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FCC RADIO TEST REPORT

Applicant's company	**D-Link Corporation**
Applicant Address	No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.
FCC ID	**KA2IR885LA1**

Product Name	AC3150 Ultra Wi-Fi Router
Brand Name	D-Link
Model No.	DIR-885L
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	May 11, 2015
Final Test Date	May 21, 2015
Submission Type	Original Equipment

Statement

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

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

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

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

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

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

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR551807AA	Rev. 01	Initial issue of report	May 26, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	AC3150 Ultra Wi-Fi Router
Brand Name	:	D-Link
Model No.	:	DIR-885L
Applicant	:	D-Link Corporation
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 May 11, 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	13.67 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	0.01 dB
4.3	15.247(e)	Power Spectral Density	Complies	0.82 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	0.37 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.09 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 2.4GHz Band: For non-beamforming mode: IEEE 802.11b: 10.56MHz IEEE 802.11g: 15.72 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 16.44 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.80 MHz For beamforming mode: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.40 MHz For 5GHz Band: For non-beamforming mode: IEEE 802.11a: 16.56 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.12 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.80 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.80 MHz For beamforming mode: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.12 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.40 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.40 MHz
Maximum Conducted Output Power	For 2.4GHz Band: For non-beamforming mode: IEEE 802.11b: 29.99 dBm IEEE 802.11g: 29.58 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.65 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 25.65 dBm For beamforming mode: IEEE 802.11ac MCS0/Nss1 (VHT20): 28.66 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.18 dBm For 5GHz Band: For non-beamforming mode: IEEE 802.11a: 29.92 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.99 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 29.99 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 28.17 dBm For beamforming mode: IEEE 802.11ac MCS0/Nss1 (VHT20): 28.17 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 28.11 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 28.17 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 802.11ac in 2.4/5GHz.

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

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

Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40 in 2.4GHz and supports VHT20, VHT40, VHT80 in 5GHz.

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

3.2. Accessories

Power	Brand	Model	Rating
Adapter	APD	WA-36A12R	Input:100-240V~50/60Hz 0.9A Max. Output:12V-3A

3.3. Table for Filed Antenna

Ant.	Brand Holder	P/N	Antenna Type	Connector	Antenn Gain (dBi)		Cable Loss (dBi)		True Gain (dBi)	
					2.4G	5G	2.4G	5G	2.4G	5G
1	HL TECHNOLOGY GROUP LIMITED	290-20187	Dipole Antenna	SMA Plug Reverse	1.8	2.8	0.5	1	1.3	1.8
2	HL TECHNOLOGY GROUP LIMITED	290-20187	Dipole Antenna	SMA Plug Reverse	1.8	2.8	0.5	1	1.3	1.8
3	HL TECHNOLOGY GROUP LIMITED	290-20188	Dipole Antenna	SMA Plug Reverse	1.8	2.8	0.5	1	1.3	1.8
4	HL TECHNOLOGY GROUP LIMITED	290-20188	Dipole Antenna	SMA Plug Reverse	1.8	2.8	0.5	1	1.3	1.8
5	HL TECHNOLOGY GROUP LIMITED	290-20213	PCB Antenna	I-PEX	1.3	-	-	-	1.3	-

Note: The EUT has five antennas.

<For 2.4GHz Band>

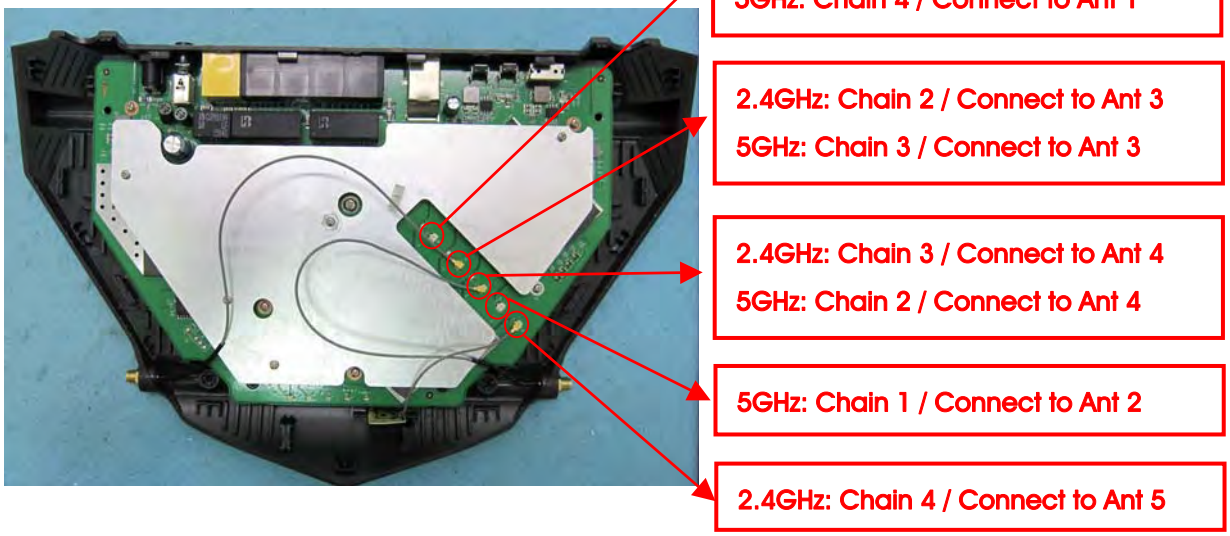
For IEEE 802.11b/g/n/ac mode (4TX/4RX)

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

<For 5GHz Band >

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

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



3.4. Table for Carrier Frequencies

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	Chain
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	Chain
AC Power Line Conducted Emissions	Normal Link	-	-	-
Maximum Conducted Output Power	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
Power Spectral Density	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
6dB Spectrum Bandwidth	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4

Radiated Emissions Below 1GHz	Normal Link	-	-	-
Radiated Emissions Above 1GHz	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
Band Edge Emissions	For non-beamforming mode			
	11a/BPSK	6 Mbps	149/157/165	1+2+3+4
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	MCS0/Nss1	155	1+2+3+4

Note 1: VHT20/VHT40 covers HT20/HT40, due to same modulation.

Note 2: There are two modes of EUT, one is beamforming mode, and the other is non-beamforming mode for 802.11ac, Beamforming mode and non-beamforming mode has been test and record in this test report.

Note 3: All the specification of test configurations and test modes were based on customer's request

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link

For Radiated Emission below 1GHz test:

Mode 1. Normal Link - Place EUT in X axis

Mode 2. Normal Link - Place EUT in Y axis

Mode 2 generated the worst test result, so it was recorded in this report.

For Radiated Emission above 1GHz test:

The EUT was performed at X axis and Y axis position for Radiated emission above 1GHz test, and the worst case was found at X axis. So the measurement will follow this same test configuration.

Mode 1. CTX - Place EUT in X axis

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

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

3.6. Table for Testing Locations

Test Site Location				
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.			
TEL:	886-3-656-9065			
FAX:	886-3-656-9085			
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D
CO02-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

For Radiated Emission test below 1GHz:

Support Unit	Brand	Model	FCC ID
Notebook*4	DELL	E4300	DoC
Flash disk3.0	Silicon Power	B06	DoC

For Radiated Emission test above 1GHz:

For non-beamforming mode

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

For beamforming mode

Support Unit	Brand	Model	FCC ID
Notebook*2	DELL	E4300	DoC
RX Device	Broadcom	Bcm4366	DoC

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
Notebook*4	DELL	E6430	DoC
Flash disk3.0	Transcend	JetFlash-700	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 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	97	96	96	-	-	-
802.11g	86	96	83	-	-	-
802.11ac MCS0/Nss1 VHT20	84	97	85	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	64	79	65

For 5GHz Band

Test Software Version	Mtool 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	5775 MHz
802.11a	95	95	95	-	-	-
802.11ac MCS0/Nss1 VHT20	95	95	97	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	95	96	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	89

For beamforming mode:

For 2.4GHz Band

Test Software Version	Mtool 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11ac MCS0/Nss1 VHT20	83	90	80	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	61	69	65

For 5GHz Band

Test Software Version	Mtool 2.0.2.7					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	5775 MHz
802.11ac MCS0/Nss1 VHT20	88	88	89	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	87	88	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	89

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:

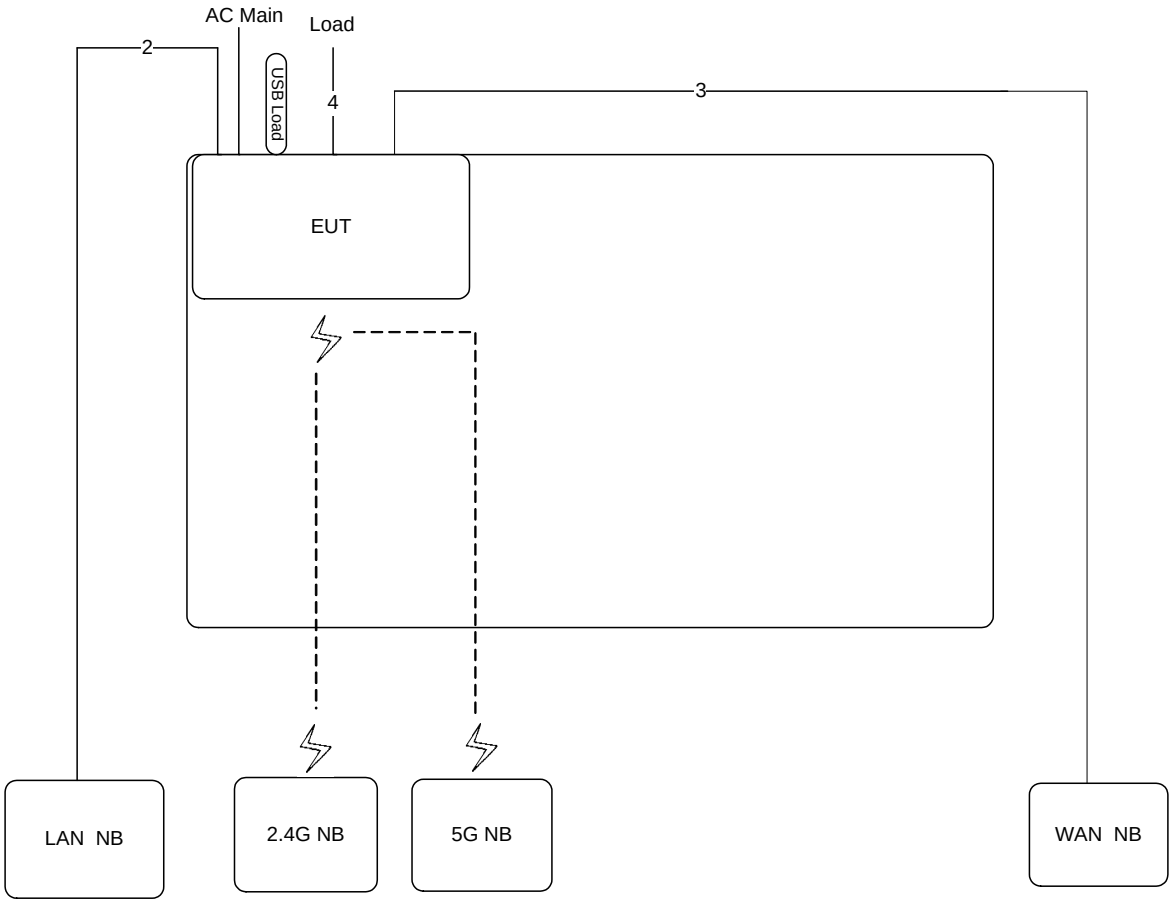
Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11b	1.000	1.000	100	0.00	0.01
	802.11g	2.043	2.087	97.89	0.09	0.49
	802.11ac MCS0/Nss1 VHT20	1.891	1.949	97.02	0.13	0.53
	802.11ac MCS0/Nss1 VHT40	0.898	0.971	92.48	0.34	1.11
5G	802.11a	2.058	2.090	98.50	0.07	0.01
	802.11ac MCS0/Nss1 VHT20	1.839	1.948	94.40	0.25	0.54
	802.11ac MCS0/Nss1 VHT40	0.900	0.978	92.02	0.36	1.11
	802.11ac MCS0/Nss1 VHT80	0.422	0.486	86.83	0.61	2.37

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	3.826	4.174	91.67	0.38	0.26
	802.11ac MCS0/Nss1 VHT40	4.580	4.957	92.40	0.34	0.22
5G	802.11ac MCS0/Nss1 VHT20	3.960	4.220	93.84	0.28	0.25
	802.11ac MCS0/Nss1 VHT40	4.520	4.880	92.62	0.33	0.22
	802.11ac MCS0/Nss1 VHT80	5.000	5.400	92.59	0.33	0.20

3.11. Test Configurations

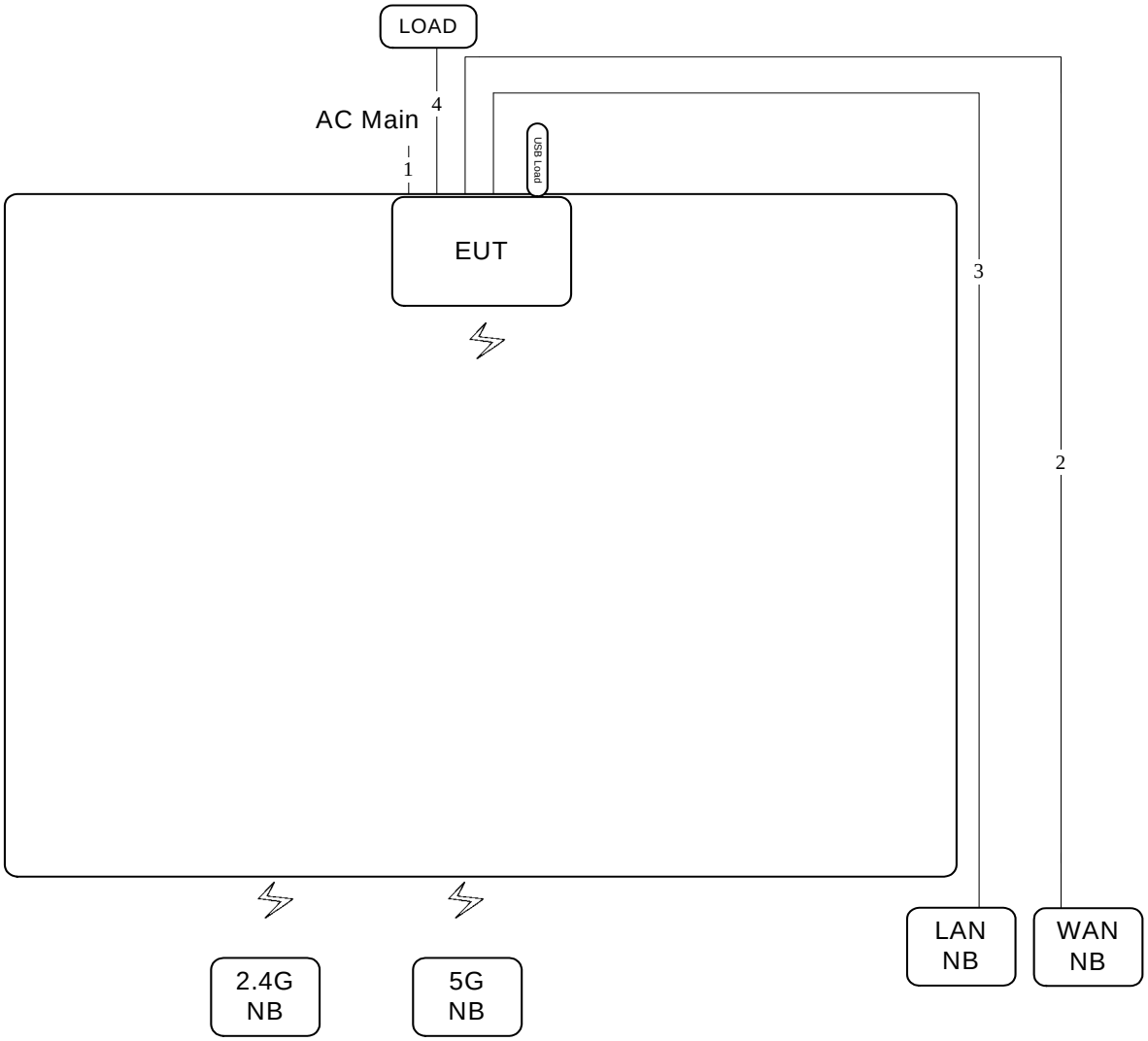
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length(m)	Remark
1	Power cable	No	1.2m	-
2	RJ-45 cable	No	10m	-
3	RJ-45 cable	No	10m	-
4	RJ-45 cable*3	No	3m	Load

3.11.2. Radiation Emissions Test Configuration

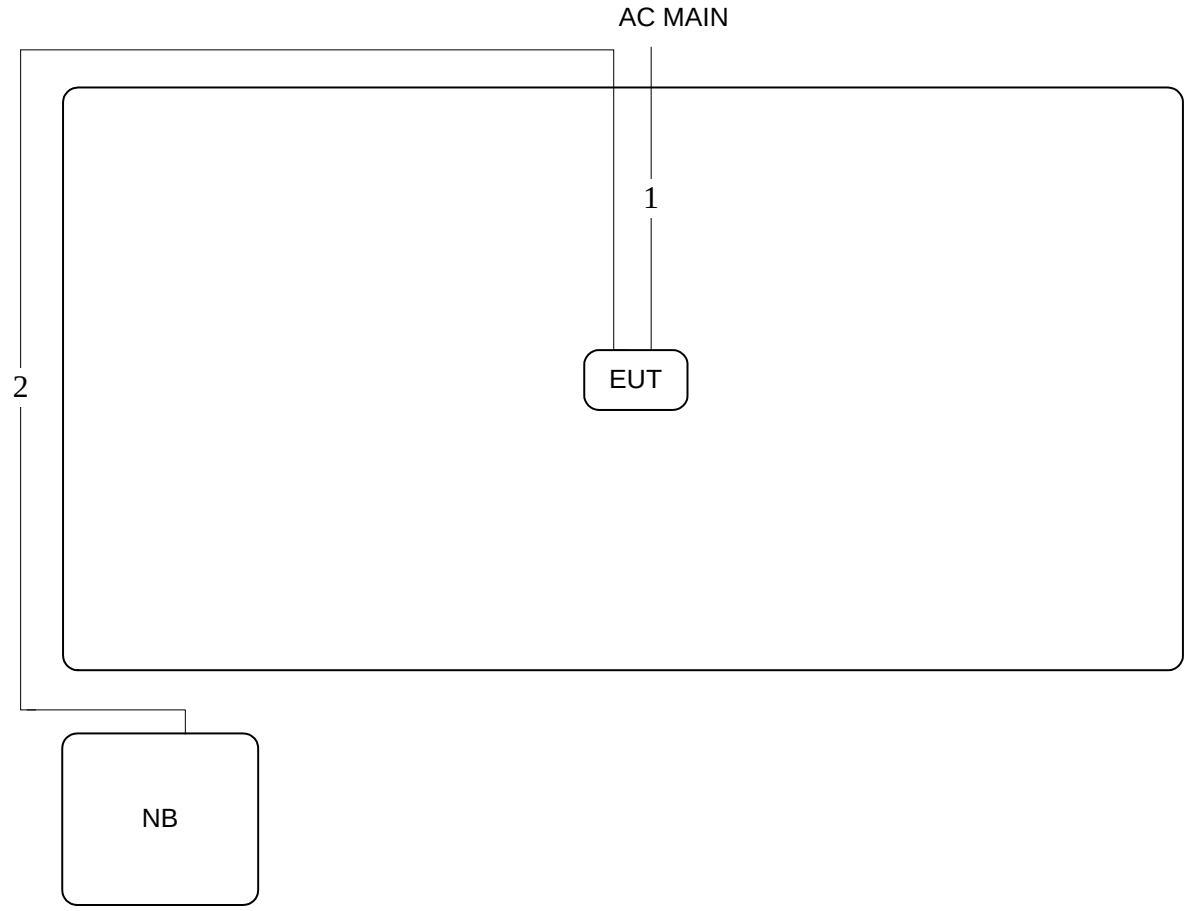
Test Configuration: 30MHz~1GHz



Item	Connection	Shielded	Length(m)	Remark
1	Power cable	No	1.2m	-
2	RJ-45 cable	No	10m	-
3	RJ-45 cable	No	10m	-
4	RJ-45 cable*3	No	3m	Load

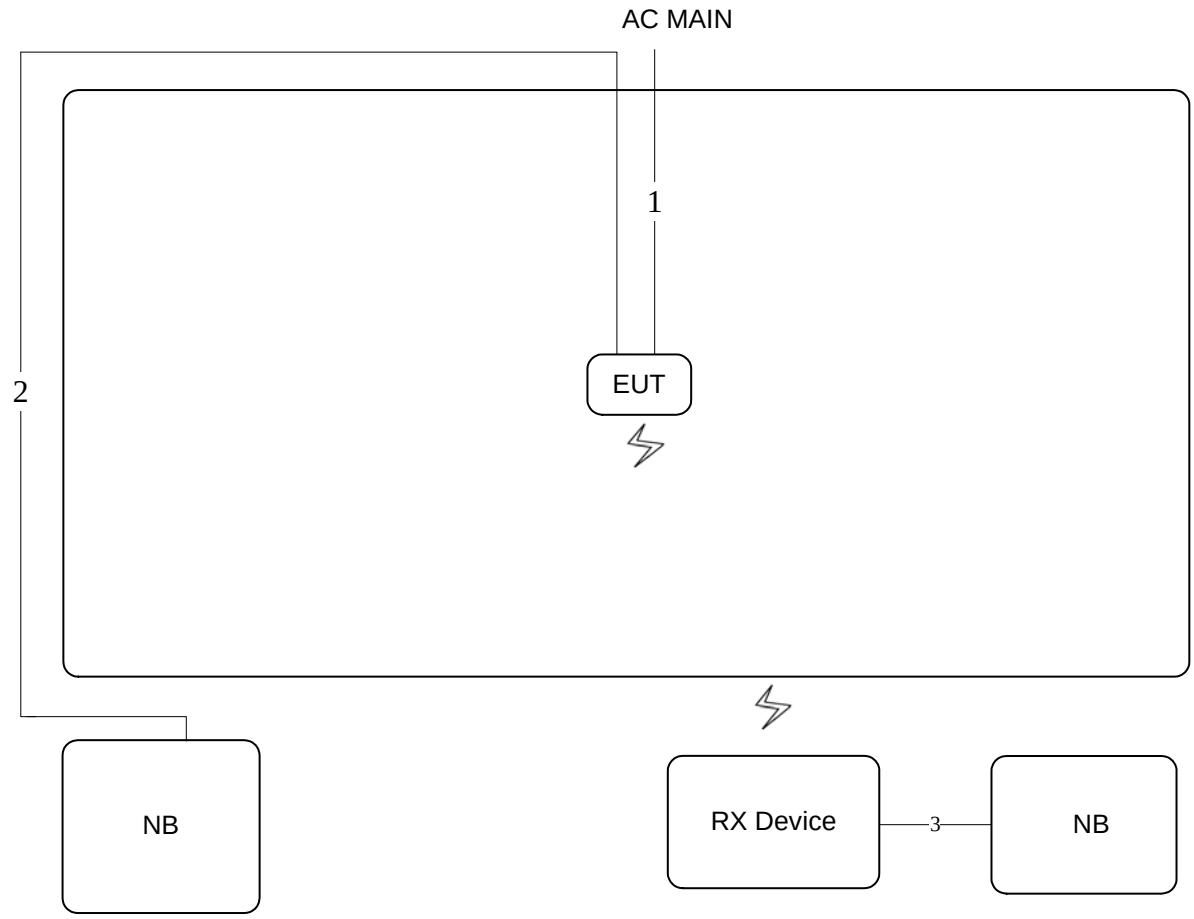
Test Configuration: above 1GHz

For non-beamforming mode:



Item	Connection	Shielded	Length(m)	Remark
1	Power cable	No	1.2m	-
2	RJ-45 cable	No	10m	-

For beamforming mode:



Item	Connection	Shielded	Length(m)	Remark
1	Power cable	No	1.2m	-
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

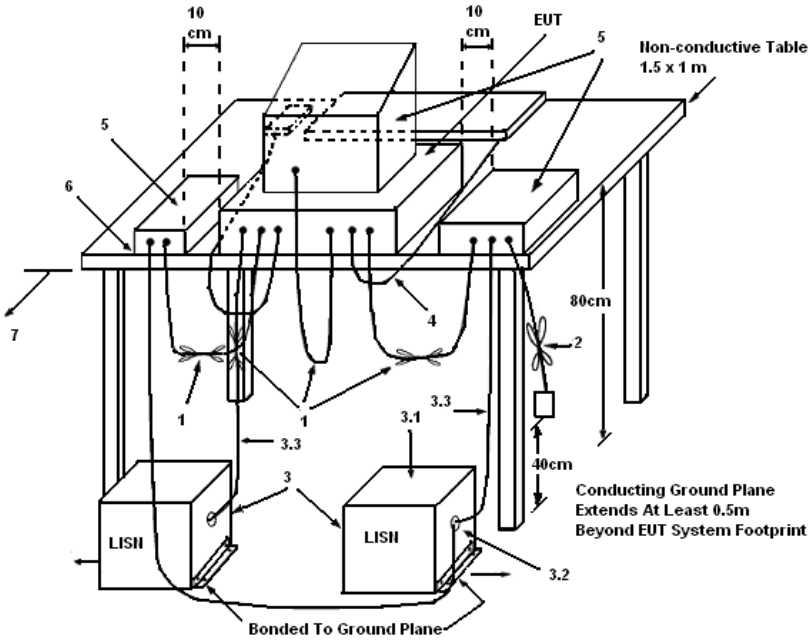
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

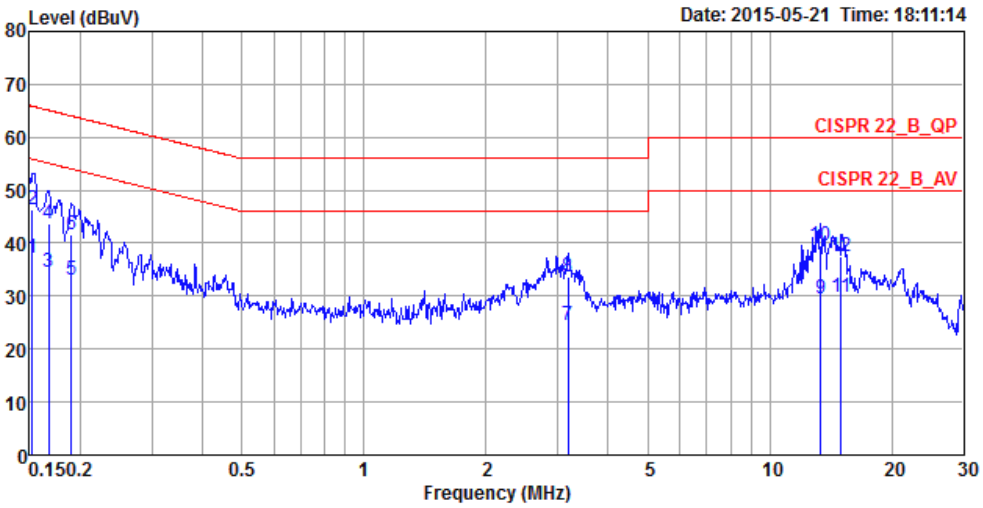
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

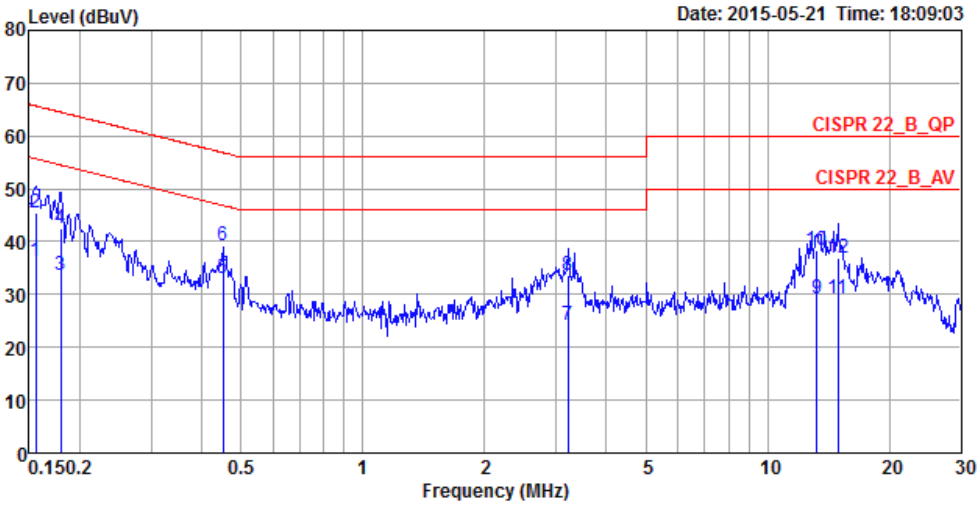
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	22°C	Humidity	54%
Test Engineer	Da Deng	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	0.1524	37.25	-18.62	55.87	27.08	10.00	0.17	LINE	Average
2	0.1524	46.40	-19.47	65.87	36.23	10.00	0.17	LINE	QP
3	0.1668	34.57	-20.55	55.12	24.40	10.00	0.17	LINE	Average
4	0.1668	43.73	-21.39	65.12	33.56	10.00	0.17	LINE	QP
5	0.1904	33.10	-20.92	54.02	22.90	10.01	0.19	LINE	Average
6	0.1904	41.68	-22.34	64.02	31.48	10.01	0.19	LINE	QP
7	3.1900	24.65	-21.35	46.00	14.29	10.07	0.29	LINE	Average
8	3.1900	33.59	-22.41	56.00	23.23	10.07	0.29	LINE	QP
9	13.3372	29.64	-20.36	50.00	18.94	10.29	0.41	LINE	Average
10	13.3372	39.43	-20.57	60.00	28.73	10.29	0.41	LINE	QP
11	14.9860	29.92	-20.08	50.00	19.17	10.32	0.43	LINE	Average
12	14.9860	37.50	-22.50	60.00	26.75	10.32	0.43	LINE	QP

Temperature	22°C	Humidity	54%
Test Engineer	Da Deng	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	0.1557	36.35	-19.34	55.69	26.18	10.00	0.17	NEUTRAL	Average
2	0.1557	45.60	-20.09	65.69	35.43	10.00	0.17	NEUTRAL	QP
3	0.1796	33.62	-20.88	54.50	23.42	10.01	0.19	NEUTRAL	Average
4	0.1796	42.37	-22.13	64.50	32.17	10.01	0.19	NEUTRAL	QP
5	0.4516	33.18	-13.67	46.85	22.97	10.01	0.20	NEUTRAL	Average
6	0.4516	39.22	-17.63	56.85	29.01	10.01	0.20	NEUTRAL	QP
7	3.2069	24.27	-21.73	46.00	13.92	10.06	0.29	NEUTRAL	Average
8	3.2069	33.77	-22.23	56.00	23.42	10.06	0.29	NEUTRAL	QP
9	13.2667	29.19	-20.81	50.00	18.49	10.29	0.41	NEUTRAL	Average
10	13.2667	38.29	-21.71	60.00	27.59	10.29	0.41	NEUTRAL	QP
11	14.9068	29.33	-20.67	50.00	18.58	10.32	0.43	NEUTRAL	Average
12	14.9068	36.82	-23.18	60.00	26.07	10.32	0.43	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

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

4.2.2. Measuring Instruments and Setting

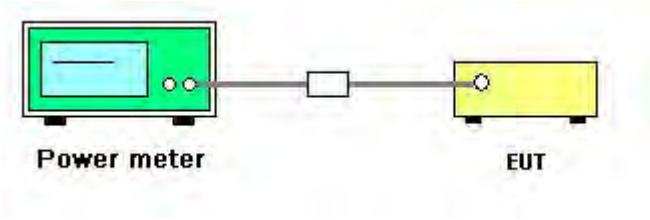
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	Average

4.2.3. Test Procedures

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

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Maximum Conducted Output Power

Temperature	25°C	Humidity	45%
Test Engineer	Lucas Huang	Test Date	May 18, 2015 ~ May 21, 2015

For non-beamforming mode

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11b	2412 MHz	24.10	23.80	24.15	23.80	29.99	30.00	Complies
	2437 MHz	23.82	23.67	23.91	23.69	29.79	30.00	Complies
	2462 MHz	23.90	23.58	23.87	23.79	29.81	30.00	Complies
802.11g	2412 MHz	20.65	20.87	21.27	21.07	26.99	30.00	Complies
	2437 MHz	23.48	23.37	23.78	23.61	29.58	30.00	Complies
	2462 MHz	20.57	20.37	20.59	20.91	26.63	30.00	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	20.57	20.27	20.78	21.11	26.71	30.00	Complies
	2437 MHz	23.75	23.26	23.68	23.81	29.65	30.00	Complies
	2462 MHz	20.80	20.51	21.12	20.91	26.86	30.00	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	15.82	15.78	15.26	15.71	21.67	30.00	Complies
	2437 MHz	19.89	19.78	19.32	19.50	25.65	30.00	Complies
	2452 MHz	16.45	16.33	16.25	16.18	22.32	30.00	Complies

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5745 MHz	24.18	23.65	23.72	24.04	29.92	30.00	Complies
	5785 MHz	24.16	23.75	23.37	23.84	29.81	30.00	Complies
	5825 MHz	23.75	23.39	23.82	23.83	29.72	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	24.17	23.65	23.54	23.71	29.79	30.00	Complies
	5785 MHz	24.23	23.98	23.32	24.12	29.95	30.00	Complies
	5825 MHz	24.20	23.62	24.15	23.88	29.99	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	24.29	23.84	23.56	24.17	29.99	30.00	Complies
	5795 MHz	24.24	23.98	23.68	23.96	29.99	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	22.20	22.64	21.64	22.06	28.17	30.00	Complies

For beamforming mode

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	2412 MHz	20.82	20.77	21.11	20.96	26.94	28.68	Complies
	2437 MHz	22.62	22.71	22.64	22.58	28.66	28.68	Complies
	2462 MHz	20.28	20.11	20.15	20.28	26.23	28.68	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	15.65	14.82	15.54	15.42	21.39	28.68	Complies
	2437 MHz	17.37	16.64	17.22	17.38	23.18	28.68	Complies
	2452 MHz	15.95	15.83	15.75	15.62	21.81	28.68	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.32 dBi>6dBi, so limit= 30-(7.32-6)=28.68 dBm

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	22.30	22.10	21.97	22.24	28.17	28.18	Complies
	5785 MHz	22.42	22.02	21.71	22.25	28.13	28.18	Complies
	5825 MHz	22.14	21.86	21.98	22.21	28.07	28.18	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	22.54	21.90	21.72	21.91	28.05	28.18	Complies
	5795 MHz	22.44	22.04	21.67	22.19	28.11	28.18	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	22.20	22.64	21.64	22.06	28.17	28.18	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.82 dBi>6dBi, so limit= 30-(7.82-6)=28.18 dBm

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

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

4.3. Power Spectral Density Measurement

4.3.1. Limit

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

4.3.2. Measuring Instruments and Setting

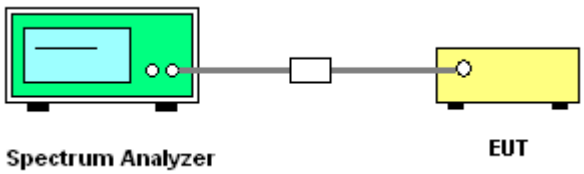
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.3.3. Test Procedures

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

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Power Spectral Density

Temperature	25°C	Humidity	45%
Test Engineer	Lucas Huang		

For non-beamforming mode

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11b	2412 MHz	-7.42	-7.69	-7.16	-7.31	-1.37	6.68	Complies
	2437 MHz	-7.73	-7.96	-7.40	-7.29	-1.57	6.68	Complies
	2462 MHz	-7.85	-7.43	-7.43	-7.50	-1.53	6.68	Complies
802.11g	2412 MHz	-3.15	-2.33	-2.60	2.91	5.53	6.68	Complies
	2437 MHz	-0.47	-1.20	-0.27	-0.23	5.50	6.68	Complies
	2462 MHz	-4.17	-3.42	-4.15	-4.16	2.06	6.68	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	-4.10	-4.71	-4.58	-4.55	1.54	6.68	Complies
	2437 MHz	-0.38	-0.98	-0.55	-0.59	5.40	6.68	Complies
	2462 MHz	-2.84	-3.51	-2.82	-2.75	3.05	6.68	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	-12.42	-13.49	-12.70	-12.69	-6.79	6.68	Complies
	2437 MHz	-9.18	-9.41	-9.55	-9.24	-3.32	6.68	Complies
	2452 MHz	-11.18	-12.82	-12.56	-11.95	-6.06	6.68	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.32 dBi>6dBi, so limit= 8-(7.32-6)=6.68 dBm/3kHz

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5745 MHz	-0.69	-0.47	-0.63	-0.88	5.36	6.18	Complies
	5785 MHz	-0.48	-0.58	-1.11	-1.02	5.23	6.18	Complies
	5825 MHz	-0.60	-1.27	-1.51	-0.76	5.00	6.18	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	-0.62	-1.41	-0.53	-0.26	5.34	6.18	Complies
	5785 MHz	-0.62	-0.63	-0.44	-1.47	5.25	6.18	Complies
	5825 MHz	0.10	-0.83	-1.11	-1.06	5.32	6.18	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-3.95	-4.54	-4.78	-4.30	1.64	6.18	Complies
	5795 MHz	-4.11	-4.68	-4.59	-4.79	1.61	6.18	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-6.73	-7.28	-7.16	-5.91	-0.72	6.18	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.82 dBi>6dBi, so limit= 8-(7.82-6)=6.18 dBm/3kHz

For beamforming mode

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	2412 MHz	-4.35	-3.93	-3.76	-3.51	2.14	6.68	Complies
	2437 MHz	-2.51	-2.86	-3.06	-2.34	3.34	6.68	Complies
	2462 MHz	-3.94	-4.67	-4.15	-4.26	1.77	6.68	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	-12.36	-12.79	-13.38	-13.73	-7.01	6.68	Complies
	2437 MHz	-11.81	-12.25	-11.33	-11.40	-5.66	6.68	Complies
	2452 MHz	-11.18	-12.82	-12.56	-11.95	-6.06	6.68	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.32 dBi>6dBi, so limit= 8-(7.32-6)=6.68 dBm/3kHz

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5745 MHz	-0.89	-0.70	-1.91	-0.21	5.14	6.18	Complies
	5785 MHz	-1.06	-0.47	-1.35	-0.53	5.18	6.18	Complies
	5825 MHz	-1.52	-1.79	-1.58	-1.87	4.33	6.18	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-6.23	-5.44	-5.77	-4.16	0.69	6.18	Complies
	5795 MHz	-5.17	-5.93	-4.55	-4.57	1.00	6.18	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-6.73	-7.28	-7.16	-5.91	-0.72	6.18	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.82 dBi>6dBi, so limit= 8-(7.82-6)=6.18 dBm/3kHz

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

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

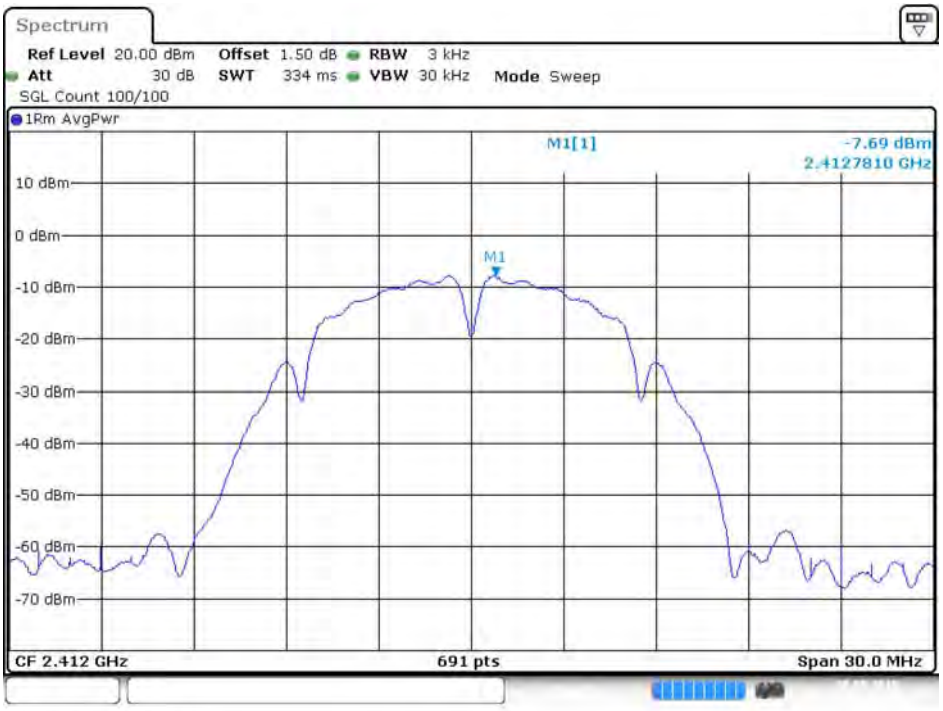
For non-beamforming mode

For 2.4GHz Band

Power Density Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 1

Date: 20.MAY.2015 19:35:45

Power Density Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 2



Date: 20.MAY.2015 19:37:56

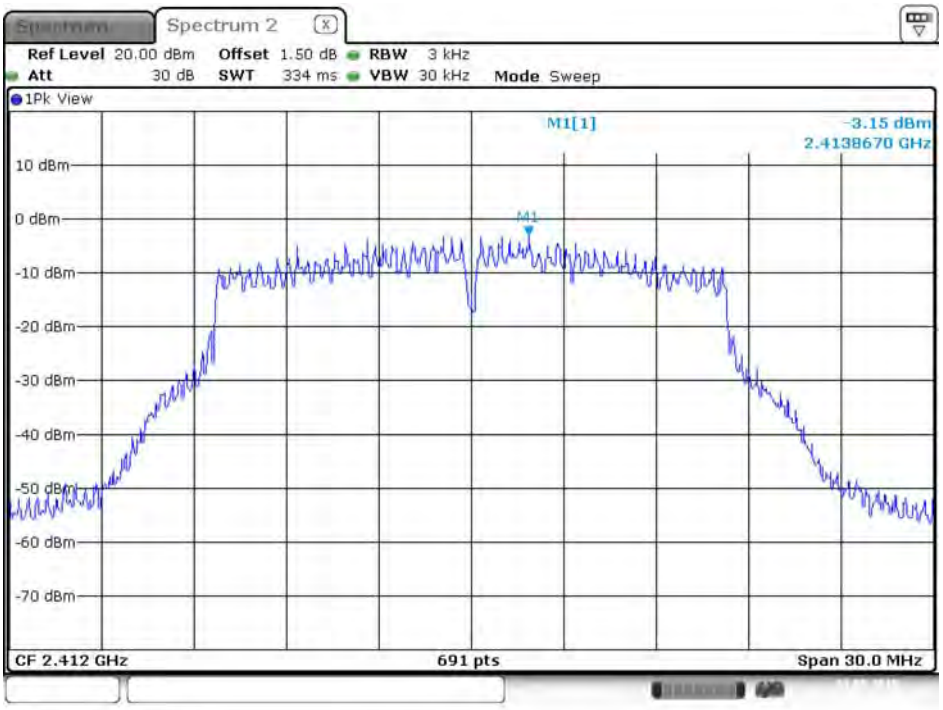
Power Density Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 3

