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FCC RADIO TEST REPORT

Applicant's company	**CyberTAN Technology Inc.**
Applicant Address	No. 99, Park Avenue III, Science-based Industrial Park, Hsinchu, 308 Taiwan
FCC ID	**N89-NU361**
Manufacturer's company	**CyberTAN Technology Inc.**
Manufacturer Address	No. 99, Park Avenue III, Science-based Industrial Park, Hsinchu, 308 Taiwan

Product Name	802.11a/b/g/n/ac Wi-Fi + Bluetooth Combo Module
Brand Name	CyberTAN
Model No.	NU361-HS
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5350MHz / 5470 ~ 5725MHz / 5725 ~ 5850 MHz
Received Date	Mar. 10, 2015
Final Test Date	Apr. 04, 2015
Submission Type	Original Equipment

Statement

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

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

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

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

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

TAF
Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR530540AD	Rev. 01	Initial issue of report	Apr. 13, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	802.11a/b/g/n/ac WI-Fi + Bluetooth Combo Module
Brand Name	:	CyberTAN
Model No.	:	NU361-HS
Applicant	:	CyberTAN Technology 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 Mar. 10, 2015 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

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	20.31 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	1.77dB
4.5	15.407(a)	Power Spectral Density	Complies	1.67 dB
4.6	15.407(b)	Radiated Emissions	Complies	3.00 dB
4.7	15.407(b)	Band Edge Emissions	Complies	1.51 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/n/ac: WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From host system
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5150 ~ 5350MHz / 5470 ~ 5725MHz / 5725 ~ 5850 MHz
Channel Number	22 for 20MHz bandwidth ; 10 for 40MHz bandwidth 5 for 80MHz bandwidth
Channel Band Width (99%)	Band 1: IEEE 802.11a: 19.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.96 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.20 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.40 MHz Band 2: IEEE 802.11a: 19.20 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 19.68 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.60 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.80 MHz Band 3: IEEE 802.11a: 20.88 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 21.72 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.80 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.40 MHz Band 4: IEEE 802.11a: 18.72 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 19.80 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.40 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.40 MHz

Maximum Conducted Output Power	Band 1: IEEE 802.11a: 21.71 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 21.65 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 19.91 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 13.03 dBm Band 2: IEEE 802.11a: 21.73 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 21.84 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 20.43 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.63 dBm Band 3: IEEE 802.11a: 22.23 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 21.76 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 20.05 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.82 dBm Band 4: IEEE 802.11a: 19.92 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 20.00 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 18.96 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 13.92 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
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	

Antenna and Band width

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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	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 supports HT20 and HT40.

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

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

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Part No.	Antenna Type	Connector	Gain (dBi)		
					2.4GHz	5GHz	Bluetooth
1	INPAQ	WAG-M-LB-00-002	PIFA Antenna	Murata	1.21	3.97	-
2	INPAQ	WAG-M-LB-00-003	PIFA Antenna	Murata	1.21	3.97	-
3	MAG. LAYERS	MSA-3507-25GC1-A1	PIFA Antenna	I-PEX	-	-	4.12

Note:

For 2.4GHz:

For IEEE 802.11b mode (1TX/1RX)

Only Chain 1 can be used as transmitting/receiving antenna.

For IEEE 802.11g/n mode (2TX/2RX)

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

Chain 1 and Chain 2 could transmit/receive simultaneously.

For 5GHz:

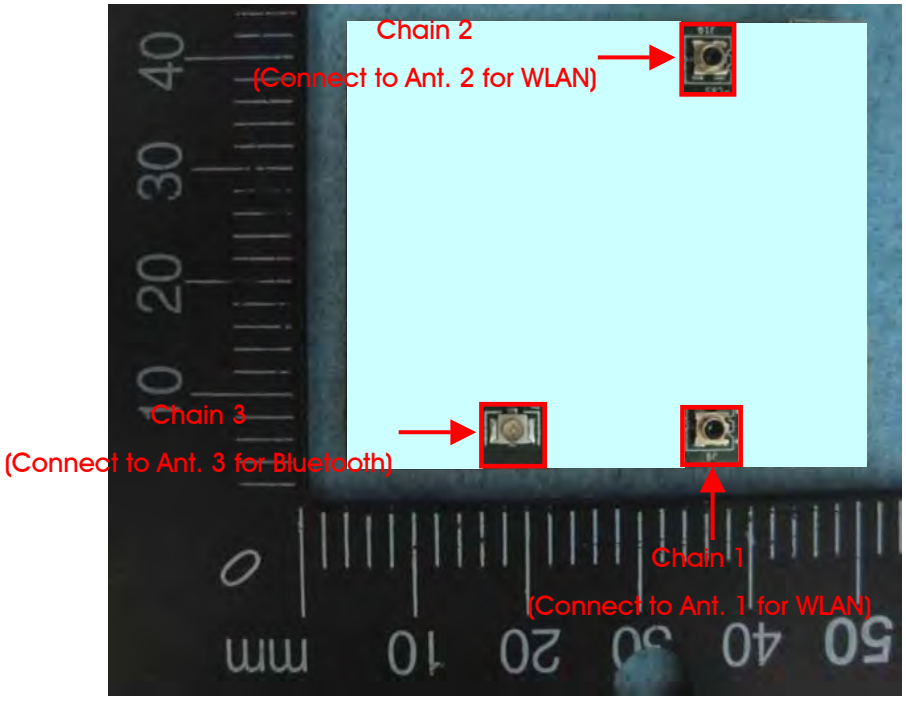
For IEEE 802.11a/n/ac mode (2TX/2RX)

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

Chain 1 and Chain 2 could transmit/receive simultaneously.

For Bluetooth mode (1TX/1RX)

Only Chain 3 can be used as transmitting/receiving antenna.



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140, 144, 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 38, 46, 54, 62, 102, 110, 134, 142, 151, 159.

For 80MHz bandwidth systems, use Channel 42, 58, 106, 138, 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz	-	-
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	132	5660 MHz
	102	5510 MHz	134	5670 MHz
	104	5520 MHz	136	5680 MHz
	106	5530 MHz	138	5690 MHz
	108	5540 MHz	140	5700 MHz
	110	5550 MHz	142	5710 MHz
	112	5560 MHz	144	5720 MHz
	116	5580 MHz	-	-
5725~5850 MHz Band 4	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	Normal Link		-	-	-
Max. Conducted Output Power	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64/100/116/140 144/149/157/165	1+2
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64/100/116/140 /144/149/157/165	1+2
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/110/134/142/151/159	1+2
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/138/155	1+2
Power Spectral Density	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64/100/116/140 144/149/157/165	1+2
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64/100/116/140 /144/149/157/165	1+2
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/110/134/142/151/159	1+2
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/138/155	1+2

26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64/100/116/140144/149/157/165	1+2
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64/100/116/140/144/149/157/165	1+2
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/110/134/142/151/159	1+2
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/138/155	1+2
6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 4	6Mbps	149/157/165	1+2
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	1+2
	11ac VHT40	Band 4	MCS0/Nss1	151/159	1+2
	11ac VHT80	Band 4	MCS0/Nss1	155	1+2
Radiated Emission Below 1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64/100/116/140144/149/157/165	1+2
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64/100/116/140/144/149/157/165	1+2
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/110/134/142/151/159	1+2
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/138/155	1+2

Band Edge Emission	11a/BPSK	Band 1~4	6Mbps	36/40/48/52/60/64/100/140144/149/157/165	1+2
	11ac VHT20	Band 1~4	MCS0/Nss1	36/40/48/52/60/64/100/140/144/149/157/165	1+2
	11ac VHT40	Band 1~4	MCS0/Nss1	38/46/54/62/102/110/134/142/151/159	1+2
	11ac VHT80	Band 1~4	MCS0/Nss1	42/58/106/138/155	1+2
Frequency Stability	20 MHz	Band 1~4	-	40/60/116/157	1+2
	40 MHz	Band 1~4	-	38/62/110/151	1+2
	80 MHz	Band 1~4	-	42/58/106/155	1+2

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

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. 2.4GHz WLAN Function + Bluetooth Function

Mode 2. 5GHz WLAN Function + Bluetooth Function

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

For Radiated Emission test (Below 1GHz):

Mode 1. 2.4GHz WLAN Function + Bluetooth Function + X axis

Mode 2. 2.4GHz WLAN Function + Bluetooth Function + Y axis

Mode 3. 2.4GHz WLAN Function + Bluetooth Function + Z axis

Mode 1 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.

Mode 4. 5GHz WLAN Function + Bluetooth Function + X axis

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

For Radiated Emission test (Above 1GHz):

The EUT was performed at X axis, Y axis and Z axis position. The worst case was found at Z axis, so it was selected to perform test and its test result was written in the report.

Mode 1. EUT Z axis

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

Mode 1. 2.4GHz WLAN Function + Bluetooth Function

Mode 2. 5GHz WLAN Function + Bluetooth Function

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

3.6. Table for Testing Locations

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

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

3.7. Table for Supporting Units

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

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC
Wireless AP	Planex	GW-AP54SGX	N/A
BT base station	Anritsu	MT8852B	N/A
Earphone	E-BOOKI	E-EPC040	N/A
Mouse	Logitech	M-U0026	DoC

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

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC
AP Router	Planex	GW-AP54SGX	AP Router
BT base station	Anritsu	MT8852B	N/A
Earphone	e-Power	S90W	N/A
Mouse	Logitech	M-U0026	DoC

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6220	DoC

3.8. Table for Parameters of Test Software Setting

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

Test Software Version	Mtool_2.0.1.0												
Mode	Test Frequency (MHz)												
	NCB: 20MHz												
	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz	5720 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	61	71	71	73	73	61	61	75	60	74	59	71	63
802.11ac MCS0/Nss1 VHT20	60	66	72	73	75	60	61	75	60	75	59	75	61
Mode	NCB: 40MHz												
802.11ac MCS0/Nss1 VHT40	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	5710 MHz	5755 MHz	5795 MHz			
	38	61	64	52	48	64	61	72	39	62			
Mode	NCB: 80MHz												
802.11ac MCS0/Nss1 VHT80	5210 MHz		5290 MHz		5530 MHz		5690 MHz		5775 MHz				
	36		52		37		72		44				

3.9. EUT Operation during Test

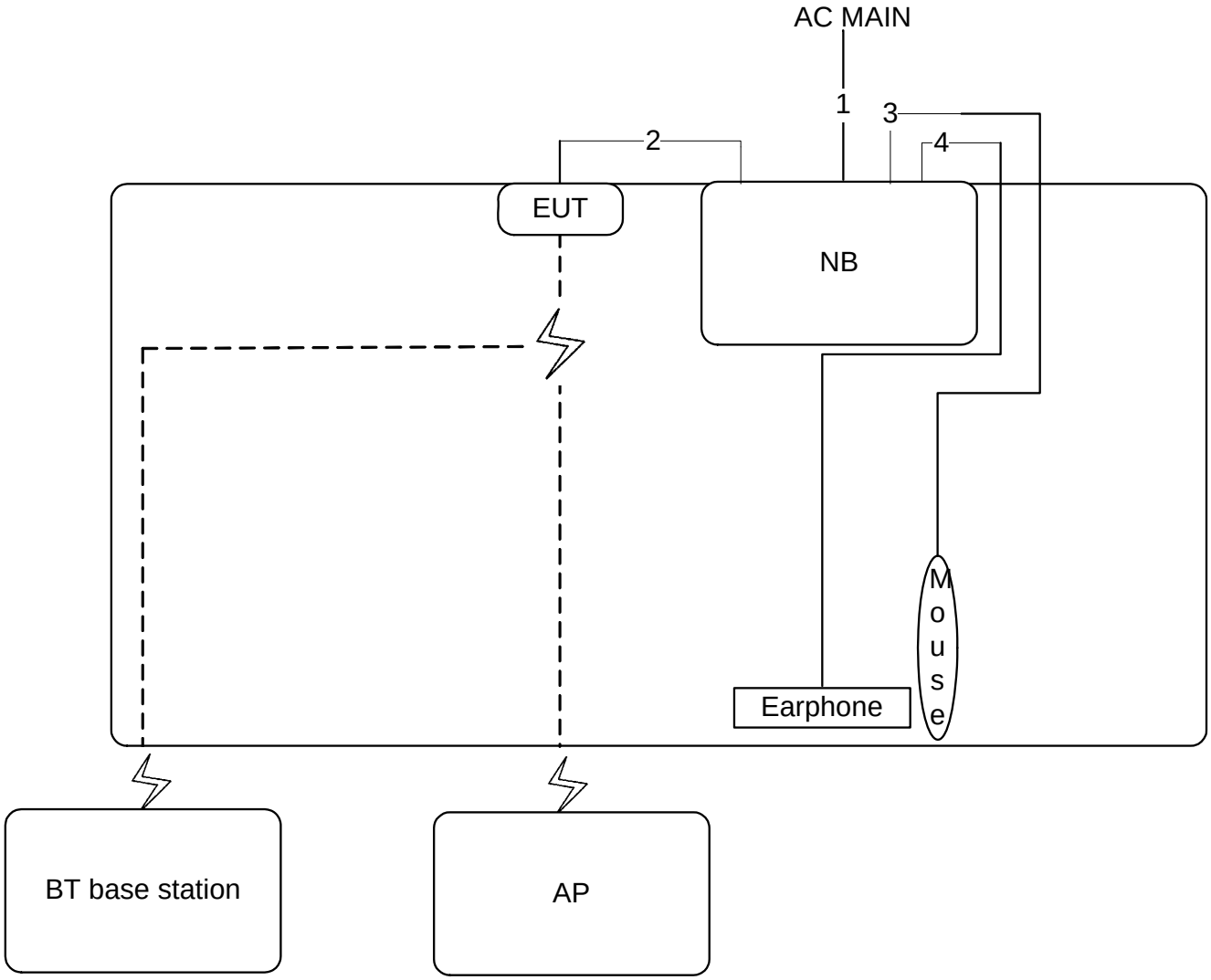
The EUT was programmed to be in continuously transmitting mode.

3.10. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.050	2.070	99.03%	0.04	0.01
802.11ac MCS0/Nss1 VHT20	1.911	1.954	97.80%	0.10	0.52
802.11ac MCS0/Nss1 VHT40	0.913	0.934	97.77%	0.10	1.10
802.11ac MCS0/Nss1 VHT80	0.430	0.452	95.15%	0.22	2.33

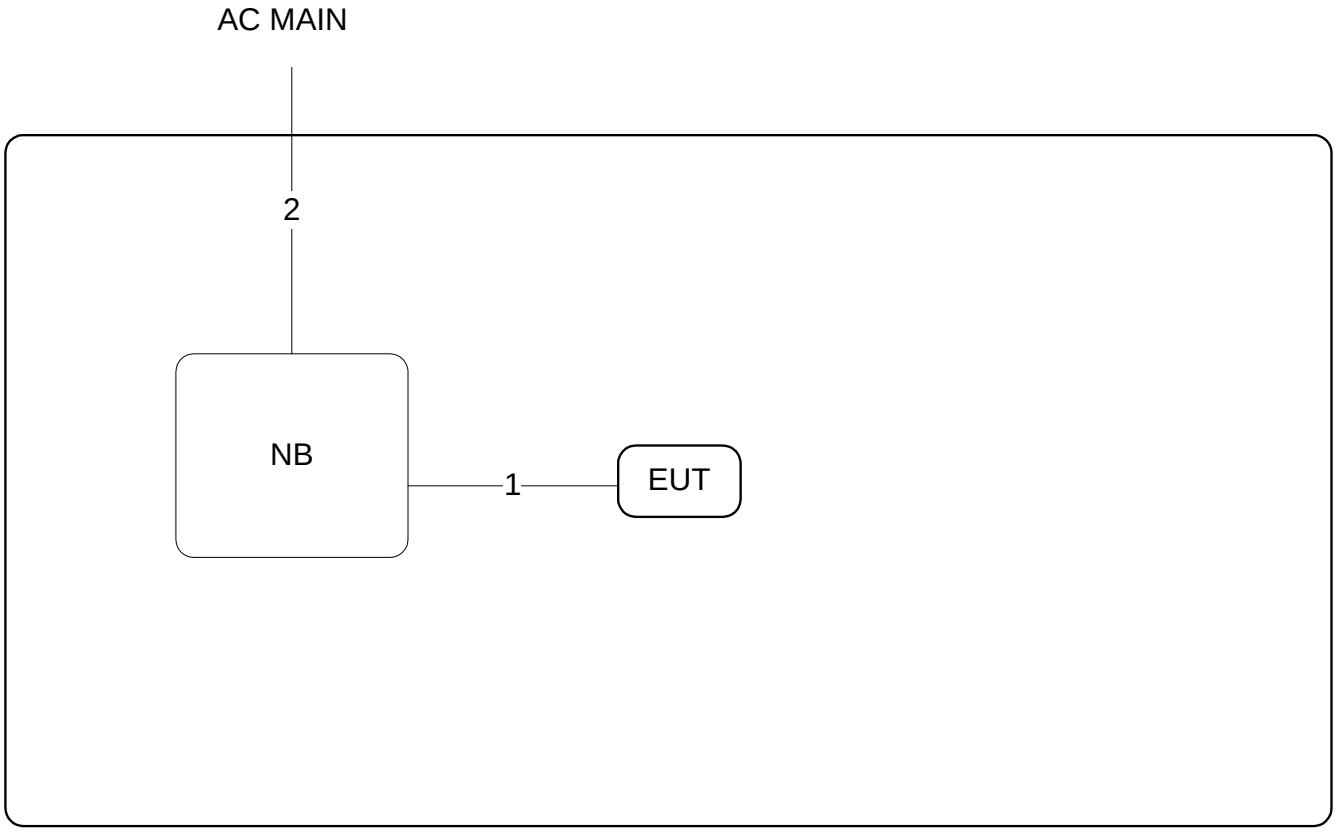
3.11. Test Configurations

3.11.1. AC Power Line Conduction Emissions and Radiation Emissions (Belowe 1GHz) Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	USB cable	Yes	0.5m
3	USB cable	Yes	1.8m
4	USB cable	Yes	1.4m

3.11.2. Radiation Emissions Test (Above 1GHz)Configuration



Item	Connection	Shielded	Length
1	USB Cable	Yes	0.5m
2	Power Cable	No	2.6m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

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

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

4.1.2. Measuring Instruments and Setting

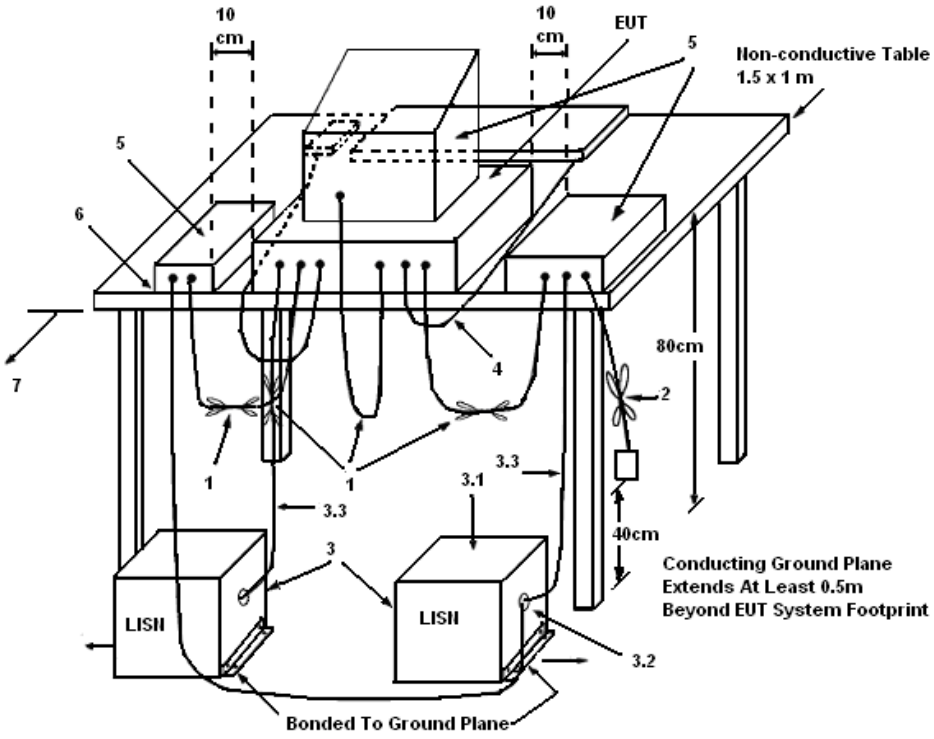
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

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

4.1.4. Test Setup Layout



LEGEND:

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

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

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

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

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

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

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

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

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

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

4.1.5. Test Deviation

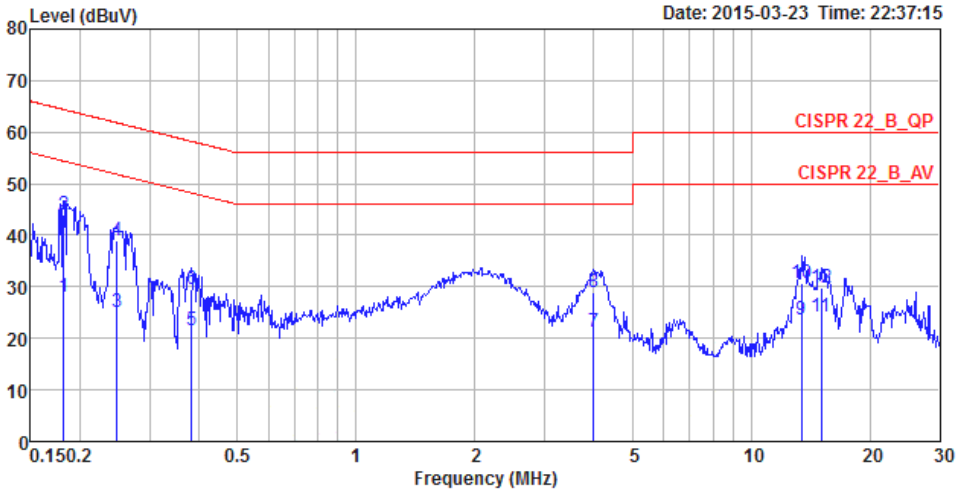
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

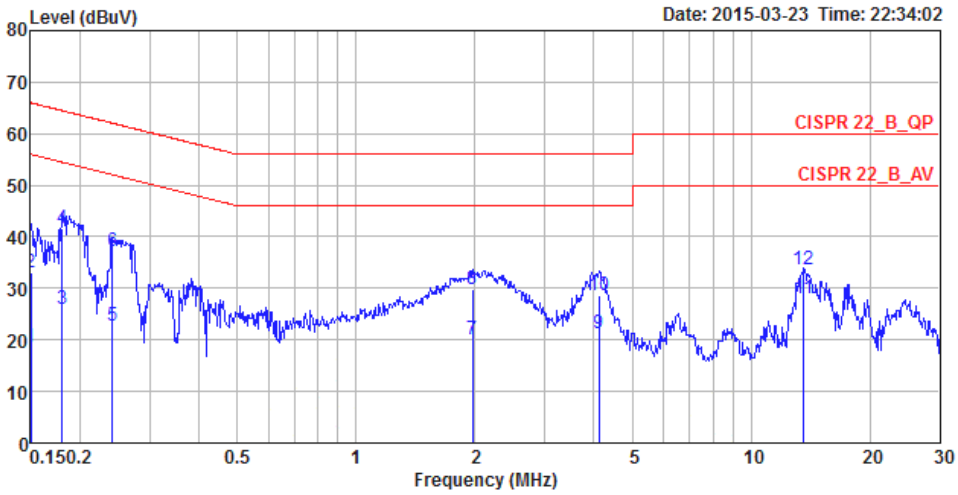
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	22°C	Humidity	58%
Test Engineer	Kane Liu	Phase	Line
Configuration	Normal Link / Mode 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.18	27.90	-26.52	54.42	17.95	9.93	0.02	LINE	Average
2	0.18	44.11	-20.31	64.42	34.16	9.93	0.02	LINE	QP
3	0.25	25.12	-26.70	51.82	15.16	9.93	0.03	LINE	Average
4	0.25	38.96	-22.86	61.82	29.00	9.93	0.03	LINE	QP
5	0.38	21.46	-26.75	48.21	11.49	9.93	0.04	LINE	Average
6	0.38	29.41	-28.80	58.21	19.44	9.93	0.04	LINE	QP
7	3.99	21.35	-24.65	46.00	11.26	10.02	0.07	LINE	Average
8	3.99	28.99	-27.01	56.00	18.90	10.02	0.07	LINE	QP
9	13.41	23.54	-26.46	50.00	13.00	10.29	0.25	LINE	Average
10	13.41	30.64	-29.36	60.00	20.10	10.29	0.25	LINE	QP
11	15.07	24.20	-25.80	50.00	13.61	10.33	0.26	LINE	Average
12	15.07	29.77	-30.23	60.00	19.18	10.33	0.26	LINE	QP

Temperature	22°C	Humidity	58%
Test Engineer	Kane Liu	Phase	Neutral
Configuration	Normal Link / Mode 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.15	18.49	-37.51	56.00	8.69	9.78	0.02	NEUTRAL	Average
2	0.15	33.04	-32.96	66.00	23.24	9.78	0.02	NEUTRAL	QP
3	0.18	25.90	-28.56	54.46	16.09	9.79	0.02	NEUTRAL	Average
4	0.18	41.51	-22.95	64.46	31.70	9.79	0.02	NEUTRAL	QP
5	0.24	22.75	-29.29	52.04	12.93	9.79	0.03	NEUTRAL	Average
6	0.24	37.08	-24.96	62.04	27.26	9.79	0.03	NEUTRAL	QP
7	1.97	20.19	-25.81	46.00	10.29	9.84	0.06	NEUTRAL	Average
8	1.97	29.96	-26.04	56.00	20.06	9.84	0.06	NEUTRAL	QP
9	4.11	21.29	-24.71	46.00	11.35	9.87	0.07	NEUTRAL	Average
10	4.11	28.77	-27.23	56.00	18.83	9.87	0.07	NEUTRAL	QP
11	13.62	28.14	-21.86	50.00	17.80	10.09	0.25	NEUTRAL	Average
12	13.62	33.74	-26.26	60.00	23.40	10.09	0.25	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

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

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

4.2.3. Test Procedures

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

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

4.2.4. Test Setup Layout

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

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

4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	20°C	Humidity	51%
Test Engineer	Nick Peng		

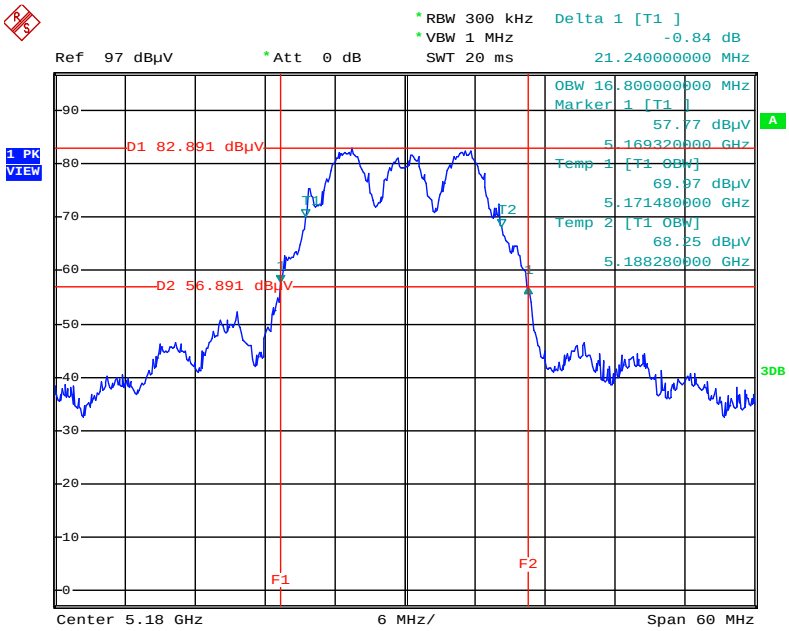
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	21.24	16.80
	5200 MHz	26.76	17.88
	5240 MHz	32.88	19.32
	5260 MHz	31.80	18.96
	5300 MHz	31.68	19.20
	5320 MHz	21.36	16.80
	5500 MHz	21.24	16.68
	5580 MHz	37.72	20.88
	5700 MHz	21.72	16.80
	5745 MHz	21.84	16.68
	5785 MHz	31.80	18.72
	5825 MHz	21.24	16.80
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.36	17.64
	5200 MHz	21.60	18.00
	5240 MHz	37.68	18.96
	5260 MHz	38.04	19.20
	5300 MHz	38.40	19.68
	5320 MHz	21.48	17.64
	5500 MHz	21.48	17.76
	5580 MHz	41.04	21.72
	5700 MHz	21.48	17.76
	5745 MHz	21.60	17.64
	5785 MHz	45.48	19.80
	5825 MHz	21.48	17.64

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT40	5190 MHz	41.40	37.20
	5230 MHz	41.20	37.20
	5270 MHz	60.60	37.60
	5310 MHz	41.40	37.00
	5510 MHz	41.20	37.20
	5550 MHz	60.60	37.40
	5670 MHz	41.20	37.40
	5755 MHz	41.20	37.00
	5795 MHz	41.40	37.40
802.11ac MCS0/Nss1 VHT80	5210 MHz	82.00	76.40
	5290 MHz	82.40	76.80
	5530 MHz	82.00	76.40
	5775 MHz	82.40	76.40

