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FCC RADIO TEST REPORT

Applicant's company	**Linksys LLC**
Applicant Address	121 Theory Drive, Irvine, CA 92617, USA
FCC ID	**Q87-EA9500**

Product Name	Linksys Tri-Band Wireless-AC Router
Brand Name	LINKSYS
Model No.	EA9500
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Aug. 05, 2015
Final Test Date	Sep. 03, 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 C63.10-2013**, **47 CFR FCC Part 15 Subpart C**, **KDB558074 D01 v03r03**, **KDB 662911 D01 v02r01**, **KDB644545 D01 v01r02.**

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

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR581108AA	Rev. 01	Initial issue of report	Sep. 22, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	Linksys Tri-Band Wireless-AC Router
Brand Name	:	LINKSYS
Model No.	:	EA9500
Applicant	:	Linksys LLC
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 Aug. 05, 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	22.36 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	1.02 dB
4.3	15.247(e)	Power Spectral Density	Complies	0.86 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	6.11 dB
4.6	15.247(d)	Band Edge Emissions	Complies	1.06 dB
4.7	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (4TX, 4RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	IEEE 802.11b: DSSS IEEE 802.11a/g: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11b: DSSS (BPSK / QPSK / CCK) IEEE 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM, 1024QAM)
Data Rate (Mbps)	IEEE 802.11b: DSSS (1/ 2/ 5.5/11) IEEE 802.11a/g: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Channel Number	For 2.4GHz Band: 11 for 20MHz bandwidth ; 7 for 40MHz bandwidth For 5GHz Band: 5 for 20MHz bandwidth ; 2 for 40MHz bandwidth 1 for 80MHz bandwidth
Channel Band Width (99%)	For Non-beamforming mode For 2.4GHz Band: IEEE 802.11b: 10.42 MHz IEEE 802.11g: 15.54 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.47 MHz For 5GHz Band: IEEE 802.11a: 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz For beamforming mode For 2.4GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.71 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.76 MHz

	For 5GHz Band: 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
Maximum Conducted Output Power	For Non-beamforming mode For 2.4GHz Band: IEEE 802.11b: 28.98 dBm IEEE 802.11g: 28.97 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 28.93 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.43 dBm For 5GHz Band: IEEE 802.11a: 28.97 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 28.91 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 28.98 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 28.82 dBm For beamforming mode For 2.4GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 26.76 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.62 dBm For 5GHz Band: IEEE 802.11ac MCS0/Nss1 (VHT20): 26.92 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.81 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 26.82 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☒ With beamforming	☐ Without beamforming

Note: The product has beamforming function for 802.11 n/ac in 2.4GHz/5GHz.

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	MCS 0-11/Nss1-4
	802.11ac (VHT40)	4	MCS 0-11/Nss1-4
5G	802.11n (HT20)	4	MCS0-31
	802.11n (HT40)	4	MCS0-31
	802.11ac (VHT20)	4	MCS 0-11/Nss1-4
	802.11ac (VHT40)	4	MCS 0-11/Nss1-4
	802.11ac (VHT80)	4	MCS 0-11/Nss1-4

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

Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40 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	APD	DA-60M12	Input: 100-240V ~ 50-60Hz 1.5A Max. Output: 12V, 5A
Other			
Power cable*1 Non-shielded, 3 m			

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)		
					2.4GHz	5GHz Band 1	5GHz Band 4
1	ARISTOTLE	RFA-25-F90-1	Dipole Antenna	I-PEX	1.6	2	-
2	ARISTOTLE	RFA-25-F90-2	Dipole Antenna	I-PEX	2.25	1.74	-
3	ARISTOTLE	RFA-25-F90-3	Dipole Antenna	I-PEX	2.1	2.3	-
4	ARISTOTLE	RFA-25-F90-4	Dipole Antenna	I-PEX	2.22	1.77	-
5	ARISTOTLE	RFA-05-F90-1	Dipole Antenna	I-PEX	-	-	2.18
6	ARISTOTLE	RFA-05-F90-2	Dipole Antenna	I-PEX	-	-	2
7	ARISTOTLE	RFA-05-F90-3	Dipole Antenna	I-PEX	-	-	1.9
8	ARISTOTLE	RFA-05-F90-4	Dipole Antenna	I-PEX	-	-	1.9

Note: The EUT has eight antennas.

For 2.4GHz / 5G Band 1 function:

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

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

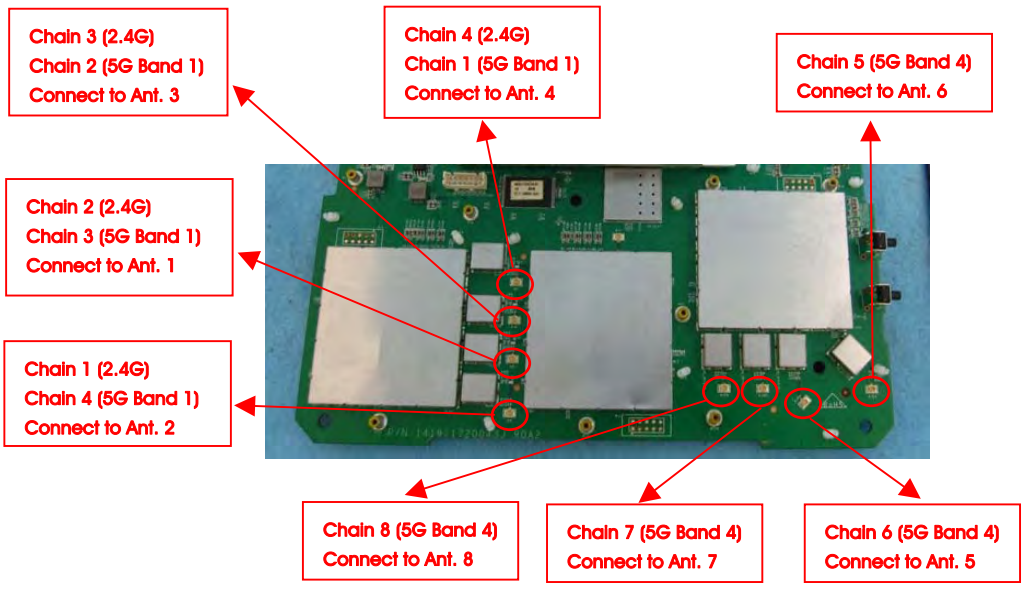
Ant. 1, Ant. 2, Ant. 3 and Ant. 4 could transmit/receive simultaneously.

For 5GHz Band 4 function:

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

Ant. 5, Ant. 6, Ant. 7 and Ant. 8 can be used as transmitting/receiving antenna.

Ant. 5, Ant. 6, Ant. 7 and Ant. 8 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, 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	Antenna
AC Power Line Conducted Emissions	Normal Link	-	-	-
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
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
	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
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
	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

Radiated Emissions Below 1GHz	Normal Link	-	-	-
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
	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
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
	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

For 5GHz Band:

Test Items	Mode	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	-	-	-
Maximum Conducted Output Power	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	5+6+7+8
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8
Power Spectral Density	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	5+6+7+8
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8
6dB Spectrum Bandwidth	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	5+6+7+8
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8

Radiated Emissions Below 1GHz	Normal Link	-	-	-
Radiated Emissions Above 1GHz	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	5+6+7+8
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8
Band Edge Emissions	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	5+6+7+8
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	MCS0/Nss1	155	5+6+7+8

Note:

1. There are two modes of EUT, one is beamforming mode, and the other is non-beamforming mode, Beamforming mode and non-beamforming mode has been test and record in this test report.
2. VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link - Place EUT in Z axis

For Radiated Emission test below 1GHz:

Mode 1. Normal Link - Place EUT in Z axis

For Radiated Emission test above 1GHz:

Mode 1. CTX - Place EUT in Z axis

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

The EUT could be applied with 2.4GHz WLAN function, 5GHz Band 1 WLAN function and 5G Band4 WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA: 581108) and Radiated Emission Co-location (please refer to Appendix C) tests are added for simultaneously transmit among 2.4GHz WLAN function, 5GHz Band 1 WLAN function and 5G Band4 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 Supporting Units

For Test Site No: 03CH01-CB

(Radiated Emission below 1GHz test)

Support Unit	Brand	Model	FCC ID
Notebook*5	DELL	E4300	DoC
Flash disk2.0	Transcend	JF700	DoC
Flash disk3.0	Transcend	JF700	DoC

(Radiated Emission above 1GHz test) (For Non-beamforming mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

(Radiated Emission above 1GHz test) (For b eamforming mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
Notebook	DELL	E4300	DoC
RX Device	LINKSYS	EA9500	N/A

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
Notebook*5	DELL	E6430	DoC
Flash disk2.0	Transcend	604108 8255	DoC
Flash disk3.0	ADATA	C103	DoC

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

3.8. Table for Parameters of Test Software Setting

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

For non-beamforming mode

For 2.4GHz Band

Test Software Version	Mtool 2.0.2.8					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	91	91	91	-	-	-
802.11g	80	88	82	-	-	-
802.11ac MCS0/Nss1 VHT20	72	89	79	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	52	66	60

For 5GHz Band

Test Software Version	Mtool 2.0.2.8					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	5775 MHz
802.11a	90	90	89	-	-	-
802.11ac MCS0/Nss1 VHT20	91	90	89	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	90	88	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	90

For beamforming mode

For 2.4GHz Band

Test Software Version	Mtool 2.0.2.8					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11ac MCS0/Nss1 VHT20	75	81	75	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	59	68	62

For 5GHz Band

Test Software Version	Mtool 2.0.2.8					
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	83	82	82	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	82	81	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	83

3.9. 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%

3.10. Duty Cycle

For non-beamforming mode:

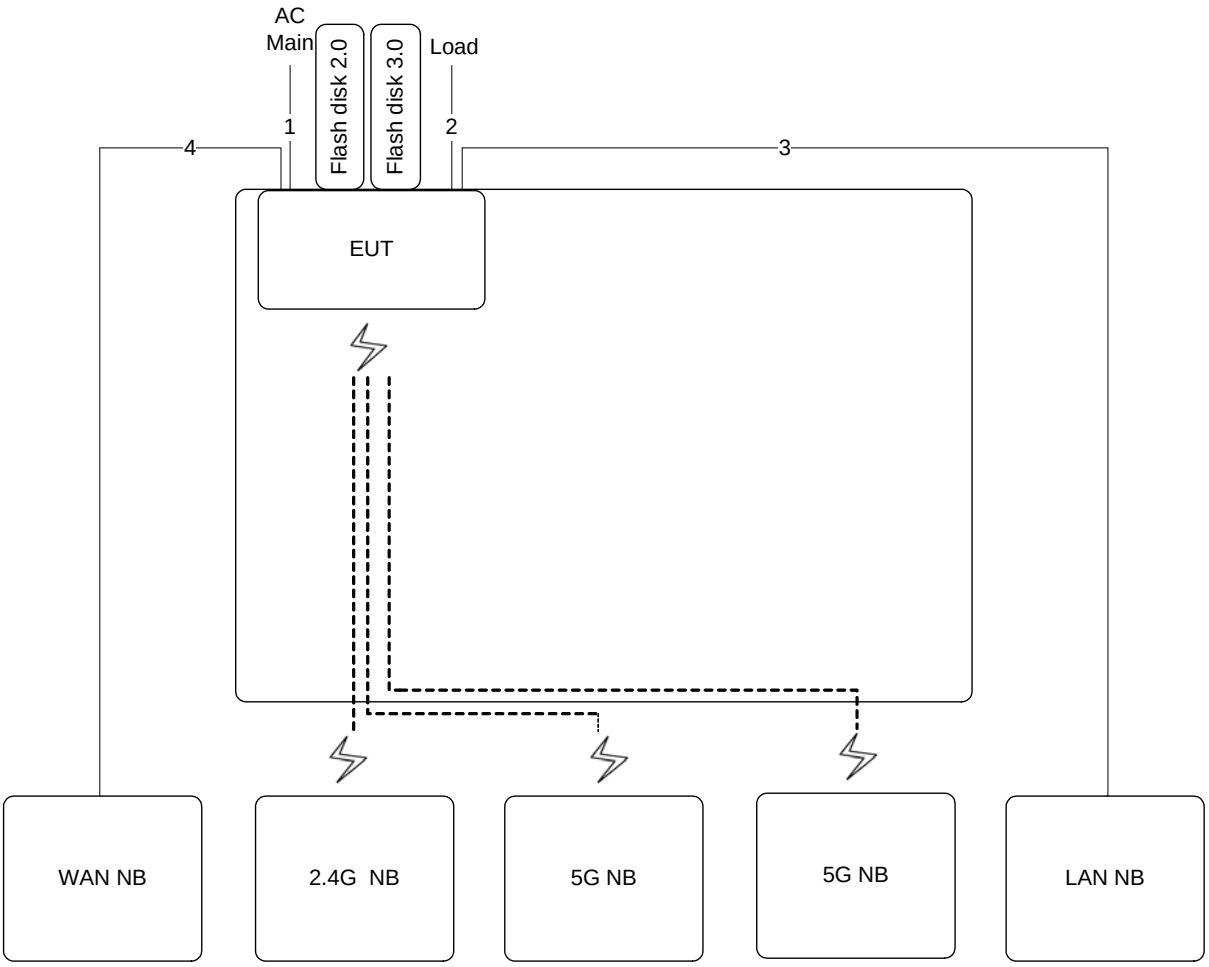
Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11b	1.000	1.000	100.00%	0.00	0.01
	802.11g	2.040	2.060	99.03%	0.04	0.01
	802.11ac MCS0/Nss1 VHT20	1.920	1.940	98.97%	0.05	0.01
	802.11ac MCS0/Nss1 VHT40	0.928	0.977	94.98%	0.22	1.08
5G	802.11a	2.059	2.085	98.75%	0.05	0.01
	802.11ac MCS0/Nss1 VHT20	1.922	1.954	98.36%	0.07	0.01
	802.11ac MCS0/Nss1 VHT40	0.924	0.965	95.75%	0.19	1.08
	802.11ac MCS0/Nss1 VHT80	0.427	0.486	87.86%	0.56	2.34

For beamforming mode:

Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11ac MCS0/Nss1 VHT20	3.798	3.918	96.94%	0.14	0.26
	802.11ac MCS0/Nss1 VHT40	4.584	4.704	97.45%	0.11	0.22
5G	802.11ac MCS0/Nss1 VHT20	3.800	3.924	96.84%	0.14	0.26
	802.11ac MCS0/Nss1 VHT40	4.560	4.704	96.94%	0.14	0.22
	802.11ac MCS0/Nss1 VHT80	4.656	4.776	97.49%	0.11	0.21

3.11. Test Configurations

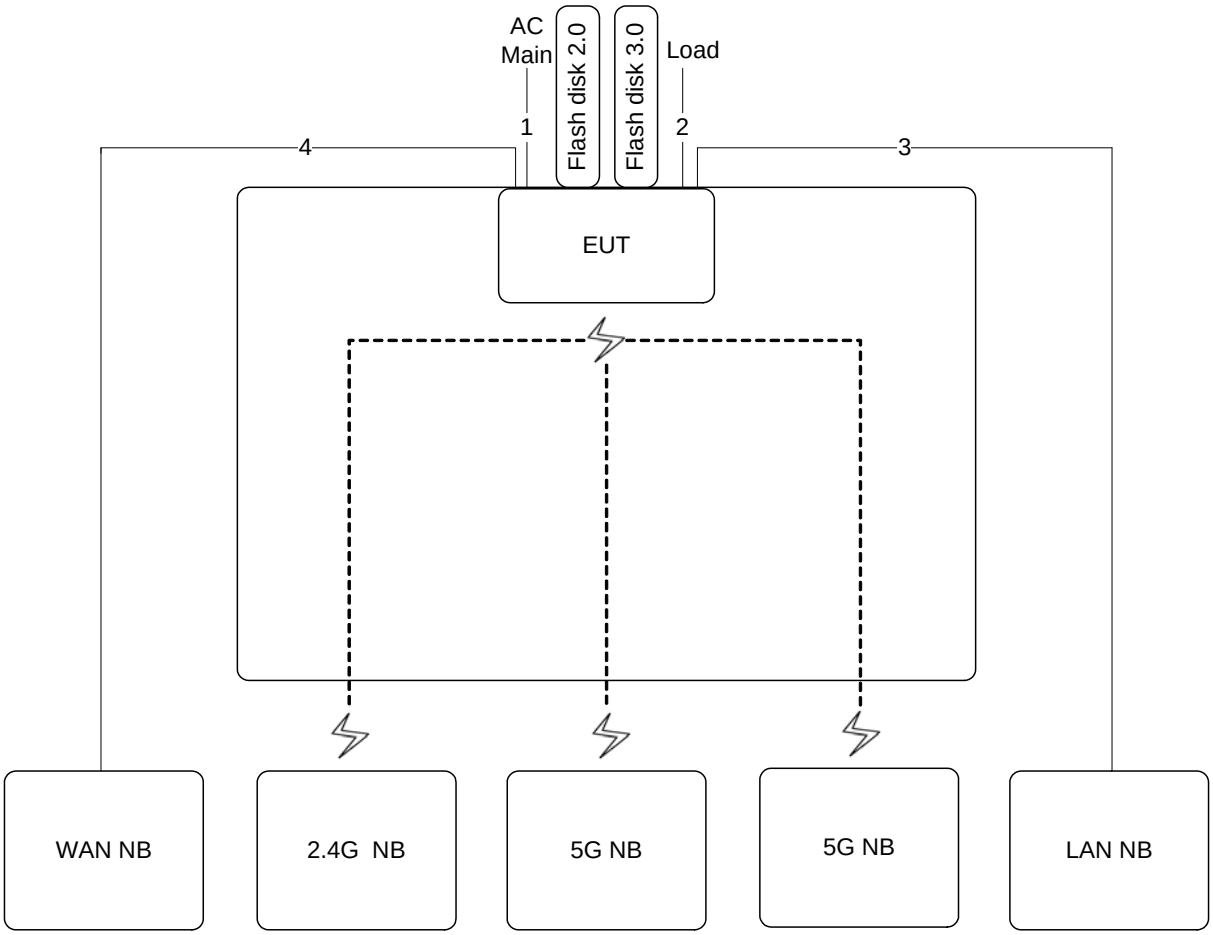
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	3m
2	RJ-45 cable*7	No	1.5m
3	RJ-45 cable	No	10m
4	RJ-45 cable	No	10m

3.11.2. Radiation Emissions Test Configuration

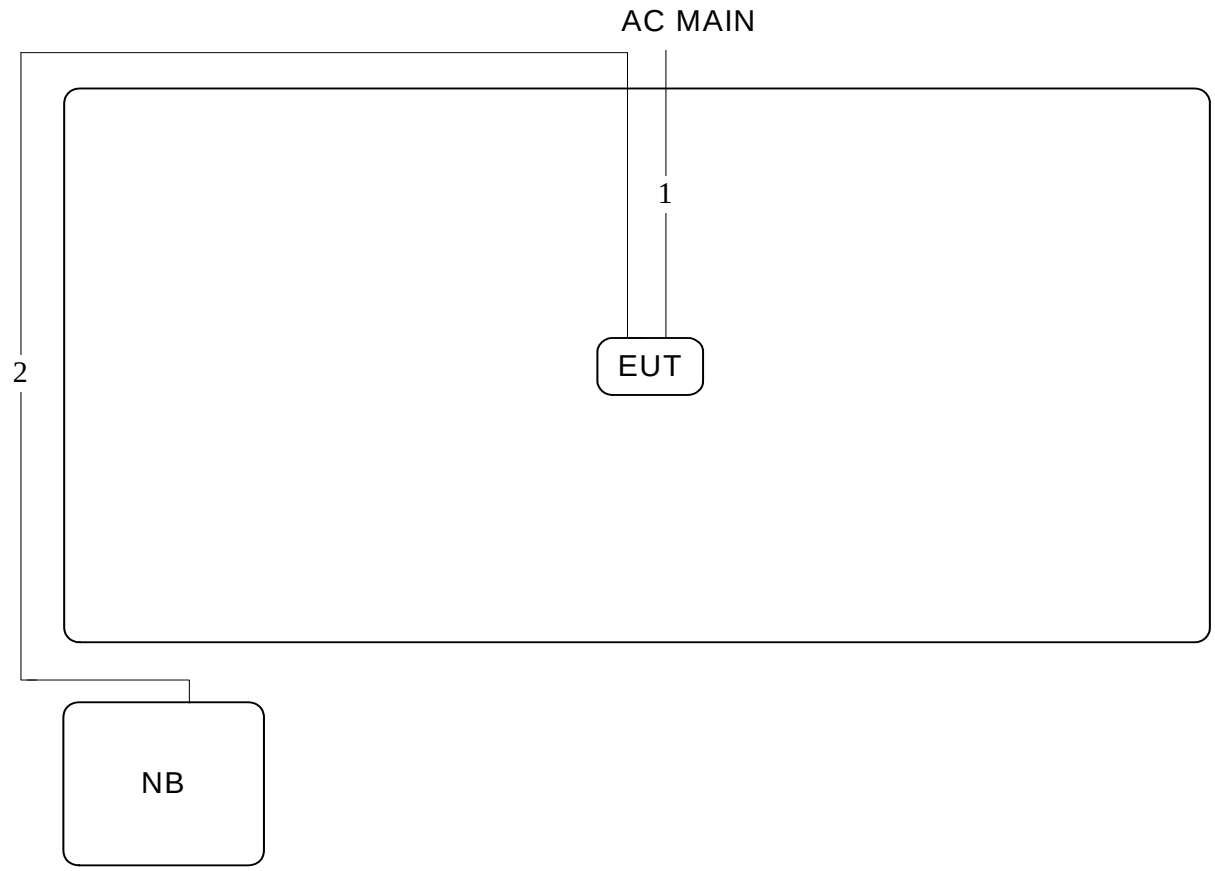
Test Configuration: 30MHz~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	3m
2	RJ-45 cable*7	No	1.5m
3	RJ-45 cable	No	10m
4	RJ-45 cable	No	10m

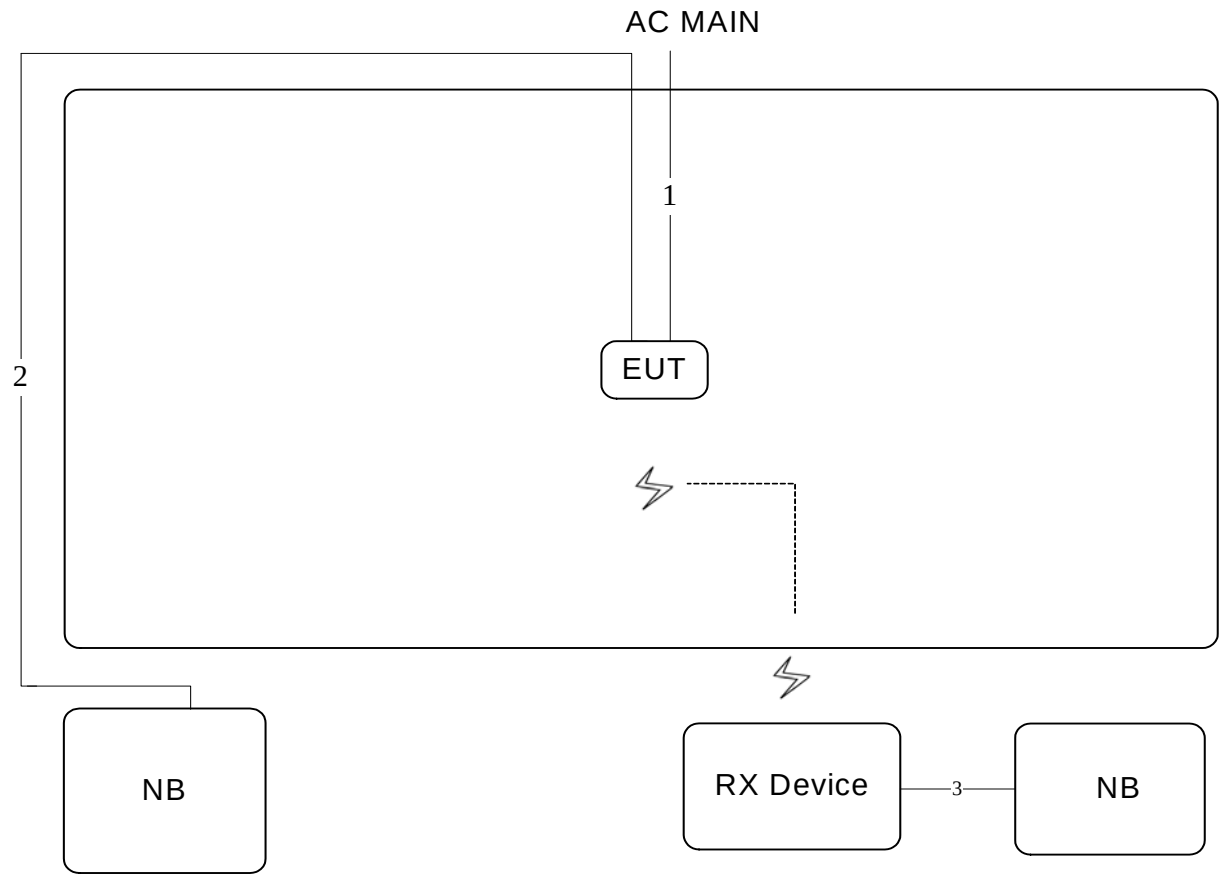
Test Configuration: above 1GHz

For non-beamforming mode



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

For beamforming mode



Item	Connection	Shielded	Length
1	Power cable	No	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

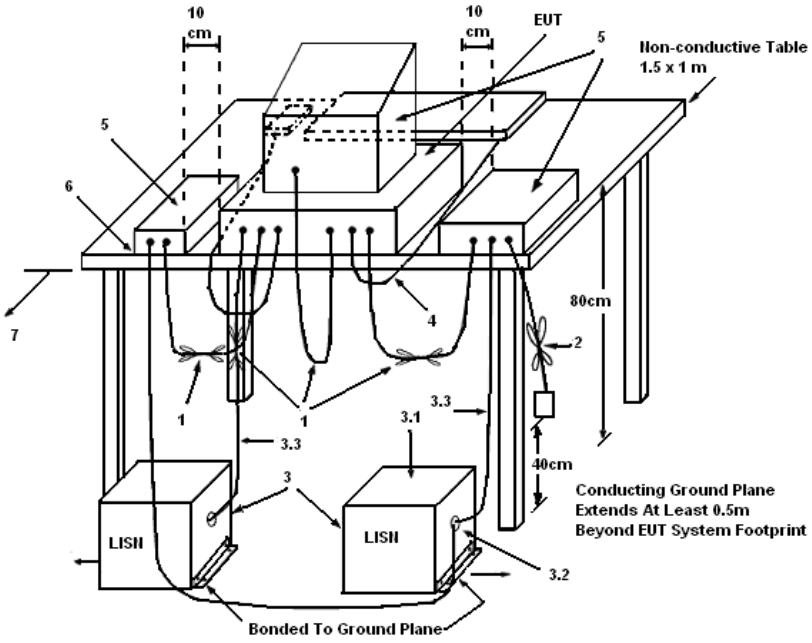
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

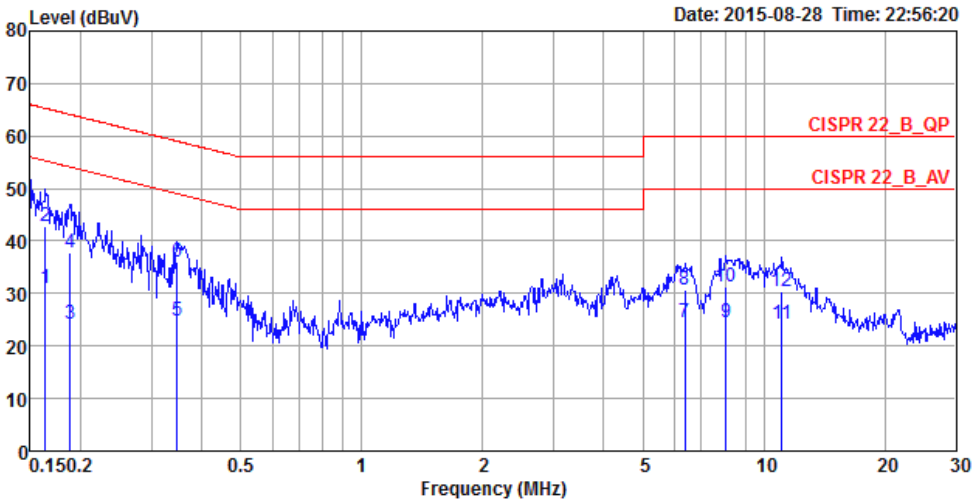
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

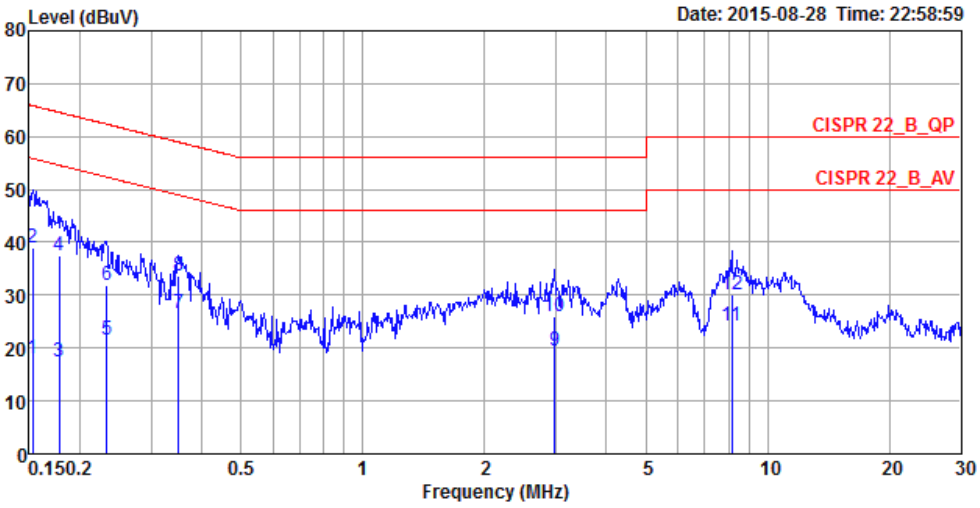
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	68%
Test Engineer	Sin Chang	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1633	31.05	-24.25	55.30	21.10	9.93	0.02	LINE	Average
2	0.1633	42.72	-22.58	65.30	32.77	9.93	0.02	LINE	QP
3	0.1884	24.23	-29.88	54.11	14.28	9.93	0.02	LINE	Average
4	0.1884	37.89	-26.22	64.11	27.94	9.93	0.02	LINE	QP
5	0.3483	24.93	-24.07	49.00	14.96	9.93	0.04	LINE	Average
6	0.3483	36.10	-22.90	59.00	26.13	9.93	0.04	LINE	QP
7	6.3521	24.43	-25.57	50.00	14.20	10.10	0.13	LINE	Average
8	6.3521	30.74	-29.26	60.00	20.51	10.10	0.13	LINE	QP
9	8.0624	24.48	-25.52	50.00	14.17	10.14	0.17	LINE	Average
10	8.0624	31.31	-28.69	60.00	21.00	10.14	0.17	LINE	QP
11	11.0797	24.25	-25.75	50.00	13.79	10.22	0.24	LINE	Average
12	11.0797	30.46	-29.54	60.00	20.00	10.22	0.24	LINE	QP

Temperature	24°C	Humidity	68%
Test Engineer	Sin Chang	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1532	17.93	-37.89	55.82	8.13	9.78	0.02	NEUTRAL	Average
2	0.1532	38.98	-26.84	65.82	29.18	9.78	0.02	NEUTRAL	QP
3	0.1777	17.37	-37.22	54.59	7.56	9.79	0.02	NEUTRAL	Average
4	0.1777	37.53	-27.06	64.59	27.72	9.79	0.02	NEUTRAL	QP
5	0.2329	21.43	-30.92	52.35	11.61	9.79	0.03	NEUTRAL	Average
6	0.2329	31.95	-30.40	62.35	22.13	9.79	0.03	NEUTRAL	QP
7	0.3502	26.60	-22.36	48.96	16.77	9.79	0.04	NEUTRAL	Average
8	0.3502	33.71	-25.25	58.96	23.88	9.79	0.04	NEUTRAL	QP
9	2.9776	19.44	-26.56	46.00	9.53	9.86	0.05	NEUTRAL	Average
10	2.9776	25.96	-30.04	56.00	16.05	9.86	0.05	NEUTRAL	QP
11	8.1483	24.15	-25.85	50.00	13.99	9.98	0.18	NEUTRAL	Average
12	8.1483	30.04	-29.96	60.00	19.88	9.98	0.18	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

The limit for output power is 30dBm.

4.2.2. Measuring Instruments and Setting

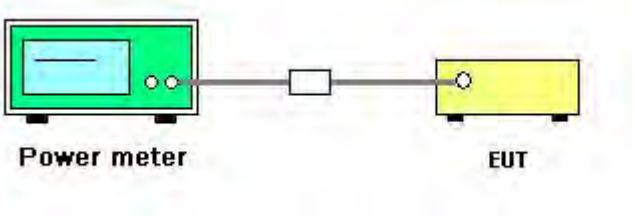
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	Average

4.2.3. Test Procedures

1. Test procedures refer KDB558074 D01 v03r03 section 9.2.3.2 Measurement using a power meter (PM).
2. Multiple antenna system was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
3. This procedure provides an alternative for determining the RMS output power using a broadband RF average power meter with a thermocouple detector.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Maximum Conducted Output Power

Temperature	25°C	Humidity	56%
Test Engineer	Eddie Weng	Test Date	Aug. 26, 2015 ~ Sep. 03, 2015

For Non-beamforming mode

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Antenna 1	Antenna 2	Antenna 3	Antenna 4	Total		
802.11b	2412 MHz	22.96	23.28	23.05	21.82	28.83	30.00	Complies
	2437 MHz	23.02	23.14	23.22	21.99	28.89	30.00	Complies
	2462 MHz	23.23	23.23	23.17	22.11	28.98	30.00	Complies
802.11g	2412 MHz	20.61	20.86	20.74	20.90	26.80	30.00	Complies
	2437 MHz	22.89	23.05	22.86	22.99	28.97	30.00	Complies
	2462 MHz	20.41	20.62	20.42	20.65	26.55	30.00	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	18.34	18.56	18.81	18.42	24.56	30.00	Complies
	2437 MHz	22.78	23.04	22.96	22.87	28.93	30.00	Complies
	2462 MHz	19.68	19.68	19.63	19.02	25.53	30.00	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	13.53	13.63	13.96	13.91	19.78	30.00	Complies
	2437 MHz	17.55	17.01	17.48	17.59	23.43	30.00	Complies
	2452 MHz	15.87	15.77	15.98	15.86	21.89	30.00	Complies

Note: Gain =2.25dBi <6dBi, so the limit doesn't reduce.

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Antenna 5	Antenna 6	Antenna 7	Antenna 8	Total		
802.11a	5745 MHz	22.54	22.69	22.55	22.92	28.70	30.00	Complies
	5785 MHz	23.31	23.11	22.37	22.95	28.97	30.00	Complies
	5825 MHz	23.35	23.12	21.80	23.09	28.90	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	22.87	22.77	22.94	22.49	28.79	30.00	Complies
	5785 MHz	23.33	23.18	22.19	22.77	28.91	30.00	Complies
	5825 MHz	23.35	23.25	21.98	22.86	28.91	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	23.26	22.96	23.20	22.37	28.98	30.00	Complies
	5795 MHz	23.51	23.03	22.61	22.38	28.92	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	22.67	22.95	22.47	23.08	28.82	30.00	Complies

Note: Gain =2.18dBi <6dBi, so the limit doesn't reduce.

For beamforming mode

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Antenna 1	Antenna 2	Antenna 3	Antenna 4	Total		
802.11ac MCS0/Nss1 VHT20	2412 MHz	19.01	19.14	19.41	19.17	25.21	27.93	Complies
	2437 MHz	20.69	20.63	20.89	20.76	26.76	27.93	Complies
	2462 MHz	18.53	18.81	18.65	19.36	24.87	27.93	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	15.41	15.07	15.66	15.52	21.44	27.93	Complies
	2437 MHz	17.51	17.33	17.95	17.59	23.62	27.93	Complies
	2452 MHz	16.08	16.02	16.34	16.45	22.25	27.93	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{ANT}}\left\{\sum_{k=1}^{N_{SS}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 8.07dBi, so limit=30-(8.07-6)=27.93dBm

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Antenna 5	Antenna 6	Antenna 7	Antenna 8	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	20.56	20.96	20.85	21.22	26.92	27.98	Complies
	5785 MHz	20.76	20.94	19.95	21.31	26.79	27.98	Complies
	5825 MHz	20.97	21.42	19.87	21.08	26.89	27.98	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	21.03	20.89	20.87	20.34	26.81	27.98	Complies
	5795 MHz	21.41	21.05	20.13	20.44	26.81	27.98	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	20.62	20.96	20.47	21.13	26.82	27.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{ANT}}\left\{\sum_{k=1}^{N_{SS}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 8.02dBi, so limit=30-(8.02-6)=27.98dBm

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

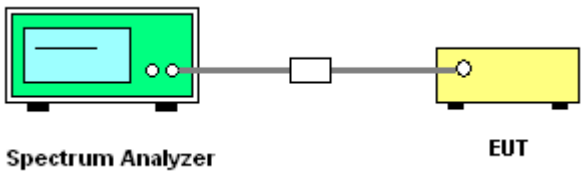
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 KDB558074 D01 v03r03 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 10.2 Method PKPSD (peak PSD) and KDB 662911 D01 v02r01 section In-Band Power Spectral Density (PSD) Measurements option (b) Measure and sum spectral maximal across the outputs.
2. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
4. Use the peak marker function to determine the maximum level in any 3 kHz band segment within the fundamental EBW.
5. The resulting PSD level must be ≤ 8 dBm.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Power Spectral Density

Temperature	25°C	Humidity	56%
Test Engineer	Eddie Weng		

For Non-beamforming mode

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Antenna 1	Antenna 2	Antenna 3	Antenna 4	Total		
802.11b	2412 MHz	-8.96	-9.02	-9.95	-10.12	-3.46	5.93	Complies
	2437 MHz	-8.89	-8.65	-9.64	-11.25	-3.48	5.93	Complies
	2462 MHz	-8.70	-8.85	-9.65	-10.00	-3.25	5.93	Complies
802.11g	2412 MHz	-2.92	-3.98	-4.77	-4.42	2.06	5.93	Complies
	2437 MHz	-1.66	-1.48	-2.35	-1.96	4.17	5.93	Complies
	2462 MHz	-4.03	-3.58	-5.43	-4.63	1.66	5.93	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	-5.21	-4.37	-6.18	-5.89	0.67	5.93	Complies
	2437 MHz	-1.31	0.57	-1.46	-2.10	5.07	5.93	Complies
	2462 MHz	-2.59	-3.81	-4.63	-3.61	2.42	5.93	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	-14.66	-14.86	-13.84	-14.19	-8.35	5.93	Complies
	2437 MHz	-10.18	-11.22	-11.13	-11.54	-4.97	5.93	Complies
	2452 MHz	-12.23	-12.04	-12.54	-11.73	-6.10	5.93	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{Sch}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 8.07dBi, so limit=8-(8.07-6)=5.93dBm/3kHz

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Antenna 5	Antenna 6	Antenna 7	Antenna 8	Total		
802.11a	5745 MHz	-2.77	-1.88	-2.65	-1.78	3.77	5.98	Complies
	5785 MHz	-1.53	-1.41	-2.87	-2.44	4.00	5.98	Complies
	5825 MHz	-2.06	-1.47	-2.67	-2.13	3.96	5.98	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	-2.31	-1.79	-2.38	-1.32	4.09	5.98	Complies
	5785 MHz	-2.20	-1.66	-2.76	-1.59	3.99	5.98	Complies
	5825 MHz	-2.30	-1.70	-3.61	-3.14	3.40	5.98	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-5.15	-5.09	-5.16	-4.12	1.16	5.98	Complies
	5795 MHz	-4.02	-4.68	-5.40	-6.00	1.06	5.98	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-7.98	-8.44	-8.41	-7.18	-1.95	5.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{ch}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 8.02dBi, so limit=8-(8.02-6)=5.98dBm/3kHz

For beamforming mode

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Antenna 1	Antenna 2	Antenna 3	Antenna 4	Total		
802.11ac MCS0/Nss1 VHT20	2412 MHz	-4.91	-5.29	-6.12	-6.01	0.47	5.93	Complies
	2437 MHz	-4.07	-3.05	-5.22	-3.98	2.01	5.93	Complies
	2462 MHz	-5.53	-5.39	-5.59	-5.00	0.65	5.93	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	-13.13	-11.14	-14.07	-13.31	-6.75	5.93	Complies
	2437 MHz	-10.67	-9.32	-11.91	-10.28	-4.43	5.93	Complies
	2452 MHz	-11.84	-11.73	-11.54	-11.70	-5.68	5.93	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{Spa}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 8.07dBi, so limit=8-(8.07-6)=5.93dBm/3kHz

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Antenna 5	Antenna 6	Antenna 7	Antenna 8	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	-2.60	-3.89	-4.32	-3.96	2.38	5.98	Complies
	5785 MHz	-2.79	-3.00	-3.33	-3.85	2.80	5.98	Complies
	5825 MHz	-2.29	-2.61	-4.61	-3.42	2.88	5.98	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-6.50	-6.51	-6.61	-7.05	-0.64	5.98	Complies
	5795 MHz	-6.55	-7.15	-7.32	-6.06	-0.72	5.98	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-10.56	-10.48	-11.20	-10.94	-4.76	5.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{Spa}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 8.02dBi, so limit=8-(8.02-6)=5.98dBm/3kHz

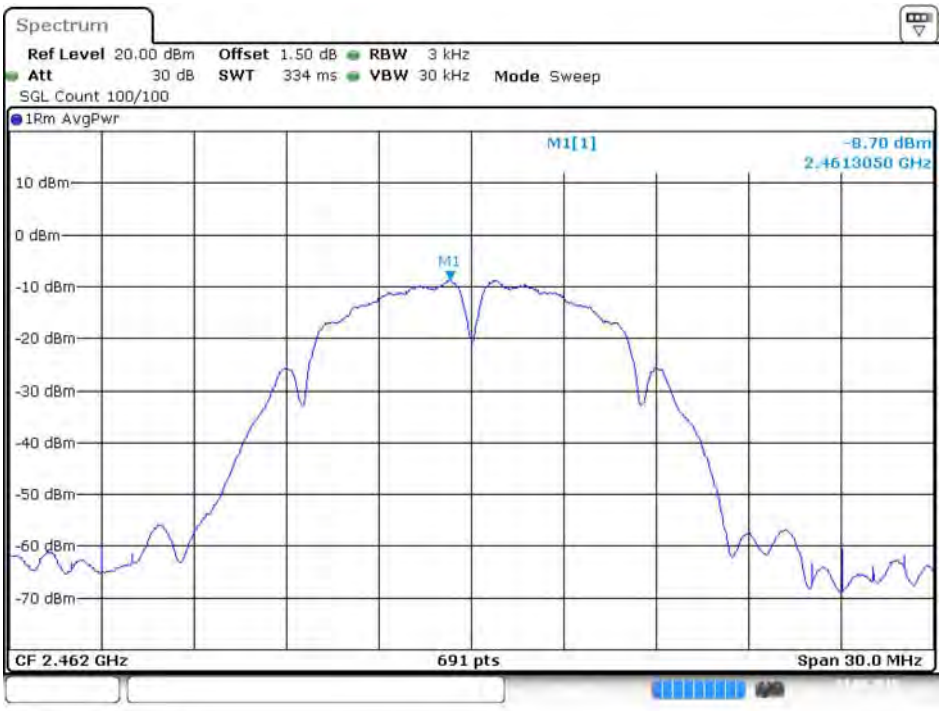
Note: All the test values were listed in the report.

