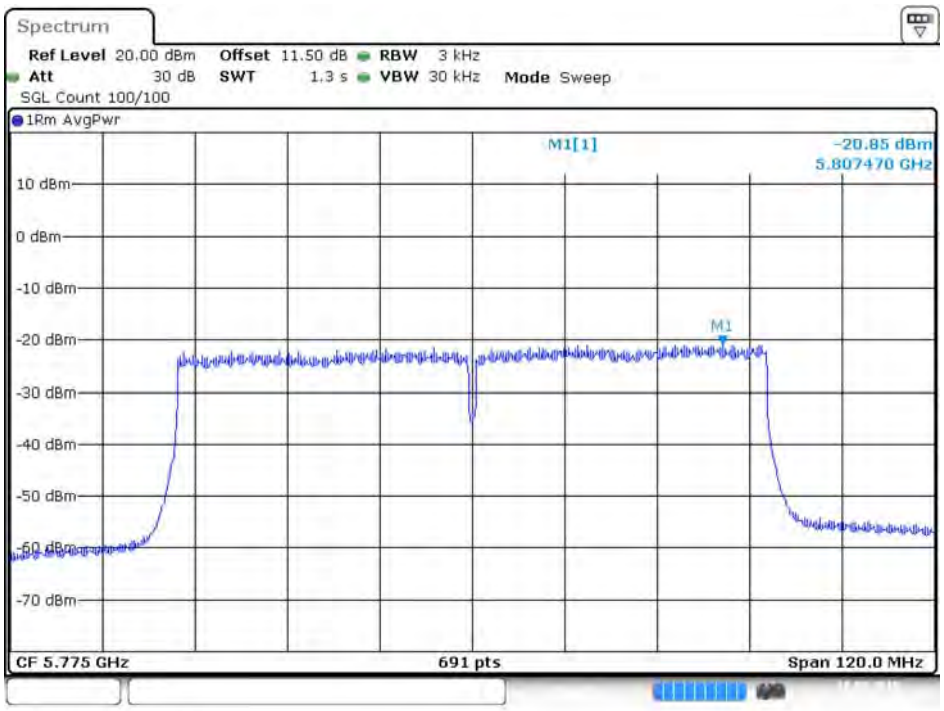
Date: 18.MAY.2015 15:24:58

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



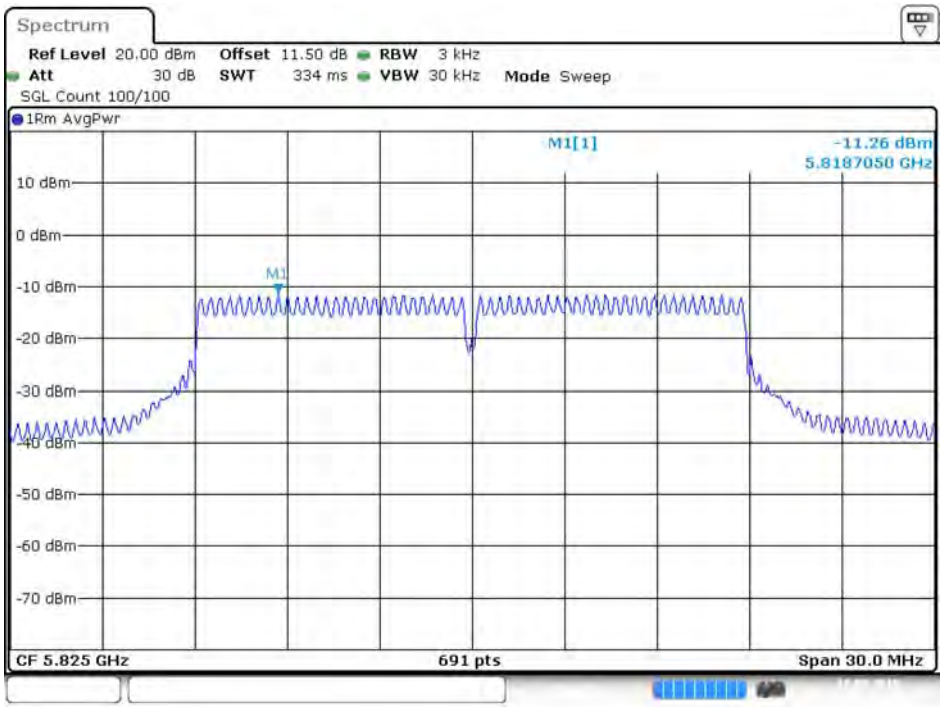
Date: 18.MAY.2015 15:28:32

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



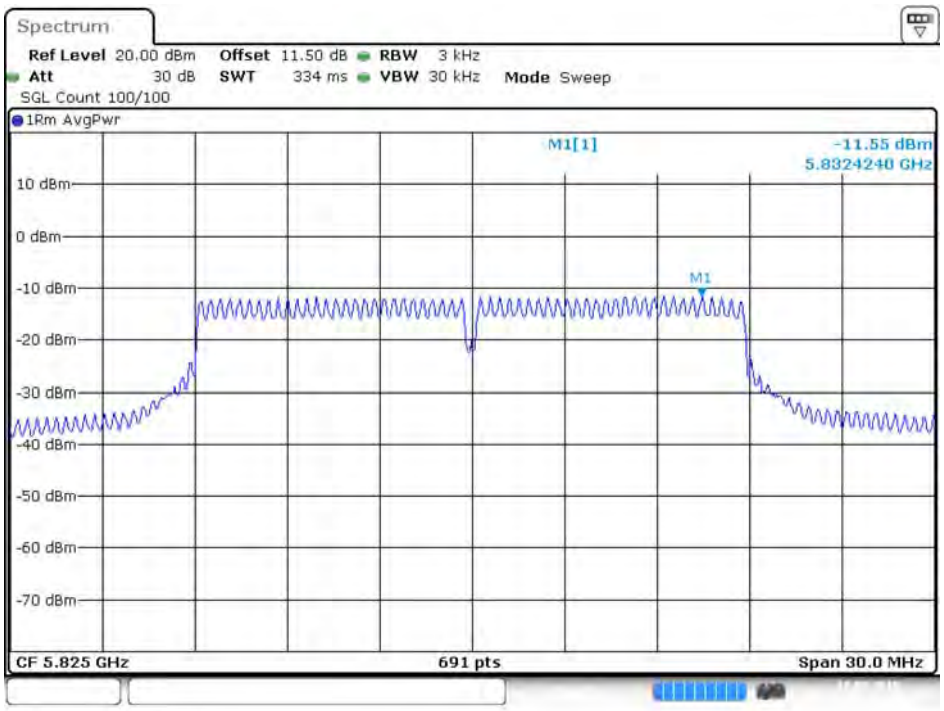
Date: 18.MAY.2015 15:31:49

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 5825 MHz / Chain 1



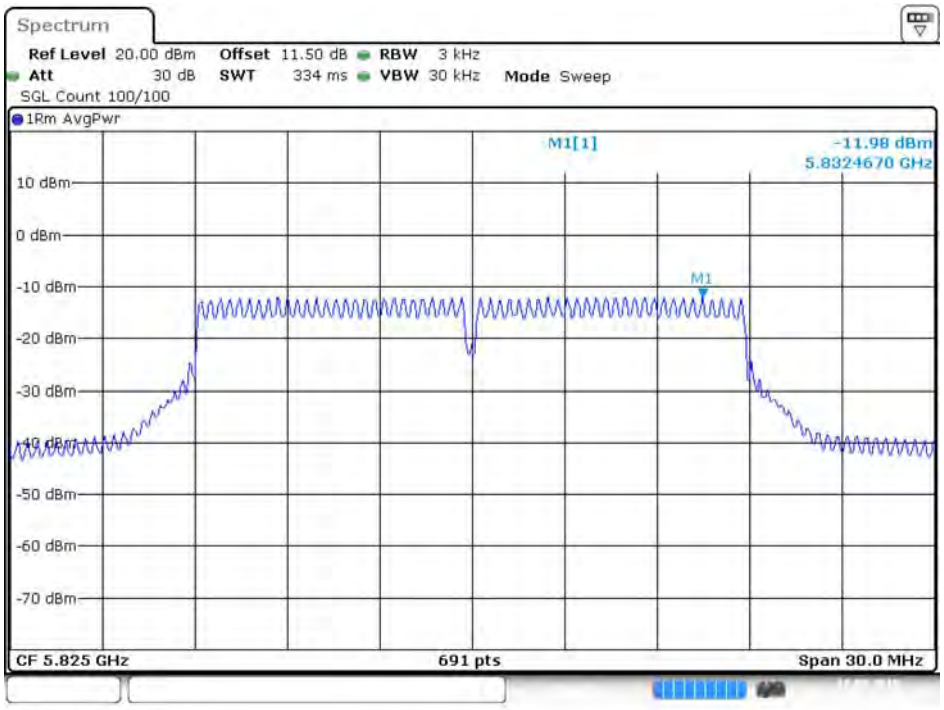
Date: 18.MAY.2015 17:38:32

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 5825 MHz / Chain 2



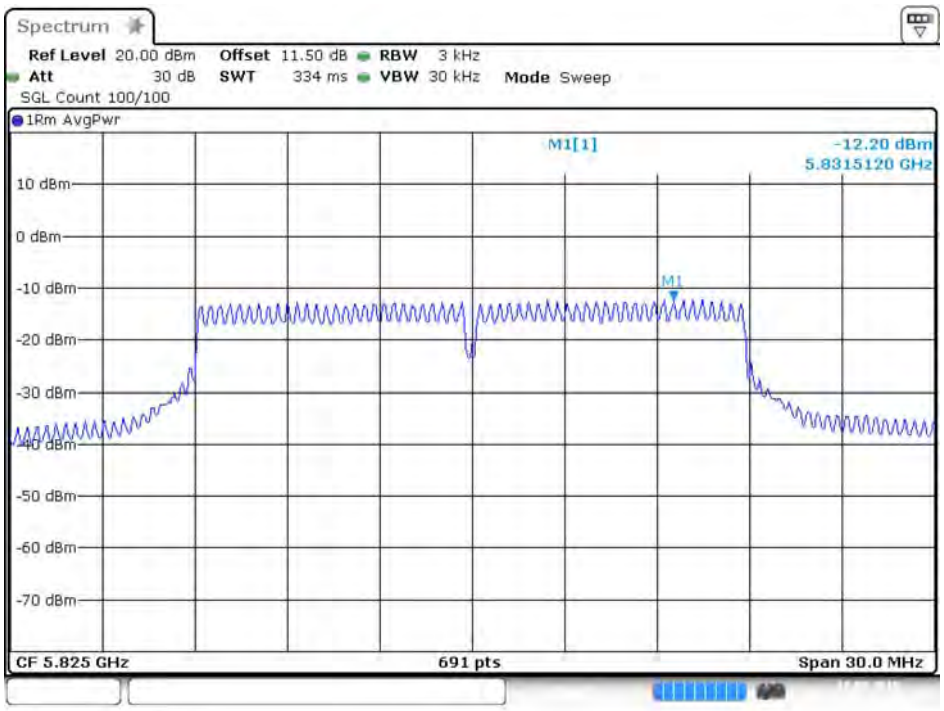
Date: 18.MAY.2015 17:36:48

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 5825 MHz / Chain 3



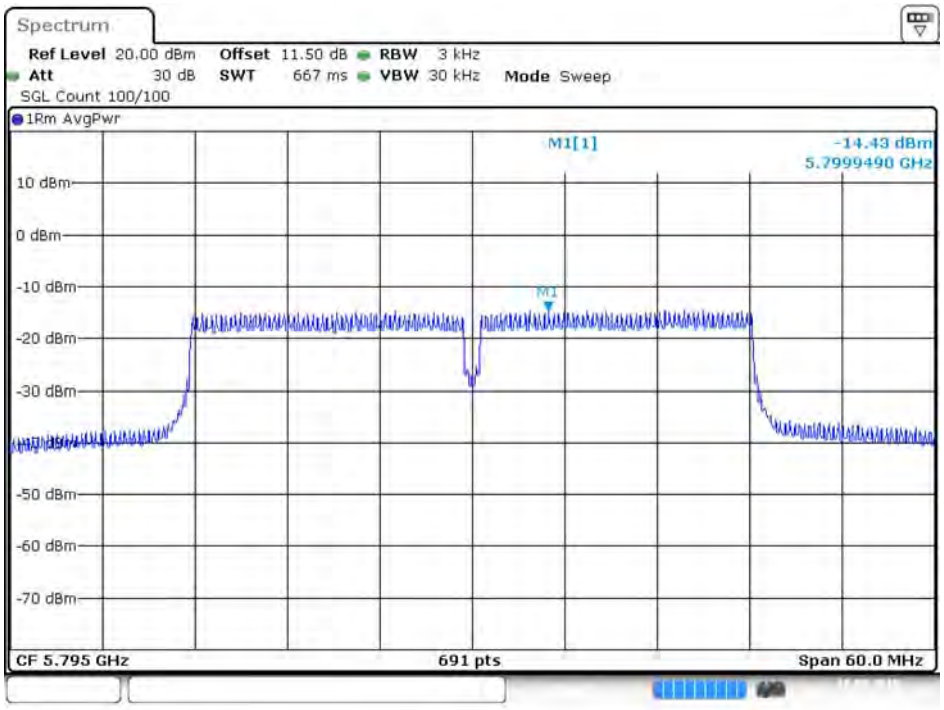
Date: 18.MAY.2015 17:35:06

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 5825 MHz / Chain 4



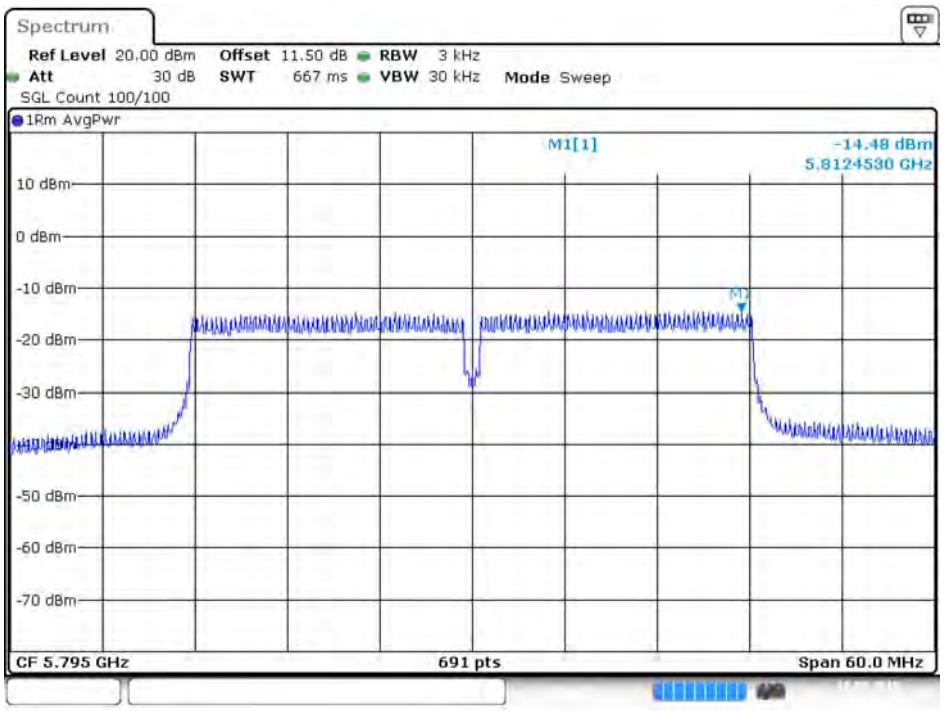
Date: 18.MAY.2015 17:32:57

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



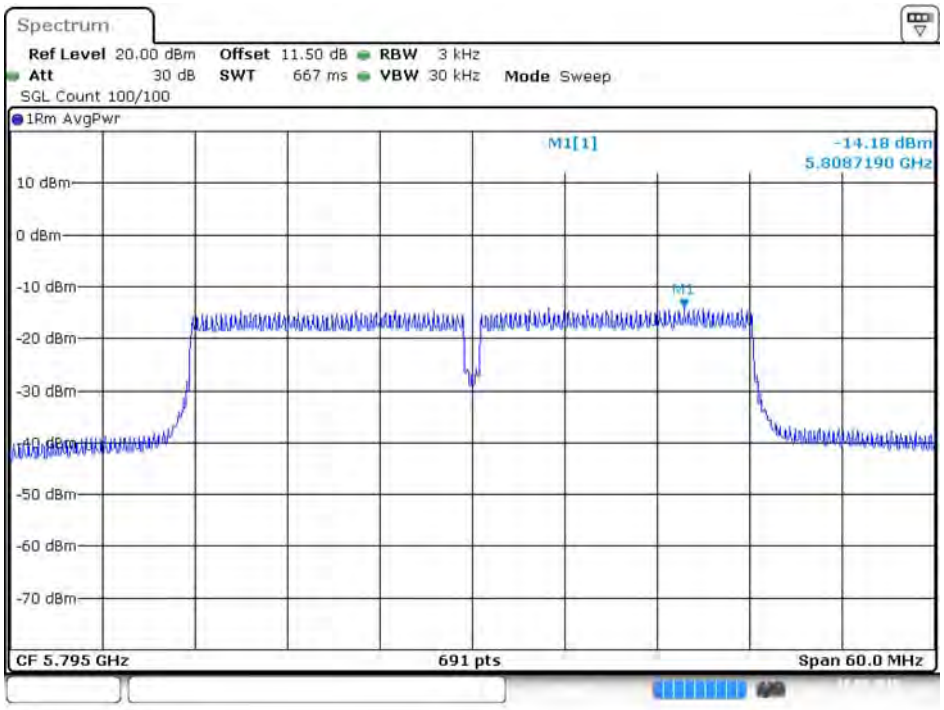
Date: 18.MAY.2015 16:22:29

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



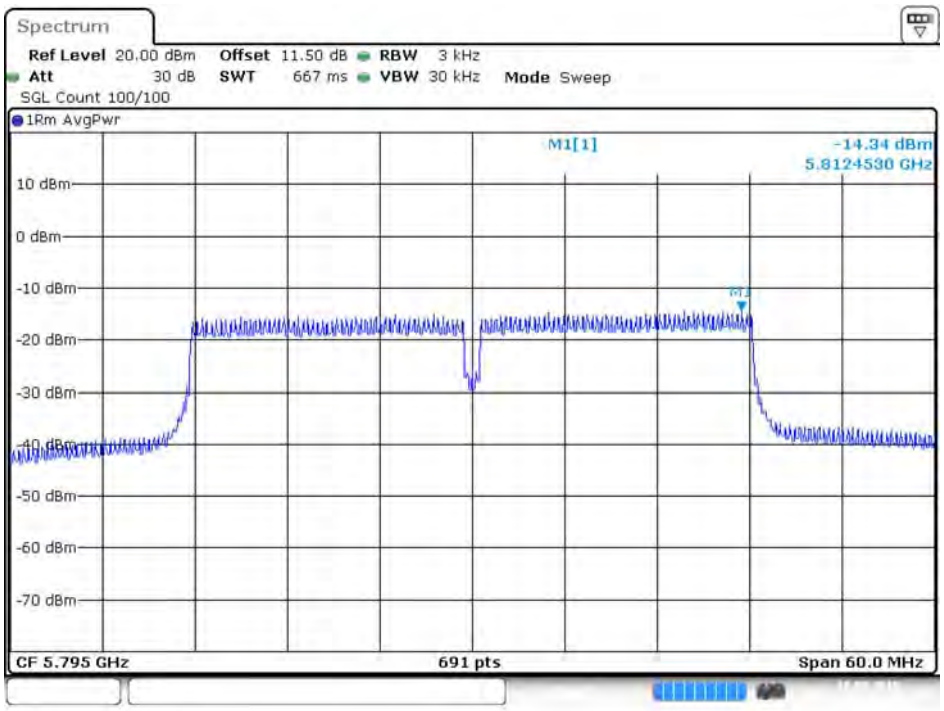
Date: 18.MAY.2015 16:19:53

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



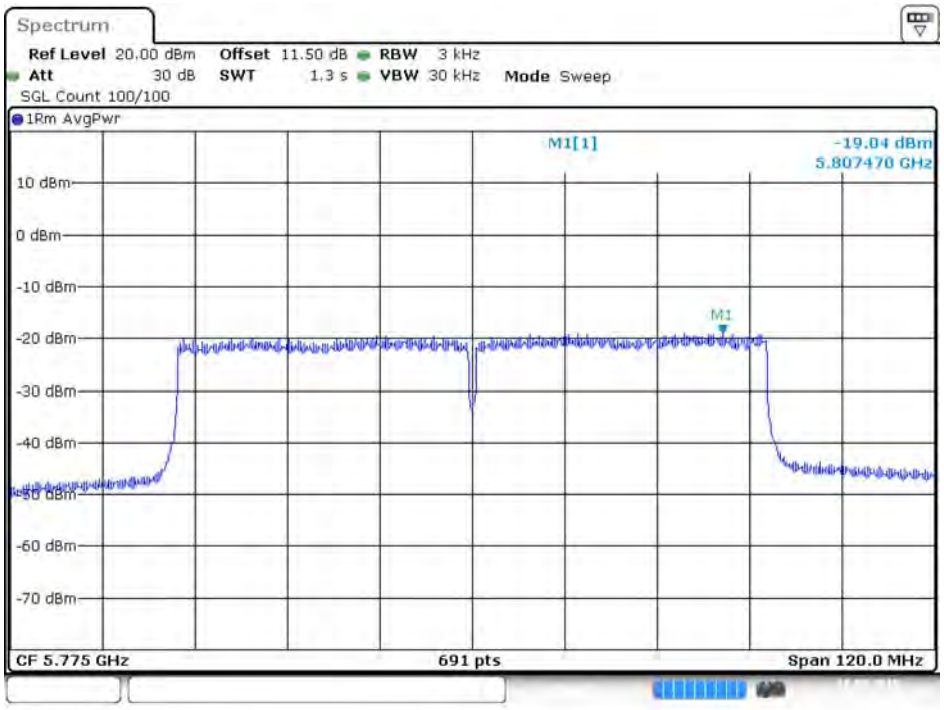
Date: 18.MAY.2015 16:15:22

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



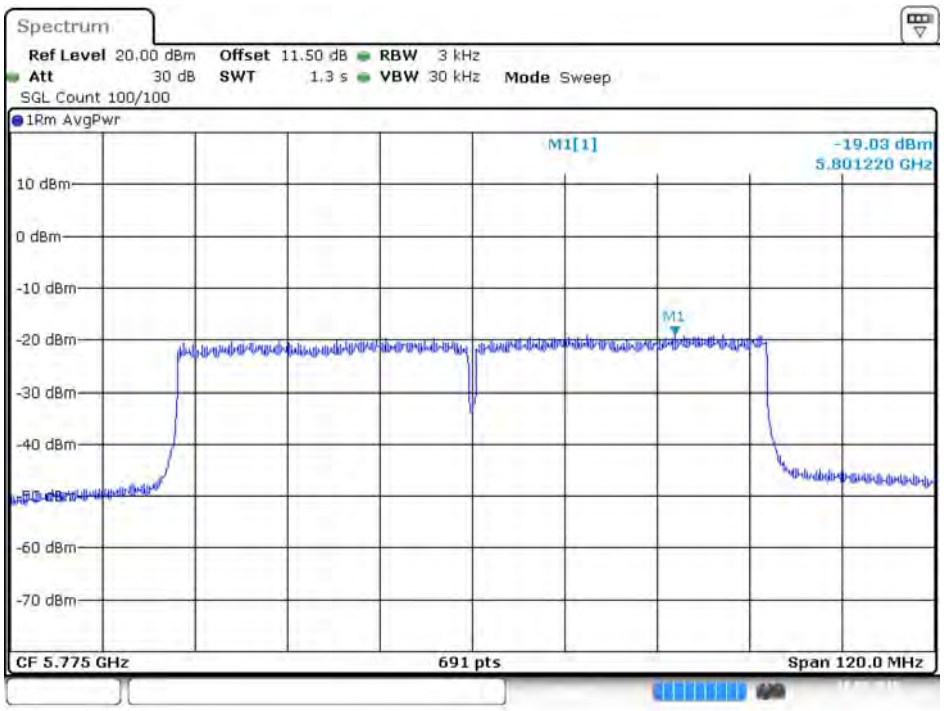
Date: 18.MAY.2015 16:12:10

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / 5775 MHz / Chain 1



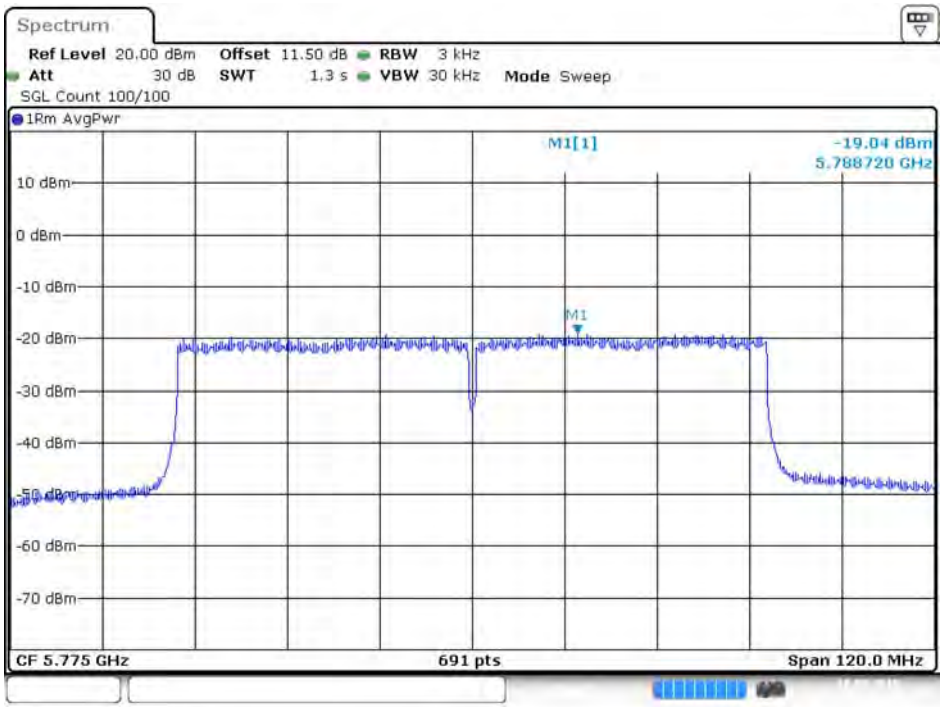
Date: 18.MAY.2015 15:47:34

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / 5775 MHz / Chain 2



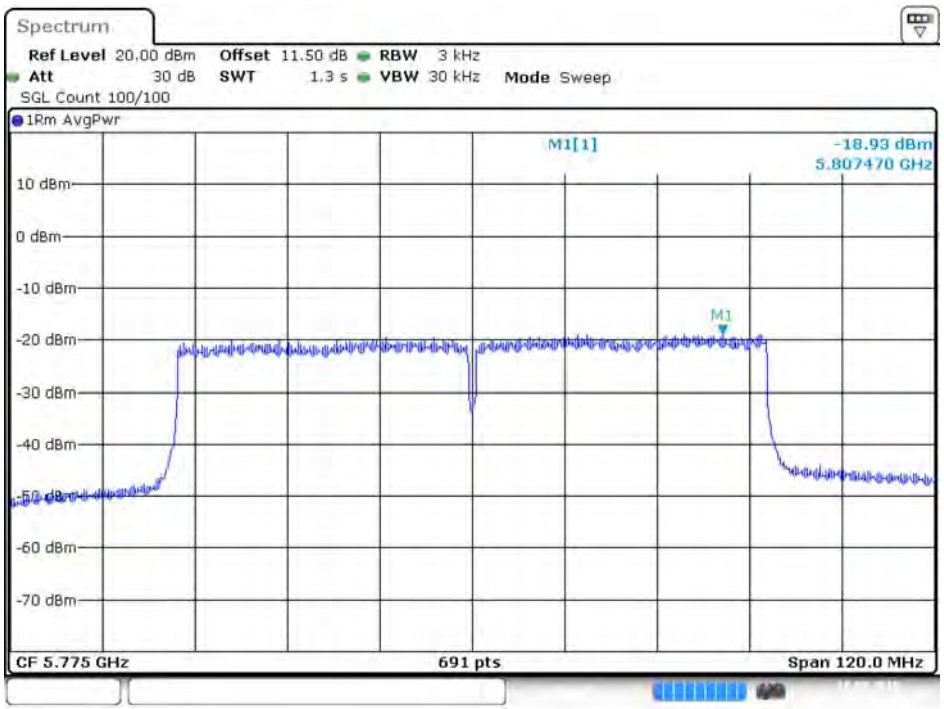
Date: 18.MAY.2015 15:43:07

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / 5775 MHz / Chain 3



Date: 18.MAY.2015 15:38:51

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / 5775 MHz / Chain 4



Date: 18.MAY.2015 15:35:13

4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

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

4.4.2. Measuring Instruments and Setting

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

6dB Spectrum Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	**Setting**
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold

4.4.3. 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 KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 8.0 DTS bandwidth=> 8.1 Option 1.
3. Multiple antenna system was performed in accordance with KDB 662911 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.

