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FCC RADIO TEST REPORT

Applicant's company	**Amped Wireless**
Applicant Address	13089 Peyton Dr. #C307 Chino Hills, CA 91709 USA
FCC ID	**ZTT-RE2600M**
Manufacturer's company	**Amped Wireless**
Manufacturer Address	13089 Peyton Dr. #C307 Chino Hills, CA 91709 USA

Product Name	High Power AC2600 Wi-Fi Range Extender with MU-MIMO
Brand Name	amped wireless
Model No.	RE2600M
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Mar. 14, 2016
Final Test Date	Mar. 22, 2016
Submission Type	Original Equipment

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 v01r01, KDB662911 D01 v02r01, KDB644545 D03 v01.**

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

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR631722AB	Rev. 01	Initial issue of report	Apr. 06, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	High Power AC2600 Wi-Fi Range Extender with MU-MIMO
Brand Name	:	amped wireless
Model No.	:	RE2600M
Applicant	:	Amped Wireless
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 Mar. 14, 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**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	11.34 dB
4.2	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies	-
4.3	15.407(e)	6dB Spectrum Bandwidth	Complies	-
4.4	15.407(a)	Maximum Conducted Output Power	Complies	0.69 dB
4.5	15.407(a)	Power Spectral Density	Complies	0.10 dB
4.6	15.407(b)	Radiated Emissions	Complies	0.04 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.02 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (4TX, 4RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	IEEE 802.11a: 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	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Channel Number	9 for 20MHz bandwidth ; 4 for 40MHz bandwidth 2 for 80MHz bandwidth
Channel Band Width (99%)	**<For Non-Beamforming Mode>** Band 1: IEEE 802.11a: 16.93 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.96 MHz Band 4: IEEE 802.11a: 17.45 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.15 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.05 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.54 MHz **<For Beamforming Mode>** Band 1: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.19 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.25 MHz Band 4: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.45 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.61 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz

Maximum Conducted Output Power	**<For Non-Beamforming Mode>** Band 1: IEEE 802.11a: 26.00 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 25.98 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 27.98 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 25.41 dBm Band 4: IEEE 802.11a: 24.65 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 25.59 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.96 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 24.87 dBm **<For Beamforming Mode>** Band 1: IEEE 802.11ac MCS0/Nss1 (VHT20): 25.29 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 24.26 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 22.00 dBm Band 4: IEEE 802.11ac MCS0/Nss1 (VHT20): 22.82 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.81 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 21.14 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
Beamforming Function	☒ With beamforming	☐ Without beamforming
Operate Condition	☒ Indoor	☐ Outdoor

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

Antenna and Band width

Antenna	Four (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)	4	MCS 0-31
802.11n (HT40)	4	MCS 0-31
802.11ac (VHT20)	4	MCS 0-9/Nss1-4
802.11ac (VHT40)	4	MCS 0-9/Nss1-4
802.11ac (VHT80)	4	MCS 0-9/Nss1-4

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

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

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

3.2. Accessories

Power	Brand	Model	Rating
Adapter 1	APD	WA-36A12FU	Input: 100-240V~50-60Hz 0.9A Output: 12V, 3A
Adapter 2	LEI	MU42-3120300-A1	Input: 100-240V~50/60Hz 1.5A Output: 12V, 3A

3.3. Table for Filed Antenna

Ant.	Brand	Model No.	Antenna Type	Connector	Gain (dBi)		Cable Loss (dB)		True Gain (dBi)	
					2.4GHz	5GHz	2.4GHz	5GHz	2.4GHz	5GHz
1	Airgain	ET2450DBKRPSMA2	Dipole Antenna	RPSMA	4.03	4.58	0.03	0.58	4	4
2	Airgain	ET2450DBKRPSMA2	Dipole Antenna	RPSMA	4.03	4.58	0.03	0.58	4	4
3	Airgain	ET2450DBKRPSMA2	Dipole Antenna	RPSMA	4.03	4.58	0.03	0.58	4	4
4	Airgain	ET2450DBKRPSMA2	Dipole Antenna	RPSMA	4.03	4.58	0.03	0.58	4	4

Note: The EUT has four antennas (4TX, 4RX).

<For 2.4GHz Function>

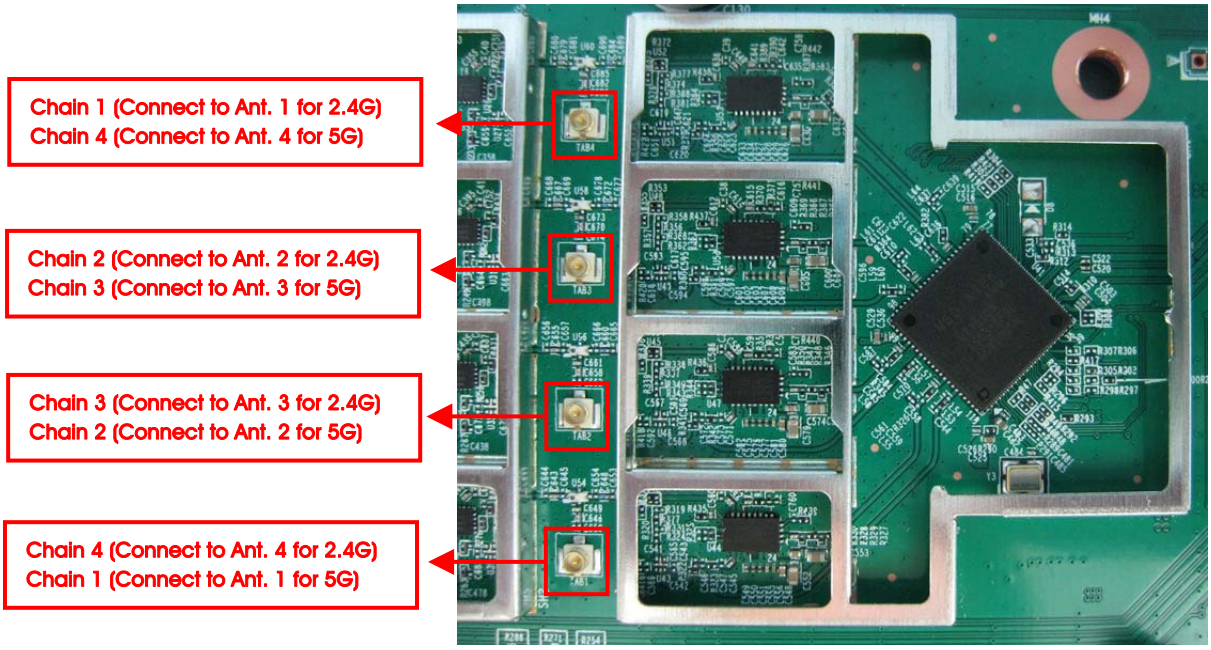
For IEEE 802.11b/g/n mode:

Chain 1, Chain 2, Chain 3 and Chain 4 can be used as transmitting/receiving antennas.

<For 5GHz Function>

For IEEE 802.11a/n/ac mode:

Chain 1, Chain 2, Chain 3 and Chain 4 can be used as transmitting/receiving antennas.



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 38, 46, 151, 159.

For 80MHz bandwidth systems, use Channel 42, 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz	-	-
5725~5850 MHz Band 4	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	Normal Link		-	-	-
Max. Conducted Output Power	<For Non-Beamforming Mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4
	<For Beamforming Mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4
Power Spectral Density	<For Non-Beamforming Mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4
	<For Beamforming Mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4

26dB Spectrum 'Bandwidth & 99% Occupied Bandwidth Measurement	<For Non-Beamforming Mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4
	<For Beamforming Mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4
6dB Spectrum Bandwidth Measurement	<For Non-Beamforming Mode>				
	11a/BPSK	Band 4	6Mbps	149/157/165	1+2+3+4
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	Band 4	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	Band 4	MCS0/Nss1	155	1+2+3+4
	<For Beamforming Mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4
Radiated Emission Below 1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	<For Non-Beamforming Mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4
	<For Beamforming Mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4

Band Edge Emission	<For Non-Beamforming Mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4
	<For Beamforming Mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3+4
Frequency Stability	20 MHz	Band 1&4	-	40/157	2
	40 MHz	Band 1&4	-	38/151	2
	80 MHz	Band 1&4	-	42/155	2

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

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

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. EUT in Z axis + Adapter 1

Mode 2. EUT in Z axis + Adapter 2

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

For Radiated Emission below 1GHz test:

Mode 1. EUT in Z axis + Adapter 1

Mode 2. EUT in Z axis + Adapter 2

Mode 1 is the worst case, so it was selected to record in this test report.

For Radiated Emission above1GHz test:

Mode 1. EUT in Z axis

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

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA631722) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	**Site Category**	**Location**	**FCC Designation No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	TW0006	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.7. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
Notebook*3	DELL	E6430	DoC
AP Router	Netgear	R7500	PY314300288
Flash disk	Transcend	604108 8255	DoC
Flash disk3.0	Transcend	JetFlash-700	DoC

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

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

Support Unit	Brand	Model	FCC ID
Notebook*3	DELL	E4300	DoC
AP Router	Netgear	R7500	PY314300288
Flash disk	Silicon Power	I-Series	DoC
Flash disk3.0	Transcend	JF700	DoC

For Test Site No: 03CH01-CB (For above 1GHz / For Non-Beamforming Mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

For Test Site No: 03CH01-CB (For above 1GHz / For Beamforming Mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
Notebook	DELL	E4300	DoC
RX Device	amped wireless	RE2600M	ZTT-RE2600M

3.8. Table for Parameters of Test Software Setting

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

<For Non-Beamforming Mode>

Test Software Version	MT7615 QA Version 0.0.1.67					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	17	19	1A	18	18	16
802.11ac MCS0/Nss1 VHT20	18	19	1B	19	18	16
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	17		17		1B	1C
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	15				15	

<For Beamforming Mode>

Test Software Version	DOS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11ac MCS0/Nss1 VHT20	16.5	19	20	14	16	12.5
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	12.5		19		17	18
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	16				14	

3.9. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN XP were executed.

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under DOS.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by RX Device and transmit duty cycle no less 98%

3.10. Duty Cycle

For non-beamforming mode:

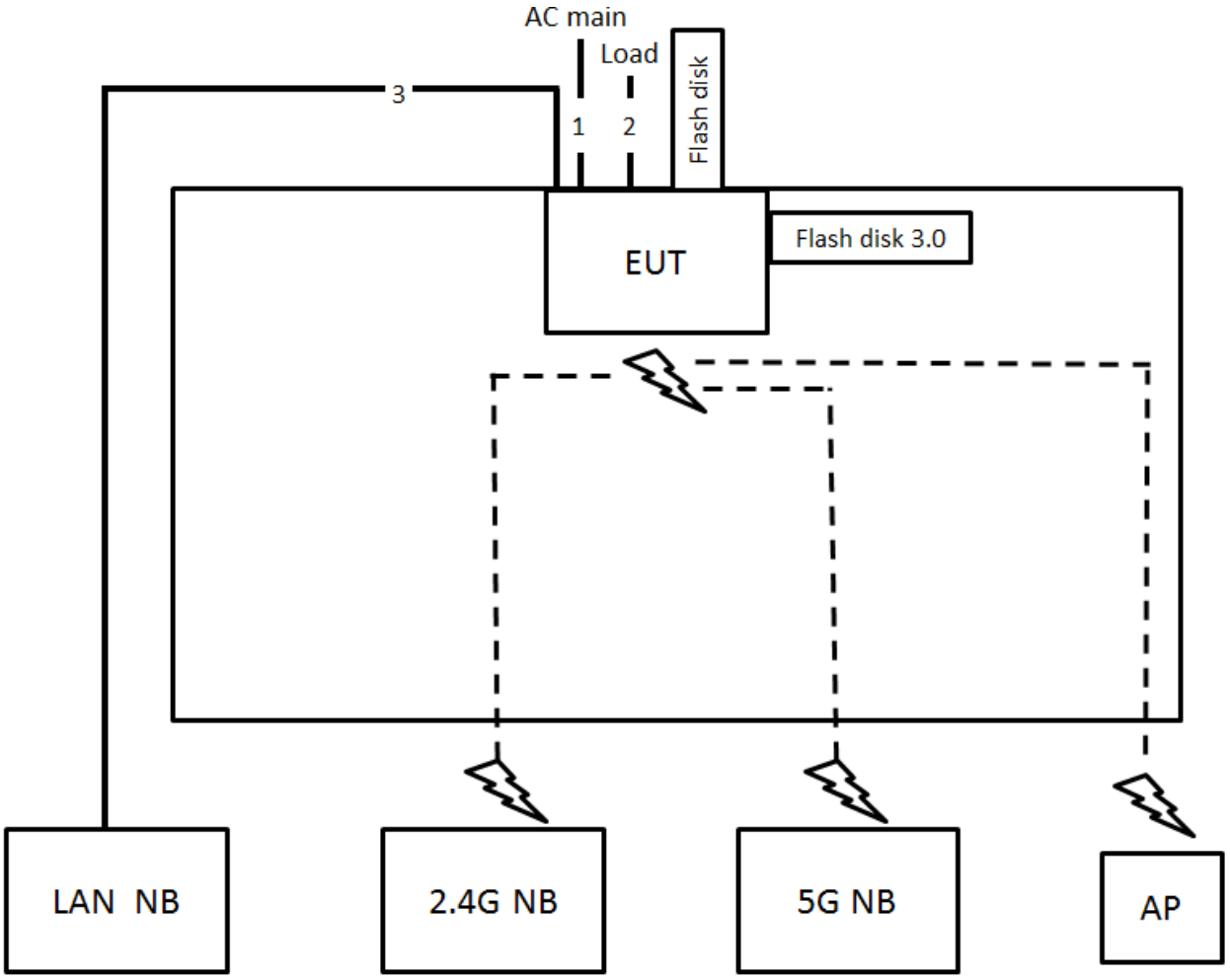
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	1.000	1.000	100	0.00	0.01
802.11ac MCS0/Nss1 VHT20	1.000	1.000	100	0.00	0.01
802.11ac MCS0/Nss1 VHT40	1.000	1.000	100	0.00	0.01
802.11ac MCS0/Nss1 VHT80	1.000	1.000	100	0.00	0.01

For beamforming mode:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	1.000	1.000	100	0.00	0.01
802.11ac MCS0/Nss1 VHT40	1.000	1.000	100	0.00	0.01
802.11ac MCS0/Nss1 VHT80	1.000	1.000	100	0.00	0.01

3.11. Test Configurations

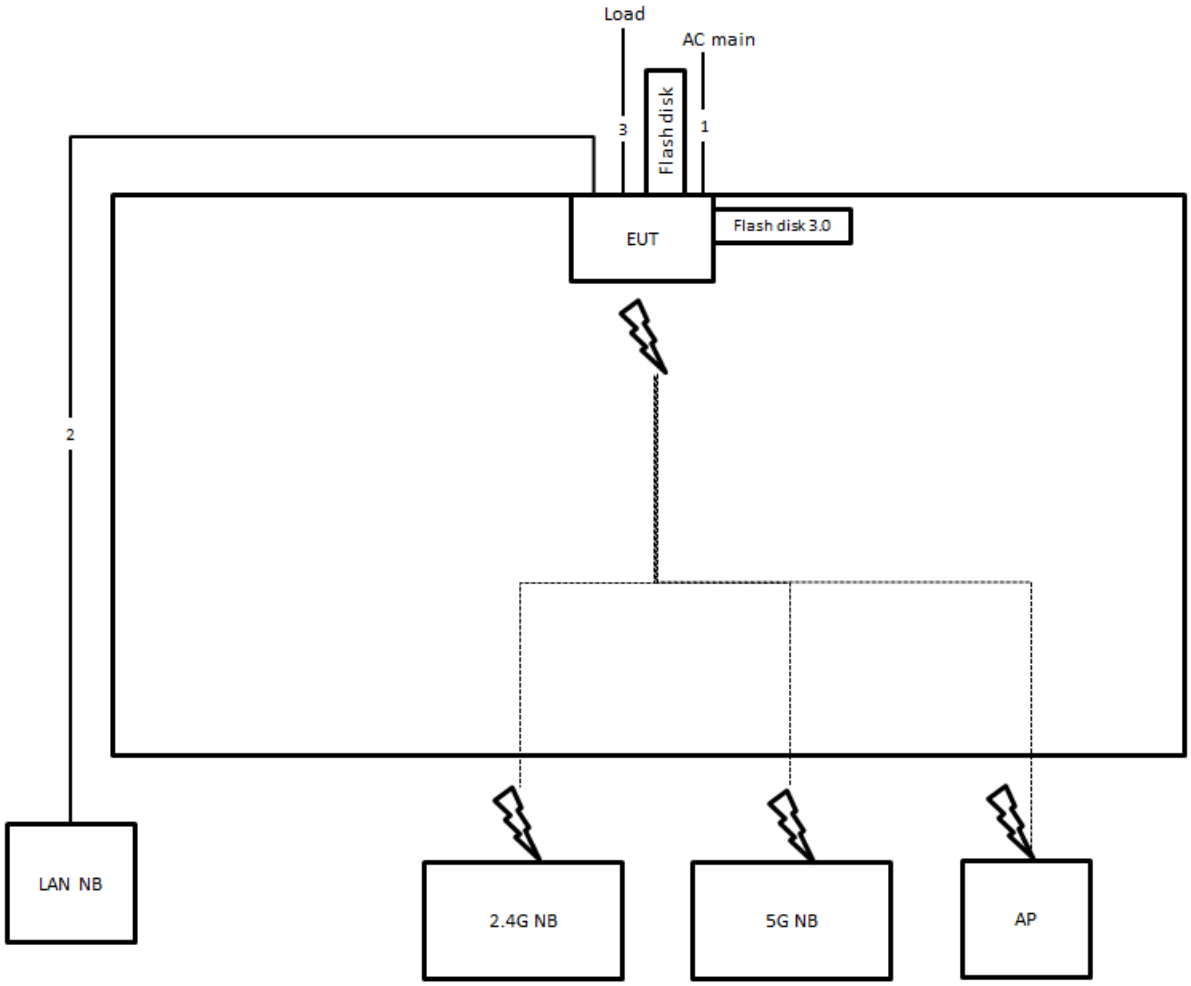
3.11.1. AC Power Line Conduction Emissions Test Configuration



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

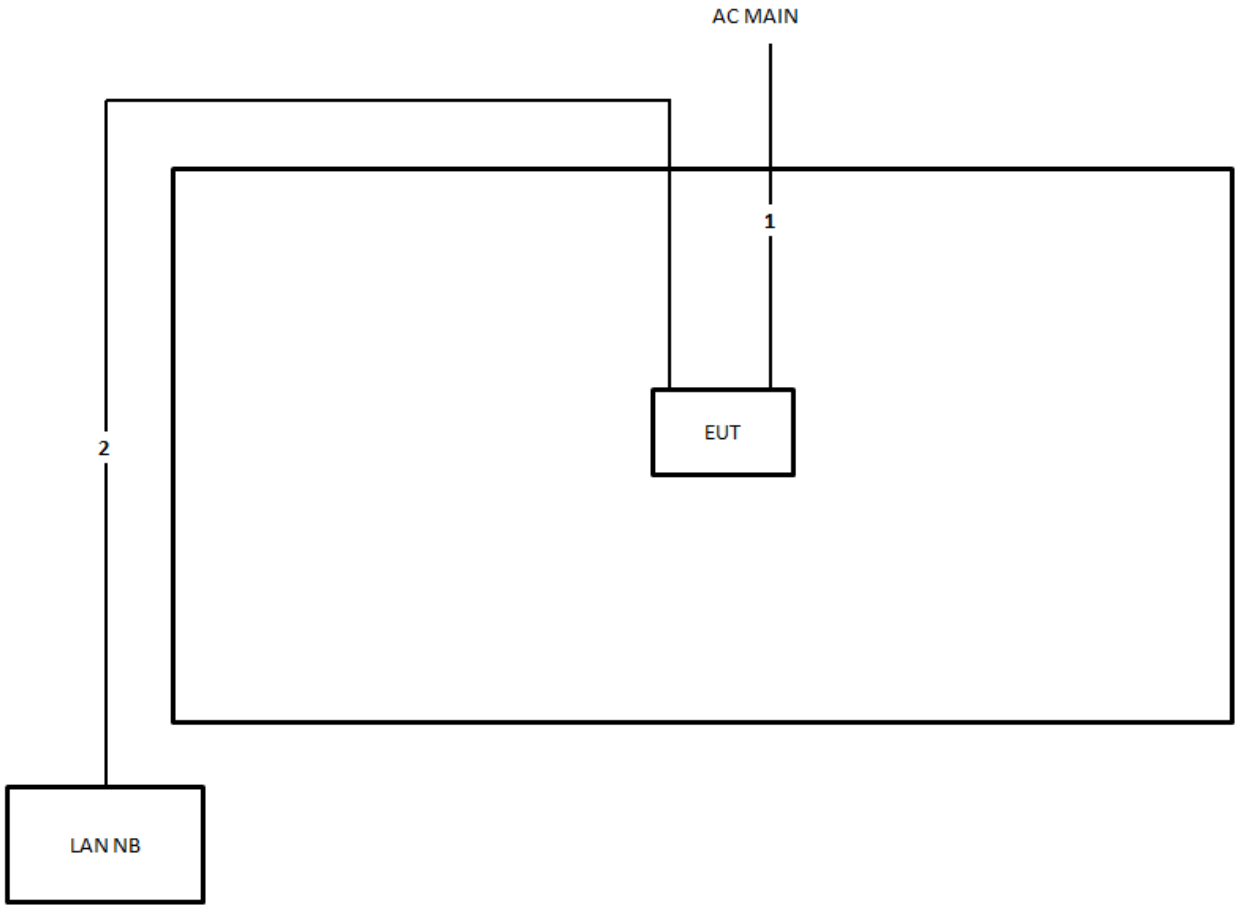
3.11.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz ~1GHz



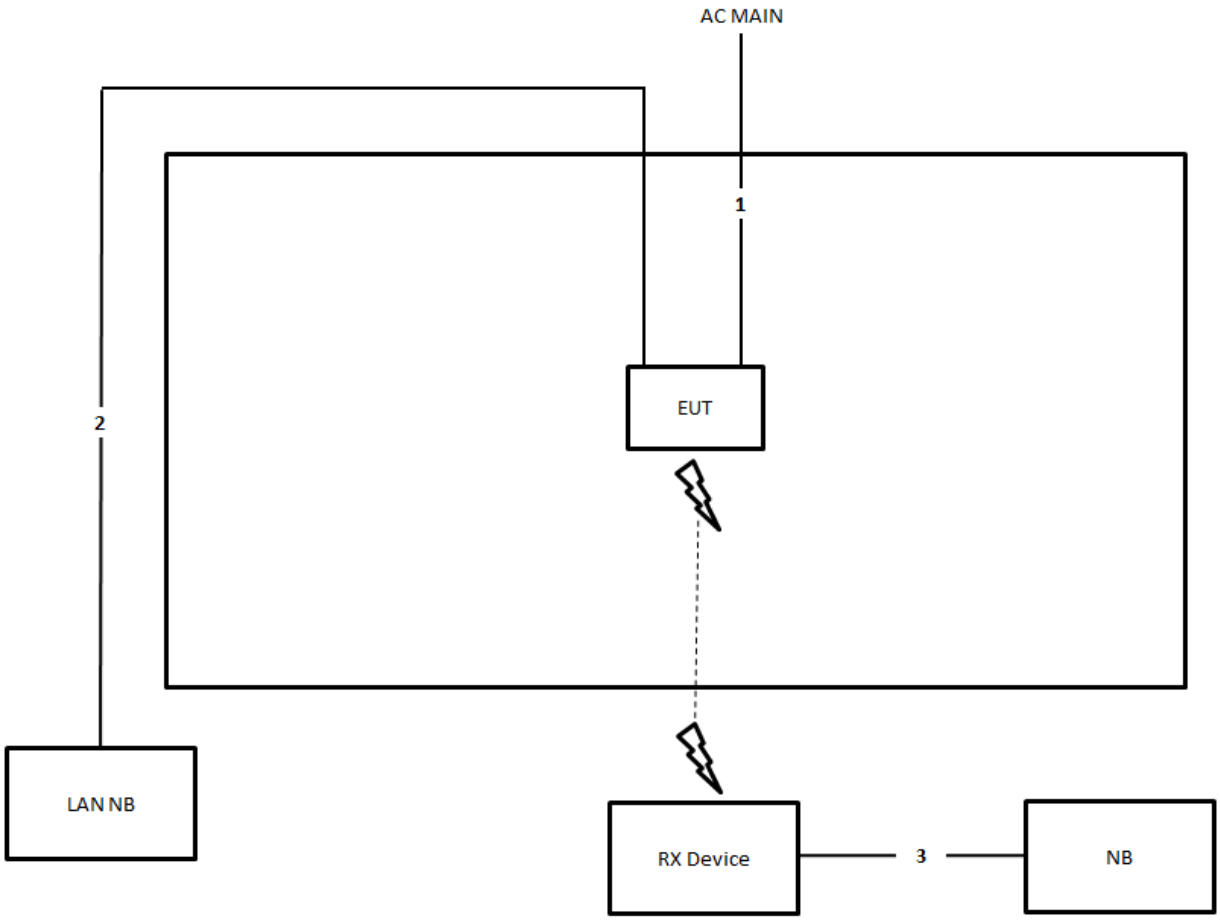
Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	10m
3	RJ-45 cable *3	No	1.5m

