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FCC RADIO TEST REPORT

Applicant's company	ALE USA Inc.
Applicant Address	26801 West Agoura Road, Calabasas, CA 91301
FCC ID	2AI9TOAW-AP1101
Manufacturer's company	ALE USA Inc.
Manufacturer Address	26801 West Agoura Road, Calabasas, CA 91301

Product Name	Alcatel-Lucent Enterprise Access Point
Brand Name	Alcatel-Lucent Enterprise
Model No.	OAW-AP1101
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5250 ~ 5350MHz / 5470 ~ 5725MHz
Received Date	Jun. 17, 2016
Final Test Date	Aug. 10, 2016
Submission Type	Class II Change

Statement

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

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

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**,

47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01r03, KDB662911 D01 v02r01, KDB644545 D03 v01, ET Docket No. 13-49; FCC 16-24.

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



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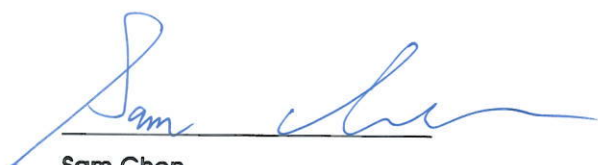
History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR661722-01	Rev. 01	Initial issue of report	Sep. 14, 2016

1. VERIFICATION OF COMPLIANCE

Product Name : Alcatel-Lucent Enterprise Access Point
Brand Name : Alcatel-Lucent Enterprise
Model No. : OAW-AP1101
Applicant : ALE USA Inc.
Test Rule Part(s) : 47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jun. 17, 2016 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.



Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E			
Part	Rule Section	Description of Test	Result
4.1	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies
4.3	15.407(a)	Maximum Conducted Output Power	Complies
4.2	15.407(e)	6dB Spectrum Bandwidth	Complies
4.4	15.407(a)	Power Spectral Density	Complies
4.5	15.407(b)	Radiated Emissions	Complies
4.6	15.407(b)	Band Edge Emissions	Complies
4.7	15.407(g)	Frequency Stability	Complies
4.8	15.203	Antenna Requirements	Complies
Note	15.407(c)	Automatically Discontinue Transmission	Complies

Note: Data transmission is always initiated by software, which is then passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets (ACKs, CTS, PSpoll, etc...) are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted.

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter or 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%)	U-NII-2A: IEEE 802.11a: 17.02 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.63 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz U-NII-2C: IEEE 802.11a: 17.02 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.41 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.92 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.70 MHz
Maximum Conducted Output Power	U-NII-2A: IEEE 802.11a: 23.76 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 23.63 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.94 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.12 dBm U-NII-2C: IEEE 802.11a: 23.86 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 23.70 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.85 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.92 dBm
Carrier Frequencies	Please refer to section 3.4

Antenna	Please refer to section 3.3
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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
Operate Condition	☒ Indoor	☐ Outdoor

Antenna and Band width

Antenna	Two (TX)		
Band width 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)	2	MCS 0-15
802.11n (HT40)	2	MCS 0-15
802.11ac (VHT20)	2	MCS 0-9/Nss1-2
802.11ac (VHT40)	2	MCS 0-9/Nss1-2
802.11ac (VHT80)	2	MCS 0-9/Nss1-2
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		

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model No.	Antenna Type	Connector	Gain (dBi)	Remark
1	N/A	3ARAAA101S1-111	PIFA Antenna	N/A	2.77	2.4GHz
2	N/A	3ARAAA101S2-111	PIFA Antenna	N/A	3.43	2.4GHz
3	N/A	3ARAAA101S3-111	PIFA Antenna	N/A	2.56	5GHz
4	N/A	3ARAAA101S4-111	PIFA Antenna	N/A	2.17	5GHz

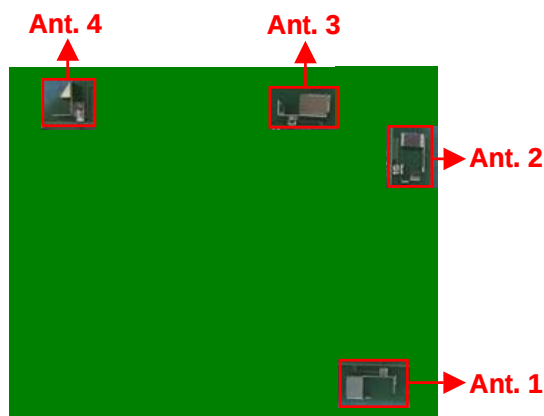
Note: The EUT has four antennas.

For 2.4GHz WLAN function (2TX/2RX):

Ant. 1 and Ant. 2 could transmit/receive simultaneously.

For 5GHz WLAN function (2TX/2RX):

Ant. 3 and Ant. 4 could transmit/receive simultaneously.



3.4. 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	-	-

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Ant.
Max. Conducted Output Power	11a/BPSK	U-NII-2A&2 C bands	6Mbps	52/60/64/100/116/140/144	3+4
	11ac VHT20	U-NII-2A&2 C bands	MCS0/Nss 1	52/60/64/100/116/140/144	3+4
	11ac VHT40	U-NII-2A&2 C bands	MCS0/Nss 1	54/62/102/110/134/142	3+4
	11ac VHT80	U-NII-2A&2 C bands	MCS0/Nss 1	58/106/122/138	3+4
Power Spectral Density	11a/BPSK	U-NII-2A&2 C bands	6Mbps	52/60/64/100/116/140/144	3+4
	11ac VHT20	U-NII-2A&2 C bands	MCS0/Nss 1	52/60/64/100/116/140/144	3+4
	11ac VHT40	U-NII-2A&2 C bands	MCS0/Nss 1	54/62/102/110/134/142	3+4
	11ac VHT80	U-NII-2A&2 C bands	MCS0/Nss 1	58/106/122/138	3+4
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	11a/BPSK	U-NII-2A&2 C bands	6Mbps	52/60/64/100/116/140/144	3+4
	11ac VHT20	U-NII-2A&2 C bands	MCS0/Nss 1	52/60/64/100/116/140/144	3+4
	11ac VHT40	U-NII-2A&2 C bands	MCS0/Nss 1	54/62/102/110/134/142	3+4
	11ac VHT80	U-NII-2A&2 C bands	MCS0/Nss 1	58/106/122/138	3+4
6dB Spectrum Bandwidth Measurement	11a/BPSK	U-NII-3 band	6Mbps	144	3+4
	11ac VHT20	U-NII-3 band	MCS0/Nss 1	144	3+4
	11ac VHT40	U-NII-3 band	MCS0/Nss 1	142	3+4
	11ac VHT80	U-NII-3 band	MCS0/Nss 1	138	3+4

Radiated Emission Above 1GHz	11a/BPSK	U-NII-2A&2 C bands	6Mbps	52/60/64/100/116/140/144	3+4
	11ac VHT20	U-NII-2A&2 C bands	MCS0/Nss 1	52/60/64/100/116/140/144	3+4
	11ac VHT40	U-NII-2A&2 C bands	MCS0/Nss 1	54/62/102/110/134/142	3+4
	11ac VHT80	U-NII-2A&2 C bands	MCS0/Nss 1	58/106/122/138	3+4
Band Edge Emission	11a/BPSK	U-NII-2A&2 C bands	6Mbps	52/60/64/100/116/140/144	3+4
	11ac VHT20	U-NII-2A&2 C bands	MCS0/Nss 1	52/60/64/100/116/140/144	3+4
	11ac VHT40	U-NII-2A&2 C bands	MCS0/Nss 1	54/62/102/110/134/142	3+4
	11ac VHT80	U-NII-2A&2 C bands	MCS0/Nss 1	58/106/122/138	3+4
Frequency Stability	20 MHz	U-NII-2A&2 C bands	-	60/116	3
	40 MHz	U-NII-2A&2 C bands	-	62/110	3
	80 MHz	U-NII-2A&2 C bands	-	58/106	3

Note: 1. The defines from manufacturer, "Console port" for debugging use only.

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

Support Unit	Brand	Model	FCC ID
Adapter	LEI	NU36-D480080-I1	DoC

The following test modes were performed for all tests:

For Radiated Emission Above 1GHz test:

The EUT for Radiated Emissions 1GHz~10th Harmonic test, EUT Y axis and EUT Z axis and the worst case was found from EUT Y axis. So the measurement will follow this same test configuration.

For Co-location MPE test:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA661722-01) test is added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	Site Category	Location	FCC Designation No.	IC File No.	VCCI Reg. No
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.7. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR661722

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Adding U-NII-2A and U-NII-2C bands (5250~5350 MHz, 5470~5725 MHz) for this device.	26dB Spectrum Bandwidth and 99% Occupied Bandwidth. 6dB Spectrum Bandwidth Measurement. - Maximum Conducted Output Power. - Power Spectral Density. - Radiated Emissions. - Band Edge Emissions. - Frequency Stability.

3.8. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC
Adapter	LEI	NU36-D480080-I1	DoC

3.9. Table for Parameters of Test Software Setting

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

Test Software Version	ART2-GUI						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	20.5	20.5	20.5	20.5	20.5	19	22.5
802.11ac MCS0/Nss1 VHT20	20.5	20.5	20.5	19.5	20.5	18.5	24
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	21.5	20	18	21	19.5	24	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz		5690 MHz
	15		15		21.5		22.5

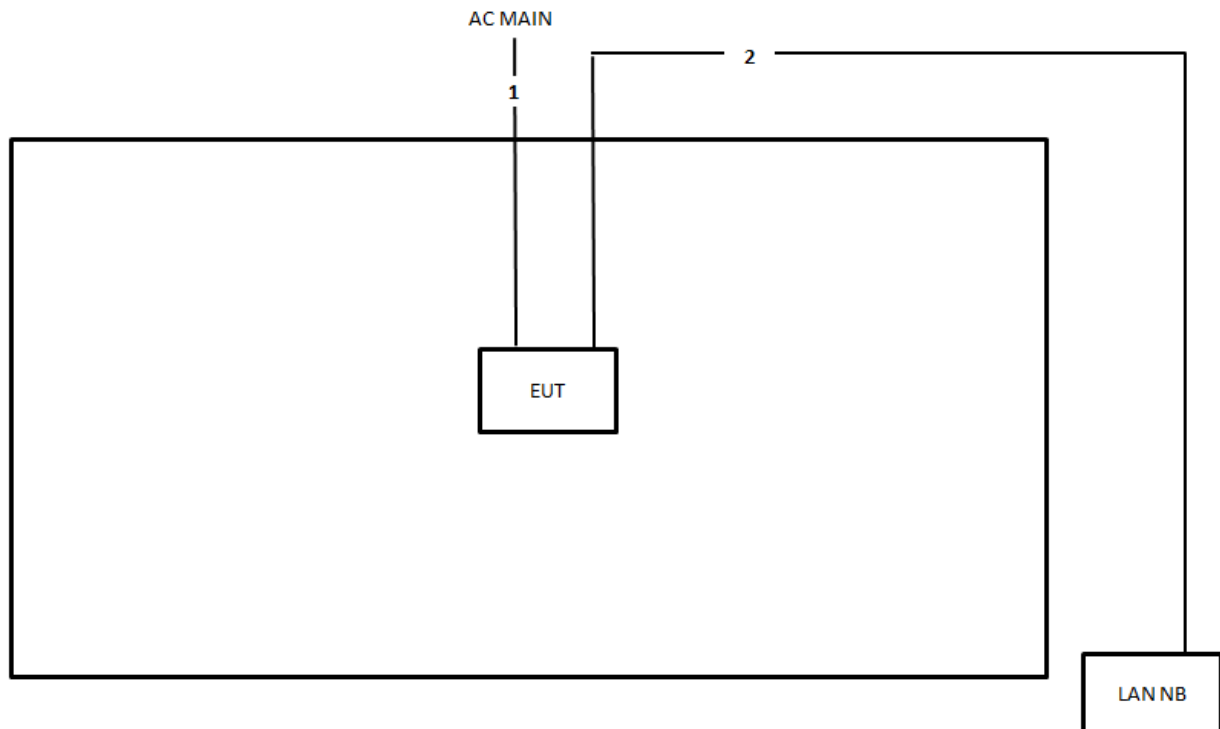
3.10. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.030	2.100	96.67	0.15	0.49
802.11ac MCS0/Nss1 VHT20	1.890	2.000	94.50	0.25	0.53
802.11ac MCS0/Nss1 VHT40	0.910	1.010	90.10	0.45	1.10
802.11ac MCS0/Nss1 VHT80	0.420	0.520	80.77	0.93	2.38

3.12. Test Configurations



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

4. TEST RESULT

4.1. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.1.1. Limit

No restriction limits.

4.1.2. Measuring Instruments and Setting

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

4.1.3. 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%.

4.1.4. Test Setup Layout

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

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

4.1.5. Test Deviation

There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

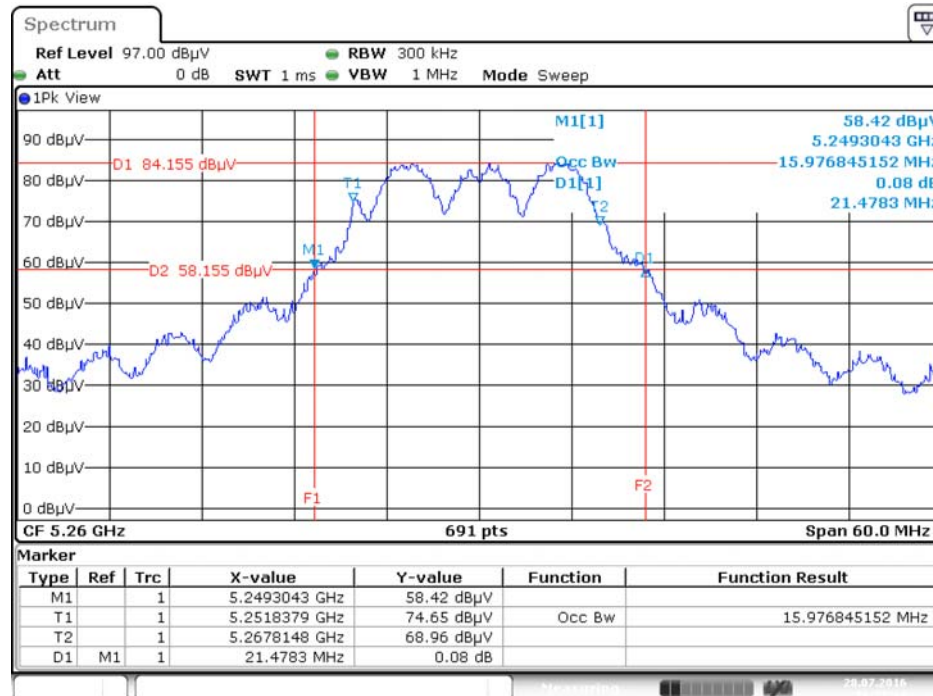
Temperature	24°C	Humidity	54%
Test Engineer	Gary Chu		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	21.48	15.98
	5300 MHz	21.22	15.89
	5320 MHz	21.39	17.02
	5500 MHz	22.70	17.02
	5580 MHz	21.48	16.15
	5700 MHz	20.70	16.06
802.11ac MCS0/Nss1 VHT20	5260 MHz	23.30	18.32
	5300 MHz	23.04	18.32
	5320 MHz	24.26	18.23
	5500 MHz	23.04	18.23
	5580 MHz	24.70	18.41
	5700 MHz	23.83	18.23
802.11ac MCS0/Nss1 VHT40	5270 MHz	45.94	37.63
	5310 MHz	44.64	37.63
	5510 MHz	45.65	37.77
	5550 MHz	49.28	37.92
	5670 MHz	45.22	37.63
802.11ac MCS0/Nss1 VHT80	5290 MHz	85.22	76.41
	5530 MHz	82.32	75.54
	5610 MHz	88.70	76.70

Straddle Channel

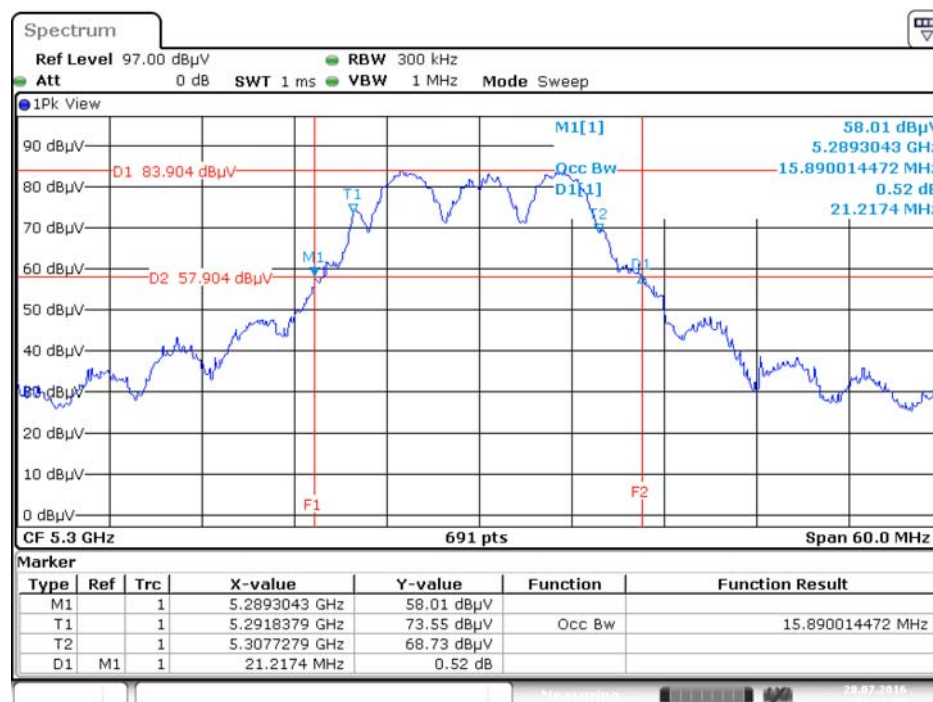
Mode	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII 2C 26dB BW (MHz)	UNII 3 26dB BW (MHz)	UNII 2C 99% BW (MHz)	UNII 3 99% BW (MHz)
802.11a	5720 MHz	21.57	17.02	5709.39	5711.49	15.61	5.96	13.51	3.51
802.11ac MCS0/Nss1 VHT20	5720 MHz	24.70	18.32	5707.39	5710.88	17.61	7.09	14.12	4.20
802.11ac MCS0/Nss1 VHT40	5710 MHz	45.80	37.63	5687.10	5691.19	37.90	7.90	33.81	3.81
802.11ac MCS0/Nss1 VHT80	5690 MHz	130.73	76.12	5632.03	5652.08	92.97	37.75	72.92	3.21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5260 MHz



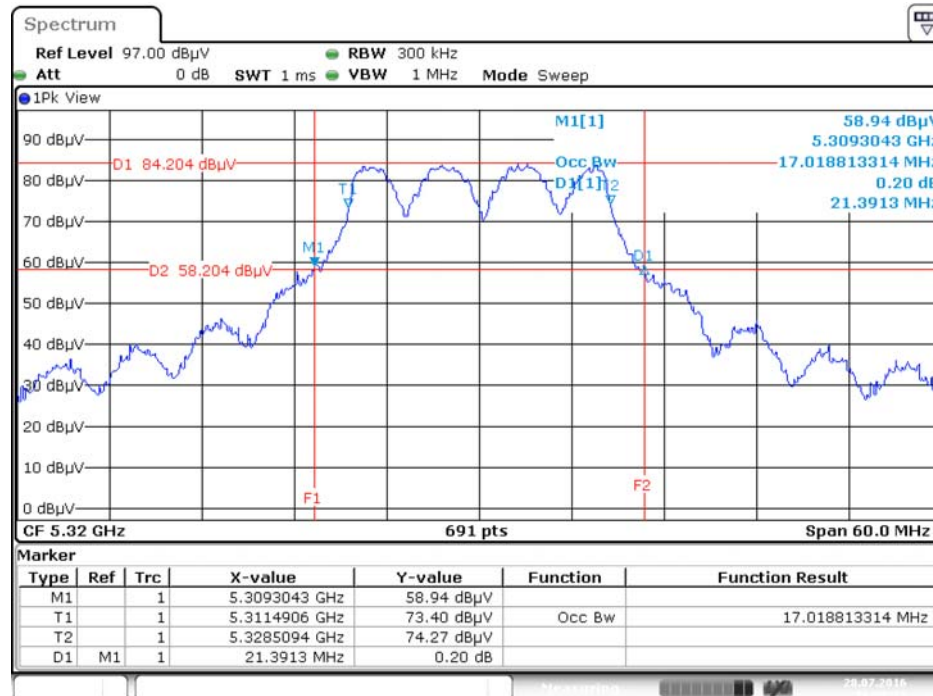
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5300 MHz



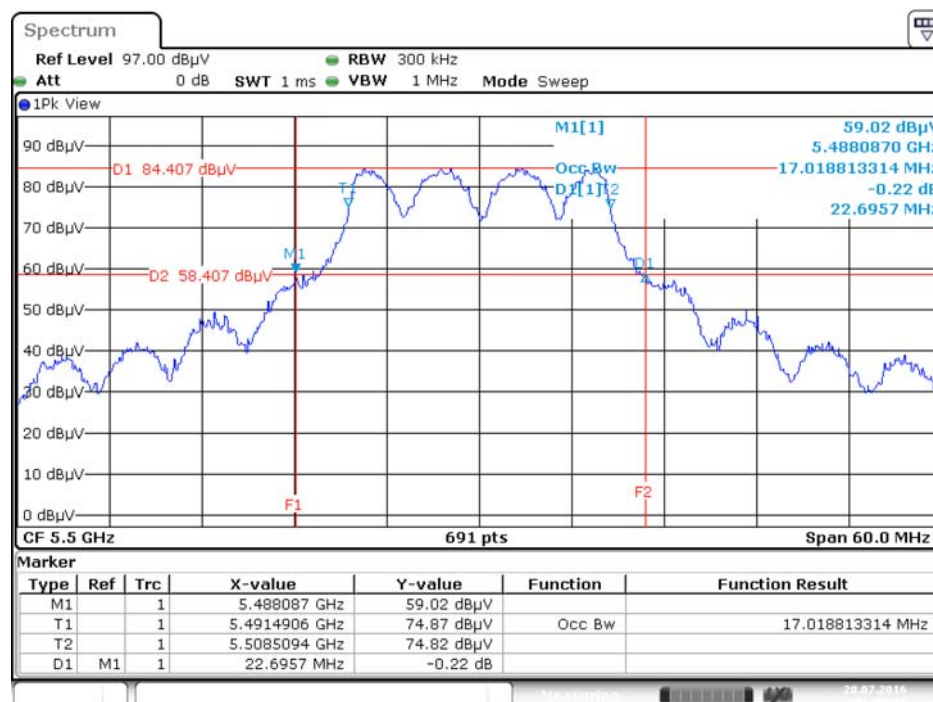
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5320 MHz



