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FCC RADIO TEST REPORT

Applicant's company	**Linksys LLC**
Applicant Address	121 Theory Drive, Irvine, CA 92617, USA
FCC ID	**Q87-EA9500V11**

Product Name	Linksys Tri-Band Wireless-AC Router
Brand Name	LINKSYS
Model No.	EA9500 V1.1 , EA9400
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Aug. 05, 2015
Final Test Date	May 17, 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 v01r02, 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
FR581108-01AB	Rev. 01	Initial issue of report	Jun. 06, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	Linksys Tri-Band Wireless-AC Router
Brand Name	:	LINKSYS
Model No.	:	EA9500 V1.1 , EA9400
Applicant	:	Linksys LLC
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 Aug. 05, 2015 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	16.67 dB
4.2	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies	-
4.3	15.407(e)	6dB Spectrum Bandwidth	Complies	-
4.4	15.407(a)	Maximum Conducted Output Power	Complies	0.02 dB
4.5	15.407(a)	Power Spectral Density	Complies	0.18 dB
4.6	15.407(b)	Radiated Emissions	Complies	4.41 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.06 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (4TX, 4RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM, 1024QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Channel Number	9 for 20MHz bandwidth ; 4 for 40MHz bandwidth 2 for 80MHz bandwidth

Channel Band Width (99%)	<For Non-beamforming mode> Band 1: IEEE 802.11a: 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.18 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 73.81 MHz Band 4: IEEE 802.11a: 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 19.19 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.47 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.54 MHz <For beamforming mode> Band 1: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.25 MHz Band 4: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz

Maximum Conducted Output Power	**<For Non-beamforming mode>** Band 1: IEEE 802.11a: 28.04 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 28.03 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 27.08 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 24.96 dBm Band 4: IEEE 802.11a: 29.74 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.70 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 25.97 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 22.32 dBm **<For beamforming mode>** Band 1: IEEE 802.11ac MCS0/Nss1 (VHT20): 28.00 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.41 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 25.43 dBm Band 4: IEEE 802.11ac MCS0/Nss1 (VHT20): 27.59 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 24.56 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 18.41 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 for 802.11n/ac in 2.4GHz/5GHz	☐ Without beamforming
Operate Condition	☒ Indoor	☐ Outdoor

Antenna and Band width

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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	4	MCS 0-31
802.11n (HT40)	4	MCS 0-31
802.11ac (VHT20)	4	MCS 0-11/Nss1-4
802.11ac (VHT40)	4	MCS 0-11/Nss1-4
802.11ac (VHT80)	4	MCS 0-11/Nss1-4
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40. Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40 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	APD	DA-60M12	Input: 100-240V ~ 50-60Hz 1.5A Max. Output: 12V, 5A
Other			
Power cable*1: Non-shielded, 3m			

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)		
					2.4GHz	5GHz Band 1	5GHz Band 4
1	ARISTOTLE	RFA-25-F90-1	Dipole Antenna	I-PEX	1.6	2	-
2	ARISTOTLE	RFA-25-F90-2	Dipole Antenna	I-PEX	2.25	1.74	-
3	ARISTOTLE	RFA-25-F90-3	Dipole Antenna	I-PEX	2.1	2.3	-
4	ARISTOTLE	RFA-25-F90-4	Dipole Antenna	I-PEX	2.22	1.77	-
5	ARISTOTLE	RFA-05-F90-1	Dipole Antenna	I-PEX	-	-	2.18
6	ARISTOTLE	RFA-05-F90-2	Dipole Antenna	I-PEX	-	-	2
7	ARISTOTLE	RFA-05-F90-3	Dipole Antenna	I-PEX	-	-	1.9
8	ARISTOTLE	RFA-05-F90-4	Dipole Antenna	I-PEX	-	-	1.9

Note: The EUT has eight antennas.

For 2.4GHz / 5G Band 1 Function:

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

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

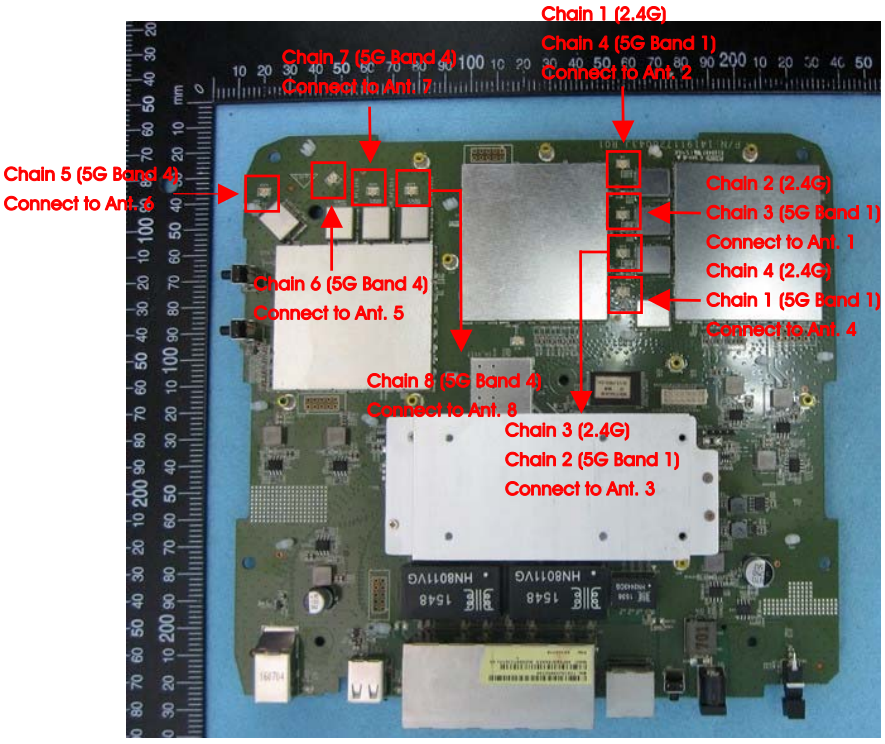
Chain 1, Chain 2, Chain 3 and Chain 4 could transmit/receive simultaneously.

For 5GHz Band 4 Function:

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

Chain 5, Chain 6, Chain 7 and Chain 8 can be used as transmitting/receiving antenna.

Chain 5, Chain 6, Chain 7 and Chain 8 could transmit/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 mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8
	<For beamforming mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8
Power Spectral Density	<For Non-beamforming mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8
	<For beamforming mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8

	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	<For Non-beamforming mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8
	<For beamforming mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8
6dB Spectrum Bandwidth Measurement	<For Non-beamforming mode>				
	11a/BPSK	Band 4	6Mbps	149/157/165	5+6+7+8
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	Band 4	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	Band 4	MCS0/Nss1	155	5+6+7+8
	<For beamforming mode>				
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	5+6+7+8
	11ac VHT40	Band 4	MCS0/Nss1	151/159	5+6+7+8
	11ac VHT80	Band 4	MCS0/Nss1	155	5+6+7+8
Radiated Emission Below 1GHz	Normal Link		-	-	-

Radiated Emission Above 1GHz	<For Non-beamforming mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8
	<For beamforming mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8
Band Edge Emission	<For Non-beamforming mode>				
	11a/BPSK	Band 1&4	6Mbps	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8
	<For beamforming mode>				
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48	1+2+3+4
				149/157/165	5+6+7+8
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46	1+2+3+4
				151/159	5+6+7+8
	11ac VHT80	Band 1&4	MCS0/Nss1	42	1+2+3+4
				155	5+6+7+8

Frequency Stability	20 MHz	Band 1&4	-	40	3
				157	5
	40 MHz	Band 1&4	-	38	3
				151	5
	80 MHz	Band 1&4	-	42	3
				155	5

Note:

1. There are two modes of EUT, one is beamforming mode, and the other is non-beamforming mode for 802.11n/ac, Beamforming mode and non-beamforming mode has been test and record in this test report.
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. The EUT can only be used at Z axis position

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link - EUT 1

Mode 2. Normal Link - EUT 2

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

For Radiated Emission test below 1GHz:

Mode 1. Normal Link - EUT 1 in Z axis

Mode 2. Normal Link - EUT 2 in Z axis

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

For Radiated Emission test above 1GHz:

The EUT does not affect the test result of RF tests, so only EUT 1 was tested and recorded in this report.

Mode 1. CTX - Place EUT 1 in Z axis

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

The EUT could be applied with WLAN 2.4GHz Band, WLAN 5GHz Band 1 and Band 4; therefore Co-location Maximum Permissible Exposure (Please refer to FA581108-01) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit among WLAN 2.4GHz Band, WLAN 5GHz Band 1 and Band 4 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 Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
EA9500 V1.1	All the models are identical, the different model names served as marketing strategy.
EA9400	

Note: Assessed as above, there is only model: EA9500 V1.1 selected to test and recorded in the report as a result.

3.8. Table for the differences of the EUT

The differences of the EUTs as below table:

EUT	Chip	Description
EUT 1	BCM4366C0	The difference is the allocation of the antenna cables.
EUT 2	BCM4366B1	

3.9. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB*5	DELL	E6430	DoC
Flash disk2.0	Transcend	604108 8255	DoC
Flash disk3.0	ADATA	C103	DoC

For Test Site No: 03CH01-CB

(Radiated Emission below 1GHz test)

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
NB*3	Apple	Mac Book	DoC
Flash disk	Silicon Power	Touch 835	DoC
Flash disk3.0	Transcend	JF700	DoC

(Radiated Emission above 1GHz test) (For Non-Beamforming mode)

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

(Radiated Emission above 1GHz test) (For Beamforming mode)

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
RX Device	LINKSYS	EA9500	N/A

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC
RX Device	LINKSYS	EA9500	N/A

3.10. Table for Parameters of Test Software Setting

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

<For Non-beamforming mode>

Test Software Version	Mtool 2.0.2.8					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	81	81	81	74	95	85
802.11ac MCS0/Nss1 VHT20	77	81	80	72	95	81
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	71		77		62	75
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	70				61	

<For beamforming mode>

Test Software Version	Mtool 2.0.2.8					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11ac MCS0/Nss1 VHT20	79	81	81	69	85	73
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	68		74		53	69
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	72				47	

3.11. EUT Operation during Test

<For Non-beamforming mode>

The EUT was programmed to be in continuously transmitting mode.

<For beamforming mode>

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

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

The program was executed as follows:

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

3.12. Duty Cycle

<For Non-beamforming mode>

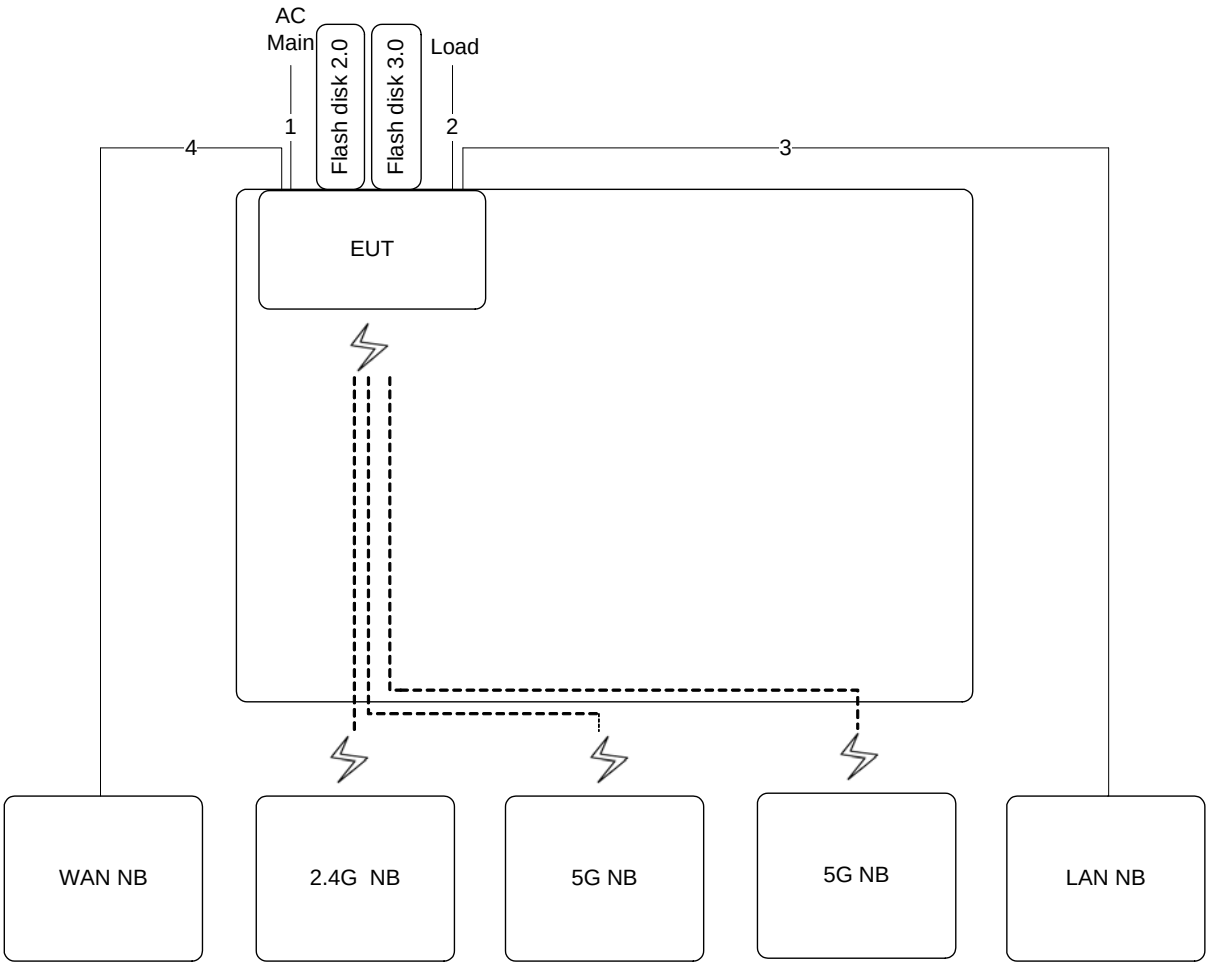
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.075	2.086	99.47%	0.02	0.01
802.11ac MCS0/Nss1 VHT20	1.920	1.950	98.46%	0.07	0.01
802.11ac MCS0/Nss1 VHT40	0.942	0.980	96.12%	0.17	1.06
802.11ac MCS0/Nss1 VHT80	0.463	0.490	94.49%	0.25	2.16

<For beamforming mode>

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	3.825	4.244	90.14%	0.45	0.26
802.11ac MCS0/Nss1 VHT40	3.663	4.038	90.56%	0.42	0.27
802.11ac MCS0/Nss1 VHT80	5.076	5.437	93.36%	0.30	0.20

3.13.Test Configurations

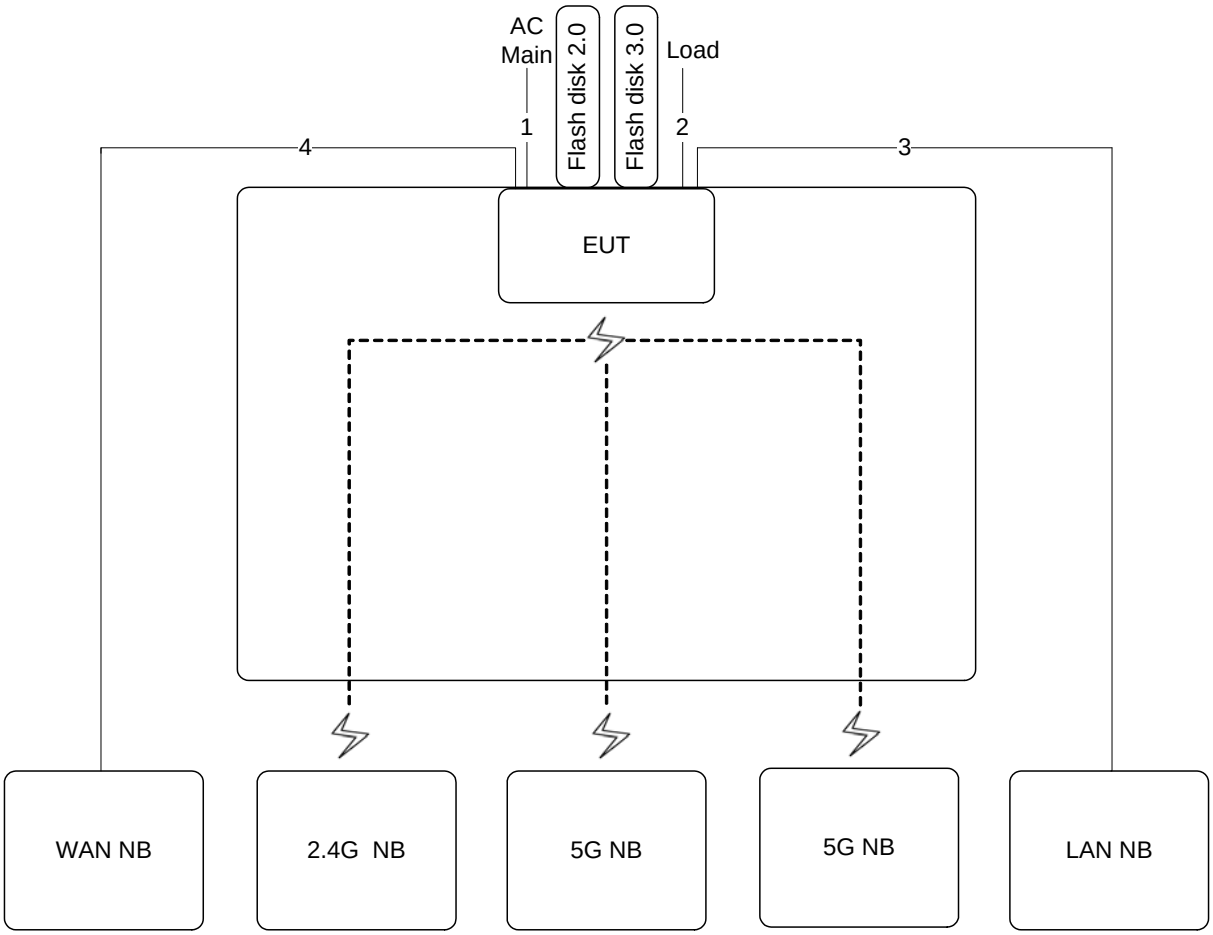
3.13.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	3m
2	RJ-45 cable*7	No	1.5m
3	RJ-45 cable	No	10m
4	RJ-45 cable	No	10m

3.13.2. Radiation Emissions Test Configuration

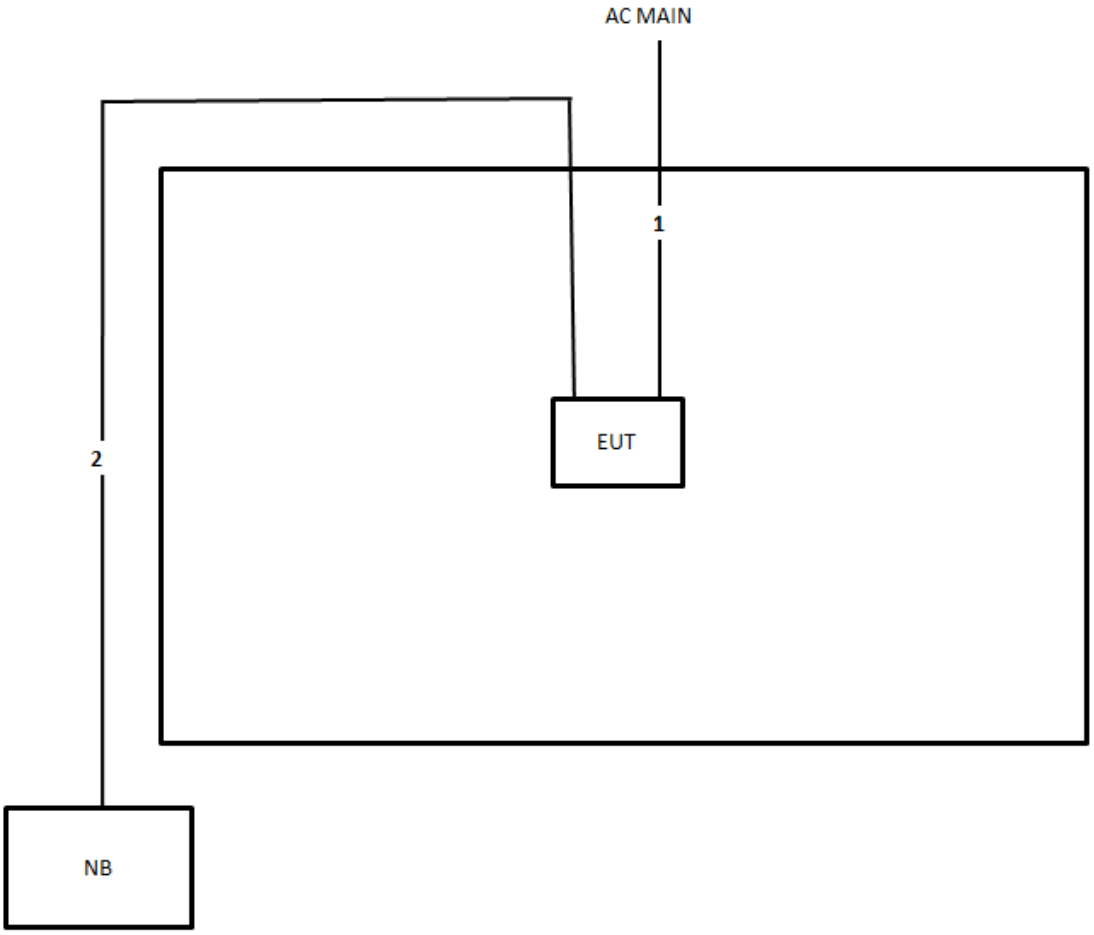
Test Configuration: 30MHz ~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	3m
2	RJ-45 cable*7	No	1.5m
3	RJ-45 cable	No	10m
4	RJ-45 cable	No	10m

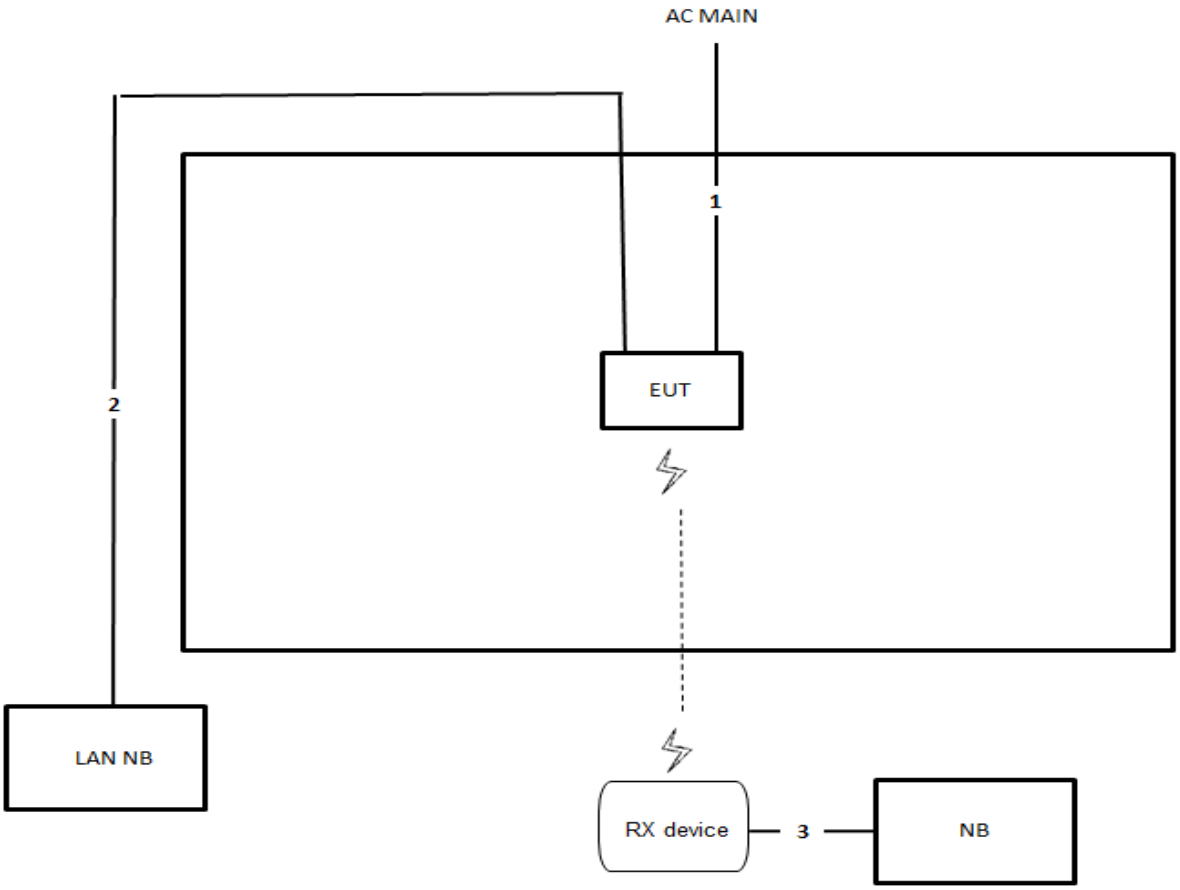
Test Configuration: above 1GHz

<For Non-beamforming mode>



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

<For beamforming mode>



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

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

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

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

4.1.2. Measuring Instruments and Setting

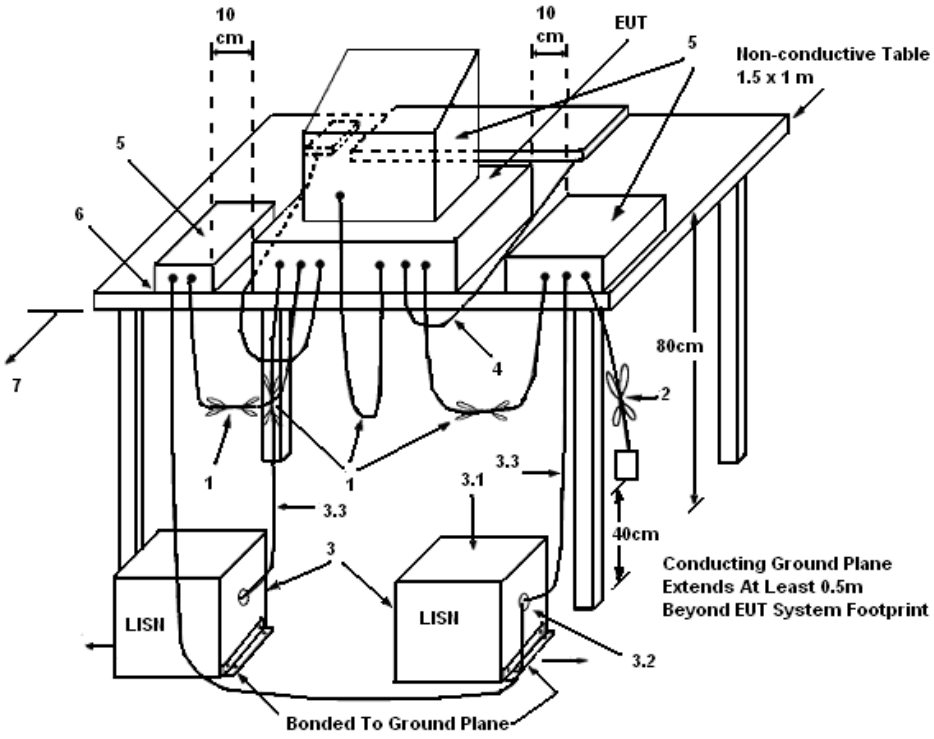
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

