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FCC RADIO TEST REPORT

Applicant's company	**Mojo Networks, Inc.**
Applicant Address	339 N. Bernardo Avenue, Suite #200, Mountain View, CA USA
FCC ID	**TOR-C75**
Manufacturer's company	**Lite-On Network Communication (Dongguan) Limited**
Manufacturer Address	30#Keji Rd., Yin Hu Industrial Area, Qingxi Town, DongGuan City, Guangdong, China

Product Name	AirTight Access Point
Brand Name	MOJO, WatchGuard
Model No.	C-75, C-75-E, AP320
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5250 ~ 5350MHz / 5470 ~ 5725MHz
Received Date	Jan. 10, 2014
Final Test Date	Aug. 09, 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 v01r03, 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
FR411023-09	Rev. 01	Initial issue of report	Mar. 03, 2017

1. VERIFICATION OF COMPLIANCE

Product Name	:	AirTight Access Point
Brand Name	:	MOJO, WatchGuard
Model No.	:	C-75, C-75-E, AP320
Applicant	:	Mojo Networks, Inc.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jan. 10, 2014 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E			
Part	**Rule Section**	**Description of Test**	**Result**
4.1	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies
4.2	15.407(a)	Maximum Conducted Output Power	Complies
4.3	15.407(a)	Power Spectral Density	Complies
4.4	15.407(b)	Radiated Emissions	Complies
4.5	15.407(b)	Band Edge Emissions	Complies
4.6	15.407(g)	Frequency Stability	Complies
4.7	15.203	Antenna Requirements	Complies

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	IEEE 802.11a: WLAN (1TX, 1RX) IEEE 802.11n/ac: WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From 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	5250 ~ 5350MHz / 5470 ~ 5725MHz
Channel Number	15 for 20MHz bandwidth ; 7 for 40MHz bandwidth 3 for 80MHz bandwidth
Channel Bandwidth (99%)	Band 2: IEEE 802.11a: 22.14 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.23 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 35.75 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.67 MHz Band 3: IEEE 802.11a: 17.45 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.15 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.19 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz
Maximum Conducted Output Power	Band 2: IEEE 802.11a: 23.22 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 19.01 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 21.80 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.30 dBm Band 3: IEEE 802.11a: 21.34 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 19.12 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 22.02 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 23.29 dBm

Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
TPC Function	☒ With TPC	☐ Without TPC
Weather Band (5600~5650MHz)	☒ With 5600~5650MHz	☐ Without 5600~5650MHz
Beamforming Function	☐ With beamforming	☒ Without beamforming
Operate Condition	☒ Indoor	☐ Outdoor

Antenna and Band width

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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	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

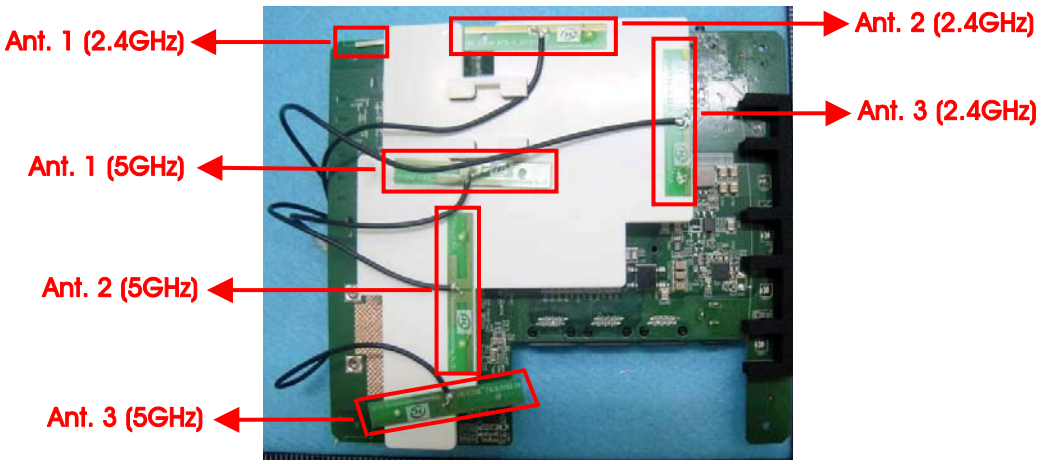
3.2. Accessories

Power	Brand	Model No.	Rating
Adapter	APD	WA-24Q12R	Input: 100-240Vac, 50-60Hz, 0.7A Max. Output: 12Vdc, 2A
Other			
Plug*1			

3.3. Table for Filed Antenna

Model No.: C-75 / AP320: Internal Ant. (low gain)

Ant.	Brand	Model No.	Type	Connector	Antenna Gain		Cable loss		True Gain (dBi)	
					2.4GHz	5GHz	2.4GHz	5GHz	2.4GHz	5GHz
1	LITEON	WP838 AP	PCB	I-PEX	3.5	6.5	0.2	-	3.3	6.5
2	LITEON	WP838 AP	PCB	I-PEX	6	5.8	-	-	6	5.8
3	LITEON	WP838 AP	PCB	I-PEX	5.4	6.6	-	-	5.4	6.6



Model No.: C-75-E: External Ant.

Ant.	Brand	Model No.	Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	MAG.LAYERS	EDA-1713-25GR2-A7	Dipole	SMA Male RP	5	5
2	MAG.LAYERS	EDA-1713-25GR2-A7	Dipole	SMA Male RP	5	5
3	MAG.LAYERS	EDA-1713-25GR2-A7	Dipole	SMA Male RP	5	5

Model No.: C-75 / AP320: Internal Ant. (higher gain)

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	Galtronics	001174B2AD5F	Dipole Ant.	I-PEX	6.36	6.31
2	Galtronics	001174B2AD5F	Dipole Ant.	I-PEX	6.69	6.64
3	Galtronics	001174B2AD5F	Dipole Ant.	I-PEX	4.78	6.04

<For 2.4GHz Band>

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

Only Ant. 1 could transmit/receive simultaneously.

For IEEE 802.11n mode (3TX/3RX):

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

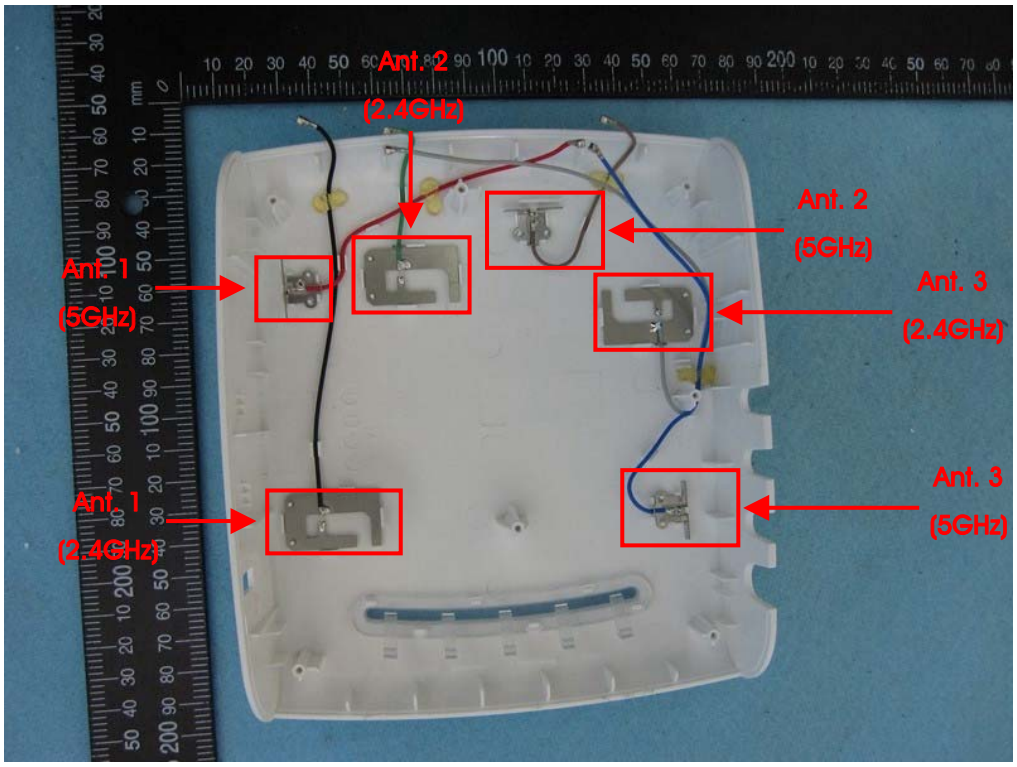
<For 5GHz Band>

For IEEE 802.11a mode (1TX/1RX):

Only Ant. 1 could transmit/receive simultaneously.

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

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



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140.

