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FCC RADIO TEST REPORT

Applicant's company	**ALE USA Inc.**
Applicant Address	26801 West Agoura Road, Calabasas, CA 91301
FCC ID	**2AI9TOAW-AP1101**
Manufacturer's company	**ALE USA Inc.**
Manufacturer Address	26801 West Agoura Road, Calabasas, CA 91301

Product Name	Alcatel-Lucent Enterprise Access Point
Brand Name	Alcatel-Lucent Enterprise
Model No.	OAW-AP1101
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Jun. 17, 2016
Final Test Date	Jul. 12, 2016
Submission Type	Original Equipment

Statement

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

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

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01r02, KDB662911 D01 v02r01, KDB644545 D03 v01, ET Docket No. 13–49; FCC 16–24.**

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

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR661722AB	Rev. 01	Initial issue of report	Aug. 08, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	Alcatel-Lucent Enterprise Access Point
Brand Name	:	Alcatel-Lucent Enterprise
Model No.	:	OAW-AP1101
Applicant	:	ALE USA Inc.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jun. 17, 2016 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.

Cliff Chang

Cliff Chang

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**
4.1	15.207	AC Power Line Conducted Emissions	Complies
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
4.5	15.407(a)	Power Spectral Density	Complies
4.6	15.407(b)	Radiated Emissions	Complies
4.7	15.407(b)	Band Edge Emissions	Complies
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 (2TX, 2RX)
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: 17.45 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.77 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.96 MHz Band 4: IEEE 802.11a: 22.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 23.27 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 53.98 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz
Maximum Conducted Output Power	Band 1: IEEE 802.11a: 25.15 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 25.37 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 24.73 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 17.73 dBm Band 4: IEEE 802.11a: 25.09 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 25.12 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 25.23 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.31 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 and Band width

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

IEEE 11n/ac Spec.

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

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

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

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

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model No.	Antenna Type	Connector	Gain (dBi)	Remark
1	N/A	3ARAAA101S1-111	PIFA Antenna	N/A	2.77	2.4GHz
2	N/A	3ARAAA101S2-111	PIFA Antenna	N/A	3.43	2.4GHz
3	N/A	3ARAAA101S3-111	PIFA Antenna	N/A	2.56	5GHz
4	N/A	3ARAAA101S4-111	PIFA Antenna	N/A	2.17	5GHz

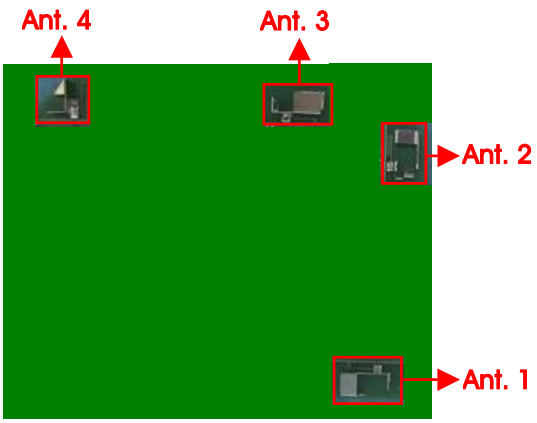
Note: The EUT has four antennas.

For 2.4GHz WLAN function (2TX/2RX):

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

For 5GHz WLAN function (2TX/2RX):

Ant. 3 and Ant. 4 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	3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	3+4
Power Spectral Density	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	3+4
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	3+4
6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 4	6Mbps	149/157/165	3+4
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	3+4
	11ac VHT40	Band 4	MCS0/Nss1	151/159	3+4
	11ac VHT80	Band 4	MCS0/Nss1	155	3+4
Radiated Emission Below 1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	3+4
Band Edge Emission	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	3+4
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	3+4
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	3+4
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	3+4
Frequency Stability	20 MHz	Band 1&4	-	40/157	3
	40 MHz	Band 1&4	-	38/151	3
	80 MHz	Band 1&4	-	42/155	3

Note: 1. The defines from manufacturer, "Console port" for debugging use only.

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

Support Unit	Brand	Model	FCC ID
PoE	PHIHONG	POE31U-1AT(SC)	DoC
Adapter	LEI	NU36-D480080-I1	DoC

The following test modes were performed for all tests:

For AC Power Line Conducted Emissions test:

Mode 1. EUT + Adapter

Mode 2. EUT + PoE

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

For Radiated Emissions 9kHz~1GHz test:

Mode 1. EUT Y axis + Adapter

Mode 2. EUT Z axis + Adapter

Mode 1 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 Y axis + PoE

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

For Radiated Emissions 1GHz~10th Harmonic test:

The EUT for Radiated Emissions 1GHz~10th Harmonic test, EUT Y axis and EUT Z axis and the worst case was found from EUT Y axis. So the measurement will follow this same test configuration.

For Radiated Emission Co-location test:

Mode 1. EUT Y axis

Mode 2. EUT Z axis

Mode 2 is the worst case, so it was selected to record in this test report.

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

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA661722) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	**Site Category**	**Location**	**FCC Designation No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	TW0006	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.7. Table for Supporting Units

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

Support Unit	Brand	Model	FCC ID
NB*2	Apple	Mac Book	DoC
NB	DELL	E4300	DoC
PoE	PHIHONG	POE31U-1AT(SC)	DoC

For Test Site No: 03CH01-CB (above 1GHz) and TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC
Adapter	LEI	NU36-D480080-I1	DoC

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB*3	DELL	E6430	DoC
Adapter	LEI	NU36-D480080-I1	DoC

3.8. Table for Parameters of Test Software Setting

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

Test Software Version	ART2-GUI					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	21	23	22.5	23	22	20.5
802.11ac MCS0/Nss1 VHT20	20.5	23.5	22.5	23	22	21
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz	5755 MHz		5795 MHz
	17.5		23.5	23.5		23.5
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz			5775 MHz		
	16			20.5		

3.9. EUT Operation during Test

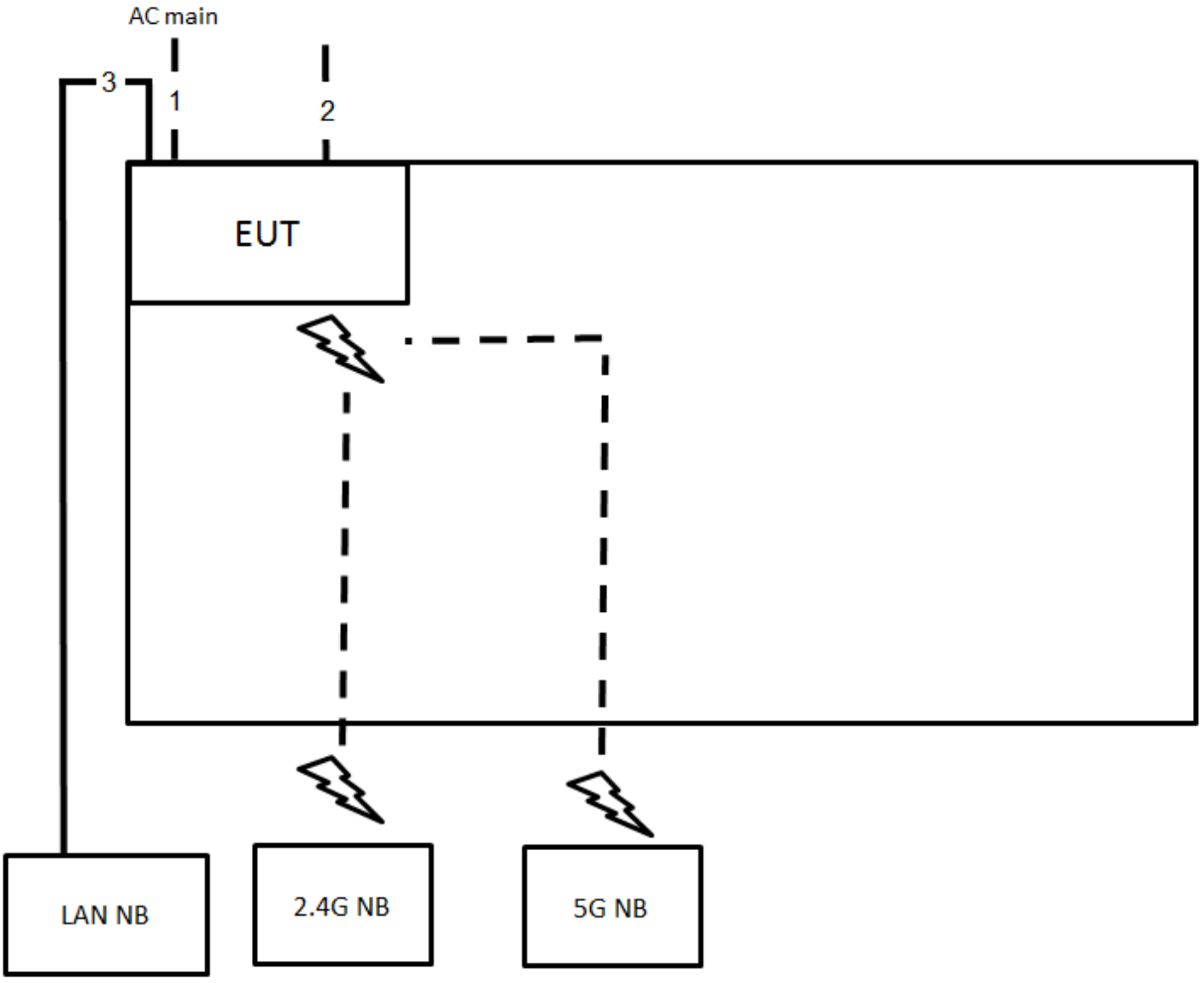
The EUT was programmed to be in continuously transmitting mode.

3.10. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.030	2.170	93.55	0.29	0.49
802.11ac MCS0/Nss1 VHT20	1.900	1.990	95.48	0.20	0.53
802.11ac MCS0/Nss1 VHT40	0.940	1.000	94.00	0.27	1.06
802.11ac MCS0/Nss1 VHT80	0.440	0.532	82.71	0.82	2.27

3.11. Test Configurations

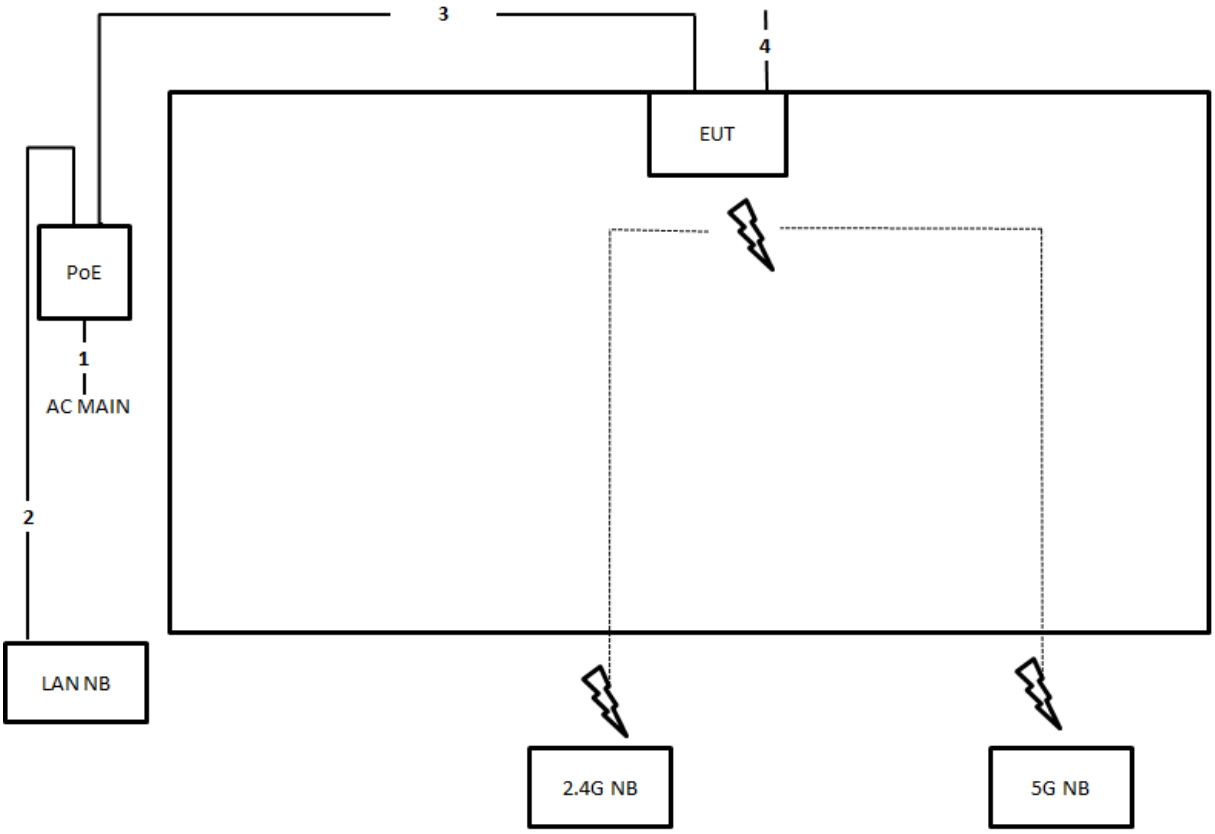
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.4m
2	Console cable	No	1.5m
3	RJ-45 cable	No	10m

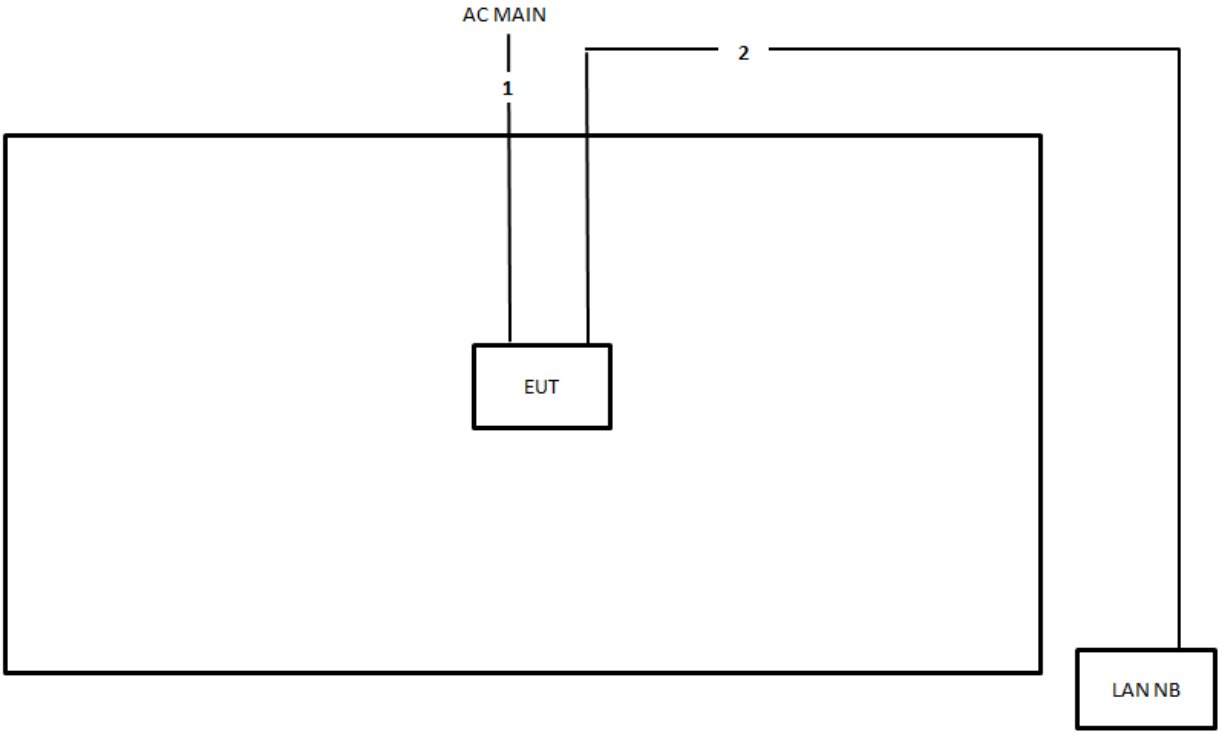
3.11.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