Date: 20.MAY.2015 19:41:37

Power Density Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 4

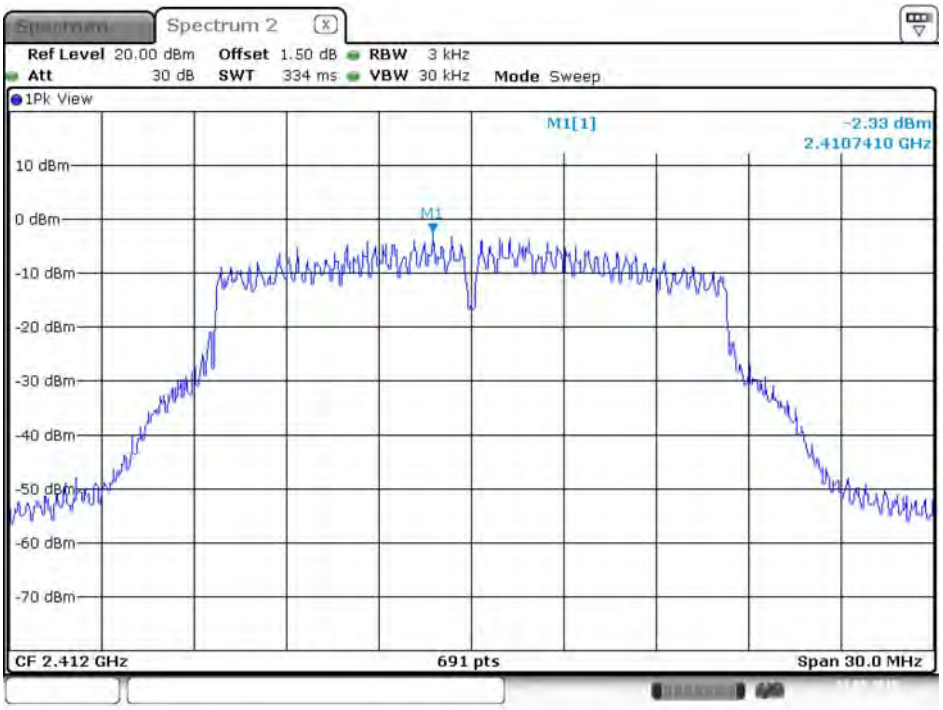
Date: 20.MAY.2015 19:43:09

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



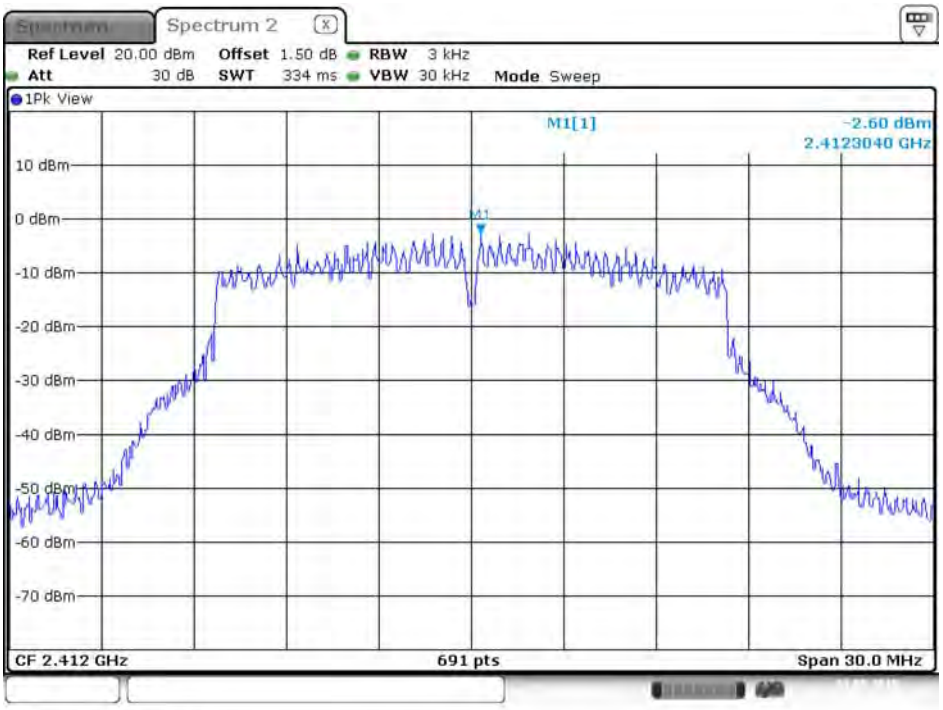
Date: 21.MAY.2015 02:27:10

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



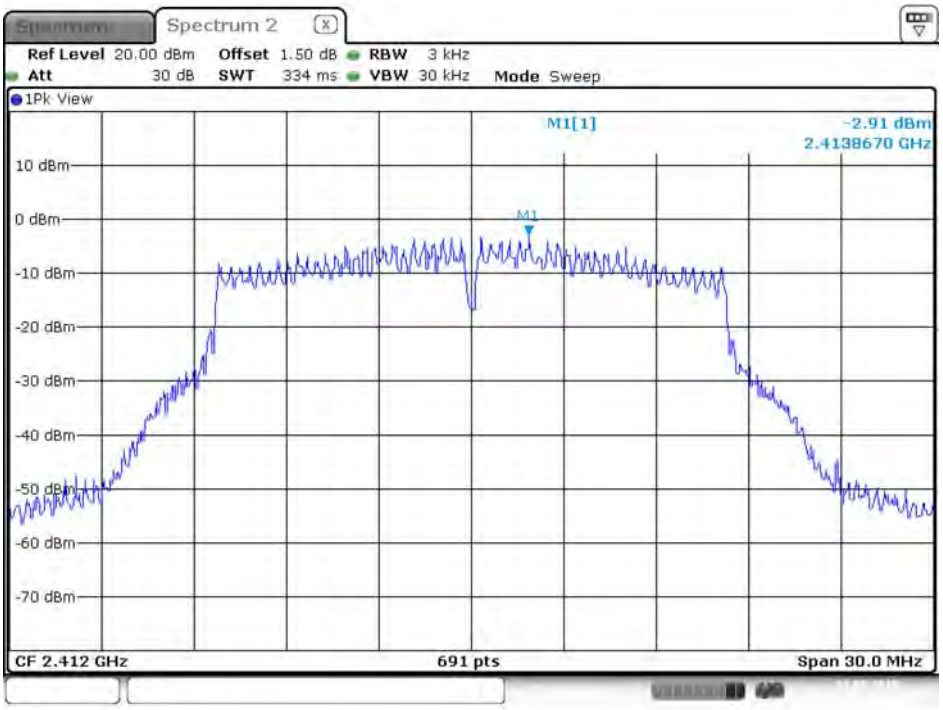
Date: 21.MAY.2015 02:27:31

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



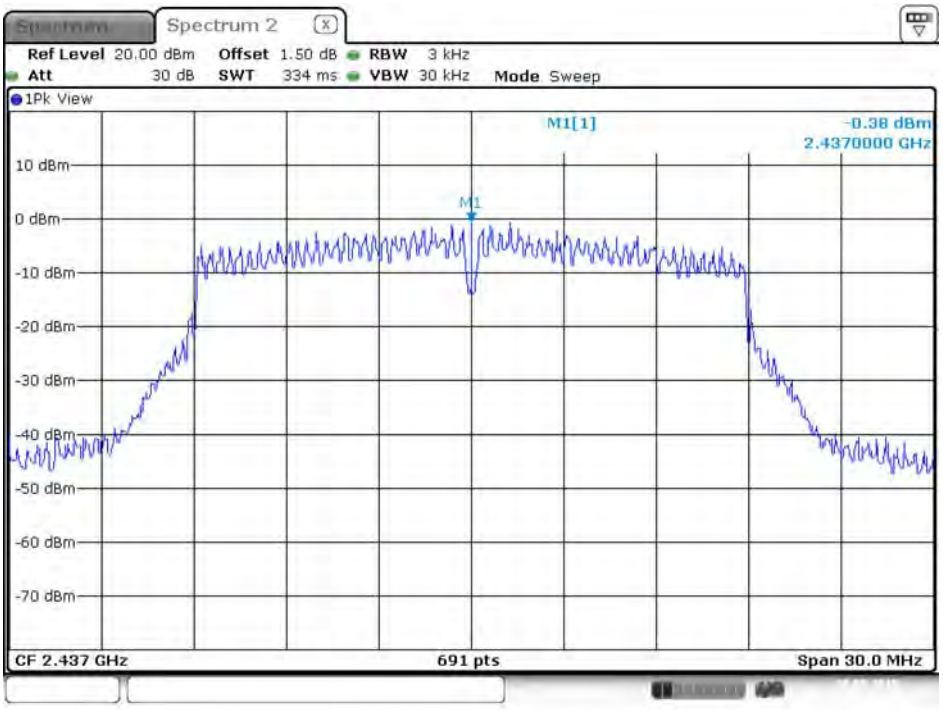
Date: 21.MAY.2015 02:27:45

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



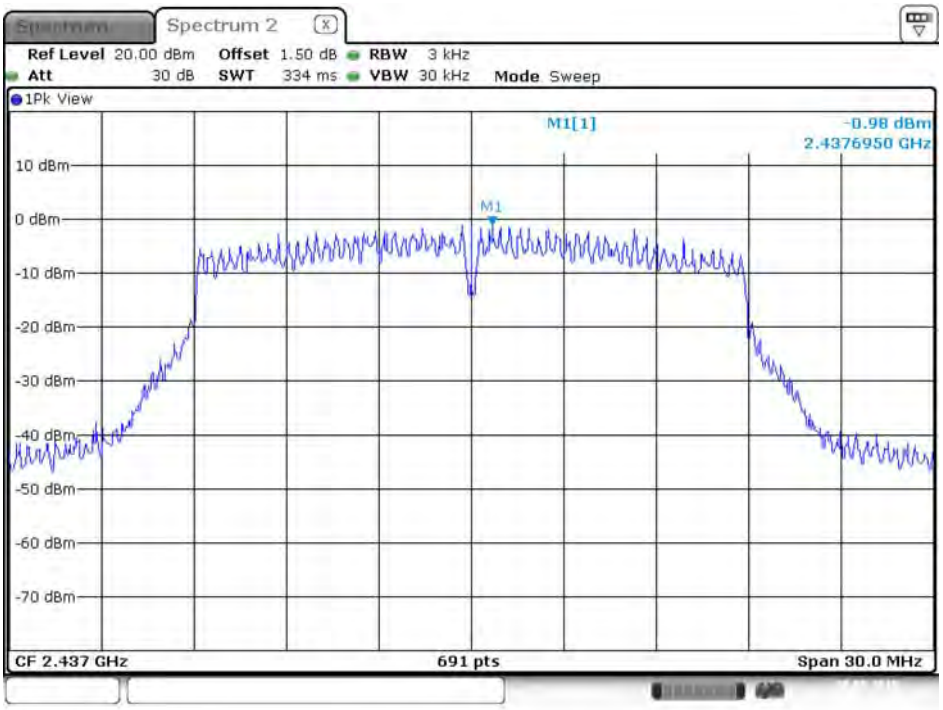
Date: 21.MAY.2015 02:28:00

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



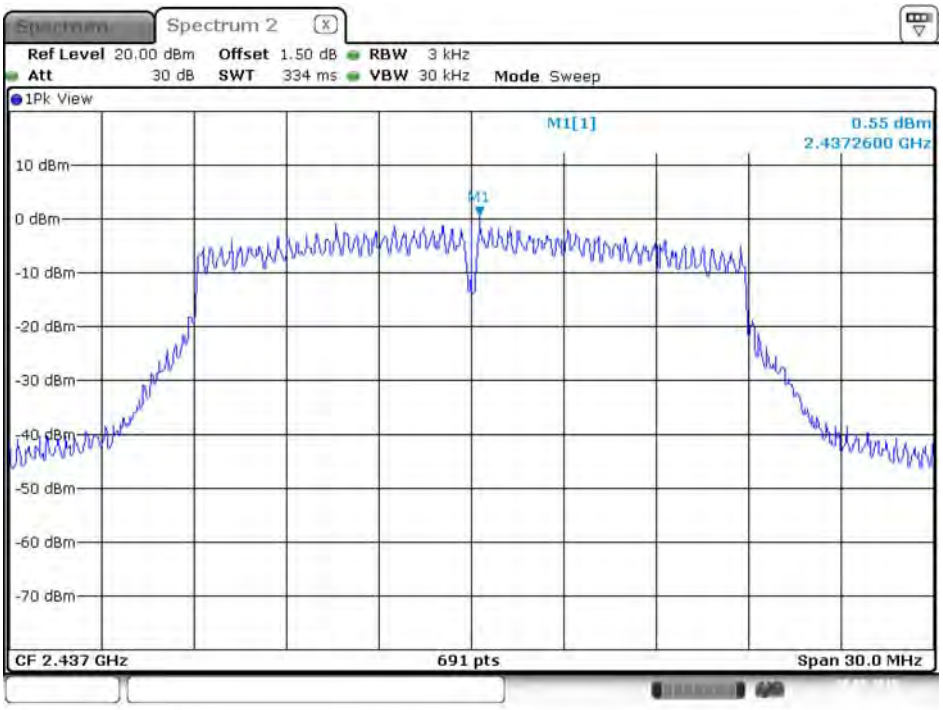
Date: 20.MAY.2015 20:33:56

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

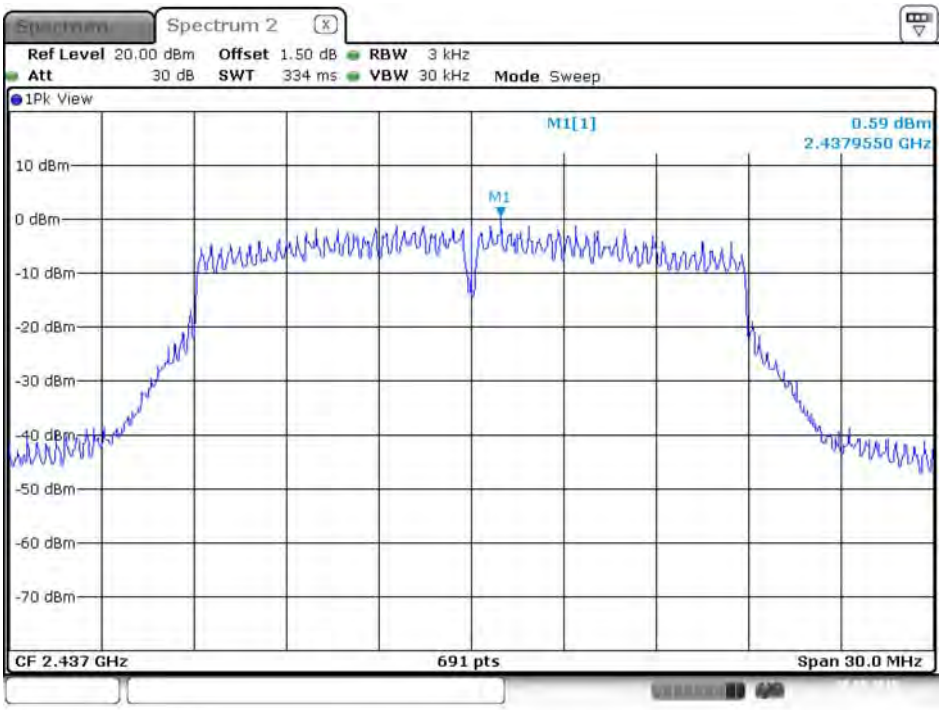


Date: 20.MAY.2015 20:33:25

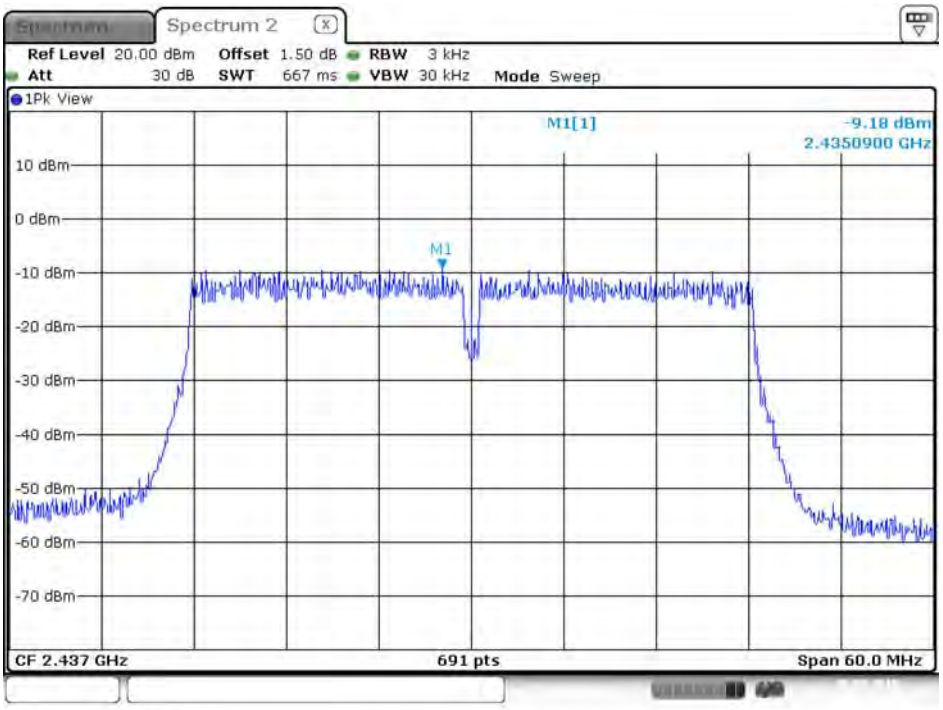
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 3



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

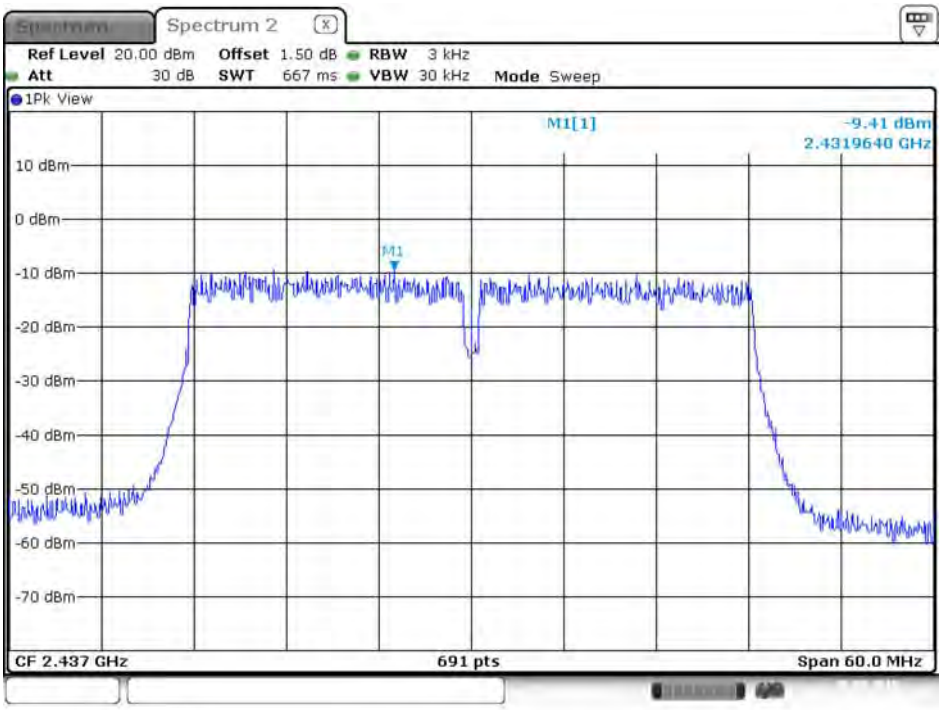


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1



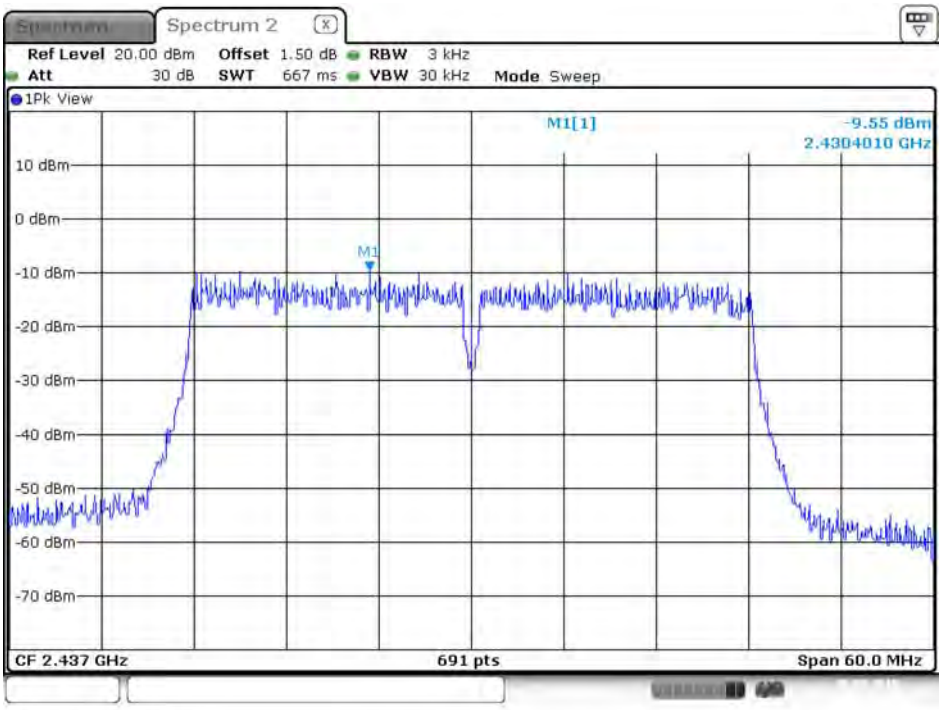
Date: 20.MAY.2015 20:41:14

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



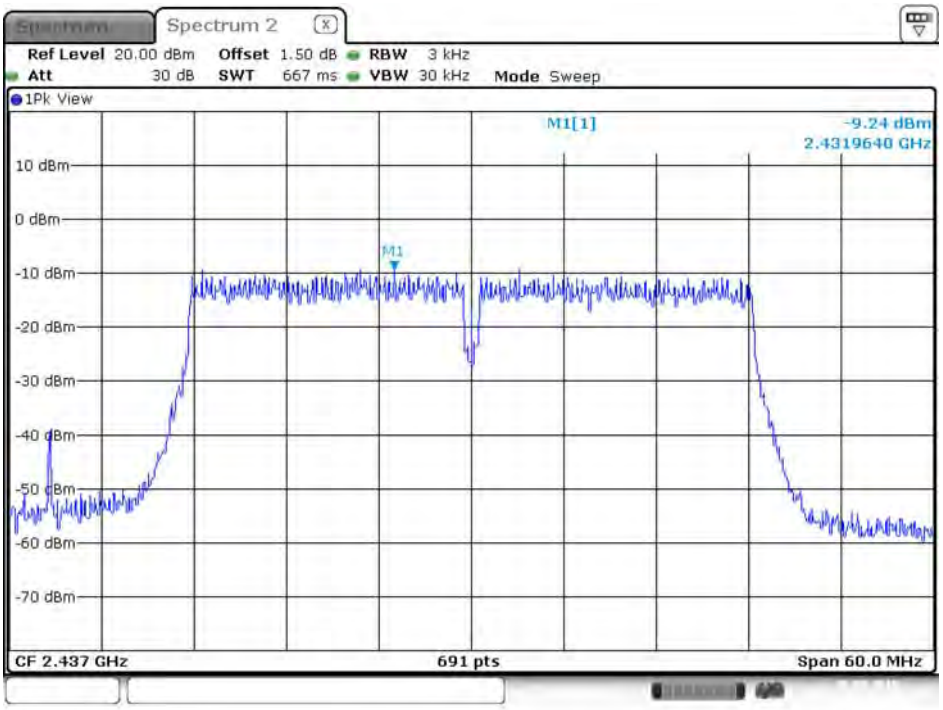
Date: 20.MAY.2015 20:41:48

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



Date: 20.MAY.2015 20:42:24

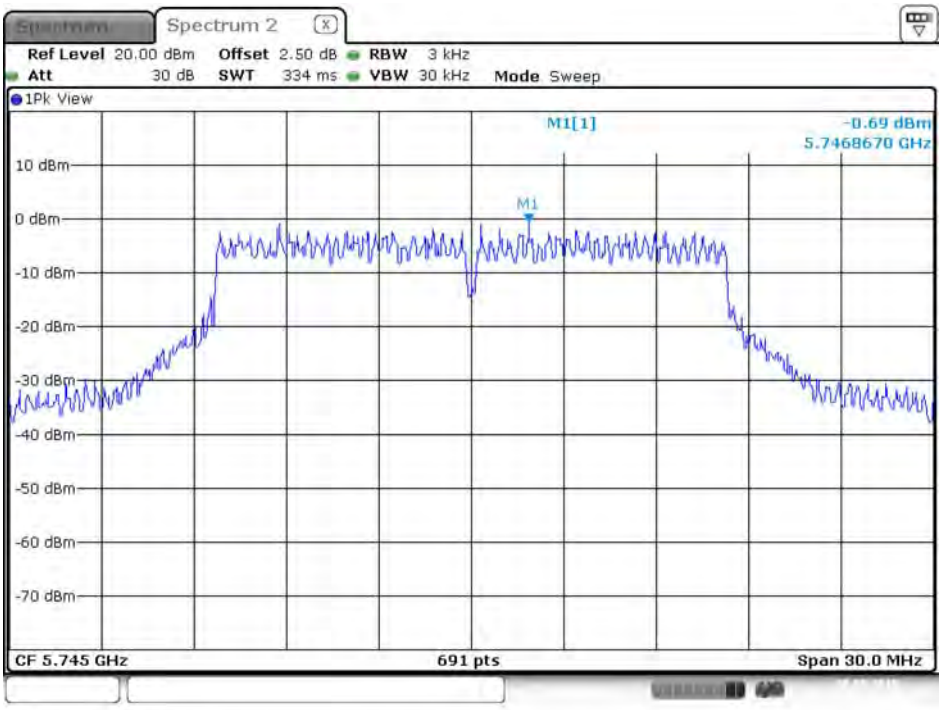
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 4



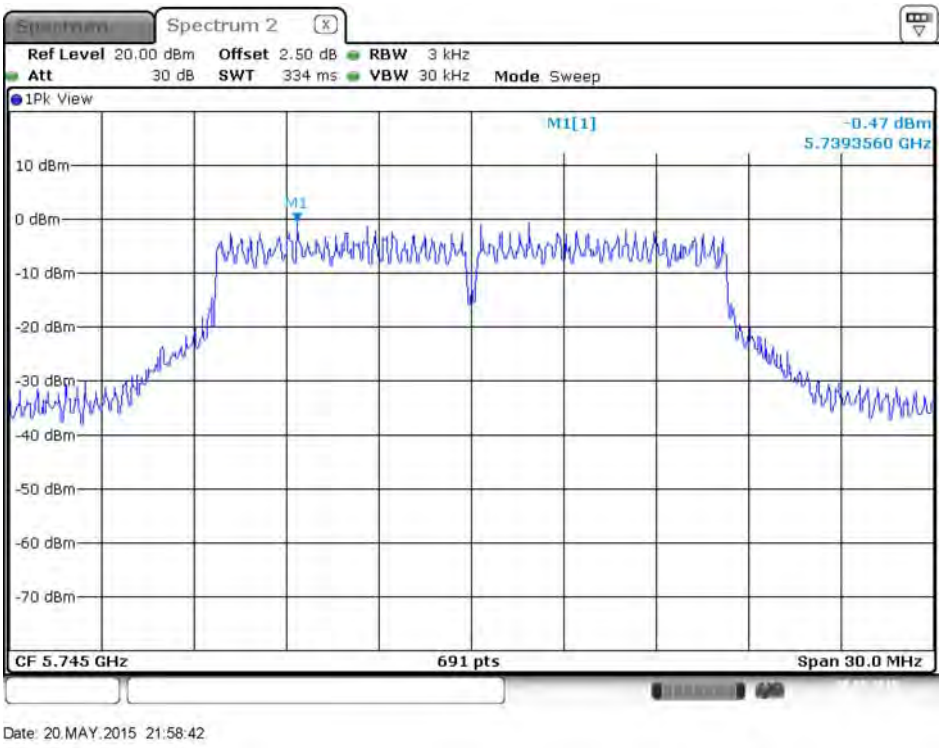
Date: 20.MAY.2015 20:42:54

For 5GHz Band

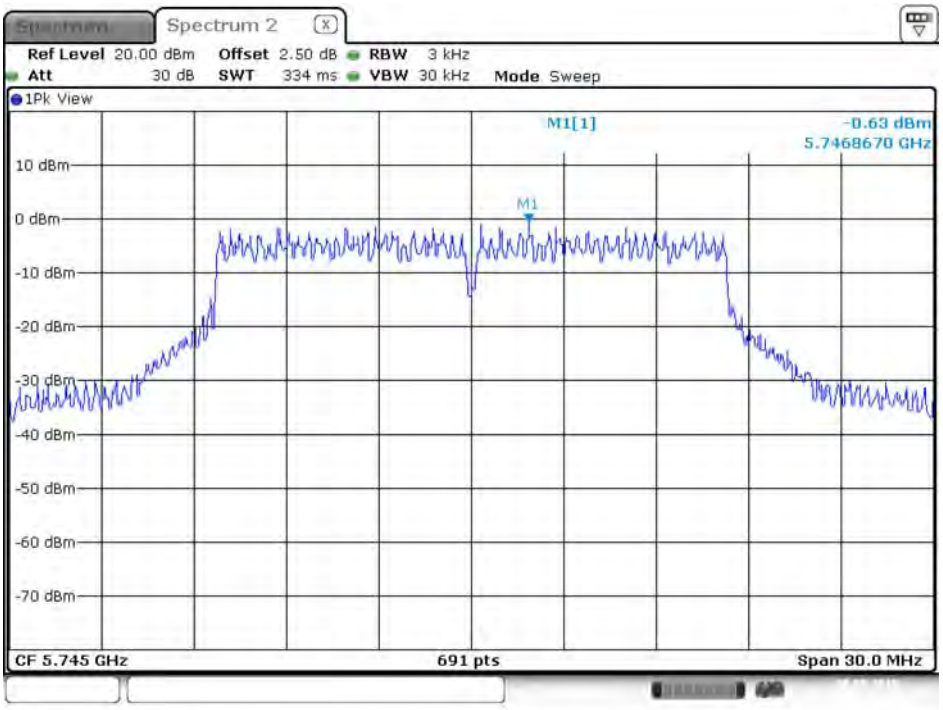
Power Density Plot on Configuration IEEE 802.11a / 5745 MHz / Chain 1



