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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	5250 ~ 5350MHz / 5470 ~ 5725MHz
Received Date	Dec. 02, 2014
Final Test Date	Jan. 27, 2015
Submission Type	Class II Change

Statement

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

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

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01, KDB662911 D01 v02r01, KDB644545 D03 v01.**

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

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR4D0481AC	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	0.15 dB
4.5	15.407(a)	Power Spectral Density	Complies	0.08 dB
4.6	15.407(b)	Radiated Emissions	Complies	1.95 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.08 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	5250 ~ 5350MHz / 5470 ~ 5725MHz
Channel Number	16 for 20MHz bandwidth ; 8 for 40MHz bandwidth 4 for 80MHz bandwidth
Channel Band Width (99%)	**For Non-Beamforming Mode:** Band 2: IEEE 802.11a: 17.36 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.06 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.04 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz Band 3: IEEE 802.11a: 17.28 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): 76.41 MHz **For Beamforming Mode:** Band 2: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.05 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz Band 3: IEEE 802.11ac MCS0/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.05 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz

Maximum Conducted Output Power	**For Non-Beamforming Mode:** Band 2: IEEE 802.11a: 18.76 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 21.36 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.03 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.29 dBm Band 3: IEEE 802.11a: 18.73 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 21.57 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.79 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 21.42 dBm **For Beamforming Mode:** Band 2: IEEE 802.11ac MCS0/Nss1 (VHT20): 21.54dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.10dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.29dBm Band 3: IEEE 802.11ac MCS0/Nss1 (VHT20): 21.54dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.55dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 21.18dBm
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
TPC Function	☒ With TPC	☐ Without TPC
Weather Band (5600~5650MHz)	☒ With 5600~5650MHz	☐ Without 5600~5650MHz
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:

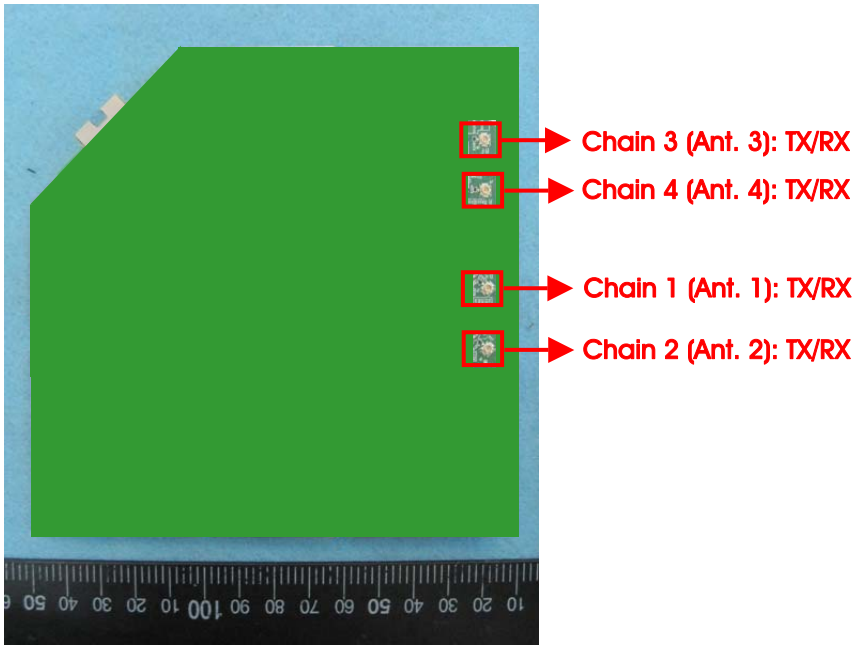
For 802.11a mode:

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 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144.

For 40MHz bandwidth systems, use Channel 54, 62, 102, 110, 118, 126, 134, 142.

For 80MHz bandwidth systems, use Channel 58, 106, 122, 138.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5250~5350 MHz Band 2	52	5260 MHz	60	5300 MHz
	54	5270 MHz	62	5310 MHz
	56	5280 MHz	64	5320 MHz
	58	5290 MHz	-	-
5470~5725 MHz Band 3	100	5500 MHz	124	5620 MHz
	102	5510 MHz	126	5630 MHz
	104	5520 MHz	128	5640 MHz
	106	5530 MHz	132	5660 MHz
	108	5540 MHz	134	5670 MHz
	110	5550 MHz	136	5680 MHz
	112	5560 MHz	138	5690 MHz
	116	5580 MHz	140	5700 MHz
	118	5590 MHz	142	5710 MHz
	120	5600 MHz	144	5720 MHz
	122	5610 MHz	-	-

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	Normal Link		-	-	-
Max. Conducted Output Power	11a/BPSK	Band 2~3	6Mbps	52/60/64/100/116 /140/144	3
	11ac VHT20	Band 2~3	MCS0/Nss1	52/60/64/100/116 /140/144	3+4
	11ac VHT40	Band 2~3	MCS0/Nss1	54/62/102/110/13 4/142	3+4
	11ac VHT80	Band 2~3	MCS0/Nss1	58/106/122/138	3+4
Power Spectral Density	11a/BPSK	Band 2~3	6Mbps	52/60/64/100/116 /140/144	3
	11ac VHT20	Band 2~3	MCS0/Nss1	52/60/64/100/116 /140/144	3+4
	11ac VHT40	Band 2~3	MCS0/Nss1	54/62/102/110/13 4/142	3+4
	11ac VHT80	Band 2~3	MCS0/Nss1	58/106/122/138	3+4
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 2~3	6Mbps	52/60/64/100/116 /140/144	3
	11ac VHT20	Band 2~3	MCS0/Nss1	52/60/64/100/116 /140/144	3+4
	11ac VHT40	Band 2~3	MCS0/Nss1	54/62/102/110/13 4/142	3+4
	11ac VHT80	Band 2~3	MCS0/Nss1	58/106/122/138	3+4
6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 3	6Mbps	140	3
	11ac VHT20	Band 3	MCS0/Nss1	140	3+4
	11ac VHT40	Band 3	MCS0/Nss1	142	3+4
	11ac VHT80	Band 3	MCS0/Nss1	138	3+4
Radiated Emission Below 1GHz	Normal Link		-	-	-

Test Items	Mode		Data Rate	Channel	Chain
Radiated Emission Above 1GHz	11a/BPSK	Band 2~3	6Mbps	52/60/64/100/116 /140/144	3
	11ac VHT20	Band 2~3	MCS0/Nss1	52/60/64/100/116 /140/144	3+4
	11ac VHT40	Band 2~3	MCS0/Nss1	54/62/102/110/13 4/142	3+4
	11ac VHT80	Band 2~3	MCS0/Nss1	58/106/122/138	3+4
Band Edge Emission	11a/BPSK	Band 2~3	6Mbps	52/60/64/100/116 /140/144	3
	11ac VHT20	Band 2~3	MCS0/Nss1	52/60/64/100/116 /140/144	3+4
	11ac VHT40	Band 2~3	MCS0/Nss1	54/62/102/110/13 4/142	3+4
	11ac VHT80	Band 2~3	MCS0/Nss1	58/106/122/138	3+4
Frequency Stability	20 MHz	Band 2~3	-	60/116	3+4
	40 MHz	Band 2~3	-	62/110	3+4
	80 MHz	Band 2~3	-	58/106	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:

EUT was performed at X axis and Y axis, and the worst-case was found at Y axis.

Therefore, 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 Class II Change

This product is an extension of original one reported under Sporton project number: FR4D0481AA and FR4D0481AB.

Modifications	Performance Checking
Add 5GHz Band 2 and Band 3 (5250~5350 MHz, 5470~5725 MHz) for this device.	1. AC Power Line Conducted Emissions 2. 26dB Spectrum Bandwidth and 99% Occupied Bandwidth 3. Maximum Conducted Output Power 4. Power Spectral Density 5. Radiated Emissions 6. Band Edge Emissions 7. Frequency Stability 8. Co-location MPE 9. Radiated Emission Co-location

3.8. 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

3.9. Table for Parameters of Test Software Setting

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

For Non-Beamforming Mode:

Test Software Version	PUTTY suite V0.62.0.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11a	74	74	74	74	72	74	72
802.11ac MCS0/Nss1 VHT20	74	74	74	76	72	72	72
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	80	67	67	80	74	74	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz	5530 MHz	5610 MHz	5690 MHz			
	61	61	75	75			

For Beamforming Mode:

Test Software Version	PUTTY suite V0.62.0.0						
Mode	Test Frequency (MHz)						
	NCB: 20MHz						
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz
802.11ac MCS0/Nss1 VHT20	75	76	75	73	74	70	73
Mode	NCB: 40MHz						
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	
	80	65	66	80	80	75	
Mode	NCB: 80MHz						
802.11ac MCS0/Nss1 VHT80	5290 MHz	5530 MHz	5610 MHz	5690 MHz			
	61	61	74	74			

3.10. 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%

3.11. Duty Cycle

For Non-Beamforming mode:

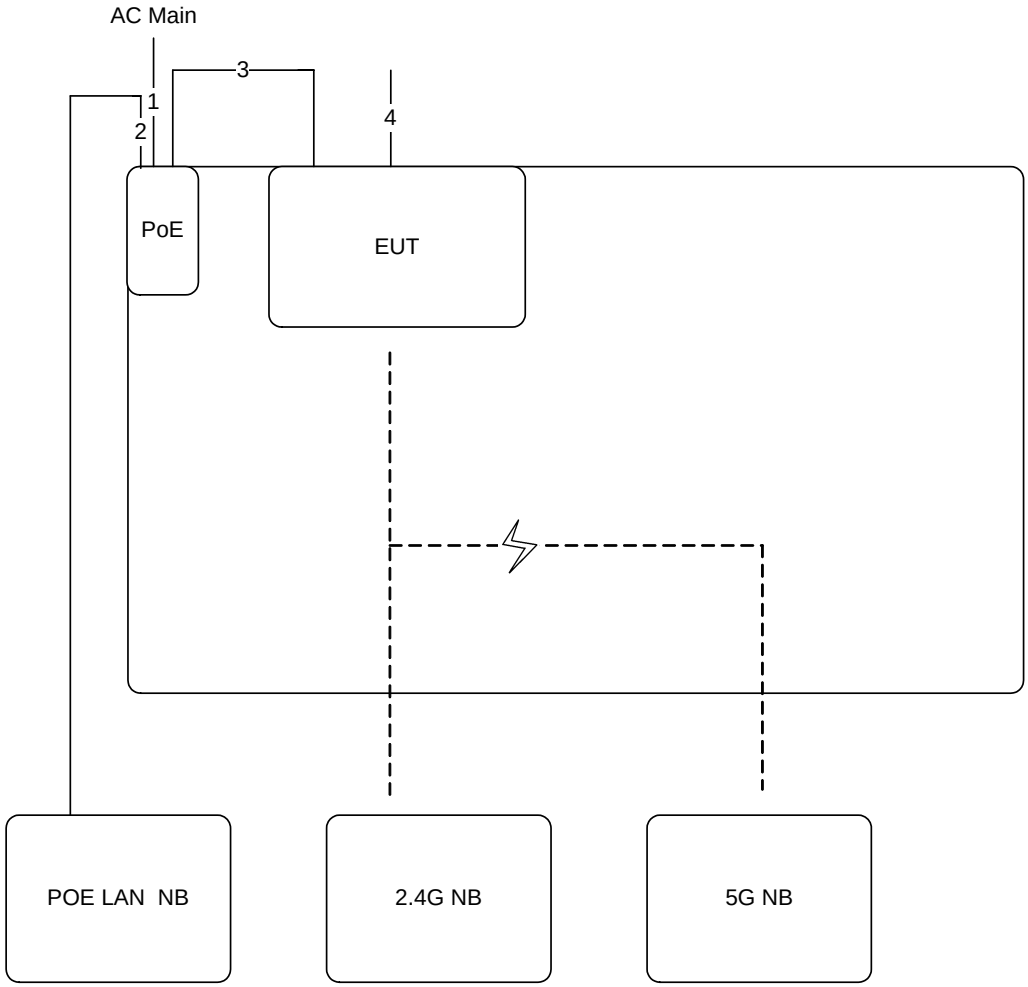
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	0.2037	0.2143	95.08%	0.22	4.91
802.11ac MCS0/Nss1 VHT20	0.1916	0.2014	95.12%	0.22	5.22
802.11ac MCS0/Nss1 VHT40	0.9539	1.0481	91.01%	0.41	1.05
802.11ac MCS0/Nss1 VHT80	0.4626	0.5594	82.70%	0.83	2.16

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

3.12. Test Configurations

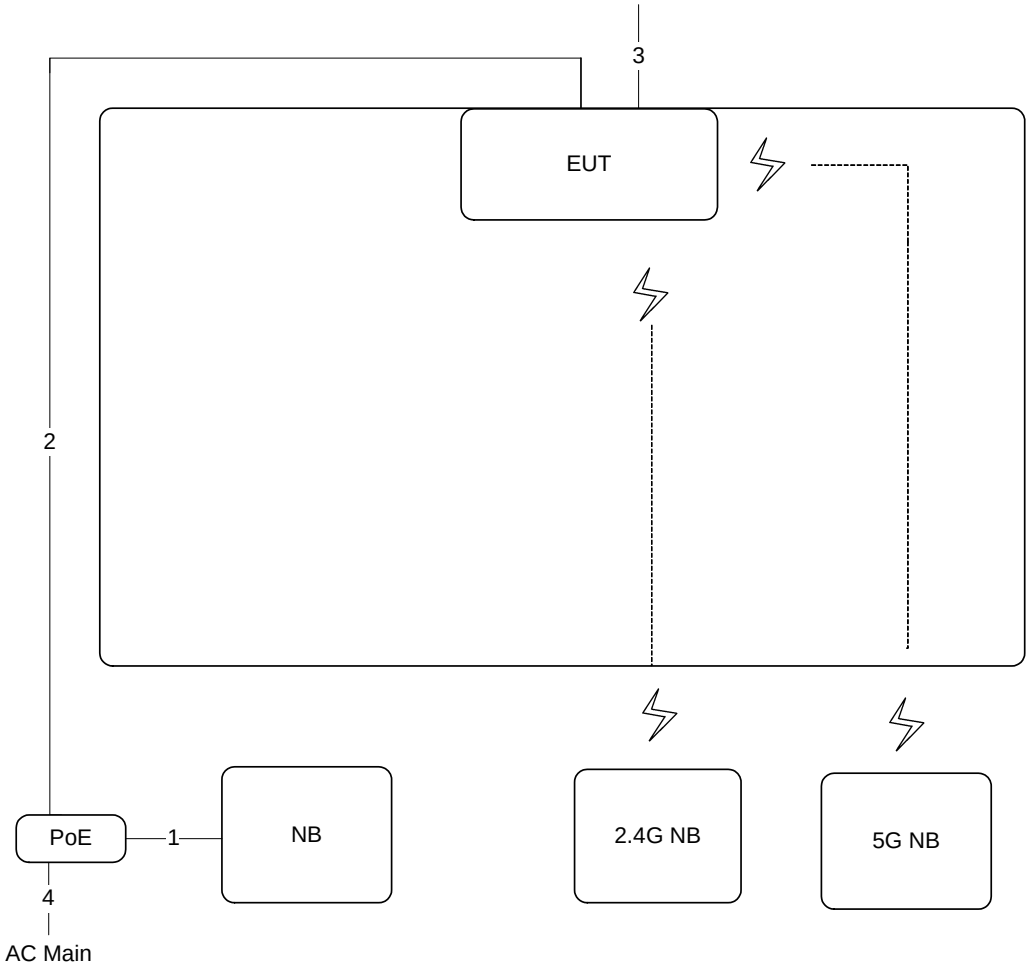
3.12.1. AC Power Line Conduction Emissions Test Configuration



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

3.12.2. Radiation Emissions Test Configuration

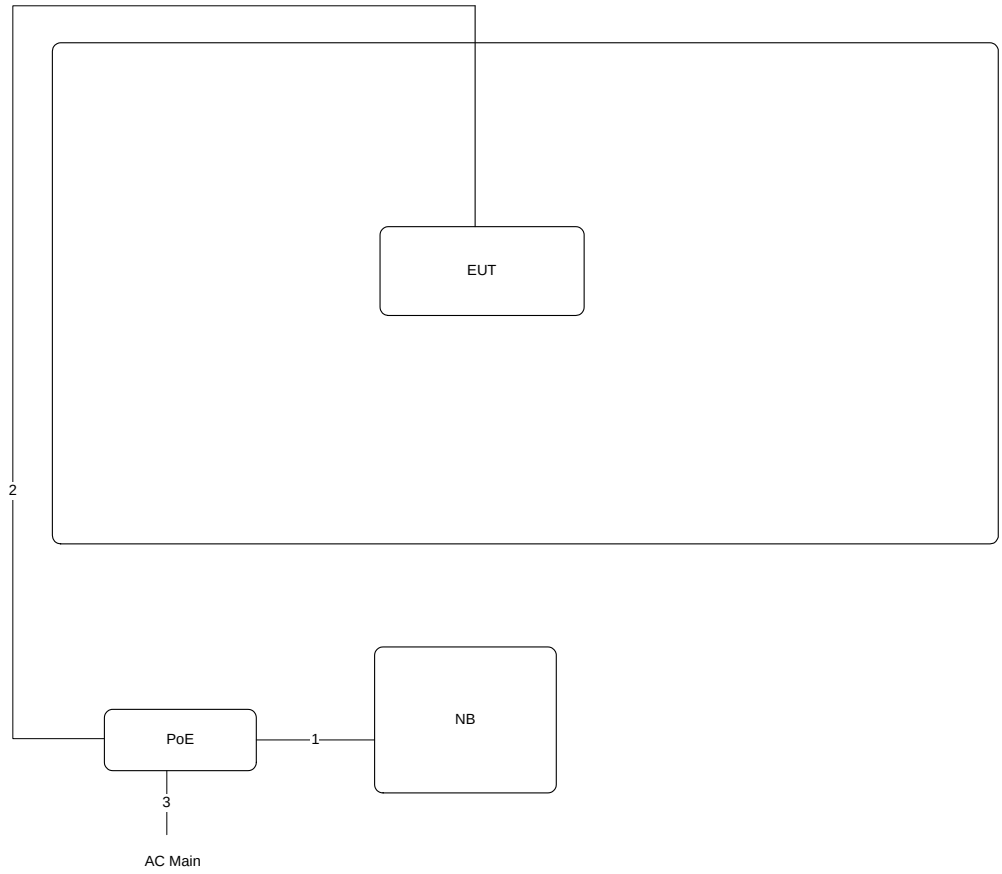
Test Configuration: 30MHz ~1GHz



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
4	Power cable	No	1.8m	-

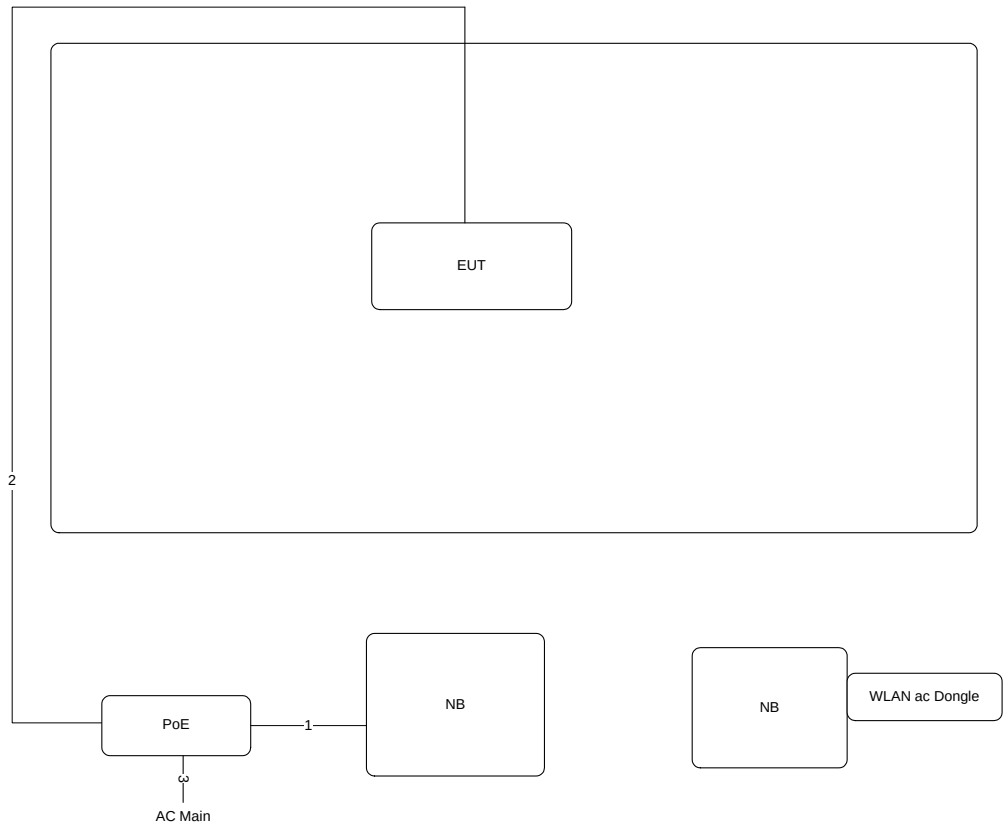
Test Configuration: above 1GHz

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

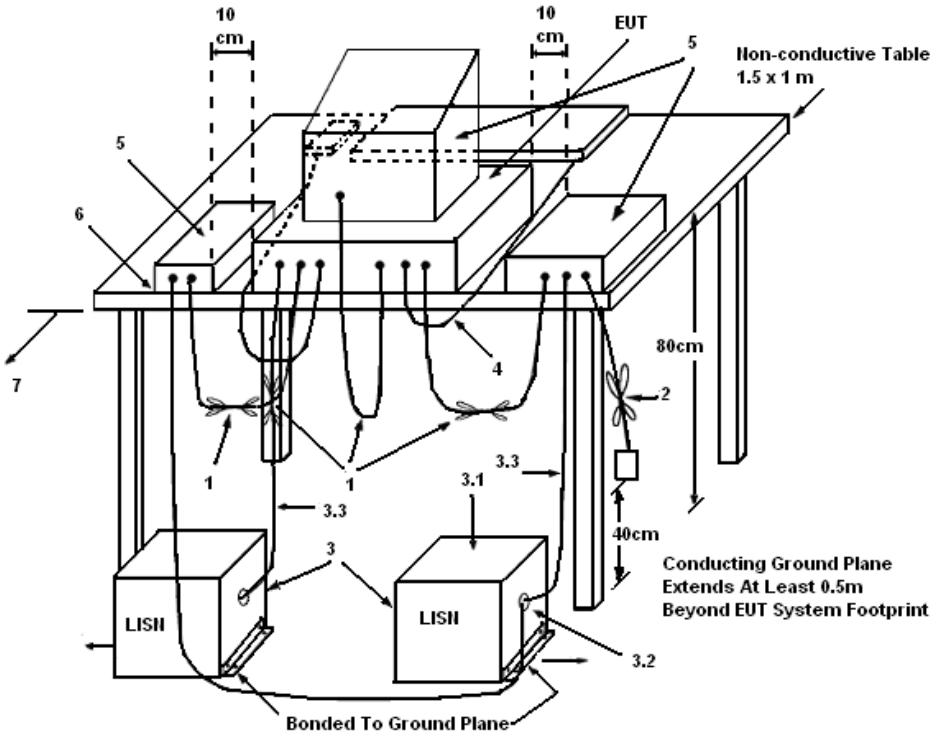
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

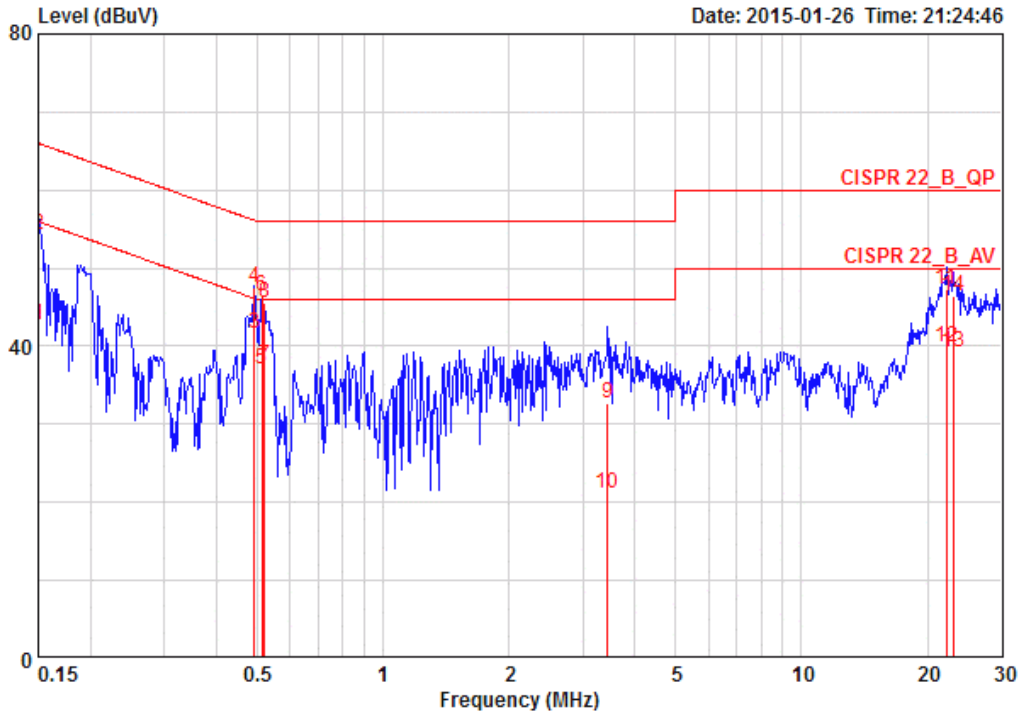
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

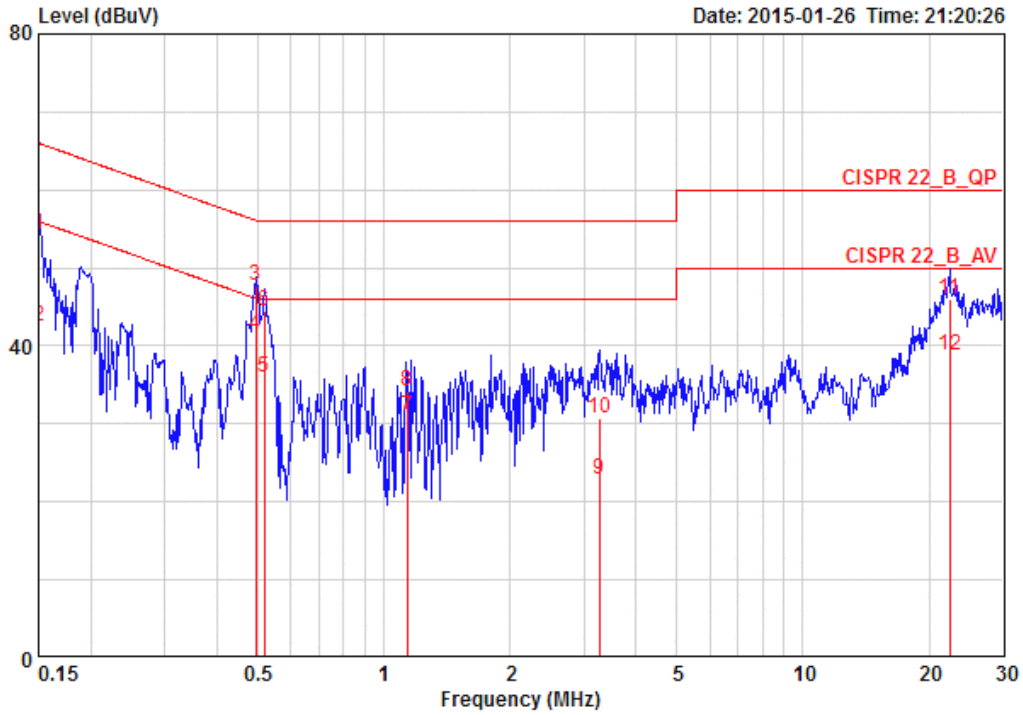
4.1.7. Results of AC Power Line Conducted Emissions Measurement

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	5260 MHz	26.69	17.36
	5300 MHz	26.60	17.36
	5320 MHz	26.60	17.28
	5500 MHz	26.43	17.28
	5580 MHz	21.48	17.10
	5700 MHz	26.34	17.27
	5720 MHz	22.78	17.10
802.11ac MCS0/Nss1 VHT20	5260 MHz	28.52	18.06
	5300 MHz	27.82	17.97
	5320 MHz	26.00	17.97
	5500 MHz	25.30	17.97
	5580 MHz	24.86	17.88
	5700 MHz	20.86	17.88
	5720 MHz	25.04	17.97
802.11ac MCS0/Nss1 VHT40	5270 MHz	65.80	37.04
	5310 MHz	42.17	36.75
	5510 MHz	40.72	36.46
	5550 MHz	66.23	36.90
	5670 MHz	54.78	36.90
	5710 MHz	55.36	36.90
802.11ac MCS0/Nss1 VHT80	5290 MHz	88.69	76.12
	5530 MHz	82.31	75.83
	5610 MHz	122.32	76.12
	5690 MHz	137.10	76.41

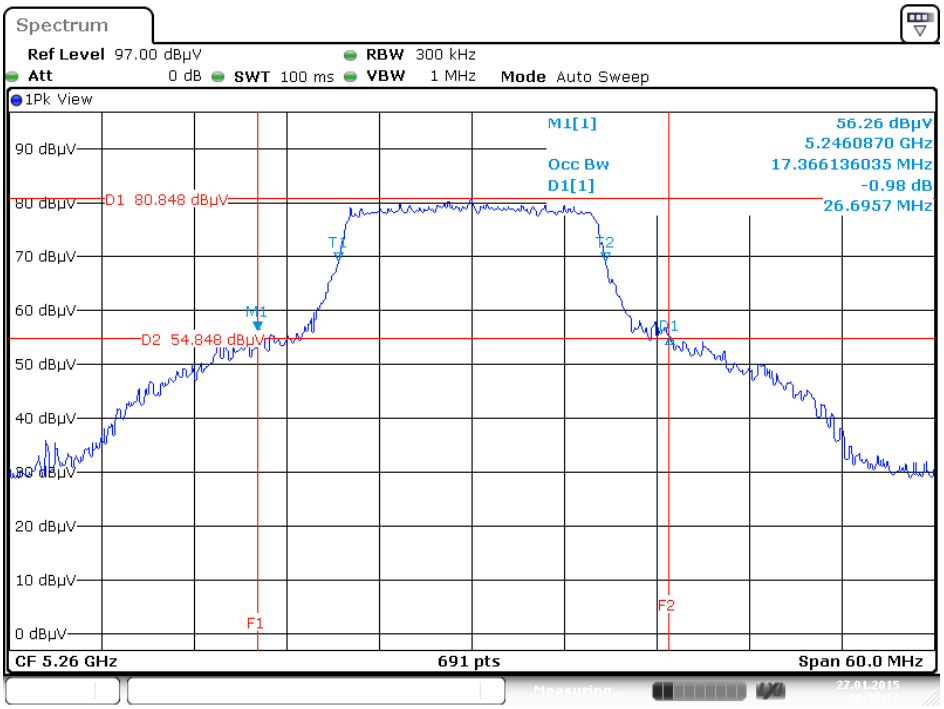
For Beamforming Mode:

Temperature	26°C	Humidity	63%
Test Engineer	Serway Li		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5260 MHz	25.22	17.97
	5300 MHz	22.26	17.97
	5320 MHz	20.70	17.89
	5500 MHz	20.78	17.97
	5580 MHz	20.96	17.97
	5700 MHz	20.52	17.89
	5720 MHz	21.57	17.89
802.11ac MCS0/Nss1 VHT40	5270 MHz	51.30	37.05
	5310 MHz	41.59	36.76
	5510 MHz	40.44	36.76
	5550 MHz	58.41	37.05
	5670 MHz	50.29	37.05
	5710 MHz	55.07	37.05
802.11ac MCS0/Nss1 VHT80	5290 MHz	82.03	75.83
	5530 MHz	82.03	75.83
	5610 MHz	101.45	75.83
	5690 MHz	109.57	76.12

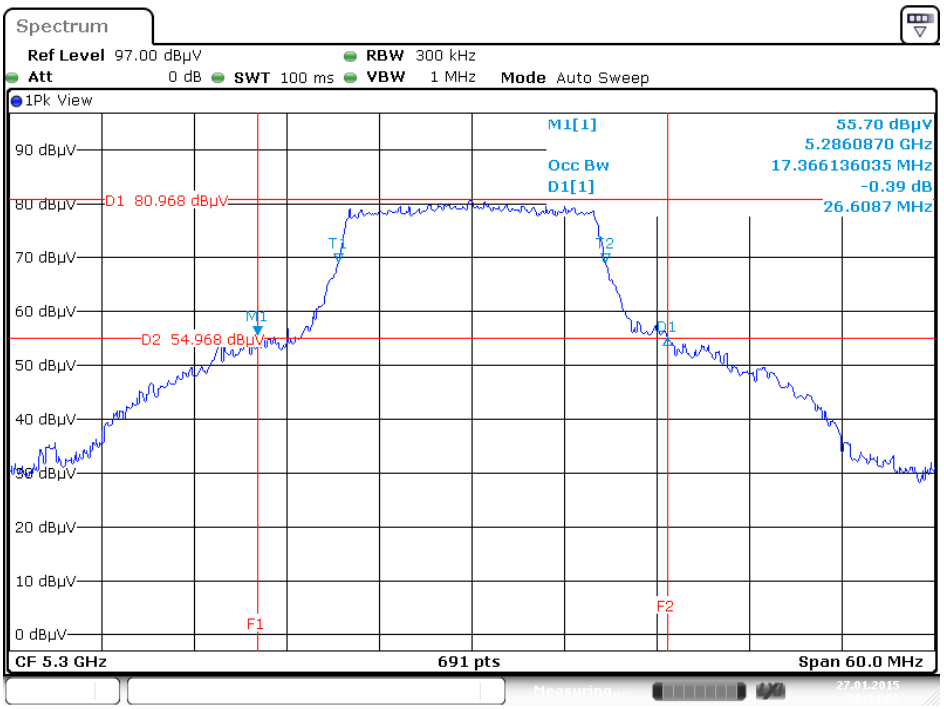
For Non-Beamforming Mode:

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 3 / 5260 MHz



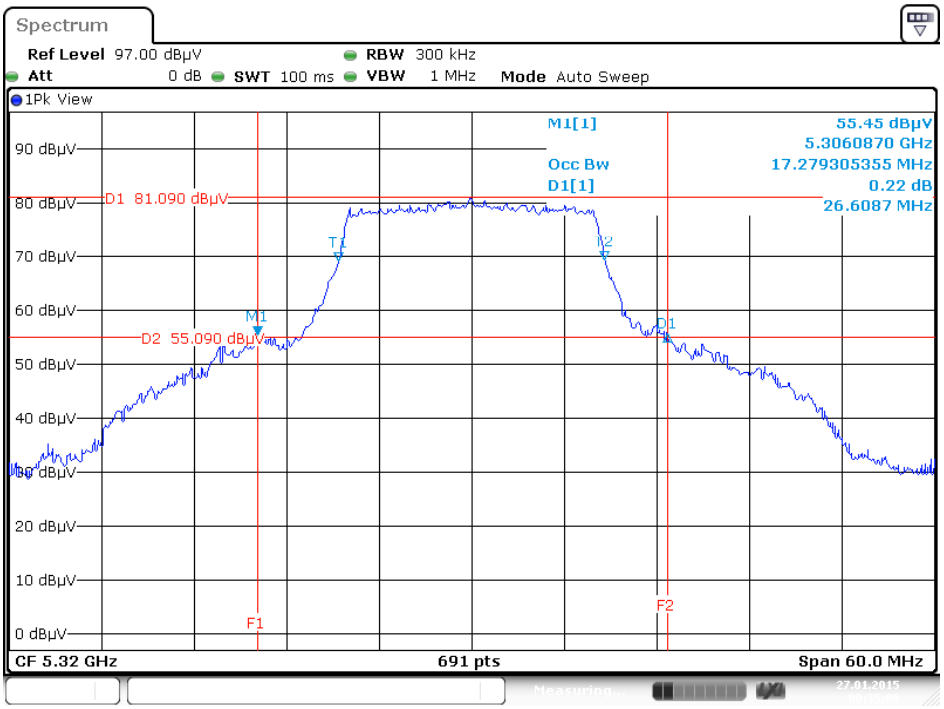
Date: 27.JAN.2015 00:33:17

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 3 / 5300 MHz



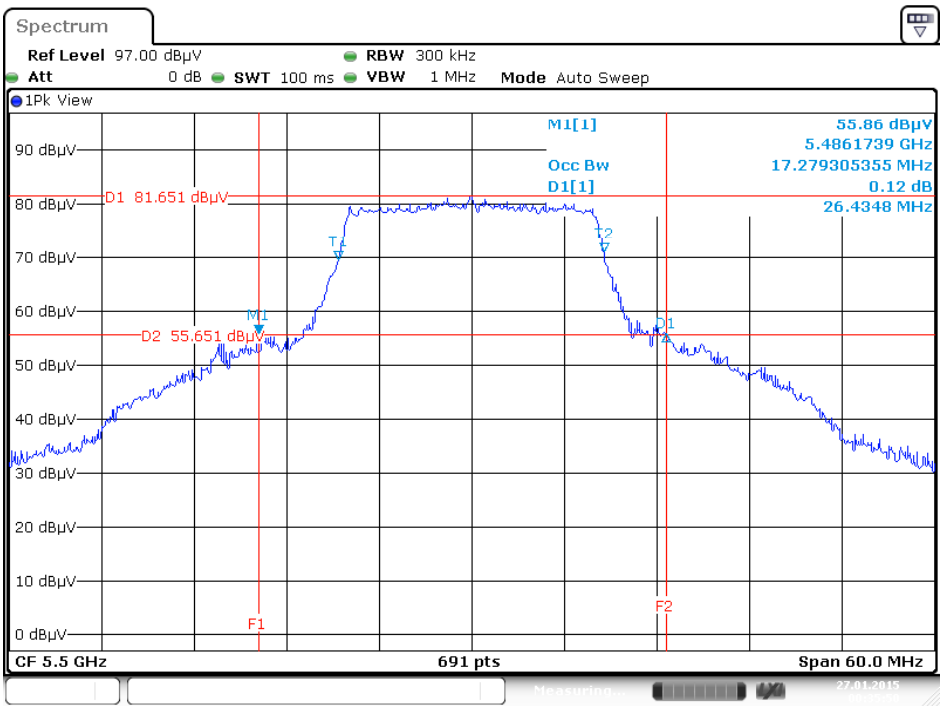
Date: 27.JAN.2015 00:34:03

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 3 / 5320 MHz



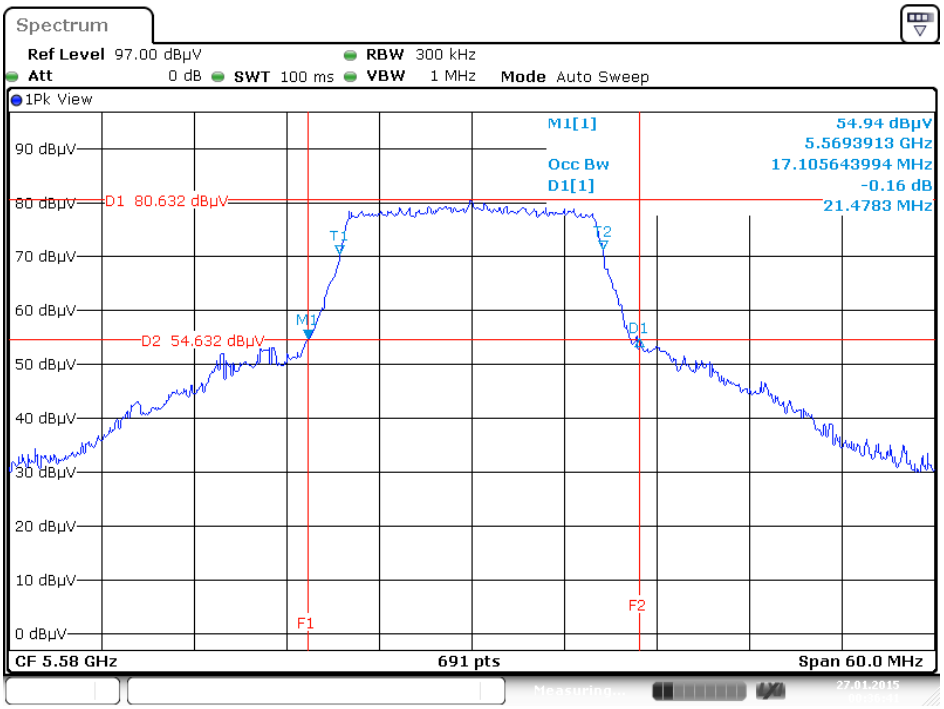
Date: 27.JAN.2015 00:35:00

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 3 / 5500 MHz



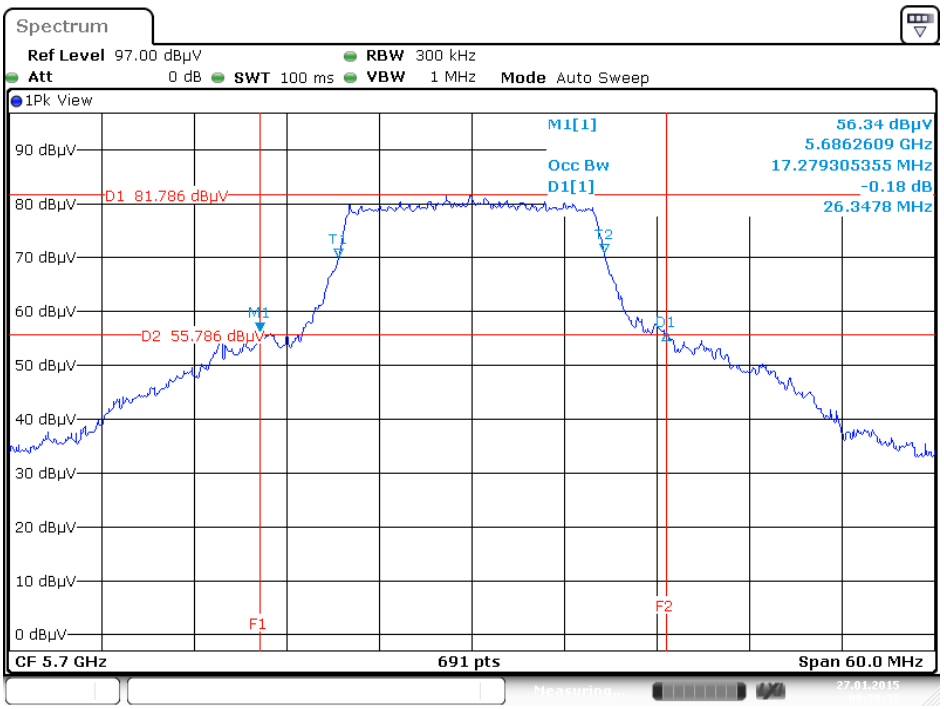
Date: 27.JAN.2015 00:35:50

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 3 / 5580 MHz



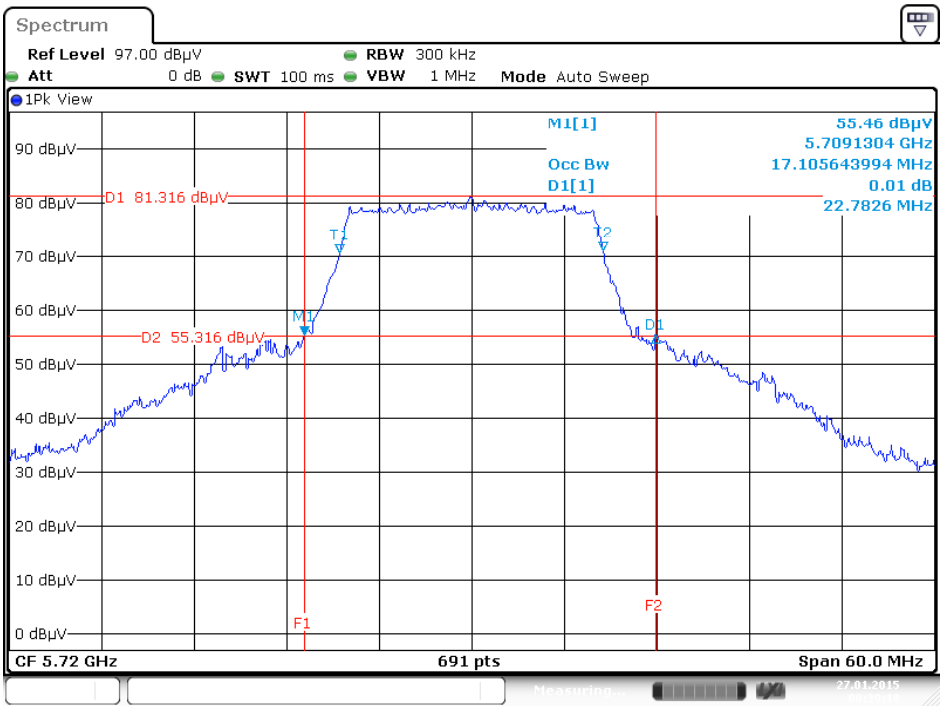
Date: 27.JAN.2015 00:36:41

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 3 / 5700 MHz



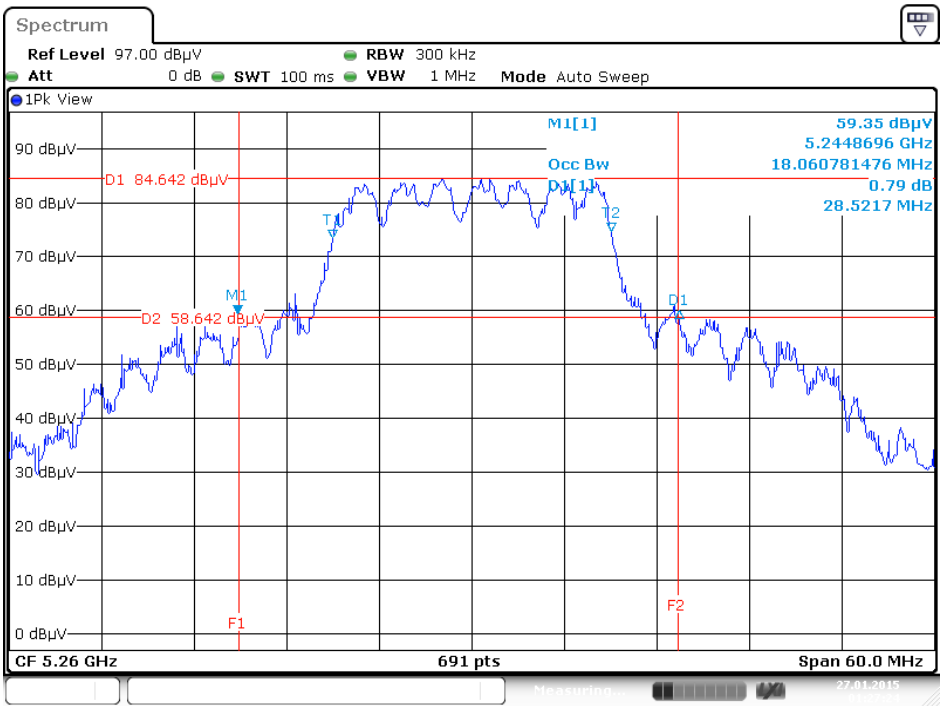
Date: 27.JAN.2015 00:38:32

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 3 / 5720 MHz



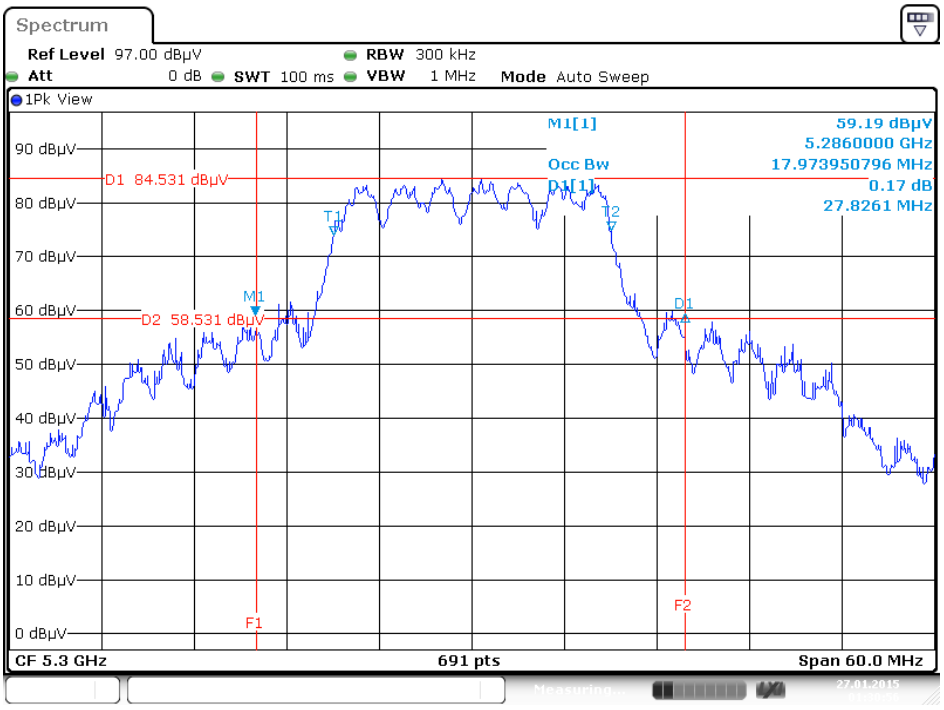
Date: 27.JAN.2015 00:39:18

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



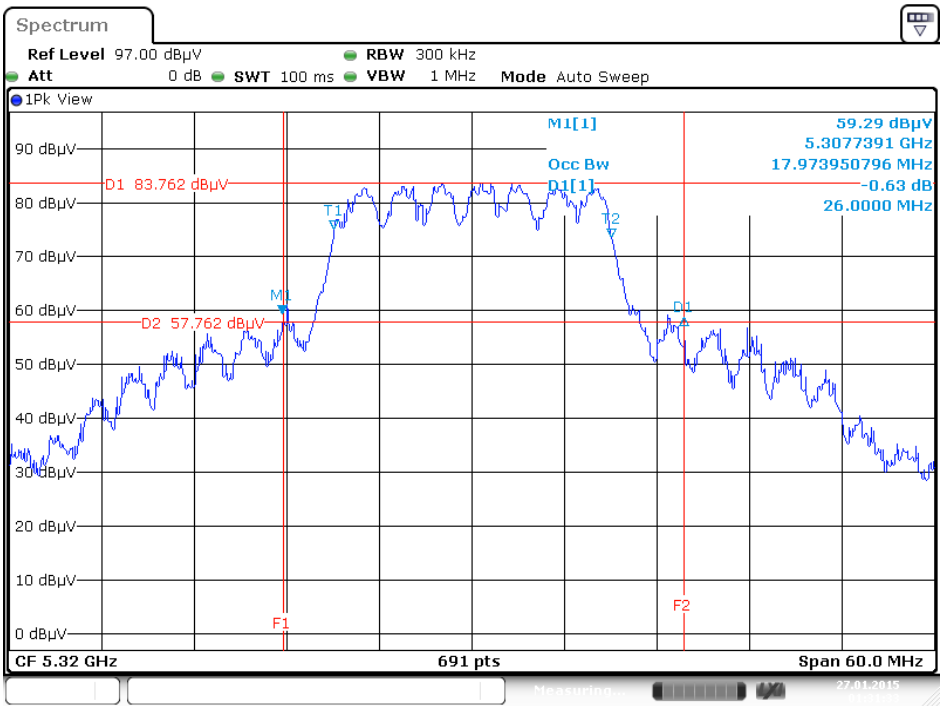
Date: 27.JAN.2015 01:27:24

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



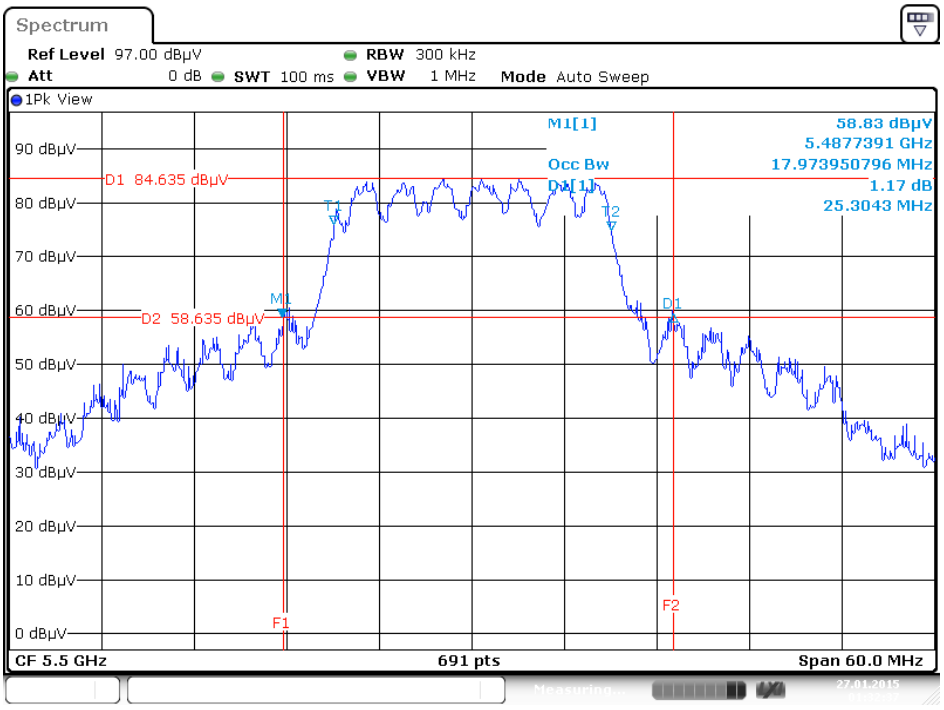
Date: 27.JAN.2015 01:30:56

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



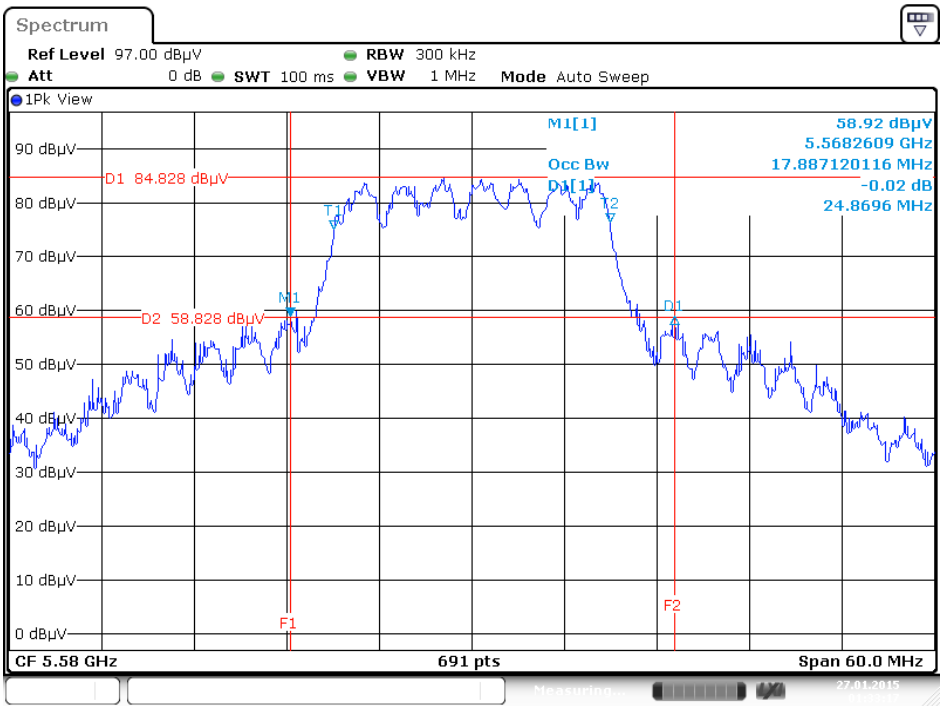
Date: 27.JAN.2015 01:31:33

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



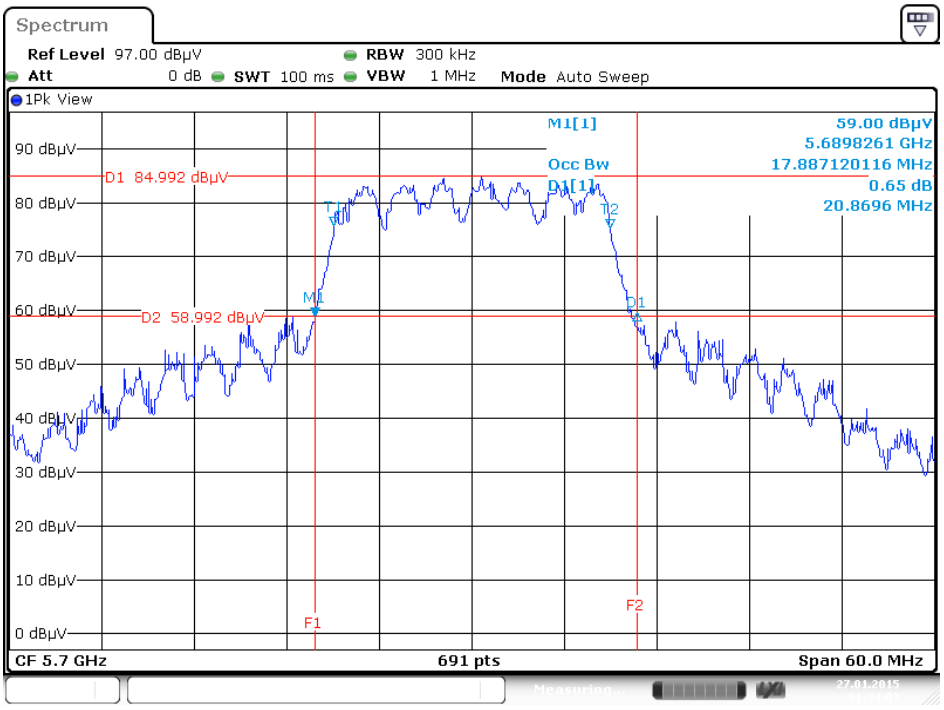
Date: 27.JAN.2015 01:32:37

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



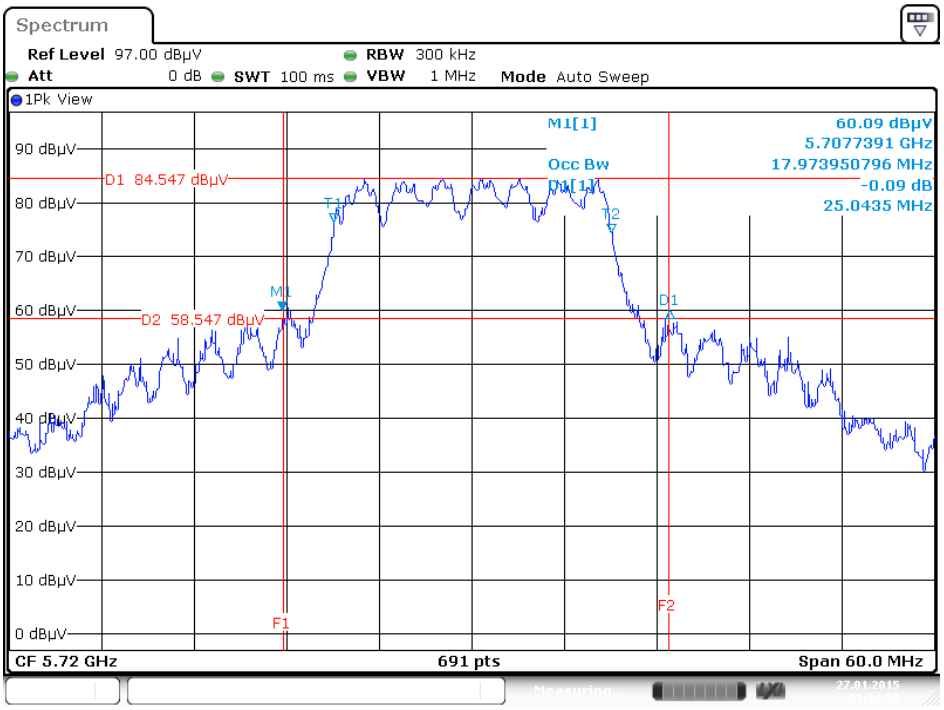
Date: 27.JAN.2015 01:33:17

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

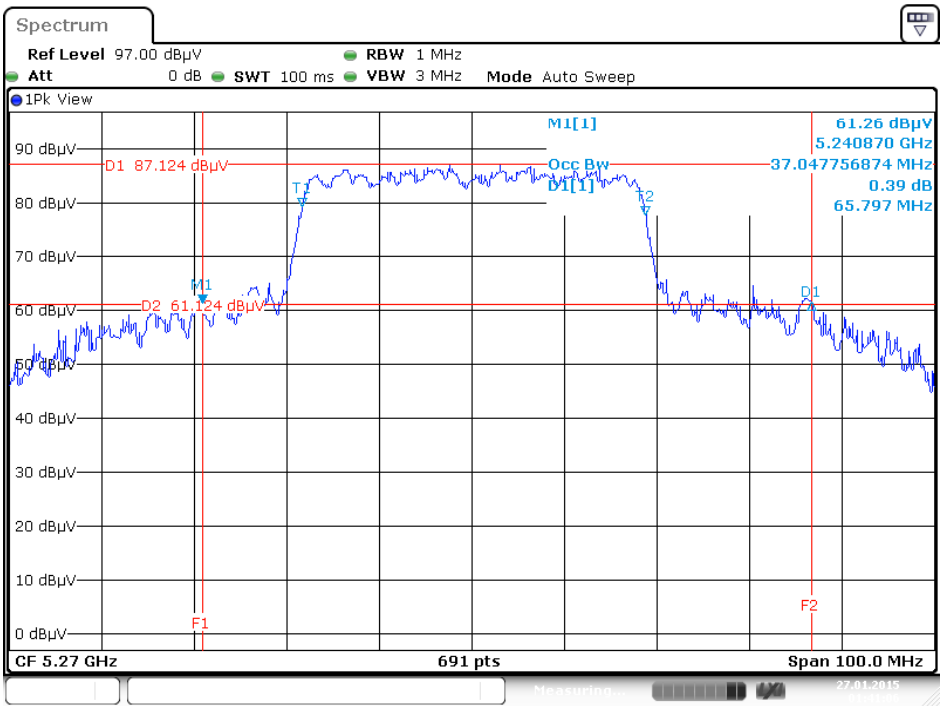


Date: 27.JAN.2015 01:34:03

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



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



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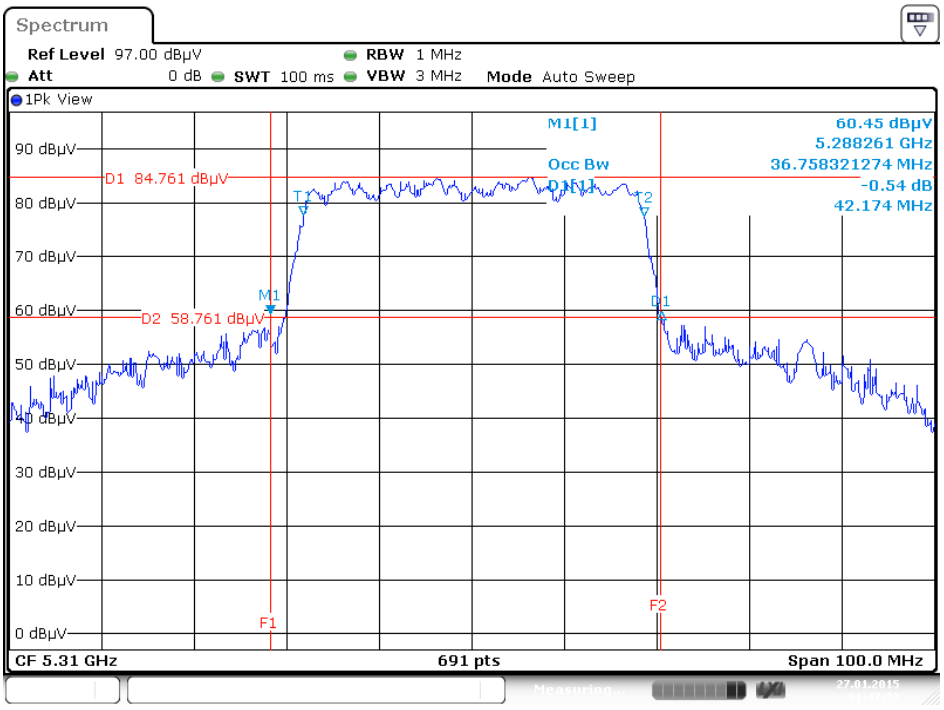
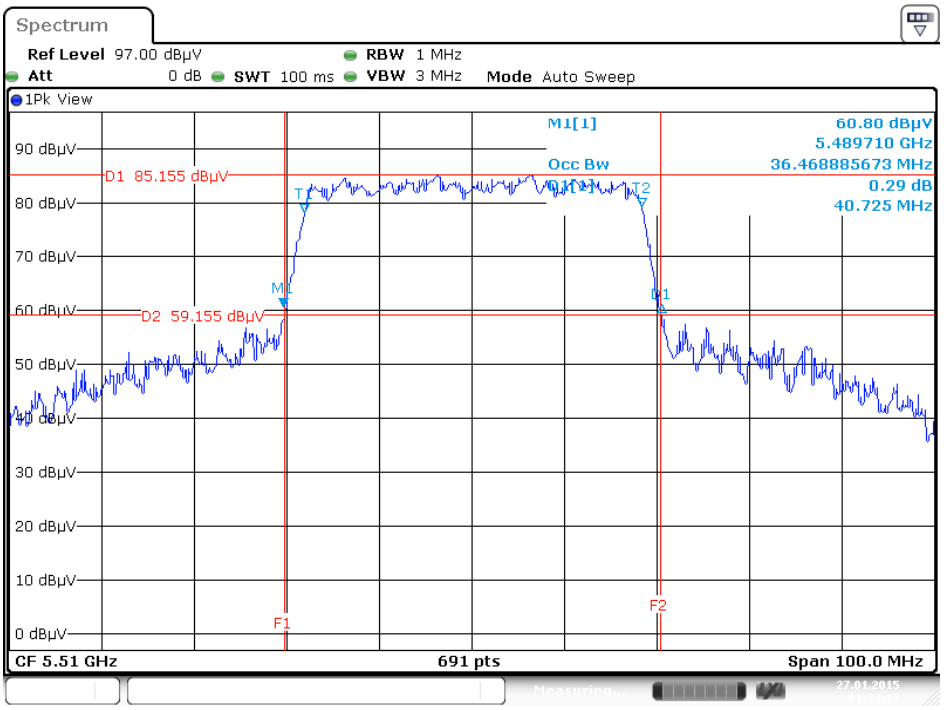
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5310 MHz



