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FCC RADIO TEST REPORT

Applicant's company	**D-Link Corporation**
Applicant Address	No.289, Shinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.
FCC ID	**KA2AP2695A1**

Product Name	AirPremier AC Simultaneous Dual Band PoE Access Point
Brand Name	D-Link
Model No.	DAP-2695
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Dec. 07, 2015
Final Test Date	Jan. 20, 2016
Submission Type	Class II Change

Statement

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

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

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01r01, KDB662911 D01 v02r01, KDB644545 D03 v01.**

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

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR360421-03AB	Rev. 01	Initial issue of report	Feb. 23, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	AirPremier AC Simultaneous Dual Band PoE Access Point
Brand Name	:	D-Link
Model No.	:	DAP-2695
Applicant	:	D-Link Corporation
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Dec. 07, 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	9.82 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	1.30 dB
4.5	15.407(a)	Power Spectral Density	Complies	0.12 dB
4.6	15.407(b)	Radiated Emissions	Complies	3.04 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.17 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Power Adapter or PoE
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Channel Number	9 for 20MHz bandwidth ; 4 for 40MHz bandwidth 2 for 80MHz bandwidth
Channel Band Width (99%)	Band 1: IEEE 802.11a: 16.08 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.88 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.00 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.60 MHz Band 4: IEEE 802.11a: 16.68 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.48 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.60 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 73.60 MHz
Maximum Conducted Output Power	Band 1: IEEE 802.11a: 26.30 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 26.38 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 28.19 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 19.65 dBm Band 4: IEEE 802.11a: 28.54 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 28.70 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.52 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.36 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
Beamforming Function	☐ With beamforming	☒ Without beamforming
Operate Condition	☒ Indoor	☐ Outdoor

Antenna & Band width

Antenna	Three (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)	3	MCS 0-23
802.11n (HT40)	3	MCS 0-23
802.11ac (VHT20)	3	MCS 0-9/Nss1-3
802.11ac (VHT40)	3	MCS 0-9/Nss1-3
802.11ac (VHT80)	3	MCS 0-9/Nss1-3

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

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

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

3.2. Accessories

Power	Brand	Model No.	Rating
Adapter	LEI	MU24A5480050-A1	Input: 100-240V~50/60Hz, 0.7A Output: 48V, 0.5A
PoE	LANREADY	PE03G-EIA	Input: 8-57Vdc (Max.48W) Output: 8-57Vdc (Max.48W)

3.3. Table for Filed Antenna

Ant.	Brand	Model No.	Antenna Type	Connector	Test Gain (dBi) (Contain cable loss)
1	WHA YU	C037-511272-A(SSR-31154)	Dipole	SMA Straight Plug Reverse	3.5
2	WHA YU	C037-511272-A(SSR-31154)	Dipole	SMA Straight Plug Reverse	3.5
3	WHA YU	C037-511272-A(SSR-31154)	Dipole	SMA Straight Plug Reverse	3.5
4	WHA YU	C037-511274-A(SSR-31153)	Dipole	SMA Plug Reverse	5.0
5	WHA YU	C037-511274-A(SSR-31153)	Dipole	SMA Plug Reverse	5.0
6	WHA YU	C037-511274-A(SSR-31153)	Dipole	SMA Plug Reverse	5.0

Note: The EUT has six antennas.

<For 2.4GHz Band:>

For IEEE 802.11b/g/n mode (3TX/3RX)

Ant. 1, Ant. 2 and Ant. 3 could transmit/receive simultaneously.

<For 5GHz Band:>

For IEEE 802.11a/n/ac mode (3TX/3RX)

Ant. 4, Ant. 5 and Ant. 6 could transmit/receive simultaneously.

3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 38, 46, 151, 159.

For 80MHz bandwidth systems, use Channel 42, 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz	-	-
5725~5850 MHz Band 4	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Ant.
AC Power Conducted Emission	Normal Link		-	-	-
Max. Conducted Output Power	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
Power Spectral Density	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 4	6Mbps	149/157/165	4+5+6
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	4+5+6
	11ac VHT40	Band 4	MCS0/Nss1	151/159	4+5+6
	11ac VHT80	Band 4	MCS0/Nss1	155	4+5+6
Radiated Emission Below 1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6

Band Edge Emission	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
Frequency Stability	20 MHz	Band 1&4	-	40/157	4
	40 MHz	Band 1&4	-	38/151	4
	80 MHz	Band 1&4	-	42/155	4

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

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. EUT with adapter

Mode 2. EUT with PoE

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

For Radiated Emission test(below 1GHz):

Mode 1. EUT with adapter in Y axis

Mode 2. EUT with adapter in Z axis

Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow this same test mode.

Mode 3. EUT with PoE in Z axis

Mode 3 is the worst case, so it was selected to record in this test report.

For Radiated Emission test(Above 1GHz):

The EUT can be placed at Y-axis and Z-axis and it supports WLAN 5GHz functions. After evaluating, the EUT at Z-axis with WLAN 5GHz function was the worst case. Consequently, measurement for Radiated Emissions will follow this same test mode.

For Co-location MPE Test:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA360421-03) test is 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. Class II Change

This product is an extension of original report under Sporton project number: FR360421AB

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Adding an adapter (Model: MU24A5480050-A1)	1. AC Conducted Emissions 2. Radiated Emissions below 1GHz
Changing 5GHz Band 1 and Band 4 to "New Rules" from "Old Rules".	1. 26dB Bandwidth and 99% Occupied Bandwidth 2. 6dB Spectrum Bandwidth 3. Maximum Conducted Output Power 4. Power Spectral Density 5. Radiated Emissions Above 1GHz 6. Band Edge Emissions 7. Frequency Stability

3.8. Table for Supporting Units

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

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

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

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

For Test Site No: CO01-CB

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

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

3.9. Table for Parameters of Test Software Setting

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

Test Software Version	DOS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	20	20.5	21	23.5	25	24.5
802.11ac MCS0/Nss1 VHT20	21	20.5	21	23.5	25	24
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	17		23.5		18.5	23
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	16				14.5	

3.10. EUT Operation during Test

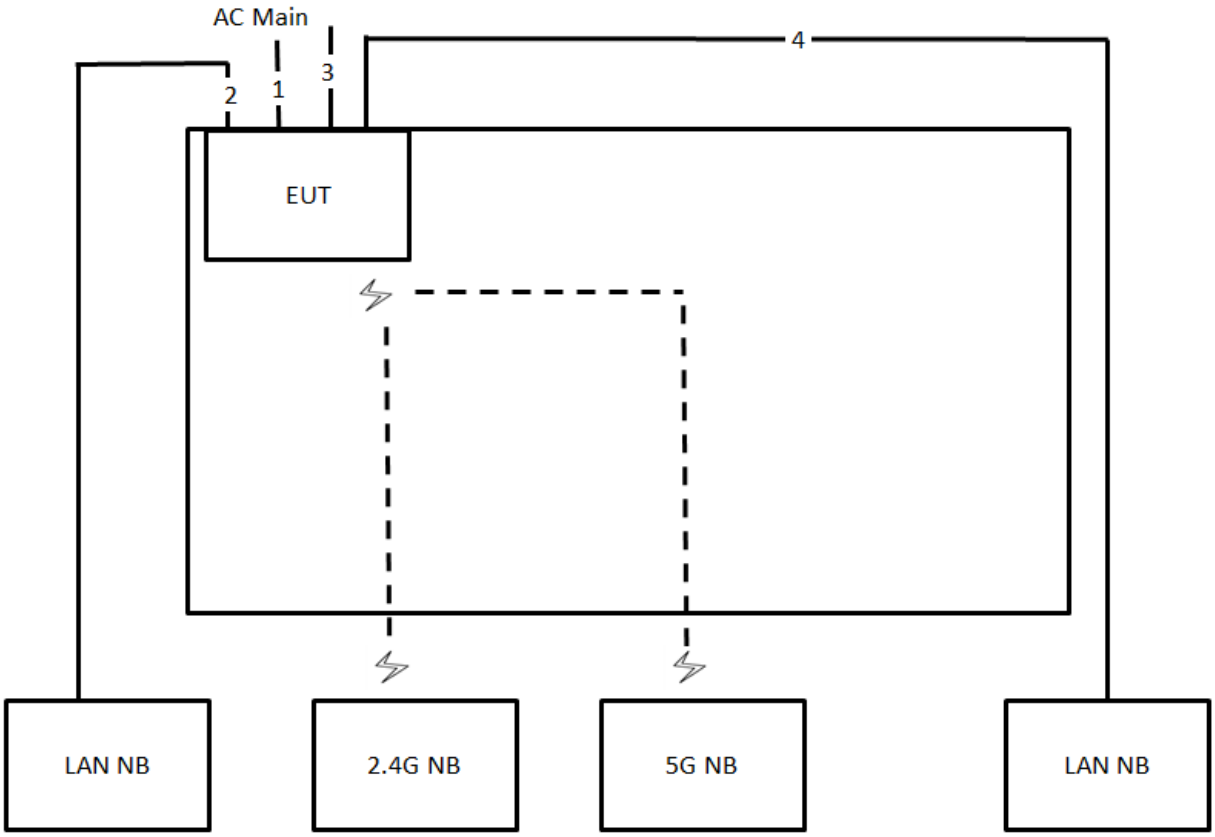
The EUT was programmed to be in continuously transmitting mode.

3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.016	2.072	97.30%	0.12	0.50
802.11ac MCS0/Nss1 VHT20	1.904	1.948	97.74%	0.10	0.53
802.11ac MCS0/Nss1 VHT40	0.910	0.980	92.86%	0.32	1.10
802.11ac MCS0/Nss1 VHT80	0.459	0.513	89.47%	0.48	2.18

3.12. Test Configurations

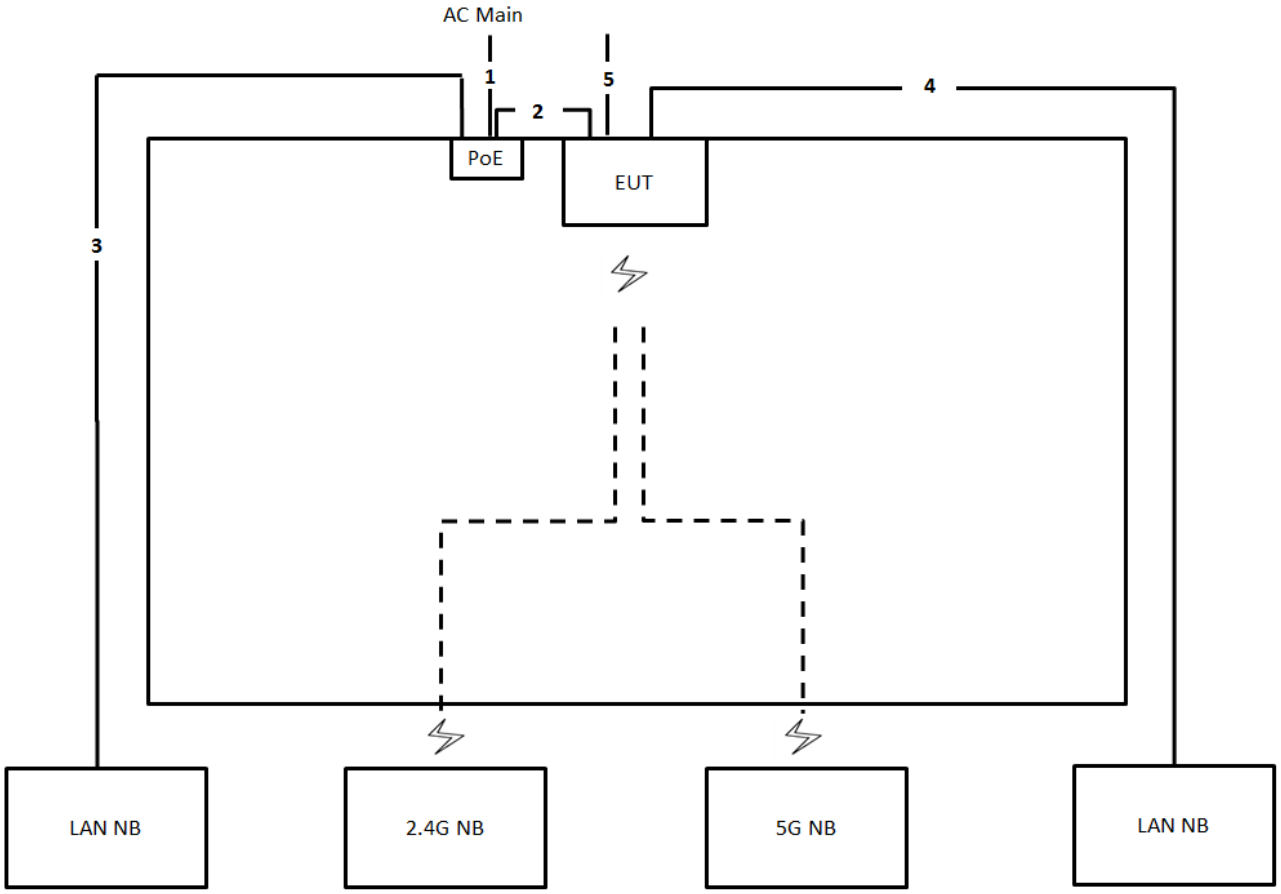
3.12.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	1.2m
2	RJ-45 cable	No	10m
3	Console cable	No	1.5m
4	RJ-45 cable	No	10m

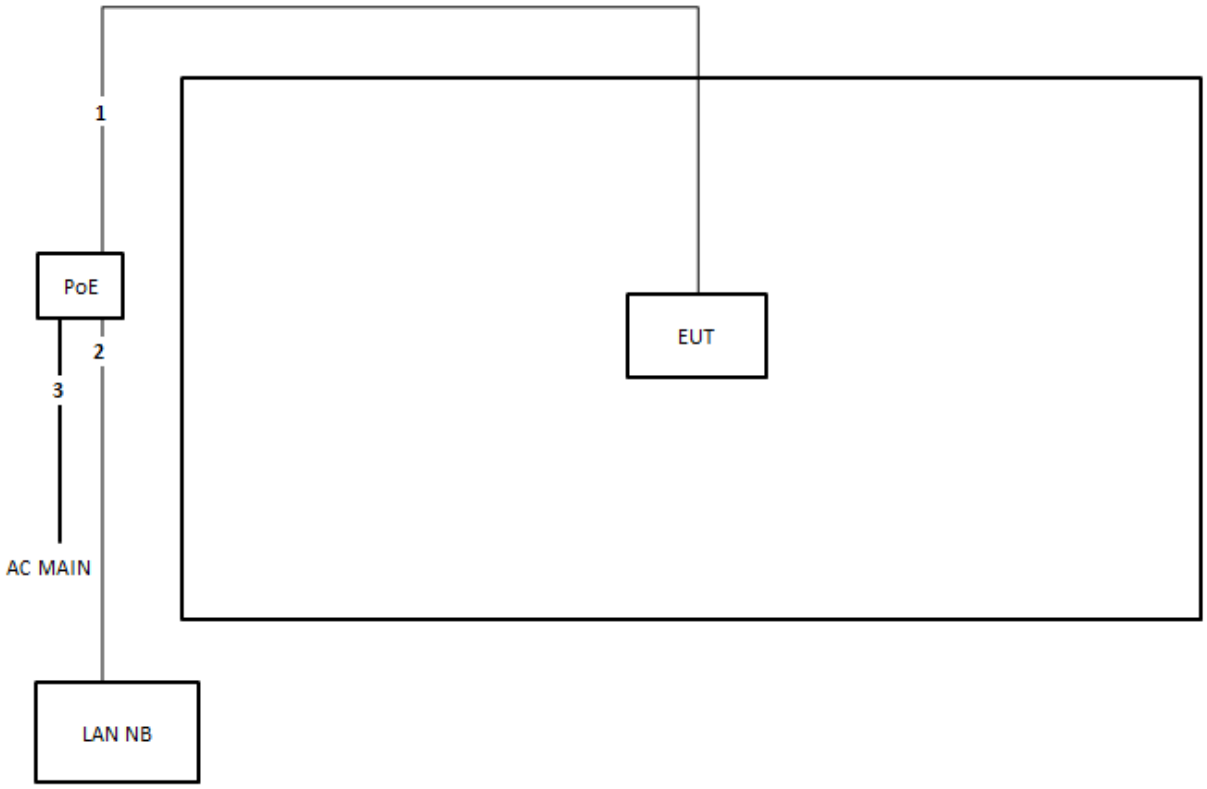
3.12.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz ~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.2m
2	RJ-45 cable	No	1.5m
3	RJ-45 cable	No	10m
4	RJ-45 cable	No	10m
5	Console cable	No	1.5m

