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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-APA2600M**
Manufacturer's company	**Amped Wireless**
Manufacturer Address	13089 Peyton Dr. #C307 Chino Hills, CA 91709 USA

Product Name	ATHENA-AP– High Power AC2600 Wi-Fi Access Point with MU-MIMO
Brand Name	amped wireless
Model No.	APA2600M
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Jul. 07, 2016
Final Test Date	Aug. 31, 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 v01r03, KDB662911 D01 v02r01, KDB644545 D03 v01, ET Docket No. 13–49; FCC 16–24.**

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

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR631722-02AB	Rev. 01	Initial issue of report	Oct. 19, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	ATHENA-AP– High Power AC2600 Wi-Fi Access Point with MU-MIMO
Brand Name	:	amped wireless
Model No.	:	APA2600M
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 Jul. 07, 2016 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E			
Part	**Rule Section**	**Description of Test**	**Result**
4.1	15.207	AC Power Line Conducted Emissions	Complies
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
4.5	15.407(a)	Power Spectral Density	Complies
4.6	15.407(b)	Radiated Emissions	Complies
4.7	15.407(b)	Band Edge Emissions	Complies
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 Bandwidth (99%)	For non-beamforming function: Band 1: IEEE 802.11a: 16.67 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.54 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.61 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.25 MHz Band 4: IEEE 802.11a: 16.41 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.54 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.18 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.39 MHz For beamforming function: Band 1: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.54 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.04 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 73.52 MHz Band 4: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.54 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.18 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.54 MHz

Maximum Conducted Output Power	For non-beamforming function: Band 1: IEEE 802.11a: 25.39 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 25.39 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 25.38 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.32 dBm Band 4: IEEE 802.11a: 25.37 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 26.10 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 28.80 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 29.89 dBm For beamforming function: Band 1: IEEE 802.11ac MCS0/Nss1 (VHT20): 25.08 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 25.12 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 21.07 dBm Band 4: IEEE 802.11ac MCS0/Nss1 (VHT20): 25.38 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 25.36 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 25.14 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
	The product has beamforming function for 802.11n/ac in 5GHz band.	
Operate Condition	☒ Indoor	☐ Outdoor

Antenna and Bandwidth

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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	4	MCS 0-31
802.11n (HT40)	4	MCS 0-31
802.11ac (VHT20)	4	MCS 0-9/Nss1-4
802.11ac (VHT40)	4	MCS 0-9/Nss1-4
802.11ac (VHT80)	4	MCS 0-9/Nss1-4
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40. Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40 and VHT80. Note 3: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac		

3.2. Accessories

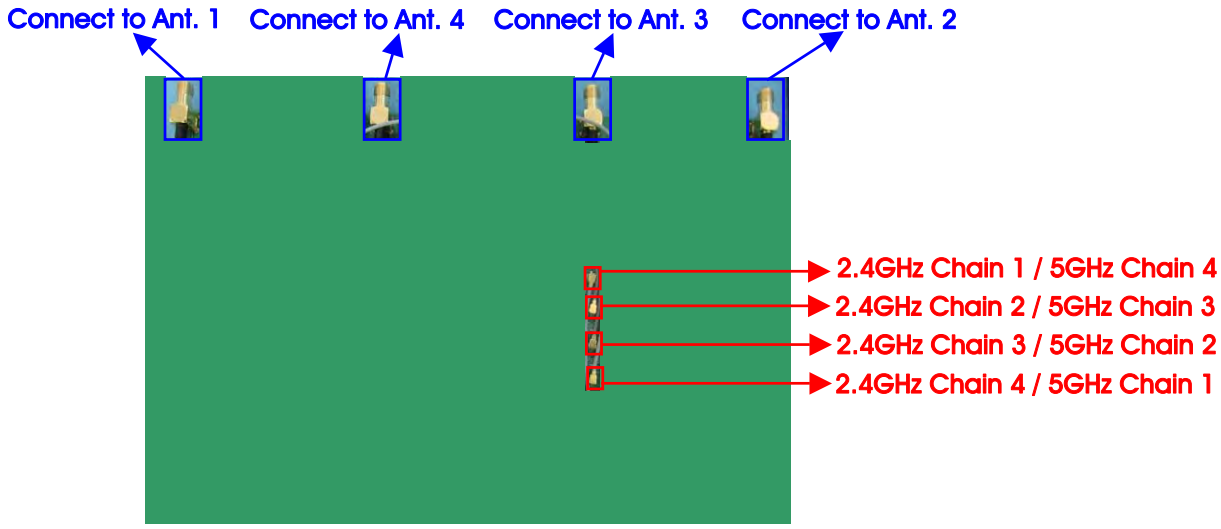
Power	Brand	Model	Rating
Adapter	LEI	MU42-3120350-A1	Input: 100-240Vac, 50/60Hz, 1.5A Output: 12Vdc, 3.5A
Other			
RJ-45 cable*1: Non-shielded, 0.9m			

3.3. Table for Filed Antenna

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

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

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



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 function:				
	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 function:				
	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 function:				
	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 function:				
	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 function:				
	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 function:				
	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 function:				
	11a/BPSK	Band 1&4	6Mbps	149/157/165	1+2+3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	155	1+2+3+4
	For beamforming function:				
	11ac VHT20	Band 1&4	MCS0/Nss1	149/157/165	1+2+3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	151/159	1+2+3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	155	1+2+3+4
Radiated Emission Below 1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	For non-beamforming function:				
	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 function:				
	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 function:				
	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 function:				
	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	1
	40 MHz	Band 1&4	-	38/151	1
	80 MHz	Band 1&4	-	42/155	1

Note: 1. The EUT can only be used at Z axis position.

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

3. There are two functions of EUT, one is beamforming function, and the other is non-beamforming function for 802.11n/ac in 5GHz band. All test results were recorded in this report.

The following test modes were performed for all tests:

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 FA631722-02) 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: 03CH01-CB (below 1 GHz)

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
NB*2	Apple	Mac Book	DoC
Flash disk	Silicon Power	Touch 835	DoC
Flash disk	Silicon Power	I-Series	DoC

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

For non-beamforming function:

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

For beamforming function:

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
ATHENA-AP– High Power AC2600 Wi-Fi Access Point with MU-MIMO (RX Device)	amped wireless	APA2600M	ZTT-APA2600M

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB*4	DELL	E6430	DoC
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
NB	DELL	E4300	DoC

3.8. Table for Parameters of Test Software Setting

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

For non-beamforming function:

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	13	13	16	18	18	18
802.11ac MCS0/Nss1 VHT20	0D	0B	0C	10	10	10
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	0C		0D		10	17
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	9				10	

For beamforming function:

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
802.11ac MCS0/Nss1 VHT20	13	13	14	19	19	10
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	10		14		19	18
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	7				19	

3.9. EUT Operation during Test

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

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 telnet.
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 function:

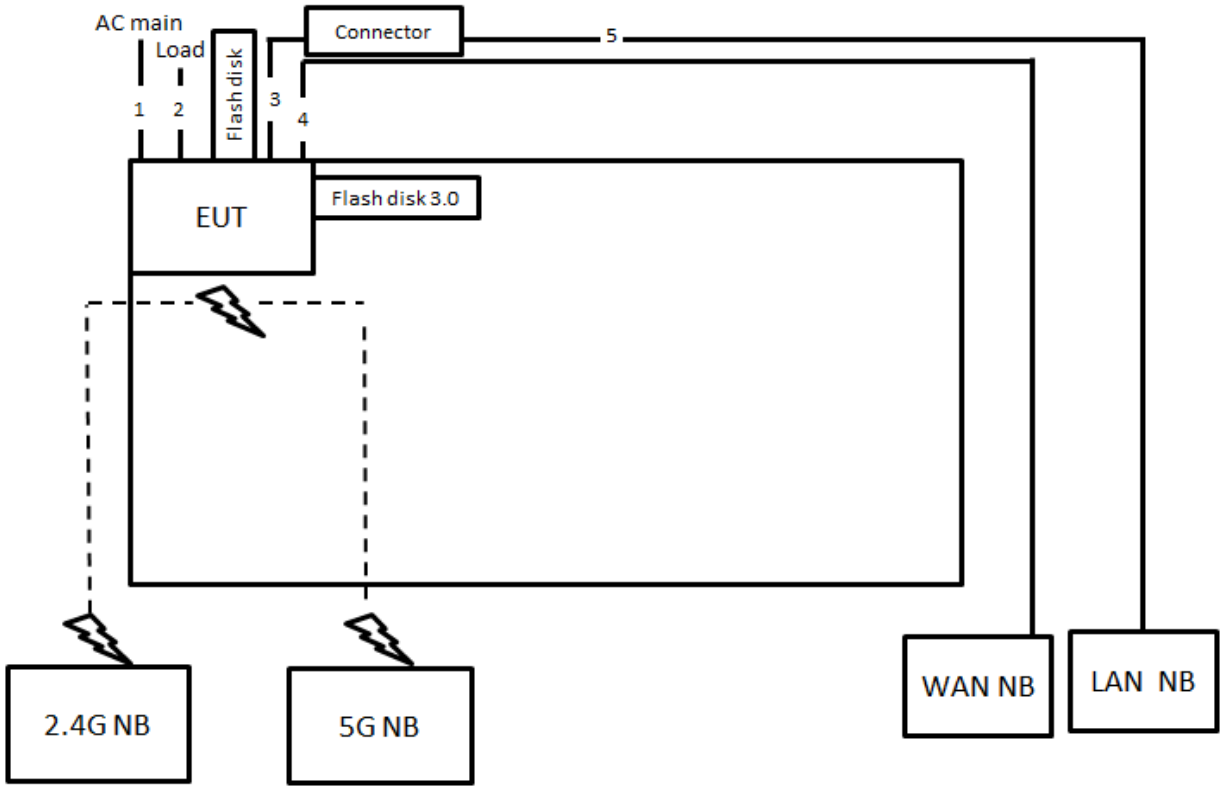
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	1.000	1.000	100.00	0.00	0.01
802.11ac MCS0/Nss1 VHT20	1.000	1.000	100.00	0.00	0.01
802.11ac MCS0/Nss1 VHT40	1.000	1.000	100.00	0.00	0.01
802.11ac MCS0/Nss1 VHT80	1.000	1.000	100.00	0.00	0.01

For beamforming function:

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	100.00	0.00	0.01
802.11ac MCS0/Nss1 VHT40	1.000	1.000	100.00	0.00	0.01
802.11ac MCS0/Nss1 VHT80	1.000	1.000	100.00	0.00	0.01

3.11. Test Configurations

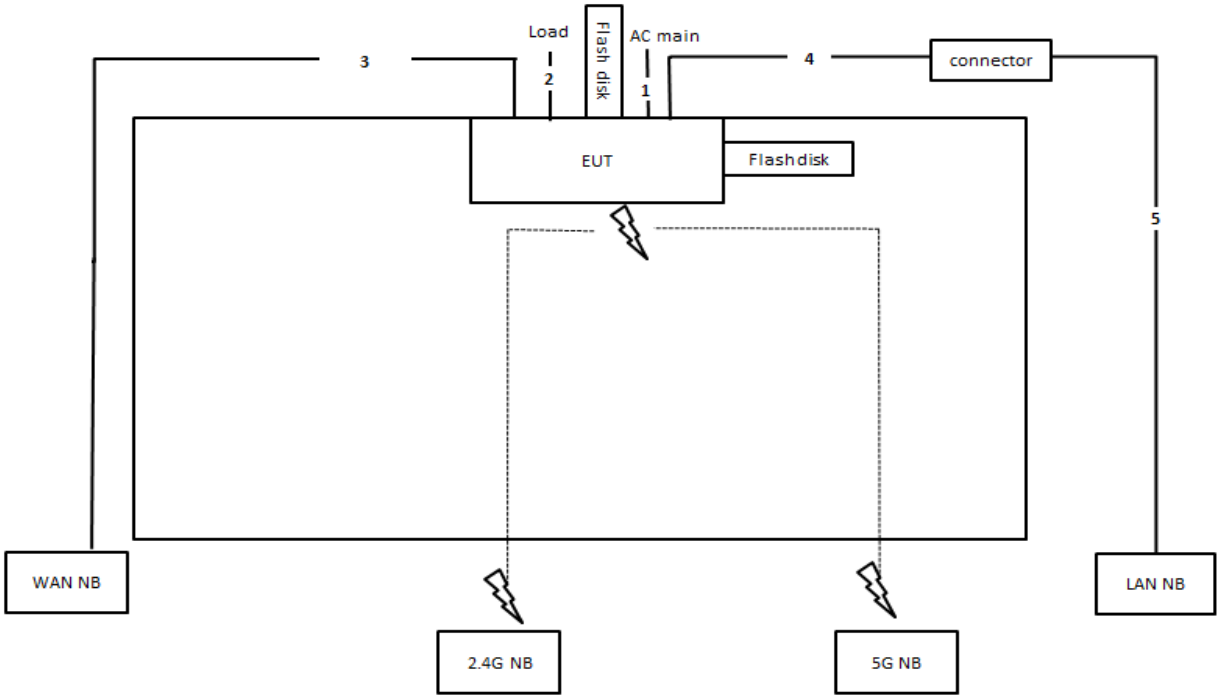
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable*3	No	1.5m
3	RJ-45 cable	No	0.9m
4	RJ-45 cable	No	10m
5	RJ-45 cable	No	10m

3.11.2. Radiation Emissions Test Configuration

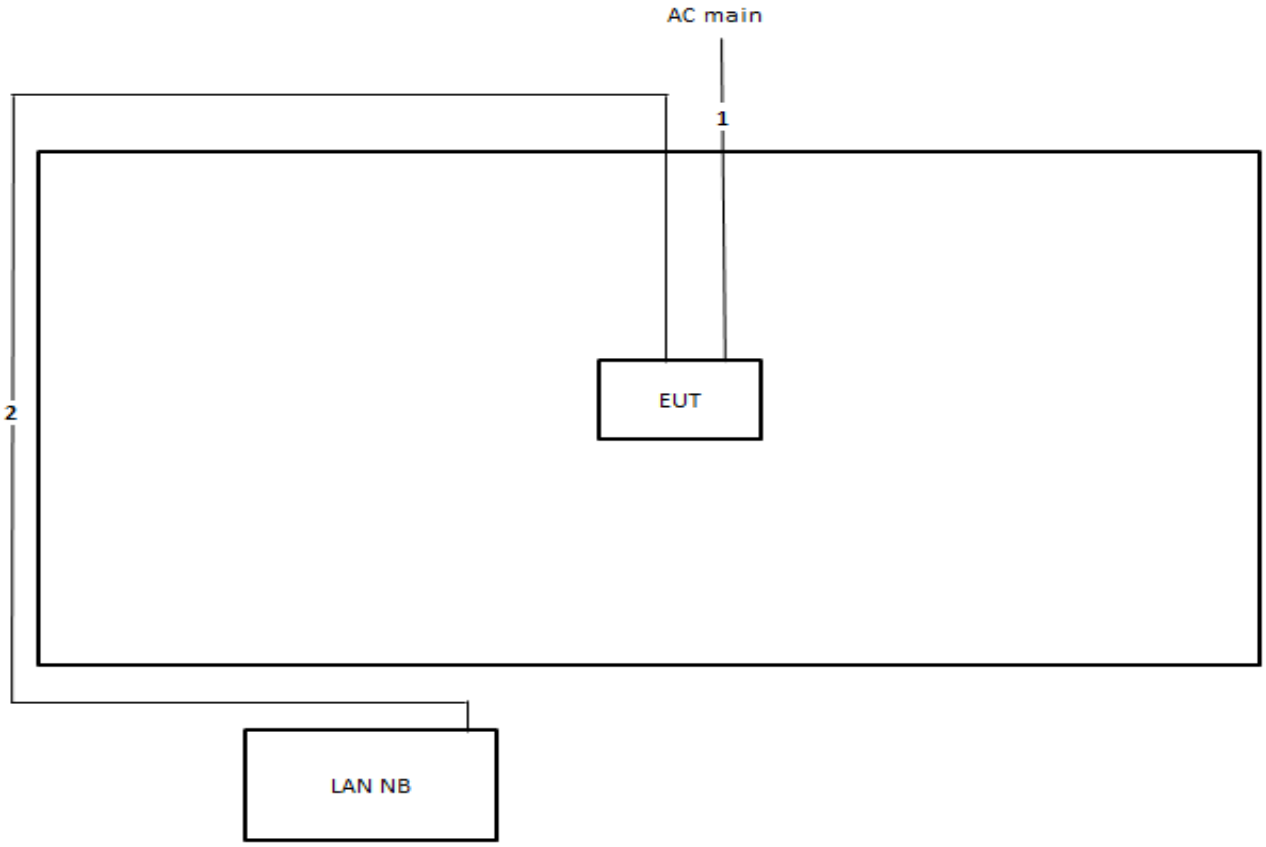
Test Configuration: 30MHz~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable*3	No	1.5m
3	RJ-45 cable	No	10m
4	RJ-45 cable	No	0.9m
5	RJ-45 cable	No	10m

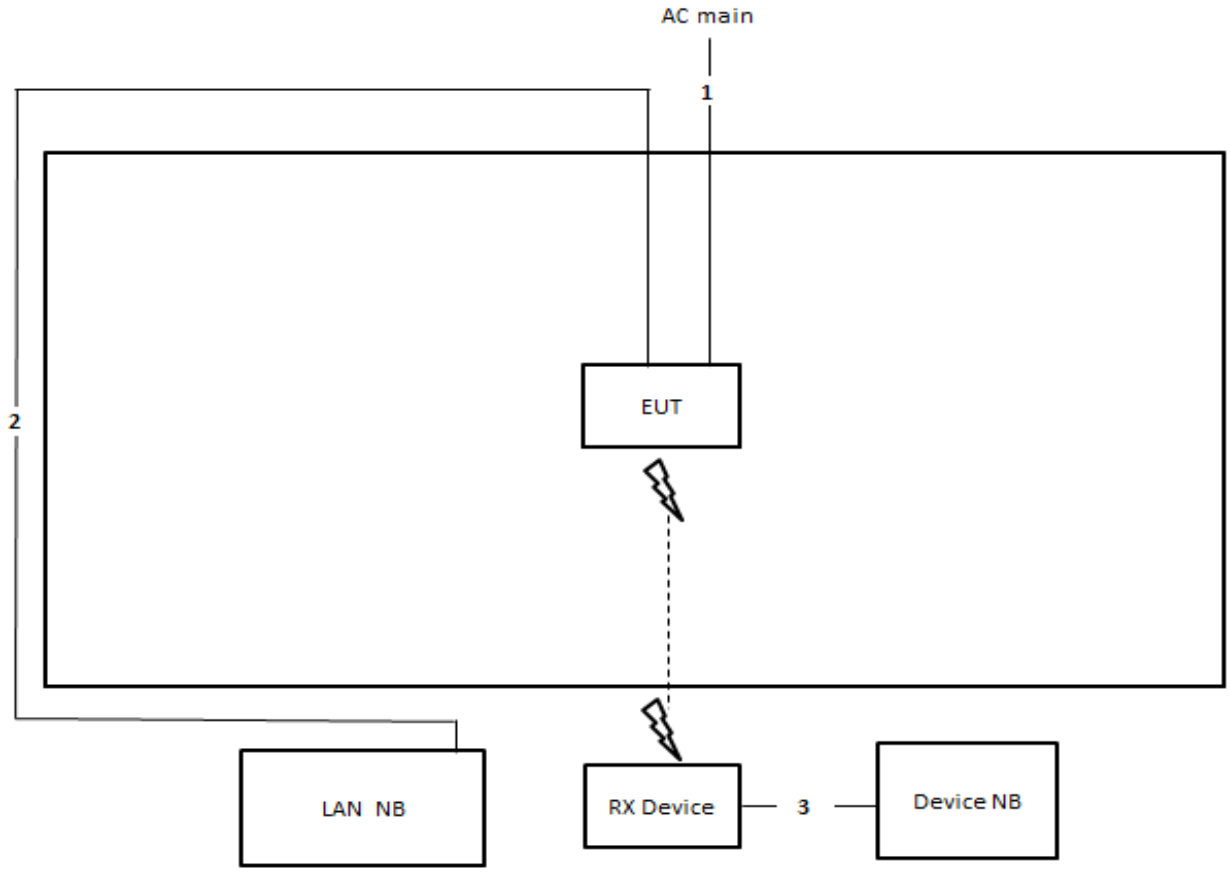
Test Configuration: above 1GHz

For non-beamforming function:



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

For beamforming function:



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

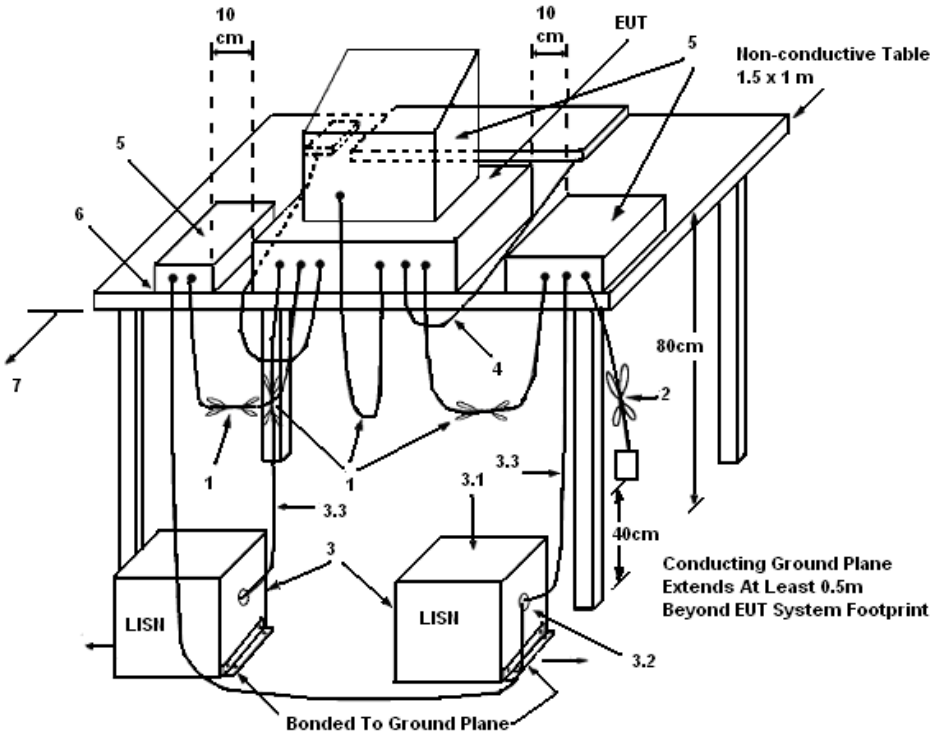
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

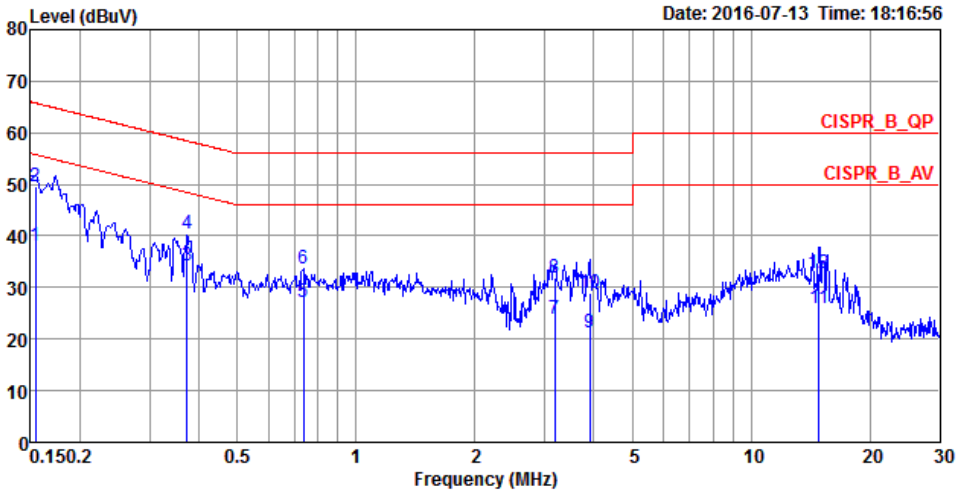
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

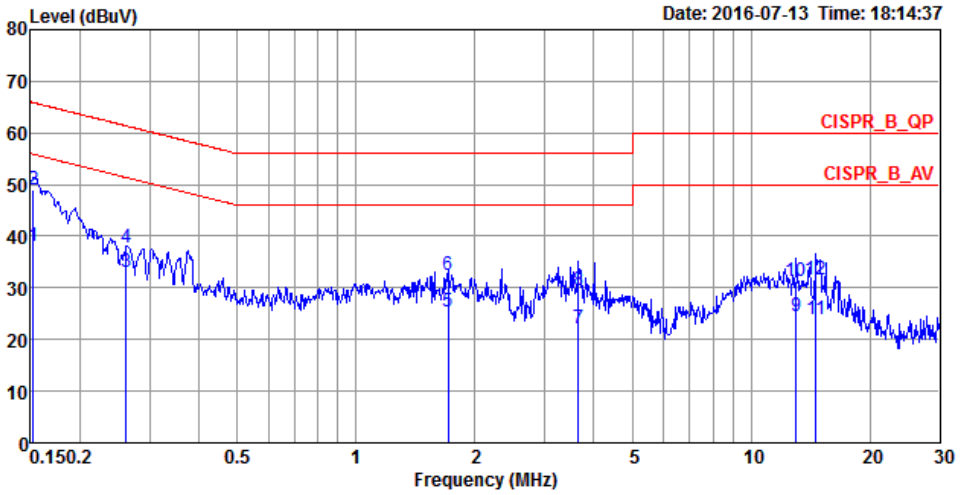
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	22°C	Humidity	63%
Test Engineer	GN Hou	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1540	38.01	-17.77	55.78	27.83	10.02	0.16	LINE	Average
2	0.1540	49.59	-16.19	65.78	39.41	10.02	0.16	LINE	QP
3	0.3731	34.11	-14.32	48.43	24.16	9.92	0.03	LINE	Average
4	0.3731	40.44	-17.99	58.43	30.49	9.92	0.03	LINE	QP
5	0.7352	27.05	-18.95	46.00	16.63	9.93	0.49	LINE	Average
6	0.7352	33.77	-22.23	56.00	23.35	9.93	0.49	LINE	QP
7	3.1900	23.96	-22.04	46.00	13.90	9.98	0.08	LINE	Average
8	3.1900	31.80	-24.20	56.00	21.74	9.98	0.08	LINE	QP
9	3.9014	21.25	-24.75	46.00	11.17	9.99	0.09	LINE	Average
10	3.9014	28.79	-27.21	56.00	18.71	9.99	0.09	LINE	QP
11	14.8281	25.83	-24.17	50.00	15.38	10.23	0.22	LINE	Average
12	14.8281	32.68	-27.32	60.00	22.23	10.23	0.22	LINE	QP

Temperature	22°C	Humidity	63%
Test Engineer	GN Hou	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1524	38.10	-17.77	55.87	27.92	10.02	0.16	NEUTRAL	Average
2	0.1524	49.00	-16.87	65.87	38.82	10.02	0.16	NEUTRAL	QP
3	0.2616	33.06	-18.32	51.38	23.02	9.92	0.12	NEUTRAL	Average
4	0.2616	37.92	-23.46	61.38	27.88	9.92	0.12	NEUTRAL	QP
5	1.7071	25.45	-20.55	46.00	15.29	9.95	0.21	NEUTRAL	Average
6	1.7071	32.49	-23.51	56.00	22.33	9.95	0.21	NEUTRAL	QP
7	3.6611	22.25	-23.75	46.00	12.17	9.99	0.09	NEUTRAL	Average
8	3.6611	29.51	-26.49	56.00	19.43	9.99	0.09	NEUTRAL	QP
9	12.9885	24.59	-25.41	50.00	14.20	10.20	0.19	NEUTRAL	Average
10	12.9885	31.36	-28.64	60.00	20.97	10.20	0.19	NEUTRAL	QP
11	14.5942	23.90	-26.10	50.00	13.47	10.22	0.21	NEUTRAL	Average
12	14.5942	31.61	-28.39	60.00	21.18	10.22	0.21	NEUTRAL	QP

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	Andy Tsai		

For non-beamforming function:

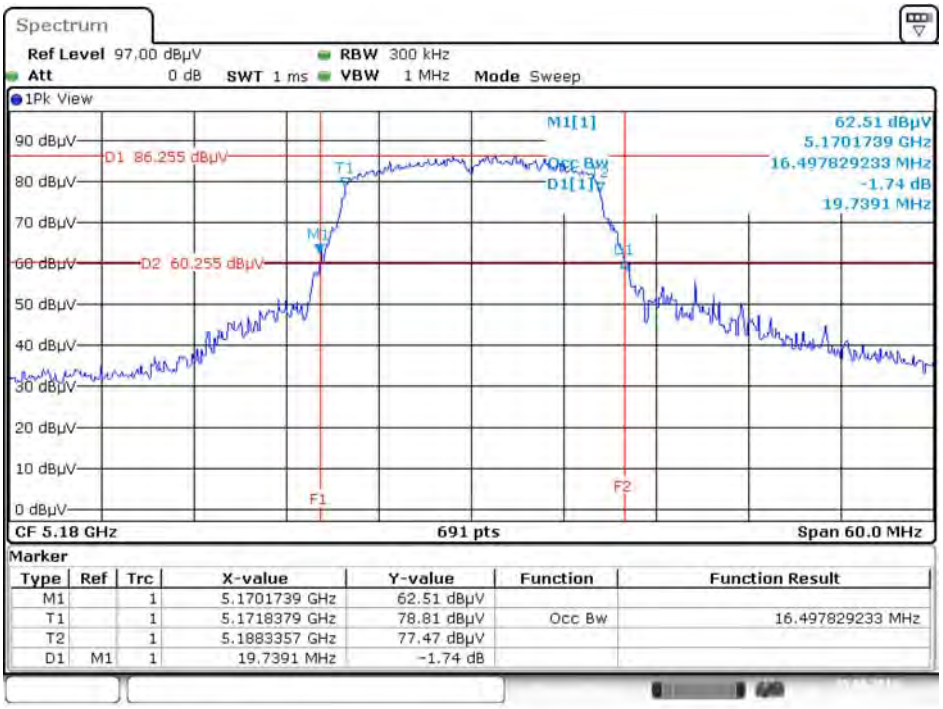
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	19.74	16.50
	5200 MHz	18.61	15.54
	5240 MHz	20.09	16.67
	5745 MHz	18.70	15.63
	5785 MHz	19.39	16.32
	5825 MHz	20.34	16.41
802.11ac MCS0/Nss1 VHT20	5180 MHz	19.22	16.50
	5200 MHz	20.00	17.54
	5240 MHz	19.57	16.50
	5745 MHz	20.09	17.45
	5785 MHz	20.09	17.54
	5825 MHz	20.17	17.54
802.11ac MCS0/Nss1 VHT40	5190 MHz	42.03	36.61
	5230 MHz	41.30	36.32
	5755 MHz	39.28	34.15
	5795 MHz	41.45	36.18
802.11ac MCS0/Nss1 VHT80	5210 MHz	81.16	75.25
	5775 MHz	80.58	74.39

For beamforming function:

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5180 MHz	20.17	17.54
	5200 MHz	20.09	17.54
	5240 MHz	20.00	17.54
	5745 MHz	19.04	16.59
	5785 MHz	20.26	17.54
	5825 MHz	20.09	17.45
802.11ac MCS0/Nss1 VHT40	5190 MHz	41.16	36.04
	5230 MHz	40.29	35.31
	5755 MHz	41.30	36.18
	5795 MHz	41.45	36.18
802.11ac MCS0/Nss1 VHT80	5210 MHz	79.71	73.52
	5775 MHz	80.58	75.54