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

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

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5250~5350 MHz Band 2	52	5260 MHz	60	5300 MHz
	54	5270 MHz	62	5310 MHz
	56	5280 MHz	64	5320 MHz
	58	5290 MHz	-	-
5470~5725 MHz Band 3	100	5500 MHz	120	5600 MHz
	102	5510 MHz	122	5610 MHz
	104	5520 MHz	124	5620 MHz
	106	5530 MHz	126	5630 MHz
	108	5540 MHz	128	5640 MHz
	110	5550 MHz	132	5660 MHz
	112	5560 MHz	134	5670 MHz
	116	5580 MHz	136	5680 MHz
	118	5590 MHz	140	5700 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.
Max. Conducted Output Power	11a/BPSK	Band 2-3	6Mbps	52/60/64/ 100/116/140	1
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/ 100/116/140	1+2+3
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/ 102/110/134	1+2+3
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2+3
Power Spectral Density	11a/BPSK	Band 2-3	6Mbps	52/60/64/ 100/116/140	1
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/ 100/116/140	1+2+3
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/ 102/110/134	1+2+3
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2+3
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	11a/BPSK	Band 2-3	6Mbps	52/60/64/ 100/116/140	1
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/ 100/116/140	1+2+3
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/ 102/110/134	1+2+3
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2+3
Radiated Emission Above 1GHz	11a/BPSK	Band 2-3	6Mbps	52/60/64/ 100/116/140	1
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/ 100/116/140	1+2+3
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/ 102/110/134	1+2+3
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2+3
Band Edge Emission	11a/BPSK	Band 2-3	6Mbps	52/60/64/ 100/116/140	1

	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/ 100/116/140	1+2+3
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/ 102/110/134	1+2+3
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2+3
Frequency Stability	20 MHz	Band 2-3	-	60/116	1
	40 MHz	Band 2-3	-	62/110	1
	80 MHz	Band 2-3	-	58/106	1

Note 1: All the specification of test configurations and test mode was base on customer's request.

Note 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.

The following test modes were performed for all tests:

For Radiated Emission test<Above 1GHz>:

The EUT can be placed in Y-axis and Z-axis. After evaluating, Y-axis was the worst case, so it's recorded in this report.

Mode 1. CTX_EUT in Y axis

For Co-location MPE:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA411023-09) tests 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 Designation No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.7. Table for Multiple Listing

The EUT has three model numbers which are identical to each other in all aspects except for the following table:

Brand Name	Model No.	Antenna
MOJO	C-75	Internal antenna
	C-75-E	External antenna
WatchGuard	AP320	Internal antenna

Note: Model: C-75 was tested for Internal Ant. (higher gain). This test result has been recorded in this test report. Model: C-75 was tested for Internal Ant. (low gain) and model: C-75-E was tested for External Ant. This test result has been recorded in Sporton test report: 411023-07.

3.8. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR411023-08AB

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

Modifications	Performance Checking
Adding 5GHz Band 2 and Band 3 (5250~5350 MHz, 5470~5725 MHz) for this device.	1. 26dB Bandwidth and 99% Occupied Bandwidth Measurement 2. Maximum Conducted Output Power Measurement 3. Power Spectral Density Measurement 4. Radiated Emissions above 1GHz 5. Band Edge Emissions Measurement 6. Frequency Stability Measurement

3.9. Table for Supporting Units

For Test Site No: 03CH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

3.10. 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 Version 2.3					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz
802.11a	18.5	22	17.5	16	20	17
802.11ac MCS0/Nss1 VHT20	13	13	12.5	13	13.5	13.5
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	
	16	13.5	12.5	16.5	17	
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz	
	11		8		20	

3.11. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

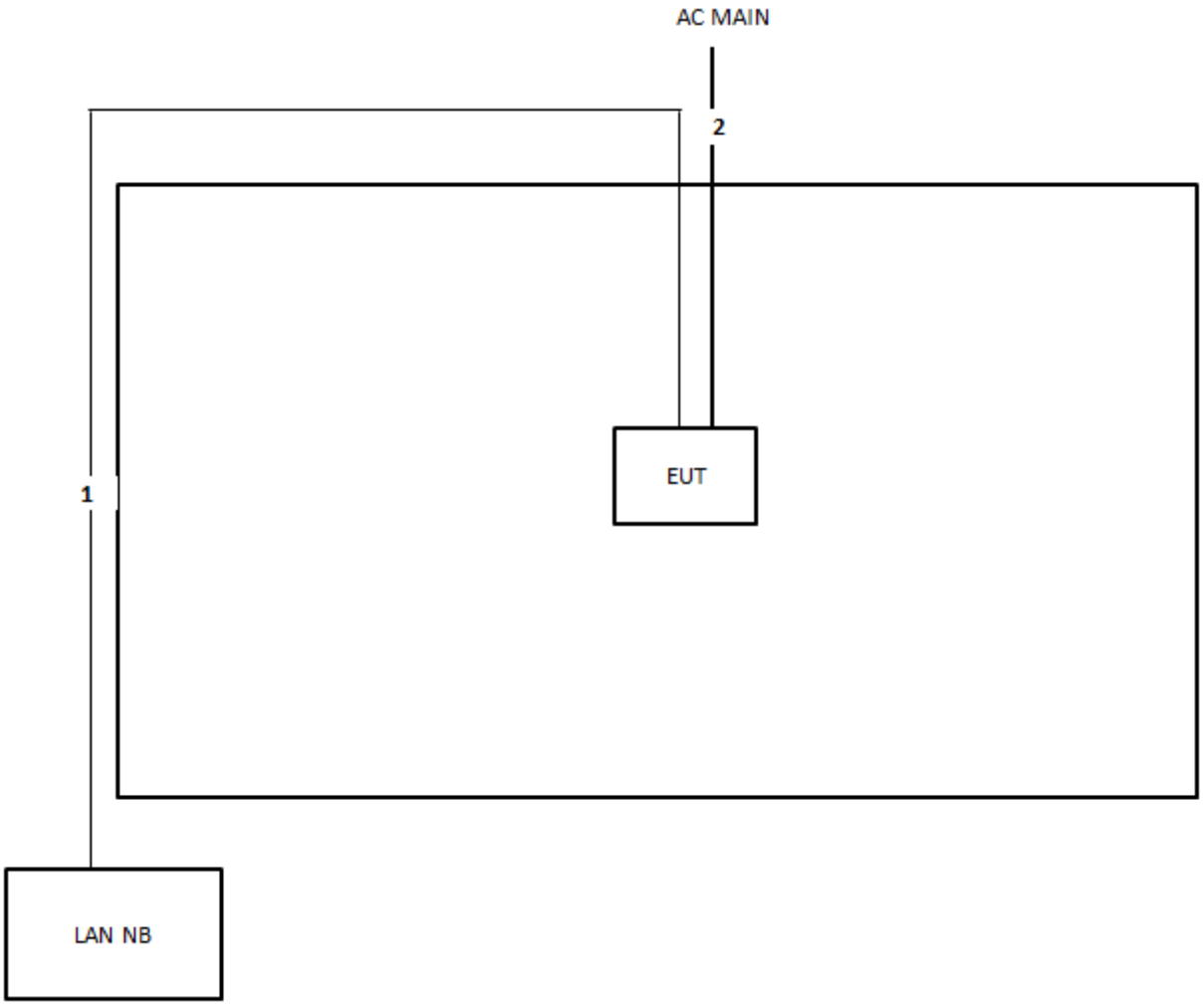
3.12. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.010	2.030	99.01%	0.04	0.01
802.11ac MCS0/Nss1 VHT20	1.904	2.040	93.33%	0.30	0.53
802.11ac MCS0/Nss1 VHT40	0.930	1.009	92.17%	0.35	1.08
802.11ac MCS0/Nss1 VHT80	0.440	0.499	88.18%	0.55	2.27

3.13. Test Configurations

3.13.1. Radiation Emissions Test Configuration

Test Configuration: above 1GHz



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

4. TEST RESULT

4.1. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.1.1. Limit

No restriction limits.

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 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

4.1.3. 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%.

4.1.4. Test Setup Layout

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

This test setup layout is the same as that shown in section 4.4.4.

4.1.5. Test Deviation

There is no deviation with the original standard.

4.1.6. EUT Operation during Test

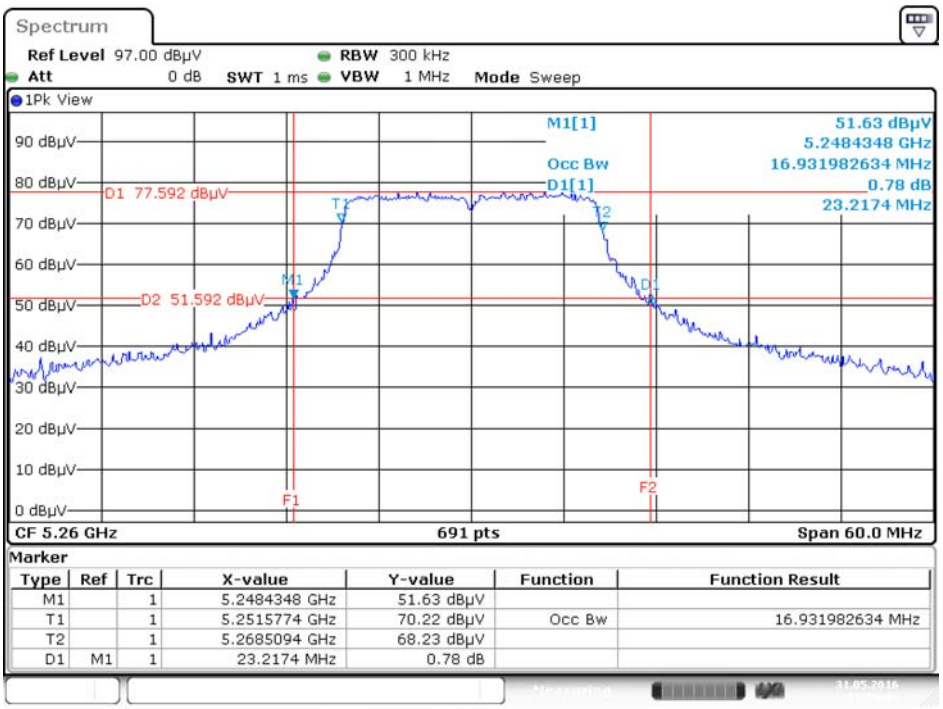
The EUT was programmed to be in continuously transmitting mode.