4.4.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

This test setup layout is the same as that shown in section 4.5.4.

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 6dB Spectrum Bandwidth

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test EUT / Function	EUT: Version 1 / Non-beamforming function

For 2.4GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	8.00	10.42	500	Complies
	2437 MHz	8.06	10.51	500	Complies
	2462 MHz	7.54	10.42	500	Complies
802.11g	2412 MHz	4.46	16.06	500	Complies
	2437 MHz	4.93	16.32	500	Complies
	2462 MHz	6.96	16.15	500	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	10.03	17.19	500	Complies
	2437 MHz	10.14	17.45	500	Complies
	2462 MHz	8.86	17.37	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	33.16	36.32	500	Complies
	2437 MHz	35.01	36.61	500	Complies
	2452 MHz	35.25	36.03	500	Complies

For 5GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	16.35	22.92	500	Complies
	5785 MHz	13.80	22.32	500	Complies
	5825 MHz	15.42	23.79	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.28	25.70	500	Complies
	5785 MHz	16.06	23.27	500	Complies
	5825 MHz	16.06	24.66	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.13	37.48	500	Complies
	5795 MHz	35.13	49.06	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.36	76.41	500	Complies

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test EUT / Function	EUT: Version 1 / Beamforming function

For 2.4GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	2412 MHz	13.79	17.62	500	Complies
	2437 MHz	14.60	17.71	500	Complies
	2462 MHz	15.18	17.71	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	35.71	37.04	500	Complies
	2437 MHz	35.82	37.04	500	Complies
	2452 MHz	35.71	37.04	500	Complies
802.11ac MCS0/Nss2 VHT20	2437 MHz	13.85	17.71	500	Complies

For 5GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.50	18.14	500	Complies
	5785 MHz	17.21	18.06	500	Complies
	5825 MHz	16.23	18.06	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.94	36.90	500	Complies
	5795 MHz	36.29	36.90	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	71.88	76.12	500	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	17.33	18.49	500	Complies
	5785 MHz	16.28	18.23	500	Complies
	5825 MHz	16.46	18.49	500	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	36.29	37.33	500	Complies
	5795 MHz	36.05	37.77	500	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	75.36	77.27	500	Complies

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test EUT / Function	EUT: Version 2 / Non-beamforming function

For 2.4GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	8.05	10.41	500	Complies
	2437 MHz	7.59	10.41	500	Complies
	2462 MHz	8.00	10.41	500	Complies
802.11g	2412 MHz	8.80	15.62	500	Complies
	2437 MHz	5.10	15.71	500	Complies
	2462 MHz	5.04	15.97	500	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	10.08	16.67	500	Complies
	2437 MHz	6.37	16.93	500	Complies
	2462 MHz	10.02	16.75	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	33.15	36.75	500	Complies
	2437 MHz	35.13	36.75	500	Complies
	2452 MHz	34.66	36.75	500	Complies

For 5GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	13.56	20.23	500	Complies
	5785 MHz	13.73	22.74	500	Complies
	5825 MHz	13.85	26.74	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	15.13	20.05	500	Complies
	5785 MHz	13.79	26.22	500	Complies
	5825 MHz	15.13	23.70	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	33.97	37.62	500	Complies
	5795 MHz	33.85	50.50	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	74.78	76.12	500	Complies

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test EUT / Function	EUT: Version 2 / Beamforming function

For 2.4GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	2412 MHz	15.07	17.71	500	Complies
	2437 MHz	15.07	17.71	500	Complies
	2462 MHz	15.71	17.71	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	36.29	36.75	500	Complies
	2437 MHz	36.40	36.90	500	Complies
	2452 MHz	36.52	36.75	500	Complies
802.11ac MCS0/Nss2 VHT20	2437 MHz	15.65	17.71	500	Complies

For 5GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.62	18.14	500	Complies
	5785 MHz	17.62	18.06	500	Complies
	5825 MHz	17.62	18.06	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.94	36.75	500	Complies
	5795 MHz	36.29	36.90	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.65	75.83	500	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	17.04	18.23	500	Complies
	5785 MHz	17.50	18.40	500	Complies
	5825 MHz	17.56	19.27	500	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	35.82	37.48	500	Complies
	5795 MHz	36.05	37.91	500	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	74.78	76.41	500	Complies

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

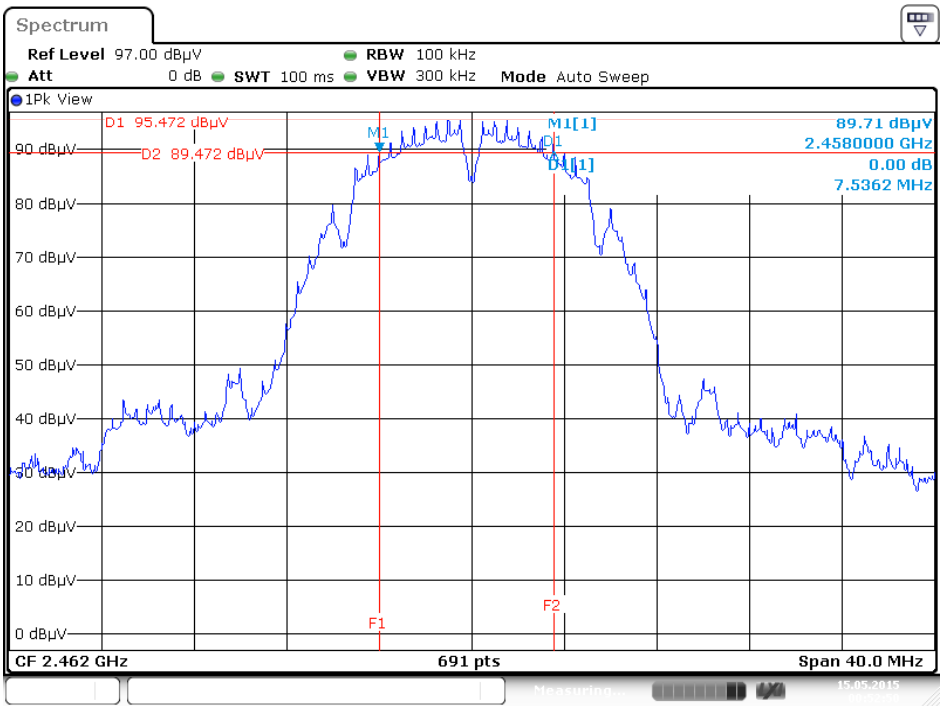
For plots, only the channel with worse result was shown.

EUT: Version 1

For non-beamforming function:

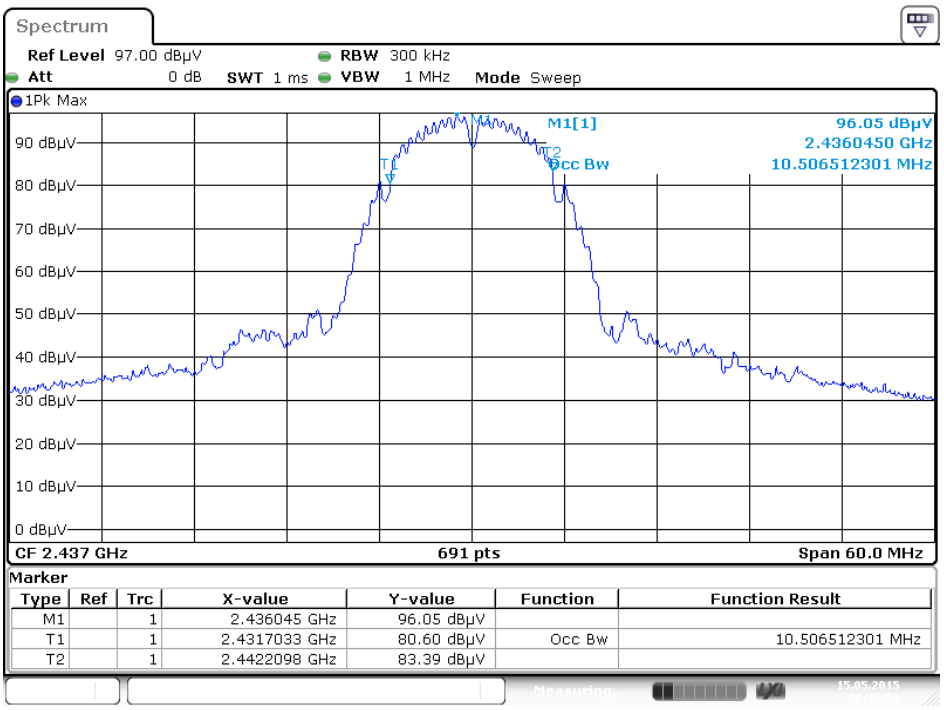
For 2.4GHz Band

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



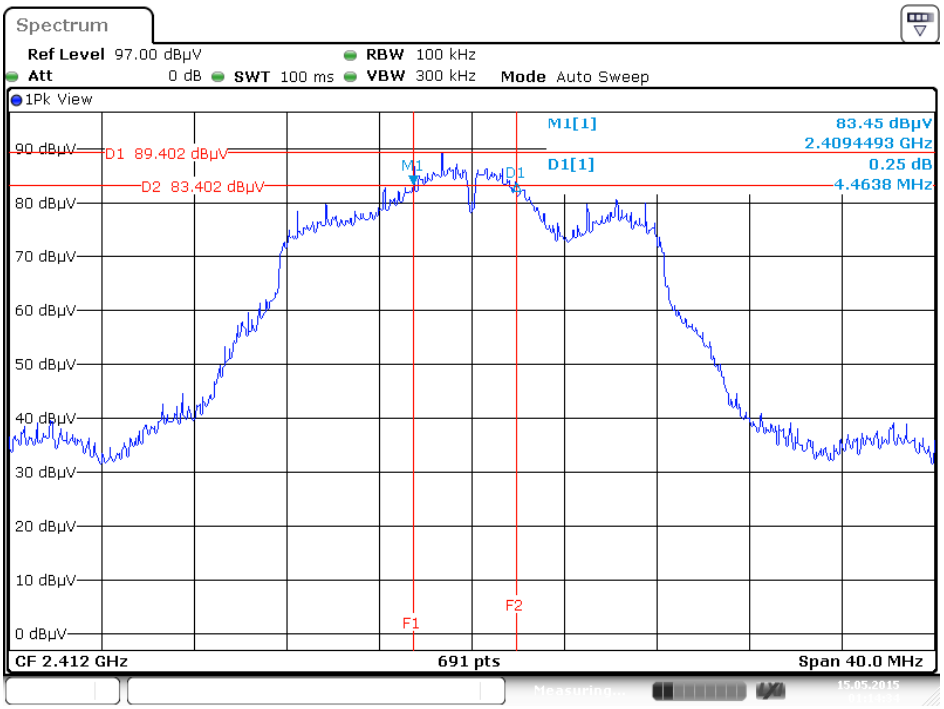
Date:15.MAY.2015 00:52:50

99% Occupied Bandwidth Plot on Configuration IEEE 802.11b / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



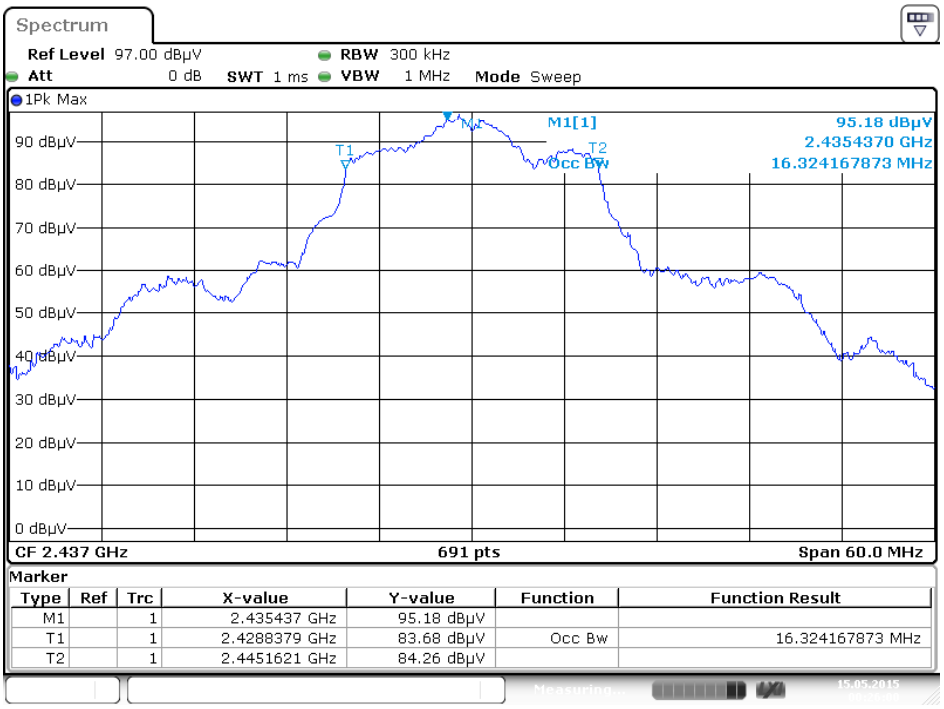
Date:15.MAY.2015 00:45:54

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2412 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



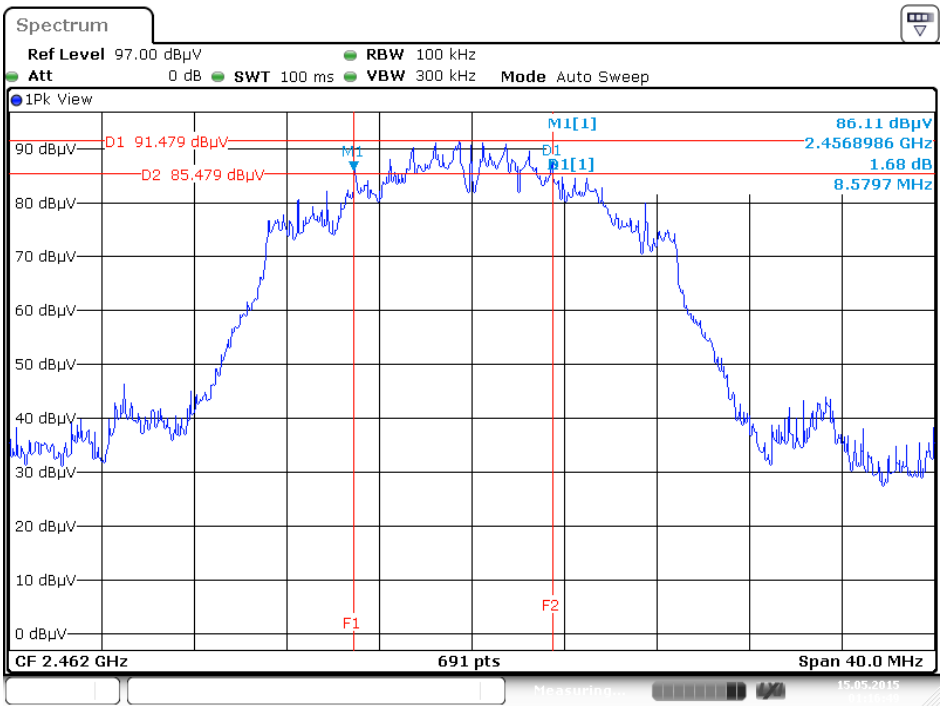
Date:15MAY.2015 01:14:35

99% Occupied Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



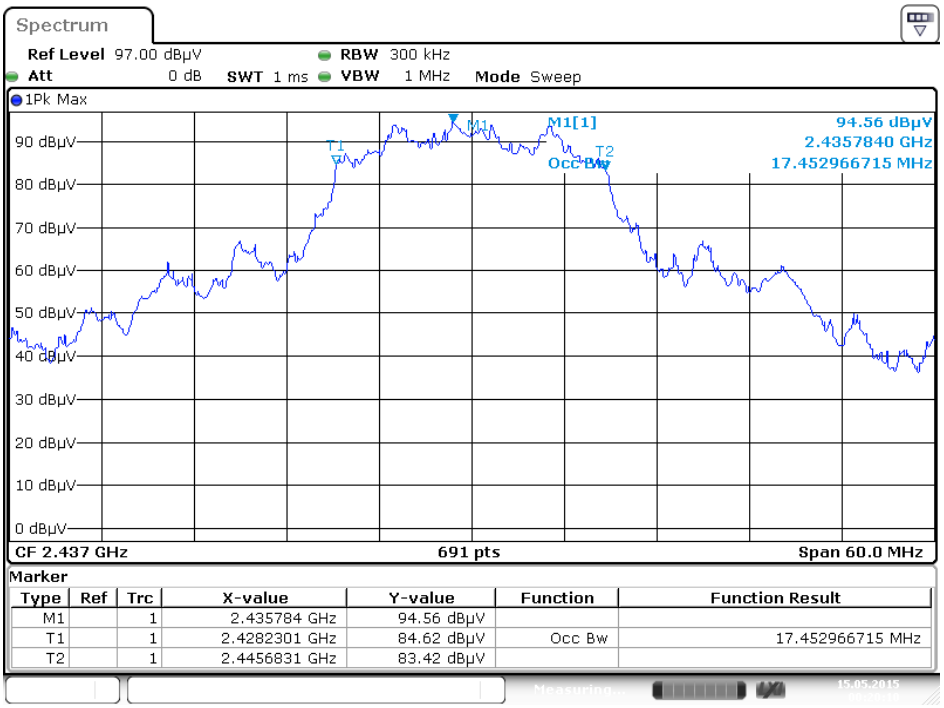
Date:15MAY.2015 00:26:00

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2462 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



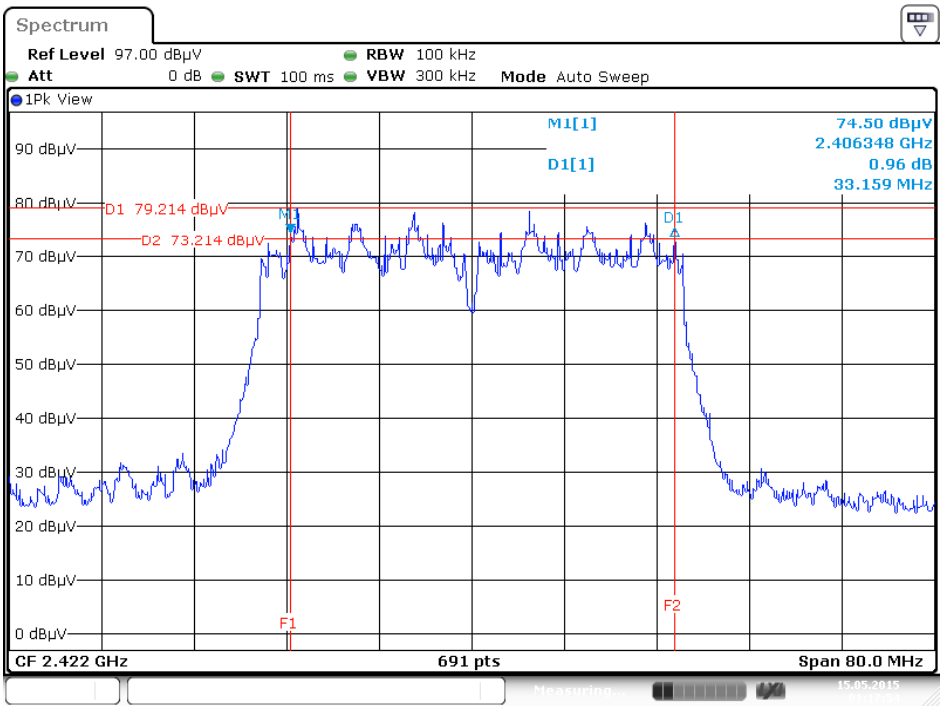
Date:15.MAY.2015 01:16:49

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



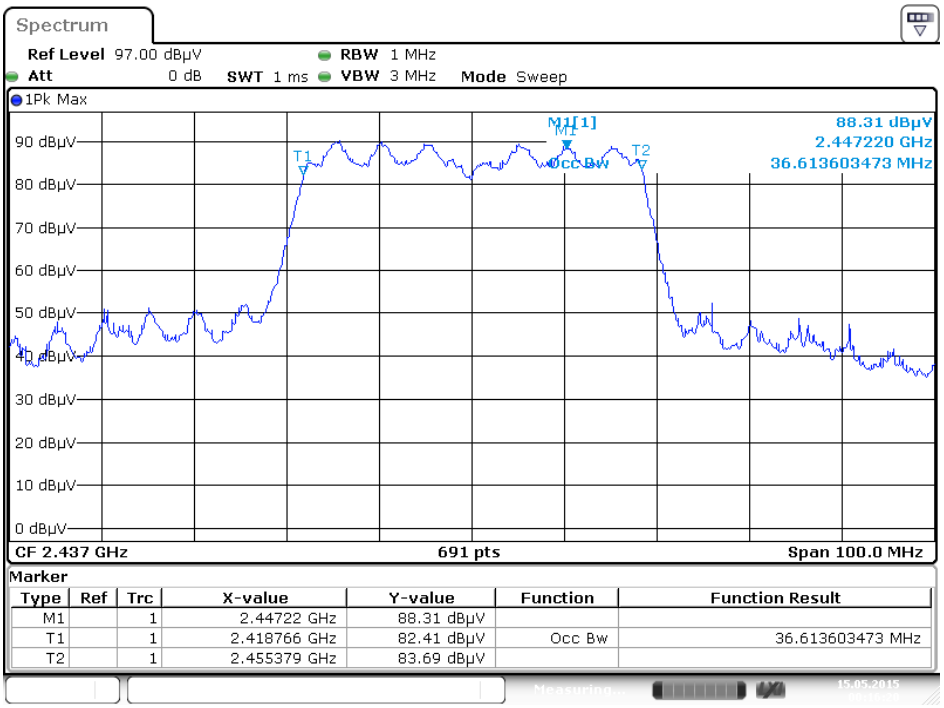
Date:15.MAY.2015 00:20:10

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



Date:15.MAY.2015 01:17:54

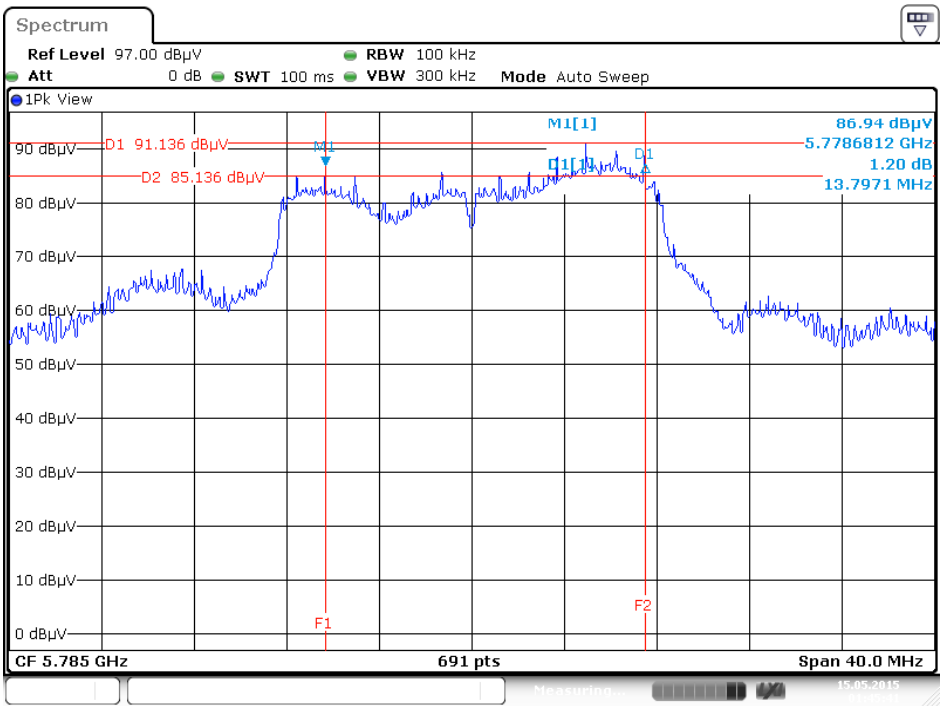
99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