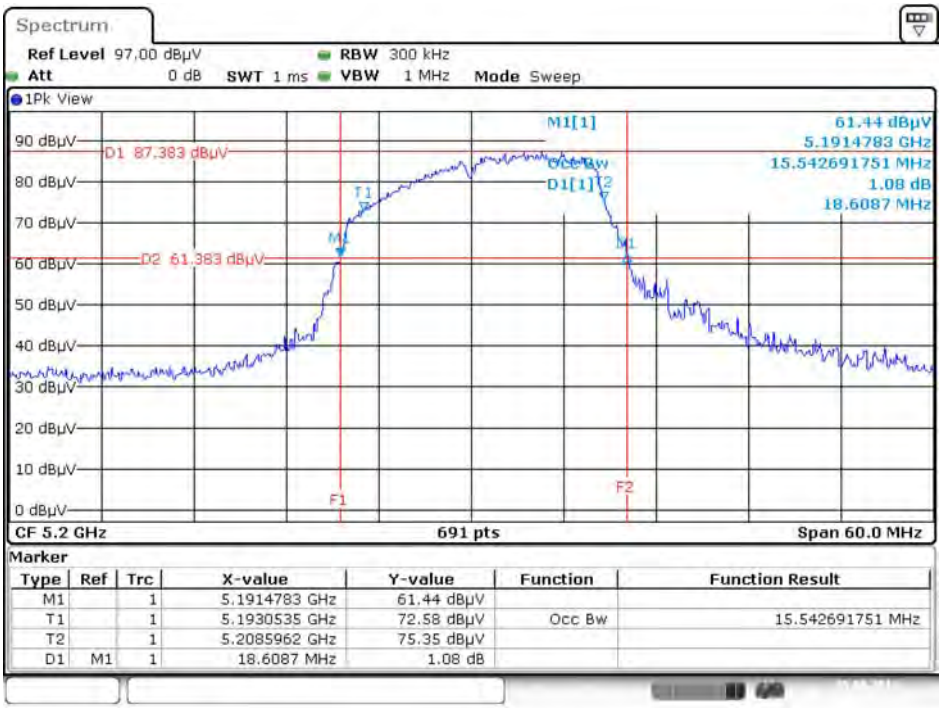
For non-beamforming function:

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



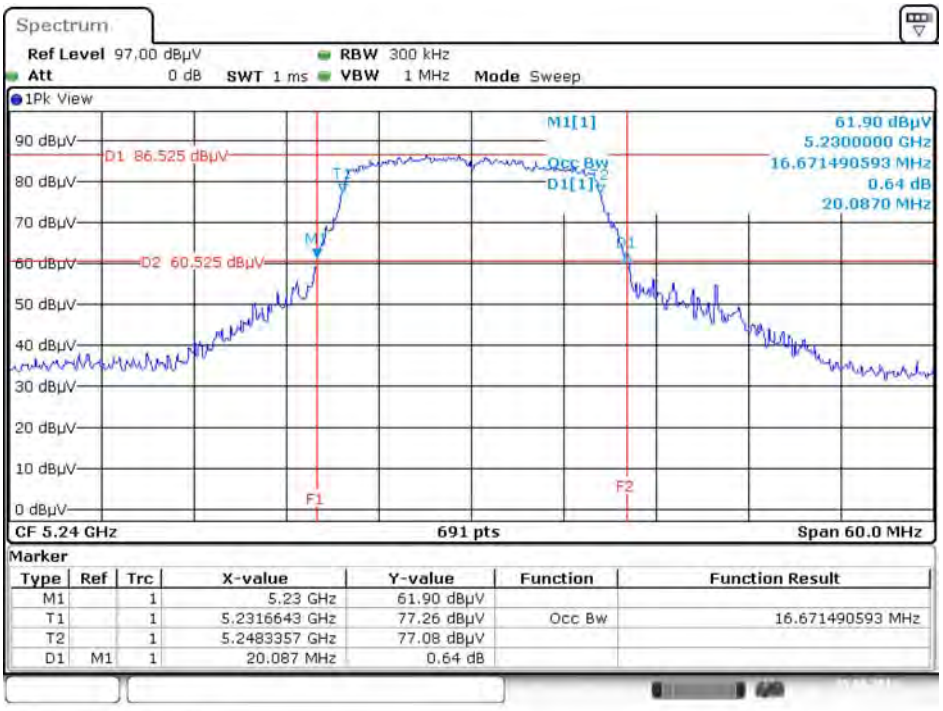
Date: 25.AUG.2016 15:07:50

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



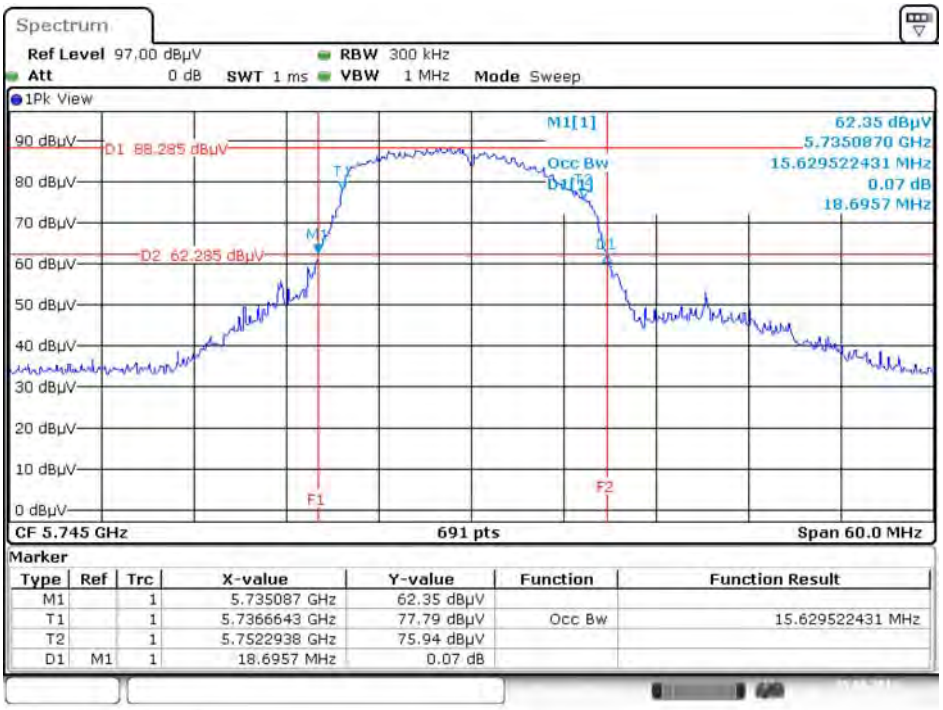
Date: 25.AUG.2016 15:11:51

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



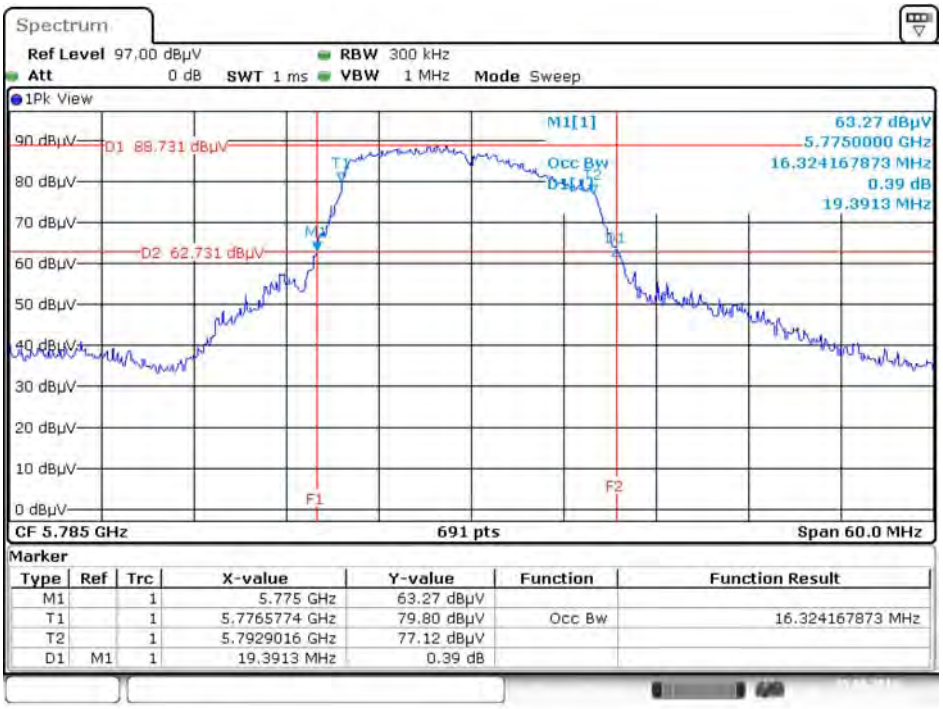
Date: 25.AUG.2016 15:13:32

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



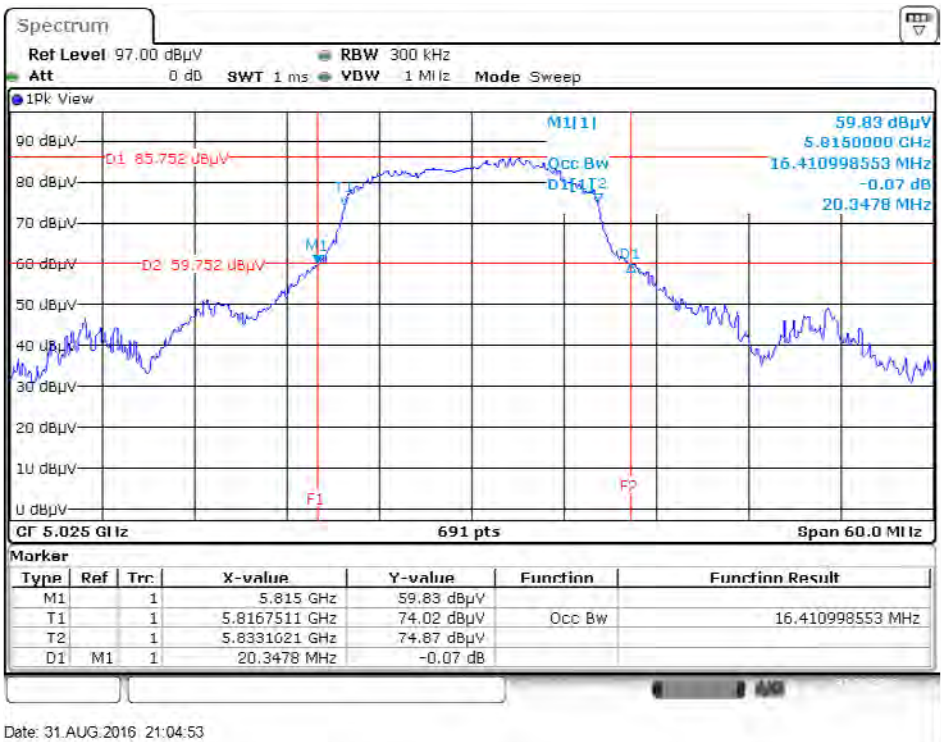
Date: 25.AUG.2016 15:14:12

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



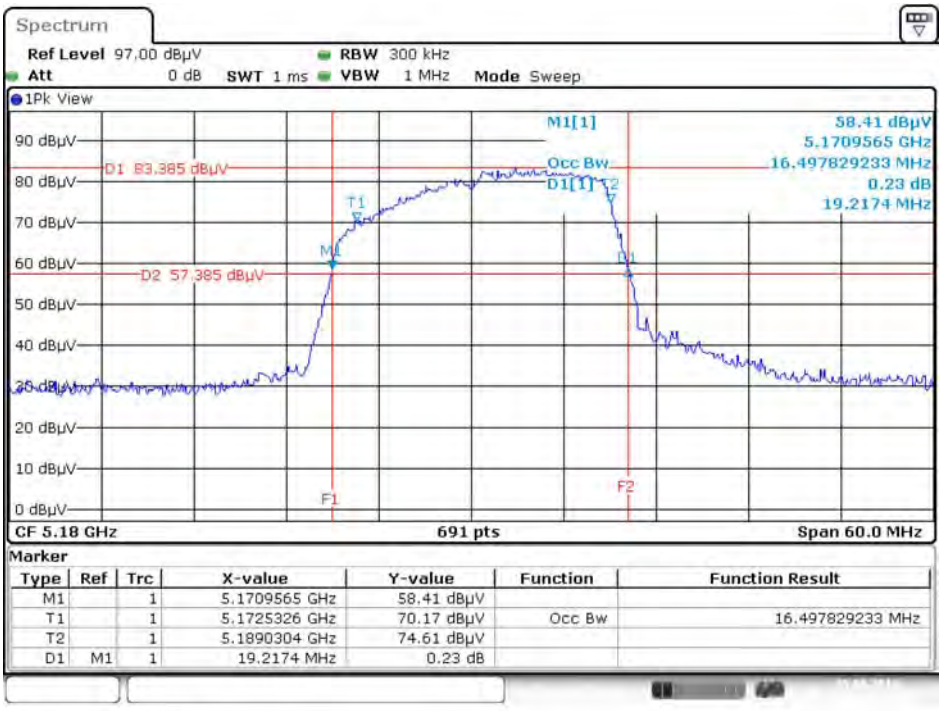
Date: 25.AUG.2016 15:15:07

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



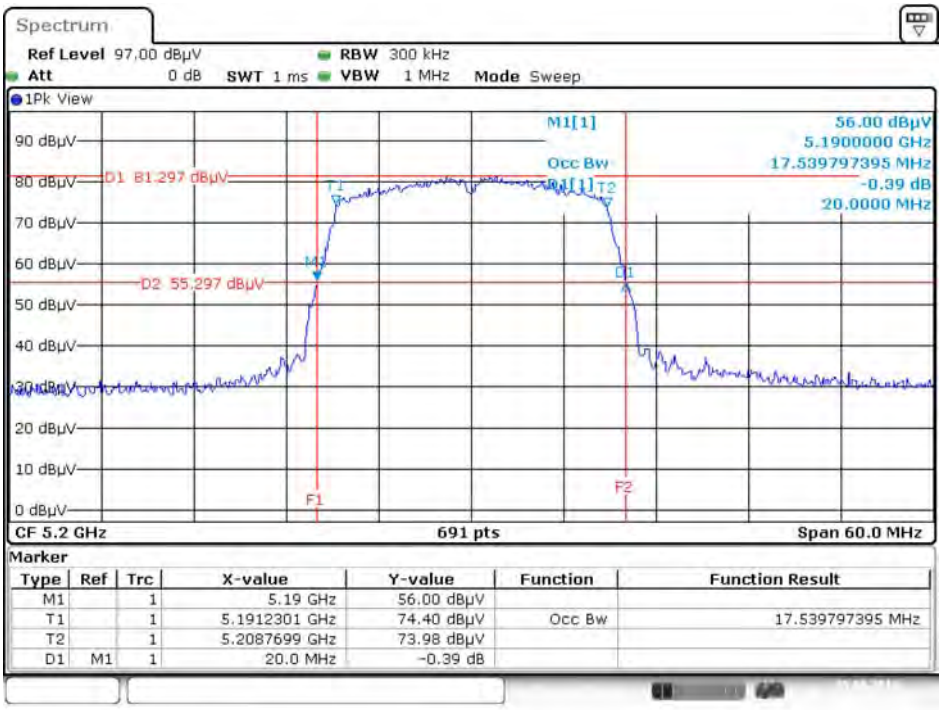
Date: 31.AUG.2016 21:04:53

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



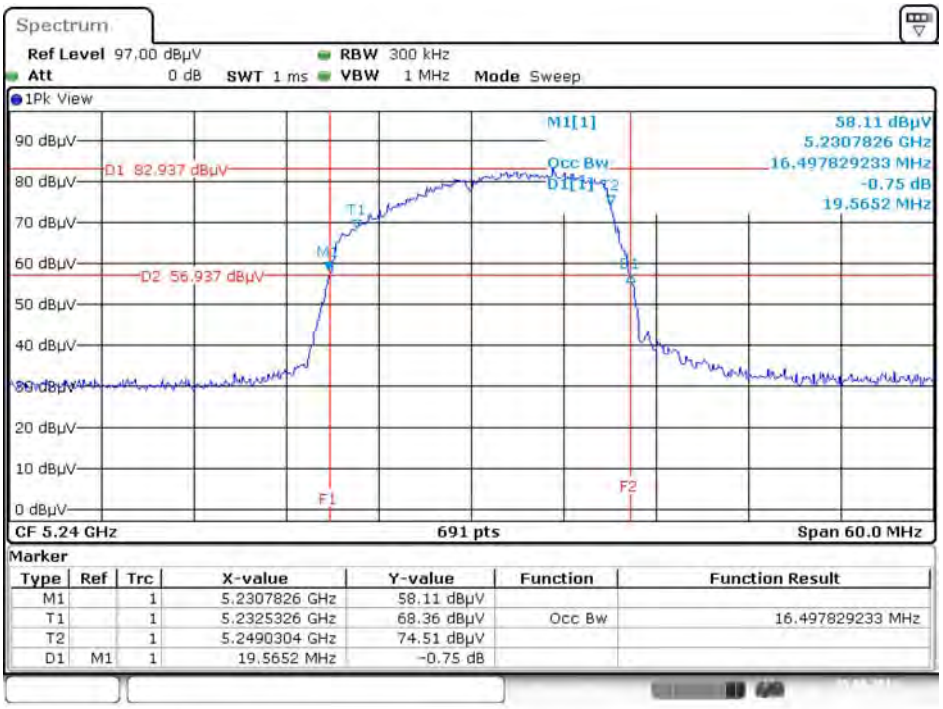
Date: 25.AUG.2016 15:20:43

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



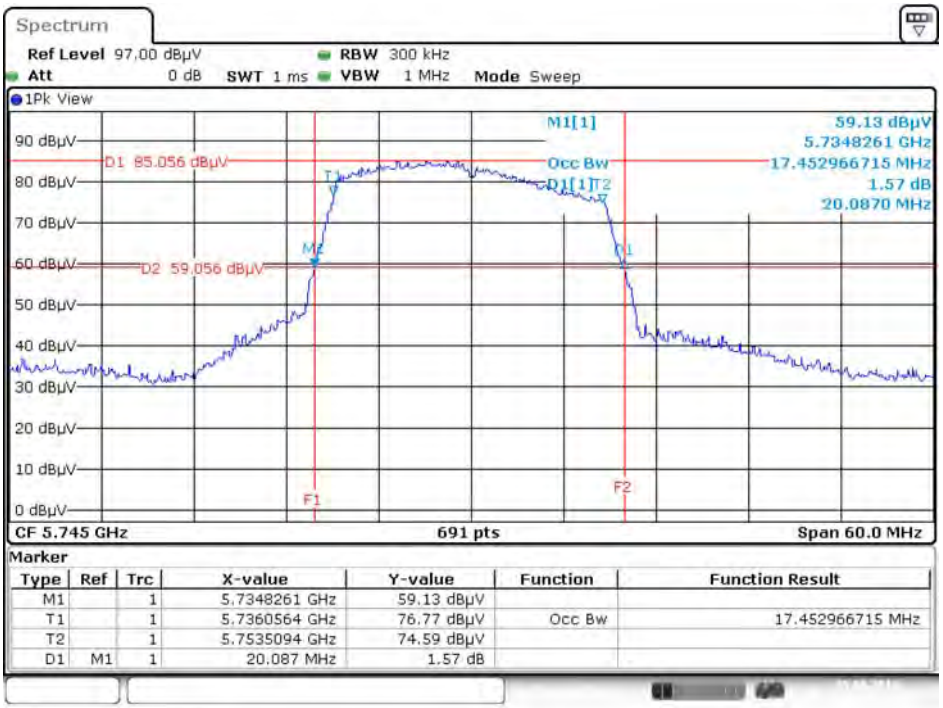
Date: 25.AUG.2016 15:21:39

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



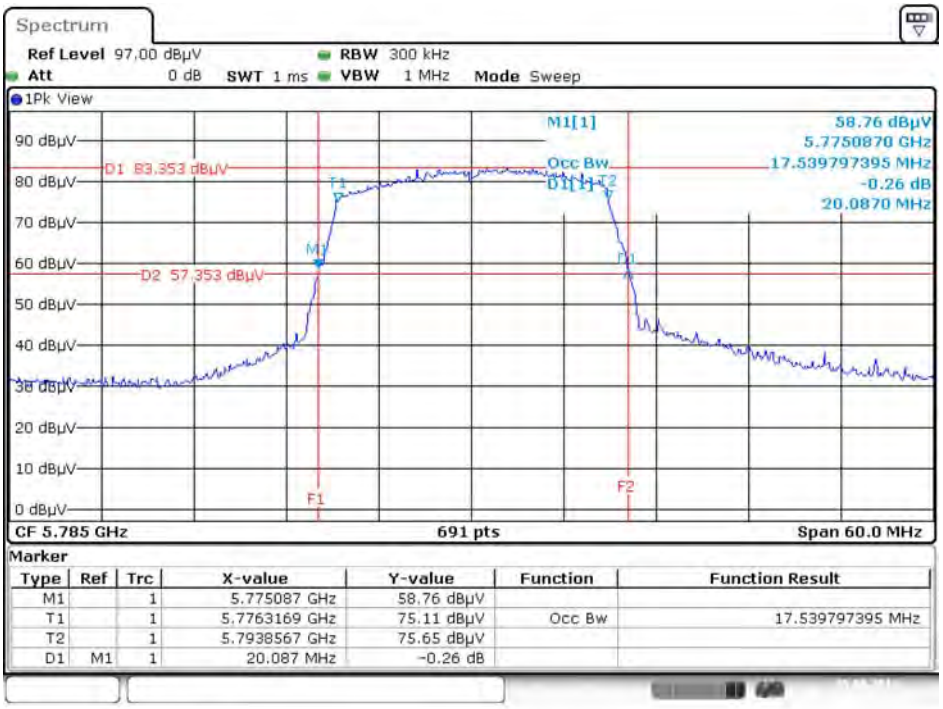
Date: 25.AUG.2016 15:22:18

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



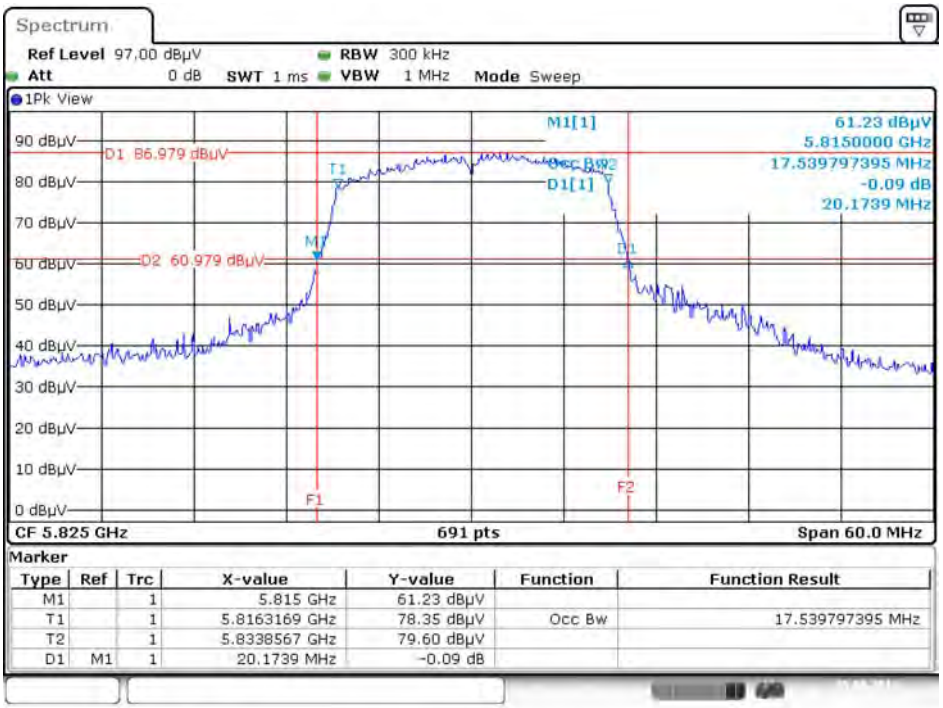
Date: 25.AUG.2016 15:25:13

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



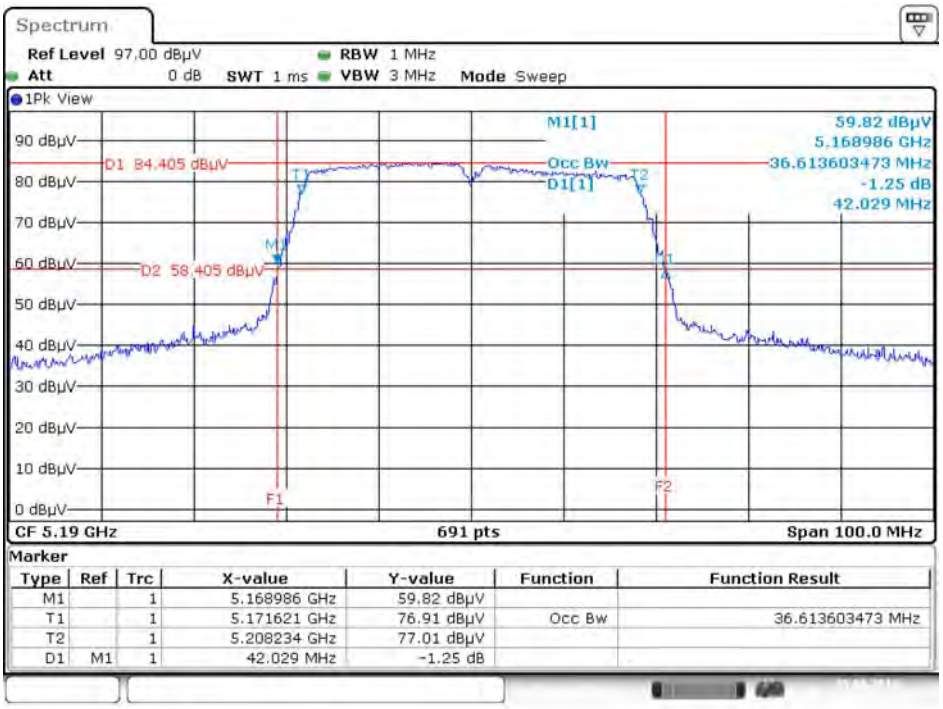
Date: 25.AUG.2016 15:27:32

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



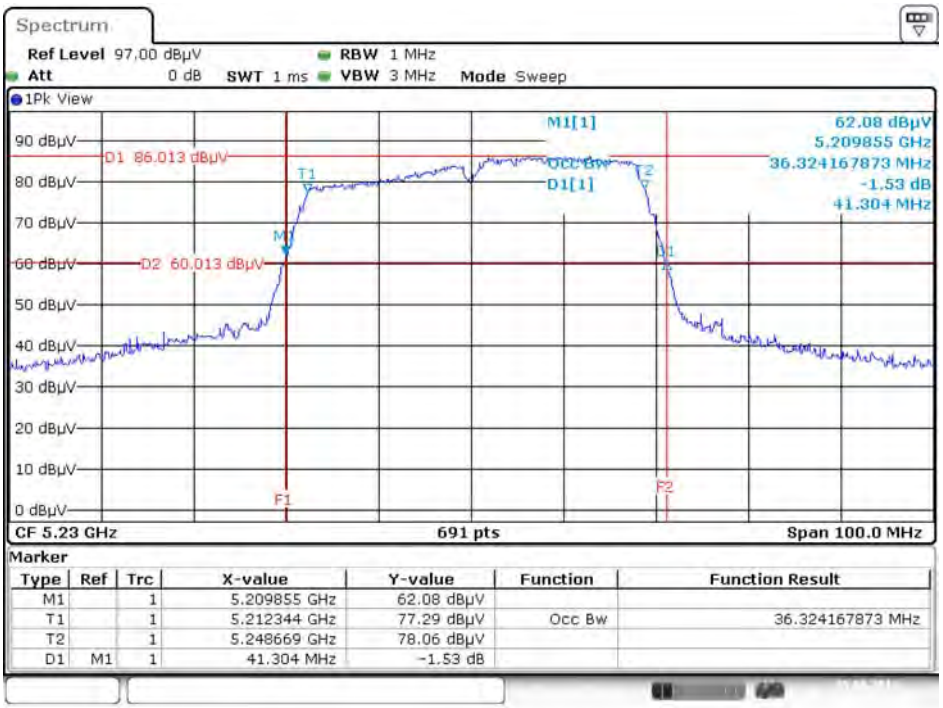
Date: 25.AUG.2016 15:29:17

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



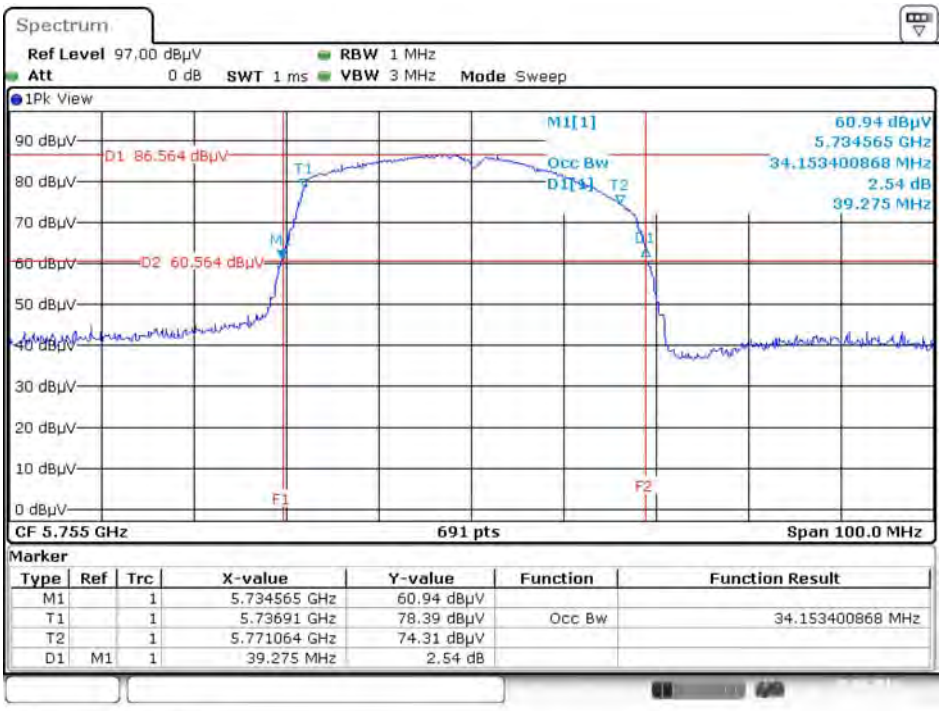
Date: 25.AUG.2016 15:58:45

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: 25.AUG.2016 15:59:28

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



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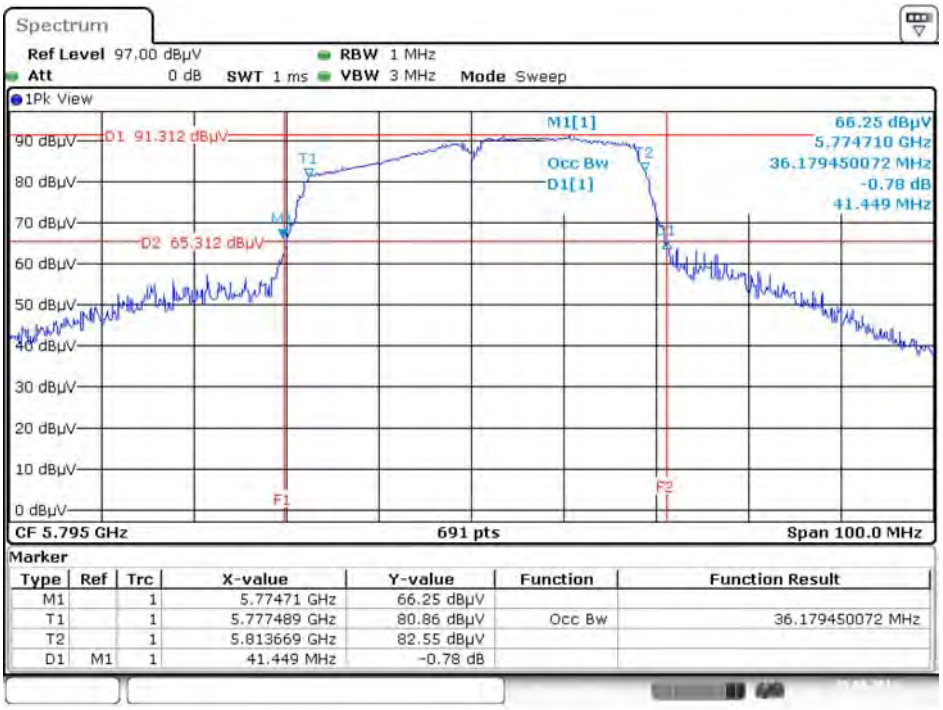
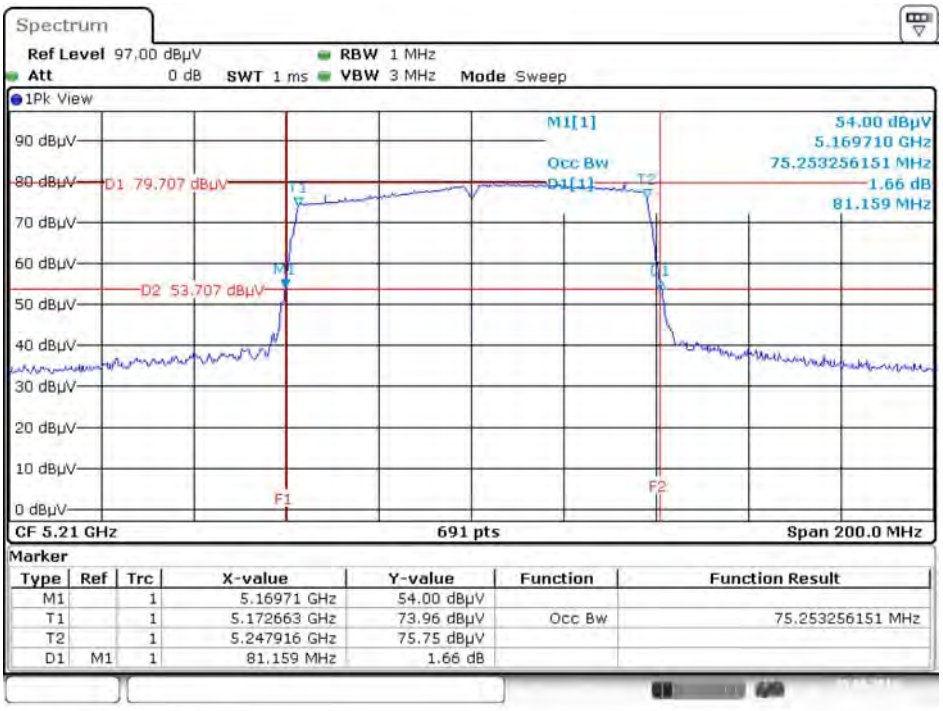
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