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

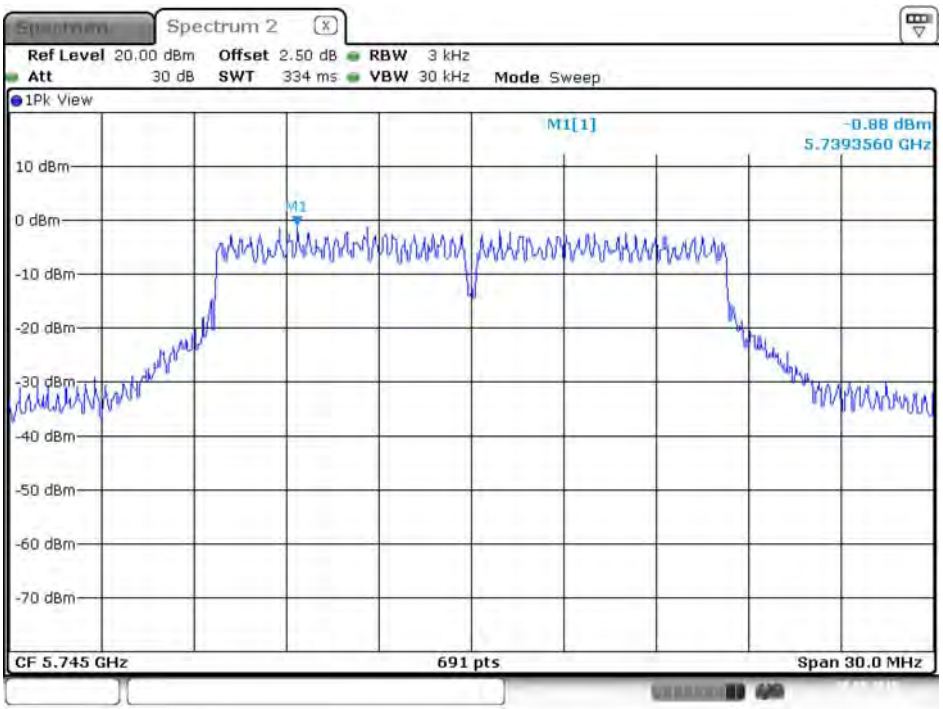


Power Density Plot on Configuration IEEE 802.11a / 5745 MHz / Chain 3



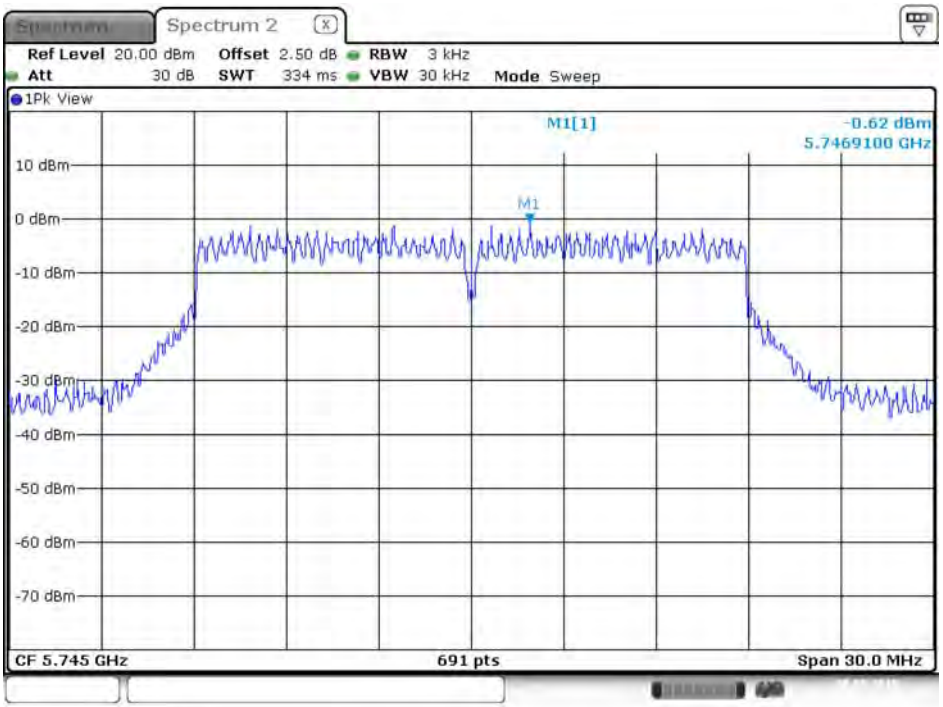
Date: 20.MAY.2015 21:58:59

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



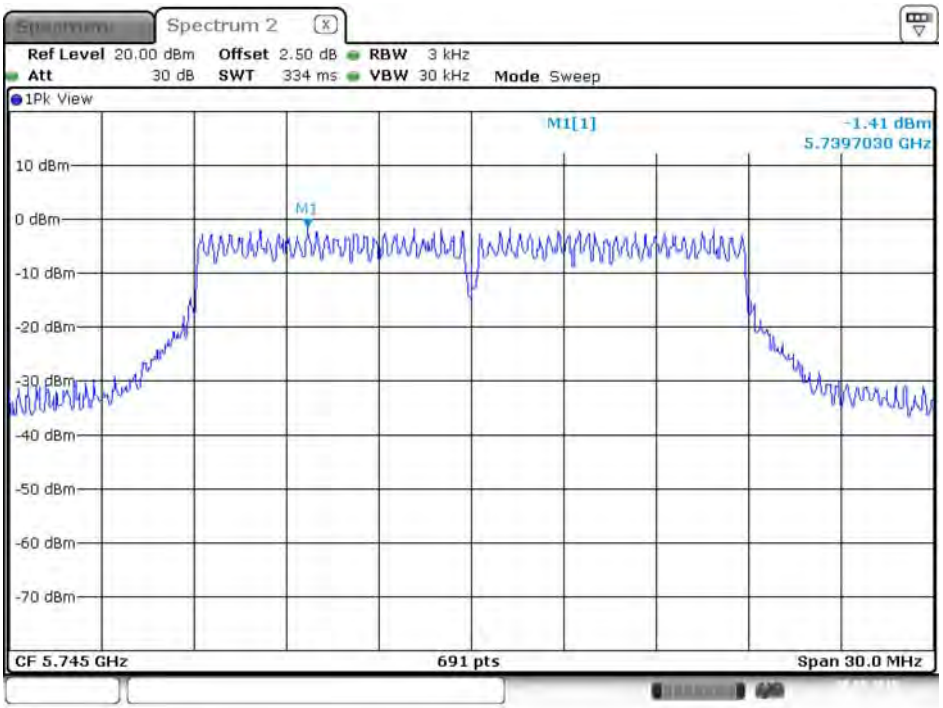
Date: 20.MAY.2015 21:59:17

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



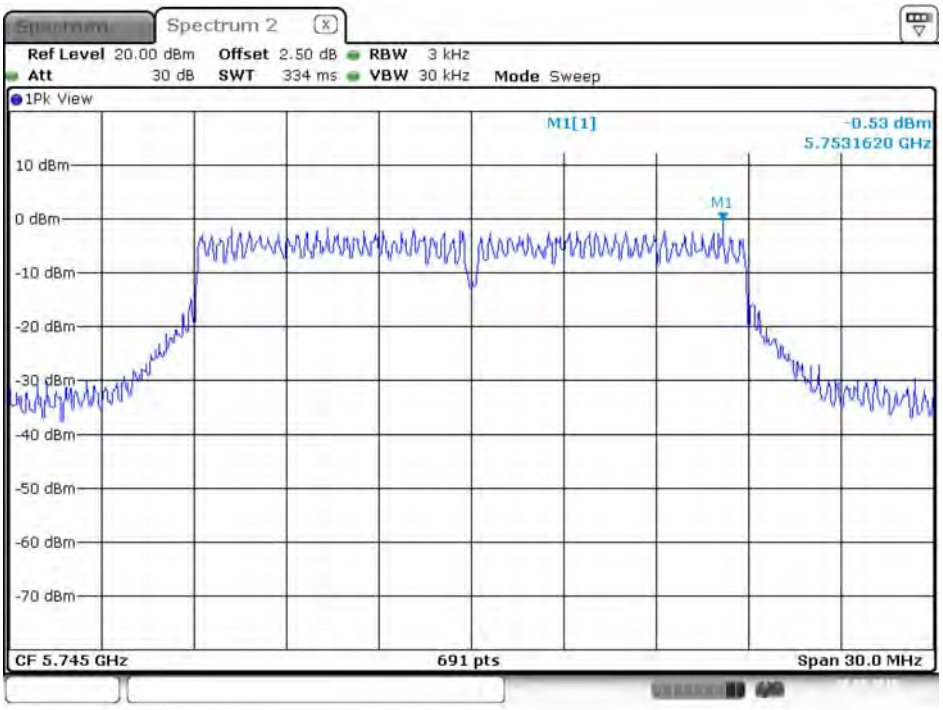
Date: 20.MAY.2015 21:30:52

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



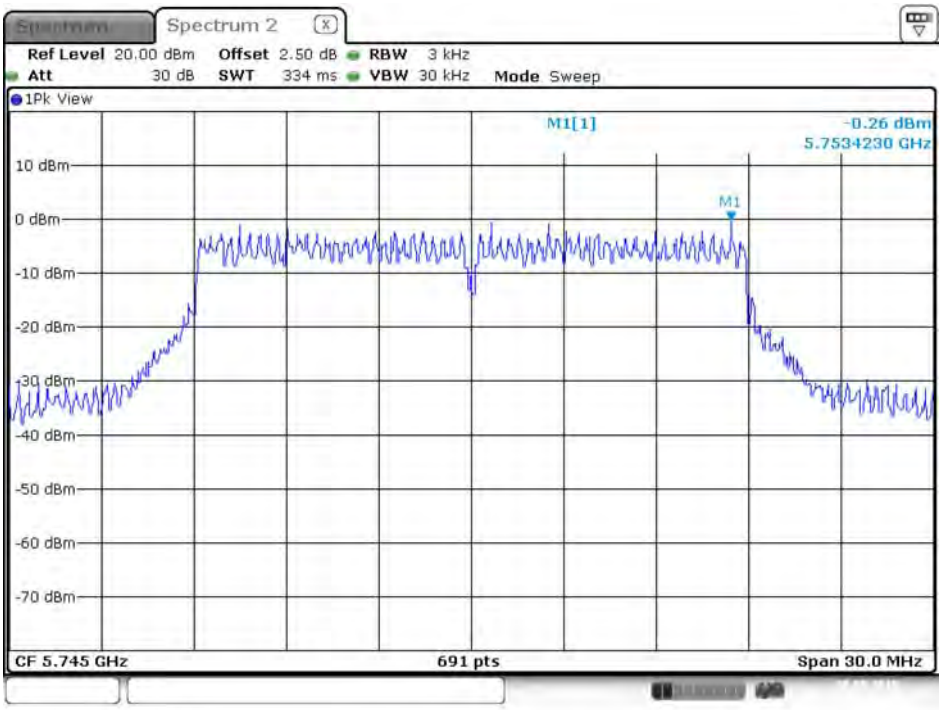
Date: 20.MAY.2015 21:31:32

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



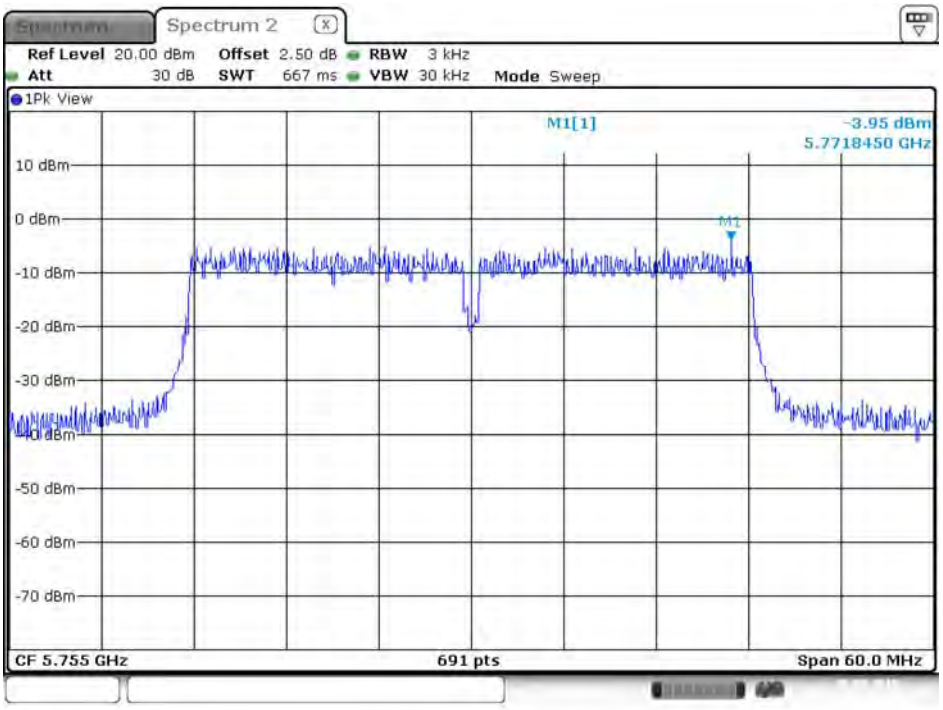
Date: 20.MAY.2015 21:31:47

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



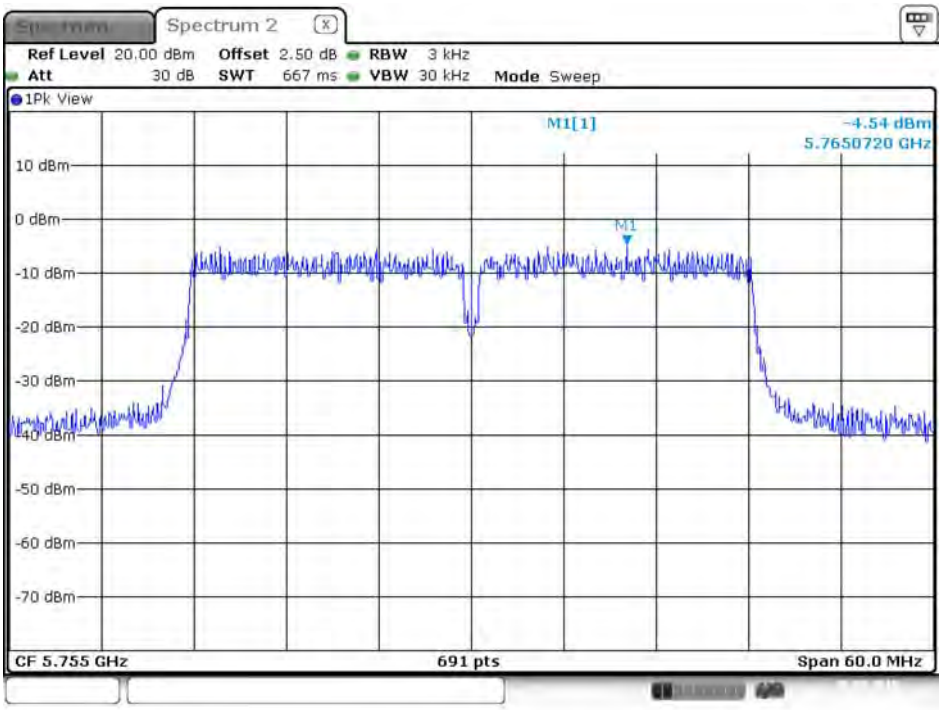
Date: 20.MAY.2015 21:32:03

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



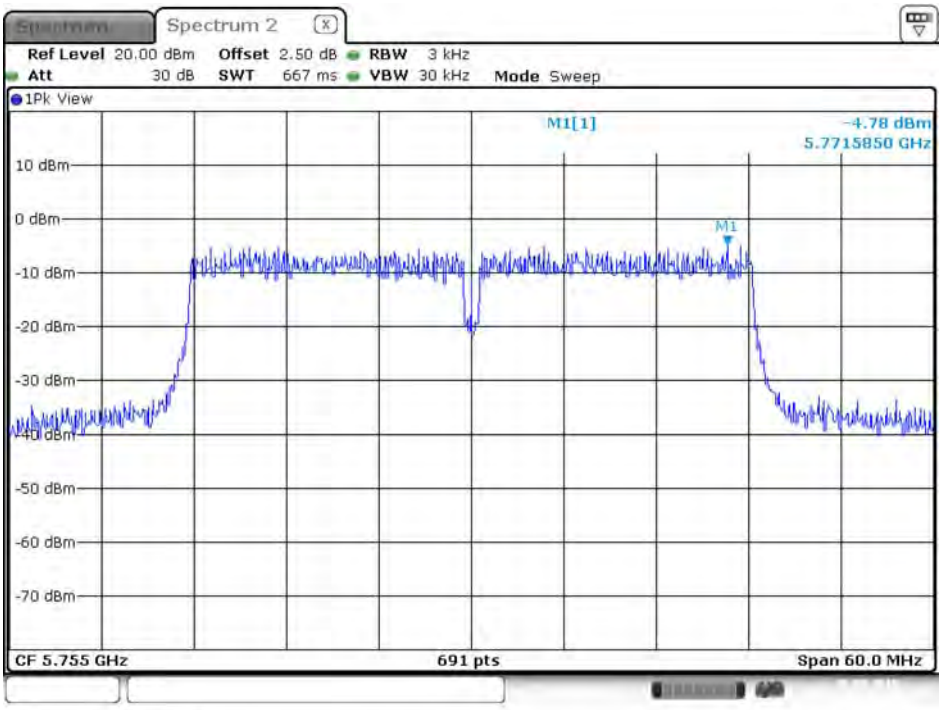
Date: 20.MAY.2015 22:05:36

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



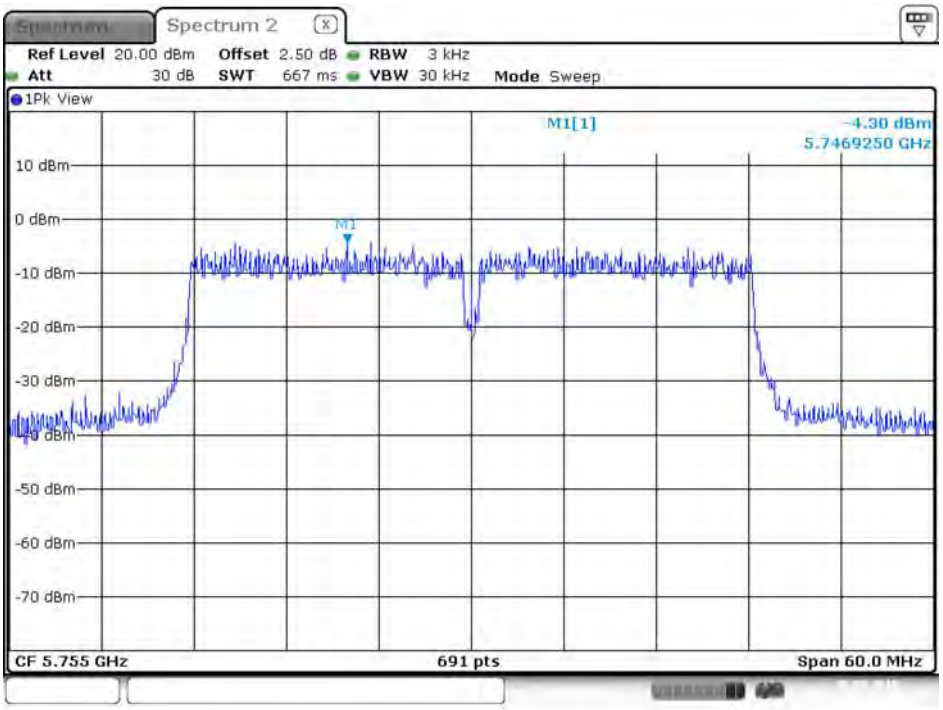
Date: 20.MAY.2015 22:05:53

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



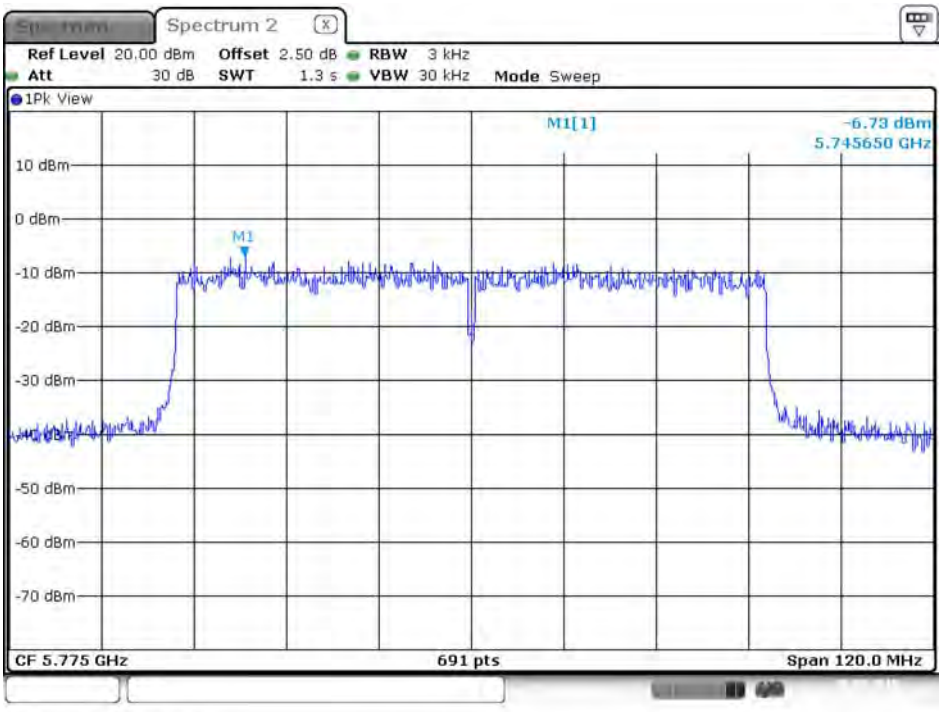
Date: 20.MAY.2015 22:06:12

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



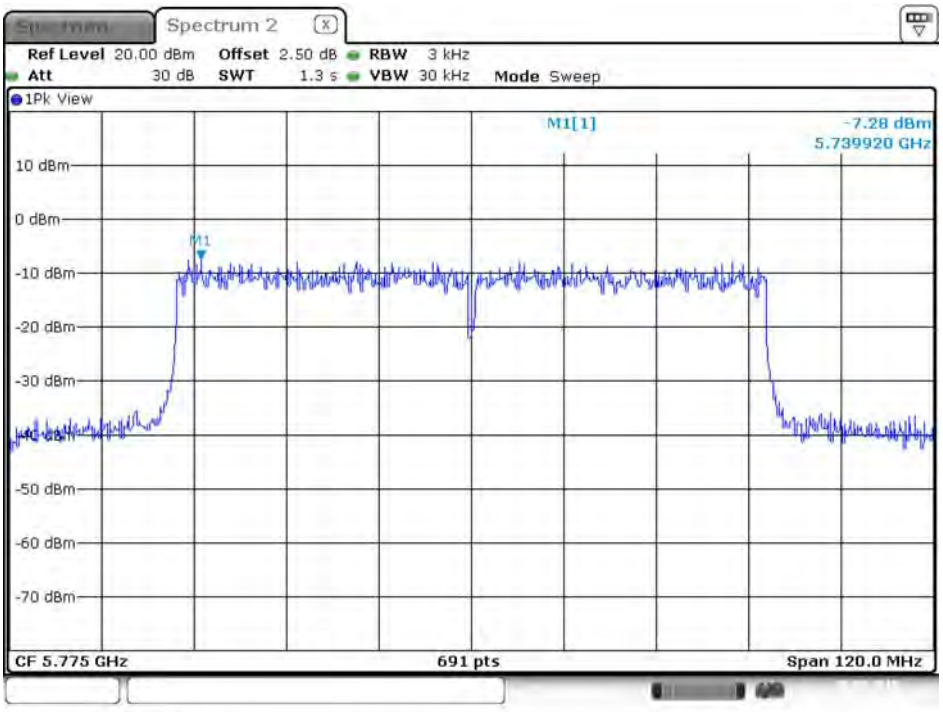
Date: 20.MAY.2015 22:06:30

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



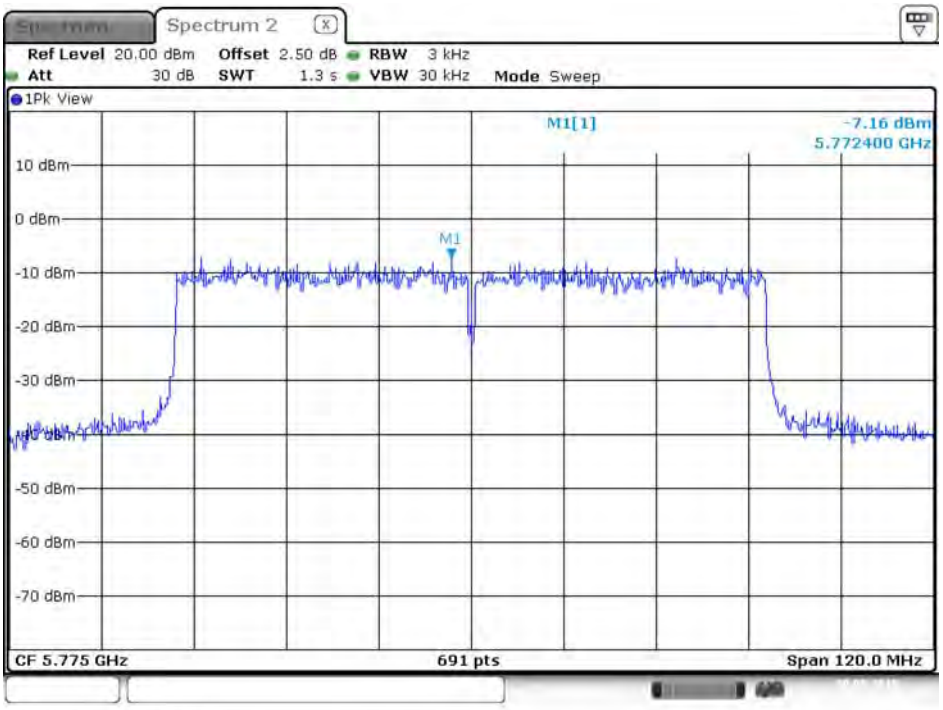
Date: 20.MAY.2015 22:11:46

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



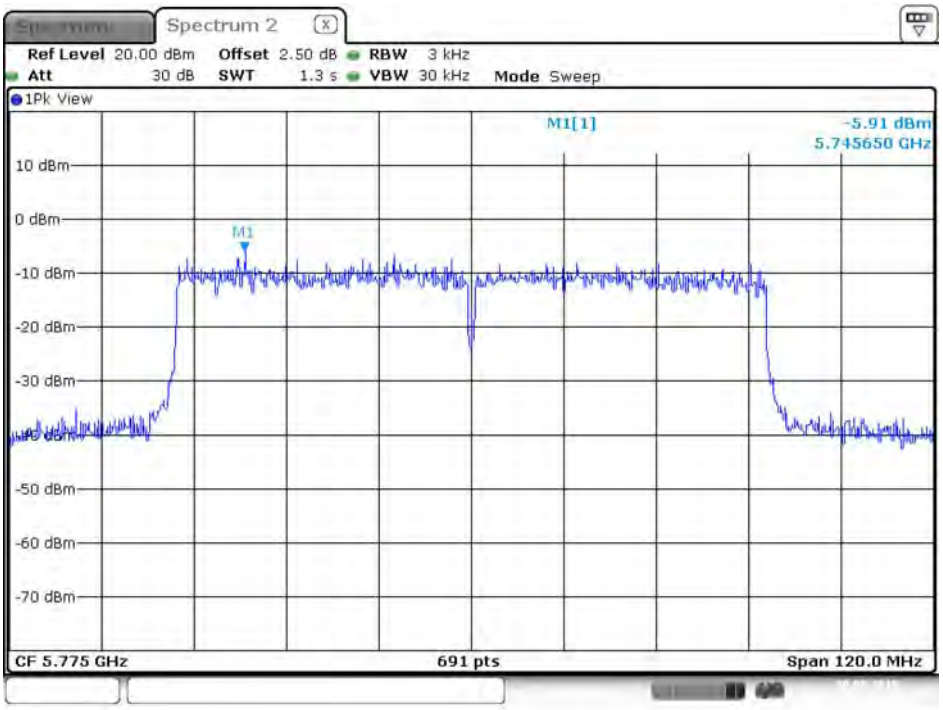
Date: 20.MAY.2015 22:12:22

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



Date: 20.MAY.2015 22:12:55

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

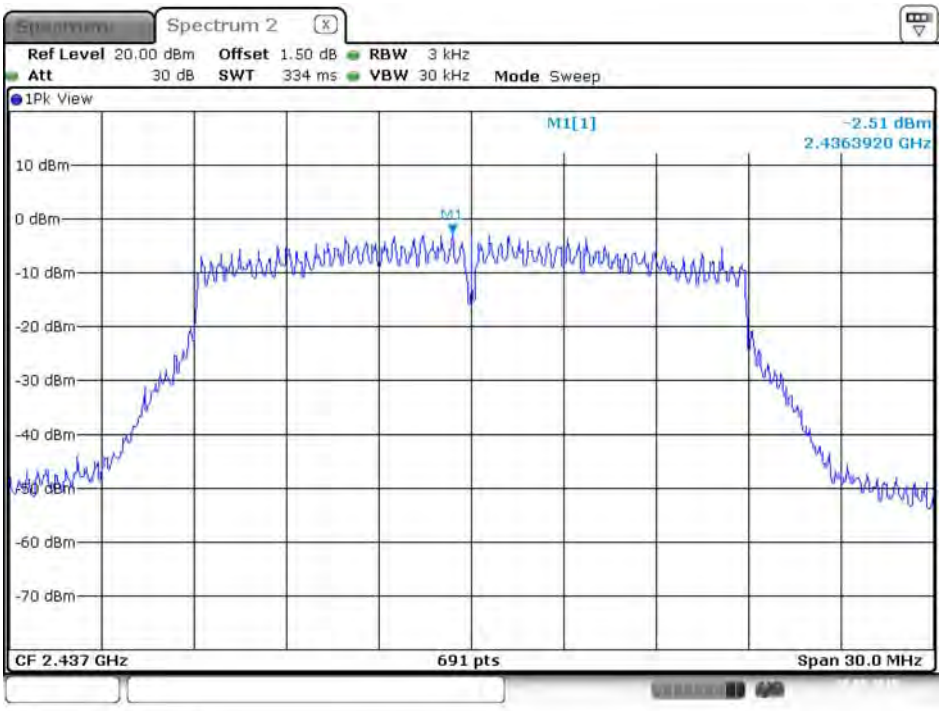


Date: 20.MAY.2015 22:13:26

For beamforming mode

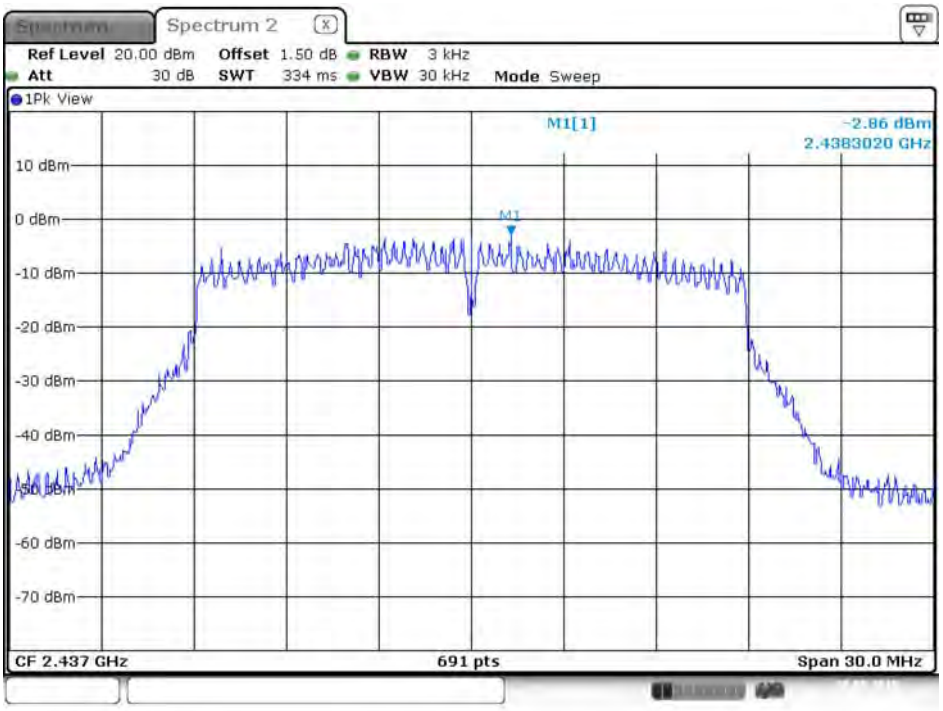
For 2.4GHz Band

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



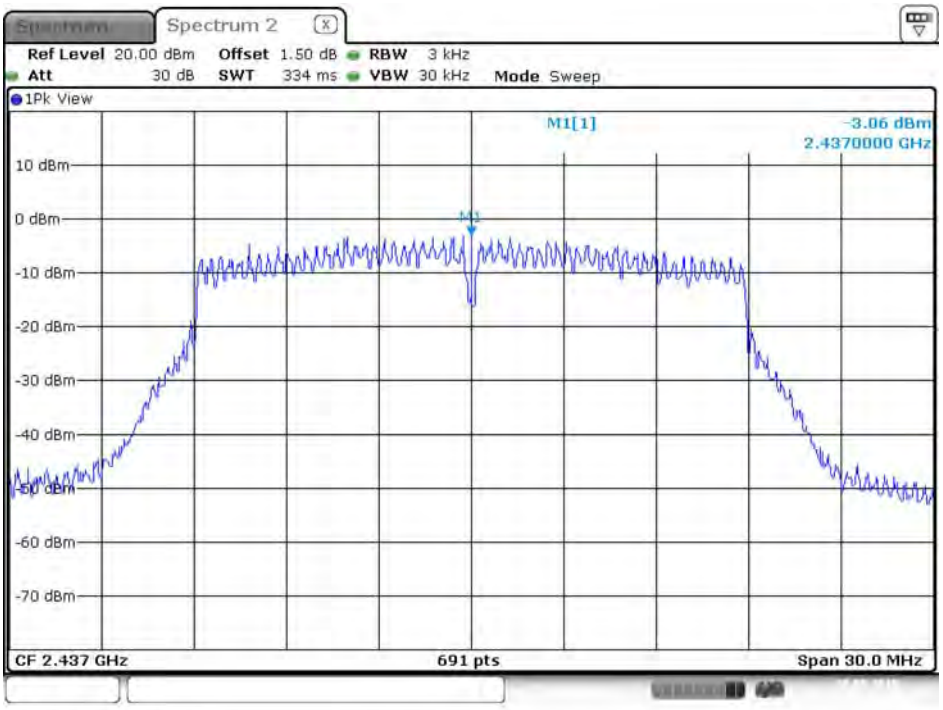
Date: 20.MAY.2015 20:57:13

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



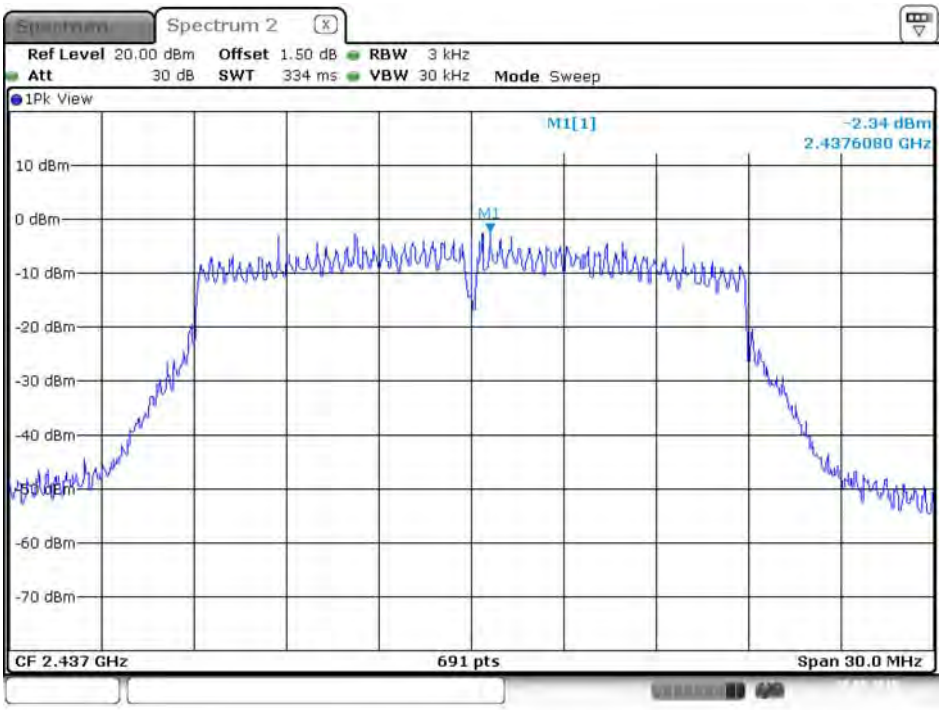
Date: 20.MAY.2015 20:57:38

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



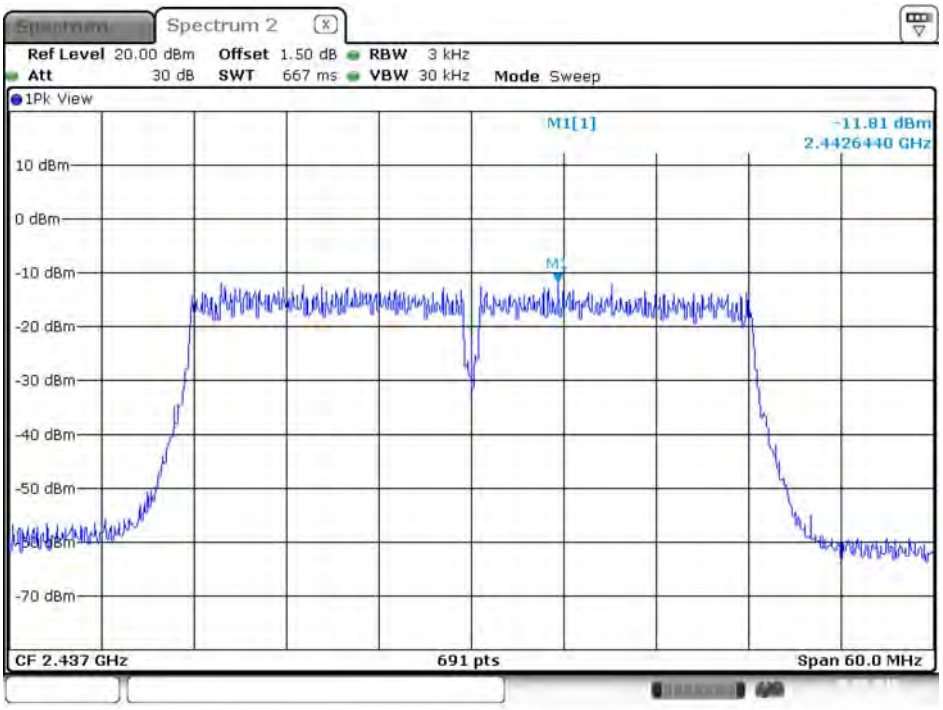
Date: 20.MAY.2015 20:58:10

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



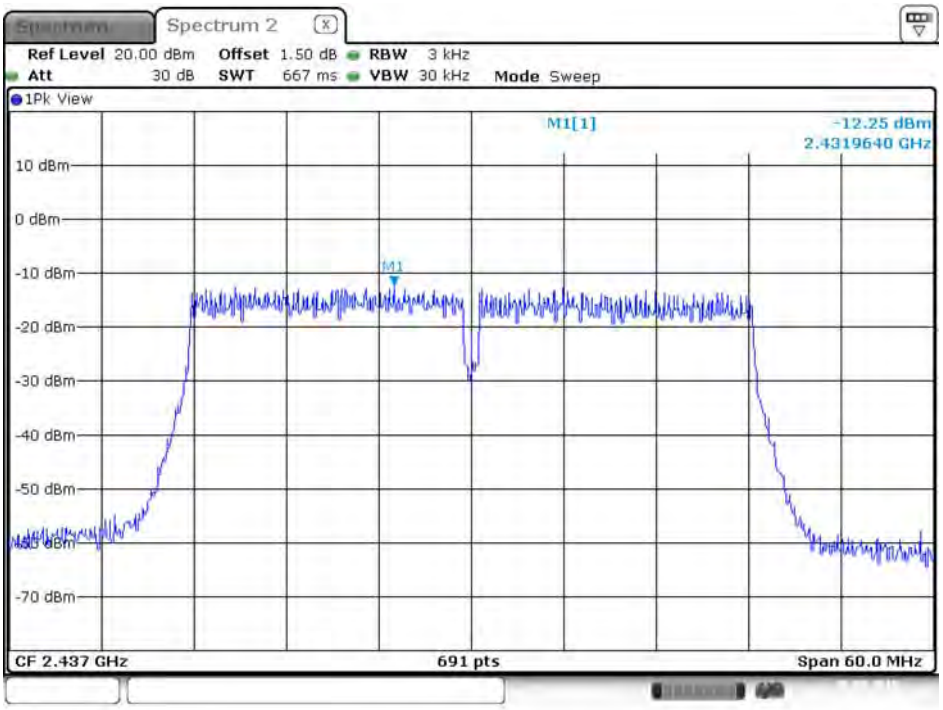
Date: 20.MAY.2015 20:58:31

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



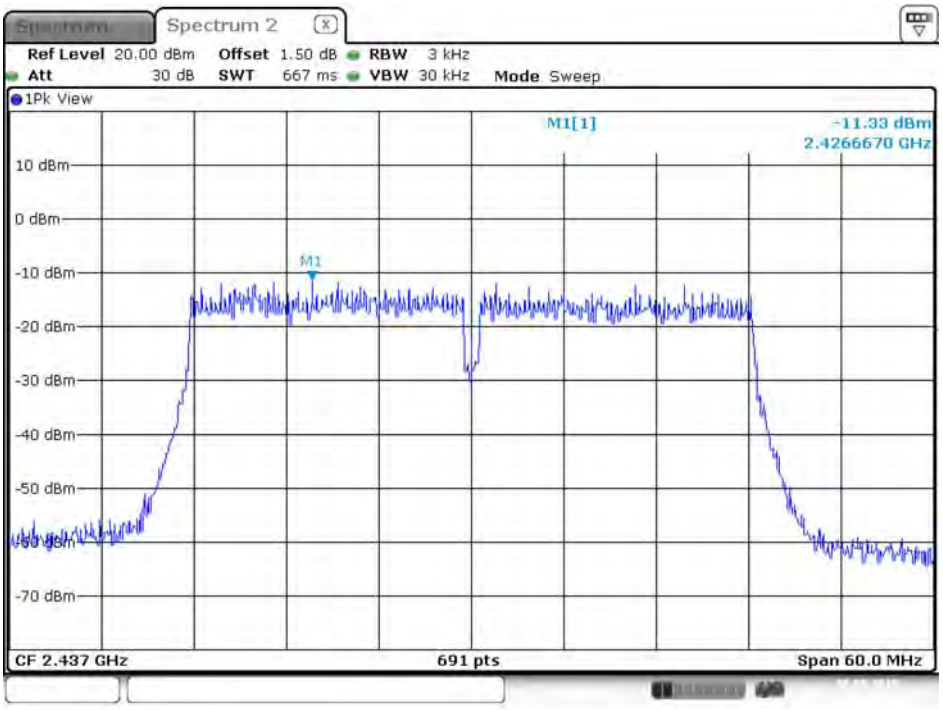
Date: 20.MAY.2015 20:47:57

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



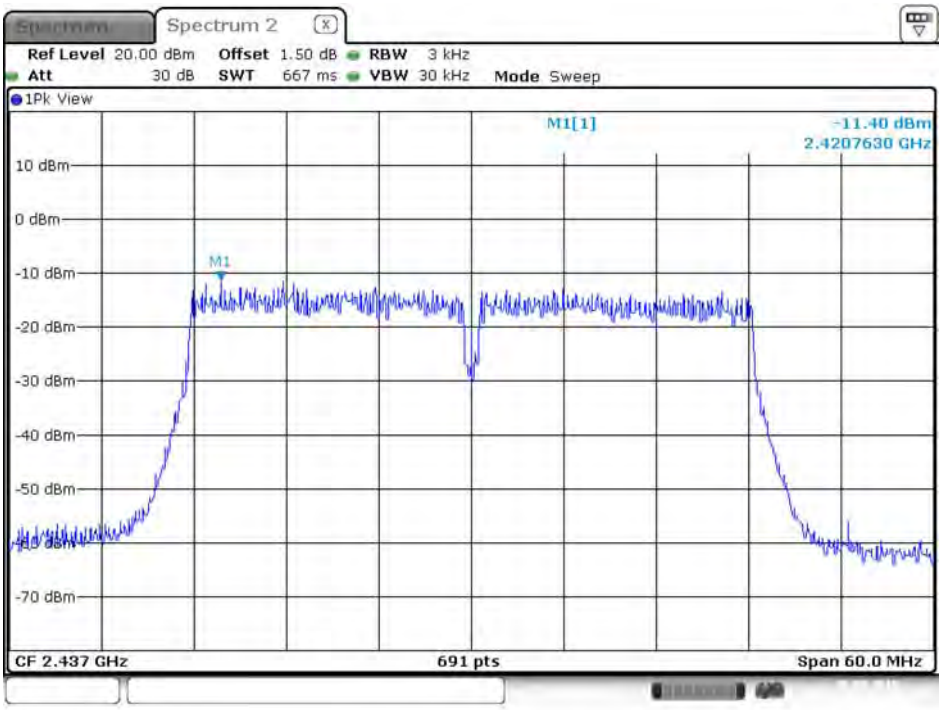
Date: 20.MAY.2015 20:48:24

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



Date: 20.MAY.2015 20:48:42

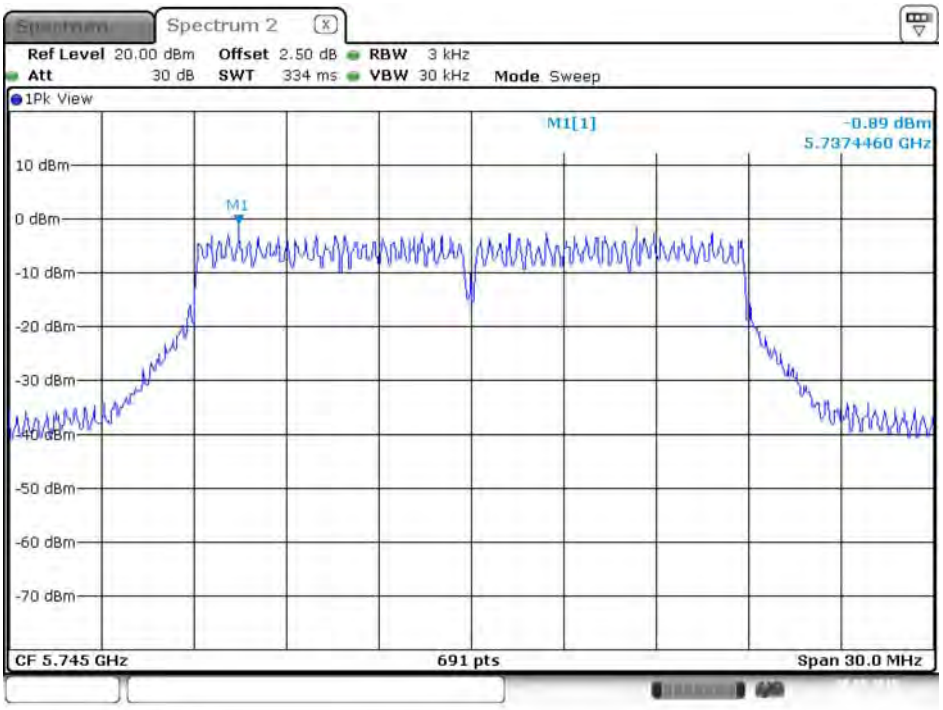
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 4