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

Test Configuration: above 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	10m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

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

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

4.1.2. Measuring Instruments and Setting

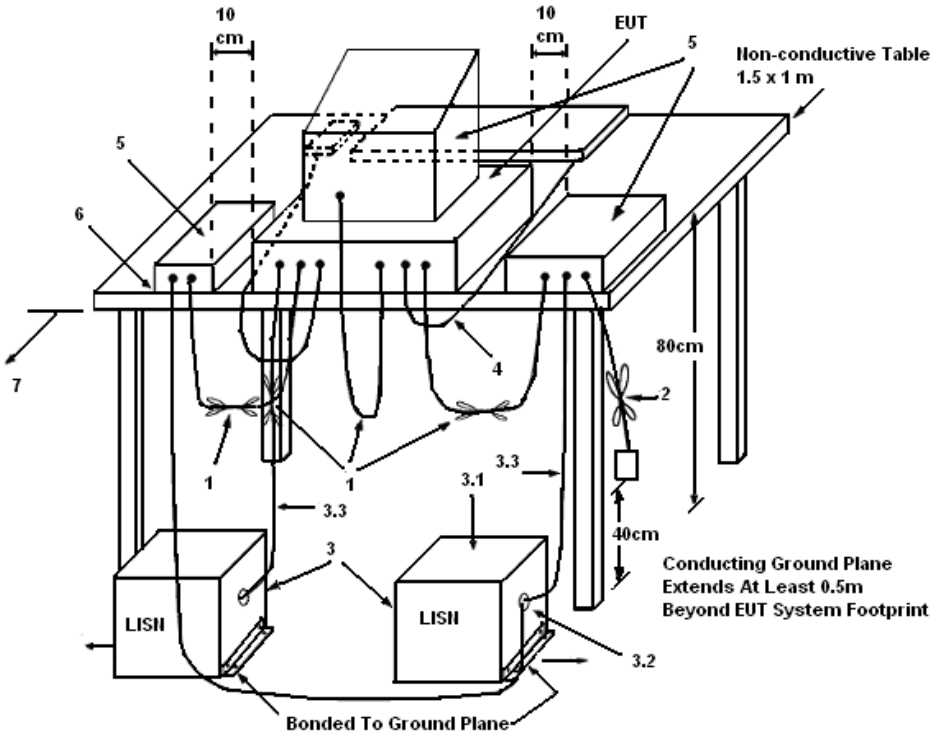
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

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

4.1.4. Test Setup Layout



LEGEND:

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

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

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

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

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

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

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

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

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

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

4.1.5. Test Deviation

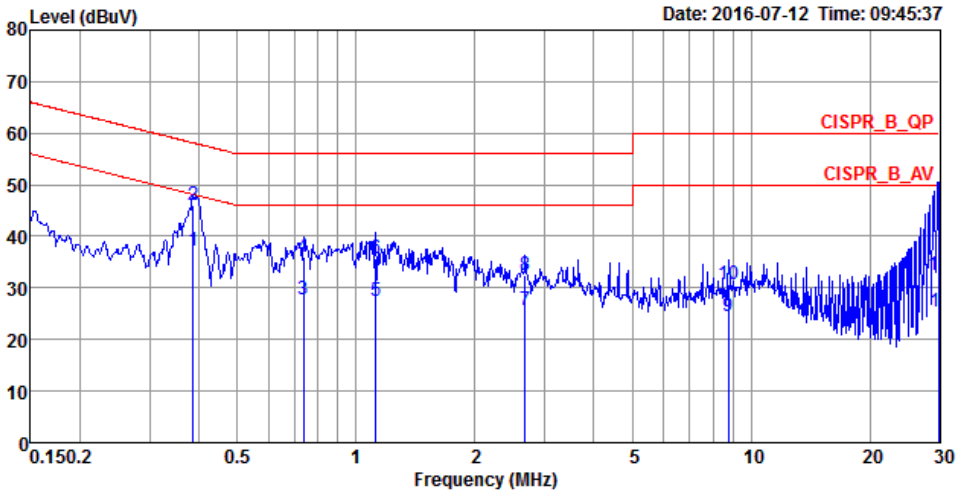
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

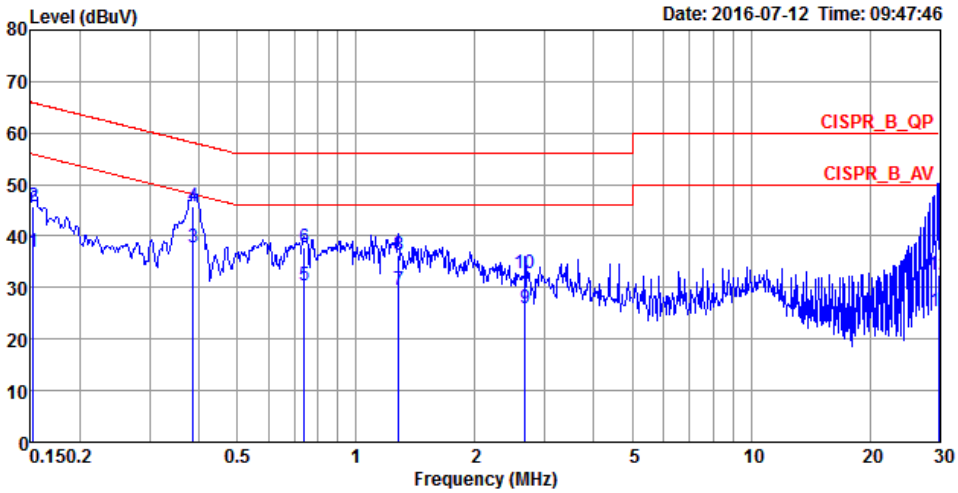
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	22℃	Humidity	63%
Test Engineer	GN Hou	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	0.3872	37.20	-10.92	48.12	27.26	9.92	0.02	LINE	Average
2	0.3872	45.91	-12.21	58.12	35.97	9.92	0.02	LINE	QP
3	0.7352	27.88	-18.12	46.00	17.46	9.93	0.49	LINE	Average
4	0.7352	36.08	-19.92	56.00	25.66	9.93	0.49	LINE	QP
5	1.1233	27.59	-18.41	46.00	17.02	9.94	0.63	LINE	Average
6	1.1233	35.67	-20.33	56.00	25.10	9.94	0.63	LINE	QP
7	2.6783	25.79	-20.21	46.00	15.75	9.97	0.07	LINE	Average
8	2.6783	32.51	-23.49	56.00	22.47	9.97	0.07	LINE	QP
9	8.7757	24.38	-25.62	50.00	14.12	10.12	0.14	LINE	Average
10	8.7757	30.62	-29.38	60.00	20.36	10.12	0.14	LINE	QP
11	30.0000	25.40	-24.60	50.00	14.51	10.57	0.32	LINE	Average
12	30.0000	32.44	-27.56	60.00	21.55	10.57	0.32	LINE	QP

Temperature	22°C	Humidity	63%
Test Engineer	GN Hou	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	0.1524	36.97	-18.90	55.87	26.79	10.02	0.16	NEUTRAL	Average
2	0.1524	45.80	-20.07	65.87	35.62	10.02	0.16	NEUTRAL	QP
3	0.3872	37.93	-10.19	48.12	27.99	9.92	0.02	NEUTRAL	Average
4	0.3872	45.76	-12.36	58.12	35.82	9.92	0.02	NEUTRAL	QP
5	0.7391	30.30	-15.70	46.00	19.88	9.93	0.49	NEUTRAL	Average
6	0.7391	37.89	-18.11	56.00	27.47	9.93	0.49	NEUTRAL	QP
7	1.2824	29.61	-16.39	46.00	19.16	9.95	0.50	NEUTRAL	Average
8	1.2824	36.17	-19.83	56.00	25.72	9.95	0.50	NEUTRAL	QP
9	2.6783	25.98	-20.02	46.00	15.94	9.97	0.07	NEUTRAL	Average
10	2.6783	32.65	-23.35	56.00	22.61	9.97	0.07	NEUTRAL	QP
11	30.0000	25.38	-24.62	50.00	14.49	10.57	0.32	NEUTRAL	Average
12	30.0000	32.39	-27.61	60.00	21.50	10.57	0.32	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

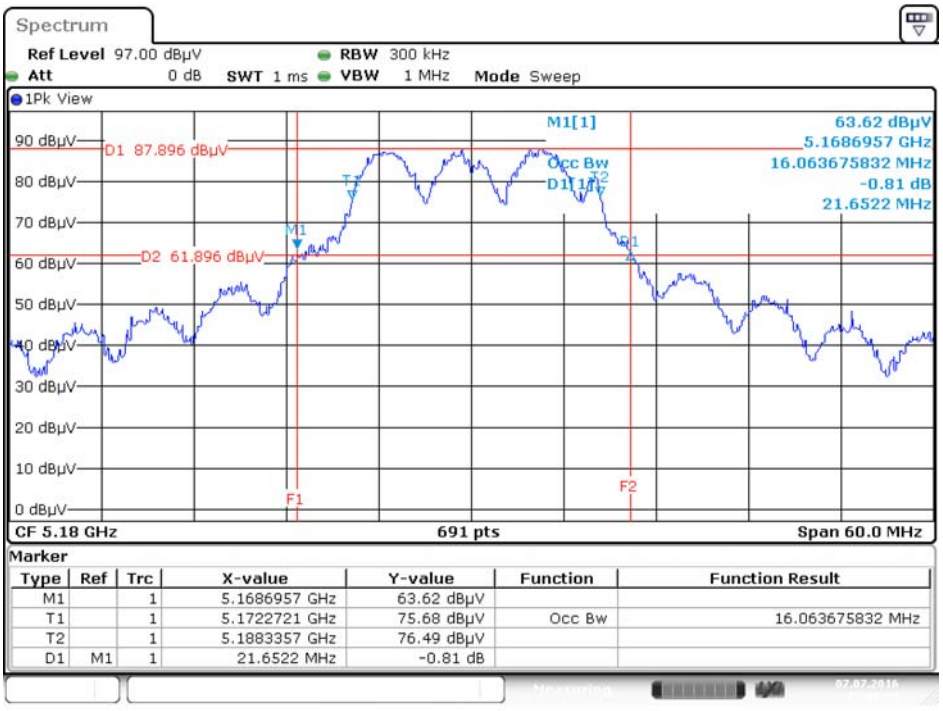
The EUT was programmed to be in continuously transmitting mode.

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

Temperature	24℃	Humidity	54%
Test Engineer	Gary Chu		

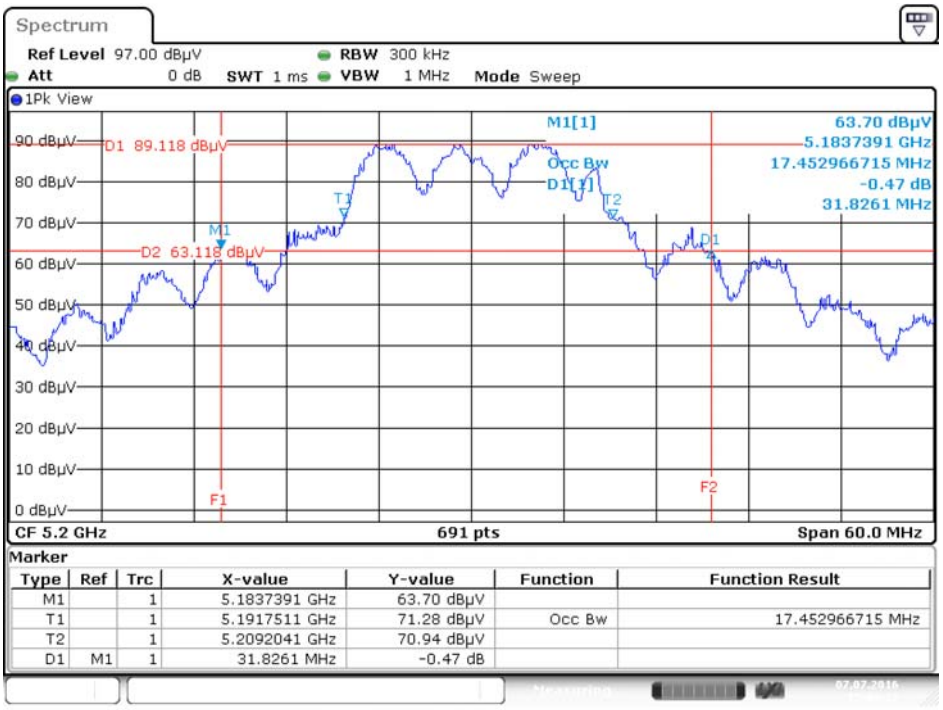
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	21.65	16.06
	5200 MHz	31.83	17.45
	5240 MHz	25.74	16.67
	5745 MHz	40.35	22.32
	5785 MHz	35.74	20.06
	5825 MHz	25.91	17.02
802.11ac MCS0/Nss1 VHT20	5180 MHz	20.00	16.85
	5200 MHz	31.22	17.54
	5240 MHz	25.57	18.32
	5745 MHz	31.39	23.27
	5785 MHz	29.74	21.27
	5825 MHz	24.87	17.45
802.11ac MCS0/Nss1 VHT40	5190 MHz	44.49	37.19
	5230 MHz	64.35	37.77
	5755 MHz	87.39	48.48
	5795 MHz	85.94	53.98
802.11ac MCS0/Nss1 VHT80	5210 MHz	83.48	74.96
	5775 MHz	95.65	76.12