Straddle Channel

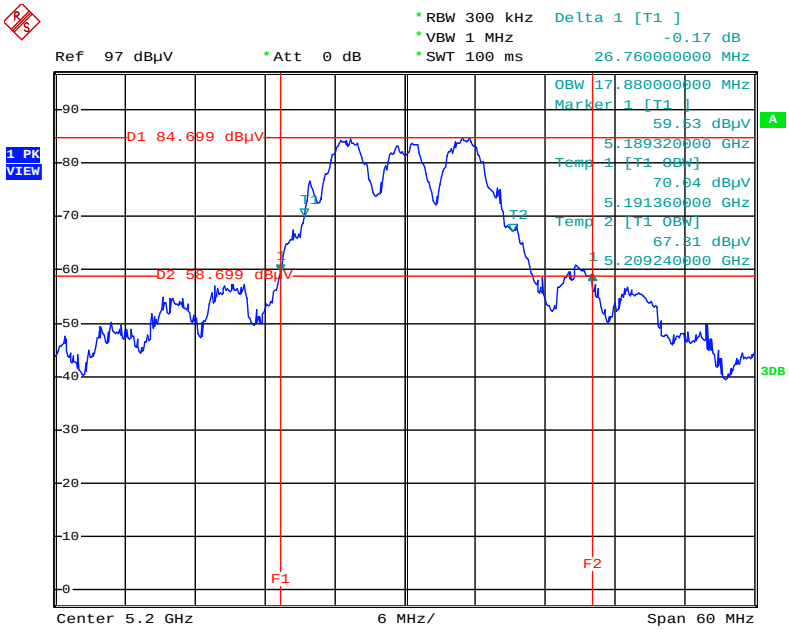
Mode	Frequency	26dB BW (MHz)	99% OBW (MHz)	26dB BW F1 (MHz)	99% OBW T1 (MHz)	UNII 2C 26dB BW (MHz)	UNII 3 26dB BW (MHz)	UNII 2C 99% BW (MHz)	UNII 3 99% BW (MHz)
802.11a	5720 MHz	35.04	19.56	5704.28	5710.64	20.72	14.32	14.36	5.20
802.11ac MCS0/Nss1 VHT20	5720 MHz	42.24	21.96	5699.96	5710.16	25.04	17.20	14.84	7.12
802.11ac MCS0/Nss1 VHT40	5710 MHz	95.40	48.00	5662.20	5687.20	62.80	32.60	37.80	10.20
802.11ac MCS0/Nss1 VHT80	5690 MHz	161.20	78.00	5604.40	5651.20	120.60	40.60	73.80	4.20

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



Date: 27.MAR.2015 22:55:42

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



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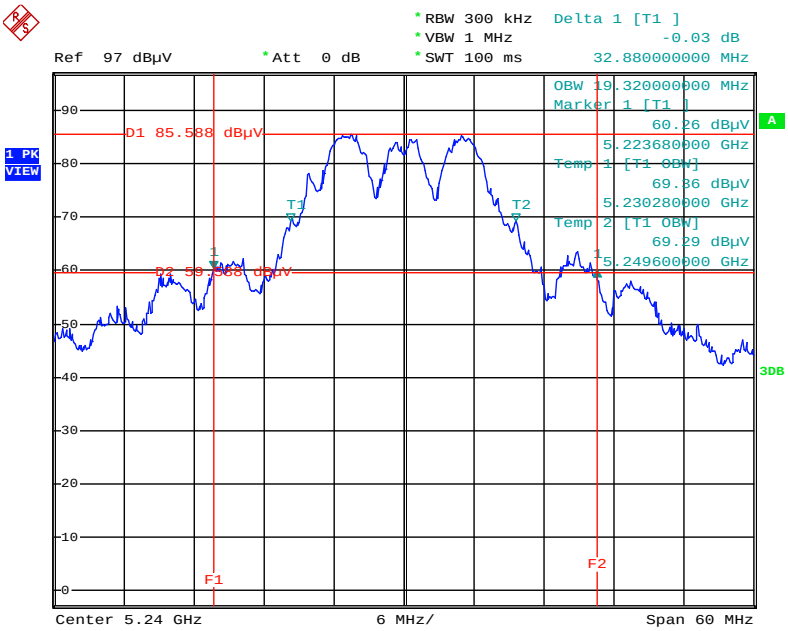
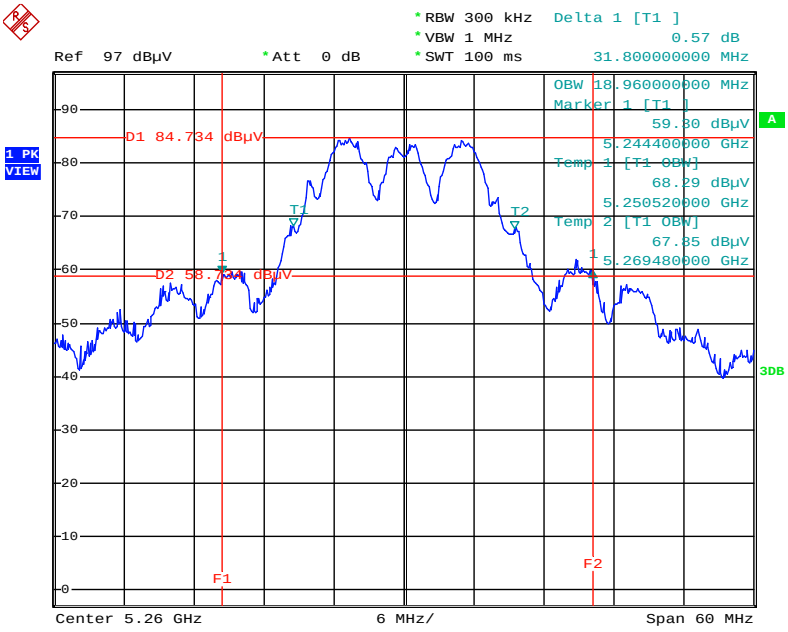
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5240 MHz



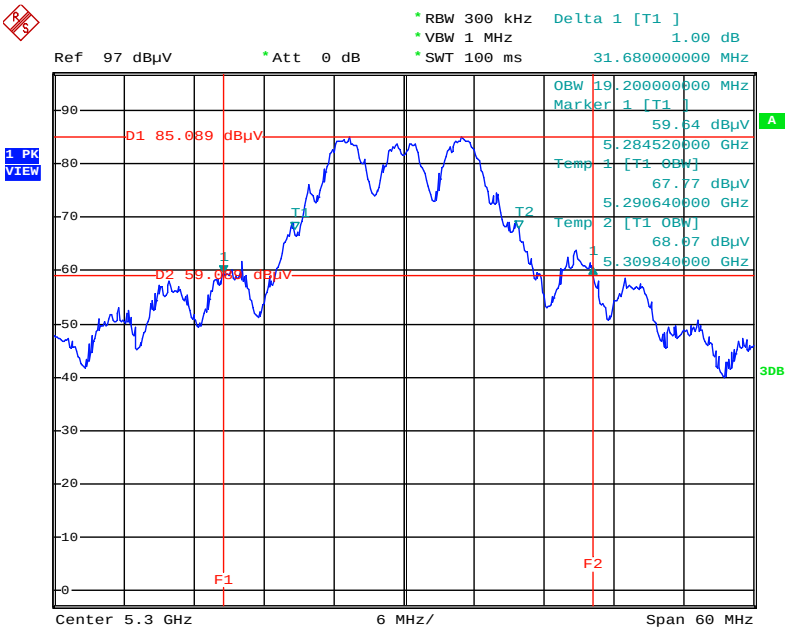
Date: 27.MAR.2015 22:57:15

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5260 MHz



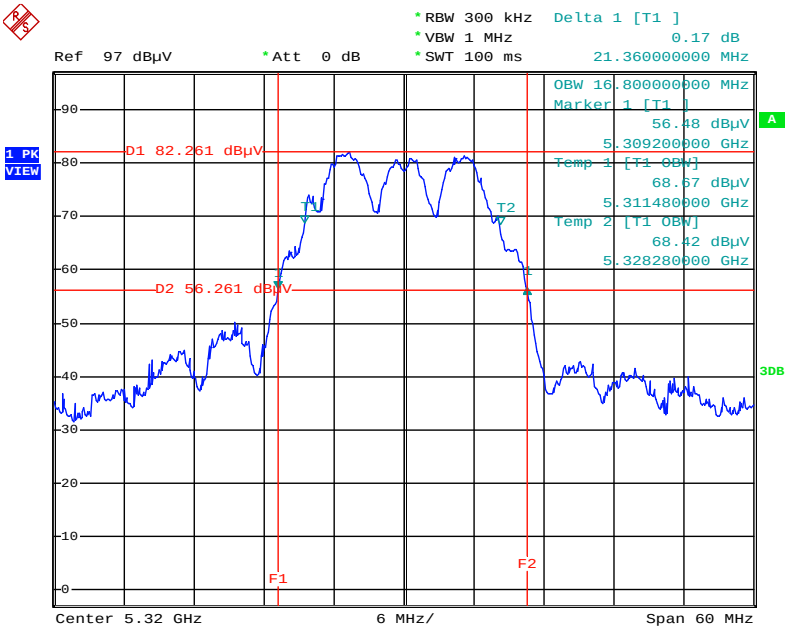
Date: 27.MAR.2015 22:57:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5300 MHz



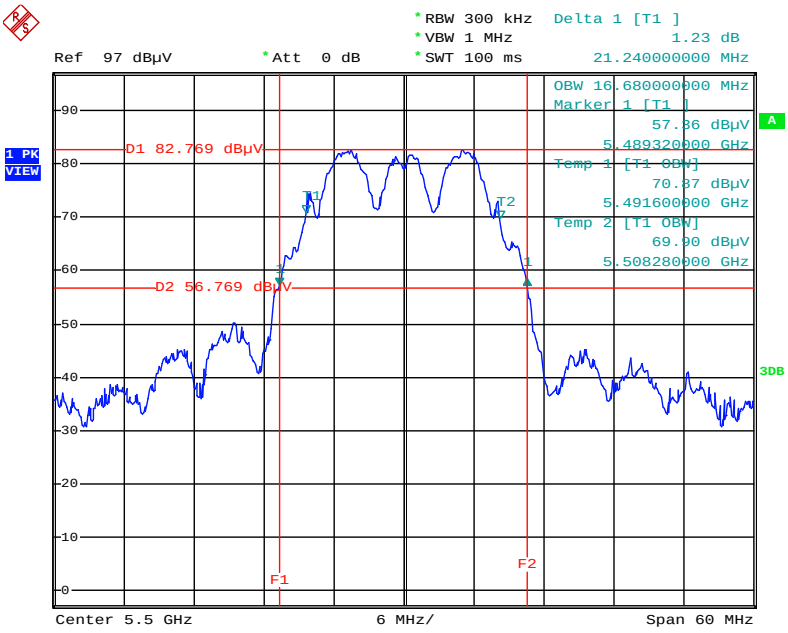
Date: 27.MAR.2015 22:58:42

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5320 MHz



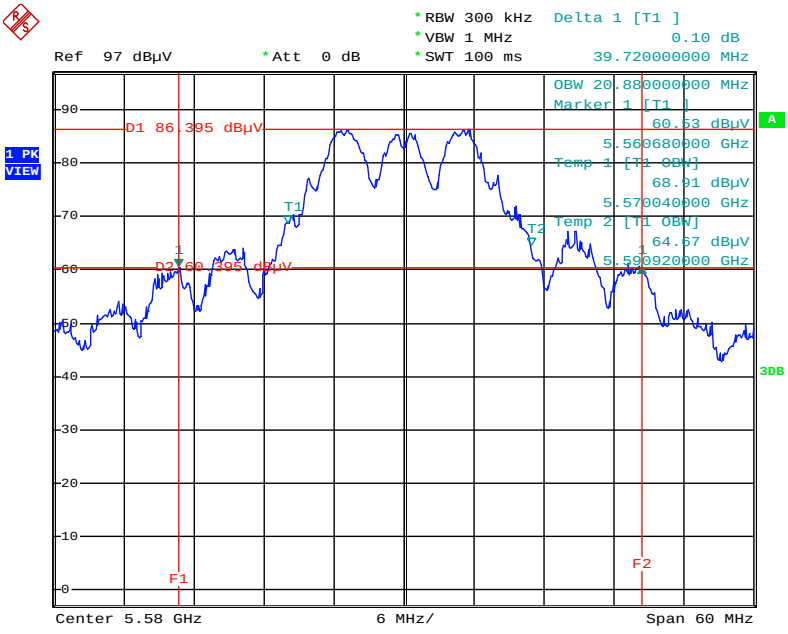
Date: 27.MAR.2015 22:59:22

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5500 MHz



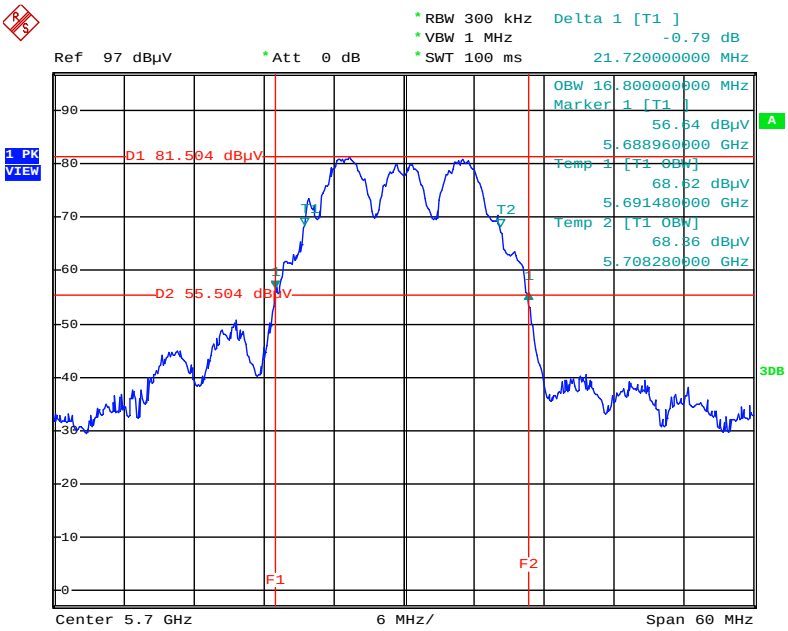
Date: 27.MAR.2015 22:59:54

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5580 MHz



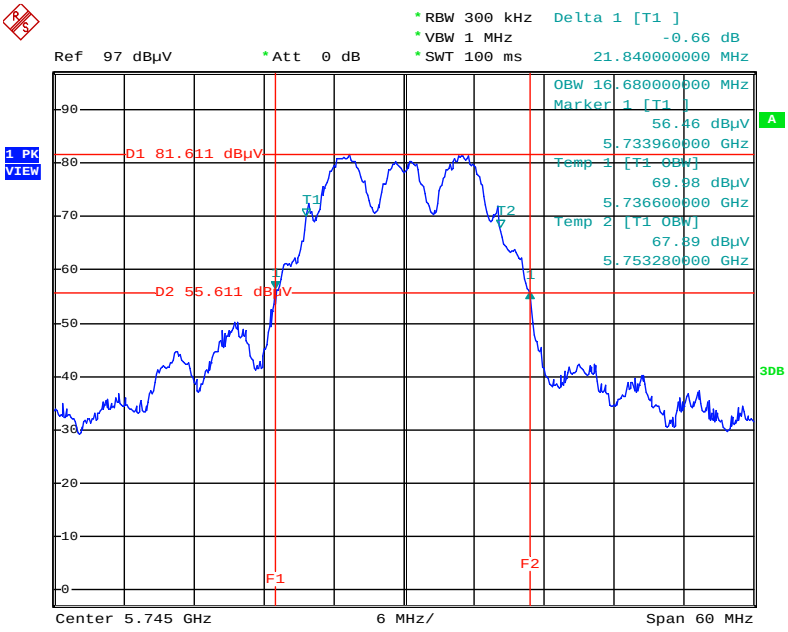
Date: 27.MAR.2015 23:00:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5700 MHz



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

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



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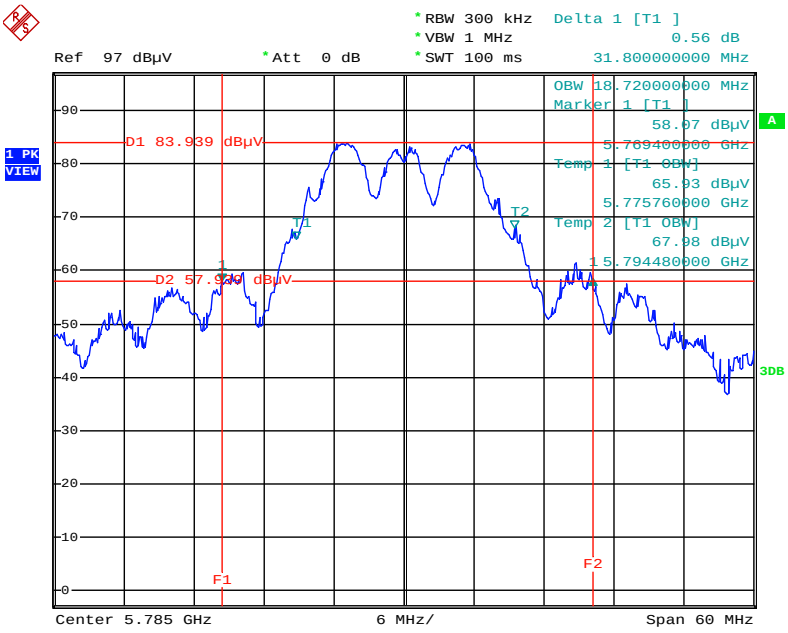
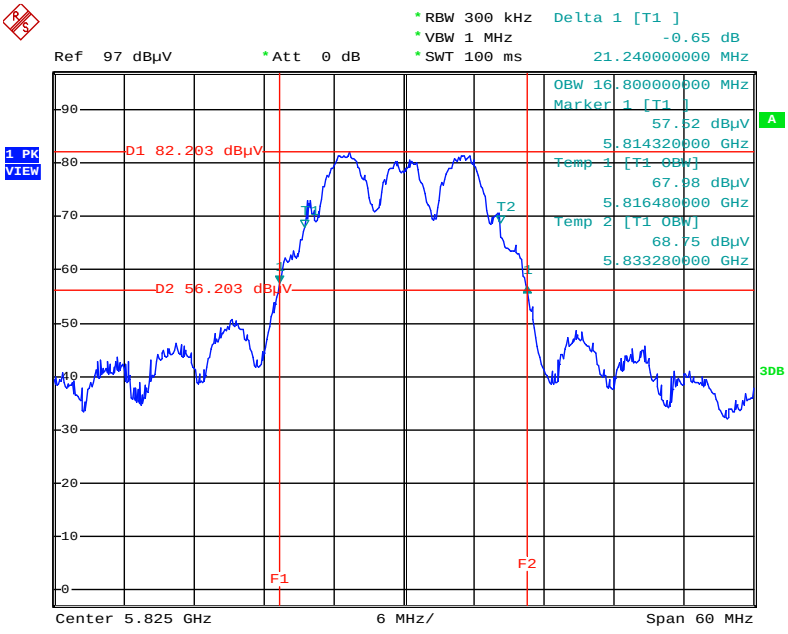
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5785 MHz



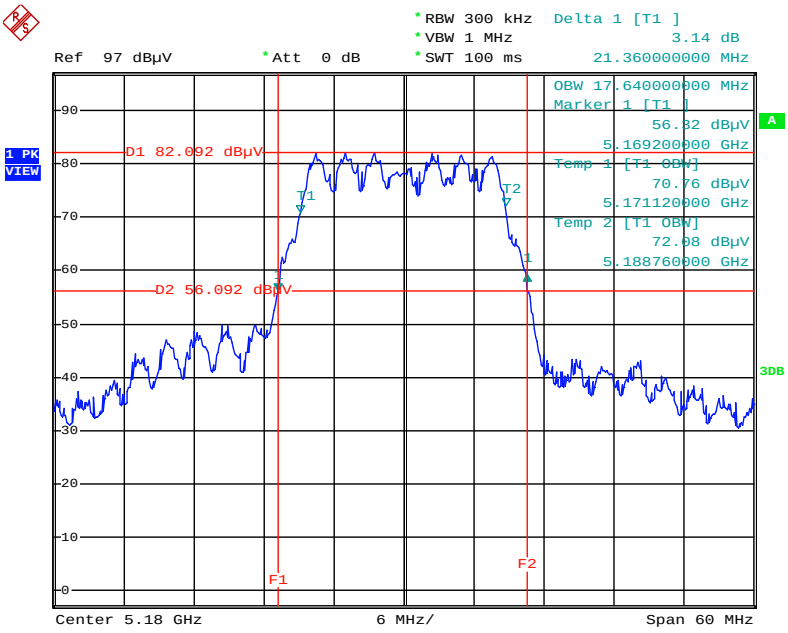
Date: 27.MAR.2015 23:02:46

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



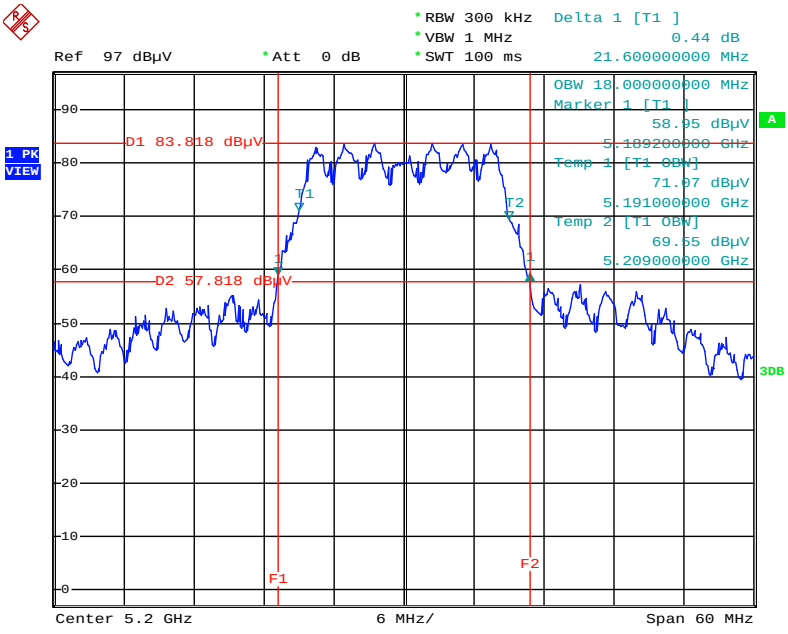
Date: 27.MAR.2015 23:03:25

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



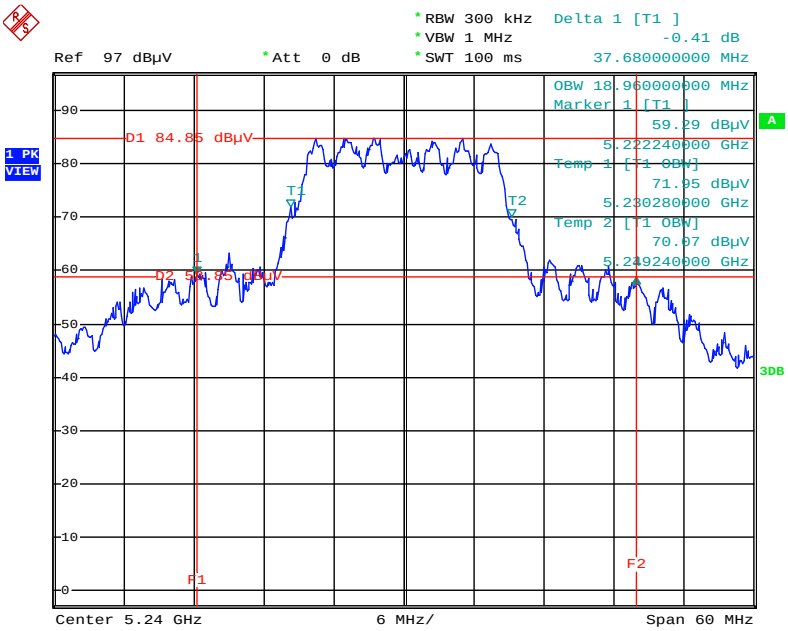
Date: 27.MAR.2015 23:15:27

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



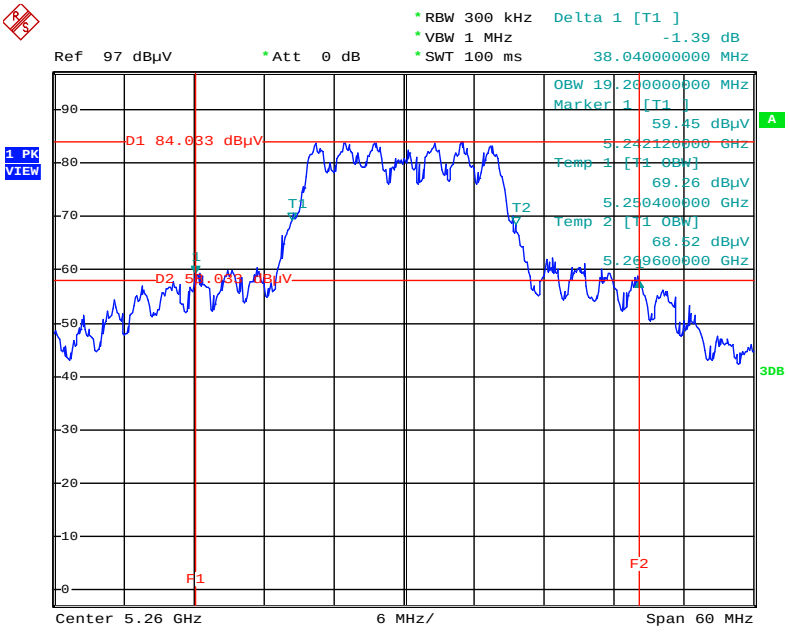
Date: 27.MAR.2015 23:16:03

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



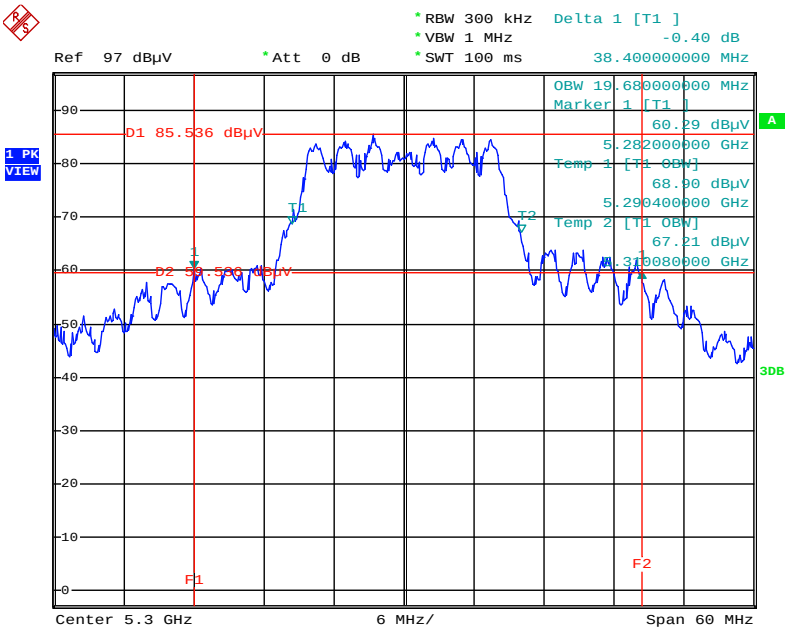
Date: 27.MAR.2015 23:16:39

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2/ 5260 MHz



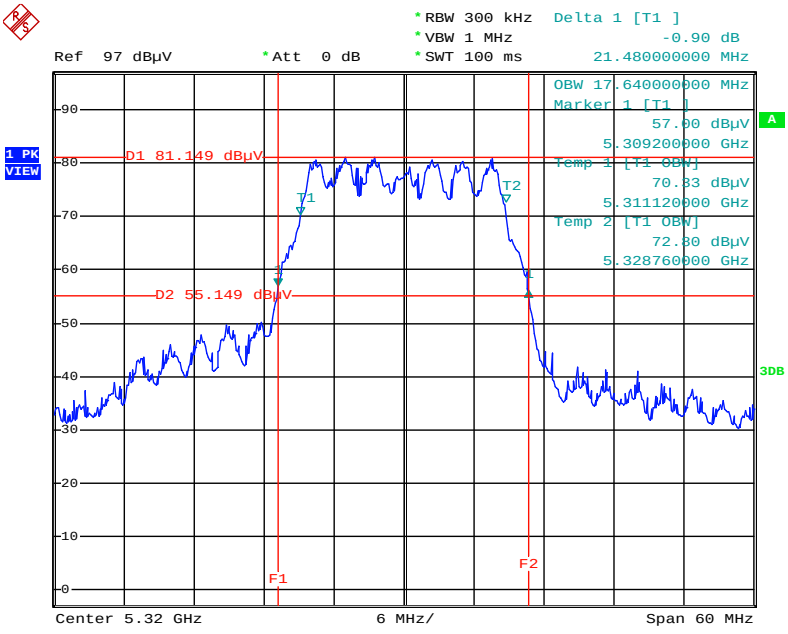
Date: 27.MAR.2015 23:17:17

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + / 5300 MHz



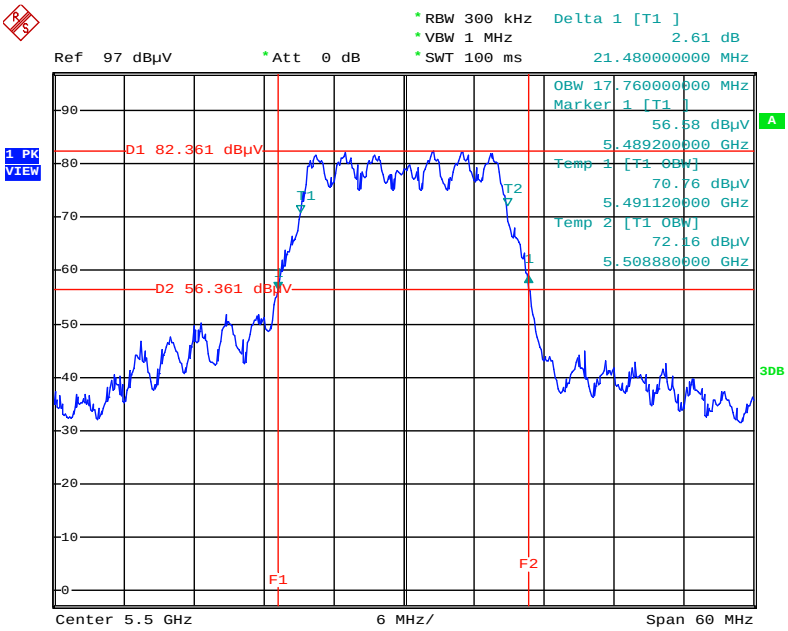
Date: 27.MAR.2015 23:17:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5320 MHz



