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FCC RADIO TEST REPORT

Applicant's company	**ASUSTeK COMPUTER INC.**
Applicant Address	4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan
FCC ID	**MSQ-RTGW00**
Manufacturer's company (1)	**ASKEY TECHNOLOGY (JIANG SU) LTD**
Manufacturer Address	NO1388, Jiao Tong Road, Wujiang Economic Technological Development Area Jiangsu Province 215200 China
Manufacturer's company (2)	**Compal Networking (KunShan) Co., LTD.**
Manufacturer Address	No. 520, Nabbang Rd., Economic & Technical Development Zone Kunshan, Jiangsu Province China

Product Name	Wireless-AC3100 Dual Band Gigabit Router
Brand Name	ASUS
Model No.	RT-AC3100,RT-AC88R,RT-AC88U
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Apr. 10, 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.

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2009**, **47 CFR FCC Part 15 Subpart C**, **KDB 558074 D01 v03r02**, **KDB 662911 D01 v02r01**, **KDB644545 D01 v01r02**

Note: Using 1.5m table as an alternative was permitted by the FCC per TCBC conference call of Dec. 2, 2014.

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

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR531828AA	Rev. 01	Initial issue of report	May 25, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	Wireless-AC3100 Dual Band Gigabit Router
Brand Name	:	ASUS
Model No.	:	RT-AC3100,RT-AC88R,RT-AC88U
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. 10, 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	5.79 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	0.02 dB
4.3	15.247(e)	Power Spectral Density	Complies	0.08 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	4.01 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	For 2.4GHz Band: WLAN (4TX, 4RX) For 5GHz Band: 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%)	For 2.4GHz Band: For Non-Beamforming Mode IEEE 802.11b: 11.89 MHz IEEE 802.11g: 18.49 MHz IEEE 802.11n MCS0/Nss1 (HT20): 17.88 MHz IEEE 802.11n MCS0/Nss1 (HT40): 36.46 MHz For Beamforming Mode IEEE 802.11n MCS0/Nss1 (VHT20): 17.71 MHz IEEE 802.11n MCS0/Nss1 (VHT40): 36.76 MHz IEEE 802.11n MCS0/Nss2 (VHT20): 17.80 MHz IEEE 802.11n MCS0/Nss2 (VHT40): 36.61 MHz For 5GHz Band: For Non-Beamforming Mode IEEE 802.11a: 24.57 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 25.00 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 46.88 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz For Beamforming Mode IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 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): 18.32 MHz IEEE 802.11ac MCS0/Nss2 (VHT40): 37.34 MHz IEEE 802.11ac MCS0/Nss2 (VHT80): 76.70 MHz

Maximum Conducted Output Power	For 2.4GHz Band: For Non-Beamforming Mode IEEE 802.11b: 29.85 dBm IEEE 802.11g: 29.65 dBm IEEE 802.11n MCS0/Nss1 (VHT20): 29.97 dBm IEEE 802.11n MCS0/Nss1 (VHT40): 23.09 dBm For Beamforming Mode IEEE 802.11n MCS0/Nss1 (VHT20): 27.49 dBm IEEE 802.11n MCS0/Nss1 (VHT40): 23.25 dBm IEEE 802.11n MCS0/Nss2 (VHT20): 29.98 dBm IEEE 802.11n MCS0/Nss2 (VHT40): 25.48 dBm For 5GHz Band: For Non-Beamforming Mode IEEE 802.11a: 29.84 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.84 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 29.95 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 27.74 dBm For Beamforming Mode IEEE 802.11ac MCS0/Nss1 (VHT20): 26.46 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.53 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 26.44 dBm IEEE 802.11ac MCS0/Nss2 (VHT20): 29.47 dBm IEEE 802.11ac MCS0/Nss2 (VHT40): 29.50 dBm IEEE 802.11ac MCS0/Nss2 (VHT80): 29.43 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☒ With beamforming for 802.11n/ac in 2.4GHz/5GHz.	☐ Without beamforming

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	MCS0-31
	802.11n (HT40)	4	MCS0-31
	802.11ac (VHT20)	4	MCS0-11/Nss1-4
	802.11ac (VHT40)	4	MCS0-11/Nss1-4
5G	802.11n (HT20)	4	MCS0-31
	802.11n (HT40)	4	MCS0-31
	802.11ac (VHT20)	4	MCS0-11/Nss1-4
	802.11ac (VHT40)	4	MCS0-11/Nss1-4
	802.11ac (VHT80)	4	MCS0-11/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 in 2.4GHz and supports VHT20, VHT40, VHT80 in 5GHz.

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

3.2. Accessories

Power	Brand	Model	Rating
Adapter 1	ASUS	ADP-45BW B	Input: 100-240V ~ 50-60Hz 1.2A Output: 19V, 2.37A
Adapter 2	ASUS	AD883J20	Input: 100-240V ~ 50-60Hz 1.0A Output: 19V, 2.37A
Adapter 3	ASUS	ADP-65DW B	Input: 100-240V ~ 50-60Hz 1.5A Output: 19V, 3.42A
Others			
RJ-45 Cable*1: Non-Shielded, 1.5m			

3.3. Table for Filed Antenna

Set	Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)	
						2.4GHz	5GHz
1	1	PSA	RFDPA171300SBLB809	Dipole Antenna	Reversed-SMA	2.25	3.37
	2	PSA	RFDPA171300SBLB809	Dipole Antenna	Reversed-SMA	2.25	3.37
	3	PSA	RFDPA171300SBLB809	Dipole Antenna	Reversed-SMA	2.25	3.37
	4	PSA	RFDPA171300SBLB809	Dipole Antenna	Reversed-SMA	2.25	3.37
2	5	PSA	RFDPA171300SBLB810	Dipole Antenna	Reversed-SMA	2.25	3.37
	6	PSA	RFDPA171300SBLB810	Dipole Antenna	Reversed-SMA	2.25	3.37
	7	PSA	RFDPA171300SBLB810	Dipole Antenna	Reversed-SMA	2.25	3.37
	8	PSA	RFDPA171300SBLB810	Dipole Antenna	Reversed-SMA	2.25	3.37

Note: The EUT has two sets of antenna and there are four antennas for each set. First set includes Ant.1~4, and second set includes Ant.5~8. The difference between set 1 & set 2 is just model name and color, so there's only set 1 selected and recorded in the report.

For 2.4GHz function (4TX/4RX):

For IEEE 802.11b/g/n/ac mode:

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

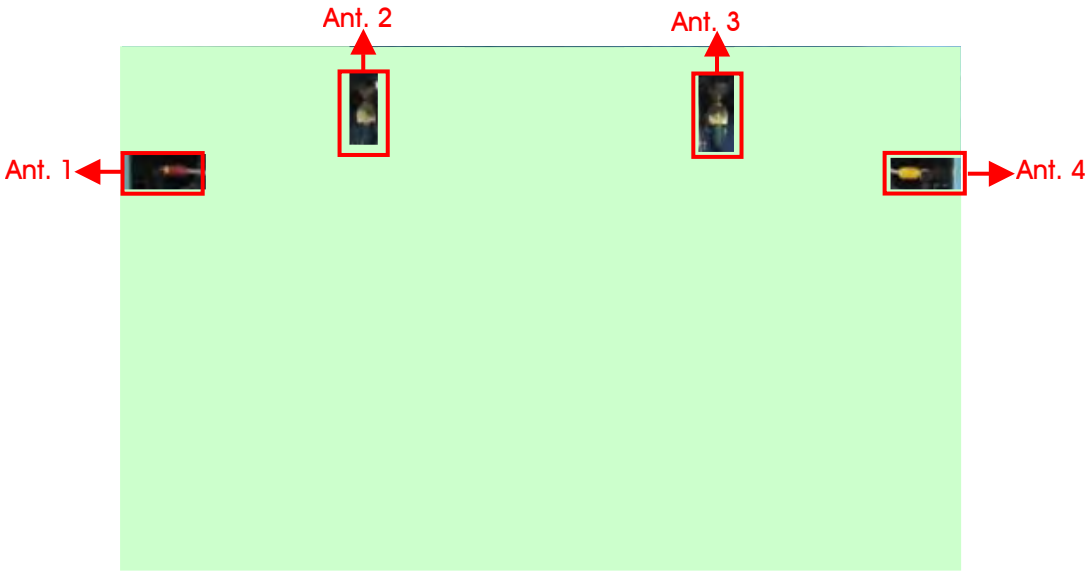
Ant. 1, Ant. 2, Ant. 3 and Ant. 4 could transmit/receive simultaneously.

For 5Hz function (4TX/4RX):

For IEEE 802.11a/n/ac mode:

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

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



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, and 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 Modes

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

For 2.4GHz Band:

Test Items	Mode	Data Rate	Channel	Ant.
AC Power Line Conducted Emissions	CTX	-	-	-
Maximum Conducted Output Power	For Non-Beamforming Mode			
	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
	For Beamforming Mode			
	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
	11ac VHT40	MCS0/Nss2	6	1+2+3+4
Power Spectral Density	For Non-Beamforming Mode			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11n HT20	MCS0/Nss1	1/6/11	1+2+3+4
	11n HT40	MCS0/Nss1	3/6/9	1+2+3+4
	For Beamforming Mode			
	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
	11ac VHT40	MCS0/Nss2	6	1+2+3+4

6dB Spectrum Bandwidth	For Non-Beamforming Mode			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11n HT20	MCS0/Nss1	1/6/11	1+2+3+4
	11n HT40	MCS0/Nss1	3/6/9	1+2+3+4
	For Beamforming Mode			
	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
	11ac VHT40	MCS0/Nss2	6	1+2+3+4
Radiated Emissions Below 1GHz	CTX	-	-	-
Radiated Emissions Above 1GHz	For Non-Beamforming Mode			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11n HT20	MCS0/Nss1	1/6/11	1+2+3+4
	11n HT40	MCS0/Nss1	3/6/9	1+2+3+4
	For Beamforming Mode			
	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
	11ac VHT40	MCS0/Nss2	6	1+2+3+4
Band Edge Emissions	For Non-Beamforming Mode			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11n HT20	MCS0/Nss1	1/6/11	1+2+3+4
	11n HT40	MCS0/Nss1	3/6/9	1+2+3+4
	For Beamforming Mode			
	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
	11ac VHT40	MCS0/Nss2	6	1+2+3+4

For 5GHz Band:

Test Items	Mode	Data Rate	Channel	Ant.
AC Power Line Conducted Emissions	CTX	-	-	-
Maximum Conducted Output Power	For Non-Beamforming Mode			
	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
	For Beamforming Mode			
	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	For Non-Beamforming Mode			
	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
	For Beamforming Mode			
	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	For Non-Beamforming Mode			
	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
	For Beamforming Mode			
	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	For Non-Beamforming Mode			
	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
	For Beamforming Mode			
	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	For Non-Beamforming Mode			
	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
	For Beamforming Mode			
	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: VHT20/VHT40 covers HT20/HT40, due to same modulation.

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

Note 3: The EUT is used for laying only.

The following test modes were performed for all tests:

For Conducted Emission and Radiated Emission test (Below 1GHz):

Mode 1. EUT With Adapter 1+ 2.4GHz

Mode 2. EUT With Adapter 1+5GHz

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

Mode 3. EUT With Adapter 2+ 5GHz

Mode 4. EUT With Adapter 3+ 5GHz

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

For Radiated Emission test (Above 1GHz):

Mode 1. CTX

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

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

3.6. Table for Testing Locations

Test Site Location				
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.			
TEL:	886-3-656-9065			
FAX:	886-3-656-9085			
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**
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

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

Equipment Name	Brand Name	Model No.	LAN Port	Description
Wireless-AC3100 Dual Band Gigabit Router	ASUS	RT-AC88U	8 LAN ports	All the models are identical except for the numbers of LAN ports and Heat sink color; the different model names served as marketing strategy.
		RT-AC3100	4 LAN ports	
		RT-AC88R	8 LAN ports	

From the above models, model: RT-AC88U was selected as representative model for the test and its data was recorded in this report.

3.8. Table for Supporting Units

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

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

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

For Non-Beamforming Mode:

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

For Beamforming Mode:

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
RX Device	Broadcom	BCM4366	DoC

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	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.

For 2.4GHz Band

For Non-Beamforming Mode

Test Software Version	Mtool 2.0.2.6					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	100	101	98	-	-	-
802.11g	83	98	74	-	-	-
802.11n MCS0/Nss1 VHT20	80	98	73	-	-	-
802.11n MCS0/Nss1 VHT40	-	-	-	61	69	55

For Beamforming Mode

Test Software Version	Mtool 2.0.2.6					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11n MCS0/Nss1 VHT20	81	85	71	-	-	-
802.11n MCS0/Nss1 VHT40	62	68	56	-	-	-

Mode	Test Frequency (MHz)	
	NCB: 20MHz	NCB: 40MHz
	2437 MHz	2437 MHz
802.11n MCS0/Nss2 VHT20	96	-
802.11n MCS0/Nss2 VHT40	-	77

For 5GHz Band

For Non-Beamforming Mode

Mode	Mtool 2.0.2.6					
	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	5775 MHz
802.11a	97	97	98	-	-	-
802.11ac MCS0/Nss1 VHT20	97	97	97	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	94	97	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	88

For Beamforming Mode

Test Software Version	Mtool 2.0.2.6					
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	81	81	81	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	81	81	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	80
802.11ac MCS0/Nss2 VHT20	93	93	93	-	-	-
802.11ac MCS0/Nss2 VHT40	-	-	-	93	93	-
802.11ac MCS0/Nss2 VHT80	-	-	-	-	-	92

3.10. EUT Operation during Test

For Non-Beamforming Mode

The EUT was programmed to be in continuously transmitting mode.

For Beamforming Mode

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN 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

For Non-Beamforming Mode

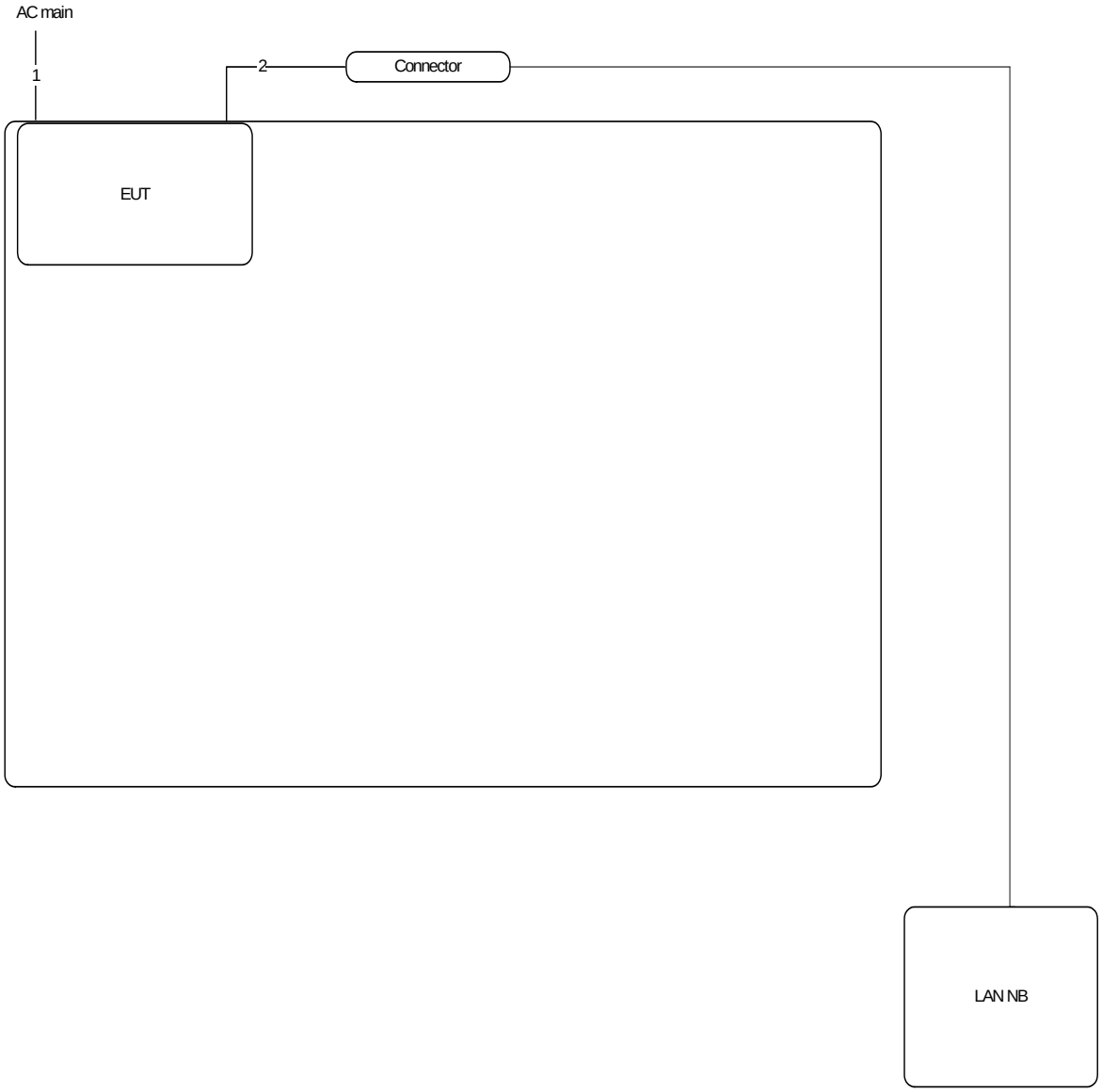
Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11b	1.000	1.000	100.00%	0.00	0.01
	802.11g	2.058	2.080	98.94%	0.05	0.01
	802.11n MCS0/Nss1 VHT20	1.921	1.944	98.82%	0.05	0.01
	802.11n MCS0/Nss1 VHT40	0.957	0.979	97.76%	0.10	1.04
5G	802.11a	2.057	2.080	98.91%	0.05	0.01
	802.11ac MCS0/Nss1 VHT20	1.921	1.944	98.80%	0.05	0.01
	802.11ac MCS0/Nss1 VHT40	0.954	0.964	98.95%	0.05	0.01
	802.11ac MCS0/Nss1 VHT80	0.463	0.485	95.40%	0.20	2.16

For Beamforming Mode

Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11n MCS0/Nss1 VHT20	3.841	4.145	92.66%	0.33	0.26
	802.11n MCS0/Nss1 VHT40	4.601	5.373	85.65%	0.67	0.22
	802.11n MCS0/Nss2 VHT20	4.783	5.406	88.47%	0.53	0.21
	802.11n MCS0/Nss2 VHT40	4.591	4.904	93.62%	0.29	0.22
5G	802.11ac MCS0/Nss1 VHT20	4.246	4.435	95.75%	0.19	0.24
	802.11ac MCS0/Nss1 VHT40	2.231	2.449	91.11%	0.40	0.45
	802.11ac MCS0/Nss1 VHT80	5.797	6.816	85.05%	0.70	0.17
	802.11ac MCS0/Nss2 VHT20	4.788	5.473	87.50%	0.58	0.21
	802.11ac MCS0/Nss2 VHT40	5.044	5.751	87.70%	0.57	0.20
	802.11ac MCS0/Nss2 VHT80	5.797	6.816	85.05%	0.70	0.17

3.12. Test Configurations

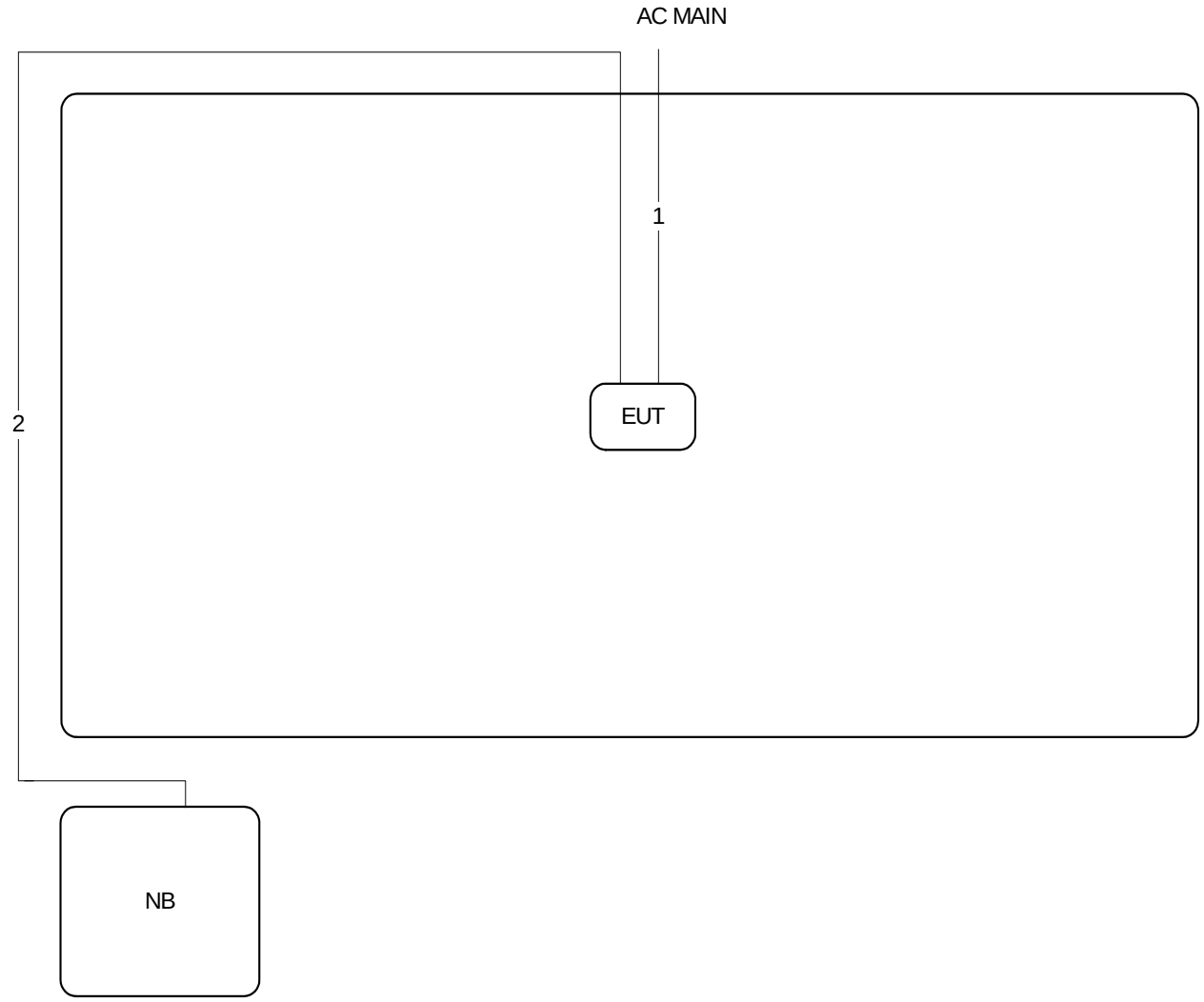
3.12.1. AC Power Line Conduction Emissions Test Configuration



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

3.12.2. Radiation Emissions Test Configuration

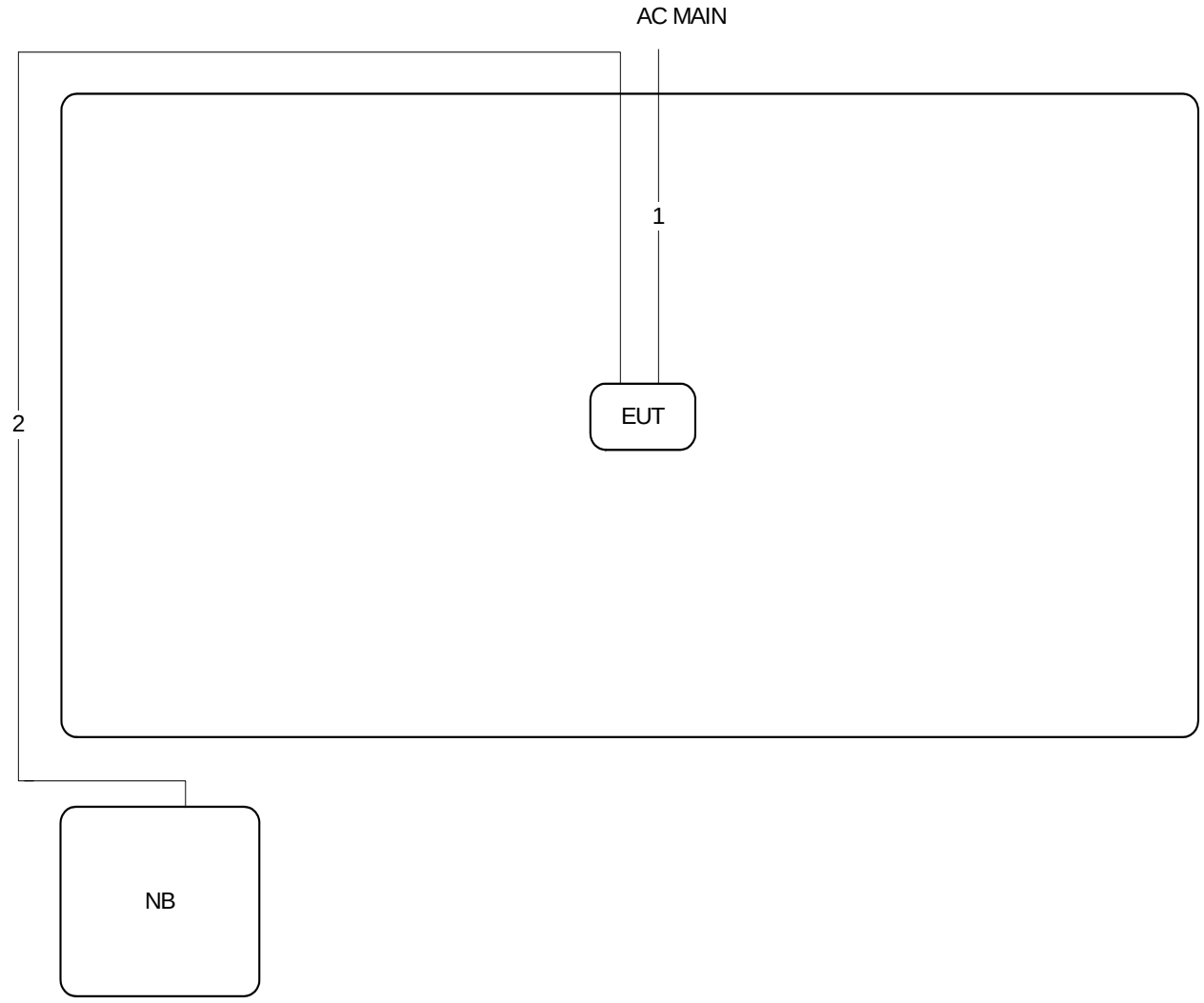
Test Configuration: 30MHz ~1GHz



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

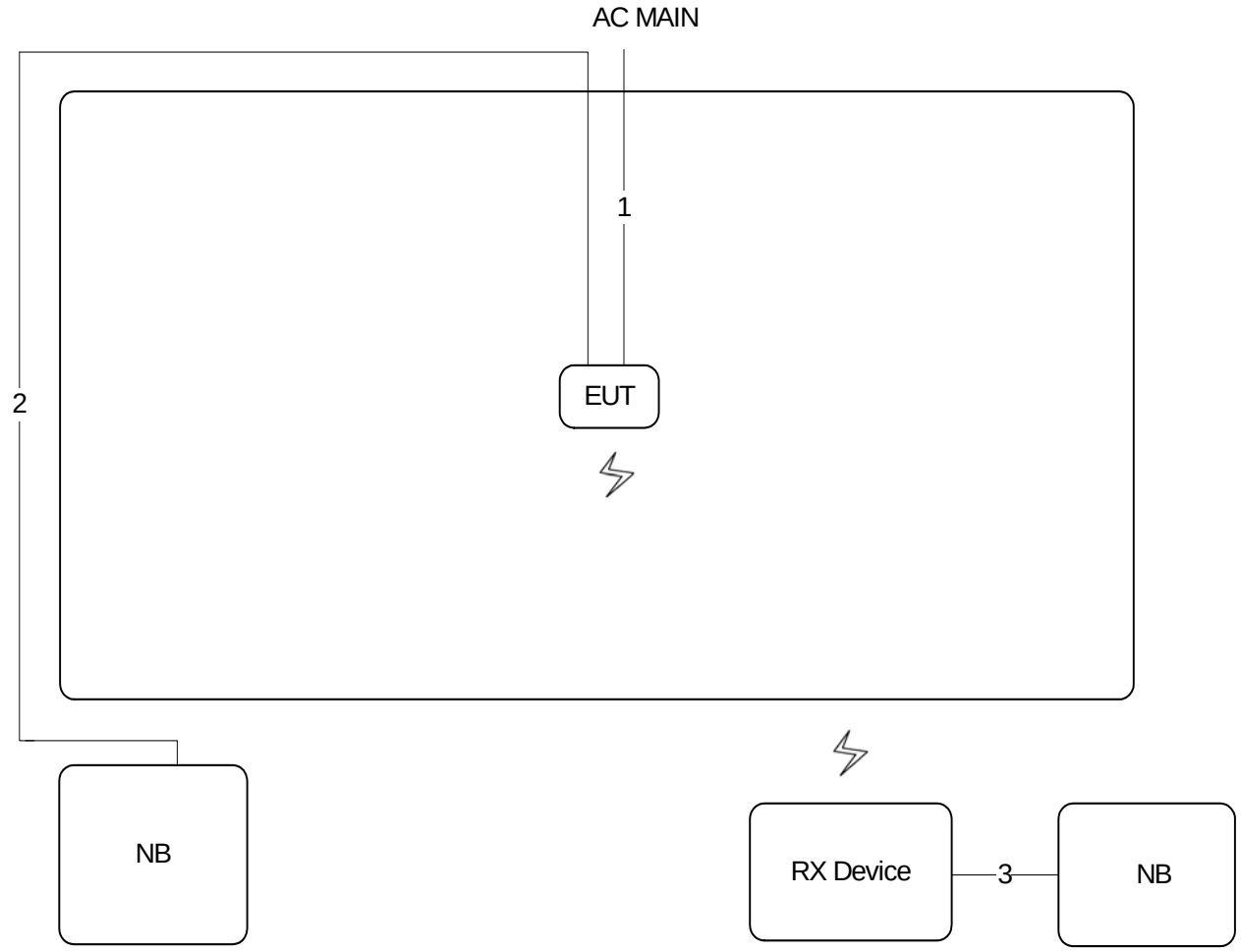
Test Configuration: above 1GHz

For Non-Beamforming Mode



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

For Beamforming Mode



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

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

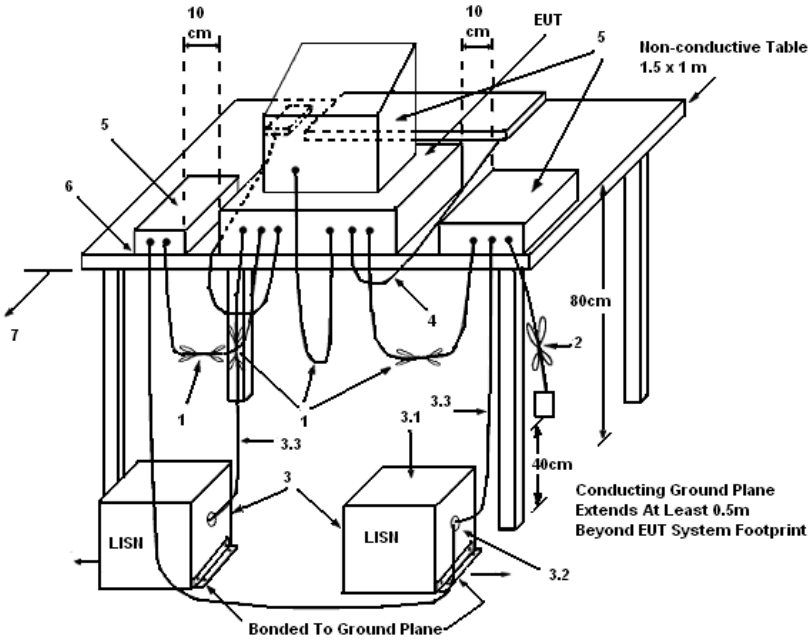
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

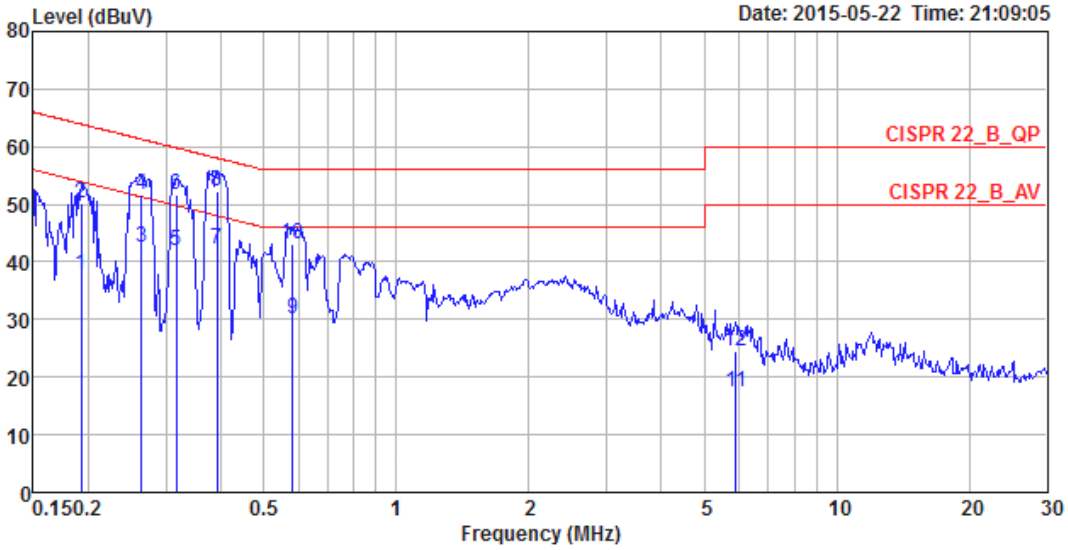
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

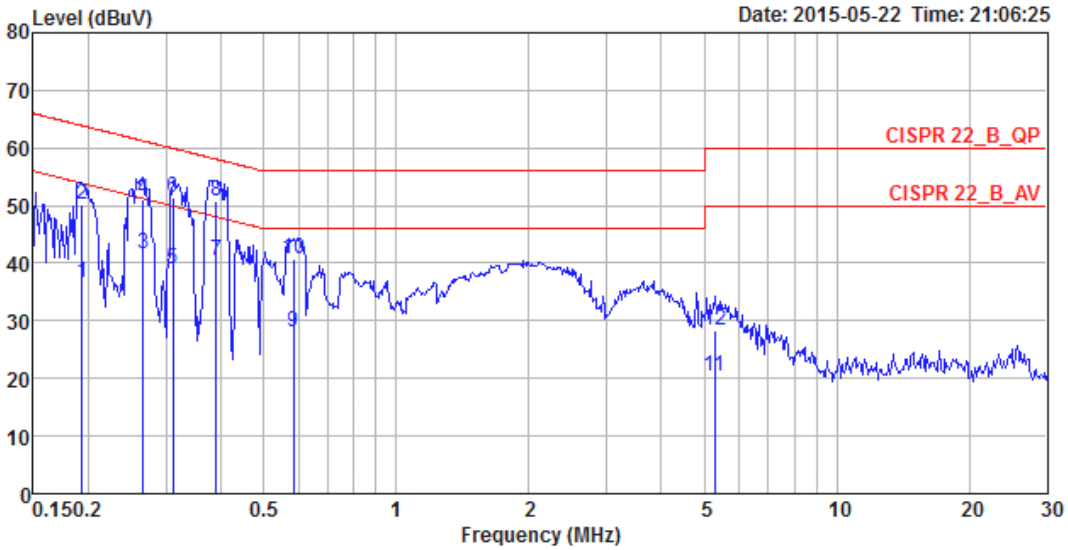
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Line
Configuration	CTX / Mode 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.19	37.89	-16.04	53.93	27.94	9.93	0.02	LINE	Average
2	0.19	50.20	-13.73	63.93	40.25	9.93	0.02	LINE	QP
3	0.26	42.65	-8.64	51.29	32.69	9.93	0.03	LINE	Average
4	0.26	51.68	-9.61	61.29	41.72	9.93	0.03	LINE	QP
5	0.32	41.83	-7.97	49.80	31.86	9.93	0.04	LINE	Average
6	0.32	51.64	-8.16	59.80	41.67	9.93	0.04	LINE	QP
7	0.39	42.24	-5.79	48.03	32.27	9.93	0.04	LINE	Average
8	0.39	52.17	-5.86	58.03	42.20	9.93	0.04	LINE	QP
9	0.58	30.12	-15.88	46.00	20.14	9.94	0.04	LINE	Average
10	0.58	43.07	-12.93	56.00	33.09	9.94	0.04	LINE	QP
11	5.90	17.28	-32.72	50.00	7.06	10.09	0.13	LINE	Average
12	5.90	24.37	-35.63	60.00	14.15	10.09	0.13	LINE	QP

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Neutral
Configuration	CTX / Mode 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.19	36.69	-17.20	53.89	26.88	9.79	0.02	NEUTRAL	Average
2	0.19	50.10	-13.79	63.89	40.29	9.79	0.02	NEUTRAL	QP
3	0.27	41.73	-9.52	51.25	31.91	9.79	0.03	NEUTRAL	Average
4	0.27	51.14	-10.11	61.25	41.32	9.79	0.03	NEUTRAL	QP
5	0.31	39.11	-10.82	49.93	29.28	9.79	0.04	NEUTRAL	Average
6	0.31	51.22	-8.71	59.93	41.39	9.79	0.04	NEUTRAL	QP
7	0.39	40.36	-7.72	48.08	30.53	9.79	0.04	NEUTRAL	Average
8	0.39	50.79	-7.29	58.08	40.96	9.79	0.04	NEUTRAL	QP
9	0.59	27.90	-18.10	46.00	18.06	9.80	0.04	NEUTRAL	Average
10	0.59	40.87	-15.13	56.00	31.03	9.80	0.04	NEUTRAL	QP
11	5.28	20.42	-29.58	50.00	10.40	9.91	0.11	NEUTRAL	Average
12	5.28	28.45	-31.55	60.00	18.43	9.91	0.11	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

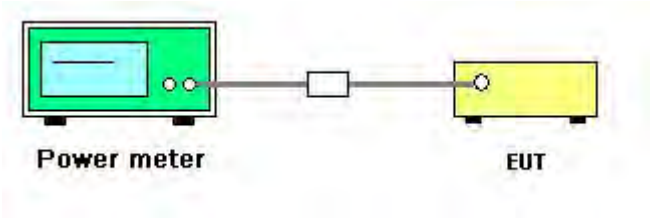
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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

For Non-Beamforming Mode

Temperature	20℃	Humidity	59%
Test Engineer	Mars Lin	Test Date	May 08, 2015

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Total		
802.11b	2412 MHz	23.54	23.89	24.12	23.45	29.78	30.00	Complies
	2437 MHz	23.64	23.76	24.22	23.66	29.85	30.00	Complies
	2462 MHz	21.65	22.21	22.66	21.94	28.15	30.00	Complies
802.11g	2412 MHz	20.92	20.58	20.75	20.5	26.71	30.00	Complies
	2437 MHz	23.59	23.58	23.45	23.88	29.65	30.00	Complies
	2462 MHz	18.14	18.55	18.22	18.41	24.35	30.00	Complies
802.11n MCS0/Nss1 VHT20	2412 MHz	20.07	19.84	19.76	19.94	25.92	30.00	Complies
	2437 MHz	24.04	23.88	23.92	23.96	29.97	30.00	Complies
	2462 MHz	17.53	18.62	17.56	17.89	23.94	30.00	Complies
802.11n MCS0/Nss1 VHT40	2422 MHz	15.52	15.25	15.43	15.14	21.36	30.00	Complies
	2437 MHz	17.26	17.01	17.05	16.97	23.09	30.00	Complies
	2452 MHz	14.13	13.94	13.62	13.71	19.88	30.00	Complies

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Total		
802.11a	5745 MHz	23.71	23.64	23.93	23.73	29.77	30.00	Complies
	5785 MHz	23.72	23.71	23.61	24.01	29.79	30.00	Complies
	5825 MHz	23.83	23.72	23.94	23.79	29.84	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	23.78	23.67	23.91	23.79	29.81	30.00	Complies
	5785 MHz	23.83	23.84	23.67	23.92	29.84	30.00	Complies
	5825 MHz	23.81	23.72	23.93	23.79	29.83	30.00	Complies
802.11n MCS0/Nss1 VHT40	5755 MHz	23.21	23.14	23.19	23.25	29.22	30.00	Complies
	5795 MHz	23.76	23.85	23.93	24.16	29.95	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	21.63	21.74	21.65	21.84	27.74	30.00	Complies

For Beamforming Mode

Temperature	20℃	Humidity	59%
Test Engineer	Serway Li	Test Date	May 18, 2015

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Total		
802.11n MCS0/Nss1 VHT20	2412 MHz	20.65	20.62	20.53	20.32	26.55	27.73	Complies
	2437 MHz	21.51	21.48	21.52	21.38	27.49	27.73	Complies
	2462 MHz	17.68	18.15	17.91	17.62	23.87	27.73	Complies
802.11n MCS0/Nss1 VHT40	2422 MHz	15.83	15.92	15.72	15.82	21.84	27.73	Complies
	2437 MHz	17.23	17.37	17.12	17.18	23.25	27.73	Complies
	2452 MHz	14.38	14.66	14.32	14.32	20.44	27.73	Complies
802.11n MCS0/Nss2 VHT20	2437 MHz	23.91	24.02	23.89	24.01	29.98	30.00	Complies
802.11n MCS0/Nss2 VHT40	2437 MHz	19.37	19.68	19.32	19.46	25.48	30.00	Complies

Note:

MCS0/Nss1: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.27dBi, so limit=30-(8.27-6)=27.73 dBm

MCS0/Nss2: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.26dBi <6dBi, so the limit doesn't reduce.