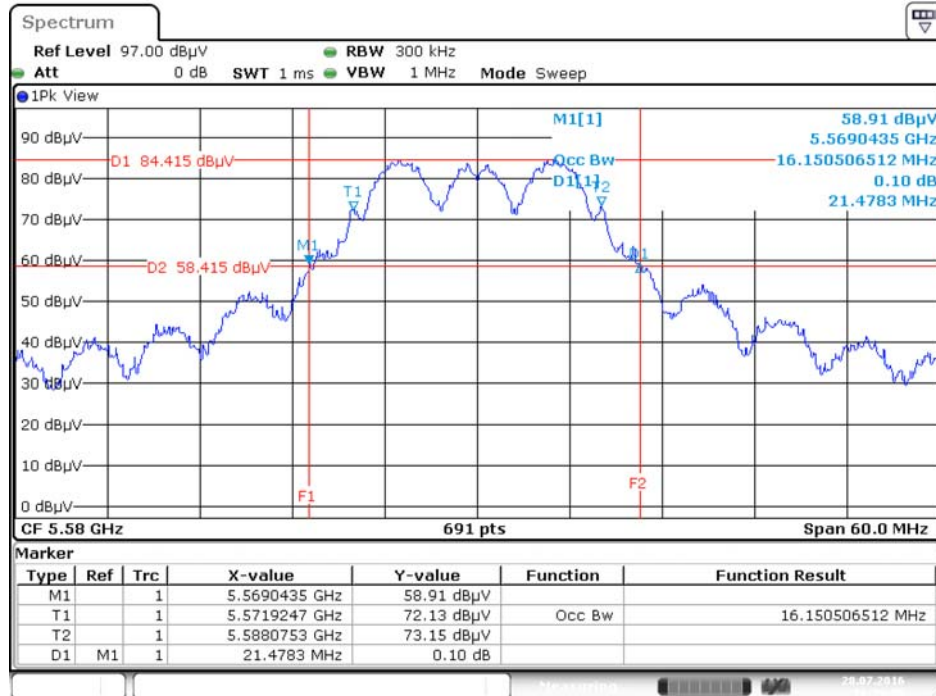
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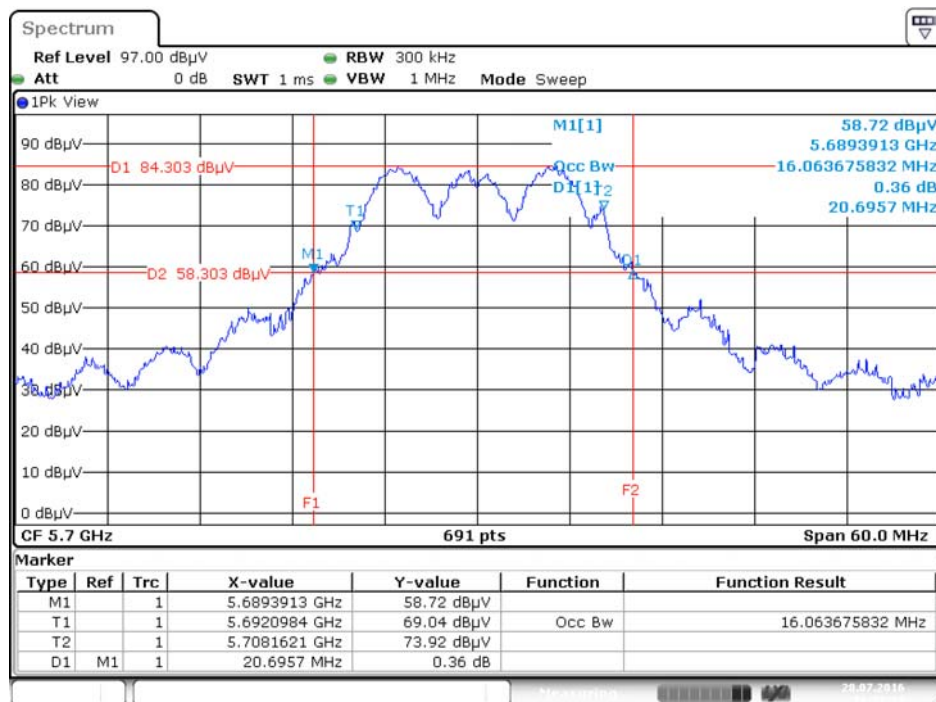
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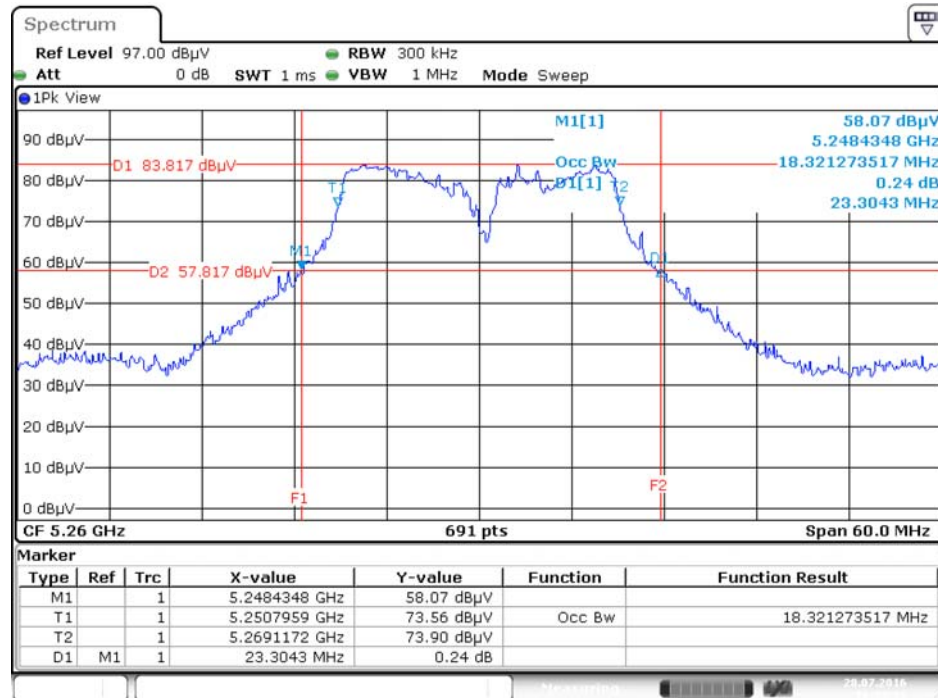
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5700 MHz



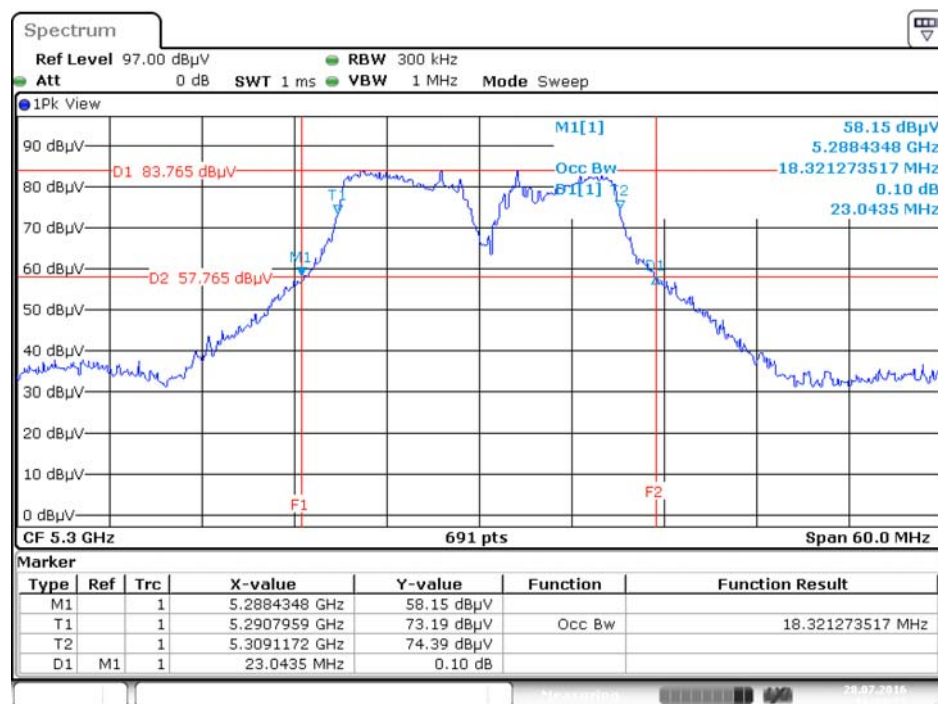
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4 / 5260 MHz



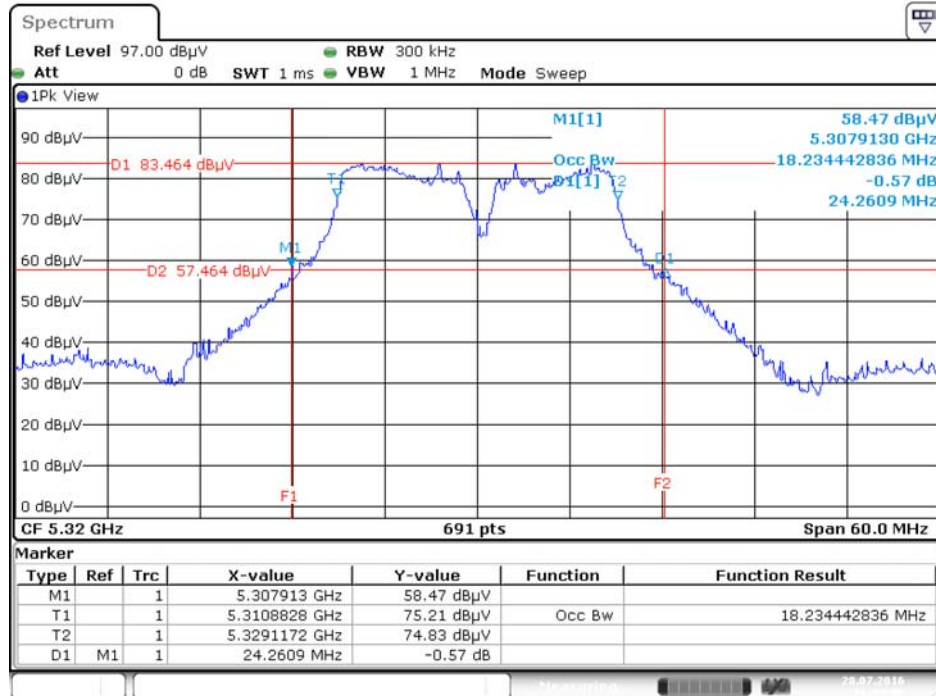
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4 / 5300 MHz



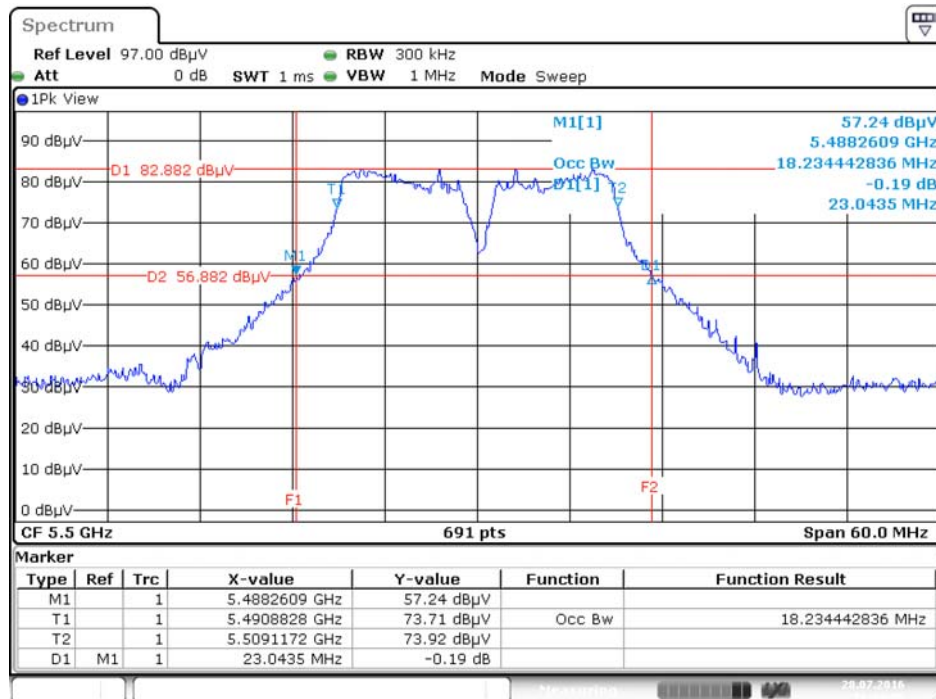
Date: 28.JUL.2016 16:33:22

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



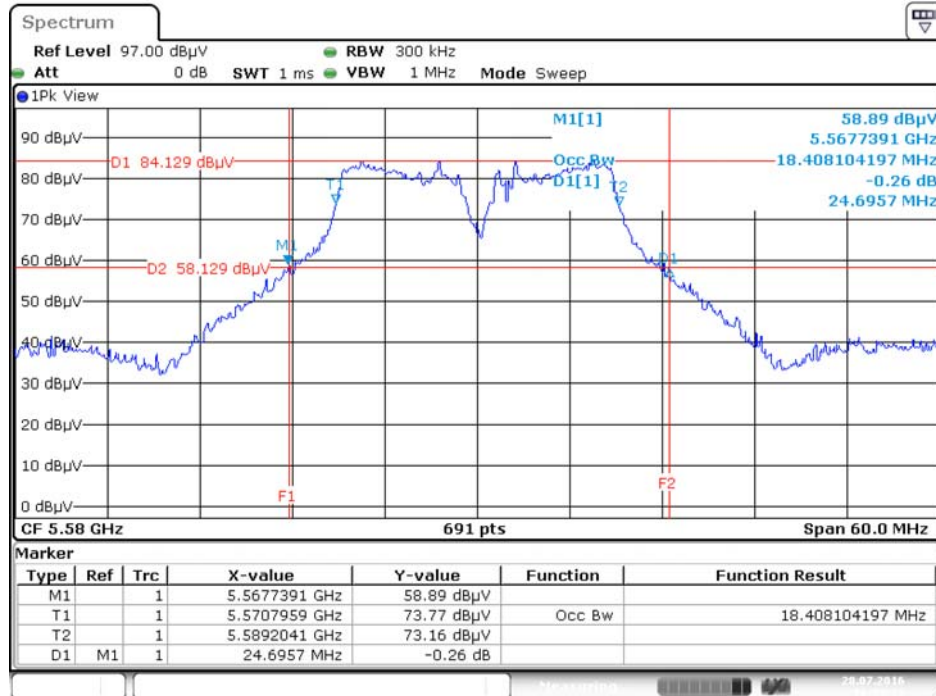
Date: 28.JUL.2016 16:33:56

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



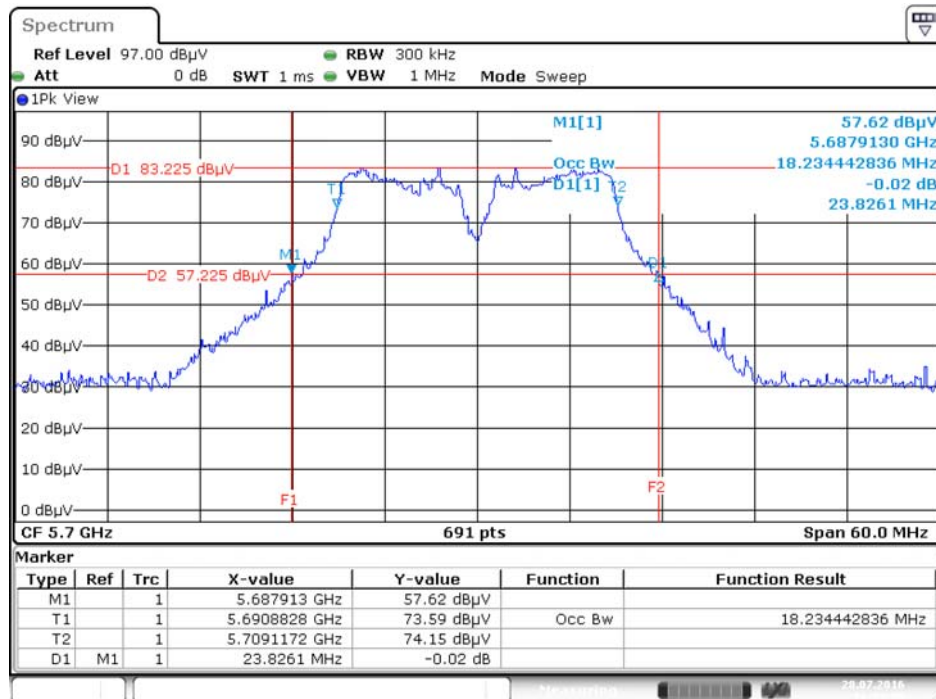
Date: 28.JUL.2016 16:34:36

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1
VHT20 / Ant. 3 + Ant. 4 / 5580 MHz**