Date:15.MAY.2015 00:16:20

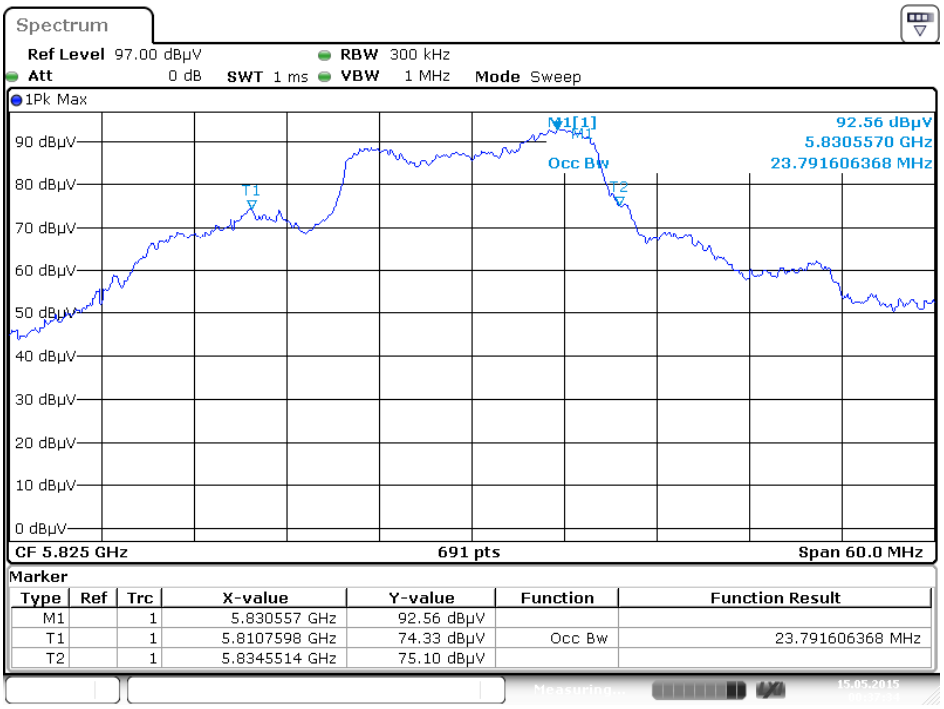
For 5GHz Band

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



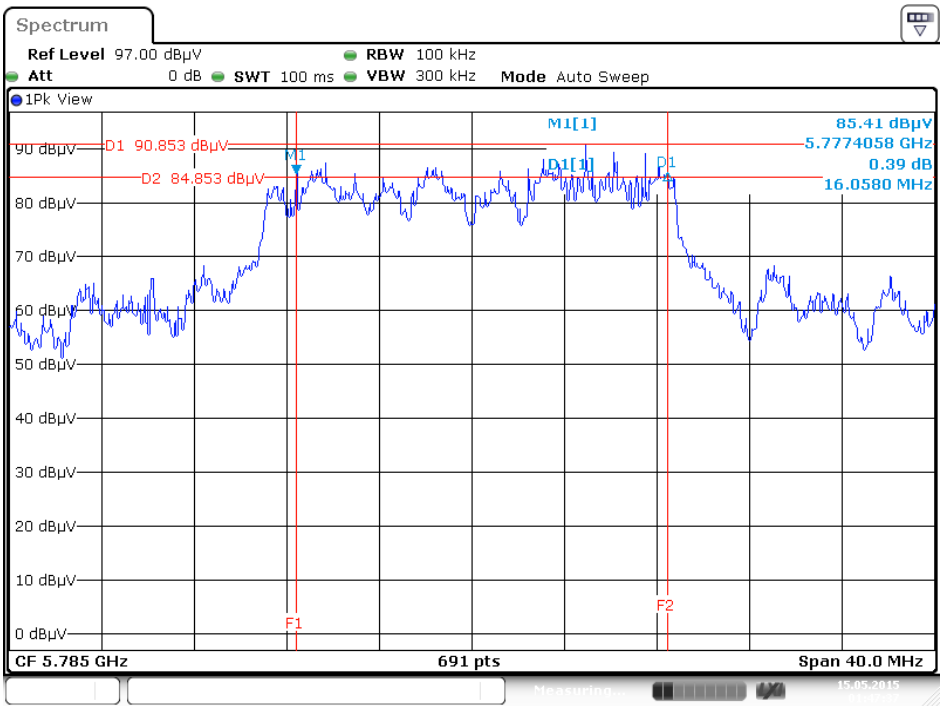
Date:15.MAY.2015 01:45:41

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



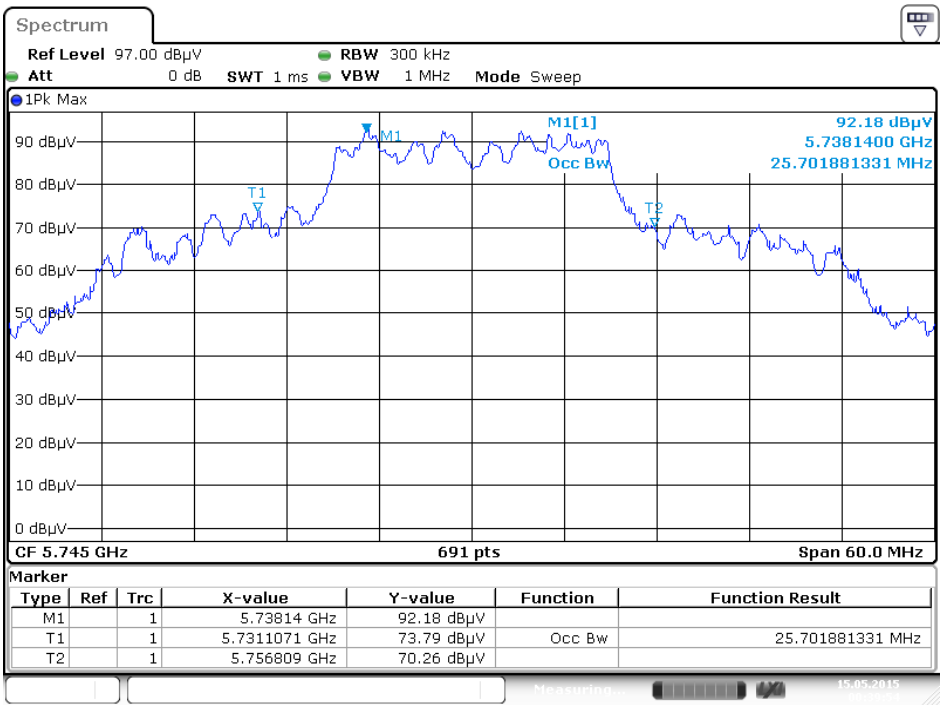
Date:15.MAY.2015 00:37:34

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



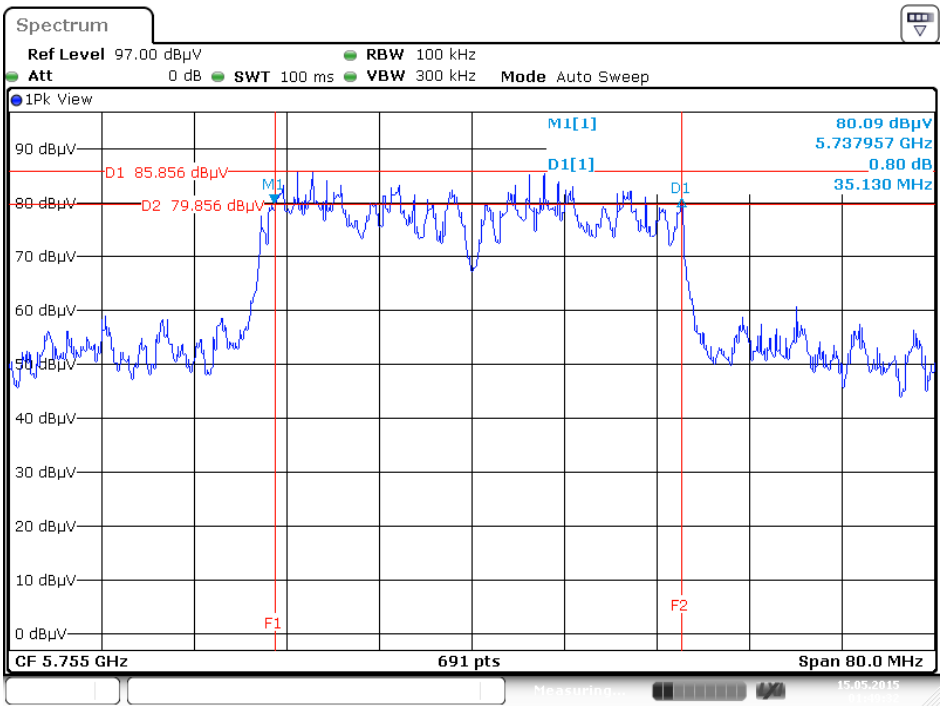
Date:15.MAY.2015 01:47:38

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



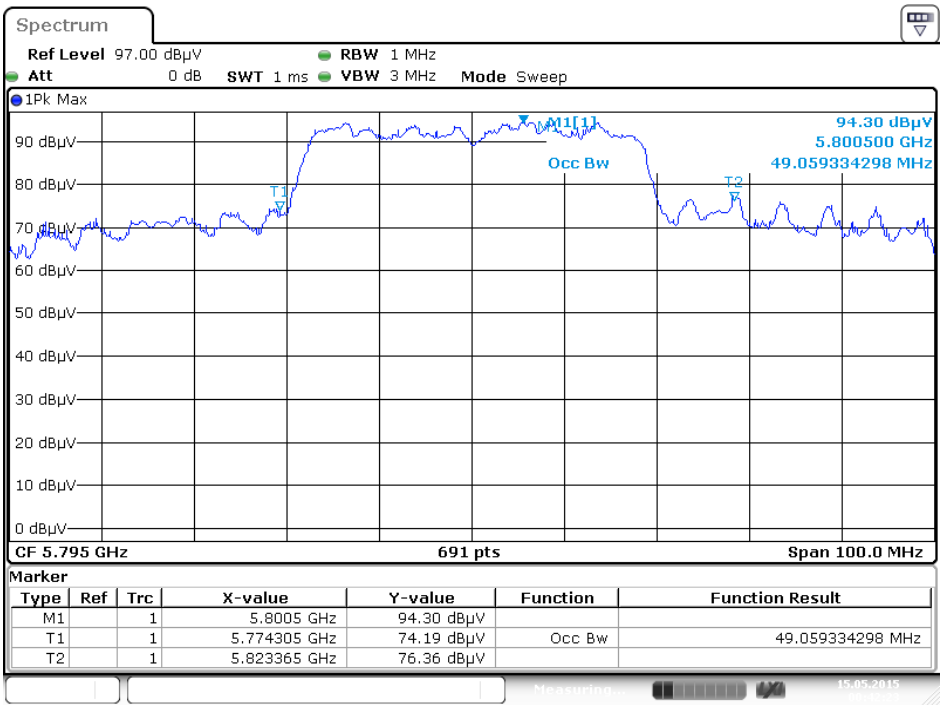
Date:15.MAY.2015 00:39:54

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



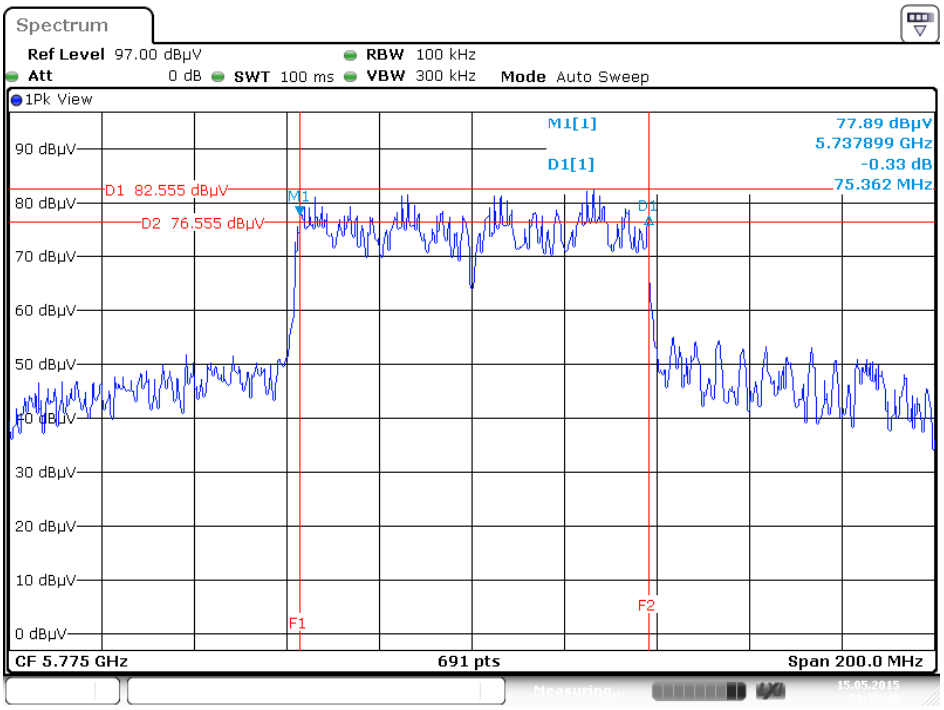
Date:15.MAY.2015 01:49:32

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



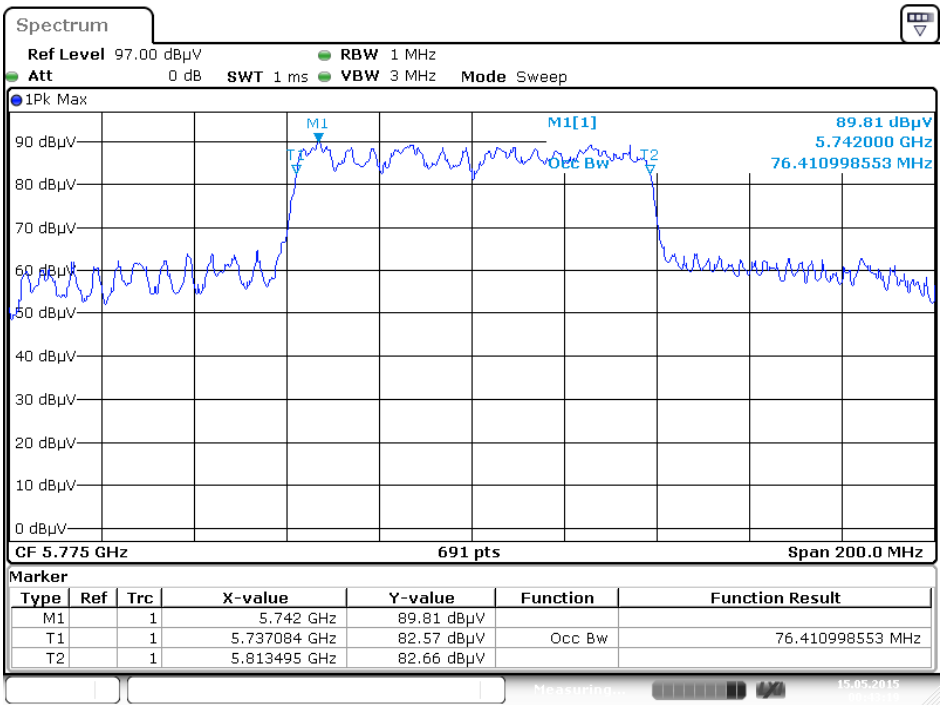
Date:15.MAY.2015 00:42:23

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



Date:15.MAY.2015 01:50:46

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



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.742 GHz	89.81 dBµV		
T1		1	5.737084 GHz	82.57 dBµV	Occ Bw	76.410998553 MHz
T2		1	5.813495 GHz	82.66 dBµV		

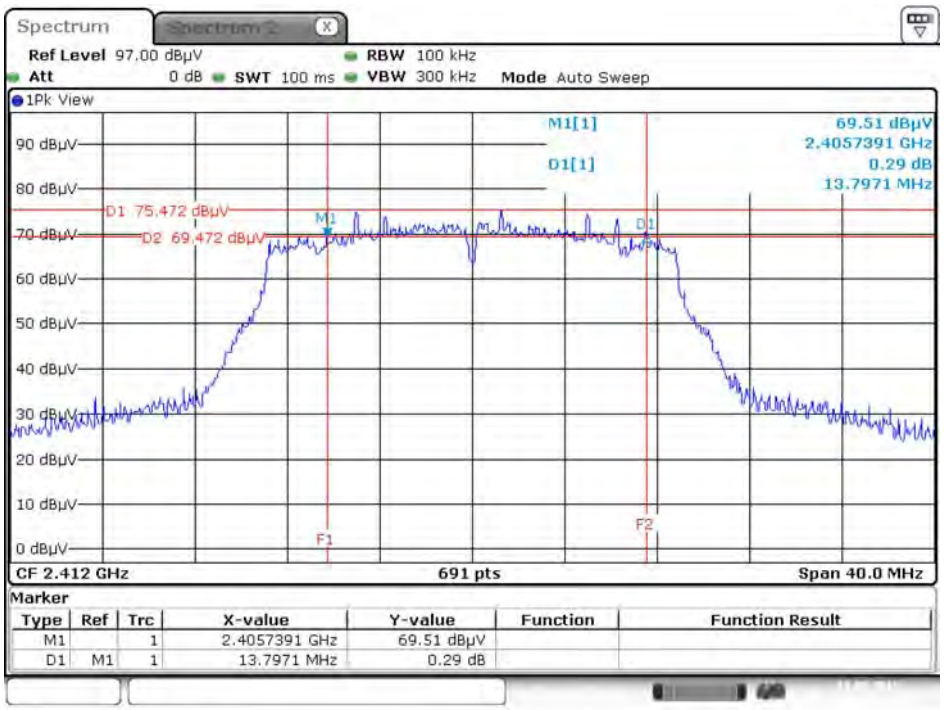
Date:15.MAY.2015 00:43:19

EUT: Version 1

<u>For beamforming function:</u>

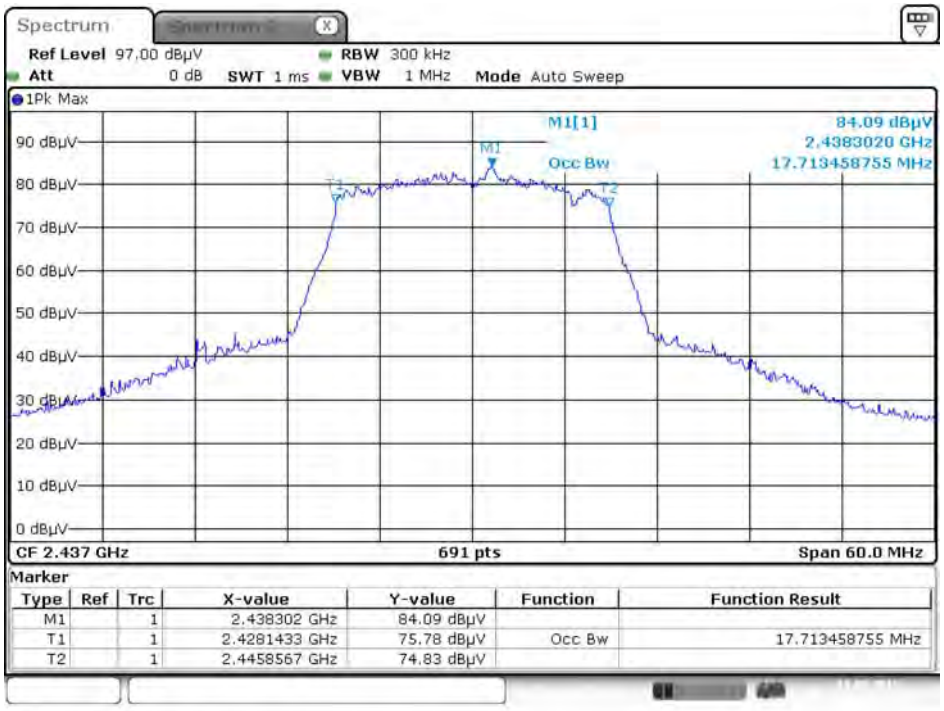
For 2.4GHz Band

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2412 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