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	20.36	20.38	20.44	20.42	26.42	26.61	Complies
	5785 MHz	20.39	20.38	20.43	20.48	26.44	26.61	Complies
	5825 MHz	20.48	20.45	20.41	20.42	26.46	26.61	Complies
802.11n MCS0/Nss1 VHT40	5755 MHz	20.51	20.26	20.65	20.61	26.53	26.61	Complies
	5795 MHz	20.42	20.40	20.56	20.65	26.53	26.61	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	20.41	20.35	20.37	20.53	26.44	26.61	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	23.28	23.43	23.45	23.61	29.46	29.62	Complies
	5785 MHz	23.42	23.35	23.32	23.59	29.44	29.62	Complies
	5825 MHz	23.49	23.42	23.44	23.46	29.47	29.62	Complies
802.11n MCS0/Nss2 VHT40	5755 MHz	23.42	23.45	23.48	23.57	29.50	29.62	Complies
	5795 MHz	23.46	23.38	23.42	23.56	29.48	29.62	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	23.31	23.32	23.46	23.56	29.43	29.62	Complies

Note:

MCS0/Nss1: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.39dBi, so limit=30-(9.39-6)=26.61 dBm

MCS0/Nss2: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.38dBi, so limit=30-(6.38-6)=29.62 dBm

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

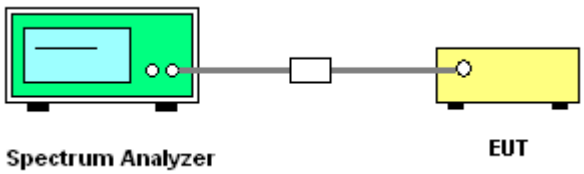
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

For Non-Beamforming Mode

Temperature	20℃	Humidity	59%
Test Engineer	Mars Lin		

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Total		
802.11b	2412 MHz	-9.32	-8.88	-8.94	-9.17	-3.05	5.73	Complies
	2437 MHz	-7.25	-8.72	-8.68	-9.72	-2.48	5.73	Complies
	2462 MHz	-7.98	-9.28	-8.64	-9.52	-2.79	5.73	Complies
802.11g	2412 MHz	-3.38	-3.78	-2.78	-3.60	2.65	5.73	Complies
	2437 MHz	-5.11	-8.63	-5.84	-9.40	-0.86	5.73	Complies
	2462 MHz	-6.44	-5.35	-5.94	-5.94	0.12	5.73	Complies
802.11n MCS0/Nss1 VHT20	2412 MHz	-3.48	-4.22	-4.82	-4.73	1.74	5.73	Complies
	2437 MHz	-0.53	-0.29	-0.91	-0.20	5.55	5.73	Complies
	2462 MHz	-5.90	-6.14	-5.91	-5.00	0.31	5.73	Complies
802.11n MCS0/Nss1 VHT40	2422 MHz	-13.35	-12.73	-11.61	-12.97	-6.59	5.73	Complies
	2437 MHz	-10.75	-10.19	-10.25	-11.20	-4.56	5.73	Complies
	2452 MHz	-13.64	-14.30	-15.03	-15.06	-8.45	5.73	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.27dBi, so limit=8-(8.27-6)=5.73 dBm/3kHz

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Total		
802.11a	5745 MHz	-1.44	-1.33	-1.36	-1.94	4.51	4.61	Complies
	5785 MHz	-2.18	-1.89	-1.88	-1.67	4.12	4.61	Complies
	5825 MHz	-1.95	-1.91	-1.43	-1.82	4.25	4.61	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	-1.62	-1.33	-1.15	-1.89	4.53	4.61	Complies
	5785 MHz	-1.76	-1.90	-1.20	-1.87	4.35	4.61	Complies
	5825 MHz	-2.26	-1.51	-1.82	-1.38	4.29	4.61	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-3.67	-4.65	-4.82	-4.89	1.54	4.61	Complies
	5795 MHz	-4.23	-2.48	-4.30	-2.87	2.63	4.61	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-8.68	-8.65	-8.91	-9.38	-2.87	4.61	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.39dBi, so limit=8-(9.39-6)=4.61 dBm/3kHz

For Beamforming Mode

Temperature	20℃	Humidity	59%
Test Engineer	Serway Li		

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Total		
802.11n MCS0/Nss1 VHT20	2412 MHz	-13.61	-13.56	-13.90	-13.62	-7.65	5.73	Complies
	2437 MHz	-12.78	-12.67	-12.53	-12.61	-6.63	5.73	Complies
	2462 MHz	-16.07	-16.21	-16.24	-16.17	-10.15	5.73	Complies
802.11n MCS0/Nss1 VHT40	2422 MHz	-22.46	-22.63	-22.44	-22.25	-16.42	5.73	Complies
	2437 MHz	-20.60	-20.97	-20.82	-20.90	-14.80	5.73	Complies
	2452 MHz	-23.75	-23.82	-23.68	-23.86	-17.76	5.73	Complies
802.11n MCS0/Nss2 VHT20	2437 MHz	-10.18	-10.34	-10.26	-10.30	-4.25	8.00	Complies
802.11n MCS0/Nss2 VHT40	2437 MHz	-18.91	-19.01	-18.99	-18.95	-12.94	8.00	Complies

MCS0/Nss1: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.27dBi, so limit=8-(8.27-6)=5.73 dBm/3kHz

MCS0/Nss2: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.26dBi<6dBi, so the limit doesn't reduce.

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Ant. 3	Ant. 4	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	-15.28	-15.42	-15.64	-15.16	-9.35	4.61	Complies
	5785 MHz	-15.36	-14.98	-15.23	-15.35	-9.21	4.61	Complies
	5825 MHz	-15.16	-15.32	-15.30	-15.42	-9.28	4.61	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-18.20	-18.25	-18.13	-18.33	-12.21	4.61	Complies
	5795 MHz	-18.50	-18.54	-18.84	-18.99	-12.69	4.61	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-21.87	-21.76	-21.90	-21.68	-15.78	4.61	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	-10.71	-10.50	-11.49	-10.59	-4.78	7.62	Complies
	5785 MHz	-11.24	-10.74	-11.55	-10.52	-4.97	7.62	Complies
	5825 MHz	-11.56	-10.67	-11.44	-11.39	-5.23	7.62	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	-15.82	-15.61	-15.48	-15.89	-9.68	7.62	Complies
	5795 MHz	-15.19	-15.56	-15.68	-15.53	-9.47	7.62	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	-18.94	-18.60	-18.74	-18.62	-12.70	7.62	Complies

Note:

MCS0/Nss1: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.39dBi, so limit=8-(9.39-6)=4.61 dBm/3kHz

MCS0/Nss2: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.38dBi, so limit=8-(6.38-6)=7.62

dBm/3kHz

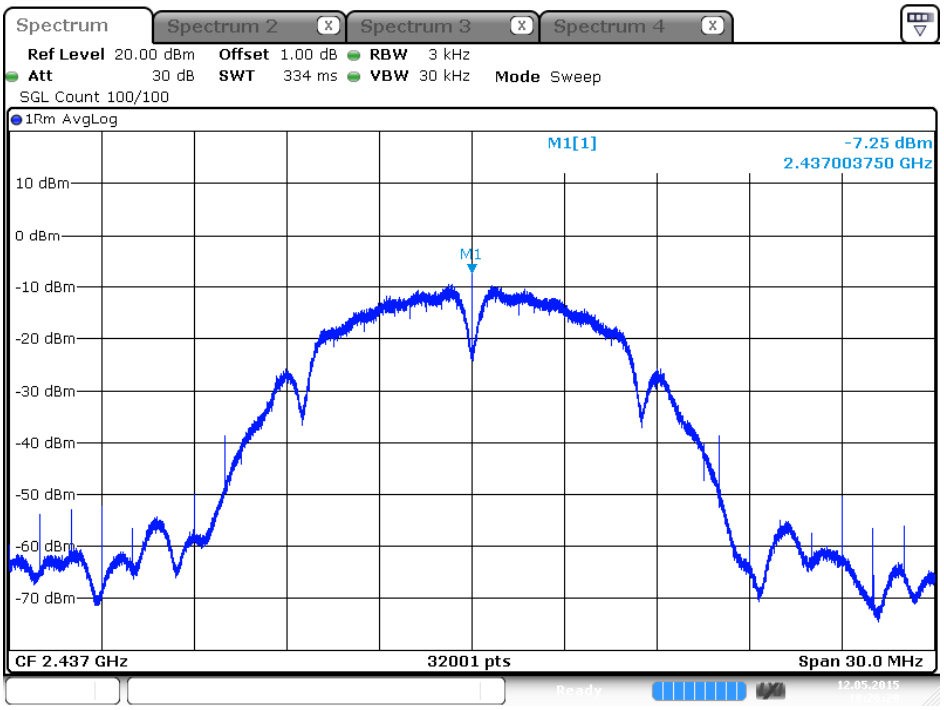
Note: All the test values were listed in the report.