Date: 20.MAY.2015 20:49:09

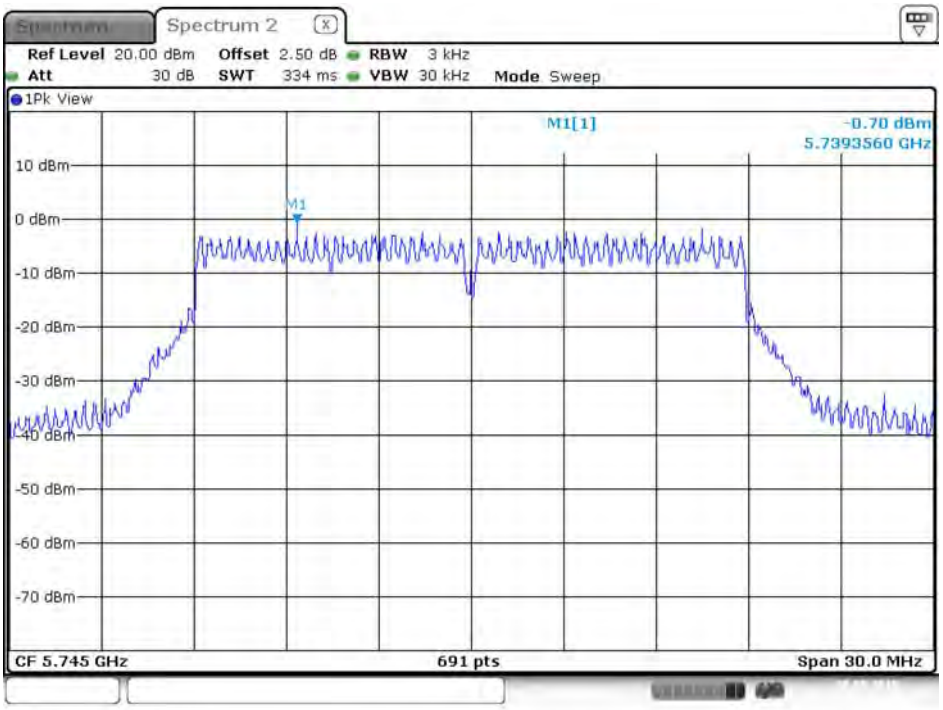
For 5GHz Band

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



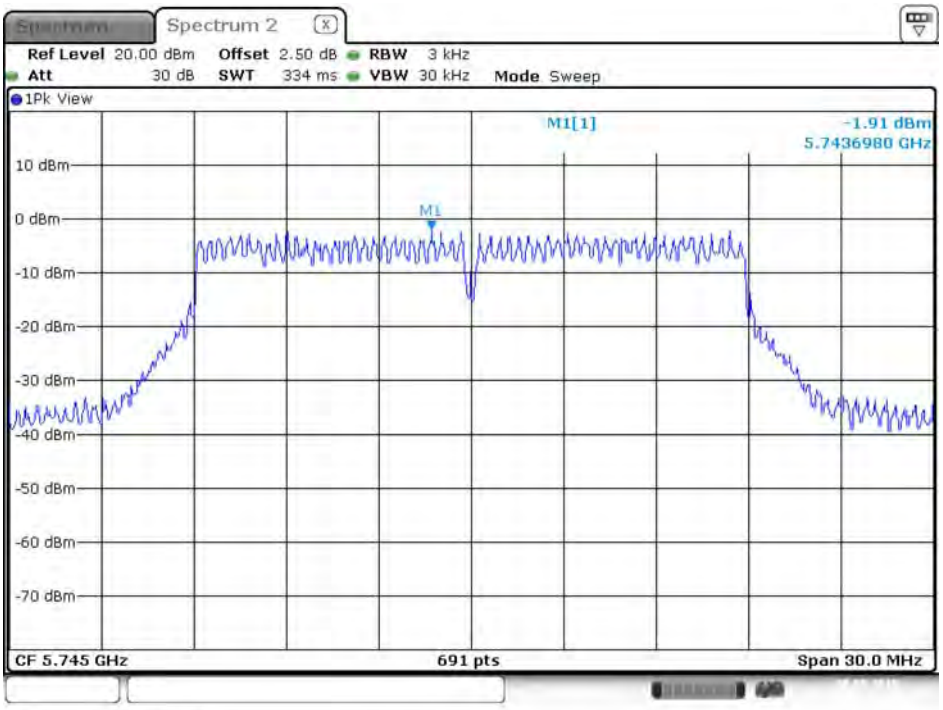
Date: 20.MAY.2015 22:21:48

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



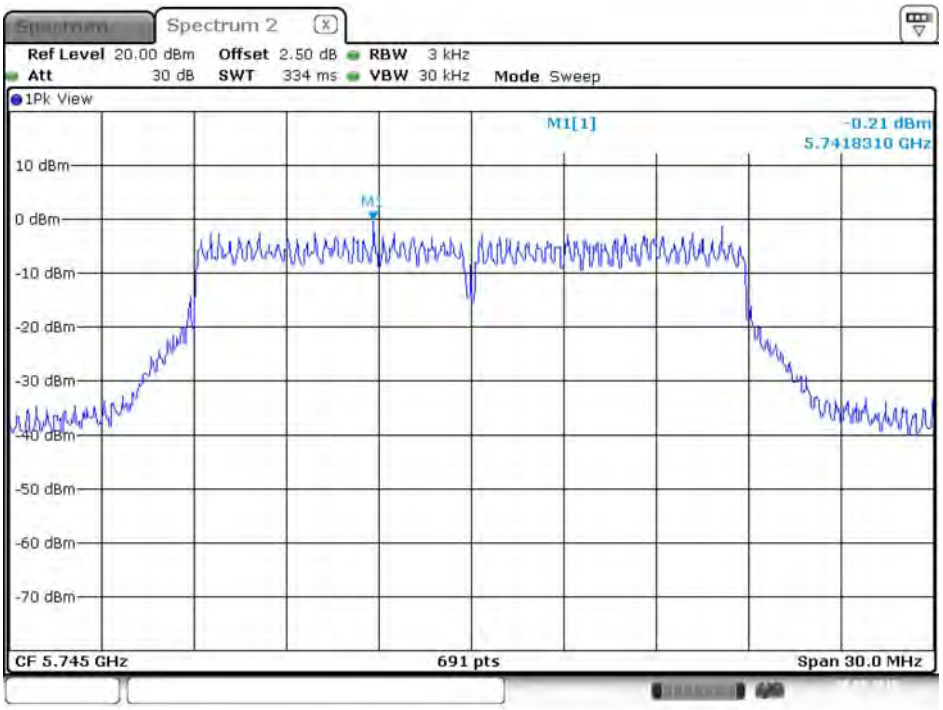
Date: 20.MAY.2015 22:22:44

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



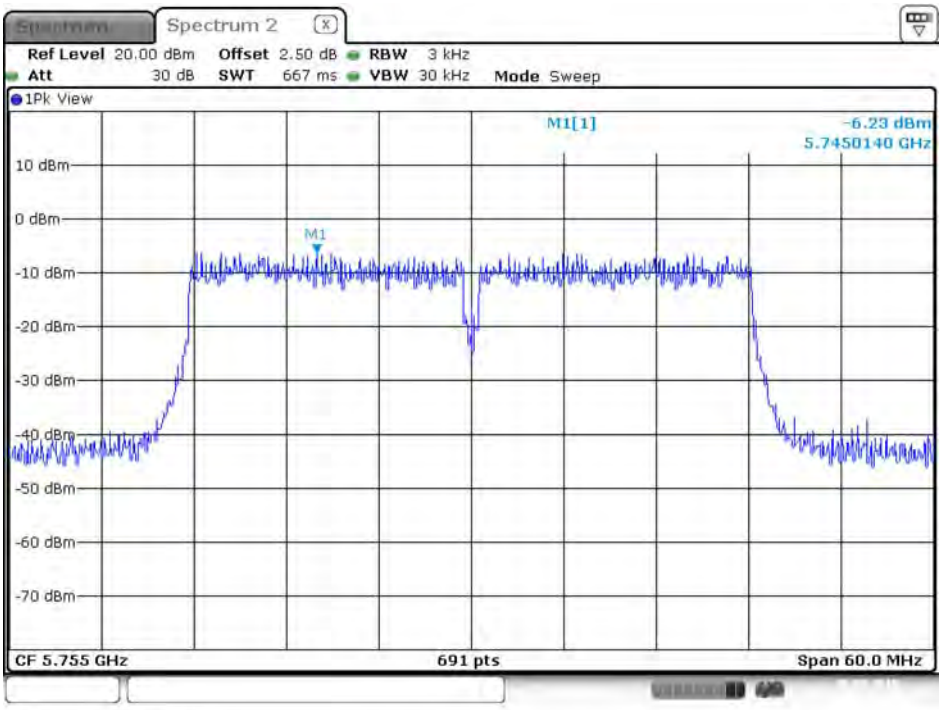
Date: 20.MAY.2015 22:23:12

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



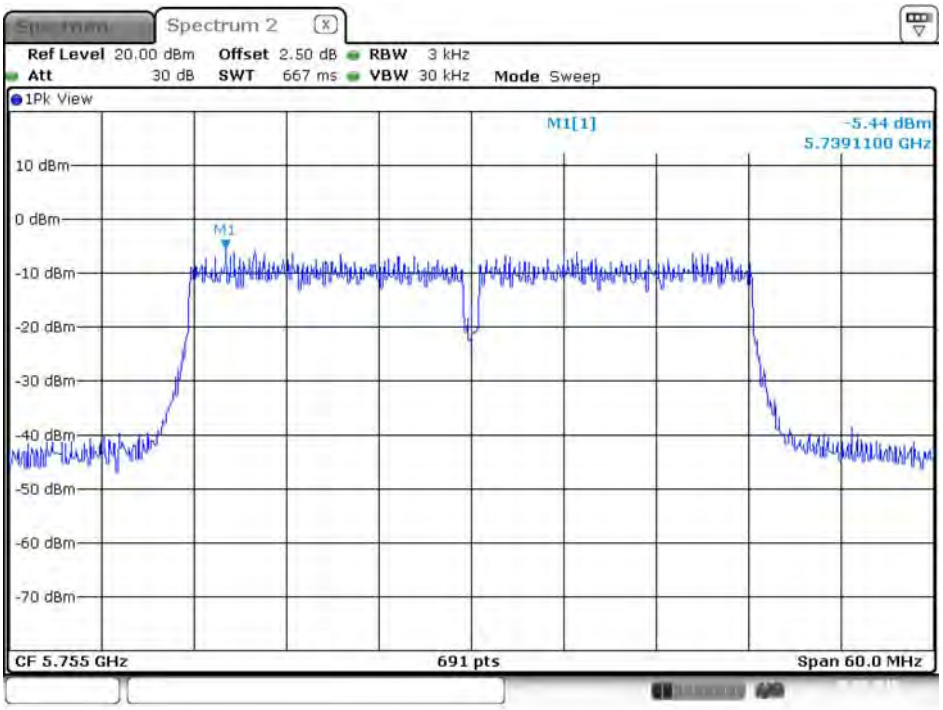
Date: 20.MAY.2015 22:23:32

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



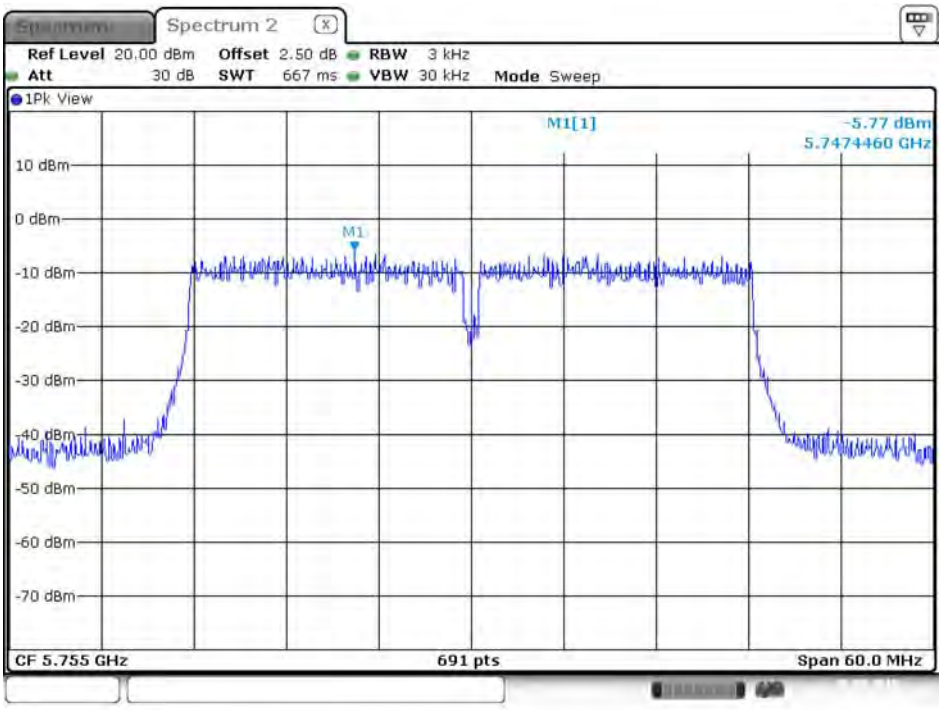
Date: 20.MAY.2015 22:18:20

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



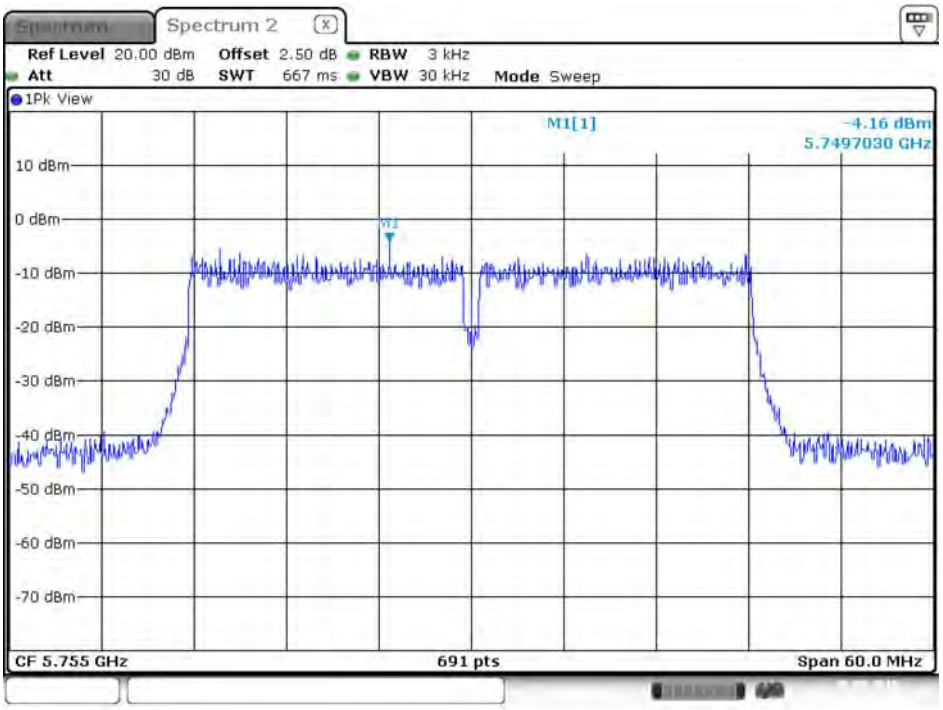
Date: 20.MAY.2015 22:18:39

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



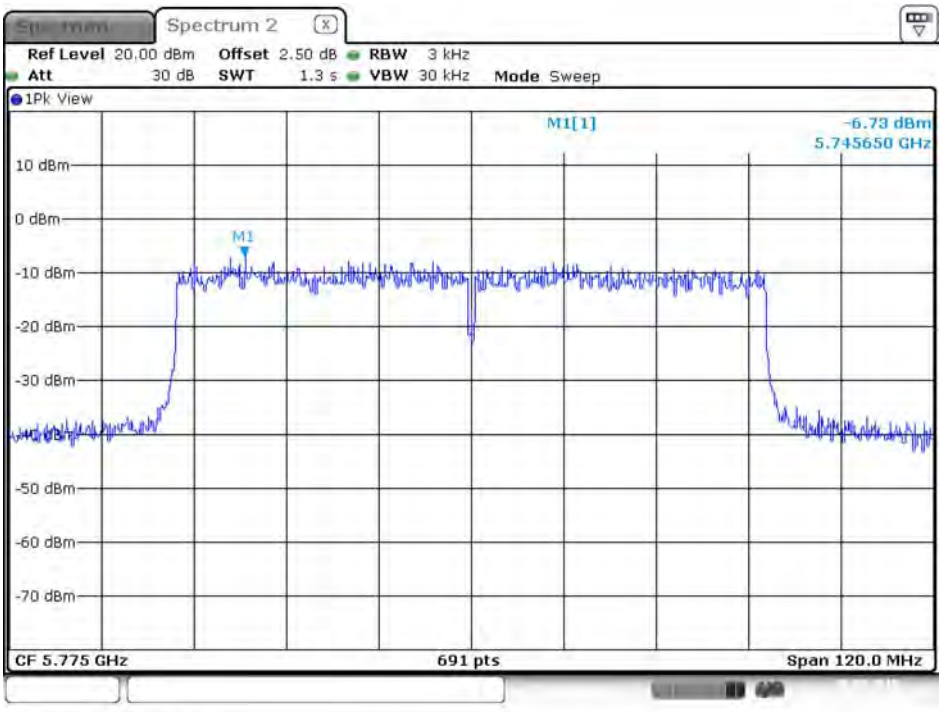
Date: 20.MAY.2015 22:18:57

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



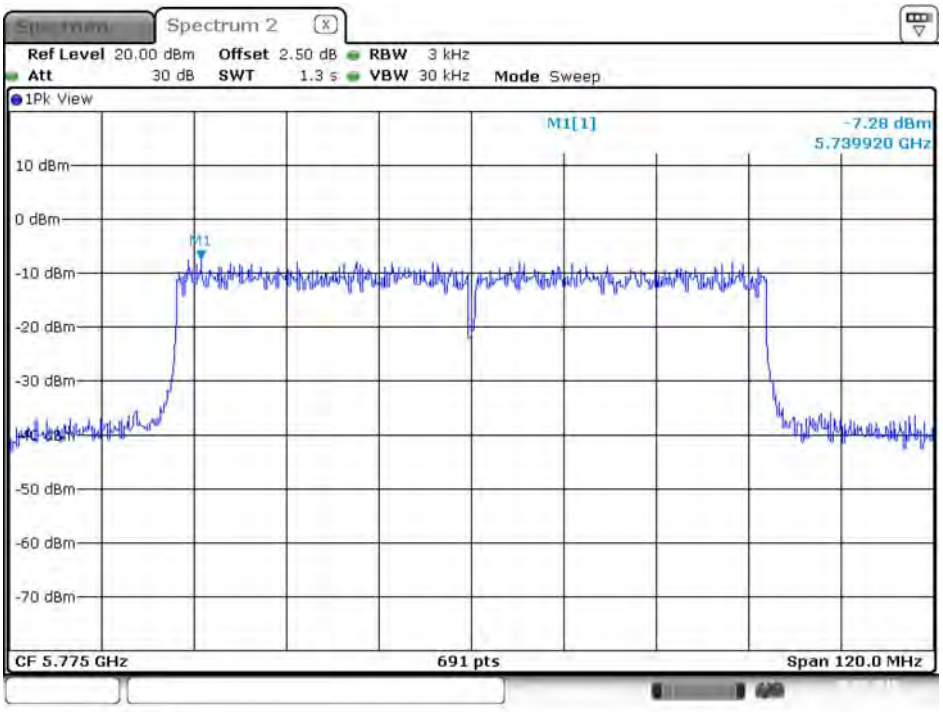
Date: 20.MAY.2015 22:19:13

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



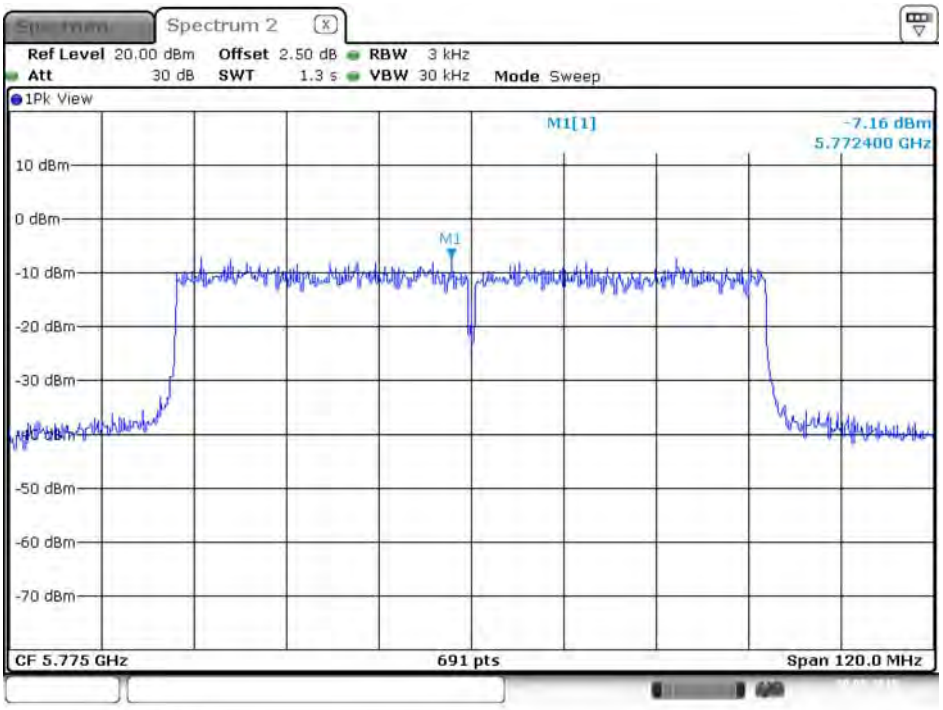
Date: 20.MAY.2015 22:11:46

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



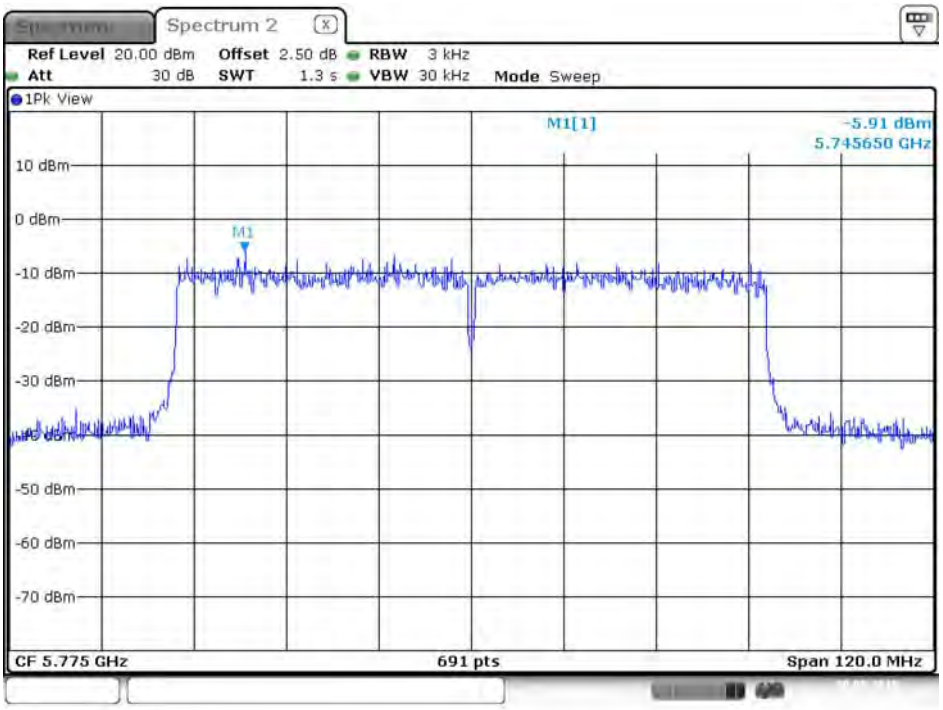
Date: 20.MAY.2015 22:12:22

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



Date: 20.MAY.2015 22:12:55

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



Date: 20.MAY.2015 22:13:26

4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

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

4.4.2. Measuring Instruments and Setting

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

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

4.4.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 8.0 DTS bandwidth=> 8.1 Option 1.
3. Multiple antenna system was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.4.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

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

4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of 6dB Spectrum Bandwidth

Temperature	25°C	Humidity	45%
Test Engineer	Lucas Huang	Test Date	May 18, 2015 ~ May 21, 2015

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	7.52	10.56	500	Complies
	2437 MHz	8.16	10.56	500	Complies
	2462 MHz	8.00	10.44	500	Complies
802.11g	2412 MHz	5.04	14.76	500	Complies
	2437 MHz	5.44	15.24	500	Complies
	2462 MHz	3.36	15.72	500	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	10.64	16.44	500	Complies
	2437 MHz	11.04	16.08	500	Complies
	2462 MHz	11.12	16.44	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	35.52	36.80	500	Complies
	2437 MHz	33.28	36.40	500	Complies
	2452 MHz	33.28	36.60	500	Complies

For 5GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	12.64	16.56	500	Complies
	5785 MHz	10.08	16.32	500	Complies
	5825 MHz	10.48	15.96	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	16.00	17.76	500	Complies
	5785 MHz	15.84	18.12	500	Complies
	5825 MHz	16.16	17.88	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	36.16	37.80	500	Complies
	5795 MHz	35.84	37.60	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	76.40	76.80	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	9.92	17.76	500	Complies
	2437 MHz	6.48	17.76	500	Complies
	2462 MHz	6.32	17.76	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	32.96	37.00	500	Complies
	2437 MHz	32.96	37.00	500	Complies
	2452 MHz	33.28	37.40	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	16.00	18.00	500	Complies
	5785 MHz	15.68	18.12	500	Complies
	5825 MHz	15.60	18.12	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.36	37.20	500	Complies
	5795 MHz	36.48	37.40	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.20	76.40	500	Complies

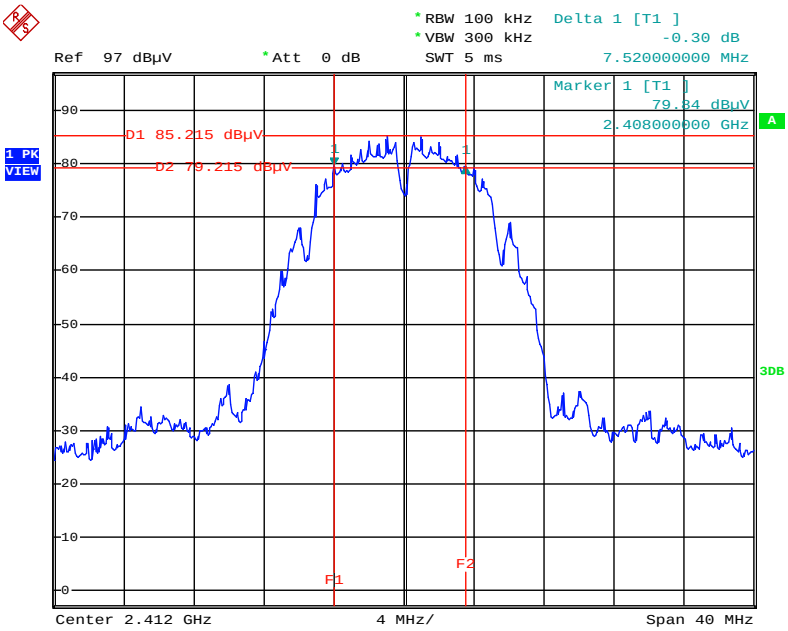
Note: All the test values were listed in the report.

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

For non-beamforming mode

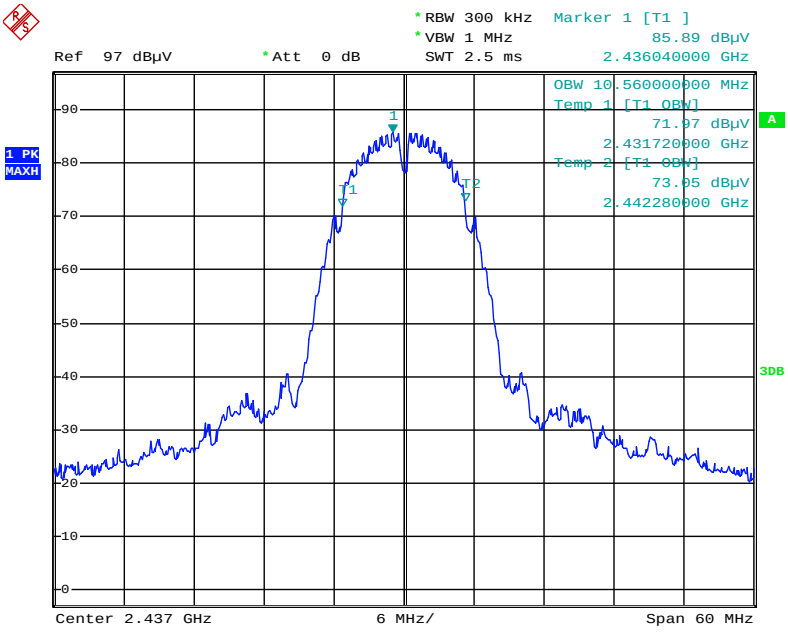
For 2.4GHz Band

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



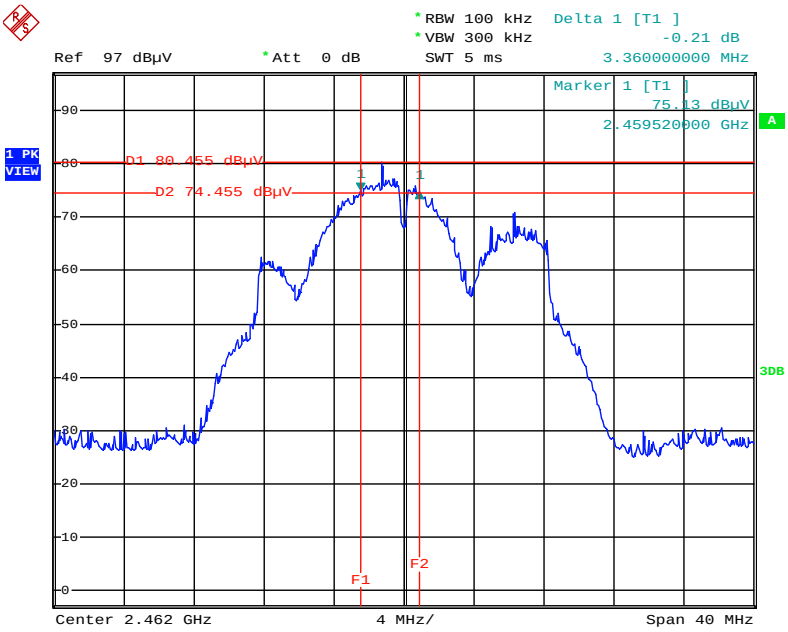
Date: 20.MAY.2015 16:48:39

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



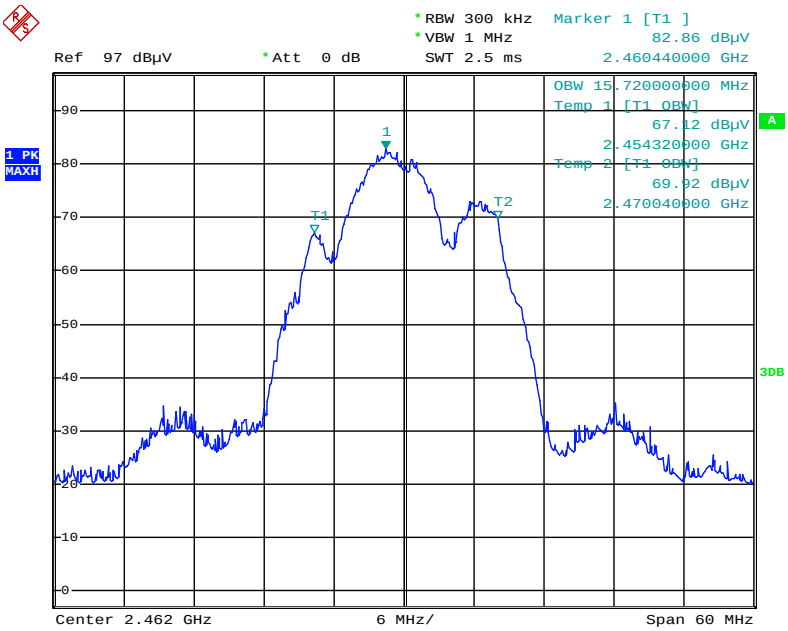
Date: 20.MAY.2015 16:49:17

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



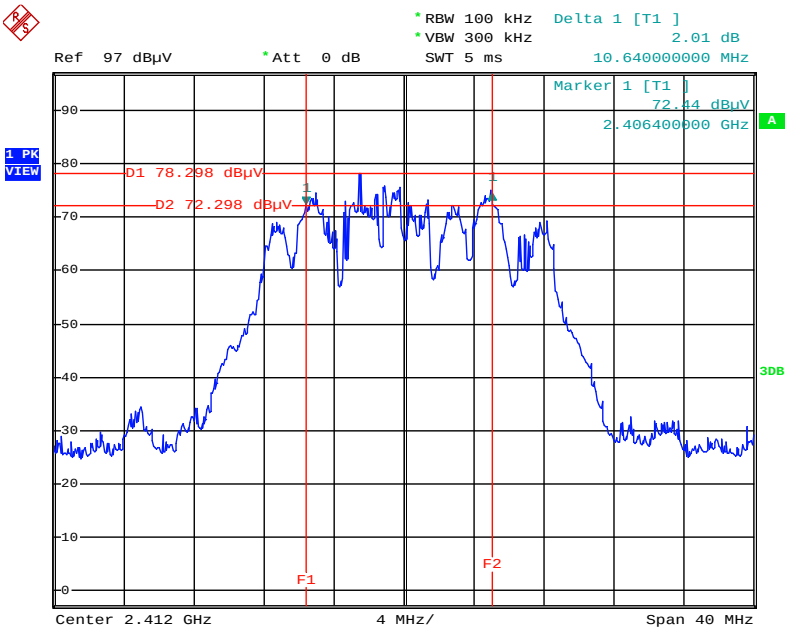
Date: 20.MAY.2015 16:52:41

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



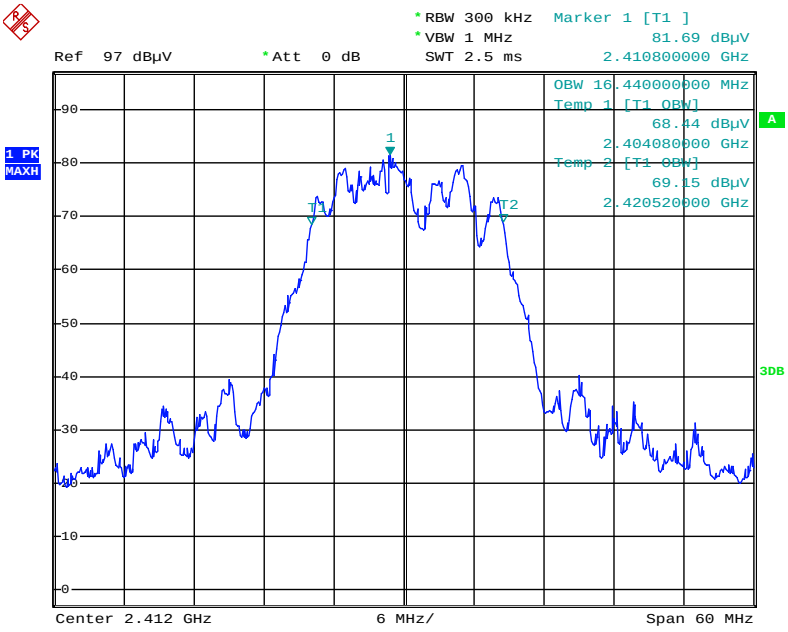
Date: 20.MAY.2015 16:52:31

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



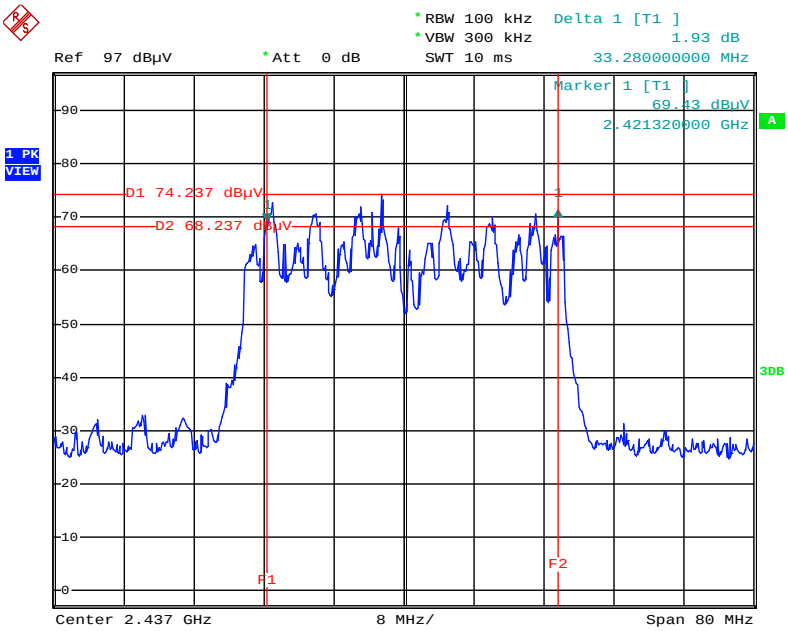
Date: 20.MAY.2015 16:54:13

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



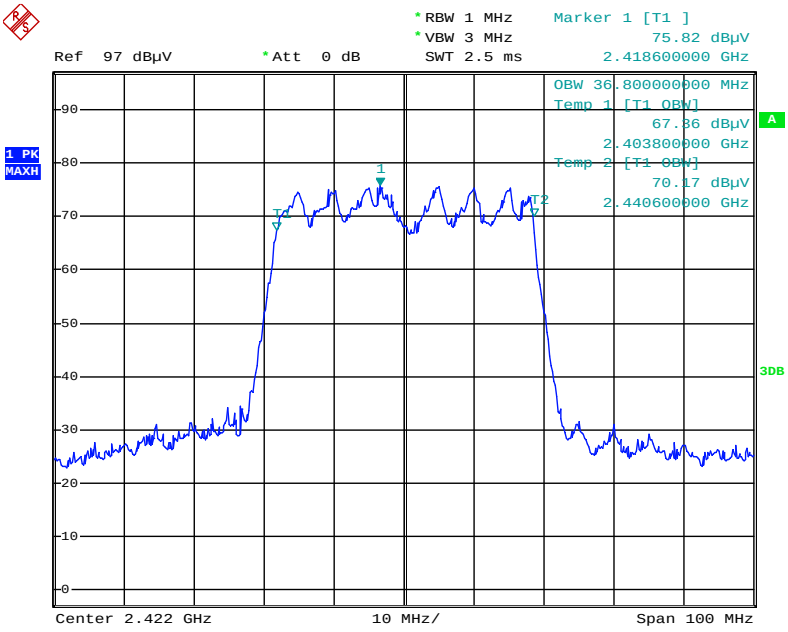
Date: 20.MAY.2015 16:54:25

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



Date: 20.MAY.2015 17:01:55

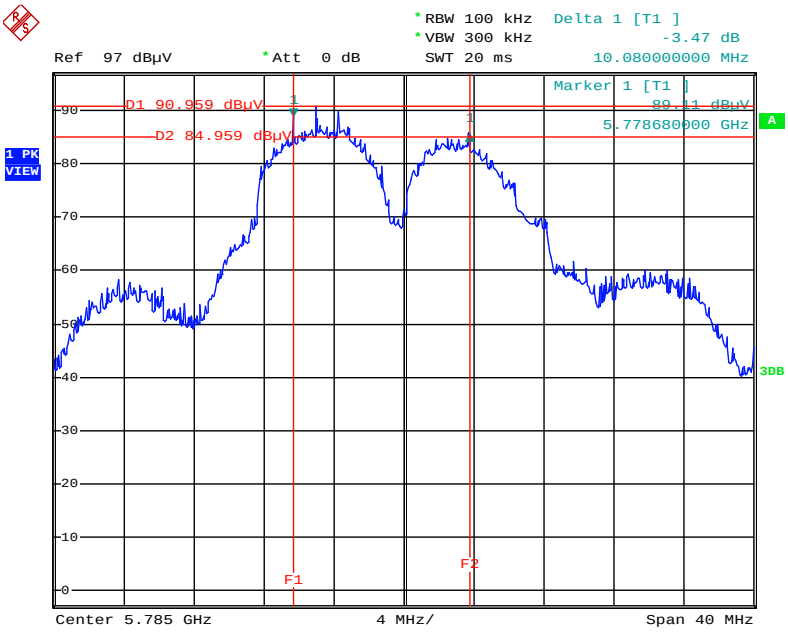
99% Occupied Bandwidth Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



Date: 20.MAY.2015 17:00:36

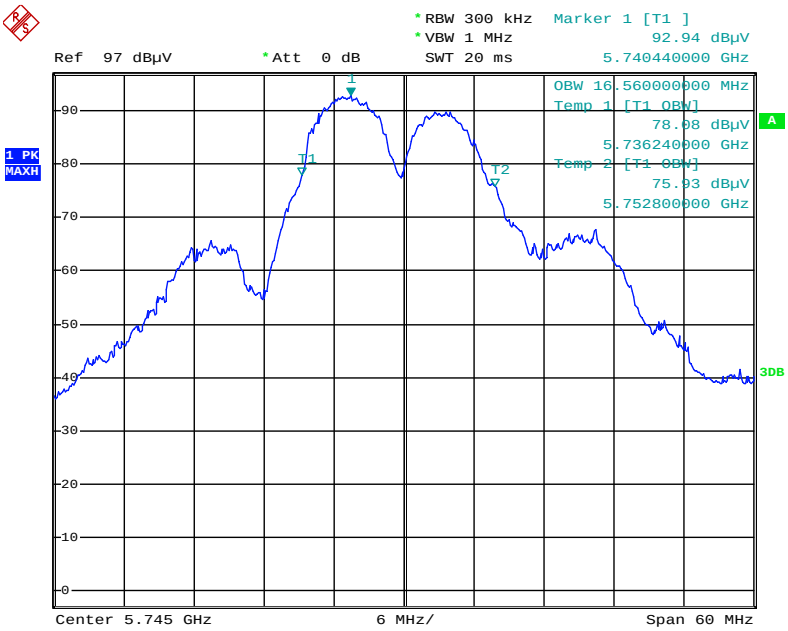
For 5GHz Band

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



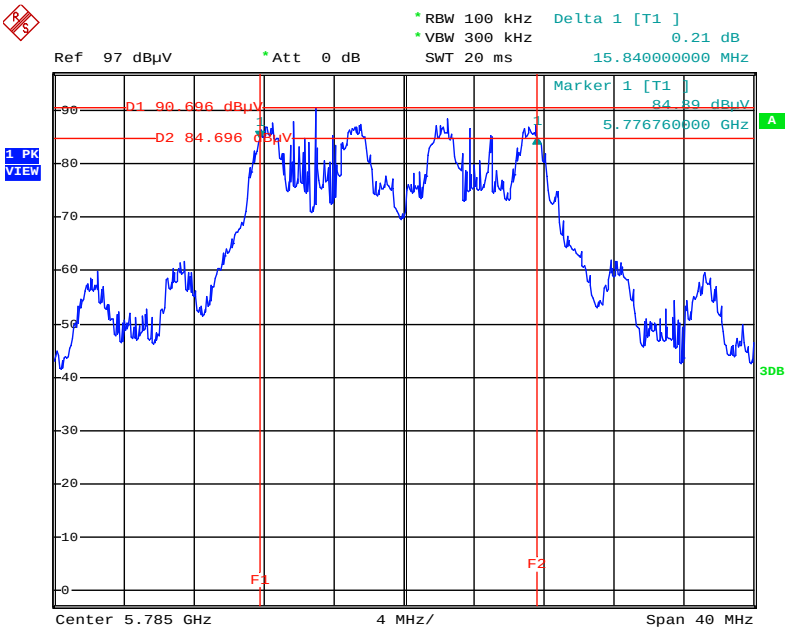
Date: 20.MAY.2015 16:23:23

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



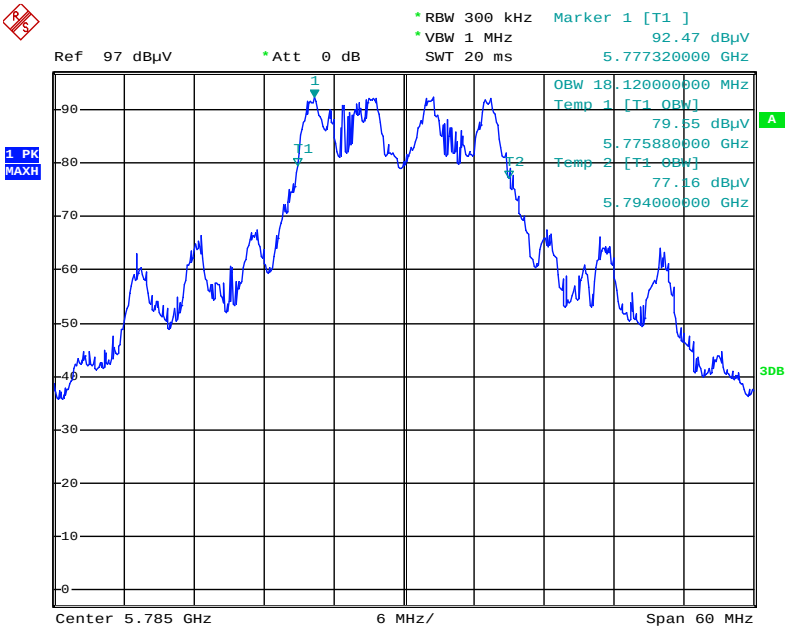
Date: 20.MAY.2015 16:22:40

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



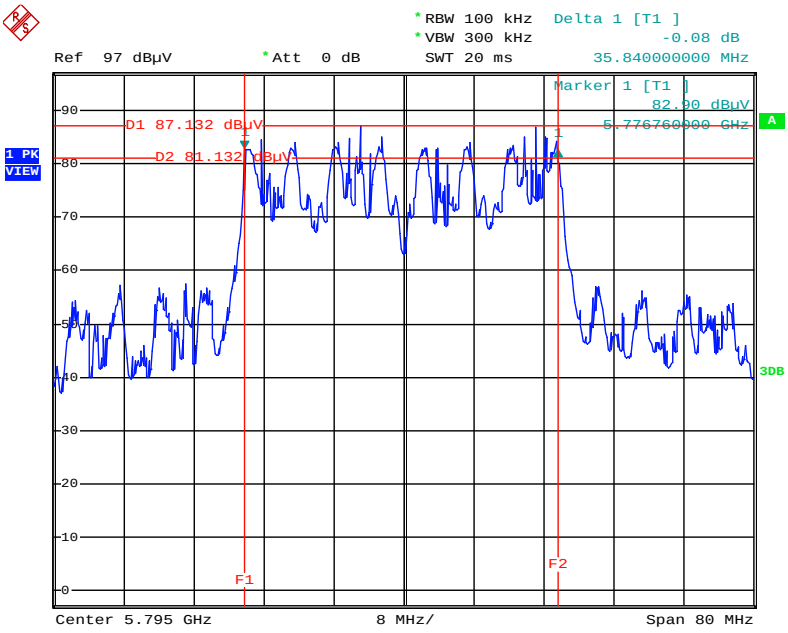
Date: 20.MAY.2015 16:27:00

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



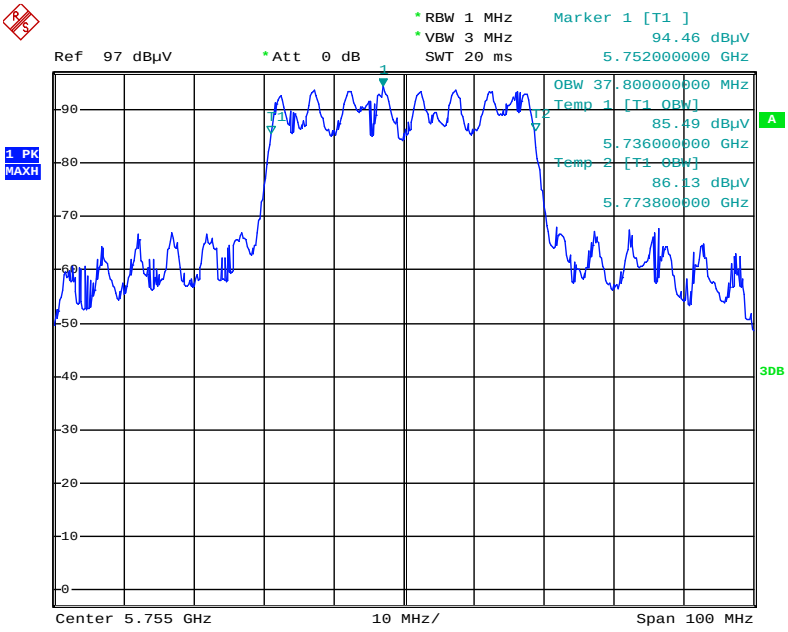
Date: 20.MAY.2015 16:26:43

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



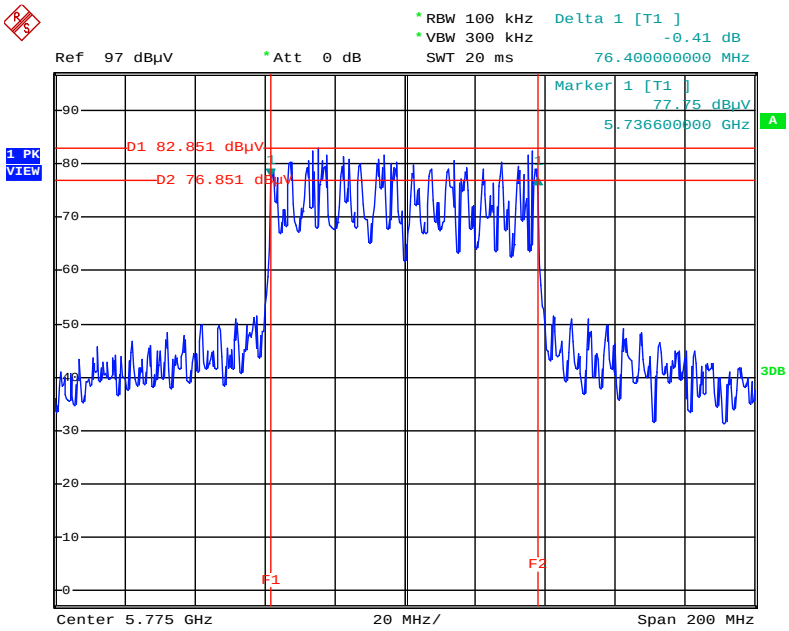
Date: 20.MAY.2015 16:29:51

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



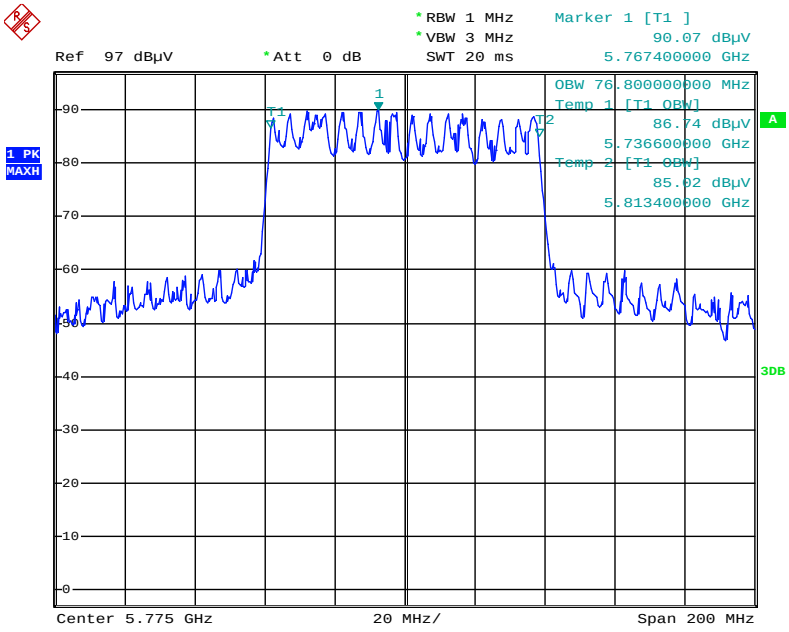
Date: 20.MAY.2015 16:29:14

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



Date: 20.MAY.2015 16:31:32

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

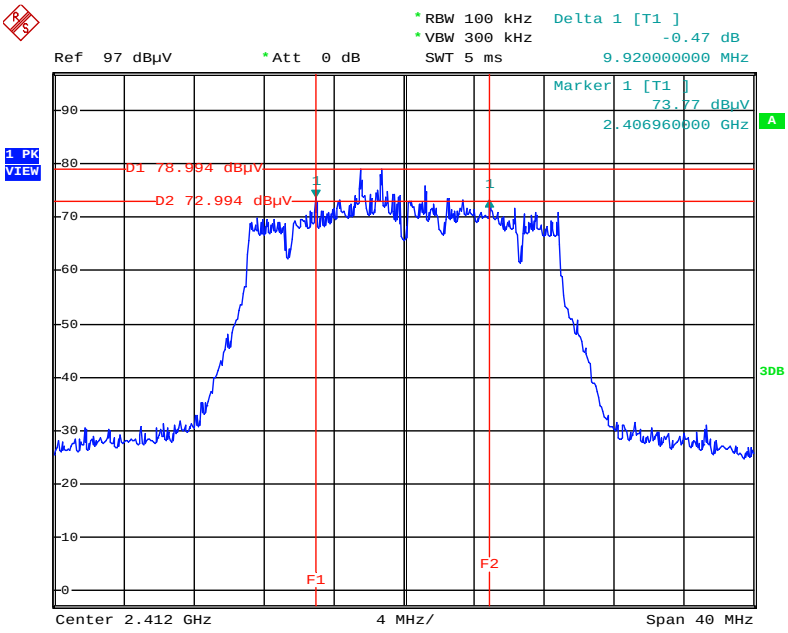


Date: 20.MAY.2015 16:31:55

For beamforming mode

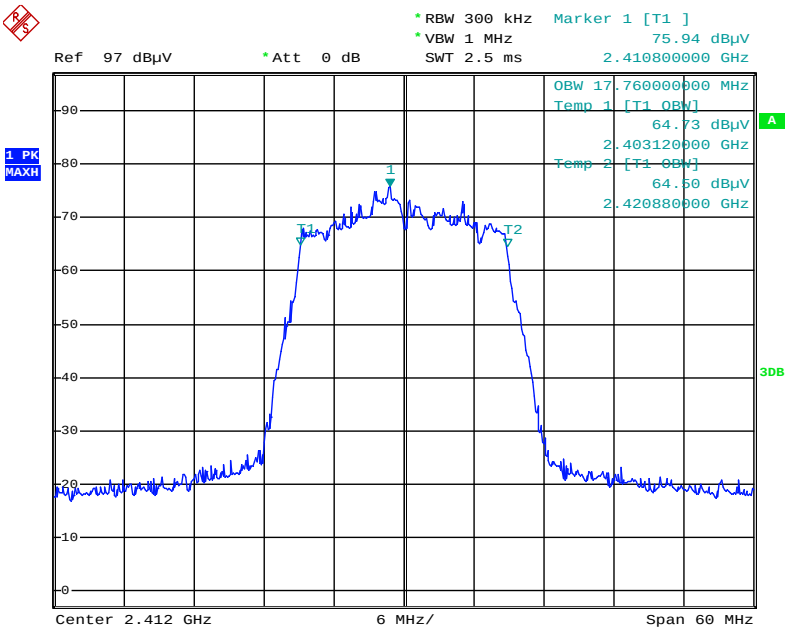
For 2.4GHz Band

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



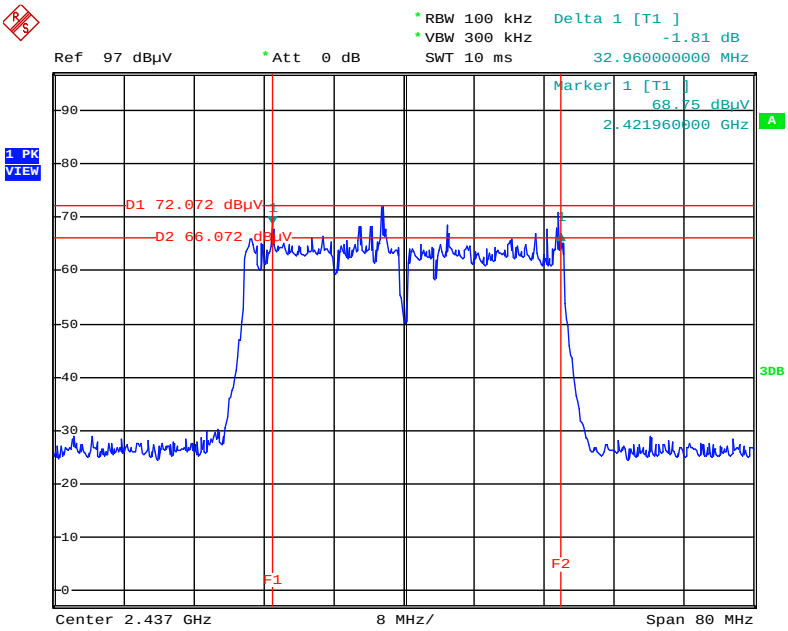
Date: 20.MAY.2015 17:06:26

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



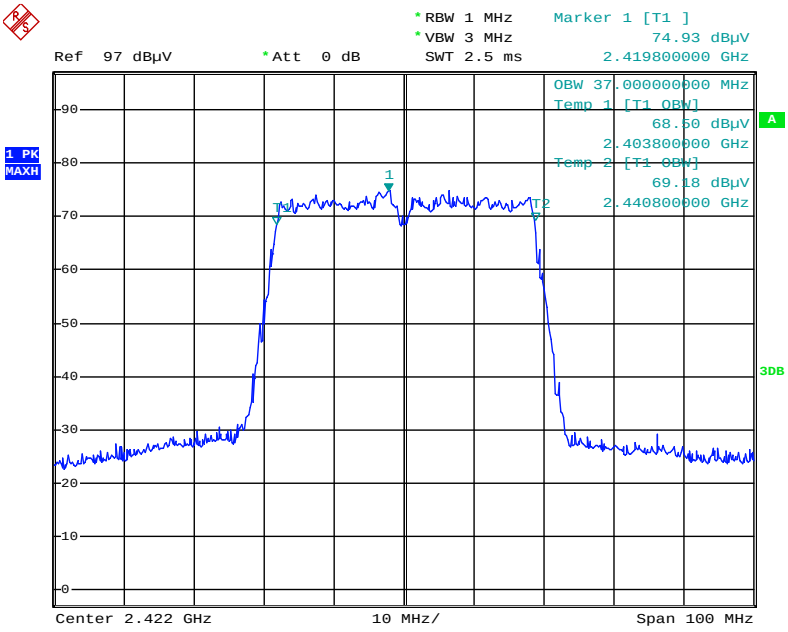
Date: 20.MAY.2015 17:11:38

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



Date: 20.MAY.2015 17:15:18

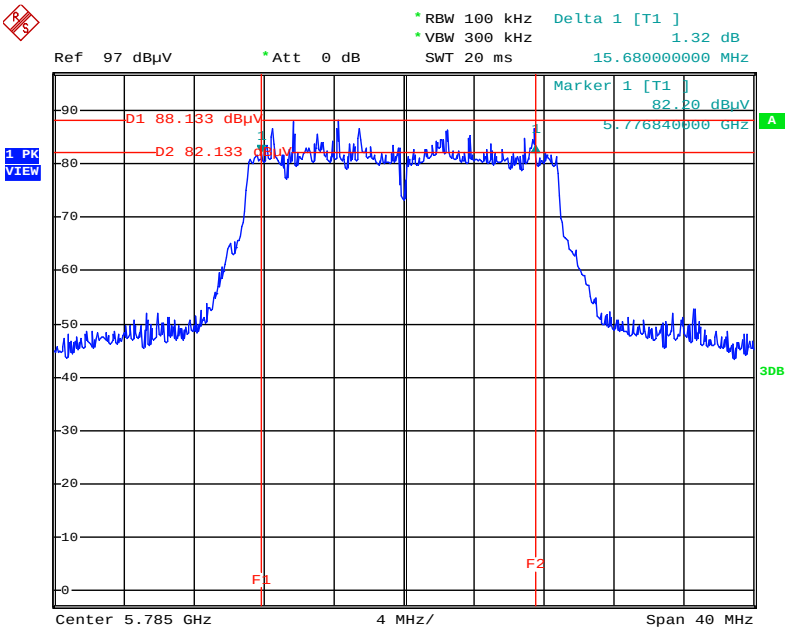
99% Occupied Bandwidth Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