Test Configuration: above 1GHz



Item	Connection	Shielded	Length(m)
1	RJ-45 cable	No	10m
2	RJ-45 Cable	No	1.5m
3	Power Cable	No	1.2m

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

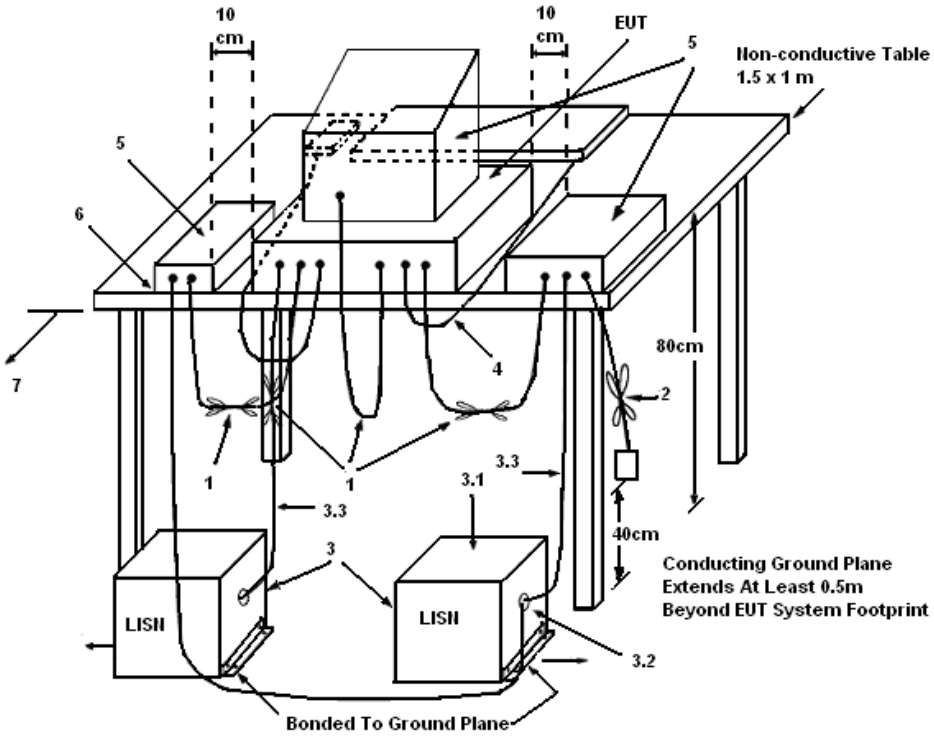
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

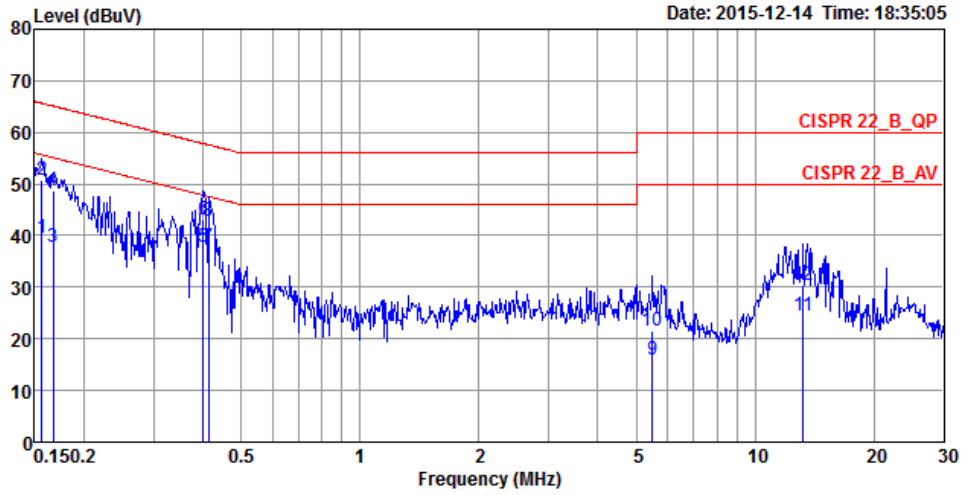
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

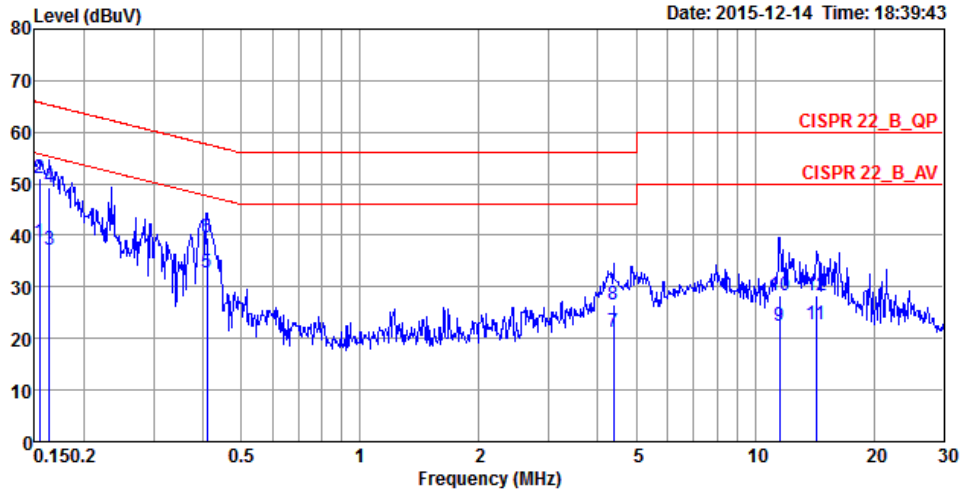
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23℃	Humidity	53%
Test Engineer	Sollo Luo	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1565	39.56	-16.09	55.65	29.61	9.93	0.02	LINE	Average
2	0.1565	50.72	-14.93	65.65	40.77	9.93	0.02	LINE	QP
3	0.1668	37.64	-17.48	55.12	27.69	9.93	0.02	LINE	Average
4	0.1668	48.80	-16.32	65.12	38.85	9.93	0.02	LINE	QP
5	0.3997	37.93	-9.93	47.86	27.96	9.93	0.04	LINE	Average
6	0.3997	43.11	-14.75	57.86	33.14	9.93	0.04	LINE	QP
7	0.4127	37.77	-9.82	47.59	27.80	9.93	0.04	LINE	Average
8	0.4127	42.74	-14.85	57.59	32.77	9.93	0.04	LINE	QP
9	5.5054	16.05	-33.95	50.00	5.86	10.08	0.11	LINE	Average
10	5.5054	21.60	-38.40	60.00	11.41	10.08	0.11	LINE	QP
11	13.2667	24.53	-25.47	50.00	14.00	10.28	0.25	LINE	Average
12	13.2667	30.32	-29.68	60.00	19.79	10.28	0.25	LINE	QP

Temperature	23℃	Humidity	53%
Test Engineer	Sollo Luo	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1540	38.75	-17.03	55.78	28.95	9.78	0.02	NEUTRAL	Average
2	0.1540	50.97	-14.81	65.78	41.17	9.78	0.02	NEUTRAL	QP
3	0.1633	37.34	-17.96	55.30	27.54	9.78	0.02	NEUTRAL	Average
4	0.1633	49.18	-16.12	65.30	39.38	9.78	0.02	NEUTRAL	QP
5	0.4105	32.82	-14.82	47.64	22.99	9.79	0.04	NEUTRAL	Average
6	0.4105	39.42	-18.22	57.64	29.59	9.79	0.04	NEUTRAL	QP
7	4.3838	21.29	-24.71	46.00	11.33	9.88	0.08	NEUTRAL	Average
8	4.3838	26.59	-29.41	56.00	16.63	9.88	0.08	NEUTRAL	QP
9	11.5594	22.56	-27.44	50.00	12.27	10.04	0.25	NEUTRAL	Average
10	11.5594	28.41	-31.59	60.00	18.12	10.04	0.25	NEUTRAL	QP
11	14.2882	22.59	-27.41	50.00	12.23	10.10	0.26	NEUTRAL	Average
12	14.2882	28.28	-31.72	60.00	17.92	10.10	0.26	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

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

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

4.2.3. Test Procedures

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

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

4.2.4. Test Setup Layout

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

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

4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

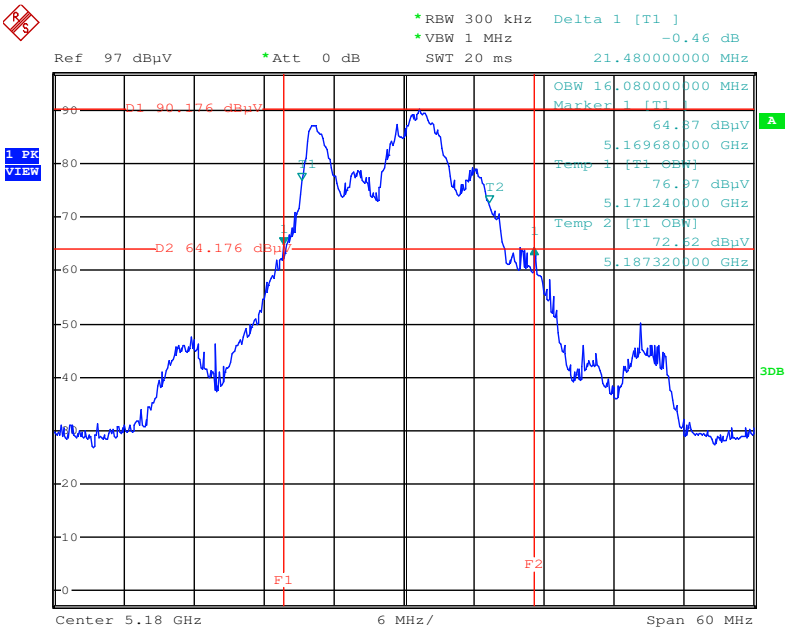
The EUT was programmed to be in continuously transmitting mode.

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

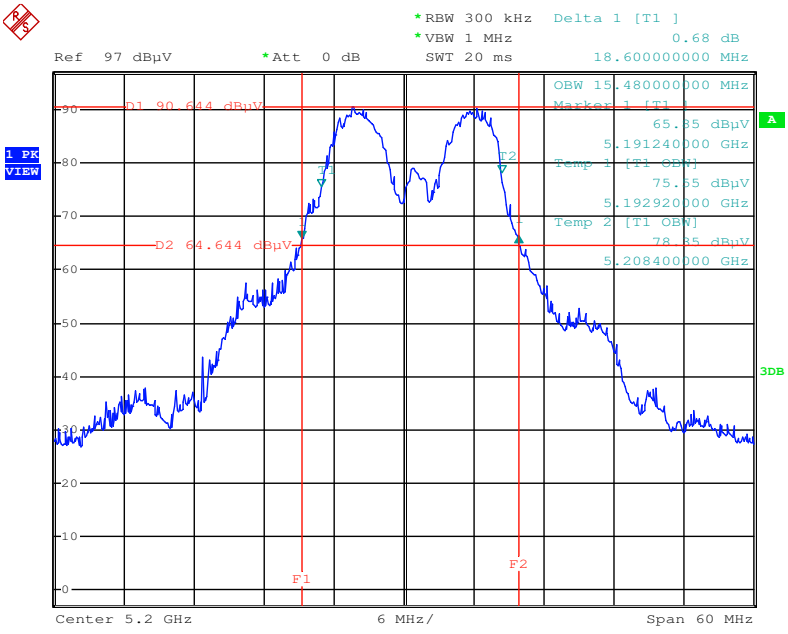
Temperature	25℃	Humidity	45%
Test Engineer	Eddie Weng		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	21.48	16.08
	5200 MHz	18.60	15.48
	5240 MHz	19.08	15.48
	5745 MHz	20.40	16.68
	5785 MHz	19.20	16.56
	5825 MHz	19.32	16.56
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.72	17.88
	5200 MHz	21.84	17.76
	5240 MHz	21.84	17.88
	5745 MHz	23.40	18.48
	5785 MHz	20.28	17.40
	5825 MHz	19.92	16.92
802.11ac MCS0/Nss1 VHT40	5190 MHz	44.80	37.00
	5230 MHz	41.00	35.00
	5755 MHz	41.00	35.60
	5795 MHz	44.20	35.40
802.11ac MCS0/Nss1 VHT80	5210 MHz	84.80	75.60
	5775 MHz	84.80	73.60

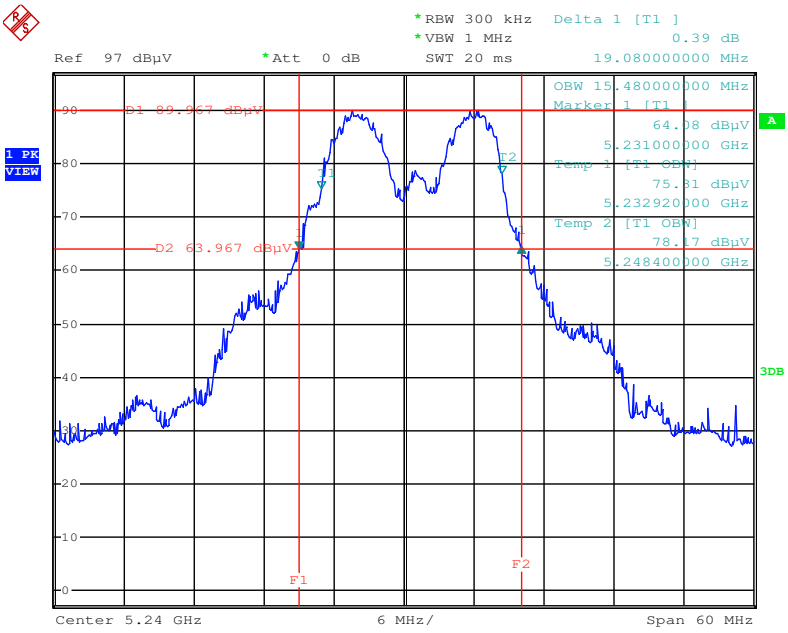
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6 / 5180 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6 / 5200 MHz