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 / 2462 MHz / Antenna 1



Date: 3.SEP.2015 11:27:24

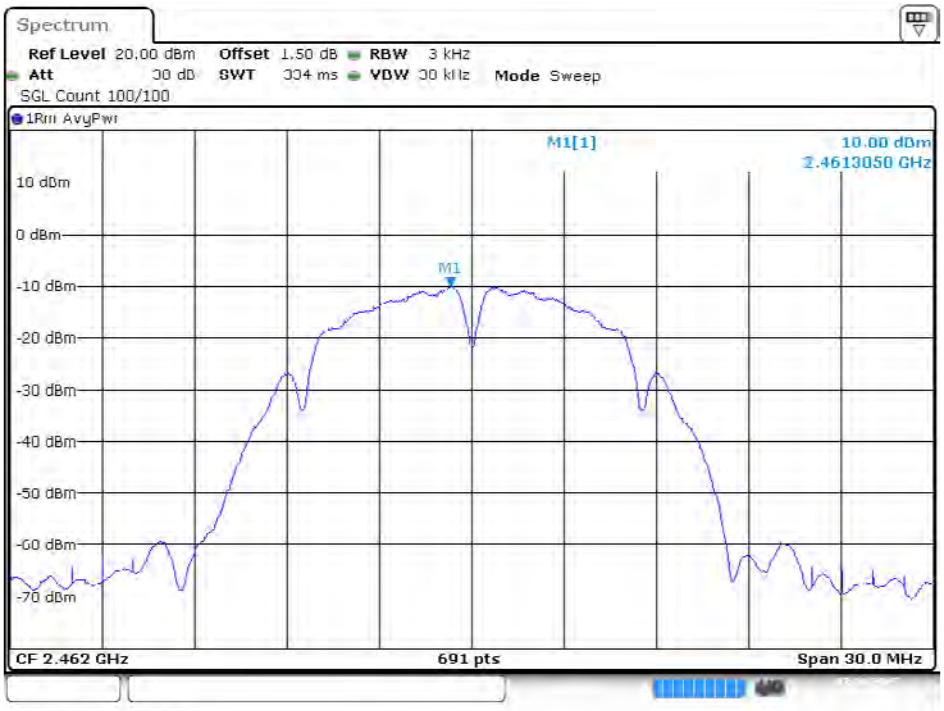
Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Antenna 2

Date: 3.SEP.2015 11:28:44

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

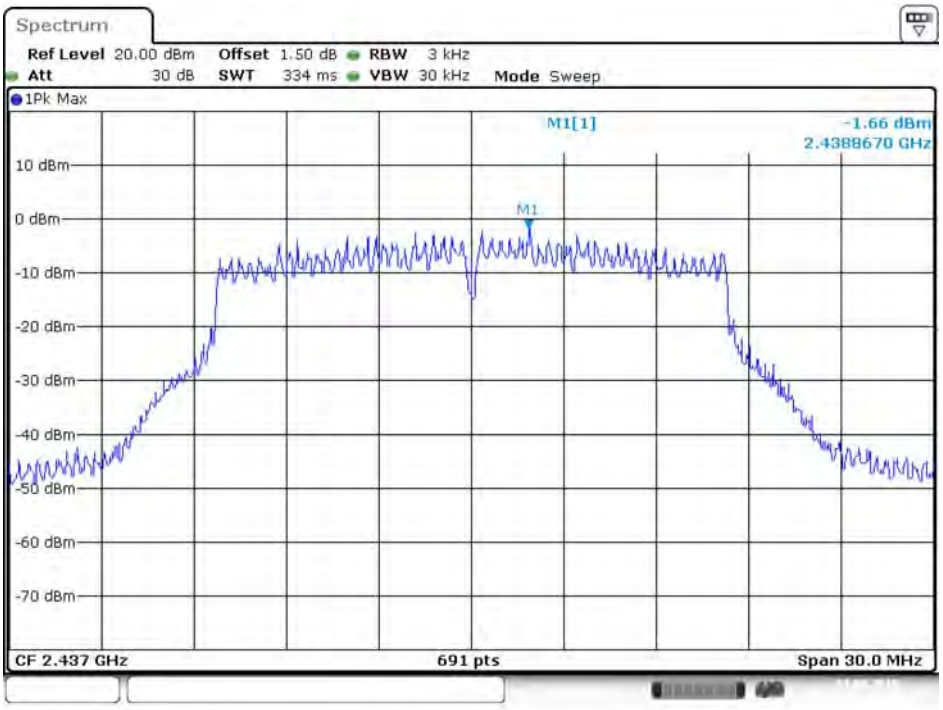
Date: 3.SEP.2015 11:24:28

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



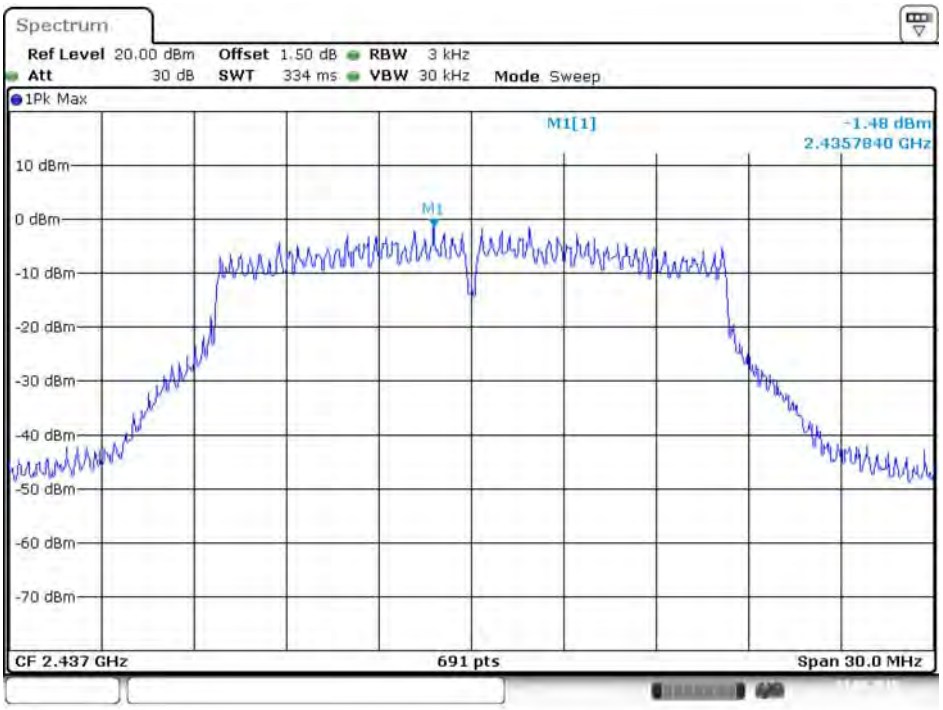
Date: 3.SEP.2015 11:21:06

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



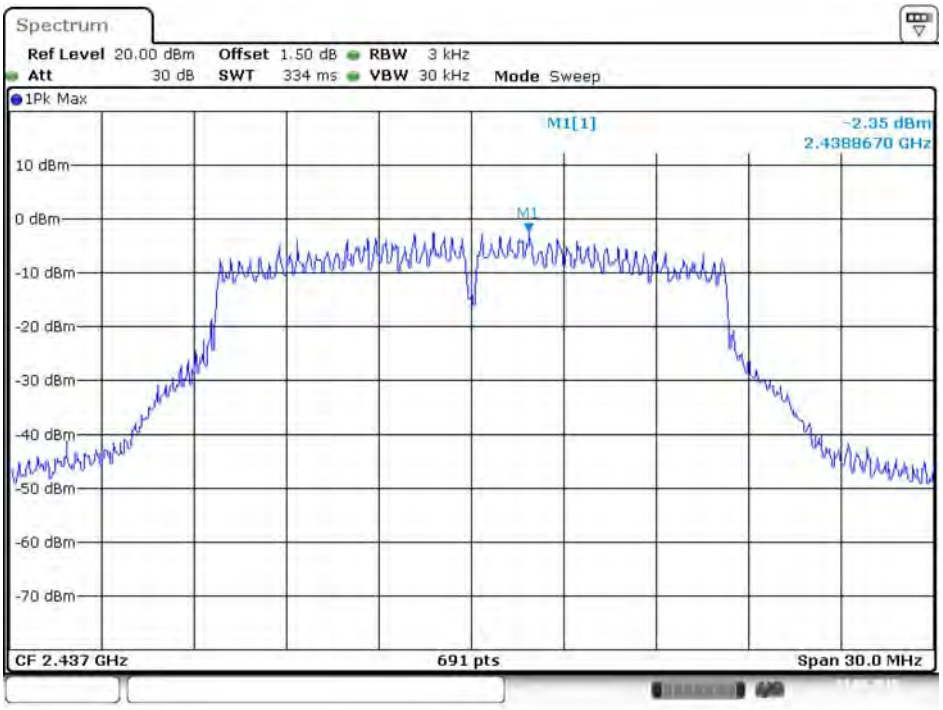
Date: 3.SEP.2015 11:36:03

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



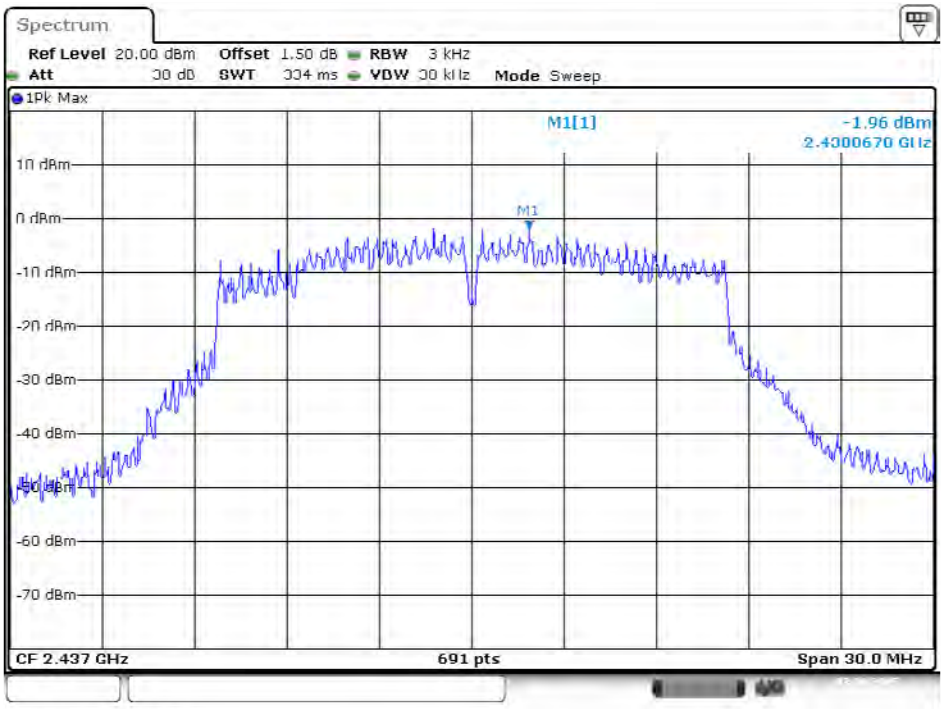
Date: 3.SEP.2015 11:35:29

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



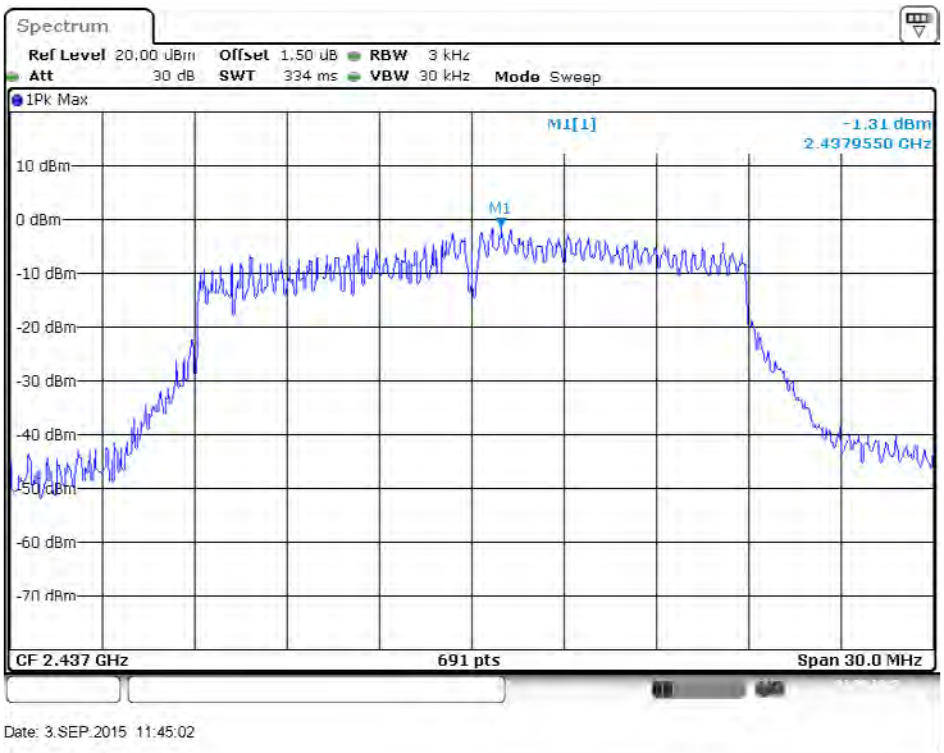
Date: 3.SEP.2015 11:34:47

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

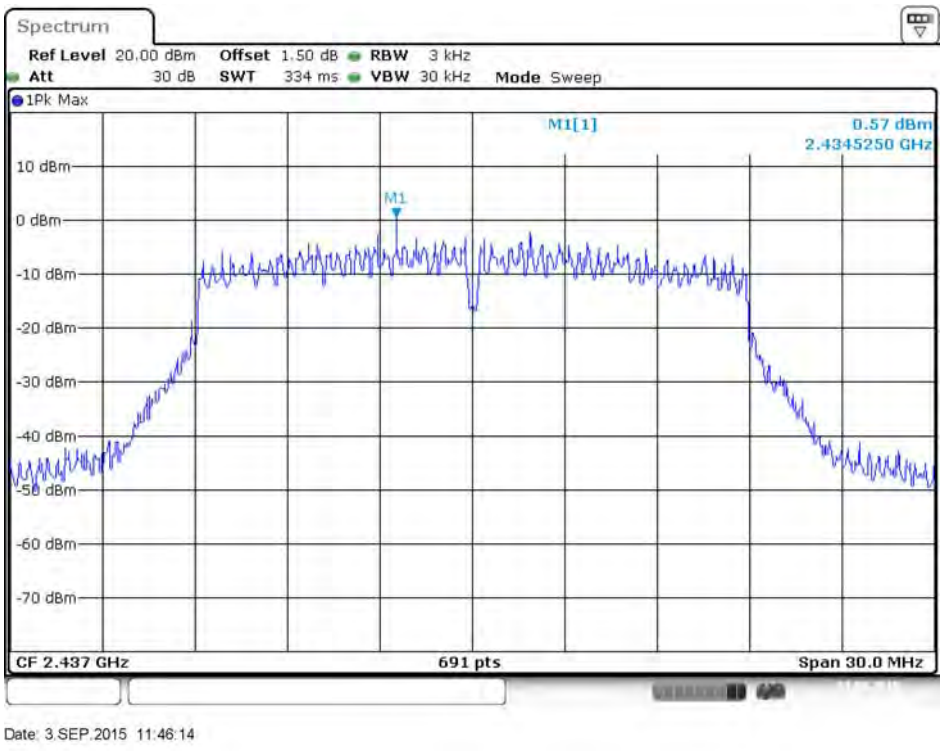


Date: 3.SEP.2015 11:34:04

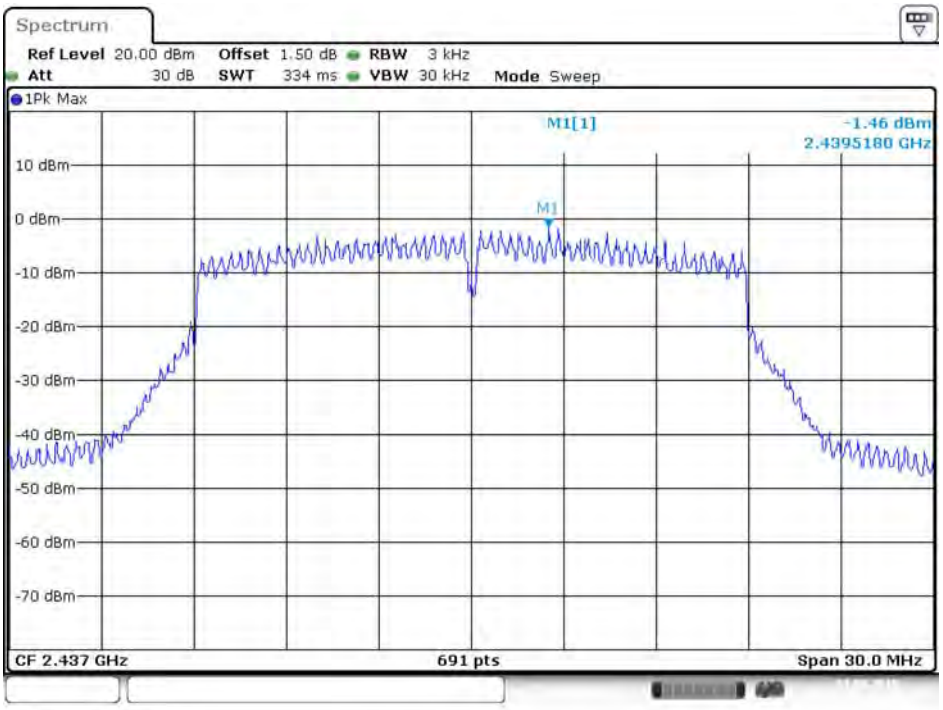
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Antenna 1



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

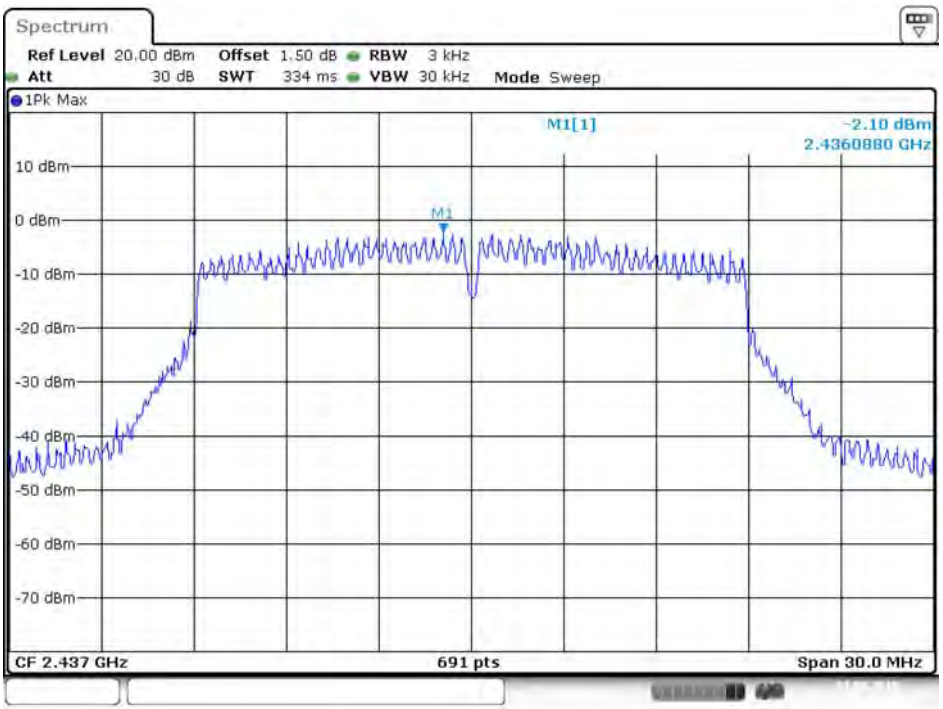


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Antenna 3



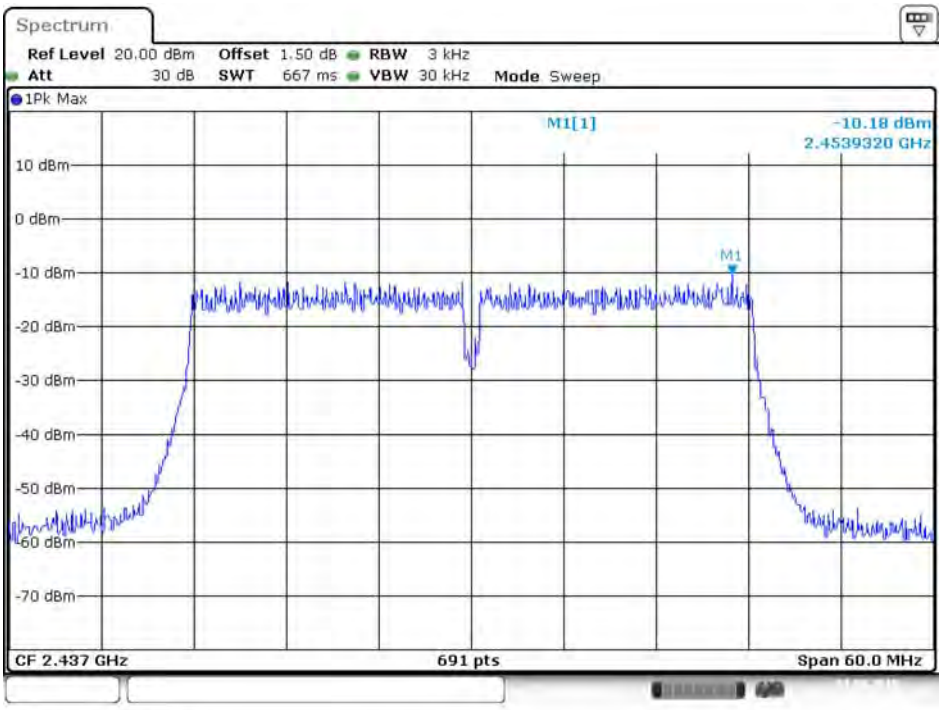
Date: 3.SEP.2015 11:47:53

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



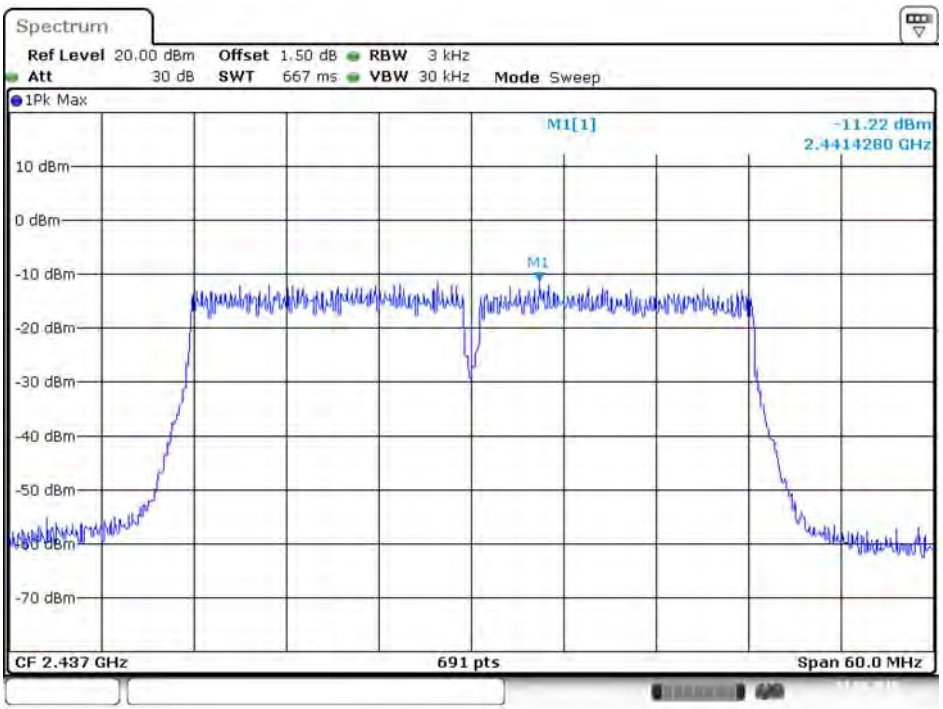
Date: 3.SEP.2015 11:48:38

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



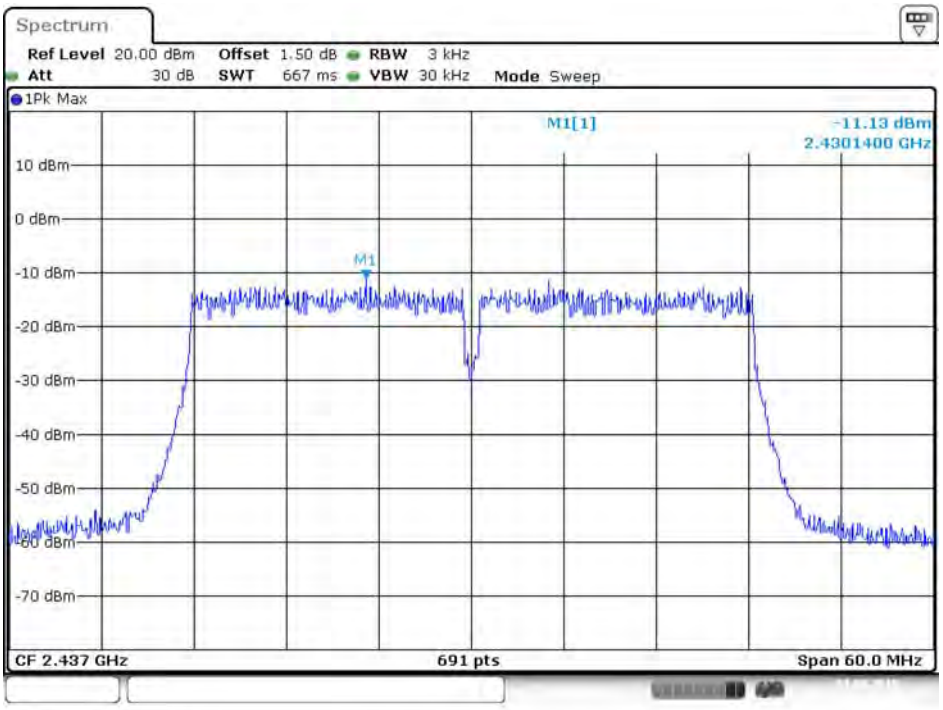
Date: 3.SEP.2015 12:00:41

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



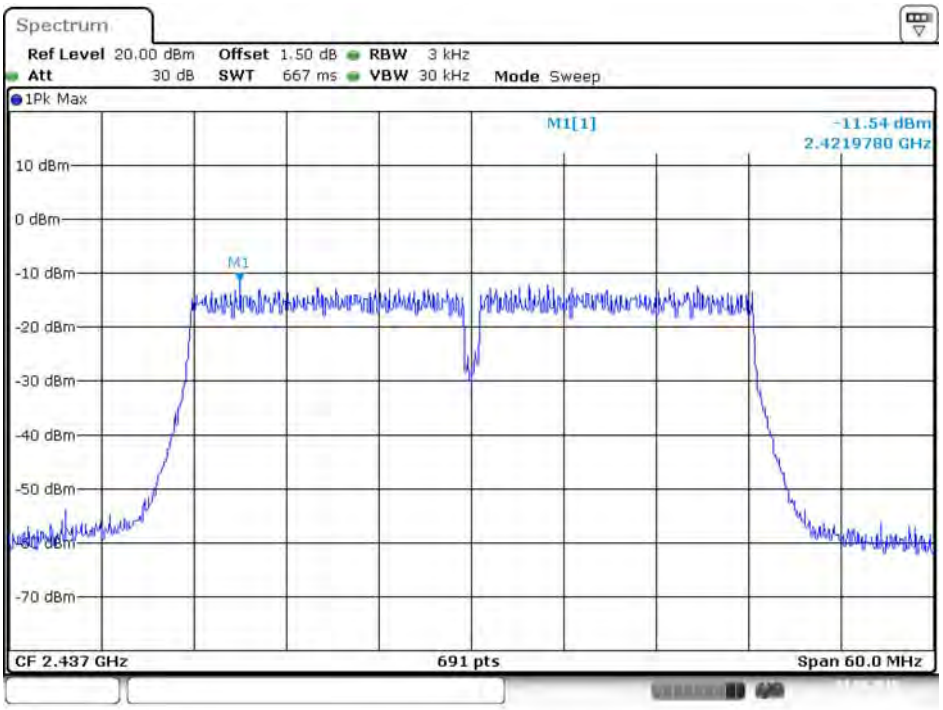
Date: 3.SEP.2015 12:00:11

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



Date: 3.SEP.2015 11:59:19

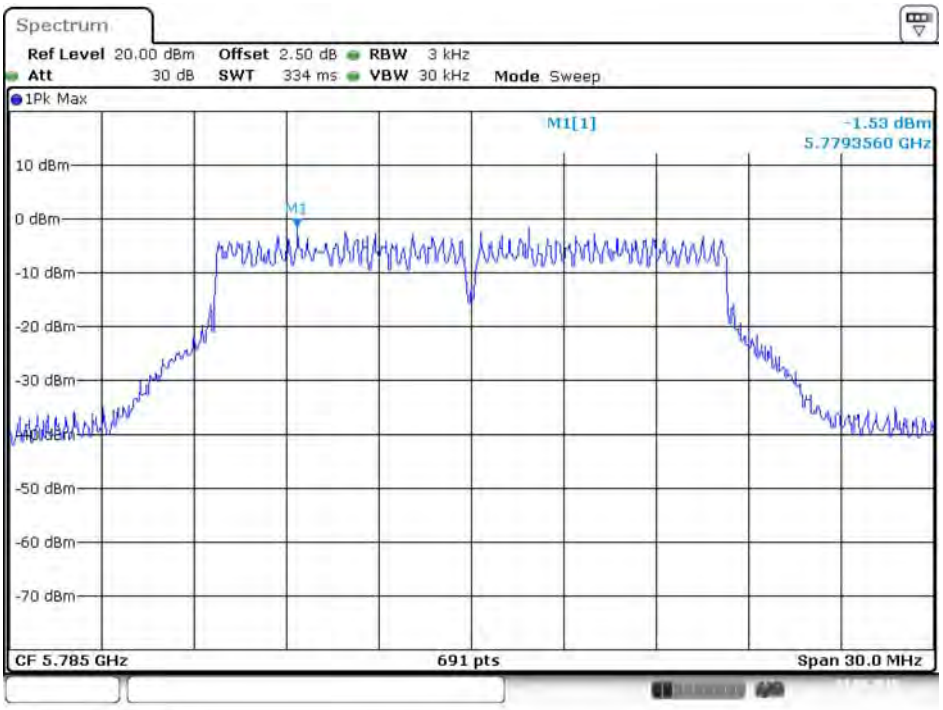
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Antenna 4