Test Configuration: above 1GHz / For Non-Beamforming Mode



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

Test Configuration: above 1GHz / For Beamforming Mode



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

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product that is designed to connect to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

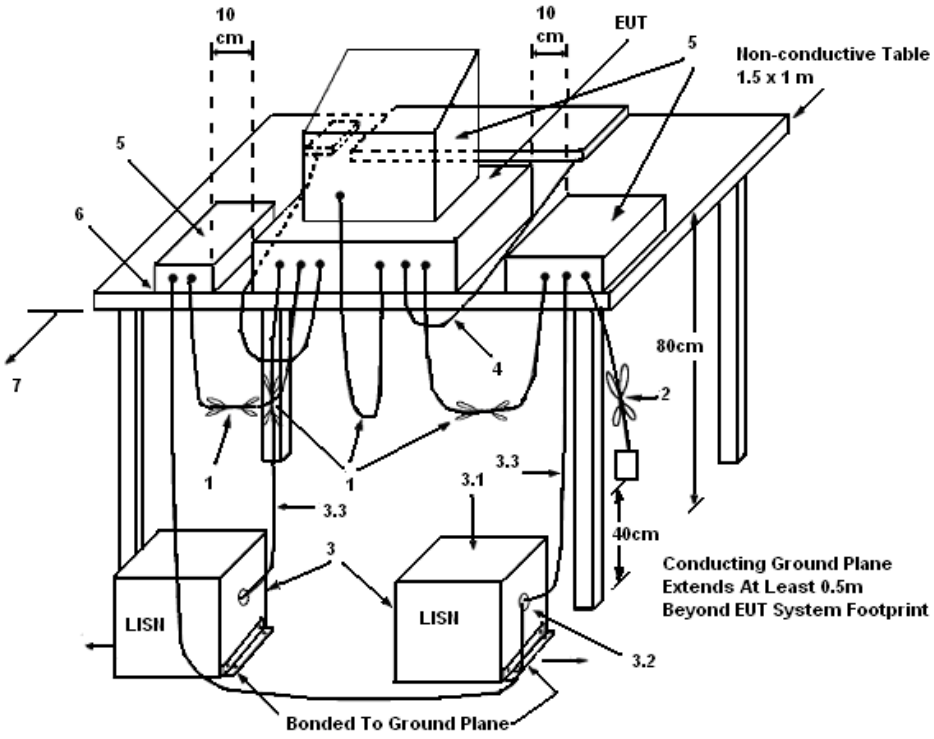
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

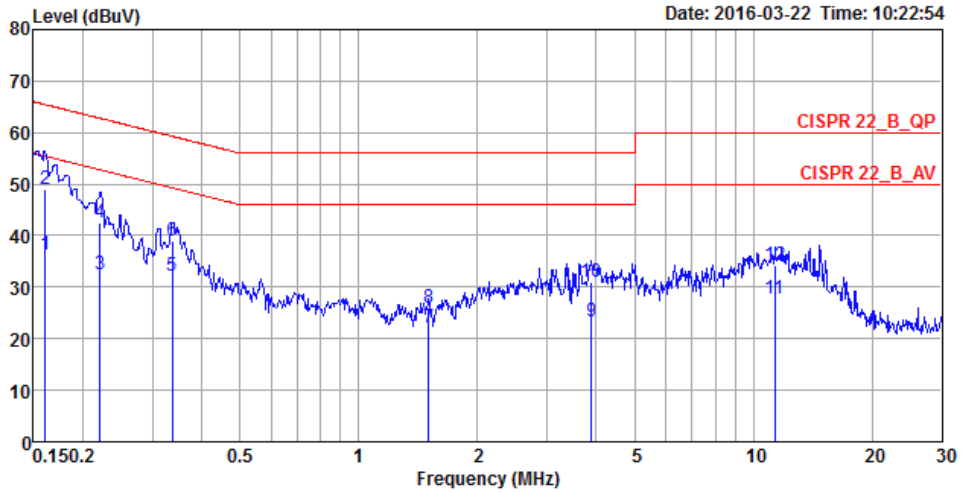
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

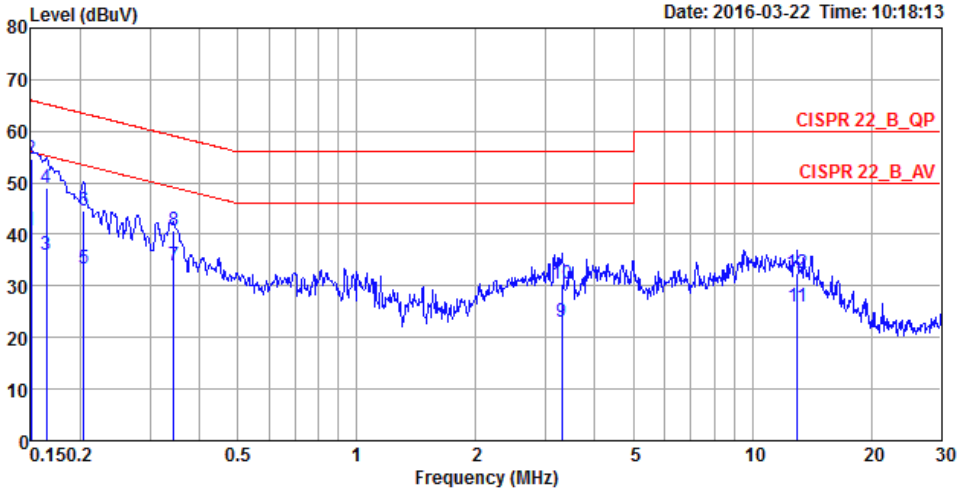
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	55%
Test Engineer	Da Deng	Phase	Line
Configuration	Normal Link	Test Mode	Mode 2



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Remark	Cable Loss	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		dB	
1	0.1607	36.36	-19.07	55.43	26.24	9.96	Average	0.16	LINE
2	0.1607	49.04	-16.39	65.43	38.92	9.96	QP	0.16	LINE
3	0.2208	32.48	-20.31	52.79	22.34	9.96	Average	0.18	LINE
4	0.2208	42.44	-20.35	62.79	32.30	9.96	QP	0.18	LINE
5	0.3374	32.11	-17.16	49.27	21.92	10.00	Average	0.19	LINE
6	0.3374	38.95	-20.32	59.27	28.76	10.00	QP	0.19	LINE
7	1.5033	22.24	-23.76	46.00	11.94	10.07	Average	0.23	LINE
8	1.5033	25.92	-30.08	56.00	15.62	10.07	QP	0.23	LINE
9	3.8808	23.27	-22.73	46.00	12.83	10.11	Average	0.33	LINE
10	3.8808	30.96	-25.04	56.00	20.52	10.11	QP	0.33	LINE
11	11.3170	27.65	-22.35	50.00	17.08	10.17	Average	0.40	LINE
12	11.3170	34.12	-25.88	60.00	23.55	10.17	QP	0.40	LINE

Temperature	24℃	Humidity	55%
Test Engineer	Da Deng	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 2



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Remark	Cable Loss	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		dB	
1	0.1500	40.66	-15.34	56.00	30.54	9.96	Average	0.16	NEUTRAL
2	0.1500	54.66	-11.34	66.00	44.54	9.96	QP	0.16	NEUTRAL
3	0.1641	36.04	-19.21	55.25	25.92	9.96	Average	0.16	NEUTRAL
4	0.1641	48.98	-16.27	65.25	38.86	9.96	QP	0.16	NEUTRAL
5	0.2040	33.26	-20.19	53.45	23.12	9.96	Average	0.18	NEUTRAL
6	0.2040	44.54	-18.91	63.45	34.40	9.96	QP	0.18	NEUTRAL
7	0.3446	33.93	-15.16	49.09	23.77	9.97	Average	0.19	NEUTRAL
8	0.3446	40.79	-18.30	59.09	30.63	9.97	QP	0.19	NEUTRAL
9	3.2930	23.11	-22.89	46.00	12.80	10.01	Average	0.30	NEUTRAL
10	3.2930	30.51	-25.49	56.00	20.20	10.01	QP	0.30	NEUTRAL
11	12.9885	25.97	-24.03	50.00	15.35	10.20	Average	0.42	NEUTRAL
12	12.9885	32.36	-27.64	60.00	21.74	10.20	QP	0.42	NEUTRAL

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the 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	≥ 3 x RBW
Detector	Peak
Trace	Max Hold

4.2.3. Test Procedures

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

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

4.2.4. Test Setup Layout

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

This test setup layout is the same as that shown in section 4.6.4.

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 26dB Bandwidth and 99% Occupied Bandwidth

Temperature	20°C	Humidity	55%
Test Engineer	Serway Li		

<For Non-Beamforming Mode>

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	19.91	16.93
	5200 MHz	19.04	16.32
	5240 MHz	19.13	15.89
	5745 MHz	19.74	16.24
	5785 MHz	20.00	16.32
	5825 MHz	20.44	17.45
802.11ac MCS0/Nss1 VHT20	5180 MHz	19.48	16.67
	5200 MHz	19.48	16.67
	5240 MHz	19.22	16.41
	5745 MHz	20.35	17.71
	5785 MHz	20.61	18.15
	5825 MHz	20.09	17.19
802.11ac MCS0/Nss1 VHT40	5190 MHz	40.87	36.32
	5230 MHz	41.16	36.32
	5755 MHz	40.87	36.61
	5795 MHz	41.88	37.05
802.11ac MCS0/Nss1 VHT80	5210 MHz	80.58	74.96
	5775 MHz	81.16	75.54

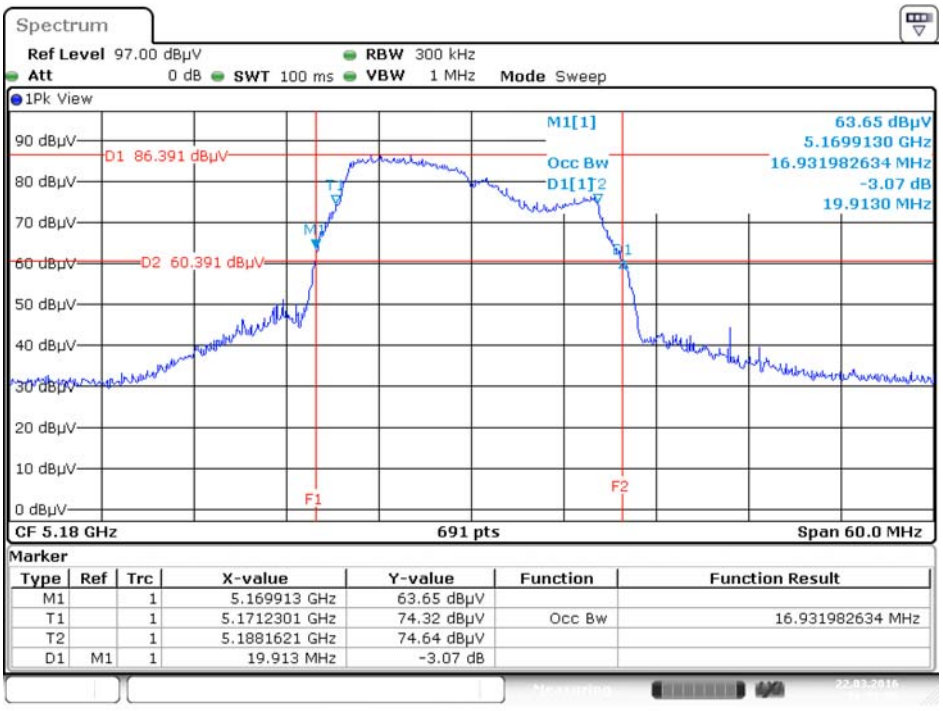
Temperature	20°C	Humidity	55%
Test Engineer	Serway Li		

<For Beamforming Mode>

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5180 MHz	19.74	17.19
	5200 MHz	19.22	16.76
	5240 MHz	19.57	17.02
	5745 MHz	20.17	17.45
	5785 MHz	20.00	17.37
	5825 MHz	19.91	17.19
802.11ac MCS0/Nss1 VHT40	5190 MHz	41.74	36.76
	5230 MHz	41.01	36.47
	5755 MHz	41.30	36.61
	5795 MHz	41.01	36.47
802.11ac MCS0/Nss1 VHT80	5210 MHz	80.58	75.25
	5775 MHz	81.16	76.12

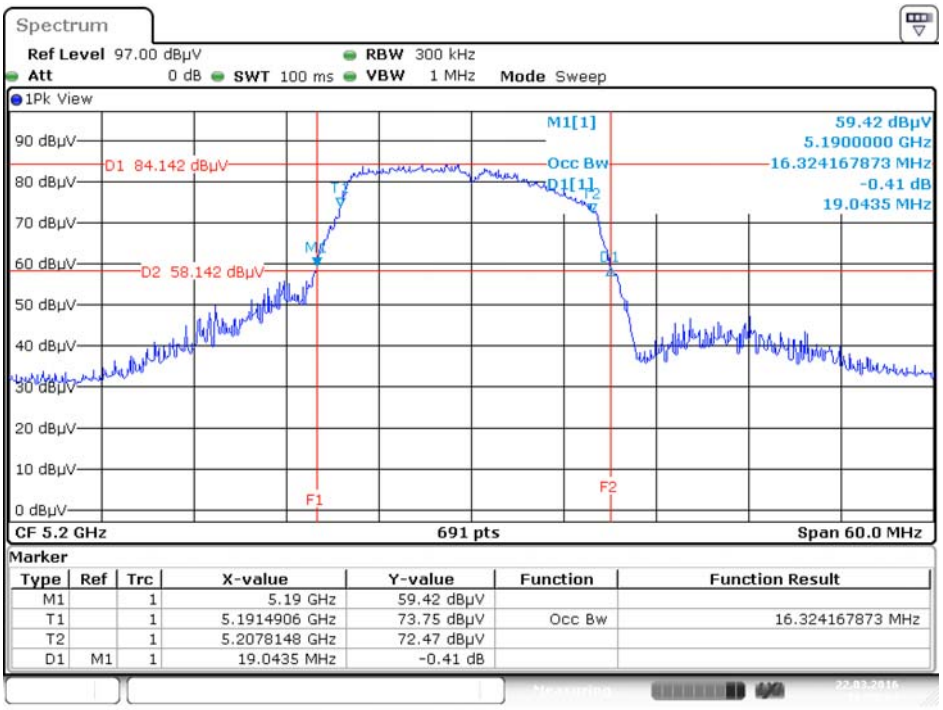
<For Non-Beamforming Mode>

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



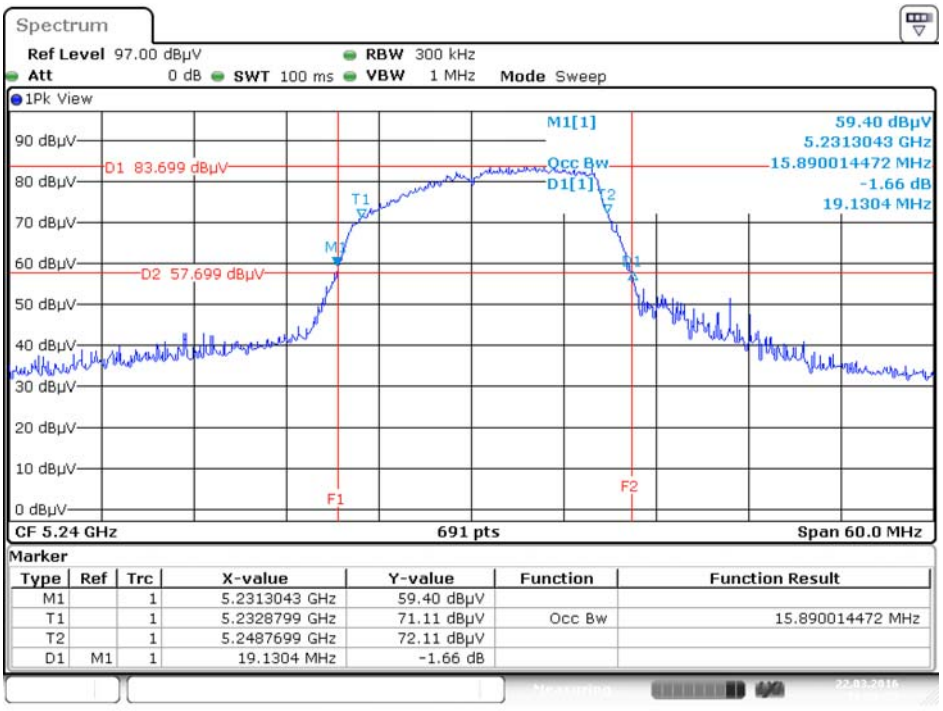
Date: 22.MAR.2016 16:51:55

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



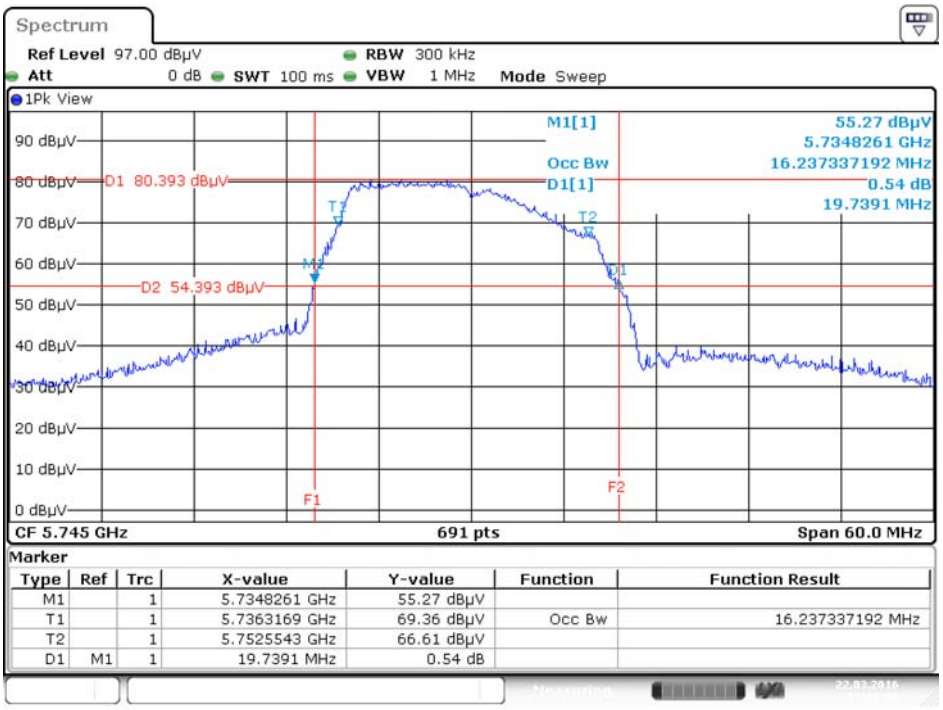
Date: 22.MAR.2016 16:55:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



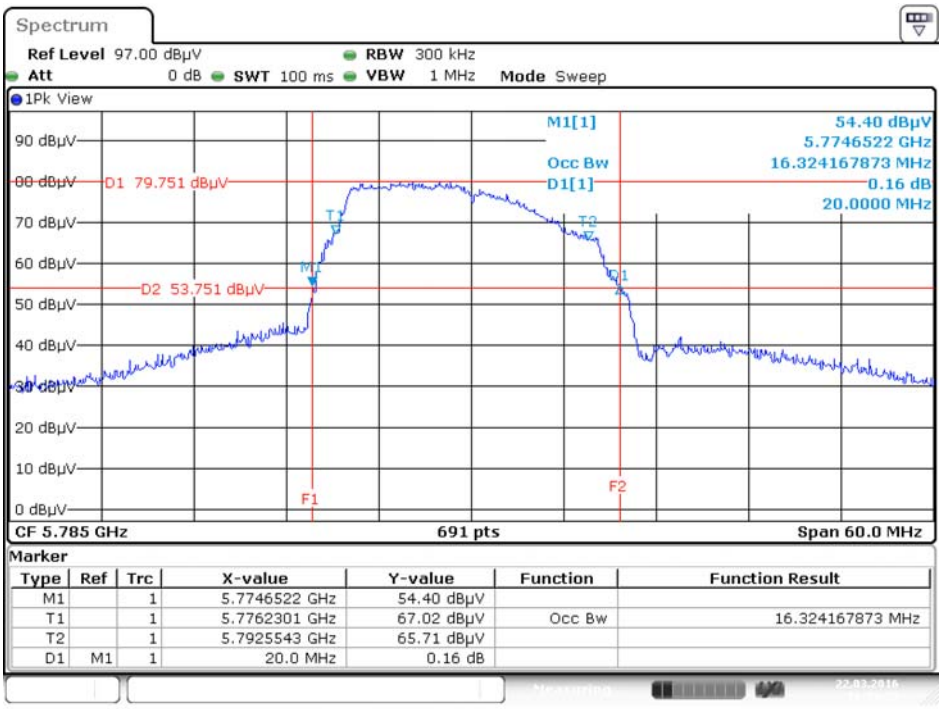
Date: 22.MAR.2016 16:56:23

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



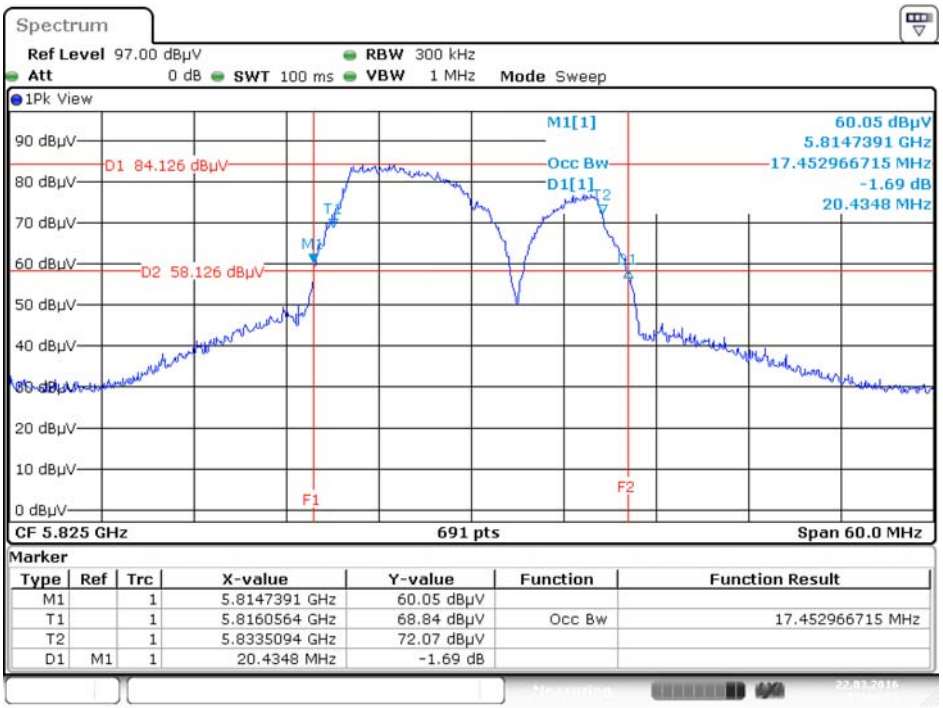
Date: 22.MAR.2016 17:01:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



