SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

FCC RADIO TEST REPORT

Applicant's company	**Aerohive Networks Inc.**
Applicant Address	330 Gibraltar Drive, Sunnyvale, CA 94089, USA
FCC ID	**WBV-AP130**
Manufacturer's company	**Wistron NeWeb Corporation**
Manufacturer Address	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan, R.O.C.

Product Name	Access Point
Brand Name	Aerohive
Model No.	AP130
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250MHz / 5725 ~ 5850 MHz
Received Date	Dec. 02, 2014
Final Test Date	Jan. 27, 2015
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 v01, KDB662911 D01 v02r01, KDB644545 D03 v01.**

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

TAF
Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR4D0481AB	Rev. 01	Initial issue of report	Feb. 06, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	Access Point
Brand Name	:	Aerohive
Model No.	:	AP130
Applicant	:	Aerohive Networks Inc.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Dec. 02, 2014 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen
SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	4.52 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	6.05 dB
4.5	15.407(a)	Power Spectral Density	Complies	5.34 dB
4.6	15.407(b)	Radiated Emissions	Complies	0.12 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.09 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	IEEE 802.11a: WLAN (1TX/1RX) IEEE 802.11n/ac: WLAN (2TX/2RX)
Radio Type	Intentional Transceiver
Power Type	From PoE
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5150 ~ 5250MHz / 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: 17.54 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.14 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.19 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz Band 4: IEEE 802.11a: 17.27 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz **For Beamforming Mode:** Band 1: IEEE 802.11ac MCS0/Nss1 (VHT20): 18.15 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.19 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz Band 4: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz

Maximum Conducted Output Power	**For Non-Beamforming Mode:** Band 1: IEEE 802.11a: 18.75 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 21.50 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.22 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 18.81 dBm Band 4: IEEE 802.11a: 18.80 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 21.26 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 20.89 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 18.36 dBm **For Beamforming Mode:** Band 1: IEEE 802.11ac MCS0/Nss1 (VHT20): 21.65dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.23dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.86dBm Band 4: IEEE 802.11ac MCS0/Nss1 (VHT20): 21.16dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 20.91dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.64dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
Beamforming Function	☒ With beamforming	☐ Without beamforming
Operating Mode	☐ Outdoor access point	
	☒ Indoor access point	
	☐ Fixed point-to-point access points	
	☐ Mobile and portable client devices	

Note: The product has beamforming function for 802.11n HT20, 802.11ac VHT20 in 2.4GHz band and 802.11n HT20/40, 802.11ac VHT20/40/80 in 5GHz band.

Antenna and Band width

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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	2	MCS 0-15
802.11n (HT40)	2	MCS 0-15
802.11ac (VHT20)	2	MCS 0-9/Nss1-2
802.11ac (VHT40)	2	MCS 0-9/Nss1-2
802.11ac (VHT80)	2	MCS 0-9/Nss1-2

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

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

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

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	-	95EAAH15.GDA	PIFA Antenna	I-PEX	3.86	-
2	-	95EAAH15.GC9	PIFA Antenna	I-PEX	3.86	-
3	-	95EAAH15.GDC	PIFA Antenna	I-PEX	-	5.29
4	-	95EAAH15.GDB	PIFA Antenna	I-PEX	-	5.29

Note: The EUT has four antennas.

Ant. 1 and Ant. 2 are used in 2.4GHz band only, and Ant. 3 and Ant. 4 are used in 5GHz band only.

For 2.4GHz band:

For 802.11b/g mode:

Only Chain 1 is used as the transmitting and receiving antenna.

For 802.11n/ac mode:

Both Chain 1 and Chain 2 can be used as transmitting antennas.

Chain 1 and Chain 2 can transmit and receive signal simultaneously.

For 5GHz band:

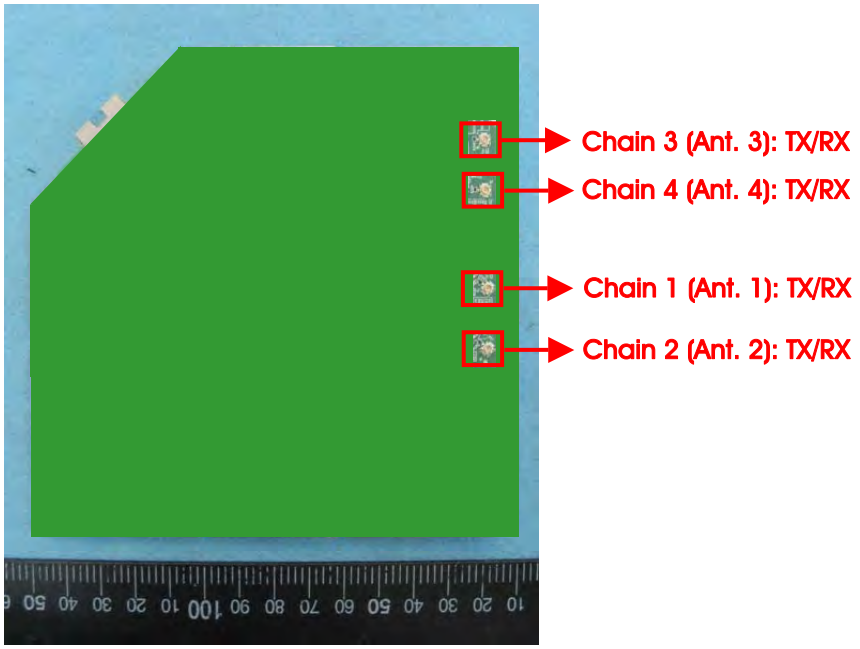
For 802.11a mode:

Only Chain 3 is used as the transmitting and receiving antenna.

For 802.11n/ac mode:

Both Chain 3 and Chain 4 can be used as transmitting antennas.

Chain 3 and Chain 4 can transmit and receive signal 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	11a/BPSK	Band 1, 4	6Mbps	36/40/48/149/157/165	3
	11ac VHT20	Band 1, 4	MCS0/Nss1	36/40/48/149/157/165	3+4
	11ac VHT40	Band 1, 4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1, 4	MCS0/Nss1	42/ 155	3+4
Power Spectral Density	11a/BPSK	Band 1, 4	6Mbps	36/40/48/149/157/165	3
	11ac VHT20	Band 1, 4	MCS0/Nss1	36/40/48/149/157/165	3+4
	11ac VHT40	Band 1, 4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1, 4	MCS0/Nss1	42/155	3+4
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1, 4	6Mbps	36/40/48/149/157/165	3
	11ac VHT20	Band 1, 4	MCS0/Nss1	36/40/48/149/157/165	3+4
	11ac VHT40	Band 1, 4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1, 4	MCS0/Nss1	42/155	3+4
6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 4	6Mbps	149/157/165	3
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	3+4
	11ac VHT40	Band 4	MCS0/Nss1	151/159	3+4
	11ac VHT80	Band 4	MCS0/Nss1	155	3+4
Radiated Emission Below 1GHz	Normal Link		-	-	-

Test Items	Mode		Data Rate	Channel	Chain
Radiated Emission Above 1GHz	11a/BPSK	Band 1, 4	6Mbps	36/40/48/149/157 /165	3
	11ac VHT20	Band 1, 4	MCS0/Nss1	36/40/48/149/157 /165	3+4
	11ac VHT40	Band 1, 4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1, 4	MCS0/Nss1	42/155	3+4
Band Edge Emission	11a/BPSK	Band 1, 4	6Mbps	36/40/48/149/157 /165	3
	11ac VHT20	Band 1, 4	MCS0/Nss1	36/40/48/149/157 /165	3+4
	11ac VHT40	Band 1, 4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1, 4	MCS0/Nss1	42/155	3+4
Frequency Stability	20 MHz	Band 1, 4	-	40/157	3+4
	40 MHz	Band 1, 4	-	38/151	3+4
	80 MHz	Band 1, 4	-	42/155	3+4

Note 1: VHT20/VHT40 covers HT20/HT40, due to same modulation.

Note 2: There are two modes of EUT in 802.11n/ac, one is beamforming mode, and the other is non-beamforming mode, Beamforming mode and non-beamforming mode have been test and record in this test report.

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link

For Radiated Emission test below 1GHz:

Mode 1. Place EUT in X axis

Mode 2. Place EUT in Y axis

Mode 2 performed as worst case, it was recorded in this report.

For Radiated Emission test above 1GHz:

Mode 2 generated the worst test result for Radiated emission below 1GHz test, thus the measurement for Radiated emission above 1GHz test will follow this same test configuration.

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

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

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.7. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC
NB	DELL	E6430	DoC
NB	DELL	E6430	DoC
PoE	Power Dsine	PD-3501G/AC	N/A

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

Support Unit	Brand	Model	FCC ID
NB	DELL	M1330	DoC
NB	DELL	M1340	DoC
NB	DELL	E6430	DoC
PoE	Power Dsine	PD-3501G/AC	N/A

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

For Non-Beamforming Mode:

Support Unit	Brand	Model	FCC ID
NB	DELL	M1330	DoC
PoE	Power Dsine	PD-3501G/AC	N/A

For Beamforming Mode:

Support Unit	Brand	Model	FCC ID
NB	DELL	M1340	DoC
NB	DELL	E6430	DoC
PoE	Power Dsine	PD-3501G/AC	N/A
WLAN ac Dongle	Netgear	A6200	PY312200200

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	D420	E2KWM3945ABG
PoE	Power Dsine	PD-3501G/AC	N/A

3.8. Table for Parameters of Test Software Setting

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

For Non-Beamforming Mode:

Test Software Version	PUTTY suite V0.62.0.0					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	75	74	74	77	73	62
802.11ac MCS0/Nss1 VHT20	75	74	74	72	74	67
Mode	**NCB: 40MHz**					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	68		80		69	80
Mode	**NCB: 80MHz**					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	67				65	

For Beamforming Mode:

Test Software Version	PUTTY suite V0.62.0.0					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11ac MCS0/Nss1 VHT20	75	75	75	68	74	67
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	69		80		58	80
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	63				58	

3.9. EUT Operation during Test

For Non-Beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For Beamforming mode:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

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

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under PUTTY suite V0.62.0.0.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by WLAN ac Dongle and transmit duty cycle no less 98%

3.10. Duty Cycle

For Non-Beamforming mode:

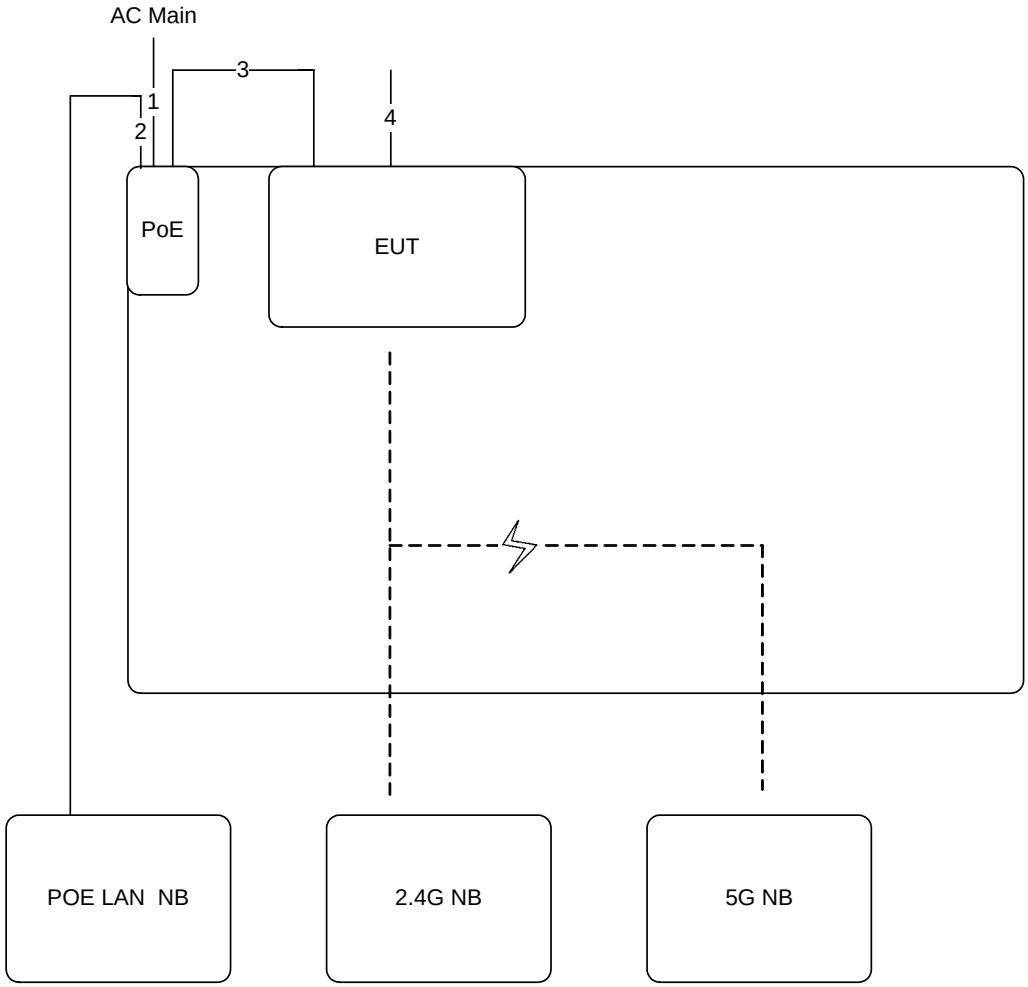
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	0.2037	0.2143	95.08%	0.22	4.91
802.11ac MCS0/Nss1 VHT20	0.1916	0.2014	95.12%	0.22	5.22
802.11ac MCS0/Nss1 VHT40	0.9539	1.0481	91.01%	0.41	1.05
802.11ac MCS0/Nss1 VHT80	0.4626	0.5594	82.70%	0.83	2.16

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	3.826	4.000	95.65%	0.19	0.26
802.11ac MCS0/Nss1 VHT40	4.594	4.898	93.79%	0.28	0.22
802.11ac MCS0/Nss1 VHT80	5.014	5.289	94.80%	0.23	0.20

3.11. Test Configurations

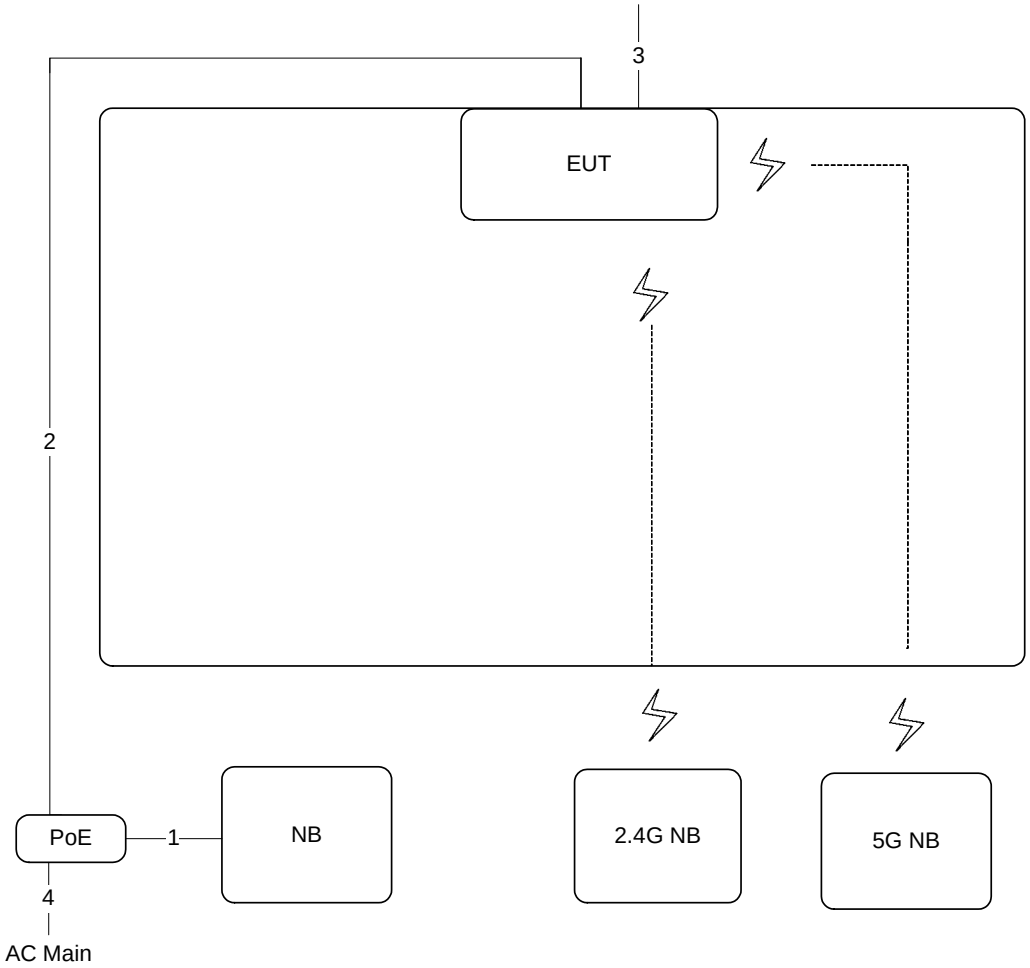
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length (m)	Remark
1	Power cable	No	1.8m	-
2	RJ-45 cable	No	10m	-
3	RJ-45 cable	No	1m	-
4	Console cable	No	1.8m	Load

3.11.2. Radiation Emissions Test Configuration

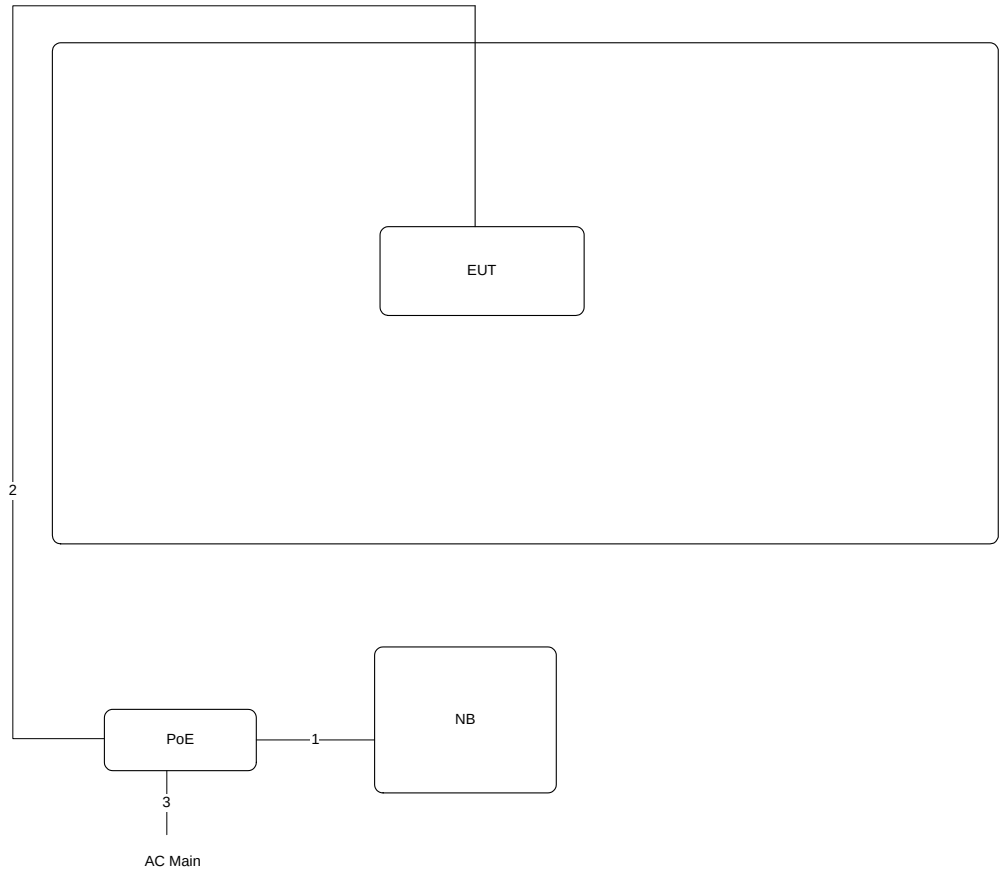
Test Configuration: 30MHz ~1GHz



Item	Connection	Shielded	Length (m)	Remark
1	RJ-45 cable	No	1m	-
2	RJ-45 cable	No	10m	-
3	Console cable	No	1.5m	Load

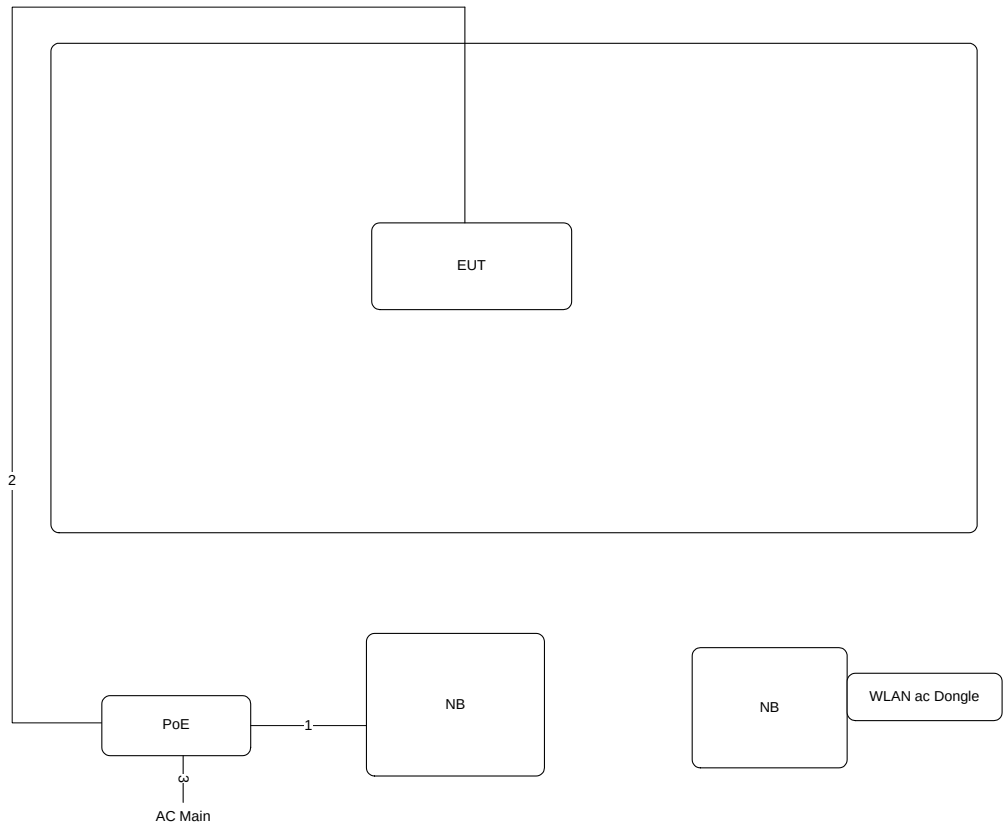
Test Configuration: above 1GHz

For Non-Beamforming Mode:



Item	Connection	Shielded	Length (m)
1	RJ-45 cable	No	1m
2	RJ-45 cable	No	10m
3	Power cable	No	1.8m

For Beamforming Mode:



Item	Connection	Shielded	Length (m)
1	RJ-45 cable	No	1m
2	RJ-45 cable	No	10m
3	Power cable	No	1.8m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

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

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

4.1.2. Measuring Instruments and Setting

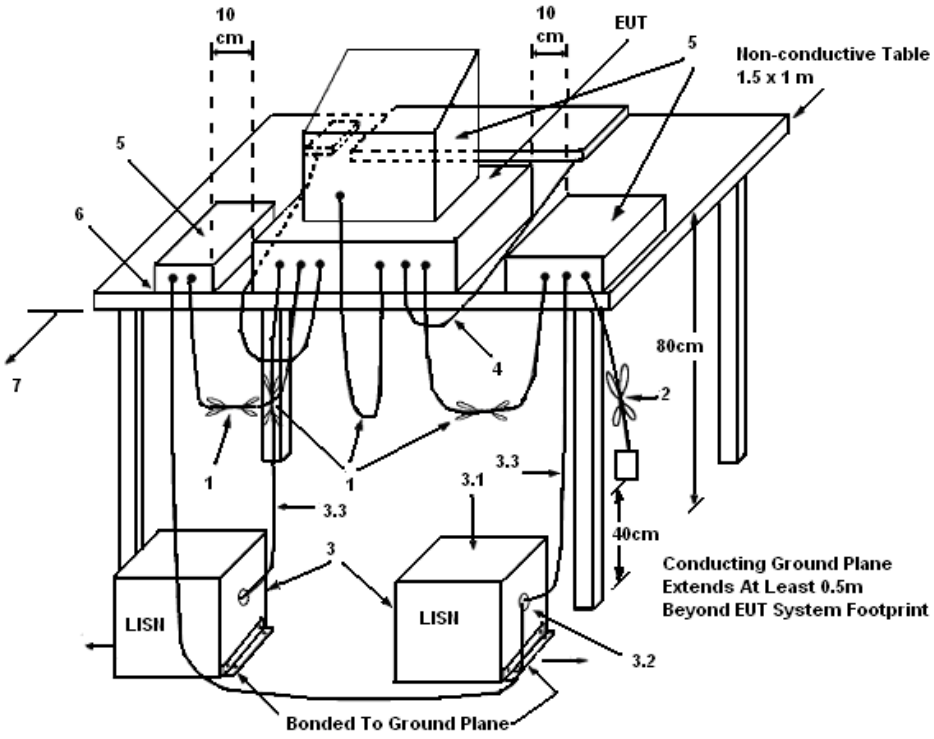
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