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

For Non-Beamforming Mode

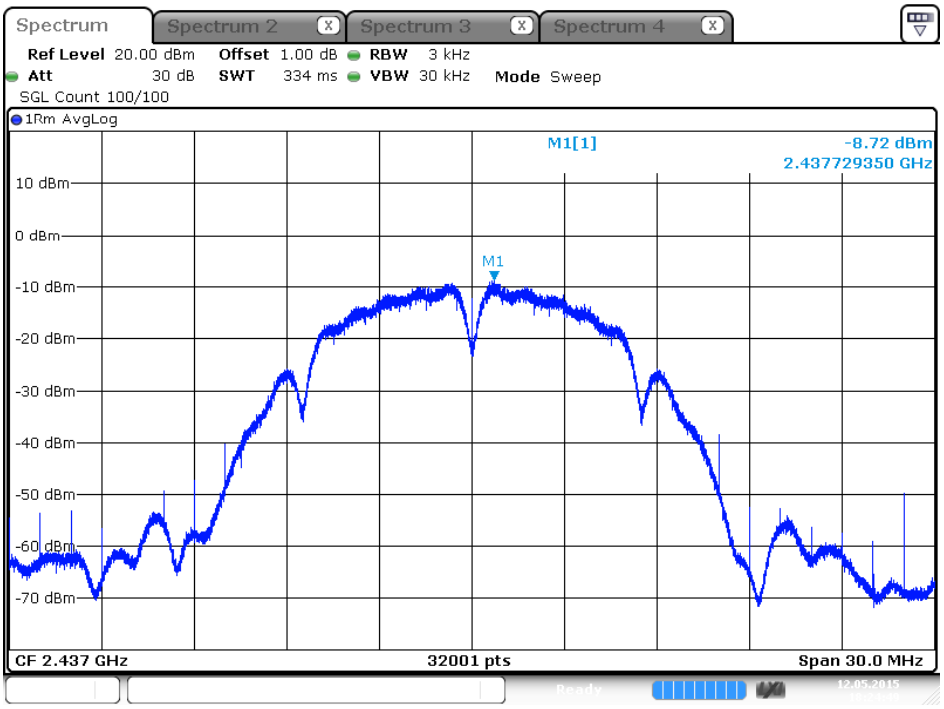
For 2.4GHz Band

Power Density Plot on Configuration IEEE 802.11b / 2437 MHz / Ant. 1



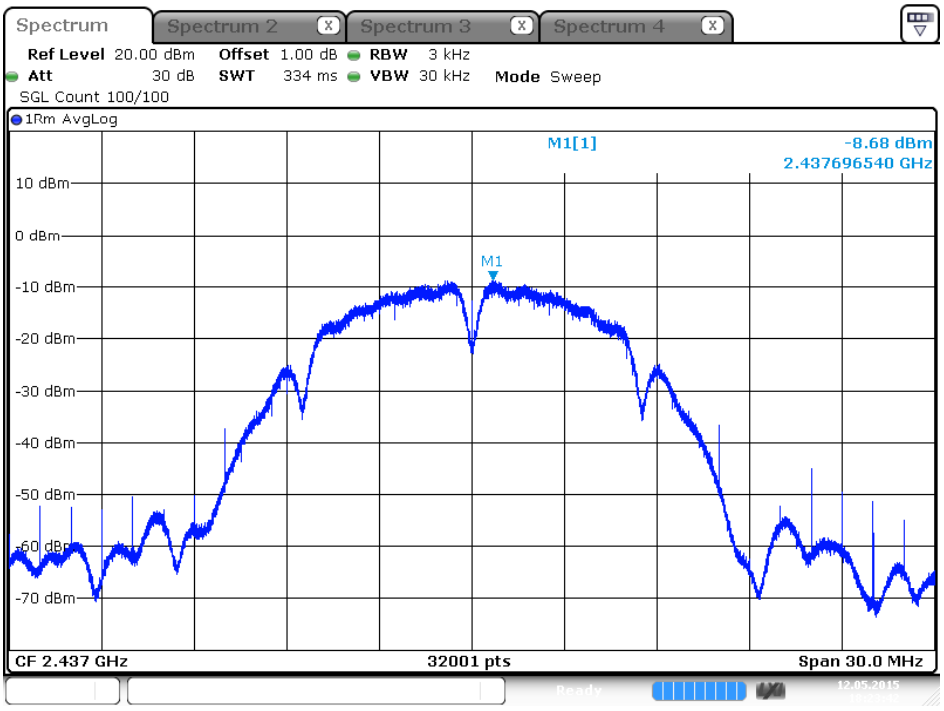
Date: 12.MAY.2015 18:26:29

Power Density Plot on Configuration IEEE 802.11b / 2437 MHz / Ant. 2



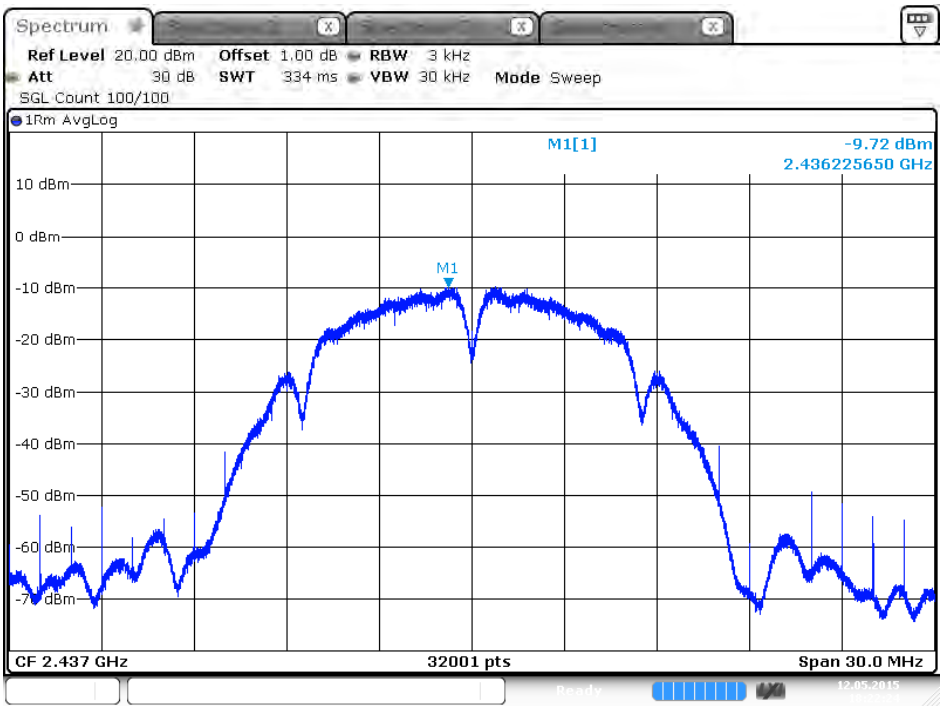
Date: 12.MAY.2015 18:24:49

Power Density Plot on Configuration IEEE 802.11b / 2437 MHz / Ant. 3



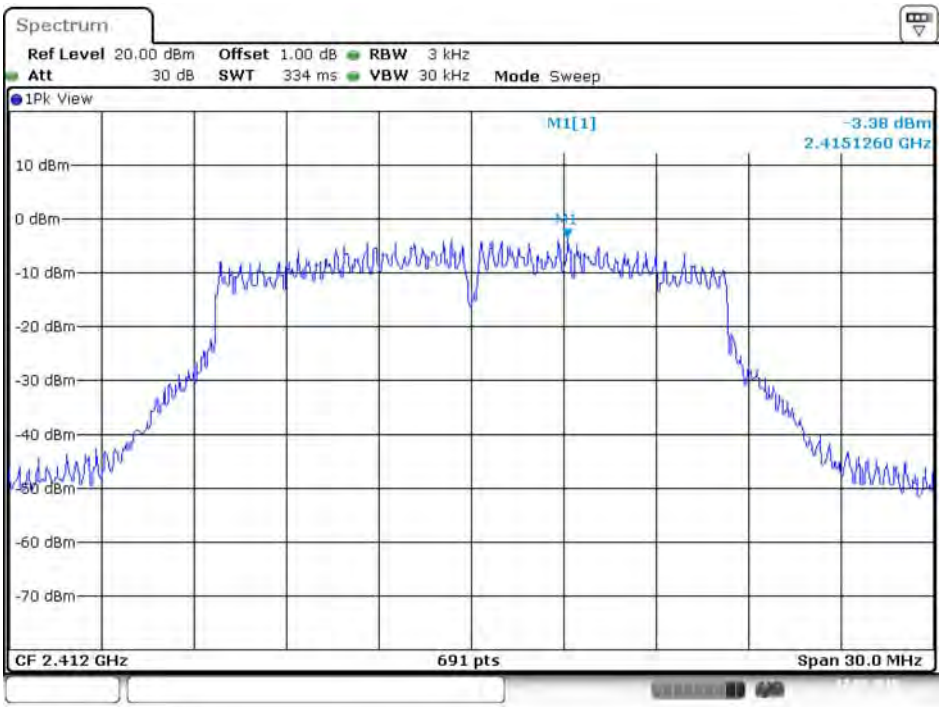
Date: 12.MAY.2015 18:23:42

Power Density Plot on Configuration IEEE 802.11b / 2437 MHz / Ant. 4



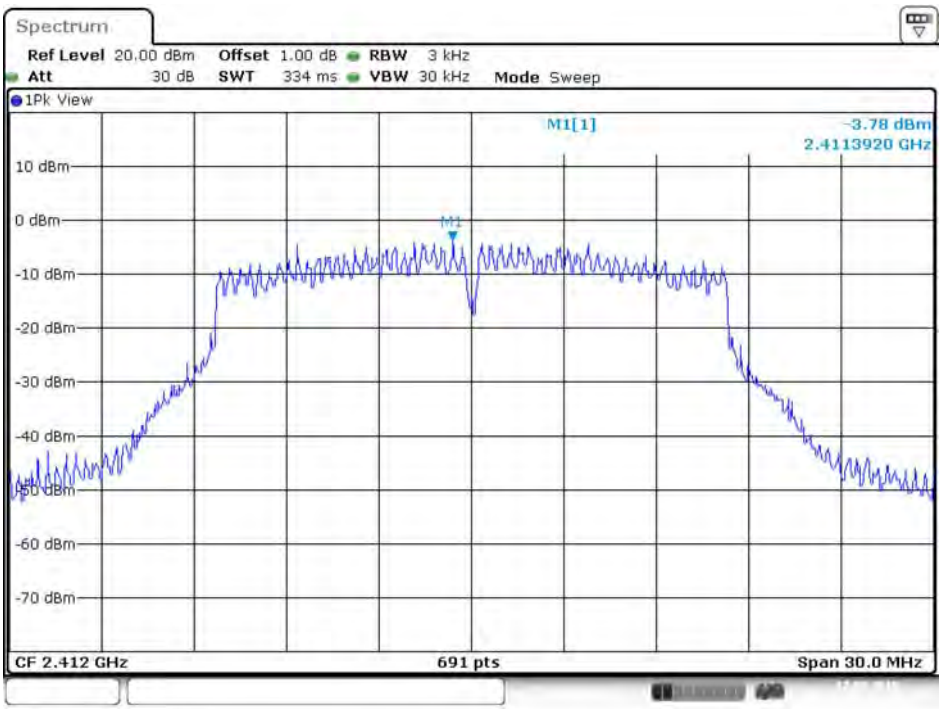
Date: 12.MAY.2015 18:22:24

Power Density Plot on Configuration IEEE 802.11g / 2412 MHz / Ant. 1



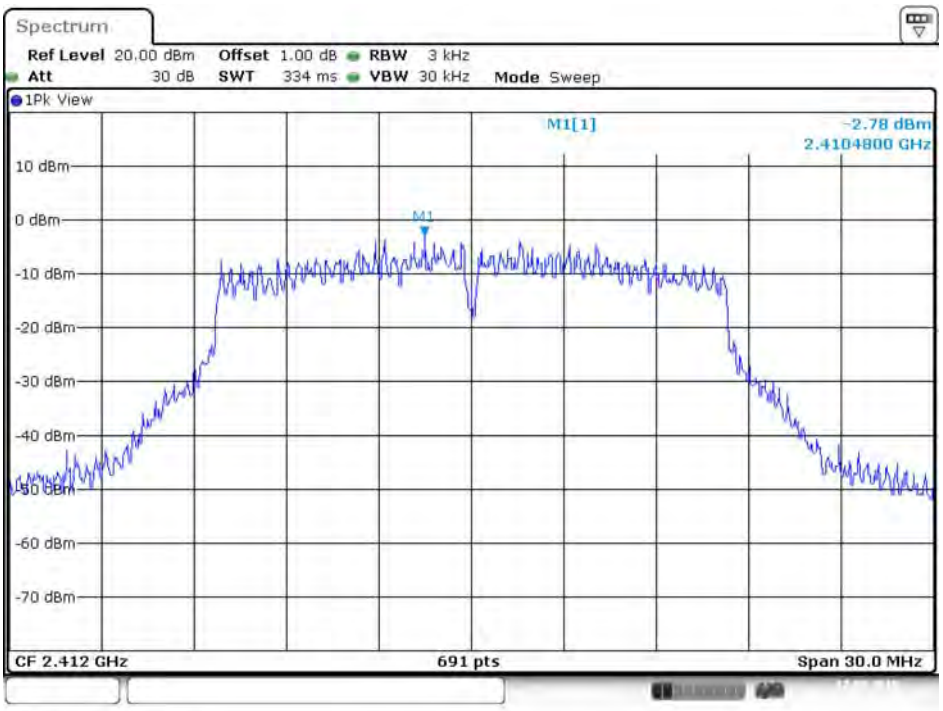
Date: 12.MAY.2015 01:42:35

Power Density Plot on Configuration IEEE 802.11g / 2412 MHz / Ant. 2



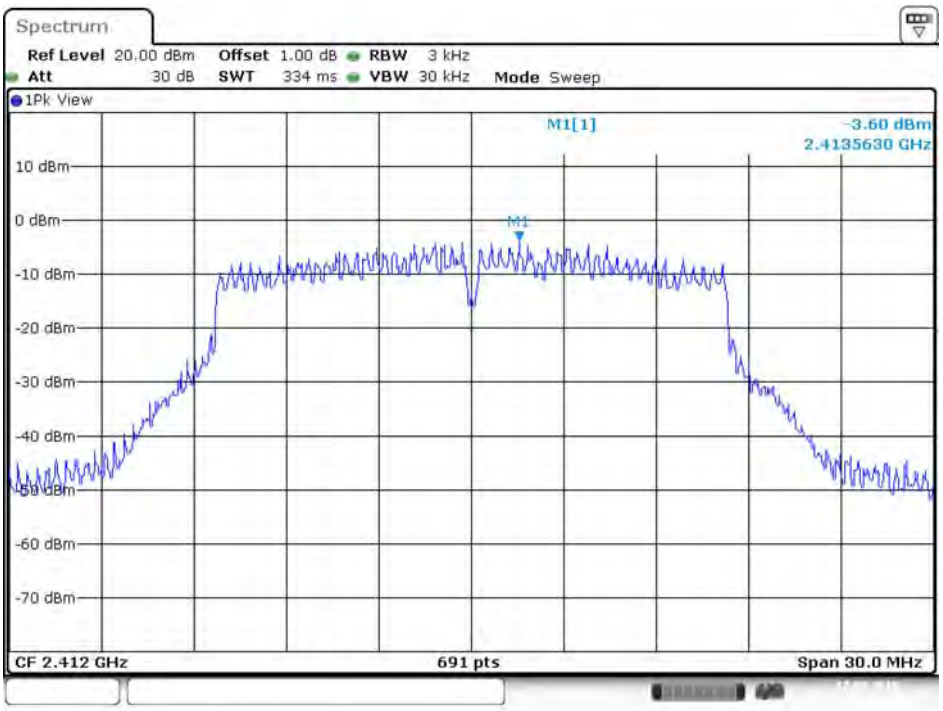
Date: 12.MAY.2015 01:42:57

Power Density Plot on Configuration IEEE 802.11g / 2412 MHz / Ant. 3



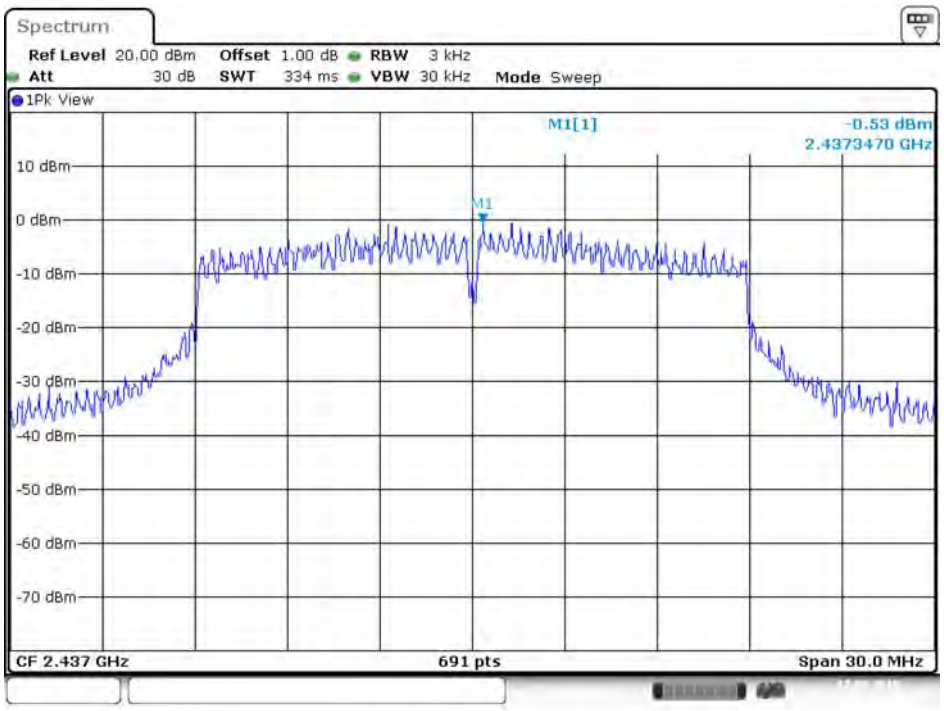
Date: 12.MAY.2015 01:43:21

Power Density Plot on Configuration IEEE 802.11g / 2412 MHz / Ant. 4



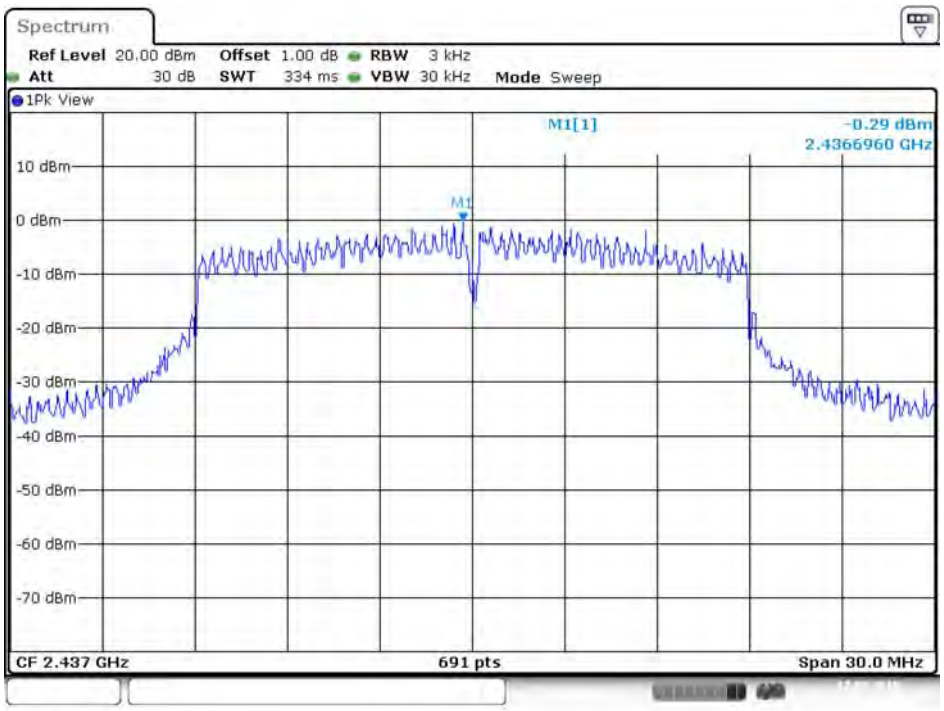
Date: 12.MAY.2015 01:43:44

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 1



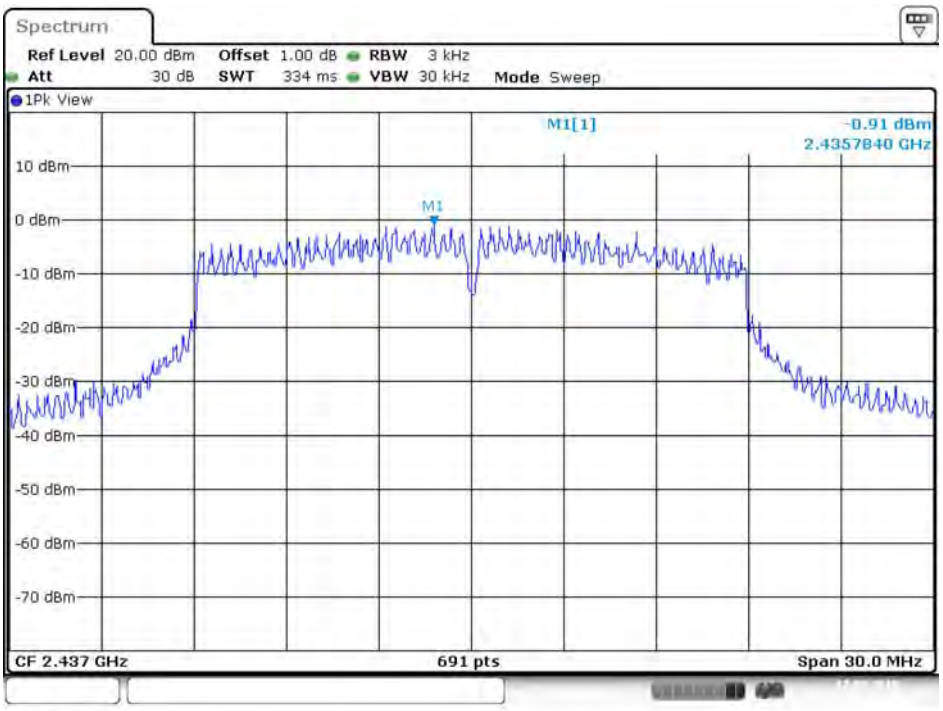
Date: 12.MAY.2015 01:55:06

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 2



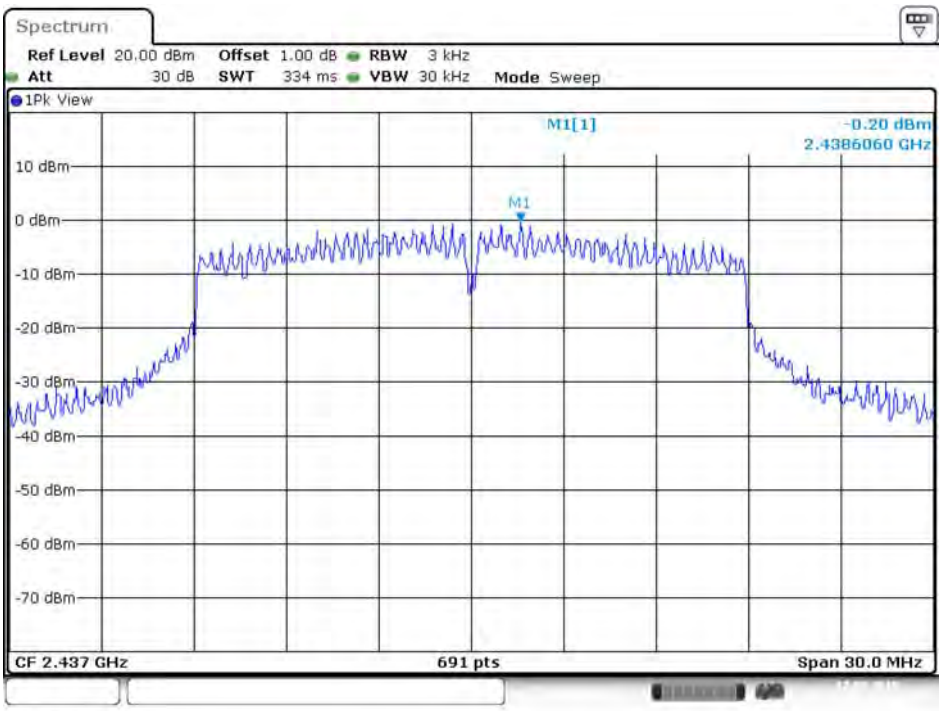
Date: 12.MAY.2015 01:56:11

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 3



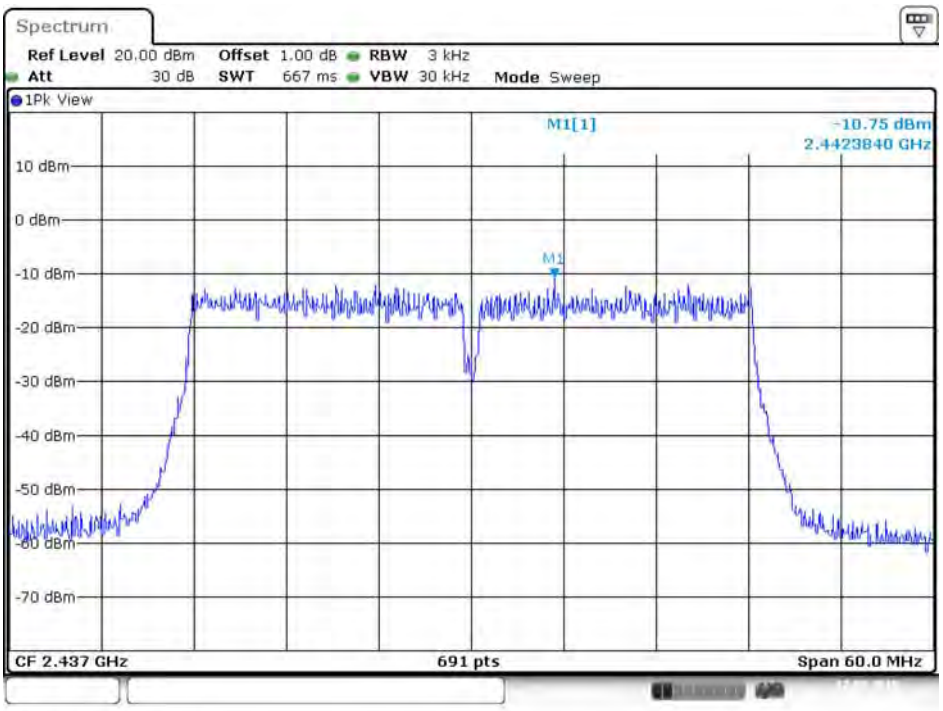
Date: 12.MAY.2015 01:56:38

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 4



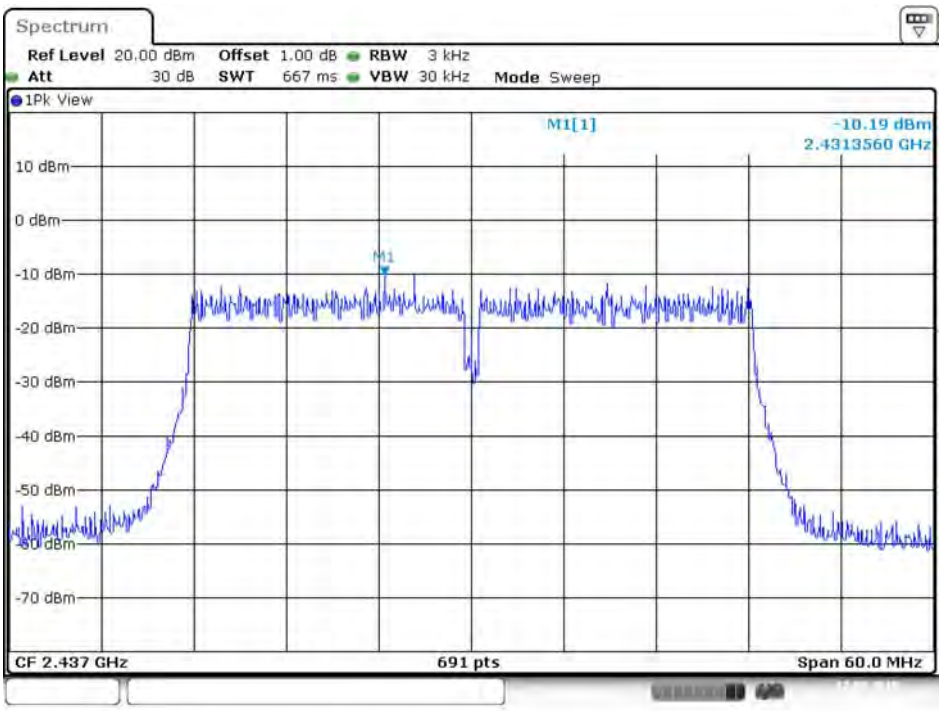
Date: 12.MAY.2015 01:57:06

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2437 MHz / Ant. 1



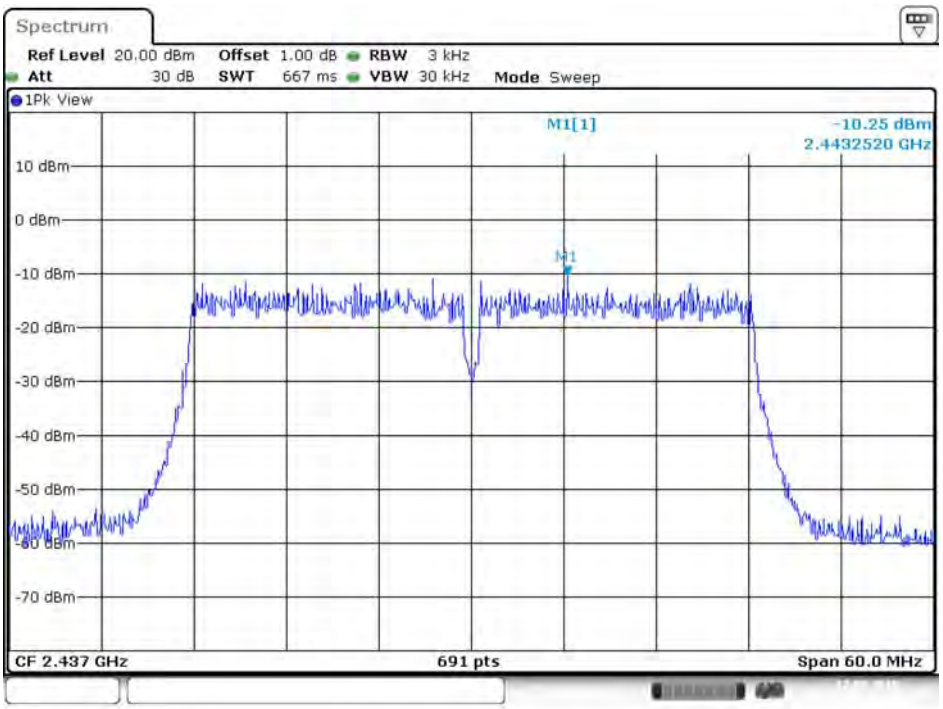
Date: 12.MAY.2015 02:03:20

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2437 MHz / Ant. 2



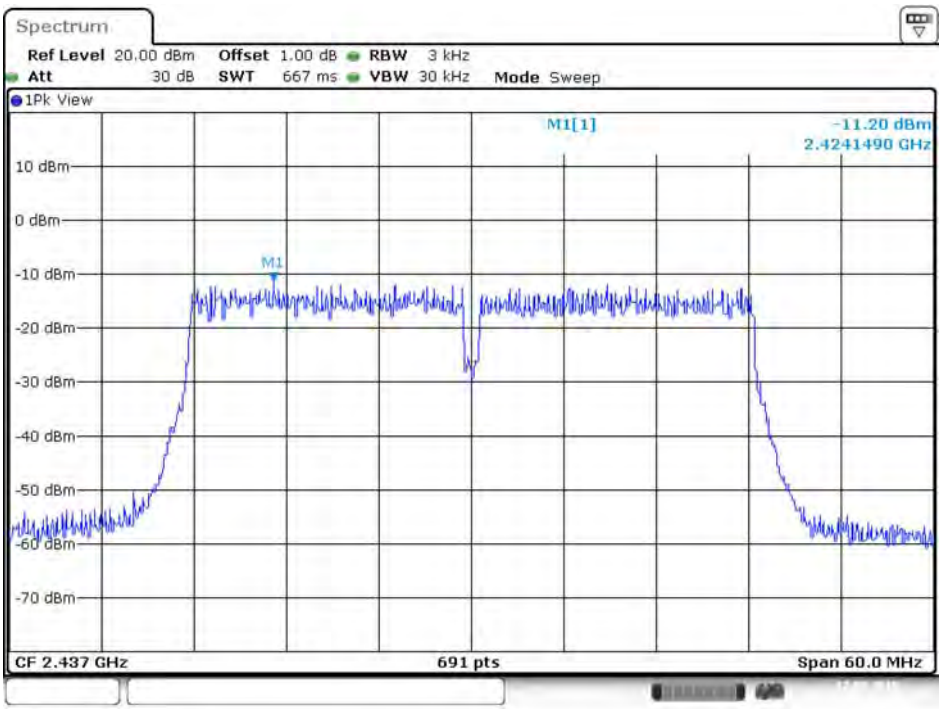
Date: 12.MAY.2015 02:03:42

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2437 MHz / Ant. 3



Date: 12.MAY.2015 02:04:04

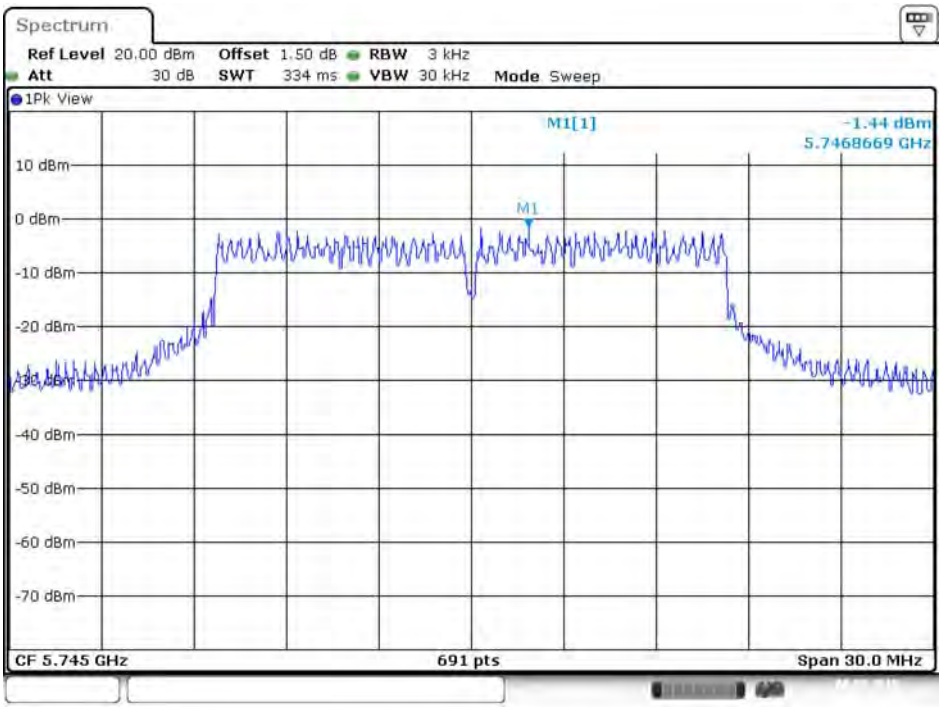
Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2437 MHz / Ant. 4