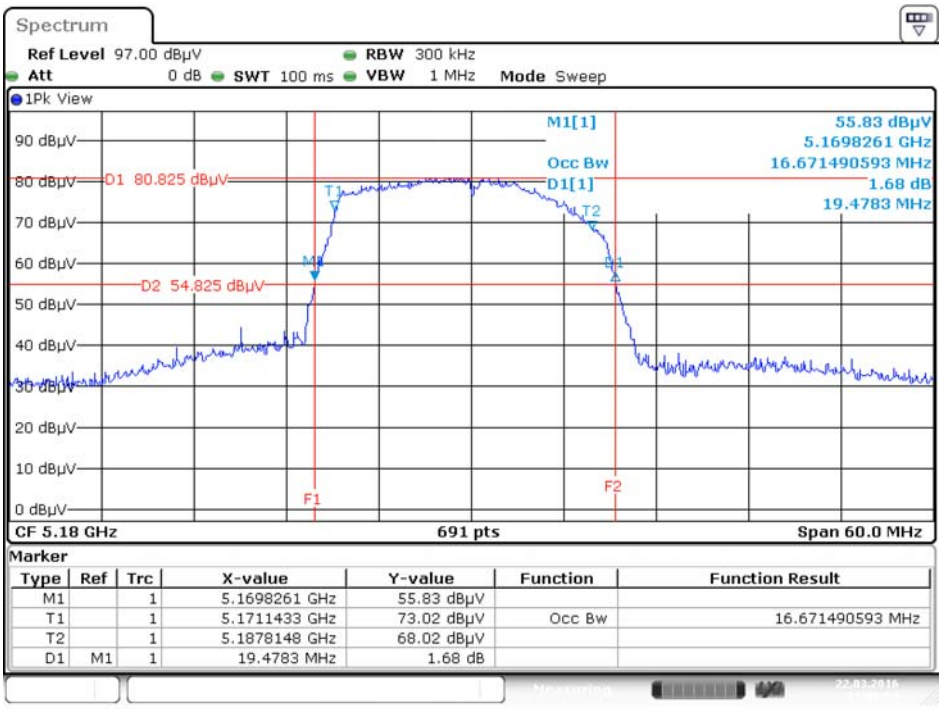
Date: 22.MAR.2016 16:59:23

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



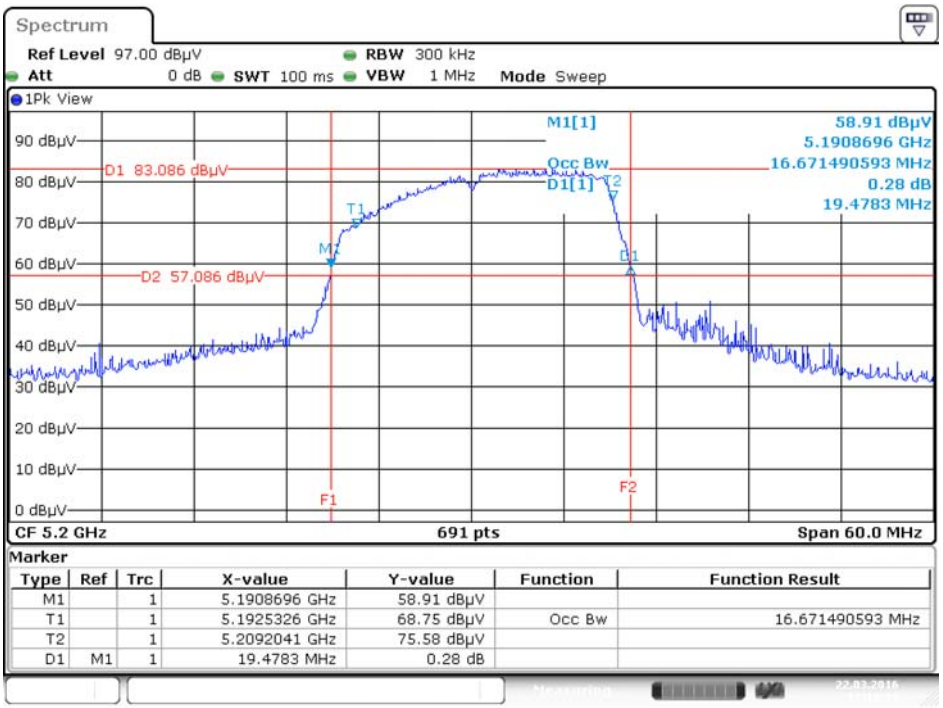
Date: 22.MAR.2016 17:04:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



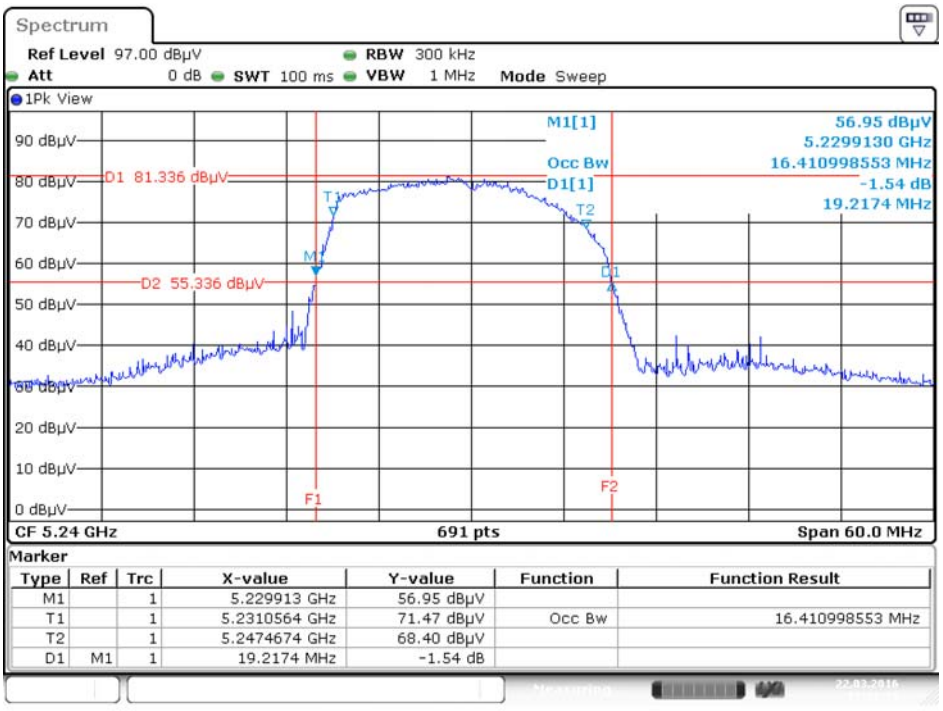
Date: 22.MAR.2016 17:08:55

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



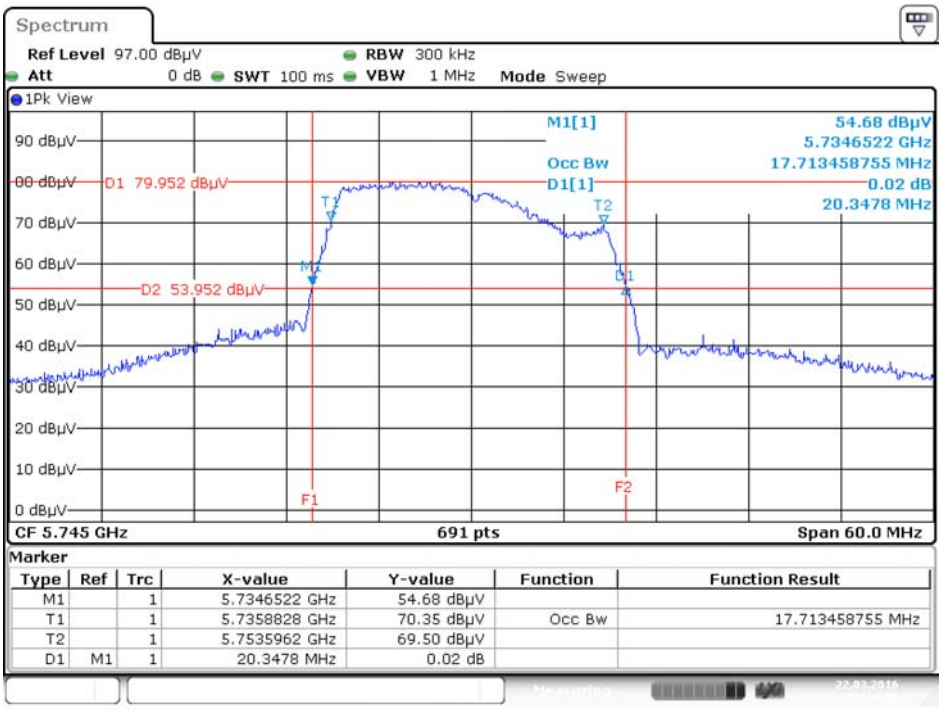
Date: 22.MAR.2016 17:10:14

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



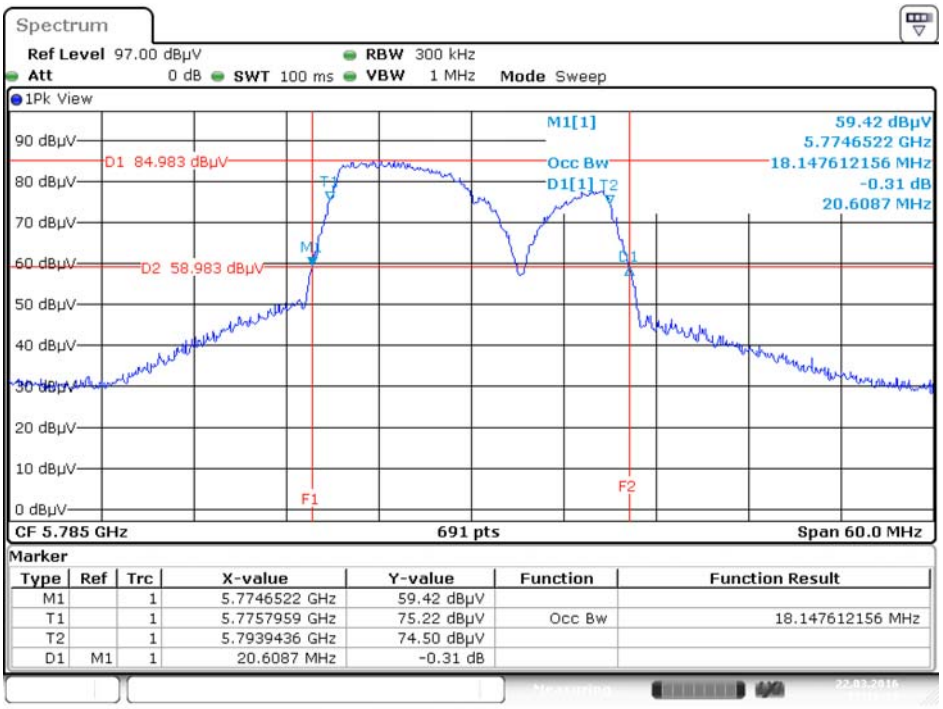
Date: 22.MAR.2016 17:11:15

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



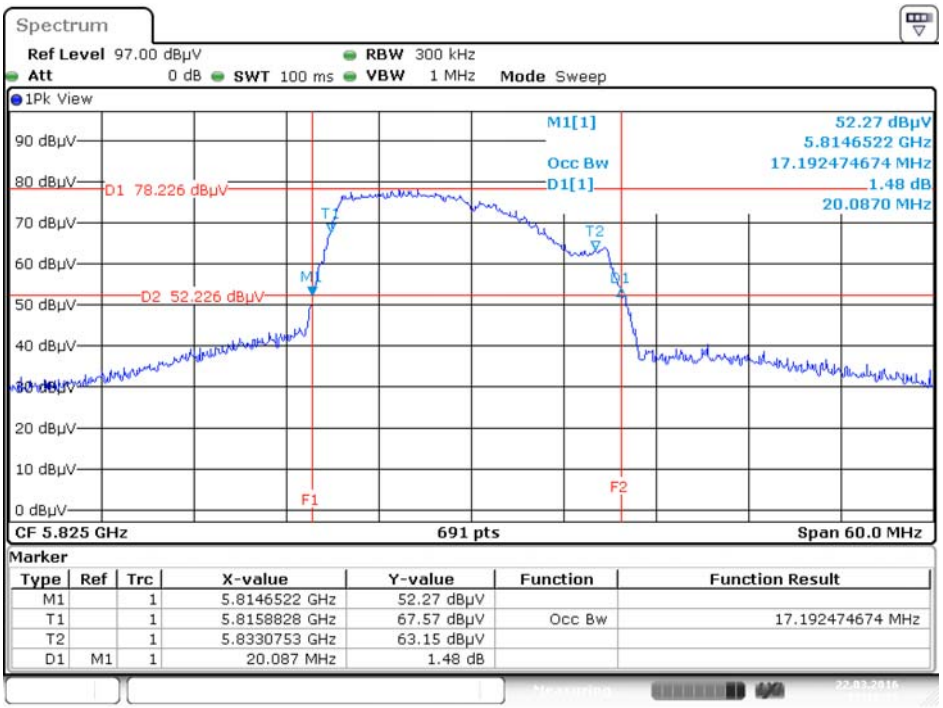
Date: 22.MAR.2016 17:14:06

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



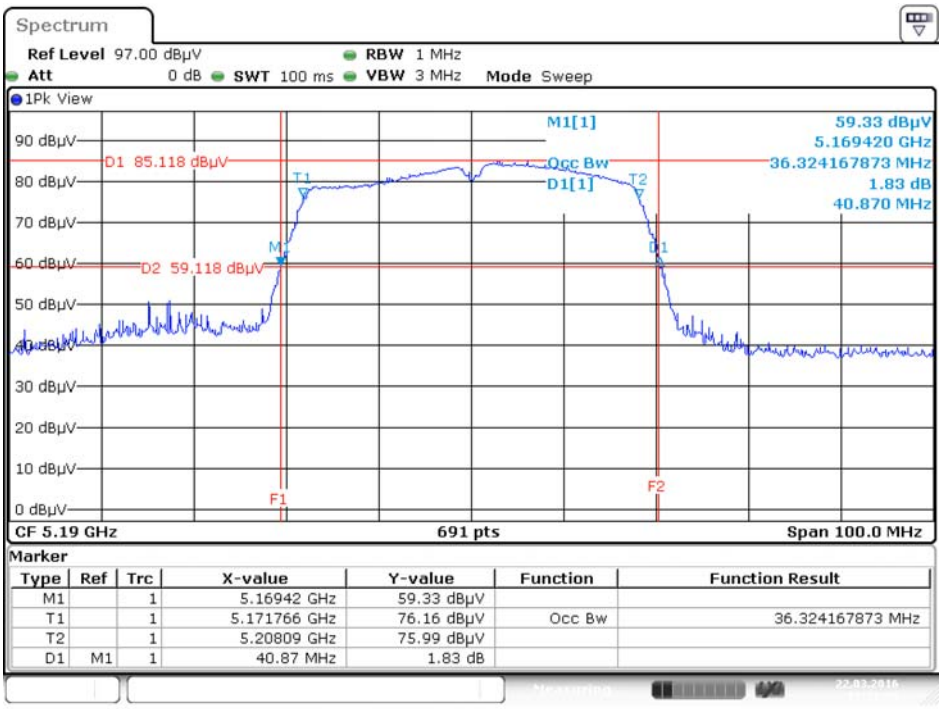
Date: 22.MAR.2016 17:16:19

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



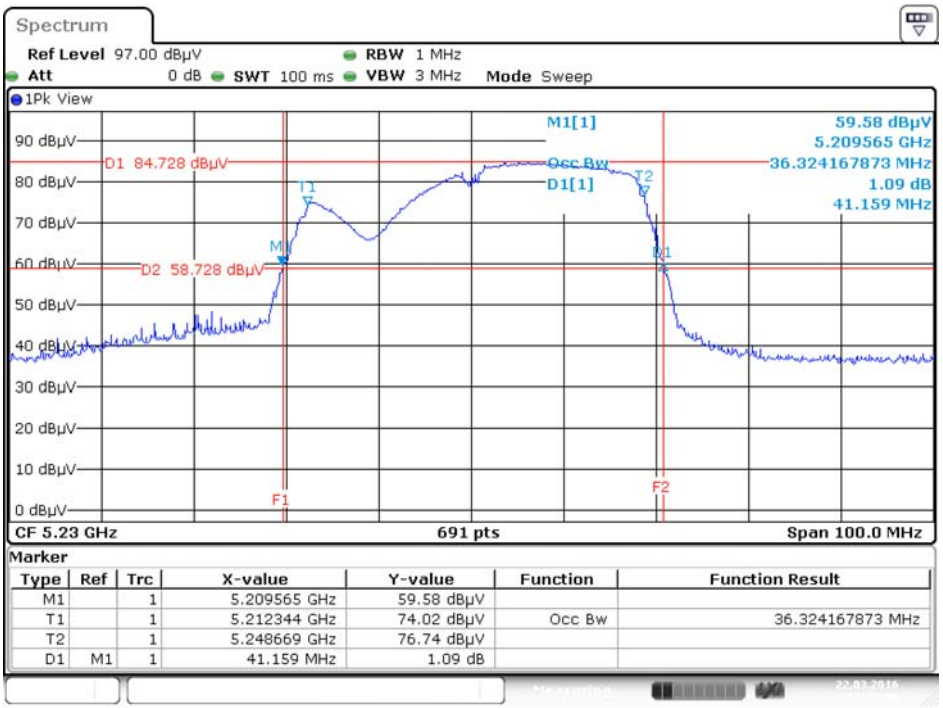
Date: 22.MAR.2016 17:18:51

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



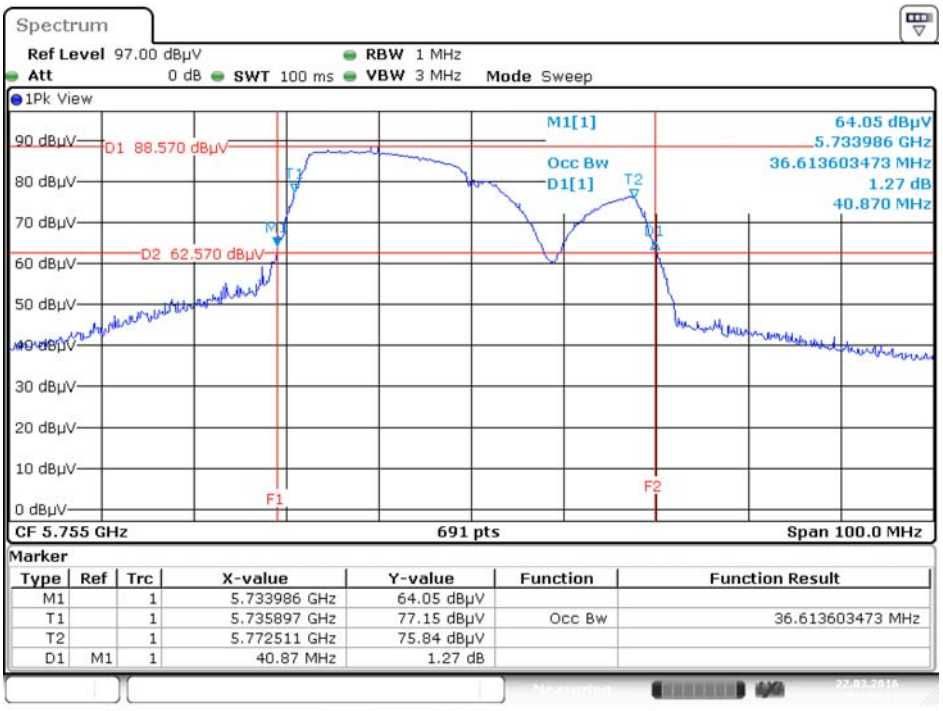
Date: 22.MAR.2016 17:21:35

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



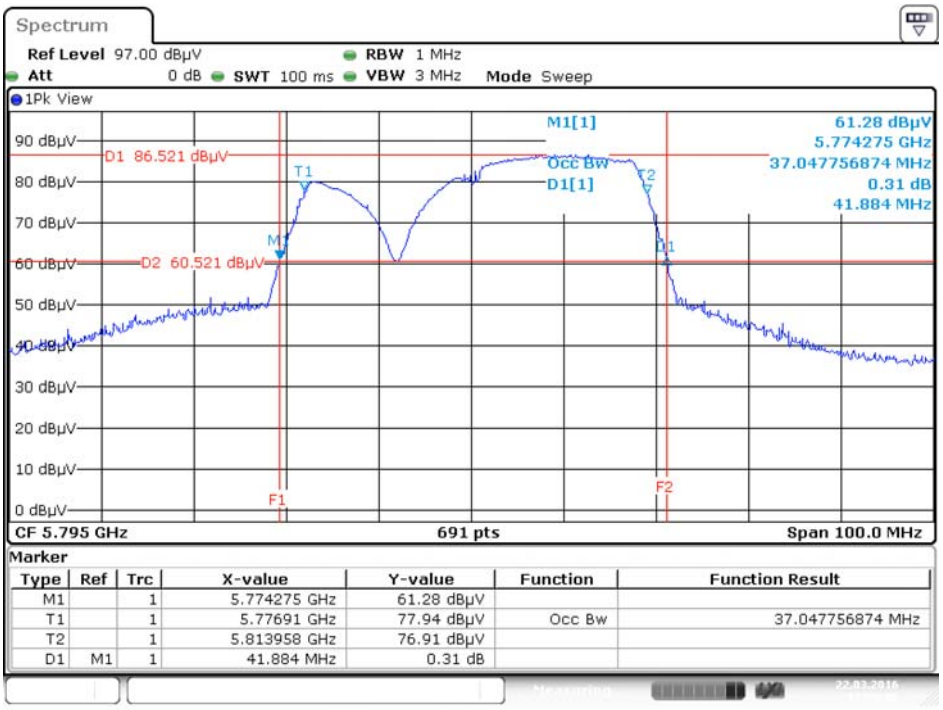
Date: 22.MAR.2016 17:23:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5755 MHz



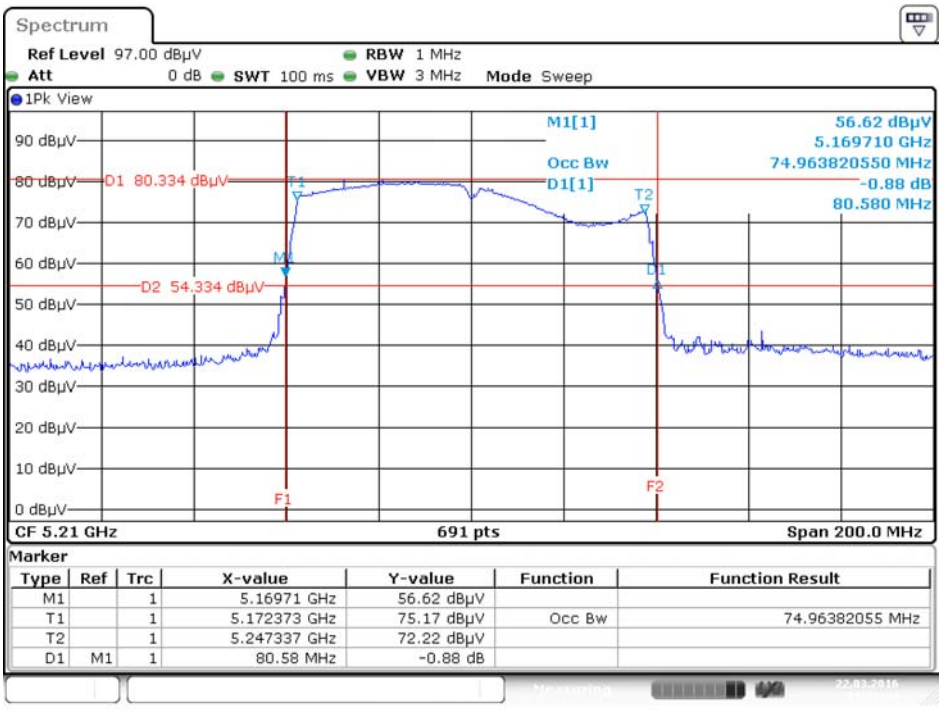
Date: 22.MAR.2016 17:24:22

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



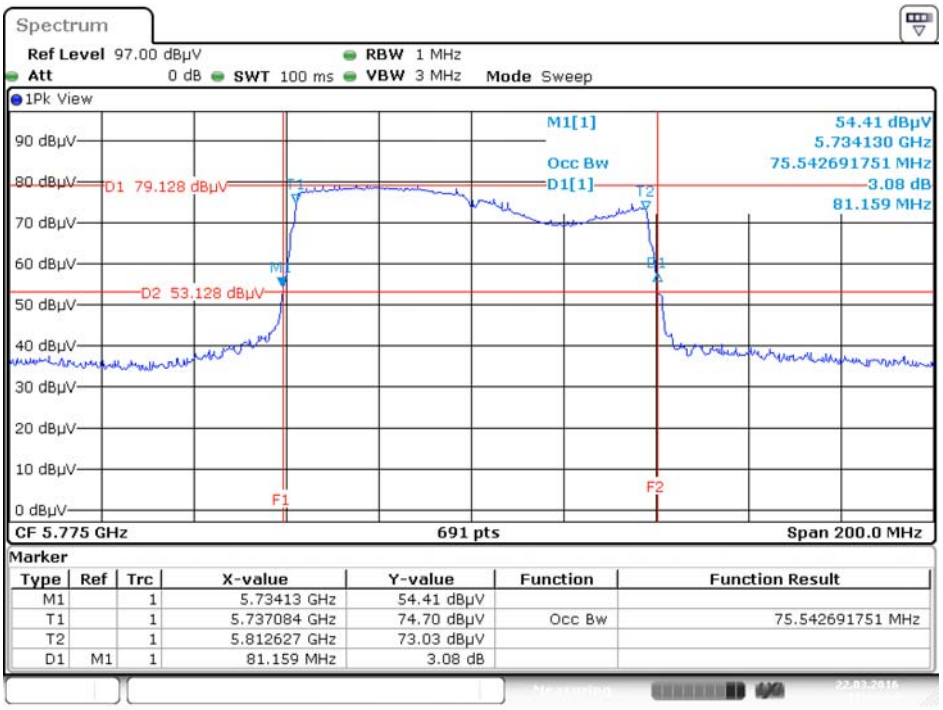
Date: 22.MAR.2016 17:25:26

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



Date: 22.MAR.2016 17:31:44

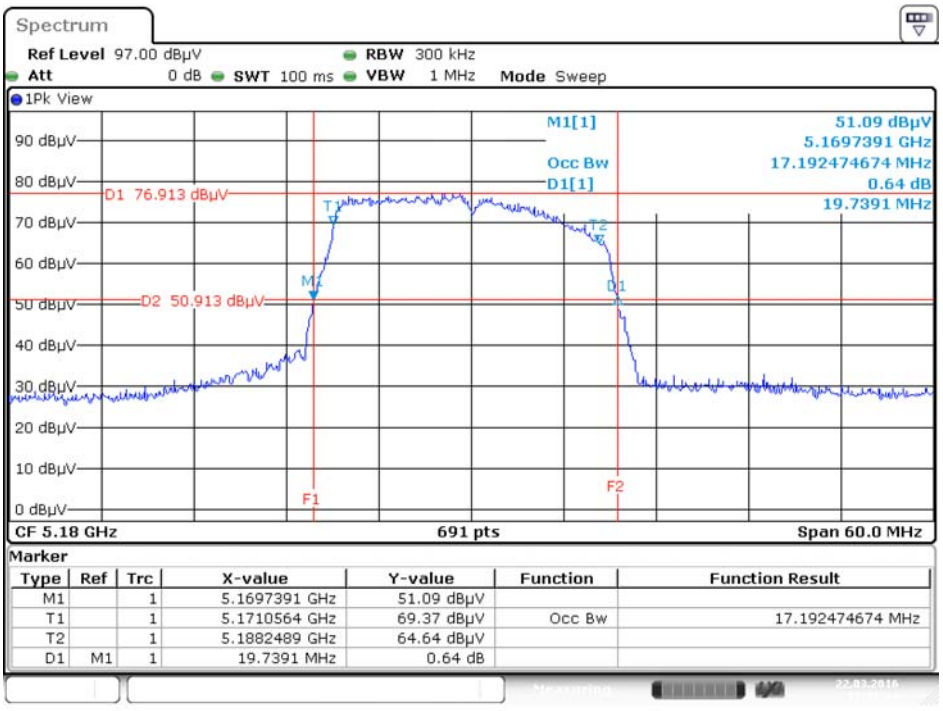
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