Date: 20.MAY.2015 17:14:03

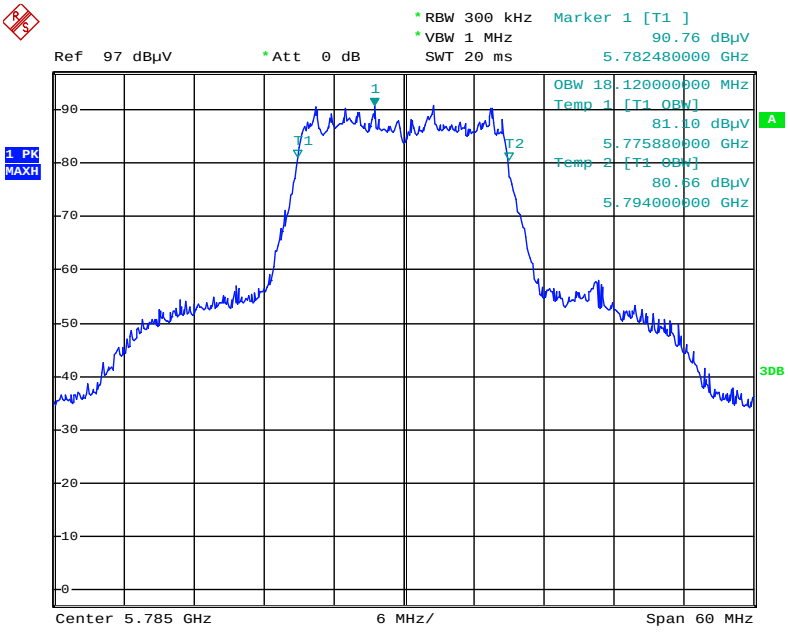
For 5GHz Band

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



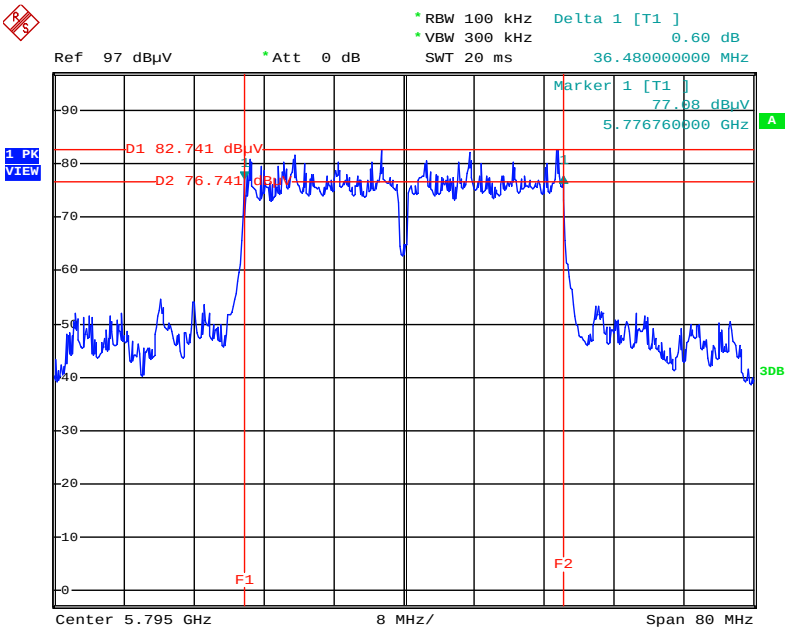
Date: 20.MAY.2015 16:38:06

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



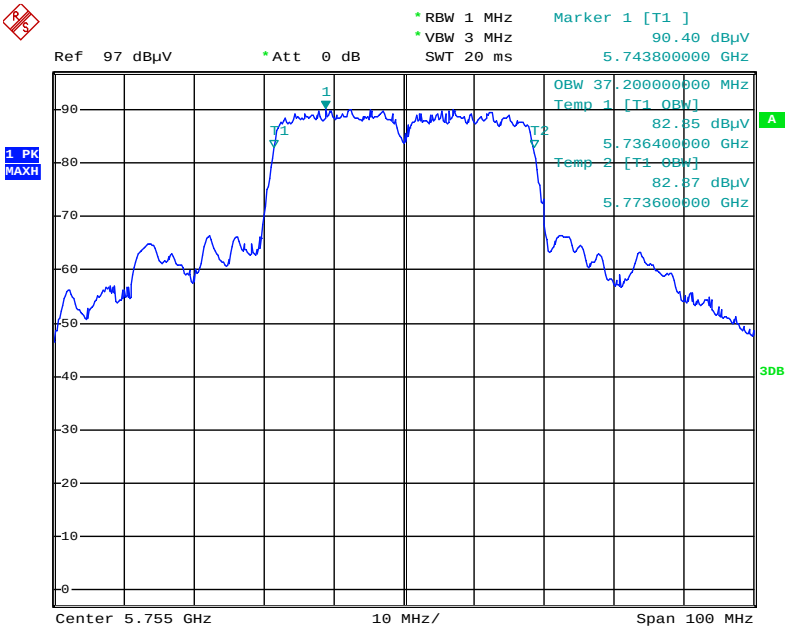
Date: 20.MAY.2015 16:37:55

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



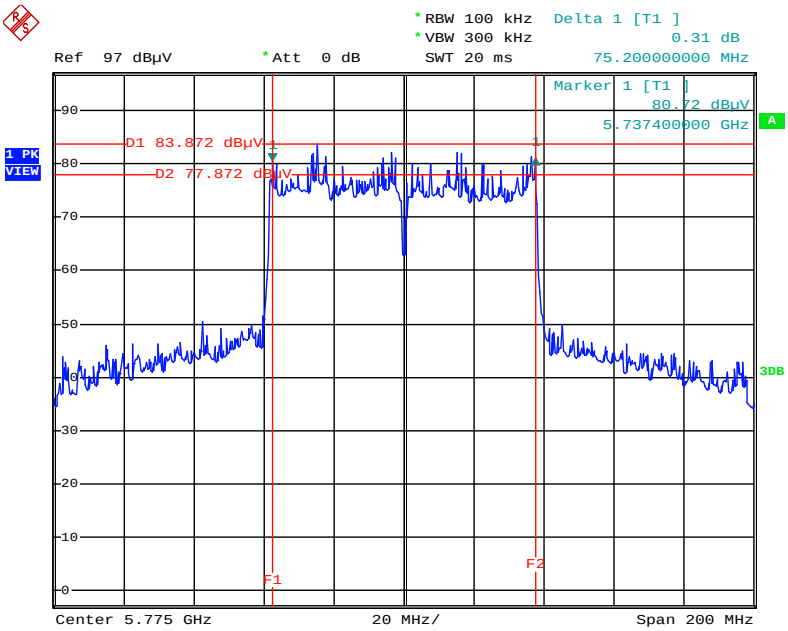
Date: 20.MAY.2015 16:41:16

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



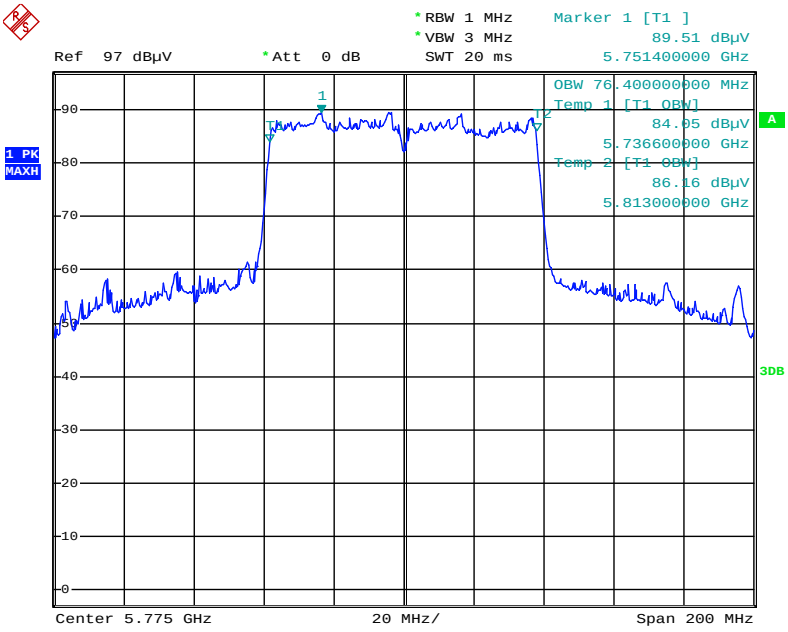
Date: 20.MAY.2015 16:40:43

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



Date: 20.MAY.2015 16:35:23

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



Date: 20.MAY.2015 16:33:58

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

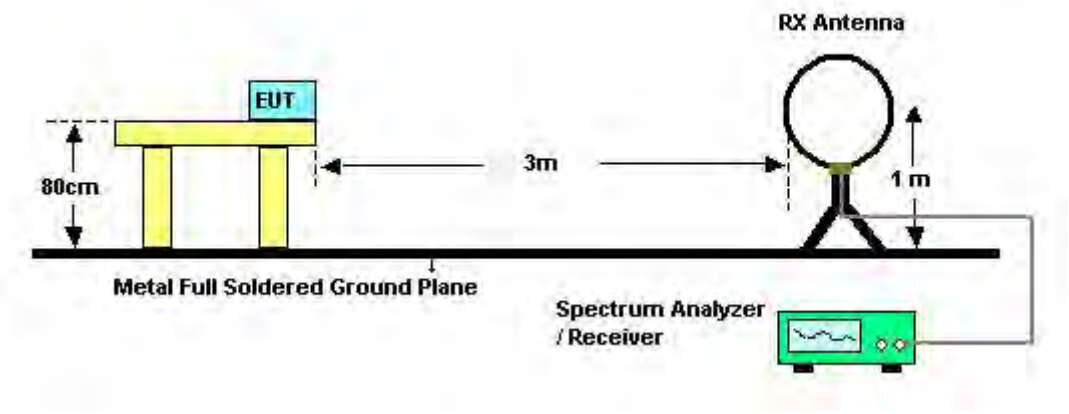
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RBW 120kHz for QP

4.5.3. Test Procedures

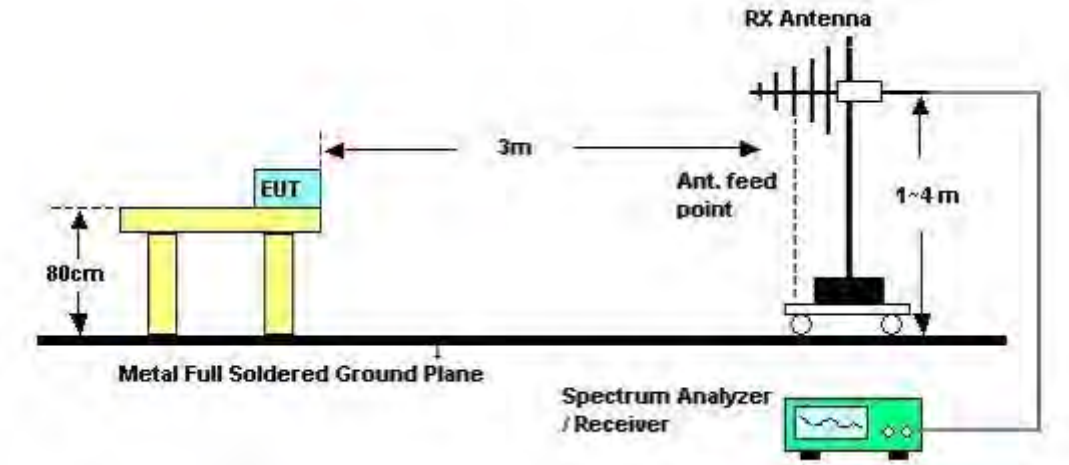
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

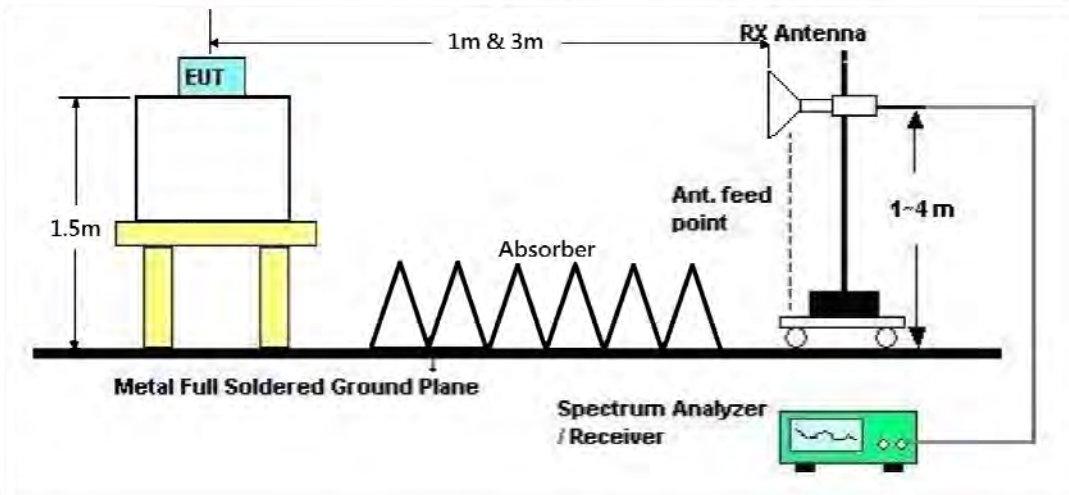
For Radiated Emissions: 9kHz ~30MHz



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	60%
Test Engineer	Akina Chiu	Configurations	Normal Link
Test Date	May 20, 2015	Test Mode	Mode 2

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

Note:

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

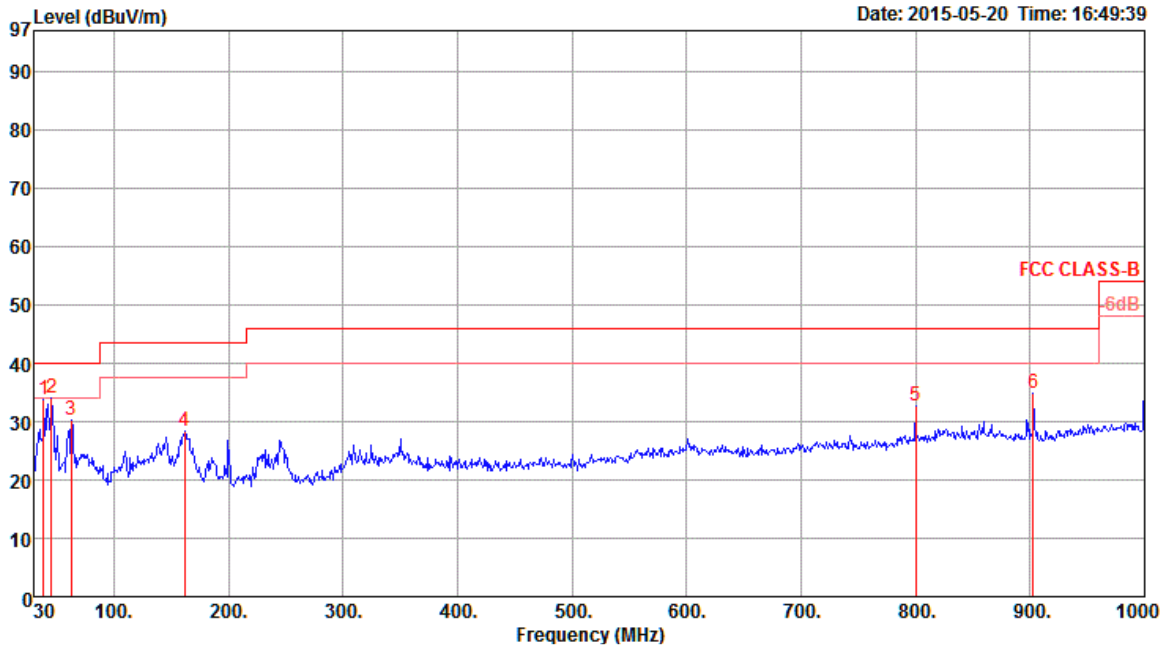
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

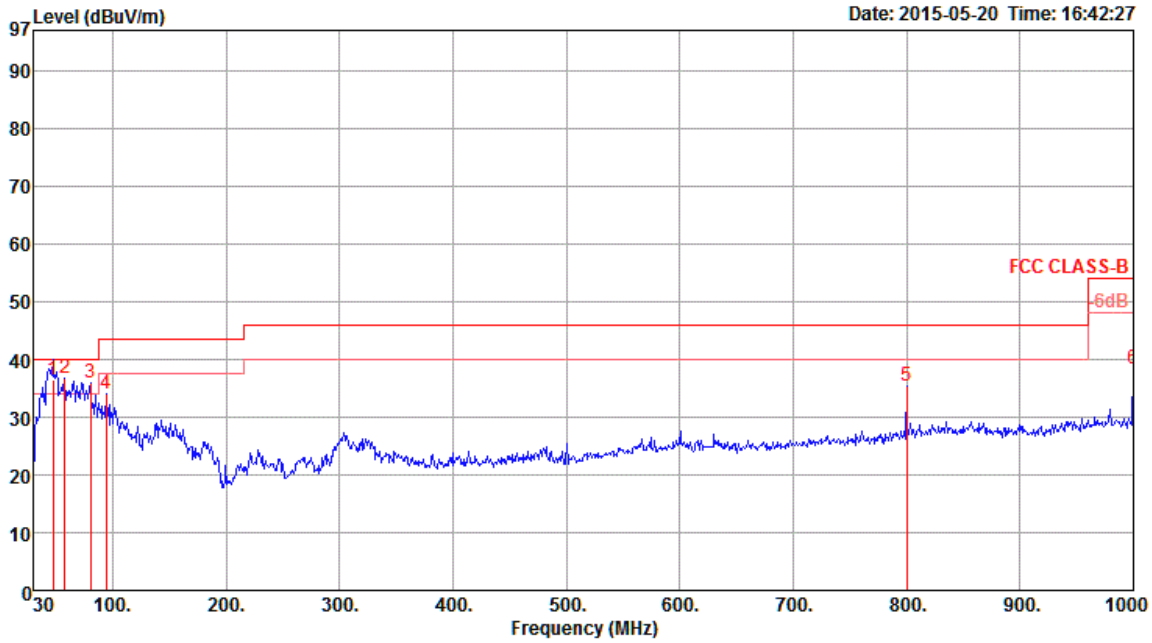
Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	Normal Link
Test Mode	Mode 2		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	38.73	33.70	40.00	-6.30	46.70	0.59	14.40	27.99	0	400	Peak	HORIZONTAL
2	45.52	34.09	40.00	-5.91	50.80	0.60	10.63	27.94	0	400	Peak	HORIZONTAL
3	62.98	30.20	40.00	-9.80	50.65	0.72	6.80	27.97	0	400	Peak	HORIZONTAL
4	161.92	28.26	43.50	-15.24	43.96	1.07	10.64	27.41	0	400	Peak	HORIZONTAL
5	800.18	32.81	46.00	-13.19	36.21	2.29	21.20	26.89	0	400	Peak	HORIZONTAL
6	903.00	34.92	46.00	-11.08	37.40	2.40	21.93	26.81	0	400	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	47.29	36.40	40.00	-3.60	53.82	0.61	9.90	27.93	359	102	QP	VERTICAL
2	58.13	36.74	40.00	-3.26	56.79	0.70	7.20	27.95	0	400	Peak	VERTICAL
3	80.44	35.86	40.00	-4.14	55.40	0.76	7.60	27.90	0	400	Peak	VERTICAL
4	94.02	34.11	43.50	-9.39	50.93	0.83	10.20	27.85	0	400	Peak	VERTICAL
5	800.18	35.31	46.00	-10.69	38.71	2.29	21.20	26.89	0	400	Peak	VERTICAL
6	1000.00	38.49	54.00	-15.51	39.70	2.51	22.50	26.22	0	400	Peak	VERTICAL

Note:

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

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

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

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

For non-beamforming mode

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4824.00	51.29	74.00	-22.71	44.70	6.11	33.56	33.08	25	151	Peak	HORIZONTAL
2	4824.13	43.55	54.00	-10.45	36.96	6.11	33.56	33.08	25	151	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4824.04	53.87	74.00	-20.13	47.28	6.11	33.56	33.08	28	126	Peak	VERTICAL
2	4824.09	48.37	54.00	-5.63	41.78	6.11	33.56	33.08	28	126	Average	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11b CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4874.10	40.64	54.00	-13.36	33.98	6.08	33.66	33.08	126	113	Average	HORIZONTAL
2	4874.38	50.35	74.00	-23.65	43.69	6.08	33.66	33.08	343	113	Peak	HORIZONTAL
3	7310.92	39.28	54.00	-14.72	27.83	8.28	36.64	33.47	190	129	Average	HORIZONTAL
4	7311.18	52.14	74.00	-21.86	40.69	8.28	36.64	33.47	190	129	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4874.17	47.53	54.00	-6.47	40.87	6.08	33.66	33.08	334	107	Average	VERTICAL
2	4874.17	53.25	74.00	-20.75	46.59	6.08	33.66	33.08	334	107	Peak	VERTICAL
3	7310.94	52.62	74.00	-21.38	41.17	8.28	36.64	33.47	280	107	Peak	VERTICAL
4	7311.06	39.57	54.00	-14.43	28.12	8.28	36.64	33.47	280	107	Average	VERTICAL

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11b CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4924.12	42.75	54.00	-11.25	36.00	6.05	33.76	33.06	37	150	Average	HORIZONTAL
2	4924.12	50.74	74.00	-23.26	43.99	6.05	33.76	33.06	37	150	Peak	HORIZONTAL
3	7385.86	40.00	54.00	-14.00	28.30	8.34	36.85	33.49	65	150	Average	HORIZONTAL
4	7385.86	53.98	74.00	-20.02	42.28	8.34	36.85	33.49	65	150	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4924.03	44.04	54.00	-9.96	37.29	6.05	33.76	33.06	329	109	Average	VERTICAL
2	4924.03	51.55	74.00	-22.45	44.80	6.05	33.76	33.06	329	109	Peak	VERTICAL
3	7385.97	40.21	54.00	-13.79	28.51	8.34	36.85	33.49	256	109	Average	VERTICAL
4	7386.06	52.62	74.00	-21.38	40.92	8.34	36.85	33.49	256	109	Peak	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11g CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.22	48.73	74.00	-25.27	42.14	6.11	33.56	33.08	335	149	Peak	HORIZONTAL
2	4823.77	35.23	54.00	-18.77	28.64	6.11	33.56	33.08	335	149	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4824.43	50.50	74.00	-23.50	43.91	6.11	33.56	33.08	38	115	Peak	VERTICAL
2	4826.08	36.87	54.00	-17.13	30.28	6.11	33.56	33.08	38	115	Average	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11g CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4873.97	46.53	74.00	-27.47	39.87	6.08	33.66	33.08	241	149	Peak	HORIZONTAL
2	4874.12	35.07	54.00	-18.93	28.41	6.08	33.66	33.08	241	149	Average	HORIZONTAL
3	7310.94	39.75	54.00	-14.25	28.30	8.28	36.64	33.47	176	149	Average	HORIZONTAL
4	7310.94	52.66	74.00	-21.34	41.21	8.28	36.64	33.47	176	149	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4875.68	37.08	54.00	-16.92	30.42	6.08	33.66	33.08	27	100	Average	VERTICAL
2	4876.40	50.33	74.00	-23.67	43.67	6.08	33.66	33.08	27	100	Peak	VERTICAL
3	7310.91	52.47	74.00	-21.53	41.02	8.28	36.64	33.47	340	101	Peak	VERTICAL
4	7311.06	40.02	54.00	-13.98	28.57	8.28	36.64	33.47	340	101	Average	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11g CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4924.15	34.66	54.00	-19.34	27.91	6.05	33.76	33.06	351	151	Average	HORIZONTAL
2	4924.15	46.81	74.00	-27.19	40.06	6.05	33.76	33.06	351	151	Peak	HORIZONTAL
3	7385.83	40.14	54.00	-13.86	28.44	8.34	36.85	33.49	108	151	Average	HORIZONTAL
4	7386.29	53.31	74.00	-20.69	41.61	8.34	36.85	33.49	108	151	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4923.77	47.39	74.00	-26.61	40.64	6.05	33.76	33.06	64	101	Peak	VERTICAL
2	4924.15	34.95	54.00	-19.05	28.20	6.05	33.76	33.06	64	101	Average	VERTICAL
3	7385.83	52.34	74.00	-21.66	40.64	8.34	36.85	33.49	108	111	Peak	VERTICAL
4	7385.97	40.28	54.00	-13.72	28.58	8.34	36.85	33.49	108	111	Average	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.74	47.78	74.00	-26.22	41.19	6.11	33.56	33.08	212	151	Peak	HORIZONTAL
2	4824.32	35.04	54.00	-18.96	28.45	6.11	33.56	33.08	212	151	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.57	48.66	74.00	-25.34	42.07	6.11	33.56	33.08	328	100	Peak	VERTICAL
2	4823.74	36.65	54.00	-17.35	30.06	6.11	33.56	33.08	328	100	Average	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 / CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4873.22	35.06	54.00	-18.94	28.40	6.08	33.66	33.08	348	152	Average	HORIZONTAL
2	4873.57	48.57	74.00	-25.43	41.91	6.08	33.66	33.08	348	152	Peak	HORIZONTAL
3	7310.80	53.02	74.00	-20.98	41.57	8.28	36.64	33.47	328	152	Peak	HORIZONTAL
4	7310.86	40.00	54.00	-14.00	28.55	8.28	36.64	33.47	328	152	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4873.51	48.37	74.00	-25.63	41.71	6.08	33.66	33.08	330	110	Peak	VERTICAL
2	4873.57	36.72	54.00	-17.28	30.06	6.08	33.66	33.08	330	110	Average	VERTICAL
3	7311.15	39.72	54.00	-14.28	28.27	8.28	36.64	33.47	232	108	Average	VERTICAL
4	7311.15	52.09	74.00	-21.91	40.64	8.28	36.64	33.47	232	108	Peak	VERTICAL

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4870.70	35.12	54.00	-18.88	28.46	6.08	33.66	33.08	172	148	Average	HORIZONTAL
2	4873.19	46.86	74.00	-27.14	40.20	6.08	33.66	33.08	172	148	Peak	HORIZONTAL
3	7311.03	52.57	74.00	-21.43	41.12	8.28	36.64	33.47	256	148	Peak	HORIZONTAL
4	7311.06	39.50	54.00	-14.50	28.05	8.28	36.64	33.47	256	148	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4873.88	48.30	74.00	-25.70	41.64	6.08	33.66	33.08	158	108	Peak	VERTICAL
2	4875.77	35.11	54.00	-18.89	28.45	6.08	33.66	33.08	158	108	Average	VERTICAL
3	7310.71	52.48	74.00	-21.52	41.03	8.28	36.64	33.47	316	108	Peak	VERTICAL
4	7310.83	39.62	54.00	-14.38	28.17	8.28	36.64	33.47	316	108	Average	VERTICAL

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4843.83	47.77	74.00	-26.23	41.16	6.10	33.59	33.08	315	150	Peak	HORIZONTAL
2	4844.29	34.78	54.00	-19.22	28.17	6.10	33.59	33.08	315	150	Average	HORIZONTAL
3	7265.74	51.59	74.00	-22.41	40.24	8.26	36.56	33.47	268	150	Peak	HORIZONTAL
4	7266.03	39.57	54.00	-14.43	28.22	8.26	36.56	33.47	268	150	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4843.86	34.49	54.00	-19.51	27.88	6.10	33.59	33.08	346	101	Average	VERTICAL
2	4844.23	46.96	74.00	-27.04	40.35	6.10	33.59	33.08	346	101	Peak	VERTICAL
3	7265.91	51.79	74.00	-22.21	40.44	8.26	36.56	33.47	299	101	Peak	VERTICAL
4	7265.97	39.44	54.00	-14.56	28.09	8.26	36.56	33.47	299	101	Average	VERTICAL

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 / CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4874.09	34.56	54.00	-19.44	27.90	6.08	33.66	33.08	287	149	Average	HORIZONTAL
2	4874.09	47.32	74.00	-26.68	40.66	6.08	33.66	33.08	287	149	Peak	HORIZONTAL
3	7309.99	52.66	74.00	-21.34	41.21	8.28	36.64	33.47	250	149	Peak	HORIZONTAL
4	7311.00	39.69	54.00	-14.31	28.24	8.28	36.64	33.47	250	149	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4874.17	34.95	54.00	-19.05	28.29	6.08	33.66	33.08	316	106	Average	VERTICAL
2	4874.26	48.69	74.00	-25.31	42.03	6.08	33.66	33.08	316	106	Peak	VERTICAL
3	7310.91	52.29	74.00	-21.71	40.84	8.28	36.64	33.47	344	106	Peak	VERTICAL
4	7310.97	39.82	54.00	-14.18	28.37	8.28	36.64	33.47	344	106	Average	VERTICAL

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4903.36	48.32	74.00	-25.68	41.59	6.07	33.73	33.07	232	106	Peak	HORIZONTAL
2	4903.97	34.82	54.00	-19.18	28.09	6.07	33.73	33.07	232	106	Average	HORIZONTAL
3	7355.83	52.50	74.00	-21.50	40.89	8.32	36.77	33.48	279	106	Peak	HORIZONTAL
4	7355.94	39.86	54.00	-14.14	28.25	8.32	36.77	33.48	279	106	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4903.91	34.80	54.00	-19.20	28.07	6.07	33.73	33.07	342	106	Average	VERTICAL
2	4904.29	47.37	74.00	-26.63	40.64	6.07	33.73	33.07	342	106	Peak	VERTICAL
3	7356.03	40.05	54.00	-13.95	28.44	8.32	36.77	33.48	311	106	Average	VERTICAL
4	7356.12	52.67	74.00	-21.33	41.06	8.32	36.77	33.48	311	106	Peak	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	11486.37	50.14	54.00	-3.86	35.37	9.24	40.28	34.75	Average	108	140	HORIZONTAL
2	11487.70	62.38	74.00	-11.62	47.61	9.24	40.28	34.75	Peak	108	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	11486.48	51.92	54.00	-2.08	37.15	9.24	40.28	34.75	Average	100	228	VERTICAL
2	11487.64	64.90	74.00	-9.10	50.13	9.24	40.28	34.75	Peak	100	228	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	11565.15	63.34	74.00	-10.66	48.57	9.26	40.27	34.76	Peak	109	140	HORIZONTAL
2	11566.45	50.42	54.00	-3.58	35.66	9.26	40.26	34.76	Average	109	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	11568.47	52.88	54.00	-1.12	38.12	9.26	40.26	34.76	Average	104	192	VERTICAL
2	11569.17	67.13	74.00	-6.87	52.37	9.26	40.26	34.76	Peak	104	192	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	11646.32	64.32	74.00	-9.68	49.60	9.28	40.22	34.78	Peak	109	141	HORIZONTAL
2	11646.77	52.78	54.00	-1.22	38.06	9.28	40.22	34.78	Average	109	141	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	11647.53	53.63	54.00	-0.37	38.91	9.28	40.22	34.78	Average	100	228	VERTICAL
2	11648.29	66.85	74.00	-7.15	52.13	9.28	40.22	34.78	Peak	100	228	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	11489.38	49.47	54.00	-4.53	34.70	9.24	40.28	34.75	Average	100	142	HORIZONTAL
2	11489.58	62.24	74.00	-11.76	47.47	9.24	40.28	34.75	Peak	100	142	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	11489.90	52.29	54.00	-1.71	37.52	9.24	40.28	34.75	Average	120	191	VERTICAL
2	11490.09	64.98	74.00	-9.02	50.21	9.24	40.28	34.75	Peak	120	191	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	11569.42	63.46	74.00	-10.54	48.70	9.26	40.26	34.76	Peak	106	141	HORIZONTAL
2	11569.48	50.10	54.00	-3.90	35.34	9.26	40.26	34.76	Average	106	141	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	11567.84	66.06	74.00	-7.94	51.30	9.26	40.26	34.76	Peak	100	229	VERTICAL
2	11572.79	52.80	54.00	-1.20	38.05	9.26	40.26	34.77	Average	100	229	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	11649.45	52.18	54.00	-1.82	37.46	9.28	40.22	34.78	Average	113	140	HORIZONTAL
2	11649.55	64.36	74.00	-9.64	49.64	9.28	40.22	34.78	Peak	113	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	11652.97	66.70	74.00	-7.30	51.99	9.28	40.21	34.78	Peak	110	228	VERTICAL
2	11652.98	53.58	54.00	-0.42	38.87	9.28	40.21	34.78	Average	110	228	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	11514.17	47.73	54.00	-6.27	32.93	9.25	40.30	34.75	Average	105	141	HORIZONTAL
2	11514.25	60.98	74.00	-13.02	46.18	9.25	40.30	34.75	Peak	105	141	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	11510.00	50.10	54.00	-3.90	35.30	9.25	40.30	34.75	Average	100	9	VERTICAL
2	11510.26	62.38	74.00	-11.62	47.58	9.25	40.30	34.75	Peak	100	9	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	11589.36	62.18	74.00	-11.82	47.43	9.27	40.25	34.77	Peak	111	141	HORIZONTAL
2	11589.54	48.20	54.00	-5.80	33.45	9.27	40.25	34.77	Average	111	141	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	11586.87	63.20	74.00	-10.80	48.45	9.27	40.25	34.77	Peak	100	228	VERTICAL
2	11592.75	50.51	54.00	-3.49	35.76	9.27	40.25	34.77	Average	100	228	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	11554.46	59.22	74.00	-14.78	44.45	9.26	40.27	34.76	Peak	116	139	HORIZONTAL
2	11554.63	46.54	54.00	-7.46	31.77	9.26	40.27	34.76	Average	116	139	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	11541.35	48.05	54.00	-5.95	33.27	9.26	40.28	34.76	Average	100	70	VERTICAL
2	11551.04	60.75	74.00	-13.25	45.98	9.26	40.27	34.76	Peak	100	70	VERTICAL

For beamforming mode

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	4819.07	32.32	54.00	-21.68	28.59	5.87	32.82	34.96	Average	115	62	HORIZONTAL
2	4822.47	44.51	74.00	-29.49	40.78	5.87	32.82	34.96	Peak	115	62	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	4817.86	45.26	74.00	-28.74	41.53	5.87	32.82	34.96	Peak	170	0	VERTICAL
2	4823.42	32.52	54.00	-21.48	28.79	5.87	32.82	34.96	Average	170	0	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 / CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	4869.08	32.61	54.00	-21.39	28.72	5.92	32.93	34.96	Average	165	168	HORIZONTAL
2	4878.76	44.76	74.00	-29.24	40.87	5.92	32.93	34.96	Peak	165	168	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	4874.04	34.60	54.00	-19.40	30.71	5.92	32.93	34.96	Average	134	352	VERTICAL
2	4874.38	48.04	74.00	-25.96	44.15	5.92	32.93	34.96	Peak	134	352	VERTICAL

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	4920.11	44.89	74.00	-29.11	40.82	5.97	33.05	34.95	Peak	112	334	HORIZONTAL
2	4920.41	32.45	54.00	-21.55	28.38	5.97	33.05	34.95	Average	112	334	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	4920.09	32.81	54.00	-21.19	28.74	5.97	33.05	34.95	Average	118	350	VERTICAL
2	4927.53	44.94	74.00	-29.06	40.87	5.97	33.05	34.95	Peak	118	350	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	4844.00	44.37	74.00	-29.63	40.59	5.88	32.86	34.96	Peak	116	213	HORIZONTAL
2	4847.79	31.95	54.00	-22.05	28.17	5.88	32.86	34.96	Average	116	213	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	4842.99	44.81	74.00	-29.19	41.03	5.88	32.86	34.96	Peak	134	338	VERTICAL
2	4848.76	32.04	54.00	-21.96	28.26	5.88	32.86	34.96	Average	134	338	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 / CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	4870.09	32.58	54.00	-21.42	28.69	5.92	32.93	34.96	Average	131	156	HORIZONTAL
2	4876.75	45.39	74.00	-28.61	41.50	5.92	32.93	34.96	Peak	131	156	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	4869.17	31.39	54.00	-22.61	27.50	5.92	32.93	34.96	Average	165	99	VERTICAL
2	4874.33	44.99	74.00	-29.01	41.10	5.92	32.93	34.96	Peak	165	99	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 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	4901.27	32.15	54.00	-21.85	28.20	5.93	32.97	34.95	Average	121	138	HORIZONTAL
2	4904.16	45.00	74.00	-29.00	40.99	5.95	33.01	34.95	Peak	121	138	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	4902.71	32.36	54.00	-21.64	28.35	5.95	33.01	34.95	Average	117	264	VERTICAL
2	4903.31	44.56	74.00	-29.44	40.55	5.95	33.01	34.95	Peak	117	264	VERTICAL

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 15, 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	10928.96	56.95	74.00	-17.05	43.12	8.88	39.71	34.76	Peak	132	177	HORIZONTAL
2	10943.55	43.38	54.00	-10.62	29.53	8.89	39.71	34.75	Average	132	177	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	10931.34	43.40	54.00	-10.60	29.57	8.88	39.71	34.76	Average	145	291	VERTICAL
2	10936.20	56.16	74.00	-17.84	42.32	8.88	39.71	34.75	Peak	145	290	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 15, 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	10973.60	43.10	54.00	-10.90	29.22	8.92	39.70	34.74	Average	139	152	HORIZONTAL
2	10997.16	55.96	74.00	-18.04	42.06	8.93	39.70	34.73	Peak	139	152	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	10965.96	42.41	54.00	-11.59	28.54	8.90	39.71	34.74	Average	100	43	VERTICAL
2	10981.24	56.09	74.00	-17.91	42.21	8.92	39.70	34.74	Peak	100	43	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 15, 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	11023.73	55.36	74.00	-18.64	41.40	8.95	39.74	34.73	Peak	124	309	HORIZONTAL
2	11030.44	43.23	54.00	-10.77	29.27	8.95	39.74	34.73	Average	124	309	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	11031.77	56.12	74.00	-17.88	42.16	8.95	39.74	34.73	Peak	201	133	VERTICAL
2	11044.10	43.46	54.00	-10.54	29.47	8.96	39.76	34.73	Average	201	133	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 15, 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	10970.82	43.10	54.00	-10.90	29.22	8.92	39.70	34.74	Average	150	260	HORIZONTAL
2	10980.77	56.29	74.00	-17.71	42.41	8.92	39.70	34.74	Peak	150	260	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	10965.20	42.25	54.00	-11.75	28.38	8.90	39.71	34.74	Average	150	340	VERTICAL
2	10998.03	56.15	74.00	-17.85	42.25	8.93	39.70	34.73	Peak	150	340	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 15, 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	11033.80	55.51	74.00	-18.49	41.55	8.95	39.74	34.73	Peak	150	240	HORIZONTAL
2	11037.16	43.34	54.00	-10.66	29.38	8.95	39.74	34.73	Average	150	240	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	11038.60	55.66	74.00	-18.34	41.67	8.96	39.76	34.73	Peak	150	152	VERTICAL
2	11043.52	43.40	54.00	-10.60	29.41	8.96	39.76	34.73	Average	150	152	VERTICAL

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 15, 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	10965.38	43.11	54.00	-10.89	29.24	8.90	39.71	34.74	Average	103	251	HORIZONTAL
2	10984.42	55.70	74.00	-18.30	41.81	8.92	39.70	34.73	Peak	103	251	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	10965.43	42.45	54.00	-11.55	28.58	8.90	39.71	34.74	Average	148	222	VERTICAL
2	10984.13	56.39	74.00	-17.61	42.50	8.92	39.70	34.73	Peak	148	222	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 KDB 558074 D01 v03r02 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	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2389.57	64.79	74.00	-9.21	31.93	4.37	28.49	0.00	85	212	Peak	VERTICAL
2	2390.00	52.72	54.00	-1.28	19.82	4.41	28.49	0.00	85	212	Average	VERTICAL
3	2412.87	120.29			87.35	4.41	28.53	0.00	85	212	Average	VERTICAL
4	2413.01	123.03			90.09	4.41	28.53	0.00	85	212	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2389.13	61.21	74.00	-12.79	28.35	4.37	28.49	0.00	294	189	Peak	VERTICAL
2	2390.00	47.86	54.00	-6.14	14.96	4.41	28.49	0.00	294	189	Average	VERTICAL
3	2437.87	119.64			86.60	4.44	28.60	0.00	294	189	Average	VERTICAL
4	2438.01	122.41			89.37	4.44	28.60	0.00	294	189	Peak	VERTICAL
5	2483.50	49.03	54.00	-4.97	15.85	4.51	28.67	0.00	294	189	Average	VERTICAL
6	2484.22	61.73	74.00	-12.27	28.55	4.51	28.67	0.00	294	189	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2462.72	119.19			86.08	4.48	28.63	0.00	269	180	Average	VERTICAL
2	2463.16	122.02			88.91	4.48	28.63	0.00	269	180	Peak	VERTICAL
3	2483.50	53.69	54.00	-0.31	20.51	4.51	28.67	0.00	269	180	Average	VERTICAL
4	2483.93	65.55	74.00	-8.45	32.37	4.51	28.67	0.00	269	180	Peak	VERTICAL

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

Temperature	25℃	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 11, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2390.00	53.74	54.00	-0.26	20.84	4.41	28.49	0.00	84	175	Average	VERTICAL
2	2390.00	72.42	74.00	-1.58	39.52	4.41	28.49	0.00	84	175	Peak	VERTICAL
3	2410.70	121.84			88.90	4.41	28.53	0.00	84	175	Peak	VERTICAL
4	2411.28	111.04			78.10	4.41	28.53	0.00	84	175	Average	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2388.26	61.51	74.00	-12.49	28.65	4.37	28.49	0.00	289	175	Peak	VERTICAL
2	2390.00	48.27	54.00	-5.73	15.37	4.41	28.49	0.00	289	175	Average	VERTICAL
3	2438.45	114.43			81.39	4.44	28.60	0.00	289	175	Average	VERTICAL
4	2439.32	125.19			92.15	4.44	28.60	0.00	289	175	Peak	VERTICAL
5	2483.50	49.04	54.00	-4.96	15.86	4.51	28.67	0.00	289	175	Average	VERTICAL
6	2485.53	62.14	74.00	-11.86	28.96	4.51	28.67	0.00	289	175	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2463.45	110.82			77.71	4.48	28.63	0.00	256	234	Average	VERTICAL
2	2464.17	121.75			88.64	4.48	28.63	0.00	256	234	Peak	VERTICAL
3	2483.50	53.62	54.00	-0.38	20.44	4.51	28.67	0.00	256	234	Average	VERTICAL
4	2483.93	71.10	74.00	-2.90	37.92	4.51	28.67	0.00	256	234	Peak	VERTICAL

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

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test date	May 11, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2388.55	53.72	54.00	-0.28	20.86	4.37	28.49	0.00	124	196	Average	VERTICAL
2	2388.70	71.65	74.00	-2.35	38.79	4.37	28.49	0.00	124	196	Peak	VERTICAL
3	2413.88	120.85			87.91	4.41	28.53	0.00	124	196	Peak	VERTICAL
4	2414.03	110.42			77.48	4.41	28.53	0.00	124	196	Average	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2385.66	63.78	74.00	-10.22	30.92	4.37	28.49	0.00	320	169	Peak	VERTICAL
2	2390.00	49.69	54.00	-4.31	16.79	4.41	28.49	0.00	320	169	Average	VERTICAL
3	2435.55	114.93			81.93	4.44	28.56	0.00	320	169	Average	VERTICAL
4	2436.13	124.52			91.52	4.44	28.56	0.00	320	169	Peak	VERTICAL
5	2483.50	49.82	54.00	-4.18	16.64	4.51	28.67	0.00	320	169	Average	VERTICAL
6	2486.68	64.28	74.00	-9.72	31.10	4.51	28.67	0.00	320	169	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2460.84	121.67			88.56	4.48	28.63	0.00	83	193	Peak	VERTICAL
2	2461.42	111.27			78.16	4.48	28.63	0.00	83	193	Average	VERTICAL
3	2483.50	53.69	54.00	-0.31	20.51	4.51	28.67	0.00	83	193	Average	VERTICAL
4	2483.50	72.89	74.00	-1.11	39.71	4.51	28.67	0.00	83	193	Peak	VERTICAL

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

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test date	May 11, 2015 ~ May 20, 2015		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2386.40	65.33	74.00	-8.67	34.55	2.86	27.92	0.00	222	131	Peak	VERTICAL
2	2390.00	53.19	54.00	-0.81	22.41	2.86	27.92	0.00	222	131	Average	VERTICAL
3	2419.60	112.33			81.57	2.88	27.88	0.00	222	131	Peak	VERTICAL
4	2420.00	102.62			71.86	2.88	27.88	0.00	222	131	Average	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2388.26	70.17	74.00	-3.83	37.31	4.37	28.49	0.00	333	172	Peak	VERTICAL
2	2388.55	53.80	54.00	-0.20	20.94	4.37	28.49	0.00	333	172	Average	VERTICAL
3	2423.11	106.40			73.40	4.44	28.56	0.00	333	172	Average	VERTICAL
4	2423.11	116.07			83.07	4.44	28.56	0.00	333	172	Peak	VERTICAL
5	2483.50	53.56	54.00	-0.44	20.38	4.51	28.67	0.00	333	172	Average	VERTICAL
6	2483.50	65.76	74.00	-8.24	32.58	4.51	28.67	0.00	333	172	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2441.29	102.74			69.66	4.48	28.60	0.00	114	145	Average	VERTICAL
2	2446.50	112.51			79.43	4.48	28.60	0.00	114	145	Peak	VERTICAL
3	2486.39	53.91	54.00	-0.09	20.73	4.51	28.67	0.00	114	145	Average	VERTICAL
4	2486.68	65.70	74.00	-8.30	32.52	4.51	28.67	0.00	114	145	Peak	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 beamforming mode

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test date	May 15, 2015 ~ May 16, 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	53.84	54.00	-0.16	20.91	4.09	28.84	0.00	Average	169	41	VERTICAL
2	2390.00	69.31	74.00	-4.69	36.38	4.09	28.84	0.00	Peak	169	41	VERTICAL
3	2414.60	121.81			88.85	4.11	28.85	0.00	Peak	169	41	VERTICAL
4	2414.89	111.55			78.59	4.11	28.85	0.00	Average	169	41	VERTICAL
5	2487.26	51.70	54.00	-2.30	18.65	4.16	28.89	0.00	Average	169	41	VERTICAL
6	2487.26	62.41	74.00	-11.59	29.36	4.16	28.89	0.00	Peak	169	41	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	2310.55	62.25	74.00	-11.75	29.43	4.03	28.79	0.00	Peak	202	322	VERTICAL
2	2390.00	49.29	54.00	-4.71	16.36	4.09	28.84	0.00	Average	202	322	VERTICAL
3	2435.26	116.22			83.24	4.12	28.86	0.00	Average	202	322	VERTICAL
4	2437.00	127.05			94.05	4.13	28.87	0.00	Peak	202	322	VERTICAL
5	2483.50	50.62	54.00	-3.38	17.57	4.16	28.89	0.00	Average	202	322	VERTICAL
6	2483.50	68.01	74.00	-5.99	34.96	4.16	28.89	0.00	Peak	202	322	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	2460.26	111.61			78.59	4.14	28.88	0.00	Average	206	290	VERTICAL
2	2461.71	122.25			89.23	4.14	28.88	0.00	Peak	206	290	VERTICAL
3	2483.50	53.85	54.00	-0.15	20.80	4.16	28.89	0.00	Average	206	290	VERTICAL
4	2484.08	68.11	74.00	-5.89	35.06	4.16	28.89	0.00	Peak	206	290	VERTICAL