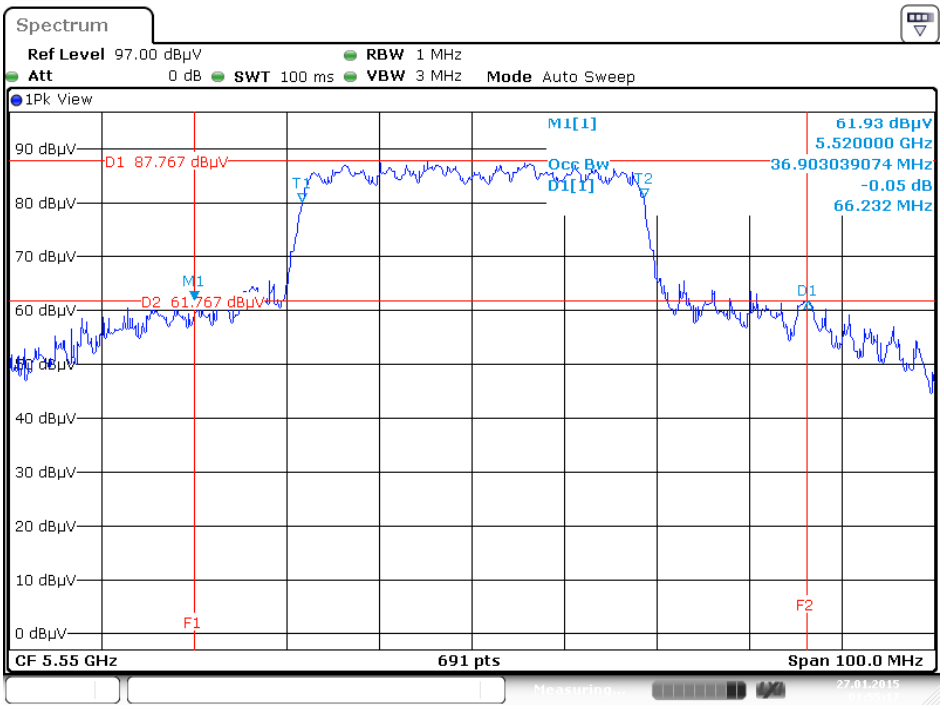
Date: 27.JAN.2015 01:47:34

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



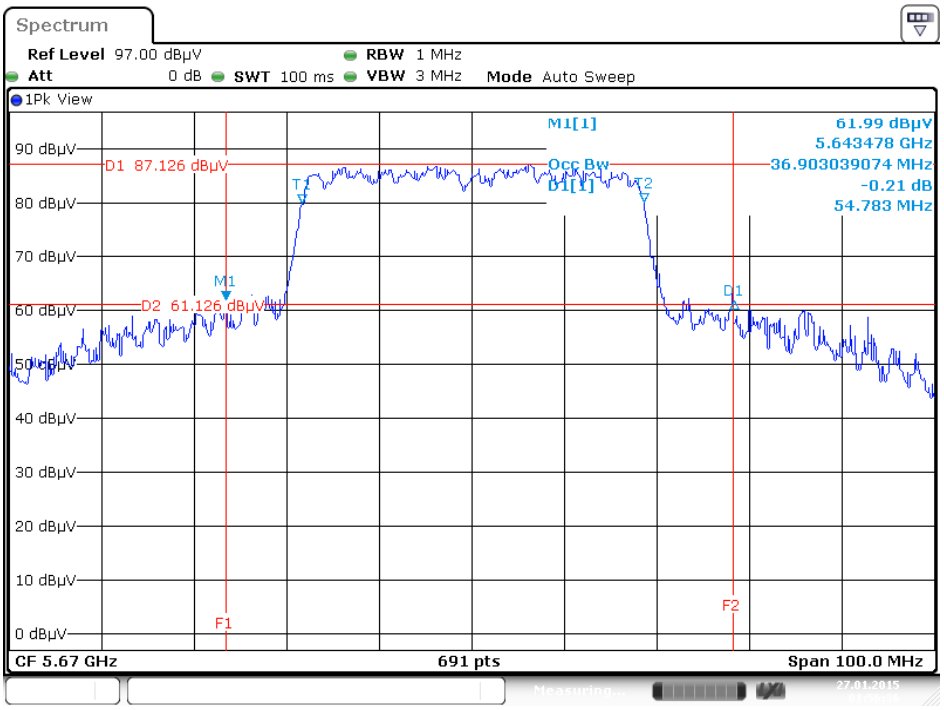
Date: 27.JAN.2015 01:54:17

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



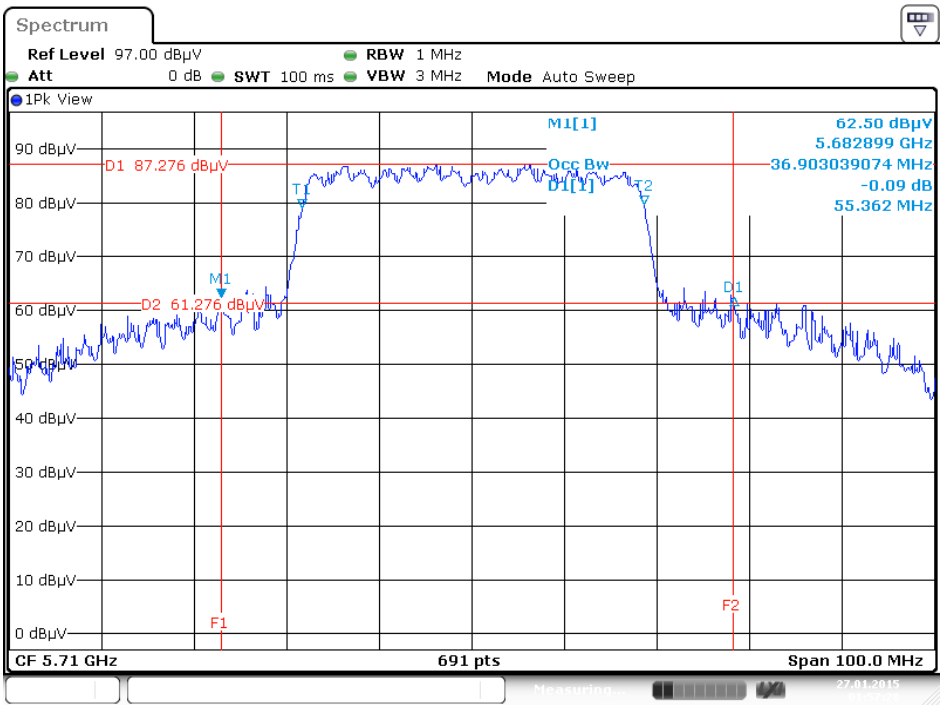
Date: 27.JAN.2015 01:55:17

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



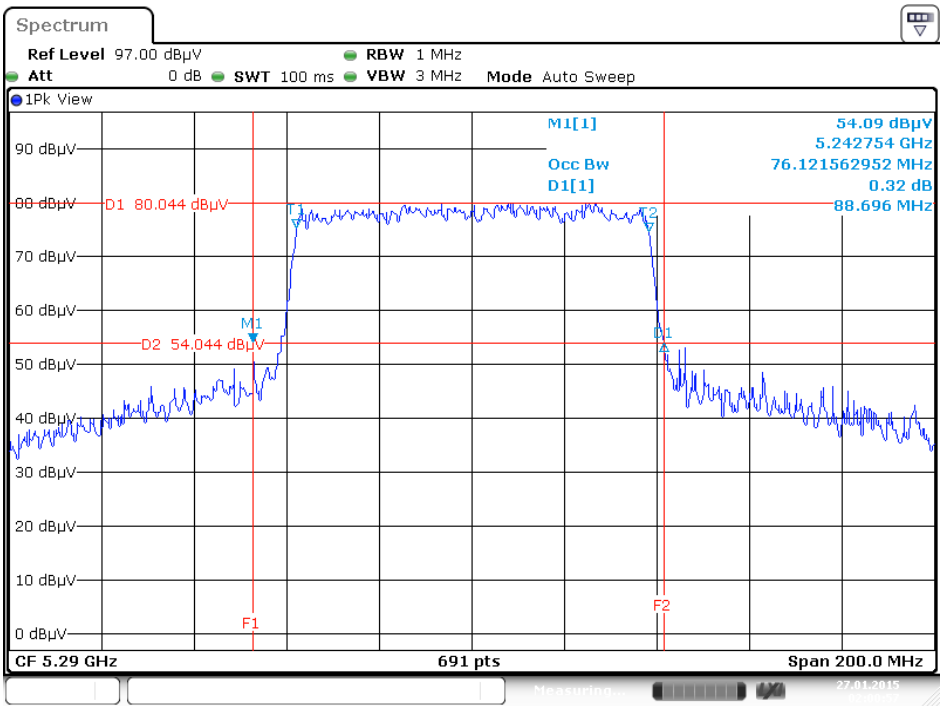
Date: 27.JAN.2015 01:56:36

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



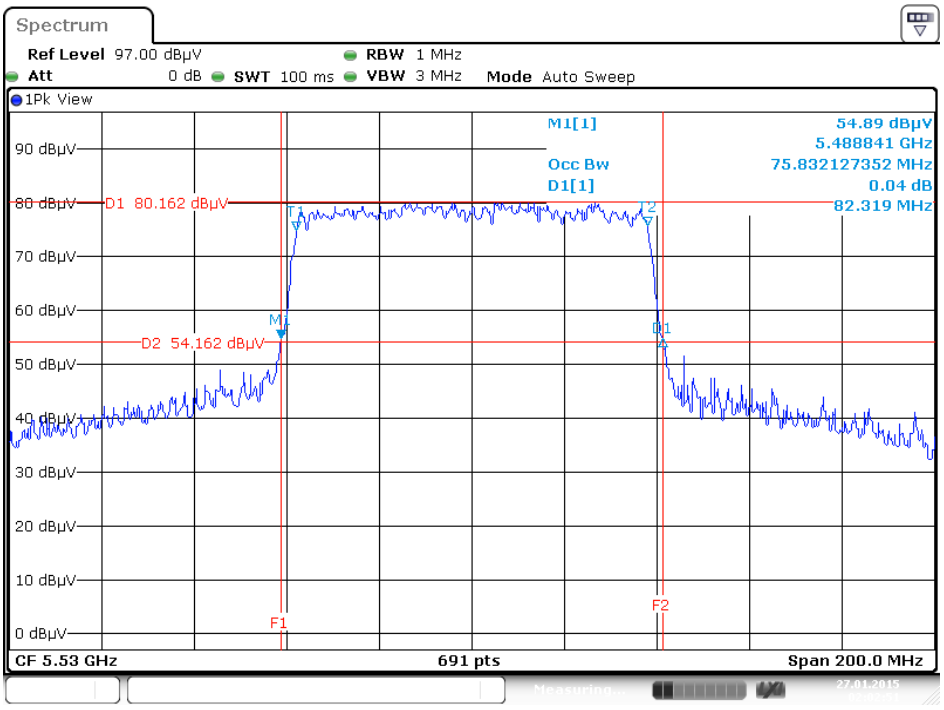
Date: 27.JAN.2015 01:57:28

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



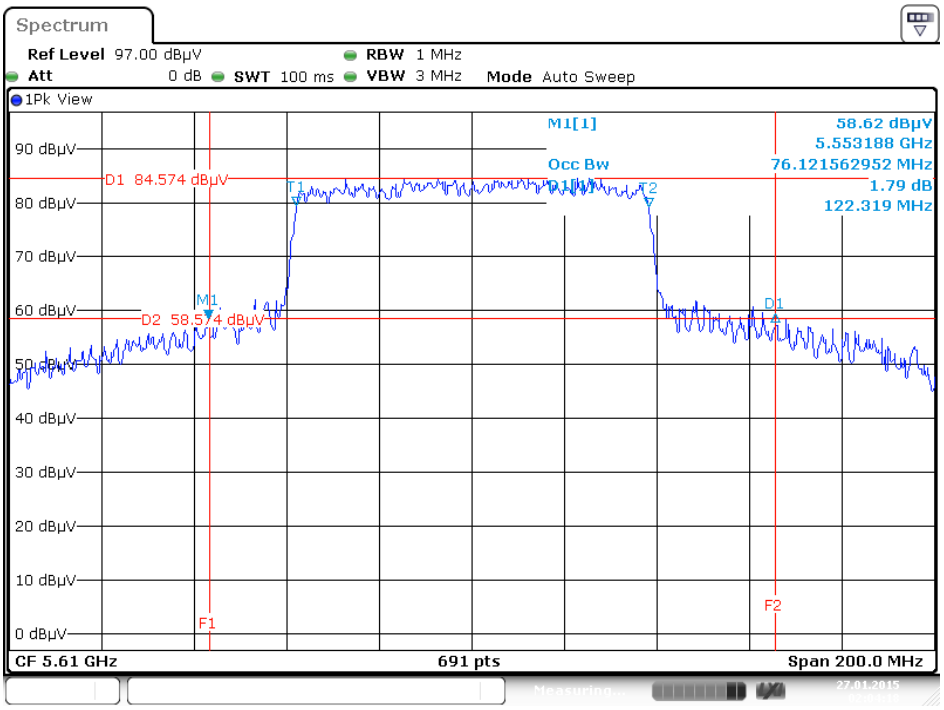
Date: 27.JAN.2015 02:00:58

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



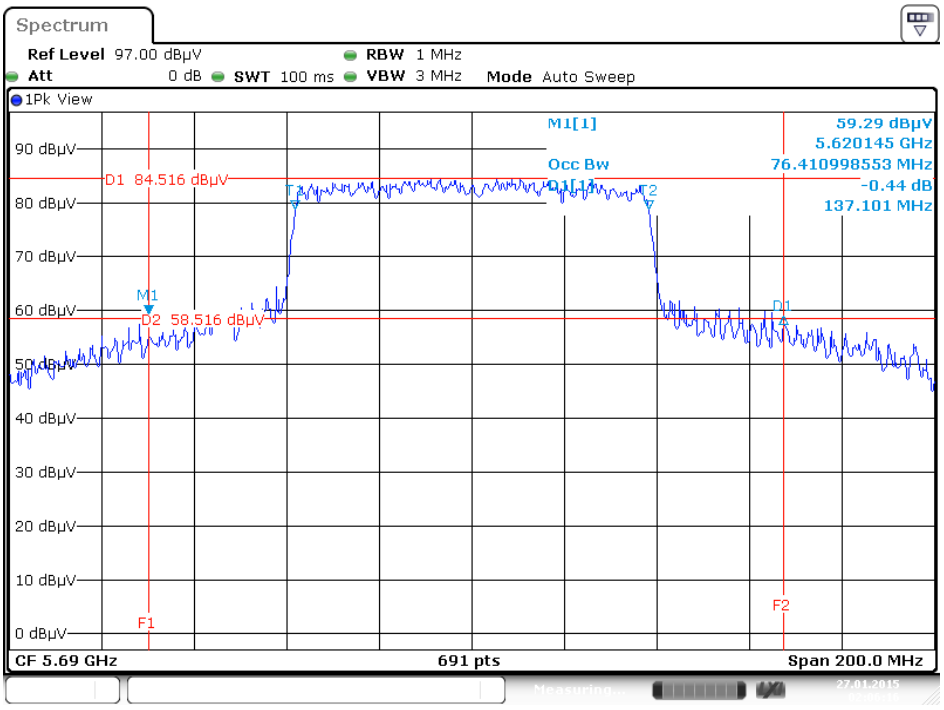
Date: 27.JAN.2015 02:02:51

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



Date: 27.JAN.2015 02:04:18

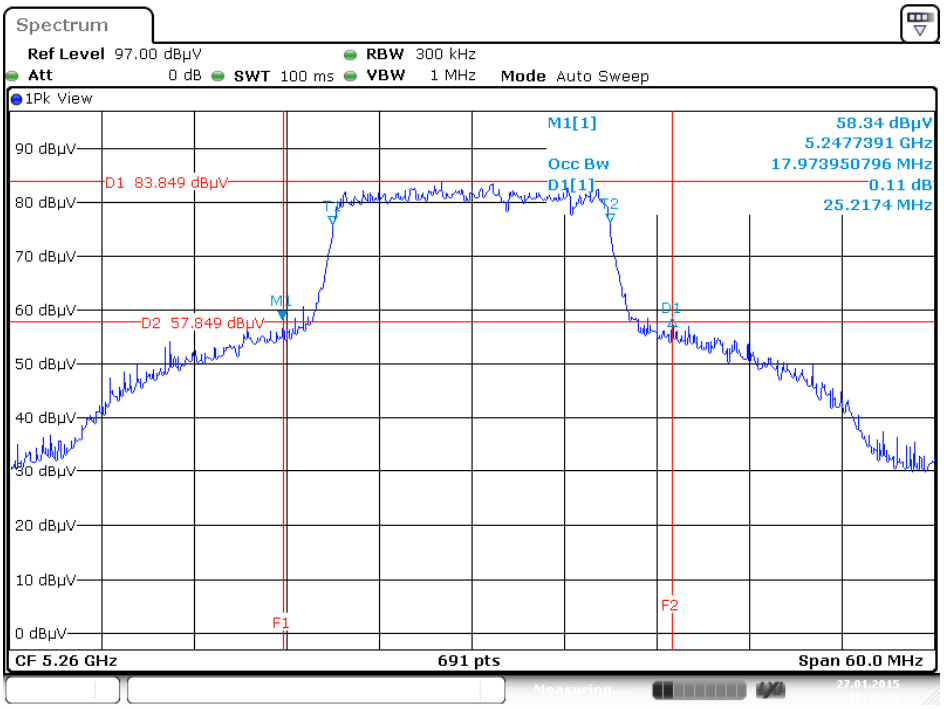
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 + Chain 4 / 5690 MHz



Date: 27.JAN.2015 02:06:16

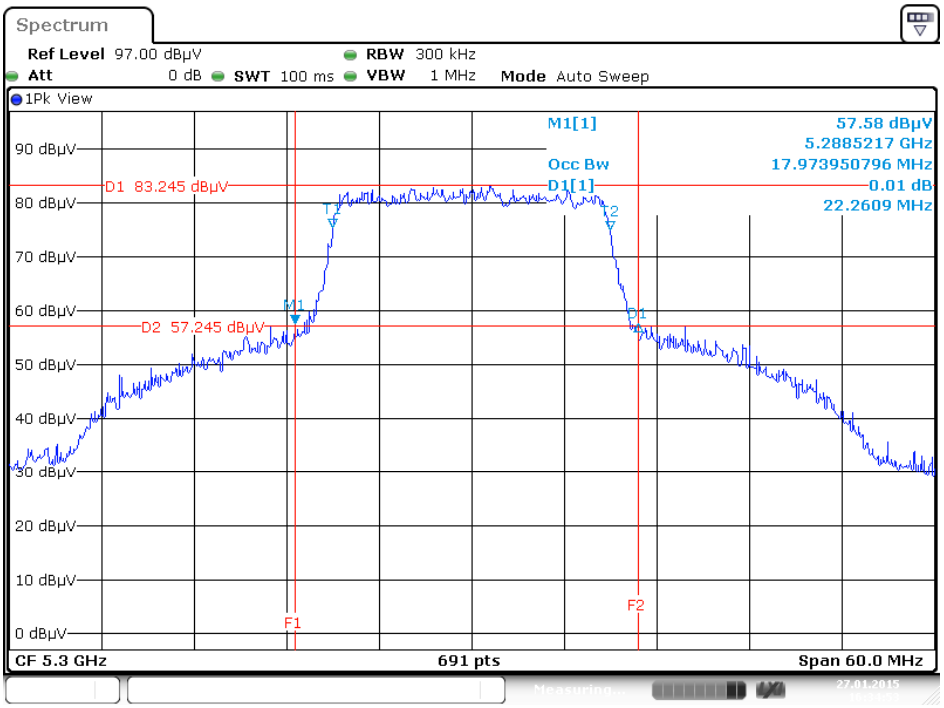
For Beamforming Mode:

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



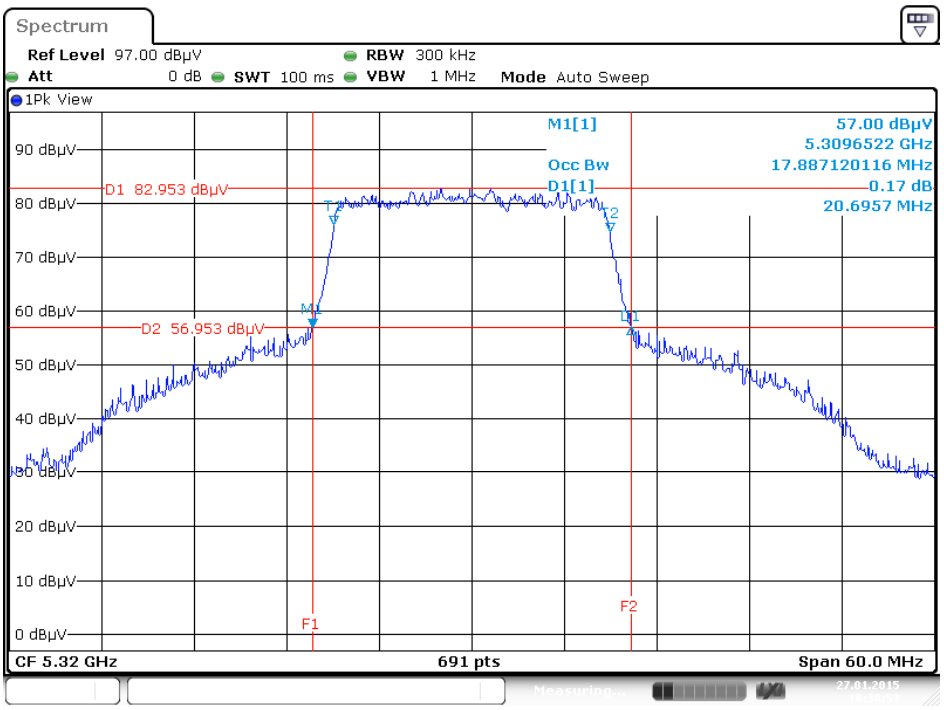
Date: 27.JAN.2015 16:30:07

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



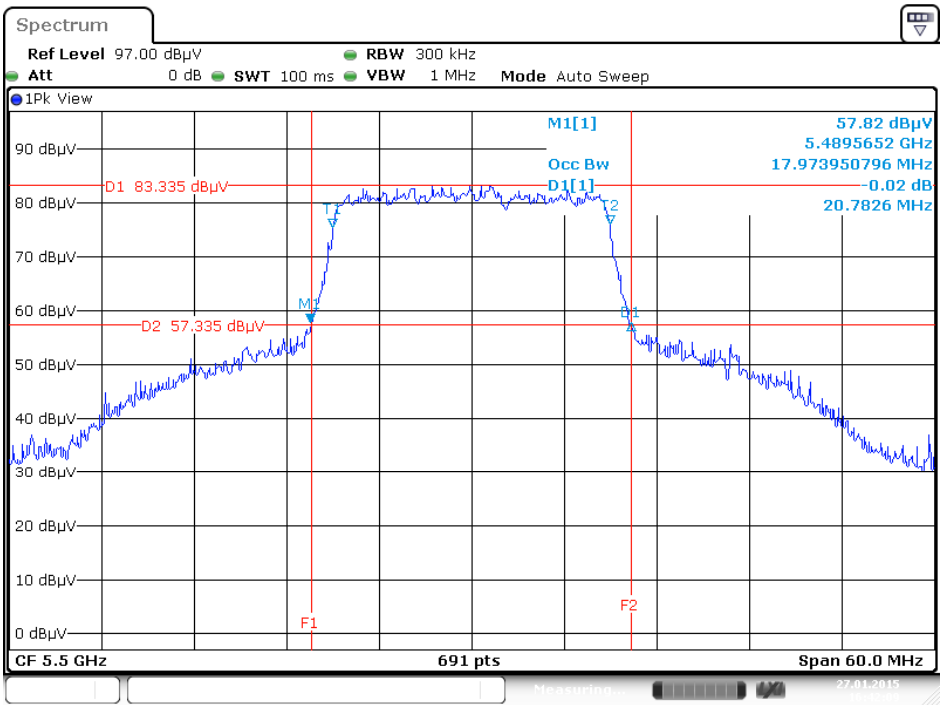
Date: 27.JAN.2015 16:34:53

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



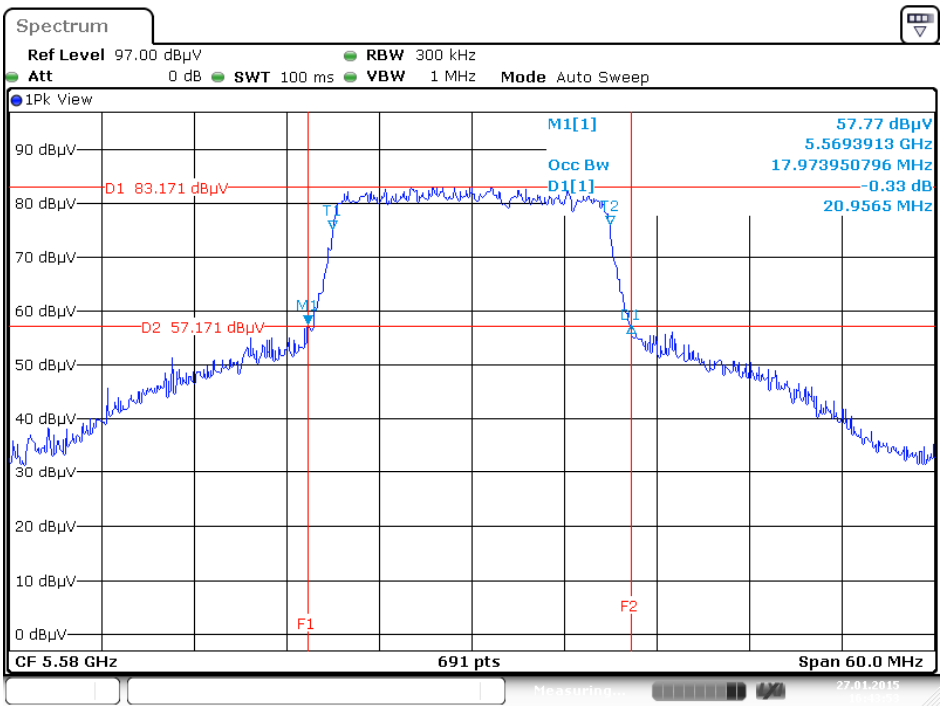
Date: 27.JAN.2015 16:38:53

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



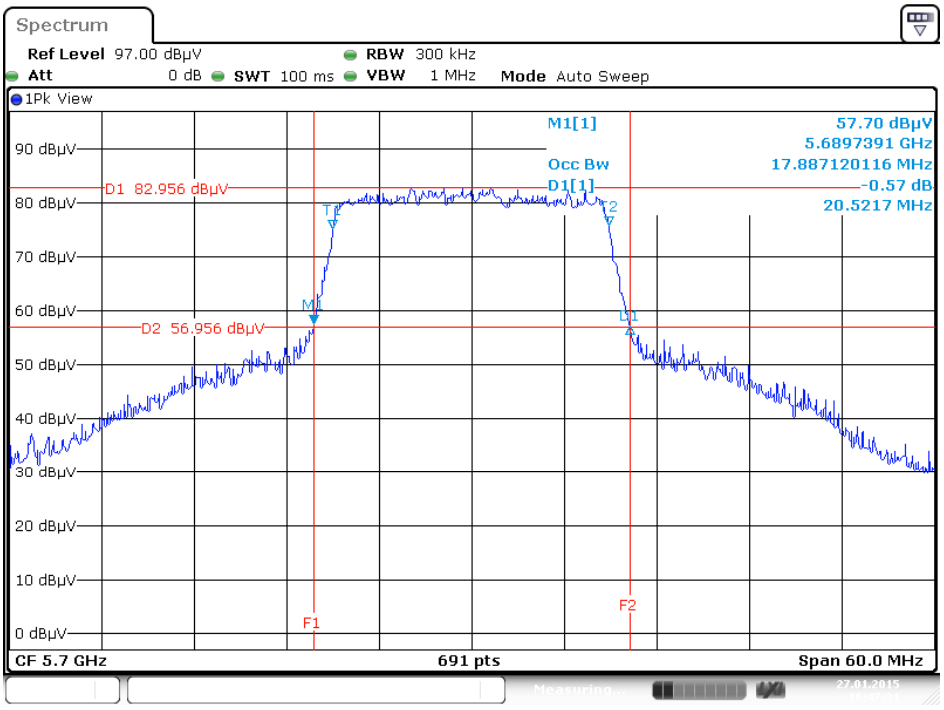
Date: 27.JAN.2015 16:42:09

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



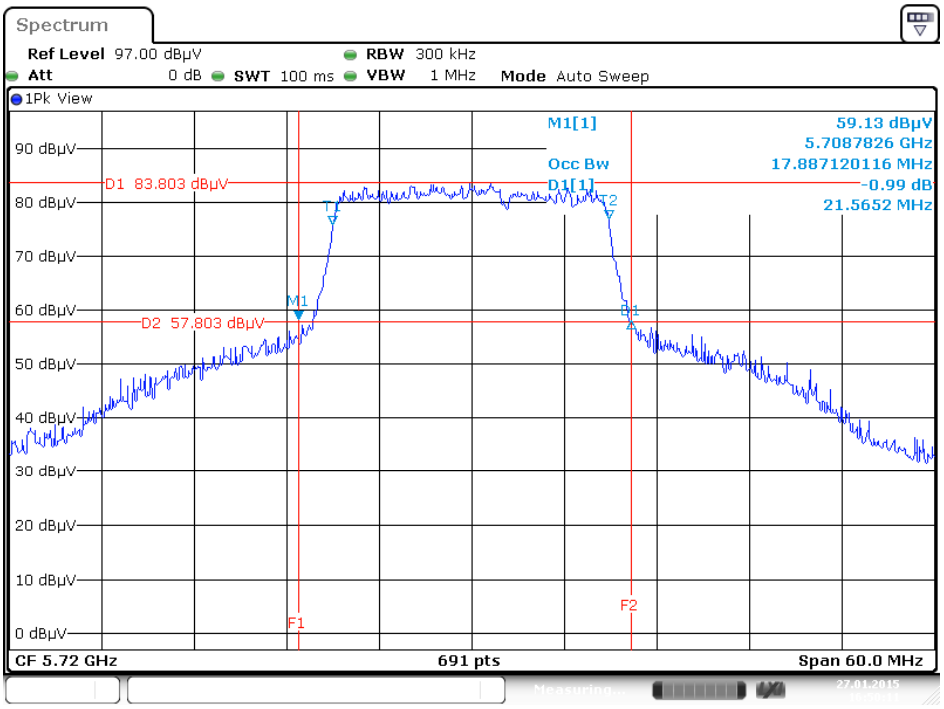
Date: 27.JAN.2015 16:43:54

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

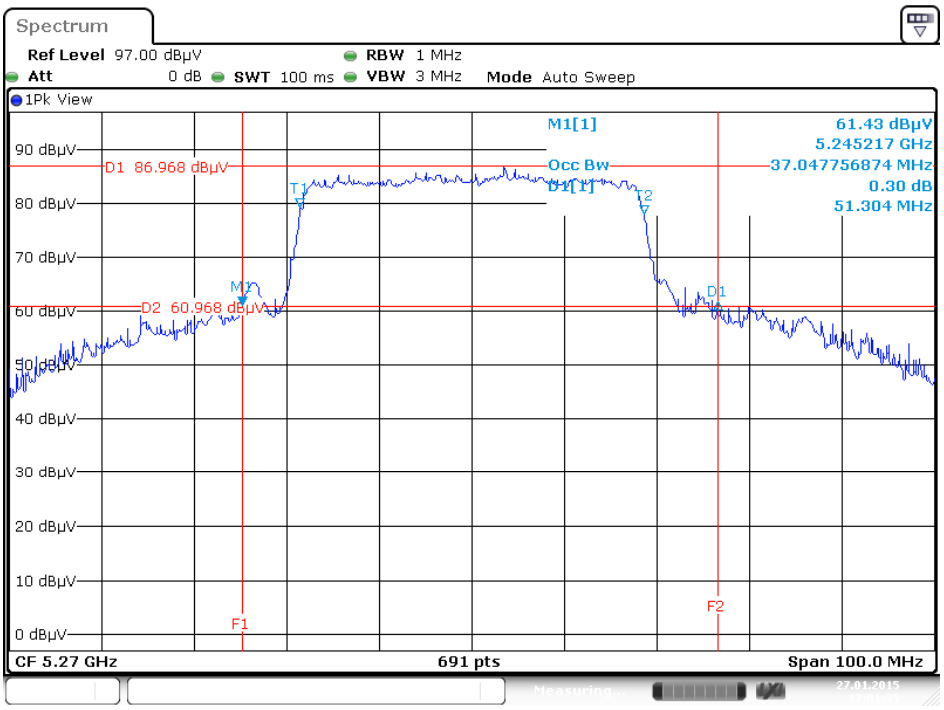


Date: 27.JAN.2015 16:47:31

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

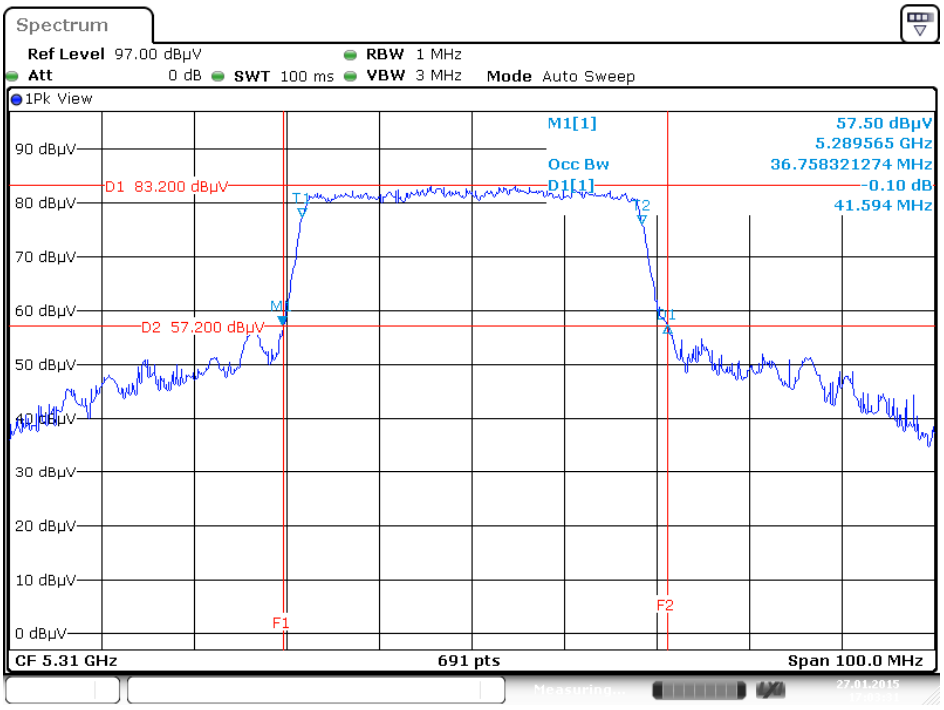


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5270 MHz



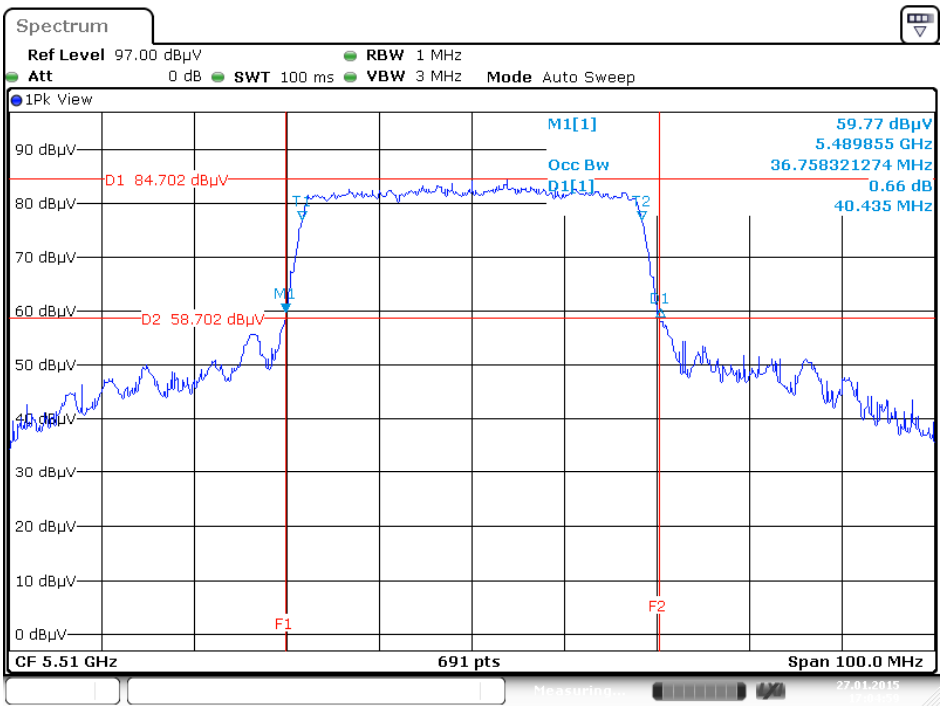
Date: 27.JAN.2015 17:01:35

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



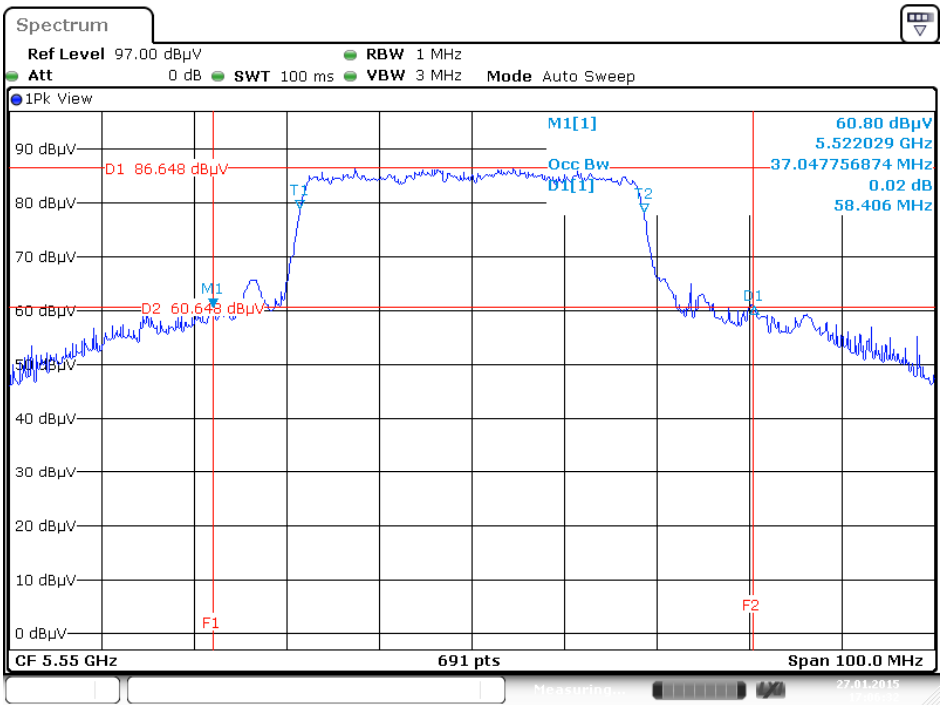
Date: 27.JAN.2015 17:03:30

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



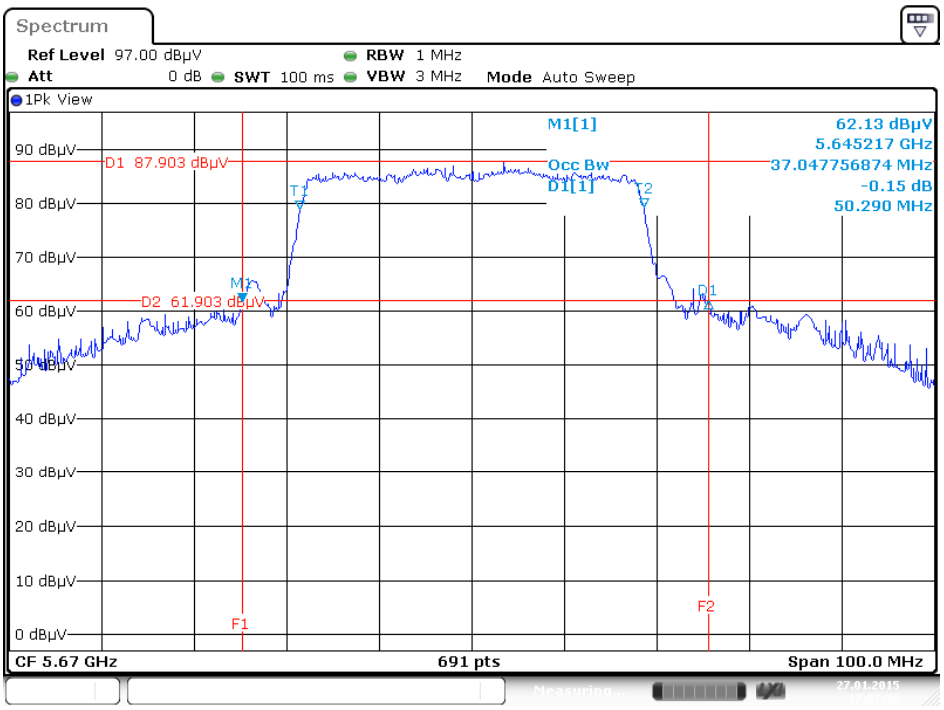
Date: 27.JAN.2015 17:04:59

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



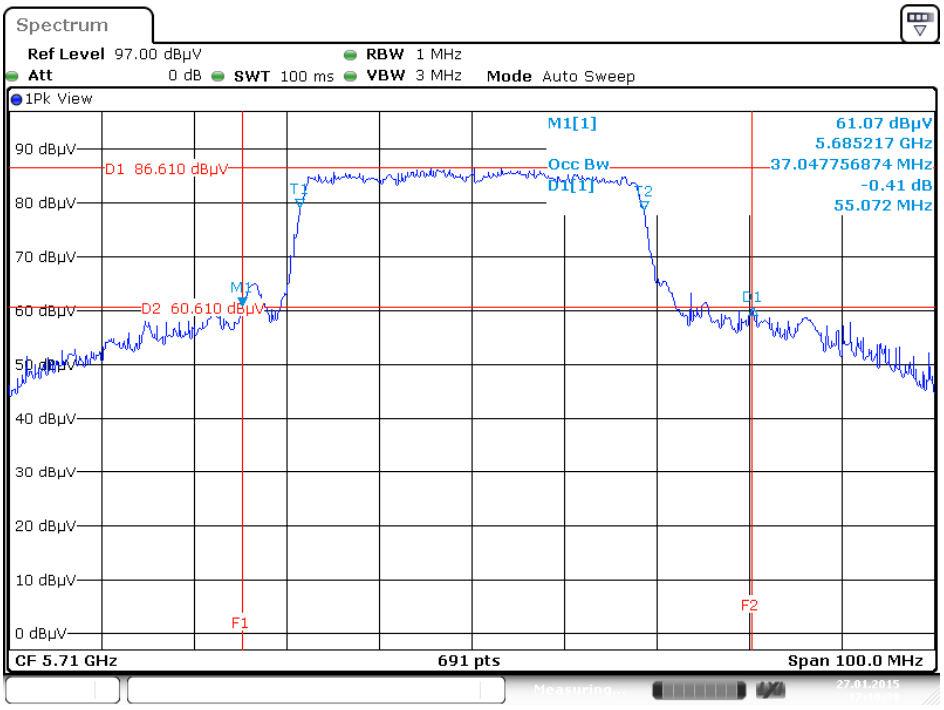
Date: 27.JAN.2015 17:06:32

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



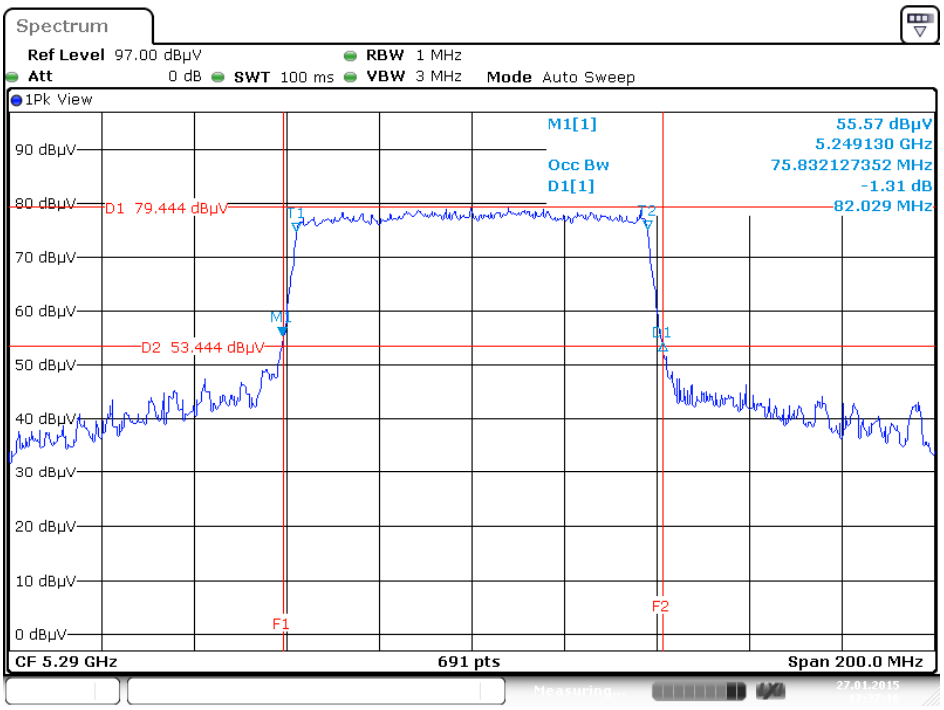
Date: 27.JAN.2015 17:07:56

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



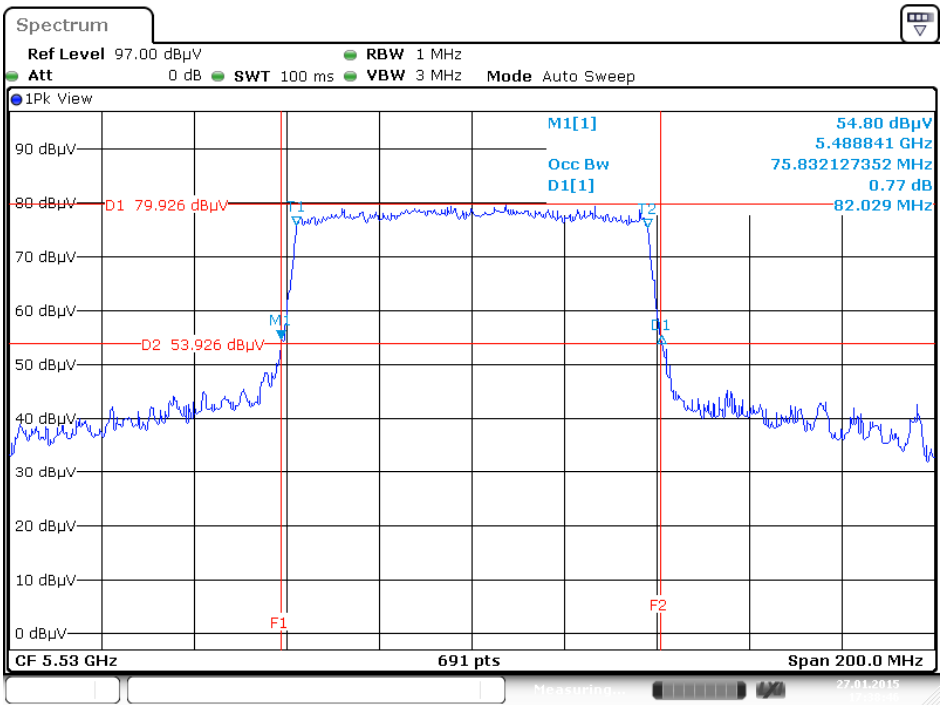
Date: 27.JAN.2015 17:10:38

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



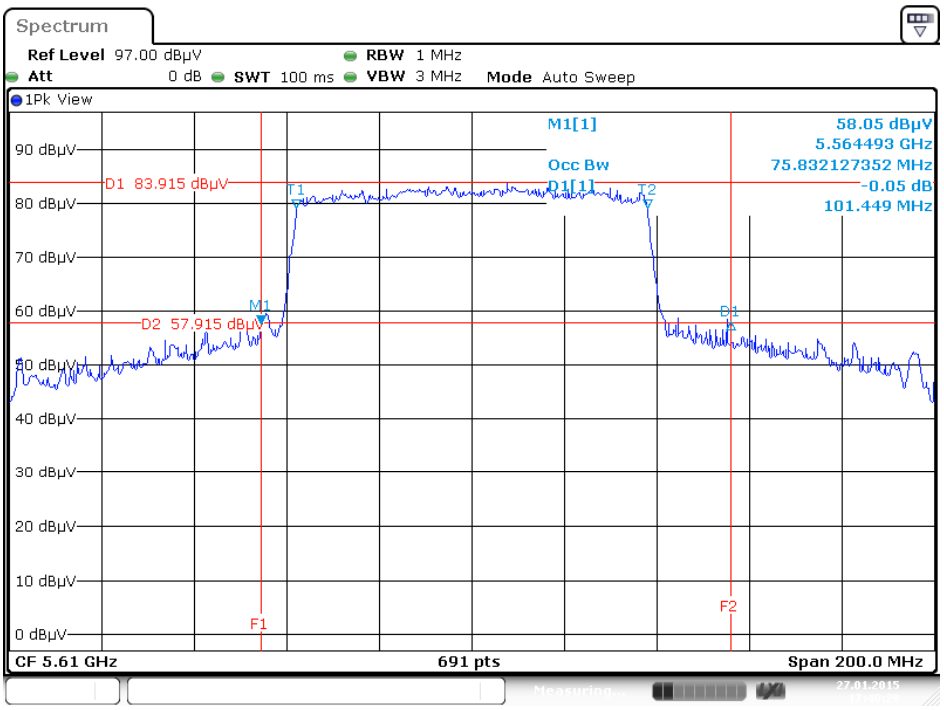
Date: 27.JAN.2015 17:37:16

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



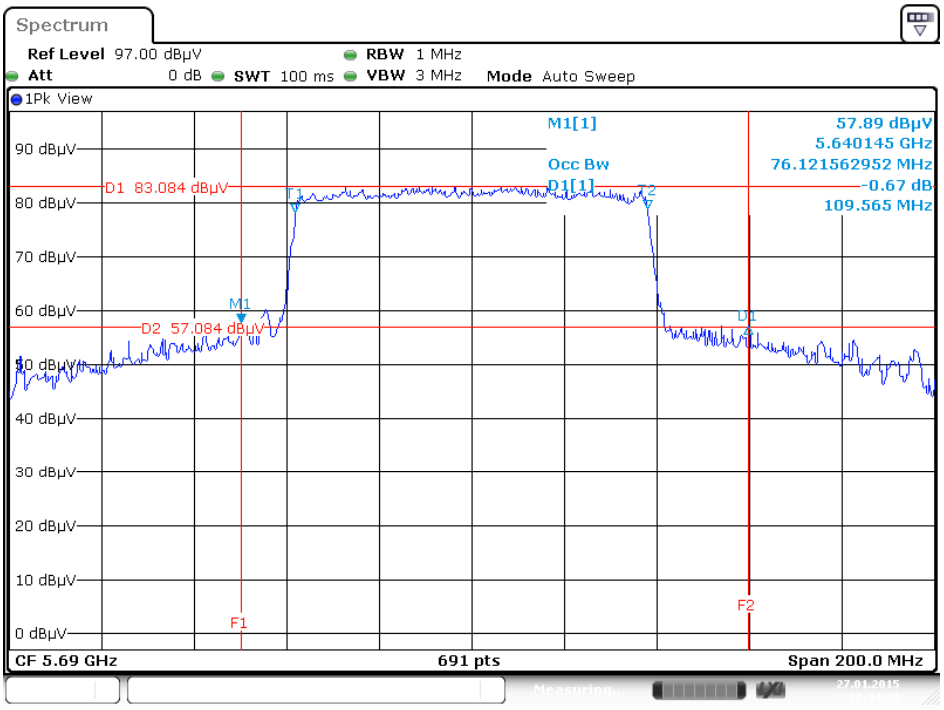
Date: 27.JAN.2015 17:38:46

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



Date: 27.JAN.2015 17:40:30

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



Date: 27.JAN.2015 17:44:29

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℃	Humidity	63%
Test Engineer	Serway Li		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5720 MHz (Straddle Channel)	16.35	500	Complies
802.11ac MCS0/Nss1 VHT20	5720 MHz (Straddle Channel)	16.06	500	Complies
802.11ac MCS0/Nss1 VHT40	5710 MHz (Straddle Channel)	35.71	500	Complies
802.11ac MCS0/Nss1 VHT80	5690 MHz (Straddle Channel)	75.07	500	Complies

For Beamforming Mode:

Temperature	26℃	Humidity	63%
Test Engineer	Serway Li		

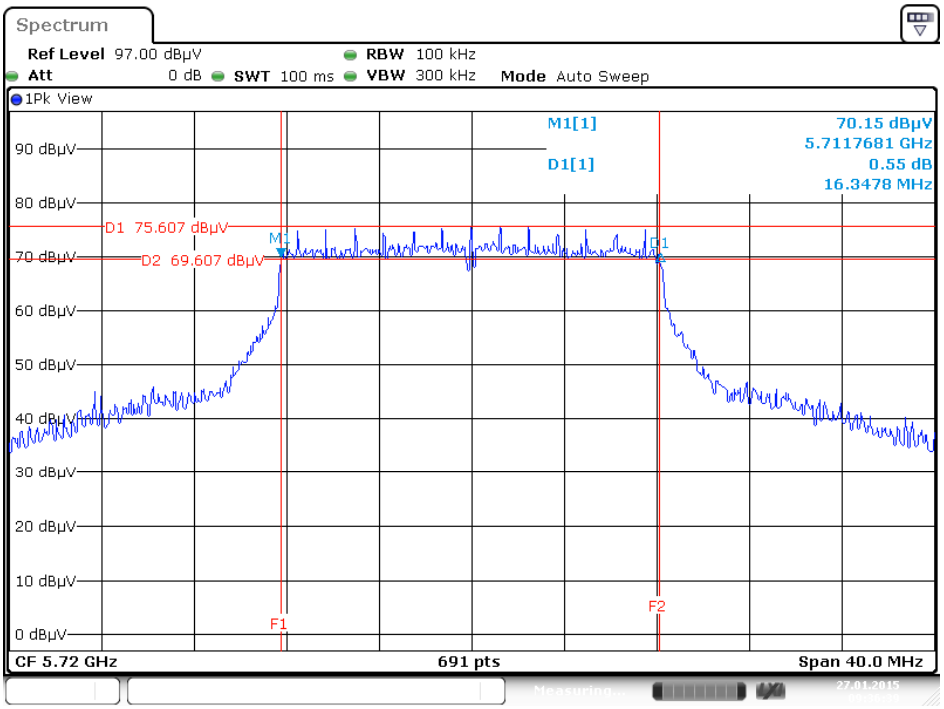
Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	5720 MHz (Straddle Channel)	16.87	500	Complies
802.11ac MCS0/Nss1 VHT40	5710 MHz (Straddle Channel)	36.29	500	Complies
802.11ac MCS0/Nss1 VHT80	5690 MHz (Straddle Channel)	75.07	500	Complies

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

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

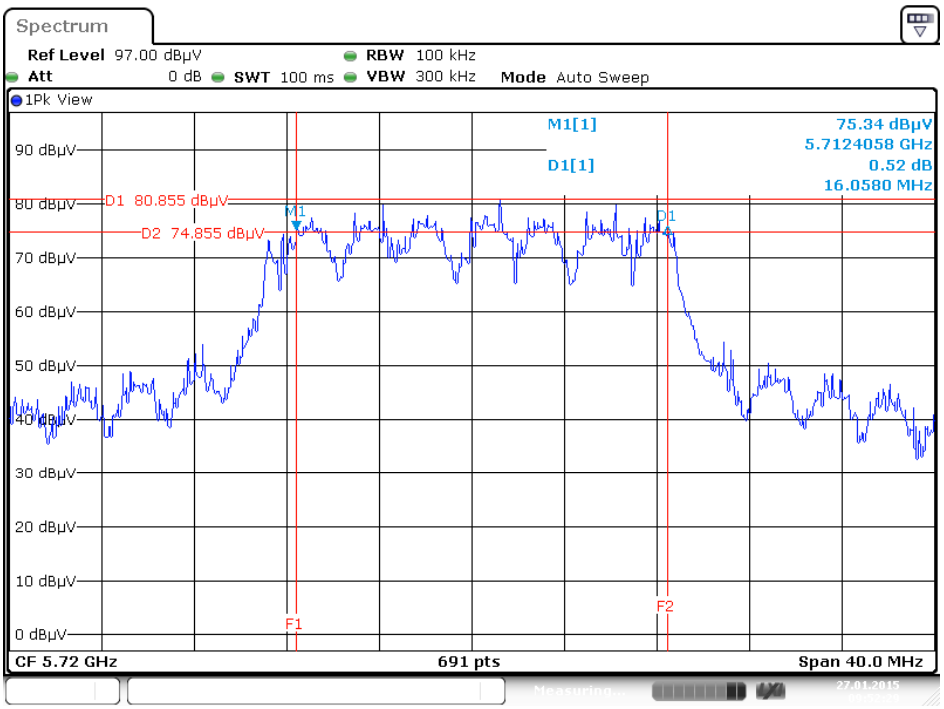
For Non-Beamforming Mode:

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 3 / 5720 MHz



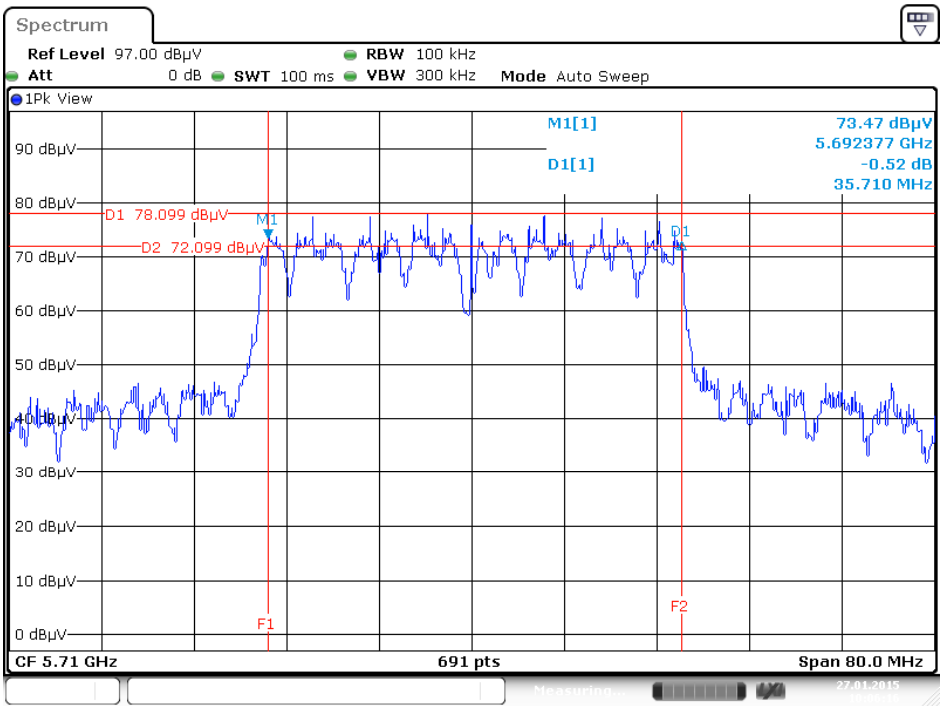
Date: 27.JAN.2015 09:36:39

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



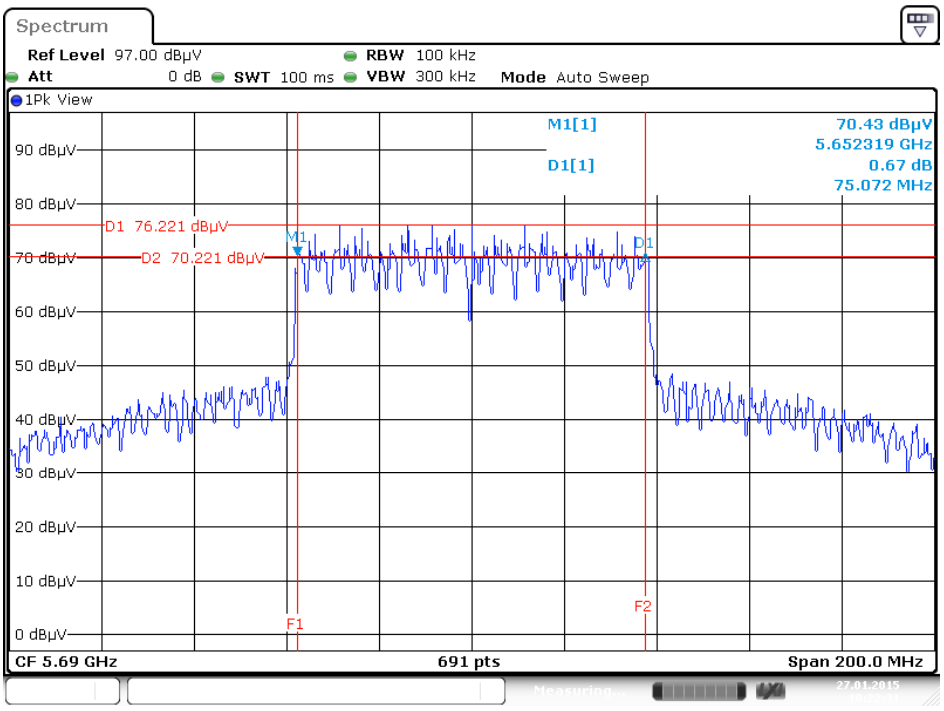
Date: 27.JAN.2015 09:52:29

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



Date: 27.JAN.2015 10:06:16

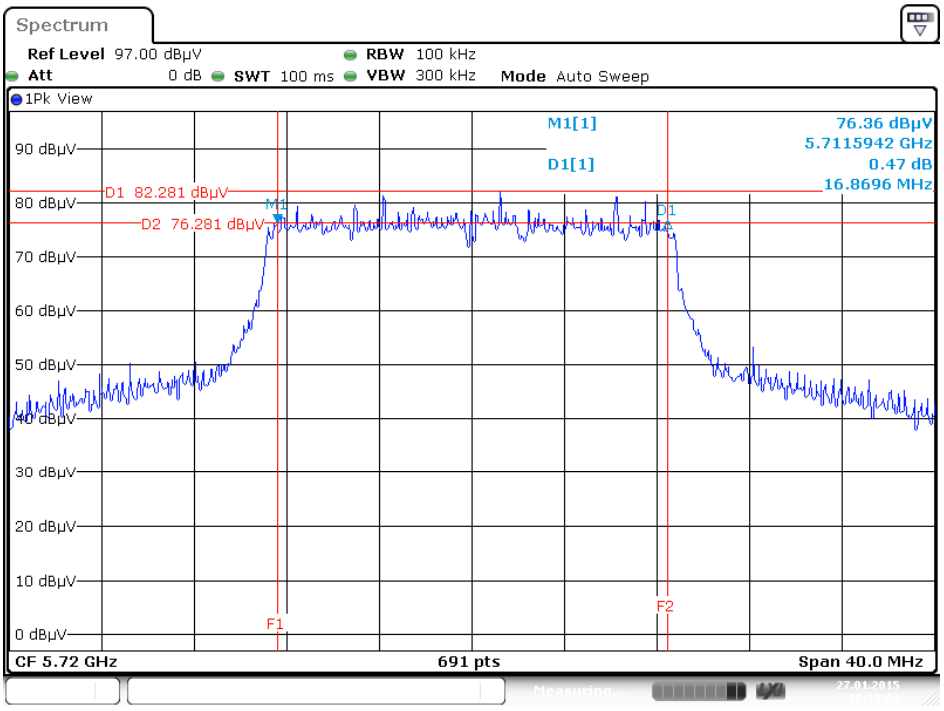
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 + Chain 4 / 5690 MHz



Date: 27.JAN.2015 10:22:31

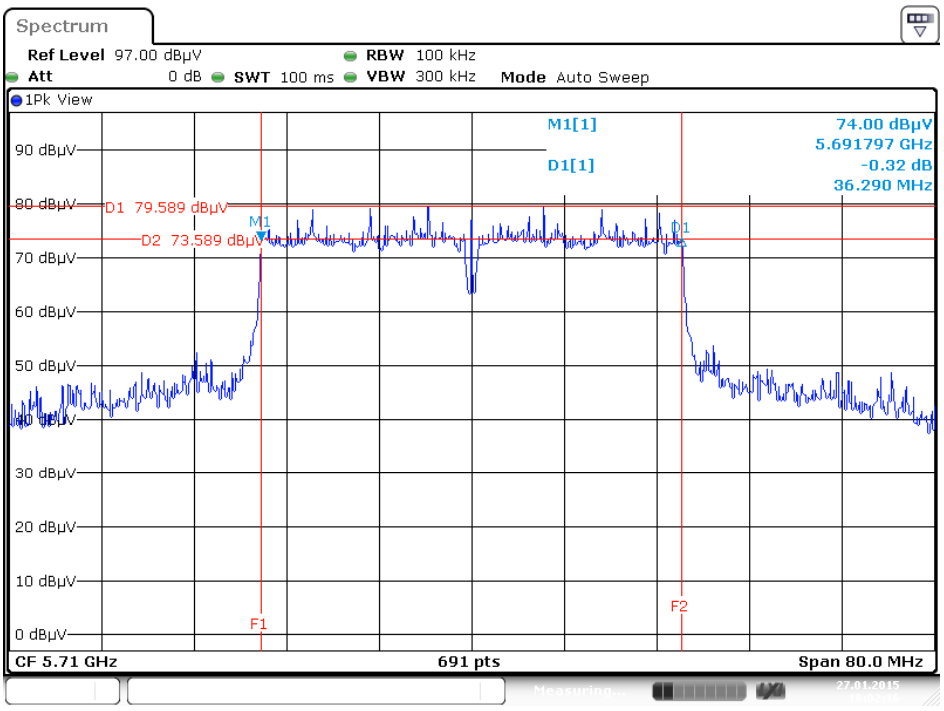
For Beamforming Mode:

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



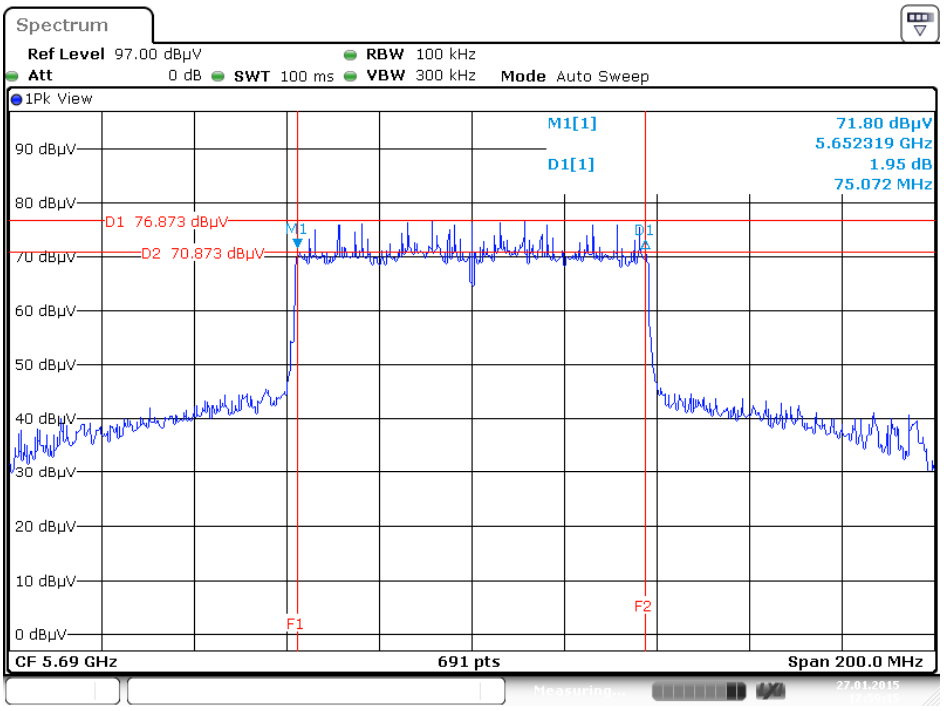
Date: 27.JAN.2015 18:10:02

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



Date: 27.JAN.2015 18:02:17

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



Date: 27.JAN.2015 17:59:15

4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

Frequency Band		Limit
☒	5.25-5.35 GHz	The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
☒	5.470-5.725 GHz	

4.4.2. Measuring Instruments and Setting

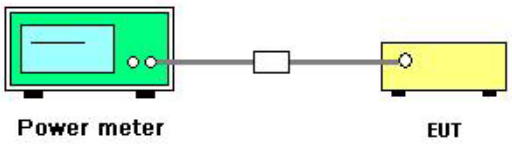
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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	5260 MHz	18.63	-	18.63	24.00	Complies
	5300 MHz	18.72	-	18.72	24.00	Complies
	5320 MHz	18.76	-	18.76	24.00	Complies
	5500 MHz	18.68	-	18.68	24.00	Complies
	5580 MHz	18.72	-	18.72	24.00	Complies
	5700 MHz	18.70	-	18.70	24.00	Complies
	5720 MHz	18.73	-	18.73	24.00	Complies
802.11ac MCS0/Nss1 VHT20	5260 MHz	18.62	17.92	21.29	24.00	Complies
	5300 MHz	18.65	17.90	21.30	24.00	Complies
	5320 MHz	18.84	17.79	21.36	24.00	Complies
	5500 MHz	18.71	18.41	21.57	24.00	Complies
	5580 MHz	18.58	17.70	21.17	24.00	Complies
	5700 MHz	18.47	18.09	21.29	24.00	Complies
	5720 MHz	18.61	17.86	21.26	24.00	Complies
802.11ac MCS0/Nss1 VHT40	5270 MHz	18.47	17.52	21.03	24.00	Complies
	5310 MHz	16.34	15.45	18.93	24.00	Complies
	5510 MHz	16.33	15.61	19.00	24.00	Complies
	5550 MHz	18.95	18.61	21.79	24.00	Complies
	5670 MHz	18.36	17.54	20.98	24.00	Complies
	5710 MHz	18.57	17.62	21.13	24.00	Complies
802.11ac MCS0/Nss1 VHT80	5290 MHz	14.68	13.84	17.29	24.00	Complies
	5530 MHz	14.71	14.08	17.42	24.00	Complies
	5610 MHz	18.83	17.82	21.36	24.00	Complies
	5690 MHz	18.74	18.05	21.42	24.00	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	5260 MHz	18.79	17.98	21.41	21.70	Complies
	5300 MHz	18.54	18.11	21.34	21.70	Complies
	5320 MHz	18.89	18.14	21.54	21.70	Complies
	5500 MHz	18.71	17.99	21.38	21.70	Complies
	5580 MHz	18.61	17.92	21.29	21.70	Complies
	5700 MHz	17.98	17.25	20.64	21.70	Complies
	5720 MHz	18.83	18.21	21.54	21.70	Complies
802.11ac MCS0/Nss1 VHT40	5270 MHz	18.52	17.61	21.10	21.70	Complies
	5310 MHz	15.79	15.09	18.46	21.70	Complies
	5510 MHz	16.17	15.30	18.77	21.70	Complies
	5550 MHz	18.92	18.12	21.55	21.70	Complies
	5670 MHz	18.69	18.27	21.50	21.70	Complies
	5710 MHz	18.81	17.91	21.39	21.70	Complies
802.11ac MCS0/Nss1 VHT80	5290 MHz	14.68	13.84	17.29	21.70	Complies
	5530 MHz	14.71	14.08	17.42	21.70	Complies
	5610 MHz	18.53	17.77	21.18	21.70	Complies
	5690 MHz	18.48	17.59	21.07	21.70	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 of Band 2 and Band 3=24-(8.30-6)=21.70dBm

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
☒	5.25-5.35 GHz	11 dBm/MHz
☒	5.470-5.725 GHz	11 dBm/MHz

4.5.2. Measuring Instruments and Setting

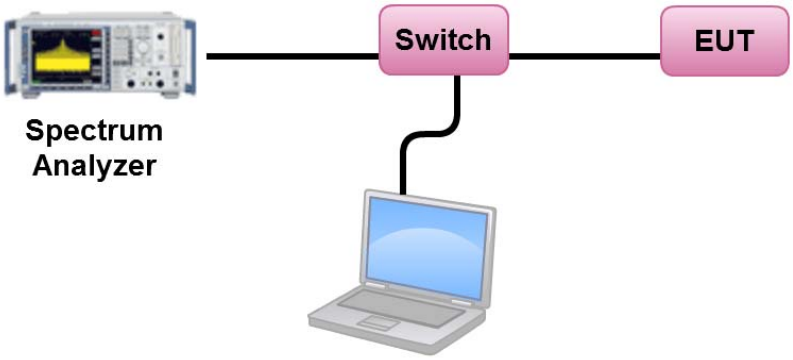
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1000 kHz
VBW	3000 kHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 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.

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Power Spectral Density

For Non-Beamforming Mode:

Temperature	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
52	5260 MHz	8.15	11.00	Complies
60	5300 MHz	7.92	11.00	Complies
64	5320 MHz	8.24	11.00	Complies
100	5500 MHz	8.36	11.00	Complies
116	5580 MHz	7.87	11.00	Complies
140	5700 MHz	8.46	11.00	Complies
144	5720 MHz	8.04	11.00	Complies

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
52	5260 MHz	8.41	8.70	Complies
60	5300 MHz	8.56	8.70	Complies
64	5320 MHz	8.41	8.70	Complies
100	5500 MHz	8.53	8.70	Complies
116	5580 MHz	8.60	8.70	Complies
140	5700 MHz	8.59	8.70	Complies
144	5720 MHz	8.62	8.70	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=11-(8.30-6)=8.70dBm/MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
54	5270 MHz	5.06	8.70	Complies
62	5310 MHz	3.49	8.70	Complies
102	5510 MHz	3.48	8.70	Complies
110	5550 MHz	6.52	8.70	Complies
134	5670 MHz	5.71	8.70	Complies
142	5710 MHz	5.62	8.70	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=11-(8.30-6)=8.70dBm/MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
58	5290 MHz	1.04	8.70	Complies
106	5530 MHz	0.43	8.70	Complies
122	5610 MHz	4.53	8.70	Complies
138	5690 MHz	4.30	8.70	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=11-(8.30-6)=8.70dBm/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
52	5260 MHz	8.41	8.70	Complies
60	5300 MHz	8.56	8.70	Complies
64	5320 MHz	8.41	8.70	Complies
100	5500 MHz	8.53	8.70	Complies
116	5580 MHz	8.60	8.70	Complies
140	5700 MHz	8.59	8.70	Complies
144	5720 MHz	8.62	8.70	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=11-(8.30-6)=8.70dBm/MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
54	5270 MHz	5.06	8.70	Complies
62	5310 MHz	2.84	8.70	Complies
102	5510 MHz	2.51	8.70	Complies
110	5550 MHz	6.52	8.70	Complies
134	5670 MHz	5.52	8.70	Complies
142	5710 MHz	5.37	8.70	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=11-(8.30-6)=8.70dBm/MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
58	5290 MHz	1.04	8.70	Complies
106	5530 MHz	0.43	8.70	Complies
122	5610 MHz	3.42	8.70	Complies
138	5690 MHz	4.39	8.70	Complies

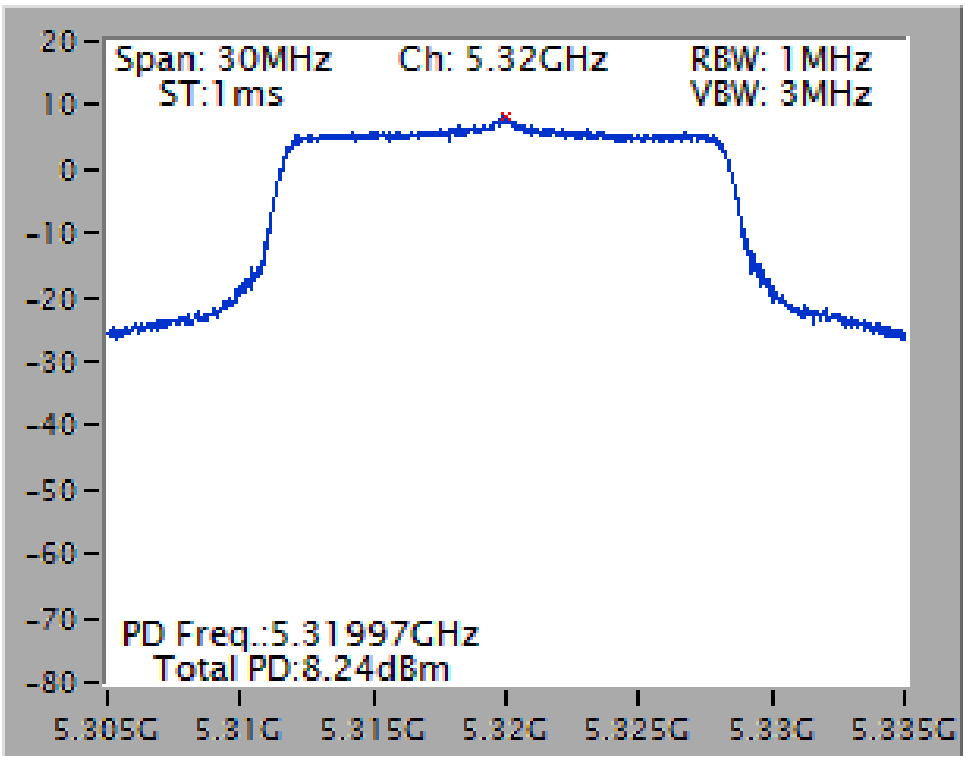
Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =8.30dBi>6dBi, so the limit=11-(8.30-6)=8.70dBm/MHz

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

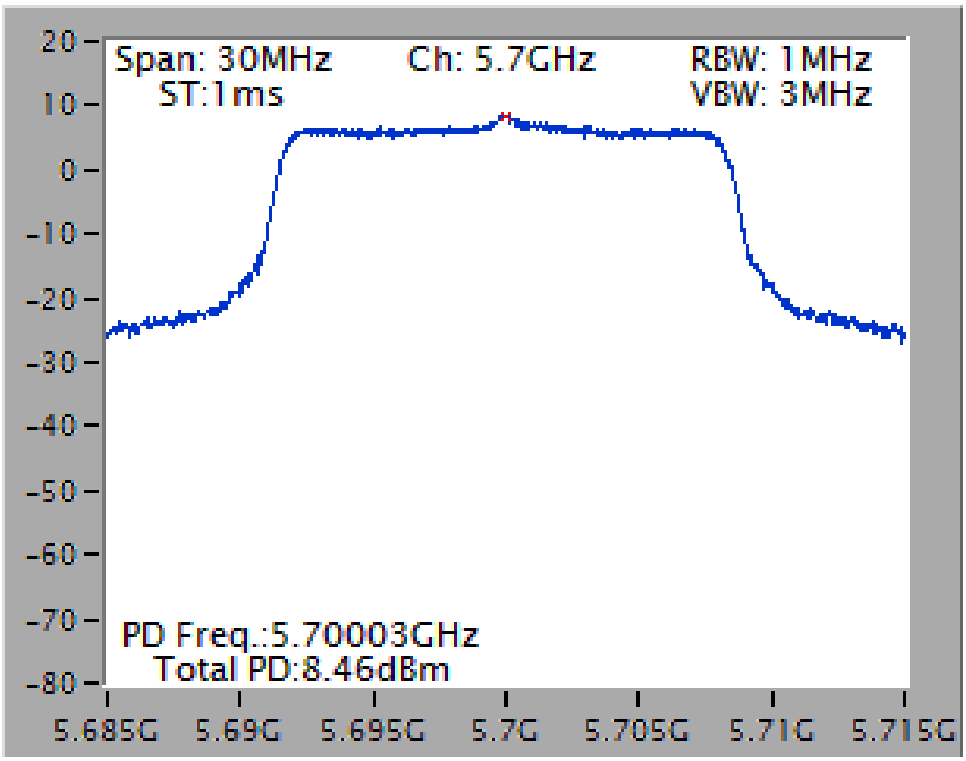
For plots, only the channel with worse result was shown.

For Non-Beamforming Mode:

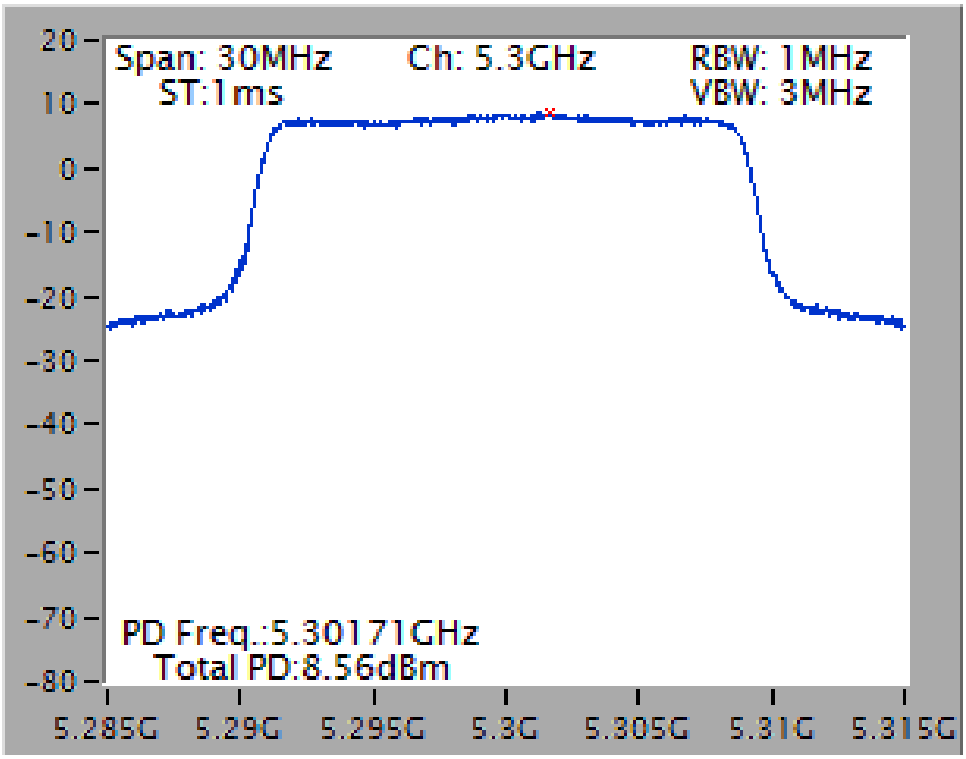
Power Density Plot on Configuration IEEE 802.11a / Chain 3 / 5320 MHz



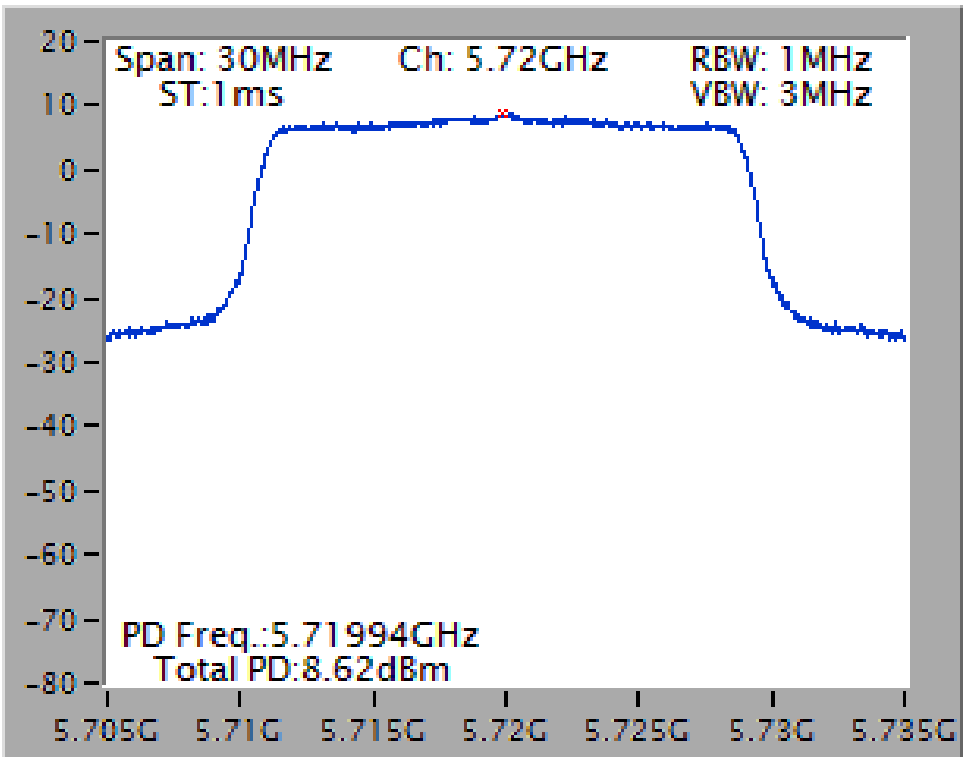
Power Density Plot on Configuration IEEE 802.11a / Chain 3 / 5700 MHz



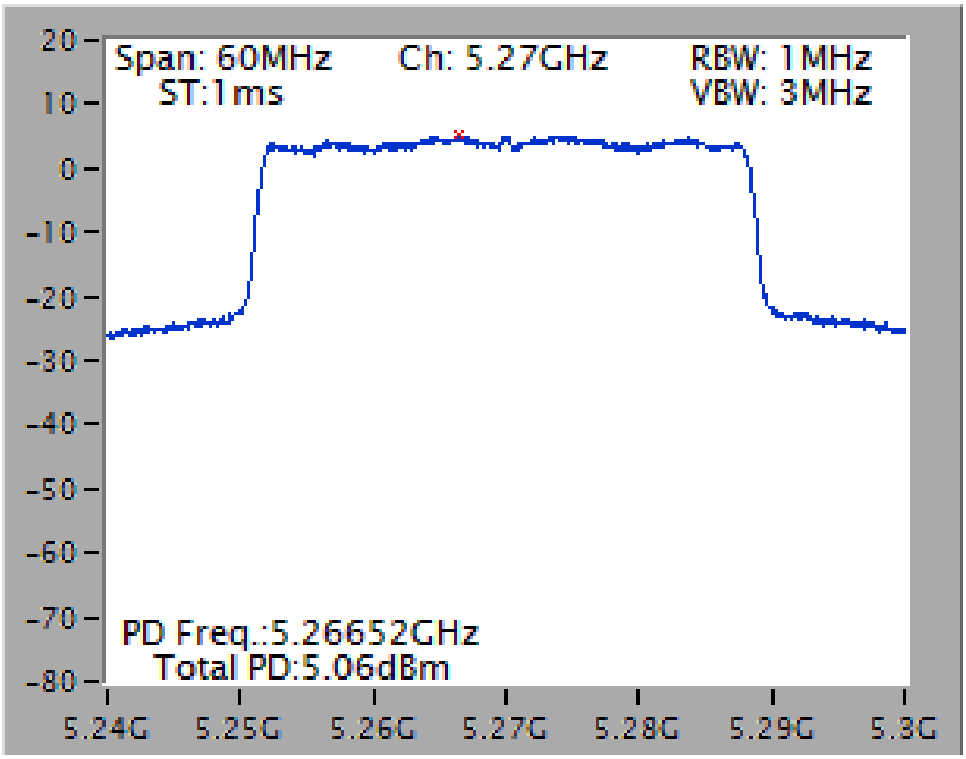
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 + Chain 4 / 5300 MHz



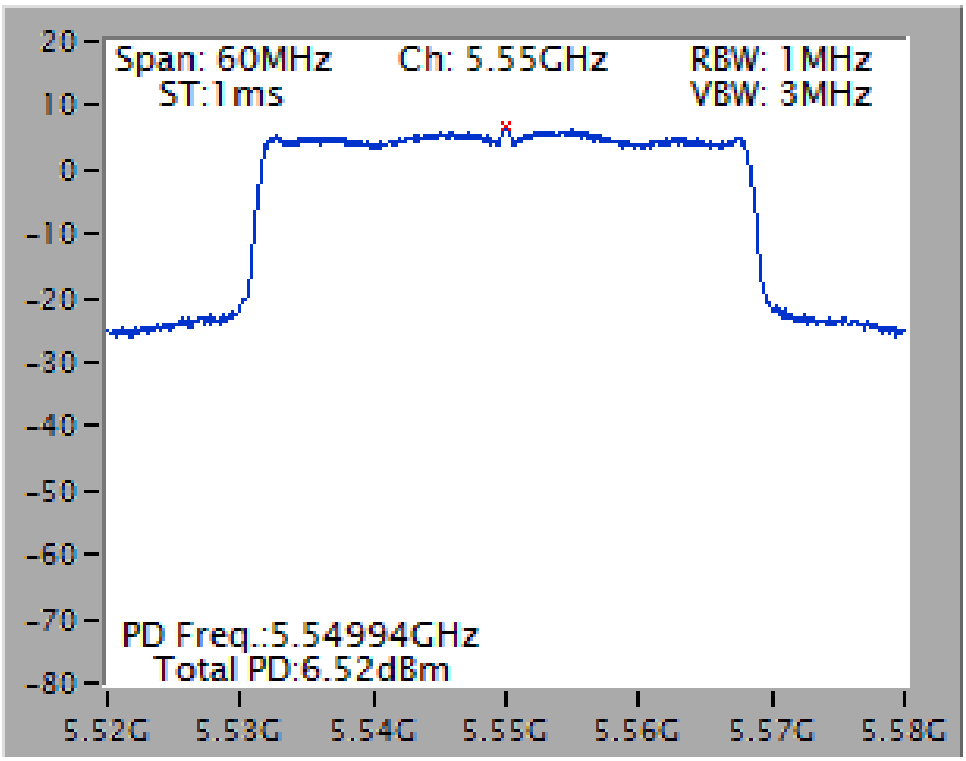
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 + Chain 4 / 5720 MHz



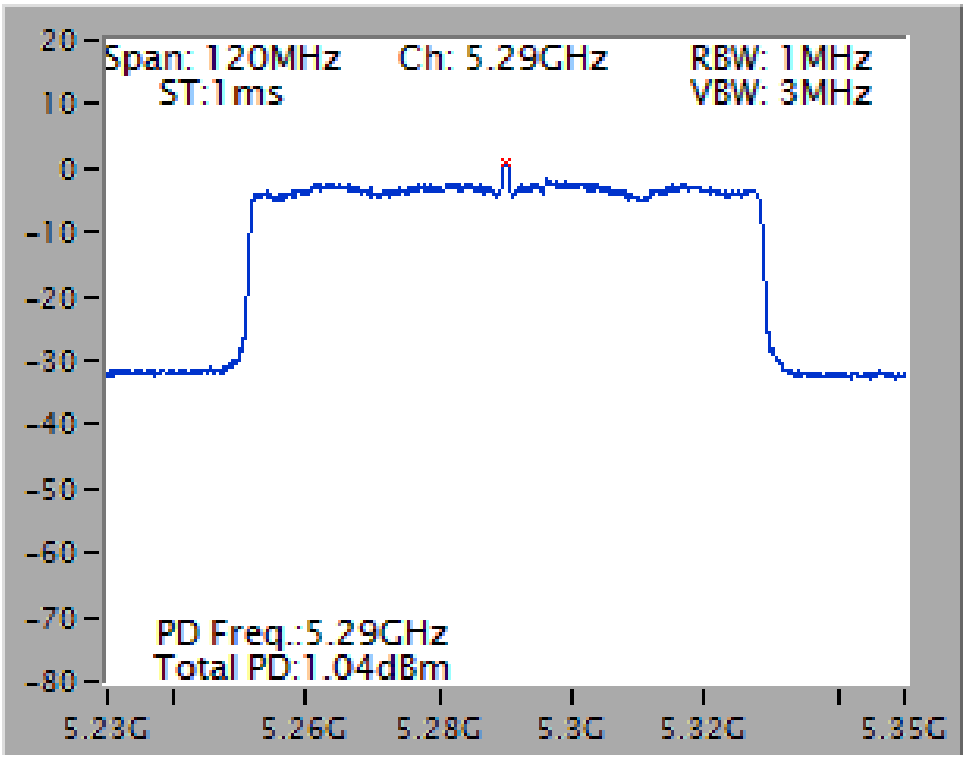
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5270 MHz



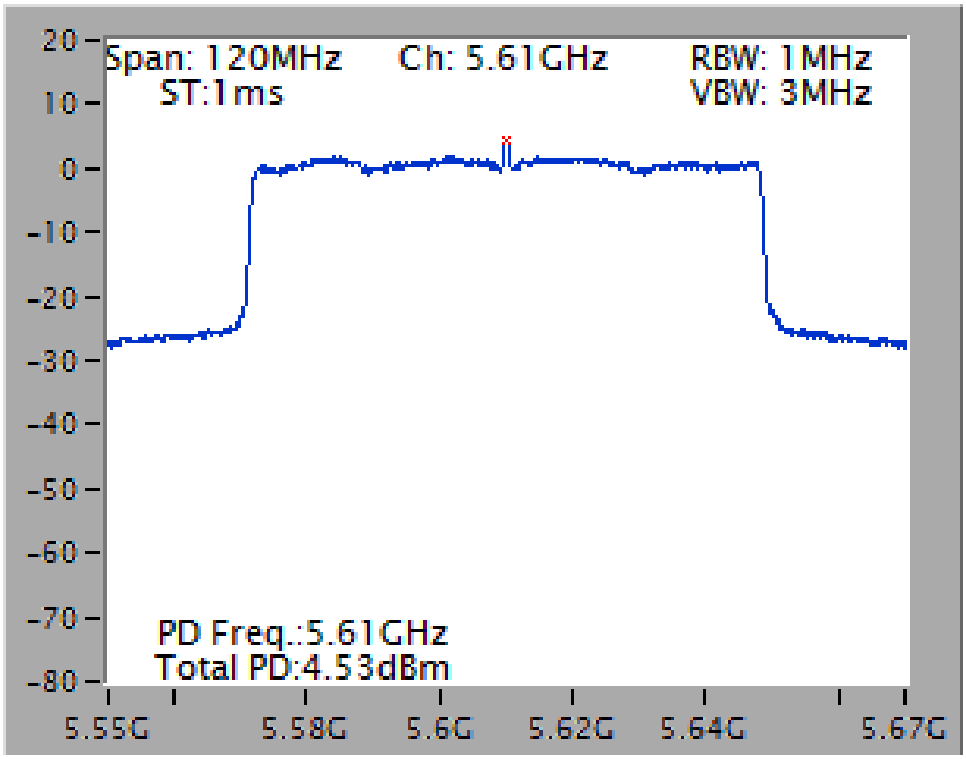
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5550 MHz



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

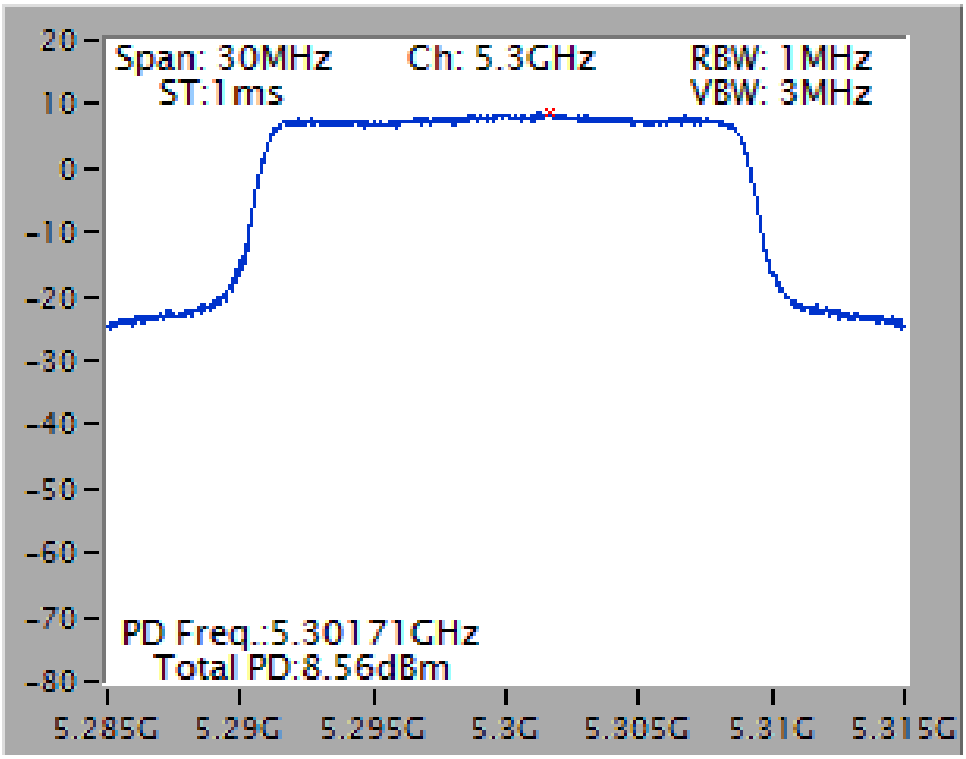


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 + Chain 4 / 5610 MHz

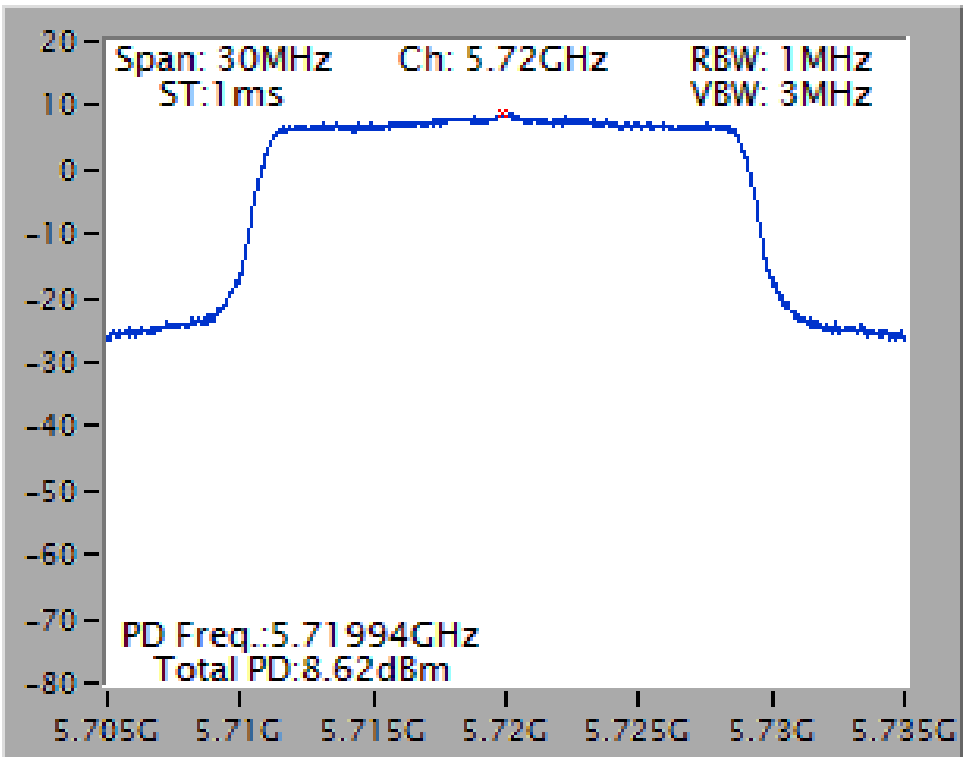


For Beamforming Mode:

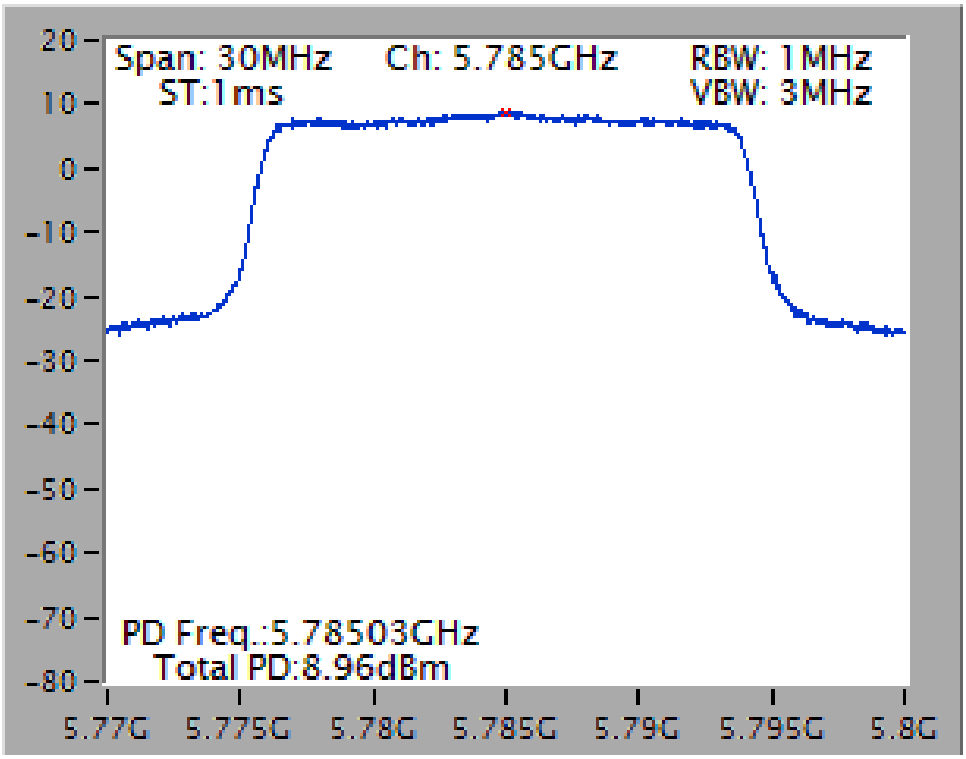
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 + Chain 4 / 5300 MHz



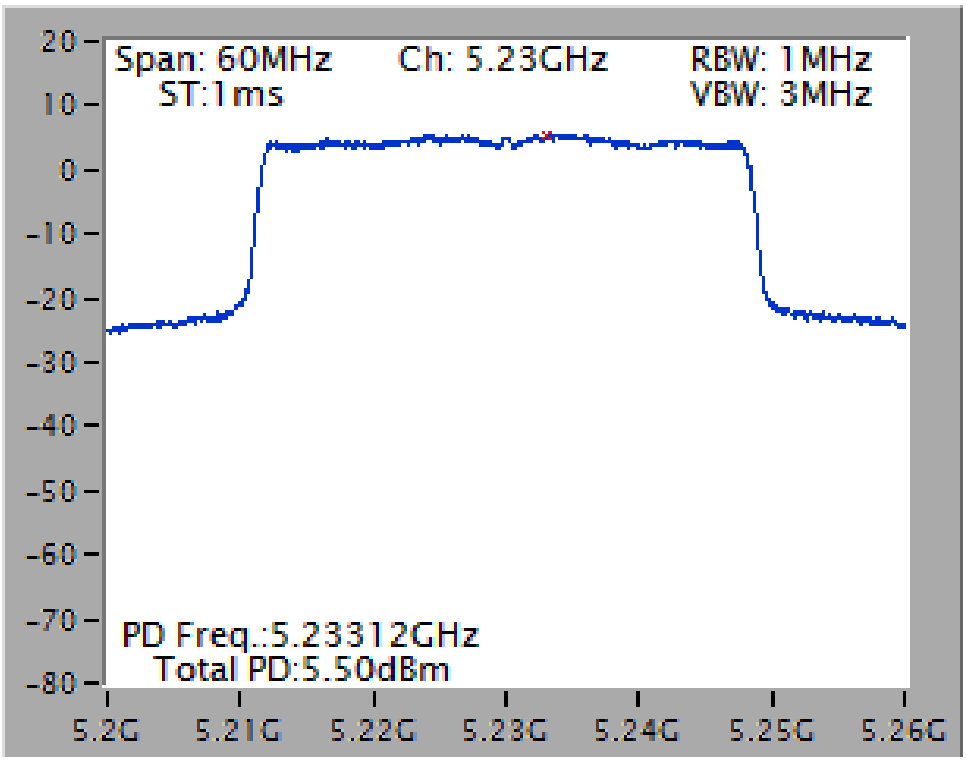
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 + Chain 4 / 5720 MHz



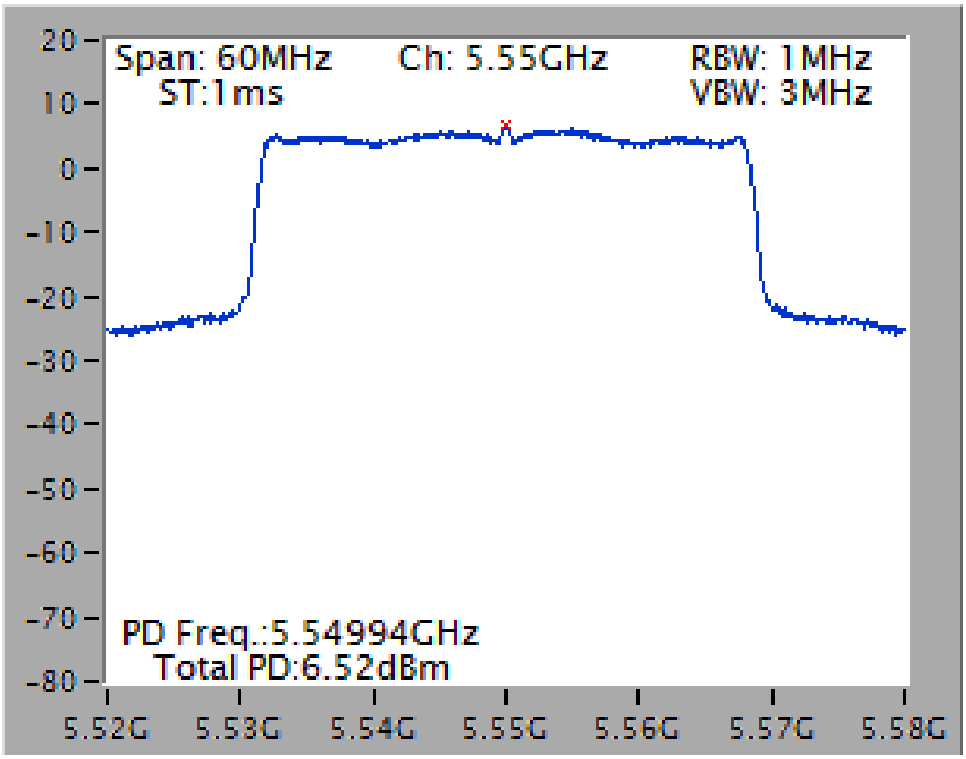
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 3 + Chain 4 / 5785 MHz



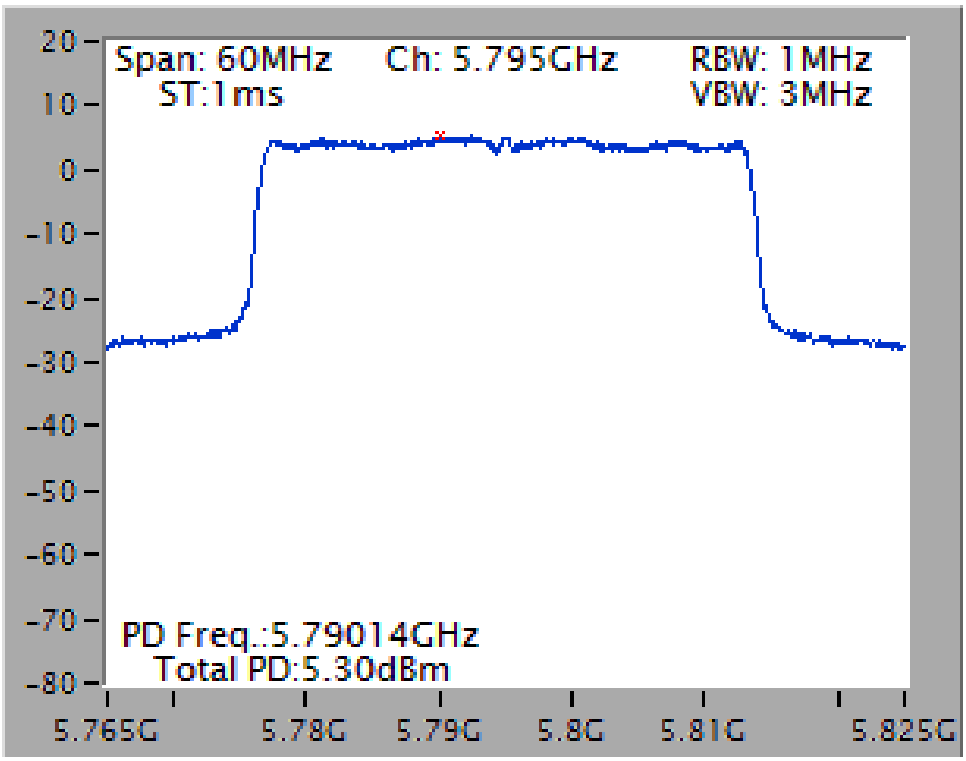
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5230 MHz



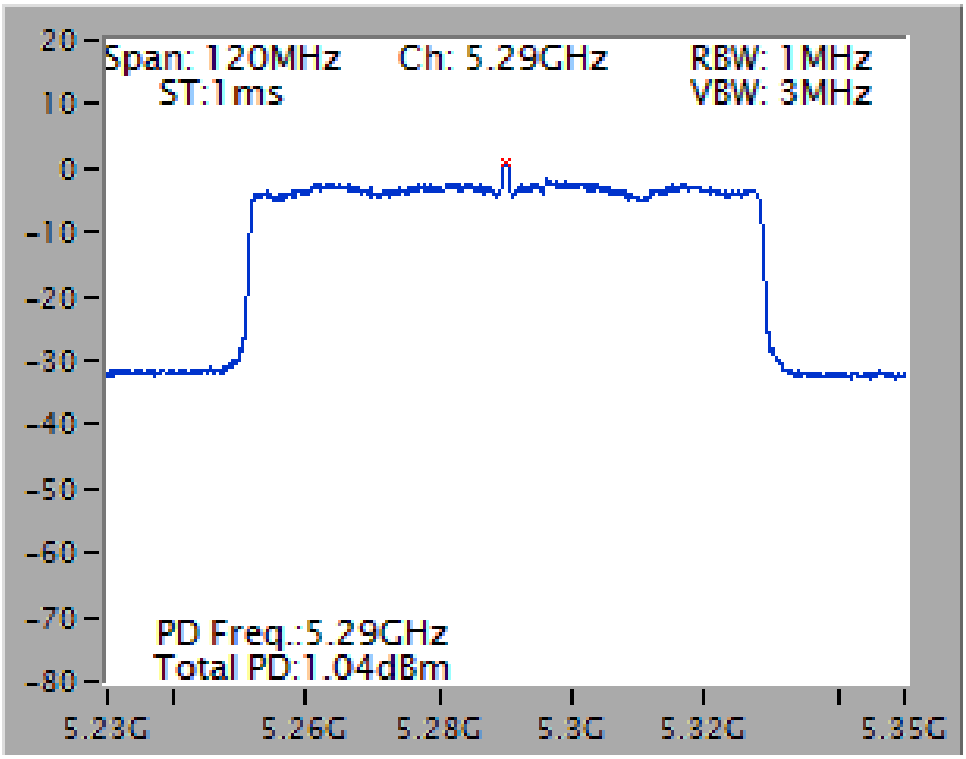
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5550 MHz



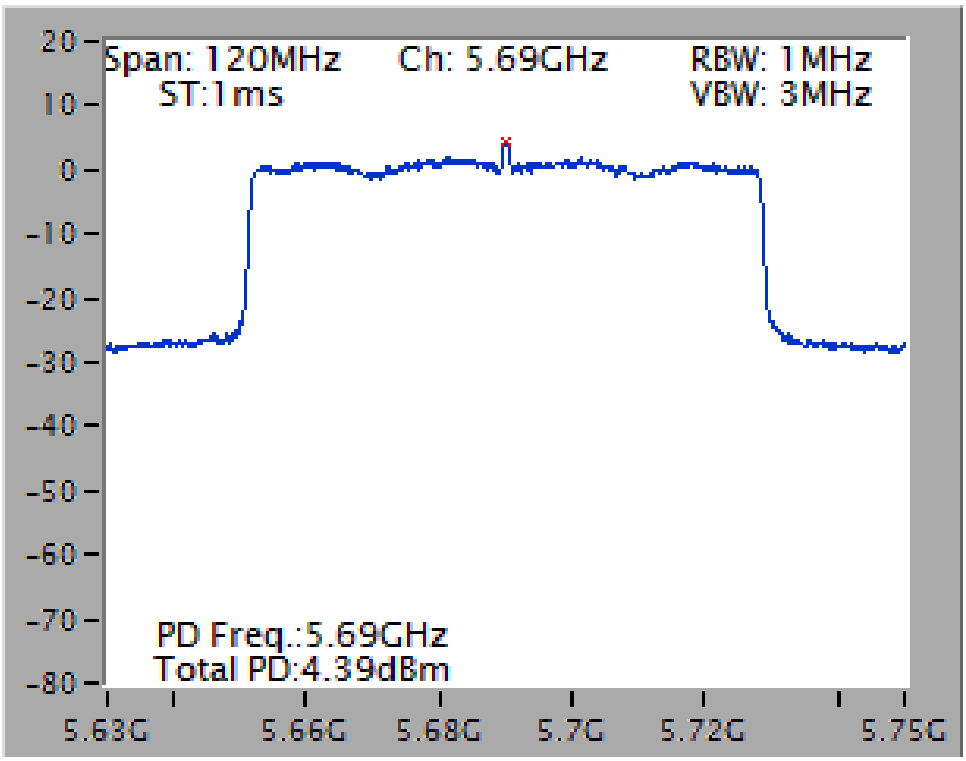
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 3 + Chain 4 / 5795 MHz



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



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 3 + Chain 4 / 5690 MHz



4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.25-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

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

4.6.2. 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

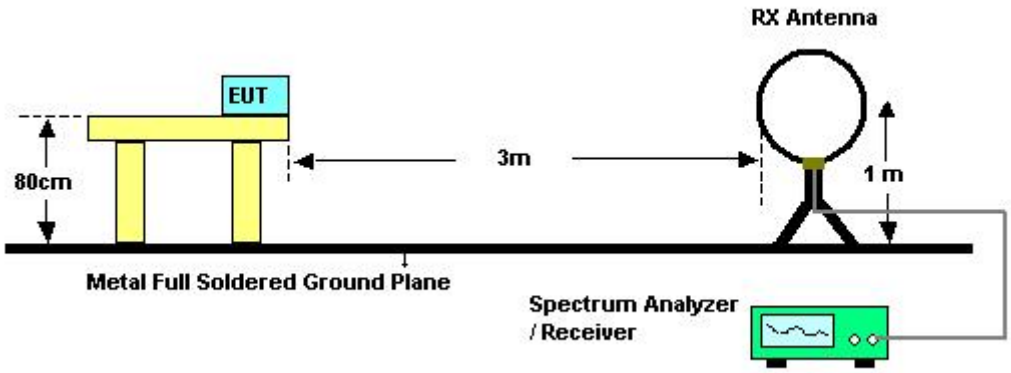
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

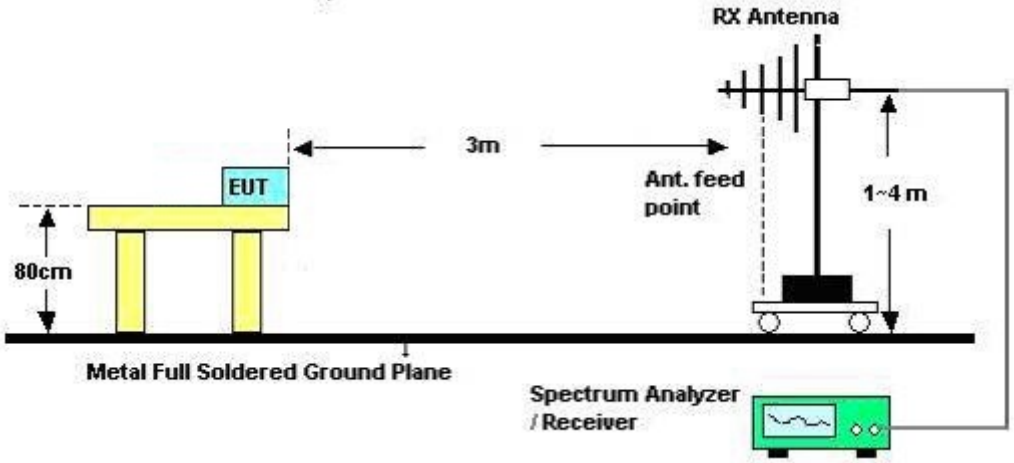
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

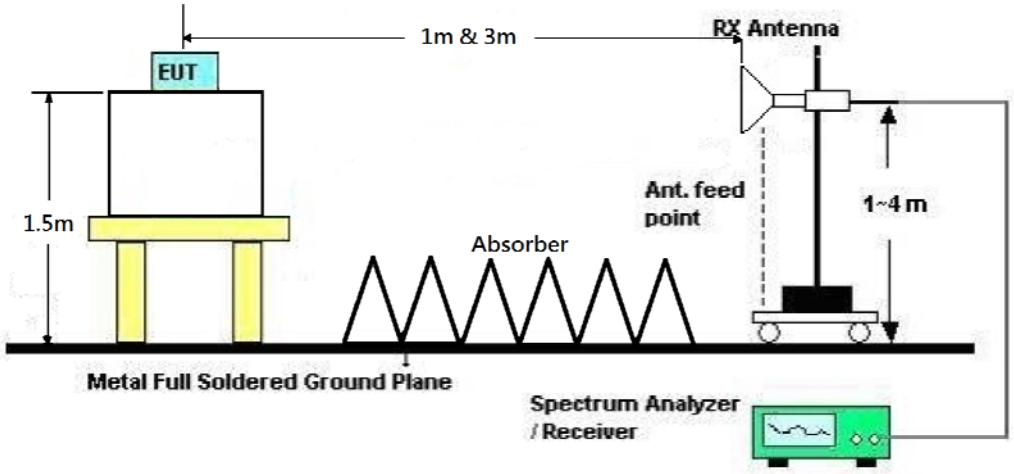
For Radiated Emissions: 9kHz ~30MHz



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.

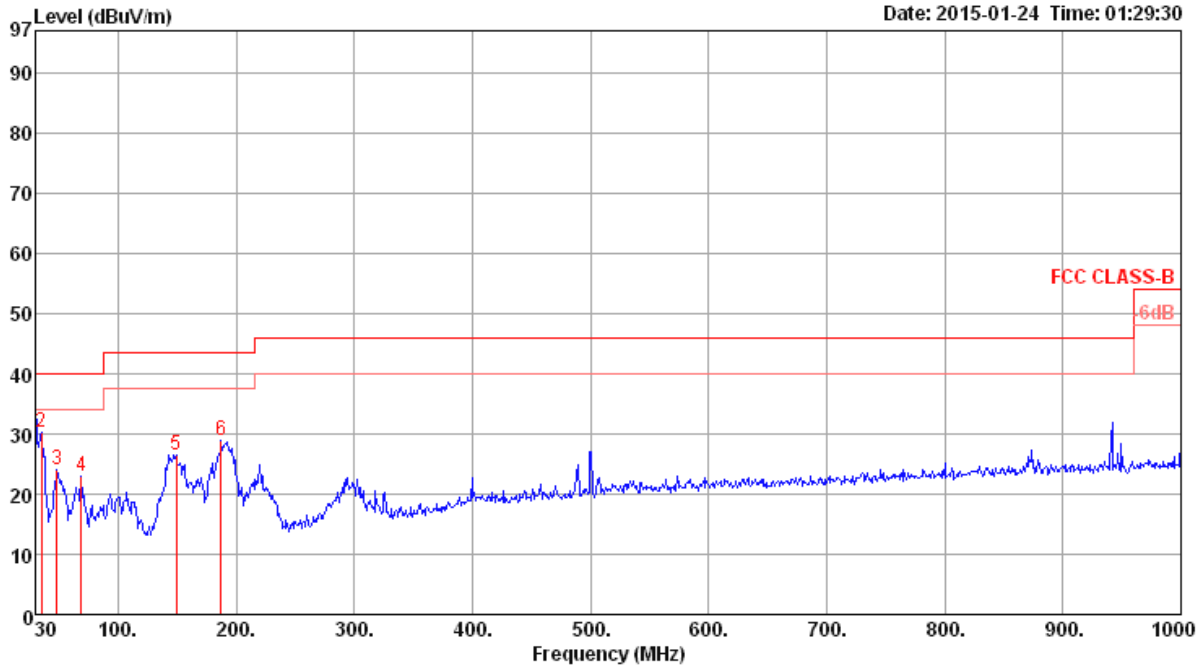
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

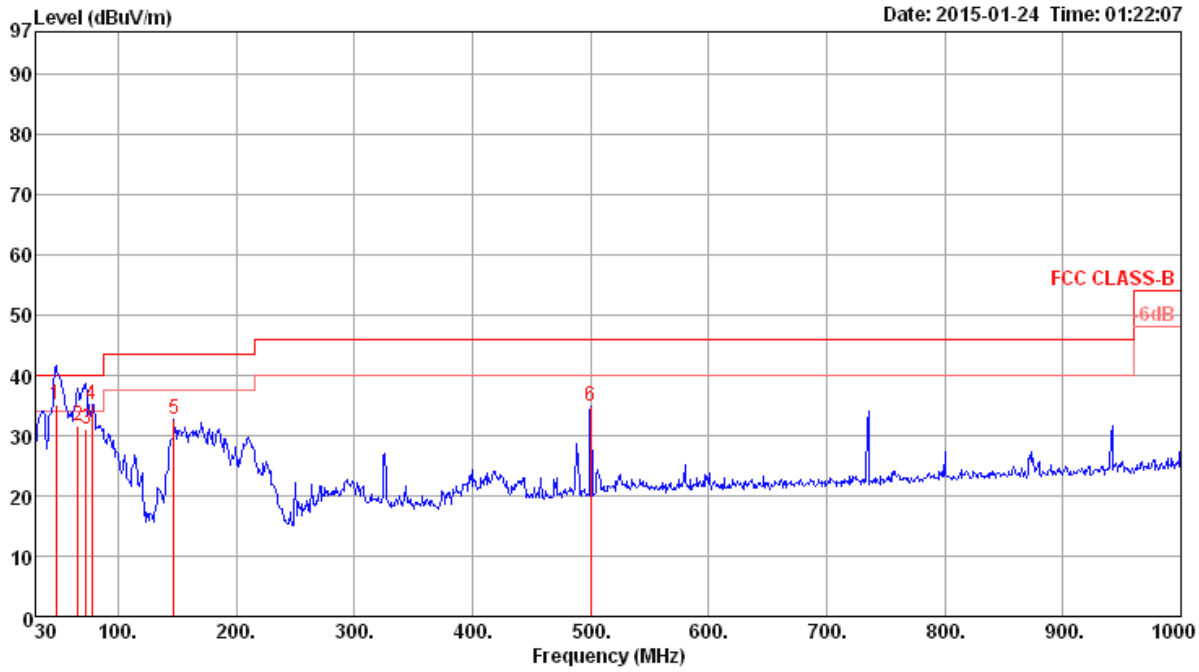
Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	Normal Link
Test Mode	Mode 2		

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 52 / 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	15777.68	60.45	74.00	-13.55	44.59	12.57	38.11	34.82	80	148	Peak	HORIZONTAL
2	15778.52	47.27	54.00	-6.73	31.41	12.57	38.11	34.82	214	148	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	15773.92	61.39	74.00	-12.61	45.53	12.57	38.11	34.82	244	135	Peak	VERTICAL
2	15783.71	47.42	54.00	-6.58	31.58	12.57	38.09	34.82	244	135	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 60 / 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	10599.65	56.78	74.00	-17.22	41.94	10.16	38.92	34.24	322	156	Peak	HORIZONTAL
2	10600.14	43.94	54.00	-10.06	29.10	10.16	38.92	34.24	322	156	Average	HORIZONTAL
3	15899.77	59.38	74.00	-14.62	43.74	12.57	37.94	34.87	258	100	Peak	HORIZONTAL
4	15900.12	45.66	54.00	-8.34	30.02	12.57	37.94	34.87	258	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	10600.17	44.08	54.00	-9.92	29.24	10.16	38.92	34.24	283	100	Average	VERTICAL
2	10600.35	56.94	74.00	-17.06	42.10	10.16	38.92	34.24	283	100	Peak	VERTICAL
3	15900.17	46.56	54.00	-7.44	30.92	12.57	37.94	34.87	27	100	Average	VERTICAL
4	15900.38	59.33	74.00	-14.67	43.69	12.57	37.94	34.87	27	100	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 64 / 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	10626.00	55.90	74.00	-18.10	42.49	8.65	39.88	35.12	Peak	191	123	HORIZONTAL
2	10641.84	43.86	54.00	-10.14	30.43	8.66	39.86	35.09	Average	191	123	HORIZONTAL
3	15958.88	46.56	54.00	-7.44	33.77	10.82	37.48	35.51	Average	185	300	HORIZONTAL
4	15961.76	58.27	74.00	-15.73	45.48	10.82	37.48	35.51	Peak	185	300	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	10630.64	56.19	74.00	-17.81	42.76	8.66	39.86	35.09	Peak	221	296	VERTICAL
2	10642.00	44.10	54.00	-9.90	30.67	8.66	39.86	35.09	Average	221	296	VERTICAL
3	15943.20	59.24	74.00	-14.76	46.43	10.81	37.51	35.51	Peak	198	4	VERTICAL
4	15959.36	46.32	54.00	-7.68	33.53	10.82	37.48	35.51	Average	198	4	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 100 / 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	10997.60	57.94	74.00	-16.06	44.31	8.93	39.50	34.80	Peak	114	50	HORIZONTAL
2	10998.08	46.11	54.00	-7.89	32.48	8.93	39.50	34.80	Average	114	50	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	10997.92	46.62	54.00	-7.38	32.99	8.93	39.50	34.80	Average	115	44	VERTICAL
2	10999.12	58.57	74.00	-15.43	44.94	8.93	39.50	34.80	Peak	115	44	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 116 / 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	11158.96	50.25	54.00	-3.75	35.54	10.60	39.13	35.02	70	217	Average	HORIZONTAL
2	11160.32	63.80	74.00	-10.20	49.09	10.60	39.13	35.02	70	217	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	11159.31	60.75	74.00	-13.25	46.04	10.60	39.13	35.02	51	219	Peak	VERTICAL
2	11162.33	47.04	54.00	-6.96	32.32	10.61	39.13	35.02	51	219	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 140 / 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	11399.90	48.70	54.00	-5.30	35.05	9.19	39.50	35.04	Average	221	45	HORIZONTAL
2	11400.70	60.54	74.00	-13.46	46.89	9.19	39.50	35.04	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	11399.20	44.43	54.00	-9.57	30.78	9.19	39.50	35.04	Average	205	329	VERTICAL
2	11401.60	55.95	74.00	-18.05	42.30	9.19	39.50	35.04	Peak	205	329	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 144 / 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	11438.41	64.59	74.00	-9.41	49.58	10.69	39.35	35.03	70	219	Peak	HORIZONTAL
2	11440.06	51.07	54.00	-2.93	36.06	10.69	39.35	35.03	70	219	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	11440.41	46.53	54.00	-7.47	31.52	10.69	39.35	35.03	50	100	Average	VERTICAL
2	11440.46	57.91	74.00	-16.09	42.90	10.69	39.35	35.03	50	100	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / 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	15780.51	51.72	54.00	-2.28	35.86	12.57	38.11	34.82	0	178	Average	HORIZONTAL
2	15780.58	66.81	74.00	-7.19	50.95	12.57	38.11	34.82	0	178	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	15779.78	46.78	54.00	-7.22	30.92	12.57	38.11	34.82	69	100	Average	VERTICAL
2	15780.51	59.56	74.00	-14.44	43.70	12.57	38.11	34.82	69	100	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / 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	10599.57	55.76	74.00	-18.24	40.92	10.16	38.92	34.24	344	100	Peak	HORIZONTAL
2	10599.93	43.61	54.00	-10.39	28.77	10.16	38.92	34.24	344	100	Average	HORIZONTAL
3	15899.78	58.42	74.00	-15.58	42.78	12.57	37.94	34.87	53	100	Peak	HORIZONTAL
4	15900.51	46.44	54.00	-7.56	30.82	12.57	37.92	34.87	53	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	10599.57	43.91	54.00	-10.09	29.07	10.16	38.92	34.24	329	124	Average	VERTICAL
2	10599.57	56.75	74.00	-17.25	41.91	10.16	38.92	34.24	329	124	Peak	VERTICAL
3	15899.78	46.31	54.00	-7.69	30.67	12.57	37.94	34.87	12	181	Average	VERTICAL
4	15900.87	59.53	74.00	-14.47	43.91	12.57	37.92	34.87	12	181	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / 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	10636.00	44.12	54.00	-9.88	30.69	8.66	39.86	35.09	Average	214	44	HORIZONTAL
2	10641.00	56.30	74.00	-17.70	42.87	8.66	39.86	35.09	Peak	214	44	HORIZONTAL
3	15956.60	48.25	54.00	-5.75	35.46	10.82	37.48	35.51	Average	181	348	HORIZONTAL
4	15961.40	60.85	74.00	-13.15	48.06	10.82	37.48	35.51	Peak	181	348	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	10635.70	43.78	54.00	-10.22	30.35	8.66	39.86	35.09	Average	221	122	VERTICAL
2	10655.40	56.34	74.00	-17.66	42.90	8.67	39.84	35.07	Peak	221	122	VERTICAL
3	15962.40	58.19	74.00	-15.81	45.40	10.82	37.48	35.51	Peak	231	44	VERTICAL
4	15965.30	46.41	54.00	-7.59	33.65	10.82	37.45	35.51	Average	231	44	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / 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	10997.50	50.53	54.00	-3.47	36.90	8.93	39.50	34.80	Average	158	281	HORIZONTAL
2	11000.20	63.40	74.00	-10.60	49.77	8.93	39.50	34.80	Peak	158	281	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	10993.40	59.91	74.00	-14.09	46.28	8.93	39.50	34.80	Peak	100	45	VERTICAL
2	10996.70	47.39	54.00	-6.61	33.76	8.93	39.50	34.80	Average	100	45	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / 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	11159.30	51.73	54.00	-2.27	37.02	10.60	39.13	35.02	70	219	Average	HORIZONTAL
2	11161.68	65.15	74.00	-8.85	50.44	10.60	39.13	35.02	70	219	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	11160.52	48.60	54.00	-5.40	33.89	10.60	39.13	35.02	348	213	Average	VERTICAL
2	11160.61	61.85	74.00	-12.15	47.14	10.60	39.13	35.02	348	213	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / 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	11399.30	49.08	54.00	-4.92	35.43	9.19	39.50	35.04	Average	224	70	HORIZONTAL
2	11403.60	60.91	74.00	-13.09	47.26	9.19	39.50	35.04	Peak	224	70	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	11411.80	45.84	54.00	-8.16	32.19	9.19	39.50	35.04	Average	216	19	VERTICAL
2	11424.30	57.84	74.00	-16.16	44.20	9.20	39.50	35.06	Peak	216	19	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 / 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	11437.25	64.79	74.00	-9.21	49.78	10.69	39.35	35.03	74	219	Peak	HORIZONTAL
2	11439.07	51.34	54.00	-2.66	36.33	10.69	39.35	35.03	74	219	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	11438.21	59.54	74.00	-14.46	44.53	10.69	39.35	35.03	344	101	Peak	VERTICAL
2	11440.58	46.94	54.00	-7.06	31.93	10.69	39.35	35.03	344	101	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / 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	15808.00	48.75	54.00	-5.25	32.94	12.57	38.07	34.83	0	189	Average	HORIZONTAL
2	15808.15	62.76	74.00	-11.24	46.95	12.57	38.07	34.83	0	189	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	15809.80	58.93	74.00	-15.07	43.12	12.57	38.07	34.83	305	190	Peak	VERTICAL
2	15810.12	46.40	54.00	-7.60	30.59	12.57	38.07	34.83	305	190	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / 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	10629.30	55.41	74.00	-18.59	41.97	8.65	39.88	35.09	Peak	212	109	HORIZONTAL
2	10643.00	43.36	54.00	-10.64	29.93	8.66	39.86	35.09	Average	212	109	HORIZONTAL
3	15915.20	45.57	54.00	-8.43	32.74	10.81	37.53	35.51	Average	223	109	HORIZONTAL
4	15916.70	59.73	74.00	-14.27	46.90	10.81	37.53	35.51	Peak	224	109	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	10641.50	43.13	54.00	-10.87	29.70	8.66	39.86	35.09	Average	189	130	VERTICAL
2	10641.50	54.13	74.00	-19.87	40.70	8.66	39.86	35.09	Peak	189	130	VERTICAL
3	15907.90	45.83	54.00	-8.17	32.98	10.81	37.56	35.52	Average	203	158	VERTICAL
4	15907.90	58.83	74.00	-15.17	45.98	10.81	37.56	35.52	Peak	203	158	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / 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	11020.20	45.64	54.00	-8.36	32.01	8.94	39.50	34.81	Average	225	76	HORIZONTAL
2	11022.50	57.84	74.00	-16.16	44.20	8.95	39.50	34.81	Peak	225	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	11023.80	56.14	74.00	-17.86	42.50	8.95	39.50	34.81	Peak	208	133	VERTICAL
2	11038.30	43.77	54.00	-10.23	30.15	8.95	39.50	34.83	Average	208	133	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / 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	11098.93	48.10	54.00	-5.90	33.45	10.58	39.08	35.01	86	222	Average	HORIZONTAL
2	11100.78	60.65	74.00	-13.35	46.00	10.58	39.08	35.01	86	222	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	11099.80	46.56	54.00	-7.44	31.91	10.58	39.08	35.01	254	206	Average	VERTICAL
2	11099.88	59.25	74.00	-14.75	44.60	10.58	39.08	35.01	254	206	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / 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	11336.40	59.02	74.00	-14.98	45.37	9.14	39.50	34.99	Peak	231	75	HORIZONTAL
2	11336.60	46.97	54.00	-7.03	33.32	9.14	39.50	34.99	Average	231	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	11342.10	44.75	54.00	-9.25	31.12	9.14	39.50	35.01	Average	222	193	VERTICAL
2	11344.30	58.12	74.00	-15.88	44.49	9.14	39.50	35.01	Peak	222	193	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / 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	11415.83	46.71	54.00	-7.29	31.72	10.69	39.33	35.03	295	207	Average	HORIZONTAL
2	11418.67	59.65	74.00	-14.35	44.66	10.69	39.33	35.03	295	207	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	11418.67	44.67	54.00	-9.33	29.68	10.69	39.33	35.03	24	192	Average	VERTICAL
2	11419.28	57.37	74.00	-16.63	42.38	10.69	39.33	35.03	24	192	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / 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	15884.90	46.79	54.00	-7.21	33.92	10.81	37.59	35.53	Average	233	60	HORIZONTAL
2	15892.00	58.93	74.00	-15.07	46.05	10.81	37.59	35.52	Peak	233	60	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	15859.00	58.54	74.00	-15.46	45.62	10.81	37.64	35.53	Peak	217	115	VERTICAL
2	15894.60	46.10	54.00	-7.90	33.22	10.81	37.59	35.52	Average	217	115	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / 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	11064.00	58.71	74.00	-15.29	45.08	8.97	39.50	34.84	Peak	235	79	HORIZONTAL
2	11078.40	44.13	54.00	-9.87	30.49	8.98	39.50	34.84	Average	235	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	11079.50	57.73	74.00	-16.27	44.09	8.98	39.50	34.84	Peak	220	147	VERTICAL
2	11080.80	44.54	54.00	-9.46	30.90	8.98	39.50	34.84	Average	220	147	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122 / 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	11219.83	45.25	54.00	-8.75	30.47	10.63	39.17	35.02	55	214	Average	HORIZONTAL
2	11220.03	57.93	74.00	-16.07	43.15	10.63	39.17	35.02	55	214	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	11219.71	43.69	54.00	-10.31	28.91	10.63	39.17	35.02	293	190	Average	VERTICAL
2	11220.61	56.93	74.00	-17.07	42.15	10.63	39.17	35.02	293	190	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 / 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	11378.85	46.62	54.00	-7.38	31.66	10.68	39.31	35.03	71	210	Average	HORIZONTAL
2	11379.34	59.33	74.00	-14.67	44.37	10.68	39.31	35.03	71	210	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	11379.34	44.51	54.00	-9.49	29.55	10.68	39.31	35.03	258	234	Average	VERTICAL
2	11381.24	58.00	74.00	-16.00	43.04	10.68	39.31	35.03	258	234	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.