Date: 22.MAR.2016 17:34:05

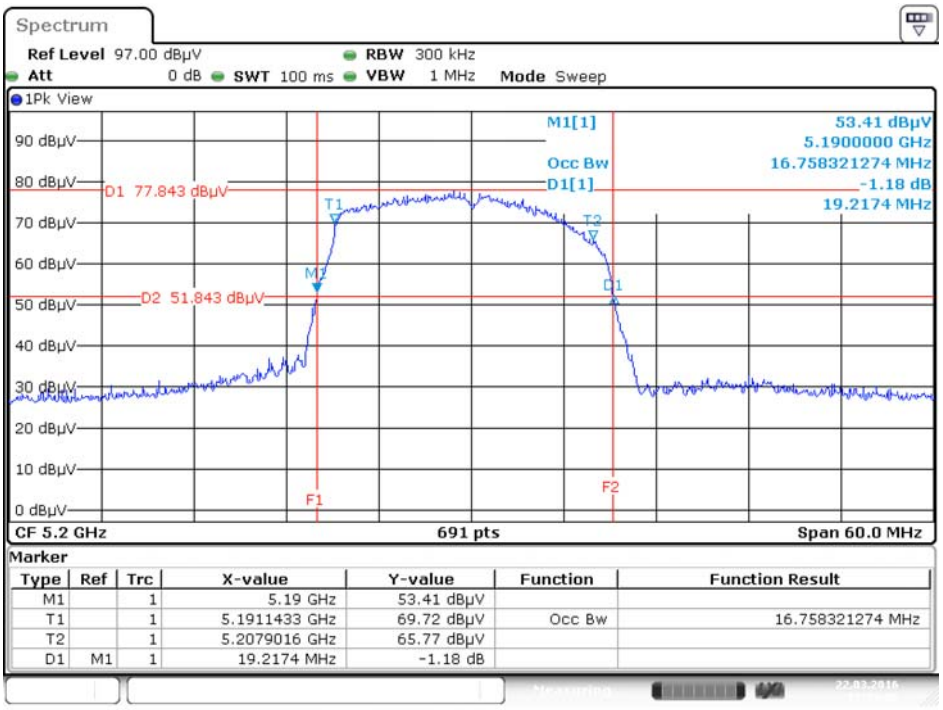
<For Beamforming Mode>

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



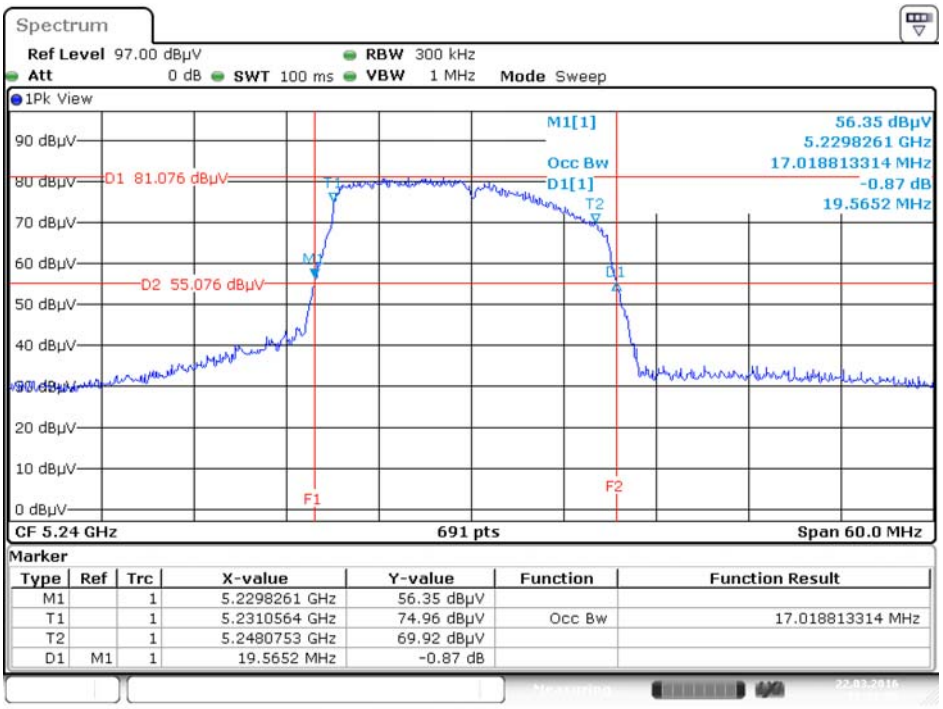
Date: 22.MAR.2016 17:57:14

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



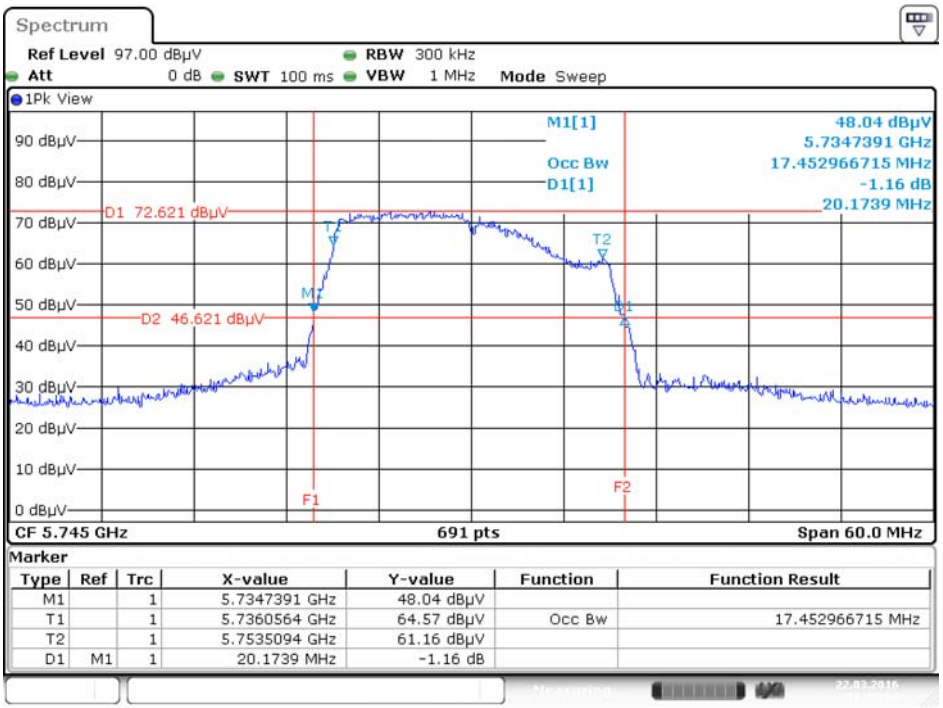
Date: 22.MAR.2016 17:59:27

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



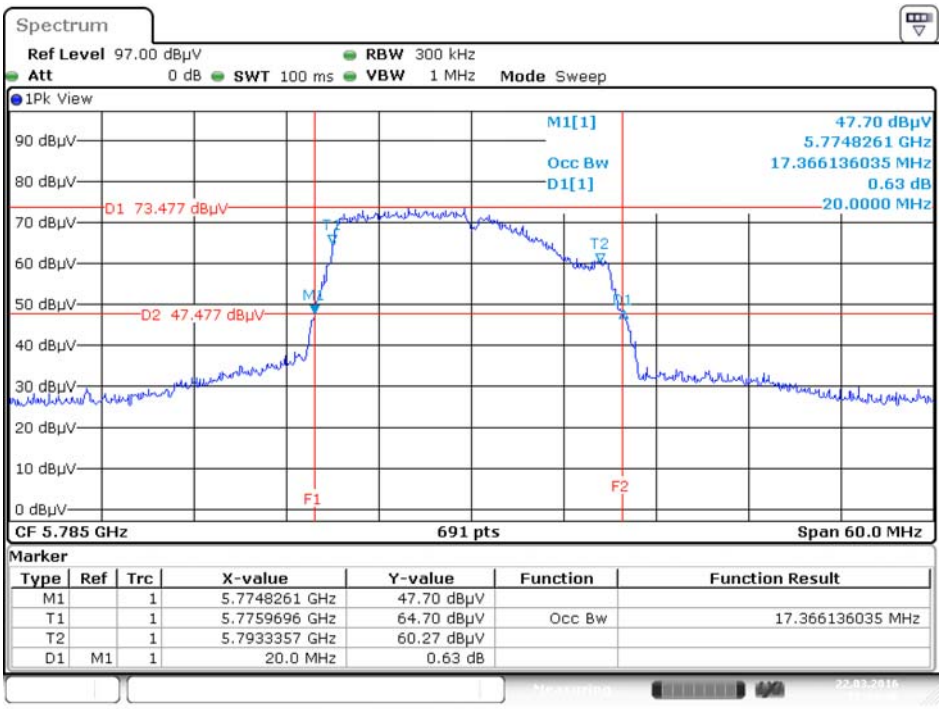
Date: 22.MAR.2016 18:01:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



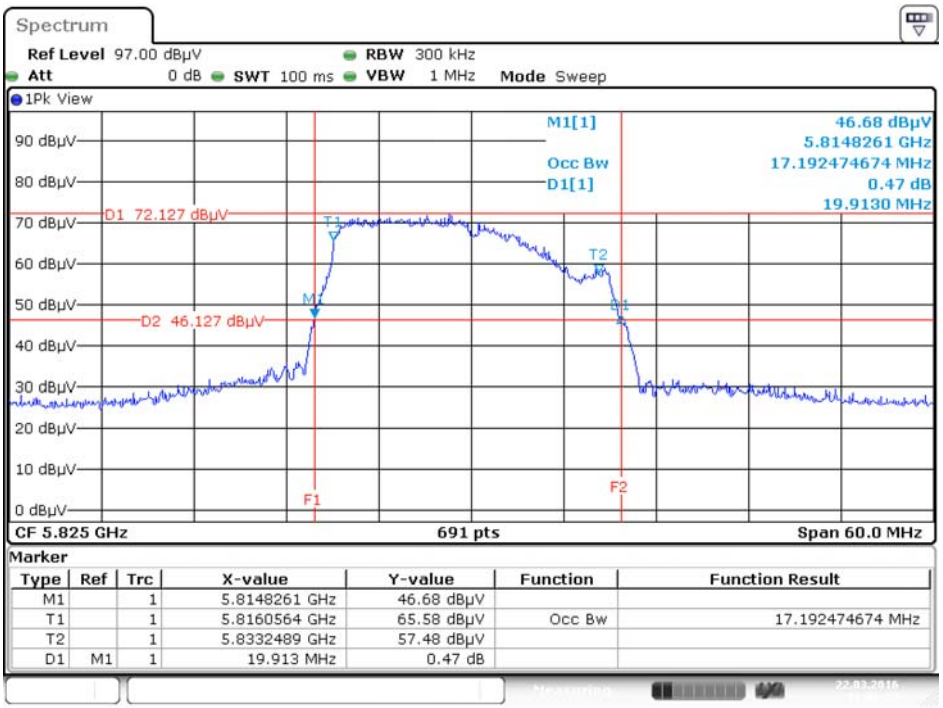
Date: 22.MAR.2016 18:03:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



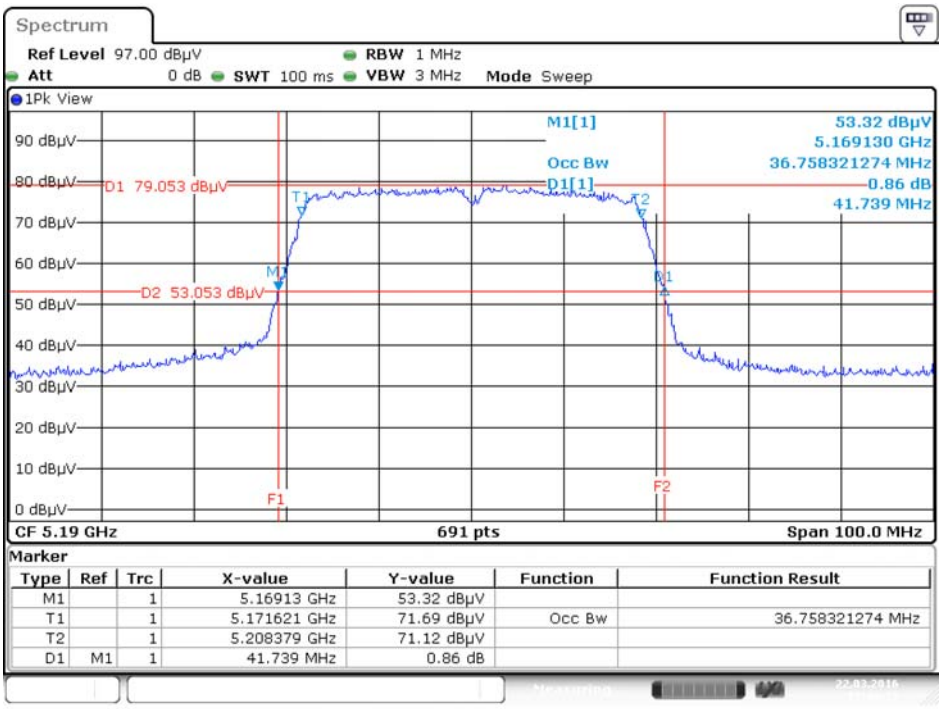
Date: 22.MAR.2016 18:04:46

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5825 MHz



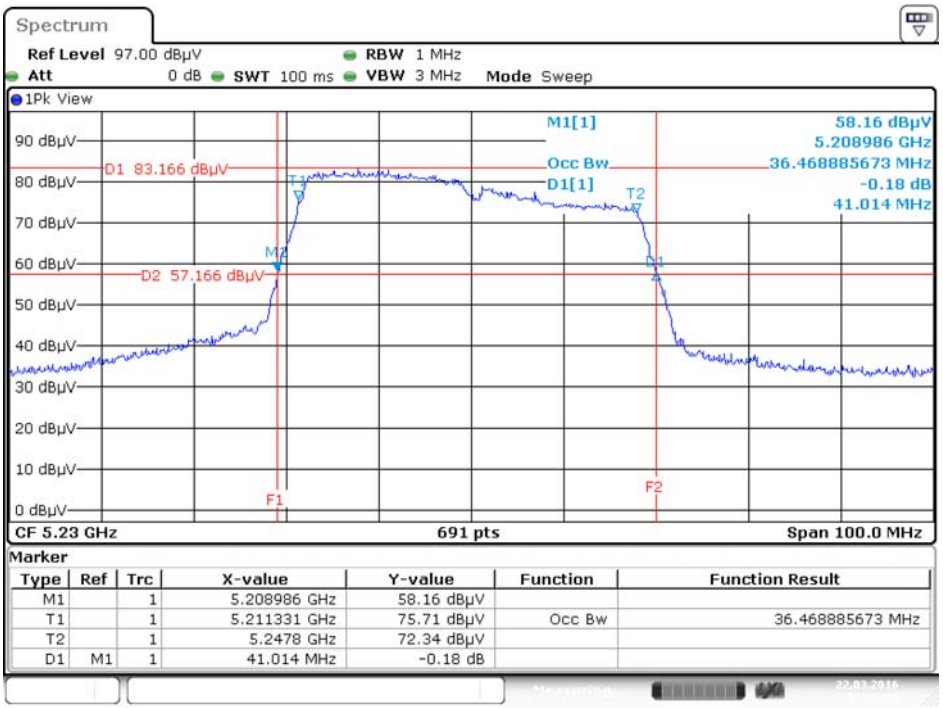
Date: 22.MAR.2016 18:06:23

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



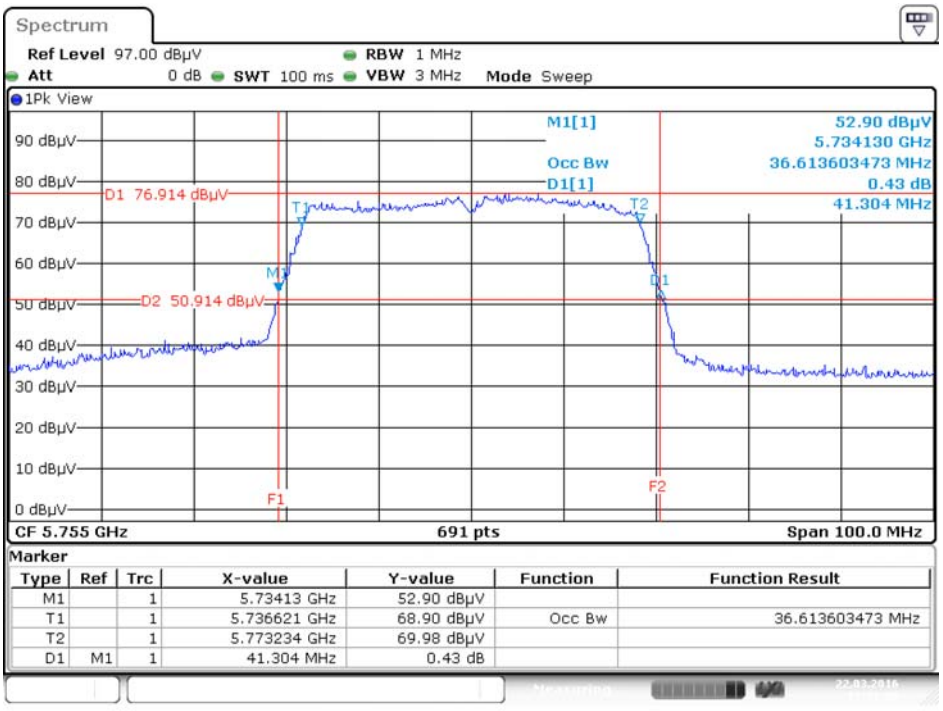
Date: 22.MAR.2016 17:49:27

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



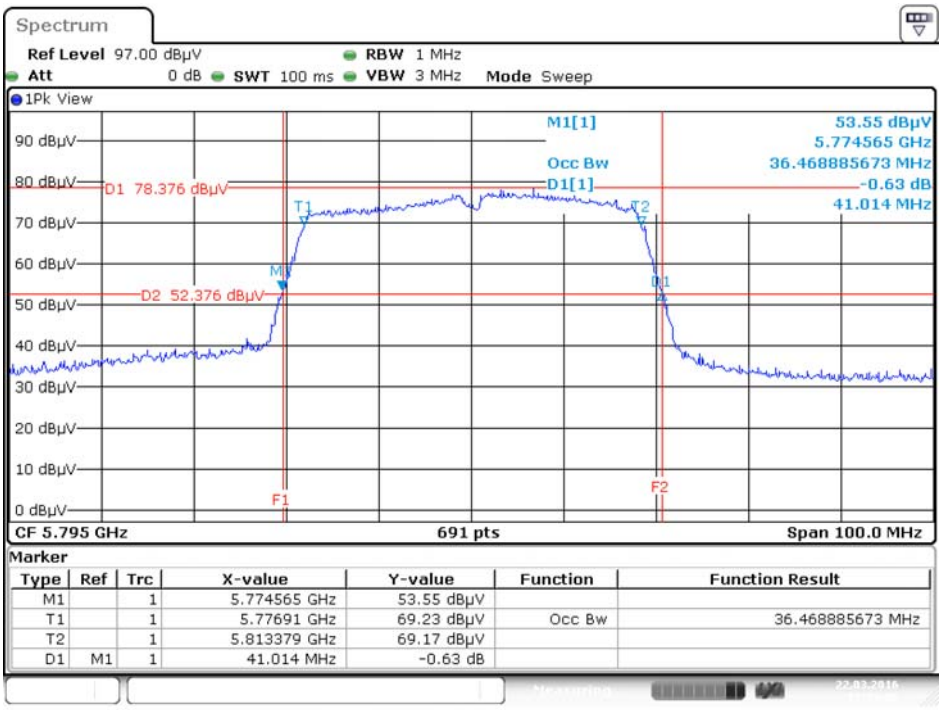
Date: 22.MAR.2016 17:50:35

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5755 MHz



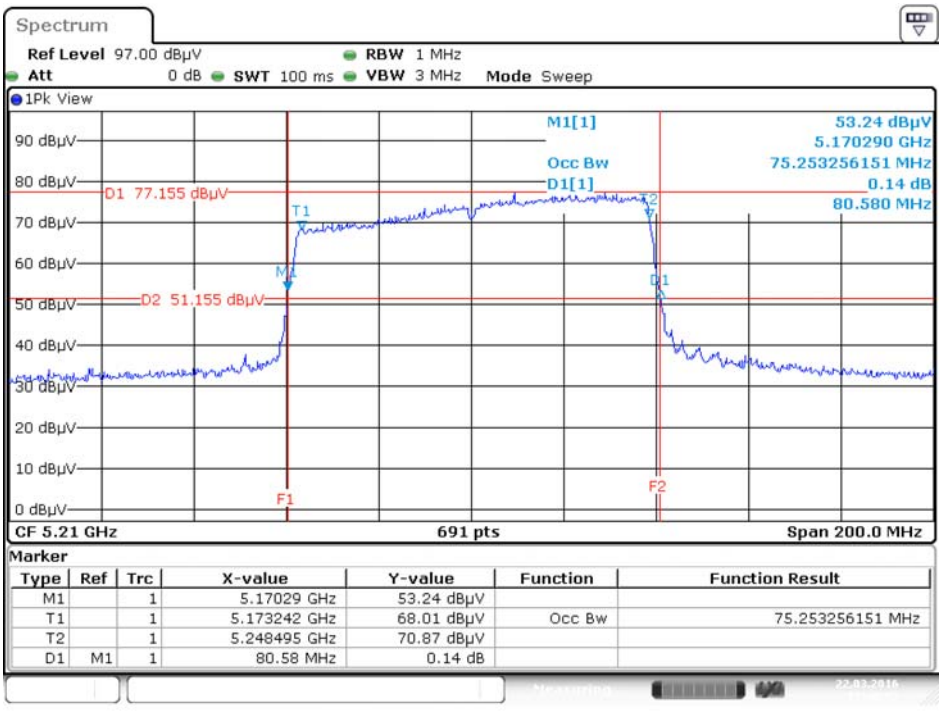
Date: 22.MAR.2016 17:52:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



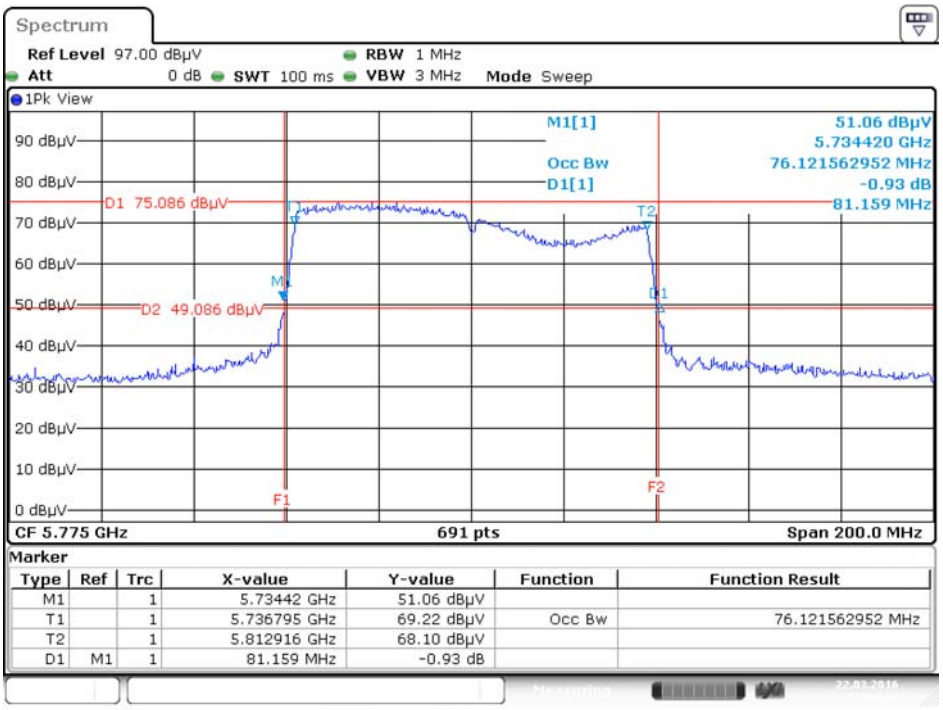
Date: 22.MAR.2016 17:54:06

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



Date: 22.MAR.2016 17:40:52

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



Date: 22.MAR.2016 17:44:35

4.3. 6dB Spectrum Bandwidth Measurement

4.3.1. Limit

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

4.3.2. Measuring Instruments and Setting

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

6dB Spectrum Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB789033 D02 v01r01 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.