Date: 12.MAY.2015 02:04:24

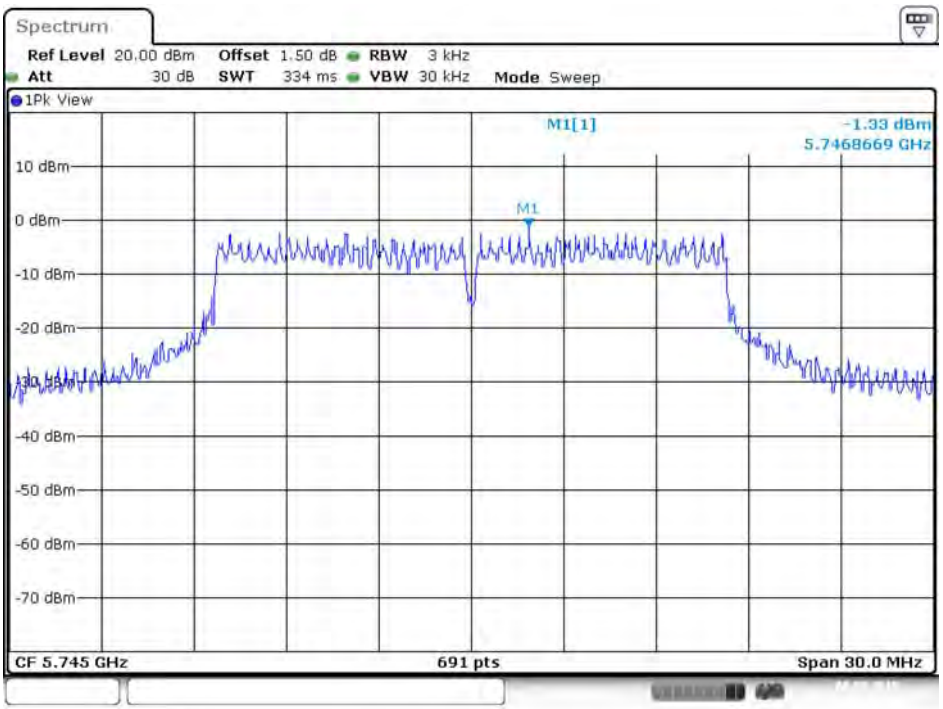
For 5GHz Band

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



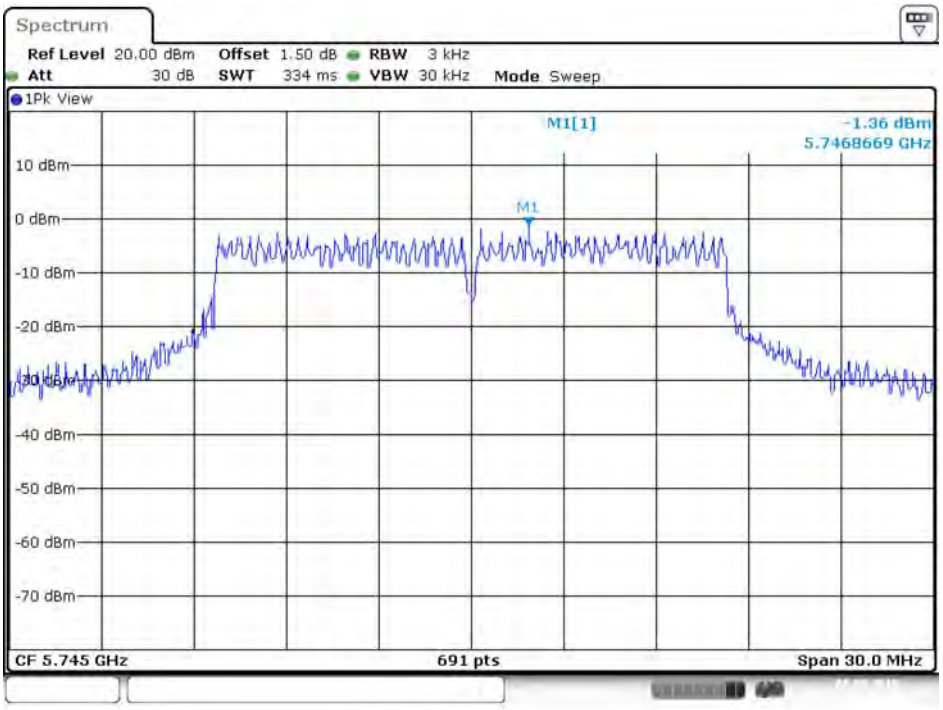
Date: 8.MAY.2015 22:59:19

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



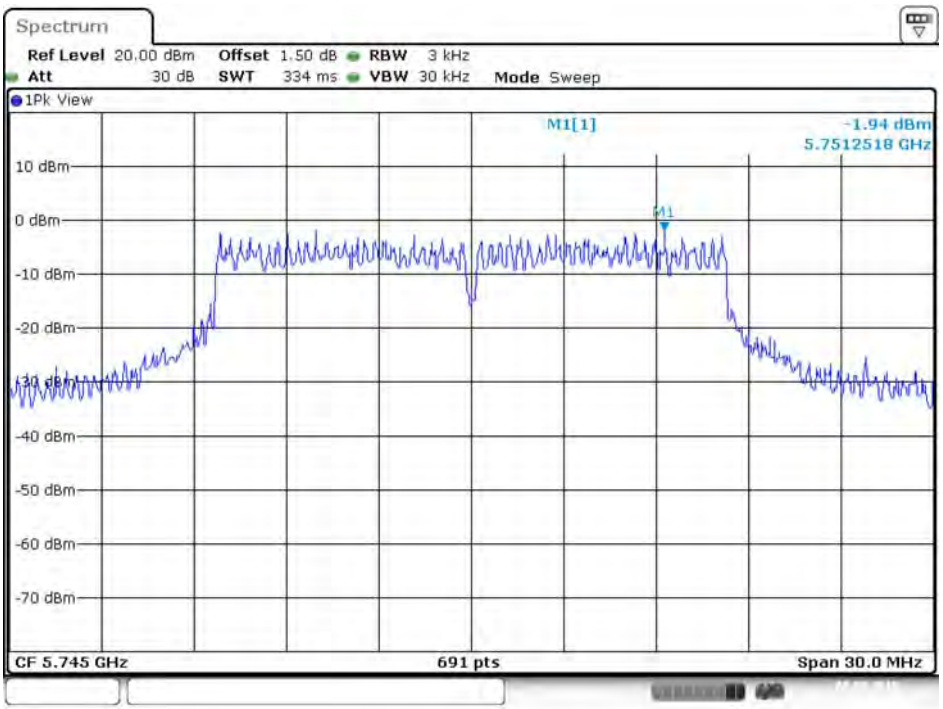
Date: 8.MAY.2015 22:59:42

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



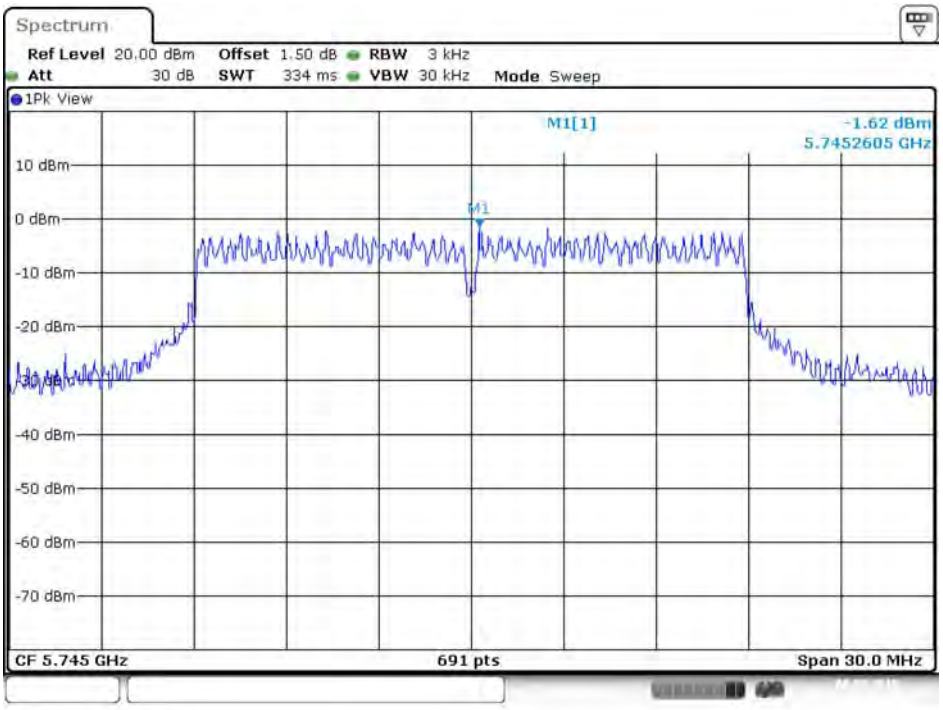
Date: 8.MAY.2015 23:00:02

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



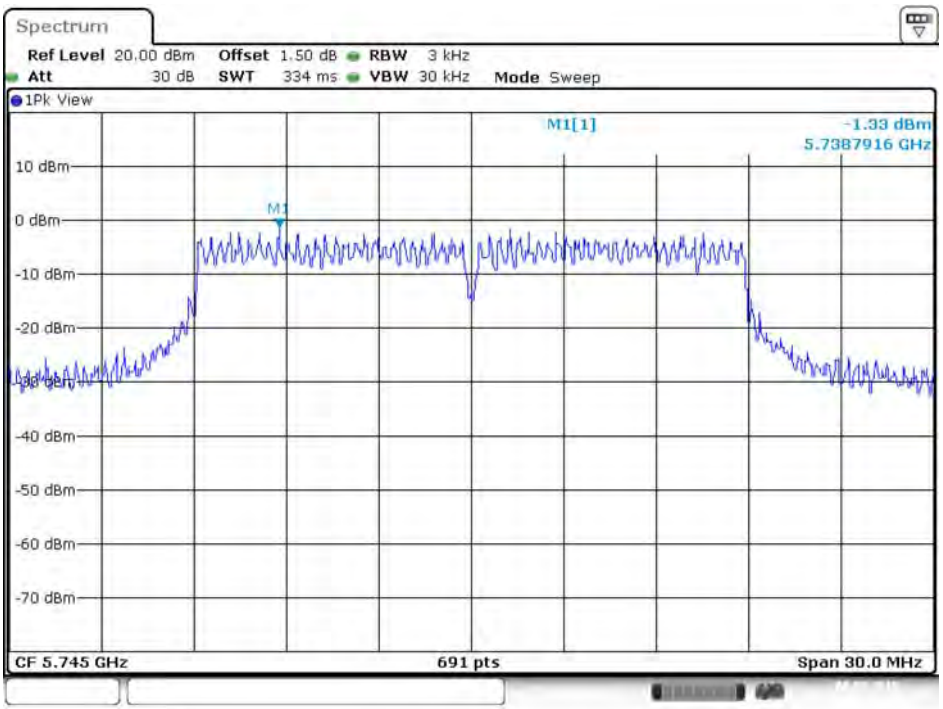
Date: 8.MAY.2015 23:00:30

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



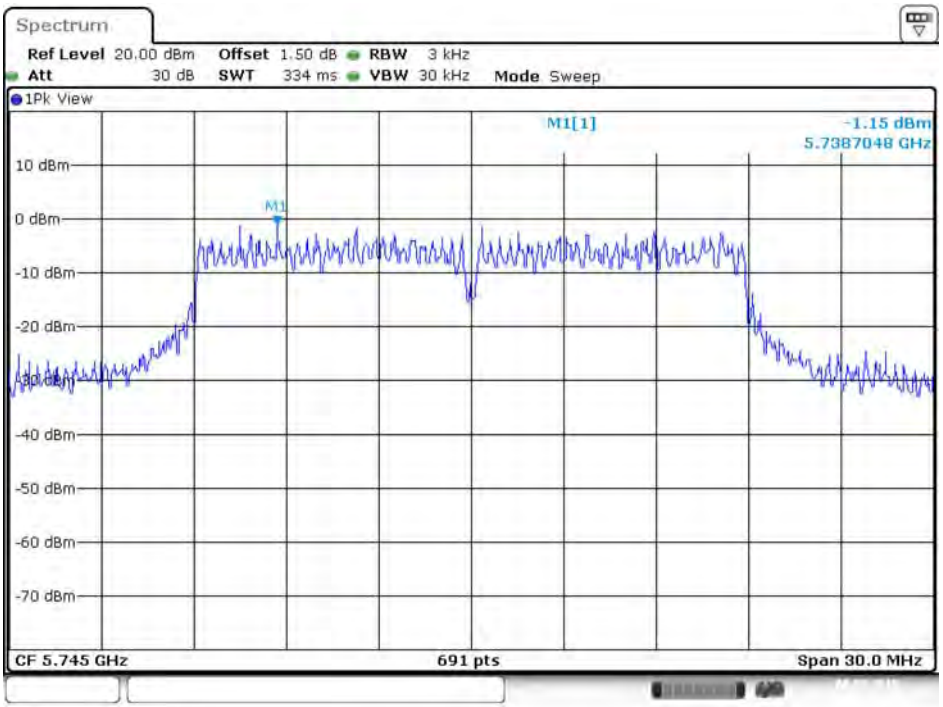
Date: 8.MAY.2015 22:45:25

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



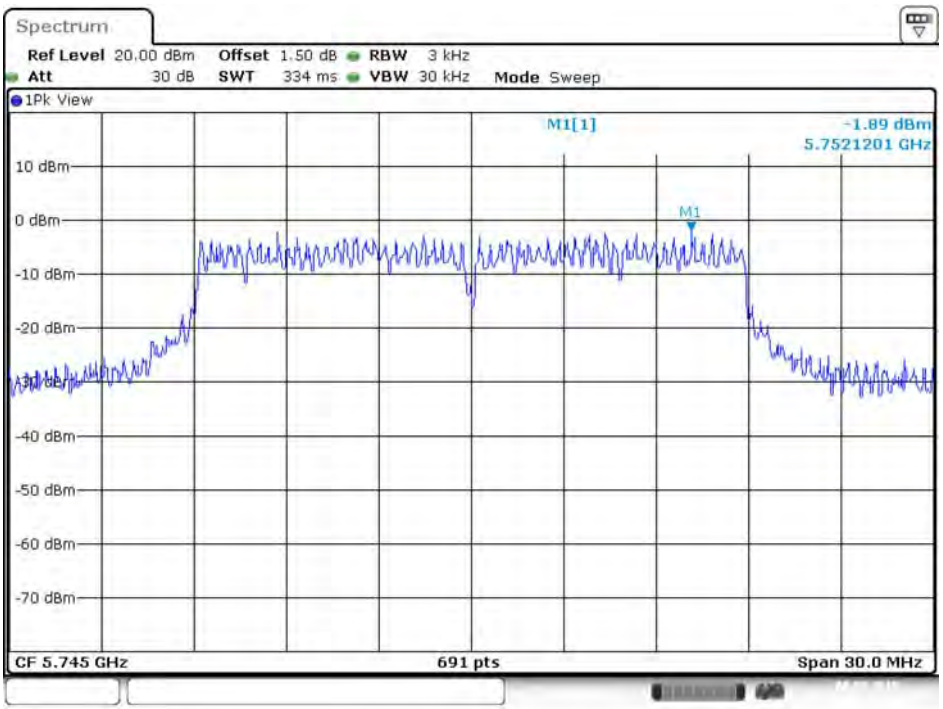
Date: 8.MAY.2015 22:45:42

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



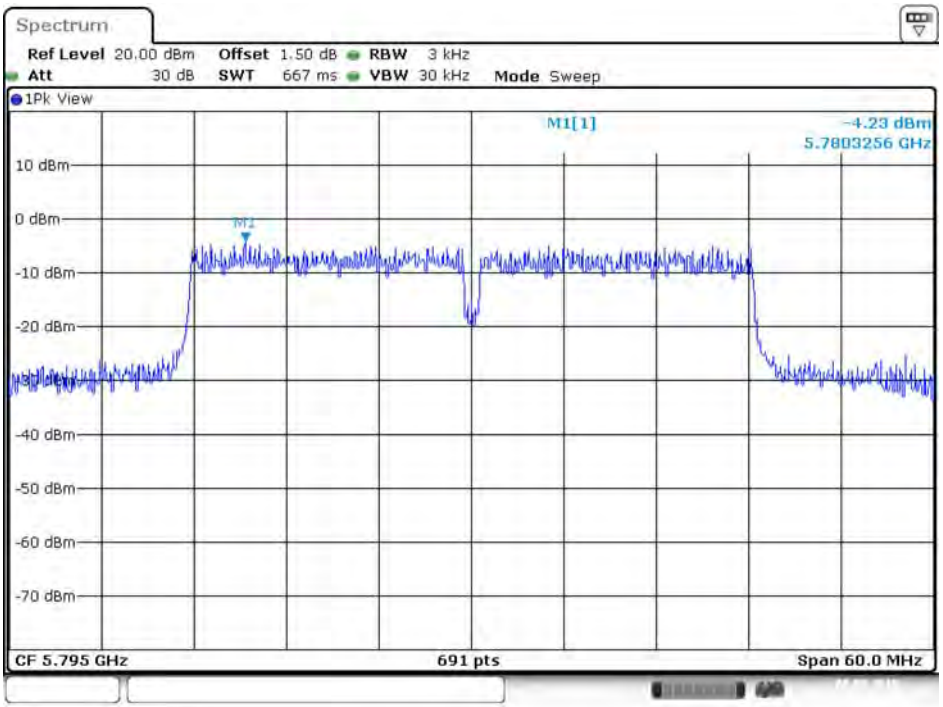
Date: 8.MAY.2015 22:46:58

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



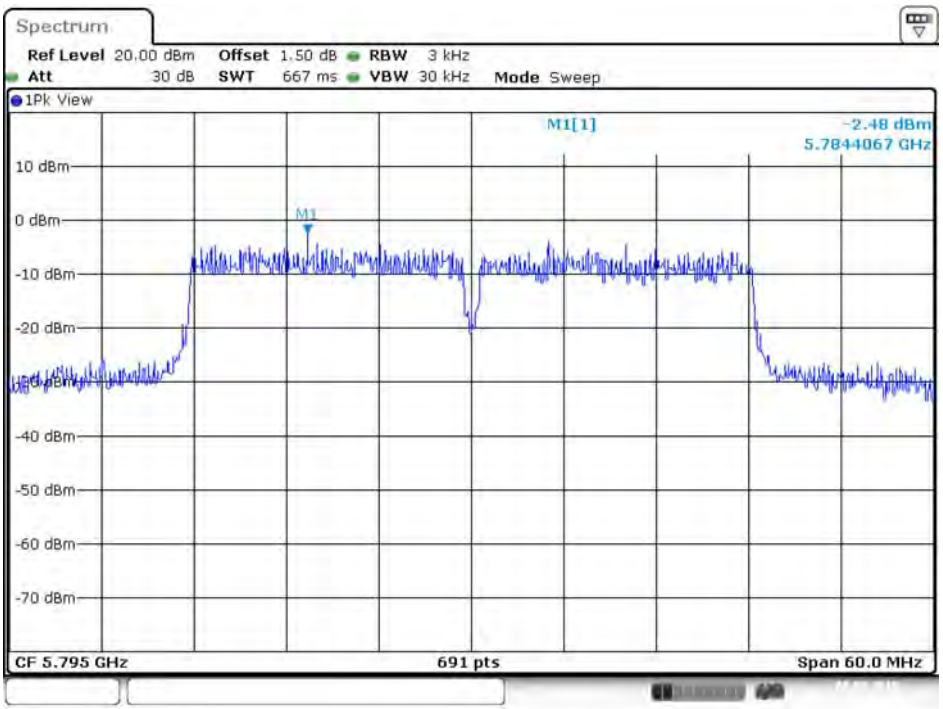
Date: 8.MAY.2015 22:47:27

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



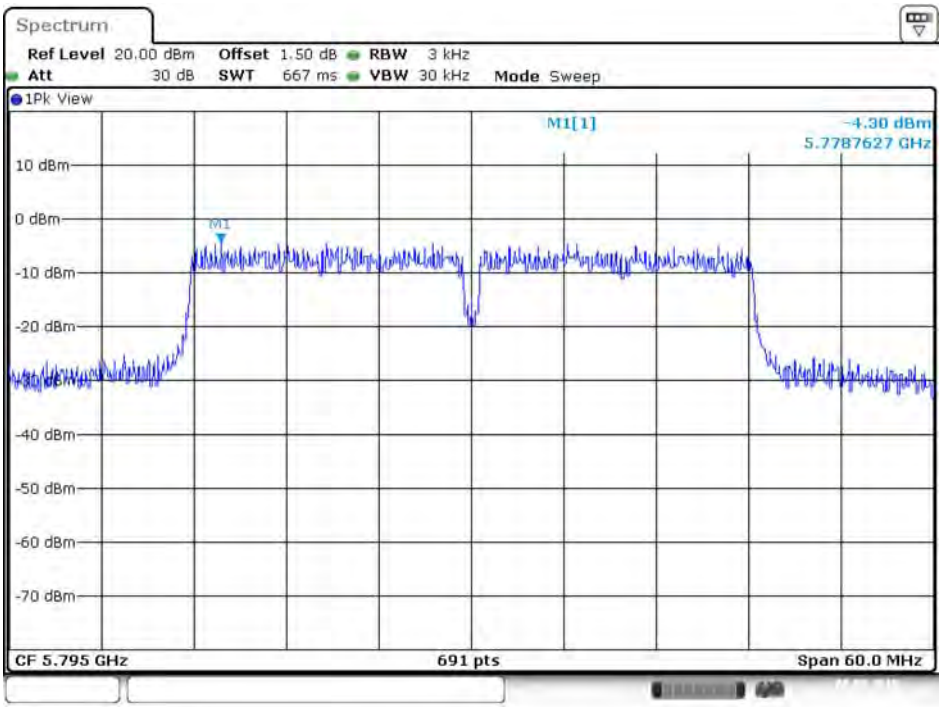
Date: 8.MAY.2015 22:43:51

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



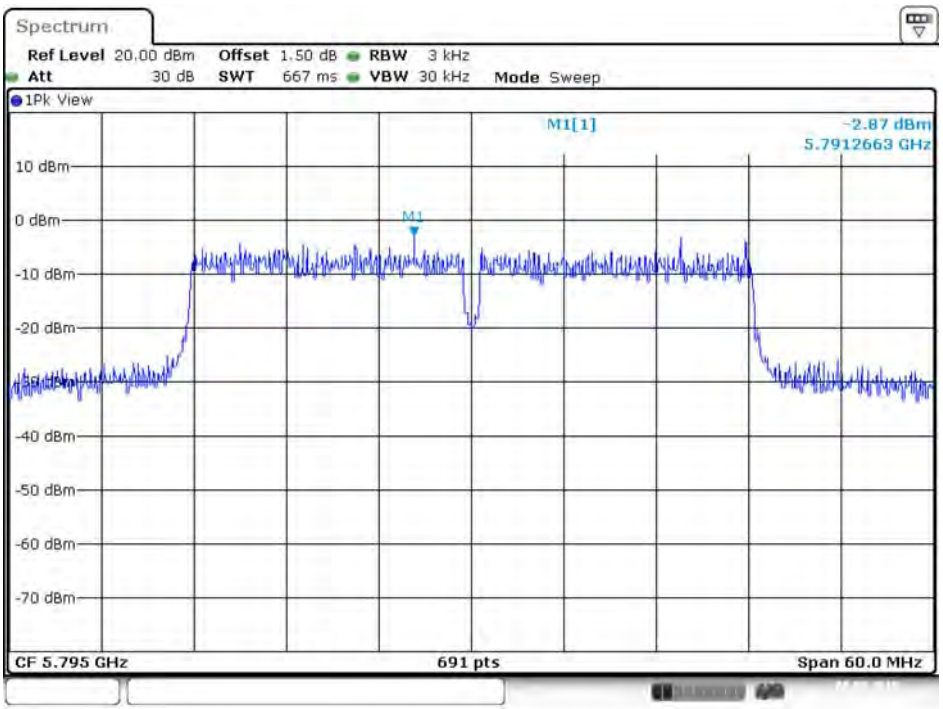
Date: 8.MAY.2015 22:44:09

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



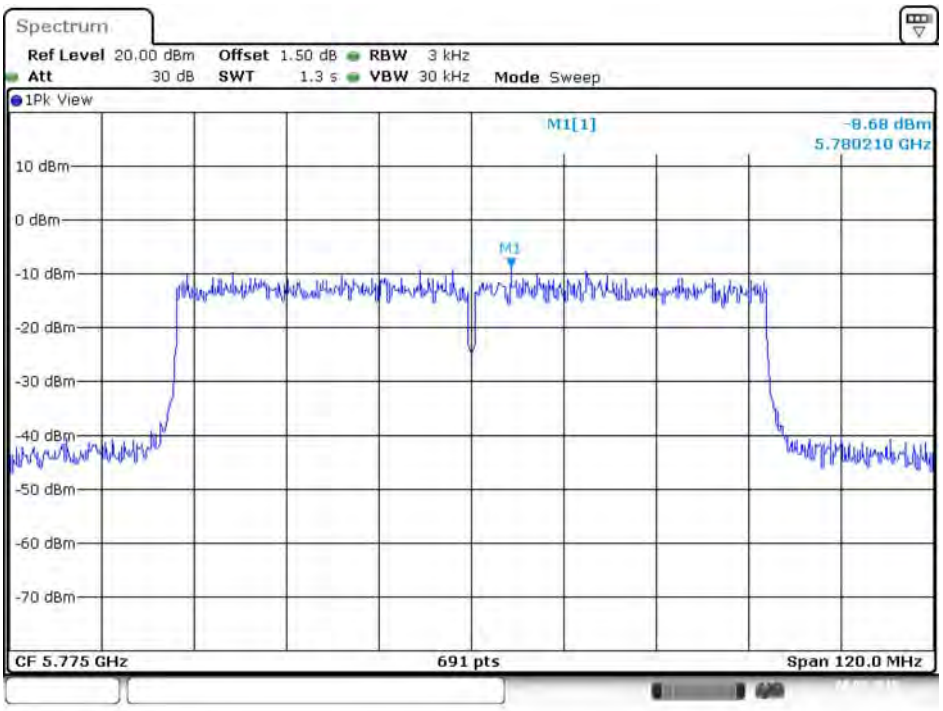
Date: 8.MAY.2015 22:44:31

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



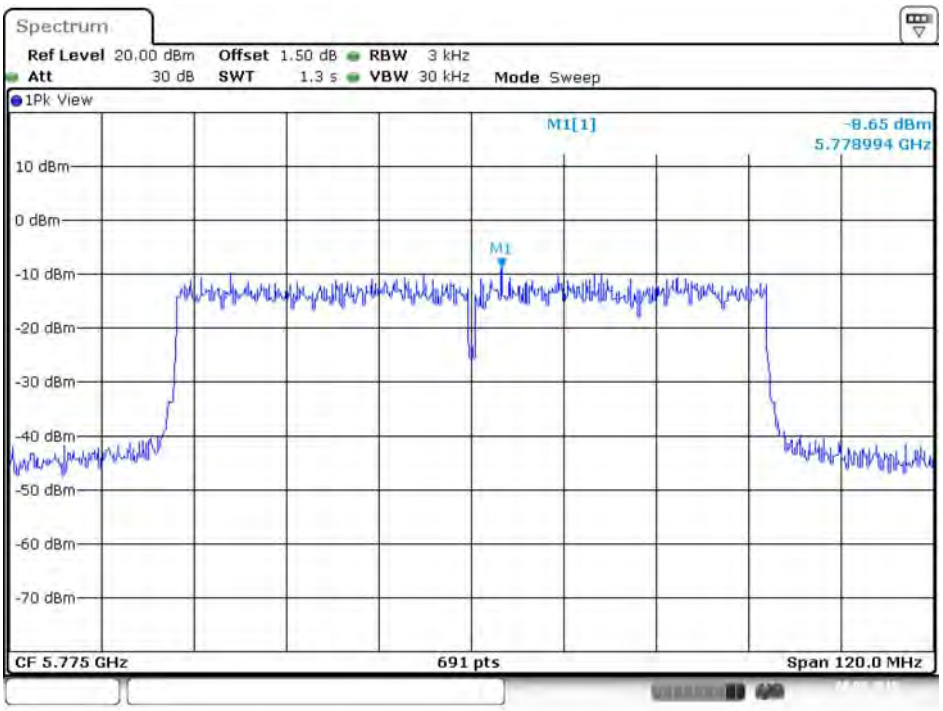
Date: 8.MAY.2015 22:44:47

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



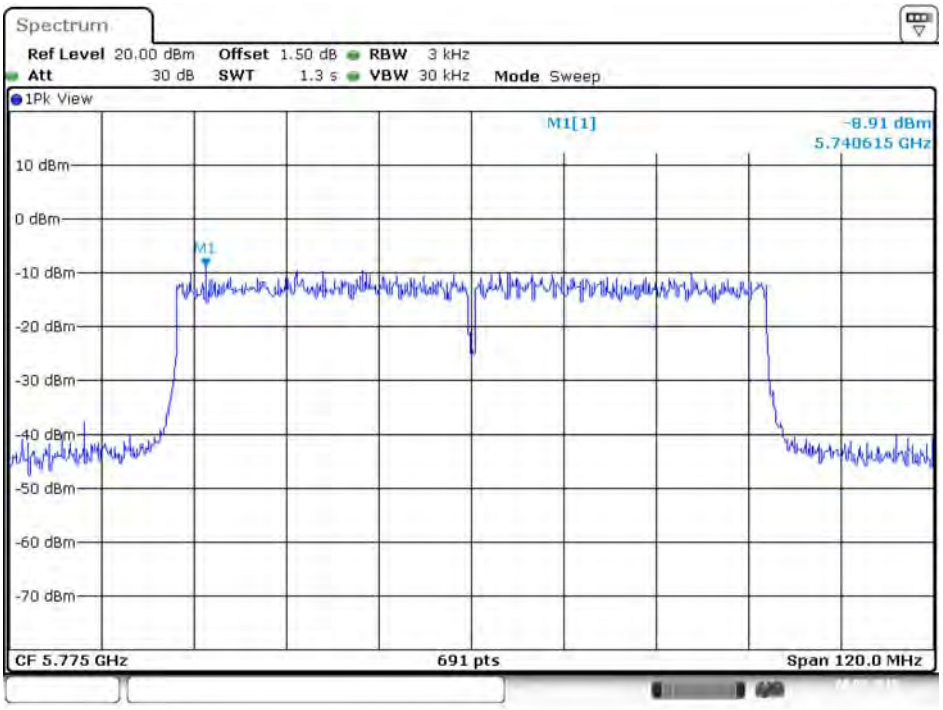
Date: 8.MAY.2015 22:38:39

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



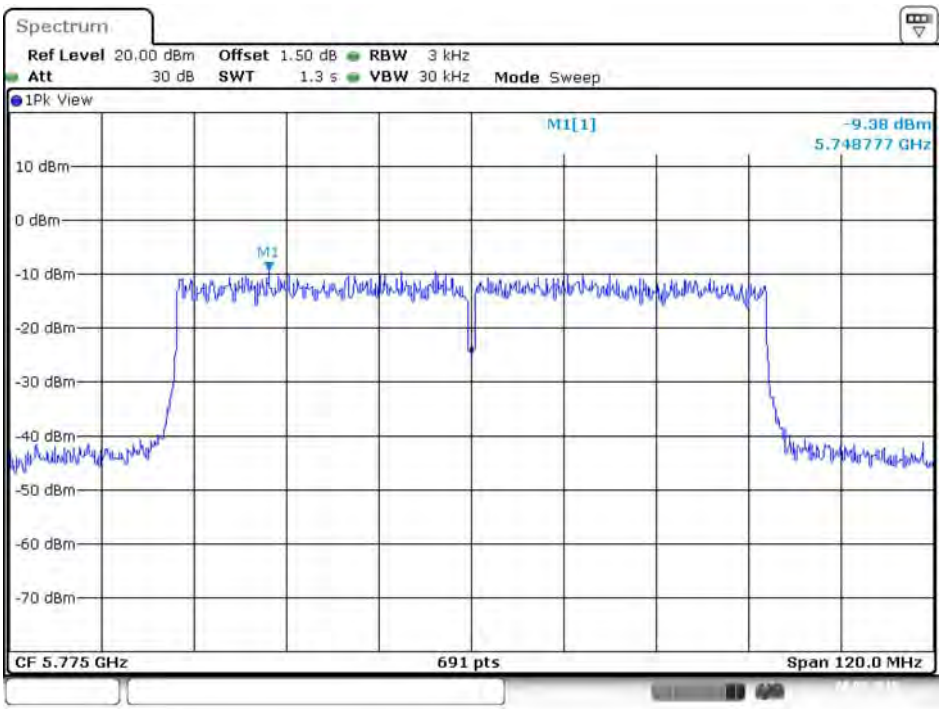
Date: 8.MAY.2015 22:39:12

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



Date: 8.MAY.2015 22:40:02

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



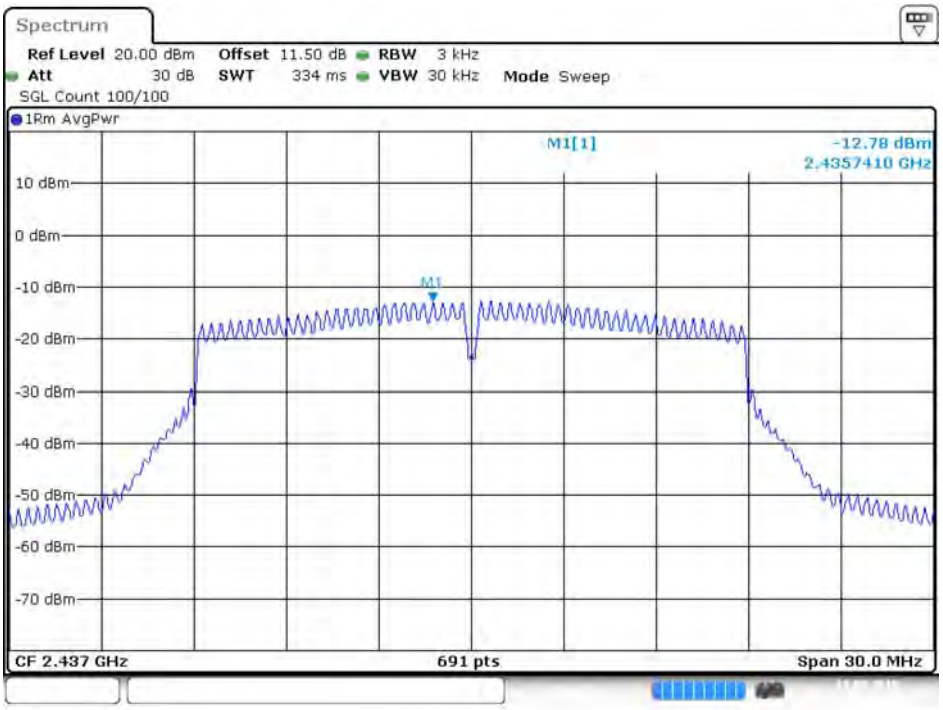
Date: 8.MAY.2015 22:40:43

For Beamforming Mode

For 2.4GHz Band

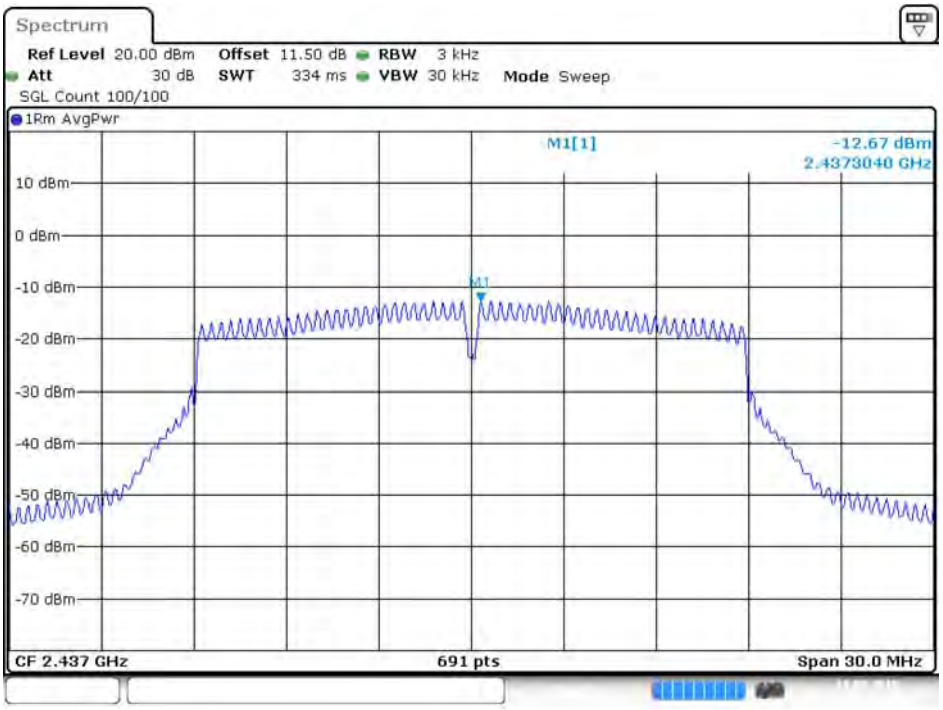
Test Mode: MCS0/Nss1

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 1



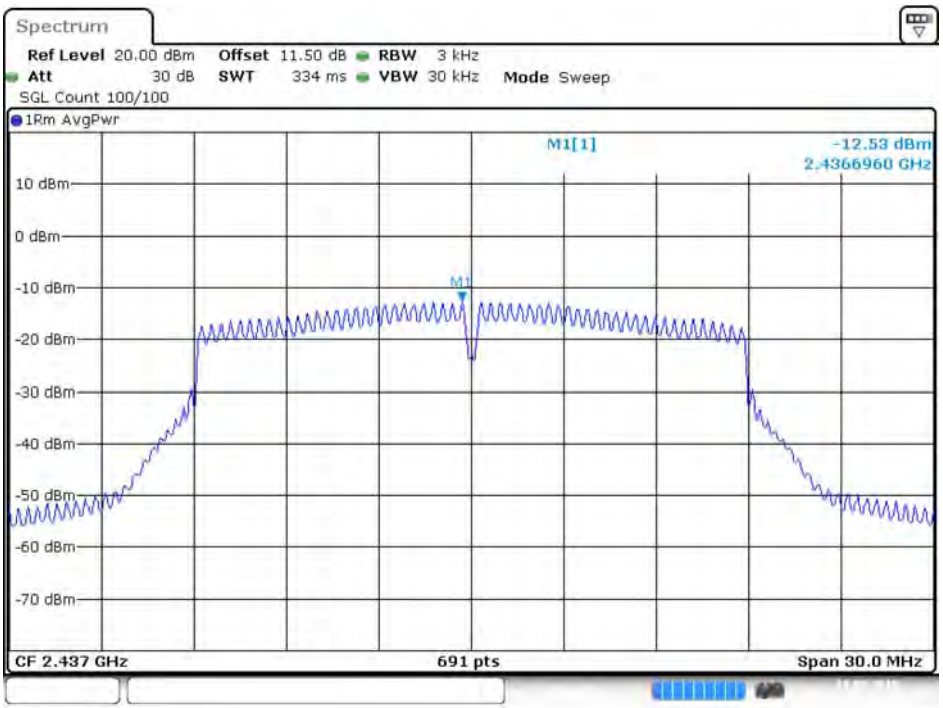
Date: 19.MAY.2015 14:02:13

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 2



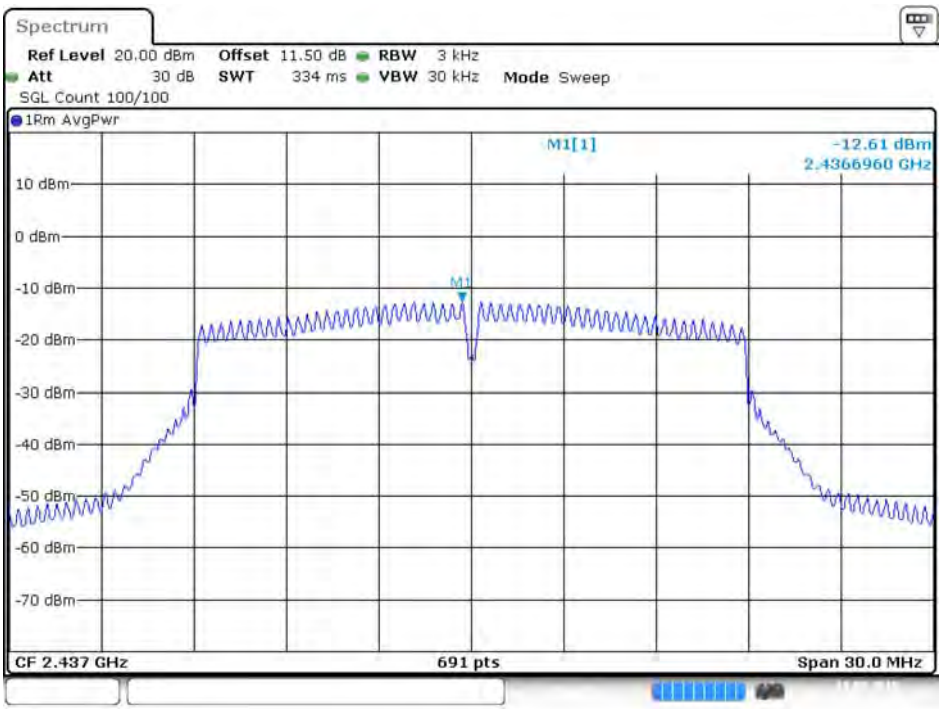
Date: 19.MAY.2015 13:59:58

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 3



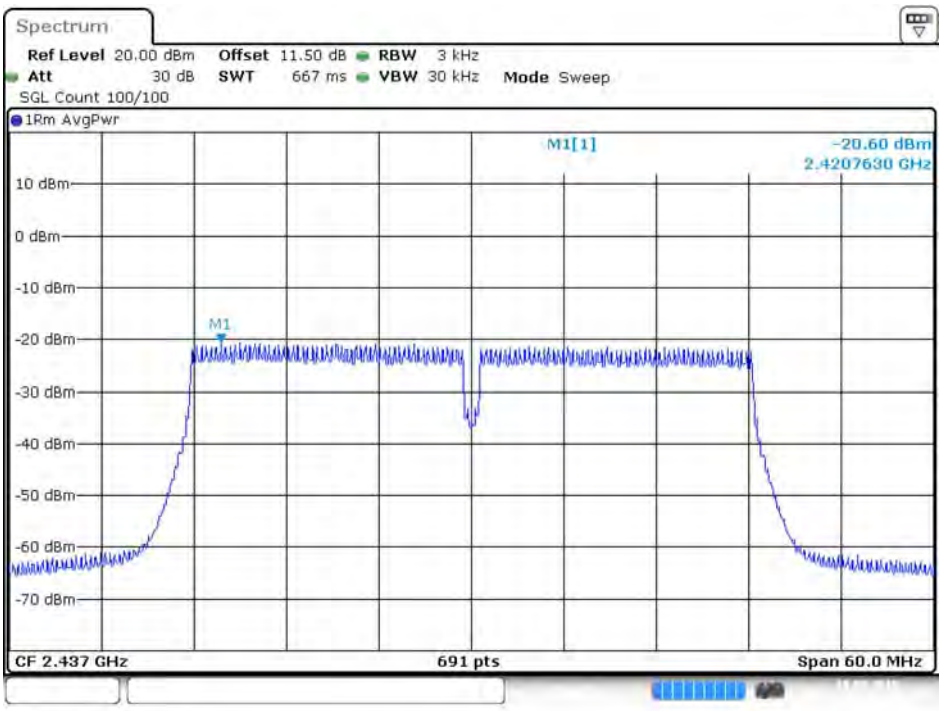
Date: 19.MAY.2015 13:56:23

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 4



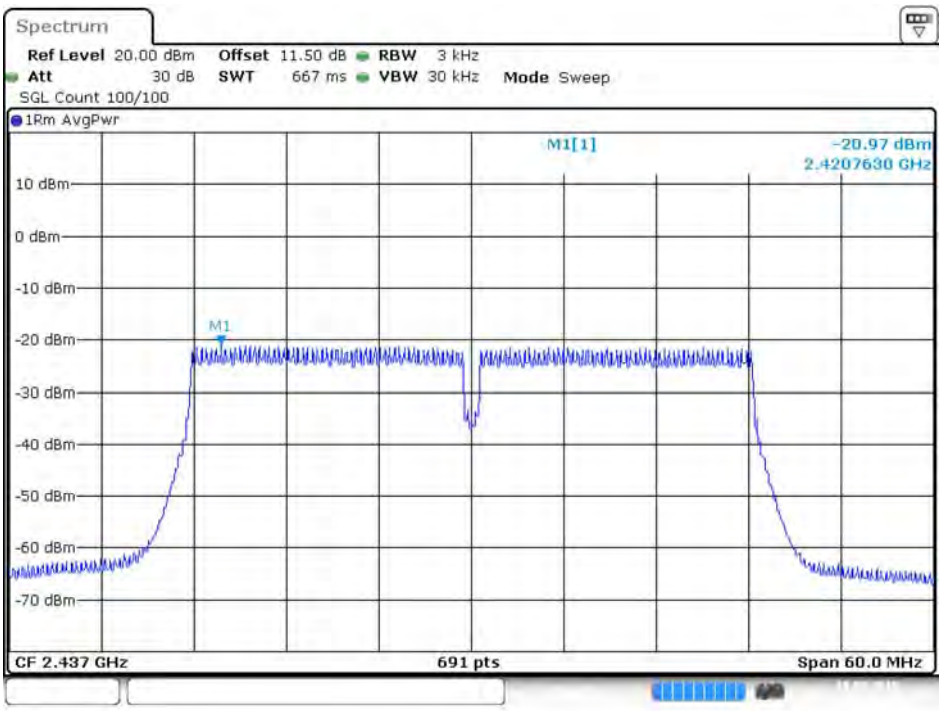
Date: 19.MAY.2015 13:54:35

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2437 MHz / Ant. 1



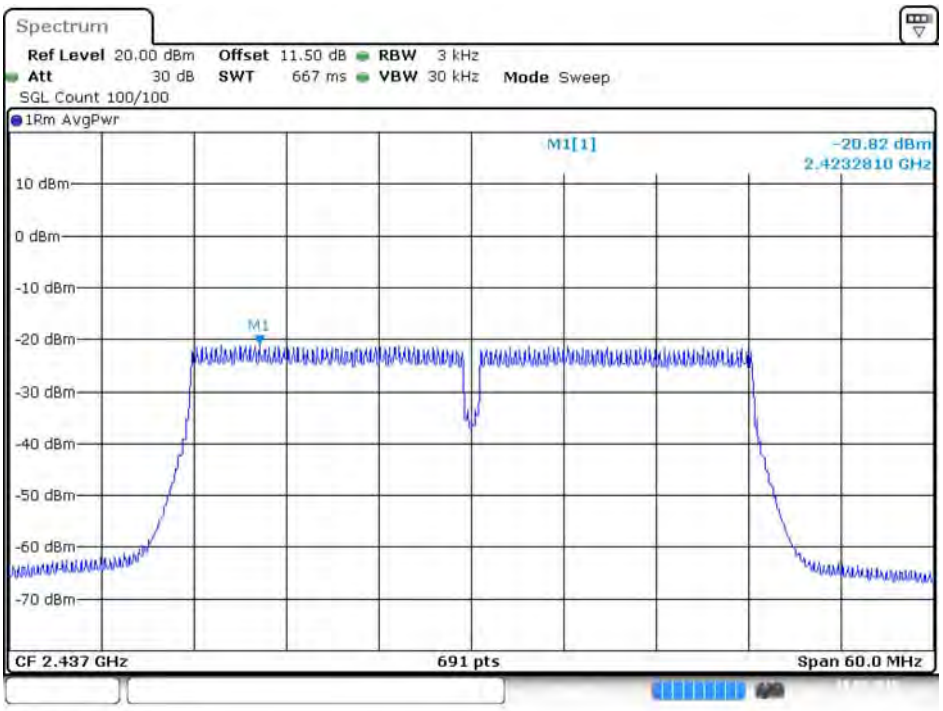
Date: 19.MAY.2015 15:19:28

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2437 MHz / Ant. 2



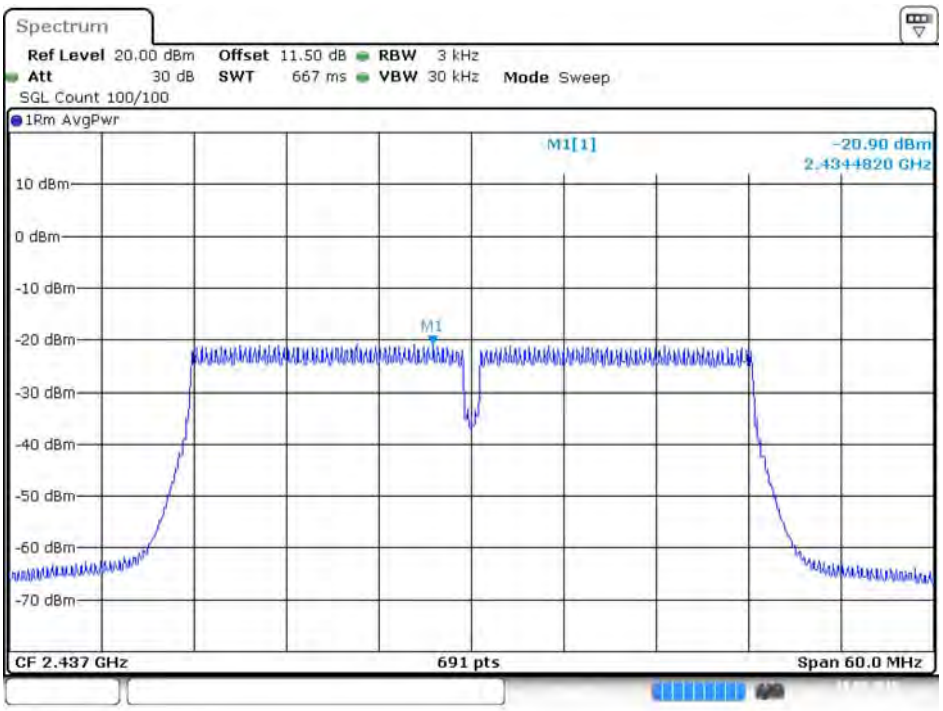
Date: 19.MAY.2015 15:26:16

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2437 MHz / Ant. 3



Date: 19.MAY.2015 15:28:13

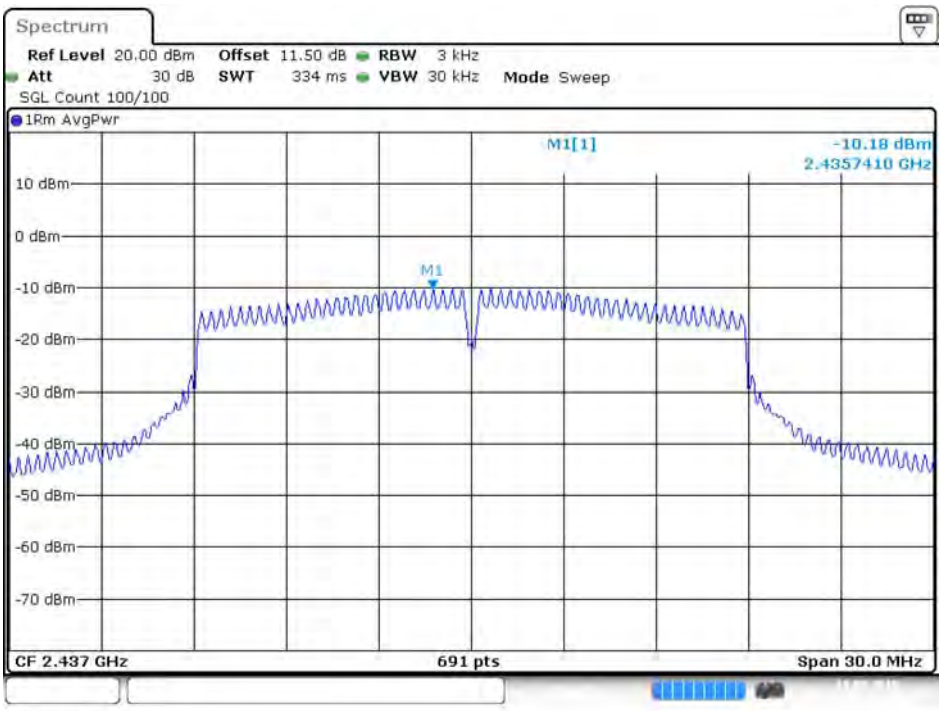
Power Density Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2437 MHz / Ant. 4



Date: 19.MAY.2015 15:23:37

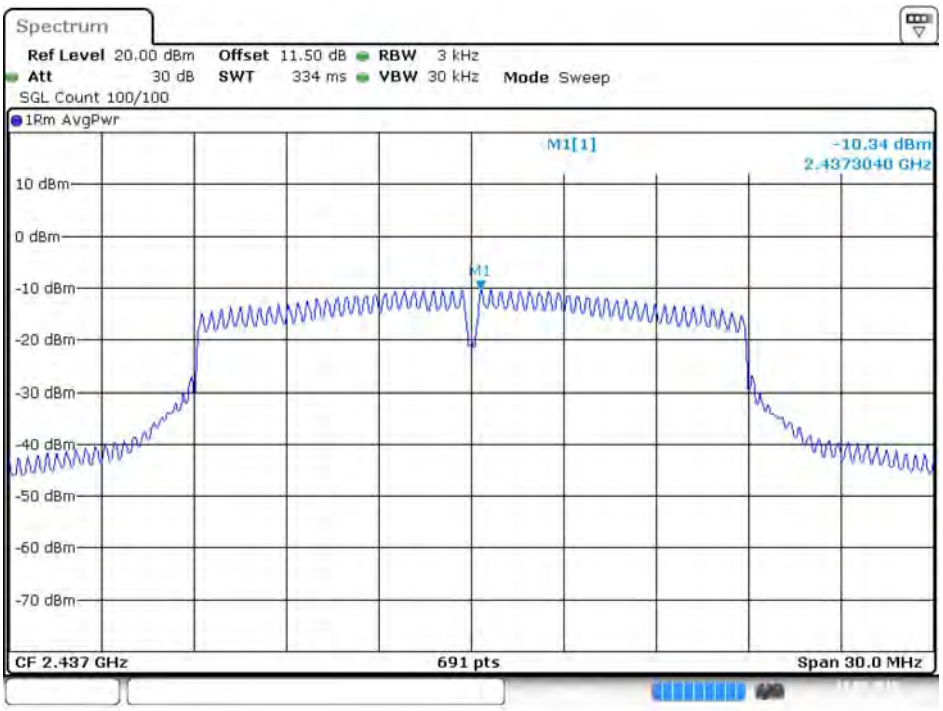
Test Mode: MCS0/Nss2

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT20 / 2437 MHz / Ant. 1



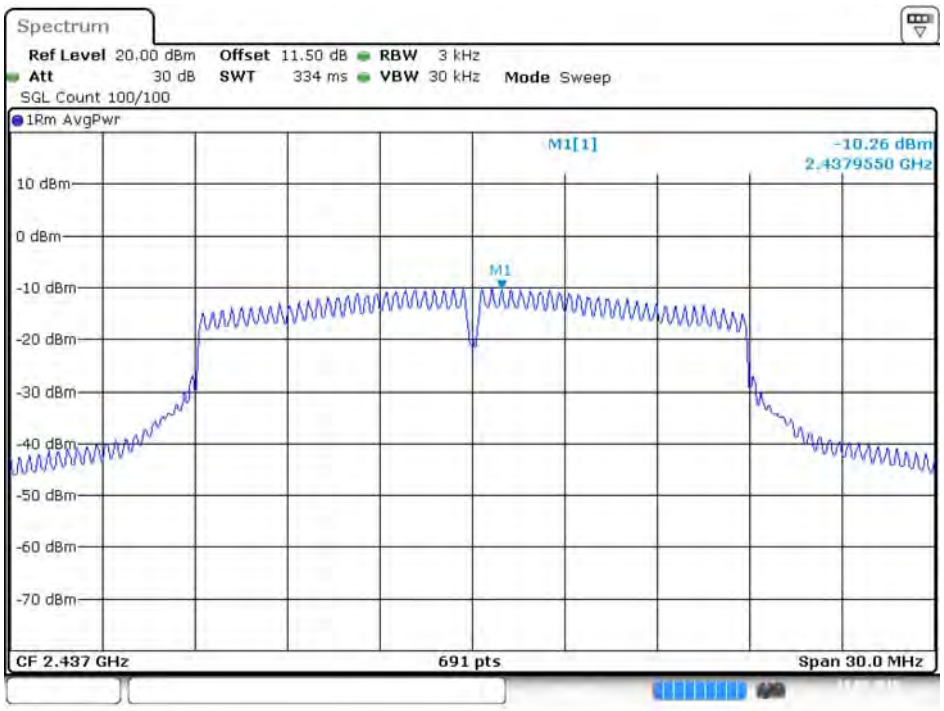
Date: 19.MAY.2015 14:29:05

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT20 / 2437 MHz / Ant. 2



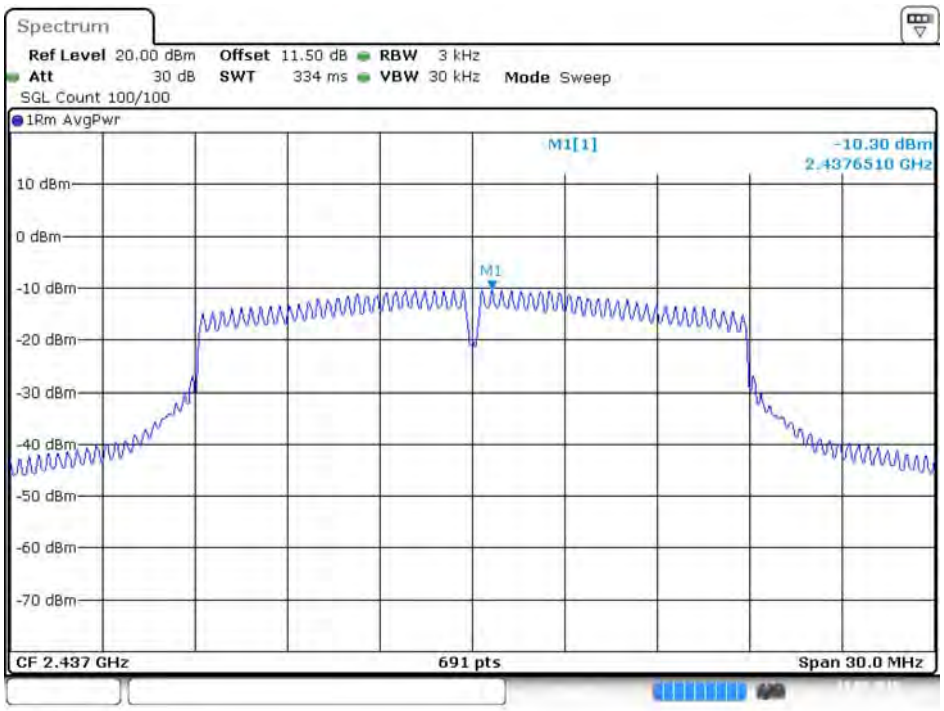
Date: 19.MAY.2015 14:31:46

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT20 / 2437 MHz / Ant. 3



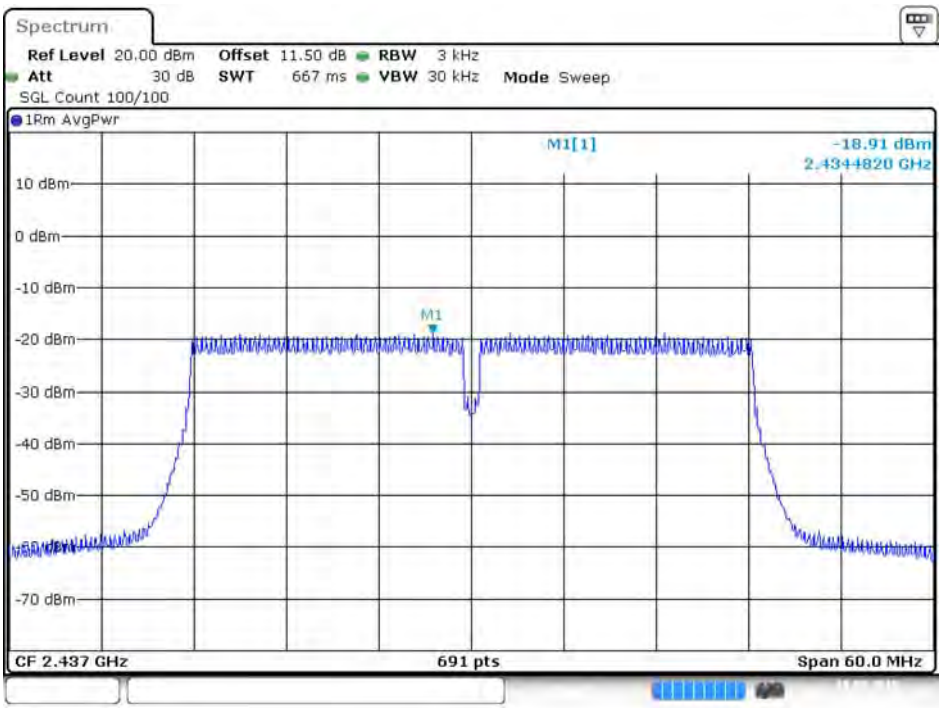
Date: 19.MAY.2015 14:34:07

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT20 / 2437 MHz / Ant. 4



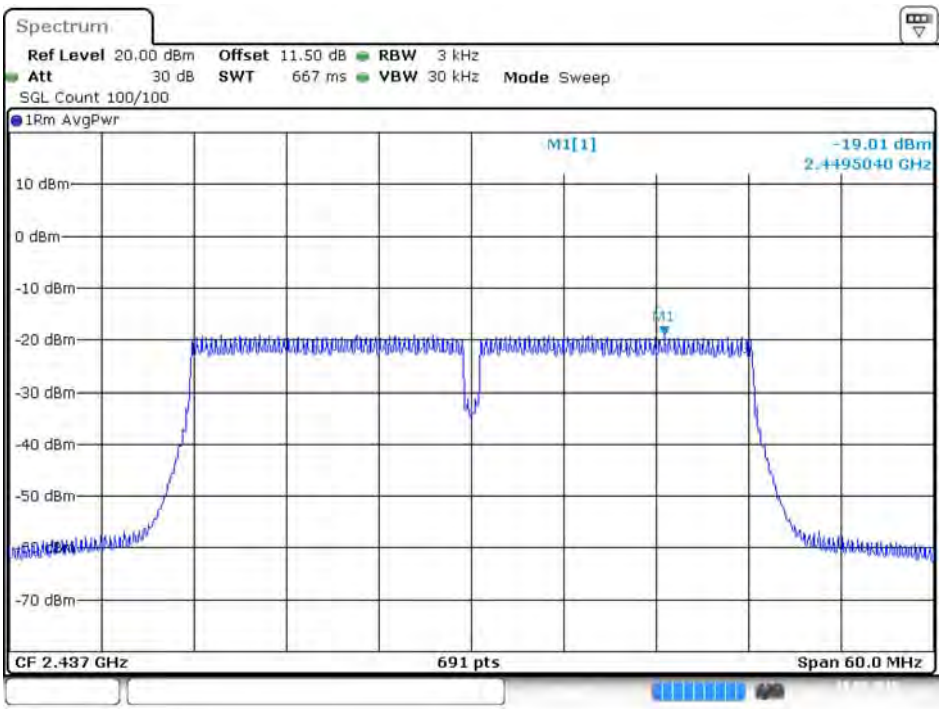
Date: 19.MAY.2015 14:35:22

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT40 / 2437 MHz / Ant. 1



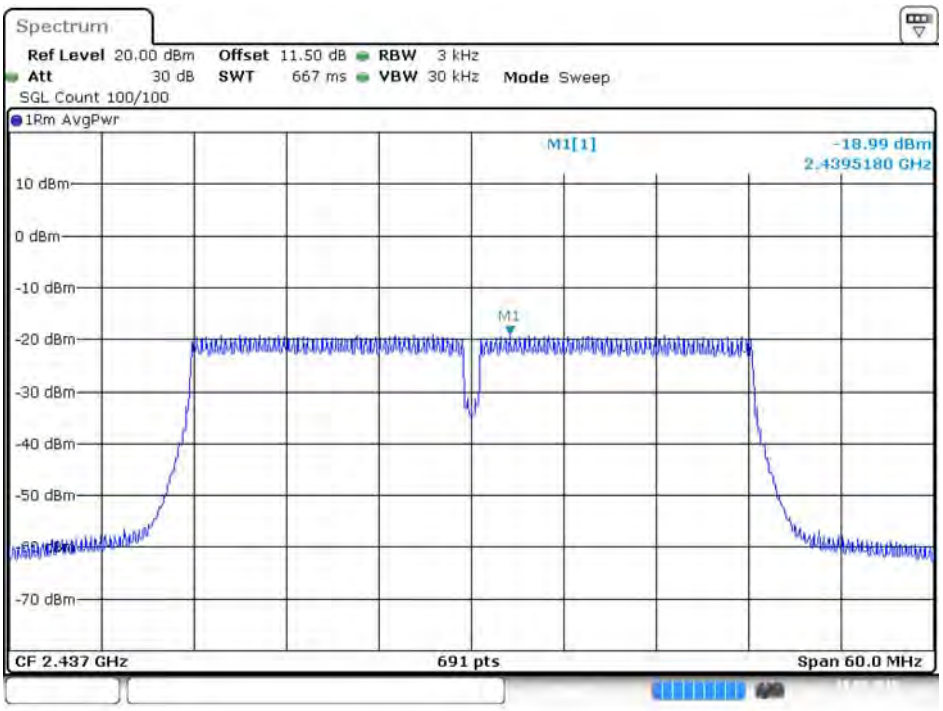
Date: 19.MAY.2015 14:38:19

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT40 / 2437 MHz / Ant. 2



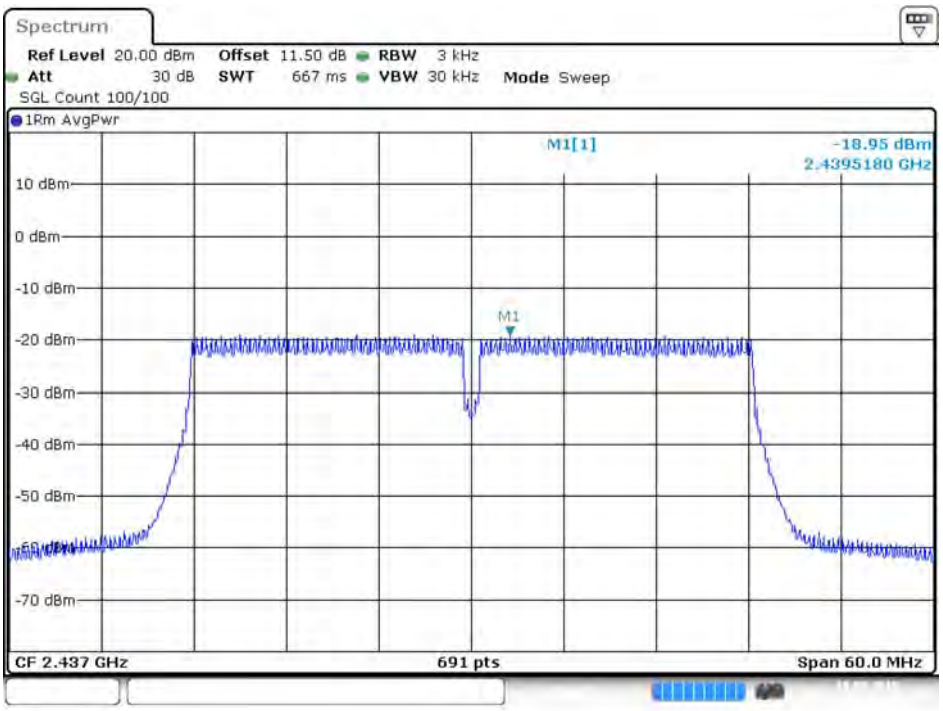
Date: 19.MAY.2015 14:40:16

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT40 / 2437 MHz / Ant. 3



Date: 19.MAY.2015 14:42:06

Power Density Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT40 / 2437 MHz / Ant. 4