For Beamforming Mode:

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015		

Horizontal

	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	15681.55	52.05	54.00	-1.95	40.74	7.61	38.55	34.85	Average	154	115	HORIZONTAL
2	15681.92	64.79	74.00	-9.21	53.48	7.61	38.55	34.85	Peak	154	115	HORIZONTAL

Vertical

	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	15680.00	51.73	54.00	-2.27	40.42	7.61	38.55	34.85	Average	211	121	VERTICAL
2	15680.04	64.49	74.00	-9.51	53.18	7.61	38.55	34.85	Peak	211	121	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / 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	10594.01	57.95	74.00	-16.05	43.09	10.16	38.92	34.22	0	180	Peak	HORIZONTAL
2	10595.54	44.30	54.00	-9.70	29.45	10.16	38.92	34.23	0	180	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	10596.41	46.19	54.00	-7.81	31.34	10.16	38.92	34.23	208	100	Average	VERTICAL
2	10601.01	57.69	74.00	-16.31	42.82	10.19	38.92	34.24	208	100	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / 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	10636.74	43.49	54.00	-10.51	28.66	10.21	38.93	34.31	336	197	Average	HORIZONTAL
2	10639.35	56.72	74.00	-17.28	41.89	10.21	38.93	34.31	336	197	Peak	HORIZONTAL
3	15955.22	48.64	54.00	-5.36	33.12	12.56	37.85	34.89	334	182	Average	HORIZONTAL
4	15966.44	60.95	74.00	-13.05	45.44	12.56	37.85	34.90	334	182	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	10652.01	56.84	74.00	-17.16	42.01	10.24	38.93	34.34	254	102	Peak	VERTICAL
2	10652.88	43.35	54.00	-10.65	28.52	10.24	38.93	34.34	254	102	Average	VERTICAL
3	15968.68	46.22	54.00	-7.78	30.74	12.56	37.82	34.90	251	221	Average	VERTICAL
4	15970.85	58.61	74.00	-15.39	43.13	12.56	37.82	34.90	251	221	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / 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	11004.27	49.77	54.00	-4.23	35.23	10.55	39.00	35.01	301	210	Average	HORIZONTAL
2	11004.99	62.38	74.00	-11.62	47.83	10.55	39.01	35.01	301	210	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	10993.20	61.76	74.00	-12.24	47.21	10.55	39.00	35.00	300	101	Peak	VERTICAL
2	11001.74	48.64	54.00	-5.36	34.10	10.55	39.00	35.01	300	101	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / 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	11160.09	63.87	74.00	-10.13	49.16	10.60	39.13	35.02	88	209	Peak	HORIZONTAL
2	11160.24	49.44	54.00	-4.56	34.73	10.60	39.13	35.02	88	209	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	11159.68	44.32	54.00	-9.68	29.61	10.60	39.13	35.02	41	219	Average	VERTICAL
2	11160.24	56.10	74.00	-17.90	41.39	10.60	39.13	35.02	41	219	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / 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	11396.89	49.45	54.00	-4.55	34.47	10.69	39.32	35.03	83	217	Average	HORIZONTAL
2	11399.93	61.84	74.00	-12.16	46.86	10.69	39.32	35.03	83	217	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	11396.24	58.28	74.00	-15.72	43.30	10.69	39.32	35.03	21	103	Peak	VERTICAL
2	11397.47	45.76	54.00	-8.24	30.78	10.69	39.32	35.03	21	103	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144 / 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	11438.00	65.60	74.00	-8.40	51.64	9.05	35.03	39.94	HORIZONTAL	72	216	Peak
2	11440.00	50.14	54.00	-3.86	36.18	9.05	35.03	39.94	HORIZONTAL	72	216	Average

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	11438.50	58.96	74.00	-15.04	45.00	9.05	35.03	39.94	VERTICAL	48	112	Peak
2	11439.90	46.20	54.00	-7.80	32.24	9.05	35.03	39.94	VERTICAL	48	112	Average

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / 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	15809.80	59.14	74.00	-14.86	45.18	10.83	34.83	37.96	HORIZONTAL	230	218	Peak
2	15824.40	46.62	54.00	-7.38	32.69	10.83	34.84	37.94	HORIZONTAL	230	218	Average

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	15813.80	46.39	54.00	-7.61	32.45	10.83	34.84	37.95	VERTICAL	142	135	Average
2	15815.50	59.80	74.00	-14.20	45.86	10.83	34.84	37.95	VERTICAL	142	135	Peak

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / 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	10628.97	55.61	74.00	-18.39	40.77	10.21	38.92	34.29	109	229	Peak	HORIZONTAL
2	10640.48	42.75	54.00	-11.25	27.93	10.21	38.93	34.32	109	229	Average	HORIZONTAL
3	15912.56	58.50	74.00	-15.50	42.90	12.56	37.92	34.88	36	206	Peak	HORIZONTAL
4	15918.71	45.51	54.00	-8.49	29.93	12.56	37.90	34.88	36	206	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	10612.91	55.81	74.00	-18.19	40.96	10.19	38.92	34.26	249	201	Peak	VERTICAL
2	10636.50	42.74	54.00	-11.26	27.91	10.21	38.93	34.31	249	201	Average	VERTICAL
3	15911.11	45.35	54.00	-8.65	29.74	12.56	37.92	34.87	271	226	Average	VERTICAL
4	15911.69	58.36	74.00	-15.64	42.75	12.56	37.92	34.87	271	226	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / 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	10795.62	43.89	54.00	-10.11	29.19	10.36	38.96	34.62	292	207	Average	HORIZONTAL
2	10798.58	55.83	74.00	-18.17	41.13	10.36	38.96	34.62	292	207	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	10796.92	42.93	54.00	-11.07	28.23	10.36	38.96	34.62	342	204	Average	VERTICAL
2	10818.63	55.67	74.00	-18.33	40.98	10.38	38.97	34.66	342	204	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / 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	11095.90	60.96	74.00	-13.04	46.87	8.96	35.01	40.14	HORIZONTAL	274	202	Peak
2	11099.70	47.38	54.00	-6.62	33.29	8.96	35.01	40.14	HORIZONTAL	274	202	Average

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	11096.50	59.99	74.00	-14.01	45.90	8.96	35.01	40.14	VERTICAL	99	100	Peak
2	11099.30	46.68	54.00	-7.32	32.59	8.96	35.01	40.14	VERTICAL	99	100	Average

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / 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	11340.07	61.65	74.00	-12.35	46.74	10.66	39.27	35.02	84	211	Peak	HORIZONTAL
2	11341.74	47.16	54.00	-6.84	32.24	10.67	39.27	35.02	84	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	11342.32	58.34	74.00	-15.66	43.42	10.67	39.27	35.02	301	218	Peak	VERTICAL
2	11353.03	44.60	54.00	-9.40	29.67	10.67	39.28	35.02	222	218	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / 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	11420.10	63.57	74.00	-10.43	49.60	9.05	35.03	39.95	HORIZONTAL	75	217	Peak
2	11420.90	47.30	54.00	-6.70	33.33	9.05	35.03	39.95	HORIZONTAL	75	217	Average

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	11419.30	57.87	74.00	-16.13	43.91	9.05	35.03	39.94	VERTICAL	50	105	Peak
2	11421.00	44.53	54.00	-9.47	30.57	9.05	35.03	39.94	VERTICAL	50	105	Average

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / 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	15845.33	59.09	74.00	-14.91	43.35	12.57	38.02	34.85	67	216	Peak	HORIZONTAL
2	15853.36	45.66	54.00	-8.34	29.95	12.57	37.99	34.85	67	216	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	15848.87	58.71	74.00	-15.29	42.97	12.57	38.02	34.85	324	207	Peak	VERTICAL
2	15855.53	45.50	54.00	-8.50	29.79	12.57	37.99	34.85	324	207	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / 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	11063.91	45.12	54.00	-8.88	30.50	10.58	39.05	35.01	79	220	Average	HORIZONTAL
2	11065.93	57.84	74.00	-16.16	43.22	10.58	39.05	35.01	79	220	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	11062.24	58.12	74.00	-15.88	43.50	10.58	39.05	35.01	329	226	Peak	VERTICAL
2	11078.02	44.26	54.00	-9.74	29.62	10.58	39.07	35.01	329	226	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122 / 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	11201.60	57.64	74.00	-16.36	43.58	9.00	35.02	40.08	HORIZONTAL	284	133	Peak
2	11230.30	44.44	54.00	-9.56	30.40	9.00	35.02	40.06	HORIZONTAL	284	133	Average

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	11224.40	43.96	54.00	-10.04	29.92	9.00	35.02	40.06	VERTICAL	265	102	Average
2	11229.60	57.20	74.00	-16.80	43.16	9.00	35.02	40.06	VERTICAL	265	102	Peak

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138 / 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	11384.90	45.30	54.00	-8.70	31.33	9.03	35.03	39.97	HORIZONTAL	76	213	Average
2	11393.10	58.76	74.00	-15.24	44.78	9.05	35.03	39.96	HORIZONTAL	76	213	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	11382.20	55.25	74.00	-18.75	41.27	9.03	35.03	39.98	VERTICAL	257	189	Peak
2	11399.50	43.31	54.00	-10.69	29.33	9.05	35.03	39.96	VERTICAL	257	189	Average

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 5.25-5.35 GHz band: all emissions outside of the 5.25-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

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

4.7.2. 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 52, 60, 64 / Chain 3
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 52

	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	5099.20	45.19	54.00	-8.81	41.41	5.90	33.60	31.48	HORIZONTAL	67	221	Average
2	5100.00	56.64	74.00	-17.36	52.86	5.90	33.60	31.48	HORIZONTAL	67	221	Peak
3	5260.00	99.14			95.06	6.01	33.54	31.61	HORIZONTAL	67	221	Average
4	5260.00	108.04			103.96	6.01	33.54	31.61	HORIZONTAL	67	221	Peak
5	5419.20	57.44	74.00	-16.56	53.08	6.10	33.48	31.74	HORIZONTAL	67	221	Peak
6	5420.00	47.01	54.00	-6.99	42.65	6.10	33.48	31.74	HORIZONTAL	67	221	Average

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

Channel 60

	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	5139.20	45.22	54.00	-8.78	41.37	5.92	33.59	31.52	HORIZONTAL	61	224	Average
2	5140.00	55.86	74.00	-18.14	52.01	5.92	33.59	31.52	HORIZONTAL	61	224	Peak
3	5298.40	107.27			103.12	6.04	33.53	31.64	HORIZONTAL	61	224	Peak
4	5300.00	99.05			94.89	6.04	33.52	31.64	HORIZONTAL	61	224	Average
5	5460.00	47.86	54.00	-6.14	43.41	6.15	33.47	31.77	HORIZONTAL	61	224	Average
6	5460.00	59.12	74.00	-14.88	54.67	6.15	33.47	31.77	HORIZONTAL	61	224	Peak

Item 3, 4 are the fundamental frequency at 5300 MHz.

Channel 64

	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	5320.00	100.01			92.35	33.30	9.84	35.48	254	64	Average	HORIZONTAL
2	5320.00	109.45			101.79	33.30	9.84	35.48	254	64	Peak	HORIZONTAL
3	5350.00	50.25	54.00	-3.75	42.51	33.40	9.83	35.49	254	64	Average	HORIZONTAL
4	5350.00	65.18	74.00	-8.82	57.44	33.40	9.83	35.49	254	64	Peak	HORIZONTAL

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

Temperature	26℃	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11a CH 100, 116, 140 / Chain 3
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 100

	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	5439.45	62.92	74.00	-11.08	54.91	33.70	9.83	35.52	251	43	Peak	HORIZONTAL
2	5460.00	49.03	54.00	-4.97	40.99	33.75	9.82	35.53	251	43	Average	HORIZONTAL
3	5467.40	65.57	74.00	-8.43	57.48	33.80	9.82	35.53	251	43	Peak	HORIZONTAL
4	5470.00	49.76	54.00	-4.24	41.67	33.80	9.82	35.53	251	43	Average	HORIZONTAL
5	5499.71	99.30			91.12	33.90	9.82	35.54	251	43	Average	HORIZONTAL
6	5500.29	108.91			100.73	33.90	9.82	35.54	251	43	Peak	HORIZONTAL

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

Channel 116

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5455.66	60.56	74.00	-13.44	52.90	6.60	34.53	33.47	54	233	Peak	HORIZONTAL
2	5460.00	50.18	54.00	-3.82	42.52	6.60	34.53	33.47	54	233	Average	HORIZONTAL
3	5465.79	49.40	54.00	-4.60	41.71	6.60	34.55	33.46	54	233	Average	HORIZONTAL
4	5467.96	59.95	74.00	-14.05	52.26	6.60	34.55	33.46	54	233	Peak	HORIZONTAL
5	5580.00	104.71			96.78	6.72	34.63	33.42	54	233	Average	HORIZONTAL
6	5580.00	112.39			104.46	6.72	34.63	33.42	54	233	Peak	HORIZONTAL
7	5740.20	52.10	54.00	-1.90	43.91	6.86	34.70	33.37	54	233	Average	HORIZONTAL
8	5740.20	60.97	74.00	-13.03	52.78	6.86	34.70	33.37	54	233	Peak	HORIZONTAL

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

Channel 140

	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	5700.00	102.27			93.47	34.14	10.02	35.36	243	65	Average	HORIZONTAL
2	5700.00	111.70			102.90	34.14	10.02	35.36	243	65	Peak	HORIZONTAL
3	5725.00	53.72	54.00	-0.28	44.83	34.18	10.05	35.34	243	65	Average	HORIZONTAL
4	5726.16	69.38	74.00	-4.62	60.49	34.18	10.05	35.34	243	65	Peak	HORIZONTAL

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

Channel 144

	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	5720.00	100.55			95.57	6.28	33.37	32.07	HORIZONTAL	53	113	Average
2	5720.00	109.08			104.10	6.28	33.37	32.07	HORIZONTAL	53	113	Peak
3	5879.00	58.67	68.20	-9.53	53.38	6.35	33.32	32.26	HORIZONTAL	53	113	Peak

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 52

	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	5106.40	56.87	74.00	-17.13	53.08	5.90	33.60	31.49	HORIZONTAL	276	142	Peak
2	5140.80	45.72	54.00	-8.28	41.87	5.92	33.59	31.52	HORIZONTAL	276	142	Average
3	5260.80	101.90			97.82	6.01	33.54	31.61	HORIZONTAL	276	142	Average
4	5261.60	110.91			106.83	6.01	33.54	31.61	HORIZONTAL	276	142	Peak
5	5374.40	59.59	74.00	-14.41	55.31	6.08	33.50	31.70	HORIZONTAL	276	142	Peak
6	5421.60	48.81	54.00	-5.19	44.45	6.10	33.48	31.74	HORIZONTAL	276	142	Average

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

Channel 60

	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	5137.60	56.20	74.00	-17.80	52.36	5.92	33.59	31.51	HORIZONTAL	277	161	Peak
2	5138.40	45.74	54.00	-8.26	41.90	5.92	33.59	31.51	HORIZONTAL	277	161	Average
3	5300.80	102.39			98.22	6.04	33.52	31.65	HORIZONTAL	277	161	Average
4	5306.40	110.85			106.68	6.04	33.52	31.65	HORIZONTAL	277	161	Peak
5	5453.60	48.91	54.00	-5.09	44.49	6.13	33.47	31.76	HORIZONTAL	277	161	Average
6	5464.00	59.61	74.00	-14.39	55.15	6.15	33.46	31.77	HORIZONTAL	277	161	Peak

Item 3, 4 are the fundamental frequency at 5300 MHz.

Channel 64

	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	5313.34	110.21			102.54	33.30	9.84	35.47	164	292	Peak	HORIZONTAL
2	5320.87	99.93			92.27	33.30	9.84	35.48	164	292	Average	HORIZONTAL
3	5350.58	50.49	54.00	-3.51	42.75	33.40	9.83	35.49	164	292	Average	HORIZONTAL
4	5351.16	65.30	74.00	-8.70	57.56	33.40	9.83	35.49	164	292	Peak	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 116, 140, 144 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 100

	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	5459.71	62.37	74.00	-11.63	54.33	33.75	9.82	35.53	101	47	Peak	HORIZONTAL
2	5460.00	49.02	54.00	-4.98	40.98	33.75	9.82	35.53	101	47	Average	HORIZONTAL
3	5464.79	67.70	74.00	-6.30	59.61	33.80	9.82	35.53	101	47	Peak	HORIZONTAL
4	5470.00	51.87	54.00	-2.13	43.78	33.80	9.82	35.53	101	47	Average	HORIZONTAL
5	5500.00	100.81			92.63	33.90	9.82	35.54	101	47	Average	HORIZONTAL
6	5500.29	110.32			102.14	33.90	9.82	35.54	101	47	Peak	HORIZONTAL

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

Channel 116

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5426.00	48.24	74.00	-25.76	40.68	6.56	34.48	33.48	46	238	Peak	HORIZONTAL
2	5451.32	58.83	74.00	-15.17	51.17	6.60	34.53	33.47	46	238	Peak	HORIZONTAL
3	5461.45	47.84	54.00	-6.16	40.18	6.60	34.53	33.47	46	238	Average	HORIZONTAL
4	5474.34	57.53	74.00	-16.47	49.84	6.60	34.55	33.46	46	238	Peak	HORIZONTAL
5	5580.72	105.28			97.35	6.72	34.63	33.42	46	238	Average	HORIZONTAL
6	5580.72	113.69			105.76	6.72	34.63	33.42	46	238	Peak	HORIZONTAL
7	5740.20	59.67	74.00	-14.33	51.48	6.86	34.70	33.37	46	238	Peak	HORIZONTAL
8	5740.92	50.25	54.00	-3.75	42.06	6.86	34.70	33.37	46	238	Average	HORIZONTAL

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

Channel 140

	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	5698.55	101.42			92.63	34.14	10.02	35.37	217	66	Average	HORIZONTAL
2	5699.13	111.00			102.20	34.14	10.02	35.36	217	66	Peak	HORIZONTAL
3	5725.87	68.59	74.00	-5.41	59.70	34.18	10.05	35.34	217	66	Peak	HORIZONTAL
4	5726.16	53.59	54.00	-0.41	44.70	34.18	10.05	35.34	217	66	Average	HORIZONTAL

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

Channel 144

	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	5718.40	102.98			98.00	6.28	33.37	32.07	HORIZONTAL	63	204	Average
2	5719.20	112.30			107.32	6.28	33.37	32.07	HORIZONTAL	63	204	Peak
3	5879.20	61.09	68.20	-7.11	55.80	6.35	33.32	32.26	HORIZONTAL	63	204	Peak

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

Temperature	26℃	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 54

	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	5098.80	56.66	74.00	-17.34	52.88	5.90	33.60	31.48	HORIZONTAL	71	168	Peak
2	5116.40	44.28	54.00	-9.72	40.47	5.90	33.59	31.50	HORIZONTAL	71	168	Average
3	5274.00	98.69			94.59	6.01	33.53	31.62	HORIZONTAL	71	168	Average
4	5281.20	108.94			104.83	6.01	33.53	31.63	HORIZONTAL	71	168	Peak
5	5386.80	58.33	74.00	-15.67	54.03	6.08	33.49	31.71	HORIZONTAL	71	168	Peak
6	5426.80	47.22	54.00	-6.78	42.83	6.13	33.48	31.74	HORIZONTAL	71	168	Average

Item 3, 4 are the fundamental frequency at 5270 MHz.

Channel 62

	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	5296.54	104.04			96.42	33.25	9.84	35.47	142	289	Peak	HORIZONTAL
2	5310.00	94.90			87.23	33.30	9.84	35.47	142	289	Average	HORIZONTAL
3	5351.30	53.42	54.00	-0.58	45.68	33.40	9.83	35.49	142	289	Average	HORIZONTAL
4	5353.47	67.59	74.00	-6.41	59.85	33.40	9.83	35.49	142	289	Peak	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110, 134, 142 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 102

	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	5459.57	61.69	74.00	-12.31	53.65	33.75	9.82	35.53	271	48	Peak	HORIZONTAL
2	5460.00	50.11	54.00	-3.89	42.07	33.75	9.82	35.53	271	48	Average	HORIZONTAL
3	5468.26	70.11	74.00	-3.89	62.02	33.80	9.82	35.53	271	48	Peak	HORIZONTAL
4	5470.00	53.91	54.00	-0.09	45.82	33.80	9.82	35.53	271	48	Average	HORIZONTAL
5	5503.49	104.98			96.80	33.90	9.82	35.54	271	48	Peak	HORIZONTAL
6	5510.00	97.42			89.22	33.90	9.83	35.53	271	48	Average	HORIZONTAL

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

Channel 110

	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	5432.40	58.07	74.00	-15.93	53.67	6.13	33.48	31.75	HORIZONTAL	52	100	Peak
2	5434.80	46.80	54.00	-7.20	42.40	6.13	33.48	31.75	HORIZONTAL	52	100	Average
3	5469.20	58.73	74.00	-15.27	54.26	6.15	33.46	31.78	HORIZONTAL	52	100	Peak
4	5470.00	45.91	54.00	-8.09	41.44	6.15	33.46	31.78	HORIZONTAL	52	100	Average
5	5554.80	99.24			94.61	6.19	33.43	31.87	HORIZONTAL	52	100	Average
6	5554.80	109.13			104.50	6.19	33.43	31.87	HORIZONTAL	52	100	Peak

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

Channel 134

	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	5666.53	106.78			98.08	34.10	9.99	35.39	256	68	Peak	HORIZONTAL
2	5670.00	99.72			91.02	34.10	9.99	35.39	256	68	Average	HORIZONTAL
3	5725.00	52.51	54.00	-1.49	43.62	34.18	10.05	35.34	256	68	Average	HORIZONTAL
4	5725.00	64.36	74.00	-9.64	55.47	34.18	10.05	35.34	256	68	Peak	HORIZONTAL

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

Channel 142

	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	5710.00	98.87			93.91	6.28	33.38	32.06	HORIZONTAL	51	216	Average
2	5714.00	107.05			102.09	6.28	33.38	32.06	HORIZONTAL	51	216	Peak
3	5874.00	58.83	68.20	-9.37	53.55	6.35	33.32	32.25	HORIZONTAL	51	216	Peak

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015		

Channel 58

	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	5147.83	61.29	74.00	-12.71	53.82	33.02	9.86	35.41	234	63	Peak	HORIZONTAL
2	5150.00	49.68	54.00	-4.32	42.21	33.02	9.86	35.41	234	63	Average	HORIZONTAL
3	5290.00	96.24			88.66	33.20	9.84	35.46	234	63	Average	HORIZONTAL
4	5301.58	101.43			93.81	33.25	9.84	35.47	234	63	Peak	HORIZONTAL
5	5350.72	53.27	54.00	-0.73	45.53	33.40	9.83	35.49	234	63	Average	HORIZONTAL
6	5351.45	66.66	74.00	-7.34	58.92	33.40	9.83	35.49	234	63	Peak	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106, 122, 138 / Chain 3 + Chain 4
Test Date	Jan. 12, 2015 ~ Jan. 15, 2015		

Channel 106

	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	5457.83	66.21	74.00	-7.79	58.16	33.75	9.82	35.52	263	51	Peak	HORIZONTAL
2	5458.55	52.93	54.00	-1.07	44.89	33.75	9.82	35.53	263	51	Average	HORIZONTAL
3	5466.38	68.72	74.00	-5.28	60.63	33.80	9.82	35.53	263	51	Peak	HORIZONTAL
4	5468.55	53.92	54.00	-0.08	45.83	33.80	9.82	35.53	263	51	Average	HORIZONTAL
5	5530.00	96.38			88.10	33.94	9.85	35.51	263	51	Average	HORIZONTAL
6	5535.79	100.76			92.47	33.94	9.86	35.51	263	51	Peak	HORIZONTAL
7	5725.00	51.19	54.00	-2.81	42.30	34.18	10.05	35.34	263	51	Average	HORIZONTAL
8	5725.00	62.62	74.00	-11.38	53.73	34.18	10.05	35.34	263	51	Peak	HORIZONTAL

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

Channel 122

	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	5454.00	61.53	74.00	-12.47	57.11	6.13	33.47	31.76	HORIZONTAL	62	212	Peak
2	5460.00	47.47	54.00	-6.53	43.02	6.15	33.47	31.77	HORIZONTAL	62	212	Average
3	5468.00	62.11	74.00	-11.89	57.64	6.15	33.46	31.78	HORIZONTAL	62	212	Peak
4	5470.00	47.97	54.00	-6.03	43.50	6.15	33.46	31.78	HORIZONTAL	62	212	Average
5	5582.00	105.21			100.52	6.21	33.42	31.90	HORIZONTAL	62	212	Peak
6	5610.00	98.00			93.25	6.22	33.41	31.94	HORIZONTAL	62	212	Average
7	5727.00	49.53	54.00	-4.47	44.54	6.28	33.37	32.08	HORIZONTAL	62	212	Average
8	5727.00	63.37	74.00	-10.63	58.38	6.28	33.37	32.08	HORIZONTAL	62	212	Peak

Item 5, 6 are the fundamental frequency at 5610 MHz.

Channel 138

	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	5690.00	97.93			93.02	6.26	33.38	32.03	HORIZONTAL	50	224	Average
2	5701.20	103.86			98.93	6.26	33.38	32.05	HORIZONTAL	50	224	Peak
3	5866.00	59.96	68.20	-8.24	54.69	6.35	33.32	32.24	HORIZONTAL	50	224	Peak

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

Note:

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

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

For Beamforming Mode:

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015 ~ Jan. 15, 2015		

Channel 52

	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	5141.73	55.77	74.00	-18.23	52.90	4.26	33.14	34.53	Peak	276	125	HORIZONTAL
2	5142.21	43.13	54.00	-10.87	40.26	4.26	33.14	34.53	Average	276	125	HORIZONTAL
3	5261.44	102.82			99.71	4.31	33.33	34.53	Average	276	125	HORIZONTAL
4	5261.92	113.03			109.92	4.31	33.33	34.53	Peak	276	125	HORIZONTAL
5	5376.83	57.78	74.00	-16.22	54.46	4.36	33.49	34.53	Peak	276	125	HORIZONTAL
6	5380.67	45.80	54.00	-8.20	42.45	4.37	33.51	34.53	Average	276	125	HORIZONTAL

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

Channel 60

	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	5131.20	47.36	54.00	-6.64	40.69	6.17	34.09	33.59	288	159	Average	HORIZONTAL
2	5132.80	58.93	74.00	-15.07	52.26	6.17	34.09	33.59	288	159	Peak	HORIZONTAL
3	5299.20	100.81			93.62	6.40	34.32	33.53	288	159	Average	HORIZONTAL
4	5301.60	110.11			102.91	6.40	34.32	33.52	288	159	Peak	HORIZONTAL
5	5413.60	62.90	74.00	-11.10	55.37	6.53	34.48	33.48	288	159	Peak	HORIZONTAL
6	5460.00	50.78	54.00	-3.22	43.12	6.60	34.53	33.47	288	159	Average	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5300 MHz.

Channel 64

	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	5317.11	113.93			106.71	6.40	34.34	33.52	279	147	Peak	HORIZONTAL
2	5318.26	103.12			95.90	6.40	34.34	33.52	279	147	Average	HORIZONTAL
3	5350.00	49.95	54.00	-4.05	42.60	6.47	34.39	33.51	279	147	Average	HORIZONTAL
4	5351.16	68.51	74.00	-5.49	61.16	6.47	34.39	33.51	279	147	Peak	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 116, 140, 144 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015 ~ Jan. 15, 2015		

Channel 100

	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	5458.84	62.47	74.00	-11.53	54.81	6.60	34.53	33.47	51	213	Peak	HORIZONTAL
2	5460.00	48.29	54.00	-5.71	40.63	6.60	34.53	33.47	51	213	Average	HORIZONTAL
3	5469.71	68.28	74.00	-5.72	60.59	6.60	34.55	33.46	51	213	Peak	HORIZONTAL
4	5470.00	51.28	54.00	-2.72	43.59	6.60	34.55	33.46	51	213	Average	HORIZONTAL
5	5500.29	116.06			108.28	6.63	34.60	33.45	51	213	Peak	HORIZONTAL
6	5501.16	105.53			97.73	6.65	34.60	33.45	51	213	Average	HORIZONTAL

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

Channel 116

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5459.20	50.99	54.00	-3.01	43.33	6.60	34.53	33.47	63	237	Average	HORIZONTAL
2	5460.00	61.91	74.00	-12.09	54.25	6.60	34.53	33.47	63	237	Peak	HORIZONTAL
3	5464.80	51.51	54.00	-2.49	43.82	6.60	34.55	33.46	63	237	Average	HORIZONTAL
4	5466.40	62.08	74.00	-11.92	54.39	6.60	34.55	33.46	63	237	Peak	HORIZONTAL
5	5583.20	105.35			97.42	6.72	34.63	33.42	63	237	Average	HORIZONTAL
6	5584.00	115.31			107.38	6.72	34.63	33.42	63	237	Peak	HORIZONTAL
7	5738.40	62.10	74.00	-11.90	53.91	6.86	34.70	33.37	63	237	Peak	HORIZONTAL
8	5739.20	51.43	54.00	-2.57	43.24	6.86	34.70	33.37	63	237	Average	HORIZONTAL

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

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5697.97	114.72			106.61	6.81	34.68	33.38	54	239	Peak	HORIZONTAL
2	5698.26	104.13			96.02	6.81	34.68	33.38	54	239	Average	HORIZONTAL
3	5725.00	53.35	54.00	-0.65	45.20	6.83	34.69	33.37	54	239	Average	HORIZONTAL
4	5725.00	70.49	74.00	-3.51	62.34	6.83	34.69	33.37	54	239	Peak	HORIZONTAL

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

Channel 144

	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	5718.00	103.42			98.45	6.28	33.38	32.07	HORIZONTAL	61	212	Average
2	5719.00	113.09			108.11	6.28	33.37	32.07	HORIZONTAL	61	212	Peak
3	5883.00	60.00	68.20	-8.20	54.71	6.35	33.32	32.26	HORIZONTAL	61	212	Peak

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

Temperature	26℃	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015 ~ Jan. 14, 2015		

Channel 54

	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	5106.00	43.89	54.00	-10.11	40.10	5.90	33.60	31.49	HORIZONTAL	296	147	Average
2	5107.60	56.76	74.00	-17.24	52.97	5.90	33.60	31.49	HORIZONTAL	296	147	Peak
3	5266.00	98.75			94.66	6.01	33.54	31.62	HORIZONTAL	296	147	Average
4	5273.20	110.33			106.23	6.01	33.53	31.62	HORIZONTAL	296	147	Peak
5	5416.40	58.47	74.00	-15.53	54.11	6.10	33.48	31.74	HORIZONTAL	296	147	Peak
6	5423.60	47.04	54.00	-6.96	42.68	6.10	33.48	31.74	HORIZONTAL	296	147	Average

Item 3, 4 are the fundamental frequency at 5270 MHz.

