



NCC RADIO TEST REPORT

Equipment : 雙頻無線接入點
Brand Name : UBIQUITI
Model Name : UAP-AC-HD
Applicant : 香港商優比快科技有限公司台灣分公司
臺北市信義區松仁路 107 號 12 樓
Manufacturer : Ubiquiti Networks, Inc.
685 Third Avenue, 27th Floor New York, New York
10017 USA
Standard : NCC LP0002 Section 4.7

The product was received on Jun. 17, 2016, and testing was started from Jul. 12, 2016 and completed on Aug. 05, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013, NCC LP0002 (Jan. 10, 2018), KDB789033 D02 v02r01, KDB662911 D01 v02r01, ET Docket No. 13-49; FCC 16-24 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.


Approved by: Sam Chen

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TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB Ver1.0

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2.1	2.3	AC Power Line Conducted Emissions	PASS	-
2.2	4.7.3	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	PASS	-
2.3	4.7.5	6dB Spectrum Bandwidth	PASS	-
2.4	4.7.3	Maximum Conducted Output Power	PASS	-
2.5	4.7.3	Power Spectral Density	PASS	-
2.6	4.7.4	Radiated Emissions	PASS	-
2.7	4.7.4	Band Edge Emissions	PASS	-
2.8	4.7.8	Antenna Requirements	PASS	-

Note: Reference to Sporton Project No.: 661623-03、661623-05.

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Sandy Chuang

1. General Information

1.1. Product Details

Items	Description
Product Type	WLAN (4TX, 4RX)
Radio Type	Intentional Transceiver
Power Type	Form PoE
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5250 ~ 5350MHz / 5470 ~ 5725MHz
Channel Number	16 for 20MHz bandwidth ; 8 for 40MHz bandwidth 4 for 80MHz bandwidth

Channel Bandwidth (99%)	For non-beamforming mode For indoor/outdoor B2~B3 U-NII-2A: IEEE 802.11a: 15.54 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 16.50 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.18 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.39 MHz U-NII-2C: IEEE 802.11a: 15.28 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 16.24 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.47 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz For beamforming mode For indoor/outdoor B2~B3 U-NII-2A: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.19 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz U-NII-2C: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.19 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz
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Maximum Conducted Output Power	For Non-beamforming mode For indoor/outdoor B2~B3 U-NII-2A: IEEE 802.11a: 18.36 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 18.18 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.18 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 20.69 dBm U-NII-2C: IEEE 802.11a: 18.19 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 18.36 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.20 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.81 dBm For beamforming mode For indoor/outdoor B2~B3 U-NII-2A: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.75 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 17.88 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.47 dBm U-NII-2C: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.36 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 17.36 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.89 dBm
Carrier Frequencies	Please refer to section 1.4
Antenna	Please refer to section 1.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
TPC Function	☒ With TPC	☐ Without TPC
Weather Band (5600~5650MHz)	☒ With 5600~5650MHz	☐ Without 5600~5650MHz
Beamforming Function	☒ With beamforming	☐ Without beamforming

Note1: The EUT has beamforming function for 802.11n/ac.

Note2: The above information was declared by manufacturer.

Antenna and Bandwidth

Antenna	Four (TX)		
Bandwidth Mode	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X
IEEE 802.11n	V	V	X
IEEE 802.11ac	V	V	V

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	4	MCS 0-31
802.11n (HT40)	4	MCS 0-31
802.11ac (VHT20)	4	MCS 0-9/Nss1-4
802.11ac (VHT40)	4	MCS 0-9/Nss1-4
802.11ac (VHT80)	4	MCS 0-9/Nss1-4

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

Then EUT supports HT20 and HT40.

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

Note 3: Modulation modes consist of below configuration:

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

1.2. Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
PoE	UBIQUITI	GP-H480-050G	Input: 100-240V~50/60Hz, MAX 0.75A(0.75A) Output: 48V, 0.5A(0.5A)
Other			
Equipment Name	Brand Name	Model Name	Remark
Power cable*1	UBIQUITI	CH-1902+CH-1106	Non-shielded, 0.6m

1.3. Table for Filed Antenna

For 2.4GHz WLAN function

Ant.	Port	Brand	Model Name	Antenna Type	Connector	TX/RX Gain (dBi)
1	1/2	-	-	PIFA Antenna	N/A	3
2	3/4	-	-	PIFA Antenna	N/A	3

For 5GHz WLAN function

Ant.	Port	Brand	Model Name	Antenna Type	Connector	TX/RX Gain (dBi)
3	1/2	-	-	PIFA Antenna	N/A	4
4	3/4	-	-	PIFA Antenna	N/A	4

Note: The above information was declared by manufacturer.

The EUT has four antennas.

For 2.4GHz WLAN function

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

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

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

For 5GHz WLAN function

IEEE 802.11a/n/ac mode (4TX/4RX): The module has four chains.

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

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

1.4. Table for Carrier Frequencies

There are three bandwidth systems.

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

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

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

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

1.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Port
AC Power Conducted Emission	Intentional-CTX		-	-	-
	Unintentional-CRX		-	-	-
Max. Conducted Output Power	For non-beamforming mode				
	For indoor/outdoor B2~B3				
	11a/BPSK	U-NII-2A U-NII-2C	6Mbps	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4
	For beamforming mode				
	For indoor/outdoor B2~B3				
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4

Power Spectral Density	For non-beamforming mode				
	For indoor/outdoor B2~B3				
	11a/BPSK	U-NII-2A U-NII-2C	6Mbps	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4
	For beamforming mode				
	For indoor/outdoor B2~B3				
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	For non-beamforming mode				
	For indoor/outdoor B2~B3				
	11a/BPSK	U-NII-2A U-NII-2C	6Mbps	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4
	For beamforming mode				
	For indoor/outdoor B2~B3				
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4

6dB Spectrum Bandwidth Measurement	For non-beamforming mode				
	11a/BPSK	U-NII-2C	6Mbps	144	1+2+3+4
	11ac VHT20	U-NII-2C	MCS0/Nss1	144	1+2+3+4
	11ac VHT40	U-NII-2C	MCS0/Nss1	142	1+2+3+4
	11ac VHT80	U-NII-2C	MCS0/Nss1	138	1+2+3+4
	For beamforming mode				
	11ac VHT20	U-NII-2C	MCS0/Nss1	144	1+2+3+4
	11ac VHT40	U-NII-2C	MCS0/Nss1	142	1+2+3+4
	11ac VHT80	U-NII-2C	MCS0/Nss1	138	1+2+3+4
Radiated Emission Below 1GHz	Intentional-CTX		-	-	-
	Unintentional-CRX		-	-	-
Radiated Emission Unintentional 1GHz~5 th Harmonic	Unintentional-CRX		-	-	-
Radiated Emission Intentional 1GHz~10 th Harmonic	For non-beamforming mode				
	11a/BPSK	U-NII-2A U-NII-2C	6Mbps	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4
	For beamforming mode				
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4

Band Edge Emission	For non-beamforming mode				
	11a/BPSK	U-NII-2A U-NII-2C	6Mbps	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4
	For beamforming mode				
	11ac VHT20	U-NII-2A U-NII-2C	MCS0/Nss1	52/60/64/ 100/116/140/144	1+2+3+4
	11ac VHT40	U-NII-2A U-NII-2C	MCS0/Nss1	54/62/ 102/110/134/142	1+2+3+4
	11ac VHT80	U-NII-2A U-NII-2C	MCS0/Nss1	58/ 106/122/138	1+2+3+4

Note 1: VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

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

The following test modes were performed for all tests:

For Conducted Emission test:

Intentional-CTX

Mode 1. EUT + CTX - 2.4GHz

Mode 2. EUT + CTX - 5GHz

Mode 1 generated the worst test result, so it was recorded in this report.

Unintentional-CRX

Mode 1. EUT + CRX - 2.4GHz

Mode 2. EUT + CRX - 5GHz

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

For Radiated Emission test:

<For 2.4GHz>

The EUT was performed at Y axis and Z axis position. The worst case was found at Y axis, thus the measurement will follow this same test configuration.

<For 5GHz>

The EUT was performed at Y axis and Z axis position. The worst case was found at Z axis, thus the measurement will follow this same test configuration.

For Radiated Emission test (Below 1GHz):

Intentional-CTX

Mode 1. EUT + 2.4GHz in Y axis

Mode 2. EUT + 5GHz in Z axis

For operating mode 2 is the worst case and it was record in this test report.

Unintentional-CRX

Mode 1. EUT + 2.4GHz in Y axis

Mode 2. EUT + 5GHz in Z axis

For operating mode 2 is the worst case and it was record in this test report.

For Radiated Emission test (Unintentional 1GHz~5th Harmonic):

Mode 1. EUT + 2.4GHz in Y axis

Mode 2. EUT + 5GHz in Z axis

For operating mode 1 is the worst case and it was record in this test report.

For Radiated Emission test (Intentional 1GHz~10th Harmonic):

Mode 1. EUT + 5GHz in Z axis

1.6. Table for Testing Locations

Test Site Location		
For Other tests		
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	
For Below 1GHz test		
Address:	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
TEL:	886-3-327-3456	
FAX:	886-3-327-0973	
Test Site No.	Site Category	Location
03CH02-HY(Below 1GHz: Intentional-CTX / Unintentional-CRX)	SAC	Hwa Ya
03CH05-CB(Above 1GHz: Unintentional 1GHz~5 th – CRX)	SAC	Hsin Chu
03CH01-CB(Above 1GHz: Intentional 1GHz~10 th – CTX)	SAC	Hsin Chu
CO01-CB(Intentional-CTX / Unintentional-CRX)	Conduction	Hsin Chu
TH01-CB	OVEN Room	Hsin Chu

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC).

1.7. Table for Supporting Units

For Test Site No: CO01-CB (Intentional-CTX / Unintentional-CRX)

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	N/A

For Test Site No: 03CH02-HY (Below 1GHz: Intentional-CTX / Unintentional-CRX)

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	N/A

For Test Site No: 03CH05-CB (Above 1GHz: Unintentional 1GHz~5th – CRX)

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	N/A

For Test Site No: 03CH01-CB

(Above 1GHz: non-beamforming mode / Intentional 1GHz~10th – CTX)

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	N/A

(Above 1GHz: beamforming mode / Intentional 1GHz~10th – CTX)

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	N/A
RX Device	UBIQUITI	UAP-AC-HD	SWX-UAPACHD

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	N/A

1.8. 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 indoor/outdoor B2~B3

Test Software Version	QCA						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	10.5	10.5	10.5	10.5	10.5	10.5	10.5
802.11ac MCS0/Nss1 VHT20	10.5	10.5	10.5	11	11	11	11
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	13.5	13.5	12.5	14	13.5	14	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz		5690 MHz
	13		11		15.5		17

For beamforming mode

For indoor/outdoor B2~B3

Test Software Version	QCA v3.0.197.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11ac MCS0/Nss1 VHT20	16.5	16.5	16.5	16.5	16.5	16.5	17
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	16.5	16.5	16.5	16.5	16.5	17.5	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz	5530 MHz	5610 MHz	5690 MHz			
	16.5	15	16.5	17.5			

1.9. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting/receiving 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 7 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 Telnet.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by RX Deviec and transmit duty cycle no less 98%

1.10. Duty Cycle

For non-beamforming mode:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Min. VBW (kHz)
802.11a	2.020	2.140	94.39	0.25	0.50
802.11ac MCS0/Nss1 VHT20	5.000	5.100	98.04	0.09	0.01
802.11ac MCS0/Nss1 VHT40	2.320	2.540	91.34	0.39	0.43
802.11ac MCS0/Nss1 VHT80	1.136	1.224	92.81	0.32	0.88

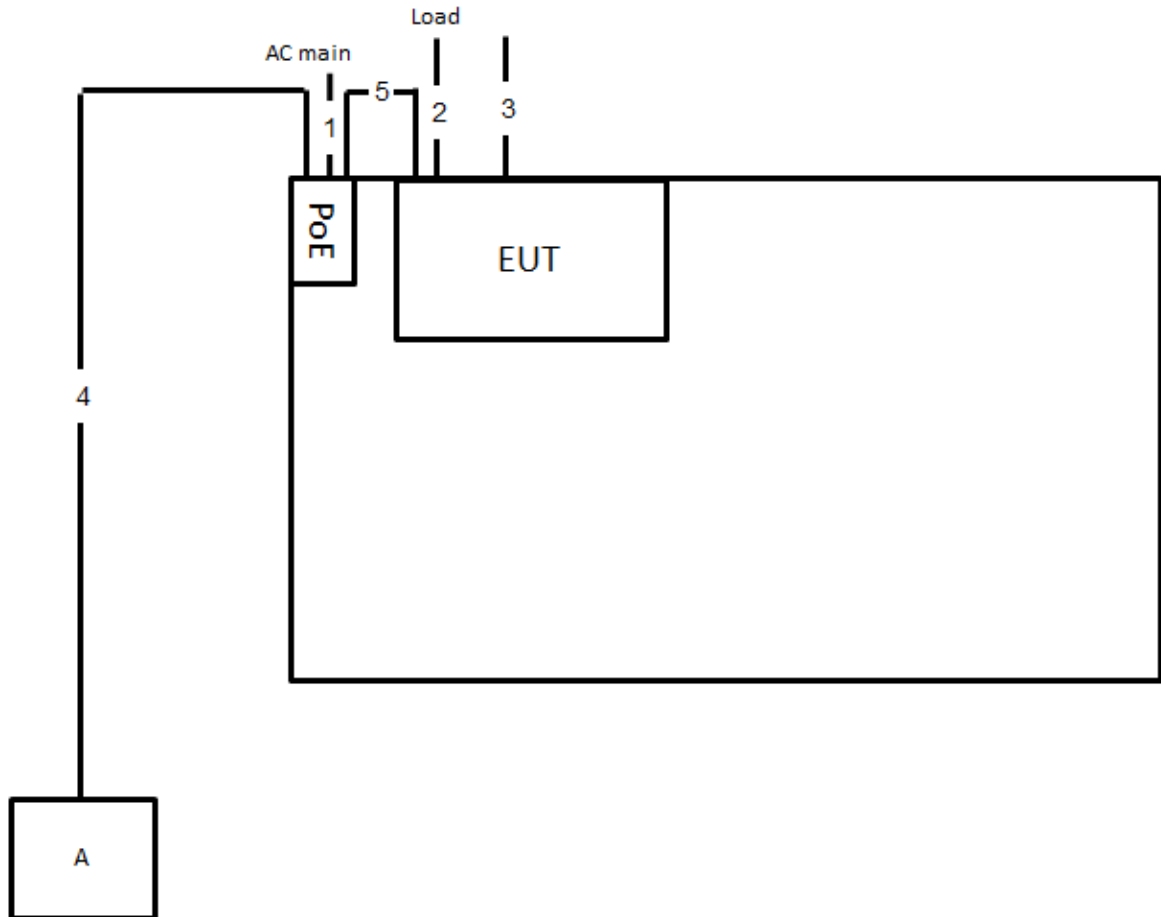
For beamforming mode:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Min. VBW (kHz)
802.11ac MCS0/Nss1 VHT20	1.751	1.925	90.96	0.41	0.57
802.11ac MCS0/Nss1 VHT40	1.664	1.854	89.75	0.47	0.60
802.11ac MCS0/Nss1 VHT80	1.915	2.105	90.97	0.41	0.52

1.11. Test Configurations

1.11.1. AC Power Line Conduction Emissions Test Configuration

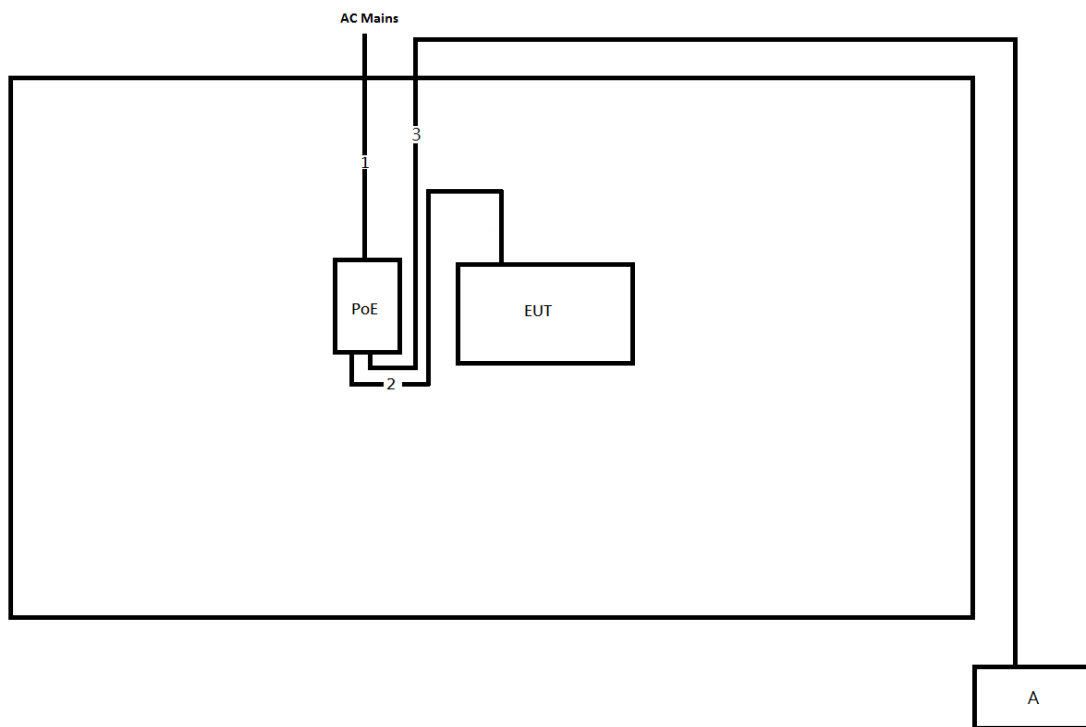
(Intentional-CTX / Unintentional-CRX)



Item	Connection	Shielded	Length	Brand	Model No.
1	Power cable	No	0.6m	-	-
2	RJ-45 cable	No	1.5m	Powersync	CLN5GBR9020
3	USB cable	Yes	2m	BENEVO	BUSB0150AMMB
4	RJ-45 cable	No	10m	-	-
5	RJ-45 cable	No	1.5m	Powersync	CLN5GBR9020

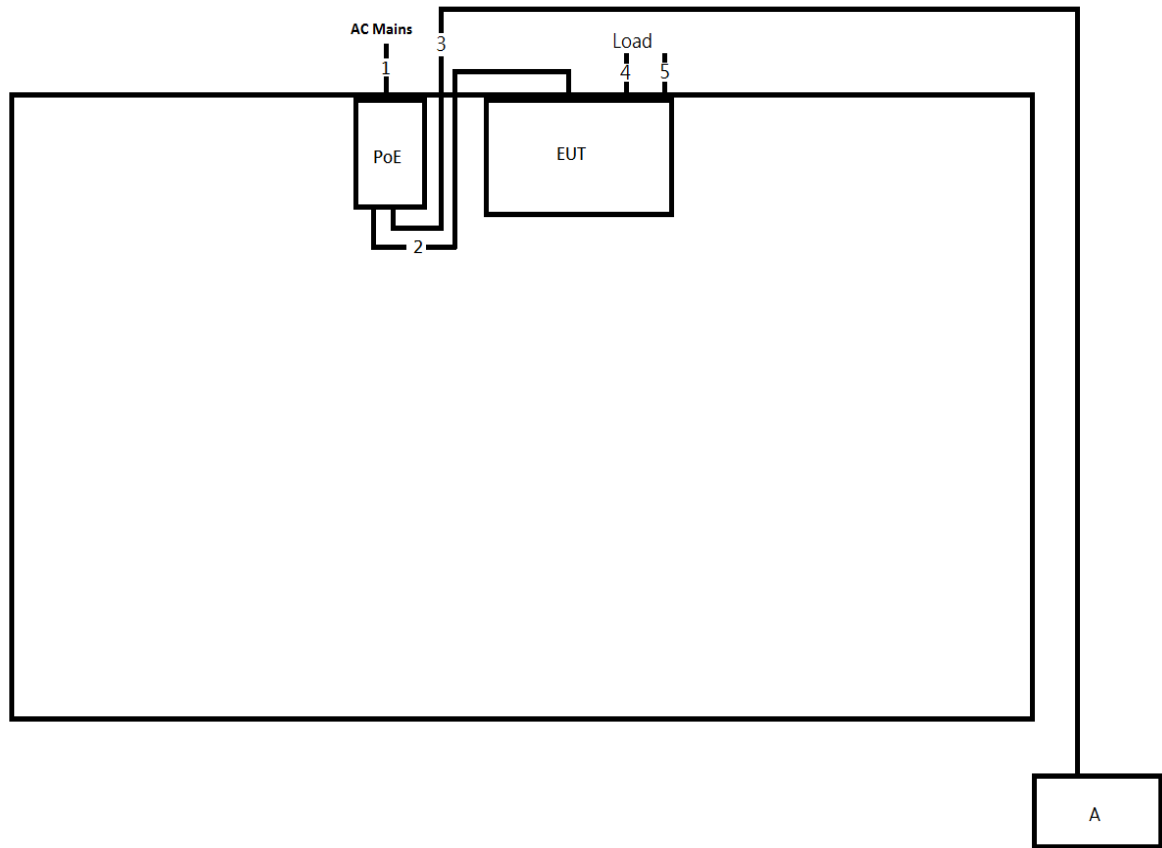
1.11.2. Radiation Emissions Test Configuration

(Below 1GHz: Intentional-CTX)



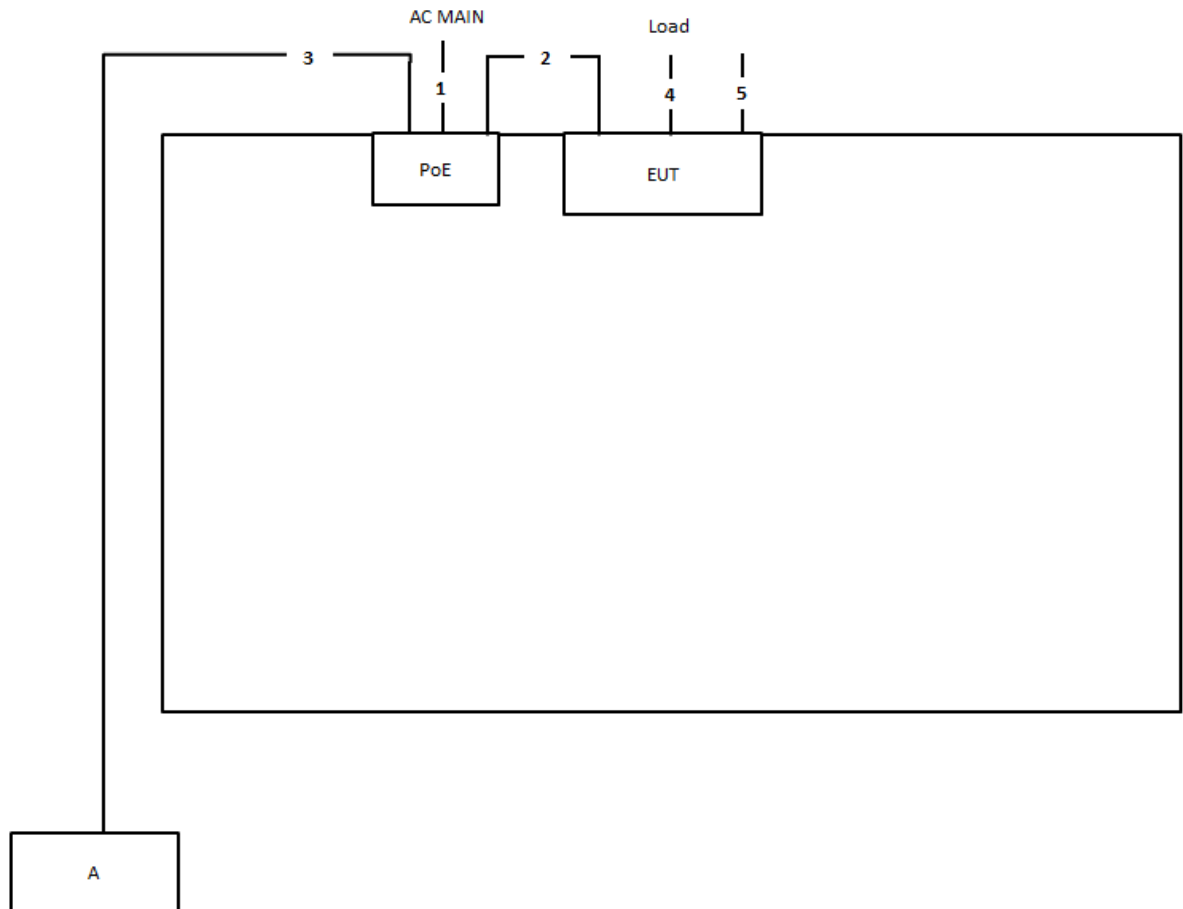
Item	Connection	Shielded	Length	Brand	Model No.
1	Power Cable	No	0.6m	-	-
2	RJ-45 cable	No	1m	Power Sync	CAT6E-01
3	RJ-45 cable	No	10 m	-	-

(Below 1GHz: Unintentional-CRX)



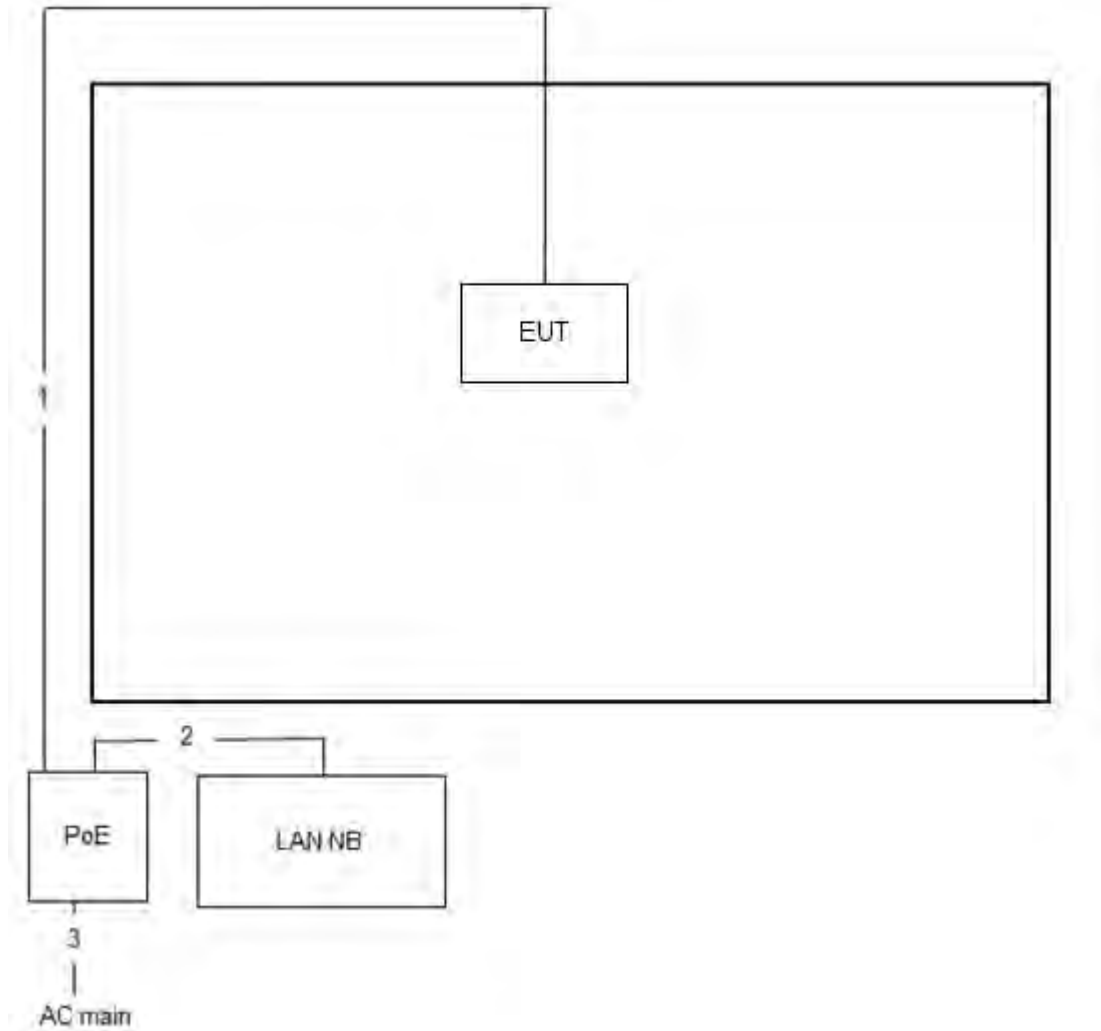
Item	Connection	Shielded	Length	Brand	Model No.
1	Power cable	No	0.6m	-	-
2	RJ-45 cable	No	1m	Power Sync	CAT6E-01
3	RJ-45 cable	No	10m	-	-
4	RJ-45 cable	No	2m	Power Sync	CAT6E-02
5	USB cable	Yes	1.2m	Hawk	04-HTE120RD

(Above 1GHz: Unintentional 1GHz~5th-CRX)



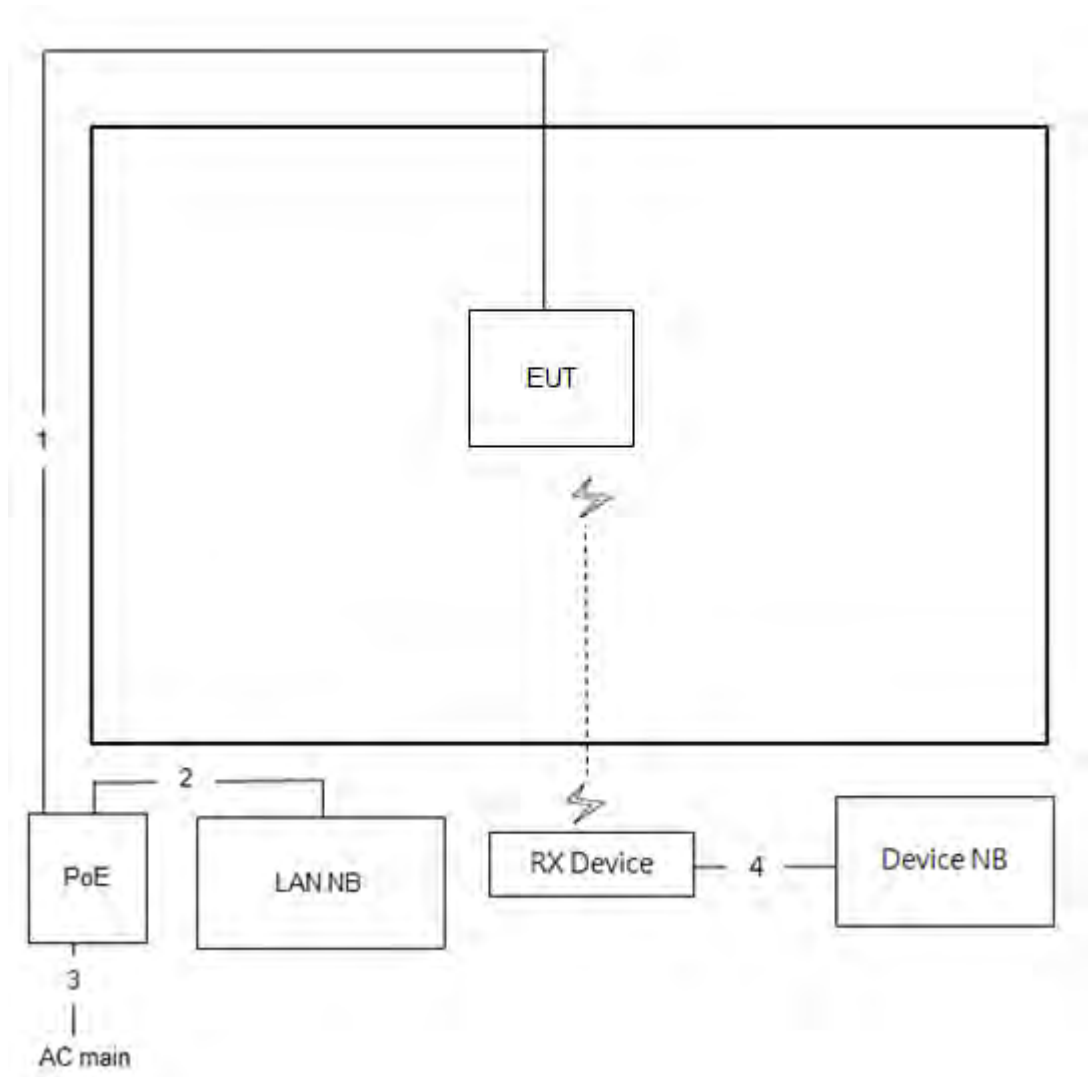
Item	Connection	Shielded	Length	Brand	Model No.
1	Power cable	No	0.6m	-	-
2	RJ-45 cable	No	1.5m	PowerSync	C65B10FL
3	RJ-45 cable	No	10m	-	-
4	RJ-45 cable	No	1.5m	PowerSync	C65B10FL
5	USB cable	Yes	2m	MYCE II	R.Link II

(Above 1GHz: Intentional 1GHz~10th-CTX: non-beamforming mode)



Item	Connection	Shielded	Length	Brand	Model No.
1	RJ-45 cable	No	10m	PowerSync	C65B10FL
2	RJ-45 cable	No	1.5m	-	-
3	Power cable	No	0.6m	-	-

(Above 1GHz: Intentional 1GHz~10th-CTX: beamforming mode)



Item	Connection	Shielded	Length	Brand	Model No.
1	RJ-45 cable	No	10m	PowerSync	C65B10FL
2	RJ-45 cable	No	1.5m	-	-
3	Power cable	No	0.6m	-	-
4	RJ-45 cable	No	1.5m	-	-

2. Test Result

2.1. AC Power Line Conducted Emissions Measurement

2.1.1. Limit

For this product that is designed to connect 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

2.1.2. Measuring Instruments and Setting

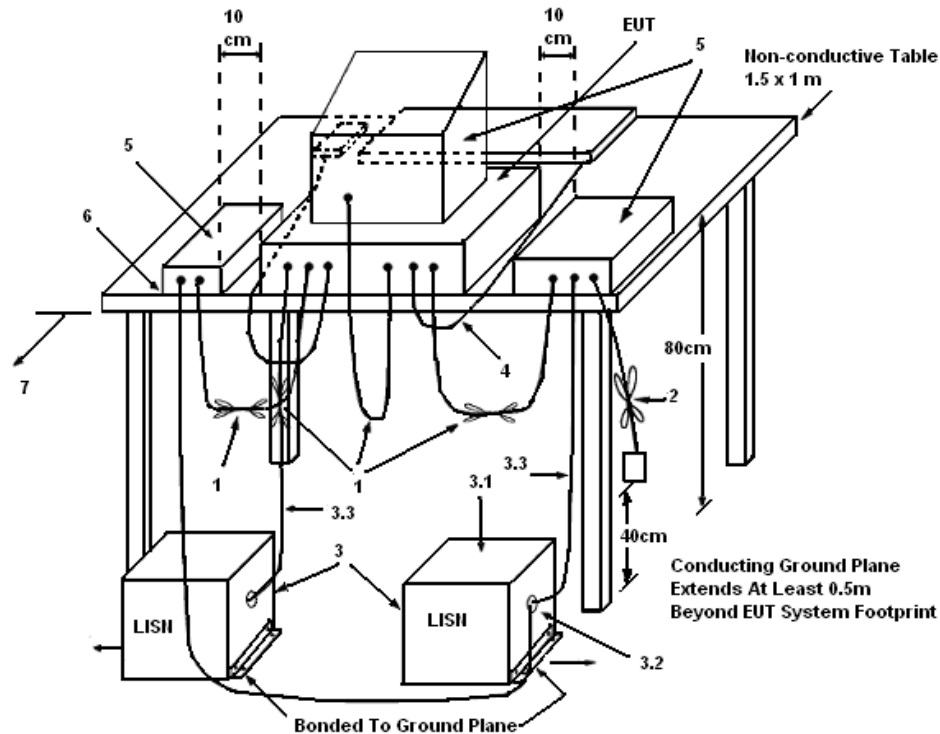
Please refer to section 3 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

2.1.3. 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.

2.1.4. 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.



2.1.5. Test Deviation

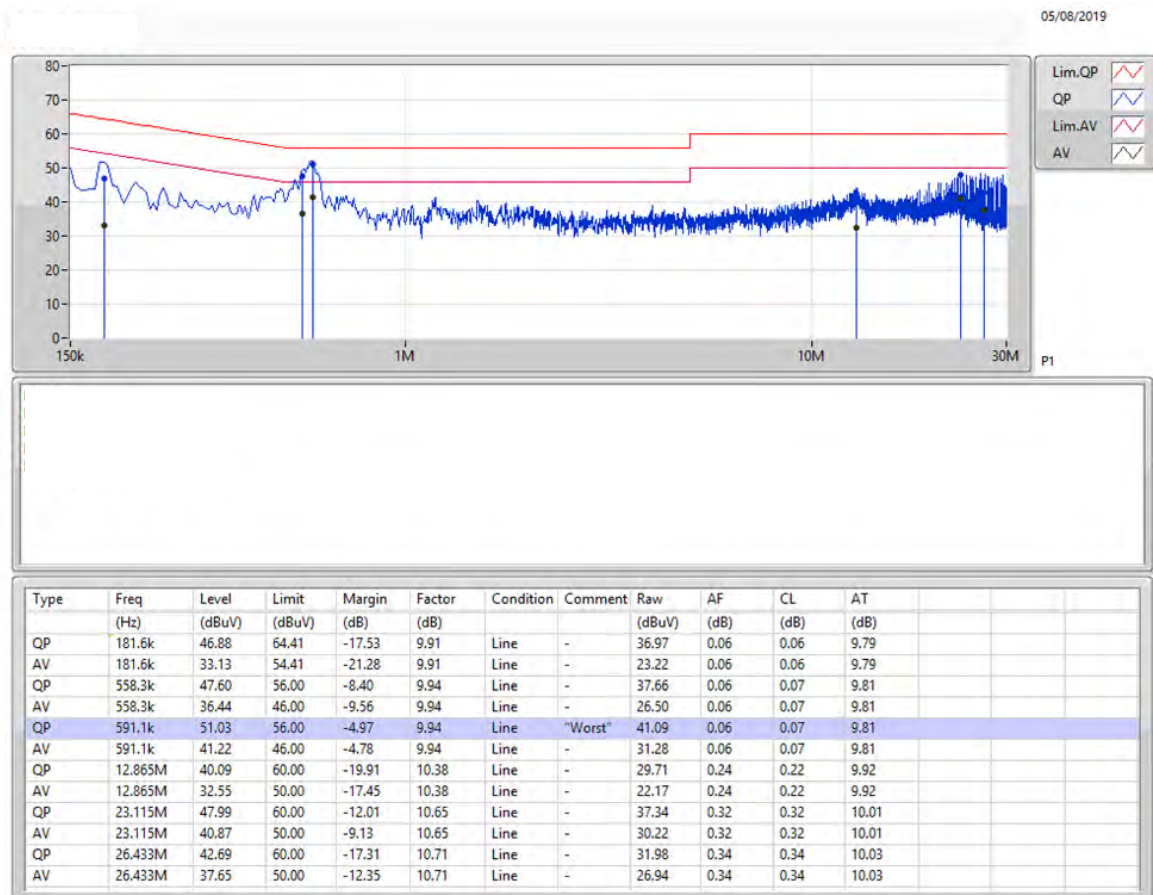
There is no deviation with the original standard.

2.1.6. EUT Operation during Test

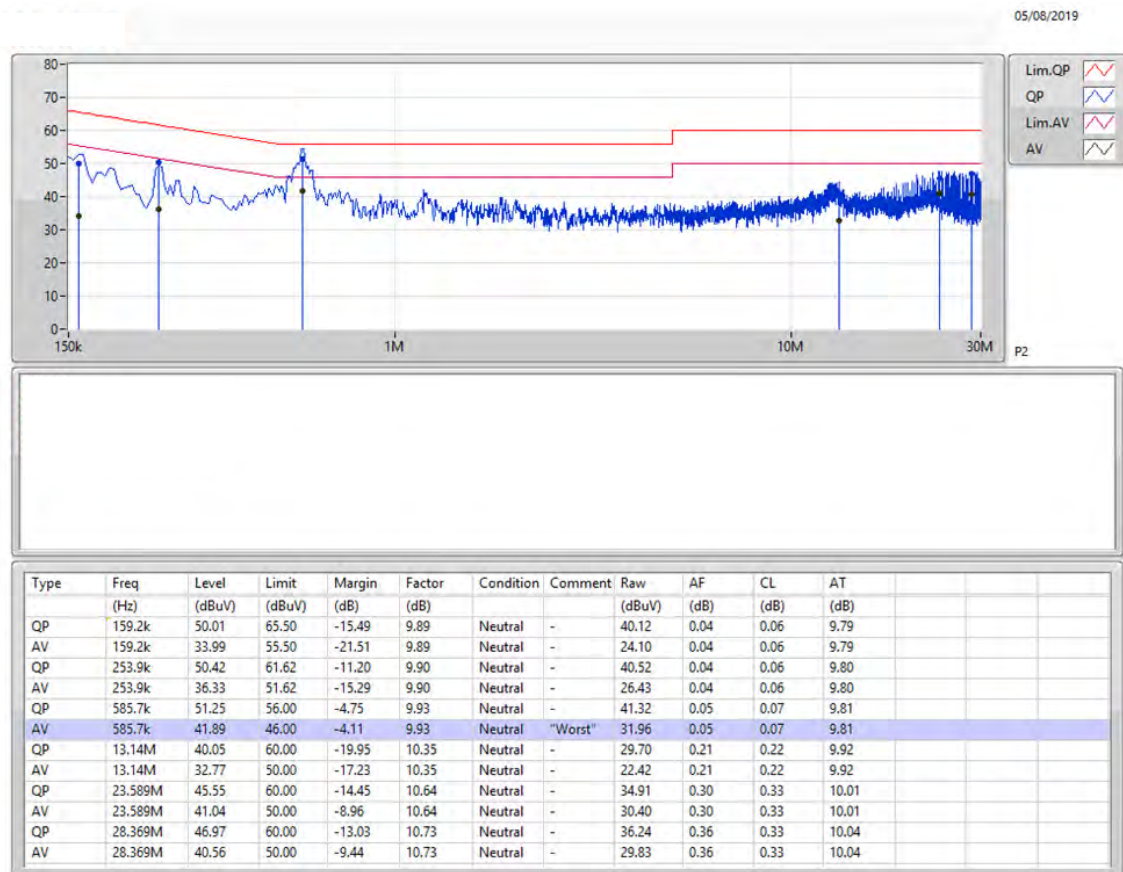
The EUT was placed on the test table and programmed in normal function.

2.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23.9~24.3°C	Humidity	58.1~59.2%
Test Engineer	Max Lin	Phase	Line
Configuration	Intentional-CTX	Test Mode	Mode 1



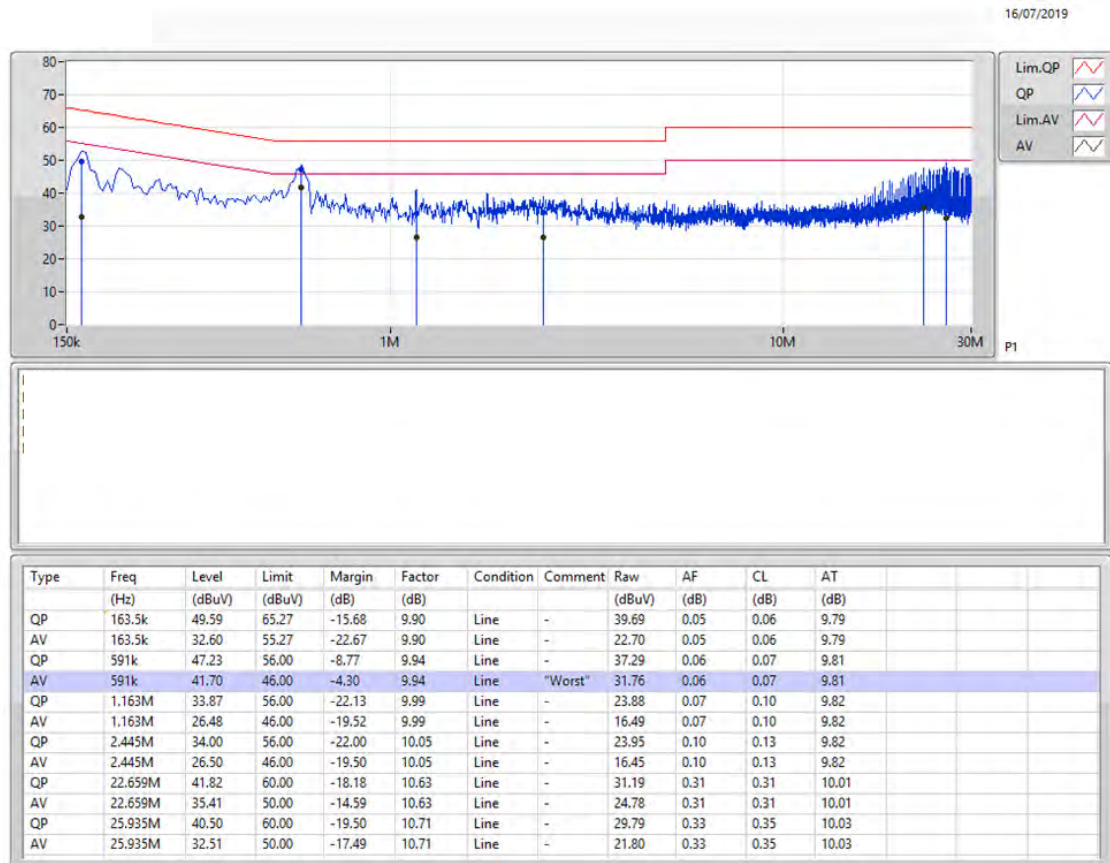
Temperature	23.9~24.3°C	Humidity	58.1~59.2%
Test Engineer	Max Lin	Phase	Neutral
Configuration	Intentional-CTX	Test Mode	Mode 1



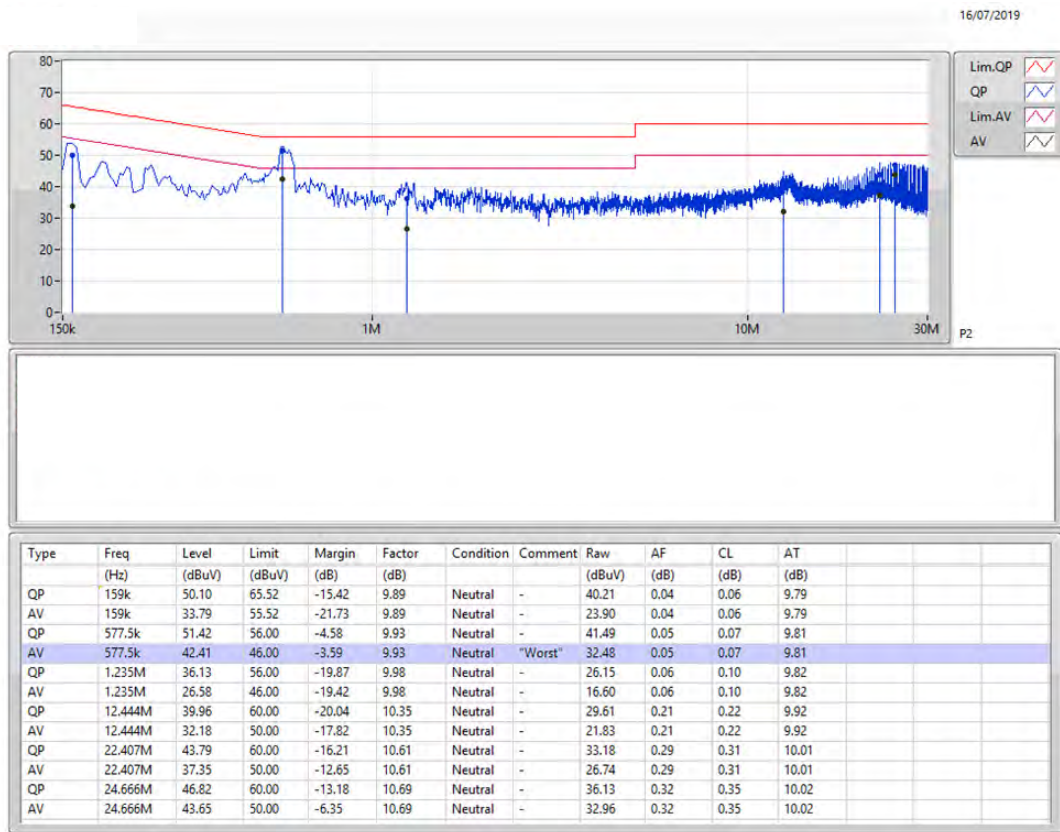
Note:

Level = Read Level + LISN Factor + Cable Loss.

Temperature	23.9~24.3°C	Humidity	58.1~59.2%
Test Engineer	Max Lin	Phase	Line
Configuration	Unintentional-CRX	Test Mode	Mode 2



Temperature	23.9~24.3°C	Humidity	58.1~59.2%
Test Engineer	Max Lin	Phase	Neutral
Configuration	Unintentional-CRX	Test Mode	Mode 2



Note:

Level = Read Level + LISN Factor + Cable Loss.

2.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

2.2.1. Limit

No restriction limits.

2.2.2. Measuring Instruments and Setting

Please refer to section 3 of equipments list in this report. The following table is the setting of the spectrum analyzer.

26dB Bandwidth	
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RBW	Approximately 1% of the emission bandwidth
VBW	VBW > RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	Setting
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max Hold

2.2.3. Test Procedures

For Radiated 26dB Bandwidth and 99% Occupied Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.
Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2.2.4. Test Setup Layout

For Radiated 26dB Bandwidth and 99% Occupied Bandwidth Measurement:

This test setup layout is the same as that shown in section 2.6.4.



2.2.5. Test Deviation

There is no deviation with the original standard.

2.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.2.7. Test Result of 26dB Bandwidth and 99% Occupied Bandwidth

Temperature	22°C	Humidity	54%
Test Engineer	Gary Chu		

For non-beamforming mode

For indoor/outdoor B2~B3

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	17.04	15.11
	5300 MHz	17.48	15.54
	5320 MHz	17.48	15.54
	5500 MHz	17.13	15.02
	5580 MHz	17.48	15.28
	5700 MHz	17.22	14.94
802.11ac MCS0/Nss1 VHT20	5260 MHz	18.35	15.89
	5300 MHz	18.44	16.50
	5320 MHz	18.44	16.50
	5500 MHz	18.26	15.54
	5580 MHz	18.52	16.24
	5700 MHz	18.26	15.63
802.11ac MCS0/Nss1 VHT40	5270 MHz	39.42	36.18
	5310 MHz	39.42	35.89
	5510 MHz	39.57	36.47
	5550 MHz	39.86	36.32
	5670 MHz	39.28	36.04
802.11ac MCS0/Nss1 VHT80	5290 MHz	79.13	74.39
	5530 MHz	79.71	76.12
	5610 MHz	78.84	74.67

Straddle Channel

Mode	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII 2C 26dB BW (MHz)	UNII 3 26dB BW (MHz)	UNII 2C 99% BW (MHz)	UNII 3 99% BW (MHz)
802.11a	5720 MHz	26.70	15.72	5701.74	5711.75	23.26	3.44	13.25	2.47
802.11ac MCS0/Nss1 VHT20	5720 MHz	33.39	16.67	5701.65	5711.32	23.35	10.04	13.68	2.99
802.11ac MCS0/Nss1 VHT40	5710 MHz	80.87	42.55	5671.01	5690.17	53.99	26.88	34.83	7.72
802.11ac MCS0/Nss1 VHT80	5690 MHz	122.90	75.83	5631.16	5651.51	93.84	29.06	73.49	2.34

For beamforming mode

For indoor/outdoor B2~B3

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5260 MHz	23.13	17.89
	5300 MHz	22.17	18.06
	5320 MHz	21.91	17.97
	5500 MHz	22.87	17.97
	5580 MHz	22.43	18.06
	5700 MHz	21.65	17.97
802.11ac MCS0/Nss1 VHT40	5270 MHz	45.07	37.19
	5310 MHz	44.64	37.05
	5510 MHz	44.93	36.90
	5550 MHz	45.51	37.19
	5670 MHz	44.64	36.90
802.11ac MCS0/Nss1 VHT80	5290 MHz	87.54	76.41
	5530 MHz	86.09	76.41
	5610 MHz	85.80	76.41

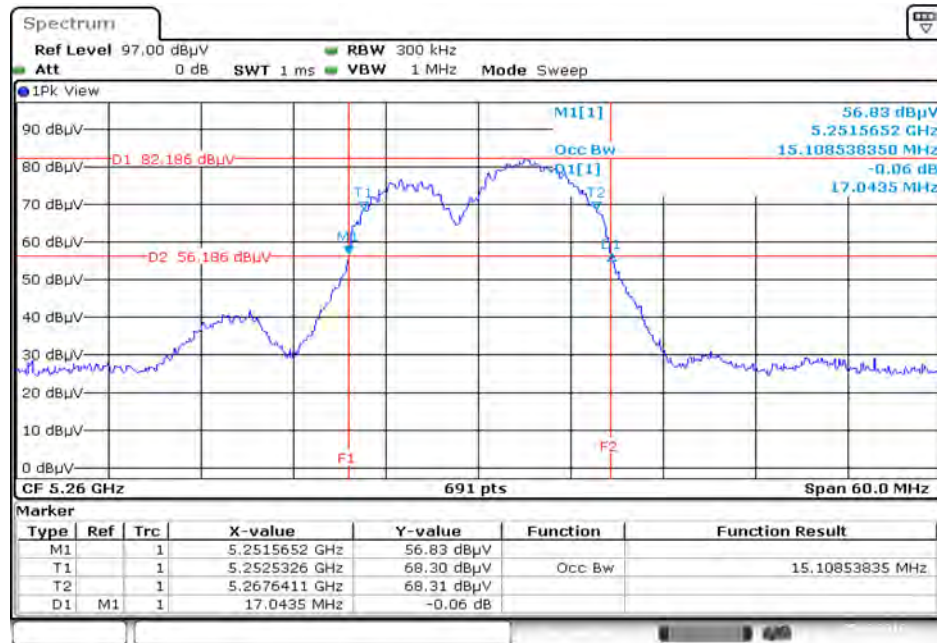
Straddle Channel

Mode	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII 2C 26dB BW (MHz)	UNII 3 26dB BW (MHz)	UNII 2C 99% BW (MHz)	UNII 3 99% BW (MHz)
802.11ac MCS0/Nss1 VHT20	5720 MHz	20.35	17.71	5709.91	5711.14	15.09	5.26	13.86	3.86
802.11ac MCS0/Nss1 VHT40	5710 MHz	40.29	36.32	5690.15	5691.91	34.85	5.44	33.09	3.23
802.11ac MCS0/Nss1 VHT80	5690 MHz	79.71	75.54	5650.29	5652.37	74.71	5.00	72.63	2.92

For non-beamforming mode

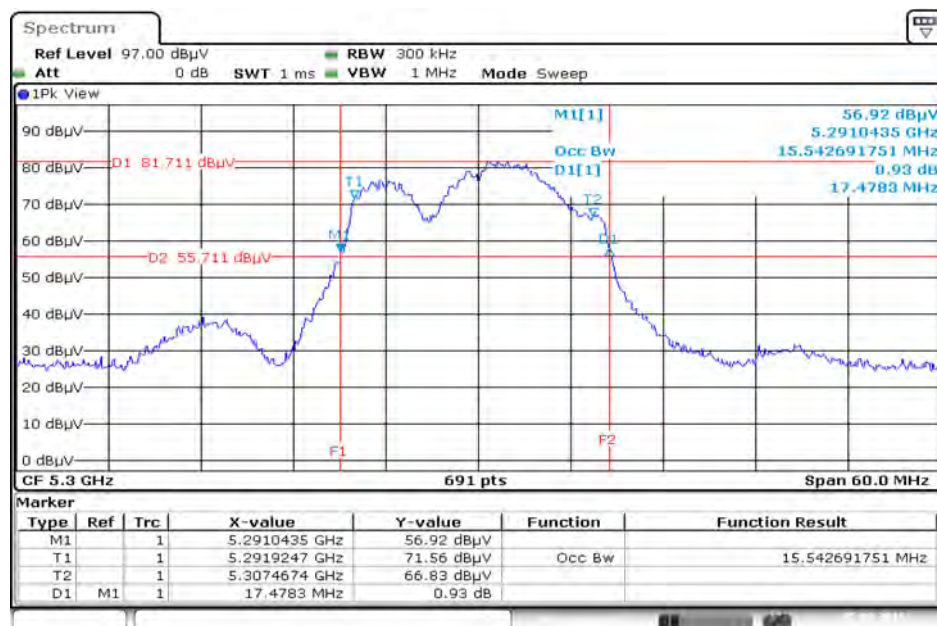
For indoor/outdoor B2~B3

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



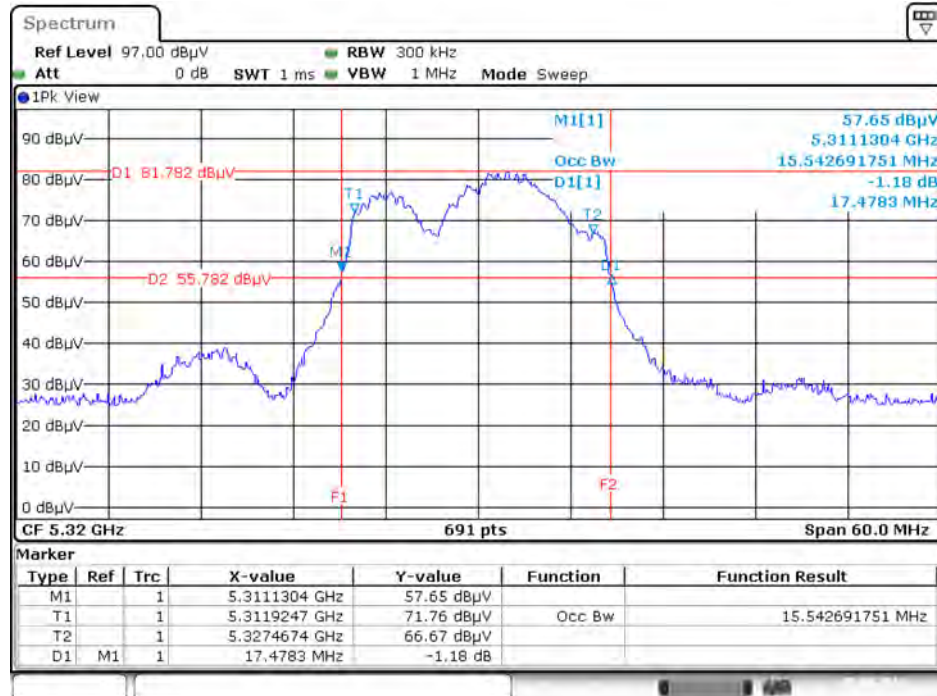
Date: 5.AUG.2016 11:45:15

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

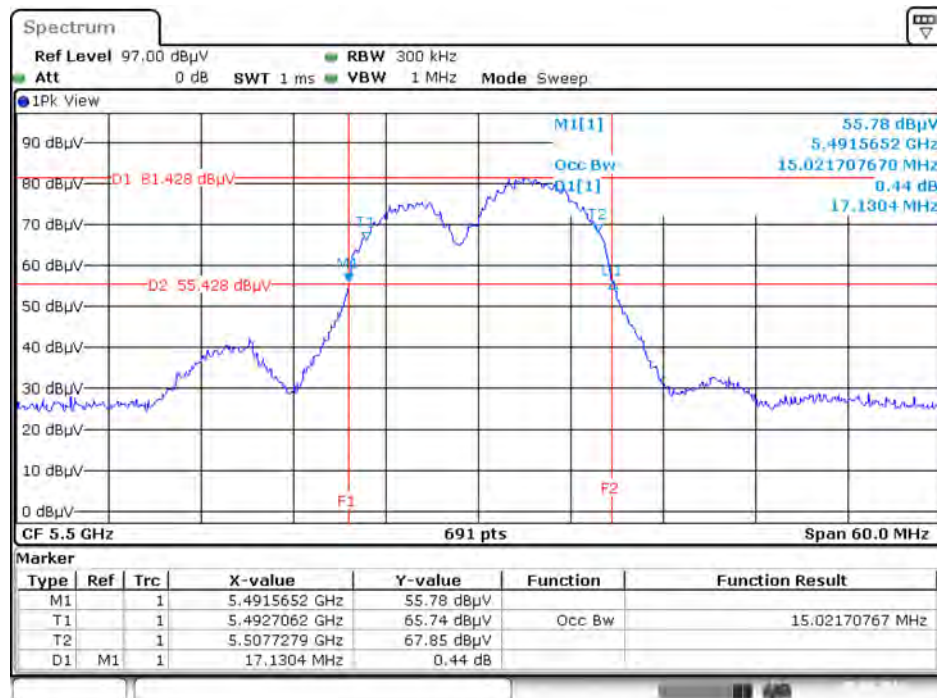


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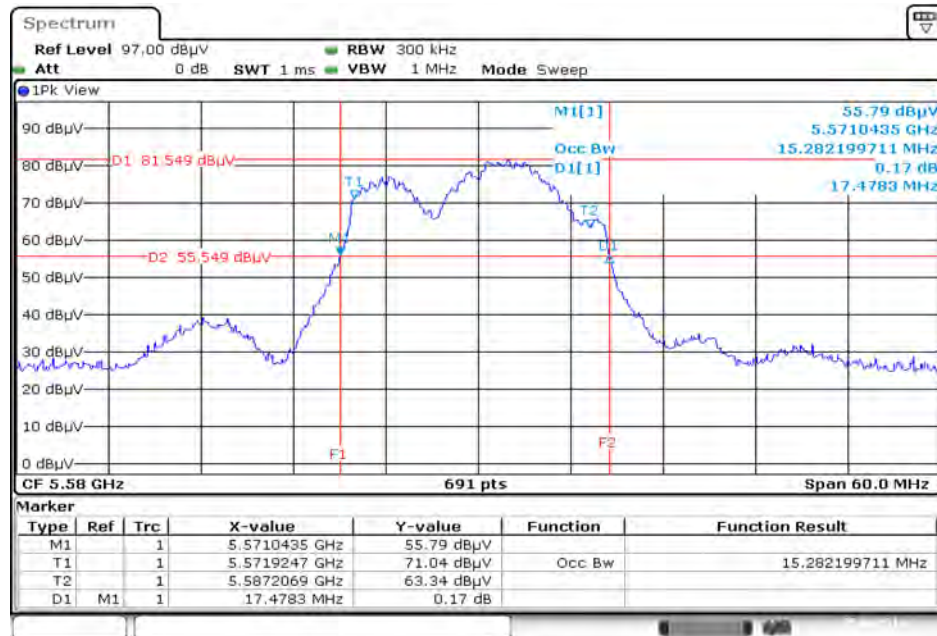
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Port 1 + Port 2 + Port 3 + Port 4 / 5320 MHz