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

4.1.4. Test Setup Layout



LEGEND:

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

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

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

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

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

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

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

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

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

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

4.1.5. Test Deviation

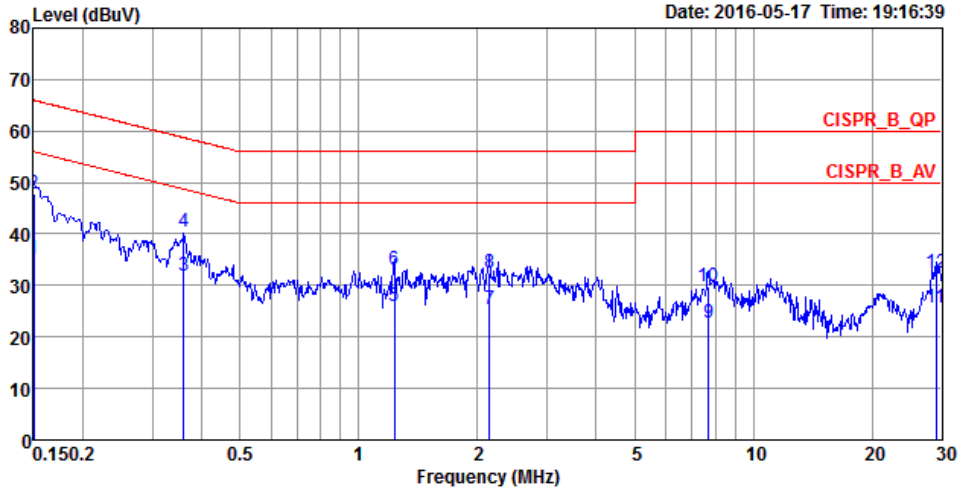
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

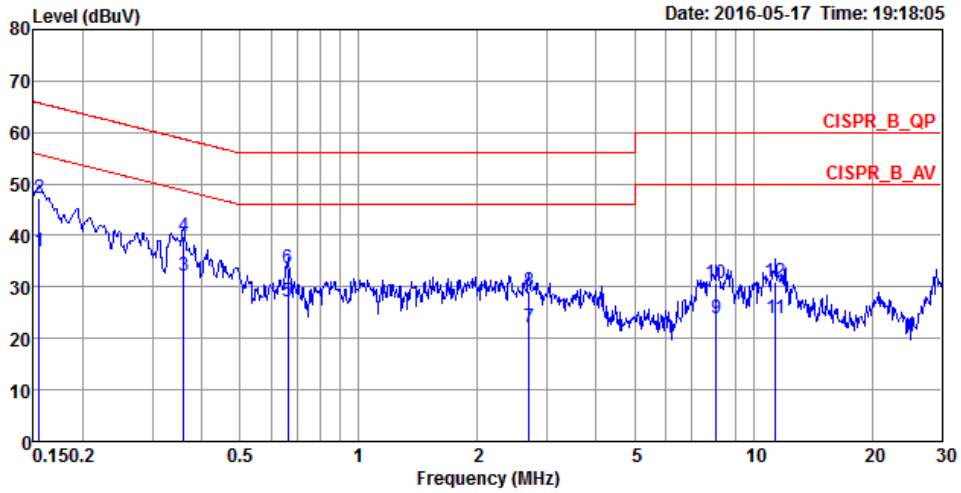
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24℃	Humidity	68%
Test Engineer	Deven Huang	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1500	35.15	-20.85	56.00	25.11	10.02	0.02	LINE	Average
2	0.1500	47.83	-18.17	66.00	37.79	10.02	0.02	LINE	QP
3	0.3596	31.92	-16.82	48.74	21.96	9.92	0.04	LINE	Average
4	0.3596	40.36	-18.38	58.74	30.40	9.92	0.04	LINE	QP
5	1.2291	25.96	-20.04	46.00	15.97	9.94	0.05	LINE	Average
6	1.2291	33.08	-22.92	56.00	23.09	9.94	0.05	LINE	QP
7	2.1439	25.50	-20.50	46.00	15.48	9.96	0.06	LINE	Average
8	2.1439	32.53	-23.47	56.00	22.51	9.96	0.06	LINE	QP
9	7.6870	22.79	-27.21	50.00	12.55	10.09	0.15	LINE	Average
10	7.6870	29.75	-30.25	60.00	19.51	10.09	0.15	LINE	QP
11	29.0613	25.64	-24.36	50.00	14.81	10.55	0.28	LINE	Average
12	29.0613	32.44	-27.56	60.00	21.61	10.55	0.28	LINE	QP

Temperature	24℃	Humidity	68%
Test Engineer	Deven Huang	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1548	36.97	-18.77	55.74	26.93	10.02	0.02	NEUTRAL	Average
2	0.1548	47.09	-18.65	65.74	37.05	10.02	0.02	NEUTRAL	QP
3	0.3596	32.07	-16.67	48.74	22.11	9.92	0.04	NEUTRAL	Average
4	0.3596	39.80	-18.94	58.74	29.84	9.92	0.04	NEUTRAL	QP
5	0.6613	27.21	-18.79	46.00	17.24	9.93	0.04	NEUTRAL	Average
6	0.6613	33.72	-22.28	56.00	23.75	9.93	0.04	NEUTRAL	QP
7	2.7068	22.20	-23.80	46.00	12.18	9.97	0.05	NEUTRAL	Average
8	2.7068	29.30	-26.70	56.00	19.28	9.97	0.05	NEUTRAL	QP
9	8.0624	23.77	-26.23	50.00	13.50	10.10	0.17	NEUTRAL	Average
10	8.0624	30.84	-29.16	60.00	20.57	10.10	0.17	NEUTRAL	QP
11	11.3771	23.81	-26.19	50.00	13.39	10.17	0.25	NEUTRAL	Average
12	11.3771	30.91	-29.09	60.00	20.49	10.17	0.25	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.

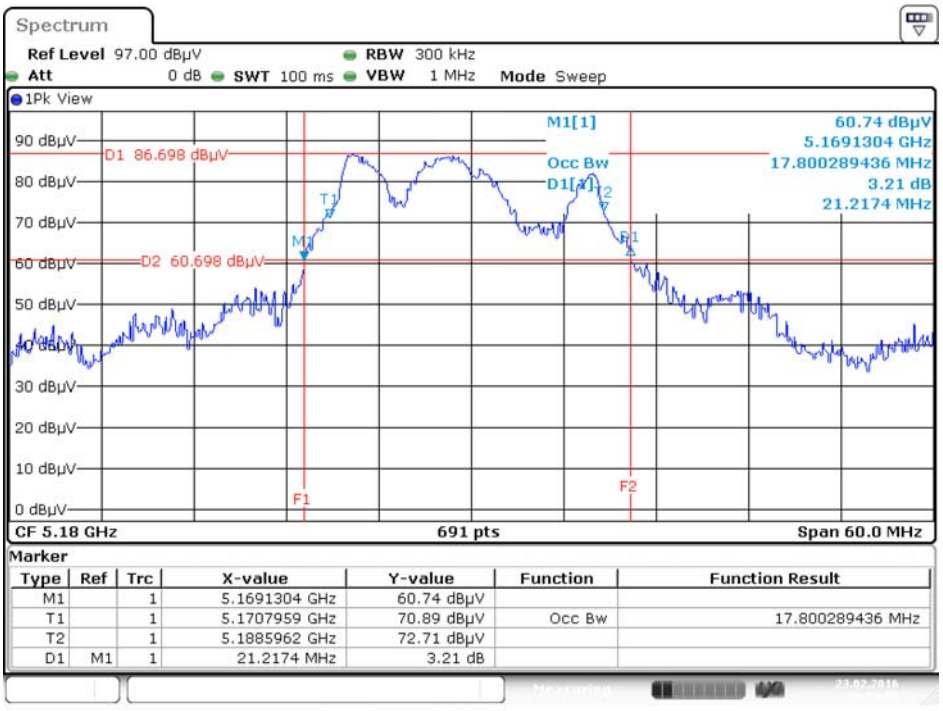
4.2.7. Test Result of 26dB Bandwidth and 99% Occupied Bandwidth

<For Non-beamforming mode>

Temperature	25℃	Humidity	56%
Test Engineer	Serway Li		

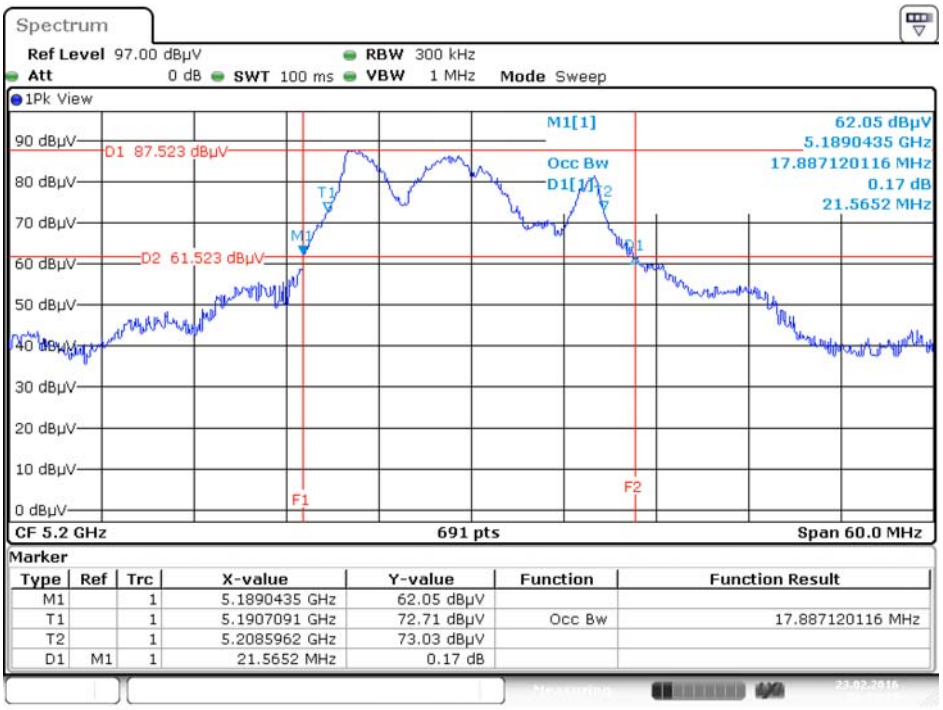
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	21.22	17.80
	5200 MHz	21.57	17.89
	5240 MHz	21.91	18.06
	5745 MHz	20.96	16.76
	5785 MHz	36.43	17.97
	5825 MHz	23.04	17.11
802.11ac MCS0/Nss1 VHT20	5180 MHz	20.87	18.06
	5200 MHz	22.17	18.06
	5240 MHz	21.22	18.06
	5745 MHz	21.48	18.06
	5785 MHz	38.70	19.19
	5825 MHz	32.78	18.15
802.11ac MCS0/Nss1 VHT40	5190 MHz	41.59	35.89
	5230 MHz	50.73	36.18
	5755 MHz	40.44	36.32
	5795 MHz	55.36	36.47
802.11ac MCS0/Nss1 VHT80	5210 MHz	80.00	73.81
	5775 MHz	81.45	75.54