Channel 62

	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	5306.53	108.63			101.43	6.40	34.32	33.52	300	190	Peak	HORIZONTAL
2	5315.21	96.61			89.39	6.40	34.34	33.52	300	190	Average	HORIZONTAL
3	5350.00	53.52	54.00	-0.48	46.17	6.47	34.39	33.51	300	190	Average	HORIZONTAL
4	5350.00	72.28	74.00	-1.72	64.93	6.47	34.39	33.51	300	190	Peak	HORIZONTAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110, 134, 142 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015 ~ Jan. 14, 2015		

Channel 102

	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	5458.26	65.92	74.00	-8.08	58.26	6.60	34.53	33.47	52	214	Peak	HORIZONTAL
2	5460.00	48.86	54.00	-5.14	41.20	6.60	34.53	33.47	52	214	Average	HORIZONTAL
3	5468.26	71.29	74.00	-2.71	63.60	6.60	34.55	33.46	52	214	Peak	HORIZONTAL
4	5470.00	53.59	54.00	-0.41	45.90	6.60	34.55	33.46	52	214	Average	HORIZONTAL
5	5506.82	109.80			102.00	6.65	34.60	33.45	52	214	Peak	HORIZONTAL
6	5513.76	98.88			91.07	6.65	34.61	33.45	52	214	Average	HORIZONTAL

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

Channel 110

	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	5435.60	47.69	54.00	-6.31	43.29	6.13	33.48	31.75	HORIZONTAL	63	133	Average
2	5460.00	60.09	74.00	-13.91	55.64	6.15	33.47	31.77	HORIZONTAL	63	133	Peak
3	5470.00	45.59	54.00	-8.41	41.12	6.15	33.46	31.78	HORIZONTAL	63	133	Average
4	5470.00	61.24	74.00	-12.76	56.77	6.15	33.46	31.78	HORIZONTAL	63	133	Peak
5	5553.20	100.35			95.72	6.19	33.43	31.87	HORIZONTAL	63	133	Average
6	5556.40	110.25			105.62	6.19	33.43	31.87	HORIZONTAL	63	133	Peak

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

Channel 134

	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	5661.32	114.19			106.13	6.79	34.66	33.39	298	211	Peak	HORIZONTAL
2	5665.08	102.48			94.42	6.79	34.66	33.39	298	211	Average	HORIZONTAL
3	5725.00	53.34	54.00	-0.66	45.19	6.83	34.69	33.37	298	211	Average	HORIZONTAL
4	5727.32	69.67	74.00	-4.33	61.52	6.83	34.69	33.37	298	211	Peak	HORIZONTAL

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

Channel 142

	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	5707.60	111.70			106.76	6.26	33.38	32.06	HORIZONTAL	65	212	Peak
2	5713.20	99.77			94.81	6.28	33.38	32.06	HORIZONTAL	65	212	Average
3	5866.80	60.14	68.20	-8.06	54.86	6.35	33.32	32.25	HORIZONTAL	65	212	Peak

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

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Chain 3 + Chain 4
Test Date	Jan. 13, 2015 ~ Jan. 21, 2015		

Channel 58

	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	5262.00	105.15			98.08	6.34	34.27	33.54	292	165	Peak	HORIZONTAL
2	5279.00	93.30			86.16	6.37	34.30	33.53	292	165	Average	HORIZONTAL
3	5350.00	53.71	54.00	-0.29	46.36	6.47	34.39	33.51	292	165	Average	HORIZONTAL
4	5355.00	67.74	74.00	-6.26	60.38	6.47	34.39	33.50	292	165	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5290 MHz.

Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106, 122, 138 / Chain 3 + Chain 4
Test Date	Jan. 14, 2015 ~ Jan. 21, 2015		

Channel 106

	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	5452.00	67.02	74.00	-6.98	59.36	6.60	34.53	33.47	293	193	Peak	HORIZONTAL
2	5460.00	52.59	54.00	-1.41	44.93	6.60	34.53	33.47	293	193	Average	HORIZONTAL
3	5465.00	53.39	54.00	-0.61	45.70	6.60	34.55	33.46	293	193	Average	HORIZONTAL
4	5469.00	66.64	74.00	-7.36	58.95	6.60	34.55	33.46	293	193	Peak	HORIZONTAL
5	5502.00	106.75			98.95	6.65	34.60	33.45	293	193	Peak	HORIZONTAL
6	5537.00	93.85			86.00	6.68	34.61	33.44	293	193	Average	HORIZONTAL
7	5725.00	46.92	54.00	-7.08	38.77	6.83	34.69	33.37	293	193	Average	HORIZONTAL
8	5740.00	60.22	74.00	-13.78	52.03	6.86	34.70	33.37	293	193	Peak	HORIZONTAL

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

Channel 122

	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	5452.00	62.72	74.00	-11.28	58.30	6.13	33.47	31.76	HORIZONTAL	64	100	Peak
2	5460.00	49.06	54.00	-4.94	44.61	6.15	33.47	31.77	HORIZONTAL	64	100	Average
3	5468.00	64.10	74.00	-9.90	59.63	6.15	33.46	31.78	HORIZONTAL	64	100	Peak
4	5470.00	49.77	54.00	-4.23	45.30	6.15	33.46	31.78	HORIZONTAL	64	100	Average
5	5584.00	110.81			106.12	6.21	33.42	31.90	HORIZONTAL	64	100	Peak
6	5601.00	97.53			92.80	6.22	33.42	31.93	HORIZONTAL	64	100	Average
7	5725.00	50.17	54.00	-3.83	45.18	6.28	33.37	32.08	HORIZONTAL	64	100	Average
8	5725.00	66.27	74.00	-7.73	61.28	6.28	33.37	32.08	HORIZONTAL	64	100	Peak

Item 5, 6 are the fundamental frequency at 5610 MHz.

Channel 138

	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	5656.00	101.96			97.14	6.24	33.40	31.98	VERTICAL	329	176	Peak
2	5662.00	88.16			83.31	6.24	33.39	32.00	VERTICAL	329	176	Average
3	5931.00	58.34	68.20	-9.86	52.95	6.37	33.30	32.32	VERTICAL	329	176	Peak

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

Note:

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

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

4.8. 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

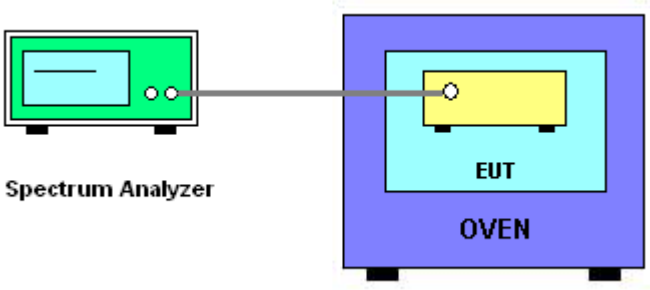
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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)	5300 MHz	5580 MHz
126.50	5299.9668	5579.9652
110.00	5299.9648	5579.9631
93.50	5299.9586	5579.9582
Max. Deviation (MHz)	0.041400	0.041800
Max. Deviation (ppm)	7.81	7.49

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5300 MHz	5580 MHz
-10	5299.9906	5579.9906
0	5299.9832	5579.9832
10	5299.9734	5579.9734
20	5299.9725	5579.9725
30	5299.9668	5579.9652
40	5299.9648	5579.9631
50	5299.9582	5579.9582
60	5299.9564	5579.9564
Max. Deviation (MHz)	0.043600	0.043600
Max. Deviation (ppm)	8.2264	7.8136

Mode: 40 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	5310 MHz	5550 MHz
126.50	5309.9668	5549.9652
110.00	5309.9648	5549.9635
93.50	5309.9586	5549.9582
Max. Deviation (MHz)	0.041400	0.041800
Max. Deviation (ppm)	7.80	7.53

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5310 MHz	5550 MHz
-10	5309.9906	5549.9906
0	5309.9832	5549.9832
10	5309.9734	5549.9734
20	5309.9725	5549.9725
30	5309.9668	5549.9652
40	5309.9648	5549.9635
50	5309.9582	5549.9582
60	5309.9564	5549.9564
Max. Deviation (MHz)	0.043600	0.043600
Max. Deviation (ppm)	8.2109	7.8559

Mode: 80 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	5290 MHz	5530 MHz
126.50	5289.9668	5529.9652
110.00	5289.9648	5529.9635
93.50	5289.9586	5529.9582
Max. Deviation (MHz)	0.041400	0.041800
Max. Deviation (ppm)	7.83	7.56

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5290 MHz	5530 MHz
-10	5289.9906	5529.9906
0	5289.9832	5529.9832
10	5289.9734	5529.9734
20	5289.9725	5529.9725
30	5289.9668	5529.9652
40	5289.9648	5529.9635
50	5289.9582	5529.9582
60	5289.9564	5529.9564
Max. Deviation (MHz)	0.043600	0.043600
Max. Deviation (ppm)	8.2420	7.8843

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.

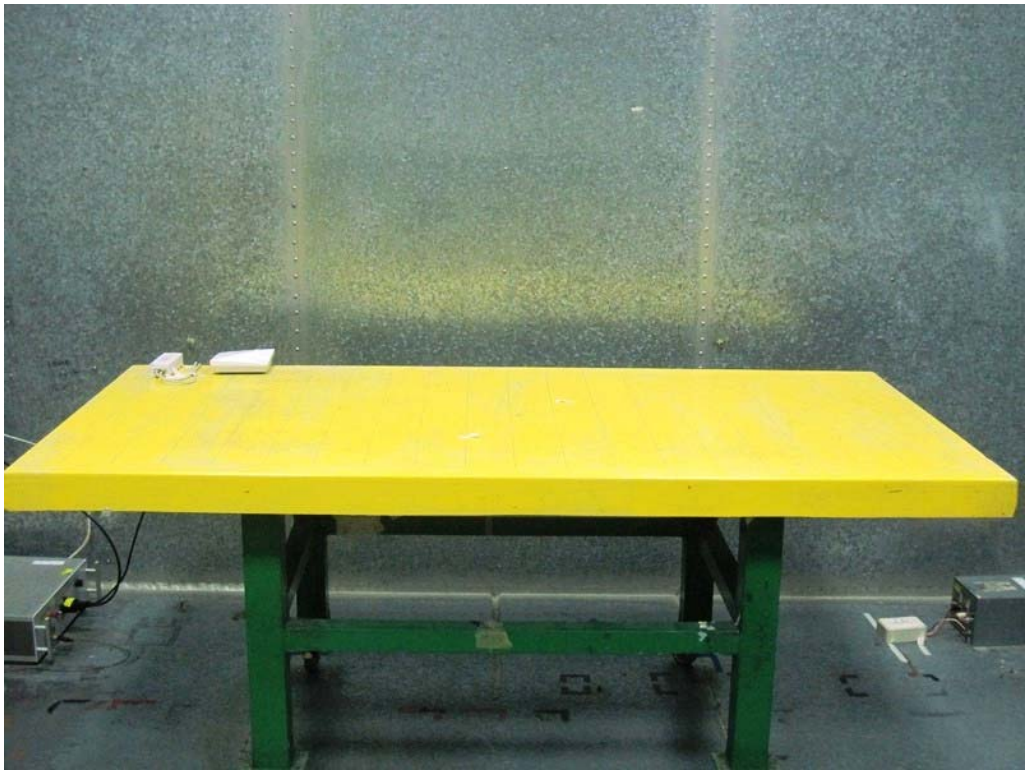
6. MEASUREMENT UNCERTAINTY

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%

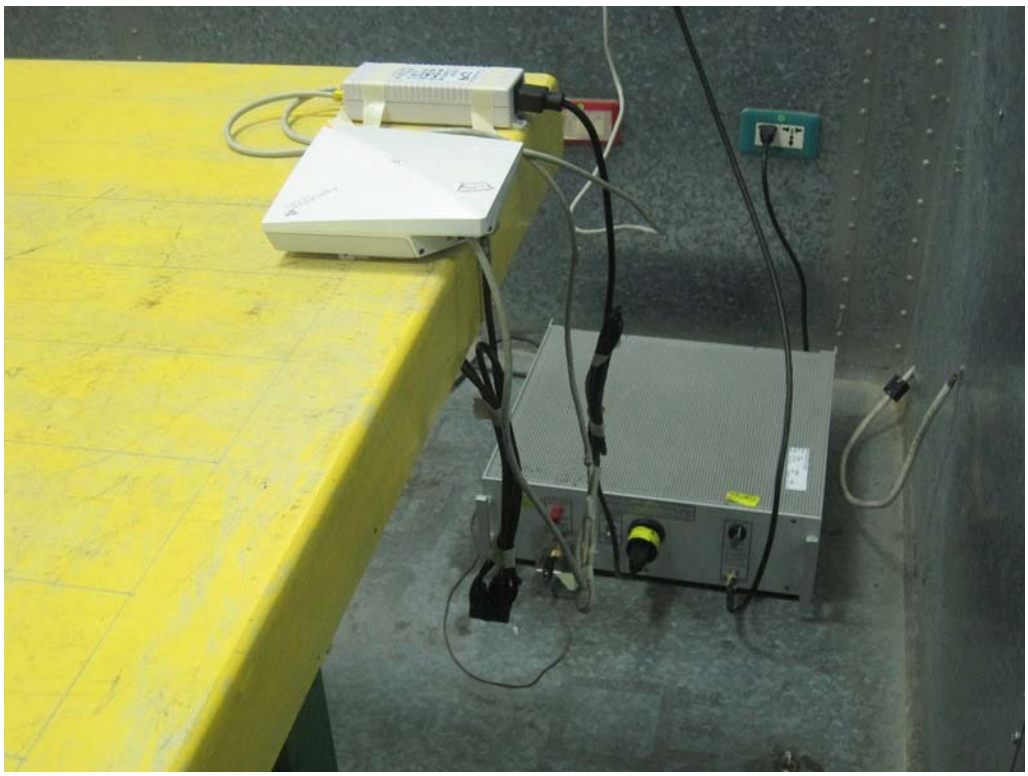
Appendix A. Test Photos

1. Photographs of Conducted Emissions Test Configuration

FRONT VIEW



REAR VIEW



2. Photographs of Radiated Emissions Test Configuration

Test Configuration: 9kHz ~30MHz

Test Mode: Mode 2

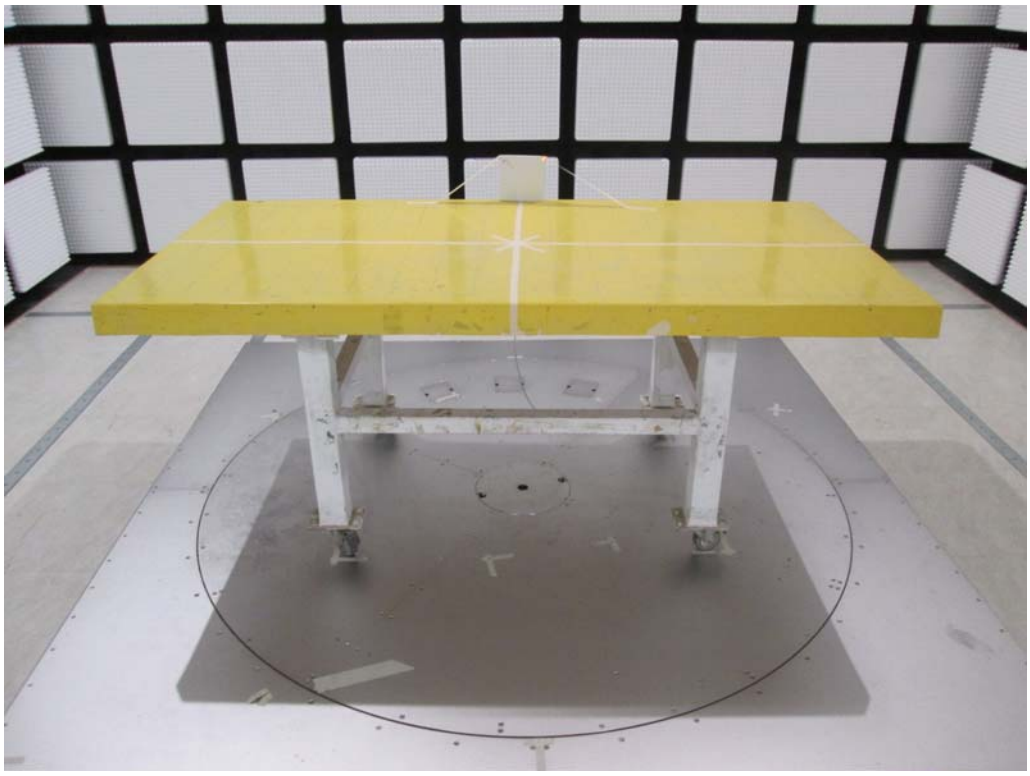
FRONT VIEW

REAR VIEW

Test Configuration: 30MHz~1GHz

Test Mode: Mode 2

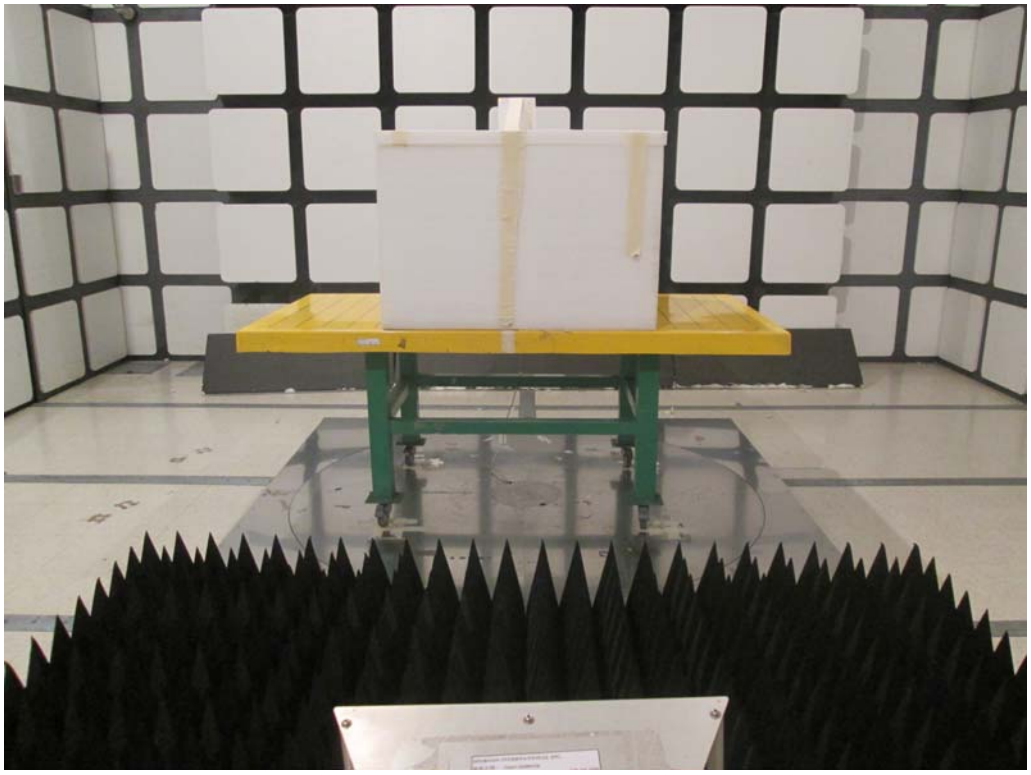
FRONT VIEW



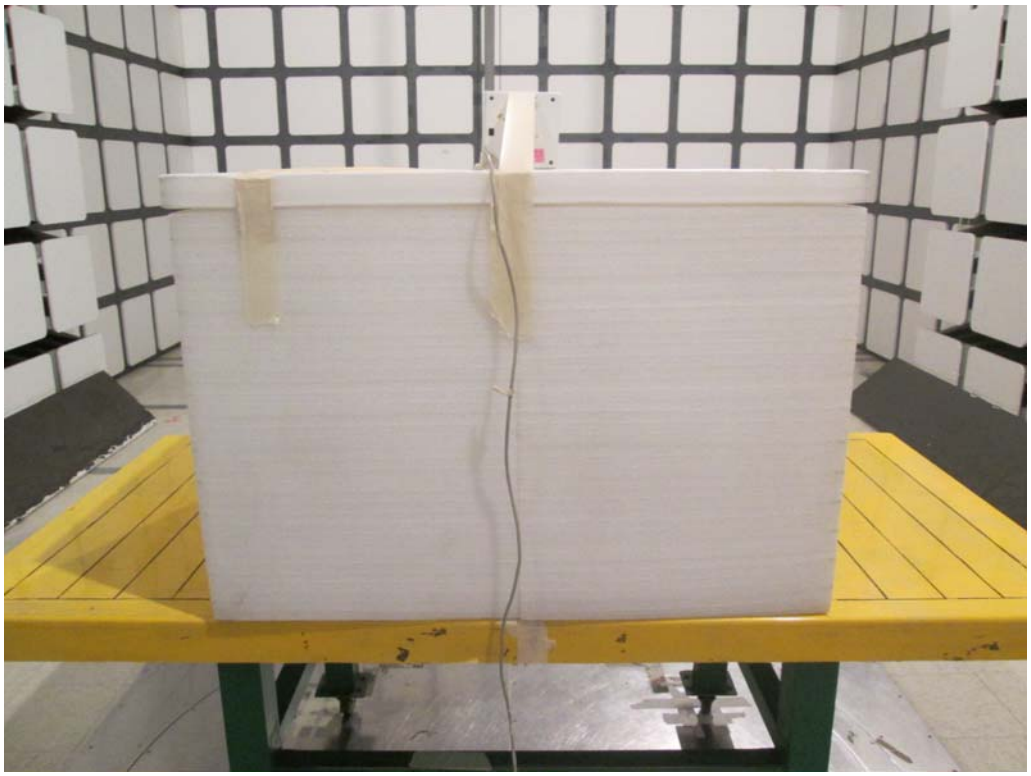
REAR VIEW

Test Configuration: Above 1GHz

FRONT VIEW



REAR VIEW



Appendix B. Maximum Permissible Exposure

1. Maximum Permissible Exposure

1. 1. Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|², |H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|², |H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

1.2. MPE Calculation Method

E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ Power Density: *Pd* (W/m²) = $\frac{E^2}{377}$

E = Electric field (V/m)

P = Average RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

Pd = $\frac{30 \times P \times G}{377 \times d^2}$

From the EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

1.3. Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

For UNII:

For 5GHz Band 1 and Band 4:

Antenna Type : PIFA Antenna

Conducted Power for IEEE 802.11ac MCS0/Nss1 (VHT20): 21.65dBm

Distance (m)	Directional Gain (dBi)	Antenna Gain (numeric)	The maximum combined Average Output Power		Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
			(dBm)	(mW)			
0.2	8.30	6.7613	21.6520	146.2836	0.196868	1	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

For 5GHz Band 2 and Band 3:

Antenna Type : PIFA Antenna

Conducted Power for IEEE 802.11ac MCS0/Nss1 (VHT40): 21.55dBm

Distance (m)	Directional Gain (dBi)	Antenna Gain (numeric)	The maximum combined Average Output Power		Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
			(dBm)	(mW)			
0.2	8.30	6.7613	21.5487	142.8465	0.192243	1	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$

For DTS:

For 2.4GHz Band:

Antenna Type : PIFA Antenna

Conducted Power for IEEE 802.11ac MCS0/Nss1 (VHT20): 22.62 dBm

Distance (m)	Directional Gain (dBi)	Antenna Gain (numeric)	The maximum combined Average Output Power		Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
			(dBm)	(mW)			
0.2	6.87	4.8644	22.6228	182.9272	0.177116	1	Complies

Note: $$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

Conclusion:

Both of the WLAN 2.4GHz Band and WLAN 5GHz Band can transmit simultaneously, the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ...etc. < 1

CPD = Calculation power density

LPD = Limit of power density

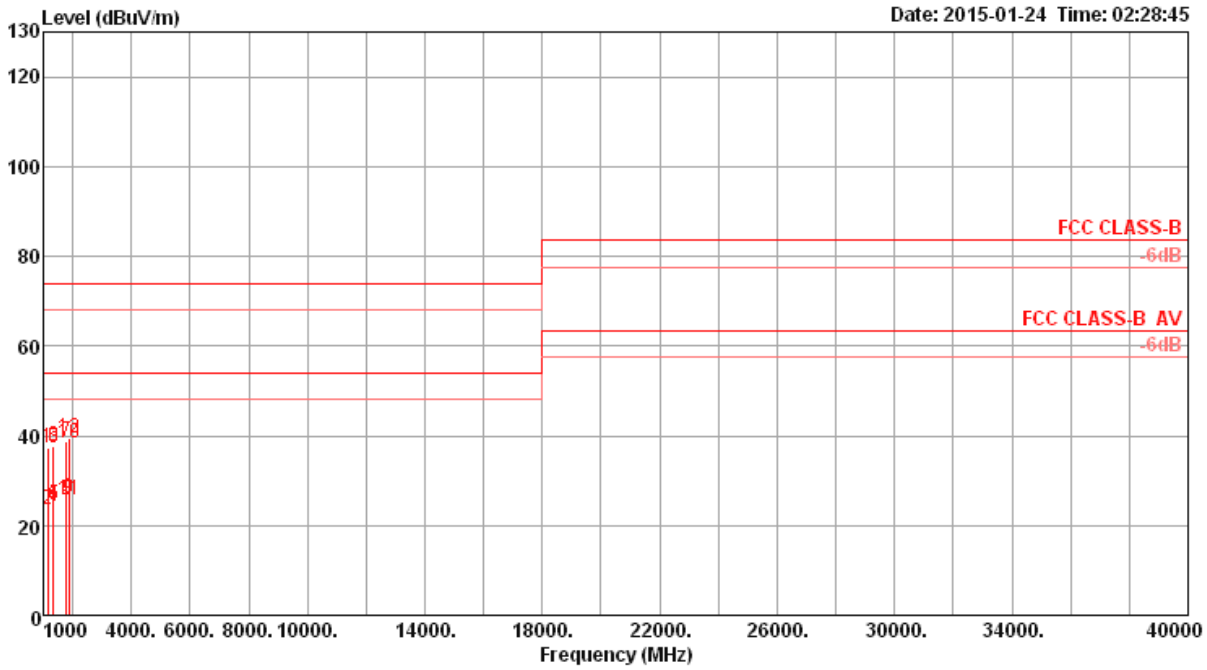
Therefore, the worst-case situation is 0.177116 / 1 + 0.196868 / 1 = 0.373984, which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

Appendix C. Radiated Emission Co-location Report

1. Results of Radiated Emissions for Co-located

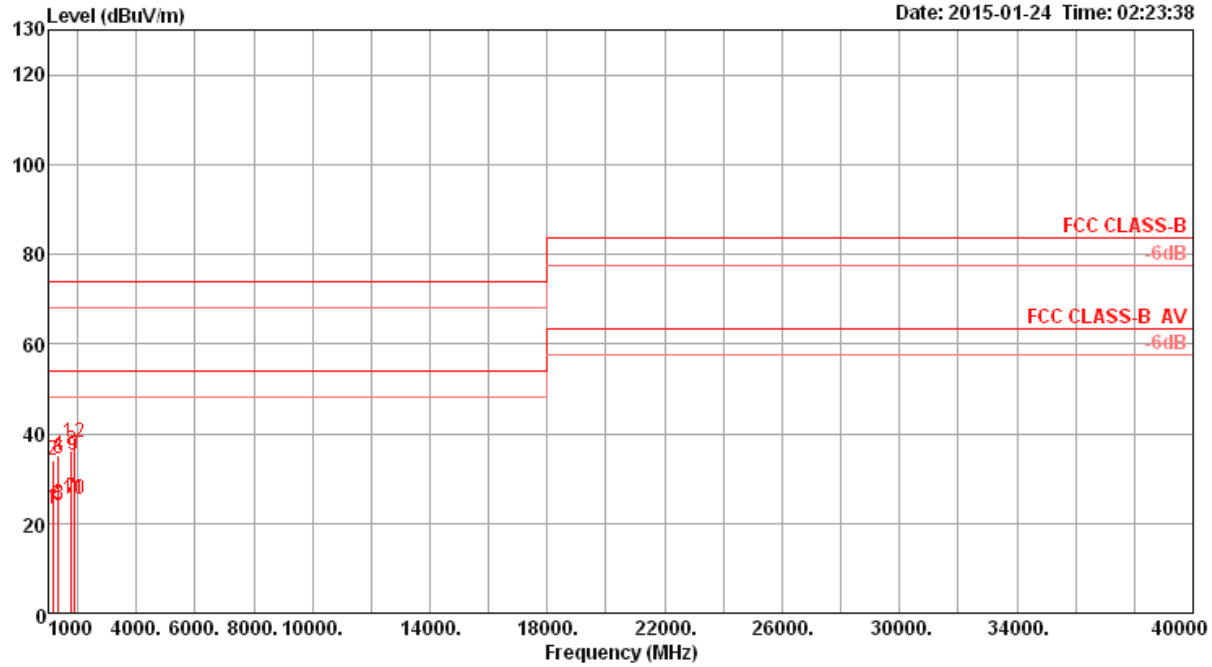
Temperature	26°C	Humidity	68%
Test Engineer	Peter Wu	Configurations	2.4GHz VHT20 2437MHz and 5GHz VHT20 5240MHz

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	1151.37	37.23	74.00	-36.77	44.45	2.76	24.48	34.46	Peak	128	277	HORIZONTAL
2	1152.31	23.50	54.00	-30.50	30.75	2.76	24.48	34.49	Average	128	277	HORIZONTAL
3	1347.01	37.14	74.00	-36.86	43.75	2.98	25.12	34.71	Peak	110	291	HORIZONTAL
4	1348.40	24.36	54.00	-29.64	30.97	2.98	25.12	34.71	Average	110	291	HORIZONTAL
5	1350.32	24.64	54.00	-29.36	31.23	3.00	25.12	34.71	Average	104	178	HORIZONTAL
6	1351.25	37.55	74.00	-36.45	44.14	3.00	25.12	34.71	Peak	104	178	HORIZONTAL
7	1781.97	38.74	74.00	-35.26	43.69	3.52	26.43	34.90	Peak	116	226	HORIZONTAL
8	1782.87	25.88	54.00	-28.12	30.83	3.52	26.43	34.90	Average	116	226	HORIZONTAL
9	1866.64	26.03	54.00	-27.97	30.61	3.63	26.69	34.90	Average	112	179	HORIZONTAL
10	1867.86	38.29	74.00	-35.71	42.87	3.63	26.69	34.90	Peak	112	179	HORIZONTAL
11	1894.17	25.88	54.00	-28.12	30.32	3.67	26.79	34.90	Average	102	175	HORIZONTAL
12	1895.50	39.53	74.00	-34.47	43.97	3.67	26.79	34.90	Peak	102	175	HORIZONTAL

Vertial



	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	1153.00	23.23	54.00	-30.77	30.48	2.76	24.48	34.49	Average	128	258	VERTICAL
2	1153.00	34.14	74.00	-39.86	41.39	2.76	24.48	34.49	Peak	128	258	VERTICAL
3	1349.00	24.12	54.00	-29.88	30.71	3.00	25.12	34.71	Average	106	222	VERTICAL
4	1349.00	35.00	74.00	-39.00	41.59	3.00	25.12	34.71	Peak	106	222	VERTICAL
5	1352.00	23.98	54.00	-30.02	30.57	3.00	25.12	34.71	Average	113	194	VERTICAL
6	1352.00	34.58	74.00	-39.42	41.17	3.00	25.12	34.71	Peak	113	194	VERTICAL
7	1783.00	25.54	54.00	-28.46	30.49	3.52	26.43	34.90	Average	113	248	VERTICAL
8	1783.00	36.18	74.00	-37.82	41.13	3.52	26.43	34.90	Peak	113	248	VERTICAL
9	1866.85	35.14	54.00	-18.86	39.72	3.63	26.69	34.90	Average	100	275	VERTICAL
10	1866.85	25.51	74.00	-48.49	30.09	3.63	26.69	34.90	Peak	100	275	VERTICAL
11	1895.80	25.17	54.00	-28.83	29.61	3.67	26.79	34.90	Average	100	330	VERTICAL
12	1895.80	38.09	74.00	-35.91	42.53	3.67	26.79	34.90	Peak	100	330	VERTICAL