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

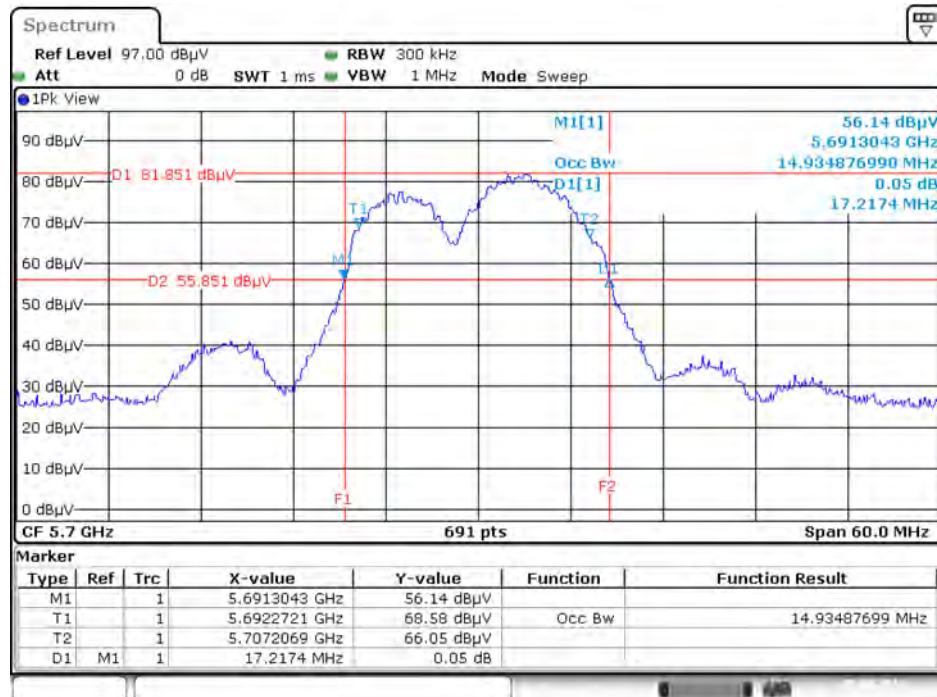


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Port 1 + Port 2 + Port 3 + Port 4 / 5580 MHz



Date: 5.AUG.2016 11:47:13

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



Date: 5.AUG.2016 11:47:32

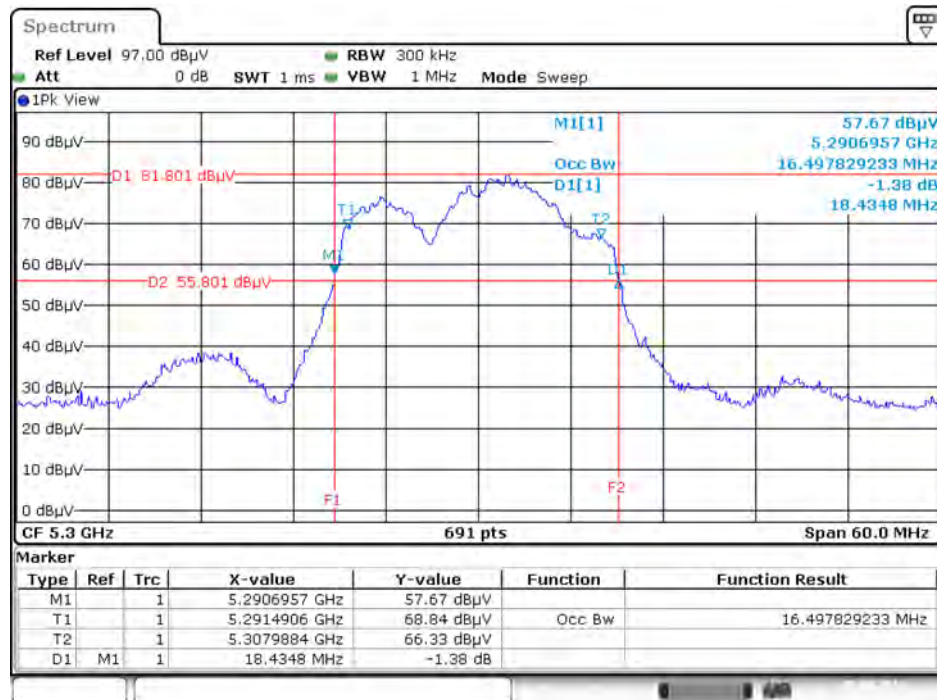


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5260 MHz



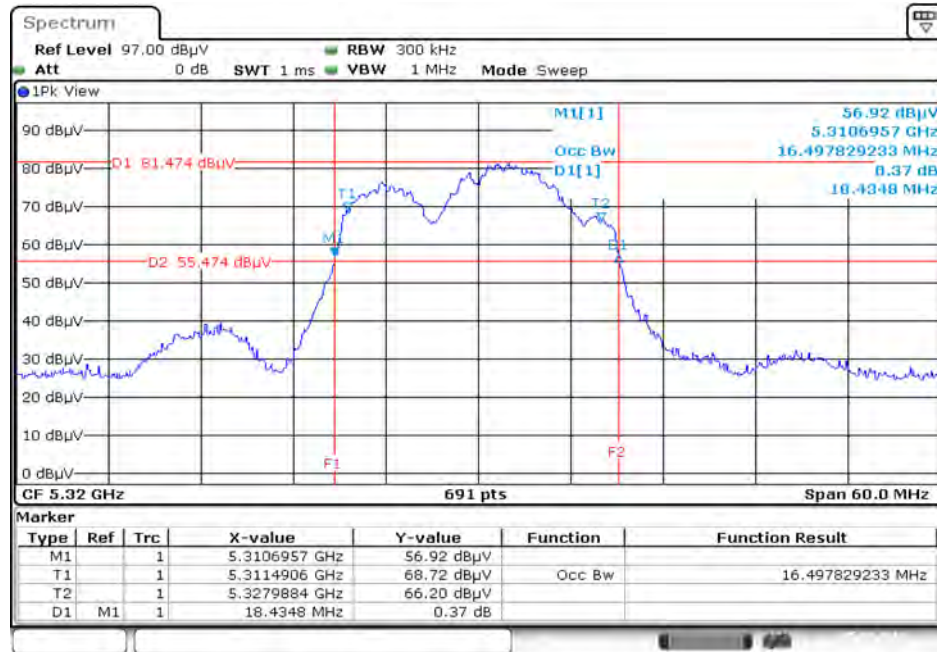
Date: 5.AUG.2016 11:52:45

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



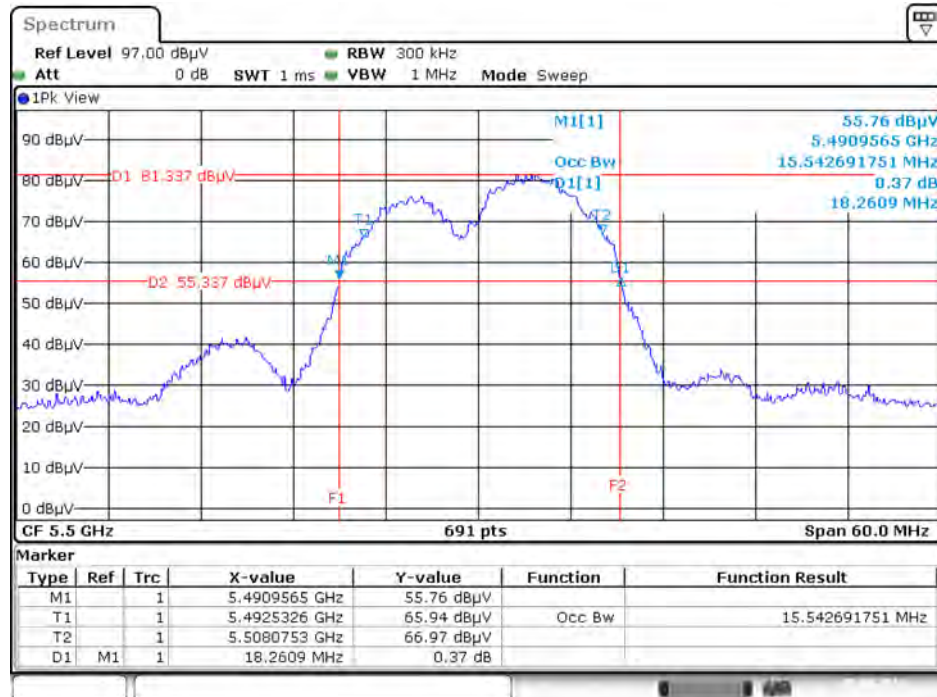
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5320 MHz



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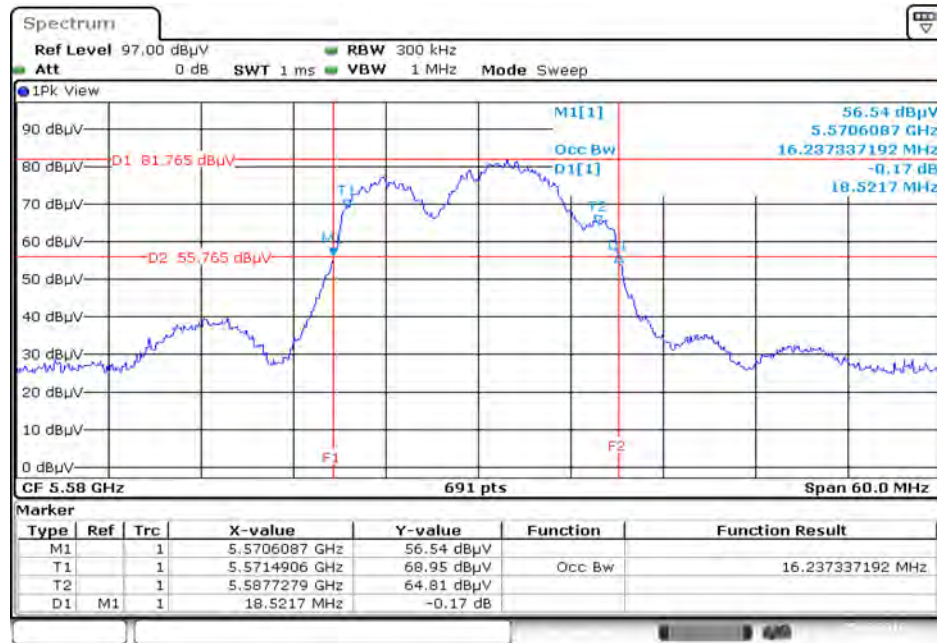
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5500 MHz



Date: 5.AUG.2016 11:54:06

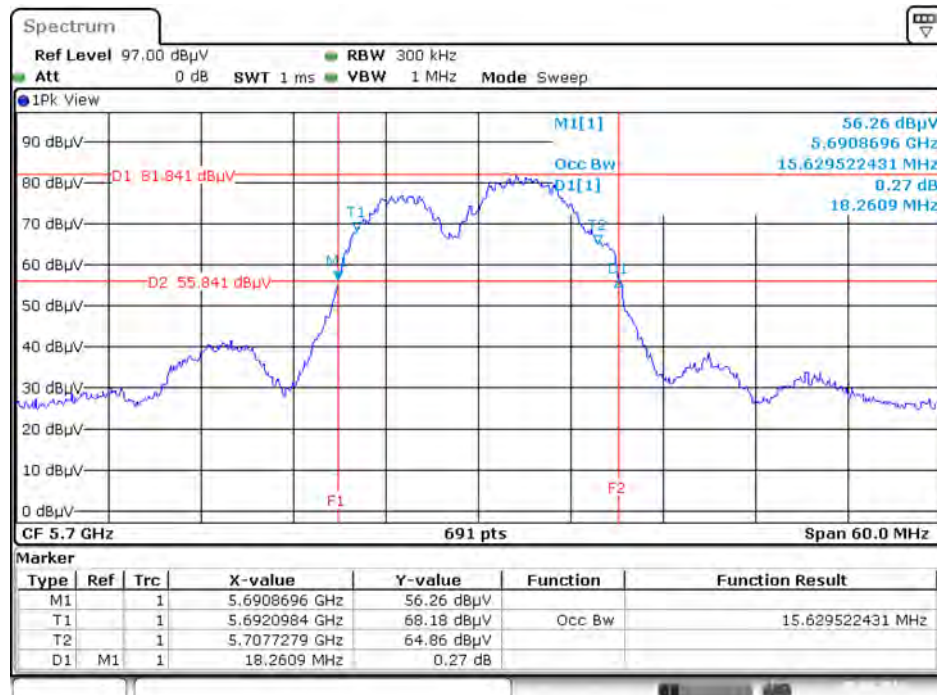


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1
VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5580 MHz



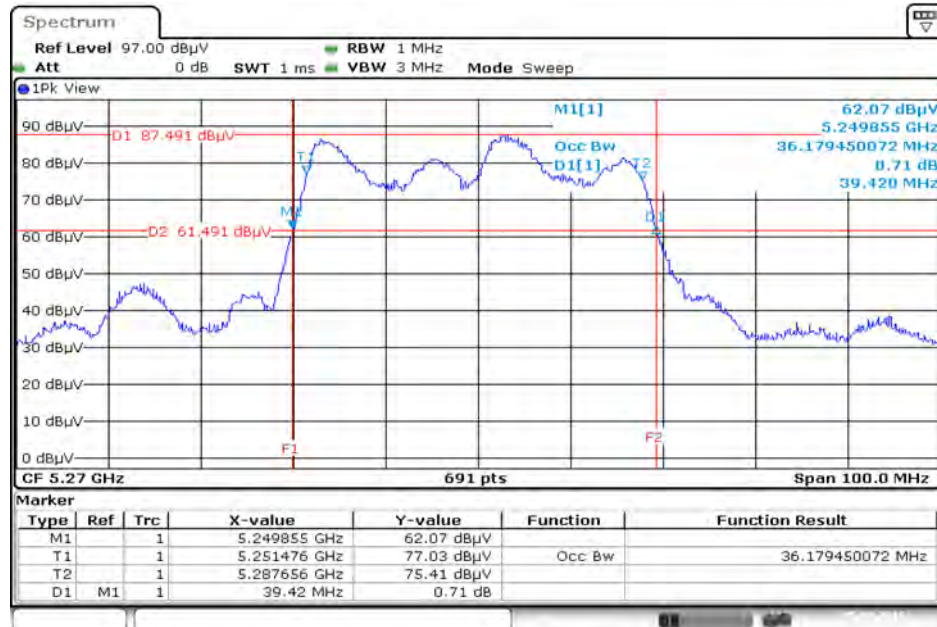
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1
VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5700 MHz



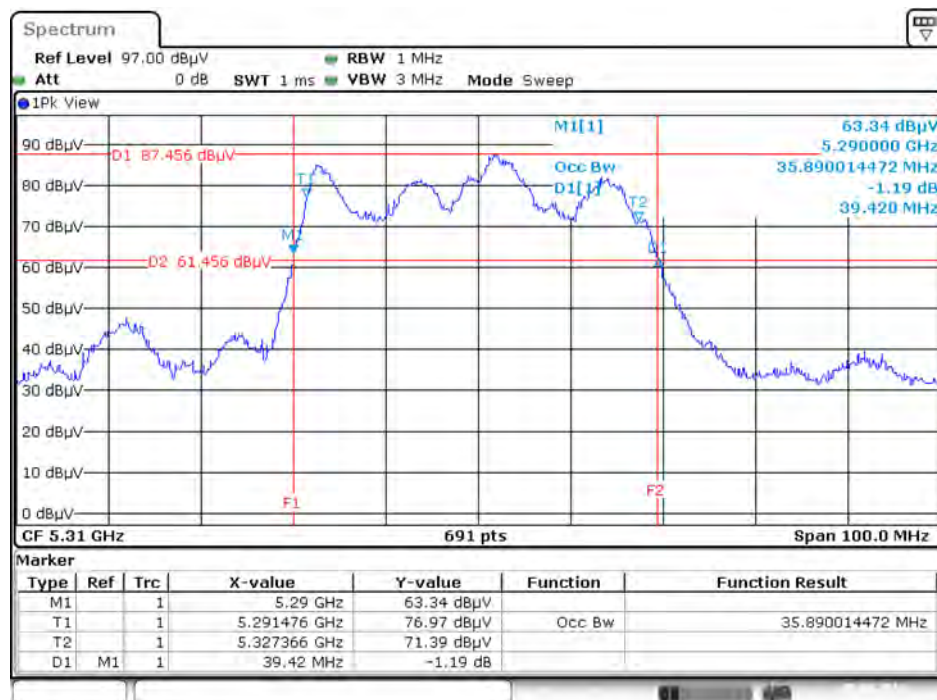
Date: 5.AUG.2016 11:55:05

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



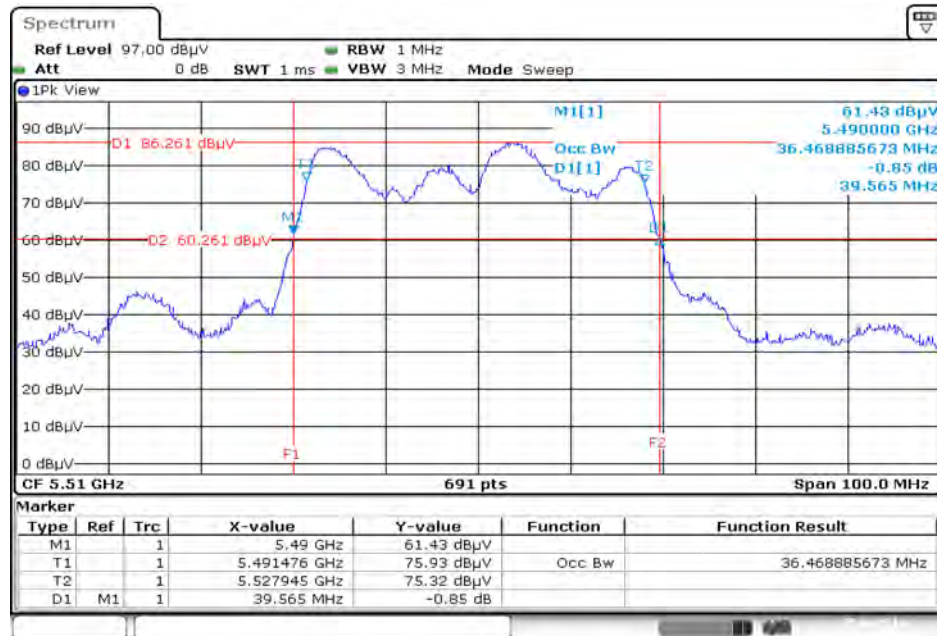
Date: 5.AUG.2016 11:59:38

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



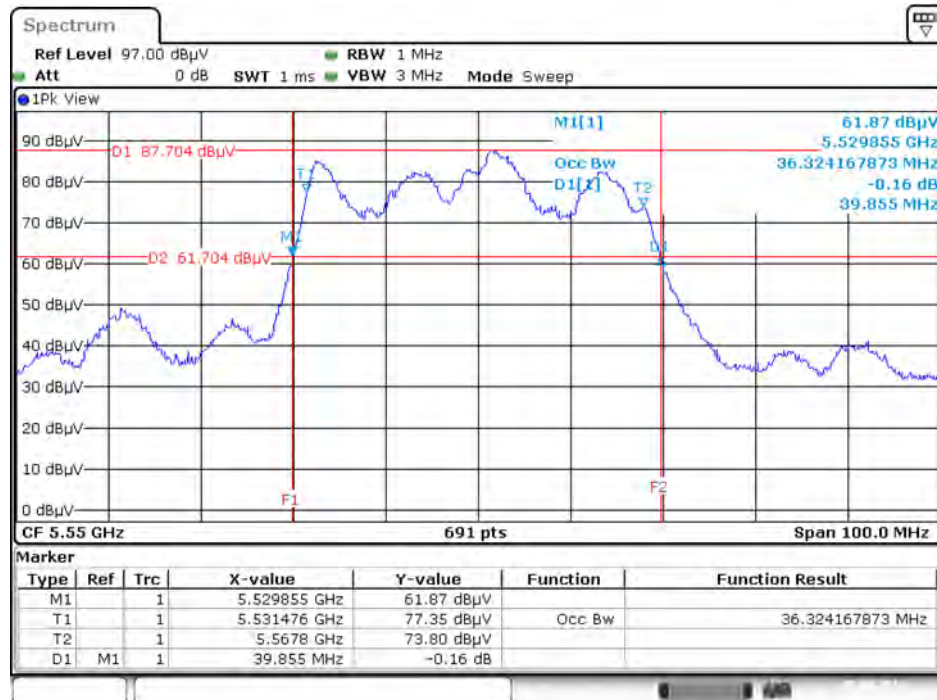
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5510 MHz



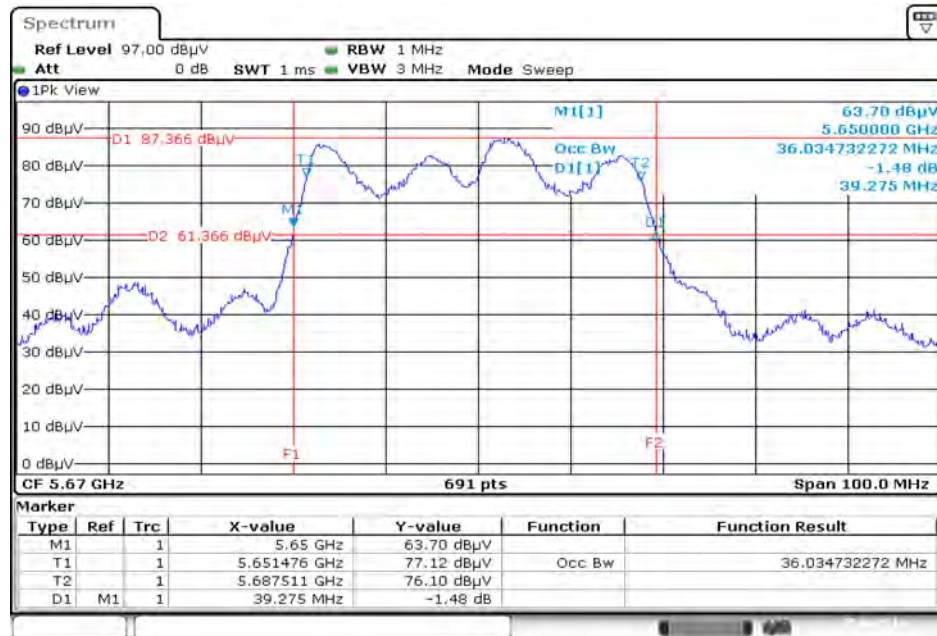
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5550 MHz



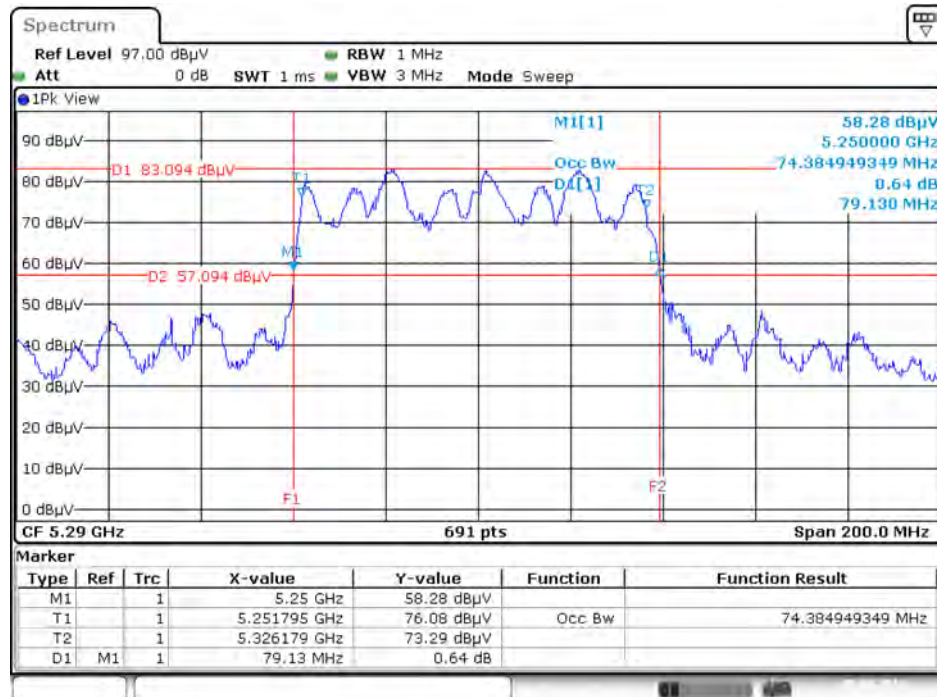
Date: 5.AUG.2016 12:01:00

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



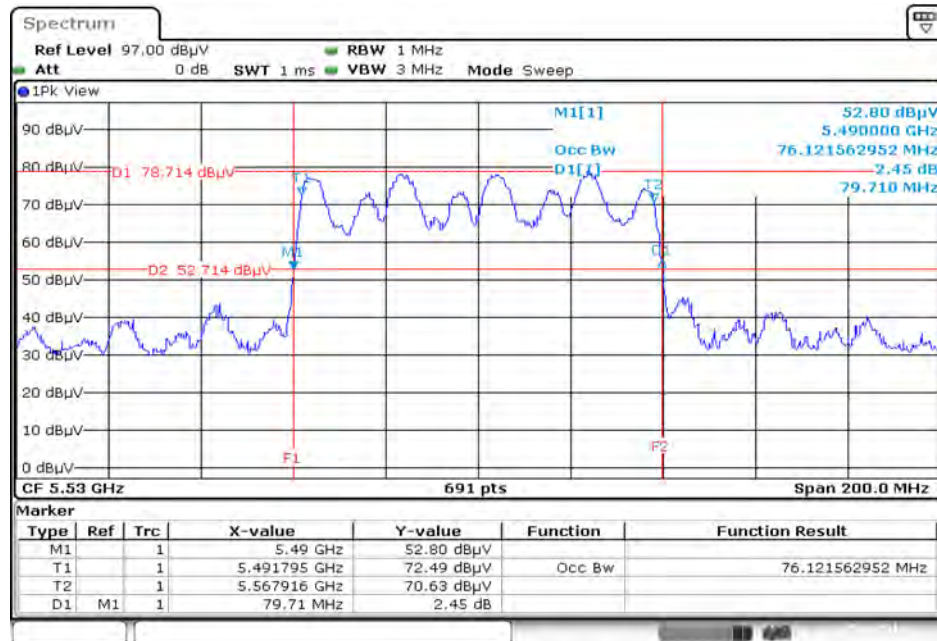
Date: 5.AUG.2016 12:01:32

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

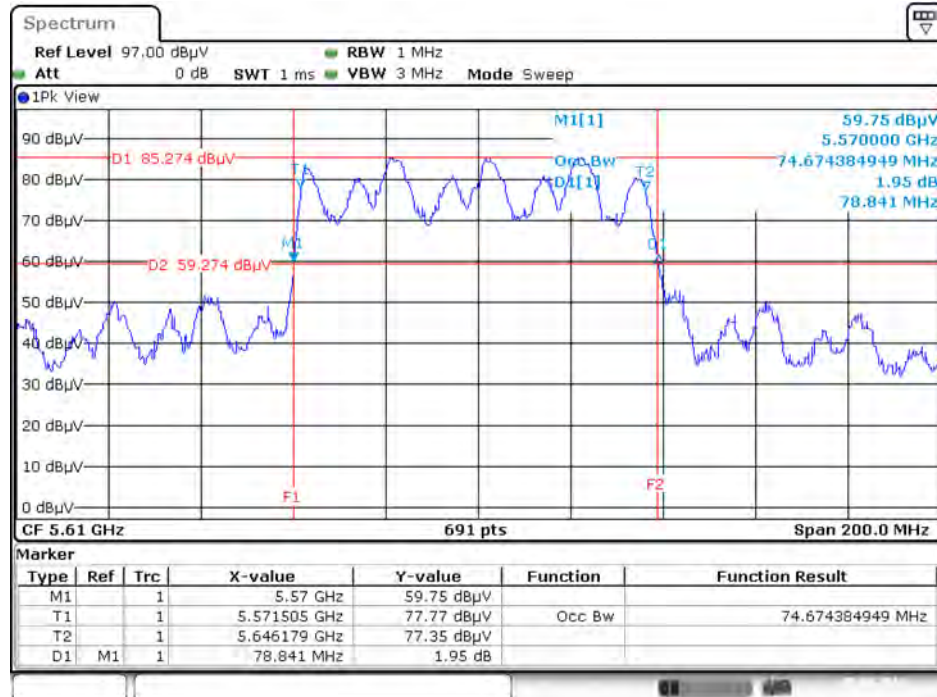


Date: 5.AUG.2016 12:04:24

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5530 MHz



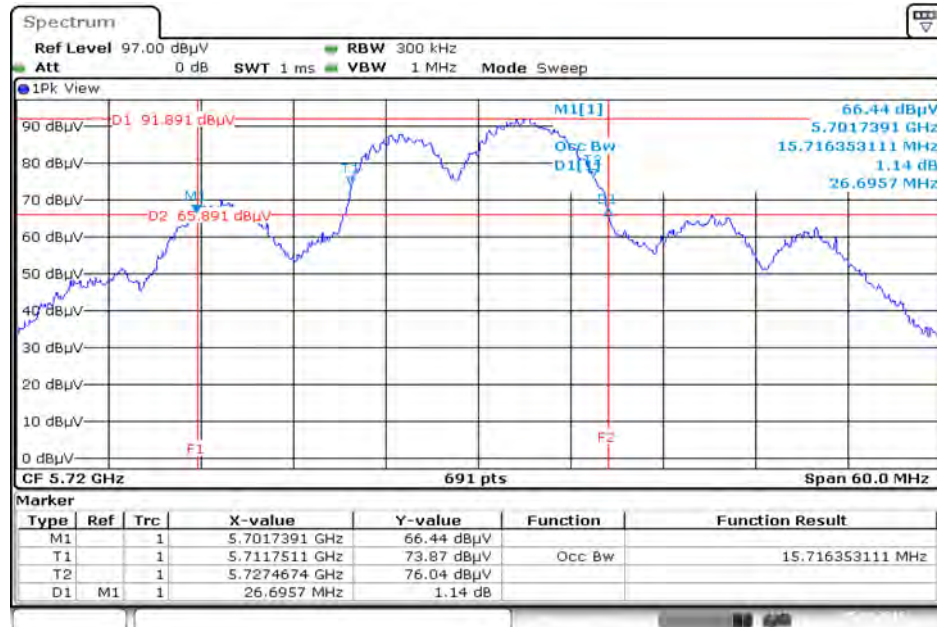
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5610 MHz





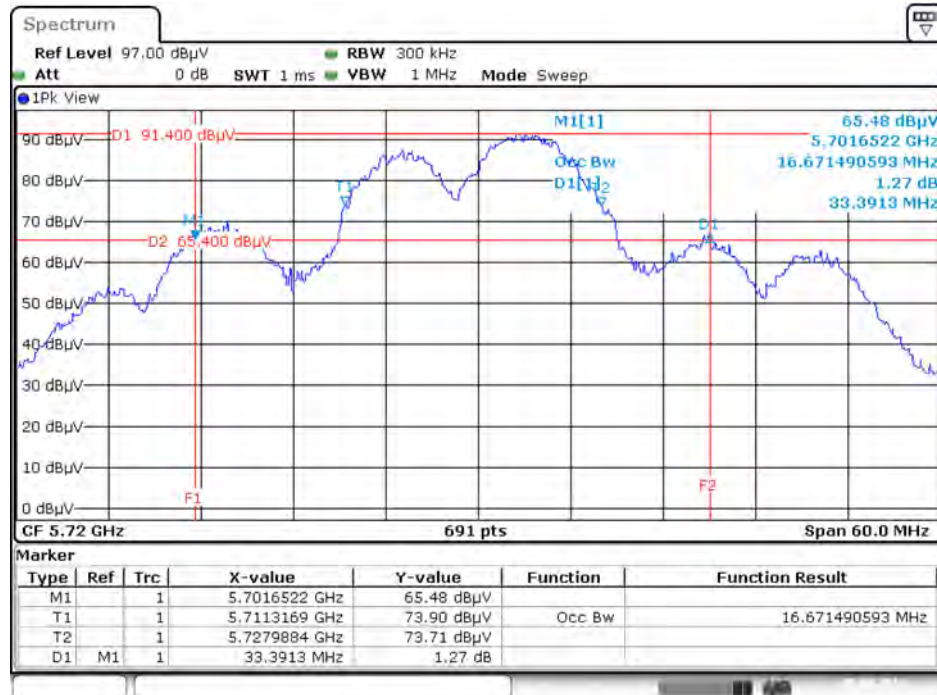
Straddle Channel

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



Date: 5.AUG.2016 13:55:22

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1
VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz



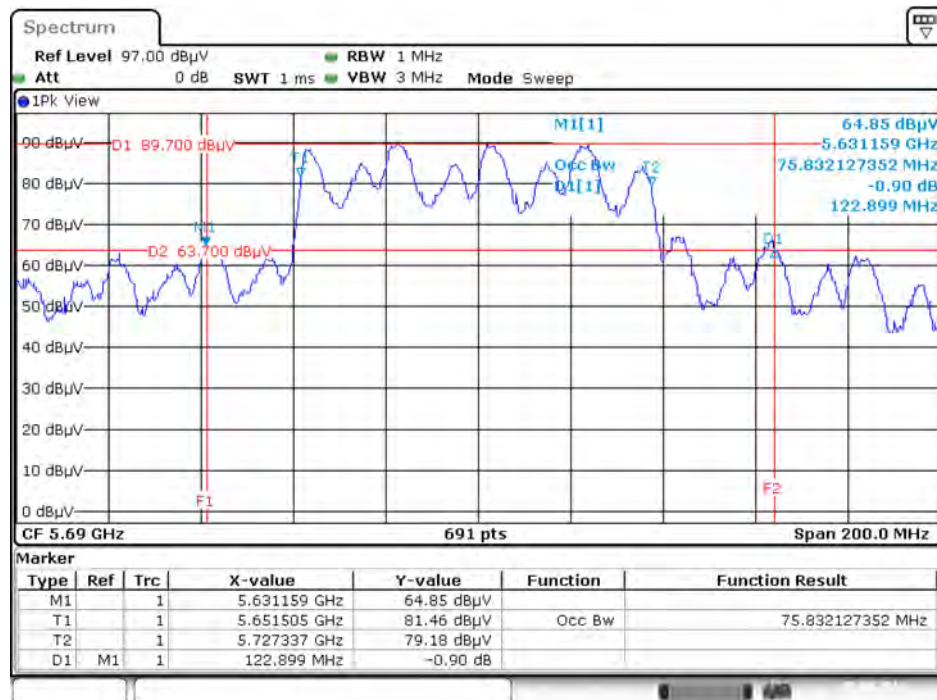
Date: 5.AUG.2016 13:57:36

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5710 MHz



Date: 5.AUG.2016 13:59:01

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



Date: 5.AUG.2016 14:01:19

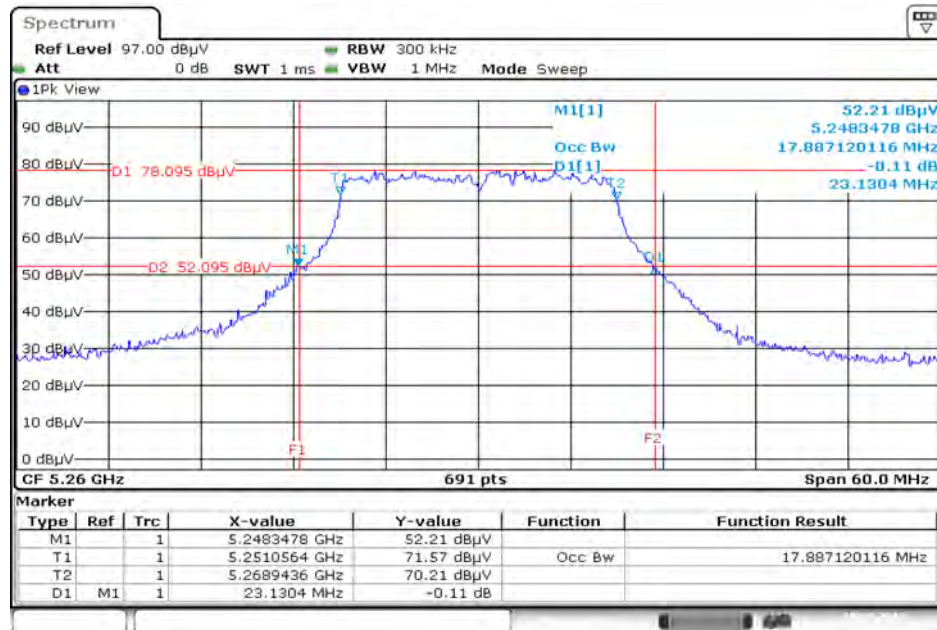


For beamforming mode

For indoor use master B1 and indoor, outdoor use B2~B4

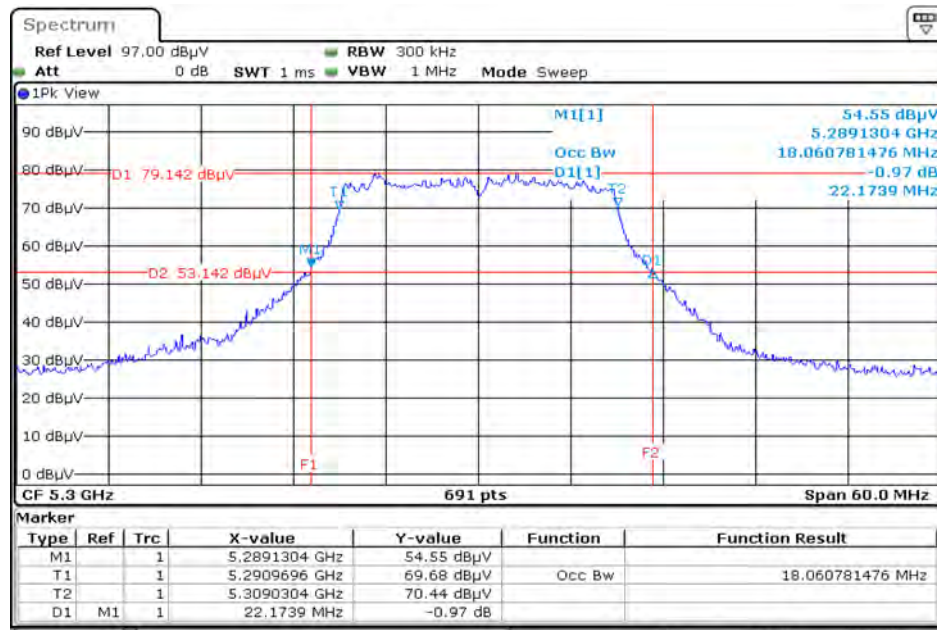
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1

VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5260 MHz

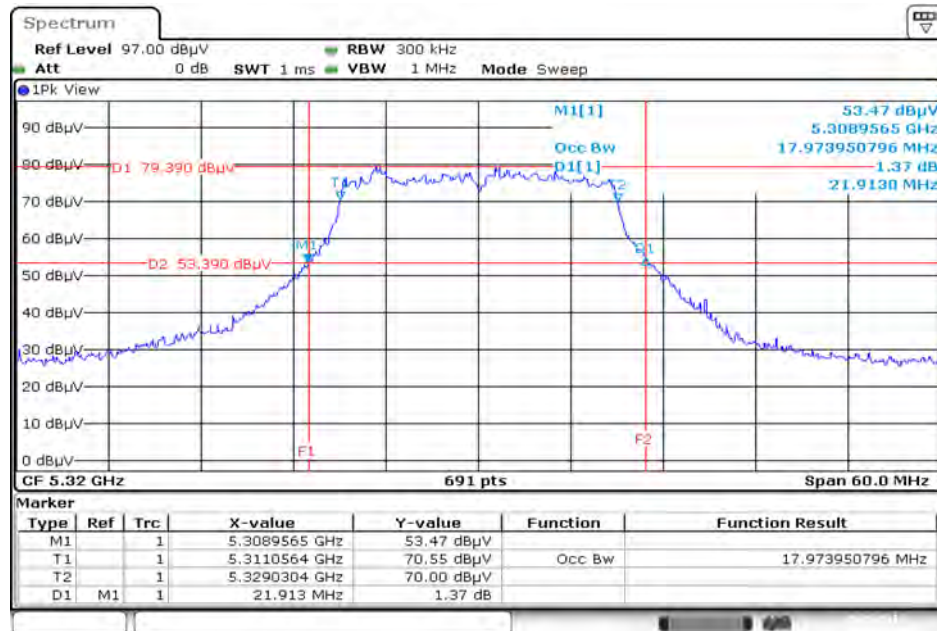


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1

VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5300 MHz

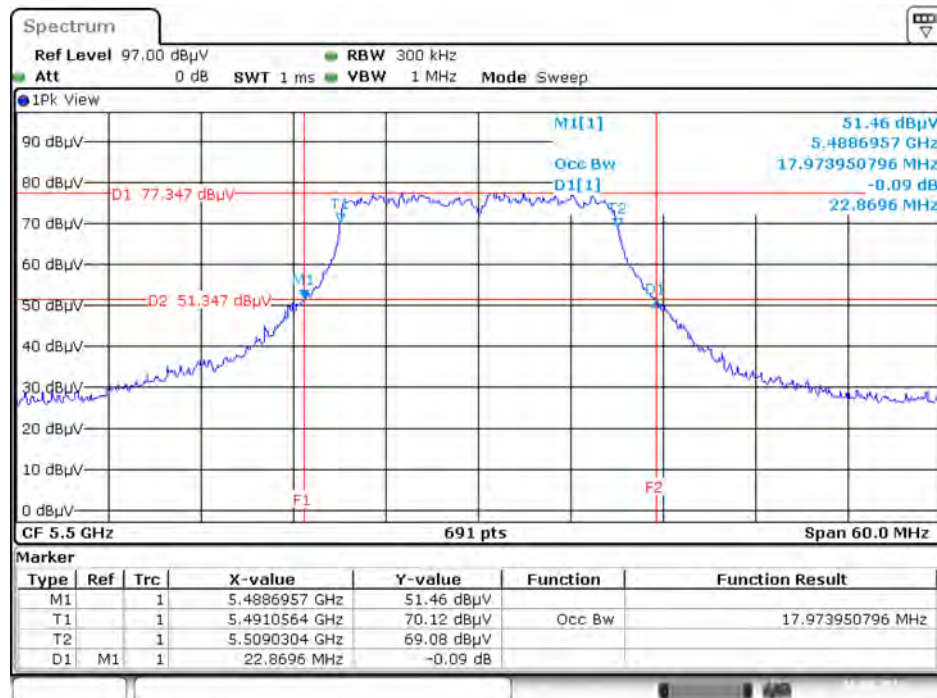


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5320 MHz



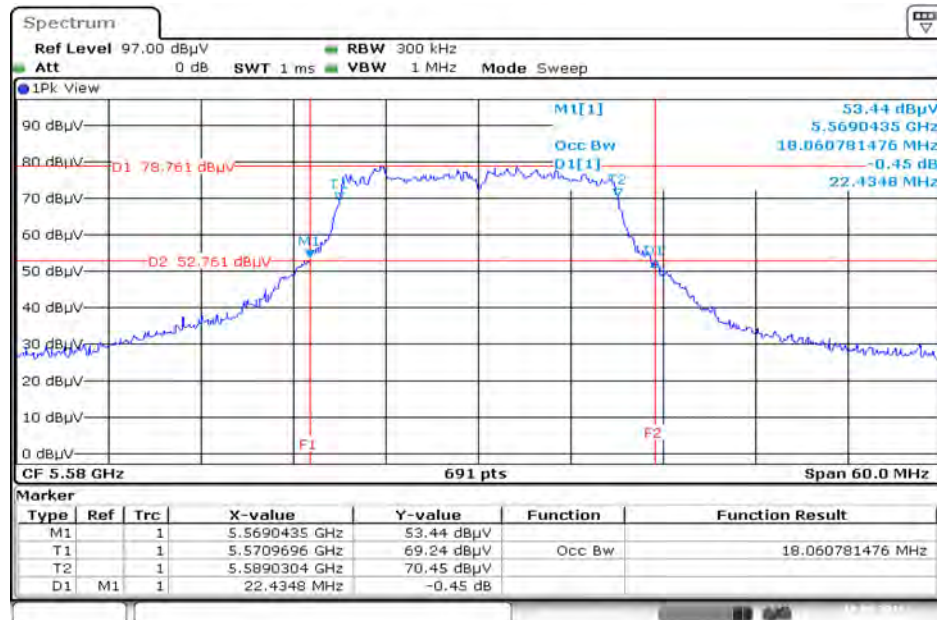
Date: 10.AUG.2016 00:17:00

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



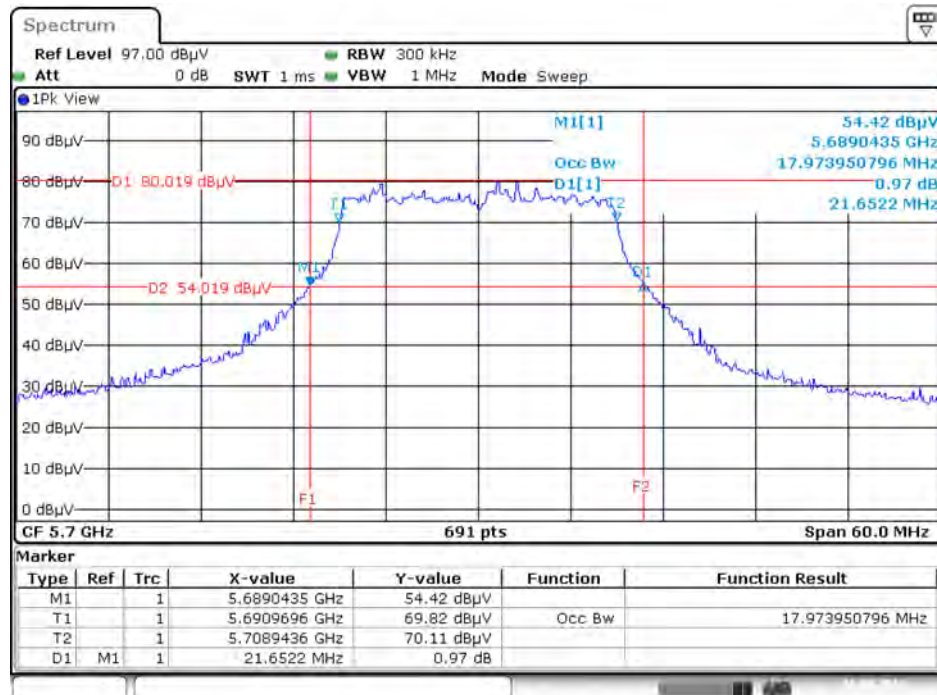
Date: 10.AUG.2016 00:18:30

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



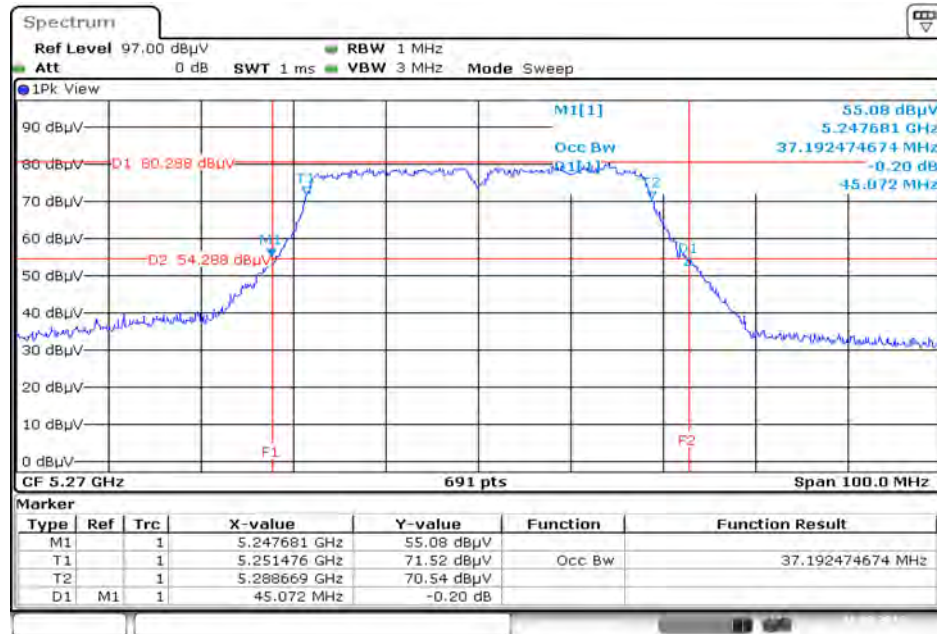
Date: 10.AUG.2016 00:19:45

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



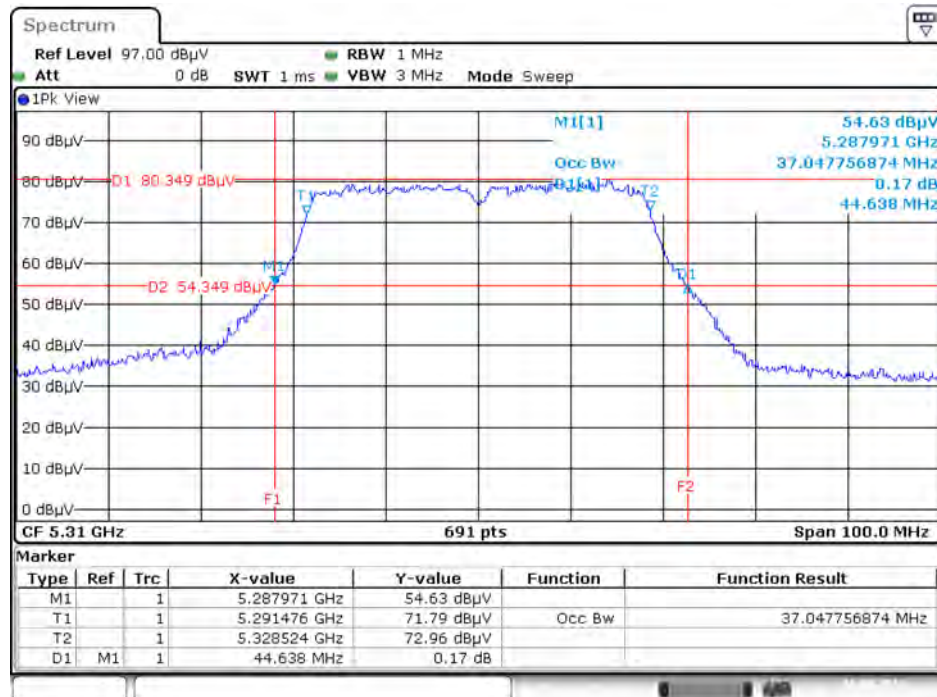
Date: 10.AUG.2016 00:21:40

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



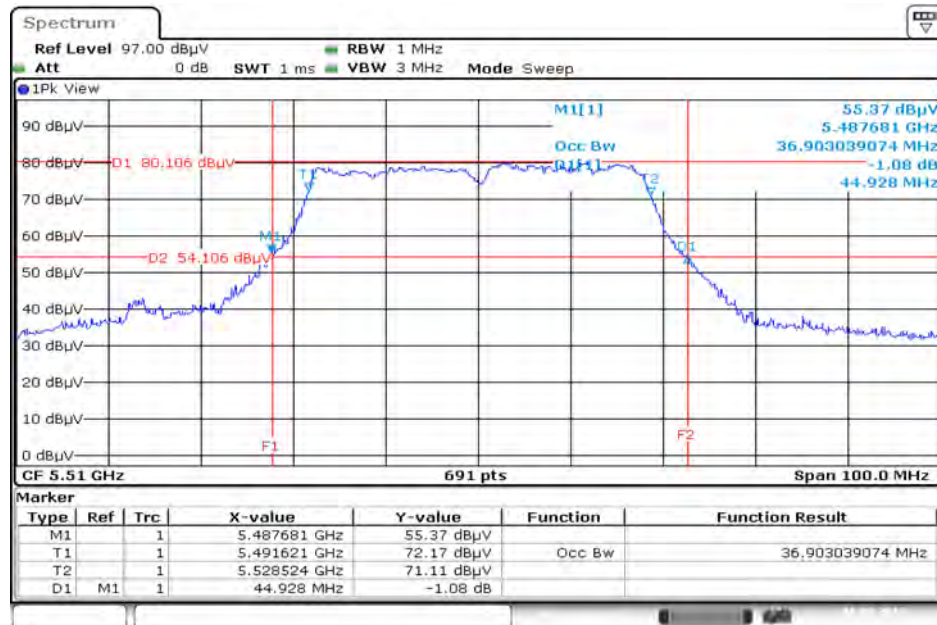
Date: 10.AUG.2016 01:11:09

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



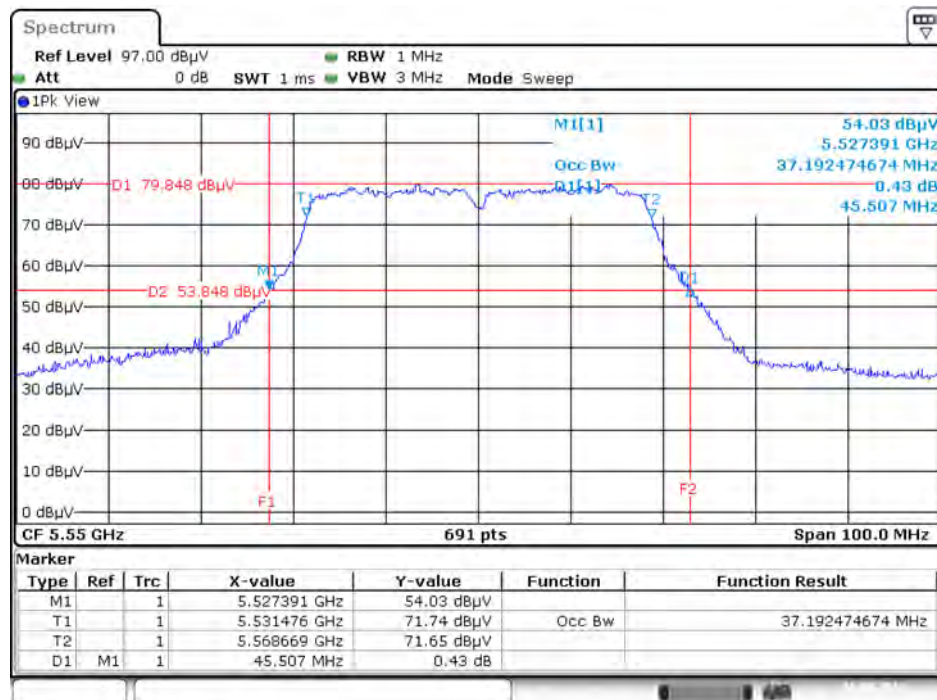
Date: 10.AUG.2016 01:12:34

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



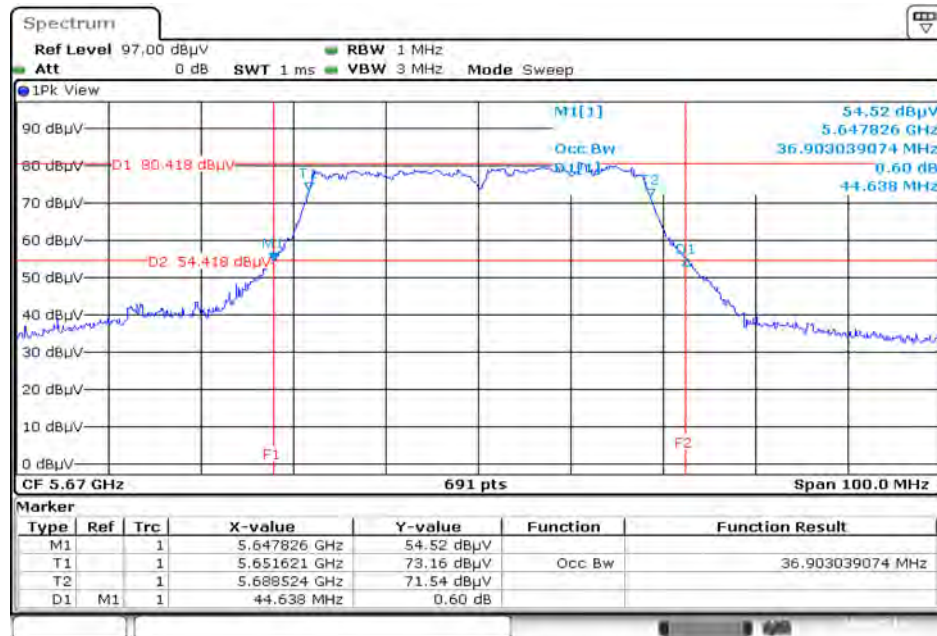
Date: 10.AUG.2016 01:15:48

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



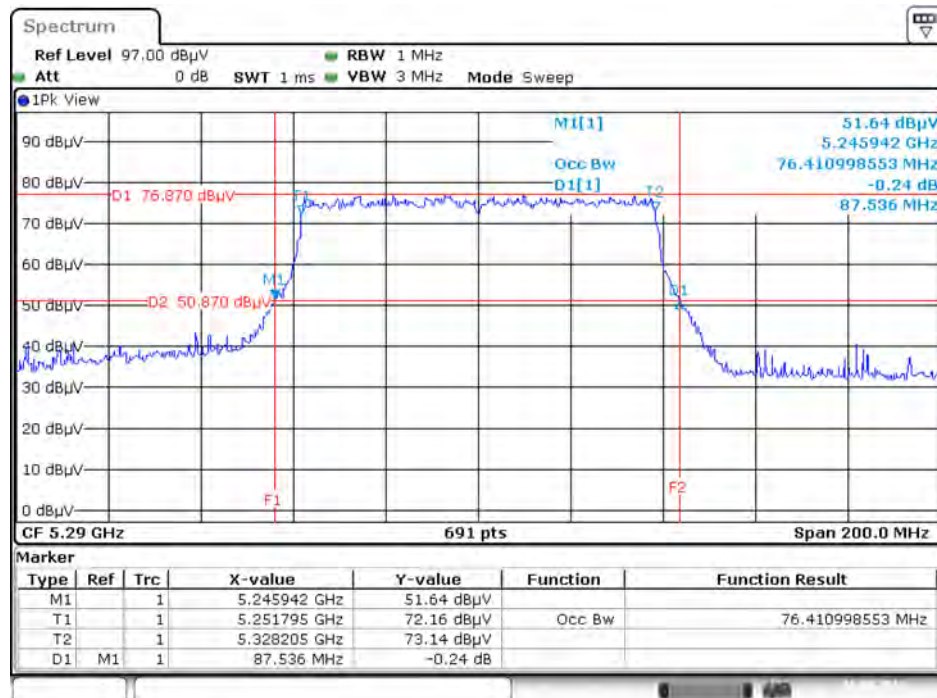
Date: 10.AUG.2016 01:17:19

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



Date: 10.AUG.2016 01:18:34

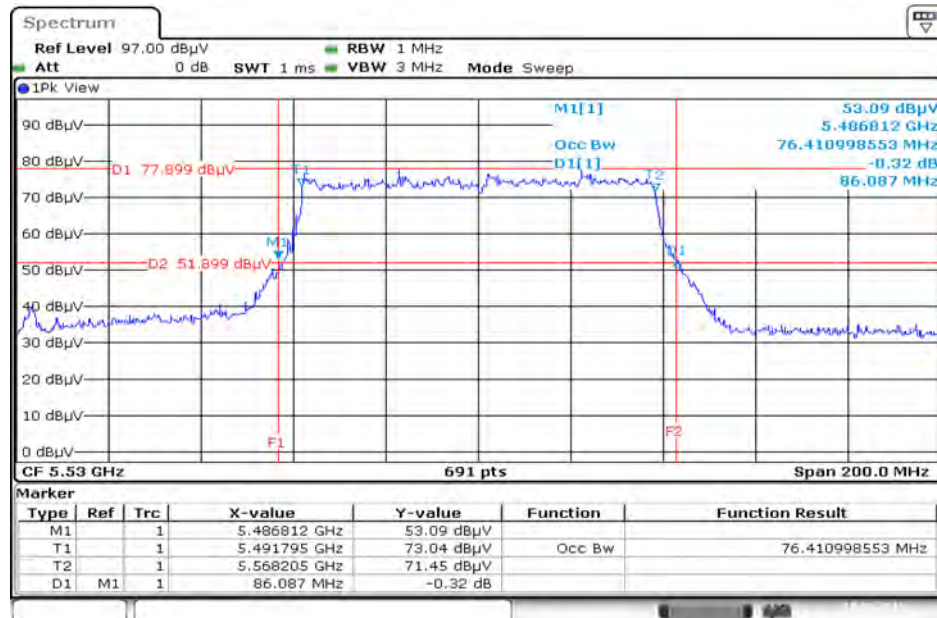
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5290 MHz