Date: 3.SEP.2015 12:01:09

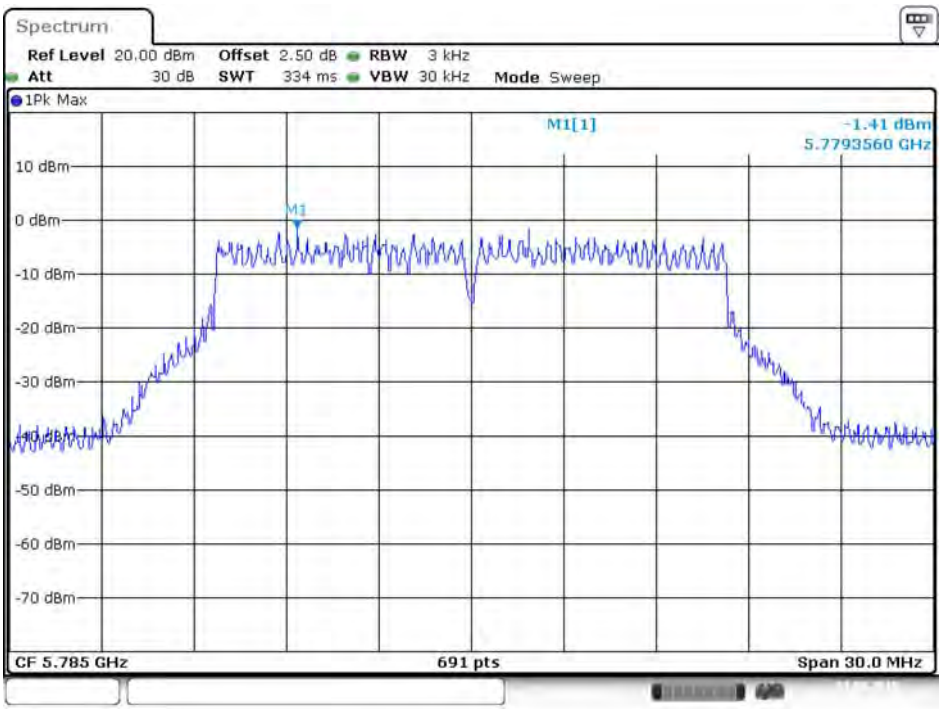
For 5GHz Band

Power Density Plot on Configuration IEEE 802.11a / 5785 MHz / Antenna 5



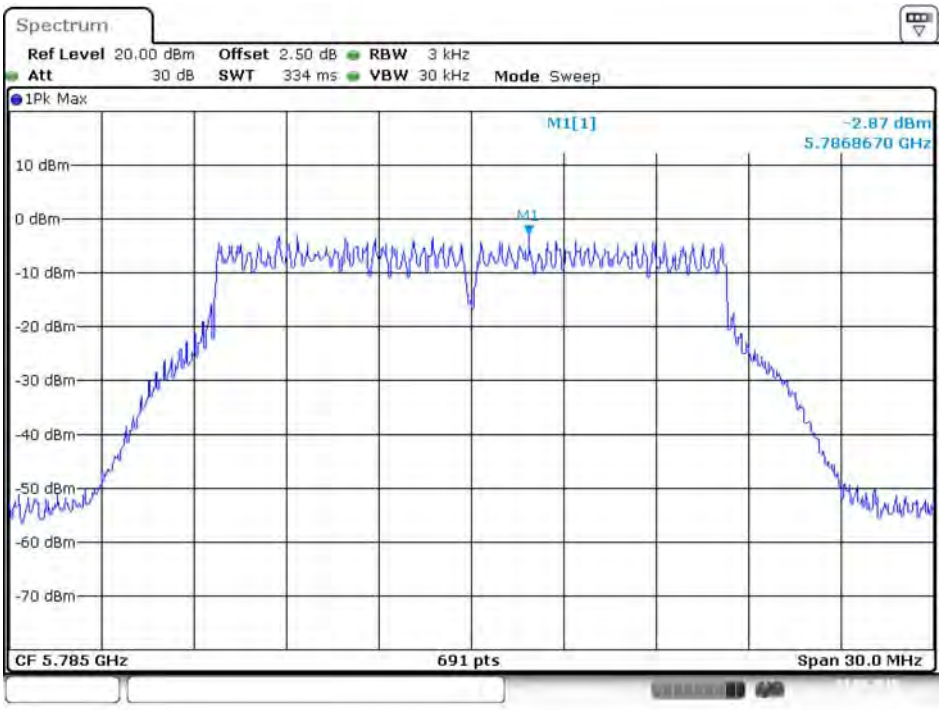
Date: 3.SEP.2015 18:12:46

Power Density Plot on Configuration IEEE 802.11a / 5785 MHz / Antenna 6



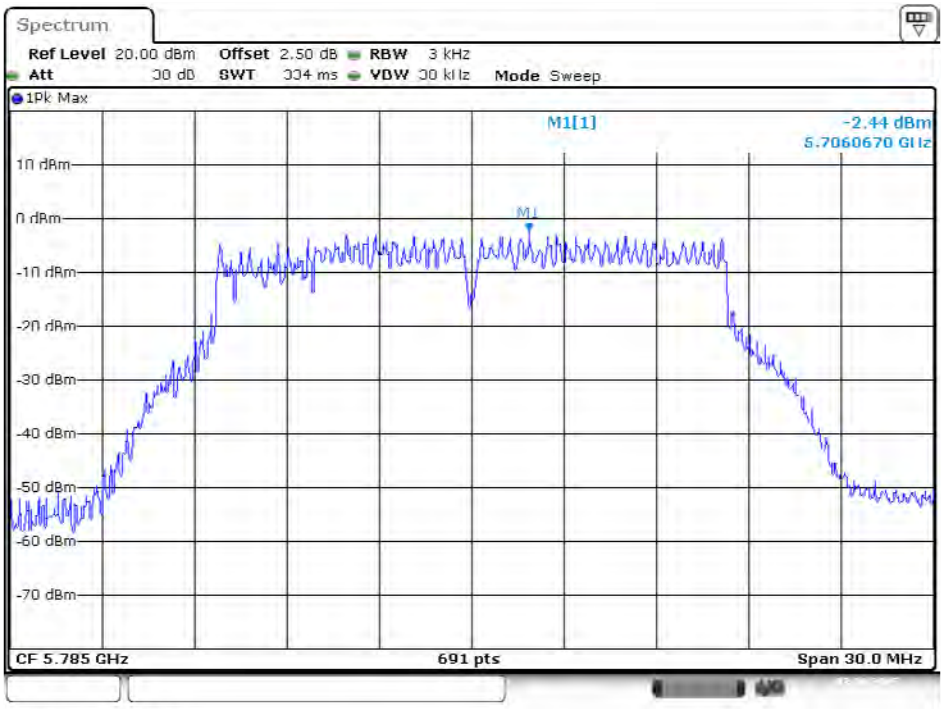
Date: 3.SEP.2015 18:12:14

Power Density Plot on Configuration IEEE 802.11a / 5785 MHz / Antenna 7



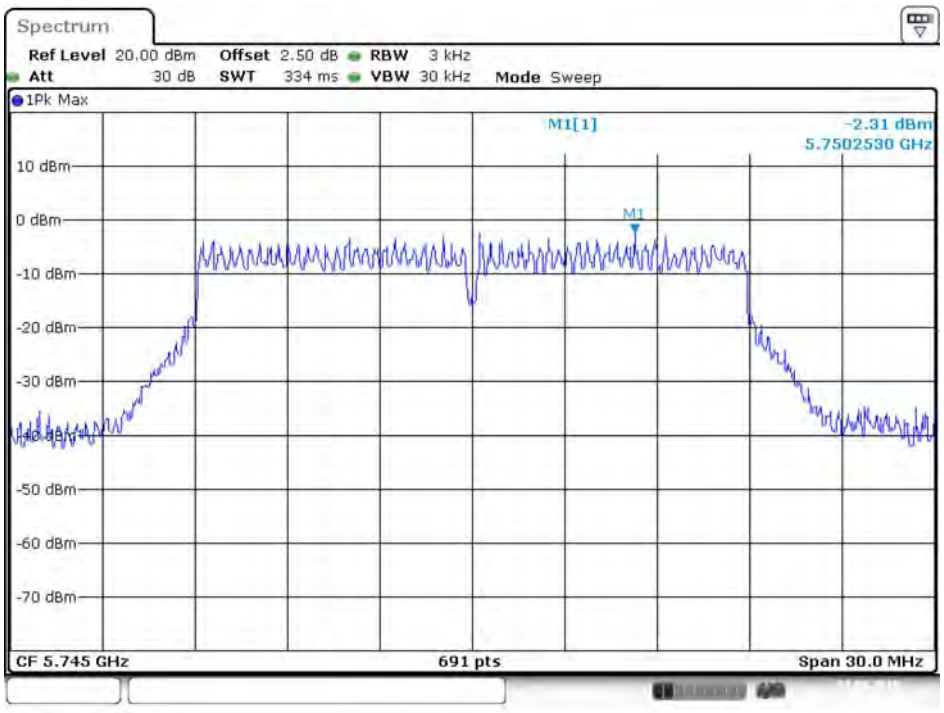
Date: 3.SEP.2015 18:11:44

Power Density Plot on Configuration IEEE 802.11a / 5785 MHz / Antenna 8



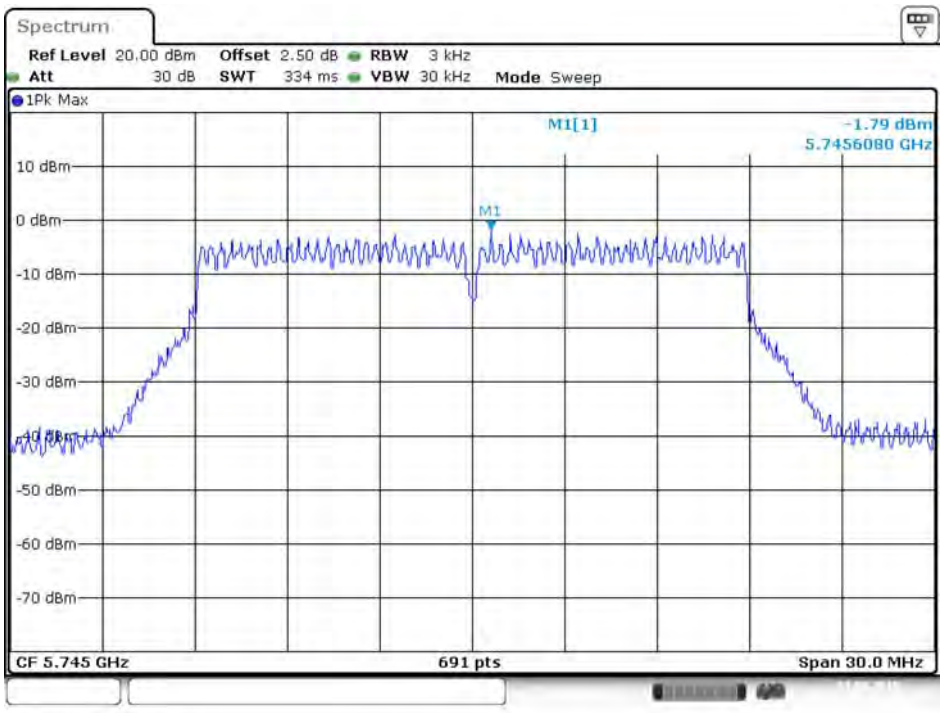
Date: 3.SEP.2015 18:10:50

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Antenna 5



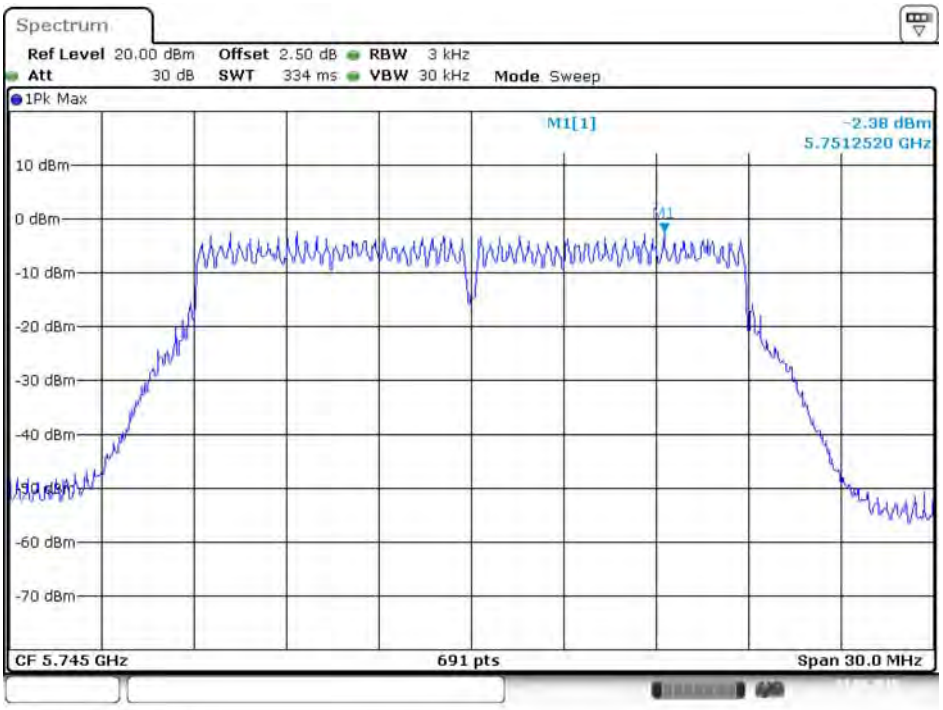
Date: 3.SEP.2015 17:59:04

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Antenna 6



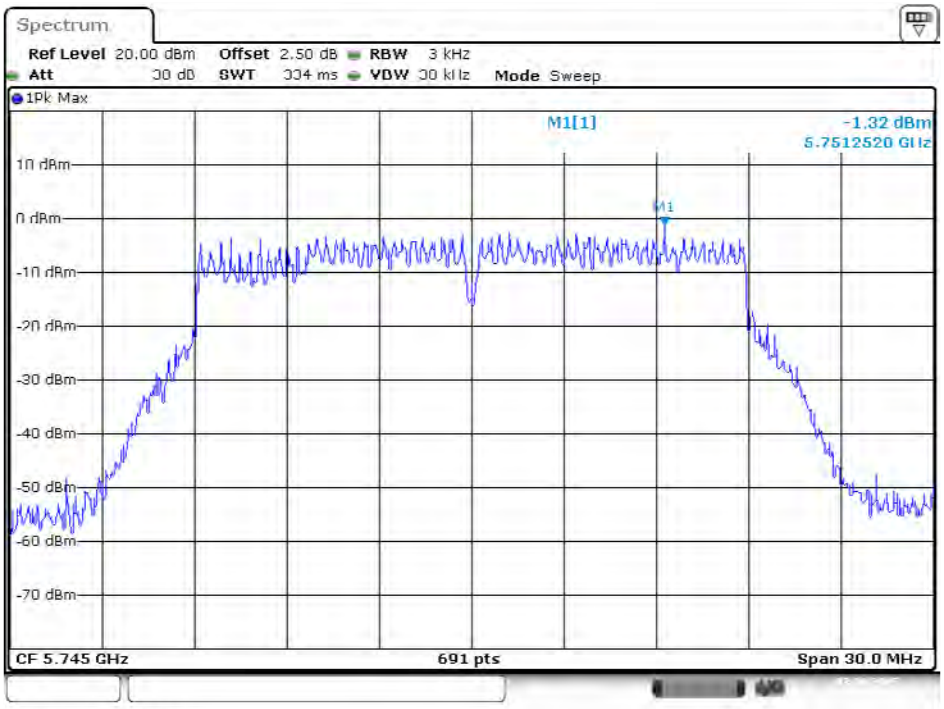
Date: 3.SEP.2015 17:58:47

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Antenna 7



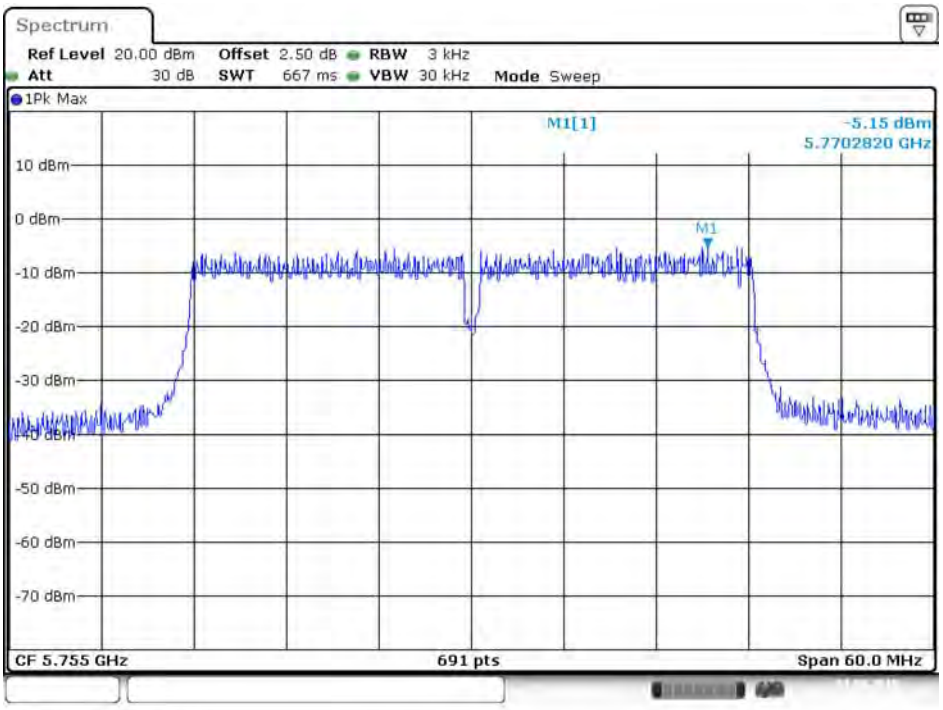
Date: 3.SEP.2015 17:58:17

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Antenna 8



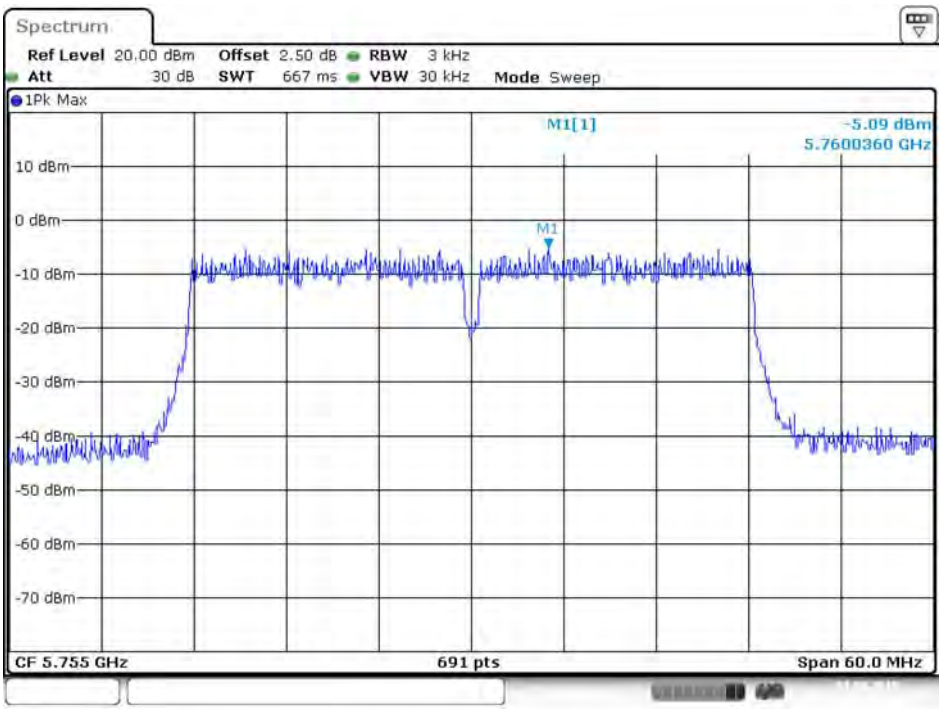
Date: 3.SEP.2015 17:57:32

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Antenna 5



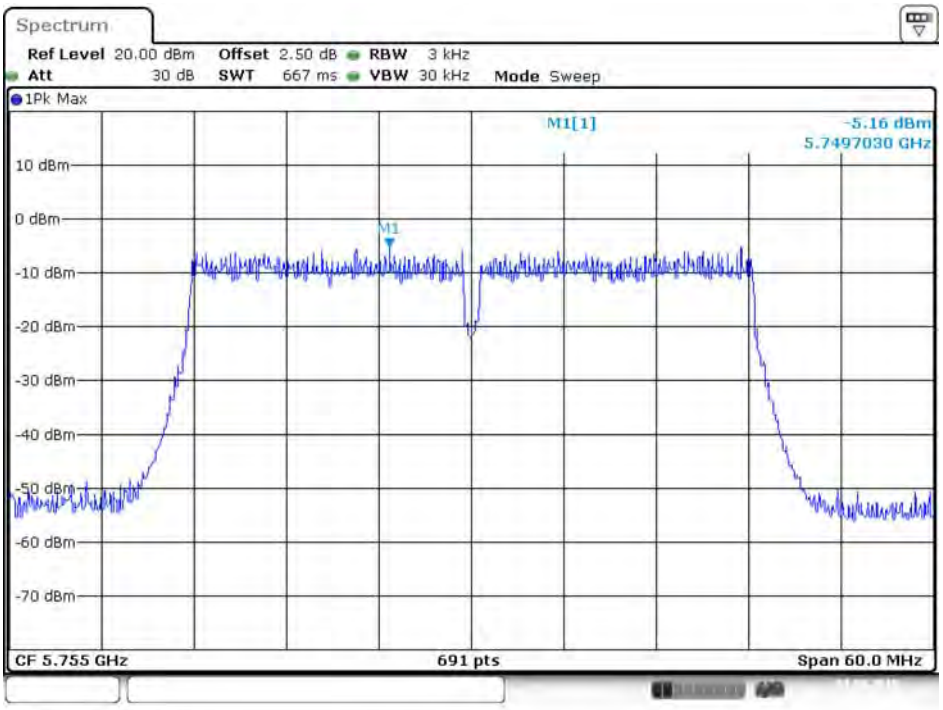
Date: 3.SEP.2015 17:54:24

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Antenna 6



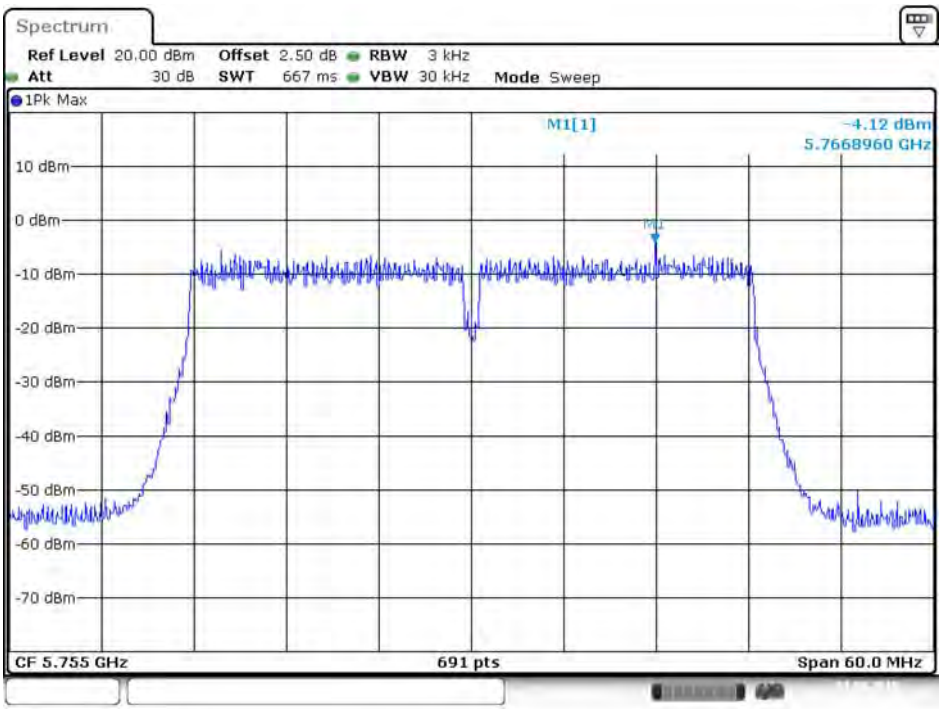
Date: 3.SEP.2015 17:54:01

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Antenna 7



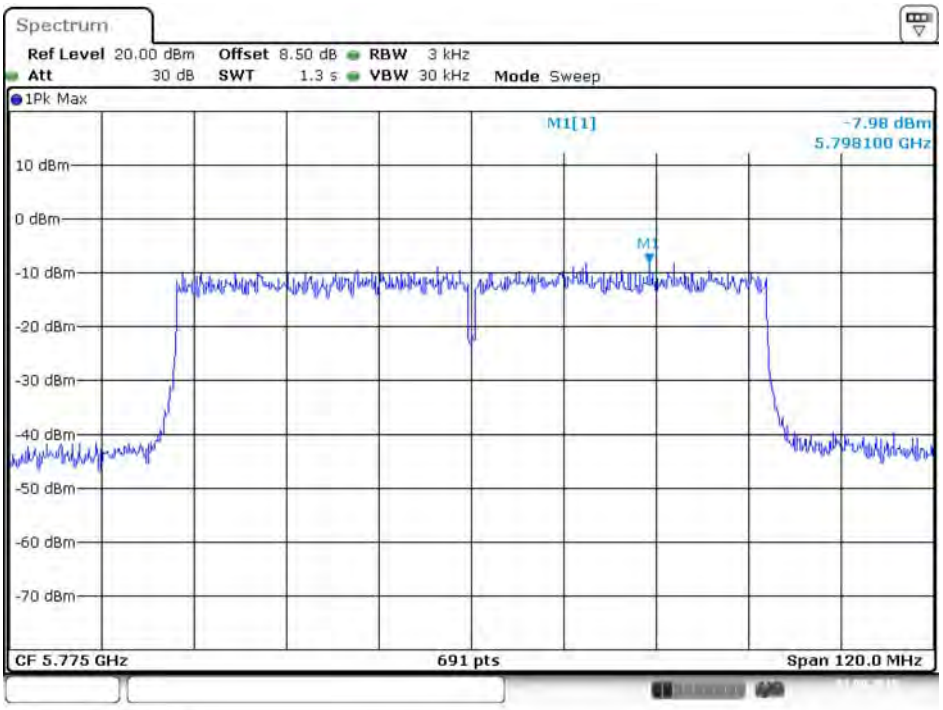
Date: 3.SEP.2015 17:53:39

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Antenna 8



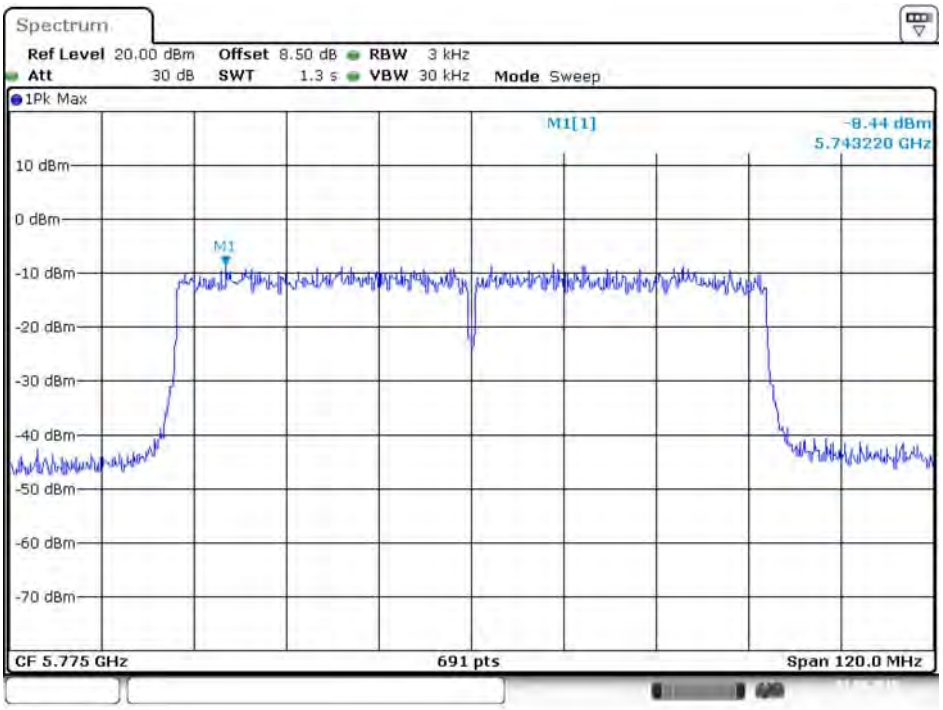
Date: 3.SEP.2015 17:53:06

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 5



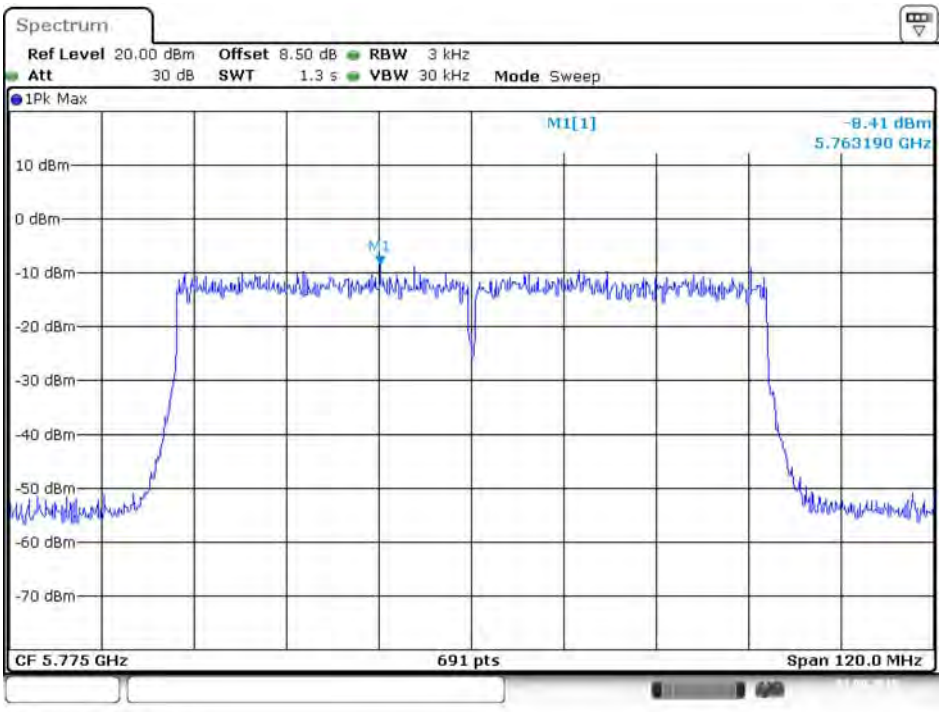
Date: 3.SEP.2015 17:49:42

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 6



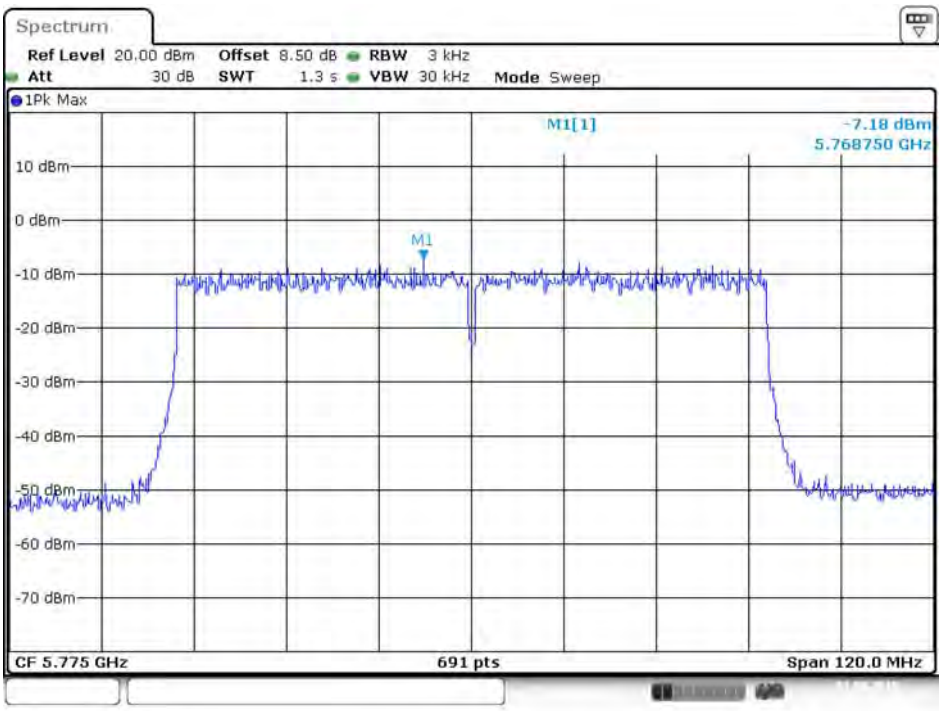
Date: 3.SEP.2015 17:50:19

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 7



Date: 3.SEP.2015 17:50:43

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 8

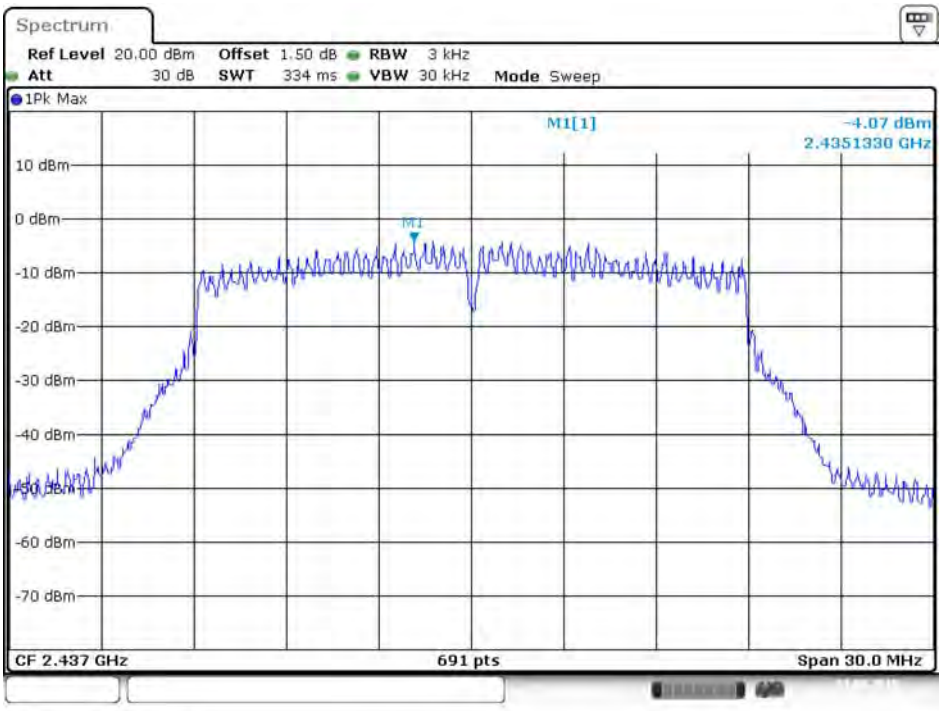


Date: 3.SEP.2015 17:51:19

For beamforming mode

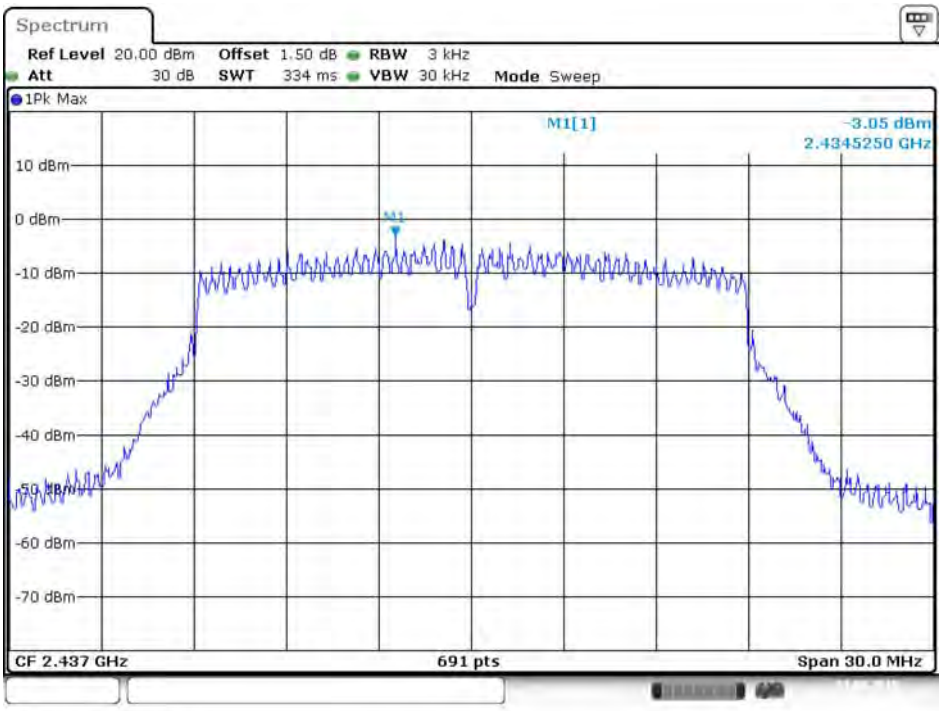
For 2.4GHz Band

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



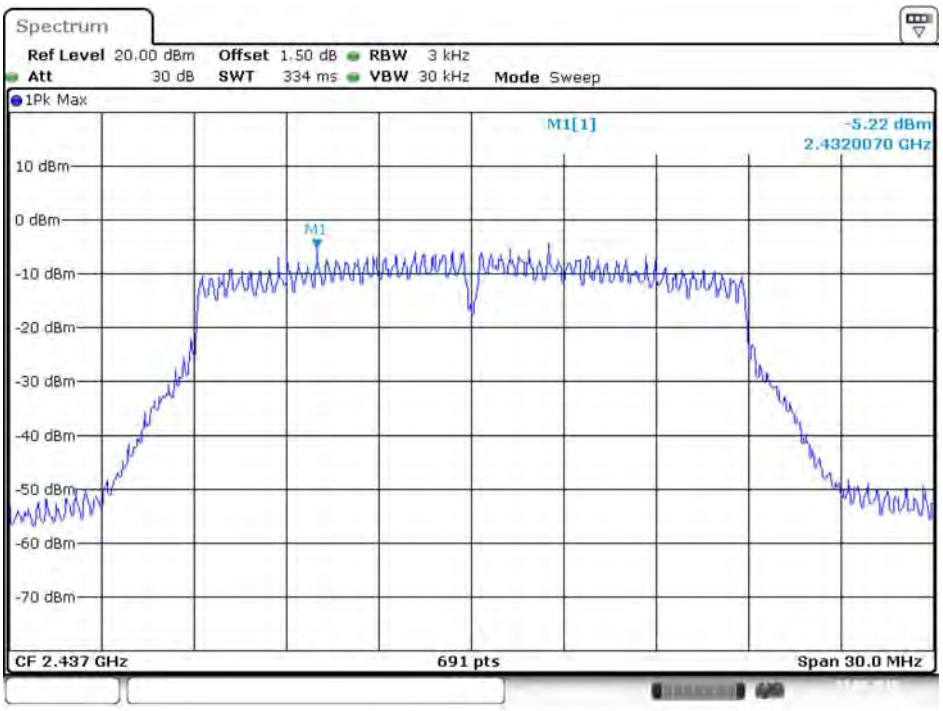
Date: 3.SEP.2015 13:53:12

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



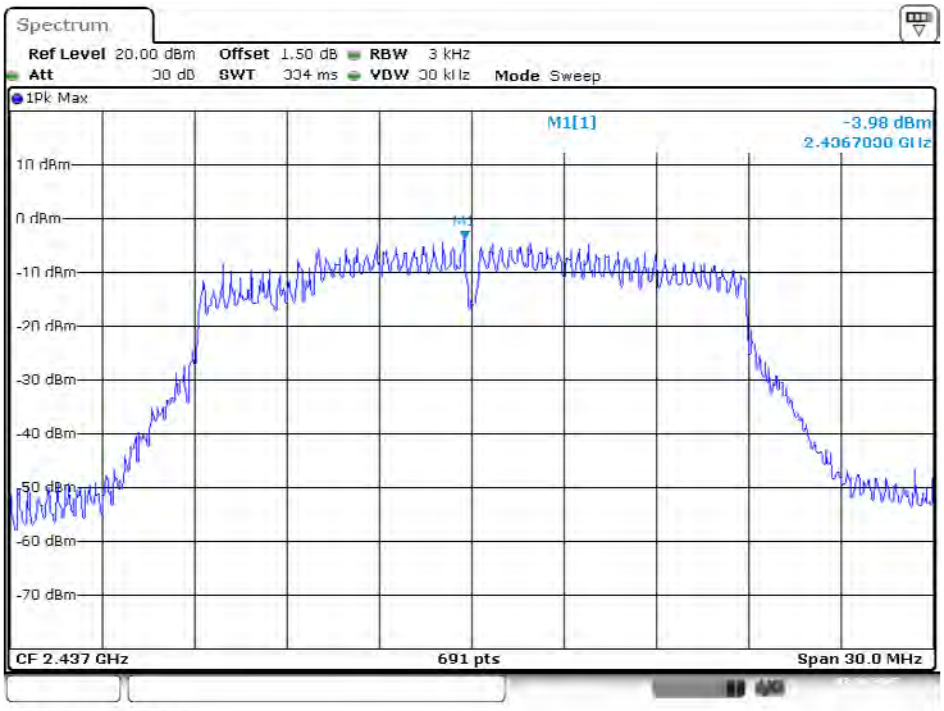
Date: 3.SEP.2015 13:52:47

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



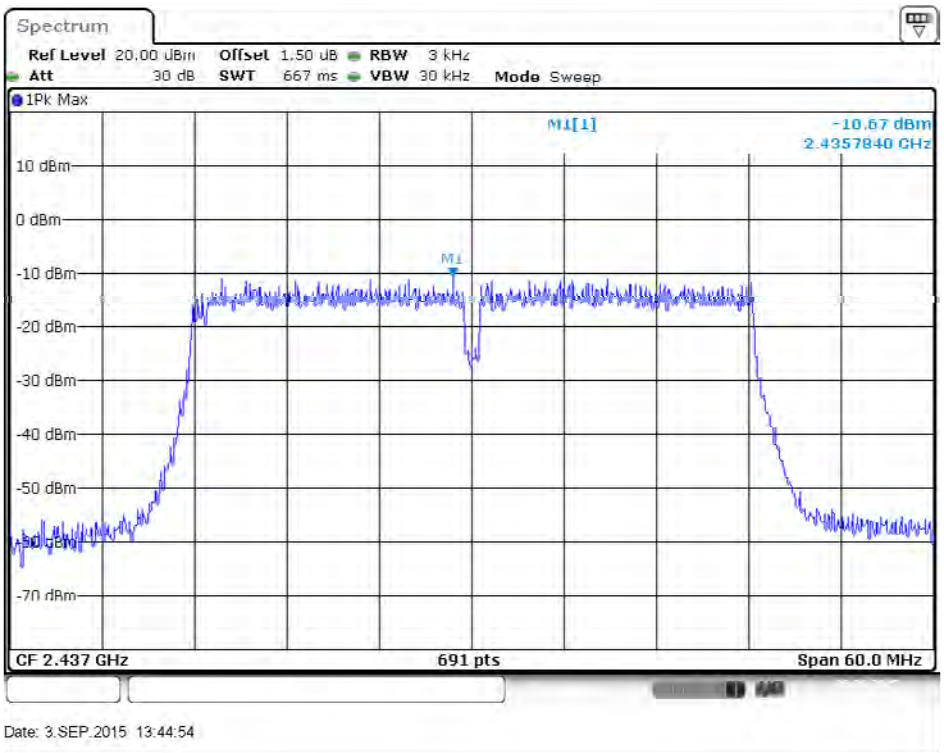
Date: 3.SEP.2015 13:52:22

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

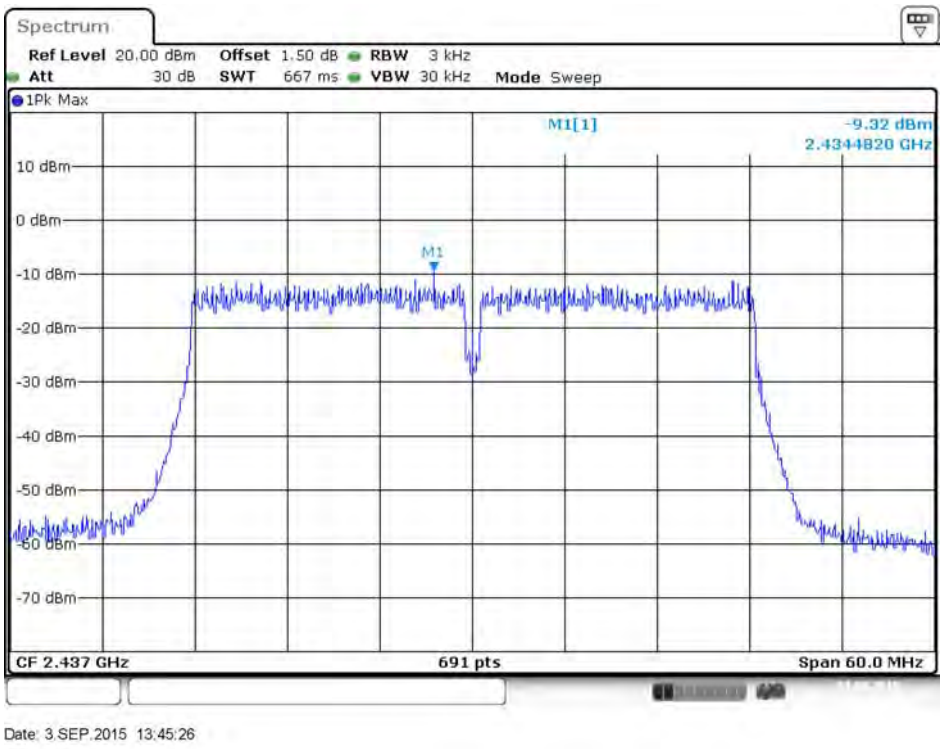


Date: 3.SEP.2015 13:51:53

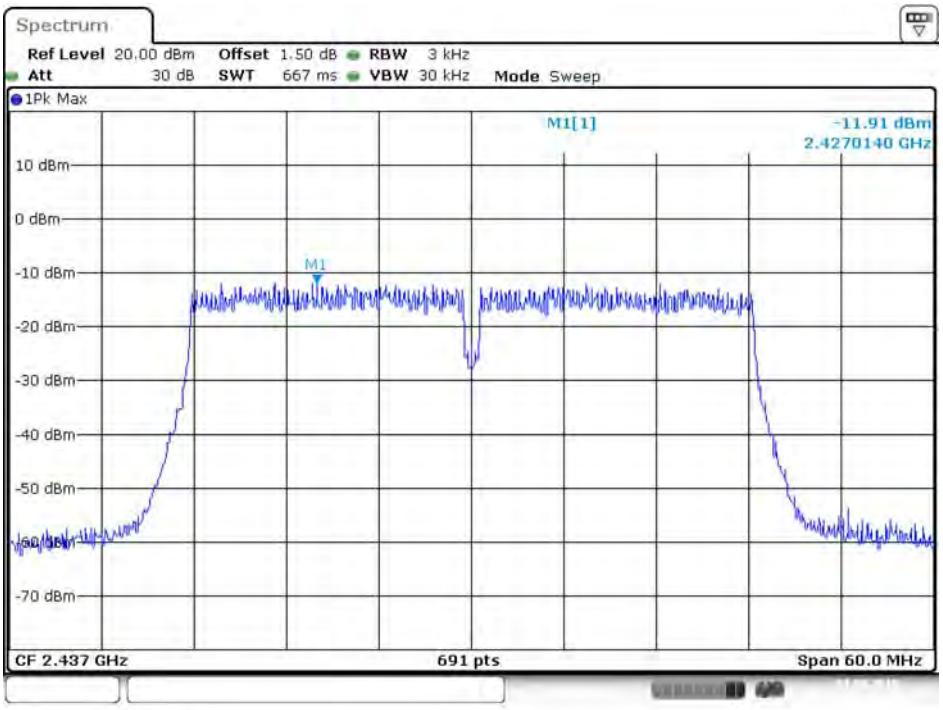
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Antenna 1



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

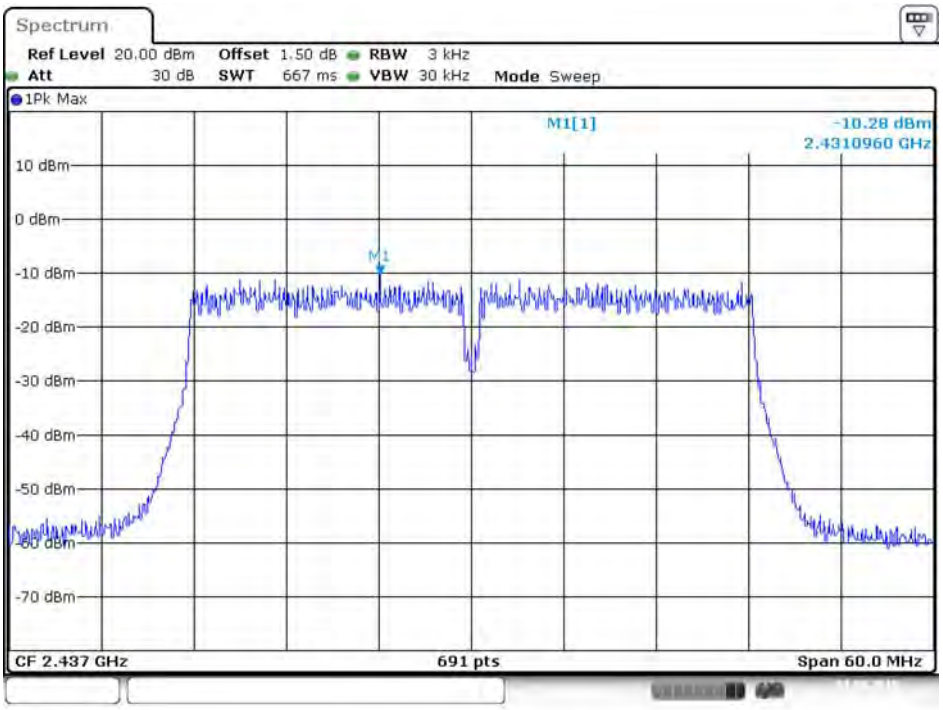


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Antenna 3



Date: 3.SEP.2015 13:46:01

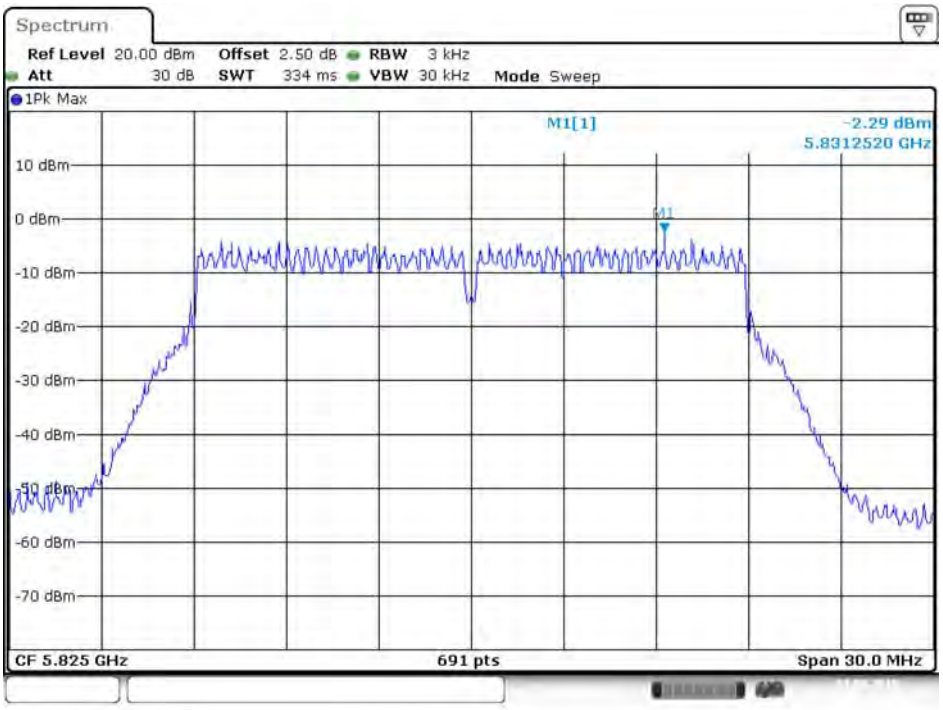
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Antenna 4



Date: 3.SEP.2015 13:46:38

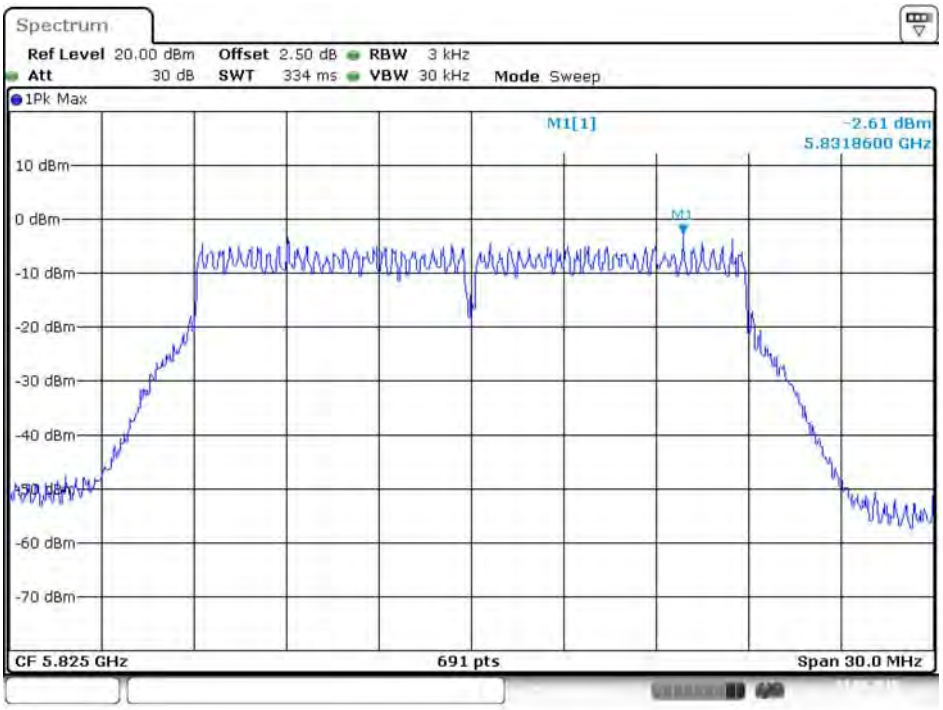
For 5GHz Band

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Antenna 5



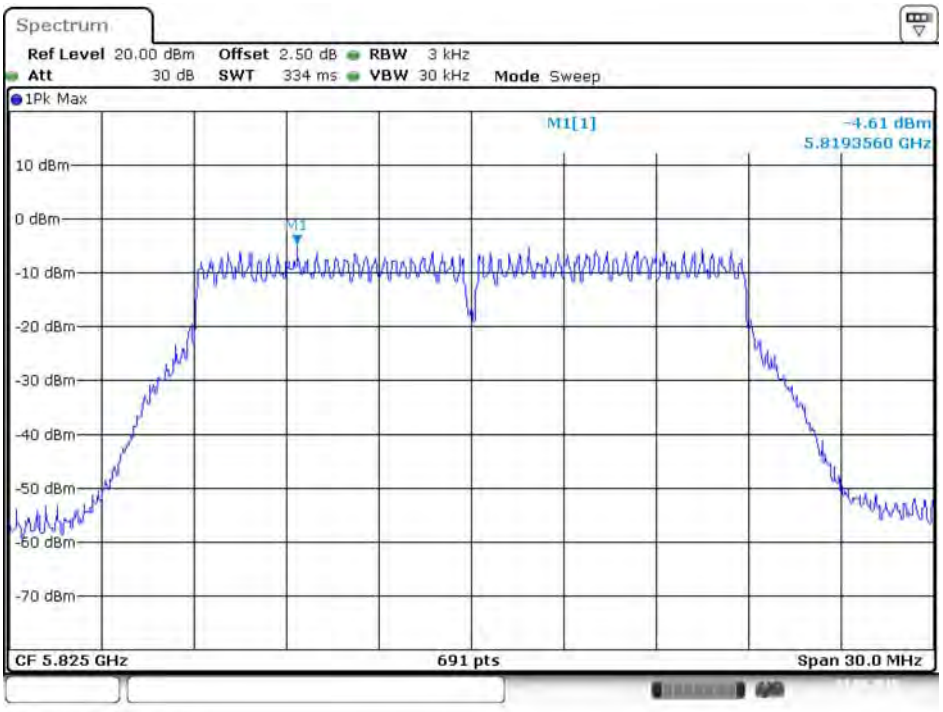
Date: 3.SEP.2015 18:25:21

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Antenna 6



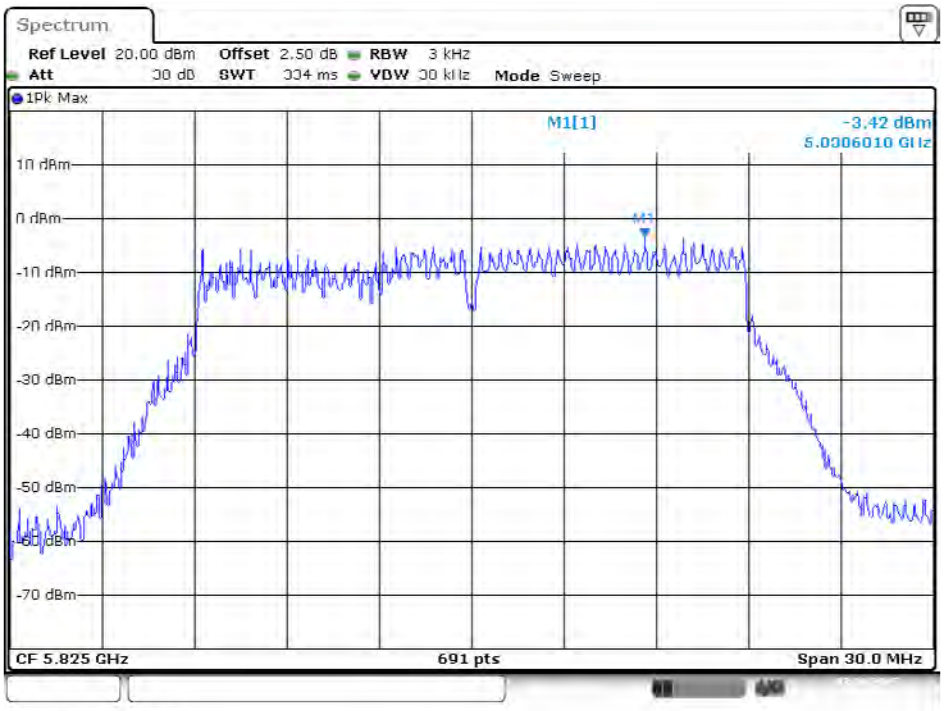
Date: 3.SEP.2015 18:24:56

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Antenna 7



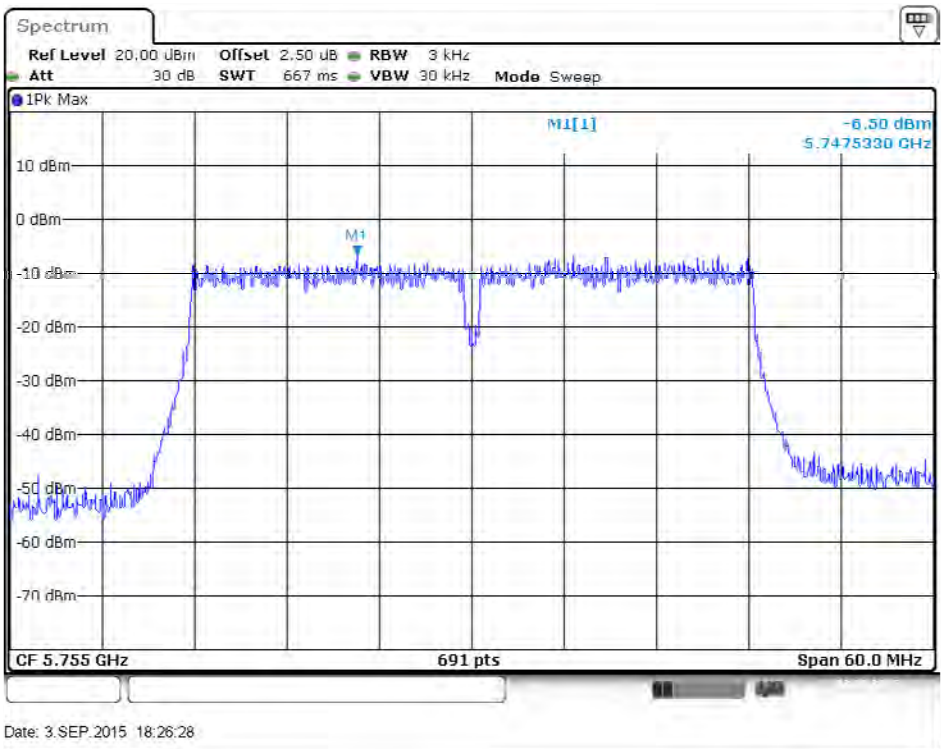
Date: 3.SEP.2015 18:24:38

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Antenna 8

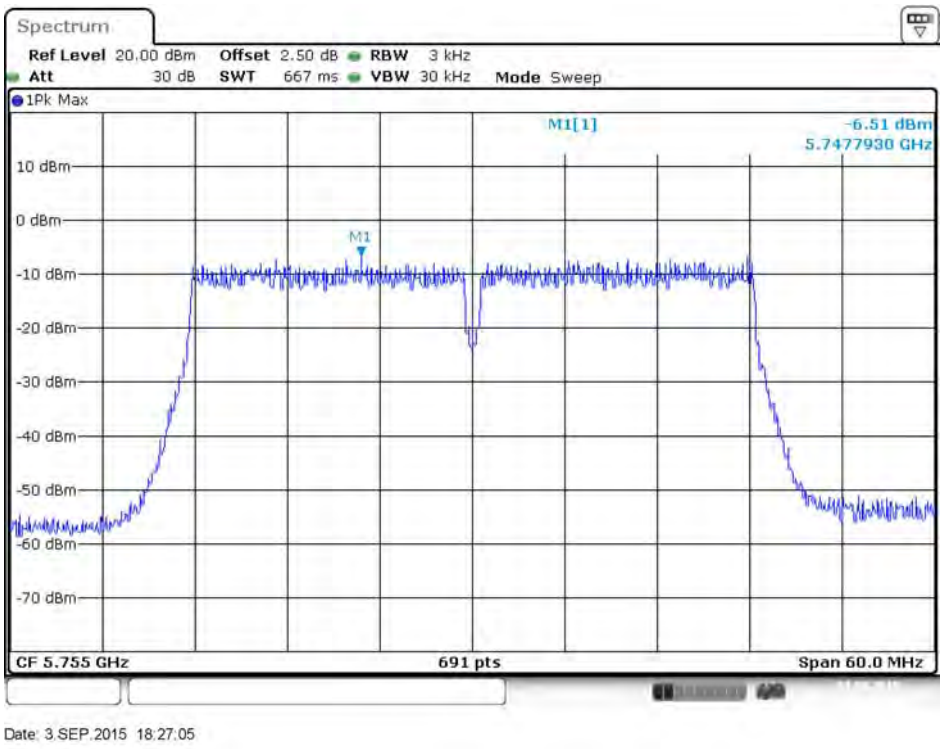


Date: 3.SEP.2015 18:24:10

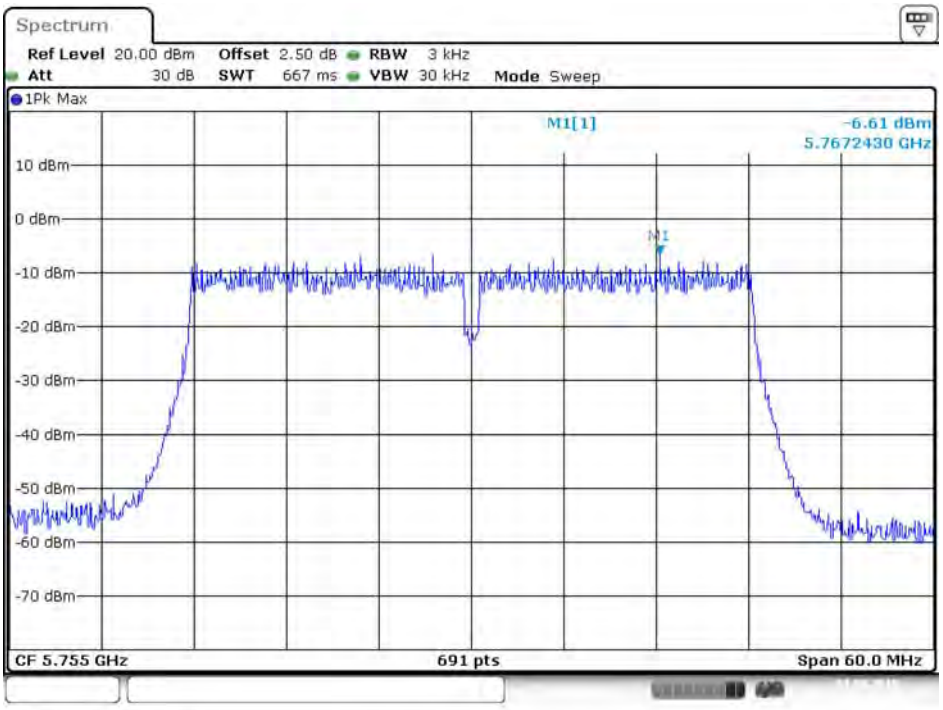
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Antenna 5