4.3.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

This test setup layout is the same as that shown in section 4.6.4.

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 6dB Spectrum Bandwidth

Temperature	20°C	Humidity	55%
Test Engineer	Serway Li		

<For Non-Beamforming Mode>

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	11.71	500	Complies
	5785 MHz	11.42	500	Complies
	5825 MHz	10.78	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	11.42	500	Complies
	5785 MHz	11.42	500	Complies
	5825 MHz	11.01	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	36.41	500	Complies
	5795 MHz	36.41	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	76.23	500	Complies

Temperature	20°C	Humidity	55%
Test Engineer	Serway Li		

<For Beamforming Mode>

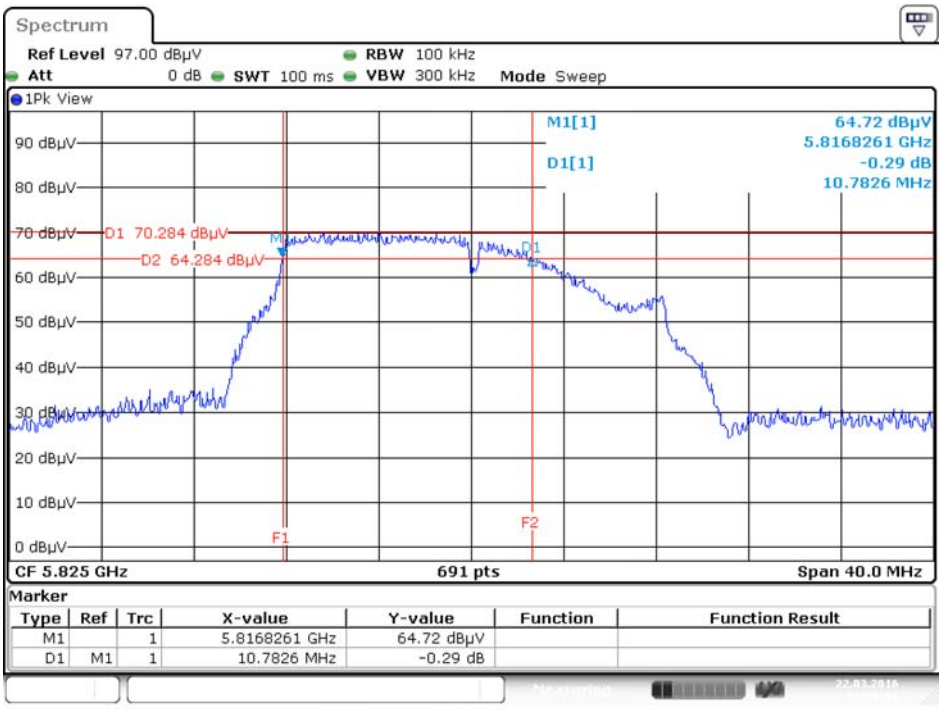
Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	5745 MHz	11.65	500	Complies
	5785 MHz	11.83	500	Complies
	5825 MHz	11.36	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	36.29	500	Complies
	5795 MHz	35.48	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	76.52	500	Complies

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

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

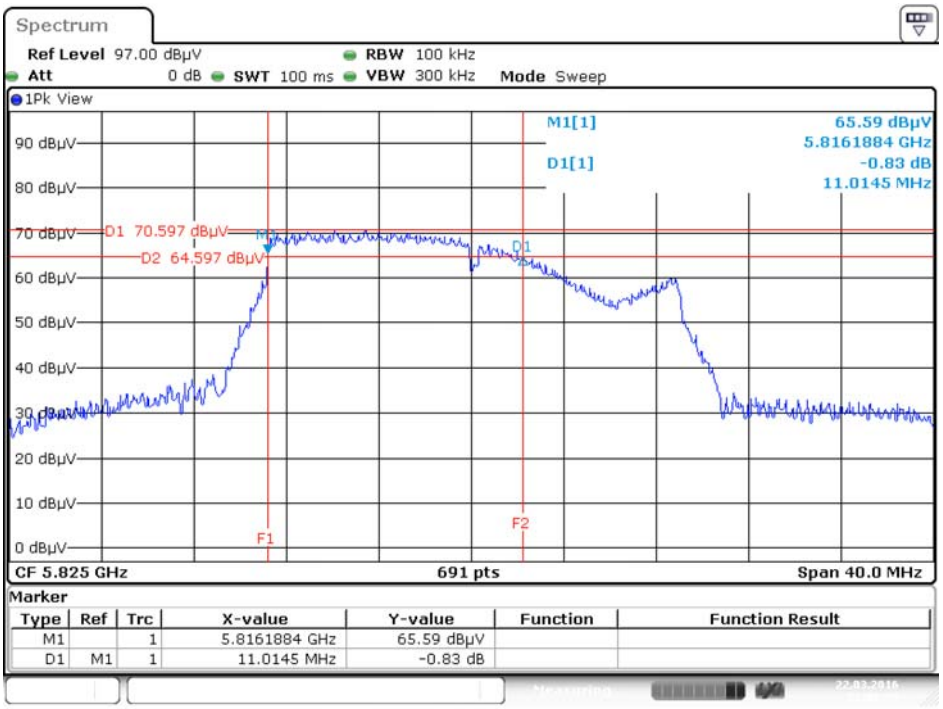
<For Non-Beamforming Mode>

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



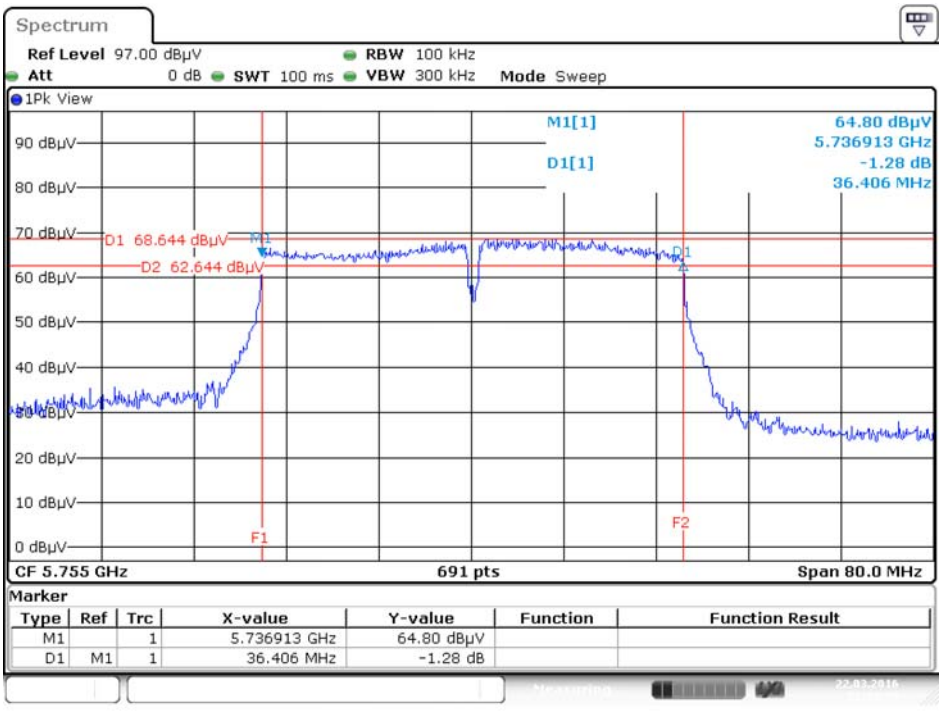
Date: 22.MAR.2016 21:56:16

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



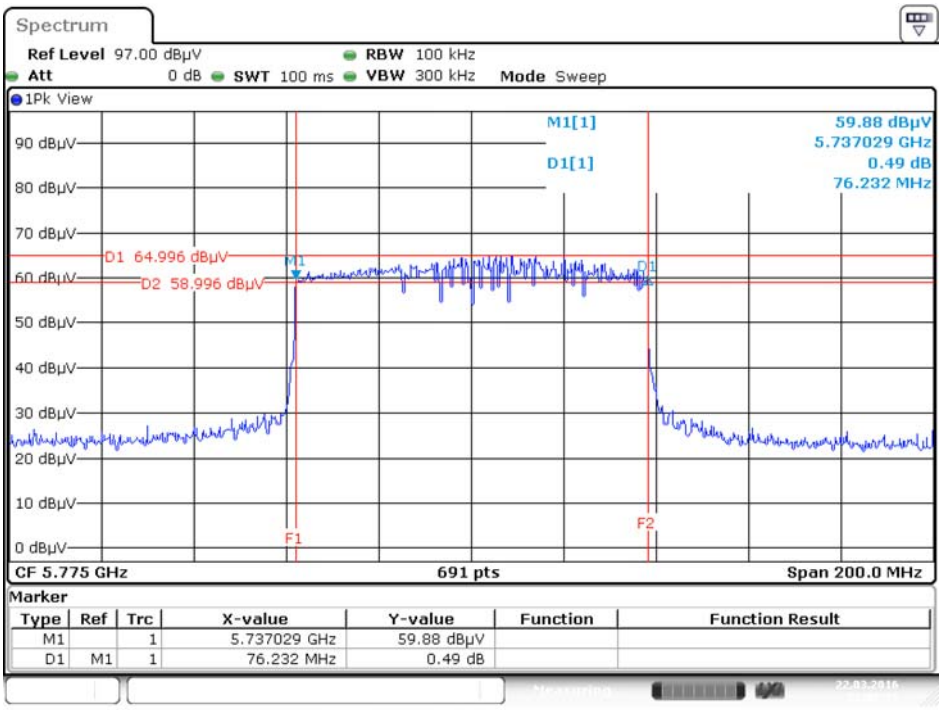
Date: 22.MAR.2016 22:02:29

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



Date: 22.MAR.2016 22:03:53

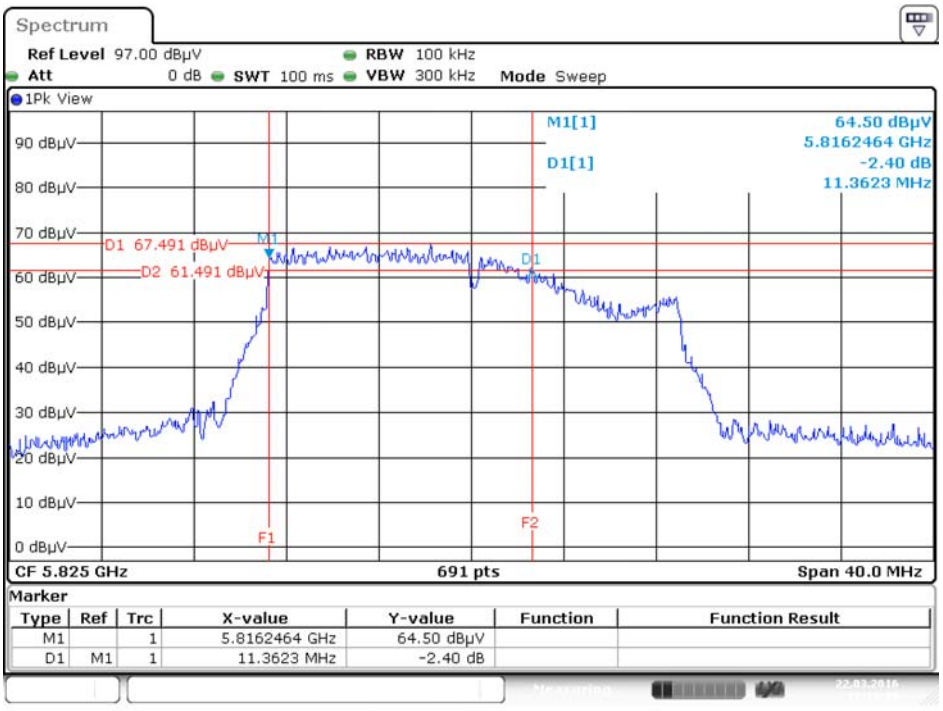
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



Date: 22.MAR.2016 22:07:52

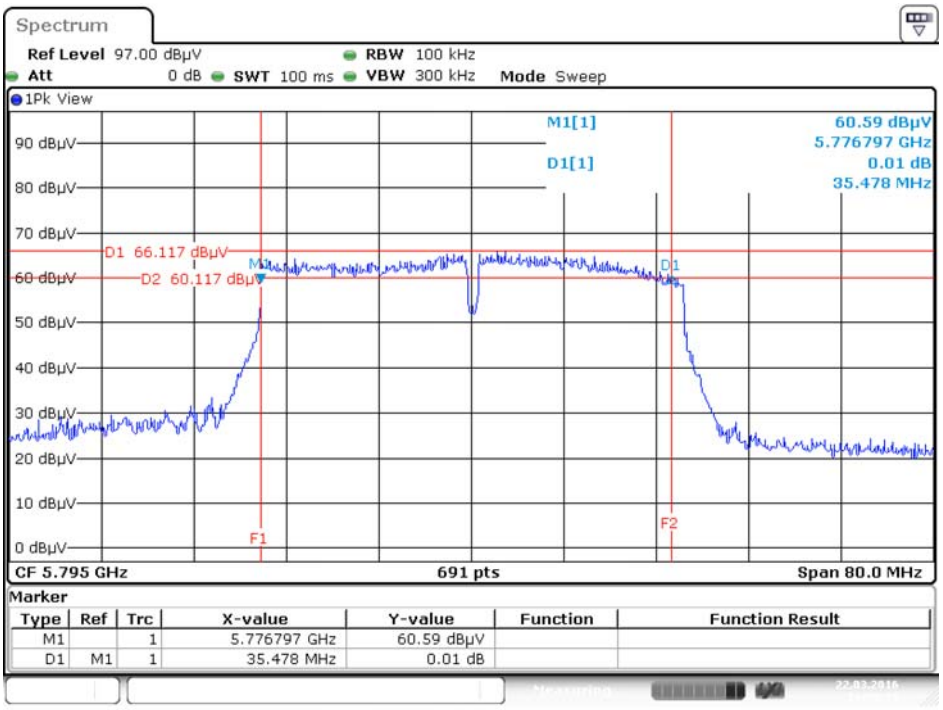
<For Beamforming Mode>

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



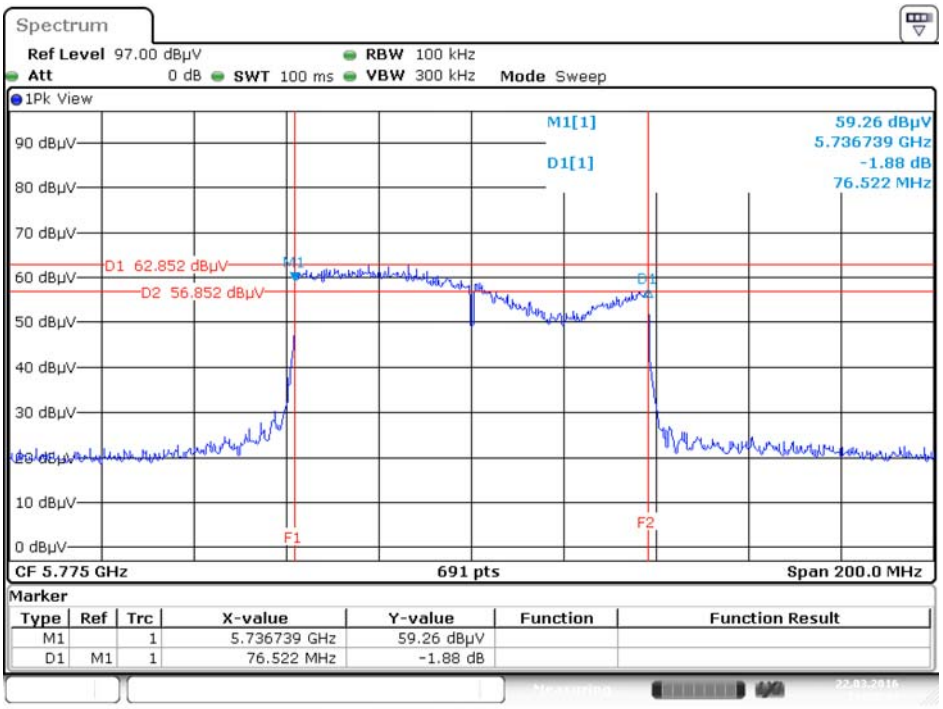
Date: 22.MAR.2016 18:10:38

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



Date: 22.MAR.2016 19:25:15

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



Date: 22.MAR.2016 19:30:43

4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

Frequency Band			Limit
☒	5.15~5.25 GHz		
	Operating Mode		
	☐	Outdoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
	☒	Indoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. 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.
	☐	Fixed point-to-point access points	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.
	☐	Mobile and portable client devices	The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi. 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.

☒	5.725~5.85 GHz	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

4.4.2. Measuring Instruments and Setting

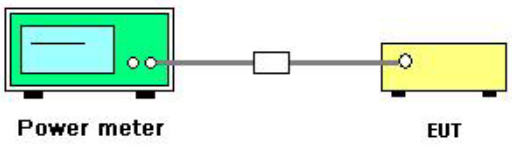
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r01 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.

4.4.4. 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 Maximum Conducted Output Power

Temperature	20°C	Humidity	55%
Test Engineer	Serway Li	Test Date	Mar. 22, 2016

<For Non-Beamforming Mode>

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5180 MHz	19.05	18.61	18.97	19.33	25.02	30.00	Complies
	5200 MHz	20.29	19.88	19.62	20.04	25.98	30.00	Complies
	5240 MHz	20.13	19.63	20.12	20.03	26.00	30.00	Complies
	5745 MHz	18.82	18.37	18.23	19.04	24.65	30.00	Complies
	5785 MHz	17.92	17.96	18.04	18.65	24.17	30.00	Complies
	5825 MHz	17.35	17.43	16.93	17.18	23.25	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	19.03	18.73	18.92	19.37	25.04	30.00	Complies
	5200 MHz	19.81	19.62	19.33	19.72	25.64	30.00	Complies
	5240 MHz	20.16	19.69	20.05	19.94	25.98	30.00	Complies
	5745 MHz	19.72	19.29	19.15	20.05	25.59	30.00	Complies
	5785 MHz	18.88	18.91	19.04	19.64	25.15	30.00	Complies
	5825 MHz	19.57	19.48	19.02	19.34	25.38	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	20.28	20.11	23.05	23.36	27.98	30.00	Complies
	5230 MHz	20.25	19.41	22.75	22.42	27.45	30.00	Complies
	5755 MHz	19.02	18.84	21.81	22.75	26.96	30.00	Complies
	5795 MHz	18.76	18.62	21.54	21.88	26.48	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	19.84	18.73	19.67	19.22	25.41	30.00	Complies
	5775 MHz	18.63	18.58	18.65	19.46	24.87	30.00	Complies

Temperature	20°C	Humidity	55%
Test Engineer	Serway Li	Test Date	Mar. 22, 2016

<For Beamforming Mode>

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5180 MHz	16.25	15.89	15.59	16.12	21.99	25.98	Complies
	5200 MHz	18.84	18.47	17.60	18.90	24.50	25.98	Complies
	5240 MHz	19.49	19.22	18.92	19.42	25.29	25.98	Complies
	5745 MHz	15.39	14.62	14.82	15.22	21.04	25.98	Complies
	5785 MHz	17.01	16.82	16.63	16.73	22.82	25.98	Complies
	5825 MHz	14.11	13.42	13.11	13.83	19.65	25.98	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	13.06	12.26	11.85	13.23	18.66	25.98	Complies
	5230 MHz	18.64	17.97	17.40	18.79	24.26	25.98	Complies
	5755 MHz	17.48	16.67	16.45	17.52	23.08	25.98	Complies
	5795 MHz	18.03	17.52	17.13	18.37	23.81	25.98	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	16.56	15.63	15.42	16.22	22.00	25.98	Complies
	5775 MHz	15.49	14.69	14.85	15.38	21.14	25.98	Complies

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

4.5. Power Spectral Density Measurement

4.5.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.4.1.

Frequency Band			Limit
☒	5.15~5.25 GHz		
	Operating Mode		
	☐	Outdoor access point	17 dBm/MHz
	☒	Indoor access point	17 dBm/MHz
	☐	Fixed point-to-point access points	17 dBm/MHz
	☐	Mobile and portable client devices	11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

4.5.2. Measuring Instruments and Setting

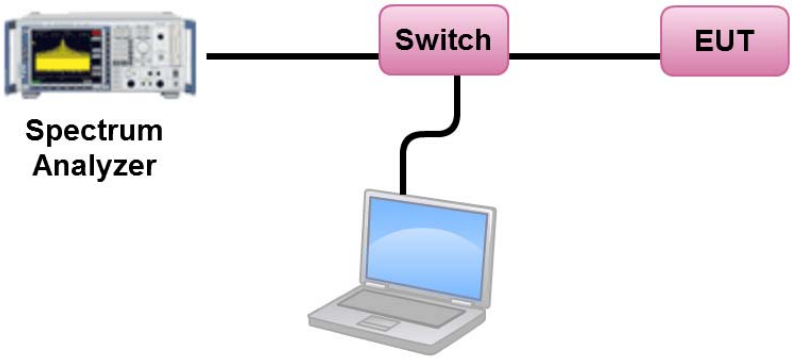
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01r01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements and sum the spectra across the outputs.
4. For 5.725~5.85 GHz, the measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

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. Test Result of Power Spectral Density

Temperature	20°C	Humidity	55%
Test Engineer	Serway Li		

<For Non-Beamforming Mode>

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	11.85	12.98	Complies
40	5200 MHz	12.73	12.98	Complies
48	5240 MHz	12.60	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi>6dBi, So Limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	11.53	-3.01	8.52	25.98	Complies
157	5785 MHz	11.04	-3.01	8.03	25.98	Complies
165	5825 MHz	10.00	-3.01	6.99	25.98	Complies

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

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	11.77	12.98	Complies
40	5200 MHz	12.34	12.98	Complies
48	5240 MHz	12.88	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi>6dBi, So Limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	12.33	-3.01	9.32	25.98	Complies
157	5785 MHz	12.08	-3.01	9.07	25.98	Complies
165	5825 MHz	12.06	-3.01	9.05	25.98	Complies

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

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	11.76	12.98	Complies
46	5230 MHz	11.05	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi>6dBi, So Limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	10.62	-3.01	7.61	25.98	Complies
159	5795 MHz	10.21	-3.01	7.20	25.98	Complies

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

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	6.03	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =10.02dBi>6dBi, So Limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	5.52	-3.01	2.51	25.98	Complies

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

Temperature	20°C	Humidity	55%
Test Engineer	Serway Li		

<For Beamforming Mode>

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	8.79	12.98	Complies
40	5200 MHz	11.38	12.98	Complies
48	5240 MHz	12.04	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi>6dBi, So Limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	7.76	-3.01	4.75	25.98	Complies
157	5785 MHz	9.58	-3.01	6.57	25.98	Complies
165	5825 MHz	6.45	-3.01	3.44	25.98	Complies

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

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	2.39	12.98	Complies
46	5230 MHz	8.01	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi>6dBi, So Limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	6.79	-3.01	3.78	25.98	Complies
159	5795 MHz	7.57	-3.01	4.56	25.98	Complies

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

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	2.83	12.98	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi>6dBi, So Limit =17-(10.02-6)=12.98dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	2.01	-3.01	-1.00	25.98	Complies

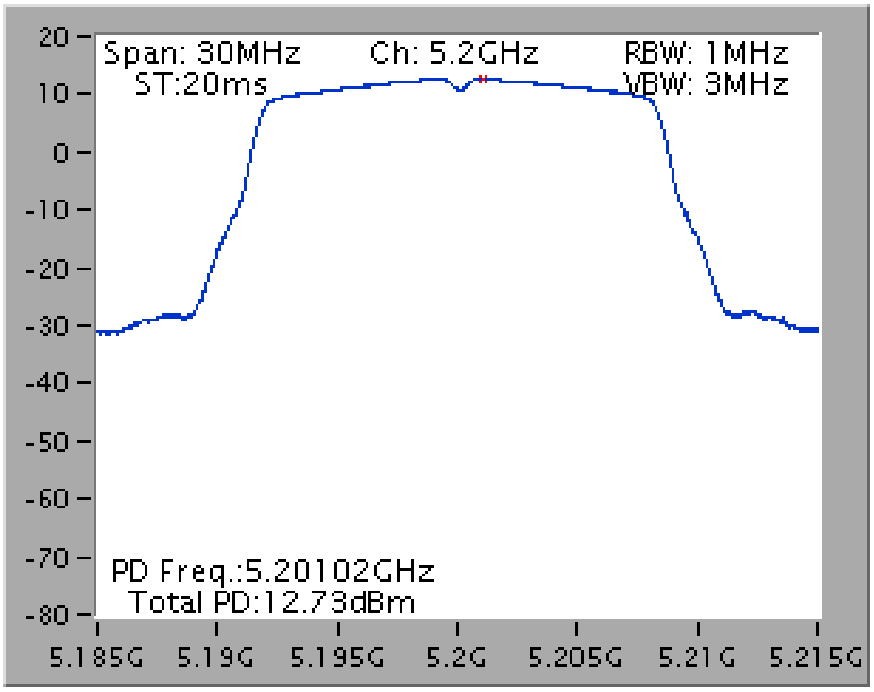
Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.02dBi>6dBi, So Limit =30-(10.02-6)=25.98dBm/500kHz.