Date: 10.AUG.2016 01:27:19

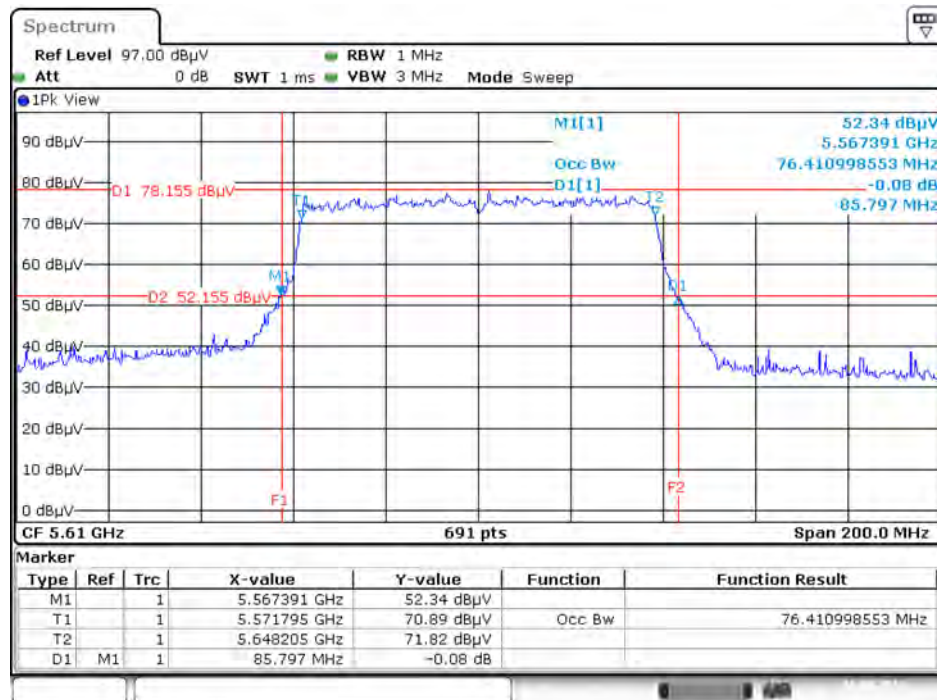


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1
VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5530 MHz



Date: 10.AUG.2016 01:29:35

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

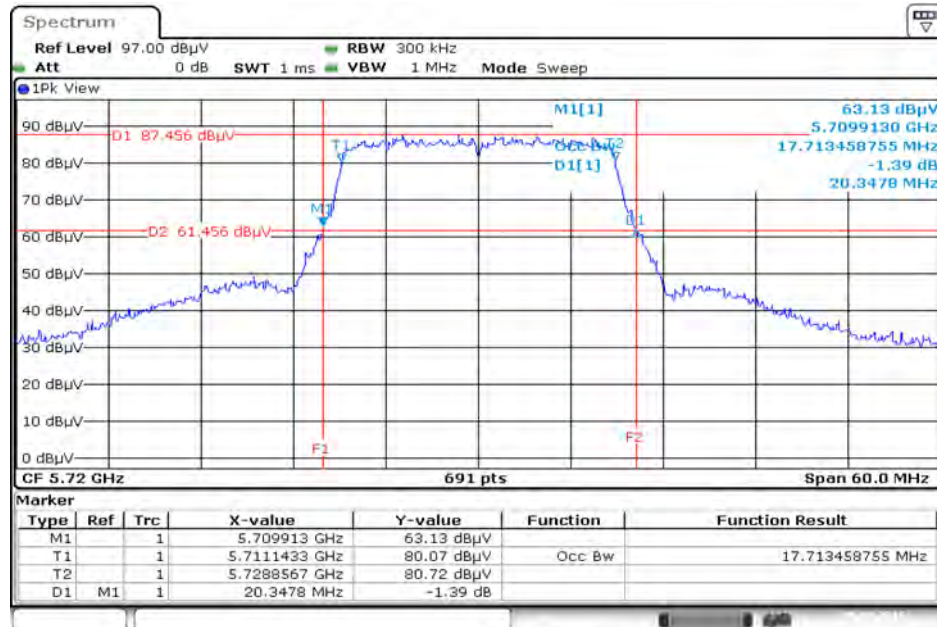


Date: 10.AUG.2016 01:32:06



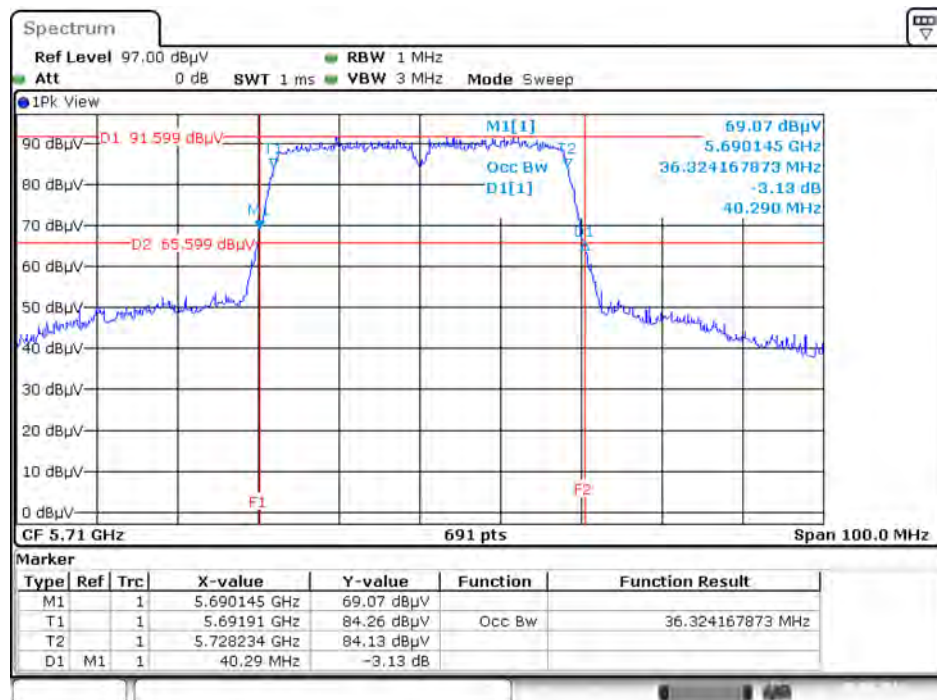
Straddle Channel

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1
VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz



Date: 9 AUG.2016 00:55:32

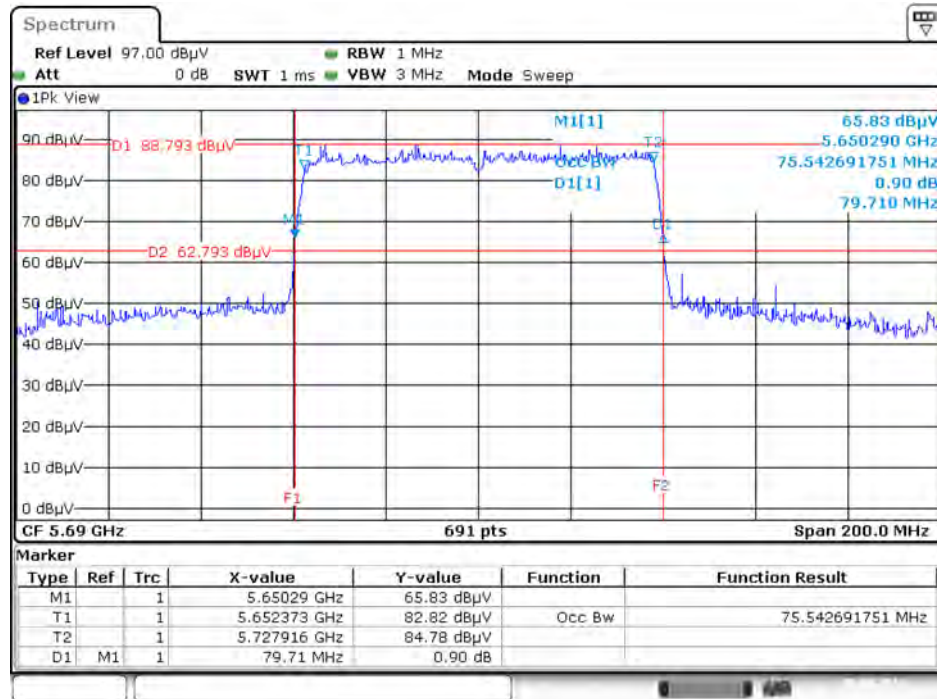
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1
VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5710 MHz



Date: 9 AUG.2016 01:29:01



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



Date: 9.AUG.2016 02:09:34

2.3. 6dB Spectrum Bandwidth Measurement

2.3.1. Limit

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

2.3.2. Measuring Instruments and Setting

Please refer to section 3 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	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

2.3.3. 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 KDB789033 D02 v02r01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth.
3. Multiple antenna system was performed in accordance with KDB662911 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.

2.3.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

This test setup layout is the same as that shown in section 2.6.4.

2.3.5. Test Deviation

There is no deviation with the original standard.

2.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.3.7. Test Result of 6dB Spectrum Bandwidth

Temperature	22°C	Humidity	54%
Test Engineer	Gary Chu		

For non-beamforming mode

Straddle Channel

Mode	Frequency	6dB BW (MHz)	6dB BW M1 (MHz)	UNII 3 BW (MHz)	Min. Limit (kHz)	Test Result
802.11a	5720 MHz	11.94	5713.68	0.62	500	PASS
802.11ac MCS0/Nss1 VHT20	5720 MHz	12.12	5713.68	0.80	500	PASS
802.11ac MCS0/Nss1 VHT40	5710 MHz	34.55	5691.80	1.35	500	PASS
802.11ac MCS0/Nss1 VHT80	5690 MHz	74.49	5651.74	1.23	500	PASS

For beamforming mode

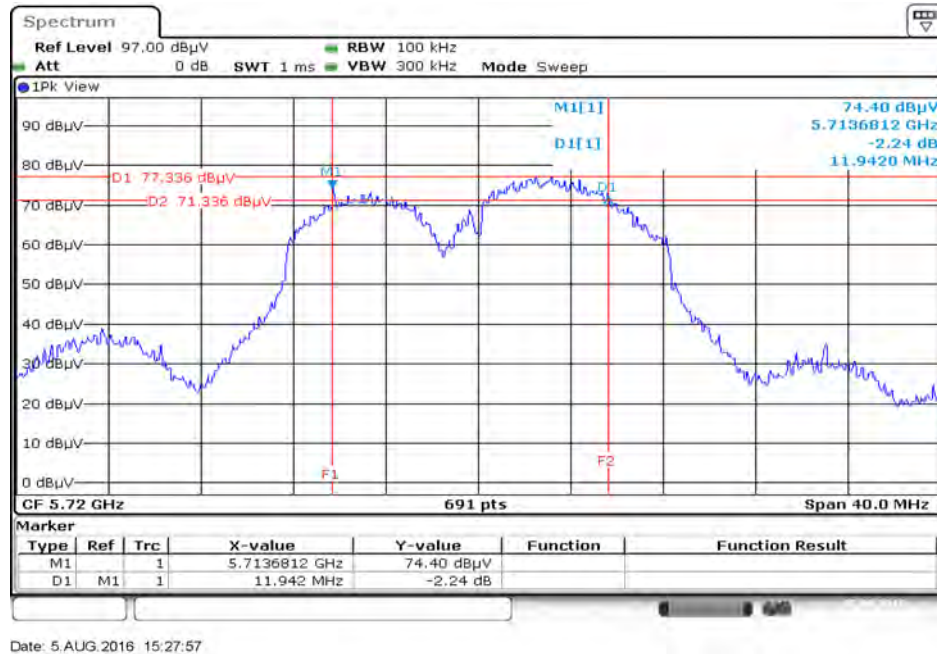
Straddle Channel

Mode	Frequency	6dB BW (MHz)	6dB BW M1 (MHz)	UNII 3 BW (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	5720 MHz	17.74	5711.07	3.81	500	PASS
802.11ac MCS0/Nss1 VHT40	5710 MHz	34.44	5691.80	1.23	500	PASS
802.11ac MCS0/Nss1 VHT80	5690 MHz	74.20	5652.03	1.23	500	PASS

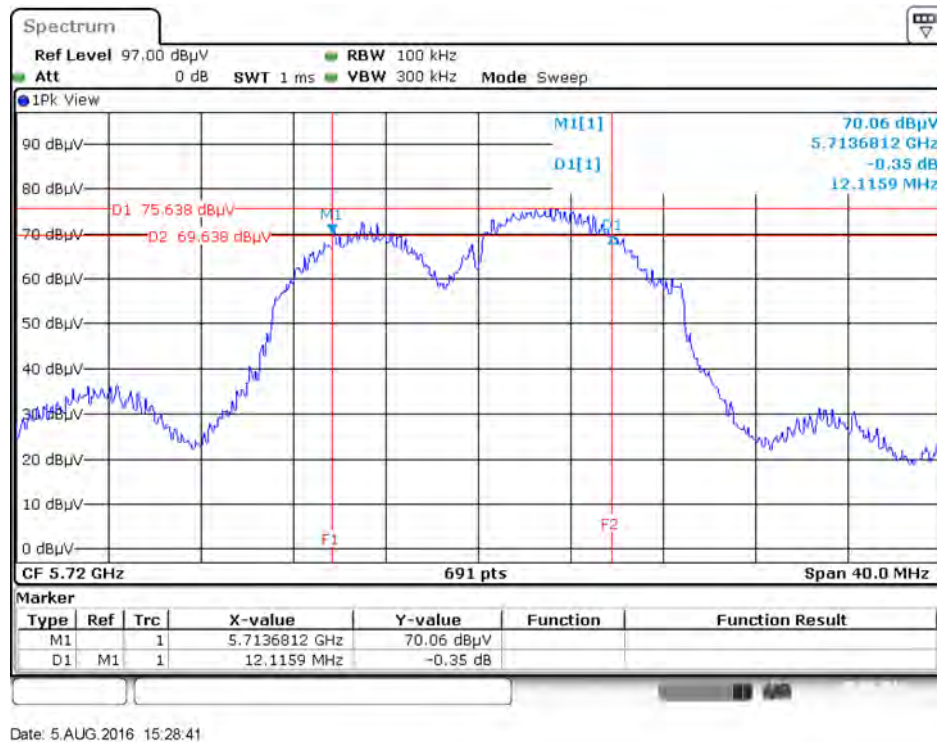
For non-beamforming mode

Straddle Channel

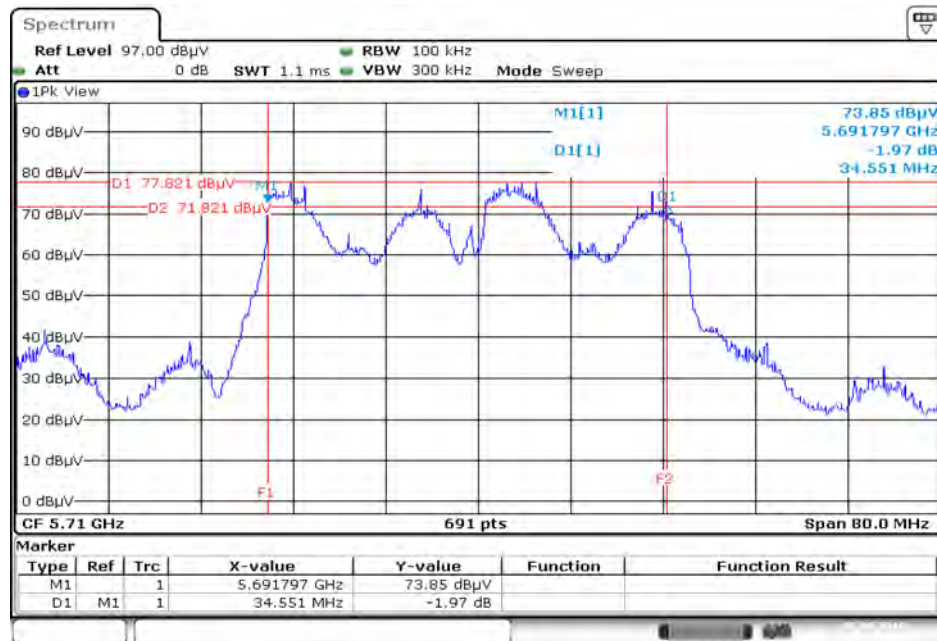
6 dB Bandwidth Plot on Configuration IEEE 802.11a / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz

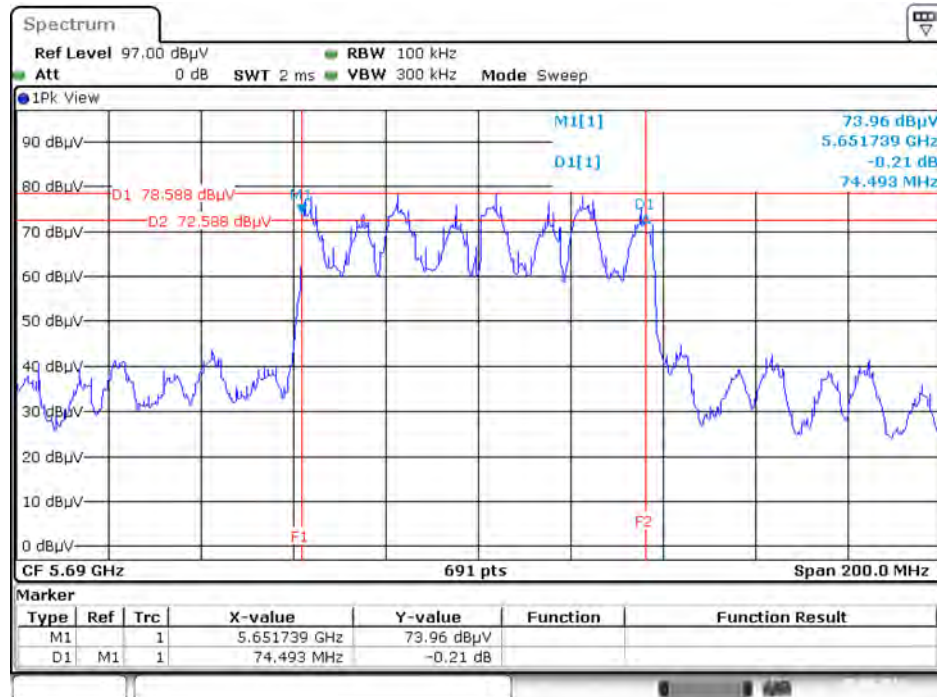


6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5710 MHz



Date: 5.AUG.2016 15:29:19

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5690 MHz

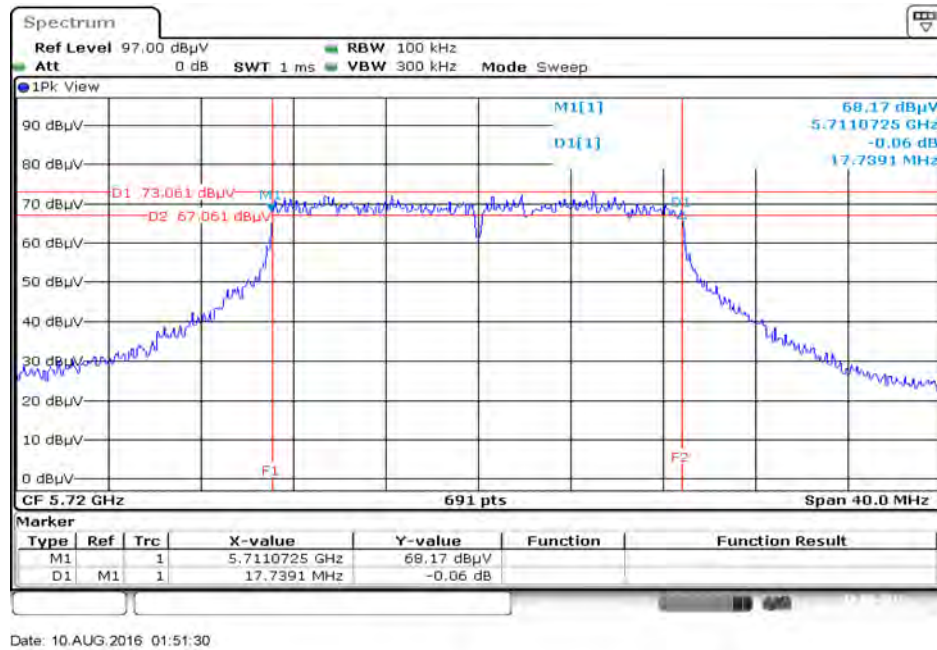


Date: 5.AUG.2016 15:30:55

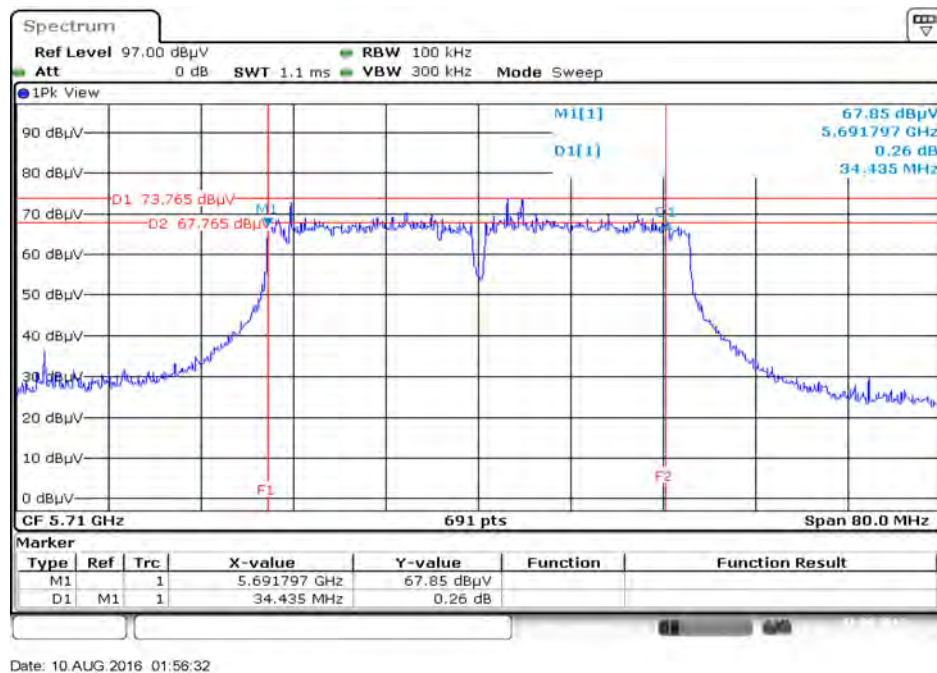
For beamforming mode

Straddle Channel

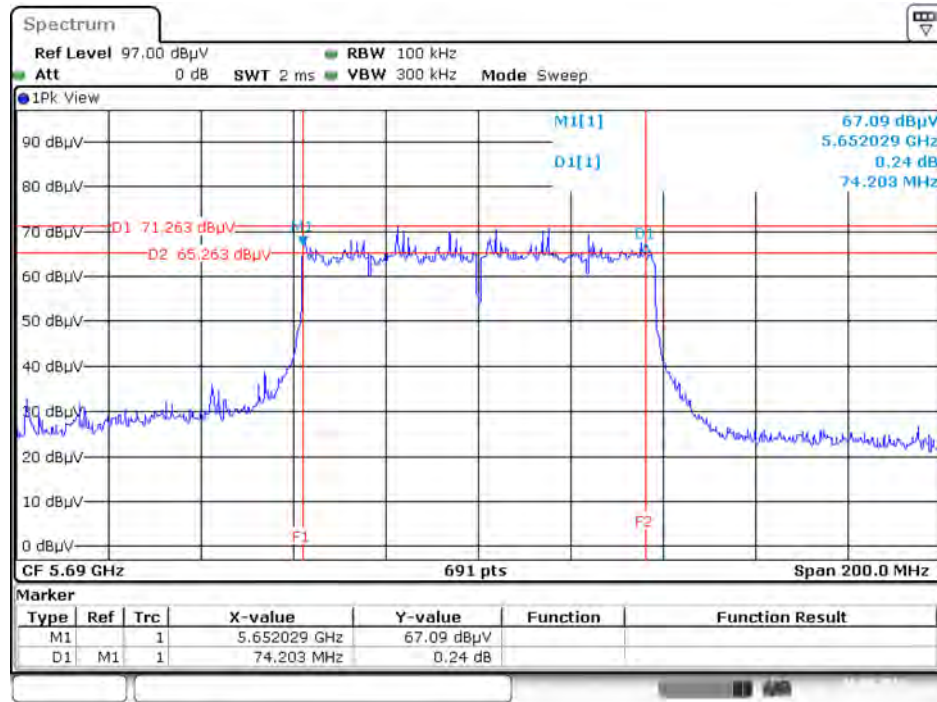
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5710 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5690 MHz



Date: 10.AUG.2016 01:59:30

2.4. Maximum Conducted Output Power Measurement

2.4.1. Limit

Frequency Band		Limit
☒	5.250-5.350 GHz	The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm $10 \log B$, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
☒	5.470-5.725 GHz	

2.4.2. Measuring Instruments and Setting

For other channel

Please refer to section 3 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

For straddle channel

Please refer to section 3 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1000 kHz
VBW	3000 kHz
Detector	RMS
Trace	Average Sweep count 100
Sweep Time	Auto

2.4.3. Test Procedures

For other channel

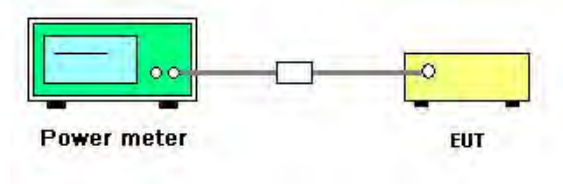
1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v02r01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

For straddle channel

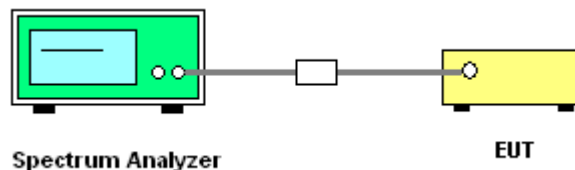
1. The transmitter output (antenna port) was connected to the spectrum analyzer.

2.4.4. Test Setup Layout

For other channel



For straddle channel



2.4.5. Test Deviation

There is no deviation with the original standard.

2.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4.7. Test Result of Maximum Conducted Output Power

Temperature	22°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Oct. 19, 2016

For non-beamforming mode

For indoor/outdoor B2~B3

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Port 1	Port 2	Port 3	Port 4	Total		
802.11a	5260 MHz	12.35	12.42	12.24	12.31	18.35	23.32	PASS
	5300 MHz	12.34	12.38	12.28	12.35	18.36	23.42	PASS
	5320 MHz	12.31	12.14	12.27	12.39	18.30	23.42	PASS
	5500 MHz	11.78	12.08	12.16	12.61	18.19	23.34	PASS
	5580 MHz	11.69	12.09	11.95	12.59	18.11	23.42	PASS
	5700 MHz	12.05	12.24	11.72	12.53	18.17	23.36	PASS
802.11ac MCS0/Nss1 VHT20	5260 MHz	12.01	12.22	12.06	12.09	18.12	23.64	PASS
	5300 MHz	12.18	12.25	12.07	12.15	18.18	23.66	PASS
	5320 MHz	11.87	11.93	12.18	12.06	18.03	23.66	PASS
	5500 MHz	12.05	12.11	12.57	12.32	18.29	23.62	PASS
	5580 MHz	12.02	12.24	12.64	12.35	18.34	23.68	PASS
	5700 MHz	12.04	12.38	12.75	12.16	18.36	23.62	PASS
802.11ac MCS0/Nss1 VHT40	5270 MHz	15.13	15.24	15.07	15.19	21.18	23.98	PASS
	5310 MHz	15.29	15.11	15.06	15.15	21.17	23.98	PASS
	5510 MHz	13.43	13.67	14.21	13.86	19.82	23.98	PASS
	5550 MHz	14.82	15.05	15.66	15.13	21.20	23.98	PASS
	5670 MHz	14.74	14.85	15.45	14.98	21.03	23.98	PASS
802.11ac MCS0/Nss1 VHT80	5290 MHz	14.61	14.74	14.59	14.72	20.69	23.98	PASS
	5530 MHz	13.25	14.26	14.28	13.58	19.89	23.98	PASS
	5610 MHz	16.22	16.71	16.94	16.45	22.61	23.98	PASS



Note:

For 802.11a:

5260 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(17.04)-(6-6)=23.32\text{dBm}<23.98\text{dBm}$, so limit=23.32dBm.
5300 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(17.48)-(6-6)=23.42\text{dBm}<23.98\text{dBm}$, so limit=23.42dBm.
5320 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(17.48)-(6-6)=23.42\text{dBm}<23.98\text{dBm}$, so limit=23.42dBm.
5500 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(17.13)-(6-6)=23.34\text{dBm}<23.98\text{dBm}$, so limit=23.34dBm.
5580 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(17.48)-(6-6)=23.42\text{dBm}<23.98\text{dBm}$, so limit=23.42dBm.
5700 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(17.22)-(6-6)=23.36\text{dBm}<23.98\text{dBm}$, so limit=23.36dBm.

For 802.11ac VHT20:

5260 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(18.35)-(6-6)=23.64\text{dBm}<23.98\text{dBm}$, so limit=23.64dBm.
5300 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(18.44)-(6-6)=23.66\text{dBm}<23.98\text{dBm}$, so limit=23.66dBm.
5320 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(18.44)-(6-6)=23.66\text{dBm}<23.98\text{dBm}$, so limit=23.66dBm.
5500 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(18.26)-(6-6)=23.62\text{dBm}<23.98\text{dBm}$, so limit=23.62dBm.
5580 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(18.52)-(6-6)=23.68\text{dBm}<23.98\text{dBm}$, so limit=23.68dBm.
5700 MHz Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(18.26)-(6-6)=23.62\text{dBm}<23.98\text{dBm}$, so limit=23.62dBm.

Straddle Channel

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Port 1	Port 2	Port 3	Port 4	Total		
802.11a	5720 MHz (UNII 2C)	10.40	10.78	10.37	11.16	16.71	23.98	PASS
	5720 MHz (UNII 3)	4.10	4.32	4.11	4.76	10.35	30.00	PASS
802.11ac MCS0/Nss1 VHT20	5720 MHz (UNII 2C)	10.63	11.00	10.72	11.64	17.04	23.98	PASS
	5720 MHz (UNII 3)	5.12	5.16	5.03	5.86	11.33	30.00	PASS
802.11ac MCS0/Nss1 VHT40	5710 MHz (UNII 2C)	14.33	14.57	14.28	15.21	20.63	23.98	PASS
	5710 MHz (UNII 3)	4.18	4.49	4.08	5.04	10.48	30.00	PASS
802.11ac MCS0/Nss1 VHT80	5690 MHz (UNII 2C)	17.27	17.66	17.64	18.49	23.81	23.98	PASS
	5690 MHz (UNII 3)	4.21	4.68	4.58	5.37	10.75	30.00	PASS

For beamforming mode

For indoor/outdoor B2~B3

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Port 1	Port 2	Port 3	Port 4	Total		
802.11ac MCS0/Nss1 VHT20	5260 MHz	11.58	11.96	11.59	11.65	17.72	19.96	PASS
	5300 MHz	11.83	11.71	11.67	11.72	17.75	19.96	PASS
	5320 MHz	11.43	11.55	11.48	11.77	17.58	19.96	PASS
	5500 MHz	10.75	11.19	11.21	11.63	17.23	19.96	PASS
	5580 MHz	10.83	11.36	11.17	11.91	17.36	19.96	PASS
	5700 MHz	10.95	11.67	10.81	11.47	17.26	19.96	PASS
802.11ac MCS0/Nss1 VHT40	5270 MHz	12.03	11.72	11.55	11.46	17.72	19.96	PASS
	5310 MHz	12.22	11.81	11.76	11.61	17.88	19.96	PASS
	5510 MHz	10.94	11.15	11.23	11.64	17.27	19.96	PASS
	5550 MHz	10.75	11.09	11.24	11.73	17.24	19.96	PASS
	5670 MHz	10.93	11.34	11.27	11.78	17.36	19.96	PASS
802.11ac MCS0/Nss1 VHT80	5290 MHz	11.71	11.53	11.13	11.41	17.47	19.96	PASS
	5530 MHz	11.85	11.92	11.55	12.13	17.89	19.96	PASS
	5610 MHz	10.82	11.43	11.14	11.71	17.31	19.96	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi} > 6\text{dBi}$, so B2 B3 limit = 23.98-(10.02-6)=19.96dBm.

Straddle Channel

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Port 1	Port 2	Port 3	Port 4	Total		
802.11ac MCS0/Nss1 VHT20	5720 MHz (UNII 2C)	10.09	10.81	10.29	10.95	16.57	18.77	PASS
	5720 MHz (UNII 3)	4.58	5.10	4.71	5.41	10.98	25.98	PASS
802.11ac MCS0/Nss1 VHT40	5710 MHz (UNII 2C)	10.86	11.53	10.75	11.52	17.20	19.96	PASS
	5710 MHz (UNII 3)	0.75	1.48	0.81	1.43	7.15	25.98	PASS
802.11ac MCS0/Nss1 VHT80	5690 MHz (UNII 2C)	10.74	11.08	11.48	11.45	17.22	19.96	PASS
	5690 MHz (UNII 3)	-2.53	-2.14	-1.52	-1.41	4.14	25.98	PASS

Note:

For 802.11ac VHT20:

5720 MHz (UNII 2C): Power limit=23.98dBm or $11+10\log(B)$; $11+10\log(15.09)-(10.02-6)=18.77\text{dBm}<23.98\text{dBm}$,
so power limit=18.77dBm.

$$\text{For (UNII 2C): } DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi} > 6\text{dBi}, \text{ so limit} = 23.98 - (10.02 - 6) = 19.96\text{dBm}.$$

$$\text{For (UNII 3): } DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi} > 6\text{dBi}, \text{ so limit} = 30 - (10.02 - 6) = 25.98\text{dBm}.$$

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

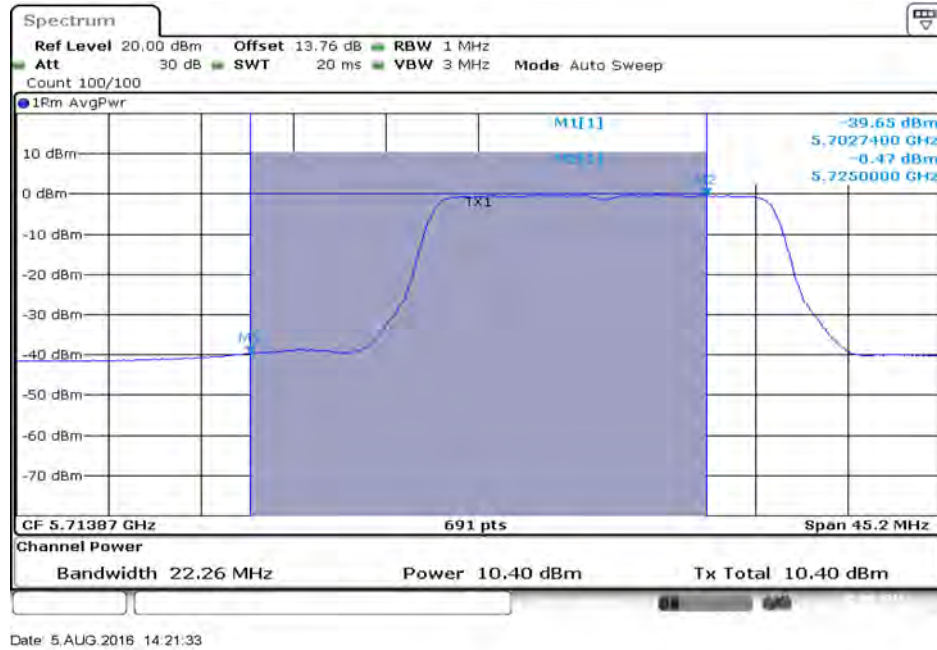
For plots, only the channel with worse result was shown.

For non-beamforming mode

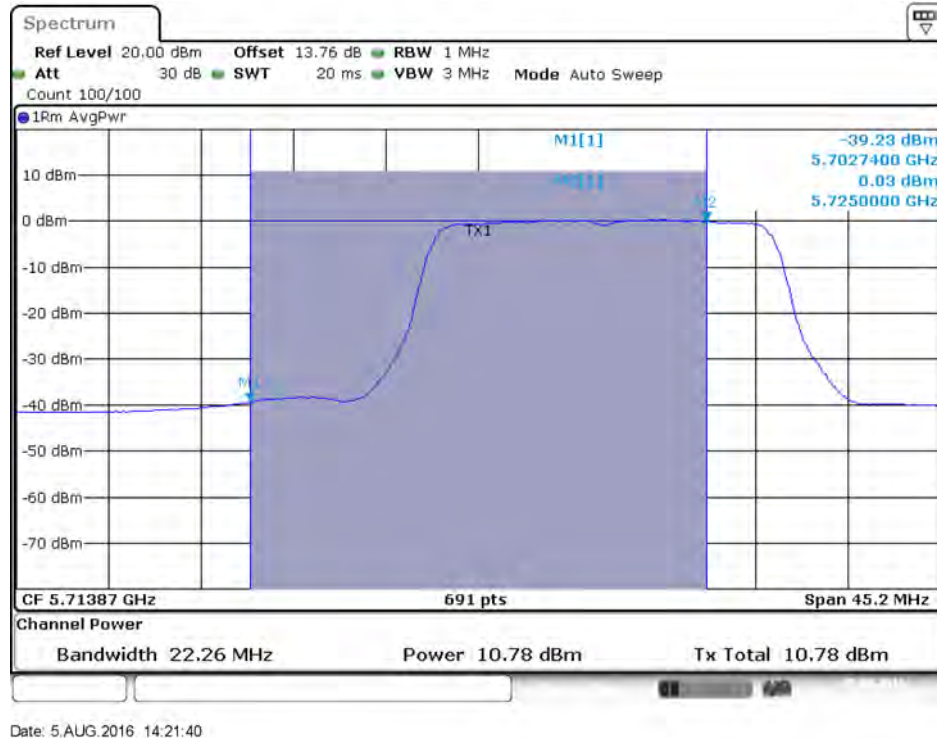
For indoor, outdoor use master and slave without radar detection

Straddle Channel

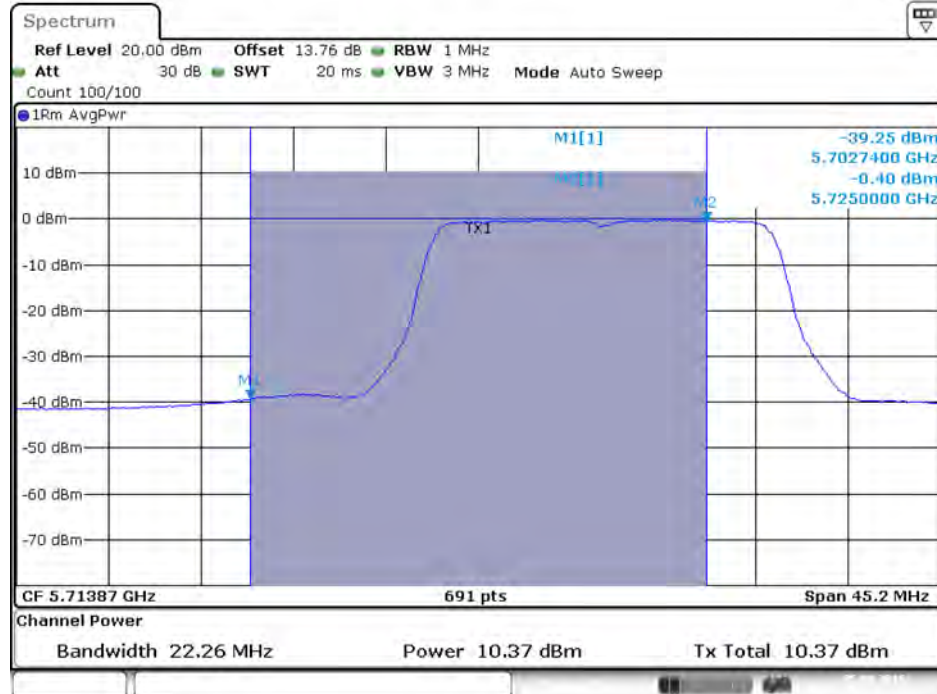
Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz (UNII 2C)

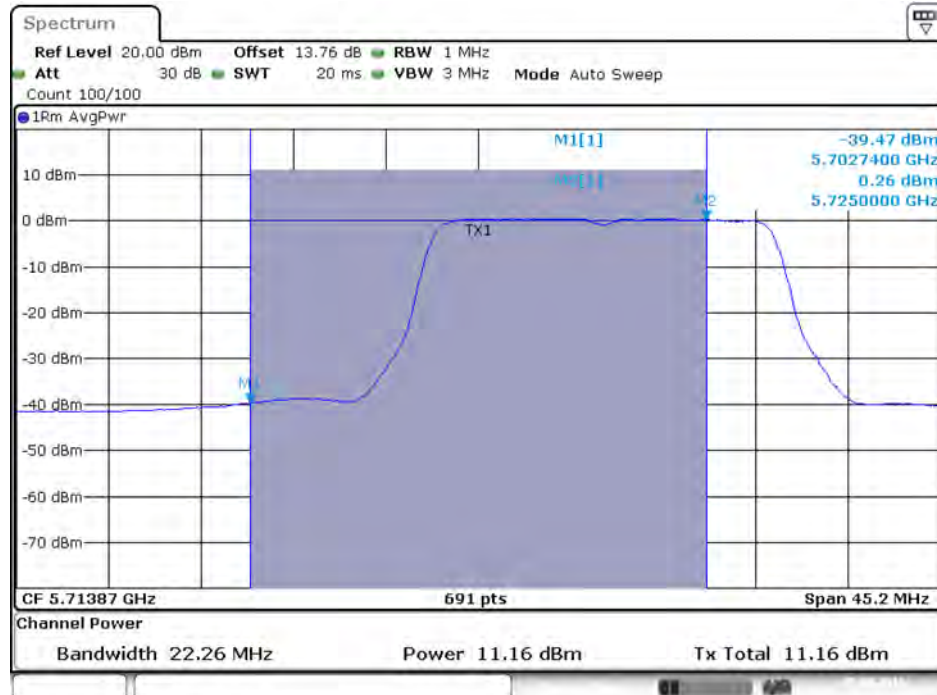


Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 3 / 5720 MHz (UNII 2C)



Date: 5.AUG.2016 14:21:47

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 4 / 5720 MHz (UNII 2C)



Date: 5.AUG.2016 14:21:54

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 3)



Date: 5.AUG.2016 14:21:36

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz (UNII 3)



Date: 5.AUG.2016 14:21:43

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 3 / 5720 MHz (UNII 3)



Date: 5.AUG.2016 14:21:50

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 4 / 5720 MHz (UNII 3)



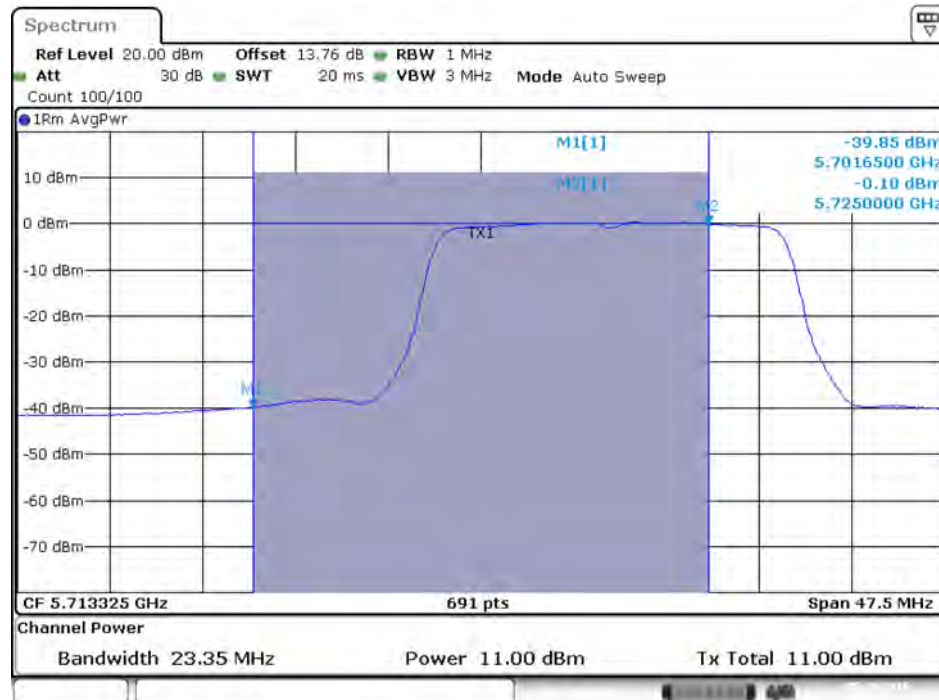
Date: 5.AUG.2016 14:21:57

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 2C)



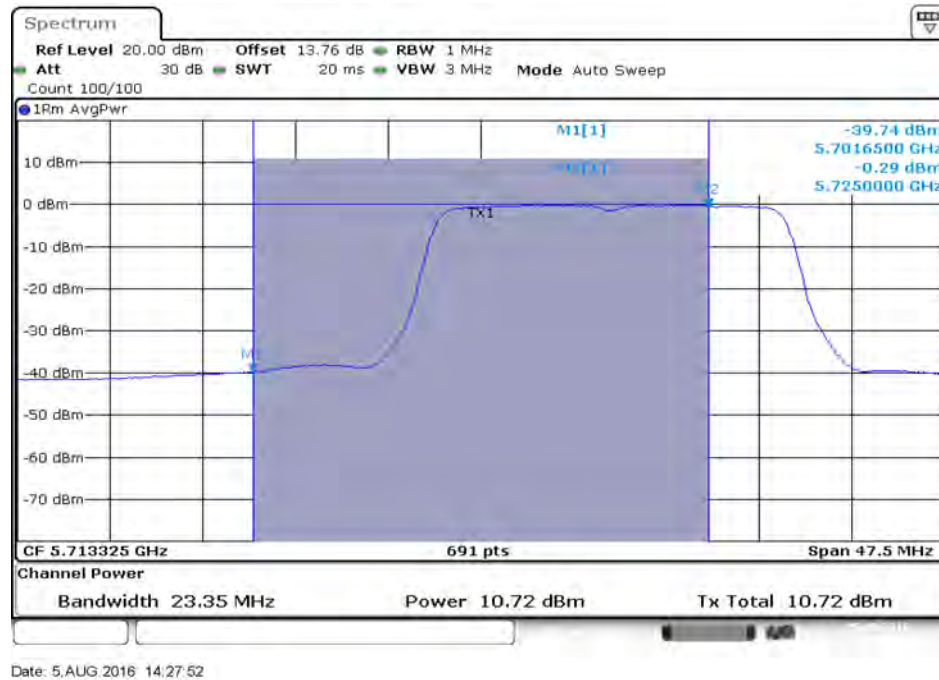
Date: 5.AUG.2016 14:27:37

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz (UNII 2C)

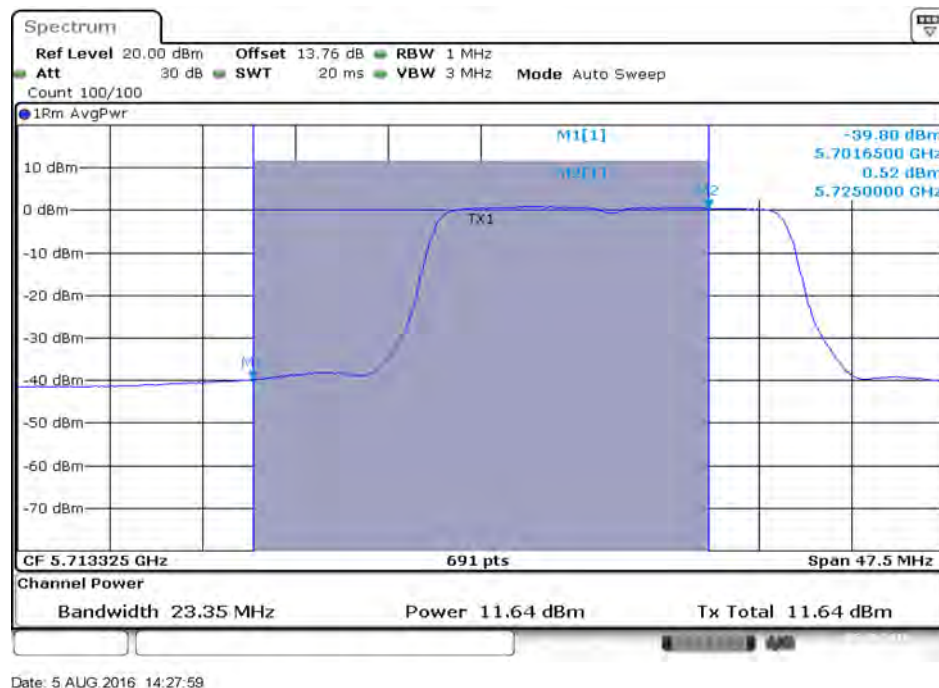


Date: 5.AUG.2016 14:27:45

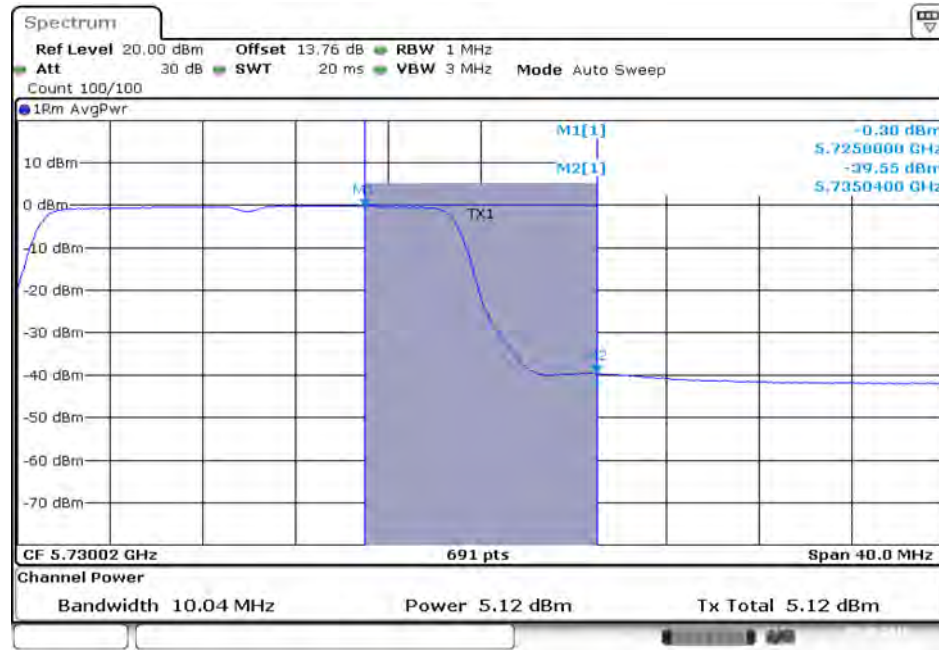
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 / 5720 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 / 5720 MHz (UNII 2C)

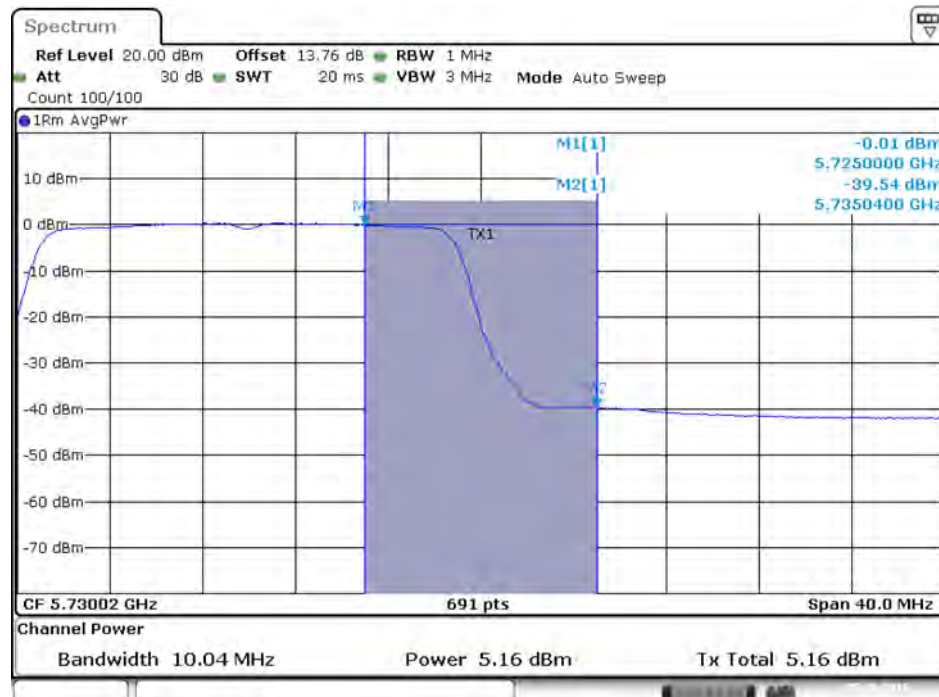


Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 3)



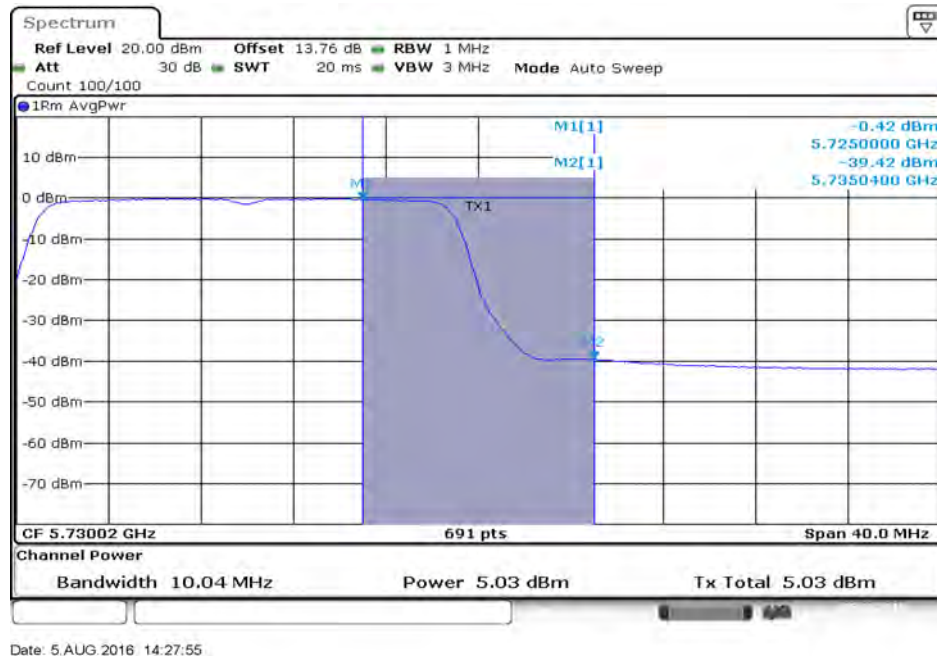
Date: 5.AUG.2016 14:27:41

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz (UNII 3)



Date: 5.AUG.2016 14:27:48

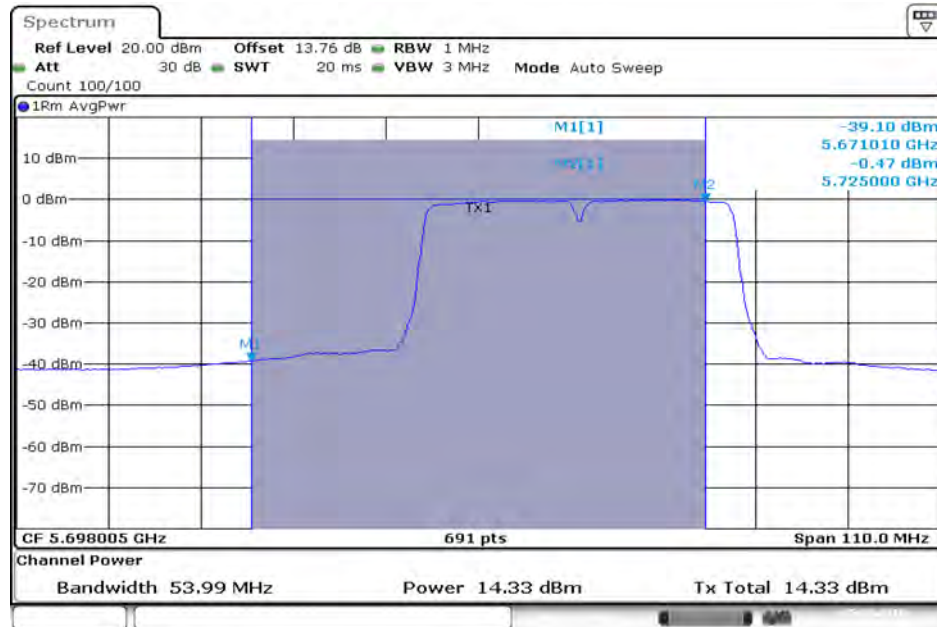
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 / 5720 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 / 5720 MHz (UNII 3)

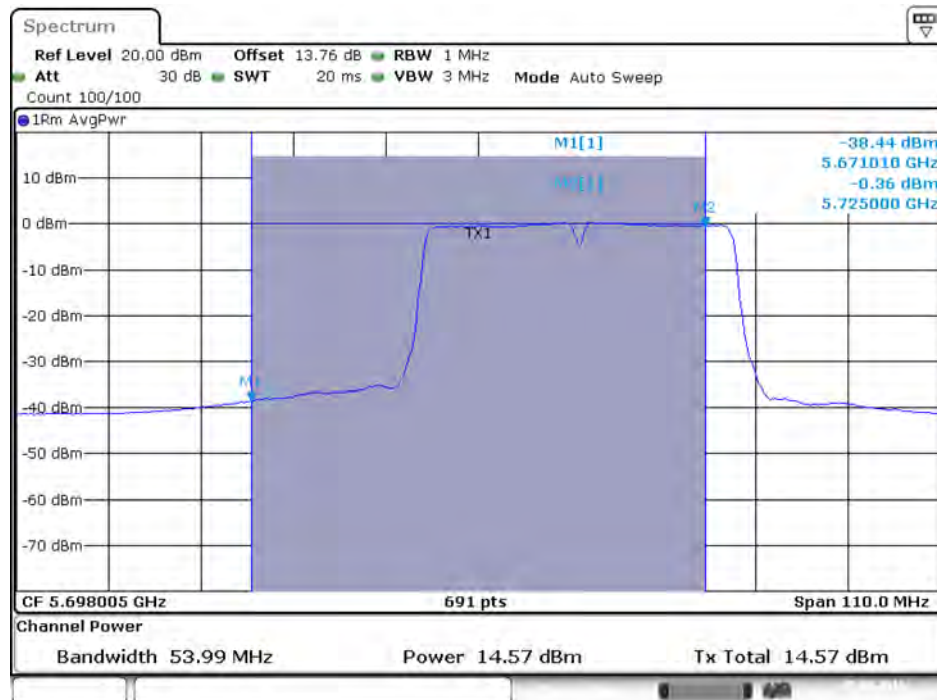


Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 2C)