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5180 MHz



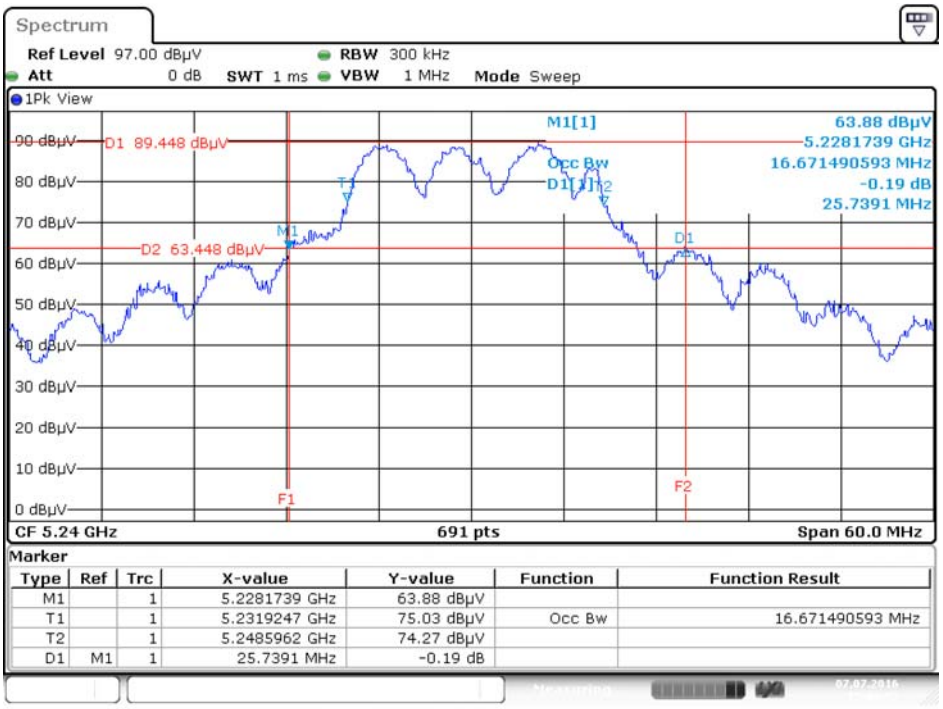
Date: 7.JUL.2016 15:08:29

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5200 MHz



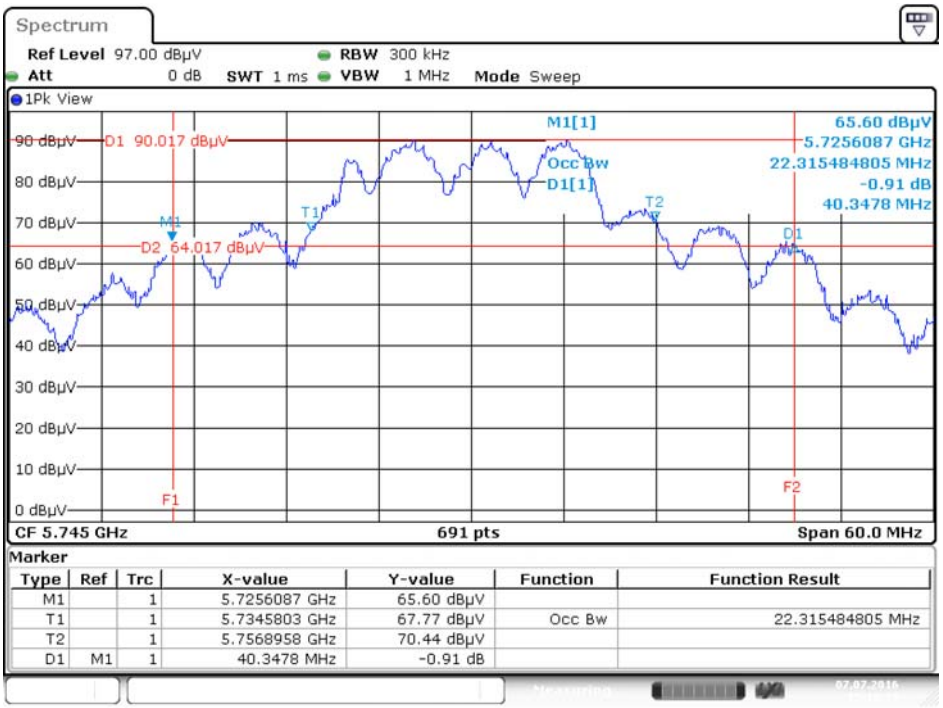
Date: 7.JUL.2016 15:09:12

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5240 MHz



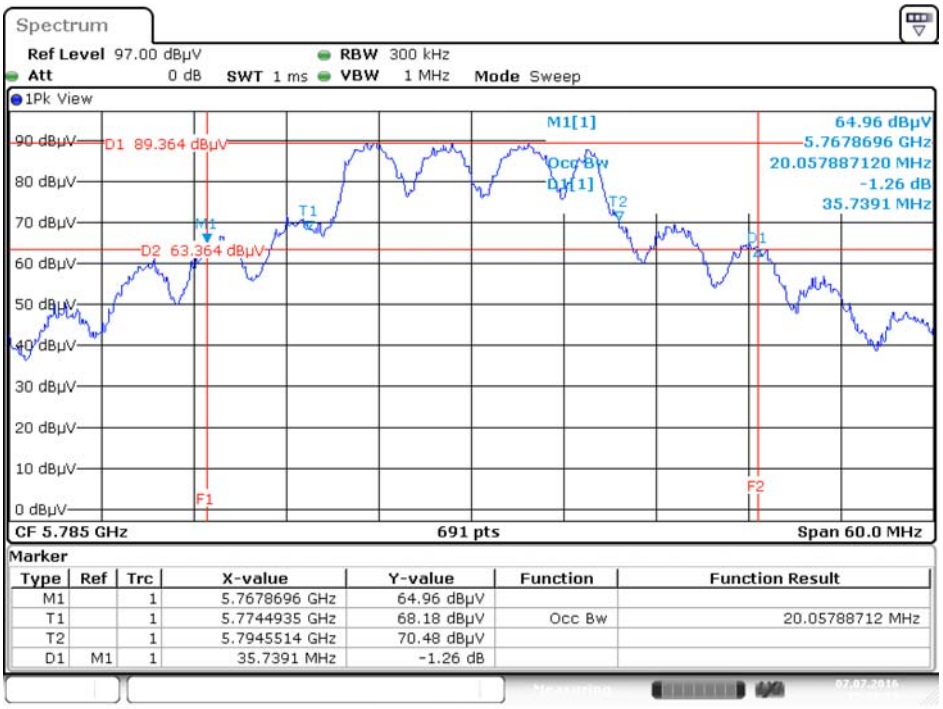
Date: 7.JUL.2016 15:09:52

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5745 MHz



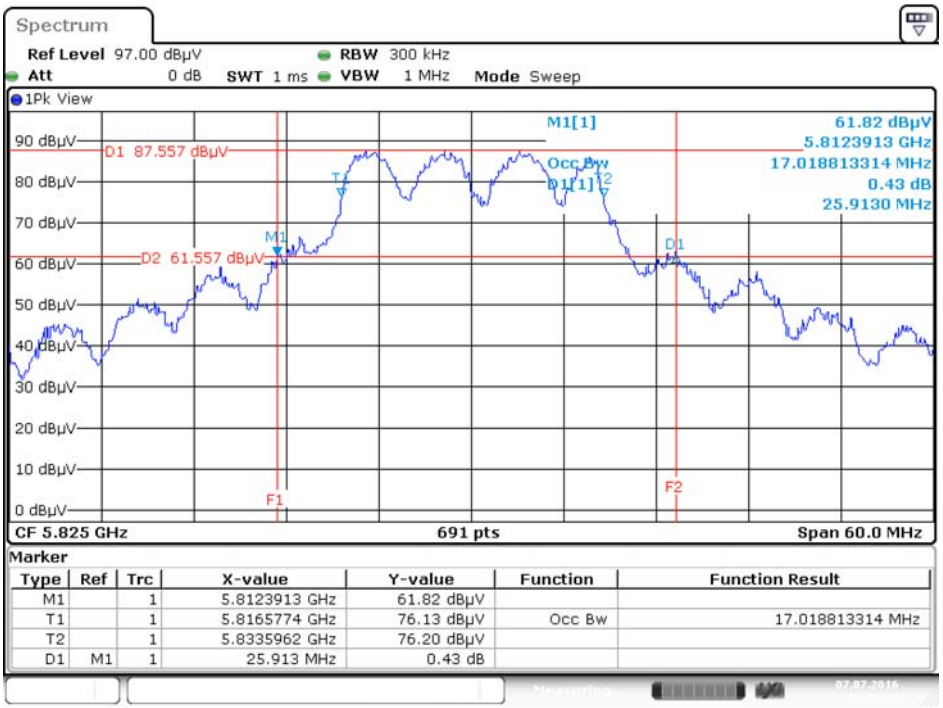
Date: 7.JUL.2016 15:10:32

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5785 MHz



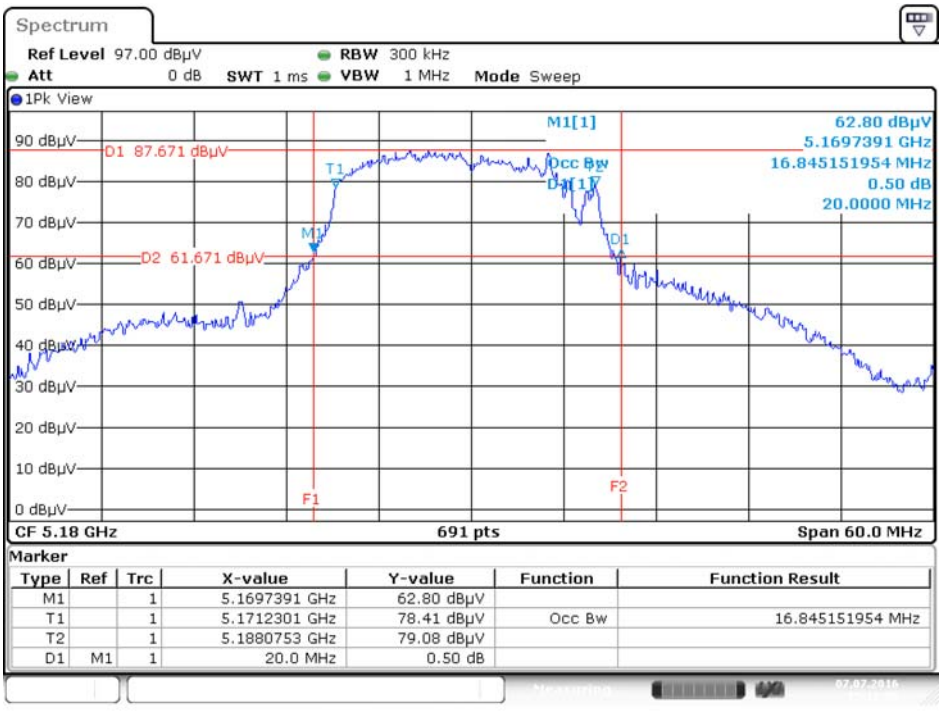
Date: 7.JUL.2016 15:11:13

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5825 MHz



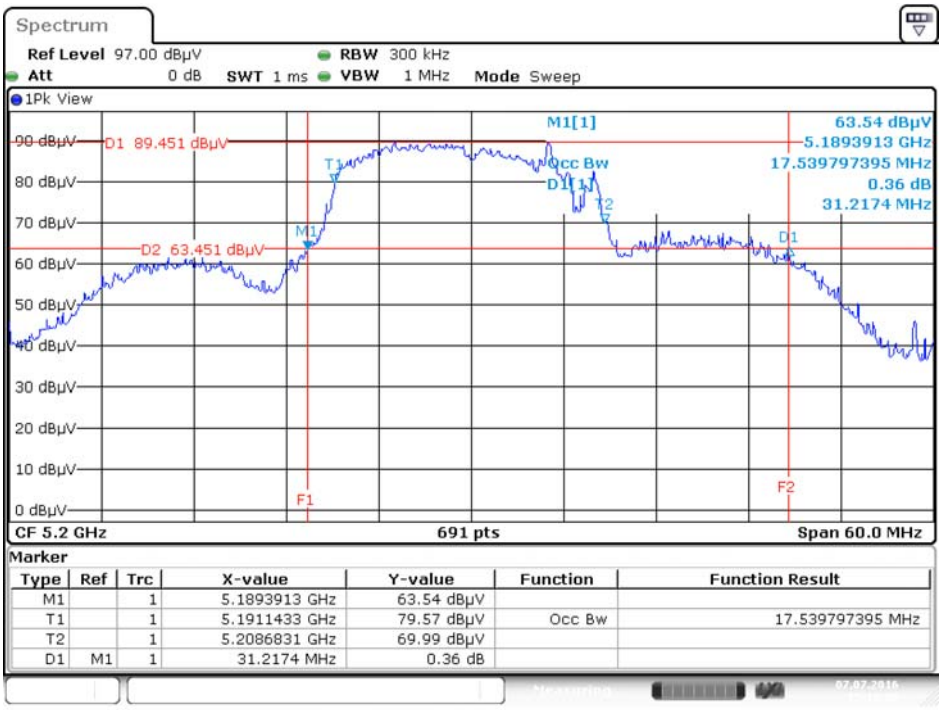
Date: 7.JUL.2016 15:11:43

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



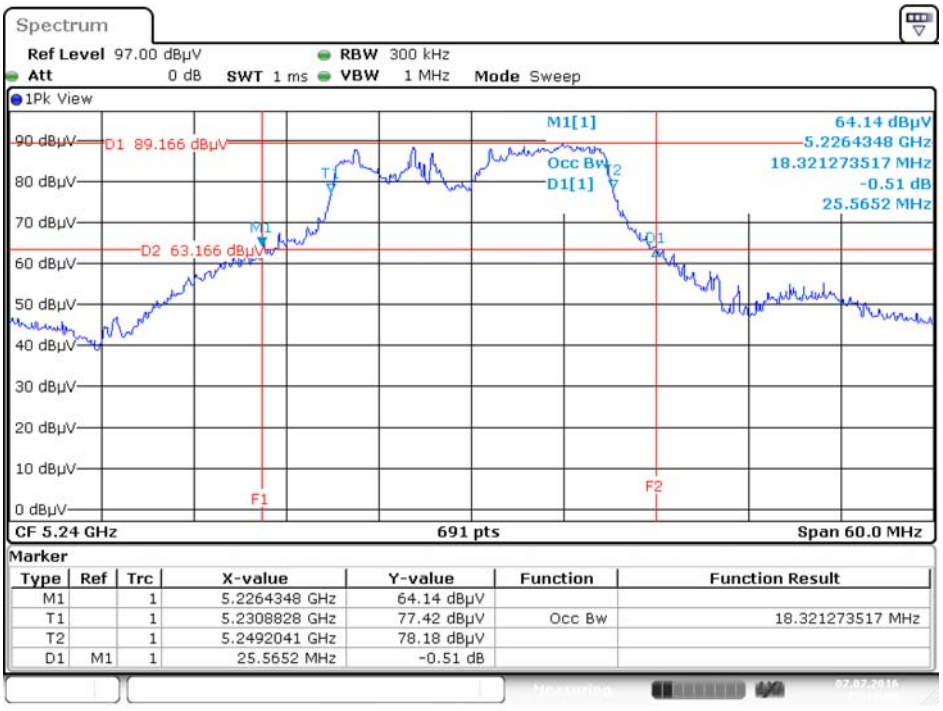
Date: 7.JUL.2016 15:12:54

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



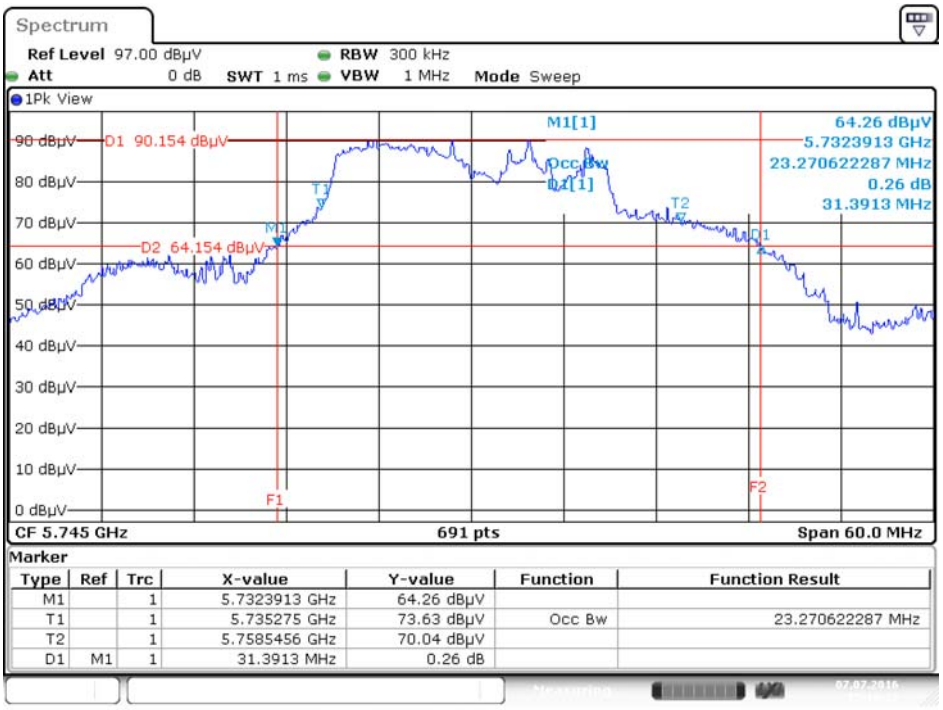
Date: 7.JUL.2016 15:13:28

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



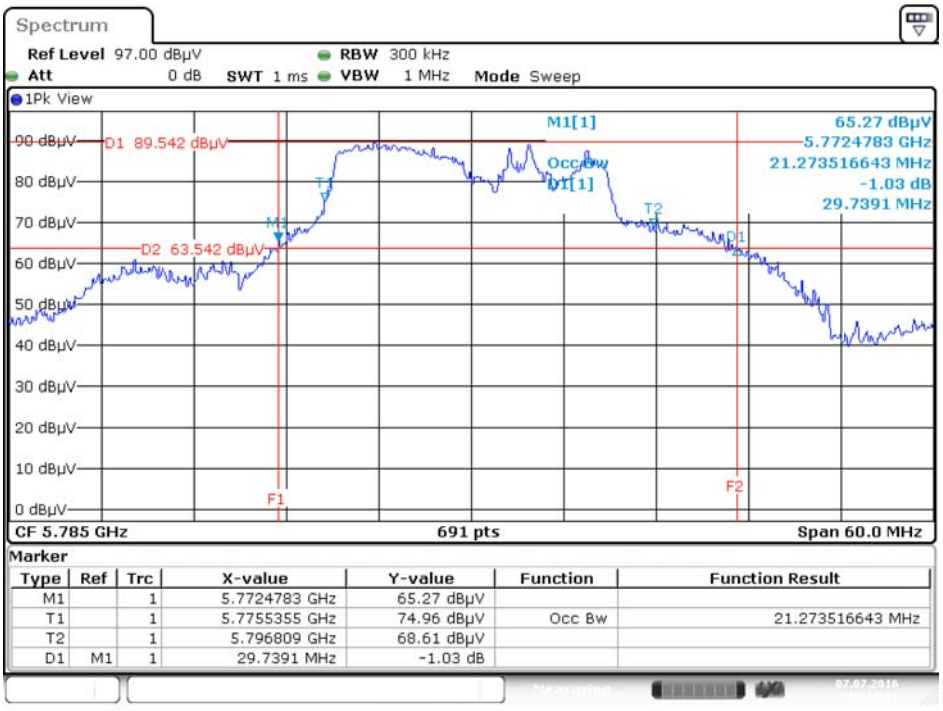
Date: 7.JUL.2016 15:14:01

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



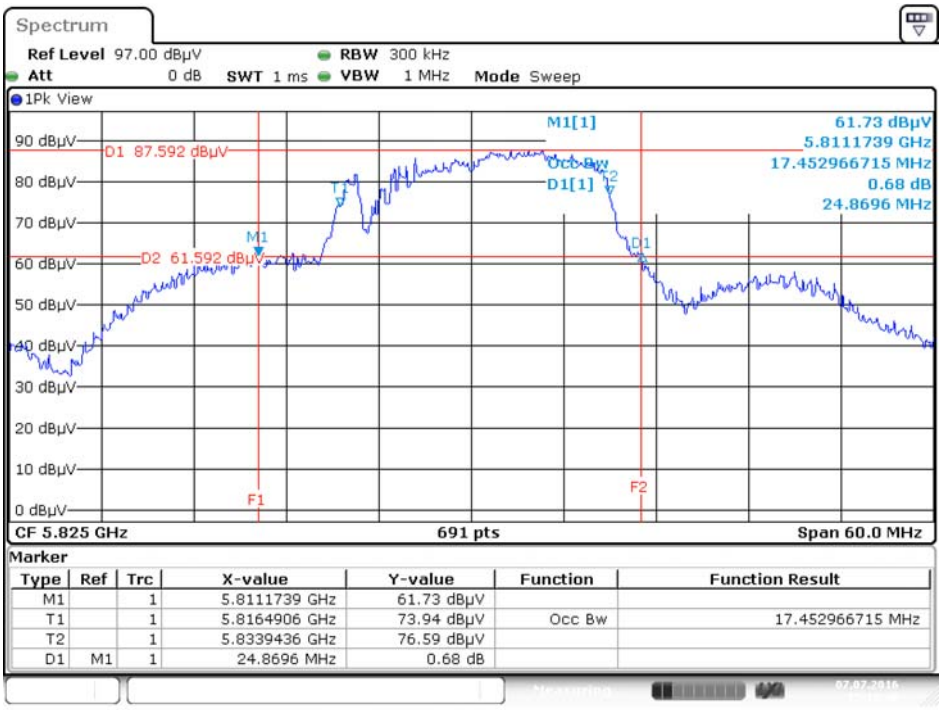
Date: 7.JUL.2016 15:14:37

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



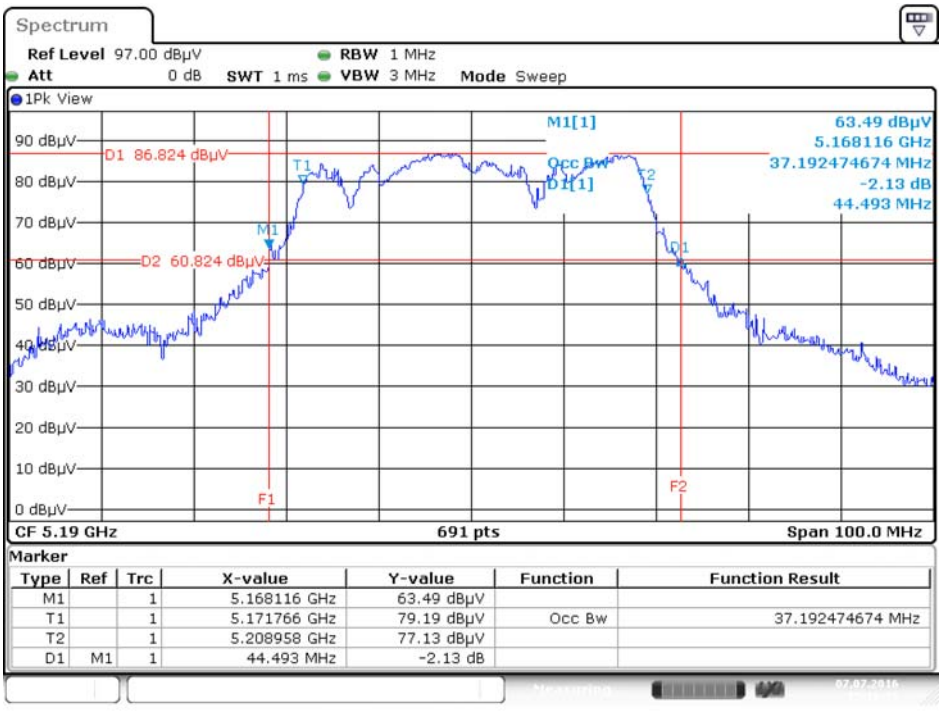