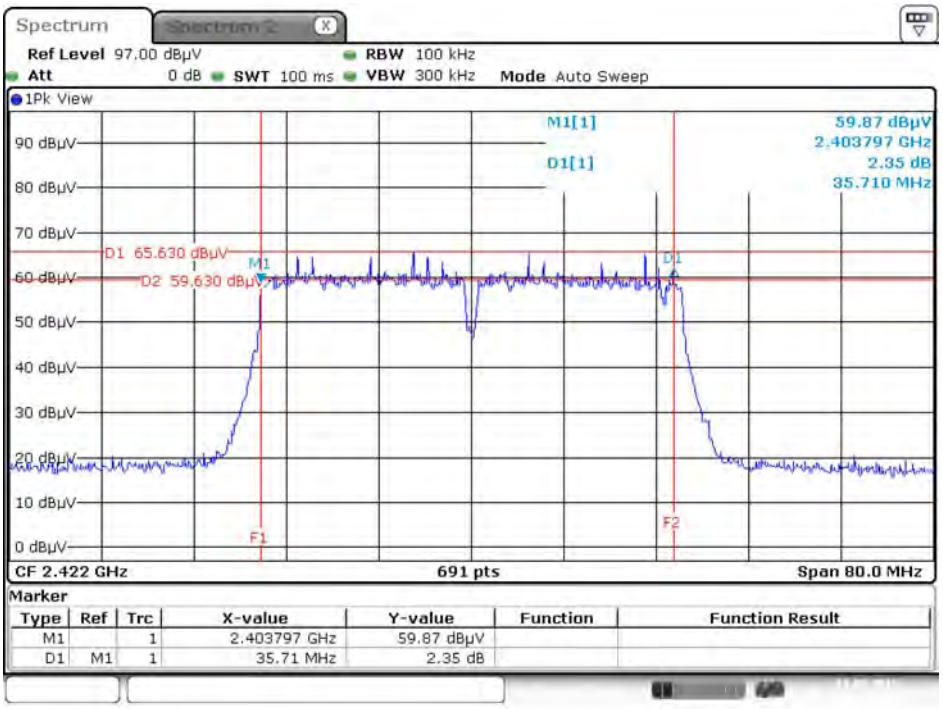
Date: 19.MAY.2015 18:06:44

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



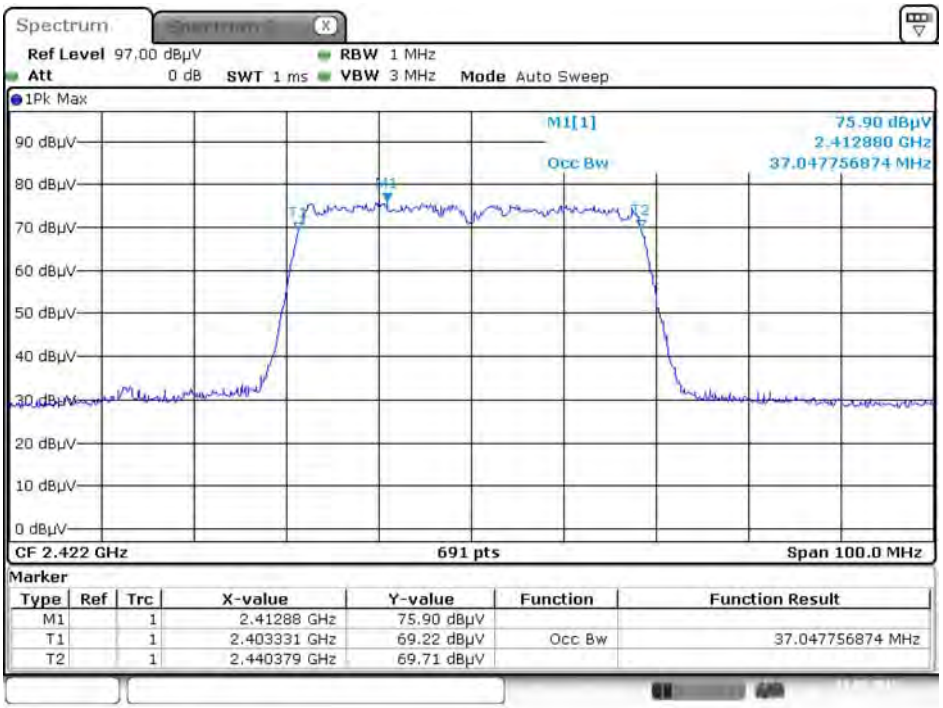
Date: 19.MAY.2015 20:06:37

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



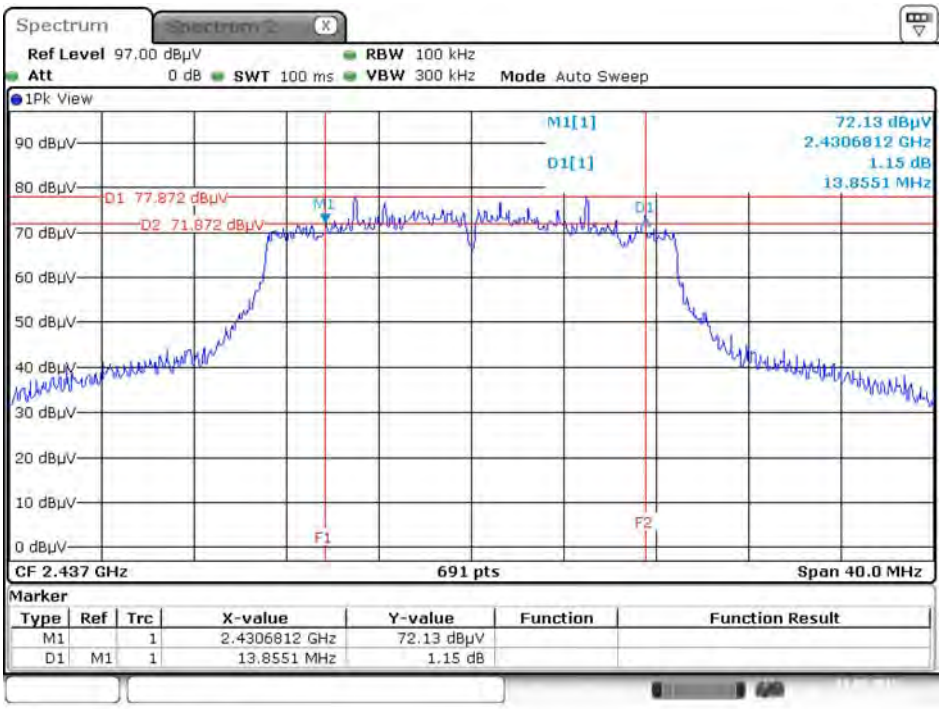
Date: 19.MAY.2015 18:12:01

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



Date: 19.MAY.2015 20:13:10

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



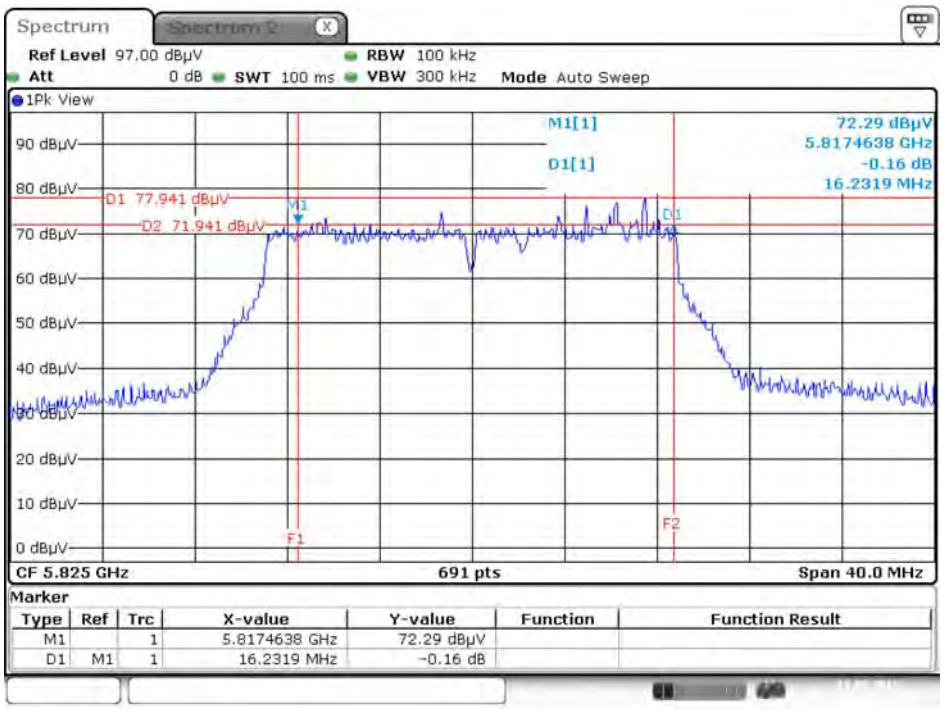
Date: 19.MAY.2015 18:17:32

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4

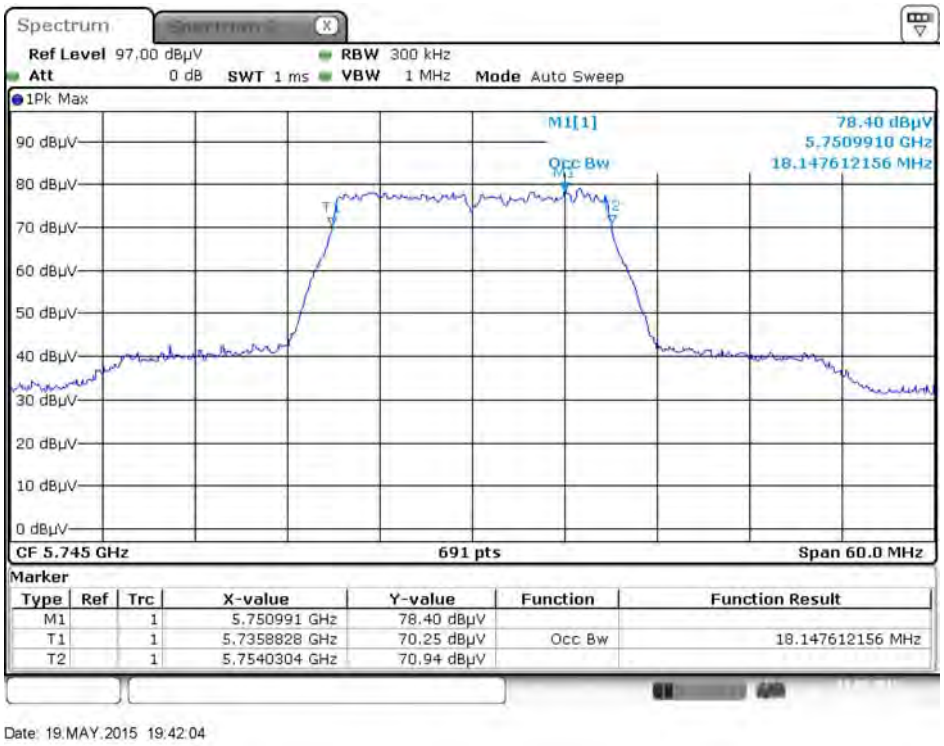
Date: 19.MAY.2015 20:03:47

For 5GHz Band

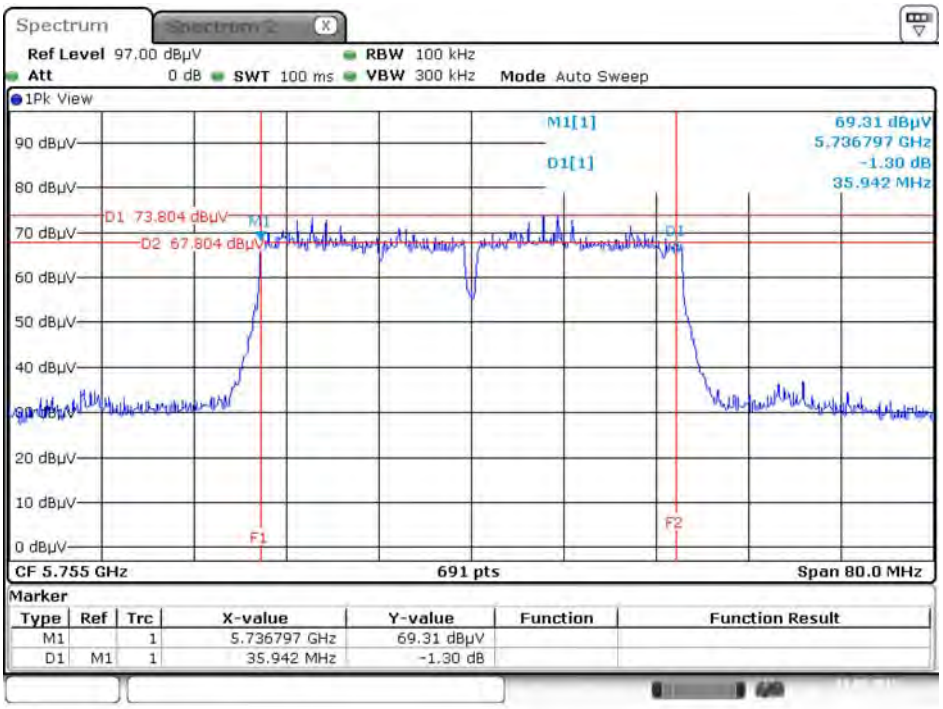
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



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

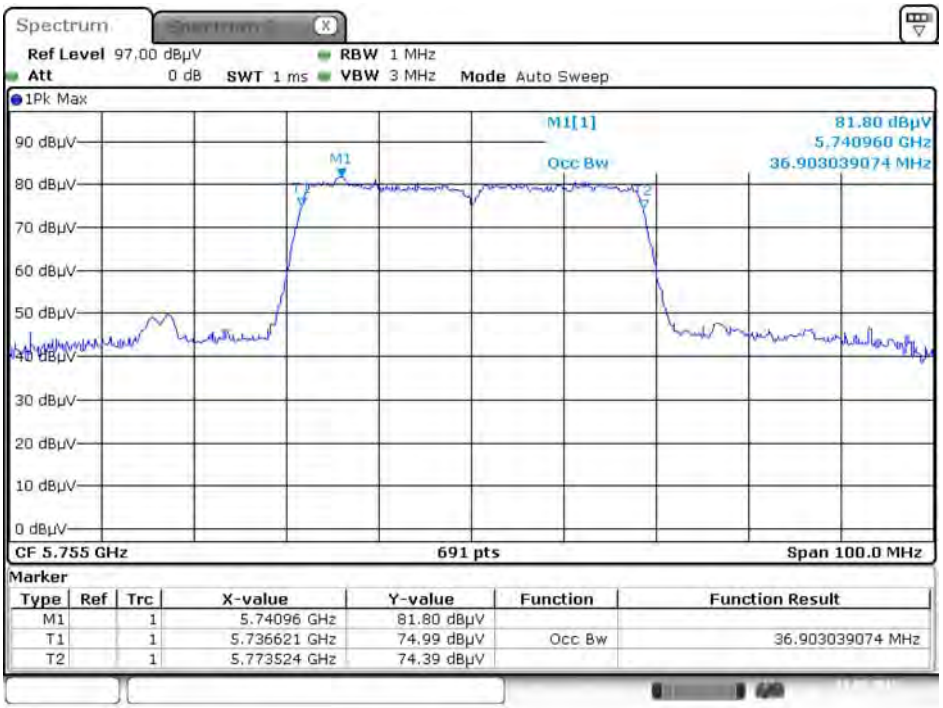


6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



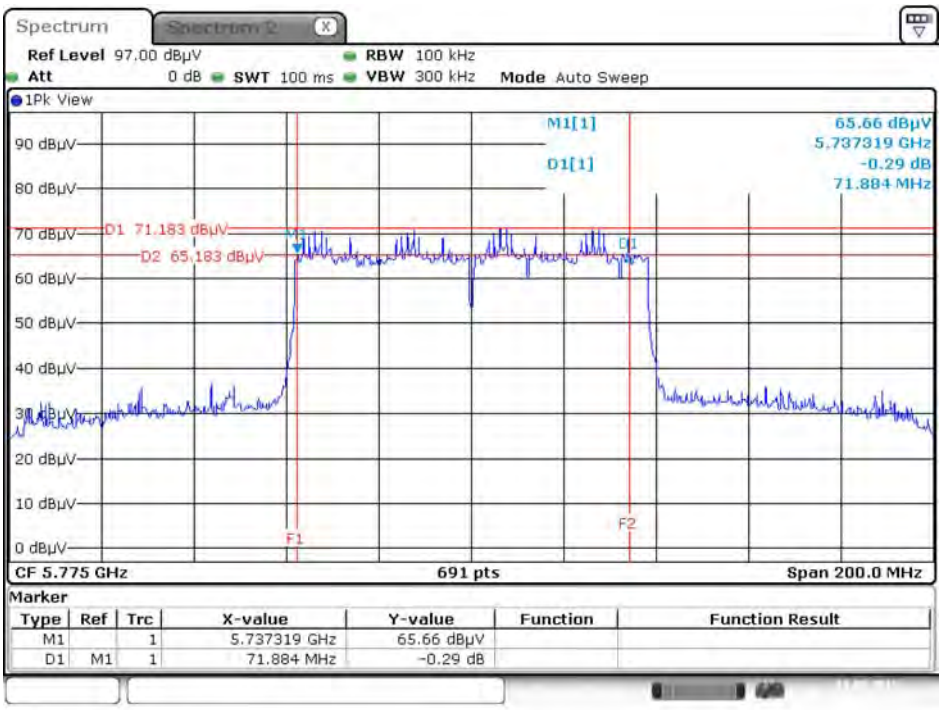
Date: 19.MAY.2015 18:26:08

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



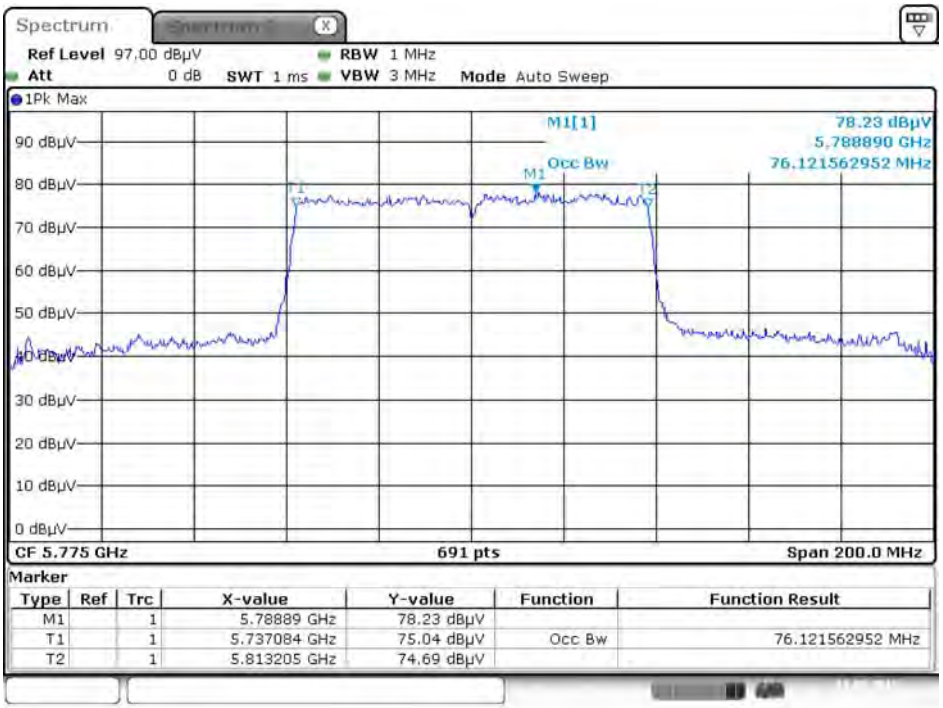
Date: 19.MAY.2015 19:53:11

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



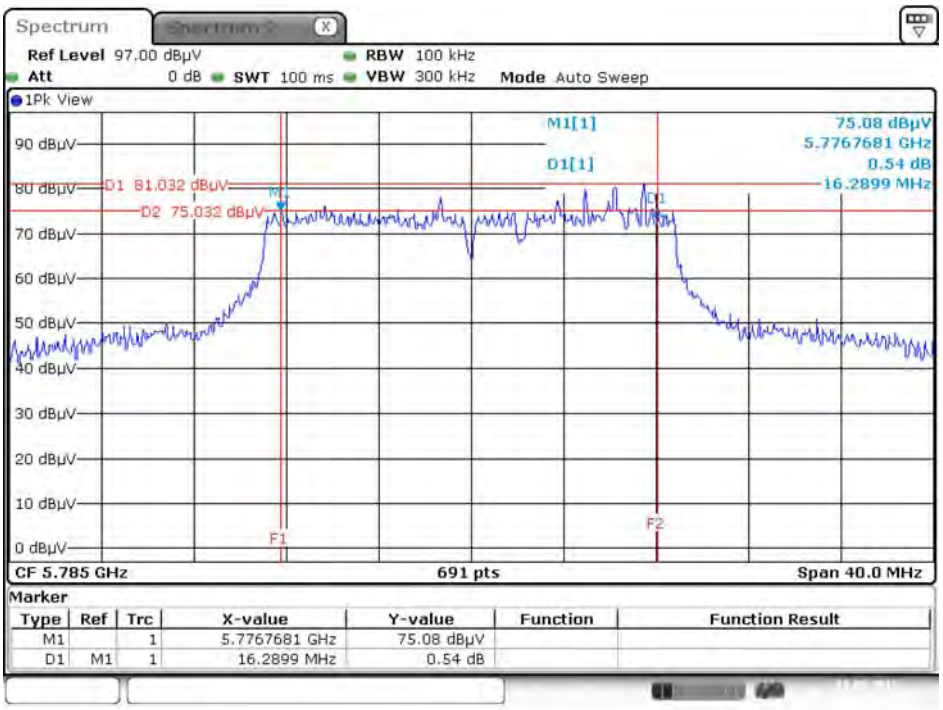
Date: 19.MAY.2015 18:29:03

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



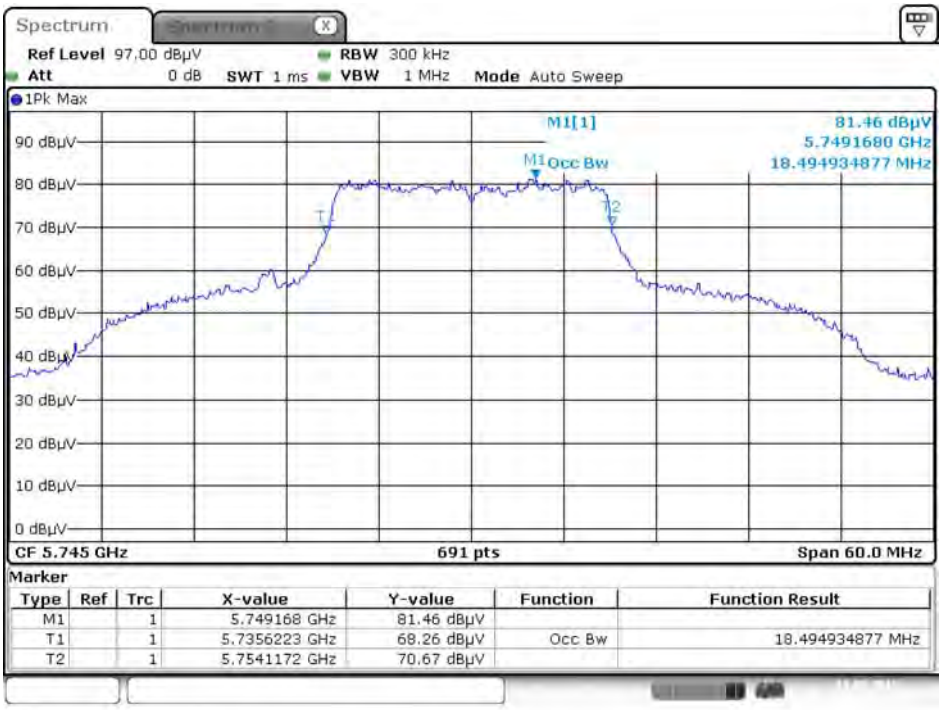
Date: 19.MAY.2015 19:52:10

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 5785 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