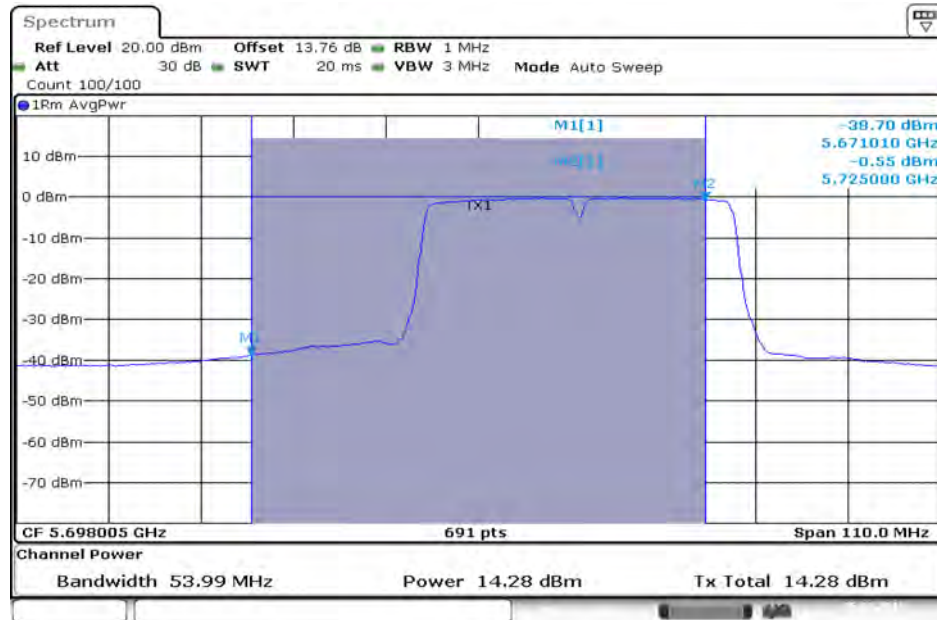
Date: 5.AUG.2016 14:39:10

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 2C)



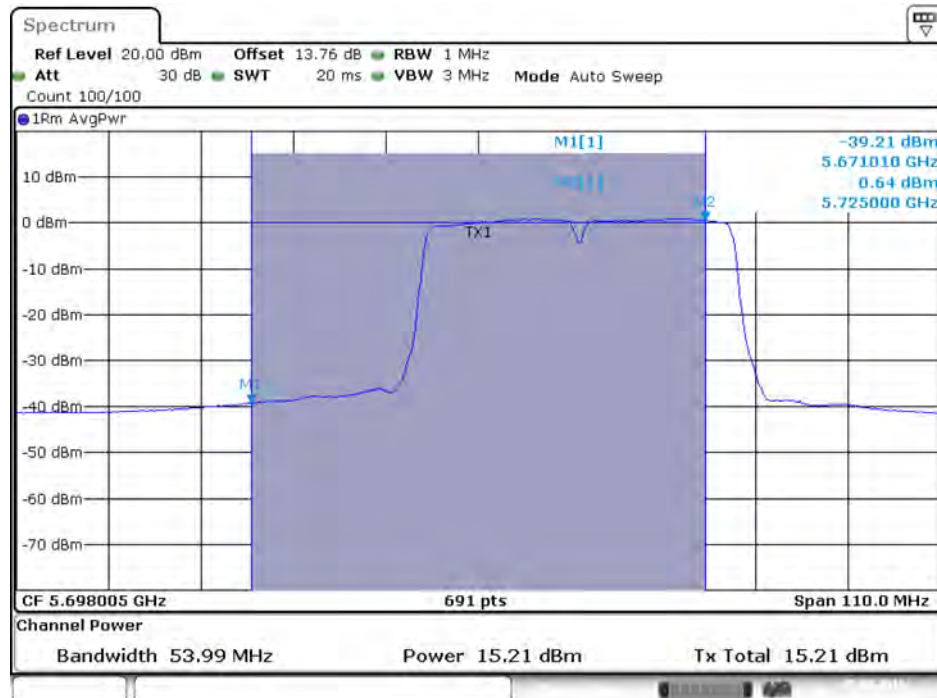
Date: 5.AUG.2016 14:39:17

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 / 5710 MHz (UNII 2C)



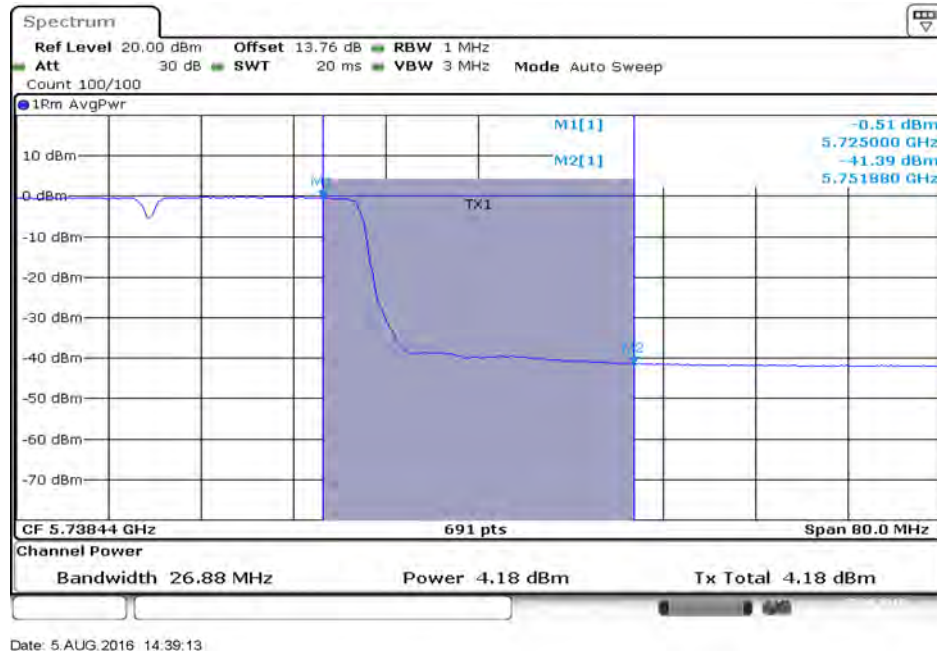
Date: 5.AUG.2016 14:39:24

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 / 5710 MHz (UNII 2C)

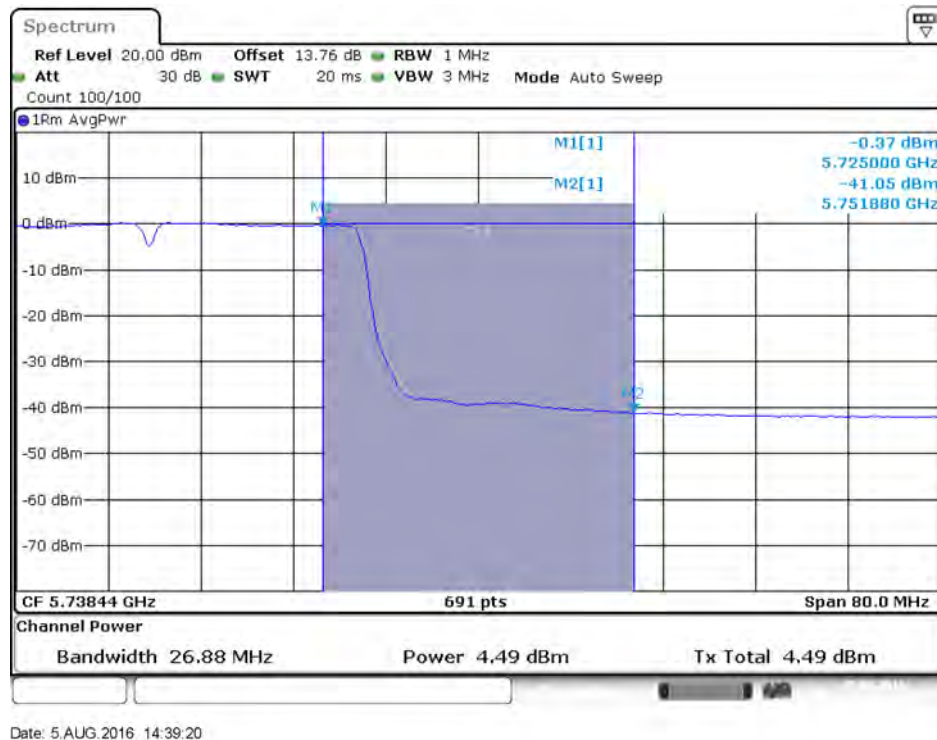


Date: 5.AUG.2016 14:39:31

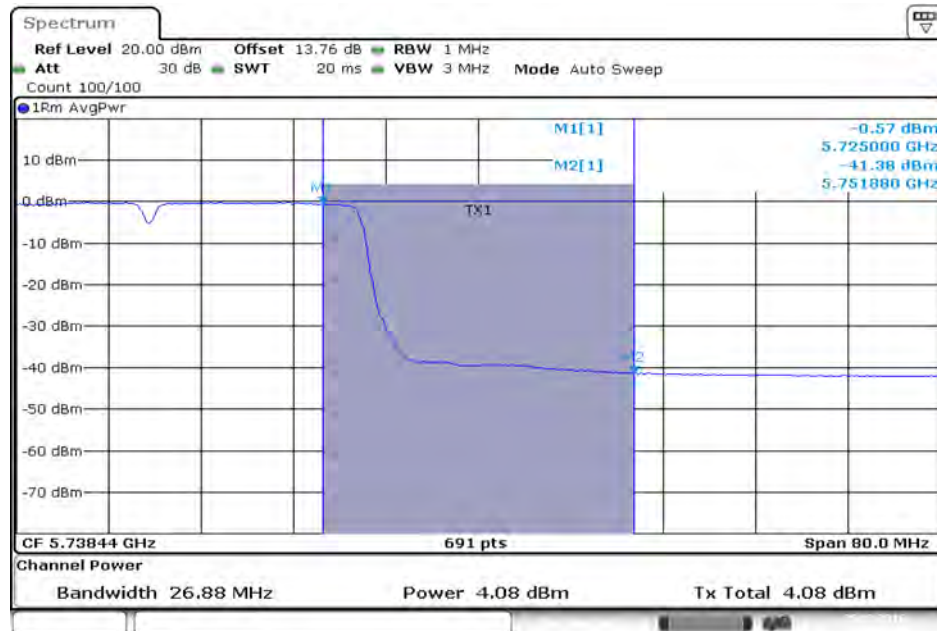
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 3)

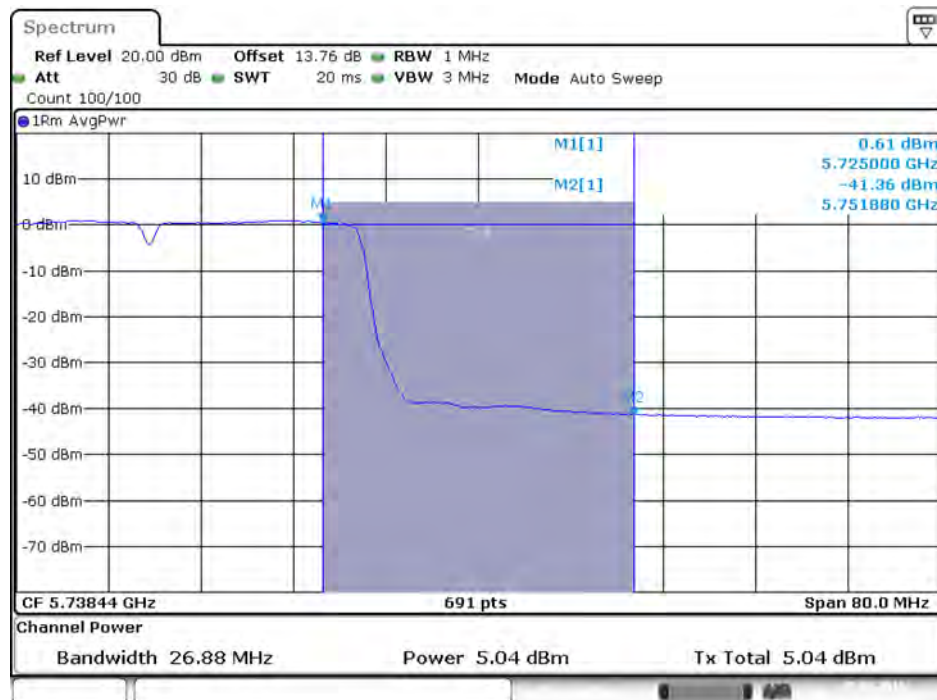


Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 / 5710 MHz (UNII 3)



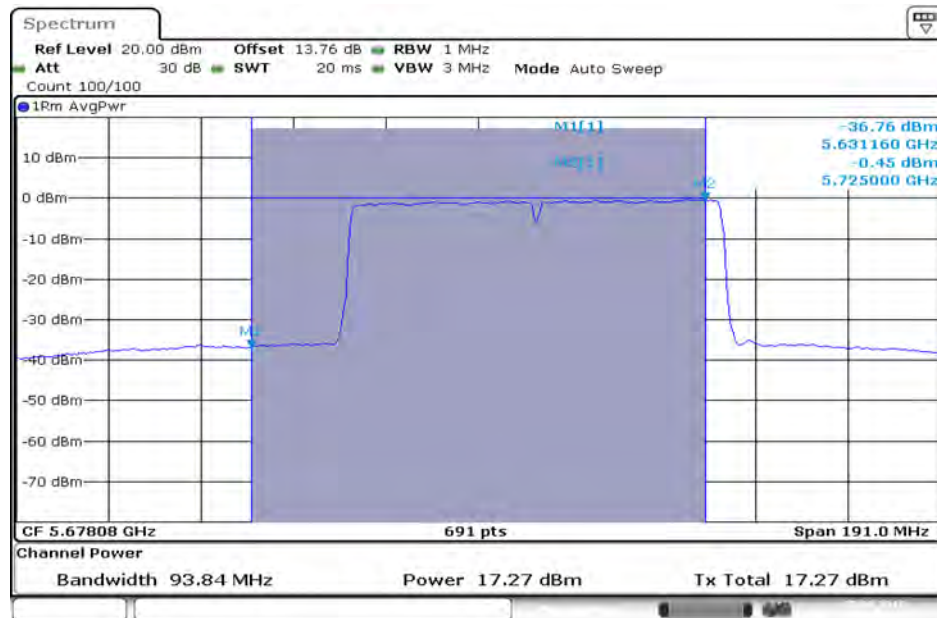
Date: 5 AUG.2016 14:39:27

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 / 5710 MHz (UNII 3)



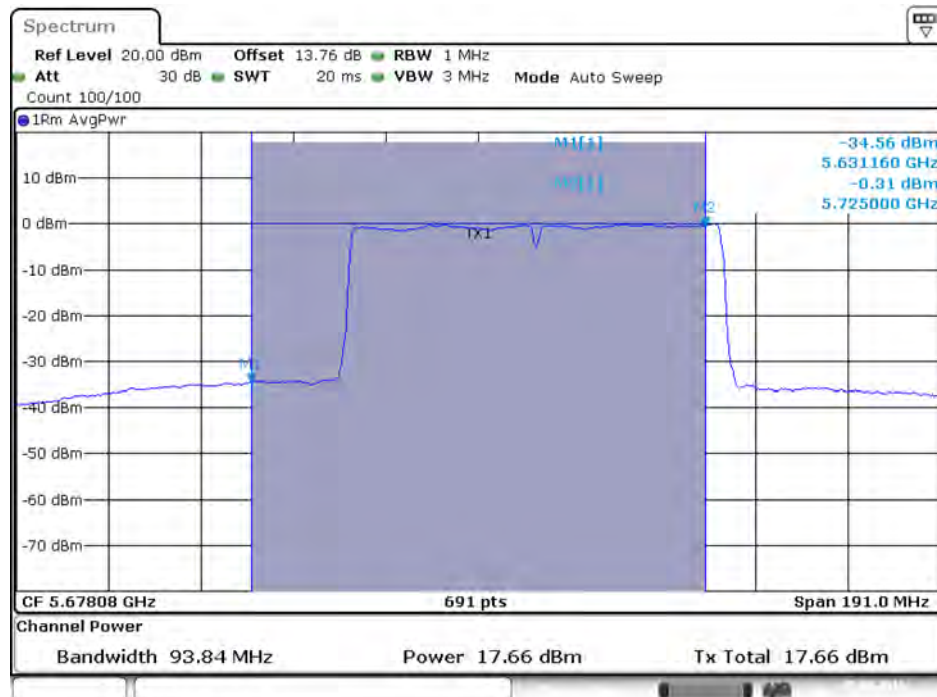
Date: 5.AUG.2016 14:39:34

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 2C)



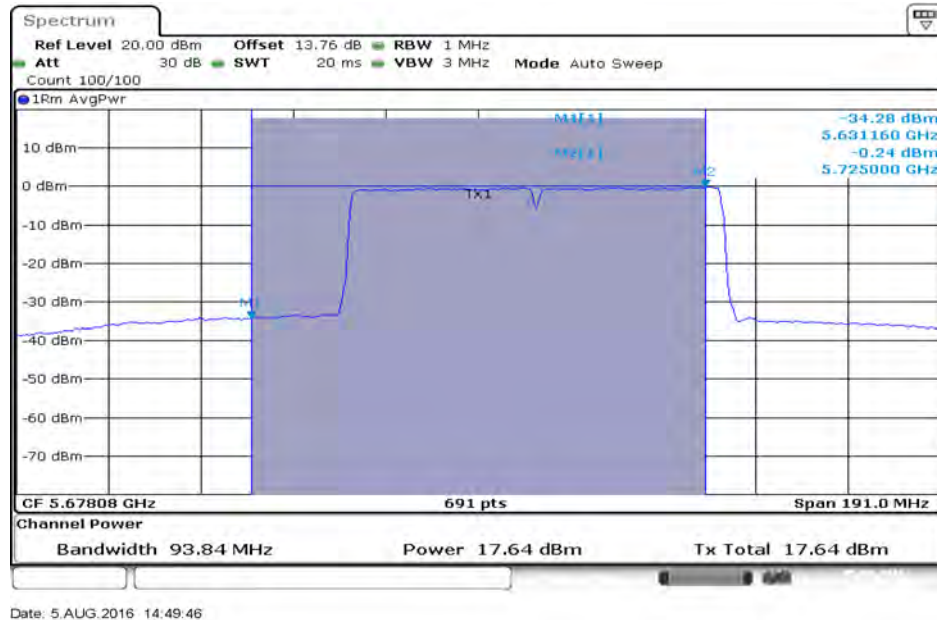
Date: 5.AUG.2016 14:49:31

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 2C)

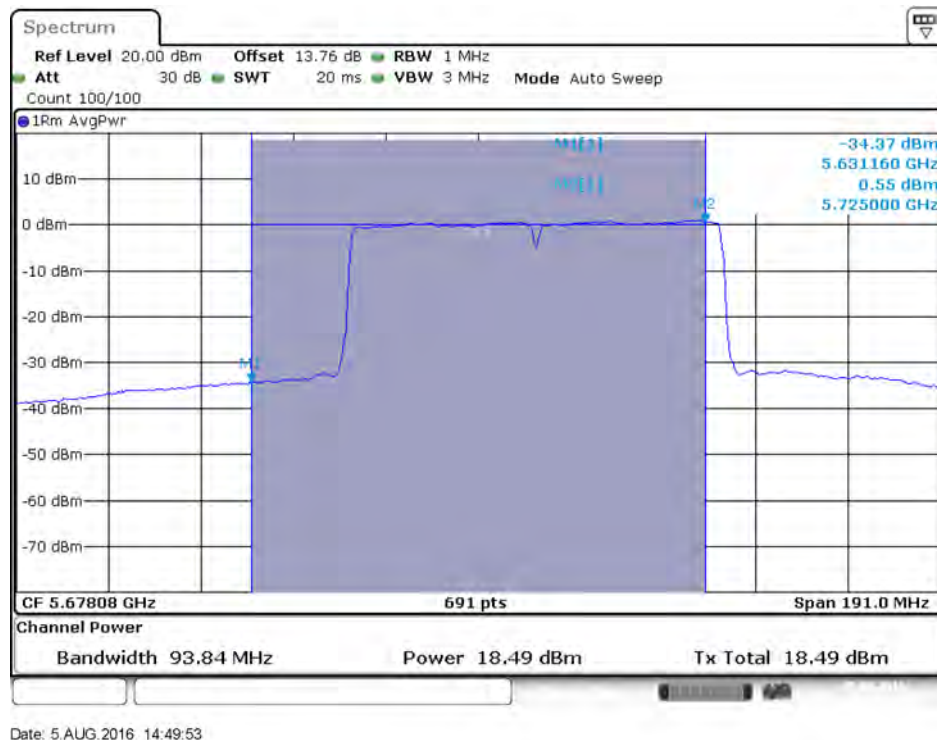


Date: 5.AUG.2016 14:49:38

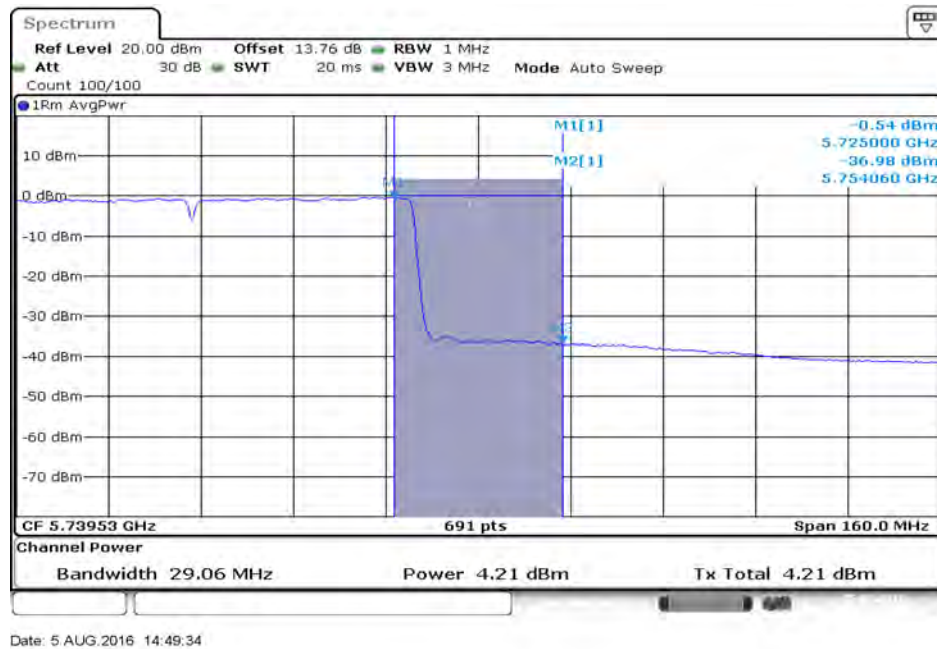
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 / 5690 MHz (UNII 2C)



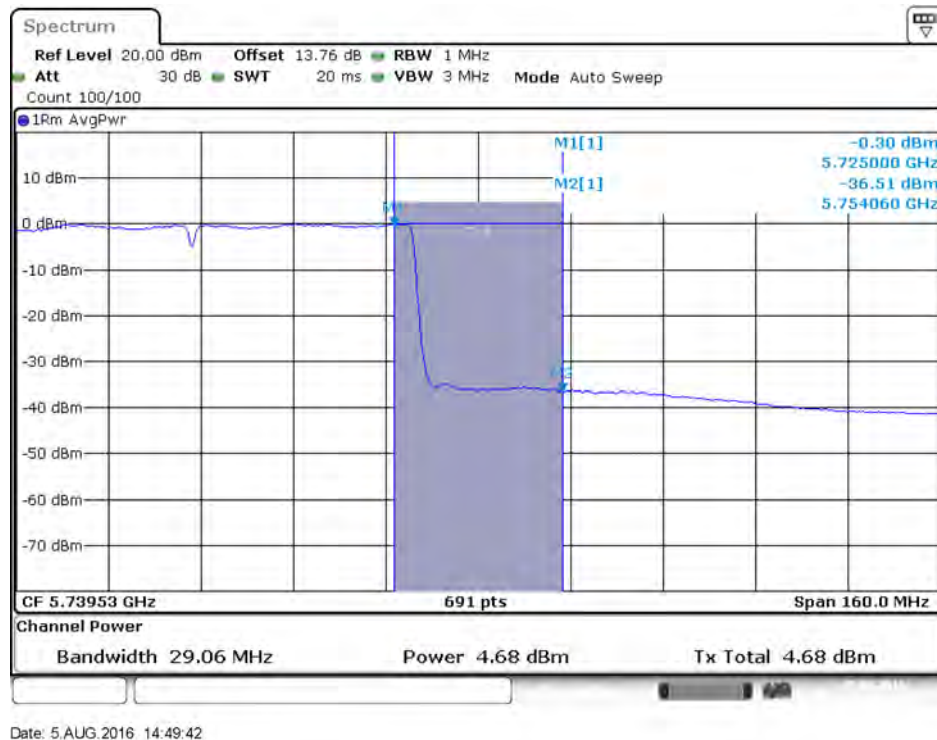
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 / 5690 MHz (UNII 2C)



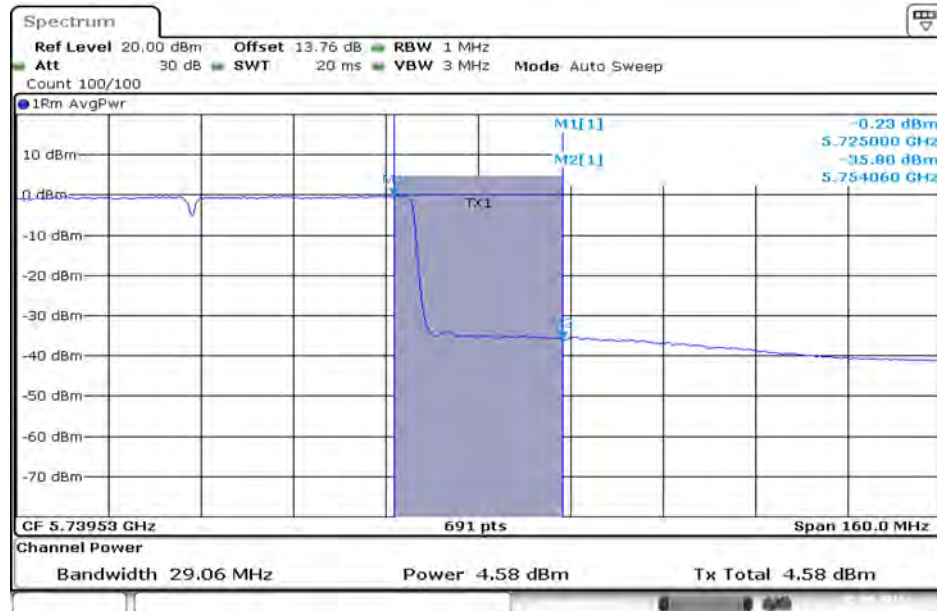
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 3)

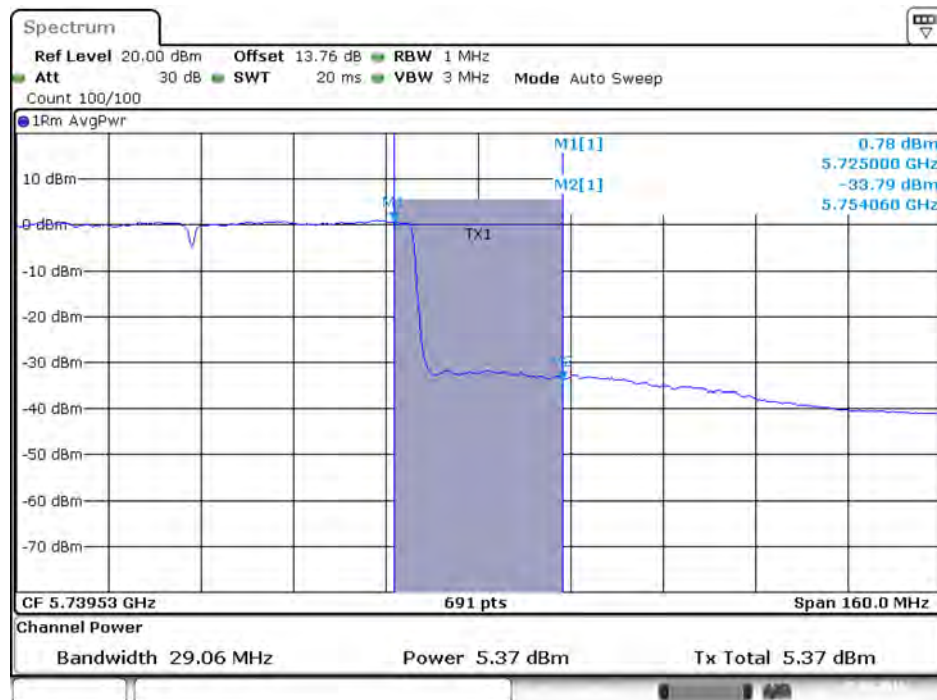


Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 / 5690 MHz (UNII 3)



Date: 5.AUG.2016 14:49:49

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 / 5690 MHz (UNII 3)



Date: 5.AUG.2016 14:49:56

For beamforming mode

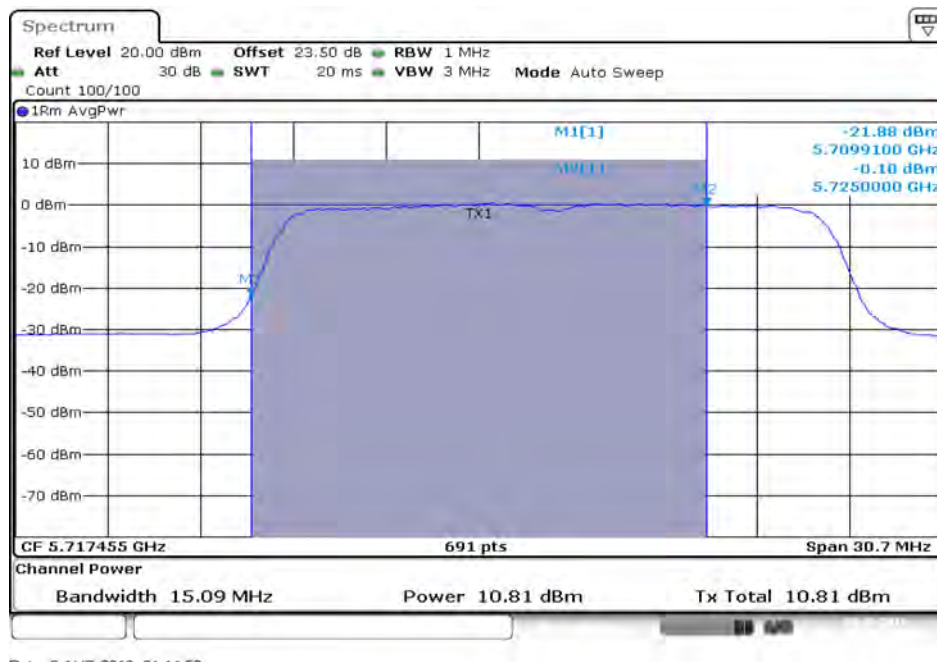
For indoor, outdoor use master and slave without radar detection

Straddle Channel

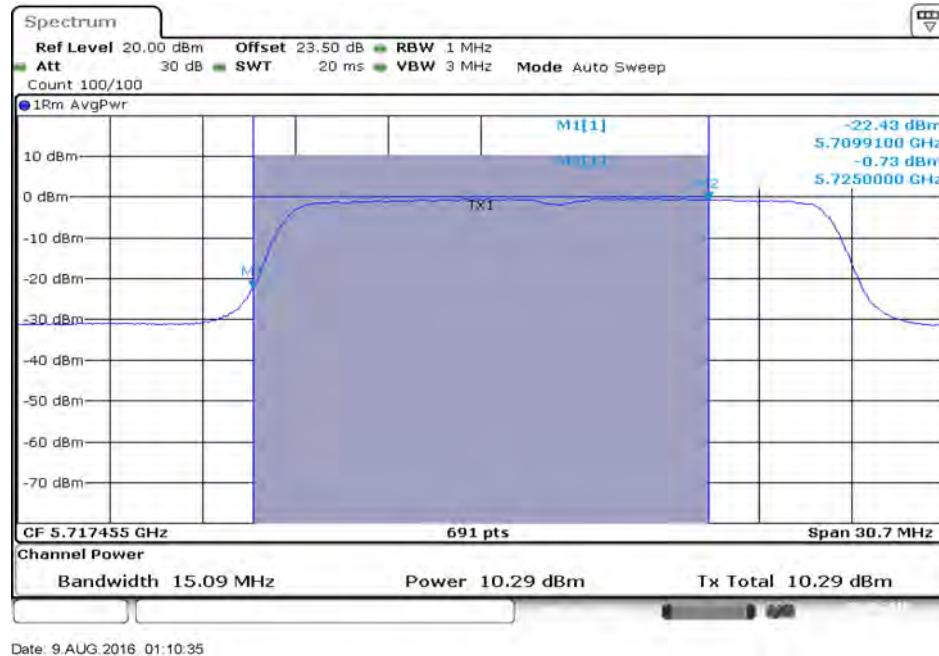
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 2C)



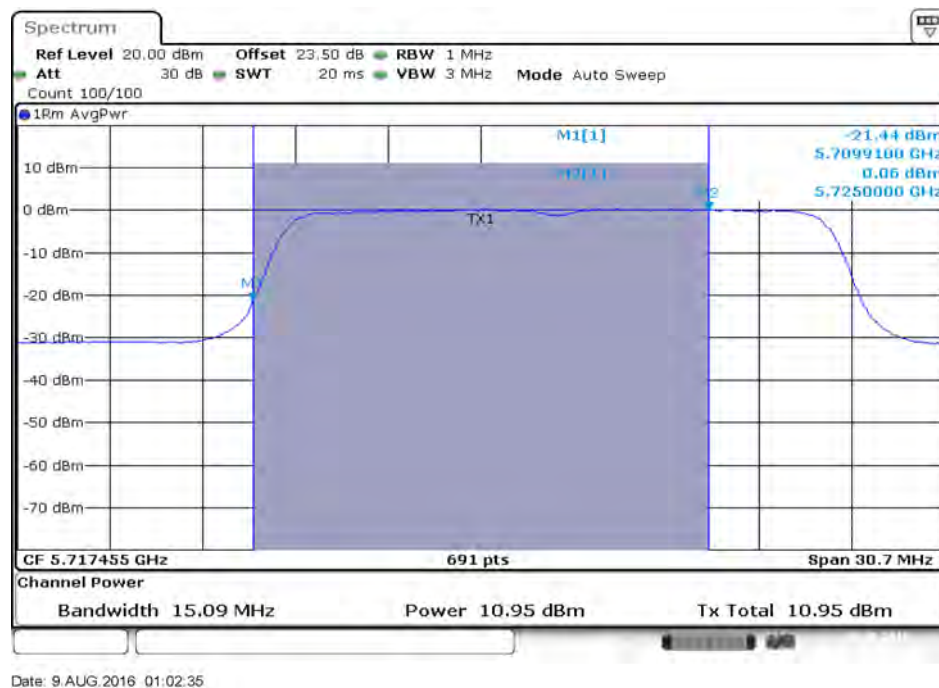
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz (UNII 2C)



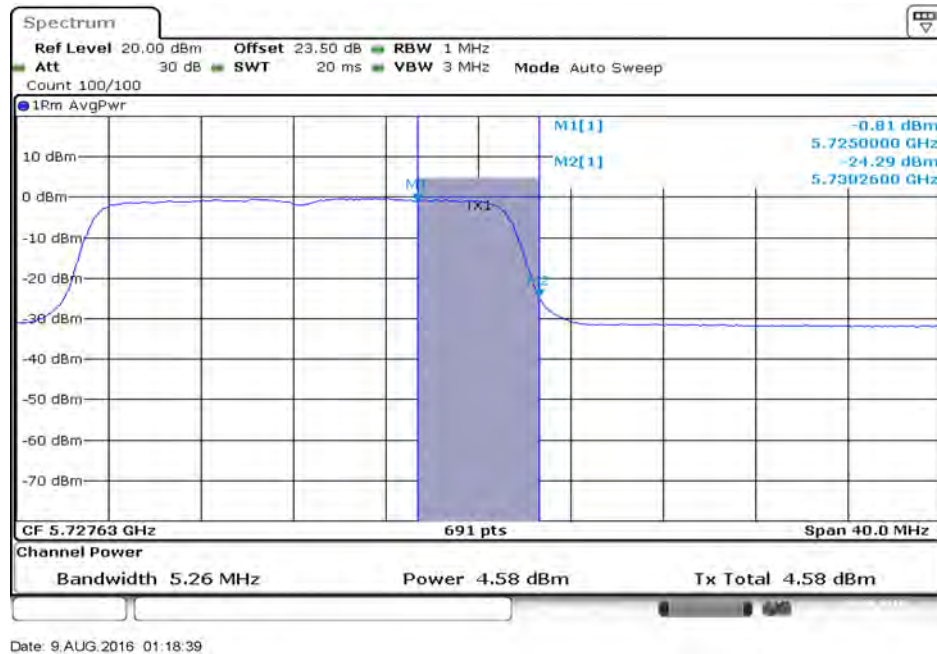
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 / 5720 MHz (UNII 2C)



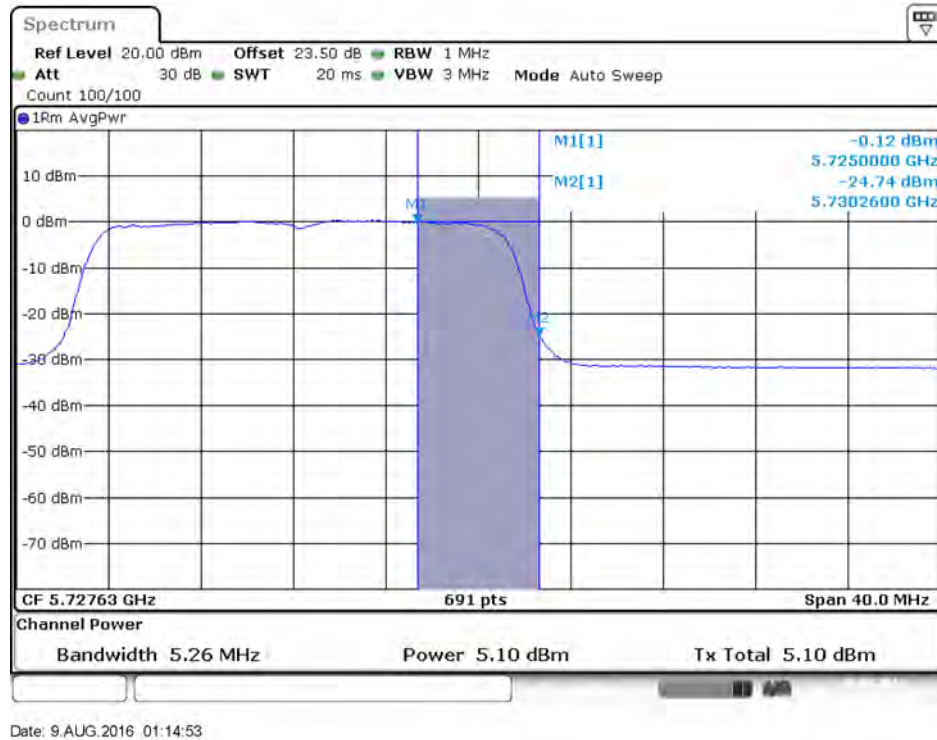
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 / 5720 MHz (UNII 2C)



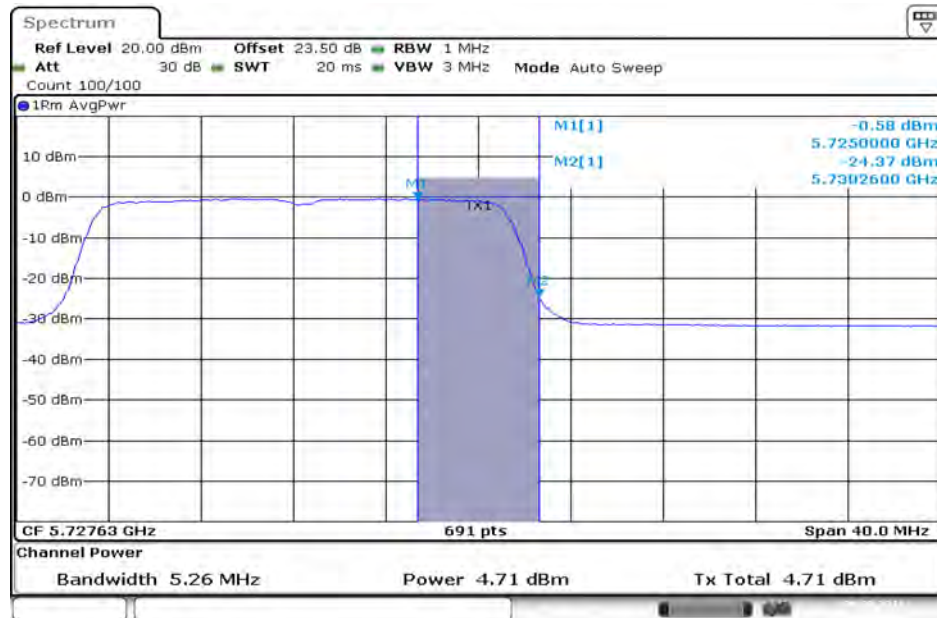
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz (UNII 3)

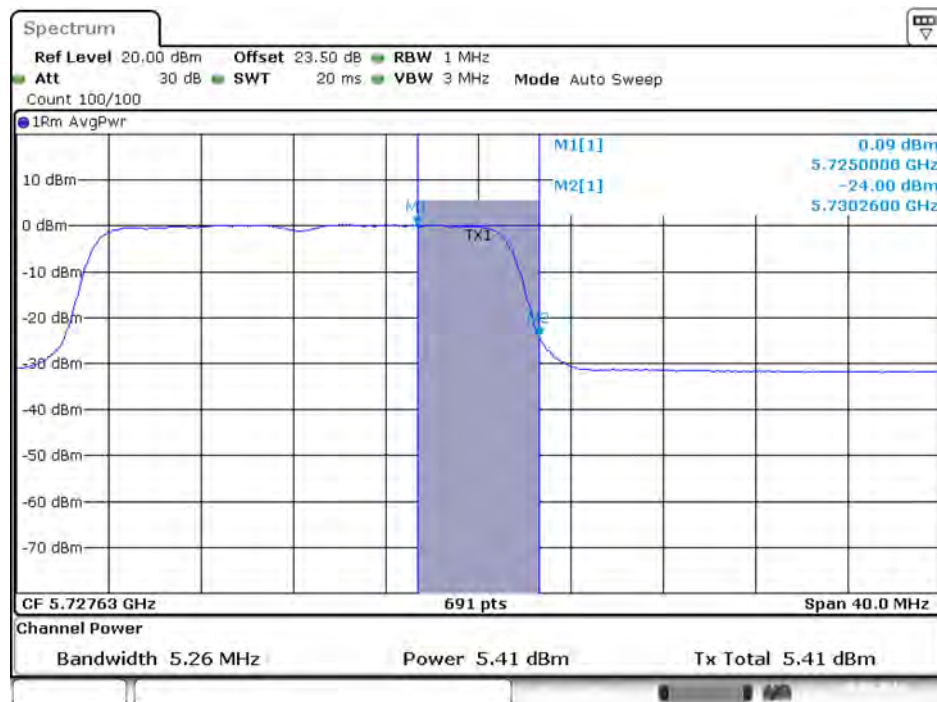


Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 / 5720 MHz (UNII 3)



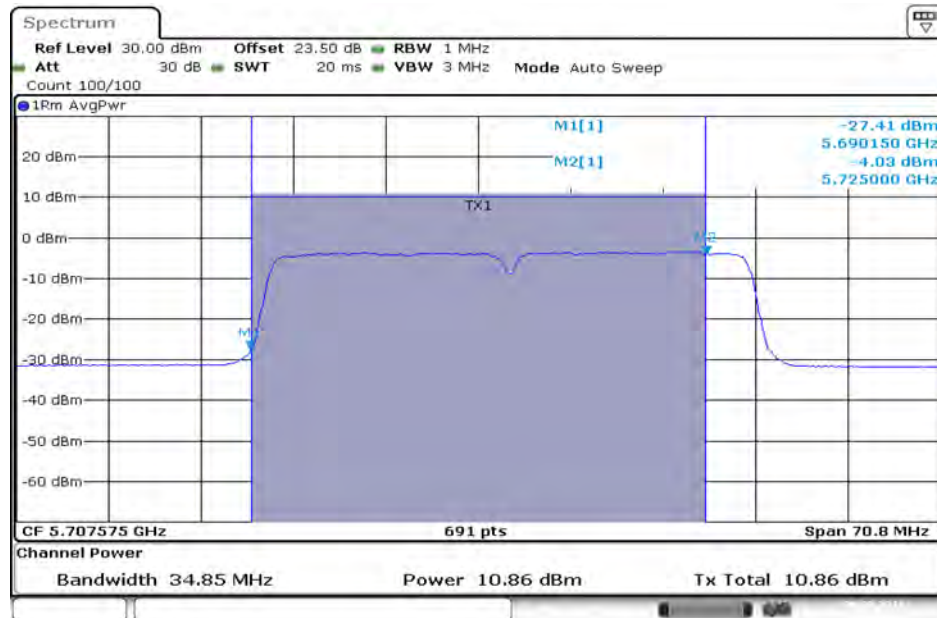
Date: 9.AUG.2016 01:10:39

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 / 5720 MHz (UNII 3)



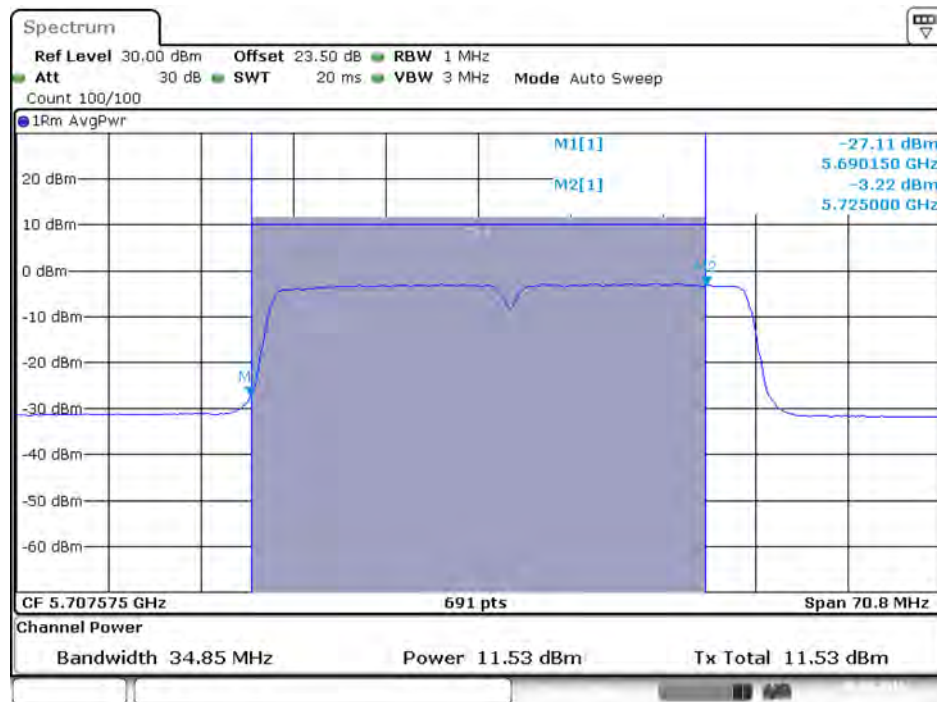
Date: 9.AUG.2016 01:02:39

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 2C)



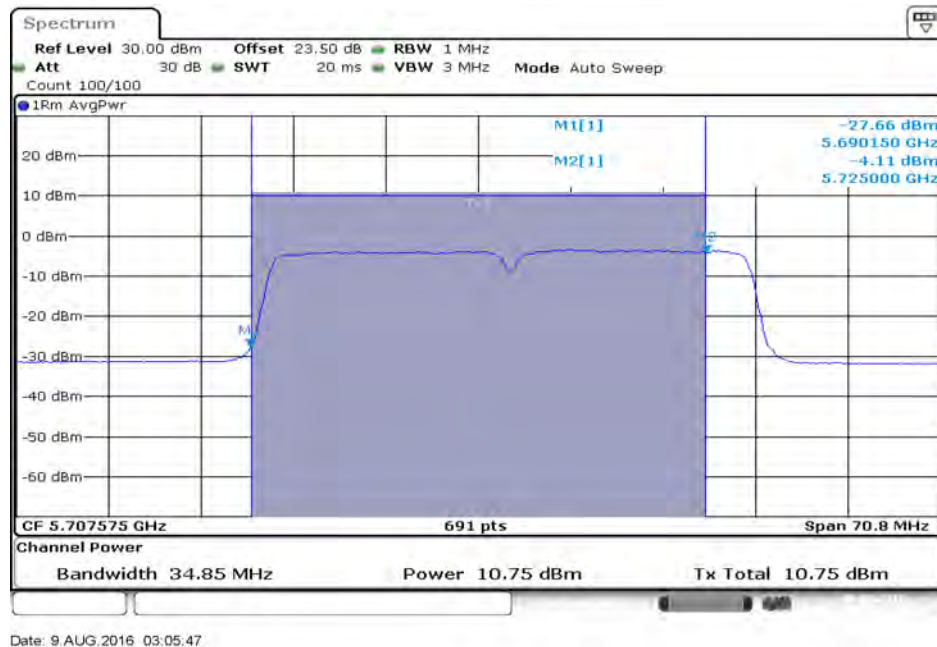
Date: 9.AUG.2016 03:10:42

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 2C)

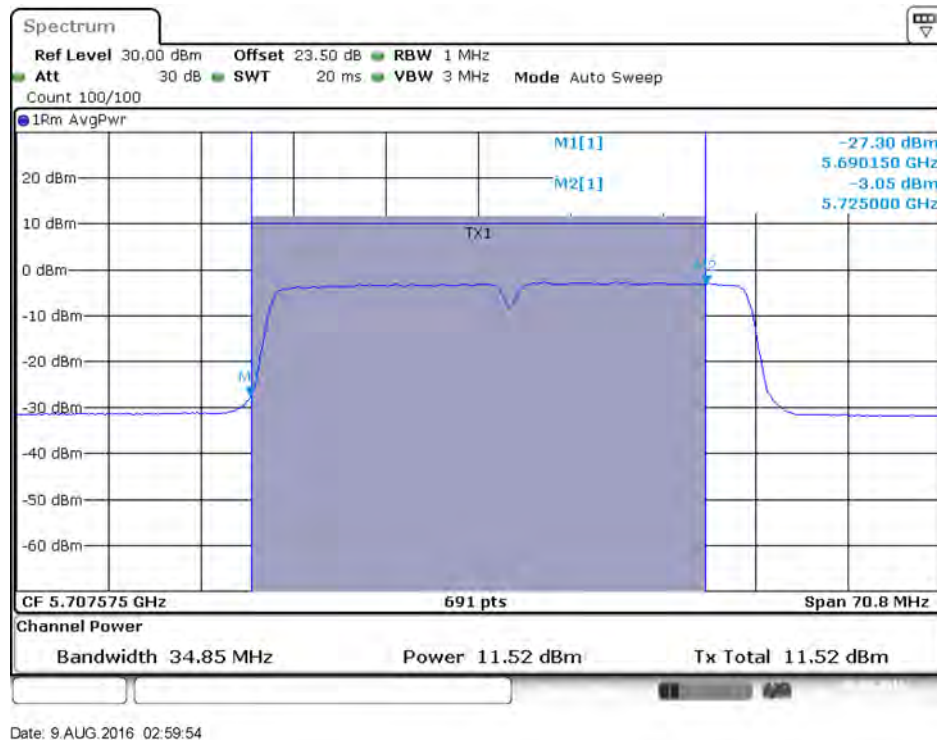


Date: 9.AUG.2016 03:08:17

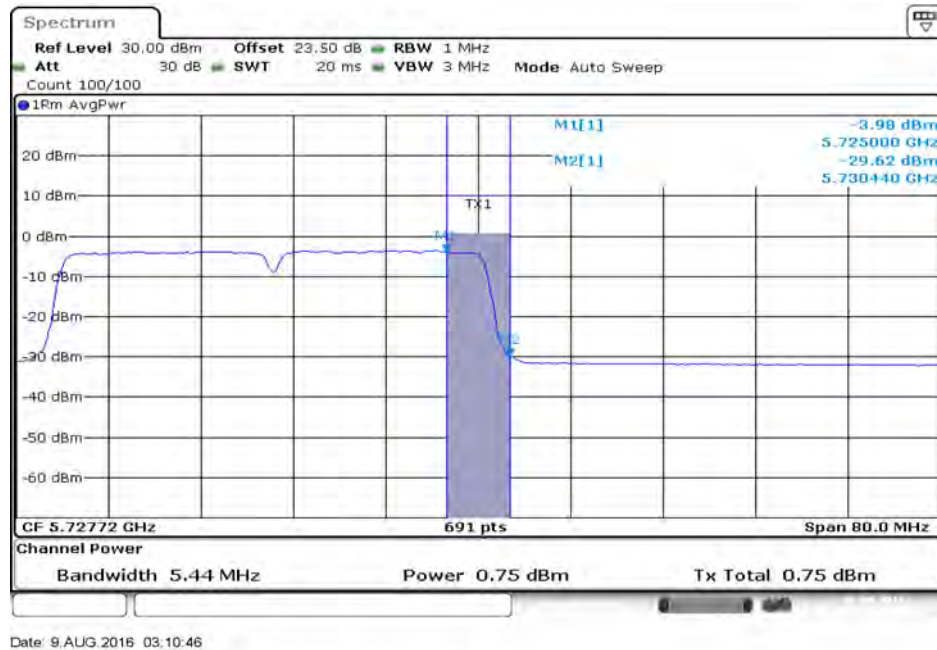
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 / 5710 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 / 5710 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 3)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 / 5710 MHz (UNII 3)



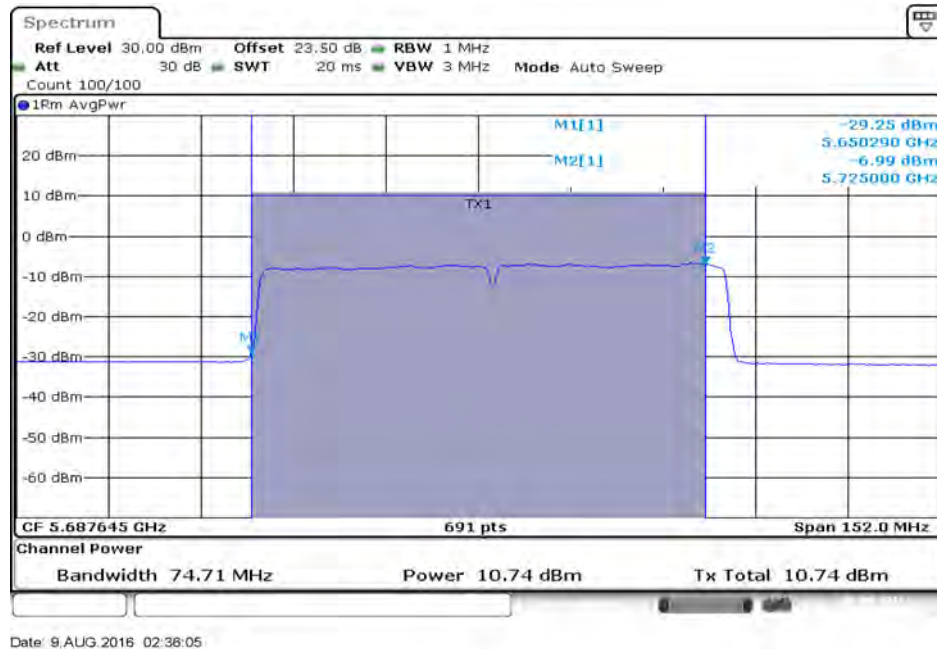
Date: 9.AUG.2016 03:05:51

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 / 5710 MHz (UNII 3)

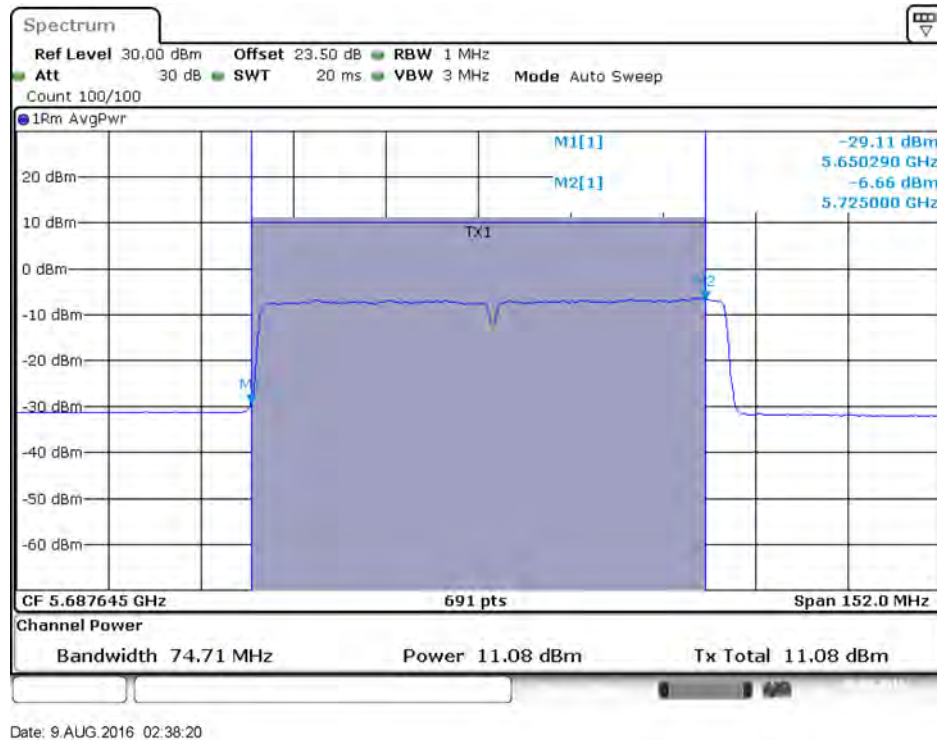


Date: 9.AUG.2016 02:59:58

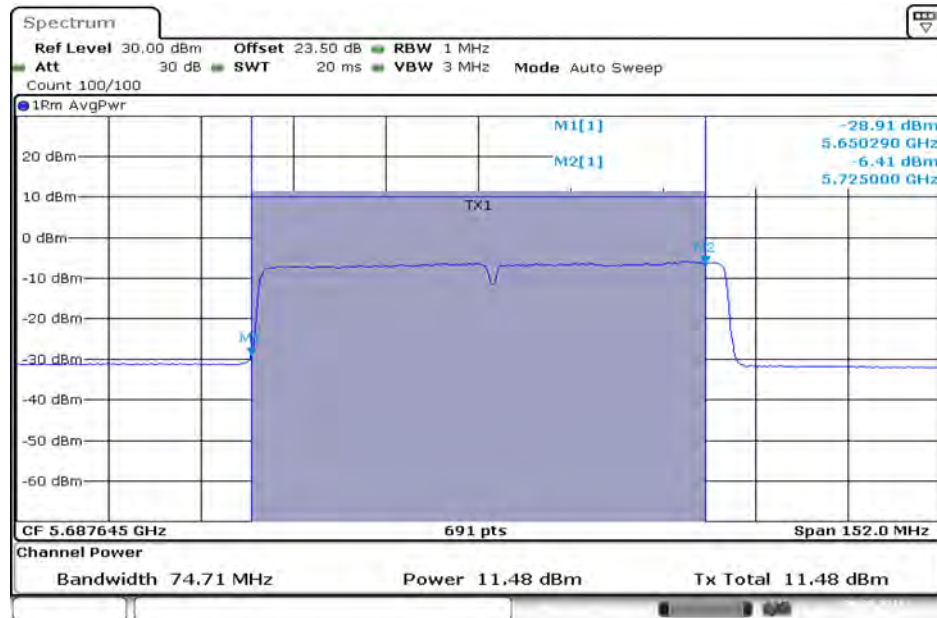
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 2C)



Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 / 5690 MHz (UNII 2C)



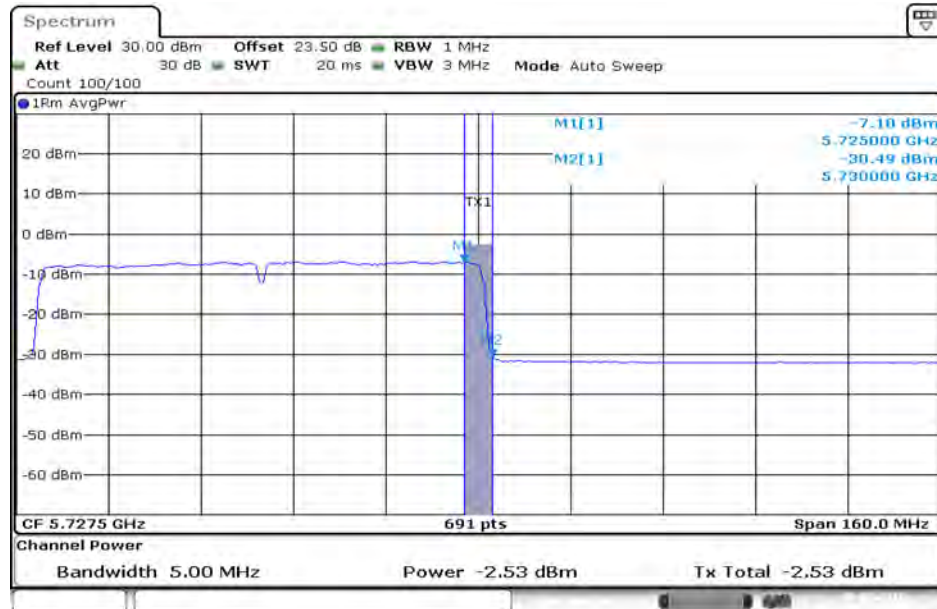
Date: 9.AUG.2016 02:40:07

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 / 5690 MHz (UNII 2C)



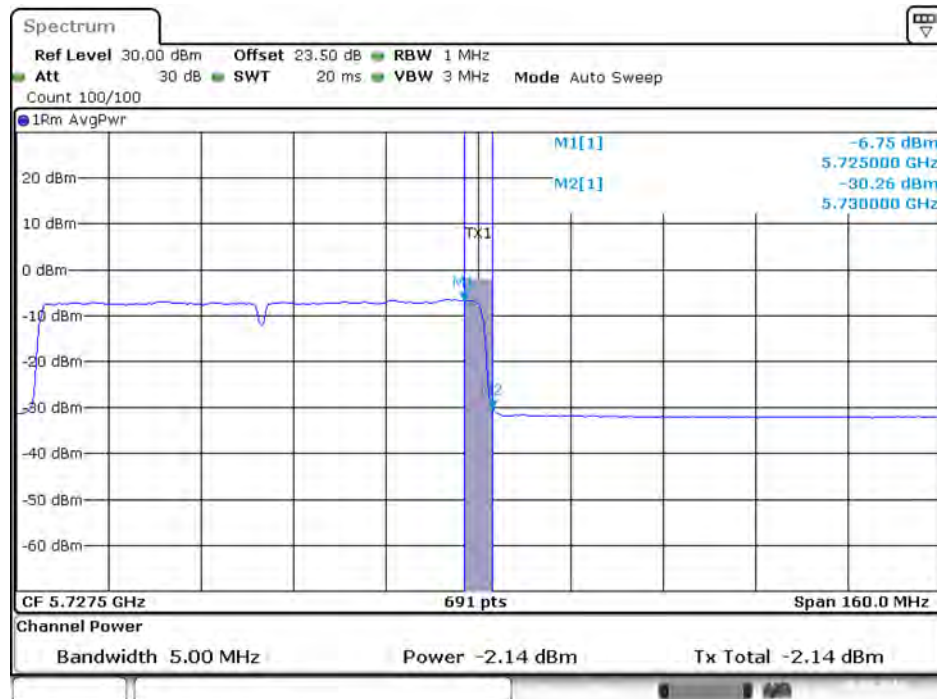
Date: 9.AUG.2016 02:42:22

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 3)



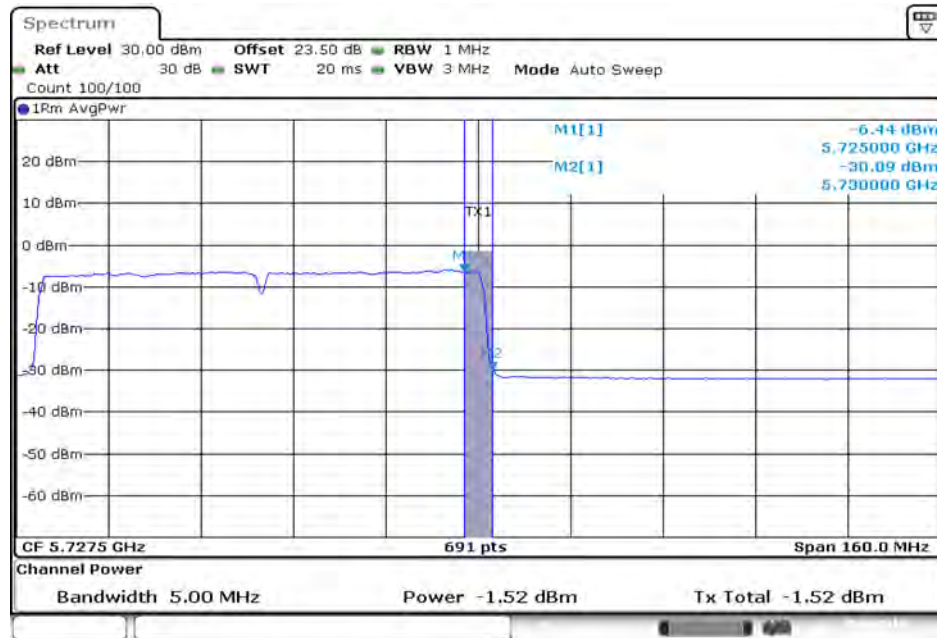
Date: 9.AUG.2016 02:36:08

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 3)



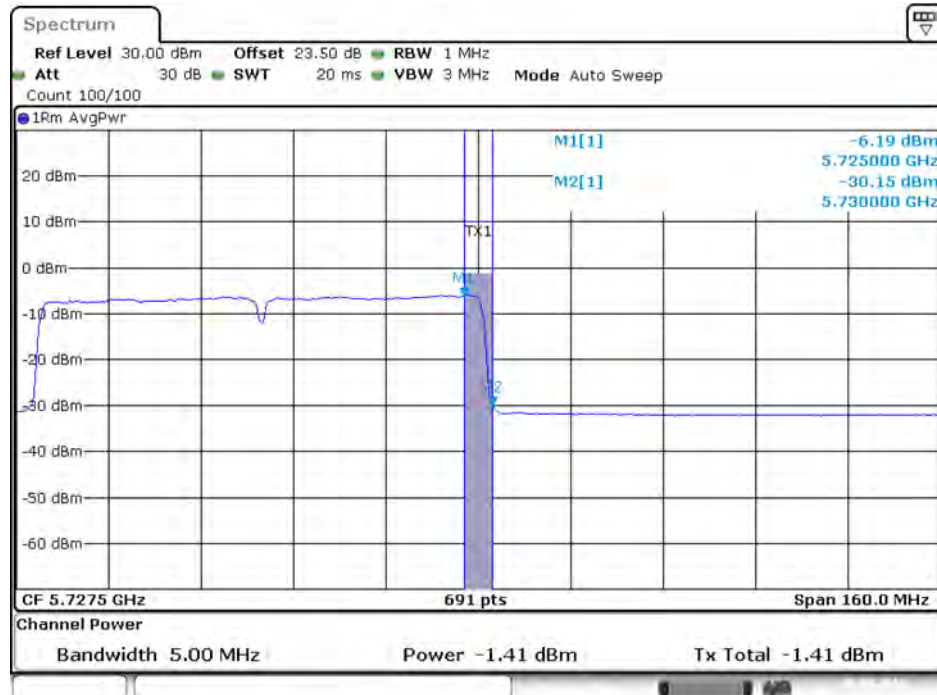
Date: 9.AUG.2016 02:38:23

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 / 5690 MHz (UNII 3)



Date: 9.AUG.2016 02:40:11

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 / 5690 MHz (UNII 3)



Date: 9.AUG.2016 02:42:26

2.5. Power Spectral Density Measurement

2.5.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 2.4.1.