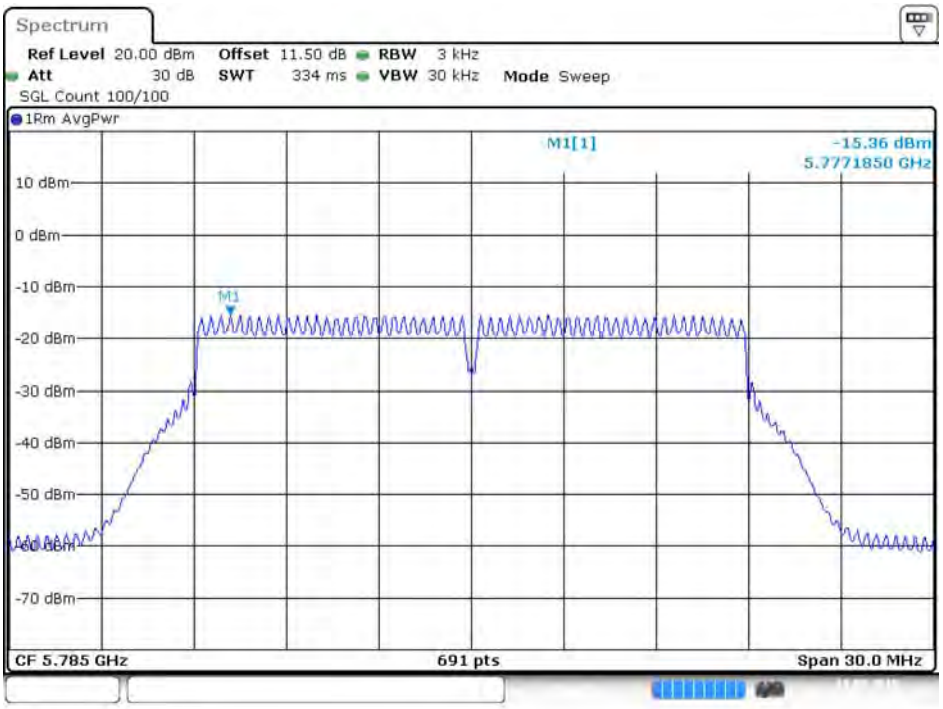


Date: 19.MAY.2015 14:44:20

For 5GHz Band

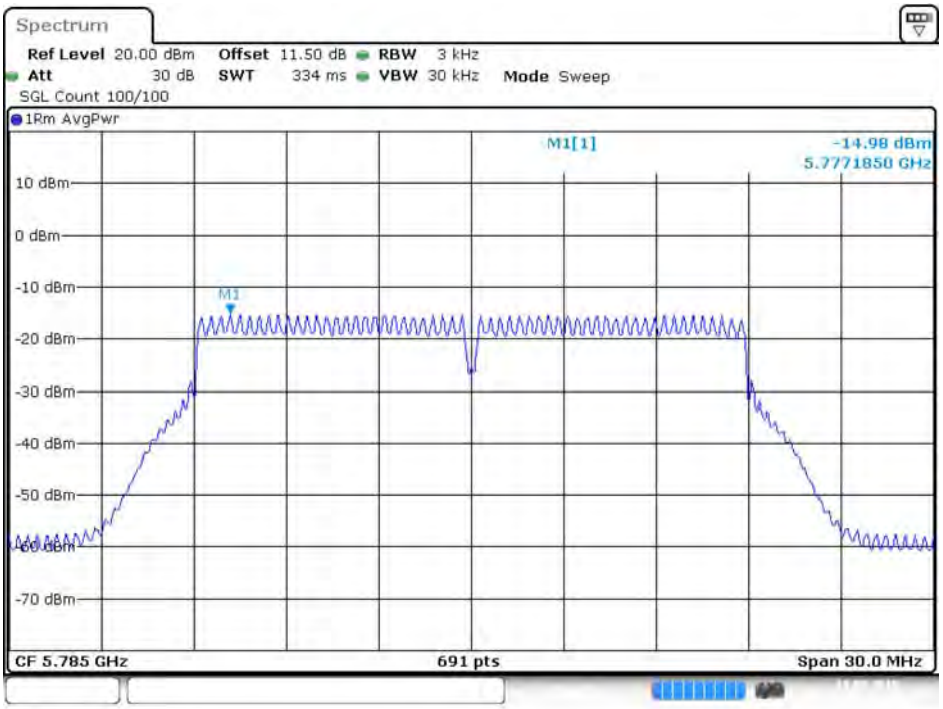
Test Mode: MCS0/Nss1

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



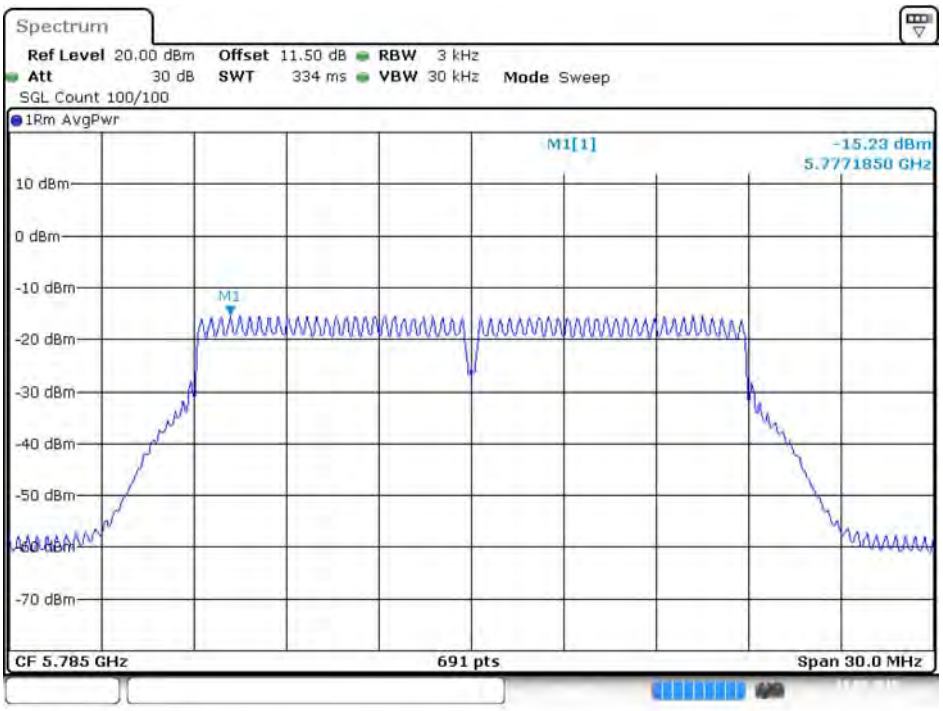
Date: 19.MAY.2015 10:42:23

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



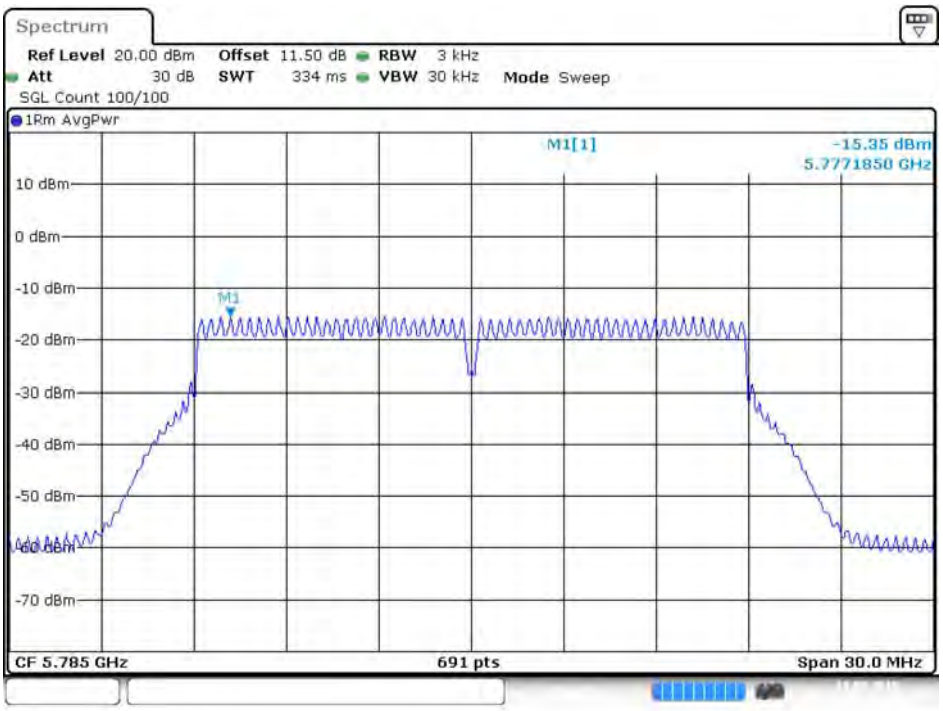
Date: 19.MAY.2015 10:44:18

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



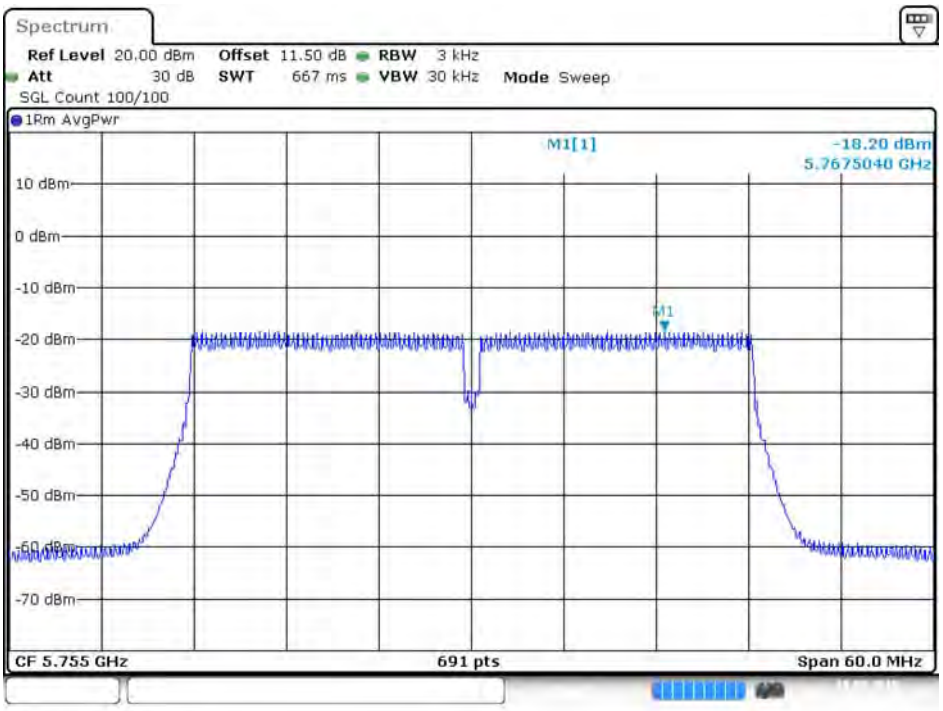
Date: 19.MAY.2015 10:47:11

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



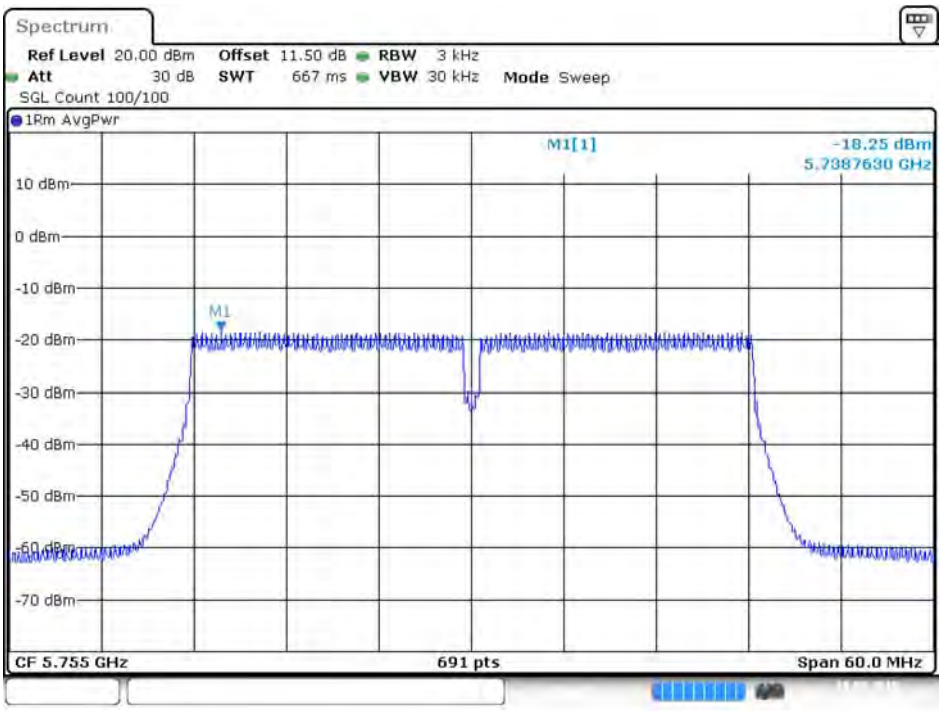
Date: 19.MAY.2015 10:48:03

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



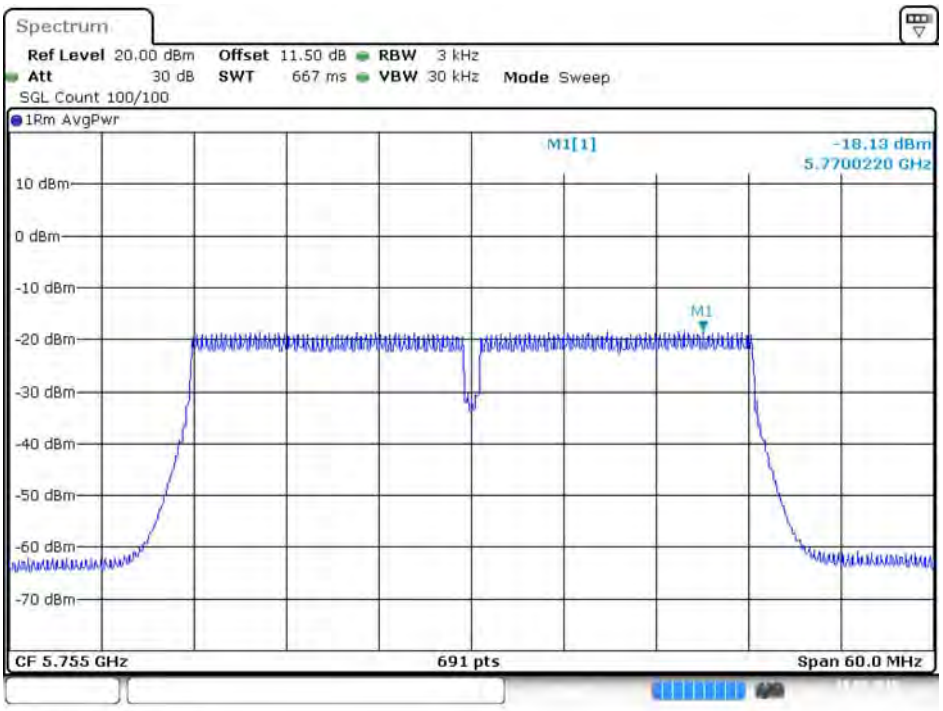
Date: 19.MAY.2015 10:58:18

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



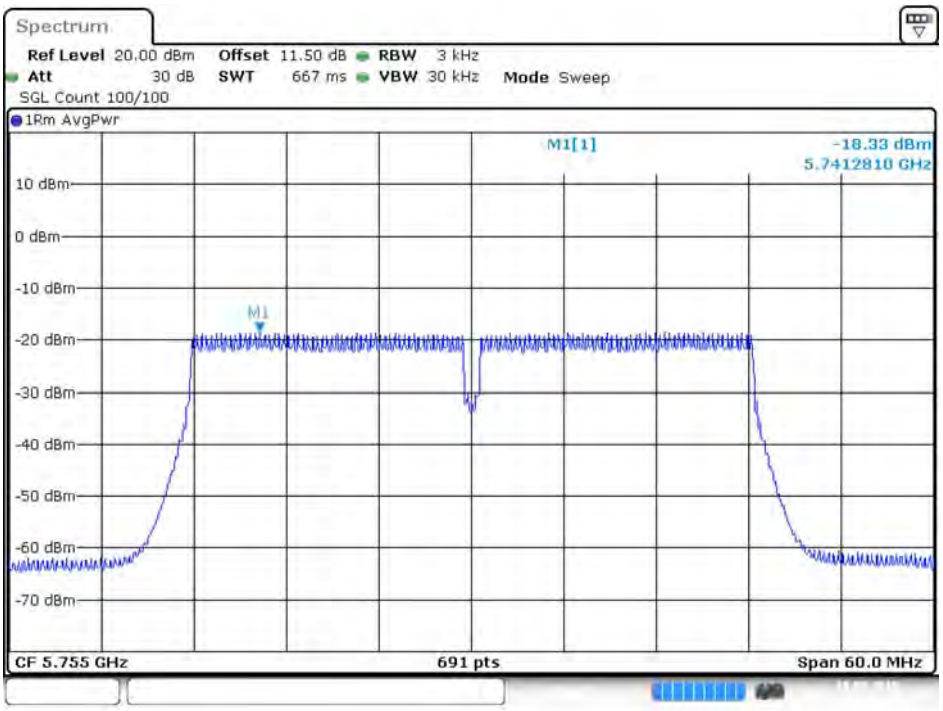
Date: 19.MAY.2015 10:59:59

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



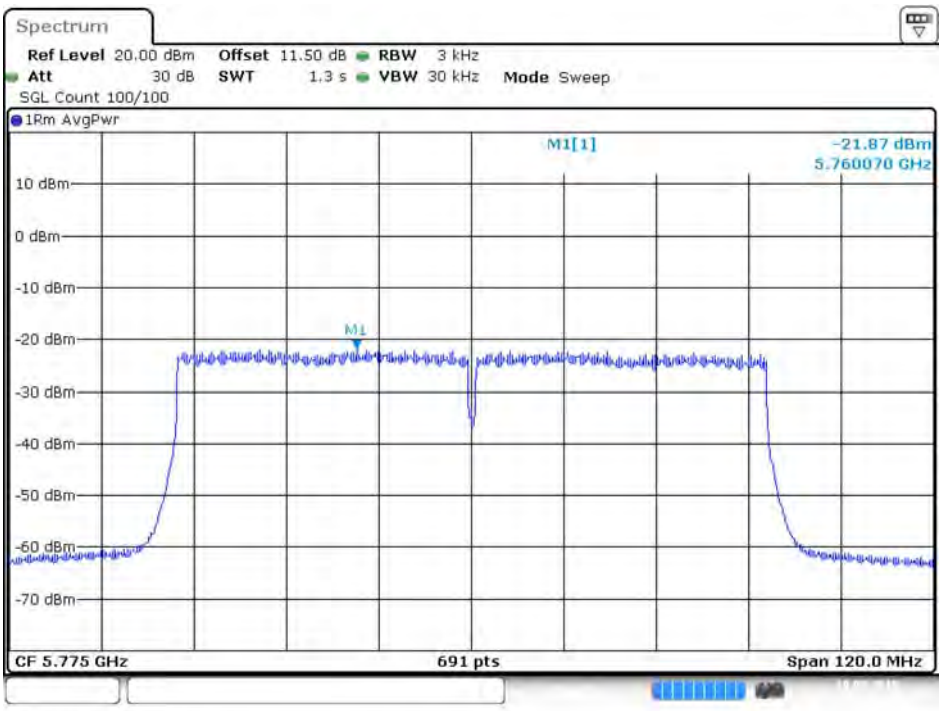
Date: 19.MAY.2015 11:03:37

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



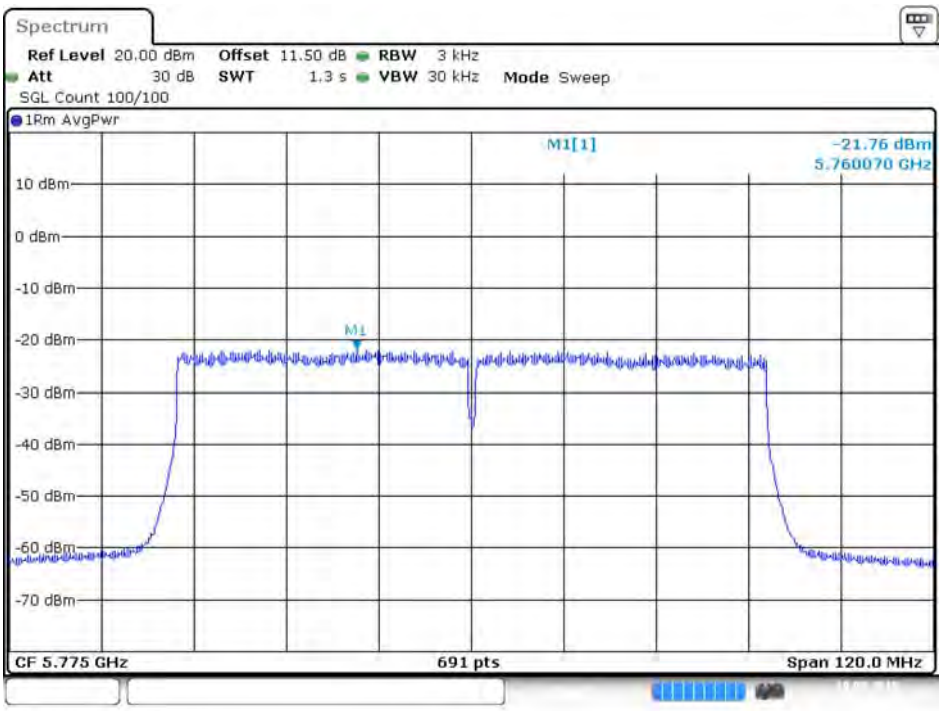
Date: 19.MAY.2015 11:05:16

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



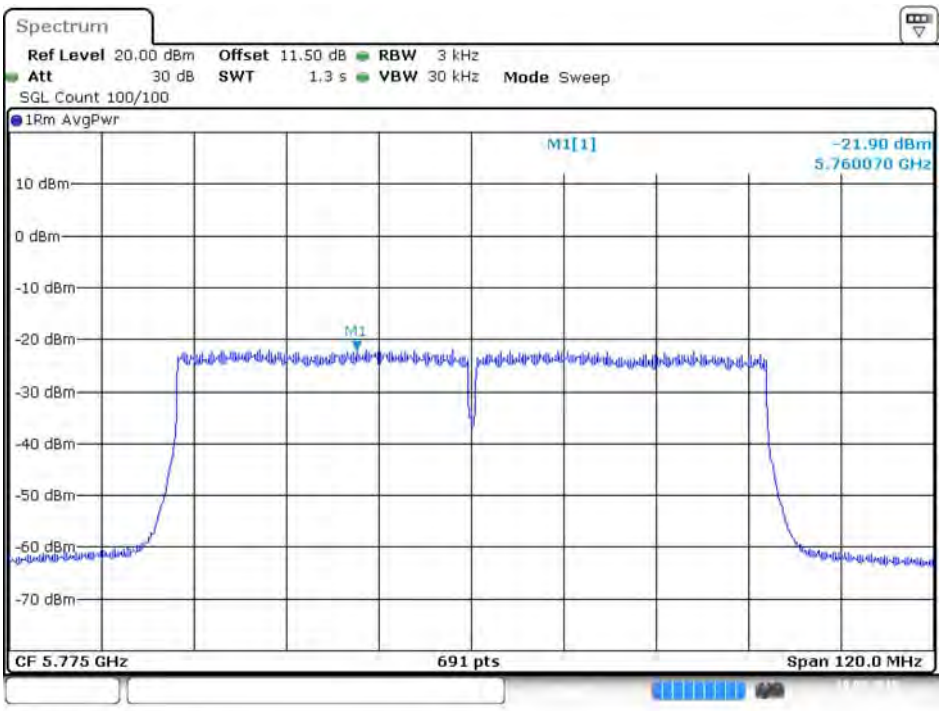
Date: 19.MAY.2015 11:55:08

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



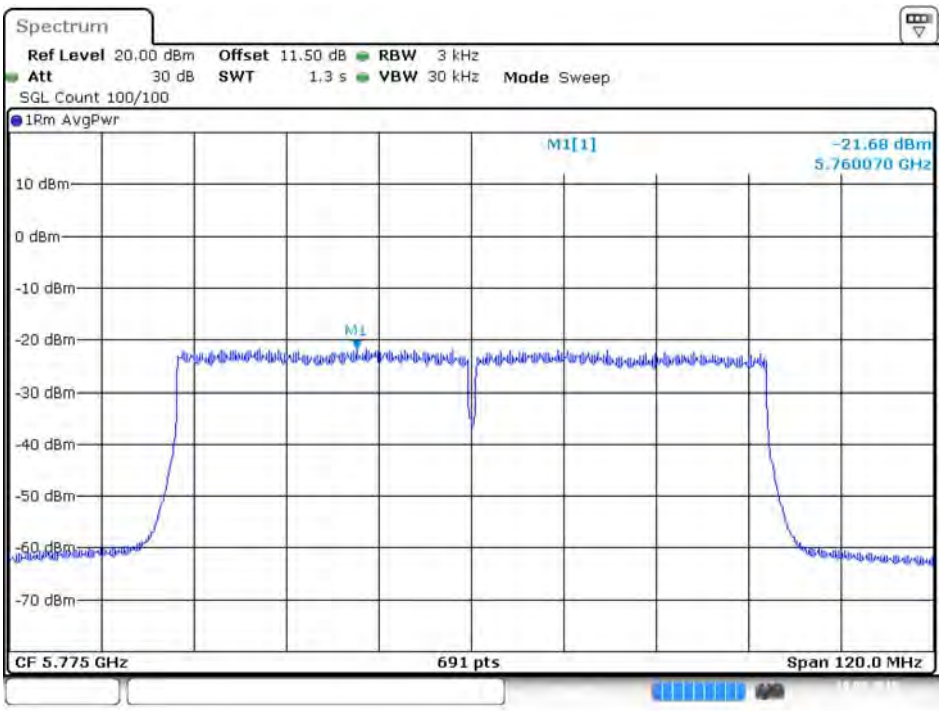
Date: 19.MAY.2015 12:02:04

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



Date: 19.MAY.2015 11:58:55

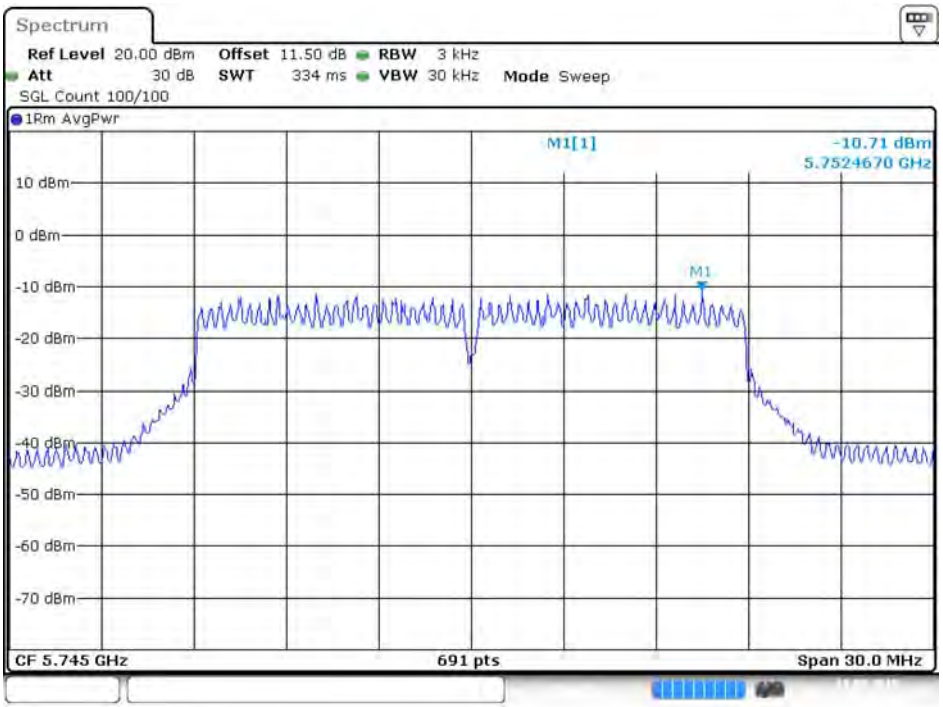
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Ant. 4