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

4.1.4. Test Setup Layout



LEGEND:

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

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

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

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

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

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

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

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

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

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

4.1.5. Test Deviation

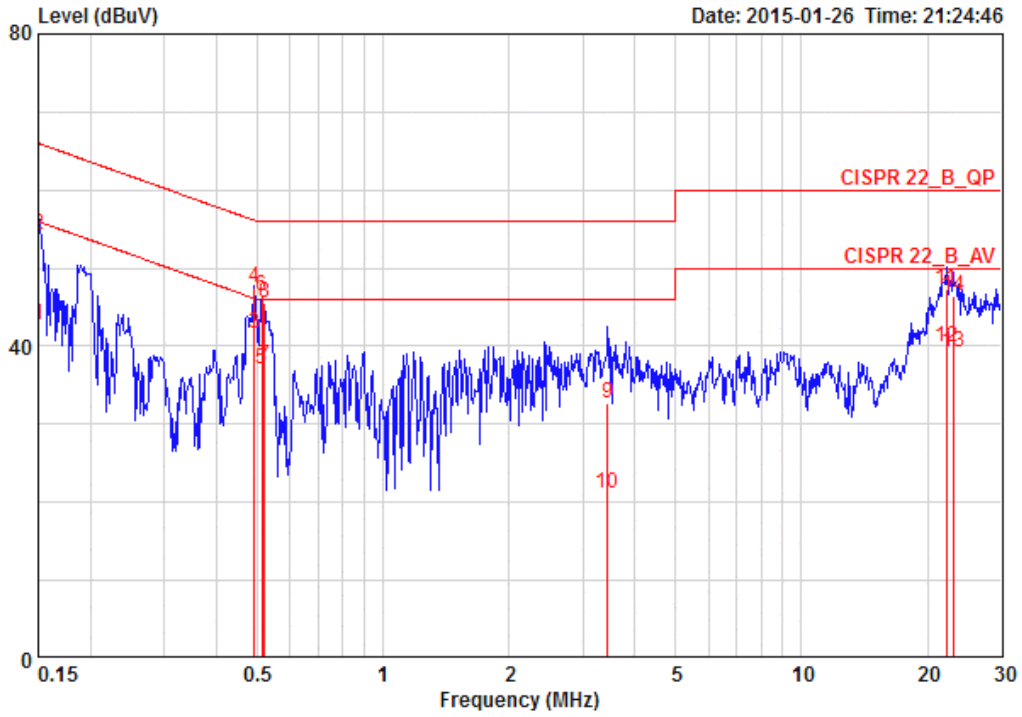
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

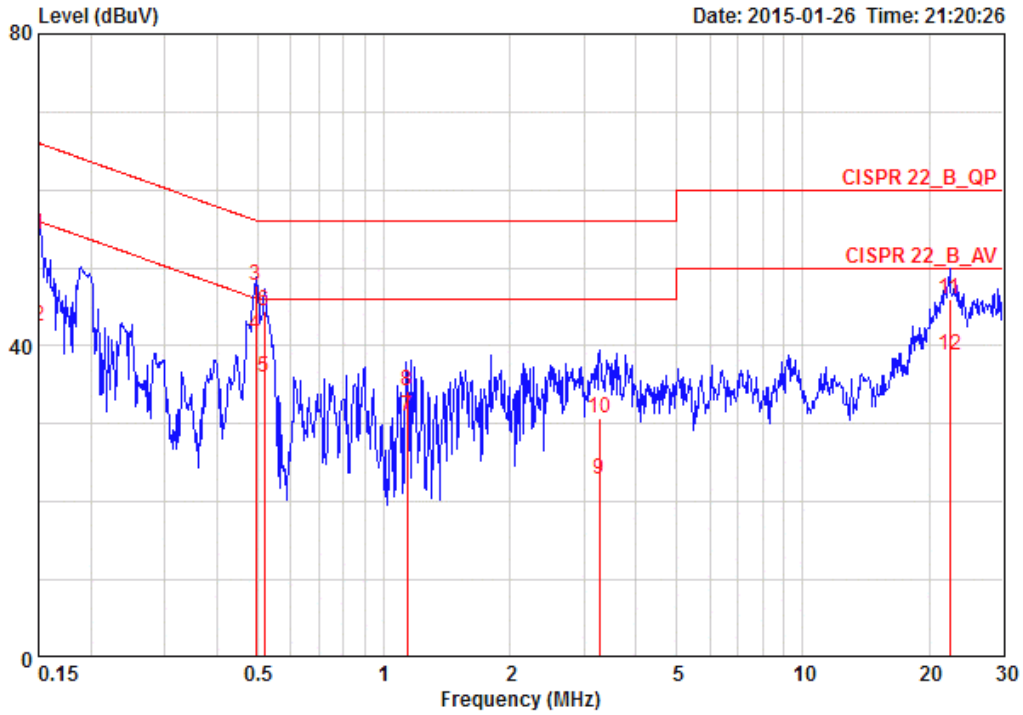
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	54%
Test Engineer	Sollo Luo	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.15000	42.77	-13.23	56.00	32.65	9.96	0.16	AVERAGE	LINE
2	0.15000	54.31	-11.69	66.00	44.19	9.96	0.16	QP	LINE
3 @	0.49150	41.63	-4.52	46.14	31.48	9.96	0.18	AVERAGE	LINE
4 @	0.49150	47.48	-8.67	56.14	37.33	9.96	0.18	QP	LINE
5 @	0.51278	37.09	-8.91	46.00	26.94	9.96	0.19	AVERAGE	LINE
6 @	0.51278	46.42	-9.58	56.00	36.27	9.96	0.19	QP	LINE
7 @	0.52100	37.44	-8.56	46.00	27.29	9.96	0.19	AVERAGE	LINE
8 @	0.52100	45.64	-10.36	56.00	35.49	9.96	0.19	QP	LINE
9	3.436	32.78	-23.22	56.00	22.43	10.06	0.29	QP	LINE
10	3.436	21.21	-24.79	46.00	10.86	10.06	0.29	AVERAGE	LINE
11	22.180	47.23	-12.77	60.00	36.25	10.44	0.54	QP	LINE
12 @	22.180	39.98	-10.02	50.00	29.00	10.44	0.54	AVERAGE	LINE
13	23.018	39.24	-10.76	50.00	28.25	10.44	0.55	AVERAGE	LINE
14	23.018	46.36	-13.64	60.00	35.37	10.44	0.55	QP	LINE

Temperature	24°C	Humidity	54%
Test Engineer	Sollo Luo	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.15000	54.32	-11.68	66.00	44.21	9.95	0.16	QP	NEUTRAL
2	0.15000	42.50	-13.50	56.00	32.39	9.95	0.16	AVERAGE	NEUTRAL
3 @	0.49411	47.75	-8.35	56.10	37.61	9.95	0.18	QP	NEUTRAL
4 @	0.49411	41.37	-4.73	46.10	31.23	9.95	0.18	AVERAGE	NEUTRAL
5 @	0.51824	36.01	-9.99	46.00	25.87	9.95	0.19	AVERAGE	NEUTRAL
6	0.51824	44.51	-11.49	56.00	34.37	9.95	0.19	QP	NEUTRAL
7	1.138	31.02	-14.98	46.00	20.82	9.99	0.21	AVERAGE	NEUTRAL
8	1.138	34.31	-21.69	56.00	24.11	9.99	0.21	QP	NEUTRAL
9	3.276	22.86	-23.14	46.00	12.54	10.04	0.29	AVERAGE	NEUTRAL
10	3.276	30.77	-25.23	56.00	20.45	10.04	0.29	QP	NEUTRAL
11	22.416	45.91	-14.09	60.00	34.95	10.41	0.54	QP	NEUTRAL
12	22.416	38.86	-11.14	50.00	27.90	10.41	0.54	AVERAGE	NEUTRAL

Note: Level = Read Level + LISN Factor + Cable Loss.

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

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

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

4.2.3. Test Procedures

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

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

4.2.4. Test Setup Layout

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

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

4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

For Non-Beamforming Mode:

Temperature	26℃	Humidity	63%
Test Engineer	Serway Li		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	28.35	17.54
	5200 MHz	27.13	17.37
	5240 MHz	26.70	17.28
	5745 MHz	26.43	17.27
	5785 MHz	21.47	17.10
	5825 MHz	20.34	16.93
802.11ac MCS0/Nss1 VHT20	5180 MHz	33.04	18.14
	5200 MHz	28.26	17.97
	5240 MHz	30.95	17.97
	5745 MHz	22.34	17.97
	5785 MHz	26.95	17.97
	5825 MHz	21.30	17.88
802.11ac MCS0/Nss1 VHT40	5190 MHz	41.16	36.75
	5230 MHz	71.01	37.19
	5755 MHz	42.75	36.61
	5795 MHz	50.00	36.90
802.11ac MCS0/Nss1 VHT80	5210 MHz	82.31	76.12
	5775 MHz	86.37	75.83

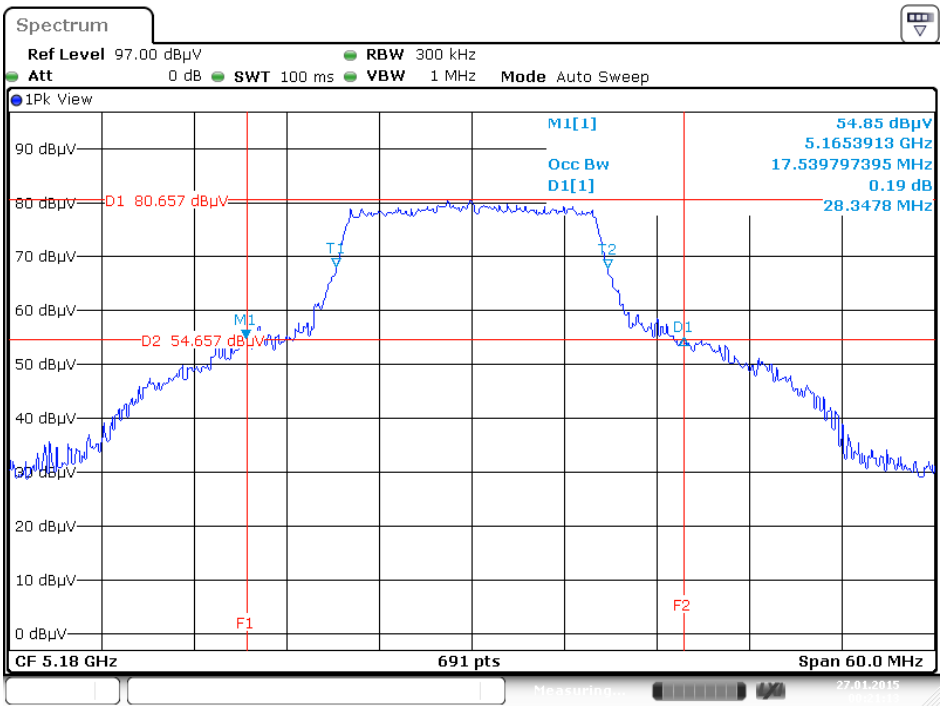
For Beamforming Mode:

Temperature	26°C	Humidity	63%
Test Engineer	Serway Li		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5180 MHz	26.70	18.15
	5200 MHz	26.61	17.97
	5240 MHz	25.83	17.97
	5745 MHz	20.52	17.80
	5785 MHz	20.61	17.89
	5825 MHz	20.43	17.80
802.11ac MCS0/Nss1 VHT40	5190 MHz	48.70	36.76
	5230 MHz	55.36	37.19
	5755 MHz	40.58	36.61
	5795 MHz	46.09	36.90
802.11ac MCS0/Nss1 VHT80	5210 MHz	82.32	75.83
	5775 MHz	82.32	75.83

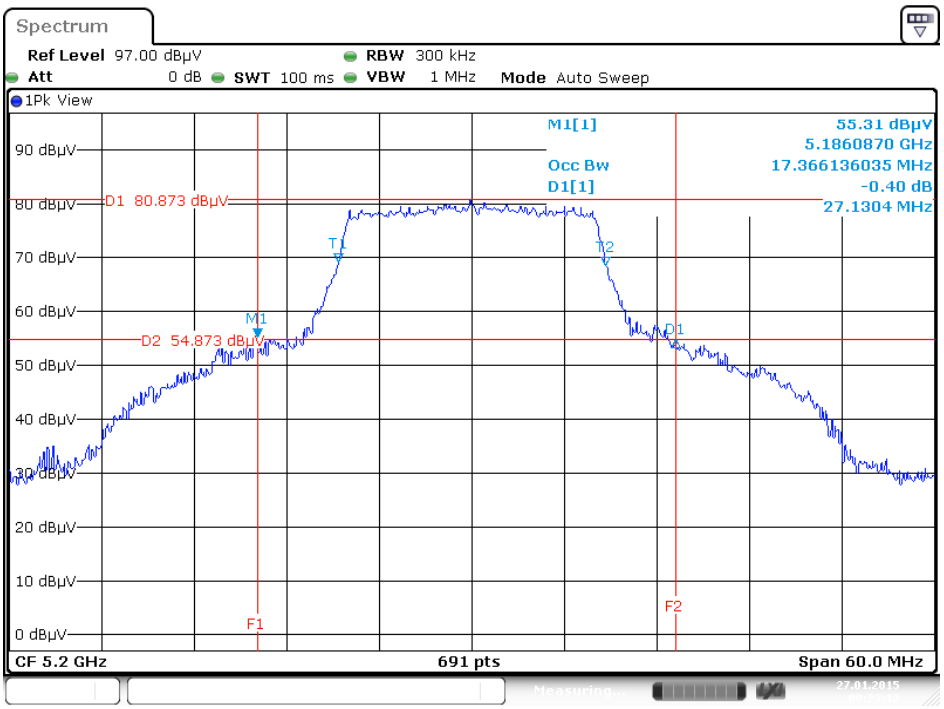
For Non-Beamforming Mode:

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



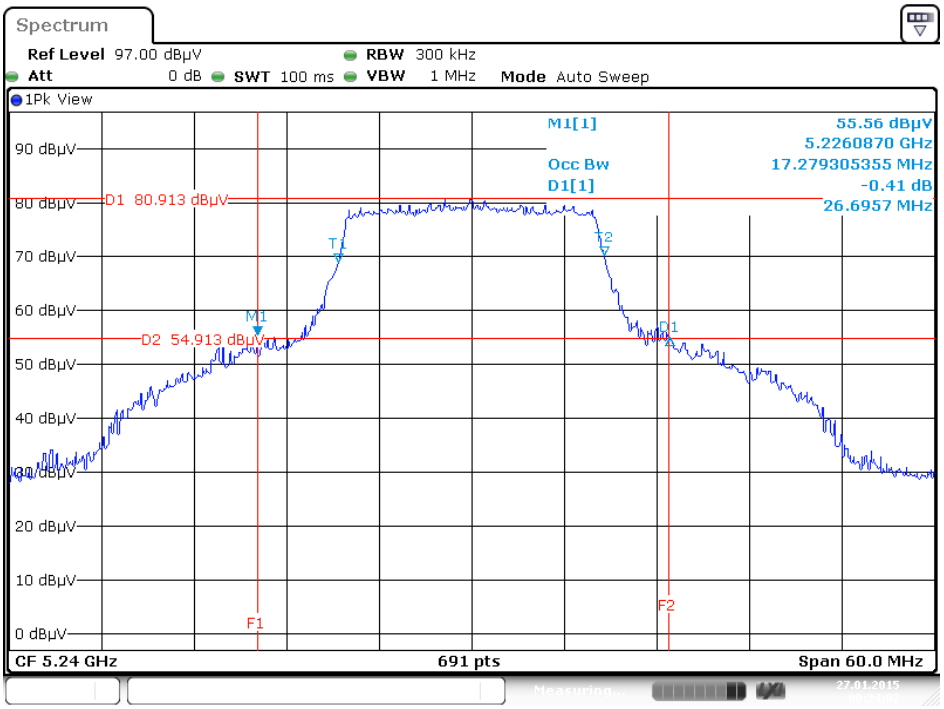
Date: 27.JAN.2015 00:21:13

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



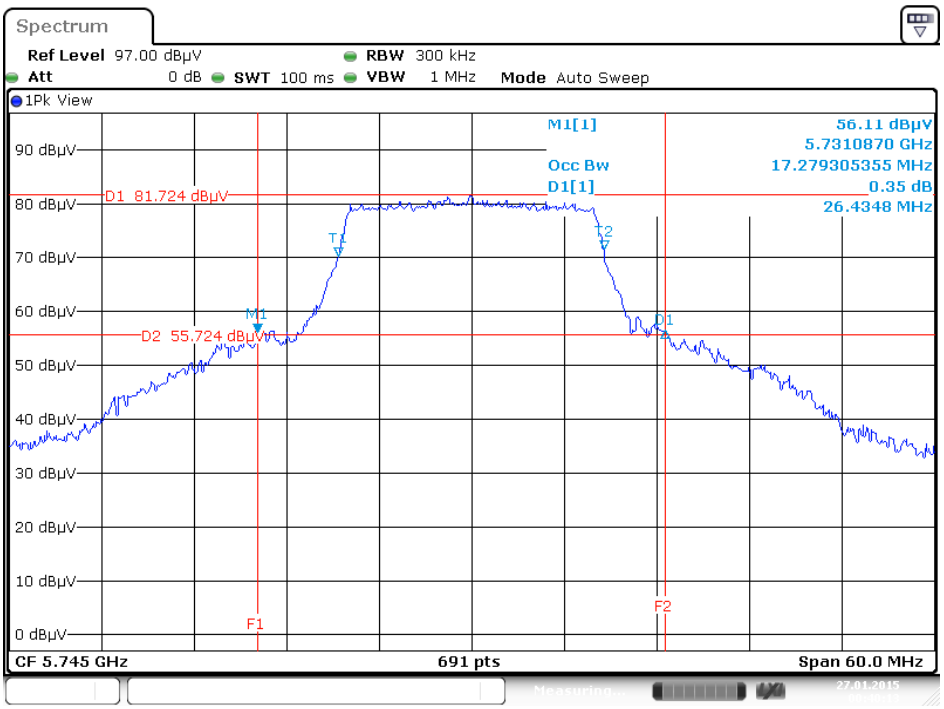
Date: 27.JAN.2015 00:23:13

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



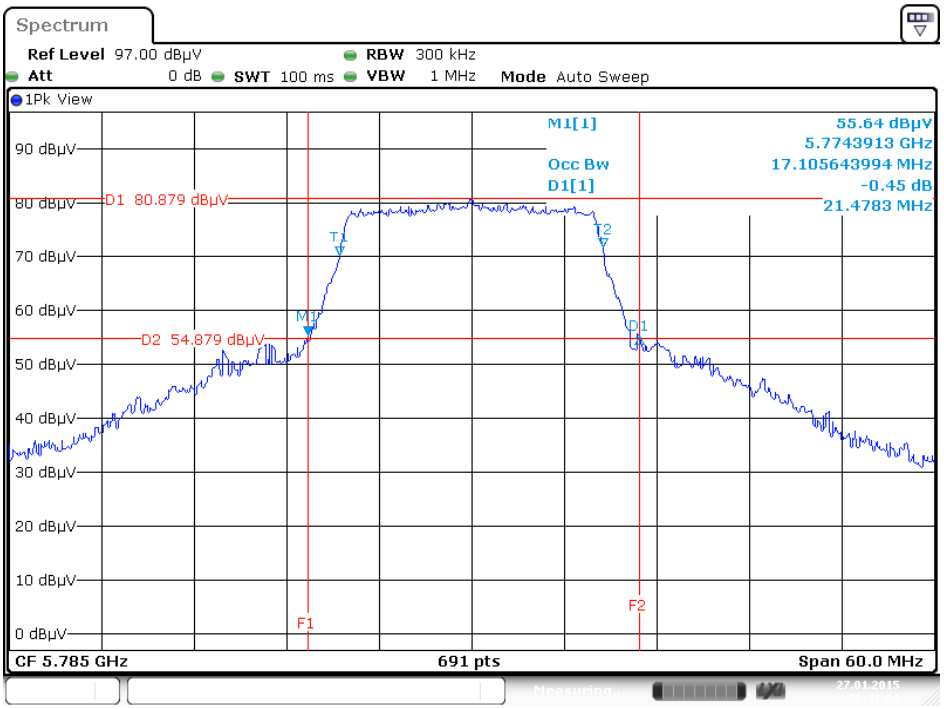
Date: 27.JAN.2015 00:24:03

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



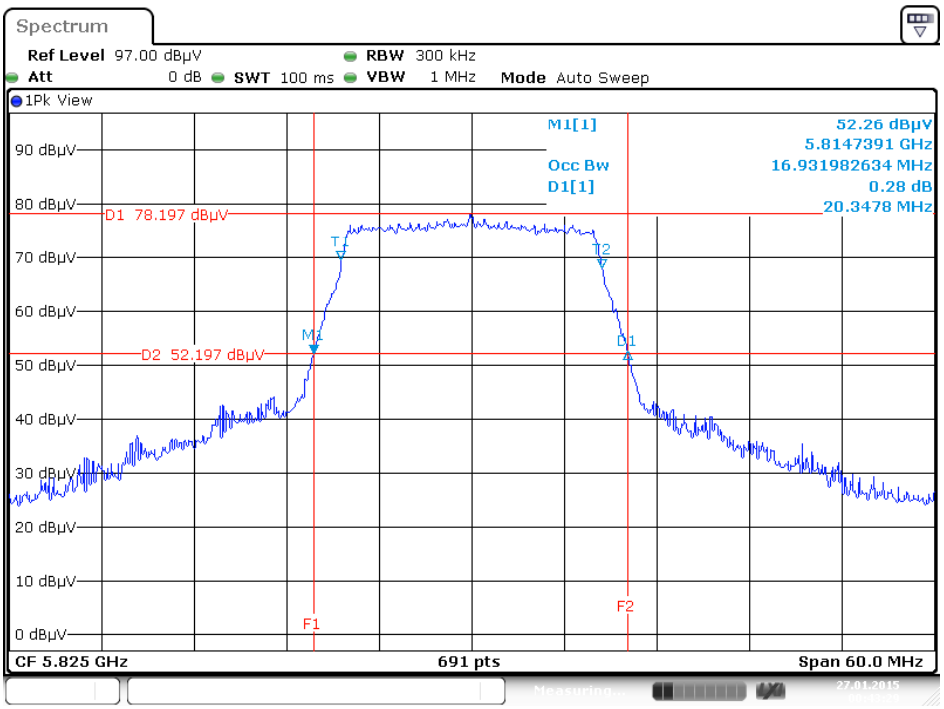
Date: 27.JAN.2015 00:40:13

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



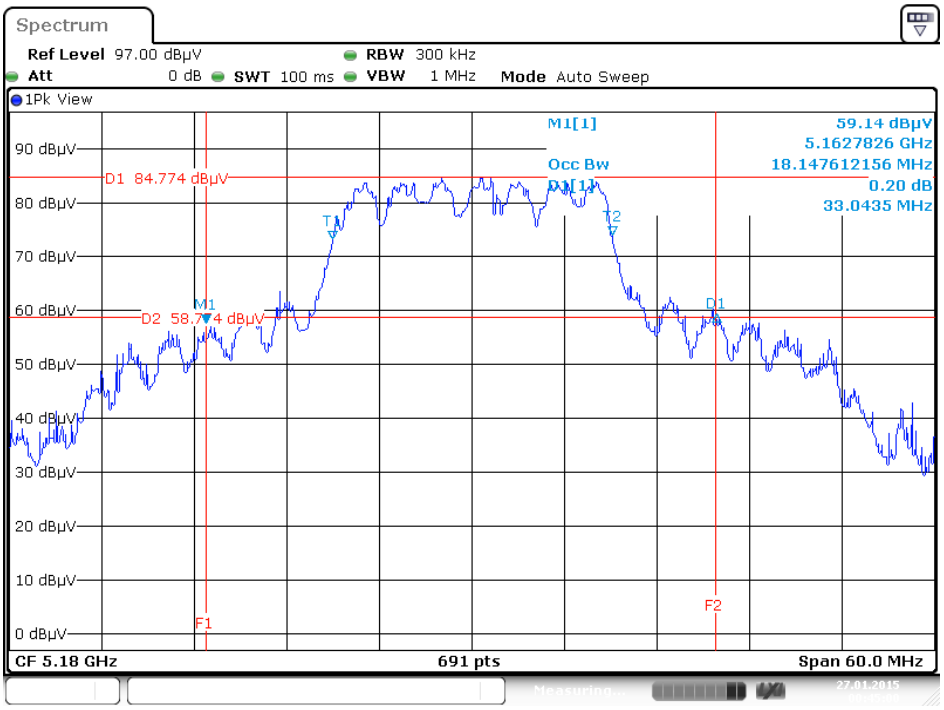
Date: 27.JAN.2015 00:41:05

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



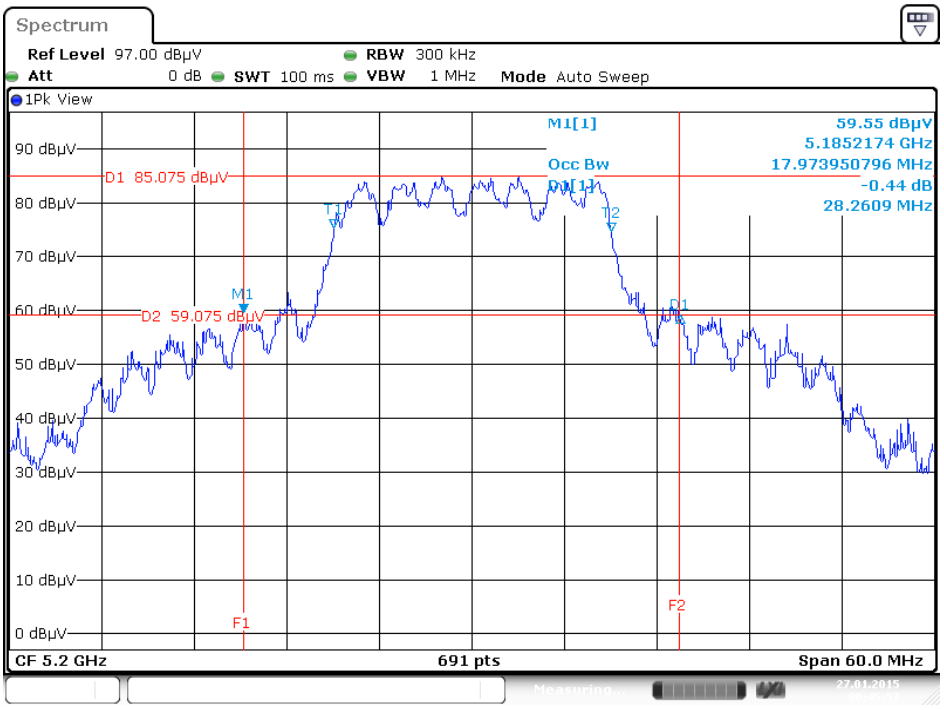
Date: 27.JAN.2015 00:43:29

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



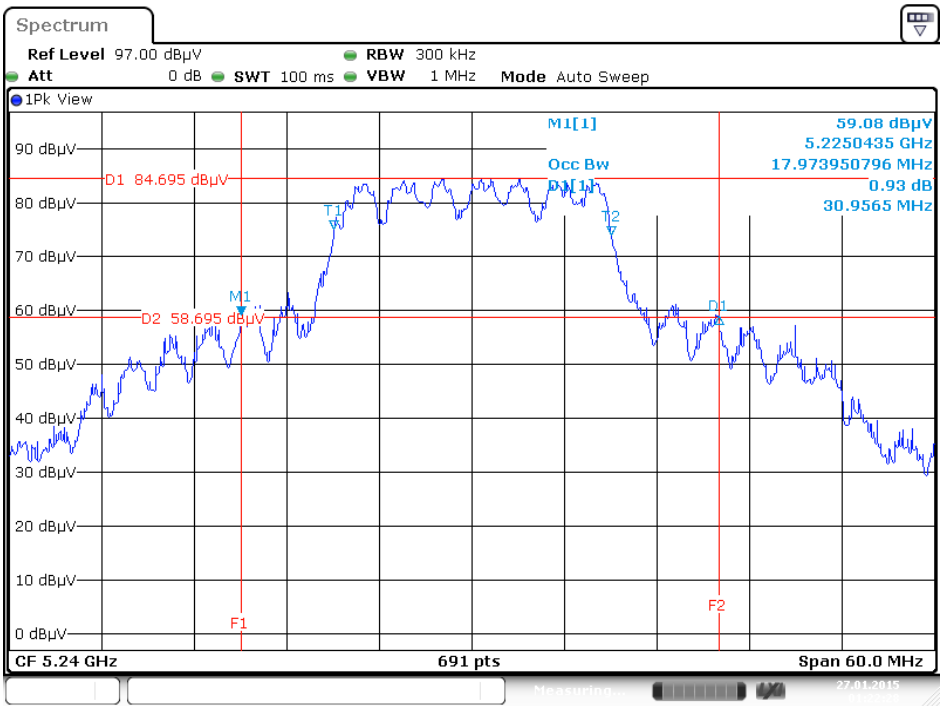
Date: 27.JAN.2015 00:45:00

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



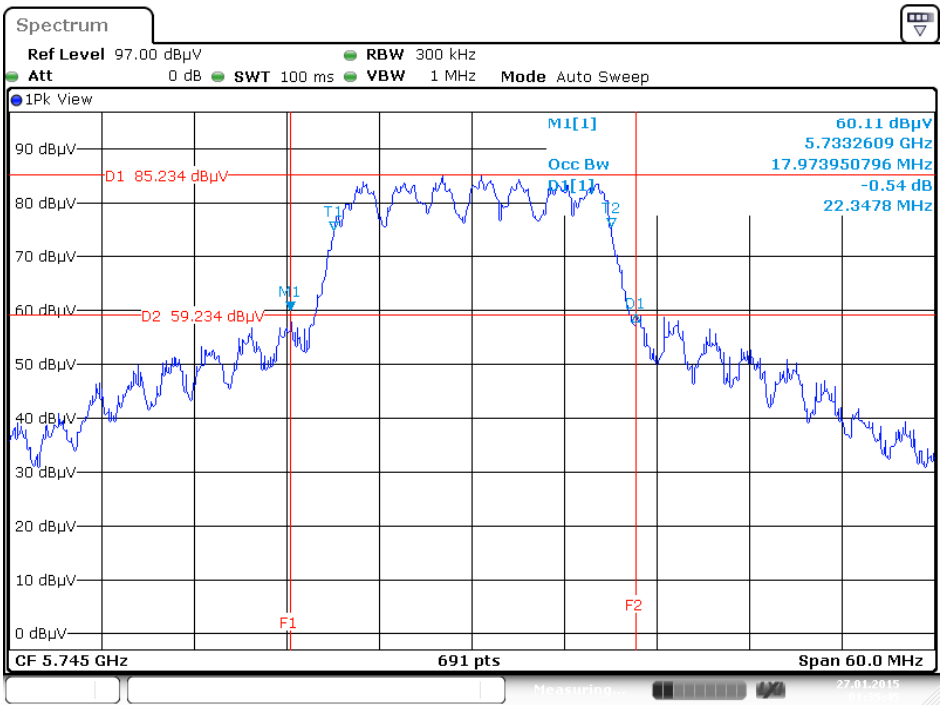
Date: 27.JAN.2015 00:45:58

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



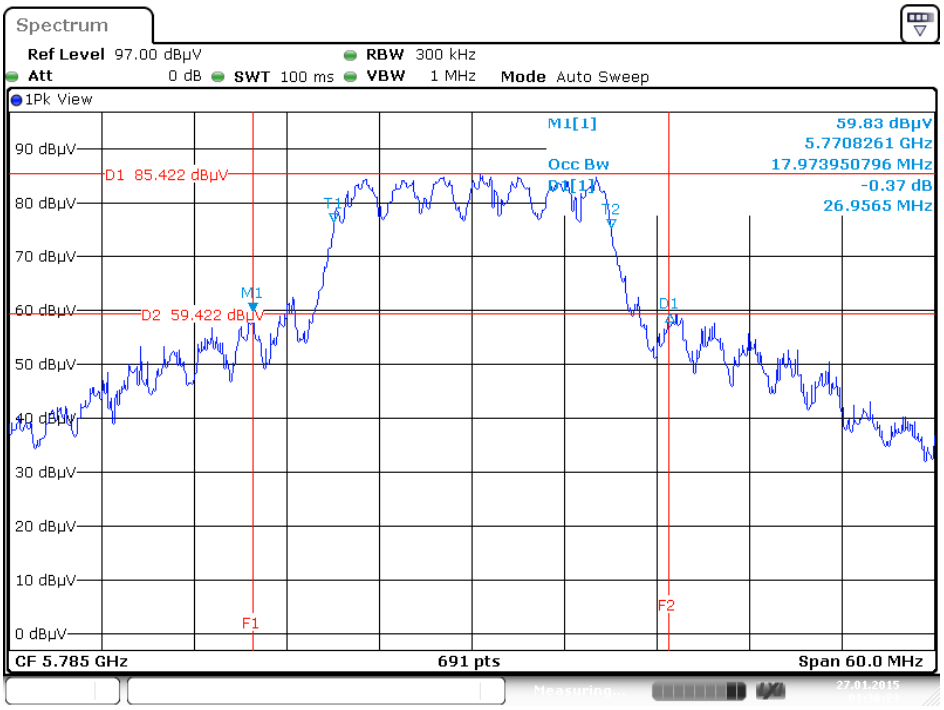
Date: 27.JAN.2015 01:22:28

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



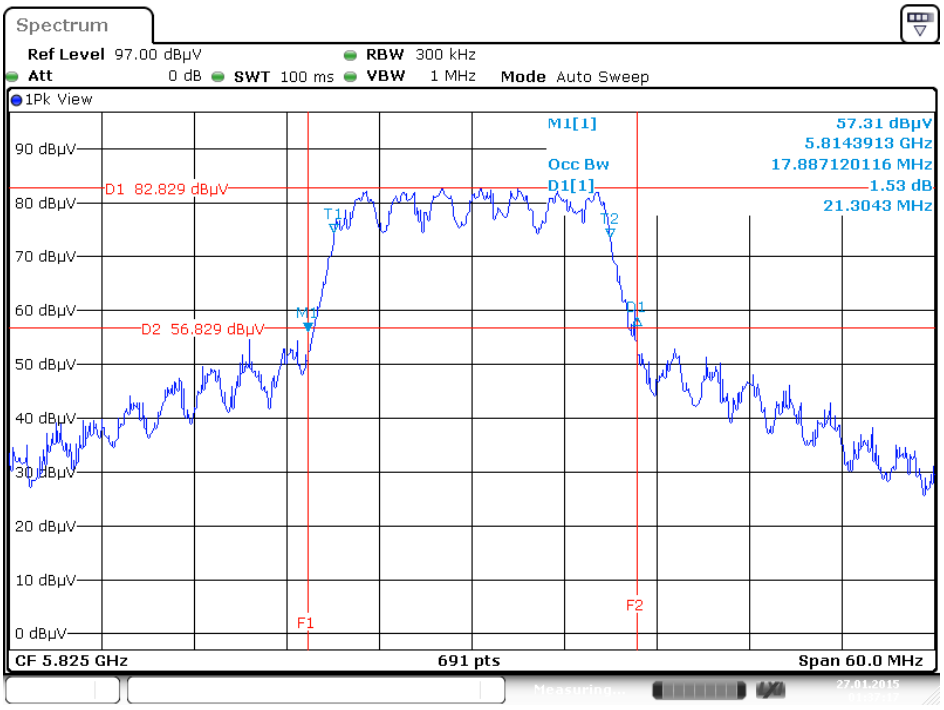
Date: 27.JAN.2015 01:35:45

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



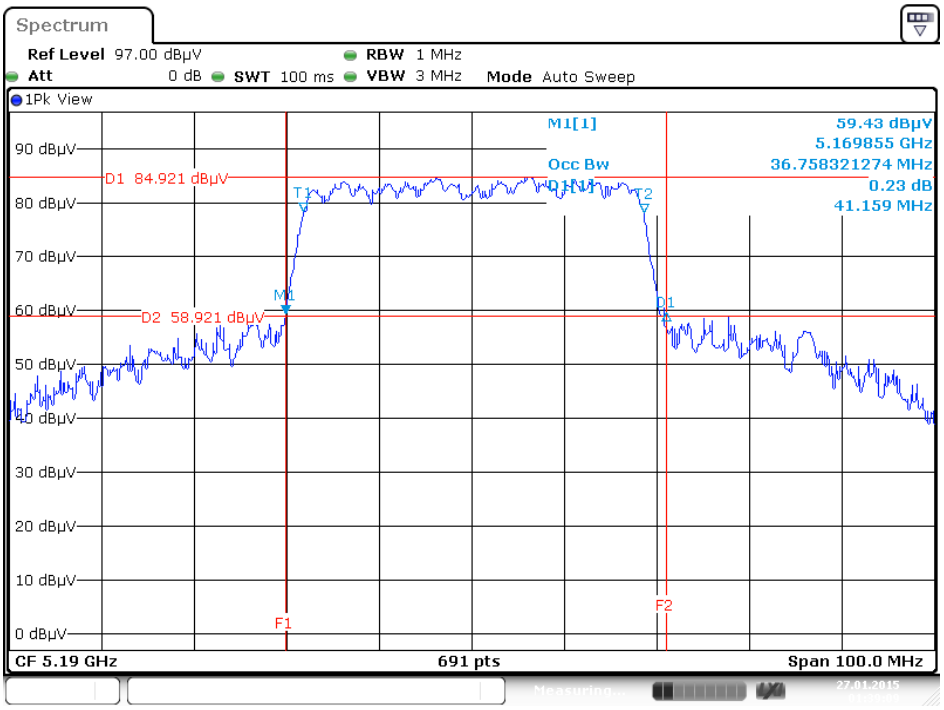
Date: 27.JAN.2015 01:36:23

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



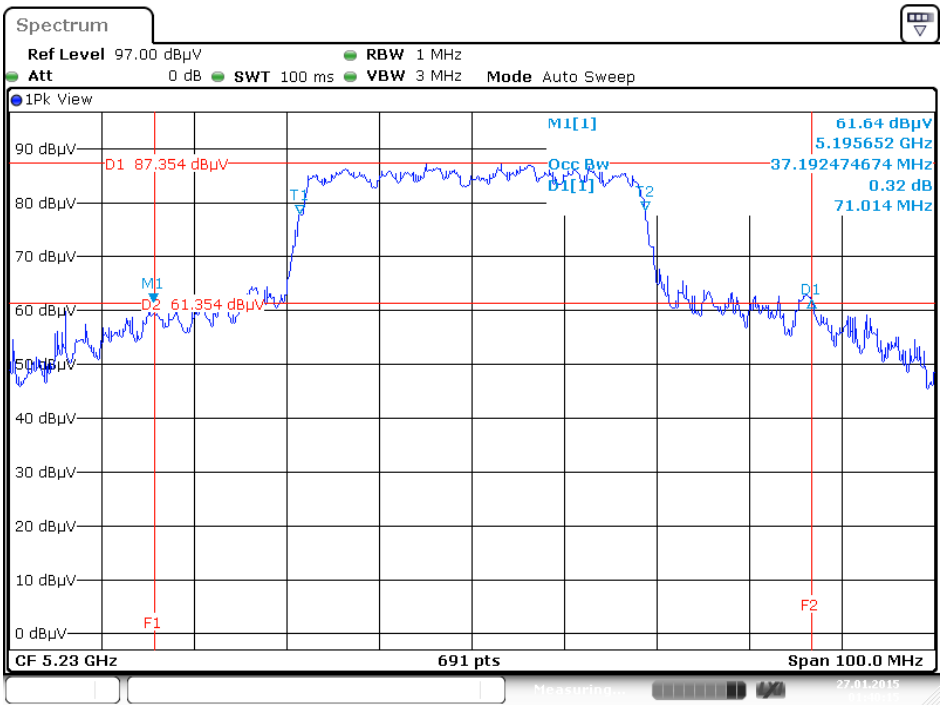
Date: 27.JAN.2015 01:37:17

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



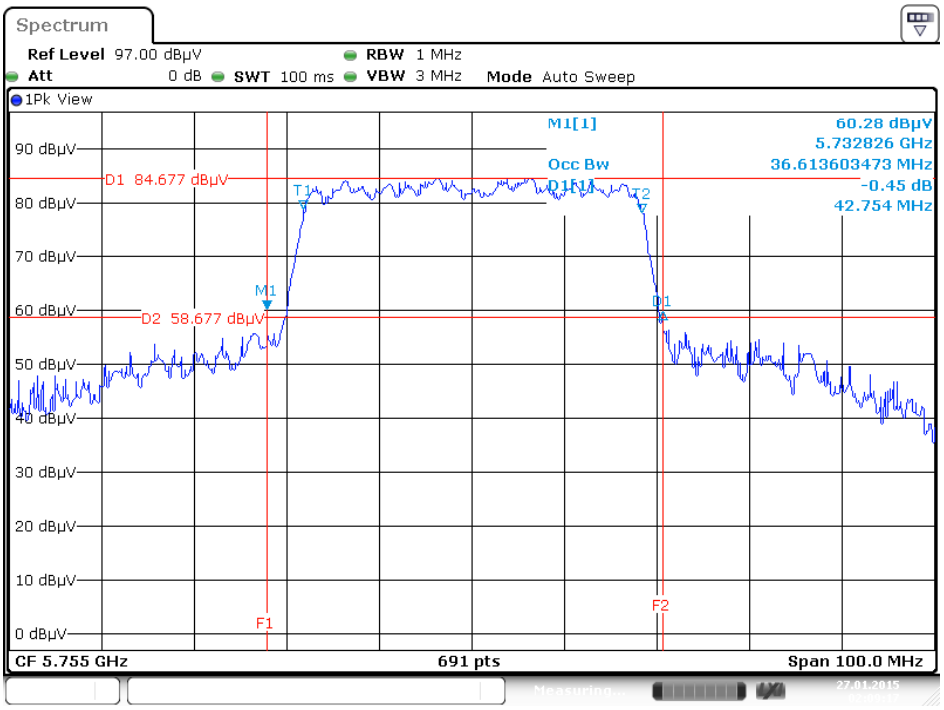
Date: 27.JAN.2015 01:39:10

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



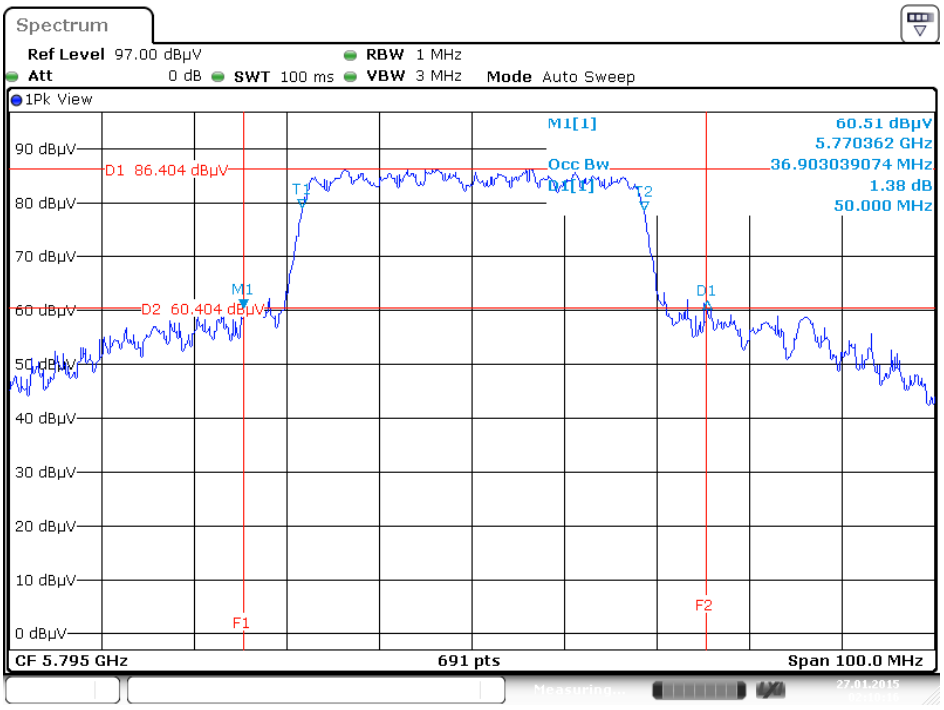
Date: 27.JAN.2015 01:40:15

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



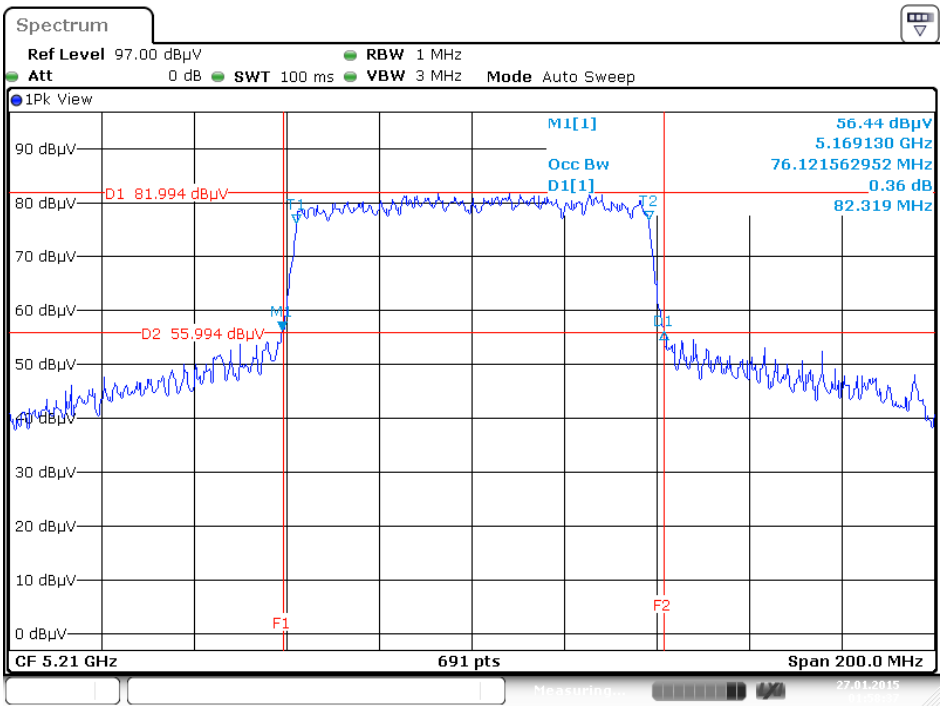
Date: 27.JAN.2015 02:09:18

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



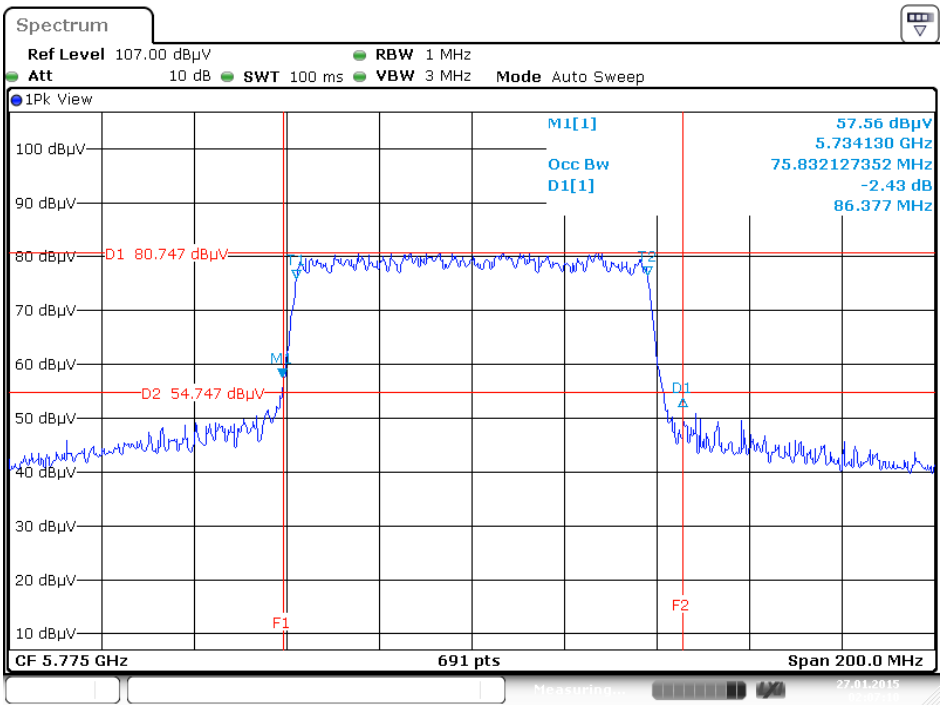
Date: 27.JAN.2015 02:10:16

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



Date: 27.JAN.2015 01:58:37

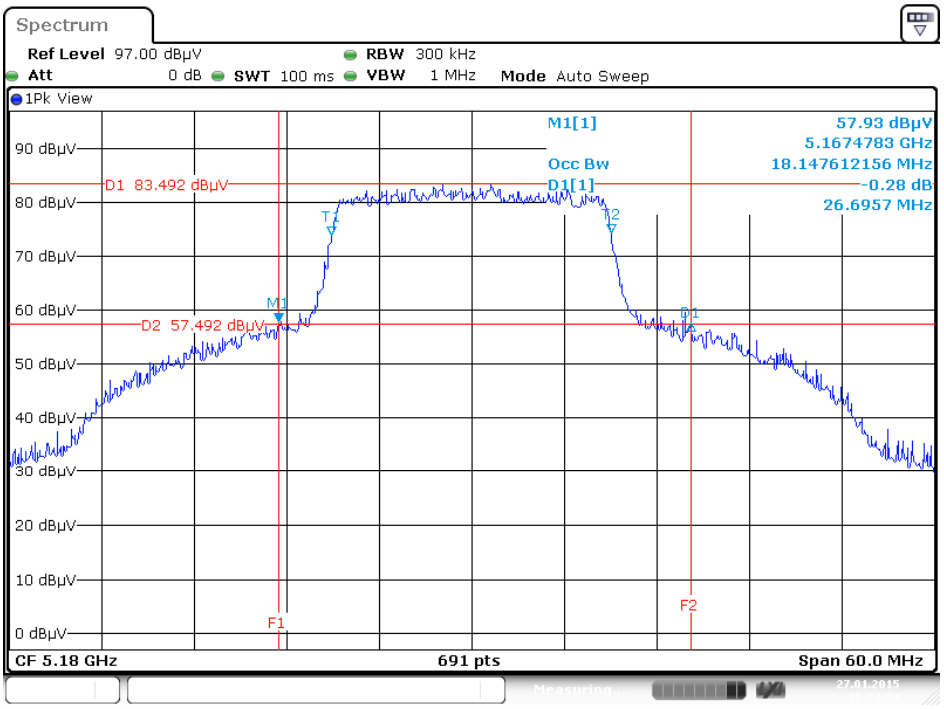
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 + Chain 4 / 5775 MHz