Date: 7.JUL.2016 15:15:12

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



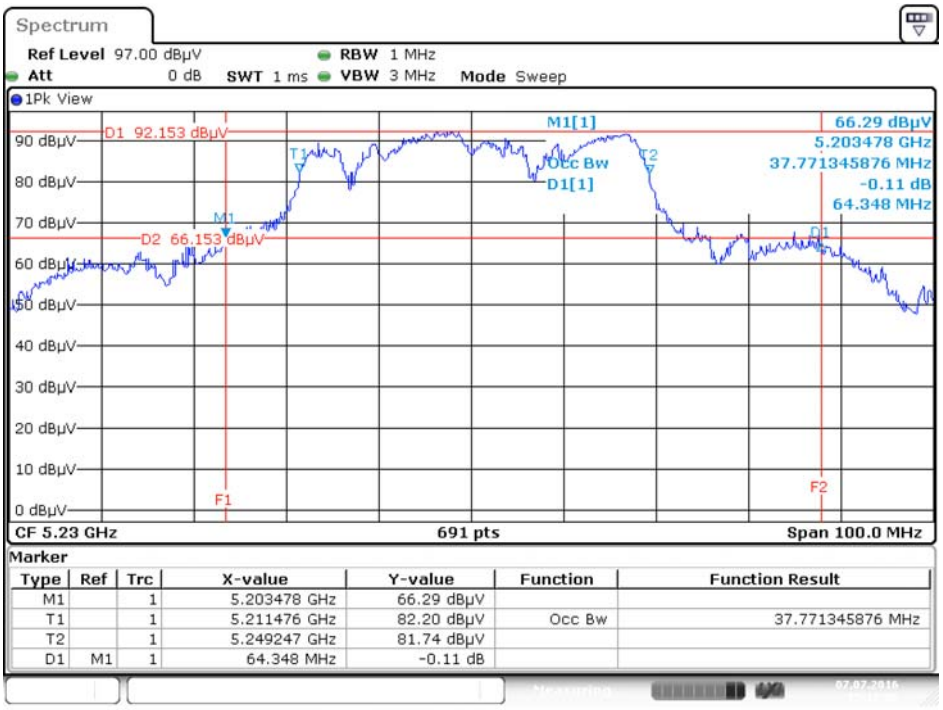
Date: 7.JUL.2016 15:15:48

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



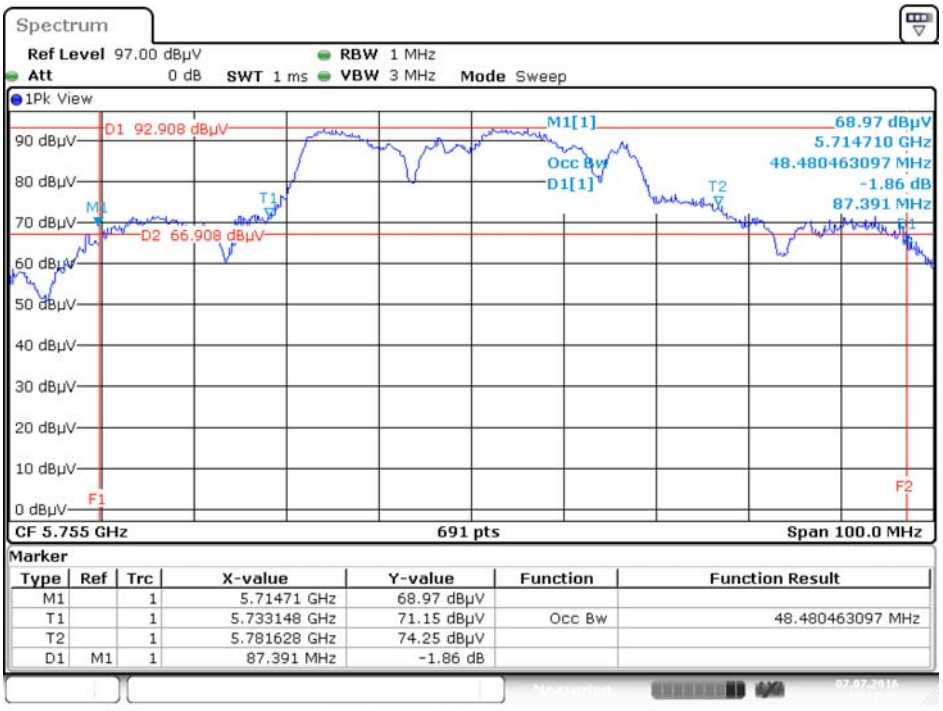
Date: 7.JUL.2016 15:16:50

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



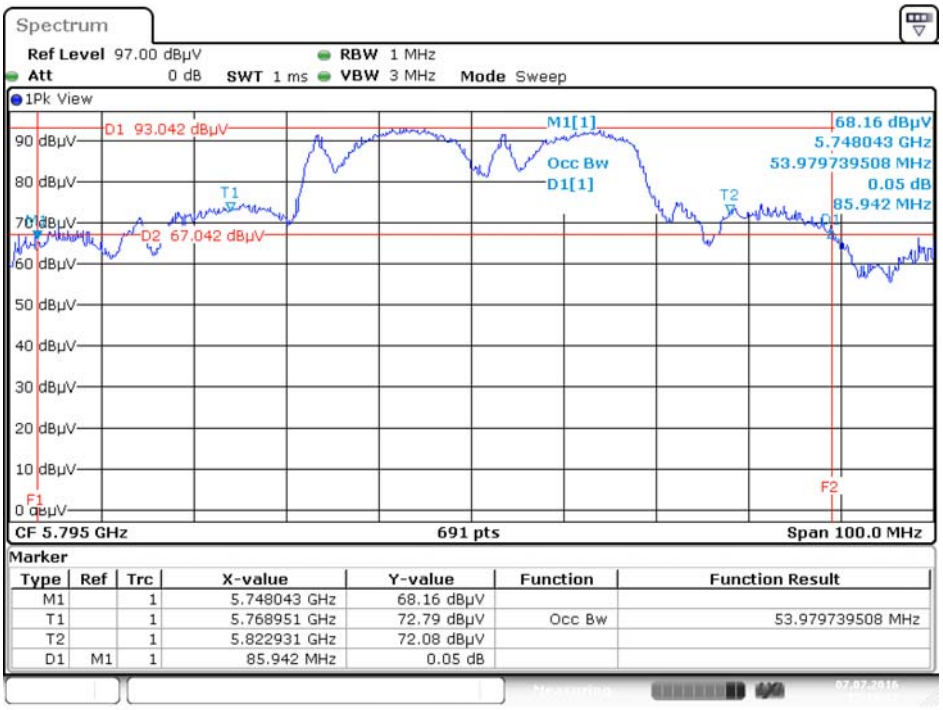
Date: 7.JUL.2016 15:17:26

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



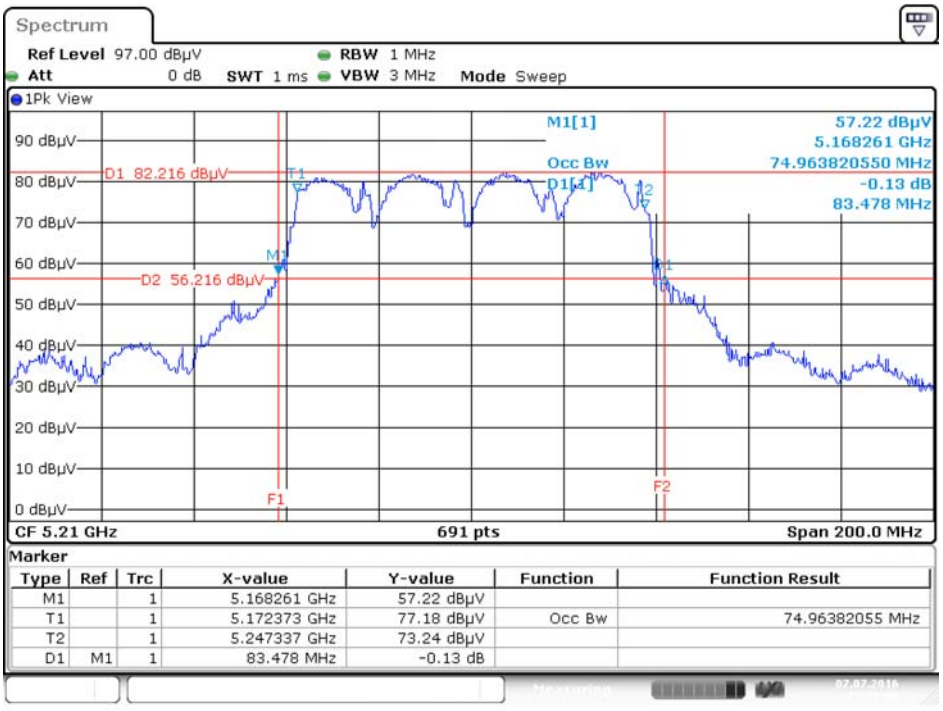
Date: 7.JUL.2016 15:18:25

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



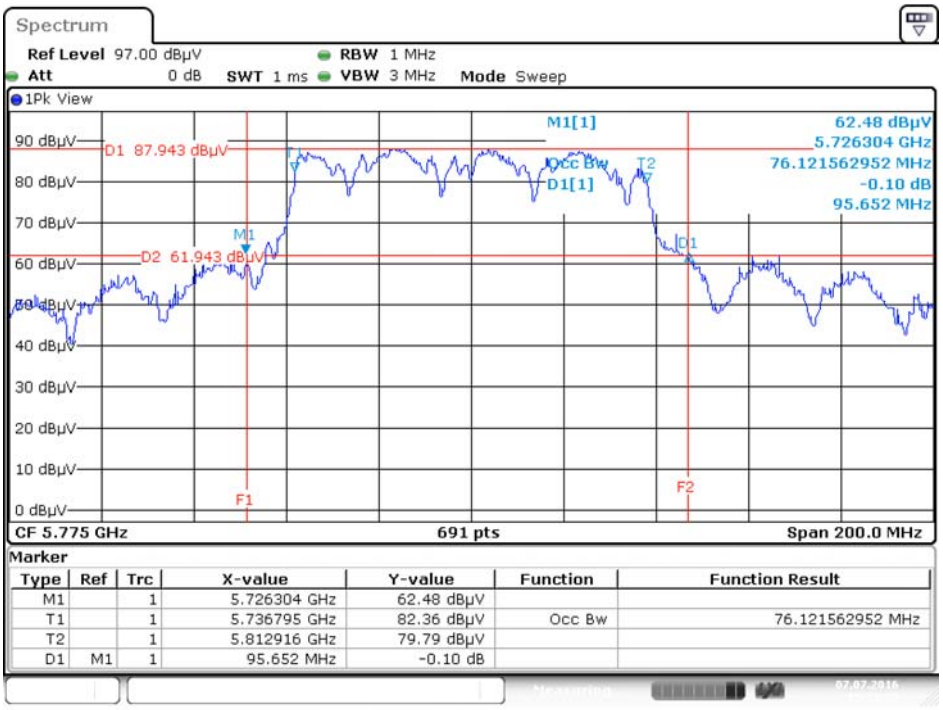
Date: 7.JUL.2016 15:19:38

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



Date: 7.JUL.2016 15:21:10

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



Date: 7.JUL.2016 15:23:23

4.3. 6dB Spectrum Bandwidth Measurement

4.3.1. Limit

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

4.3.2. Measuring Instruments and Setting

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

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

4.3.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB789033 D02 v01r02 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth.
3. Multiple antenna system was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.3.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