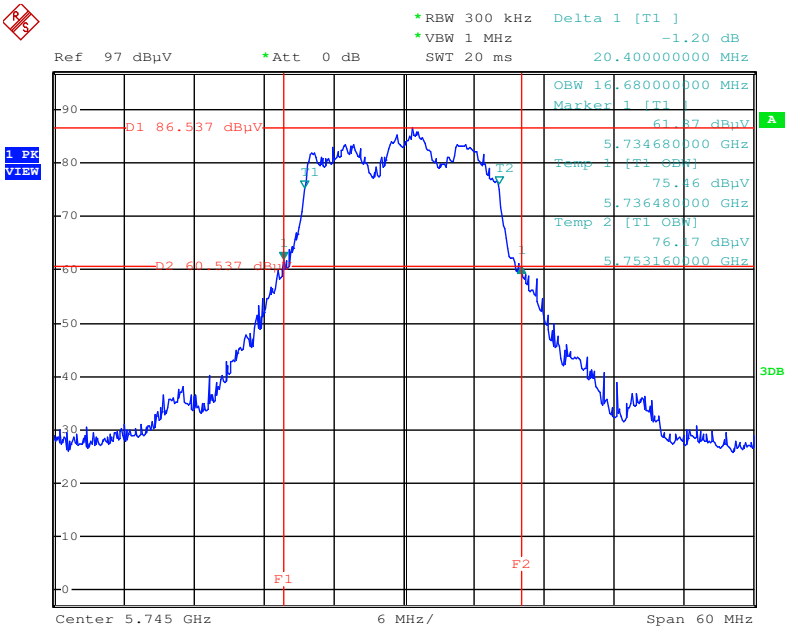


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6 / 5240 MHz



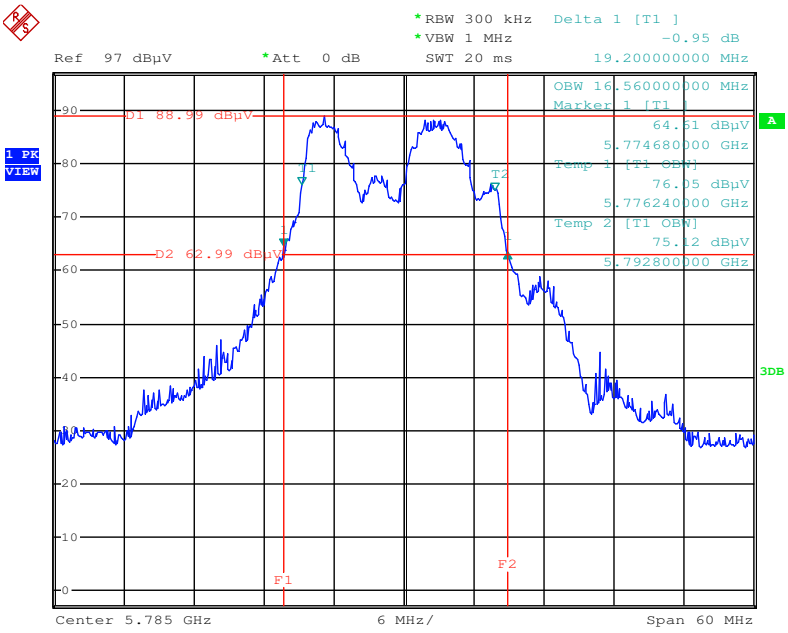
Date: 20.JAN.2016 19:21:19

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6 / 5745 MHz



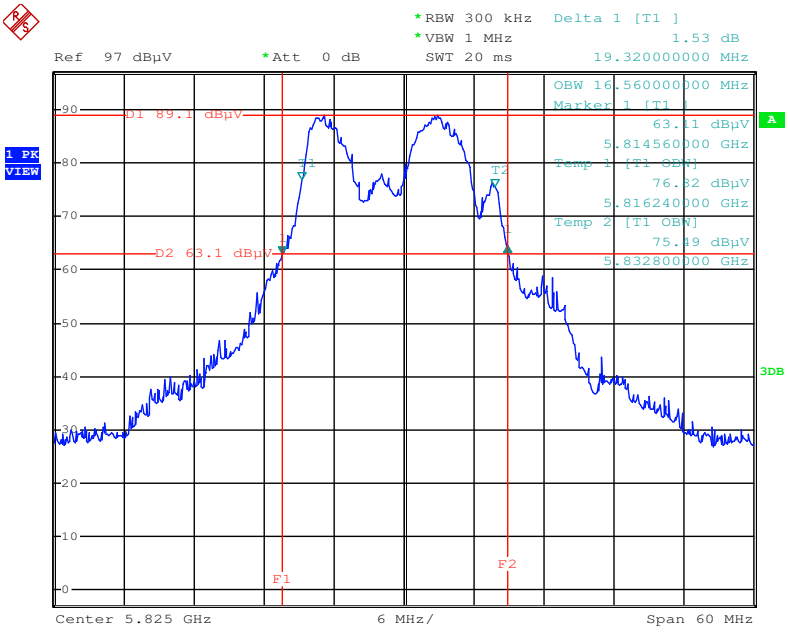
Date: 20.JAN.2016 19:22:29

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6 / 5785 MHz



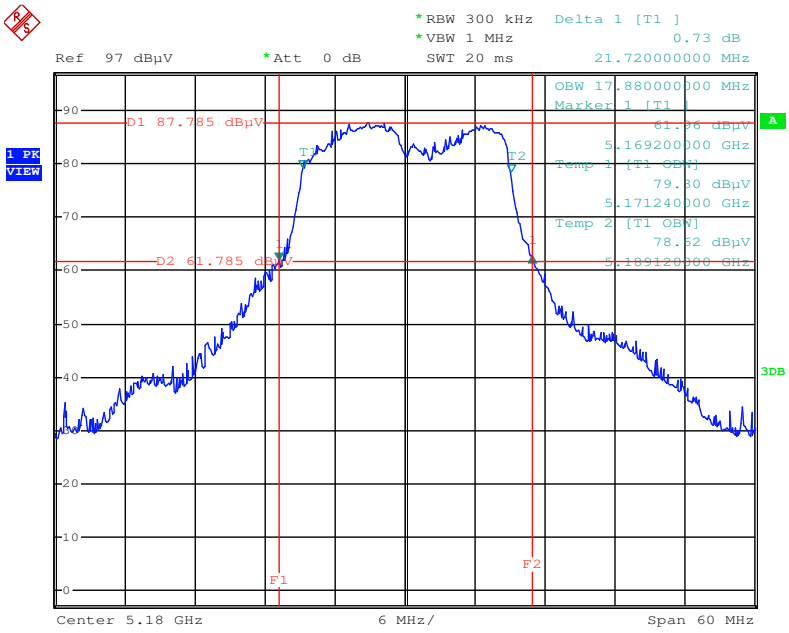
Date: 20.JAN.2016 19:23:02

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6 / 5825 MHz



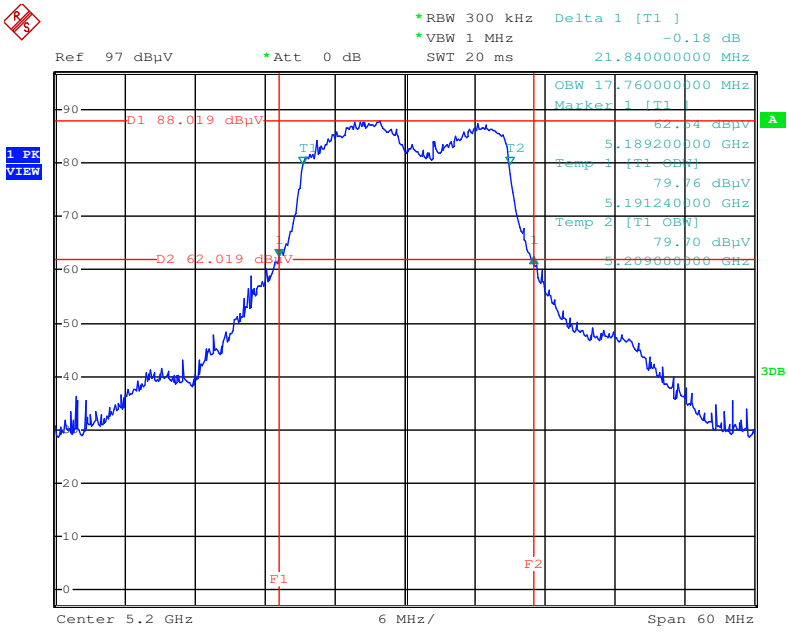
Date: 20.JAN.2016 19:23:32

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 + Ant. 5 + Ant. 6 / 5180 MHz



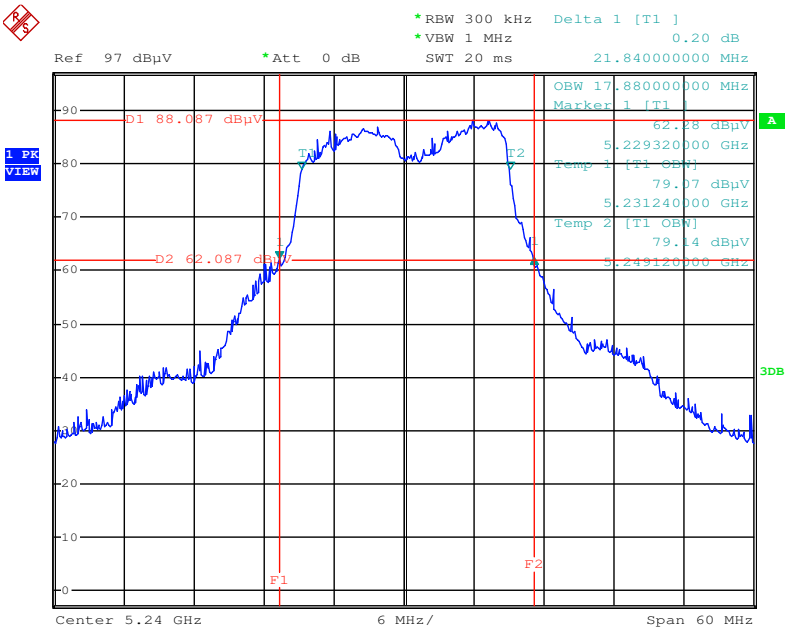
Date: 20.JAN.2016 19:28:43

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 + Ant. 5 + Ant. 6 / 5200 MHz



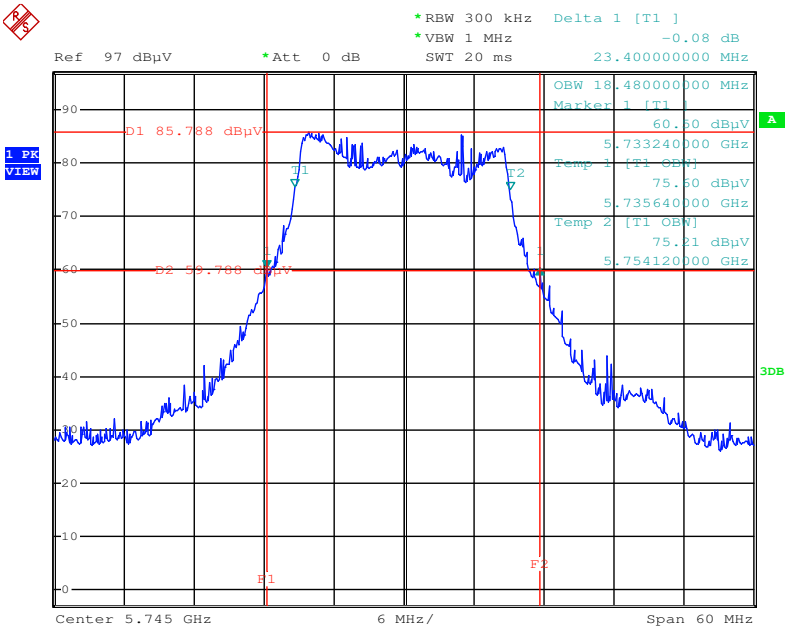
Date: 20.JAN.2016 19:28:18

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 + Ant. 5 + Ant. 6 / 5240 MHz



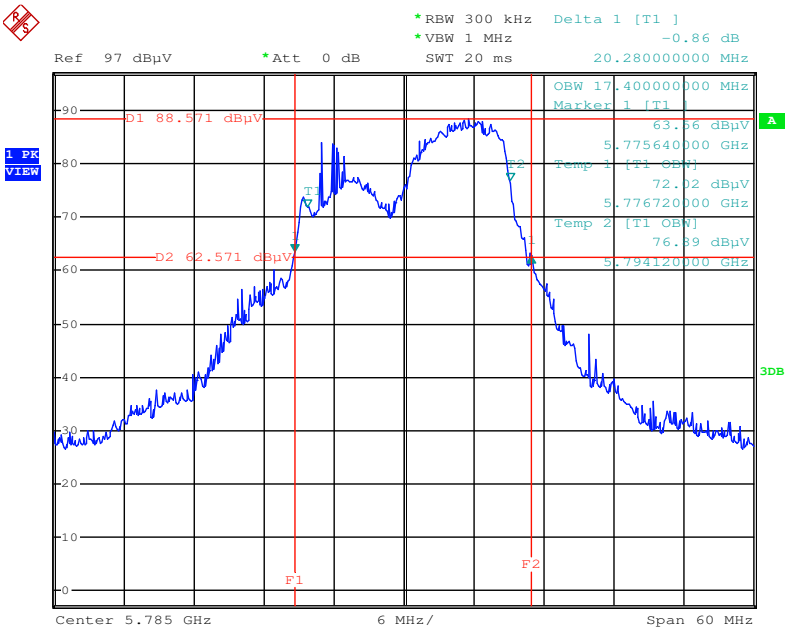
Date: 20.JAN.2016 19:29:16

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 + Ant. 5 + Ant. 6 / 5745 MHz



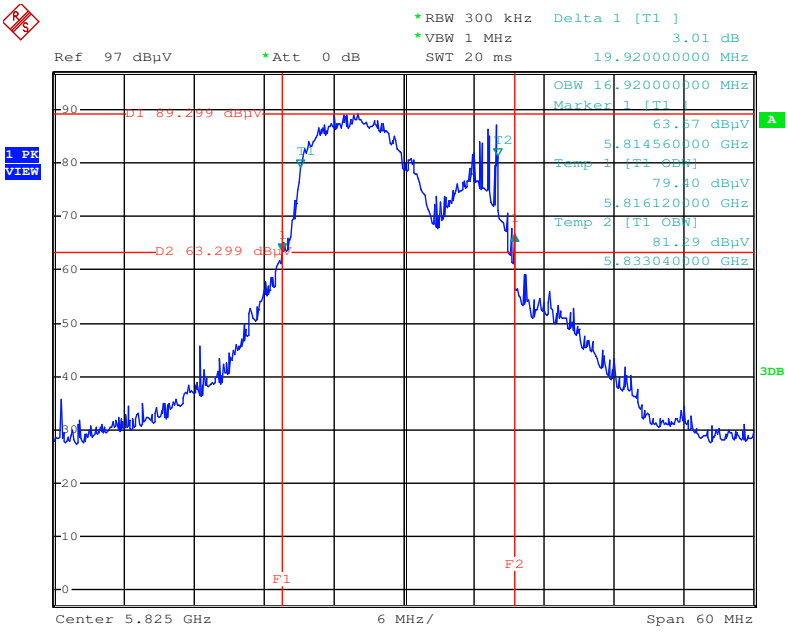
Date: 20.JAN.2016 19:27:12

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 + Ant. 5 + Ant. 6 / 5785 MHz