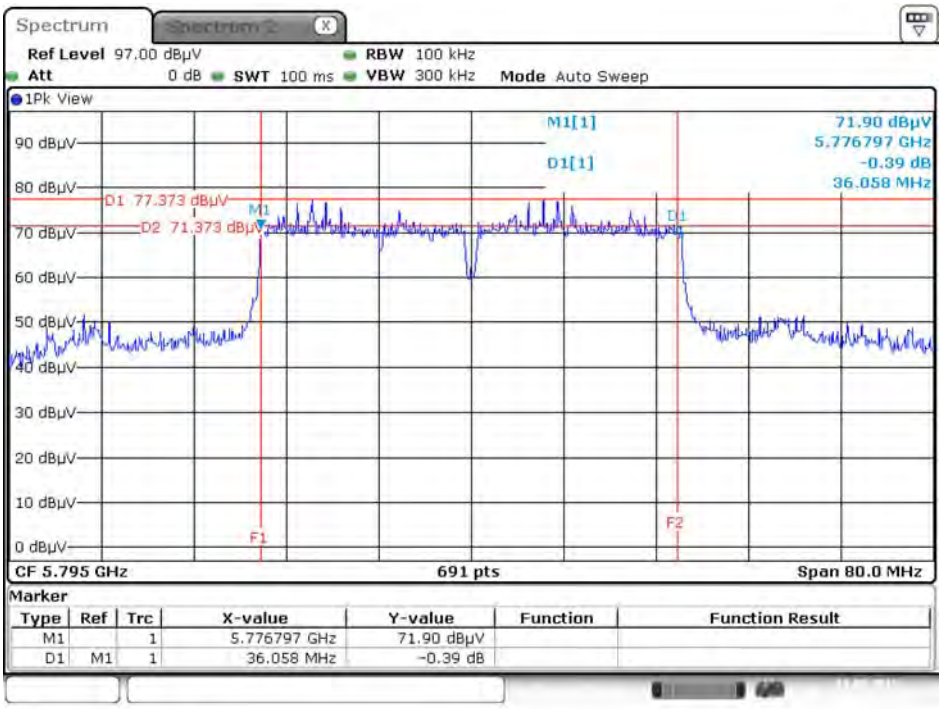
Date: 19.MAY.2015 18:33:40

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



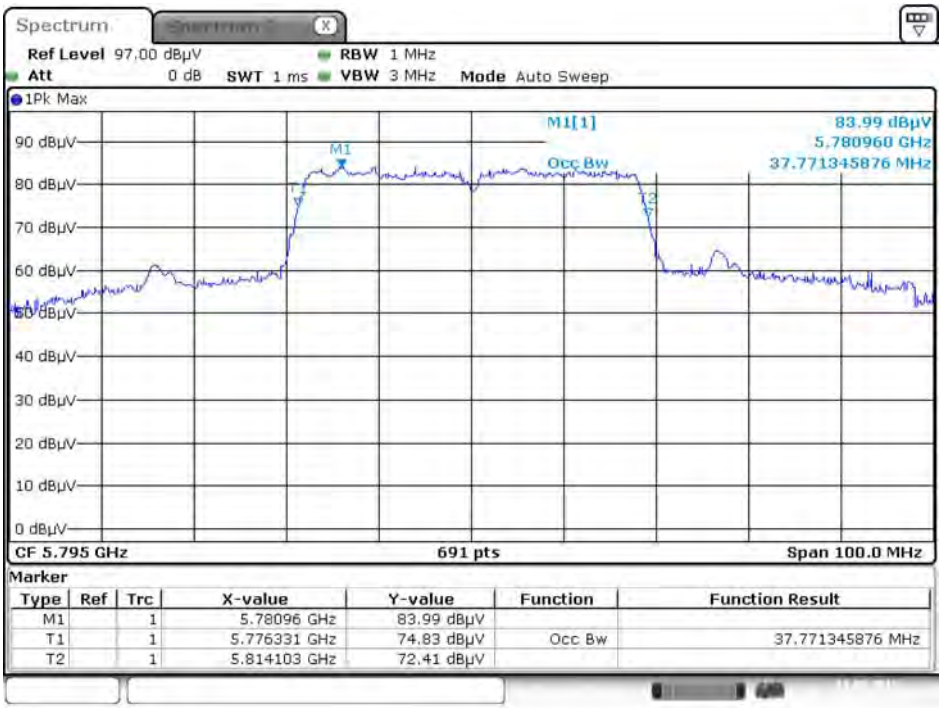
Date: 19.MAY.2015 19:56:10

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



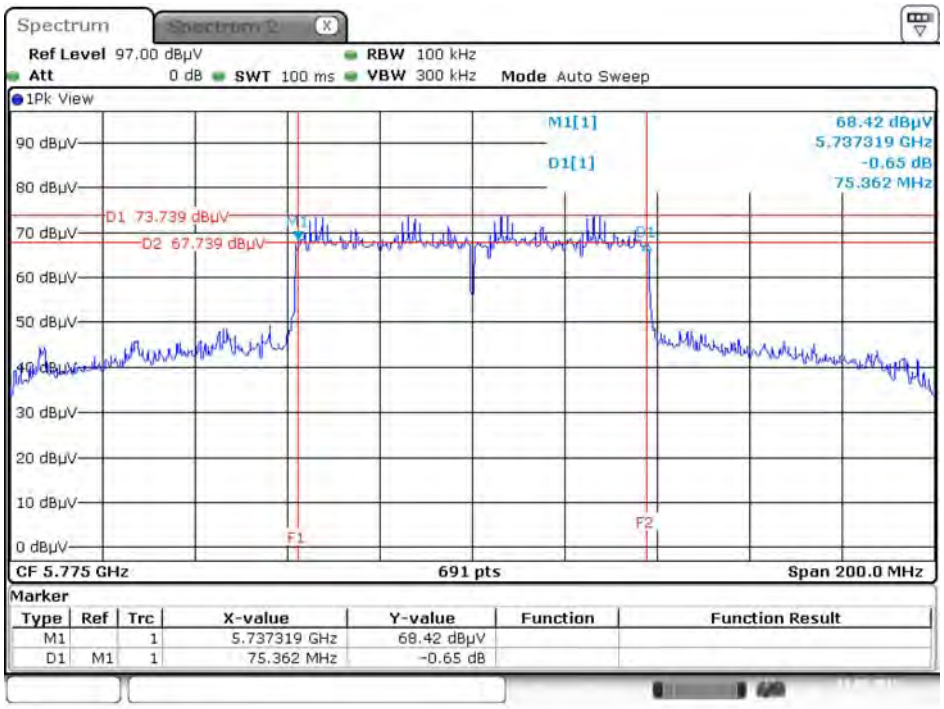
Date: 19.MAY.2015 19:36:15

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



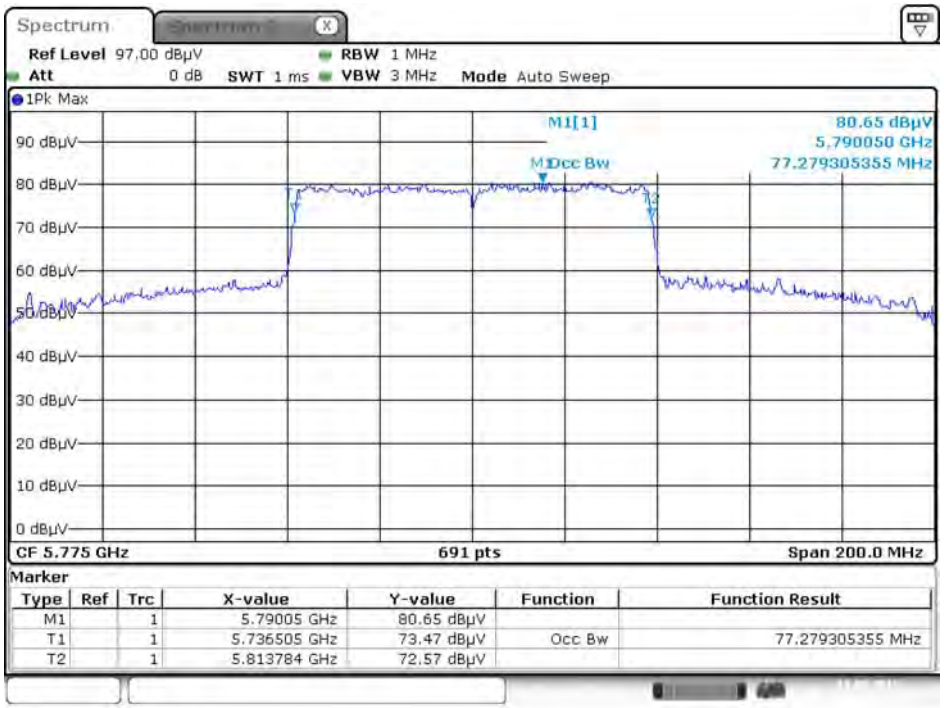
Date: 19.MAY.2015 19:59:32

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



Date: 19.MAY.2015 19:37:48

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



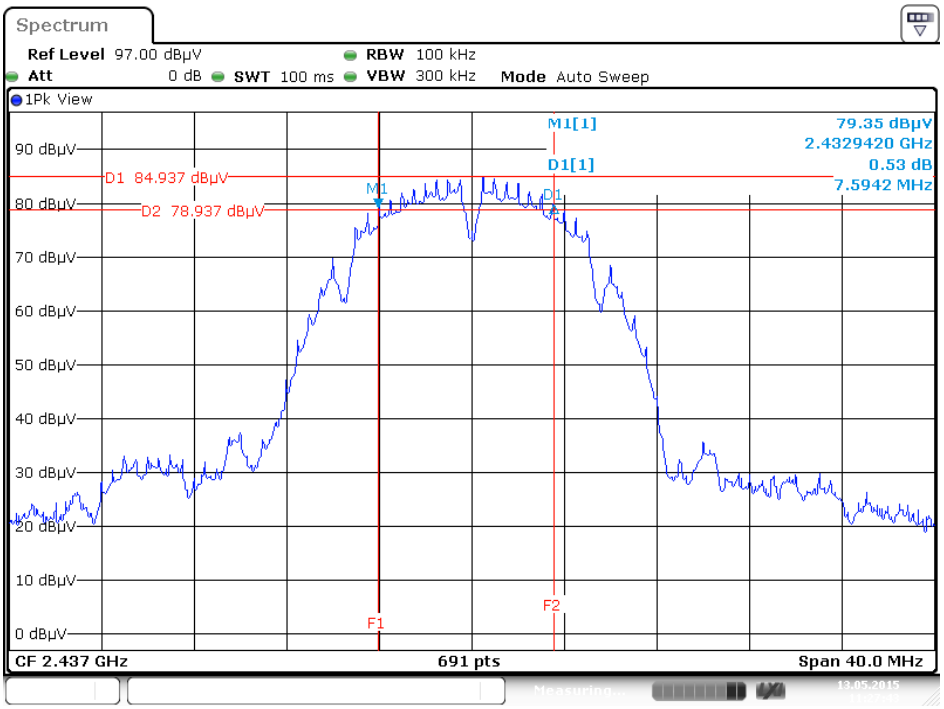
Date: 19.MAY.2015 20:00:20

EUT: Version 2

For non-beamforming function:

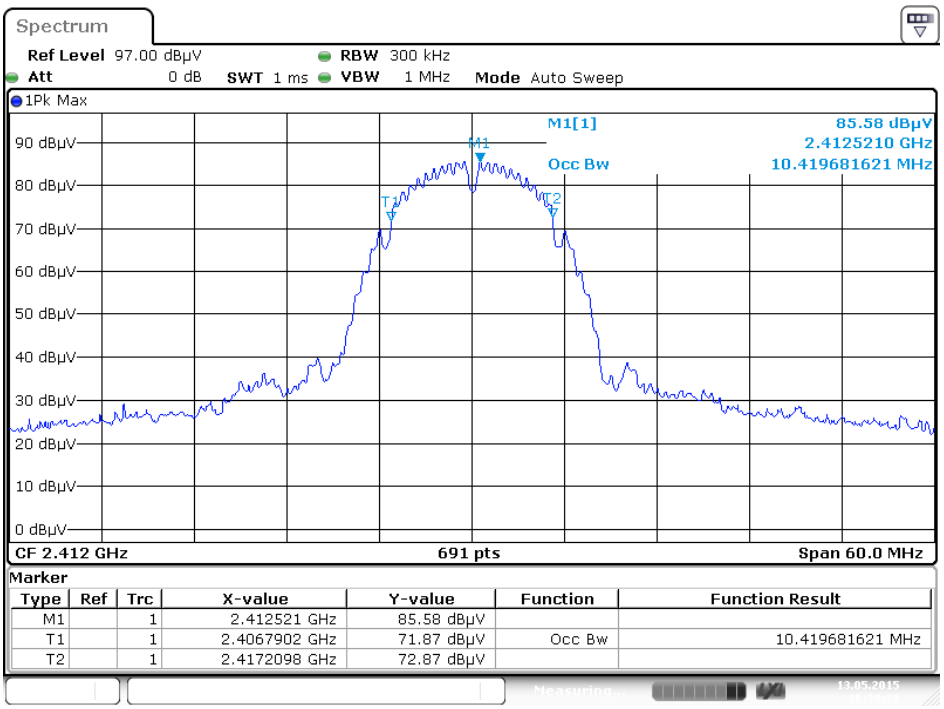
For 2.4GHz Band

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



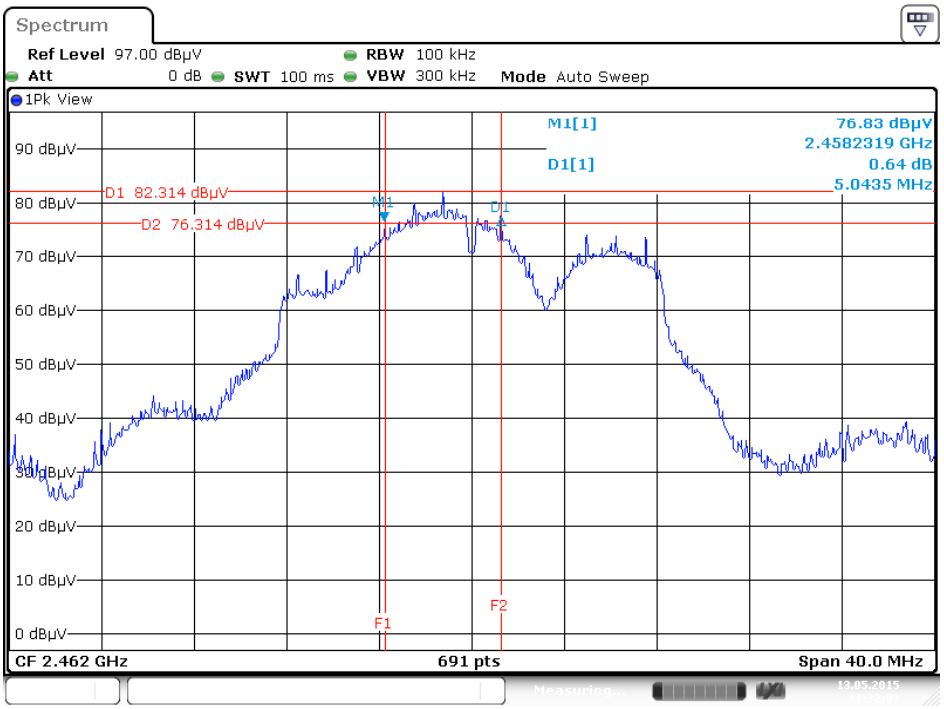
Date: 13 MAY 2015 11:27:42

99% Occupied Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



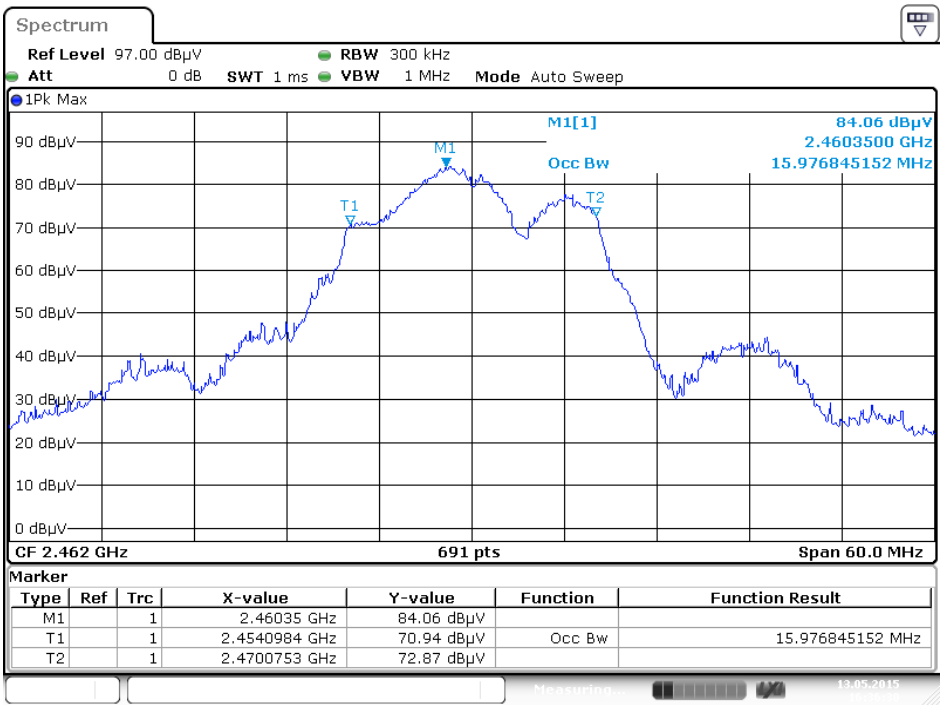
Date: 13 MAY 2015 16:30:29

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



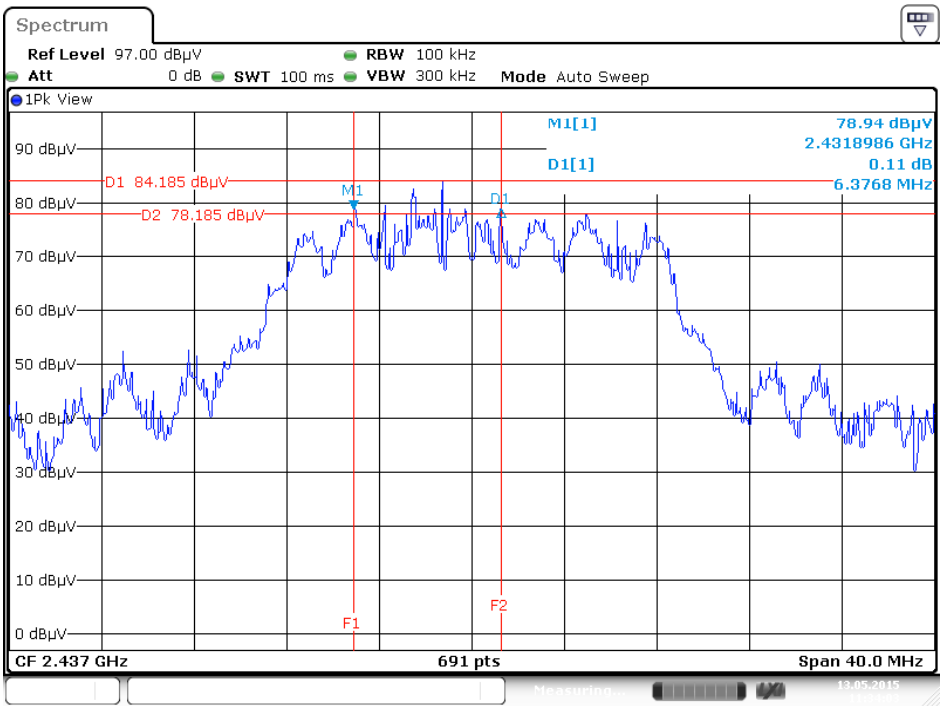
Date:13.MAY.2015 11:32:04

99% Occupied Bandwidth Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



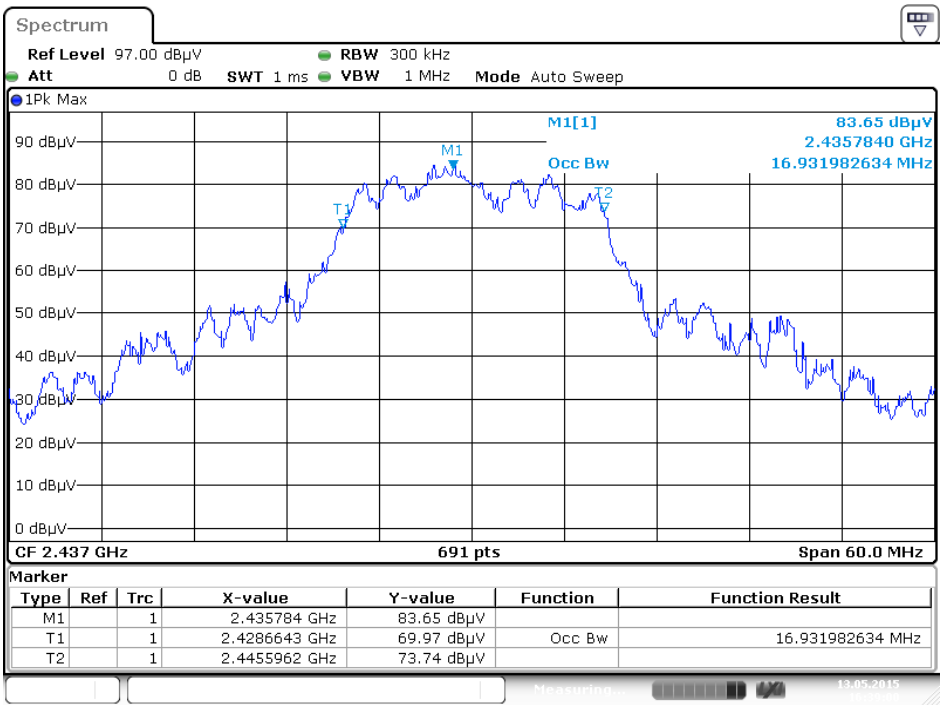
Date:13.MAY.2015 16:36:30

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



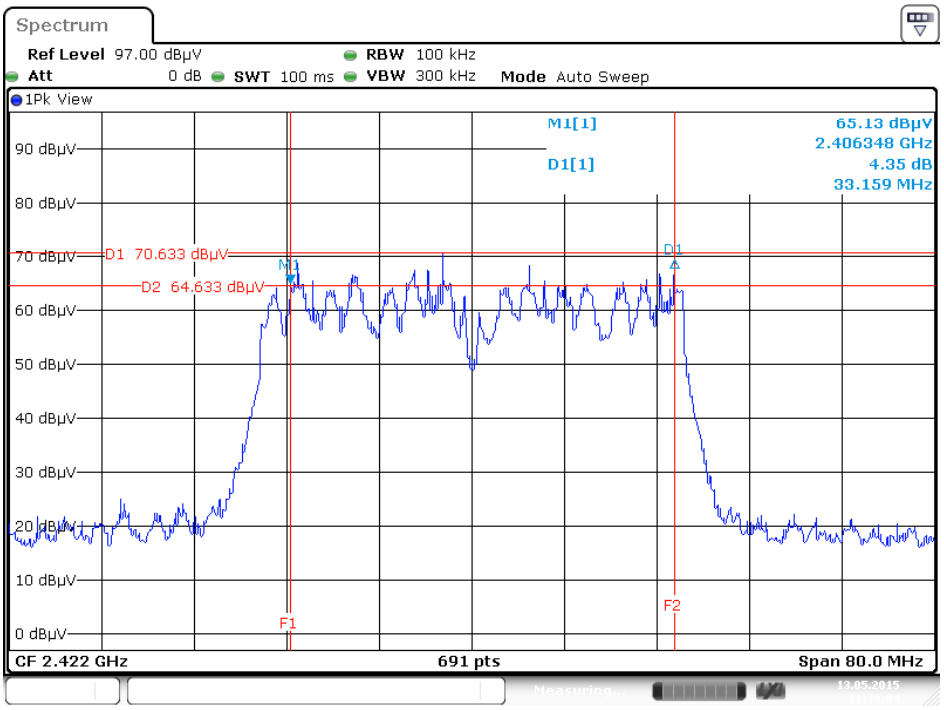
Date:13.MAY.2015 11:34:03

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



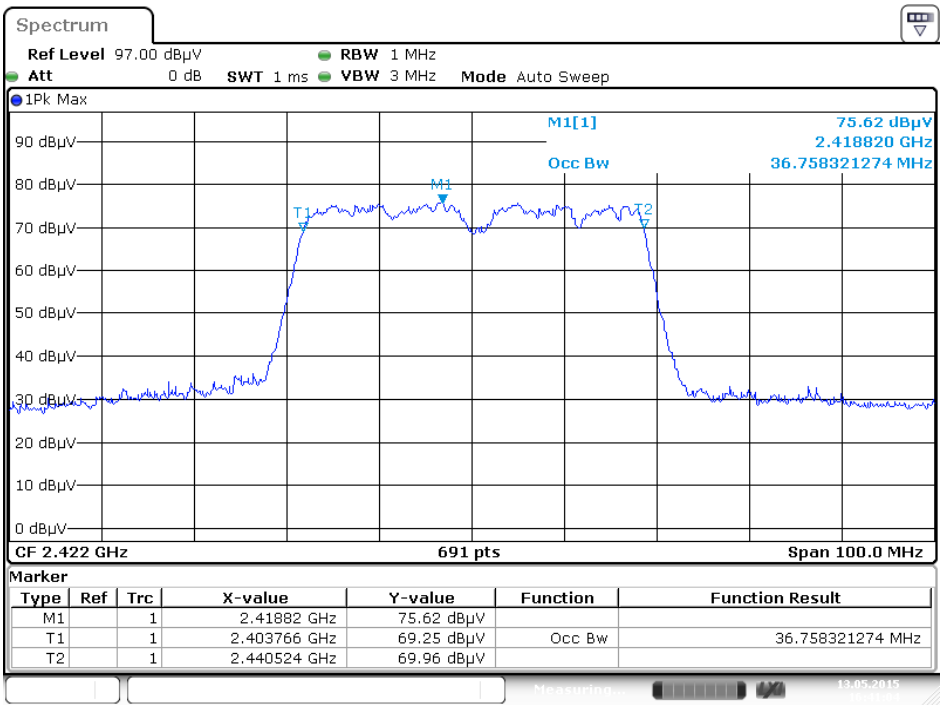
Date:13.MAY.2015 16:39:00

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



Date:13.MAY.2015 11:36:04

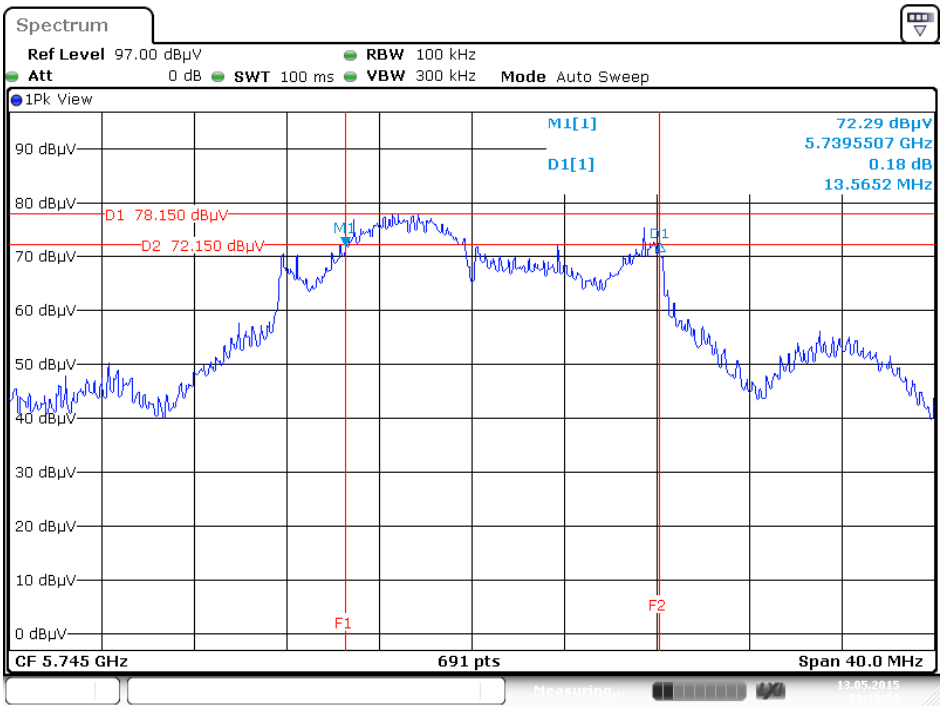
99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