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

Temperature	24°C	Humidity	60%
Test Engineer	Gary Chu		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	23.22	16.93
	5300 MHz	39.91	22.14
	5320 MHz	21.91	16.85
	5500 MHz	22.09	16.85
	5580 MHz	30.44	17.45
	5700 MHz	21.91	16.85
802.11ac MCS0/Nss1 VHT20	5260 MHz	22.70	18.23
	5300 MHz	20.61	17.54
	5320 MHz	20.44	17.54
	5500 MHz	22.52	18.15
	5580 MHz	23.48	18.15
	5700 MHz	21.30	17.97
802.11ac MCS0/Nss1 VHT40	5270 MHz	42.32	35.60
	5310 MHz	41.16	35.75
	5510 MHz	43.33	36.61
	5550 MHz	43.33	37.19
	5670 MHz	43.04	36.32
802.11ac MCS0/Nss1 VHT80	5290 MHz	82.32	74.67
	5530 MHz	82.61	75.83
	5610 MHz	87.99	74.10

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 1 / 5260 MHz



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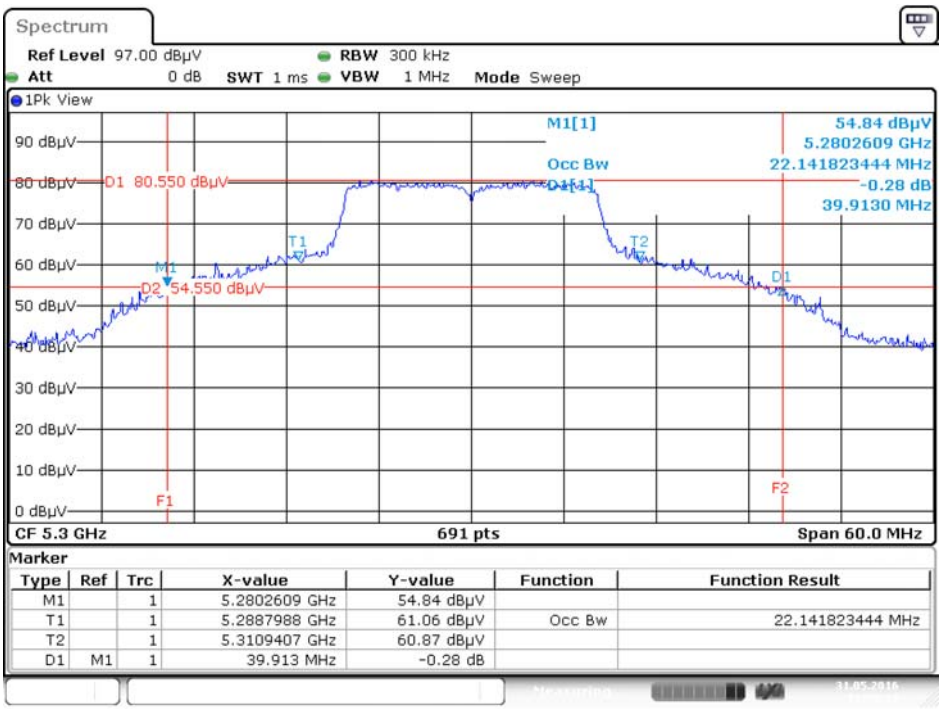
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 1/ 5300 MHz



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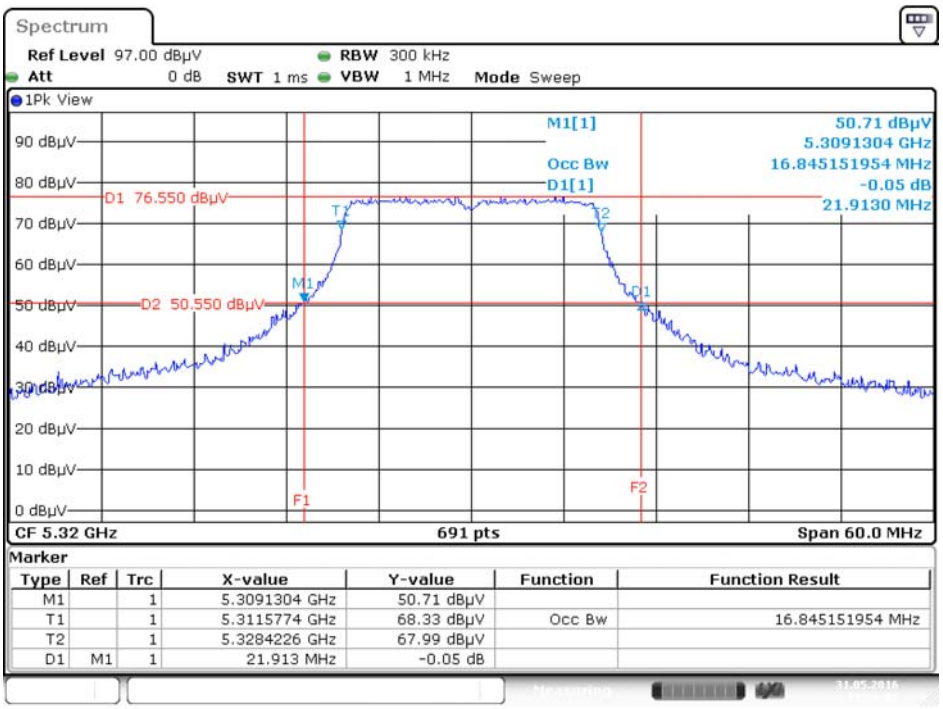

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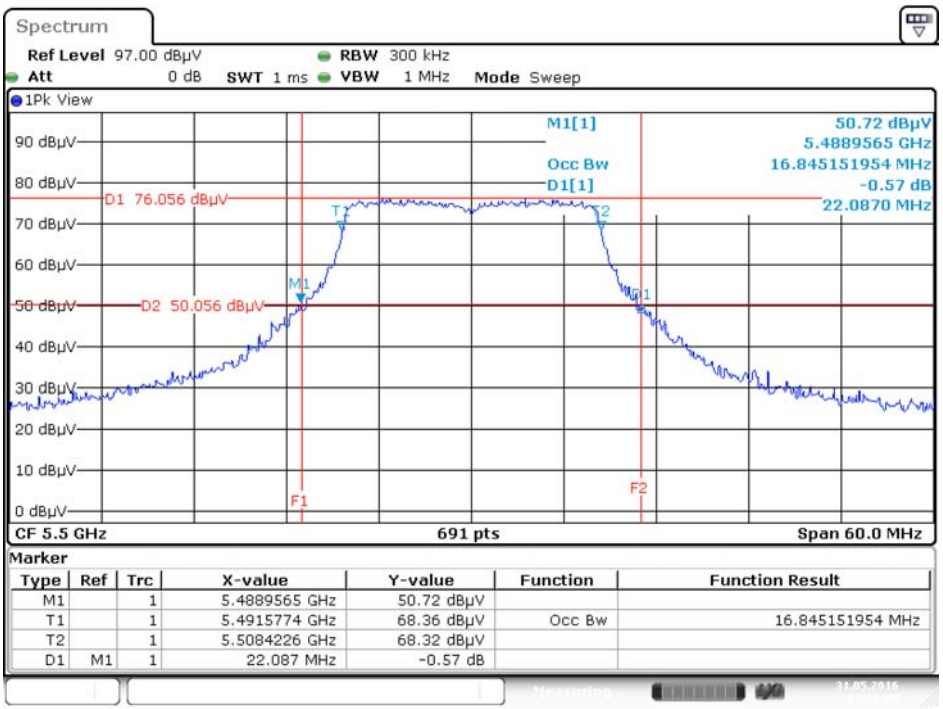