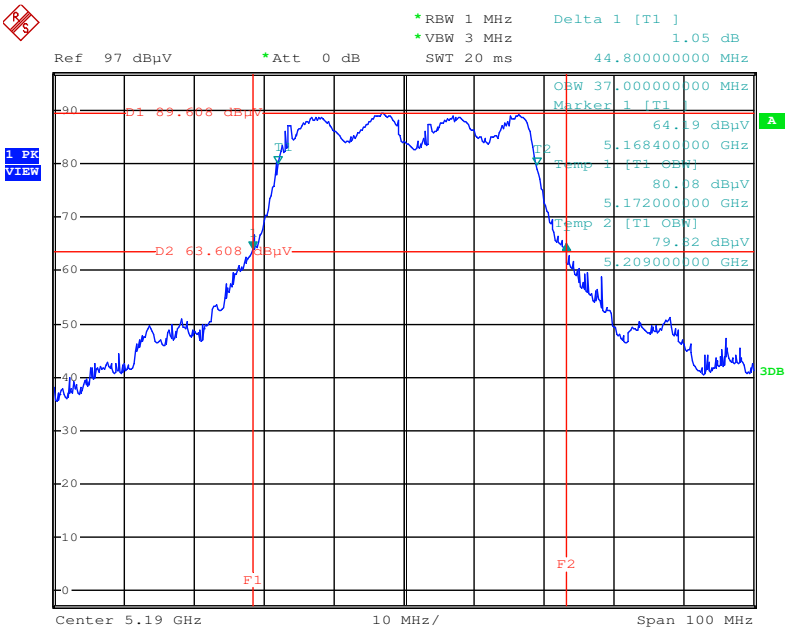
Date: 20.JAN.2016 19:26:42

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 + Ant. 5 + Ant. 6 / 5825 MHz



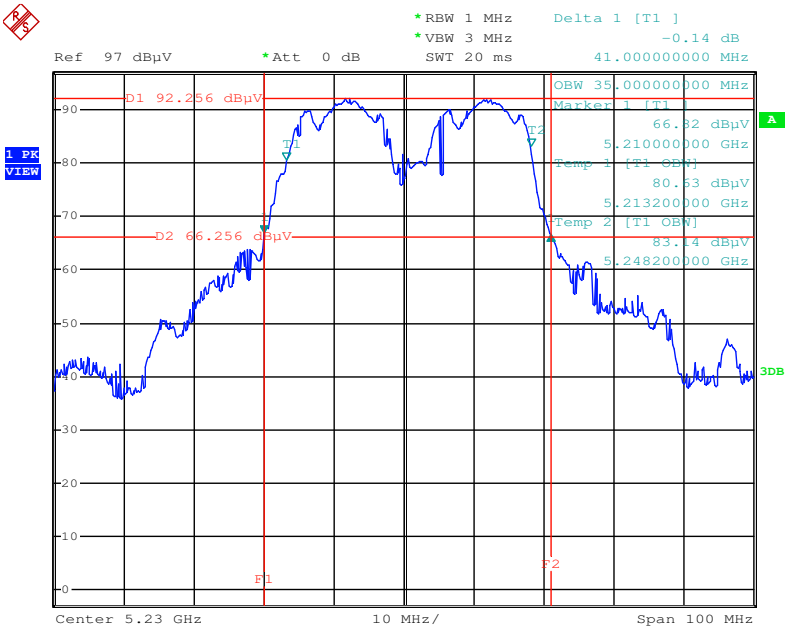
Date: 20.JAN.2016 19:25:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 + Ant. 5 + Ant. 6 / 5190 MHz



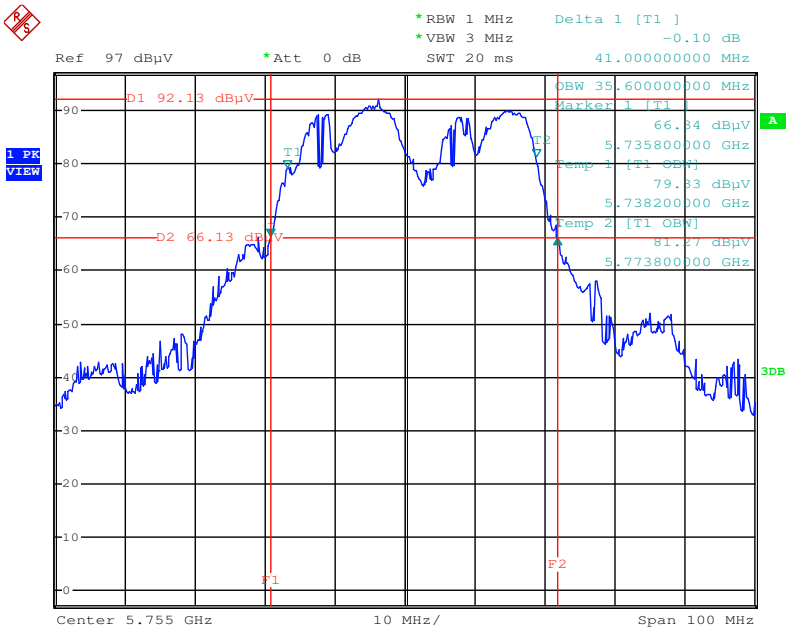
Date: 20.JAN.2016 19:31:29

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 + Ant. 5 + Ant. 6 / 5230 MHz



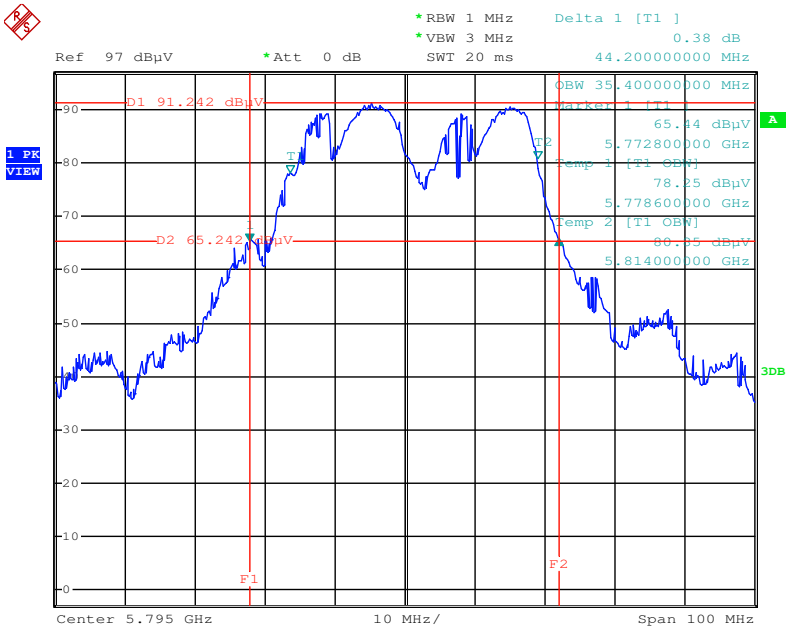
Date: 20.JAN.2016 19:32:01

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 + Ant. 5 + Ant. 6 / 5755 MHz



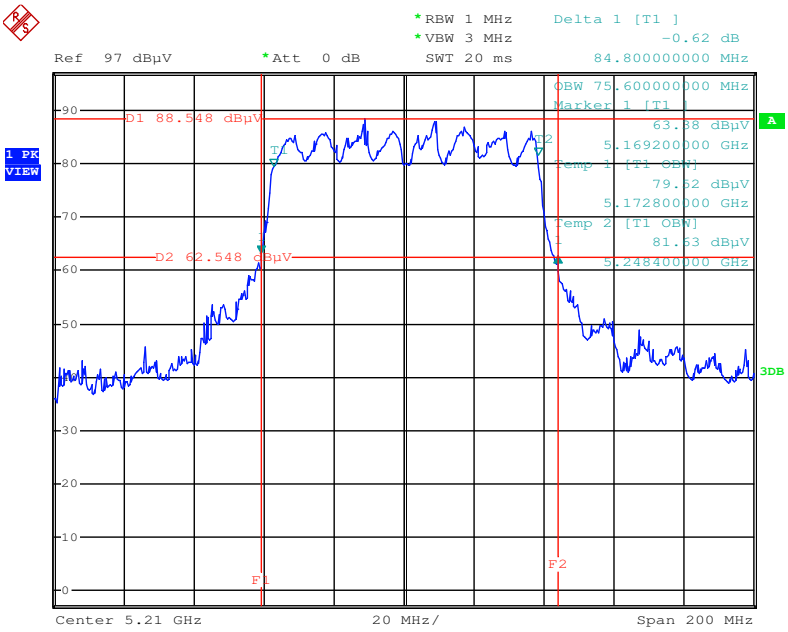
Date: 20.JAN.2016 19:32:30

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 + Ant. 5 + Ant. 6 / 5795 MHz



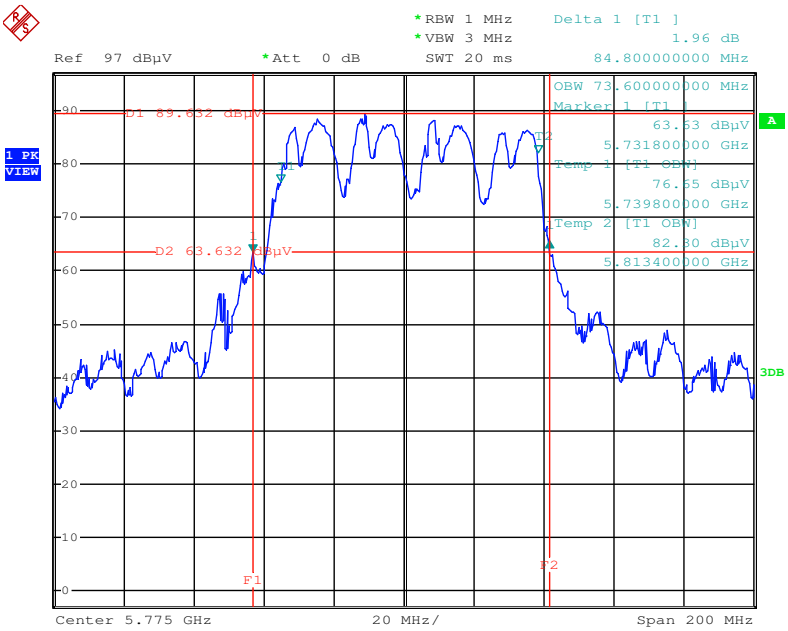
Date: 20.JAN.2016 19:33:01

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 4 + Ant. 5 + Ant. 6 / 5210 MHz



Date: 20.JAN.2016 19:34:44

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 4 + Ant. 5 + Ant. 6 / 5775 MHz



Date: 20.JAN.2016 19:35:15

4.3. 6dB Spectrum Bandwidth Measurement

4.3.1. Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

4.3.2. Measuring Instruments and Setting

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

6dB Spectrum Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB789033 D02 v01r01 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

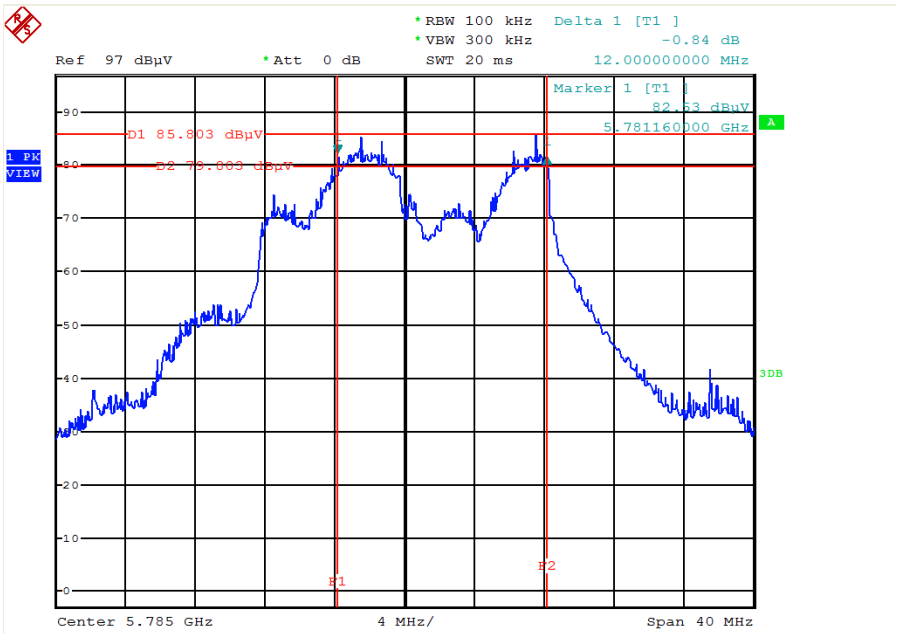
Temperature	25°C	Humidity	45%
Test Engineer	Eddie Weng		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	12.16	500	Complies
	5785 MHz	12.00	500	Complies
	5825 MHz	14.80	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	15.04	500	Complies
	5785 MHz	15.60	500	Complies
	5825 MHz	15.36	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	32.64	500	Complies
	5795 MHz	35.68	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	62.20	500	Complies

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

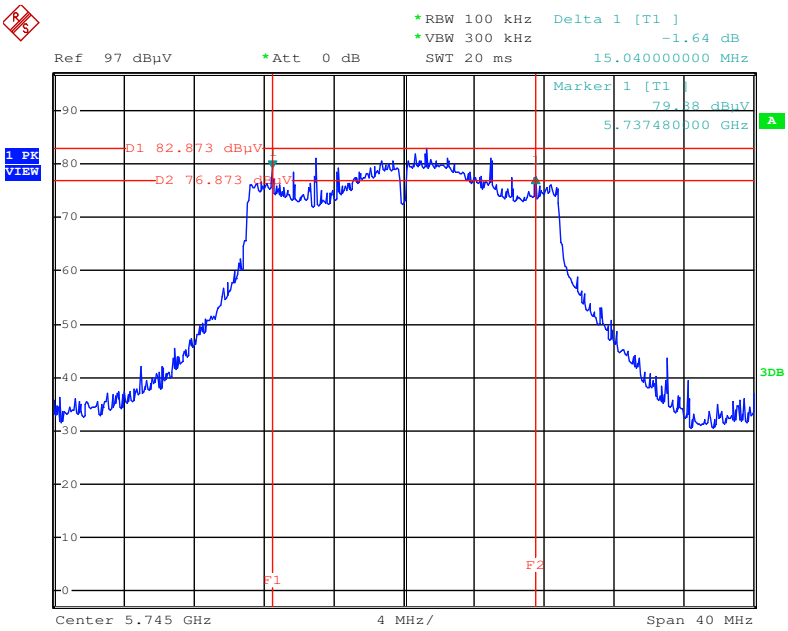
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6 / 5785 MHz