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Antenna 6

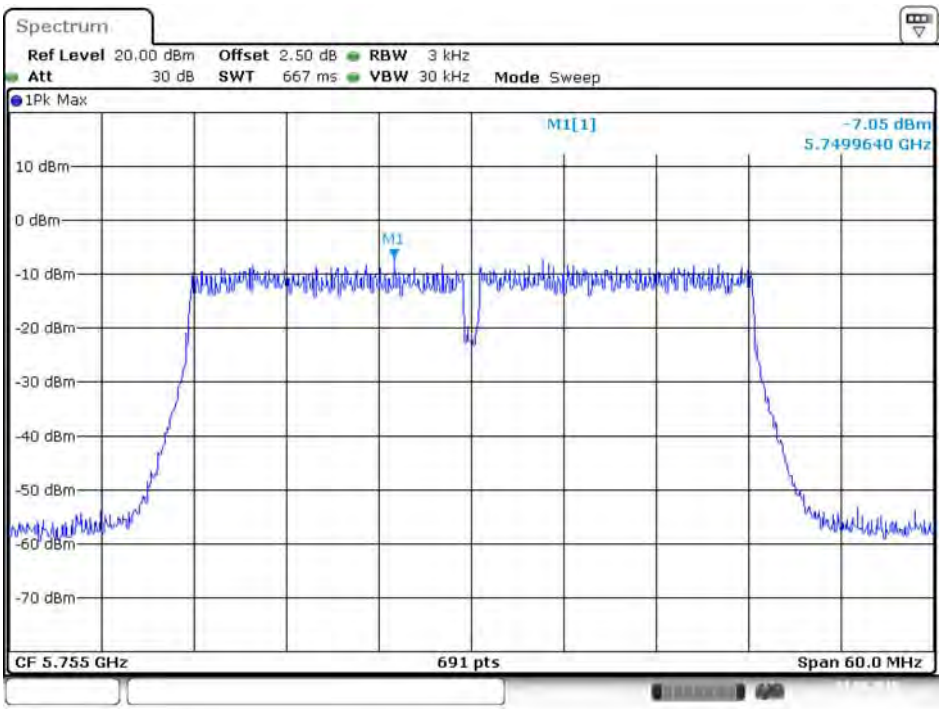


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Antenna 7



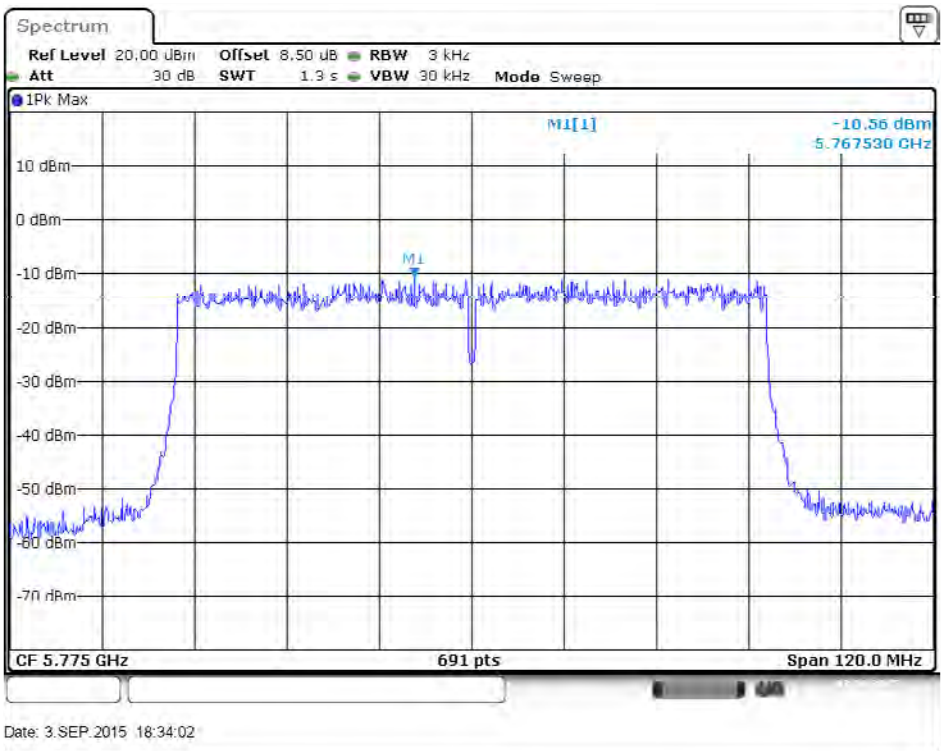
Date: 3.SEP.2015 18:27:31

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755 MHz / Antenna 8

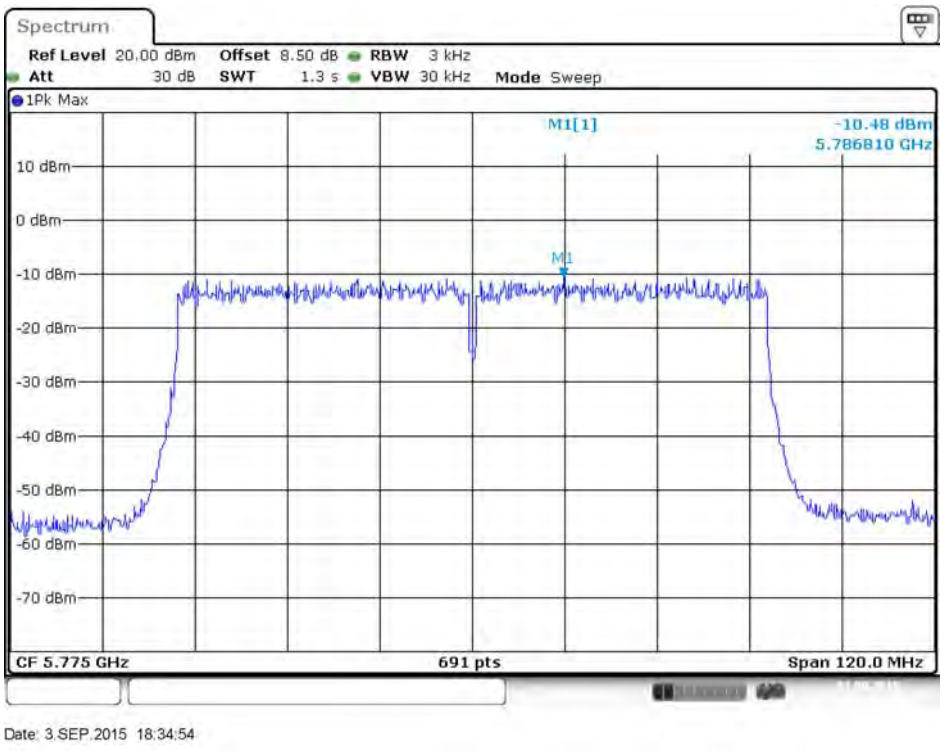


Date: 3.SEP.2015 18:28:03

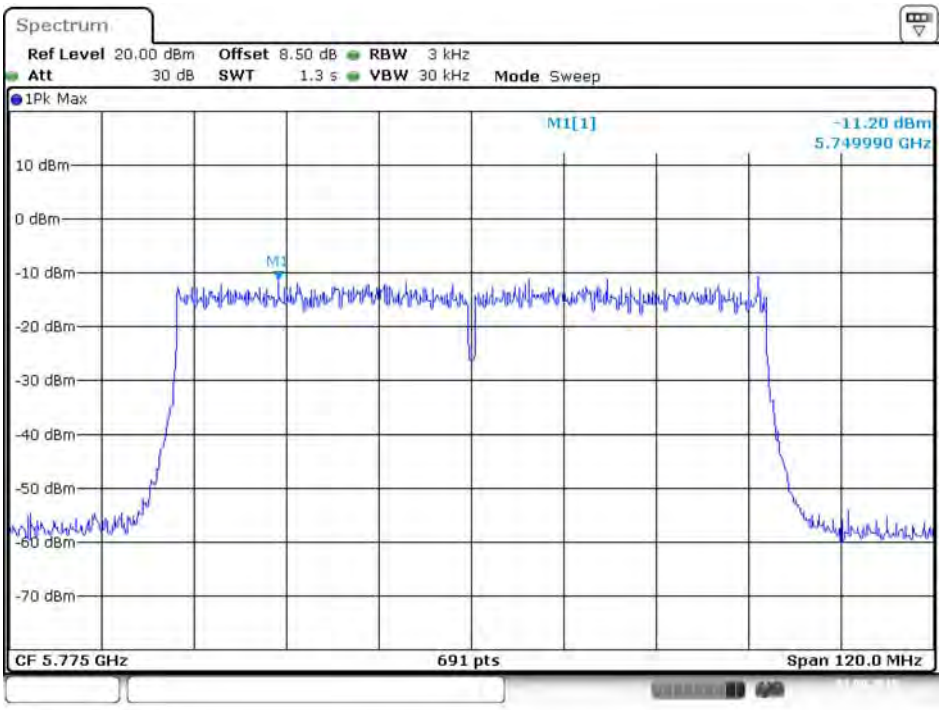
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 5



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 6

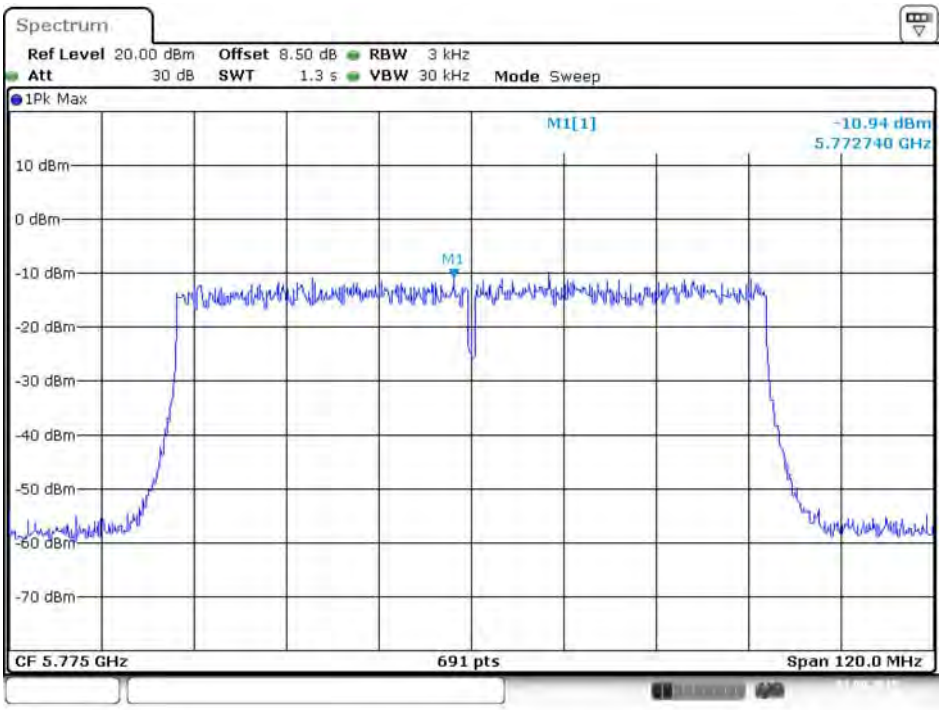


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 7



Date: 3.SEP.2015 18:35:26

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 8



Date: 3.SEP.2015 18:35:55

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 KDB558074 D01 v03r03 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 8.0 DTS bandwidth=> 8.1 Option 1.
3. Multiple antenna system was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.4.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

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

4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of 6dB Spectrum Bandwidth

Temperature	25°C	Humidity	56%
Test Engineer	Eddie Weng		

For Non-beamforming mode

For 2.4GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	7.54	10.33	500	Complies
	2437 MHz	8.06	10.42	500	Complies
	2462 MHz	8.00	10.42	500	Complies
802.11g	2412 MHz	5.51	15.02	500	Complies
	2437 MHz	4.12	15.20	500	Complies
	2462 MHz	3.88	15.54	500	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	10.67	16.67	500	Complies
	2437 MHz	10.09	16.67	500	Complies
	2462 MHz	10.43	15.46	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	33.86	36.18	500	Complies
	2437 MHz	33.86	36.03	500	Complies
	2452 MHz	35.71	36.47	500	Complies

For 5GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	13.86	16.67	500	Complies
	5785 MHz	14.49	16.32	500	Complies
	5825 MHz	14.43	15.59	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	16.29	17.89	500	Complies
	5785 MHz	16.93	18.06	500	Complies
	5825 MHz	16.70	17.71	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.13	36.32	500	Complies
	5795 MHz	35.25	36.32	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.07	75.83	500	Complies

For beamforming mode

For 2.4GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	2412 MHz	10.03	17.54	500	Complies
	2437 MHz	10.09	17.71	500	Complies
	2462 MHz	10.03	17.63	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	35.36	36.76	500	Complies
	2437 MHz	35.71	36.76	500	Complies
	2452 MHz	35.36	36.76	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	17.68	17.89	500	Complies
	5785 MHz	17.62	18.06	500	Complies
	5825 MHz	17.68	17.97	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	75.36	76.12	500	Complies

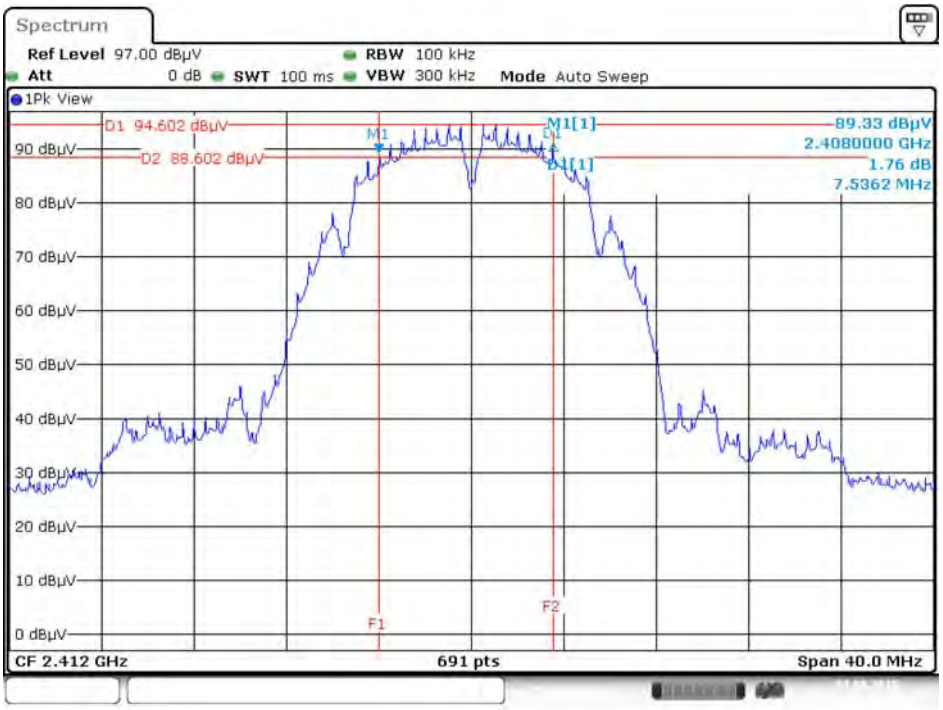
Note: All the test values were listed in the report.

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

For Non-beamforming mode

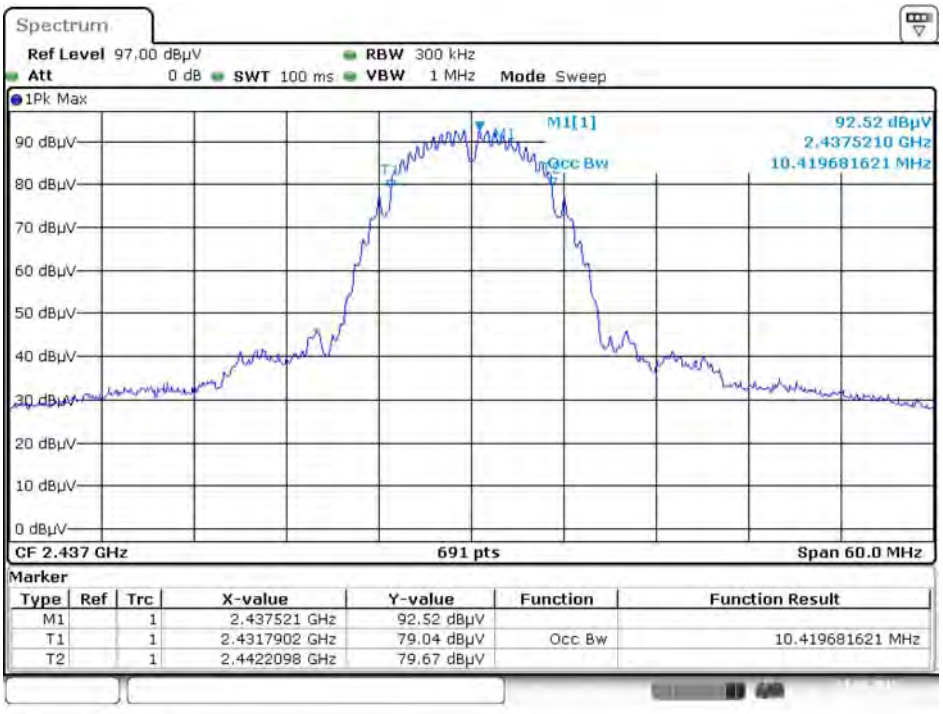
For 2.4GHz Band

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



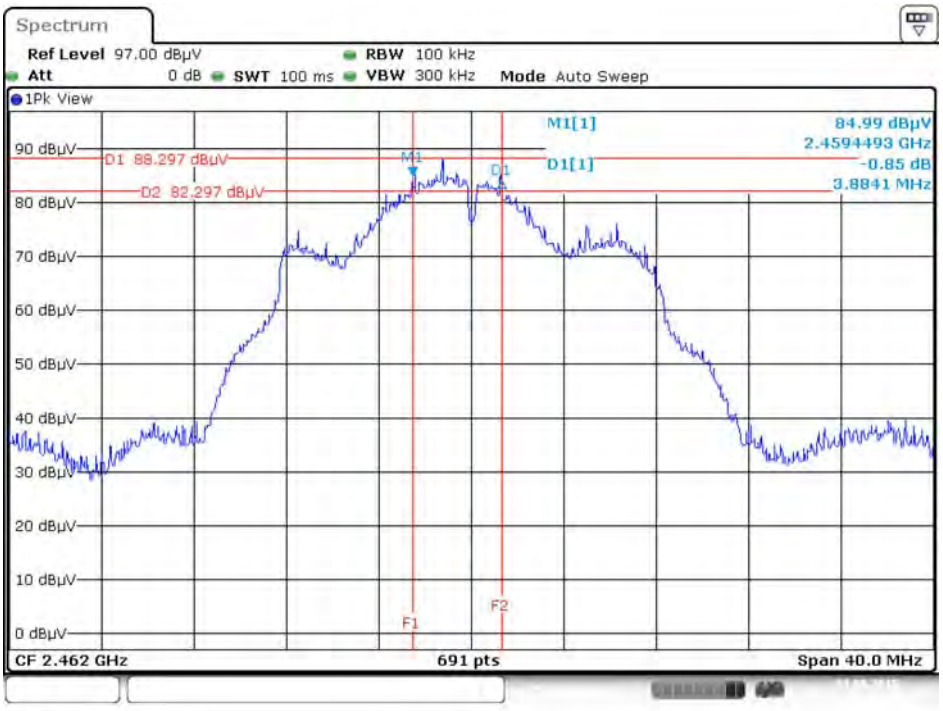
Date: 3.SEP.2015 14:12:00

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



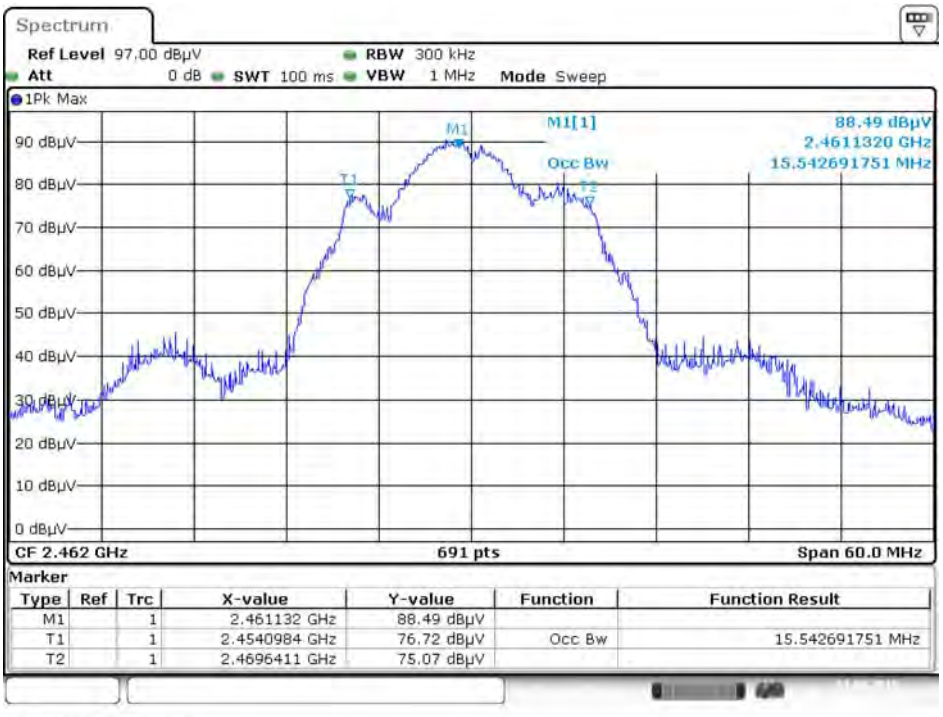
Date: 3.SEP.2015 14:42:08

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



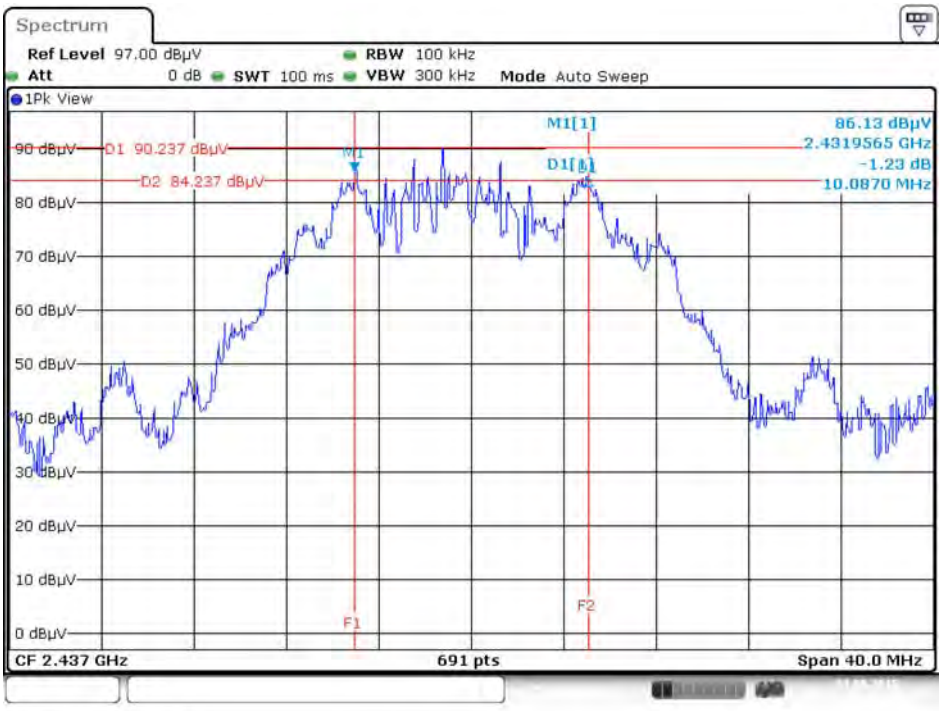
Date: 3.SEP.2015 14:30:22

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

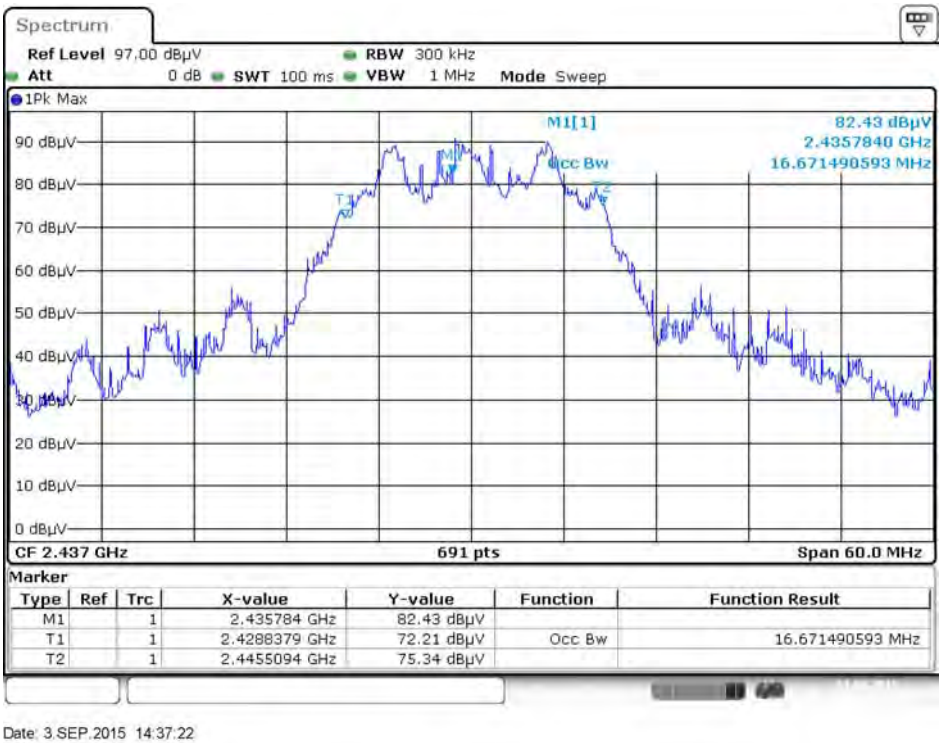


Date: 3.SEP.2015 14:40:23

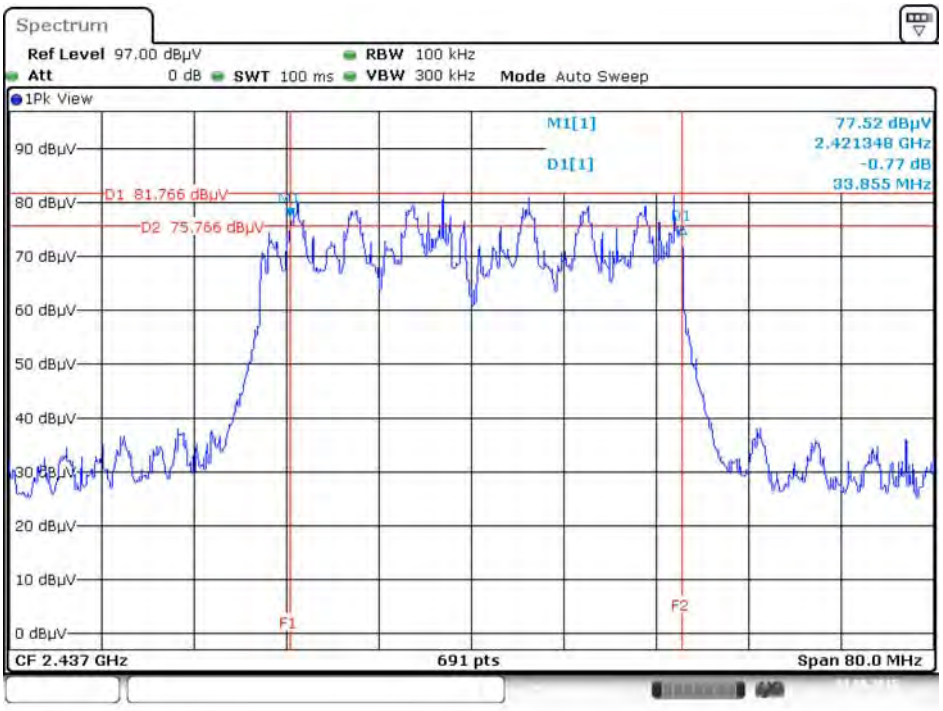
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4



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

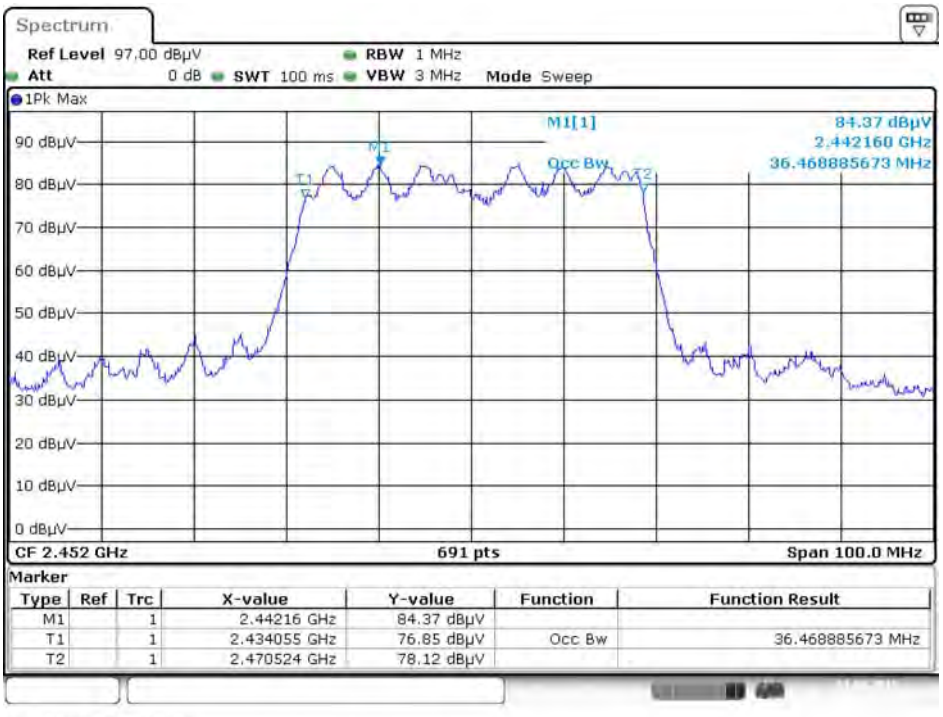


6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4



Date: 3.SEP.2015 14:10:25

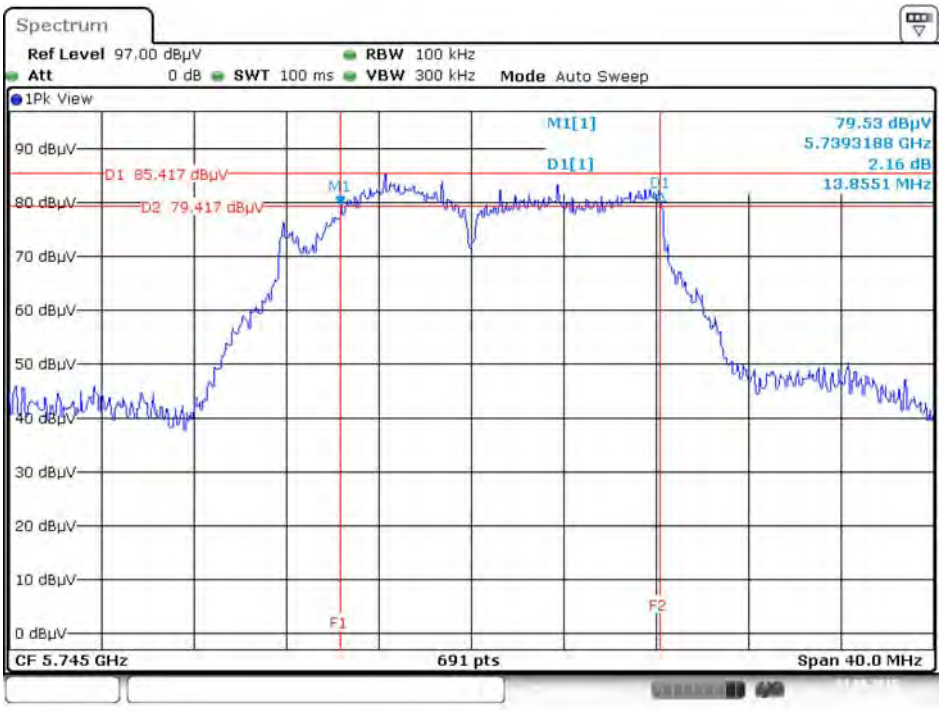
99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4



Date: 3.SEP.2015 14:58:07

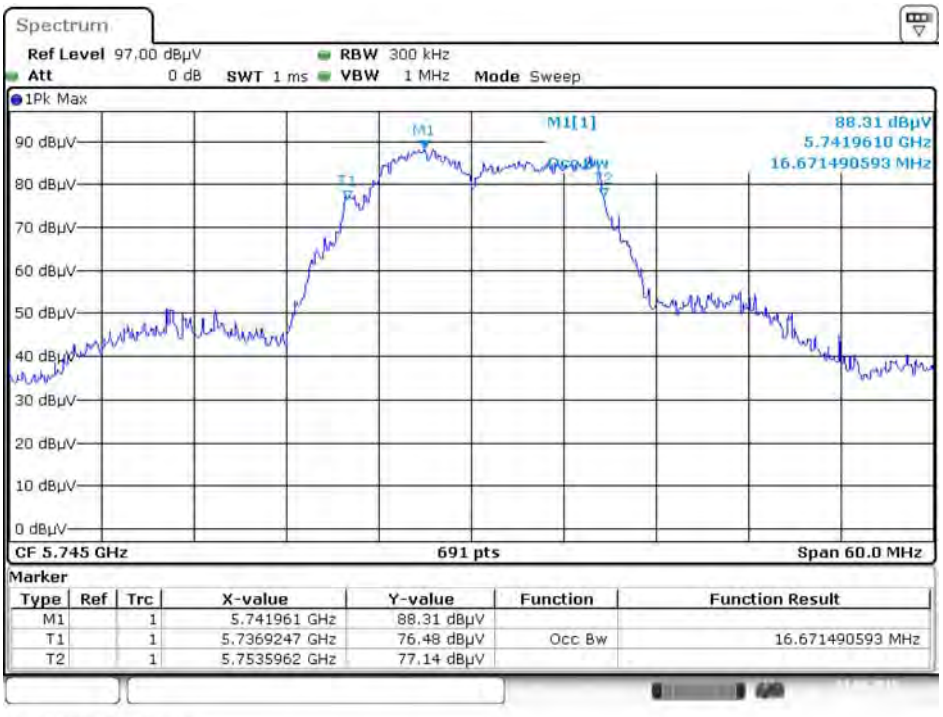
For 5GHz Band

6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5745 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



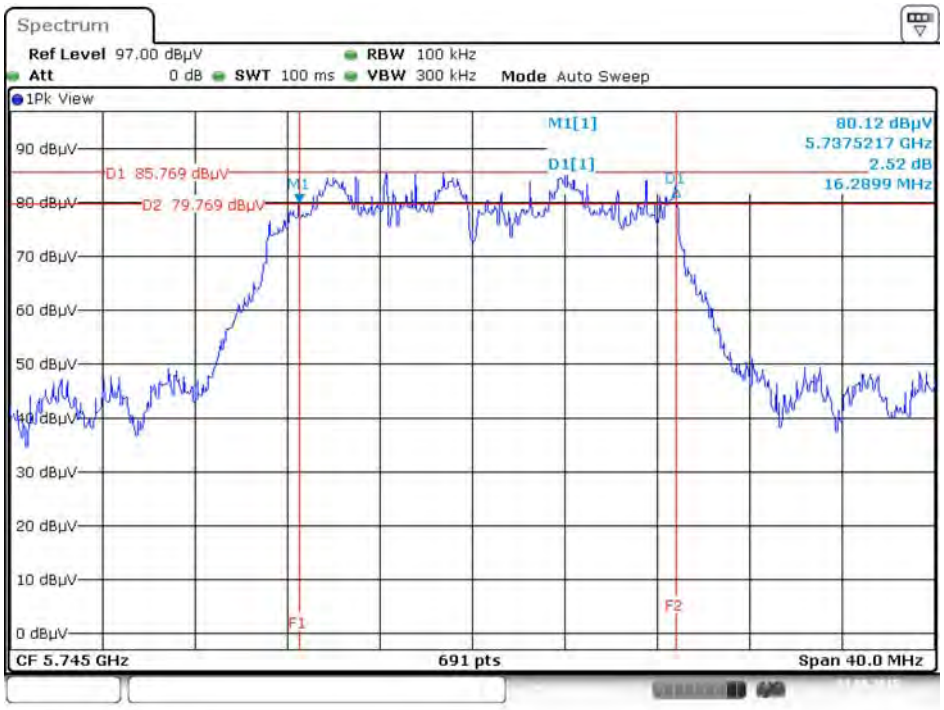
Date: 3.SEP.2015 19:31:35

99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / 5745 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