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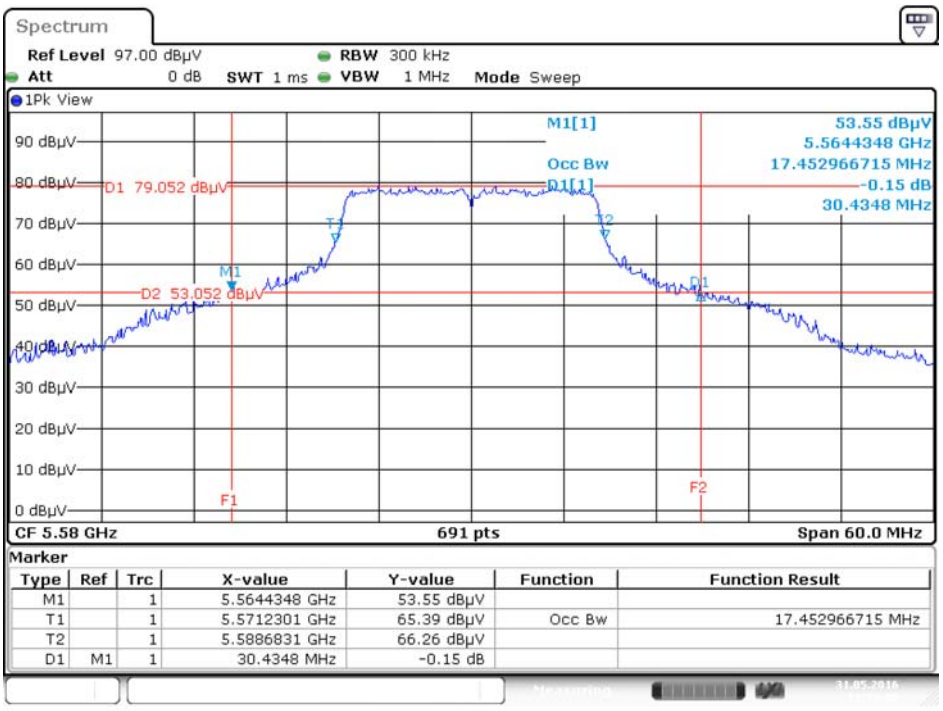
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 1 / 5580 MHz



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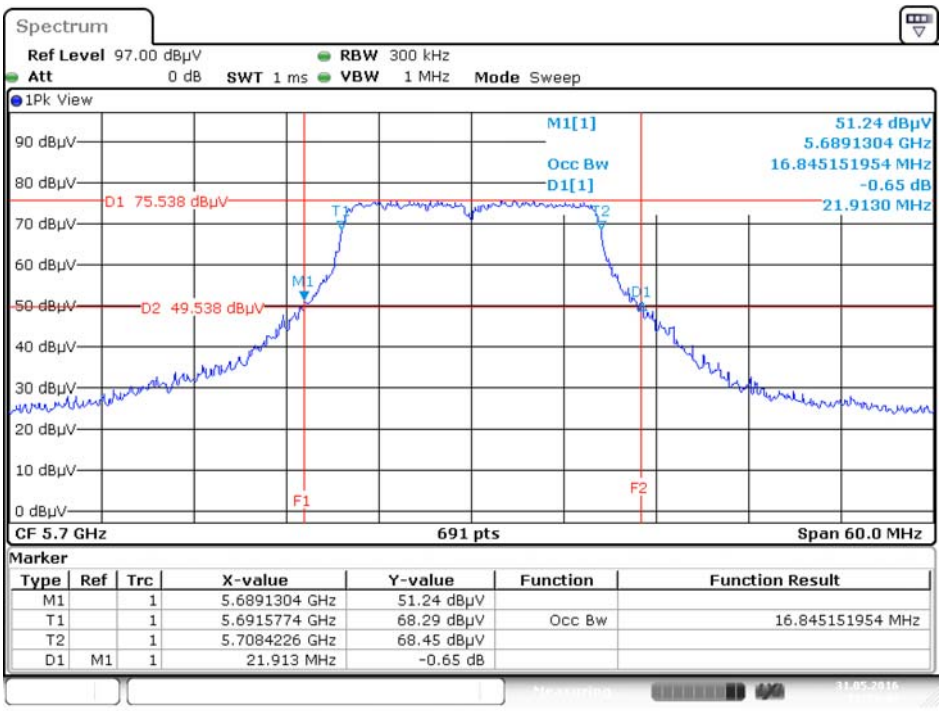
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 1 / 5700 MHz



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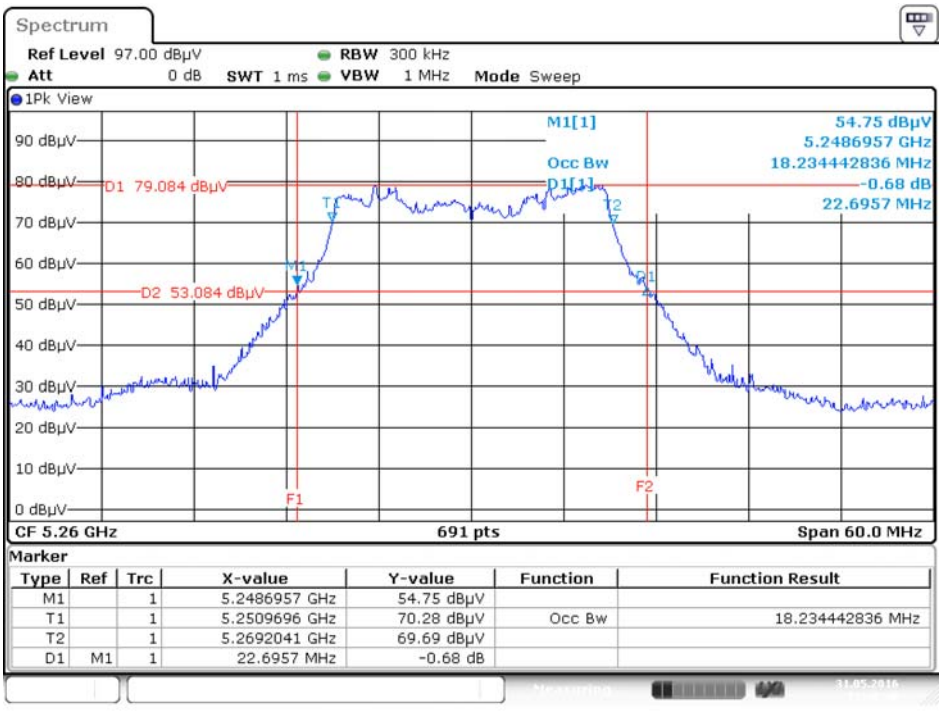
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5260 MHz



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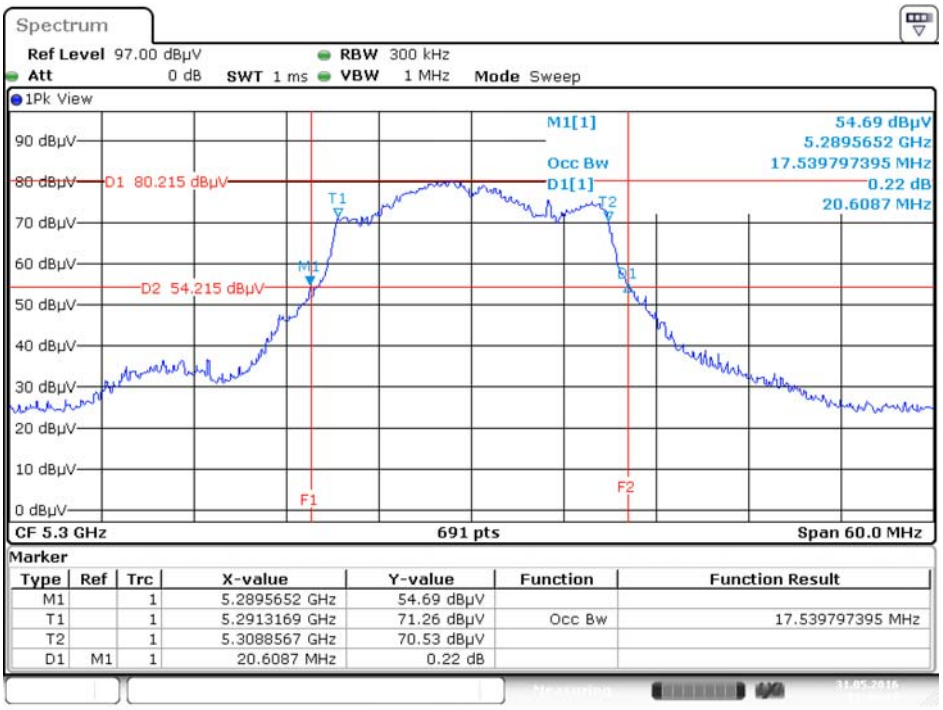
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5300 MHz