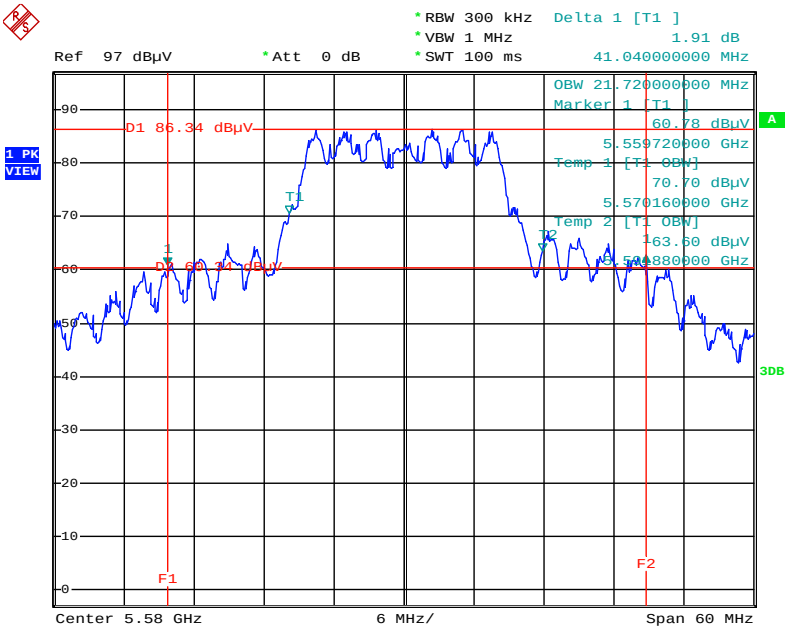
Date: 27.MAR.2015 23:18:41

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5500 MHz



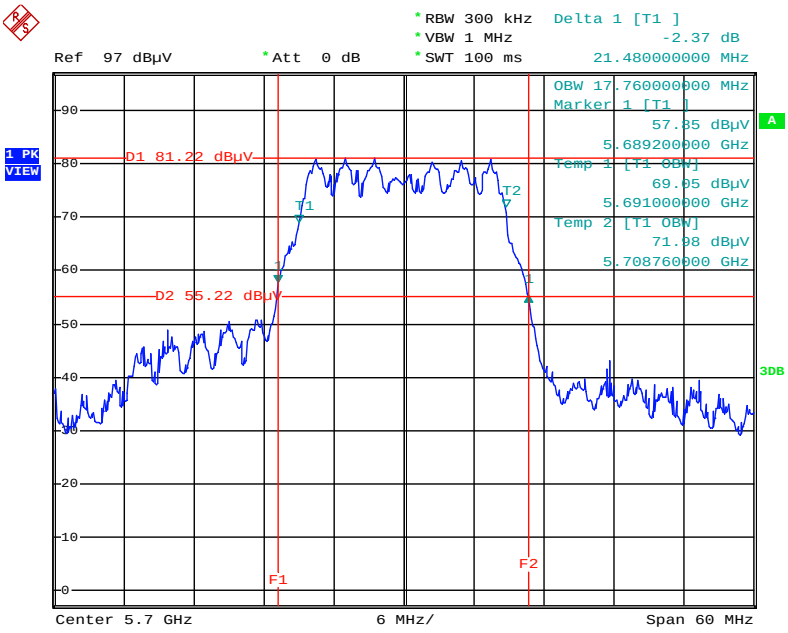
Date: 27.MAR.2015 23:18:59

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5580 MHz



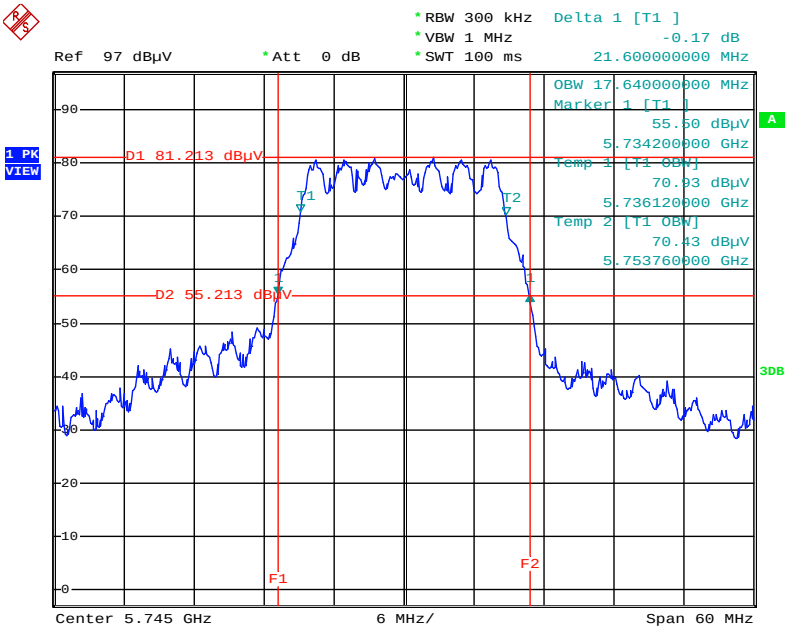
Date: 27.MAR.2015 23:19:27

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5700 MHz



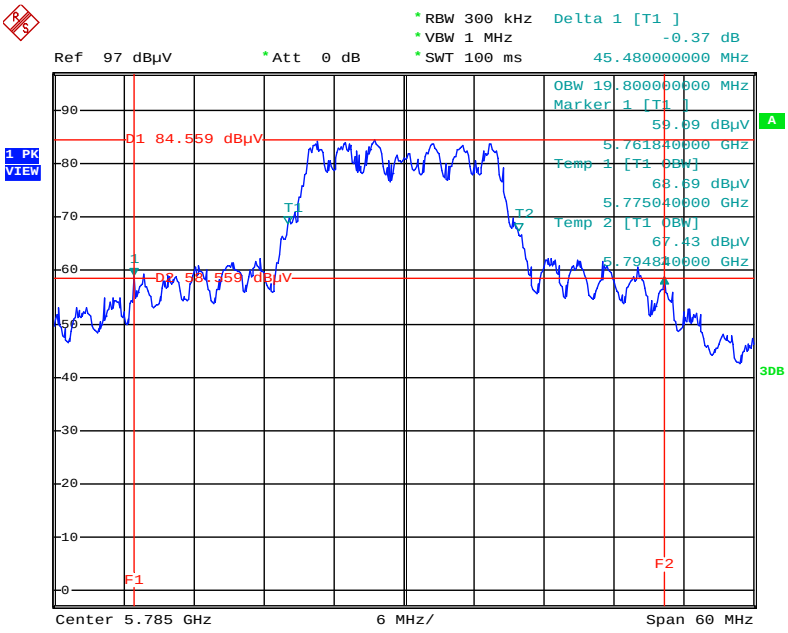
Date: 27.MAR.2015 23:19:57

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



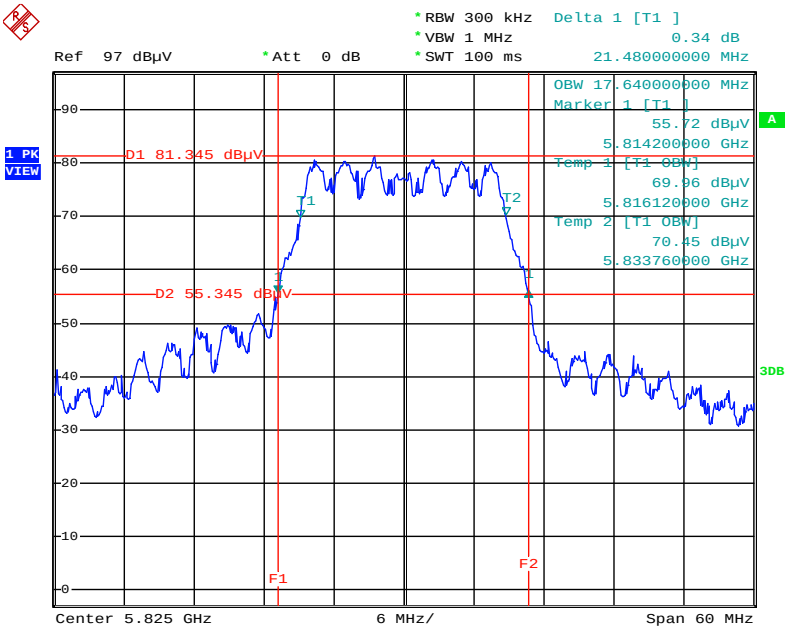
Date: 27.MAR.2015 23:20:24

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



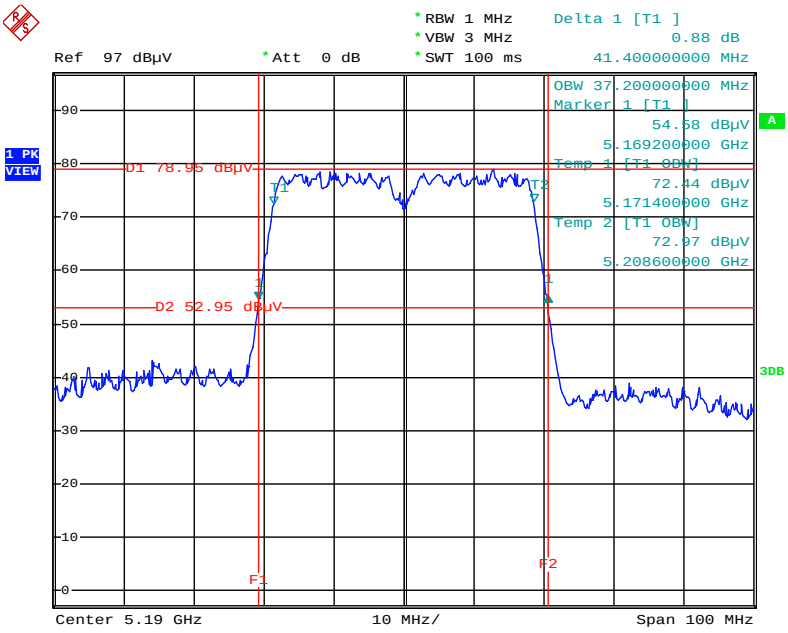
Date: 27.MAR.2015 23:21:01

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



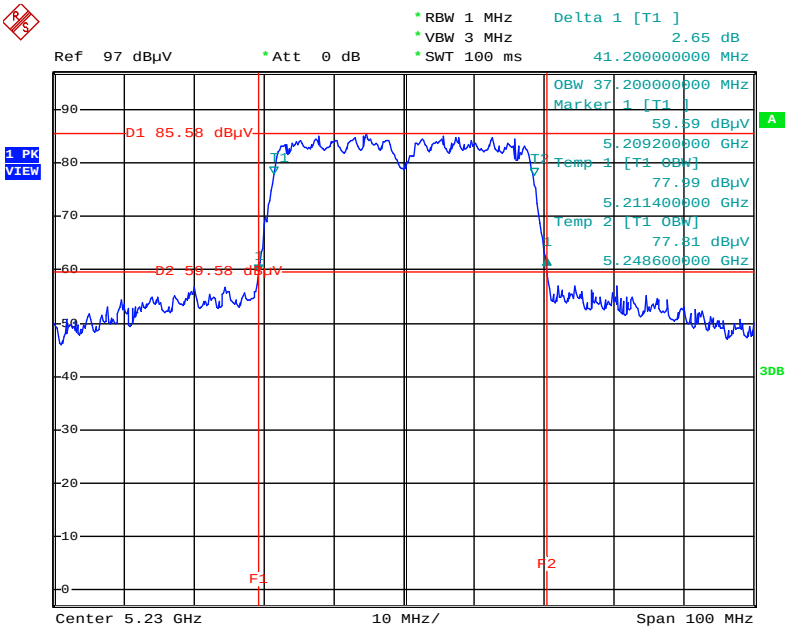
Date: 27.MAR.2015 23:21:45

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



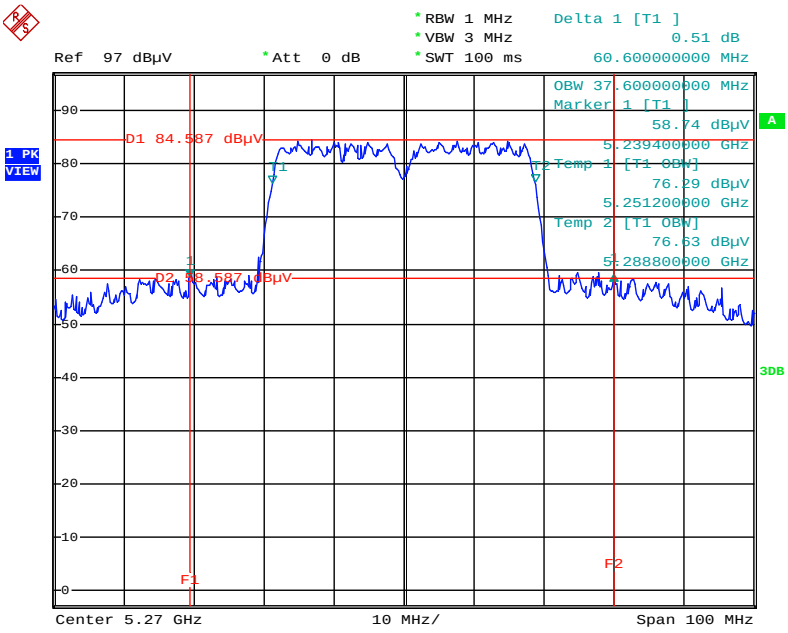
Date: 27.MAR.2015 23:28:14

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



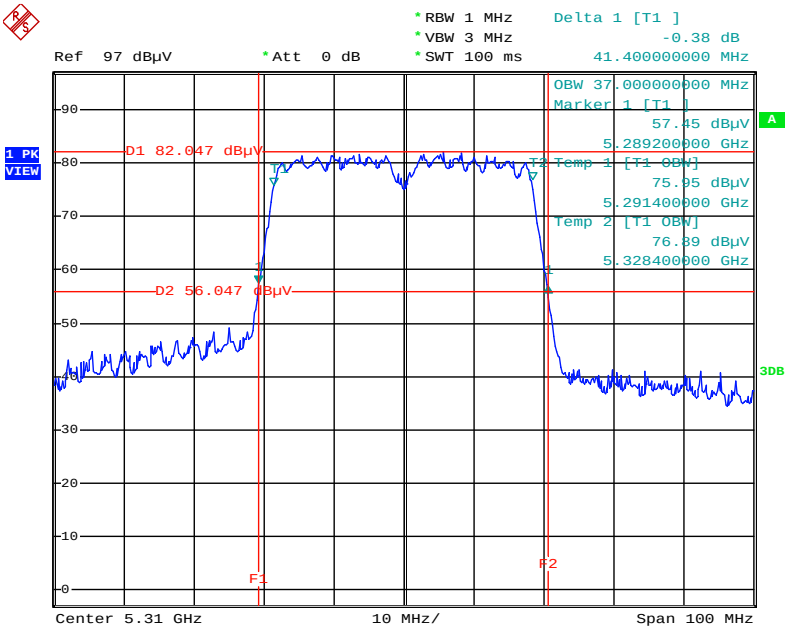
Date: 27.MAR.2015 23:28:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5270 MHz



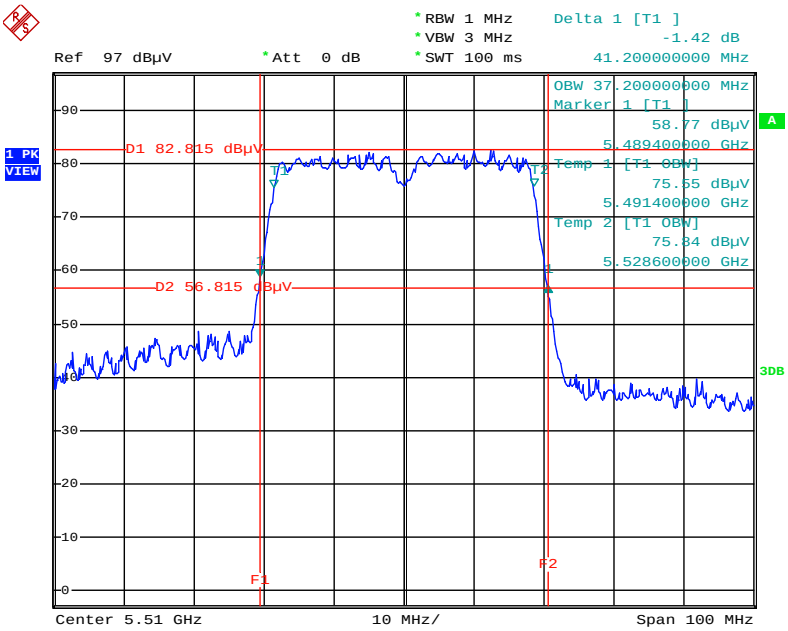
Date: 27.MAR.2015 23:29:17

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5310 MHz



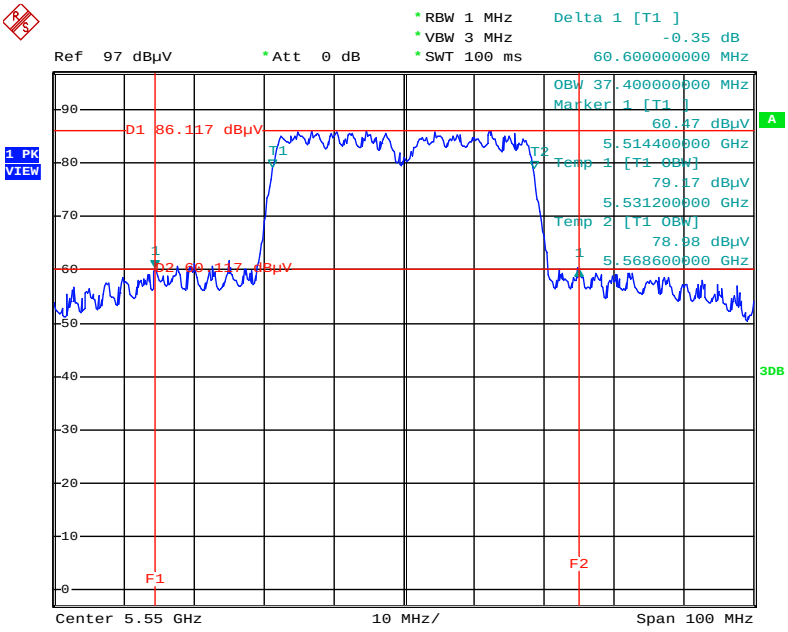
Date: 27.MAR.2015 23:29:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5510 MHz



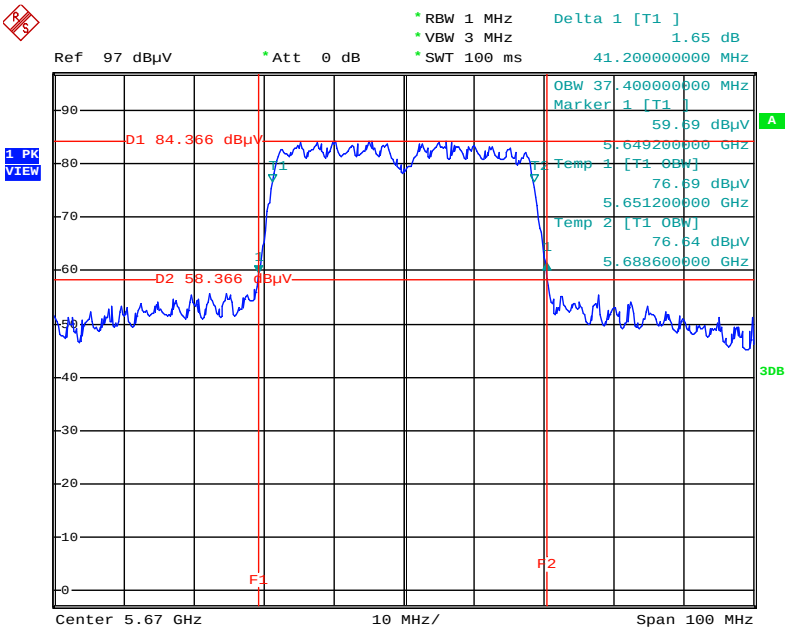
Date: 27.MAR.2015 23:30:16

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5550 MHz



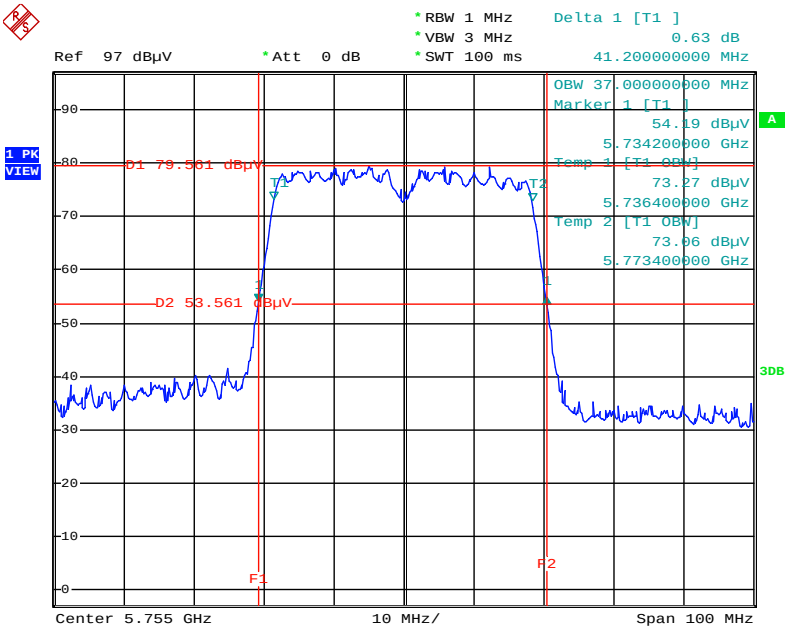
Date: 27.MAR.2015 23:30:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5670 MHz



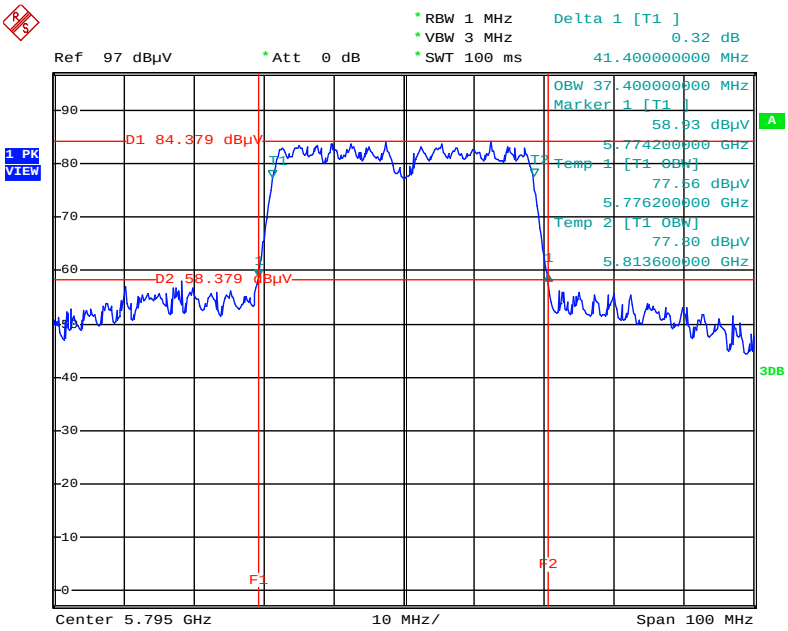
Date: 27.MAR.2015 23:32:31

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



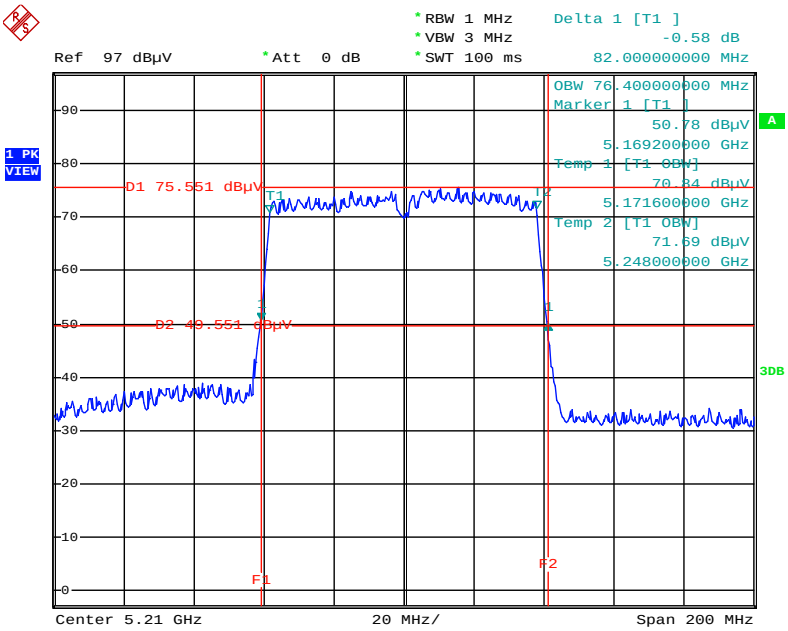
Date: 27.MAR.2015 23:33:13

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



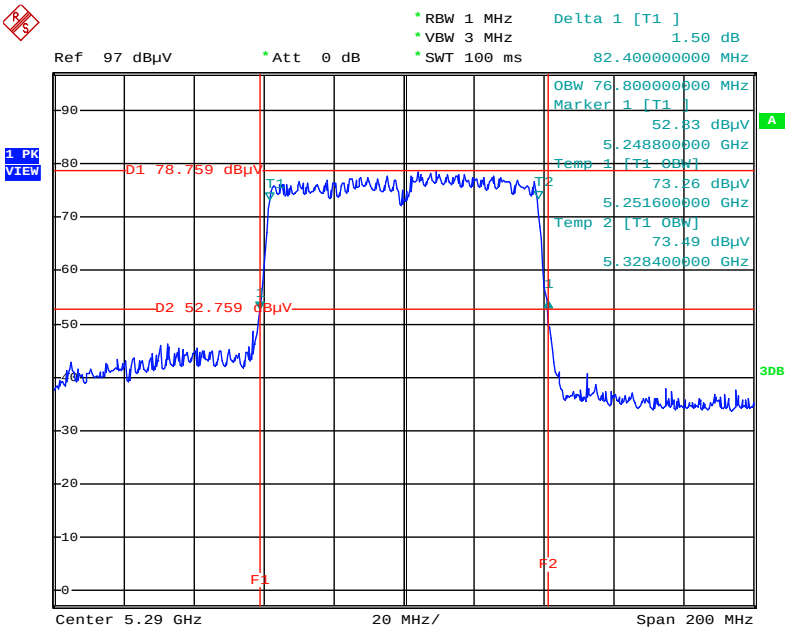
Date: 27.MAR.2015 23:33:44

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



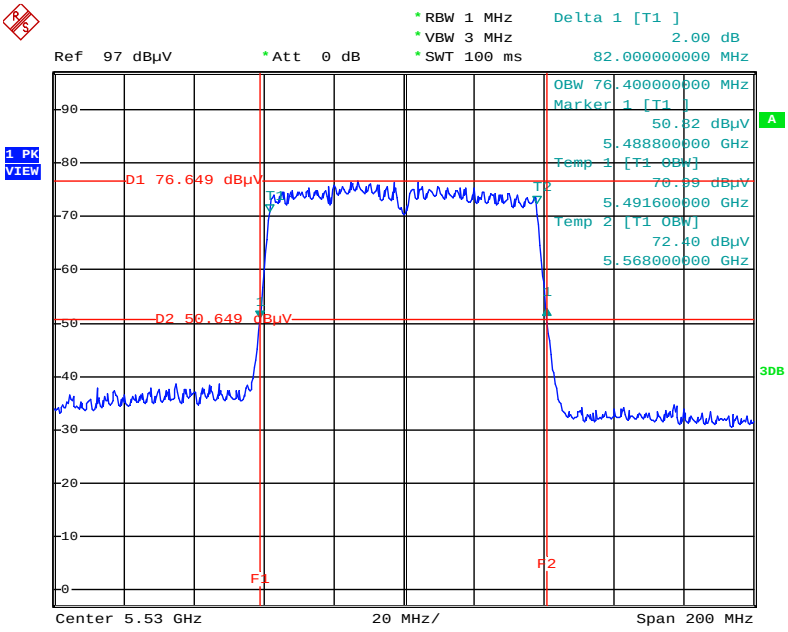
Date: 27.MAR.2015 23:41:55

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5290 MHz



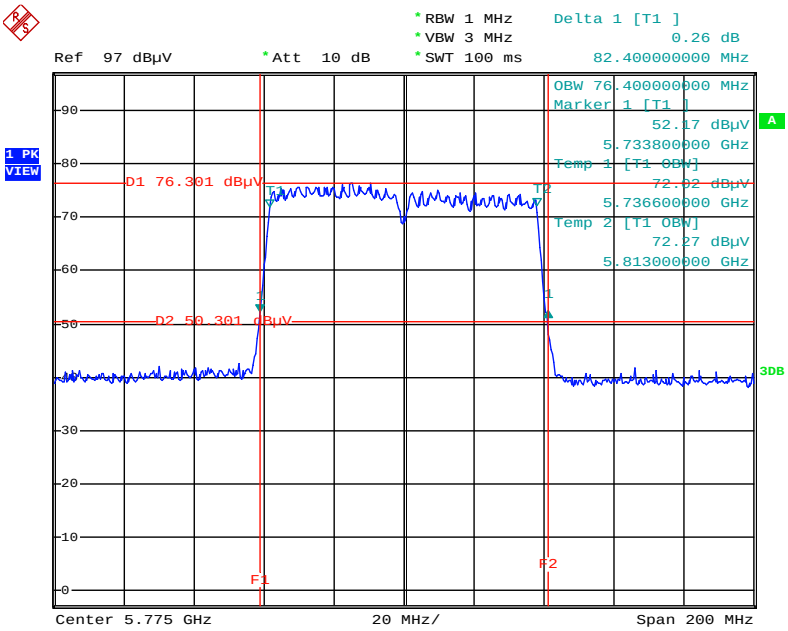
Date: 27.MAR.2015 23:42:30

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5530 MHz



Date: 27.MAR.2015 23:43:11

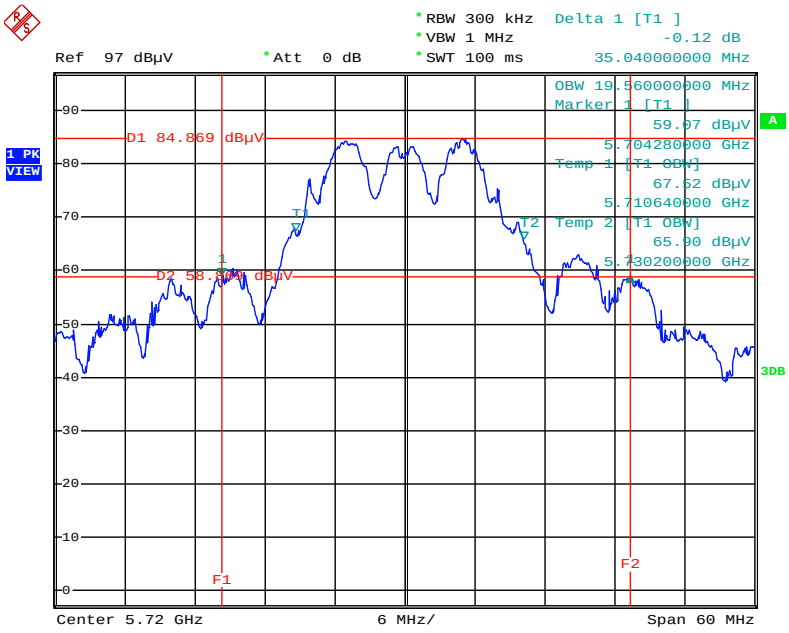
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5775 MHz