Frequency Band		Limit
☒	5.250-5.350 GHz	11 dBm/MHz
☒	5.470-5.725 GHz	11 dBm/MHz

2.5.2. Measuring Instruments and Setting

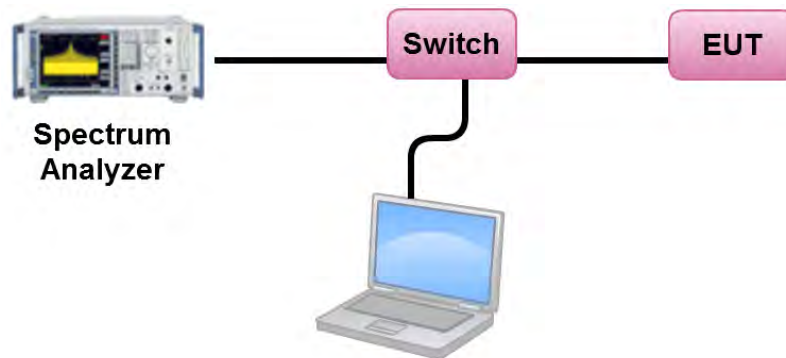
Please refer to section 3 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1000 kHz
VBW	3000 kHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times
Note: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.	

2.5.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v02r01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements and sum the spectra across the outputs.
4. For 5.725~5.85 GHz, the measured result of PSD level must add $10\log(500\text{kHz/RBW})$ and the final result should ≤ 30 dBm.

2.5.4. Test Setup Layout



2.5.5. Test Deviation

There is no deviation with the original standard.

2.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.5.7. Test Result of Power Spectral Density

Temperature	22°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Oct. 19, 2016

For non-beamforming mode

For indoor/outdoor B2~B3

Configuration IEEE 802.11a / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
52	5260 MHz	4.92	6.98	PASS
60	5300 MHz	4.91	6.98	PASS
64	5320 MHz	4.88	6.98	PASS
100	5500 MHz	4.85	6.98	PASS
116	5580 MHz	4.93	6.98	PASS
140	5700 MHz	4.97	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so B2 B3 limit = 11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
52	5260 MHz	4.76	6.98	PASS
60	5300 MHz	4.82	6.98	PASS
64	5320 MHz	4.81	6.98	PASS
100	5500 MHz	4.88	6.98	PASS
116	5580 MHz	4.85	6.98	PASS
140	5700 MHz	4.97	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so B2 B3 limit = 11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
54	5270 MHz	4.87	6.98	PASS
62	5310 MHz	4.93	6.98	PASS
102	5510 MHz	3.41	6.98	PASS
110	5550 MHz	4.88	6.98	PASS
134	5670 MHz	4.90	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so B2 B3 limit = 11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
58	5290 MHz	1.41	6.98	PASS
106	5530 MHz	-3.41	6.98	PASS
122	5610 MHz	3.39	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so B2 B3 limit = 11-(10.02-6)=6.98dBm/MHz.

Straddle Channel
Configuration IEEE 802.11a / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
144	5720 MHz (UNII 2C)	4.68	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 11 - (10.02 - 6) = 6.98 dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	4.47	-3.01	1.46	25.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 30 - (10.02 - 6) = 25.98 dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
144	5720 MHz (UNII 2C)	4.76	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 11 - (10.02 - 6) = 6.98 dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	4.58	-3.01	1.57	25.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 30-(10.02-6)=25.98dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
142	5710 MHz (UNII 2C)	4.69	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 11-(10.02-6)=6.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
142	5710 MHz (UNII 3)	4.38	-3.01	1.37	25.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 30-(10.02-6)=25.98dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
138	5690 MHz (UNII 2C)	4.61	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 11 - (10.02 - 6) = 6.98 dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
138	5690 MHz (UNII 3)	4.60	-3.01	1.59	25.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 30 - (10.02 - 6) = 25.98 dBm/500kHz.

For beamforming mode

For indoor/outdoor B2~B3

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
52	5260 MHz	4.37	6.98	PASS
60	5300 MHz	4.42	6.98	PASS
64	5320 MHz	4.25	6.98	PASS
100	5500 MHz	3.91	6.98	PASS
116	5580 MHz	4.00	6.98	PASS
140	5700 MHz	3.94	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so B2 B3 limit = 11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
54	5270 MHz	1.43	6.98	PASS
62	5310 MHz	1.57	6.98	PASS
102	5510 MHz	0.92	6.98	PASS
110	5550 MHz	0.89	6.98	PASS
134	5670 MHz	1.05	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so B2 B3 limit = 11-(10.02-6)=6.98dBm/MHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
58	5290 MHz	-1.73	6.98	PASS
106	5530 MHz	-1.72	6.98	PASS
122	5610 MHz	-1.91	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so B2 B3 limit = $11 - (10.02 - 6) = 6.98\text{dBm/MHz}$.

Straddle Channel
Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
144	5720 MHz (UNII 2C)	4.64	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 11 - (10.02 - 6) = 6.98 dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	4.39	-3.01	1.38	25.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 30 - (10.02 - 6) = 25.98 dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
142	5710 MHz (UNII 2C)	1.81	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 11 - (10.02 - 6) = 6.98 dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
142	5710 MHz (UNII 3)	1.65	-3.01	-1.36	25.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 30-(10.02-6)=25.98dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
138	5690 MHz (UNII 2C)	-1.60	6.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 11-(10.02-6)=6.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
138	5690 MHz (UNII 3)	-1.66	-3.01	-4.67	25.98	PASS

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 10.02\text{dBi}$, so limit = 30-(10.02-6)=25.98dBm/500kHz.

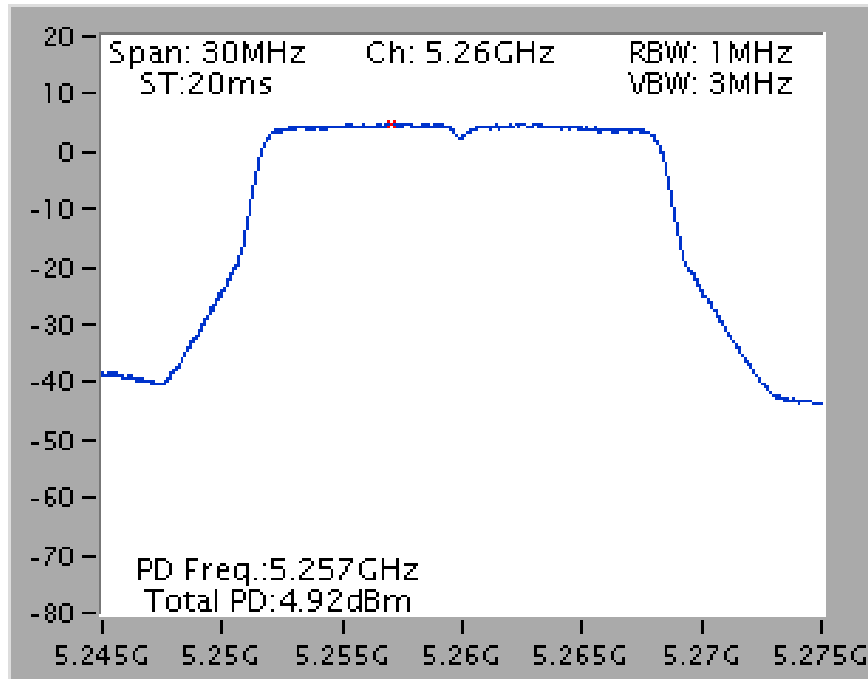
Note: All the test values were listed in the report.

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

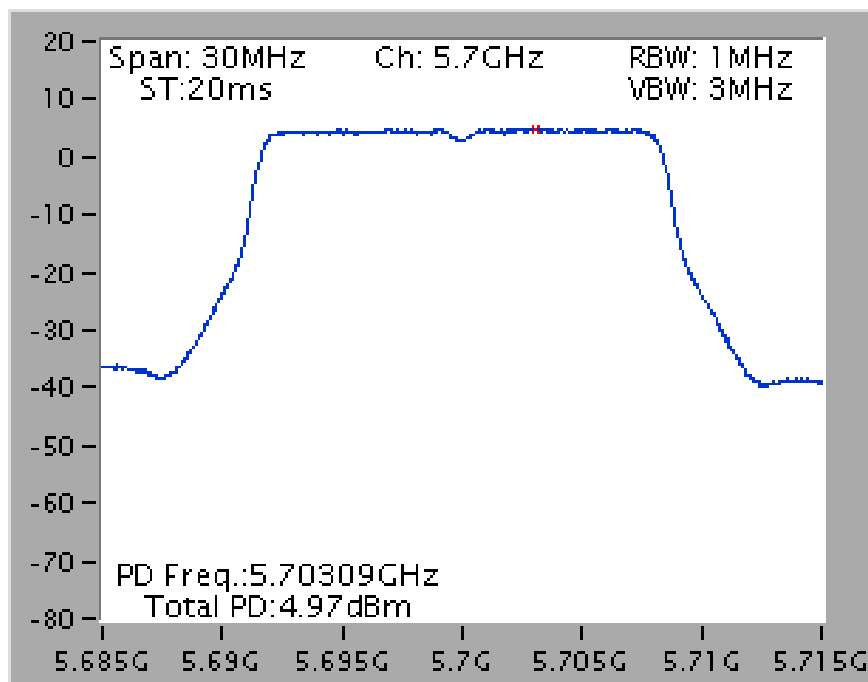
For non-beamforming mode

For indoor/outdoor B2-B3

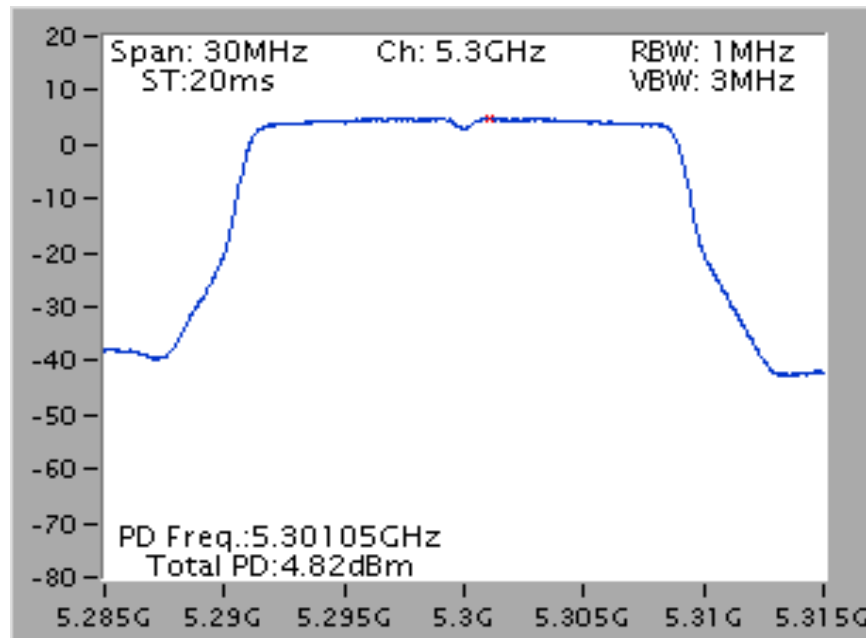
Power Density Plot on Configuration IEEE 802.11a / Port 1 + Port 2 + Port 3 + Port 4 / 5260 MHz



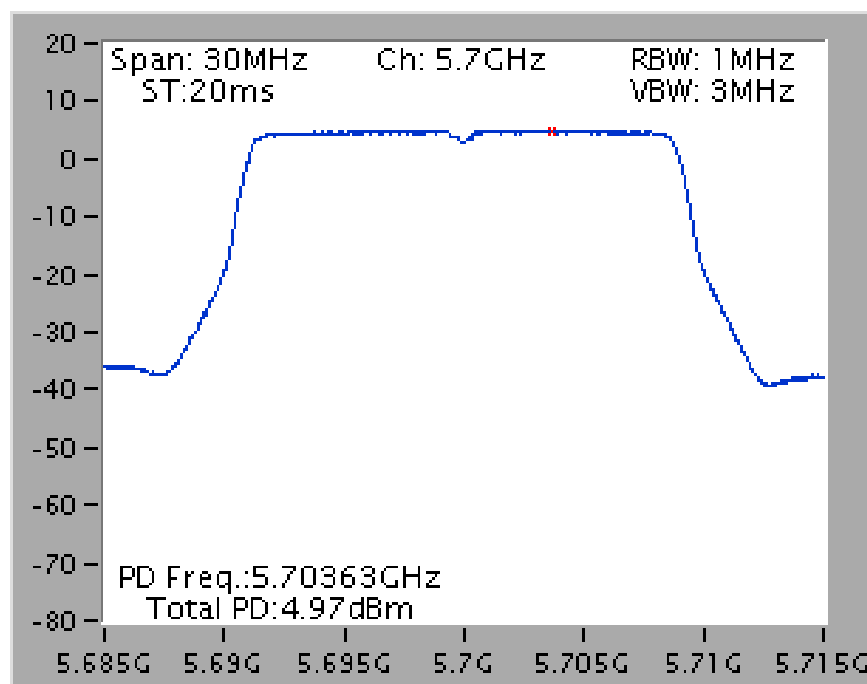
Power Density Plot on Configuration IEEE 802.11a / Port 1 + Port 2 + Port 3 + Port 4 / 5700 MHz



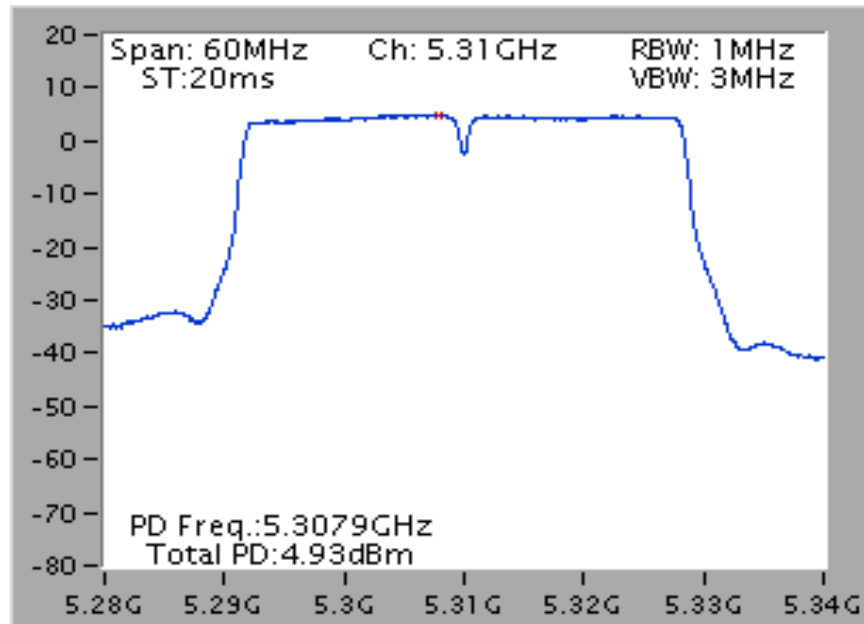
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5300 MHz



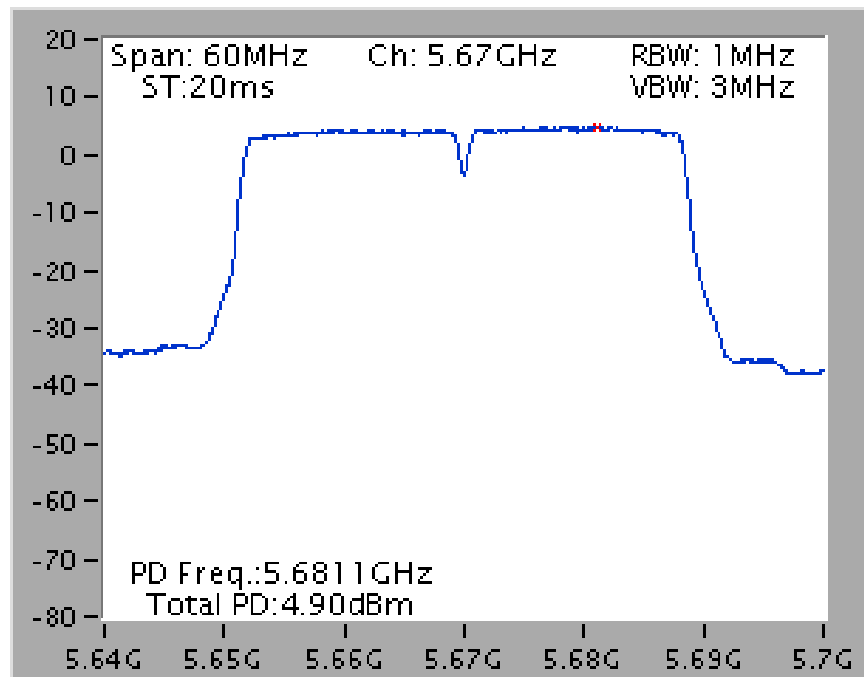
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5700 MHz



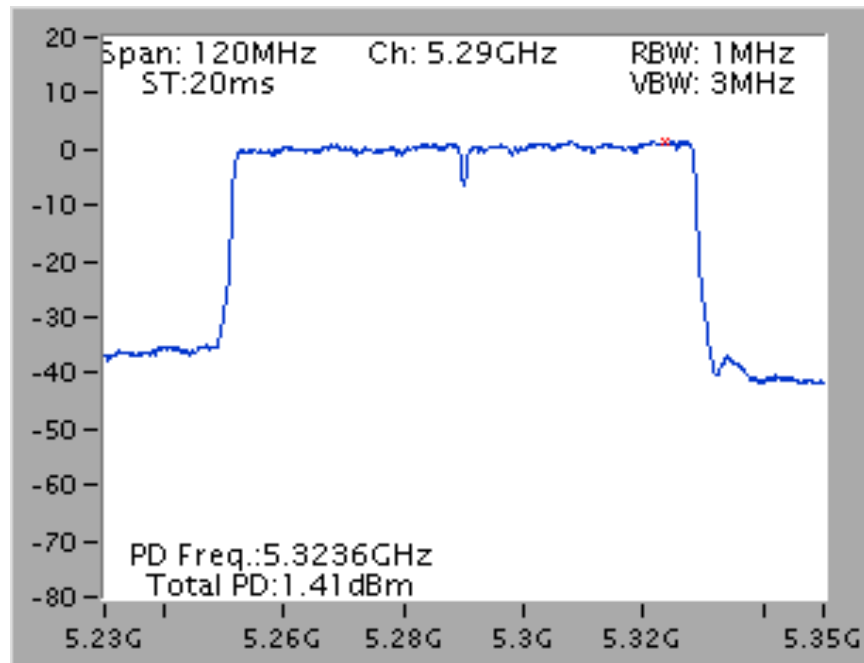
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5310 MHz



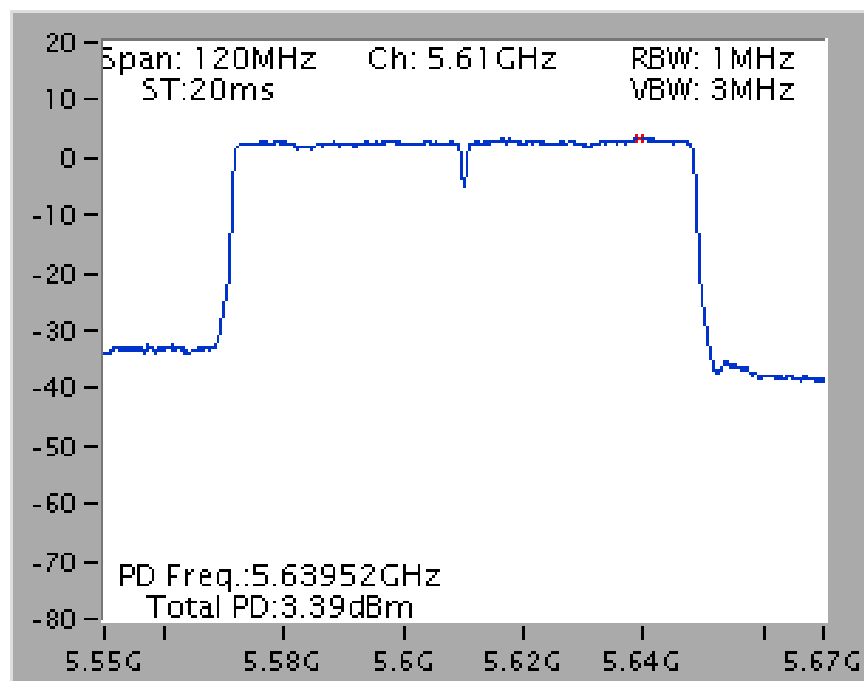
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5670 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5290 MHz

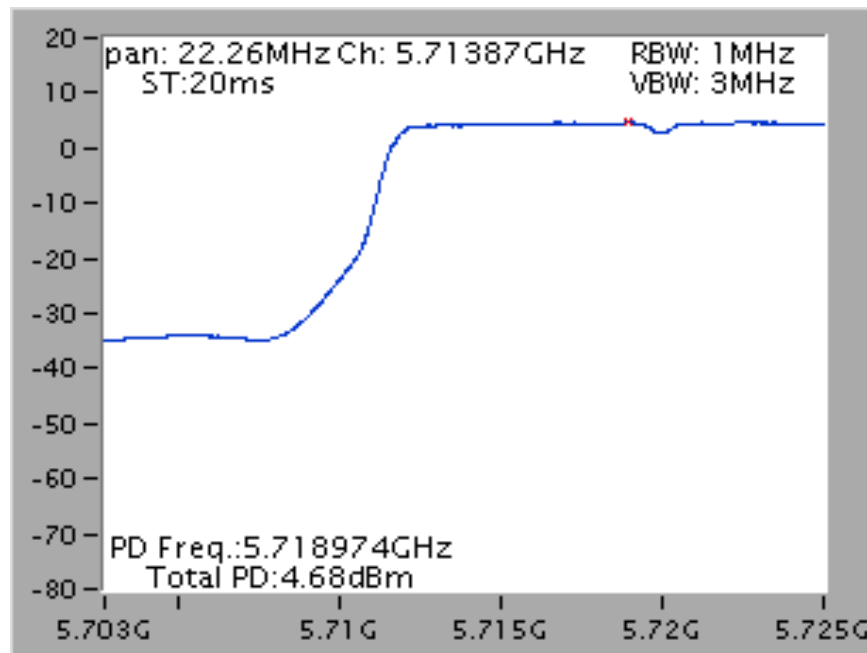


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5610 MHz

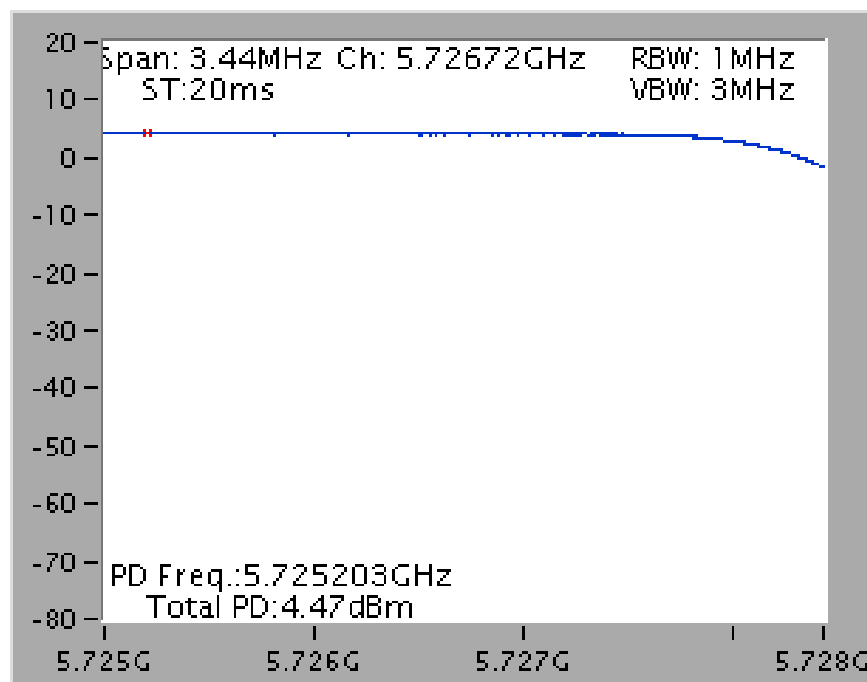


Straddle Channel

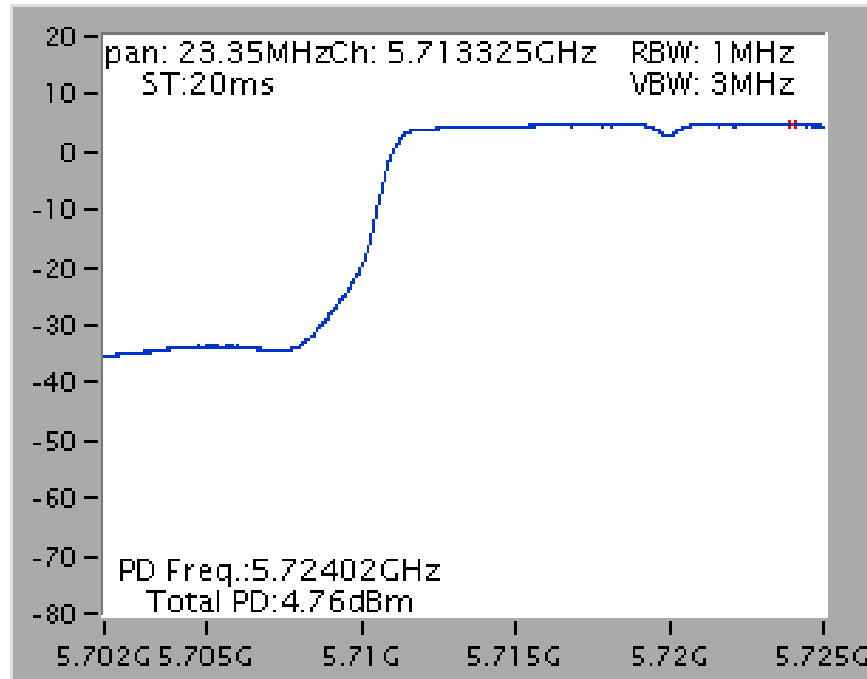
Power Density Plot on Configuration IEEE 802.11a / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz (UNII 2C)



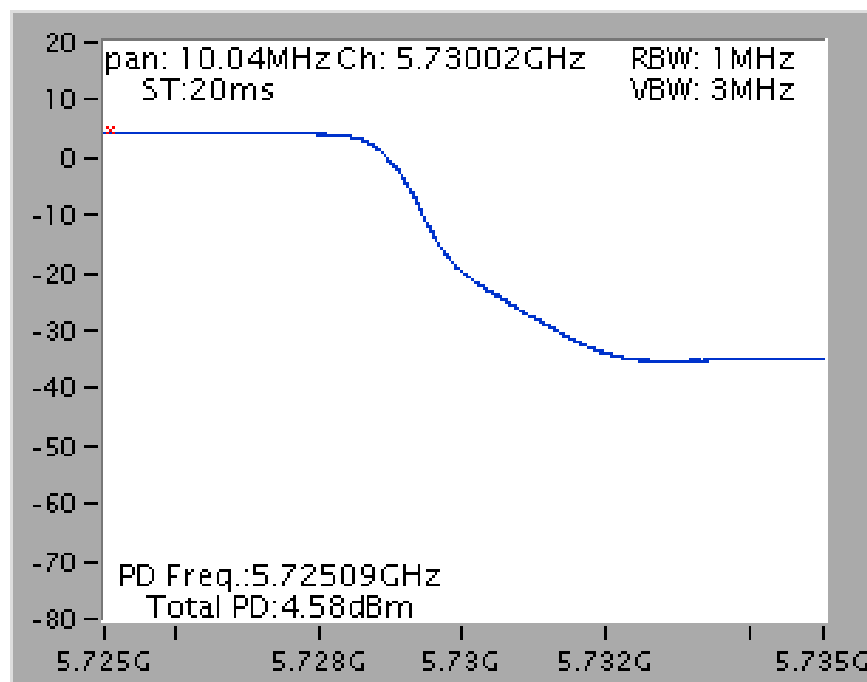
Power Density Plot on Configuration IEEE 802.11a / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz (UNII 3)



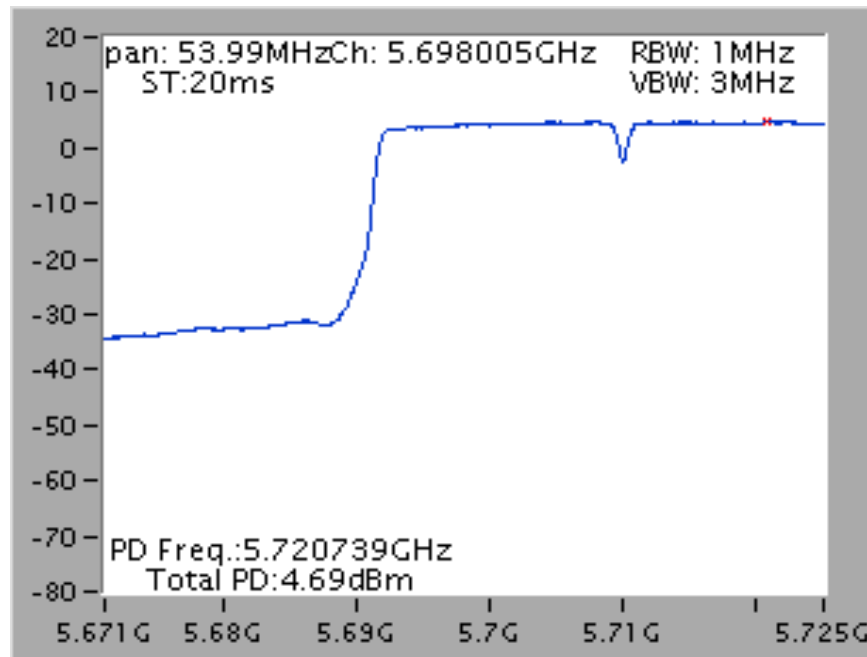
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz (UNII 2C)



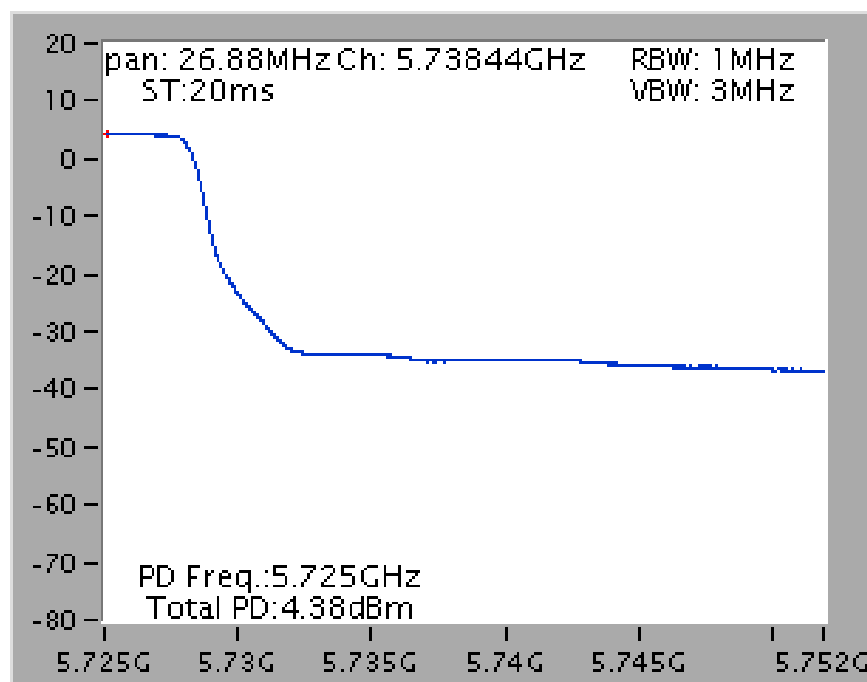
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz (UNII 3)



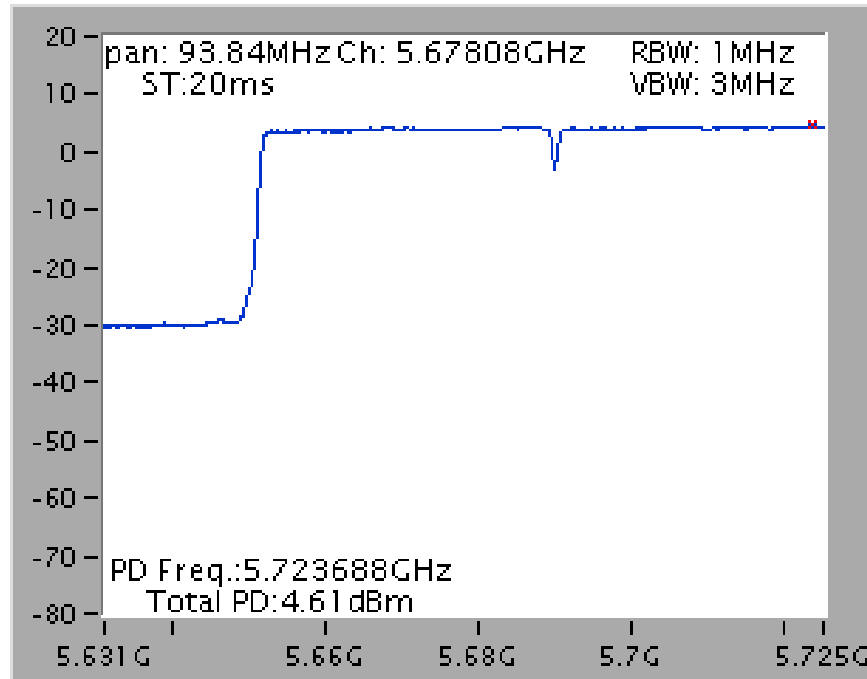
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5710 MHz (UNII 2C)



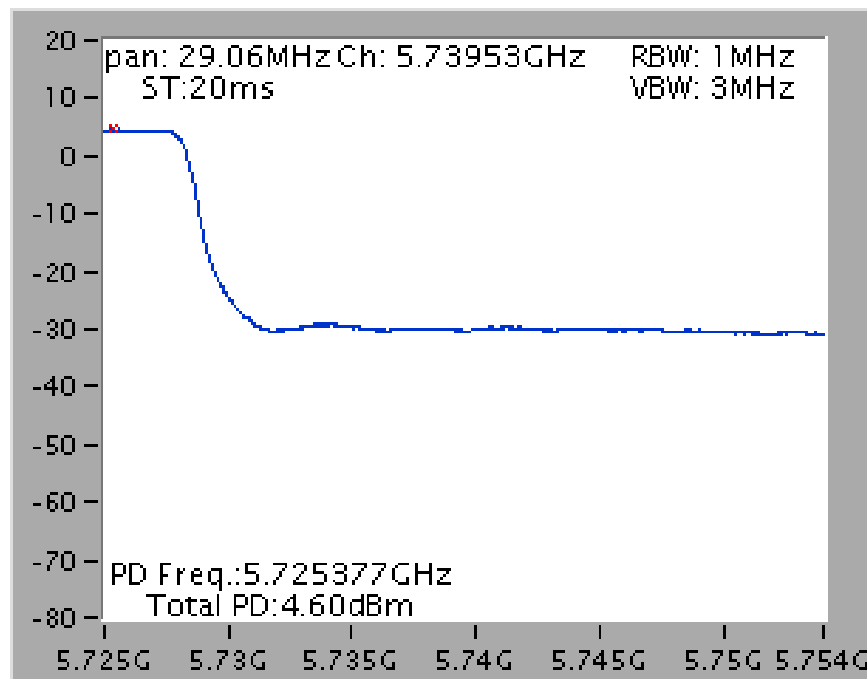
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5710 MHz (UNII 3)



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5690 MHz (UNII 2C)



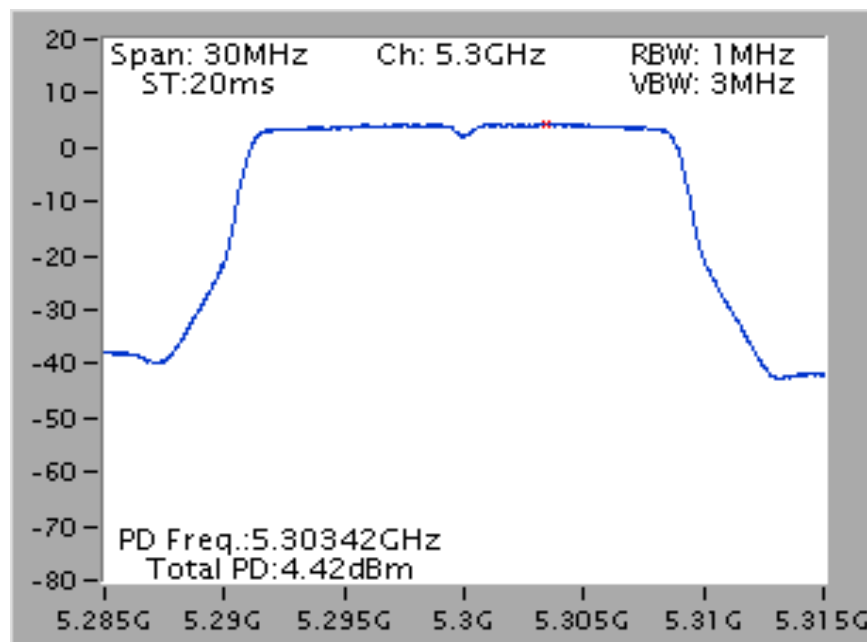
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5690 MHz (UNII 3)



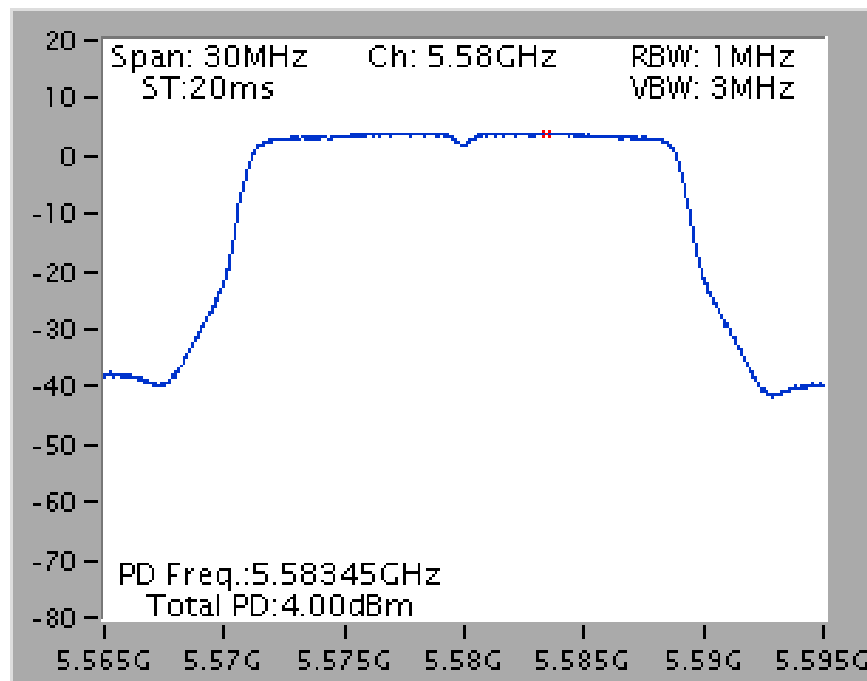
For beamforming mode

For indoor/outdoor B2-B3

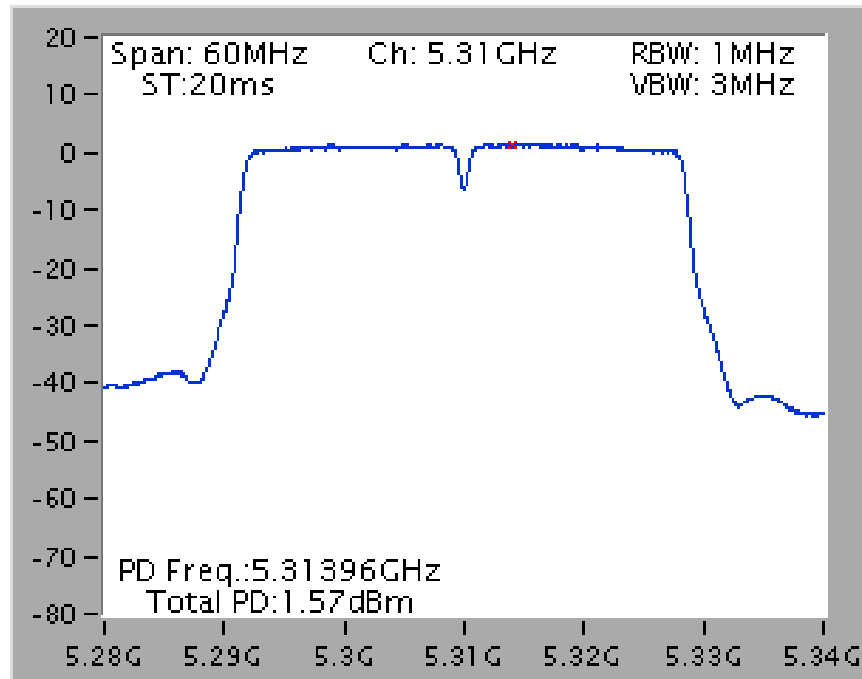
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5300 MHz



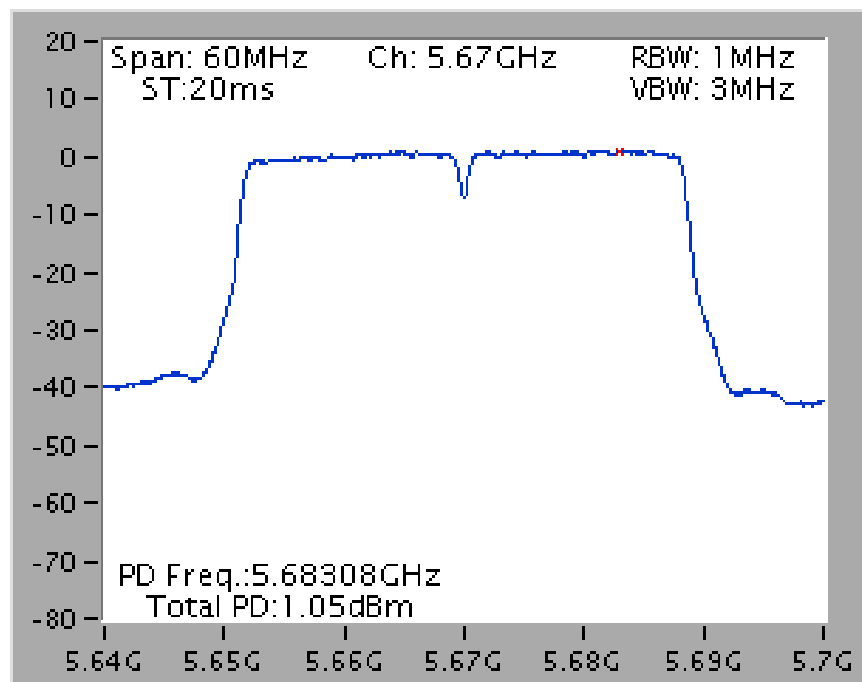
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5580 MHz



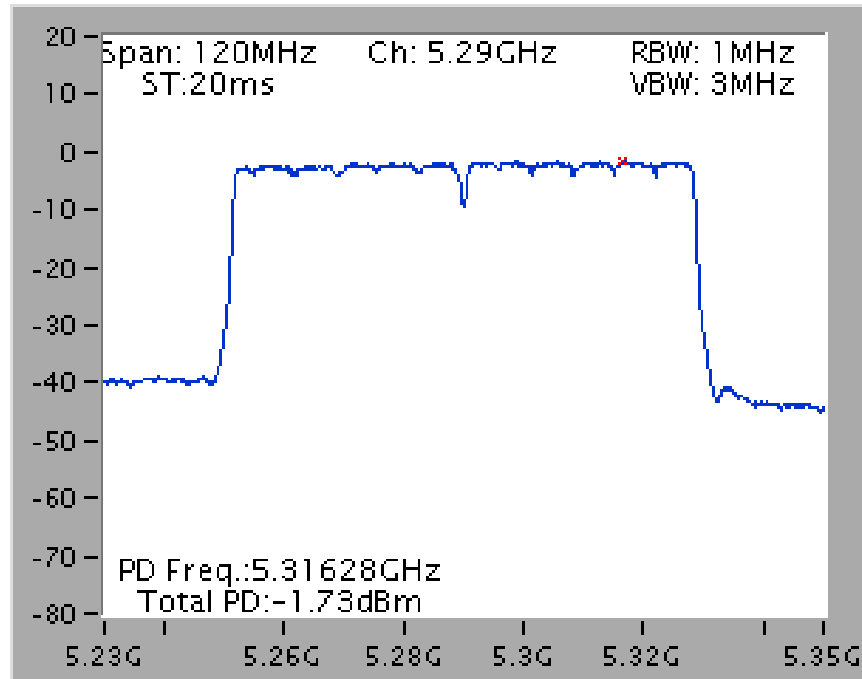
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5310 MHz



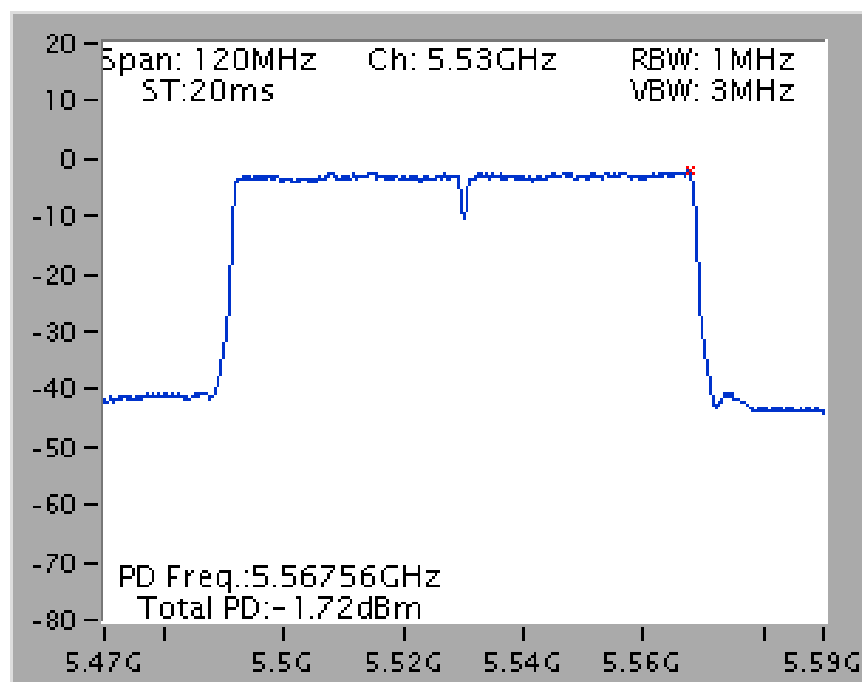
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5670 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5290 MHz

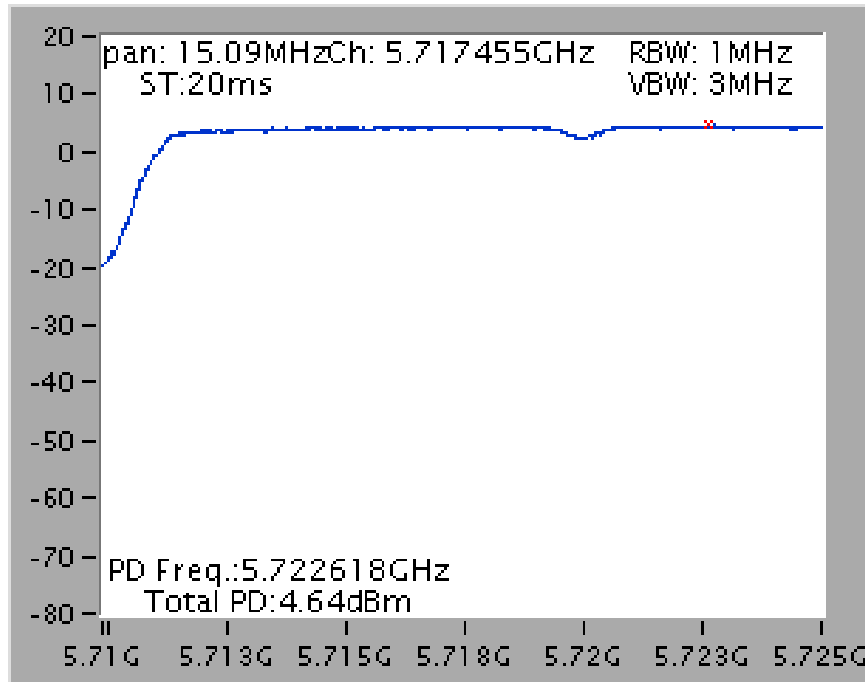


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5530 MHz

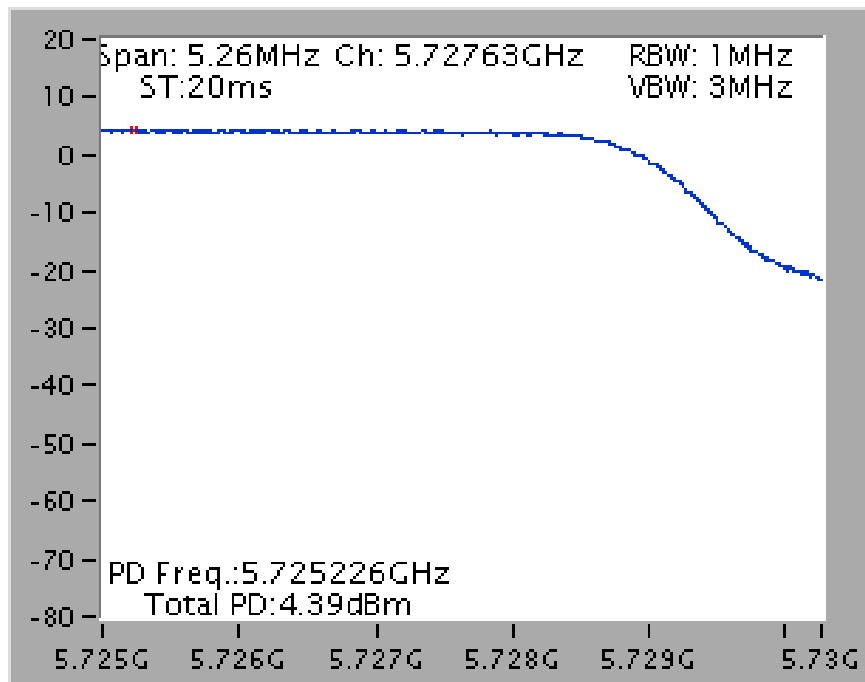


Straddle Channel

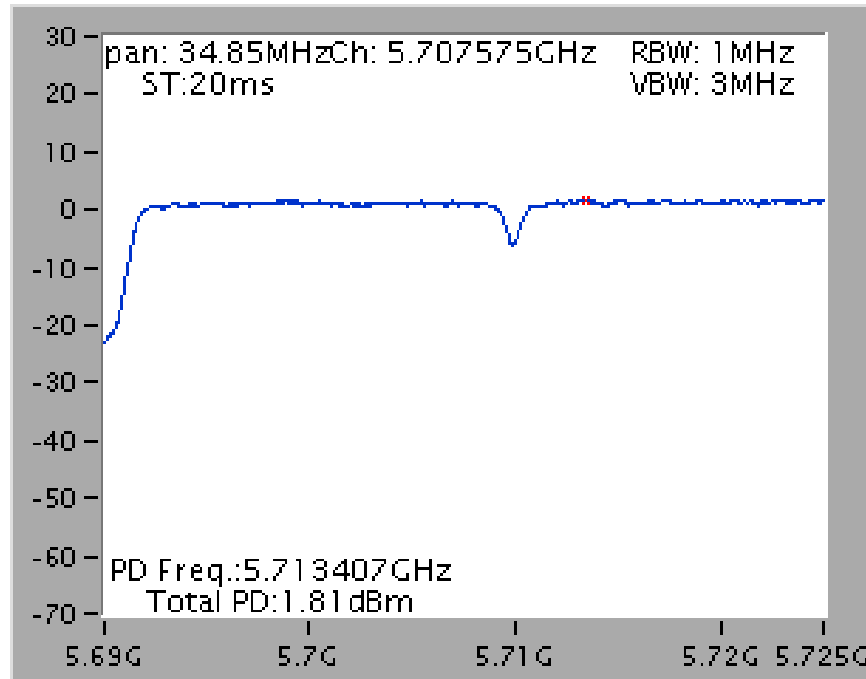
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz (UNII 2C)



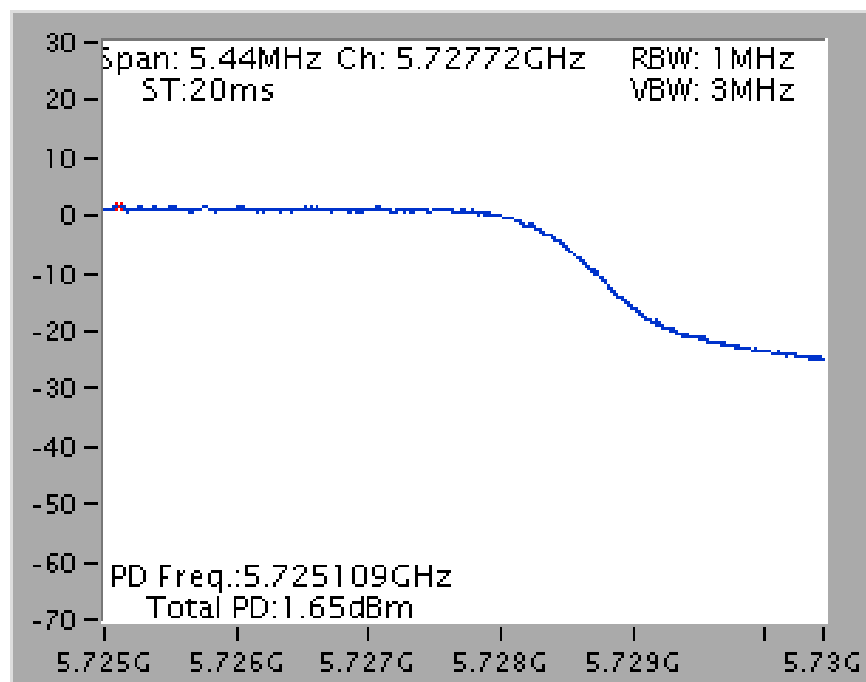
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5720 MHz (UNII 3)