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



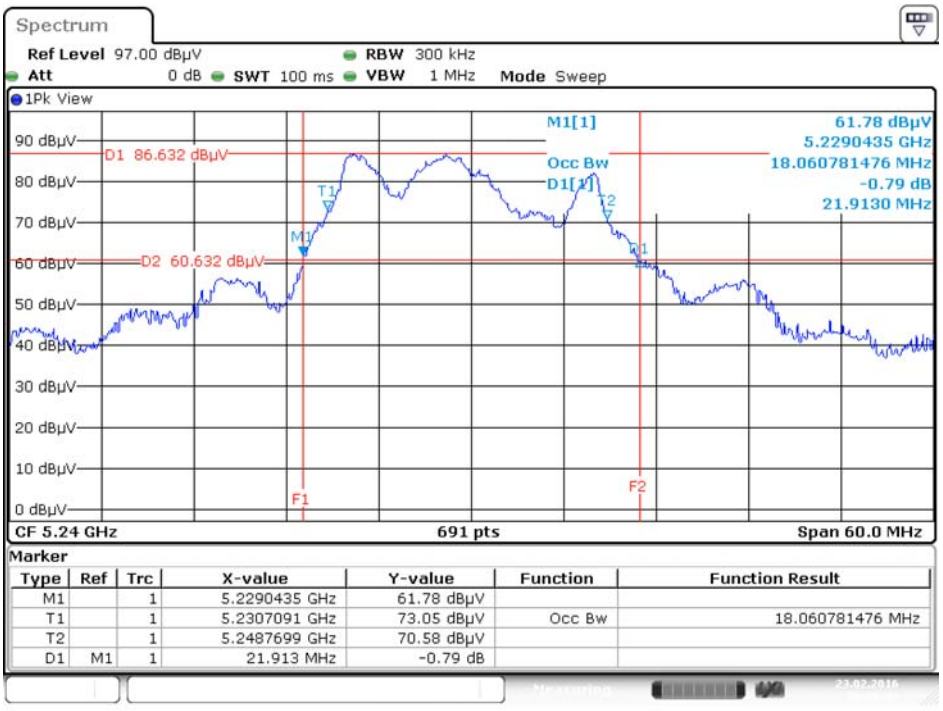
Date: 23.FEB.2016 20:54:59

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



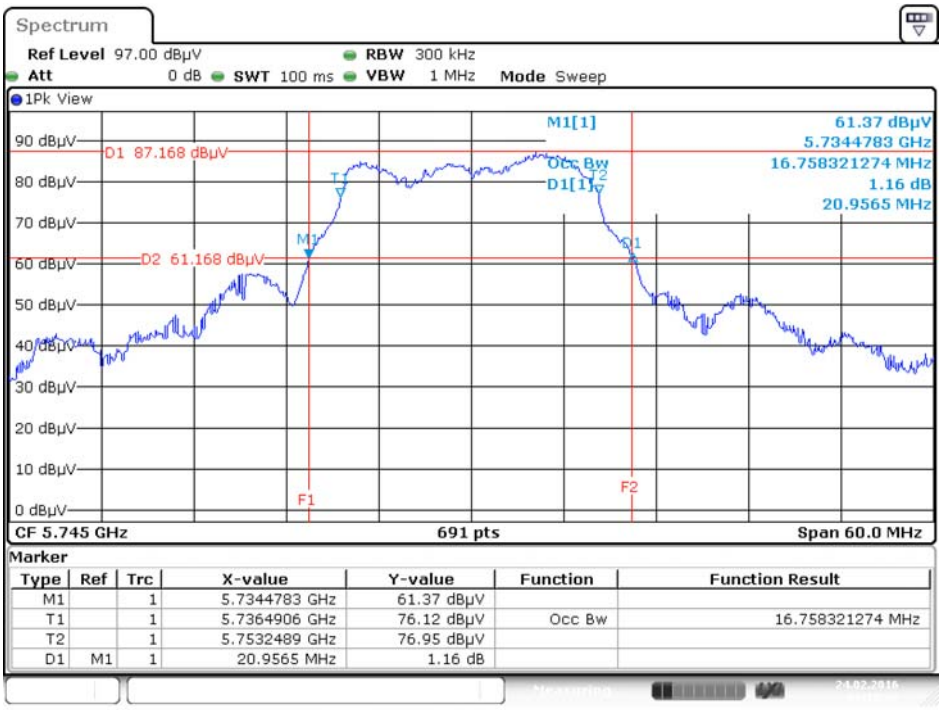
Date: 23.FEB.2016 20:52:14

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



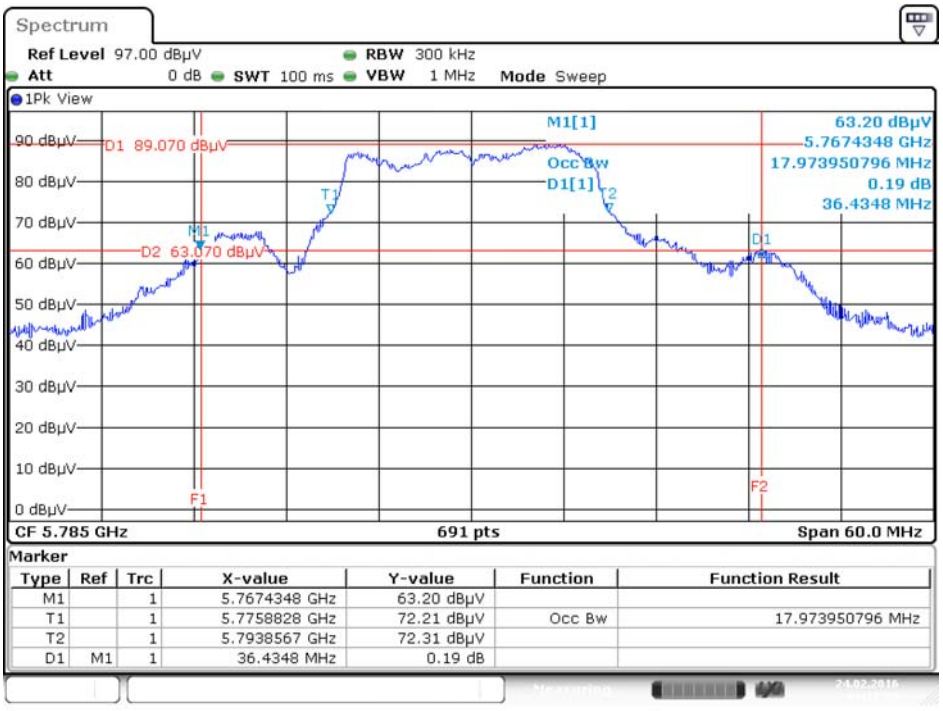
Date: 23.FEB.2016 20:56:41

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5745 MHz



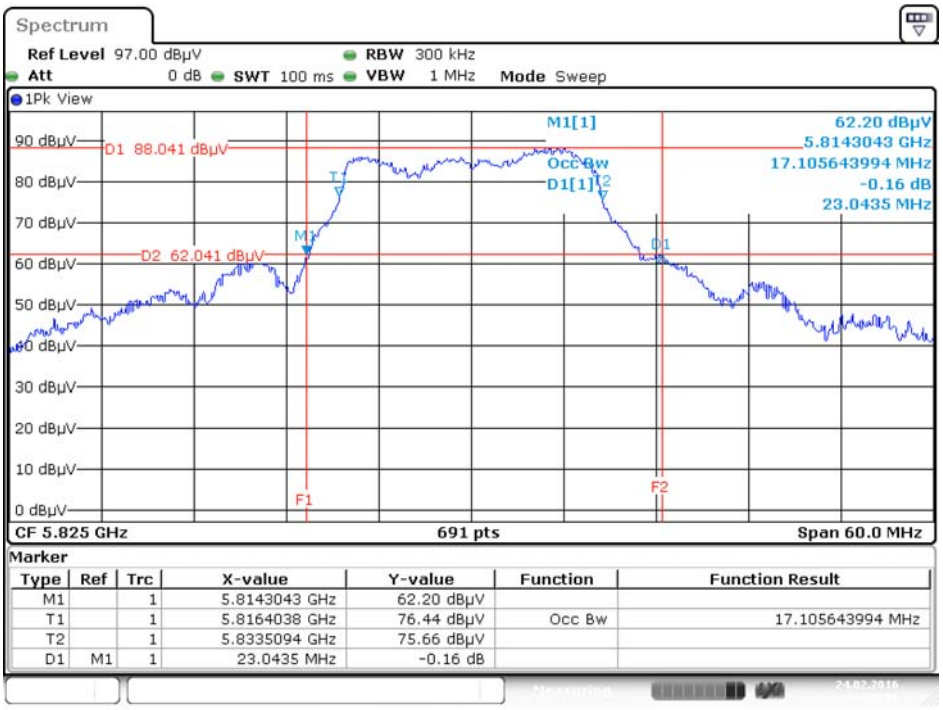
Date: 24.FEB.2016 09:15:46

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5785 MHz



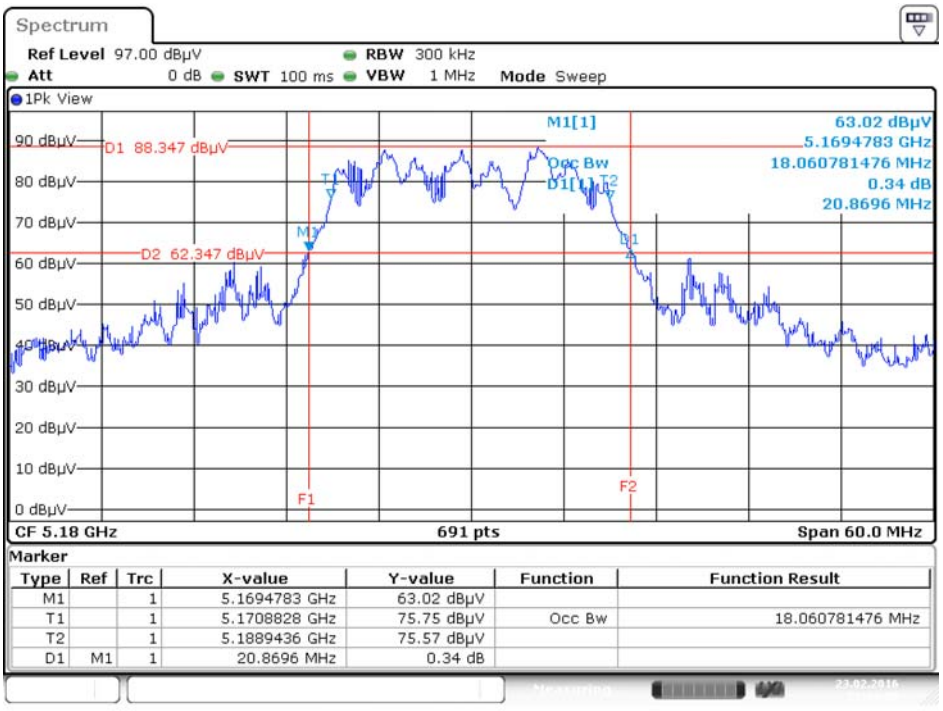
Date: 24.FEB.2016 09:17:53

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5825 MHz



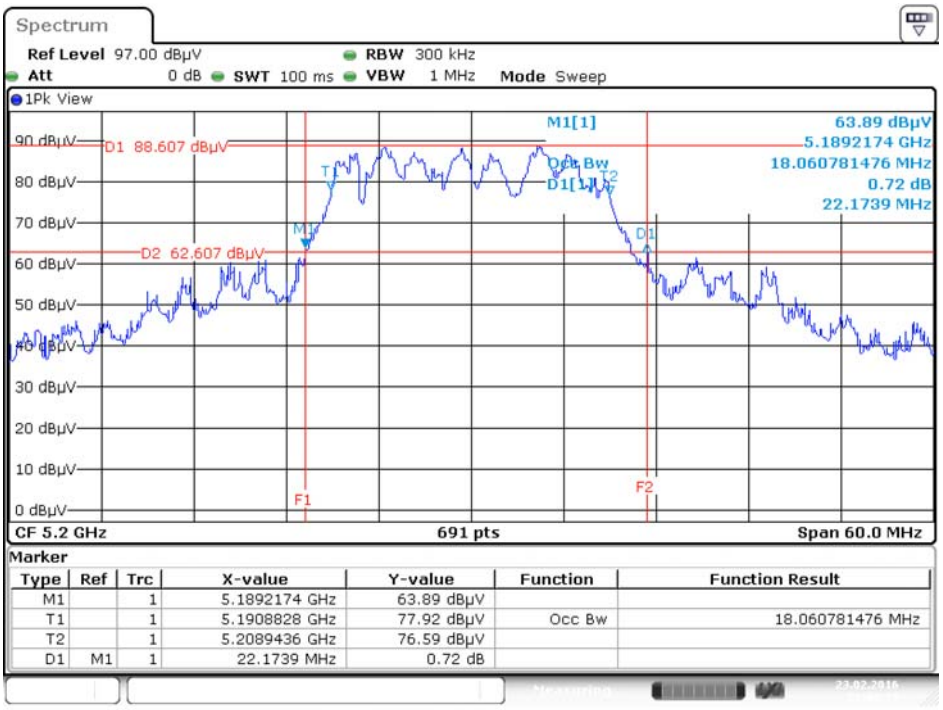
Date: 24.FEB.2016 09:20:16

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



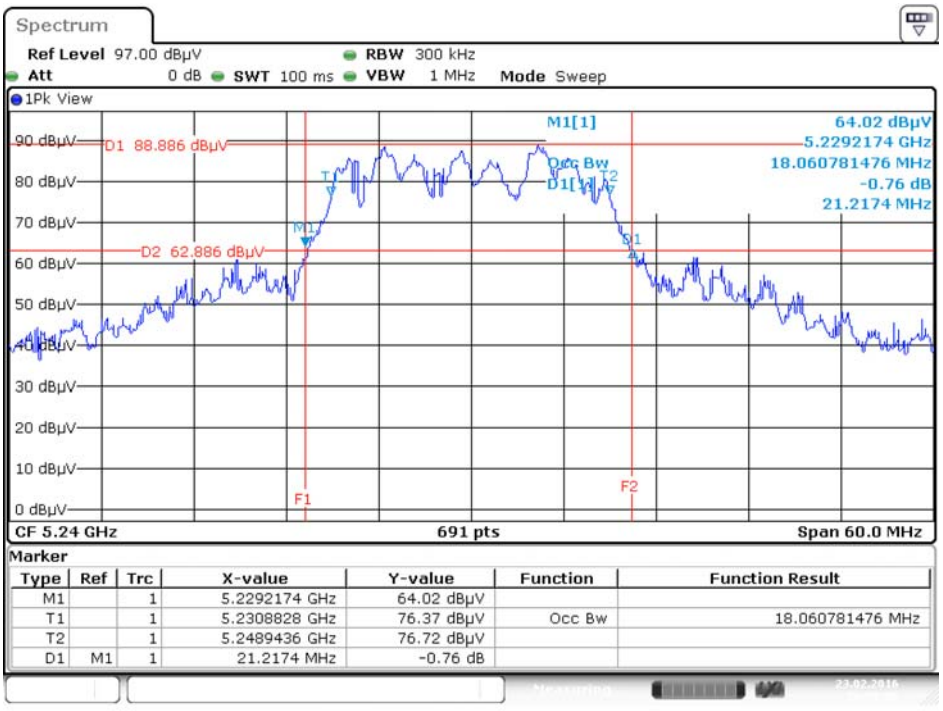
Date: 23.FEB.2016 21:04:20

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



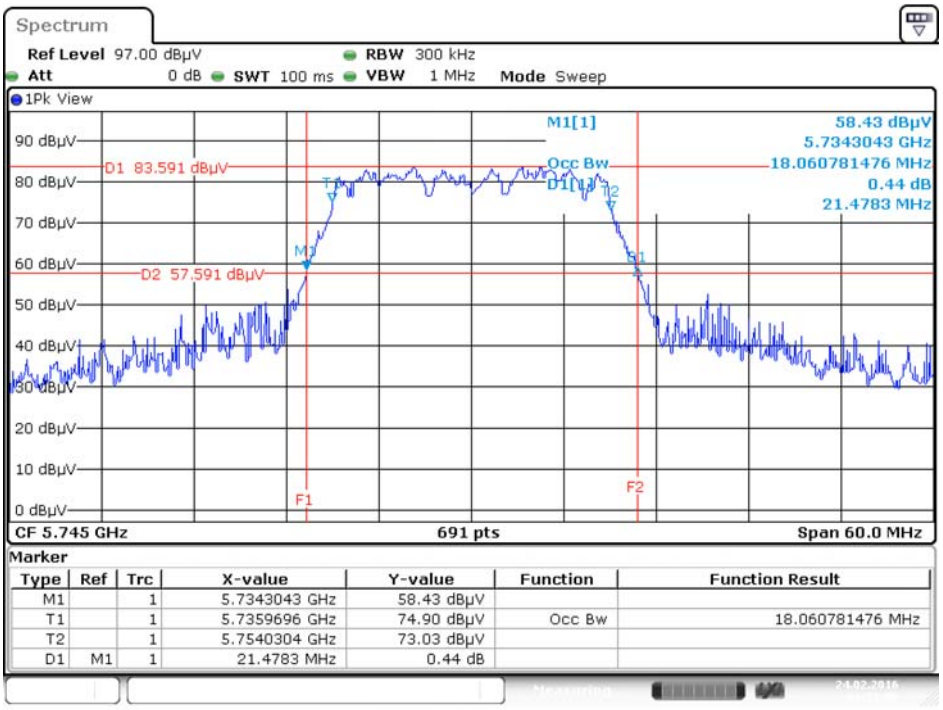
Date: 23.FEB.2016 21:00:13

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



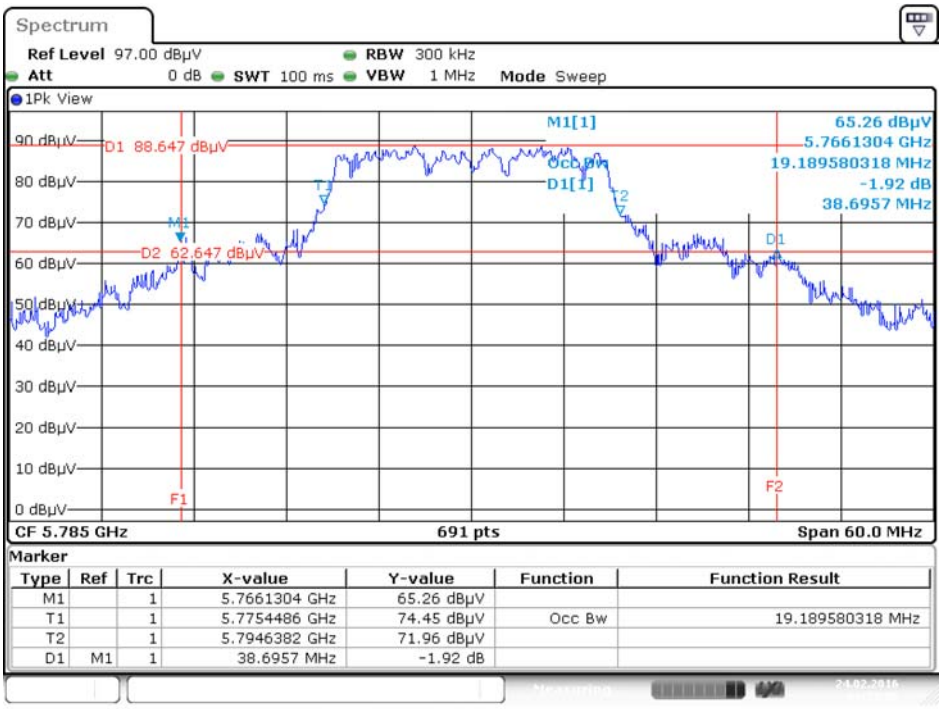
Date: 23.FEB.2016 20:58:36

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5745 MHz



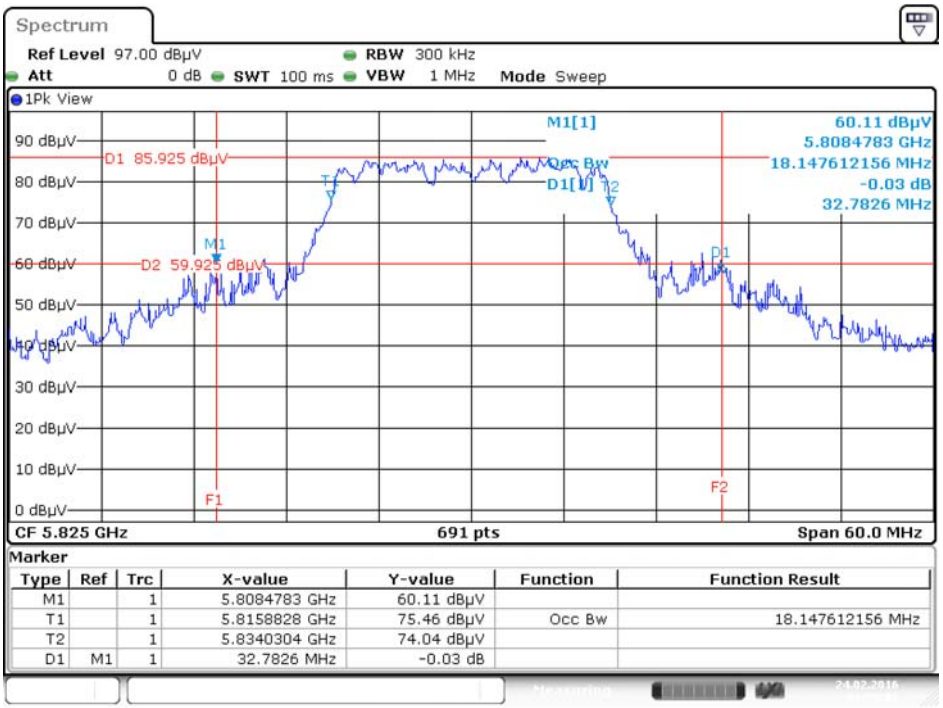
Date: 24.FEB.2016 09:21:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5785 MHz



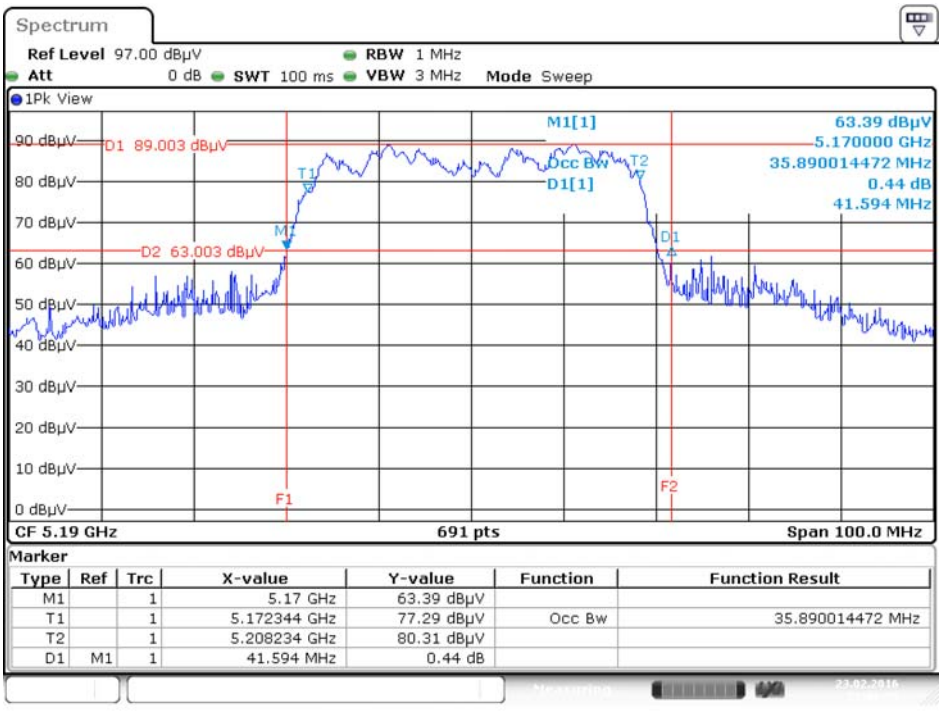
Date: 24.FEB.2016 09:23:37

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5825 MHz



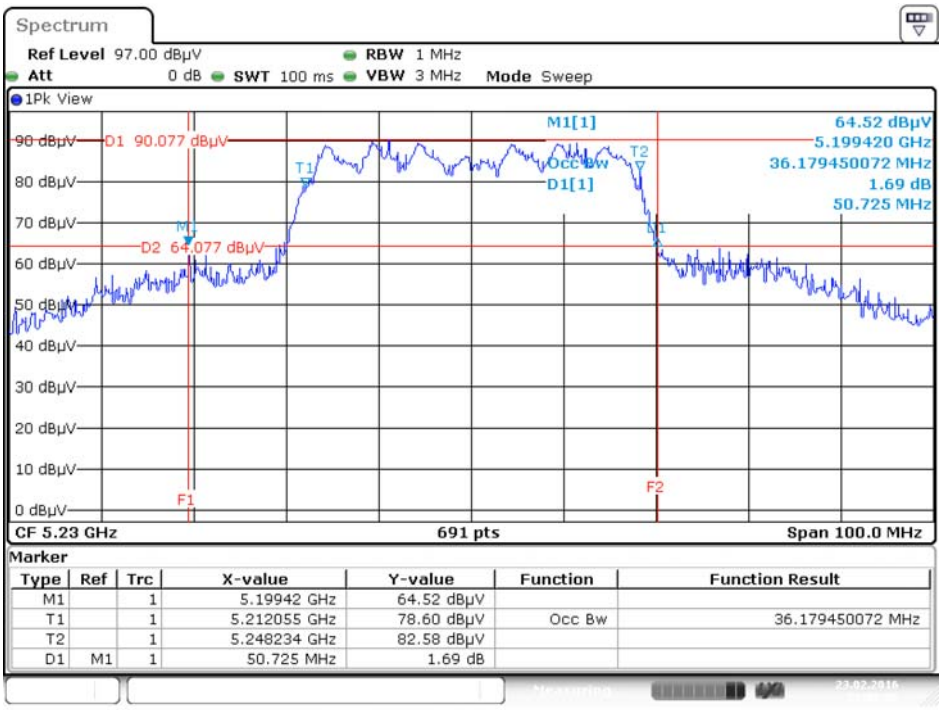
Date: 24.FEB.2016 09:25:02

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



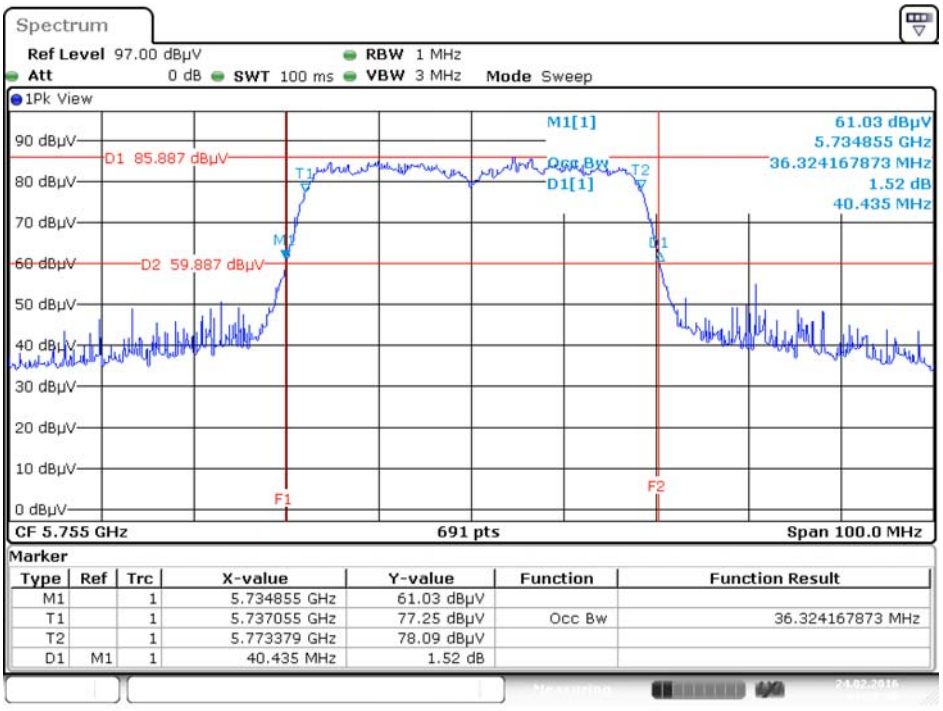
Date: 23.FEB.2016 21:06:35

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



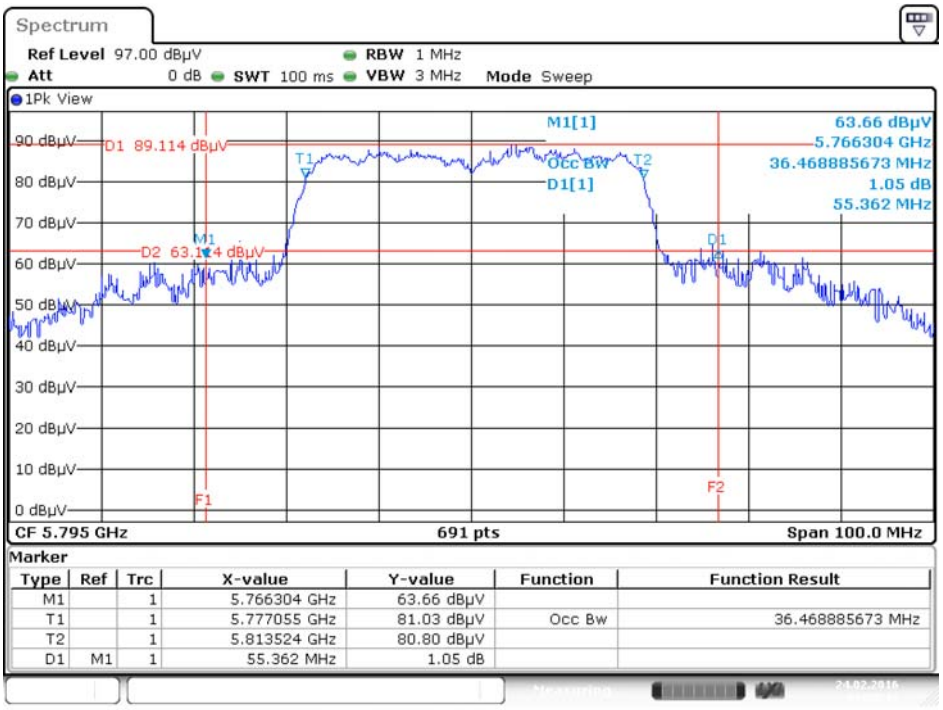
Date: 23.FEB.2016 21:08:26

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5755 MHz



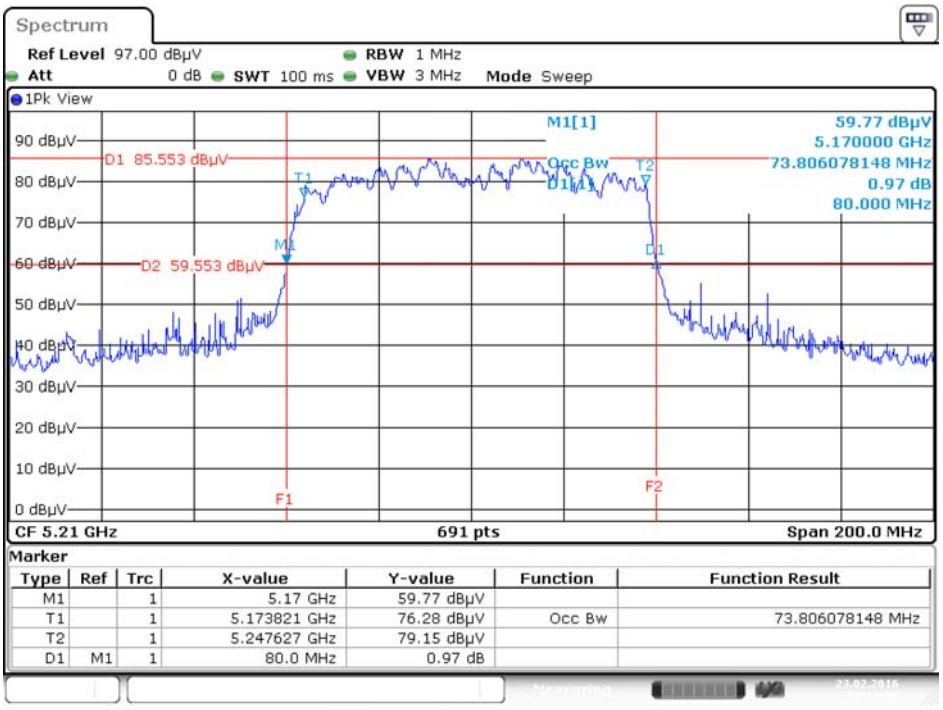
Date: 24.FEB.2016 09:28:49

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5795 MHz



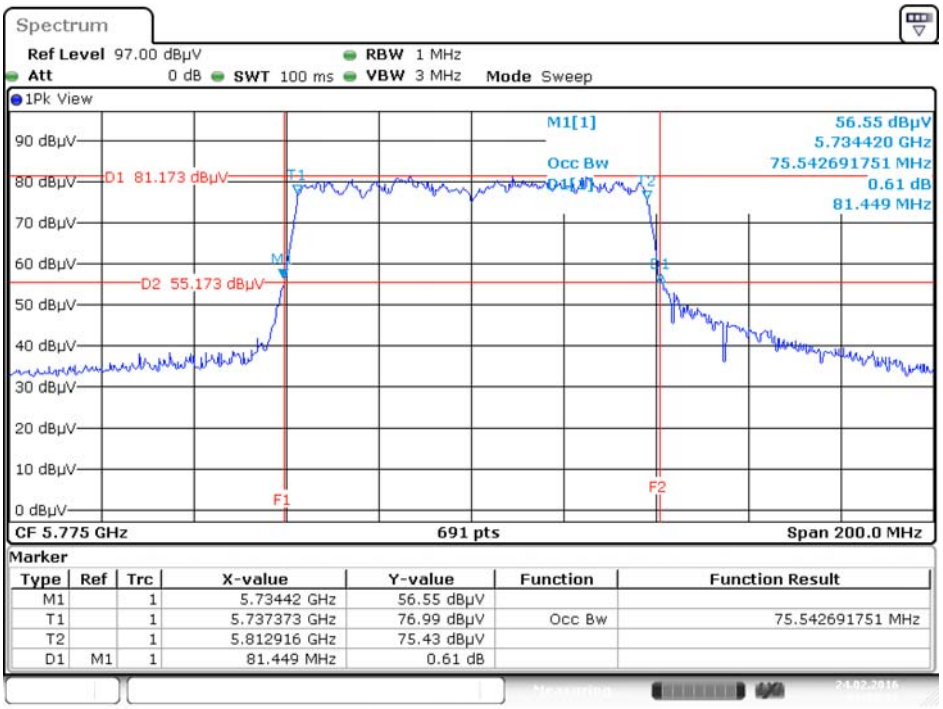
Date: 24.FEB.2016 09:30:41

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: 23.FEB.2016 21:10:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5775 MHz



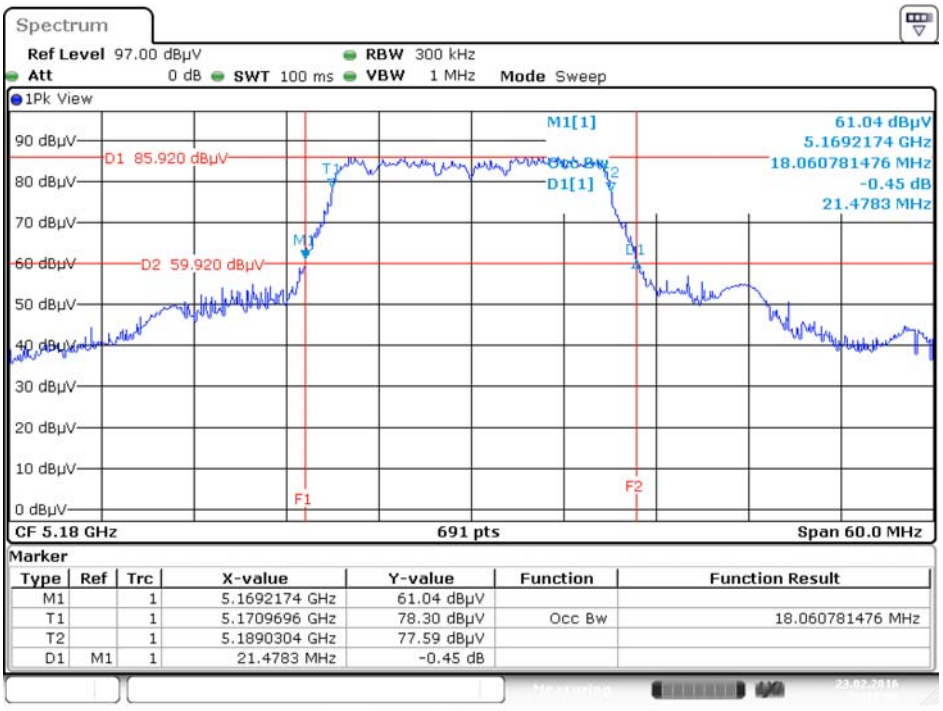
Date: 24.FEB.2016 09:33:11

<For beamforming mode>

Temperature	25℃	Humidity	56%
Test Engineer	Serway Li		

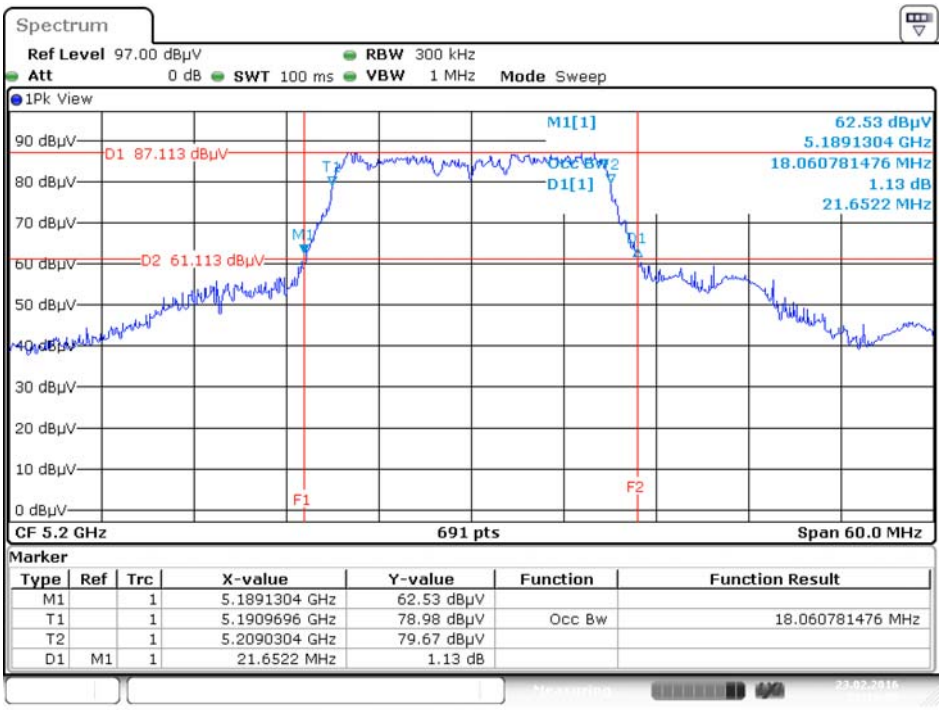
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.48	18.06
	5200 MHz	21.65	18.06
	5240 MHz	21.65	18.06
	5745 MHz	21.48	17.97
	5785 MHz	21.48	18.06
	5825 MHz	21.65	17.97
802.11ac MCS0/Nss1 VHT40	5190 MHz	40.29	36.61
	5230 MHz	40.58	36.90
	5755 MHz	40.44	36.76
	5795 MHz	40.58	36.76
802.11ac MCS0/Nss1 VHT80	5210 MHz	80.87	75.25
	5775 MHz	81.45	76.12