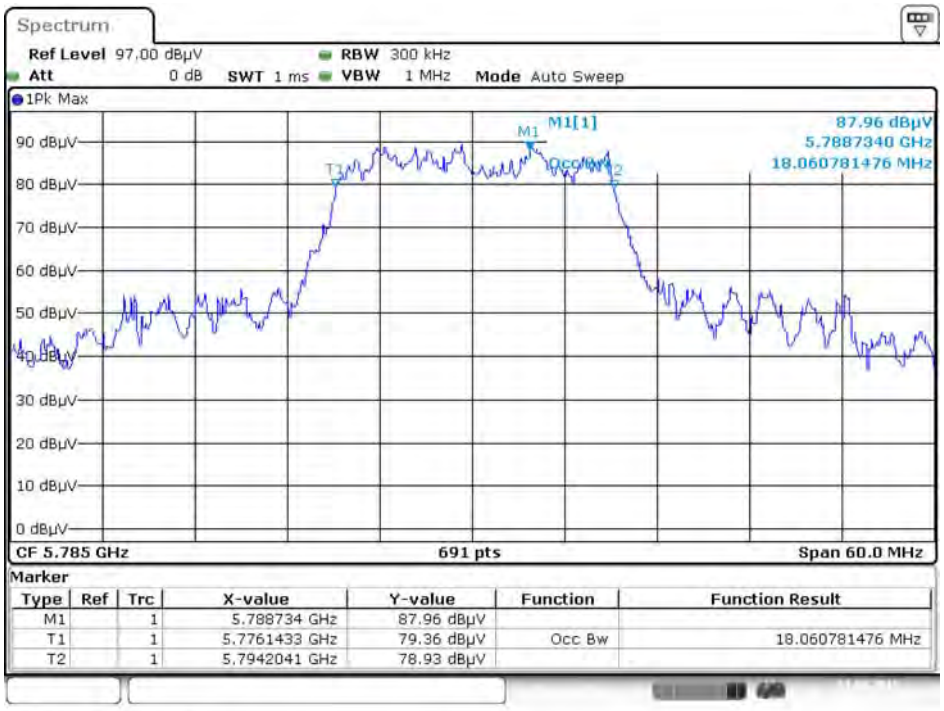
Date: 3.SEP.2015 19:53:27

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



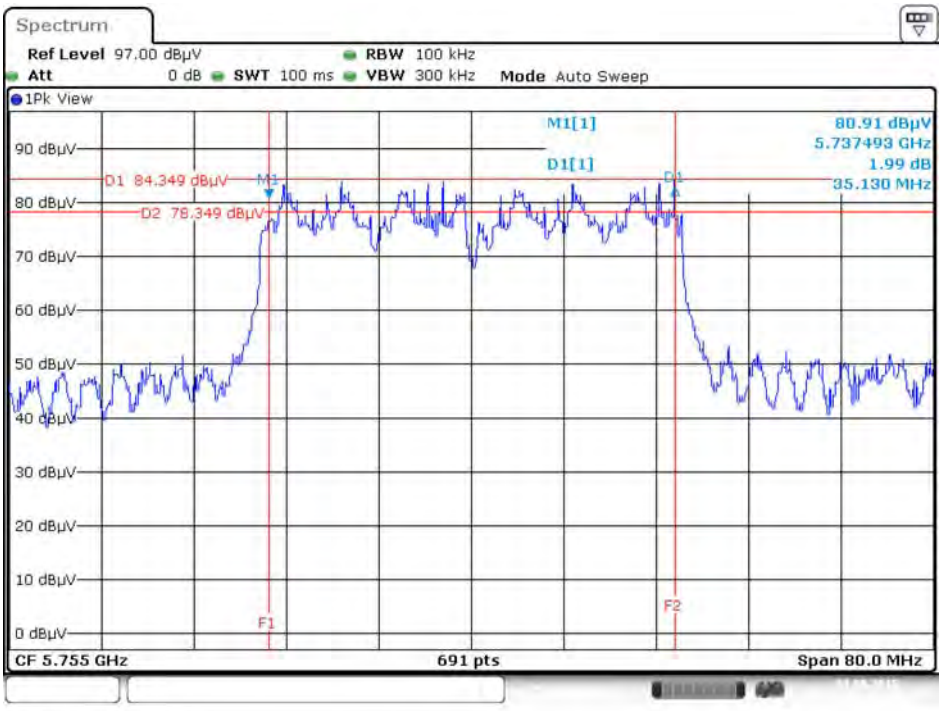
Date: 3.SEP.2015 19:37:26

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5785 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



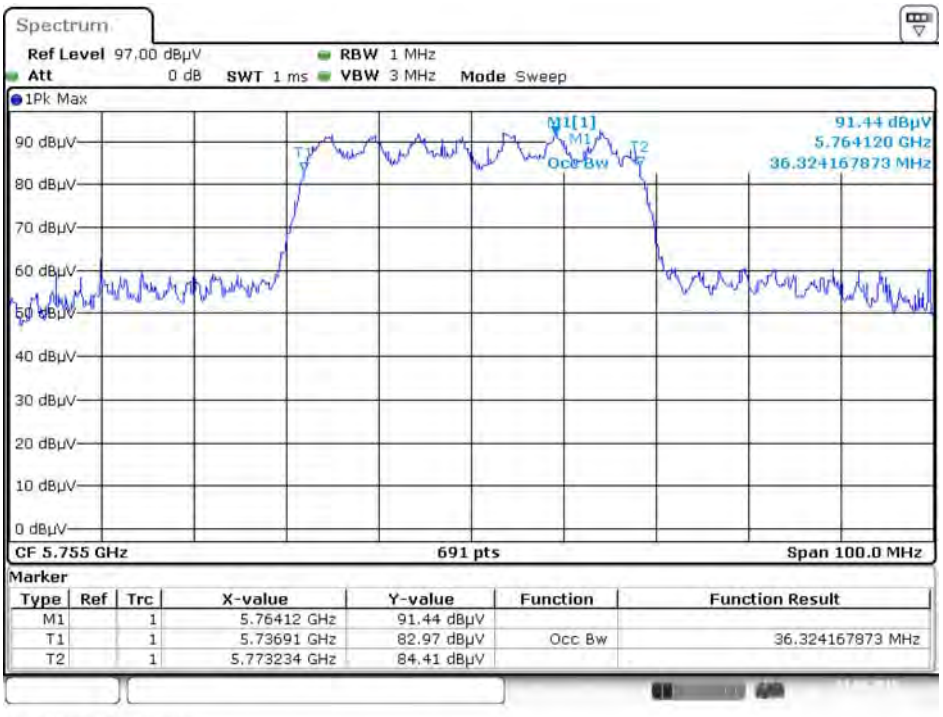
Date: 3.SEP.2015 19:58:12

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



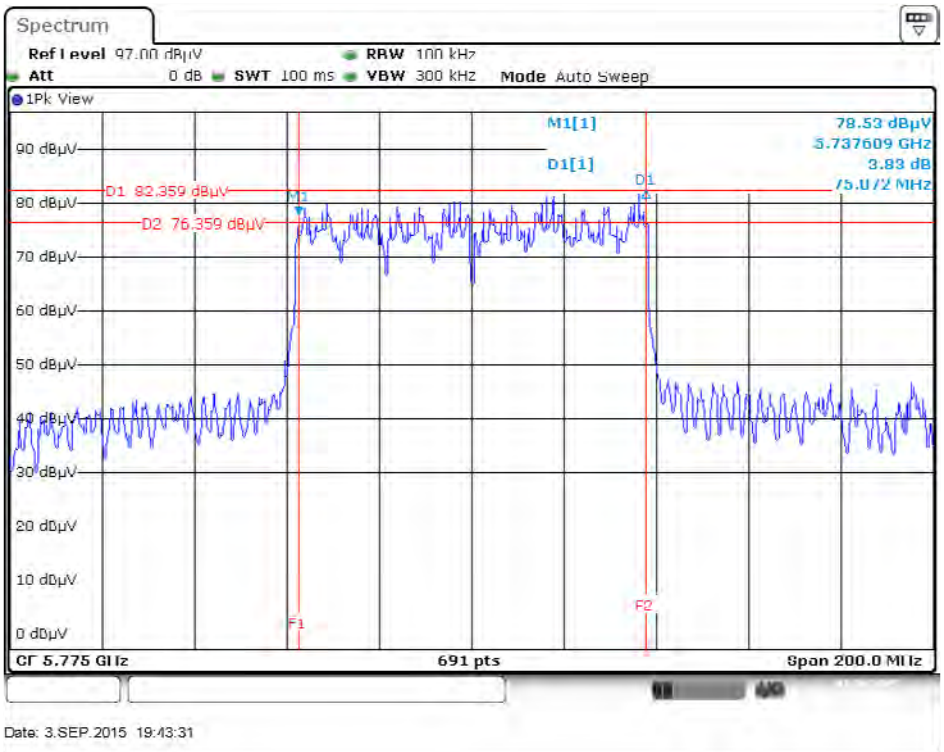
Date: 3.SEP.2015 19:39:20

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8

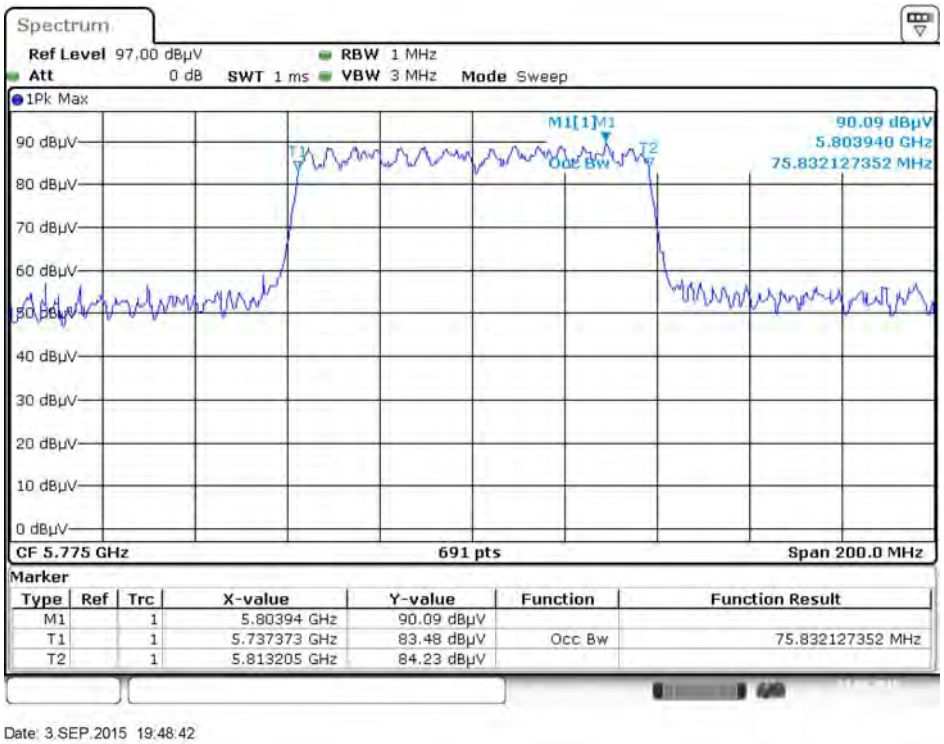


Date: 3.SEP.2015 19:50:30

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



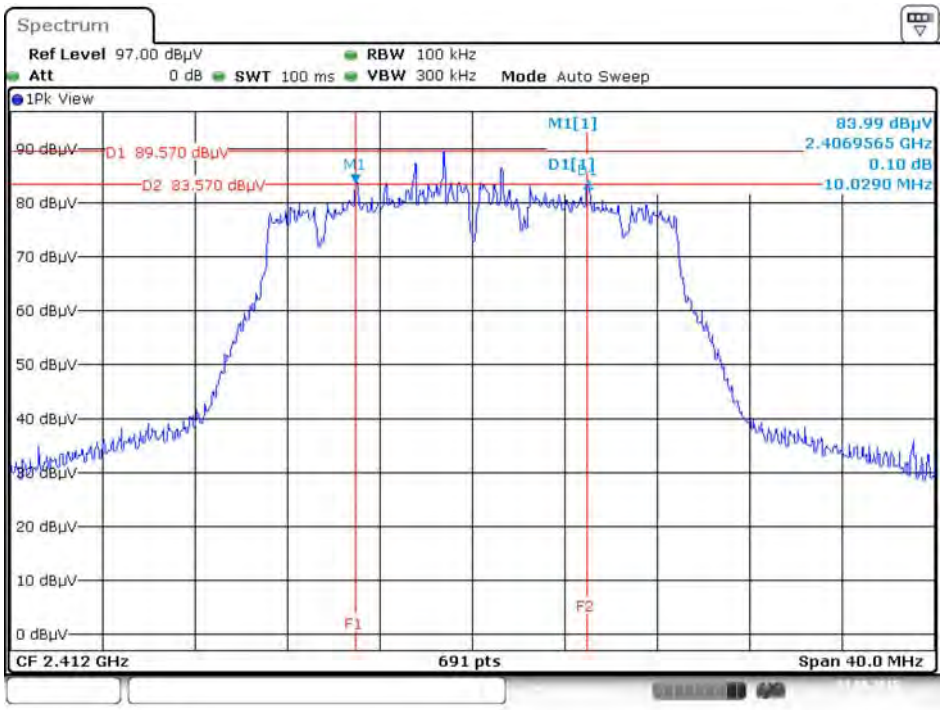
99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



For beamforming mode

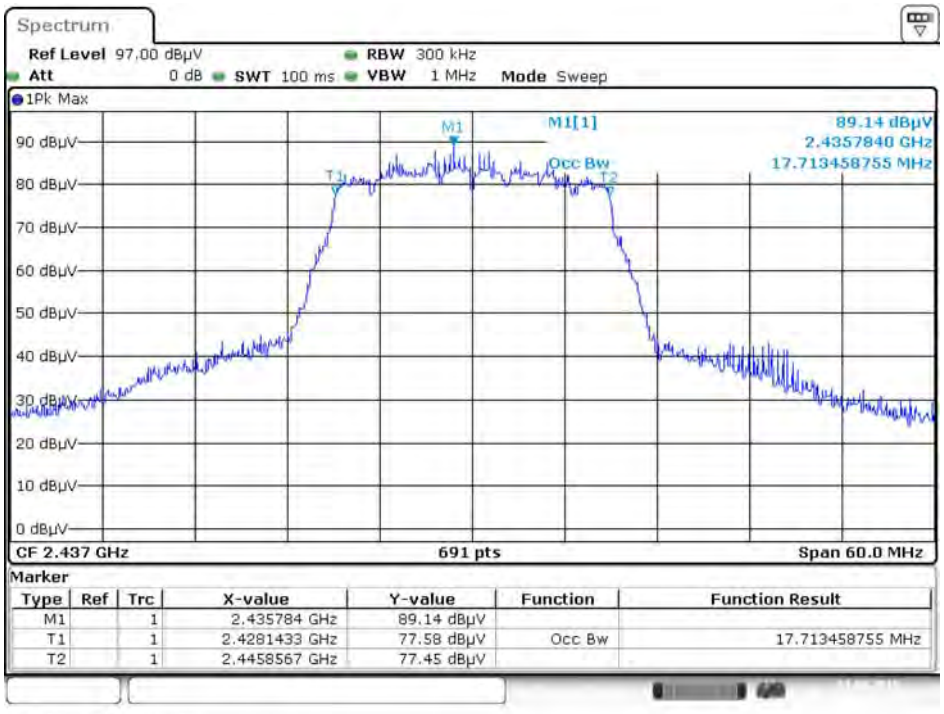
For 2.4GHz Band

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



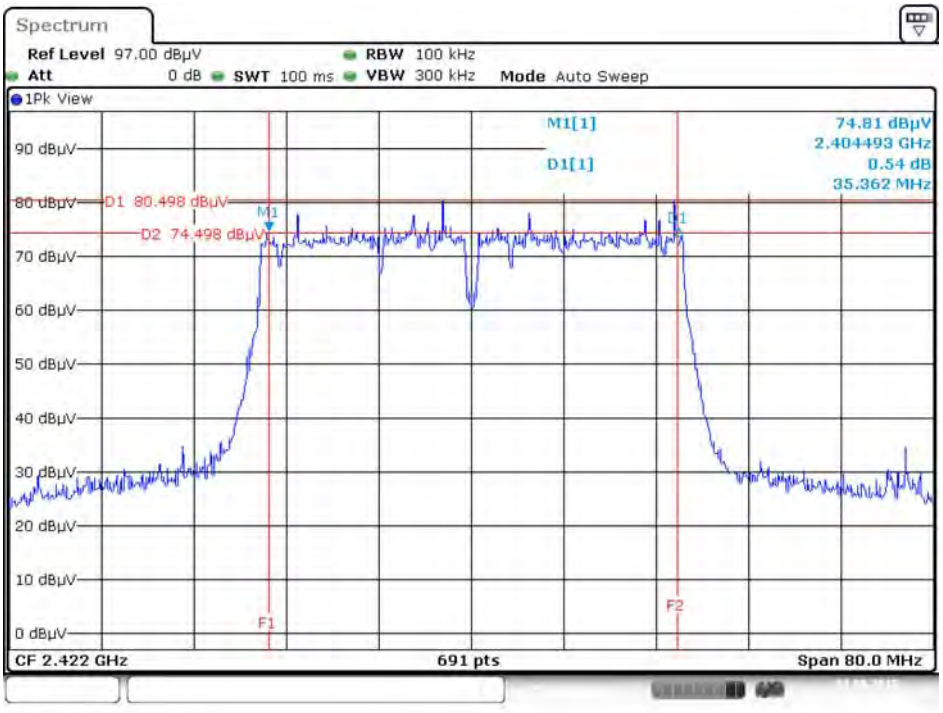
Date: 3.SEP.2015 14:02:45

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



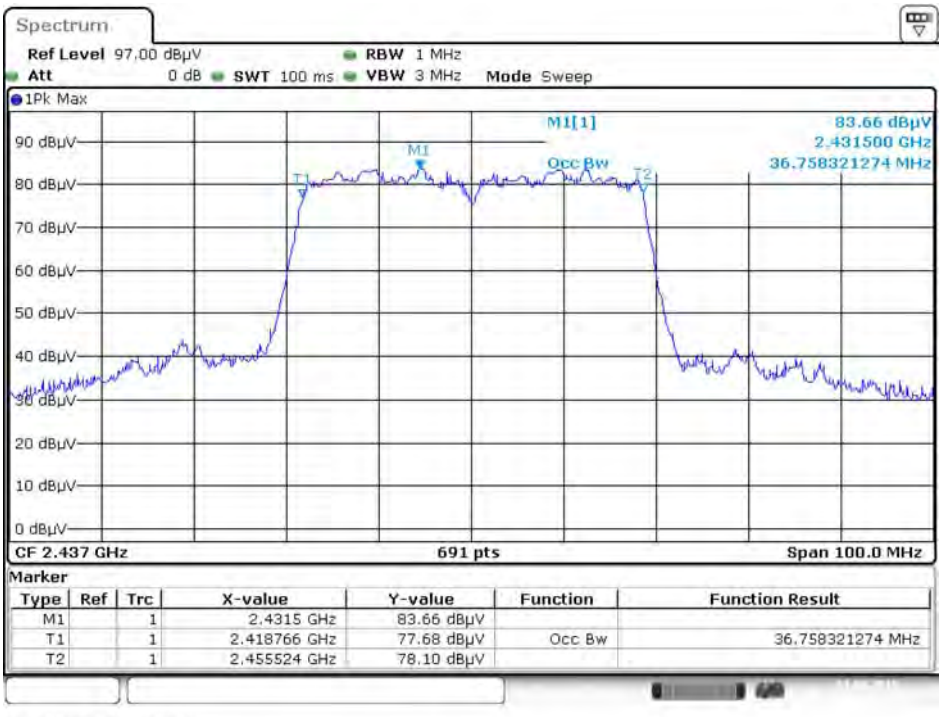
Date: 3.SEP.2015 14:47:31

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



Date: 3.SEP.2015 14:05:03

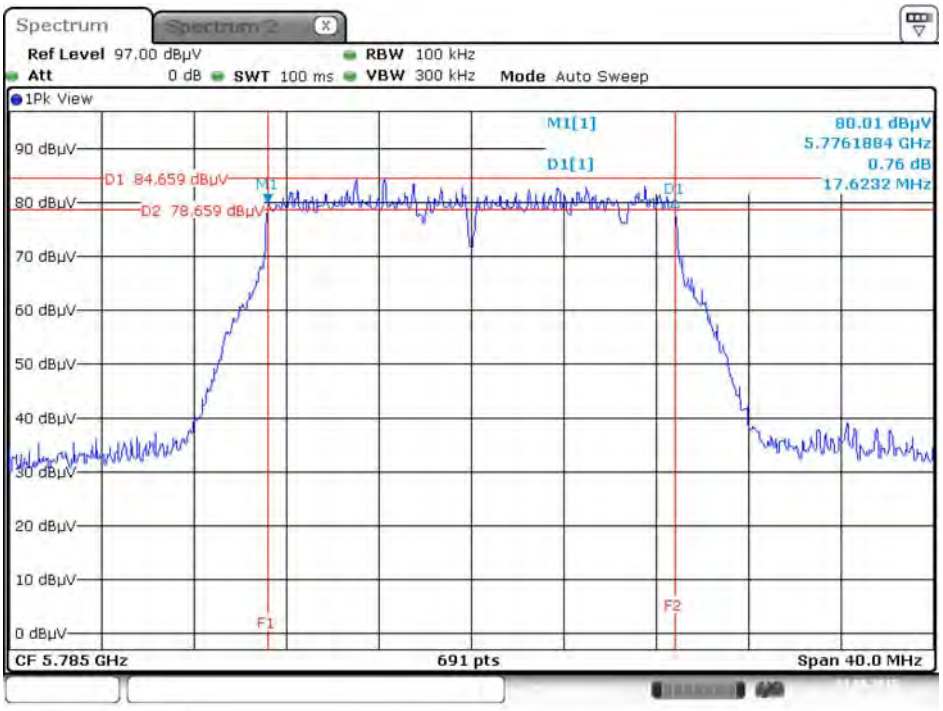
99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4



Date: 3.SEP.2015 14:50:06

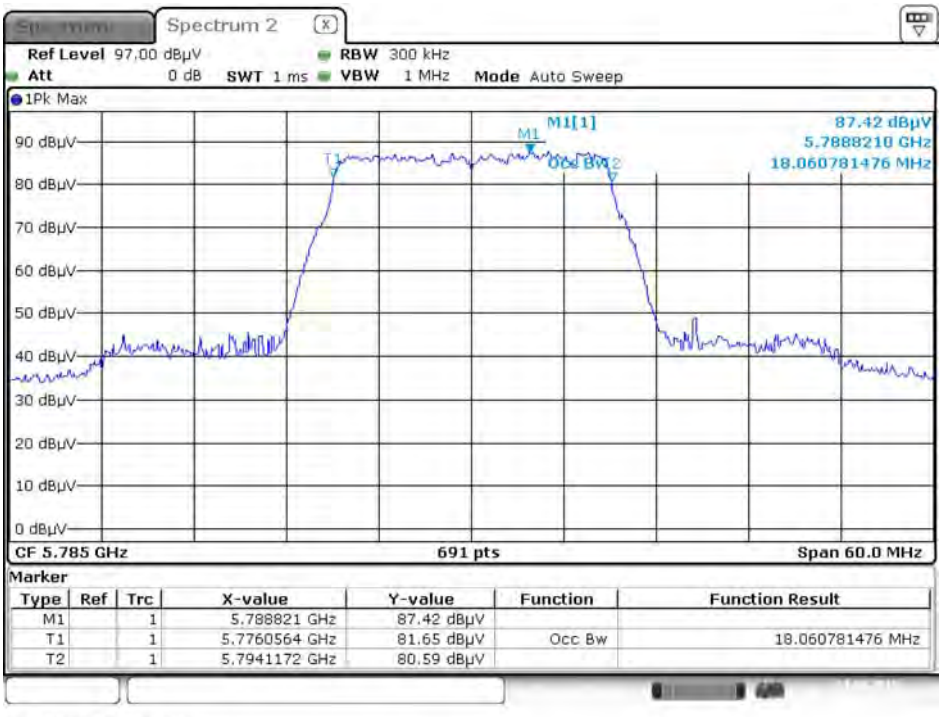
For 5GHz Band

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5785 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



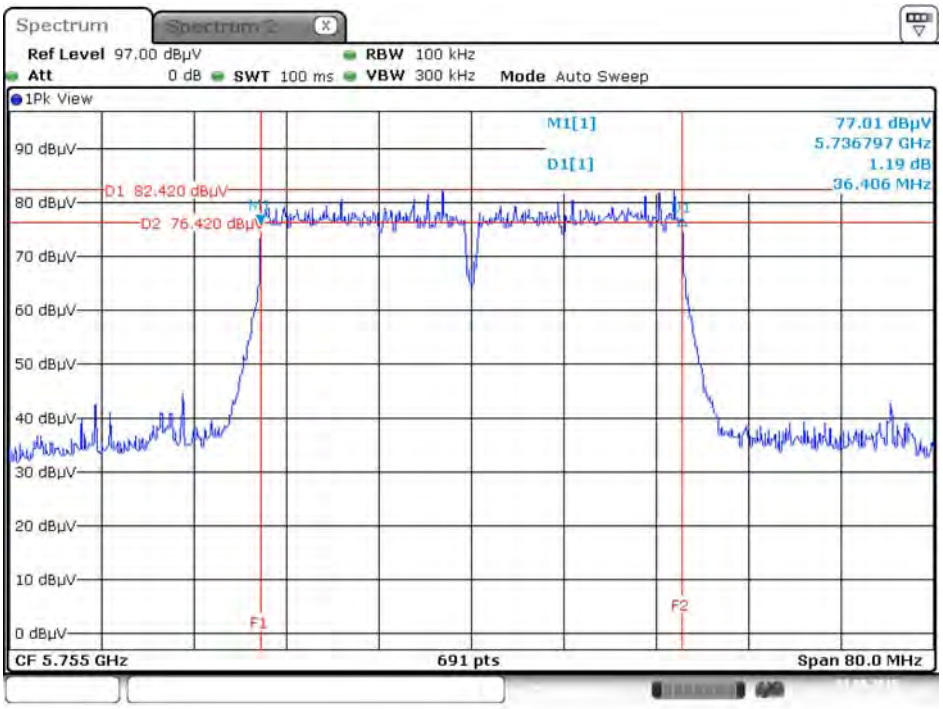
Date: 3.SEP.2015 20:05:49

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5785 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



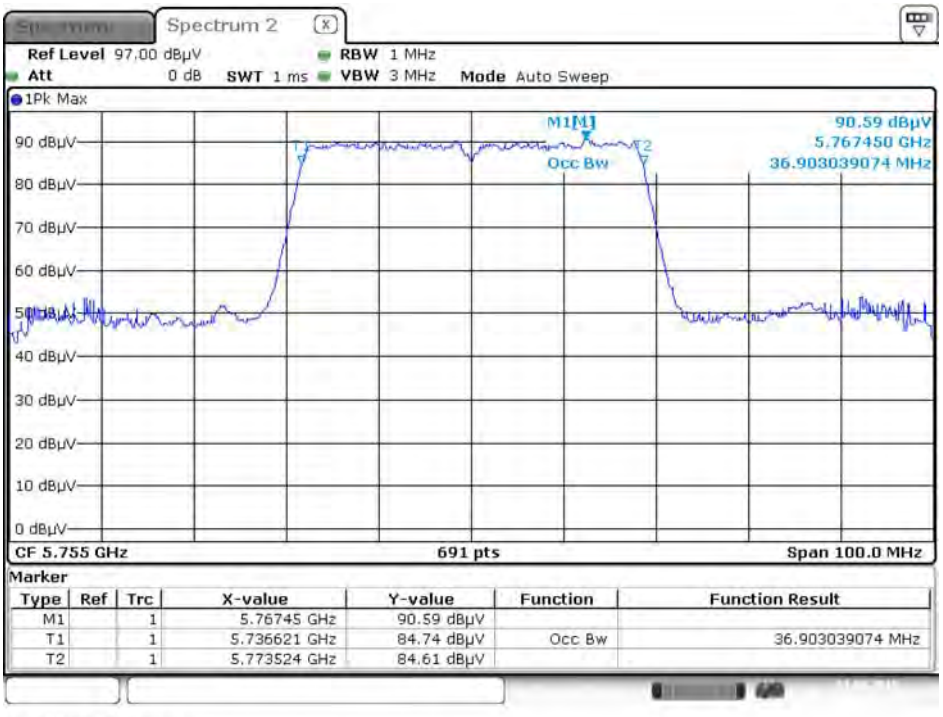
Date: 3.SEP.2015 20:19:20

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



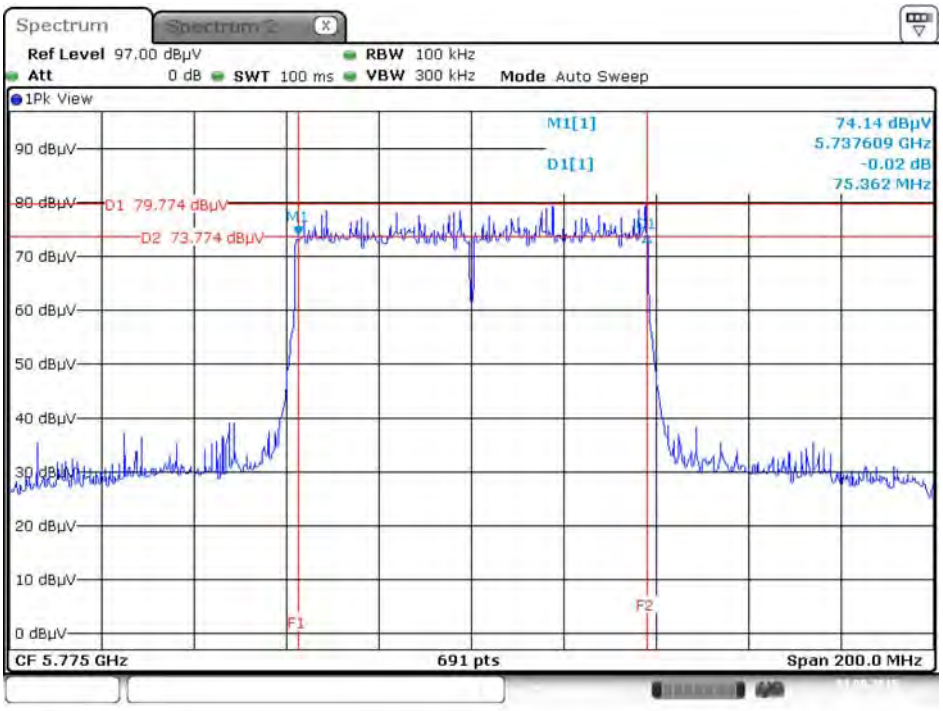
Date: 3.SEP.2015 20:25:03

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



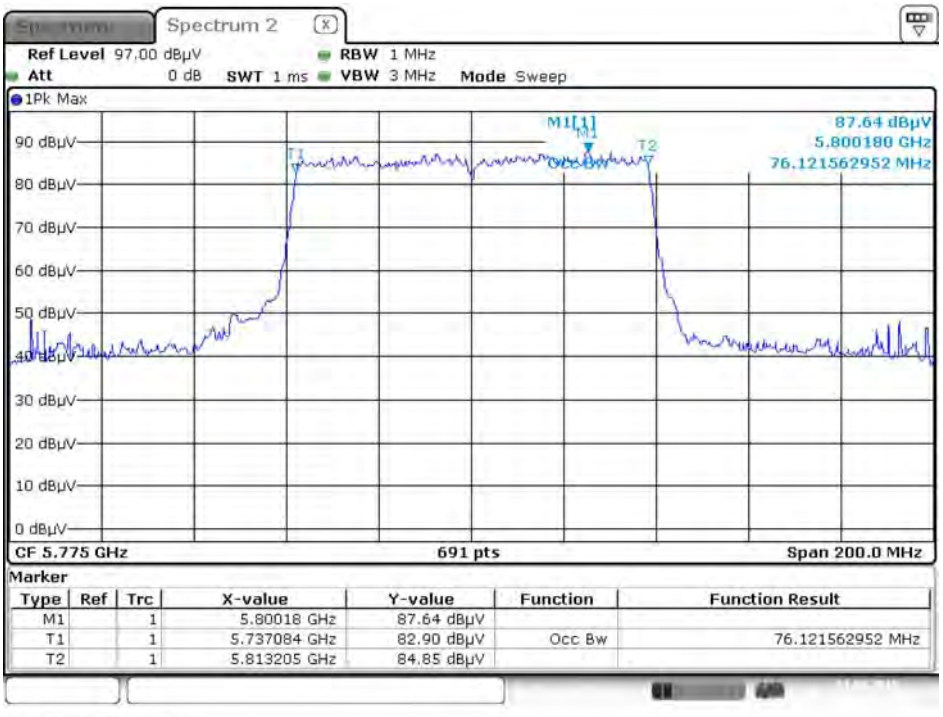
Date: 3.SEP.2015 20:25:29

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



Date: 3.SEP.2015 20:30:18

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8



Date: 3.SEP.2015 20:31:35

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

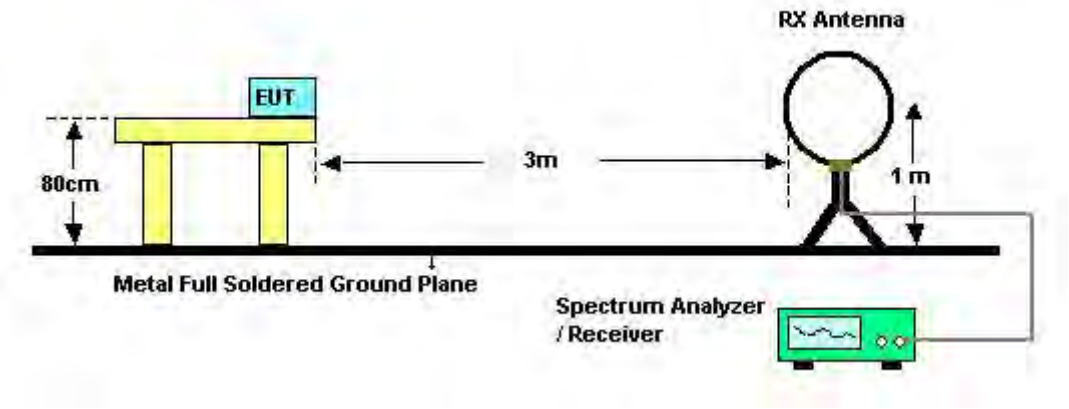
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RBW 120kHz for QP

4.5.3. Test Procedures

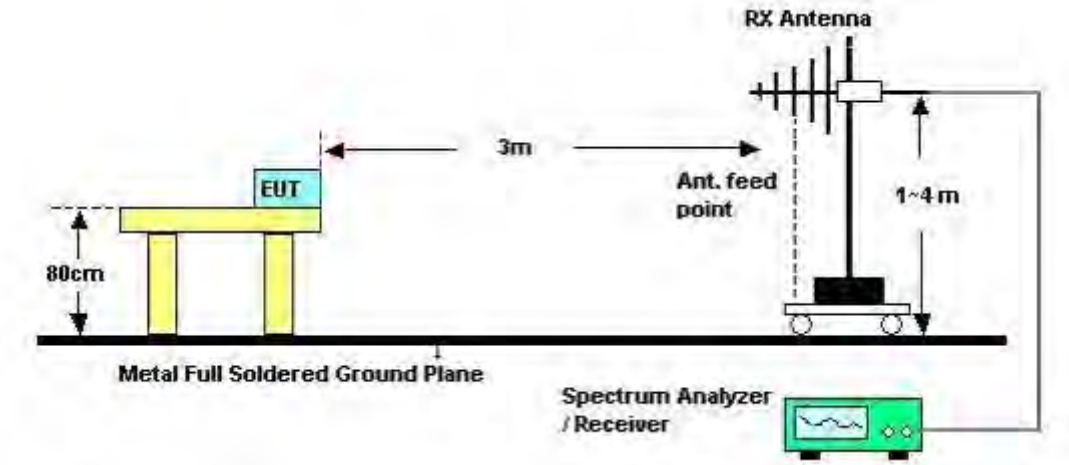
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

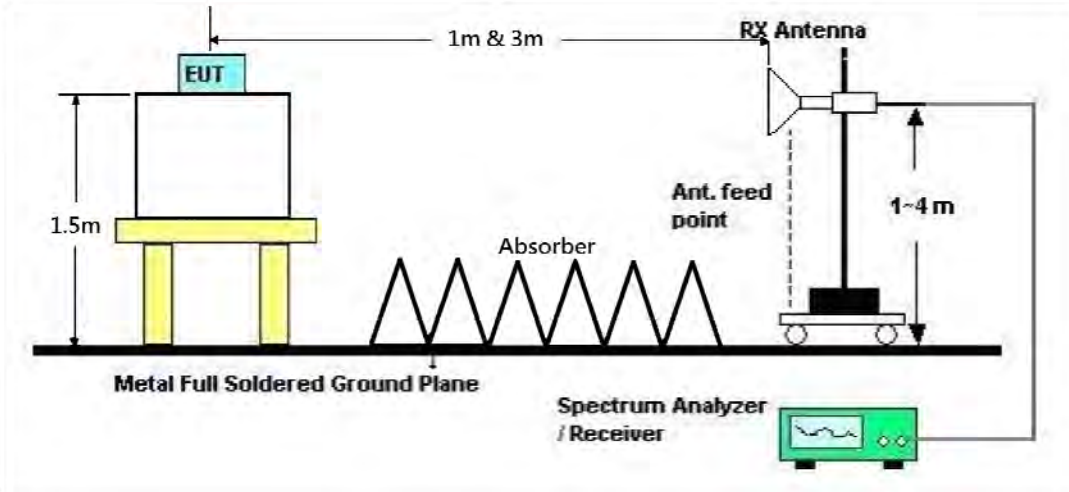
For Radiated Emissions: 9kHz ~30MHz



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	25°C	Humidity	58%
Test Engineer	Alvin Li	Configurations	Normal Link
Test Date	Sep. 02, 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.

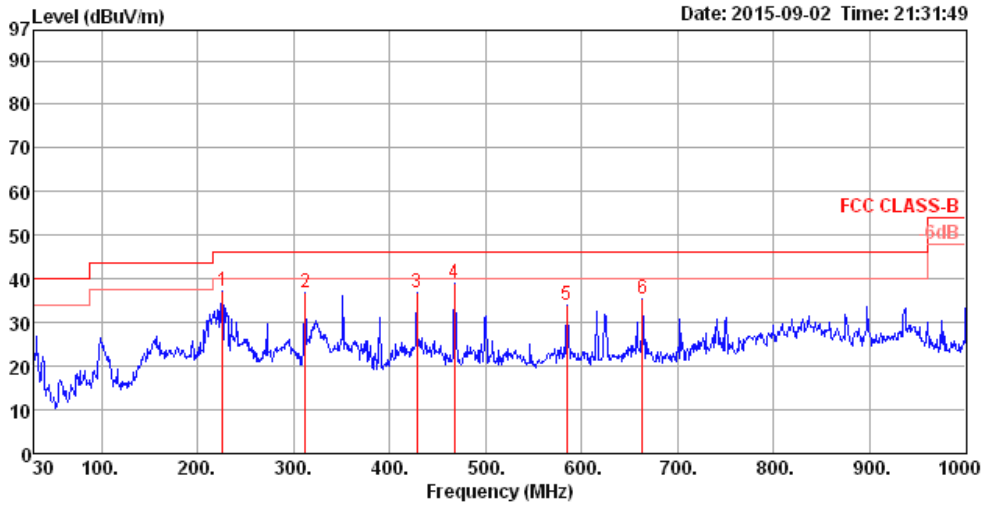
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

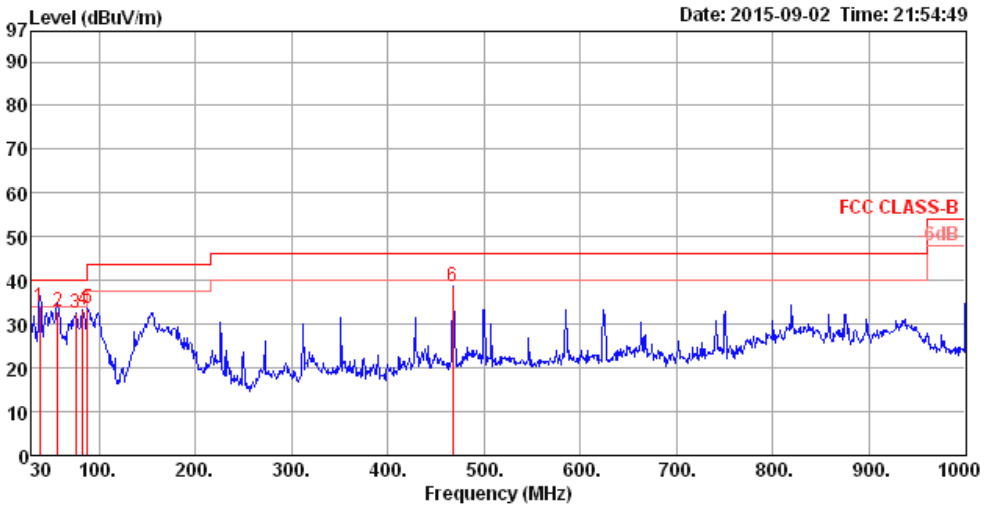
Temperature	25°C	Humidity	58%
Test Engineer	Alvin Li	Configurations	Normal Link

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	225.94	37.16	46.00	-8.84	54.69	1.82	10.87	30.22	100	0	HORIZONTAL	Peak
2	312.27	36.84	46.00	-9.16	49.93	2.16	14.15	29.40	100	0	HORIZONTAL	Peak
3	428.67	36.80	46.00	-9.20	45.30	2.58	16.85	27.93	100	0	HORIZONTAL	Peak
4	467.47	38.88	46.00	-7.12	46.18	2.70	17.39	27.39	100	0	HORIZONTAL	Peak
5	584.84	33.91	46.00	-12.09	39.75	3.07	18.91	27.82	100	0	HORIZONTAL	Peak
6	663.41	35.60	46.00	-10.40	40.69	3.30	19.53	27.92	100	0	HORIZONTAL	Peak

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	38.73	33.89	40.00	-6.11	42.56	0.73	14.61	24.01	150	286	VERTICAL	QP
2	57.16	32.75	40.00	-7.25	49.24	0.88	7.37	24.74	150	232	VERTICAL	QP
3	75.59	32.71	40.00	-7.29	49.94	1.02	7.16	25.41	200	0	VERTICAL	Peak
4	83.35	33.30	40.00	-6.70	49.79	1.07	8.07	25.63	200	0	VERTICAL	Peak
5	87.99	33.51	40.00	-6.49	49.27	1.11	8.89	25.76	200	0	VERTICAL	Peak
6	467.47	38.70	46.00	-7.30	46.00	2.70	17.39	27.39	200	0	VERTICAL	Peak