Date: 27.MAR.2015 23:45:20

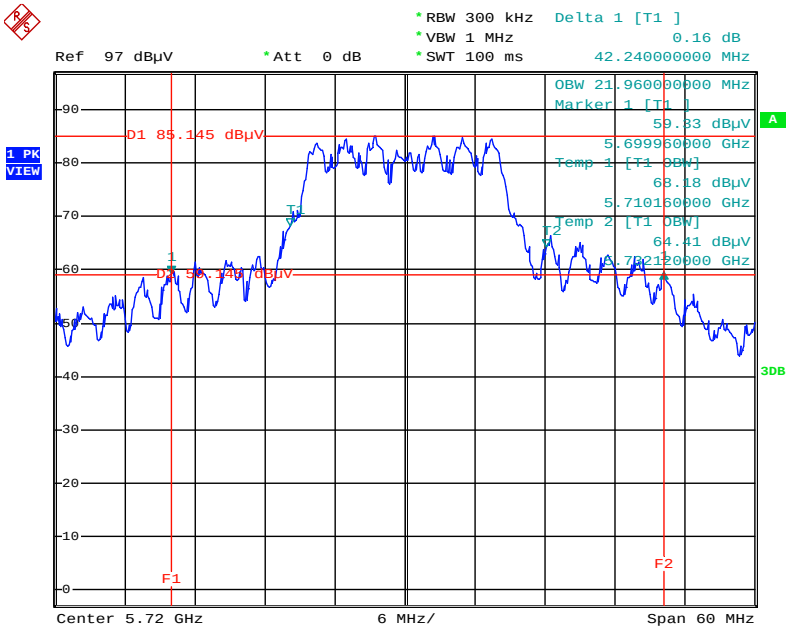
Straddle Channel

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5720 MHz



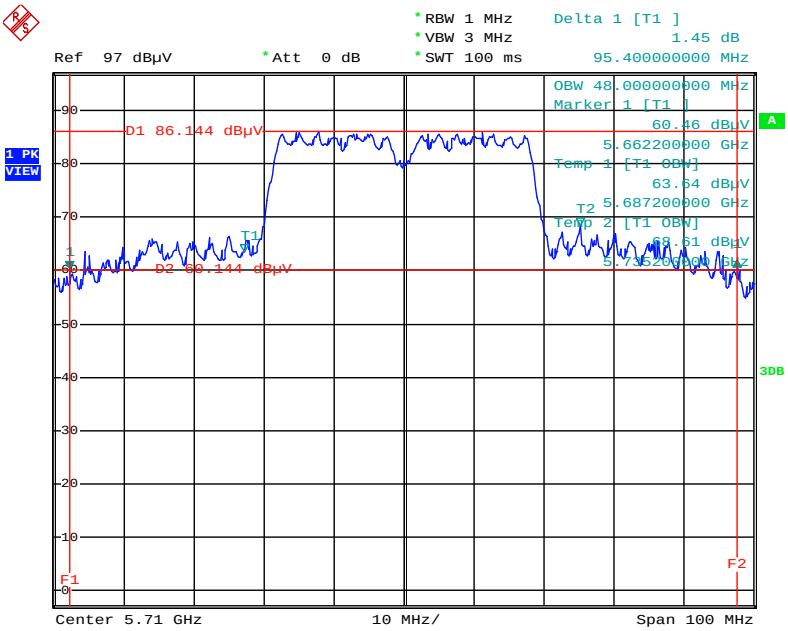
Date: 27.MAR.2015 23:04:44

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5720 MHz



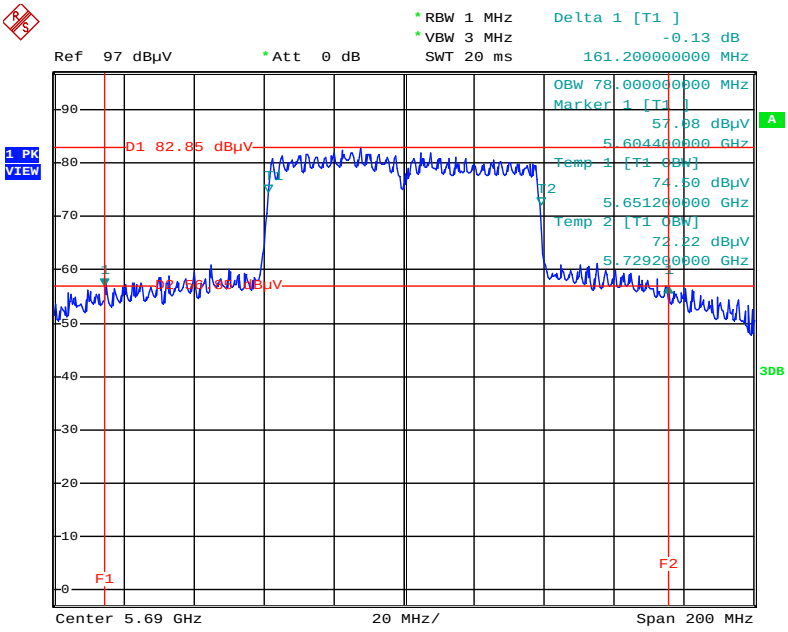
Date: 27.MAR.2015 23:23:03

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5710 MHz



Date: 27.MAR.2015 23:35:03

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5690 MHz



Date: 27.MAR.2015 23:48:11

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

Temperature	20°C	Humidity	51%
Test Engineer	Nick Peng		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	12.56	500	Complies
	5785 MHz	12.48	500	Complies
	5825 MHz	12.56	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	16.32	500	Complies
	5785 MHz	15.84	500	Complies
	5825 MHz	16.08	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.04	500	Complies
	5795 MHz	35.84	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	74.00	500	Complies

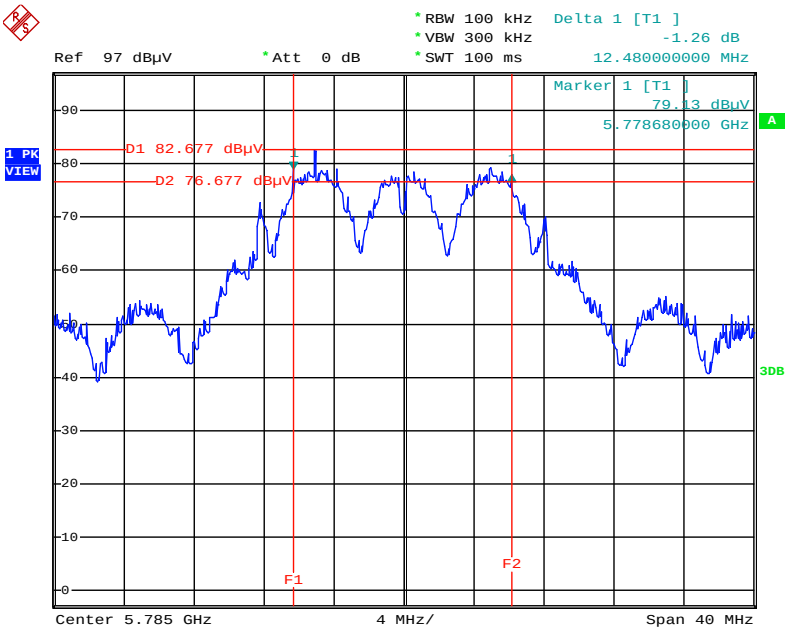
Straddle Channel

Mode	Frequency	6dB BW (MHz)	6dB BW F2 (MHz)	UNII 3 BW (MHz)	Min. Limit (kHz)	Test Result
802.11a	5720 MHz	12.96	5726.56	1.56	500	Complies
802.11ac MCS0/Nss1 VHT20	5720 MHz	16.32	5728.08	3.08	500	Complies
802.11ac MCS0/Nss1 VHT40	5710 MHz	35.84	5727.92	2.92	500	Complies
802.11ac MCS0/Nss1 VHT80	5690 MHz	74.00	5811.40	86.40	500	Complies

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

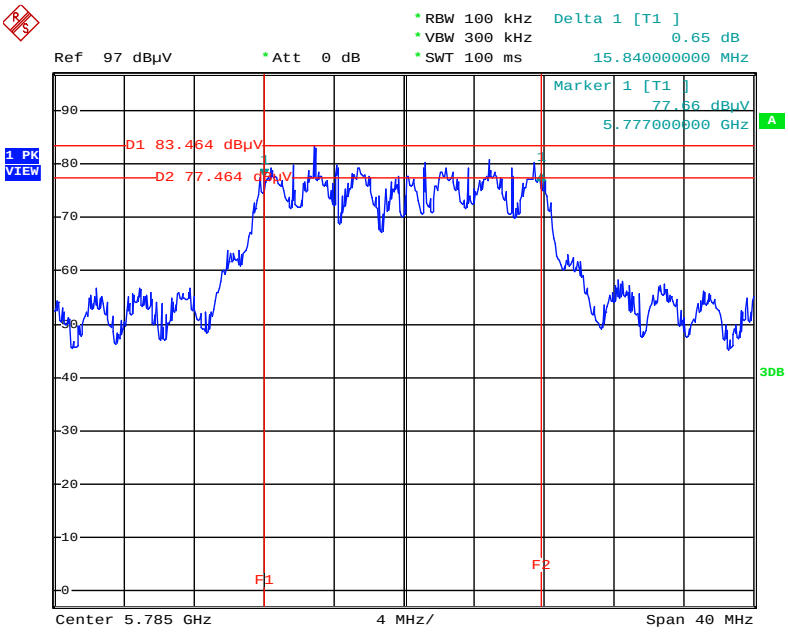
For plots, only the channel with worse result was shown.

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



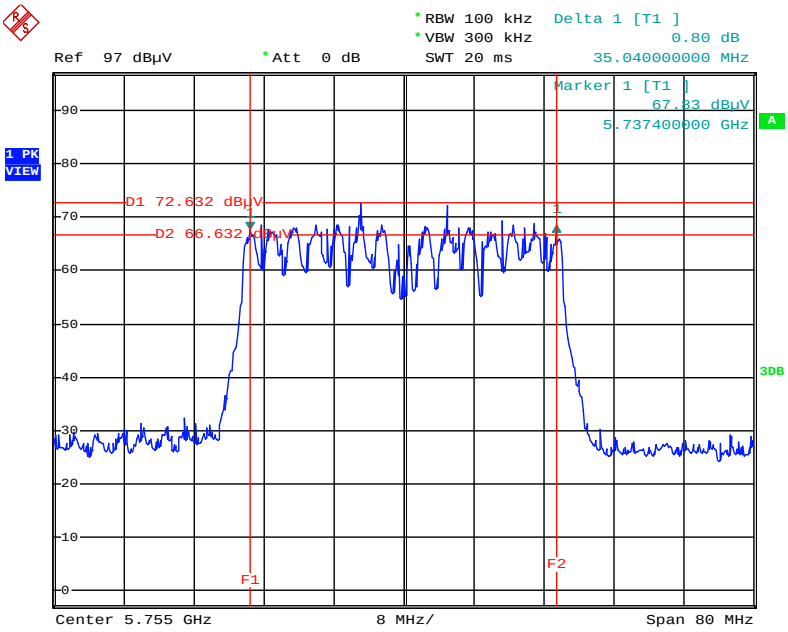
Date: 27.MAR.2015 23:13:58

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



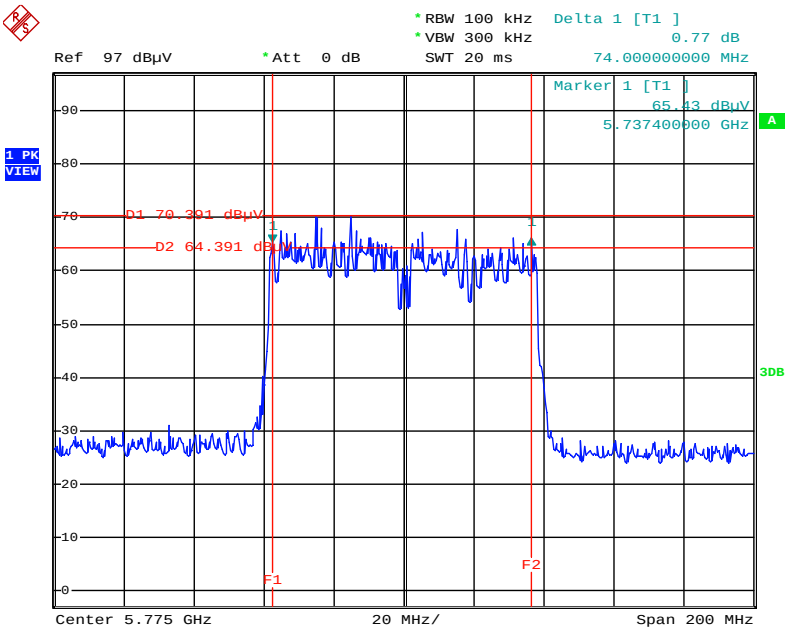
Date: 27.MAR.2015 23:26:40

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



Date: 27.MAR.2015 23:38:58

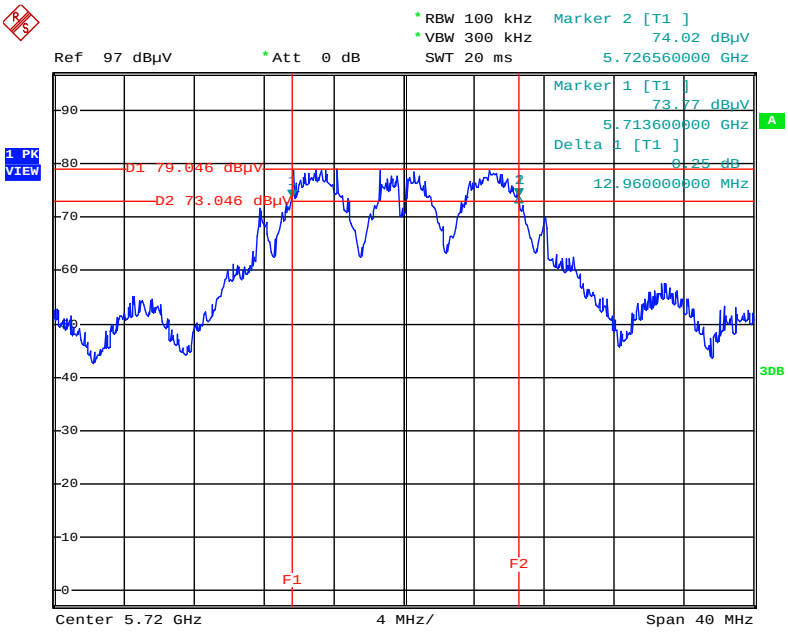
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5775 MHz



Date: 27.MAR.2015 23:45:47

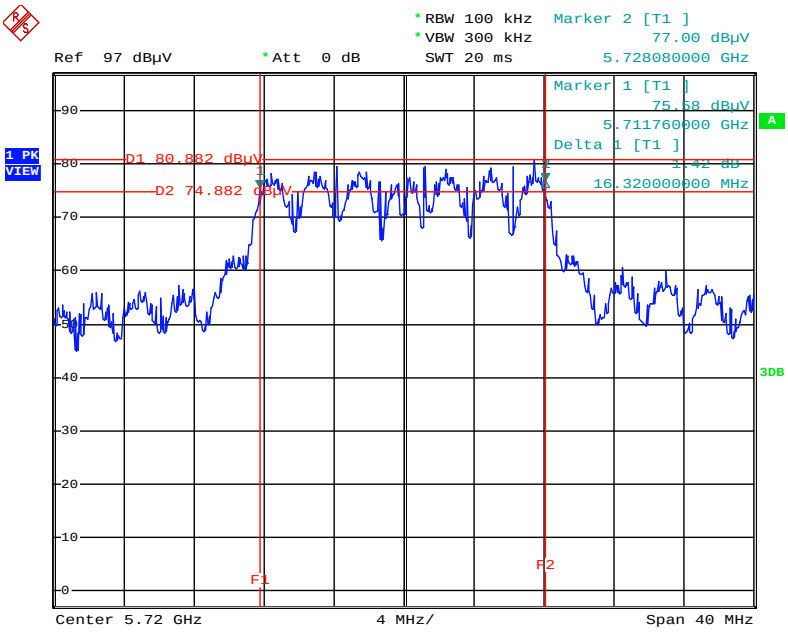
Straddle Channel

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5720 MHz



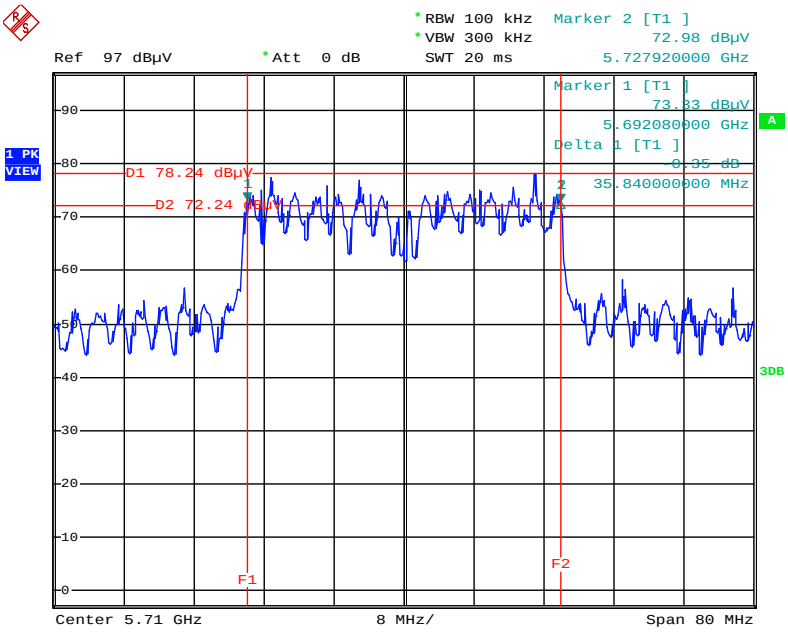
Date: 27.MAR.2015 23:11:34

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5720 MHz



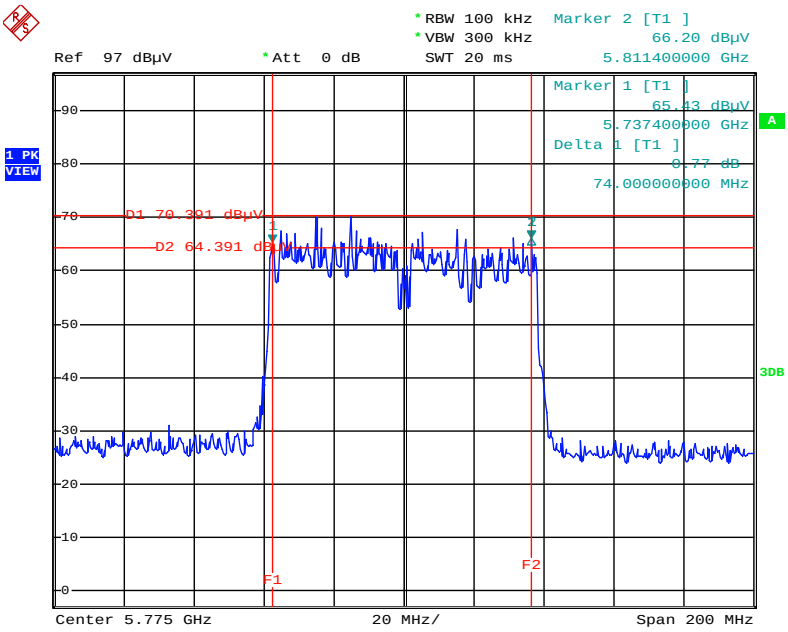
Date: 27.MAR.2015 23:25:09

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5710 MHz



Date: 27.MAR.2015 23:37:33

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5690 MHz



Date: 27.MAR.2015 23:47:16

4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

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

☒	5.25-5.35 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	
☒	5.725~5.85 GHz	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

4.4.2. Measuring Instruments and Setting

For other channel:

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

For straddle channel:

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 count 100
Sweep Time	Auto

4.4.3. Test Procedures

For other channel:

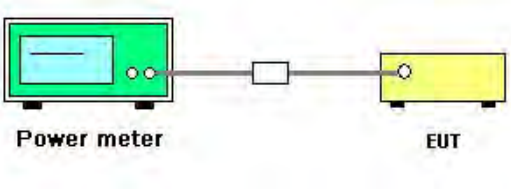
1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (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.

For straddle channel:

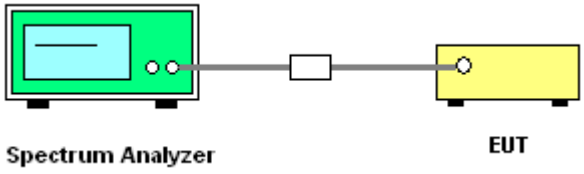
1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with FCC Public Notice DA 02-2138, August 30, 2002.

4.4.4. Test Setup Layout

For other channel:



For straddle channel:



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Maximum Conducted Output Power

Temperature	20°C	Humidity	51%
Test Engineer	Nick Peng	Test Date	Mar. 27, 2015 ~ Mar. 28, 2015

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11a	5180 MHz	16.15	15.77	18.97	24.00	Complies
	5200 MHz	18.45	18.89	21.69	24.00	Complies
	5240 MHz	18.52	18.88	21.71	24.00	Complies
	5260 MHz	18.59	18.85	21.73	24.00	Complies
	5300 MHz	18.54	18.87	21.72	24.00	Complies
	5320 MHz	15.15	15.93	18.57	24.00	Complies
	5500 MHz	15.22	15.36	18.30	24.00	Complies
	5580 MHz	19.14	19.29	22.23	24.00	Complies
	5700 MHz	13.49	14.36	16.96	24.00	Complies
	5745 MHz	14.25	14.02	17.15	30.00	Complies
	5785 MHz	17.05	16.76	19.92	30.00	Complies
	5825 MHz	14.67	14.61	17.65	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	15.58	16.27	18.95	24.00	Complies
	5200 MHz	17.30	17.62	20.47	24.00	Complies
	5240 MHz	18.31	18.94	21.65	24.00	Complies
	5260 MHz	18.49	18.93	21.73	24.00	Complies
	5300 MHz	18.61	19.03	21.84	24.00	Complies
	5320 MHz	15.15	15.59	18.39	24.00	Complies
	5500 MHz	15.55	15.74	18.66	24.00	Complies
	5580 MHz	18.66	18.84	21.76	24.00	Complies
	5700 MHz	14.22	14.58	17.41	24.00	Complies
	5745 MHz	14.06	13.96	17.02	30.00	Complies
	5785 MHz	16.03	17.78	20.00	30.00	Complies
	5825 MHz	14.31	14.11	17.22	30.00	Complies

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11ac MCS0/Nss1 VHT40	5190 MHz	10.66	11.39	14.05	24.00	Complies
	5230 MHz	16.65	17.14	19.91	24.00	Complies
	5270 MHz	17.26	17.57	20.43	24.00	Complies
	5310 MHz	13.88	14.52	17.22	24.00	Complies
	5510 MHz	12.81	13.46	16.16	24.00	Complies
	5550 MHz	17.02	17.05	20.05	24.00	Complies
	5670 MHz	16.27	16.31	19.30	24.00	Complies
	5755 MHz	10.49	8.98	12.81	30.00	Complies
	5795 MHz	15.98	15.92	18.96	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	9.78	10.25	13.03	24.00	Complies
	5290 MHz	13.41	13.82	16.63	24.00	Complies
	5530 MHz	9.65	10.78	13.26	24.00	Complies
	5775 MHz	11.08	10.74	13.92	30.00	Complies

Straddle Channel

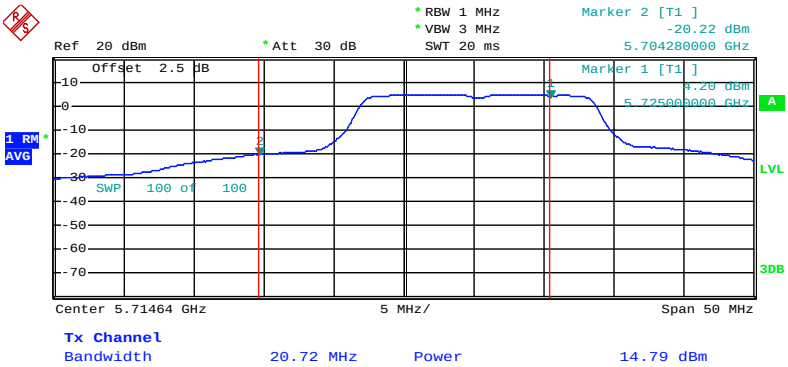
Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11a	5720 MHz (UNII 2C)	14.79	14.57	17.73	24.00	Complies
	5720 MHz (UNII 3)	8.01	8.33	11.23	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5720 MHz (UNII 2C)	14.98	14.90	18.05	24.00	Complies
	5720 MHz (UNII 3)	9.02	8.66	11.95	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5710 MHz (UNII 2C)	14.75	15.23	18.10	24.00	Complies
	5710 MHz (UNII 3)	4.59	4.78	7.79	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5690 MHz (UNII 2C)	14.93	14.24	17.82	24.00	Complies
	5690 MHz (UNII 3)	0.70	0.70	3.93	30.00	Complies

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

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

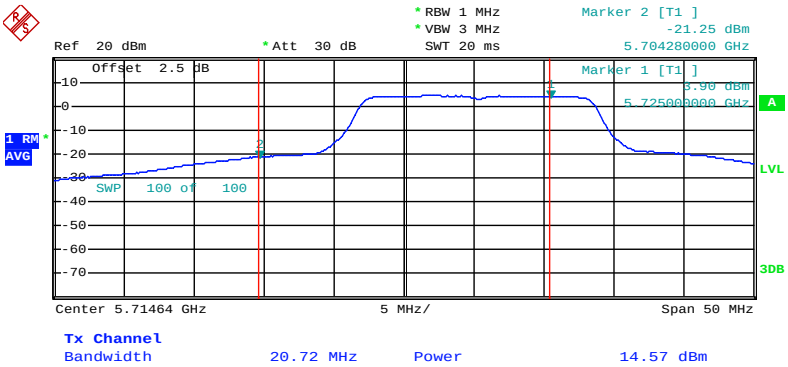
Straddle Channel

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 2C)



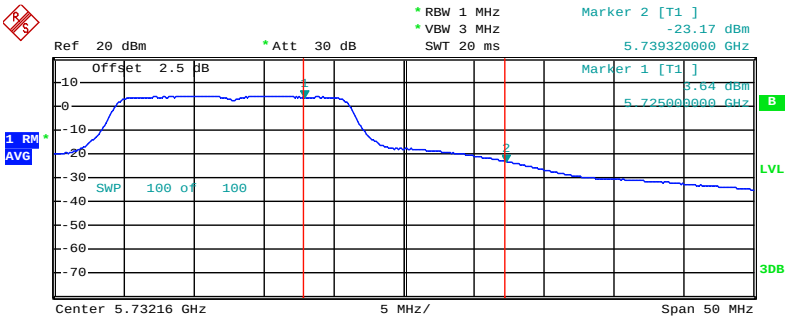
Date: 28.MAR.2015 10:55:31

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz (UNII 2C)



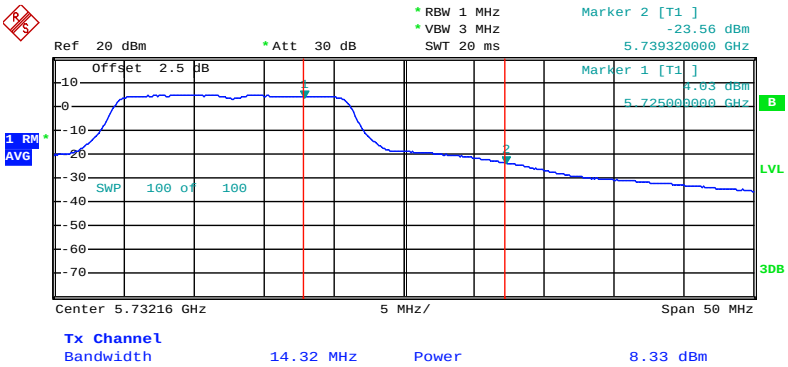
Date: 28.MAR.2015 10:56:19

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5720 MHz (UNII 3)



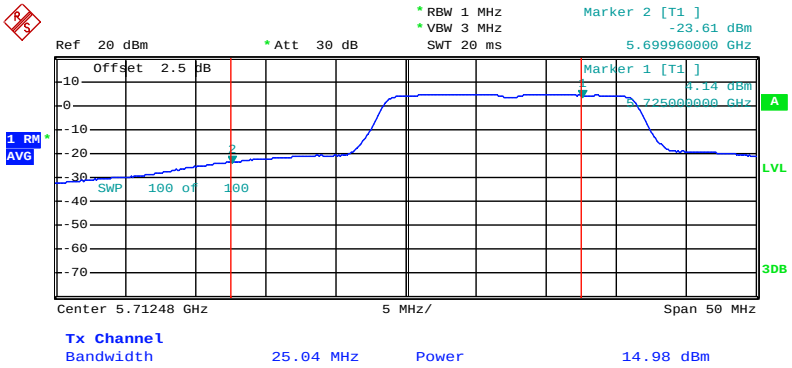
Date: 28.MAR.2015 10:58:47

Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5720 MHz (UNII 3)



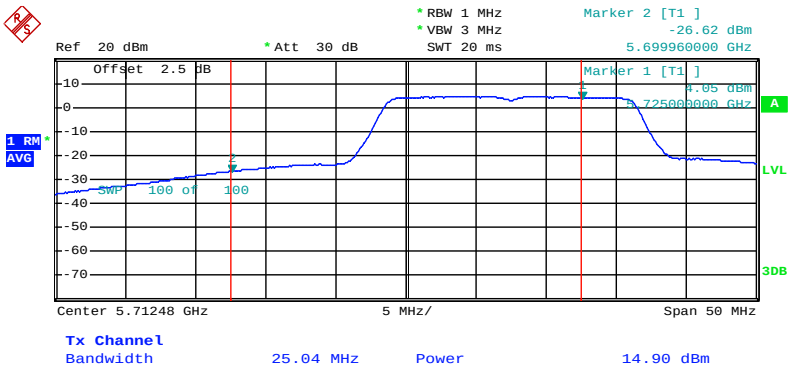
Date: 28.MAR.2015 10:57:24

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 2C)