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



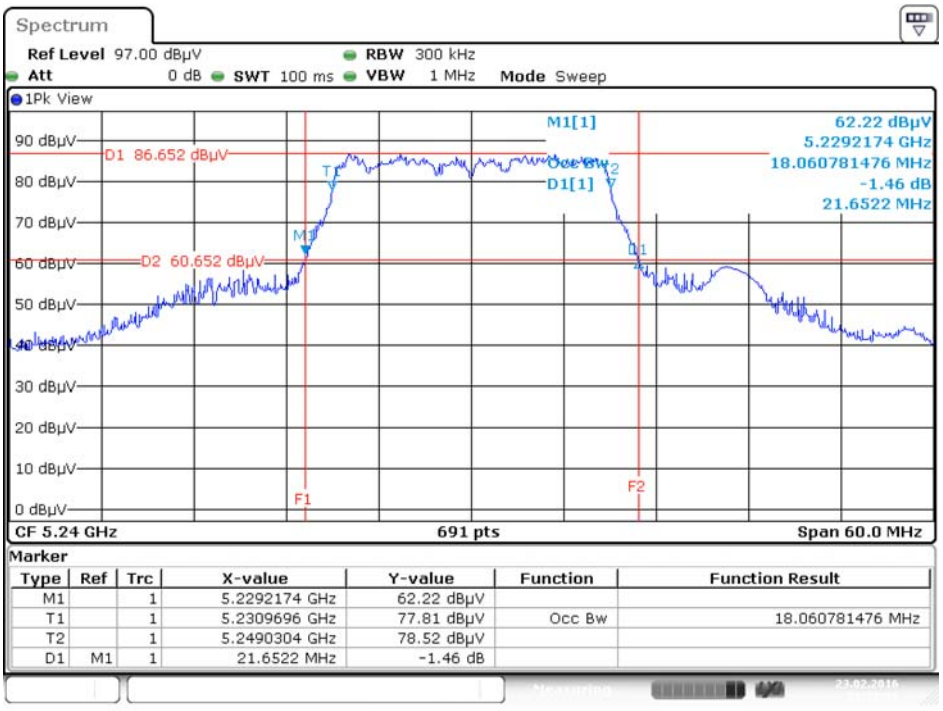
Date: 23.FEB.2016 21:18:26

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



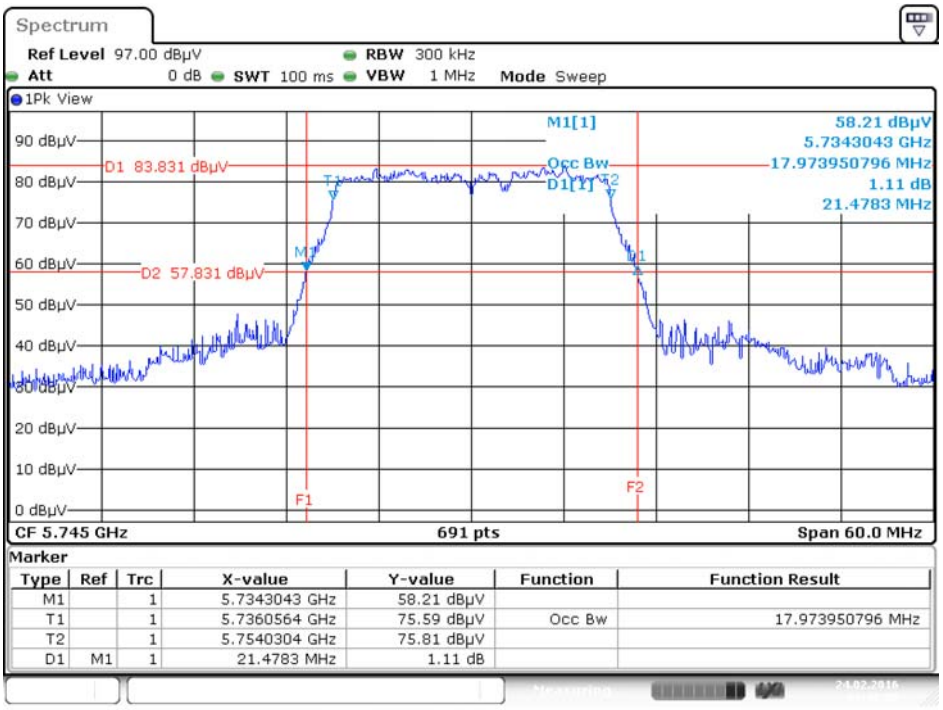
Date: 23.FEB.2016 21:19:59

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



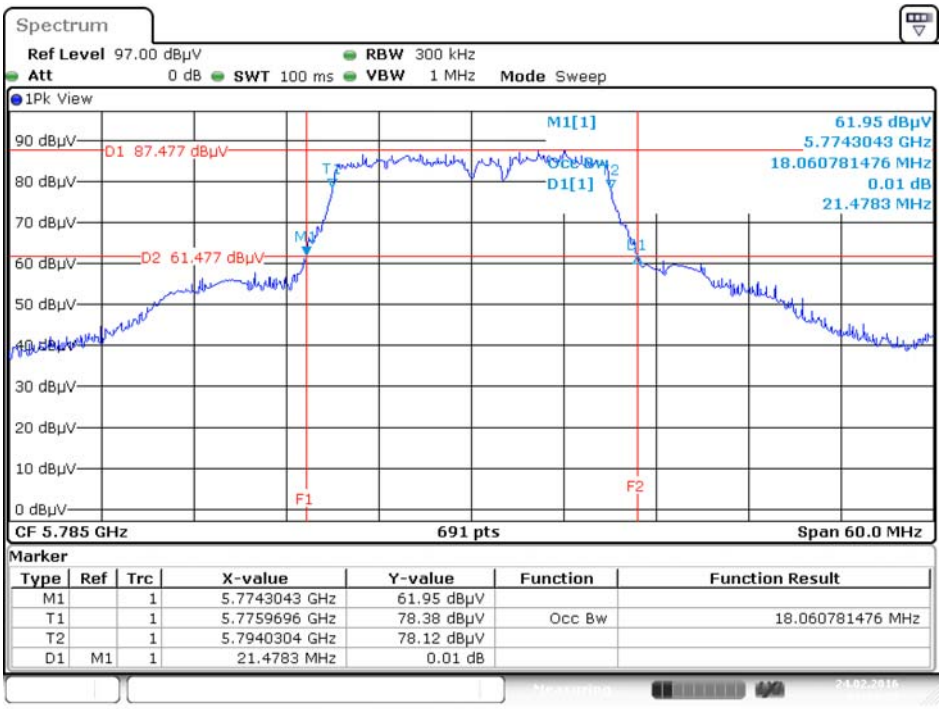
Date: 23.FEB.2016 21:21:11

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5745 MHz



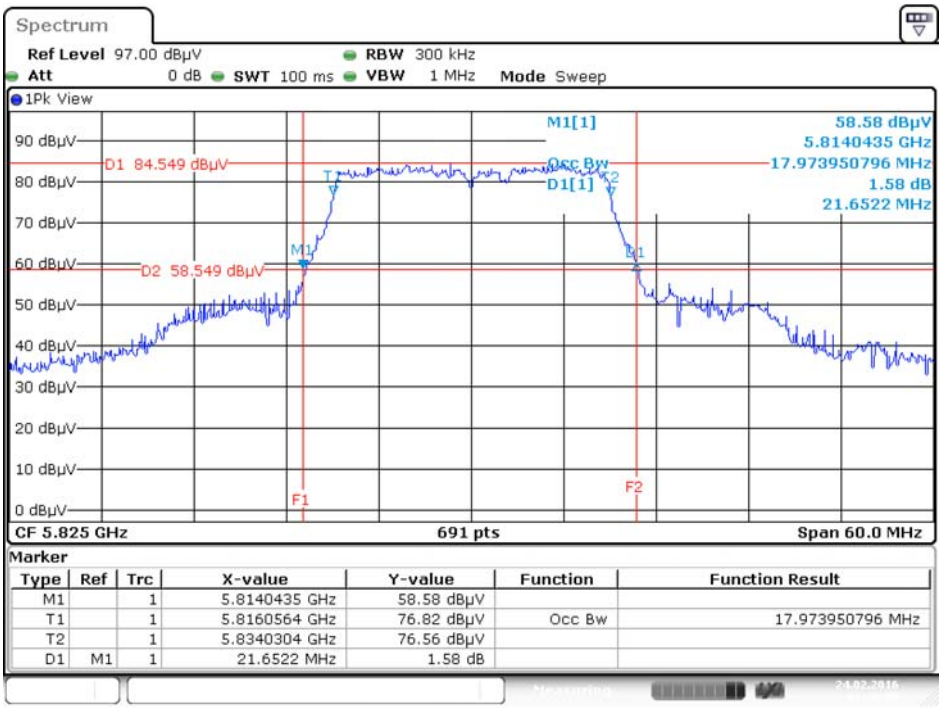
Date: 24.FEB.2016 09:42:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5785 MHz



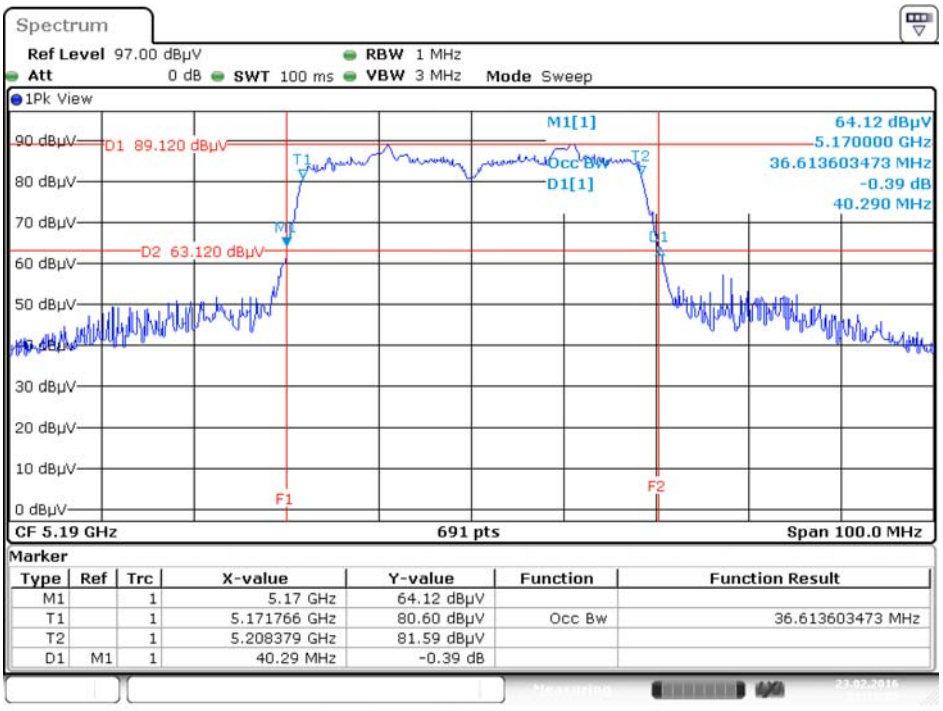
Date: 24.FEB.2016 09:44:25

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5825 MHz



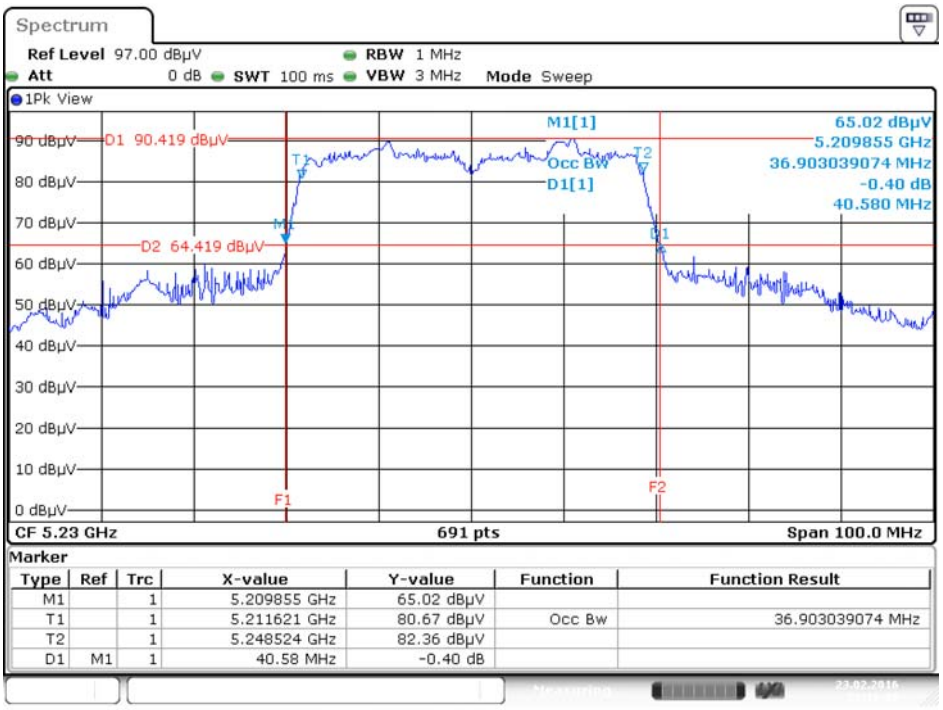
Date: 24.FEB.2016 09:45:58

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



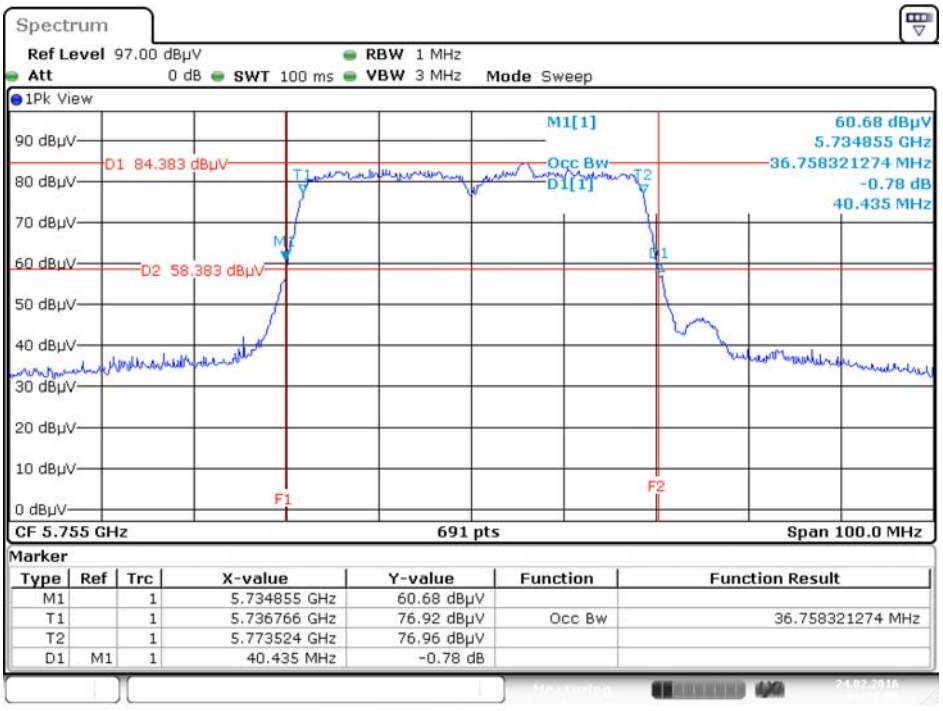
Date: 23.FEB.2016 21:15:00

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



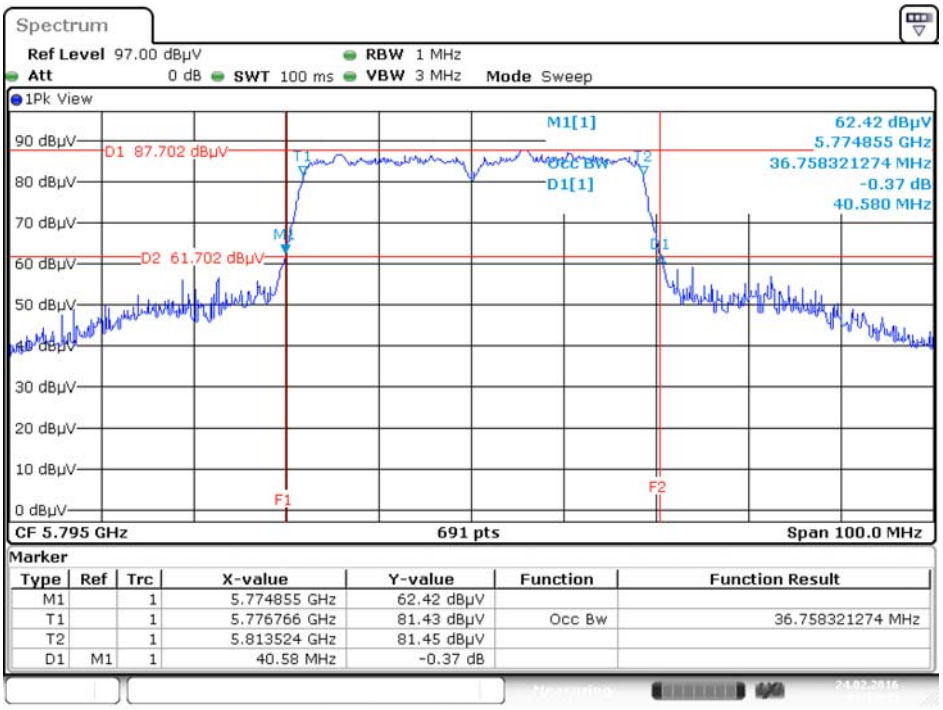
Date: 23.FEB.2016 21:16:39

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5755 MHz



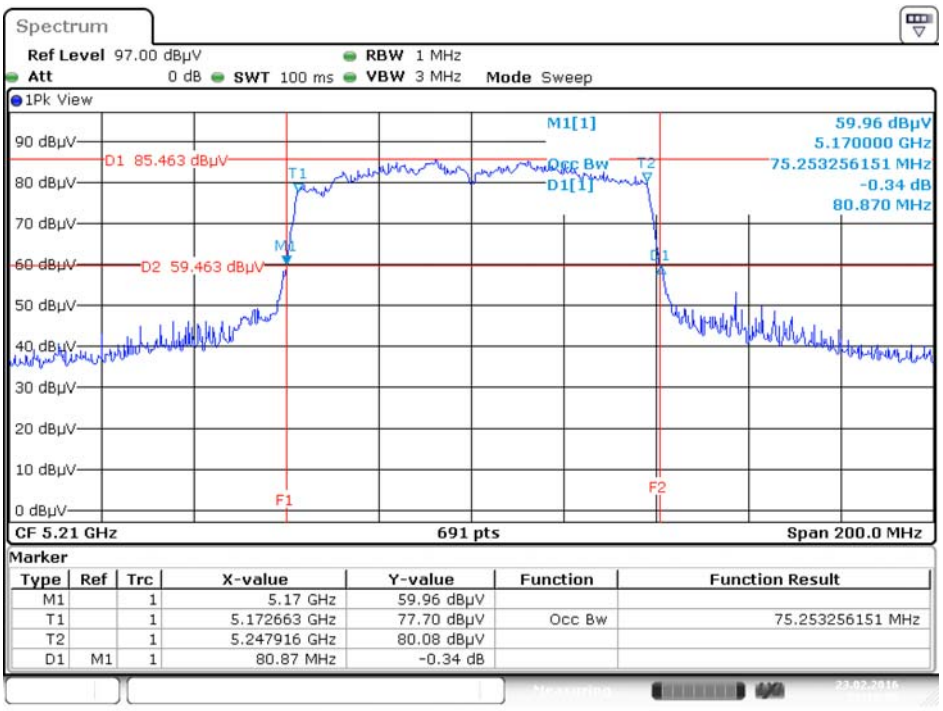
Date: 24.FEB.2016 09:38:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5795 MHz



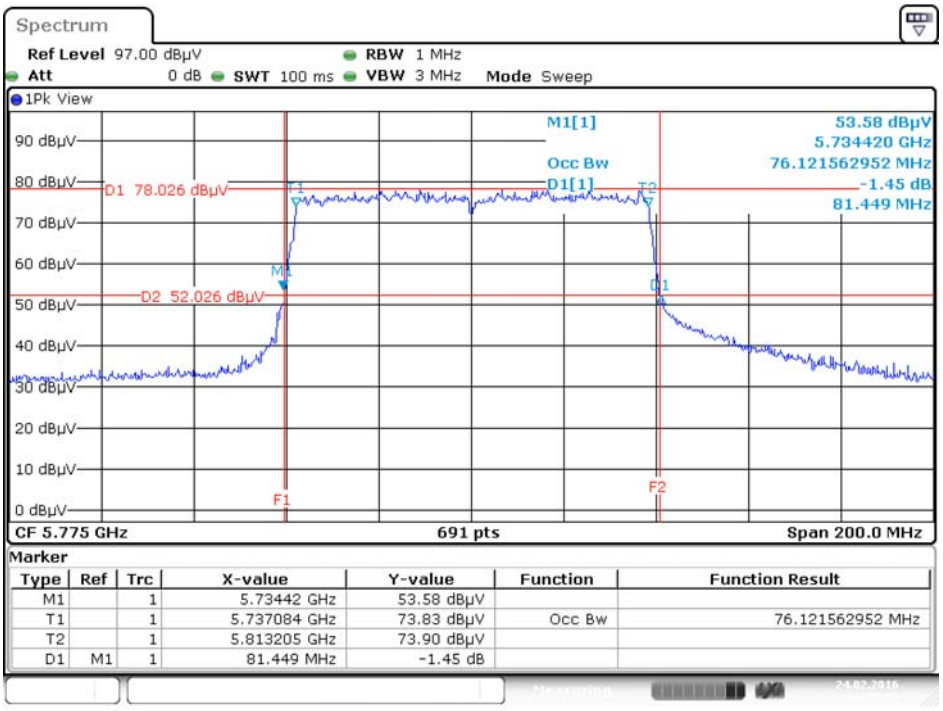
Date: 24.FEB.2016 09:39:44

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: 23.FEB.2016 21:13:06

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5775 MHz



Date: 24.FEB.2016 09:35:52

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 v01r02 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

<For Non-beamforming mode>

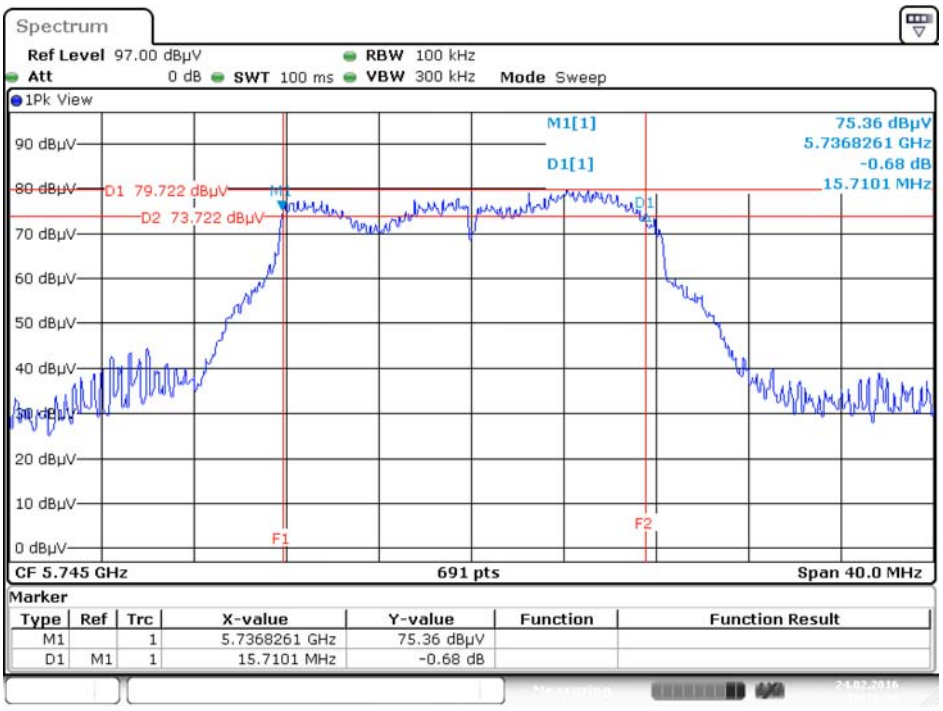
Temperature	25℃	Humidity	56%
Test Engineer	Serway Li		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	15.71	500	Complies
	5785 MHz	15.71	500	Complies
	5825 MHz	15.71	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.33	500	Complies
	5785 MHz	17.51	500	Complies
	5825 MHz	17.39	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.01	500	Complies
	5795 MHz	35.71	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.65	500	Complies