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	25°C	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11b CH 1 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.94	44.56	74.00	-29.44	40.28	5.87	33.42	35.01	Peak	245	302	HORIZONTAL
2	4824.00	31.22	54.00	-22.78	26.94	5.87	33.42	35.01	Average	245	302	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4824.07	38.36	54.00	-15.64	34.08	5.87	33.42	35.01	Average	153	10	VERTICAL
2	4824.14	47.64	74.00	-26.36	43.36	5.87	33.42	35.01	Peak	153	10	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11b CH 6 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.54	45.85	74.00	-28.15	41.41	5.92	33.53	35.01	Peak	164	355	HORIZONTAL
2	4873.89	32.70	54.00	-21.30	28.26	5.92	33.53	35.01	Average	164	355	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4874.03	35.50	54.00	-18.50	31.06	5.92	33.53	35.01	Average	271	3	VERTICAL
2	4874.19	46.60	74.00	-27.40	42.16	5.92	33.53	35.01	Peak	271	3	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11b CH 11 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4924.02	32.41	54.00	-21.59	27.80	5.97	33.65	35.01	Average	173	87	HORIZONTAL
2	4924.26	45.87	74.00	-28.13	41.26	5.97	33.65	35.01	Peak	173	87	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4924.04	35.58	54.00	-18.42	30.97	5.97	33.65	35.01	Average	238	18	VERTICAL
2	4924.10	47.27	74.00	-26.73	42.66	5.97	33.65	35.01	Peak	238	18	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11g CH 1 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4821.84	32.82	54.00	-21.18	28.54	5.87	33.42	35.01	Average	145	34	HORIZONTAL
2	4824.30	46.38	74.00	-27.62	42.10	5.87	33.42	35.01	Peak	145	34	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.52	45.71	74.00	-28.29	41.43	5.87	33.42	35.01	Peak	164	34	VERTICAL
2	4826.94	32.93	54.00	-21.07	28.65	5.87	33.42	35.01	Average	164	34	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11g CH 6 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4872.66	33.02	54.00	-20.98	28.58	5.92	33.53	35.01	Average	150	334	HORIZONTAL
2	4872.68	45.57	74.00	-28.43	41.13	5.92	33.53	35.01	Peak	150	334	HORIZONTAL
3	7307.10	48.40	74.00	-25.60	40.17	7.13	36.38	35.28	Peak	132	140	HORIZONTAL
4	7311.08	36.53	54.00	-17.47	28.30	7.13	36.38	35.28	Average	132	140	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4870.62	45.77	74.00	-28.23	41.33	5.92	33.53	35.01	Peak	153	357	VERTICAL
2	4872.72	33.02	54.00	-20.98	28.58	5.92	33.53	35.01	Average	153	357	VERTICAL
3	7310.78	49.21	74.00	-24.79	40.98	7.13	36.38	35.28	Peak	100	34	VERTICAL
4	7311.10	39.48	54.00	-14.52	31.25	7.13	36.38	35.28	Average	100	34	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11g CH 11 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4924.18	46.37	74.00	-27.63	41.76	5.97	33.65	35.01	Peak	150	116	HORIZONTAL
2	4926.30	33.67	54.00	-20.33	29.06	5.97	33.65	35.01	Average	150	116	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4925.40	33.64	54.00	-20.36	29.03	5.97	33.65	35.01	Average	133	154	VERTICAL
2	4926.50	46.72	74.00	-27.28	42.11	5.97	33.65	35.01	Peak	133	154	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4822.60	32.63	54.00	-21.37	28.35	5.87	33.42	35.01	Average	151	187	HORIZONTAL
2	4827.00	45.55	74.00	-28.45	41.27	5.87	33.42	35.01	Peak	151	187	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4819.52	32.78	54.00	-21.22	28.50	5.87	33.42	35.01	Average	148	356	VERTICAL
2	4827.96	45.38	74.00	-28.62	41.10	5.87	33.42	35.01	Peak	148	356	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 6 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.80	33.10	54.00	-20.90	28.66	5.92	33.53	35.01	Average	150	137	HORIZONTAL
2	4876.64	45.49	74.00	-28.51	41.05	5.92	33.53	35.01	Peak	150	137	HORIZONTAL
3	7306.12	48.64	74.00	-25.36	40.41	7.13	36.38	35.28	Peak	153	262	HORIZONTAL
4	7307.72	35.79	54.00	-18.21	27.56	7.13	36.38	35.28	Average	153	262	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.34	45.99	74.00	-28.01	41.55	5.92	33.53	35.01	Peak	151	49	VERTICAL
2	4874.02	33.05	54.00	-20.95	28.61	5.92	33.53	35.01	Average	151	49	VERTICAL
3	7311.10	36.98	54.00	-17.02	28.75	7.13	36.38	35.28	Average	155	25	VERTICAL
4	7311.56	48.40	74.00	-25.60	40.17	7.13	36.38	35.28	Peak	155	25	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4919.72	46.14	74.00	-27.86	41.53	5.97	33.65	35.01	Peak	149	199	HORIZONTAL
2	4924.88	33.44	54.00	-20.56	28.83	5.97	33.65	35.01	Average	149	199	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4922.04	33.64	54.00	-20.36	29.03	5.97	33.65	35.01	Average	149	211	VERTICAL
2	4922.36	46.71	74.00	-27.29	42.10	5.97	33.65	35.01	Peak	149	211	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4843.18	45.06	74.00	-28.94	40.73	5.88	33.46	35.01	Peak	156	294	HORIZONTAL
2	4844.80	32.52	54.00	-21.48	28.19	5.88	33.46	35.01	Average	156	294	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4844.16	32.58	54.00	-21.42	28.25	5.88	33.46	35.01	Average	152	348	VERTICAL
2	4846.28	45.51	74.00	-28.49	41.18	5.88	33.46	35.01	Peak	152	348	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.76	33.13	54.00	-20.87	28.69	5.92	33.53	35.01	Average	159	179	HORIZONTAL
2	4874.44	46.22	74.00	-27.78	41.78	5.92	33.53	35.01	Peak	159	179	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4869.32	45.63	74.00	-28.37	41.19	5.92	33.53	35.01	Peak	156	131	VERTICAL
2	4873.06	32.84	54.00	-21.16	28.40	5.92	33.53	35.01	Average	156	131	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4926.40	33.61	54.00	-20.39	29.00	5.97	33.65	35.01	Average	184	320	HORIZONTAL
2	4928.46	45.95	74.00	-28.05	41.34	5.97	33.65	35.01	Peak	184	320	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4925.76	33.56	54.00	-20.44	28.95	5.97	33.65	35.01	Average	158	297	VERTICAL
2	4927.60	45.96	74.00	-28.04	41.35	5.97	33.65	35.01	Peak	158	297	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11a CH 149 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 22, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11488.65	53.12	74.00	-20.88	39.60	9.24	39.08	34.80	Peak	154	183	HORIZONTAL
2	11491.90	39.94	54.00	-14.06	26.42	9.24	39.08	34.80	Average	154	183	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11488.65	41.42	54.00	-12.58	27.90	9.24	39.08	34.80	Average	154	135	VERTICAL
2	11492.15	53.59	74.00	-20.41	40.07	9.24	39.08	34.80	Peak	154	135	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11a CH 157 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 22, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11567.97	40.76	54.00	-13.24	27.17	9.26	39.14	34.81	Average	154	196	HORIZONTAL
2	11572.10	53.97	74.00	-20.03	40.39	9.26	39.14	34.82	Peak	154	196	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11567.50	40.88	54.00	-13.12	27.29	9.26	39.14	34.81	Average	154	164	VERTICAL
2	11569.98	53.87	74.00	-20.13	40.29	9.26	39.14	34.82	Peak	154	164	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11a CH 165 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 22, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11647.80	41.35	54.00	-12.65	27.73	9.28	39.18	34.84	Average	154	218	HORIZONTAL
2	11647.80	54.42	74.00	-19.58	40.80	9.28	39.18	34.84	Peak	154	218	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11647.56	54.27	74.00	-19.73	40.65	9.28	39.18	34.84	Peak	154	244	VERTICAL
2	11651.29	41.31	54.00	-12.69	27.68	9.28	39.19	34.84	Average	154	244	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 22, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11488.88	53.78	74.00	-20.22	40.26	9.24	39.08	34.80	Peak	154	217	HORIZONTAL
2	11490.73	40.58	54.00	-13.42	27.06	9.24	39.08	34.80	Average	154	217	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11488.30	52.84	74.00	-21.16	39.32	9.24	39.08	34.80	Peak	154	181	VERTICAL
2	11491.31	40.47	54.00	-13.53	26.95	9.24	39.08	34.80	Average	154	181	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 22, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11491.89	40.31	54.00	-13.69	26.79	9.24	39.08	34.80	Average	151	158	HORIZONTAL
2	11492.12	53.79	74.00	-20.21	40.27	9.24	39.08	34.80	Peak	151	158	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11489.26	53.06	74.00	-20.94	39.54	9.24	39.08	34.80	Peak	151	138	VERTICAL
2	11492.35	40.45	54.00	-13.55	26.93	9.24	39.08	34.80	Average	151	138	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 22, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11650.80	41.04	54.00	-12.96	27.41	9.28	39.19	34.84	Average	151	135	HORIZONTAL
2	11652.08	54.47	74.00	-19.53	40.84	9.28	39.19	34.84	Peak	151	135	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11648.84	41.03	54.00	-12.97	27.41	9.28	39.18	34.84	Average	151	116	VERTICAL
2	11652.42	53.97	74.00	-20.03	40.34	9.28	39.19	34.84	Peak	151	116	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 22, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11507.95	40.22	54.00	-13.78	26.67	9.25	39.10	34.80	Average	151	169	HORIZONTAL
2	11510.07	53.60	74.00	-20.40	40.05	9.25	39.10	34.80	Peak	151	169	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11509.63	53.65	74.00	-20.35	40.10	9.25	39.10	34.80	Peak	151	193	VERTICAL
2	11510.33	40.17	54.00	-13.83	26.62	9.25	39.10	34.80	Average	151	193	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 22, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11590.51	40.35	54.00	-13.65	26.75	9.27	39.15	34.82	Average	151	187	HORIZONTAL
2	11590.86	53.53	74.00	-20.47	39.93	9.27	39.15	34.82	Peak	151	187	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11590.19	40.46	54.00	-13.54	26.86	9.27	39.15	34.82	Average	151	216	VERTICAL
2	11590.87	53.49	74.00	-20.51	39.89	9.27	39.15	34.82	Peak	151	216	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 22, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11549.17	53.43	74.00	-20.57	39.85	9.26	39.13	34.81	Peak	151	159	HORIZONTAL
2	11551.61	40.27	54.00	-13.73	26.69	9.26	39.13	34.81	Average	151	159	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11548.43	53.88	74.00	-20.12	40.31	9.26	39.12	34.81	Peak	151	201	VERTICAL
2	11551.46	40.55	54.00	-13.45	26.97	9.26	39.13	34.81	Average	151	201	VERTICAL

For beamforming mode

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4821.86	31.64	54.00	-22.36	27.36	5.87	33.42	35.01	Average	191	74	HORIZONTAL
2	4823.59	45.54	74.00	-28.46	41.26	5.87	33.42	35.01	Peak	191	74	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.48	31.81	54.00	-22.19	27.53	5.87	33.42	35.01	Average	172	136	VERTICAL
2	4824.50	43.98	74.00	-30.02	39.70	5.87	33.42	35.01	Peak	172	136	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 6 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4872.69	32.64	54.00	-21.36	28.20	5.92	33.53	35.01	Average	164	132	HORIZONTAL
2	4873.52	45.46	74.00	-28.54	41.02	5.92	33.53	35.01	Peak	164	132	HORIZONTAL
3	7309.09	34.72	54.00	-19.28	26.49	7.13	36.38	35.28	Average	217	263	HORIZONTAL
4	7311.16	48.49	74.00	-25.51	40.26	7.13	36.38	35.28	Peak	217	263	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.38	45.46	74.00	-28.54	41.02	5.92	33.53	35.01	Peak	190	138	VERTICAL
2	4873.93	33.42	54.00	-20.58	28.98	5.92	33.53	35.01	Average	190	138	VERTICAL
3	7311.00	36.92	54.00	-17.08	28.69	7.13	36.38	35.28	Average	106	37	VERTICAL
4	7311.25	48.03	74.00	-25.97	39.80	7.13	36.38	35.28	Peak	106	37	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4926.04	45.25	74.00	-28.75	40.64	5.97	33.65	35.01	Peak	136	162	HORIZONTAL
2	4926.20	32.76	54.00	-21.24	28.15	5.97	33.65	35.01	Average	136	162	HORIZONTAL
3	7383.99	47.53	74.00	-26.47	39.08	7.17	36.57	35.29	Peak	197	203	HORIZONTAL
4	7384.35	35.10	54.00	-18.90	26.65	7.17	36.57	35.29	Average	197	203	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4921.76	45.39	74.00	-28.61	40.78	5.97	33.65	35.01	Peak	174	94	VERTICAL
2	4924.98	32.79	54.00	-21.21	28.18	5.97	33.65	35.01	Average	174	94	VERTICAL
3	7386.01	48.02	74.00	-25.98	39.57	7.17	36.57	35.29	Peak	105	39	VERTICAL
4	7386.07	36.57	54.00	-17.43	28.12	7.17	36.57	35.29	Average	105	39	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4843.46	31.91	54.00	-22.09	27.58	5.88	33.46	35.01	Average	182	171	HORIZONTAL
2	4844.92	44.53	74.00	-29.47	40.20	5.88	33.46	35.01	Peak	182	171	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4844.36	45.64	74.00	-28.36	41.31	5.88	33.46	35.01	Peak	142	213	VERTICAL
2	4845.99	32.31	54.00	-21.69	27.98	5.88	33.46	35.01	Average	142	213	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4874.25	45.67	74.00	-28.33	41.23	5.92	33.53	35.01	Peak	159	99	HORIZONTAL
2	4876.10	32.33	54.00	-21.67	27.89	5.92	33.53	35.01	Average	159	99	HORIZONTAL
3	7308.85	47.80	74.00	-26.20	39.57	7.13	36.38	35.28	Peak	177	249	HORIZONTAL
4	7313.30	34.66	54.00	-19.34	26.43	7.13	36.38	35.28	Average	177	249	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4871.80	46.41	74.00	-27.59	41.97	5.92	33.53	35.01	Peak	166	106	VERTICAL
2	4872.59	32.55	54.00	-21.45	28.11	5.92	33.53	35.01	Average	166	106	VERTICAL
3	7310.65	48.07	74.00	-25.93	39.84	7.13	36.38	35.28	Peak	100	36	VERTICAL
4	7311.04	36.84	54.00	-17.16	28.61	7.13	36.38	35.28	Average	100	36	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4905.36	32.79	54.00	-21.21	28.24	5.95	33.61	35.01	Average	162	47	HORIZONTAL
2	4905.44	45.48	74.00	-28.52	40.93	5.95	33.61	35.01	Peak	162	47	HORIZONTAL
3	7353.88	35.24	54.00	-18.76	26.86	7.16	36.50	35.28	Average	142	331	HORIZONTAL
4	7357.49	47.97	74.00	-26.03	39.59	7.16	36.50	35.28	Peak	142	331	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4905.92	32.88	54.00	-21.12	28.33	5.95	33.61	35.01	Average	205	142	VERTICAL
2	4907.68	46.27	74.00	-27.73	41.72	5.95	33.61	35.01	Peak	205	142	VERTICAL
3	7356.03	37.11	54.00	-16.89	28.73	7.16	36.50	35.28	Average	100	37	VERTICAL
4	7356.04	48.45	74.00	-25.55	40.07	7.16	36.50	35.28	Peak	100	37	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11486.16	39.95	54.00	-14.05	26.43	9.24	39.08	34.80	Average	100	303	HORIZONTAL
2	11490.96	52.73	74.00	-21.27	39.21	9.24	39.08	34.80	Peak	100	303	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11489.00	56.34	74.00	-17.66	42.82	9.24	39.08	34.80	Peak	227	83	VERTICAL
2	11490.28	43.06	54.00	-10.94	29.54	9.24	39.08	34.80	Average	227	83	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11568.36	56.53	74.00	-17.47	42.94	9.26	39.14	34.81	Peak	224	112	HORIZONTAL
2	11569.92	42.87	54.00	-11.13	29.29	9.26	39.14	34.82	Average	224	112	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11574.04	43.86	54.00	-10.14	30.28	9.26	39.14	34.82	Average	229	88	VERTICAL
2	11575.44	57.05	74.00	-16.95	43.47	9.26	39.14	34.82	Peak	229	88	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11644.04	54.05	74.00	-19.95	40.42	9.28	39.18	34.83	Peak	102	101	HORIZONTAL
2	11648.32	41.18	54.00	-12.82	27.56	9.28	39.18	34.84	Average	102	101	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11645.28	57.34	74.00	-16.66	43.71	9.28	39.18	34.83	Peak	206	86	VERTICAL
2	11650.12	43.64	54.00	-10.36	30.02	9.28	39.18	34.84	Average	206	86	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11494.08	40.86	54.00	-13.14	27.34	9.24	39.08	34.80	Average	168	271	HORIZONTAL
2	11496.72	53.81	74.00	-20.19	40.29	9.24	39.08	34.80	Peak	168	271	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11510.56	42.25	54.00	-11.75	28.70	9.25	39.10	34.80	Average	283	91	VERTICAL
2	11513.60	54.96	74.00	-19.04	41.41	9.25	39.10	34.80	Peak	283	91	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11574.24	53.35	74.00	-20.65	39.77	9.26	39.14	34.82	Peak	188	277	HORIZONTAL
2	11579.68	41.33	54.00	-12.67	27.75	9.26	39.14	34.82	Average	188	277	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11586.16	55.21	74.00	-18.79	41.61	9.27	39.15	34.82	Peak	161	85	VERTICAL
2	11590.00	42.90	54.00	-11.10	29.30	9.27	39.15	34.82	Average	161	85	VERTICAL

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Antenna 5 + Antenna 6 + Antenna 7 + Antenna 8
Test Date	Aug. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11552.50	40.92	54.00	-13.08	27.34	9.26	39.13	34.81	Average	143	136	HORIZONTAL
2	11554.90	53.88	74.00	-20.12	40.30	9.26	39.13	34.81	Peak	143	136	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11548.96	54.01	74.00	-19.99	40.43	9.26	39.13	34.81	Peak	184	271	VERTICAL
2	11549.48	40.50	54.00	-13.50	26.92	9.26	39.13	34.81	Average	184	271	VERTICAL

Note:

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

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

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

4.6. Emissions Measurement

4.6.1. 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

4.6.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (30dBc in any 100 kHz bandwidth emission)	100 kHz / 300 kHz for Peak

4.6.3. Test Procedures

For Radiated band edges Measurement:

1. The test procedure is the same as section 4.5.3.

For Radiated Out of Band Emission Measurement:

1. Test was performed in accordance with KDB558074 D01 v03r03 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 10.1 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure

4.6.4. Test Setup Layout

For Radiated band edges Measurement:

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

For Radiated Out of Band Emission Measurement:

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

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

For non-beamforming mode

Temperature	25°C	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11b CH 1, 6, 11 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.60	63.29	74.00	-10.71	30.99	4.09	28.21	0.00	Peak	230	147	VERTICAL
2	2390.00	52.67	54.00	-1.33	20.37	4.09	28.21	0.00	Average	230	147	VERTICAL
3	2413.00	123.24			90.89	4.11	28.24	0.00	Peak	230	147	VERTICAL
4	2413.20	118.91			86.56	4.11	28.24	0.00	Average	230	147	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2381.80	57.67	74.00	-16.33	25.41	4.08	28.18	0.00	Peak	216	147	VERTICAL
2	2390.00	45.92	54.00	-8.08	13.62	4.09	28.21	0.00	Average	216	147	VERTICAL
3	2436.20	119.49			87.09	4.12	28.28	0.00	Average	216	147	VERTICAL
4	2436.20	123.62			91.22	4.12	28.28	0.00	Peak	216	147	VERTICAL
5	2488.60	58.24	74.00	-15.76	25.67	4.17	28.40	0.00	Peak	216	147	VERTICAL
6	2513.40	46.43	54.00	-7.57	13.78	4.19	28.46	0.00	Average	216	147	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2461.20	117.90			85.42	4.14	28.34	0.00	Average	236	147	VERTICAL
2	2463.00	122.00			89.52	4.14	28.34	0.00	Peak	236	147	VERTICAL
3	2483.50	52.84	54.00	-1.16	20.31	4.16	28.37	0.00	Average	236	147	VERTICAL
4	2483.50	62.86	74.00	-11.14	30.33	4.16	28.37	0.00	Peak	236	147	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11g CH 1, 6, 11 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 20, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	52.88	54.00	-1.12	20.58	4.09	28.21	0.00	Average	233	146	VERTICAL
2	2390.00	72.42	74.00	-1.58	40.12	4.09	28.21	0.00	Peak	233	146	VERTICAL
3	2412.80	109.24			76.89	4.11	28.24	0.00	Average	233	146	VERTICAL
4	2413.00	119.64			87.29	4.11	28.24	0.00	Peak	233	146	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2385.40	59.80	74.00	-14.20	27.54	4.08	28.18	0.00	Peak	217	145	VERTICAL
2	2386.60	46.41	54.00	-7.59	14.11	4.09	28.21	0.00	Average	217	145	VERTICAL
3	2436.20	114.25			81.85	4.12	28.28	0.00	Average	217	145	VERTICAL
4	2436.20	124.58			92.18	4.12	28.28	0.00	Peak	217	145	VERTICAL
5	2486.20	65.66	74.00	-8.34	33.13	4.16	28.37	0.00	Peak	217	145	VERTICAL
6	2487.80	47.43	54.00	-6.57	14.86	4.17	28.40	0.00	Average	217	145	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2461.20	120.10			87.62	4.14	28.34	0.00	Peak	236	151	VERTICAL
2	2461.40	109.56			77.08	4.14	28.34	0.00	Average	236	151	VERTICAL
3	2483.50	52.86	54.00	-1.14	20.33	4.16	28.37	0.00	Average	236	151	VERTICAL
4	2483.80	69.49	74.00	-4.51	36.96	4.16	28.37	0.00	Peak	236	151	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	52.93	54.00	-1.07	20.63	4.09	28.21	0.00	Average	225	75	VERTICAL
2	2390.00	66.54	74.00	-7.46	34.24	4.09	28.21	0.00	Peak	225	75	VERTICAL
3	2410.40	107.31			74.96	4.11	28.24	0.00	Average	225	75	VERTICAL
4	2415.20	118.15			85.80	4.11	28.24	0.00	Peak	225	75	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.80	70.66	74.00	-3.34	38.36	4.09	28.21	0.00	Peak	219	74	VERTICAL
2	2390.00	50.98	54.00	-3.02	18.68	4.09	28.21	0.00	Average	219	74	VERTICAL
3	2435.00	126.17			93.77	4.12	28.28	0.00	Peak	219	74	VERTICAL
4	2435.40	114.56			82.16	4.12	28.28	0.00	Average	219	74	VERTICAL
5	2485.40	49.93	54.00	-4.07	17.40	4.16	28.37	0.00	Average	219	74	VERTICAL
6	2485.40	64.84	74.00	-9.16	32.31	4.16	28.37	0.00	Peak	219	74	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2464.00	118.80			86.32	4.14	28.34	0.00	Peak	212	112	VERTICAL
2	2464.20	107.74			75.26	4.14	28.34	0.00	Average	212	112	VERTICAL
3	2484.00	52.94	54.00	-1.06	20.41	4.16	28.37	0.00	Average	212	112	VERTICAL
4	2484.20	71.45	74.00	-2.55	38.92	4.16	28.37	0.00	Peak	212	112	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2386.80	65.00	74.00	-9.00	32.70	4.09	28.21	0.00	Peak	224	78	VERTICAL
2	2390.00	52.79	54.00	-1.21	20.49	4.09	28.21	0.00	Average	224	78	VERTICAL
3	2406.80	111.09			78.74	4.11	28.24	0.00	Peak	224	78	VERTICAL
4	2425.20	100.44			68.04	4.12	28.28	0.00	Average	224	78	VERTICAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	52.83	54.00	-1.17	20.53	4.09	28.21	0.00	Average	245	70	VERTICAL
2	2390.00	65.51	74.00	-8.49	33.21	4.09	28.21	0.00	Peak	245	70	VERTICAL
3	2424.20	113.88			81.48	4.12	28.28	0.00	Peak	245	70	VERTICAL
4	2425.40	103.65			71.25	4.12	28.28	0.00	Average	245	70	VERTICAL
5	2485.00	48.77	54.00	-5.23	16.24	4.16	28.37	0.00	Average	245	70	VERTICAL
6	2485.80	61.19	74.00	-12.81	28.66	4.16	28.37	0.00	Peak	245	70	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2445.20	102.47			70.03	4.13	28.31	0.00	Average	213	75	VERTICAL
2	2445.20	112.70			80.26	4.13	28.31	0.00	Peak	213	75	VERTICAL
3	2485.60	52.91	54.00	-1.09	20.38	4.16	28.37	0.00	Average	213	75	VERTICAL
4	2486.00	65.53	74.00	-8.47	33.00	4.16	28.37	0.00	Peak	213	75	VERTICAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

For beamforming mode

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	52.64	54.00	-1.36	20.34	4.09	28.21	0.00	Average	213	324	VERTICAL
2	2390.00	66.90	74.00	-7.10	34.60	4.09	28.21	0.00	Peak	213	324	VERTICAL
3	2414.40	108.23			75.88	4.11	28.24	0.00	Average	213	324	VERTICAL
4	2414.80	117.37			85.02	4.11	28.24	0.00	Peak	213	324	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.40	63.71	74.00	-10.29	31.41	4.09	28.21	0.00	Peak	233	326	VERTICAL
2	2390.00	48.09	54.00	-5.91	15.79	4.09	28.21	0.00	Average	233	326	VERTICAL
3	2435.00	114.74			82.34	4.12	28.28	0.00	Average	233	326	VERTICAL
4	2437.00	124.93			92.49	4.13	28.31	0.00	Peak	233	326	VERTICAL
5	2483.50	50.28	54.00	-3.72	17.75	4.16	28.37	0.00	Average	233	326	VERTICAL
6	2484.20	66.59	74.00	-7.41	34.06	4.16	28.37	0.00	Peak	233	326	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2463.40	108.52			76.04	4.14	28.34	0.00	Average	188	117	VERTICAL
2	2464.20	118.06			85.58	4.14	28.34	0.00	Peak	188	117	VERTICAL
3	2483.50	52.85	54.00	-1.15	20.32	4.16	28.37	0.00	Average	188	117	VERTICAL
4	2484.20	69.71	74.00	-4.29	37.18	4.16	28.37	0.00	Peak	188	117	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25℃	Humidity	58%
Test Engineer	Alvin Li	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Antenna 1 + Antenna 2 + Antenna 3 + Antenna 4
Test Date	Aug. 21, 2015		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2387.60	66.04	74.00	-7.96	33.74	4.09	28.21	0.00	Peak	236	337	VERTICAL
2	2390.00	52.90	54.00	-1.10	20.60	4.09	28.21	0.00	Average	236	337	VERTICAL
3	2415.20	112.28			79.93	4.11	28.24	0.00	Peak	236	337	VERTICAL
4	2416.80	101.57			69.22	4.11	28.24	0.00	Average	236	337	VERTICAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.40	65.65	74.00	-8.35	33.35	4.09	28.21	0.00	Peak	236	18	VERTICAL
2	2390.00	52.82	54.00	-1.18	20.52	4.09	28.21	0.00	Average	236	18	VERTICAL
3	2422.60	115.01			82.61	4.12	28.28	0.00	Peak	236	18	VERTICAL
4	2424.20	104.02			71.62	4.12	28.28	0.00	Average	236	18	VERTICAL
5	2483.50	48.91	54.00	-5.09	16.38	4.16	28.37	0.00	Average	236	18	VERTICAL
6	2484.20	60.10	74.00	-13.90	27.57	4.16	28.37	0.00	Peak	236	18	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2445.60	103.08			70.64	4.13	28.31	0.00	Average	222	148	VERTICAL
2	2446.40	112.62			80.18	4.13	28.31	0.00	Peak	222	148	VERTICAL
3	2483.50	52.89	54.00	-1.11	20.36	4.16	28.37	0.00	Average	222	148	VERTICAL
4	2485.60	65.10	74.00	-8.90	32.57	4.16	28.37	0.00	Peak	222	148	VERTICAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

Note:

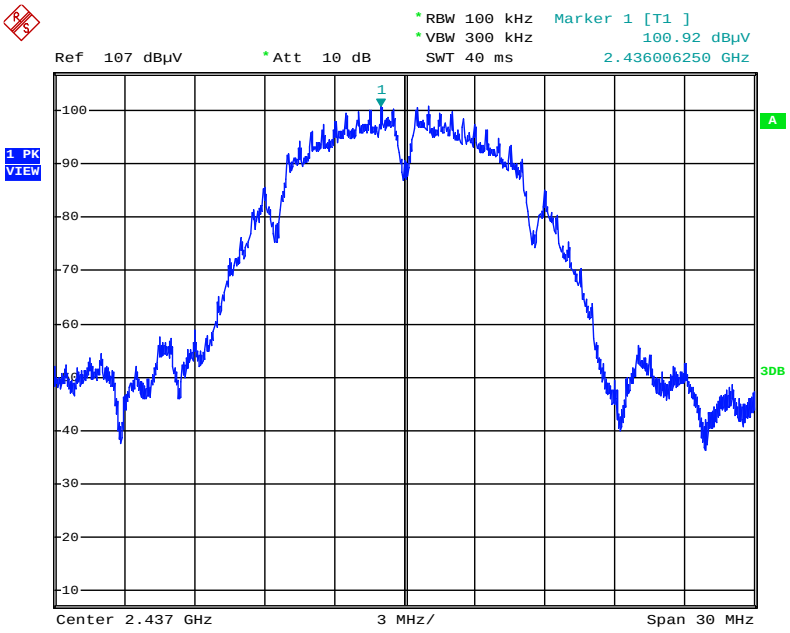
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

For Emission not in Restricted Band

For non-beamforming mode

Plot on Configuration IEEE 802.11b / Reference Level



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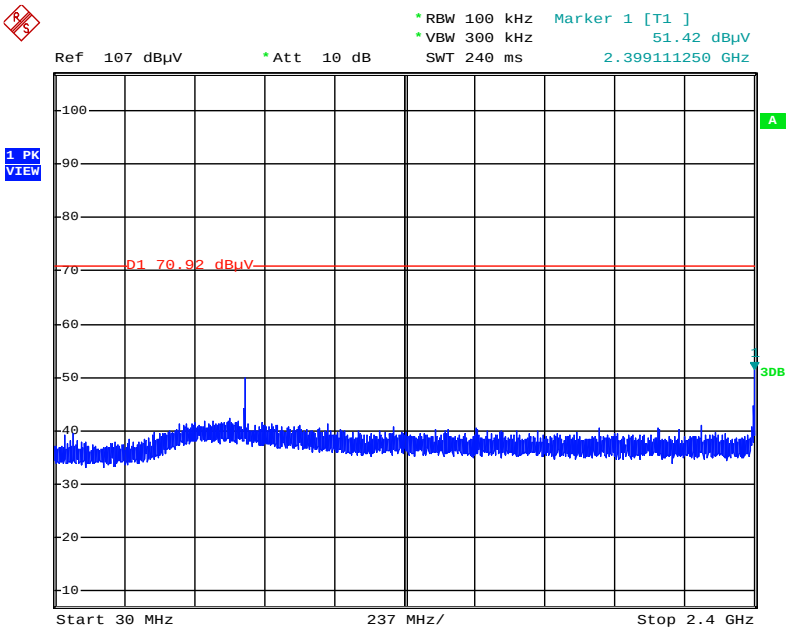
Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc)



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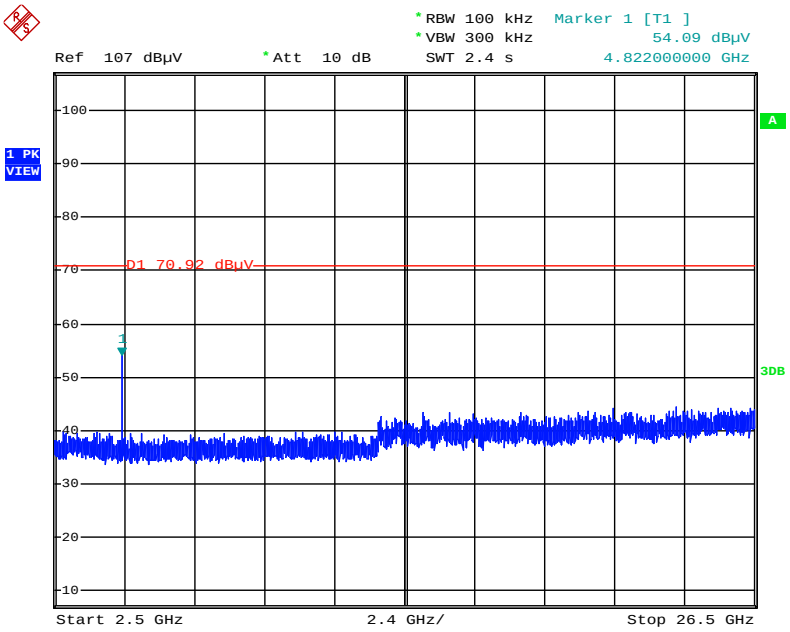
Plot on Configuration IEEE 802.11b / CH 1 / 2500MHz~26500MHz (down 30dBc)



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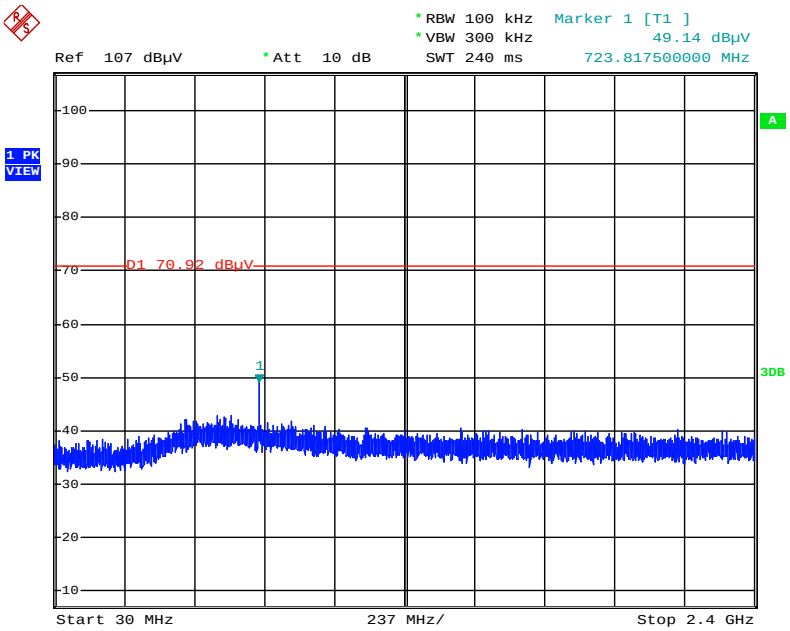
Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc)



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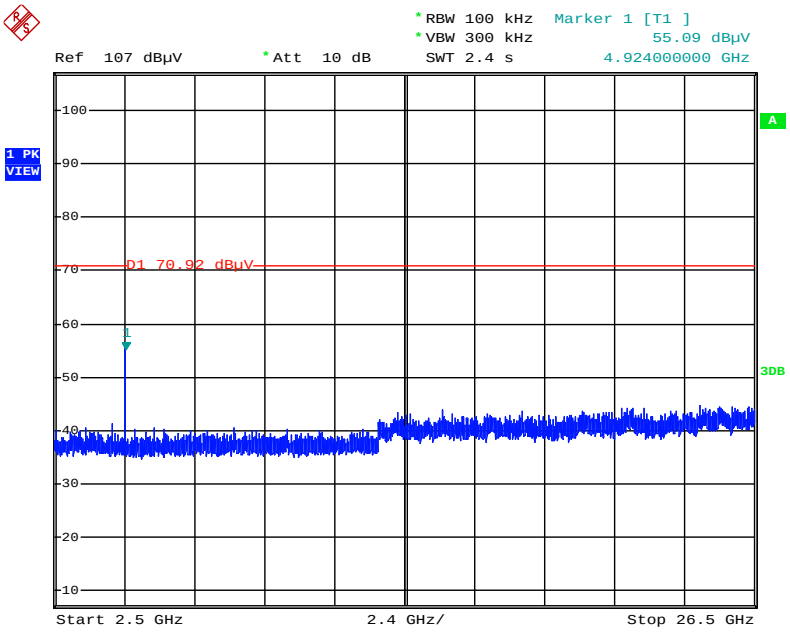
Plot on Configuration IEEE 802.11b / CH 11 / 2500MHz~26500MHz (down 30dBc)



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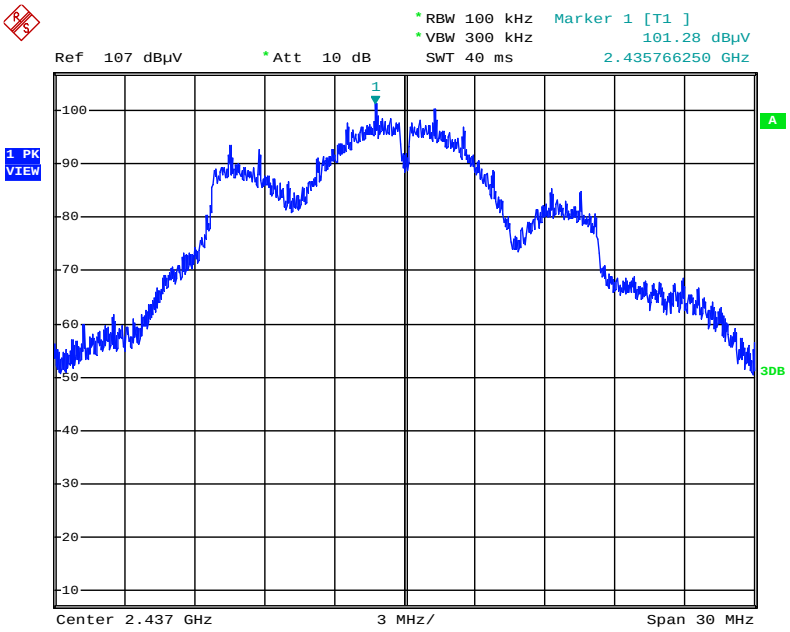
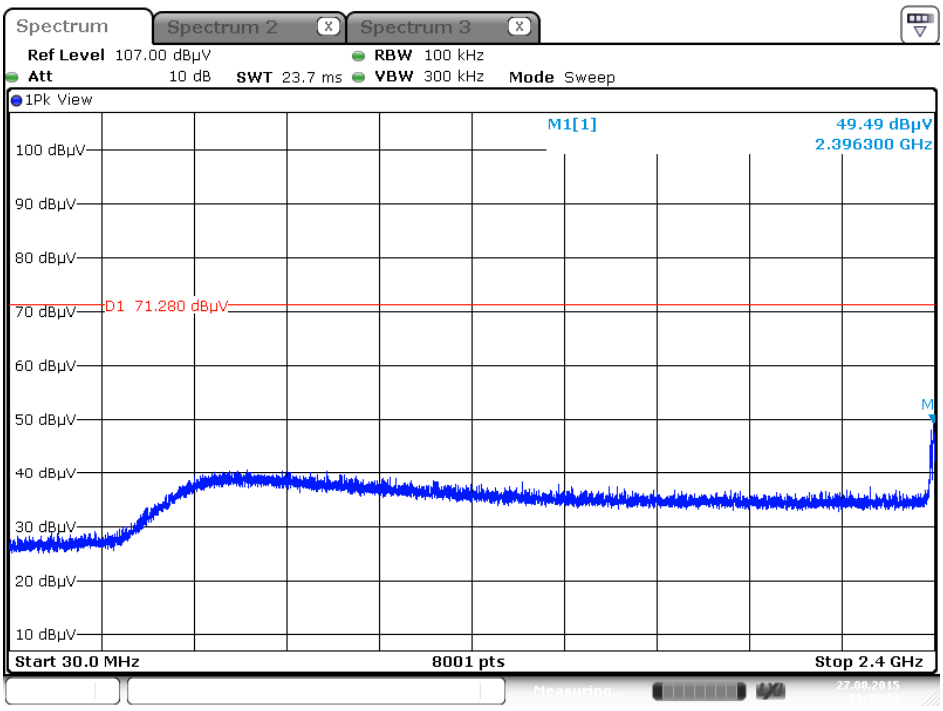
Plot on Configuration IEEE 802.11g / Reference Level



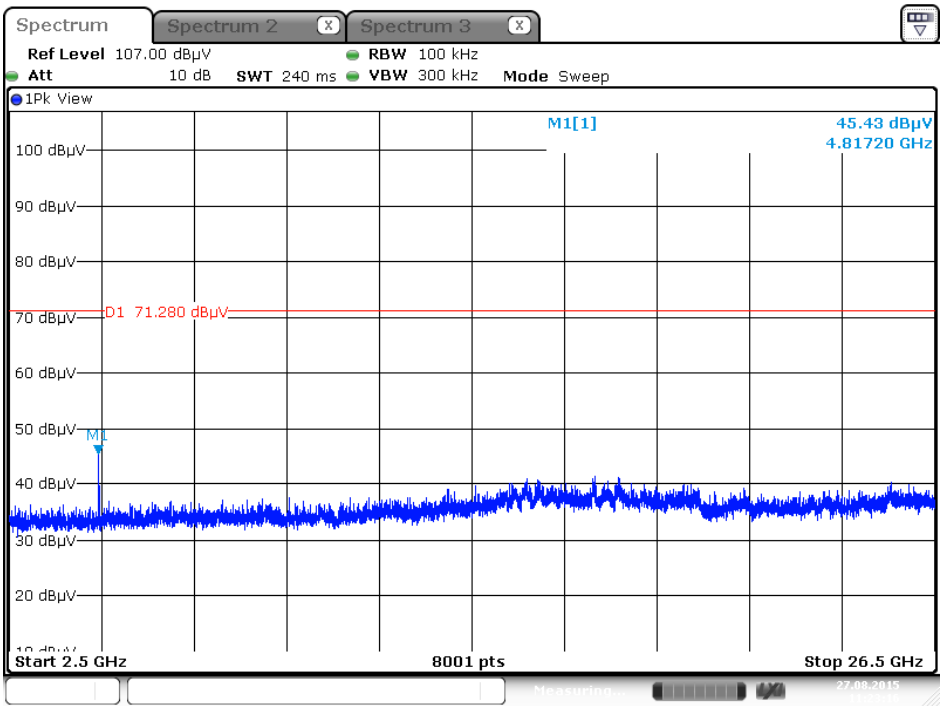
Date: 21.AUG.2015 22:40:25

Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc)



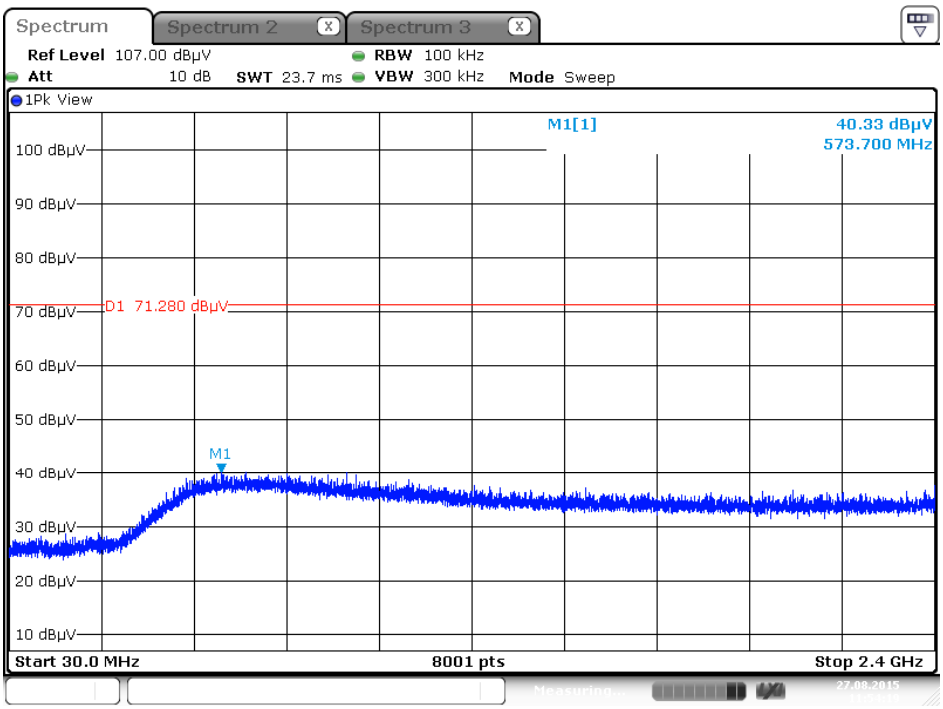
Date: 27.AUG.2015 11:32:22

Plot on Configuration IEEE 802.11g / CH 1 / 2500MHz~26500MHz (down 30dBc)



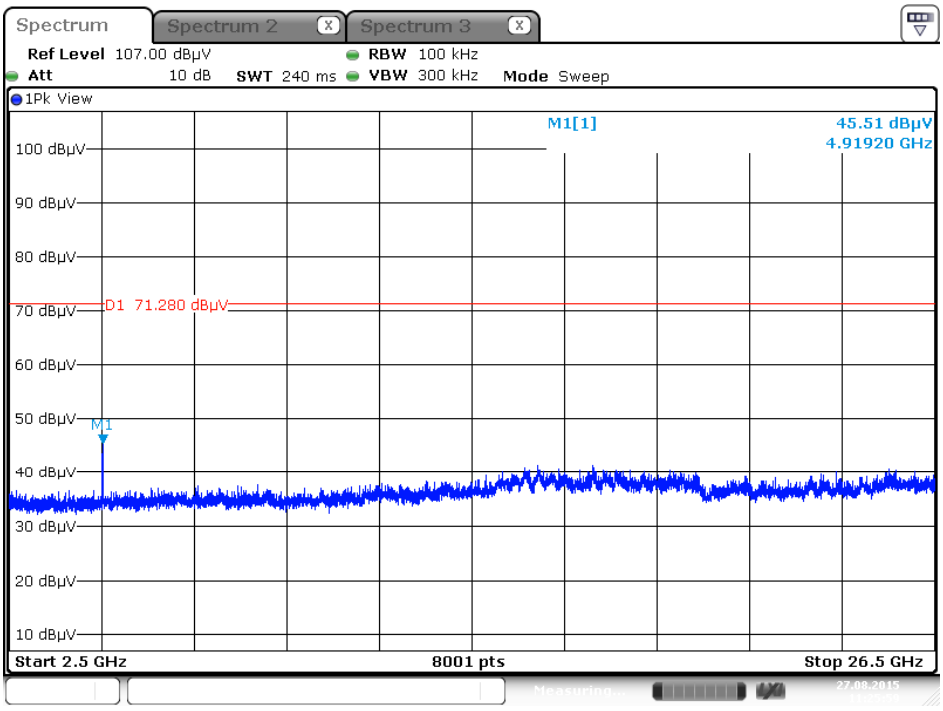
Date: 27.AUG.2015 11:23:17

Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc)



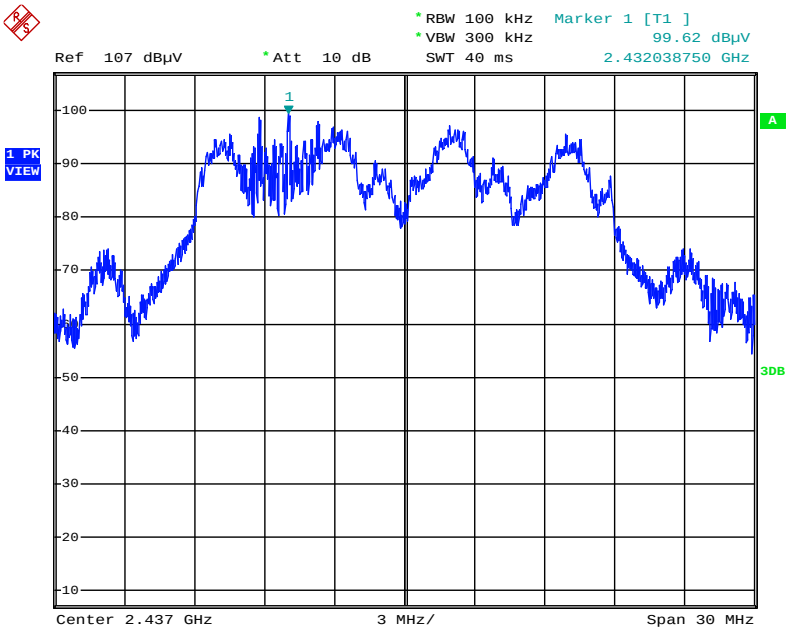
Date: 27.AUG.2015 11:54:19

Plot on Configuration IEEE 802.11g / CH 11 / 2500MHz~26500MHz (down 30dBc)