Date:13.MAY.2015 16:41:04

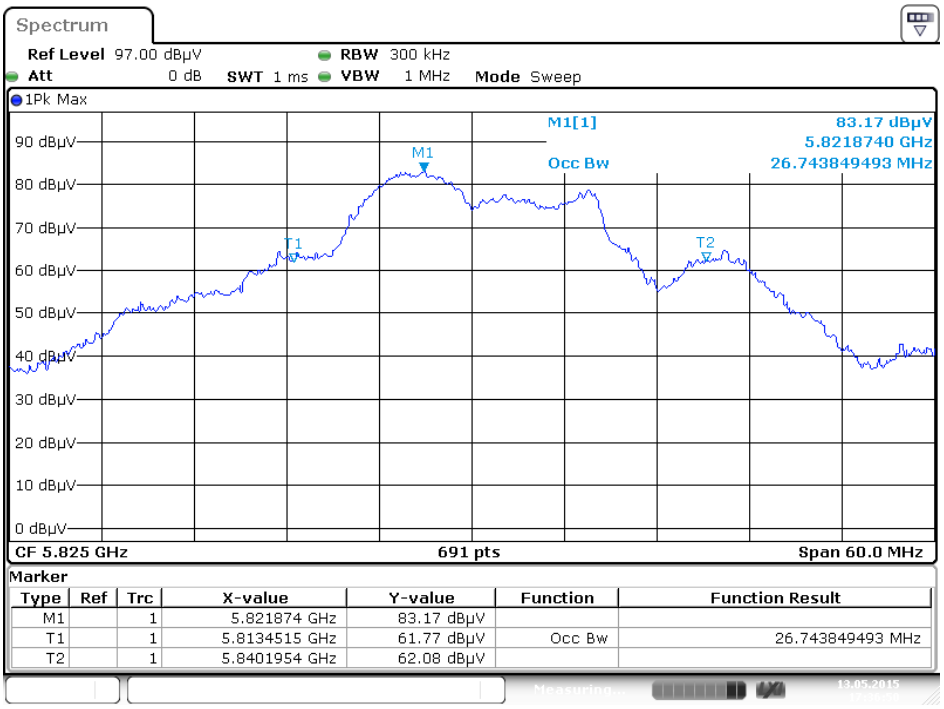
For 5GHz Band

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



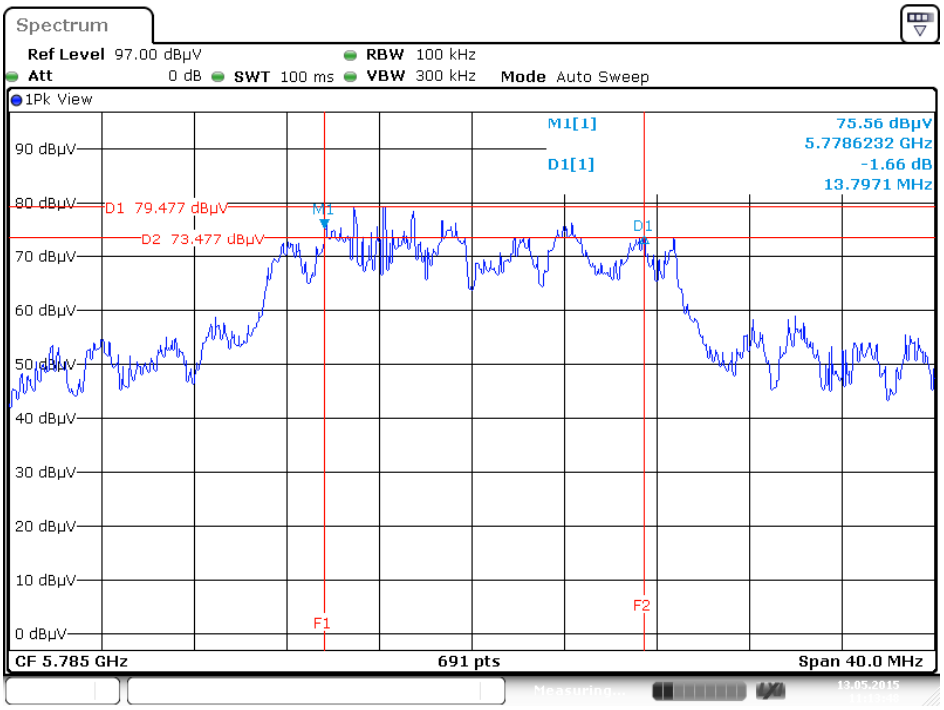
Date:13.MAY.2015 11:10:08

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



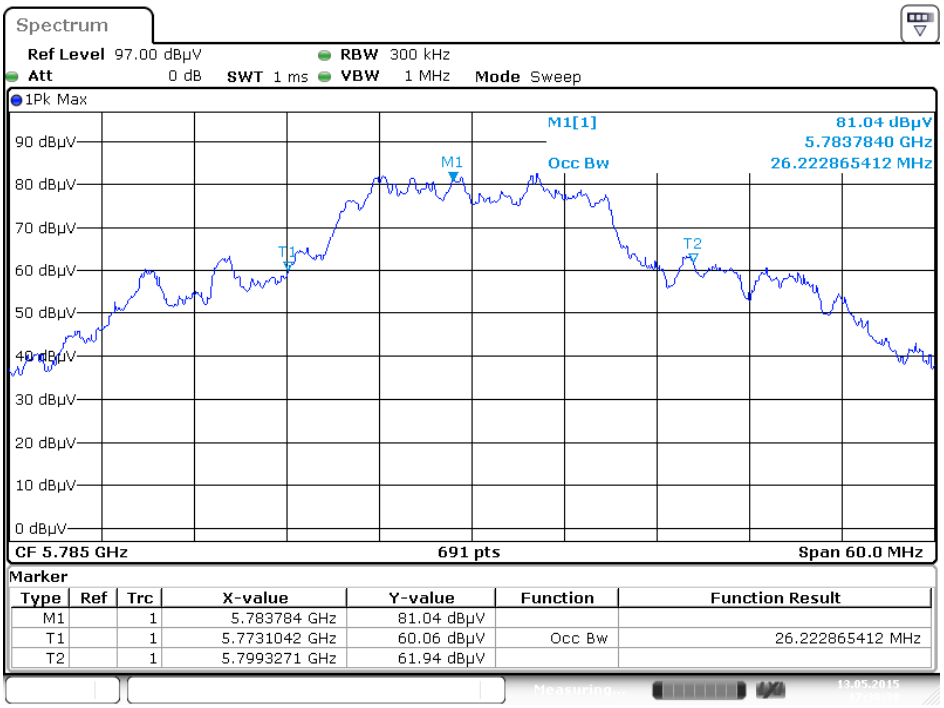
Date:13.MAY.2015 17:36:50

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



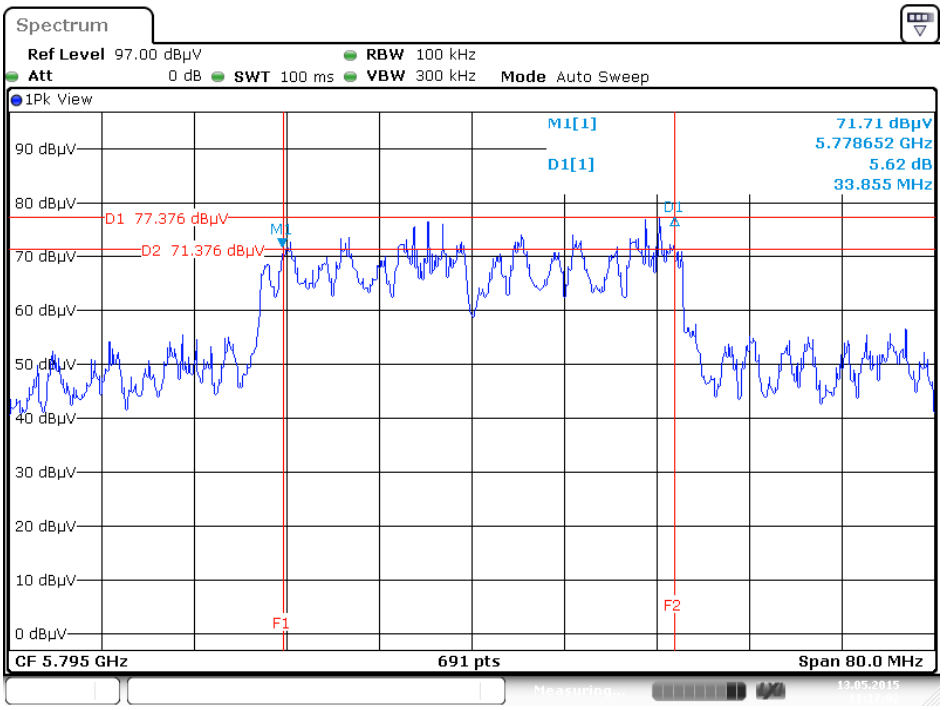
Date:13.MAY.2015 11:13:48

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



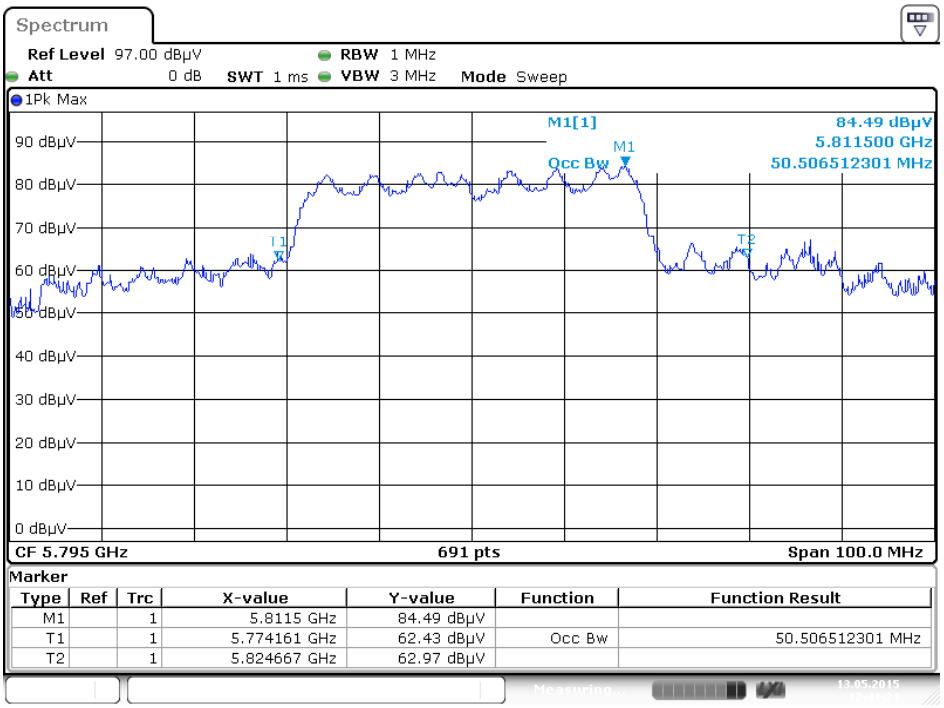
Date:13.MAY.2015 17:38:40

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



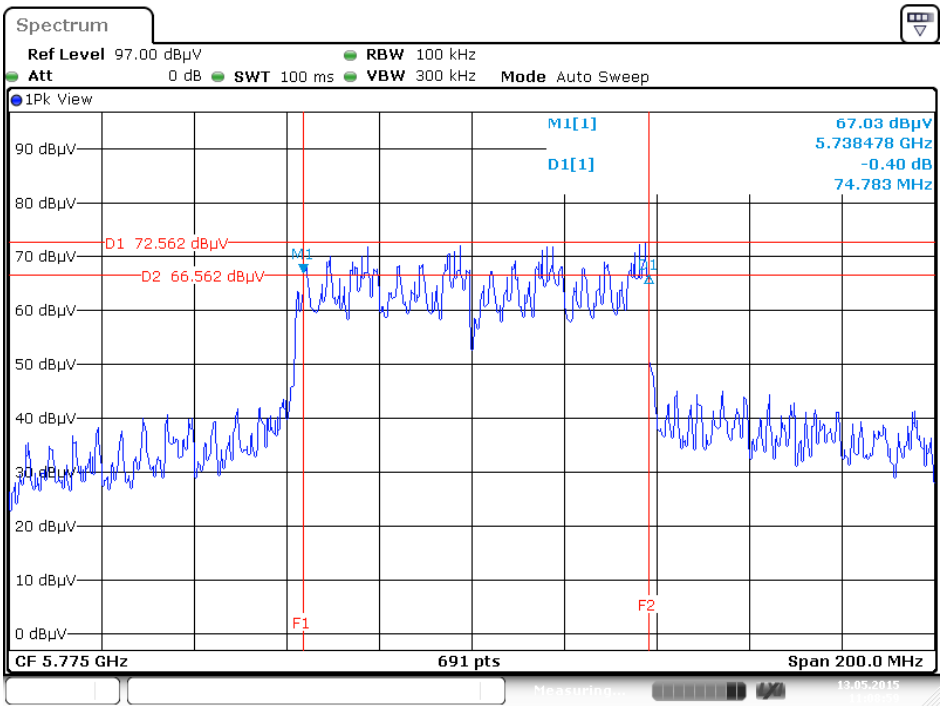
Date:13.MAY.2015 11:17:02

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



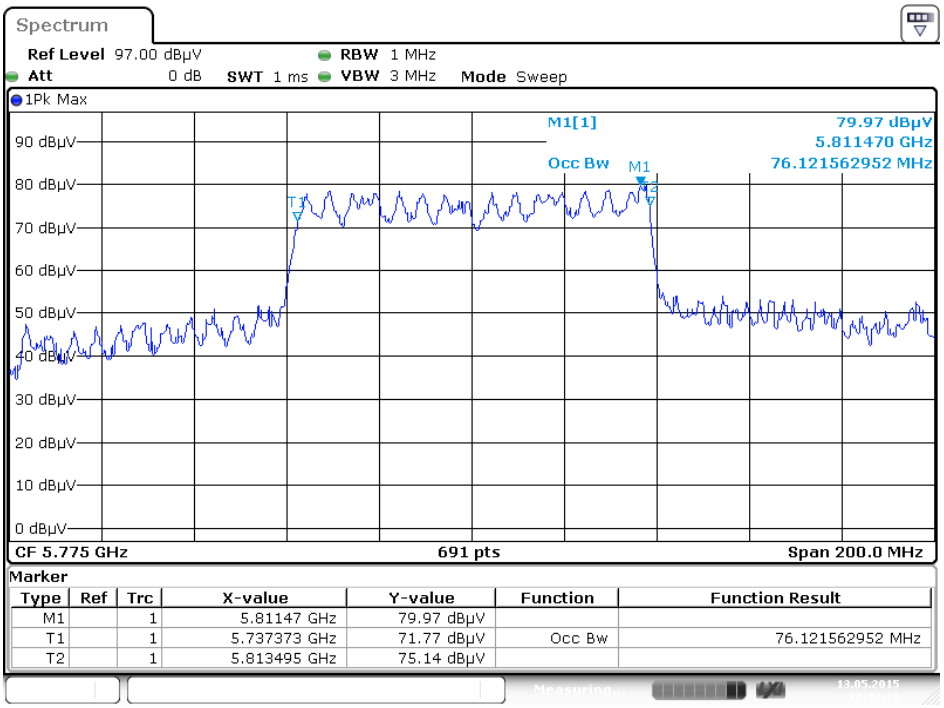
Date:13.MAY.2015 17:41:21

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



Date:13.MAY.2015 11:09:00

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



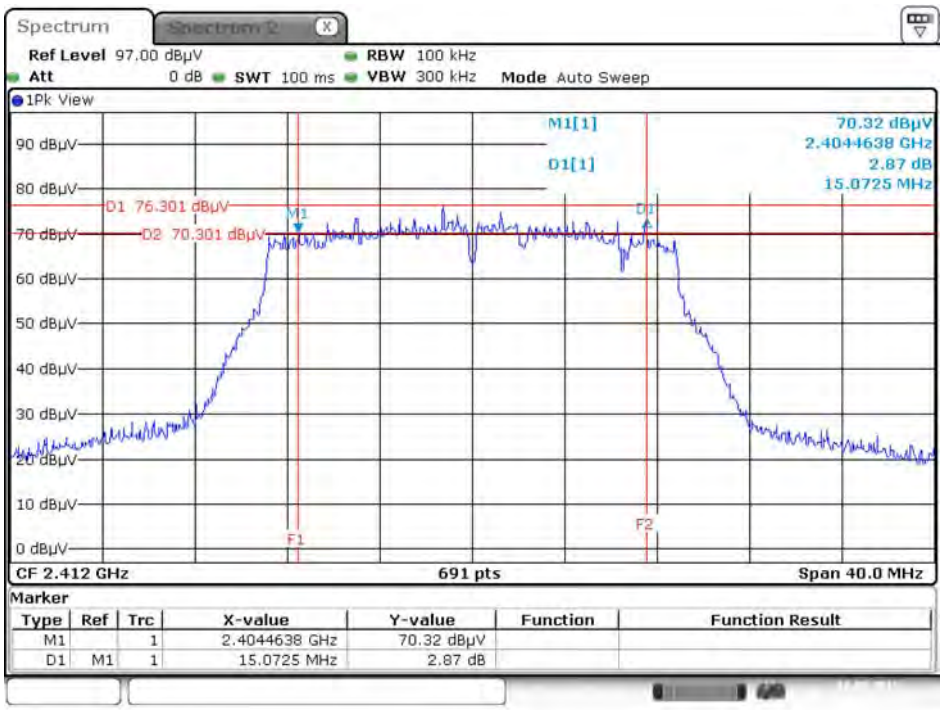
Date:13.MAY.2015 17:42:17

EUT: Version 2

For beamforming function:

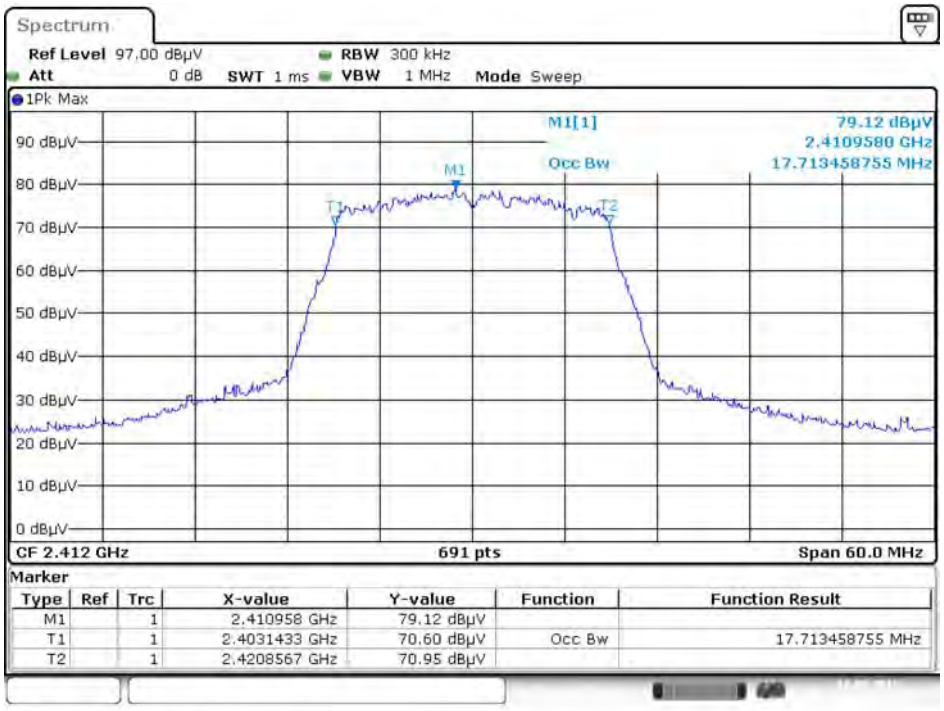
For 2.4GHz Band

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2412 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



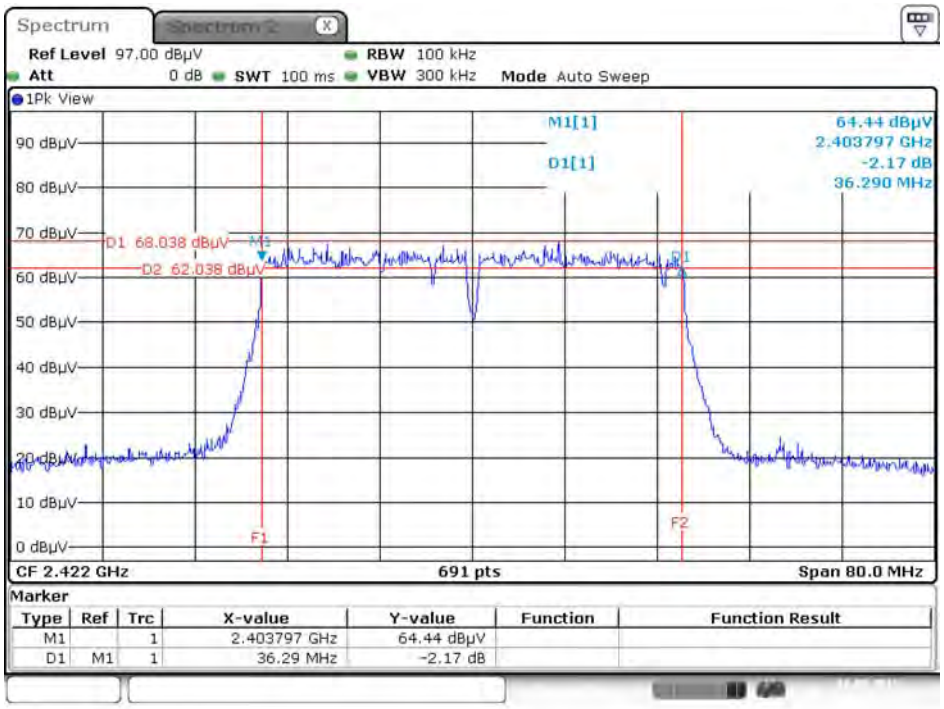
Date: 18.MAY.2015 14:16:46

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2412 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



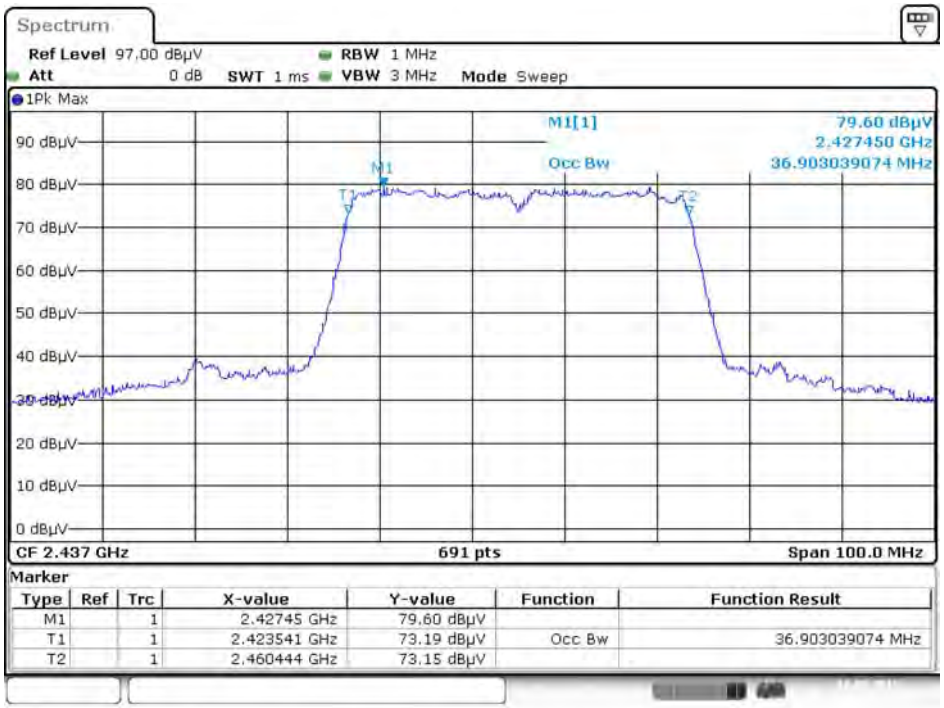
Date: 18.MAY.2015 14:26:37

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



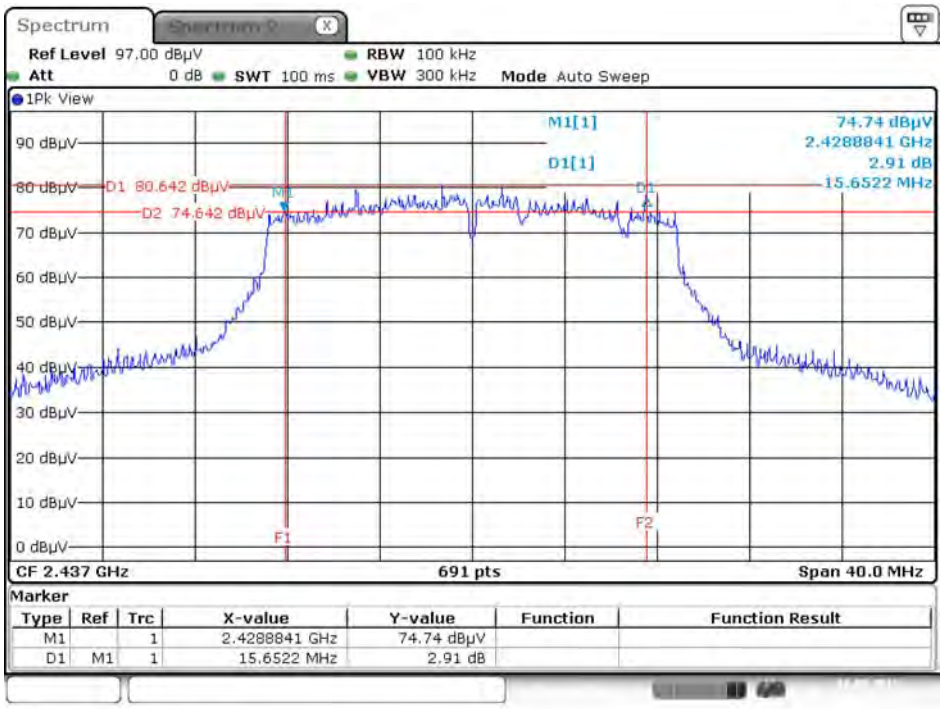
Date: 18.MAY.2015 14:18:46

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



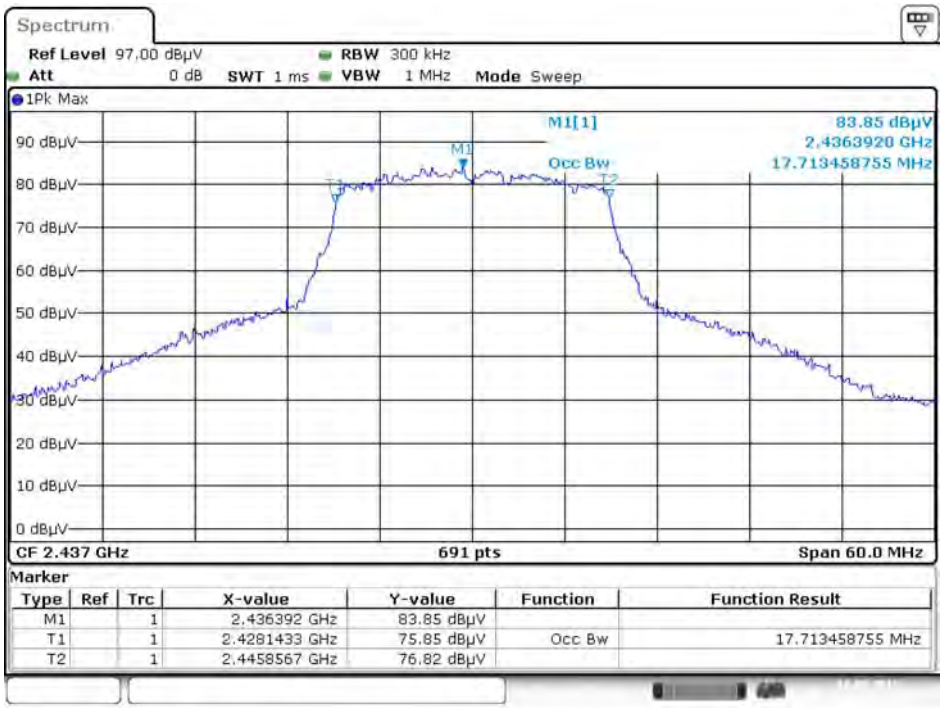
Date: 18.MAY.2015 14:29:40

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



Date: 18.MAY.2015 14:22:38

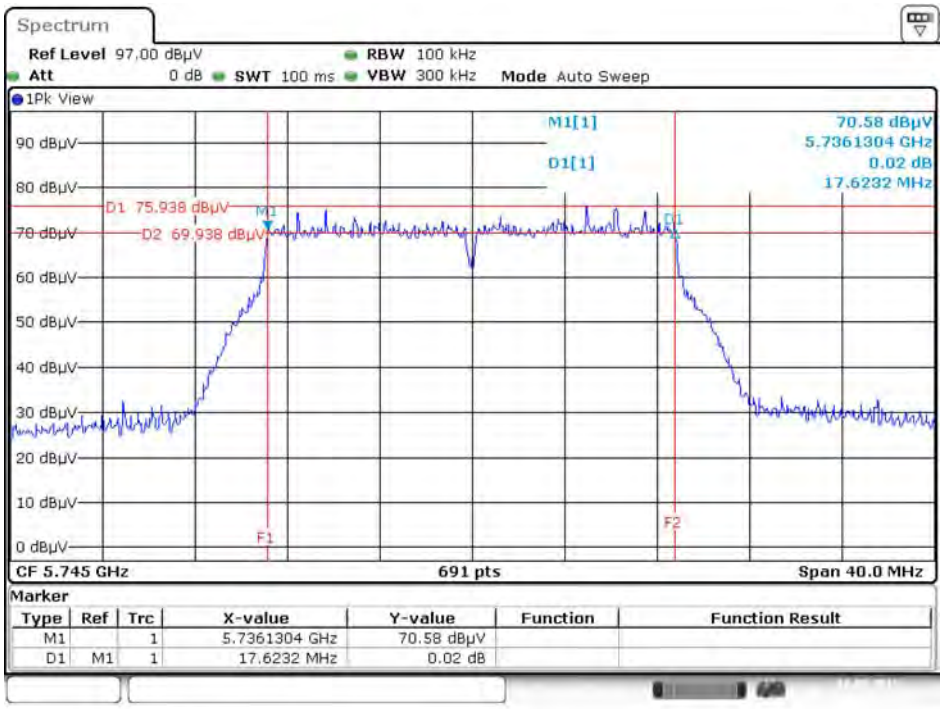
99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