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

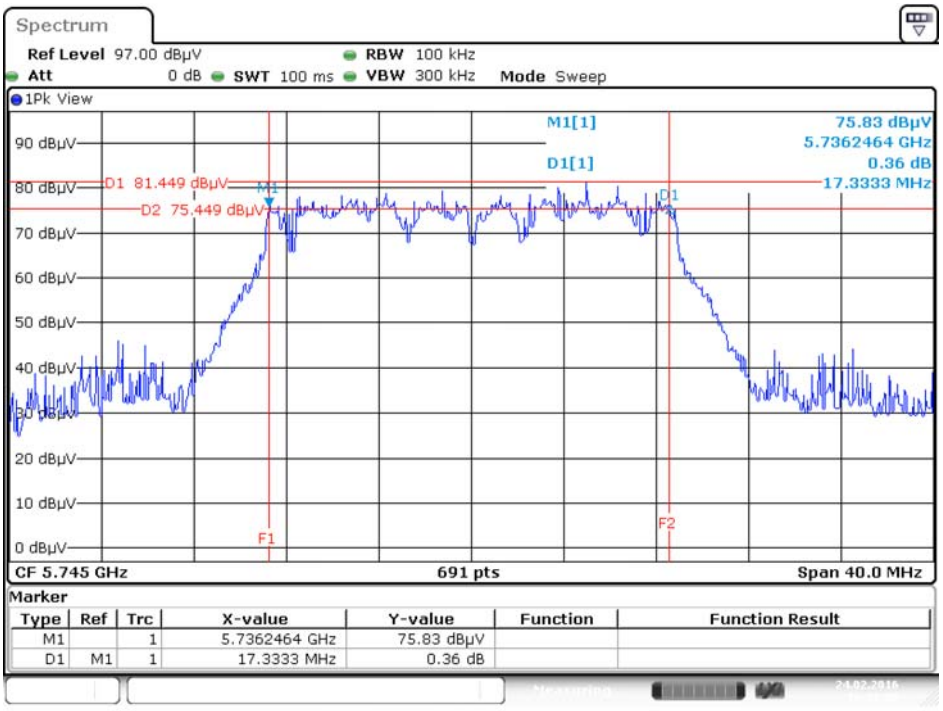
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 5 + Chain 6 + Chain 7+ Chain 8/ 5745 MHz



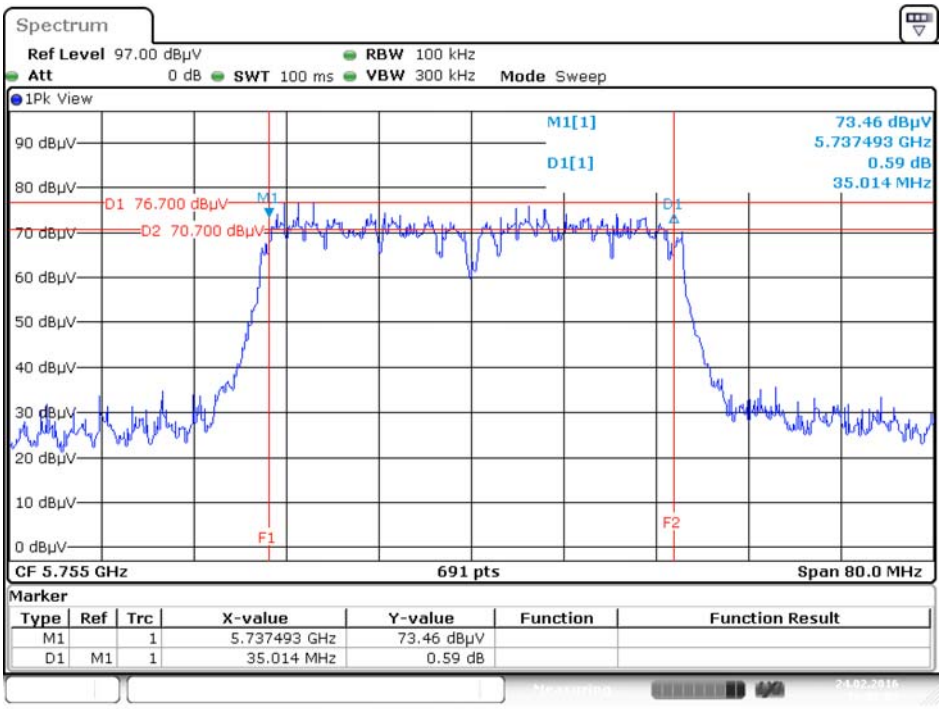
Date: 24.FEB.2016 10:16:45

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5745 MHz



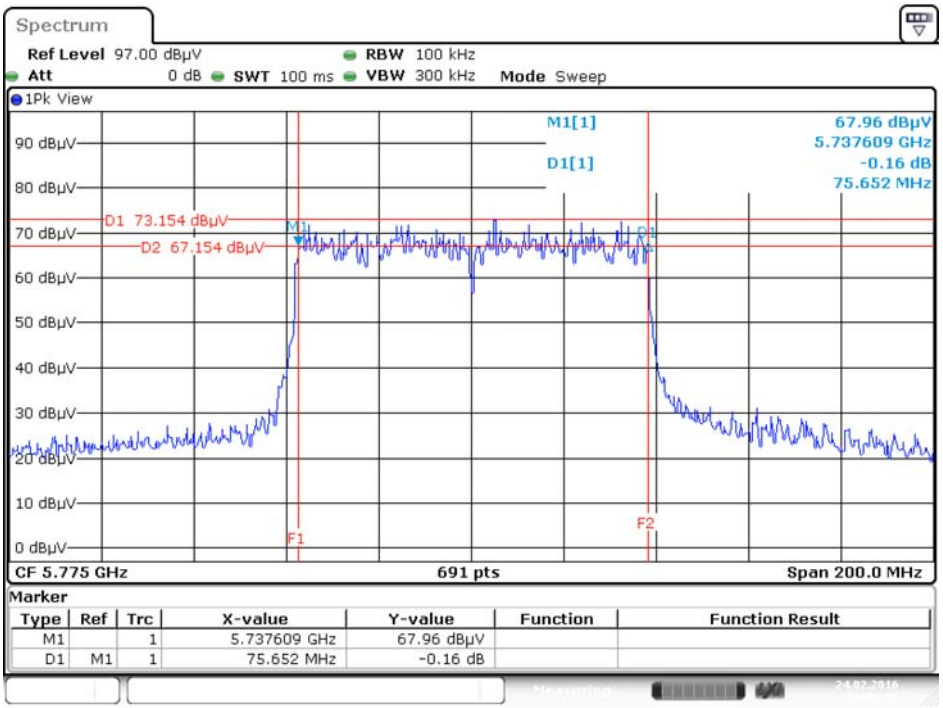
Date: 24.FEB.2016 10:11:19

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5755MHz



Date: 24.FEB.2016 10:08:03

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5775 MHz



Date: 24.FEB.2016 10:05:25

<For beamforming mode>

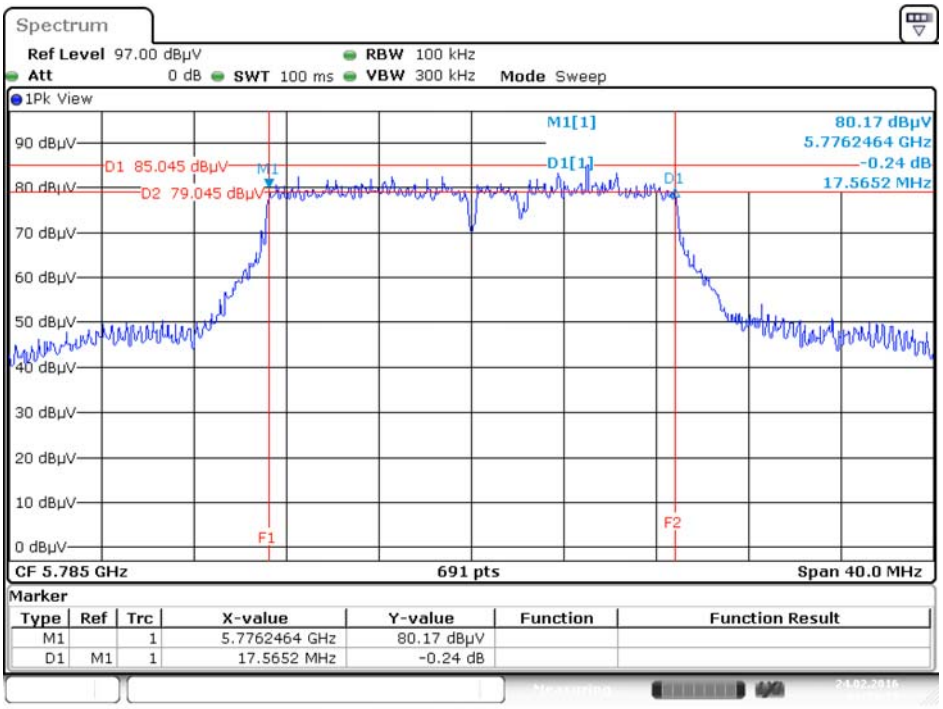
Temperature	25℃	Humidity	56%
Test Engineer	Serway Li		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.68	500	Complies
	5785 MHz	17.57	500	Complies
	5825 MHz	17.57	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.71	500	Complies
	5795 MHz	36.29	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.07	500	Complies

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

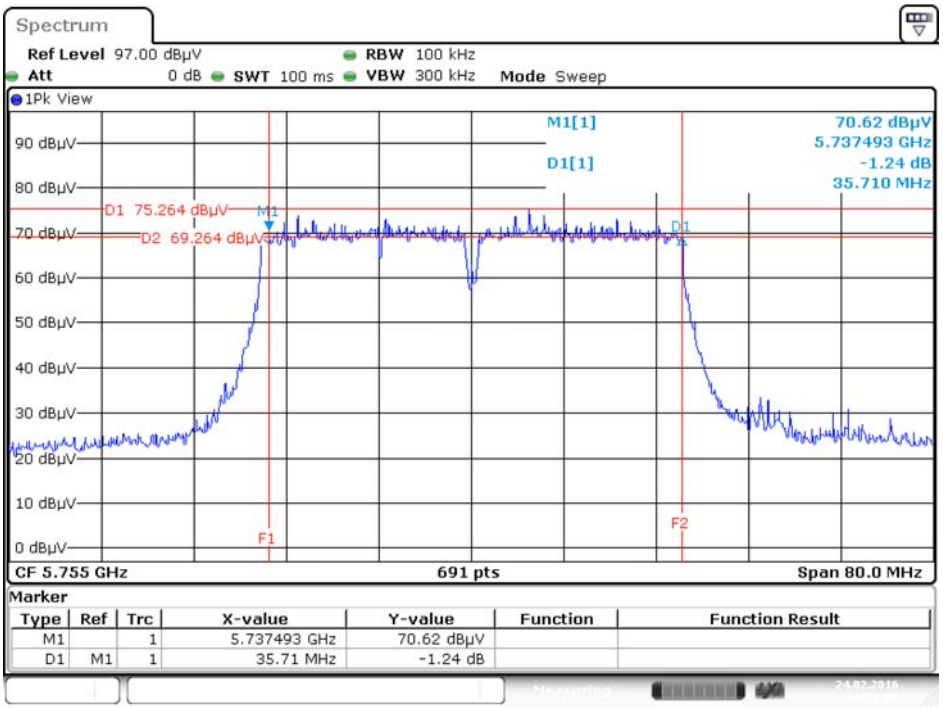
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5785 MHz



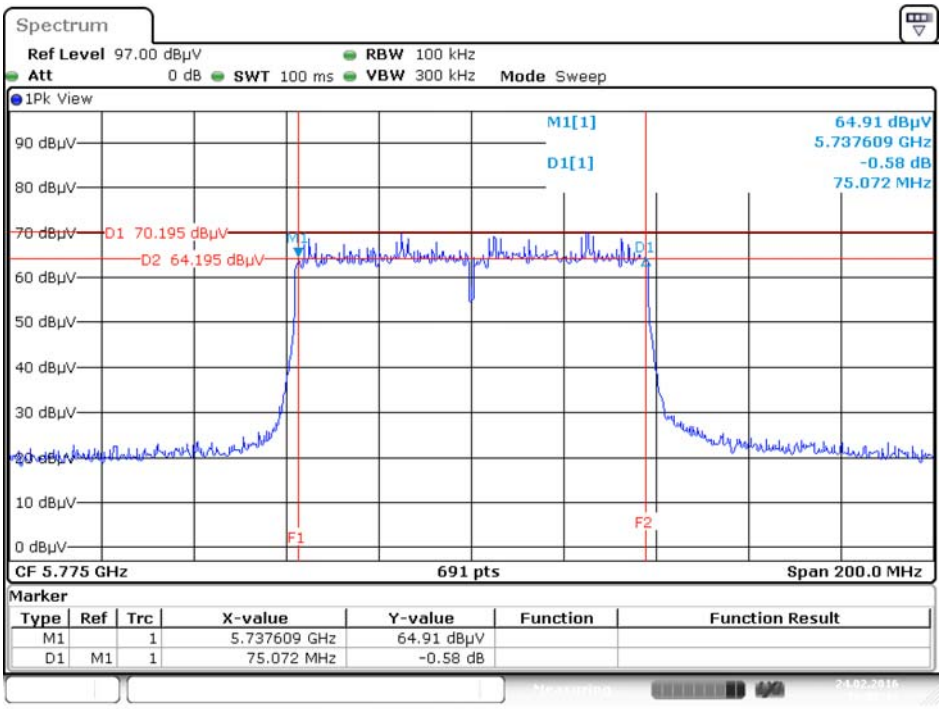
Date: 24.FEB.2016 09:54:13

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 5755MHz



Date: 24.FEB.2016 09:58:30

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 5 + Chain 6 + Chain 7+ Chain 8 / 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

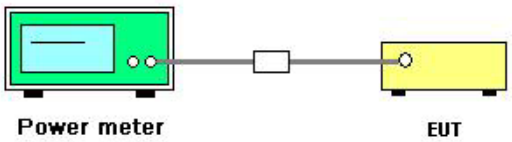
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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 v01r02 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

<For Non-beamforming mode>

Temperature	25°C	Humidity	56%
Test Engineer	Serway Li	Test Date	Feb. 23, 2016

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5180 MHz	23.14	21.33	21.09	22.21	28.04	30.00	Complies
	5200 MHz	23.24	21.75	21.24	21.38	28.00	30.00	Complies
	5240 MHz	23.72	21.34	21.19	21.06	28.00	30.00	Complies
	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 5	Chain 6	Chain 7	Chain 8	Total		
	5745 MHz	19.36	17.62	18.57	19.27	24.78	30.00	Complies
	5785 MHz	24.11	22.93	23.42	24.28	29.74	30.00	Complies
	5825 MHz	22.46	20.46	21.17	21.77	27.55	30.00	Complies
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	21.94	20.61	19.78	20.95	26.91	30.00	Complies
	5200 MHz	23.23	21.94	21.36	21.22	28.03	30.00	Complies
	5240 MHz	23.96	21.15	21.13	21.01	28.03	30.00	Complies
	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 5	Chain 6	Chain 7	Chain 8	Total		
	5745 MHz	19.11	17.12	18.09	19.07	24.44	30.00	Complies
	5785 MHz	24.17	22.77	23.34	24.27	29.70	30.00	Complies
	5825 MHz	21.67	19.47	20.05	21.07	26.67	30.00	Complies

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT40	5190 MHz	20.72	18.72	18.53	19.18	25.40	30.00	Complies
	5230 MHz	23.04	19.92	20.10	20.35	27.08	30.00	Complies
	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 5	Chain 6	Chain 7	Chain 8	Total		
	5755 MHz	17.04	15.79	16.88	16.95	22.71	30.00	Complies
	5795 MHz	20.49	19.15	19.88	20.17	25.97	30.00	Complies
Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT80	5210 MHz	20.09	18.26	18.13	18.98	24.96	30.00	Complies
	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 5	Chain 6	Chain 7	Chain 8	Total		
	5775 MHz	16.93	14.96	16.15	16.87	22.32	30.00	Complies

<For beamforming mode>

Temperature	22°C	Humidity	56%
Test Engineer	Serway Li	Test Date	Feb. 23, 2016~Mar. 30, 2016

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	22.55	20.85	20.34	21.48	27.41	28.02	Complies
	5200 MHz	23.24	21.75	21.24	21.38	28.00	28.02	Complies
	5240 MHz	23.72	21.34	21.19	21.06	28.00	28.02	Complies
	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 5	Chain 6	Chain 7	Chain 8	Total		
	5745 MHz	18.37	16.46	17.21	18.19	23.65	27.98	Complies
	5785 MHz	22.11	20.66	21.39	21.96	27.59	27.98	Complies
	5825 MHz	19.91	17.51	18.36	19.12	24.84	27.98	Complies
Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT40	5190 MHz	19.93	17.97	17.58	18.59	24.63	28.02	Complies
	5230 MHz	22.36	19.39	19.58	19.43	26.41	28.02	Complies
	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 5	Chain 6	Chain 7	Chain 8	Total		
	5755 MHz	15.04	13.52	14.65	14.83	20.57	27.98	Complies
	5795 MHz	19.28	17.59	18.41	18.71	24.56	27.98	Complies
Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT80	5210 MHz	20.52	18.84	18.55	19.44	25.43	28.02	Complies
	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 5	Chain 6	Chain 7	Chain 8	Total		
	5775 MHz	12.34	11.45	12.11	13.42	18.41	27.98	Complies

Note: Band 1 $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.98dBi, so limit= 30-(7.98-6)=28.02 dBm

Note: Band 4 $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.02dBi, so limit= 30-(8.02-6)=27.98 dBm

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

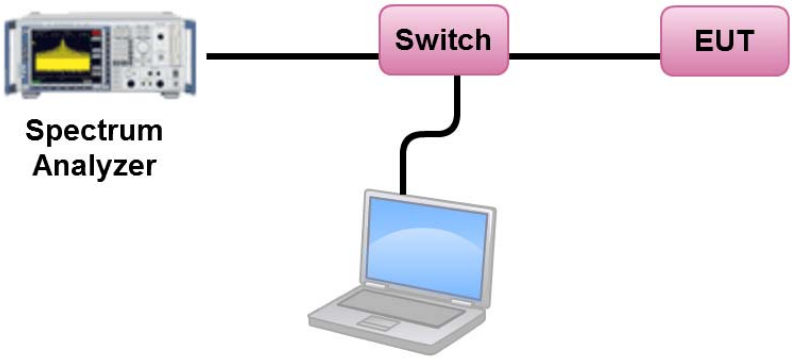
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 v01r02 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

<For Non-beamforming mode>

Temperature	25℃	Humidity	56%
Test Engineer	Serway Li	Test Date	Feb. 23, 2016~Mar. 30, 2016

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	14.83	15.02	Complies
40	5200 MHz	14.77	15.02	Complies
48	5240 MHz	14.81	15.02	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.98dBi, so limit= 17-(7.98-6)= 15.02 dBm/MHz

Configuration IEEE 802.11a / Chain 5 + Chain 6 + Chain 7 + Chain 8

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	11.65	-3.01	8.64	27.98	Complies
157	5785 MHz	16.59	-3.01	13.58	27.98	Complies
165	5825 MHz	14.42	-3.01	11.41	27.98	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.02dBi, so limit= 30-(8.02-6)= 27.98 dBm/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	13.77	15.02	Complies
40	5200 MHz	14.84	15.02	Complies
48	5240 MHz	14.83	15.02	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.98dBi, so limit= 17-(7.98-6)= 15.02 dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7 + Chain 8

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	11.28	-3.01	8.27	27.98	Complies
157	5785 MHz	16.56	-3.01	13.55	27.98	Complies
165	5825 MHz	13.56	-3.01	10.55	27.98	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.02dBi, so limit= 30-(8.02-6)= 27.98 dBm/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	9.19	15.02	Complies
46	5230 MHz	10.86	15.02	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.98dBi, so limit= 17-(7.98-6)= 15.02 dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7 + Chain 8

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	6.61	-3.01	3.60	27.98	Complies
159	5795 MHz	9.81	-3.01	6.80	27.98	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.02dBi, so limit= 30-(8.02-6)= 27.98 dBm/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	5.83	15.02	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.98dBi, so limit= 17-(7.98-6)= 15.02 dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 5 + Chain 6 + Chain 7 + Chain 8

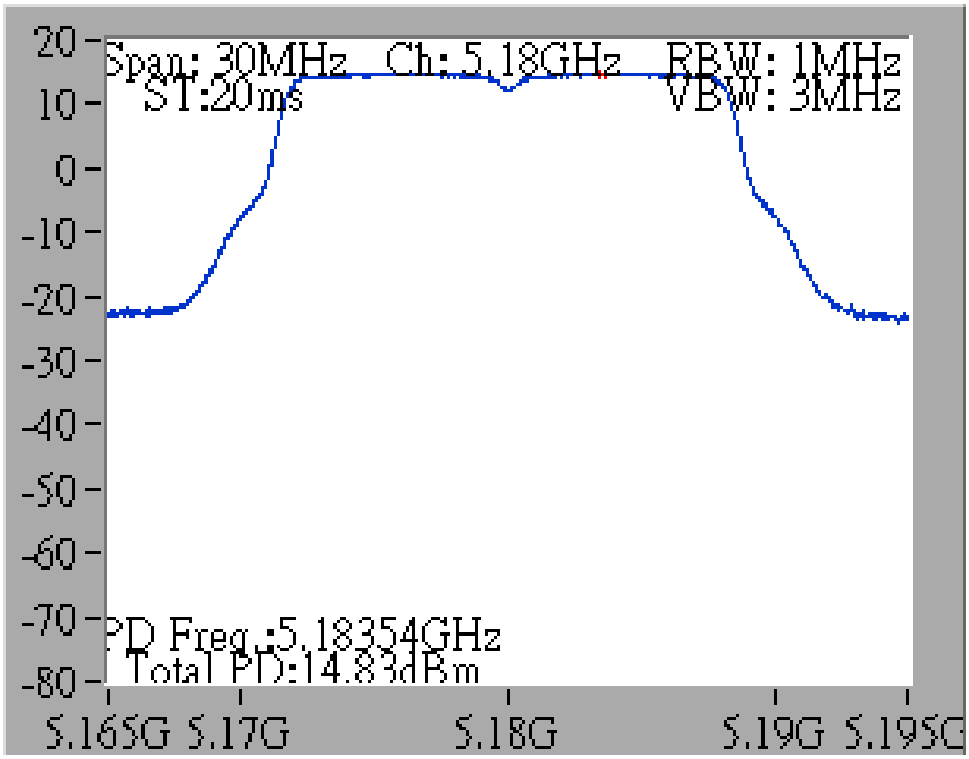
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	3.18	-3.01	0.17	27.98	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.02dBi, so limit= 30-(8.02-6)= 27.98 dBm/500kHz

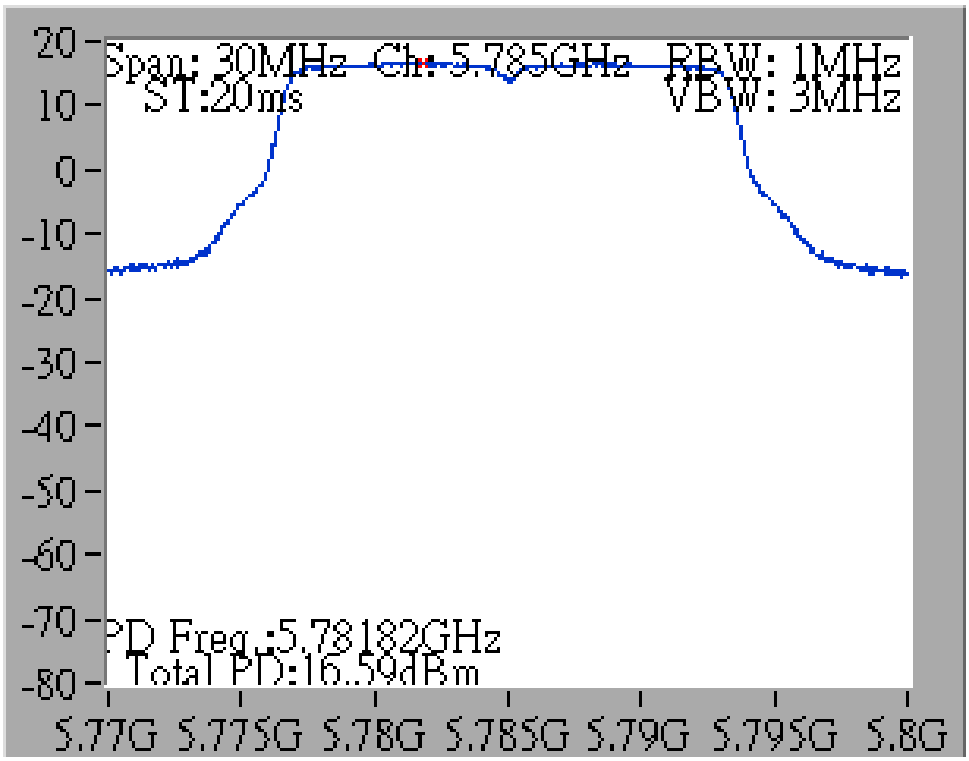
Note: All the test values were listed in the report.