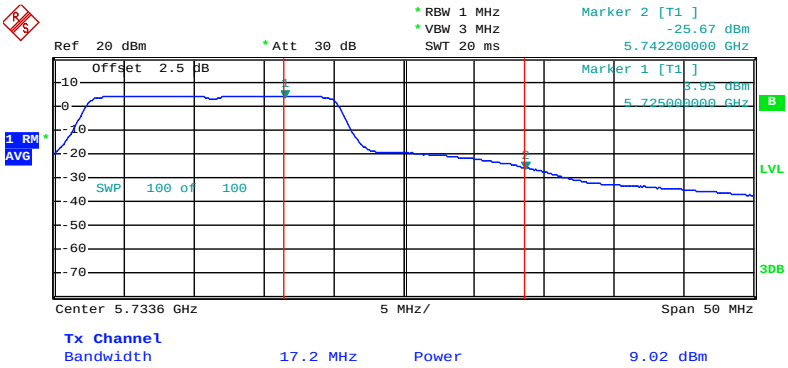
Date: 28.MAR.2015 11:16:07

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz (UNII 2C)



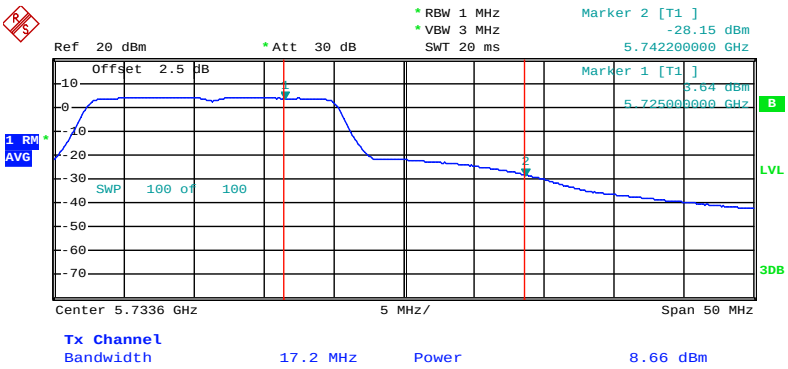
Date: 28.MAR.2015 11:14:43

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5720 MHz (UNII 3)



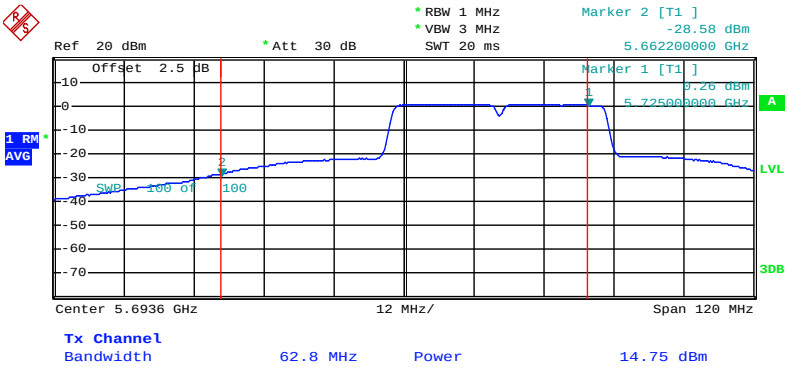
Date: 28.MAR.2015 11:05:56

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5720 MHz (UNII 3)



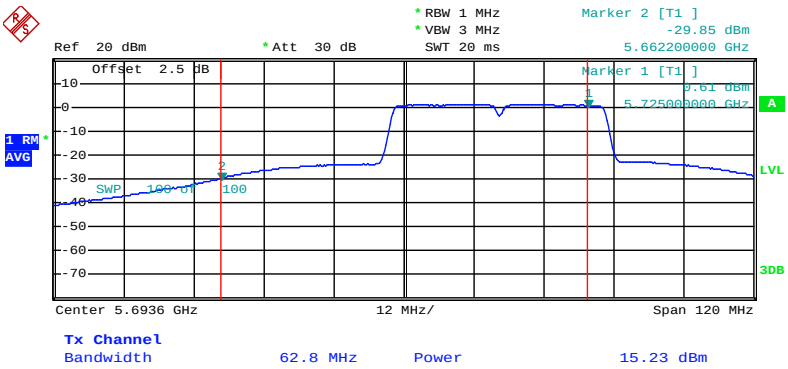
Date: 28.MAR.2015 11:08:29

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 2C)



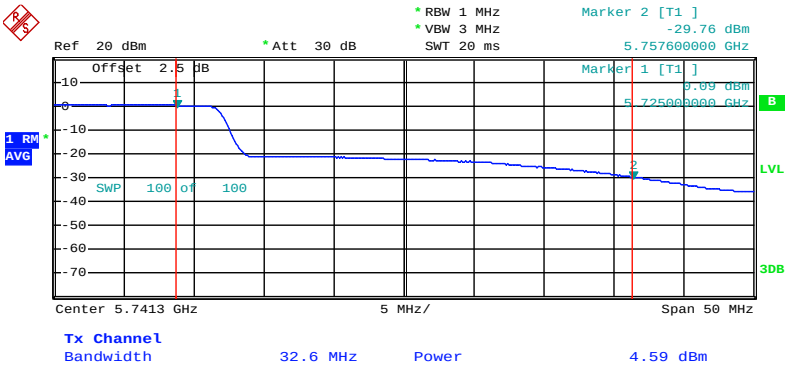
Date: 28.MAR.2015 11:21:06

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 2C)



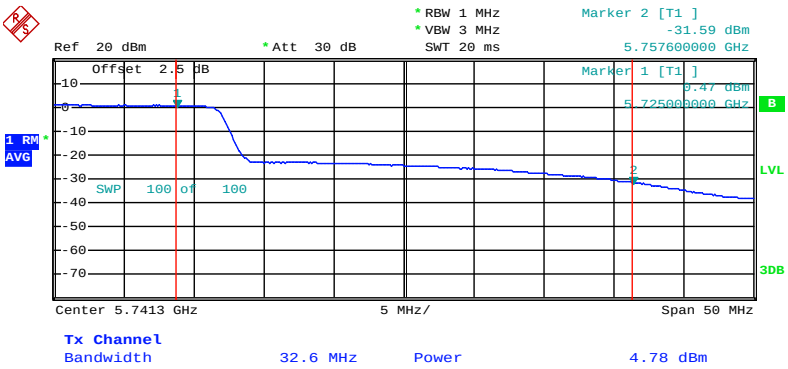
Date: 28.MAR.2015 11:22:16

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5710 MHz (UNII 3)



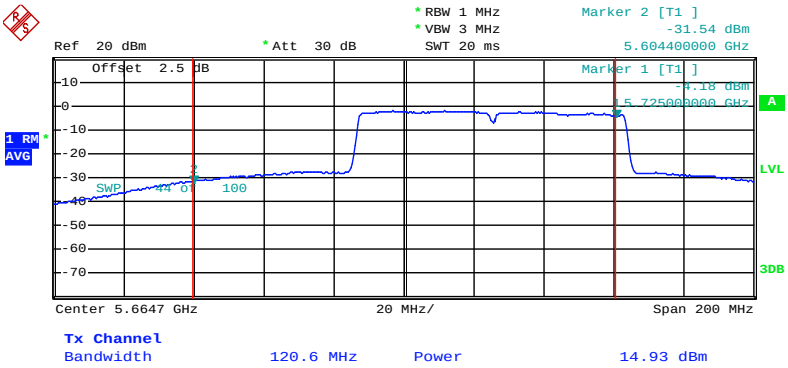
Date: 28.MAR.2015 11:29:17

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5710 MHz (UNII 3)



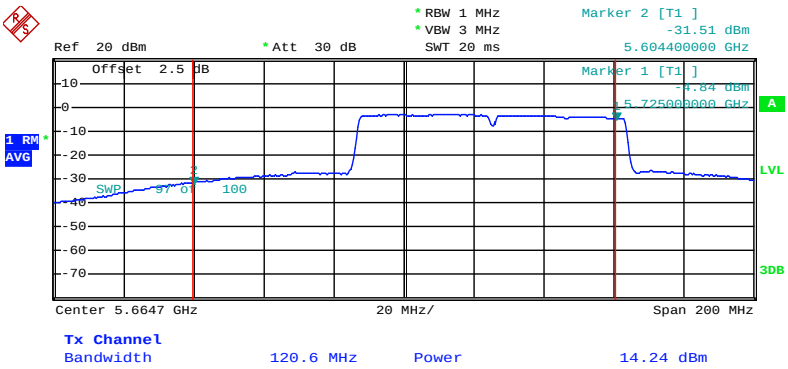
Date: 28.MAR.2015 11:26:09

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 2C)



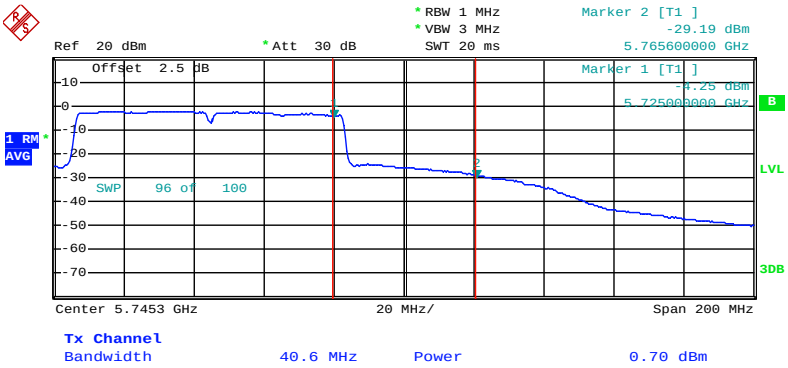
Date: 28.MAR.2015 12:08:49

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 2C)



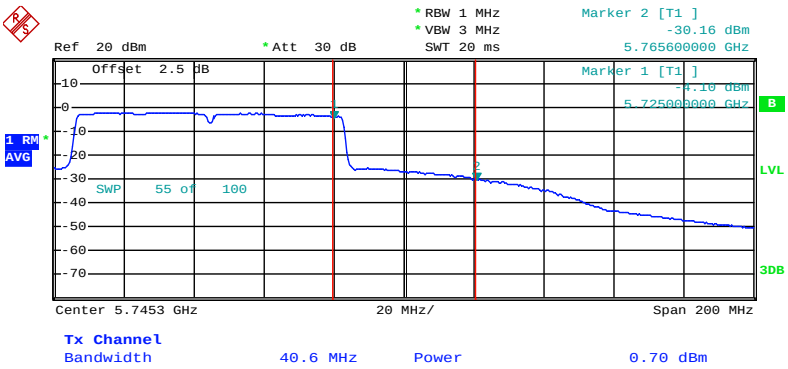
Date: 28.MAR.2015 12:09:48

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 5690 MHz (UNII 3)



Date: 28.MAR.2015 12:00:02

Conducted Output Power Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 2 / 5690 MHz (UNII 3)



Date: 28.MAR.2015 12:05:52

4.5. Power Spectral Density Measurement

4.5.1. Limit

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

Frequency Band			Limit
☒	5.15~5.25 GHz		
	Operating Mode		
	☐	Outdoor access point	17 dBm/MHz
	☐	Indoor access point	17 dBm/MHz
	☐	Fixed point-to-point access points	17 dBm/MHz
	☒	Mobile and portable client devices	11 dBm/MHz
☒	5.25-5.35 GHz		11 dBm/MHz
☒	5.470-5.725 GHz		11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

4.5.2. Measuring Instruments and Setting

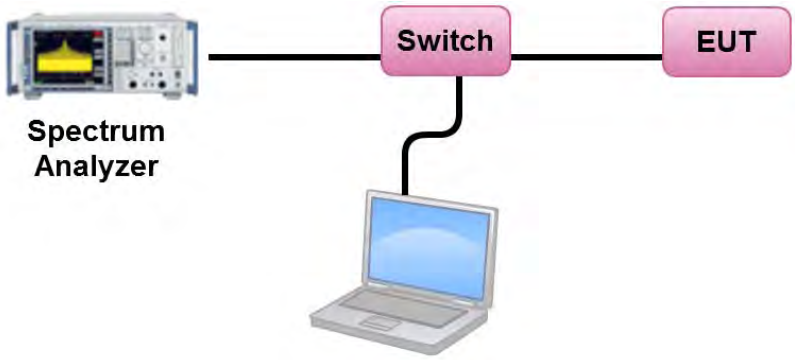
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 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.
5. For 5.725~5.85 GHz, the measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Power Spectral Density

Temperature	20°C	Humidity	51%
Test Engineer	Nick Peng		

Configuration IEEE 802.11a / Chain 1 + Chain 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	5.25	10.02	Complies
40	5200 MHz	6.39	10.02	Complies
48	5240 MHz	6.41	10.02	Complies
52	5260 MHz	6.36	10.02	Complies
60	5300 MHz	5.99	10.02	Complies
64	5320 MHz	4.66	10.02	Complies
100	5500 MHz	4.89	10.02	Complies
116	5580 MHz	8.35	10.02	Complies
140	5700 MHz	4.38	10.02	Complies

Note: $Directiona\,lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 11-(6.98-6)=10.02dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	4.19	-3.01	1.18	29.02	Complies
157	5785 MHz	6.67	-3.01	3.66	29.02	Complies
165	5825 MHz	4.80	-3.01	1.79	29.02	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 30-(6.98-6)=29.02dBm/500MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	4.39	10.02	Complies
40	5200 MHz	6.19	10.02	Complies
48	5240 MHz	6.37	10.02	Complies
52	5260 MHz	6.48	10.02	Complies
60	5300 MHz	5.95	10.02	Complies
64	5320 MHz	4.02	10.02	Complies
100	5500 MHz	4.58	10.02	Complies
116	5580 MHz	8.13	10.02	Complies
140	5700 MHz	4.05	10.02	Complies

Note: $Directiona\,lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 11-(6.98-6)=10.02dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	3.79	-3.01	0.78	29.02	Complies
157	5785 MHz	6.64	-3.01	3.63	29.02	Complies
165	5825 MHz	3.86	-3.01	0.85	29.02	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 30-(6.98-6)=29.02dBm/500MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-3.14	10.02	Complies
46	5230 MHz	2.72	10.02	Complies
54	5270 MHz	3.13	10.02	Complies
62	5310 MHz	-0.30	10.02	Complies
102	5510 MHz	-0.86	10.02	Complies
110	5550 MHz	3.22	10.02	Complies
134	5670 MHz	1.64	10.02	Complies

Note: $Directiona\,lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 11-(6.98-6)=10.02dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	-3.33	-3.01	-6.34	29.02	Complies
159	5795 MHz	1.98	-3.01	-1.03	29.02	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 30-(6.98-6)=29.02dBm/500MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-7.14	10.02	Complies
58	5290 MHz	-3.57	10.02	Complies
106	5530 MHz	-6.68	10.02	Complies

Note: $Directiona\,lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 11-(6.98-6)=10.02dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	-5.69	-3.01	-8.70	29.02	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 30-(6.98-6)=29.02dBm/500MHz

Straddle Channel

Configuration IEEE 802.11a / Chain 1 + Chain 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
144	5720 MHz (UNII 2C)	6.49	10.02	Complies

Note: $Directiona\,lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 11-(6.98-6)=10.02dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	5.82	-3.01	2.81	29.02	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 30-(6.98-6)=29.02dBm/500MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
144	5720 MHz (UNII 2C)	5.88	10.02	Complies

Note: $Directiona\,lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 11-(6.98-6)=10.02dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
144	5720 MHz (UNII 3)	5.42	-3.01	2.41	29.02	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 30-(6.98-6)=29.02dBm/500MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
142	5710 MHz (UNII 2C)	4.10	10.02	Complies

Note: $Directiona\,lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 11-(6.98-6)=10.02dBm/MHz

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
142	5710 MHz (UNII 3)	2.91	-3.01	-0.10	29.02	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 30-(6.98-6)=29.02dBm/500MHz

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
138	5690 MHz (UNII 2C)	0.03	10.02	Complies

Note: $Directiona\,lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 11-(6.98-6)=10.02dBm/MHz

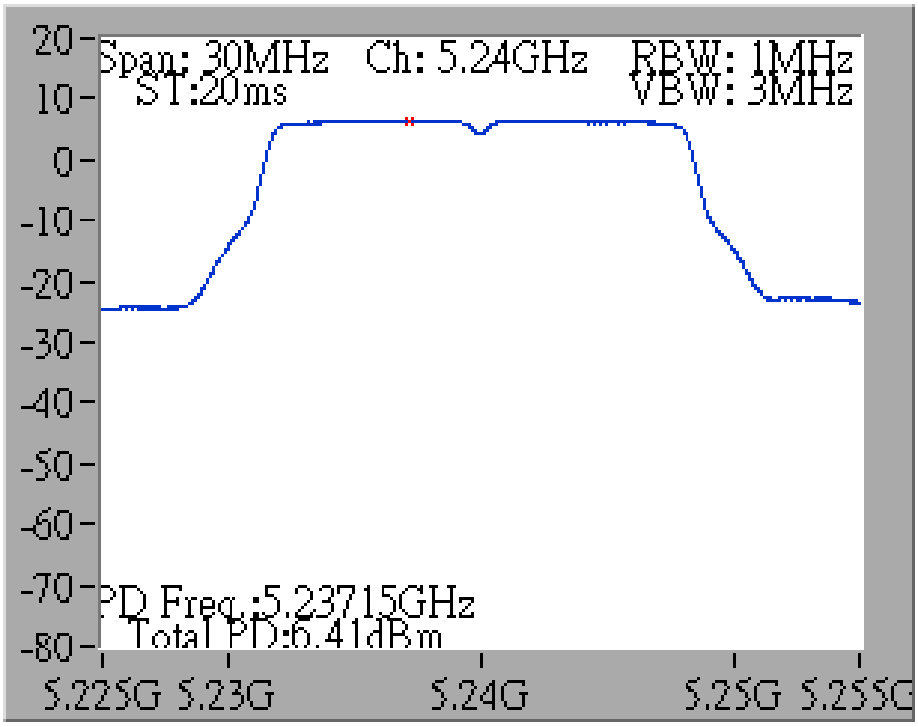
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
138	5690 MHz (UNII 3)	-2.15	-3.01	-5.16	29.02	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.98dBi >6dBi, so the limit 30-(6.98-6)=29.02dBm/500MHz

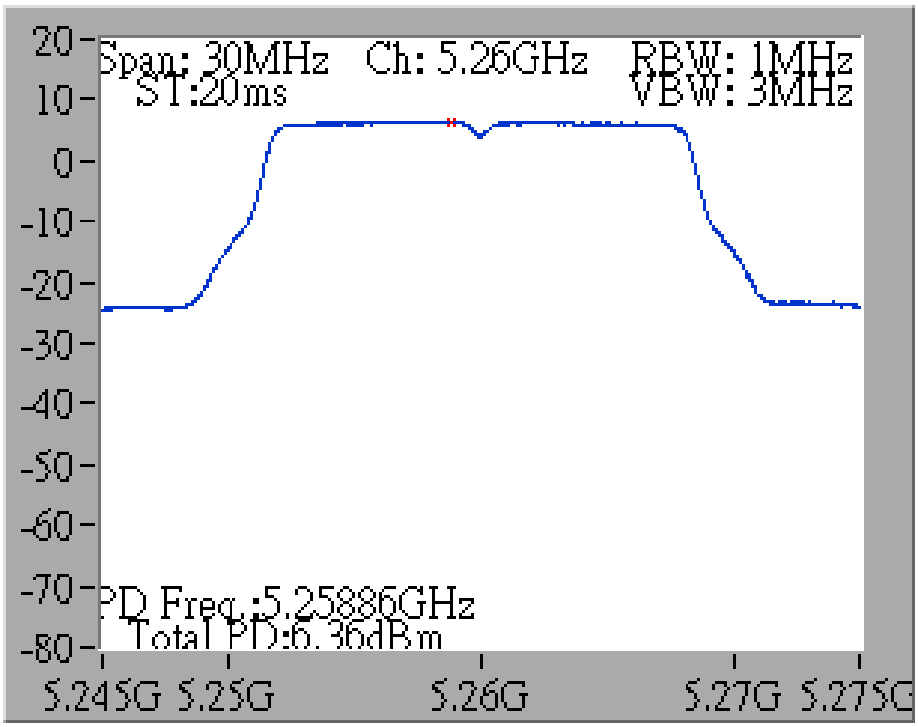
Note: All the test values were listed in the report.

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

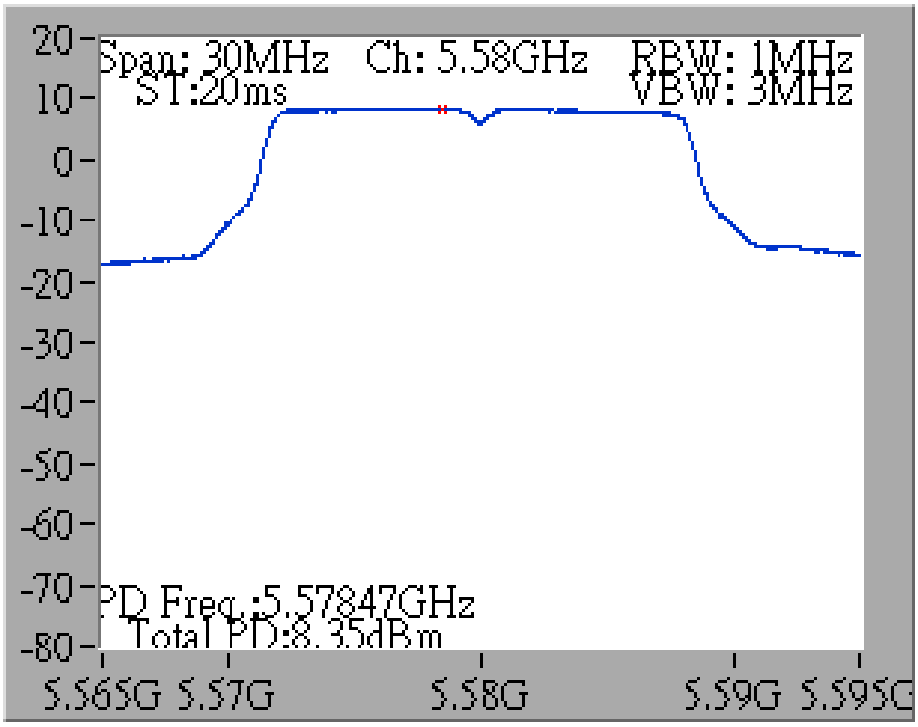
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5240 MHz



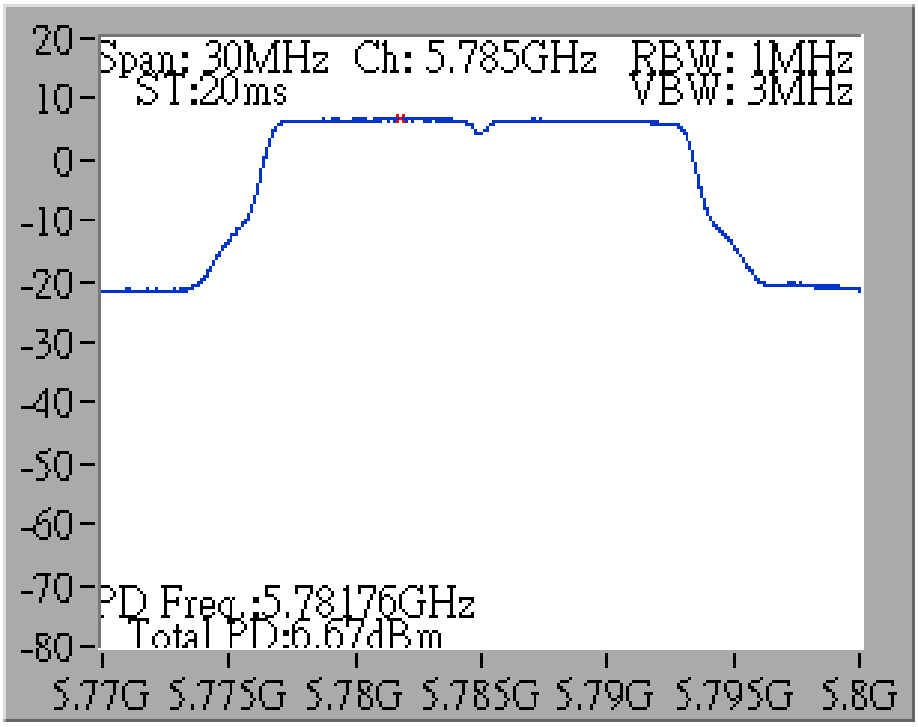
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5260 MHz



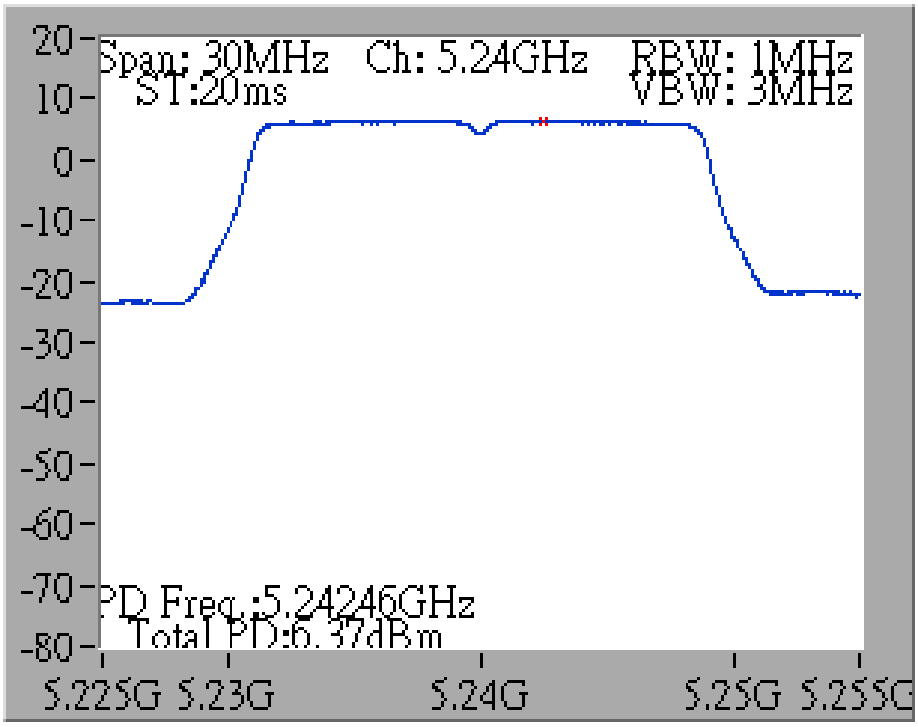
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5580 MHz



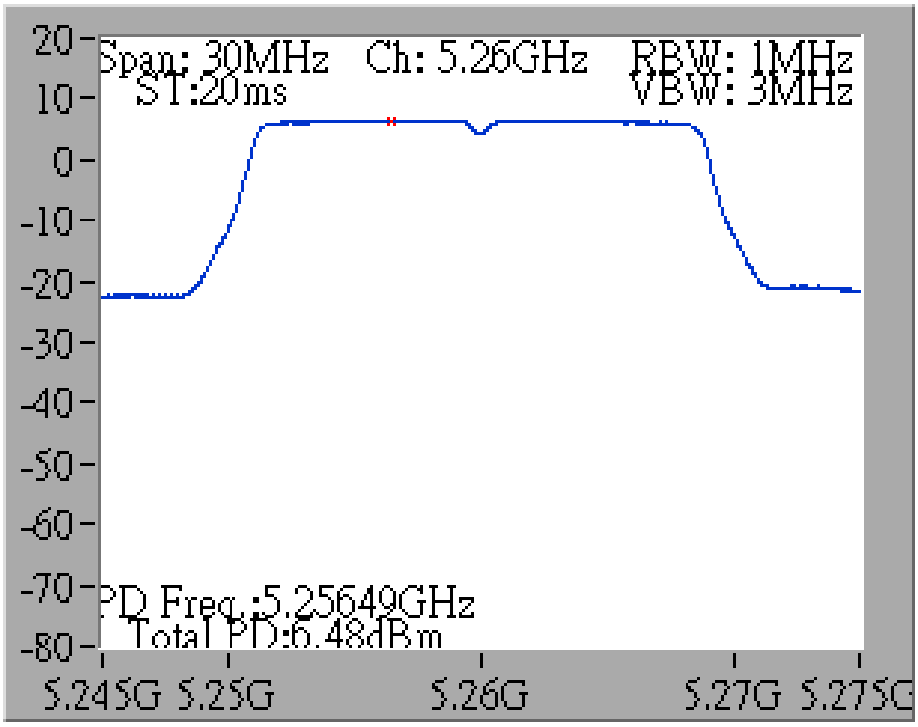
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5785 MHz



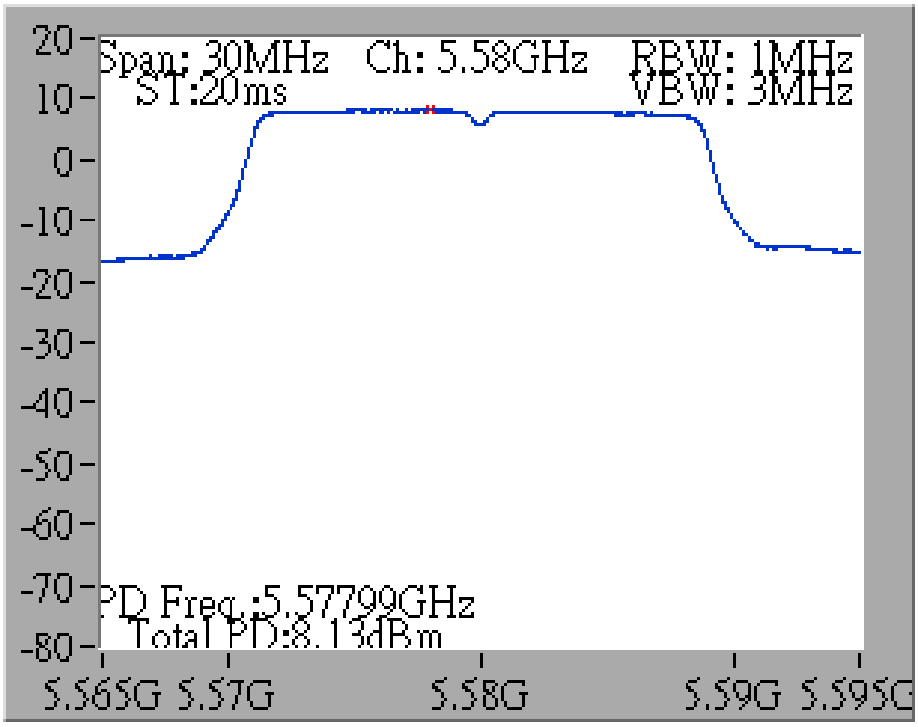
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5240 MHz