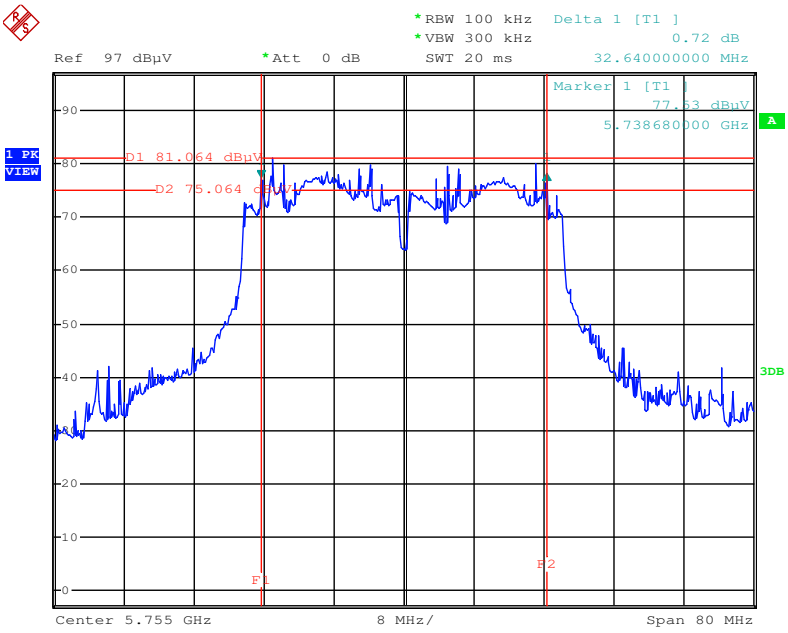
Date: 20.JAN.2016 19:44:49

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 + Ant. 5 + Ant. 6 / 5745 MHz



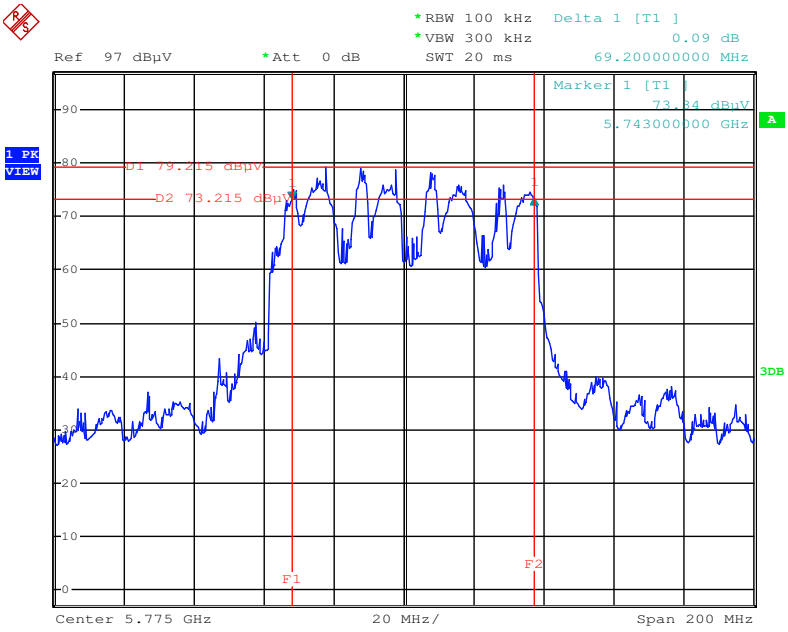
Date: 20.JAN.2016 19:40:50

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 + Ant. 5 + Ant. 6 / 5755MHz



Date: 20.JAN.2016 19:38:57

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 4 + Ant. 5 + Ant. 6 / 5775 MHz



Date: 20.JAN.2016 19:36:46

4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

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

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

4.4.2. Measuring Instruments and Setting

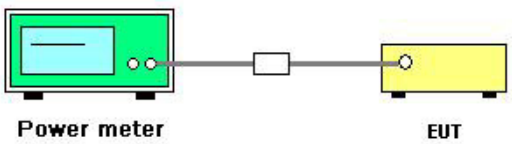
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Maximum Conducted Output Power

Temperature	25°C	Humidity	45%
Test Engineer	Eddie Weng	Test Date	Jan. 18, 2016~Jan. 20, 2016

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Ant. 4	Ant. 5	Ant. 6	Total		
802.11a	5180 MHz	19.91	19.69	20.23	24.72	30.00	Complies
	5200 MHz	20.55	21.69	22.04	26.24	30.00	Complies
	5240 MHz	21.14	21.63	21.78	26.30	30.00	Complies
	5745 MHz	22.46	21.77	23.12	27.26	30.00	Complies
	5785 MHz	23.75	23.51	24.03	28.54	30.00	Complies
	5825 MHz	23.62	23.11	23.48	28.18	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.08	21.54	21.45	26.13	30.00	Complies
	5200 MHz	20.76	21.39	22.02	26.19	30.00	Complies
	5240 MHz	21.12	21.53	22.11	26.38	30.00	Complies
	5745 MHz	21.96	21.15	23.14	26.93	30.00	Complies
	5785 MHz	23.58	23.62	24.52	28.70	30.00	Complies
	5825 MHz	23.46	22.11	22.56	27.52	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	15.95	15.89	15.92	20.69	30.00	Complies
	5230 MHz	23.71	22.96	23.54	28.19	30.00	Complies
	5755 MHz	16.66	17.43	17.13	21.86	30.00	Complies
	5795 MHz	21.64	21.65	21.95	26.52	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	14.31	14.77	15.48	19.65	30.00	Complies
	5775 MHz	12.16	12.82	12.76	17.36	30.00	Complies

4.5. Power Spectral Density Measurement

4.5.1. Limit

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

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

4.5.2. Measuring Instruments and Setting

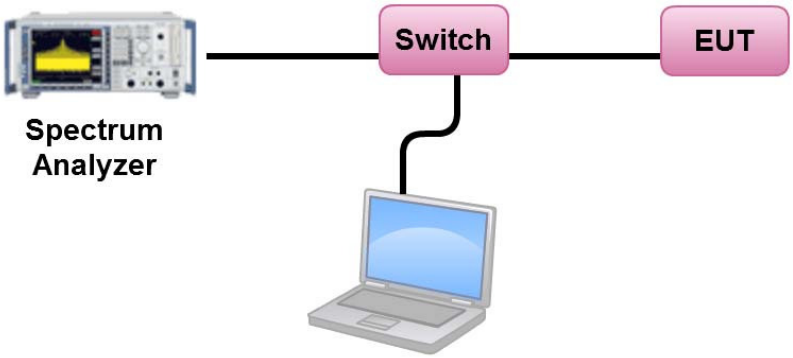
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 v01r01 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	25°C	Humidity	45%
Test Engineer	Eddie Weng	Test Date	Jan. 18, 2016~Jan. 20, 2016

Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	11.54	13.23	Complies
40	5200 MHz	12.87	13.23	Complies
48	5240 MHz	13.10	13.23	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.77dBi, so limit =17-(9.77-6)=13.23 (dBm/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	13.91	-3.01	10.90	26.23	Complies
157	5785 MHz	15.32	-3.01	12.31	26.23	Complies
165	5825 MHz	15.08	-3.01	12.07	26.23	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.77dBi, so limit =30-(9.77-6)=26.23 (dBm/500kHz)

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	13.11	13.23	Complies
40	5200 MHz	12.93	13.23	Complies
48	5240 MHz	12.98	13.23	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.77dBi, so limit =17-(9.77-6)= 13.23 (dBm/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	13.64	-3.01	10.63	26.23	Complies
157	5785 MHz	15.54	-3.01	12.53	26.23	Complies
165	5825 MHz	14.45	-3.01	11.44	26.23	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.77dBi, so limit =30-(9.77-6)=26.23 (dBm/500kHz)

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 + Ant. 5 + Ant. 6

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	4.57	13.23	Complies
46	5230 MHz	11.95	13.23	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.77dBi, so limit =17-(9.77-6)= 13.23 (dBm/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	5.41	-3.01	2.40	26.23	Complies
159	5795 MHz	10.05	-3.01	7.04	26.23	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.77dBi, so limit =30-(9.77-6)=26.23 (dBm/500kHz)

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 4 + Ant. 5 + Ant. 6

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	0.58	13.23	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.77dBi, so limit =17-(9.77-6)= 13.23 (dBm/MHz)

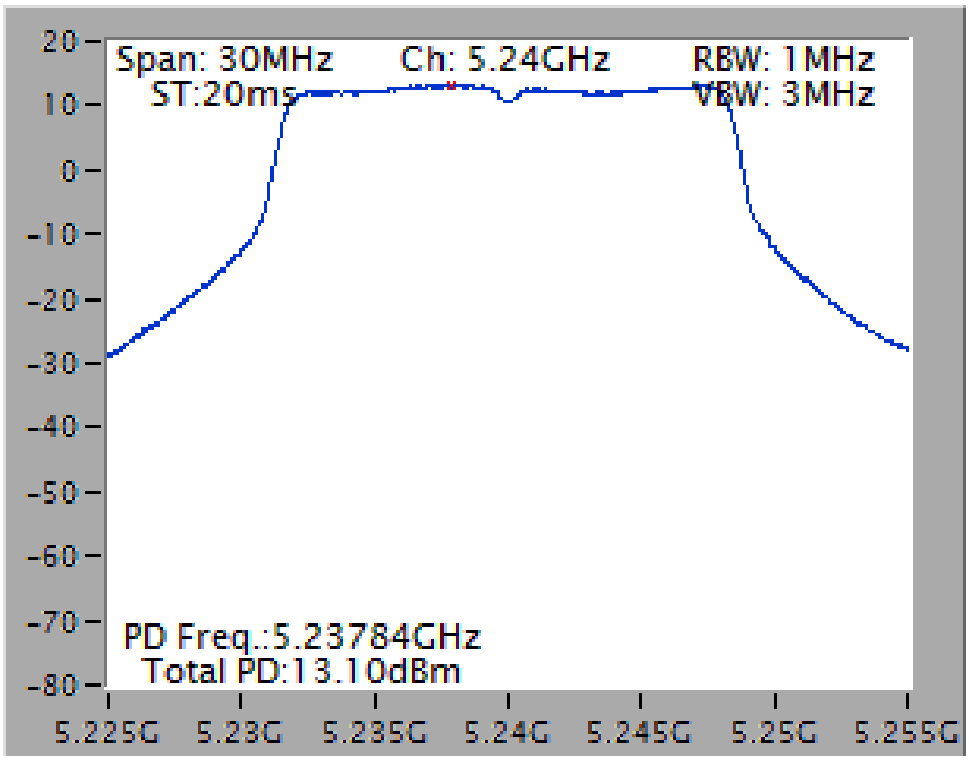
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	-1.93	-3.01	-4.94	26.23	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.77dBi, so limit =30-(9.77-6)=26.23 (dBm/500kHz)

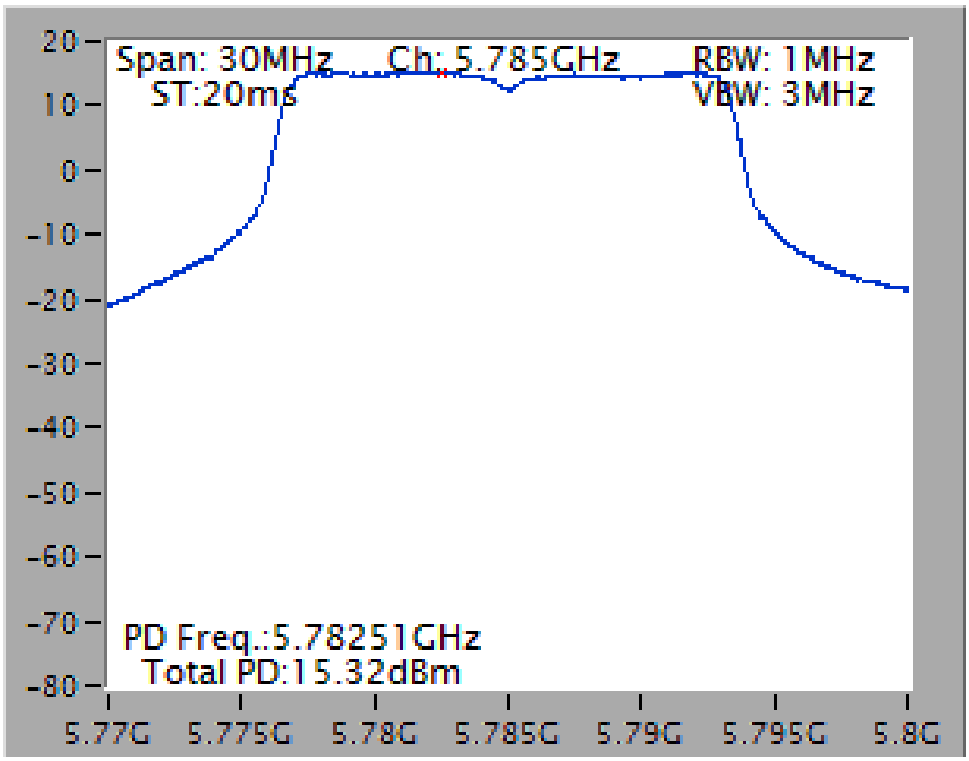
Note: All the test values were listed in the report.

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

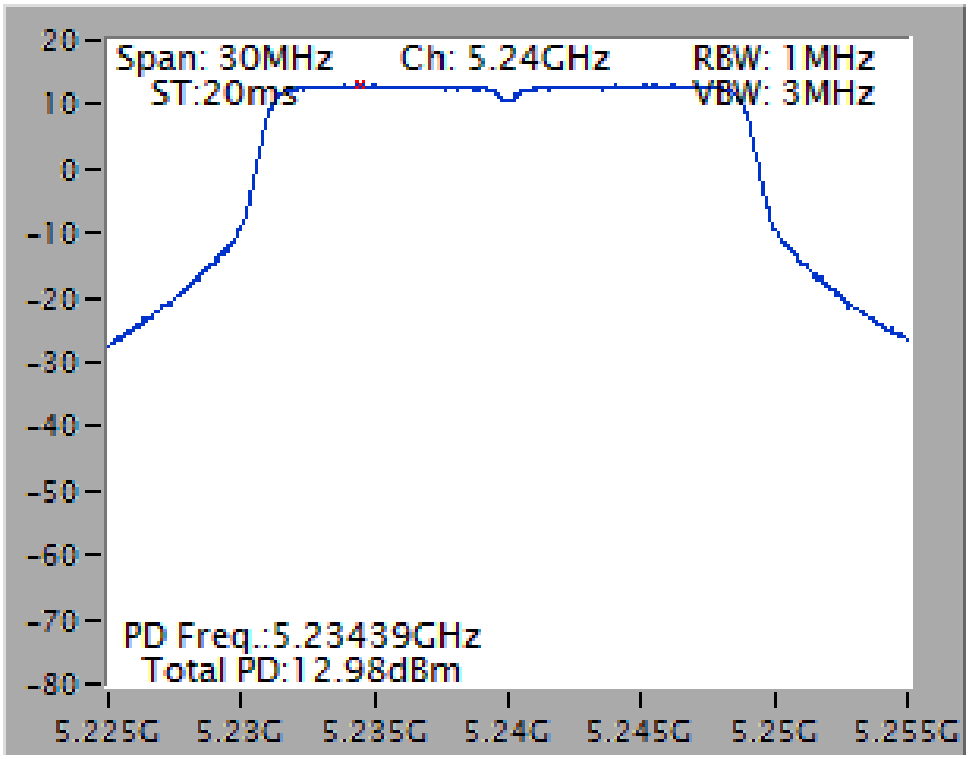
Power Density Plot on Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6 / 5240 MHz