Date: 27.JAN.2015 02:07:10

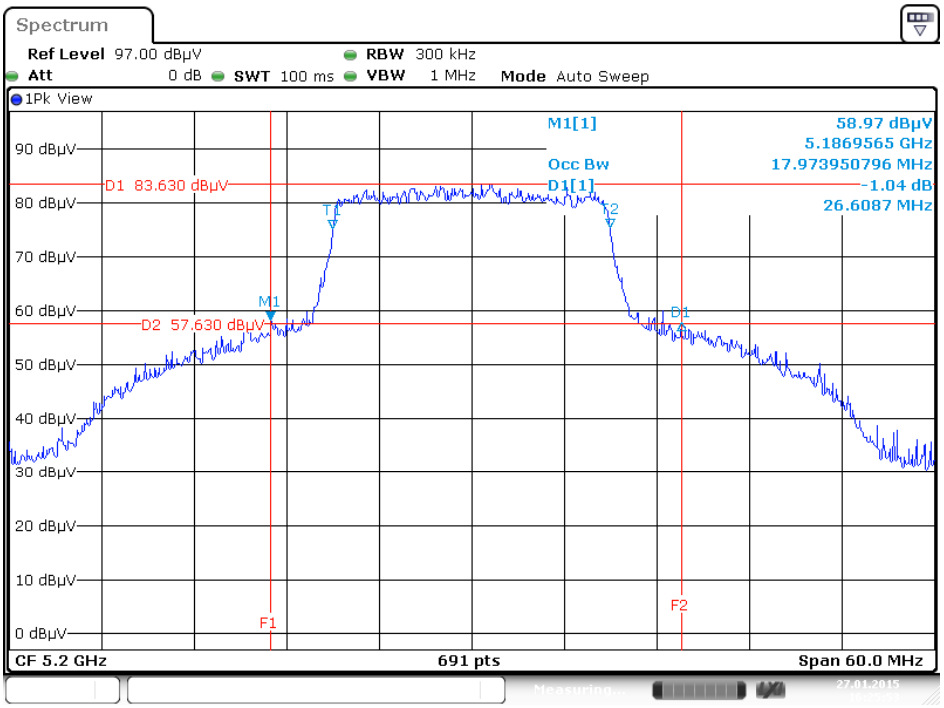
For Beamforming Mode:

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



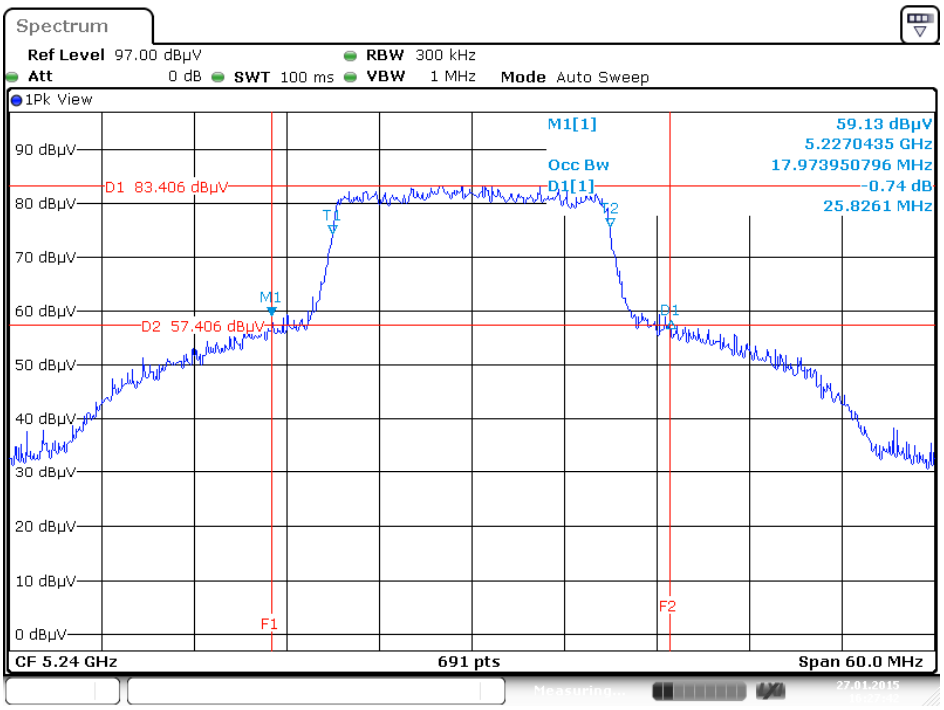
Date: 27.JAN.2015 16:23:24

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



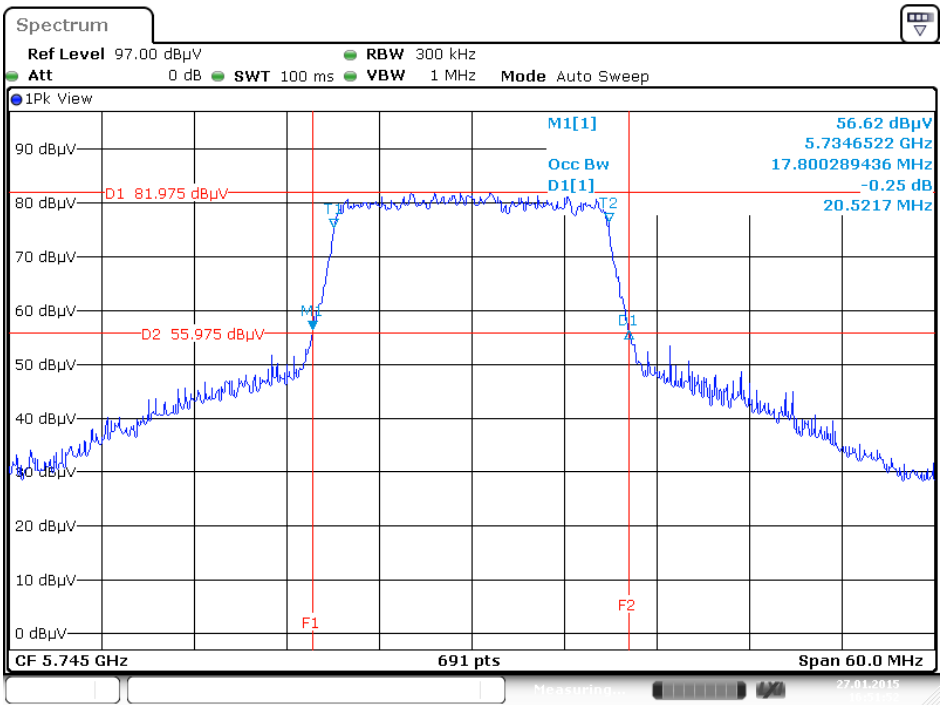
Date: 27.JAN.2015 16:25:54

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



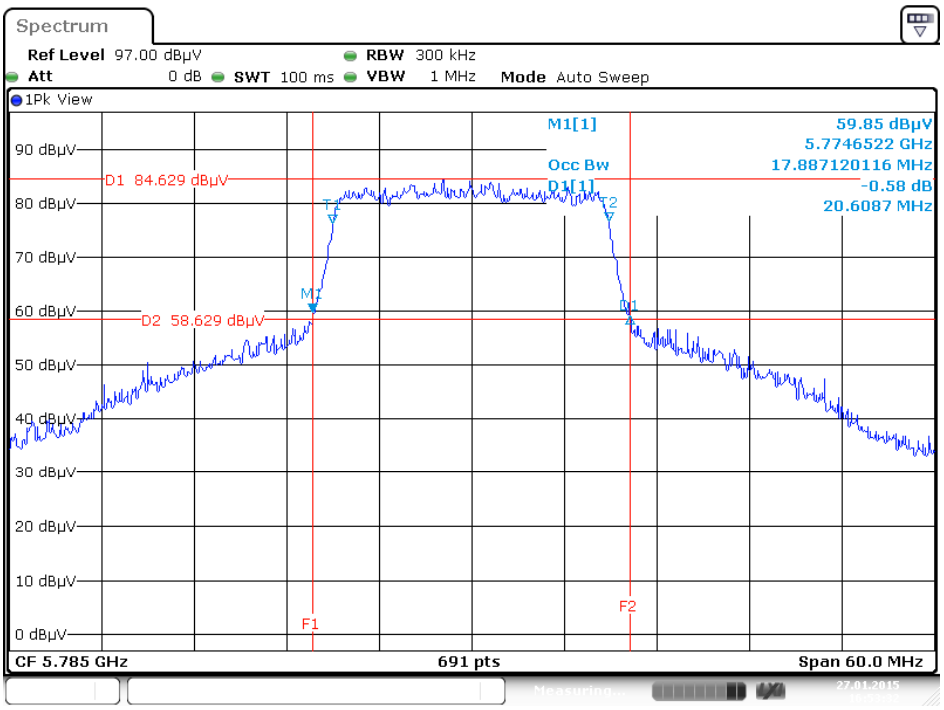
Date: 27.JAN.2015 16:27:43

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



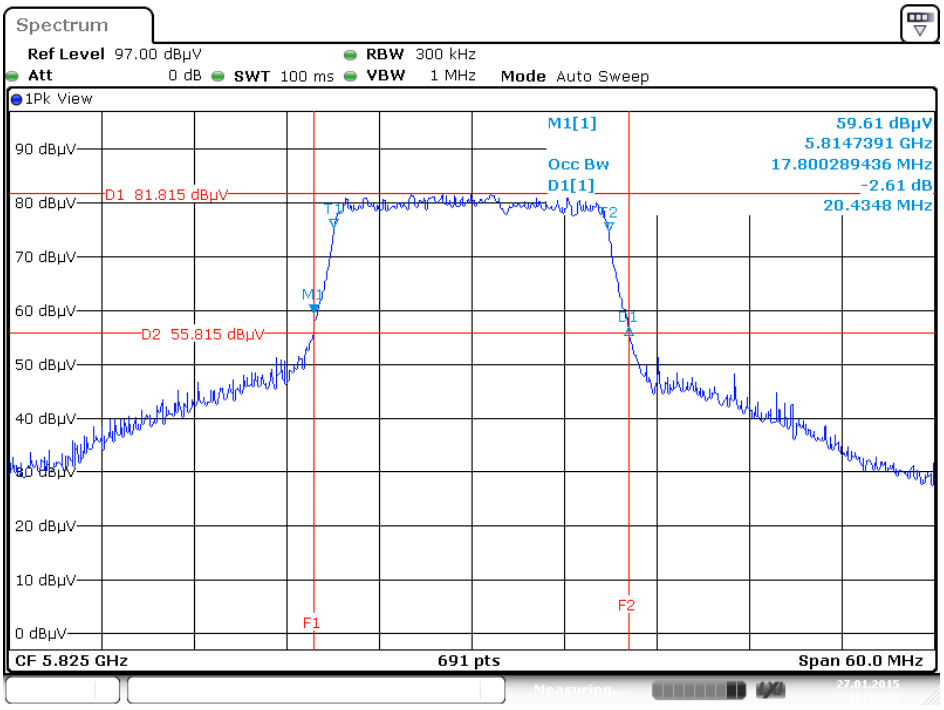
Date: 27.JAN.2015 16:51:52

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



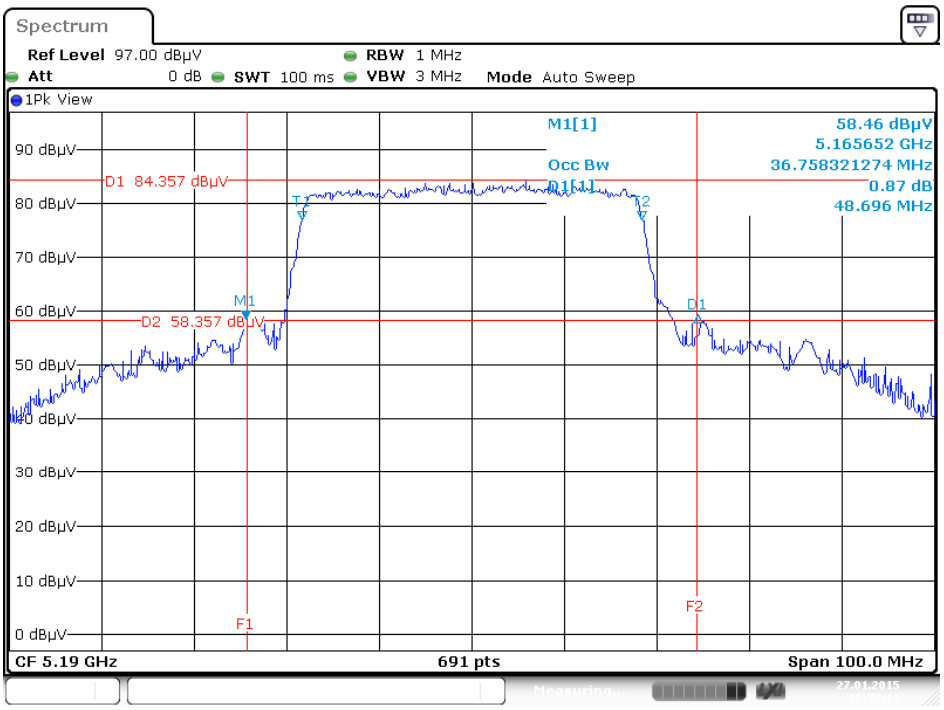
Date: 27.JAN.2015 16:53:32

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



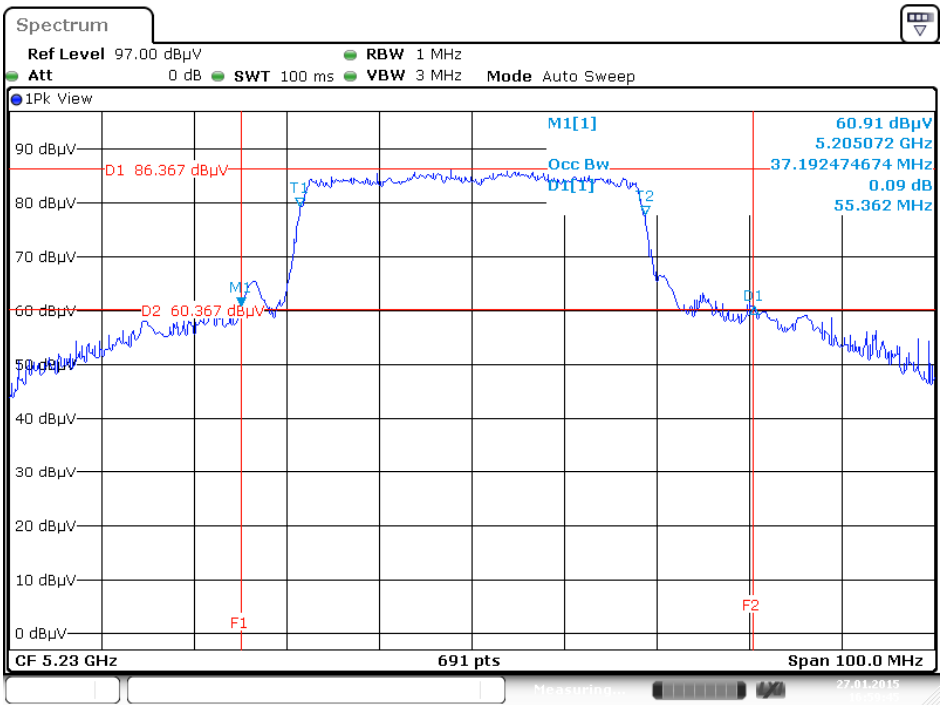
Date: 27.JAN.2015 16:55:05

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



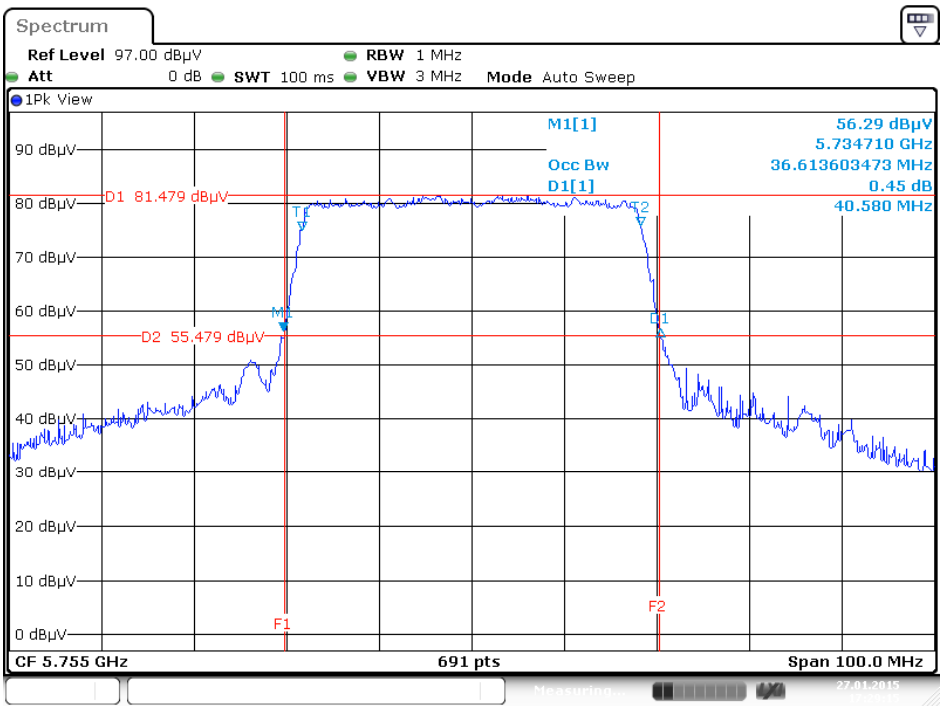
Date: 27.JAN.2015 16:57:14

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



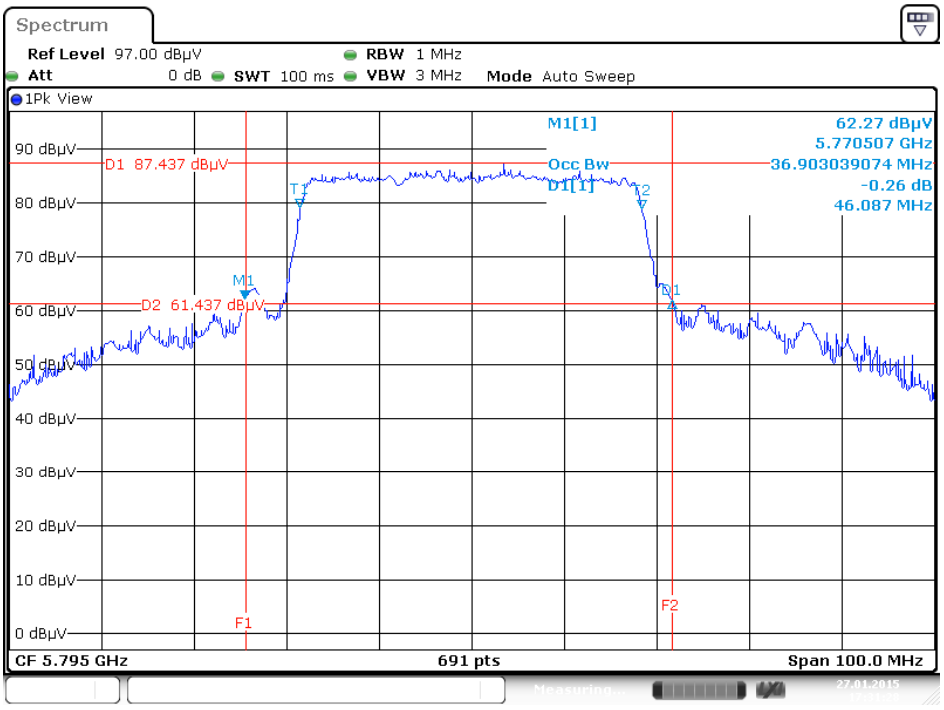
Date: 27.JAN.2015 16:59:45

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



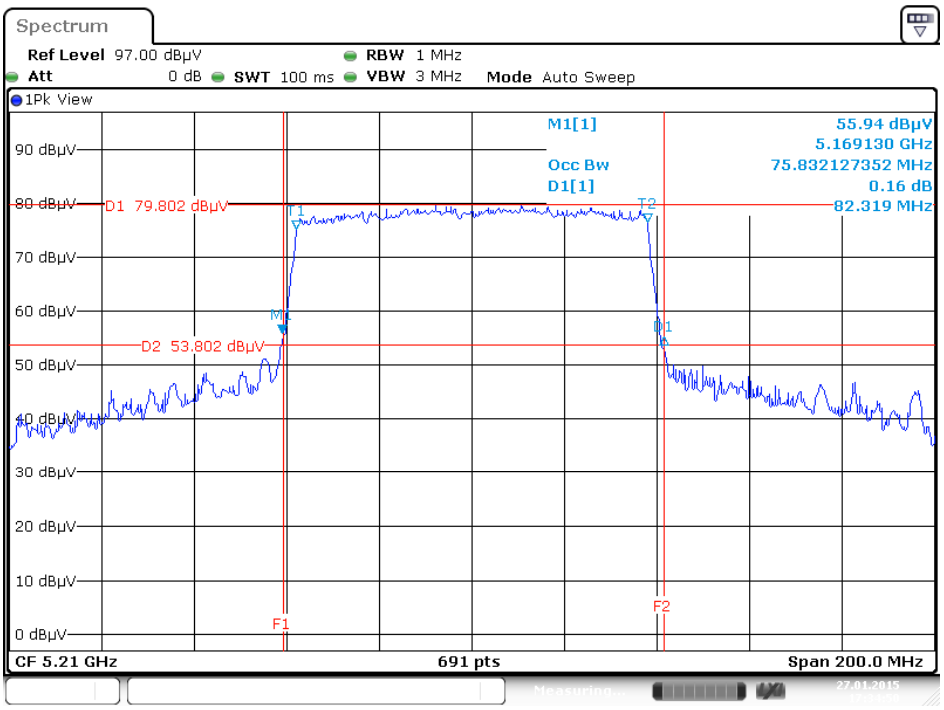
Date: 27.JAN.2015 17:29:16

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



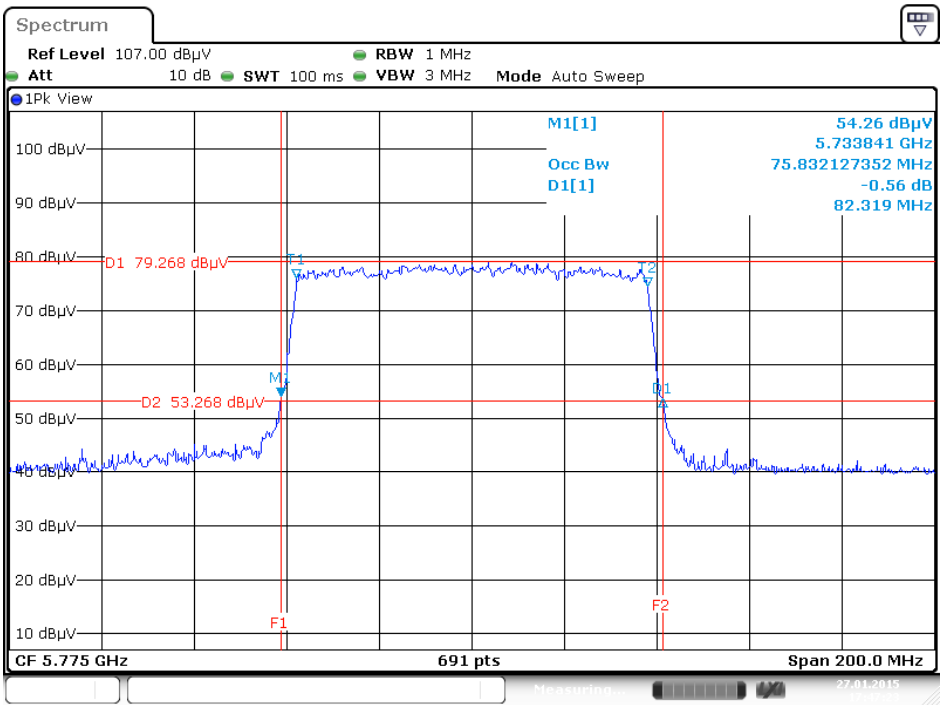
Date: 27.JAN.2015 17:31:28

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



Date: 27.JAN.2015 17:34:49

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



Date: 27.JAN.2015 17:47:23

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	approximately 1% of the emission bandwidth
VBW	VBW > 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 v01 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	26°C	Humidity	63%
Test Engineer	Serway Li		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	16.35	500	Complies
	5785 MHz	16.35	500	Complies
	5825 MHz	16.35	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	16.70	500	Complies
	5785 MHz	16.35	500	Complies
	5825 MHz	16.99	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.71	500	Complies
	5795 MHz	35.71	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.07	500	Complies

For Beamforming Mode:

Temperature	26°C	Humidity	63%
Test Engineer	Serway Li		

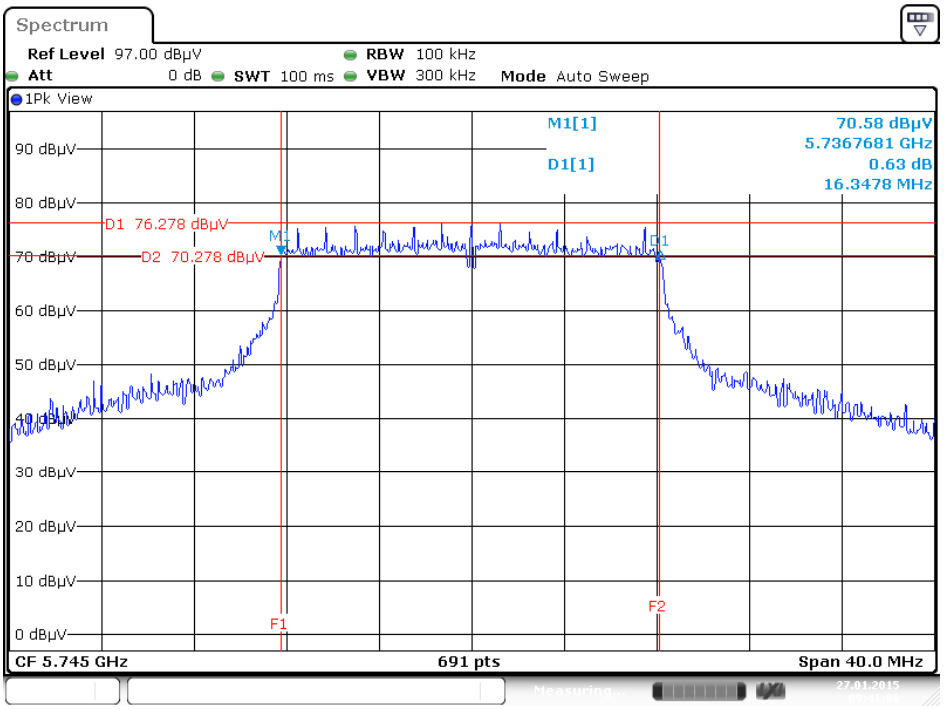
Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	5745 MHz	16.70	500	Complies
	5785 MHz	16.64	500	Complies
	5825 MHz	16.70	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.94	500	Complies
	5795 MHz	36.06	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	72.75	500	Complies

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

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

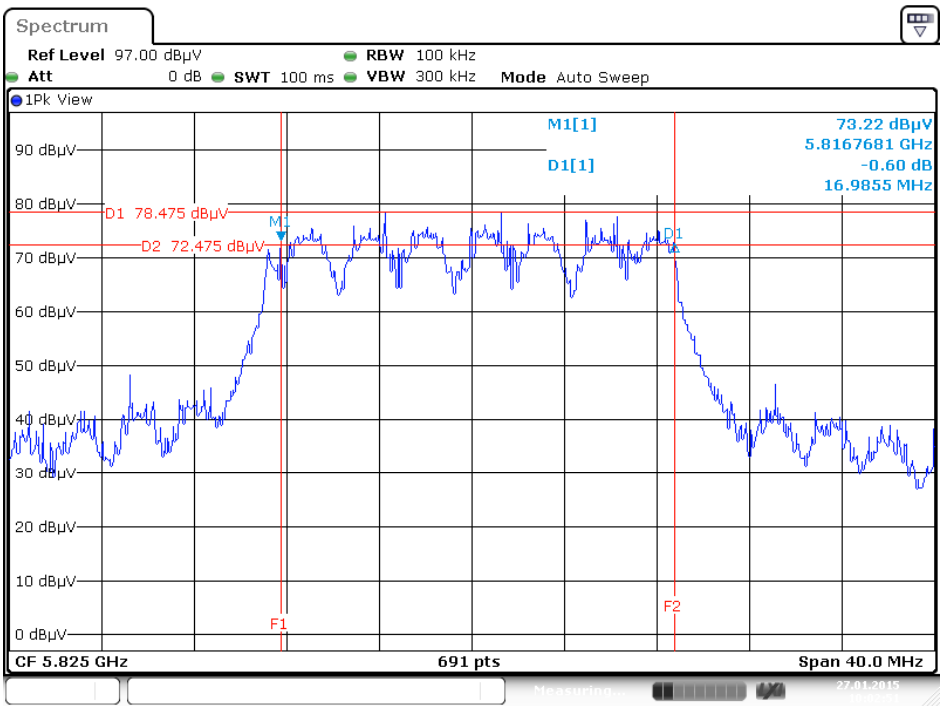
For Non-Beamforming Mode:

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 3 / 5745 MHz



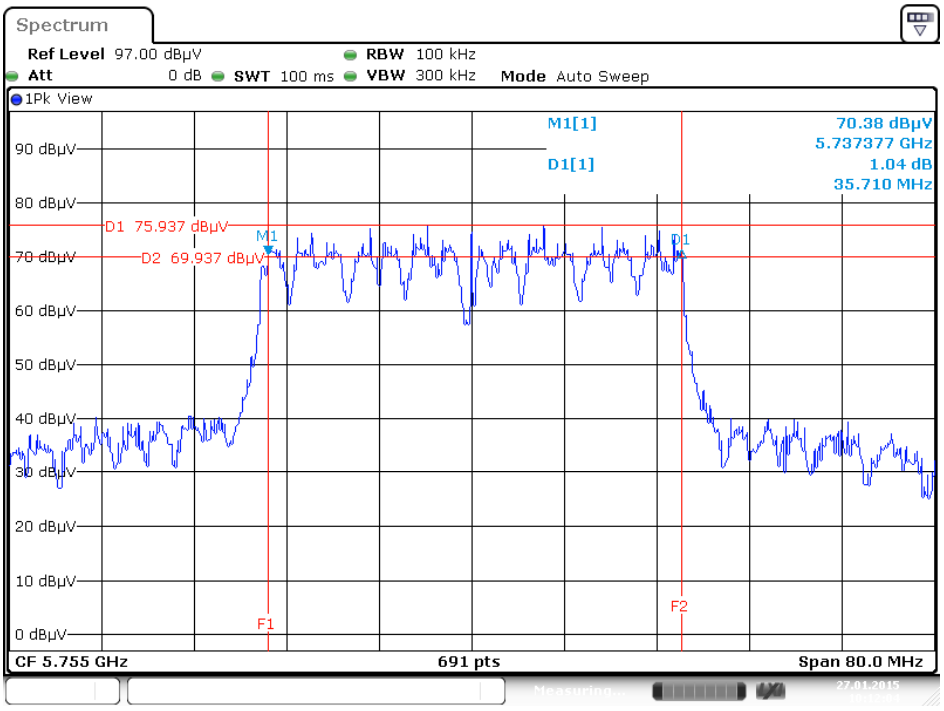
Date: 27.JAN.2015 09:41:06

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



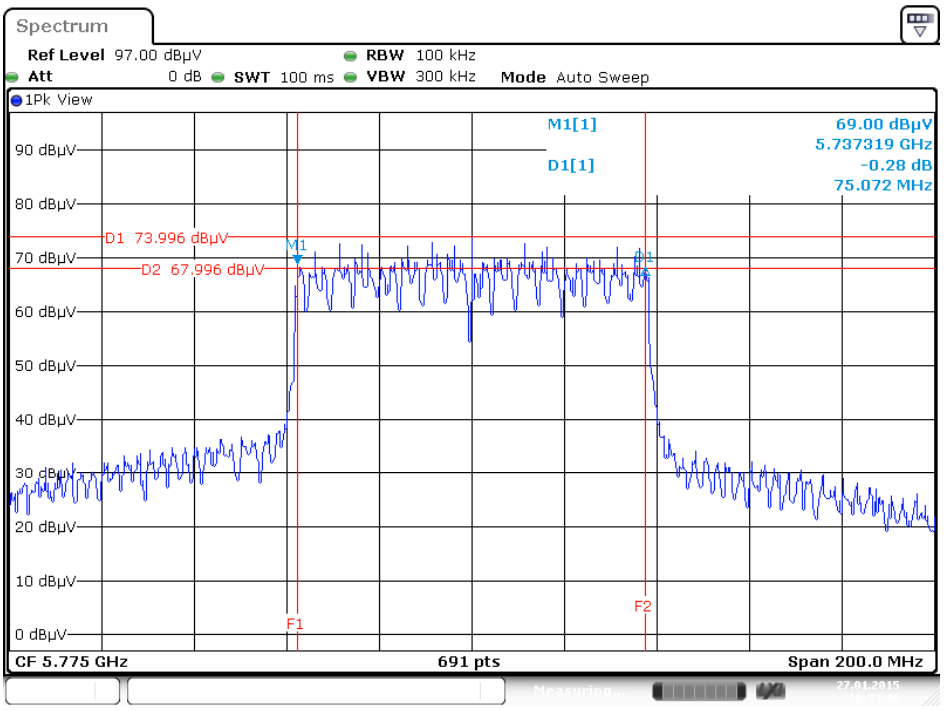
Date: 27.JAN.2015 10:02:51

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



Date: 27.JAN.2015 10:12:04

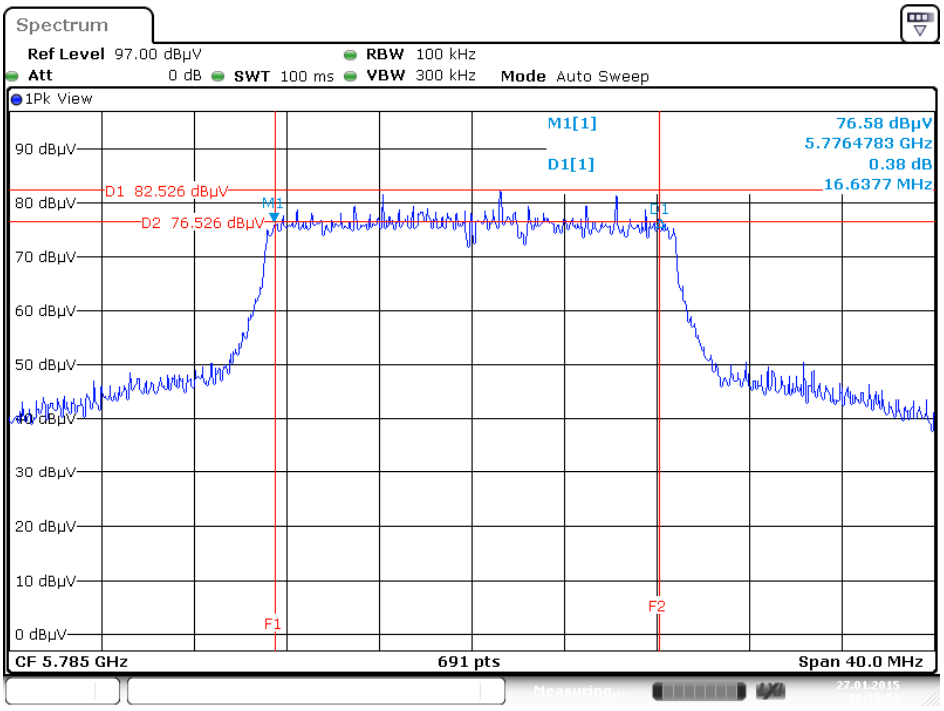
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 + Chain 4 / 5775 MHz



Date: 27.JAN.2015 10:24:46

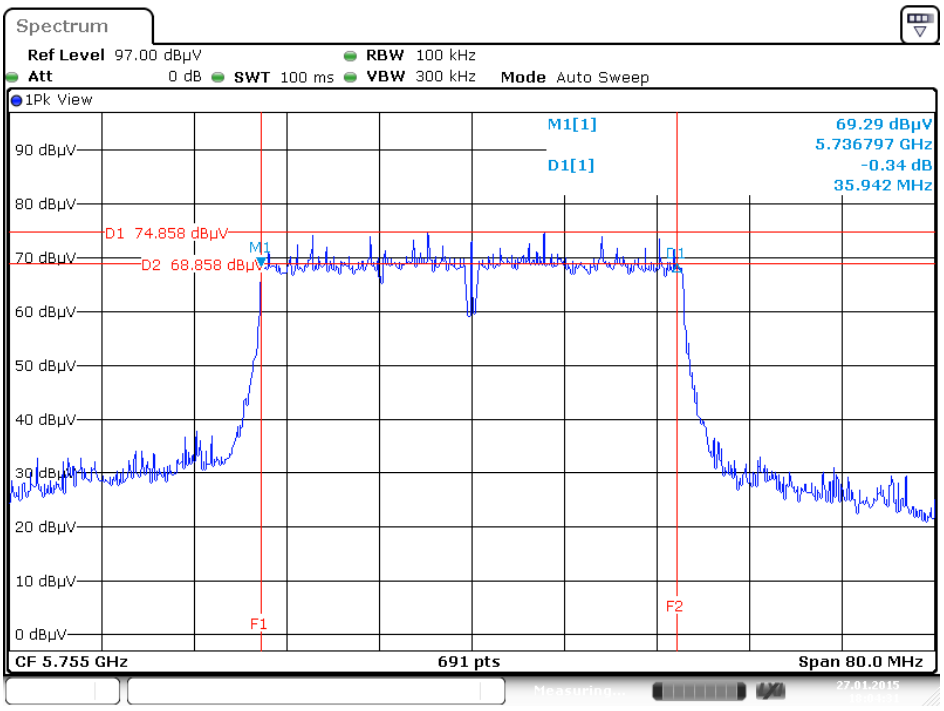
For Beamforming Mode:

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



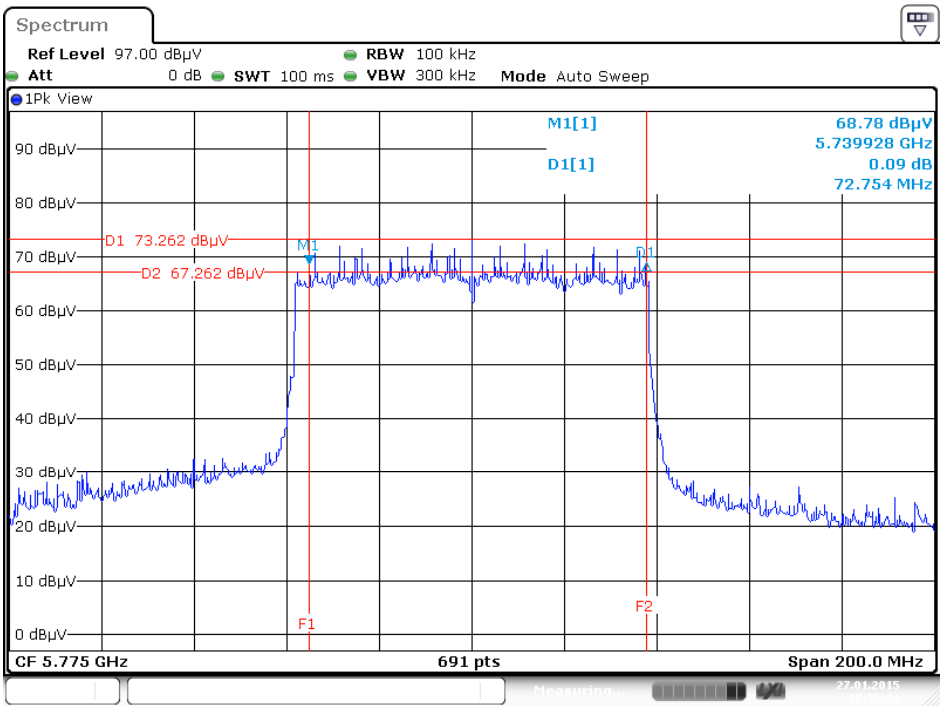
Date: 27.JAN.2015 18:13:52

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



Date: 27.JAN.2015 18:04:31

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



Date: 27.JAN.2015 17:56:25

4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

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

☒	5.725~5.85 GHz	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

4.4.2. Measuring Instruments and Setting

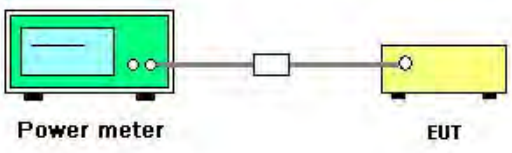
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01 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	26°C	Humidity	63%
Test Engineer	Serway Li	Test Date	Jan. 26, 2015

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 3	Chain 4	Total		
802.11a	5180 MHz	18.75	-	18.75	30.00	Complies
	5200 MHz	18.70	-	18.70	30.00	Complies
	5240 MHz	18.64	-	18.64	30.00	Complies
	5745 MHz	18.80	-	18.80	30.00	Complies
	5785 MHz	18.41	-	18.41	30.00	Complies
	5825 MHz	15.57	-	15.57	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	18.85	18.10	21.50	30.00	Complies
	5200 MHz	18.62	18.21	21.43	30.00	Complies
	5240 MHz	18.60	18.28	21.45	30.00	Complies
	5745 MHz	18.06	17.89	20.99	30.00	Complies
	5785 MHz	18.62	17.84	21.26	30.00	Complies
	5825 MHz	16.63	15.85	19.27	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	16.47	15.71	19.12	30.00	Complies
	5230 MHz	18.47	17.94	21.22	30.00	Complies
	5755 MHz	16.57	15.74	19.19	30.00	Complies
	5795 MHz	18.26	17.47	20.89	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	16.05	15.54	18.81	30.00	Complies
	5775 MHz	15.75	14.90	18.36	30.00	Complies

For Beamforming Mode:

Temperature	26°C	Humidity	63%
Test Engineer	Serway Li	Test Date	Jan. 26, 2015

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5180 MHz	18.80	18.43	21.63	27.70	Complies
	5200 MHz	18.78	18.32	21.57	27.70	Complies
	5240 MHz	18.76	18.52	21.65	27.70	Complies
	5745 MHz	17.12	16.29	19.74	27.70	Complies
	5785 MHz	18.56	17.70	21.16	27.70	Complies
	5825 MHz	16.63	15.85	19.27	27.70	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	16.79	16.55	19.68	27.70	Complies
	5230 MHz	18.50	17.91	21.23	27.70	Complies
	5755 MHz	14.02	13.32	16.69	27.70	Complies
	5795 MHz	18.24	17.54	20.91	27.70	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	15.21	14.45	17.86	27.70	Complies
	5775 MHz	13.97	13.26	16.64	27.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30>6dBi, so the limit=30-(8.30-6)=27.70dBm

4.5. Power Spectral Density Measurement

4.5.1. Limit

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

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

4.5.2. Measuring Instruments and Setting

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

For 5.15-5.25 GHz

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

For 5.725~5.85 GHz

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RBW	RBW ≥ 1/T
VBW	VBW ≥ 3 RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple
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

For 5.15-5.25 GHz

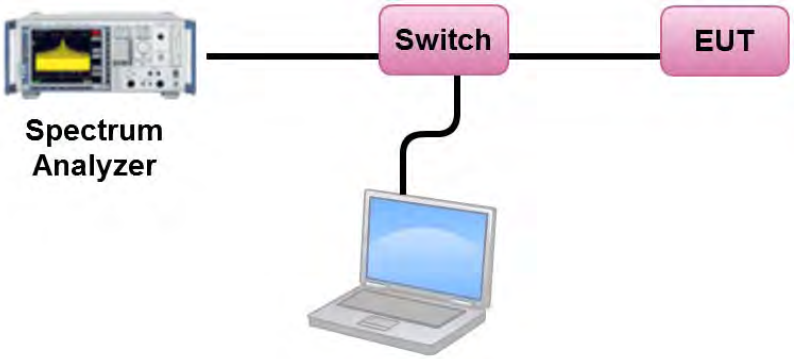
1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements (a) Measure and sum the spectra across the outputs.
4. When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.

For 5.725~5.85 GHz

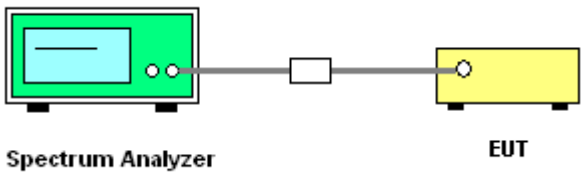
1. Test procedures refer KDB662911 D01 v02r01 section In-Band Power Spectral Density (PSD) Measurements option (b) Measure and sum spectral maximal across the outputs.
2. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
4. Use the peak marker function to determine the maximum level in any 3 kHz band segment within the fundamental EBW.
5. The measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.5.4. Test Setup Layout

For 5.15-5.25 GHz



For 5.725~5.85 GHz



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	26°C	Humidity	63%
Test Engineer	Serway Li	Test Date	Jan. 26, 2015

Configuration IEEE 802.11a / Chain 3

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	8.06	17.00	Complies
40	5200 MHz	7.73	17.00	Complies
48	5240 MHz	7.70	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	8.56	-3.01	5.55	30.00	Complies
157	5785 MHz	8.06	-3.01	5.05	30.00	Complies
165	5825 MHz	5.44	-3.01	2.43	30.00	Complies

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	8.15	14.70	Complies
40	5200 MHz	8.15	14.70	Complies
48	5240 MHz	8.67	14.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 1=17-(8.30-6)=14.70dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	7.97	-3.01	4.96	27.70	Complies
157	5785 MHz	8.96	-3.01	5.95	27.70	Complies
165	5825 MHz	6.88	-3.01	3.87	27.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 4=30-(8.30-6)=27.70dBm/MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	3.49	14.70	Complies
46	5230 MHz	5.50	14.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 1=17-(8.30-6)=14.70dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	3.99	-3.01	0.98	27.70	Complies
159	5795 MHz	5.30	-3.01	2.29	27.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 4=30-(8.30-6)=27.70dBm/MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	2.11	14.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 1=17-(8.30-6)=14.70dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	3.87	-3.01	0.86	27.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 4=30-(8.30-6)=27.70dBm/MHz

For Beamforming Mode:

Temperature	26°C	Humidity	63%
Test Engineer	Serway Li	Test Date	Jan. 26, 2015

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	9.21	14.70	Complies
40	5200 MHz	9.16	14.70	Complies
48	5240 MHz	9.36	14.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 1=17-(8.30-6)=14.70dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	7.33	-3.01	4.32	27.70	Complies
157	5785 MHz	8.96	-3.01	5.95	27.70	Complies
165	5825 MHz	6.88	-3.01	3.87	27.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 4=30-(8.30-6)=27.70dBm/MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	2.92	14.70	Complies
46	5230 MHz	5.50	14.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 1=17-(8.30-6)=14.70dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	0.89	-3.01	-2.12	27.70	Complies
159	5795 MHz	5.30	-3.01	2.29	27.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 4=30-(8.30-6)=27.70dBm/MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	0.53	14.70	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 1=17-(8.30-6)=14.70dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	0.49	-3.01	-2.52	27.70	Complies

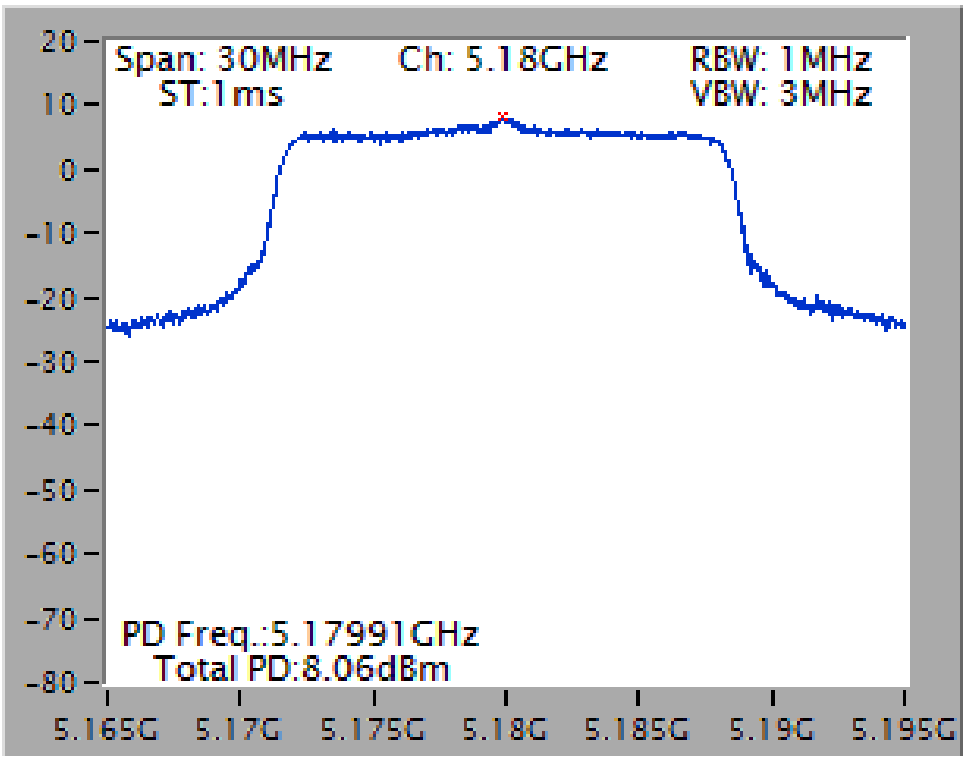
Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit of Band 4=30-(8.30-6)=27.70dBm/MHz

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

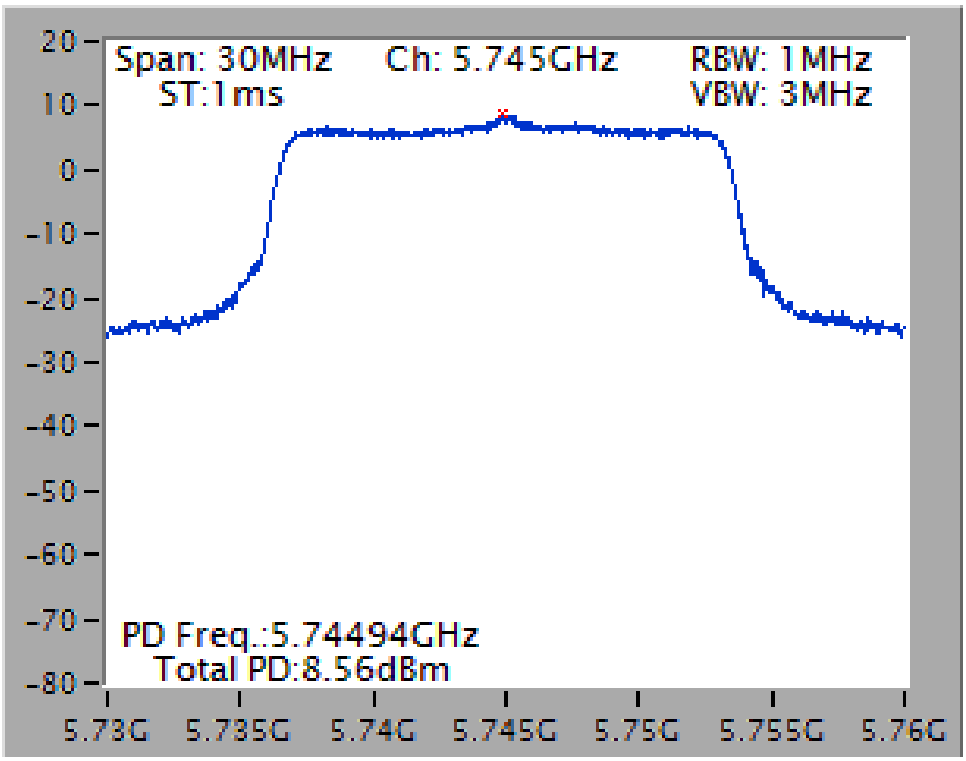
For plots, only the channel with worse result was shown.