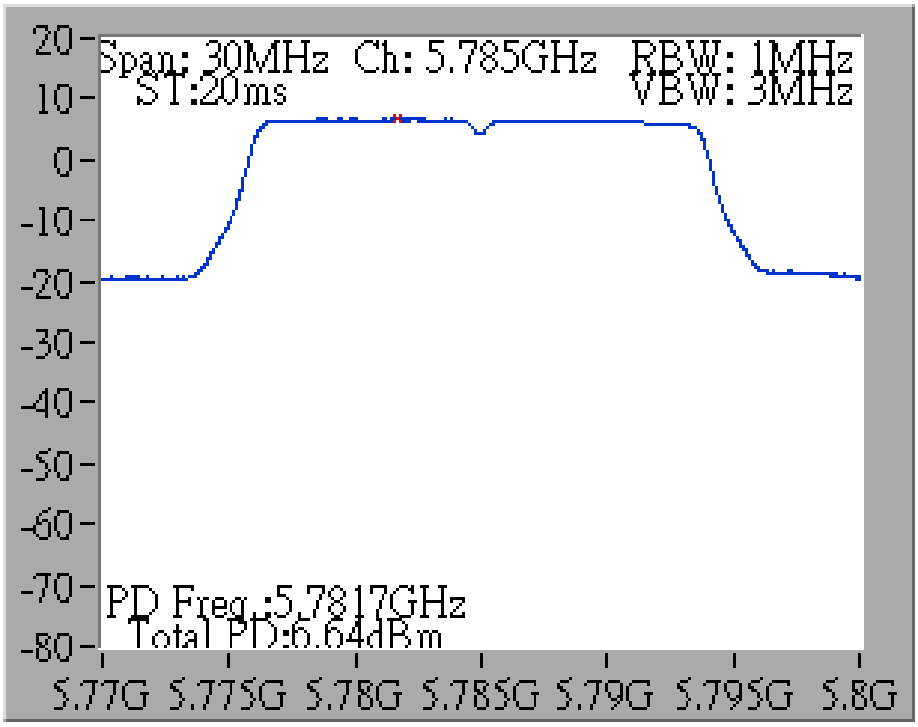
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5260 MHz



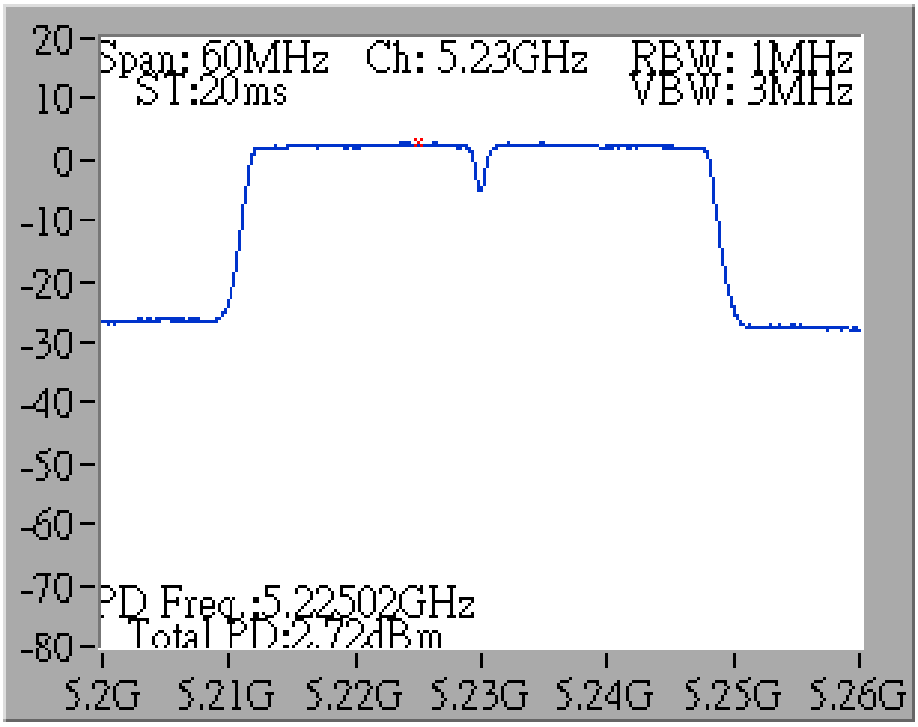
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5580 MHz



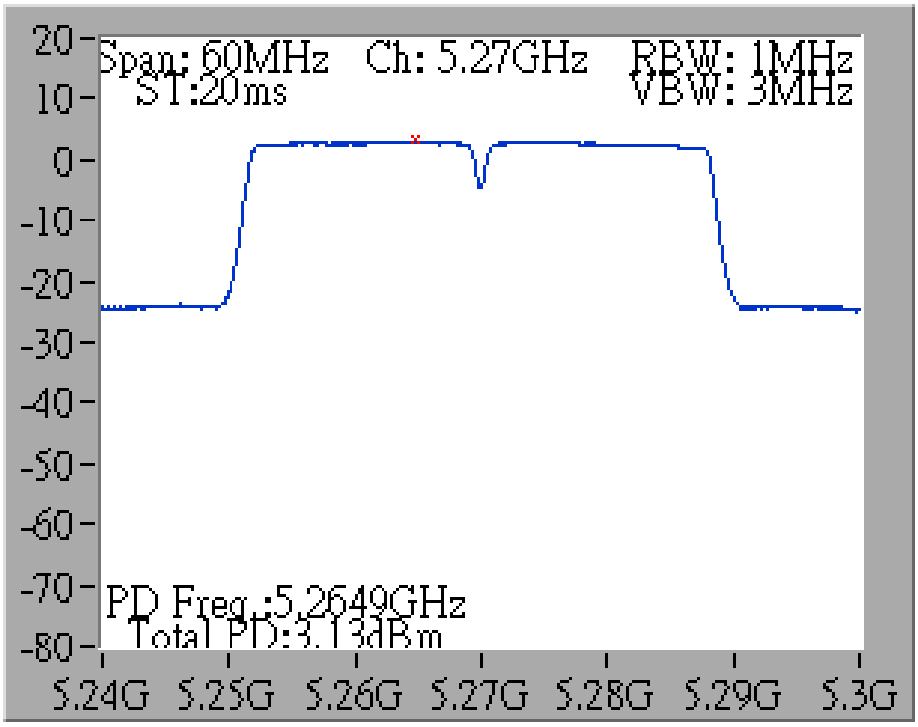
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5785 MHz



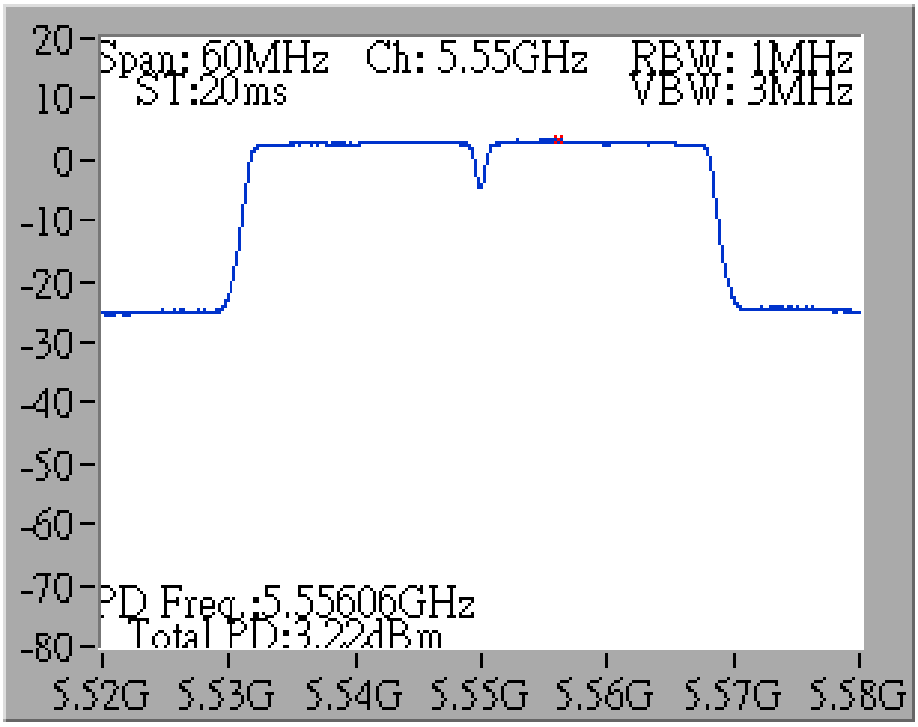
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5230 MHz



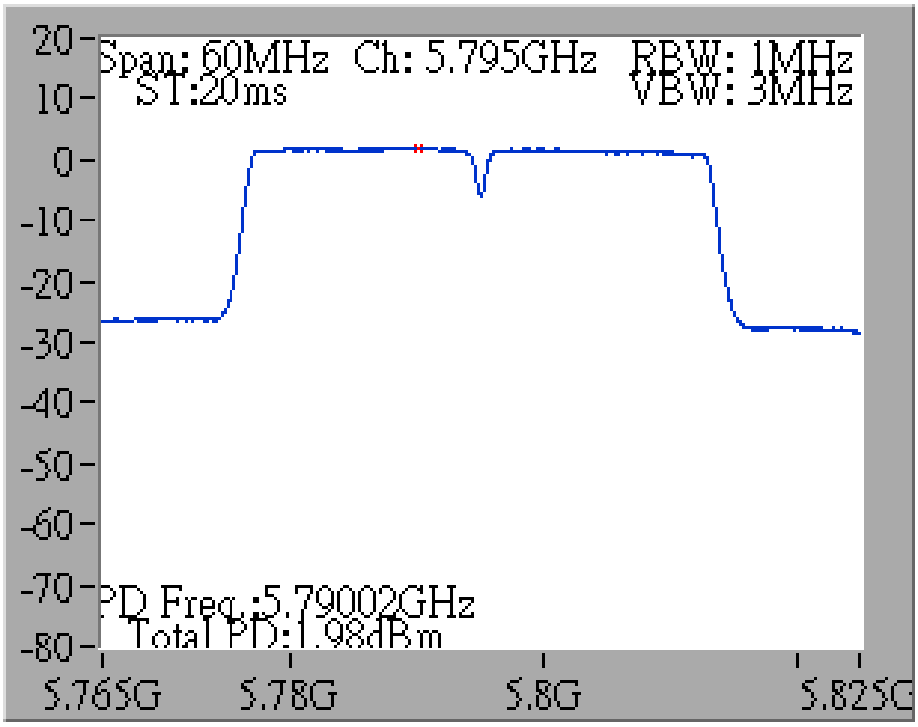
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5270 MHz



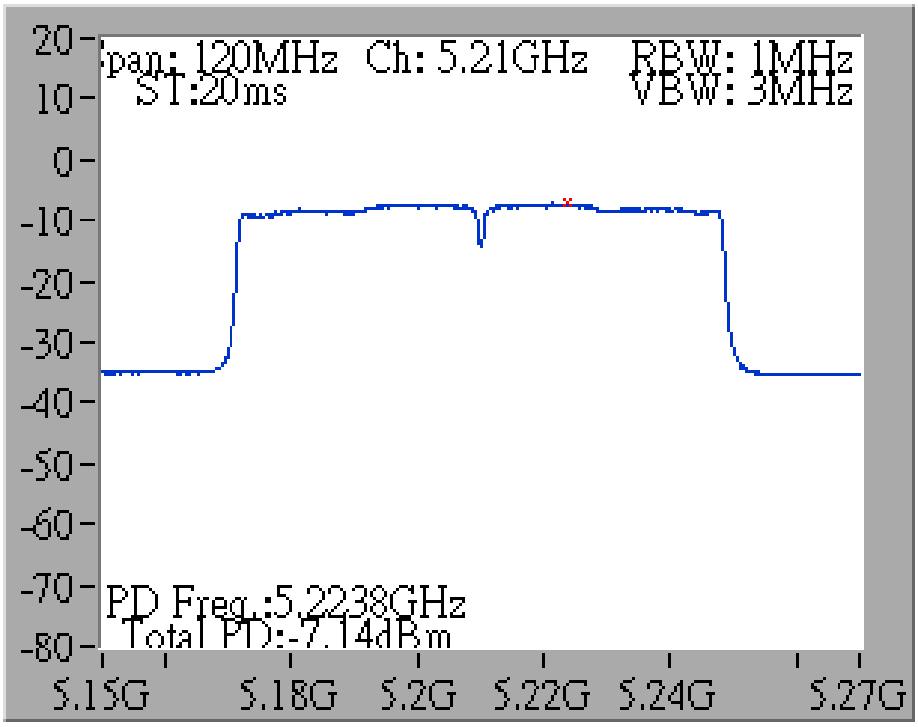
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5550 MHz



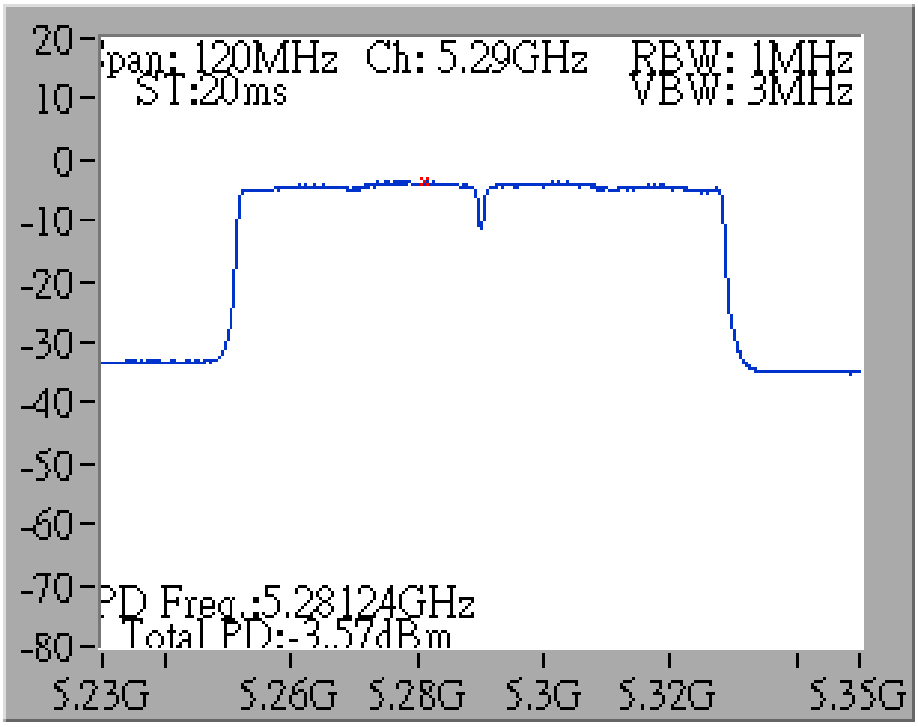
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5795 MHz



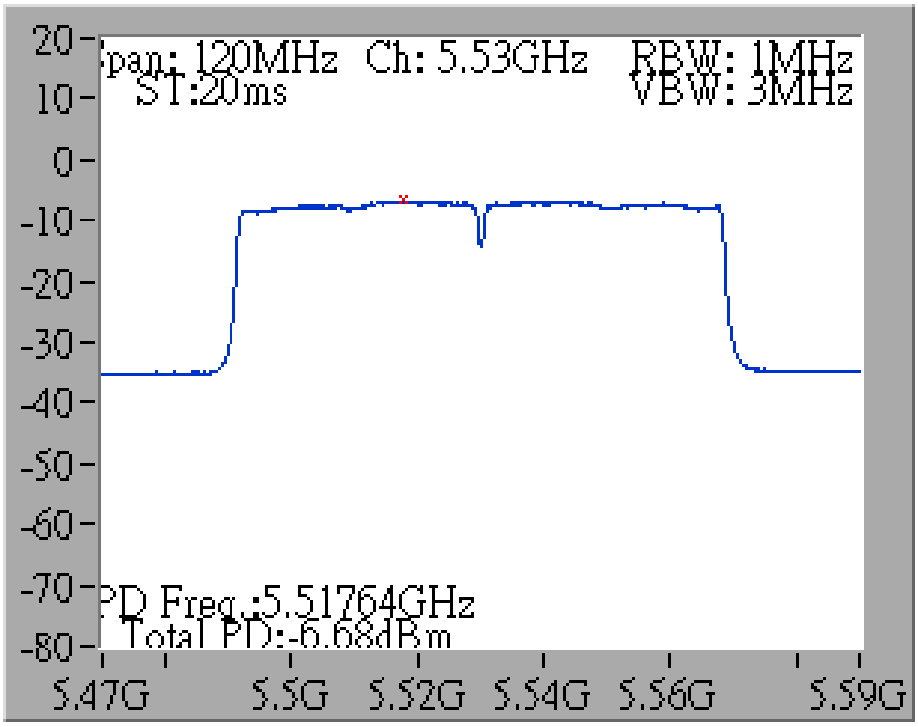
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5210 MHz



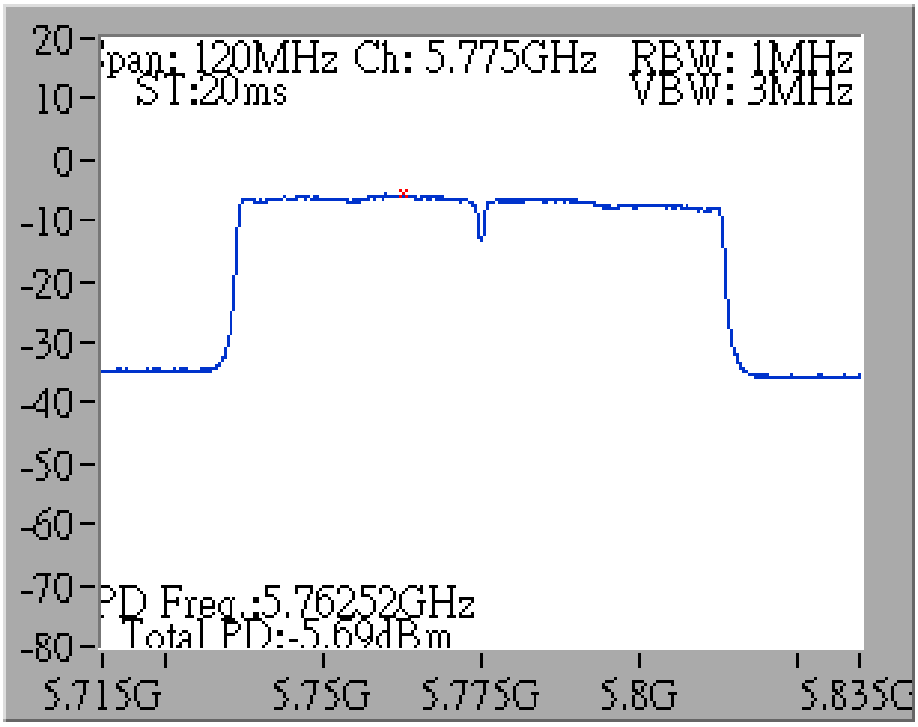
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5290 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5530 MHz

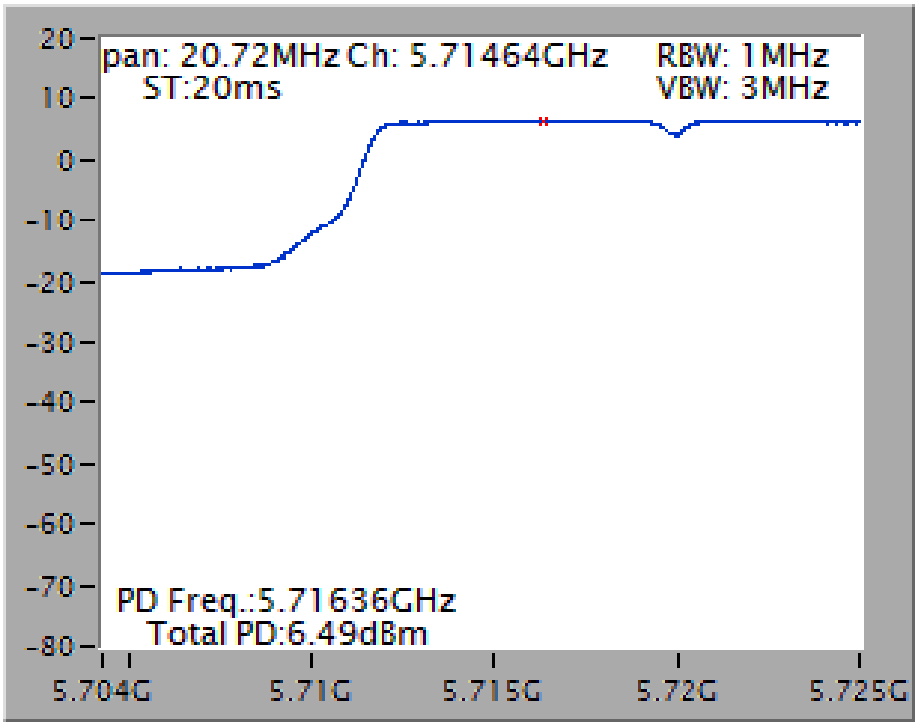


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5775 MHz

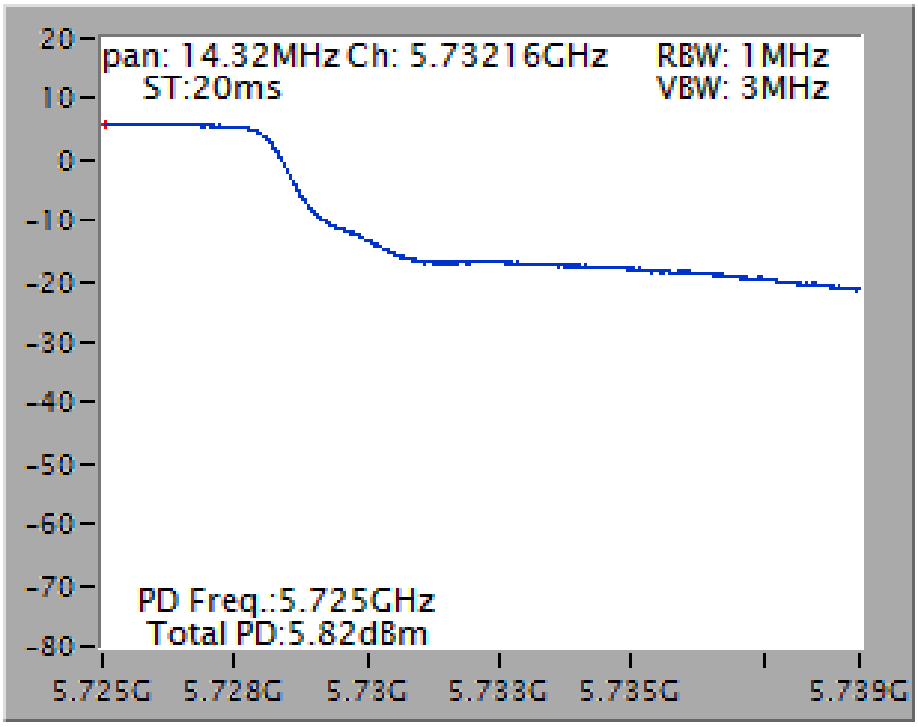


Straddle Channel

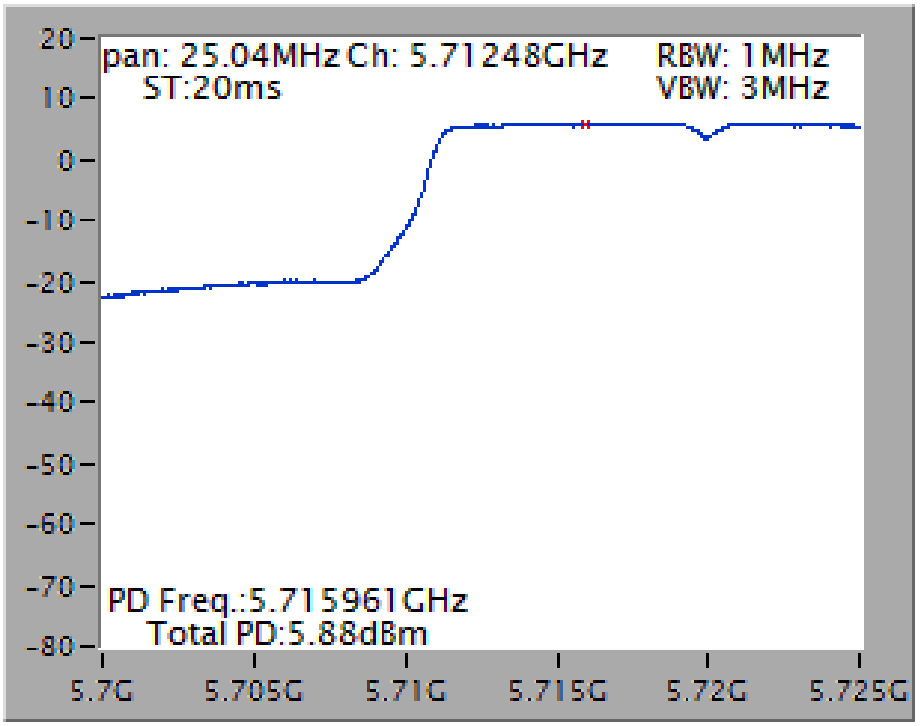
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5720 MHz (UNII 2C)



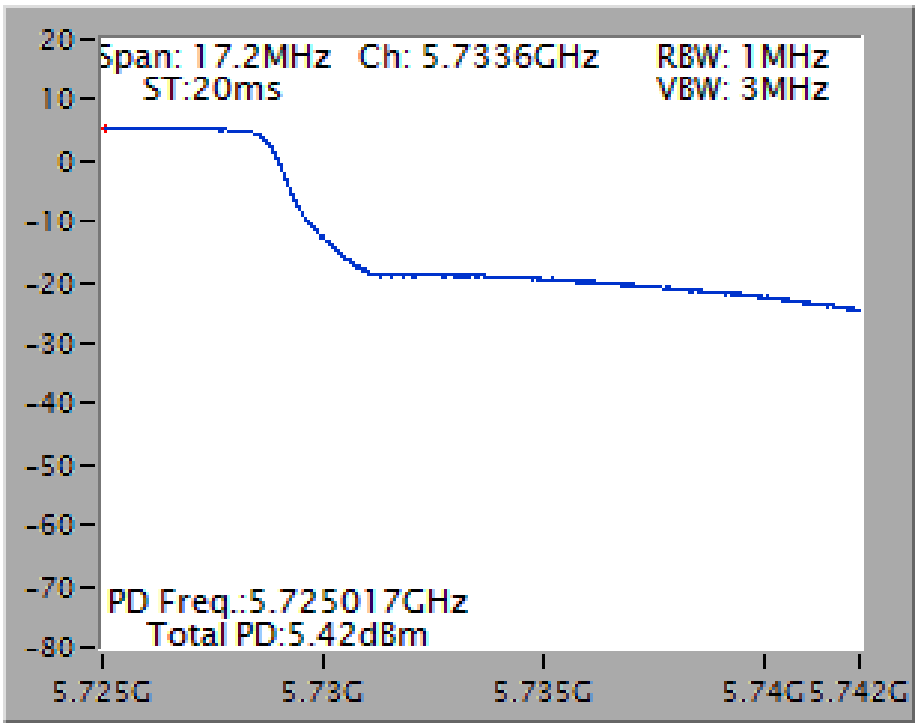
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2/ 5720 MHz (UNII 3)



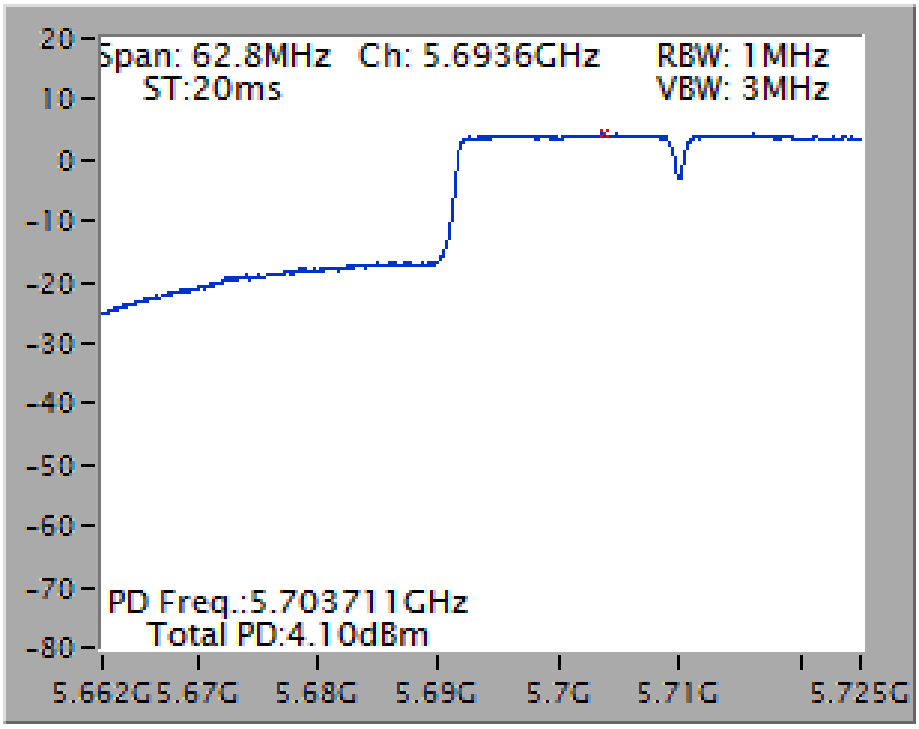
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5720 MHz (UNII 2C)