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

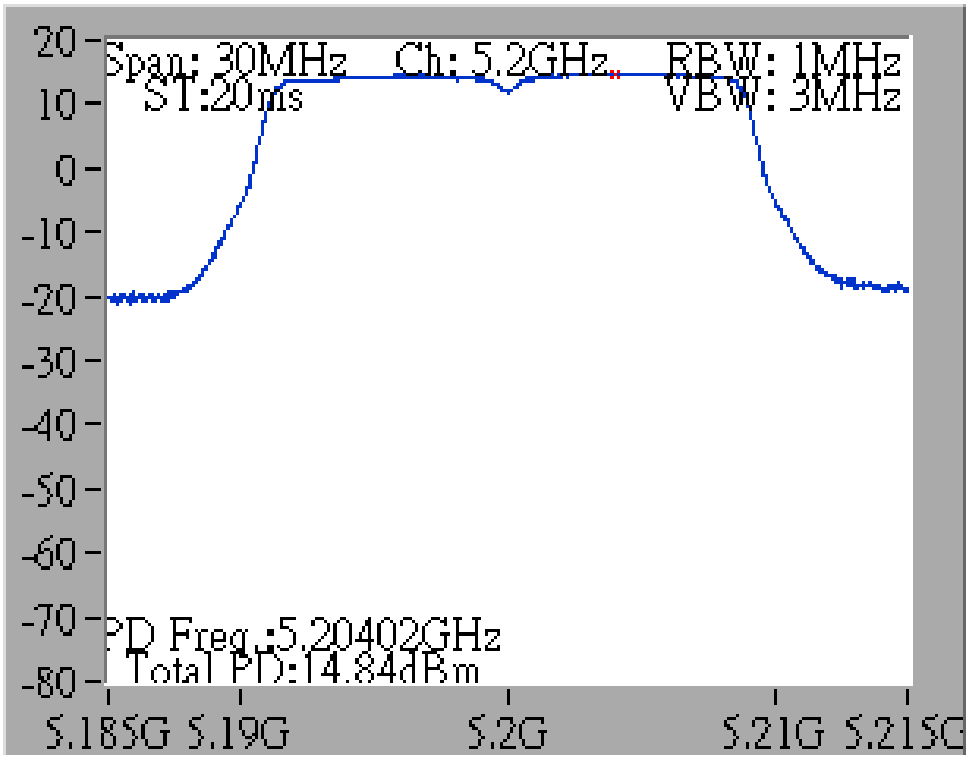
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



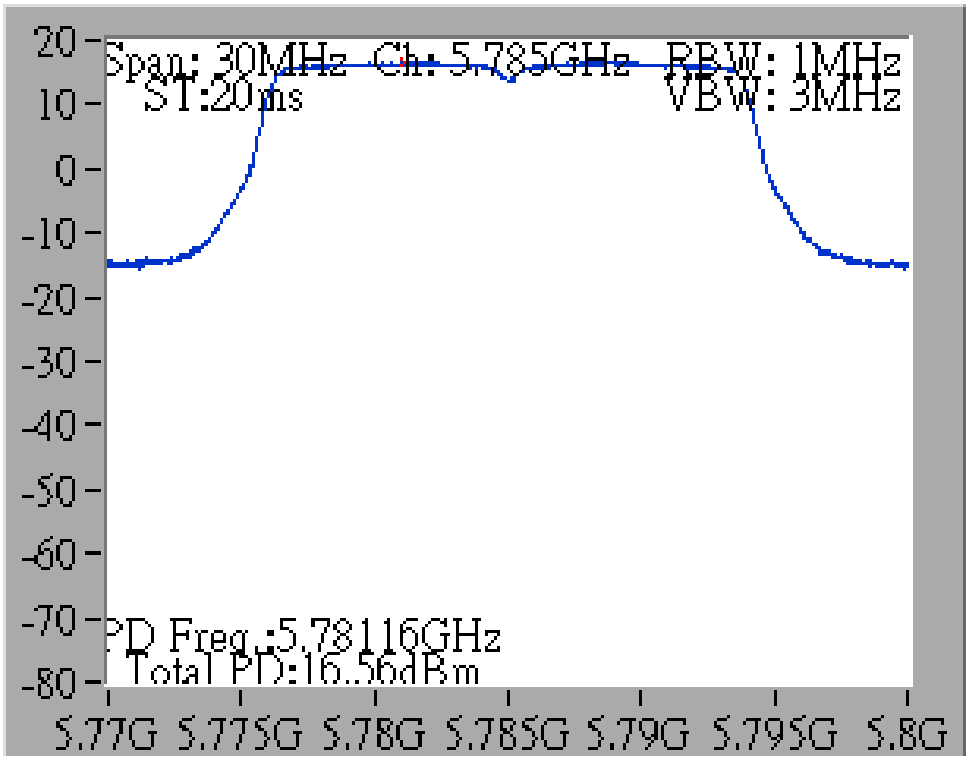
Power Density Plot on Configuration IEEE 802.11a / Chain 5 + Chain 6 + Chain 7 + Chain 8 / 5785 MHz



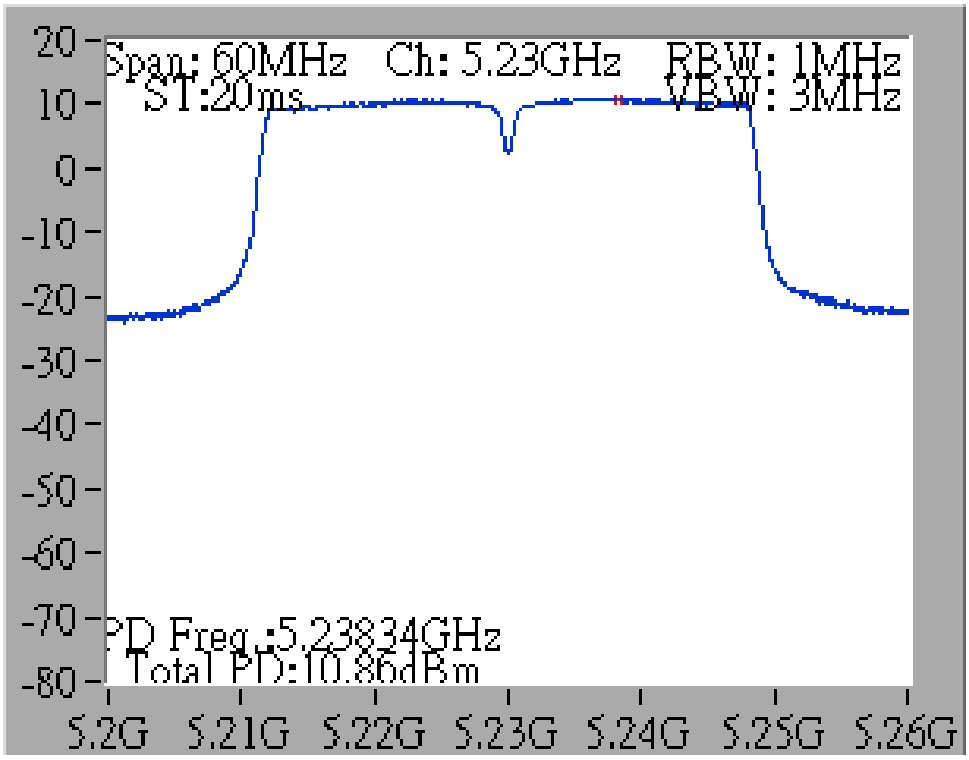
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



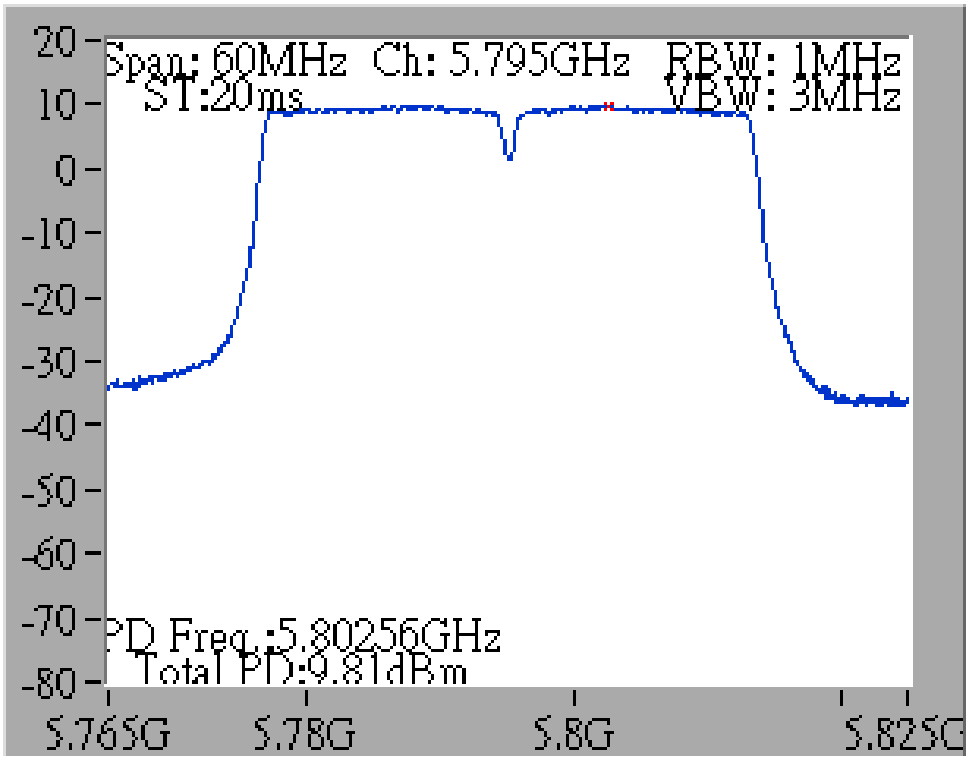
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7 + Chain 8 / 5785 MHz



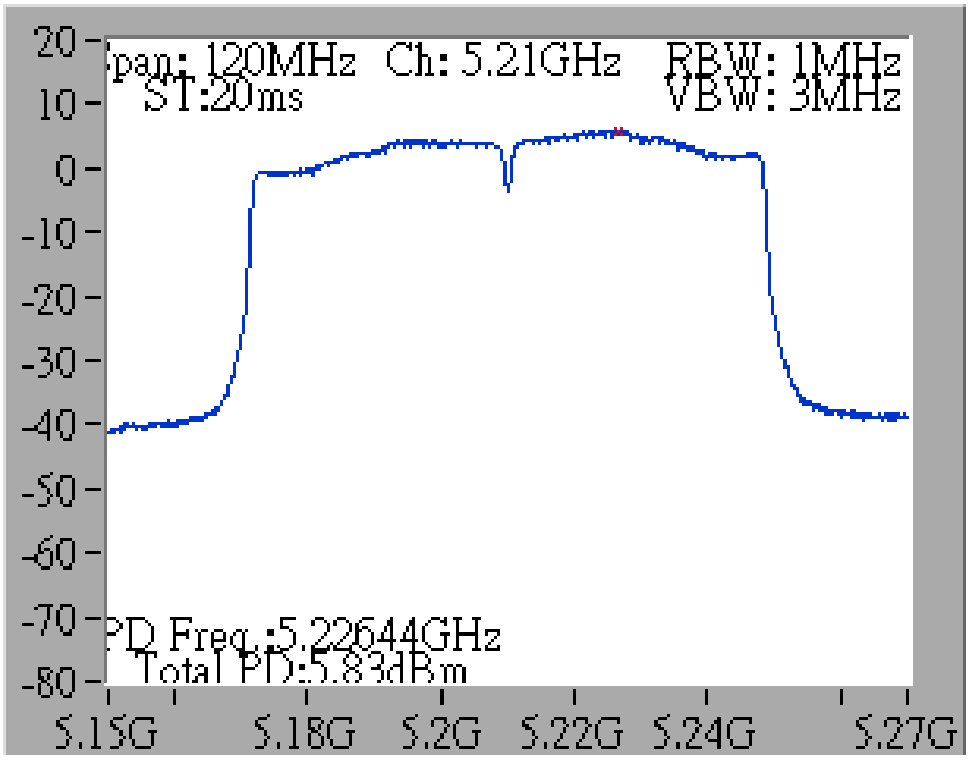
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



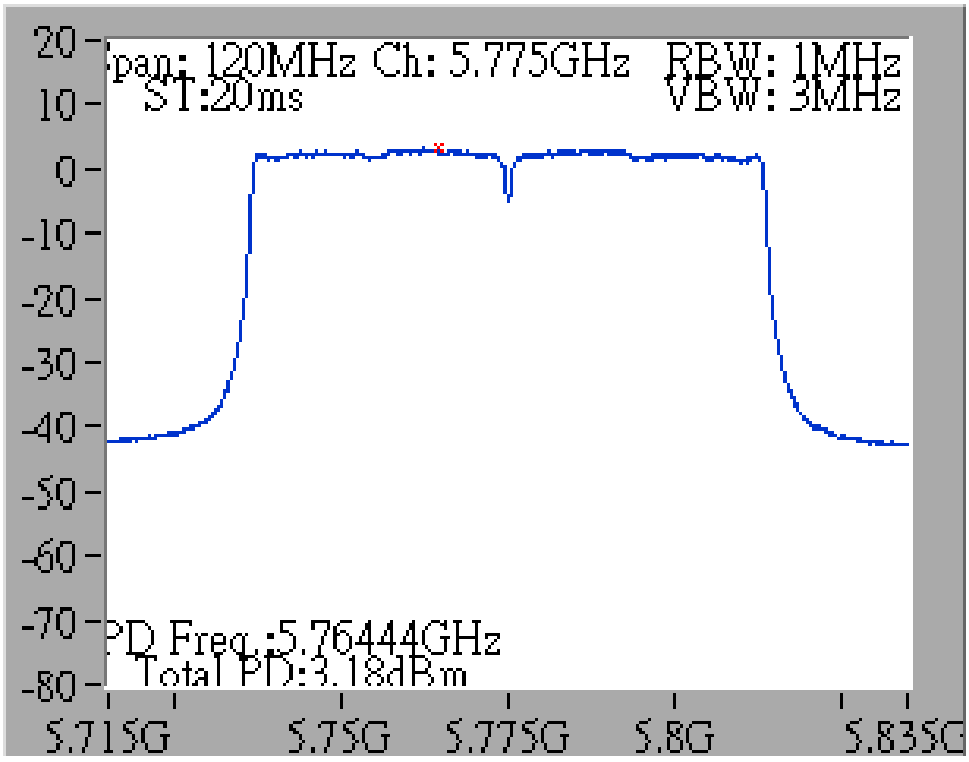
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7 + Chain 8 / 5795 MHz



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 5 + Chain 6 + Chain 7 + Chain 8 / 5775 MHz



<For beamforming mode>

Temperature	25°C	Humidity	56%
Test Engineer	Serway Li	Test Date	Feb. 23, 2016~Mar. 30, 2016

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	14.20	15.02	Complies
40	5200 MHz	14.78	15.02	Complies
48	5240 MHz	14.79	15.02	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.98dBi, so limit= 17-(7.98-6)= 15.02 dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7 + Chain 8

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	10.48	-3.01	7.47	27.98	Complies
157	5785 MHz	14.42	-3.01	11.41	27.98	Complies
165	5825 MHz	11.63	-3.01	8.62	27.98	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.02dBi, so limit= 30-(8.02-6)= 27.98 dBm/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	8.50	15.02	Complies
46	5230 MHz	10.28	15.02	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.98dBi, so limit= 17-(7.98-6)= 15.02 dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7 + Chain 8

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	4.33	-3.01	1.32	27.98	Complies
159	5795 MHz	8.32	-3.01	5.31	27.98	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.02dBi, so limit= 30-(8.02-6)= 27.98 dBm/500kHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	6.29	15.02	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.98dBi, so limit= 17-(7.98-6)= 15.02 dBm/MHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 5 + Chain 6 + Chain 7 + Chain 8

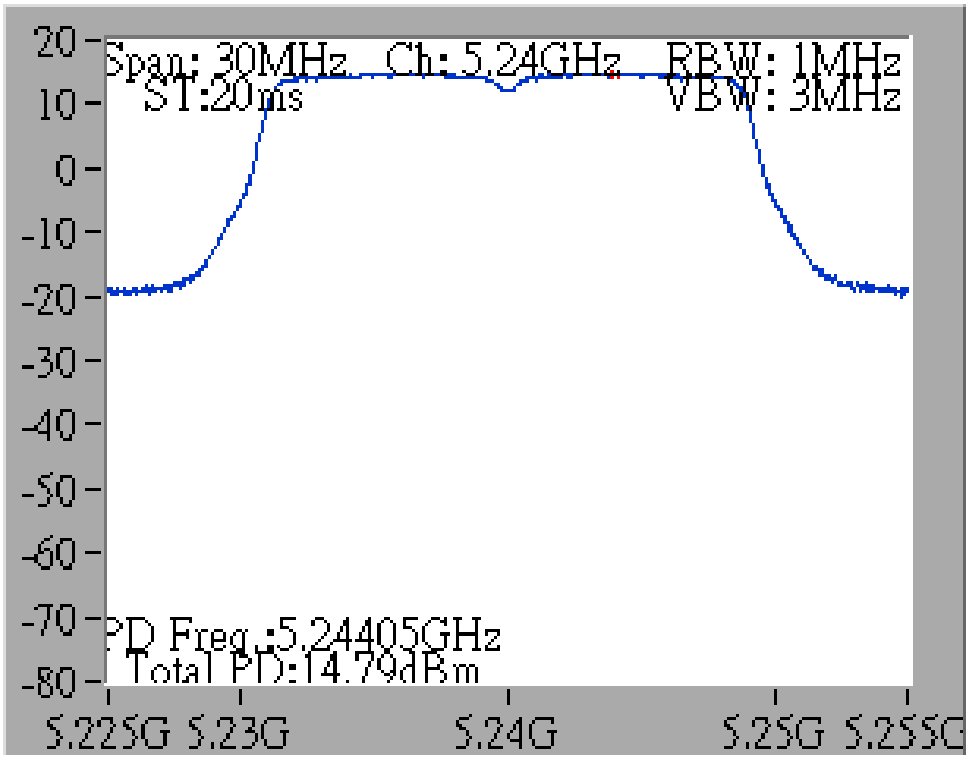
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	-0.71	-3.01	-3.72	27.98	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.02dBi, so limit= 30-(8.02-6)= 27.98 dBm/500kHz

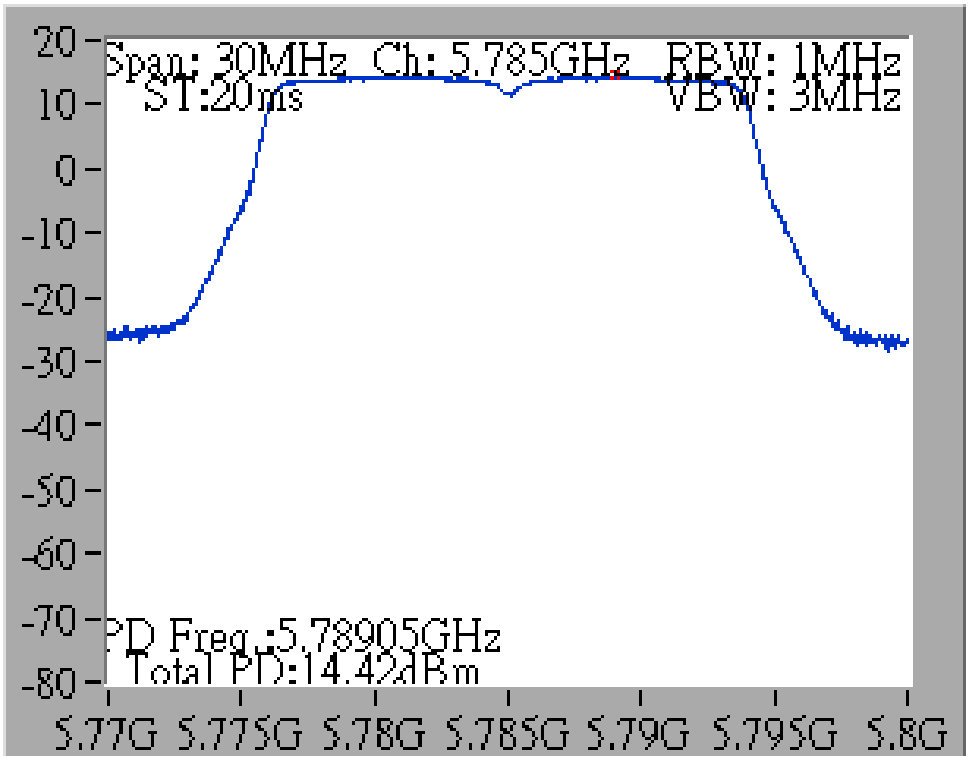
Note: All the test values were listed in the report.

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

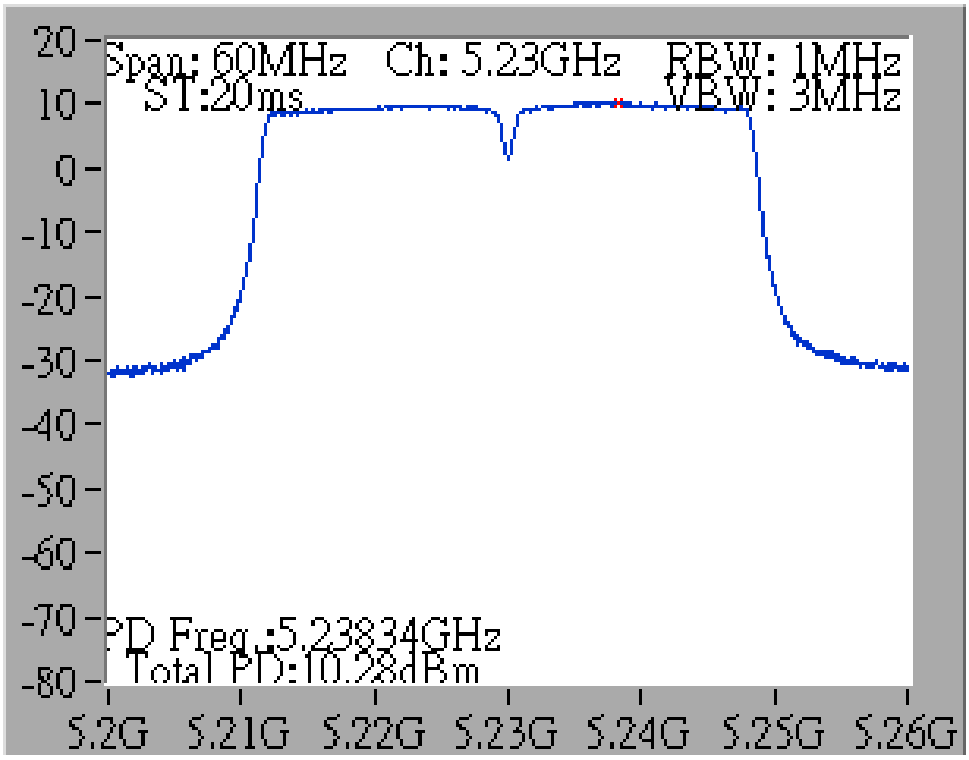
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



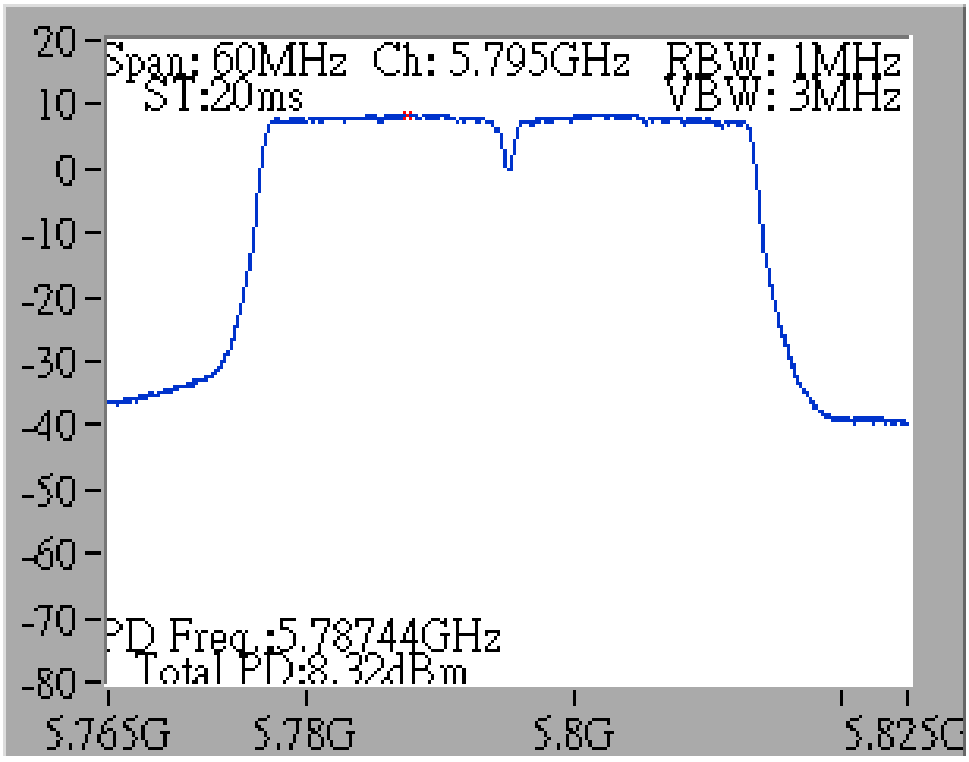
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 + Chain 6 + Chain 7 + Chain 8 / 5785 MHz