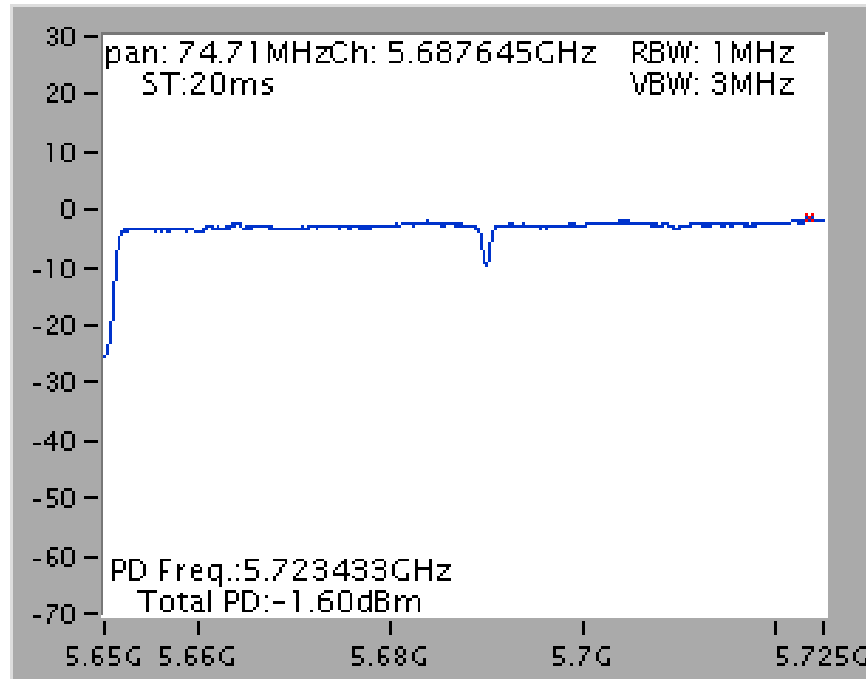
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5710 MHz (UNII 2C)



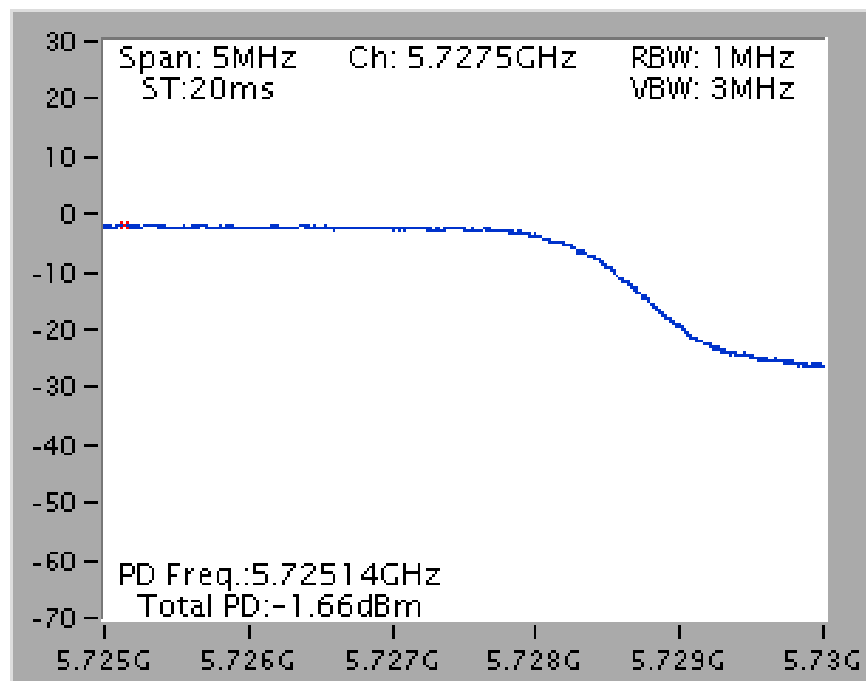
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5710 MHz (UNII 3)



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5690 MHz (UNII 2C)

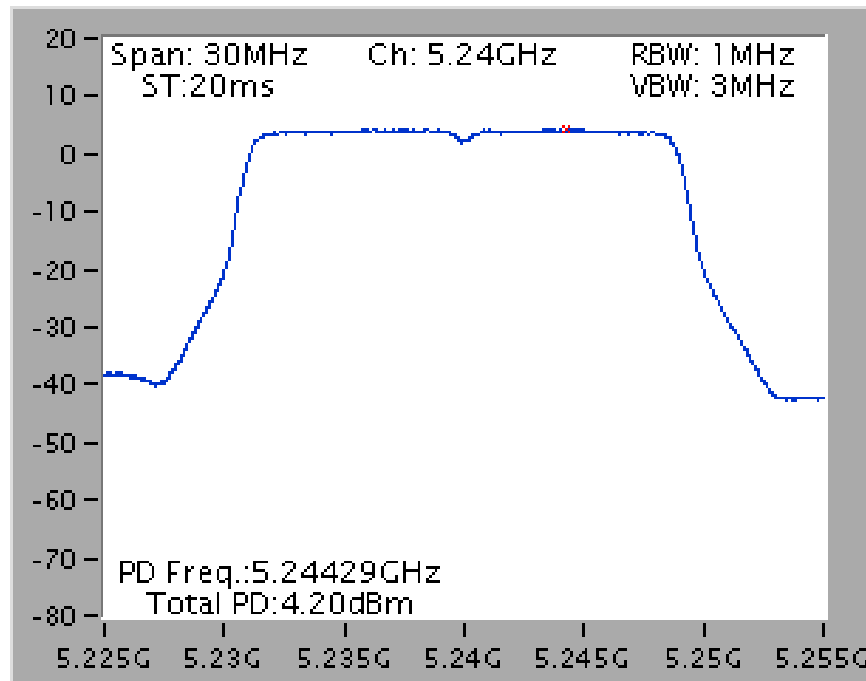


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5690 MHz (UNII 3)

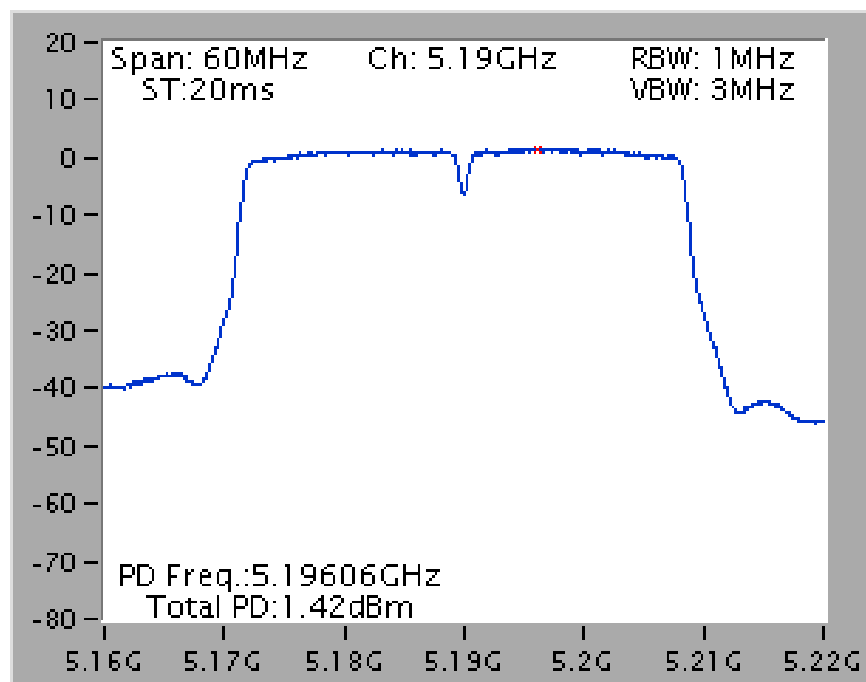


For indoor use slave without radar detection B1

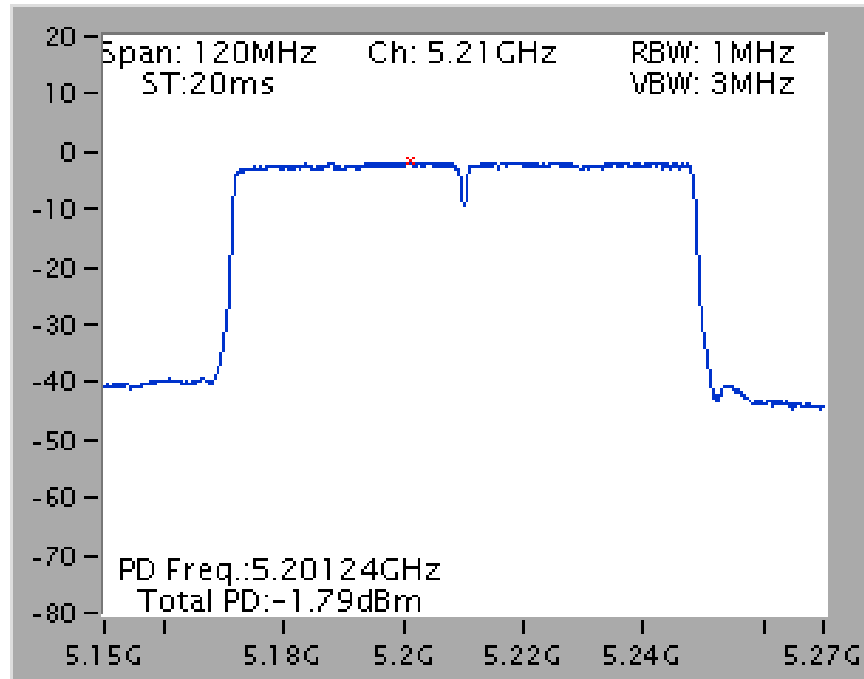
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Port 1 + Port 2 + Port 3 + Port 4 / 5240 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Port 1 + Port 2 + Port 3 + Port 4 / 5190 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Port 1 + Port 2 + Port 3 + Port 4 / 5210 MHz



2.6. Radiated Emissions Measurement

2.6.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.25-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

In addition, 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

2.6.2. Measuring Instruments and Setting

Please refer to section 3 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	40 GHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz 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~1000MHz / RBW 120kHz for QP

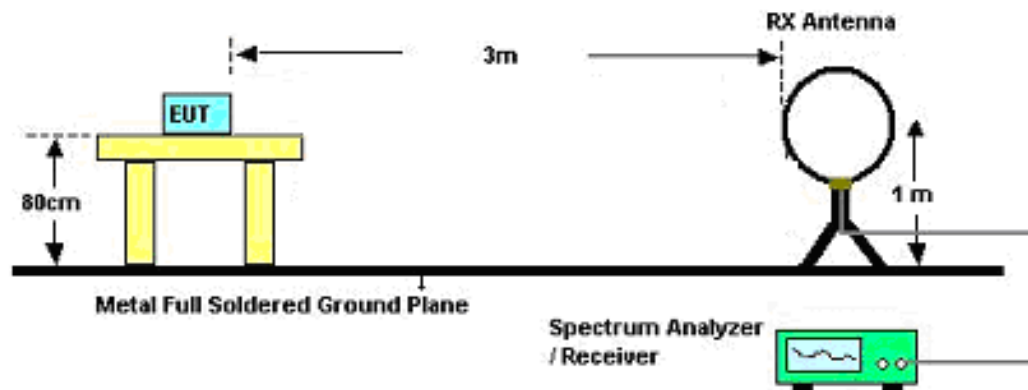
2.6.3. Test Procedures

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 PASS 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.

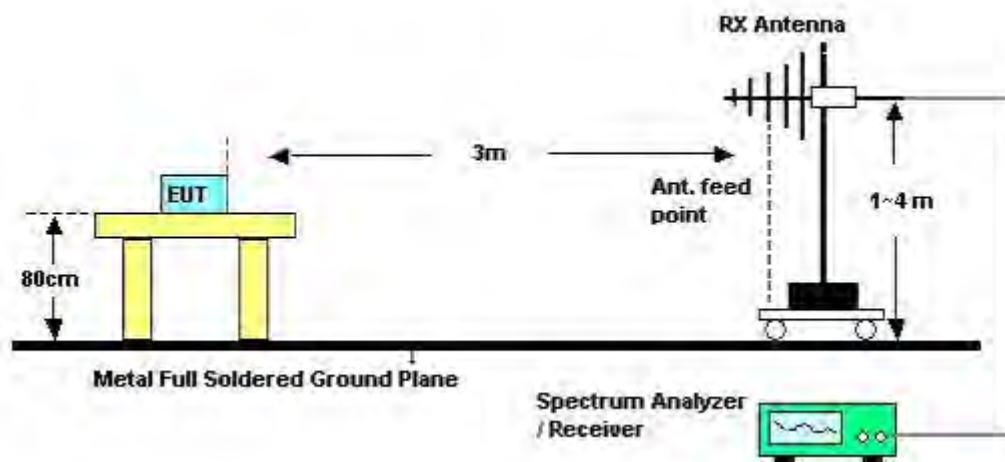
2.6.4. Test Setup Layout

Radiated Emissions
For Intentional – CTX

9kHz ~30MHz

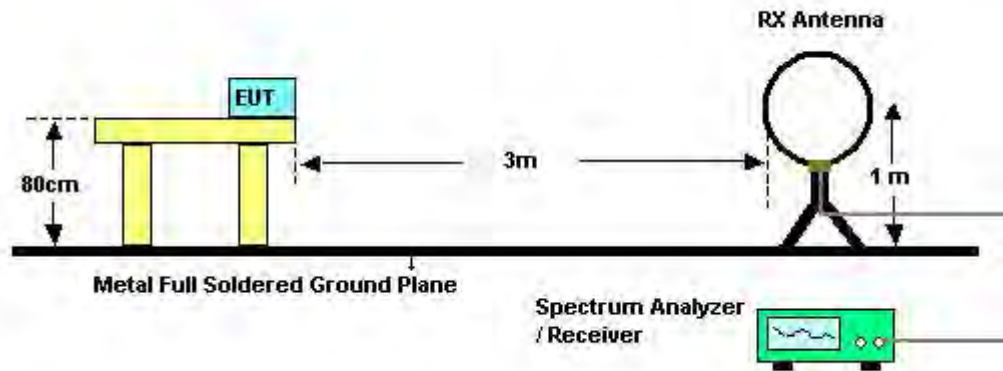


30MHz~1GHz

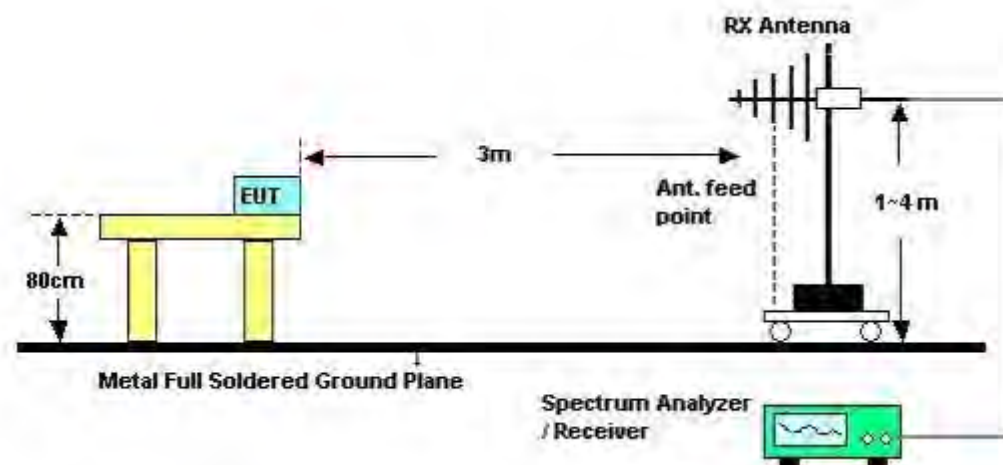


For Unintentional – CRX

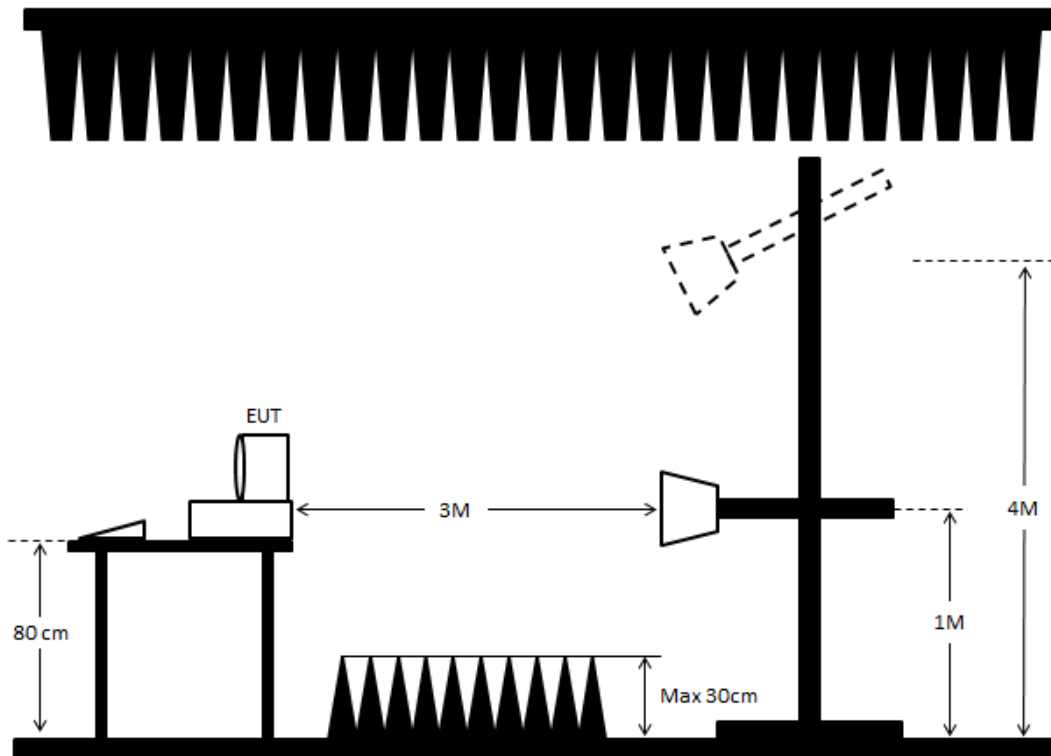
9kHz ~30MHz



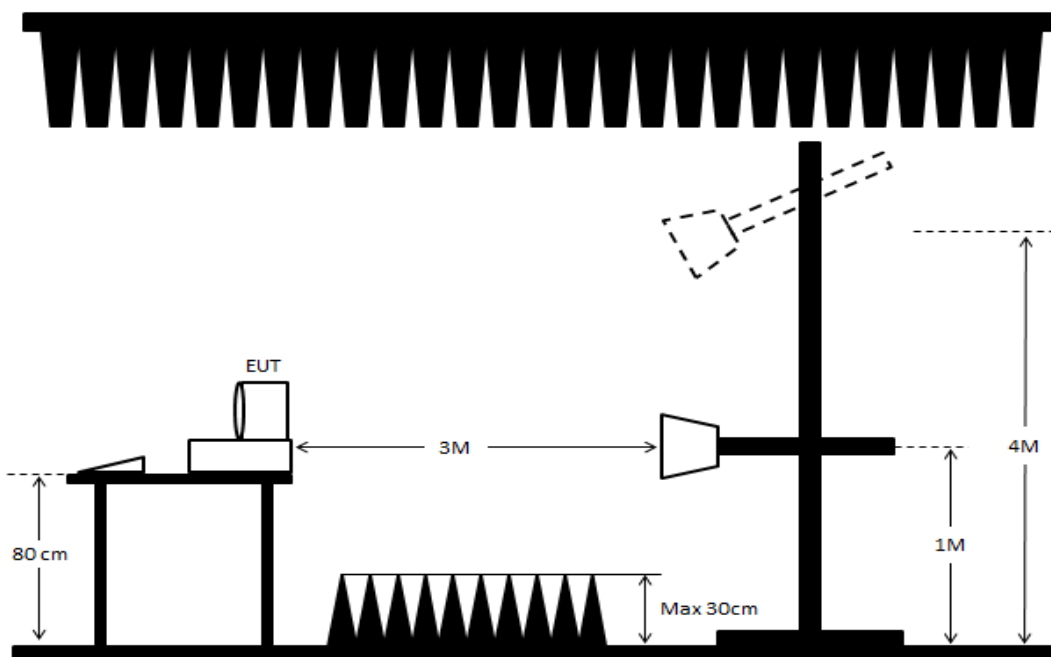
30MHz~1GHz



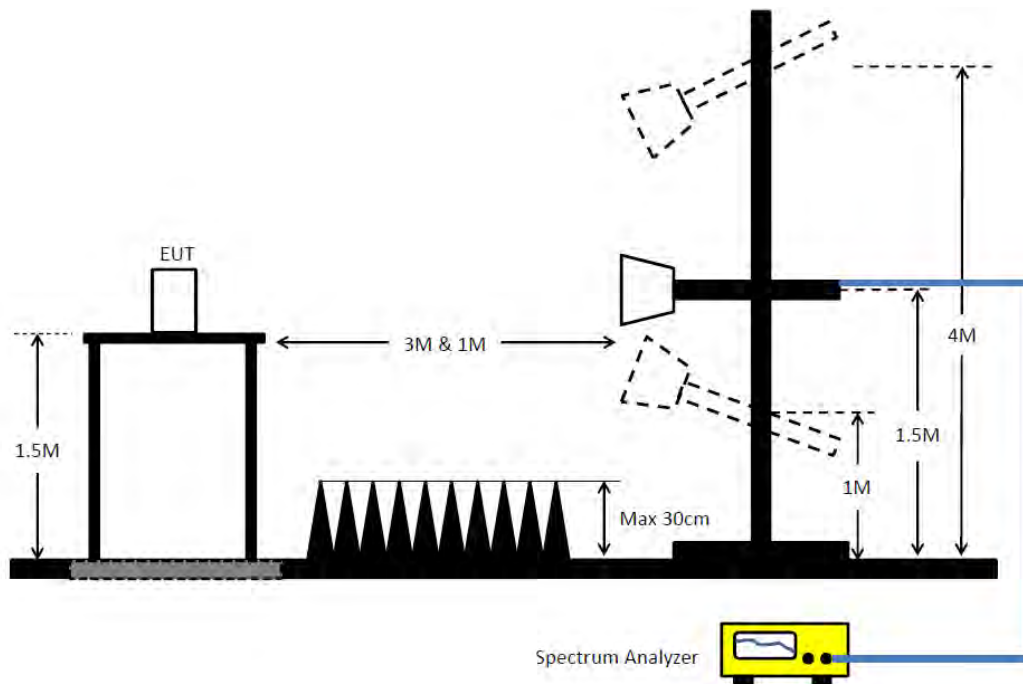
For Unintentional 1GHz~5th Harmonic – CRX (1,000~18,000 MHz)



For Unintentional 1GHz~5th Harmonic – CRX (18,000~30,000 MHz)



For Intentional 1GHz~10th Harmonic – CTX



2.6.5. Test Deviation

There is no deviation with the original standard.

2.6.6. 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.

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

Temperature	22.2~24.5°C	Humidity	51.8~53.6%
Test Engineer	Jeff Lin	Configurations	Intentional-CTX
Test Date	Jul. 24, 2019	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 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

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

Temperature	22.2~24.5°C	Humidity	51.8~53.6%
Test Engineer	Jeff Lin	Configurations	Unintentional-CRX
Test Date	Jul. 24, 2019	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 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

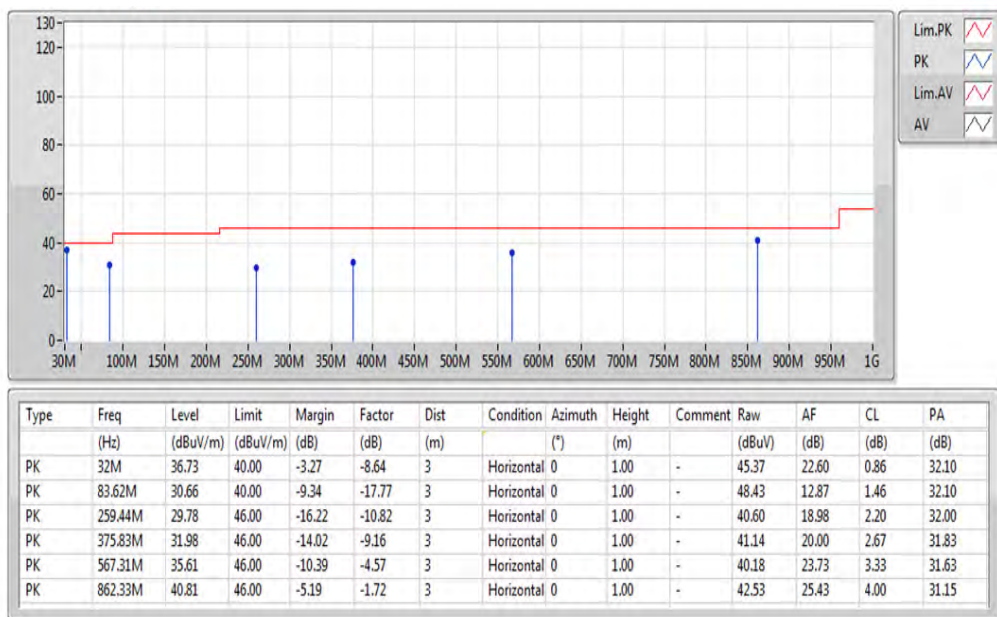
Limit line = specific limits (dBuV) + distance extrapolation factor.

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

Temperature	22.2~24.5°C	Humidity	51.8~53.6%
Test Engineer	Jeff Lin	Configurations	Intentional-CTX
Test Mode	Mode 2		

Horizontal

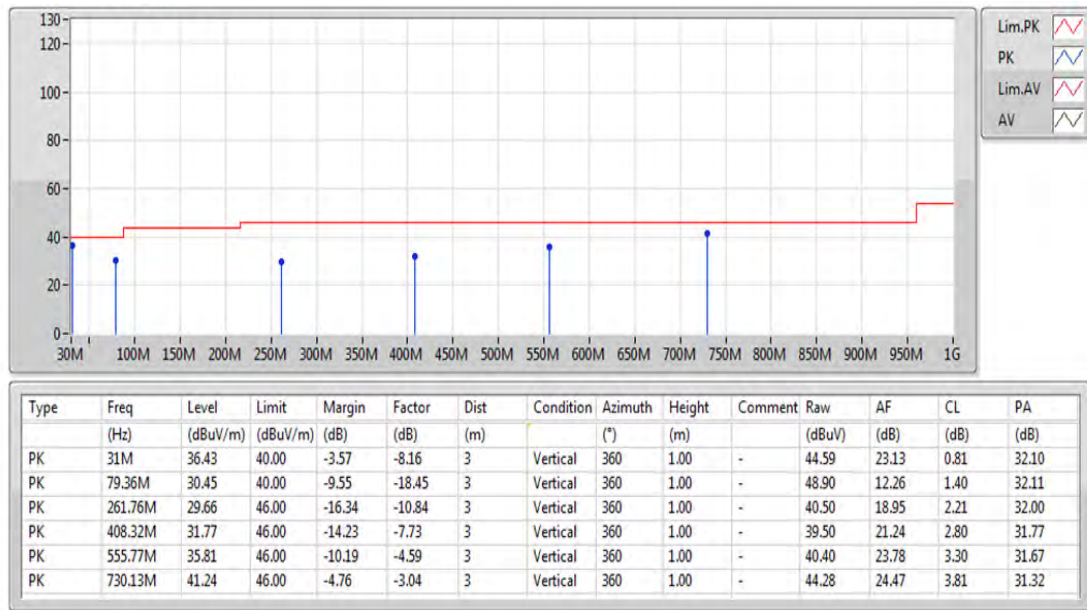
24/07/2019





Vertical

24/07/2019



Note:

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

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

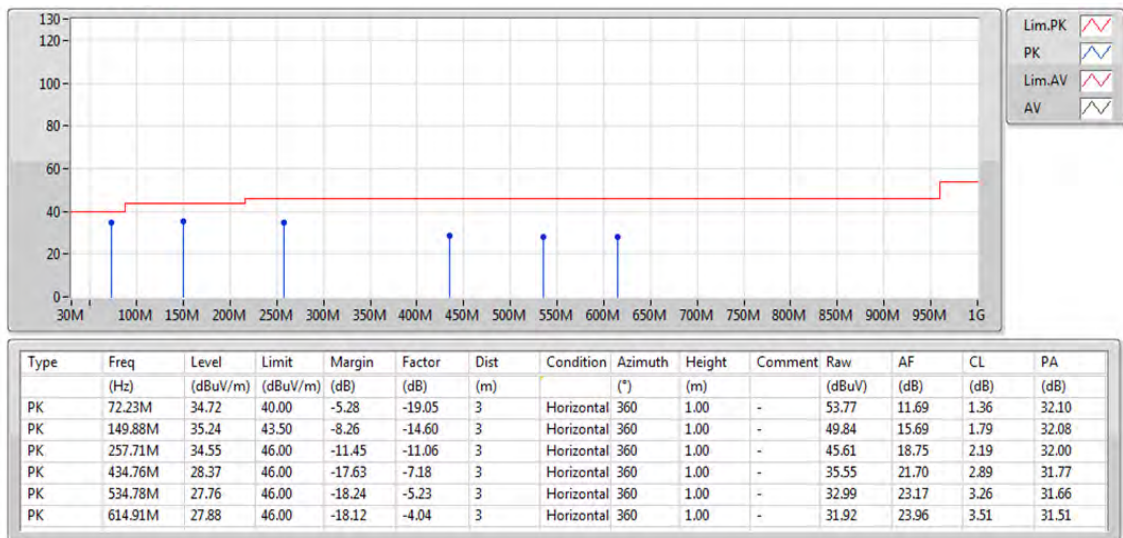
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.



Temperature	22.2~24.5°C	Humidity	51.8~53.6%
Test Engineer	Jeff Lin	Configurations	Unintentional-CRX
Test Mode	Mode 2		

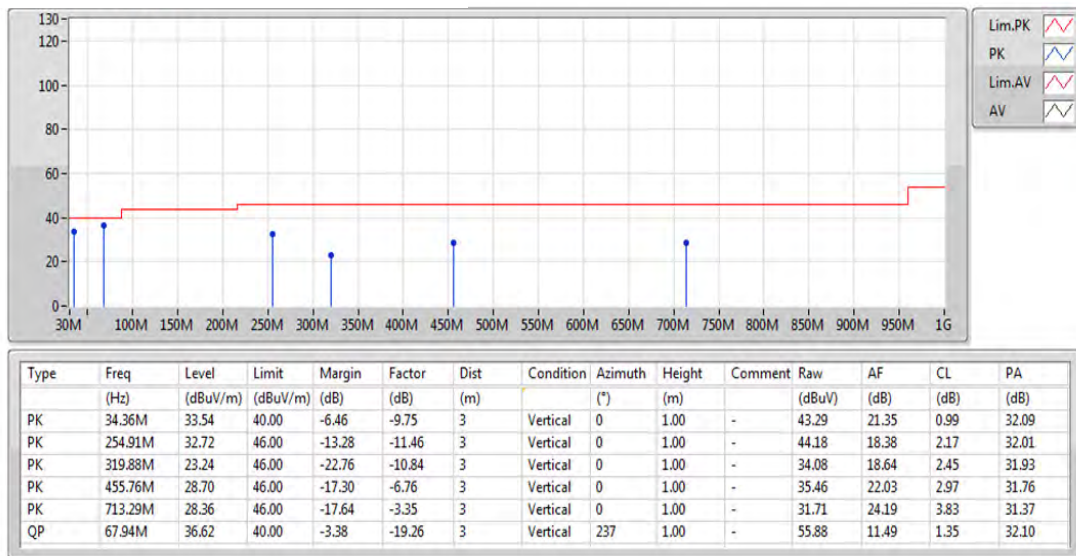
Horizontal

24/07/2019



Vertical

24/07/2019



Note:

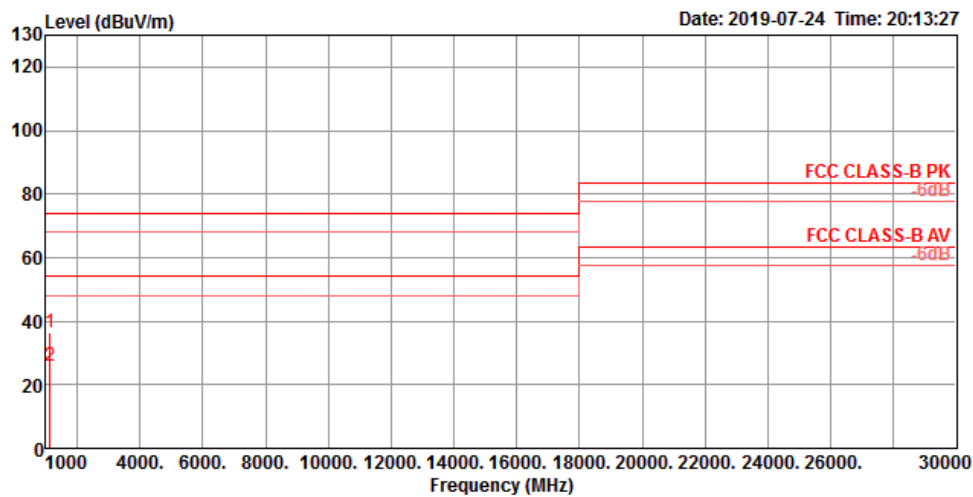
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

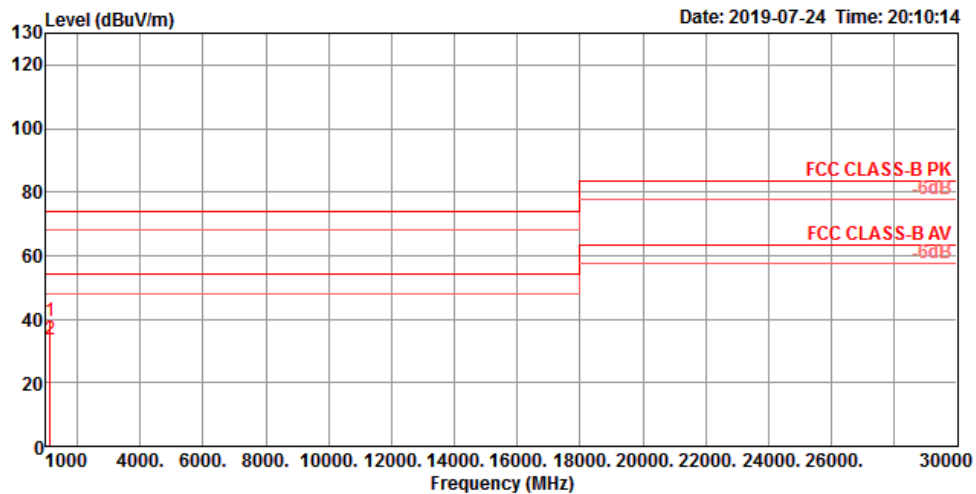
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

2.6.9. Results for Radiated Emission test (Unintentional 1GHz~5th Harmonic)

Temperature	25.5~26.3°C	Humidity	64-66 6%
Test Engineer	Cola Fan	Configurations	Unintentional-CRX
Test Mode	Mode 1		

Horizontal


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	1124.76	36.41	74.00	-37.59	45.48	2.78	24.96	36.81	100	178	Peak	HORIZONTAL
2	1125.20	25.81	54.00	-28.19	34.88	2.78	24.96	36.81	100	178	Average	HORIZONTAL

**Vertical**

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	1125.03	39.33	74.00	-34.67	48.40	2.78	24.96	36.81	152	192	Peak
2	1125.19	33.61	54.00	-20.39	42.68	2.78	24.96	36.81	152	192	Average

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.

2.6.10. For Radiated Emissions test (Intentional 1GHz~10th Harmonic)
For non-beamforming mode

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 52 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	10519.20	61.56	68.20	-6.64	47.08	9.60	38.40	33.52	228	76 Peak	HORIZONTAL
2	15767.40	47.83	54.00	-6.17	31.61	12.18	37.76	33.72	129	123 Average	HORIZONTAL
3	15791.40	60.37	74.00	-13.63	44.20	12.20	37.69	33.72	129	123 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	10518.20	63.56	68.20	-4.64	49.08	9.60	38.40	33.52	100	29 Peak	VERTICAL
2	15768.00	48.07	54.00	-5.93	31.85	12.18	37.76	33.72	224	279 Average	VERTICAL
3	15781.20	60.12	74.00	-13.88	43.90	12.18	37.76	33.72	224	279 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 60 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Oct. 18, 2016~Nov. 04, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10600.52	57.38	74.00	-16.62	43.08	11.43	38.98	36.11	193	200	Peak	HORIZONTAL
2	10600.92	44.50	54.00	-9.50	30.20	11.43	38.98	36.11	193	200	Average	HORIZONTAL
3	15896.08	59.78	74.00	-14.22	44.81	12.61	38.32	35.96	193	106	Peak	HORIZONTAL
4	15898.16	46.14	54.00	-7.86	31.17	12.61	38.32	35.96	193	106	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10609.44	43.50	54.00	-10.50	29.20	11.43	38.98	36.11	191	132	Average	VERTICAL
2	10609.52	56.25	74.00	-17.75	41.95	11.43	38.98	36.11	191	132	Peak	VERTICAL
3	15891.52	59.77	74.00	-14.23	44.80	12.61	38.32	35.96	226	201	Peak	VERTICAL
4	15899.28	46.17	54.00	-7.83	31.20	12.61	38.32	35.96	226	201	Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 64 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15974.90	60.60	74.00	-13.40	44.81	12.29	37.40	33.90	164	250 Peak	HORIZONTAL
2	15977.70	48.02	54.00	-5.98	32.23	12.29	37.40	33.90	164	250 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15953.30	48.03	54.00	-5.97	32.14	12.27	37.47	33.85	182	116 Average	VERTICAL
2	15957.60	61.59	74.00	-12.41	45.70	12.27	37.47	33.85	182	116 Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 100 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11008.90	44.65	54.00	-9.35	29.58	9.86	38.40	33.19	175	177 Average	HORIZONTAL
2	11011.00	56.93	74.00	-17.07	41.86	9.86	38.40	33.19	175	177 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	10998.80	44.84	54.00	-9.16	29.77	9.86	38.40	33.19	209	94 Average	VERTICAL
2	11002.10	58.12	74.00	-15.88	43.05	9.86	38.40	33.19	209	94 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 116 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11158.40	44.39	54.00	-9.61	28.97	9.94	38.67	33.19	128	267 Average	HORIZONTAL
2	11178.40	56.49	74.00	-17.51	41.07	9.94	38.67	33.19	128	267 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11159.10	45.39	54.00	-8.61	29.97	9.94	38.67	33.19	100	142 Average	VERTICAL
2	11175.00	57.08	74.00	-16.92	41.66	9.94	38.67	33.19	100	142 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 140 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11417.90	45.87	54.00	-8.13	29.89	10.07	39.09	33.18	244	172 Average	HORIZONTAL
2	11421.40	58.00	74.00	-16.00	42.02	10.07	39.09	33.18	244	172 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11417.60	45.79	54.00	-8.21	29.81	10.07	39.09	33.18	218	85 Average	VERTICAL
2	11419.90	58.22	74.00	-15.78	42.24	10.07	39.09	33.18	218	85 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10523.90	57.65	68.20	-10.55	43.17	9.60	38.40	33.52	191	53	Peak	HORIZONTAL
2	15755.10	47.34	54.00	-6.66	31.07	12.18	37.76	33.67	205	63	Average	HORIZONTAL
3	15764.70	60.69	74.00	-13.31	44.47	12.18	37.76	33.72	205	63	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10518.60	64.54	68.20	-3.66	50.06	9.60	38.40	33.52	100	29	Peak	VERTICAL
2	15755.10	47.51	54.00	-6.49	31.24	12.18	37.76	33.67	154	286	Average	VERTICAL
3	15761.90	59.94	74.00	-14.06	43.67	12.18	37.76	33.67	154	286	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15896.20	59.02	74.00	-14.98	43.04	12.24	37.55	33.81	224	274 Peak	HORIZONTAL
2	15925.00	46.45	54.00	-7.55	30.56	12.27	37.47	33.85	224	274 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15891.20	59.22	74.00	-14.78	43.24	12.24	37.55	33.81	292	98 Peak	VERTICAL
2	15919.30	46.81	54.00	-7.19	30.88	12.27	37.47	33.81	292	98 Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15949.90	46.81	54.00	-7.19	30.92	12.27	37.47	33.85	132	47 Average	HORIZONTAL
2	15982.80	59.99	74.00	-14.01	44.20	12.29	37.40	33.90	132	47 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15954.60	46.97	54.00	-7.03	31.08	12.27	37.47	33.85	114	316 Average	VERTICAL
2	15966.90	59.77	74.00	-14.23	43.93	12.29	37.40	33.85	114	316 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	10982.60	43.95	54.00	-10.05	28.92	9.84	38.40	33.21	268	50 Average	HORIZONTAL
2	11011.50	56.41	74.00	-17.59	41.34	9.86	38.40	33.19	268	50 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	10982.90	44.06	54.00	-9.94	29.03	9.84	38.40	33.21	182	250 Average	VERTICAL
2	10994.10	57.05	74.00	-16.95	42.00	9.84	38.40	33.19	182	250 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11159.40	56.87	74.00	-17.13	41.45	9.94	38.67	33.19	184	78 Peak	HORIZONTAL
2	11164.20	44.61	54.00	-9.39	29.19	9.94	38.67	33.19	184	78 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11138.00	56.79	74.00	-17.21	41.45	9.92	38.61	33.19	173	325 Peak	VERTICAL
2	11155.20	44.11	54.00	-9.89	28.77	9.92	38.61	33.19	173	325 Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Oct. 18, 2016~Nov. 04, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11412.88	58.38	74.00	-15.62	43.32	11.85	39.22	36.01	156	96 Peak	HORIZONTAL
2	11415.28	44.54	54.00	-9.46	29.48	11.85	39.22	36.01	156	96 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11394.72	57.83	74.00	-16.17	42.79	11.84	39.22	36.02	150	234 Peak	VERTICAL
2	11415.20	44.60	54.00	-9.40	29.54	11.85	39.22	36.01	150	234 Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15800.44	46.37	54.00	-7.63	30.20	12.20	37.69	33.72	209	127 Average	HORIZONTAL
2	15800.52	59.65	74.00	-14.35	43.48	12.20	37.69	33.72	209	127 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15800.00	46.49	54.00	-7.51	30.32	12.20	37.69	33.72	125	267 Average	VERTICAL
2	15805.48	59.55	74.00	-14.45	43.38	12.20	37.69	33.72	125	267 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	10612.80	42.50	54.00	-11.50	27.90	9.65	38.40	33.45	160	73 Average	HORIZONTAL
2	10622.44	54.92	74.00	-19.08	40.30	9.67	38.40	33.45	160	73 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	10610.00	42.77	54.00	-11.23	28.17	9.65	38.40	33.45	248	118 Average	VERTICAL
2	10615.08	56.16	74.00	-17.84	41.56	9.65	38.40	33.45	248	118 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11015.88	56.47	74.00	-17.53	41.40	9.86	38.40	33.19	224	106 Peak	HORIZONTAL
2	11021.32	43.71	54.00	-10.29	28.64	9.86	38.40	33.19	224	106 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11024.20	43.79	54.00	-10.21	28.72	9.86	38.40	33.19	159	324 Average	VERTICAL
2	11026.28	56.83	74.00	-17.17	41.76	9.86	38.40	33.19	159	324 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Oct. 18, 2016~Nov. 04, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11089.36	44.17	54.00	-9.83	29.31	11.68	39.29	36.11	150	135	Average	HORIZONTAL
2	11103.12	57.14	74.00	-16.86	42.27	11.69	39.28	36.10	150	135	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11109.60	44.15	54.00	-9.85	29.28	11.69	39.28	36.10	150	73	Average	VERTICAL
2	11116.00	57.87	74.00	-16.13	42.99	11.70	39.28	36.10	150	73	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configuration	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11340.32	43.56	54.00	-10.44	27.79	10.02	38.93	33.18	267	301 Average	HORIZONTAL
2	11347.04	56.67	74.00	-17.33	40.90	10.02	38.93	33.18	267	301 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11330.88	44.56	54.00	-9.44	28.79	10.02	38.93	33.18	221	223 Average	VERTICAL
2	11346.88	57.33	74.00	-16.67	41.56	10.02	38.93	33.18	221	223 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15865.52	59.25	74.00	-14.75	43.17	12.22	37.62	33.76	238	105 Peak	HORIZONTAL
2	15874.12	46.05	54.00	-7.95	30.07	12.24	37.55	33.81	238	105 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15869.80	46.29	54.00	-7.71	30.26	12.22	37.62	33.81	237	236 Average	VERTICAL
2	15876.00	58.82	74.00	-15.18	42.84	12.24	37.55	33.81	237	236 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Aug. 22, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11059.90	43.19	54.00	-10.81	28.05	9.88	38.45	33.19	215	122 Average	HORIZONTAL
2	11064.65	56.29	74.00	-17.71	41.08	9.89	38.51	33.19	215	122 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11059.86	56.78	74.00	-17.22	41.64	9.88	38.45	33.19	173	224 Peak	VERTICAL
2	11060.13	43.23	54.00	-10.77	28.02	9.89	38.51	33.19	173	224 Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11211.84	56.19	74.00	-17.81	40.70	9.96	38.72	33.19	174	289 Peak	HORIZONTAL
2	11229.96	43.33	54.00	-10.67	27.78	9.97	38.77	33.19	174	289 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11224.80	55.61	74.00	-18.39	40.06	9.97	38.77	33.19	161	146 Peak	VERTICAL
2	11228.64	43.30	54.00	-10.70	27.75	9.97	38.77	33.19	161	146 Average	VERTICAL



Straddle Channel

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 144 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11429.20	58.74	74.00	-15.26	42.76	10.07	39.09	33.18	259	35 Peak	HORIZONTAL
2	11443.70	45.99	54.00	-8.01	30.01	10.07	39.09	33.18	259	35 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11440.40	46.46	54.00	-7.54	30.48	10.07	39.09	33.18	171	333 Average	VERTICAL
2	11450.50	58.64	74.00	-15.36	42.59	10.08	39.15	33.18	171	333 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11424.00	45.42	54.00	-8.58	29.44	10.07	39.09	33.18	252	153 Average	HORIZONTAL
2	11460.40	58.01	74.00	-15.99	41.96	10.08	39.15	33.18	252	153 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11436.90	58.21	74.00	-15.79	42.23	10.07	39.09	33.18	153	333 Peak	VERTICAL
2	11440.20	45.85	54.00	-8.15	29.87	10.07	39.09	33.18	153	333 Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 17, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11423.32	45.43	54.00	-8.57	29.45	10.07	39.09	33.18	190	228 Average	HORIZONTAL
2	11429.88	58.31	74.00	-15.69	42.33	10.07	39.09	33.18	190	228 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11422.44	45.56	54.00	-8.44	29.58	10.07	39.09	33.18	293	78 Average	VERTICAL
2	11426.48	58.59	74.00	-15.41	42.61	10.07	39.09	33.18	293	78 Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Oct. 18, 2016~Nov. 04, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11377.76	44.30	54.00	-9.70	29.26	11.83	39.23	36.02	150	328 Average	HORIZONTAL
2	11398.72	57.97	74.00	-16.03	42.92	11.84	39.22	36.01	150	328 Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11364.16	57.65	74.00	-16.35	42.62	11.82	39.23	36.02	150	180 Peak	VERTICAL
2	11387.04	44.39	54.00	-9.61	29.36	11.83	39.22	36.02	150	180 Average	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.

**For beamforming mode**

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configuration	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15778.90	60.24	74.00	-13.76	43.94	13.39	38.17	35.26	155	89 Peak	HORIZONTAL
2	15783.94	47.10	54.00	-6.90	30.88	13.39	38.12	35.29	155	89 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15776.86	60.17	74.00	-13.83	43.87	13.39	38.17	35.26	155	36 Peak	VERTICAL
2	15780.54	47.24	54.00	-6.76	30.94	13.39	38.17	35.26	155	36 Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Oct. 18, 2016~Nov. 04, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10586.32	44.83	54.00	-9.17	30.57	11.42	38.95	36.11	220	358	Average	HORIZONTAL
2	10601.20	57.75	74.00	-16.25	43.45	11.43	38.98	36.11	220	358	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10584.88	58.32	74.00	-15.68	44.06	11.42	38.95	36.11	188	60	Peak	VERTICAL
2	10593.92	44.82	54.00	-9.18	30.52	11.43	38.98	36.11	188	60	Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10637.34	42.58	54.00	-11.42	27.87	10.60	38.95	34.84	152	316	Average	HORIZONTAL
2	10640.00	55.53	74.00	-18.47	40.82	10.60	38.95	34.84	152	316	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10636.92	42.41	54.00	-11.59	27.70	10.60	38.95	34.84	141	201	Average	VERTICAL
2	10639.26	55.88	74.00	-18.12	41.17	10.60	38.95	34.84	141	201	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10995.66	42.65	54.00	-11.35	27.58	10.66	39.09	34.68	139	84	Average	HORIZONTAL
2	10999.98	55.14	74.00	-18.86	40.05	10.66	39.10	34.67	139	84	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11001.36	55.58	74.00	-18.42	40.49	10.66	39.10	34.67	137	135	Peak	VERTICAL
2	11004.08	42.67	54.00	-11.33	27.58	10.66	39.10	34.67	137	135	Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11159.62	55.73	74.00	-18.27	40.44	10.69	39.30	34.70	149	68	Peak	HORIZONTAL
2	11163.72	43.75	54.00	-10.25	28.46	10.69	39.30	34.70	149	68	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11155.48	42.97	54.00	-11.03	27.71	10.69	39.26	34.69	148	147	Average	VERTICAL
2	11157.20	55.58	74.00	-18.42	40.29	10.69	39.30	34.70	148	147	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11396.22	56.29	74.00	-17.71	40.71	10.73	39.58	34.73	169	93 Peak	HORIZONTAL
2	11399.22	43.44	54.00	-10.56	27.86	10.73	39.58	34.73	169	93 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11395.12	56.62	74.00	-17.38	41.04	10.73	39.58	34.73	168	131 Peak	VERTICAL
2	11396.28	43.43	54.00	-10.57	27.85	10.73	39.58	34.73	168	131 Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15807.30	47.32	54.00	-6.68	31.10	13.39	38.12	35.29	134	239	Average	HORIZONTAL
2	15811.40	59.56	74.00	-14.44	43.34	13.39	38.12	35.29	134	239	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15807.28	47.22	54.00	-6.78	31.00	13.39	38.12	35.29	137	181	Average	VERTICAL
2	15812.90	60.40	74.00	-13.60	44.18	13.39	38.12	35.29	137	181	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Oct. 18, 2016~Nov. 04, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10636.08	57.64	74.00	-16.36	43.30	11.45	39.00	36.11	175	255	Peak	HORIZONTAL
2	10638.72	44.72	54.00	-9.28	30.39	11.45	39.00	36.12	175	255	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10601.36	44.04	54.00	-9.96	29.74	11.43	38.98	36.11	150	57	Average	VERTICAL
2	10639.68	57.20	74.00	-16.80	42.87	11.45	39.00	36.12	150	57	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11019.10	55.77	74.00	-18.23	40.68	10.66	39.10	34.67	137	66	Peak	HORIZONTAL
2	11022.80	42.62	54.00	-11.38	27.53	10.66	39.10	34.67	137	66	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11015.56	42.89	54.00	-11.11	27.80	10.66	39.10	34.67	140	120	Average	VERTICAL
2	11024.42	55.21	74.00	-18.79	40.12	10.66	39.10	34.67	140	120	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11097.76	43.35	54.00	-10.65	28.14	10.68	39.22	34.69	119	156	Average	HORIZONTAL
2	11104.84	55.78	74.00	-18.22	40.57	10.68	39.22	34.69	119	156	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11104.24	55.85	74.00	-18.15	40.64	10.68	39.22	34.69	146	66	Peak	VERTICAL
2	11104.78	43.23	54.00	-10.77	28.02	10.68	39.22	34.69	146	66	Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configuration	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11335.30	43.07	54.00	-10.93	27.57	10.72	39.50	34.72	124	329	Average	HORIZONTAL
2	11340.00	55.60	74.00	-18.40	40.10	10.72	39.50	34.72	124	329	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11336.98	43.13	54.00	-10.87	27.63	10.72	39.50	34.72	112	222	Average	VERTICAL
2	11338.78	56.09	74.00	-17.91	40.59	10.72	39.50	34.72	112	222	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15865.28	47.32	54.00	-6.68	31.18	13.39	38.06	35.31	186	326	Average	HORIZONTAL
2	15868.26	60.34	74.00	-13.66	44.20	13.39	38.06	35.31	186	326	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15872.40	59.89	74.00	-14.11	43.75	13.39	38.06	35.31	188	254	Peak	VERTICAL
2	15873.90	47.23	54.00	-6.77	31.17	13.39	38.01	35.34	188	254	Average	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Oct. 18, 2016~Nov. 04, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11061.78	58.03	74.00	-15.97	43.19	11.67	39.29	36.12	150	265 Peak	HORIZONTAL
2	11064.84	44.50	54.00	-9.50	29.66	11.67	39.29	36.12	150	265 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11061.64	44.14	54.00	-9.86	29.30	11.67	39.29	36.12	150	161 Average	VERTICAL
2	11062.04	57.58	74.00	-16.42	42.74	11.67	39.29	36.12	150	161 Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11216.14	55.66	74.00	-18.34	40.32	10.70	39.34	34.70	110	47 Peak	HORIZONTAL
2	11219.64	43.27	54.00	-10.73	27.93	10.70	39.34	34.70	110	47 Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	11219.10	42.46	54.00	-11.54	27.12	10.70	39.34	34.70	112	66 Average	VERTICAL
2	11223.14	56.72	74.00	-17.28	41.35	10.70	39.38	34.71	112	66 Peak	VERTICAL



Straddle Channel

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11435.68	43.21	54.00	-10.79	27.59	10.74	39.62	34.74	179	75	Average	HORIZONTAL
2	11436.90	55.92	74.00	-18.08	40.30	10.74	39.62	34.74	179	75	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11436.16	43.43	54.00	-10.57	27.81	10.74	39.62	34.74	162	150	Average	VERTICAL
2	11444.30	56.01	74.00	-17.99	40.39	10.74	39.62	34.74	162	150	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11418.88	55.77	74.00	-18.23	40.15	10.74	39.62	34.74	208	224	Peak	HORIZONTAL
2	11418.99	43.14	54.00	-10.86	27.52	10.74	39.62	34.74	208	224	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11418.78	43.10	54.00	-10.90	27.48	10.74	39.62	34.74	103	110	Average	VERTICAL
2	11418.98	56.66	74.00	-17.34	41.04	10.74	39.62	34.74	103	110	Peak	VERTICAL



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 / Port 1 + Port 2 + Port 3 + Port 4
Test Date	Jul. 31, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11377.70	43.68	54.00	-10.32	28.15	10.72	39.54	34.73	114	253	Average	HORIZONTAL
2	11384.80	56.39	74.00	-17.61	40.81	10.73	39.58	34.73	114	253	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11382.30	43.60	54.00	-10.40	28.07	10.72	39.54	34.73	114	263	Average	VERTICAL
2	11384.28	56.27	74.00	-17.73	40.74	10.72	39.54	34.73	114	263	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.

2.7. Band Edge Emissions Measurement

2.7.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.25-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

In addition, 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 (microrvolts/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

2.7.2. Measuring Instruments and Setting

Please refer to section 3 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 (Emission in non-restricted band)	1MHz / 3MHz for Peak

**2.7.3. Test Procedures**

The test procedure is the same as section 0.

2.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 2.6.4.

2.7.5. Test Deviation

There is no deviation with the original standard.

2.7.6. EUT Operation during Test

For Non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

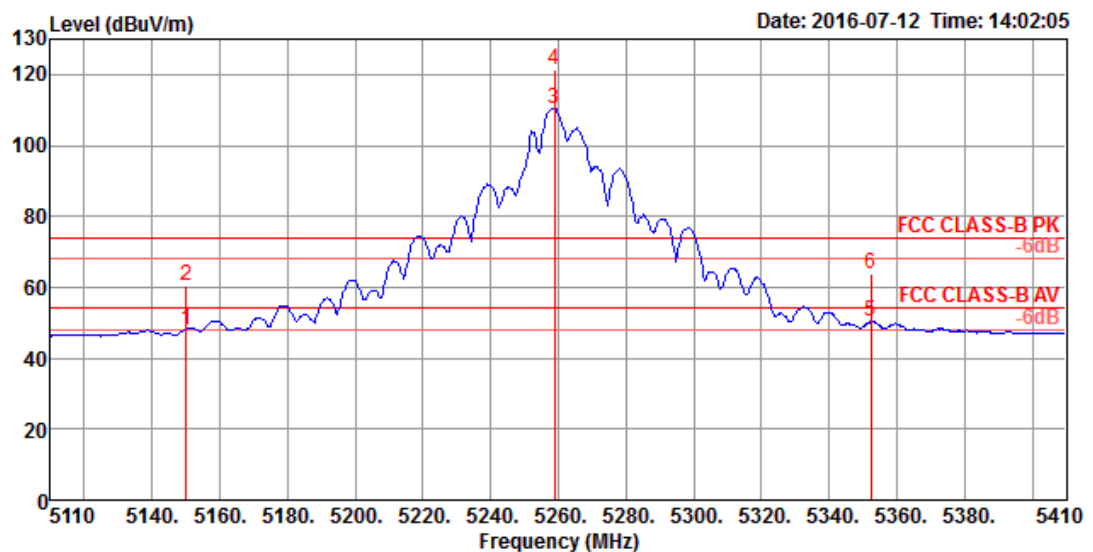
For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

2.7.7. Test Result of Band Edge and Fundamental Emissions

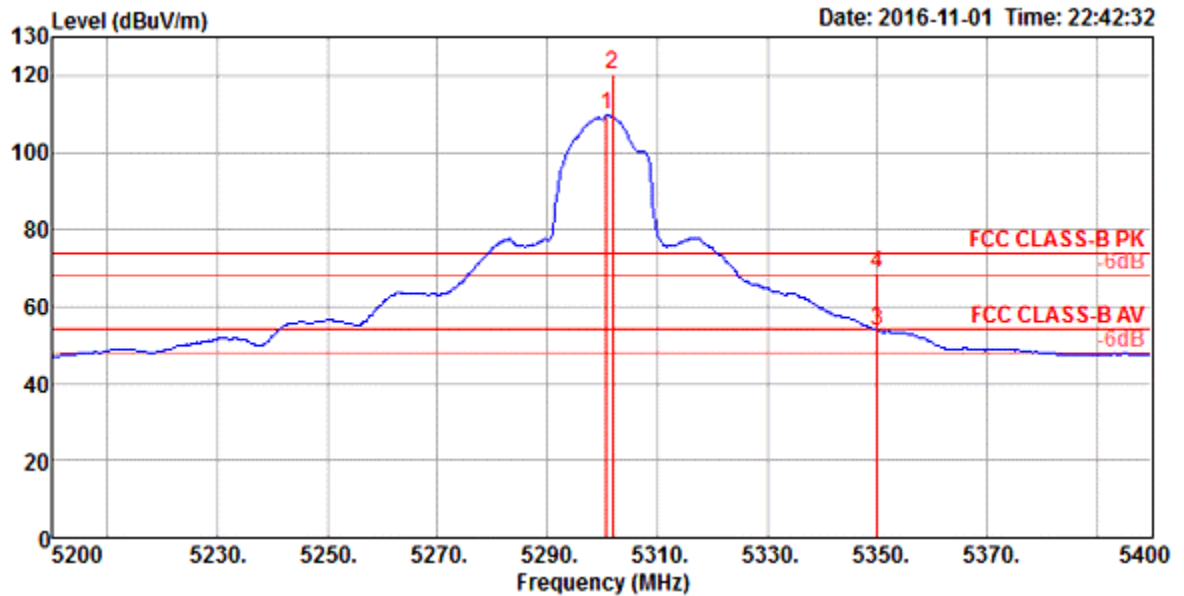
For non-beamforming mode

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 52, 60, 64 / Port 1 + Port 2 + Port 3 + Port 4

Channel 52


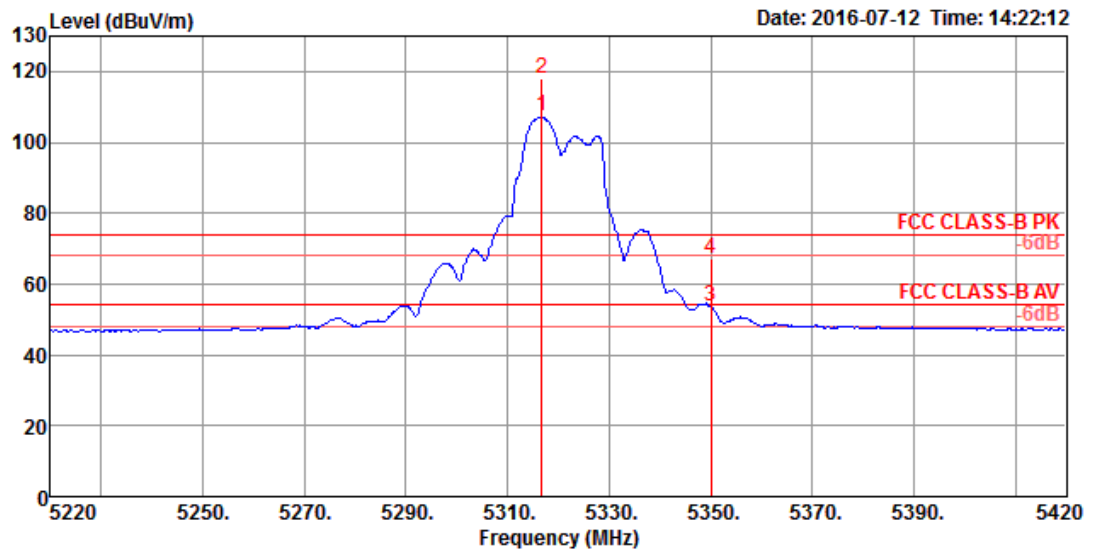
	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor				
						dB	dB/m	dB	cm	deg		
1	5150.00	48.20	54.00	-5.80	40.98	7.34	31.52	31.64	275	332	Average	VERTICAL
2	5150.00	60.44	74.00	-13.56	53.22	7.34	31.52	31.64	275	332	Peak	VERTICAL
3	5258.80	110.26			102.81	7.47	31.61	31.63	275	332	Average	VERTICAL
4	5258.80	121.51			114.06	7.47	31.61	31.63	275	332	Peak	VERTICAL
5	5352.40	50.32	54.00	-3.68	42.66	7.60	31.68	31.62	275	332	Average	VERTICAL
6	5352.40	63.77	74.00	-10.23	56.11	7.60	31.68	31.62	275	332	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5260 MHz.