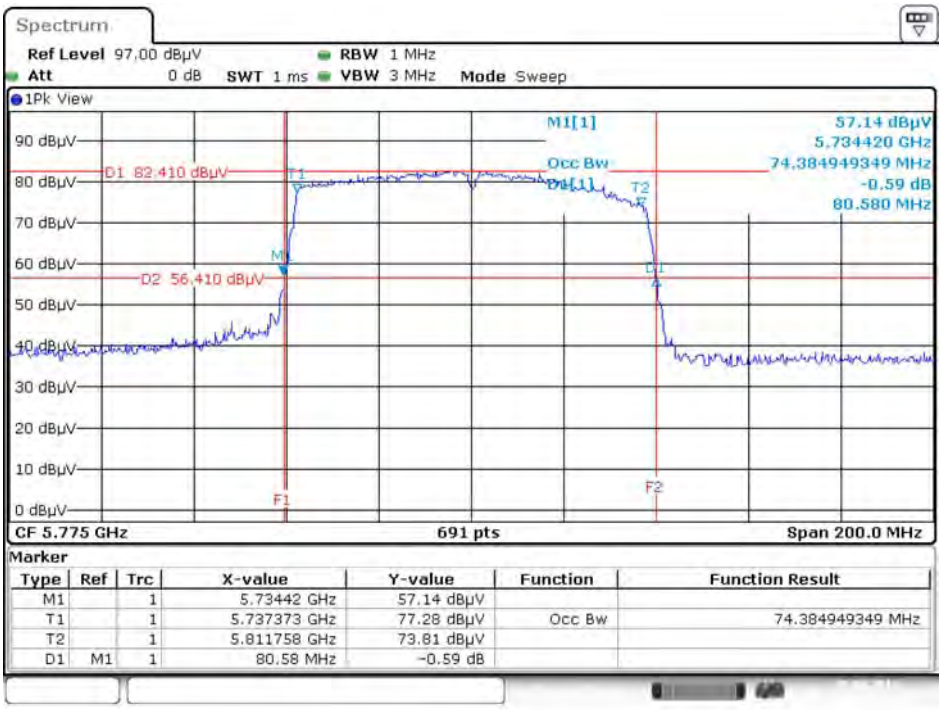
Date: 25.AUG.2016 16:12:37

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: 25.AUG.2016 16:20:18

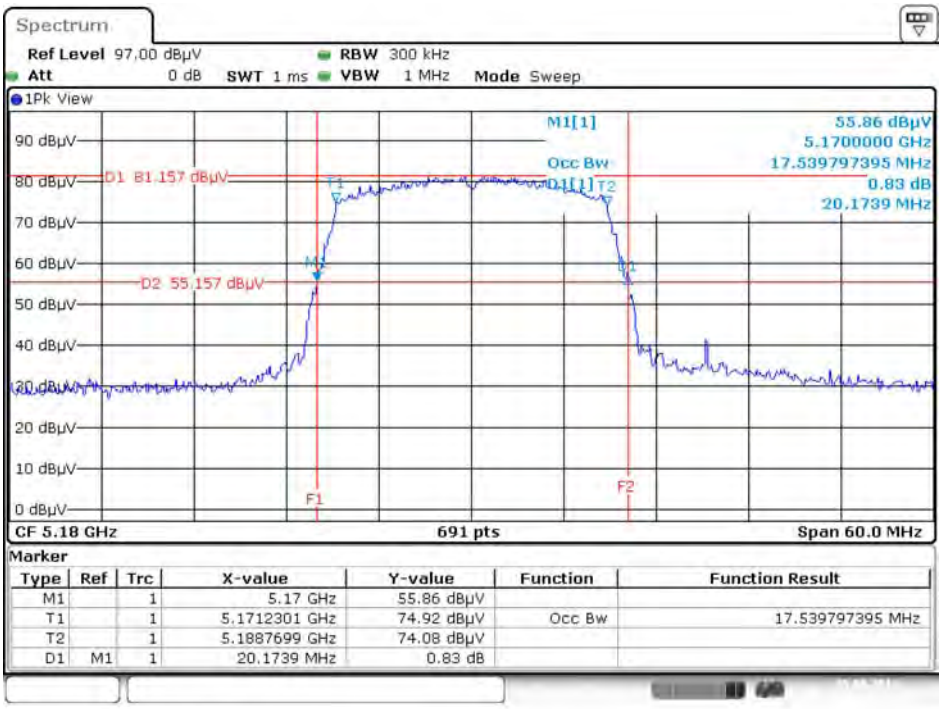
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



Date: 25.AUG.2016 16:21:18

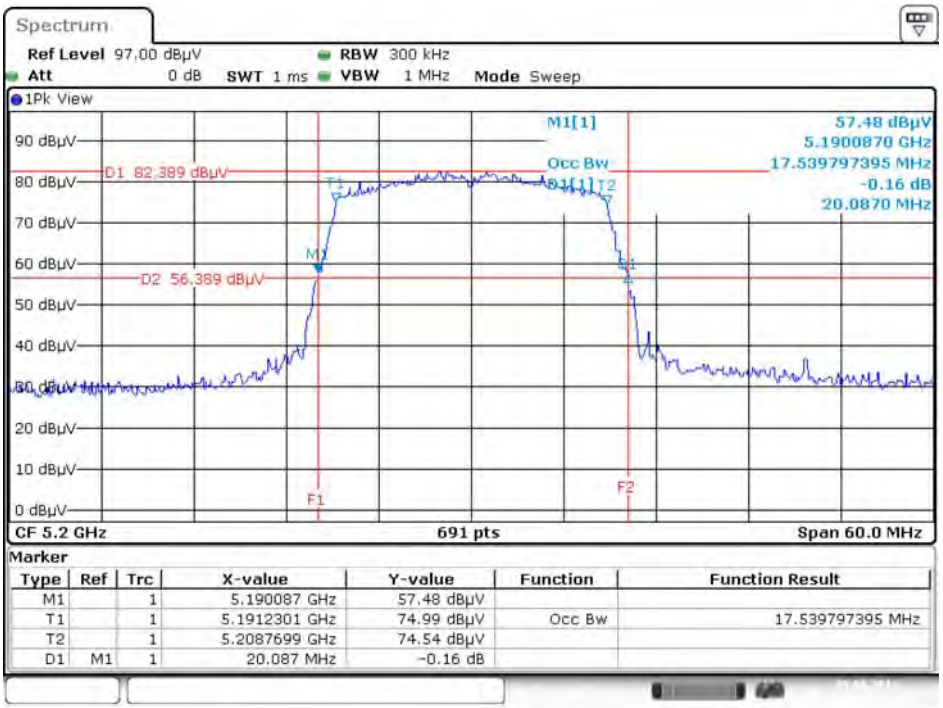
For beamforming function:

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



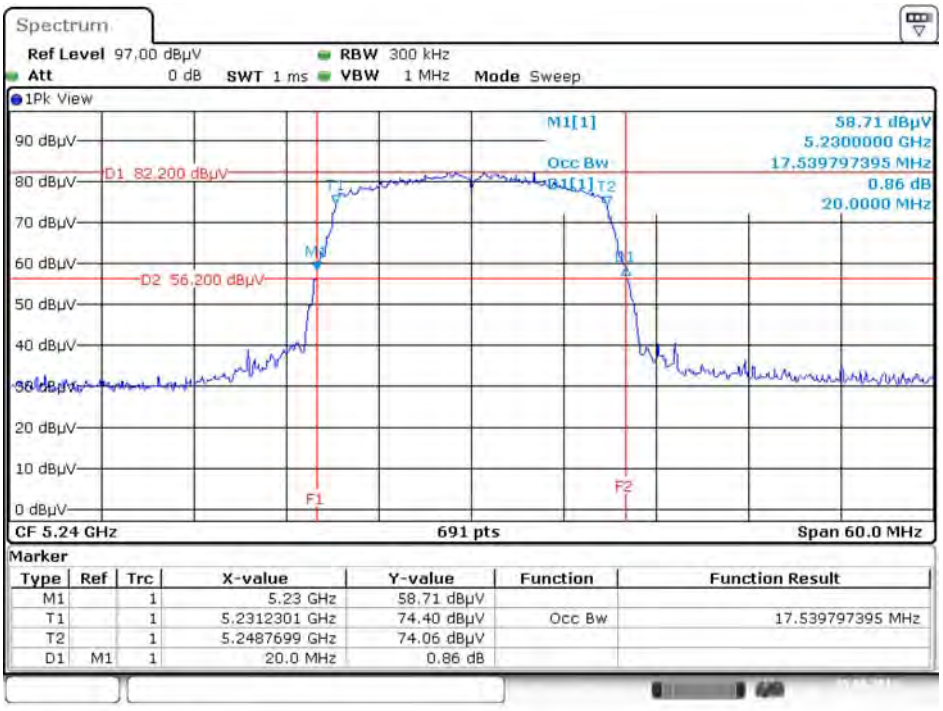
Date: 25.AUG.2016 16:25:32

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: 25.AUG.2016 16:27:55

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



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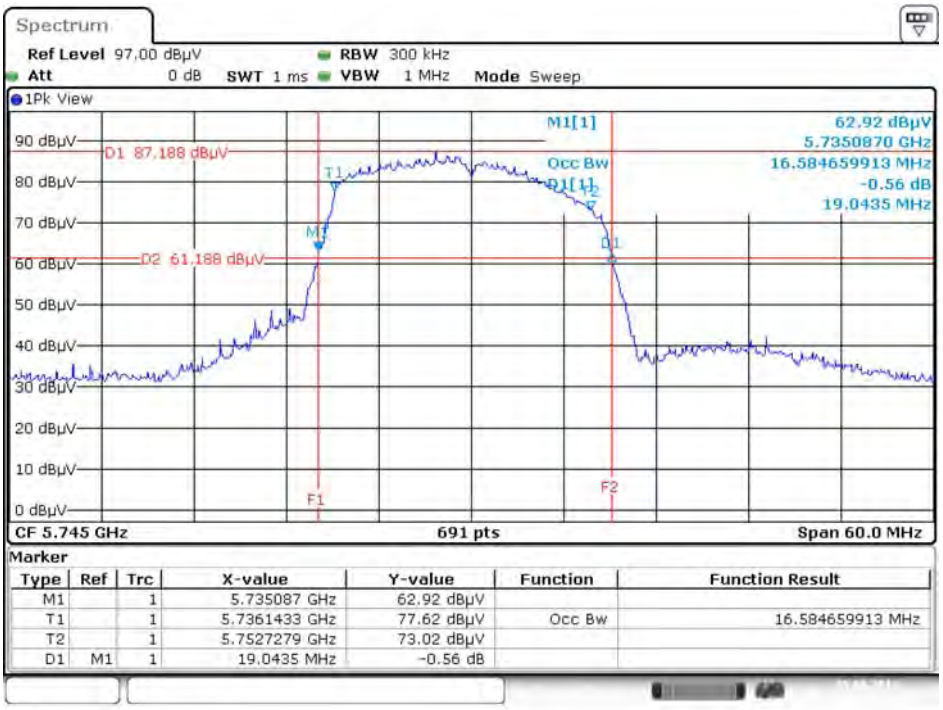
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



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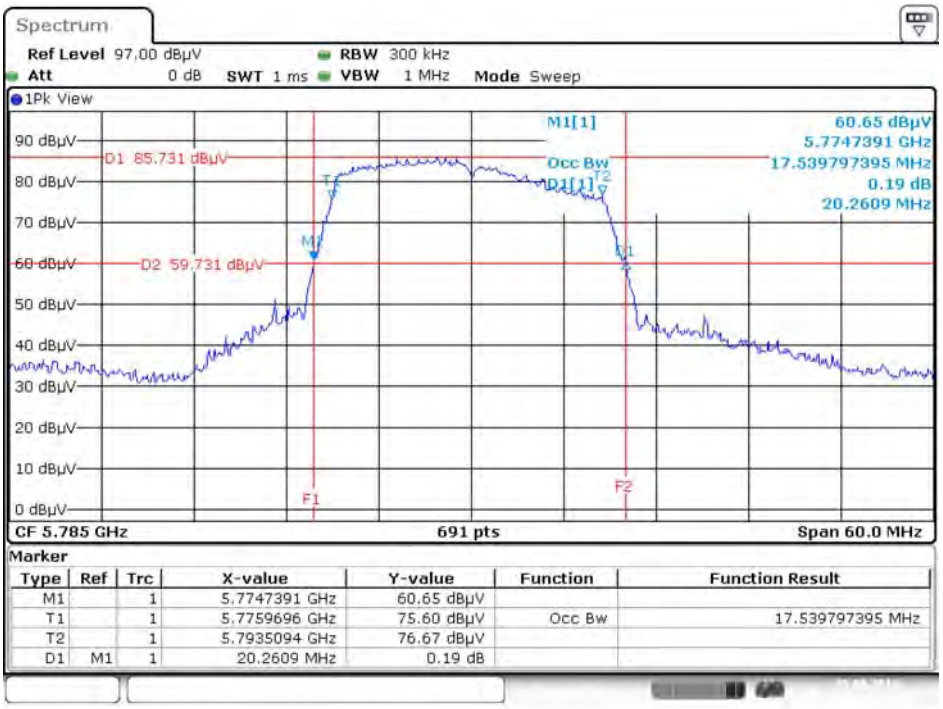
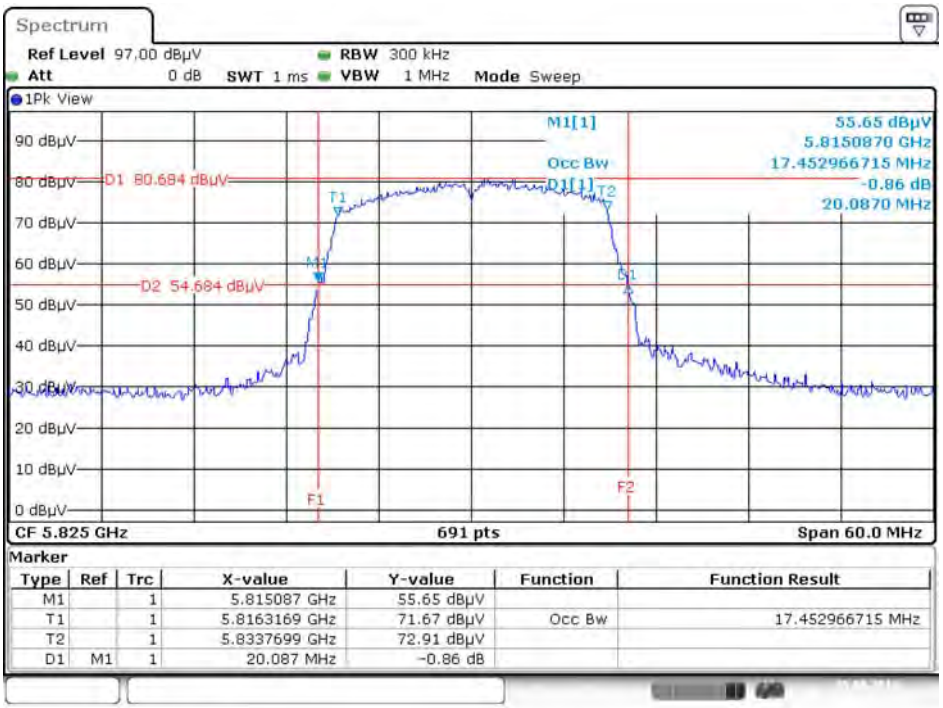
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5785 MHz



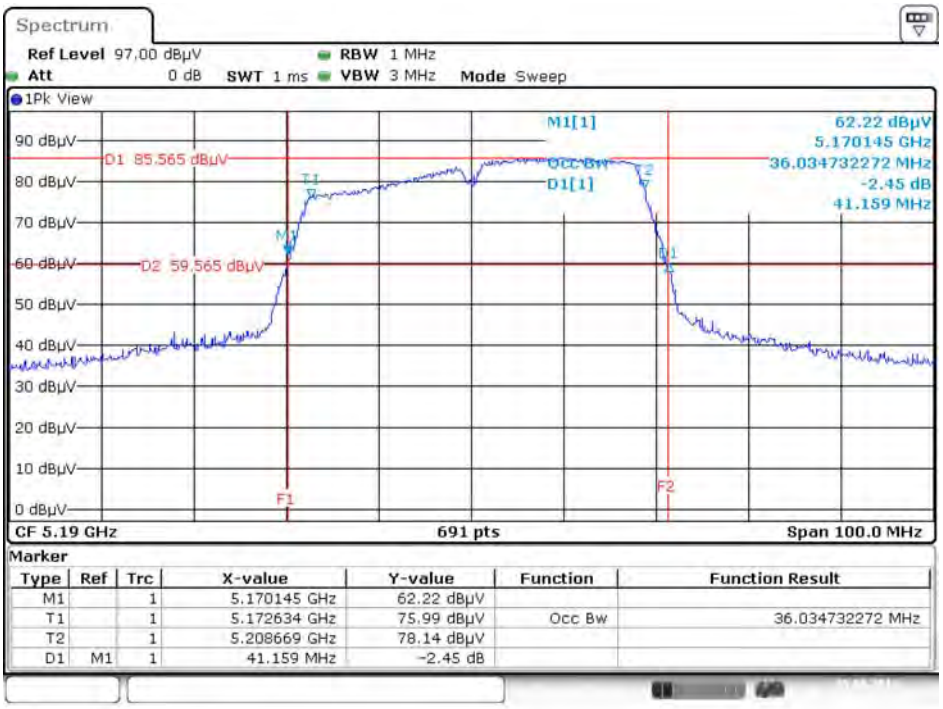
Date: 25.AUG.2016 16:30:35

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



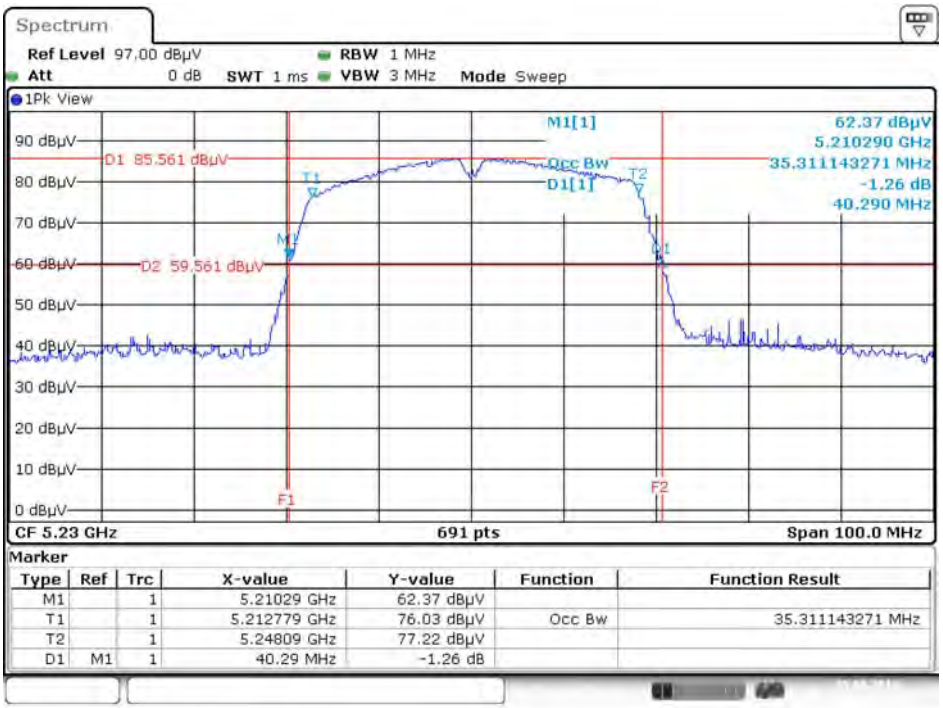
Date: 25.AUG.2016 16:31:56

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



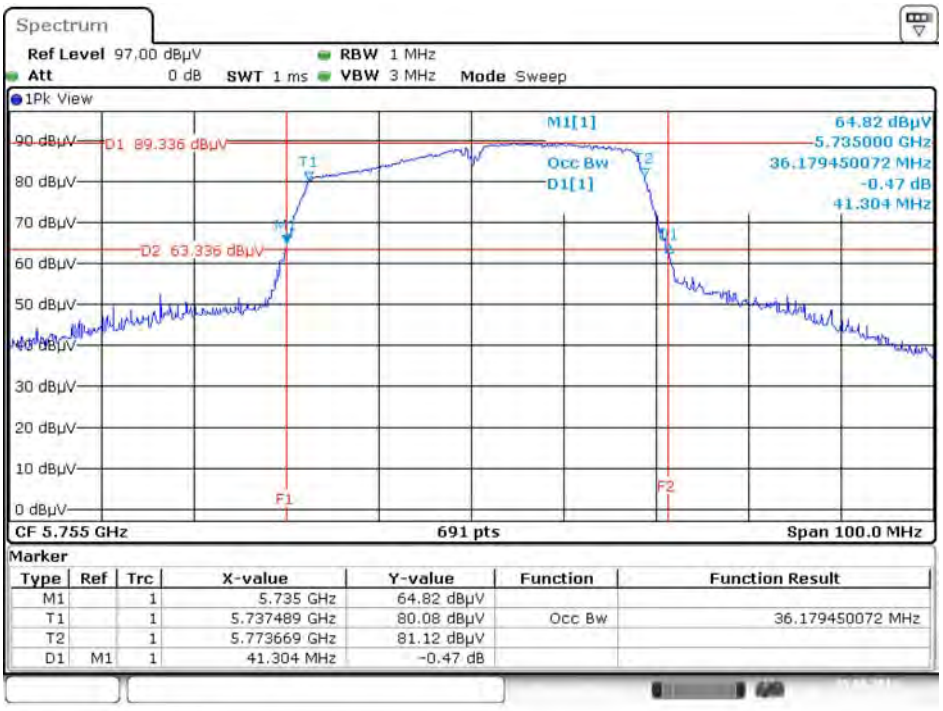
Date: 25.AUG.2016 16:44:11

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



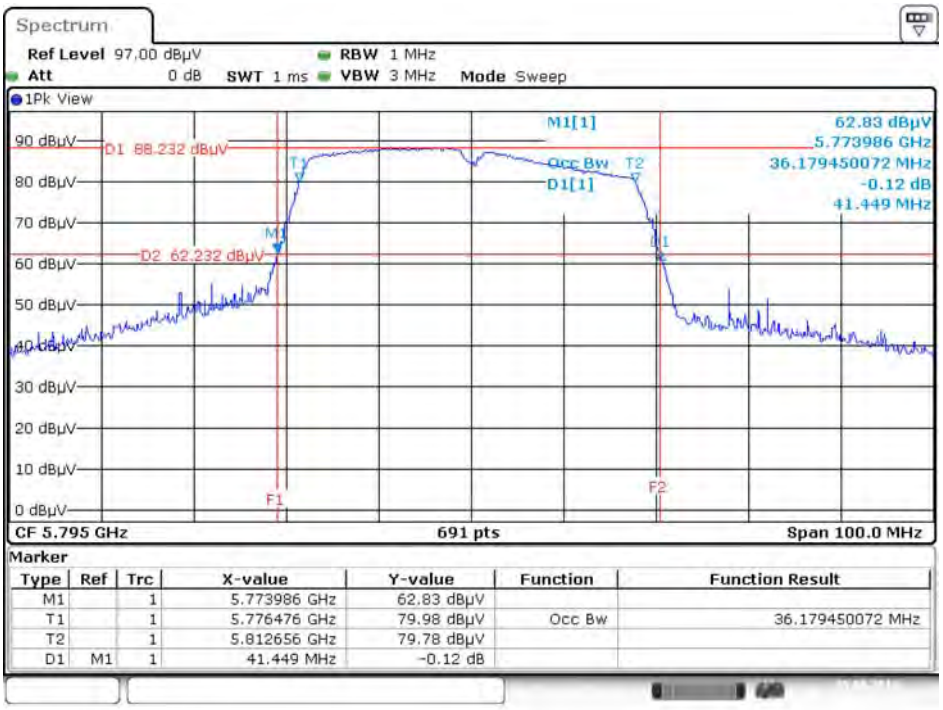
Date: 25.AUG.2016 16:48:32

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



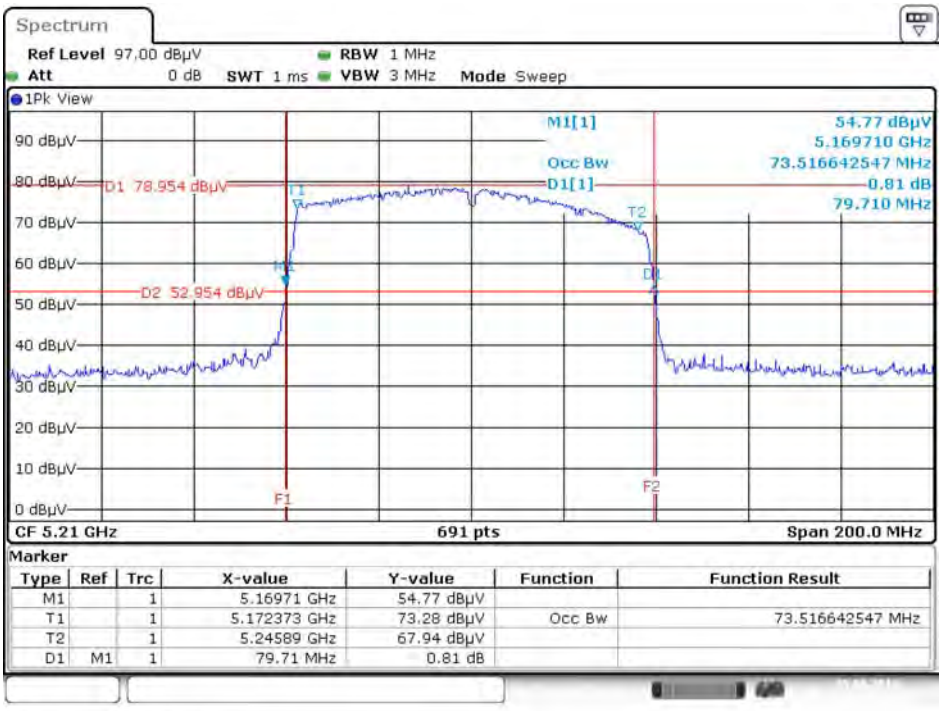
Date: 25.AUG.2016 16:49:33

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



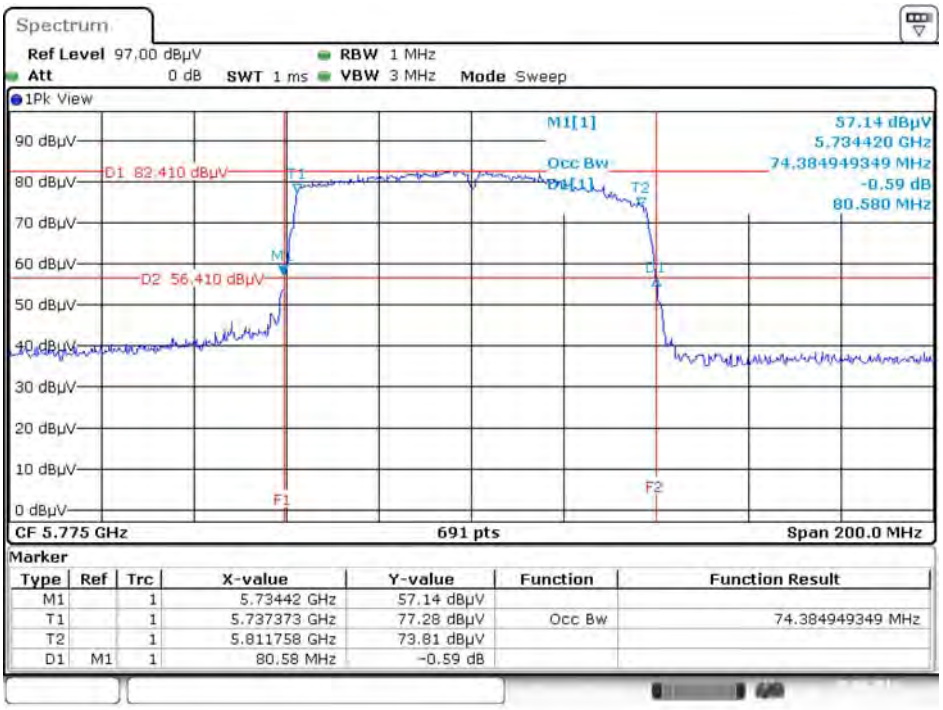
Date: 25.AUG.2016 16:50:39

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: 25.AUG.2016 16:54:17

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: 25.AUG.2016 16:21:18

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 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth.
3. Multiple antenna system was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.3.4. 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	Andy Tsai		

For non-beamforming function:

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	12.81	500	Complies
	5785 MHz	11.94	500	Complies
	5825 MHz	12.29	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	16.64	500	Complies
	5785 MHz	16.29	500	Complies
	5825 MHz	16.06	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	28.41	500	Complies
	5795 MHz	27.36	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	68.70	500	Complies

For beamforming function:

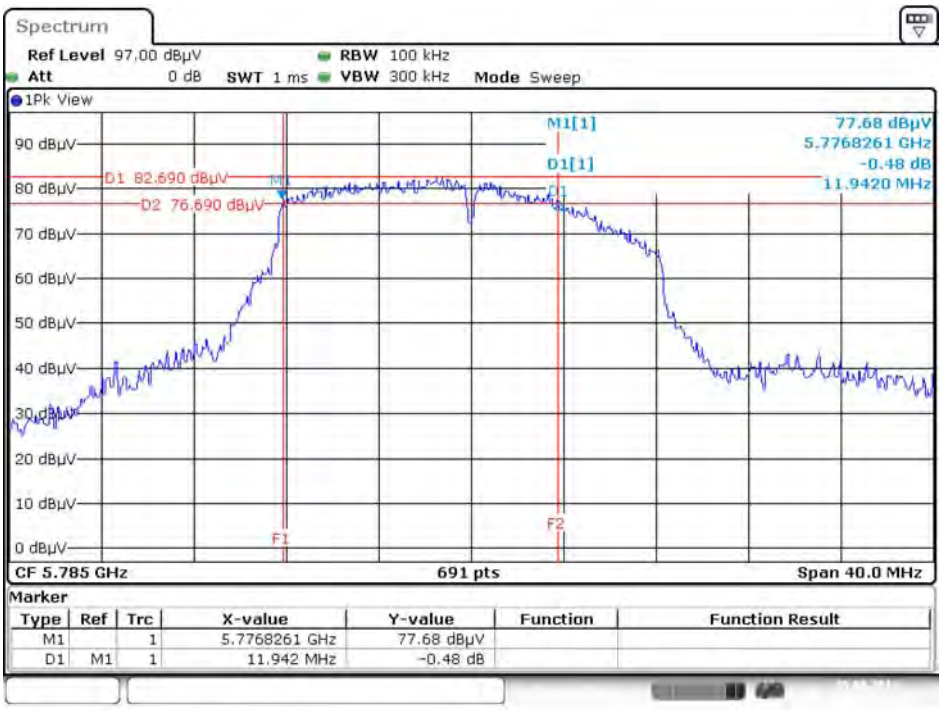
Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	5745 MHz	16.06	500	Complies
	5785 MHz	13.80	500	Complies
	5825 MHz	16.29	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	31.07	500	Complies
	5795 MHz	29.22	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	57.97	500	Complies