Date: 19.MAY.2015 12:06:07

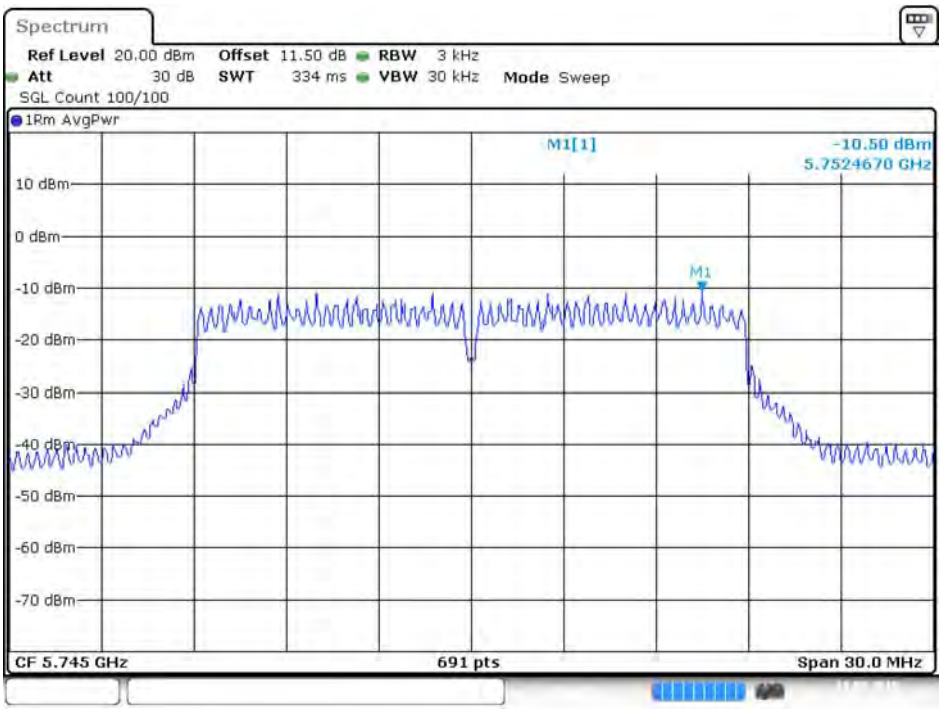
Test Mode: MCS0/Nss2

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



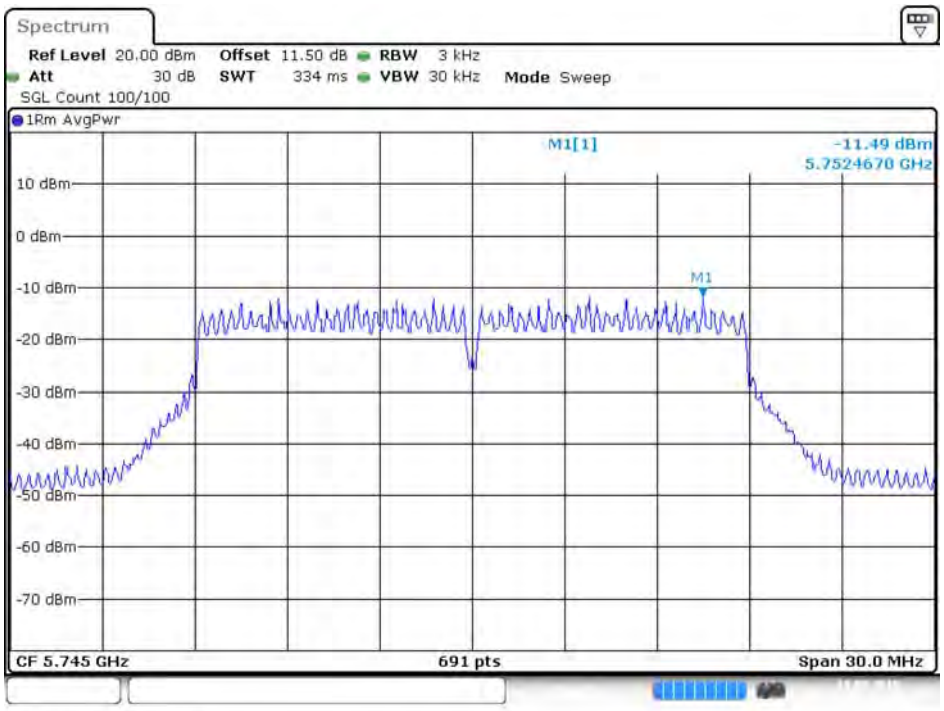
Date: 19.MAY.2015 10:08:47

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



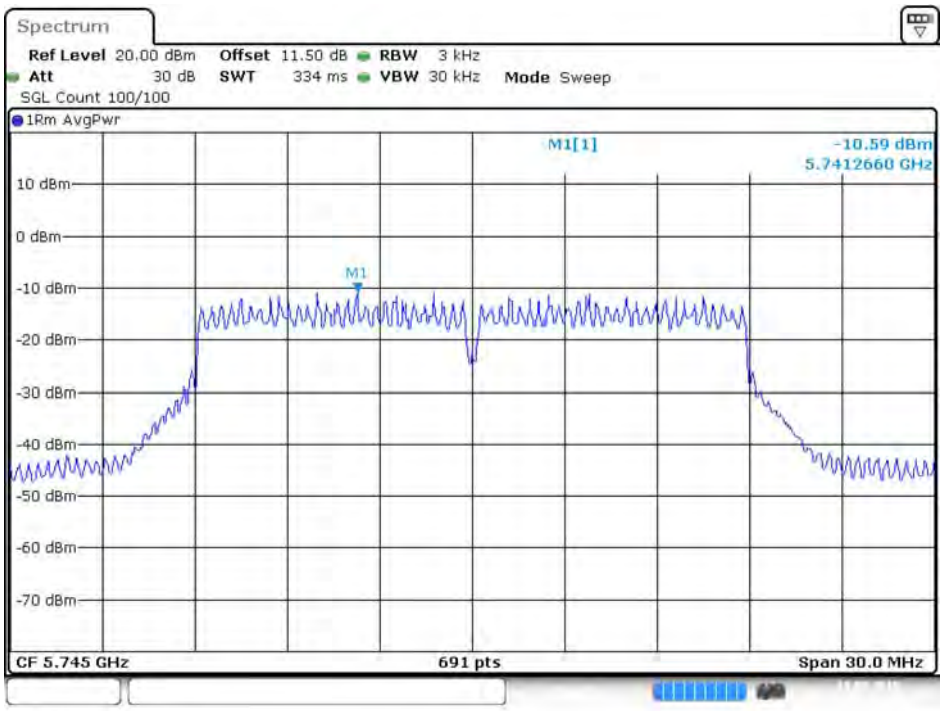
Date: 19.MAY.2015 10:11:15

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2VHT20 / 5745 MHz / Ant. 3



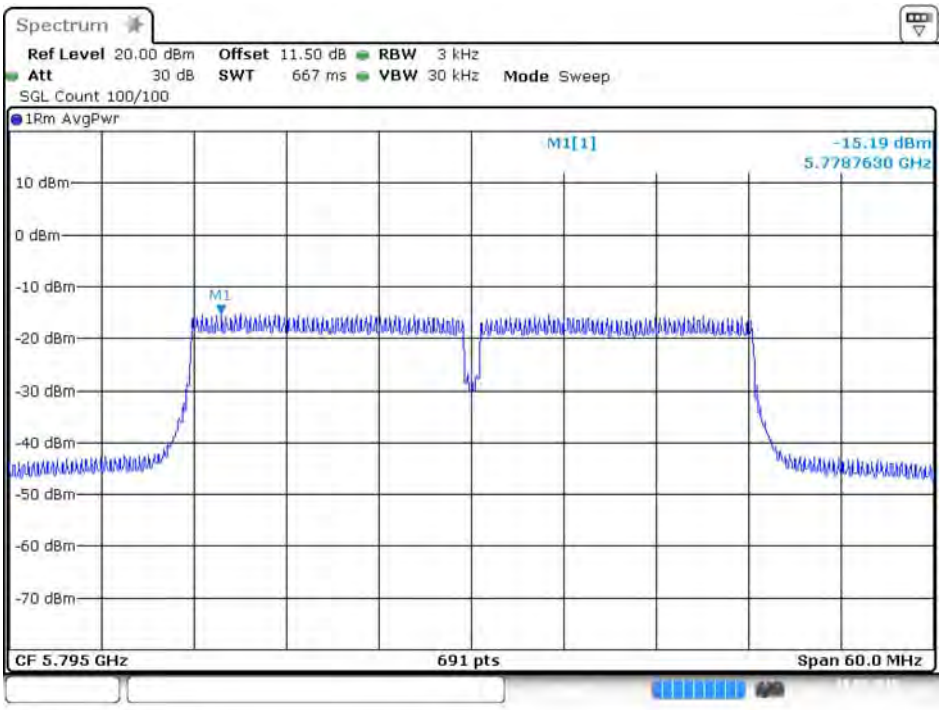
Date: 19.MAY.2015 10:13:22

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



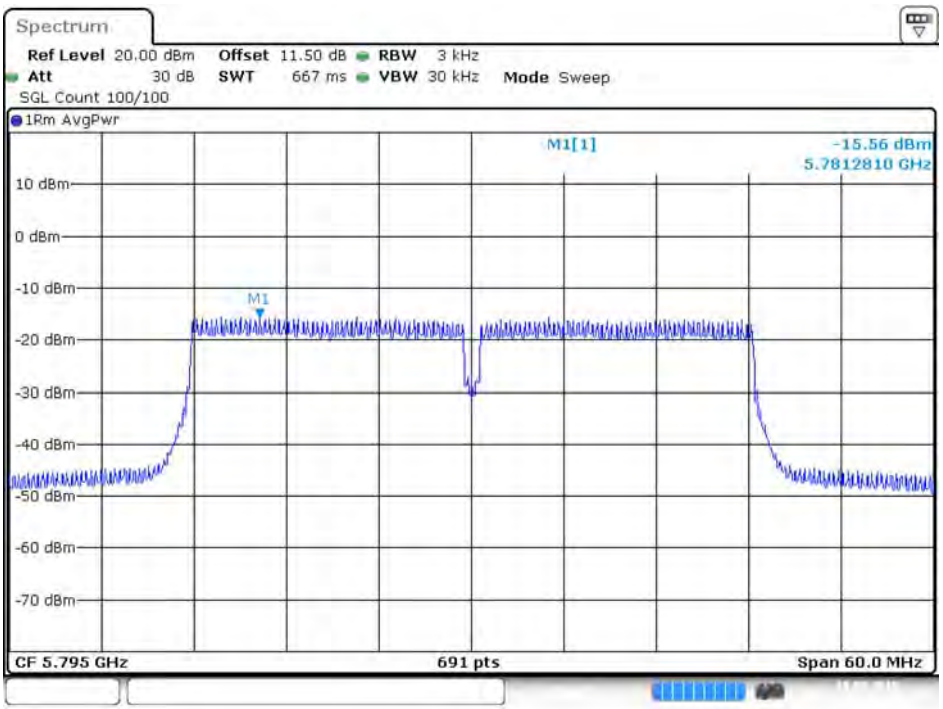
Date: 19.MAY.2015 10:14:39

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



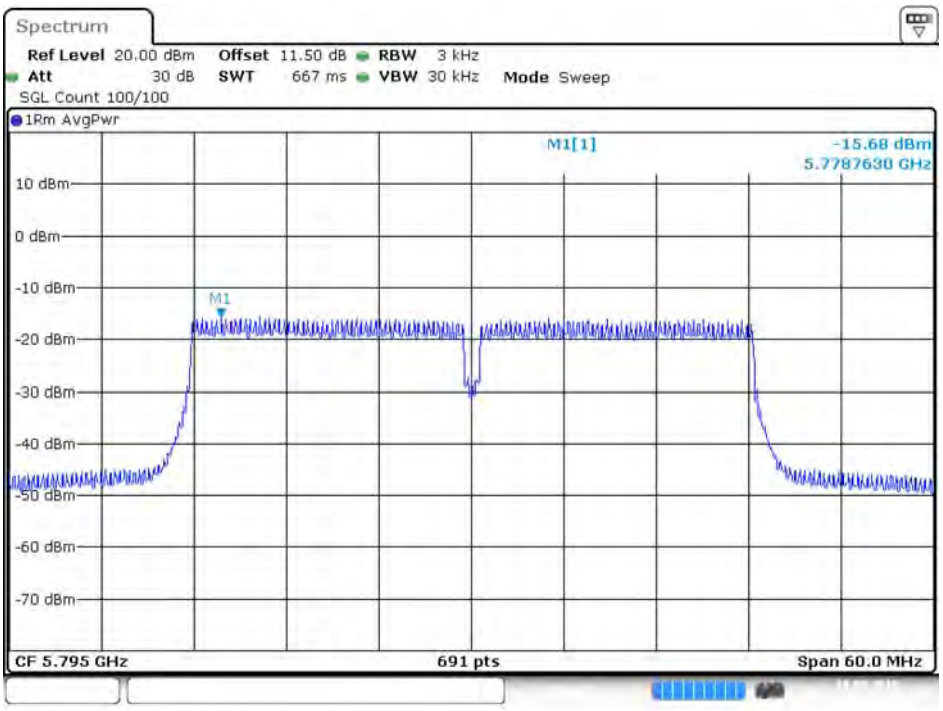
Date: 19.MAY.2015 11:26:53

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



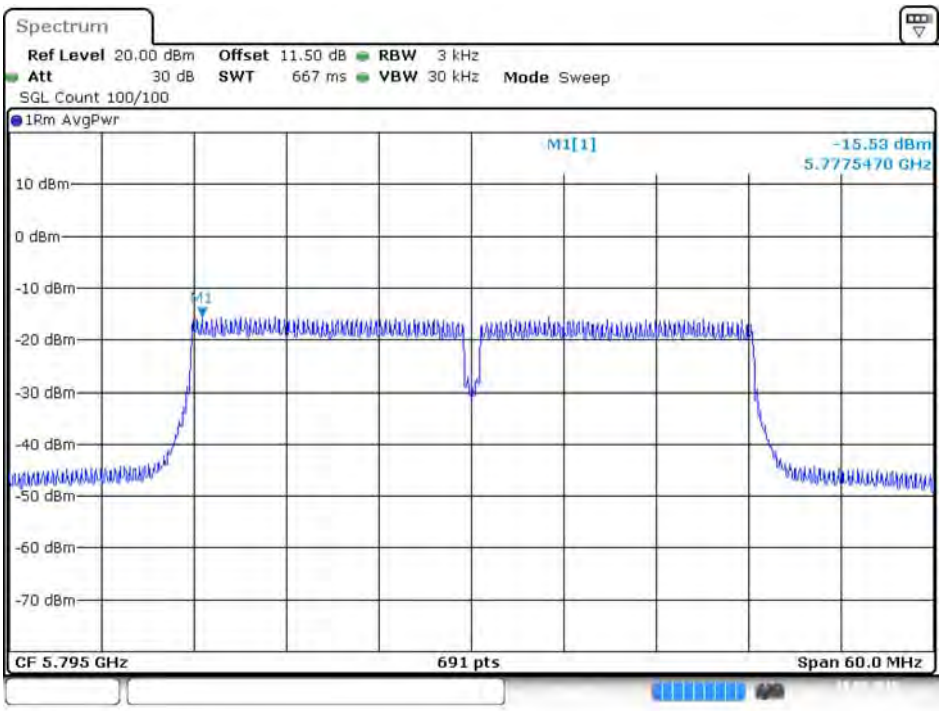
Date: 19.MAY.2015 11:29:28

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



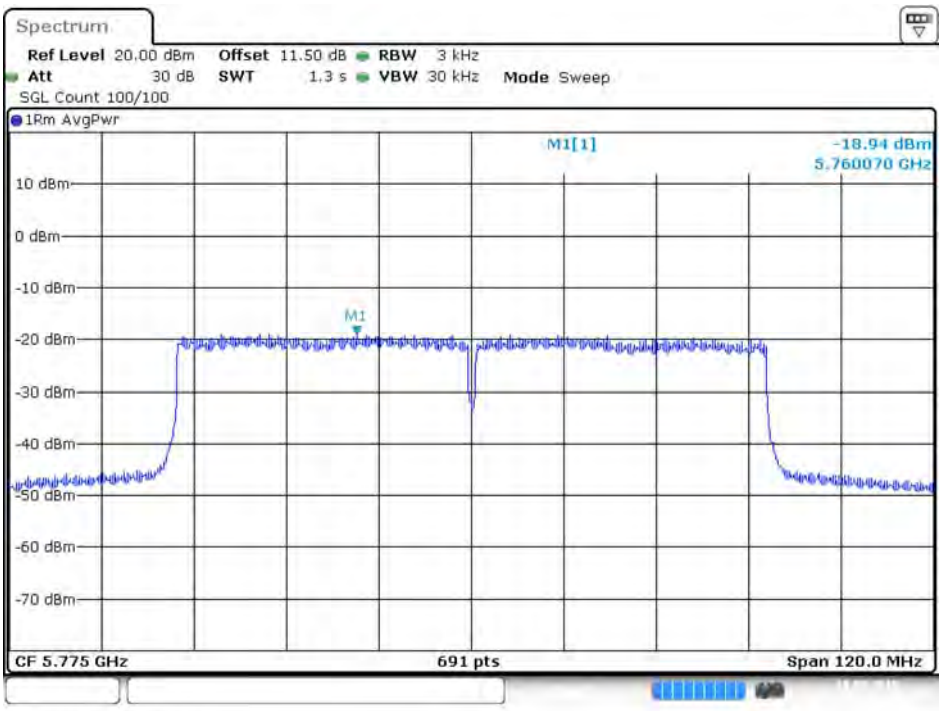
Date: 19.MAY.2015 11:31:24

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



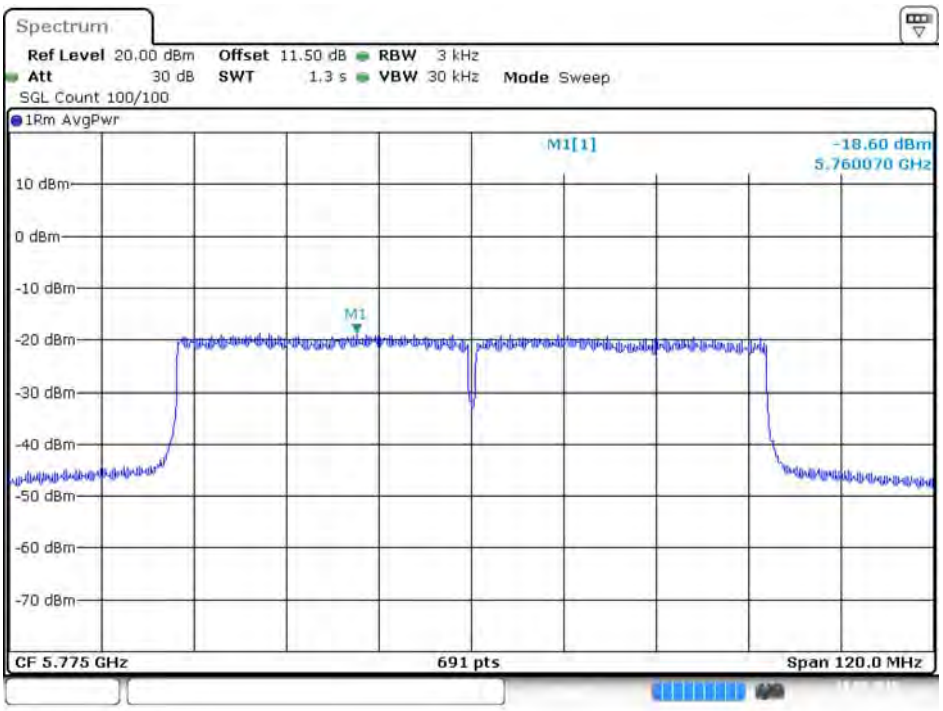
Date: 19.MAY.2015 11:34:49

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



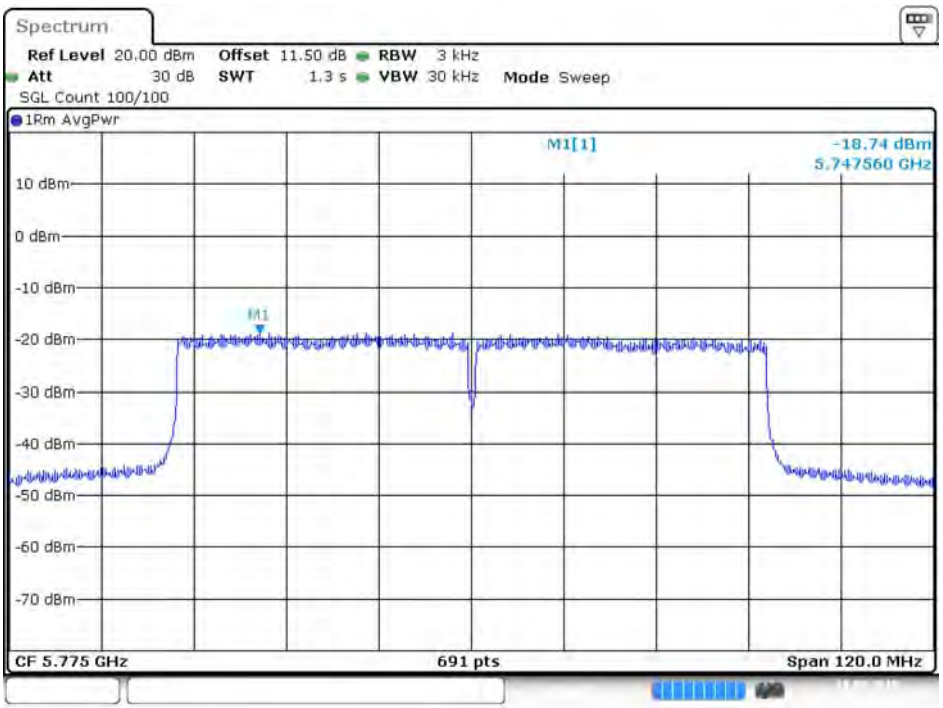
Date: 19.MAY.2015 11:40:03

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



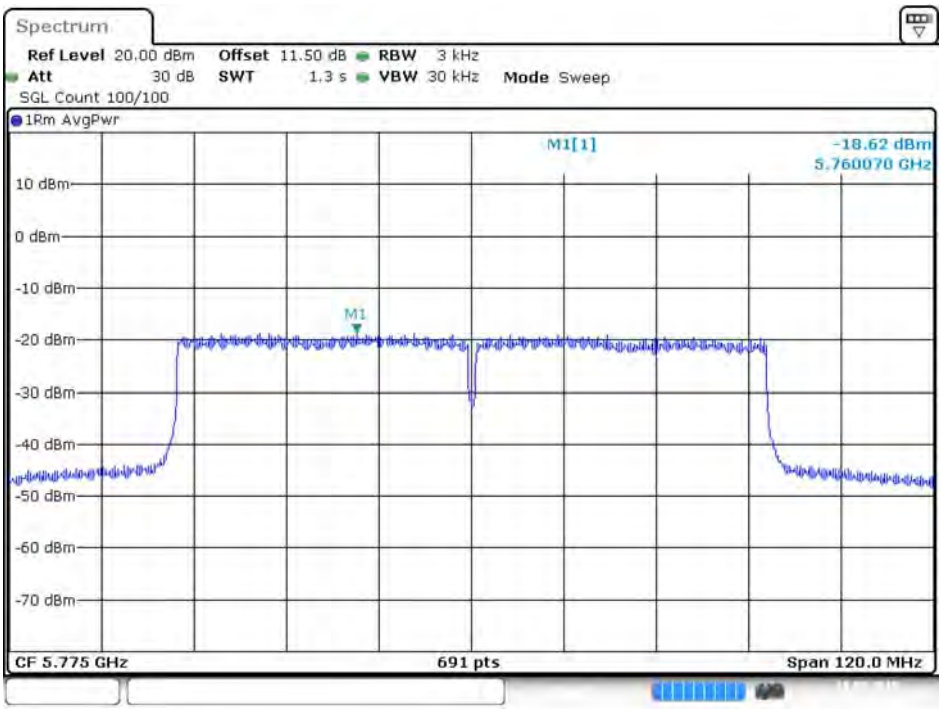
Date: 19.MAY.2015 11:43:54

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



Date: 19.MAY.2015 11:50:42

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



Date: 19.MAY.2015 11:47:16

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

For Non-Beamforming Mode

Temperature	20℃	Humidity	59%
Test Engineer	Mars Lin		

For 2.4GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	8.05	11.46	500	Complies
	2437 MHz	8.00	11.89	500	Complies
	2462 MHz	8.98	11.63	500	Complies
802.11g	2412 MHz	13.15	16.67	500	Complies
	2437 MHz	14.43	18.49	500	Complies
	2462 MHz	14.43	16.75	500	Complies
802.11n MCS0/Nss1 VHT20	2412 MHz	15.65	17.53	500	Complies
	2437 MHz	14.49	17.88	500	Complies
	2462 MHz	15.71	17.53	500	Complies
802.11n MCS0/Nss1 VHT40	2422 MHz	35.01	36.32	500	Complies
	2437 MHz	35.13	36.46	500	Complies
	2452 MHz	35.13	36.32	500	Complies

For 5GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	15.71	24.57	500	Complies
	5785 MHz	15.01	23.27	500	Complies
	5825 MHz	12.86	20.14	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	16.05	25.00	500	Complies
	5785 MHz	15.71	21.88	500	Complies
	5825 MHz	15.65	21.70	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.82	38.06	500	Complies
	5795 MHz	35.82	46.88	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.94	76.41	500	Complies

For Beamforming Mode

Temperature	20℃	Humidity	59%
Test Engineer	Serway Li		

For 2.4GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11n MCS0/Nss1 VHT20	2412 MHz	14.84	17.63	500	Complies
	2437 MHz	14.49	17.71	500	Complies
	2462 MHz	15.01	17.63	500	Complies
802.11n MCS0/Nss1 VHT40	2422 MHz	33.04	36.47	500	Complies
	2437 MHz	34.55	36.76	500	Complies
	2452 MHz	33.04	36.76	500	Complies
802.11n MCS0/Nss2 VHT20	2437 MHz	14.49	17.80	500	Complies
802.11n MCS0/Nss2 VHT40	2437 MHz	31.77	36.61	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	17.57	17.97	500	Complies
	5785 MHz	17.57	17.97	500	Complies
	5825 MHz	17.62	18.06	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	36.41	36.90	500	Complies
	5795 MHz	36.41	36.90	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	76.23	76.12	500	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	17.62	18.32	17.62	Complies
	5785 MHz	17.57	18.23	17.57	Complies
	5825 MHz	17.62	18.23	17.62	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	36.41	37.34	36.41	Complies
	5795 MHz	36.41	37.19	36.41	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	75.65	76.70	75.65	Complies

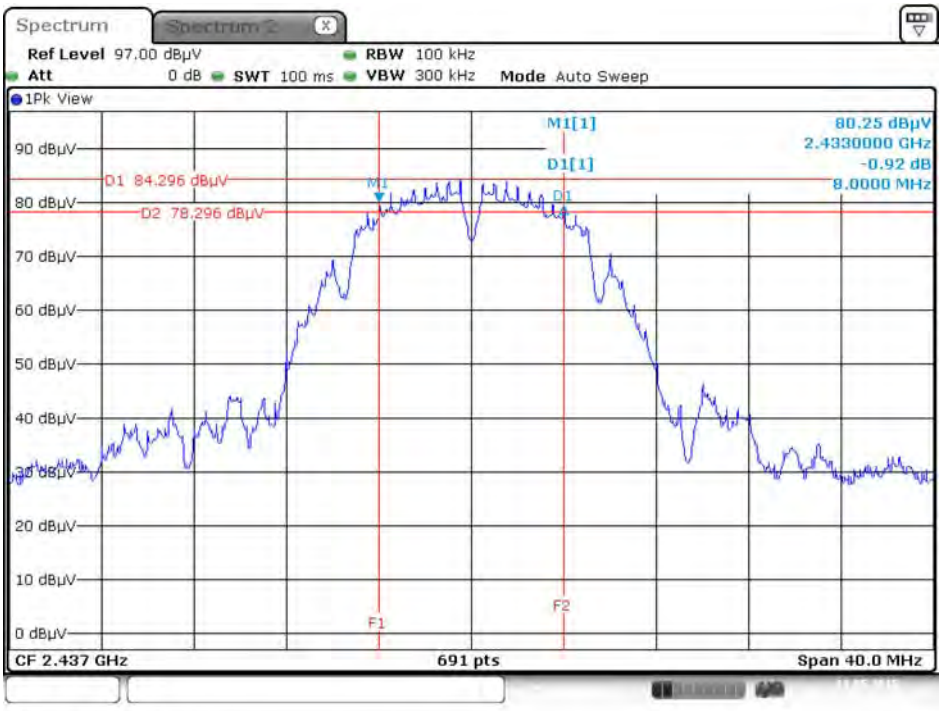
Note: All the test values were listed in the report.

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

For Non-Beamforming Mode

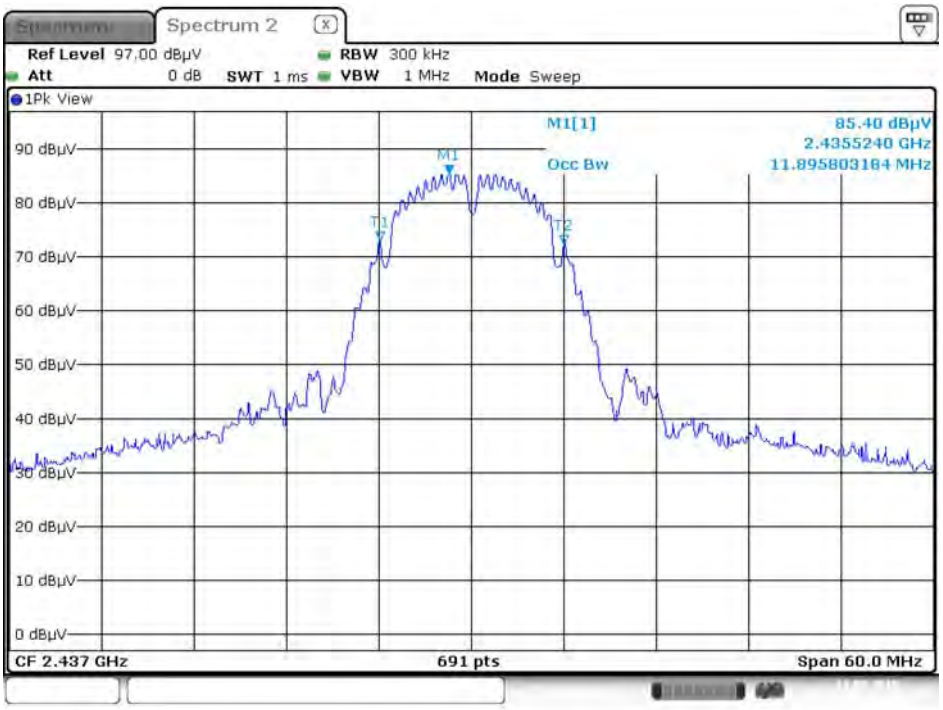
For 2.4GHz Band

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



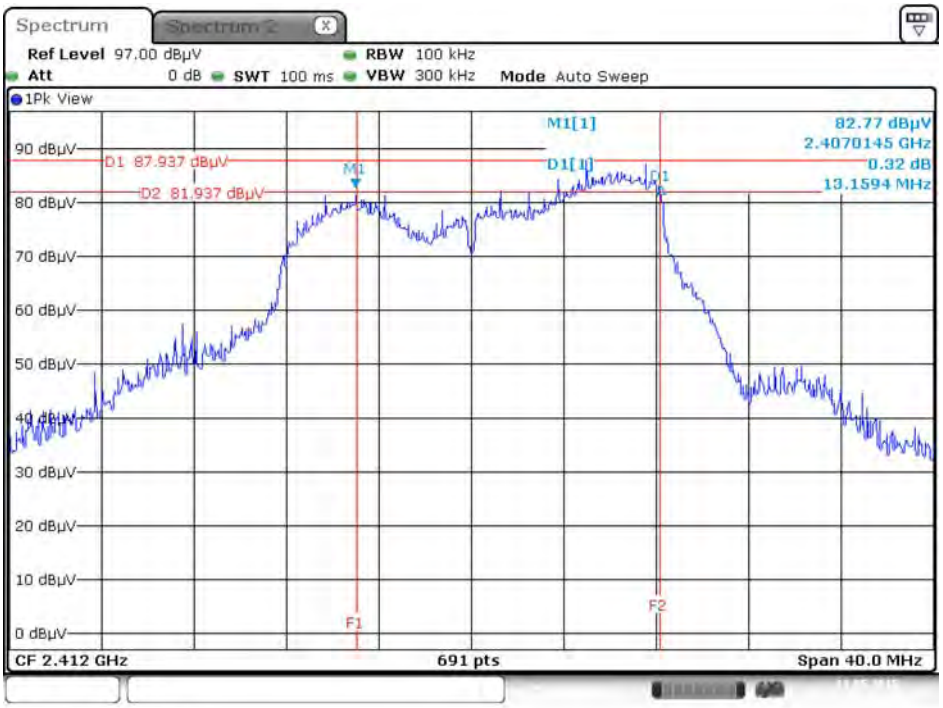
Date: 11.MAY.2015 22:01:11

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



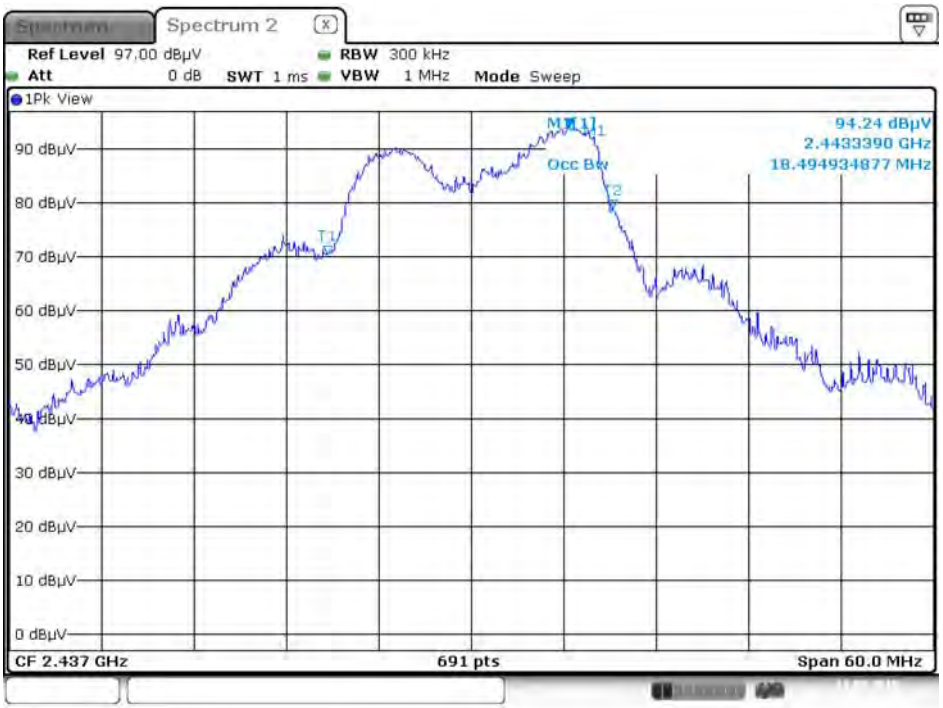
Date: 11.MAY.2015 22:02:37

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



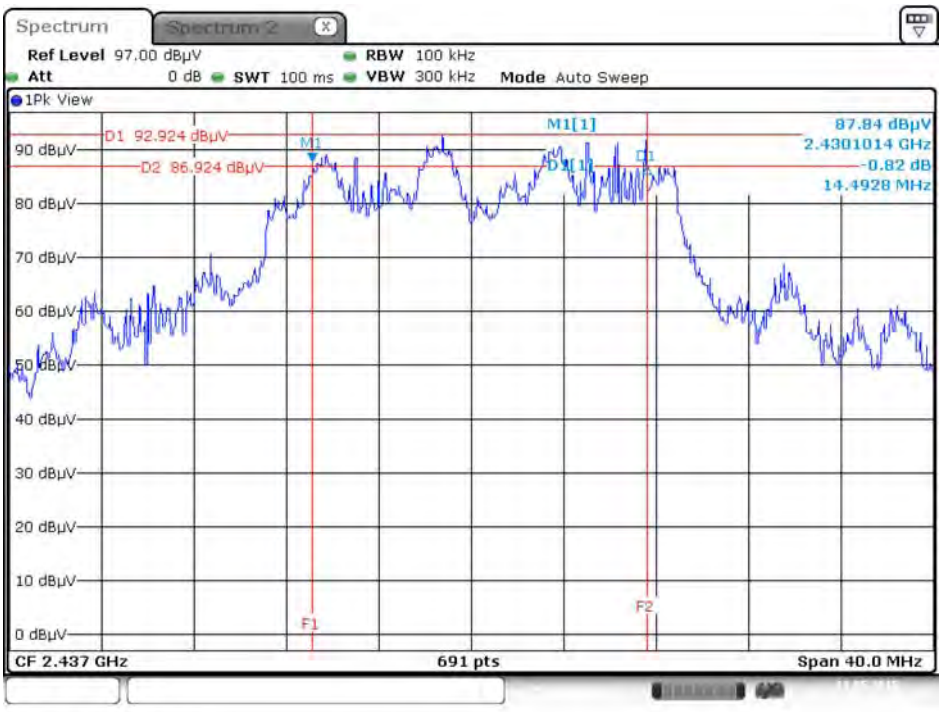
Date: 11.MAY.2015 22:15:51

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



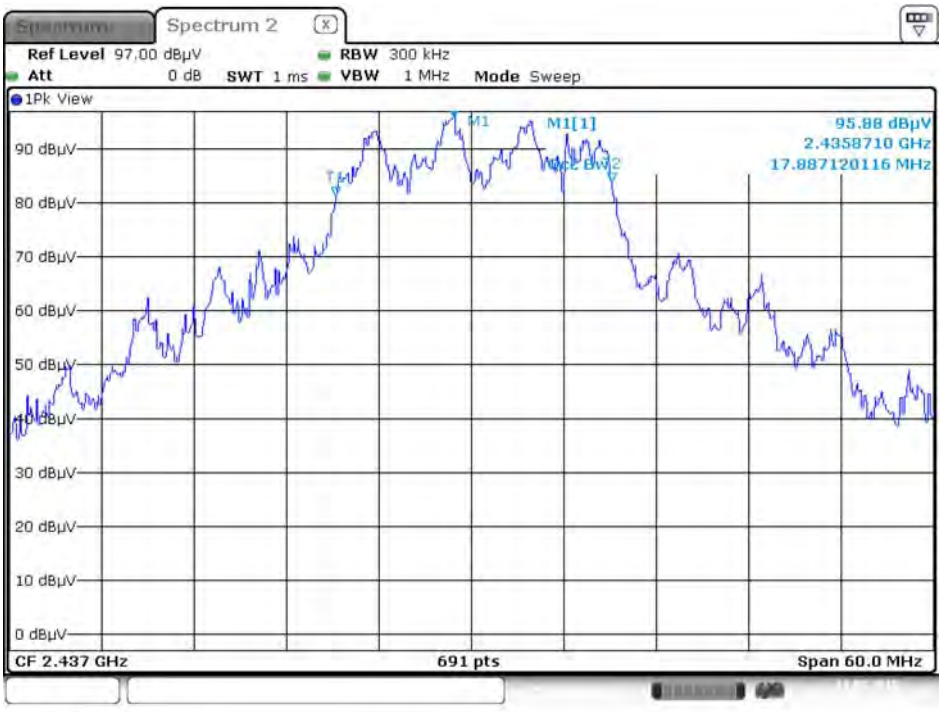
Date: 11.MAY.2015 22:12:59

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



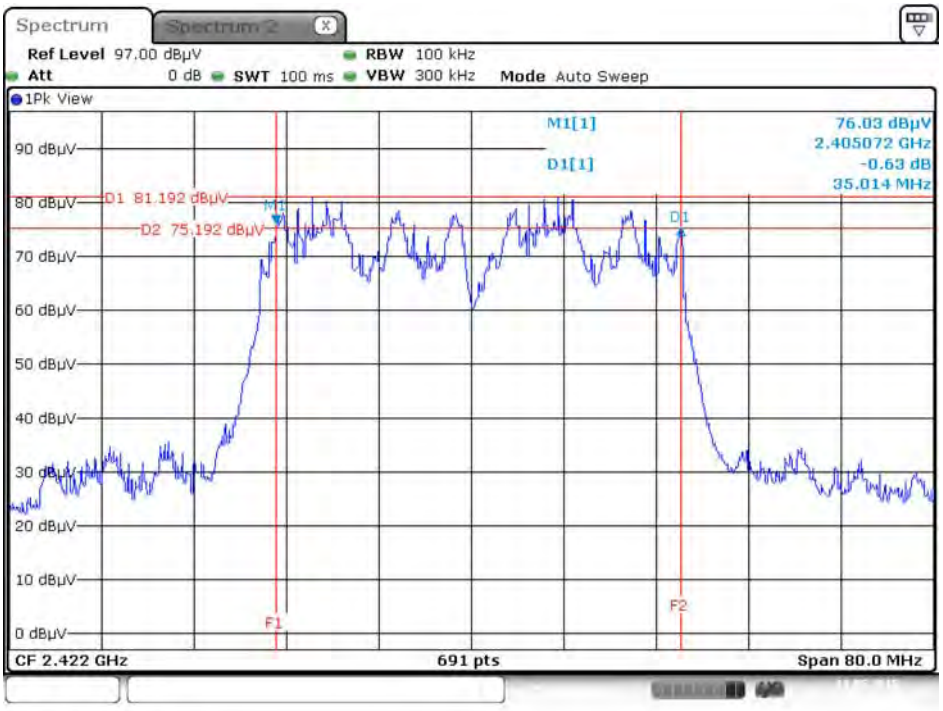
Date: 11.MAY.2015 22:25:25

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



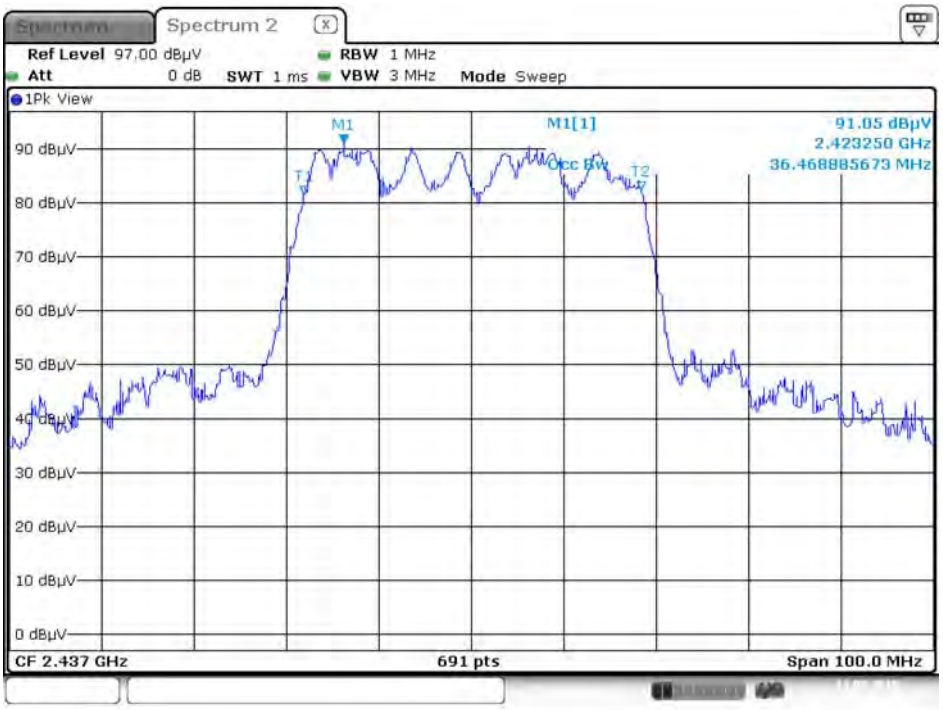
Date: 11.MAY.2015 22:26:32

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2422 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



Date: 11.MAY.2015 22:30:29

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



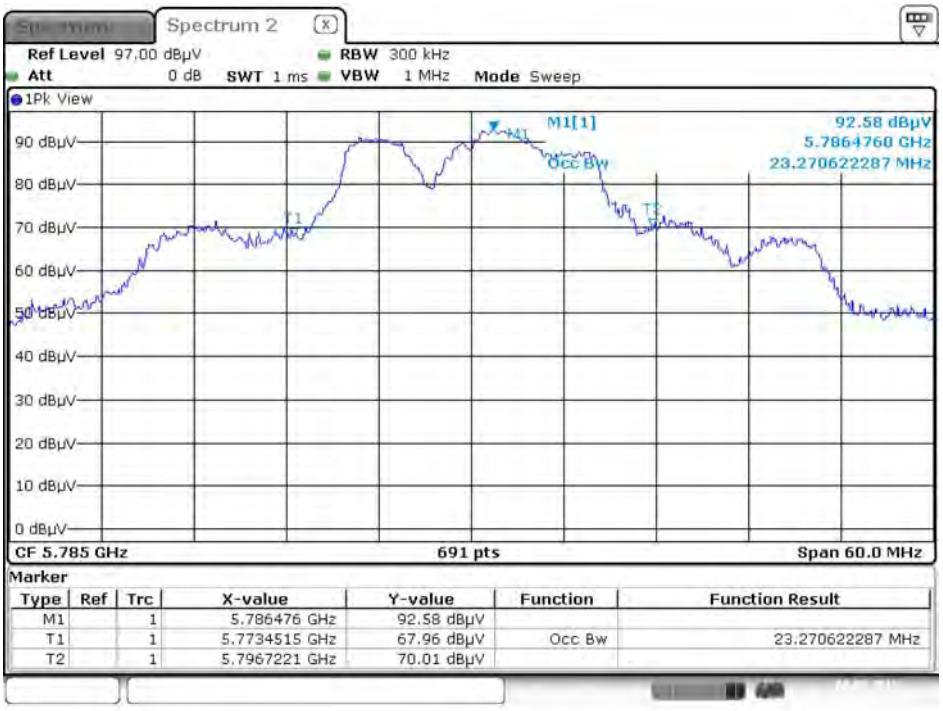
Date: 11.MAY.2015 22:32:39

For 5GHz Band

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5825 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4

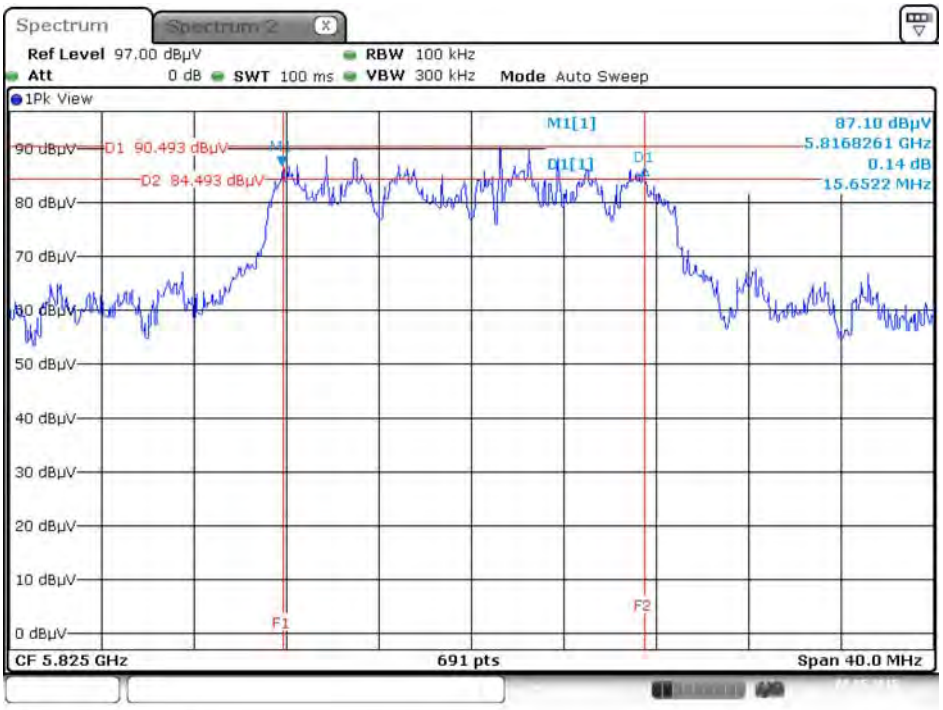
Date: 8.MAY.2015 21:28:52

99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / 5785 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