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

Temperature	25°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test date	May 16, 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	2389.57	67.12	74.00	-6.88	34.19	4.09	28.84	0.00	Peak	199	315	VERTICAL
2	2390.00	53.44	54.00	-0.56	20.51	4.09	28.84	0.00	Average	199	315	VERTICAL
3	2416.36	113.37			80.41	4.11	28.85	0.00	Peak	199	315	VERTICAL
4	2417.22	102.99			70.03	4.11	28.85	0.00	Average	199	315	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	2388.26	68.59	74.00	-5.41	35.66	4.09	28.84	0.00	Peak	185	352	VERTICAL
2	2390.00	53.88	54.00	-0.12	20.95	4.09	28.84	0.00	Average	185	352	VERTICAL
3	2422.53	105.37			72.39	4.12	28.86	0.00	Average	185	352	VERTICAL
4	2423.69	116.50			83.52	4.12	28.86	0.00	Peak	185	352	VERTICAL
5	2483.50	64.10	74.00	-9.90	31.05	4.16	28.89	0.00	Peak	185	352	VERTICAL
6	2484.08	50.93	54.00	-3.07	17.88	4.16	28.89	0.00	Average	185	352	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	2445.05	103.07			70.07	4.13	28.87	0.00	Average	196	280	VERTICAL
2	2458.08	113.76			80.74	4.14	28.88	0.00	Peak	196	280	VERTICAL
3	2483.50	53.40	54.00	-0.60	20.35	4.16	28.89	0.00	Average	196	280	VERTICAL
4	2486.97	66.93	74.00	-7.07	33.88	4.16	28.89	0.00	Peak	196	280	VERTICAL

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

Note:

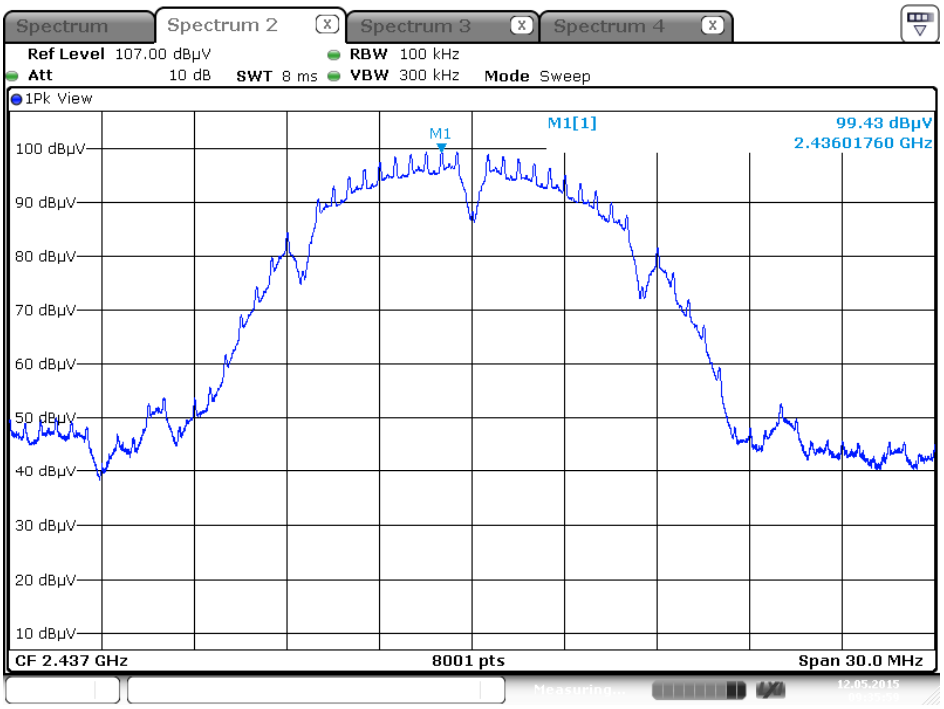
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

For Emission not in Restricted Band

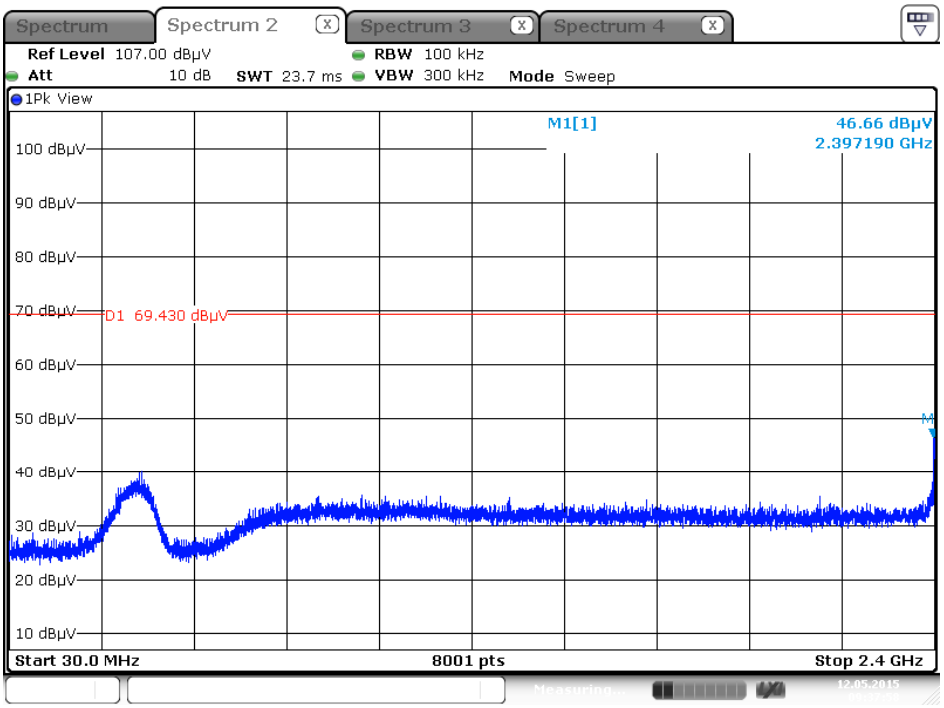
For non-beamforming mode

Plot on Configuration IEEE 802.11b / Reference Level



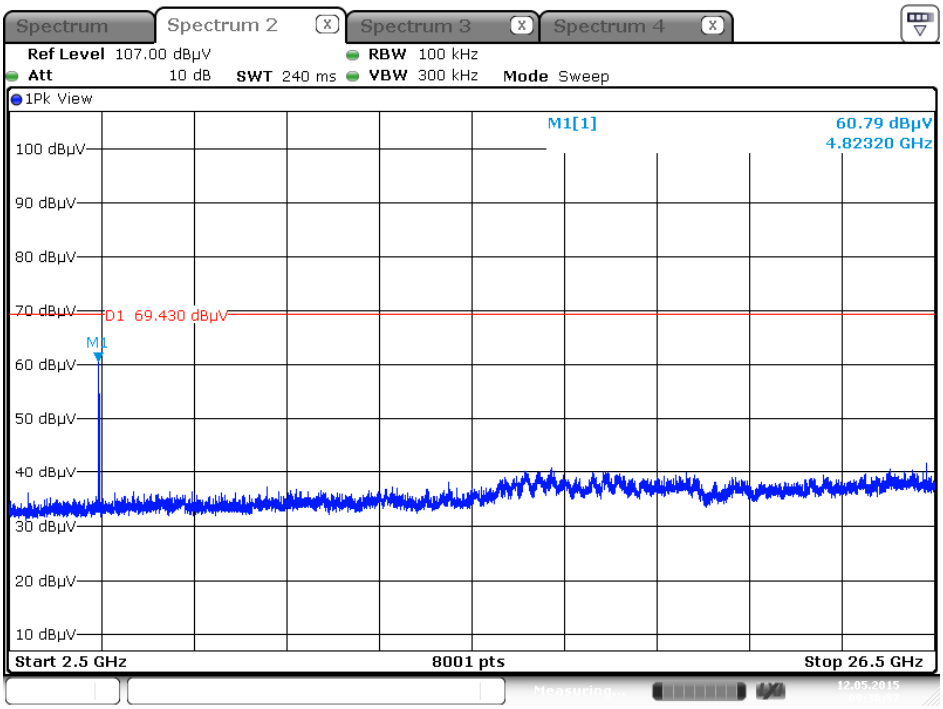
Date: 12.MAY.2015 09:35:59

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



Date: 12.MAY.2015 09:37:59

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



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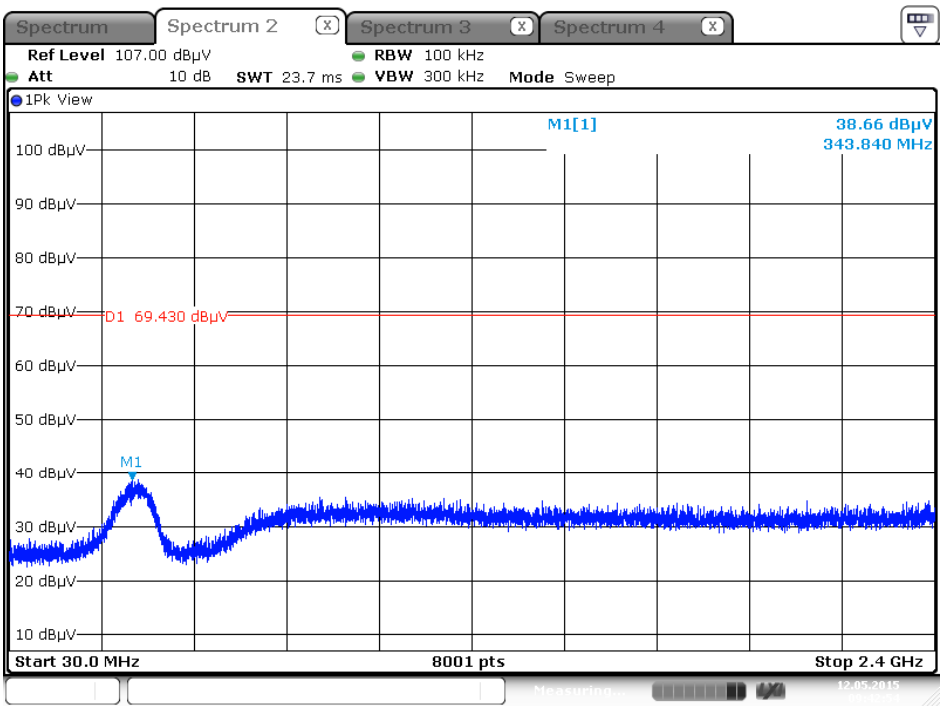
Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc)



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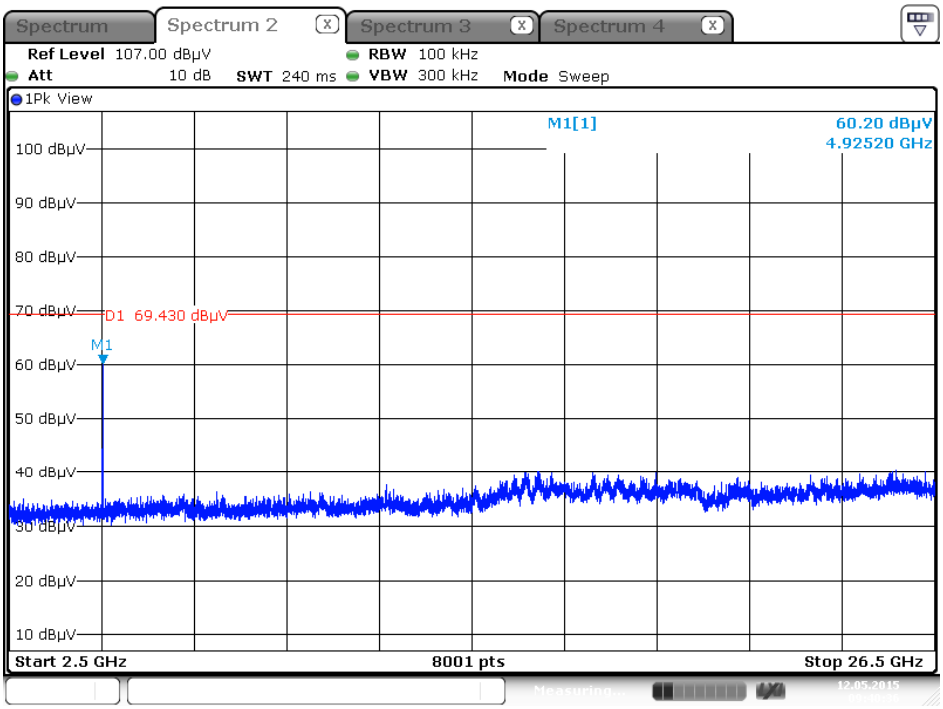
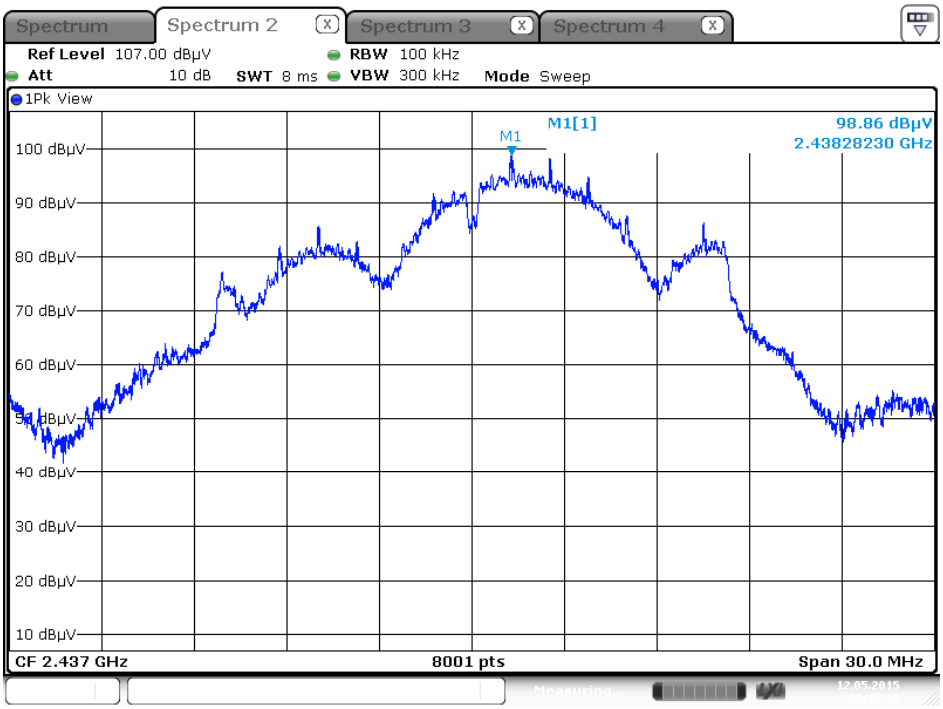
Plot on Configuration IEEE 802.11b / CH 11 / 2500MHz~26500MHz (down 30dBc)



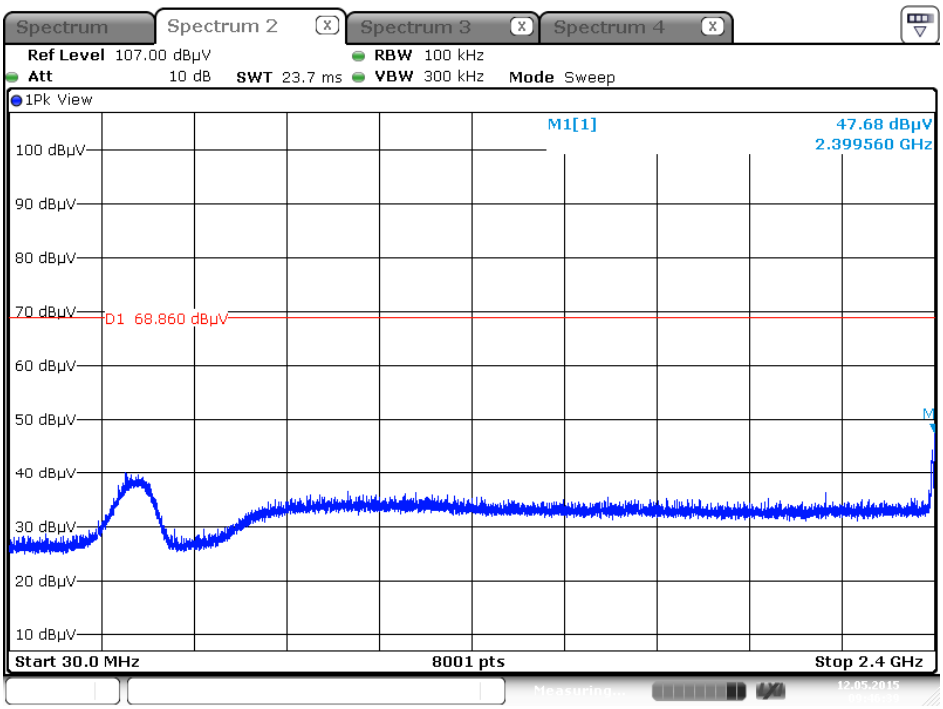
Date: 12.MAY.2015 09:40:36

Plot on Configuration IEEE 802.11g / Reference Level



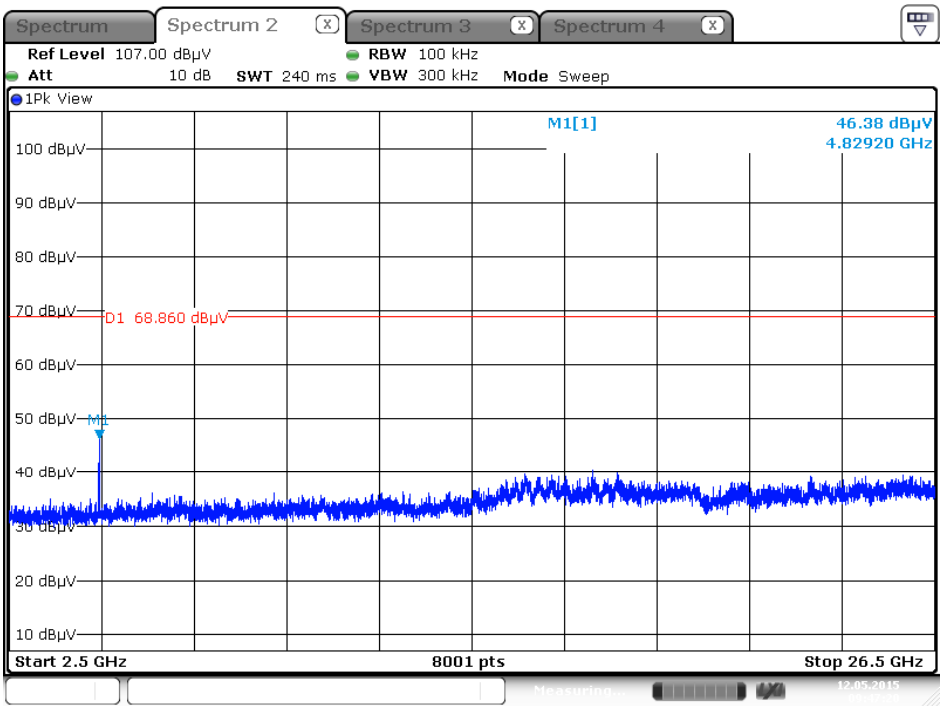
Date: 12.MAY.2015 09:45:16

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



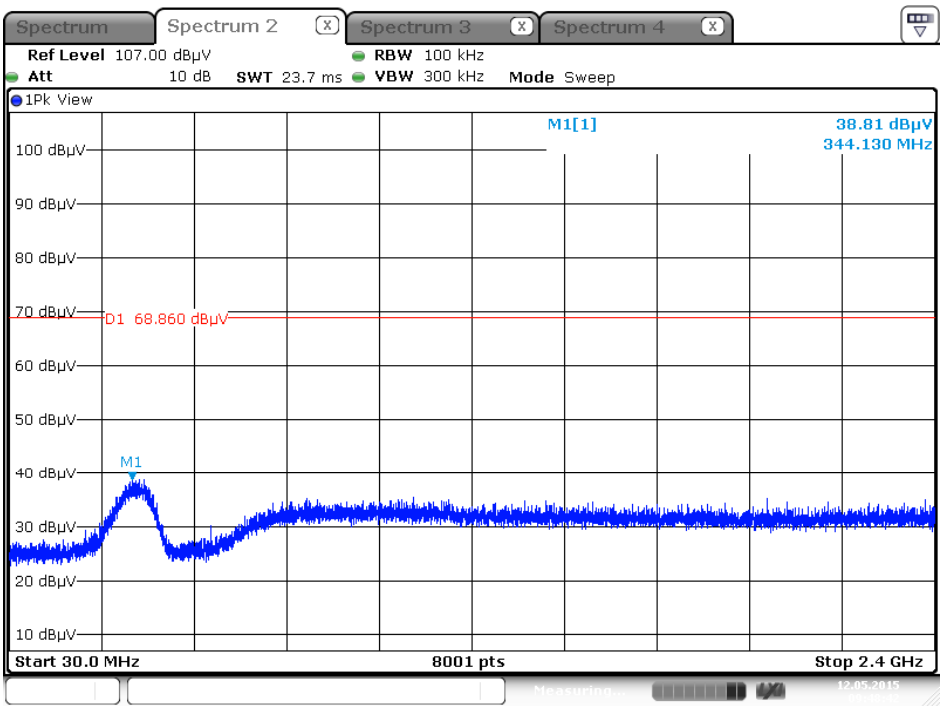
Date: 12.MAY.2015 09:46:39

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



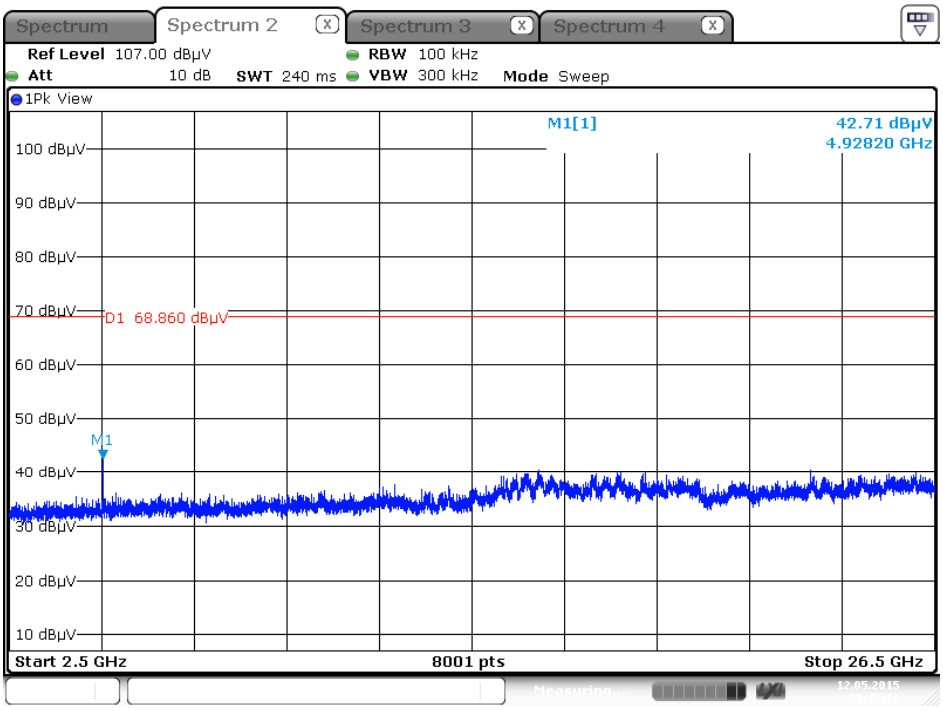
Date: 12.MAY.2015 09:47:20

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



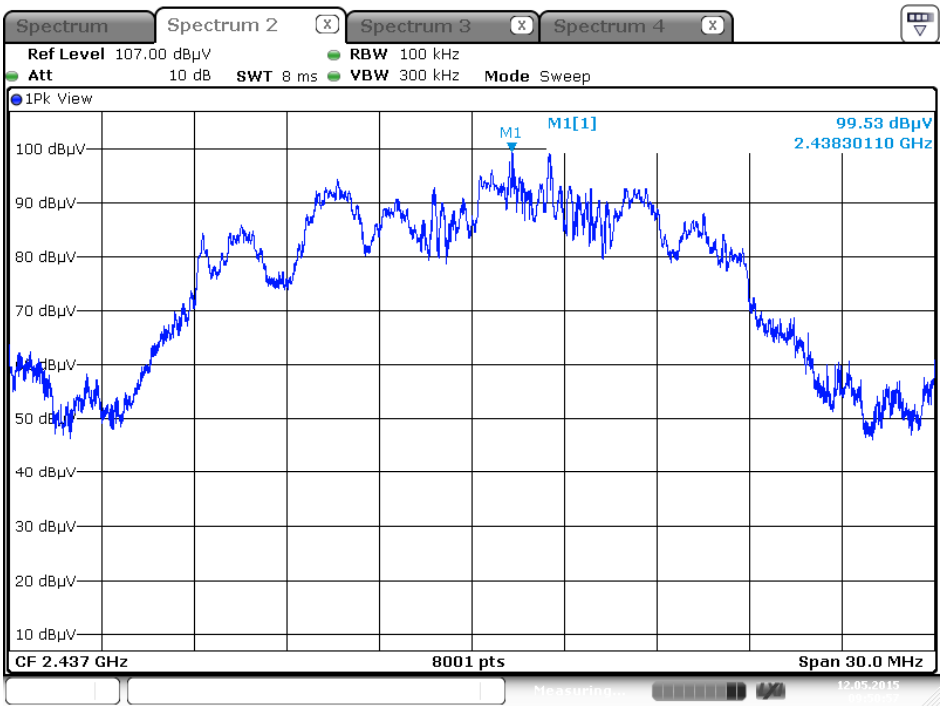
Date: 12.MAY.2015 09:48:42

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



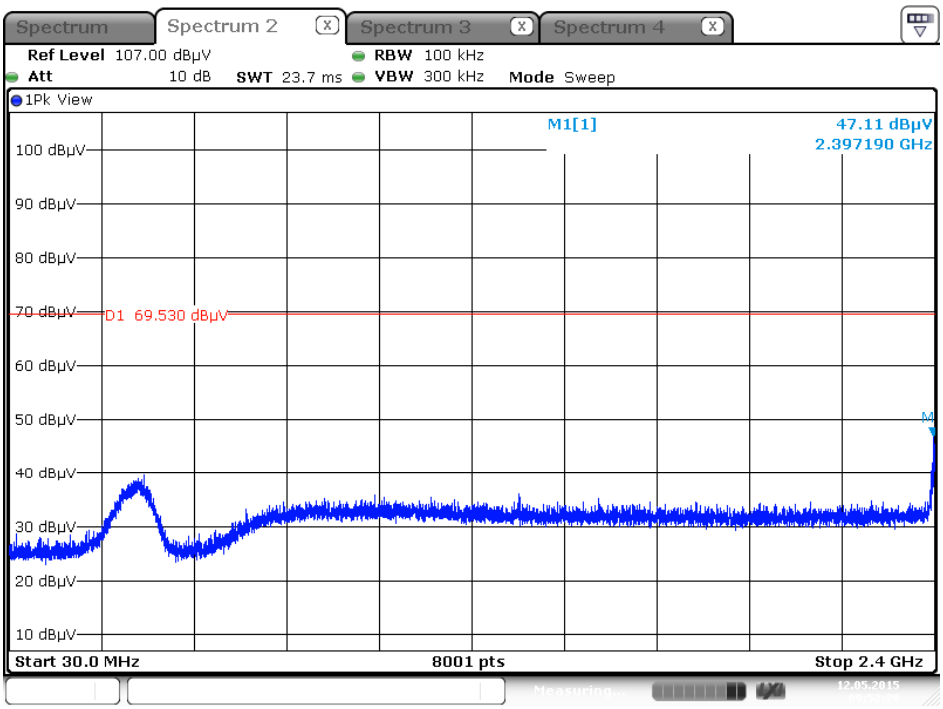
Date: 12.MAY.2015 09:48:12

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / Reference Level



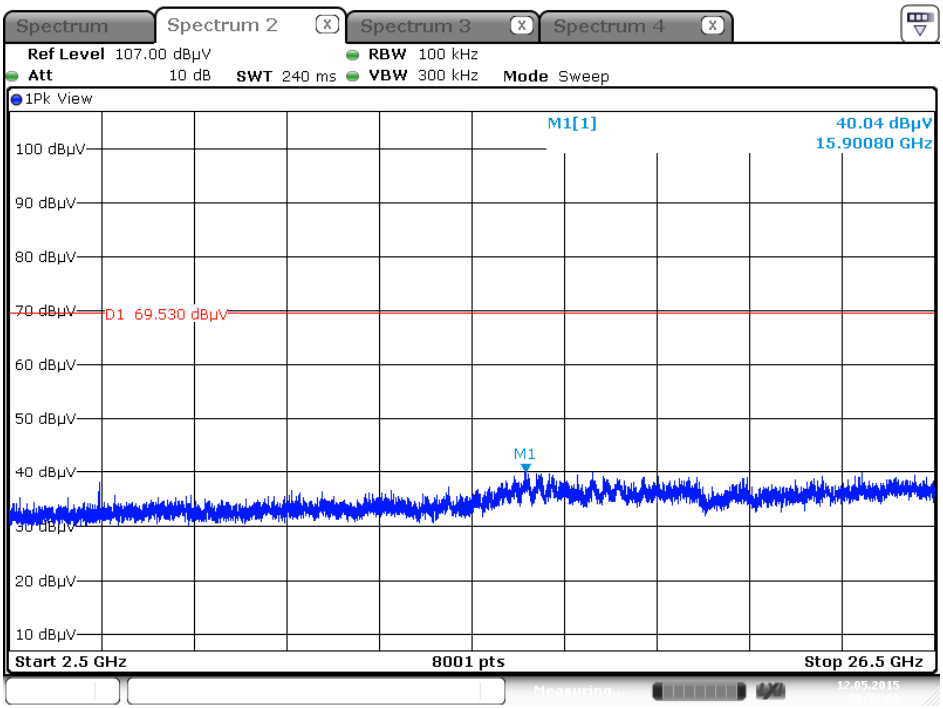
Date: 12.MAY.2015 09:50:58

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



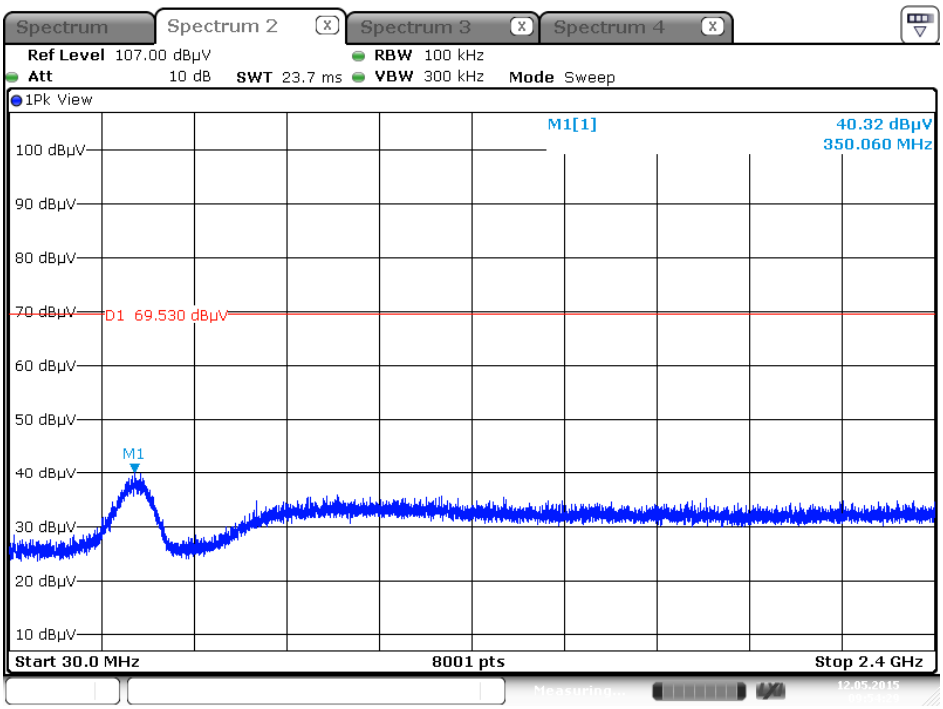
Date: 12.MAY.2015 09:52:29

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / CH 1 / 2500MHz~26500MHz (down 30dBc)



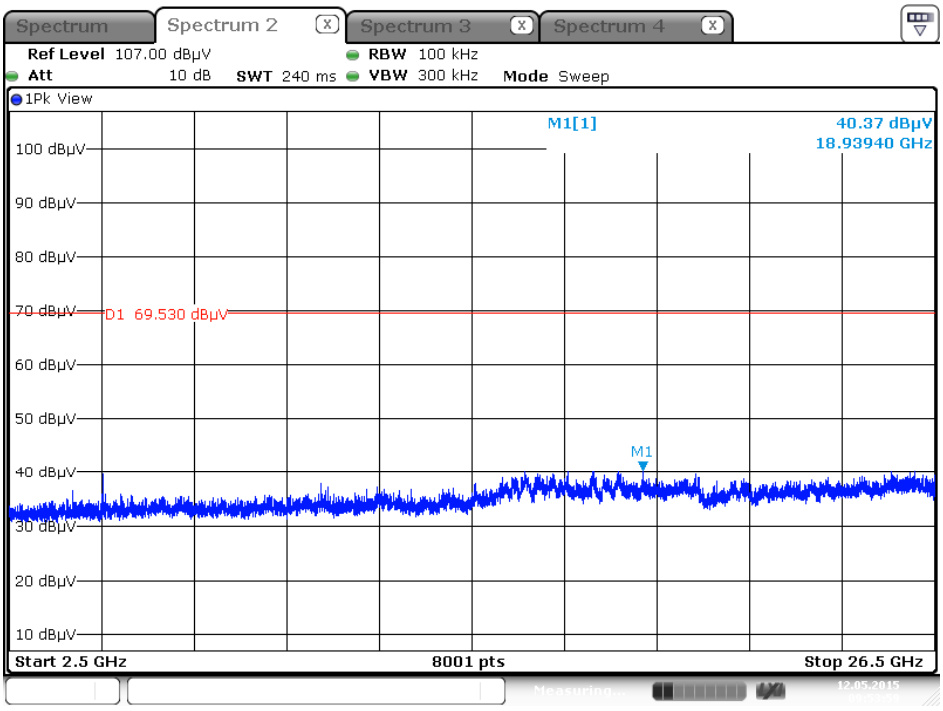
Date: 12.MAY.2015 09:53:09

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / CH 11 / 30MHz~2400MHz (down 30dBc)



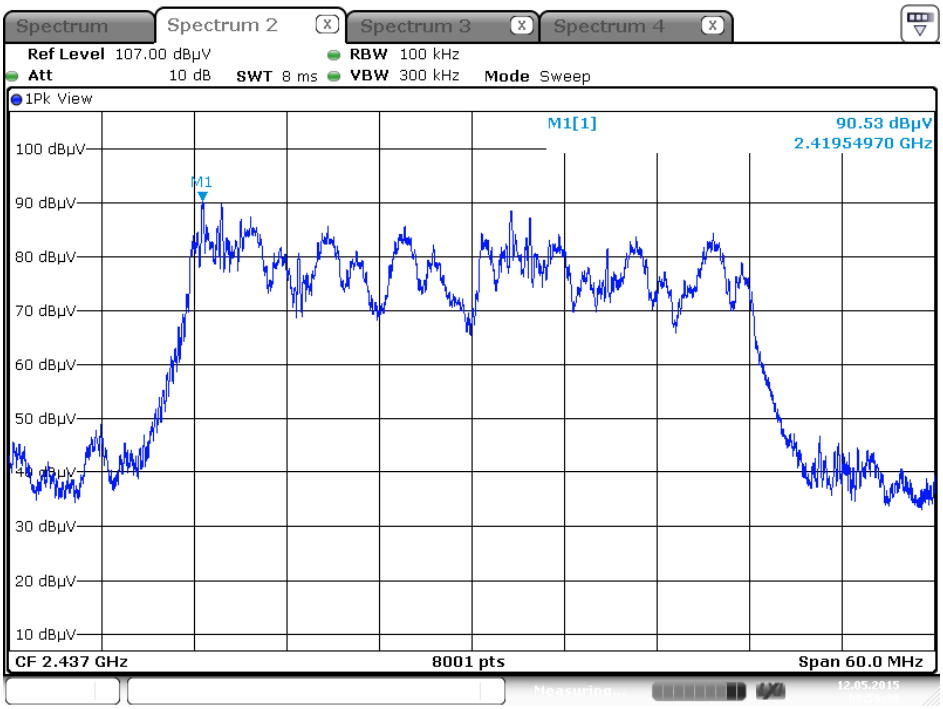
Date: 12.MAY.2015 09:54:29

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / CH 11 / 2500MHz~26500MHz (down 30dBc)



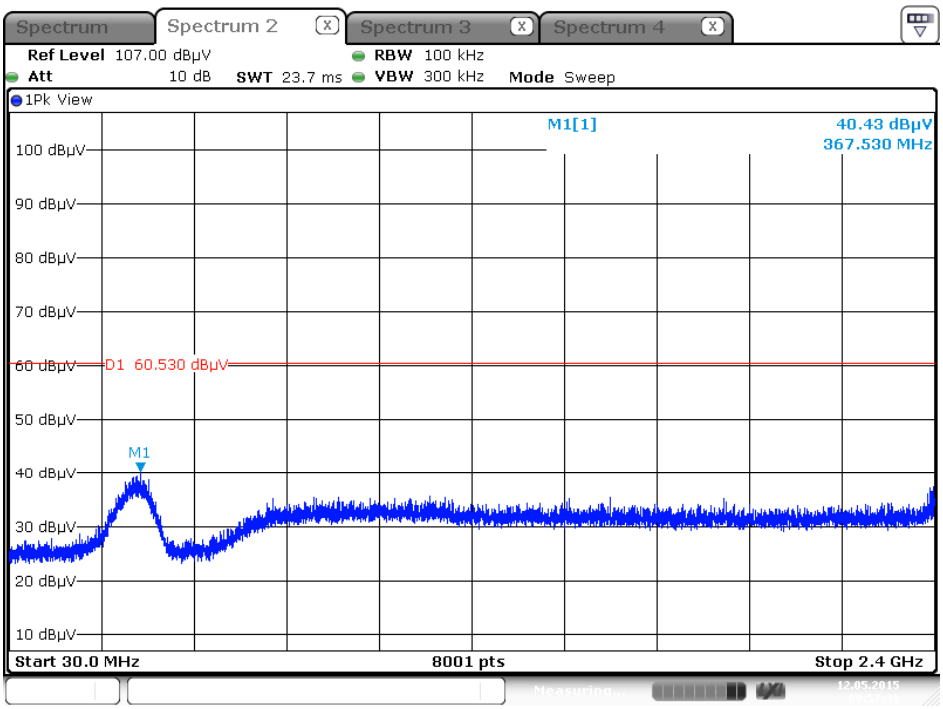
Date: 12.MAY.2015 09:53:59

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / Reference Level



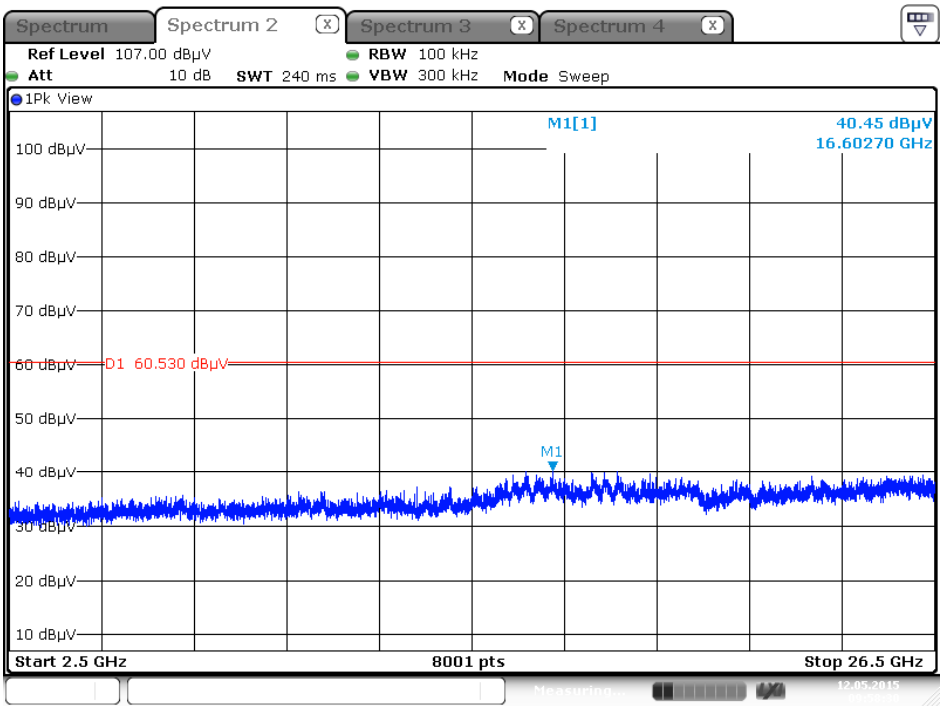
Date: 12.MAY.2015 09:56:30

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



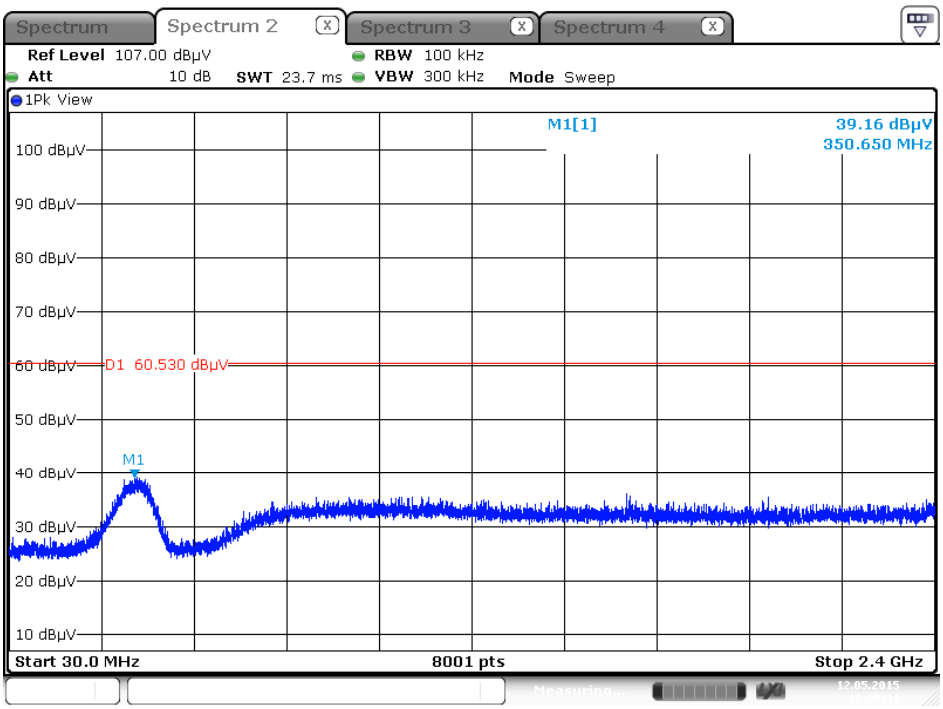
Date: 12.MAY.2015 09:57:36

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / CH 3 / 2500MHz~26500MHz (down 30dBc)



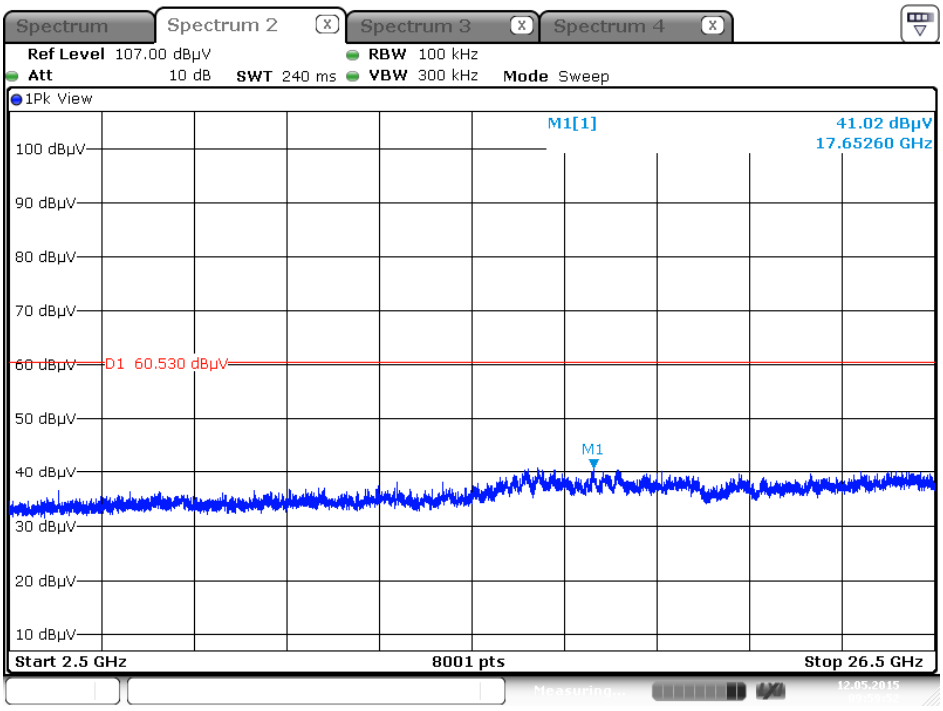
Date:12.MAY.2015 09:58:30

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / CH 9 / 30MHz~2400MHz (down 30dBc)