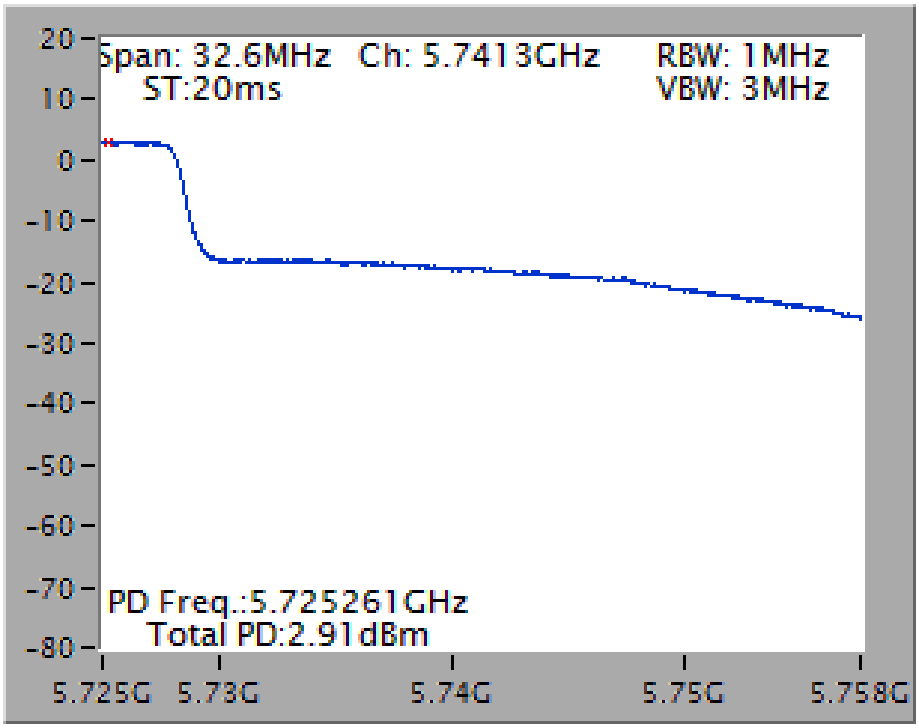
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2/ 5720 MHz (UNII 3)



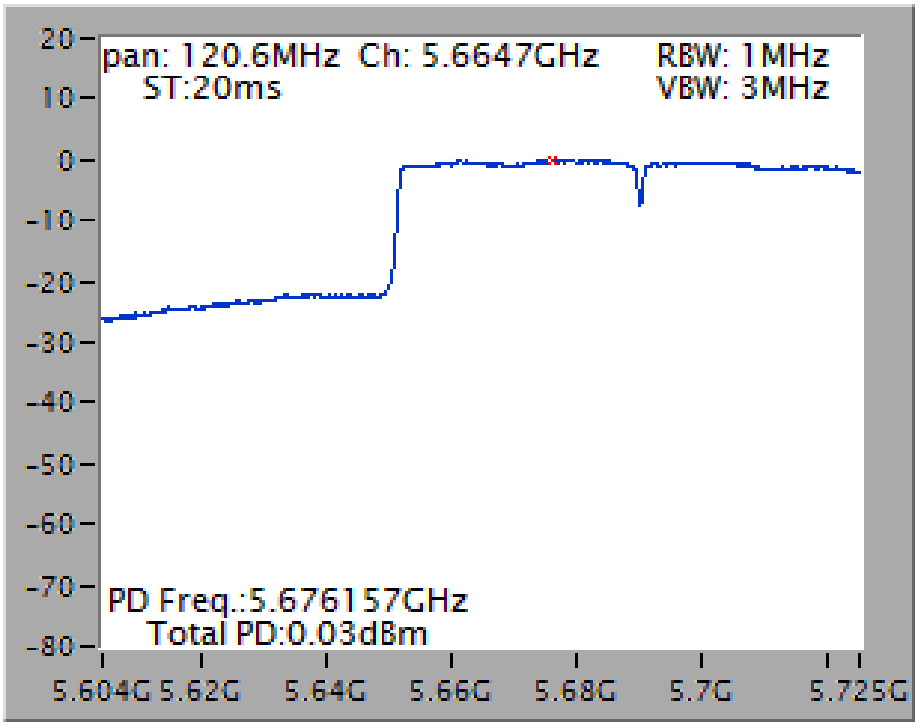
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2/ 5710 MHz (UNII 2C)



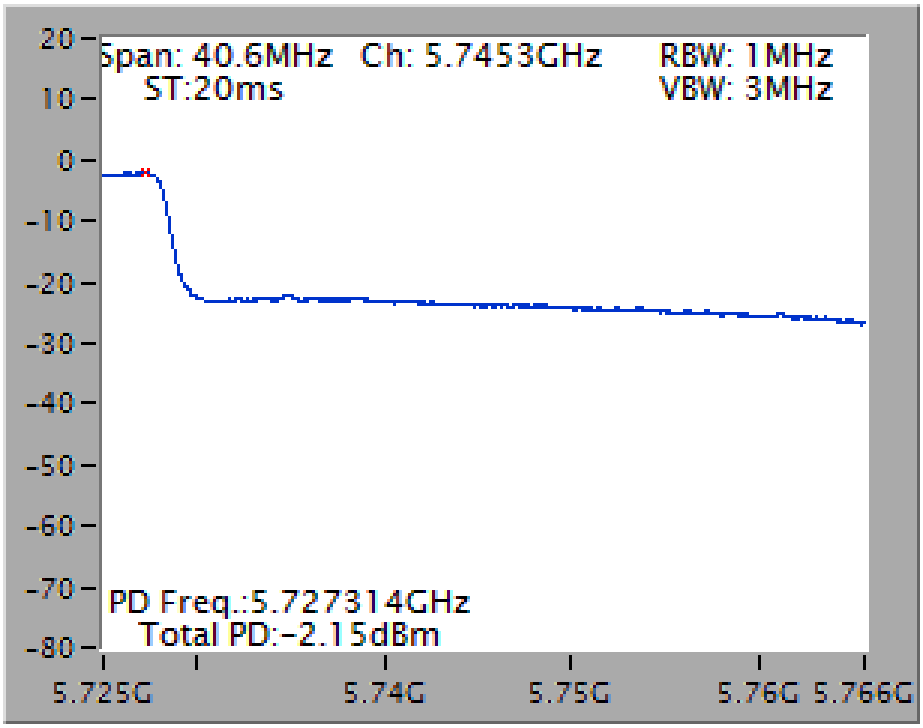
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5710 MHz (UNII 3)



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5690 MHz (UNII 2C)



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5690 MHz (UNII 3)



4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.470-5.725 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.

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

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

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

4.6.2. Measuring Instruments and Setting

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

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

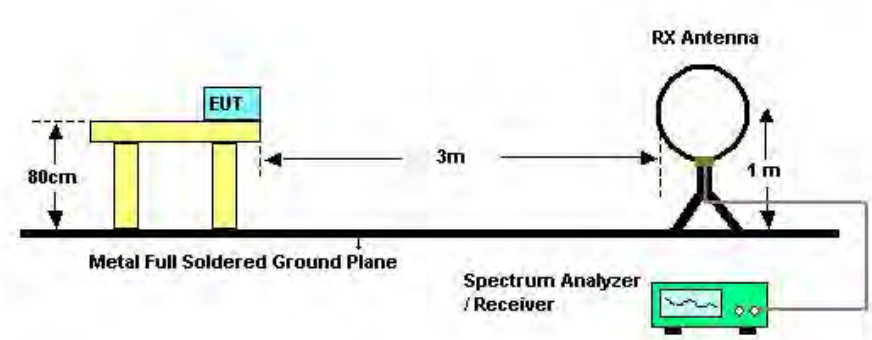
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

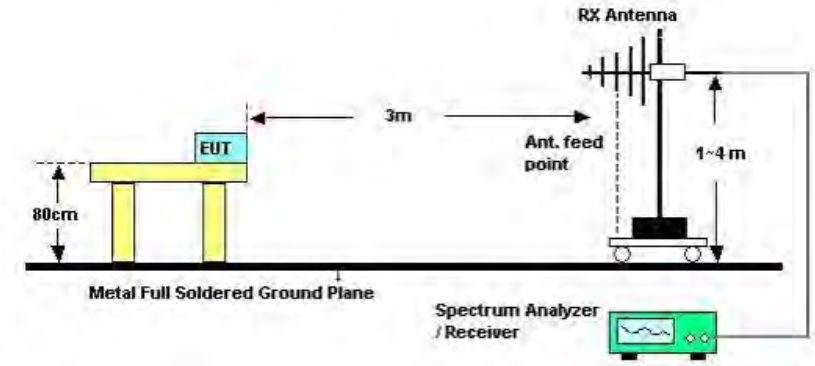
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
8. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
9. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.6.4. Test Setup Layout

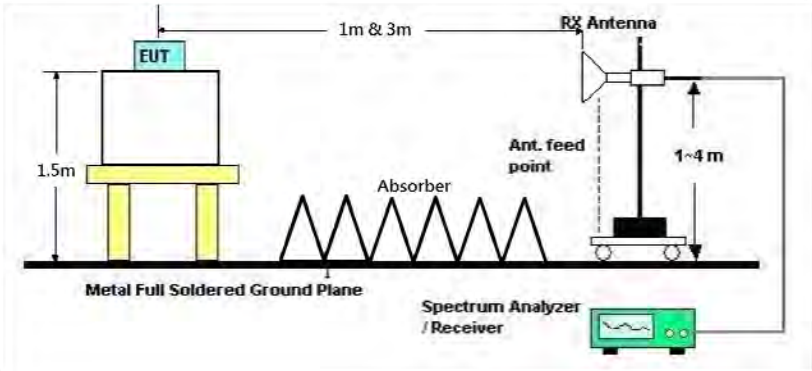
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	Normal Link / Mode 1
Test Date	Apr. 01, 2015 ~ Apr. 02, 2015		

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.

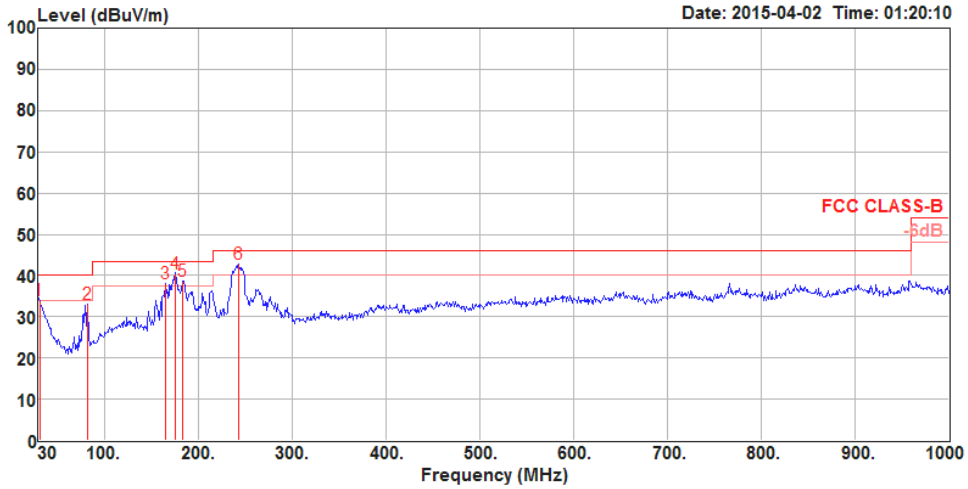
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

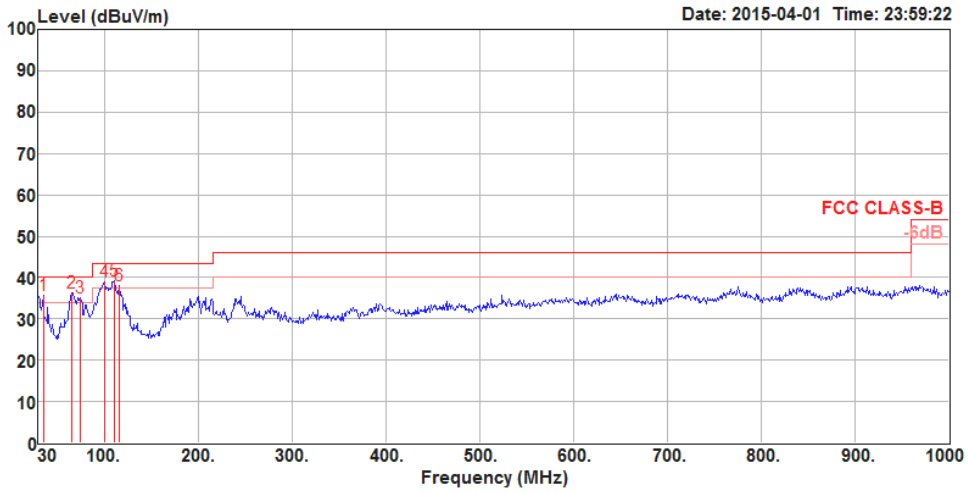
Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	Normal Link / Mode 1

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	30.97	34.05	40.00	-5.95	50.29	0.45	19.50	36.19	150	359	Peak	HORIZONTAL
2	82.38	32.91	40.00	-7.09	60.67	0.79	7.92	36.47	300	74	Peak	HORIZONTAL
3	164.83	37.93	43.50	-5.57	62.99	1.12	10.55	36.73	150	140	Peak	HORIZONTAL
4	175.50	40.50	43.50	-3.00	66.14	1.14	9.97	36.75	150	150	Peak	HORIZONTAL
5	183.26	38.75	43.50	-4.75	64.68	1.17	9.67	36.77	150	150	Peak	HORIZONTAL
6	243.40	42.71	46.00	-3.29	65.89	1.36	12.45	36.99	125	154	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	34.85	35.80	40.00	-4.20	54.31	0.51	17.18	36.20	125	313	Peak	VERTICAL
2	65.89	36.41	40.00	-3.59	65.23	0.70	6.84	36.36	125	313	Peak	VERTICAL
3	74.62	35.03	40.00	-4.97	63.52	0.75	7.18	36.42	150	154	Peak	VERTICAL
4	100.81	38.81	43.50	-4.69	63.30	0.87	11.20	36.56	150	97	Peak	VERTICAL
5	110.51	39.22	43.50	-4.28	62.58	0.91	12.33	36.60	100	107	Peak	VERTICAL
6	115.36	38.01	43.50	-5.49	61.12	0.93	12.57	36.61	100	157	Peak	VERTICAL

Note:

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

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

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

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2
Test Date	Mar. 20, 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	15530.61	46.29	63.50	-17.21	28.96	12.58	38.45	33.70	250	150	Average	HORIZONTAL
2	15530.66	59.47	83.50	-24.03	42.14	12.58	38.45	33.70	250	150	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	15530.71	59.99	83.50	-23.51	42.66	12.58	38.45	33.70	12	150	Peak	VERTICAL
2	15547.34	46.39	63.50	-17.11	29.08	12.58	38.43	33.70	12	150	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2
Test Date	Mar. 20, 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	15593.62	62.50	83.50	-21.00	45.29	12.58	38.38	33.75	271	145	Peak	HORIZONTAL
2	15597.02	48.08	63.50	-15.42	30.89	12.58	38.36	33.75	271	145	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	15592.18	59.88	83.50	-23.62	42.67	12.58	38.38	33.75	107	136	Peak	VERTICAL
2	15596.73	46.63	63.50	-16.87	29.44	12.58	38.36	33.75	107	136	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2
Test Date	Mar. 20, 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	15604.97	58.80	83.50	-24.70	41.64	12.58	38.36	33.78	194	149	Peak	HORIZONTAL
2	15609.81	45.32	63.50	-18.18	28.16	12.58	38.36	33.78	194	149	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	15598.33	45.32	63.50	-18.18	28.13	12.58	38.36	33.75	35	151	Average	VERTICAL
2	15608.94	58.47	83.50	-25.03	41.31	12.58	38.36	33.78	35	151	Peak	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 52 / Chain 1 + Chain 2
Test Date	Mar. 20, 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	15777.34	59.40	83.50	-24.10	42.67	12.57	38.11	33.95	270	150	Peak	HORIZONTAL
2	15777.44	44.92	63.50	-18.58	28.19	12.57	38.11	33.95	270	150	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	15774.81	45.20	63.50	-18.30	28.45	12.57	38.11	33.93	361	150	Average	VERTICAL
2	15775.71	58.12	83.50	-25.38	41.37	12.57	38.11	33.93	361	150	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 60 / Chain 1 + Chain 2
Test Date	Mar. 20, 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	10591.38	56.80	83.50	-26.70	41.35	10.16	38.92	33.63	290	150	Peak	HORIZONTAL
2	10593.17	43.38	63.50	-20.12	27.93	10.16	38.92	33.63	290	150	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	10598.17	44.20	63.50	-19.30	28.75	10.16	38.92	33.63	175	135	Average	VERTICAL
2	10604.36	57.84	83.50	-25.66	42.35	10.19	38.92	33.62	175	135	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 64 / Chain 1 + Chain 2
Test Date	Mar. 20, 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	10633.59	56.51	83.50	-26.99	40.97	10.21	38.93	33.60	19	150	Peak	HORIZONTAL
2	10646.54	43.14	63.50	-20.36	27.60	10.21	38.93	33.60	19	150	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	10640.87	43.48	63.50	-20.02	27.94	10.21	38.93	33.60	1	151	Average	VERTICAL
2	10647.82	56.78	83.50	-26.72	41.24	10.21	38.93	33.60	1	151	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 100 / Chain 1 + Chain 2
Test Date	Mar. 20, 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	10990.38	57.01	83.50	-26.49	40.84	10.55	39.00	33.38	19	155	Peak	HORIZONTAL
2	11002.18	43.99	63.50	-19.51	27.82	10.55	39.00	33.38	19	155	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	10996.41	57.10	83.50	-26.40	40.93	10.55	39.00	33.38	319	155	Peak	VERTICAL
2	11007.98	44.02	63.50	-19.48	27.84	10.55	39.01	33.38	319	155	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 116 / Chain 1 + Chain 2
Test Date	Mar. 20, 2015 ~ Mar. 21, 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	11152.66	56.73	83.50	-26.77	40.39	10.60	39.12	33.38	301	155	Peak	HORIZONTAL
2	11162.66	44.23	63.50	-19.27	27.87	10.61	39.13	33.38	301	155	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	11156.12	58.33	83.50	-25.17	41.99	10.60	39.12	33.38	214	155	Peak	VERTICAL
2	11157.88	44.79	63.50	-18.71	28.44	10.60	39.13	33.38	214	155	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 140 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11401.73	44.31	63.50	-19.19	27.67	10.69	39.32	33.37	302	155	Average	HORIZONTAL
2	11409.46	57.43	83.50	-26.07	40.79	10.69	39.32	33.37	302	155	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	11392.28	57.55	83.50	-25.95	40.92	10.69	39.31	33.37	275	155	Peak	VERTICAL
2	11401.83	44.62	63.50	-18.88	27.98	10.69	39.32	33.37	275	155	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11482.34	44.17	63.50	-19.33	27.44	10.71	39.39	33.37	71	155	Average	HORIZONTAL
2	11486.47	57.78	83.50	-25.72	41.05	10.71	39.39	33.37	71	155	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	11483.97	57.20	83.50	-26.30	40.47	10.71	39.39	33.37	48	155	Peak	VERTICAL
2	11486.41	44.30	63.50	-19.20	27.57	10.71	39.39	33.37	48	155	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11572.08	50.08	63.50	-13.42	33.27	10.76	39.44	33.39	246	132	Average	HORIZONTAL
2	11572.28	62.81	83.50	-20.69	46.00	10.76	39.44	33.39	246	132	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	11566.54	47.62	63.50	-15.88	30.81	10.75	39.44	33.38	88	157	Average	VERTICAL
2	11571.83	60.38	83.50	-23.12	43.57	10.76	39.44	33.39	88	157	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11651.51	46.21	63.50	-17.29	29.32	10.81	39.49	33.41	232	131	Average	HORIZONTAL
2	11651.57	58.59	83.50	-24.91	41.70	10.81	39.49	33.41	232	131	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	11644.36	57.16	83.50	-26.34	40.29	10.79	39.48	33.40	182	153	Peak	VERTICAL
2	11651.96	44.74	63.50	-18.76	27.85	10.81	39.49	33.41	182	153	Average	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	15533.97	58.84	83.50	-24.66	41.51	12.58	38.45	33.70	187	151	Peak	HORIZONTAL
2	15542.82	45.67	63.50	-17.83	28.34	12.58	38.45	33.70	187	151	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	15532.92	58.52	83.50	-24.98	41.19	12.58	38.45	33.70	203	151	Peak	VERTICAL
2	15541.15	45.63	63.50	-17.87	28.30	12.58	38.45	33.70	203	151	Average	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	15592.44	57.99	83.50	-25.51	40.78	12.58	38.38	33.75	211	151	Peak	HORIZONTAL
2	15598.17	45.43	63.50	-18.07	28.24	12.58	38.36	33.75	211	151	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	15593.85	57.70	83.50	-25.80	40.49	12.58	38.38	33.75	237	151	Peak	VERTICAL
2	15602.08	45.02	63.50	-18.48	27.86	12.58	38.36	33.78	237	151	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	15712.85	45.35	63.50	-18.15	28.45	12.57	38.21	33.88	234	144	Average	HORIZONTAL
2	15716.38	58.13	83.50	-25.37	41.25	12.57	38.19	33.88	234	144	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	15715.03	58.49	83.50	-25.01	41.61	12.57	38.19	33.88	206	144	Peak	VERTICAL
2	15717.24	45.25	63.50	-18.25	28.37	12.57	38.19	33.88	206	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	15770.19	44.78	63.50	-18.72	28.03	12.57	38.11	33.93	257	144	Average	HORIZONTAL
2	15781.73	57.66	83.50	-25.84	40.95	12.57	38.09	33.95	257	144	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	15770.32	44.86	63.50	-18.64	28.11	12.57	38.11	33.93	285	144	Average	VERTICAL
2	15775.42	58.29	83.50	-25.21	41.54	12.57	38.11	33.93	285	144	Peak	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	10592.85	43.27	63.50	-20.23	27.82	10.16	38.92	33.63	286	144	Average	HORIZONTAL
2	10600.45	55.96	83.50	-27.54	40.51	10.16	38.92	33.63	286	144	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	10604.46	55.75	83.50	-27.75	40.26	10.19	38.92	33.62	308	144	Peak	VERTICAL
2	10608.37	43.31	63.50	-20.19	27.82	10.19	38.92	33.62	308	144	Average	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	10640.26	56.86	83.50	-26.64	41.32	10.21	38.93	33.60	281	144	Peak	HORIZONTAL
2	10646.51	43.21	63.50	-20.29	27.67	10.21	38.93	33.60	281	144	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	10630.80	56.01	83.50	-27.49	40.47	10.21	38.93	33.60	301	144	Peak	VERTICAL
2	10636.31	43.07	63.50	-20.43	27.53	10.21	38.93	33.60	301	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11007.92	43.39	63.50	-20.11	27.21	10.55	39.01	33.38	250	144	Average	HORIZONTAL
2	11008.01	56.96	83.50	-26.54	40.78	10.55	39.01	33.38	250	144	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	10999.78	56.47	83.50	-27.03	40.30	10.55	39.00	33.38	272	144	Peak	VERTICAL
2	11008.88	43.73	63.50	-19.77	27.54	10.56	39.01	33.38	272	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11161.19	43.75	63.50	-19.75	27.40	10.60	39.13	33.38	237	144	Average	HORIZONTAL
2	11162.95	56.36	83.50	-27.14	40.00	10.61	39.13	33.38	237	144	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	11159.46	44.27	63.50	-19.23	27.92	10.60	39.13	33.38	216	144	Average	VERTICAL
2	11169.07	57.27	83.50	-26.23	40.91	10.61	39.13	33.38	216	144	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11394.01	57.55	83.50	-25.95	40.92	10.69	39.31	33.37	178	144	Peak	HORIZONTAL
2	11395.22	44.22	63.50	-19.28	27.59	10.69	39.31	33.37	178	144	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	11397.40	44.51	63.50	-18.99	27.87	10.69	39.32	33.37	197	144	Average	VERTICAL
2	11403.49	57.15	83.50	-26.35	40.51	10.69	39.32	33.37	197	144	Peak	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11483.01	57.36	83.50	-26.14	40.63	10.71	39.39	33.37	304	144	Peak	HORIZONTAL
2	11490.83	44.13	63.50	-19.37	27.40	10.71	39.39	33.37	304	144	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	11480.03	56.39	83.50	-27.11	39.68	10.71	39.37	33.37	326	144	Peak	VERTICAL
2	11486.79	44.55	63.50	-18.95	27.82	10.71	39.39	33.37	326	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11568.46	43.97	63.50	-19.53	27.16	10.75	39.44	33.38	140	144	Average	HORIZONTAL
2	11575.58	57.07	83.50	-26.43	40.26	10.76	39.44	33.39	140	144	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11573.46	56.89	83.50	-26.61	40.08	10.76	39.44	33.39	75	144	Peak	VERTICAL
2	11577.44	43.83	63.50	-19.67	27.02	10.76	39.44	33.39	75	144	Average	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11640.67	43.96	63.50	-19.54	27.09	10.79	39.48	33.40	208	144	Average	HORIZONTAL
2	11645.45	56.39	83.50	-27.11	39.52	10.79	39.48	33.40	208	144	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11648.30	45.03	63.50	-18.47	28.15	10.81	39.48	33.41	295	144	Average	VERTICAL
2	11649.17	57.11	83.50	-26.39	40.23	10.81	39.48	33.41	295	144	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	15562.88	45.34	63.50	-18.16	28.09	12.58	38.40	33.73	176	144	Average	HORIZONTAL
2	15567.63	58.53	83.50	-24.97	41.28	12.58	38.40	33.73	176	144	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	15561.25	45.18	63.50	-18.32	27.93	12.58	38.40	33.73	153	144	Average	VERTICAL
2	15563.17	57.99	83.50	-25.51	40.74	12.58	38.40	33.73	153	144	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	15693.81	57.42	83.50	-26.08	40.46	12.58	38.23	33.85	110	144	Peak	HORIZONTAL
2	15694.68	45.09	63.50	-18.41	28.13	12.58	38.23	33.85	110	144	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	15692.40	45.51	63.50	-17.99	28.55	12.58	38.23	33.85	127	144	Average	VERTICAL
2	15696.51	57.91	83.50	-25.59	40.97	12.58	38.21	33.85	127	144	Peak	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	15815.64	57.33	83.50	-26.17	40.70	12.57	38.04	33.98	128	144	Peak	HORIZONTAL
2	15817.79	44.60	63.50	-18.90	27.97	12.57	38.04	33.98	128	144	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	15801.89	57.89	83.50	-25.61	41.20	12.57	38.07	33.95	108	144	Peak	VERTICAL
2	15816.99	44.48	63.50	-19.02	27.85	12.57	38.04	33.98	108	144	Average	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	10611.92	55.38	83.50	-28.12	39.89	10.19	38.92	33.62	134	144	Peak	HORIZONTAL
2	10623.46	43.06	63.50	-20.44	27.57	10.19	38.92	33.62	134	144	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	10613.17	56.23	83.50	-27.27	40.74	10.19	38.92	33.62	120	144	Peak	VERTICAL
2	10627.76	43.37	63.50	-20.13	27.84	10.21	38.92	33.60	120	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11011.96	56.88	83.50	-26.62	40.69	10.56	39.01	33.38	145	144	Peak	HORIZONTAL
2	11024.90	43.62	63.50	-19.88	27.41	10.56	39.03	33.38	145	144	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	11010.00	43.46	63.50	-20.04	27.27	10.56	39.01	33.38	158	144	Average	VERTICAL
2	11028.62	56.38	83.50	-27.12	40.17	10.56	39.03	33.38	158	144	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11093.21	56.77	83.50	-26.73	40.49	10.58	39.08	33.38	111	144	Peak	HORIZONTAL
2	11096.44	43.64	63.50	-19.86	27.36	10.58	39.08	33.38	111	144	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	11099.71	56.88	83.50	-26.62	40.60	10.58	39.08	33.38	127	144	Peak	VERTICAL
2	11108.91	43.75	63.50	-19.75	27.46	10.58	39.09	33.38	127	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11340.10	57.30	83.50	-26.20	40.74	10.66	39.27	33.37	138	144	Peak	HORIZONTAL
2	11340.26	44.20	63.50	-19.30	27.63	10.67	39.27	33.37	138	144	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	11340.42	57.20	83.50	-26.30	40.63	10.67	39.27	33.37	119	144	Peak	VERTICAL
2	11347.82	44.26	63.50	-19.24	27.68	10.67	39.28	33.37	119	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 /Chain 1 + Chain 2
Test Date	Mar. 21, 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	11502.12	44.22	63.50	-19.28	27.47	10.72	39.40	33.37	147	144	Average	HORIZONTAL
2	11519.29	56.78	83.50	-26.72	40.02	10.73	39.41	33.38	147	144	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11506.51	43.94	63.50	-19.56	27.19	10.72	39.40	33.37	104	144	Average	VERTICAL
2	11510.64	57.25	83.50	-26.25	40.50	10.72	39.40	33.37	104	144	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 /Chain 1 + Chain 2
Test Date	Mar. 21, 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	11588.27	57.76	83.50	-25.74	40.94	10.76	39.45	33.39	199	144	Peak	HORIZONTAL
2	11598.27	44.28	63.50	-19.22	27.45	10.78	39.45	33.40	199	144	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	11585.61	57.33	83.50	-26.17	40.51	10.76	39.45	33.39	183	144	Peak	VERTICAL
2	11588.49	44.65	63.50	-18.85	27.83	10.76	39.45	33.39	183	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	15625.80	45.12	63.50	-18.38	28.01	12.58	38.33	33.80	170	144	Average	HORIZONTAL
2	15627.31	58.04	83.50	-25.46	40.93	12.58	38.33	33.80	170	144	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	15627.63	57.88	83.50	-25.62	40.77	12.58	38.33	33.80	146	144	Peak	VERTICAL
2	15629.68	45.11	63.50	-18.39	28.02	12.58	38.31	33.80	146	144	Average	VERTICAL

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	15863.49	57.28	83.50	-26.22	40.75	12.57	37.99	34.03	97	144	Peak	HORIZONTAL
2	15873.46	44.66	63.50	-18.84	28.15	12.57	37.97	34.03	97	144	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	15873.11	44.51	63.50	-18.99	28.00	12.57	37.97	34.03	120	144	Average	VERTICAL
2	15876.73	57.61	83.50	-25.89	41.10	12.57	37.97	34.03	120	144	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11056.67	43.58	63.50	-19.92	27.34	10.57	39.05	33.38	139	144	Average	HORIZONTAL
2	11056.70	56.28	83.50	-27.22	40.04	10.57	39.05	33.38	139	144	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	11050.93	56.40	83.50	-27.10	40.17	10.57	39.04	33.38	119	144	Peak	VERTICAL
2	11056.51	43.54	63.50	-19.96	27.30	10.57	39.05	33.38	119	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11549.01	44.09	63.50	-19.41	27.29	10.75	39.43	33.38	173	144	Average	HORIZONTAL
2	11553.78	57.01	83.50	-26.49	40.21	10.75	39.43	33.38	173	144	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	11547.34	57.64	83.50	-25.86	40.85	10.75	39.42	33.38	143	144	Peak	VERTICAL
2	11550.06	44.10	63.50	-19.40	27.30	10.75	39.43	33.38	143	144	Average	VERTICAL

Straddle Channel

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 144 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11426.79	57.81	83.50	-25.69	41.16	10.69	39.33	33.37	1	155	Peak	HORIZONTAL
2	11427.60	44.91	63.50	-18.59	28.26	10.69	39.33	33.37	1	155	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	11425.74	44.15	63.50	-19.35	27.50	10.69	39.33	33.37	27	155	Average	VERTICAL
2	11428.97	57.36	83.50	-26.14	40.71	10.69	39.33	33.37	27	155	Peak	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144/ Chain 1 + Chain 2
Test Date	Mar. 21, 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	11438.40	46.30	63.50	-17.20	29.63	10.69	39.35	33.37	228	144	Average	HORIZONTAL
2	11442.56	58.35	83.50	-25.15	41.67	10.70	39.35	33.37	228	144	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	11436.31	58.07	83.50	-25.43	41.40	10.69	39.35	33.37	99	144	Peak	VERTICAL
2	11441.12	45.65	63.50	-17.85	28.98	10.69	39.35	33.37	99	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11413.30	44.30	63.50	-19.20	27.65	10.69	39.33	33.37	172	144	Average	HORIZONTAL
2	11429.04	56.86	83.50	-26.64	40.21	10.69	39.33	33.37	172	144	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	11411.09	57.73	83.50	-25.77	41.09	10.69	39.32	33.37	149	144	Peak	VERTICAL
2	11415.90	44.47	63.50	-19.03	27.82	10.69	39.33	33.37	149	144	Average	VERTICAL

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 140 / Chain 1 + Chain 2
Test Date	Mar. 21, 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	11372.02	44.01	63.50	-19.49	27.41	10.68	39.29	33.37	21	144	Average	HORIZONTAL
2	11377.08	57.36	83.50	-26.14	40.76	10.68	39.29	33.37	21	144	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	11373.11	44.25	63.50	-19.25	27.65	10.68	39.29	33.37	49	144	Average	VERTICAL
2	11380.77	56.87	83.50	-26.63	40.25	10.68	39.31	33.37	49	144	Peak	VERTICAL

Note:

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

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

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

4.7. Band Edge Emissions Measurement

4.7.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.470-5.725 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.