For Non-Beamforming Mode:

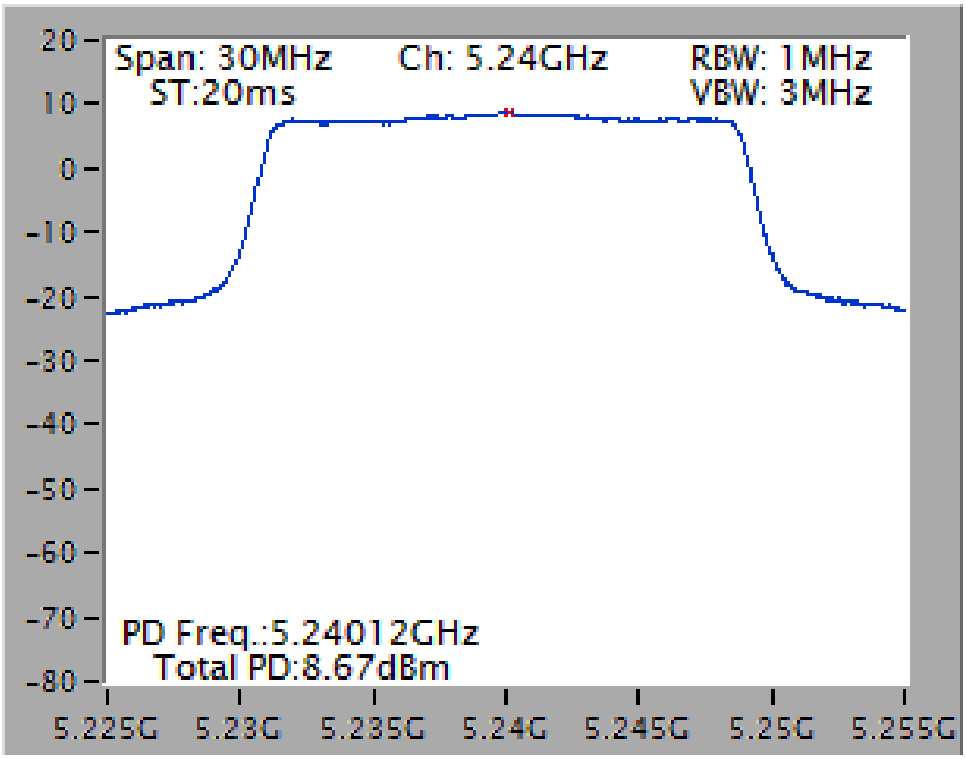
Power Density Plot on Configuration IEEE 802.11a / Chain 3 / 5180 MHz



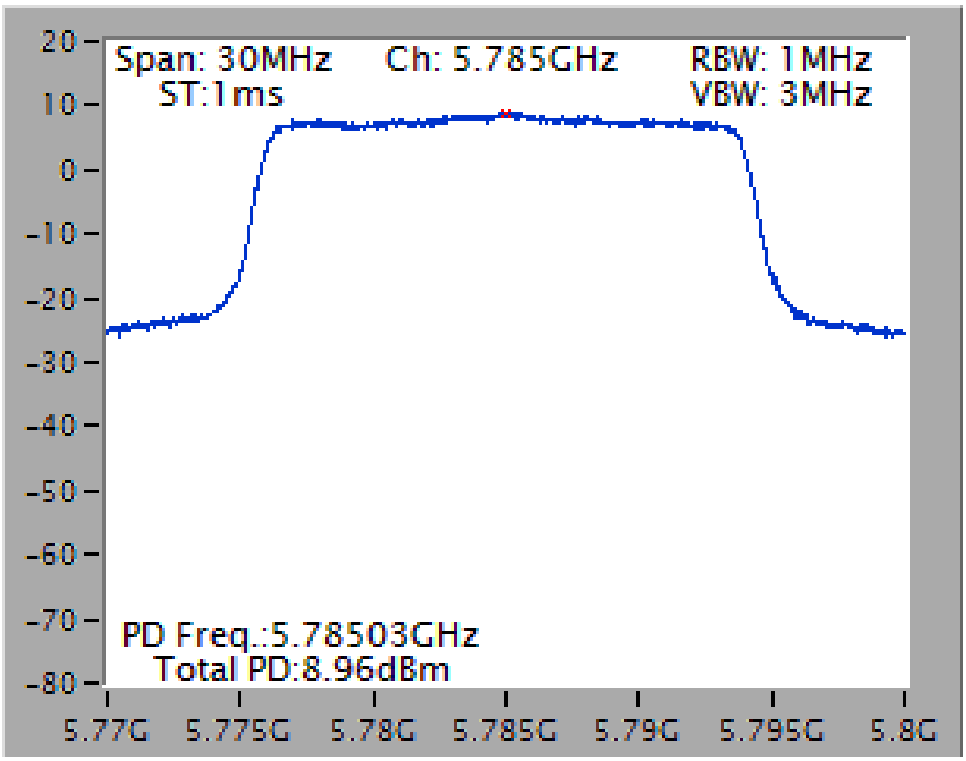
Power Density Plot on Configuration IEEE 802.11a / Chain 3 / 5745 MHz



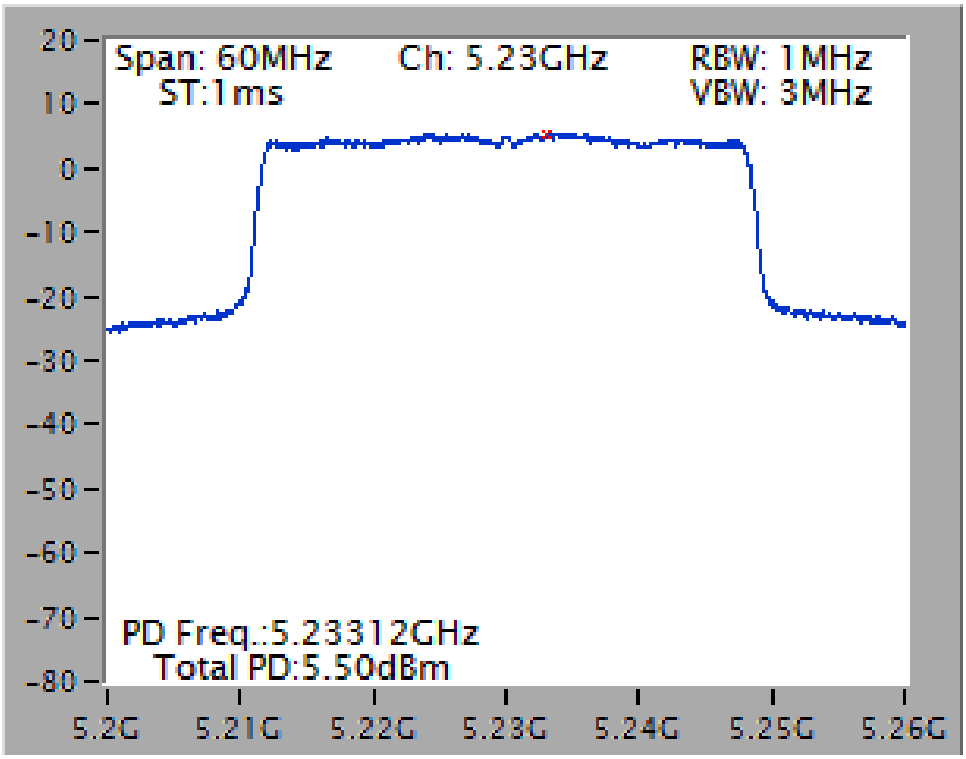
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 + Chain 4 / 5240 MHz



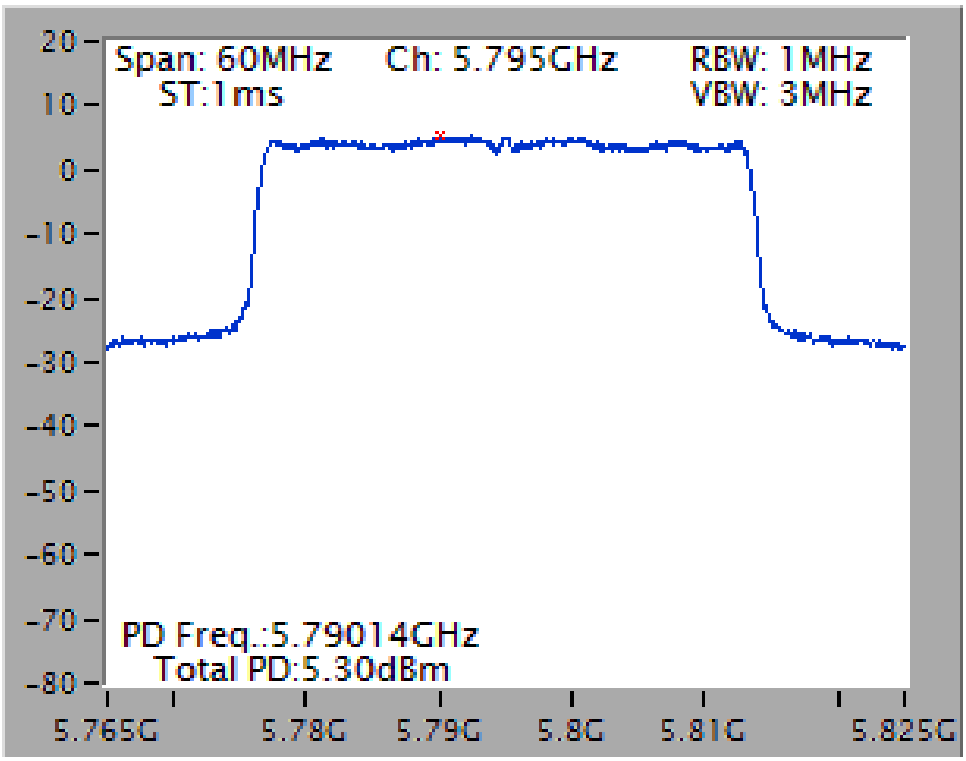
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 + Chain 4 / 5785 MHz



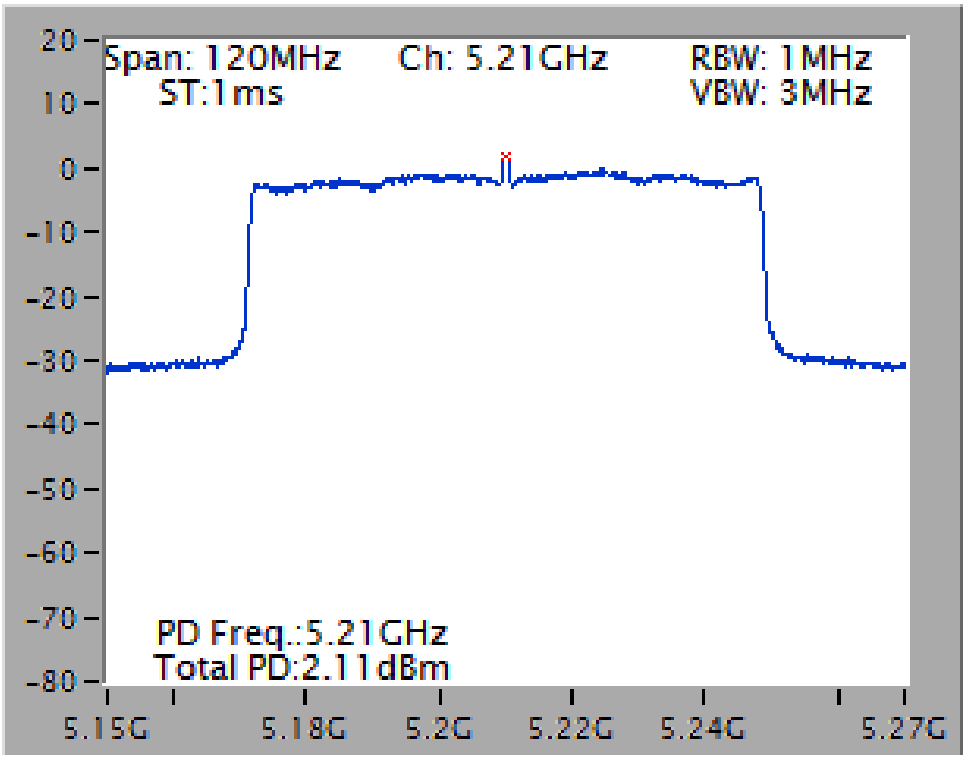
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5230 MHz



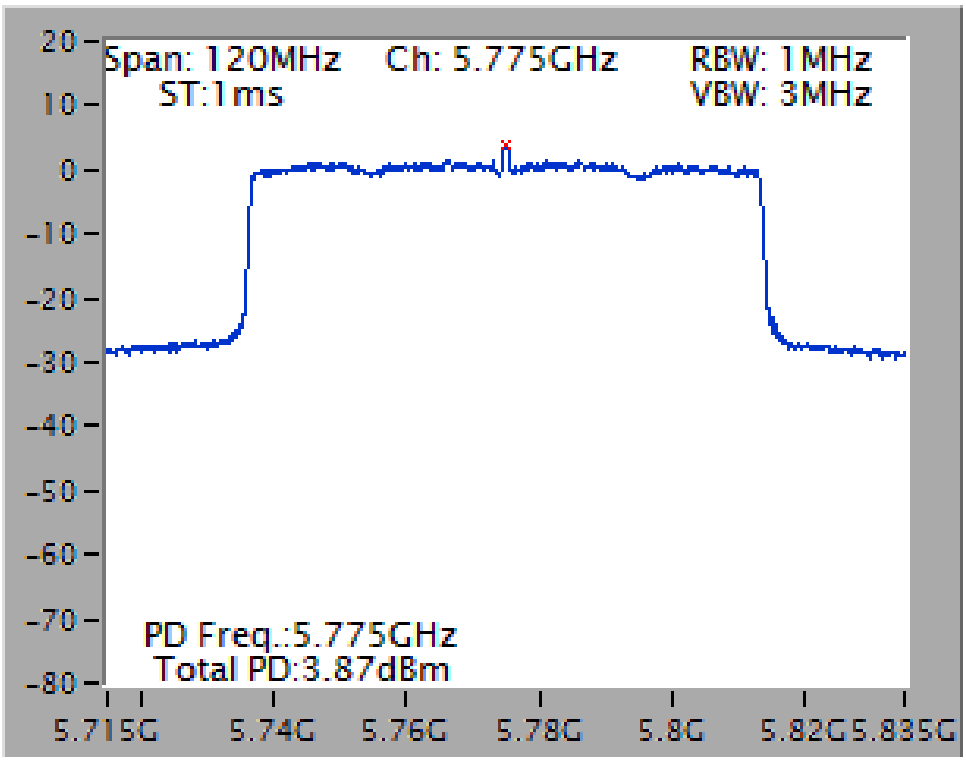
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5795 MHz



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

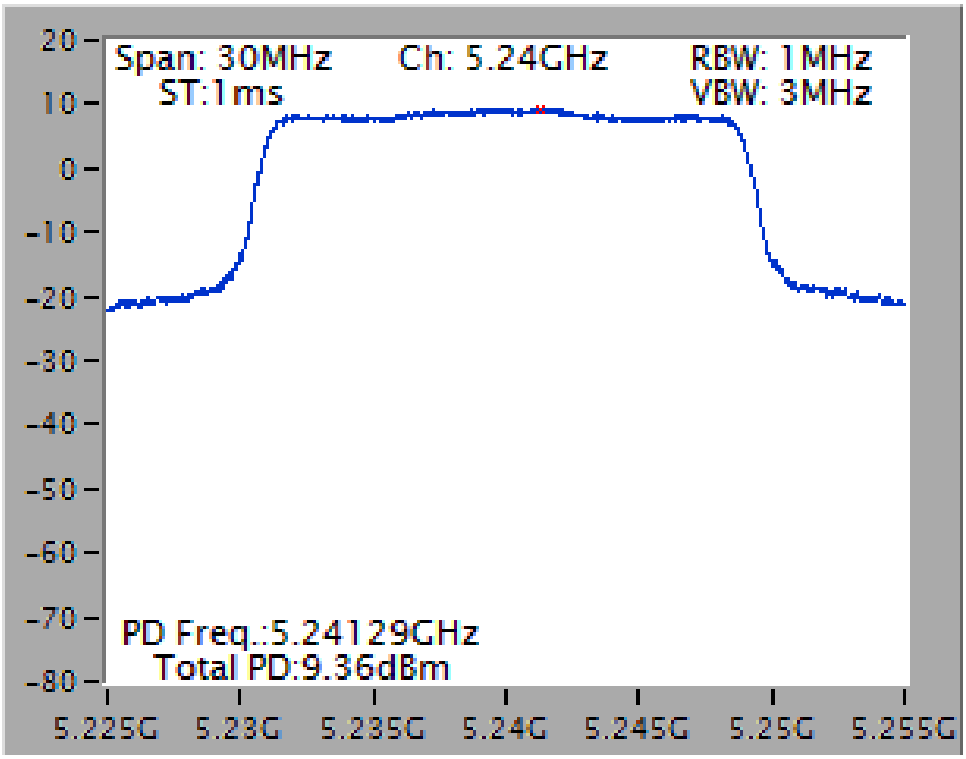


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 + Chain 4 / 5775 MHz

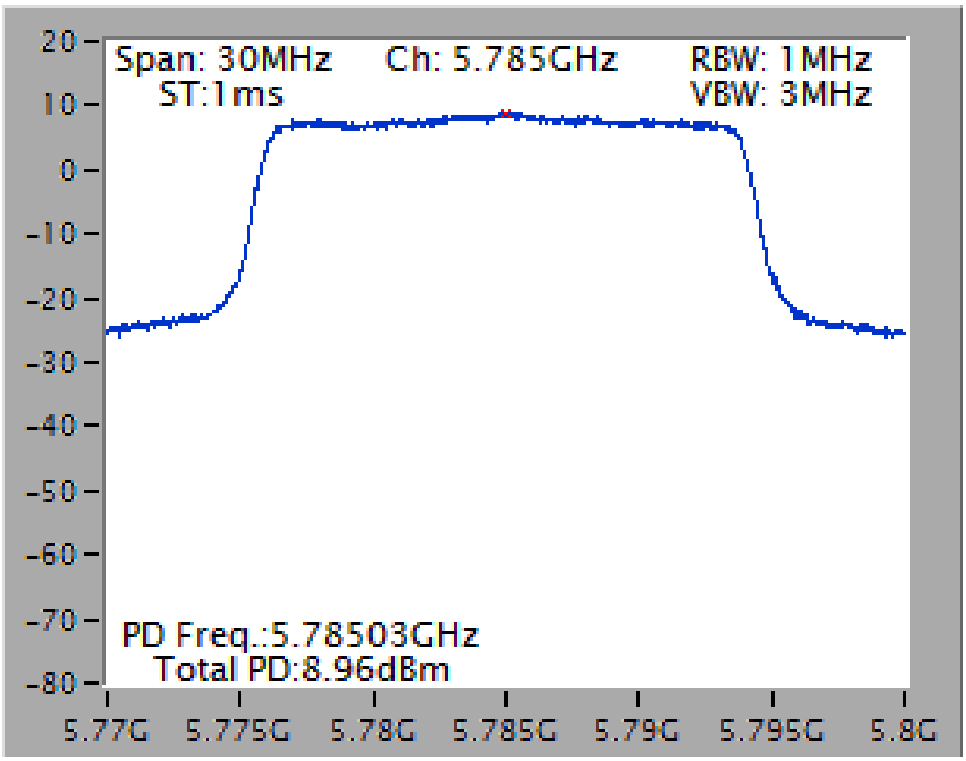


For Beamforming Mode:

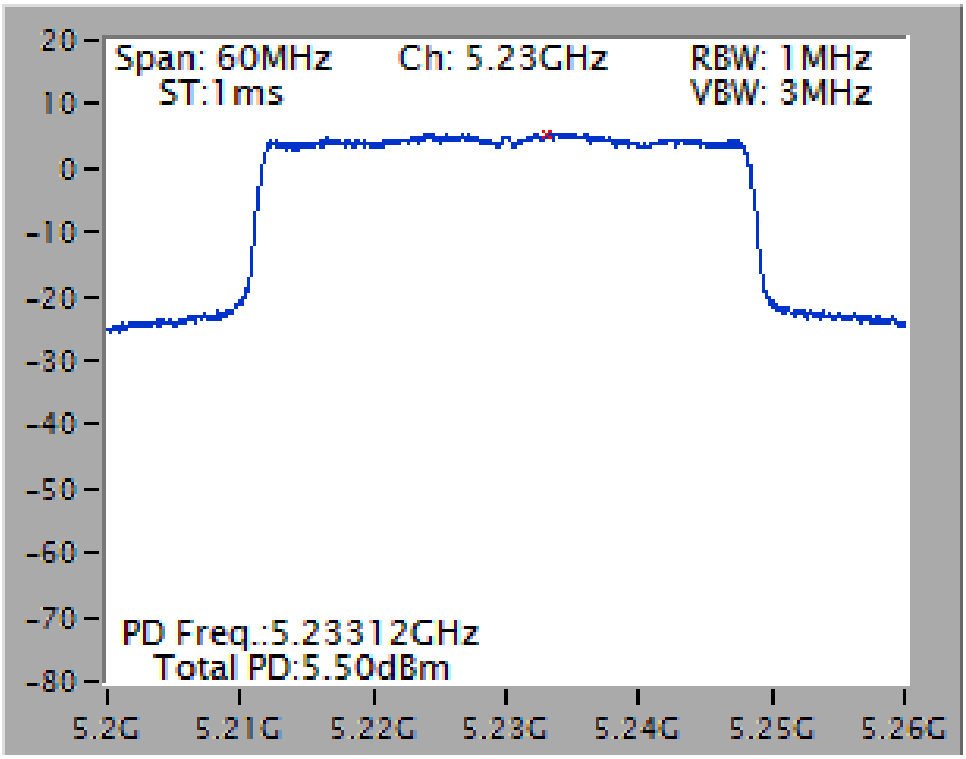
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 + Chain 4 / 5240 MHz



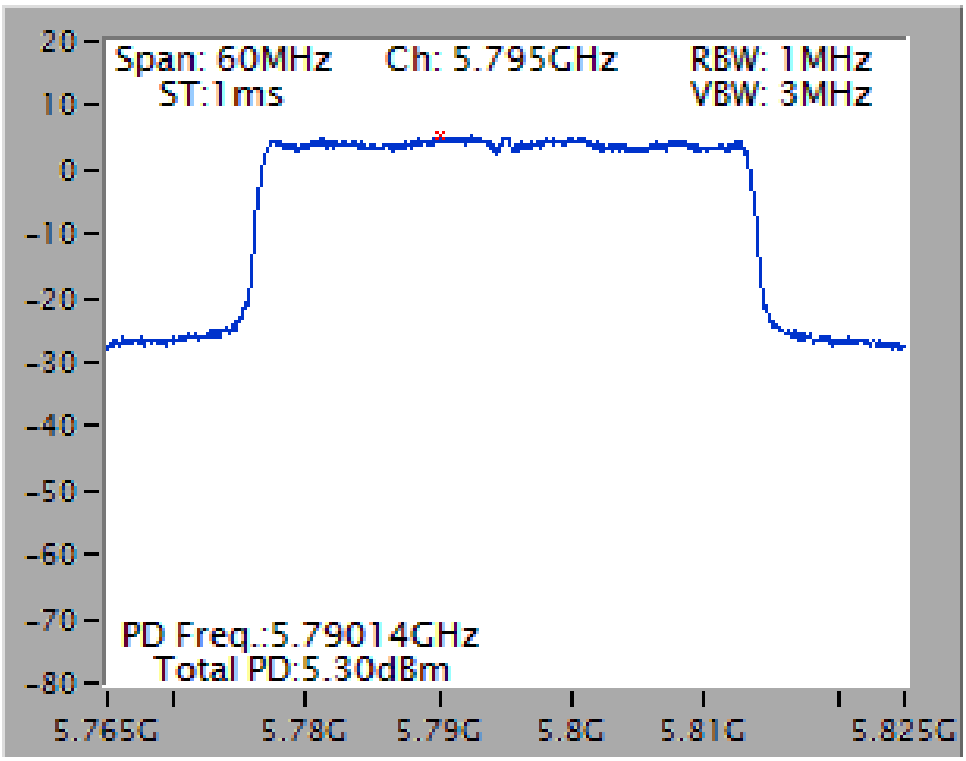
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 + Chain 4 / 5785 MHz