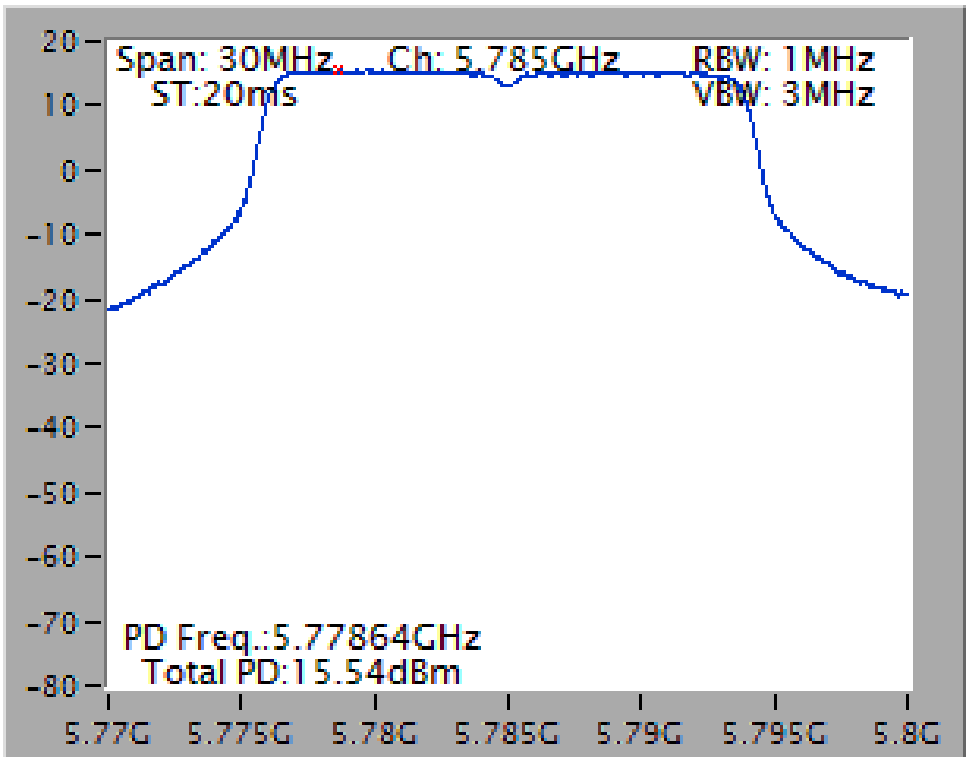
Power Density Plot on Configuration IEEE 802.11a / Ant. 4 + Ant. 5 + Ant. 6 / 5785 MHz



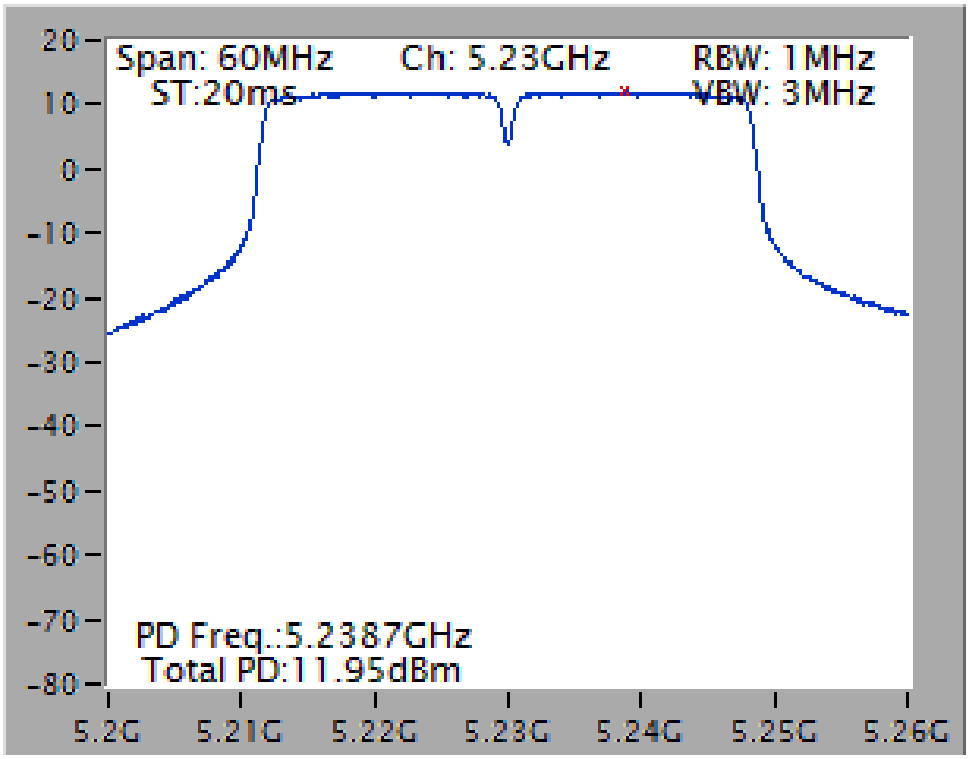
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 + Ant. 5 + Ant. 6 / 5240 MHz



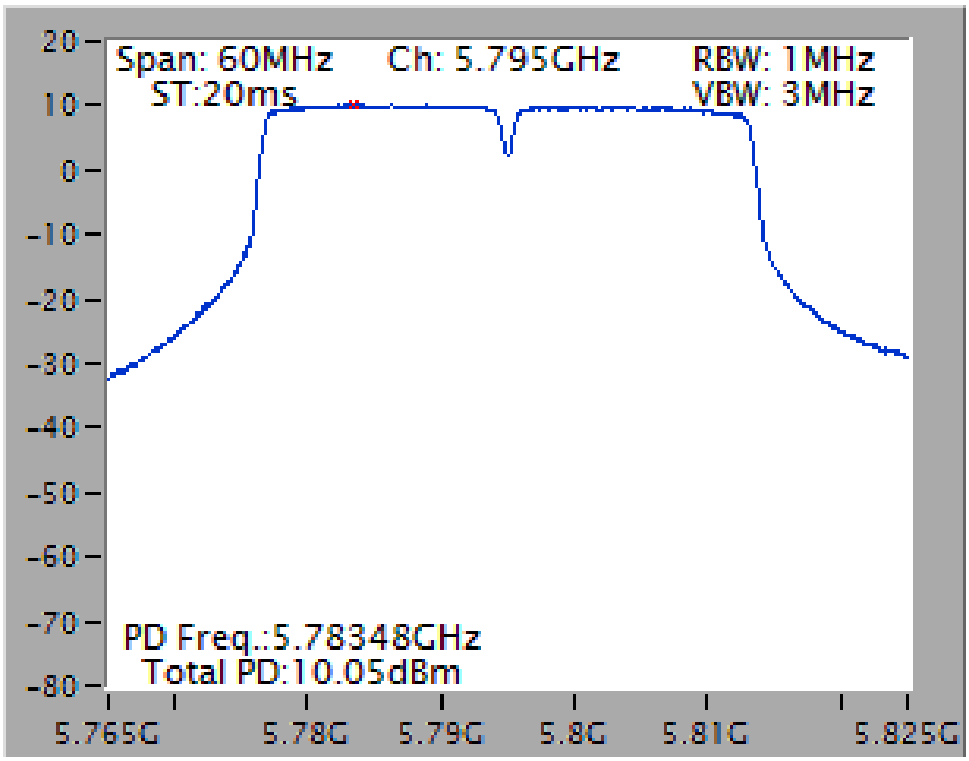
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 4 + Ant. 5 + Ant. 6 / 5785 MHz



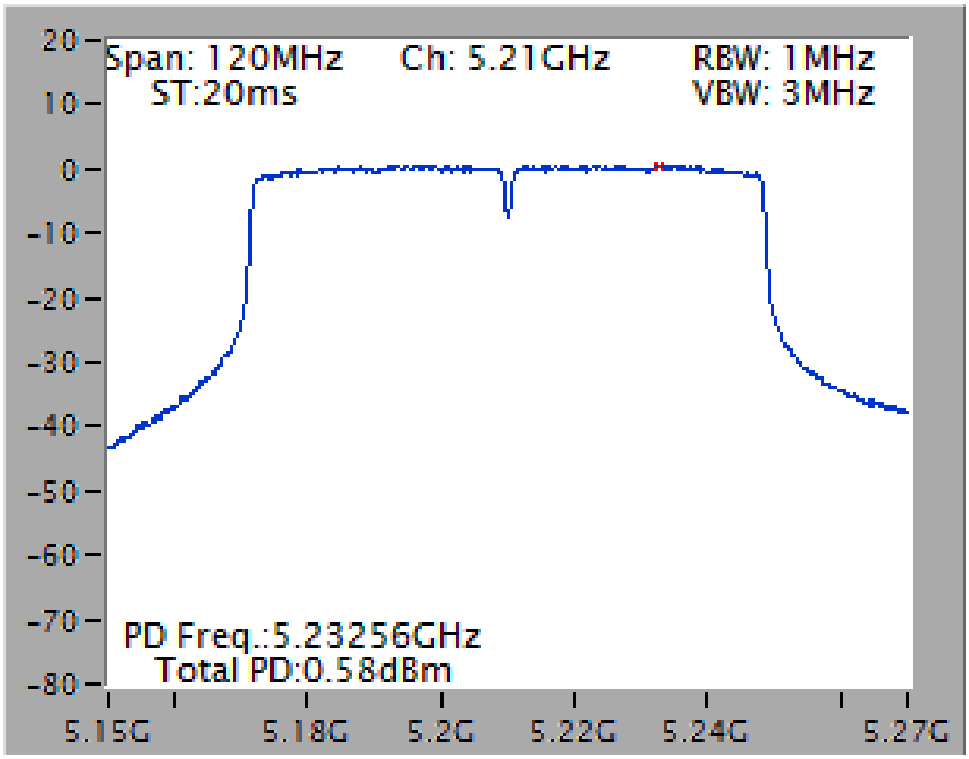
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 + Ant. 5 + Ant. 6 / 5230 MHz



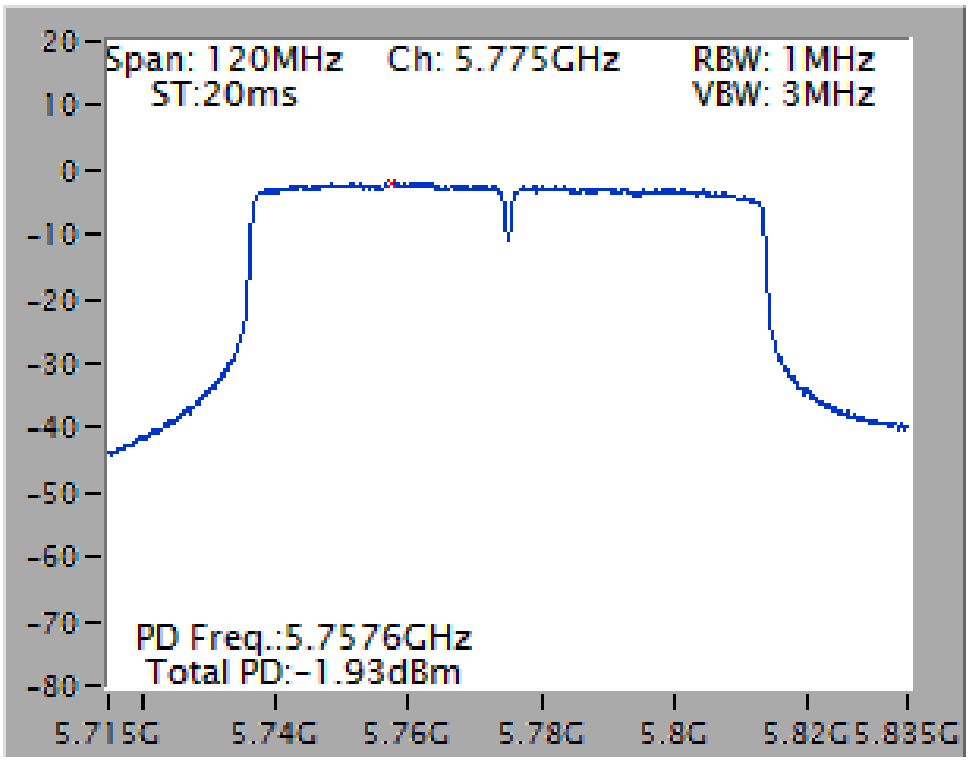
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 4 + Ant. 5 + Ant. 6 / 5795 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 4 + Ant. 5 + Ant. 6 / 5210 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 4 + Ant. 5 + Ant. 6 / 5775 MHz



4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: all emissions 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

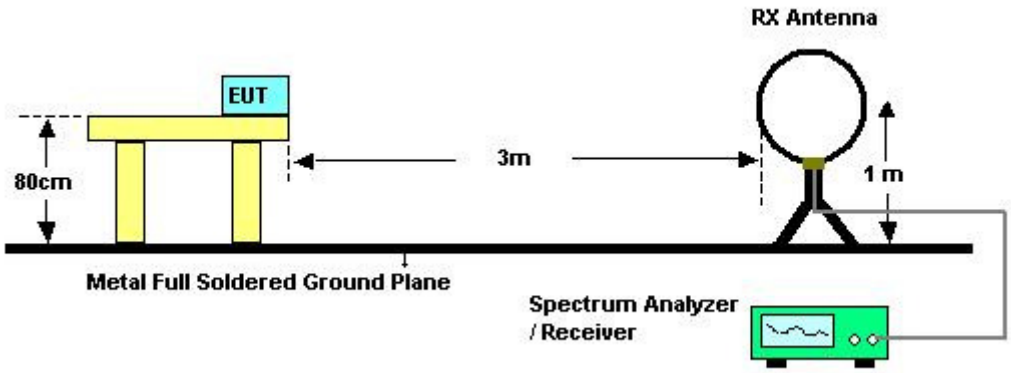
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

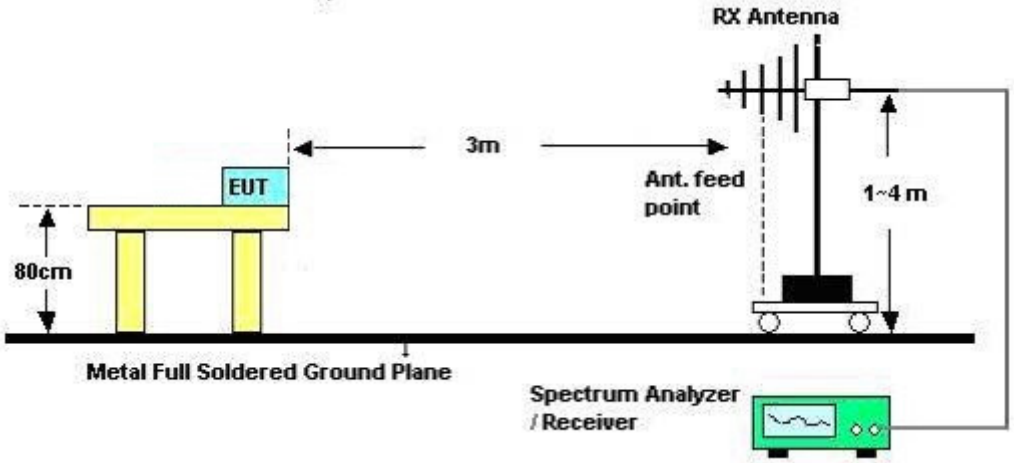
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