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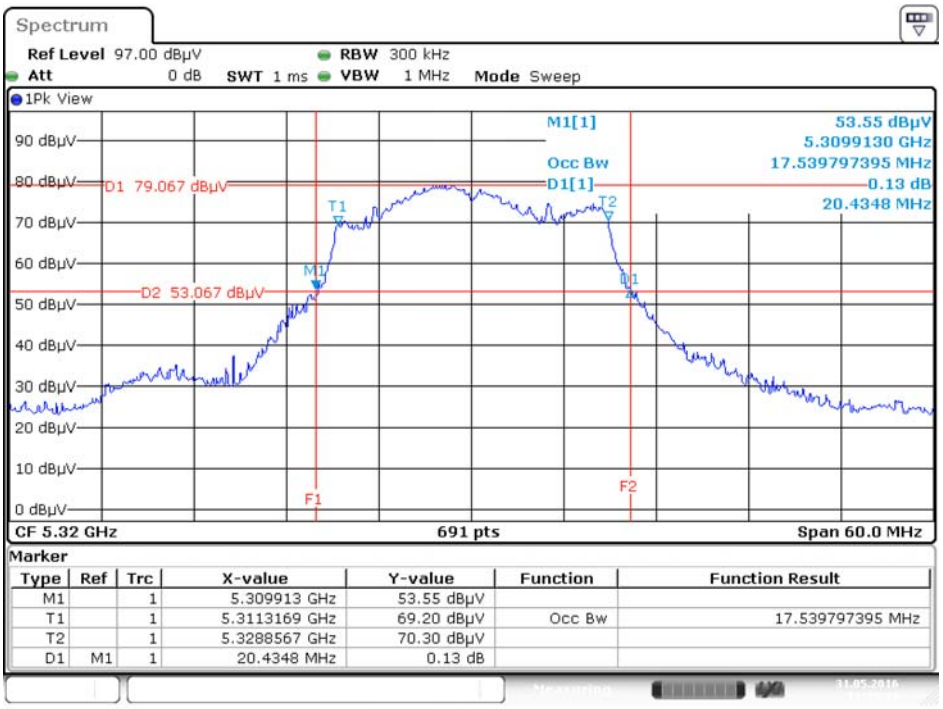
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5320 MHz



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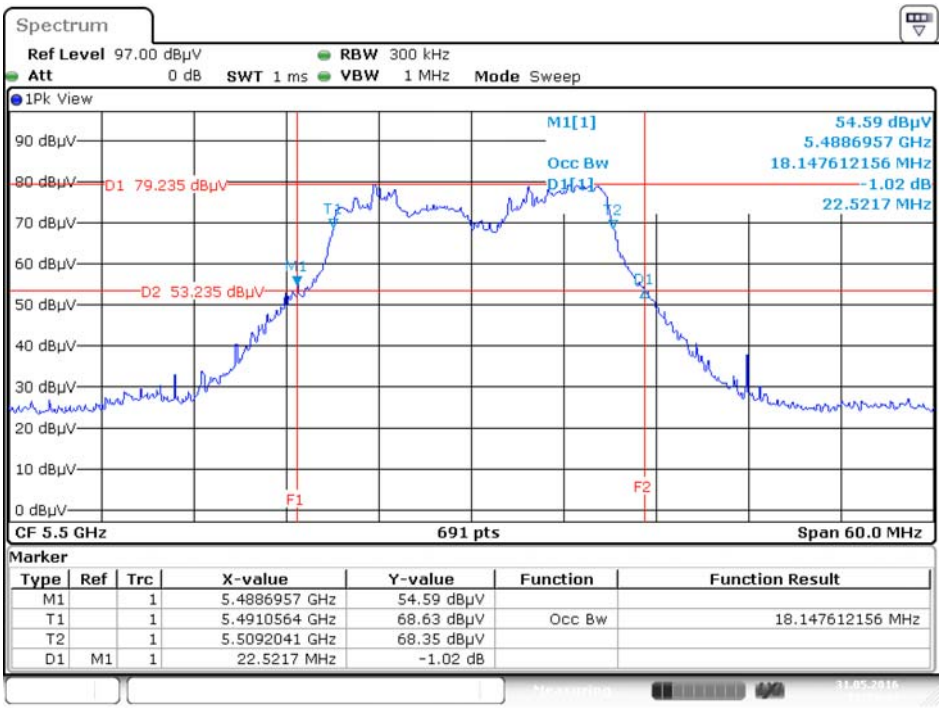
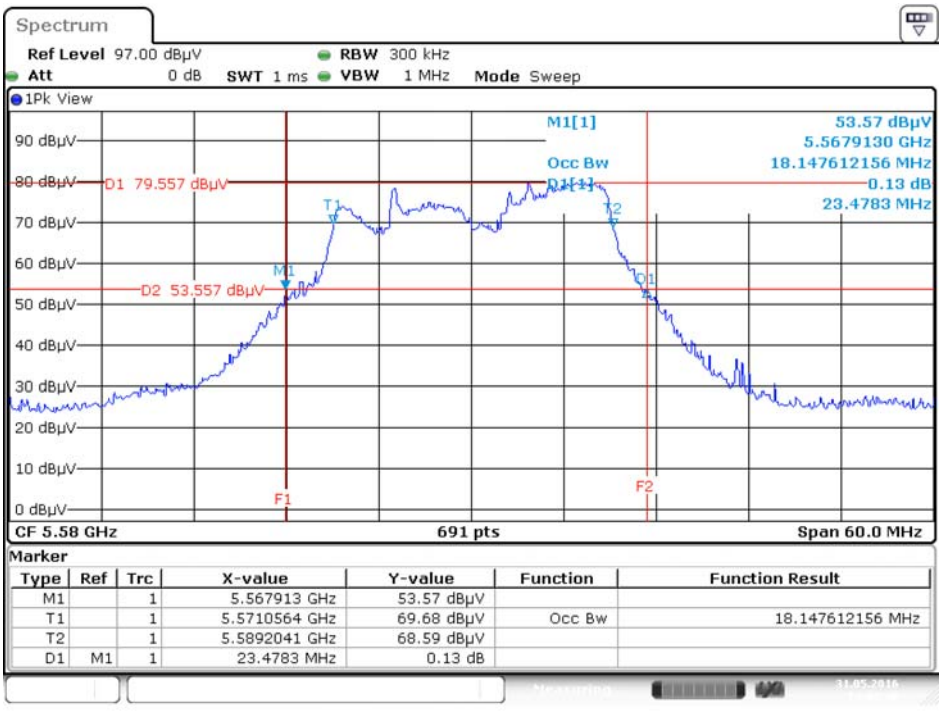
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5500 MHz



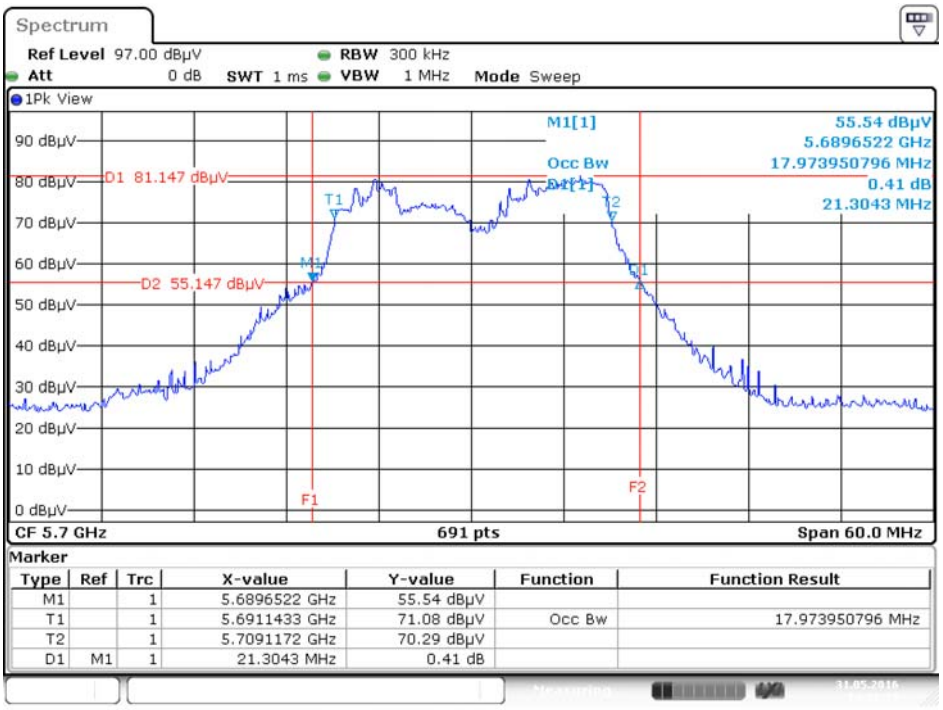
Date: 31.MAY.2016 13:59:43

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5580 MHz



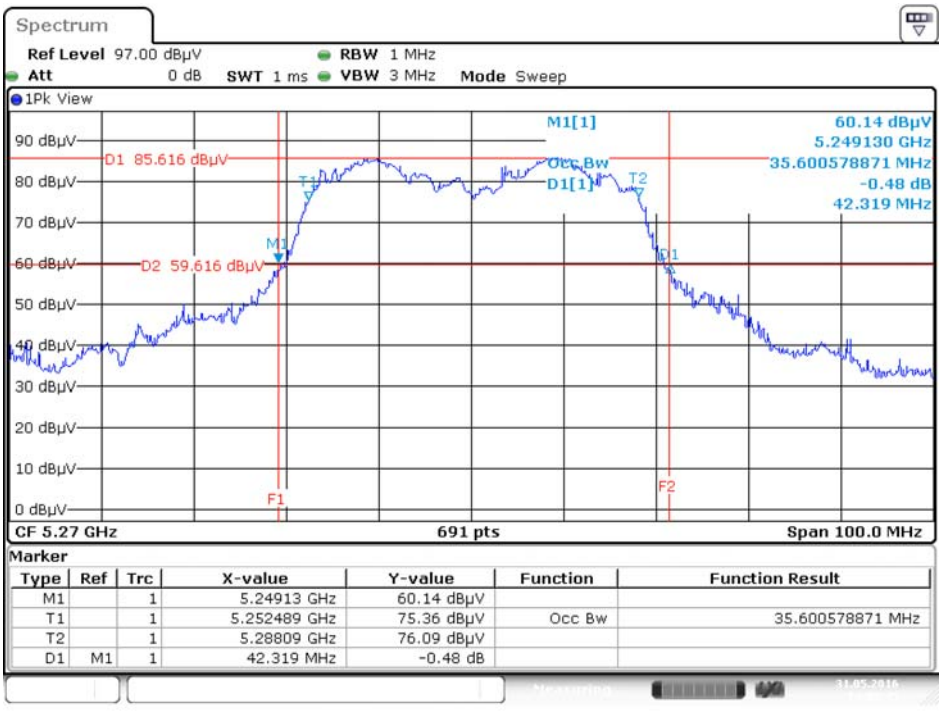
Date: 31.MAY.2016 14:00:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5700 MHz