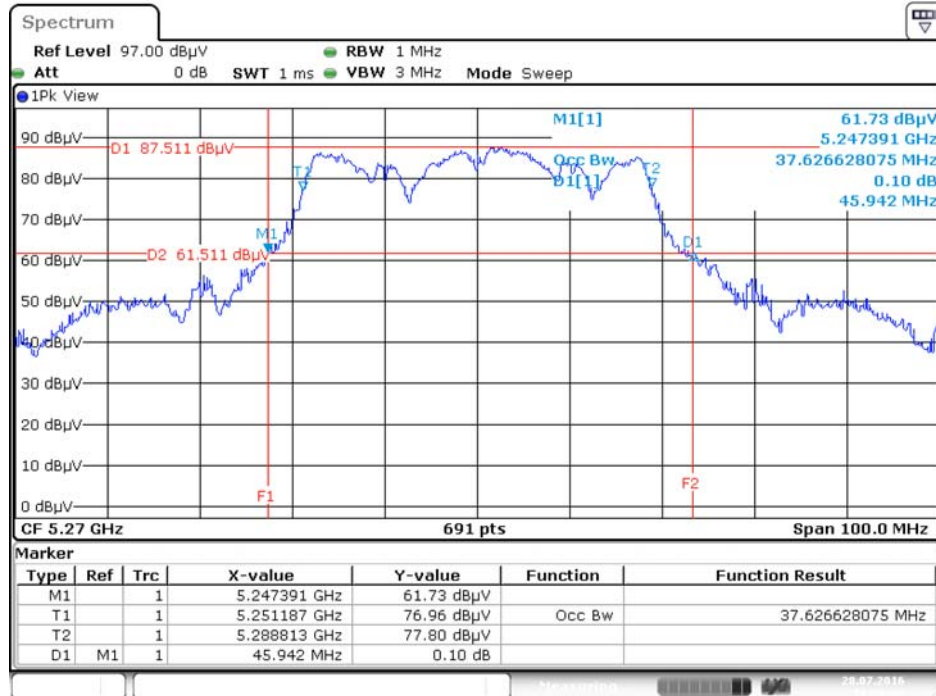
Date: 28.JUL.2016 16:35:16

**26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1
VHT20 / Ant. 3 + Ant. 4 / 5700 MHz**



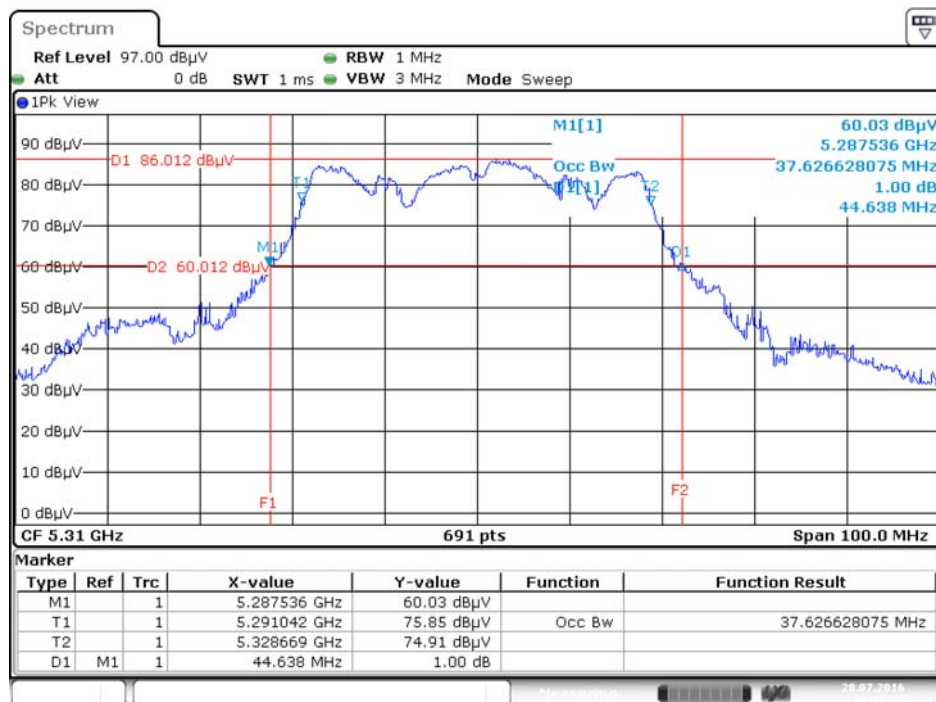
Date: 28.JUL.2016 16:36:00

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



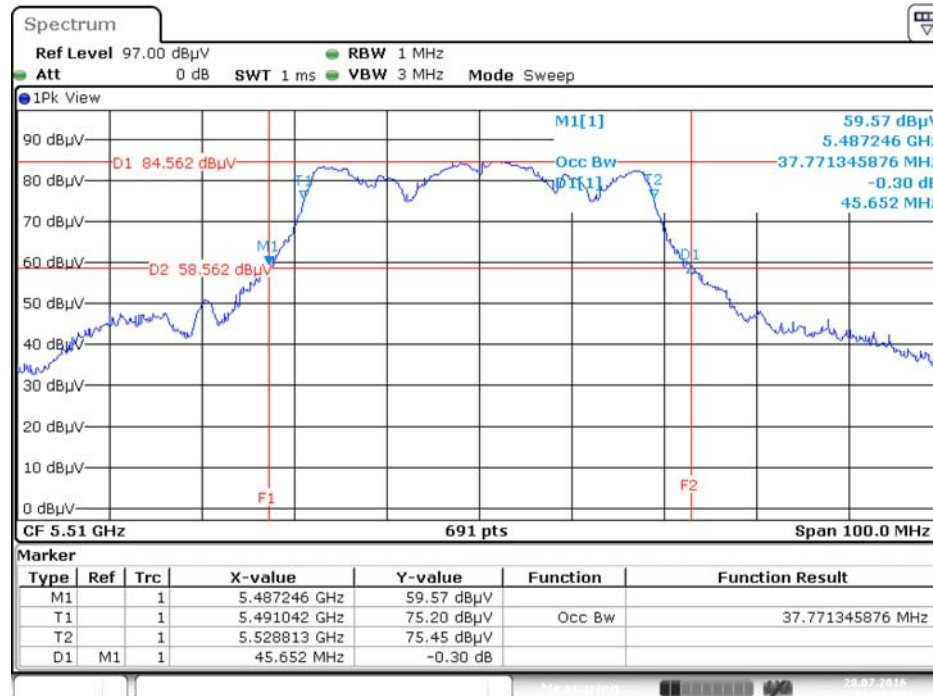
Date: 28.JUL.2016 16:36:47

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



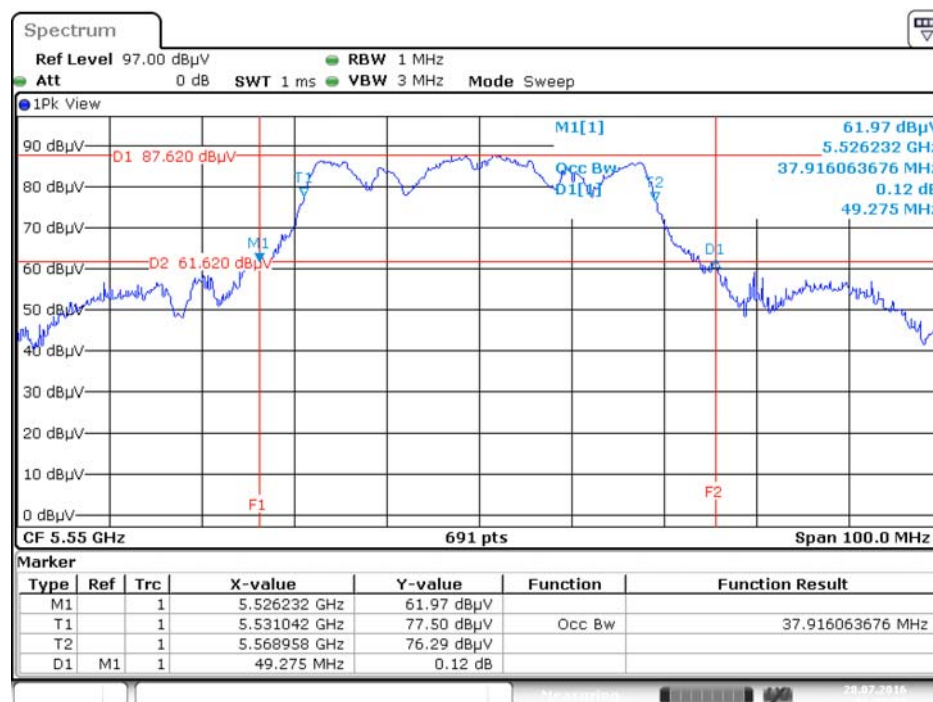
Date: 28.JUL.2016 16:37:25

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



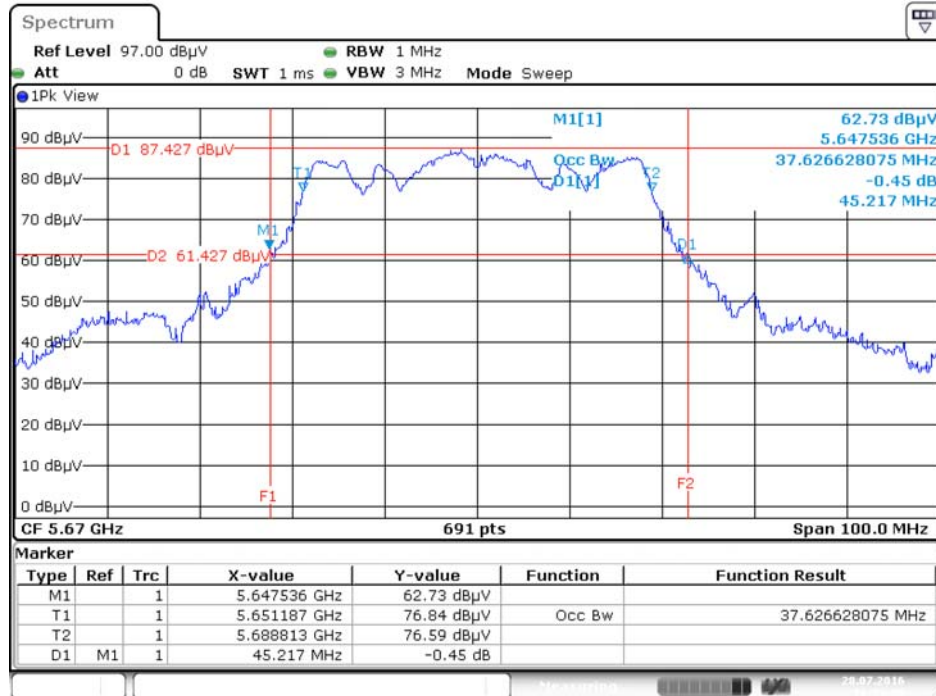
Date: 28. JUL 2016 16:38:00

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



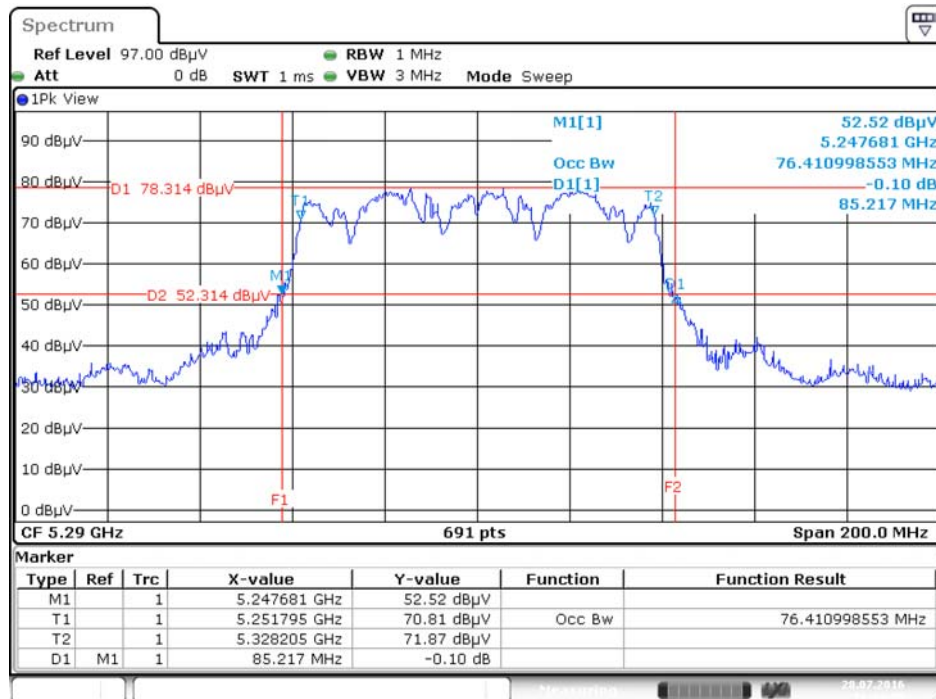
Date: 28. JUL 2016 16:38:39

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



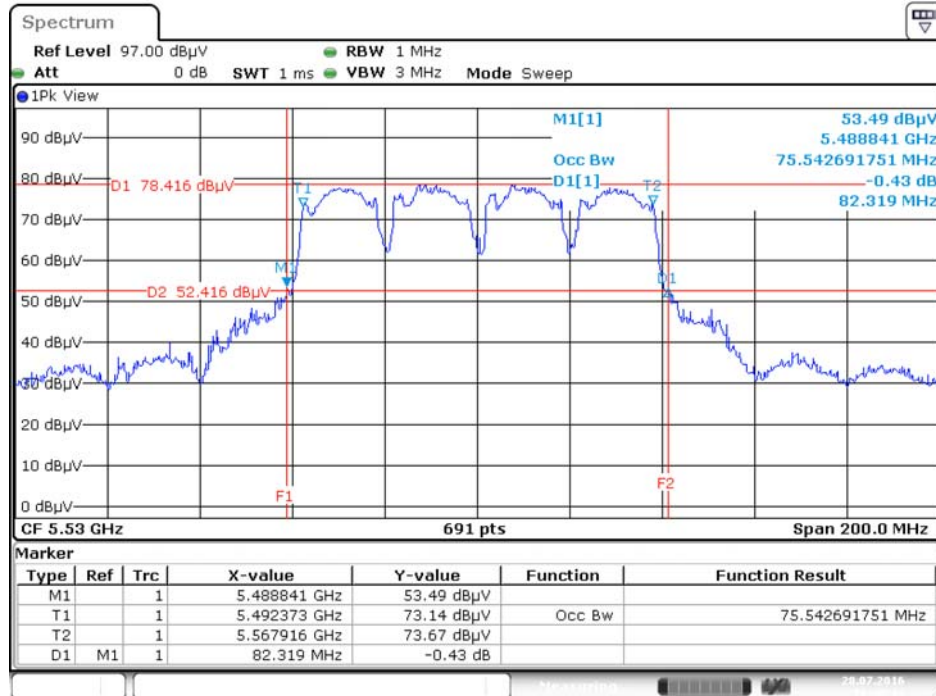
Date: 28. JUL 2016 16:39:28

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



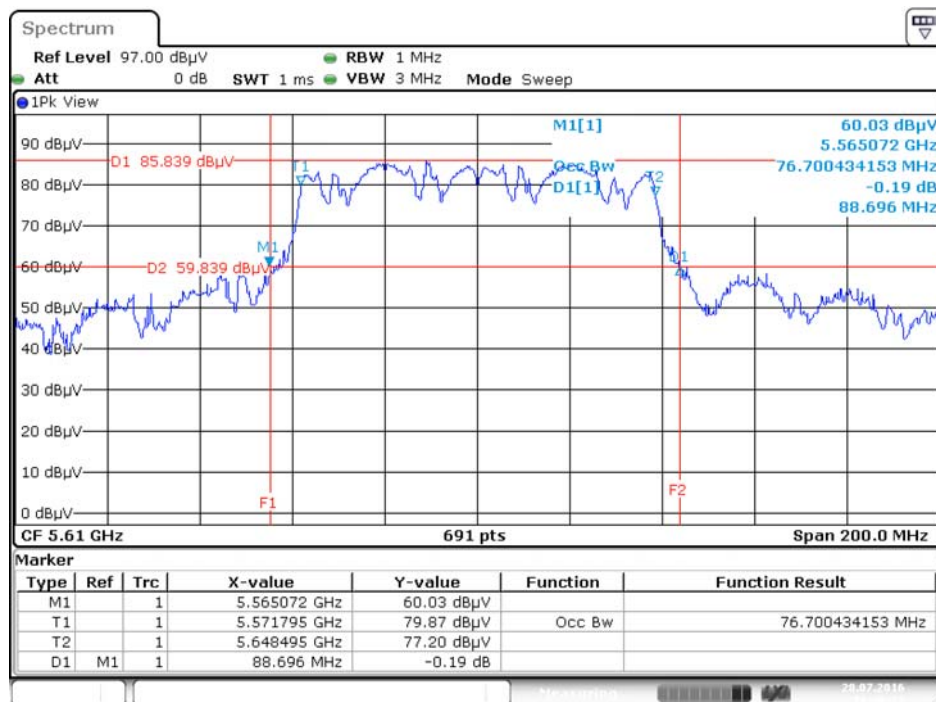
Date: 28. JUL 2016 16:44:58

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



Date: 28.JUL.2016 16:45:41

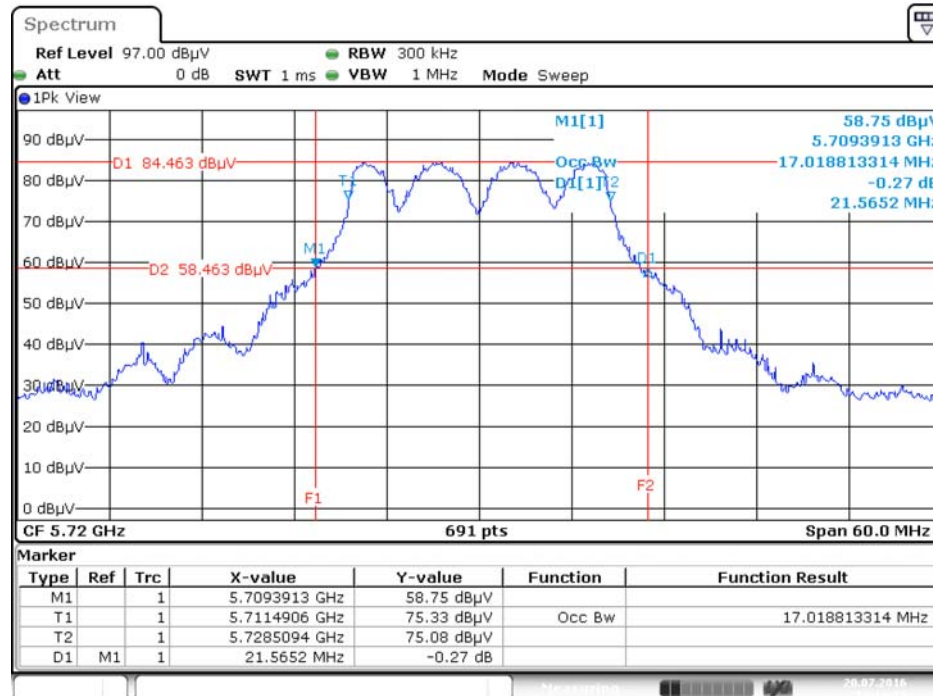
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 3 + Ant. 4 / 5610 MHz



Date: 28.JUL.2016 16:46:32

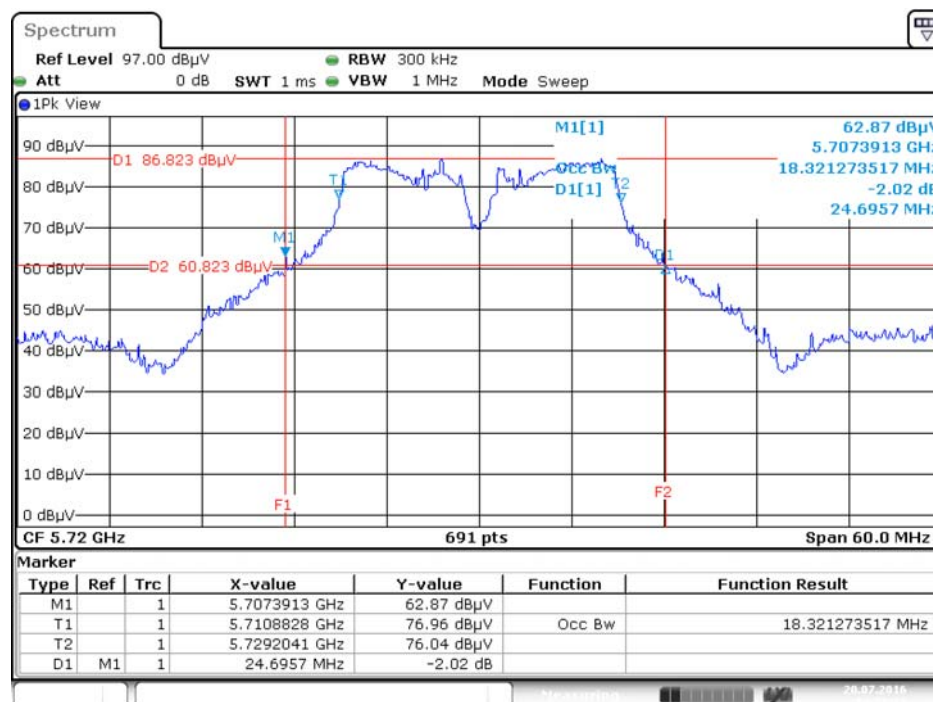
Straddle Channel

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5720 MHz



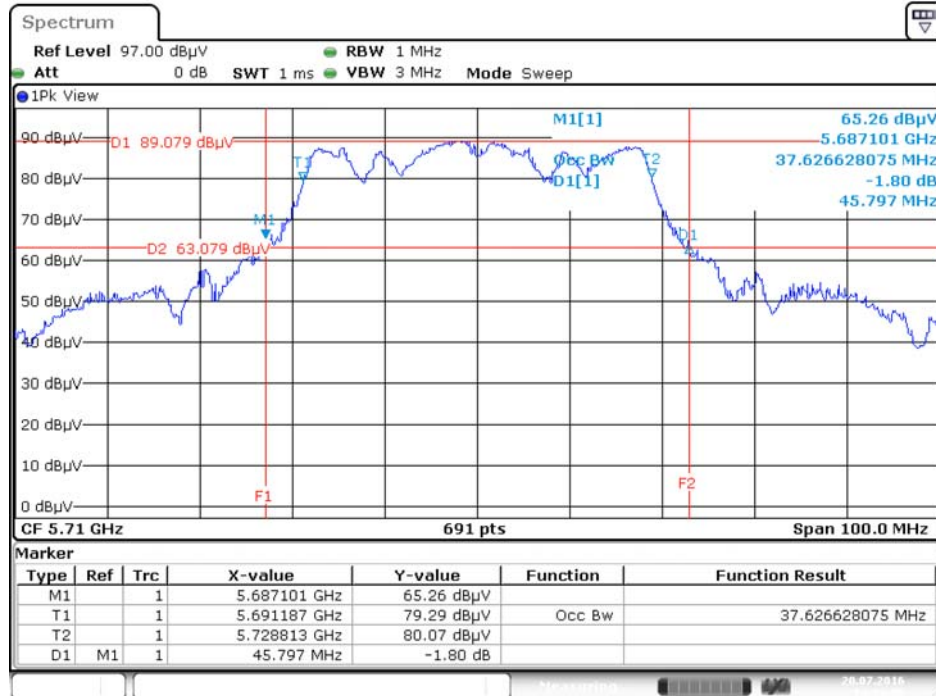
Date: 20.JUL.2016 14:14:34

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



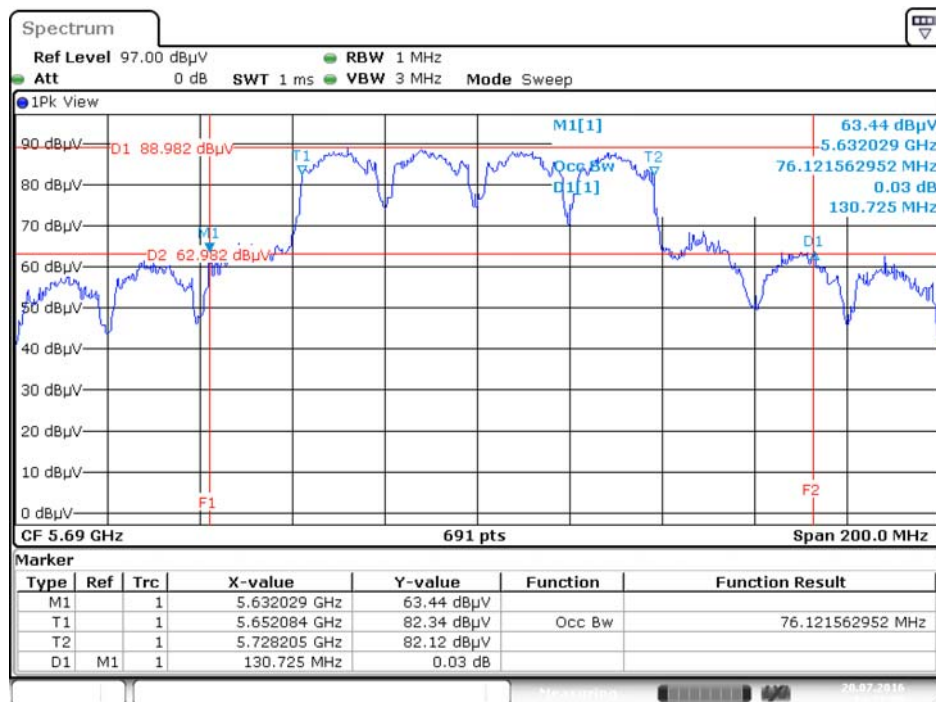
Date: 20.JUL.2016 14:21:37

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



Date: 20.JUL.2016 14:24:57

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



Date: 20.JUL.2016 14:27:58

4.2. 6dB Spectrum Bandwidth Measurement

4.2.1. Limit

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

4.2.2. Measuring Instruments and Setting

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

4.2.3. 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 v01r03 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.

4.2.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

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

4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of 6dB Spectrum Bandwidth

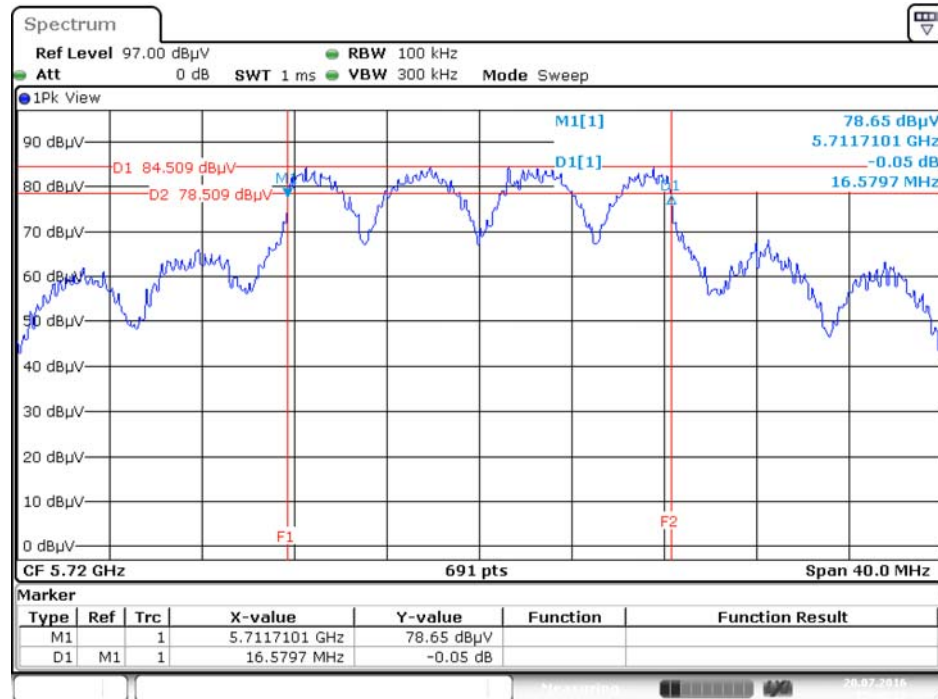
Temperature	24°C	Humidity	54%
Test Engineer	Gary Chu		

Straddle Channel

Mode	Frequency	6dB BW (MHz)	6dB BW M1 (MHz)	UNII 3 BW (MHz)	Min. Limit (kHz)	Test Result
802.11a	5720 MHz	16.58	5711.17	2.75	500	Complies
802.11ac MCS0/Nss1 VHT20	5720 MHz	12.93	5713.39	1.32	500	Complies
802.11ac MCS0/Nss1 VHT40	5710 MHz	35.25	5692.38	2.62	500	Complies
802.11ac MCS0/Nss1 VHT80	5690 MHz	76.52	5651.74	3.26	500	Complies