Date: 18.MAY.2015 14:24:37

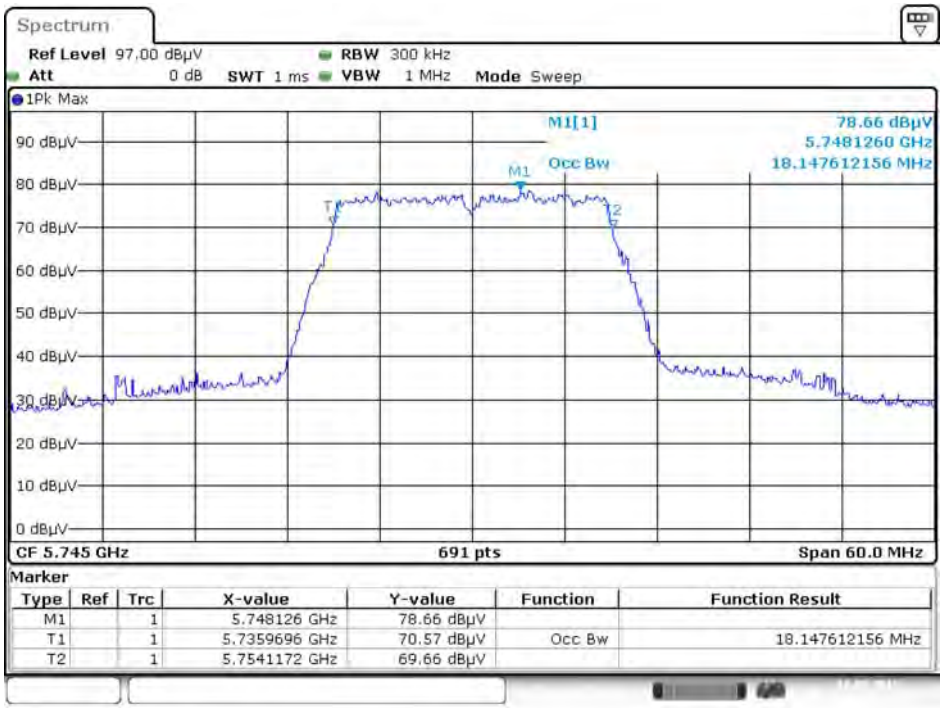
For 5GHz Band

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



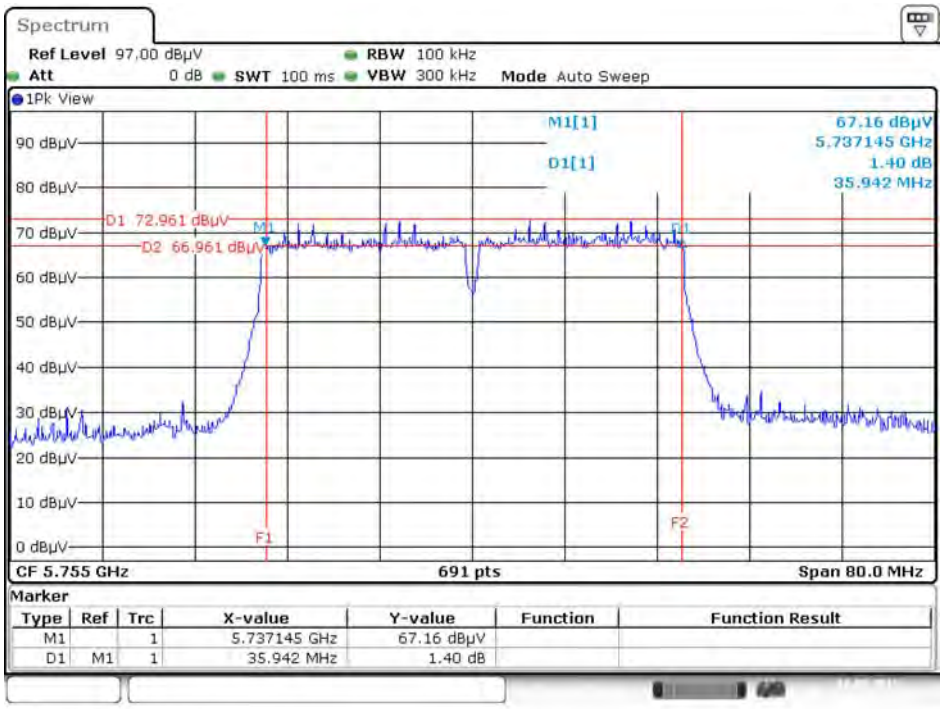
Date: 18.MAY.2015 14:46:41

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



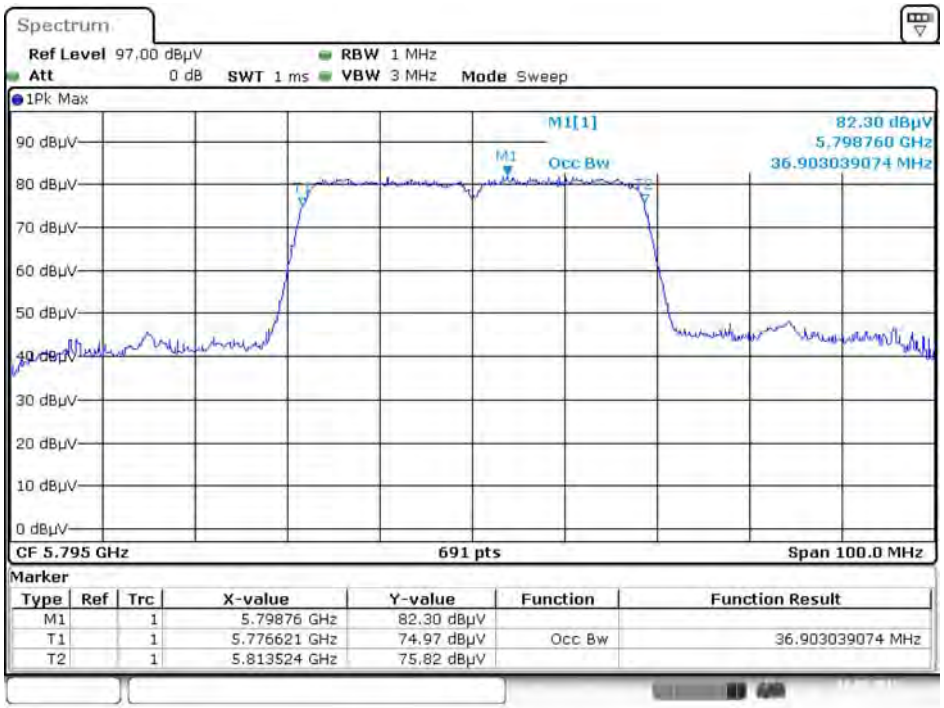
Date: 18.MAY.2015 15:01:42

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



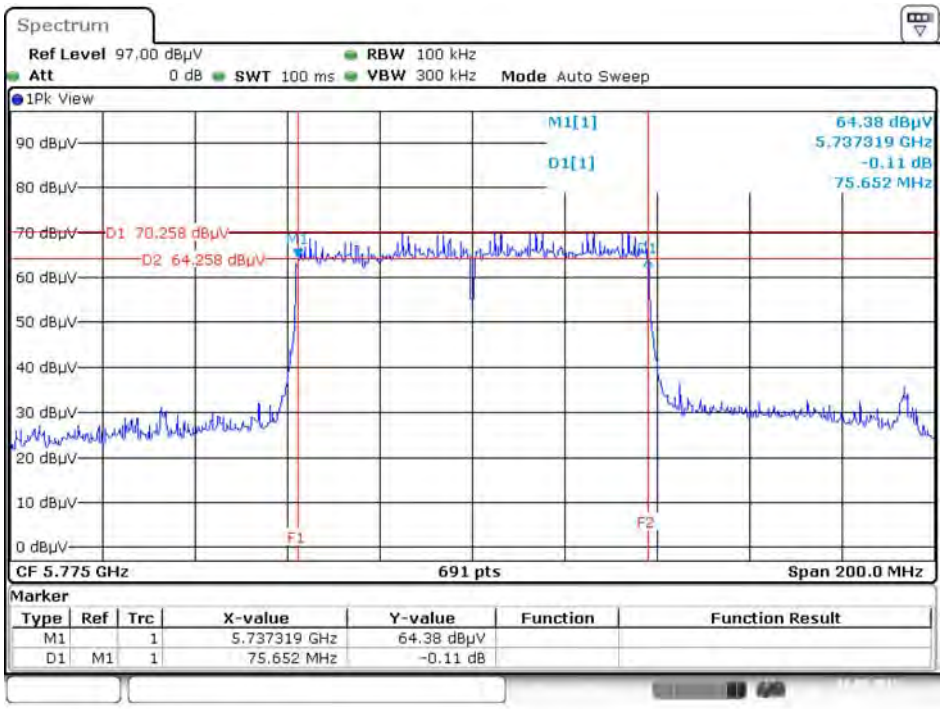
Date: 18.MAY.2015 14:48:37

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



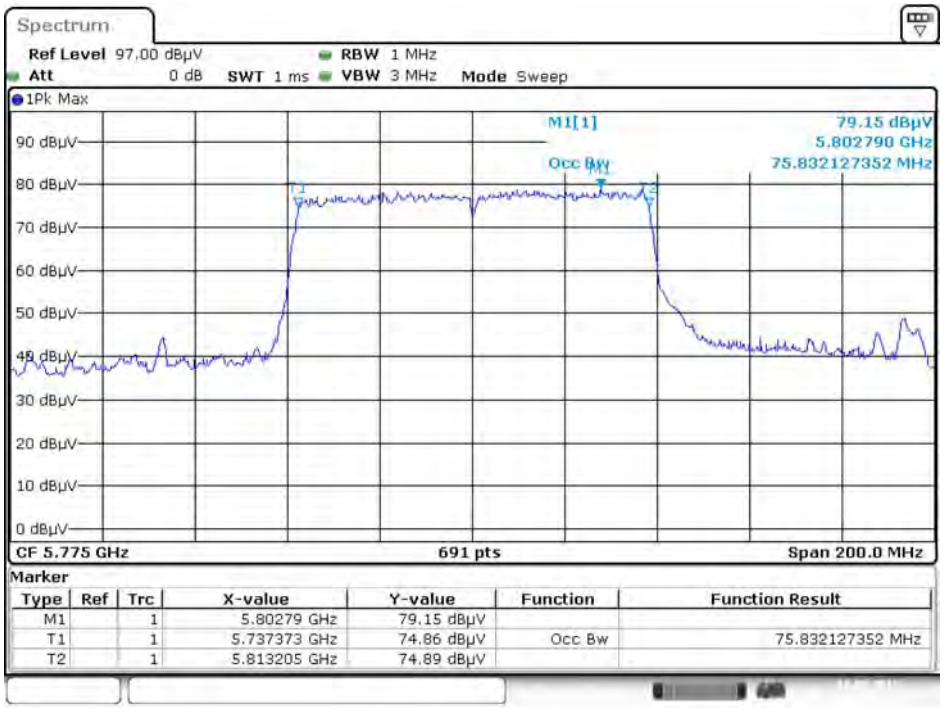
Date: 18.MAY.2015 15:04:21

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



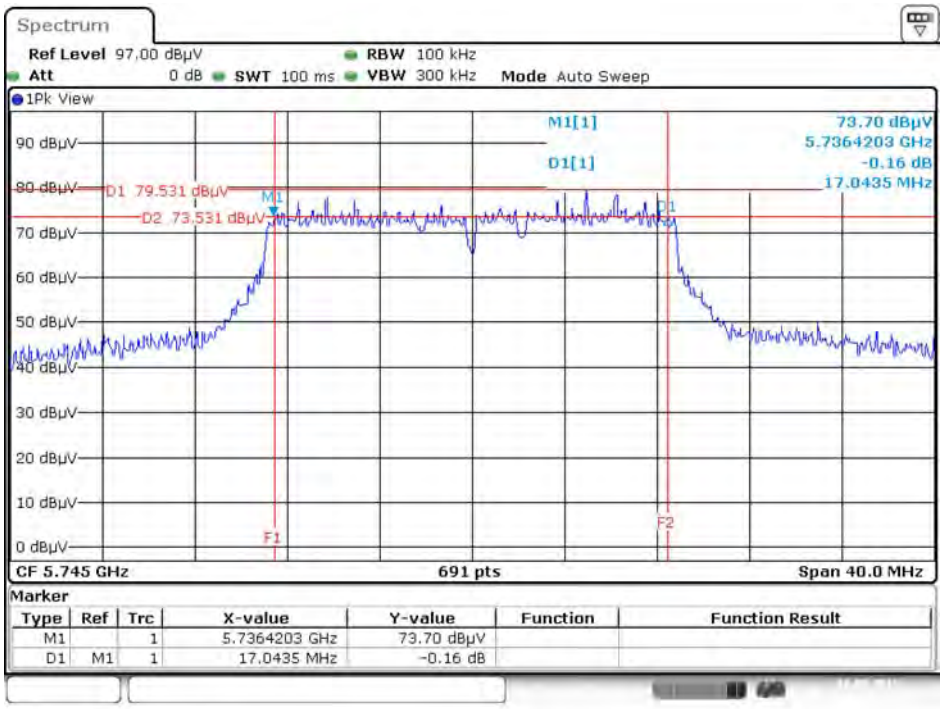
Date: 18.MAY.2015 14:49:51

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



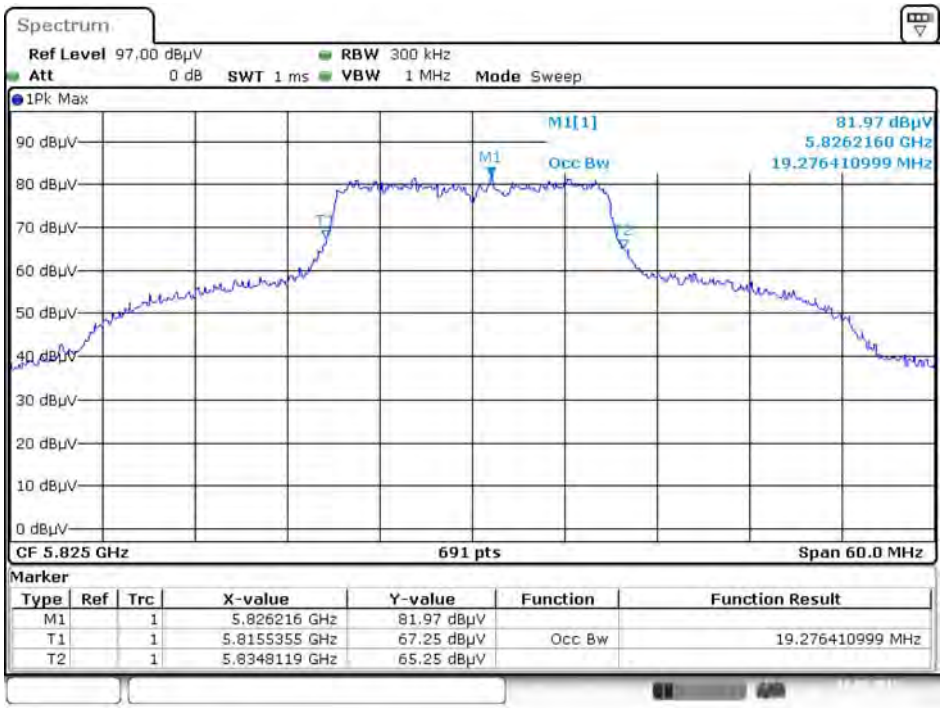
Date: 18.MAY.2015 15:05:11

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



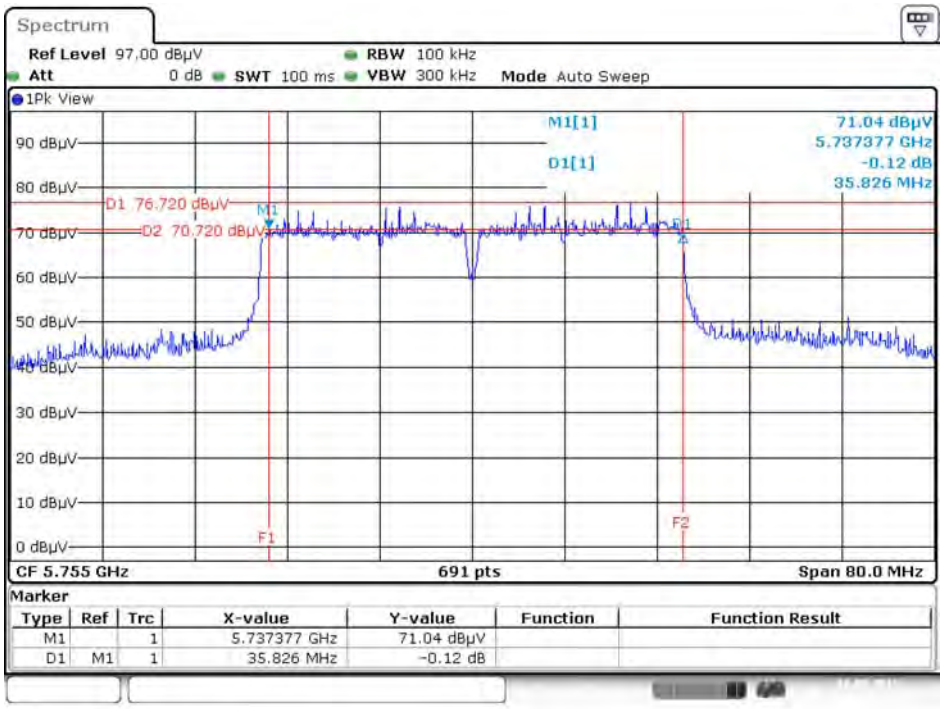
Date: 18.MAY.2015 14:51:37

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



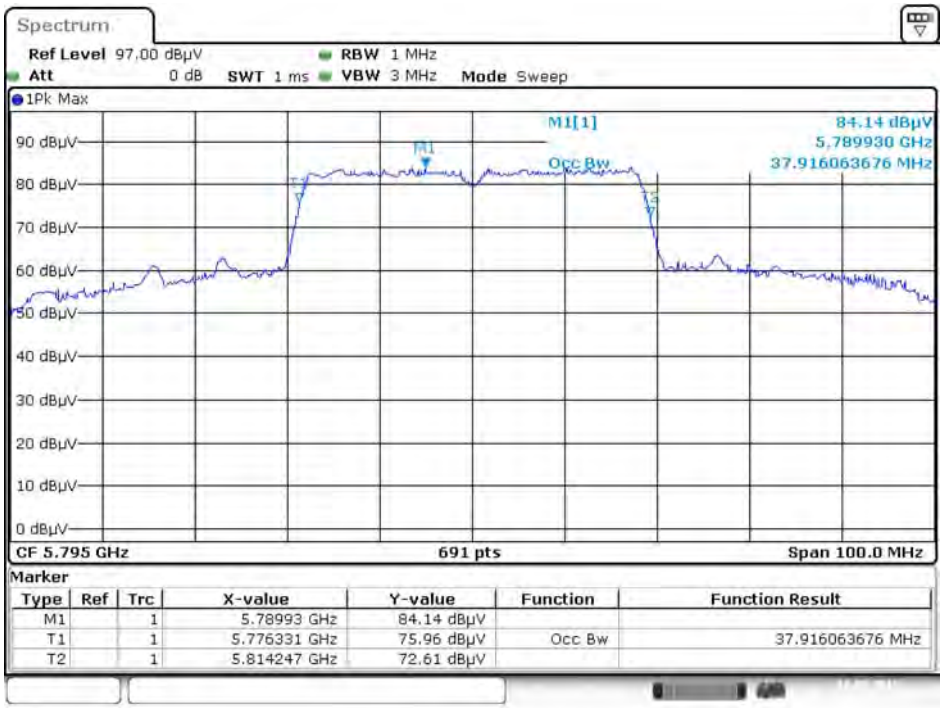
Date: 18.MAY.2015 15:00:38

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / 5755 MHz / Chain 1 + Chain 2 + Chain 3+ Chain 4



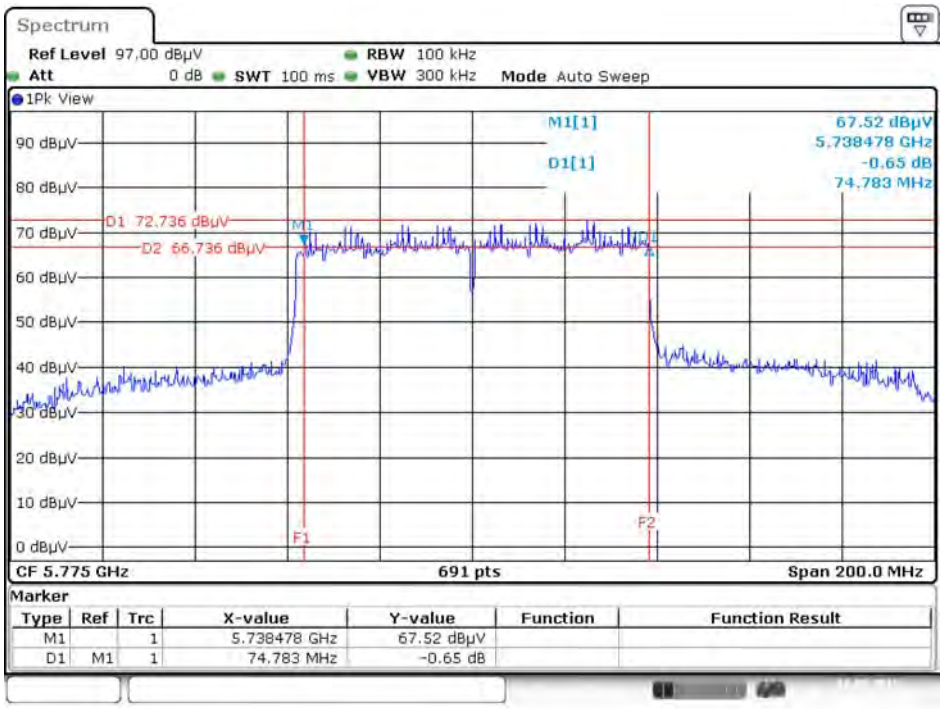
Date: 18.MAY.2015 14:53:36

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



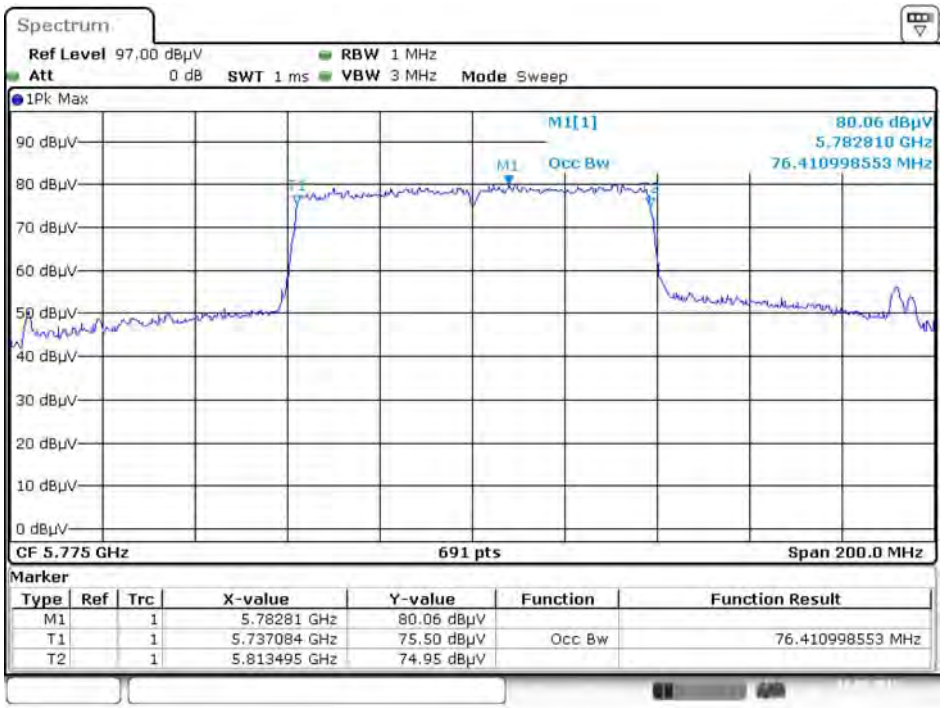
Date: 18.MAY.2015 14:58:24

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



Date: 18.MAY.2015 14:54:55

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



Date: 18.MAY.2015 14:56:31

4.5. Radiated Emissions Measurement

4.5.1. Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.5.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	100kHz / 300kHz for peak