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

4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of 6dB Spectrum Bandwidth

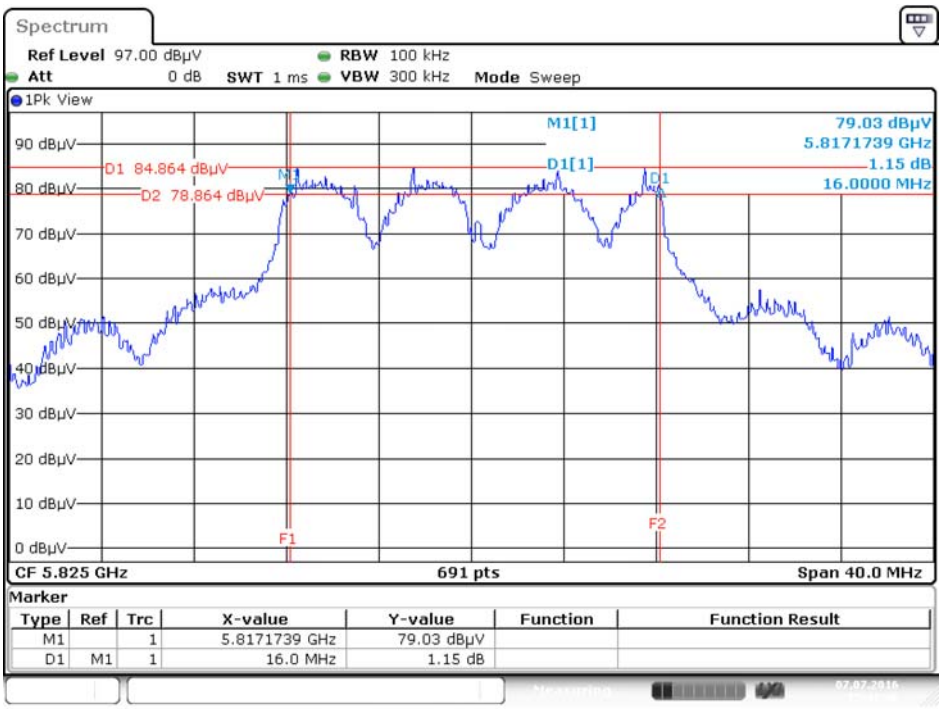
Temperature	24℃	Humidity	54%
Test Engineer	Gary Chu		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	15.19	500	Complies
	5785 MHz	12.52	500	Complies
	5825 MHz	16.00	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	14.20	500	Complies
	5785 MHz	10.78	500	Complies
	5825 MHz	16.93	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.13	500	Complies
	5795 MHz	34.09	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	74.20	500	Complies

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

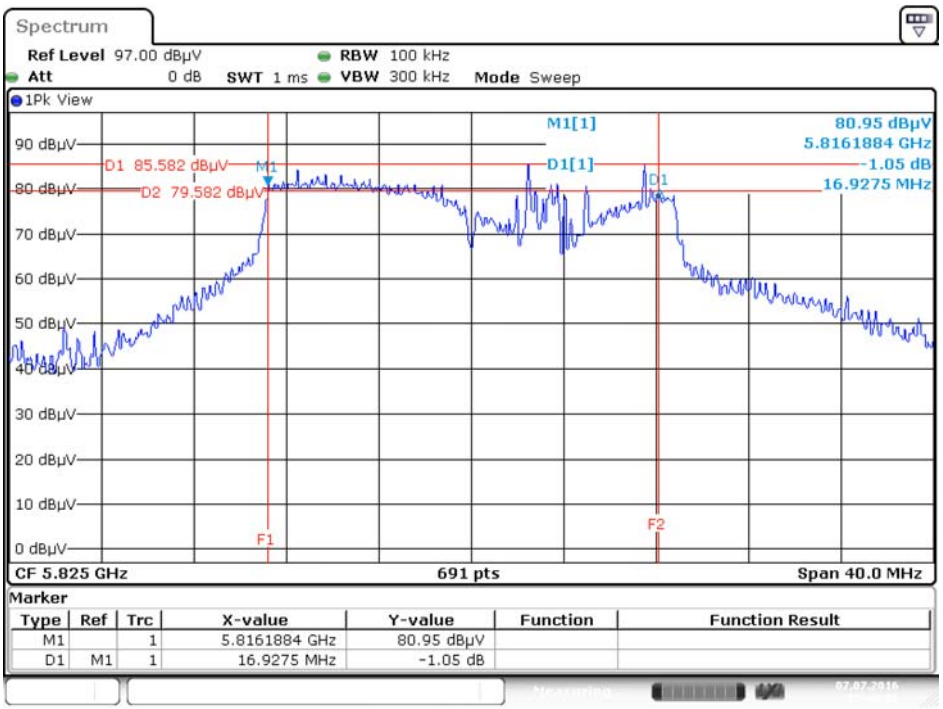
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5825 MHz



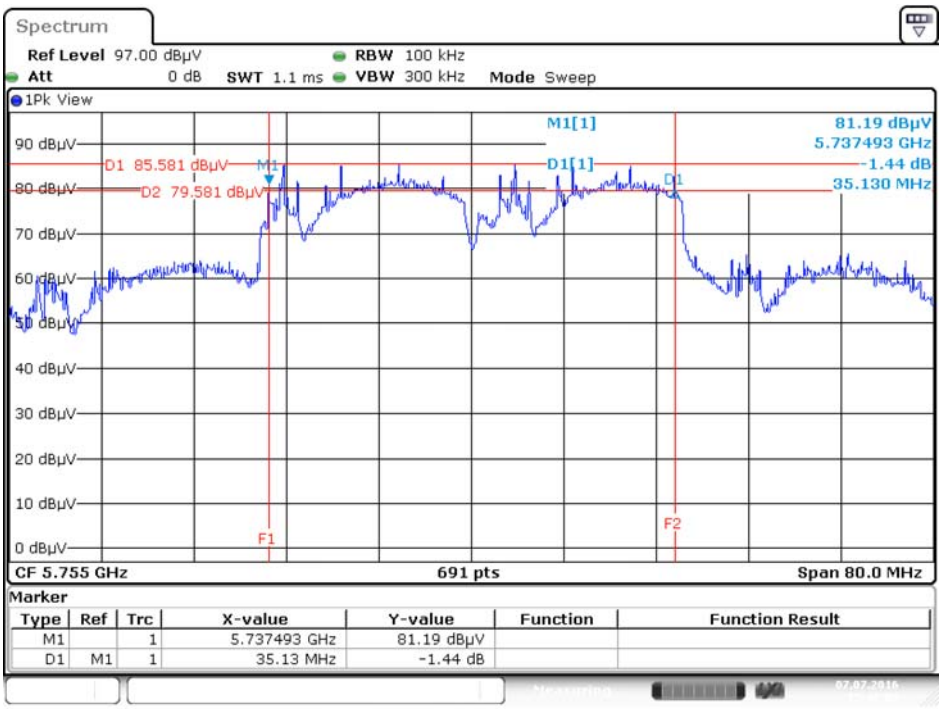
Date: 7.JUL.2016 15:41:46

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



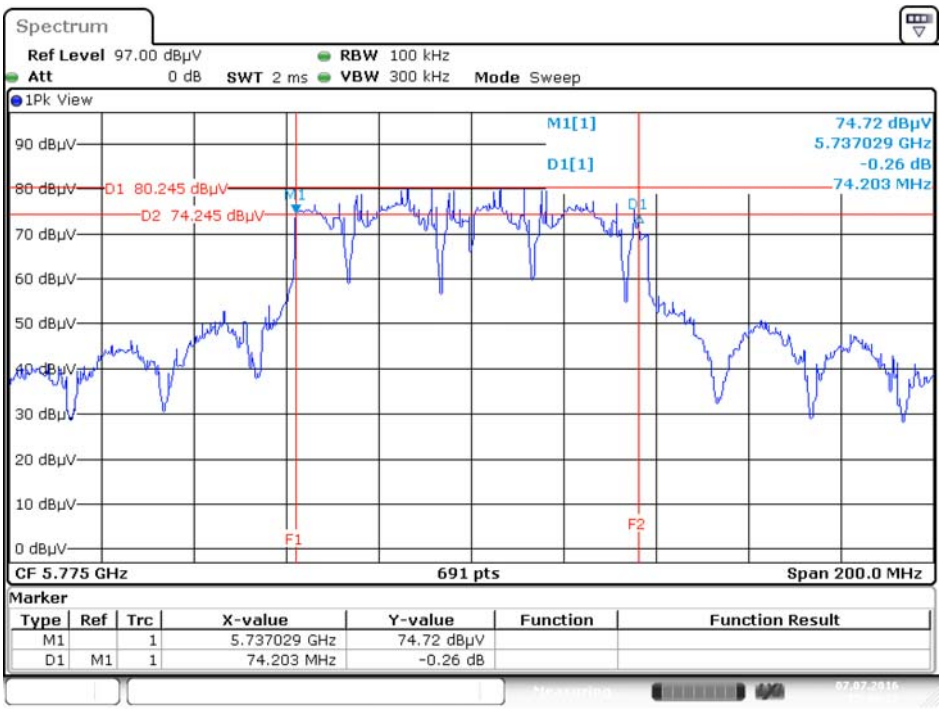
Date: 7.JUL.2016 15:45:17

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



Date: 7.JUL.2016 15:47:03

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



Date: 7.JUL.2016 15:49:17

4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

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

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

4.4.2. Measuring Instruments and Setting

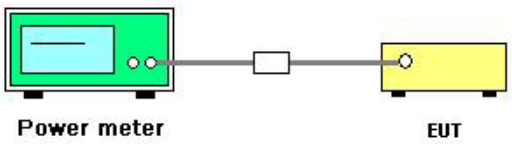
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r02 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Maximum Conducted Output Power

Temperature	24°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Jul. 07, 2016

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Ant. 3	Ant. 4	Total		
802.11a	5180 MHz	20.81	20.52	23.68	30.00	Complies
	5200 MHz	22.36	21.91	25.15	30.00	Complies
	5240 MHz	21.72	21.39	24.57	30.00	Complies
	5745 MHz	22.11	22.05	25.09	30.00	Complies
	5785 MHz	21.72	21.62	24.68	30.00	Complies
	5825 MHz	20.45	20.17	23.32	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	20.21	19.88	23.06	30.00	Complies
	5200 MHz	22.45	22.26	25.37	30.00	Complies
	5240 MHz	21.64	21.37	24.52	30.00	Complies
	5745 MHz	22.13	22.08	25.12	30.00	Complies
	5785 MHz	21.71	21.58	24.66	30.00	Complies
	5825 MHz	20.91	20.54	23.74	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	16.64	16.39	19.53	30.00	Complies
	5230 MHz	21.98	21.44	24.73	30.00	Complies
	5755 MHz	22.26	22.17	25.23	30.00	Complies
	5795 MHz	22.04	22.08	25.07	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	14.96	14.47	17.73	30.00	Complies
	5775 MHz	20.38	20.22	23.31	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
	☐	Client devices	11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

4.5.2. Measuring Instruments and Setting

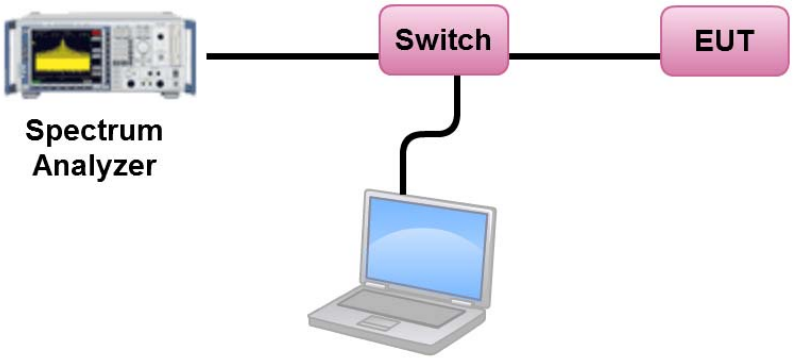
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01r02 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements and sum the spectra across the outputs.
4. For 5.725~5.85 GHz, the measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Power Spectral Density

Temperature	24°C	Humidity	54%
Test Engineer	Gary Chu	Test Date	Jul. 07, 2016

Configuration IEEE 802.11a / Ant. 3 + Ant. 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	10.49	17.00	Complies
40	5200 MHz	11.84	17.00	Complies
48	5240 MHz	11.34	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	11.78	-3.01	8.77	30.00	Complies
157	5785 MHz	11.51	-3.01	8.50	30.00	Complies
165	5825 MHz	10.04	-3.01	7.03	30.00	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.38dBi <6dBi, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	9.76	17.00	Complies
40	5200 MHz	12.23	17.00	Complies
48	5240 MHz	11.36	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	11.72	-3.01	8.71	30.00	Complies
157	5785 MHz	11.40	-3.01	8.39	30.00	Complies
165	5825 MHz	10.38	-3.01	7.37	30.00	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.38dBi <6dBi, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 + Ant. 4

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
38	5190 MHz	3.49		17.00		Complies
46	5230 MHz	8.41		17.00		Complies
Channel	**Frequency**	**Power Density (dBm/MHz)**	**10log(500kHz/RBW) Factor (dB)**	**Power Density (dBm/500kHz)**	**Power Density Limit (dBm/500kHz)**	**Result**
151	5755 MHz	8.93	-3.01	5.92	30.00	Complies
159	5795 MHz	8.88	-3.01	5.87	30.00	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.38dBi <6dBi, so the limit doesn't reduce.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 3 + Ant. 4

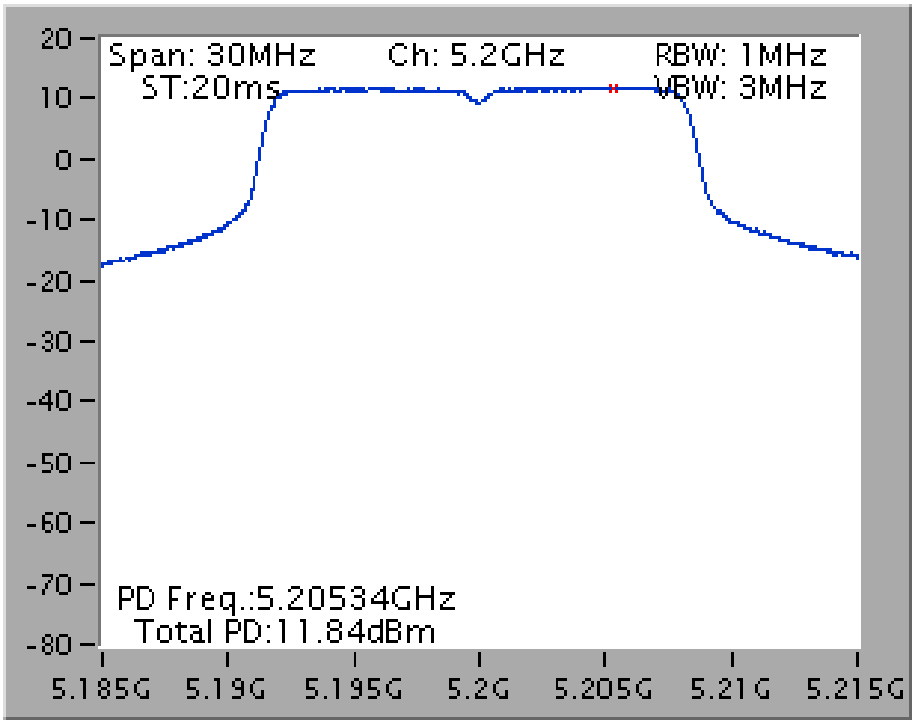
Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
42	5210 MHz	-1.65		17.00		Complies
Channel	**Frequency**	**Power Density (dBm/MHz)**	**10log(500kHz/RBW) Factor (dB)**	**Power Density (dBm/500kHz)**	**Power Density Limit (dBm/500kHz)**	**Result**
155	5775 MHz	3.95	-3.01	0.94	30.00	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.38dBi <6dBi, so the limit doesn't reduce.