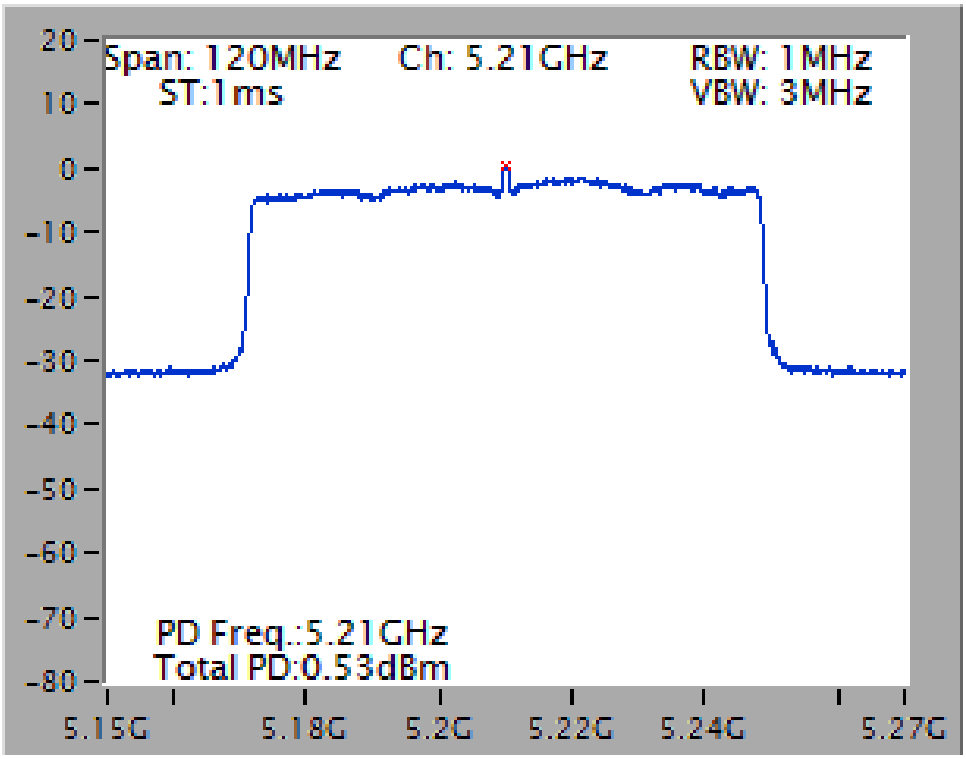
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5230 MHz



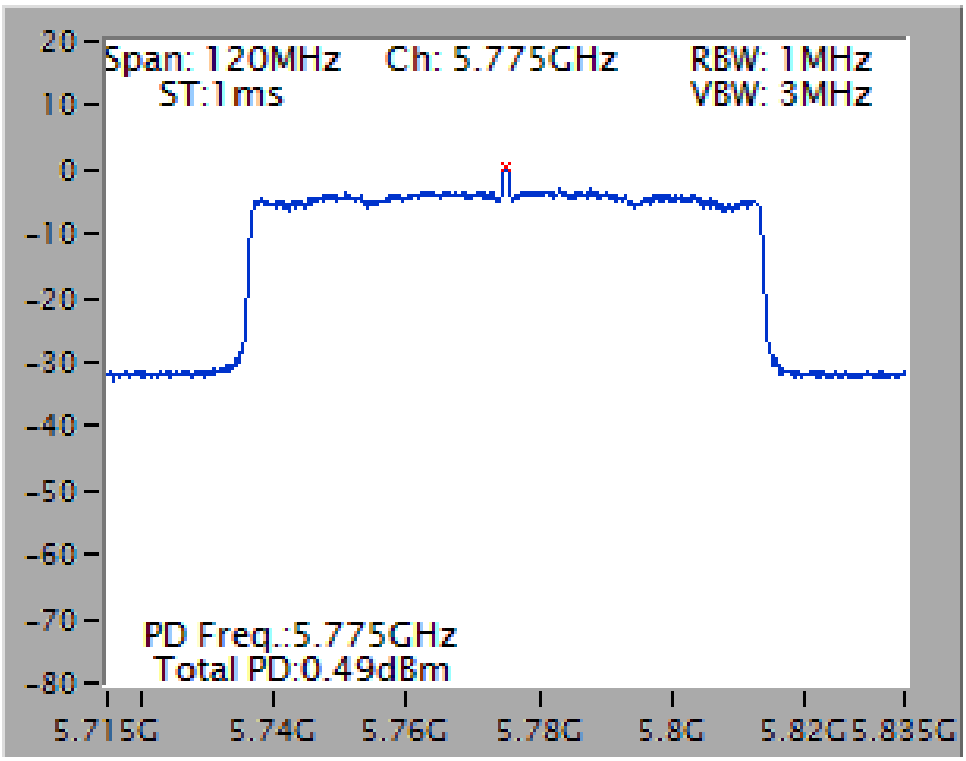
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5795 MHz



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



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



4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.25 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

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

4.6.2. Measuring Instruments and Setting

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

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

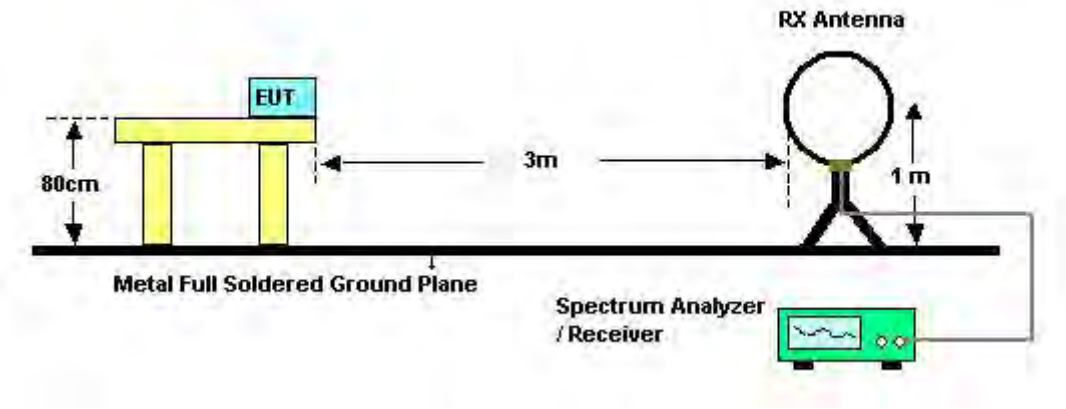
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

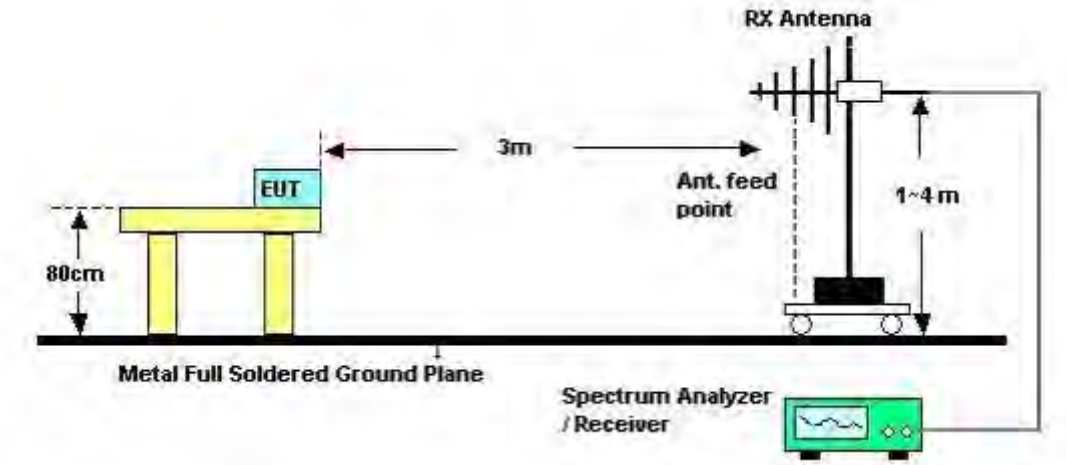
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

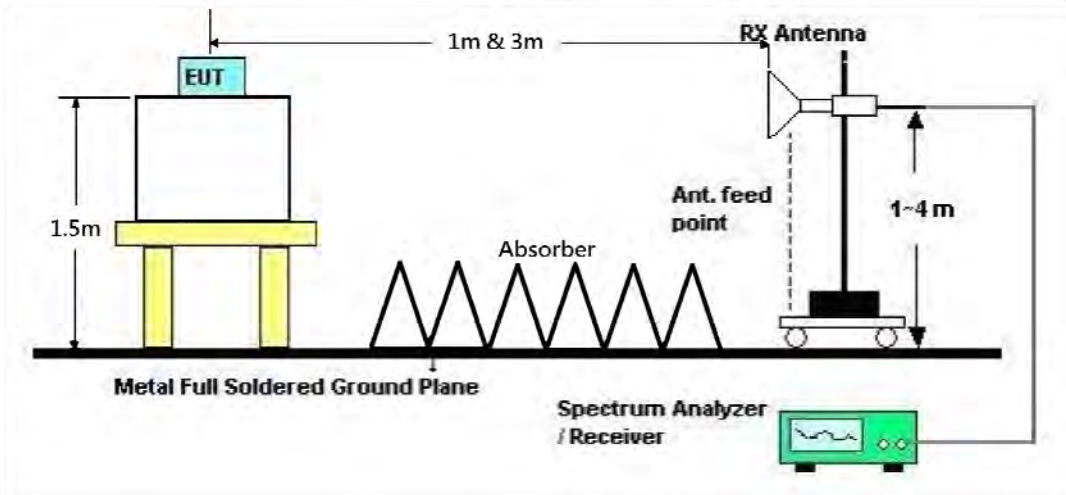
For Radiated Emissions: 9kHz ~30MHz



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	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	Normal Link
Test Date	Jan. 24, 2015	Test Mode	Mode 2

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

Note:

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

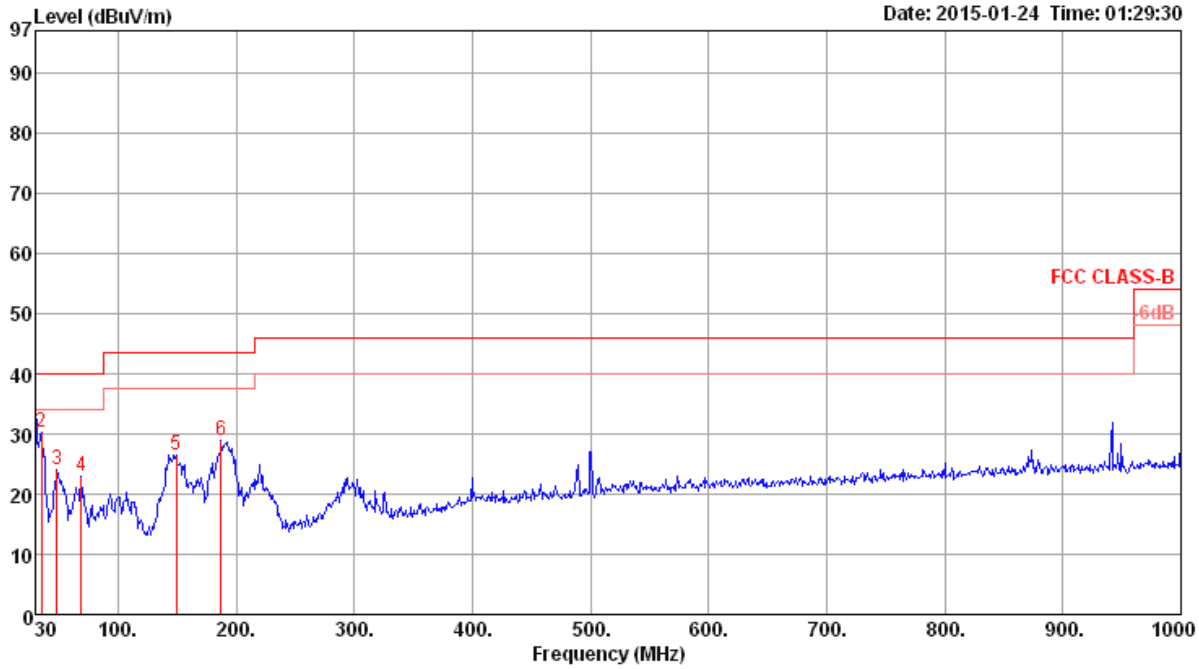
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

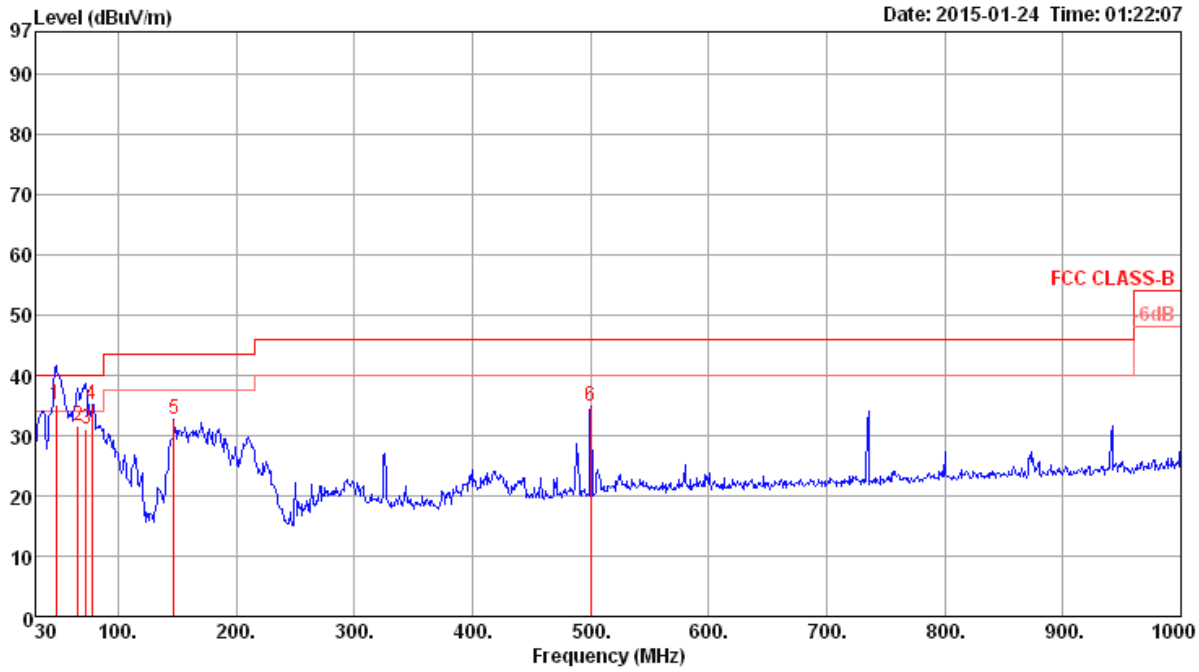
Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	Normal Link
Test Mode	Mode 2		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	30.00	32.71	40.00	-7.29	41.14	0.61	18.76	27.80	Peak	100	0	HORIZONTAL
2	34.85	30.36	40.00	-9.64	41.38	0.70	16.08	27.80	Peak	100	0	HORIZONTAL
3	48.43	24.07	40.00	-15.93	41.92	0.82	9.13	27.80	Peak	100	0	HORIZONTAL
4	68.80	22.98	40.00	-17.02	43.08	0.98	6.65	27.73	Peak	100	0	HORIZONTAL
5	149.31	26.55	43.50	-16.95	40.59	1.42	11.90	27.36	Peak	100	0	HORIZONTAL
6	187.14	28.87	43.50	-14.63	42.72	1.60	11.71	27.16	Peak	100	0	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	47.46	35.17	40.00	-4.83	52.75	0.80	9.42	27.80	QP	109	174	VERTICAL
2	65.89	31.68	40.00	-8.32	51.78	0.95	6.69	27.74	QP	139	335	VERTICAL
3	72.68	31.21	40.00	-8.79	51.19	0.95	6.78	27.71	QP	135	157	VERTICAL
4	77.53	35.14	40.00	-4.86	54.85	0.95	7.03	27.69	Peak	400	0	VERTICAL
5	147.37	32.56	43.50	-10.94	46.51	1.42	11.99	27.36	Peak	400	0	VERTICAL
6	500.45	34.85	46.00	-11.15	42.65	2.67	17.63	28.10	Peak	400	0	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	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 36 / Chain 3
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15536.36	49.90	54.00	-4.10	36.57	10.77	38.15	35.59	Average	197	9	HORIZONTAL
2	15543.08	63.27	74.00	-10.73	49.97	10.77	38.12	35.59	Peak	197	9	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15533.04	58.70	74.00	-15.30	45.37	10.77	38.15	35.59	Peak	170	286	VERTICAL
2	15537.60	47.08	54.00	-6.92	33.75	10.77	38.15	35.59	Average	170	286	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 40 / Chain 3
Test Date	Jan. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15599.91	59.61	74.00	-14.39	43.42	12.58	38.36	34.75	45	100	Peak	HORIZONTAL
2	15600.06	47.61	54.00	-6.39	31.42	12.58	38.36	34.75	45	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15599.86	60.37	74.00	-13.63	44.18	12.58	38.36	34.75	332	100	Peak	VERTICAL
2	15600.09	46.65	54.00	-7.35	30.46	12.58	38.36	34.75	332	100	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 48 / Chain 3
Test Date	Jan. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15719.94	47.43	54.00	-6.57	31.47	12.57	38.19	34.80	319	100	Average	HORIZONTAL
2	15720.06	60.97	74.00	-13.03	45.01	12.57	38.19	34.80	319	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15719.74	47.25	54.00	-6.75	31.29	12.57	38.19	34.80	87	100	Average	VERTICAL
2	15720.49	59.52	74.00	-14.48	43.56	12.57	38.19	34.80	87	100	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 149 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11486.70	49.43	54.00	-4.57	35.77	9.24	39.50	35.08	Average	221	45	HORIZONTAL
2	11499.50	61.94	74.00	-12.06	48.29	9.25	39.50	35.10	Peak	221	45	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11490.80	58.62	74.00	-15.38	44.96	9.24	39.50	35.08	Peak	227	270	VERTICAL
2	11495.50	46.58	54.00	-7.42	32.94	9.24	39.50	35.10	Average	227	270	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 157 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11570.10	53.78	54.00	-0.22	40.14	9.26	39.47	35.09	Average	222	83	HORIZONTAL
2	11570.60	66.31	74.00	-7.69	52.67	9.26	39.47	35.09	Peak	222	83	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11570.80	48.24	54.00	-5.76	34.60	9.26	39.47	35.09	Average	235	261	VERTICAL
2	11572.20	59.92	74.00	-14.08	46.27	9.26	39.47	35.08	Peak	235	261	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 165 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11652.40	53.88	54.00	-0.12	40.23	9.28	39.44	35.07	Average	227	79	HORIZONTAL
2	11652.80	66.81	74.00	-7.19	53.16	9.28	39.44	35.07	Peak	227	79	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11646.30	62.76	74.00	-11.24	49.11	9.28	39.44	35.07	Peak	236	266	VERTICAL
2	11649.80	50.39	54.00	-3.61	36.74	9.28	39.44	35.07	Average	236	266	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15537.50	64.61	74.00	-9.39	51.28	10.77	38.15	35.59	Peak	195	13	HORIZONTAL
2	15540.20	51.75	54.00	-2.25	38.45	10.77	38.12	35.59	Average	195	13	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15535.60	59.12	74.00	-14.88	45.79	10.77	38.15	35.59	Peak	207	237	VERTICAL
2	15536.10	47.13	54.00	-6.87	33.80	10.77	38.15	35.59	Average	207	237	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 3 + Chain 4
Test Date	Jan. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15600.35	58.78	74.00	-15.22	42.59	12.58	38.36	34.75	284	101	Peak	HORIZONTAL
2	15600.85	47.67	54.00	-6.33	31.48	12.58	38.36	34.75	284	101	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15599.77	47.02	54.00	-6.98	30.83	12.58	38.36	34.75	33	101	Average	VERTICAL
2	15600.85	59.79	74.00	-14.21	43.60	12.58	38.36	34.75	33	101	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 3 + Chain 4
Test Date	Jan. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15720.70	67.47	74.00	-6.53	51.51	12.57	38.19	34.80	360	182	Peak	HORIZONTAL
2	15722.79	53.39	54.00	-0.61	37.43	12.57	38.19	34.80	360	185	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15725.93	47.37	54.00	-6.63	31.41	12.57	38.19	34.80	32	190	Average	VERTICAL
2	15730.28	60.06	74.00	-13.94	44.10	12.57	38.19	34.80	32	190	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11484.20	63.42	74.00	-10.58	49.76	9.24	39.50	35.08	Peak	226	80	HORIZONTAL
2	11491.90	51.11	54.00	-2.89	37.45	9.24	39.50	35.08	Average	226	80	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11492.00	48.59	54.00	-5.41	34.93	9.24	39.50	35.08	Average	215	64	VERTICAL
2	11492.00	59.59	74.00	-14.41	45.93	9.24	39.50	35.08	Peak	215	64	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11572.00	53.87	54.00	-0.13	40.22	9.26	39.47	35.08	Average	225	81	HORIZONTAL
2	11572.30	65.94	74.00	-8.06	52.29	9.26	39.47	35.08	Peak	225	81	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11569.30	50.49	54.00	-3.51	36.85	9.26	39.47	35.09	Average	203	112	VERTICAL
2	11569.30	62.49	74.00	-11.51	48.85	9.26	39.47	35.09	Peak	203	112	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11649.36	66.89	74.00	-7.11	51.64	10.81	39.48	35.04	72	211	Peak	HORIZONTAL
2	11649.52	53.85	54.00	-0.15	38.60	10.81	39.48	35.04	72	211	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11645.52	61.33	74.00	-12.67	46.10	10.79	39.48	35.04	269	217	Peak	VERTICAL
2	11649.84	48.48	54.00	-5.52	33.23	10.81	39.48	35.04	269	217	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15559.50	46.84	54.00	-7.16	33.55	10.78	38.09	35.58	Average	206	360	HORIZONTAL
2	15567.00	59.14	74.00	-14.86	45.85	10.78	38.09	35.58	Peak	206	360	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15561.00	46.70	54.00	-7.30	33.41	10.78	38.09	35.58	Average	216	291	VERTICAL
2	15561.00	57.70	74.00	-16.30	44.41	10.78	38.09	35.58	Peak	216	291	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 3 + Chain 4
Test Date	Jan. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15689.94	48.96	54.00	-5.04	32.94	12.58	38.23	34.79	18	183	Average	HORIZONTAL
2	15690.03	59.56	74.00	-14.44	43.54	12.58	38.23	34.79	18	183	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15689.62	45.75	54.00	-8.25	29.73	12.58	38.23	34.79	75	100	Average	VERTICAL
2	15690.23	59.96	74.00	-14.04	43.94	12.58	38.23	34.79	75	100	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11506.20	60.95	74.00	-13.05	47.30	9.25	39.50	35.10	Peak	223	75	HORIZONTAL
2	11509.40	48.18	54.00	-5.82	34.53	9.25	39.50	35.10	Average	223	75	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11493.50	46.24	54.00	-7.76	32.58	9.24	39.50	35.08	Average	205	137	VERTICAL
2	11521.60	59.40	74.00	-14.60	45.75	9.25	39.49	35.09	Peak	205	137	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11586.30	64.62	74.00	-9.38	50.96	9.27	39.47	35.08	Peak	223	76	HORIZONTAL
2	11591.80	51.76	54.00	-2.24	38.10	9.27	39.47	35.08	Average	223	76	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11589.20	49.62	54.00	-4.38	35.96	9.27	39.47	35.08	Average	212	60	VERTICAL
2	11599.40	61.31	74.00	-12.69	47.65	9.27	39.47	35.08	Peak	212	60	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15611.20	46.40	54.00	-7.60	33.18	10.78	38.01	35.57	Average	221	78	HORIZONTAL
2	15623.30	59.27	74.00	-14.73	46.07	10.78	37.99	35.57	Peak	221	78	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15636.20	45.38	54.00	-8.62	32.18	10.78	37.99	35.57	Average	221	78	VERTICAL
2	15636.20	56.38	74.00	-17.62	43.18	10.78	37.99	35.57	Peak	221	78	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11559.10	48.72	54.00	-5.28	35.07	9.26	39.48	35.09	Average	218	76	HORIZONTAL
2	11568.70	60.66	74.00	-13.34	47.02	9.26	39.47	35.09	Peak	218	76	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11547.10	58.70	74.00	-15.30	45.04	9.26	39.49	35.09	Peak	209	147	VERTICAL
2	11569.70	46.52	54.00	-7.48	32.88	9.26	39.47	35.09	Average	209	147	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	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15535.66	65.45	74.00	-8.55	49.14	12.58	38.45	34.72	357	199	Peak	HORIZONTAL
2	15539.86	51.35	54.00	-2.65	35.04	12.58	38.45	34.72	357	199	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15530.52	60.13	74.00	-13.87	43.82	12.58	38.45	34.72	27	101	Peak	VERTICAL
2	15541.88	47.10	54.00	-6.90	30.80	12.58	38.45	34.73	27	101	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15577.21	59.97	74.00	-14.03	43.73	12.58	38.40	34.74	125	100	Peak	HORIZONTAL
2	15598.55	47.20	54.00	-6.80	31.01	12.58	38.36	34.75	125	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15583.00	59.63	74.00	-14.37	43.41	12.58	38.38	34.74	329	172	Peak	VERTICAL
2	15607.96	47.19	54.00	-6.81	31.00	12.58	38.36	34.75	329	172	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15723.18	50.37	54.00	-3.63	34.41	12.57	38.19	34.80	354	191	Average	HORIZONTAL
2	15728.83	64.31	74.00	-9.69	48.35	12.57	38.19	34.80	354	191	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15713.56	46.95	54.00	-7.05	30.99	12.57	38.19	34.80	274	101	Average	VERTICAL
2	15731.29	59.88	74.00	-14.12	43.95	12.57	38.16	34.80	274	101	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11490.43	46.83	54.00	-7.17	31.76	10.71	39.39	35.03	349	205	Average	HORIZONTAL
2	11490.94	59.37	74.00	-14.63	44.30	10.71	39.39	35.03	349	205	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11487.25	44.72	54.00	-9.28	29.65	10.71	39.39	35.03	46	204	Average	VERTICAL
2	11494.56	57.44	74.00	-16.56	42.36	10.72	39.39	35.03	46	204	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11571.23	50.52	54.00	-3.48	35.35	10.76	39.44	35.03	350	230	Average	HORIZONTAL
2	11572.97	63.46	74.00	-10.54	48.29	10.76	39.44	35.03	350	230	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11573.55	60.41	74.00	-13.59	45.24	10.76	39.44	35.03	240	228	Peak	VERTICAL
2	11579.77	47.91	54.00	-6.09	32.74	10.76	39.44	35.03	240	228	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 3 + Chain 4
Test Date	Jan. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11649.42	53.50	54.00	-0.50	39.85	9.28	39.44	35.07	Average	225	74	HORIZONTAL
2	11650.07	66.87	74.00	-7.13	53.22	9.28	39.44	35.07	Peak	225	74	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11649.93	59.83	74.00	-14.17	46.18	9.28	39.44	35.07	Peak	228	341	VERTICAL
2	11653.62	47.53	54.00	-6.47	33.88	9.28	39.44	35.07	Average	228	341	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15548.73	46.50	54.00	-7.50	30.22	12.58	38.43	34.73	291	211	Average	HORIZONTAL
2	15560.88	59.81	74.00	-14.19	43.56	12.58	38.40	34.73	291	211	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15560.09	59.65	74.00	-14.35	43.37	12.58	38.43	34.73	317	186	Peak	VERTICAL
2	15562.33	45.16	54.00	-8.84	28.91	12.58	38.40	34.73	317	186	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	15690.10	44.99	54.00	-9.01	30.85	10.80	34.79	38.13	HORIZONTAL	67	220	Average
2	15690.10	56.71	74.00	-17.29	42.57	10.80	34.79	38.13	HORIZONTAL	67	220	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	15688.40	57.64	74.00	-16.36	43.48	10.80	34.79	38.15	VERTICAL	37	135	Peak
2	15713.20	45.40	54.00	-8.60	31.32	10.80	34.80	38.08	VERTICAL	37	135	Average