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

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

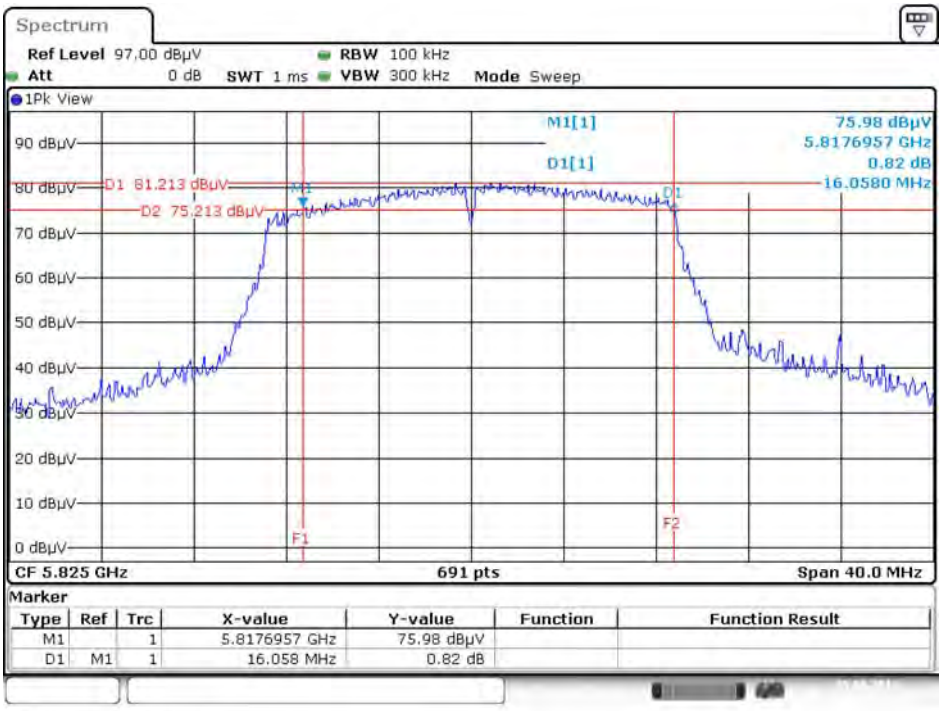
For non-beamforming function:

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



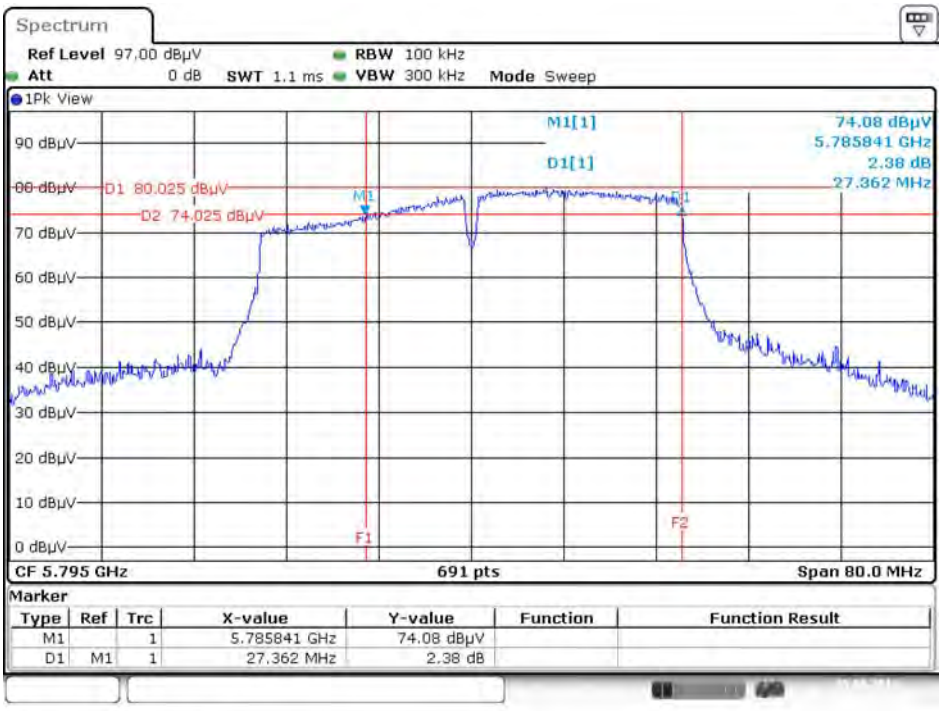
Date: 25.AUG.2016 15:17:05

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



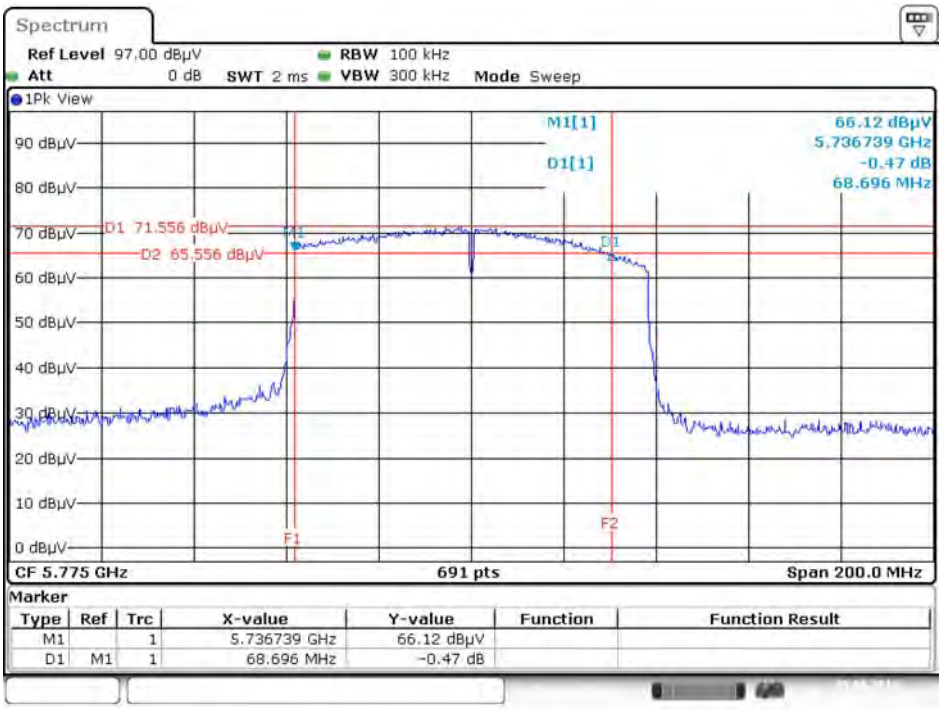
Date: 25.AUG.2016 15:31:27

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



Date: 25.AUG.2016 16:19:03

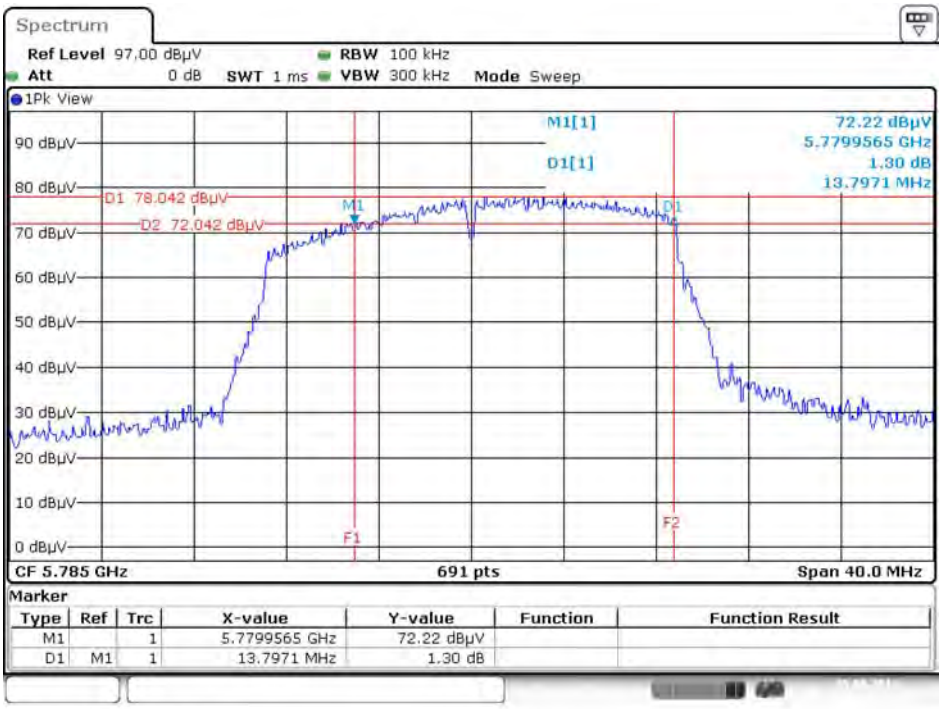
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz



Date: 25.AUG.2016 16:21:56

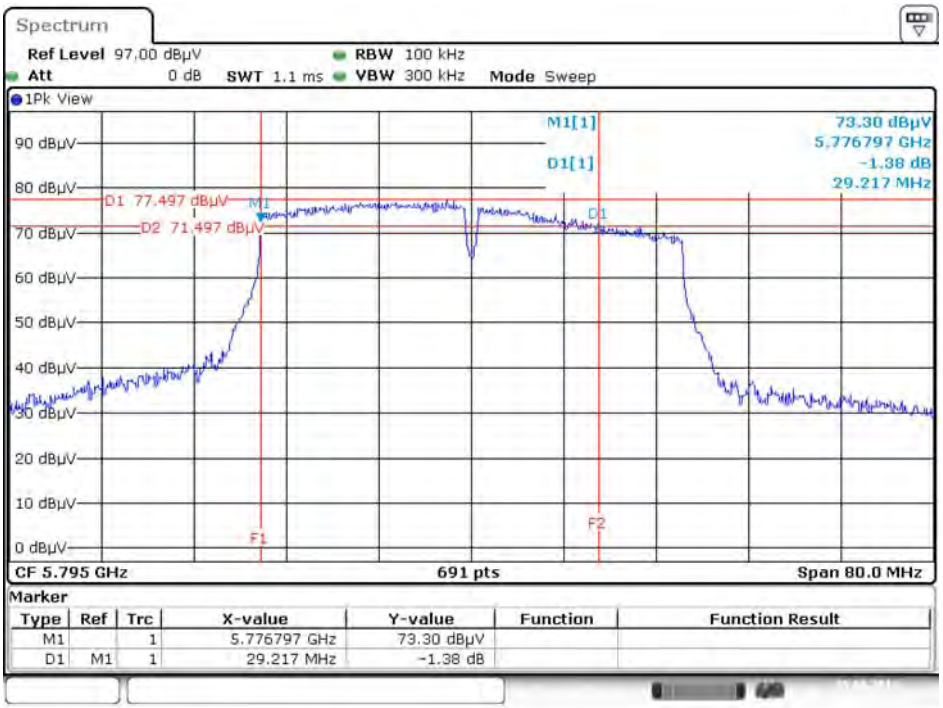
For beamforming function:

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



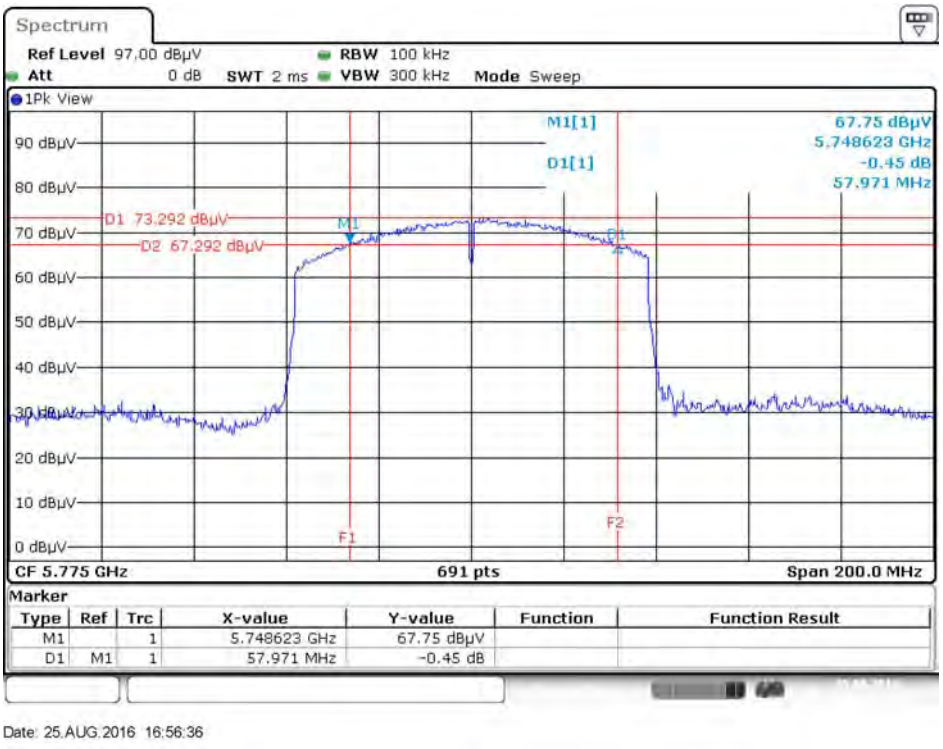
Date: 25.AUG.2016 16:40:36

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



Date: 25.AUG.2016 16:51:27

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



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.
	☐	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

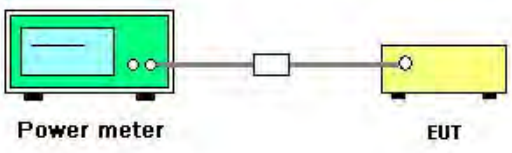
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

4.4.4. 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	Andy Tsai	Test Date	Jul. 22, 2016~Aug. 31, 2016

For non-beamforming function:

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5180 MHz	19.48	19.52	19.51	18.93	25.39	30.00	Complies
	5200 MHz	19.38	19.45	19.03	18.83	25.20	30.00	Complies
	5240 MHz	19.67	19.52	18.96	18.79	25.27	30.00	Complies
	5745 MHz	19.43	19.52	19.22	19.23	25.37	30.00	Complies
	5785 MHz	19.12	19.54	19.10	18.72	25.15	30.00	Complies
	5825 MHz	18.83	18.82	18.88	19.39	25.01	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	19.33	19.53	19.26	19.35	25.39	30.00	Complies
	5200 MHz	18.91	19.31	18.98	18.89	25.05	30.00	Complies
	5240 MHz	18.94	19.15	18.89	19.24	25.08	30.00	Complies
	5745 MHz	20.27	20.07	19.97	20.02	26.10	30.00	Complies
	5785 MHz	19.35	19.59	19.85	19.76	25.66	30.00	Complies
	5825 MHz	19.33	19.22	19.62	19.48	25.44	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	19.06	19.35	19.04	19.17	25.18	30.00	Complies
	5230 MHz	19.44	19.41	19.12	19.47	25.38	30.00	Complies
	5755 MHz	19.88	19.71	20.02	20.29	26.00	30.00	Complies
	5795 MHz	22.89	22.92	22.89	22.40	28.80	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	17.48	17.23	16.95	17.52	23.32	30.00	Complies
	5775 MHz	23.94	23.96	23.72	23.87	29.89	30.00	Complies

For beamforming function:

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	18.79	18.85	19.12	18.84	24.92	25.40	Complies
	5200 MHz	18.92	18.78	19.47	19.02	25.08	25.40	Complies
	5240 MHz	19.13	18.75	18.85	18.57	24.85	25.40	Complies
	5745 MHz	19.05	19.61	19.66	19.03	25.37	25.40	Complies
	5785 MHz	18.91	19.14	19.63	19.71	25.38	25.40	Complies
	5825 MHz	14.06	13.91	14.54	13.66	20.08	25.40	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	17.49	17.52	17.35	16.95	23.35	25.40	Complies
	5230 MHz	19.09	19.05	19.24	19.02	25.12	25.40	Complies
	5755 MHz	19.05	19.73	19.56	18.95	25.36	25.40	Complies
	5795 MHz	18.76	18.81	19.43	19.09	25.05	25.40	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	15.17	15.14	15.06	14.82	21.07	25.40	Complies
	5775 MHz	18.98	19.03	19.75	18.64	25.14	25.40	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=30 – (10.60 – 6)=25.40dBm.

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
	☐	Client devices	11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

4.5.2. Measuring Instruments and Setting

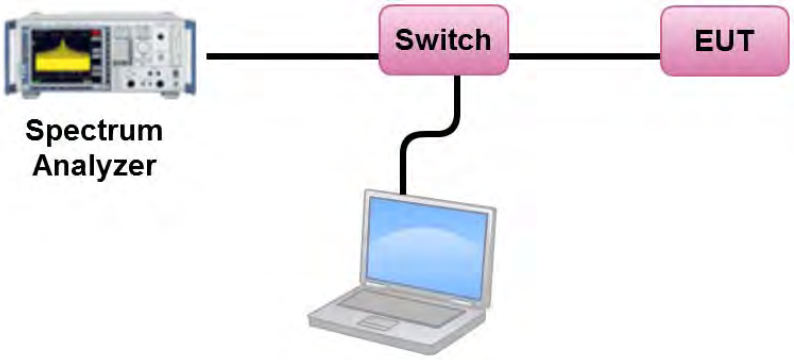
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements and sum the spectra across the outputs.
4. 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	Andy Tsai	Test Date	Jul. 22, 2016~Aug. 31, 2016

For non-beamforming function:

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	12.24	12.40	Complies
40	5200 MHz	12.02	12.40	Complies
48	5240 MHz	12.06	12.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=17 – (10.60 – 6)=12.40dBm/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	12.23	-3.01	9.22	25.40	Complies
157	5785 MHz	12.06	-3.01	9.05	25.40	Complies
165	5825 MHz	12.04	-3.01	9.03	25.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=30 – (10.60 – 6)=25.40dBm/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	12.25	12.40	Complies
40	5200 MHz	12.05	12.40	Complies
48	5240 MHz	12.09	12.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=17 – (10.60 – 6)=12.40dBm/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	12.98	-3.01	9.97	25.40	Complies
157	5785 MHz	12.52	-3.01	9.51	25.40	Complies
165	5825 MHz	12.32	-3.01	9.31	25.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=30 – (10.60 – 6)=25.40dBm/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	8.90	12.40	Complies
46	5230 MHz	9.38	12.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=17 – (10.60 – 6)=12.40dBm/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	9.79	-3.01	6.78	25.40	Complies
159	5795 MHz	12.59	-3.01	9.58	25.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=30 – (10.60 – 6)=25.40dBm/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	4.03	12.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=17 – (10.60 – 6)=12.40dBm/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	10.76	-3.01	7.75	25.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=30 – (10.60 – 6)=25.40dBm/500kHz.

For beamforming function:

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	11.71	12.40	Complies
40	5200 MHz	12.00	12.40	Complies
48	5240 MHz	11.67	12.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=17 – (10.60 – 6)=12.40dBm/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	12.28	-3.01	9.27	25.40	Complies
157	5785 MHz	12.20	-3.01	9.19	25.40	Complies
165	5825 MHz	6.78	-3.01	3.77	25.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=30 – (10.60 – 6)=25.40dBm/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	7.22	12.40	Complies
46	5230 MHz	8.81	12.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=17 – (10.60 – 6)=12.40dBm/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	9.05	-3.01	6.04	25.40	Complies
159	5795 MHz	9.08	-3.01	6.07	25.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=30 – (10.60 – 6)=25.40dBm/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	1.93	12.40	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=17 – (10.60 – 6)=12.40dBm/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	6.14	-3.01	3.13	25.40	Complies

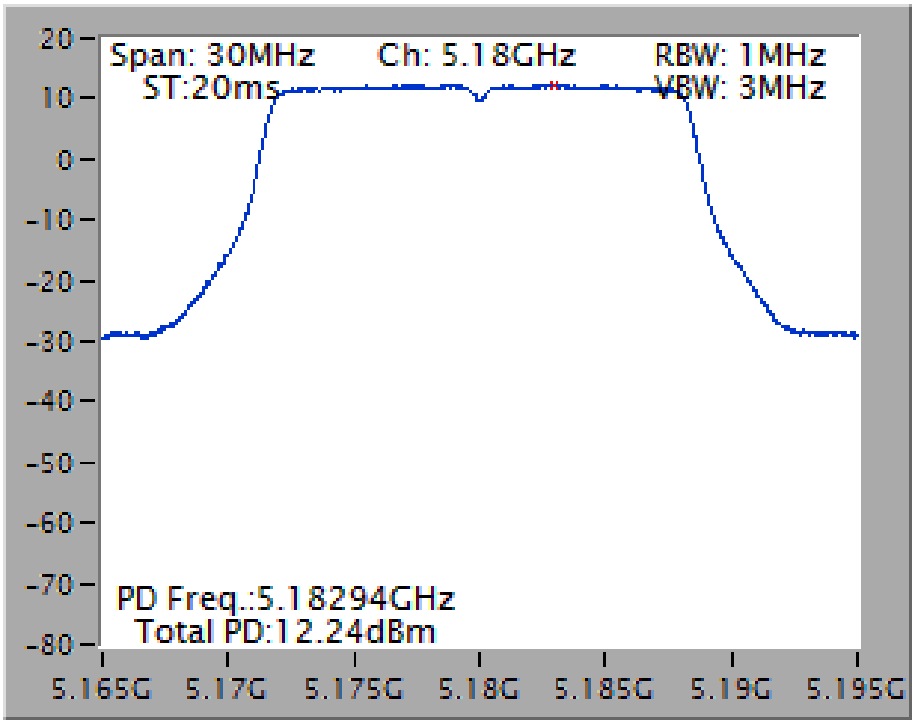
Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =10.60dBi >6dBi, so limit=30 – (10.60 – 6)=25.40dBm/500kHz.

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

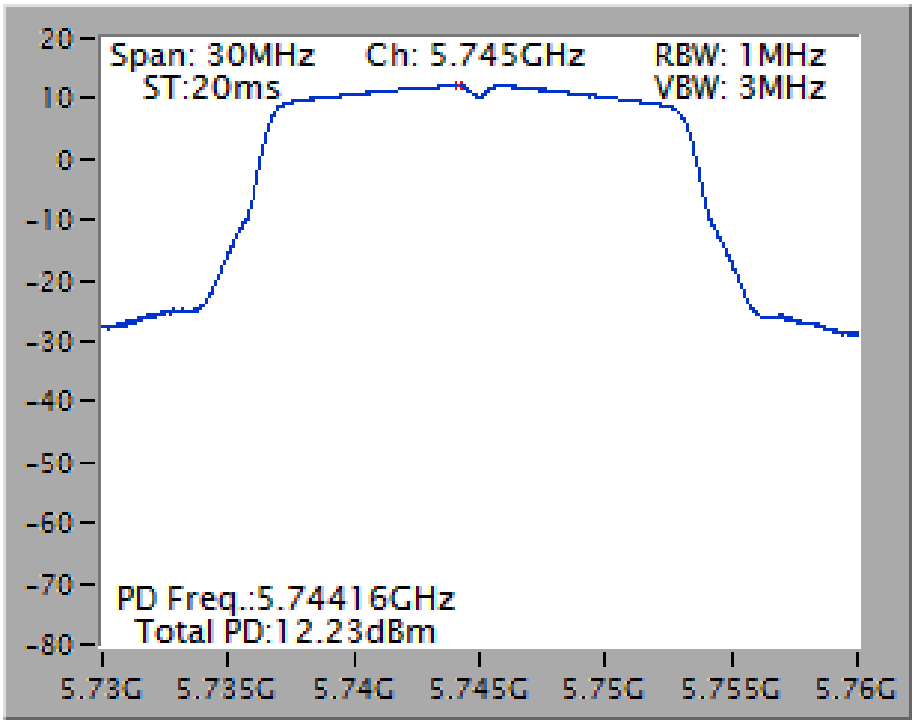
For plots, only the channel with worse result was shown.

For non-beamforming function:

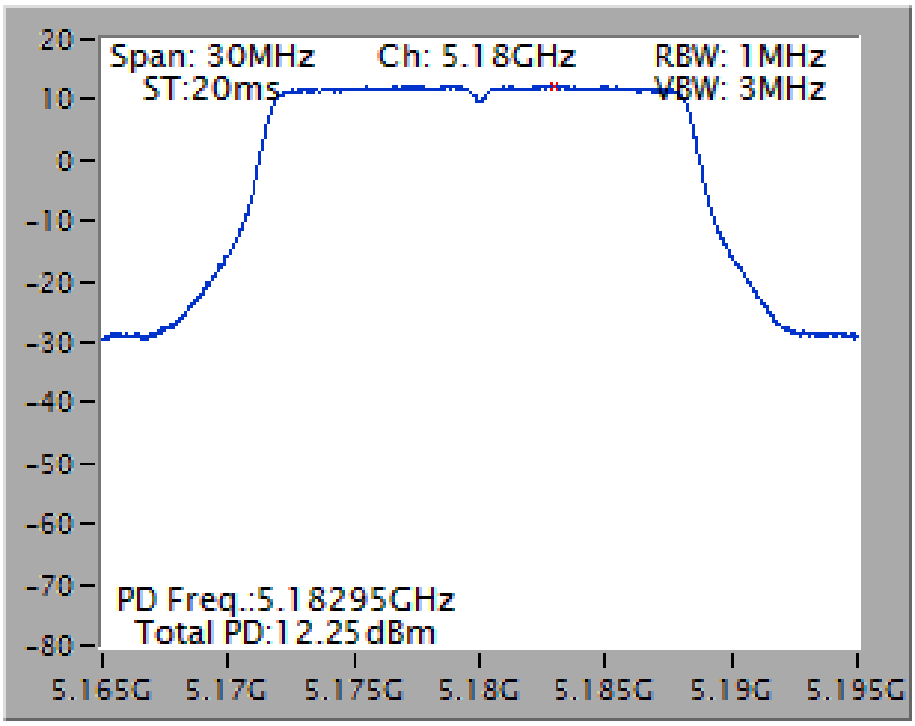
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



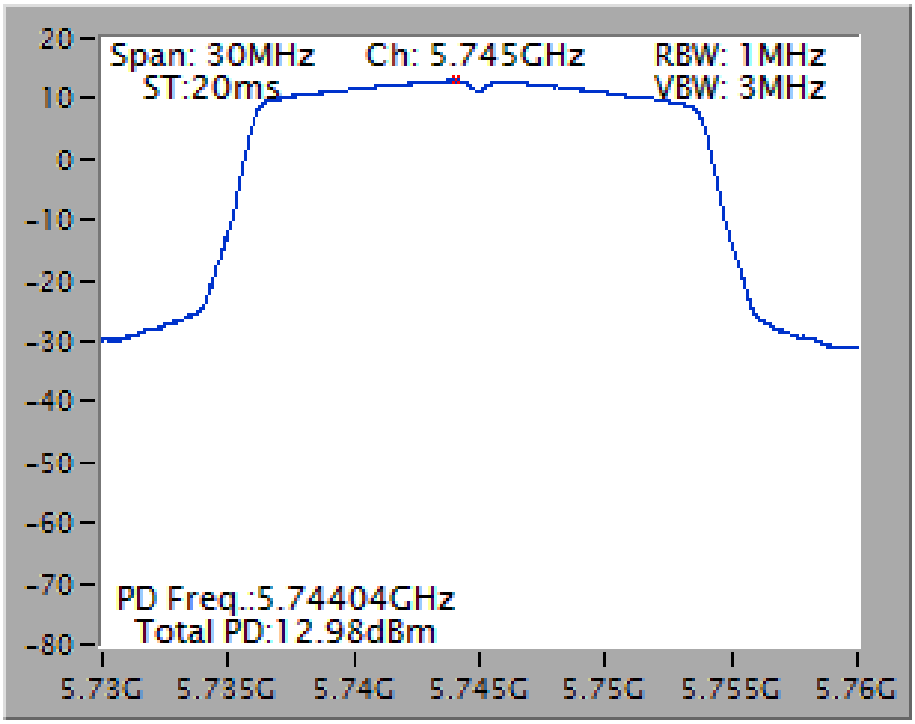
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



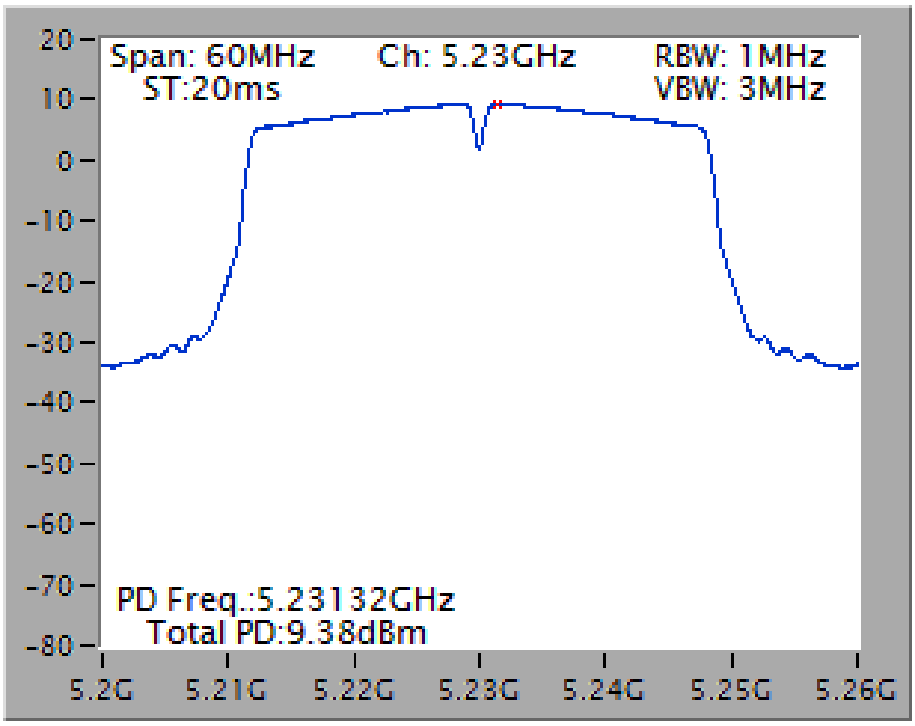
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



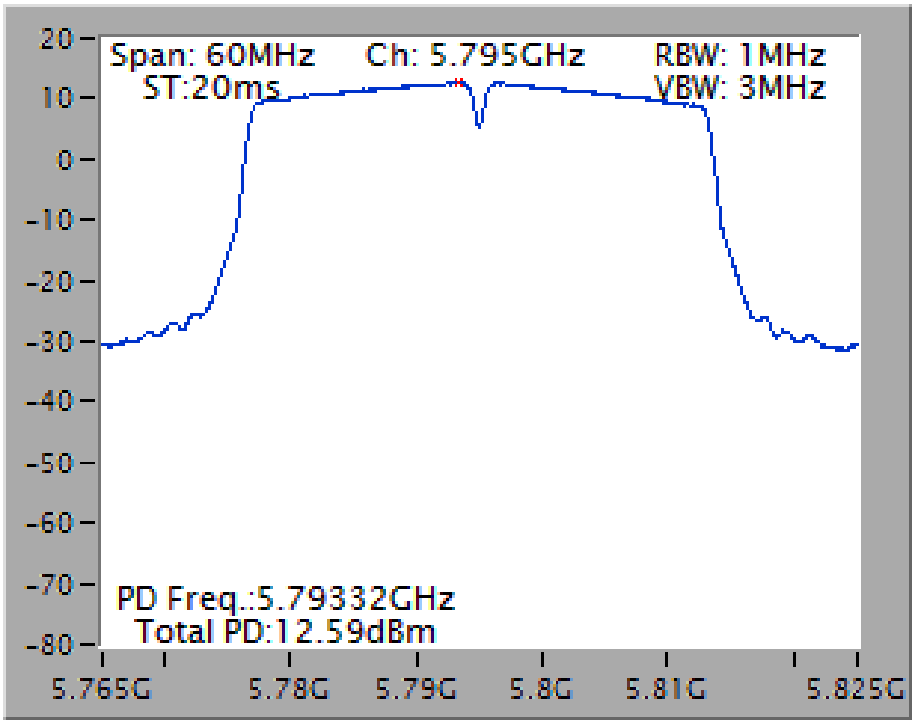
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