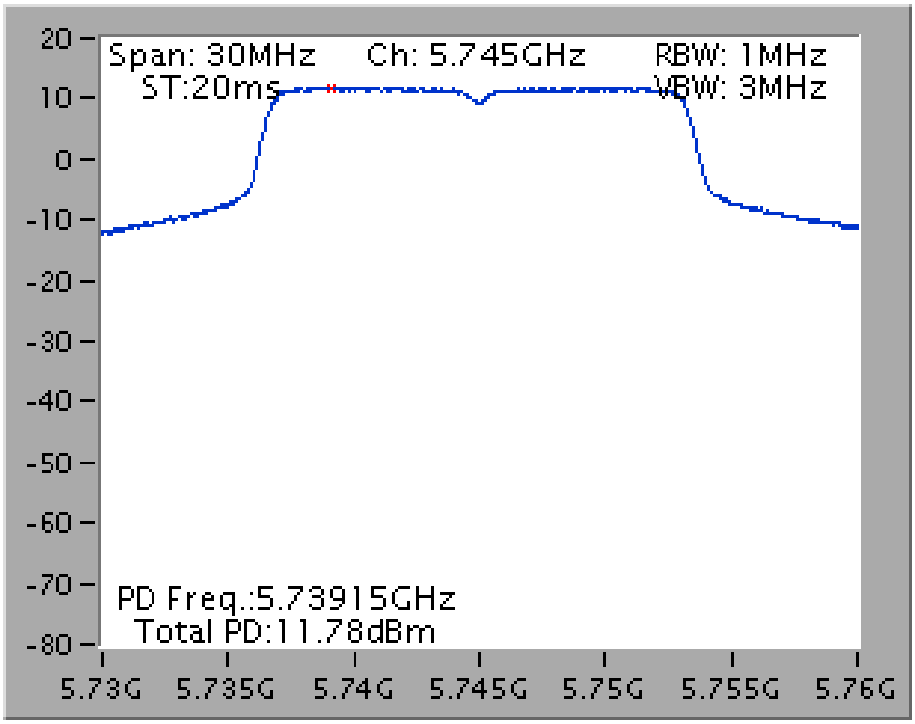
Note: All the test values were listed in the report.

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

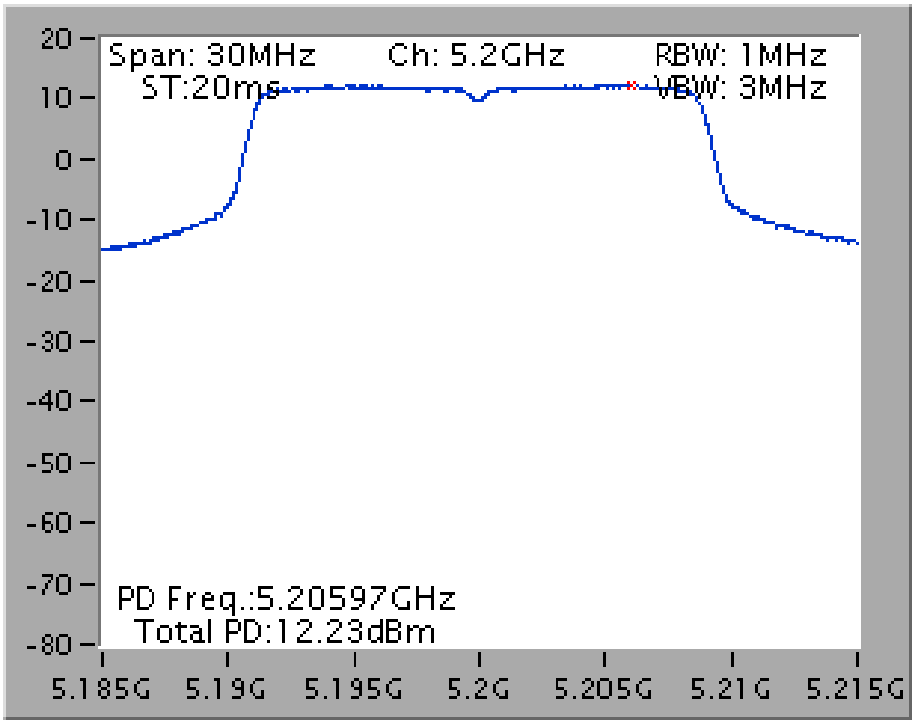
Power Density Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5200 MHz



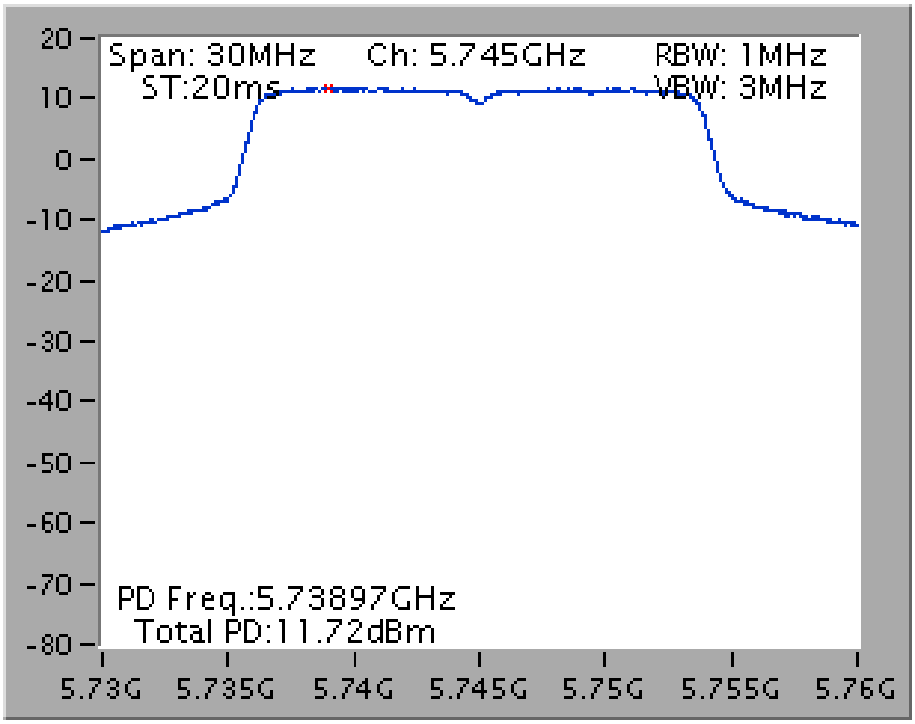
Power Density Plot on Configuration IEEE 802.11a / Ant. 3 + Ant. 4 / 5745 MHz



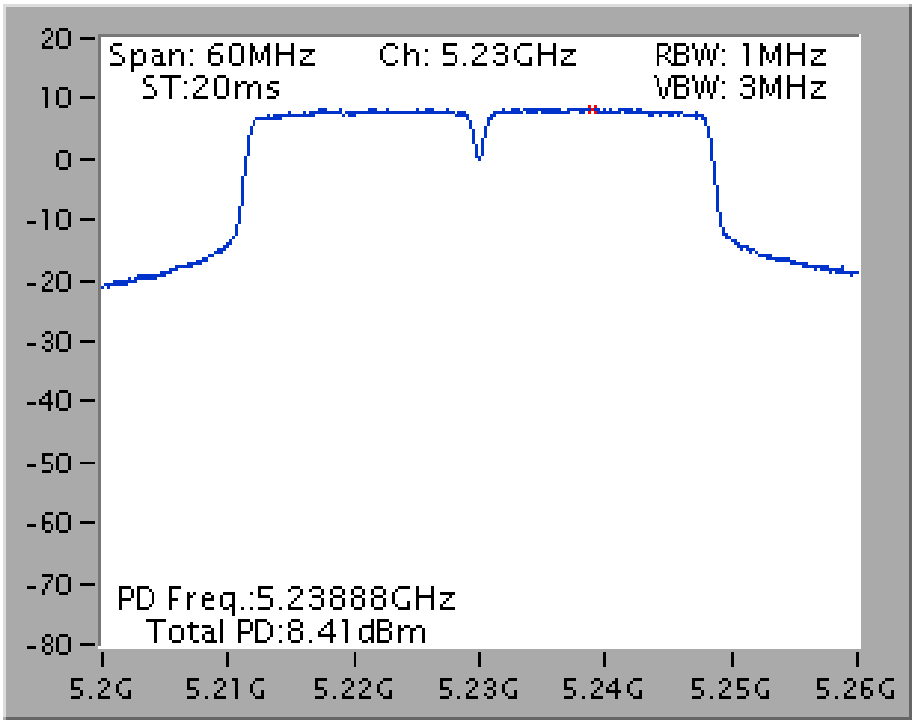
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4 / 5200 MHz



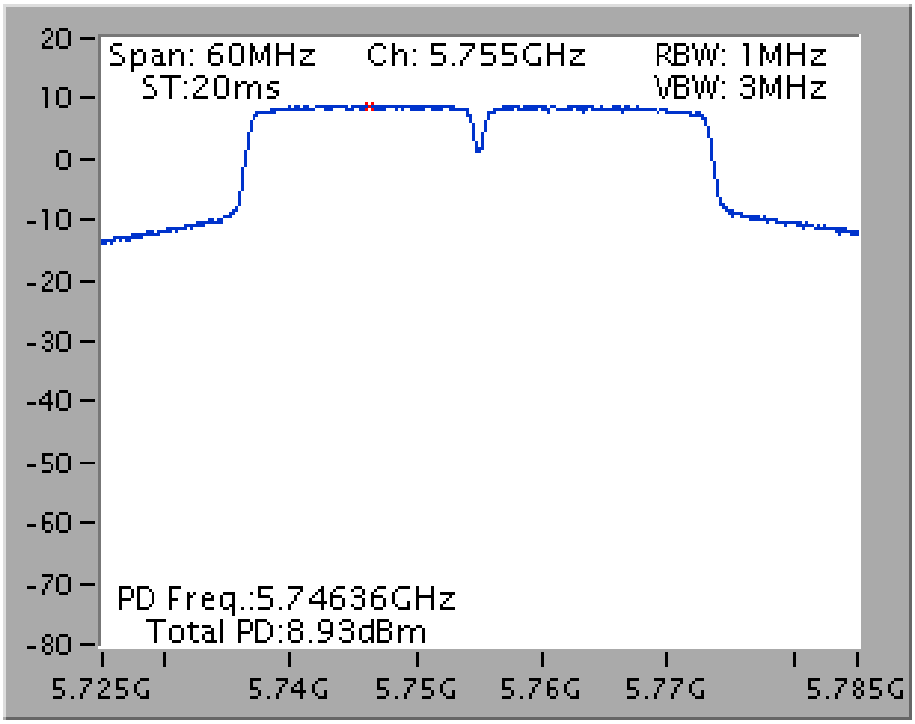
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 3 + Ant. 4 / 5745 MHz



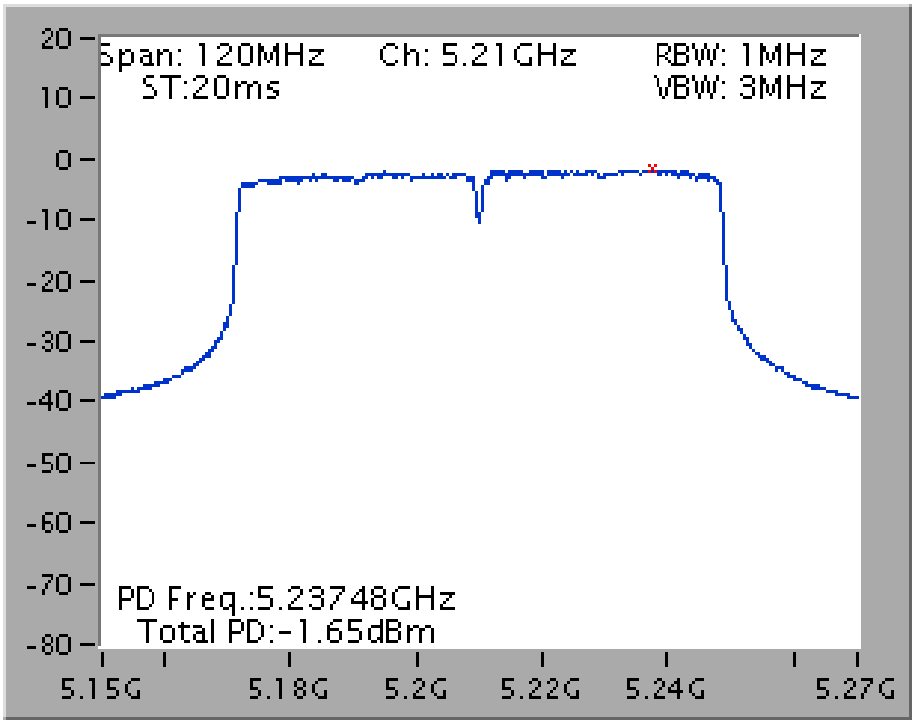
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 + Ant. 4 / 5230 MHz



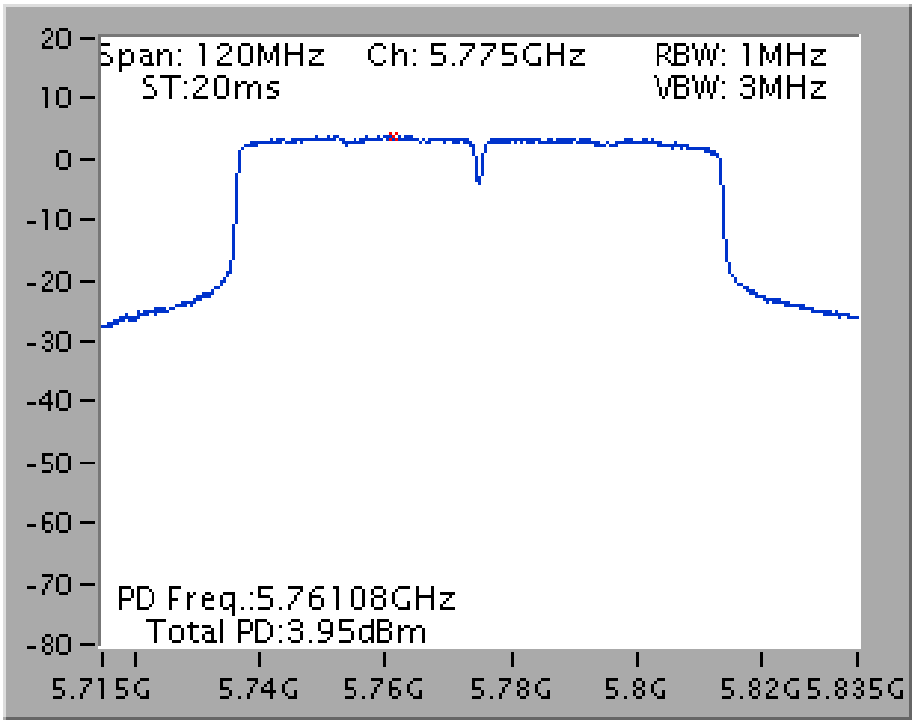
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 3 + Ant. 4 / 5755 MHz



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



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



4.6. Radiated Emissions Measurement

4.6.1. Limit

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

For transmitters operating in the 5.725-5.85 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