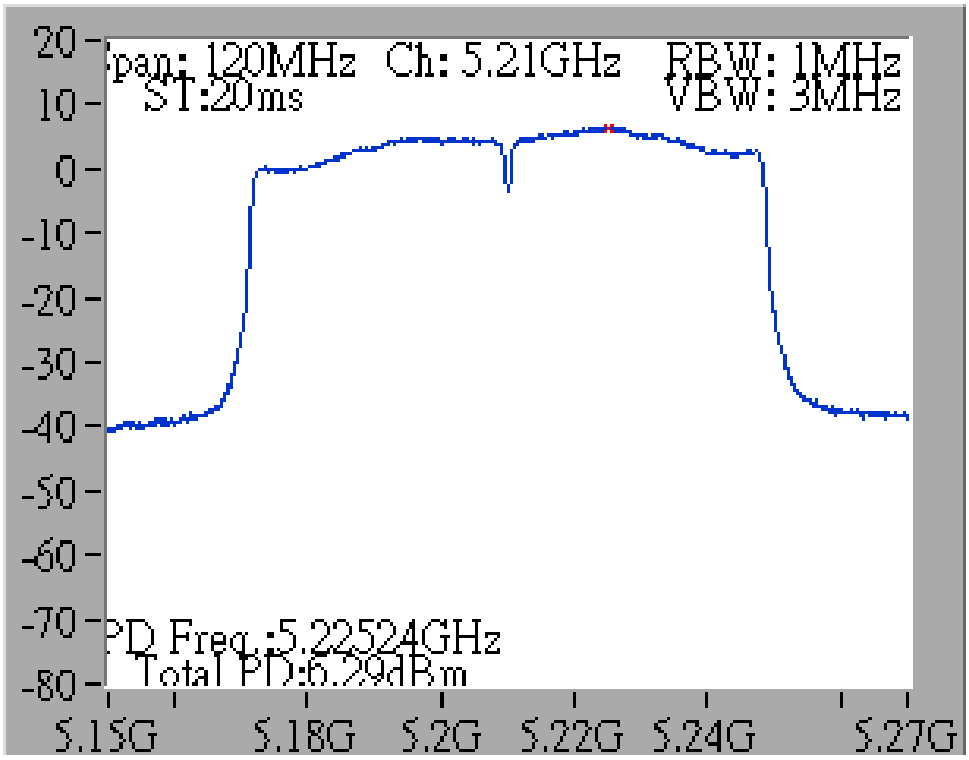
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



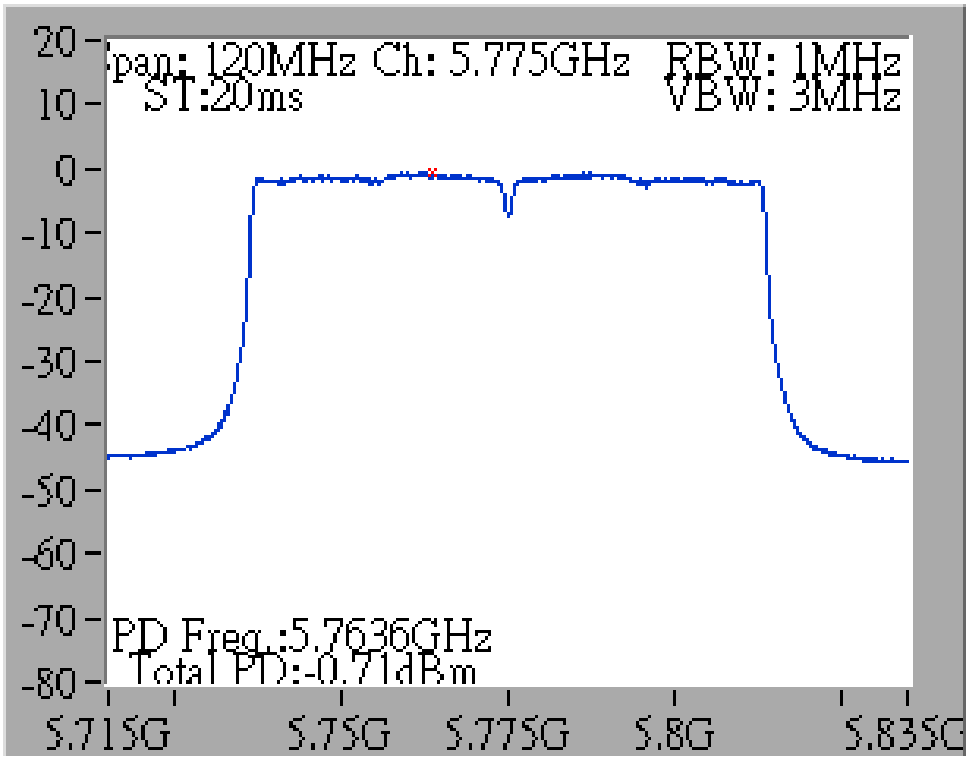
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 + Chain 6 + Chain 7 + Chain 8 / 5795 MHz



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 5 + Chain 6 + Chain 7 + Chain 8 / 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

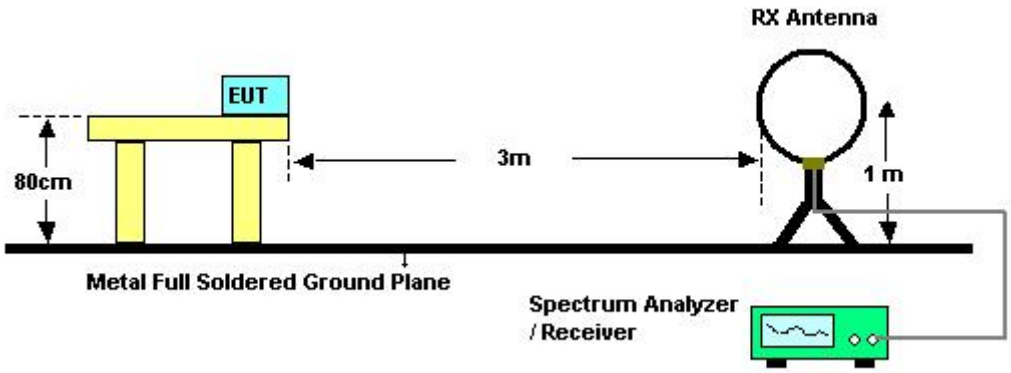
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

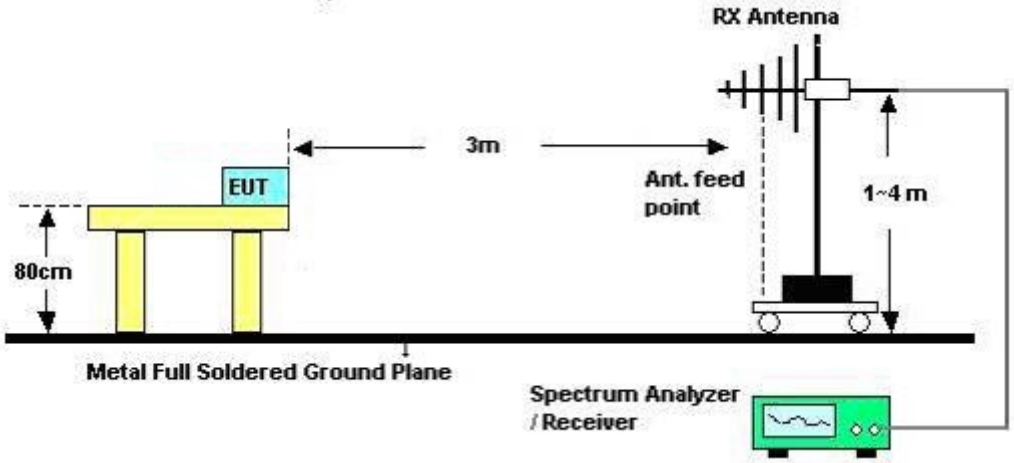
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

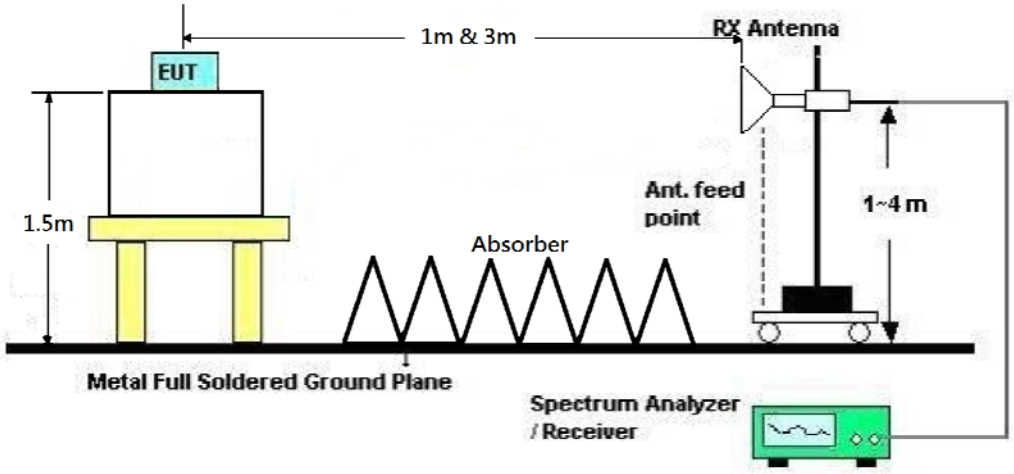
For Radiated Emissions: 9kHz ~30MHz



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 mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

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

Temperature	24℃	Humidity	54%
Test Engineer	Eason Chen / John Tang	Configurations	Normal Link
Test Date	May 13, 2016	Test Mode	Mode 1

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

Note:

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

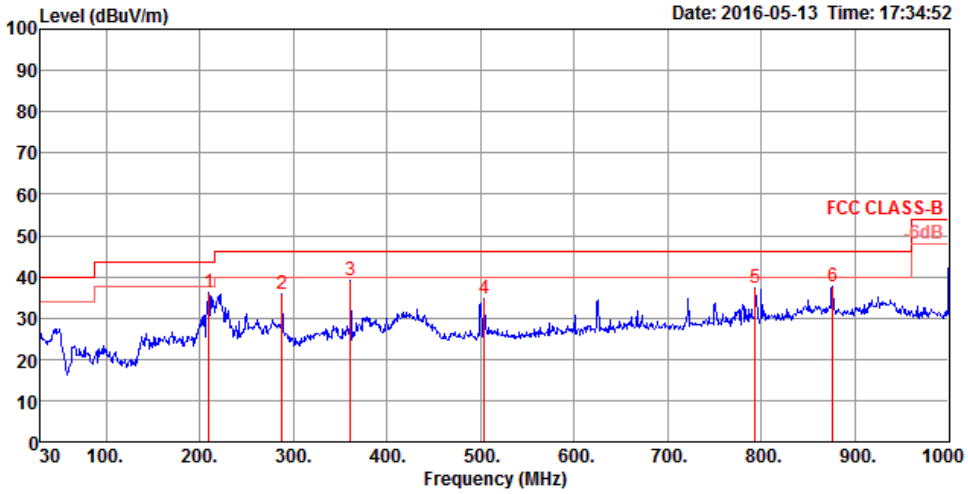
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

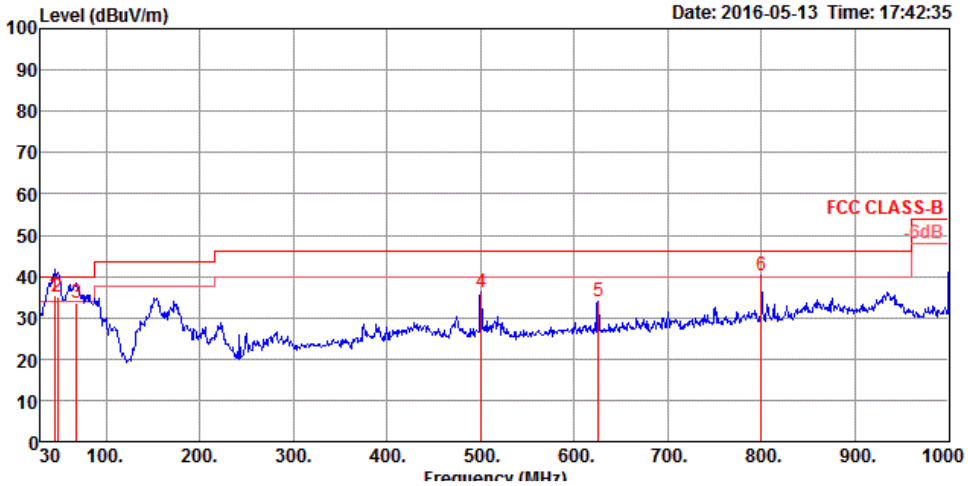
Temperature	24℃	Humidity	54%
Test Engineer	Eason Chen / John Tang	Configurations	Normal Link
Test Mode	Mode 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	209.45	36.31	43.50	-7.19	50.69	1.24	16.70	32.32	125	181	Peak	HORIZONTAL
2	288.02	35.73	46.00	-10.27	46.79	1.45	19.78	32.29	125	0	Peak	HORIZONTAL
3	360.77	39.08	46.00	-6.92	48.08	1.64	21.67	32.31	100	360	Peak	HORIZONTAL
4	504.33	34.54	46.00	-11.46	40.85	1.95	24.09	32.35	150	59	Peak	HORIZONTAL
5	793.39	37.38	46.00	-8.62	40.42	2.45	26.76	32.25	125	359	Peak	HORIZONTAL
6	875.84	37.56	46.00	-8.44	39.32	2.55	27.55	31.86	100	183	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	44.55	35.59	40.00	-4.41	50.04	0.59	17.37	32.41	100	230	QP	VERTICAL
2	48.43	35.02	40.00	-4.98	51.26	0.61	15.56	32.41	100	21	QP	VERTICAL
3	68.80	33.42	40.00	-6.58	52.11	0.72	12.99	32.40	150	105	QP	VERTICAL
4	500.45	36.23	46.00	-9.77	42.61	1.94	24.03	32.35	150	3	Peak	VERTICAL
5	625.58	33.89	46.00	-12.11	38.36	2.16	25.77	32.40	100	51	Peak	VERTICAL
6	800.18	40.13	46.00	-5.87	43.11	2.46	26.80	32.24	100	66	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.

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

<For Non-beamforming mode>

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15539.91	60.25	74.00	-13.75	44.96	12.53	38.38	35.62	100	273	Peak	HORIZONTAL
2	15541.45	46.96	54.00	-7.04	31.67	12.53	38.38	35.62	100	273	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	15541.80	60.37	74.00	-13.63	45.08	12.53	38.38	35.62	100	329	Peak	VERTICAL
2	15541.86	47.03	54.00	-6.97	31.74	12.53	38.38	35.62	100	329	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15598.27	46.88	54.00	-7.12	31.71	12.53	38.26	35.62	100	254	Average	HORIZONTAL
2	15601.04	60.15	74.00	-13.85	45.09	12.53	38.15	35.62	100	254	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	15597.55	60.13	74.00	-13.87	44.96	12.53	38.26	35.62	100	80	Peak	VERTICAL
2	15602.05	46.73	54.00	-7.27	31.67	12.53	38.15	35.62	100	80	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15719.12	59.77	74.00	-14.23	44.97	12.54	37.91	35.65	100	195	Peak	HORIZONTAL
2	15721.62	46.47	54.00	-7.53	31.67	12.54	37.91	35.65	100	195	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	15718.67	59.18	74.00	-14.82	44.38	12.54	37.91	35.65	100	217	Peak	VERTICAL
2	15720.83	46.58	54.00	-7.42	31.78	12.54	37.91	35.65	100	217	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 149 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11489.13	56.84	74.00	-17.16	42.63	10.94	39.20	35.93	192	162	Peak	HORIZONTAL
2	11490.96	44.11	54.00	-9.89	29.90	10.94	39.20	35.93	192	162	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	11490.00	45.39	54.00	-8.61	31.18	10.94	39.20	35.93	213	133	Average	VERTICAL
2	11490.98	57.23	74.00	-16.77	43.02	10.94	39.20	35.93	213	133	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 157 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11569.42	44.85	54.00	-9.15	30.64	10.98	39.15	35.92	178	288	Average	HORIZONTAL
2	11570.01	57.12	74.00	-16.88	42.91	10.98	39.15	35.92	178	288	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	11569.01	57.08	74.00	-16.92	42.87	10.98	39.15	35.92	156	268	Peak	VERTICAL
2	11569.08	45.05	54.00	-8.95	30.84	10.98	39.15	35.92	156	268	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 165 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11649.14	58.14	74.00	-15.86	43.95	11.01	39.09	35.91	190	342	Peak	HORIZONTAL
2	11650.39	44.55	54.00	-9.45	30.36	11.01	39.09	35.91	190	342	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	11650.14	45.13	54.00	-8.87	30.94	11.01	39.09	35.91	154	318	Average	VERTICAL
2	11650.32	57.76	74.00	-16.24	43.57	11.01	39.09	35.91	154	318	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15539.16	45.56	54.00	-8.44	30.54	12.49	38.39	35.86	157	234	Average	HORIZONTAL
2	15539.20	59.83	74.00	-14.17	44.81	12.49	38.39	35.86	157	234	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	15539.20	59.83	74.00	-14.17	44.81	12.49	38.39	35.86	121	142	Peak	VERTICAL
2	15540.80	45.85	54.00	-8.15	30.83	12.49	38.39	35.86	121	142	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15598.52	46.55	54.00	-7.45	31.38	12.53	38.26	35.62	100	103	Average	HORIZONTAL
2	15598.68	59.43	74.00	-14.57	44.26	12.53	38.26	35.62	100	103	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	15599.38	46.54	54.00	-7.46	31.37	12.53	38.26	35.62	100	120	Average	VERTICAL
2	15601.35	59.74	74.00	-14.26	44.68	12.53	38.15	35.62	100	120	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15720.72	46.42	54.00	-7.58	31.62	12.54	37.91	35.65	100	61	Average	HORIZONTAL
2	15722.47	59.36	74.00	-14.64	44.56	12.54	37.91	35.65	100	61	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	15719.82	59.60	74.00	-14.40	44.80	12.54	37.91	35.65	100	87	Peak	VERTICAL
2	15720.81	46.32	54.00	-7.68	31.52	12.54	37.91	35.65	100	87	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11489.63	57.73	74.00	-16.27	43.52	10.94	39.20	35.93	183	247	Peak	HORIZONTAL
2	11490.95	44.10	54.00	-9.90	29.89	10.94	39.20	35.93	183	247	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	11489.38	58.05	74.00	-15.95	43.84	10.94	39.20	35.93	198	241	Peak	VERTICAL
2	11490.98	44.70	54.00	-9.30	30.49	10.94	39.20	35.93	198	241	Average	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11569.02	44.83	54.00	-9.17	30.62	10.98	39.15	35.92	177	180	Average	HORIZONTAL
2	11569.27	57.83	74.00	-16.17	43.62	10.98	39.15	35.92	177	180	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	11569.12	57.72	74.00	-16.28	43.51	10.98	39.15	35.92	208	279	Peak	VERTICAL
2	11569.24	43.83	54.00	-10.17	29.62	10.98	39.15	35.92	208	279	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11650.23	43.48	54.00	-10.52	29.29	11.01	39.09	35.91	185	302	Average	HORIZONTAL
2	11650.54	56.48	74.00	-17.52	42.29	11.01	39.09	35.91	185	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	11650.04	56.98	74.00	-17.02	42.79	11.01	39.09	35.91	174	314	Peak	VERTICAL
2	11650.28	44.54	54.00	-9.46	30.35	11.01	39.09	35.91	174	314	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15567.66	60.21	74.00	-13.79	45.04	12.53	38.26	35.62	100	102	Peak	HORIZONTAL
2	15570.75	46.86	54.00	-7.14	31.69	12.53	38.26	35.62	100	102	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	15568.59	60.42	74.00	-13.58	45.25	12.53	38.26	35.62	100	85	Peak	VERTICAL
2	15570.42	46.67	54.00	-7.33	31.50	12.53	38.26	35.62	100	85	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15690.05	46.62	54.00	-7.38	31.69	12.54	38.03	35.64	100	146	Average	HORIZONTAL
2	15692.20	60.05	74.00	-13.95	45.24	12.54	37.91	35.64	100	146	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	15688.87	60.19	74.00	-13.81	45.26	12.54	38.03	35.64	100	127	Peak	VERTICAL
2	15690.28	46.56	54.00	-7.44	31.63	12.54	38.03	35.64	100	127	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11510.13	43.35	54.00	-10.65	29.13	10.94	39.20	35.92	149	226	Average	HORIZONTAL
2	11510.71	56.81	74.00	-17.19	42.59	10.94	39.20	35.92	149	226	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	11510.00	43.40	54.00	-10.60	29.18	10.94	39.20	35.92	156	252	Average	VERTICAL
2	11510.20	56.67	74.00	-17.33	42.45	10.94	39.20	35.92	156	252	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11589.65	44.58	54.00	-9.42	30.38	10.99	39.12	35.91	189	243	Average	HORIZONTAL
2	11590.80	57.89	74.00	-16.11	43.69	10.99	39.12	35.91	189	243	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	11589.97	44.99	54.00	-9.01	30.79	10.99	39.12	35.91	156	349	Average	VERTICAL
2	11590.38	58.30	74.00	-15.70	44.10	10.99	39.12	35.91	156	349	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15630.07	44.92	54.00	-9.08	29.86	12.55	38.37	35.86	100	360	Average	HORIZONTAL
2	15630.12	59.15	74.00	-14.85	44.09	12.55	38.37	35.86	100	360	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	15629.65	58.43	74.00	-15.57	43.37	12.55	38.37	35.86	100	360	Peak	VERTICAL
2	15630.37	45.12	54.00	-8.88	30.06	12.55	38.37	35.86	100	360	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11549.78	57.49	74.00	-16.51	43.28	10.96	39.17	35.92	125	333	Peak	HORIZONTAL
2	11550.13	44.35	54.00	-9.65	30.14	10.96	39.17	35.92	125	333	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	11549.03	56.98	74.00	-17.02	42.77	10.96	39.17	35.92	129	148	Peak	VERTICAL
2	11550.88	45.64	54.00	-8.36	31.43	10.98	39.15	35.92	129	148	Average	VERTICAL

Note:

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

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

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

<For beamforming mode>

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15538.95	62.52	74.00	-11.48	47.23	12.53	38.38	35.62	105	106	Peak	HORIZONTAL
2	15539.83	47.51	54.00	-6.49	32.22	12.53	38.38	35.62	105	106	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	15541.07	47.60	54.00	-6.40	32.31	12.53	38.38	35.62	102	101	Average	VERTICAL
2	15541.75	60.98	74.00	-13.02	45.69	12.53	38.38	35.62	102	101	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15598.84	46.69	54.00	-7.31	31.52	12.53	38.26	35.62	104	344	Average	HORIZONTAL
2	15601.37	60.37	74.00	-13.63	45.31	12.53	38.15	35.62	104	344	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	15598.88	60.02	74.00	-13.98	44.85	12.53	38.26	35.62	106	355	Peak	VERTICAL
2	15599.51	47.07	54.00	-6.93	31.90	12.53	38.26	35.62	106	355	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15719.65	45.91	54.00	-8.09	31.11	12.54	37.91	35.65	101	324	Average	HORIZONTAL
2	15721.11	59.55	74.00	-14.45	44.75	12.54	37.91	35.65	101	324	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	15719.08	46.02	54.00	-7.98	31.22	12.54	37.91	35.65	105	333	Average	VERTICAL
2	15721.83	59.65	74.00	-14.35	44.85	12.54	37.91	35.65	105	333	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11489.72	58.36	74.00	-15.64	44.15	10.94	39.20	35.93	158	141	Peak	HORIZONTAL
2	11489.97	44.90	54.00	-9.10	30.69	10.94	39.20	35.93	158	141	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	11489.98	57.69	74.00	-16.31	43.48	10.94	39.20	35.93	124	333	Peak	VERTICAL
2	11490.32	44.57	54.00	-9.43	30.36	10.94	39.20	35.93	124	333	Average	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.13	57.63	74.00	-16.37	43.42	10.98	39.15	35.92	189	139	Peak	HORIZONTAL
2	11570.40	44.45	54.00	-9.55	30.24	10.98	39.15	35.92	189	139	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.56	44.60	54.00	-9.40	30.39	10.98	39.15	35.92	146	186	Average	VERTICAL
2	11570.57	57.82	74.00	-16.18	43.61	10.98	39.15	35.92	146	186	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11650.48	58.03	74.00	-15.97	43.84	11.01	39.09	35.91	184	114	Peak	HORIZONTAL
2	11650.54	44.46	54.00	-9.54	30.27	11.01	39.09	35.91	184	114	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	11650.30	44.61	54.00	-9.39	30.42	11.01	39.09	35.91	163	223	Average	VERTICAL
2	11650.41	58.73	74.00	-15.27	44.54	11.01	39.09	35.91	163	223	Peak	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15569.61	46.98	54.00	-7.02	31.81	12.53	38.26	35.62	101	323	Average	HORIZONTAL
2	15569.89	61.37	74.00	-12.63	46.20	12.53	38.26	35.62	101	323	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	15568.31	60.29	74.00	-13.71	45.12	12.53	38.26	35.62	103	313	Peak	VERTICAL
2	15569.63	47.32	54.00	-6.68	32.15	12.53	38.26	35.62	103	313	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15689.93	58.80	74.00	-15.20	43.87	12.54	38.03	35.64	101	298	Peak	HORIZONTAL
2	15690.81	45.88	54.00	-8.12	30.95	12.54	38.03	35.64	101	298	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	15687.62	59.18	74.00	-14.82	44.25	12.54	38.03	35.64	103	309	Peak	VERTICAL
2	15690.73	46.05	54.00	-7.95	31.12	12.54	38.03	35.64	103	309	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11510.88	56.51	74.00	-17.49	42.29	10.94	39.20	35.92	159	274	Peak	HORIZONTAL
2	11511.00	43.17	54.00	-10.83	28.95	10.94	39.20	35.92	159	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	11509.03	56.34	74.00	-17.66	42.12	10.94	39.20	35.92	135	260	Peak	VERTICAL
2	11509.98	43.51	54.00	-10.49	29.29	10.94	39.20	35.92	135	260	Average	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11590.01	44.15	54.00	-9.85	29.95	10.99	39.12	35.91	152	269	Average	HORIZONTAL
2	11590.52	57.83	74.00	-16.17	43.63	10.99	39.12	35.91	152	269	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	11590.15	44.58	54.00	-9.42	30.38	10.99	39.12	35.91	123	248	Average	VERTICAL
2	11590.30	57.88	74.00	-16.12	43.68	10.99	39.12	35.91	123	248	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	15630.15	45.42	54.00	-8.58	30.36	12.55	38.37	35.86	145	232	Average	HORIZONTAL
2	15630.67	57.70	74.00	-16.30	42.64	12.55	38.37	35.86	145	232	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	15630.19	45.22	54.00	-8.78	30.16	12.55	38.37	35.86	110	222	Average	VERTICAL
2	15630.21	58.68	74.00	-15.32	43.62	12.55	38.37	35.86	110	222	Peak	VERTICAL