Channel 60


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	Line	Limit	Level	Loss	Factor	Factor	cm	deg	
1 @	5300.80	109.63			104.61	8.18	33.45	36.61	282	139 Average	HORIZONTAL
2 @	5302.00	120.38			115.36	8.18	33.45	36.61	282	139 Peak	HORIZONTAL
3	5350.00	53.84	54.00	-0.16	48.72	8.19	33.53	36.60	282	139 Average	HORIZONTAL
4	5350.00	68.37	74.00	-5.63	63.25	8.19	33.53	36.60	282	139 Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

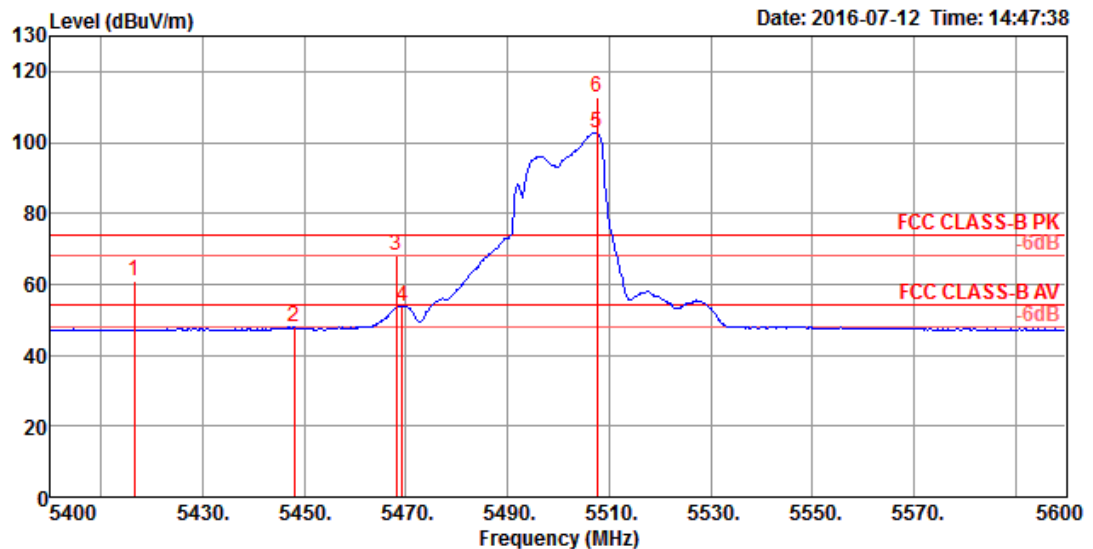
**Channel 64**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 0	5316.80	107.27			99.69	7.56	31.65	31.63	276	332	Average
2 0	5316.80	117.86			110.28	7.56	31.65	31.63	276	332	Peak
3	5350.00	53.60	54.00	-0.40	45.94	7.60	31.68	31.62	276	332	Average
4	5350.00	67.24	74.00	-6.76	59.58	7.60	31.68	31.62	276	332	Peak

Item 1, 2 are the fundamental frequency at 5320 MHz.

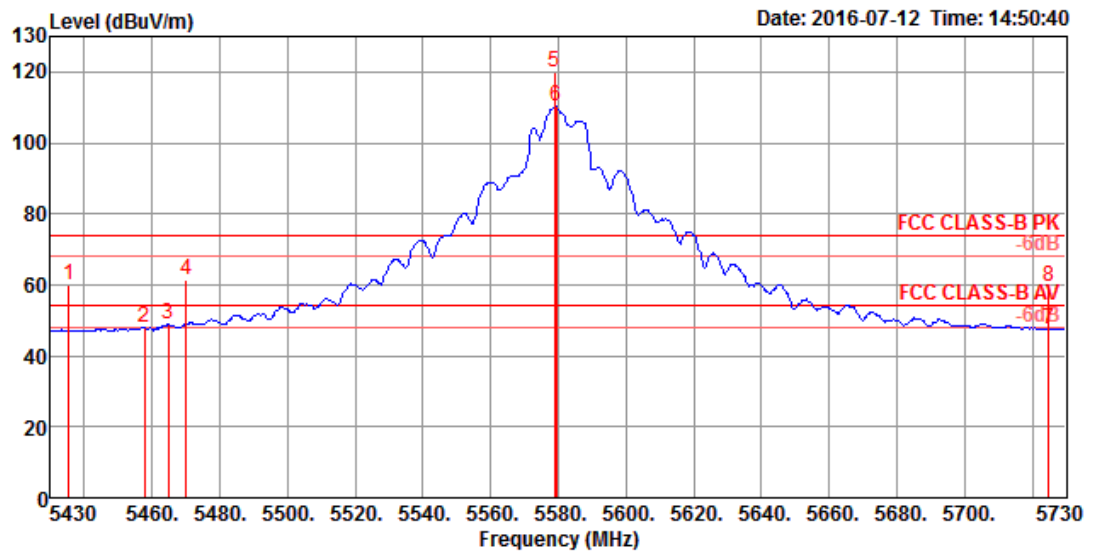


Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 100, 116, 140 / Port 1 + Port 2 + Port 3 + Port 4

Channel 100

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg	
1	5416.40	60.73	74.00	-13.27	52.96	7.65	31.74	31.62	300	51 Peak	HORIZONTAL
2	5448.00	47.76	54.00	-6.24	39.98	7.64	31.76	31.62	300	51 Average	HORIZONTAL
3	5468.00	68.35	74.00	-5.65	60.54	7.64	31.78	31.61	300	51 Peak	HORIZONTAL
4	5469.20	53.56	54.00	-0.44	45.75	7.64	31.78	31.61	300	51 Average	HORIZONTAL
5 0	5507.60	102.75			94.94	7.63	31.80	31.62	300	51 Average	HORIZONTAL
6 0	5507.60	112.54			104.73	7.63	31.80	31.62	300	51 Peak	HORIZONTAL

Item 5, 6 are the fundamental frequency at 5500 MHz.

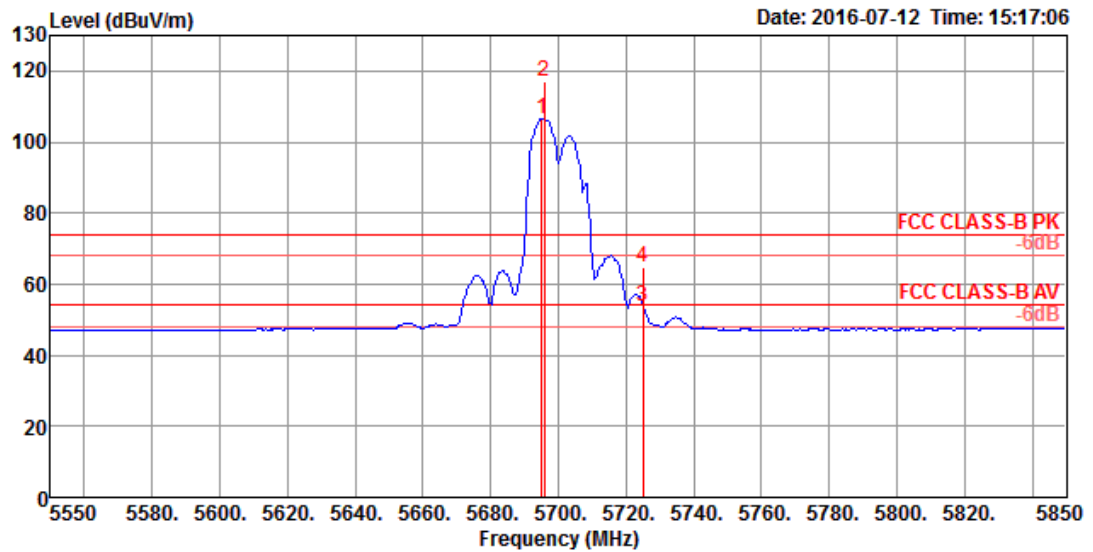
Channel 116


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5435.40	59.78	74.00	-14.22	52.00	7.65	31.75	31.62	210	78 Peak	VERTICAL
2	5457.60	47.86	54.00	-6.14	40.07	7.64	31.76	31.61	210	78 Average	VERTICAL
3	5464.80	48.74	54.00	-5.26	40.93	7.64	31.78	31.61	210	78 Average	VERTICAL
4	5470.00	61.34	74.00	-12.66	53.53	7.64	31.78	31.61	210	78 Peak	VERTICAL
5 0	5578.80	119.90			112.04	7.61	31.90	31.65	210	78 Peak	VERTICAL
6 0	5579.40	110.24			102.38	7.61	31.90	31.65	210	78 Average	VERTICAL
7	5725.00	47.66	54.00	-6.34	39.54	7.74	32.08	31.70	210	78 Average	VERTICAL
8	5725.00	59.30	74.00	-14.70	51.18	7.74	32.08	31.70	210	78 Peak	VERTICAL

Item 5, 6 are the fundamental frequency at 5580 MHz.



Channel 140

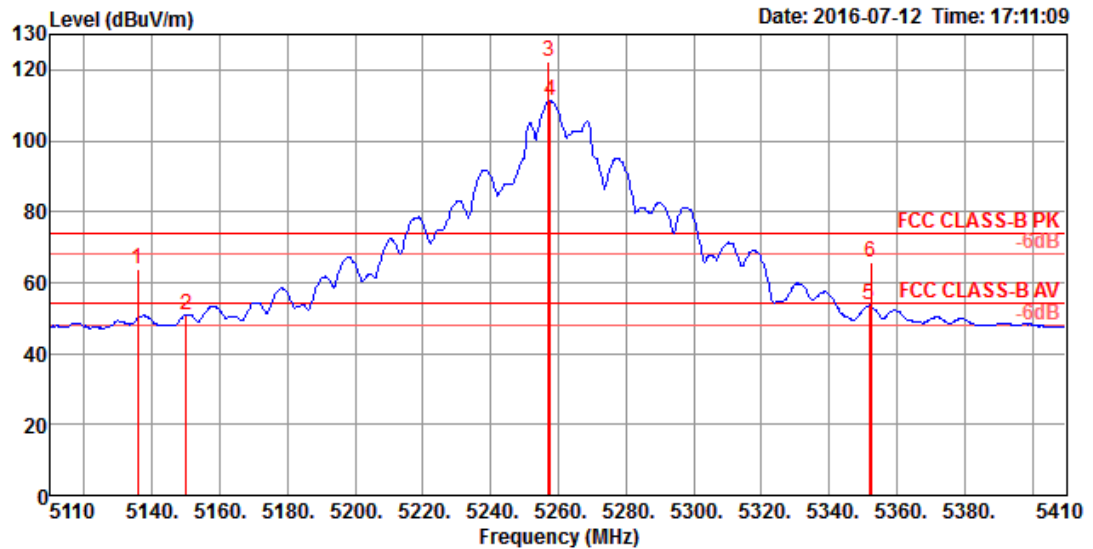


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 0	5695.20	106.60			98.54	7.71	32.04	31.69	218	118 Average	VERTICAL
2 0	5695.80	116.82			108.76	7.71	32.04	31.69	218	118 Peak	VERTICAL
3	5725.00	53.55	54.00	-0.45	45.43	7.74	32.08	31.70	218	118 Average	VERTICAL
4	5725.00	64.75	74.00	-9.25	56.63	7.74	32.08	31.70	218	118 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

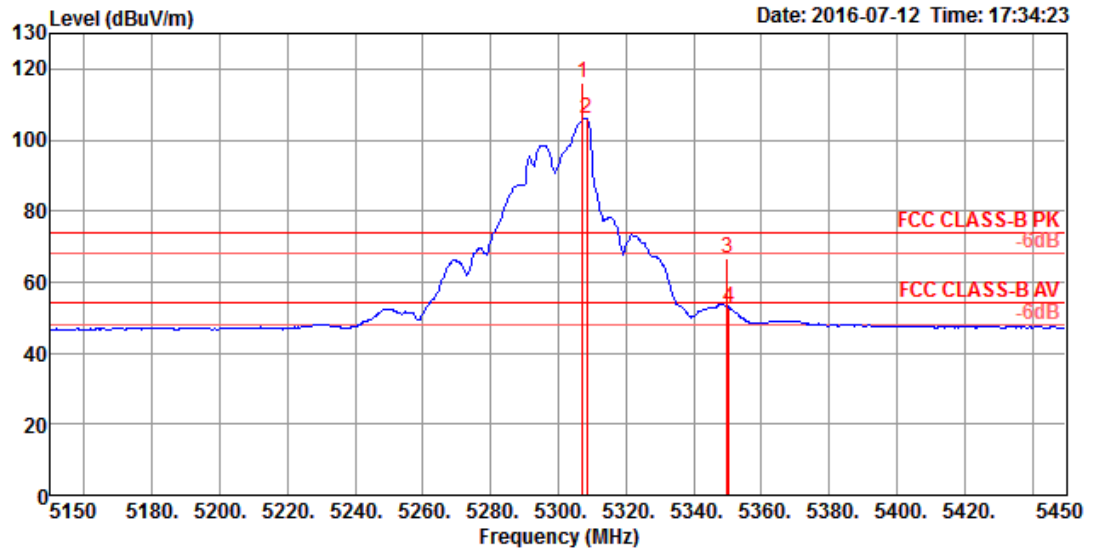


Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Port 1 + Port 2 + Port 3 + Port 4

Channel 52

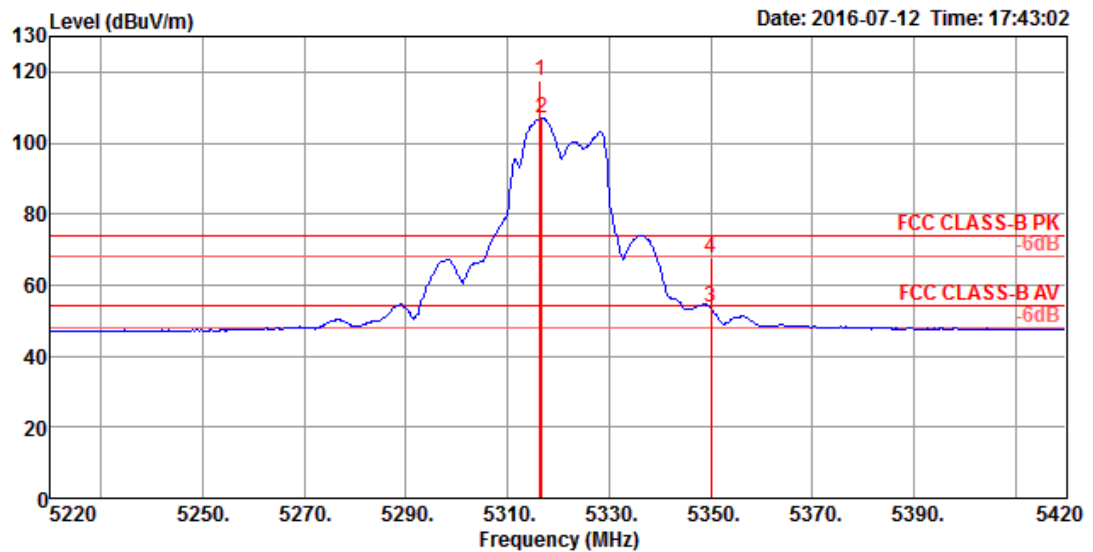
	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5135.80	63.81	74.00	-10.19	56.63	7.32	31.51	31.65	222	328	Peak	VERTICAL
2	5150.00	50.71	54.00	-3.29	43.49	7.34	31.52	31.64	222	328	Average	VERTICAL
3 0	5257.00	122.34			114.89	7.47	31.61	31.63	222	328	Peak	VERTICAL
4 0	5257.60	111.31			103.86	7.47	31.61	31.63	222	328	Average	VERTICAL
5	5351.80	53.49	54.00	-0.51	45.83	7.60	31.68	31.62	222	328	Average	VERTICAL
6	5352.40	65.65	74.00	-8.35	57.99	7.60	31.68	31.62	222	328	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5260 MHz.

Channel 60


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 0	5307.20	115.96			108.41	7.54	31.64	31.63	300	118	Peak
2 0	5308.40	106.06			98.48	7.56	31.65	31.63	300	118	Average
3	5350.00	66.62	74.00	-7.38	58.96	7.60	31.68	31.62	300	118	Peak
4	5350.40	52.63	54.00	-1.37	44.97	7.60	31.68	31.62	300	118	Average

Item 1, 2 are the fundamental frequency at 5300 MHz.

**Channel 64**

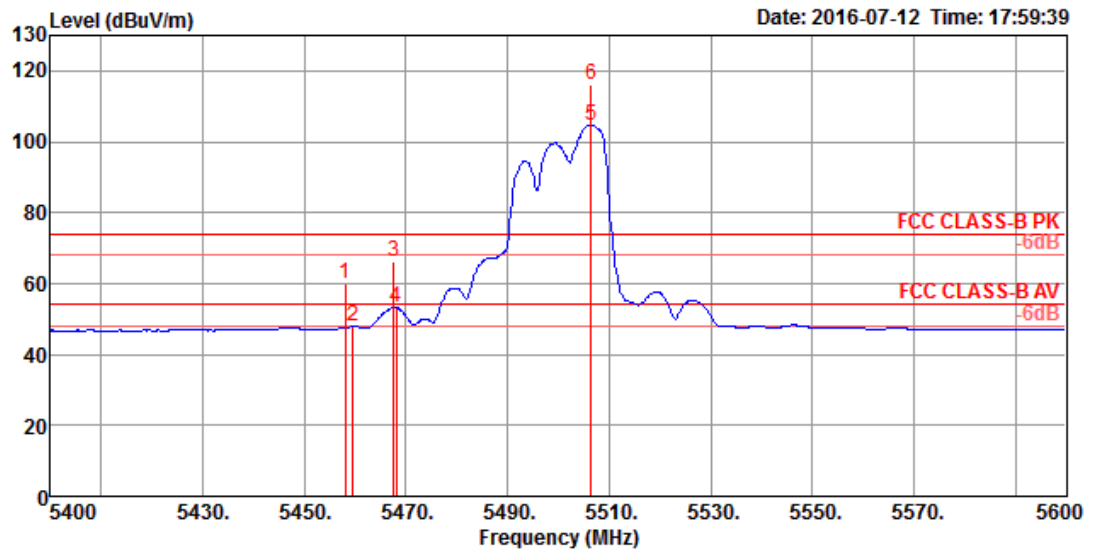
	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m		dBuV	dB	dB/m	dB	cm	deg		
1 0	5316.40	117.50			109.92	7.56	31.65	31.63	241	332	Peak	VERTICAL
2 0	5316.80	106.95			99.37	7.56	31.65	31.63	241	332	Average	VERTICAL
3	5350.00	53.52	54.00	-0.48	45.86	7.60	31.68	31.62	241	332	Average	VERTICAL
4	5350.00	67.85	74.00	-6.15	60.19	7.60	31.68	31.62	241	332	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.



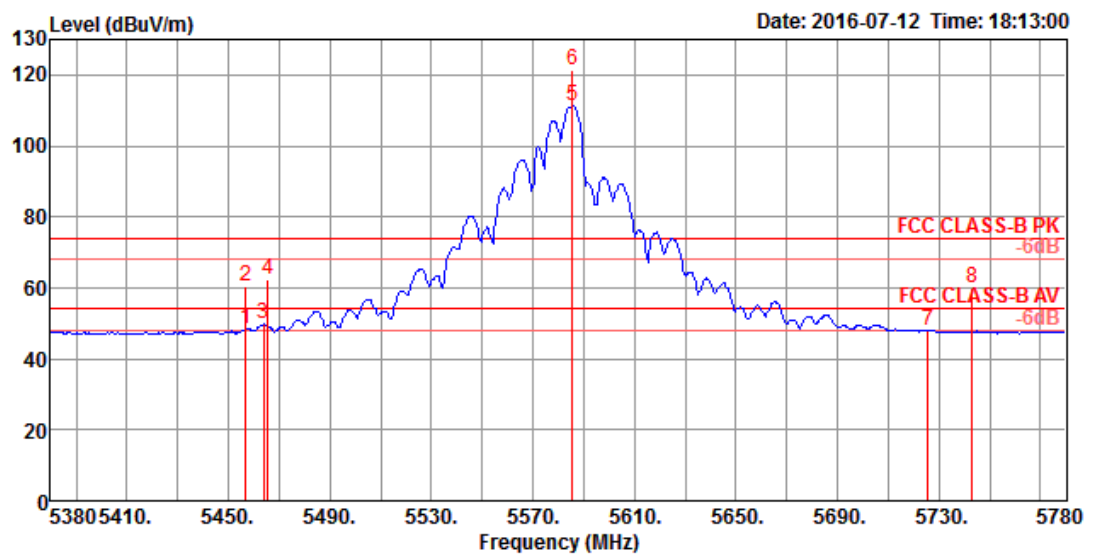
Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 116, 140 / Port 1 + Port 2 + Port 3 + Port 4

Channel 100



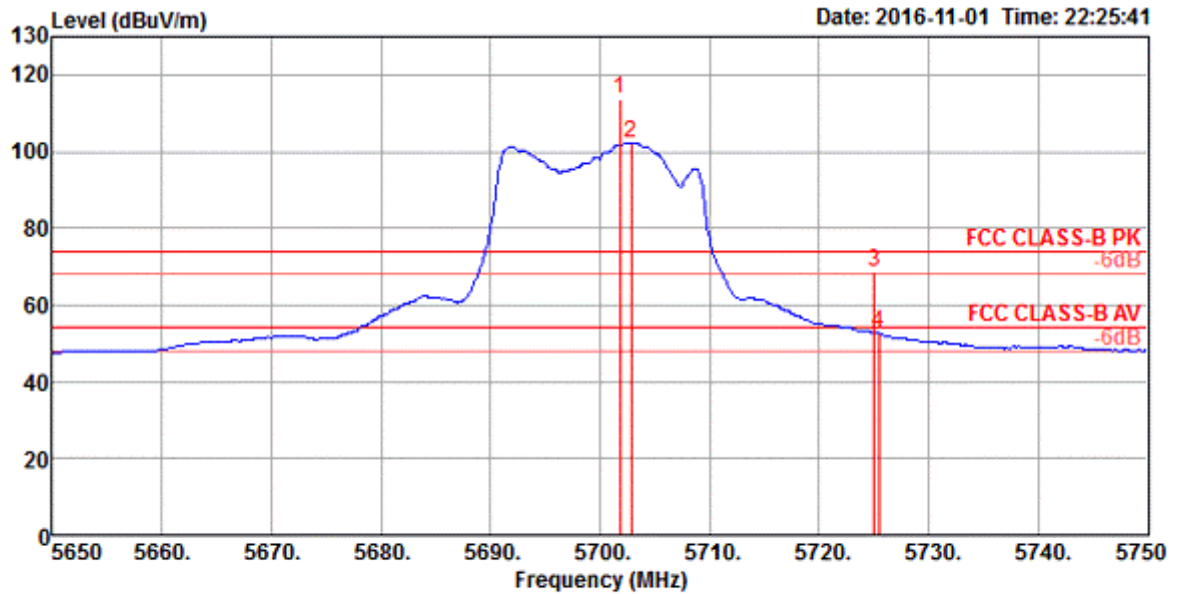
	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg	
1	5458.00	60.07	74.00	-13.93	52.28	7.64	31.76	31.61	297	166	Peak
2	5459.60	47.82	54.00	-6.18	40.03	7.64	31.76	31.61	297	166	Average
3	5467.60	66.10	74.00	-7.90	58.29	7.64	31.78	31.61	297	166	Peak
4	5468.00	53.10	54.00	-0.90	45.29	7.64	31.78	31.61	297	166	Average
5 0	5506.40	104.79			96.98	7.63	31.80	31.62	297	166	Average
6 0	5506.40	116.13			108.32	7.63	31.80	31.62	297	166	Peak

Item 5, 6 are the fundamental frequency at 5500 MHz.

Channel 116


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5456.80	48.45	54.00	-5.55	40.66	7.64	31.76	31.61	287	165 Average	VERTICAL
2	5456.80	60.49	74.00	-13.51	52.70	7.64	31.76	31.61	287	165 Peak	VERTICAL
3	5464.00	49.66	54.00	-4.34	41.85	7.64	31.78	31.61	287	165 Average	VERTICAL
4	5465.60	62.35	74.00	-11.65	54.54	7.64	31.78	31.61	287	165 Peak	VERTICAL
5 0	5585.60	111.34			103.48	7.61	31.90	31.65	287	165 Average	VERTICAL
6 0	5585.60	121.39			113.53	7.61	31.90	31.65	287	165 Peak	VERTICAL
7	5725.60	48.13	54.00	-5.87	40.01	7.74	32.08	31.70	287	165 Average	VERTICAL
8	5743.20	60.13	74.00	-13.87	51.98	7.76	32.10	31.71	287	165 Peak	VERTICAL

Item 5, 6 are the fundamental frequency at 5580 MHz.

Channel 140


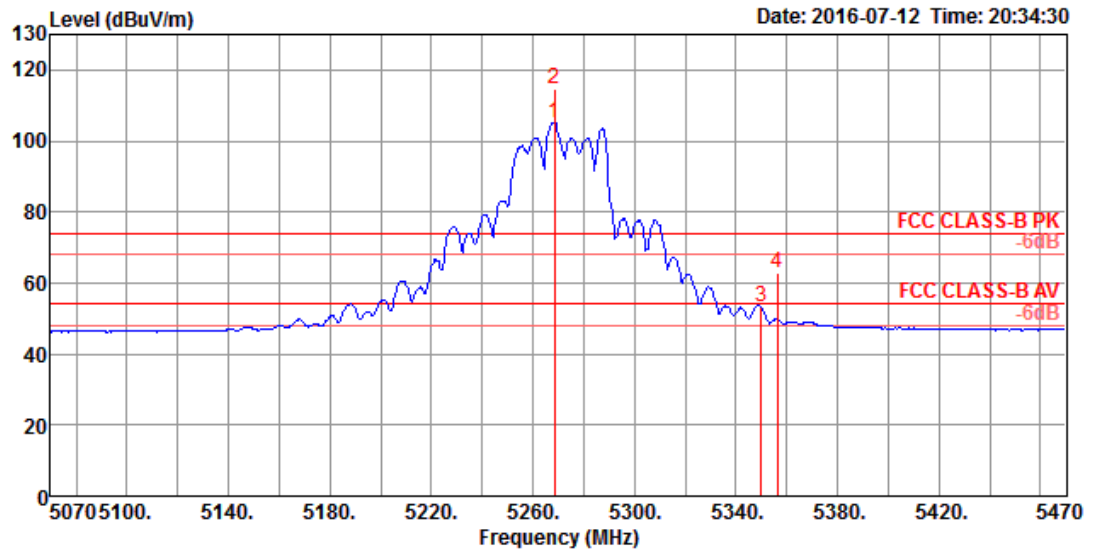
	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	Limit	Level	Loss	Factor	Factor	cm	deg	
1 @	5701.80	113.51			107.02	8.65	34.36	36.52	287	118	Peak
2 @	5702.80	102.33			95.84	8.65	34.36	36.52	287	118	Average
3	5725.00	68.83	74.00	-5.17	62.28	8.62	34.45	36.52	287	118	Peak
4	5725.40	52.56	54.00	-1.44	46.01	8.62	34.45	36.52	287	118	Average

Item 1, 2 are the fundamental frequency at 5700 MHz.



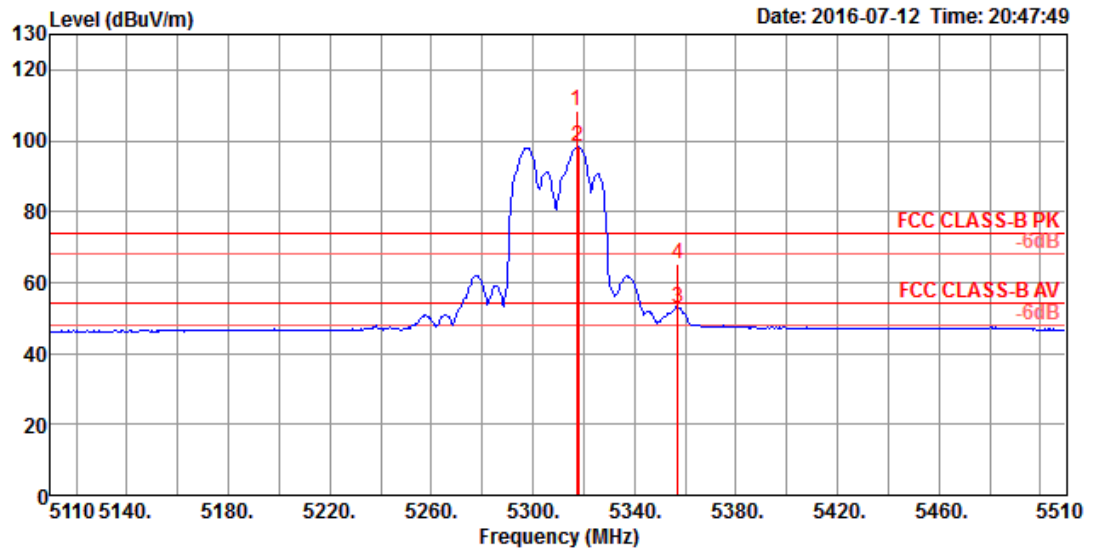
Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Port 1 + Port 2 + Port 3 + Port 4

Channel 54



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 0	5268.40	105.22			97.74	7.49	31.62	31.63	300	330	Average
2 0	5268.40	114.75			107.27	7.49	31.62	31.63	300	330	Peak
3	5350.00	53.19	54.00	-0.81	45.53	7.60	31.68	31.62	300	330	Average
4	5356.40	62.71	74.00	-11.29	55.02	7.62	31.69	31.62	300	330	Peak

Item 1, 2 are the fundamental frequency at 5270 MHz.

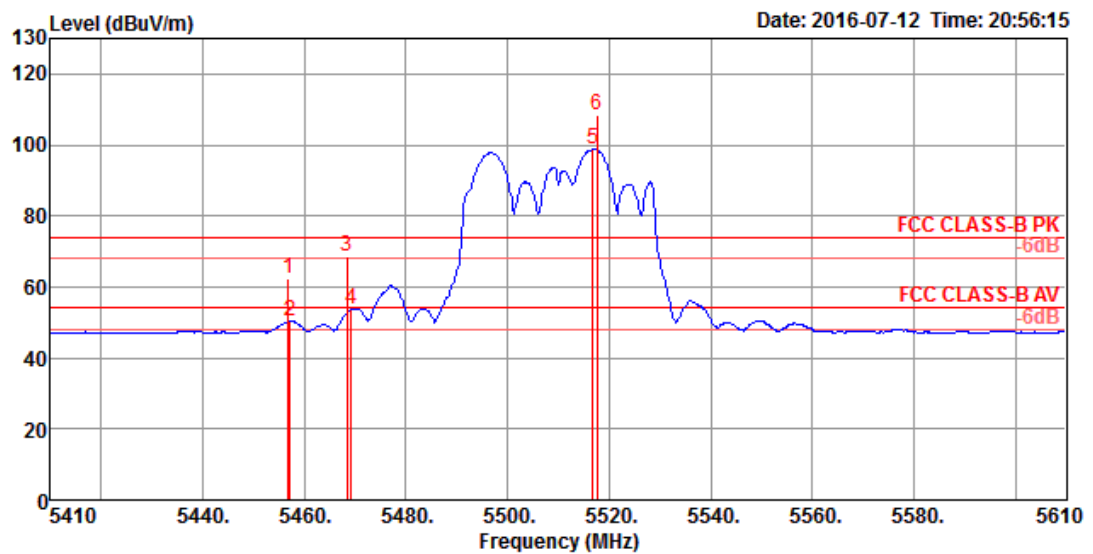
**Channel 62**

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 0	5317.20	108.23			100.65	7.56	31.65	31.63	300	116 Peak	HORIZONTAL
2 0	5318.00	98.13			90.55	7.56	31.65	31.63	300	116 Average	HORIZONTAL
3	5357.20	52.98	54.00	-1.02	45.29	7.62	31.69	31.62	300	116 Average	HORIZONTAL
4	5357.20	65.27	74.00	-8.73	57.58	7.62	31.69	31.62	300	116 Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5310 MHz.



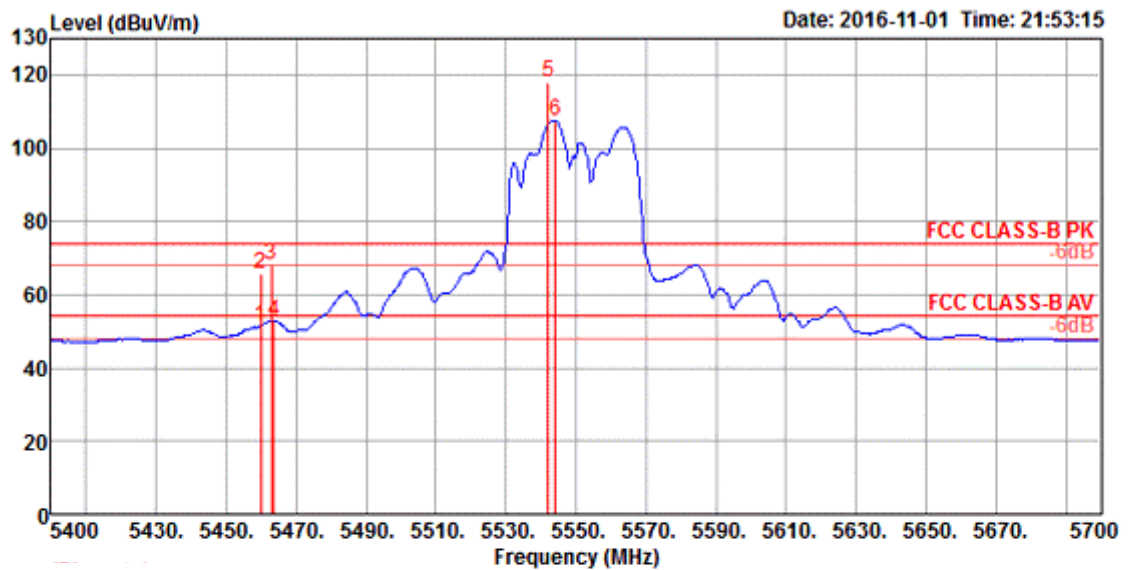
Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110, 134 / Port 1 + Port 2 + Port 3 + Port 4

Channel 102

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5456.80	62.49	74.00	-11.51	54.70	7.64	31.76	31.61	300	163 Peak	VERTICAL
2	5457.20	50.27	54.00	-3.73	42.48	7.64	31.76	31.61	300	163 Average	VERTICAL
3	5468.40	68.42	74.00	-5.58	60.61	7.64	31.78	31.61	300	163 Peak	VERTICAL
4	5469.20	53.61	54.00	-0.39	45.80	7.64	31.78	31.61	300	163 Average	VERTICAL
5 0	5516.80	98.68			90.85	7.63	31.82	31.62	300	163 Average	VERTICAL
6 0	5517.60	108.21			100.38	7.63	31.82	31.62	300	163 Peak	VERTICAL

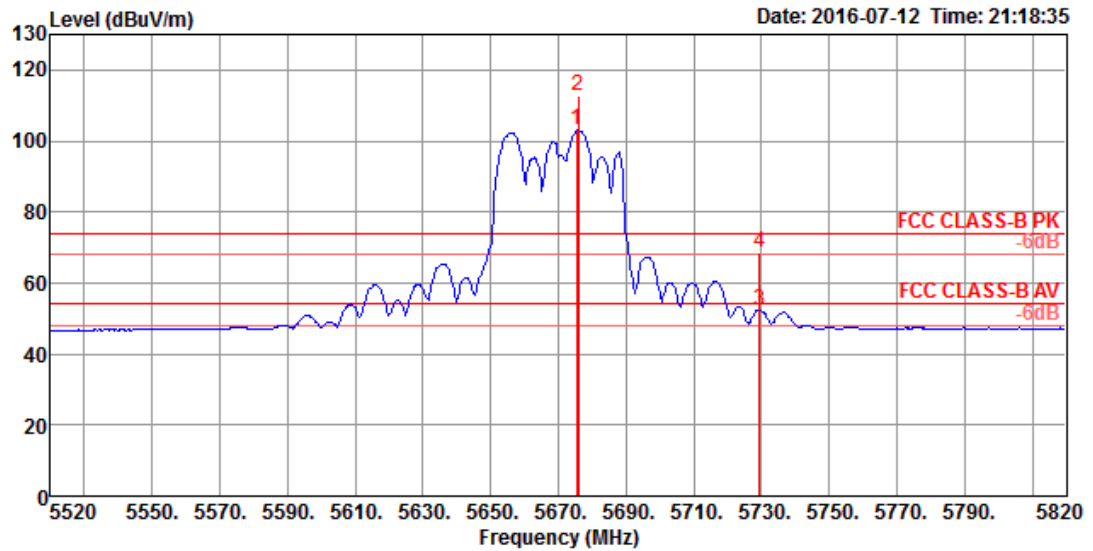
Item 5, 6 are the fundamental frequency at 5510 MHz.

Channel 110



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5460.00	51.56	54.00	-2.44	46.05	8.38	33.72	36.59	300	179 Average	VERTICAL
2	5460.00	65.54	74.00	-8.46	60.03	8.38	33.72	36.59	300	179 Peak	VERTICAL
3	5463.00	68.35	74.00	-5.65	62.83	8.39	33.72	36.59	300	179 Peak	VERTICAL
4	5463.60	52.83	54.00	-1.17	47.28	8.39	33.75	36.59	300	179 Average	VERTICAL
5 @	5542.20	118.00			112.05	8.63	33.89	36.57	300	179 Peak	VERTICAL
6 @	5544.00	107.61			101.61	8.63	33.94	36.57	300	179 Average	VERTICAL

Item 5, 6 are the fundamental frequency at 5550 MHz.

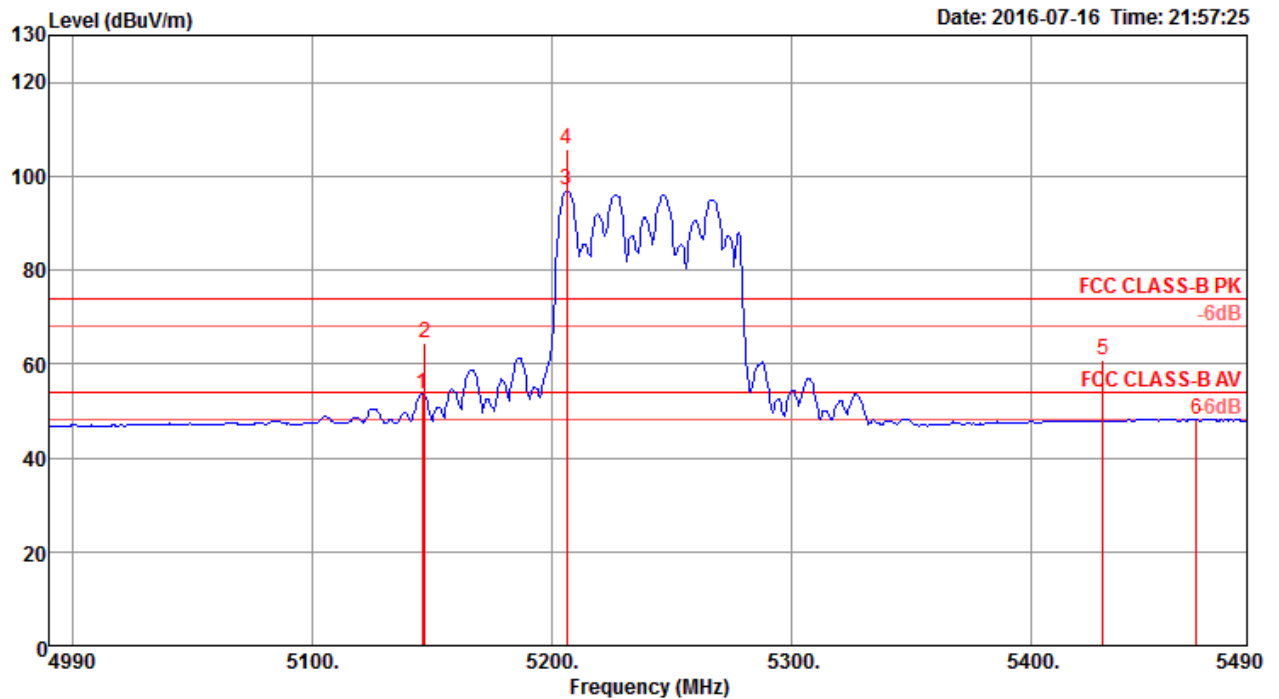
Channel 134


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 0	5675.40	102.91			94.88	7.69	32.02	31.68	300	161 Average	VERTICAL
2 0	5676.00	112.65			104.62	7.69	32.02	31.68	300	161 Peak	VERTICAL
3	5729.40	52.49	54.00	-1.51	44.38	7.74	32.08	31.71	300	161 Average	VERTICAL
4	5729.40	68.46	74.00	-5.54	60.35	7.74	32.08	31.71	300	161 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5670 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Port 1 + Port 2 + Port 3 + Port 4

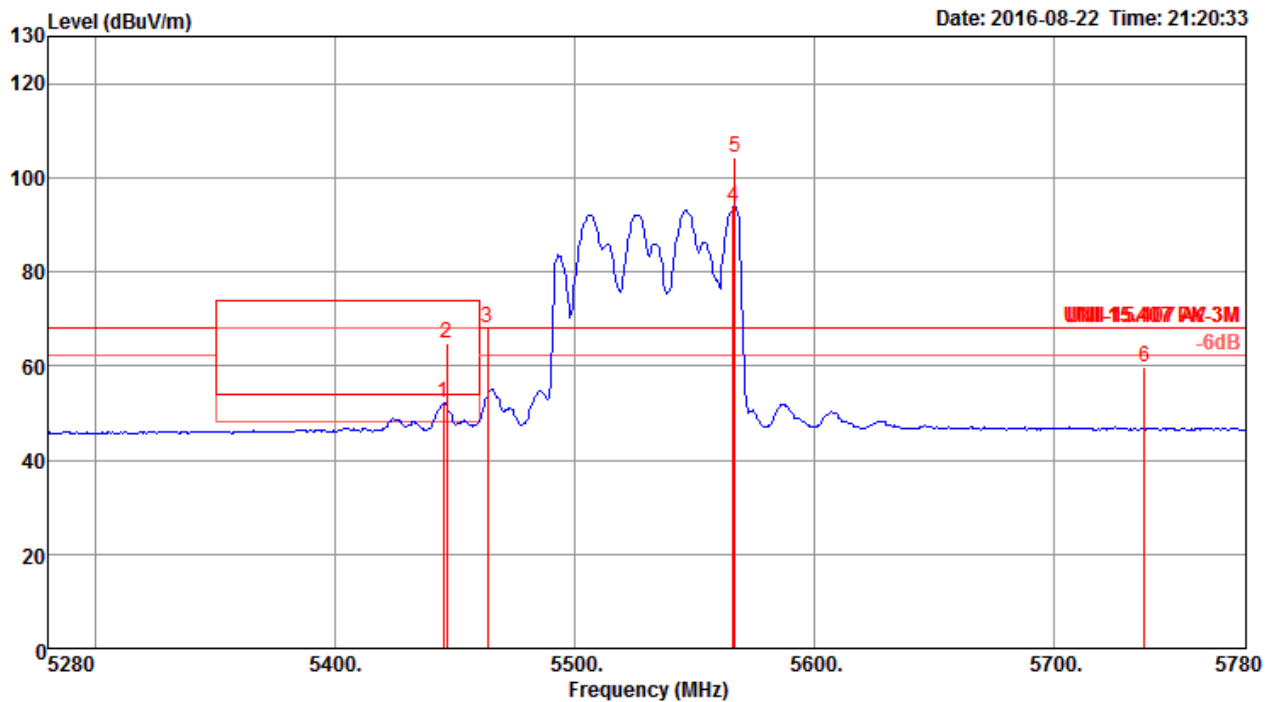
Channel 58

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5146.00	53.76	54.00	-0.24	46.50	6.44	33.74	32.92	238	167 Average	VERTICAL
2	5147.00	64.55	74.00	-9.45	57.29	6.44	33.74	32.92	238	167 Peak	VERTICAL
3	5206.00	96.98			89.57	6.49	33.84	32.92	238	167 Average	VERTICAL
4	5206.00	105.83			98.42	6.49	33.84	32.92	238	167 Peak	VERTICAL
5	5430.00	60.96	74.00	-13.04	53.04	6.67	34.18	32.93	238	167 Peak	VERTICAL
6	5469.00	48.28	54.00	-5.72	40.27	6.69	34.25	32.93	238	167 Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5290 MHz.

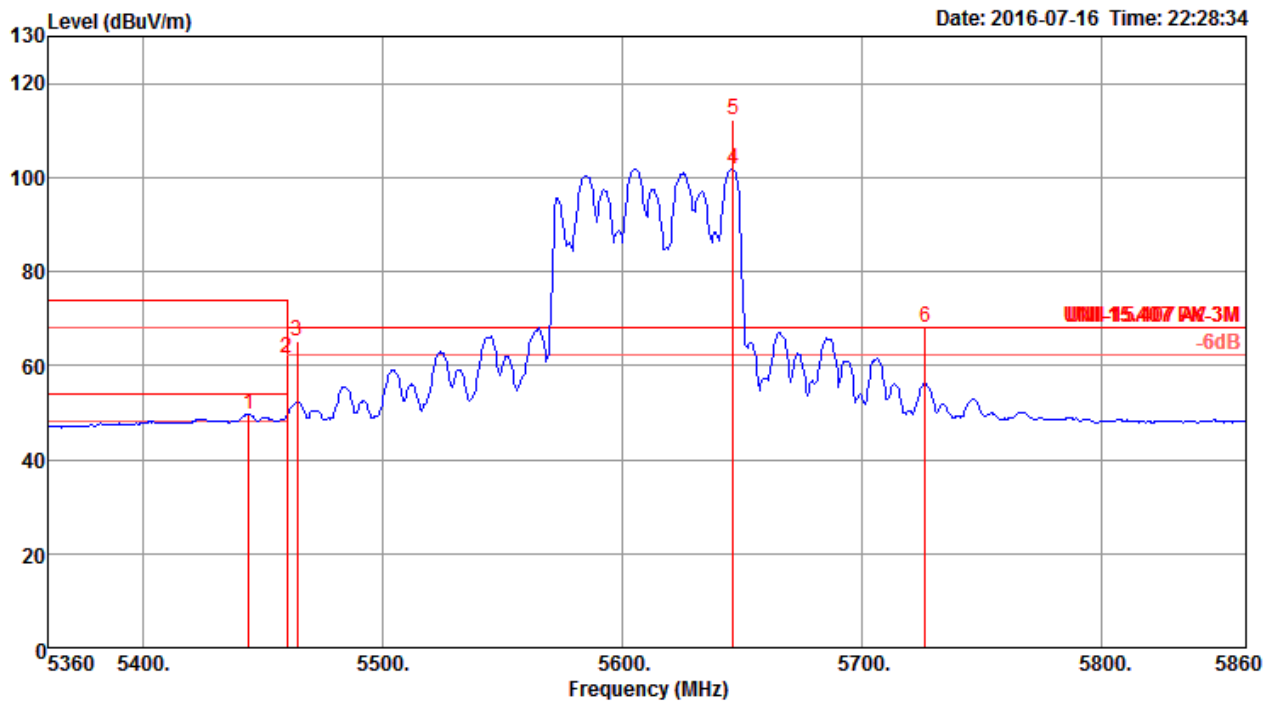


Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106, 122 / Port 1 + Port 2 + Port 3 + Port 4

Channel 106

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg		
1	5445.06	52.07	54.00	-1.93	44.13	6.67	34.20	32.93	300	318	Average	VERTICAL
2	5446.67	64.86	74.00	-9.14	56.92	6.67	34.20	32.93	300	318	Peak	VERTICAL
3	5463.49	68.04	68.20	-0.16	60.06	6.68	34.23	32.93	300	318	Peak	VERTICAL
4	5566.06	93.65			85.53	6.73	34.34	32.95	300	318	Average	VERTICAL
5	5566.86	104.16			96.04	6.73	34.34	32.95	300	318	Peak	VERTICAL
6	5737.53	59.92	68.20	-8.28	51.59	6.88	34.44	32.99	300	318	Peak	VERTICAL

Item 4, 5 are the fundamental frequency at 5530 MHz.

Channel 122


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5444.00	49.75	54.00	-4.25	41.81	6.67	34.20	32.93	223	135 Average	VERTICAL
2	5460.00	61.63	74.00	-12.37	53.65	6.68	34.23	32.93	223	135 Peak	VERTICAL
3	5464.00	65.27	68.20	-2.93	57.26	6.69	34.25	32.93	223	135 Peak	VERTICAL
4	5646.00	101.89			93.67	6.80	34.39	32.97	223	135 Average	VERTICAL
5	5646.00	112.27			104.05	6.80	34.39	32.97	223	135 Peak	VERTICAL
6	5726.00	68.14	68.20	-0.06	59.81	6.88	34.44	32.99	223	135 Peak	VERTICAL

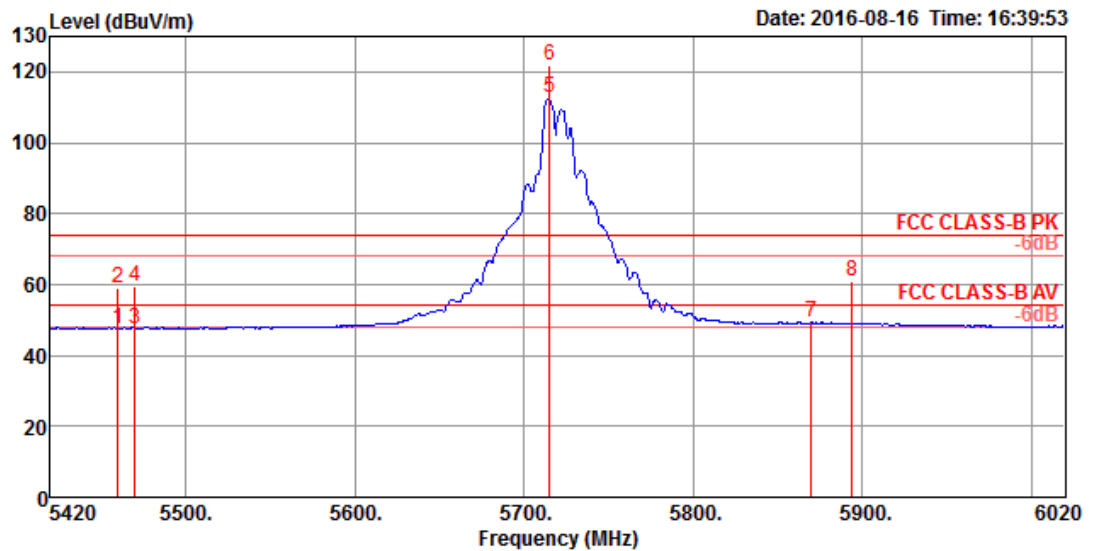
Item 4, 5 are the fundamental frequency at 5610 MHz.