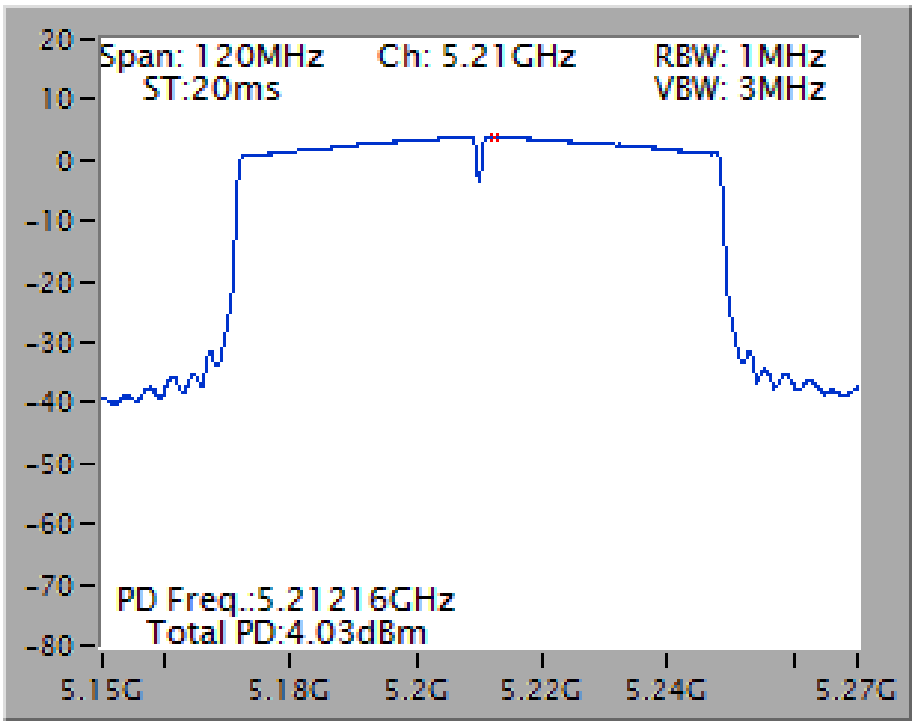
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



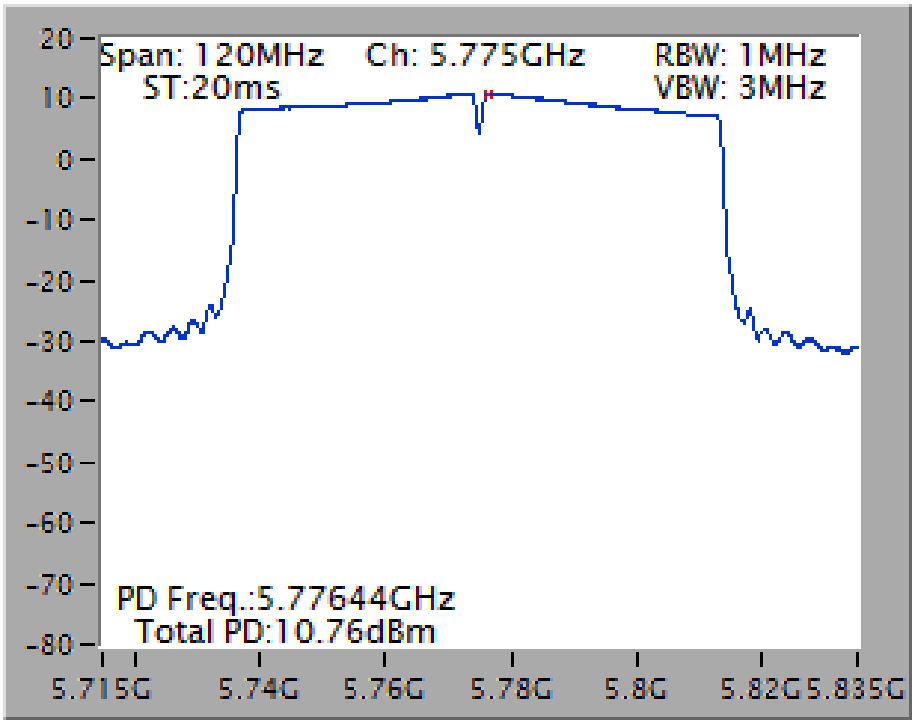
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



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

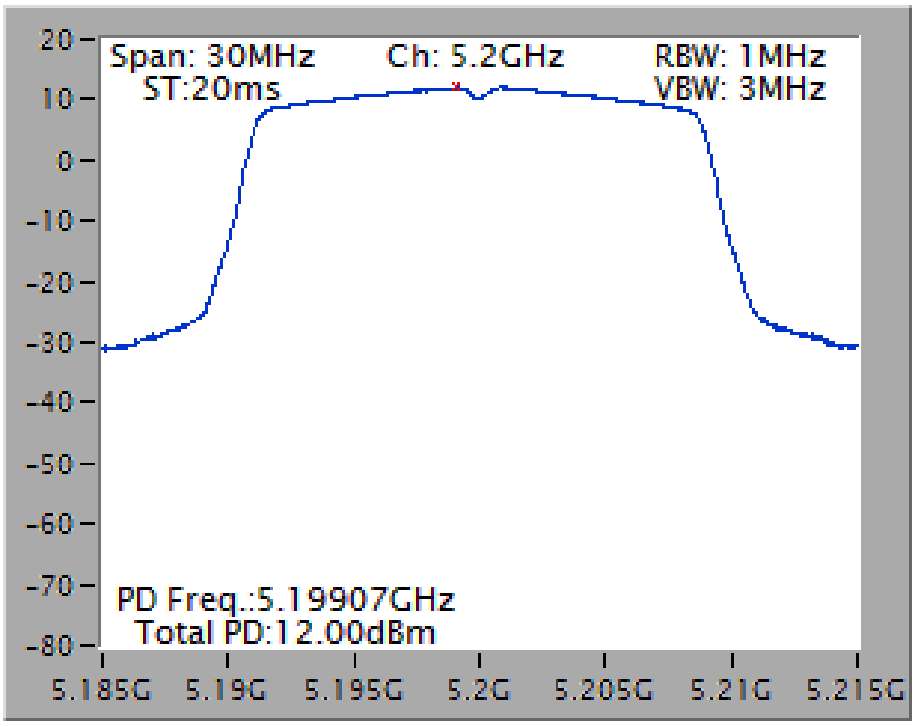


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5775 MHz

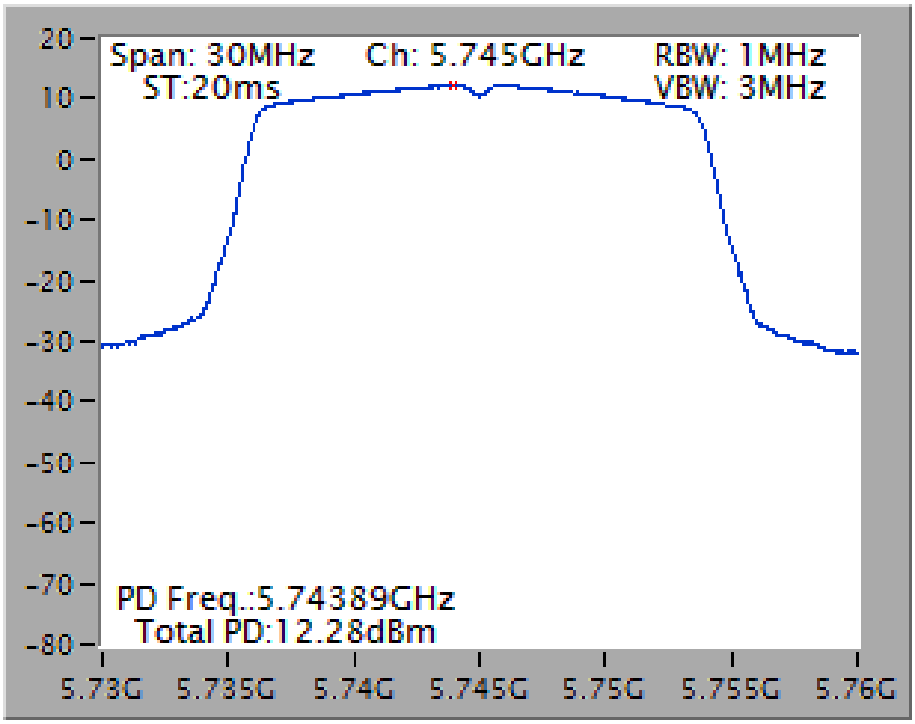


For beamforming function:

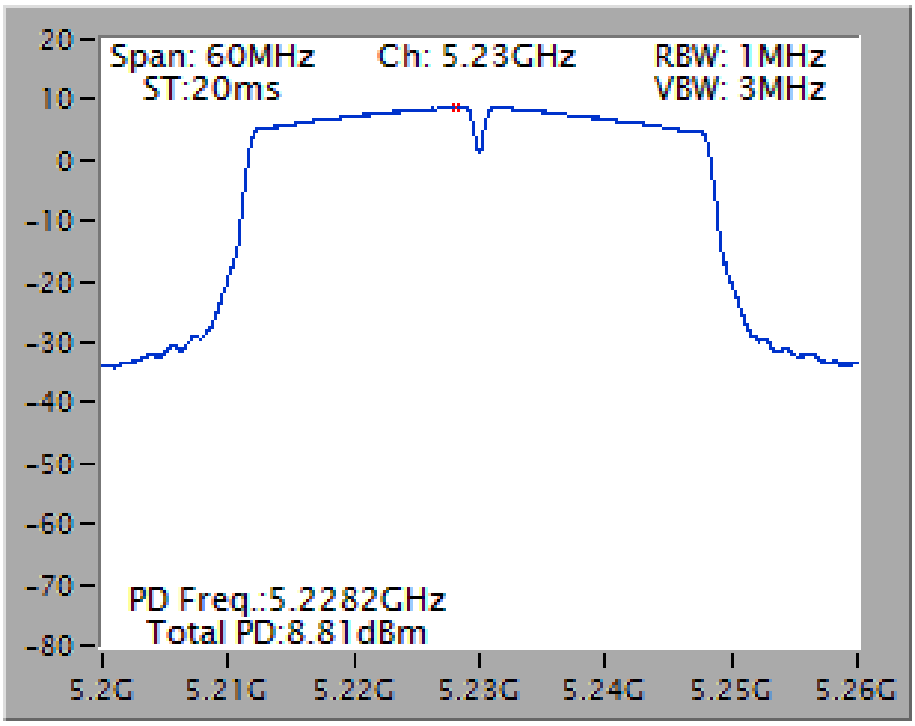
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



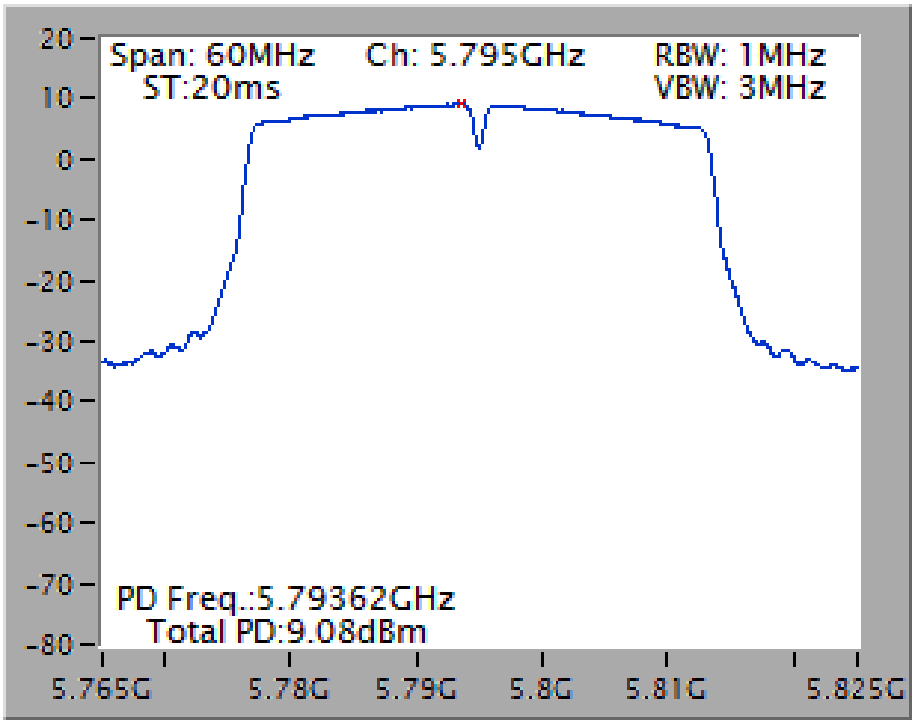
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5745 MHz



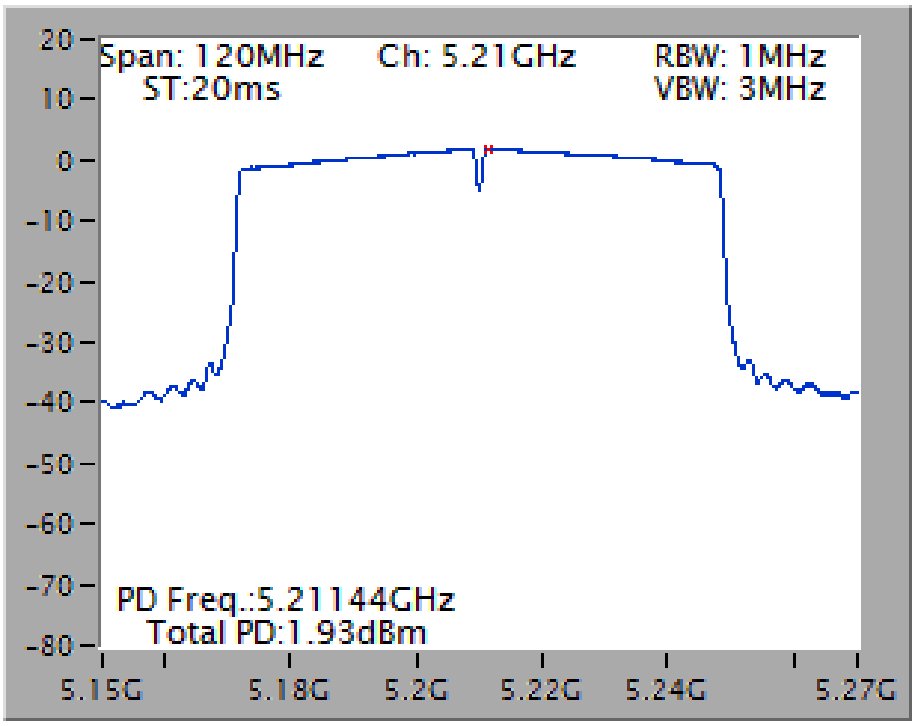
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



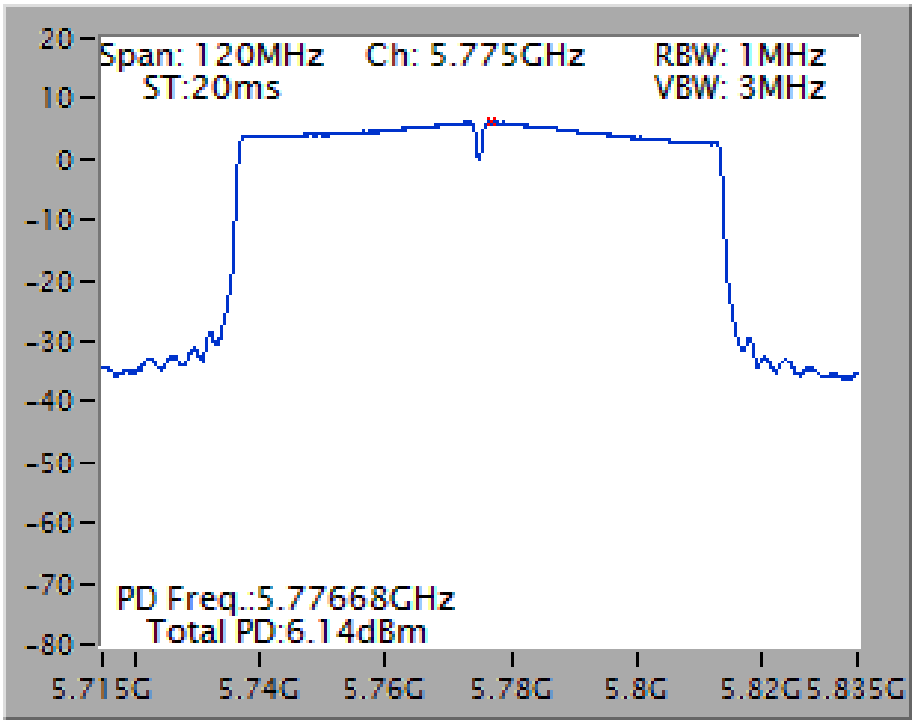
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5795 MHz



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 shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

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

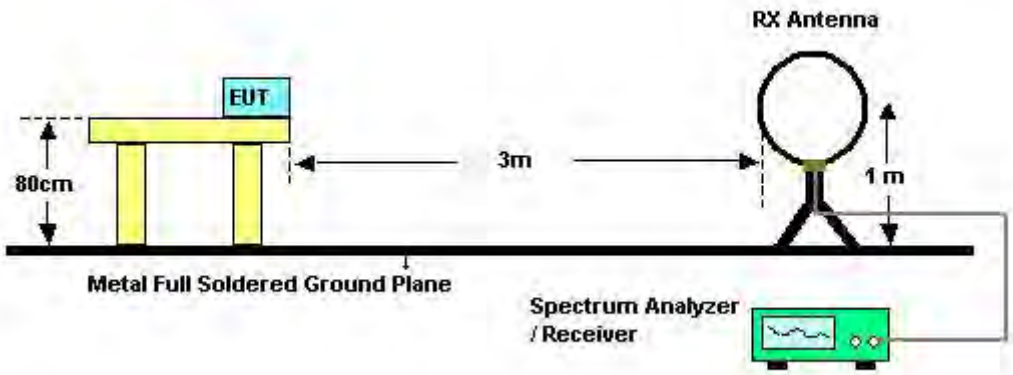
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

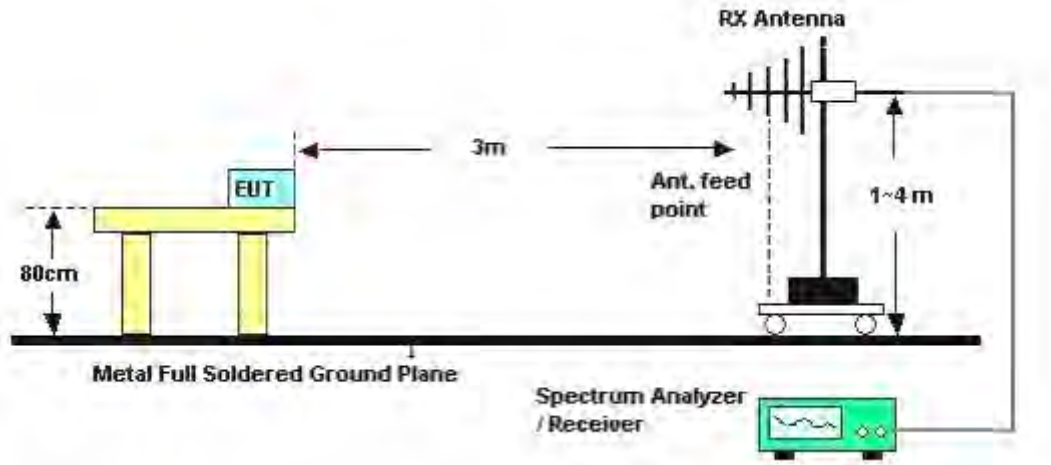
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

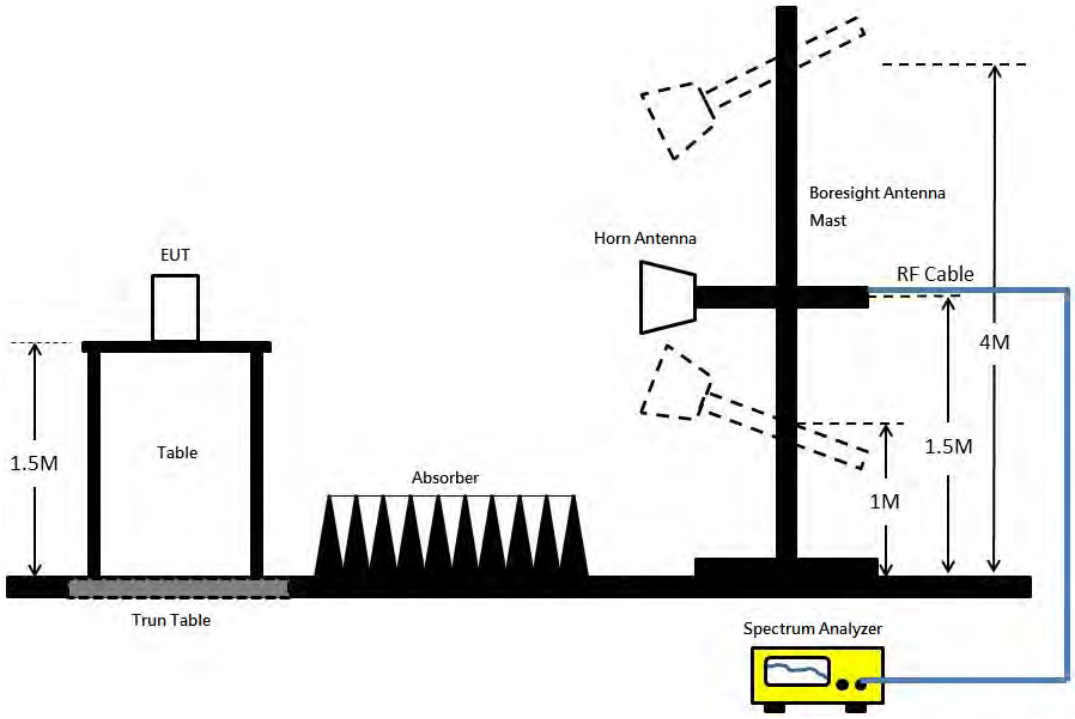
For Radiated Emissions: 9kHz ~30MHz



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 function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

The EUT was programmed to be in beamforming transmitting mode.

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	Normal Link
Test Date	Aug. 16, 2016		

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.

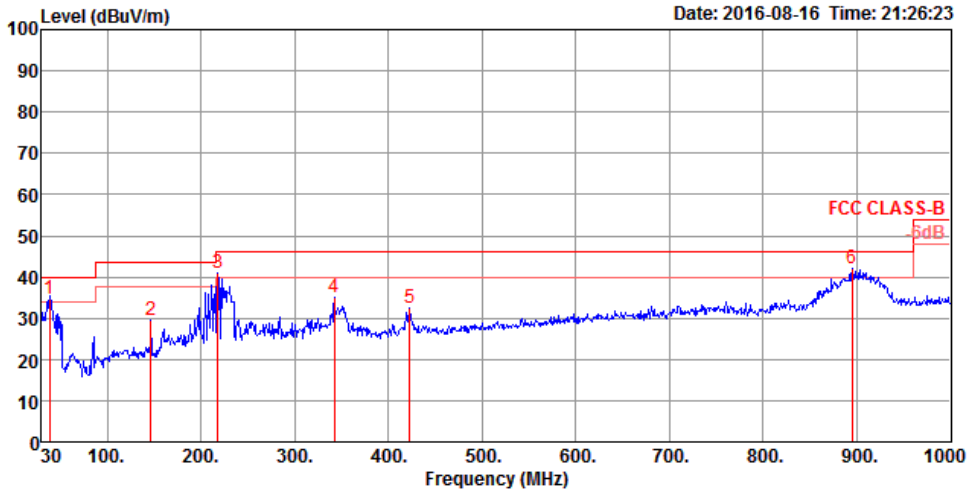
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

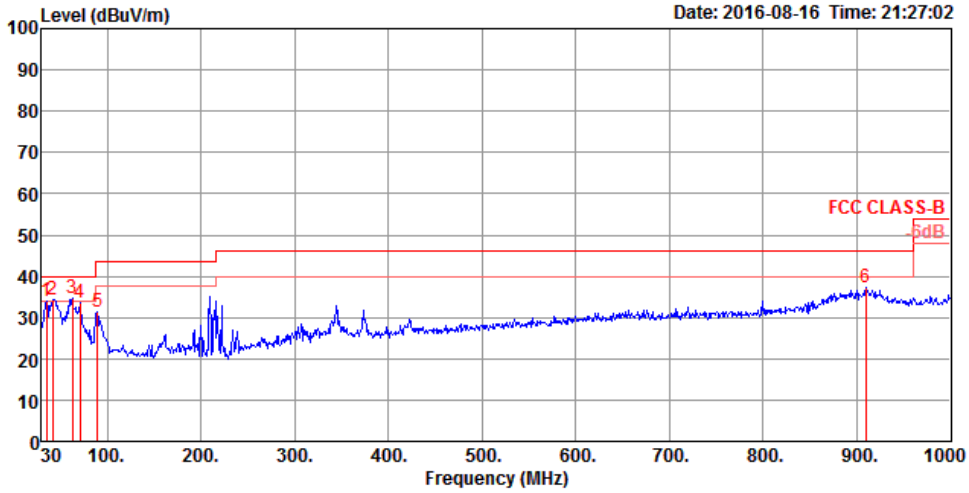
Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	Normal Link

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	38.73	34.61	40.00	-5.39	45.55	0.54	20.93	32.41	200	163	Peak	HORIZONTAL
2	146.40	29.57	43.50	-13.93	43.29	1.03	17.61	32.36	200	143	Peak	HORIZONTAL
3	218.18	40.82	46.00	-5.18	55.00	1.27	16.87	32.32	150	12	Peak	HORIZONTAL
4	342.34	35.03	46.00	-10.97	44.56	1.59	21.18	32.30	150	271	Peak	HORIZONTAL
5	422.85	32.52	46.00	-13.48	40.13	1.78	22.94	32.33	100	358	Peak	HORIZONTAL
6	895.24	41.89	46.00	-4.11	43.43	2.56	27.66	31.76	100	307	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	34.85	33.97	40.00	-6.03	42.50	0.52	23.35	32.40	100	168	Peak	VERTICAL
2	41.64	34.34	40.00	-5.66	47.08	0.56	19.11	32.41	100	176	Peak	VERTICAL
3	62.98	34.60	40.00	-5.40	52.84	0.70	13.46	32.40	200	347	Peak	VERTICAL
4	70.74	33.40	40.00	-6.60	52.12	0.72	12.96	32.40	150	170	Peak	VERTICAL
5	89.17	31.34	43.50	-12.16	47.53	0.82	15.38	32.39	100	60	Peak	VERTICAL
6	909.79	37.36	46.00	-8.64	38.65	2.59	27.78	31.66	150	69	Peak	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB 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 function:

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 22, 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	15536.23	57.98	74.00	-16.02	41.28	12.06	38.13	33.49	154	311	Peak	HORIZONTAL
2	15536.39	45.19	54.00	-8.81	28.49	12.06	38.13	33.49	154	311	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	15520.37	57.67	74.00	-16.33	40.97	12.06	38.13	33.49	151	244	Peak	VERTICAL
2	15550.26	45.34	54.00	-8.66	28.64	12.06	38.13	33.49	151	244	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 22, 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	15590.79	58.56	74.00	-15.44	41.95	12.09	38.05	33.53	147	253	Peak	HORIZONTAL
2	15624.28	44.98	54.00	-9.02	28.47	12.11	37.98	33.58	147	253	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	15595.27	45.12	54.00	-8.88	28.51	12.09	38.05	33.53	152	320	Average	VERTICAL
2	15617.07	58.06	74.00	-15.94	41.55	12.11	37.98	33.58	152	320	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 22, 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	15707.34	45.35	54.00	-8.65	28.98	12.15	37.84	33.62	162	293	Average	HORIZONTAL
2	15743.56	58.22	74.00	-15.78	41.95	12.18	37.76	33.67	162	293	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	15700.61	58.40	74.00	-15.60	42.03	12.15	37.84	33.62	150	189	Peak	VERTICAL
2	15713.99	45.49	54.00	-8.51	29.17	12.15	37.84	33.67	150	189	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 22, 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	11491.20	47.03	54.00	-6.97	30.91	10.10	39.20	33.18	230	111	Average	HORIZONTAL
2	11491.20	64.03	74.00	-9.97	47.91	10.10	39.20	33.18	230	111	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	11489.44	67.22	74.00	-6.78	51.10	10.10	39.20	33.18	230	111	Peak	VERTICAL
2	11492.08	53.87	54.00	-0.13	37.75	10.10	39.20	33.18	230	111	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 22, 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	11571.36	48.81	54.00	-5.19	32.68	10.13	39.20	33.20	229	332	Average	HORIZONTAL
2	11573.21	64.84	74.00	-9.16	48.71	10.13	39.20	33.20	229	332	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	11570.32	53.85	54.00	-0.15	37.72	10.13	39.20	33.20	229	332	Average	VERTICAL
2	11576.25	69.03	74.00	-4.97	52.90	10.13	39.20	33.20	229	332	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 22, 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	11652.32	47.54	54.00	-6.46	31.38	10.18	39.20	33.22	229	332	Average	HORIZONTAL
2	11652.72	64.08	74.00	-9.92	47.92	10.18	39.20	33.22	229	332	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	11651.20	67.66	74.00	-6.34	51.50	10.18	39.20	33.22	229	332	Peak	VERTICAL
2	11651.28	53.94	54.00	-0.06	37.78	10.18	39.20	33.22	229	332	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	15540.40	58.72	74.00	-15.28	42.02	12.06	38.13	33.49	196	125	Peak	HORIZONTAL
2	15541.83	45.91	54.00	-8.09	29.21	12.06	38.13	33.49	196	125	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	15538.22	58.38	74.00	-15.62	41.68	12.06	38.13	33.49	172	253	Peak	VERTICAL
2	15538.68	45.98	54.00	-8.02	29.28	12.06	38.13	33.49	172	253	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	15597.80	46.09	54.00	-7.91	29.48	12.09	38.05	33.53	185	268	Average	HORIZONTAL
2	15599.09	58.64	74.00	-15.36	42.03	12.09	38.05	33.53	185	268	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	15598.04	46.34	54.00	-7.66	29.73	12.09	38.05	33.53	195	168	Average	VERTICAL
2	15599.85	59.04	74.00	-14.96	42.43	12.09	38.05	33.53	195	168	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	15721.69	46.04	54.00	-7.96	29.72	12.15	37.84	33.67	212	156	Average	HORIZONTAL
2	15722.41	59.19	74.00	-14.81	42.87	12.15	37.84	33.67	212	156	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15721.38	58.86	74.00	-15.14	42.54	12.15	37.84	33.67	190	256	Peak	VERTICAL
2	15721.45	45.92	54.00	-8.08	29.60	12.15	37.84	33.67	190	256	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	11487.79	59.83	74.00	-14.17	43.71	10.10	39.20	33.18	224	254	Peak	HORIZONTAL
2	11490.42	46.90	54.00	-7.10	30.78	10.10	39.20	33.18	224	254	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	11490.52	50.13	54.00	-3.87	34.01	10.10	39.20	33.18	230	113	Average	VERTICAL
2	11490.74	63.76	74.00	-10.24	47.64	10.10	39.20	33.18	230	113	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	11571.66	46.21	54.00	-7.79	30.08	10.13	39.20	33.20	200	19	Average	HORIZONTAL
2	11571.68	58.84	74.00	-15.16	42.71	10.13	39.20	33.20	200	19	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	11568.59	49.77	54.00	-4.23	33.64	10.13	39.20	33.20	151	213	Average	VERTICAL
2	11569.39	63.27	74.00	-10.73	47.14	10.13	39.20	33.20	151	213	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	11651.54	63.52	74.00	-10.48	47.36	10.18	39.20	33.22	223	54	Peak	HORIZONTAL
2	11652.20	50.02	54.00	-3.98	33.86	10.18	39.20	33.22	223	54	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	11649.91	53.04	54.00	-0.96	36.90	10.16	39.20	33.22	226	104	Average	VERTICAL
2	11652.36	67.66	74.00	-6.34	51.50	10.18	39.20	33.22	226	104	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	15049.61	62.36	74.00	-11.64	42.96	11.82	40.47	32.89	127	274	Peak	HORIZONTAL
2	15051.11	49.78	54.00	-4.22	30.38	11.82	40.47	32.89	127	274	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	15051.01	63.27	74.00	-10.73	43.87	11.82	40.47	32.89	158	165	Peak	VERTICAL
2	15052.21	49.85	54.00	-4.15	30.45	11.82	40.47	32.89	158	165	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	15691.56	59.55	74.00	-14.45	43.18	12.15	37.84	33.62	202	112	Peak	HORIZONTAL
2	15691.61	46.34	54.00	-7.66	29.97	12.15	37.84	33.62	202	112	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	15689.29	59.04	74.00	-14.96	42.62	12.13	37.91	33.62	217	285	Peak	VERTICAL
2	15691.32	46.30	54.00	-7.70	29.93	12.15	37.84	33.62	217	285	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	11510.00	50.36	54.00	-3.64	34.25	10.10	39.20	33.19	219	52	Average	HORIZONTAL
2	11510.00	64.66	74.00	-9.34	48.55	10.10	39.20	33.19	219	52	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	11508.55	66.80	74.00	-7.20	50.68	10.10	39.20	33.18	236	110	Peak	VERTICAL
2	11508.68	53.63	54.00	-0.37	37.51	10.10	39.20	33.18	236	110	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	11590.00	48.84	54.00	-5.16	32.70	10.15	39.20	33.21	214	138	Average	HORIZONTAL
2	11590.00	61.95	74.00	-12.05	45.81	10.15	39.20	33.21	214	138	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	11590.00	53.22	54.00	-0.78	37.08	10.15	39.20	33.21	232	333	Average	VERTICAL
2	11590.00	67.24	74.00	-6.76	51.10	10.15	39.20	33.21	232	333	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	15630.00	47.33	54.00	-6.67	30.82	12.11	37.98	33.58	183	144	Average	HORIZONTAL
2	15630.00	60.24	74.00	-13.76	43.73	12.11	37.98	33.58	183	144	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	15630.00	47.07	54.00	-6.93	30.56	12.11	37.98	33.58	199	257	Average	VERTICAL
2	15630.00	59.94	74.00	-14.06	43.43	12.11	37.98	33.58	199	257	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Aug. 12, 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	11550.00	49.69	54.00	-4.31	33.57	10.12	39.20	33.20	224	51	Average	HORIZONTAL
2	11550.00	64.66	74.00	-9.34	48.54	10.12	39.20	33.20	224	51	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	11550.00	51.97	54.00	-2.03	35.85	10.12	39.20	33.20	226	104	Average	VERTICAL
2	11550.00	65.91	74.00	-8.09	49.79	10.12	39.20	33.20	226	104	Peak	VERTICAL