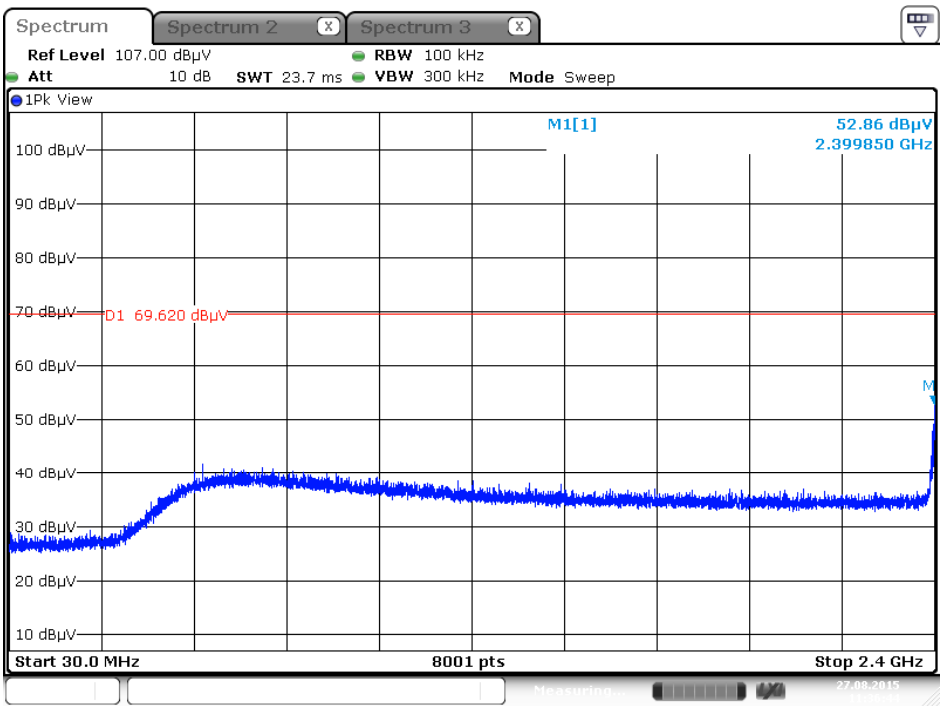
Date: 27.AUG.2015 11:25:59

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Reference Level



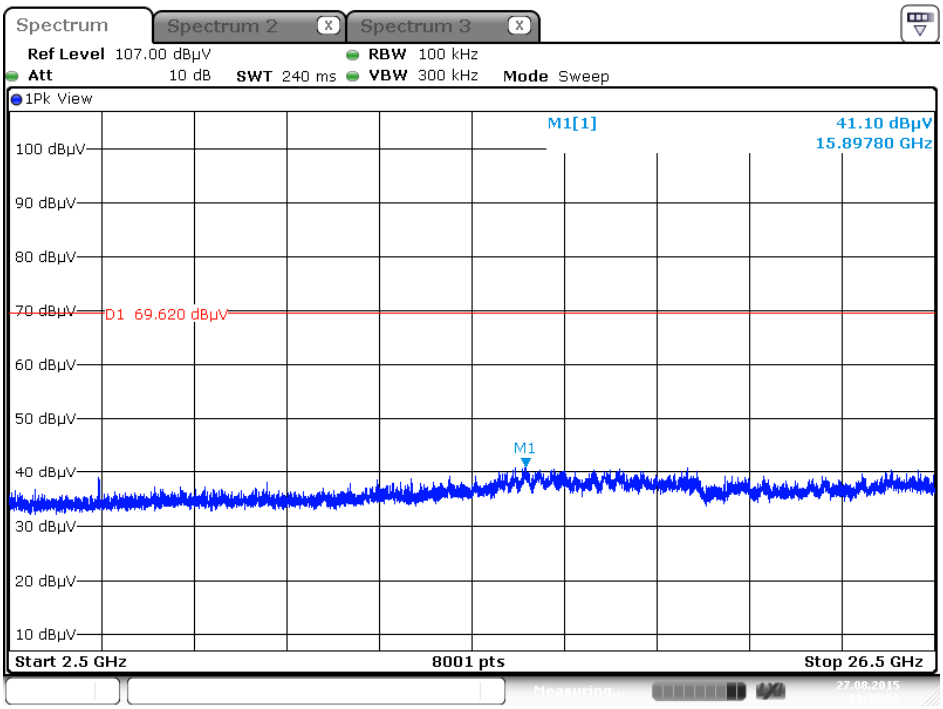
Date: 21.AUG.2015 23:03:22

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



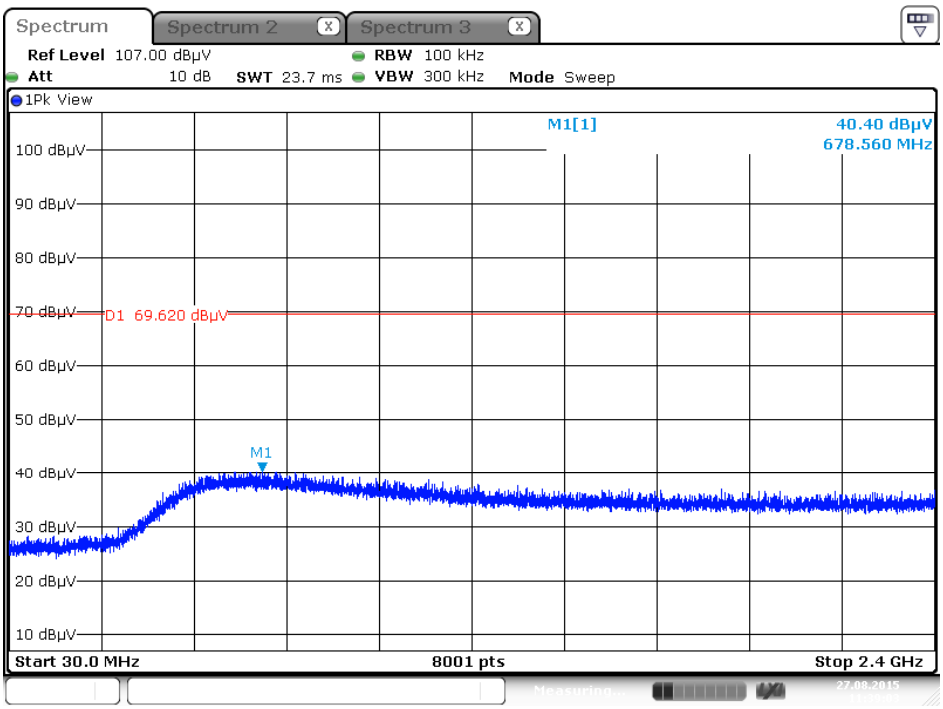
Date: 27.AUG.2015 11:36:45

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 2500MHz~26500MHz (down 30dBc)



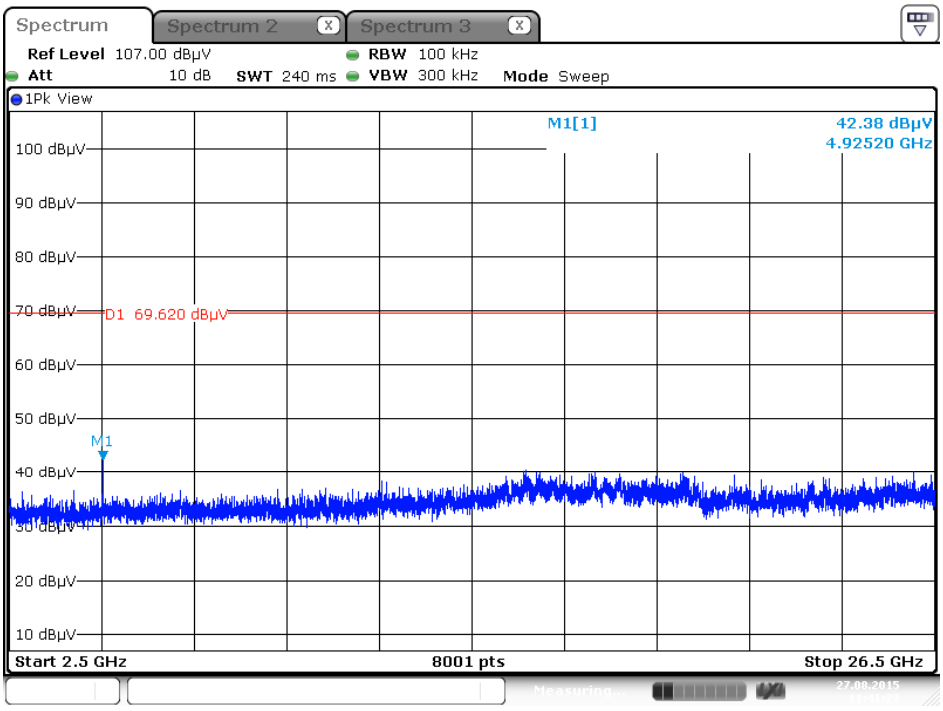
Date: 27.AUG.2015 11:37:53

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 30MHz~2400MHz (down 30dBc)



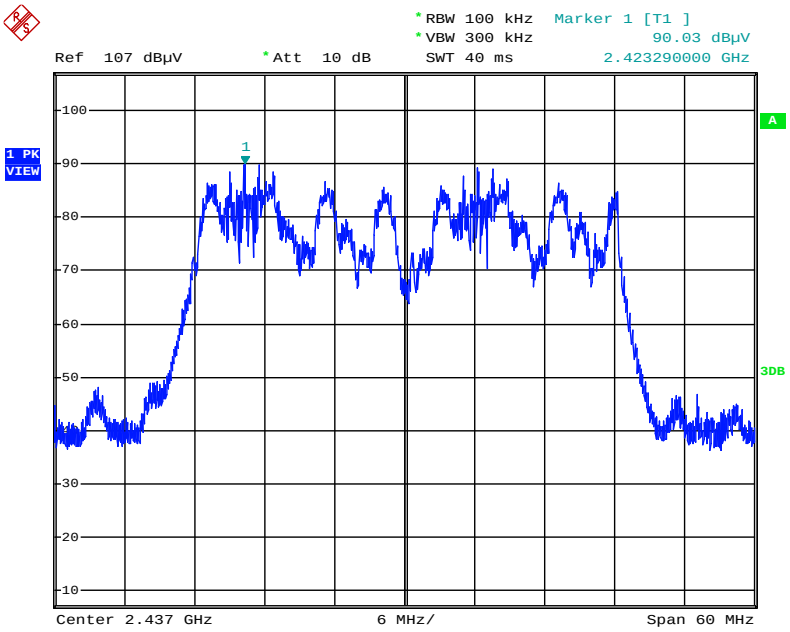
Date: 27.AUG.2015 11:39:03

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 2500MHz~26500MHz (down 30dBc)



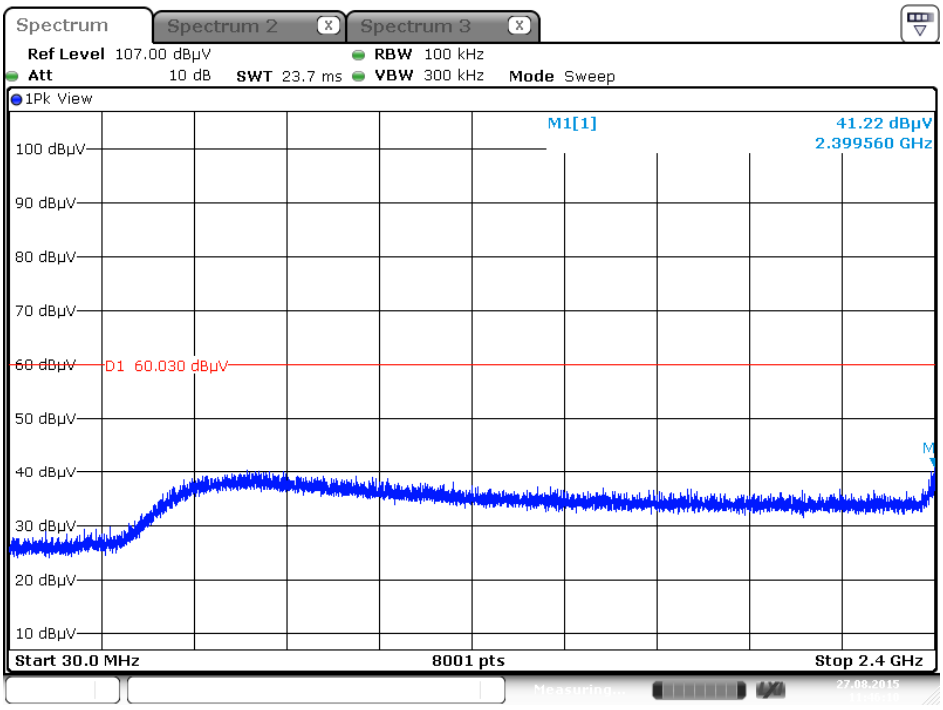
Date: 27.AUG.2015 11:41:23

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Reference Level



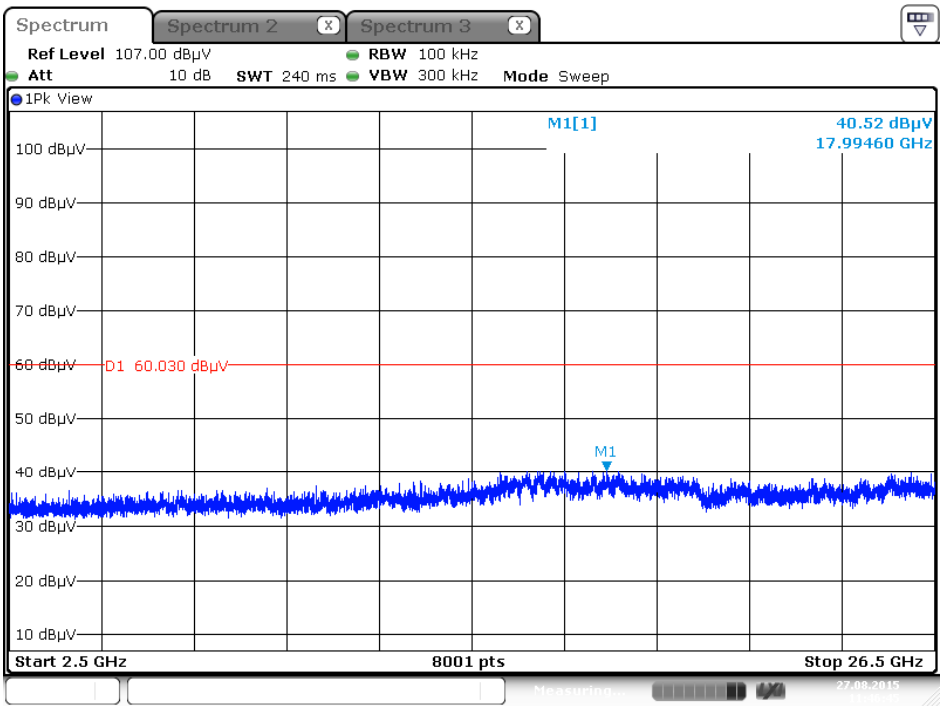
Date: 21.AUG.2015 23:11:44

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



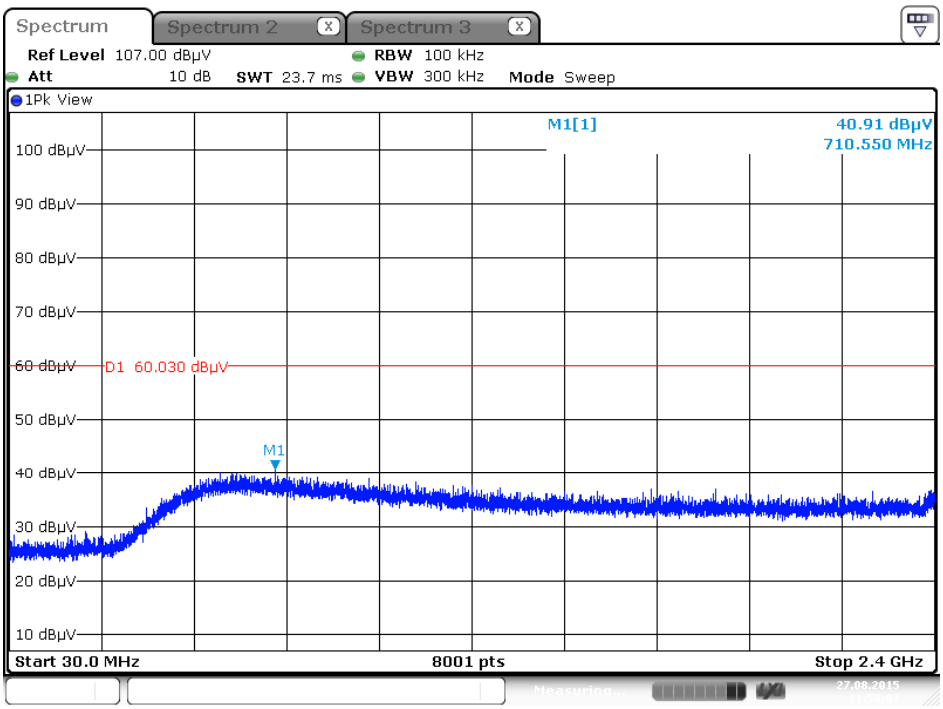
Date: 27.AUG.2015 11:46:11

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 2500MHz~26500MHz (down 30dBc)



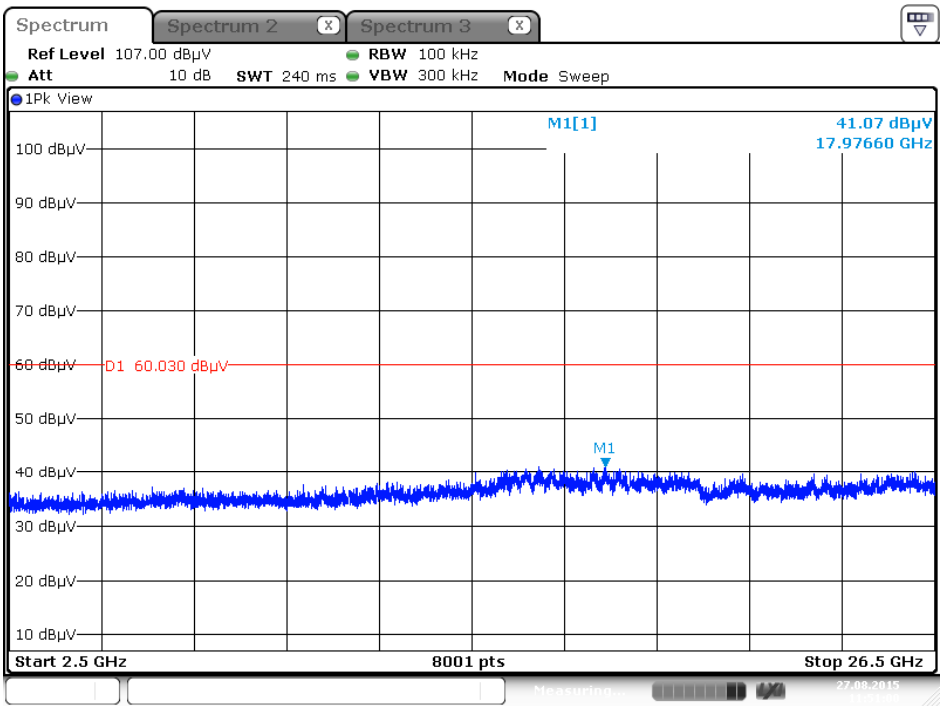
Date: 27.AUG.2015 11:46:45

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 30MHz~2400MHz (down 30dBc)



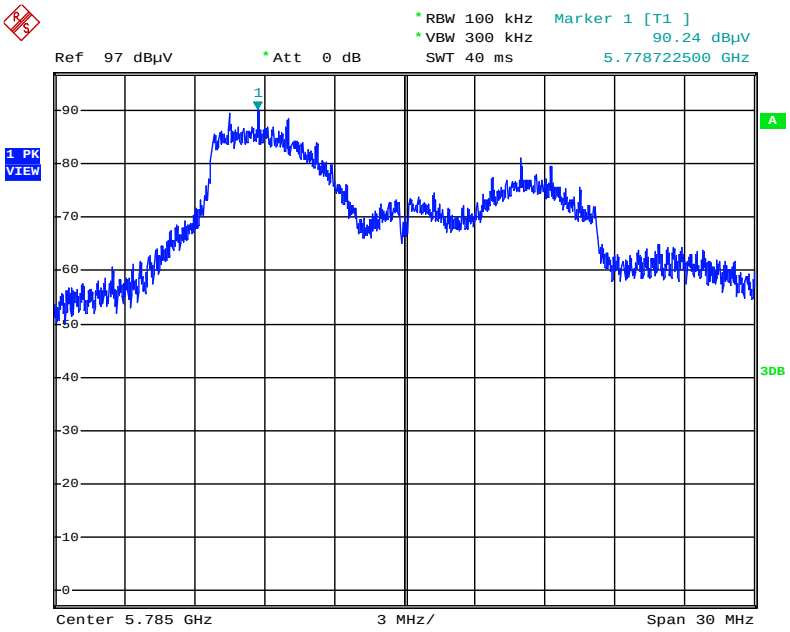
Date: 27.AUG.2015 11:50:07

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 2500MHz~26500MHz (down 30dBc)



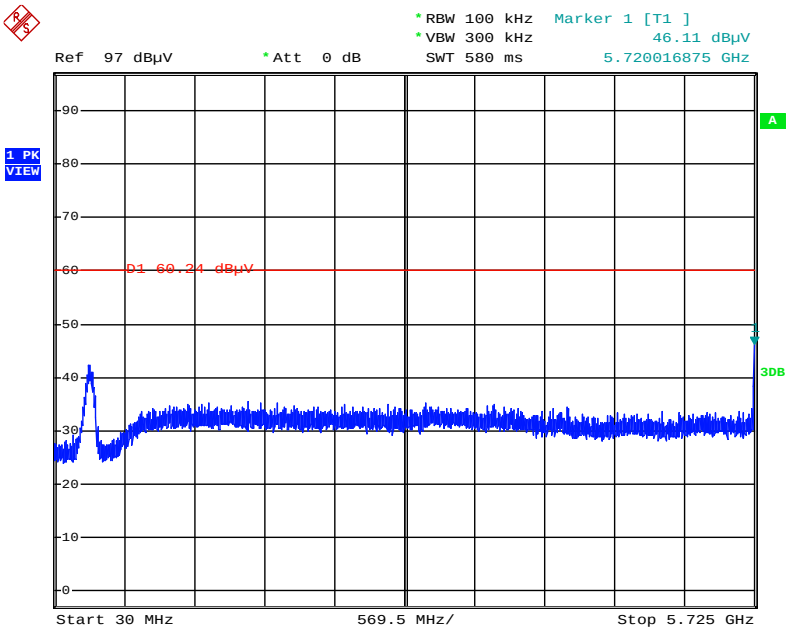
Date: 27.AUG.2015 11:51:00

Plot on Configuration IEEE 802.11a / Reference Level



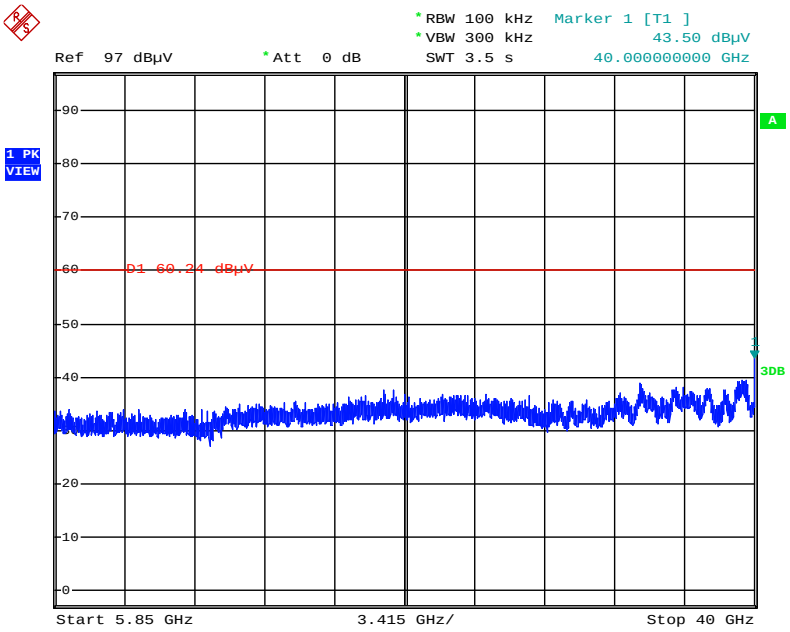
Date: 22.AUG.2015 10:41:35

Plot on Configuration IEEE 802.11a / CH 149 / 30MHz~5725MHz (down 30dBc)



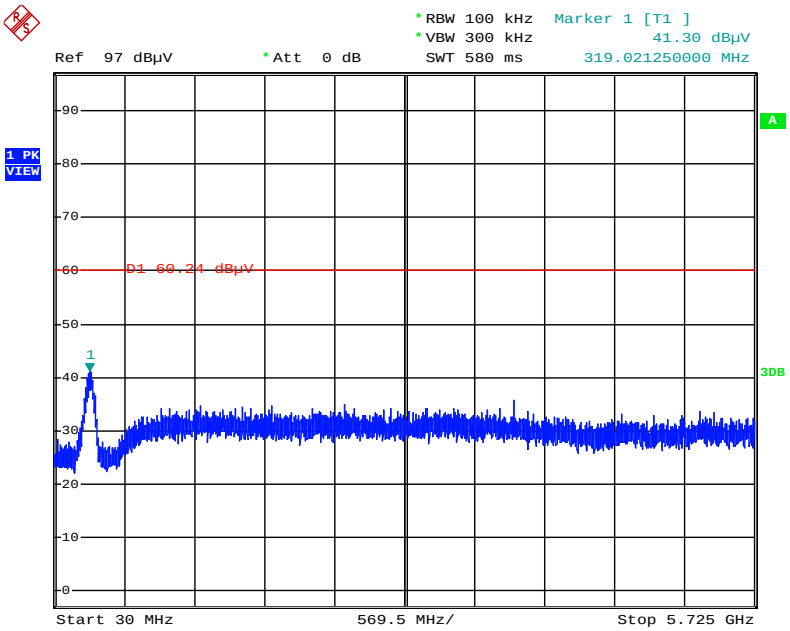
Date: 22.AUG.2015 10:57:14

Plot on Configuration IEEE 802.11a / CH 149 / 5850MHz~40000MHz (down 30dBc)



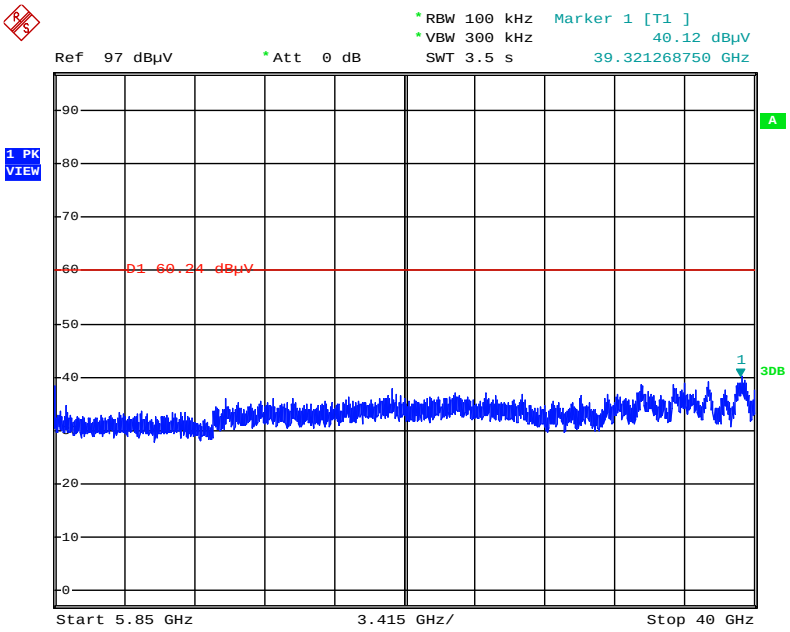
Date: 22.AUG.2015 10:58:25

Plot on Configuration IEEE 802.11a / CH 165 / 30MHz~5725MHz (down 30dBc)



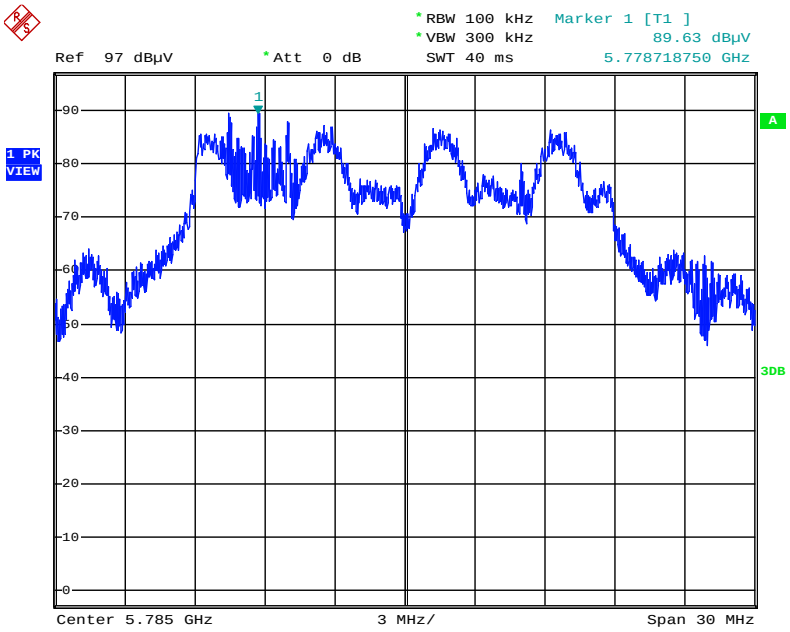
Date: 22.AUG.2015 11:00:17

Plot on Configuration IEEE 802.11a / CH 165 / 5850MHz~40000MHz (down 30dBc)



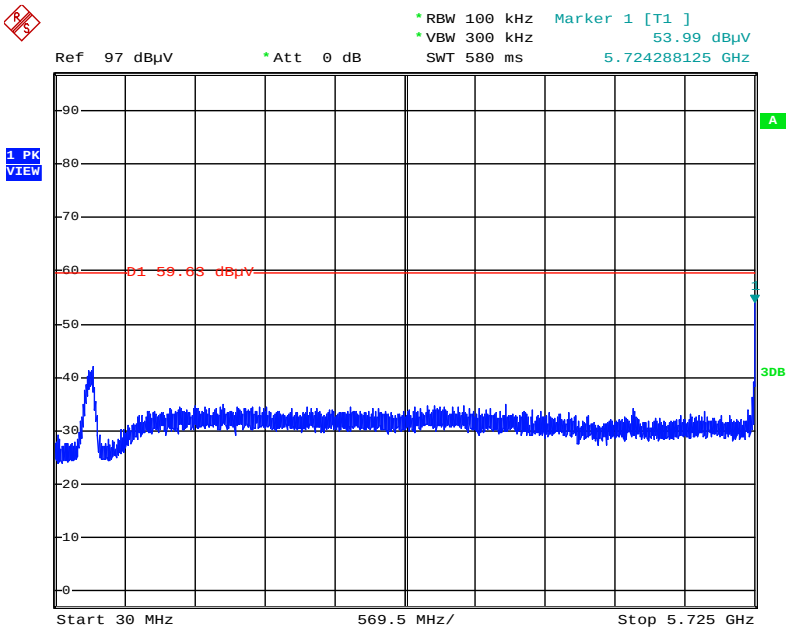
Date: 22.AUG.2015 11:00:59

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Reference Level



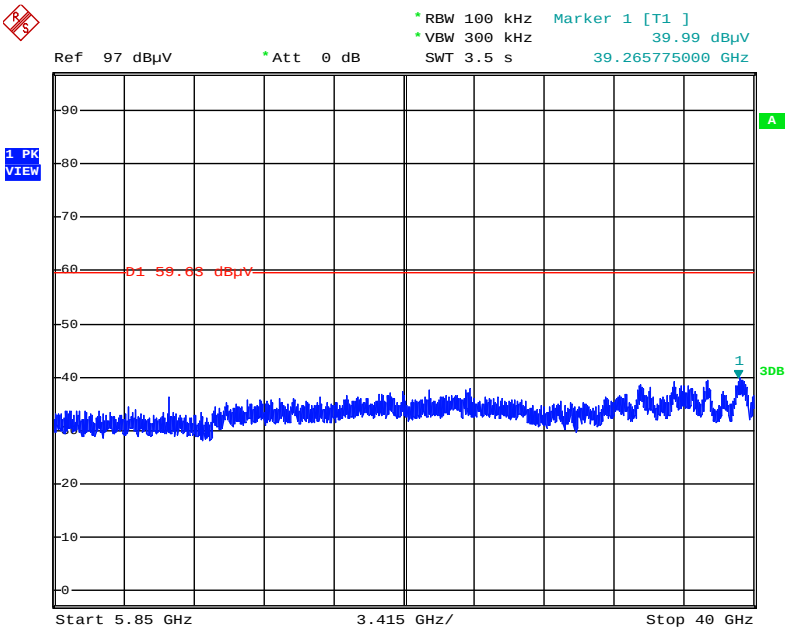
Date: 22.AUG.2015 11:02:22

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 149 / 30MHz~5725MHz (down 30dBc)



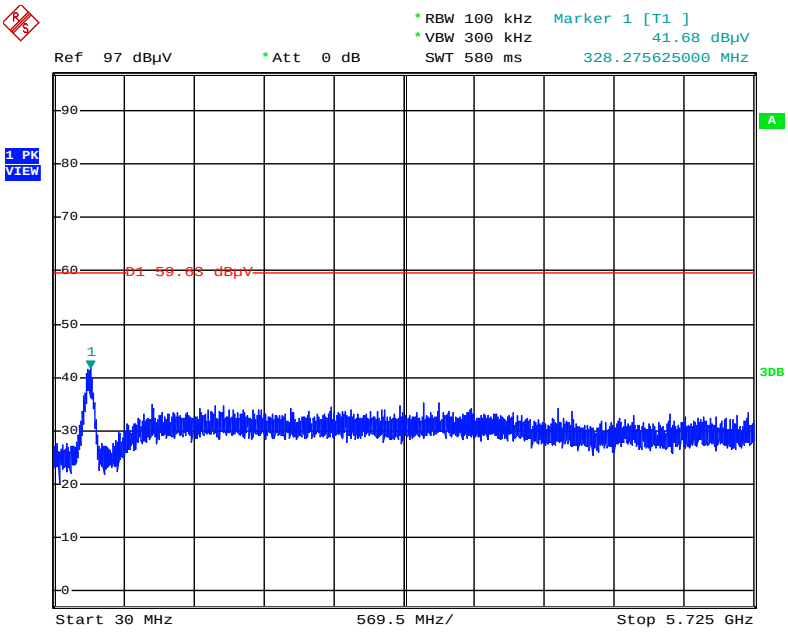
Date: 22.AUG.2015 11:03:59

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 149 / 5850MHz~40000MHz (down 30dBc)



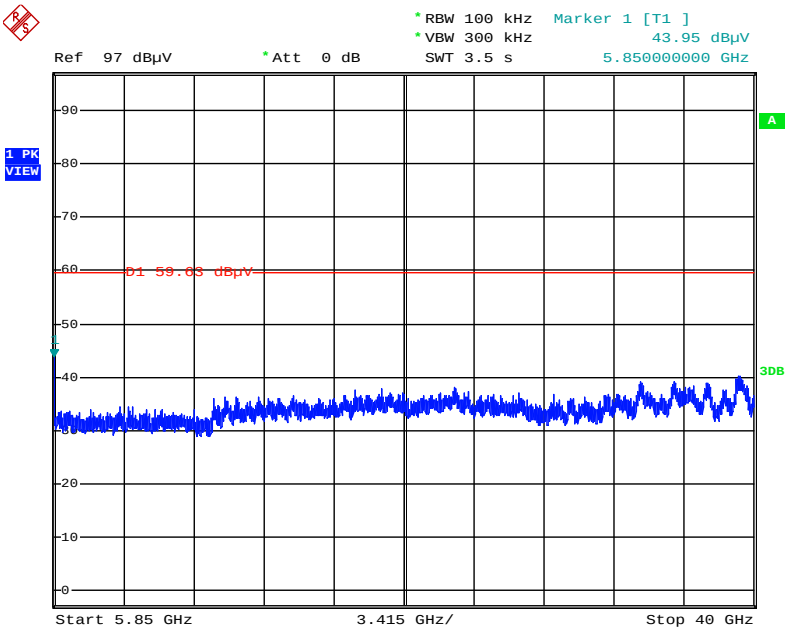
Date: 22.AUG.2015 11:04:52

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 165 / 30MHz~5725MHz (down 30dBc)



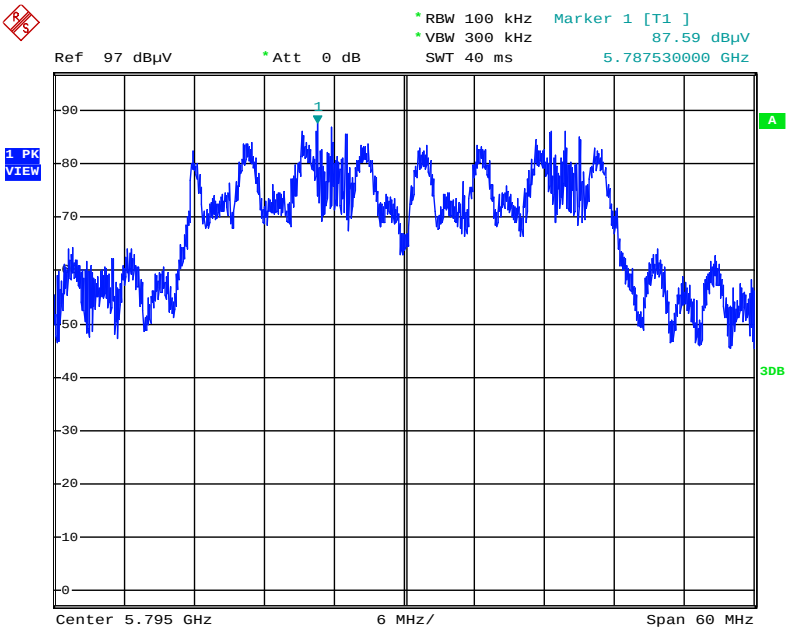
Date: 22.AUG.2015 11:11:28

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 165 / 5850MHz~40000MHz (down 30dBc)



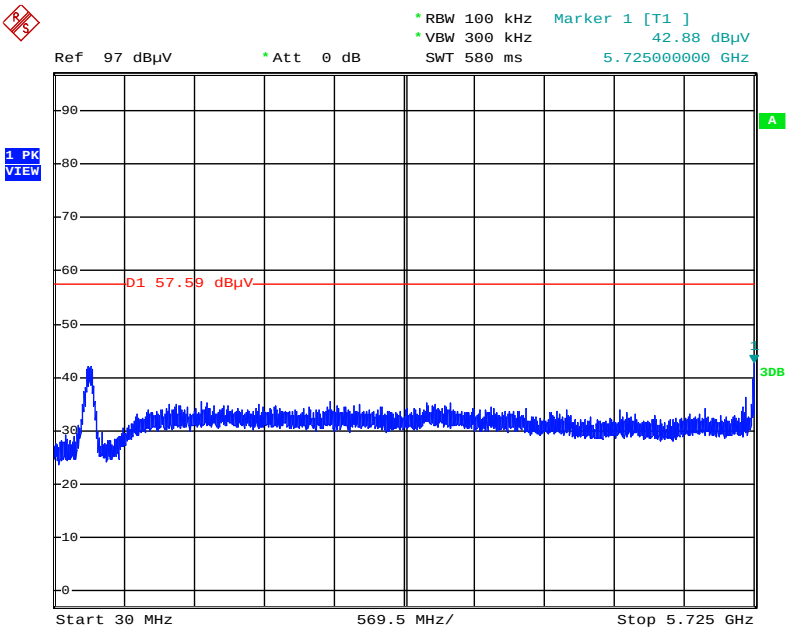
Date: 22.AUG.2015 11:13:12

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Reference Level



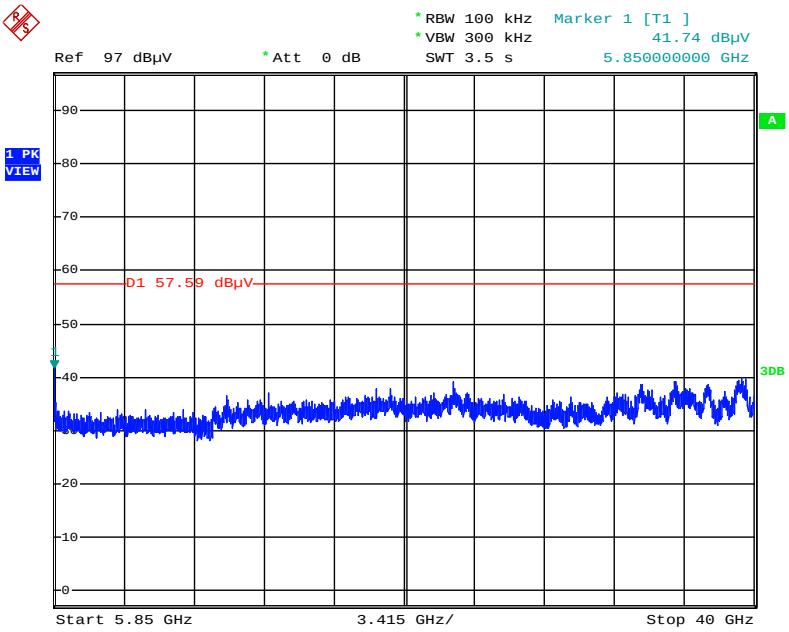
Date: 22.AUG.2015 11:14:40

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 151 / 30MHz~5725MHz (down 30dBc)



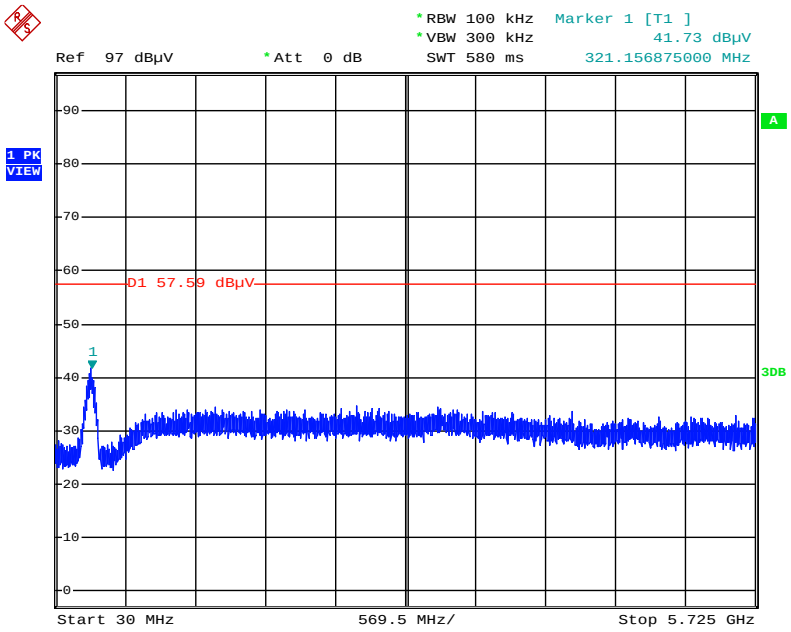
Date: 22.AUG.2015 11:16:38

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 151 / 5850MHz~40000MHz (down 30dBc)



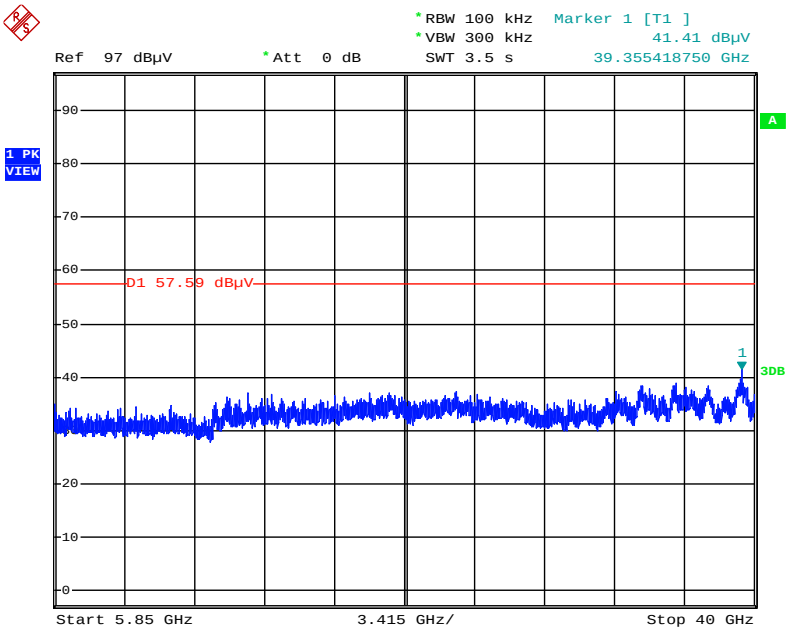
Date: 22.AUG.2015 11:17:30

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 159 / 30MHz~5725MHz (down 30dBc)