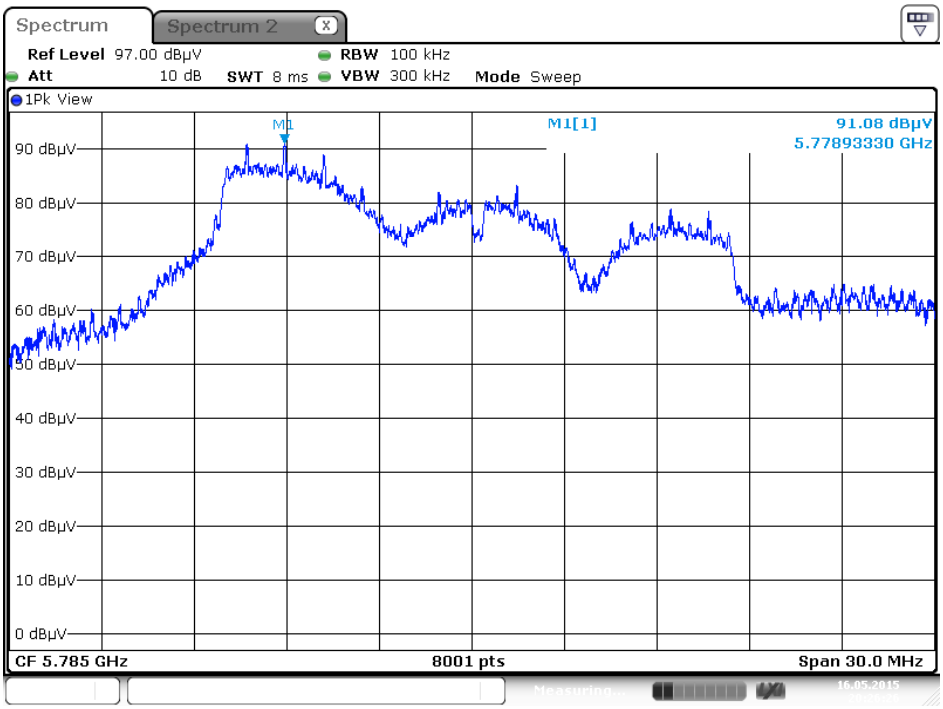
Date:12.MAY.2015 10:00:32

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / CH 9 / 2500MHz~26500MHz (down 30dBc)



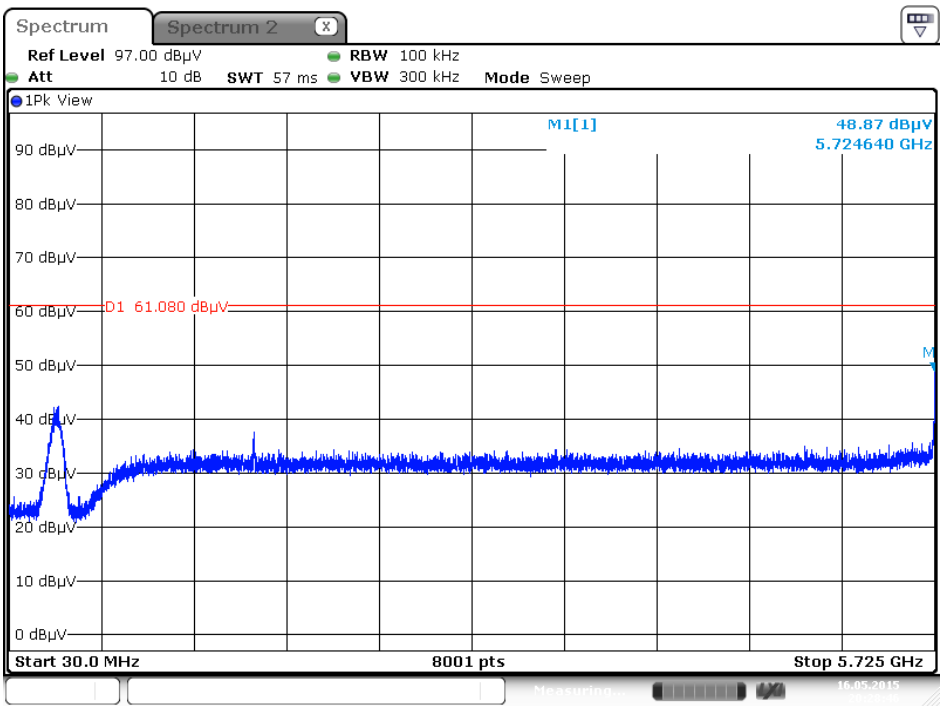
Date: 12.MAY.2015 09:59:51

Plot on Configuration IEEE 802.11a / Reference Level



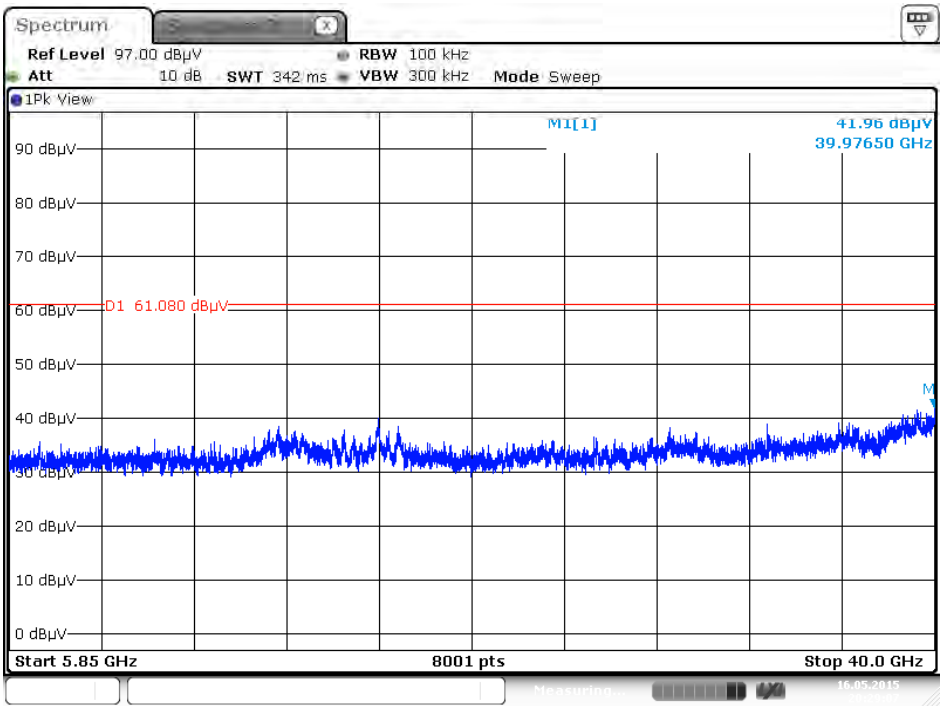
Date: 16.MAY.2015 20:26:27

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



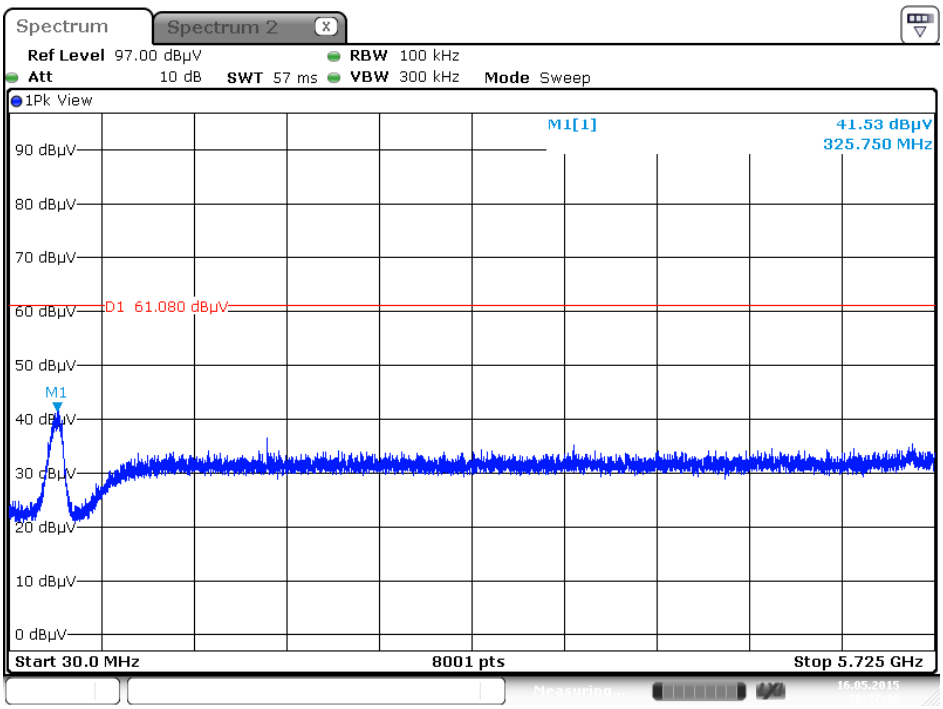
Date: 16.MAY.2015 20:28:46

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



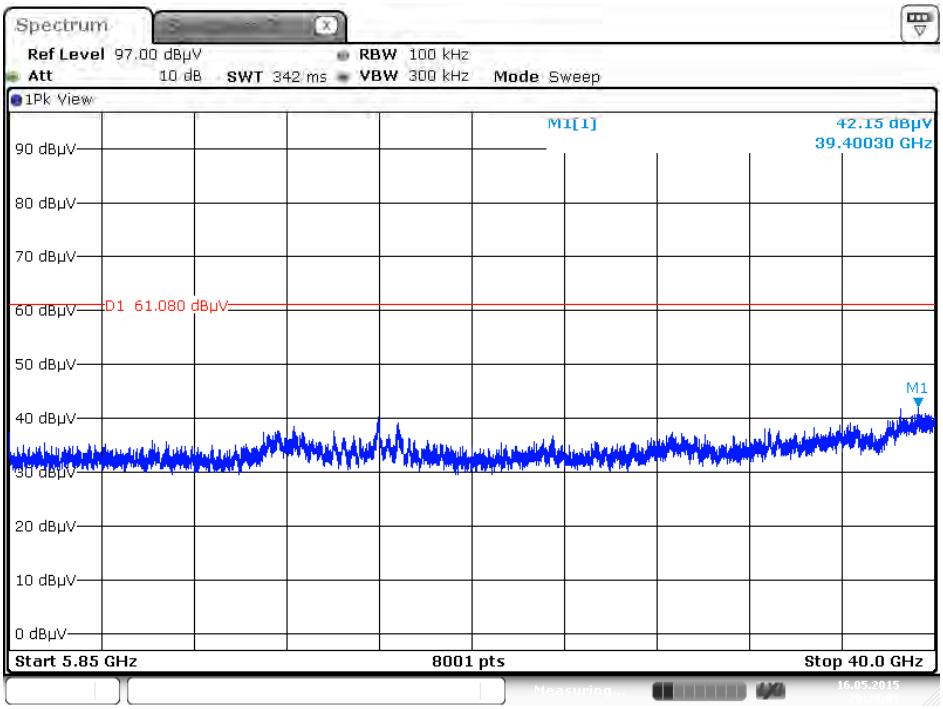
Date: 16.MAY.2015 20:29:07

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



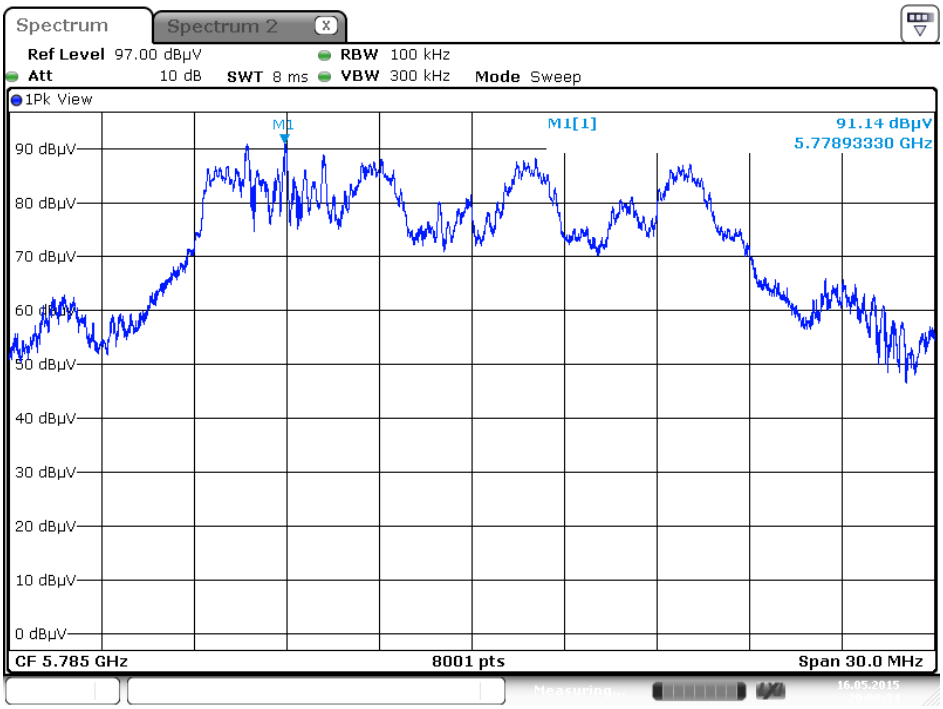
Date: 16.MAY.2015 20:27:30

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



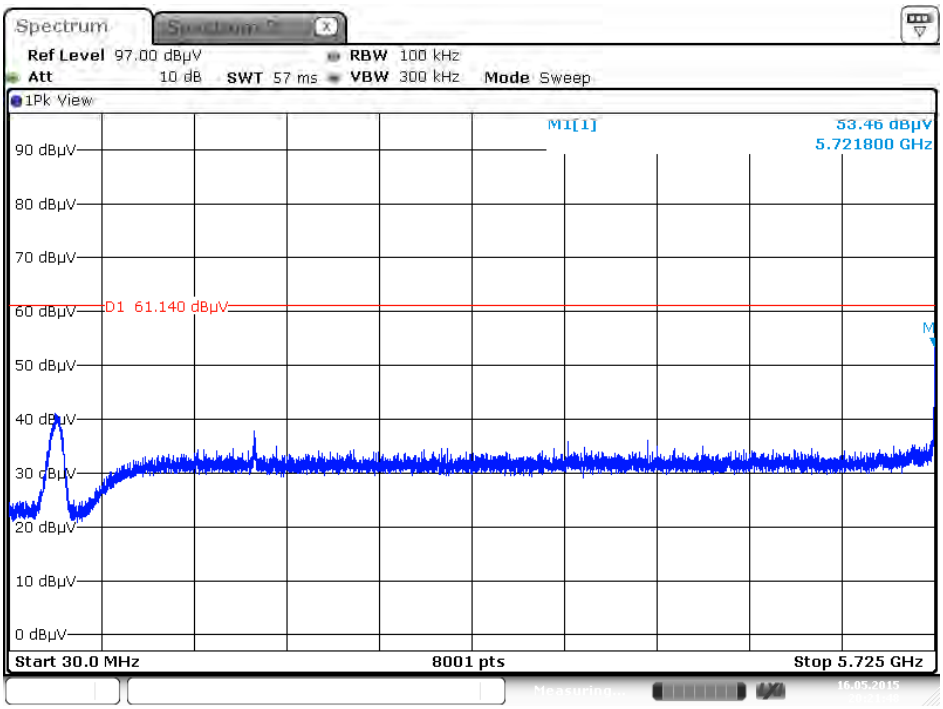
Date: 16.MAY.2015 20:28:05

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



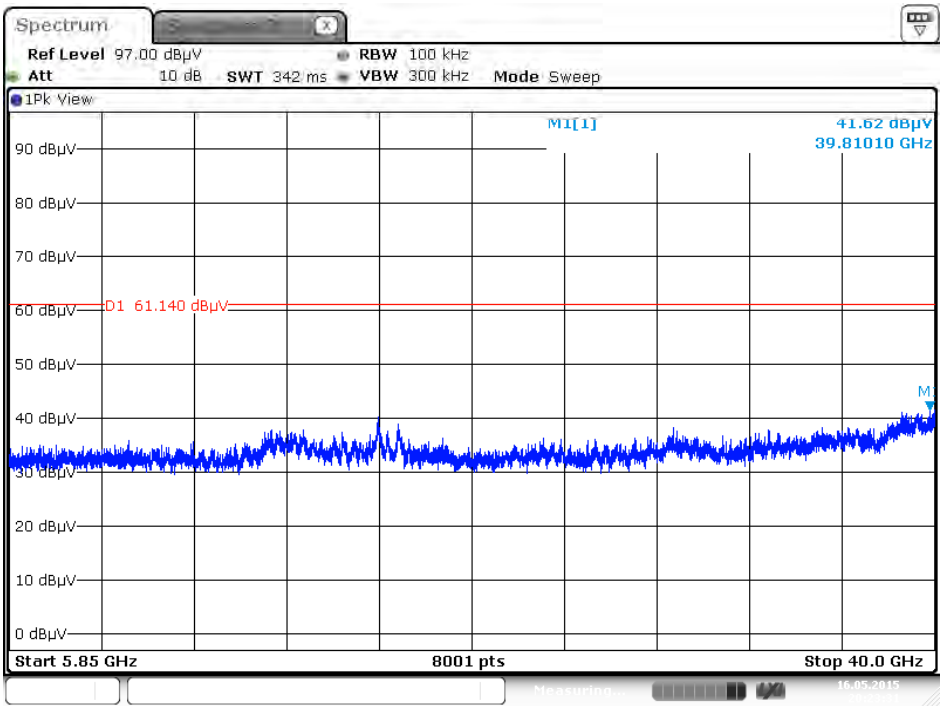
Date: 16.MAY.2015 20:08:35

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



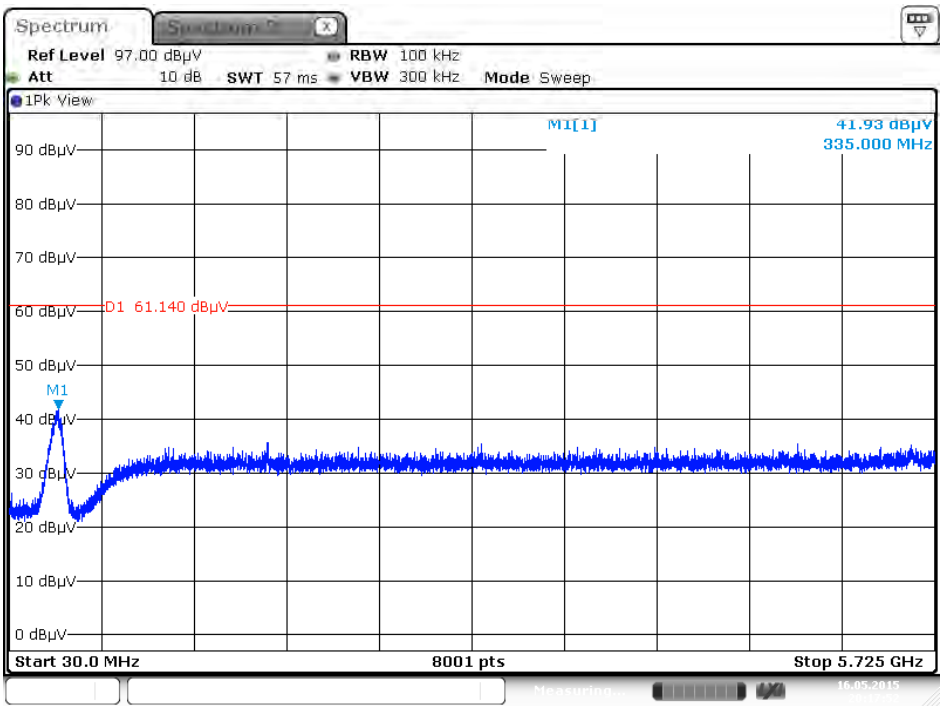
Date: 16.MAY.2015 20:21:48

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



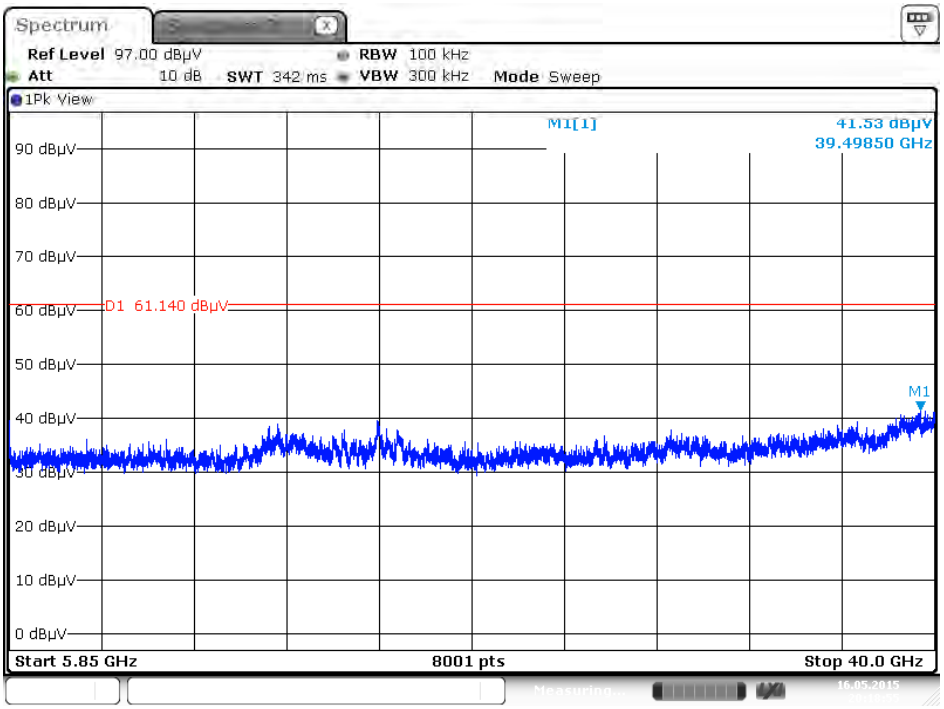
Date: 16.MAY.2015 20:23:31

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



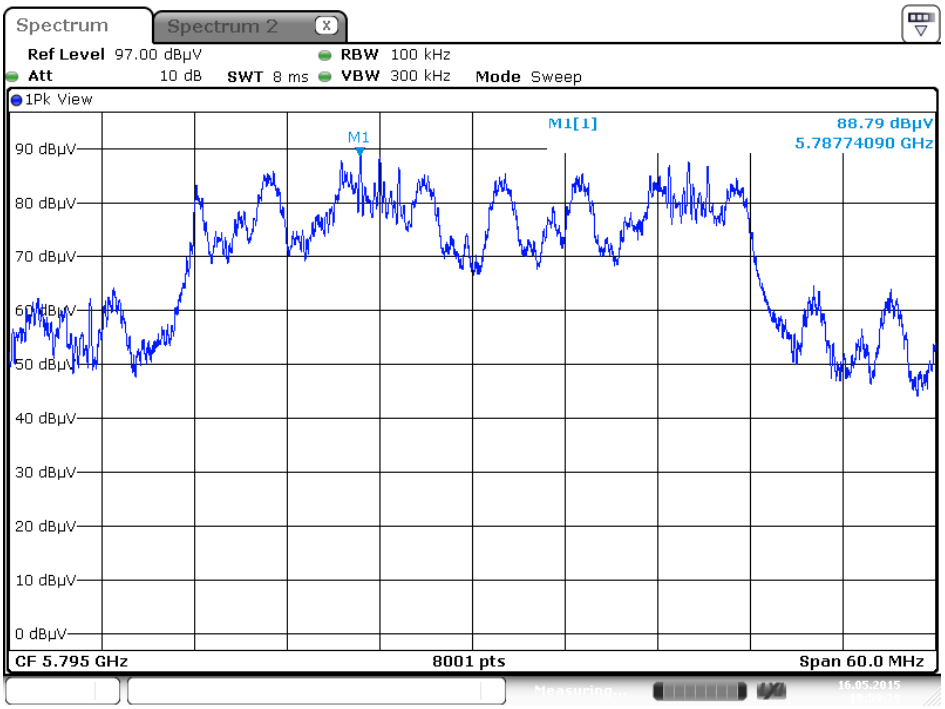
Date: 16.MAY.2015 20:17:53

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



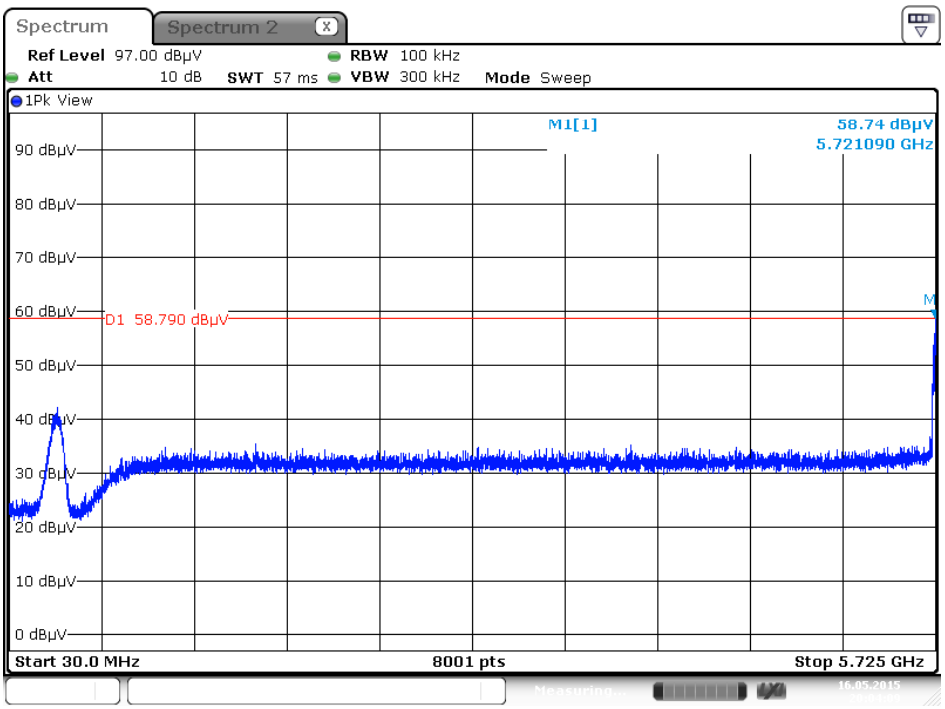
Date: 16.MAY.2015 20:18:55

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



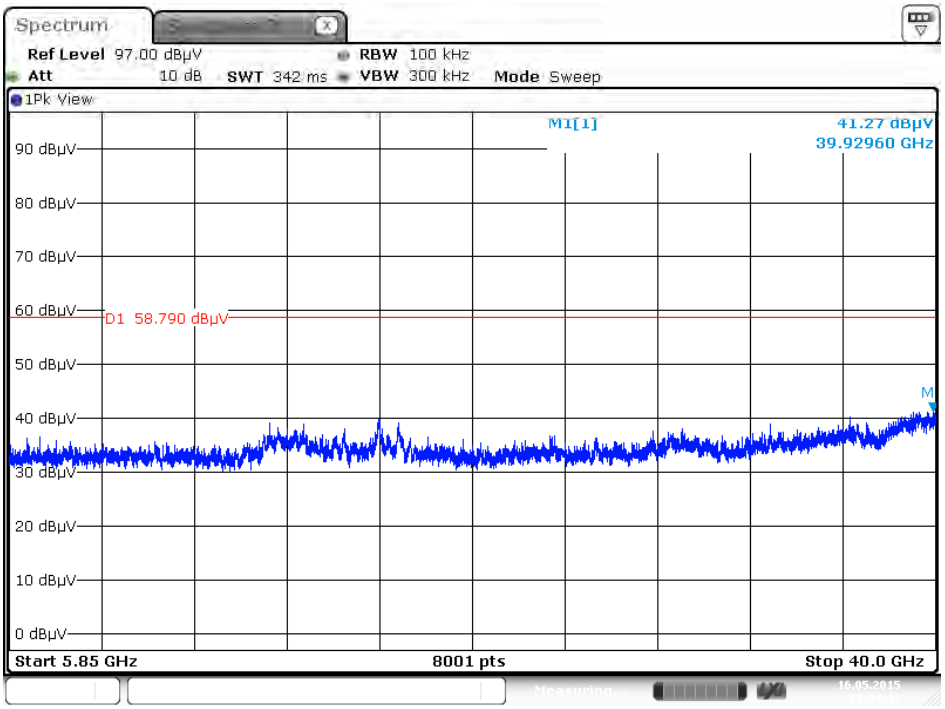
Date: 16.MAY.2015 19:59:19

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



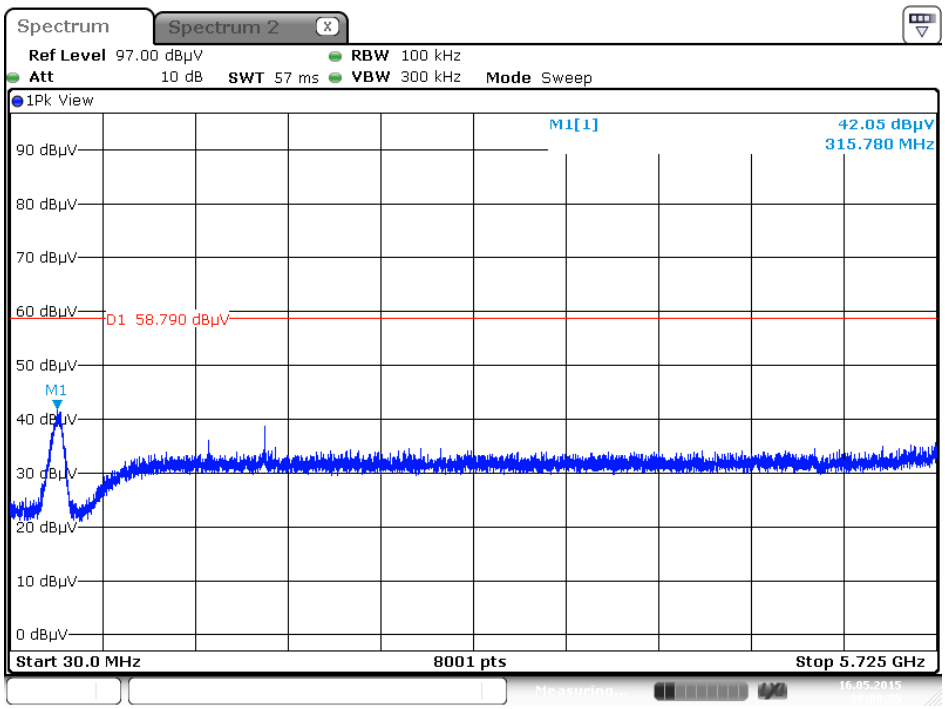
Date: 16.MAY.2015 20:04:09

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



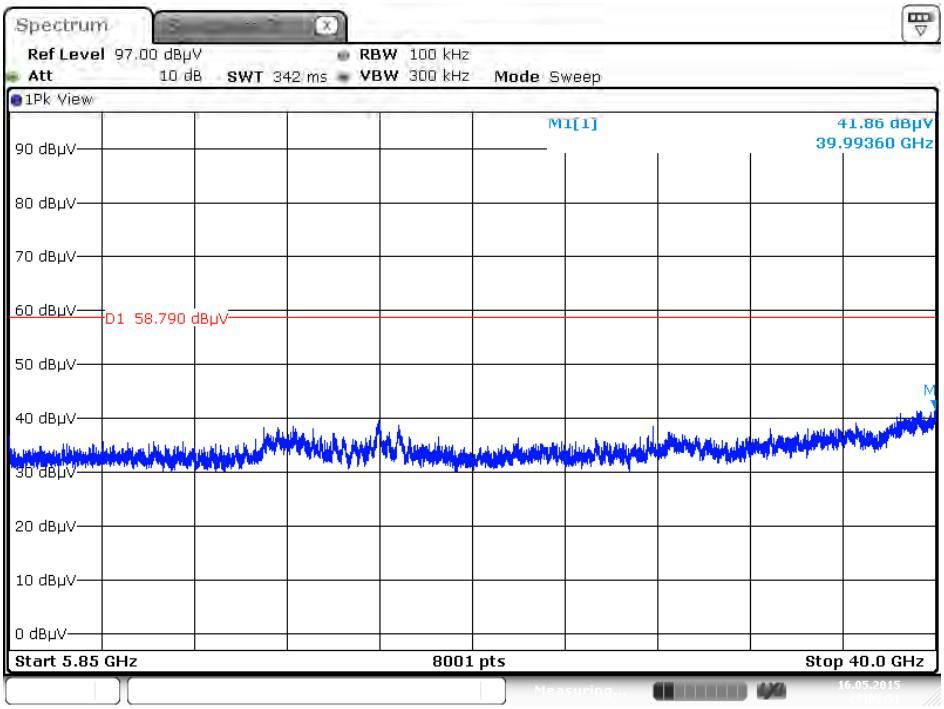
Date: 16.MAY.2015 20:04:43

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



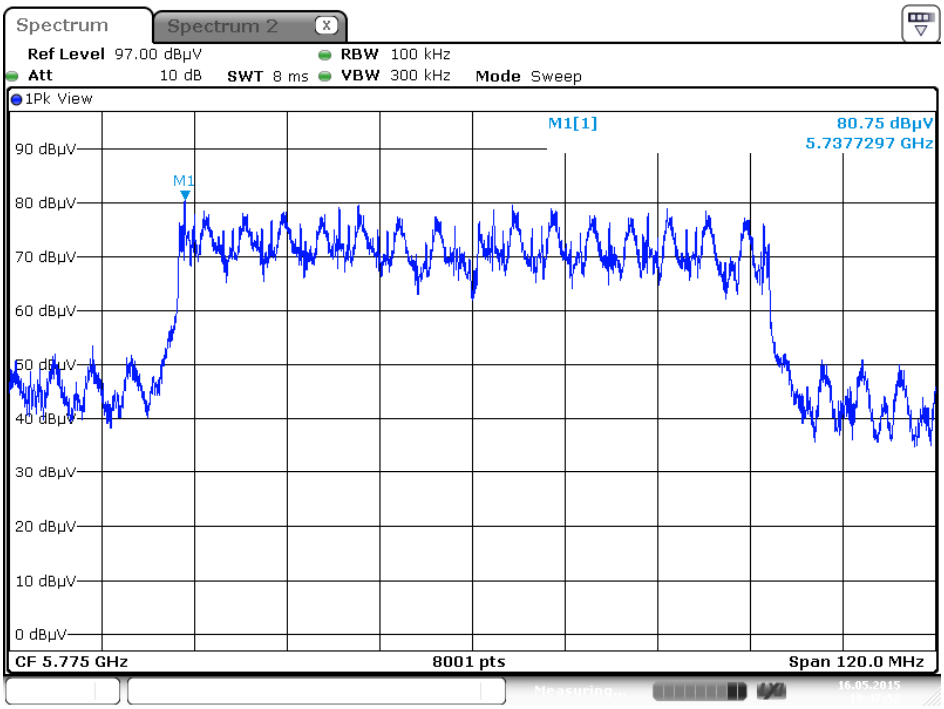
Date: 16.MAY.2015 20:00:25

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



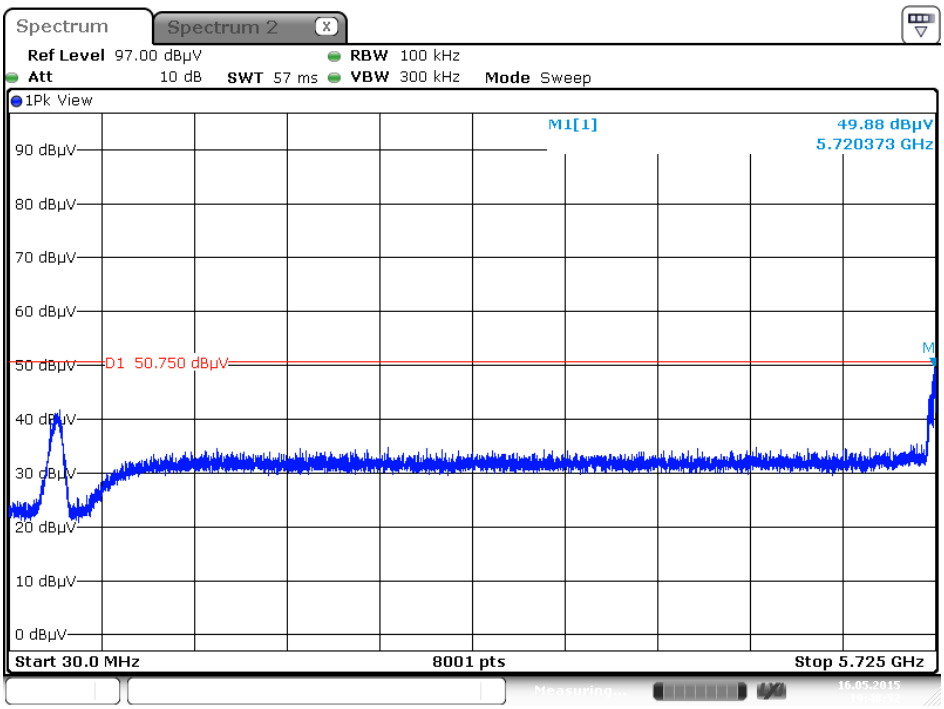
Date: 16.MAY.2015 20:00:51

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



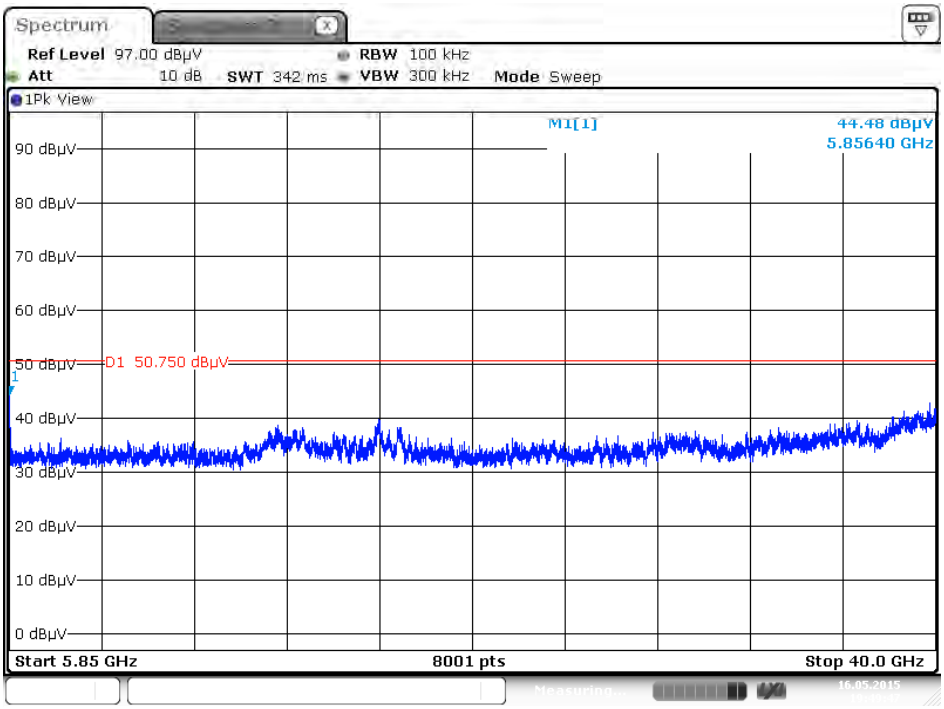
Date: 16.MAY.2015 19:47:52

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



Date: 16.MAY.2015 19:48:52

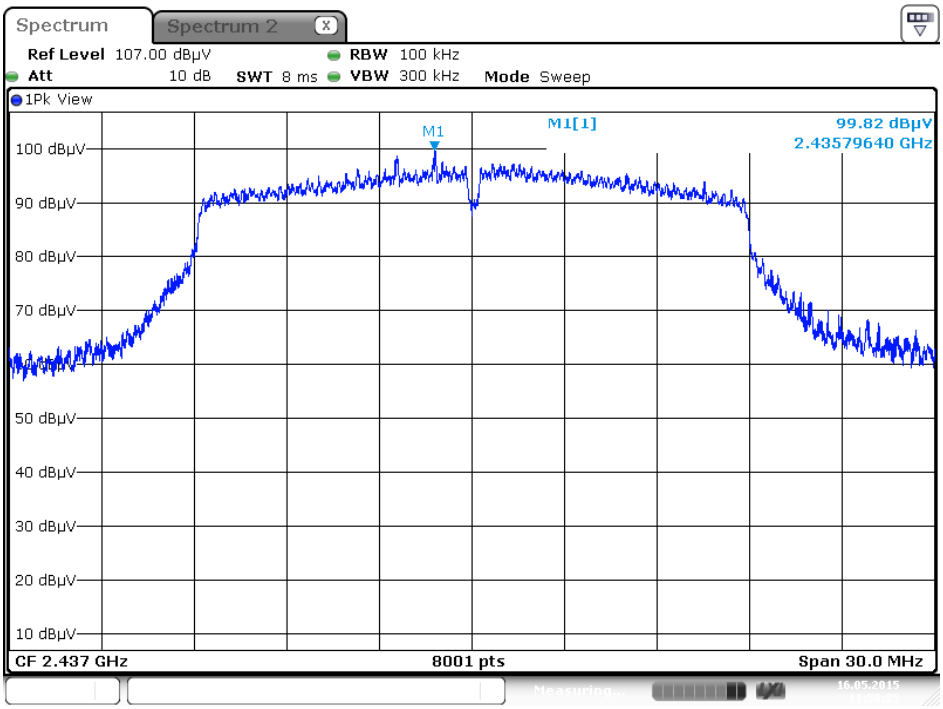
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / CH 155 / 5850MHz~40000MHz (down 30dBc)



Date: 16.MAY.2015 19:49:47

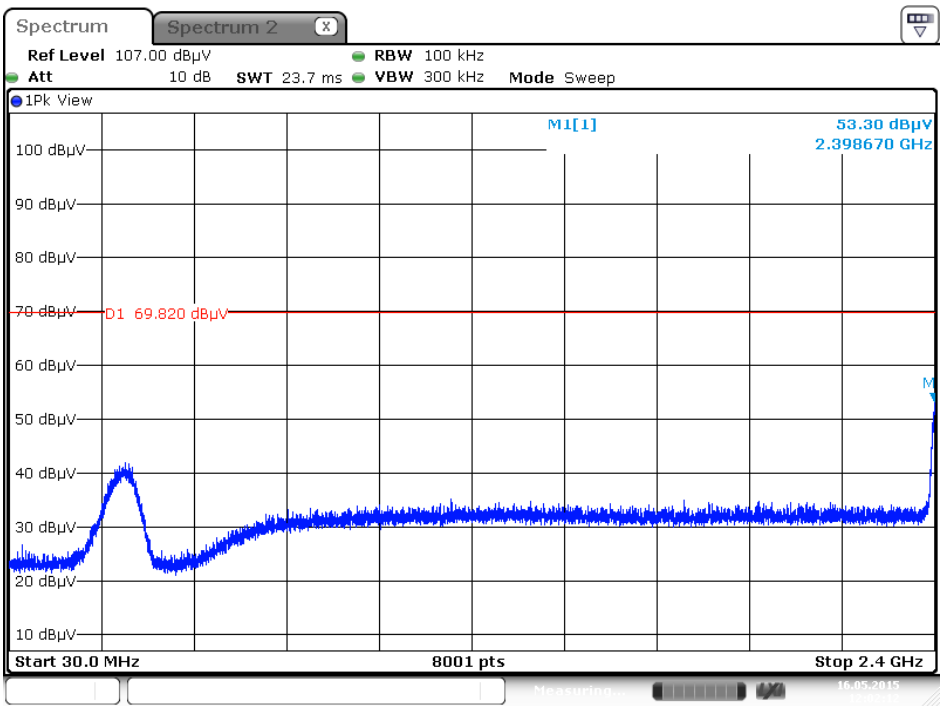
For beamforming mode

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / Reference Level



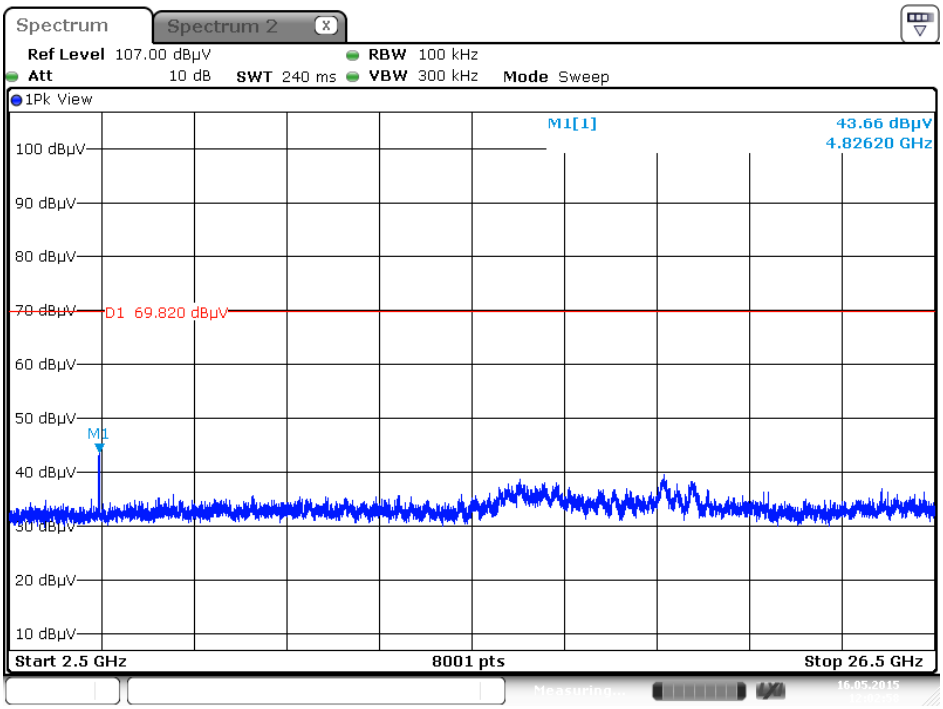
Date: 16.MAY.2015 11:58:25

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



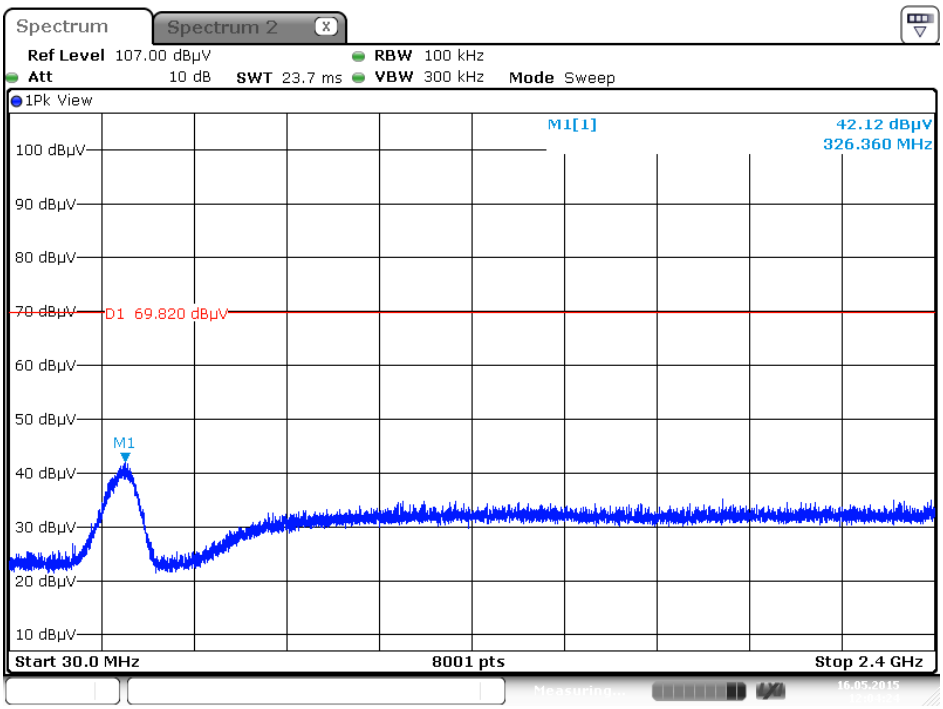
Date: 16.MAY.2015 12:02:12

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / CH 1 / 2500MHz~26500MHz (down 30dBc)