For beamforming function:

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	15539.04	44.84	54.00	-9.16	28.14	12.06	38.13	33.49	125	219	Average	HORIZONTAL
2	15539.23	58.17	74.00	-15.83	41.47	12.06	38.13	33.49	125	219	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	15539.66	58.76	74.00	-15.24	42.06	12.06	38.13	33.49	201	111	Peak	VERTICAL
2	15540.59	45.03	54.00	-8.97	28.33	12.06	38.13	33.49	201	111	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	15599.95	58.64	74.00	-15.36	42.03	12.09	38.05	33.53	184	240	Peak	HORIZONTAL
2	15600.57	44.96	54.00	-9.04	28.40	12.11	37.98	33.53	184	240	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	15600.14	59.29	74.00	-14.71	42.68	12.09	38.05	33.53	177	316	Peak	VERTICAL
2	15600.28	47.78	54.00	-6.22	31.17	12.09	38.05	33.53	177	316	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	15719.61	45.05	54.00	-8.95	28.73	12.15	37.84	33.67	162	302	Average	HORIZONTAL
2	15720.20	58.33	74.00	-15.67	42.01	12.15	37.84	33.67	162	302	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	15719.57	45.33	54.00	-8.67	29.01	12.15	37.84	33.67	192	298	Average	VERTICAL
2	15720.74	57.95	74.00	-16.05	41.63	12.15	37.84	33.67	192	298	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	11489.83	59.59	74.00	-14.41	43.47	10.10	39.20	33.18	112	48	Peak	HORIZONTAL
2	11490.05	46.55	54.00	-7.45	30.43	10.10	39.20	33.18	112	48	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	11488.64	66.34	74.00	-7.66	50.22	10.10	39.20	33.18	100	148	Peak	VERTICAL
2	11490.08	53.03	54.00	-0.97	36.91	10.10	39.20	33.18	100	148	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	11560.87	68.04	74.00	-5.96	51.91	10.13	39.20	33.20	231	134	Peak	HORIZONTAL
2	11565.35	53.29	54.00	-0.71	37.16	10.13	39.20	33.20	231	134	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	11560.87	68.09	74.00	-5.91	51.96	10.13	39.20	33.20	230	134	Peak	VERTICAL
2	11564.55	53.90	54.00	-0.10	37.77	10.13	39.20	33.20	230	134	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	11649.99	47.83	54.00	-6.17	31.69	10.16	39.20	33.22	207	144	Average	HORIZONTAL
2	11650.69	62.44	74.00	-11.56	46.30	10.16	39.20	33.22	207	144	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	11649.85	53.85	54.00	-0.15	37.71	10.16	39.20	33.22	236	346	Average	VERTICAL
2	11650.43	68.82	74.00	-5.18	52.68	10.16	39.20	33.22	236	346	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	15569.70	58.14	74.00	-15.86	41.53	12.09	38.05	33.53	136	248	Peak	HORIZONTAL
2	15570.45	45.02	54.00	-8.98	28.41	12.09	38.05	33.53	136	248	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	15570.87	44.98	54.00	-9.02	28.37	12.09	38.05	33.53	188	326	Average	VERTICAL
2	15570.89	58.66	74.00	-15.34	42.05	12.09	38.05	33.53	188	326	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	15689.89	58.67	74.00	-15.33	42.25	12.13	37.91	33.62	117	268	Peak	HORIZONTAL
2	15690.62	45.00	54.00	-9.00	28.58	12.13	37.91	33.62	117	268	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	15689.88	58.75	74.00	-15.25	42.33	12.13	37.91	33.62	178	216	Peak	VERTICAL
2	15690.24	45.23	54.00	-8.77	28.81	12.13	37.91	33.62	178	216	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	11509.01	62.48	74.00	-11.52	46.37	10.10	39.20	33.19	207	148	Peak	HORIZONTAL
2	11509.67	49.09	54.00	-4.91	32.98	10.10	39.20	33.19	207	148	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	11509.60	53.21	54.00	-0.79	37.10	10.10	39.20	33.19	224	331	Average	VERTICAL
2	11510.81	67.28	74.00	-6.72	51.17	10.10	39.20	33.19	224	331	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	11589.94	46.79	54.00	-7.21	30.65	10.15	39.20	33.21	213	144	Average	HORIZONTAL
2	11590.92	60.78	74.00	-13.22	44.64	10.15	39.20	33.21	213	144	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	11589.87	53.90	54.00	-0.10	37.76	10.15	39.20	33.21	207	349	Average	VERTICAL
2	11590.80	68.57	74.00	-5.43	52.43	10.15	39.20	33.21	207	349	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	15630.06	44.67	54.00	-9.33	28.16	12.11	37.98	33.58	123	151	Average	HORIZONTAL
2	15630.71	58.19	74.00	-15.81	41.68	12.11	37.98	33.58	123	151	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	15629.55	58.02	74.00	-15.98	41.51	12.11	37.98	33.58	144	215	Peak	VERTICAL
2	15630.17	44.63	54.00	-9.37	28.12	12.11	37.98	33.58	144	215	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Jul. 19, 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	11550.35	61.46	74.00	-12.54	45.33	10.13	39.20	33.20	216	187	Peak	HORIZONTAL
2	11550.42	48.19	54.00	-5.81	32.06	10.13	39.20	33.20	216	187	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	11550.65	53.42	54.00	-0.58	37.29	10.13	39.20	33.20	240	347	Average	VERTICAL
2	11553.11	65.52	74.00	-8.48	49.39	10.13	39.20	33.20	240	347	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 shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

In addition, In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

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

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 function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

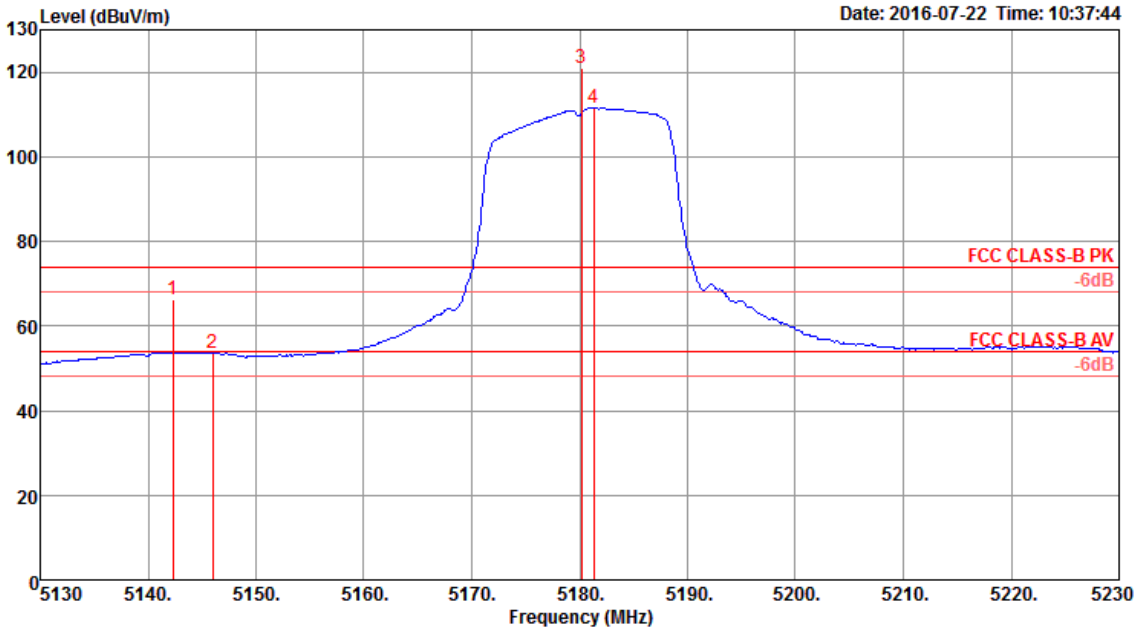
The EUT was programmed to be in beamforming transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

For non-beamforming function:

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4

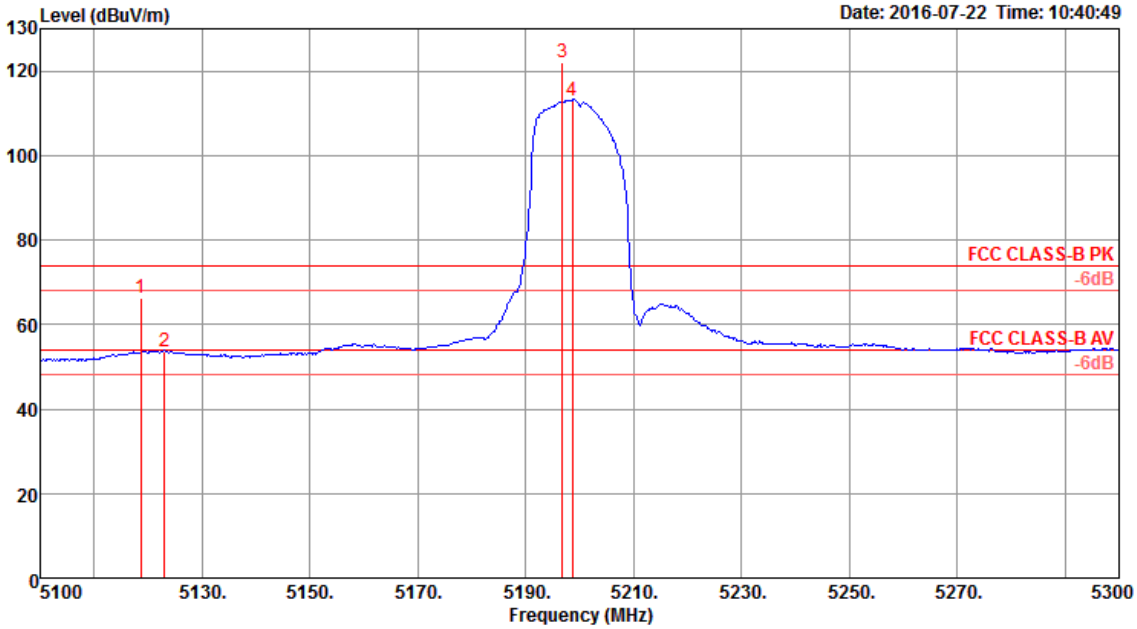
Channel 36



	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	5142.34	66.22	74.00	-7.78	58.96	6.44	33.74	32.92	102	209	Peak	VERTICAL
2	5146.03	53.68	54.00	-0.32	46.42	6.44	33.74	32.92	102	209	Average	VERTICAL
3	5180.16	121.13			113.79	6.47	33.79	32.92	102	209	Peak	VERTICAL
4	5181.28	111.46			104.12	6.47	33.79	32.92	102	209	Average	VERTICAL

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

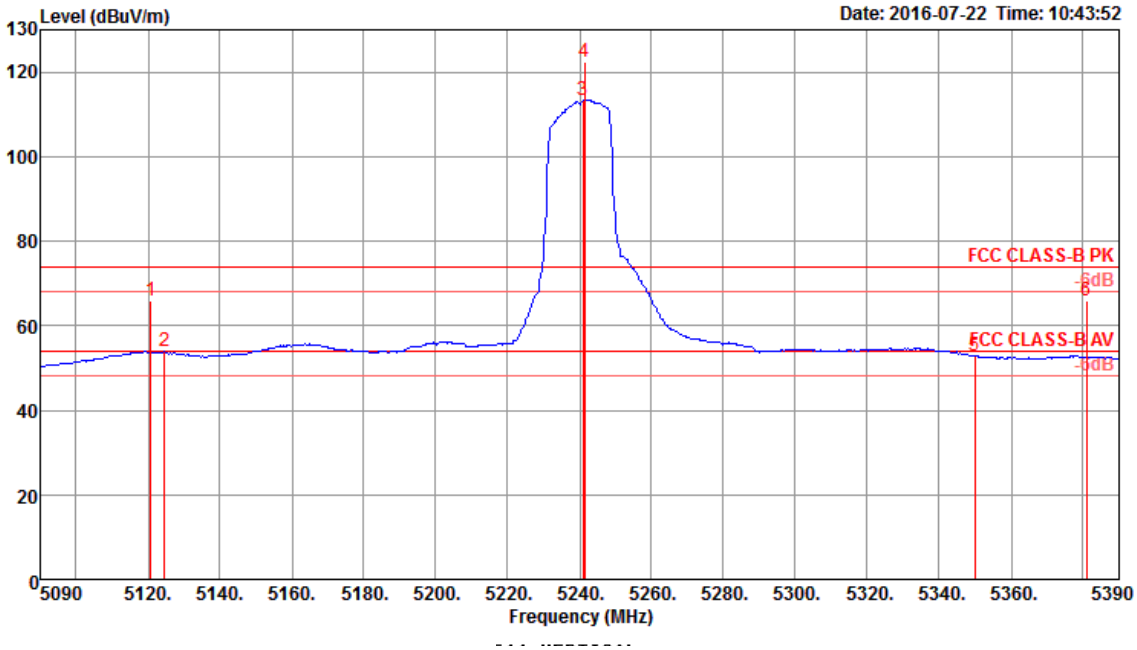
Channel 40



	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	5118.59	66.39	74.00	-7.61	59.20	6.41	33.69	32.91	101	207	Peak	VERTICAL
2	5123.08	53.75	54.00	-0.25	46.57	6.41	33.69	32.92	101	207	Average	VERTICAL
3	5196.80	122.02			114.64	6.48	33.82	32.92	101	207	Peak	VERTICAL
4	5198.72	113.15			105.77	6.48	33.82	32.92	101	207	Average	VERTICAL

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

Channel 48

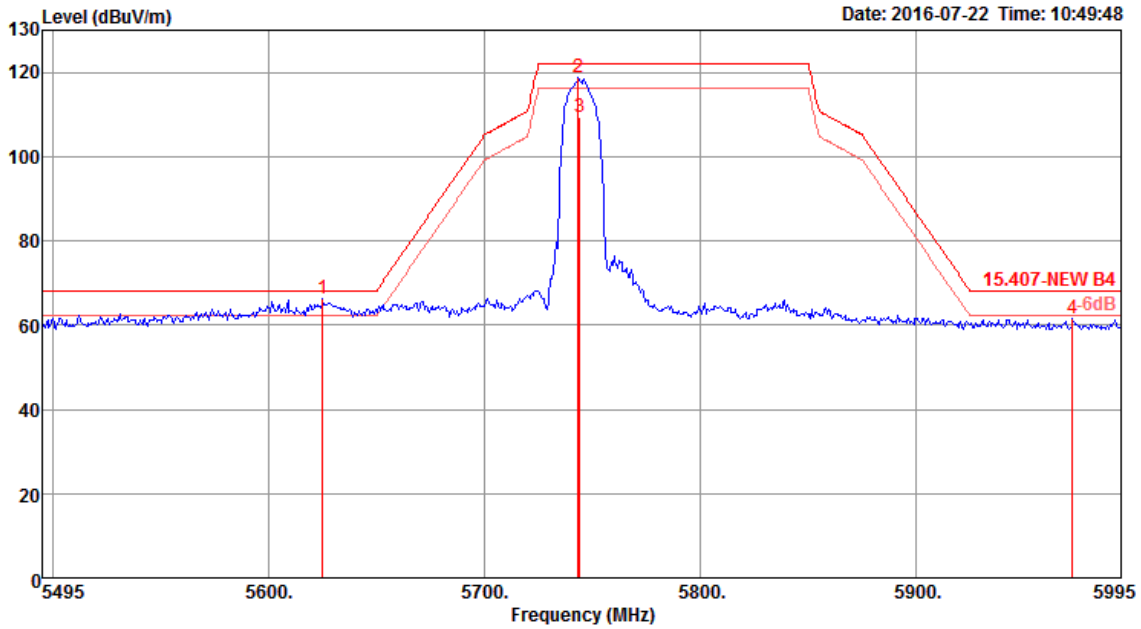


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5120.77	65.97	74.00	-8.03	58.78	6.41	33.69	32.91	101	210	Peak	VERTICAL
2	5124.62	53.83	54.00	-0.17	46.65	6.41	33.69	32.92	101	210	Average	VERTICAL
3	5240.96	113.38			105.89	6.52	33.89	32.92	101	210	Average	VERTICAL
4	5241.44	122.22			114.73	6.52	33.89	32.92	101	210	Peak	VERTICAL
5	5350.00	52.75	54.00	-1.25	45.00	6.61	34.06	32.92	101	210	Average	VERTICAL
6	5380.87	65.73	74.00	-8.27	57.91	6.64	34.11	32.93	101	210	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4

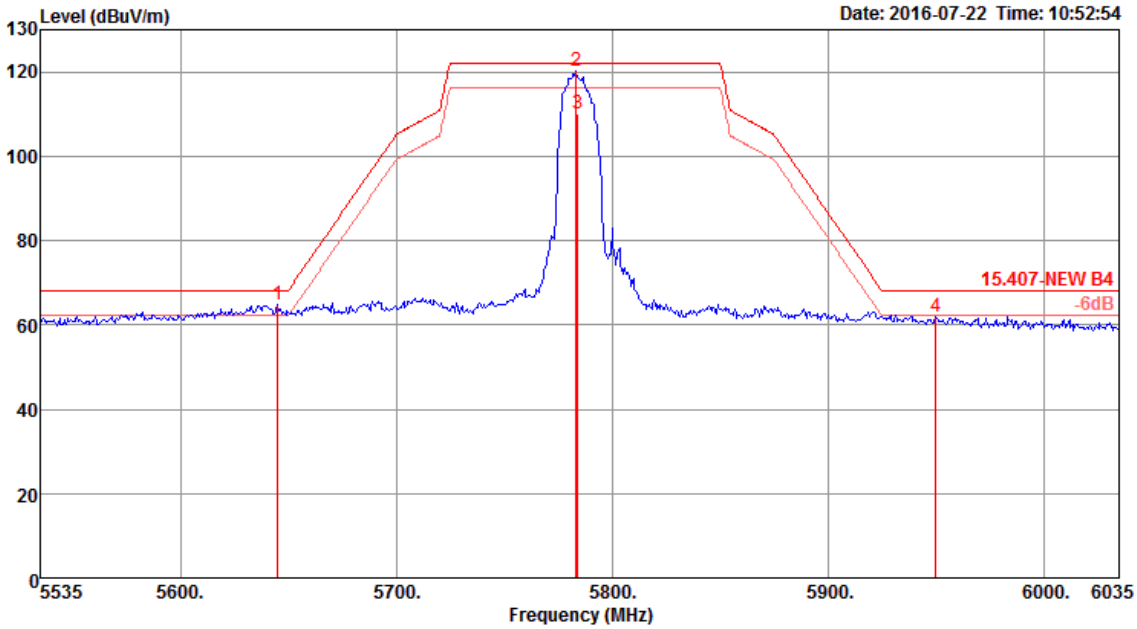
Channel 149



	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	5625.00	66.21	68.20	-1.99	58.01	6.78	34.38	32.96	218	138	Peak	VERTICAL
2	5743.50	118.87			110.51	6.90	34.45	32.99	218	138	Peak	VERTICAL
3	5744.20	109.21			100.85	6.90	34.45	32.99	218	138	Average	VERTICAL
4	5972.50	61.39	68.20	-6.81	52.87	6.99	34.58	33.05	218	138	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

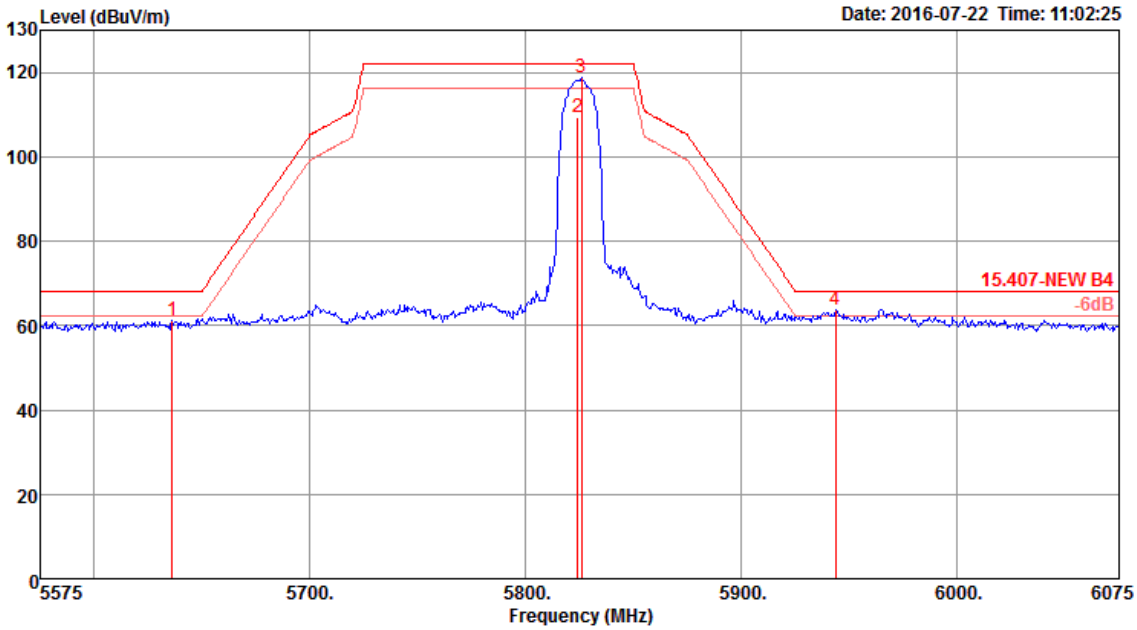
Channel 157



	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	5645.00	64.92	68.20	-3.28	56.70	6.80	34.39	32.97	208	145	Peak	VERTICAL
2	5783.50	120.25			111.86	6.93	34.47	33.01	208	145	Peak	VERTICAL
3	5784.20	109.91			101.52	6.93	34.47	33.01	208	145	Average	VERTICAL
4	5950.00	62.00	68.20	-6.20	53.49	6.99	34.57	33.05	208	145	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

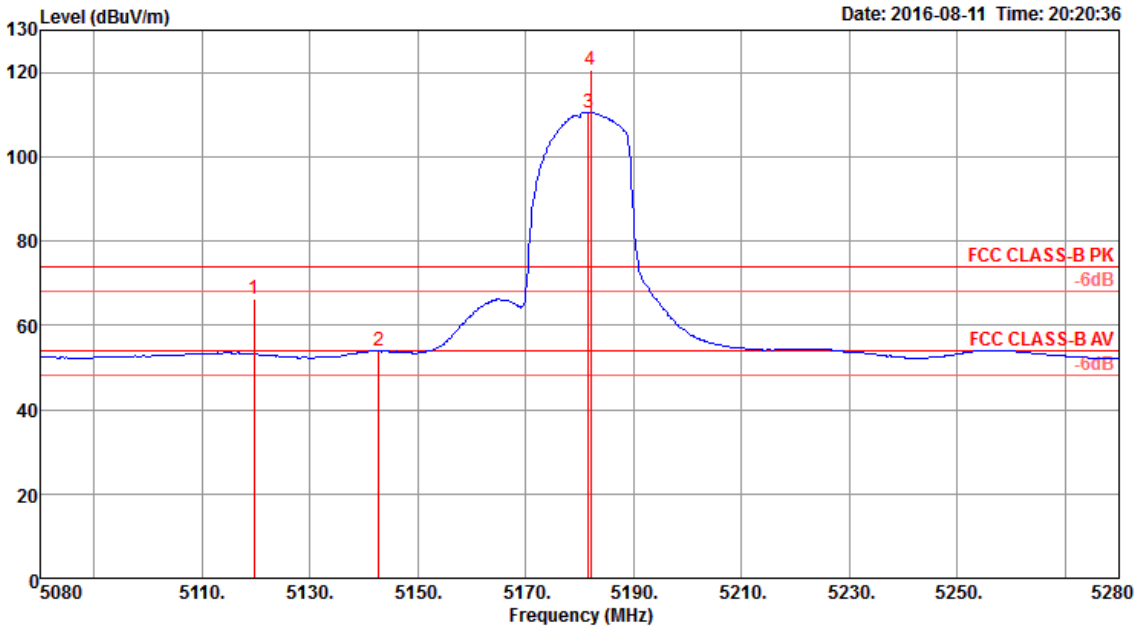


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5636.00	61.03	68.20	-7.17	52.84	6.78	34.38	32.97	229	145	Peak	VERTICAL
2	5824.20	109.37			100.93	6.96	34.50	33.02	229	145	Average	VERTICAL
3	5826.00	118.86			110.42	6.96	34.50	33.02	229	145	Peak	VERTICAL
4	5943.50	63.82	68.20	-4.38	55.31	6.99	34.57	33.05	229	145	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4

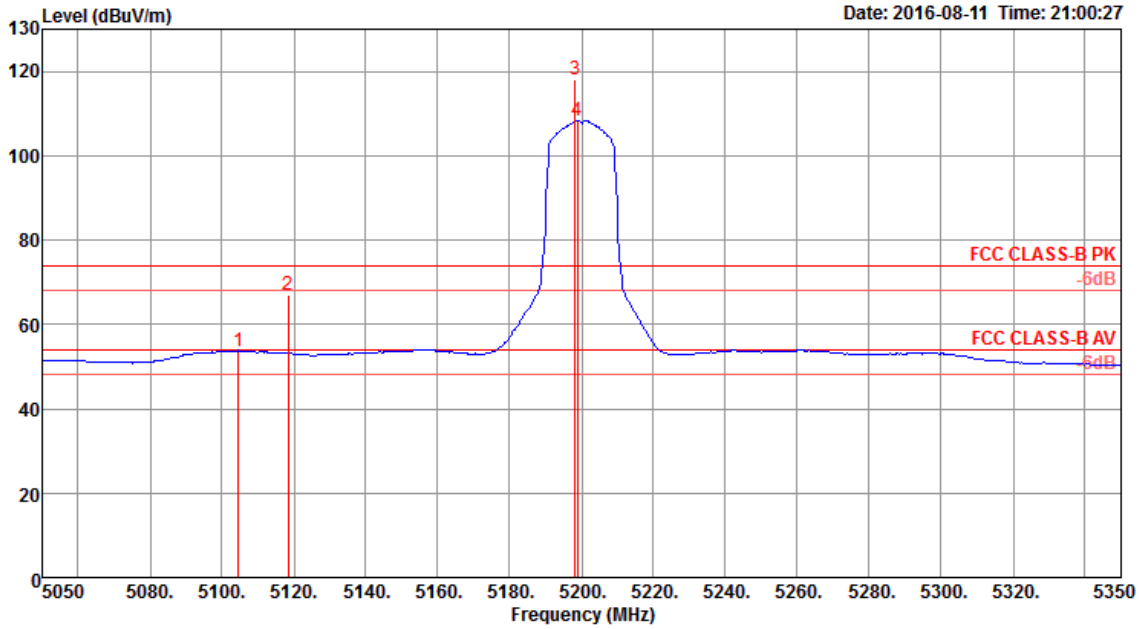
Channel 36



	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	5119.60	66.11	74.00	-7.89	58.92	6.41	33.69	32.91	100	239	Peak	VERTICAL
2	5142.80	53.87	54.00	-0.13	46.61	6.44	33.74	32.92	100	239	Average	VERTICAL
3	5181.60	110.54			103.20	6.47	33.79	32.92	100	239	Average	VERTICAL
4	5182.00	120.42			113.08	6.47	33.79	32.92	100	239	Peak	VERTICAL

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

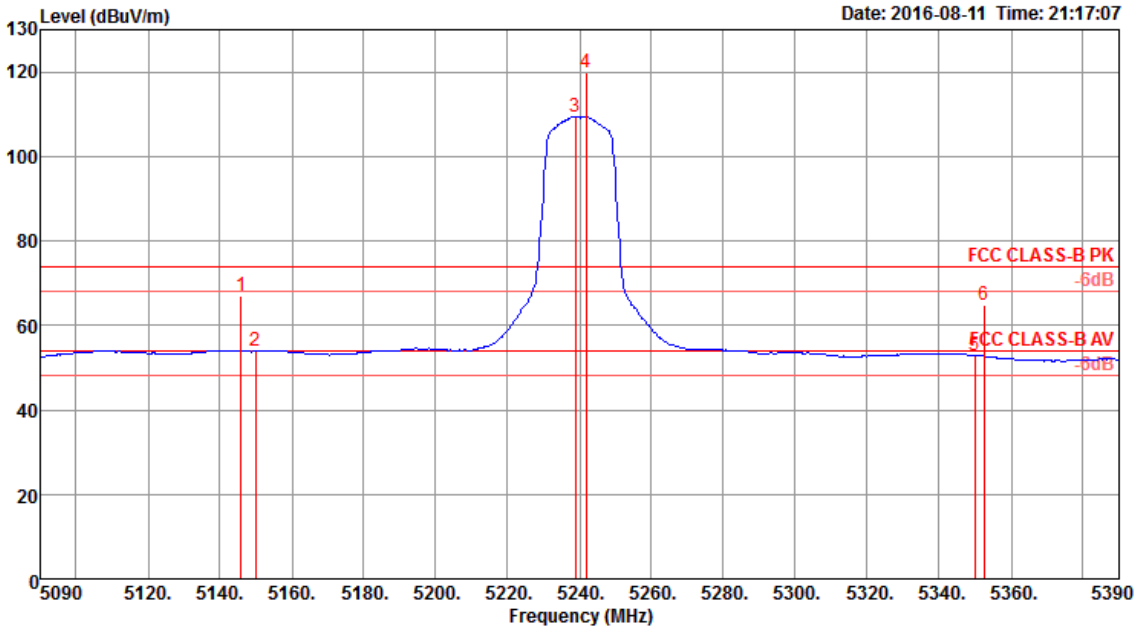
Channel 40



	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	5104.60	53.77	54.00	-0.23	46.61	6.40	33.67	32.91	100	153	Average	VERTICAL
2	5118.40	66.82	74.00	-7.18	59.63	6.41	33.69	32.91	100	153	Peak	VERTICAL
3	5198.20	117.96			110.58	6.48	33.82	32.92	100	153	Peak	VERTICAL
4	5198.80	108.35			100.97	6.48	33.82	32.92	100	153	Average	VERTICAL