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

4.6.2. Measuring Instruments and Setting

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

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

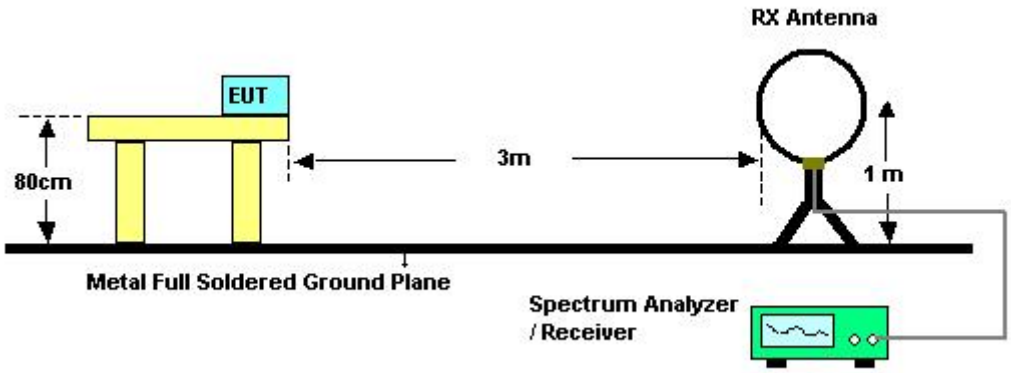
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

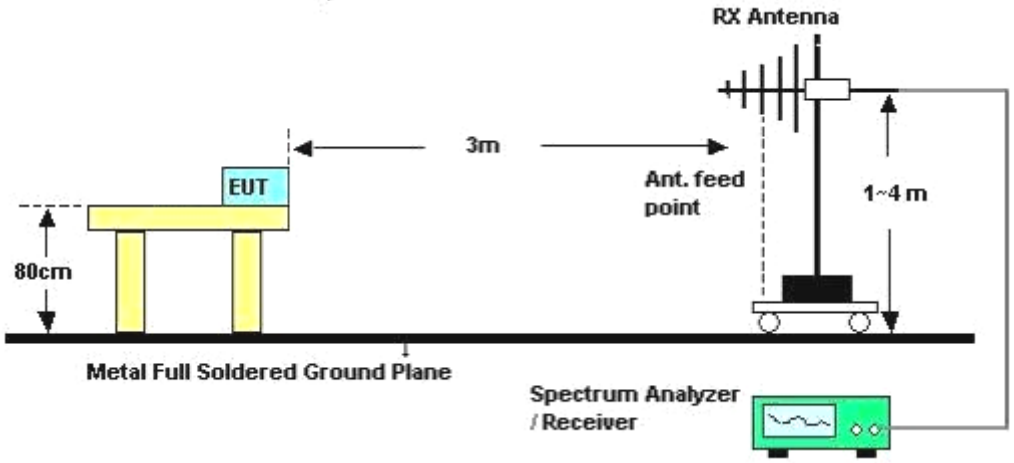
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

4.6.4. Test Setup Layout

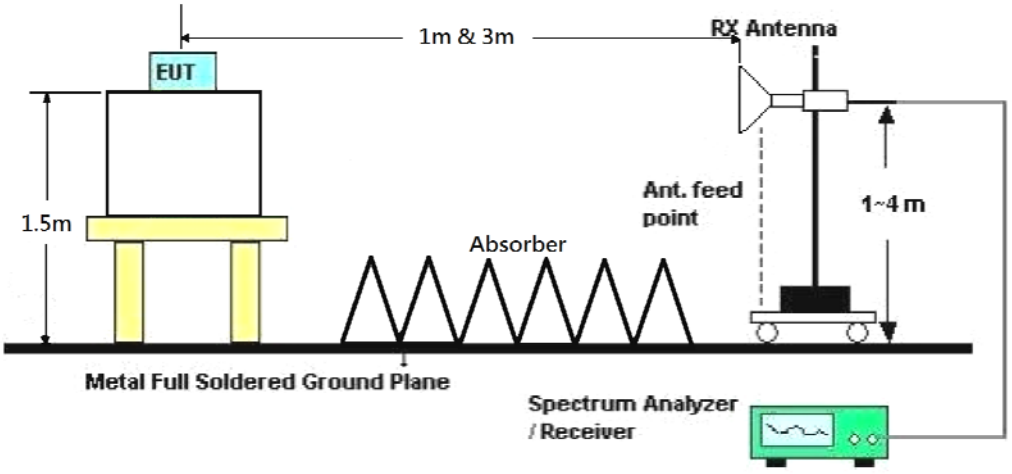
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	Normal Link
Test Date	Jul. 06, 2016	Test Mode	Mode 3

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

Note:

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

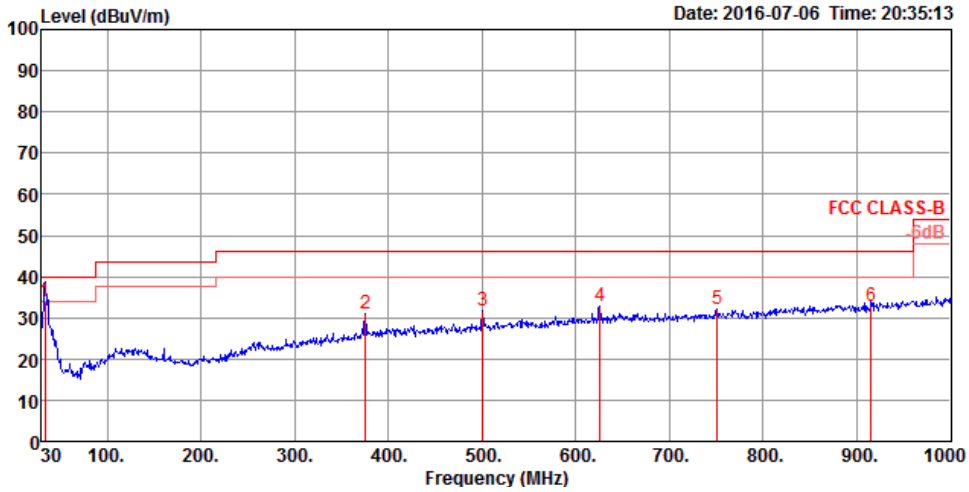
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

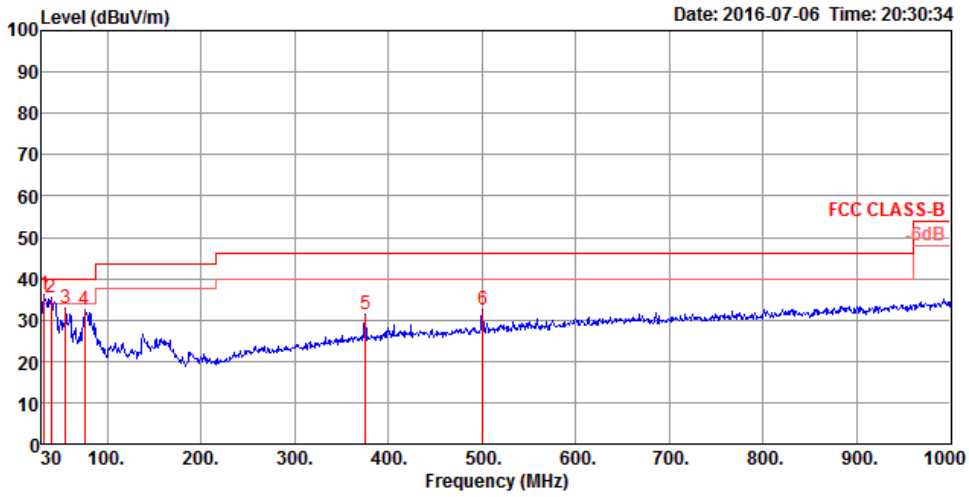
Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	Normal Link
Test Mode	Mode 3		

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	33.88	33.78	40.00	-6.22	41.90	0.51	23.77	32.40	100	161	QP	HORIZONTAL
2	375.32	30.96	46.00	-15.04	39.53	1.67	22.08	32.32	150	72	Peak	HORIZONTAL
3	500.45	31.63	46.00	-14.37	38.01	1.94	24.03	32.35	100	276	Peak	HORIZONTAL
4	625.58	32.82	46.00	-13.18	37.29	2.16	25.77	32.40	100	241	Peak	HORIZONTAL
5	750.71	32.15	46.00	-13.85	35.68	2.37	26.40	32.30	125	14	Peak	HORIZONTAL
6	915.61	33.01	46.00	-12.99	34.16	2.60	27.83	31.58	125	229	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	32.91	36.12	40.00	-3.88	43.77	0.51	24.24	32.40	125	221	Peak	VERTICAL
2	39.70	35.37	40.00	-4.63	46.88	0.54	20.36	32.41	100	124	Peak	VERTICAL
3	55.22	32.80	40.00	-7.20	50.31	0.65	14.25	32.41	200	278	Peak	VERTICAL
4	75.59	32.40	40.00	-7.60	50.74	0.75	13.31	32.40	100	172	Peak	VERTICAL
5	375.32	31.36	46.00	-14.64	39.93	1.67	22.08	32.32	150	202	Peak	VERTICAL
6	500.45	32.57	46.00	-13.43	38.95	1.94	24.03	32.35	100	138	Peak	VERTICAL

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	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 36 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	15540.27	61.99	74.00	-12.01	45.29	12.06	38.13	33.49	103	229	Peak	HORIZONTAL
2	15541.04	48.45	54.00	-5.55	31.75	12.06	38.13	33.49	103	229	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	15537.78	49.46	54.00	-4.54	32.76	12.06	38.13	33.49	105	91	Average	VERTICAL
2	15537.99	63.36	74.00	-10.64	46.66	12.06	38.13	33.49	105	91	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 40 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15598.34	50.56	54.00	-3.44	33.95	12.09	38.05	33.53	204	286	Average	HORIZONTAL
2	15604.10	65.70	74.00	-8.30	49.14	12.11	37.98	33.53	204	286	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	15597.18	73.75	74.00	-0.25	57.14	12.09	38.05	33.53	110	314	Peak	VERTICAL
2	15598.98	52.88	54.00	-1.12	36.27	12.09	38.05	33.53	110	314	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 48 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	15718.56	63.31	74.00	-10.69	46.99	12.15	37.84	33.67	210	280	Peak	HORIZONTAL
2	15723.56	49.00	54.00	-5.00	32.68	12.15	37.84	33.67	210	280	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	15723.52	67.99	74.00	-6.01	51.67	12.15	37.84	33.67	130	83	Peak	VERTICAL
2	15723.90	49.71	54.00	-4.29	33.39	12.15	37.84	33.67	130	83	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 149 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	11490.36	47.62	54.00	-6.38	31.50	10.10	39.20	33.18	112	89	Average	HORIZONTAL
2	11490.40	63.46	74.00	-10.54	47.34	10.10	39.20	33.18	112	89	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	11488.80	67.55	74.00	-6.45	51.43	10.10	39.20	33.18	101	81	Peak	VERTICAL
2	11489.08	53.84	54.00	-0.16	37.72	10.10	39.20	33.18	101	81	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 157 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.48	62.87	74.00	-11.13	46.74	10.13	39.20	33.20	100	85	Peak	HORIZONTAL
2	11570.52	49.58	54.00	-4.42	33.45	10.13	39.20	33.20	100	85	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	11568.40	53.89	54.00	-0.11	37.76	10.13	39.20	33.20	100	85	Average	VERTICAL
2	11570.44	67.87	74.00	-6.13	51.74	10.13	39.20	33.20	100	85	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 165 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11650.44	49.93	54.00	-4.07	33.79	10.16	39.20	33.22	100	85	Average	HORIZONTAL
2	11650.48	63.48	74.00	-10.52	47.34	10.16	39.20	33.22	100	85	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	11648.76	53.82	54.00	-0.18	37.68	10.16	39.20	33.22	100	85	Average	VERTICAL
2	11649.60	67.42	74.00	-6.58	51.28	10.16	39.20	33.22	100	85	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	15530.56	62.01	74.00	-11.99	45.31	12.06	38.13	33.49	100	82	Peak	HORIZONTAL
2	15533.92	47.70	54.00	-6.30	31.00	12.06	38.13	33.49	100	82	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	15545.12	61.51	74.00	-12.49	44.81	12.06	38.13	33.49	100	22	Peak	VERTICAL
2	15545.92	49.85	54.00	-4.15	33.15	12.06	38.13	33.49	100	22	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	15601.56	61.95	74.00	-12.05	45.39	12.11	37.98	33.53	100	231	Peak	HORIZONTAL
2	15601.60	48.74	54.00	-5.26	32.18	12.11	37.98	33.53	100	231	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	15595.56	73.49	74.00	-0.51	56.88	12.09	38.05	33.53	100	313	Peak	VERTICAL
2	15596.88	52.62	54.00	-1.38	36.01	12.09	38.05	33.53	100	313	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	15716.84	59.45	74.00	-14.55	43.13	12.15	37.84	33.67	100	271	Peak	HORIZONTAL
2	15722.56	47.44	54.00	-6.56	31.12	12.15	37.84	33.67	101	271	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	15714.24	49.87	54.00	-4.13	33.55	12.15	37.84	33.67	125	88	Average	VERTICAL
2	15720.72	64.12	74.00	-9.88	47.80	12.15	37.84	33.67	125	88	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11489.32	49.03	54.00	-4.97	32.91	10.10	39.20	33.18	100	132	Average	HORIZONTAL
2	11491.24	62.02	74.00	-11.98	45.90	10.10	39.20	33.18	100	132	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	11486.00	53.75	54.00	-0.25	37.63	10.10	39.20	33.18	100	88	Average	VERTICAL
2	11488.16	67.17	74.00	-6.83	51.05	10.10	39.20	33.18	100	88	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.88	49.07	54.00	-4.93	32.94	10.13	39.20	33.20	100	84	Average	HORIZONTAL
2	11573.20	63.04	74.00	-10.96	46.91	10.13	39.20	33.20	100	84	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	11568.32	53.71	54.00	-0.29	37.58	10.13	39.20	33.20	100	82	Average	VERTICAL
2	11571.08	67.65	74.00	-6.35	51.52	10.13	39.20	33.20	100	82	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	11651.20	49.61	54.00	-4.39	33.45	10.18	39.20	33.22	113	84	Average	HORIZONTAL
2	11652.28	63.36	74.00	-10.64	47.20	10.18	39.20	33.22	113	84	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	11646.96	67.56	74.00	-6.44	51.42	10.16	39.20	33.22	100	82	Peak	VERTICAL
2	11648.40	53.77	54.00	-0.23	37.63	10.16	39.20	33.22	100	82	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	15570.21	61.94	74.00	-12.06	45.33	13.38	38.39	35.16	144	102	Peak	HORIZONTAL
2	15570.90	47.77	54.00	-6.23	31.16	13.38	38.39	35.16	144	102	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15570.13	60.98	74.00	-13.02	44.37	13.38	38.39	35.16	210	282	Peak	VERTICAL
2	15570.45	47.85	54.00	-6.15	31.24	13.38	38.39	35.16	210	282	Average	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	15692.74	60.85	74.00	-13.15	44.47	13.39	38.23	35.24	200	19	Peak	HORIZONTAL
2	15693.53	48.55	54.00	-5.45	32.17	13.39	38.23	35.24	200	19	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	15693.53	49.47	54.00	-4.53	33.09	13.39	38.23	35.24	193	46	Average	VERTICAL
2	15696.70	62.66	74.00	-11.34	46.28	13.39	38.23	35.24	193	46	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	11511.12	63.66	74.00	-10.34	47.96	10.75	39.70	34.75	195	228	Peak	HORIZONTAL
2	11511.92	48.43	54.00	-5.57	32.73	10.75	39.70	34.75	195	228	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	11507.66	50.65	54.00	-3.35	34.95	10.75	39.70	34.75	213	260	Average	VERTICAL
2	11508.69	64.78	74.00	-9.22	49.08	10.75	39.70	34.75	213	260	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	11586.54	62.40	74.00	-11.60	46.79	10.76	39.62	34.77	300	56	Peak	HORIZONTAL
2	11589.74	48.83	54.00	-5.17	33.22	10.76	39.62	34.77	300	56	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	11584.62	51.32	54.00	-2.68	35.71	10.76	39.62	34.77	203	262	Average	VERTICAL
2	11586.60	65.26	74.00	-8.74	49.65	10.76	39.62	34.77	203	262	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	15629.75	46.73	54.00	-7.27	30.20	13.38	38.34	35.19	129	198	Average	HORIZONTAL
2	15630.45	59.83	74.00	-14.17	43.30	13.38	38.34	35.19	129	198	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15630.51	46.82	54.00	-7.18	30.29	13.38	38.34	35.19	199	145	Average	VERTICAL
2	15630.88	60.21	74.00	-13.79	43.68	13.38	38.34	35.19	199	145	Peak	VERTICAL