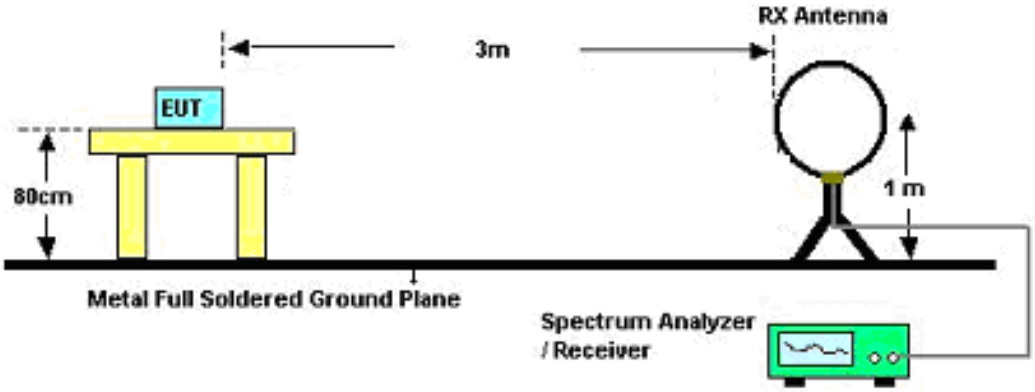
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RBW 120kHz for QP

4.5.3. Test Procedures

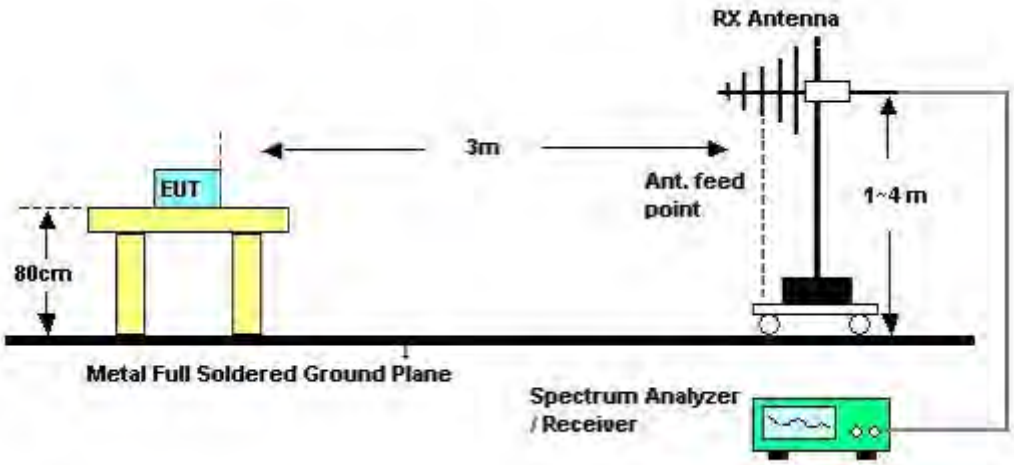
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
8. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
9. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.5.4. Test Setup Layout

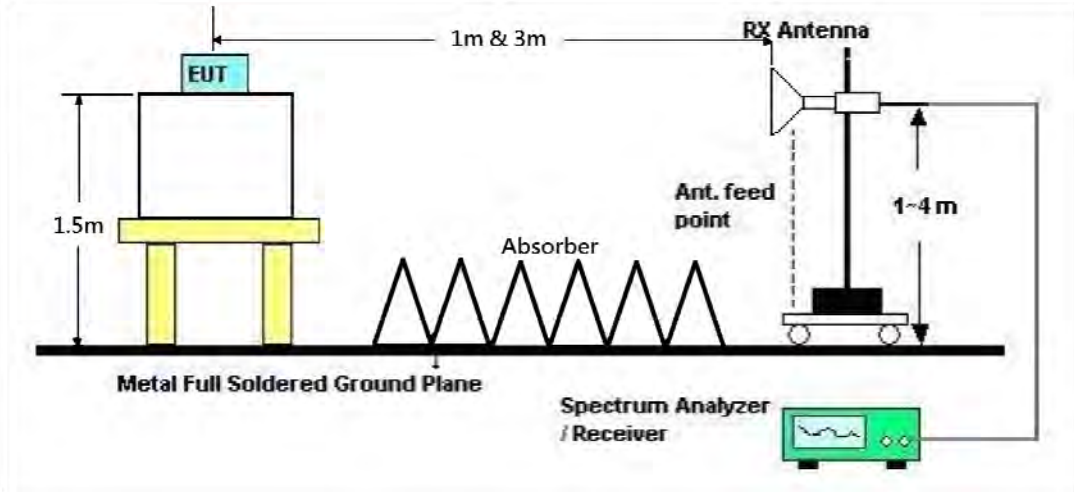
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

The EUT was programmed to be in beamforming transmitting mode.

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	CTX
Test Date	May 16, 2015	Test Mode	Mode 5
Test EUT	EUT: Version 1		

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

Note:

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

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

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

Temperature	22℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	CTX
Test Date	May 15, 2015	Test Mode	Mode 5
Test EUT	EUT: Version 2		

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

Note:

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

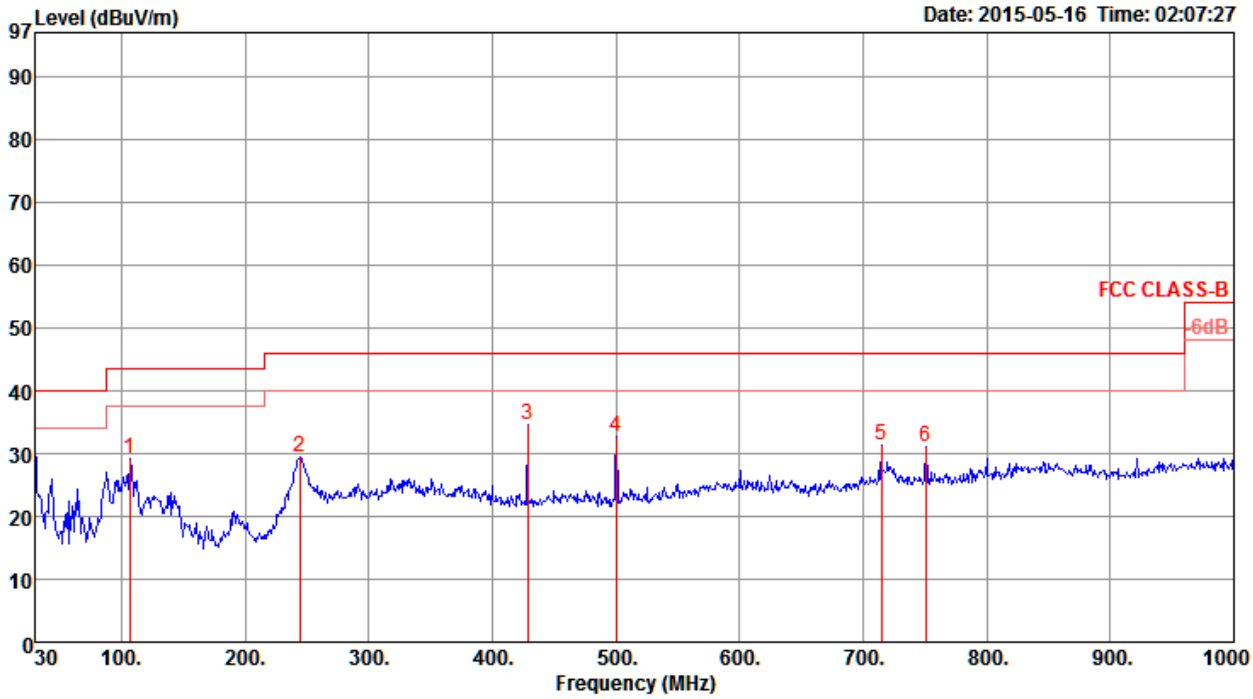
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

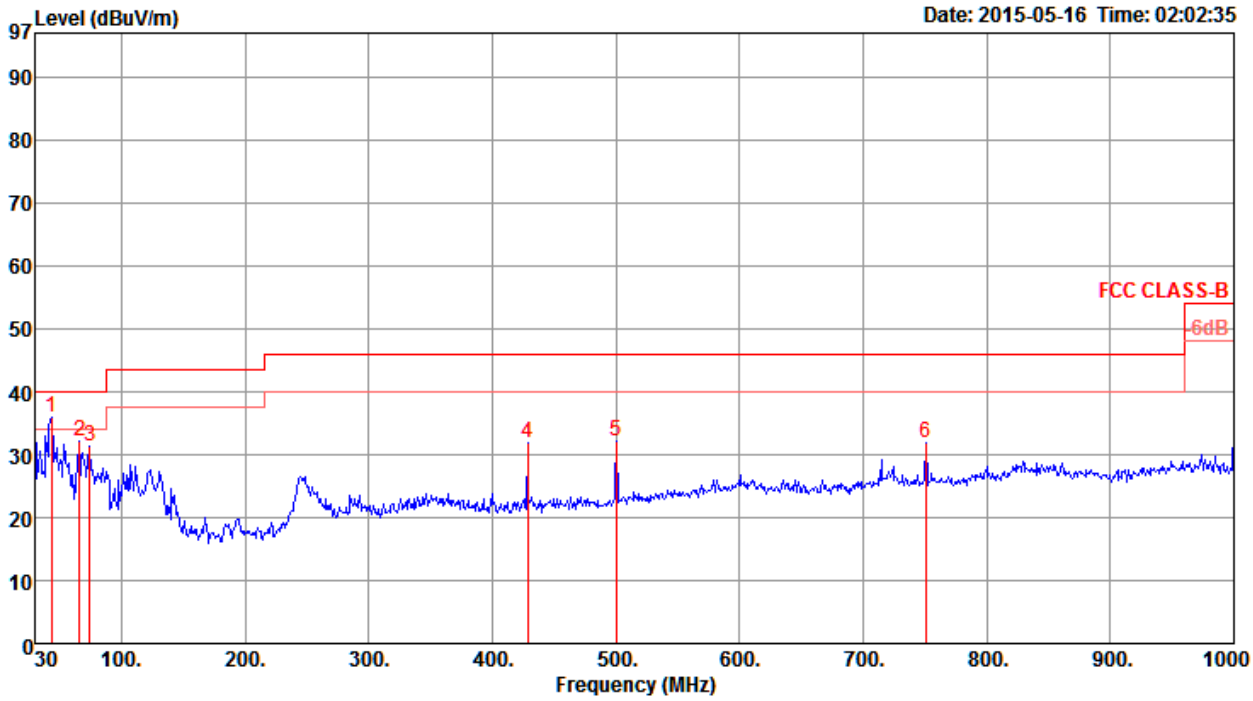
Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	CTX
Test Mode	Mode 5	Test EUT	EUT: Version 1

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	106.63	29.22	43.50	-14.28	43.85	0.89	12.24	27.76	0	200	Peak	HORIZONTAL
2	244.37	29.37	46.00	-16.63	42.38	1.31	12.65	26.97	0	200	Peak	HORIZONTAL
3	428.67	34.46	46.00	-11.54	43.60	1.70	16.85	27.69	0	200	Peak	HORIZONTAL
4	500.45	32.76	46.00	-13.24	41.06	1.83	17.80	27.93	0	200	Peak	HORIZONTAL
5	714.82	31.24	46.00	-14.76	36.07	2.15	20.11	27.09	0	200	Peak	HORIZONTAL
6	750.71	31.20	46.00	-14.80	35.50	2.21	20.61	27.12	0	200	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	43.58	35.92	40.00	-4.08	51.71	0.60	11.56	27.95	0	200	Peak	VERTICAL
2	65.89	32.02	40.00	-7.98	52.45	0.73	6.80	27.96	0	200	Peak	VERTICAL
3	74.62	31.27	40.00	-8.73	51.28	0.75	7.16	27.92	0	200	Peak	VERTICAL
4	428.67	31.88	46.00	-14.12	41.02	1.70	16.85	27.69	0	200	Peak	VERTICAL
5	500.45	32.21	46.00	-13.79	40.51	1.83	17.80	27.93	0	200	Peak	VERTICAL
6	750.71	31.81	46.00	-14.19	36.11	2.21	20.61	27.12	0	200	Peak	VERTICAL

Note:

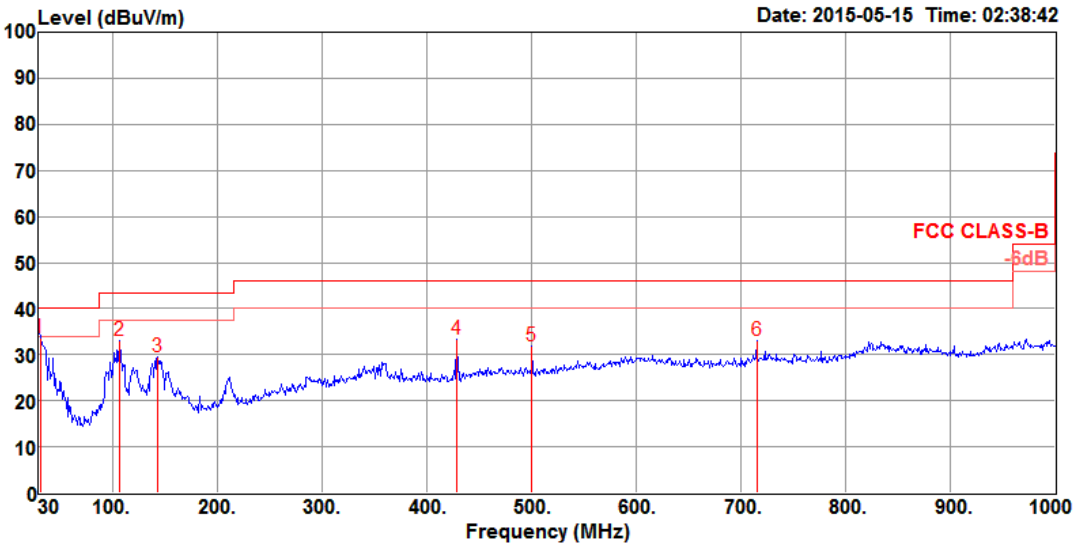
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

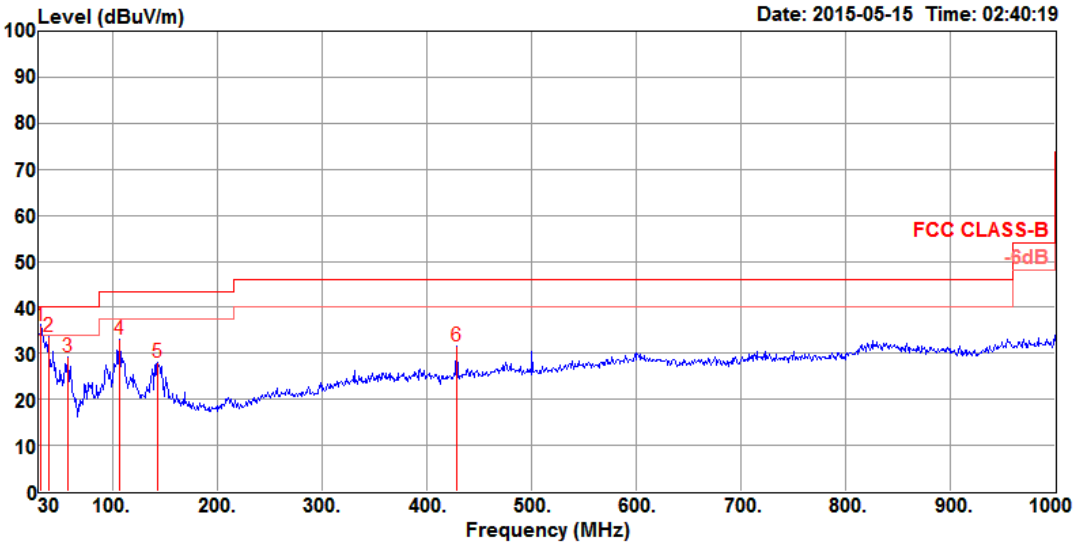
Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	CTX
Test Mode	Mode 5	Test EUT	EUT: Version 2

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	30.97	33.61	40.00	-6.39	45.71	0.64	19.50	32.24	300	326	Peak	HORIZONTAL
2	106.63	33.12	43.50	-10.38	52.47	0.97	11.94	32.26	300	259	Peak	HORIZONTAL
3	143.49	29.62	43.50	-13.88	48.93	1.08	11.77	32.16	200	84	Peak	HORIZONTAL
4	428.67	33.30	46.00	-12.70	46.85	1.78	16.85	32.18	100	305	Peak	HORIZONTAL
5	500.45	31.93	46.00	-14.07	44.38	1.90	17.80	32.15	200	353	Peak	HORIZONTAL
6	714.82	33.14	46.00	-12.86	43.21	2.17	19.91	32.15	125	213	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	31.94	36.00	40.00	-4.00	48.72	0.64	18.88	32.24	150	298	Peak	VERTICAL
2	38.73	33.58	40.00	-6.42	50.39	0.66	14.82	32.29	200	38	Peak	VERTICAL
3	58.13	29.31	40.00	-10.69	53.59	0.76	7.26	32.30	200	38	Peak	VERTICAL
4	106.63	33.11	43.50	-10.39	52.49	0.97	11.91	32.26	100	1	Peak	VERTICAL
5	143.49	28.15	43.50	-15.35	47.45	1.08	11.78	32.16	100	13	Peak	VERTICAL
6	428.67	31.60	46.00	-14.40	45.15	1.78	16.85	32.18	100	8	Peak	VERTICAL

Note:

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

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

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

4.5.9. Results for Radiated Emissions (1GHz~10th Harmonic)

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.84	46.19	74.00	-27.81	39.60	6.11	33.56	33.08	72	153	Peak	HORIZONTAL
2	4824.00	35.71	54.00	-18.29	29.12	6.11	33.56	33.08	72	153	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.91	47.15	74.00	-26.85	40.56	6.11	33.56	33.08	36	139	Peak	VERTICAL
2	4823.97	37.10	54.00	-16.90	30.51	6.11	33.56	33.08	36	139	Average	VERTICAL

Temperature	22℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11b CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4923.99	44.78	74.00	-29.22	38.03	6.05	33.76	33.06	101	143	Peak	HORIZONTAL
2	4924.07	33.96	54.00	-20.04	27.21	6.05	33.76	33.06	101	143	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4923.84	46.88	74.00	-27.12	40.13	6.05	33.76	33.06	333	143	Peak	VERTICAL
2	4924.00	35.60	54.00	-18.40	28.85	6.05	33.76	33.06	333	143	Average	VERTICAL

Temperature	22℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11b CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4922.60	46.14	74.00	-27.86	39.39	6.05	33.76	33.06	293	152	Peak	HORIZONTAL
2	4923.50	32.90	54.00	-21.10	26.15	6.05	33.76	33.06	293	152	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4923.88	46.15	74.00	-27.85	39.40	6.05	33.76	33.06	327	155	Peak	VERTICAL
2	4924.06	35.85	54.00	-18.15	29.10	6.05	33.76	33.06	327	155	Average	VERTICAL

Temperature	22℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11g CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.08	32.96	54.00	-21.04	26.37	6.11	33.56	33.08	260	131	Average	HORIZONTAL
2	4832.00	45.85	74.00	-28.15	39.26	6.11	33.56	33.08	260	131	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4814.20	32.84	54.00	-21.16	26.29	6.11	33.52	33.08	204	182	Average	VERTICAL
2	4817.16	46.17	74.00	-27.83	39.58	6.11	33.56	33.08	204	182	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11g CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4875.24	45.14	74.00	-28.86	38.48	6.08	33.66	33.08	89	160	Peak	HORIZONTAL
2	4875.48	32.55	54.00	-21.45	25.89	6.08	33.66	33.08	89	160	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4868.12	32.88	54.00	-21.12	26.22	6.08	33.66	33.08	94	150	Average	VERTICAL
2	4875.44	45.23	74.00	-28.77	38.57	6.08	33.66	33.08	94	150	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11g CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4920.52	45.01	74.00	-28.99	38.26	6.05	33.76	33.06	98	170	Peak	HORIZONTAL
2	4920.72	32.90	54.00	-21.10	26.15	6.05	33.76	33.06	98	170	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4922.68	32.85	54.00	-21.15	26.10	6.05	33.76	33.06	36	158	Average	VERTICAL
2	4925.96	46.02	74.00	-27.98	39.27	6.05	33.76	33.06	36	158	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4815.00	32.65	54.00	-21.35	26.10	6.11	33.52	33.08	146	183	Average	HORIZONTAL
2	4818.40	45.57	74.00	-28.43	38.98	6.11	33.56	33.08	146	183	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.16	32.67	54.00	-21.33	26.08	6.11	33.56	33.08	112	155	Average	VERTICAL
2	4826.48	45.71	74.00	-28.29	39.12	6.11	33.56	33.08	112	155	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4868.08	32.56	54.00	-21.44	25.90	6.08	33.66	33.08	283	181	Average	HORIZONTAL
2	4875.08	45.19	74.00	-28.81	38.53	6.08	33.66	33.08	283	181	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4864.96	45.87	74.00	-28.13	39.25	6.08	33.62	33.08	319	144	Peak	VERTICAL
2	4878.12	32.89	54.00	-21.11	26.23	6.08	33.66	33.08	319	144	Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4914.84	33.11	54.00	-20.89	26.39	6.05	33.73	33.06	270	169	Average	HORIZONTAL
2	4924.44	45.24	74.00	-28.76	38.49	6.05	33.76	33.06	270	169	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4921.44	32.91	54.00	-21.09	26.16	6.05	33.76	33.06	327	162	Average	VERTICAL
2	4930.88	45.56	74.00	-28.44	38.81	6.05	33.76	33.06	327	162	Peak	VERTICAL

Temperature	22℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4881.72	44.65	74.00	-29.35	37.99	6.08	33.66	33.08	280	191	Peak	HORIZONTAL
2	4888.64	32.72	54.00	-21.28	26.03	6.08	33.69	33.08	280	191	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4874.56	45.81	74.00	-28.19	39.15	6.08	33.66	33.08	361	161	Peak	VERTICAL
2	4893.12	32.68	54.00	-21.32	25.99	6.07	33.69	33.07	361	161	Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4882.96	44.89	74.00	-29.11	38.23	6.08	33.66	33.08	330	156	Peak	HORIZONTAL
2	4883.56	32.32	54.00	-21.68	25.66	6.08	33.66	33.08	330	156	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4880.80	32.59	54.00	-21.41	25.93	6.08	33.66	33.08	294	122	Average	VERTICAL
2	4881.64	43.72	74.00	-30.28	37.06	6.08	33.66	33.08	294	122	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4914.80	45.16	74.00	-28.84	38.44	6.05	33.73	33.06	142	189	Peak	HORIZONTAL
2	4915.60	33.00	54.00	-21.00	26.28	6.05	33.73	33.06	142	189	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4914.40	45.04	74.00	-28.96	38.32	6.05	33.73	33.06	114	138	Peak	VERTICAL
2	4918.60	32.99	54.00	-21.01	26.24	6.05	33.76	33.06	114	138	Average	VERTICAL

Temperature	22℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015~ May 09, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10923.04	45.02	54.00	-8.98	28.98	10.48	38.99	33.43	121	191	Average	HORIZONTAL
2	10927.56	58.46	74.00	-15.54	42.42	10.48	38.99	33.43	121	191	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10916.96	59.00	74.00	-15.00	42.97	10.48	38.98	33.43	37	126	Peak	VERTICAL
2	10928.60	45.17	54.00	-8.83	29.13	10.48	38.99	33.43	37	126	Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 09, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10959.40	45.04	54.00	-8.96	28.92	10.53	38.99	33.40	133	157	Average	HORIZONTAL
2	10972.84	57.81	74.00	-16.19	41.68	10.53	39.00	33.40	133	157	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10956.76	44.91	54.00	-9.09	28.83	10.50	38.99	33.41	171	137	Average	VERTICAL
2	10962.20	58.00	74.00	-16.00	41.88	10.53	38.99	33.40	171	137	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 09, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10997.68	56.70	74.00	-17.30	40.53	10.55	39.00	33.38	211	163	Peak	HORIZONTAL
2	11011.04	44.24	54.00	-9.76	28.05	10.56	39.01	33.38	211	163	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10996.08	44.39	54.00	-9.61	28.22	10.55	39.00	33.38	169	126	Average	VERTICAL
2	10998.80	56.70	74.00	-17.30	40.53	10.55	39.00	33.38	169	126	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 09, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10922.20	44.64	54.00	-9.36	28.60	10.48	38.99	33.43	135	187	Average	HORIZONTAL
2	10927.72	56.42	74.00	-17.58	40.38	10.48	38.99	33.43	135	187	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10924.60	44.61	54.00	-9.39	28.57	10.48	38.99	33.43	190	146	Average	VERTICAL
2	10933.20	56.81	74.00	-17.19	40.73	10.50	38.99	33.41	190	146	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 09, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10957.48	44.97	54.00	-9.03	28.89	10.50	38.99	33.41	8	190	Average	HORIZONTAL
2	10963.36	57.46	74.00	-16.54	41.34	10.53	38.99	33.40	8	190	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10957.84	45.14	54.00	-8.86	29.02	10.53	38.99	33.40	21	130	Average	VERTICAL
2	10967.36	57.30	74.00	-16.70	41.18	10.53	38.99	33.40	21	130	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 09, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11002.76	44.13	54.00	-9.87	27.96	10.55	39.00	33.38	156	124	Average	HORIZONTAL
2	11009.04	57.01	74.00	-16.99	40.82	10.56	39.01	33.38	156	124	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11007.64	44.18	54.00	-9.82	28.00	10.55	39.01	33.38	100	198	Average	VERTICAL
2	11009.04	56.00	74.00	-18.00	39.81	10.56	39.01	33.38	100	198	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 09, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10927.24	45.07	54.00	-8.93	29.03	10.48	38.99	33.43	228	160	Average	HORIZONTAL
2	10944.44	57.13	74.00	-16.87	41.05	10.50	38.99	33.41	228	160	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	10929.60	45.12	54.00	-8.88	29.08	10.48	38.99	33.43	210	109	Average	VERTICAL
2	10929.88	58.83	74.00	-15.17	42.79	10.48	38.99	33.43	210	109	Peak	VERTICAL