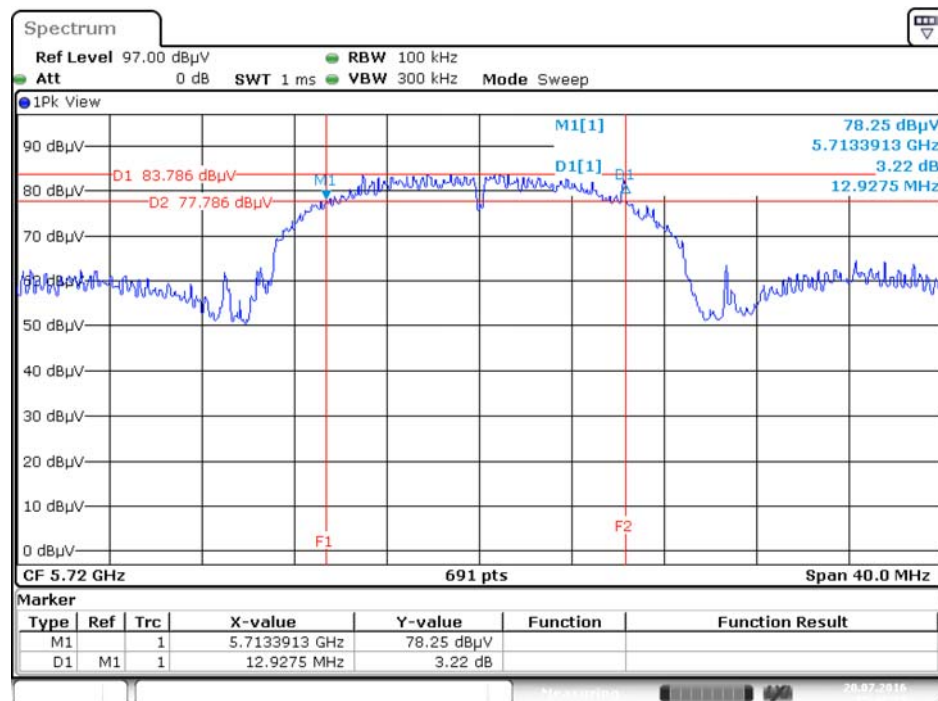
Straddle Channel

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5720 MHz



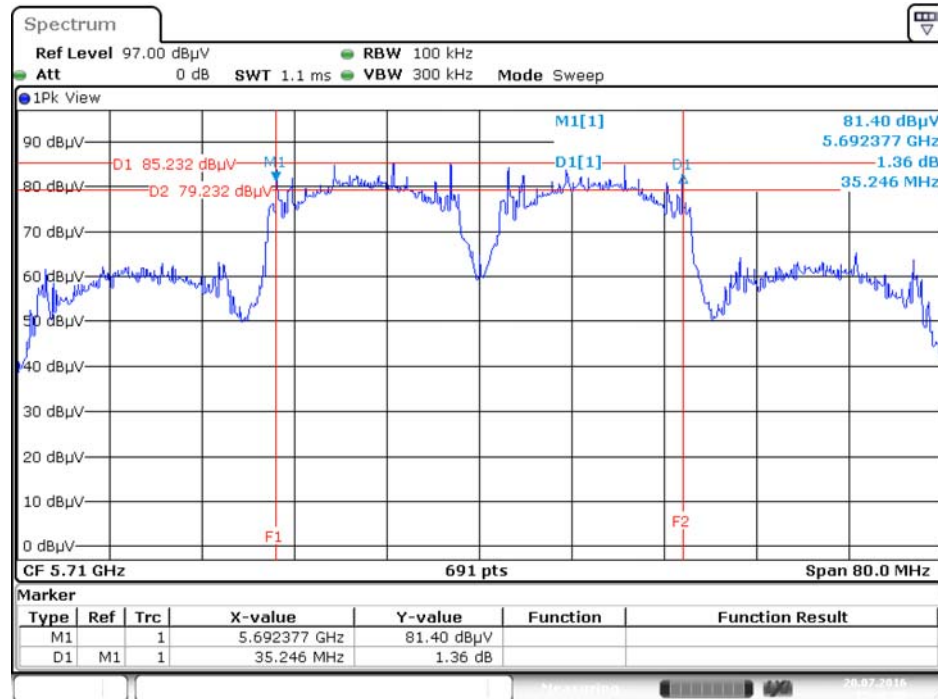
Date: 20.JUL.2016 15:45:22

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4 / 5720 MHz



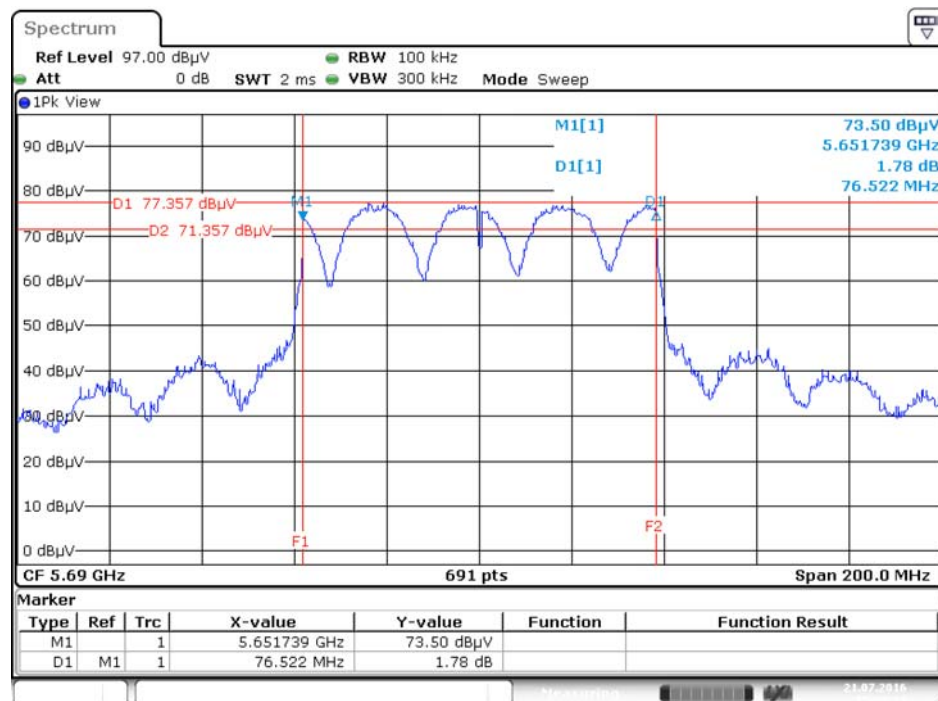
Date: 20.JUL.2016 15:47:13

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 + Ant. 4 / 5710 MHz



Date: 20.JUL.2016 15:48:10

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 3 + Ant. 4 / 5690 MHz



Date: 21.JUL.2016 15:20:19

4.3. Maximum Conducted Output Power Measurement

4.3.1. Limit

Frequency Band		Limit
☒	5.25-5.35 GHz	The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (23.98dBm) 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	

4.3.2. Measuring Instruments and Setting

For straddle channel:

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	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

For other channel:

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

Power Meter Parameter	Setting
Detector	AVERAGE

4.3.3. Test Procedures

For other channel:

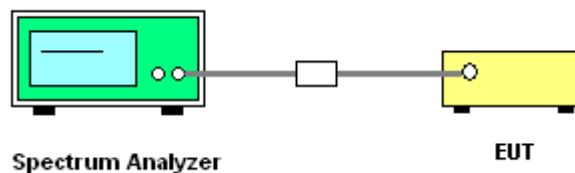
The transmitter output (antenna port) was connected to the spectrum analyzer.

For straddle channel:

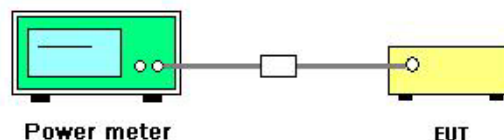
1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power 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.

4.3.4. Test Setup Layout

For straddle channel:



For other channel:



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Maximum Conducted Output Power

Temperature	24°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Jul. 20, 2016~Jul. 28, 2016

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Ant. 3	Ant. 4	Total		
802.11a	5260 MHz	20.30	21.16	23.76	23.98	Complies
	5300 MHz	20.64	20.81	23.74	23.98	Complies
	5320 MHz	20.66	20.70	23.69	23.98	Complies
	5500 MHz	20.67	21.03	23.86	23.98	Complies
	5580 MHz	20.76	20.56	23.67	23.98	Complies
	5700 MHz	19.81	18.03	22.02	23.98	Complies
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.22	20.98	23.63	23.98	Complies
	5300 MHz	20.48	20.68	23.59	23.98	Complies
	5320 MHz	20.56	20.49	23.54	23.98	Complies
	5500 MHz	19.69	20.03	22.87	23.98	Complies
	5580 MHz	20.63	20.75	23.70	23.98	Complies
	5700 MHz	19.23	19.44	22.35	23.98	Complies
802.11ac MCS0/Nss1 VHT40	5270 MHz	20.88	20.97	23.94	23.98	Complies
	5310 MHz	19.23	19.56	22.41	23.98	Complies
	5510 MHz	17.91	18.01	20.97	23.98	Complies
	5550 MHz	20.65	21.03	23.85	23.98	Complies
	5670 MHz	19.62	19.81	22.73	23.98	Complies
802.11ac MCS0/Nss1 VHT80	5290 MHz	13.91	14.31	17.12	23.98	Complies
	5530 MHz	14.32	14.29	17.32	23.98	Complies
	5610 MHz	20.58	21.21	23.92	23.98	Complies

Straddle Channel

Mode	Frequency	Conducted Power (dBm)			Max. Power Limit (dBm)	Result
		Ant. 3	Ant. 4	Total		
802.11a	5720 MHz (UNII 2C)	20.19	19.21	22.74	22.93	Complies
	5720 MHz (UNII 3)	14.13	13.03	16.63	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5720 MHz (UNII 2C)	20.42	19.42	22.96	23.46	Complies
	5720 MHz (UNII 3)	14.81	13.68	17.29	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5710 MHz (UNII 2C)	21.17	20.07	23.67	23.98	Complies
	5710 MHz (UNII 3)	10.51	9.23	12.93	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5690 MHz (UNII 2C)	19.88	19.13	22.53	23.98	Complies
	5690 MHz (UNII 3)	5.39	4.08	7.79	30.00	Complies

Note: (UNII 2C) power limit=11+10*log(B) or 23.98dBm.

11a 5720MHz (UNII 2C) power limit=11+10*log(15.61)=22.93dBm<23.98dBm, so the limit=22.93dBm.

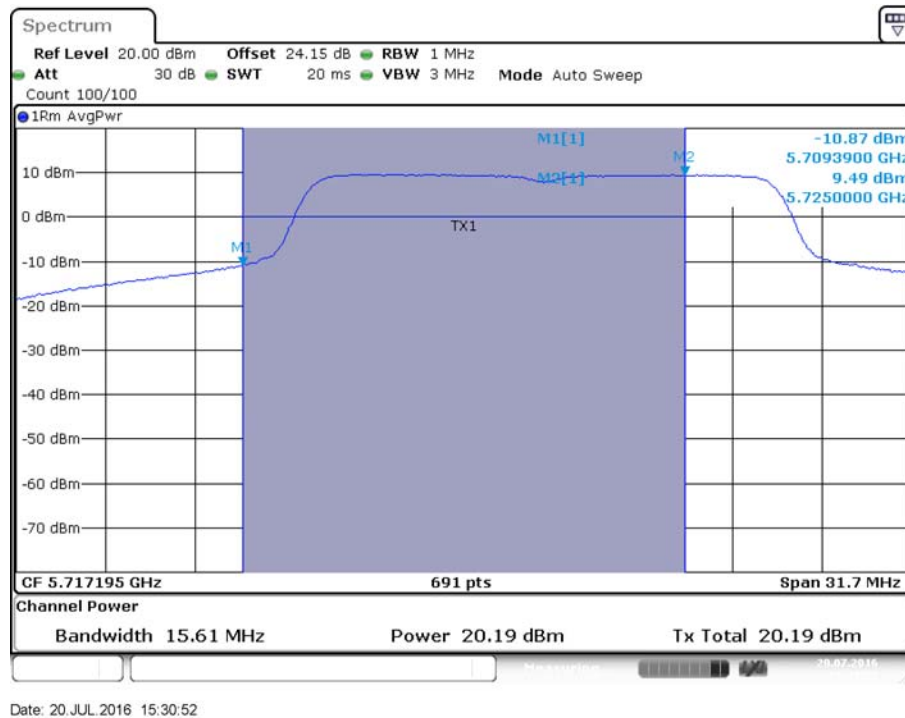
11ac VHT20 5720MHz (UNII 2C) power limit=11+10*log(17.61)=23.46dBm<23.98dBm, so the limit=23.46dBm.

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

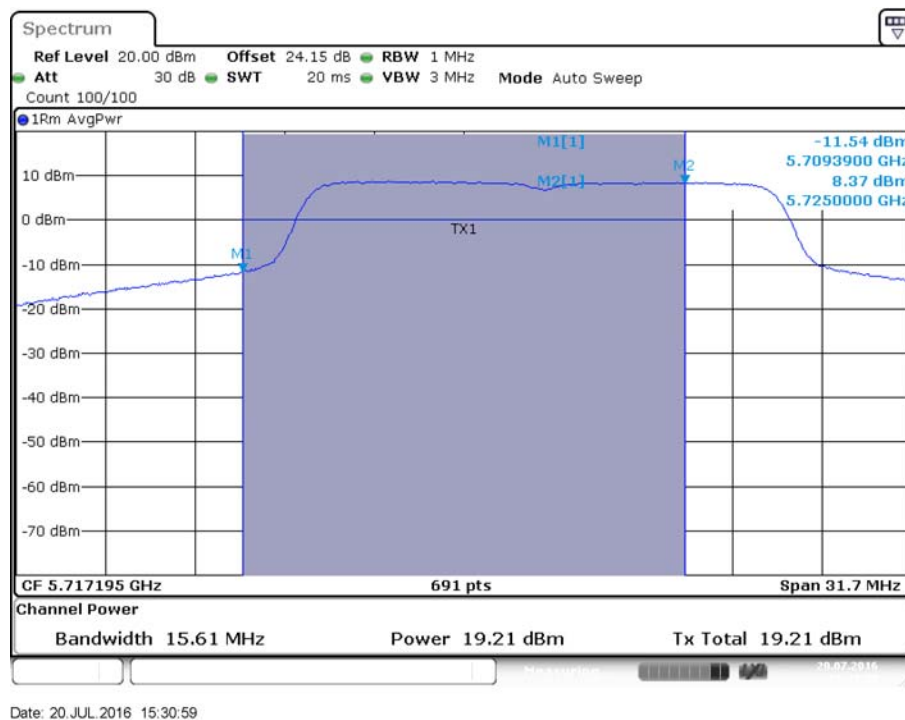
For plots, only the straddle channel result was shown.

Straddle Channel

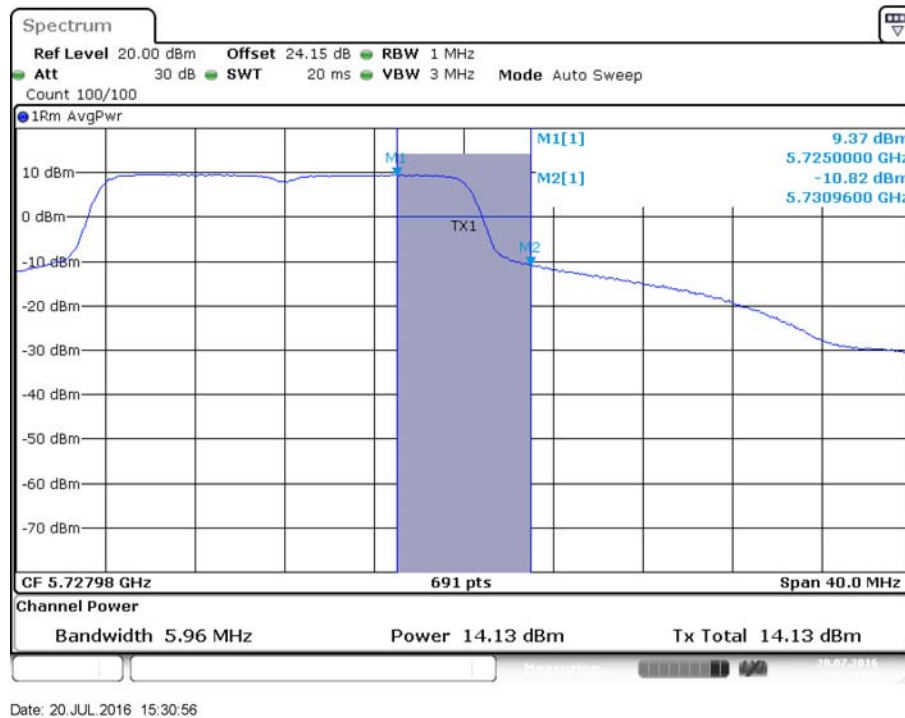
Conducted Output Power Plot on Configuration IEEE 802.11a / Ant. 3 / 5720 MHz (UNII 2C)



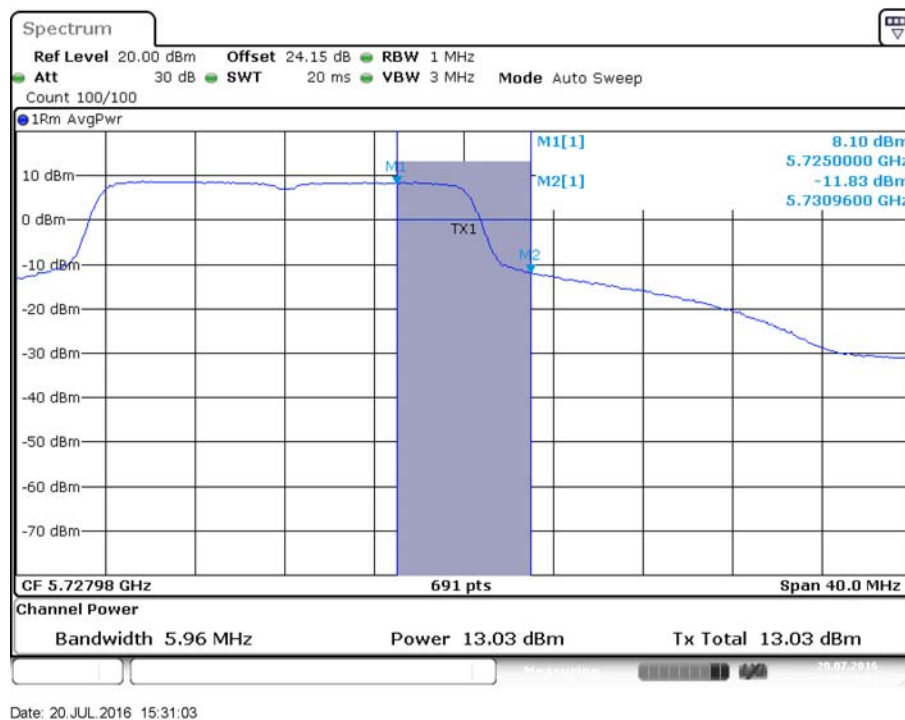
Conducted Output Power Plot on Configuration IEEE 802.11a / Ant. 4 / 5720 MHz (UNII 2C)



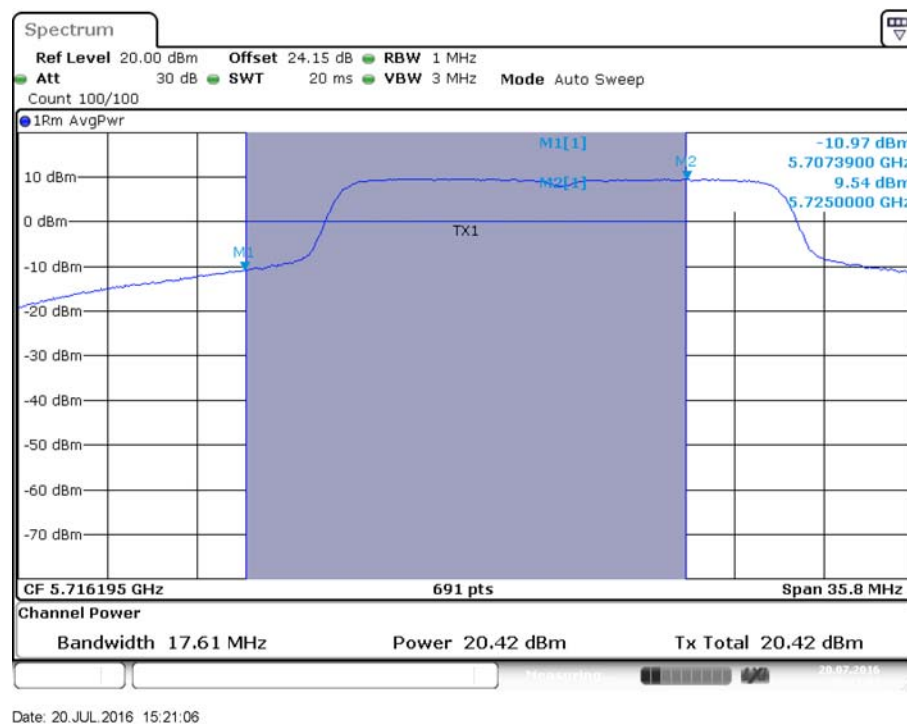
Conducted Output Power Plot on Configuration IEEE 802.11a / Ant. 3 / 5720 MHz (UNII 3)



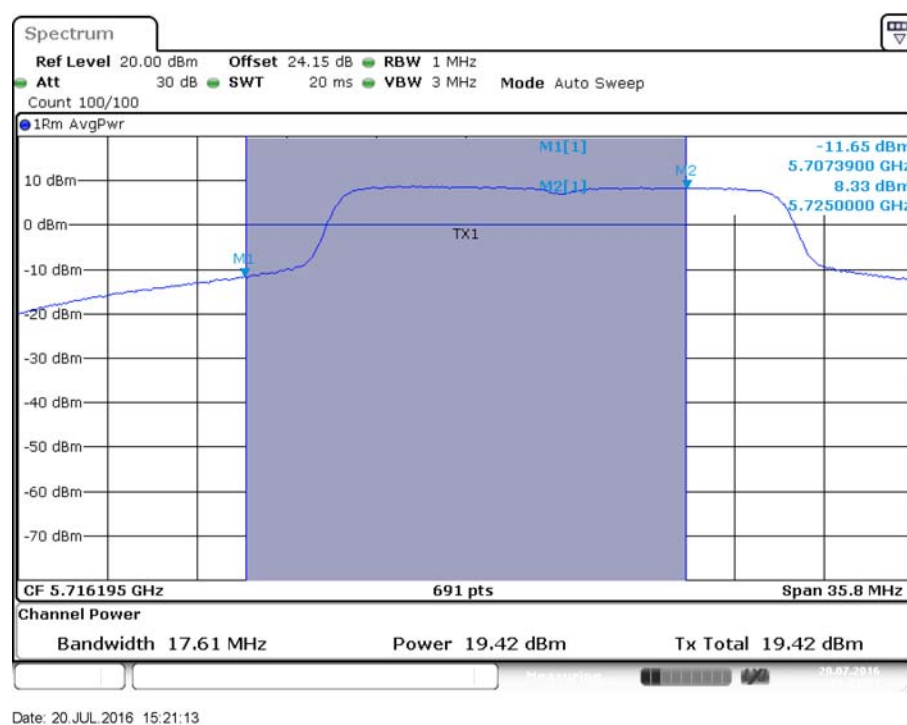
Conducted Output Power Plot on Configuration IEEE 802.11a / Ant. 4 / 5720 MHz (UNII 3)



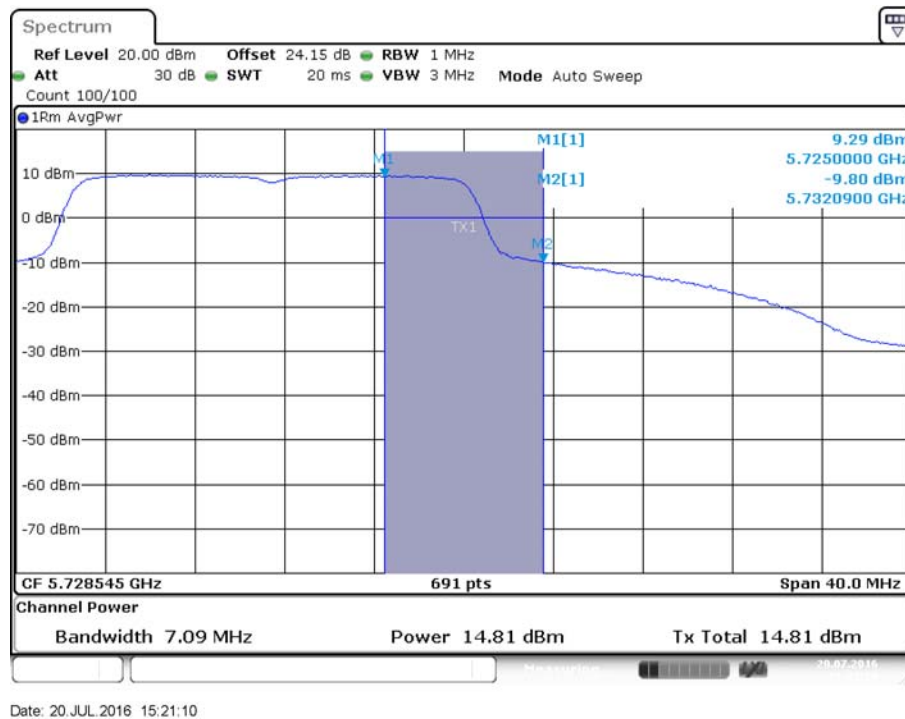
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 / 5720 MHz (UNII 2C)