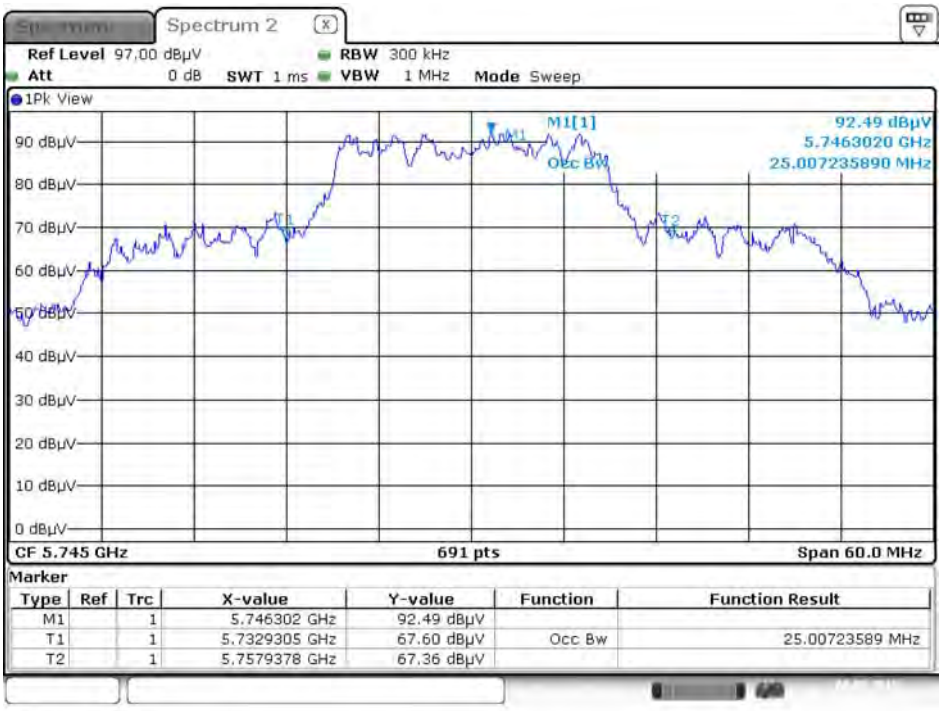
Date: 8.MAY.2015 21:26:58

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



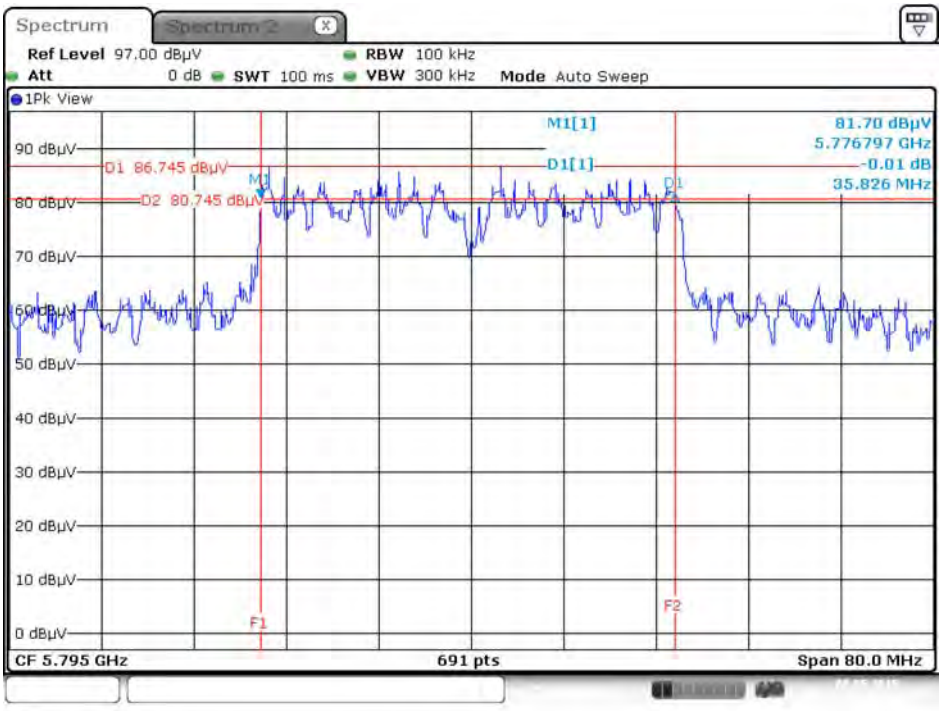
Date: 8.MAY.2015 21:30:40

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



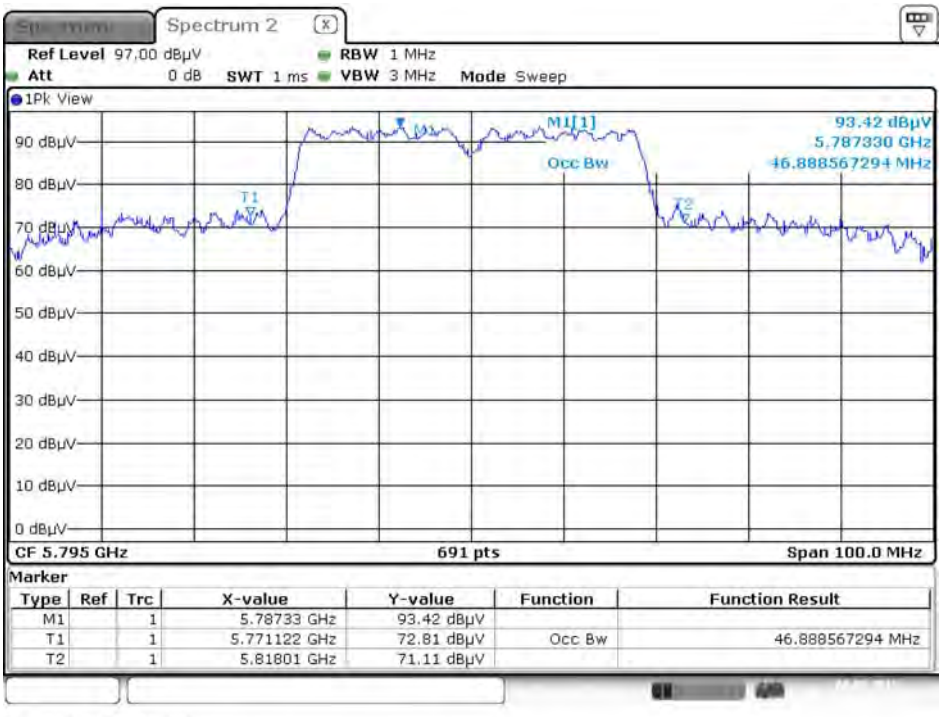
Date: 8.MAY.2015 21:34:43

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



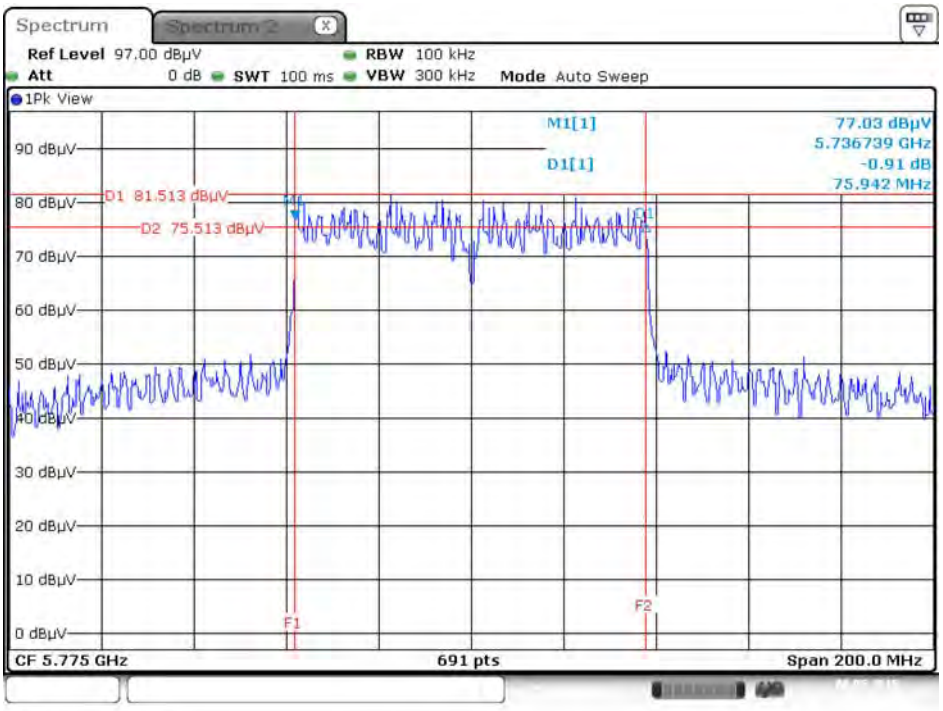
Date: 8.MAY.2015 21:37:46

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



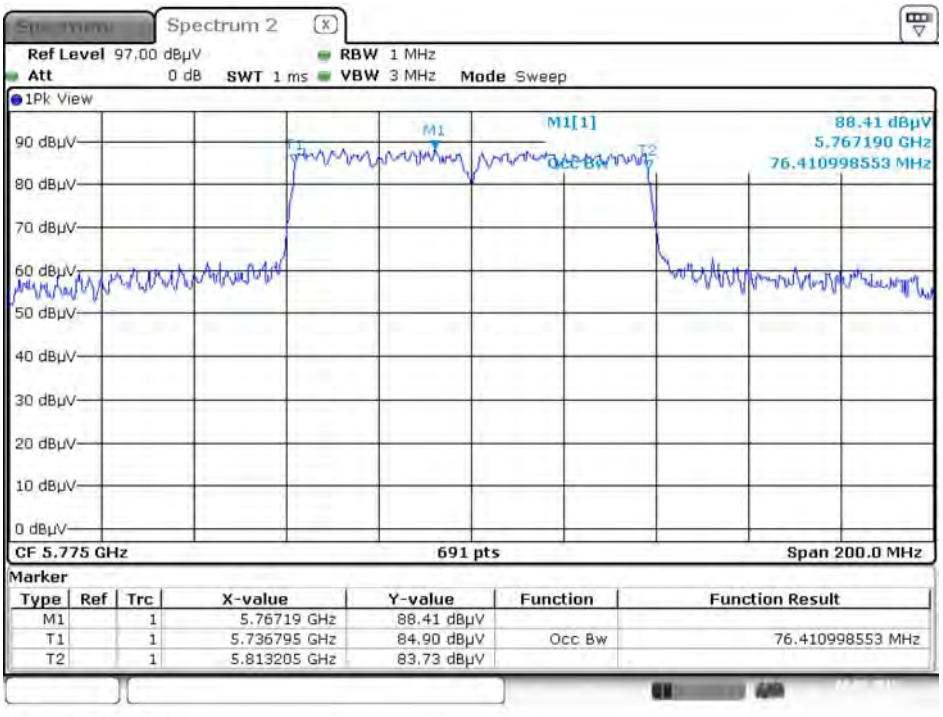
Date: 8.MAY.2015 21:38:27

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



Date: 8.MAY.2015 21:41:12

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



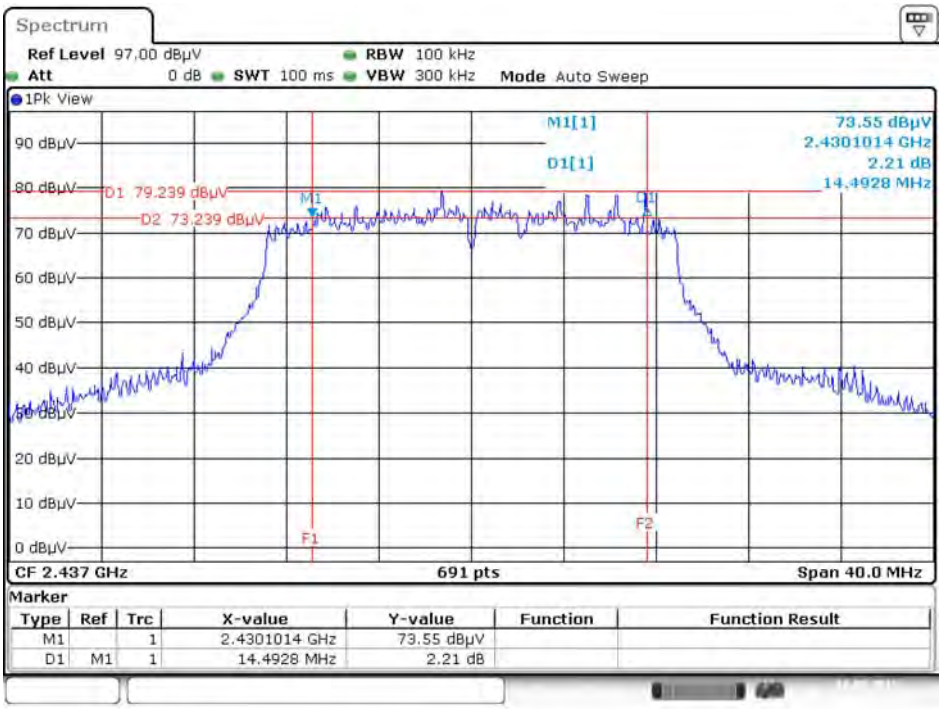
Date: 8.MAY.2015 21:40:06

For Beamforming Mode

For 2.4GHz Band

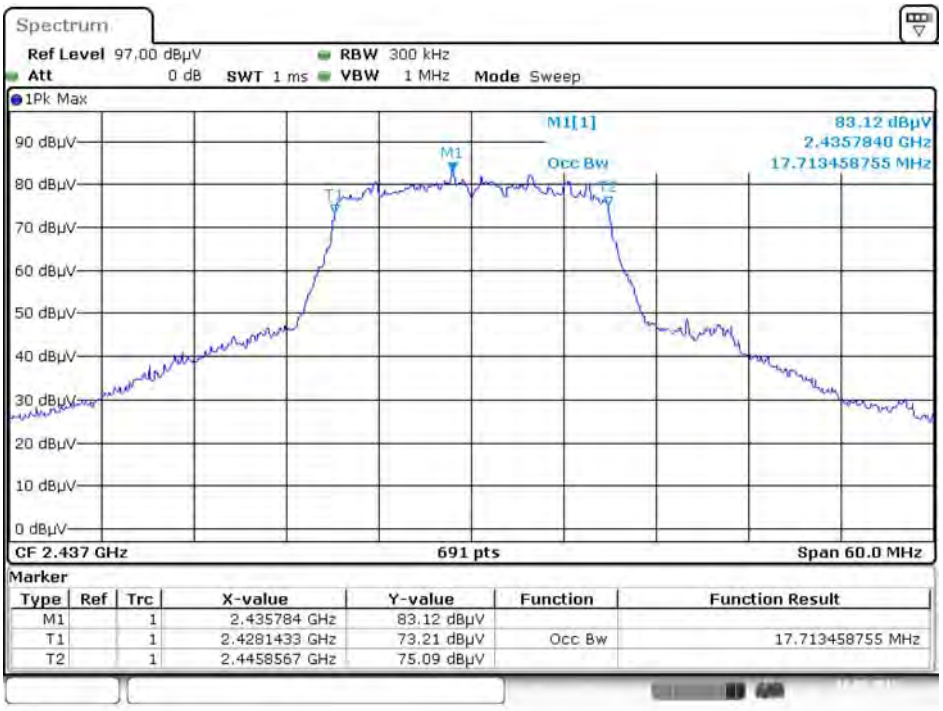
Test Mode: MCS0/Nss1

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT20 / 2437 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



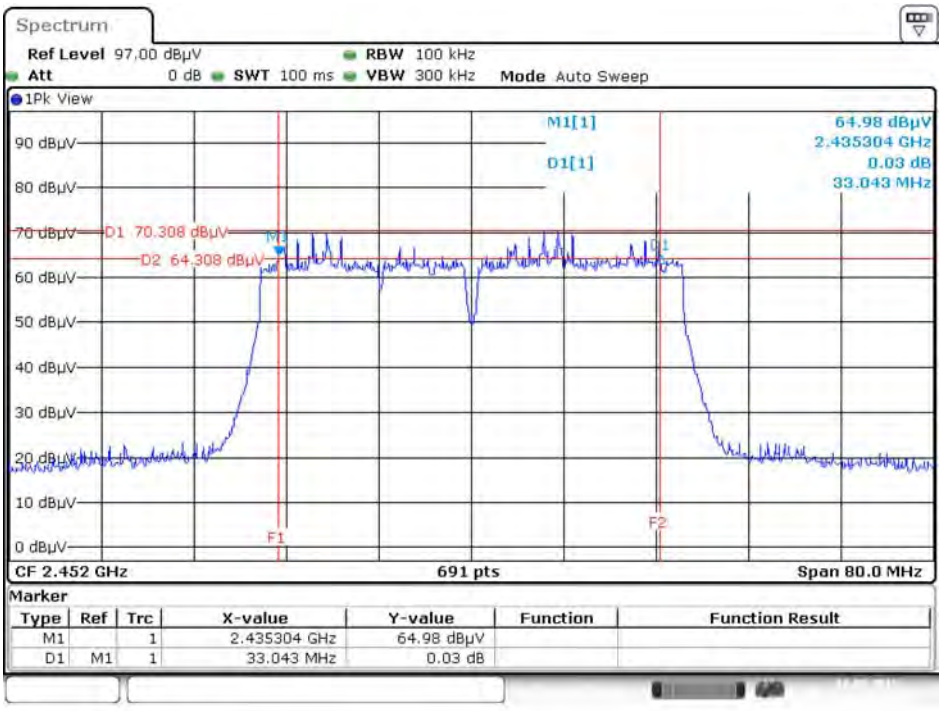
Date: 18.MAY.2015 21:32:33

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



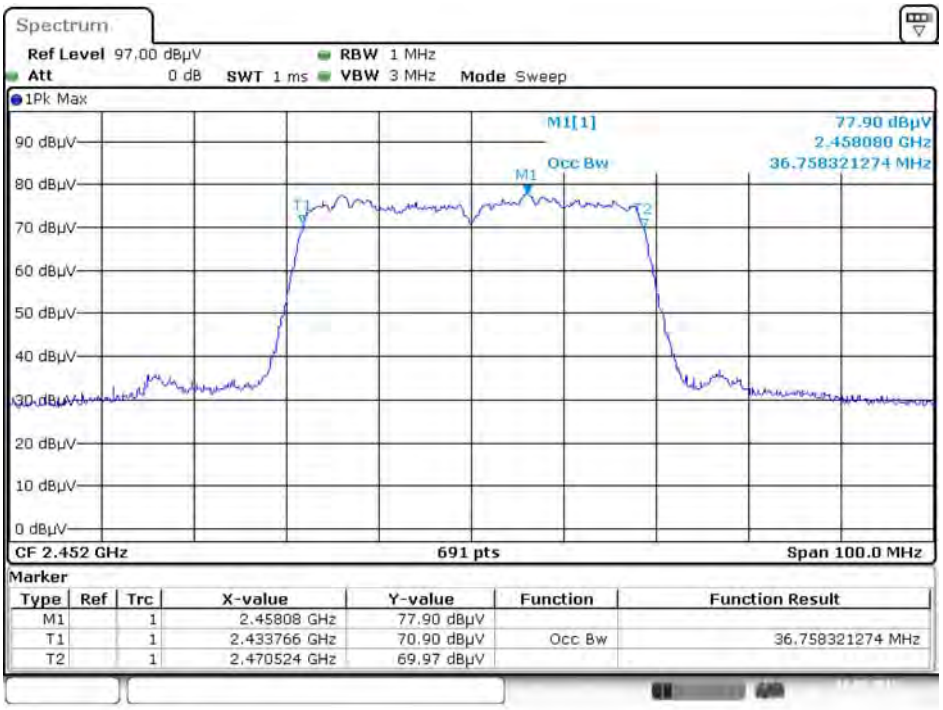
Date: 18.MAY.2015 21:58:16

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2452 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



Date: 18.MAY.2015 21:19:06

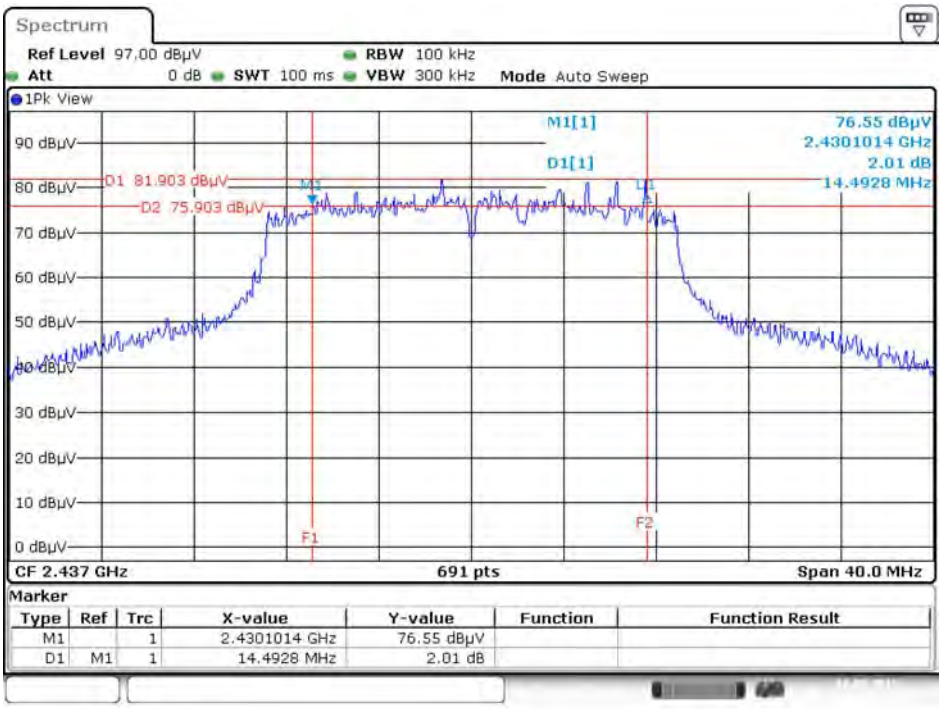
99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0/Nss1 VHT40 / 2452 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



Date: 18.MAY.2015 21:54:33

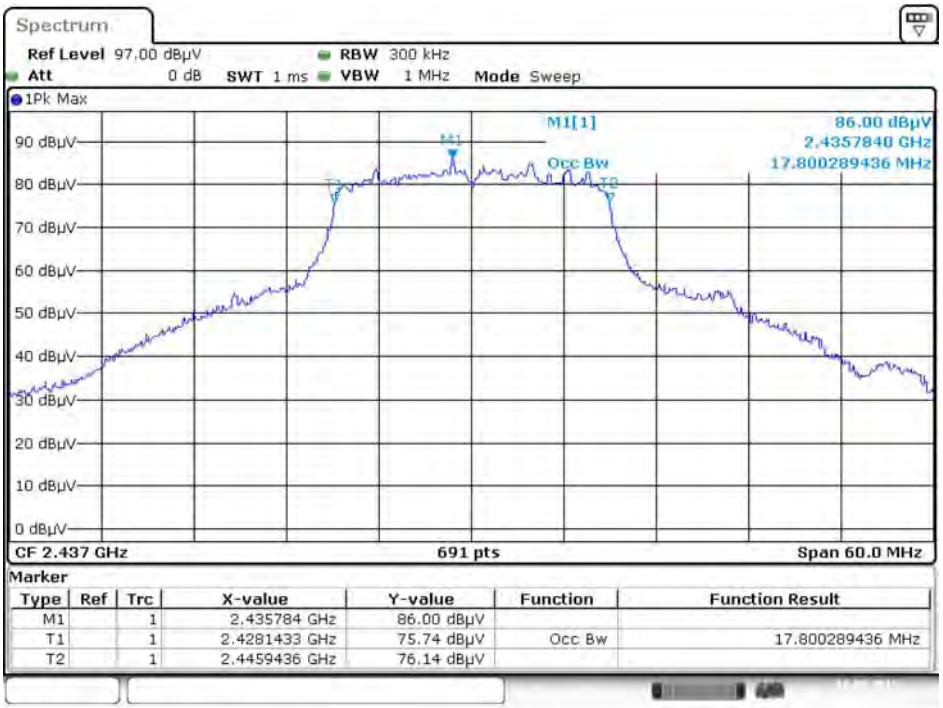
Test Mode: MCS0/Nss2

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT20 / 2437 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



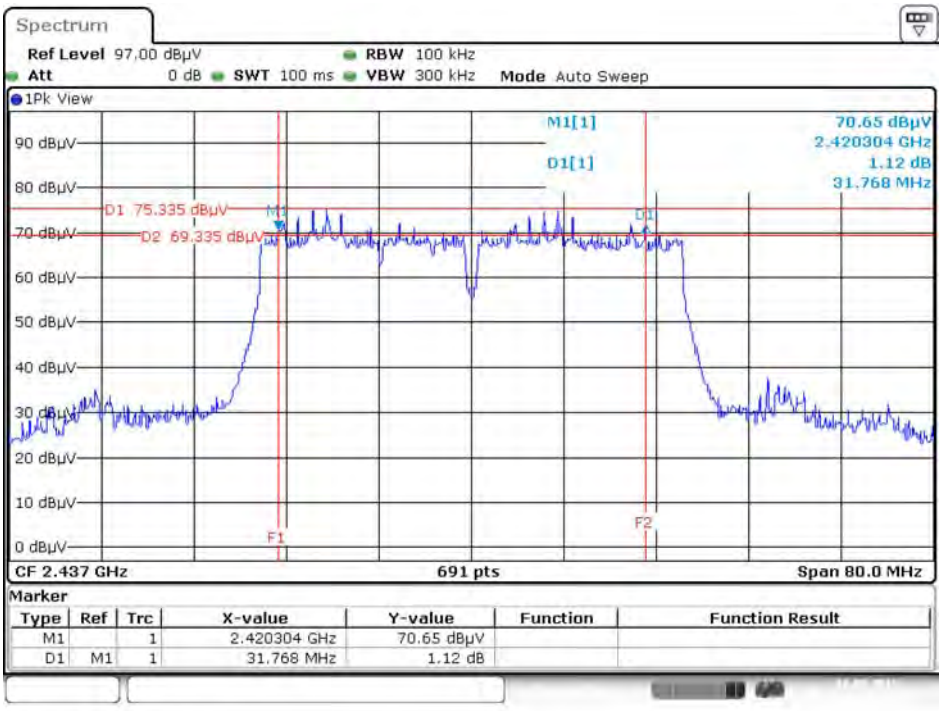
Date: 18.MAY.2015 21:41:20

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



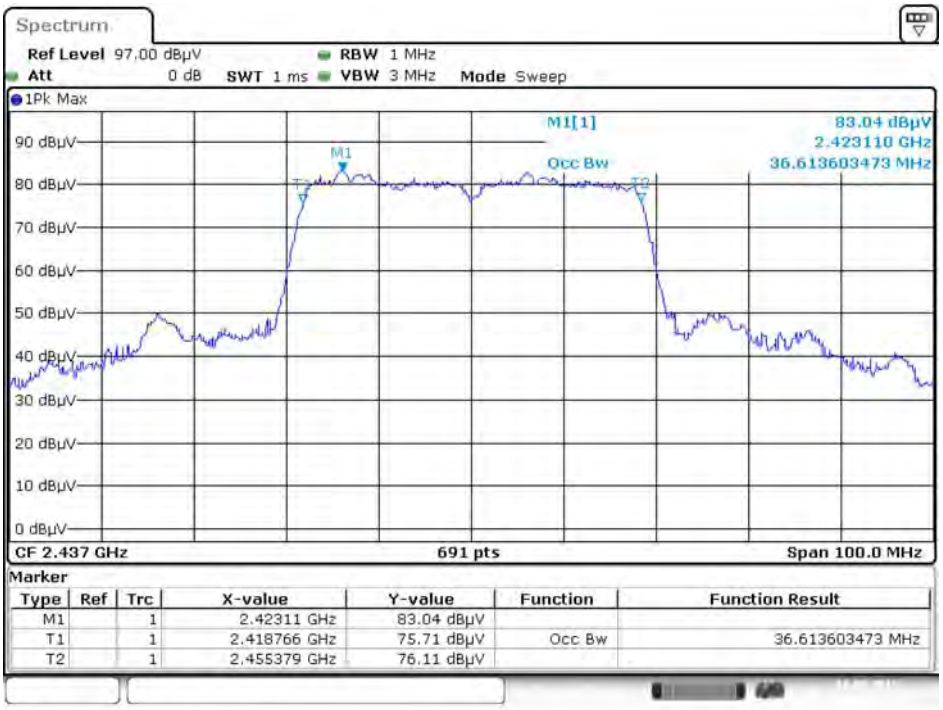
Date: 18.MAY.2015 22:01:20

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT40 / 2437 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



Date: 18.MAY.2015 21:43:36

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0/Nss2 VHT40 / 2437 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4

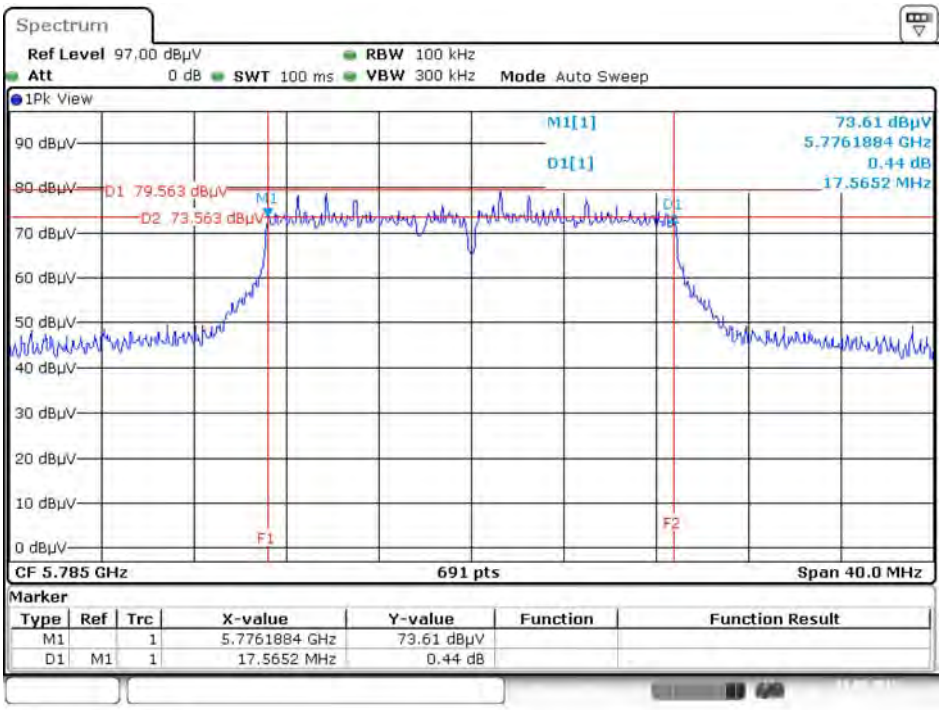


Date: 18.MAY.2015 21:48:30

For 5GHz Band

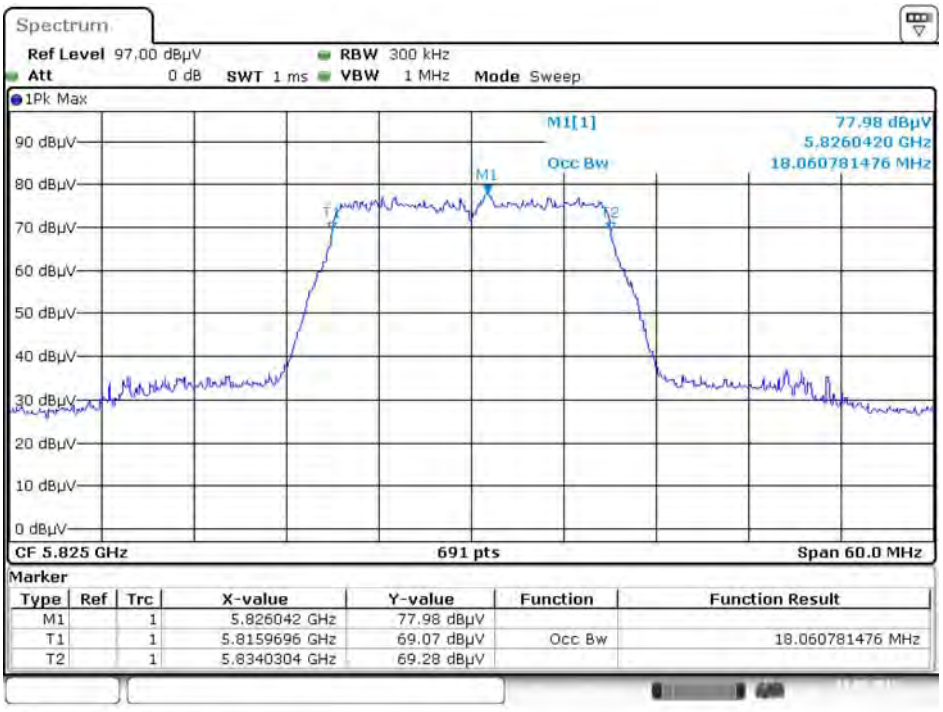
Test Mode: MCS0/Nss1

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



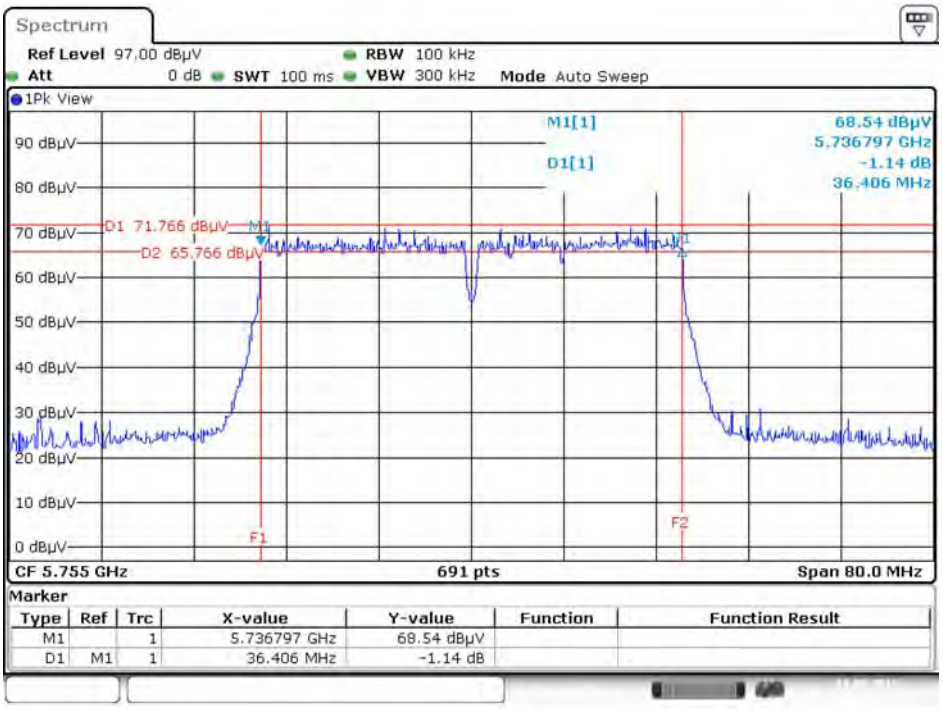
Date: 19.MAY.2015 09:41:40

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



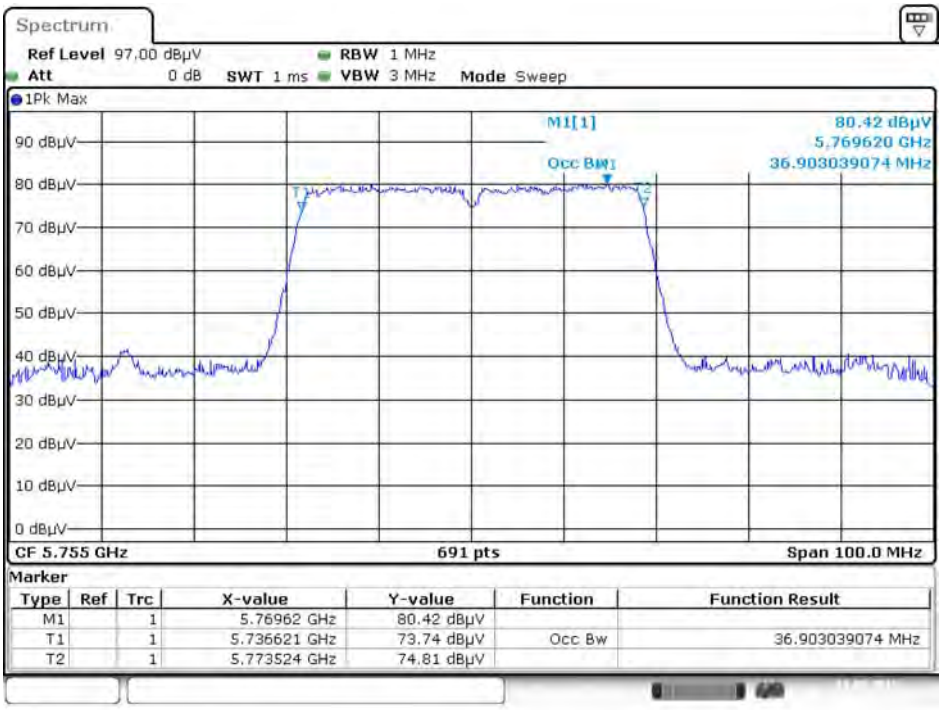
Date: 19.MAY.2015 09:52:25

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



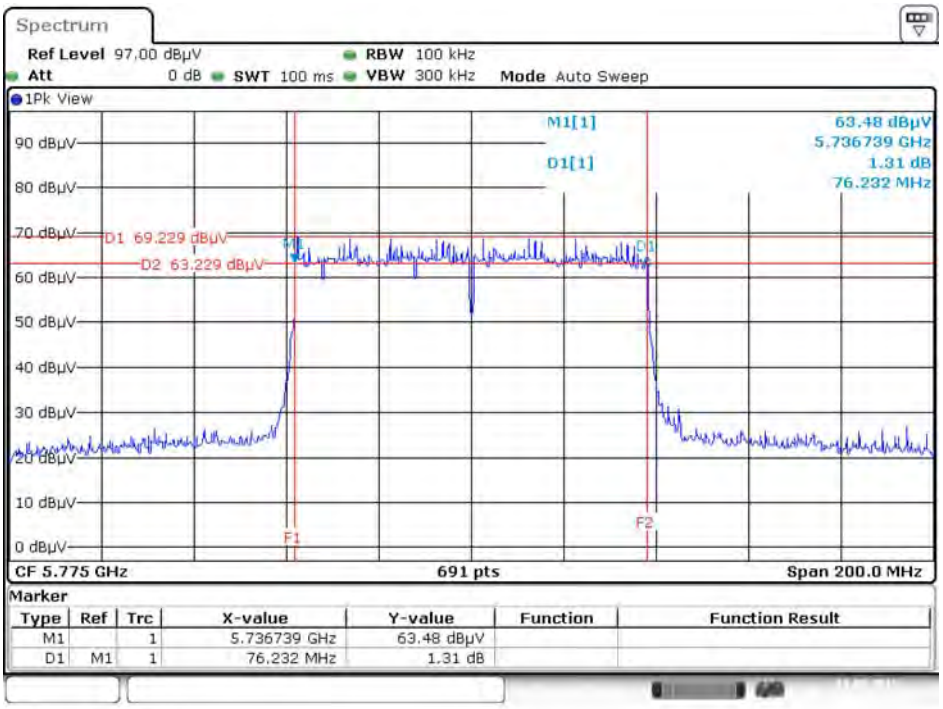
Date: 19.MAY.2015 09:35:48

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



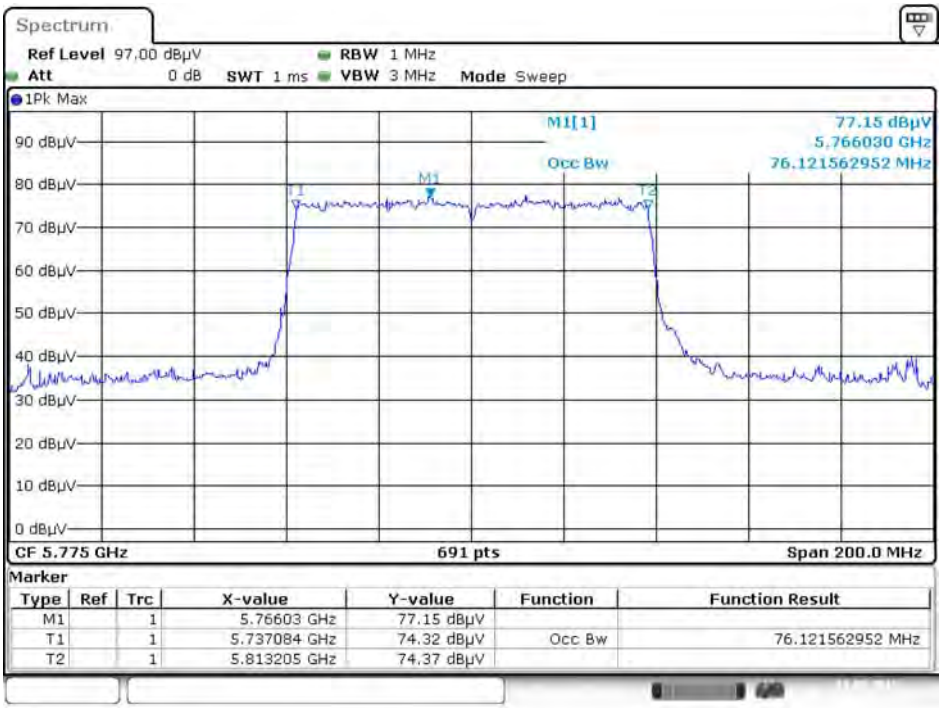
Date: 19.MAY.2015 09:53:37

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



Date: 19.MAY.2015 09:37:44

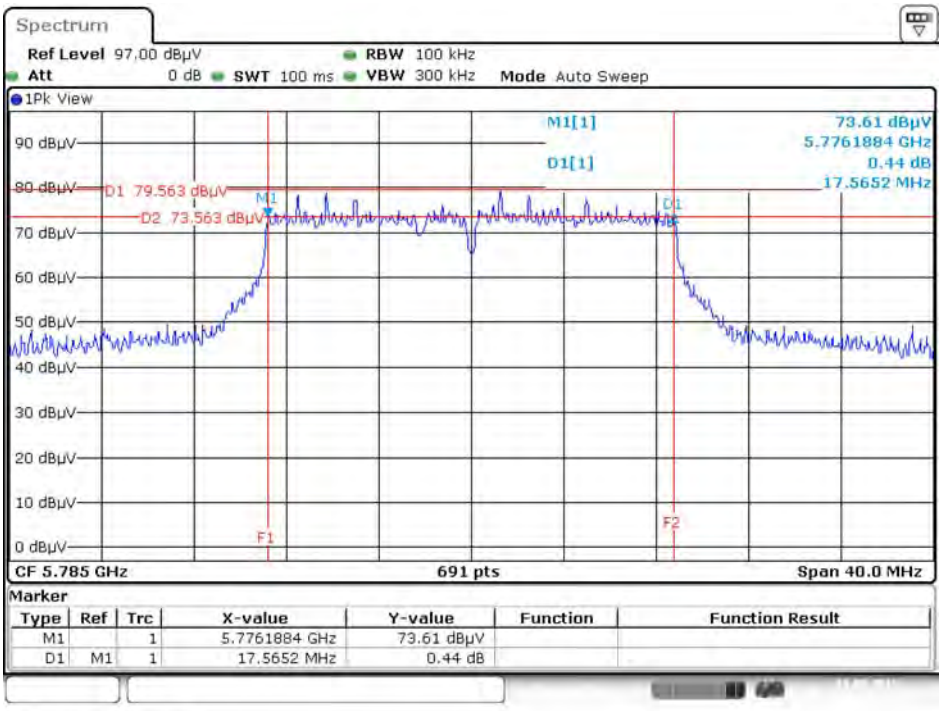
99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