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

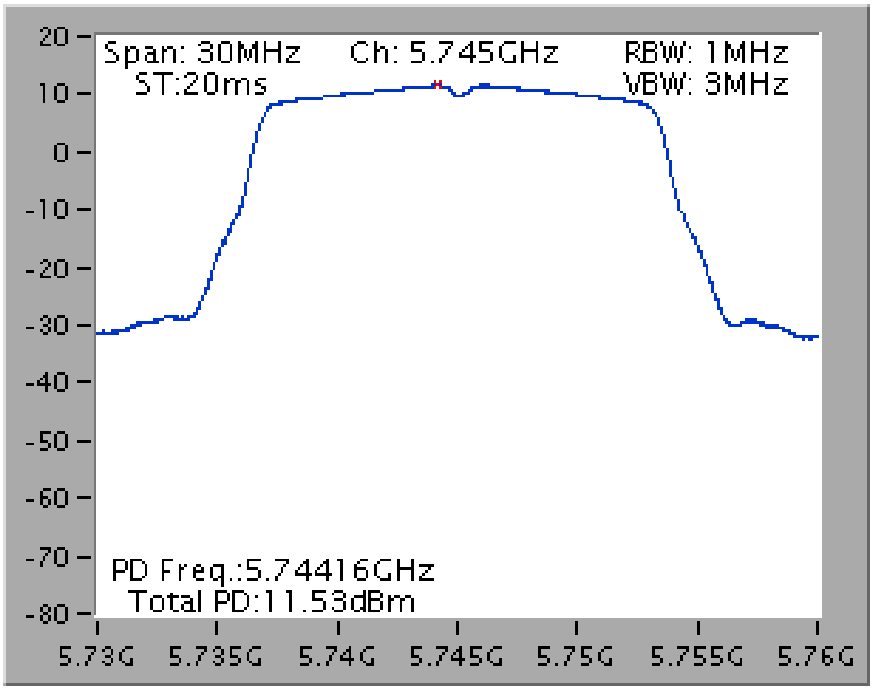
For plots, only the channel with worse result was shown.

<For Non-Beamforming Mode>

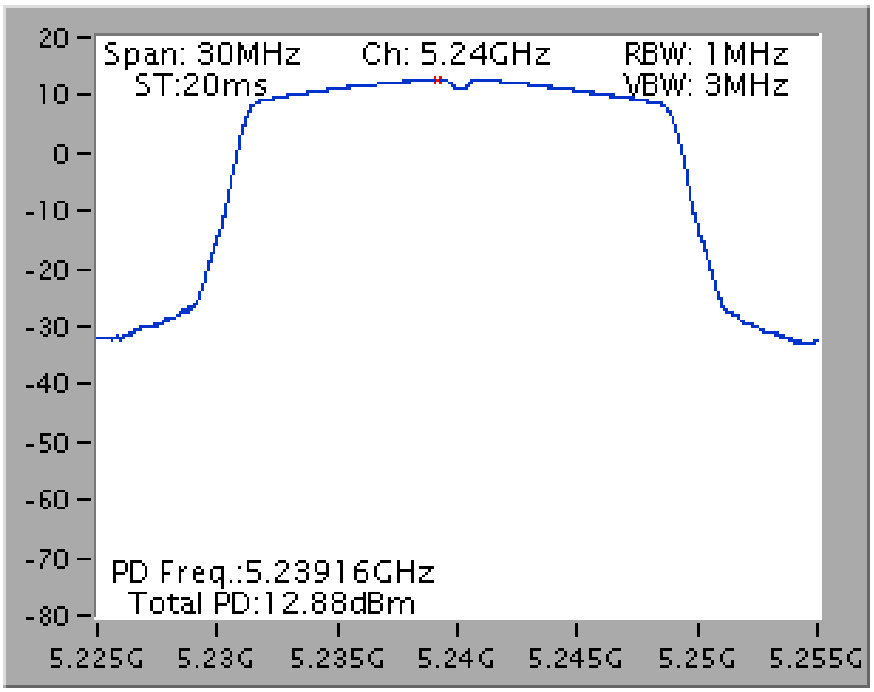
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



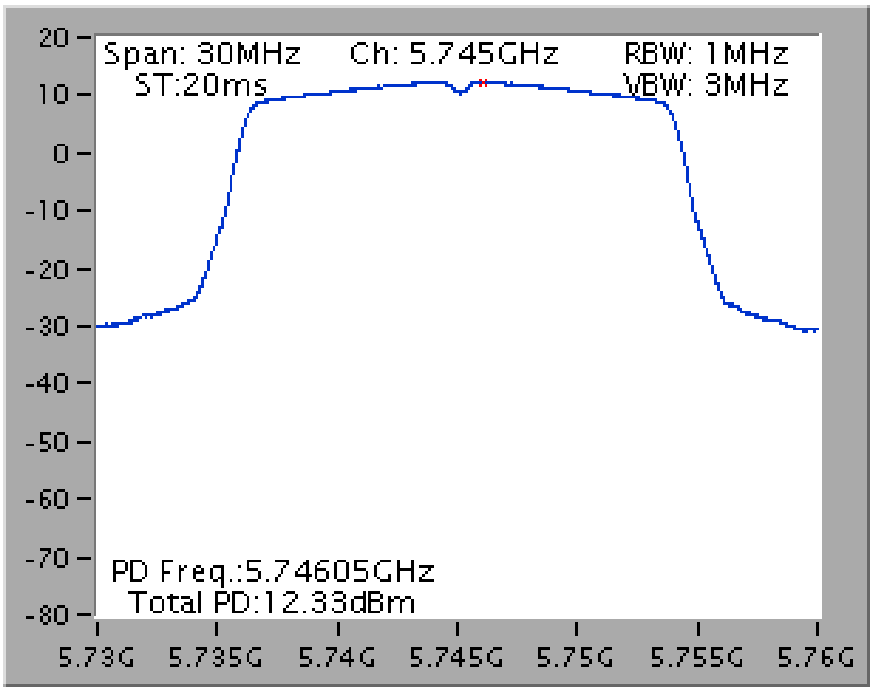
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



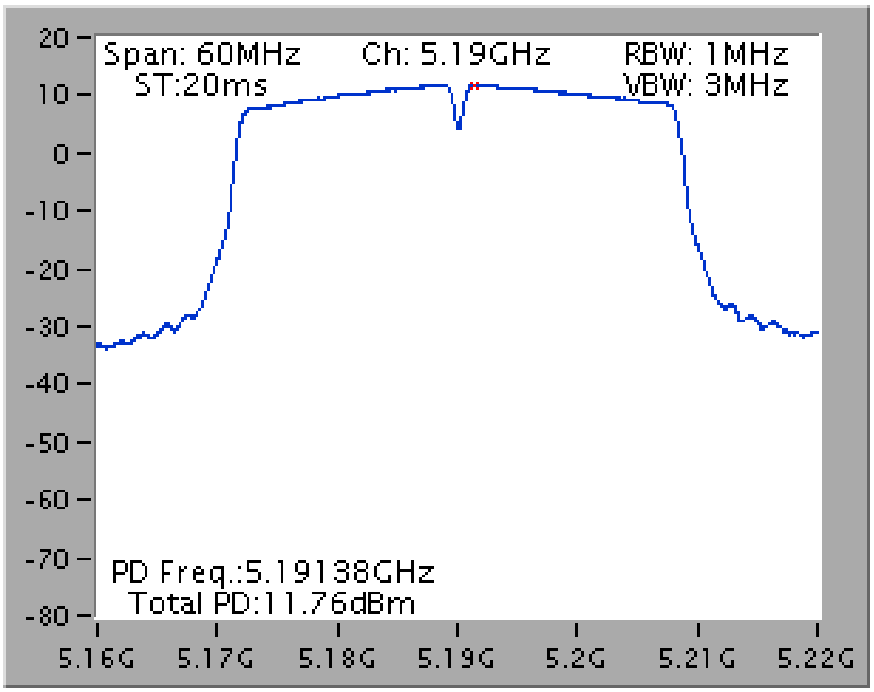
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



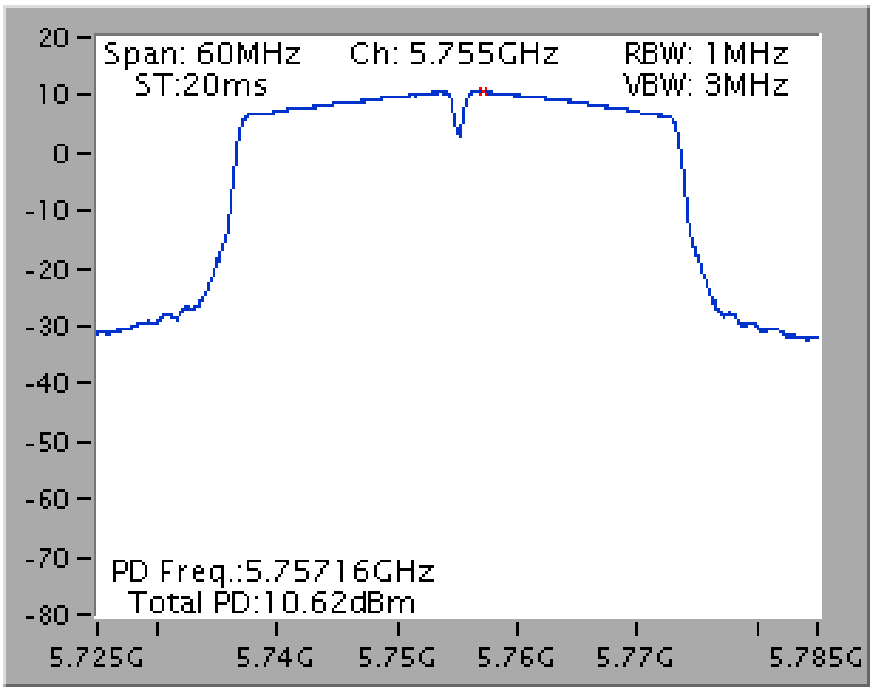
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



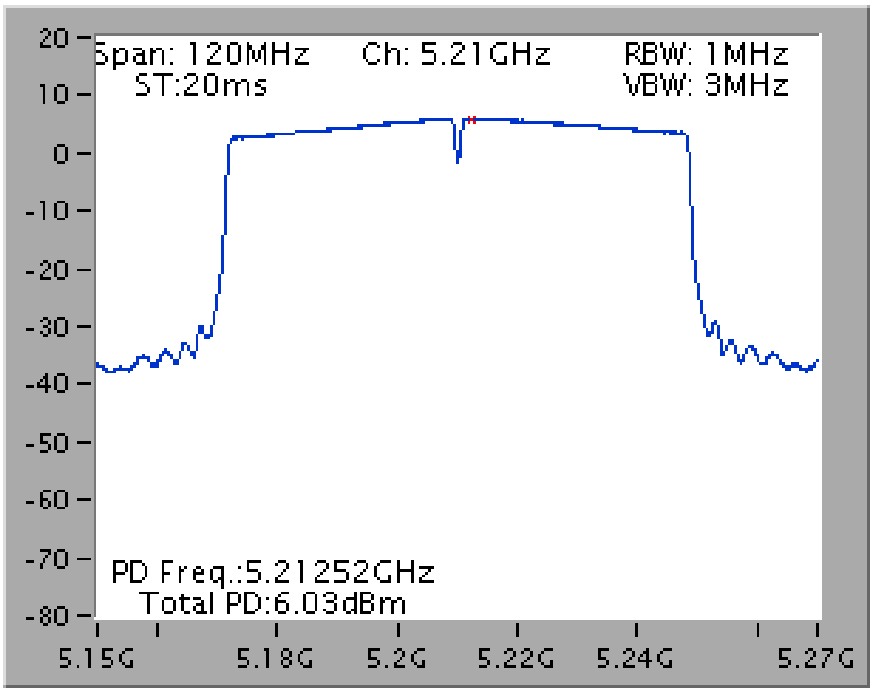
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



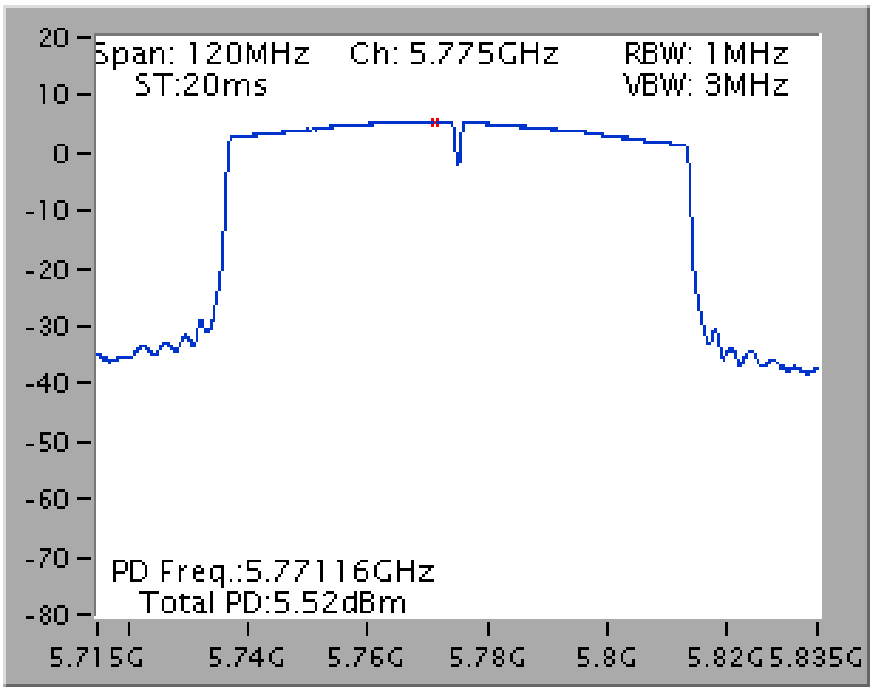
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5755 MHz



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

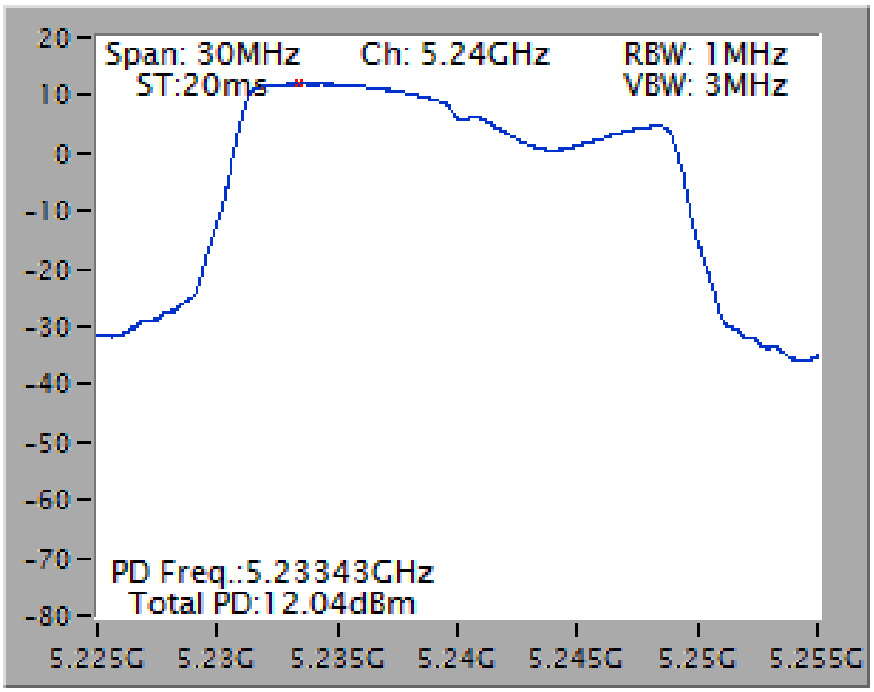


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz

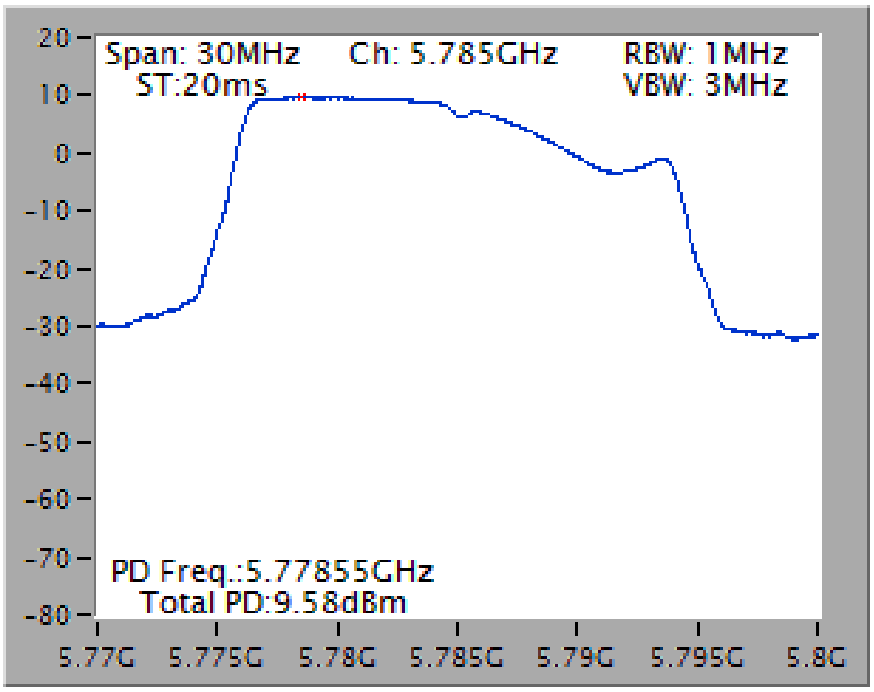


<For Beamforming Mode>

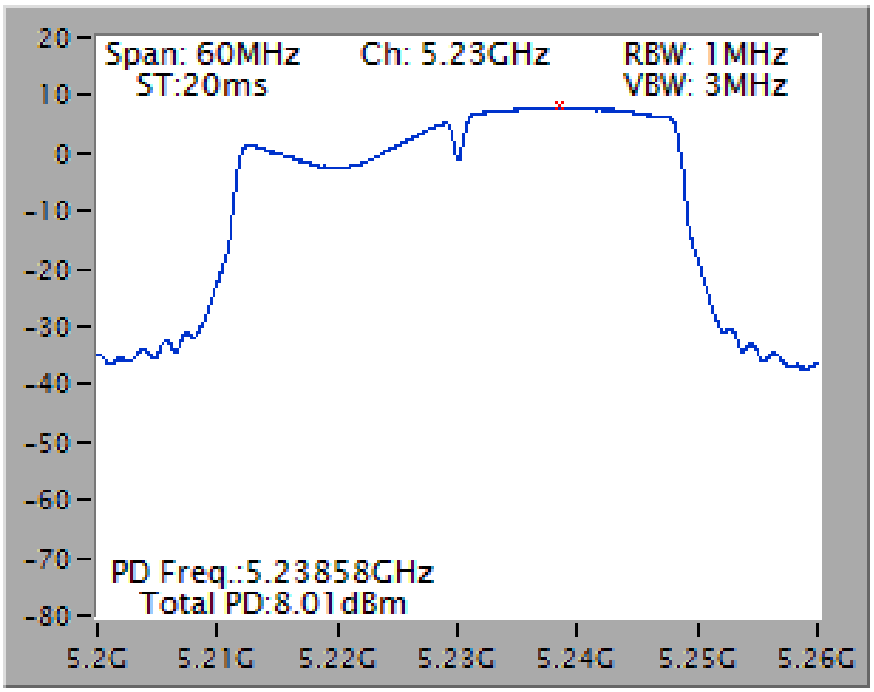
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



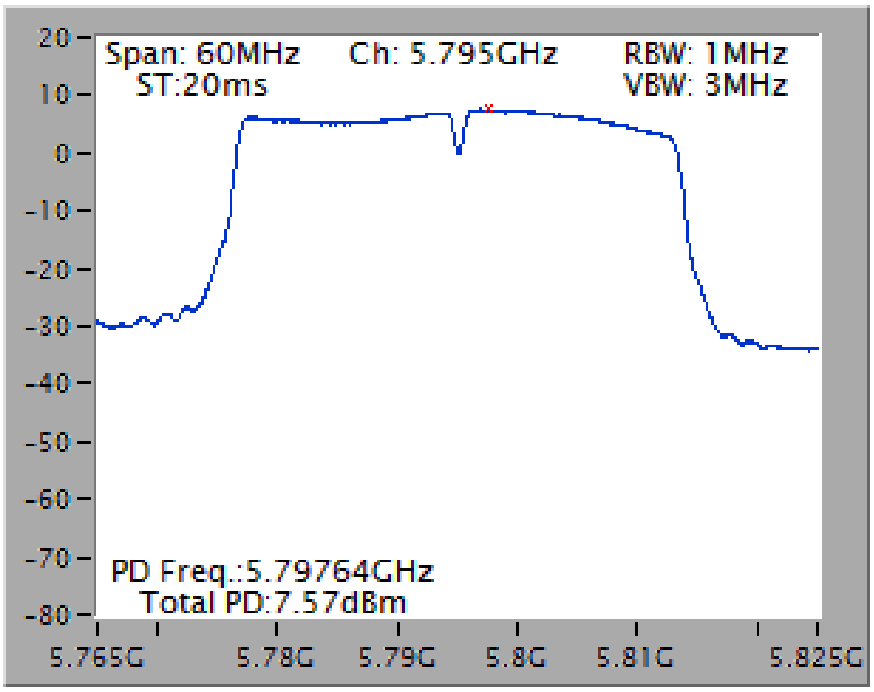
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



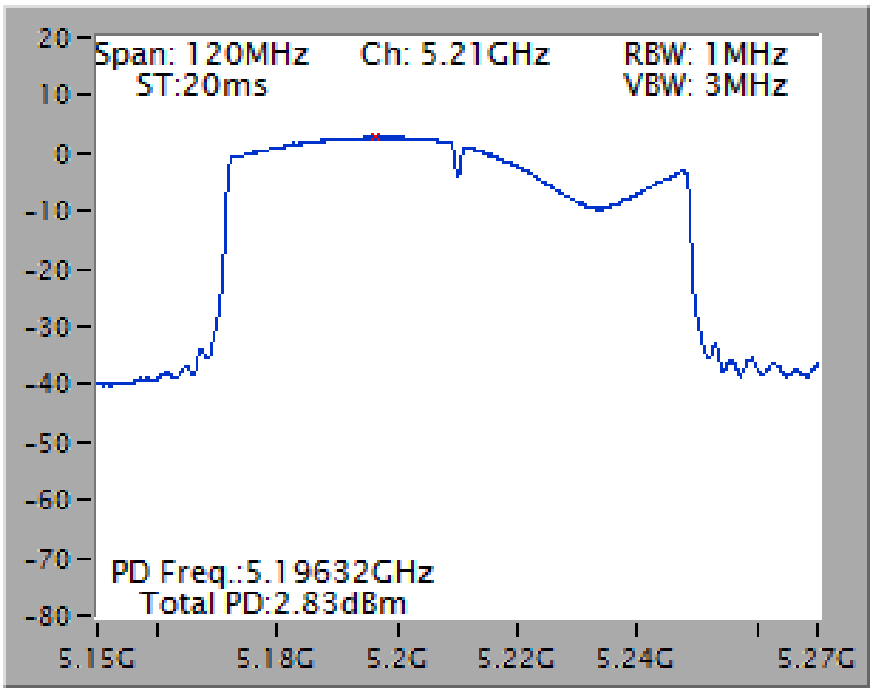
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