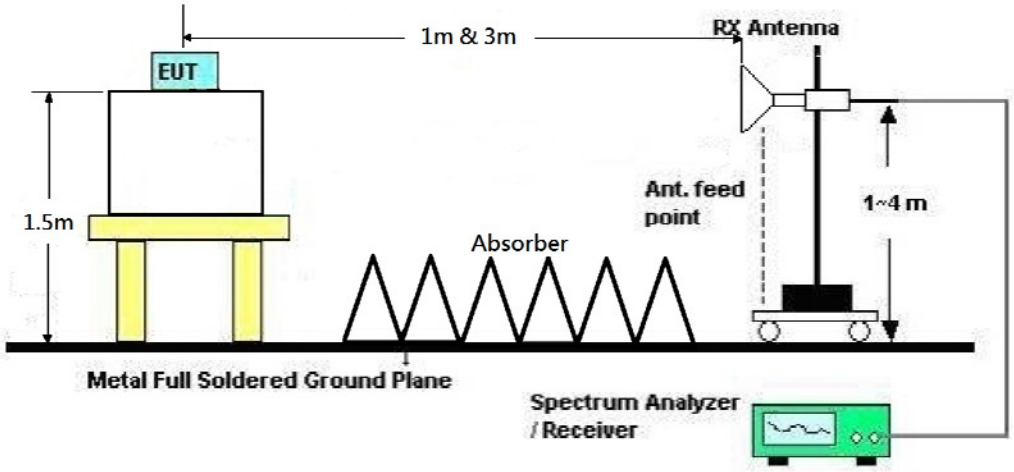
For Radiated Emissions: 9kHz ~30MHz



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	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	Normal Link
Test Date	Dec. 07, 2015	Test Mode	Mode 3

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

Note:

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

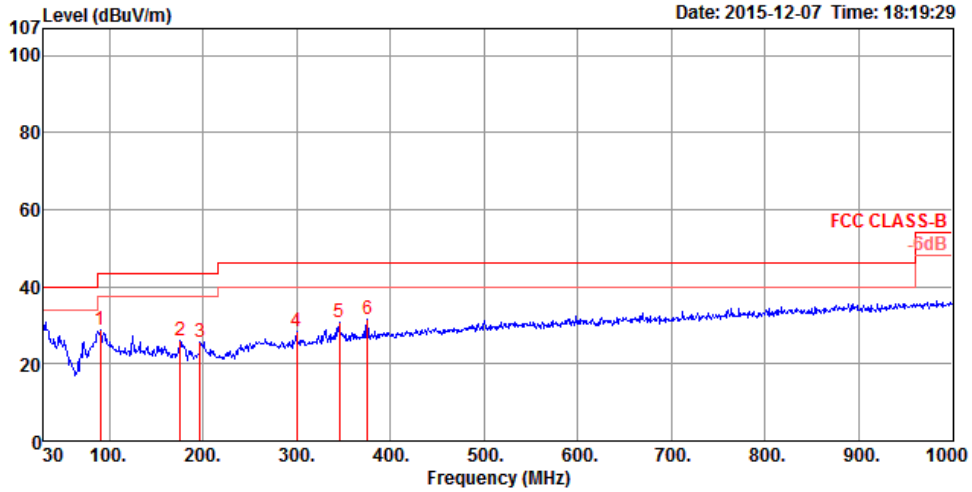
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

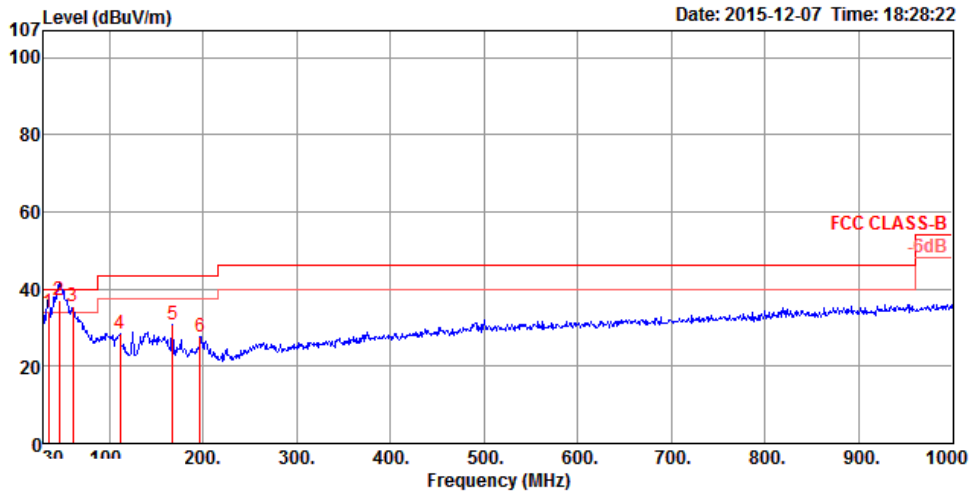
Temperature	23℃	Humidity	51%
Test Engineer	Brian Sun	Configurations	Normal Link
Test Mode	Mode 3		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	90.14	28.68	43.50	-14.82	50.69	1.21	32.58	9.36	HORIZONTAL	171	300	Peak
2	175.50	25.97	43.50	-17.53	46.99	1.61	32.55	9.92	HORIZONTAL	232	300	Peak
3	196.84	25.69	43.50	-17.81	46.38	1.69	32.55	10.17	HORIZONTAL	358	300	Peak
4	299.66	28.59	46.00	-17.41	45.18	2.05	32.52	13.88	HORIZONTAL	63	150	Peak
5	345.25	30.61	46.00	-15.39	45.80	2.17	32.53	15.17	HORIZONTAL	0	100	Peak
6	375.32	31.50	46.00	-14.50	45.87	2.24	32.54	15.93	HORIZONTAL	229	100	Peak

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	34.85	33.94	40.00	-6.06	48.60	0.81	32.64	17.17	VERTICAL	85	100	QP
2	46.49	36.96	40.00	-3.04	58.10	0.95	32.63	10.54	VERTICAL	287	100	QP
3	61.04	35.65	40.00	-4.35	60.36	1.10	32.61	6.80	VERTICAL	78	100	Peak
4	111.48	28.58	43.50	-14.92	47.47	1.33	32.57	12.35	VERTICAL	19	125	Peak
5	167.74	30.92	43.50	-12.58	51.57	1.58	32.56	10.33	VERTICAL	121	200	Peak
6	196.84	27.62	43.50	-15.88	48.31	1.69	32.55	10.17	VERTICAL	259	100	Peak

Note:

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

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

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

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

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 36 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15540.46	62.36	74.00	-11.64	41.35	16.37	38.13	33.49	141	291	Peak	HORIZONTAL
2	15541.62	48.86	54.00	-5.14	27.85	16.37	38.13	33.49	141	291	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15538.29	62.21	74.00	-11.79	41.20	16.37	38.13	33.49	143	286	Peak	VERTICAL
2	15538.60	48.94	54.00	-5.06	27.93	16.37	38.13	33.49	143	286	Average	VERTICAL

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 40 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15600.28	62.89	74.00	-11.11	41.97	16.40	38.05	33.53	138	305	Peak	HORIZONTAL
2	15600.28	48.94	54.00	-5.06	28.02	16.40	38.05	33.53	138	305	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15599.03	49.07	54.00	-4.93	28.15	16.40	38.05	33.53	143	301	Average	VERTICAL
2	15601.74	62.52	74.00	-11.48	41.64	16.43	37.98	33.53	143	301	Peak	VERTICAL

Temperature	23℃	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 48 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15722.03	48.13	54.00	-5.87	27.48	16.48	37.84	33.67	138	303	Average	HORIZONTAL
2	15722.08	61.73	74.00	-12.27	41.08	16.48	37.84	33.67	138	303	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	15717.55	61.75	74.00	-12.25	41.10	16.48	37.84	33.67	134	310	Peak	VERTICAL
2	15721.35	48.33	54.00	-5.67	27.68	16.48	37.84	33.67	134	310	Average	VERTICAL

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 149 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11488.73	59.77	74.00	-14.23	39.51	14.24	39.20	33.18	141	315	Peak	HORIZONTAL
2	11489.09	46.32	54.00	-7.68	26.06	14.24	39.20	33.18	141	315	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11487.73	59.39	74.00	-14.61	39.13	14.24	39.20	33.18	142	310	Peak	VERTICAL
2	11491.53	46.43	54.00	-7.57	26.17	14.24	39.20	33.18	142	310	Average	VERTICAL

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 157 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11567.58	60.08	74.00	-13.92	39.73	14.35	39.20	33.20	138	330	Peak	HORIZONTAL
2	11568.03	46.07	54.00	-7.93	25.72	14.35	39.20	33.20	138	330	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11571.96	46.38	54.00	-7.62	26.03	14.35	39.20	33.20	139	320	Average	VERTICAL
2	11572.11	59.57	74.00	-14.43	39.22	14.35	39.20	33.20	139	320	Peak	VERTICAL

Temperature	23℃	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 165 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11648.52	46.60	54.00	-7.40	26.17	14.45	39.20	33.22	129	328	Average	HORIZONTAL
2	11648.73	59.94	74.00	-14.06	39.51	14.45	39.20	33.22	129	328	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	11647.61	46.77	54.00	-7.23	26.34	14.45	39.20	33.22	136	335	Average	VERTICAL
2	11651.08	60.44	74.00	-13.56	39.95	14.51	39.20	33.22	136	335	Peak	VERTICAL

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15538.85	48.97	54.00	-5.03	27.96	16.37	38.13	33.49	181	312	Average	HORIZONTAL
2	15541.53	62.10	74.00	-11.90	41.09	16.37	38.13	33.49	181	312	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	15541.44	48.88	54.00	-5.12	27.87	16.37	38.13	33.49	168	328	Average	VERTICAL
2	15541.52	62.87	74.00	-11.13	41.86	16.37	38.13	33.49	168	328	Peak	VERTICAL

Temperature	23℃	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15599.17	49.10	54.00	-4.90	28.18	16.40	38.05	33.53	147	325	Average	HORIZONTAL
2	15601.30	61.81	74.00	-12.19	40.93	16.43	37.98	33.53	147	325	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15597.58	49.05	54.00	-4.95	28.13	16.40	38.05	33.53	156	319	Average	VERTICAL
2	15602.33	61.80	74.00	-12.20	40.92	16.43	37.98	33.53	156	319	Peak	VERTICAL

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15717.51	62.12	74.00	-11.88	41.47	16.48	37.84	33.67	155	345	Peak	HORIZONTAL
2	15722.11	48.24	54.00	-5.76	27.59	16.48	37.84	33.67	155	345	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15720.28	48.49	54.00	-5.51	27.84	16.48	37.84	33.67	128	333	Average	VERTICAL
2	15721.42	61.48	74.00	-12.52	40.83	16.48	37.84	33.67	128	333	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11488.71	46.26	54.00	-7.74	26.00	14.24	39.20	33.18	145	350	Average	HORIZONTAL
2	11491.81	59.36	74.00	-14.64	39.10	14.24	39.20	33.18	145	350	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	11491.07	46.48	54.00	-7.52	26.22	14.24	39.20	33.18	128	322	Average	VERTICAL
2	11492.20	60.37	74.00	-13.63	40.11	14.24	39.20	33.18	128	322	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11568.22	46.20	54.00	-7.80	25.85	14.35	39.20	33.20	117	353	Average	HORIZONTAL
2	11570.26	59.44	74.00	-14.56	39.09	14.35	39.20	33.20	117	353	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	11567.60	60.79	74.00	-13.21	40.44	14.35	39.20	33.20	134	342	Peak	VERTICAL
2	11567.74	46.44	54.00	-7.56	26.09	14.35	39.20	33.20	134	342	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11647.88	46.89	54.00	-7.11	26.46	14.45	39.20	33.22	126	321	Average	HORIZONTAL
2	11647.98	60.99	74.00	-13.01	40.56	14.45	39.20	33.22	126	321	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	11647.98	46.72	54.00	-7.28	26.29	14.45	39.20	33.22	114	345	Average	VERTICAL
2	11649.66	60.10	74.00	-13.90	39.67	14.45	39.20	33.22	114	345	Peak	VERTICAL

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15568.21	49.13	54.00	-4.87	28.21	16.40	38.05	33.53	164	311	Average	HORIZONTAL
2	15571.84	63.60	74.00	-10.40	42.68	16.40	38.05	33.53	164	311	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	15569.79	49.26	54.00	-4.74	28.34	16.40	38.05	33.53	146	342	Average	VERTICAL
2	15571.05	62.37	74.00	-11.63	41.45	16.40	38.05	33.53	146	342	Peak	VERTICAL

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15687.65	61.99	74.00	-12.01	41.25	16.45	37.91	33.62	136	332	Peak	HORIZONTAL
2	15692.03	48.69	54.00	-5.31	27.99	16.48	37.84	33.62	136	332	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15688.56	62.39	74.00	-11.61	41.65	16.45	37.91	33.62	142	354	Peak	VERTICAL
2	15689.21	48.52	54.00	-5.48	27.78	16.45	37.91	33.62	142	354	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11509.56	59.87	74.00	-14.13	39.62	14.24	39.20	33.19	156	311	Peak	HORIZONTAL
2	11512.14	46.82	54.00	-7.18	26.57	14.24	39.20	33.19	156	311	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11507.59	46.64	54.00	-7.36	26.38	14.24	39.20	33.18	117	324	Average	VERTICAL
2	11509.96	60.28	74.00	-13.72	40.03	14.24	39.20	33.19	117	324	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11589.96	59.45	74.00	-14.55	39.06	14.40	39.20	33.21	129	295	Peak	HORIZONTAL
2	11590.68	46.29	54.00	-7.71	25.90	14.40	39.20	33.21	129	295	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11589.39	46.35	54.00	-7.65	25.96	14.40	39.20	33.21	140	304	Average	VERTICAL
2	11591.24	60.26	74.00	-13.74	39.87	14.40	39.20	33.21	140	304	Peak	VERTICAL

Temperature	23℃	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15630.72	48.78	54.00	-5.22	27.95	16.43	37.98	33.58	156	274	Average	HORIZONTAL
2	15631.47	62.41	74.00	-11.59	41.58	16.43	37.98	33.58	156	274	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	15627.75	61.96	74.00	-12.04	41.13	16.43	37.98	33.58	134	286	Peak	VERTICAL
2	15631.61	48.80	54.00	-5.20	27.97	16.43	37.98	33.58	134	286	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11548.15	46.51	54.00	-7.49	26.22	14.29	39.20	33.20	150	239	Average	HORIZONTAL
2	11552.34	60.01	74.00	-13.99	39.66	14.35	39.20	33.20	150	239	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	11548.01	59.74	74.00	-14.26	39.45	14.29	39.20	33.20	148	244	Peak	VERTICAL
2	11551.69	46.37	54.00	-7.63	26.02	14.35	39.20	33.20	148	244	Average	VERTICAL

Note:

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

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

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

4.7. Band Edge Emissions Measurement

4.7.1. Limit

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: all emissions 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.