Date: 19.MAY.2015 09:56:14

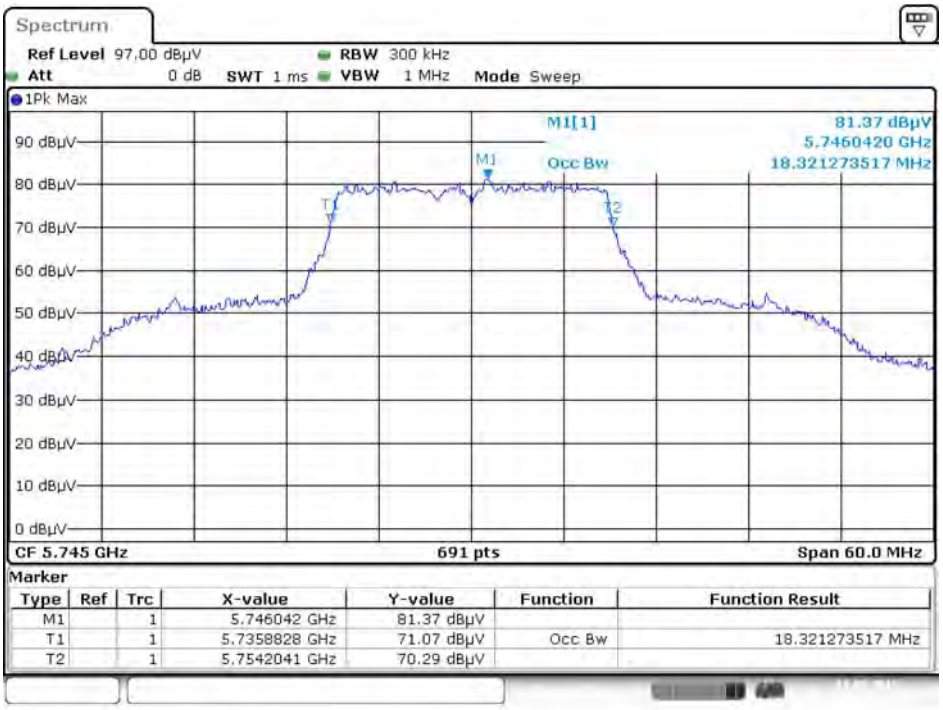
Test Mode: MCS0/Nss2

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



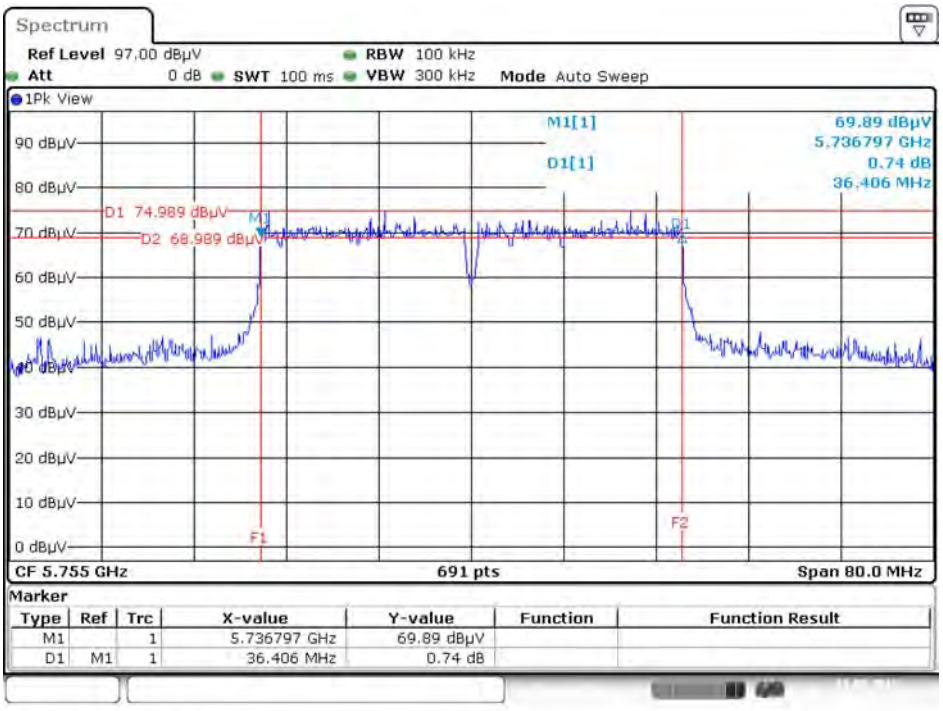
Date: 19.MAY.2015 09:41:40

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



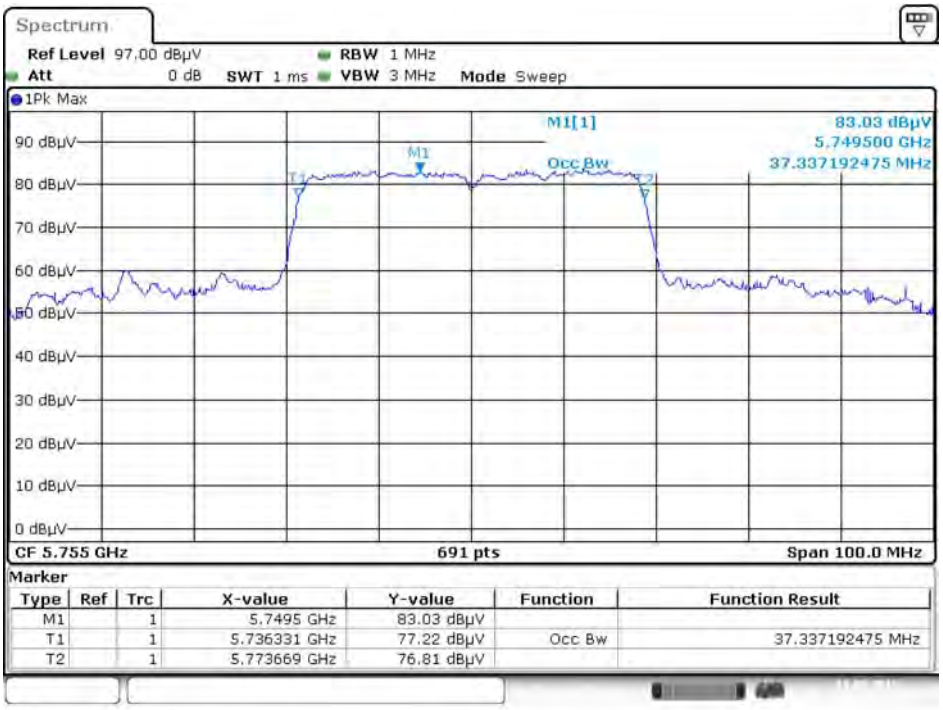
Date: 19.MAY.2015 09:58:47

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



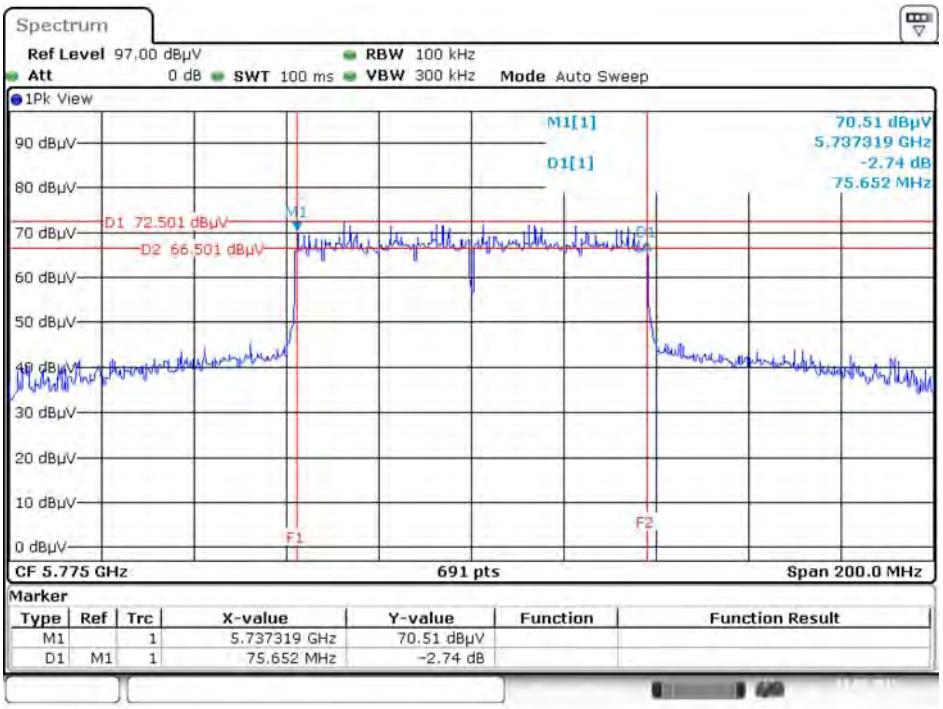
Date: 19.MAY.2015 09:43:43

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / 5755MHz / Ant. 1 + Ant. 2 + Ant. 3 + Ant. 4



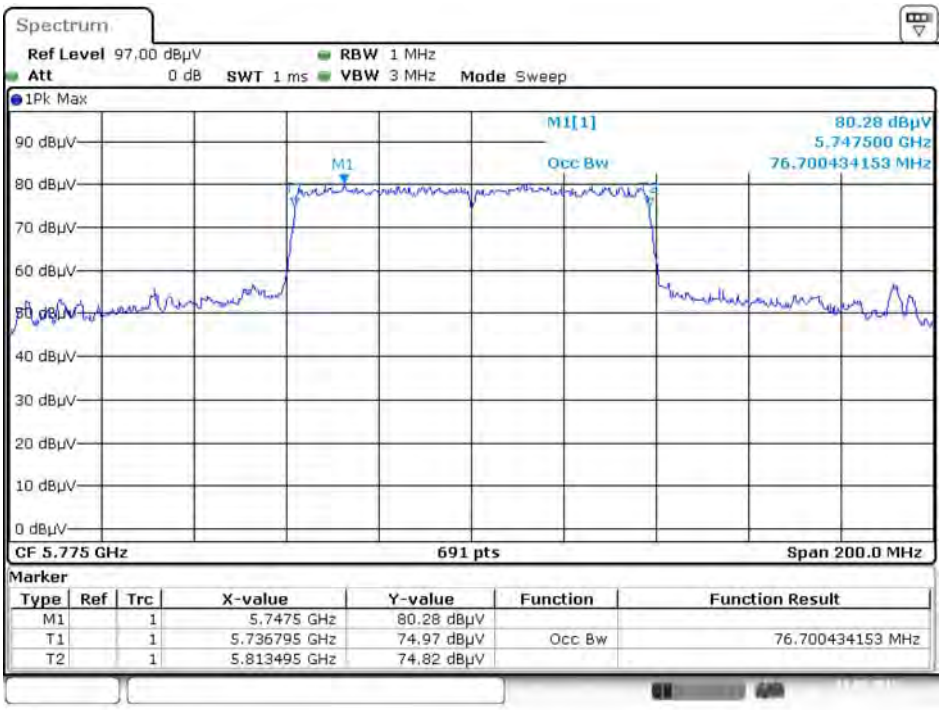
Date: 19.MAY.2015 10:01:50

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



Date: 19.MAY.2015 09:39:00

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



Date: 19.MAY.2015 09:57:03

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

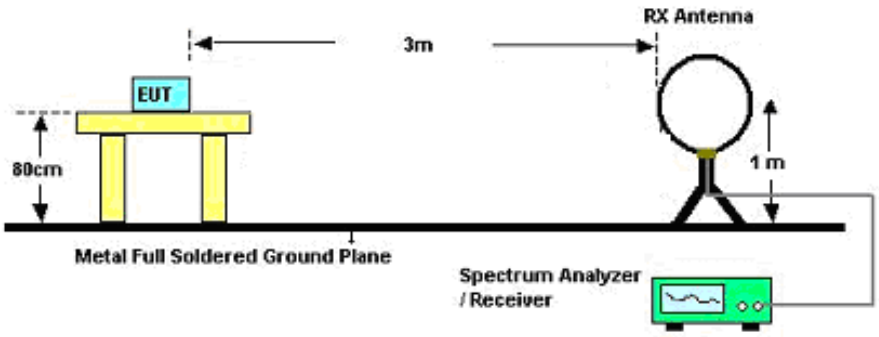
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RBW 120kHz for QP

4.5.3. Test Procedures

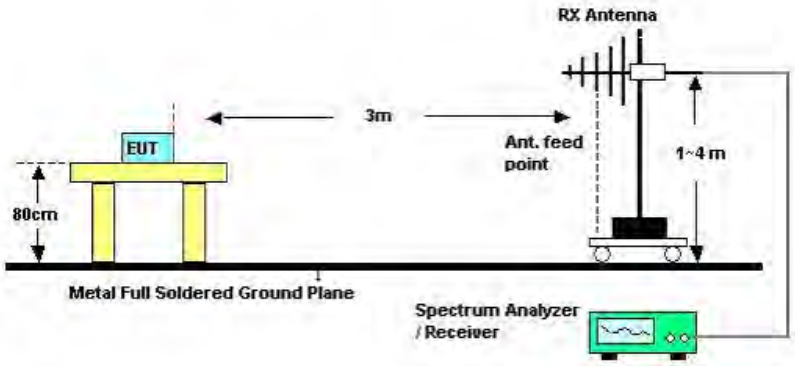
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting 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

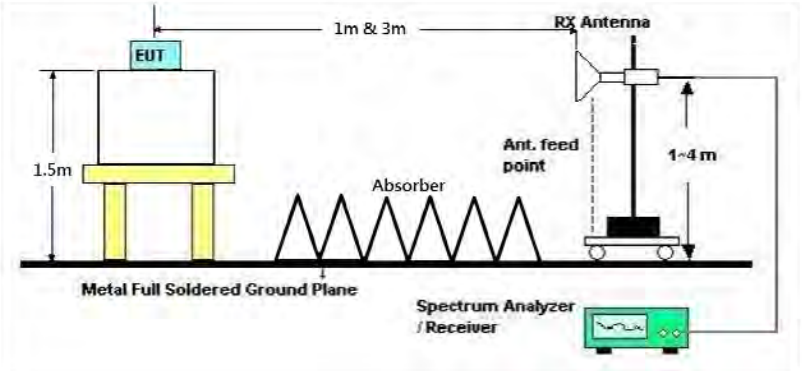
For Radiated Emissions: 9kHz ~30MHz



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 mode:

The EUT was programmed to be in continuously transmitting mode.

For Beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

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

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	CTX / Mode 2
Test Date	May 13, 2015		

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.

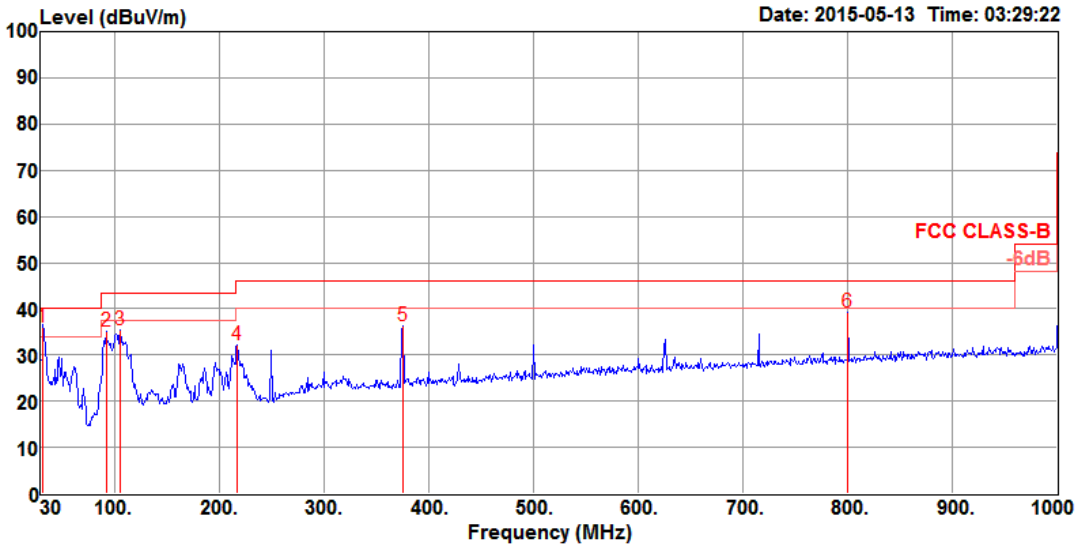
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

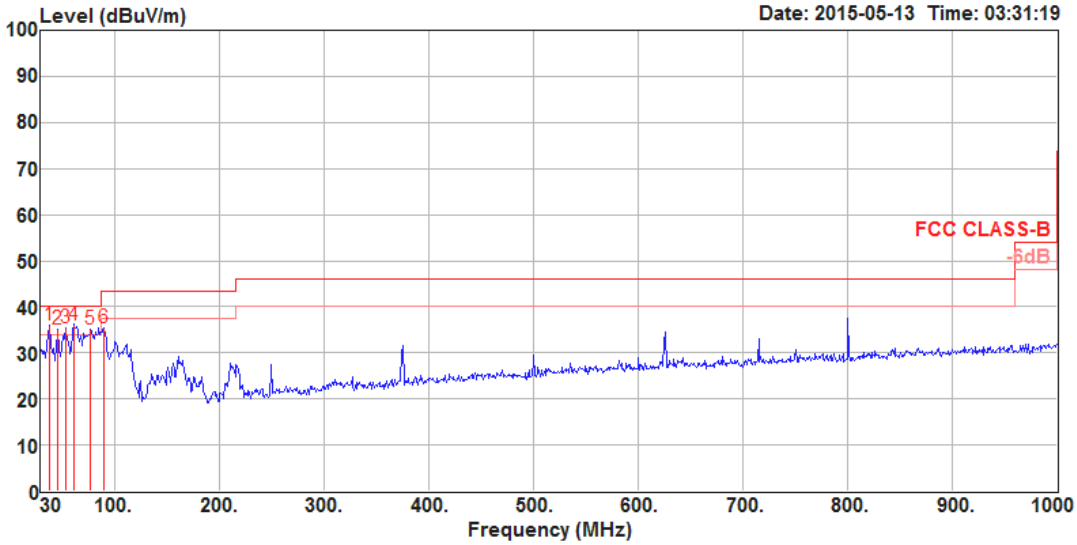
Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	CTX / Mode 2

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	31.94	35.99	40.00	-4.01	48.69	0.64	18.90	32.24	125	310	Peak	HORIZONTAL
2	92.08	35.07	43.50	-8.43	56.77	0.92	9.58	32.20	300	118	Peak	HORIZONTAL
3	105.66	35.36	43.50	-8.14	54.84	0.96	11.82	32.26	200	259	Peak	HORIZONTAL
4	217.21	32.09	46.00	-13.91	52.13	1.30	10.73	32.07	150	107	Peak	HORIZONTAL
5	375.32	36.38	46.00	-9.62	50.88	1.68	15.91	32.09	100	187	Peak	HORIZONTAL
6	800.18	39.26	46.00	-6.74	48.24	2.30	20.80	32.08	125	227	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	37.76	35.96	40.00	-4.04	52.19	0.66	15.39	32.28	100	344	Peak	VERTICAL
2	46.49	34.98	40.00	-5.02	55.96	0.69	10.59	32.26	125	314	Peak	VERTICAL
3	53.28	35.45	40.00	-4.55	58.75	0.74	8.27	32.31	200	352	Peak	VERTICAL
4	61.04	35.99	40.00	-4.01	60.62	0.78	6.89	32.30	200	173	Peak	VERTICAL
5	77.53	35.00	40.00	-5.00	58.92	0.84	7.41	32.17	150	181	Peak	VERTICAL
6	90.14	35.37	43.50	-8.13	57.45	0.92	9.23	32.23	100	95	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)

For Non-Beamforming Mode

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11b CH 1 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4823.73	46.16	74.00	-27.84	41.72	7.05	33.70	31.09	HORIZONTAL	107	100	Peak
2	4824.08	34.28	54.00	-19.72	29.84	7.05	33.70	31.09	HORIZONTAL	107	100	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4824.04	34.30	54.00	-19.70	29.87	7.05	33.70	31.08	VERTICAL	245	100	Average
2	4824.22	46.16	74.00	-27.84	41.73	7.05	33.70	31.08	VERTICAL	245	100	Peak

Temperature	26℃	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11b CH 6 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4873.52	46.24	74.00	-27.76	41.65	7.09	33.68	31.18	HORIZONTAL	239	100	Peak
2	4873.99	34.29	54.00	-19.71	29.70	7.09	33.68	31.18	HORIZONTAL	239	100	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4873.42	46.15	74.00	-27.85	41.56	7.09	33.68	31.18	VERTICAL	307	100	Peak
2	4874.05	35.29	54.00	-18.71	30.70	7.09	33.68	31.18	VERTICAL	307	100	Average

Temperature	26℃	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11b CH 11 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4924.28	45.58	74.00	-28.42	40.85	7.13	33.67	31.27	HORIZONTAL	204	100	Peak
2	4924.80	32.56	54.00	-21.44	27.83	7.13	33.67	31.27	HORIZONTAL	204	100	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4924.15	32.39	54.00	-21.61	27.65	7.13	33.67	31.28	VERTICAL	125	100	Average
2	4924.36	45.91	74.00	-28.09	41.17	7.13	33.67	31.28	VERTICAL	125	100	Peak

Temperature	26℃	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11g CH 1 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4823.02	32.24	54.00	-21.76	27.80	7.05	33.70	31.09	HORIZONTAL	180	100	Average
2	4823.82	45.33	74.00	-28.67	40.89	7.05	33.70	31.09	HORIZONTAL	180	100	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4823.16	33.01	54.00	-20.99	28.58	7.05	33.70	31.08	VERTICAL	274	100	Average
2	4824.55	46.41	74.00	-27.59	41.98	7.05	33.70	31.08	VERTICAL	274	100	Peak

Temperature	26℃	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11g CH 6 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4873.18	32.37	54.00	-21.63	27.78	7.09	33.68	31.18	HORIZONTAL	167	100	Average
2	4874.37	46.03	74.00	-27.97	41.44	7.09	33.68	31.18	HORIZONTAL	167	100	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4873.02	32.99	54.00	-21.01	28.40	7.09	33.68	31.18	VERTICAL	235	100	Average
2	4873.29	46.16	74.00	-27.84	41.57	7.09	33.68	31.18	VERTICAL	235	100	Peak

Temperature	26℃	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11g CH 11 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	PreampFactor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4924.41	46.10	74.00	-27.90	41.37	7.13	33.67	31.27	HORIZONTAL	222	100	Peak
2	4924.42	32.33	54.00	-21.67	27.60	7.13	33.67	31.27	HORIZONTAL	222	100	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	PreampFactor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4924.13	32.44	54.00	-21.56	27.70	7.13	33.67	31.28	VERTICAL	172	100	Average
2	4924.40	46.49	74.00	-27.51	41.75	7.13	33.67	31.28	VERTICAL	172	100	Peak

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT20 CH 1 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4823.78	45.79	74.00	-28.21	41.35	7.05	33.70	31.09	HORIZONTAL	215	100	Peak
2	4824.56	32.52	54.00	-21.48	28.08	7.05	33.70	31.09	HORIZONTAL	215	100	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4823.57	32.78	54.00	-21.22	28.35	7.05	33.70	31.08	VERTICAL	240	100	Average
2	4824.18	46.22	74.00	-27.78	41.79	7.05	33.70	31.08	VERTICAL	240	100	Peak

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT20 CH 6 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4873.47	46.26	74.00	-27.74	41.67	7.09	33.68	31.18	HORIZONTAL	285	100	Peak
2	4873.95	32.80	54.00	-21.20	28.21	7.09	33.68	31.18	HORIZONTAL	285	100	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4873.44	46.33	74.00	-27.67	41.74	7.09	33.68	31.18	VERTICAL	260	100	Peak
2	4874.46	33.11	54.00	-20.89	28.52	7.09	33.68	31.18	VERTICAL	260	100	Average

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT20 CH 11 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4924.46	46.76	74.00	-27.24	42.03	7.13	33.67	31.27	HORIZONTAL	297	100	Peak
2	4924.90	33.25	54.00	-20.75	28.52	7.13	33.67	31.27	HORIZONTAL	297	100	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4923.54	46.79	74.00	-27.21	42.08	7.13	33.67	31.25	VERTICAL	273	100	Peak
2	4924.52	33.39	54.00	-20.61	28.65	7.13	33.67	31.28	VERTICAL	273	100	Average

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT40 CH 3 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	4835.29	34.86	54.00	-19.14	28.24	6.11	33.59	33.08	243	166	Average	HORIZONTAL
2	4850.02	47.47	74.00	-26.53	40.86	6.10	33.59	33.08	243	166	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	4834.01	34.88	54.00	-19.12	28.26	6.11	33.59	33.08	211	189	Average	VERTICAL
2	4853.44	49.12	74.00	-24.88	42.48	6.10	33.62	33.08	211	189	Peak	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT40 CH 6 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	4870.32	48.13	74.00	-25.87	41.47	6.08	33.66	33.08	135	155	Peak	HORIZONTAL
2	4871.54	34.90	54.00	-19.10	28.24	6.08	33.66	33.08	135	155	Average	HORIZONTAL
3	7319.83	39.39	54.00	-14.61	27.87	8.30	36.69	33.47	80	171	Average	HORIZONTAL
4	7320.49	52.44	74.00	-21.56	40.92	8.30	36.69	33.47	80	171	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	4866.62	35.09	54.00	-18.91	28.47	6.08	33.62	33.08	67	174	Average	VERTICAL
2	4867.40	48.49	74.00	-25.51	41.87	6.08	33.62	33.08	67	174	Peak	VERTICAL
3	7314.65	53.23	74.00	-20.77	41.76	8.30	36.64	33.47	103	195	Peak	VERTICAL
4	7317.45	39.38	54.00	-14.62	27.86	8.30	36.69	33.47	103	195	Average	VERTICAL

Temperature	26℃	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT40 CH 9 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	4898.21	48.08	74.00	-25.92	41.39	6.07	33.69	33.07	199	166	Peak	HORIZONTAL
2	4898.36	34.78	54.00	-19.22	28.09	6.07	33.69	33.07	199	166	Average	HORIZONTAL
3	7359.42	53.28	74.00	-20.72	41.67	8.32	36.77	33.48	233	209	Peak	HORIZONTAL
4	7360.69	39.85	54.00	-14.15	28.24	8.32	36.77	33.48	233	209	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	4896.68	35.02	54.00	-18.98	28.33	6.07	33.69	33.07	310	175	Average	VERTICAL
2	4898.94	48.74	74.00	-25.26	42.05	6.07	33.69	33.07	310	175	Peak	VERTICAL
3	7351.22	53.67	74.00	-20.33	42.06	8.32	36.77	33.48	272	186	Peak	VERTICAL
4	7364.05	39.89	54.00	-14.11	28.27	8.34	36.77	33.49	272	186	Average	VERTICAL

Temperature	26℃	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11a CH 149 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	11489.97	44.19	54.00	-9.81	27.46	10.71	39.39	33.37	255	188	Average	HORIZONTAL
2	11490.25	56.45	74.00	-17.55	39.72	10.71	39.39	33.37	255	188	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	11489.97	57.73	74.00	-16.27	41.00	10.71	39.39	33.37	304	186	Peak	VERTICAL
2	11490.14	44.72	54.00	-9.28	27.99	10.71	39.39	33.37	304	186	Average	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11a CH 157 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	11570.03	45.08	54.00	-8.92	28.27	10.76	39.44	33.39	242	188	Average	HORIZONTAL
2	11570.07	57.56	74.00	-16.44	40.75	10.76	39.44	33.39	242	188	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	11569.83	57.60	74.00	-16.40	40.79	10.76	39.44	33.39	128	188	Peak	VERTICAL
2	11569.85	45.21	54.00	-8.79	28.40	10.76	39.44	33.39	128	188	Average	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11a CH 165 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	11649.88	45.37	54.00	-8.63	28.49	10.81	39.48	33.41	147	188	Average	HORIZONTAL
2	11649.89	58.24	74.00	-15.76	41.36	10.81	39.48	33.41	147	188	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	11649.75	57.90	74.00	-16.10	41.02	10.81	39.48	33.41	316	188	Peak	VERTICAL
2	11649.96	45.14	54.00	-8.86	28.26	10.81	39.48	33.41	316	188	Average	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	11489.99	57.30	74.00	-16.70	40.57	10.71	39.39	33.37	113	188	Peak	HORIZONTAL
2	11490.25	44.29	54.00	-9.71	27.56	10.71	39.39	33.37	113	188	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	11490.01	44.22	54.00	-9.78	27.49	10.71	39.39	33.37	254	188	Average	VERTICAL
2	11490.01	57.38	74.00	-16.62	40.65	10.71	39.39	33.37	254	188	Peak	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	11568.44	44.52	54.00	-9.48	27.71	10.75	39.44	33.38	114	200	Average	HORIZONTAL
2	11568.44	58.80	74.00	-15.20	41.99	10.75	39.44	33.38	114	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	11568.28	45.15	54.00	-8.85	28.34	10.75	39.44	33.38	246	200	Average	VERTICAL
2	11568.28	56.00	74.00	-18.00	39.19	10.75	39.44	33.38	246	200	Peak	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	11649.83	45.26	54.00	-8.74	28.38	10.81	39.48	33.41	30	200	Average	HORIZONTAL
2	11650.36	58.39	74.00	-15.61	41.51	10.81	39.48	33.41	30	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	11649.80	58.89	74.00	-15.11	42.01	10.81	39.48	33.41	74	200	Peak	VERTICAL
2	11649.91	45.27	54.00	-8.73	28.39	10.81	39.48	33.41	74	200	Average	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	11508.22	57.89	74.00	-16.11	41.14	10.72	39.40	33.37	181	200	Peak	HORIZONTAL
2	11510.09	44.64	54.00	-9.36	27.89	10.72	39.40	33.37	181	200	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	11511.11	44.90	54.00	-9.10	28.15	10.72	39.40	33.37	109	200	Average	VERTICAL
2	11512.40	58.22	74.00	-15.78	41.47	10.72	39.40	33.37	109	200	Peak	VERTICAL

Temperature	26℃	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	11588.06	44.89	54.00	-9.11	28.07	10.76	39.45	33.39	181	200	Average	HORIZONTAL
2	11588.94	57.65	74.00	-16.35	40.83	10.76	39.45	33.39	181	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	11591.70	44.88	54.00	-9.12	28.06	10.76	39.45	33.39	223	200	Average	VERTICAL
2	11591.82	58.32	74.00	-15.68	41.50	10.76	39.45	33.39	223	200	Peak	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 06, 2015		

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	11548.45	58.77	74.00	-15.23	41.98	10.75	39.42	33.38	270	200	Peak	HORIZONTAL
2	11552.04	44.81	54.00	-9.19	28.01	10.75	39.43	33.38	270	200	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	11548.55	45.00	54.00	-9.00	28.20	10.75	39.43	33.38	243	200	Average	VERTICAL
2	11549.64	58.66	74.00	-15.34	41.86	10.75	39.43	33.38	243	200	Peak	VERTICAL

For Beamforming Mode:

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT20 CH 1 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 16, 2015		

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	4828.80	34.12	54.00	-19.88	27.53	6.11	33.56	33.08	266	195	Average	HORIZONTAL
2	4830.08	47.02	74.00	-26.98	40.43	6.11	33.56	33.08	266	195	Peak	HORIZONTAL
3	7240.84	52.64	74.00	-21.36	41.38	8.24	36.48	33.46	342	195	Peak	HORIZONTAL
4	7245.20	39.17	54.00	-14.83	27.91	8.24	36.48	33.46	342	195	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	4821.48	47.22	74.00	-26.78	40.63	6.11	33.56	33.08	15	195	Peak	VERTICAL
2	4829.48	34.27	54.00	-19.73	27.68	6.11	33.56	33.08	15	195	Average	VERTICAL
3	7231.32	39.07	54.00	-14.93	27.82	8.22	36.48	33.45	226	195	Average	VERTICAL
4	7238.48	52.11	74.00	-21.89	40.85	8.24	36.48	33.46	226	195	Peak	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT20 CH 6 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 16, 2015		

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	4841.24	36.11	54.00	-17.89	29.50	6.10	33.59	33.08	32	195	Average	HORIZONTAL
2	4858.88	46.80	74.00	-27.20	40.16	6.10	33.62	33.08	32	195	Peak	HORIZONTAL
3	7251.32	39.00	54.00	-15.00	27.70	8.24	36.52	33.46	285	195	Average	HORIZONTAL
4	7253.80	52.26	74.00	-21.74	40.96	8.24	36.52	33.46	285	195	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	4846.64	36.19	54.00	-17.81	29.58	6.10	33.59	33.08	69	195	Average	VERTICAL
2	4847.92	47.60	74.00	-26.40	40.99	6.10	33.59	33.08	69	195	Peak	VERTICAL
3	7254.00	38.92	54.00	-15.08	27.62	8.24	36.52	33.46	224	195	Average	VERTICAL
4	7269.36	52.18	74.00	-21.82	40.83	8.26	36.56	33.47	224	195	Peak	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT20 CH 11 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 16, 2015		

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	4919.28	34.30	54.00	-19.70	27.55	6.05	33.76	33.06	195	195	Average	HORIZONTAL
2	4920.76	47.58	74.00	-26.42	40.83	6.05	33.76	33.06	195	195	Peak	HORIZONTAL
3	7382.24	40.13	54.00	-13.87	28.47	8.34	36.81	33.49	164	195	Average	HORIZONTAL
4	7385.88	53.76	74.00	-20.24	42.06	8.34	36.85	33.49	164	195	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	4919.32	34.34	54.00	-19.66	27.59	6.05	33.76	33.06	147	195	Average	VERTICAL
2	4925.72	47.30	74.00	-26.70	40.55	6.05	33.76	33.06	147	195	Peak	VERTICAL
3	7378.00	40.01	54.00	-13.99	28.35	8.34	36.81	33.49	217	195	Average	VERTICAL
4	7391.60	53.41	74.00	-20.59	41.68	8.37	36.85	33.49	217	195	Peak	VERTICAL

Temperature	26°C	Humidity	55%
Test Engineer	Gino Huang	Configurations	IEEE 802.11n MCS0/Nss1 VHT40 CH 3 / Ant. 1 + Ant. 2 + Ant. 3+ Ant. 4
Test Date	May 16, 2015		

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	4834.68	33.90	54.00	-20.10	27.28	6.11	33.59	33.08	205	195	Average	HORIZONTAL
2	4841.00	46.55	74.00	-27.45	39.94	6.10	33.59	33.08	205	195	Peak	HORIZONTAL
3	7256.92	38.75	54.00	-15.25	27.45	8.24	36.52	33.46	181	195	Average	HORIZONTAL
4	7273.60	52.22	74.00	-21.78	40.87	8.26	36.56	33.47	181	195	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	4848.36	47.20	74.00	-26.80	40.59	6.10	33.59	33.08	23	195	Peak	VERTICAL
2	4853.96	34.12	54.00	-19.88	27.48	6.10	33.62	33.08	23	195	Average	VERTICAL
3	7256.44	38.83	54.00	-15.17	27.53	8.24	36.52	33.46	114	195	Average	VERTICAL
4	7269.68	51.79	74.00	-22.21	40.44	8.26	36.56	33.47	114	195	Peak	VERTICAL