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 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	11549.06	42.23	54.00	-11.77	28.02	10.96	39.17	35.92	129	336	Average	HORIZONTAL
2	11549.97	55.83	74.00	-18.17	41.62	10.96	39.17	35.92	129	336	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	43.10	54.00	-10.90	28.89	10.96	39.17	35.92	157	46	Average	VERTICAL
2	11550.27	55.62	74.00	-18.38	41.41	10.98	39.15	35.92	157	46	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

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

4.7.4. Test Setup Layout

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

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

For Non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

<For Non-beamforming mode>

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.70	53.94	54.00	-0.06	48.92	7.20	31.45	33.63	172	255	Average	VERTICAL
2	5146.14	73.92	74.00	-0.08	68.90	7.20	31.45	33.63	172	255	Peak	VERTICAL
3	5175.95	121.54			116.47	7.21	31.48	33.62	172	255	Peak	VERTICAL
4	5177.11	110.43			105.36	7.21	31.48	33.62	172	255	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	5145.88	53.77	54.00	-0.23	48.75	7.20	31.45	33.63	179	254	Average	VERTICAL
2	5146.74	71.80	74.00	-2.20	66.78	7.20	31.45	33.63	179	254	Peak	VERTICAL
3	5196.82	125.98			120.89	7.21	31.50	33.62	179	254	Peak	VERTICAL
4	5197.11	114.94			109.85	7.21	31.50	33.62	179	254	Average	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.70	62.57	74.00	-11.43	57.55	7.20	31.45	33.63	185	253	Peak	VERTICAL
2	5150.00	49.49	54.00	-4.51	44.47	7.20	31.45	33.63	185	253	Average	VERTICAL
3	5236.96	113.58			108.44	7.22	31.54	33.62	185	253	Average	VERTICAL
4	5238.26	123.67			118.53	7.22	31.54	33.62	185	253	Peak	VERTICAL
5	5350.00	47.60	54.00	-6.40	42.30	7.25	31.65	33.60	185	253	Average	VERTICAL
6	5353.47	60.56	74.00	-13.44	55.26	7.25	31.65	33.60	185	253	Peak	VERTICAL

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

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5509.00	64.98	68.20	-3.22	59.88	7.72	33.80	36.42	224	245	Peak	VERTICAL
2	5587.00	67.36	68.20	-0.84	61.86	7.88	34.03	36.41	224	245	Peak	VERTICAL
3	5749.00	115.57			109.57	7.86	34.50	36.36	224	245	Average	VERTICAL
4	5749.00	124.84			118.84	7.86	34.50	36.36	224	245	Peak	VERTICAL
5	5912.00	65.81	77.79	-11.98	59.35	7.82	34.97	36.33	224	245	Peak	VERTICAL
6	5978.00	63.19	68.20	-5.01	56.55	7.80	35.15	36.31	224	245	Peak	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5551.00	65.38	68.20	-2.82	60.04	7.82	33.94	36.42	214	243	Peak	VERTICAL
2	5627.00	66.38	68.20	-1.82	60.71	7.90	34.17	36.40	214	243	Peak	VERTICAL
3	5789.00	114.99			108.85	7.85	34.64	36.35	214	243	Average	VERTICAL
4	5790.00	124.53			118.39	7.85	34.64	36.35	214	243	Peak	VERTICAL
5	5950.00	64.54	68.20	-3.66	57.99	7.81	35.06	36.32	214	243	Peak	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5584.00	65.92	68.20	-2.28	60.42	7.88	34.03	36.41	207	136	Peak	VERTICAL
2	5664.00	66.52	78.59	-12.07	60.75	7.89	34.27	36.39	207	136	Peak	VERTICAL
3	5826.00	114.75			108.52	7.84	34.73	36.34	207	136	Average	VERTICAL
4	5826.00	124.84			118.61	7.84	34.73	36.34	207	136	Peak	VERTICAL
5	5987.00	63.85	68.20	-4.35	57.21	7.80	35.15	36.31	207	136	Peak	VERTICAL

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

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.60	72.14	74.00	-1.86	68.23	7.24	33.17	36.50	247	248	Peak	VERTICAL
2	5149.80	53.63	54.00	-0.37	49.72	7.24	33.17	36.50	247	248	Average	VERTICAL
3	5184.80	106.86			102.83	7.29	33.23	36.49	247	248	Average	VERTICAL
4	5184.80	117.90			113.87	7.29	33.23	36.49	247	248	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	5149.64	70.38	74.00	-3.62	65.36	7.20	31.45	33.63	191	239	Peak	VERTICAL
2	5150.00	53.92	54.00	-0.08	48.90	7.20	31.45	33.63	191	239	Average	VERTICAL
3	5203.76	112.33			107.22	7.22	31.51	33.62	191	239	Average	VERTICAL
4	5203.76	122.72			117.61	7.22	31.51	33.62	191	239	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	5144.92	61.29	74.00	-12.71	56.27	7.20	31.45	33.63	196	240	Peak	VERTICAL
2	5150.00	48.93	54.00	-5.07	43.91	7.20	31.45	33.63	196	240	Average	VERTICAL
3	5243.47	111.64			106.49	7.22	31.54	33.61	196	240	Average	VERTICAL
4	5243.91	121.94			116.79	7.22	31.54	33.61	196	240	Peak	VERTICAL
5	5350.00	47.34	54.00	-6.66	42.04	7.25	31.65	33.60	196	240	Average	VERTICAL
6	5355.64	60.66	74.00	-13.34	55.34	7.26	31.66	33.60	196	240	Peak	VERTICAL

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

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5500.00	65.35	68.20	-2.85	60.26	7.72	33.80	36.43	268	249	Peak	VERTICAL
2	5583.00	66.71	68.20	-1.49	61.21	7.88	34.03	36.41	268	249	Peak	VERTICAL
3	5738.00	124.44			118.49	7.87	34.45	36.37	268	249	Peak	VERTICAL
4	5739.00	113.72			107.73	7.86	34.50	36.37	268	249	Average	VERTICAL
5	5977.00	64.12	68.20	-4.08	57.48	7.80	35.15	36.31	268	249	Peak	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5551.00	65.40	68.20	-2.80	60.06	7.82	33.94	36.42	228	247	Peak	VERTICAL
2	5630.00	65.42	68.20	-2.78	59.75	7.90	34.17	36.40	228	247	Peak	VERTICAL
3	5788.00	113.19			107.09	7.86	34.59	36.35	228	247	Average	VERTICAL
4	5788.00	123.72			117.62	7.86	34.59	36.35	228	247	Peak	VERTICAL
5	5939.00	64.41	68.20	-3.79	57.90	7.82	35.01	36.32	228	247	Peak	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5590.00	66.69	68.20	-1.51	61.19	7.88	34.03	36.41	251	246	Peak	VERTICAL
2	5669.00	66.37	82.30	-15.93	60.60	7.89	34.27	36.39	251	246	Peak	VERTICAL
3	5828.00	113.12			106.89	7.84	34.73	36.34	251	246	Average	VERTICAL
4	5828.00	123.82			117.59	7.84	34.73	36.34	251	246	Peak	VERTICAL
5	5979.00	63.75	68.20	-4.45	57.11	7.80	35.15	36.31	251	246	Peak	VERTICAL

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

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.90	53.92	54.00	-0.08	48.90	7.20	31.45	33.63	198	240	Average	VERTICAL
2	5149.48	73.80	74.00	-0.20	68.78	7.20	31.45	33.63	198	240	Peak	VERTICAL
3	5198.68	102.60			97.51	7.21	31.50	33.62	198	240	Average	VERTICAL
4	5198.68	114.78			109.69	7.21	31.50	33.62	198	240	Peak	VERTICAL
5	5354.05	52.86	54.00	-1.14	47.56	7.25	31.65	33.60	198	240	Average	VERTICAL
6	5354.05	64.18	74.00	-9.82	58.88	7.25	31.65	33.60	198	240	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	5083.55	53.87	54.00	-0.13	48.93	7.19	31.39	33.64	194	240	Average	VERTICAL
2	5147.22	64.66	74.00	-9.34	59.64	7.20	31.45	33.63	194	240	Peak	VERTICAL
3	5219.00	115.55			110.42	7.22	31.53	33.62	194	240	Peak	VERTICAL
4	5223.63	105.49			100.36	7.22	31.53	33.62	194	240	Average	VERTICAL
5	5352.32	60.08	74.00	-13.92	54.78	7.25	31.65	33.60	194	240	Peak	VERTICAL
6	5374.31	48.86	54.00	-5.14	43.52	7.26	31.68	33.60	194	240	Average	VERTICAL

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

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 2016		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5606.20	67.62	68.20	-0.58	62.03	7.91	34.08	36.40	231	118	Peak	VERTICAL
2	5761.00	118.71			112.66	7.86	34.55	36.36	231	118	Peak	VERTICAL
3	5762.20	108.14			102.09	7.86	34.55	36.36	231	118	Average	VERTICAL
4	5929.00	65.96	68.20	-2.24	59.46	7.82	35.01	36.33	231	118	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	5619.20	67.62	68.20	-0.58	61.99	7.90	34.13	36.40	252	247	Peak	VERTICAL
2	5637.80	67.36	68.20	-0.84	61.68	7.90	34.17	36.39	252	247	Peak	VERTICAL
3	5642.60	67.59	68.20	-0.61	61.87	7.89	34.22	36.39	252	247	Peak	VERTICAL
4	5783.00	107.90			101.80	7.86	34.59	36.35	252	247	Average	VERTICAL
5	5783.00	117.95			111.85	7.86	34.59	36.35	252	247	Peak	VERTICAL
6	5970.20	64.67	68.20	-3.53	58.07	7.81	35.11	36.32	252	247	Peak	VERTICAL

Item 4, 5 are the fundamental frequency at 5795 MHz.

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4 CH 155 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 2016		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5147.00	53.40	54.00	-0.60	49.49	7.24	33.17	36.50	206	186	Average	VERTICAL
2	5155.00	71.85	74.00	-2.15	67.94	7.24	33.17	36.50	206	186	Peak	VERTICAL
3	5227.00	101.48			97.30	7.35	33.31	36.48	206	186	Average	VERTICAL
4	5227.00	110.17			105.99	7.35	33.31	36.48	206	186	Peak	VERTICAL
5	5353.00	52.81	54.00	-1.19	48.28	7.46	33.53	36.46	206	186	Average	VERTICAL
6	5353.00	62.19	74.00	-11.81	57.66	7.46	33.53	36.46	206	186	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	5618.00	66.85	68.20	-1.35	61.22	7.90	34.13	36.40	242	248	Peak	VERTICAL
2	5639.00	67.41	68.20	-0.79	61.73	7.90	34.17	36.39	242	248	Peak	VERTICAL
3	5758.00	113.93			107.88	7.86	34.55	36.36	242	248	Peak	VERTICAL
4	5763.00	103.05			97.00	7.86	34.55	36.36	242	248	Average	VERTICAL
5	5919.00	67.73	72.62	-4.89	61.27	7.82	34.97	36.33	242	248	Peak	VERTICAL
6	5928.00	65.13	68.20	-3.07	58.63	7.82	35.01	36.33	242	248	Peak	VERTICAL

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

Note:

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

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

<For beamforming mode>

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.60	70.77	74.00	-3.23	65.75	7.20	31.45	33.63	182	360	Peak	VERTICAL
2	5148.80	53.59	54.00	-0.41	48.57	7.20	31.45	33.63	182	360	Average	VERTICAL
3	5184.40	119.14			114.07	7.21	31.48	33.62	182	360	Peak	VERTICAL
4	5185.60	108.12			103.05	7.21	31.48	33.62	182	360	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	5149.60	72.31	74.00	-1.69	67.29	7.20	31.45	33.63	189	0	Peak	VERTICAL
2	5150.00	53.90	54.00	-0.10	48.88	7.20	31.45	33.63	189	0	Average	VERTICAL
3	5196.80	123.73			118.64	7.21	31.50	33.62	189	0	Peak	VERTICAL
4	5203.20	114.27			109.16	7.22	31.51	33.62	189	0	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	5084.80	51.10	54.00	-2.90	46.16	7.19	31.39	33.64	186	360	Average	VERTICAL
2	5084.80	62.69	74.00	-11.31	57.75	7.19	31.39	33.64	186	360	Peak	VERTICAL
3	5236.80	113.32			108.18	7.22	31.54	33.62	186	360	Average	VERTICAL
4	5236.80	123.63			118.49	7.22	31.54	33.62	186	360	Peak	VERTICAL
5	5350.00	46.54	54.00	-7.46	41.24	7.25	31.65	33.60	186	360	Average	VERTICAL
6	5351.20	58.74	74.00	-15.26	53.44	7.25	31.65	33.60	186	360	Peak	VERTICAL

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

Temperature	22℃	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5512.00	65.86	68.20	-2.34	60.68	7.75	33.85	36.42	211	192	Peak	VERTICAL
2	5589.00	64.83	68.20	-3.37	59.33	7.88	34.03	36.41	211	192	Peak	VERTICAL
3	5748.00	112.28			106.28	7.86	34.50	36.36	211	192	Average	VERTICAL
4	5749.00	121.56			115.56	7.86	34.50	36.36	211	192	Peak	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5632.00	64.46	68.20	-3.74	58.79	7.90	34.17	36.40	198	195	Peak	VERTICAL
2	5788.00	111.86			105.76	7.86	34.59	36.35	198	195	Average	VERTICAL
3	5789.00	121.76			115.62	7.85	34.64	36.35	198	195	Peak	VERTICAL
4	5947.00	64.85	68.20	-3.35	58.30	7.81	35.06	36.32	198	195	Peak	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5590.00	67.02	68.20	-1.18	61.52	7.88	34.03	36.41	211	158	Peak	VERTICAL
2	5828.00	114.64			108.41	7.84	34.73	36.34	211	158	Average	VERTICAL
3	5829.00	123.73			117.50	7.84	34.73	36.34	211	158	Peak	VERTICAL
4	5985.00	63.39	68.20	-4.81	56.75	7.80	35.15	36.31	211	158	Peak	VERTICAL

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

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5144.40	66.88	74.00	-7.12	61.86	7.20	31.45	33.63	186	0	Peak	VERTICAL
2	5150.00	53.32	54.00	-0.68	48.30	7.20	31.45	33.63	186	0	Average	VERTICAL
3	5182.00	114.33			109.26	7.21	31.48	33.62	186	0	Peak	VERTICAL
4	5206.80	103.73			98.62	7.22	31.51	33.62	186	0	Average	VERTICAL
5	5353.20	52.68	54.00	-1.32	47.38	7.25	31.65	33.60	186	0	Average	VERTICAL
6	5357.20	63.60	74.00	-10.40	58.28	7.26	31.66	33.60	186	0	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	5079.60	65.06	74.00	-8.94	60.14	7.18	31.38	33.64	187	0	Peak	VERTICAL
2	5082.80	53.71	54.00	-0.29	48.77	7.19	31.39	33.64	187	0	Average	VERTICAL
3	5223.60	116.00			110.87	7.22	31.53	33.62	187	0	Peak	VERTICAL
4	5224.40	105.61			100.48	7.22	31.53	33.62	187	0	Average	VERTICAL

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

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 2016		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5592.00	67.86	68.20	-0.34	62.28	7.91	34.08	36.41	215	195	Peak	VERTICAL
2	5746.00	118.22			112.22	7.86	34.50	36.36	215	195	Peak	VERTICAL
3	5749.00	107.78			101.78	7.86	34.50	36.36	215	195	Average	VERTICAL
4	5923.00	66.46	69.67	-3.21	60.00	7.82	34.97	36.33	215	195	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	5631.00	67.27	68.20	-0.93	61.60	7.90	34.17	36.40	215	192	Peak	VERTICAL
2	5787.00	117.90			111.80	7.86	34.59	36.35	215	192	Peak	VERTICAL
3	5788.00	107.42			101.32	7.86	34.59	36.35	215	192	Average	VERTICAL
4	5951.00	64.54	68.20	-3.66	57.99	7.81	35.06	36.32	215	192	Peak	VERTICAL

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

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4 CH 155 / Chain 5 + Chain 6 + Chain 7 + Chain 8
Test Date	Feb. 26, 2016		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.00	72.26	74.00	-1.74	68.35	7.24	33.17	36.50	192	360	Peak	VERTICAL
2	5150.00	53.83	54.00	-0.17	49.92	7.24	33.17	36.50	192	360	Average	VERTICAL
3	5173.00	114.12			110.10	7.29	33.23	36.50	192	360	Peak	VERTICAL
4	5225.00	101.63			97.45	7.35	33.31	36.48	192	360	Average	VERTICAL
5	5350.00	46.06	54.00	-7.94	41.53	7.46	33.53	36.46	192	360	Average	VERTICAL
6	5356.00	59.42	74.00	-14.58	54.86	7.47	33.55	36.46	192	360	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	5591.00	67.53	68.20	-0.67	62.03	7.88	34.03	36.41	205	188	Peak	VERTICAL
2	5761.00	113.56			107.51	7.86	34.55	36.36	205	188	Peak	VERTICAL
3	5762.00	103.25			97.20	7.86	34.55	36.36	205	188	Average	VERTICAL
4	5951.00	62.33	68.20	-5.87	55.78	7.81	35.06	36.32	205	188	Peak	VERTICAL

Item 2, 3 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

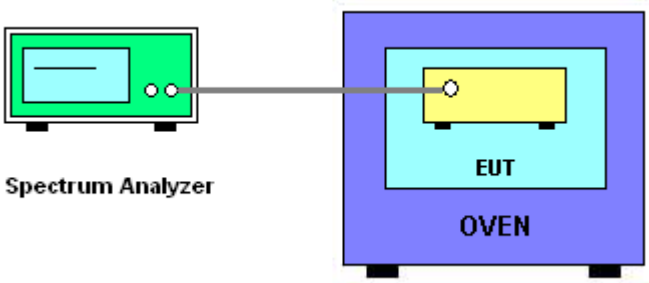
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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	22°C	Humidity	56%
Test Engineer	Serway Li	Test Date	Feb. 23, 2016

Mode: 20 MHz / Chain 3

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5200.0178	5200.0173	5200.0164	5200.0161
110.00	5200.0173	5200.0171	5200.0169	5200.0164
93.50	5200.0170	5200.0166	5200.0164	5200.0161
Max. Deviation (MHz)	0.0178	0.0173	0.0169	0.0164
Max. Deviation (ppm)	3.42	3.33	3.25	3.15
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5200.0214	5200.0210	5200.0200	5200.0191
-20	5200.0206	5200.0200	5200.0193	5200.0187
-10	5200.0198	5200.0194	5200.0189	5200.0184
0	5200.0194	5200.0193	5200.0189	5200.0183
10	5200.0190	5200.0181	5200.0177	5200.0171
20	5200.0173	5200.0169	5200.0165	5200.0157
30	5200.0167	5200.0157	5200.0149	5200.0144
40	5200.0149	5200.0144	5200.0141	5200.0132
50	5200.0138	5200.0133	5200.0132	5200.0122
Max. Deviation (MHz)	0.0214	0.0210	0.0200	0.0191
Max. Deviation (ppm)	4.12	4.04	3.85	3.67
Result	Complies			

Mode: 20 MHz / Chain 5

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5785.0179	5785.0171	5785.0163	5785.0157
110.00	5785.0169	5785.0167	5785.0157	5785.0147
93.50	5785.0166	5785.0157	5785.0156	5785.0150
Max. Deviation (MHz)	0.0179	0.0171	0.0163	0.0157
Max. Deviation (ppm)	3.09	2.96	2.82	2.71
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5785.0219	5785.0209	5785.0204	5785.0195
-20	5785.0207	5785.0205	5785.0201	5785.0199
-10	5785.0191	5785.0186	5785.0177	5785.0170
0	5785.0186	5785.0183	5785.0176	5785.0175
10	5785.0183	5785.0178	5785.0168	5785.0163
20	5785.0169	5785.0165	5785.0157	5785.0156
30	5785.0165	5785.0157	5785.0149	5785.0142
40	5785.0164	5785.0159	5785.0152	5785.0148
50	5785.0157	5785.0148	5785.0140	5785.0135
Max. Deviation (MHz)	0.0219	0.0209	0.0204	0.0199
Max. Deviation (ppm)	3.79	3.61	3.53	3.44
Result	Complies			

Mode: 40 MHz / Chain 3

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5190.0180	5190.0178	5190.0175	5190.0170
110.00	5190.0171	5190.0162	5190.0160	5190.0154
93.50	5190.0164	5190.0162	5190.0157	5190.0156
Max. Deviation (MHz)	0.0180	0.0178	0.0175	0.0170
Max. Deviation (ppm)	3.47	3.43	3.37	3.28
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5190.0229	5190.0225	5190.0218	5190.0208
-20	5190.0221	5190.0219	5190.0216	5190.0210
-10	5190.0206	5190.0202	5190.0193	5190.0189
0	5190.0195	5190.0193	5190.0188	5190.0184
10	5190.0179	5190.0173	5190.0168	5190.0164
20	5190.0171	5190.0163	5190.0153	5190.0148
30	5190.0166	5190.0157	5190.0154	5190.0144
40	5190.0159	5190.0156	5190.0155	5190.0146
50	5190.0142	5190.0136	5190.0135	5190.0132
Max. Deviation (MHz)	0.0229	0.0225	0.0218	0.0210
Max. Deviation (ppm)	4.41	4.34	4.20	4.05
Result	Complies			

Mode: 40 MHz / Chain 5

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5755.0175	5755.0166	5755.0162	5755.0159
110.00	5755.0172	5755.0162	5755.0156	5755.0149
93.50	5755.0162	5755.0161	5755.0156	5755.0154
Max. Deviation (MHz)	0.0175	0.0166	0.0162	0.0159
Max. Deviation (ppm)	3.04	2.88	2.81	2.76
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5755.0233	5755.0229	5755.0219	5755.0212
-20	5755.0219	5755.0214	5755.0210	5755.0200
-10	5755.0213	5755.0207	5755.0200	5755.0194
0	5755.0209	5755.0201	5755.0194	5755.0189
10	5755.0191	5755.0186	5755.0177	5755.0176
20	5755.0172	5755.0163	5755.0158	5755.0153
30	5755.0163	5755.0155	5755.0150	5755.0146
40	5755.0153	5755.0152	5755.0146	5755.0144
50	5755.0139	5755.0131	5755.0128	5755.0118
Max. Deviation (MHz)	0.0233	0.0229	0.0219	0.0212
Max. Deviation (ppm)	4.05	3.98	3.81	3.68
Result	Complies			

Mode: 80 MHz / Chain 3

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5210.0174	5210.0173	5210.0171	5210.0163
110.00	5210.0172	5210.0170	5210.0165	5210.0160
93.50	5210.0168	5210.0167	5210.0160	5210.0150
Max. Deviation (MHz)	0.0174	0.0173	0.0171	0.0163
Max. Deviation (ppm)	3.34	3.32	3.28	3.13
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5210.0227	5210.0218	5210.0214	5210.0213
-20	5210.0223	5210.0213	5210.0211	5210.0207
-10	5210.0213	5210.0204	5210.0202	5210.0197
0	5210.0206	5210.0200	5210.0198	5210.0189
10	5210.0191	5210.0181	5210.0174	5210.0165
20	5210.0172	5210.0171	5210.0162	5210.0154
30	5210.0168	5210.0160	5210.0157	5210.0148
40	5210.0157	5210.0149	5210.0140	5210.0131
50	5210.0143	5210.0141	5210.0135	5210.0129
Max. Deviation (MHz)	0.0227	0.0218	0.0214	0.0213
Max. Deviation (ppm)	4.36	4.18	4.11	4.09
Result	Complies			

Mode: 80 MHz / Chain 5

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5775.0169	5775.0167	5775.0160	5775.0155
110.00	5775.0168	5775.0158	5775.0156	5775.0150
93.50	5775.0162	5775.0157	5775.0147	5775.0142
Max. Deviation (MHz)	0.0169	0.0167	0.0160	0.0155
Max. Deviation (ppm)	2.93	2.89	2.77	2.68
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5775.0206	5775.0205	5775.0203	5775.0200
-20	5775.0205	5775.0196	5775.0189	5775.0181
-10	5775.0202	5775.0195	5775.0186	5775.0179
0	5775.0189	5775.0181	5775.0174	5775.0164
10	5775.0181	5775.0177	5775.0168	5775.0164
20	5775.0169	5775.0160	5775.0155	5775.0145
30	5775.0165	5775.0164	5775.0157	5775.0149
40	5775.0152	5775.0146	5775.0140	5775.0137
50	5775.0150	5775.0146	5775.0143	5775.0138
Max. Deviation (MHz)	0.0206	0.0205	0.0203	0.0200
Max. Deviation (ppm)	3.57	3.55	3.52	3.46
Result	Complies			

4.9. Antenna Requirements

4.9.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.9.2. Antenna Connector Construction

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

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 0216	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 02, 2014	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. 02, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 03, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 25, 2015	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 06, 2015	Radiation (03CH01-CB)
BILOG ANTENNA	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 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)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Feb. 24, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 21, 2015	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 21, 2015	Radiation (03CH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	Apr. 22, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-I0-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
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%