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	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 36, 40, 48 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5146.80	66.14	74.00	-7.86	57.17	8.15	33.74	32.92	219	144	Peak	VERTICAL
2	5150.00	53.69	54.00	-0.31	44.72	8.15	33.74	32.92	219	144	Average	VERTICAL
3	5176.00	112.04			102.91	8.26	33.79	32.92	219	144	Average	VERTICAL
4	5176.40	121.05			111.92	8.26	33.79	32.92	219	144	Peak	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5143.60	53.63	54.00	-0.37	44.66	8.15	33.74	32.92	216	143	Average	VERTICAL
2	5144.00	67.15	74.00	-6.85	58.18	8.15	33.74	32.92	216	143	Peak	VERTICAL
3	5193.20	126.44			117.22	8.32	33.82	32.92	216	143	Peak	VERTICAL
4	5202.80	116.61			107.38	8.31	33.84	32.92	216	143	Average	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5144.00	50.94	54.00	-3.06	41.97	8.15	33.74	32.92	225	203	Average	VERTICAL
2	5150.00	62.22	74.00	-11.78	53.25	8.15	33.74	32.92	225	203	Peak	VERTICAL
3	5242.40	126.86			117.60	8.29	33.89	32.92	225	203	Peak	VERTICAL
4	5242.40	116.99			107.73	8.29	33.89	32.92	225	203	Average	VERTICAL
5	5360.60	51.84	54.00	-2.16	42.49	8.19	34.08	32.92	225	203	Average	VERTICAL
6	5372.00	64.45	74.00	-9.55	55.09	8.18	34.11	32.93	225	203	Peak	VERTICAL

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

Temperature	23℃	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11a CH 149, 157, 165 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5714.40	67.77	68.20	-0.43	57.82	8.51	34.43	32.99	222	206	Peak	VERTICAL
2	5723.40	75.48	78.20	-2.72	65.56	8.47	34.44	32.99	222	206	Peak	VERTICAL
3	5744.20	121.13			111.24	8.43	34.45	32.99	222	206	Peak	VERTICAL
4	5744.20	111.33			101.44	8.43	34.45	32.99	222	206	Average	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5703.00	62.52	68.20	-5.68	52.52	8.56	34.42	32.98	224	177	Peak	VERTICAL
2	5725.00	62.73	78.20	-15.47	52.81	8.47	34.44	32.99	224	177	Peak	VERTICAL
3	5790.60	122.12			112.34	8.31	34.48	33.01	224	177	Peak	VERTICAL
4	5790.60	111.98			102.20	8.31	34.48	33.01	224	177	Average	VERTICAL
5	5856.80	62.95	78.20	-15.25	52.81	8.64	34.52	33.02	224	177	Peak	VERTICAL
6	5863.80	63.00	68.20	-5.20	52.87	8.64	34.52	33.03	224	177	Peak	VERTICAL

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

Channel 165

: V:2.25m

	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	5830.60	122.78			112.83	8.47	34.50	33.02	229	179	Peak	VERTICAL
2	5830.80	113.22			103.27	8.47	34.50	33.02	229	179	Average	VERTICAL
3	5851.00	75.21	78.20	-2.99	65.16	8.56	34.51	33.02	229	179	Peak	VERTICAL
4	5860.20	67.56	68.20	-0.64	57.43	8.64	34.52	33.03	229	179	Peak	VERTICAL

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

Temperature	23℃	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5150.00	68.78	74.00	-5.22	59.81	8.15	33.74	32.92	216	145	Peak	VERTICAL
2	5150.00	53.62	54.00	-0.38	44.65	8.15	33.74	32.92	216	145	Average	VERTICAL
3	5181.80	111.81			102.68	8.26	33.79	32.92	216	145	Average	VERTICAL
4	5182.40	121.66			112.53	8.26	33.79	32.92	216	145	Peak	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5144.40	53.76	54.00	-0.24	44.79	8.15	33.74	32.92	225	202	Average	VERTICAL
2	5144.80	68.25	74.00	-5.75	59.28	8.15	33.74	32.92	225	202	Peak	VERTICAL
3	5203.60	125.55			116.32	8.31	33.84	32.92	225	202	Peak	VERTICAL
4	5204.40	115.49			106.26	8.31	33.84	32.92	225	202	Average	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5116.40	63.92	74.00	-10.08	55.11	8.03	33.69	32.91	231	202	Peak	VERTICAL
2	5144.60	51.14	54.00	-2.86	42.17	8.15	33.74	32.92	231	202	Average	VERTICAL
3	5244.80	117.65			108.39	8.29	33.89	32.92	231	202	Average	VERTICAL
4	5245.40	127.56			118.30	8.29	33.89	32.92	231	202	Peak	VERTICAL
5	5370.80	52.00	54.00	-2.00	42.64	8.18	34.11	32.93	231	202	Average	VERTICAL
6	5378.60	64.72	74.00	-9.28	55.36	8.18	34.11	32.93	231	202	Peak	VERTICAL

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

Temperature	23℃	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5714.20	67.53	68.20	-0.67	57.58	8.51	34.43	32.99	222	360	Peak	VERTICAL
2	5723.00	73.29	78.20	-4.91	63.37	8.47	34.44	32.99	222	360	Peak	VERTICAL
3	5743.60	109.71			99.82	8.43	34.45	32.99	222	360	Average	VERTICAL
4	5744.00	120.57			110.68	8.43	34.45	32.99	222	360	Peak	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5701.80	63.93	68.20	-4.27	53.93	8.56	34.42	32.98	223	177	Peak	VERTICAL
2	5723.40	64.99	78.20	-13.21	55.07	8.47	34.44	32.99	223	177	Peak	VERTICAL
3	5786.60	113.05			103.24	8.35	34.47	33.01	223	177	Average	VERTICAL
4	5787.00	123.52			113.71	8.35	34.47	33.01	223	177	Peak	VERTICAL
5	5856.20	64.14	78.20	-14.06	54.00	8.64	34.52	33.02	223	177	Peak	VERTICAL
6	5867.00	64.19	68.20	-4.01	54.06	8.64	34.52	33.03	223	177	Peak	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5818.20	122.90			113.03	8.39	34.49	33.01	231	37	Peak	VERTICAL
2	5818.40	112.68			102.81	8.39	34.49	33.01	231	37	Average	VERTICAL
3	5852.40	69.71	78.20	-8.49	59.66	8.56	34.51	33.02	231	37	Peak	VERTICAL
4	5861.60	68.01	68.20	-0.19	57.88	8.64	34.52	33.03	231	37	Peak	VERTICAL

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

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5141.60	67.56	74.00	-6.44	58.67	8.09	33.72	32.92	213	157	Peak	VERTICAL
2	5142.80	53.48	54.00	-0.52	44.51	8.15	33.74	32.92	213	157	Average	VERTICAL
3	5201.20	105.48			96.26	8.32	33.82	32.92	213	157	Average	VERTICAL
4	5202.00	115.64			106.41	8.31	33.84	32.92	213	157	Peak	VERTICAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.66	53.80	54.00	-0.20	44.83	8.15	33.74	32.92	225	191	Average	VERTICAL
2	5146.53	67.88	74.00	-6.12	58.91	8.15	33.74	32.92	225	191	Peak	VERTICAL
3	5225.22	121.55			112.31	8.30	33.86	32.92	225	191	Peak	VERTICAL
4	5225.22	111.09			101.85	8.30	33.86	32.92	225	191	Average	VERTICAL

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

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5711.40	68.03	68.20	-0.17	58.08	8.51	34.43	32.99	227	211	Peak	VERTICAL
2	5723.00	71.75	78.20	-6.45	61.83	8.47	34.44	32.99	227	211	Peak	VERTICAL
3	5750.60	102.25			92.37	8.43	34.45	33.00	227	211	Average	VERTICAL
4	5751.00	112.41			102.53	8.43	34.45	33.00	227	211	Peak	VERTICAL

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

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5715.00	64.82	68.20	-3.38	54.87	8.51	34.43	32.99	224	42	Peak	VERTICAL
2	5723.00	68.01	78.20	-10.19	58.09	8.47	34.44	32.99	224	42	Peak	VERTICAL
3	5801.40	110.33			100.55	8.31	34.48	33.01	224	42	Average	VERTICAL
4	5802.60	121.02			111.24	8.31	34.48	33.01	224	42	Peak	VERTICAL
5	5856.60	70.26	78.20	-7.94	60.12	8.64	34.52	33.02	224	42	Peak	VERTICAL
6	5861.40	67.97	68.20	-0.23	57.84	8.64	34.52	33.03	224	42	Peak	VERTICAL

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

Temperature	23°C	Humidity	51%
Test Engineer	Brian Sun	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Ant. 4 + Ant. 5 + Ant. 6
Test Date	Jan. 15, 2016		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5136.25	53.57	54.00	-0.43	44.68	8.09	33.72	32.92	226	145	Average	VERTICAL
2	5136.98	67.22	74.00	-6.78	58.33	8.09	33.72	32.92	226	145	Peak	VERTICAL
3	5236.05	110.17			100.91	8.29	33.89	32.92	226	145	Peak	VERTICAL
4	5236.05	98.82			89.56	8.29	33.89	32.92	226	145	Average	VERTICAL
5	5350.00	49.33	54.00	-4.67	39.99	8.20	34.06	32.92	226	145	Average	VERTICAL
6	5352.17	60.06	74.00	-13.94	50.72	8.20	34.06	32.92	226	145	Peak	VERTICAL

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

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5714.00	67.69	68.20	-0.51	57.74	8.51	34.43	32.99	228	28	Peak	VERTICAL
2	5724.00	76.07	78.20	-2.13	66.15	8.47	34.44	32.99	228	28	Peak	VERTICAL
3	5752.00	97.32			87.44	8.43	34.45	33.00	228	28	Average	VERTICAL
4	5764.00	109.63			99.78	8.39	34.46	33.00	228	28	Peak	VERTICAL
5	5852.00	63.43	78.20	-14.77	53.38	8.56	34.51	33.02	228	28	Peak	VERTICAL
6	5887.00	63.23	68.20	-4.97	53.01	8.72	34.53	33.03	228	28	Peak	VERTICAL

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

Note:

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

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

4.8. Frequency Stability Measurement

4.8.1. Limit

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

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

4.8.2. Measuring Instruments and Setting

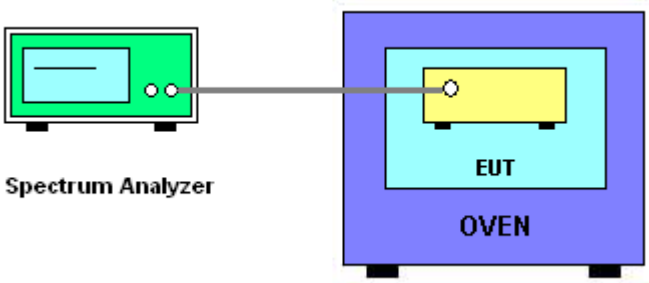
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.8.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
7. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
8. Extreme temperature is 0°C~40°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	25℃	Humidity	45%
Test Engineer	Eddie Weng	Test Date	Jan. 18, 2016~Jan. 20, 2016

Mode: 20 MHz / Ant. 4

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9988	5199.9986	5199.9979	5199.9970
110.00	5199.9987	5199.9979	5199.9975	5199.9965
93.50	5199.9978	5199.9976	5199.9967	5199.9957
Max. Deviation (MHz)	0.0022	0.0024	0.0033	0.0043
Max. Deviation (ppm)	0.42	0.46	0.63	0.83
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(℃)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5199.9969	5199.9960	5199.9958	5199.9949
10	5199.9974	5199.9968	5199.9966	5199.9960
20	5199.9987	5199.9986	5199.9977	5199.9973
30	5199.9988	5199.9978	5199.9976	5199.9975
40	5199.9991	5199.9990	5199.9980	5199.9978
Max. Deviation (MHz)	0.0031	0.0040	0.0042	0.0051
Max. Deviation (ppm)	0.60	0.77	0.81	0.98
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9999	5784.9993	5784.9988	5784.9978
110.00	5784.9992	5784.9982	5784.9981	5784.9975
93.50	5784.9984	5784.9981	5784.9973	5784.9967
Max. Deviation (MHz)	0.0016	0.0019	0.0027	0.0033
Max. Deviation (ppm)	0.28	0.33	0.47	0.57
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5784.9971	5784.9965	5784.9962	5784.9961
10	5784.9987	5784.9980	5784.9978	5784.9969
20	5784.9992	5784.9985	5784.9981	5784.9978
30	5784.9993	5784.9988	5784.9983	5784.9978
40	5785.0001	5784.9994	5784.9989	5784.9986
Max. Deviation (MHz)	0.0029	0.0035	0.0038	0.0039
Max. Deviation (ppm)	0.50	0.61	0.66	0.67
Result	Complies			

Mode: 40 MHz / Ant. 4

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9998	5189.9990	5189.9981	5189.9976
110.00	5189.9991	5189.9985	5189.9975	5189.9974
93.50	5189.9984	5189.9975	5189.9973	5189.9965
Max. Deviation (MHz)	0.0016	0.0025	0.0027	0.0035
Max. Deviation (ppm)	0.31	0.48	0.52	0.67
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5189.9967	5189.9965	5189.9957	5189.9953
10	5189.9972	5189.9965	5189.9964	5189.9958
20	5189.9991	5189.9981	5189.9976	5189.9973
30	5189.9993	5189.9990	5189.9984	5189.9977
40	5190.0005	5189.9999	5189.9991	5189.9988
Max. Deviation (MHz)	0.0033	0.0035	0.0043	0.0047
Max. Deviation (ppm)	0.64	0.67	0.83	0.91
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9993	5754.9990	5754.9980	5754.9973
110.00	5754.9983	5754.9976	5754.9974	5754.9967
93.50	5754.9977	5754.9968	5754.9966	5754.9958
Max. Deviation (MHz)	0.0023	0.0032	0.0034	0.0042
Max. Deviation (ppm)	0.40	0.56	0.59	0.73
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5754.9954	5754.9945	5754.9940	5754.9939
10	5754.9970	5754.9962	5754.9955	5754.9949
20	5754.9983	5754.9977	5754.9973	5754.9970
30	5754.9985	5754.9979	5754.9974	5754.9972
40	5754.9993	5754.9985	5754.9981	5754.9980
Max. Deviation (MHz)	0.0046	0.0055	0.0060	0.0061
Max. Deviation (ppm)	0.80	0.96	1.04	1.06
Result	Complies			

Mode: 80 MHz / Ant. 4

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5209.9994	5209.9988	5209.9981	5209.9977
110.00	5209.9990	5209.9980	5209.9978	5209.9975
93.50	5209.9981	5209.9971	5209.9970	5209.9964
Max. Deviation (MHz)	0.0019	0.0029	0.0030	0.0036
Max. Deviation (ppm)	0.36	0.56	0.58	0.69
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5210.0016	5210.0011	5210.0001	5209.9999
10	5210.0001	5209.9992	5209.9988	5209.9978
20	5209.9990	5209.9980	5209.9974	5209.9966
30	5209.9990	5209.9983	5209.9981	5209.9979
40	5210.0000	5209.9997	5209.9990	5209.9981
Max. Deviation (MHz)	0.0016	0.0020	0.0026	0.0034
Max. Deviation (ppm)	0.31	0.38	0.50	0.65
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9993	5774.9984	5774.9982	5774.9978
110.00	5774.9989	5774.9984	5774.9980	5774.9974
93.50	5774.9981	5774.9971	5774.9962	5774.9954
Max. Deviation (MHz)	0.0019	0.0029	0.0038	0.0046
Max. Deviation (ppm)	0.33	0.50	0.66	0.80
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5774.9974	5774.9973	5774.9966	5774.9957
10	5774.9984	5774.9977	5774.9976	5774.9968
20	5774.9989	5774.9984	5774.9977	5774.9968
30	5774.9990	5774.9983	5774.9982	5774.9978
40	5774.9992	5774.9991	5774.9982	5774.9977
Max. Deviation (MHz)	0.0026	0.0027	0.0034	0.0043
Max. Deviation (ppm)	0.45	0.47	0.59	0.74
Result	Complies			

4.9. Antenna Requirements

4.9.1. Limit

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

4.9.2. Antenna Connector Construction

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

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 13, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May. 25, 2015	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015*	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Feb. 24, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02099	1GHz ~ 26.5GHz	Dec. 07, 2015	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Feb.10, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 21, 2015	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-l0-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Oct. 13, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

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

"*" Calibration Interval of instruments listed above is two years.

NCR means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%