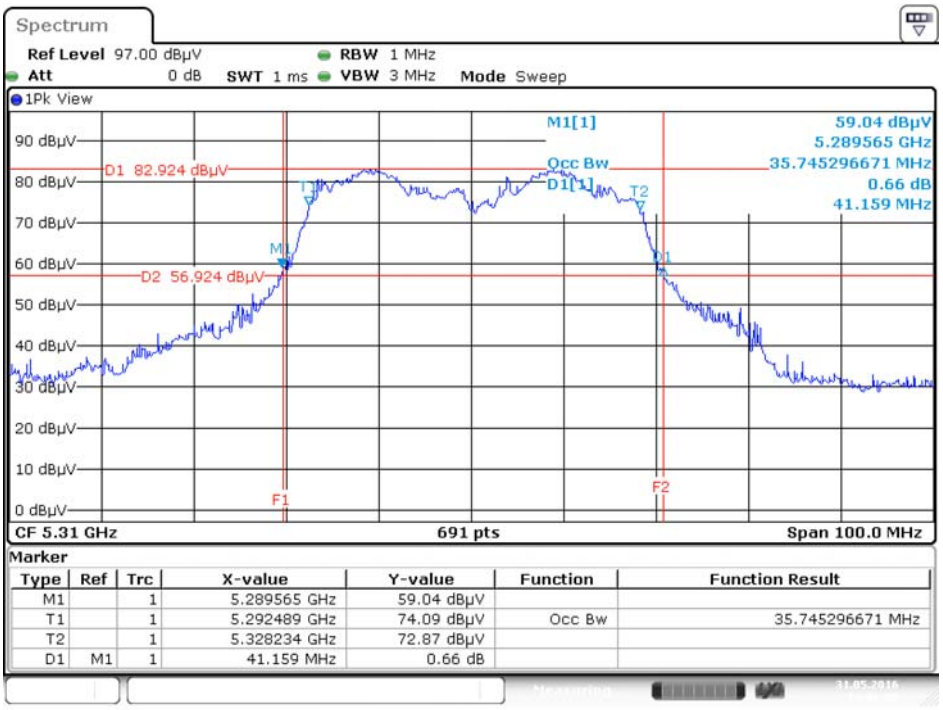
Date: 31.MAY.2016 14:01:38

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5270 MHz



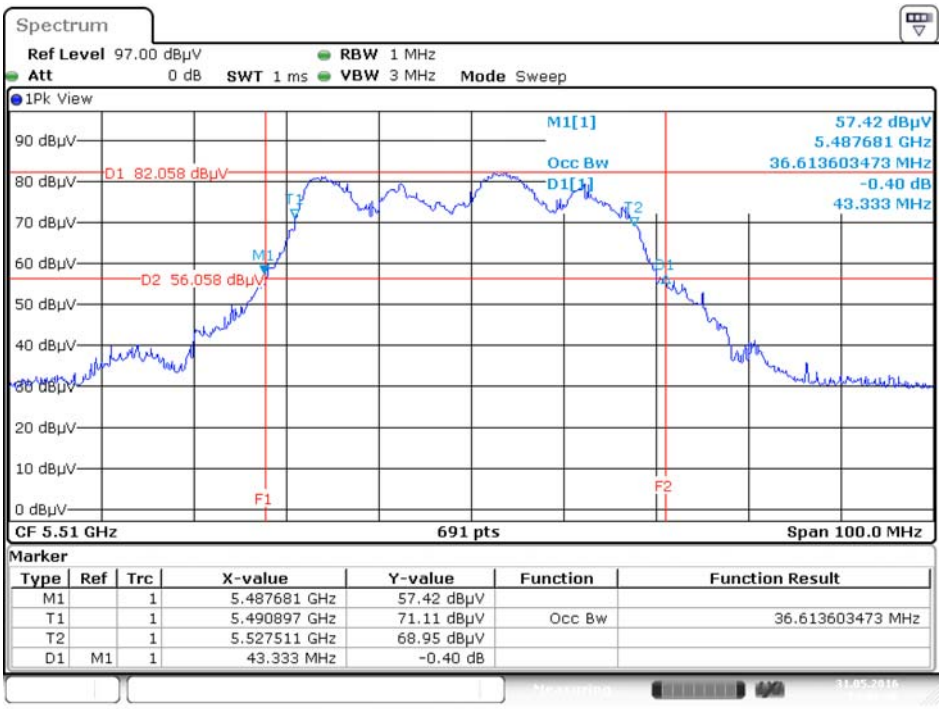
Date: 31.MAY.2016 14:05:45

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5310 MHz



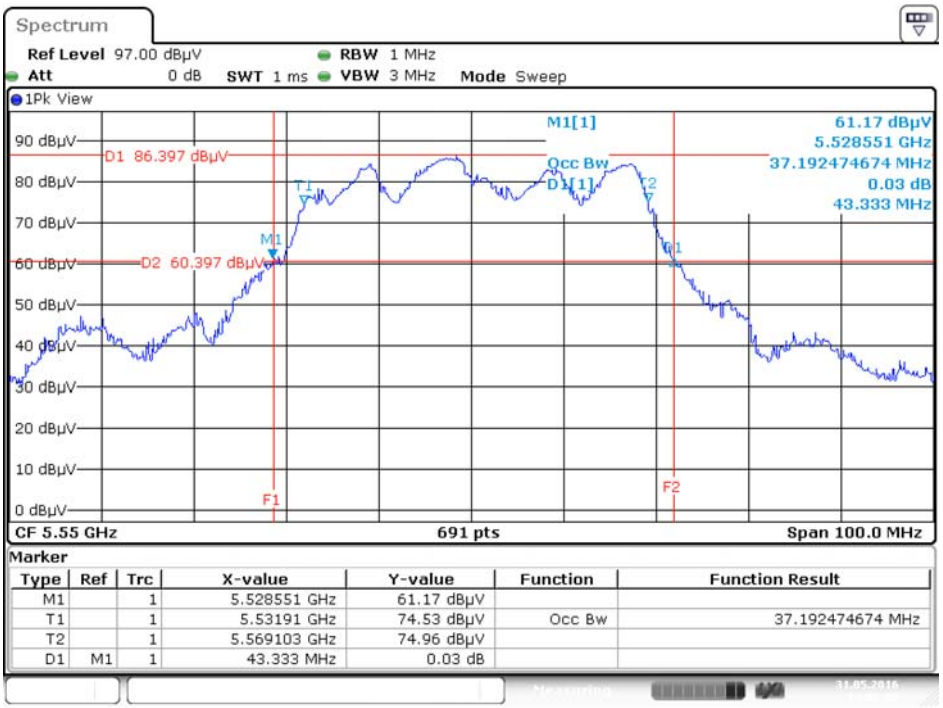
Date: 31.MAY.2016 14:06:09

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5510 MHz



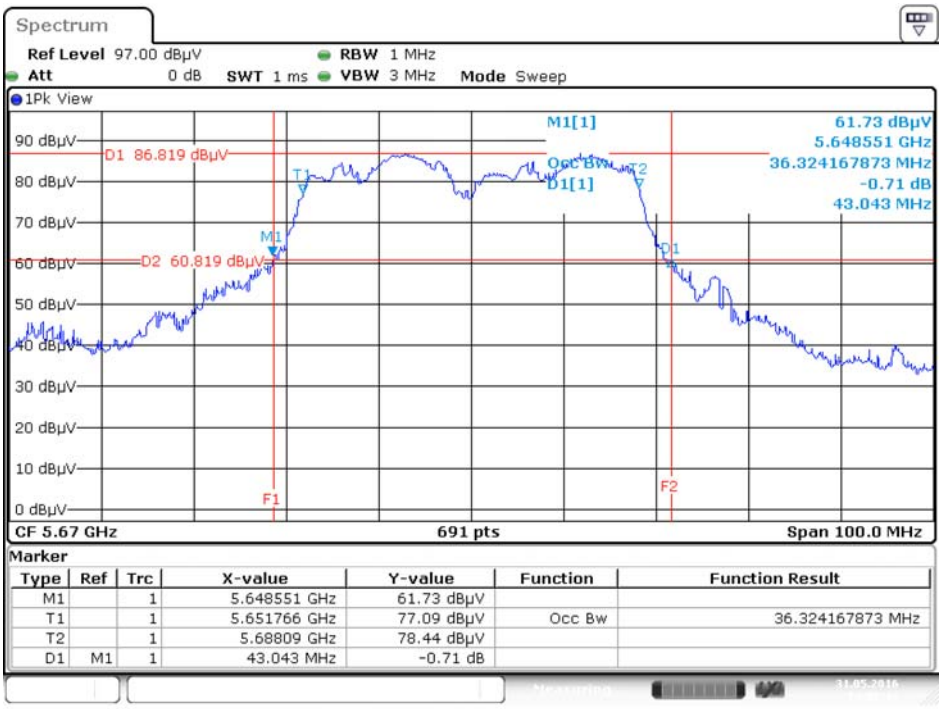
Date: 31.MAY.2016 14:06:46

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5550 MHz



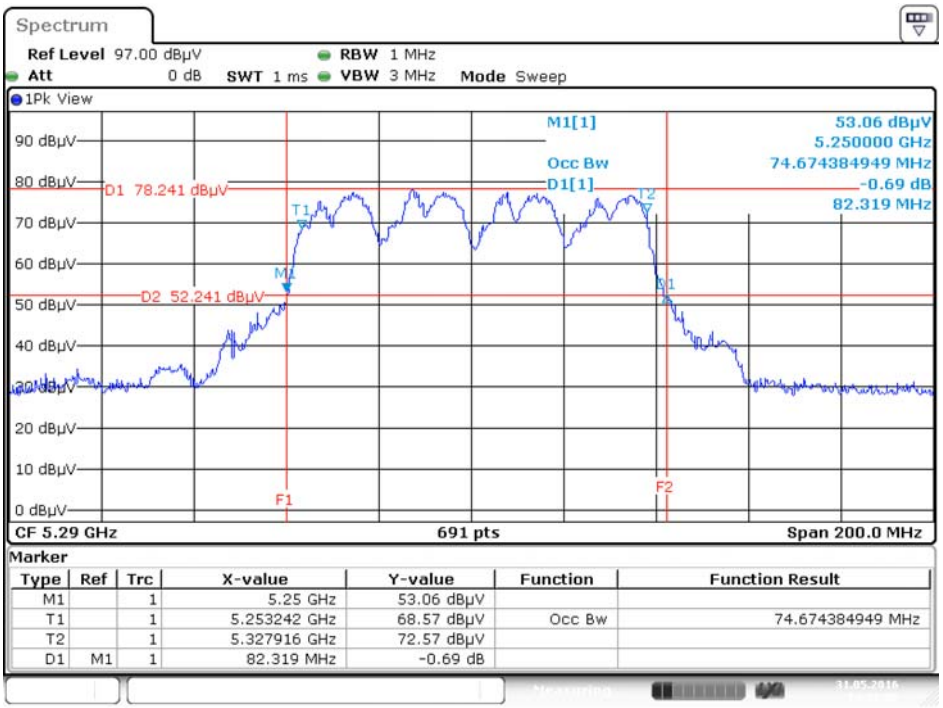
Date: 31.MAY.2016 14:08:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5670 MHz



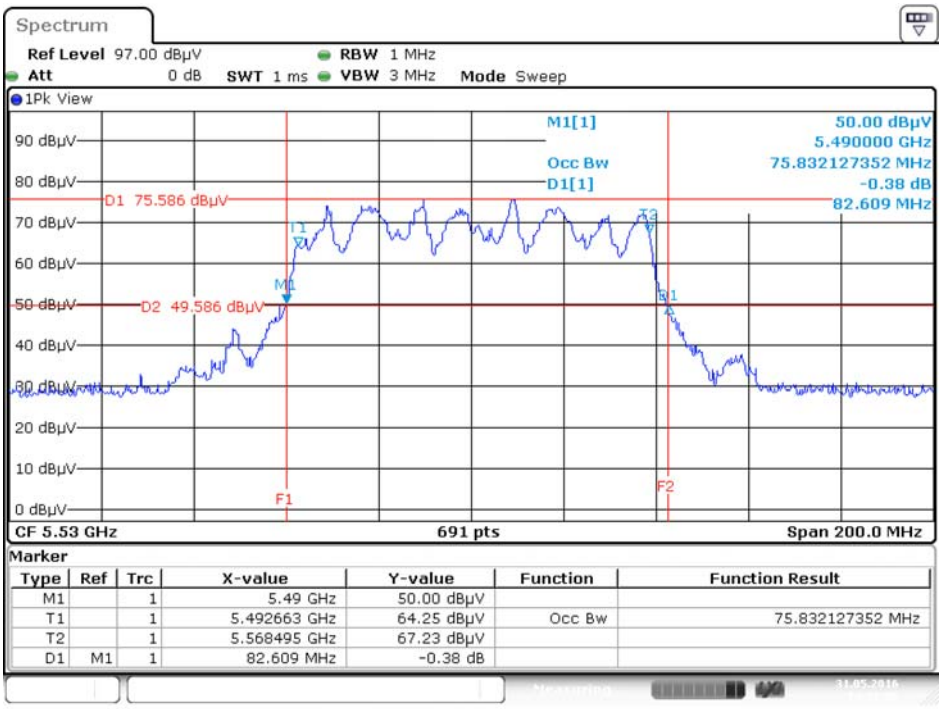