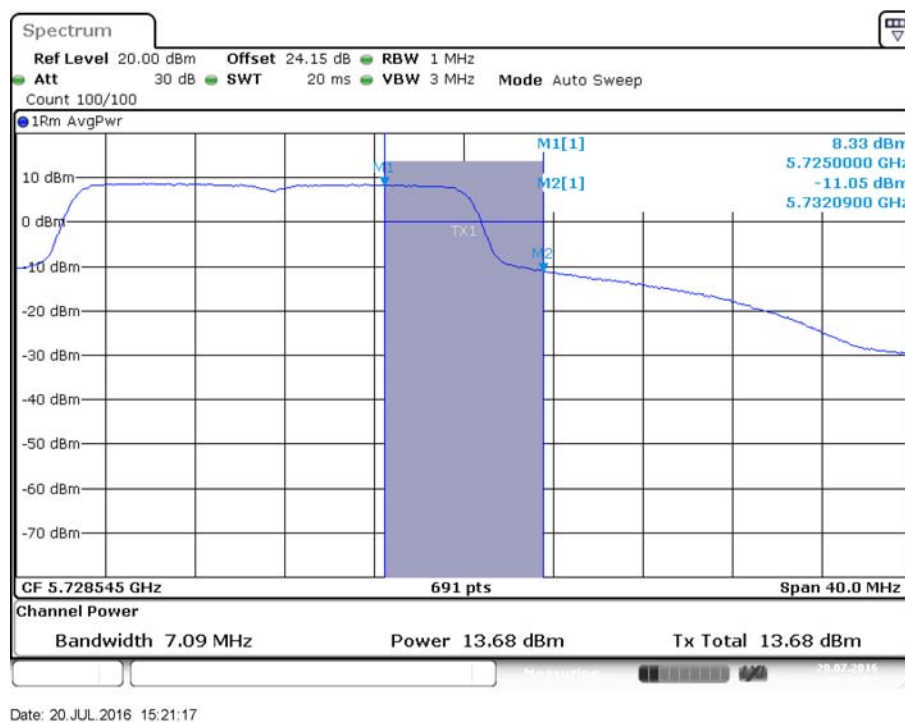
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 / 5720 MHz (UNII 2C)



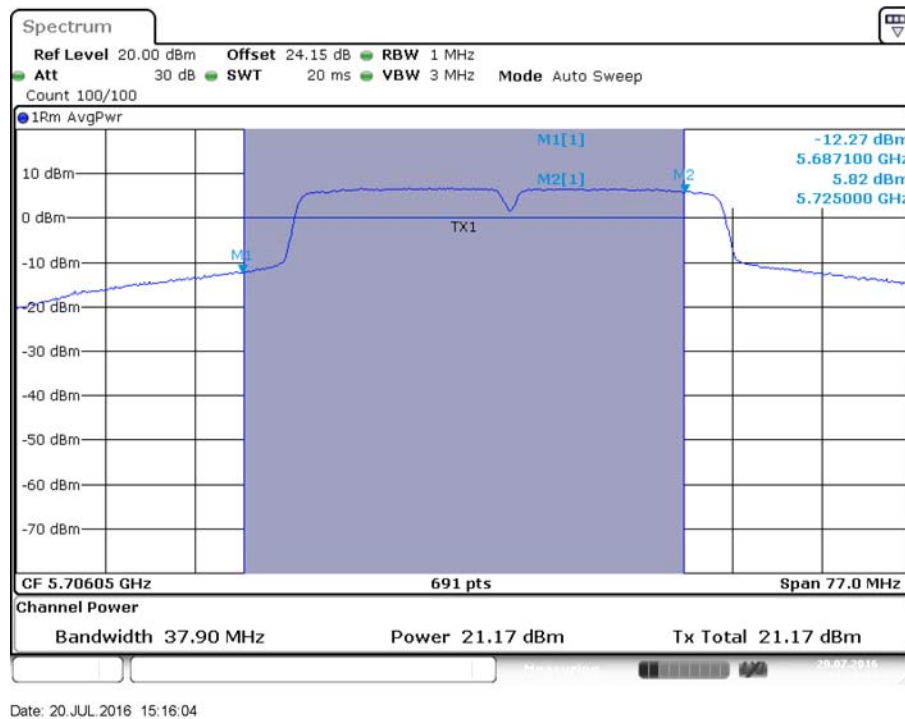
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 / 5720 MHz (UNII 3)



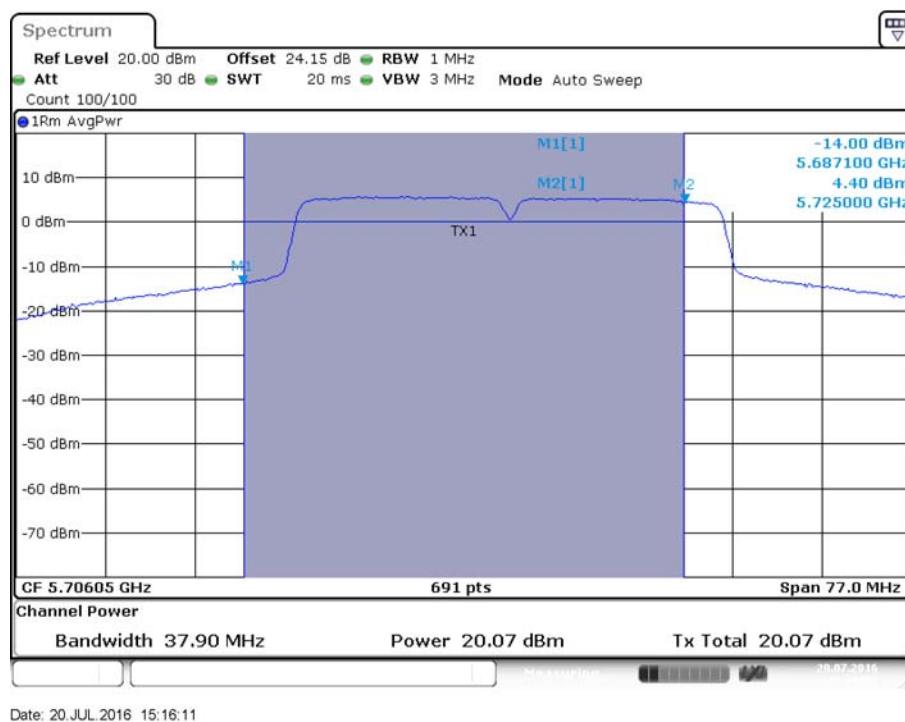
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 / 5720 MHz (UNII 3)



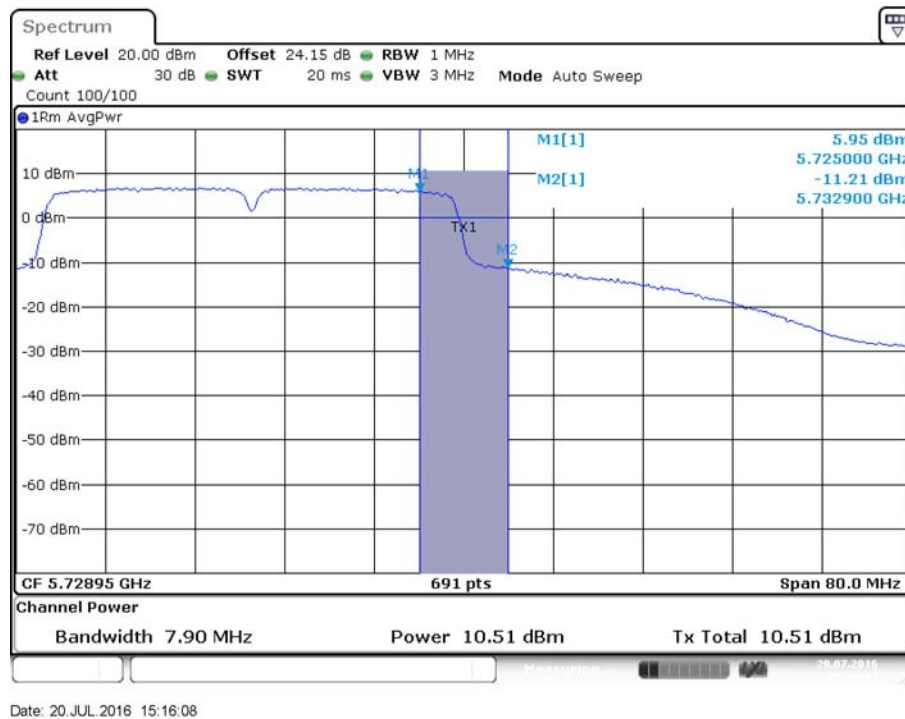
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 / 5710 MHz (UNII 2C)



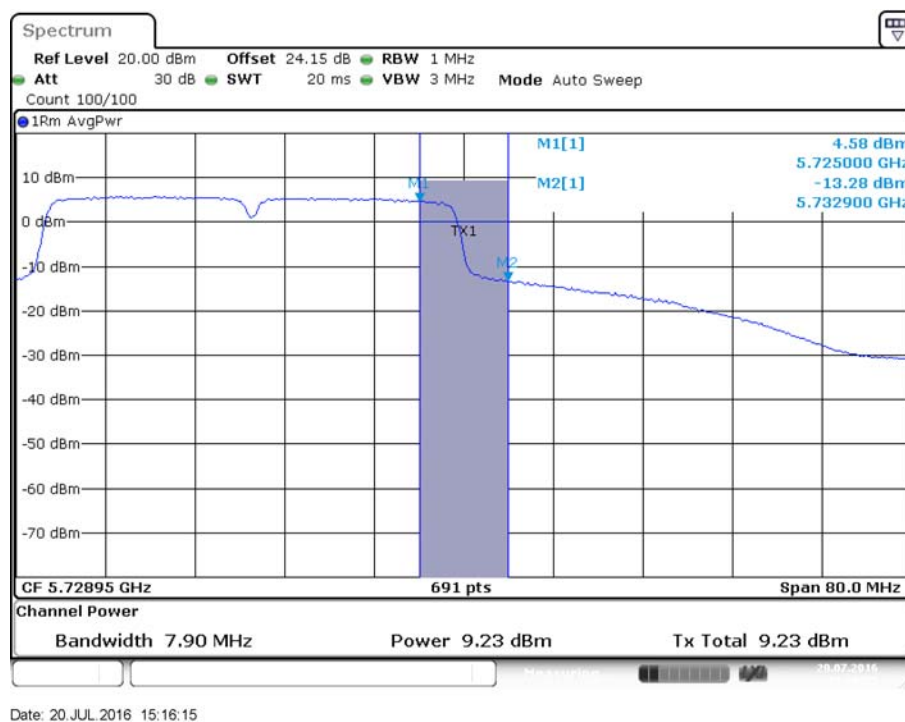
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 / 5710 MHz (UNII 2C)



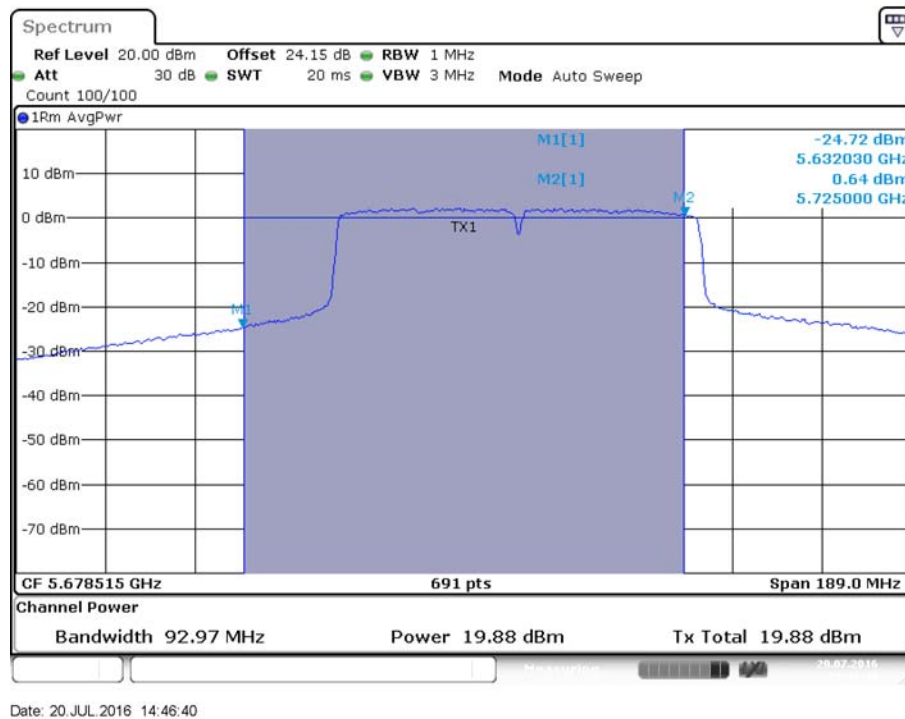
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 / 5710 MHz (UNII 3)



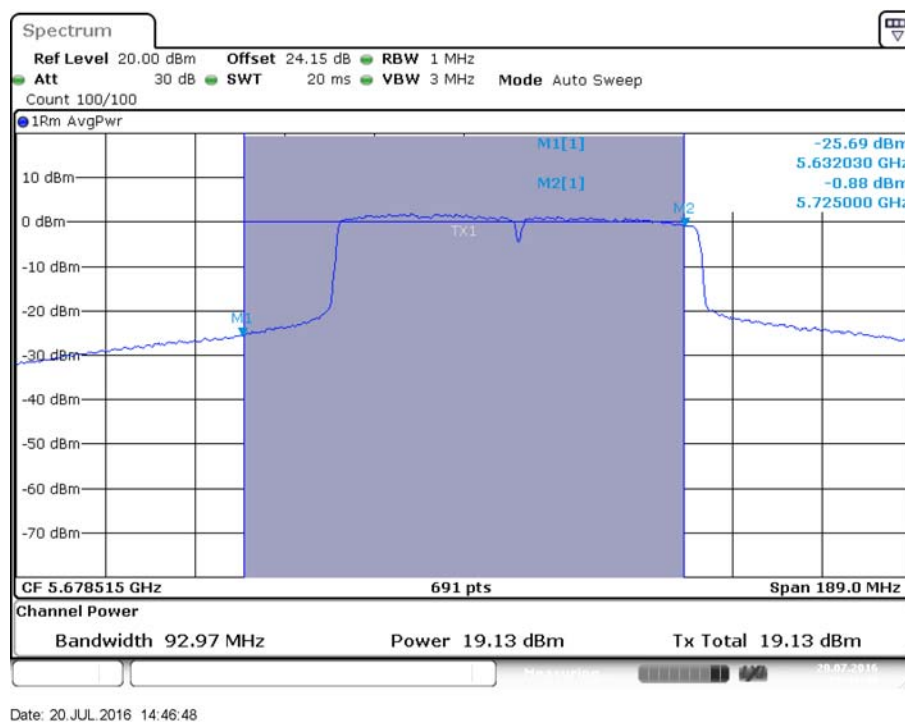
Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 / 5710 MHz (UNII 3)



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



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



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



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



4.4. Power Spectral Density Measurement

4.4.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.3.1.

Frequency Band		Limit
☒	5.25-5.35 GHz	11 dBm/MHz
☒	5.470-5.725 GHz	11 dBm/MHz

4.4.2. Measuring Instruments and Setting

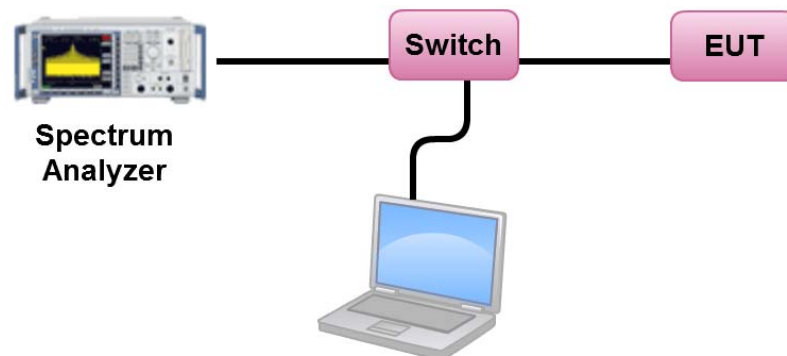
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.4.3. 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 v01r03 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.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Power Spectral Density

Temperature	24°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Jul. 20, 2016~Jul. 28, 2016

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11a	5260 MHz	10.49	11.00	Complies
	5300 MHz	10.50	11.00	Complies
	5320 MHz	10.49	11.00	Complies
	5500 MHz	10.81	11.00	Complies
	5580 MHz	10.61	11.00	Complies
	5700 MHz	8.66	11.00	Complies
802.11ac MCS0/Nss1 VHT20	5260 MHz	10.61	11.00	Complies
	5300 MHz	10.30	11.00	Complies
	5320 MHz	10.26	11.00	Complies
	5500 MHz	9.65	11.00	Complies
	5580 MHz	10.54	11.00	Complies
	5700 MHz	9.24	11.00	Complies
802.11ac MCS0/Nss1 VHT40	5270 MHz	7.58	11.00	Complies
	5310 MHz	6.12	11.00	Complies
	5510 MHz	4.59	11.00	Complies
	5550 MHz	7.59	11.00	Complies
	5670 MHz	6.64	11.00	Complies
802.11ac MCS0/Nss1 VHT80	5290 MHz	-1.95	11.00	Complies
	5530 MHz	-1.68	11.00	Complies
	5610 MHz	4.74	11.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 5.38 \text{dBi} < 6 \text{dBi}$, so the limit doesn't reduce.

Straddle Channel

Configuration IEEE 802.11a / Ant. 3 + Ant. 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
144	5720 MHz (UNII 2C)	9.70		11.00		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RB w) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	9.55	-3.01	6.54	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 5.38 \text{ dBi} < 6 \text{ dBi}$, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
144	5720 MHz (UNII 2C)	9.93		11.00		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RB w) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	9.42	-3.01	6.41	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 5.38 \text{ dBi} < 6 \text{ dBi}$, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 + Ant. 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
142	5710 MHz (UNII 2C)	7.74		11.00		Complies
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)	7.50	-3.01	4.49	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 5.38 \text{dBi} < 6 \text{dBi}$, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 3 + Ant. 4

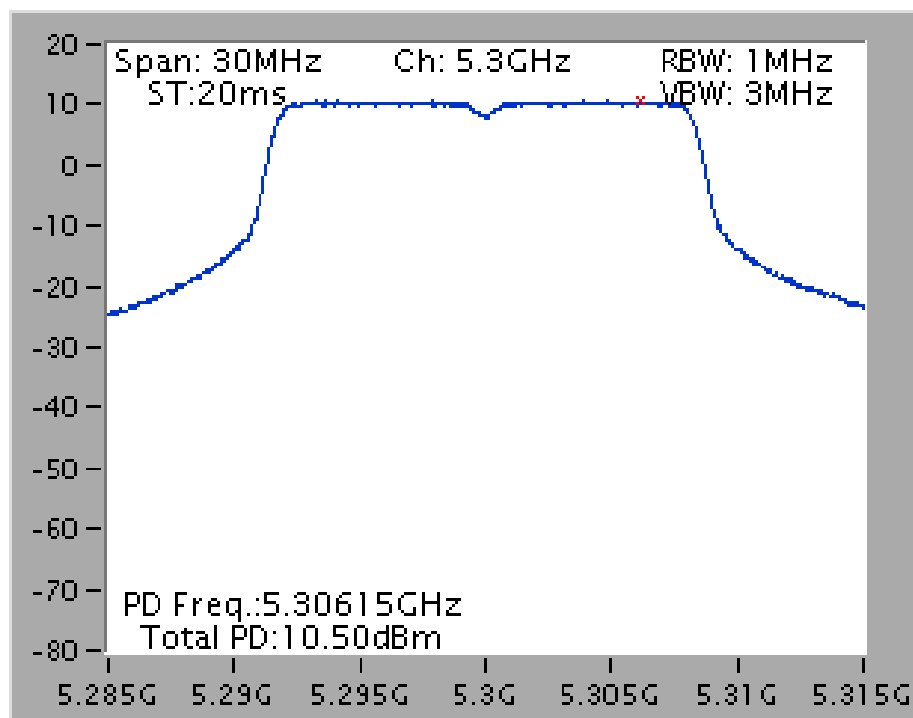
Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
138	5690 MHz (UNII 2C)	3.51		11.00		Complies
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
138	5690 MHz (UNII 3)	1.55	-3.01	-1.46	30.00	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 5.38 \text{dBi} < 6 \text{dBi}$, so the limit doesn't reduce.

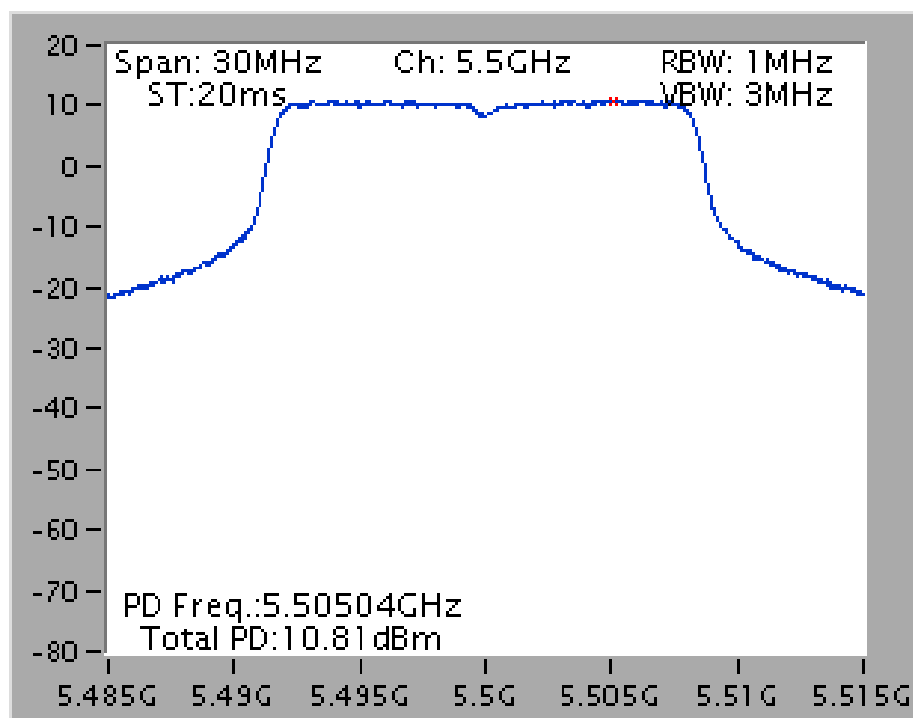
Note: All the test values were listed in the report.