Straddle Channel

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 144 (UNII 2C) / Port 1 + Port 2 + Port 3 + Port 4

Channel 144



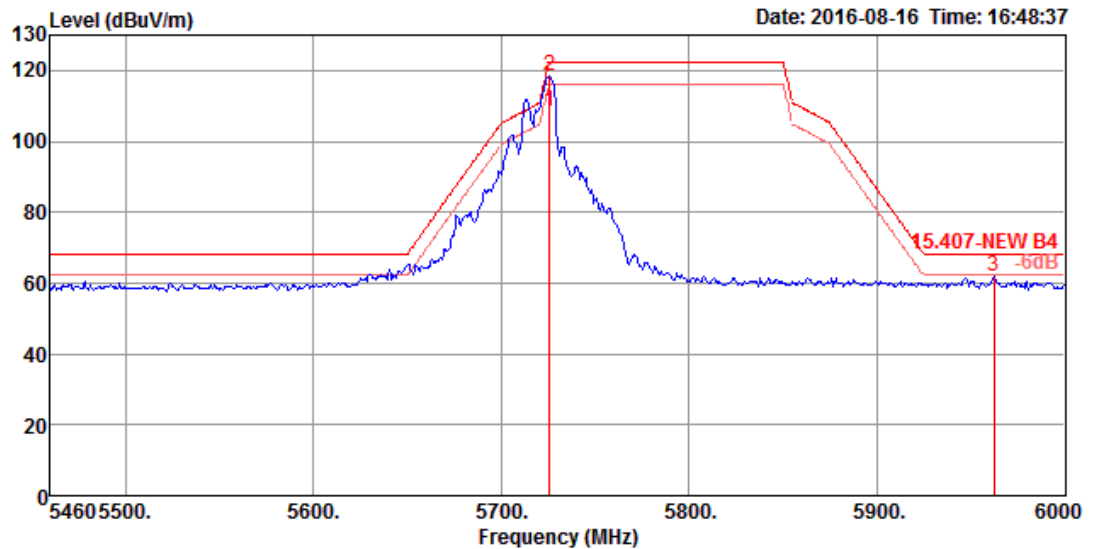
	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5460.00	47.65	54.00	-6.35	39.18	8.33	31.75	31.61	311	181 Average	VERTICAL
2	5460.00	59.00	74.00	-15.00	50.53	8.33	31.75	31.61	311	181 Peak	VERTICAL
3	5470.00	47.52	54.00	-6.48	39.03	8.33	31.77	31.61	311	181 Average	VERTICAL
4	5470.00	59.40	74.00	-14.60	50.91	8.33	31.77	31.61	311	181 Peak	VERTICAL
5	5715.20	112.54			103.36	8.82	32.06	31.70	311	181 Average	VERTICAL
6	5715.20	121.75			112.57	8.82	32.06	31.70	311	181 Peak	VERTICAL
7	5870.00	49.33	54.00	-4.67	39.93	8.92	32.24	31.76	311	181 Average	VERTICAL
8	5894.00	61.11	74.00	-12.89	51.82	8.78	32.28	31.77	311	181 Peak	VERTICAL

Item 5, 6 are the fundamental frequency at 5720 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11a CH 144 (UNII 3) / Port 1 + Port 2 + Port 3 + Port 4

Channel 144



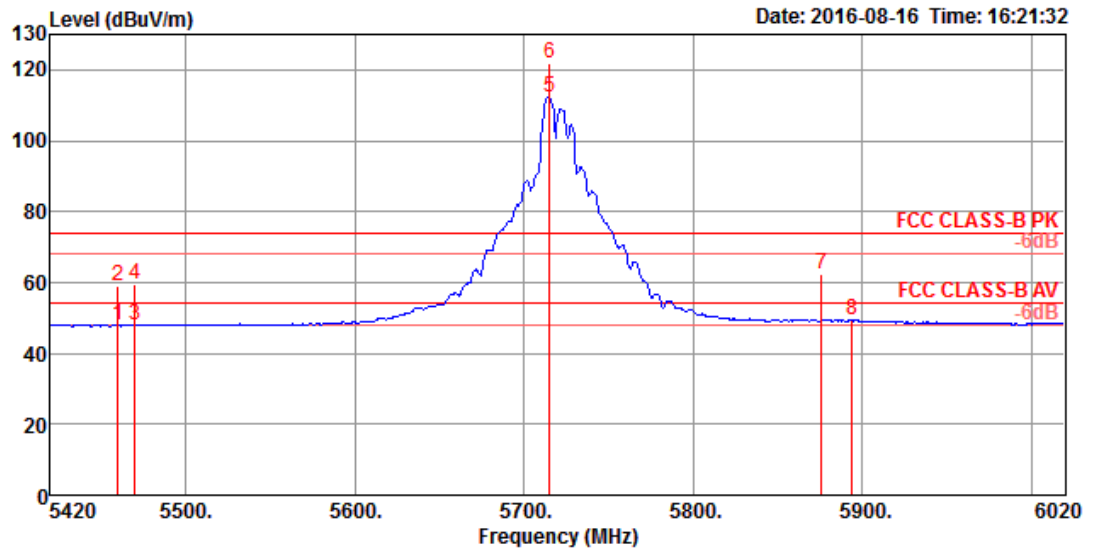
	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5725.68	108.34			99.06	8.90	32.08	31.70	320	131	Average	HORIZONTAL
2	5725.68	118.31			109.03	8.90	32.08	31.70	320	131	Peak	HORIZONTAL
3	5962.20	61.92	68.20	-6.28	52.85	8.51	32.36	31.80	320	131	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5720 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 (UNII 2C) / Port 1 + Port 2 + Port 3 + Port 4

Channel 144

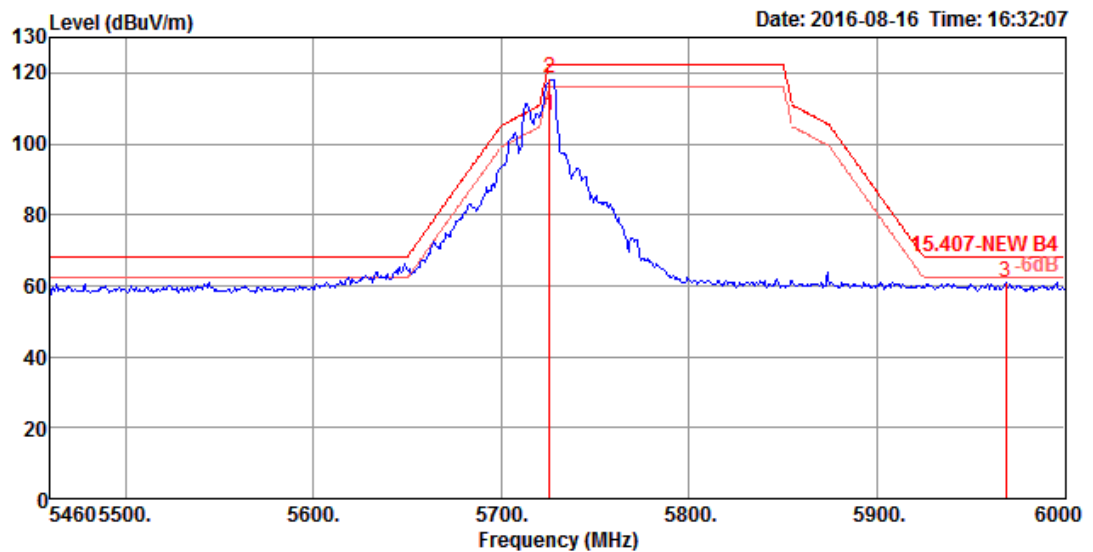


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5460.00	47.79	54.00	-6.21	39.32	8.33	31.75	31.61	309	181 Average	VERTICAL
2	5460.00	59.22	74.00	-14.78	50.75	8.33	31.75	31.61	309	181 Peak	VERTICAL
3	5470.00	47.87	54.00	-6.13	39.38	8.33	31.77	31.61	309	181 Average	VERTICAL
4	5470.00	59.27	74.00	-14.73	50.78	8.33	31.77	31.61	309	181 Peak	VERTICAL
5	5715.20	112.45			103.27	8.82	32.06	31.70	309	181 Average	VERTICAL
6	5715.20	121.65			112.47	8.82	32.06	31.70	309	181 Peak	VERTICAL
7	5876.00	62.27	74.00	-11.73	52.92	8.85	32.26	31.76	309	181 Peak	VERTICAL
8	5894.00	49.33	54.00	-4.67	40.04	8.78	32.28	31.77	309	181 Average	VERTICAL

Item 5, 6 are the fundamental frequency at 5720 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 (UNII 3) / Port 1 + Port 2 + Port 3 + Port 4

Channel 144

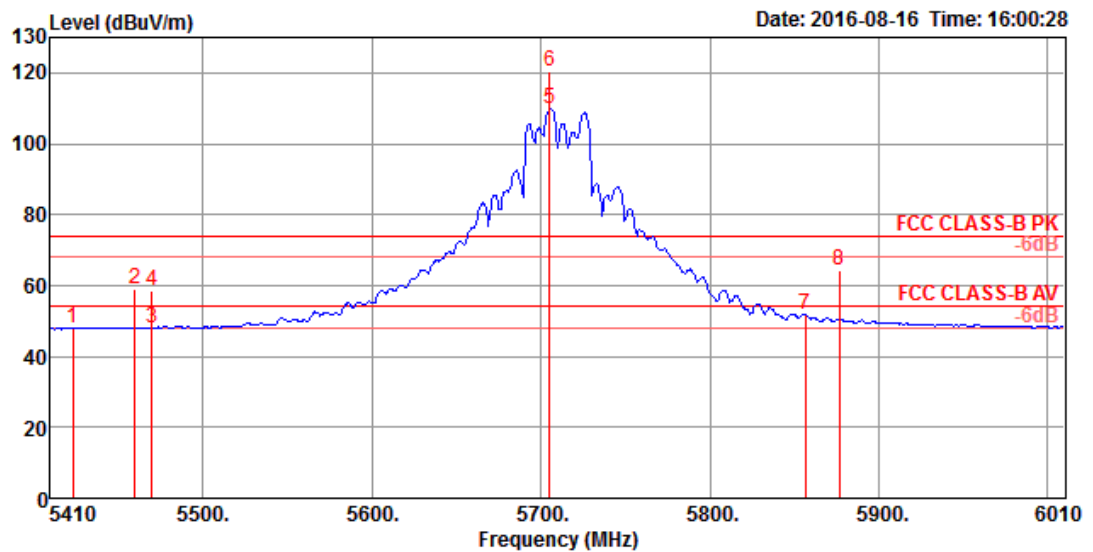
	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5725.68	108.12			98.84	8.90	32.08	31.70	320	129	Average	HORIZONTAL
2	5725.68	118.55			109.27	8.90	32.08	31.70	320	129	Peak	HORIZONTAL
3	5968.68	60.91	68.20	-7.29	51.84	8.51	32.36	31.80	320	129	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5720 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 (UNII 2C) / Port 1 + Port 2 + Port 3 + Port 4

Channel 142

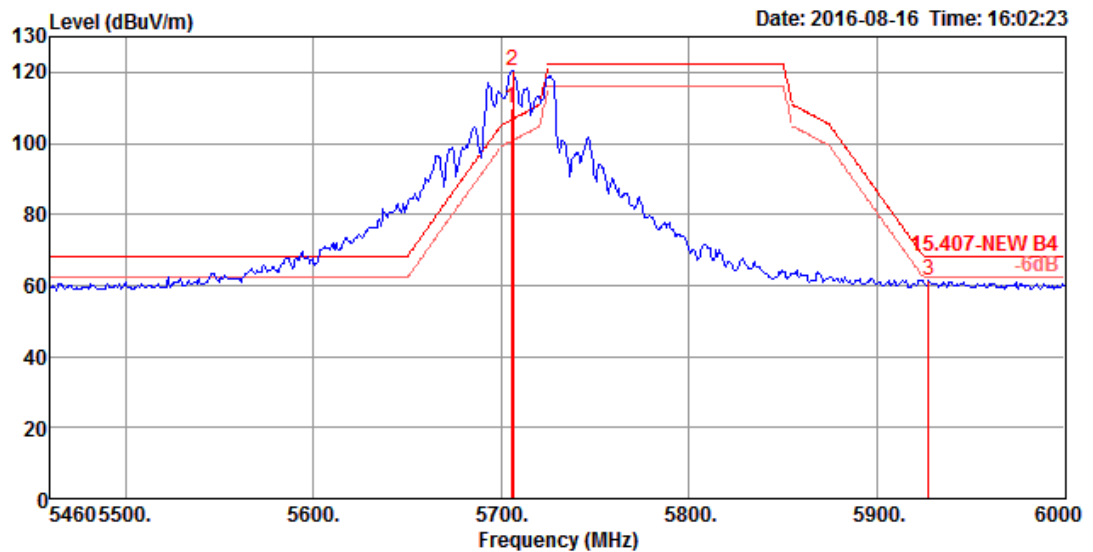


	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg		
1	5423.20	47.99	54.00	-6.01	39.55	8.34	31.72	31.62	320	174	Average	VERTICAL
2	5460.00	58.93	74.00	-15.07	50.46	8.33	31.75	31.61	320	174	Peak	VERTICAL
3	5470.00	48.18	54.00	-5.82	39.69	8.33	31.77	31.61	320	174	Average	VERTICAL
4	5470.00	58.73	74.00	-15.27	50.24	8.33	31.77	31.61	320	174	Peak	VERTICAL
5	5705.20	109.89			100.79	8.75	32.04	31.69	320	174	Average	VERTICAL
6	5705.20	120.36			111.26	8.75	32.04	31.69	320	174	Peak	VERTICAL
7	5856.40	51.94	54.00	-2.06	42.53	8.92	32.24	31.75	320	174	Average	VERTICAL
8	5876.80	64.28	74.00	-9.72	54.93	8.85	32.26	31.76	320	174	Peak	VERTICAL

Item 5, 6 are the fundamental frequency at 5710 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 (UNII 3) / Port 1 + Port 2 + Port 3 + Port 4

Channel 142

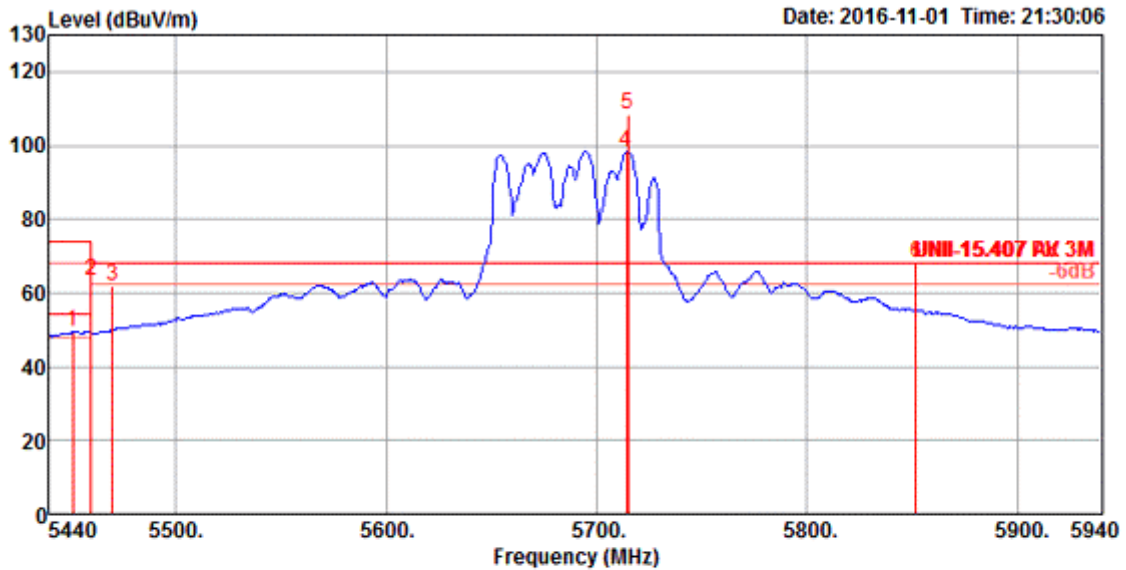
	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg		
1 0	5705.16	109.91			100.81	8.75	32.04	31.69	320	174	Average	VERTICAL
2 0	5706.24	120.59			111.40	8.82	32.06	31.69	320	174	Peak	VERTICAL
3	5927.64	61.29	68.20	-6.91	52.11	8.64	32.32	31.78	320	174	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5710 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 (UNII 2C) / Port 1 + Port 2 + Port 3 + Port 4

Channel 138



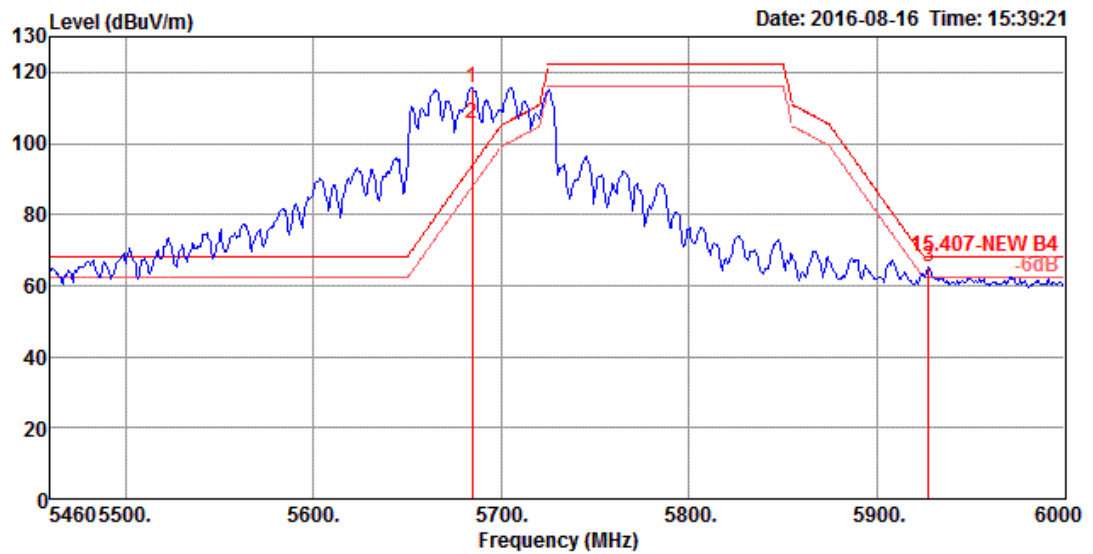
	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5451.00	49.37	54.00	-4.63	43.89	8.36	33.72	36.60	291	137 Average	HORIZONTAL
2	5460.00	63.14	74.00	-10.86	57.63	8.38	33.72	36.59	291	137 Peak	HORIZONTAL
3	5470.00	62.10	68.20	-6.10	56.53	8.41	33.75	36.59	291	137 Peak	HORIZONTAL
4 @	5714.00	98.35			91.83	8.63	34.41	36.52	291	137 Average	HORIZONTAL
5 @	5715.00	108.61			102.09	8.63	34.41	36.52	291	137 Peak	HORIZONTAL
6	5852.00	68.09	68.20	-0.11	61.18	8.61	34.78	36.48	291	137 Peak	HORIZONTAL

Item 4, 5 are the fundamental frequency at 5690 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 (UNII 3) / Port 1 + Port 2 + Port 3 + Port 4

Channel 138

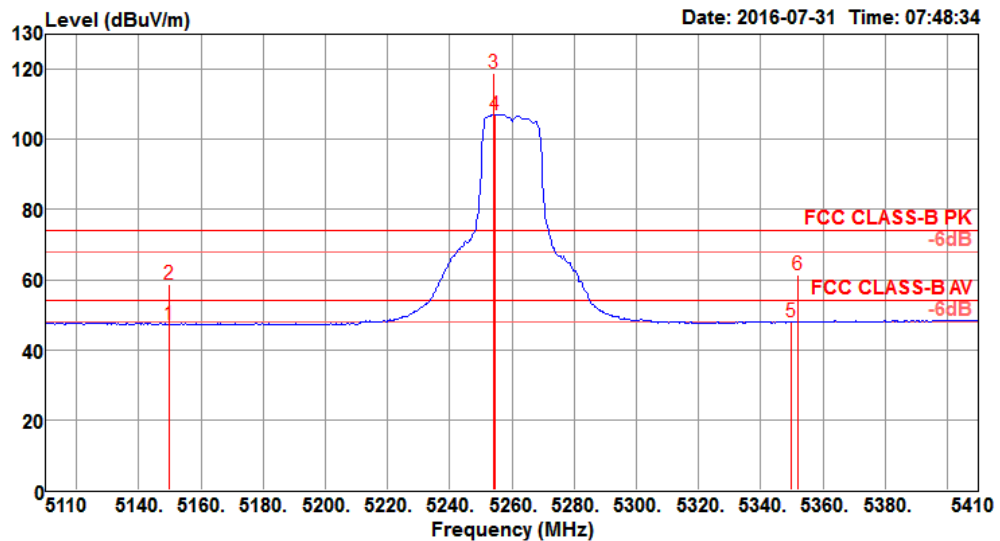


	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg		
1 0	5684.64	115.58			106.56	8.68	32.02	31.68	297	177	Peak	VERTICAL
2 0	5684.64	105.61			96.59	8.68	32.02	31.68	297	177	Average	VERTICAL
3	5927.64	65.46	68.20	-2.74	56.28	8.64	32.32	31.78	297	177	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5690 MHz.

For beamforming mode

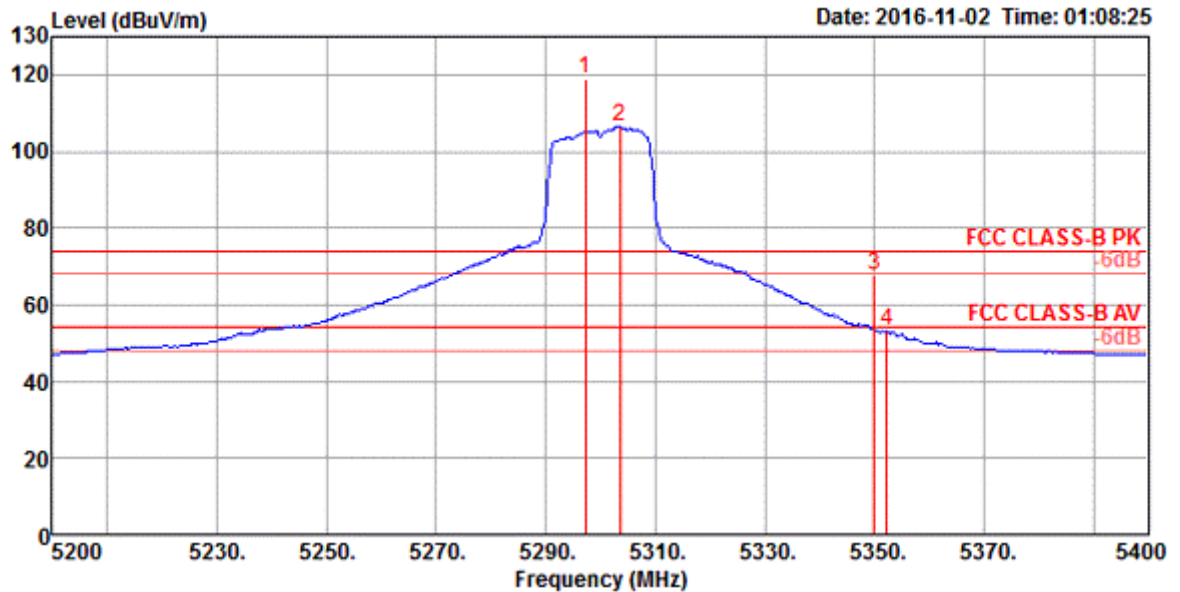
Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Port 1 + Port 2 + Port 3 + Port 4

Channel 52


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5150.00	47.22	54.00	-6.78	39.80	7.48	34.85	34.91	291	182 Average	VERTICAL
2	5150.00	58.81	74.00	-15.19	51.39	7.48	34.85	34.91	291	182 Peak	VERTICAL
3	5254.00	118.75			111.19	7.51	34.96	34.91	291	182 Peak	VERTICAL
4	5254.60	107.15			99.59	7.51	34.96	34.91	291	182 Average	VERTICAL
5	5350.00	47.77	54.00	-6.23	40.07	7.56	35.05	34.91	291	182 Average	VERTICAL
6	5351.80	61.35	74.00	-12.65	53.65	7.56	35.05	34.91	291	182 Peak	VERTICAL

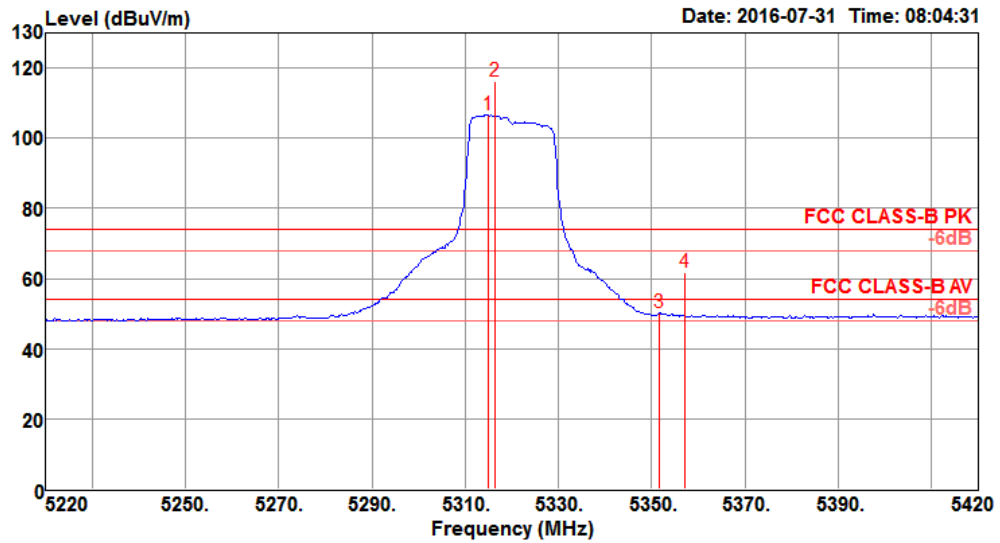
Item 3, 4 are the fundamental frequency at 5260 MHz.

Channel 60



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 @	5297.20	119.20			114.19	8.17	33.45	36.61	246	144	Peak
2 @	5303.60	106.52			101.50	8.18	33.45	36.61	246	144	Average
3	5350.00	67.45	74.00	-6.55	62.33	8.19	33.53	36.60	246	144	Peak
4	5352.40	53.32	54.00	-0.68	48.20	8.19	33.53	36.60	246	144	Average

Item 1, 2 are the fundamental frequency at 5300 MHz.

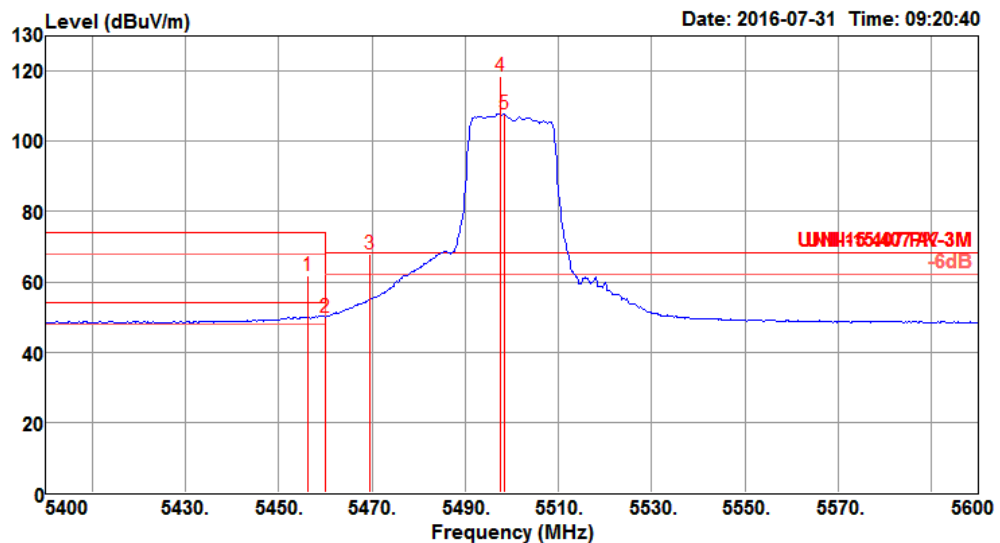
Channel 64


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5314.80	106.64			98.99	7.54	35.02	34.91	274	229 Average	VERTICAL
2	5316.40	116.40			108.75	7.54	35.02	34.91	274	229 Peak	VERTICAL
3	5351.60	50.15	54.00	-3.85	42.45	7.56	35.05	34.91	274	229 Average	VERTICAL
4	5357.20	61.72	74.00	-12.28	54.01	7.56	35.06	34.91	274	229 Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

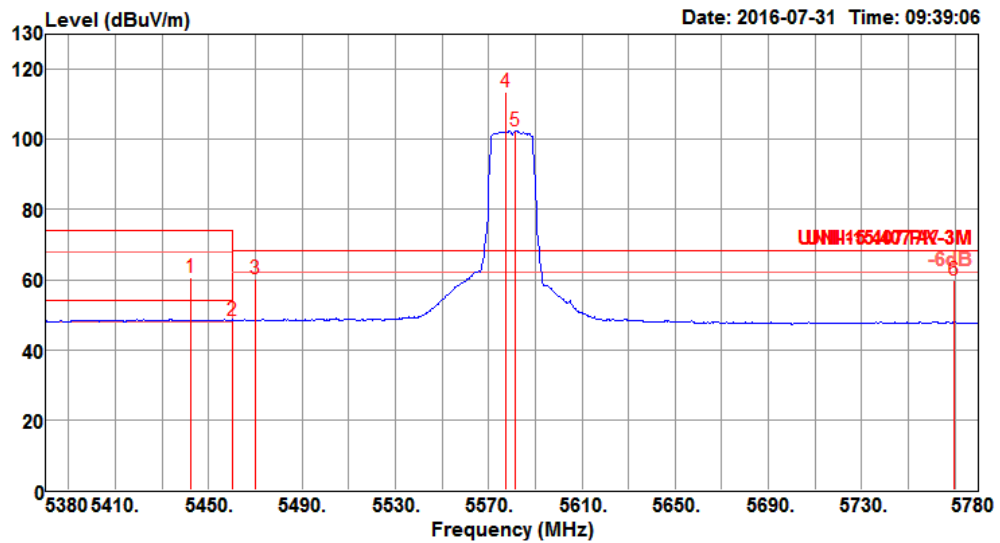


Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 116, 140 / Port 1 + Port 2 + Port 3 + Port 4

Channel 100

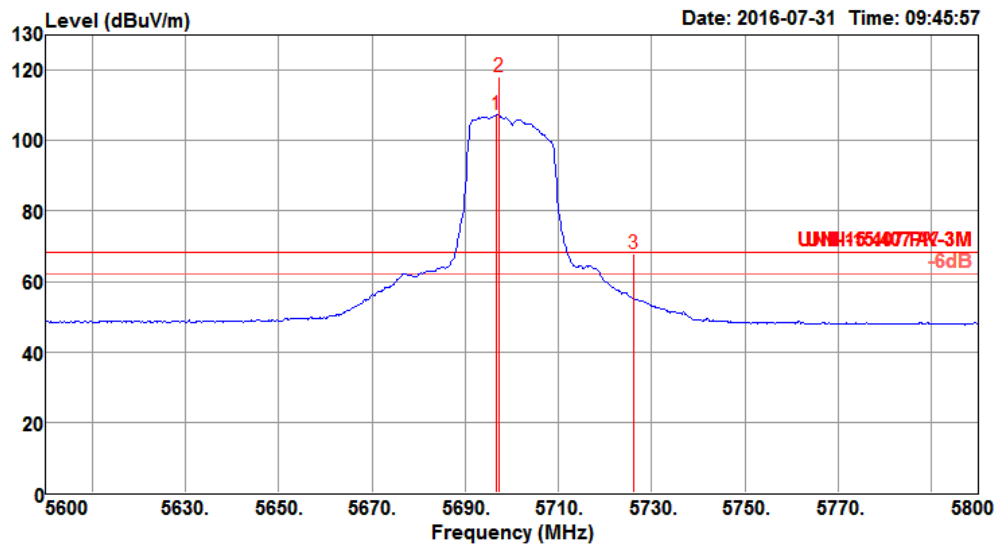
	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5456.40	61.90	74.00	-12.10	53.98	7.69	35.15	34.92	276	174	Peak	VERTICAL
2	5460.00	50.00	54.00	-4.00	42.08	7.69	35.15	34.92	276	174	Average	VERTICAL
3	5469.60	67.94	68.20	-0.26	59.97	7.72	35.17	34.92	276	174	Peak	VERTICAL
4	5497.60	118.32			110.27	7.77	35.20	34.92	276	174	Peak	VERTICAL
5	5498.40	107.87			99.82	7.77	35.20	34.92	276	174	Average	VERTICAL

Item 4, 5 are the fundamental frequency at 5500 MHz.

Channel 116


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5442.40	60.57	74.00	-13.43	52.69	7.66	35.14	34.92	276	253	Peak
2	5460.00	48.50	54.00	-5.50	40.58	7.69	35.15	34.92	276	253	Average
3	5470.00	60.36	68.20	-7.84	52.39	7.72	35.17	34.92	276	253	Peak
4	5577.60	113.49			105.29	7.91	35.22	34.93	276	253	Peak
5	5581.60	102.44			94.24	7.91	35.22	34.93	276	253	Average
6	5769.60	59.77	68.20	-8.43	51.72	7.75	35.25	34.95	276	253	Peak

Item 4, 5 are the fundamental frequency at 5580 MHz.

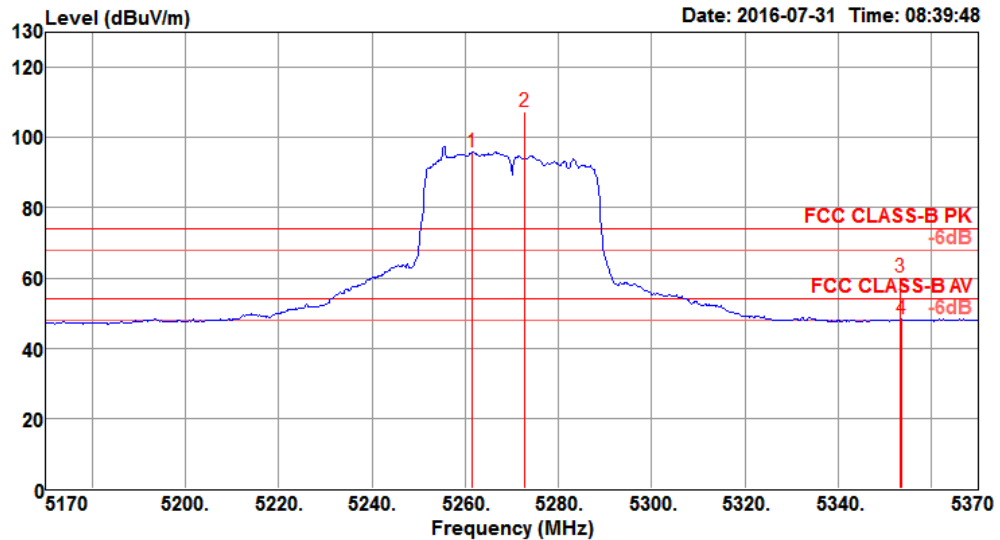
Channel 140


	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5696.80	107.30			99.18	7.82	35.24	34.94	296	183	Average	VERTICAL
2	5697.20	118.18			110.06	7.82	35.24	34.94	296	183	Peak	VERTICAL
3	5726.00	67.78	68.20	-0.42	59.68	7.79	35.25	34.94	296	183	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.



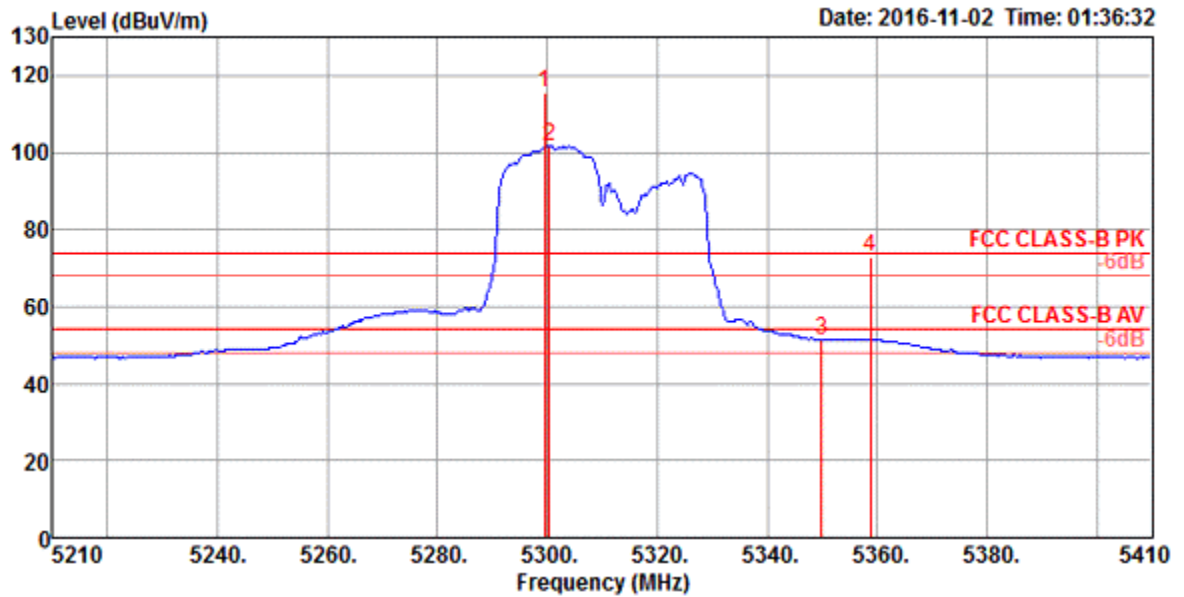
Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Port 1 + Port 2 + Port 3 + Port 4

Channel 54

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5261.60	95.86			88.30	7.51	34.96	34.91	275	56 Average	HORIZONTAL
2	5272.80	107.31			99.73	7.52	34.97	34.91	275	56 Peak	HORIZONTAL
3	5353.20	60.40	74.00	-13.60	52.70	7.56	35.05	34.91	275	56 Peak	HORIZONTAL
4	5353.60	48.28	54.00	-5.72	40.58	7.56	35.05	34.91	275	56 Average	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

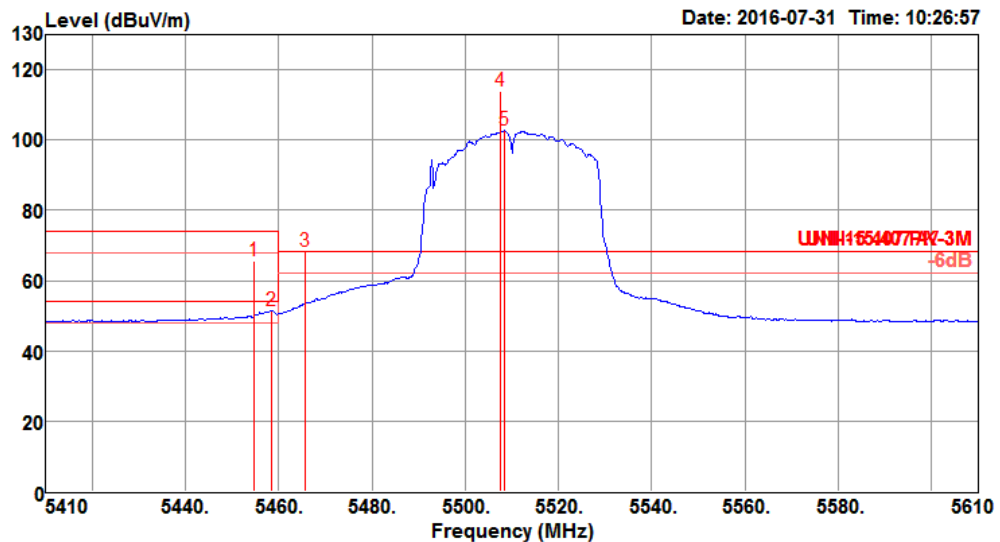


	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1 @	5299.60	115.64			110.62	8.18	33.45	36.61	289	144 Peak	HORIZONTAL
2 @	5300.40	101.77			96.75	8.18	33.45	36.61	289	144 Average	HORIZONTAL
3	5350.00	51.49	54.00	-2.51	46.37	8.19	33.53	36.60	289	144 Average	HORIZONTAL
4	5358.80	72.98	74.00	-1.02	67.84	8.19	33.55	36.60	289	144 Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5310 MHz.

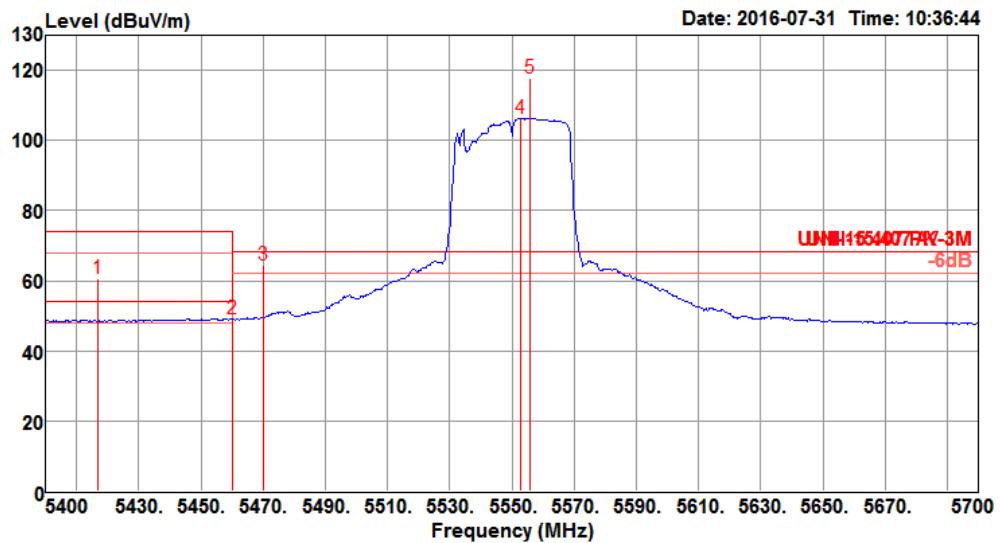


Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110, 134 / Port 1 + Port 2 + Port 3 + Port 4

Channel 102

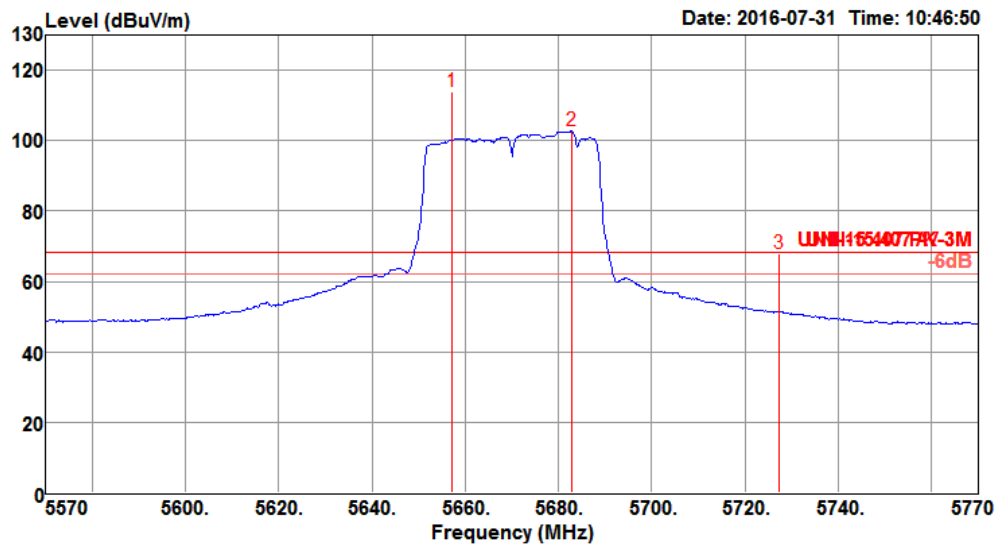
	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5454.80	65.62	74.00	-8.38	57.70	7.69	35.15	34.92	291	227	Peak	VERTICAL
2	5458.40	51.43	54.00	-2.57	43.51	7.69	35.15	34.92	291	227	Average	VERTICAL
3	5465.60	68.18	68.20	-0.02	60.21	7.72	35.17	34.92	291	227	Peak	VERTICAL
4	5507.60	114.09			106.04	7.77	35.20	34.92	291	227	Peak	VERTICAL
5	5508.40	102.60			94.55	7.77	35.20	34.92	291	227	Average	VERTICAL

Item 4, 5 are the fundamental frequency at 5510 MHz.

Channel 110


	Freq	Level	Line	Limit	Level	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg		
1	5416.80	60.52	74.00	-13.48	52.68	7.64	35.12	34.92	276	186	Peak	VERTICAL
2	5460.00	49.04	54.00	-4.96	41.12	7.69	35.15	34.92	276	186	Average	VERTICAL
3	5470.00	64.44	68.20	-3.76	56.47	7.72	35.17	34.92	276	186	Peak	VERTICAL
4	5553.00	106.41			98.26	7.86	35.21	34.92	276	186	Average	VERTICAL
5	5556.00	117.60			109.45	7.86	35.21	34.92	276	186	Peak	VERTICAL

Item 4, 5 are the fundamental frequency at 5550 MHz.

Channel 134


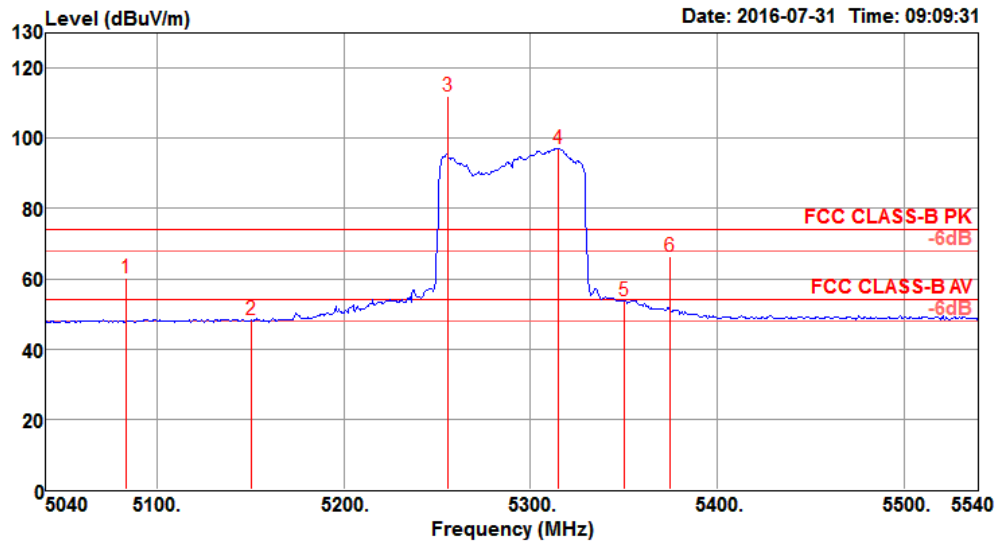
	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5657.20	113.74			105.59	7.86	35.23	34.94	280	174	Peak
2	5682.80	102.79			94.65	7.84	35.24	34.94	280	174	Average
3	5727.20	67.96	68.20	-0.24	59.86	7.79	35.25	34.94	280	174	Peak

Item 1, 2 are the fundamental frequency at 5670 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Port 1 + Port 2 + Port 3 + Port 4

Channel 58



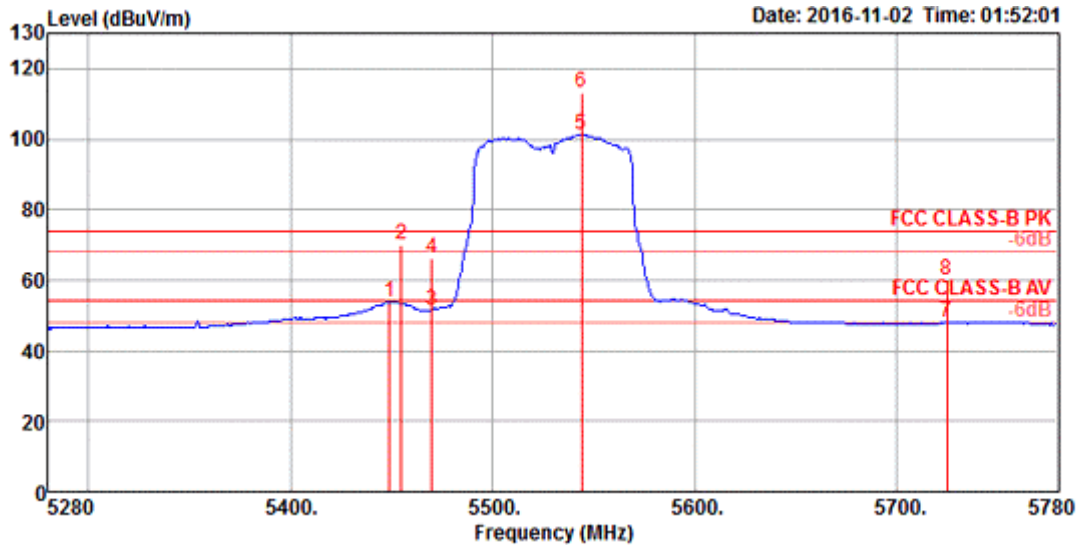
	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5083.00	60.13	74.00	-13.87	52.76	7.48	34.79	34.90	288	235	Peak	VERTICAL
2	5150.00	48.35	54.00	-5.65	40.93	7.48	34.85	34.91	288	235	Average	VERTICAL
3	5256.00	112.17			104.61	7.51	34.96	34.91	288	235	Peak	VERTICAL
4	5315.00	97.16			89.51	7.54	35.02	34.91	288	235	Average	VERTICAL
5	5350.00	53.86	54.00	-0.14	46.16	7.56	35.05	34.91	288	235	Average	VERTICAL
6	5375.00	66.34	74.00	-7.66	58.61	7.57	35.08	34.92	288	235	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5290 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106, 122/ Port 1 + Port 2 + Port 3 + Port 4

Channel 106



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5449.00	53.86	54.00	-0.14	48.39	8.35	33.72	36.60	300	181 Average	VERTICAL
2	5455.00	70.20	74.00	-3.80	64.70	8.37	33.72	36.59	300	181 Peak	VERTICAL
3	5470.00	51.30	54.00	-2.70	45.73	8.41	33.75	36.59	300	181 Average	VERTICAL
4	5470.00	66.31	74.00	-7.69	60.74	8.41	33.75	36.59	300	181 Peak	VERTICAL
5 @	5544.00	101.41			95.41	8.63	33.94	36.57	300	181 Average	VERTICAL
6 @	5544.00	113.41			107.41	8.63	33.94	36.57	300	181 Peak	VERTICAL
7	5725.00	47.78	54.00	-6.22	41.23	8.62	34.45	36.52	300	181 Average	VERTICAL
8	5725.00	59.72	74.00	-14.28	53.17	8.62	34.45	36.52	300	181 Peak	VERTICAL

Item 5, 6 are the fundamental frequency at 5530 MHz.



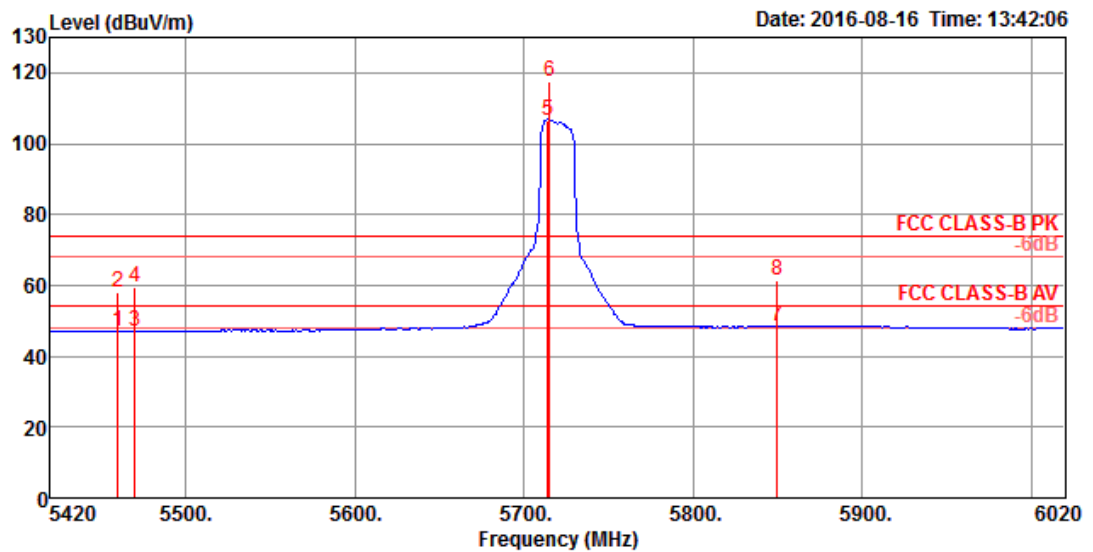
Page Number : 227 of 237
Issued Date : Aug. 20, 2019
Report Version : 01



Straddle Channel

Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 (UNII 2C) / Port 1 + Port 2 + Port 3 + Port 4

Channel 144

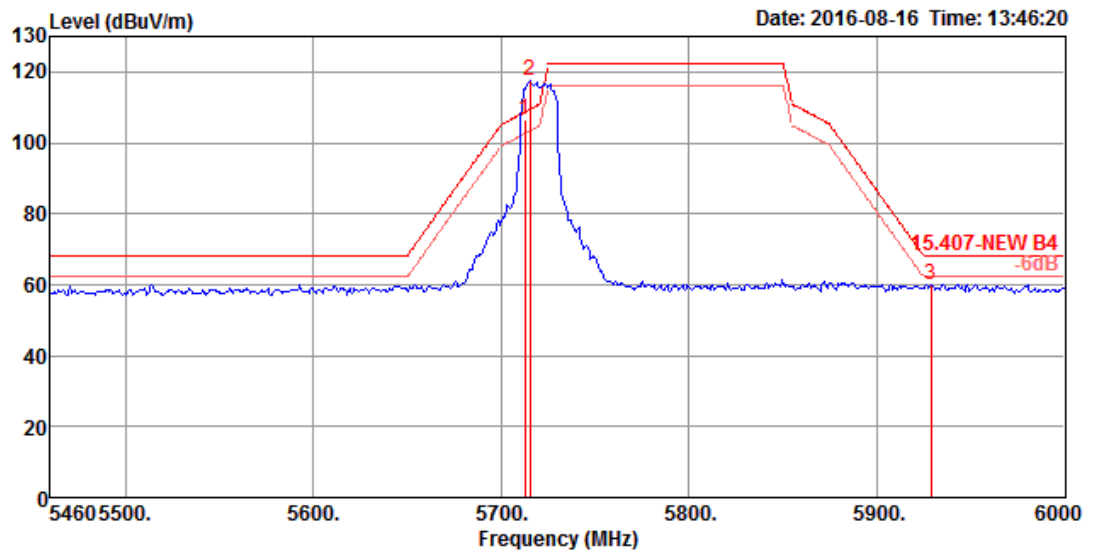


	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5460.00	47.05	54.00	-6.95	39.85	8.33	31.75	32.88	298	150	Average	HORIZONTAL
2	5460.00	57.89	74.00	-16.11	50.69	8.33	31.75	32.88	298	150	Peak	HORIZONTAL
3	5470.00	47.09	54.00	-6.91	39.86	8.33	31.77	32.87	298	150	Average	HORIZONTAL
4	5470.00	59.31	74.00	-14.69	52.08	8.33	31.77	32.87	298	150	Peak	HORIZONTAL
5	5714.00	106.69			98.70	8.82	32.06	32.89	298	150	Average	HORIZONTAL
6	5715.20	117.44			109.45	8.82	32.06	32.89	298	150	Peak	HORIZONTAL
7	5850.00	48.32	54.00	-5.68	40.03	8.98	32.22	32.91	298	150	Average	HORIZONTAL
8	5850.00	61.37	74.00	-12.63	53.08	8.98	32.22	32.91	298	150	Peak	HORIZONTAL

Item 5, 6 are the fundamental frequency at 5720 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 (UNII 3) / Port 1 + Port 2 + Port 3 + Port 4

Channel 144

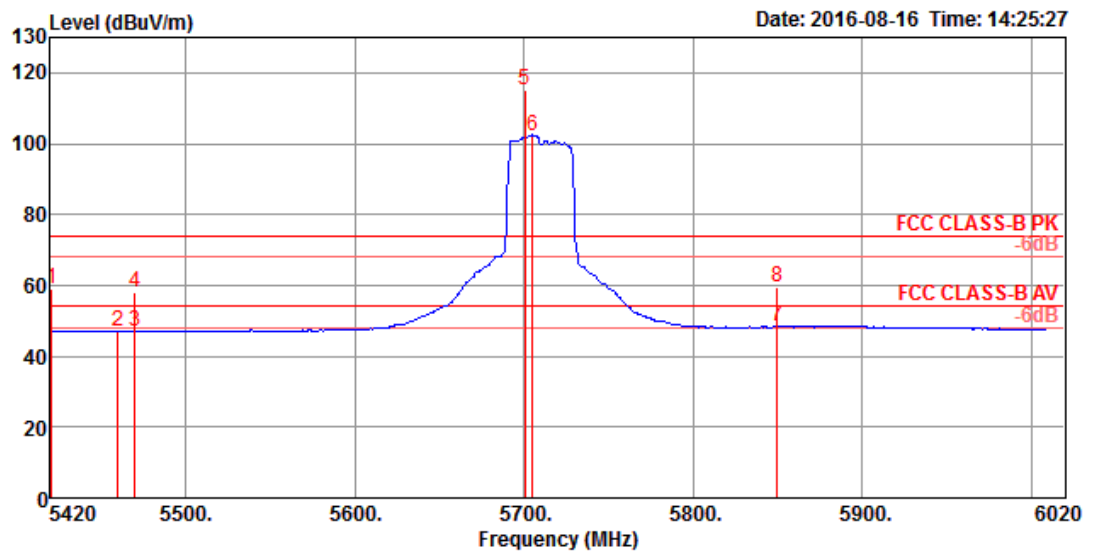
	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5712.80	106.60			98.61	8.82	32.06	32.89	298	150	Average
2	5715.20	117.49			109.50	8.82	32.06	32.89	298	150	Peak
3	5928.80	60.08	68.20	-8.12	52.03	8.64	32.32	32.91	298	150	Peak

Item 1, 2 are the fundamental frequency at 5720 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 (UNII 2C) / Port 1 + Port 2 + Port 3 + Port 4

Channel 142

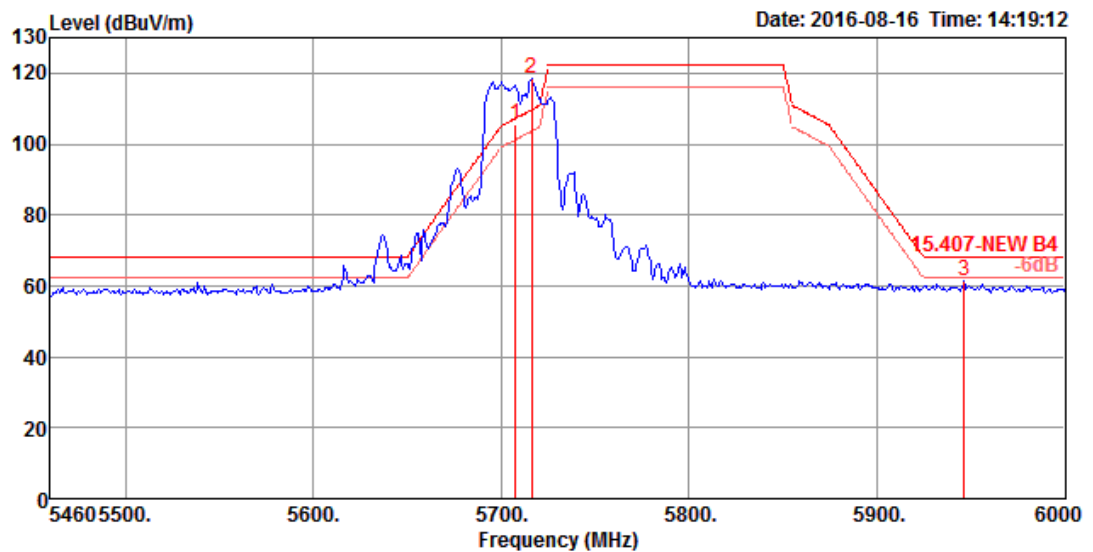


	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg		
1	5420.80	59.21	74.00	-14.79	52.03	8.34	31.72	32.88	300	143	Peak	HORIZONTAL
2	5460.00	46.87	54.00	-7.13	39.67	8.33	31.75	32.88	300	143	Average	HORIZONTAL
3	5470.00	46.95	54.00	-7.05	39.72	8.33	31.77	32.87	300	143	Average	HORIZONTAL
4	5470.00	58.20	74.00	-15.80	50.97	8.33	31.77	32.87	300	143	Peak	HORIZONTAL
5	5700.40	114.98			107.08	8.75	32.04	32.89	300	143	Peak	HORIZONTAL
6	5705.20	102.29			94.39	8.75	32.04	32.89	300	143	Average	HORIZONTAL
7	5850.00	48.28	54.00	-5.72	39.99	8.98	32.22	32.91	300	143	Average	HORIZONTAL
8	5850.00	59.61	74.00	-14.39	51.32	8.98	32.22	32.91	300	143	Peak	HORIZONTAL

Item 5, 6 are the fundamental frequency at 5710 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 (UNII 3) / Port 1 + Port 2 + Port 3 + Port 4

Channel 142

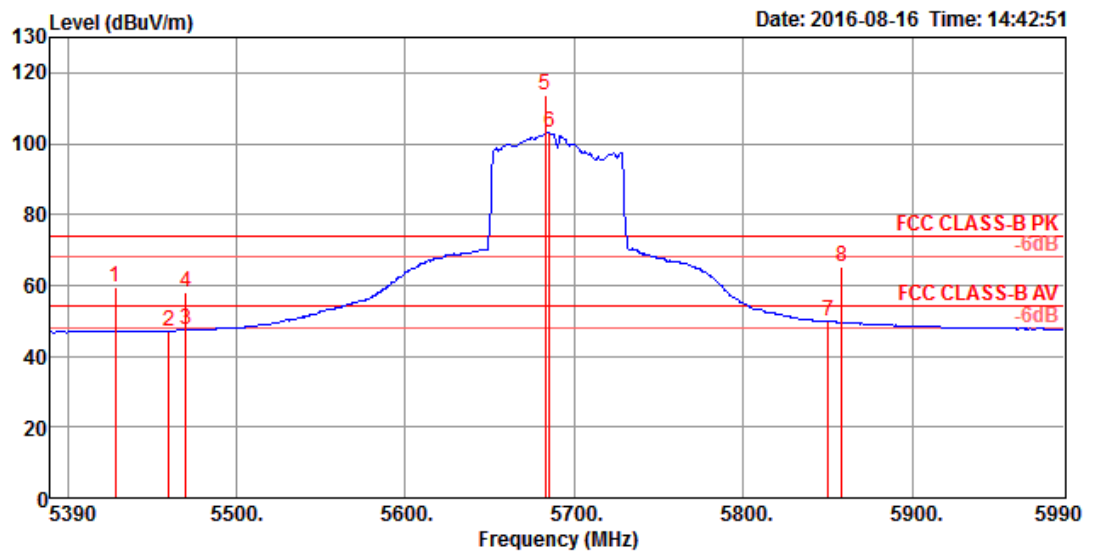
	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg	
1	5707.60	105.55			97.56	8.82	32.06	32.89	236	180	Average
2	5716.00	118.64			110.65	8.82	32.06	32.89	236	180	Peak
3	5946.40	61.41	68.20	-6.79	53.40	8.58	32.34	32.91	236	180	Peak

Item 1, 2 are the fundamental frequency at 5710 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 (UNII 2C) / Port 1 + Port 2 + Port 3 + Port 4

Channel 138

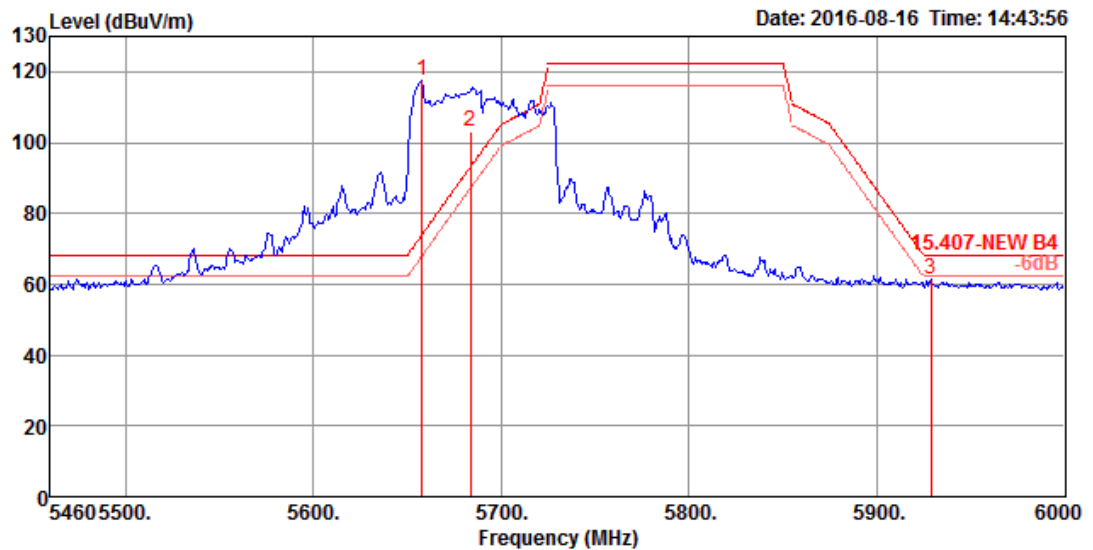


	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg		
1	5428.40	59.50	74.00	-14.50	52.32	8.34	31.72	32.88	278	180	Peak	VERTICAL
2	5460.00	47.07	54.00	-6.93	39.87	8.33	31.75	32.88	278	180	Average	VERTICAL
3	5470.00	47.37	54.00	-6.63	40.14	8.33	31.77	32.87	278	180	Average	VERTICAL
4	5470.00	58.00	74.00	-16.00	50.77	8.33	31.77	32.87	278	180	Peak	VERTICAL
5	5682.80	113.73			105.92	8.68	32.02	32.89	278	180	Peak	VERTICAL
6	5685.20	102.93			95.12	8.68	32.02	32.89	278	180	Average	VERTICAL
7	5850.00	50.05	54.00	-3.95	41.76	8.98	32.22	32.91	278	180	Average	VERTICAL
8	5858.00	65.01	74.00	-8.99	56.76	8.92	32.24	32.91	278	180	Peak	VERTICAL

Item 5, 6 are the fundamental frequency at 5690 MHz.



Temperature	22°C	Humidity	54%
Test Engineer	Zero Chen & Stim Sung & Steven Liang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 (UNII 3) / Port 1 + Port 2 + Port 3 + Port 4

Channel 138

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 0	5657.64	117.47			109.76	8.60	32.00	32.89	278	180	Peak	VERTICAL
2 0	5683.56	103.03			95.22	8.68	32.02	32.89	278	180	Average	VERTICAL
3	5928.72	61.60	68.20	-6.60	53.55	8.64	32.32	32.91	278	180	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5690 MHz.



2.8. Antenna Requirements

2.8.1. 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.

2.8.2. Antenna Connector Construction

Please refer to section 1.3 in this test report; antenna connector complied with the requirements.

3. List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 28, 2019	Jan. 27, 2020	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 24, 2018	Dec. 23, 2019	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Jan. 11, 2019	Jan. 10, 2020	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 21, 2019	May 20, 2020	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	Oct. 19, 2018	Oct. 19, 2019	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11149	30-1000MHz	Jul. 02, 2019	Jul. 01, 2020	Radiation (03CH02-HY)
Signal Analyzer	R&S	FSP40	100593	9 kHz ~ 40 GHz	Dec. 27, 2018	Dec. 26, 2019	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	Jan. 18, 2019	Jan. 17, 2020	Radiation (03CH02-HY)
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz ~ 1GHz	Sep. 08, 2018	Sep. 07, 2019	Radiation (03CH02-HY)
EMI Test Receiver	R&S	ESR	102052	9kHz ~ 3.6GHz	Apr. 09, 2019	Aug. 08, 2020	Radiation (03CH02-HY)
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	Mar. 15, 2019	Mar. 14, 2020	Radiation (03CH02HY)
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1291	1GHz~18GHz	Oct. 12, 2018	Oct. 11, 2019	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170507	15GHz ~ 40GHz	Jun. 12, 2019	Jun. 11, 2020	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630S E	980287	1GHz ~ 26.5GHz	Mar. 28, 2019	Mar. 27, 2020	Radiation (03CH05-CB)
Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 04, 2018	Jul. 03, 2019	Radiation (03CH05-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 03, 2019	Jul. 02, 2020	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Jan. 31, 2019	Jan. 30, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04	1GHz~18GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+23	30MHz~18GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Jul. 20, 2016	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Jul. 20, 2016	Radiation (03CH01-CB)

Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Jan. 17, 2017	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Nov. 13, 2016	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	May 05, 2016	May 04, 2017	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	May 15, 2017	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Nov. 01, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Oct. 23, 2017	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Nov. 01, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Oct. 23, 2017	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Nov. 01, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Oct. 23, 2017	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Nov. 01, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Oct. 23, 2017	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-I0-7	N/A	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Dec. 09, 2016	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2016	Jun. 02, 2017	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz ~ 26.5 GHz	Nov. 02, 2015	Nov. 01, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz ~ 26.5 GHz	Nov. 02, 2015	Nov. 01, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz ~ 26.5 GHz	Nov. 02, 2015	Nov. 01, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz ~ 26.5 GHz	Nov. 02, 2015	Nov. 01, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz ~ 26.5 GHz	Nov. 02, 2015	Nov. 01, 2016	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Nov. 01, 2016	Conducted (TH01-CB)

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

N.C.R means Non-Calibration required.

4. Measurement Uncertainty

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 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%