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

Channel 48

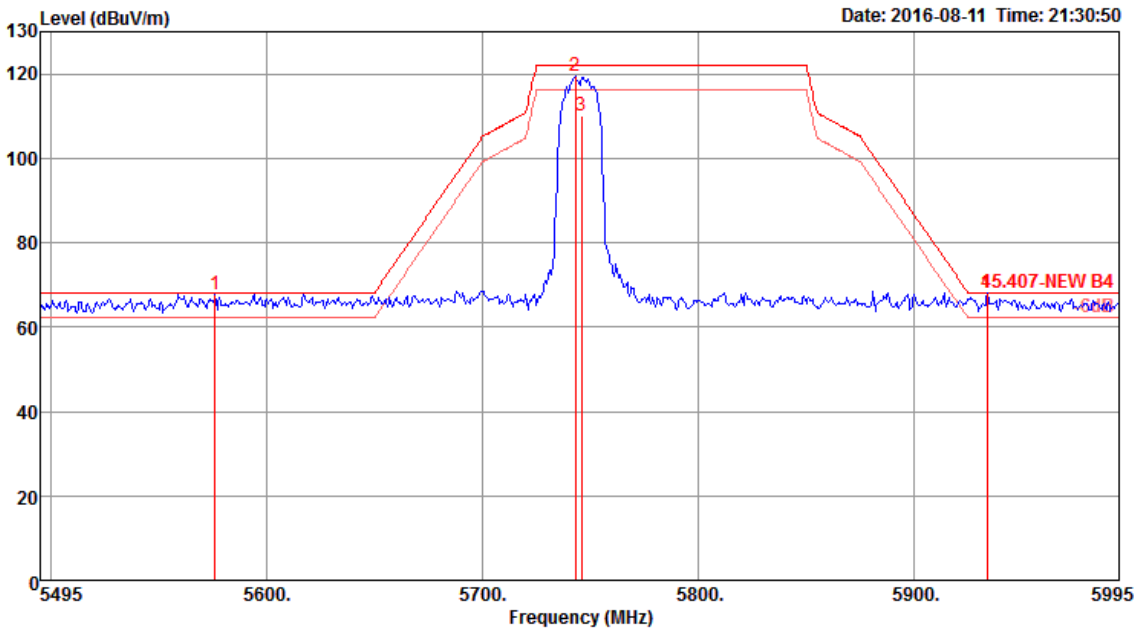


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.80	67.11	74.00	-6.89	59.85	6.44	33.74	32.92	100	235	Peak	VERTICAL
2	5150.00	53.79	54.00	-0.21	46.53	6.44	33.74	32.92	100	235	Average	VERTICAL
3	5238.80	109.50			102.01	6.52	33.89	32.92	100	235	Average	VERTICAL
4	5241.80	119.74			112.25	6.52	33.89	32.92	100	235	Peak	VERTICAL
5	5350.00	52.80	54.00	-1.20	45.05	6.61	34.06	32.92	100	235	Average	VERTICAL
6	5352.40	64.73	74.00	-9.27	56.98	6.61	34.06	32.92	100	235	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4

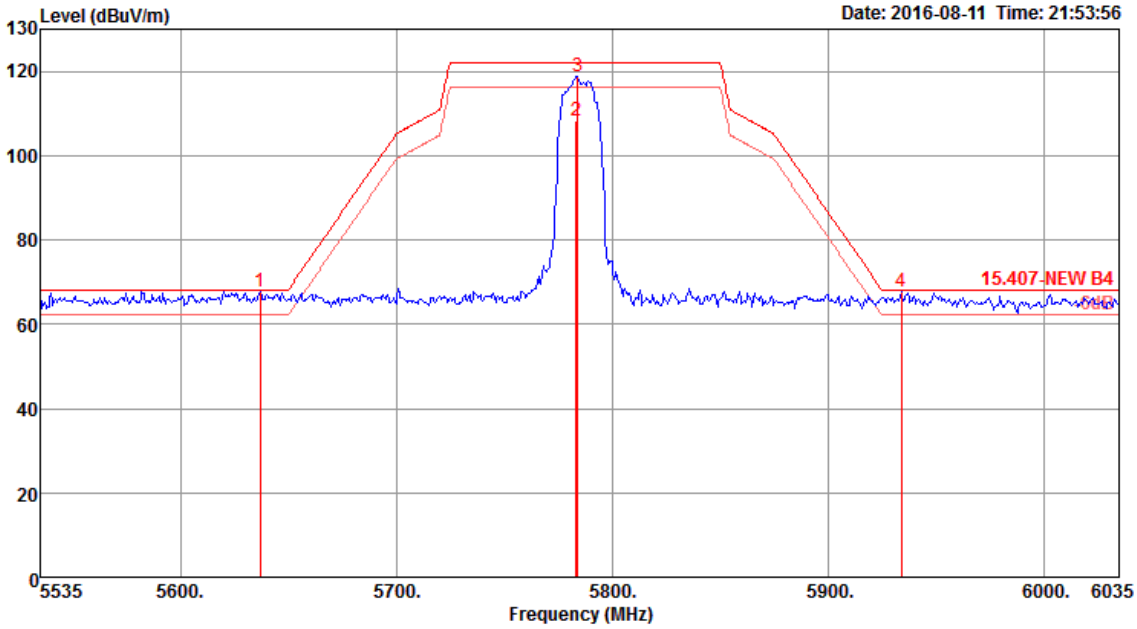
Channel 149



	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	5576.00	67.78	68.20	-0.42	59.64	6.74	34.35	32.95	266	182	Peak	VERTICAL
2	5743.00	119.47			111.11	6.90	34.45	32.99	266	182	Peak	VERTICAL
3	5746.00	110.22			101.87	6.90	34.45	33.00	266	182	Average	VERTICAL
4	5934.00	68.09	68.20	-0.11	59.59	6.98	34.56	33.04	266	182	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

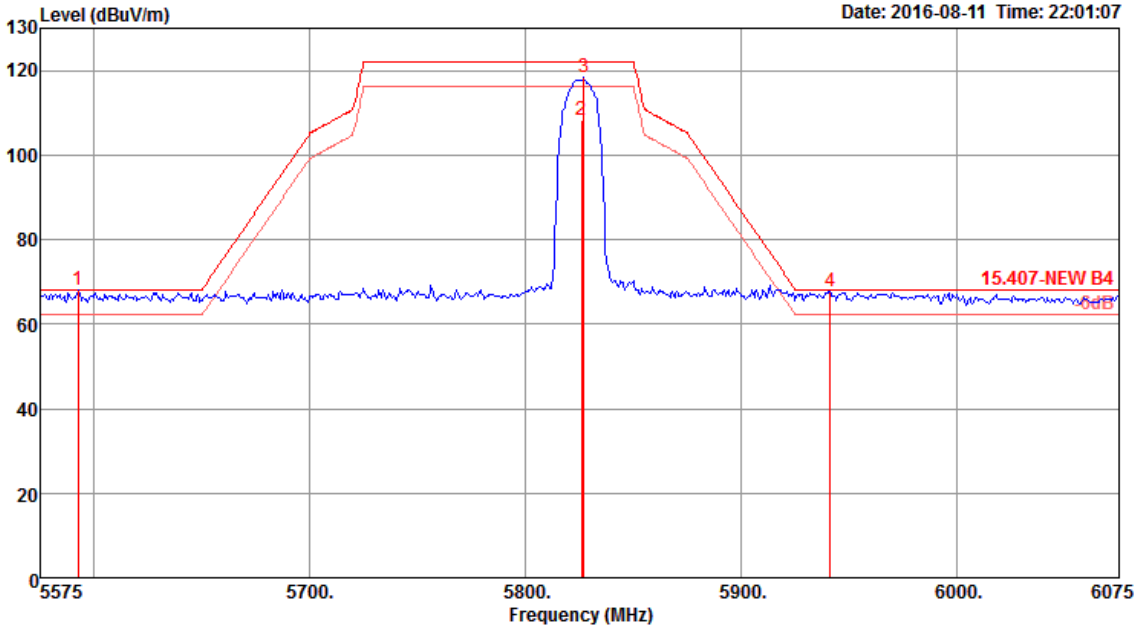
Channel 157



	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	5637.00	67.78	68.20	-0.42	59.59	6.78	34.38	32.97	200	81	Peak	VERTICAL
2	5783.57	108.27			99.88	6.93	34.47	33.01	200	81	Average	VERTICAL
3	5784.00	118.73			110.34	6.93	34.47	33.01	200	81	Peak	VERTICAL
4	5934.00	67.54	68.20	-0.66	59.04	6.98	34.56	33.04	200	81	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

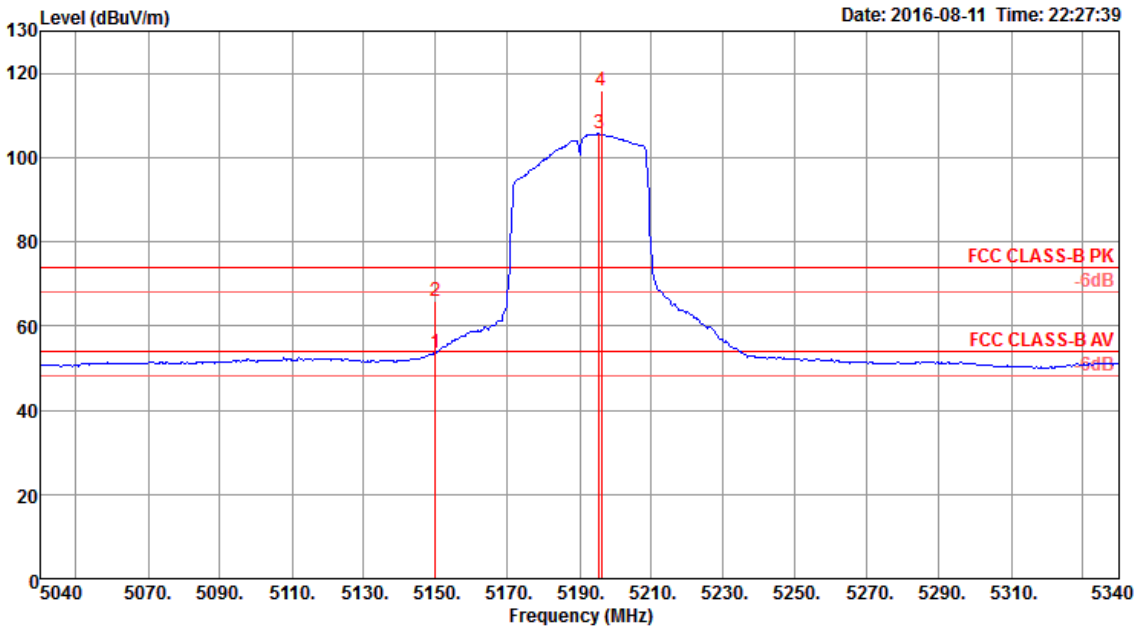


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5592.50	68.03	68.20	-0.17	59.87	6.75	34.36	32.95	237	82	Peak	VERTICAL
2	5826.00	108.23			99.79	6.96	34.50	33.02	237	82	Average	VERTICAL
3	5827.00	118.27			109.83	6.96	34.50	33.02	237	82	Peak	VERTICAL
4	5941.00	67.85	68.20	-0.35	59.36	6.98	34.56	33.05	237	82	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4

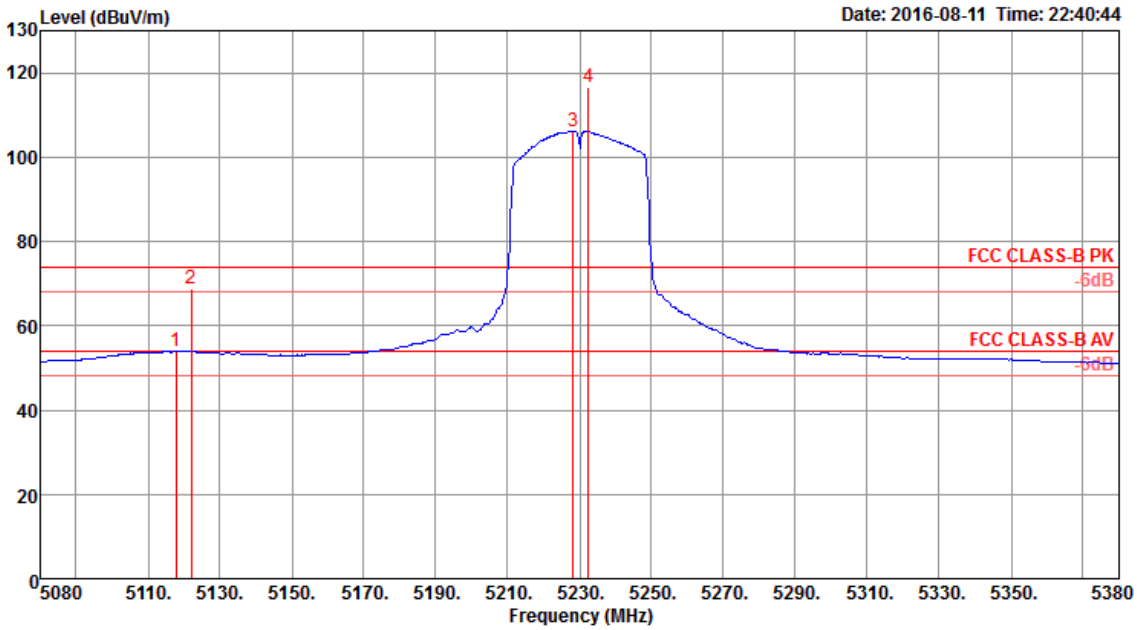
Channel 38



	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	5150.00	53.53	54.00	-0.47	46.27	6.44	33.74	32.92	100	103	Average	VERTICAL
2	5150.00	65.75	74.00	-8.25	58.49	6.44	33.74	32.92	100	103	Peak	VERTICAL
3	5195.40	105.77			98.39	6.48	33.82	32.92	100	103	Average	VERTICAL
4	5196.00	115.76			108.38	6.48	33.82	32.92	100	103	Peak	VERTICAL

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

Channel 46

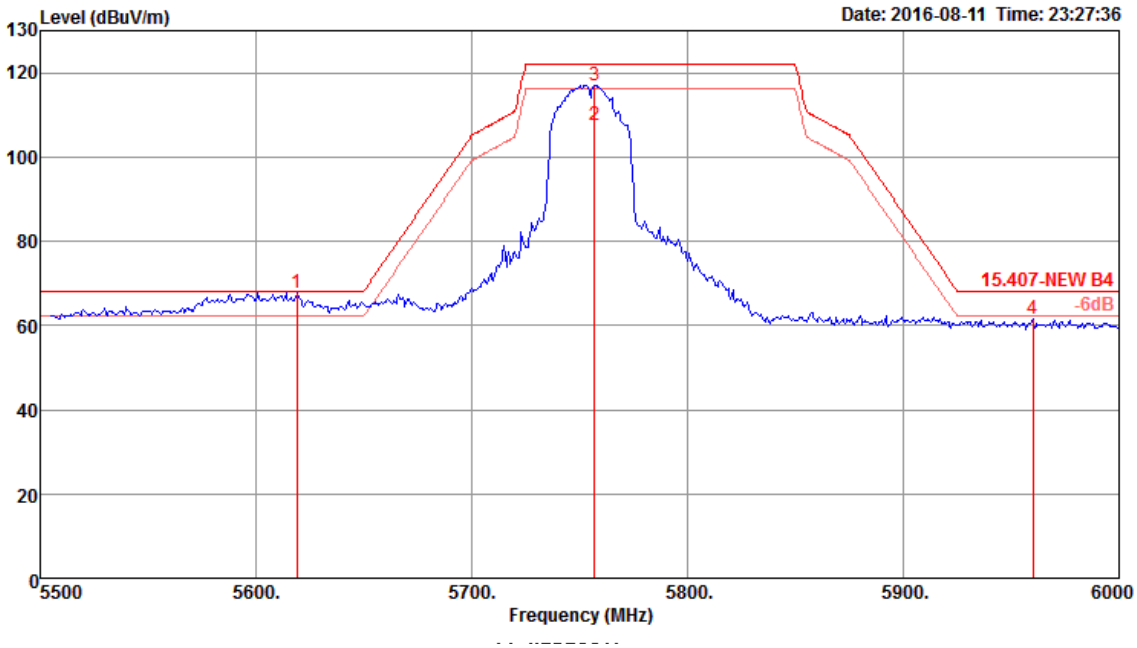


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5117.80	53.87	54.00	-0.13	46.68	6.41	33.69	32.91	100	237	Average	VERTICAL
2	5122.00	68.83	74.00	-5.17	61.64	6.41	33.69	32.91	100	237	Peak	VERTICAL
3	5228.20	106.25			98.80	6.51	33.86	32.92	100	237	Average	VERTICAL
4	5232.40	116.60			109.11	6.52	33.89	32.92	100	237	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4

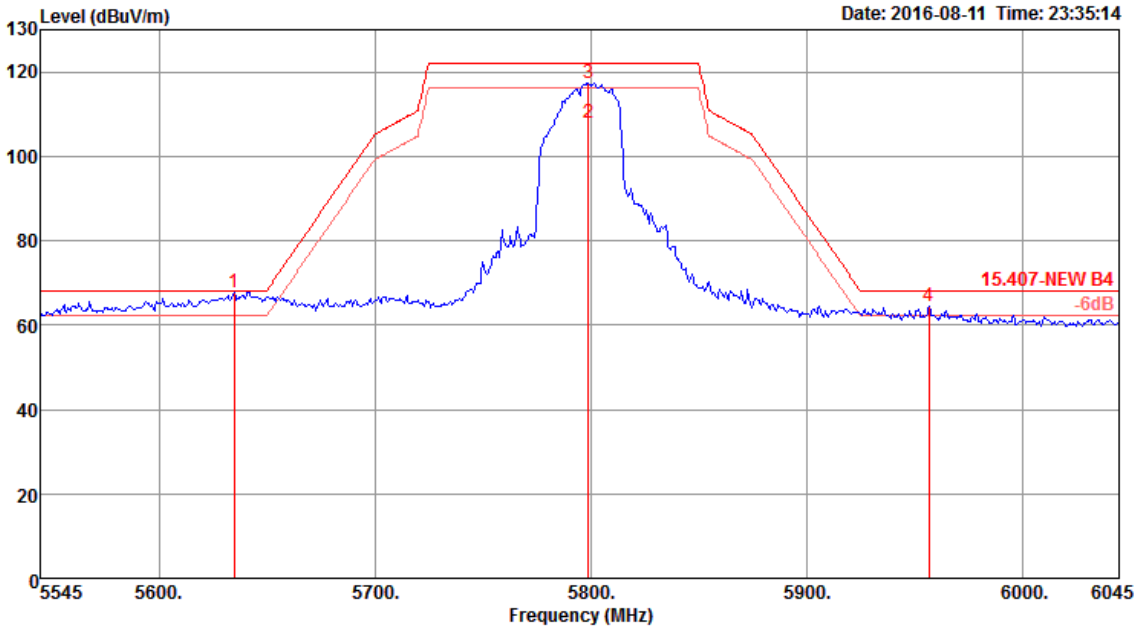
Channel 151



	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	5619.00	67.76	68.20	-0.44	59.58	6.77	34.37	32.96	101	116	Peak	VERTICAL
2	5757.00	107.72			99.34	6.92	34.46	33.00	101	116	Average	VERTICAL
3	5757.00	117.09			108.71	6.92	34.46	33.00	101	116	Peak	VERTICAL
4	5960.00	61.38	68.20	-6.82	52.86	6.99	34.58	33.05	101	116	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5755 MHz.

Channel 159

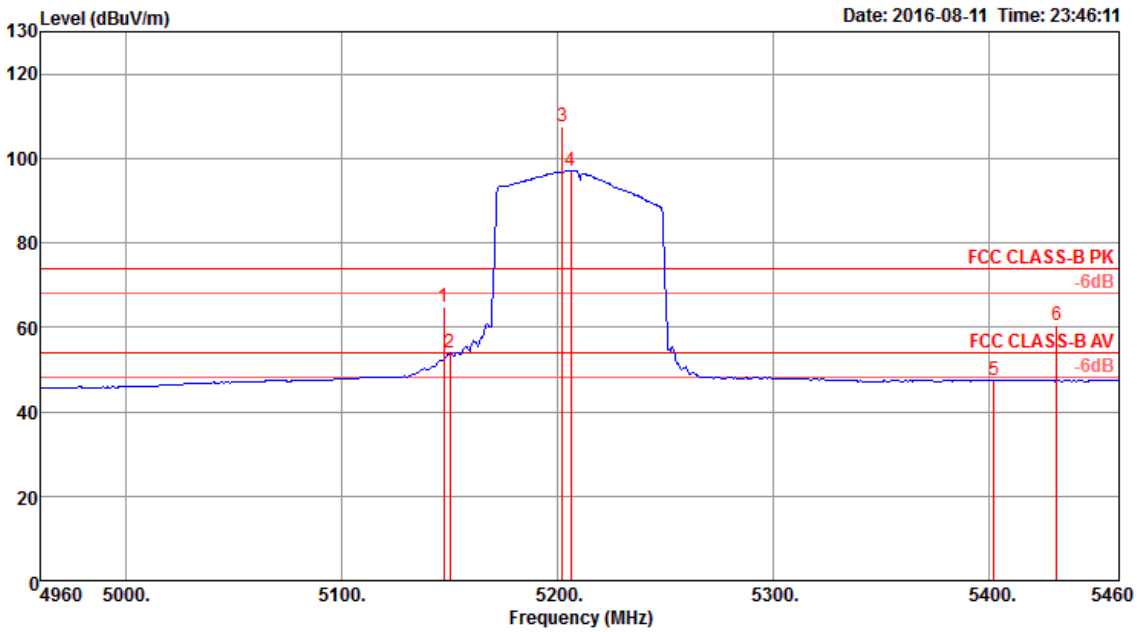


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5635.00	67.89	68.20	-0.31	59.70	6.78	34.38	32.97	208	115	Peak	VERTICAL
2	5799.00	107.75			99.33	6.95	34.48	33.01	208	115	Average	VERTICAL
3	5799.00	117.45			109.03	6.95	34.48	33.01	208	115	Peak	VERTICAL
4	5957.00	64.51	68.20	-3.69	56.00	6.99	34.57	33.05	208	115	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5795 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4

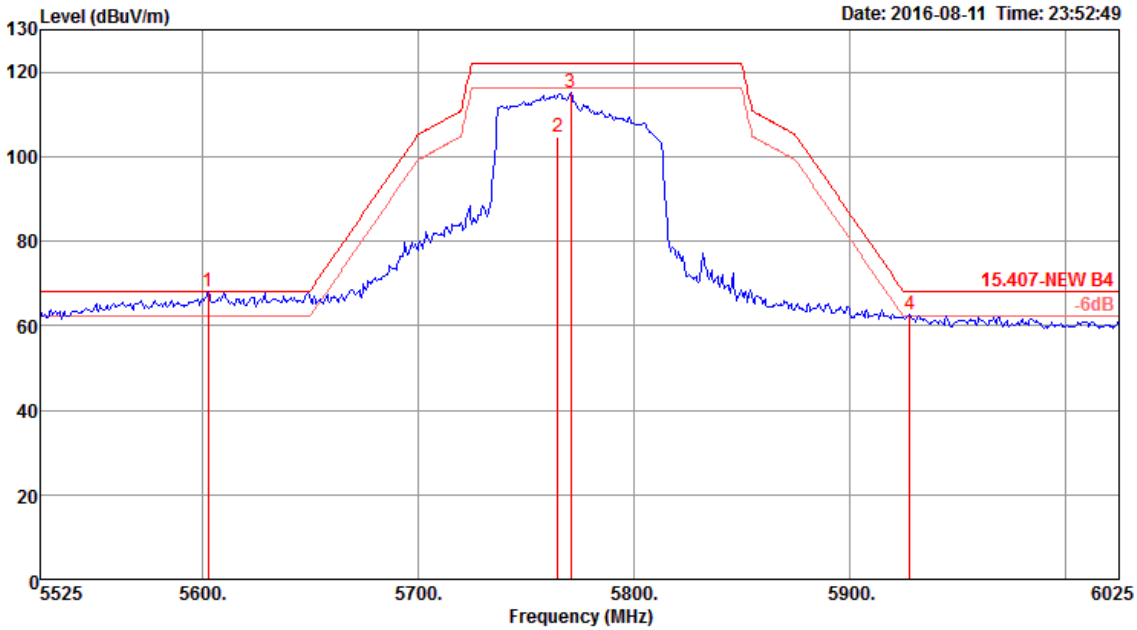
Channel 42



	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	5147.00	64.92	74.00	-9.08	57.66	6.44	33.74	32.92	107	234	Peak	VERTICAL
2	5150.00	53.86	54.00	-0.14	46.60	6.44	33.74	32.92	107	234	Average	VERTICAL
3	5202.00	107.48			100.07	6.49	33.84	32.92	107	234	Peak	VERTICAL
4	5206.00	97.19			89.78	6.49	33.84	32.92	107	234	Average	VERTICAL
5	5402.00	47.38	54.00	-6.62	39.50	6.66	34.15	32.93	107	234	Average	VERTICAL
6	5431.00	60.38	74.00	-13.62	52.46	6.67	34.18	32.93	107	234	Peak	VERTICAL

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

Channel 155



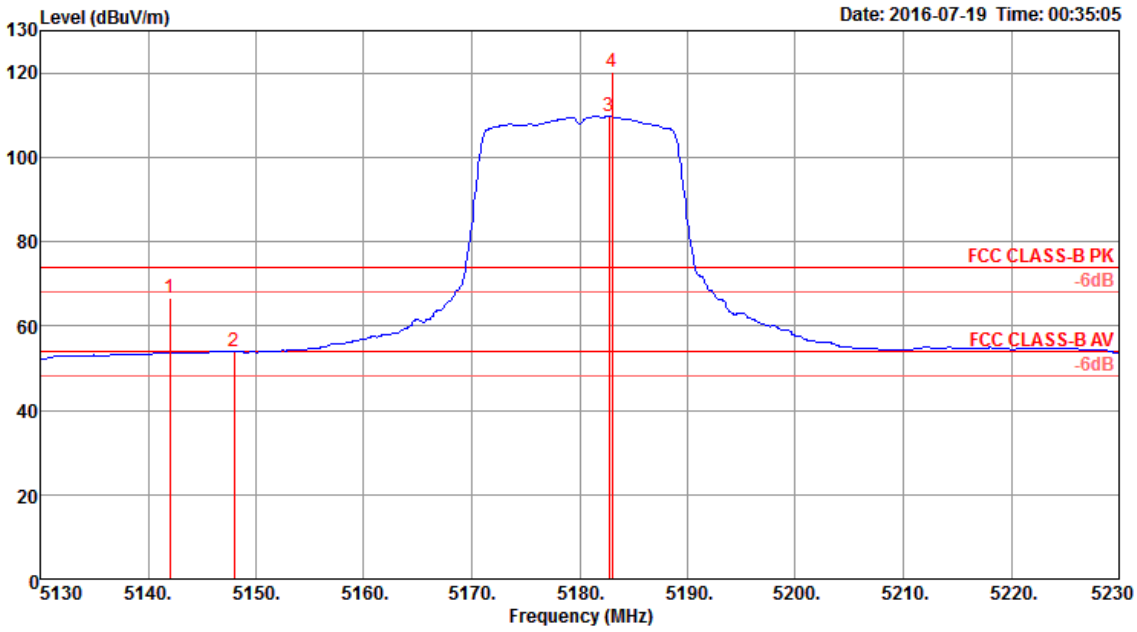
	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5603.00	68.07	68.20	-0.13	59.92	6.75	34.36	32.96	199	208	Peak	VERTICAL
2	5765.00	104.65			96.27	6.92	34.46	33.00	199	208	Average	VERTICAL
3	5771.00	114.98			106.60	6.92	34.46	33.00	199	208	Peak	VERTICAL
4	5928.00	62.73	68.20	-5.47	54.23	6.98	34.56	33.04	199	208	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5775 MHz.

For beamforming function:

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4

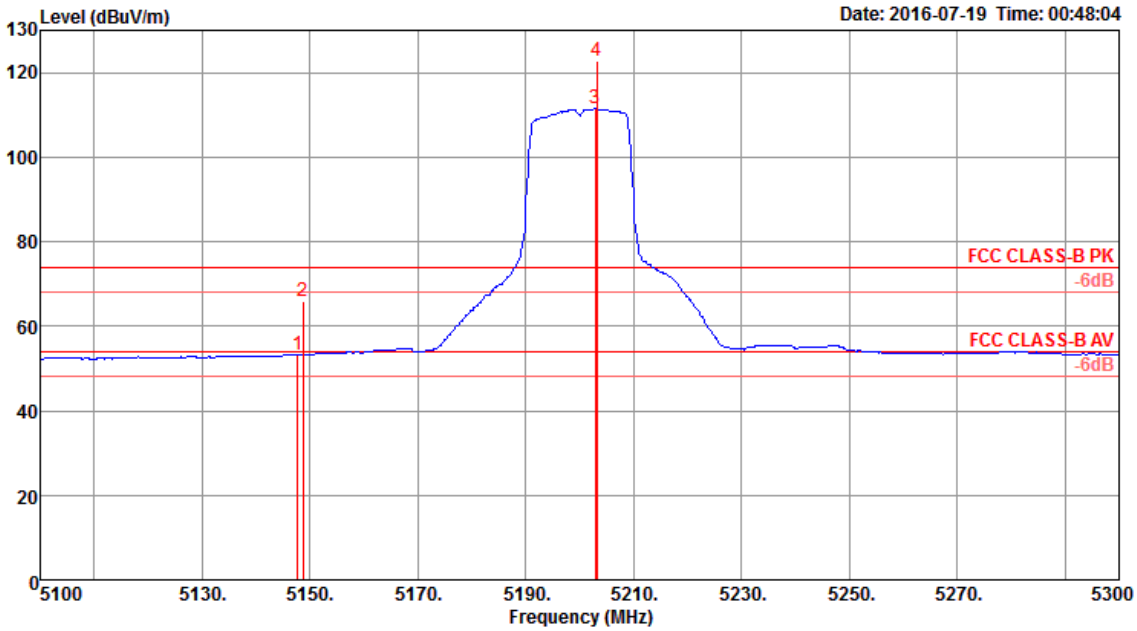
Channel 36



	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	5142.02	66.59	74.00	-7.41	59.33	6.44	33.74	32.92	107	224	Peak	VERTICAL
2	5147.95	53.95	54.00	-0.05	46.69	6.44	33.74	32.92	107	224	Average	VERTICAL
3	5182.72	109.69			02.35	6.47	33.79	32.92	107	224	Average	VERTICAL
4	5183.05	120.19			12.85	6.47	33.79	32.92	107	224	Peak	VERTICAL

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

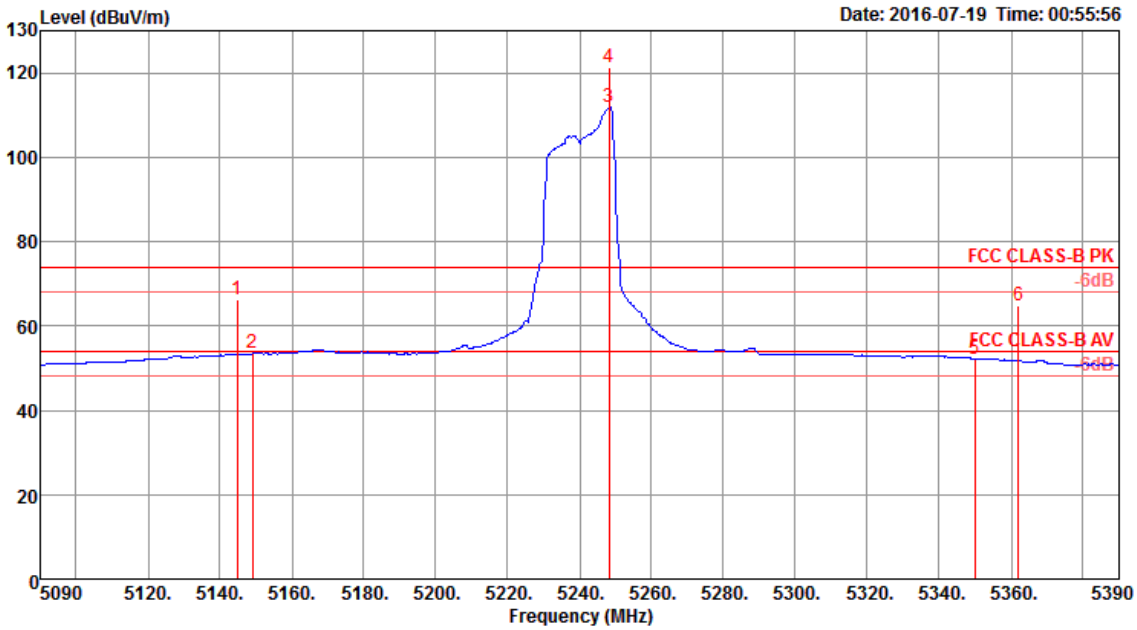
Channel 40



	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	5147.76	53.28	54.00	-0.72	46.02	6.44	33.74	32.92	101	284	Average	VERTICAL
2	5148.72	65.97	74.00	-8.03	58.71	6.44	33.74	32.92	101	284	Peak	VERTICAL
3	5202.89	111.42			104.01	6.49	33.84	32.92	101	284	Average	VERTICAL
4	5203.21	122.92			115.51	6.49	33.84	32.92	101	284	Peak	VERTICAL