Date: 31.MAY.2016 14:08:41

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5290 MHz



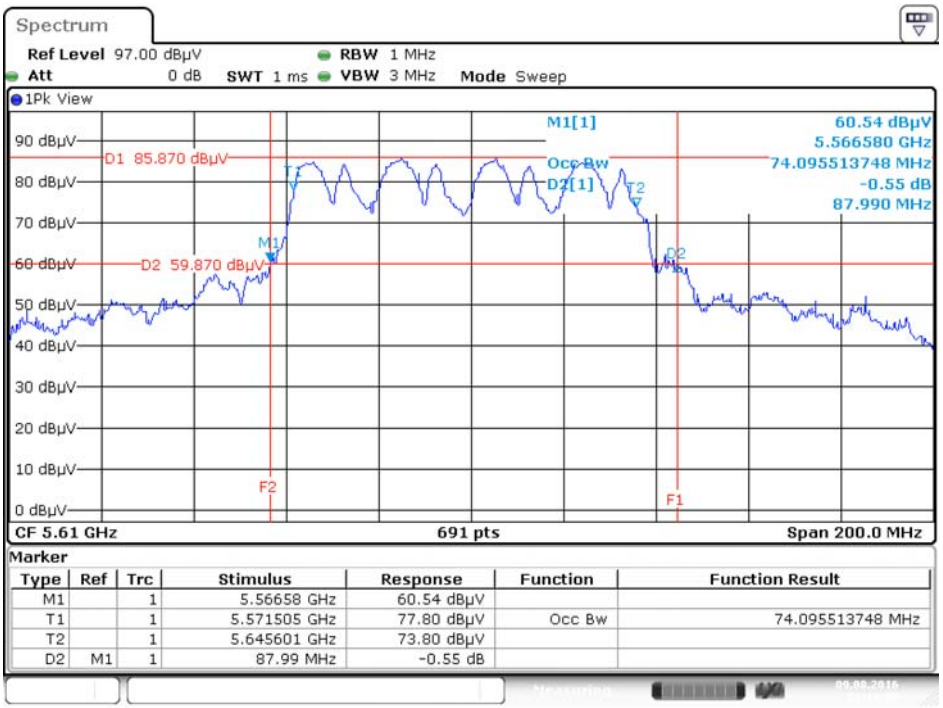
Date: 31.MAY.2016 14:11:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5530 MHz



Date: 31.MAY.2016 14:11:36

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5610 MHz



Date: 9.AUG.2016 21:13:58

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

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

4.2.2. Measuring Instruments and Setting

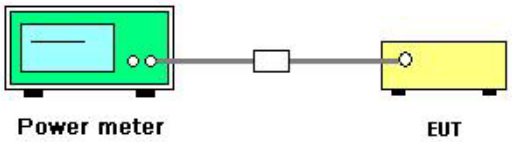
Please refer to section 5 of equipments list in this report The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r03 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.