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

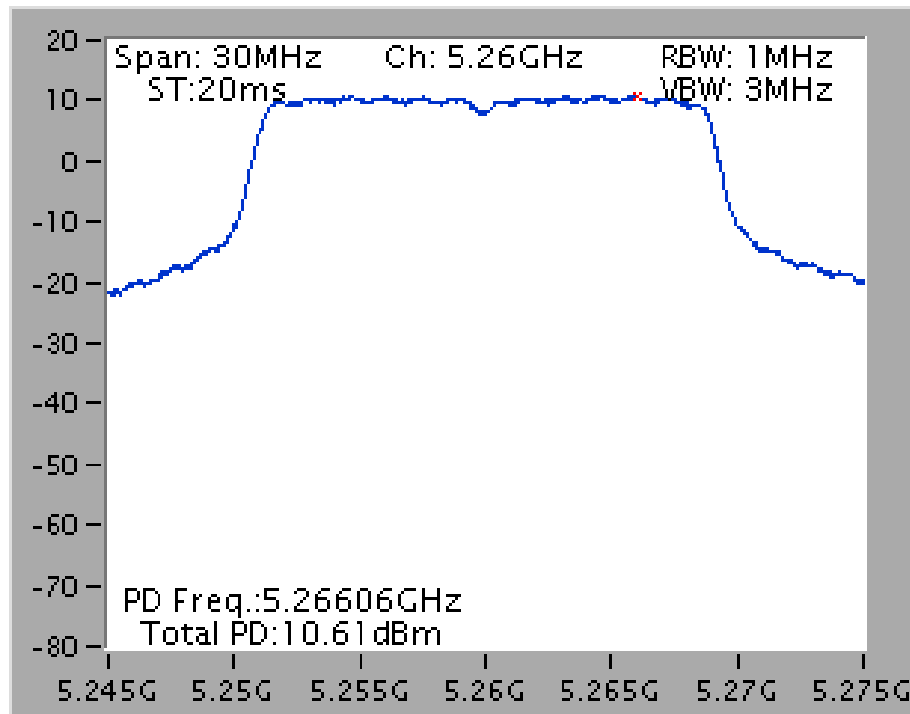
Power Density Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5300 MHz



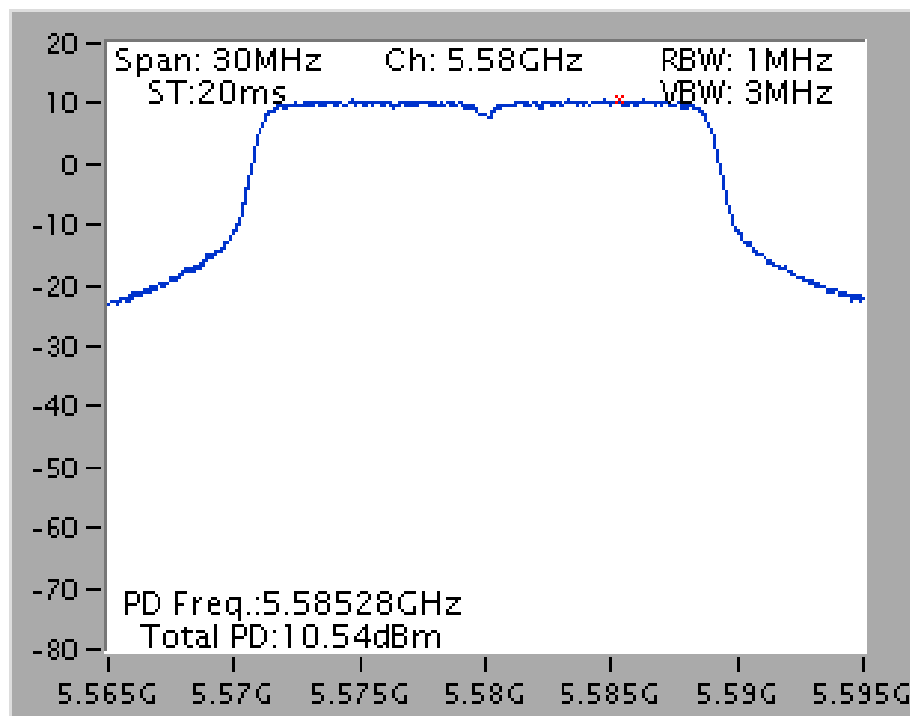
Power Density Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5500 MHz



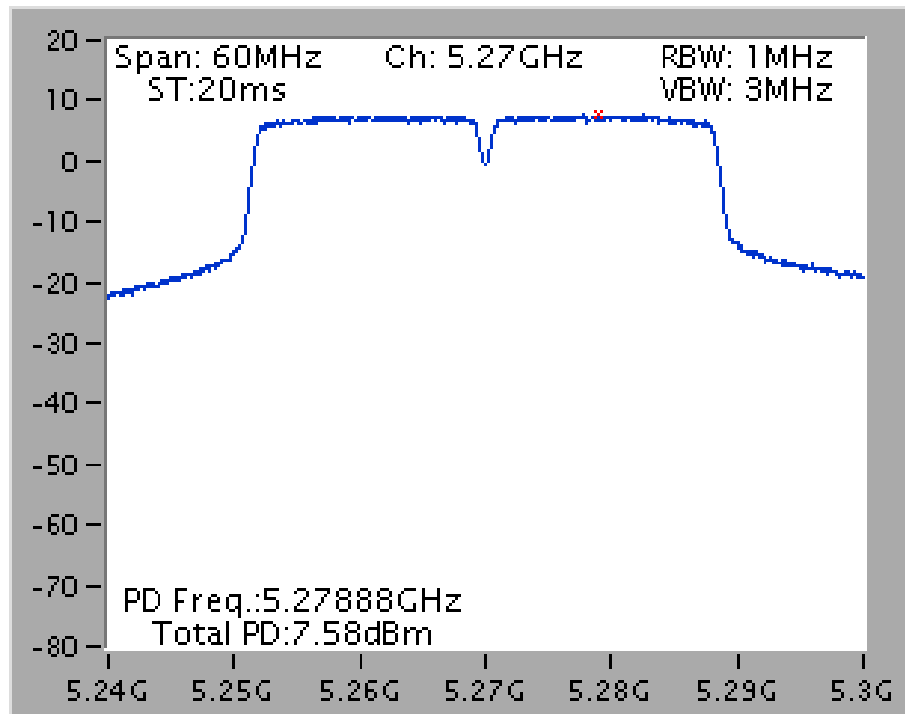
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4 / 5260 MHz



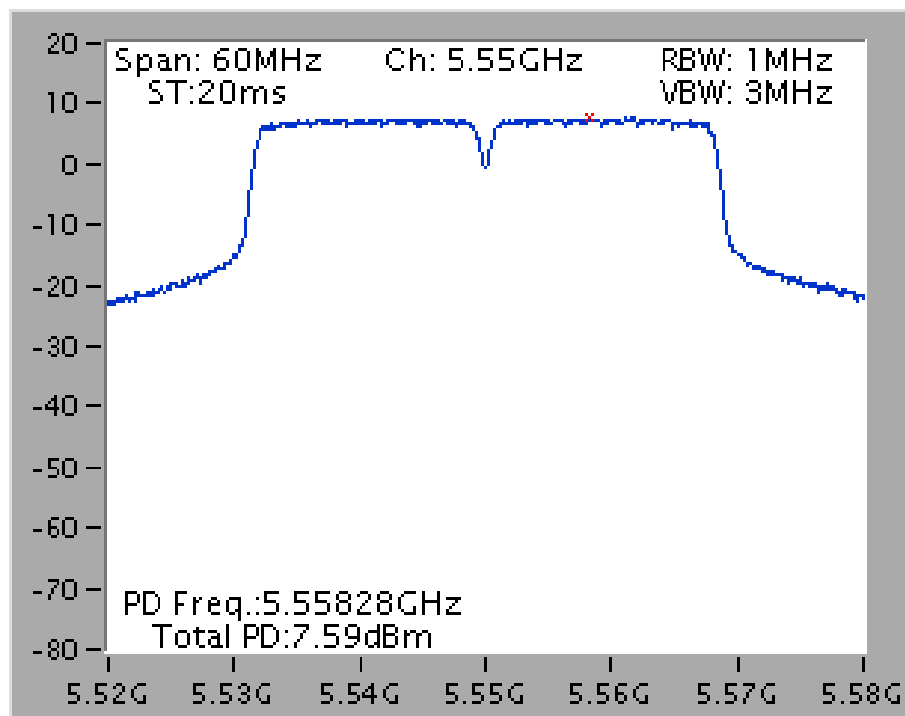
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4 / 5580 MHz



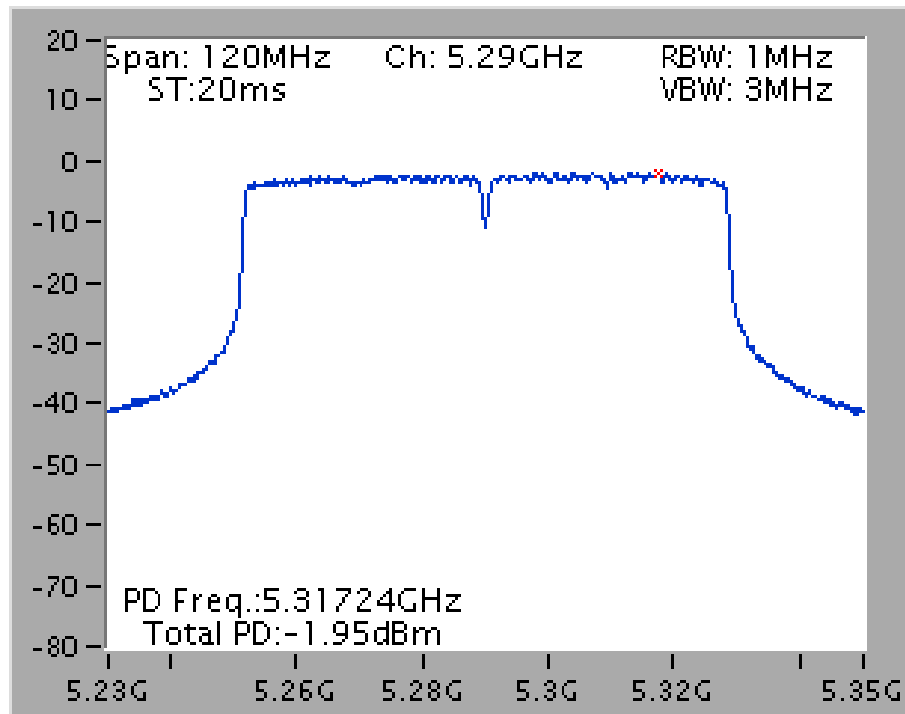
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 + Ant. 4 / 5270 MHz



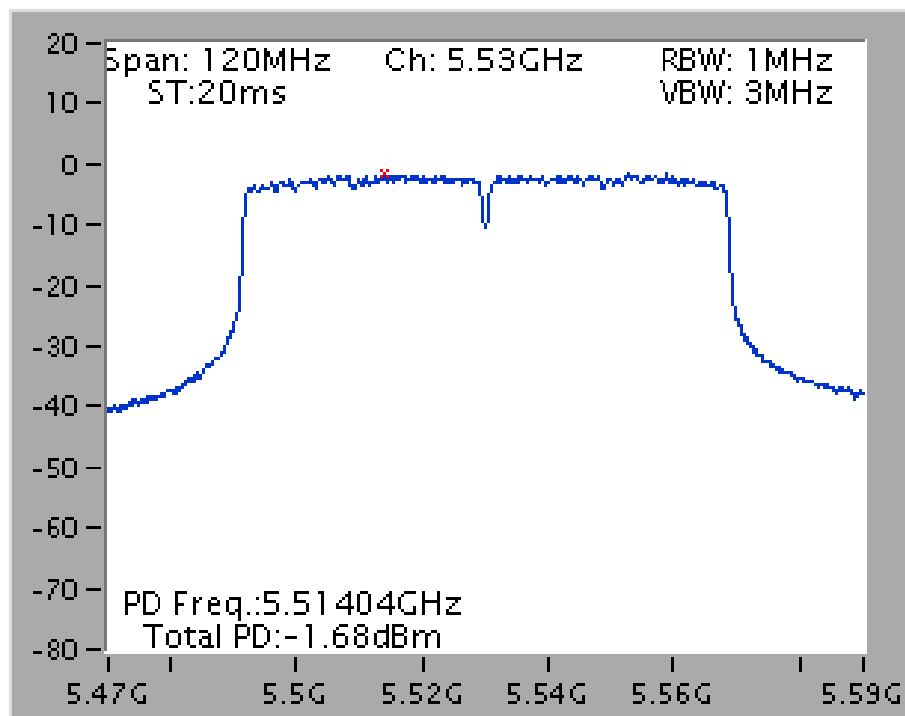
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 + Ant. 4 / 5550 MHz



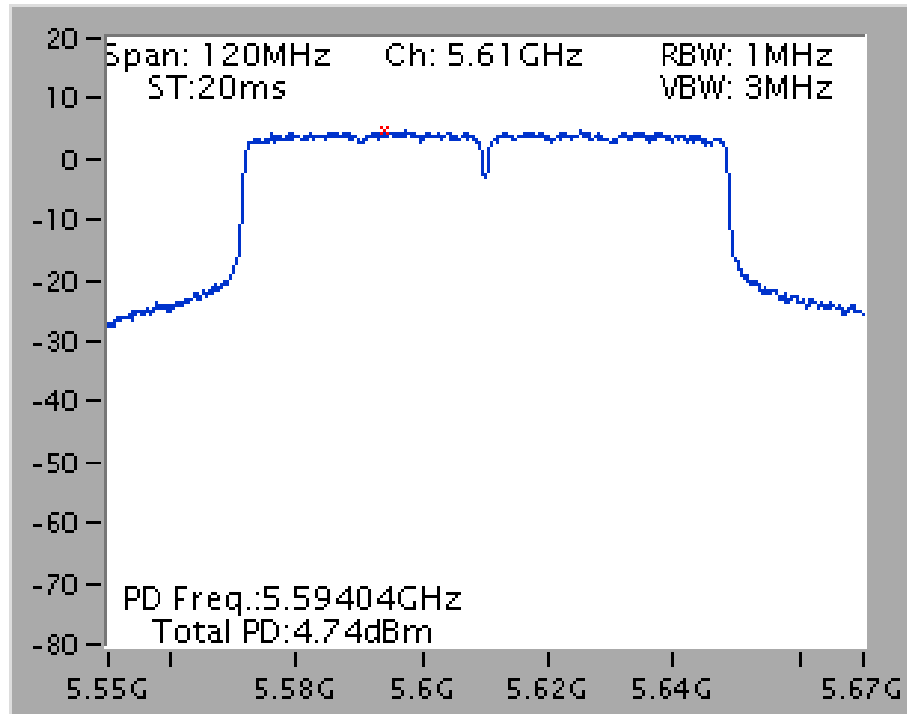
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 3 + Ant. 4 / 5290 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 3 + Ant. 4 / 5530 MHz

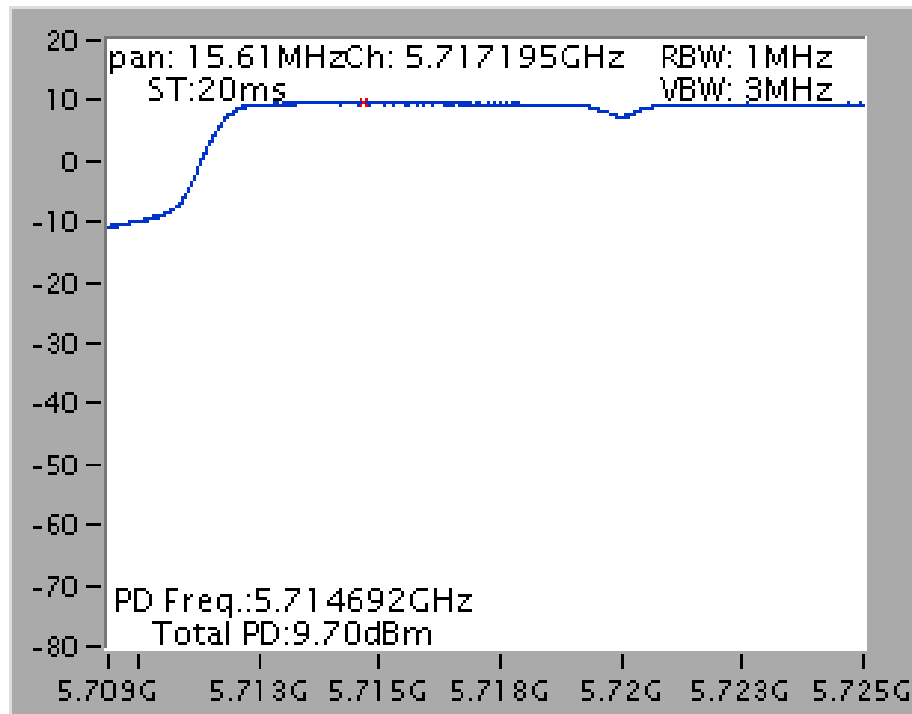


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 3 + Ant. 4 / 5610 MHz

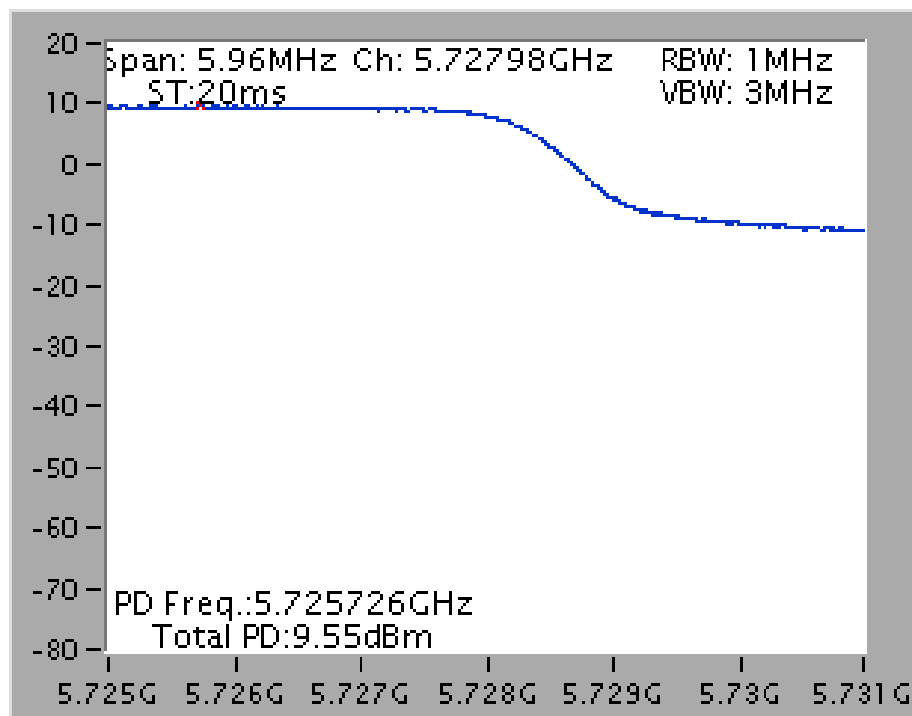


Straddle Channel

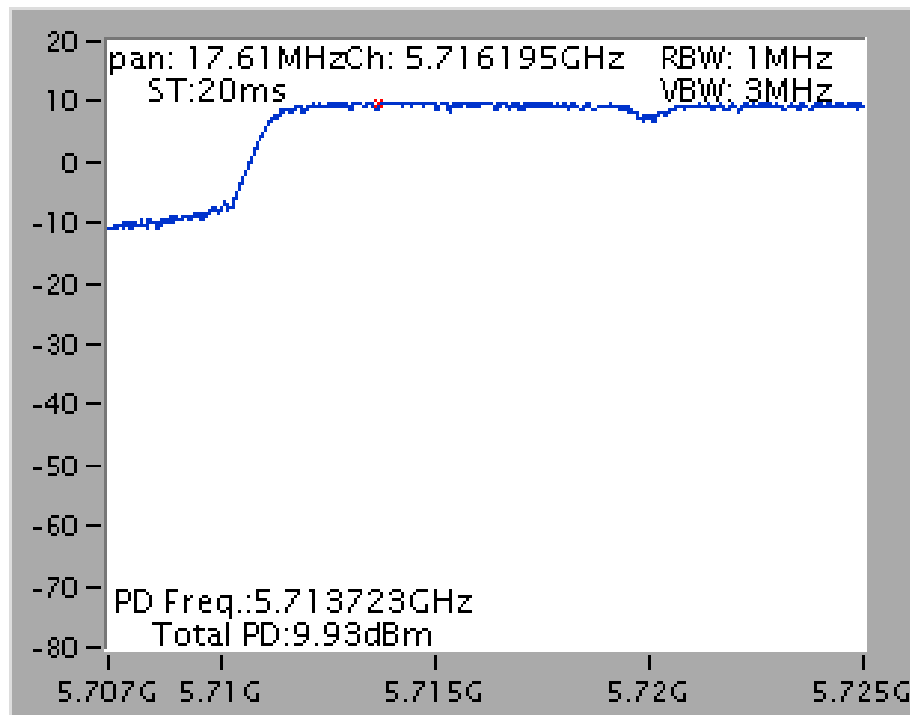
Power Density Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5720 MHz (UNII 2C)



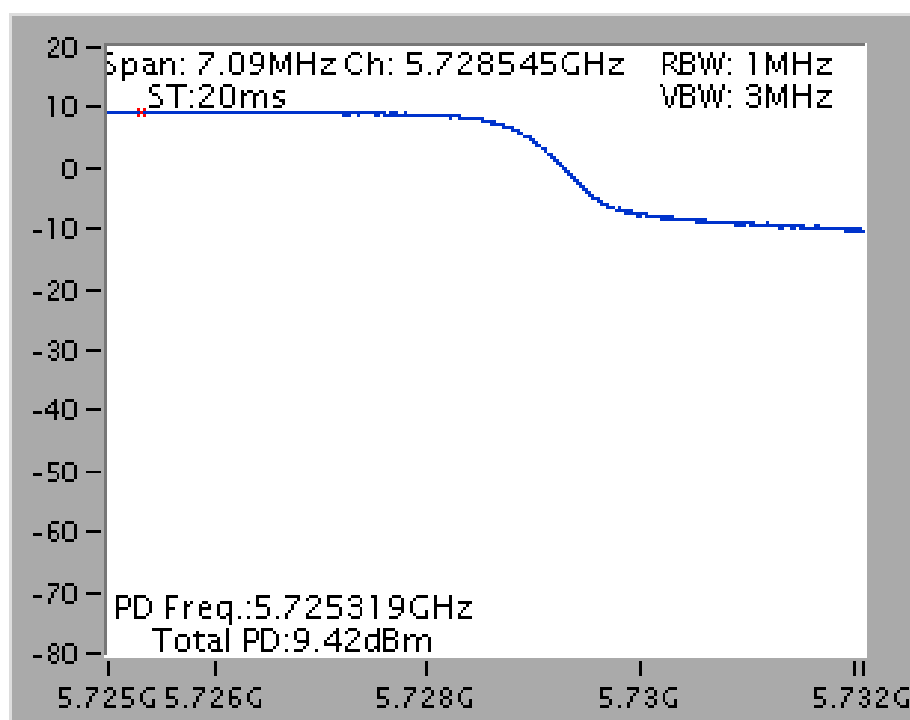
Power Density Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5720 MHz (UNII 3)



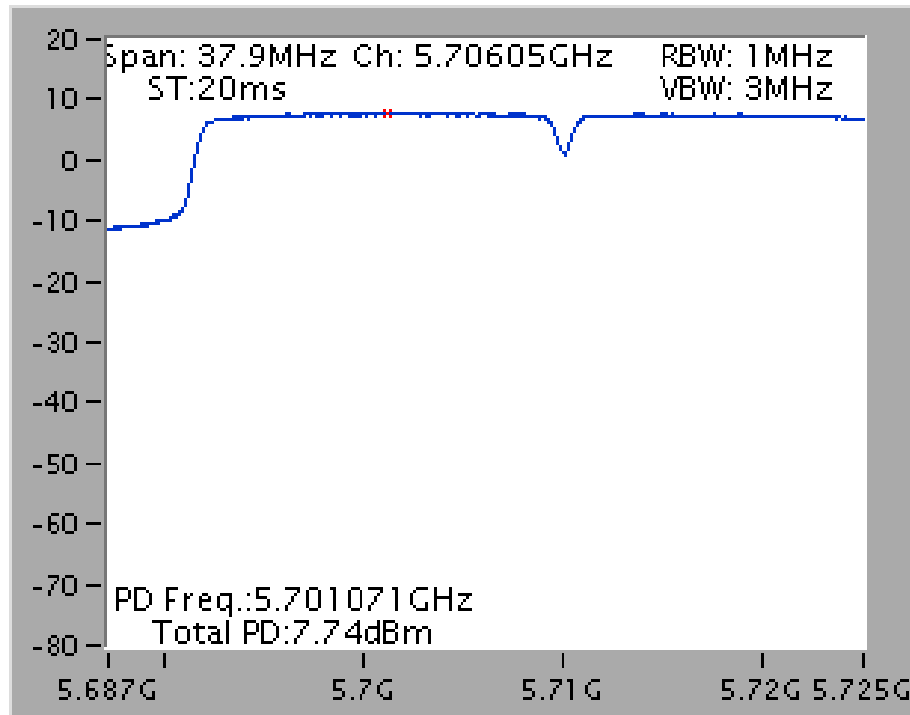
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4 / 5720 MHz (UNII 2C)