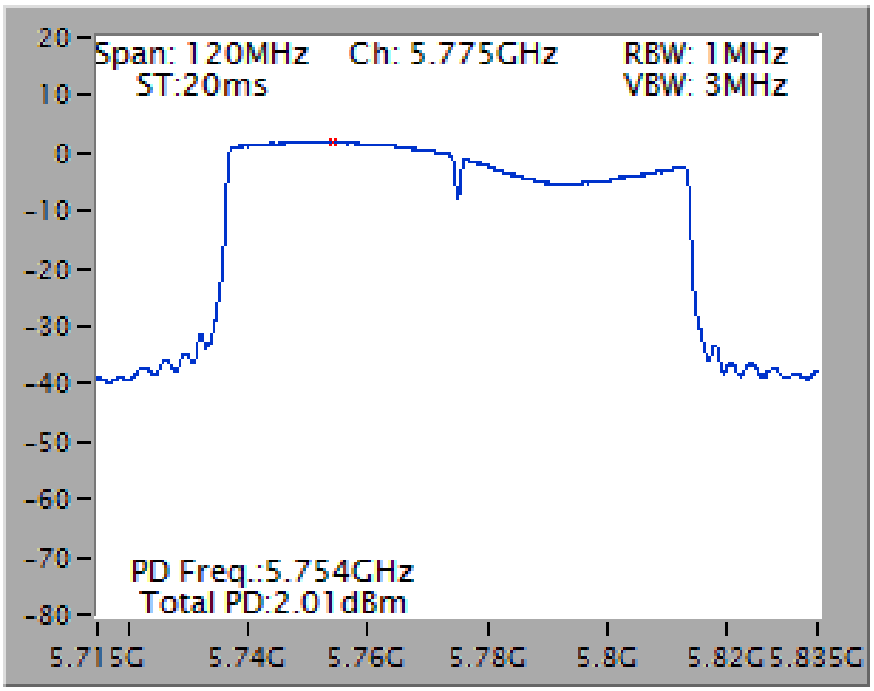
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



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



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.25 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 5.725-5.85 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions 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

4.6.2. 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

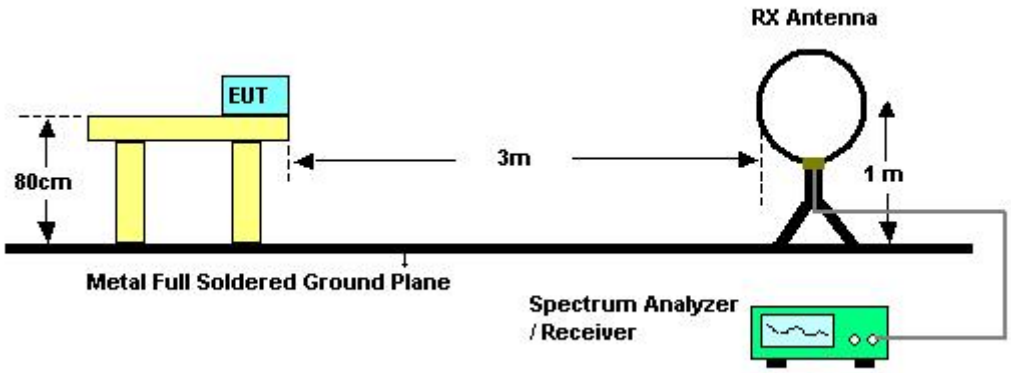
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

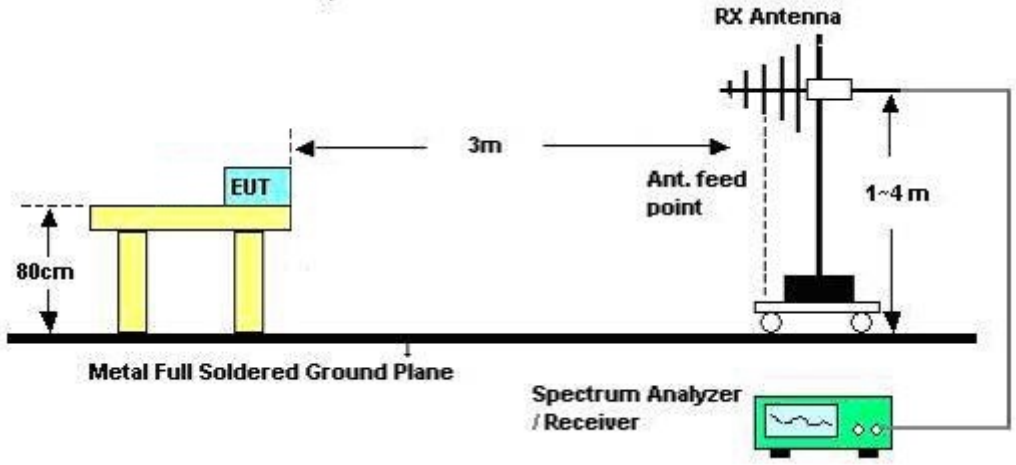
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

4.6.4. Test Setup Layout

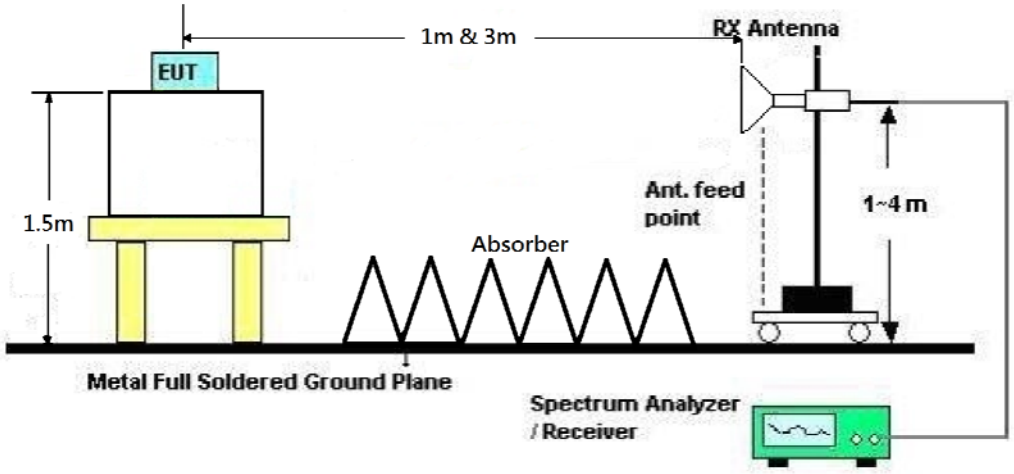
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

For Non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

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

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	Normal Link
Test Date	Mar. 21, 2016	Test Mode	Mode 1

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

Note:

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

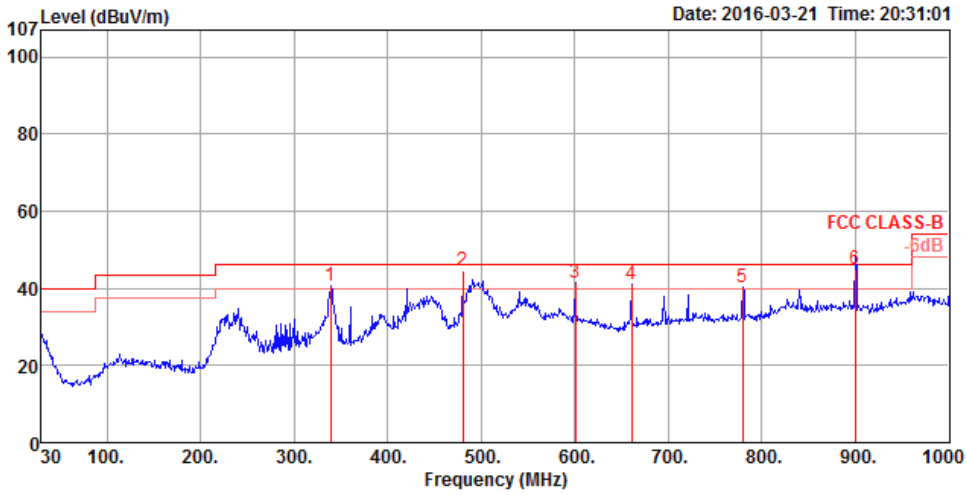
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

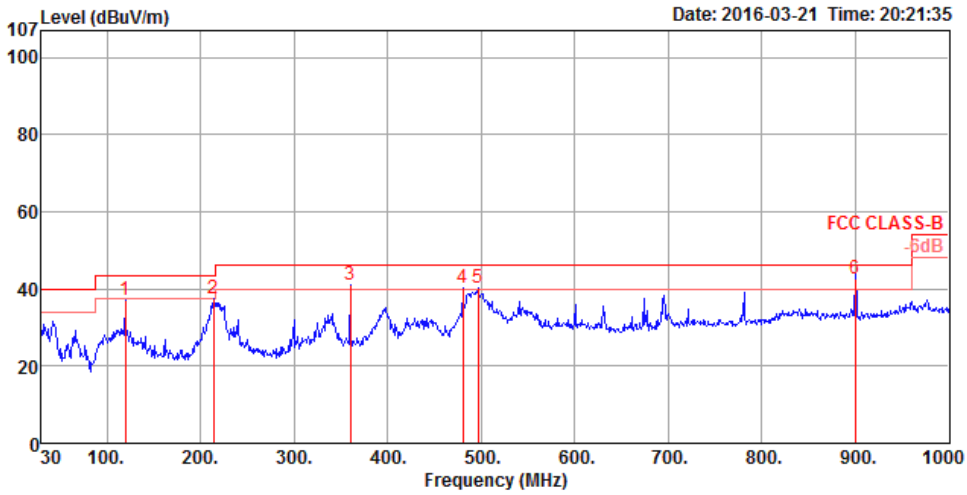
Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	Normal Link
Test Mode	Mode 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	339.43	40.57	46.00	-5.43	50.24	2.15	20.71	32.53	150	4	Peak	HORIZONTAL
2	480.08	44.49	46.00	-1.51	51.11	2.54	23.44	32.60	100	179	QP	HORIZONTAL
3	600.36	41.61	46.00	-4.39	46.67	2.83	24.80	32.69	150	130	Peak	HORIZONTAL
4	660.50	40.97	46.00	-5.03	45.28	2.97	25.35	32.63	150	201	Peak	HORIZONTAL
5	779.81	40.27	46.00	-5.73	43.10	3.19	26.41	32.43	150	209	Peak	HORIZONTAL
6	900.04	45.16	46.00	-0.84	46.15	3.37	27.50	31.86	100	118	QP	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	119.24	36.98	43.50	-6.52	49.97	1.39	18.18	32.56	100	255	Peak	VERTICAL
2	214.30	37.46	43.50	-6.04	52.09	1.76	16.15	32.54	100	141	Peak	VERTICAL
3	359.80	40.94	46.00	-5.06	50.05	2.20	21.22	32.53	200	0	Peak	VERTICAL
4	480.08	40.15	46.00	-5.85	46.77	2.54	23.44	32.60	200	261	Peak	VERTICAL
5	496.57	40.08	46.00	-5.92	46.44	2.60	23.65	32.61	100	168	Peak	VERTICAL
6	900.09	42.63	46.00	-3.37	43.62	3.37	27.50	31.86	125	329	QP	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.

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

<For Non-Beamforming Mode>

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	1199.94	53.57	74.00	-20.43	61.96	2.52	24.50	35.41	133	195	Peak	HORIZONTAL
2	1200.02	52.50	54.00	-1.50	60.89	2.52	24.50	35.41	133	195	Average	HORIZONTAL
3	15539.30	45.57	54.00	-8.43	30.60	11.45	38.16	34.64	178	157	Average	HORIZONTAL
4	15539.48	58.22	74.00	-15.78	43.25	11.45	38.16	34.64	178	157	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	1199.98	51.79	74.00	-22.21	60.18	2.52	24.50	35.41	108	195	Peak	VERTICAL
2	1199.99	51.34	54.00	-2.66	59.73	2.52	24.50	35.41	108	195	Average	VERTICAL
3	15540.09	46.01	54.00	-7.99	31.04	11.45	38.16	34.64	141	160	Average	VERTICAL
4	15540.15	45.90	74.00	-28.10	30.93	11.45	38.16	34.64	141	160	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15599.02	46.12	54.00	-7.88	31.09	11.48	38.23	34.68	236	116	Average	HORIZONTAL
2	15600.54	58.93	74.00	-15.07	43.82	11.50	38.29	34.68	236	116	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15599.32	46.77	54.00	-7.23	31.74	11.48	38.23	34.68	3	119	Average	VERTICAL
2	15600.92	59.39	74.00	-14.61	44.28	11.50	38.29	34.68	3	119	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15719.11	58.80	74.00	-15.20	43.63	11.56	38.42	34.81	326	125	Peak	HORIZONTAL
2	15720.04	46.48	54.00	-7.52	31.31	11.56	38.42	34.81	326	125	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15719.63	47.46	54.00	-6.54	32.29	11.56	38.42	34.81	36	119	Average	VERTICAL
2	15720.02	61.87	74.00	-12.13	46.70	11.56	38.42	34.81	36	119	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11489.94	49.05	54.00	-4.95	35.50	9.67	38.50	34.62	160	310	Average	HORIZONTAL
2	11490.42	62.86	74.00	-11.14	49.31	9.67	38.50	34.62	160	310	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11490.03	53.96	54.00	-0.04	40.41	9.67	38.50	34.62	130	316	Average	VERTICAL
2	11491.44	68.44	74.00	-5.56	54.89	9.67	38.50	34.62	130	316	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11570.61	48.59	54.00	-5.41	35.00	9.71	38.53	34.65	160	308	Average	HORIZONTAL
2	11573.40	61.53	74.00	-12.47	47.94	9.71	38.53	34.65	160	308	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11567.05	67.76	74.00	-6.24	54.17	9.71	38.53	34.65	128	307	Peak	VERTICAL
2	11568.11	53.81	54.00	-0.19	40.22	9.71	38.53	34.65	128	307	Average	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11649.94	48.22	54.00	-5.78	34.60	9.75	38.55	34.68	155	312	Average	HORIZONTAL
2	11653.37	61.26	74.00	-12.74	47.60	9.77	38.57	34.68	155	312	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11651.73	69.64	74.00	-4.36	55.98	9.77	38.57	34.68	129	312	Peak	VERTICAL
2	11652.12	53.80	54.00	-0.20	40.14	9.77	38.57	34.68	129	312	Average	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15531.76	46.04	54.00	-7.96	31.07	11.45	38.16	34.64	190	278	Average	HORIZONTAL
2	15539.90	58.12	74.00	-15.88	43.15	11.45	38.16	34.64	190	278	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15539.13	45.99	54.00	-8.01	31.02	11.45	38.16	34.64	115	276	Average	VERTICAL
2	15549.20	58.06	74.00	-15.94	43.09	11.45	38.16	34.64	115	276	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15598.11	46.15	54.00	-7.85	31.12	11.48	38.23	34.68	38	244	Average	HORIZONTAL
2	15604.73	59.00	74.00	-15.00	43.89	11.50	38.29	34.68	38	244	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15598.48	46.76	54.00	-7.24	31.73	11.48	38.23	34.68	243	251	Average	VERTICAL
2	15603.24	59.01	74.00	-14.99	43.90	11.50	38.29	34.68	243	251	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15719.92	46.59	54.00	-7.41	31.42	11.56	38.42	34.81	323	237	Average	HORIZONTAL
2	15720.02	58.90	74.00	-15.10	43.73	11.56	38.42	34.81	323	237	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15719.34	46.98	54.00	-7.02	31.81	11.56	38.42	34.81	223	244	Average	VERTICAL
2	15724.62	59.73	74.00	-14.27	44.56	11.56	38.42	34.81	223	244	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11490.93	59.99	74.00	-14.01	46.44	9.67	38.50	34.62	186	312	Peak	HORIZONTAL
2	11491.15	48.42	54.00	-5.58	34.87	9.67	38.50	34.62	186	312	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11491.70	53.90	54.00	-0.10	40.35	9.67	38.50	34.62	216	320	Average	VERTICAL
2	11492.18	67.79	74.00	-6.21	54.24	9.67	38.50	34.62	216	320	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11568.75	46.64	54.00	-7.36	33.05	9.71	38.53	34.65	190	320	Average	HORIZONTAL
2	11571.25	59.29	74.00	-14.71	45.70	9.71	38.53	34.65	190	320	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11567.53	68.44	74.00	-5.56	54.85	9.71	38.53	34.65	130	320	Peak	VERTICAL
2	11570.90	53.80	54.00	-0.20	40.21	9.71	38.53	34.65	130	320	Average	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11649.49	49.31	54.00	-4.69	35.69	9.75	38.55	34.68	157	314	Average	HORIZONTAL
2	11653.53	62.76	74.00	-11.24	49.10	9.77	38.57	34.68	157	314	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11648.59	53.86	54.00	-0.14	40.24	9.75	38.55	34.68	126	309	Average	VERTICAL
2	11652.34	68.11	74.00	-5.89	54.45	9.77	38.57	34.68	126	309	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15570.61	58.94	74.00	-15.06	43.91	11.48	38.23	34.68	308	202	Peak	HORIZONTAL
2	15571.92	46.46	54.00	-7.54	31.43	11.48	38.23	34.68	308	202	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15568.75	46.19	54.00	-7.81	31.16	11.48	38.23	34.68	191	197	Average	VERTICAL
2	15571.14	58.71	74.00	-15.29	43.68	11.48	38.23	34.68	191	197	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15688.64	59.26	74.00	-14.74	44.15	11.53	38.35	34.77	255	120	Peak	HORIZONTAL
2	15688.75	46.15	54.00	-7.85	31.04	11.53	38.35	34.77	255	120	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15690.38	46.62	54.00	-7.38	31.51	11.53	38.35	34.77	298	116	Average	VERTICAL
2	15692.39	59.85	74.00	-14.15	44.64	11.56	38.42	34.77	298	116	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11514.31	47.71	54.00	-6.29	34.17	9.67	38.50	34.63	159	319	Average	HORIZONTAL
2	11514.34	60.73	74.00	-13.27	47.19	9.67	38.50	34.63	159	319	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11506.70	51.33	54.00	-2.67	37.78	9.67	38.50	34.62	132	319	Average	VERTICAL
2	11508.19	68.08	74.00	-5.92	54.53	9.67	38.50	34.62	132	319	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11589.52	45.70	54.00	-8.30	32.09	9.73	38.54	34.66	293	317	Average	HORIZONTAL
2	11599.49	57.17	74.00	-16.83	43.56	9.73	38.54	34.66	293	317	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11588.33	68.63	74.00	-5.37	55.02	9.73	38.54	34.66	131	319	Peak	VERTICAL
2	11591.47	53.83	54.00	-0.17	40.22	9.73	38.54	34.66	131	319	Average	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15629.39	58.56	74.00	-15.44	43.50	11.50	38.29	34.73	104	294	Peak	HORIZONTAL
2	15632.95	46.16	54.00	-7.84	31.10	11.50	38.29	34.73	104	294	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15625.35	58.68	74.00	-15.32	43.62	11.50	38.29	34.73	178	298	Peak	VERTICAL
2	15631.51	46.30	54.00	-7.70	31.24	11.50	38.29	34.73	178	298	Average	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11545.87	57.17	74.00	-16.83	43.60	9.69	38.51	34.63	81	308	Peak	HORIZONTAL
2	11555.93	44.91	54.00	-9.09	31.32	9.71	38.53	34.65	81	308	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11546.63	59.50	74.00	-14.50	45.95	9.69	38.51	34.65	216	315	Peak	VERTICAL
2	11548.40	47.67	54.00	-6.33	34.12	9.69	38.51	34.65	216	315	Average	VERTICAL

Note:

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

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

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

<For Beamforming Mode>

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 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	15539.44	49.01	54.00	-4.99	26.07	18.54	38.13	33.73	222	339	Average	HORIZONTAL
2	15543.84	62.43	74.00	-11.57	39.49	18.54	38.13	33.73	222	339	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	15542.84	62.87	74.00	-11.13	39.93	18.54	38.13	33.73	200	316	Peak	VERTICAL
2	15546.20	49.17	54.00	-4.83	26.23	18.54	38.13	33.73	200	316	Average	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 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	15593.08	48.79	54.00	-5.21	25.94	18.57	38.05	33.77	219	134	Average	HORIZONTAL
2	15597.12	61.62	74.00	-12.38	38.77	18.57	38.05	33.77	219	134	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	15605.60	64.36	74.00	-9.64	41.55	18.60	37.98	33.77	222	22	Peak	VERTICAL
2	15606.24	49.11	54.00	-4.89	26.30	18.60	37.98	33.77	222	22	Average	VERTICAL

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 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	15718.60	62.04	74.00	-11.96	39.46	18.66	37.84	33.92	200	38	Peak	HORIZONTAL
2	15720.44	48.93	54.00	-5.07	26.35	18.66	37.84	33.92	200	38	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	15725.20	60.88	74.00	-13.12	38.30	18.66	37.84	33.92	117	32	Peak	VERTICAL
2	15729.12	49.22	54.00	-4.78	26.64	18.66	37.84	33.92	117	32	Average	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 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	11484.12	48.66	54.00	-5.34	28.01	14.82	39.20	33.37	200	119	Average	HORIZONTAL
2	11490.60	61.78	74.00	-12.22	41.13	14.82	39.20	33.37	200	119	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	11489.90	53.96	54.00	-0.04	33.31	14.82	39.20	33.37	223	48	Average	VERTICAL
2	11491.00	68.68	74.00	-5.32	48.03	14.82	39.20	33.37	223	48	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 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	11570.40	60.43	74.00	-13.57	39.73	14.89	39.20	33.39	221	304	Peak	HORIZONTAL
2	11572.64	48.04	54.00	-5.96	27.34	14.89	39.20	33.39	221	304	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	11570.20	53.91	54.00	-0.09	33.21	14.89	39.20	33.39	230	30	Average	VERTICAL
2	11570.80	69.06	74.00	-4.94	48.36	14.89	39.20	33.39	230	30	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 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	11652.44	62.24	74.00	-11.76	41.47	14.98	39.20	33.41	200	245	Peak	HORIZONTAL
2	11655.60	49.25	54.00	-4.75	28.48	14.98	39.20	33.41	200	245	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	11645.76	68.56	74.00	-5.44	47.82	14.95	39.20	33.41	221	27	Peak	VERTICAL
2	11650.20	53.79	54.00	-0.21	33.05	14.95	39.20	33.41	221	27	Average	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 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	15564.88	62.08	74.00	-11.92	39.23	18.57	38.05	33.77	150	198	Peak	HORIZONTAL
2	15565.80	48.94	54.00	-5.06	26.09	18.57	38.05	33.77	150	198	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	15563.56	49.07	54.00	-4.93	26.22	18.57	38.05	33.77	130	88	Average	VERTICAL
2	15566.96	61.96	74.00	-12.04	39.11	18.57	38.05	33.77	130	88	Peak	VERTICAL

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 17, 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	15682.36	49.23	54.00	-4.77	26.56	18.63	37.91	33.87	200	237	Average	HORIZONTAL
2	15693.56	63.12	74.00	-10.88	40.49	18.66	37.84	33.87	200	237	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	15681.60	49.25	54.00	-4.75	26.58	18.63	37.91	33.87	150	228	Average	VERTICAL
2	15689.56	62.68	74.00	-11.32	40.01	18.63	37.91	33.87	150	228	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 17, 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	11503.52	61.66	74.00	-12.34	41.01	14.82	39.20	33.37	200	329	Peak	HORIZONTAL
2	11503.88	48.82	54.00	-5.18	28.17	14.82	39.20	33.37	200	329	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	11510.20	52.42	54.00	-1.58	31.78	14.82	39.20	33.38	222	156	Average	VERTICAL
2	11513.16	66.33	74.00	-7.67	45.69	14.82	39.20	33.38	222	156	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 17, 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	11589.80	49.19	54.00	-4.81	28.47	14.92	39.20	33.40	200	253	Average	HORIZONTAL
2	11599.84	61.63	74.00	-12.37	40.91	14.92	39.20	33.40	200	253	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11589.80	53.77	54.00	-0.23	33.05	14.92	39.20	33.40	226	43	Average	VERTICAL
2	11591.30	67.65	74.00	-6.35	46.93	14.92	39.20	33.40	226	43	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 17, 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	15625.40	48.75	54.00	-5.25	25.99	18.60	37.98	33.82	200	203	Average	HORIZONTAL
2	15639.36	61.68	74.00	-12.32	38.92	18.60	37.98	33.82	200	203	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	15620.12	49.16	54.00	-4.84	26.40	18.60	37.98	33.82	215	71	Average	VERTICAL
2	15626.12	61.87	74.00	-12.13	39.11	18.60	37.98	33.82	215	71	Peak	VERTICAL

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 17, 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	11541.04	48.11	54.00	-5.89	27.44	14.85	39.20	33.38	200	338	Average	HORIZONTAL
2	11555.72	60.94	74.00	-13.06	40.24	14.89	39.20	33.39	200	338	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	11550.16	49.38	54.00	-4.62	28.72	14.85	39.20	33.39	224	311	Average	VERTICAL
2	11551.04	62.21	74.00	-11.79	41.51	14.89	39.20	33.39	224	311	Peak	VERTICAL

Note:

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

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

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

4.7. Band Edge Emissions Measurement

4.7.1. Limit

For transmitters operating in the 5.15-5.25 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 5.725-5.85 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions 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

4.7.2. 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	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

4.7.3. Test Procedures

1. The test procedure is the same as section 4.6.3.

4.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

For Non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

<For Non-Beamforming Mode>

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5145.39	65.50	74.00	-8.50	60.55	6.11	33.31	34.47	196	100	Peak	VERTICAL
2	5149.71	53.72	54.00	-0.28	48.77	6.11	33.31	34.47	196	100	Average	VERTICAL
3	5179.04	121.08			116.03	6.17	33.35	34.47	196	100	Peak	VERTICAL
4	5179.04	111.81			106.76	6.17	33.35	34.47	196	100	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5101.44	66.24	74.00	-7.76	61.45	6.01	33.25	34.47	197	100	Peak	VERTICAL
2	5114.42	53.85	54.00	-0.15	49.01	6.04	33.27	34.47	197	100	Average	VERTICAL
3	5199.04	112.50			107.39	6.20	33.38	34.47	197	100	Average	VERTICAL
4	5200.00	122.48			117.37	6.20	33.38	34.47	197	100	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5149.14	65.98	74.00	-8.02	61.03	6.11	33.31	34.47	196	100	Peak	VERTICAL
2	5150.00	53.73	54.00	-0.27	48.78	6.11	33.31	34.47	196	100	Average	VERTICAL
3	5234.71	121.83			116.54	6.32	33.44	34.47	196	100	Peak	VERTICAL
4	5238.56	112.18			106.89	6.32	33.44	34.47	196	100	Average	VERTICAL
5	5359.23	53.16	54.00	-0.84	47.40	6.62	33.61	34.47	196	100	Average	VERTICAL
6	5363.08	65.20	74.00	-8.80	59.44	6.62	33.61	34.47	196	100	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5652.05	53.31	68.20	-14.89	46.77	6.79	34.25	34.50	248	100	Peak	VERTICAL
2	5725.00	56.30	78.20	-21.90	49.88	6.43	34.50	34.51	248	100	Peak	VERTICAL
3	5744.20	95.47			89.08	6.36	34.55	34.52	248	100	Average	VERTICAL
4	5746.60	104.33			97.94	6.36	34.55	34.52	248	100	Peak	VERTICAL
5	5850.00	48.97	78.20	-29.23	42.27	6.39	34.85	34.54	248	100	Peak	VERTICAL
6	5870.00	49.85	68.20	-18.35	43.02	6.47	34.90	34.54	248	100	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5685.64	63.88	68.20	-4.32	57.39	6.65	34.35	34.51	251	193	Peak	VERTICAL
2	5725.00	61.91	78.20	-16.29	55.49	6.43	34.50	34.51	251	193	Peak	VERTICAL
3	5782.60	116.83			110.49	6.22	34.65	34.53	251	193	Peak	VERTICAL
4	5784.20	107.13			100.79	6.22	34.65	34.53	251	193	Average	VERTICAL
5	5850.00	62.09	78.20	-16.11	55.39	6.39	34.85	34.54	251	193	Peak	VERTICAL
6	5865.93	61.73	68.20	-6.47	54.90	6.47	34.90	34.54	251	193	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5785 MHz.