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11549.27	44.98	54.00	-9.02	29.32	10.75	39.67	34.76	182	28	Average	HORIZONTAL
2	11549.75	58.33	74.00	-15.67	42.67	10.75	39.67	34.76	182	28	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	11557.12	59.80	74.00	-14.20	44.15	10.76	39.65	34.76	208	250	Peak	VERTICAL
2	11557.53	46.56	54.00	-7.44	30.91	10.76	39.65	34.76	208	250	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 shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

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

4.7.2. Measuring Instruments and Setting

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

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

4.7.3. Test Procedures

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	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 36, 40, 48 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	5148.80	53.85	54.00	-0.15	46.59	6.44	33.74	32.92	102	73	Average	VERTICAL
2	5148.80	73.09	74.00	-0.91	65.83	6.44	33.74	32.92	102	73	Peak	VERTICAL
3	5183.60	105.32			97.98	6.47	33.79	32.92	102	73	Average	VERTICAL
4	5183.60	116.15			108.81	6.47	33.79	32.92	102	73	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	5148.40	49.13	54.00	-4.87	41.87	6.44	33.74	32.92	112	81	Average	VERTICAL
2	5149.20	62.68	74.00	-11.32	55.42	6.44	33.74	32.92	112	81	Peak	VERTICAL
3	5194.00	108.20			100.82	6.48	33.82	32.92	112	81	Average	VERTICAL
4	5194.40	117.68			110.30	6.48	33.82	32.92	112	81	Peak	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5146.40	58.87	74.00	-15.13	51.61	6.44	33.74	32.92	102	86	Peak	VERTICAL
2	5150.00	46.82	54.00	-7.18	39.56	6.44	33.74	32.92	102	86	Average	VERTICAL
3	5237.00	117.46			109.97	6.52	33.89	32.92	102	86	Peak	VERTICAL
4	5246.60	107.71			100.22	6.52	33.89	32.92	102	86	Average	VERTICAL
5	5350.00	48.61	54.00	-5.39	40.86	6.61	34.06	32.92	102	86	Average	VERTICAL
6	5353.60	60.44	74.00	-13.56	52.69	6.61	34.06	32.92	102	86	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11a CH 149, 157, 165 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	5575.00	61.86	68.20	-6.34	53.74	6.73	34.34	32.95	142	96	Peak	HORIZONTAL
2	5746.00	100.95			92.60	6.90	34.45	33.00	142	96	Average	HORIZONTAL
3	5747.00	111.98			103.63	6.90	34.45	33.00	142	96	Peak	HORIZONTAL
4	5933.00	60.53	68.20	-7.67	52.03	6.98	34.56	33.04	142	96	Peak	HORIZONTAL

Item 2, 3 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	5625.00	61.89	68.20	-6.31	53.69	6.78	34.38	32.96	106	270	Peak	VERTICAL
2	5782.00	117.31			108.91	6.93	34.47	33.00	106	270	Peak	VERTICAL
3	5792.00	107.05			98.63	6.95	34.48	33.01	106	270	Average	VERTICAL
4	5946.00	60.34	68.20	-7.86	51.83	6.99	34.57	33.05	106	270	Peak	VERTICAL

Item 2, 3 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	5621.00	61.17	68.20	-7.03	52.99	6.77	34.37	32.96	114	271	Peak	VERTICAL
2	5827.00	105.29			96.85	6.96	34.50	33.02	114	271	Average	VERTICAL
3	5827.00	114.72			106.28	6.96	34.50	33.02	114	271	Peak	VERTICAL
4	5955.00	60.47	68.20	-7.73	51.96	6.99	34.57	33.05	114	271	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	53.04	54.00	-0.96	45.78	6.44	33.74	32.92	100	84	Average	VERTICAL
2	5150.00	68.12	74.00	-5.88	60.86	6.44	33.74	32.92	100	84	Peak	VERTICAL
3	5175.60	105.63			98.29	6.47	33.79	32.92	100	84	Average	VERTICAL
4	5176.80	115.48			108.14	6.47	33.79	32.92	100	84	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	5147.60	64.94	74.00	-9.06	57.68	6.44	33.74	32.92	100	82	Peak	VERTICAL
2	5150.00	49.19	54.00	-4.81	41.93	6.44	33.74	32.92	100	82	Average	VERTICAL
3	5206.00	107.66			100.25	6.49	33.84	32.92	100	82	Average	VERTICAL
4	5206.00	117.54			110.13	6.49	33.84	32.92	100	82	Peak	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.20	59.62	74.00	-14.38	52.36	6.44	33.74	32.92	111	79	Peak	VERTICAL
2	5150.00	46.24	54.00	-7.76	38.98	6.44	33.74	32.92	111	79	Average	VERTICAL
3	5234.60	106.64			99.15	6.52	33.89	32.92	111	79	Average	VERTICAL
4	5235.80	117.20			109.71	6.52	33.89	32.92	111	79	Peak	VERTICAL
5	5350.00	47.86	54.00	-6.14	40.11	6.61	34.06	32.92	111	79	Average	VERTICAL
6	5359.60	61.81	74.00	-12.19	54.03	6.62	34.08	32.92	111	79	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	5597.00	61.51	68.20	-6.69	53.36	6.75	34.36	32.96	110	351	Peak	VERTICAL
2	5738.00	106.62			98.29	6.88	34.44	32.99	110	351	Average	VERTICAL
3	5738.00	116.14			107.81	6.88	34.44	32.99	110	351	Peak	VERTICAL
4	5947.00	60.29	68.20	-7.91	51.78	6.99	34.57	33.05	110	351	Peak	VERTICAL

Item 2, 3 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	5626.00	61.54	68.20	-6.66	53.34	6.78	34.38	32.96	100	265	Peak	VERTICAL
2	5793.00	106.86			98.44	6.95	34.48	33.01	100	265	Average	VERTICAL
3	5793.00	116.41			107.99	6.95	34.48	33.01	100	265	Peak	VERTICAL
4	5954.00	60.46	68.20	-7.74	51.95	6.99	34.57	33.05	100	265	Peak	VERTICAL

Item 2, 3 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	5628.00	60.50	68.20	-7.70	52.30	6.78	34.38	32.96	102	298	Peak	VERTICAL
2	5829.00	105.47			97.03	6.96	34.50	33.02	102	298	Average	VERTICAL
3	5829.00	115.15			106.71	6.96	34.50	33.02	102	298	Peak	VERTICAL
4	5928.00	59.87	68.20	-8.33	51.37	6.98	34.56	33.04	102	298	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 2016		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.01	66.87	74.00	-7.13	59.45	7.48	34.85	34.91	195	273	Peak	VERTICAL
2	5148.33	53.83	54.00	-0.17	46.41	7.48	34.85	34.91	195	273	Average	VERTICAL
3	5185.51	109.05			101.60	7.48	34.88	34.91	195	273	Peak	VERTICAL
4	5204.74	98.74			91.25	7.49	34.91	34.91	195	273	Average	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	5142.50	62.24	74.00	-11.76	54.82	7.48	34.85	34.91	269	282	Peak	VERTICAL
2	5149.71	49.32	54.00	-4.68	41.90	7.48	34.85	34.91	269	282	Average	VERTICAL
3	5243.46	103.44			95.91	7.50	34.94	34.91	269	282	Average	VERTICAL
4	5244.42	113.21			105.68	7.50	34.94	34.91	269	282	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	5537.00	62.83	68.20	-5.37	54.71	7.83	35.21	34.92	292	286	Peak	VERTICAL
2	5747.79	104.36			96.28	7.77	35.25	34.94	292	286	Average	VERTICAL
3	5748.50	114.59			106.51	7.77	35.25	34.94	292	286	Peak	VERTICAL
4	5949.50	61.83	68.20	-6.37	53.54	7.97	35.29	34.97	292	286	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5755 MHz.

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5566.50	61.88	68.20	-6.32	53.72	7.88	35.21	34.93	300	289	Peak	VERTICAL
2	5779.00	112.89			104.85	7.73	35.26	34.95	300	289	Peak	VERTICAL
3	5796.60	103.22			95.20	7.71	35.26	34.95	300	289	Average	VERTICAL
4	5966.50	61.05	68.20	-7.15	52.74	7.99	35.29	34.97	300	289	Peak	VERTICAL

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

Temperature	22°C	Humidity	54%
Test Engineer	John Tang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Ant. 3 + Ant. 4
Test Date	Jul. 01, 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	5138.69	66.36	74.00	-7.64	58.95	7.48	34.84	34.91	234	277	Peak	VERTICAL
2	5145.10	53.54	54.00	-0.46	46.12	7.48	34.85	34.91	234	277	Average	VERTICAL
3	5198.78	105.67			98.20	7.48	34.90	34.91	234	277	Peak	VERTICAL
4	5246.06	94.33			86.80	7.50	34.94	34.91	234	277	Average	VERTICAL
5	5350.00	48.03	54.00	-5.97	40.33	7.56	35.05	34.91	234	277	Average	VERTICAL
6	5357.21	60.04	74.00	-13.96	52.33	7.56	35.06	34.91	234	277	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	5638.00	67.62	68.20	-0.58	59.42	7.90	35.23	34.93	198	76	Peak	VERTICAL
2	5651.50	68.20	69.31	-1.11	60.02	7.88	35.23	34.93	198	76	Peak	VERTICAL
3	5655.00	69.88	71.91	-2.03	61.70	7.88	35.23	34.93	198	76	Peak	VERTICAL
4	5757.37	96.40			88.35	7.75	35.25	34.95	198	76	Average	VERTICAL
5	5764.50	108.80			100.75	7.75	35.25	34.95	198	76	Peak	VERTICAL
6	5934.50	63.96	68.20	-4.24	55.69	7.94	35.29	34.96	198	76	Peak	VERTICAL

Item 4, 5 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

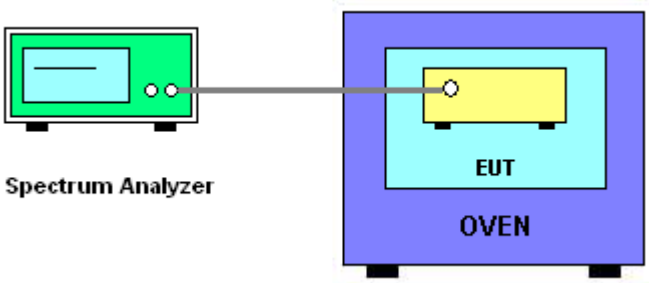
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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~45°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	24℃	Humidity	54%
Test Engineer	Gary Chu	Test Date	Jul. 07, 2016

Mode: 20 MHz / Ant. 3

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9757	5199.9747	5199.9739	5199.9732
110.00	5199.9753	5199.9749	5199.9748	5199.9743
93.50	5199.9752	5199.9750	5199.9744	5199.9737
Max. Deviation (MHz)	0.0248	0.0253	0.0261	0.0268
Max. Deviation (ppm)	4.78	4.87	5.03	5.16
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(℃)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5199.9861	5199.9859	5199.9849	5199.9839
10	5199.9859	5199.9851	5199.9841	5199.9836
20	5199.9852	5199.9844	5199.9841	5199.9836
30	5199.9831	5199.9829	5199.9822	5199.9818
40	5199.9826	5199.9817	5199.9809	5199.9805
45	5199.9820	5199.9812	5199.9809	5199.9806
Max. Deviation (MHz)	0.0180	0.0188	0.0191	0.0195
Max. Deviation (ppm)	3.47	3.62	3.68	3.76
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9763	5784.9756	5784.9749	5784.9745
110.00	5784.9753	5784.9747	5784.9743	5784.9739
93.50	5784.9745	5784.9743	5784.9734	5784.9724
Max. Deviation (MHz)	0.0255	0.0257	0.0266	0.0276
Max. Deviation (ppm)	4.42	4.45	4.61	4.78
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5784.9880	5784.9875	5784.9873	5784.9867
10	5784.9866	5784.9856	5784.9853	5784.9844
20	5784.9852	5784.9843	5784.9833	5784.9830
30	5784.9831	5784.9829	5784.9819	5784.9817
40	5784.9815	5784.9808	5784.9807	5784.9805
45	5784.9800	5784.9796	5784.9793	5784.9788
Max. Deviation (MHz)	0.0200	0.0204	0.0207	0.0212
Max. Deviation (ppm)	3.46	3.53	3.58	3.67
Result	Complies			

Mode: 40 MHz / Ant. 3

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9862	5189.9861	5189.9854	5189.9847
110.00	5189.9852	5189.9851	5189.9843	5189.9839
93.50	5189.9845	5189.9838	5189.9834	5189.9826
Max. Deviation (MHz)	0.0155	0.0162	0.0166	0.0174
Max. Deviation (ppm)	2.98	3.11	3.19	3.34
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5189.9866	5189.9856	5189.9849	5189.9846
10	5189.9856	5189.9846	5189.9836	5189.9835
20	5189.9852	5189.9847	5189.9837	5189.9831
30	5189.9831	5189.9822	5189.9816	5189.9811
40	5189.9812	5189.9802	5189.9794	5189.9789
45	5189.9806	5189.9796	5189.9789	5189.9787
Max. Deviation (MHz)	0.0194	0.0204	0.0211	0.0213
Max. Deviation (ppm)	3.74	3.94	4.07	4.11
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9861	5754.9856	5754.9848	5754.9844
110.00	5754.9852	5754.9849	5754.9841	5754.9834
93.50	5754.9843	5754.9837	5754.9835	5754.9826
Max. Deviation (MHz)	0.0157	0.0163	0.0165	0.0174
Max. Deviation (ppm)	2.72	2.83	2.86	3.02
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5754.9888	5754.9884	5754.9880	5754.9872
10	5754.9868	5754.9859	5754.9853	5754.9848
20	5754.9852	5754.9848	5754.9844	5754.9835
30	5754.9831	5754.9830	5754.9820	5754.9819
40	5754.9818	5754.9814	5754.9811	5754.9802
45	5754.9810	5754.9806	5754.9802	5754.9799
Max. Deviation (MHz)	0.0190	0.0194	0.0198	0.0201
Max. Deviation (ppm)	3.31	3.38	3.45	3.50
Result	Complies			

Mode: 80 MHz / Ant. 3

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5209.9857	5209.9850	5209.9840	5209.9834
110.00	5209.9852	5209.9846	5209.9843	5209.9834
93.50	5209.9842	5209.9839	5209.9838	5209.9835
Max. Deviation (MHz)	0.0158	0.0161	0.0162	0.0166
Max. Deviation (ppm)	3.02	3.08	3.10	3.18
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5209.9857	5209.9851	5209.9847	5209.9837
10	5209.9853	5209.9845	5209.9841	5209.9834
20	5209.9852	5209.9851	5209.9841	5209.9836
30	5209.9831	5209.9823	5209.9815	5209.9813
40	5209.9822	5209.9813	5209.9807	5209.9801
45	5209.9804	5209.9795	5209.9787	5209.9779
Max. Deviation (MHz)	0.0196	0.0205	0.0213	0.0221
Max. Deviation (ppm)	3.77	3.94	4.09	4.25
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9856	5774.9851	5774.9848	5774.9847
110.00	5774.9852	5774.9850	5774.9840	5774.9833
93.50	5774.9844	5774.9840	5774.9831	5774.9828
Max. Deviation (MHz)	0.0156	0.0160	0.0169	0.0172
Max. Deviation (ppm)	2.69	2.76	2.92	2.97
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5774.9882	5774.9876	5774.9866	5774.9863
10	5774.9862	5774.9857	5774.9856	5774.9847
20	5774.9852	5774.9848	5774.9842	5774.9838
30	5774.9831	5774.9827	5774.9820	5774.9812
40	5774.9814	5774.9809	5774.9807	5774.9805
45	5774.9808	5774.9806	5774.9803	5774.9800
Max. Deviation (MHz)	0.0192	0.0194	0.0197	0.0200
Max. Deviation (ppm)	3.33	3.36	3.42	3.47
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 Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 2016	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 24, 2016	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-I0-7	N/A	N/A	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

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

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

N.C.R. means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

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