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11494.73	45.28	54.00	-8.72	30.20	10.72	39.39	35.03	33	202	Average	HORIZONTAL
2	11507.47	58.58	74.00	-15.42	43.49	10.72	39.40	35.03	33	202	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11490.54	44.60	54.00	-9.40	29.53	10.71	39.39	35.03	74	211	Average	VERTICAL
2	11507.68	57.29	74.00	-16.71	42.20	10.72	39.40	35.03	74	211	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11590.00	63.15	74.00	-10.85	47.97	10.76	39.45	35.03	70	217	Peak	HORIZONTAL
2	11592.46	49.85	54.00	-4.15	34.67	10.76	39.45	35.03	70	217	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11571.62	46.31	54.00	-7.69	31.14	10.76	39.44	35.03	328	199	Average	VERTICAL
2	11590.00	58.61	74.00	-15.39	43.43	10.76	39.45	35.03	328	199	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15672.69	46.14	54.00	-7.86	30.08	12.58	38.26	34.78	68	227	Average	HORIZONTAL
2	15676.89	58.88	74.00	-15.12	42.82	12.58	38.26	34.78	68	227	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15653.30	59.31	74.00	-14.69	43.22	12.58	38.28	34.77	85	213	Peak	VERTICAL
2	15677.61	46.04	54.00	-7.96	29.98	12.58	38.26	34.78	85	213	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11559.70	45.39	54.00	-8.61	30.24	10.75	39.43	35.03	83	221	Average	HORIZONTAL
2	11569.17	58.45	74.00	-15.55	43.29	10.75	39.44	35.03	83	221	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11561.94	43.80	54.00	-10.20	28.65	10.75	39.43	35.03	136	211	Average	VERTICAL
2	11569.68	56.78	74.00	-17.22	41.62	10.75	39.44	35.03	136	211	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 5.15-5.25 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

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

4.7.2. Measuring Instruments and Setting

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

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

4.7.3. Test Procedures

1. The test procedure is the same as section 4.6.3, only the frequency range investigated is limited to 100MHz around bandedges.

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	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 3
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5150.00	49.08	54.00	-4.92	41.61	33.02	9.86	35.41	100	276	Average	HORIZONTAL
2	5150.00	62.43	74.00	-11.57	54.96	33.02	9.86	35.41	100	276	Peak	HORIZONTAL
3	5180.00	99.17			91.70	33.04	9.85	35.42	100	276	Average	HORIZONTAL
4	5180.58	108.42			100.96	33.04	9.85	35.43	100	276	Peak	HORIZONTAL

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	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5149.36	55.75	74.00	-18.25	52.88	4.26	33.14	34.53	Peak	297	173	HORIZONTAL
2	5150.00	42.66	54.00	-11.34	39.79	4.26	33.14	34.53	Average	297	173	HORIZONTAL
3	5202.00	99.93			96.96	4.28	33.22	34.53	Average	297	173	HORIZONTAL
4	5203.21	112.78			109.81	4.28	33.22	34.53	Peak	297	173	HORIZONTAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5082.40	56.15	74.00	-17.85	52.41	5.88	33.61	31.47	HORIZONTAL	59	212	Peak
2	5120.00	45.19	54.00	-8.81	41.38	5.90	33.59	31.50	HORIZONTAL	59	212	Average
3	5240.00	99.36			95.32	5.99	33.55	31.60	HORIZONTAL	59	212	Average
4	5240.00	108.02			103.98	5.99	33.55	31.60	HORIZONTAL	59	212	Peak
5	5392.80	58.31	74.00	-15.69	53.98	6.10	33.49	31.72	HORIZONTAL	59	212	Peak
6	5400.80	47.51	54.00	-6.49	43.18	6.10	33.49	31.72	HORIZONTAL	59	212	Average

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 3
Test Date	Jan. 12, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5714.71	66.64	68.20	-1.56	57.80	34.16	10.03	35.35	249	72	Peak	HORIZONTAL
2	5725.00	77.81	78.20	-0.39	68.92	34.18	10.05	35.34	249	72	Peak	HORIZONTAL
3	5745.00	100.32			91.37	34.20	10.07	35.32	249	72	Average	HORIZONTAL
4	5745.29	109.64			100.69	34.20	10.07	35.32	249	72	Peak	HORIZONTAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5698.94	62.69	68.20	-5.51	53.89	34.14	10.02	35.36	238	47	Peak	HORIZONTAL
2	5724.57	63.85	78.20	-14.35	54.97	34.18	10.04	35.34	238	47	Peak	HORIZONTAL
3	5785.00	100.96			91.81	34.33	10.11	35.29	238	47	Average	HORIZONTAL
4	5785.43	110.28			101.13	34.33	10.11	35.29	238	47	Peak	HORIZONTAL
5	5850.87	63.05	78.20	-15.15	53.51	34.60	10.17	35.23	238	47	Peak	HORIZONTAL
6	5929.03	65.91	68.20	-2.29	55.89	34.93	10.25	35.16	238	47	Peak	HORIZONTAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5825.00	101.00			91.57	34.53	10.15	35.25	240	52	Average	HORIZONTAL
2	5825.29	110.36			100.93	34.53	10.15	35.25	240	52	Peak	HORIZONTAL
3	5850.87	68.66	78.20	-9.54	59.12	34.60	10.17	35.23	240	52	Peak	HORIZONTAL
4	5863.47	64.81	68.20	-3.39	55.18	34.67	10.18	35.22	240	52	Peak	HORIZONTAL

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

Temperature	26℃	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5148.26	65.64	74.00	-8.36	58.17	33.02	9.86	35.41	173	295	Peak	HORIZONTAL
2	5150.00	50.40	54.00	-3.60	42.93	33.02	9.86	35.41	173	295	Average	HORIZONTAL
3	5178.26	111.80			104.33	33.04	9.85	35.42	173	295	Peak	HORIZONTAL
4	5180.29	101.50			94.03	33.04	9.85	35.42	173	295	Average	HORIZONTAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5044.80	45.38	54.00	-8.62	41.70	5.86	33.62	31.44	HORIZONTAL	282	164	Average
2	5141.60	55.90	74.00	-18.10	52.04	5.92	33.58	31.52	HORIZONTAL	282	164	Peak
3	5200.80	101.64			97.66	5.97	33.56	31.57	HORIZONTAL	282	164	Average
4	5200.80	110.77			106.79	5.97	33.56	31.57	HORIZONTAL	282	164	Peak
5	5360.80	49.13	54.00	-4.87	44.86	6.08	33.50	31.69	HORIZONTAL	282	164	Average
6	5360.80	59.98	74.00	-14.02	55.71	6.08	33.50	31.69	HORIZONTAL	282	164	Peak

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5115.20	55.98	74.00	-18.02	52.18	5.90	33.60	31.50	HORIZONTAL	279	131	Peak
2	5121.60	45.78	54.00	-8.22	41.95	5.92	33.59	31.50	HORIZONTAL	279	131	Average
3	5240.80	102.57			98.53	5.99	33.55	31.60	HORIZONTAL	279	131	Average
4	5240.80	111.85			107.81	5.99	33.55	31.60	HORIZONTAL	279	131	Peak
5	5399.20	49.25	54.00	-4.75	44.92	6.10	33.49	31.72	HORIZONTAL	279	131	Average
6	5399.20	59.42	74.00	-14.58	55.09	6.10	33.49	31.72	HORIZONTAL	279	131	Peak

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5714.13	66.09	68.20	-2.11	57.25	34.16	10.03	35.35	220	61	Peak	HORIZONTAL
2	5724.13	77.60	78.20	-0.60	68.72	34.18	10.04	35.34	220	61	Peak	HORIZONTAL
3	5743.84	111.00			102.07	34.20	10.06	35.33	220	61	Peak	HORIZONTAL
4	5746.16	101.00			92.05	34.20	10.07	35.32	220	61	Average	HORIZONTAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5712.11	63.65	68.20	-4.55	54.81	34.16	10.03	35.35	232	49	Peak	HORIZONTAL
2	5725.00	62.03	78.20	-16.17	53.14	34.18	10.05	35.34	232	49	Peak	HORIZONTAL
3	5783.84	101.94			92.80	34.33	10.10	35.29	232	49	Average	HORIZONTAL
4	5785.00	111.90			102.75	34.33	10.11	35.29	232	49	Peak	HORIZONTAL
5	5850.58	63.88	78.20	-14.32	54.34	34.60	10.17	35.23	232	49	Peak	HORIZONTAL
6	5860.29	64.25	68.20	-3.95	54.62	34.67	10.18	35.22	232	49	Peak	HORIZONTAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5824.13	101.16			91.73	34.53	10.15	35.25	223	46	Average	HORIZONTAL
2	5826.45	111.11			101.68	34.53	10.15	35.25	223	46	Peak	HORIZONTAL
3	5850.00	71.29	78.20	-6.91	61.75	34.60	10.17	35.23	223	46	Peak	HORIZONTAL
4	5860.00	64.37	68.20	-3.83	54.74	34.67	10.18	35.22	223	46	Peak	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5148.26	67.75	74.00	-6.25	60.28	33.02	9.86	35.41	176	293	Peak	HORIZONTAL
2	5150.00	53.21	54.00	-0.79	45.74	33.02	9.86	35.41	176	293	Average	HORIZONTAL
3	5185.66	95.61			88.15	33.04	9.85	35.43	176	293	Average	HORIZONTAL
4	5185.66	106.21			98.75	33.04	9.85	35.43	176	293	Peak	HORIZONTAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5073.20	56.32	74.00	-17.68	52.59	5.88	33.61	31.46	HORIZONTAL	273	145	Peak
2	5107.60	44.47	54.00	-9.53	40.68	5.90	33.60	31.49	HORIZONTAL	273	145	Average
3	5226.00	97.90			93.87	5.99	33.55	31.59	HORIZONTAL	273	145	Average
4	5226.00	107.43			103.40	5.99	33.55	31.59	HORIZONTAL	273	145	Peak
5	5386.80	46.84	54.00	-7.16	42.54	6.08	33.49	31.71	HORIZONTAL	273	145	Average
6	5390.80	58.37	74.00	-15.63	54.04	6.10	33.49	31.72	HORIZONTAL	273	145	Peak

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5711.09	68.11	68.20	-0.09	59.27	34.16	10.03	35.35	214	311	Peak	HORIZONTAL
2	5723.70	72.83	78.20	-5.37	63.95	34.18	10.04	35.34	214	311	Peak	HORIZONTAL
3	5755.00	96.26			87.30	34.20	10.08	35.32	214	311	Average	HORIZONTAL
4	5758.04	105.56			96.52	34.27	10.08	35.31	214	311	Peak	HORIZONTAL

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

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5699.37	64.02	68.20	-4.18	55.22	34.14	10.02	35.36	102	337	Peak	VERTICAL
2	5721.96	62.44	78.20	-15.76	53.58	34.16	10.04	35.34	102	337	Peak	VERTICAL
3	5781.54	91.75			82.61	34.33	10.10	35.29	102	337	Average	VERTICAL
4	5781.54	101.96			92.82	34.33	10.10	35.29	102	337	Peak	VERTICAL
5	5853.91	64.53	78.20	-13.67	54.98	34.60	10.18	35.23	102	337	Peak	VERTICAL
6	5873.02	65.29	68.20	-2.91	55.58	34.73	10.19	35.21	102	337	Peak	VERTICAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5148.55	67.48	74.00	-6.52	60.01	33.02	9.86	35.41	162	304	Peak	HORIZONTAL
2	5150.00	53.67	54.00	-0.33	46.20	33.02	9.86	35.41	162	304	Average	HORIZONTAL
3	5200.59	101.56			94.09	33.05	9.85	35.43	162	304	Peak	HORIZONTAL
4	5210.00	93.12			85.65	33.06	9.85	35.44	162	304	Average	HORIZONTAL
5	5350.00	49.89	54.00	-4.11	42.15	33.40	9.83	35.49	162	304	Average	HORIZONTAL
6	5350.72	61.88	74.00	-12.12	54.14	33.40	9.83	35.49	162	304	Peak	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015		

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5710.66	67.31	68.20	-0.89	58.47	34.16	10.03	35.35	230	303	Peak	HORIZONTAL
2	5721.38	70.03	78.20	-8.17	61.18	34.16	10.04	35.35	230	303	Peak	HORIZONTAL
3	5775.00	99.13			90.00	34.33	10.10	35.30	230	303	Average	HORIZONTAL
4	5783.68	103.65			94.51	34.33	10.10	35.29	230	303	Peak	HORIZONTAL
5	5850.72	68.71	78.20	-9.49	59.17	34.60	10.17	35.23	230	303	Peak	HORIZONTAL
6	5861.45	67.80	68.20	-0.40	58.17	34.67	10.18	35.22	230	303	Peak	HORIZONTAL

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	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5148.56	73.38	74.00	-0.62	70.51	4.26	33.14	34.53	Peak	282	192	HORIZONTAL
2	5150.00	51.14	54.00	-2.86	48.27	4.26	33.14	34.53	Average	282	192	HORIZONTAL
3	5178.08	104.76			101.83	4.27	33.19	34.53	Average	282	192	HORIZONTAL
4	5178.40	115.30			112.37	4.27	33.19	34.53	Peak	282	192	HORIZONTAL

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	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5149.36	55.75	74.00	-18.25	52.88	4.26	33.14	34.53	Peak	297	173	HORIZONTAL
2	5150.00	42.66	54.00	-11.34	39.79	4.26	33.14	34.53	Average	297	173	HORIZONTAL
3	5202.00	99.93			96.96	4.28	33.22	34.53	Peak	297	173	HORIZONTAL
4	5203.21	112.78			109.81	4.28	33.22	34.53	Peak	297	173	HORIZONTAL

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	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	5121.64	44.39	54.00	-9.61	41.59	4.24	33.09	34.53	Average	283	205	HORIZONTAL
2	5127.98	57.06	74.00	-16.94	54.23	4.25	33.11	34.53	Peak	283	205	HORIZONTAL
3	5241.92	102.42			99.35	4.30	33.30	34.53	Average	283	205	HORIZONTAL
4	5244.33	112.17			109.10	4.30	33.30	34.53	Peak	283	205	HORIZONTAL
5	5362.12	57.15	74.00	-16.85	53.83	4.36	33.49	34.53	Peak	283	205	HORIZONTAL
6	5362.12	45.69	54.00	-8.31	42.37	4.36	33.49	34.53	Average	283	205	HORIZONTAL

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

Temperature	26℃	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015 ~ Jan. 23, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5714.71	64.31	68.20	-3.89	56.18	6.83	34.68	33.38	292	208	Peak	HORIZONTAL
2	5725.00	77.37	78.20	-0.83	69.22	6.83	34.69	33.37	292	208	Peak	HORIZONTAL
3	5752.24	115.19			106.99	6.86	34.70	33.36	292	208	Peak	HORIZONTAL
4	5753.10	104.23			96.03	6.86	34.70	33.36	292	208	Average	HORIZONTAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5696.77	62.02	68.20	-6.18	53.91	6.81	34.68	33.38	297	206	Peak	HORIZONTAL
2	5723.26	61.83	78.20	-16.37	53.68	6.83	34.69	33.37	297	206	Peak	HORIZONTAL
3	5783.84	106.54			98.28	6.90	34.71	33.35	297	206	Average	HORIZONTAL
4	5783.84	117.47			109.21	6.90	34.71	33.35	297	206	Peak	HORIZONTAL
5	5851.74	61.78	78.20	-16.42	53.42	6.95	34.74	33.33	297	206	Peak	HORIZONTAL
6	5860.00	61.30	68.20	-6.90	52.92	6.97	34.74	33.33	297	206	Peak	HORIZONTAL

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	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5827.32	111.28			105.03	6.48	34.97	35.20	Peak	201	294	HORIZONTAL
2	5832.81	100.99			94.74	6.48	34.97	35.20	Average	201	294	HORIZONTAL
3	5850.00	66.50	78.20	-11.70	60.23	6.49	34.98	35.20	Peak	201	294	HORIZONTAL
4	5861.45	61.83	68.20	-6.37	55.54	6.50	34.99	35.20	Peak	201	294	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015 ~ Jan. 14, 2015		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5149.42	71.37	74.00	-2.63	64.63	6.21	34.11	33.58	277	115	Peak	HORIZONTAL
2	5150.00	53.65	54.00	-0.35	46.91	6.21	34.11	33.58	277	115	Average	HORIZONTAL
3	5186.82	109.93			103.10	6.24	34.16	33.57	277	115	Peak	HORIZONTAL
4	5188.26	99.21			92.38	6.24	34.16	33.57	277	115	Average	HORIZONTAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5081.20	55.93	74.00	-18.07	52.20	5.88	33.61	31.46	VERTICAL	337	100	Peak
2	5148.40	42.91	54.00	-11.09	39.05	5.92	33.58	31.52	VERTICAL	337	100	Average
3	5216.40	93.15			89.17	5.97	33.56	31.57	VERTICAL	337	100	Average
4	5227.60	103.60			99.58	5.99	33.55	31.58	VERTICAL	337	100	Peak
5	5402.80	43.88	54.00	-10.12	39.54	6.10	33.49	31.73	VERTICAL	337	100	Average
6	5418.00	56.11	74.00	-17.89	51.75	6.10	33.48	31.74	VERTICAL	337	100	Peak

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5712.83	67.96	68.20	-0.24	59.83	6.83	34.68	33.38	290	210	Peak	HORIZONTAL
2	5725.00	73.24	78.20	-4.96	65.09	6.83	34.69	33.37	290	210	Peak	HORIZONTAL
3	5748.92	98.29			90.09	6.86	34.70	33.36	290	210	Average	HORIZONTAL
4	5751.96	111.46			103.26	6.86	34.70	33.36	290	210	Peak	HORIZONTAL

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

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5707.62	62.88	68.20	-5.32	54.75	6.83	34.68	33.38	65	212	Peak	HORIZONTAL
2	5722.40	64.55	78.20	-13.65	56.40	6.83	34.69	33.37	65	212	Peak	HORIZONTAL
3	5786.32	113.79			105.52	6.90	34.72	33.35	65	212	Peak	HORIZONTAL
4	5789.79	102.08			93.81	6.90	34.72	33.35	65	212	Average	HORIZONTAL
5	5858.25	66.43	78.20	-11.77	58.05	6.97	34.74	33.33	65	212	Peak	HORIZONTAL
6	5865.21	63.15	68.20	-5.05	54.76	6.97	34.74	33.32	65	212	Peak	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015 ~ Jan. 21, 2015		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5143.49	67.10	74.00	-6.90	60.40	6.17	34.11	33.58	282	100	Peak	HORIZONTAL
2	5145.66	53.53	54.00	-0.47	46.79	6.21	34.11	33.58	282	100	Average	HORIZONTAL
3	5187.57	106.41			99.58	6.24	34.16	33.57	282	100	Peak	HORIZONTAL
4	5236.05	93.87			86.89	6.30	34.23	33.55	282	100	Average	HORIZONTAL
5	5356.51	61.25	74.00	-12.75	53.89	6.47	34.39	33.50	282	100	Peak	HORIZONTAL
6	5361.58	47.69	54.00	-6.31	40.31	6.47	34.41	33.50	282	100	Average	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5707.76	67.28	68.20	-0.92	59.15	6.83	34.68	33.38	298	217	Peak	HORIZONTAL
2	5719.93	69.23	78.20	-8.97	61.08	6.83	34.69	33.37	298	217	Peak	HORIZONTAL
3	5746.06	108.72			100.53	6.86	34.70	33.37	298	217	Peak	HORIZONTAL
4	5790.20	94.45			86.18	6.90	34.72	33.35	298	217	Average	HORIZONTAL
5	5851.45	65.52	78.20	-12.68	57.16	6.95	34.74	33.33	298	217	Peak	HORIZONTAL
6	5862.17	65.73	68.20	-2.47	57.35	6.97	34.74	33.33	298	217	Peak	HORIZONTAL

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

Note:

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

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

4.8. Frequency Stability Measurement

4.8.1. Limit

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

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

4.8.2. Measuring Instruments and Setting

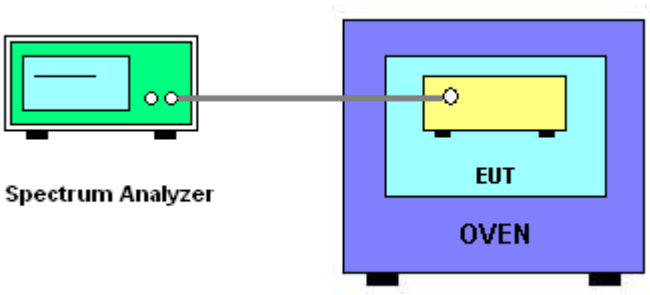
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.8.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is -10°C~60°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	26°C	Humidity	63%
Test Engineer	Serway Li	Test Date	Jan. 26, 2015

Mode: 20 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	5200 MHz	5785 MHz
126.50	5199.9676	5784.9634
110.00	5199.9652	5784.9617
93.50	5199.9592	5784.9616
Max. Deviation (MHz)	0.040800	0.038400
Max. Deviation (ppm)	7.85	6.64

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5200 MHz	5785 MHz
-10	5199.9906	5784.9906
0	5199.9832	5784.9832
10	5199.9734	5784.9734
20	5199.9725	5784.9725
30	5199.9676	5784.9634
40	5199.9652	5784.9617
50	5199.9582	5784.9582
60	5199.9564	5784.9564
Max. Deviation (MHz)	0.043600	0.043600
Max. Deviation (ppm)	8.38	7.5367

Mode: 40 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	5190 MHz	5755 MHz
126.50	5189.9676	5754.9634
110.00	5189.9657	5754.9617
93.50	5189.9592	5754.9616
Max. Deviation (MHz)	0.040800	0.038400
Max. Deviation (ppm)	7.86	6.67

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5190 MHz	5755 MHz
-10	5189.9906	5754.9906
0	5189.9832	5754.9832
10	5189.9734	5754.9734
20	5189.9725	5754.9725
30	5189.9676	5754.9634
40	5189.9657	5754.9617
50	5189.9582	5754.9582
60	5189.9564	5754.9564
Max. Deviation (MHz)	0.043600	0.043600
Max. Deviation (ppm)	8.40	7.5760

Mode: 80 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	5210 MHz	5775 MHz
126.50	5209.9676	5774.9634
110.00	5209.9657	5774.9617
93.50	5209.9592	5774.9616
Max. Deviation (MHz)	0.040800	0.038400
Max. Deviation (ppm)	7.83	6.65

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5210 MHz	5775 MHz
-10	5209.9906	5774.9906
0	5209.9832	5774.9832
10	5209.9734	5774.9734
20	5209.9725	5774.9725
30	5209.9676	5774.9634
40	5209.9657	5774.9617
50	5209.9582	5774.9582
60	5209.9564	5774.9564
Max. Deviation (MHz)	0.043600	0.043600
Max. Deviation (ppm)	8.37	7.5498

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. 23, 2014	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 02, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 02, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 04, 2014	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 26, 2014	Radiation (03CH01-CB)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jul. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Oct. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02009	1GHz ~ 26.5GHz	Dec. 17, 2014	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100080	9kHz ~ 40GHz	Oct. 15, 2014	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Jan. 21, 2015	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESR26	101289	9kHz~26GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R.	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO 2000	N/A	1 m - 4 m	N.C.R.	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec.12, 2014	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2014	Conducted (TH01-CB)
RF Power Divider	Woken	2 Way	0120A02056002D	2GHz ~ 18GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Power Divider	Woken	3 Way	MDC2366	2GHz ~ 18GHz	Nov. 15, 2014	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Power Divider	Woken	4 Way	0120A04056002D	2GHz ~ 18GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Oct. 06, 2014	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Oct. 06, 2014	Conducted (TH01-CB)

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

NCR means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.4 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%