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5712.82	62.72	68.20	-5.48	56.28	6.50	34.45	34.51	245	193	Peak	VERTICAL
2	5725.00	60.53	78.20	-17.67	54.11	6.43	34.50	34.51	245	193	Peak	VERTICAL
3	5823.40	114.27			107.70	6.31	34.80	34.54	245	193	Peak	VERTICAL
4	5826.60	105.55			98.98	6.31	34.80	34.54	245	193	Average	VERTICAL
5	5850.00	63.66	78.20	-14.54	56.96	6.39	34.85	34.54	245	193	Peak	VERTICAL
6	5949.20	62.81	68.20	-5.39	55.35	6.87	35.15	34.56	245	193	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5825 MHz.

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5139.14	65.93	74.00	-8.07	61.04	6.07	33.29	34.47	195	100	Peak	VERTICAL
2	5150.00	53.64	54.00	-0.36	48.69	6.11	33.31	34.47	195	100	Average	VERTICAL
3	5176.64	120.36			115.31	6.17	33.35	34.47	195	100	Peak	VERTICAL
4	5179.04	110.52			105.47	6.17	33.35	34.47	195	100	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5126.44	53.63	54.00	-0.37	48.79	6.04	33.27	34.47	196	101	Average	VERTICAL
2	5150.00	66.63	74.00	-7.37	61.68	6.11	33.31	34.47	196	101	Peak	VERTICAL
3	5201.92	121.00			115.83	6.24	33.40	34.47	196	101	Peak	VERTICAL
4	5201.92	111.63			106.46	6.24	33.40	34.47	196	101	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5146.73	66.18	74.00	-7.82	61.23	6.11	33.31	34.47	196	102	Peak	VERTICAL
2	5150.00	53.77	54.00	-0.23	48.82	6.11	33.31	34.47	196	102	Average	VERTICAL
3	5236.64	120.34			115.05	6.32	33.44	34.47	196	102	Peak	VERTICAL
4	5239.04	111.25			105.96	6.32	33.44	34.47	196	102	Average	VERTICAL
5	5353.46	65.92	74.00	-8.08	60.22	6.58	33.59	34.47	196	102	Peak	VERTICAL
6	5354.90	53.97	54.00	-0.03	48.21	6.62	33.61	34.47	196	102	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	22℃	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5707.50	64.76	68.20	-3.44	58.32	6.50	34.45	34.51	250	184	Peak	VERTICAL
2	5725.00	67.01	78.20	-11.19	60.59	6.43	34.50	34.51	250	184	Peak	VERTICAL
3	5743.08	117.27			110.88	6.36	34.55	34.52	250	184	Peak	VERTICAL
4	5744.04	107.68			101.29	6.36	34.55	34.52	250	184	Average	VERTICAL
5	5850.00	62.22	78.20	-15.98	55.52	6.39	34.85	34.54	250	184	Peak	VERTICAL
6	5872.40	62.30	68.20	-5.90	55.47	6.47	34.90	34.54	250	184	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5689.33	65.50	68.20	-2.70	59.04	6.57	34.40	34.51	248	204	Peak	VERTICAL
2	5725.00	62.65	78.20	-15.55	56.23	6.43	34.50	34.51	248	204	Peak	VERTICAL
3	5785.48	117.58			111.24	6.22	34.65	34.53	248	204	Peak	VERTICAL
4	5787.40	107.24			100.90	6.22	34.65	34.53	248	204	Average	VERTICAL
5	5850.00	62.32	78.20	-15.88	55.62	6.39	34.85	34.54	248	204	Peak	VERTICAL
6	5862.40	63.70	68.20	-4.50	56.87	6.47	34.90	34.54	248	204	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5785 MHz.

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5680.29	64.17	68.20	-4.03	57.68	6.65	34.35	34.51	248	195	Peak	VERTICAL
2	5725.00	61.64	78.20	-16.56	55.22	6.43	34.50	34.51	248	195	Peak	VERTICAL
3	5824.04	116.77			110.20	6.31	34.80	34.54	248	195	Peak	VERTICAL
4	5824.04	106.36			99.79	6.31	34.80	34.54	248	195	Average	VERTICAL
5	5850.00	61.47	78.20	-16.73	54.77	6.39	34.85	34.54	248	195	Peak	VERTICAL
6	5909.14	62.63	68.20	-5.57	55.42	6.71	35.05	34.55	248	195	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5144.17	64.84	74.00	-9.16	59.89	6.11	33.31	34.47	195	101	Peak	VERTICAL
2	5150.00	53.90	54.00	-0.10	48.95	6.11	33.31	34.47	195	101	Average	VERTICAL
3	5187.44	107.10			101.99	6.20	33.38	34.47	195	101	Average	VERTICAL
4	5188.08	116.41			111.30	6.20	33.38	34.47	195	101	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5148.75	53.43	54.00	-0.57	48.48	6.11	33.31	34.47	196	100	Average	VERTICAL
2	5149.71	65.13	74.00	-8.87	60.18	6.11	33.31	34.47	196	100	Peak	VERTICAL
3	5231.92	106.12			100.83	6.32	33.44	34.47	196	100	Average	VERTICAL
4	5234.33	115.18			109.89	6.32	33.44	34.47	196	100	Peak	VERTICAL
5	5352.12	53.82	54.00	-0.18	48.12	6.58	33.59	34.47	196	100	Average	VERTICAL
6	5359.81	64.61	74.00	-9.39	58.85	6.62	33.61	34.47	196	100	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5627.60	67.99	68.20	-0.21	61.43	6.86	34.20	34.50	254	192	Peak	VERTICAL
2	5725.00	71.54	78.20	-6.66	65.12	6.43	34.50	34.51	254	192	Peak	VERTICAL
3	5752.12	116.58			110.19	6.36	34.55	34.52	254	192	Peak	VERTICAL
4	5753.08	106.47			100.08	6.36	34.55	34.52	254	192	Average	VERTICAL
5	5850.00	63.76	78.20	-14.44	57.06	6.39	34.85	34.54	254	192	Peak	VERTICAL
6	5865.58	66.34	68.20	-1.86	59.51	6.47	34.90	34.54	254	192	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5755 MHz.

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5642.44	65.11	68.20	-3.09	58.57	6.79	34.25	34.50	251	200	Peak	VERTICAL
2	5725.00	63.13	78.20	-15.07	56.71	6.43	34.50	34.51	251	200	Peak	VERTICAL
3	5796.92	114.52			108.20	6.15	34.70	34.53	251	200	Peak	VERTICAL
4	5798.21	105.54			99.22	6.15	34.70	34.53	251	200	Average	VERTICAL
5	5850.00	61.96	78.20	-16.24	55.26	6.39	34.85	34.54	251	200	Peak	VERTICAL
6	5863.59	63.24	68.20	-4.96	56.41	6.47	34.90	34.54	251	200	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5795 MHz.

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5143.49	65.29	74.00	-8.71	60.34	6.11	33.31	34.47	197	100	Peak	VERTICAL
2	5150.00	53.98	54.00	-0.02	49.03	6.11	33.31	34.47	197	100	Average	VERTICAL
3	5213.21	100.66			95.49	6.24	33.40	34.47	197	100	Average	VERTICAL
4	5215.61	110.69			105.52	6.24	33.40	34.47	197	100	Peak	VERTICAL
5	5350.00	52.53	54.00	-1.47	46.83	6.58	33.59	34.47	197	100	Average	VERTICAL
6	5353.43	63.18	74.00	-10.82	57.48	6.58	33.59	34.47	197	100	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5210 MHz.

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5711.70	68.18	68.20	-0.02	61.74	6.50	34.45	34.51	252	197	Peak	VERTICAL
2	5725.00	70.21	78.20	-7.99	63.79	6.43	34.50	34.51	252	197	Peak	VERTICAL
3	5773.40	99.52			93.18	6.22	34.65	34.53	252	197	Average	VERTICAL
4	5782.21	109.03			102.69	6.22	34.65	34.53	252	197	Peak	VERTICAL
5	5850.00	64.56	78.20	-13.64	57.86	6.39	34.85	34.54	252	197	Peak	VERTICAL
6	5861.54	65.50	68.20	-2.70	58.67	6.47	34.90	34.54	252	197	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5775 MHz.

Note:

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

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

<For Beamforming Mode>

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Channel 36

	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	5148.40	66.55	74.00	-7.45	55.43	10.43	33.74	33.05	104	283	Peak	VERTICAL
2	5150.00	53.86	54.00	-0.14	42.74	10.43	33.74	33.05	104	283	Average	VERTICAL
3	5182.80	118.67			107.47	10.46	33.79	33.05	104	283	Peak	VERTICAL
4	5183.20	109.43			98.23	10.46	33.79	33.05	104	283	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5125.00	64.69	74.00	-9.31	53.65	10.40	33.69	33.05	101	254	Peak	VERTICAL
2	5149.60	53.78	54.00	-0.22	42.66	10.43	33.74	33.05	101	254	Average	VERTICAL
3	5195.80	120.78			109.53	10.48	33.82	33.05	101	254	Peak	VERTICAL
4	5197.60	111.54			100.29	10.48	33.82	33.05	101	254	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5150.00	53.72	54.00	-0.28	42.60	10.43	33.74	33.05	107	134	Average	VERTICAL
2	5150.00	66.50	74.00	-7.50	55.38	10.43	33.74	33.05	107	134	Peak	VERTICAL
3	5243.00	112.41			101.11	10.47	33.89	33.06	107	134	Average	VERTICAL
4	5243.00	121.96			110.66	10.47	33.89	33.06	107	134	Peak	VERTICAL
5	5351.60	53.13	54.00	-0.87	41.70	10.43	34.06	33.06	107	134	Average	VERTICAL
6	5352.20	65.26	74.00	-8.74	53.83	10.43	34.06	33.06	107	134	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016		

Channel 149

	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	5715.00	64.93	68.20	-3.27	52.85	10.78	34.43	33.13	183	98	Peak	VERTICAL
2	5725.00	72.58	78.20	-5.62	60.50	10.77	34.44	33.13	183	98	Peak	VERTICAL
3	5746.60	105.72			93.65	10.76	34.45	33.14	183	98	Average	VERTICAL
4	5746.60	116.25			104.18	10.76	34.45	33.14	183	98	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5745 MHz.

Channel 157

	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	5709.80	63.86	68.20	-4.34	51.78	10.78	34.43	33.13	146	109	Peak	VERTICAL
2	5718.20	63.44	78.20	-14.76	51.36	10.78	34.43	33.13	146	109	Peak	VERTICAL
3	5787.00	104.17			92.11	10.74	34.47	33.15	146	109	Average	VERTICAL
4	5788.20	114.40			102.34	10.74	34.47	33.15	146	109	Peak	VERTICAL
5	5851.60	61.60	78.20	-16.60	49.36	10.90	34.51	33.17	146	109	Peak	VERTICAL
6	5872.60	61.63	68.20	-6.57	49.33	10.96	34.52	33.18	146	109	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5785 MHz.

Channel 165

	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	5828.20	105.52			93.34	10.85	34.50	33.17	180	108	Average	VERTICAL
2	5828.20	115.41			103.23	10.85	34.50	33.17	180	108	Peak	VERTICAL
3	5851.00	64.82	78.20	-13.38	52.58	10.90	34.51	33.17	180	108	Peak	VERTICAL
4	5863.40	63.03	68.20	-5.17	50.73	10.96	34.52	33.18	180	108	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 16, 2016 ~ Mar. 17, 2016		

Channel 38

	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	67.23	74.00	-6.77	56.11	10.43	33.74	33.05	111	284	Peak	VERTICAL
2	5150.00	53.84	54.00	-0.16	42.72	10.43	33.74	33.05	111	284	Average	VERTICAL
3	5199.60	113.98			102.73	10.48	33.82	33.05	111	284	Peak	VERTICAL
4	5200.00	103.87			92.62	10.48	33.82	33.05	111	284	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	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	5143.60	64.48	74.00	-9.52	53.36	10.43	33.74	33.05	114	114	Peak	VERTICAL
2	5149.00	52.48	54.00	-1.52	41.36	10.43	33.74	33.05	114	114	Average	VERTICAL
3	5224.60	117.39			106.11	10.47	33.86	33.05	114	114	Peak	VERTICAL
4	5225.20	107.97			96.69	10.47	33.86	33.05	114	114	Average	VERTICAL
5	5353.60	53.71	54.00	-0.29	42.28	10.43	34.06	33.06	114	114	Average	VERTICAL
6	5367.40	65.93	74.00	-8.07	54.48	10.43	34.08	33.06	114	114	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 17, 2016		

Channel 151

	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	5713.80	68.10	68.20	-0.10	56.02	10.78	34.43	33.13	200	86	Peak	HORIZONTAL
2	5723.00	73.55	78.20	-4.65	61.47	10.77	34.44	33.13	200	86	Peak	HORIZONTAL
3	5747.80	104.54			92.47	10.76	34.45	33.14	200	86	Average	HORIZONTAL
4	5749.40	114.58			102.51	10.76	34.45	33.14	200	86	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5755 MHz.

Channel 159

	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	5713.00	65.02	68.20	-3.18	52.94	10.78	34.43	33.13	215	264	Peak	VERTICAL
2	5719.80	65.75	78.20	-12.45	53.67	10.78	34.43	33.13	215	264	Peak	VERTICAL
3	5799.00	105.03			92.97	10.73	34.48	33.15	215	264	Average	VERTICAL
4	5804.60	114.97			102.92	10.73	34.48	33.16	215	264	Peak	VERTICAL
5	5850.60	64.16	78.20	-14.04	51.92	10.90	34.51	33.17	215	264	Peak	VERTICAL
6	5877.00	64.21	68.20	-3.99	51.84	11.02	34.53	33.18	215	264	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5795 MHz.

Temperature	22°C	Humidity	50%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Mar. 17, 2016		

Channel 42

	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	5149.20	63.80	74.00	-10.20	52.68	10.43	33.74	33.05	199	334	Peak	VERTICAL
2	5150.00	53.75	54.00	-0.25	42.63	10.43	33.74	33.05	199	334	Average	VERTICAL
3	5233.20	110.06			98.75	10.47	33.89	33.05	199	334	Peak	VERTICAL
4	5237.20	100.50			89.19	10.47	33.89	33.05	199	334	Average	VERTICAL
5	5350.00	50.32	54.00	-3.68	38.89	10.43	34.06	33.06	199	334	Average	VERTICAL
6	5371.60	63.07	74.00	-10.93	51.60	10.42	34.11	33.06	199	334	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5210 MHz.

Channel 155

	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	5713.40	68.06	68.20	-0.14	55.98	10.78	34.43	33.13	206	85	Peak	VERTICAL
2	5723.00	71.10	78.20	-7.10	59.02	10.77	34.44	33.13	206	85	Peak	VERTICAL
3	5746.20	100.30			88.23	10.76	34.45	33.14	206	85	Average	VERTICAL
4	5749.40	111.19			99.12	10.76	34.45	33.14	206	85	Peak	VERTICAL
5	5851.00	65.25	78.20	-12.95	53.01	10.90	34.51	33.17	206	85	Peak	VERTICAL
6	5869.40	63.65	68.20	-4.55	51.35	10.96	34.52	33.18	206	85	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 5775 MHz.

Note:

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

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

4.8. Frequency Stability Measurement

4.8.1. 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).

4.8.2. Measuring Instruments and Setting

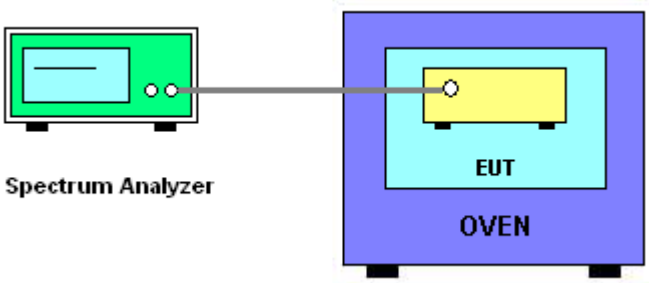
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.8.3. 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. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
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 -30°C~50°C.

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

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

4.8.7. Test Result of Frequency Stability

Temperature	20°C	Humidity	55%
Test Engineer	Serway Li	Test Date	Mar. 22, 2016

Mode: 20 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9845	5199.9836	5199.9833	5199.9827
110.00	5199.9835	5199.9829	5199.9821	5199.9820
93.50	5199.9828	5199.9819	5199.9817	5199.9814
Max. Deviation (MHz)	0.0172	0.0181	0.0183	0.0186
Max. Deviation (ppm)	3.31	3.48	3.52	3.58
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5199.9798	5199.9796	5199.9789	5199.9783
-20	5199.9804	5199.9795	5199.9791	5199.9788
-10	5199.9808	5199.9806	5199.9802	5199.9794
0	5199.9822	5199.9821	5199.9817	5199.9809
10	5199.9832	5199.9829	5199.9820	5199.9819
20	5199.9835	5199.9826	5199.9825	5199.9823
30	5199.9841	5199.9835	5199.9834	5199.9829
40	5199.9860	5199.9859	5199.9858	5199.9849
50	5199.9872	5199.9870	5199.9862	5199.9854
Max. Deviation (MHz)	0.0202	0.0205	0.0211	0.0217
Max. Deviation (ppm)	3.88	3.94	4.06	4.17
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9869	5784.9859	5784.9855	5784.9851
110.00	5784.9865	5784.9858	5784.9856	5784.9848
93.50	5784.9862	5784.9861	5784.9860	5784.9855
Max. Deviation (MHz)	0.0138	0.0142	0.0145	0.0152
Max. Deviation (ppm)	2.39	2.45	2.51	2.63
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5784.9837	5784.9833	5784.9824	5784.9815
-20	5784.9841	5784.9832	5784.9828	5784.9826
-10	5784.9844	5784.9834	5784.9828	5784.9821
0	5784.9855	5784.9854	5784.9853	5784.9848
10	5784.9862	5784.9855	5784.9852	5784.9846
20	5784.9865	5784.9858	5784.9848	5784.9838
30	5784.9872	5784.9868	5784.9859	5784.9852
40	5784.9875	5784.9868	5784.9861	5784.9859
50	5784.9882	5784.9881	5784.9880	5784.9876
Max. Deviation (MHz)	0.0163	0.0168	0.0176	0.0185
Max. Deviation (ppm)	2.82	2.90	3.04	3.20
Result	Complies			

Mode: 40 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9866	5189.9863	5189.9860	5189.9855
110.00	5189.9856	5189.9848	5189.9841	5189.9840
93.50	5189.9851	5189.9847	5189.9846	5189.9843
Max. Deviation (MHz)	0.0149	0.0153	0.0159	0.0160
Max. Deviation (ppm)	2.87	2.95	3.06	3.08
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5189.9920	5189.9919	5189.9914	5189.9913
-20	5189.9919	5189.9912	5189.9905	5189.9902
-10	5189.9899	5189.9889	5189.9885	5189.9876
0	5189.9883	5189.9877	5189.9869	5189.9864
10	5189.9871	5189.9869	5189.9865	5189.9856
20	5189.9856	5189.9851	5189.9848	5189.9842
30	5189.9843	5189.9841	5189.9836	5189.9830
40	5189.9827	5189.9823	5189.9813	5189.9805
50	5189.9818	5189.9811	5189.9808	5189.9802
Max. Deviation (MHz)	0.0182	0.0189	0.0192	0.0198
Max. Deviation (ppm)	3.51	3.64	3.70	3.82
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9839	5754.9838	5754.9831	5754.9822
110.00	5754.9836	5754.9833	5754.9823	5754.9820
93.50	5754.9835	5754.9827	5754.9820	5754.9816
Max. Deviation (MHz)	0.0165	0.0173	0.0180	0.0184
Max. Deviation (ppm)	2.87	3.01	3.13	3.20
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5754.9874	5754.9864	5754.9863	5754.9859
-20	5754.9866	5754.9856	5754.9852	5754.9849
-10	5754.9862	5754.9852	5754.9844	5754.9837
0	5754.9848	5754.9839	5754.9833	5754.9827
10	5754.9845	5754.9835	5754.9834	5754.9827
20	5754.9836	5754.9829	5754.9827	5754.9825
30	5754.9829	5754.9821	5754.9812	5754.9809
40	5754.9816	5754.9806	5754.9799	5754.9798
50	5754.9814	5754.9810	5754.9804	5754.9803
Max. Deviation (MHz)	0.0186	0.0194	0.0201	0.0202
Max. Deviation (ppm)	3.23	3.37	3.49	3.51
Result	Complies			

Mode: 80 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5209.9846	5209.9841	5209.9834	5209.9826
110.00	5209.9838	5209.9834	5209.9828	5209.9824
93.50	5209.9829	5209.9819	5209.9818	5209.9815
Max. Deviation (MHz)	0.0171	0.0181	0.0182	0.0185
Max. Deviation (ppm)	3.28	3.47	3.49	3.55
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5209.9774	5209.9769	5209.9766	5209.9759
-20	5209.9783	5209.9779	5209.9774	5209.9769
-10	5209.9801	5209.9799	5209.9796	5209.9789
0	5209.9820	5209.9818	5209.9817	5209.9810
10	5209.9835	5209.9832	5209.9825	5209.9822
20	5209.9838	5209.9829	5209.9828	5209.9825
30	5209.9842	5209.9840	5209.9832	5209.9827
40	5209.9848	5209.9842	5209.9840	5209.9837
50	5209.9862	5209.9856	5209.9854	5209.9851
Max. Deviation (MHz)	0.0226	0.0231	0.0234	0.0241
Max. Deviation (ppm)	4.34	4.43	4.49	4.63
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9875	5774.9869	5774.9859	5774.9858
110.00	5774.9865	5774.9861	5774.9858	5774.9856
93.50	5774.9856	5774.9847	5774.9839	5774.9830
Max. Deviation (MHz)	0.0144	0.0153	0.0161	0.0170
Max. Deviation (ppm)	2.49	2.65	2.79	2.94
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5774.9938	5774.9932	5774.9929	5774.9928
-20	5774.9921	5774.9918	5774.9916	5774.9909
-10	5774.9910	5774.9907	5774.9899	5774.9893
0	5774.9903	5774.9897	5774.9888	5774.9880
10	5774.9883	5774.9876	5774.9866	5774.9864
20	5774.9865	5774.9861	5774.9860	5774.9852
30	5774.9861	5774.9854	5774.9851	5774.9842
40	5774.9849	5774.9840	5774.9830	5774.9821
50	5774.9847	5774.9843	5774.9834	5774.9829
Max. Deviation (MHz)	0.0153	0.0160	0.0170	0.0179
Max. Deviation (ppm)	2.65	2.77	2.94	3.10
Result	Complies			

4.9. Antenna Requirements

4.9.1. 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.

4.9.2. Antenna Connector Construction

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

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 25, 2015	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
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)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 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)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 27, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 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-I0-7	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. 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)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	RG402	High Cable-6	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.

"*" Calibration Interval of instruments listed above is two years.

N.C.R. means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%