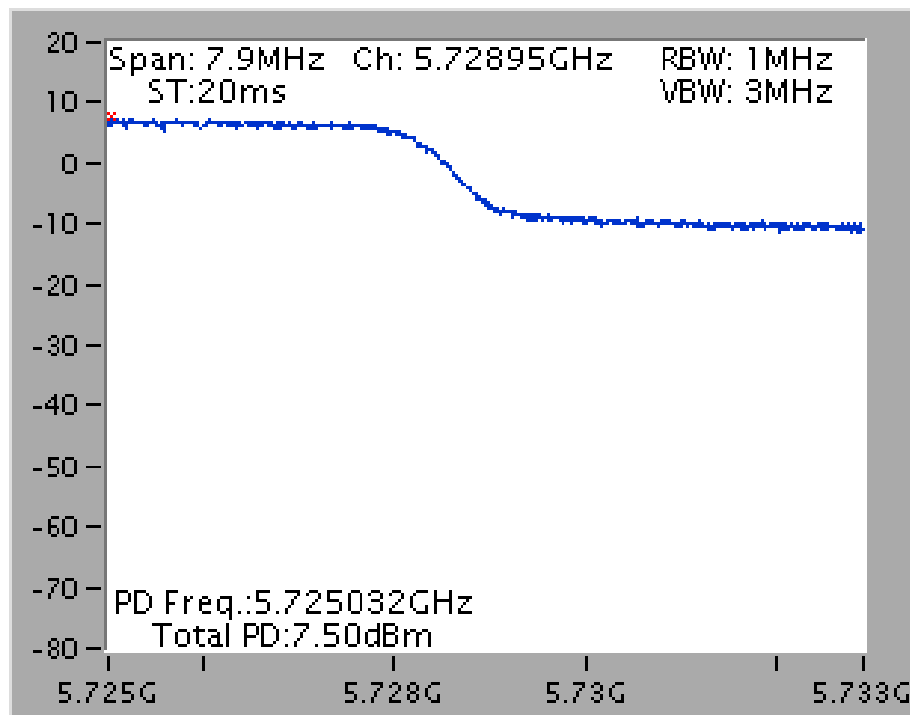
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4 / 5720 MHz (UNII 3)



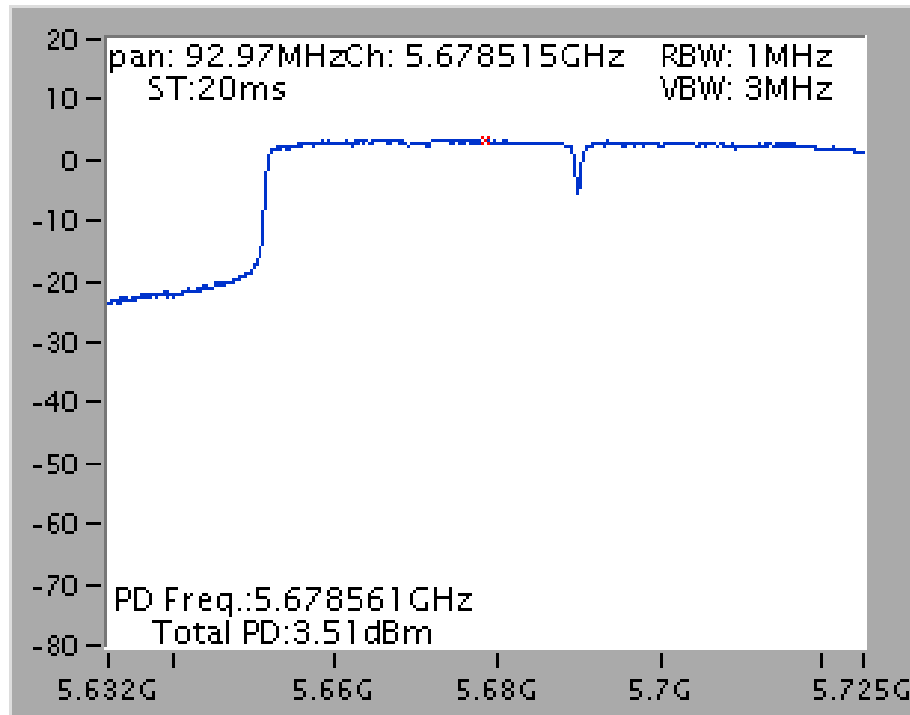
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 + Ant. 4 / 5710 MHz (UNII 2C)



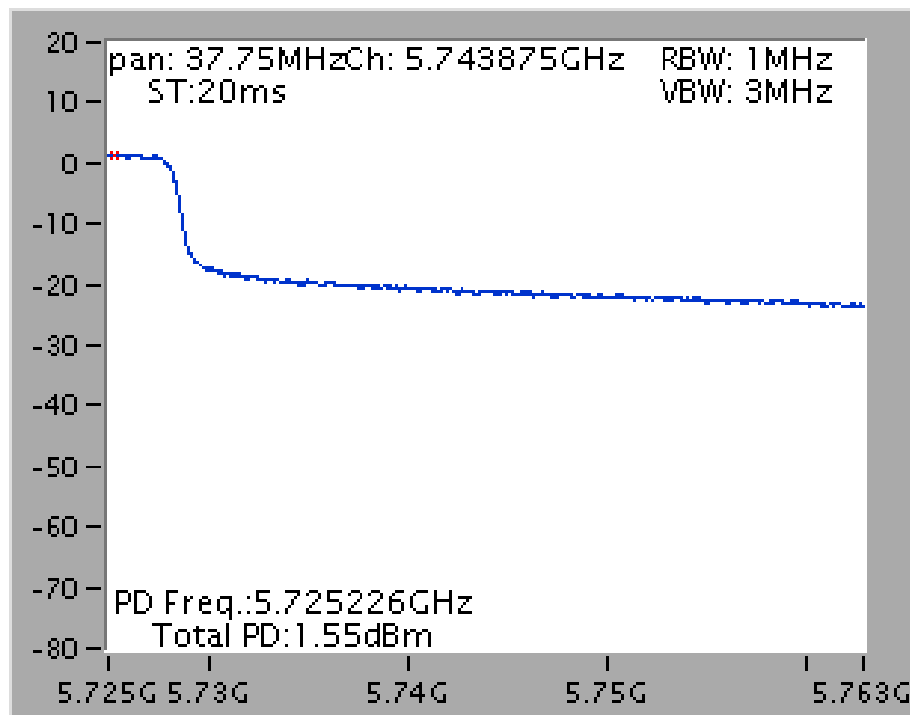
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 + Ant. 4 / 5710 MHz (UNII 3)



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



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



4.5. Radiated Emissions Measurement

4.5.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 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.

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

4.5.2. Measuring Instruments and Setting

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

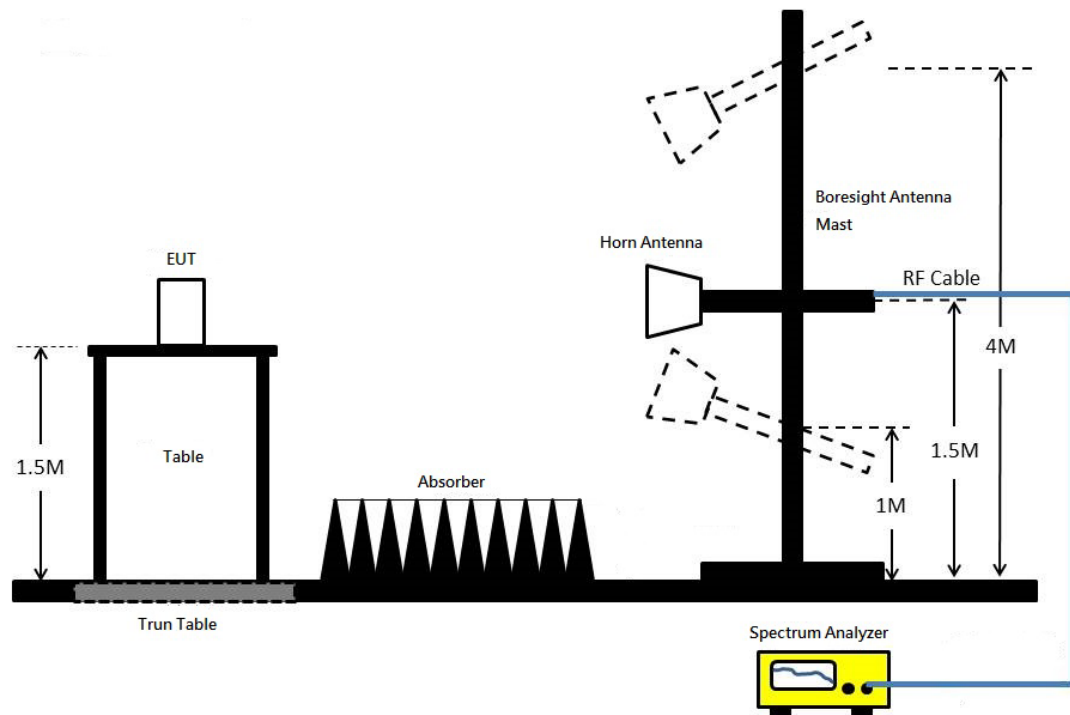
Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

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

4.5.3. Test Procedures

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

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Results for Radiated Emissions (1GHz~40GHz)

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 52 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 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	15778.90	50.10	54.00	-3.90	35.18	11.29	38.48	34.85	257	299	Average	HORIZONTAL
2	15783.60	70.78	74.00	-3.22	55.78	11.30	38.55	34.85	257	299	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	15780.80	49.70	54.00	-4.30	34.78	11.29	38.48	34.85	232	40	Average	VERTICAL
2	15783.00	73.76	74.00	-0.24	58.76	11.30	38.55	34.85	232	40	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 60 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamplifier Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10598.75	45.29	54.00	-8.71	32.00	9.74	38.50	34.95	161	128	Average	HORIZONTAL
2	10599.16	58.91	74.00	-15.09	45.62	9.74	38.50	34.95	161	128	Peak	HORIZONTAL
3	15897.48	49.78	54.00	-4.22	34.73	11.32	38.67	34.94	180	303	Average	HORIZONTAL
4	15902.05	68.61	74.00	-5.39	53.56	11.32	38.67	34.94	180	303	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamplifier Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10598.18	48.38	54.00	-5.62	35.09	9.74	38.50	34.95	187	263	Average	VERTICAL
2	10603.36	61.55	74.00	-12.45	48.26	9.74	38.50	34.95	187	263	Peak	VERTICAL
3	15896.47	69.35	74.00	-4.65	54.30	11.32	38.67	34.94	165	244	Peak	VERTICAL
4	15896.76	49.03	54.00	-4.97	33.98	11.32	38.67	34.94	165	244	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 64 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	10636.64	57.00	74.00	-17.00	43.70	9.73	38.50	34.93	178	101	Peak	HORIZONTAL
2	10636.82	43.25	54.00	-10.75	29.95	9.73	38.50	34.93	178	101	Average	HORIZONTAL
3	15963.96	59.91	74.00	-14.09	44.82	11.33	38.74	34.98	185	58	Peak	HORIZONTAL
4	15965.01	46.06	54.00	-7.94	30.97	11.33	38.74	34.98	185	58	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	10640.41	59.42	74.00	-14.58	46.09	9.73	38.50	34.90	162	245	Peak	VERTICAL
2	10640.81	45.40	54.00	-8.60	32.07	9.73	38.50	34.90	162	245	Average	VERTICAL
3	15951.58	60.07	74.00	-13.93	44.98	11.33	38.74	34.98	195	32	Peak	VERTICAL
4	15961.68	46.03	54.00	-7.97	30.94	11.33	38.74	34.98	195	32	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 100 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	10991.58	42.77	54.00	-11.23	29.26	9.69	38.50	34.68	186	129	Average	HORIZONTAL
2	11006.97	55.61	74.00	-18.39	42.09	9.68	38.50	34.66	186	129	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	10997.83	42.58	54.00	-11.42	29.06	9.68	38.50	34.66	184	125	Average	VERTICAL
2	11002.40	56.10	74.00	-17.90	42.58	9.68	38.50	34.66	184	125	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 116 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 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	11157.50	49.99	54.00	-4.01	36.48	9.66	38.50	34.65	146	238	Average	HORIZONTAL
2	11162.80	62.78	74.00	-11.22	49.27	9.66	38.50	34.65	146	238	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	11159.00	53.78	54.00	-0.22	40.27	9.66	38.50	34.65	151	266	Average	VERTICAL
2	11159.70	64.89	74.00	-9.11	51.38	9.66	38.50	34.65	151	266	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 140 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 2016		

Horizontal

	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	11396.84	56.14	74.00	-17.86	42.64	9.63	38.50	34.63	183	138	Peak
2	11402.98	42.62	54.00	-11.38	29.12	9.63	38.50	34.63	183	138	Average

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	11393.23	42.58	54.00	-11.42	29.08	9.63	38.50	34.63	188	135	Average
2	11401.39	56.16	74.00	-17.84	42.66	9.63	38.50	34.63	188	135	Peak

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 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	15775.60	50.24	54.00	-3.76	35.32	11.29	38.48	34.85	257	298	Average	HORIZONTAL
2	15783.40	69.63	74.00	-4.37	54.63	11.30	38.55	34.85	257	298	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	15776.80	73.67	74.00	-0.33	58.75	11.29	38.48	34.85	204	51	Peak	VERTICAL
2	15786.20	50.15	54.00	-3.85	35.15	11.30	38.55	34.85	204	51	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 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	10600.12	62.10	74.00	-11.90	48.81	9.74	38.50	34.95	179	233	Peak	HORIZONTAL
2	10600.46	47.60	54.00	-6.40	34.31	9.74	38.50	34.95	179	233	Average	HORIZONTAL
3	15893.34	65.17	74.00	-8.83	50.12	11.32	38.67	34.94	185	265	Peak	HORIZONTAL
4	15898.90	48.43	54.00	-5.57	33.38	11.32	38.67	34.94	185	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	10603.16	47.65	54.00	-6.35	34.36	9.74	38.50	34.95	178	242	Average	VERTICAL
2	10605.18	61.85	74.00	-12.15	48.54	9.74	38.50	34.93	178	242	Peak	VERTICAL
3	15897.28	48.07	54.00	-5.93	33.02	11.32	38.67	34.94	181	257	Average	VERTICAL
4	15904.23	64.86	74.00	-9.14	49.81	11.32	38.67	34.94	181	257	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	10638.70	43.06	54.00	-10.94	29.73	9.73	38.50	34.90	184	238	Average	HORIZONTAL
2	10641.30	55.82	74.00	-18.18	42.49	9.73	38.50	34.90	184	238	Peak	HORIZONTAL
3	15961.25	46.06	54.00	-7.94	30.97	11.33	38.74	34.98	188	234	Average	HORIZONTAL
4	15969.29	59.29	74.00	-14.71	44.13	11.34	38.80	34.98	188	234	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	10637.13	56.00	74.00	-18.00	42.70	9.73	38.50	34.93	182	214	Peak
2	10639.80	43.03	54.00	-10.97	29.70	9.73	38.50	34.90	182	214	Average
3	15961.56	46.17	54.00	-7.83	31.08	11.33	38.74	34.98	184	222	Average
4	15962.00	58.40	74.00	-15.60	43.31	11.33	38.74	34.98	184	222	Peak

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	10991.52	55.08	74.00	-18.92	41.57	9.69	38.50	34.68	191	251	Peak	HORIZONTAL
2	11007.00	42.17	54.00	-11.83	28.65	9.68	38.50	34.66	191	251	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	10995.86	41.99	54.00	-12.01	28.46	9.69	38.50	34.66	189	241	Average
2	11006.37	55.18	74.00	-18.82	41.66	9.68	38.50	34.66	189	241	Peak

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016		

Horizontal

	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	11159.20	61.47	74.00	-12.53	47.96	9.66	38.50	34.65	189	249	Peak
2	11159.20	50.17	54.00	-3.83	36.66	9.66	38.50	34.65	189	249	Average

Vertical

	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	11156.40	65.89	74.00	-8.11	52.38	9.66	38.50	34.65	189	274	Peak
2	11158.40	53.74	54.00	-0.26	40.23	9.66	38.50	34.65	189	274	Average

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	11396.56	55.98	74.00	-18.02	42.48	9.63	38.50	34.63	189	298	Peak	HORIZONTAL
2	11400.55	42.68	54.00	-11.32	29.18	9.63	38.50	34.63	189	298	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	11394.47	42.48	54.00	-11.52	28.98	9.63	38.50	34.63	187	258	Average
2	11405.01	55.50	74.00	-18.50	42.00	9.63	38.50	34.63	187	258	Peak

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	15812.98	59.67	74.00	-14.33	44.67	11.30	38.55	34.85	184	278	Peak	HORIZONTAL
2	15816.77	46.05	54.00	-7.95	31.09	11.30	38.55	34.89	184	278	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	15809.51	59.50	74.00	-14.50	44.50	11.30	38.55	34.85	186	287	Peak	VERTICAL
2	15814.46	45.93	54.00	-8.07	30.93	11.30	38.55	34.85	186	287	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	10615.01	43.18	54.00	-10.82	29.87	9.74	38.50	34.93	182	255	Average	HORIZONTAL
2	10624.23	56.96	74.00	-17.04	43.66	9.73	38.50	34.93	182	255	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	10615.01	43.56	54.00	-10.44	30.25	9.74	38.50	34.93	179	264	Average	VERTICAL
2	10615.83	56.44	74.00	-17.56	43.13	9.74	38.50	34.93	179	264	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	11015.11	43.17	54.00	-10.83	29.65	9.68	38.50	34.66	182	245	Average
2	11017.06	56.57	74.00	-17.43	43.05	9.68	38.50	34.66	182	245	Peak

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	11016.82	56.18	74.00	-17.82	42.66	9.68	38.50	34.66	179	241	Peak	VERTICAL
2	11024.14	42.97	54.00	-11.03	29.45	9.68	38.50	34.66	179	241	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 2016		

Horizontal

	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	11095.01	56.91	74.00	-17.09	43.39	9.67	38.50	34.65	186	271	Peak	HORIZONTAL
2	11104.37	42.97	54.00	-11.03	29.45	9.67	38.50	34.65	186	271	Average	HORIZONTAL

Vertical

	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	11097.11	55.85	74.00	-18.15	42.33	9.67	38.50	34.65	184	267	Peak	VERTICAL
2	11099.07	43.03	54.00	-10.97	29.51	9.67	38.50	34.65	184	267	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	11344.59	43.22	54.00	-10.78	29.71	9.64	38.50	34.63	183	292	Average	HORIZONTAL
2	11344.95	57.35	74.00	-16.65	43.84	9.64	38.50	34.63	183	292	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	11337.99	56.18	74.00	-17.82	42.67	9.64	38.50	34.63	185	281	Peak	VERTICAL
2	11344.44	43.05	54.00	-10.95	29.54	9.64	38.50	34.63	185	281	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	15871.98	46.33	54.00	-7.67	31.35	11.31	38.61	34.94	176	284	Average	HORIZONTAL
2	15874.34	60.00	74.00	-14.00	44.95	11.32	38.67	34.94	176	284	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	15871.66	59.02	74.00	-14.98	44.04	11.31	38.61	34.94	178	297	Peak	VERTICAL
2	15874.05	46.66	54.00	-7.34	31.61	11.32	38.67	34.94	178	297	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 2016		

Horizontal

	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	11057.95	56.14	74.00	-17.86	42.62	9.68	38.50	34.66	177	274	Peak
2	11064.53	43.10	54.00	-10.90	29.59	9.67	38.50	34.66	177	274	Average

Vertical

	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	11061.59	55.96	74.00	-18.04	42.45	9.67	38.50	34.66	182	281	Peak
2	11064.25	42.74	54.00	-11.26	29.23	9.67	38.50	34.66	182	281	Average

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 2016		

Horizontal

	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	11218.42	56.22	74.00	-17.78	42.70	9.66	38.50	34.64	179	271	Peak	HORIZONTAL
2	11221.11	42.62	54.00	-11.38	29.11	9.65	38.50	34.64	179	271	Average	HORIZONTAL

Vertical

	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	11223.47	42.55	54.00	-11.45	29.04	9.65	38.50	34.64	175	268	Average	VERTICAL
2	11224.21	55.60	74.00	-18.40	42.09	9.65	38.50	34.64	175	268	Peak	VERTICAL

Straddle Channel

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 144 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 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	11439.90	50.43	54.00	-3.57	36.92	9.63	38.50	34.62	194	220	Average	HORIZONTAL
2	11441.30	63.49	74.00	-10.51	49.98	9.63	38.50	34.62	194	220	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	11439.00	53.79	54.00	-0.21	40.28	9.63	38.50	34.62	199	264	Average	VERTICAL
2	11443.90	66.78	74.00	-7.22	53.27	9.63	38.50	34.62	199	264	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016		

Horizontal

	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	11438.60	63.76	74.00	-10.24	50.25	9.63	38.50	34.62	194	217	Peak	HORIZONTAL
2	11439.00	51.14	54.00	-2.86	37.63	9.63	38.50	34.62	194	217	Average	HORIZONTAL

Vertical

	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	11437.60	66.00	74.00	-8.00	52.49	9.63	38.50	34.62	188	276	Peak	VERTICAL
2	11437.60	53.78	54.00	-0.22	40.27	9.63	38.50	34.62	188	276	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 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	11416.60	64.51	74.00	-9.49	51.01	9.63	38.50	34.63	194	219	Peak	HORIZONTAL
2	11419.00	51.86	54.00	-2.14	38.36	9.63	38.50	34.63	194	219	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	11419.40	53.90	54.00	-0.10	40.40	9.63	38.50	34.63	194	360	Average
2	11420.60	66.41	74.00	-7.59	52.91	9.63	38.50	34.63	194	360	Peak

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 / Ant. 3 + Ant. 4
Test Date	Jul. 18, 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	11377.86	46.92	54.00	-7.08	33.42	9.63	38.50	34.63	175	264	Average	HORIZONTAL
2	11378.48	59.84	74.00	-14.16	46.34	9.63	38.50	34.63	175	264	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	11378.21	59.77	74.00	-14.23	46.27	9.63	38.50	34.63	177	265	Peak	VERTICAL
2	11381.63	46.71	54.00	-7.29	33.21	9.63	38.50	34.63	177	265	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.

4.6. Band Edge Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 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.

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

4.6.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for Peak

4.6.3. Test Procedures

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

4.6.4. Test Setup Layout

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

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.