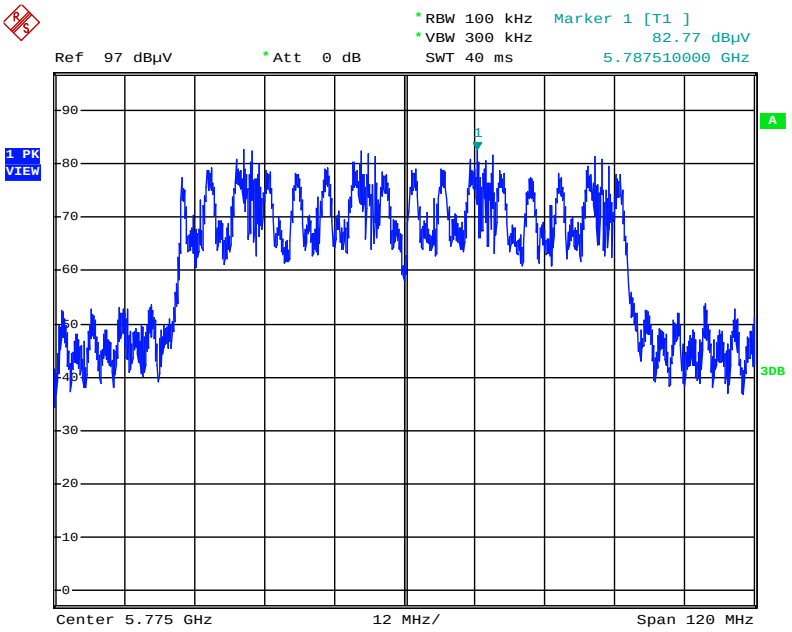
Date: 22.AUG.2015 11:18:55

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 159 / 5850MHz~40000MHz (down 30dBc)



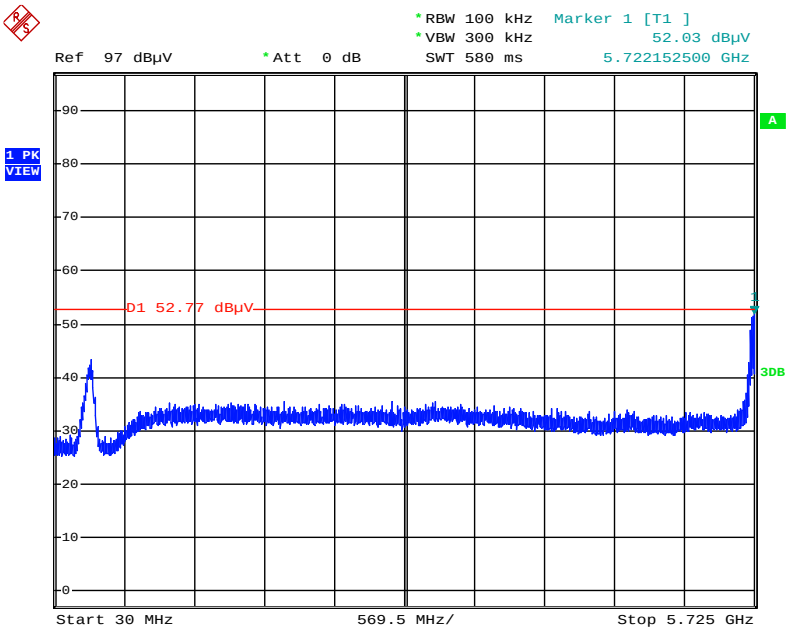
Date: 22.AUG.2015 11:19:35

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Reference Level



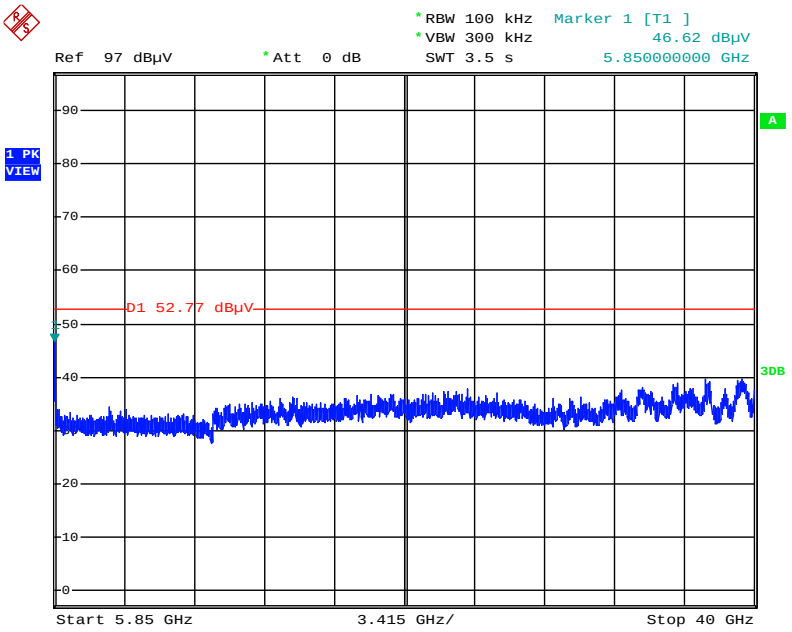
Date: 22.AUG.2015 11:23:25

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / CH 155 / 30MHz~5725MHz (down 30dBc)



Date: 22.AUG.2015 11:26:16

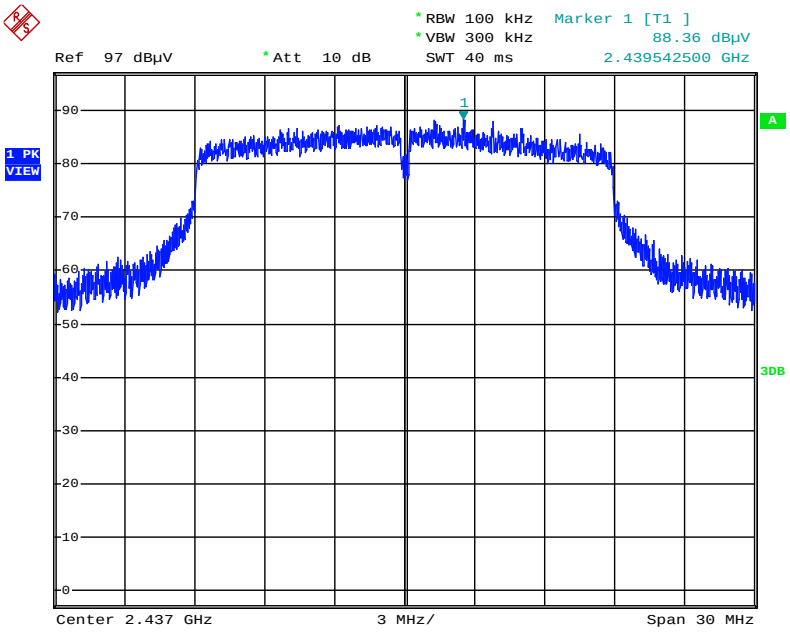
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / CH 155 / 5850MHz~40000MHz (down 30dBc)



Date: 22.AUG.2015 11:27:10

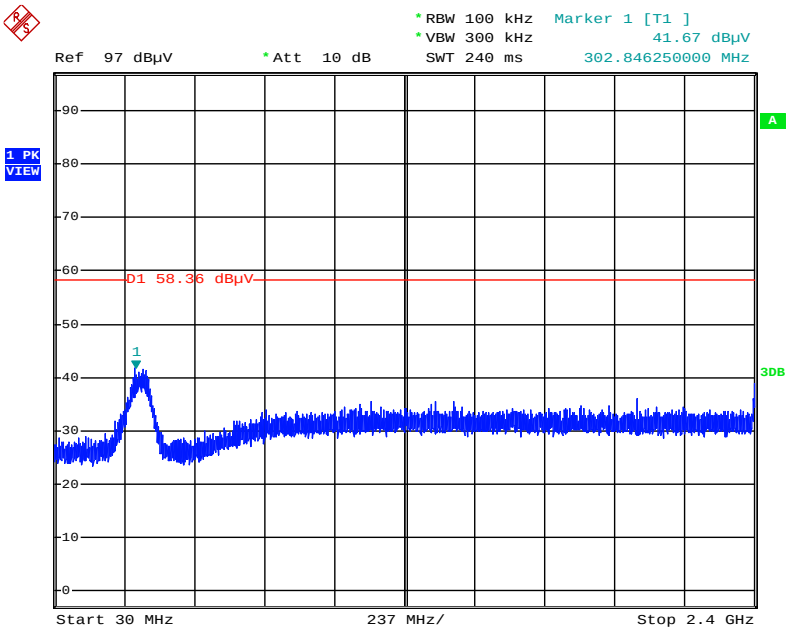
For beamforming mode

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Reference Level



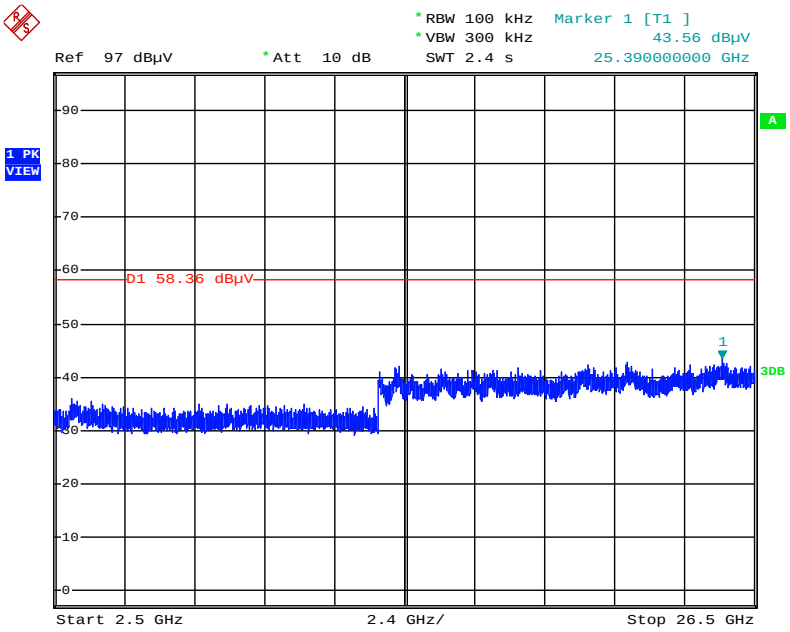
Date: 20.AUG.2015 16:57:11

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



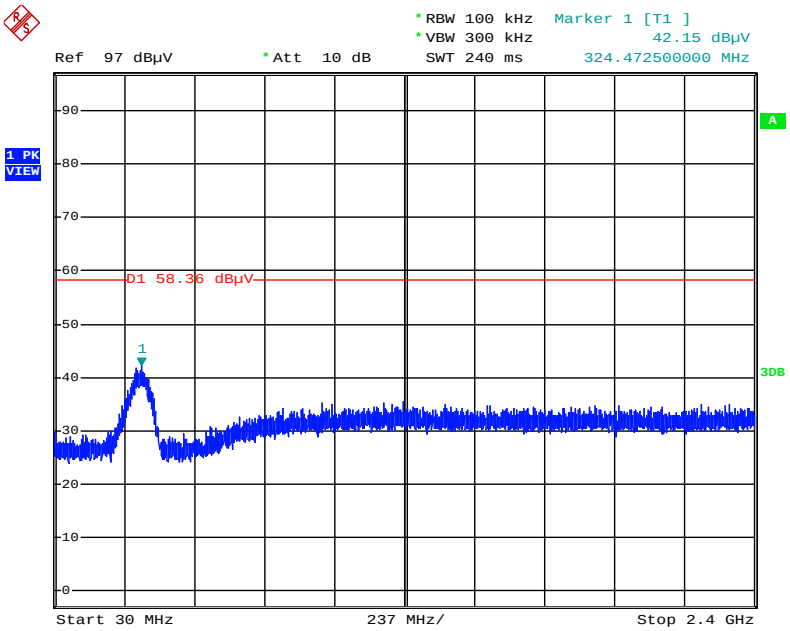
Date: 20.AUG.2015 17:00:16

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 2500MHz~26500MHz (down 30dBc)



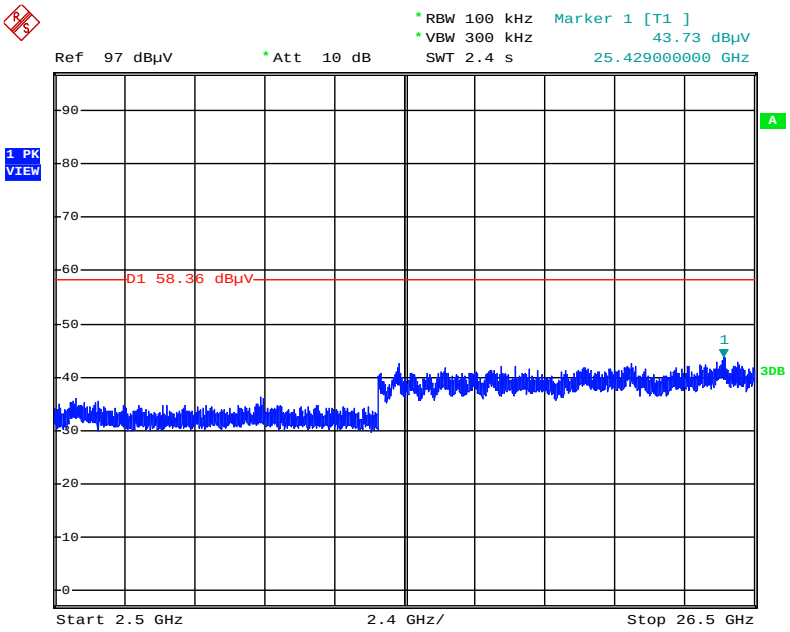
Date: 20.AUG.2015 17:00:53

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 30MHz~2400MHz (down 30dBc)



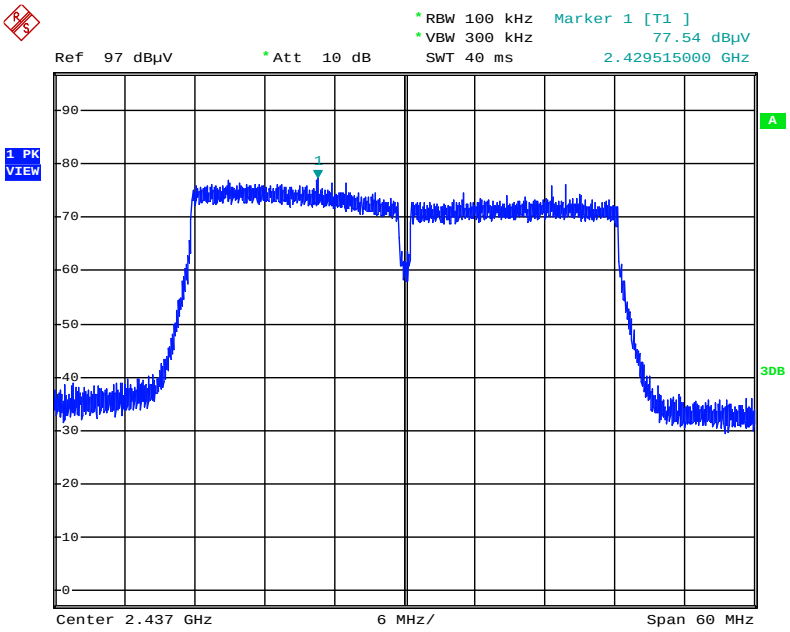
Date: 20.AUG.2015 17:01:43

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 2500MHz~26500MHz (down 30dBc)



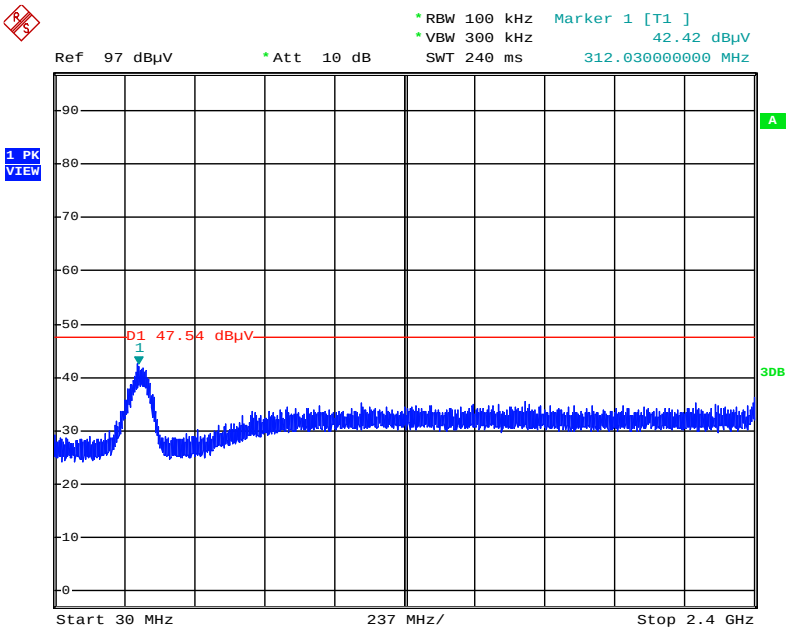
Date: 20.AUG.2015 17:03:31

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Reference Level



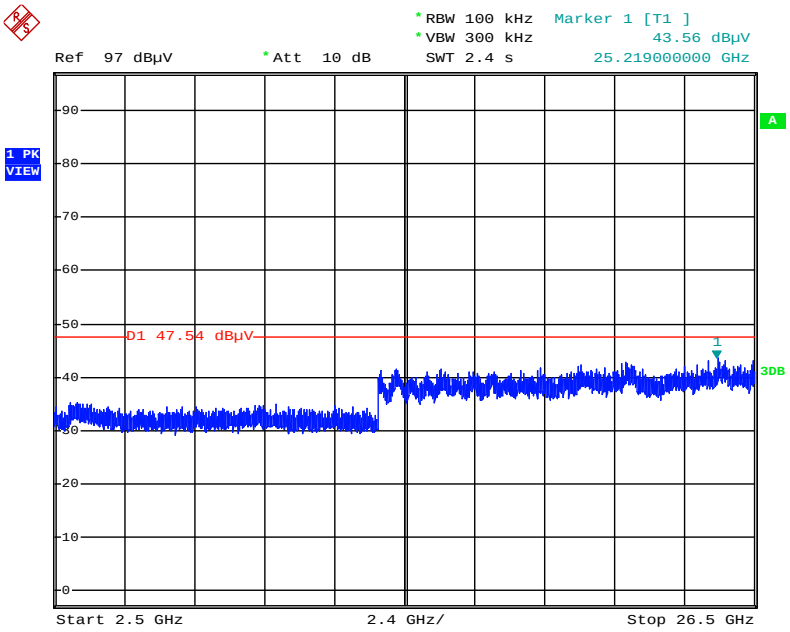
Date: 20.AUG.2015 17:05:30

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



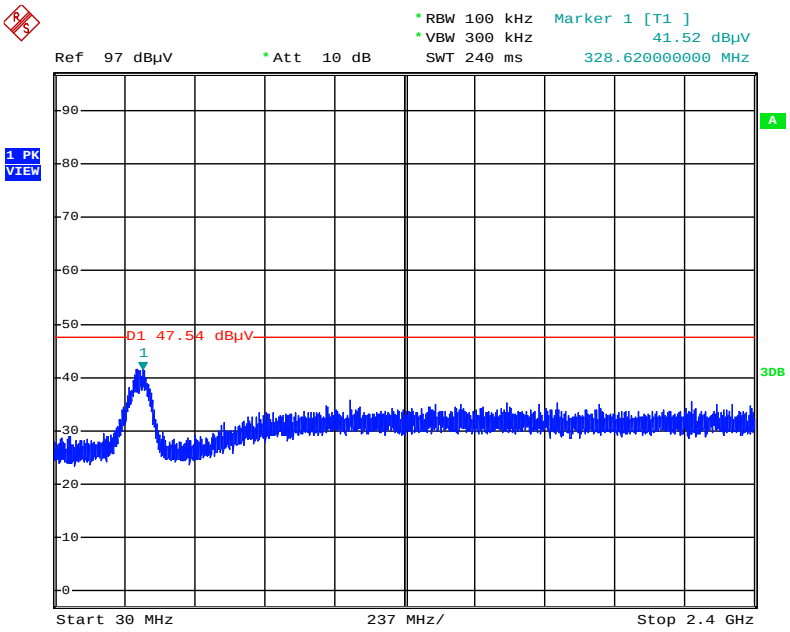
Date: 20.AUG.2015 17:08:33

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 2500MHz~26500MHz (down 30dBc)



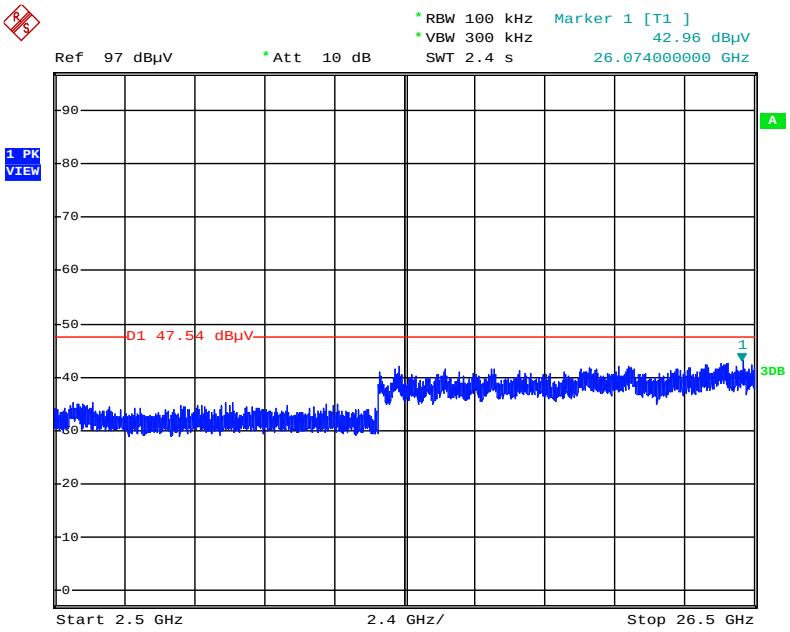
Date: 20.AUG.2015 17:09:17

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 30MHz~2400MHz (down 30dBc)



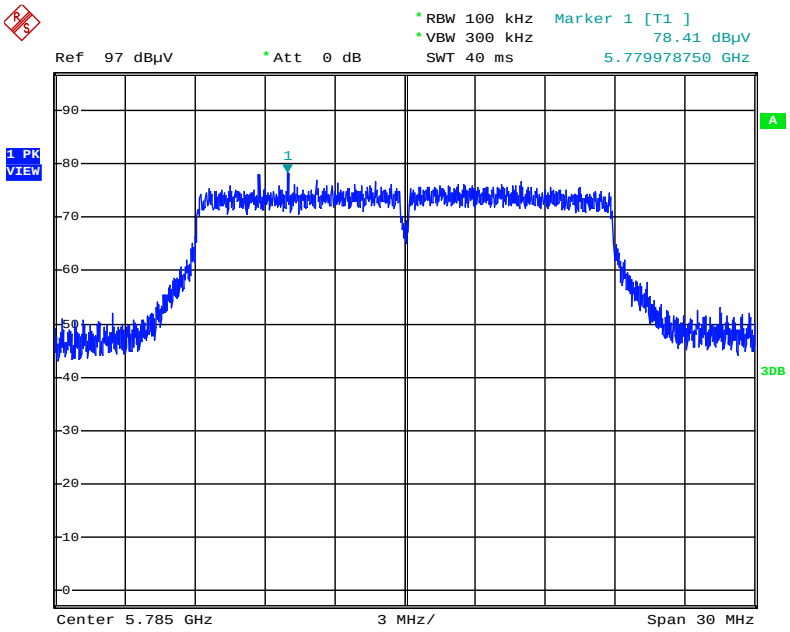
Date: 20.AUG.2015 17:10:34

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 2500MHz~26500MHz (down 30dBc)



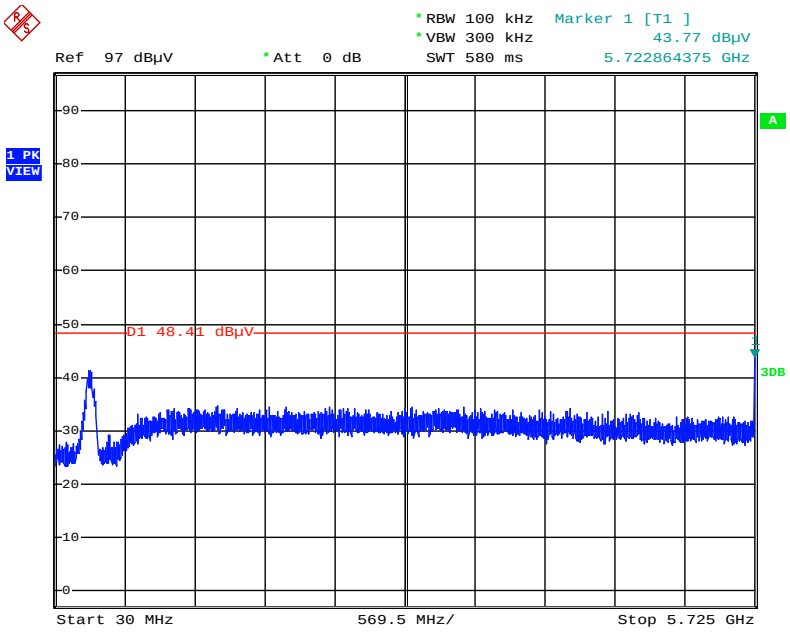
Date: 20.AUG.2015 17:11:12

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Reference Level



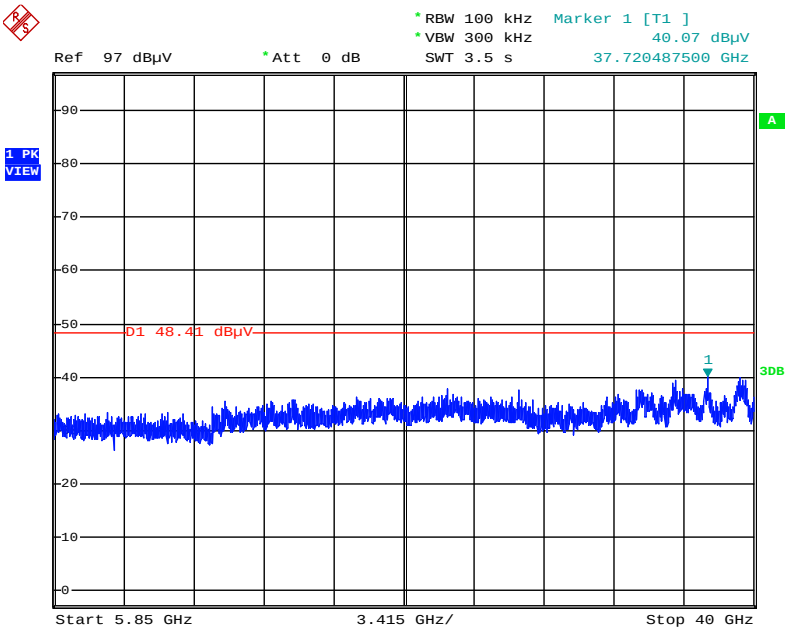
Date: 20.AUG.2015 17:58:50

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 149 / 30MHz~5725MHz (down 30dBc)



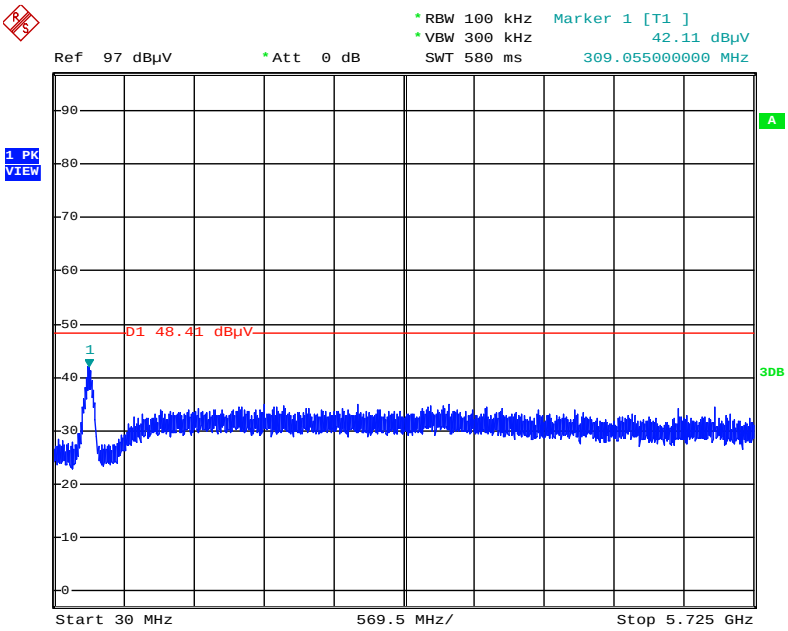
Date: 20.AUG.2015 18:00:18

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 149 / 5850MHz~40000MHz (down 30dBc)



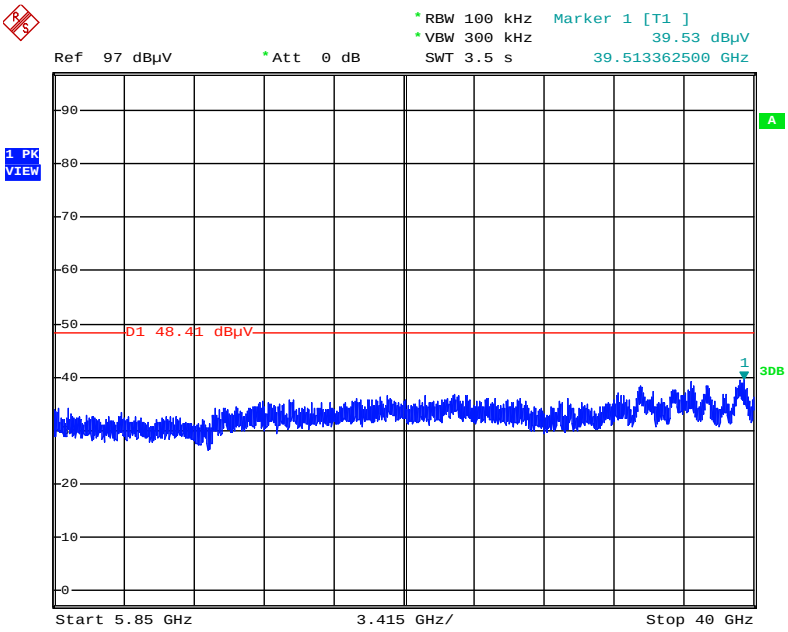
Date: 20.AUG.2015 18:01:27

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 165 / 30MHz~5725MHz (down 30dBc)



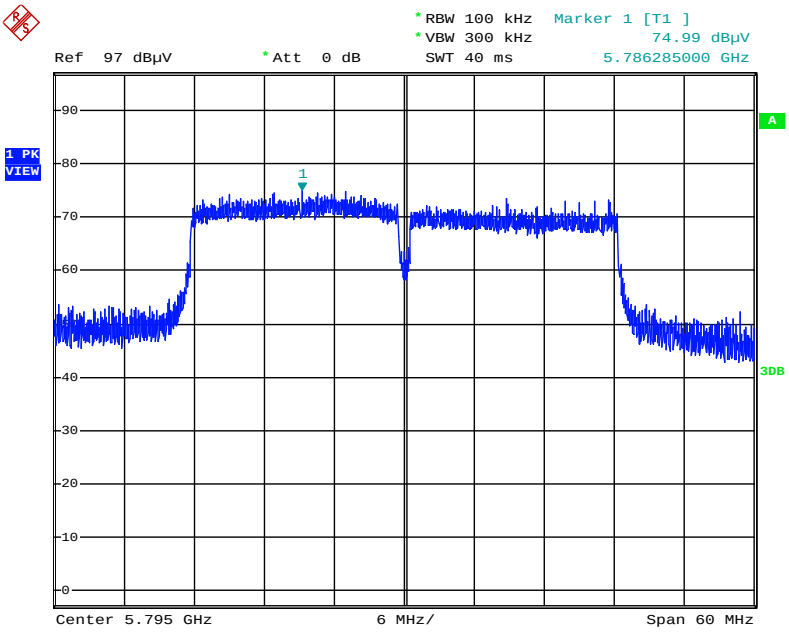
Date: 20.AUG.2015 18:02:46

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 165 / 5850MHz~40000MHz (down 30dBc)



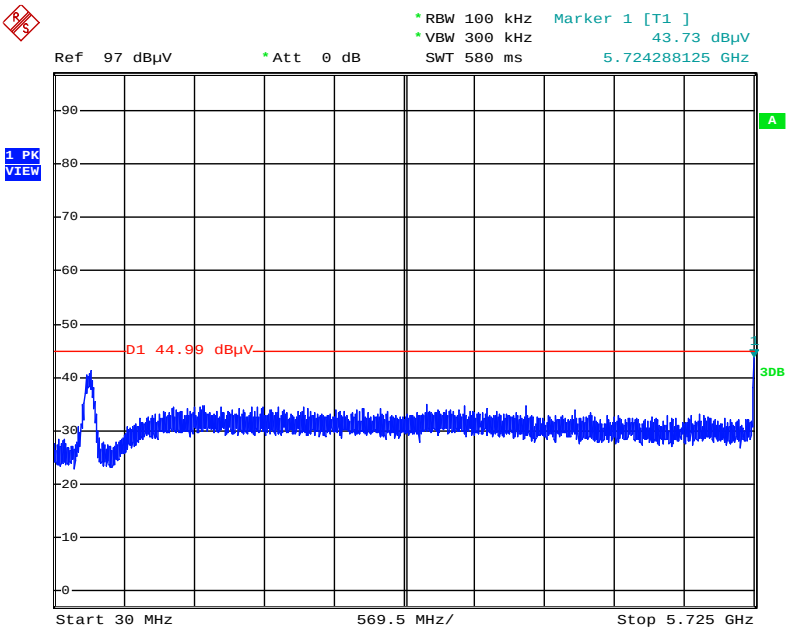
Date: 20.AUG.2015 18:03:24

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Reference Level



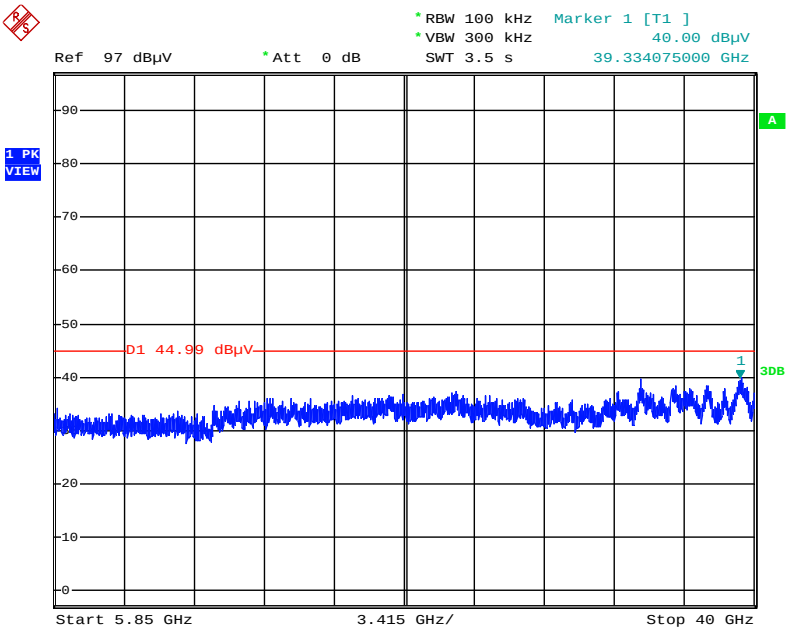
Date: 20.AUG.2015 18:14:35

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 151 / 30MHz~5725MHz (down 30dBc)



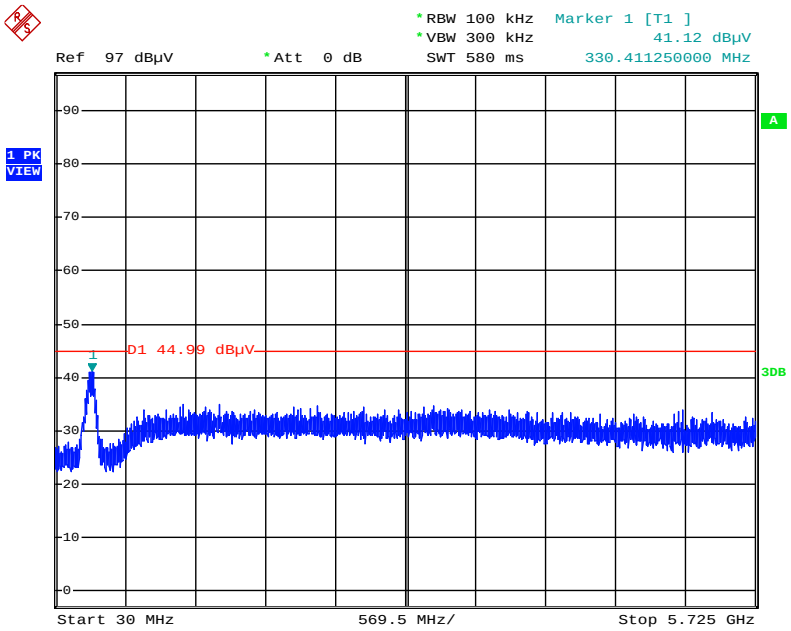
Date: 20.AUG.2015 18:18:38

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 151 / 5850MHz~40000MHz (down 30dBc)



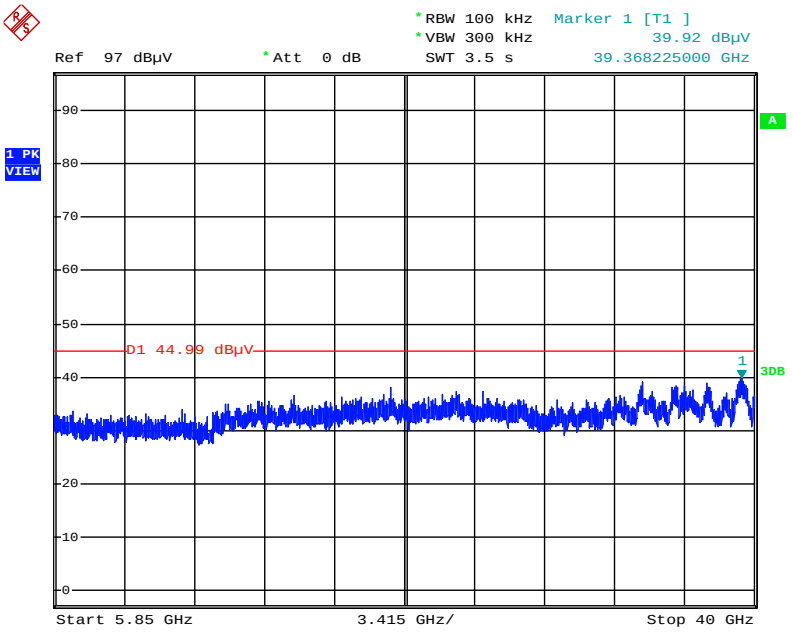
Date: 20.AUG.2015 18:17:19

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 159 / 30MHz~5725MHz (down 30dBc)



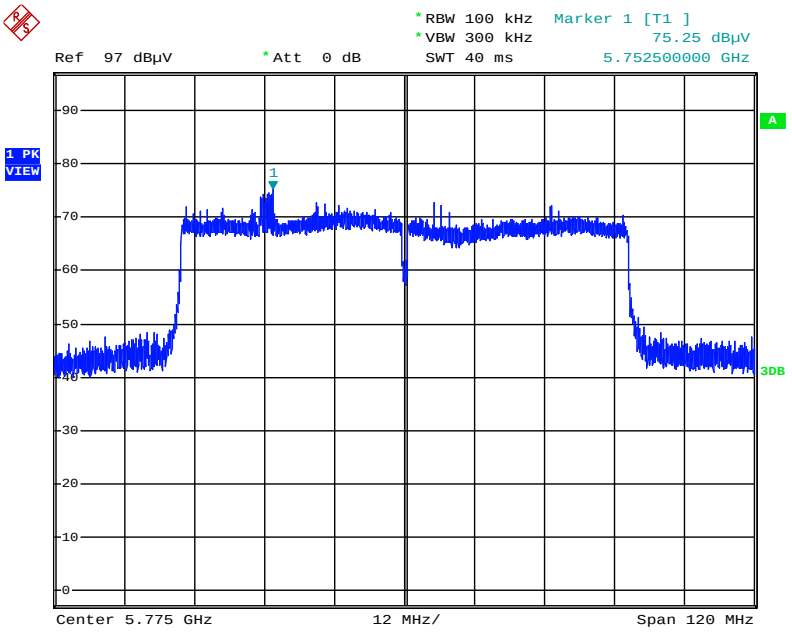
Date: 20.AUG.2015 18:15:28

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 159 / 5850MHz~40000MHz (down 30dBc)



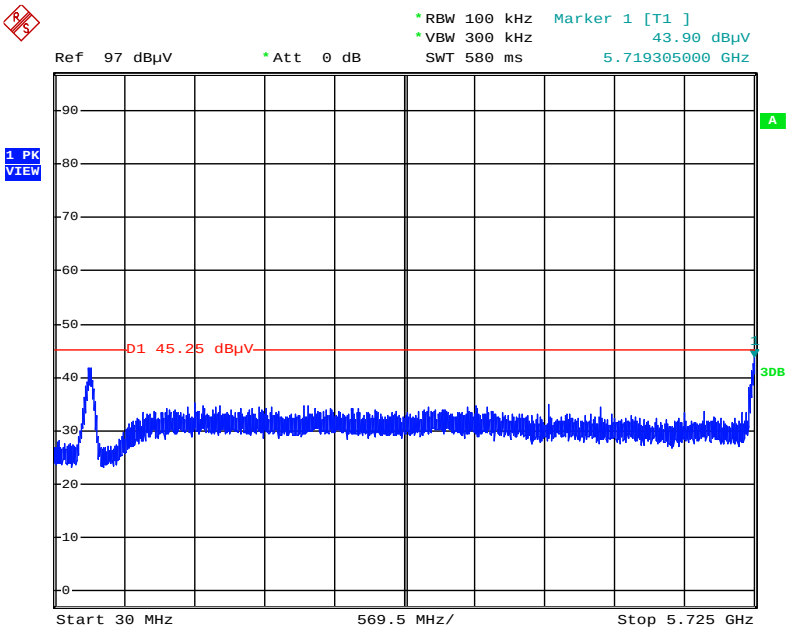
Date: 20.AUG.2015 18:16:16

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Reference Level



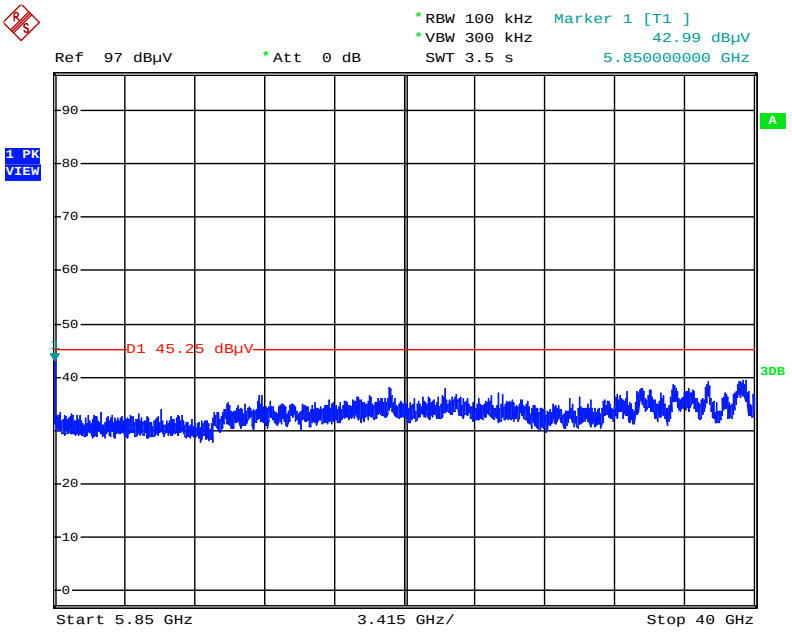
Date: 20.AUG.2015 18:23:10

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / CH 155 / 30MHz~5725MHz (down 30dBc)



Date: 20.AUG.2015 18:23:57

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / CH 155 / 5850MHz~40000MHz (down 30dBc)



Date: 20.AUG.2015 18:27:55

4.7. Antenna Requirements

4.7.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.7.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 02, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 02, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 03, 2014	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 06, 2015	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Feb. 24, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 21, 2015	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015*	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100979	9kHz~40GHz	Dec. 12, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 03, 2014	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.
"*" Calibration Interval of instruments listed above is two years.
N.C.R. means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%