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

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

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

4.7.2. Measuring Instruments and Setting

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

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

4.7.3. Test Procedures

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

4.7.4. Test Setup Layout

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

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2
Test Date	Mar. 17, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5149.80	78.21	83.54	-5.33	39.36	31.52	7.33	0.00	150	175	HORIZONTAL	Peak
2	5149.80	61.82	63.54	-1.72	22.97	31.52	7.33	0.00	150	175	HORIZONTAL	Average
3	5174.60	109.15			70.26	31.54	7.35	0.00	150	175	HORIZONTAL	Average
4	5175.00	120.10			81.21	31.54	7.35	0.00	150	175	HORIZONTAL	Peak

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5148.00	75.32	83.54	-8.22	36.47	31.52	7.33	0.00	150	31	HORIZONTAL	Peak
2	5150.00	61.24	63.54	-2.30	22.39	31.52	7.33	0.00	150	31	HORIZONTAL	Average
3	5194.40	122.36			83.43	31.56	7.37	0.00	150	31	HORIZONTAL	Peak
4	5194.80	112.24			73.31	31.56	7.37	0.00	150	31	HORIZONTAL	Average

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5150.00	67.41	83.54	-16.13	28.56	31.52	7.33	0.00	143	251	VERTICAL	Peak
2	5150.00	55.69	63.54	-7.85	16.84	31.52	7.33	0.00	143	251	VERTICAL	Average
3	5241.60	124.03			85.02	31.59	7.42	0.00	143	251	VERTICAL	Peak
4	5242.00	112.98			73.97	31.59	7.42	0.00	143	251	VERTICAL	Average

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

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 52, 60, 64 / Chain 1 + Chain 2
Test Date	Mar. 18, 2015		

Channel 52

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5254.80	112.07			73.03	31.61	7.43	0.00	140	42	HORIZONTAL	Average
2	5264.40	122.91			83.85	31.62	7.44	0.00	140	42	HORIZONTAL	Peak
3	5350.00	66.61	83.54	-16.93	27.41	31.68	7.52	0.00	140	42	HORIZONTAL	Peak
4	5350.00	55.53	63.54	-8.01	16.33	31.68	7.52	0.00	140	42	HORIZONTAL	Average

Item 1, 2 are the fundamental frequency at 5260 MHz.

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5301.60	112.00			72.89	31.64	7.47	0.00	142	236	VERTICAL	Average
2	5302.00	123.07			83.95	31.64	7.48	0.00	142	236	VERTICAL	Peak
3	5350.00	72.92	83.54	-10.62	33.72	31.68	7.52	0.00	142	236	VERTICAL	Peak
4	5350.00	59.78	63.54	-3.76	20.58	31.68	7.52	0.00	142	236	VERTICAL	Average

Item 1, 2 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	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5314.40	121.06			81.91	31.66	7.49	0.00	138	31	HORIZONTAL	Peak
2	5314.60	110.28			71.13	31.66	7.49	0.00	138	31	HORIZONTAL	Average
3	5350.00	61.99	63.54	-1.55	22.79	31.68	7.52	0.00	138	31	HORIZONTAL	Average
4	5350.20	77.66	83.54	-5.88	38.46	31.68	7.52	0.00	138	31	HORIZONTAL	Peak

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

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 100, 140 / Chain 1 + Chain 2
Test Date	Mar. 18, 2015		

Channel 100

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5459.40	70.10	83.54	-13.44	30.72	31.76	7.62	0.00	143	230	VERTICAL	Peak
2	5460.00	58.20	63.54	-5.34	18.82	31.76	7.62	0.00	143	230	VERTICAL	Average
3	5467.40	78.21	83.54	-5.33	38.80	31.78	7.63	0.00	143	230	VERTICAL	Peak
4	5470.00	60.84	63.54	-2.70	21.43	31.78	7.63	0.00	143	230	VERTICAL	Average
5	5497.00	109.63			70.17	31.80	7.66	0.00	143	230	VERTICAL	Average
6	5501.80	120.13			80.67	31.80	7.66	0.00	143	230	VERTICAL	Peak

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

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5694.20	121.08			81.26	32.04	7.78	0.00	133	218	HORIZONTAL	Peak
2	5699.00	110.53			70.70	32.05	7.78	0.00	133	218	HORIZONTAL	Average
3	5725.00	76.33	83.54	-7.21	36.46	32.08	7.79	0.00	133	218	HORIZONTAL	Peak
4	5725.00	62.00	63.54	-1.54	22.13	32.08	7.79	0.00	133	218	HORIZONTAL	Average

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

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 1 + Chain 2
Test Date	Mar. 18, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5714.40	75.89	77.74	-1.85	36.04	32.06	7.79	0.00	136	217	HORIZONTAL	Peak
2	5724.20	85.70	87.74	-2.04	45.83	32.08	7.79	0.00	136	217	HORIZONTAL	Peak
3	5744.00	111.13			71.23	32.10	7.80	0.00	136	217	HORIZONTAL	Average
4	5749.40	121.93			82.01	32.11	7.81	0.00	136	217	HORIZONTAL	Peak

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5713.80	71.01	77.74	-6.73	31.16	32.06	7.79	0.00	132	216	HORIZONTAL	Peak
2	5725.00	74.62	87.74	-13.12	34.75	32.08	7.79	0.00	132	216	HORIZONTAL	Peak
3	5779.40	126.25			86.28	32.14	7.83	0.00	132	216	HORIZONTAL	Peak
4	5783.80	114.65			74.67	32.15	7.83	0.00	132	216	HORIZONTAL	Average
5	5850.00	71.61	87.74	-16.13	31.51	32.23	7.87	0.00	132	216	HORIZONTAL	Peak
6	5860.00	70.01	77.74	-7.73	29.90	32.24	7.87	0.00	132	216	HORIZONTAL	Peak

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5819.20	123.28			83.24	32.19	7.85	0.00	131	216	HORIZONTAL	Peak
2	5824.00	112.41			72.37	32.19	7.85	0.00	131	216	HORIZONTAL	Average
3	5851.00	83.56	87.74	-4.18	43.46	32.23	7.87	0.00	131	216	HORIZONTAL	Peak
4	5860.00	75.99	77.74	-1.75	35.88	32.24	7.87	0.00	131	216	HORIZONTAL	Peak

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

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2
Test Date	Mar. 18, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5150.00	78.92	83.54	-4.62	40.07	31.52	7.33	0.00	141	198	HORIZONTAL	Peak
2	5150.00	61.93	63.54	-1.61	23.08	31.52	7.33	0.00	141	198	HORIZONTAL	Average
3	5174.21	121.86			82.97	31.54	7.35	0.00	141	198	HORIZONTAL	Peak
4	5174.21	111.63			72.74	31.54	7.35	0.00	141	198	HORIZONTAL	Average

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5149.28	75.85	83.54	-7.69	37.00	31.52	7.33	0.00	140	201	HORIZONTAL	Peak
2	5150.00	61.87	63.54	-1.67	23.02	31.52	7.33	0.00	140	201	HORIZONTAL	Average
3	5197.11	124.20			85.27	31.56	7.37	0.00	140	201	HORIZONTAL	Peak
4	5202.17	113.59			74.64	31.57	7.38	0.00	140	201	HORIZONTAL	Average

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5148.70	69.27	83.54	-14.27	30.42	31.52	7.33	0.00	139	200	HORIZONTAL	Peak
2	5150.00	56.36	63.54	-7.18	17.51	31.52	7.33	0.00	139	200	HORIZONTAL	Average
3	5242.17	124.78			85.76	31.60	7.42	0.00	139	200	HORIZONTAL	Peak
4	5242.17	113.78			74.76	31.60	7.42	0.00	139	200	HORIZONTAL	Average
5	5350.00	56.04	63.54	-7.50	16.84	31.68	7.52	0.00	139	200	HORIZONTAL	Average
6	5350.43	67.44	83.54	-16.10	28.24	31.68	7.52	0.00	139	200	HORIZONTAL	Peak

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Chain 1 + Chain 2
Test Date	Mar. 18, 2015		

Channel 52

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5150.00	67.58	83.54	-15.96	28.73	31.52	7.33	0.00	141	198	HORIZONTAL	Peak
2	5150.00	55.82	63.54	-7.72	16.97	31.52	7.33	0.00	141	198	HORIZONTAL	Average
3	5254.79	124.65			85.61	31.61	7.43	0.00	141	198	HORIZONTAL	Peak
4	5262.17	113.35			74.30	31.61	7.44	0.00	141	198	HORIZONTAL	Average
5	5350.00	66.91	83.54	-16.63	27.71	31.68	7.52	0.00	141	198	HORIZONTAL	Peak
6	5350.00	55.89	63.54	-7.65	16.69	31.68	7.52	0.00	141	198	HORIZONTAL	Average

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

Channel 60

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5295.08	123.59			84.48	31.64	7.47	0.00	137	197	HORIZONTAL	Peak
2	5297.11	113.29			74.18	31.64	7.47	0.00	137	197	HORIZONTAL	Average
3	5350.00	75.31	83.54	-8.23	36.11	31.68	7.52	0.00	137	197	HORIZONTAL	Peak
4	5350.00	61.45	63.54	-2.09	22.25	31.68	7.52	0.00	137	197	HORIZONTAL	Average

Item 1, 2 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	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5321.88	122.86			83.71	31.66	7.49	0.00	136	200	HORIZONTAL	Peak
2	5322.17	111.08			71.93	31.66	7.49	0.00	136	200	HORIZONTAL	Average
3	5350.00	76.98	83.54	-6.56	37.78	31.68	7.52	0.00	136	200	HORIZONTAL	Peak
4	5350.00	61.47	63.54	-2.07	22.27	31.68	7.52	0.00	136	200	HORIZONTAL	Average

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 140 / Chain 1 + Chain 2
Test Date	Mar. 18, 2015		

Channel 100

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5458.70	74.94	83.54	-8.60	35.55	31.77	7.62	0.00	132	203	HORIZONTAL	Peak
2	5460.00	59.23	63.54	-4.31	19.84	31.77	7.62	0.00	132	203	HORIZONTAL	Average
3	5469.71	61.81	63.54	-1.73	22.40	31.78	7.63	0.00	132	203	HORIZONTAL	Average
4	5469.86	79.93	83.54	-3.61	40.52	31.78	7.63	0.00	132	203	HORIZONTAL	Peak
5	5497.40	121.98			82.52	31.80	7.66	0.00	132	203	HORIZONTAL	Peak
6	5504.63	111.01			71.54	31.81	7.66	0.00	132	203	HORIZONTAL	Average

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

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5694.65	121.95			82.13	32.04	7.78	0.00	129	205	HORIZONTAL	Peak
2	5697.11	110.67			70.85	32.04	7.78	0.00	129	205	HORIZONTAL	Average
3	5725.00	79.42	83.54	-4.12	39.55	32.08	7.79	0.00	129	205	HORIZONTAL	Peak
4	5725.00	61.97	63.54	-1.57	22.10	32.08	7.79	0.00	129	205	HORIZONTAL	Average

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

Temperature	25℃	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5714.13	75.24	77.74	-2.50	35.39	32.06	7.79	0.00	138	210	HORIZONTAL	Peak
2	5725.00	86.23	87.74	-1.51	46.36	32.08	7.79	0.00	138	210	HORIZONTAL	Peak
3	5739.50	110.43			70.54	32.09	7.80	0.00	138	210	HORIZONTAL	Average
4	5742.11	121.89			81.99	32.10	7.80	0.00	138	210	HORIZONTAL	Peak

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5715.00	72.56	77.74	-5.18	32.71	32.06	7.79	0.00	133	210	HORIZONTAL	Peak
2	5725.00	78.46	87.74	-9.28	38.59	32.08	7.79	0.00	133	210	HORIZONTAL	Peak
3	5779.50	114.13			74.16	32.14	7.83	0.00	133	210	HORIZONTAL	Average
4	5782.40	125.74			85.76	32.15	7.83	0.00	133	210	HORIZONTAL	Peak
5	5850.00	73.88	87.74	-13.86	33.78	32.23	7.87	0.00	133	210	HORIZONTAL	Peak
6	5860.00	71.54	77.74	-6.20	31.43	32.24	7.87	0.00	133	210	HORIZONTAL	Peak

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5819.50	111.69			71.65	32.19	7.85	0.00	134	209	HORIZONTAL	Average
2	5822.40	122.74			82.70	32.19	7.85	0.00	134	209	HORIZONTAL	Peak
3	5850.00	82.45	87.74	-5.29	42.35	32.23	7.87	0.00	134	209	HORIZONTAL	Peak
4	5860.00	75.88	77.74	-1.86	35.77	32.24	7.87	0.00	134	209	HORIZONTAL	Peak

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5150.00	75.39	83.54	-8.15	36.54	31.52	7.33	0.00	133	218	HORIZONTAL	Peak
2	5150.00	61.87	63.54	-1.67	23.02	31.52	7.33	0.00	133	218	HORIZONTAL	Average
3	5192.03	104.18			65.25	31.56	7.37	0.00	133	218	HORIZONTAL	Average
4	5194.63	113.60			74.67	31.56	7.37	0.00	133	218	HORIZONTAL	Peak

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5150.00	73.54	83.54	-10.00	34.69	31.52	7.33	0.00	142	202	HORIZONTAL	Peak
2	5150.00	61.70	63.54	-1.84	22.85	31.52	7.33	0.00	142	202	HORIZONTAL	Average
3	5224.50	121.15			82.17	31.58	7.40	0.00	142	202	HORIZONTAL	Peak
4	5224.50	110.50			71.52	31.58	7.40	0.00	142	202	HORIZONTAL	Average

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 54

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5264.79	111.32			72.26	31.62	7.44	0.00	143	203	HORIZONTAL	Average
2	5266.96	121.08			82.02	31.62	7.44	0.00	143	203	HORIZONTAL	Peak
3	5350.00	72.88	83.54	-10.66	33.68	31.68	7.52	0.00	143	203	HORIZONTAL	Peak
4	5350.00	61.47	63.54	-2.07	22.27	31.68	7.52	0.00	143	203	HORIZONTAL	Average

Item 1, 2 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	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5296.98	107.92			68.81	31.64	7.47	0.00	135	200	HORIZONTAL	Average
2	5312.60	117.63			78.49	31.65	7.49	0.00	135	200	HORIZONTAL	Peak
3	5350.00	76.69	83.54	-6.85	37.49	31.68	7.52	0.00	135	200	HORIZONTAL	Peak
4	5350.00	61.57	63.54	-1.97	22.37	31.68	7.52	0.00	135	200	HORIZONTAL	Average

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110, 134 / Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 102

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5460.00	70.73	83.54	-12.81	31.34	31.77	7.62	0.00	130	172	HORIZONTAL	Peak
2	5460.00	57.99	63.54	-5.55	18.60	31.77	7.62	0.00	130	172	HORIZONTAL	Average
3	5470.00	77.05	83.54	-6.49	37.64	31.78	7.63	0.00	130	172	HORIZONTAL	Peak
4	5470.00	61.91	63.54	-1.63	22.50	31.78	7.63	0.00	130	172	HORIZONTAL	Average
5	5494.95	108.54			69.08	31.80	7.66	0.00	130	172	HORIZONTAL	Peak
6	5504.50	99.58			60.11	31.81	7.66	0.00	130	172	HORIZONTAL	Average

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

Channel 110

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5460.00	74.30	83.54	-9.24	34.91	31.77	7.62	0.00	135	206	HORIZONTAL	Peak
2	5460.00	60.35	63.54	-3.19	20.96	31.77	7.62	0.00	135	206	HORIZONTAL	Average
3	5469.71	76.06	77.74	-1.68	36.65	31.78	7.63	0.00	135	206	HORIZONTAL	Peak
4	5541.90	120.33			80.79	31.85	7.69	0.00	135	206	HORIZONTAL	Peak
5	5544.79	110.36			70.81	31.86	7.69	0.00	135	206	HORIZONTAL	Average

Item 4, 5 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	5673.21	105.38			63.92	6.79	34.67	0.00	285	139	Average	VERTICAL
2	5675.77	115.59			74.13	6.79	34.67	0.00	285	139	Peak	VERTICAL
3	5730.26	76.11	77.74	-1.63	34.56	6.86	34.69	0.00	285	139	Peak	VERTICAL

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5709.50	75.57	77.74	-2.17	35.73	32.06	7.78	0.00	134	206	HORIZONTAL	Peak
2	5725.00	76.39	87.74	-11.35	36.52	32.08	7.79	0.00	134	206	HORIZONTAL	Peak
3	5749.50	105.21			65.29	32.11	7.81	0.00	134	206	HORIZONTAL	Average
4	5752.11	114.91			74.99	32.11	7.81	0.00	134	206	HORIZONTAL	Peak

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

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5712.68	76.18	77.74	-1.56	36.33	32.06	7.79	0.00	138	209	HORIZONTAL	Peak
2	5722.11	82.30	87.74	-5.44	42.44	32.07	7.79	0.00	138	209	HORIZONTAL	Peak
3	5786.90	110.43			70.45	32.15	7.83	0.00	138	209	HORIZONTAL	Average
4	5789.50	121.47			81.49	32.15	7.83	0.00	138	209	HORIZONTAL	Peak
5	5850.00	80.36	87.74	-7.38	40.26	32.23	7.87	0.00	138	209	HORIZONTAL	Peak
6	5864.63	75.57	77.74	-2.17	35.46	32.24	7.87	0.00	138	209	HORIZONTAL	Peak

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 58 / Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5137.70	73.28	83.54	-10.26	34.45	31.51	7.32	0.00	132	210	HORIZONTAL	Peak
2	5150.00	61.92	63.54	-1.62	23.07	31.52	7.33	0.00	132	210	HORIZONTAL	Average
3	5219.41	111.00			72.02	31.58	7.40	0.00	132	210	HORIZONTAL	Peak
4	5219.41	101.42			62.44	31.58	7.40	0.00	132	210	HORIZONTAL	Average
5	5350.00	57.14	63.54	-6.40	17.94	31.68	7.52	0.00	132	210	HORIZONTAL	Average
6	5360.85	69.95	83.54	-13.59	30.73	31.69	7.53	0.00	132	210	HORIZONTAL	Peak

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

Channel 58

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5134.80	71.53	83.54	-12.01	32.71	31.51	7.31	0.00	132	204	HORIZONTAL	Peak
2	5149.28	59.71	63.54	-3.83	20.86	31.52	7.33	0.00	132	204	HORIZONTAL	Average
3	5276.98	104.90			65.82	31.63	7.45	0.00	132	204	HORIZONTAL	Average
4	5302.30	114.49			75.36	31.65	7.48	0.00	132	204	HORIZONTAL	Peak
5	5350.00	61.72	63.54	-1.82	22.52	31.68	7.52	0.00	132	204	HORIZONTAL	Average
6	5357.24	74.72	83.54	-8.82	35.50	31.69	7.53	0.00	132	204	HORIZONTAL	Peak

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106, 155 / Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 106

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5460.00	74.00	83.54	-9.54	34.61	31.77	7.62	0.00	135	201	HORIZONTAL	Peak
2	5460.00	61.23	63.54	-2.31	21.84	31.77	7.62	0.00	135	201	HORIZONTAL	Average
3	5470.00	73.07	83.54	-10.47	33.66	31.78	7.63	0.00	135	201	HORIZONTAL	Peak
4	5470.00	61.68	63.54	-1.86	22.27	31.78	7.63	0.00	135	201	HORIZONTAL	Average
5	5519.87	111.09			71.60	31.82	7.67	0.00	135	201	HORIZONTAL	Peak
6	5539.41	101.27			61.74	31.85	7.68	0.00	135	201	HORIZONTAL	Average
7	5725.00	57.69	63.54	-5.85	17.82	32.08	7.79	0.00	135	201	HORIZONTAL	Average
8	5730.79	70.43	83.54	-13.11	30.55	32.08	7.80	0.00	135	201	HORIZONTAL	Peak

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

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5709.93	75.82	77.74	-1.92	35.98	32.06	7.78	0.00	132	200	HORIZONTAL	Peak
2	5717.76	77.29	87.74	-10.45	37.43	32.07	7.79	0.00	132	200	HORIZONTAL	Peak
3	5764.87	102.36			62.42	32.12	7.82	0.00	132	200	HORIZONTAL	Average
4	5777.89	112.30			72.34	32.14	7.82	0.00	132	200	HORIZONTAL	Peak
5	5859.41	72.15	87.74	-15.59	32.04	32.24	7.87	0.00	132	200	HORIZONTAL	Peak
6	5860.00	72.15	77.74	-5.59	32.04	32.24	7.87	0.00	132	200	HORIZONTAL	Peak

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

Straddle Channel

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11a CH 144/ Chain 1 + Chain 2
Test Date	Mar. 18, 2015		

Channel 144

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5718.80	114.43			74.57	32.07	7.79	0.00	136	215	HORIZONTAL	Average
2	5724.20	125.08			85.21	32.08	7.79	0.00	136	215	HORIZONTAL	Peak
3	5850.00	56.17	63.54	-7.37	16.07	32.23	7.87	0.00	136	215	HORIZONTAL	Average
4	5854.20	68.83	83.54	-14.71	28.73	32.23	7.87	0.00	136	215	HORIZONTAL	Peak

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 144/ Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 144

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5712.19	115.42			75.57	32.06	7.79	0.00	131	210	HORIZONTAL	Average
2	5714.79	125.21			85.36	32.06	7.79	0.00	131	210	HORIZONTAL	Peak
3	5850.00	57.66	63.54	-5.88	17.56	32.23	7.87	0.00	131	210	HORIZONTAL	Average
4	5862.59	71.68	83.54	-11.86	31.57	32.24	7.87	0.00	131	210	HORIZONTAL	Peak

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 142 / Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 142

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5702.19	122.30			82.47	32.05	7.78	0.00	135	211	HORIZONTAL	Peak
2	5704.79	111.87			72.04	32.05	7.78	0.00	135	211	HORIZONTAL	Average
3	5850.00	58.20	63.54	-5.34	18.10	32.23	7.87	0.00	135	211	HORIZONTAL	Average
4	5853.04	70.48	83.54	-13.06	30.38	32.23	7.87	0.00	135	211	HORIZONTAL	Peak

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

Temperature	25°C	Humidity	65%
Test Engineer	Roki Liu, Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 138/ Chain 1 + Chain 2
Test Date	Mar. 19, 2015		

Channel 138

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5674.80	118.73			78.95	32.02	7.76	0.00	131	209	HORIZONTAL	Peak
2	5682.04	109.28			69.49	32.02	7.77	0.00	131	209	HORIZONTAL	Average
3	5850.00	72.07	83.54	-11.47	31.97	32.23	7.87	0.00	131	209	HORIZONTAL	Peak
4	5850.00	60.69	63.54	-2.85	20.59	32.23	7.87	0.00	131	209	HORIZONTAL	Average

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

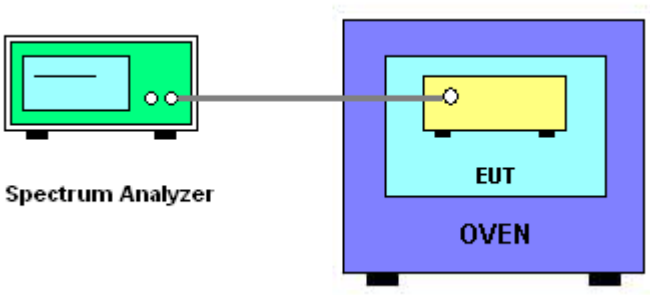
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 -30°C~70°C.

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

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

4.8.7. Test Result of Frequency Stability

Temperature	20°C	Humidity	51%
Test Engineer	Nick Peng	Test Date	Mar. 27, 2015

Mode: 20 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz	5300 MHz	5580 MHz	5785 MHz
126.50	5200.0600	5300.0400	5580.0400	5785.0300
110.00	5200.0500	5300.0500	5580.0600	5785.0400
93.50	5200.0600	5300.0300	5580.0600	5785.0400
Max. Deviation (MHz)	0.06	0.05	0.06	0.04
Max. Deviation (ppm)	11.54	9.43	10.75	6.91

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz	5300 MHz	5580 MHz	5785 MHz
-30	5200.0000	5300.0100	5580.0100	5785.0400
-20	5200.0100	5300.0200	5580.0100	5785.0600
-10	5200.0200	5300.0200	5580.0100	5785.0600
0	5200.0200	5300.0300	5580.0200	5785.0400
10	5200.0600	5300.0500	5580.0400	5785.0400
20	5200.0500	5300.0500	5580.0400	5785.0500
30	5200.0700	5300.0600	5580.0600	5785.0400
40	5200.0600	5300.0700	5580.0600	5785.0600
50	5200.0600	5300.0800	5580.0400	5785.0600
60	5200.0600	5300.0600	5580.0400	5785.0600
70	5200.0700	5300.0800	5580.0600	5785.0800
Max. Deviation (MHz)	0.07	0.08	0.06	0.08
Max. Deviation (ppm)	13.46	15.09	10.75	13.83

Mode: 40 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz	5310 MHz	5550 MHz	5755 MHz
126.50	5190.0300	5310.0200	5550.0300	5755.0100
110.00	5190.0300	5310.0200	5550.0400	5755.0200
93.50	5190.0400	5310.0200	5550.0400	5755.0100
Max. Deviation (MHz)	0.04	0.02	0.04	0.02
Max. Deviation (ppm)	7.71	3.77	7.21	3.48

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz	5310 MHz	5550 MHz	5755 MHz
-30	5190.0200	5310.0200	5550.0300	5755.0100
-20	5190.0200	5310.0200	5550.0400	5755.0000
-10	5190.0200	5310.0300	5550.0400	5755.0100
0	5190.0300	5310.0300	5550.0300	5755.0200
10	5190.0400	5310.0200	5550.0400	5755.0300
20	5190.0300	5310.0200	5550.0300	5755.0100
30	5190.0500	5310.0400	5550.0400	5755.0100
40	5190.0500	5310.0300	5550.0600	5755.0100
50	5190.0600	5310.0300	5550.0600	5755.0200
60	5190.0600	5310.0600	5550.0600	5755.0200
70	5190.0800	5310.0400	5550.0800	5755.0200
Max. Deviation (MHz)	0.08	0.06	0.08	0.03
Max. Deviation (ppm)	15.41	11.30	14.41	5.21

Mode: 80 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz	5290 MHz	5530 MHz	5775 MHz
126.50	5210.0300	5290.0300	5530.0300	5775.0400
110.00	5210.0400	5290.0400	5530.0400	5775.0300
93.50	5210.0300	5290.0300	5530.0400	5775.0400
Max. Deviation (MHz)	0.04	0.04	0.04	0.04
Max. Deviation (ppm)	7.68	7.56	7.23	6.93

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz	5290 MHz	5530 MHz	5775 MHz
-30	5210.0600	5290.0200	5530.0200	5775.0400
-20	5210.0400	5290.0100	5530.0400	5775.0300
-10	5210.0400	5290.0100	5530.0400	5775.0400
0	5210.0400	5290.0300	5530.0300	5775.0300
10	5210.0300	5290.0400	5530.0300	5775.0300
20	5210.0400	5290.0300	5530.0400	5775.0400
30	5210.0400	5290.0500	5530.0600	5775.0100
40	5210.0300	5290.0400	5530.0400	5775.0300
50	5210.0500	5290.0300	5530.0500	5775.0400
60	5210.0600	5290.0600	5530.0600	5775.0600
70	5210.0400	5290.0800	5530.0300	5775.0500
Max. Deviation (MHz)	0.06	0.08	0.06	0.06
Max. Deviation (ppm)	11.52	15.12	10.85	10.39

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. 03, 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	Feb. 24, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 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	1m~4m	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-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Thermometer	HTC-1	HTC-1	TP-1	-50℃~70℃	Mar. 11, 2015	Radiation (03CH01-CB)
Spectrum 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 Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 03, 2014	Conducted (TH01-CB)
Thermometer	HTC-1	HTC-1	TP-8	-50℃~70℃	Mar. 05, 2015	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%