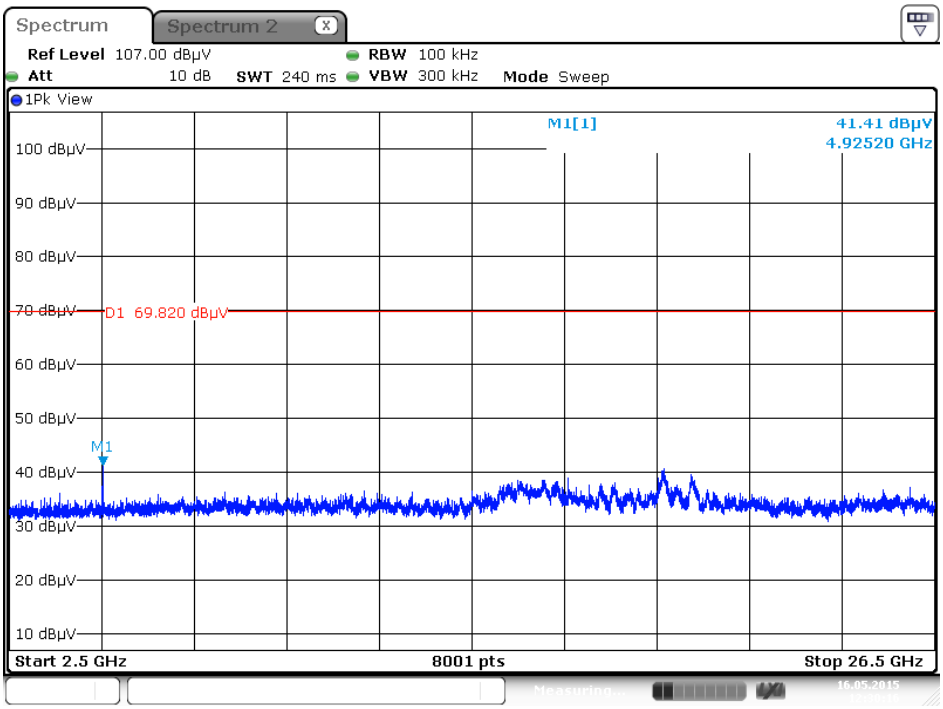
Date: 16.MAY.2015 12:02:59

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / CH 11 / 30MHz~2400MHz (down 30dBc)



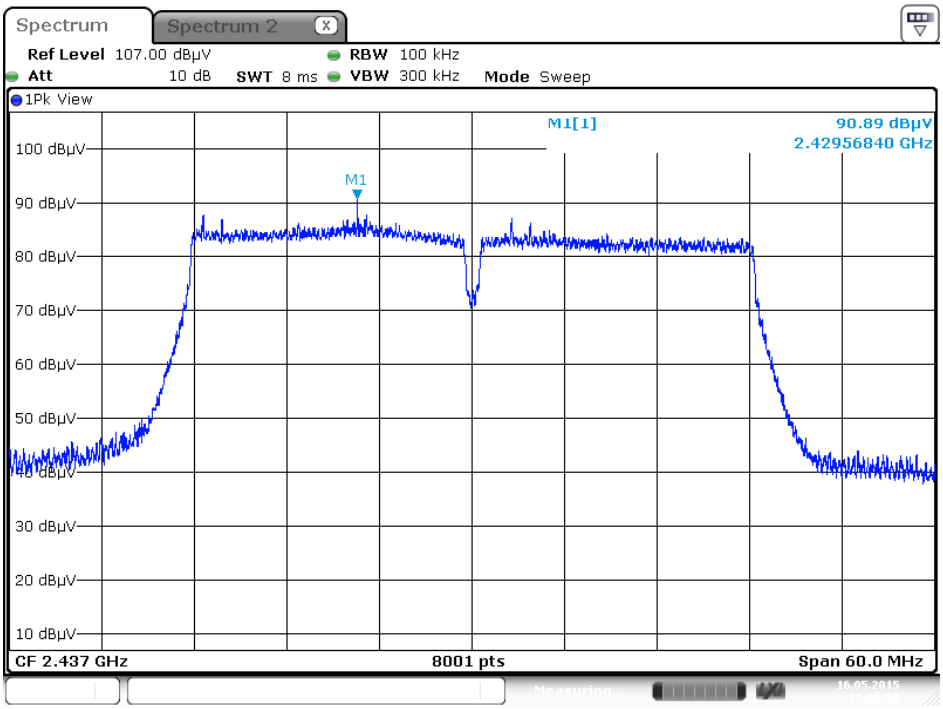
Date: 16.MAY.2015 12:04:25

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT20 / CH 11 / 2500MHz~26500MHz (down 30dBc)



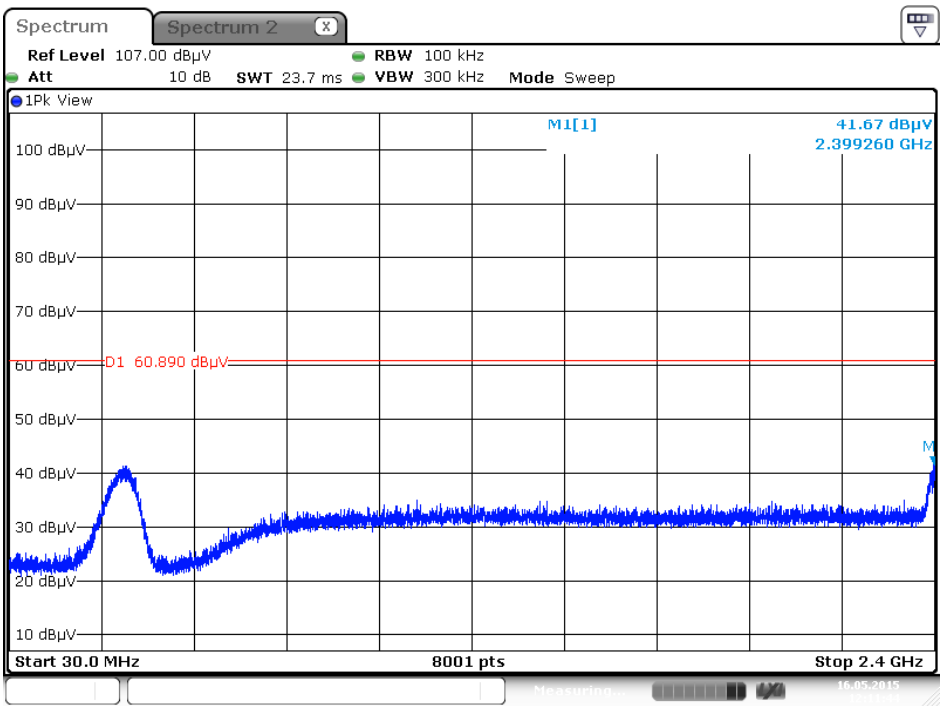
Date: 16.MAY.2015 12:30:16

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / Reference Level



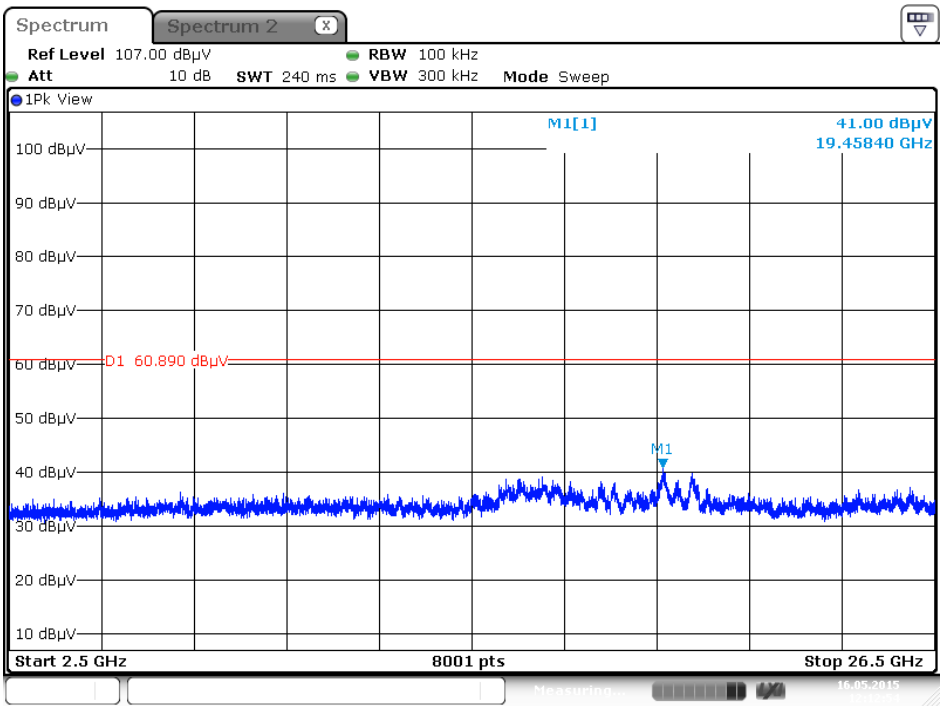
Date: 16.MAY.2015 12:09:59

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



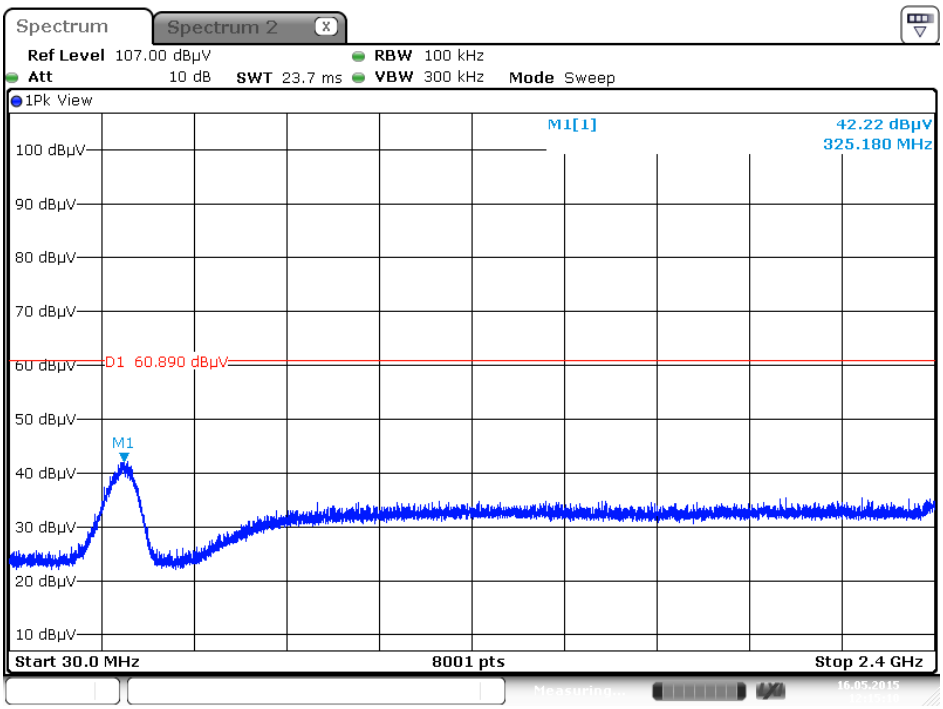
Date: 16.MAY.2015 12:11:44

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / CH 3 / 2500MHz~26500MHz (down 30dBc)



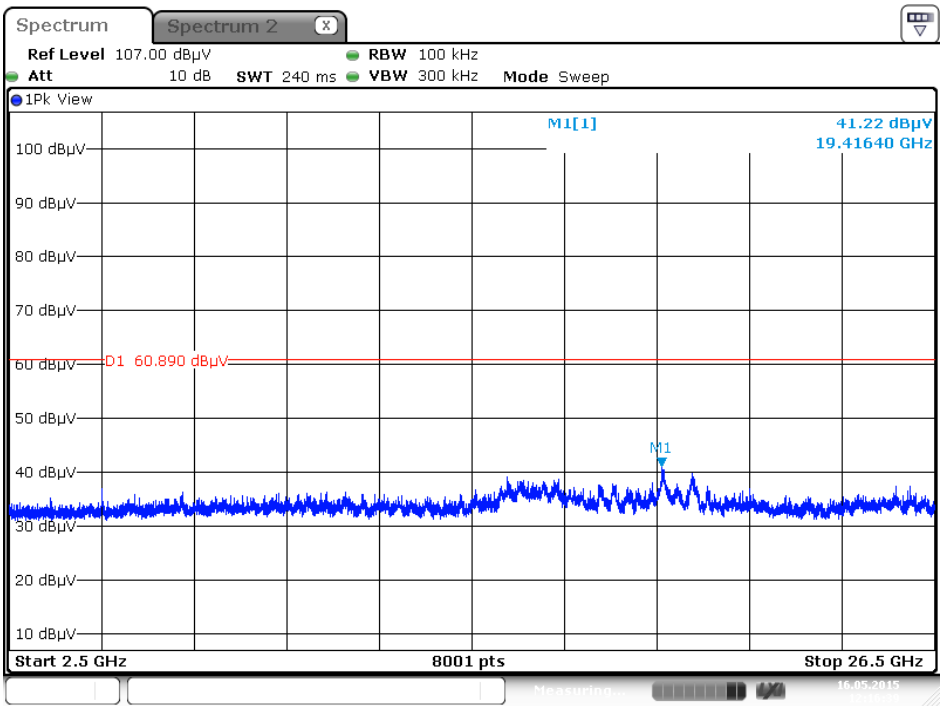
Date: 16.MAY.2015 12:12:54

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / CH 9 / 30MHz~2400MHz (down 30dBc)



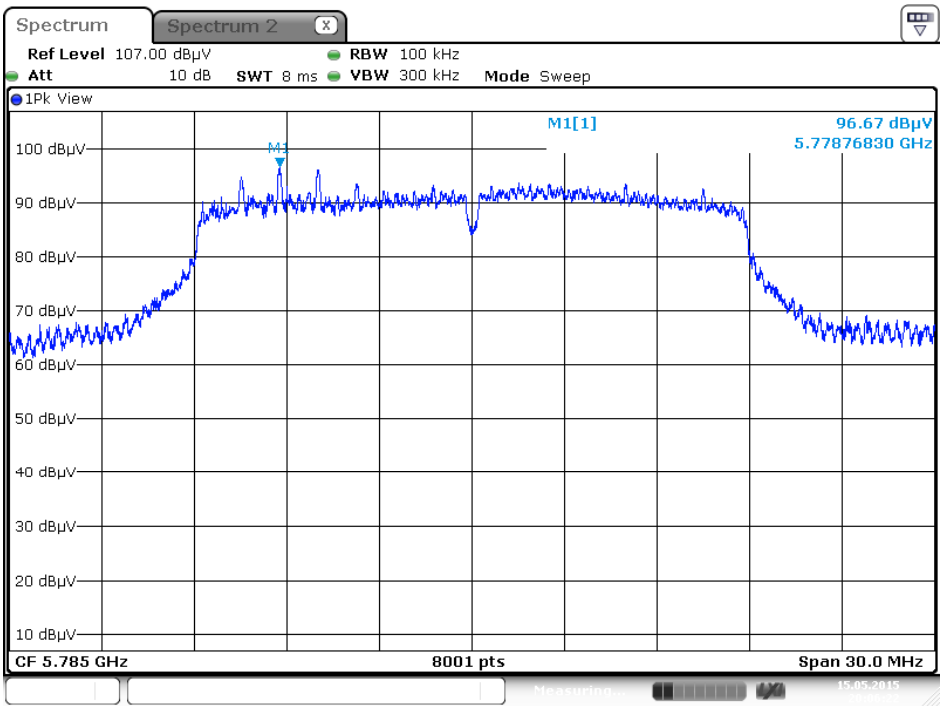
Date: 16.MAY.2015 12:15:10

Plot on Configuration IEEE 802. 11ac MCS0/Nss1 VHT40 / CH 9 / 2500MHz~26500MHz (down 30dBc)



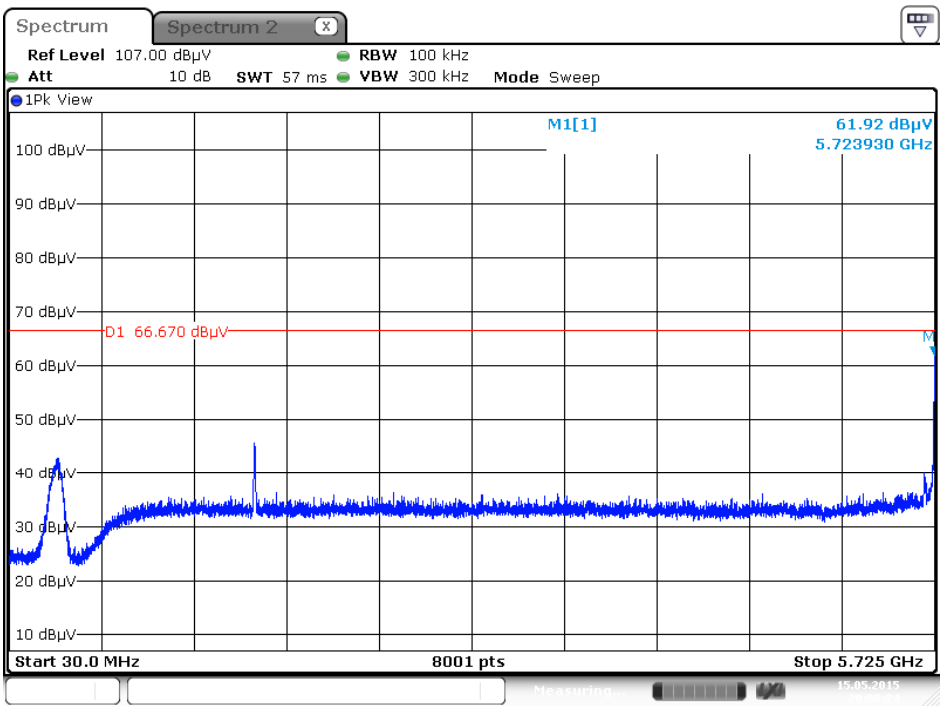
Date: 16.MAY.2015 12:16:39

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



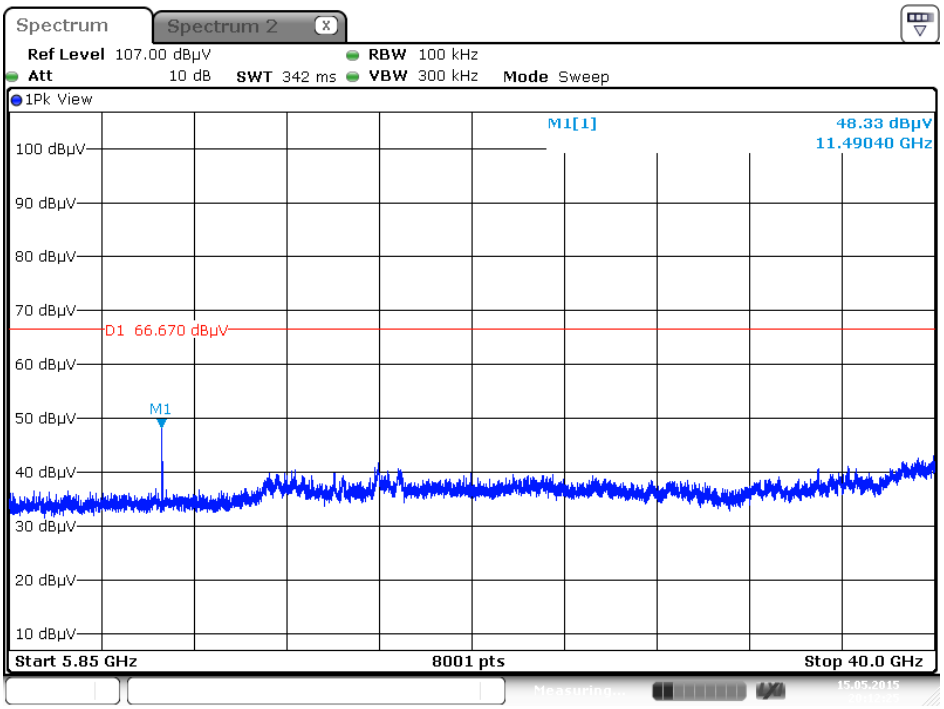
Date: 15.MAY.2015 20:06:21

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



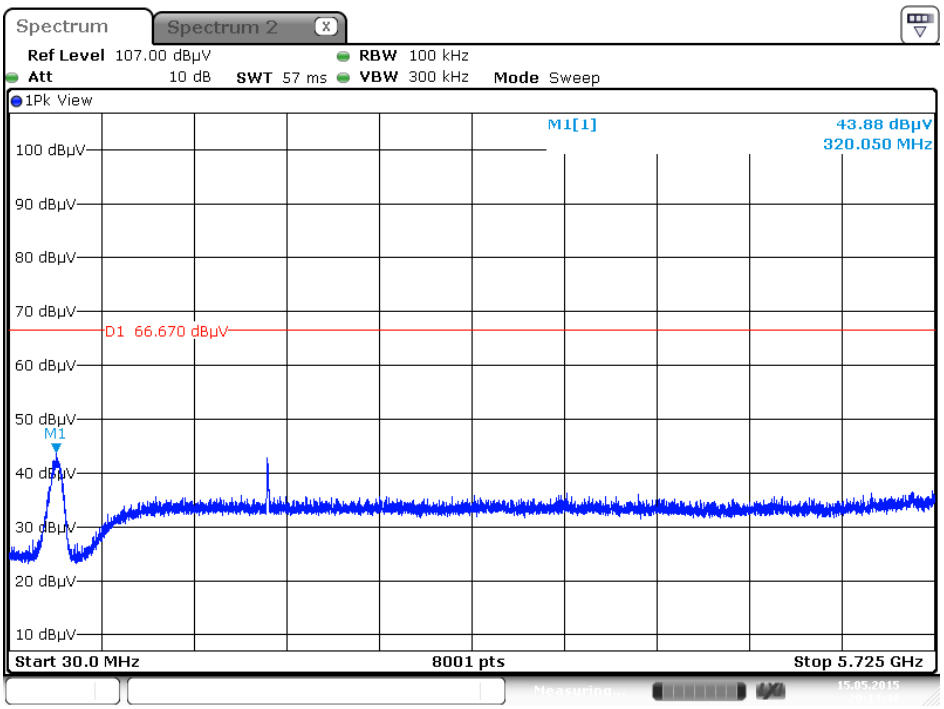
Date: 15.MAY.2015 20:08:24

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



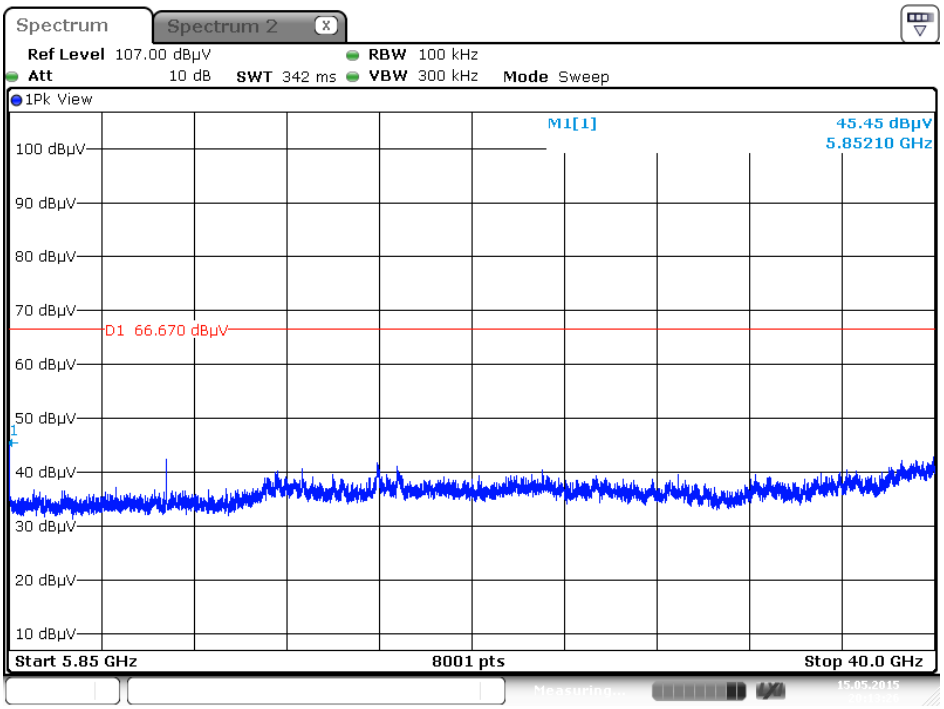
Date: 15.MAY.2015 20:12:24

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



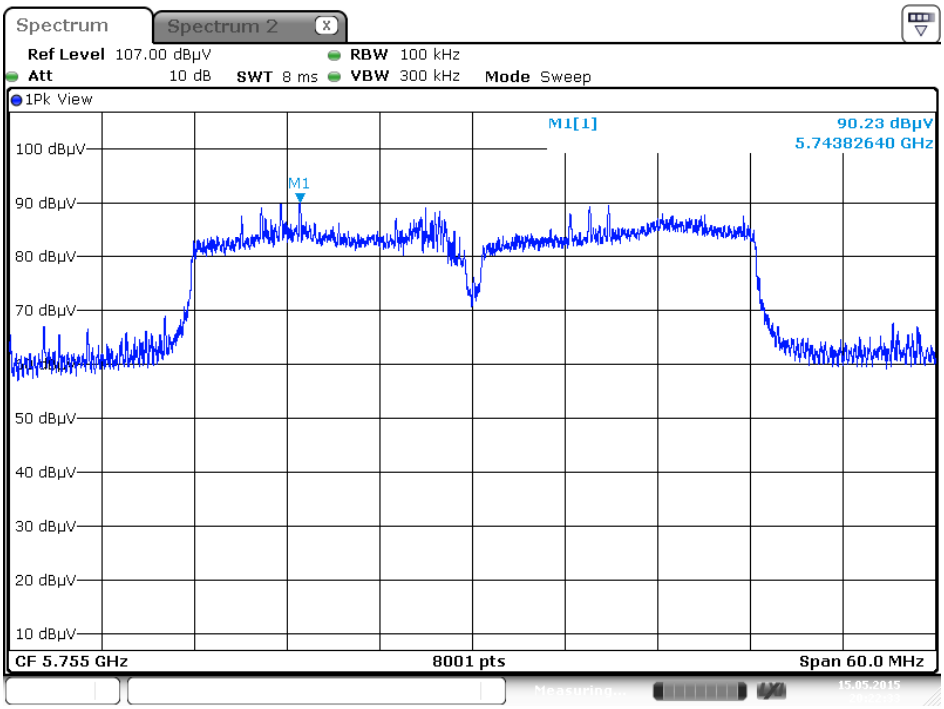
Date: 15.MAY.2015 20:14:40

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



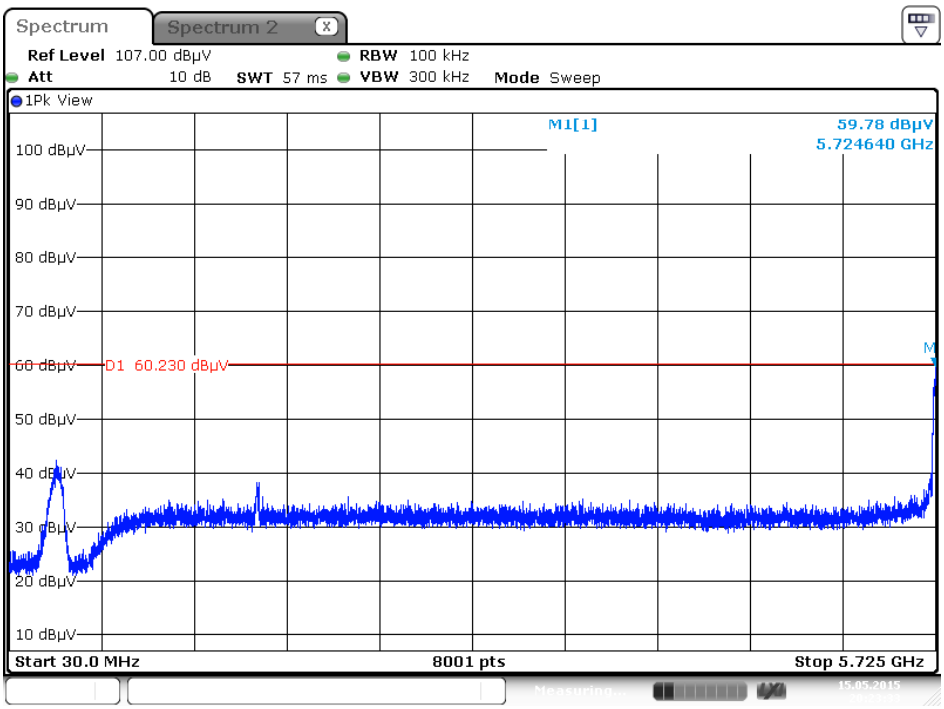
Date: 15.MAY.2015 20:13:25

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



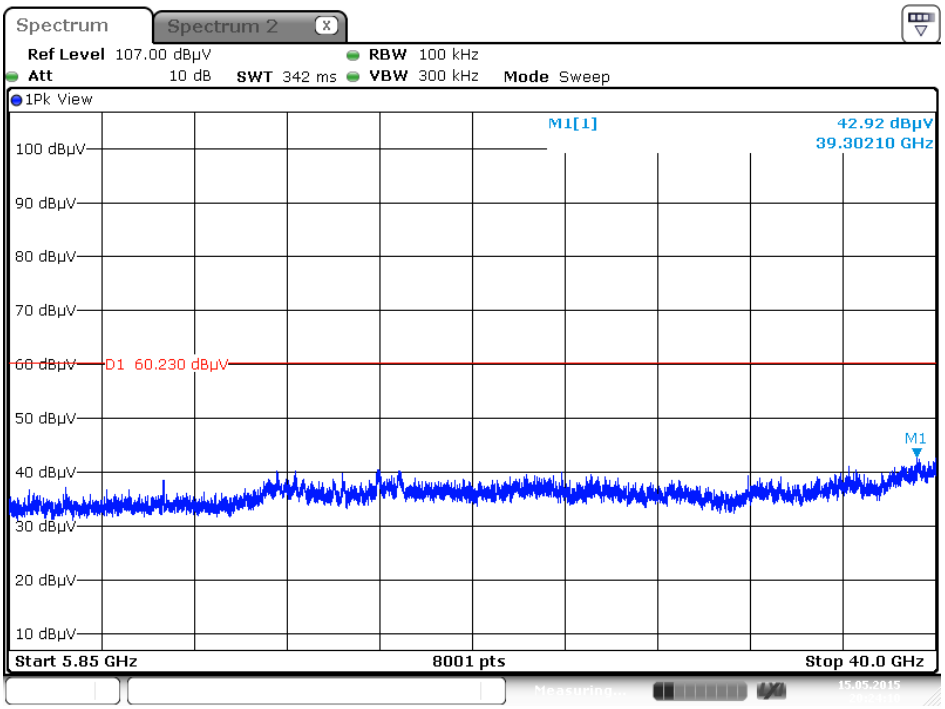
Date: 15.MAY.2015 20:22:33

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



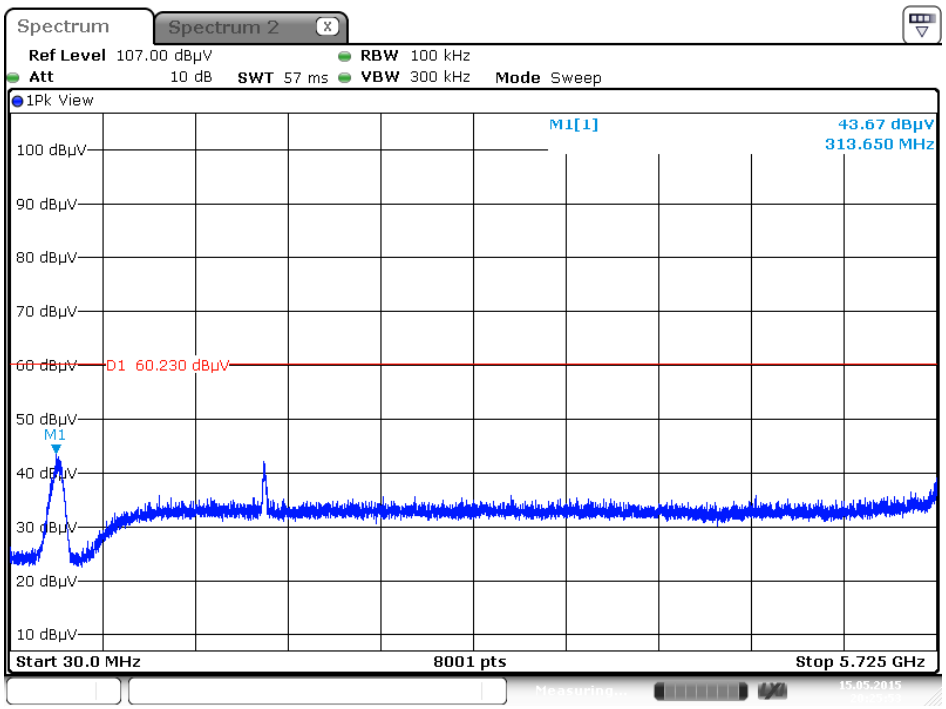
Date: 15.MAY.2015 20:23:33

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



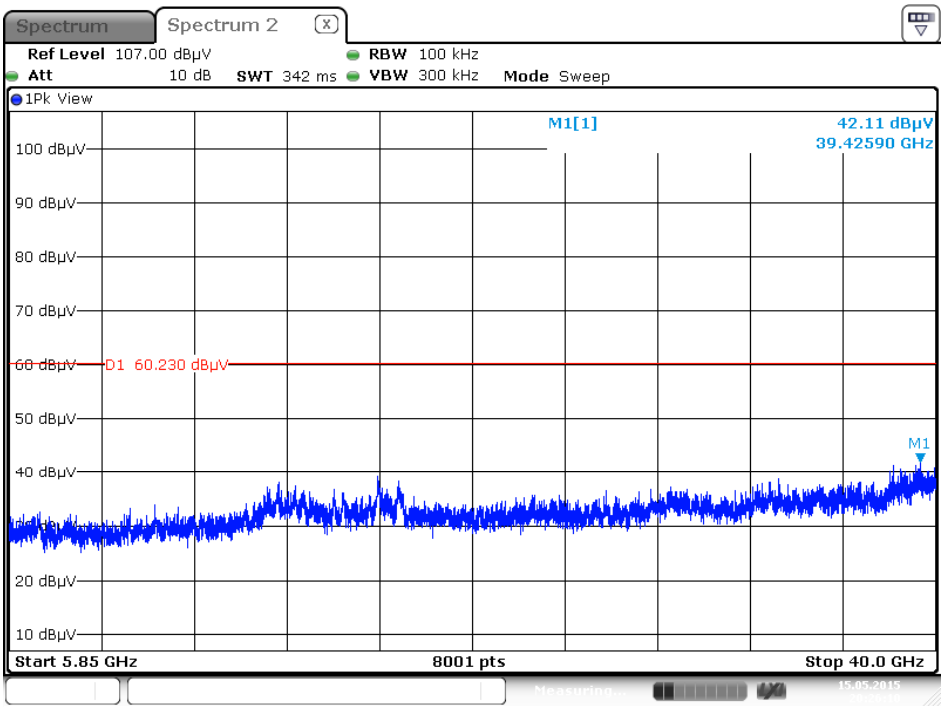
Date: 15.MAY.2015 20:24:09

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



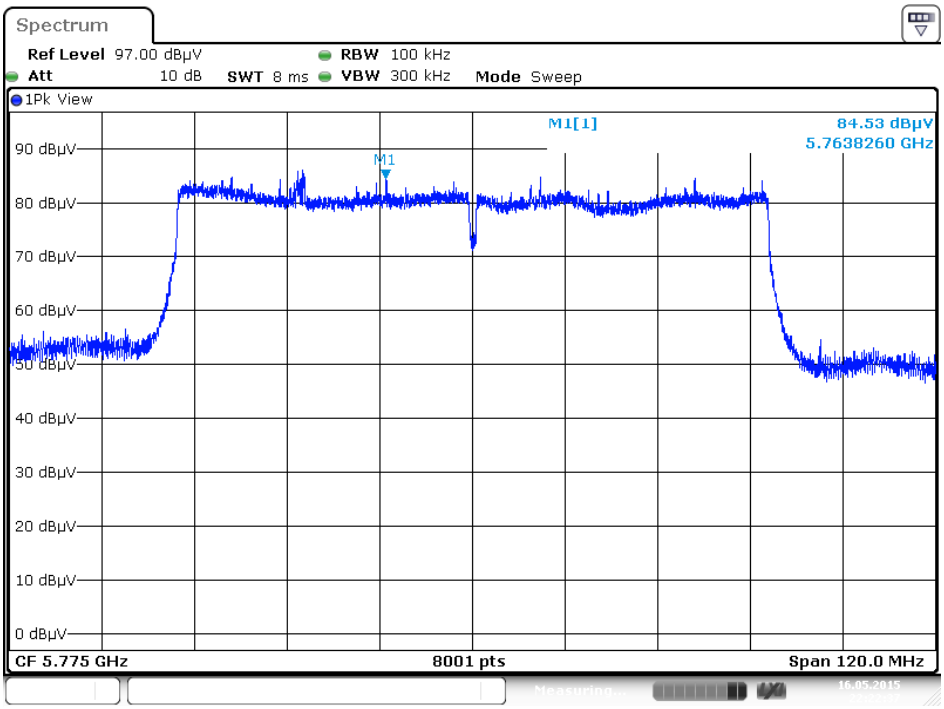
Date: 15.MAY.2015 20:25:52

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



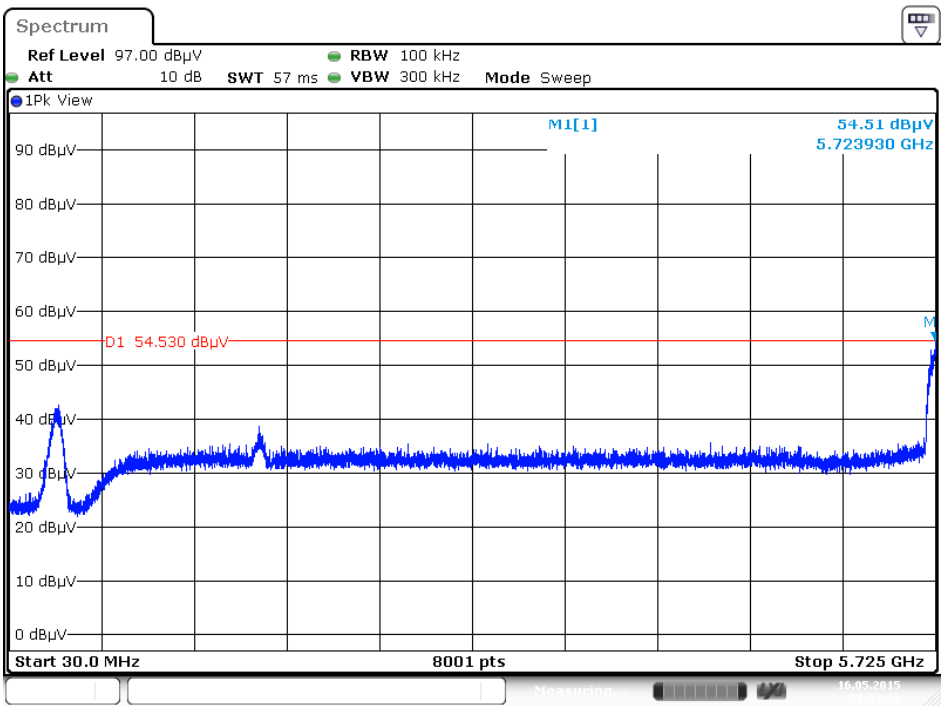
Date: 15.MAY.2015 20:26:10

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



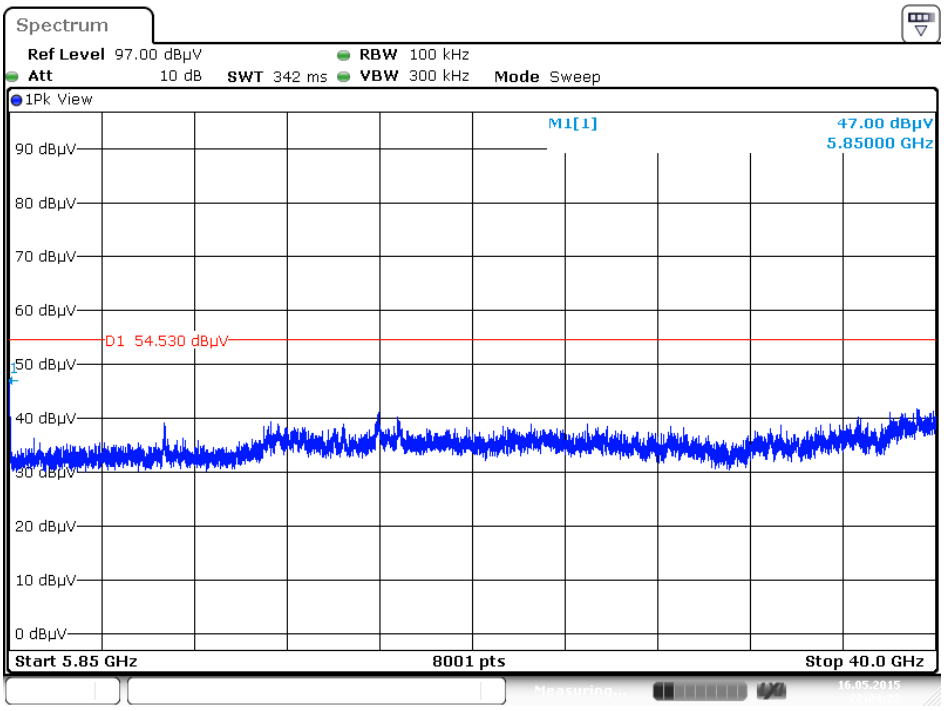
Date: 16.MAY.2015 22:22:37

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



Date: 16.MAY.2015 22:23:56

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



Date: 16.MAY.2015 22:24:22

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
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Nov. 17, 2014	Conduction (CO02-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 17, 2014	Conduction (CO02-CB)
MXE EMI Receiver	Agilent	N9038A	MY52260140	9kHz ~ 30MHz	Jan. 13, 2015	Conduction (CO02-CB)
COND Cable	Woken	Cable	01	0.15MHz ~ 30MHz	Dec. 01, 2014	Conduction (CO02-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO02-CB)
Pulse Limiter	Schwarzbeck	VTSD 9561F	9561-F073	9kHz ~ 30MHz	Sep. 26, 2014	Conduction (CO02-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	Aug. 22, 2014	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 Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Jan. 21, 2015	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R.	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO 2000	N/A	1 m ~ 4 m	N.C.R.	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)
Thermometer	HTC-1	HTC-1	TP-1	-50℃~70℃	Mar. 11, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	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)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
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)
Thermometer	HTC-1	HTC-1	TP-8	-50℃~70℃	Mar. 05, 2015	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

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%