4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 52, 60, 64 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016		

Channel 52

	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	5149.00	59.72	74.00	-14.28	52.98	7.90	33.31	34.47	252	279	Peak	VERTICAL
2	5150.00	47.10	54.00	-6.90	40.36	7.90	33.31	34.47	252	279	Average	VERTICAL
3	5261.00	118.54			111.61	7.94	33.46	34.47	252	279	Peak	VERTICAL
4	5266.00	108.68			101.74	7.93	33.48	34.47	252	279	Average	VERTICAL
5	5350.00	61.95	74.00	-12.05	54.94	7.89	33.59	34.47	252	279	Peak	VERTICAL
6	5351.00	48.85	54.00	-5.15	41.84	7.89	33.59	34.47	252	279	Average	VERTICAL

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

Channel 60

	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	5296.00	118.48			111.52	7.91	33.52	34.47	246	278	Peak	VERTICAL
2	5306.00	108.71			101.75	7.91	33.52	34.47	246	278	Average	VERTICAL
3	5350.00	68.25	74.00	-5.75	61.24	7.89	33.59	34.47	246	278	Peak	VERTICAL
4	5351.00	53.70	54.00	-0.30	46.69	7.89	33.59	34.47	246	278	Average	VERTICAL

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

Channel 64

	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	5316.40	117.30			110.31	7.91	33.55	34.47	248	276	Peak	VERTICAL
2	5326.40	106.78			99.78	7.90	33.57	34.47	248	276	Average	VERTICAL
3	5350.80	53.93	54.00	-0.07	46.92	7.89	33.59	34.47	248	276	Average	VERTICAL
4	5351.20	69.28	74.00	-4.72	62.27	7.89	33.59	34.47	248	276	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 100, 116, 140 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016		

Channel 100

	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	5458.80	63.49	74.00	-10.51	56.33	7.89	33.74	34.47	256	273	Peak	VERTICAL
2	5458.80	48.98	54.00	-5.02	41.82	7.89	33.74	34.47	256	273	Average	VERTICAL
3	5468.80	71.19	74.00	-2.81	64.00	7.90	33.76	34.47	256	273	Peak	VERTICAL
4	5468.80	53.78	54.00	-0.22	46.59	7.90	33.76	34.47	256	273	Average	VERTICAL
5	5503.60	116.13			108.89	7.91	33.80	34.47	256	273	Peak	VERTICAL
6	5504.00	106.03			98.79	7.91	33.80	34.47	256	273	Average	VERTICAL

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

Channel 116

	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	5456.00	61.62	74.00	-12.38	54.46	7.89	33.74	34.47	244	282	Peak	VERTICAL
2	5460.00	48.71	54.00	-5.29	41.55	7.89	33.74	34.47	244	282	Average	VERTICAL
3	5468.00	60.86	74.00	-13.14	53.67	7.90	33.76	34.47	244	282	Peak	VERTICAL
4	5470.00	48.75	54.00	-5.25	41.56	7.90	33.76	34.47	244	282	Average	VERTICAL
5	5574.00	118.88			111.42	7.94	34.00	34.48	244	282	Peak	VERTICAL
6	5574.00	108.67			101.21	7.94	34.00	34.48	244	282	Average	VERTICAL
7	5725.00	48.12	54.00	-5.88	40.26	7.87	34.50	34.51	244	282	Average	VERTICAL
8	5727.00	60.30	74.00	-13.70	52.45	7.87	34.50	34.52	244	282	Peak	VERTICAL

Item 5, 6 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	5696.00	102.79			95.01	7.89	34.40	34.51	252	283	Average
2	5706.00	112.56			104.74	7.88	34.45	34.51	252	283	Peak
3	5725.60	53.95	54.00	-0.05	46.09	7.87	34.50	34.51	252	283	Average
4	5726.40	67.85	74.00	-6.15	60.00	7.87	34.50	34.52	252	283	Peak

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016		

Channel 52

	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	5146.00	59.89	74.00	-14.11	53.15	7.90	33.31	34.47	250	277	Peak	VERTICAL
2	5150.00	46.87	54.00	-7.13	40.13	7.90	33.31	34.47	250	277	Average	VERTICAL
3	5263.00	119.68			112.74	7.93	33.48	34.47	250	277	Peak	VERTICAL
4	5265.00	109.31			102.37	7.93	33.48	34.47	250	277	Average	VERTICAL
5	5350.00	60.20	74.00	-13.80	53.19	7.89	33.59	34.47	250	277	Peak	VERTICAL
6	5350.00	48.16	54.00	-5.84	41.15	7.89	33.59	34.47	250	277	Average	VERTICAL

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

Channel 60

	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	5293.00	118.86			111.90	7.91	33.52	34.47	271	276	Peak	VERTICAL
2	5293.00	108.74			101.78	7.91	33.52	34.47	271	276	Average	VERTICAL
3	5351.00	53.78	54.00	-0.22	46.77	7.89	33.59	34.47	271	276	Average	VERTICAL
4	5357.00	69.00	74.00	-5.00	61.98	7.88	33.61	34.47	271	276	Peak	VERTICAL

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	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5314.40	116.93			109.94	7.91	33.55	34.47	247	278	Peak	VERTICAL
2	5314.80	104.25			97.26	7.91	33.55	34.47	247	278	Average	VERTICAL
3	5351.20	53.88	54.00	-0.12	46.87	7.89	33.59	34.47	247	278	Average	VERTICAL
4	5353.20	72.03	74.00	-1.97	65.02	7.89	33.59	34.47	247	278	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 116, 140 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016		

Channel 100

	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	5454.80	63.47	74.00	-10.53	56.31	7.89	33.74	34.47	256	278	Peak	VERTICAL
2	5460.00	49.70	54.00	-4.30	42.54	7.89	33.74	34.47	256	278	Average	VERTICAL
3	5469.60	68.58	74.00	-5.42	61.39	7.90	33.76	34.47	256	278	Peak	VERTICAL
4	5470.00	53.37	54.00	-0.63	46.18	7.90	33.76	34.47	256	278	Average	VERTICAL
5	5494.40	106.42			99.21	7.90	33.78	34.47	256	278	Average	VERTICAL
6	5495.20	115.93			108.69	7.91	33.80	34.47	256	278	Peak	VERTICAL

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

Channel 116

	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	5450.00	61.67	74.00	-12.33	54.51	7.89	33.74	34.47	249	276	Peak	VERTICAL
2	5460.00	48.62	54.00	-5.38	41.46	7.89	33.74	34.47	249	276	Average	VERTICAL
3	5463.00	61.19	74.00	-12.81	54.03	7.89	33.74	34.47	249	276	Peak	VERTICAL
4	5470.00	48.97	54.00	-5.03	41.78	7.90	33.76	34.47	249	276	Average	VERTICAL
5	5575.00	108.55			101.09	7.94	34.00	34.48	249	276	Average	VERTICAL
6	5576.00	119.01			111.50	7.94	34.05	34.48	249	276	Peak	VERTICAL
7	5727.00	48.06	54.00	-5.94	40.21	7.87	34.50	34.52	249	276	Average	VERTICAL
8	5734.00	61.37	74.00	-12.63	53.52	7.87	34.50	34.52	249	276	Peak	VERTICAL

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

Channel 140

	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	5704.40	112.75			104.97	7.89	34.40	34.51	235	291	Peak	VERTICAL
2	5706.00	102.52			94.70	7.88	34.45	34.51	235	291	Average	VERTICAL
3	5725.00	53.49	54.00	-0.51	45.63	7.87	34.50	34.51	235	291	Average	VERTICAL
4	5726.00	69.81	74.00	-4.19	61.95	7.87	34.50	34.51	235	291	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016		

Channel 54

	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	5266.00	114.65			107.71	7.93	33.48	34.47	254	281	Peak	VERTICAL
2	5285.00	105.53			98.58	7.92	33.50	34.47	254	281	Average	VERTICAL
3	5350.00	53.74	54.00	-0.26	46.73	7.89	33.59	34.47	254	281	Average	VERTICAL
4	5365.00	66.31	74.00	-7.69	59.29	7.88	33.61	34.47	254	281	Peak	VERTICAL

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

Channel 62

	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	5314.00	112.51			105.52	7.91	33.55	34.47	246	277	Peak	VERTICAL
2	5315.00	101.36			94.37	7.91	33.55	34.47	246	277	Average	VERTICAL
3	5350.00	66.65	74.00	-7.35	59.64	7.89	33.59	34.47	246	277	Peak	VERTICAL
4	5351.00	53.63	54.00	-0.37	46.62	7.89	33.59	34.47	246	277	Average	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110, 134 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016		

Channel 102

	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	5452.00	48.42	54.00	-5.58	41.26	7.89	33.74	34.47	192	313	Average	HORIZONTAL
2	5455.00	60.39	74.00	-13.61	53.23	7.89	33.74	34.47	192	313	Peak	HORIZONTAL
3	5469.00	67.54	74.00	-6.46	60.35	7.90	33.76	34.47	192	313	Peak	HORIZONTAL
4	5470.00	53.97	54.00	-0.03	46.78	7.90	33.76	34.47	192	313	Average	HORIZONTAL
5	5511.00	95.76			88.52	7.91	33.80	34.47	192	313	Average	HORIZONTAL
6	5512.00	105.22			97.92	7.92	33.85	34.47	192	313	Peak	HORIZONTAL

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

Channel 110

	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	5453.00	64.74	74.00	-9.26	57.58	7.89	33.74	34.47	253	288	Peak	VERTICAL
2	5455.00	51.44	54.00	-2.56	44.28	7.89	33.74	34.47	253	288	Average	VERTICAL
3	5470.00	68.49	74.00	-5.51	61.30	7.90	33.76	34.47	253	288	Peak	VERTICAL
4	5470.00	53.56	54.00	-0.44	46.37	7.90	33.76	34.47	253	288	Average	VERTICAL
5	5552.00	114.35			106.95	7.93	33.95	34.48	253	288	Peak	VERTICAL
6	5553.00	104.83			97.43	7.93	33.95	34.48	253	288	Average	VERTICAL

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

Channel 134

	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	5661.00	109.87			102.16	7.91	34.30	34.50	263	298	Peak	VERTICAL
2	5662.00	101.26			93.55	7.91	34.30	34.50	263	298	Average	VERTICAL
3	5725.00	65.08	74.00	-8.92	57.22	7.87	34.50	34.51	263	298	Peak	VERTICAL
4	5725.00	53.53	54.00	-0.47	45.67	7.87	34.50	34.51	263	298	Average	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016		

Channel 58

	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	5145.00	58.82	74.00	-15.18	52.08	7.90	33.31	34.47	249	282	Peak	VERTICAL
2	5149.00	47.35	54.00	-6.65	40.61	7.90	33.31	34.47	249	282	Average	VERTICAL
3	5299.00	105.97			99.01	7.91	33.52	34.47	249	282	Peak	VERTICAL
4	5325.00	95.40			88.40	7.90	33.57	34.47	249	282	Average	VERTICAL
5	5350.00	68.97	74.00	-5.03	61.96	7.89	33.59	34.47	249	282	Peak	VERTICAL
6	5350.00	53.54	54.00	-0.46	46.53	7.89	33.59	34.47	249	282	Average	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106, 122 / Ant. 3 + Ant. 4
Test Date	Jul. 15, 2016~Jul. 16, 2016		

Channel 106

	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	5454.00	65.83	74.00	-8.17	58.67	7.89	33.74	34.47	256	280	Peak	VERTICAL
2	5455.00	53.71	54.00	-0.29	46.55	7.89	33.74	34.47	256	280	Average	VERTICAL
3	5470.00	68.31	74.00	-5.69	61.12	7.90	33.76	34.47	256	280	Peak	VERTICAL
4	5470.00	53.35	54.00	-0.65	46.16	7.90	33.76	34.47	256	280	Average	VERTICAL
5	5515.00	95.67			88.37	7.92	33.85	34.47	256	280	Average	VERTICAL
6	5517.00	105.75			98.45	7.92	33.85	34.47	256	280	Peak	VERTICAL
7	5725.00	48.20	54.00	-5.80	40.34	7.87	34.50	34.51	256	280	Average	VERTICAL
8	5728.00	60.42	74.00	-13.58	52.57	7.87	34.50	34.52	256	280	Peak	VERTICAL

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

Channel 122

	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	5673.00	98.64			90.90	7.90	34.35	34.51	254	285	Average
2	5676.00	109.60			101.86	7.90	34.35	34.51	254	285	Peak
3	5851.00	68.79	74.00	-5.21	60.68	7.80	34.85	34.54	254	285	Peak
4	5852.00	53.06	54.00	-0.94	44.95	7.80	34.85	34.54	254	285	Average

Item 1, 2 are the fundamental frequency at 5610 MHz.

Straddle Channel

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 144 / Ant. 3 + Ant. 4
Test Date	Aug. 09, 2016~Aug. 10, 2016		

Channel 144 (UNII 2C)

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamplifier Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5458.80	60.38	74.00	-13.62	53.18	8.33	31.75	32.88	283	291	Peak	VERTICAL
2	5460.00	47.06	54.00	-6.94	39.86	8.33	31.75	32.88	283	291	Average	VERTICAL
3	5470.00	47.28	54.00	-6.72	40.05	8.33	31.77	32.87	283	291	Average	VERTICAL
4	5470.00	59.39	74.00	-14.61	52.16	8.33	31.77	32.87	283	291	Peak	VERTICAL
5	5712.80	106.70			98.71	8.82	32.06	32.89	283	291	Average	VERTICAL
6	5723.60	116.71			108.62	8.90	32.08	32.89	283	291	Peak	VERTICAL
7	5850.00	48.10	54.00	-5.90	39.81	8.98	32.22	32.91	283	291	Average	VERTICAL
8	5850.00	59.64	74.00	-14.36	51.35	8.98	32.22	32.91	283	291	Peak	VERTICAL

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

Channel 144 (UNII 3)

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamplifier Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5712.80	106.70			98.71	8.82	32.06	32.89	283	291	Average	VERTICAL
2	5723.60	116.71			108.62	8.90	32.08	32.89	283	291	Peak	VERTICAL
3	5937.20	62.27	68.20	-5.93	54.22	8.64	32.32	32.91	283	291	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 / Ant. 3 + Ant. 4
Test Date	Aug. 09, 2016~Aug. 10, 2016		

Channel 144 (UNII 2C)

	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	5458.80	59.39	74.00	-14.61	52.19	8.33	31.75	32.88	280	282 Peak	VERTICAL
2	5460.00	46.82	54.00	-7.18	39.62	8.33	31.75	32.88	280	282 Average	VERTICAL
3	5465.20	59.90	74.00	-14.10	52.68	8.33	31.77	32.88	280	282 Peak	VERTICAL
4	5470.00	47.00	54.00	-7.00	39.77	8.33	31.77	32.87	280	282 Average	VERTICAL
5 0	5714.00	105.89			97.90	8.82	32.06	32.89	280	282 Average	VERTICAL
6 0	5715.20	116.29			108.30	8.82	32.06	32.89	280	282 Peak	VERTICAL
7	5850.00	47.76	54.00	-6.24	39.47	8.98	32.22	32.91	280	282 Average	VERTICAL
8	5850.00	59.79	74.00	-14.21	51.50	8.98	32.22	32.91	280	282 Peak	VERTICAL

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

Channel 144 (UNII 3)

	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	5714.00	105.89			97.90	8.82	32.06	32.89	280	282 Average	VERTICAL
2 0	5715.20	116.29			108.30	8.82	32.06	32.89	280	282 Peak	VERTICAL
3	5934.80	60.79	68.20	-7.41	52.74	8.64	32.32	32.91	280	282 Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / Ant. 3 + Ant. 4
Test Date	Aug. 09, 2016~Aug. 10, 2016		

Channel 142 (UNII 2C)

	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	5442.40	61.19	74.00	-12.81	53.99	8.34	31.74	32.88	250	297 Peak	VERTICAL
2	5460.00	48.76	54.00	-5.24	41.56	8.33	31.75	32.88	250	297 Average	VERTICAL
3	5470.00	48.66	54.00	-5.34	41.43	8.33	31.77	32.87	250	297 Average	VERTICAL
4	5470.00	58.83	74.00	-15.17	51.60	8.33	31.77	32.87	250	297 Peak	VERTICAL
5 0	5701.60	113.32			105.42	8.75	32.04	32.89	250	297 Peak	VERTICAL
6 0	5704.00	104.22			96.32	8.75	32.04	32.89	250	297 Average	VERTICAL
7	5850.00	53.54	54.00	-0.46	45.25	8.98	32.22	32.91	250	297 Average	VERTICAL
8	5854.00	68.50	74.00	-5.50	60.21	8.98	32.22	32.91	250	297 Peak	VERTICAL

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

Channel 142 (UNII 3)

	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	5701.60	113.32			105.42	8.75	32.04	32.89	250	297 Peak	VERTICAL
2	5704.00	104.22			96.32	8.75	32.04	32.89	250	297 Average	VERTICAL
3	5960.80	61.44	68.20	-6.76	53.49	8.51	32.36	32.92	250	297 Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 / Ant. 3 + Ant. 4
Test Date	Aug. 09, 2016~Aug. 10, 2016		

Channel 138 (UNII 2C)

	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	5432.00	47.50	54.00	-6.50	40.32	8.34	31.72	32.88	320	270 Average	VERTICAL
2	5439.20	60.58	74.00	-13.42	53.38	8.34	31.74	32.88	320	270 Peak	VERTICAL
3	5470.00	47.70	54.00	-6.30	40.47	8.33	31.77	32.87	320	270 Average	VERTICAL
4	5470.00	61.94	74.00	-12.06	54.71	8.33	31.77	32.87	320	270 Peak	VERTICAL
5 0	5673.20	98.67			90.86	8.68	32.02	32.89	320	270 Average	VERTICAL
6 0	5675.60	109.60			101.79	8.68	32.02	32.89	320	270 Peak	VERTICAL
7	5852.00	53.59	54.00	-0.41	45.30	8.98	32.22	32.91	320	270 Average	VERTICAL
8	5853.20	68.87	74.00	-5.13	60.58	8.98	32.22	32.91	320	270 Peak	VERTICAL

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

Channel 138 (UNII 3)

	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	5668.40	94.26			86.55	8.60	32.00	32.89	175	63 Average	HORIZONTAL
2 0	5679.20	107.27			99.46	8.68	32.02	32.89	175	63 Peak	HORIZONTAL
3	5954.40	61.56	68.20	-6.64	53.55	8.58	32.34	32.91	175	63 Peak	HORIZONTAL

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

Note:

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

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

4.7. Frequency Stability Measurement

4.7.1. Limit

In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

4.7.2. Measuring Instruments and Setting

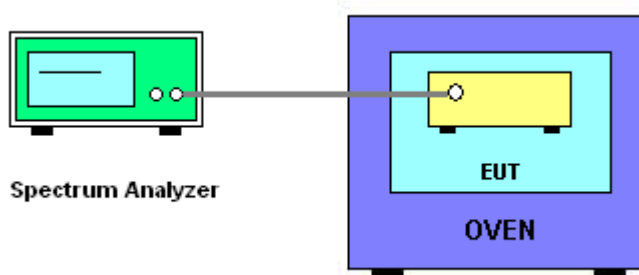
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RBW	10 kHz
VBW	10 kHz
Sweep Time	Auto

4.7.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6$ ppm and the limit is less than ± 20 ppm (IEEE 802.11n specification).
6. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
7. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
8. Extreme temperature is $0^\circ\text{C} \sim 45^\circ\text{C}$.

4.7.4. Test Setup Layout





4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

4.7.7. Test Result of Frequency Stability

Temperature	24°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Jul. 20, 2016~Jul. 28, 2016

Mode: 20 MHz / Ant. 3

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5300 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5299.9964	5299.9961	5299.9951	5299.9950
110.00	5299.9963	5299.9960	5299.9956	5299.9946
93.50	5299.9953	5299.9948	5299.9944	5299.9943
Max. Deviation (MHz)	0.0047	0.0052	0.0056	0.0057
Max. Deviation (ppm)	0.88	0.98	1.05	1.07
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5300 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5299.9948	5299.9942	5299.9932	5299.9928
10	5299.9962	5299.9952	5299.9943	5299.9939
20	5299.9963	5299.9954	5299.9951	5299.9944
30	5299.9968	5299.9963	5299.9961	5299.9958
40	5299.9977	5299.9968	5299.9966	5299.9962
45	5299.9990	5299.9983	5299.9974	5299.9967
Max. Deviation (MHz)	0.0052	0.0058	0.0068	0.0072
Max. Deviation (ppm)	0.98	1.09	1.28	1.36
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5580 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5579.9972	5579.9969	5579.9965	5579.9955
110.00	5579.9963	5579.9954	5579.9947	5579.9941
93.50	5579.9953	5579.9950	5579.9949	5579.9946
Max. Deviation (MHz)	0.0047	0.0050	0.0053	0.0059
Max. Deviation (ppm)	0.84	0.89	0.95	1.06
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5580 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5579.9942	5579.9941	5579.9939	5579.9937
10	5579.9947	5579.9940	5579.9933	5579.9928
20	5579.9963	5579.9955	5579.9946	5579.9939
30	5579.9968	5579.9958	5579.9950	5579.9943
40	5579.9984	5579.9981	5579.9980	5579.9979
45	5579.9998	5579.9989	5579.9985	5579.9981
Max. Deviation (MHz)	0.0058	0.0060	0.0067	0.0072
Max. Deviation (ppm)	1.04	1.07	1.20	1.29
Result	Complies			

Mode: 40 MHz / Ant. 3

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5310 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5309.9971	5309.9964	5309.9961	5309.9951
110.00	5309.9963	5309.9960	5309.9955	5309.9953
93.50	5309.9953	5309.9947	5309.9946	5309.9942
Max. Deviation (MHz)	0.0047	0.0053	0.0054	0.0058
Max. Deviation (ppm)	0.88	1.00	1.02	1.09
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5310 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5309.9931	5309.9924	5309.9921	5309.9918
10	5309.9946	5309.9945	5309.9938	5309.9928
20	5309.9963	5309.9958	5309.9949	5309.9946
30	5309.9968	5309.9960	5309.9953	5309.9943
40	5309.9983	5309.9978	5309.9969	5309.9963
45	5309.9999	5309.9990	5309.9985	5309.9979
Max. Deviation (MHz)	0.0069	0.0076	0.0079	0.0082
Max. Deviation (ppm)	1.30	1.43	1.49	1.54
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5550 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5549.9971	5549.9967	5549.9957	5549.9954
110.00	5549.9963	5549.9960	5549.9953	5549.9949
93.50	5549.9957	5549.9954	5549.9944	5549.9937
Max. Deviation (MHz)	0.0043	0.0046	0.0056	0.0063
Max. Deviation (ppm)	0.77	0.83	1.01	1.13
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5550 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5549.9929	5549.9927	5549.9920	5549.9914
10	5549.9949	5549.9945	5549.9942	5549.9941
20	5549.9963	5549.9958	5549.9957	5549.9955
30	5549.9968	5549.9963	5549.9962	5549.9953
40	5549.9975	5549.9967	5549.9960	5549.9951
45	5549.9981	5549.9980	5549.9978	5549.9975
Max. Deviation (MHz)	0.0071	0.0073	0.0080	0.0086
Max. Deviation (ppm)	1.28	1.31	1.44	1.55
Result	Complies			

Mode: 80 MHz / Ant. 3

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5290 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5289.9971	5289.9963	5289.9958	5289.9948
110.00	5289.9963	5289.9961	5289.9957	5289.9954
93.50	5289.9954	5289.9950	5289.9941	5289.9937
Max. Deviation (MHz)	0.0046	0.0050	0.0059	0.0063
Max. Deviation (ppm)	0.87	0.94	1.11	1.19
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5290 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5289.9955	5289.9953	5289.9948	5289.9939
10	5289.9958	5289.9950	5289.9942	5289.9937
20	5289.9963	5289.9954	5289.9945	5289.9944
30	5289.9968	5289.9961	5289.9957	5289.9947
40	5289.9974	5289.9964	5289.9960	5289.9956
45	5289.9989	5289.9982	5289.9975	5289.9971
Max. Deviation (MHz)	0.0045	0.0050	0.0058	0.0063
Max. Deviation (ppm)	0.85	0.94	1.09	1.19
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5530 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5529.9966	5529.9957	5529.9950	5529.9944
110.00	5529.9963	5529.9958	5529.9953	5529.9944
93.50	5529.9954	5529.9946	5529.9938	5529.9933
Max. Deviation (MHz)	0.0046	0.0054	0.0062	0.0067
Max. Deviation (ppm)	0.83	0.97	1.12	1.21
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5530 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5529.9926	5529.9920	5529.9918	5529.9910
10	5529.9945	5529.9943	5529.9936	5529.9934
20	5529.9963	5529.9954	5529.9953	5529.9944
30	5529.9968	5529.9966	5529.9963	5529.9960
40	5529.9975	5529.9970	5529.9962	5529.9953
45	5529.9980	5529.9974	5529.9966	5529.9960
Max. Deviation (MHz)	0.0074	0.0080	0.0082	0.0074
Max. Deviation (ppm)	1.34	1.44	1.48	1.34
Result	Complies			

4.8. Antenna Requirements

4.8.1. 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. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.8.2. Antenna Connector Construction

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

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-10-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

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

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
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%