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

Channel 48

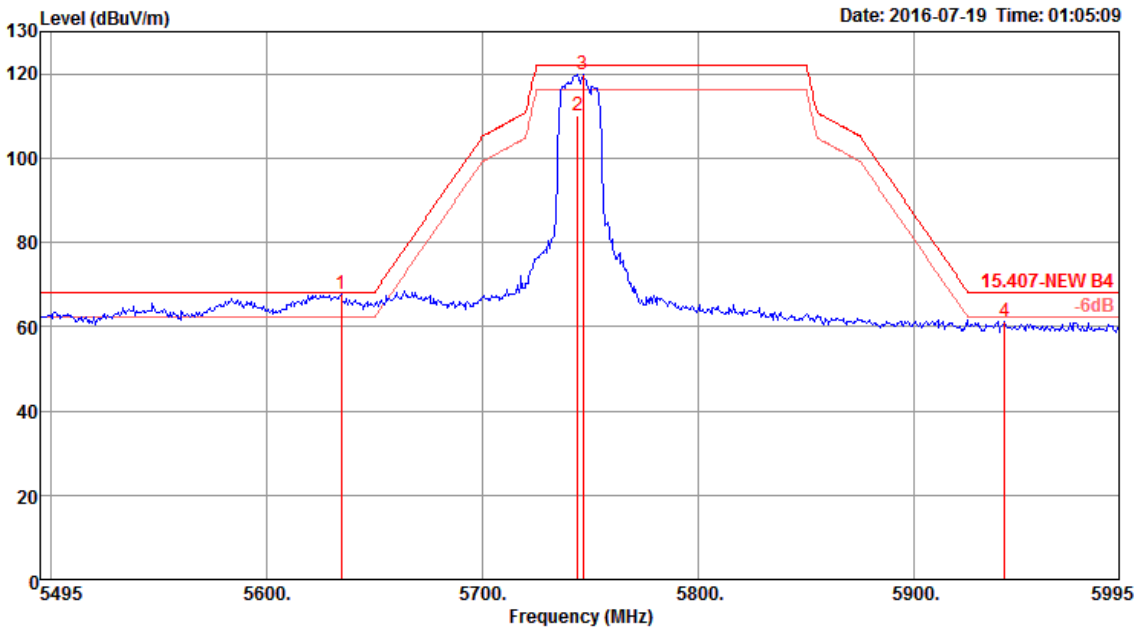


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5144.81	66.21	74.00	-7.79	58.95	6.44	33.74	32.92	102	232	Peak	VERTICAL
2	5149.14	53.46	54.00	-0.54	46.20	6.44	33.74	32.92	102	232	Average	VERTICAL
3	5248.17	111.84			104.32	6.53	33.91	32.92	102	232	Average	VERTICAL
4	5248.17	121.26			113.74	6.53	33.91	32.92	102	232	Peak	VERTICAL
5	5350.00	52.12	54.00	-1.88	44.37	6.61	34.06	32.92	102	232	Average	VERTICAL
6	5362.12	64.97	74.00	-9.03	57.19	6.62	34.08	32.92	102	232	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3 + Chain 4

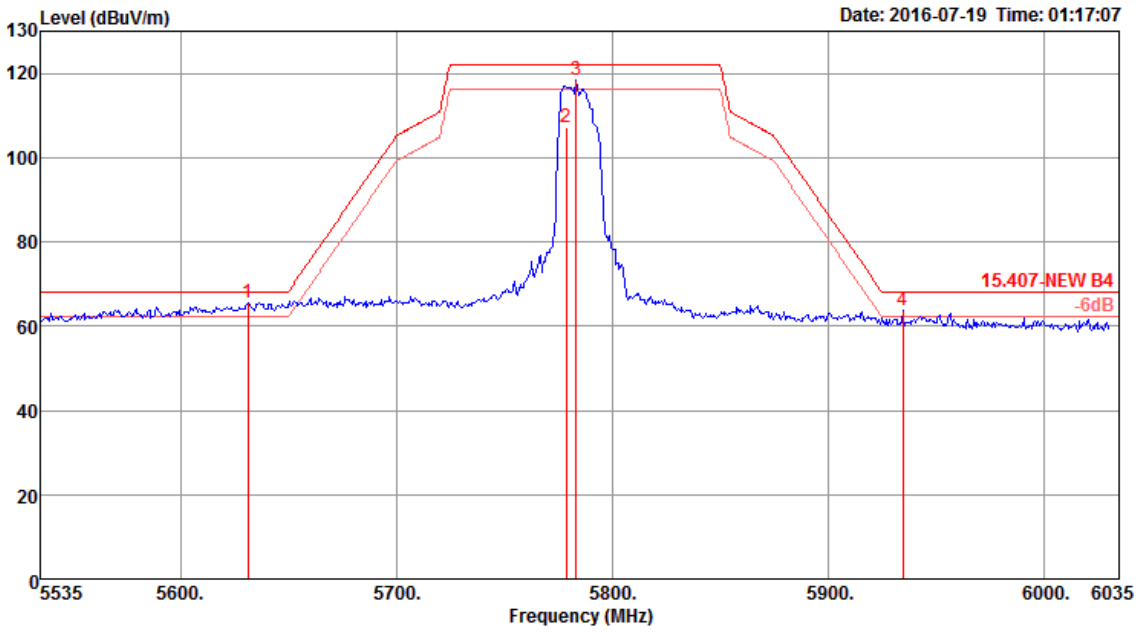
Channel 149



	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	5634.50	67.63	68.20	-0.57	59.44	6.78	34.38	32.97	183	245	Peak	VERTICAL
2	5744.20	110.06			101.70	6.90	34.45	32.99	183	245	Average	VERTICAL
3	5746.50	119.88			111.53	6.90	34.45	33.00	183	245	Peak	VERTICAL
4	5942.00	61.28	68.20	-6.92	52.77	6.99	34.57	33.05	183	245	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

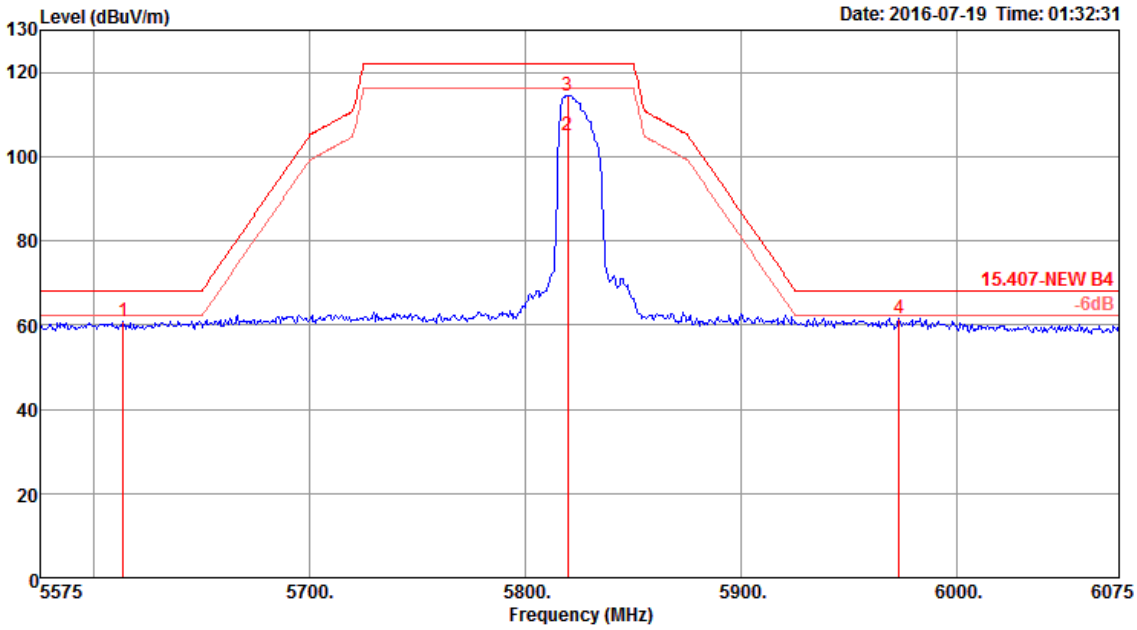
Channel 157



	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	5631.35	65.65	68.20	-2.55	57.45	6.78	34.38	32.96	206	238	Peak	VERTICAL
2	5778.75	107.31			98.91	6.93	34.47	33.00	206	238	Average	VERTICAL
3	5783.35	118.23			109.84	6.93	34.47	33.01	206	238	Peak	VERTICAL
4	5934.85	63.86	68.20	-4.34	55.36	6.98	34.56	33.04	206	238	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

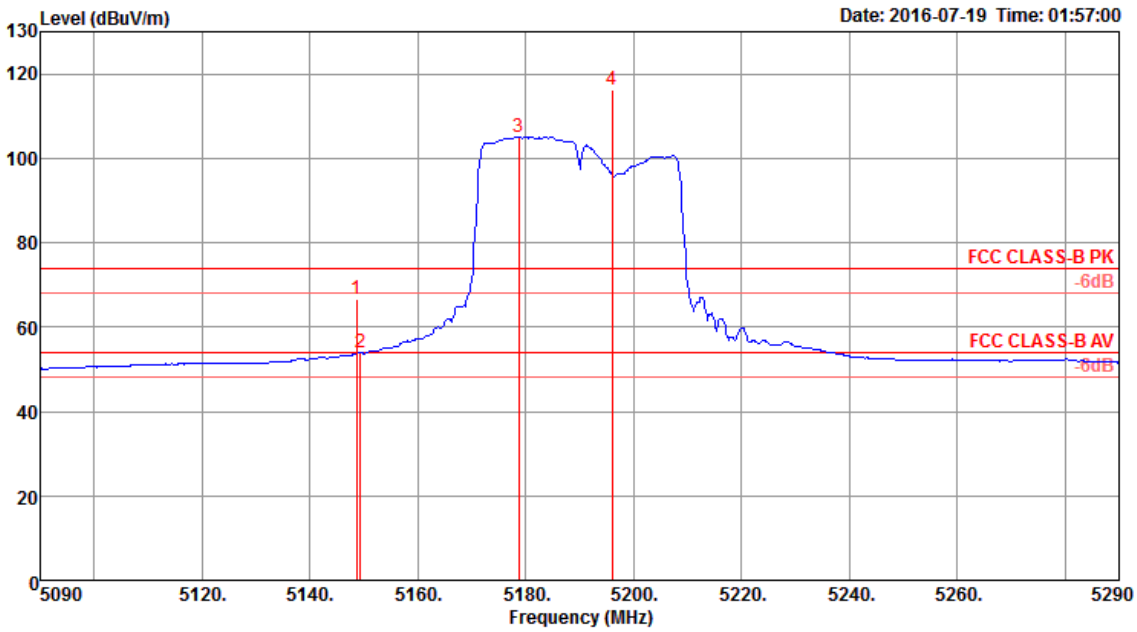


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5613.50	60.96	68.20	-7.24	52.78	6.77	34.37	32.96	223	97	Peak	VERTICAL
2	5819.39	105.05			96.62	6.95	34.49	33.01	223	97	Average	VERTICAL
3	5819.50	114.41			105.98	6.95	34.49	33.01	223	97	Peak	VERTICAL
4	5973.00	61.72	68.20	-6.48	53.20	6.99	34.58	33.05	223	97	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4

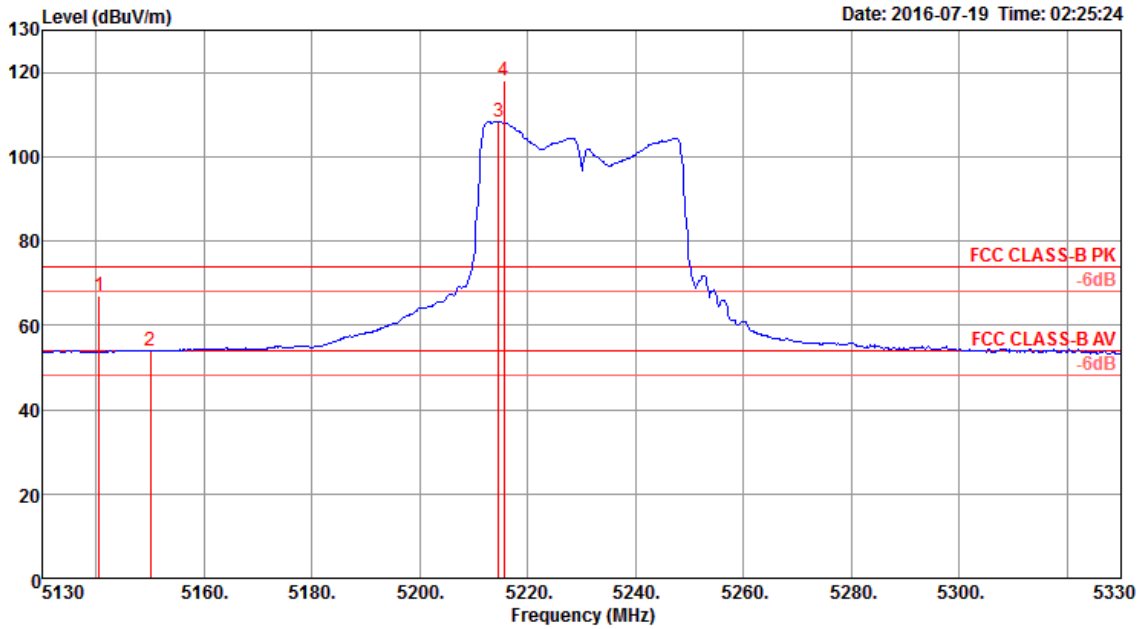
Channel 38



	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	5148.65	66.77	74.00	-7.23	59.51	6.44	33.74	32.92	117	224	Peak	VERTICAL
2	5149.30	53.97	54.00	-0.03	46.71	6.44	33.74	32.92	117	224	Average	VERTICAL
3	5178.78	105.16			97.82	6.47	33.79	32.92	117	224	Average	VERTICAL
4	5196.09	116.31			108.93	6.48	33.82	32.92	117	224	Peak	VERTICAL

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

Channel 46

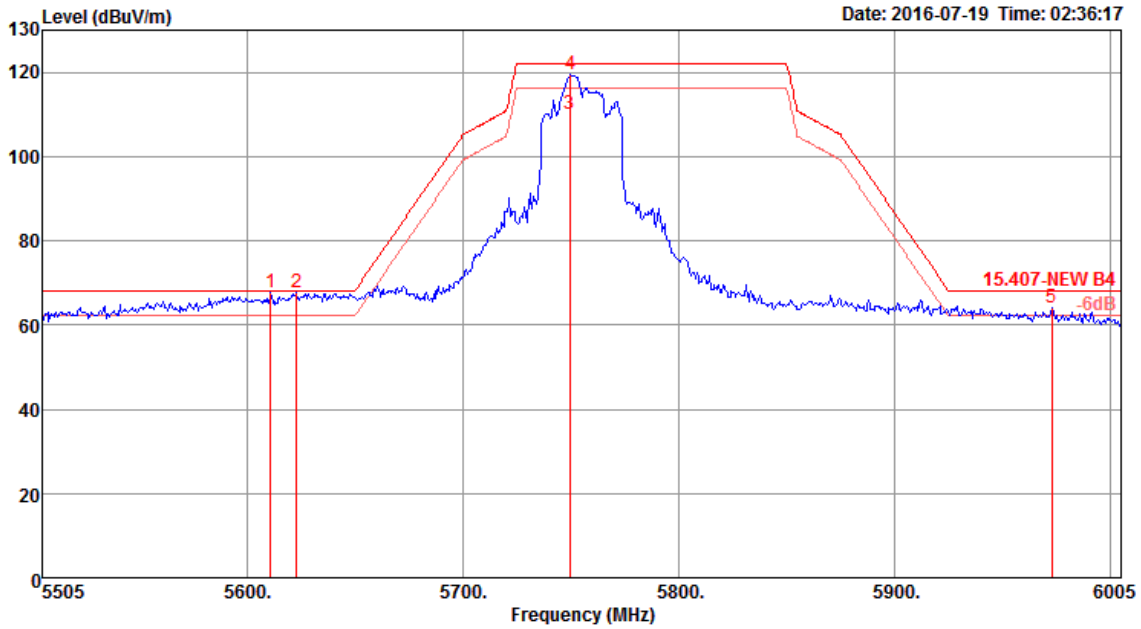


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5140.58	67.05	74.00	-6.95	59.82	6.43	33.72	32.92	100	158	Peak	VERTICAL
2	5150.00	53.98	54.00	-0.02	46.72	6.44	33.74	32.92	100	158	Average	VERTICAL
3	5214.62	108.25			100.84	6.49	33.84	32.92	100	158	Average	VERTICAL
4	5215.58	118.09			110.68	6.49	33.84	32.92	100	158	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2 + Chain 3 + Chain 4

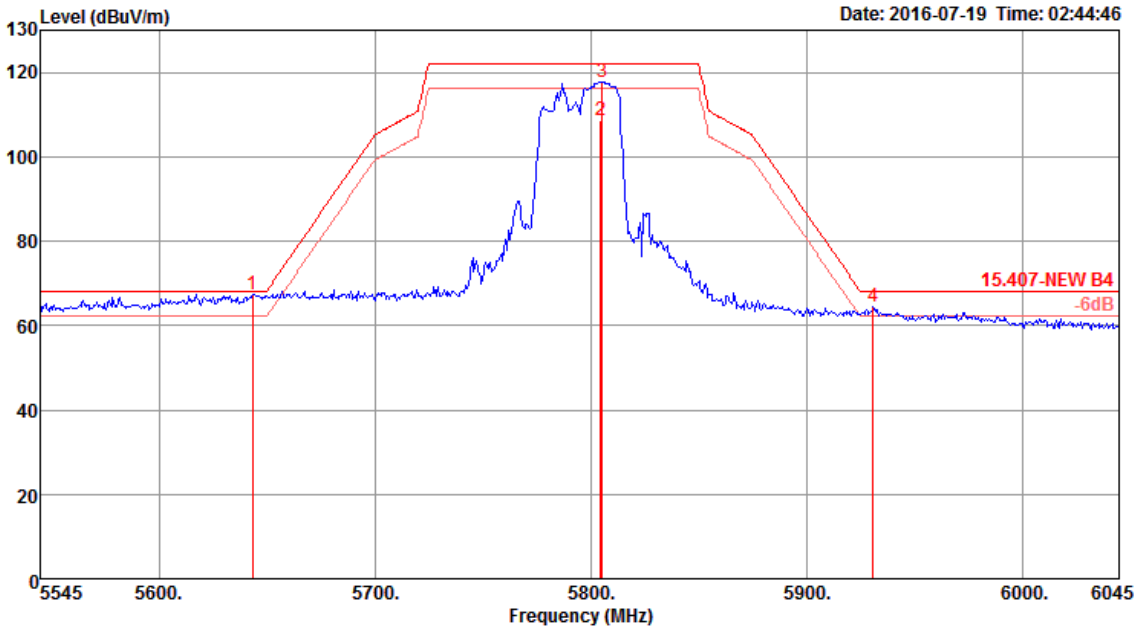
Channel 151



	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	5611.00	67.76	68.20	-0.44	59.58	6.77	34.37	32.96	246	245	Peak	VERTICAL
2	5623.00	67.76	68.20	-0.44	59.58	6.77	34.37	32.96	246	245	Peak	VERTICAL
3	5749.39	110.24			101.89	6.90	34.45	33.00	246	245	Average	VERTICAL
4	5750.00	119.39			111.04	6.90	34.45	33.00	246	245	Peak	VERTICAL
5	5973.00	64.05	68.20	-4.15	55.53	6.99	34.58	33.05	246	245	Peak	VERTICAL

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

Channel 159

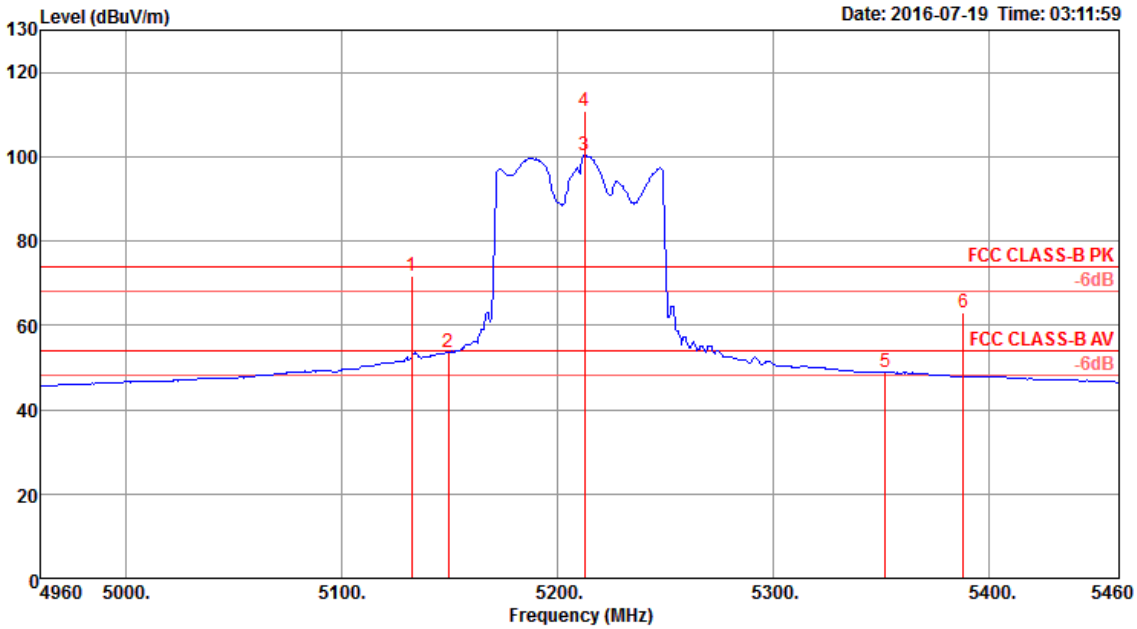


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5643.50	67.48	68.20	-0.72	59.26	6.80	34.39	32.97	207	99	Peak	VERTICAL
2	5804.62	108.54			100.12	6.95	34.48	33.01	207	99	Average	VERTICAL
3	5805.50	117.80			109.37	6.95	34.49	33.01	207	99	Peak	VERTICAL
4	5931.00	64.49	68.20	-3.71	55.99	6.98	34.56	33.04	207	99	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5795 MHz.

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Chain 1 + Chain 2 + Chain 3 + Chain 4

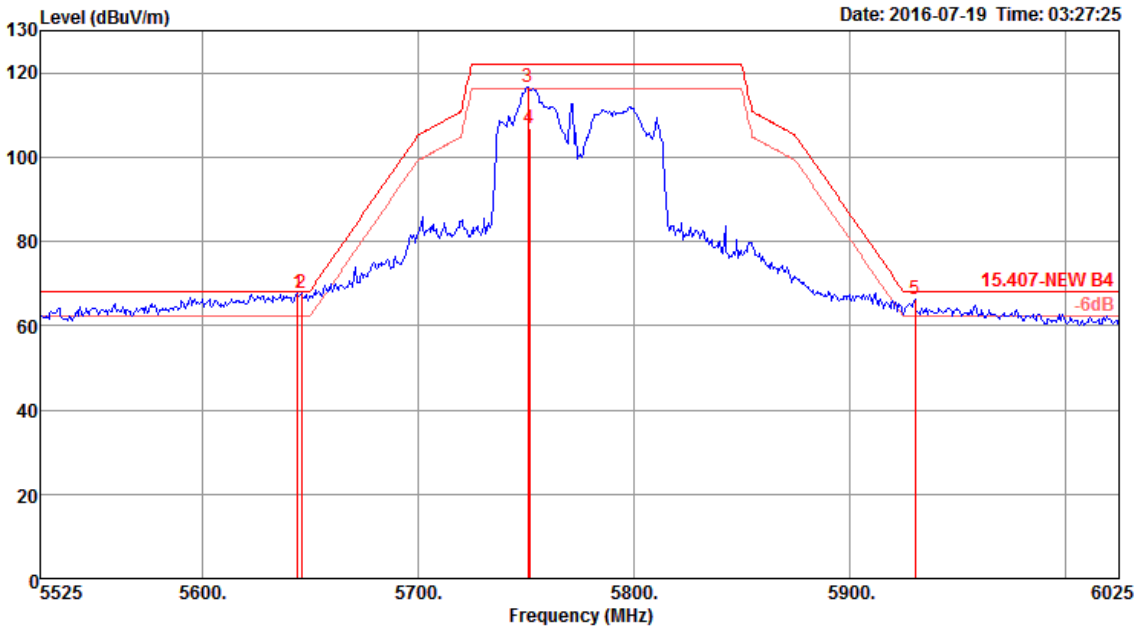
Channel 42



	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	5132.28	71.55	74.00	-2.45	64.32	6.43	33.72	32.92	102	157	Peak	VERTICAL
2	5149.10	53.72	54.00	-0.28	46.46	6.44	33.74	32.92	102	157	Average	VERTICAL
3	5212.40	100.14			92.73	6.49	33.84	32.92	102	157	Average	VERTICAL
4	5212.40	110.70			103.29	6.49	33.84	32.92	102	157	Peak	VERTICAL
5	5351.83	48.83	54.00	-5.17	41.08	6.61	34.06	32.92	102	157	Average	VERTICAL
6	5387.89	63.08	74.00	-10.92	55.23	6.65	34.13	32.93	102	157	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	5644.50	67.77	68.20	-0.43	59.55	6.80	34.39	32.97	246	246	Peak	VERTICAL
2	5646.00	67.89	68.20	-0.31	59.67	6.80	34.39	32.97	246	246	Peak	VERTICAL
3	5751.00	116.57			108.22	6.90	34.45	33.00	246	246	Peak	VERTICAL
4	5751.76	106.91			98.56	6.90	34.45	33.00	246	246	Average	VERTICAL
5	5930.50	66.43	68.20	-1.77	57.93	6.98	34.56	33.04	246	246	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

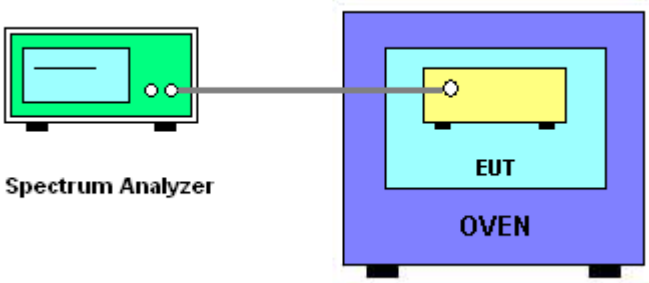
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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	Andy Tsai	Test Date	Jul. 22, 2016~Aug. 31, 2016

Mode: 20 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9709	5199.9699	5199.9693	5199.9689
110.00	5199.9705	5199.9699	5199.9698	5199.9690
93.50	5199.9704	5199.9700	5199.9692	5199.9683
Max. Deviation (MHz)	0.0296	0.0301	0.0308	0.0317
Max. Deviation (ppm)	5.70	5.79	5.93	6.10
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5199.9769	5199.9767	5199.9764	5199.9759
-20	5199.9766	5199.9764	5199.9754	5199.9749
-10	5199.9752	5199.9742	5199.9735	5199.9733
0	5199.9737	5199.9731	5199.9721	5199.9714
10	5199.9717	5199.9713	5199.9709	5199.9701
20	5199.9705	5199.9704	5199.9697	5199.9690
30	5199.9656	5199.9646	5199.9645	5199.9638
40	5199.9653	5199.9650	5199.9645	5199.9642
50	5199.9635	5199.9632	5199.9624	5199.9617
Max. Deviation (MHz)	0.0365	0.0368	0.0376	0.0383
Max. Deviation (ppm)	7.03	7.09	7.24	7.37
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9712	5784.9703	5784.9699	5784.9695
110.00	5784.9705	5784.9698	5784.9692	5784.9688
93.50	5784.9704	5784.9699	5784.9695	5784.9685
Max. Deviation (MHz)	0.0296	0.0302	0.0308	0.0315
Max. Deviation (ppm)	5.12	5.22	5.33	5.45
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5784.9770	5784.9766	5784.9758	5784.9750
-20	5784.9753	5784.9750	5784.9745	5784.9739
-10	5784.9752	5784.9748	5784.9747	5784.9740
0	5784.9737	5784.9735	5784.9734	5784.9727
10	5784.9725	5784.9720	5784.9716	5784.9714
20	5784.9705	5784.9696	5784.9690	5784.9686
30	5784.9656	5784.9646	5784.9639	5784.9632
40	5784.9644	5784.9638	5784.9629	5784.9622
50	5784.9645	5784.9642	5784.9635	5784.9629
Max. Deviation (MHz)	0.0356	0.0362	0.0371	0.0378
Max. Deviation (ppm)	6.16	6.27	6.42	6.54
Result	Complies			

Mode: 40 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9711	5189.9702	5189.9692	5189.9688
110.00	5189.9705	5189.9695	5189.9691	5189.9687
93.50	5189.9699	5189.9694	5189.9691	5189.9682
Max. Deviation (MHz)	0.0301	0.0306	0.0309	0.0318
Max. Deviation (ppm)	5.80	5.90	5.96	6.13
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5189.9751	5189.9745	5189.9736	5189.9729
-20	5189.9739	5189.9737	5189.9736	5189.9726
-10	5189.9732	5189.9723	5189.9717	5189.9715
0	5189.9716	5189.9707	5189.9697	5189.9690
10	5189.9707	5189.9701	5189.9698	5189.9694
20	5189.9705	5189.9696	5189.9691	5189.9683
30	5189.9656	5189.9647	5189.9644	5189.9639
40	5189.9654	5189.9650	5189.9643	5189.9640
50	5189.9699	5189.9698	5189.9693	5189.9685
Max. Deviation (MHz)	0.0346	0.0353	0.0357	0.0361
Max. Deviation (ppm)	6.68	6.81	6.89	6.97
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9712	5754.9703	5754.9693	5754.9684
110.00	5754.9705	5754.9695	5754.9694	5754.9689
93.50	5754.9699	5754.9694	5754.9689	5754.9686
Max. Deviation (MHz)	0.0301	0.0306	0.0311	0.0316
Max. Deviation (ppm)	5.23	5.32	5.41	5.49
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5754.9767	5754.9759	5754.9752	5754.9747
-20	5754.9752	5754.9742	5754.9733	5754.9725
-10	5754.9748	5754.9742	5754.9737	5754.9728
0	5754.9736	5754.9733	5754.9730	5754.9722
10	5754.9720	5754.9718	5754.9712	5754.9708
20	5754.9705	5754.9702	5754.9694	5754.9688
30	5754.9656	5754.9651	5754.9641	5754.9639
40	5754.9651	5754.9643	5754.9633	5754.9627
50	5754.9697	5754.9696	5754.9692	5754.9684
Max. Deviation (MHz)	0.0349	0.0357	0.0367	0.0373
Max. Deviation (ppm)	6.07	6.21	6.39	6.49
Result	Complies			

Mode: 80 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5209.9709	5209.9705	5209.9695	5209.9689
110.00	5209.9705	5209.9703	5209.9693	5209.9686
93.50	5209.9703	5209.9693	5209.9692	5209.9685
Max. Deviation (MHz)	0.0297	0.0307	0.0308	0.0315
Max. Deviation (ppm)	5.70	5.90	5.92	6.05
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5209.9765	5209.9755	5209.9750	5209.9745
-20	5209.9748	5209.9745	5209.9739	5209.9730
-10	5209.9739	5209.9734	5209.9726	5209.9719
0	5209.9728	5209.9725	5209.9715	5209.9705
10	5209.9721	5209.9711	5209.9708	5209.9705
20	5209.9705	5209.9697	5209.9696	5209.9686
30	5209.9656	5209.9653	5209.9643	5209.9637
40	5209.9637	5209.9635	5209.9626	5209.9616
50	5209.9689	5209.9687	5209.9678	5209.9670
Max. Deviation (MHz)	0.0363	0.0365	0.0374	0.0384
Max. Deviation (ppm)	6.98	7.02	7.19	7.38
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9706	5774.9702	5774.9700	5774.9697
110.00	5774.9705	5774.9696	5774.9692	5774.9684
93.50	5774.9697	5774.9694	5774.9691	5774.9685
Max. Deviation (MHz)	0.0303	0.0306	0.0309	0.0316
Max. Deviation (ppm)	5.25	5.30	5.35	5.48
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5774.9753	5774.9743	5774.9739	5774.9736
-20	5774.9740	5774.9732	5774.9726	5774.9718
-10	5774.9733	5774.9726	5774.9724	5774.9719
0	5774.9717	5774.9709	5774.9699	5774.9693
10	5774.9708	5774.9705	5774.9704	5774.9703
20	5774.9705	5774.9702	5774.9698	5774.9692
30	5774.9656	5774.9652	5774.9647	5774.9640
40	5774.9646	5774.9640	5774.9632	5774.9624
50	5774.9699	5774.9692	5774.9687	5774.9678
Max. Deviation (MHz)	0.0354	0.0360	0.0368	0.0376
Max. Deviation (ppm)	6.14	6.24	6.38	6.52
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 Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 2016	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 24, 2016	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
Bilog Antenna	Schaffner	CBL6112D&ATT-06	22021&SP-01	20MHz ~ 2GHz	Nov. 18, 2015	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)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	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 Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 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)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

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

"*" 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%