4.2.4. Test Setup Layout



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 Maximum Conducted Output Power

Temperature	24°C	Humidity	60%
Test Engineer	Gary Chu	Test Date	May 31, 2016~Aug. 09, 2016

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Ant. 1					
802.11a	5260 MHz	20.35				23.67	Complies
	5300 MHz	23.22				23.67	Complies
	5320 MHz	19.37				23.67	Complies
	5500 MHz	18.23				23.67	Complies
	5580 MHz	21.34				23.67	Complies
	5700 MHz	18.09				23.67	Complies
Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Total		
802.11ac MCS0/Nss1 VHT20	5260 MHz	14.69	13.84	14.08	18.99	23.34	Complies
	5300 MHz	14.56	13.88	14.24	19.01	23.34	Complies
	5320 MHz	14.08	13.38	14.72	18.87	23.34	Complies
	5500 MHz	14.42	13.45	15.02	19.12	23.34	Complies
	5580 MHz	13.98	13.39	14.89	18.90	23.34	Complies
	5700 MHz	14.24	13.01	14.89	18.89	23.34	Complies
802.11ac MCS0/Nss1 VHT40	5270 MHz	17.49	16.52	17.02	21.80	23.34	Complies
	5310 MHz	14.54	13.47	14.73	19.05	23.34	Complies
	5510 MHz	12.87	12.14	14.06	17.87	23.34	Complies
	5550 MHz	16.71	16.48	17.58	21.72	23.34	Complies
	5670 MHz	17.35	16.77	17.59	22.02	23.34	Complies
802.11ac MCS0/Nss1 VHT80	5290 MHz	11.83	11.02	11.68	16.30	23.34	Complies
	5530 MHz	8.57	8.13	9.22	13.43	23.34	Complies
	5610 MHz	18.03	18.15	19.26	23.29	23.34	Complies

Note:

802.11a: Ant. Gain=6.31dBi, so limit =23.98-(6.31-6)=23.67 dBm

802.11ac MCS0/Nss1 VHT20/VHT40/VHT80: Ant. Gain=6.64dBi, so limit =23.98-(6.64-6)=23.34 dBm

4.3. Power Spectral Density Measurement

4.3.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.2.1.

Frequency Band		Limit
☒	5.25-5.35 GHz	11 dBm/MHz
☒	5.470-5.725 GHz	11 dBm/MHz

4.3.2. Measuring Instruments and Setting

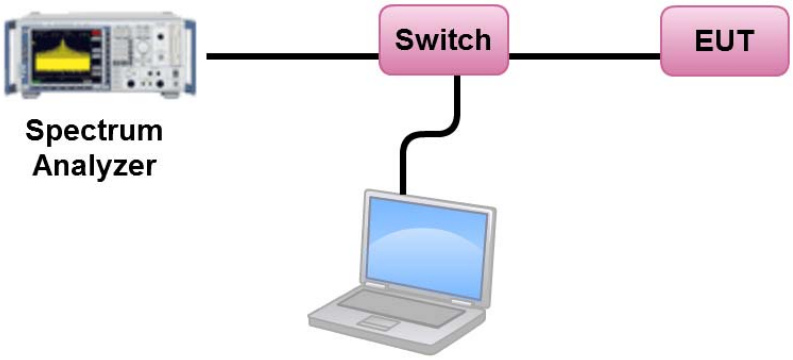
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.3.3. 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 v01r03 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.

4.3.4. Test Setup Layout



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 Power Spectral Density

Temperature	24°C	Humidity	60%
Test Engineer	Gary Chu	Test Date	May 31, 2016~Aug. 09, 2016

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11a	5260 MHz	7.07	10.69	Complies
	5300 MHz	10.00	10.69	Complies
	5320 MHz	6.22	10.69	Complies
	5500 MHz	5.06	10.69	Complies
	5580 MHz	8.22	10.69	Complies
	5700 MHz	4.89	10.69	Complies
802.11ac MCS0/Nss1 VHT20	5260 MHz	5.84	5.90	Complies
	5300 MHz	5.86	5.90	Complies
	5320 MHz	5.78	5.90	Complies
	5500 MHz	5.83	5.90	Complies
	5580 MHz	5.74	5.90	Complies
	5700 MHz	5.82	5.90	Complies
802.11ac MCS0/Nss1 VHT40	5270 MHz	5.80	5.90	Complies
	5310 MHz	2.75	5.90	Complies
	5510 MHz	1.55	5.90	Complies
	5550 MHz	5.47	5.90	Complies
	5670 MHz	5.85	5.90	Complies
802.11ac MCS0/Nss1 VHT80	5290 MHz	-2.85	5.90	Complies
	5530 MHz	-5.69	5.90	Complies
	5610 MHz	4.23	5.90	Complies

Note: 802.11a : Ant. Gain =6.31dBi, so limit =11-(6.31-6)=10.69 (dBm/MHz)

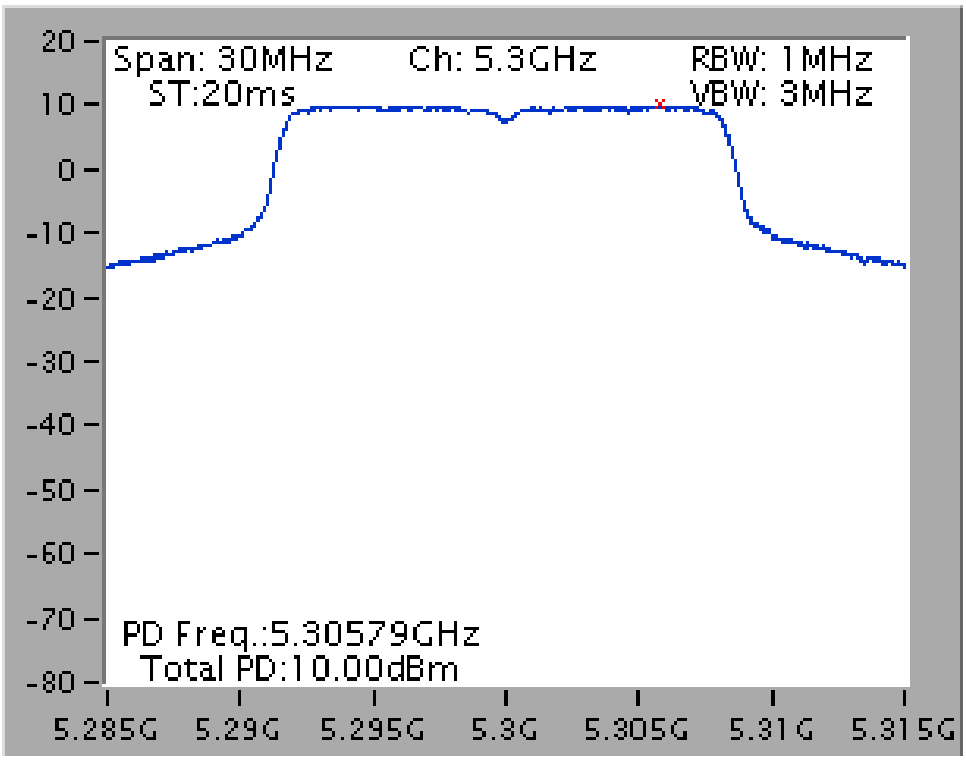
Note: 802.11ac MCS0/Nss1 VHT20/VHT40/VHT80:

$$Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$$ =11.10dBi, so limit=11 – (11.10 – 6)=5.90(dBm/MHz)

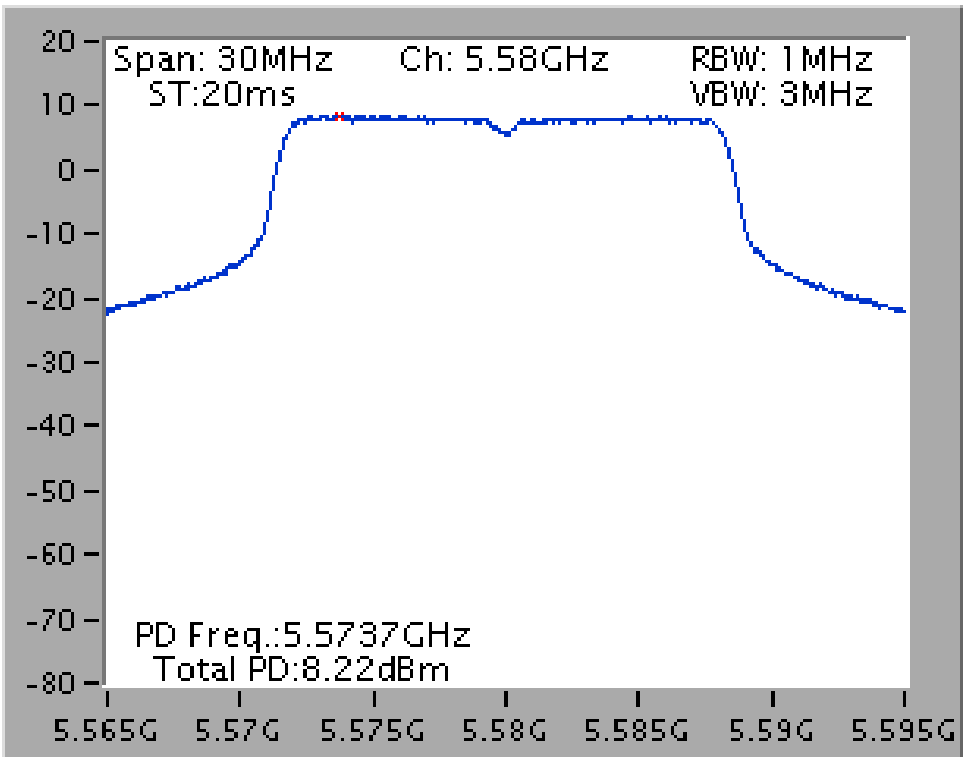
Note: All the test values were listed in the report.

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

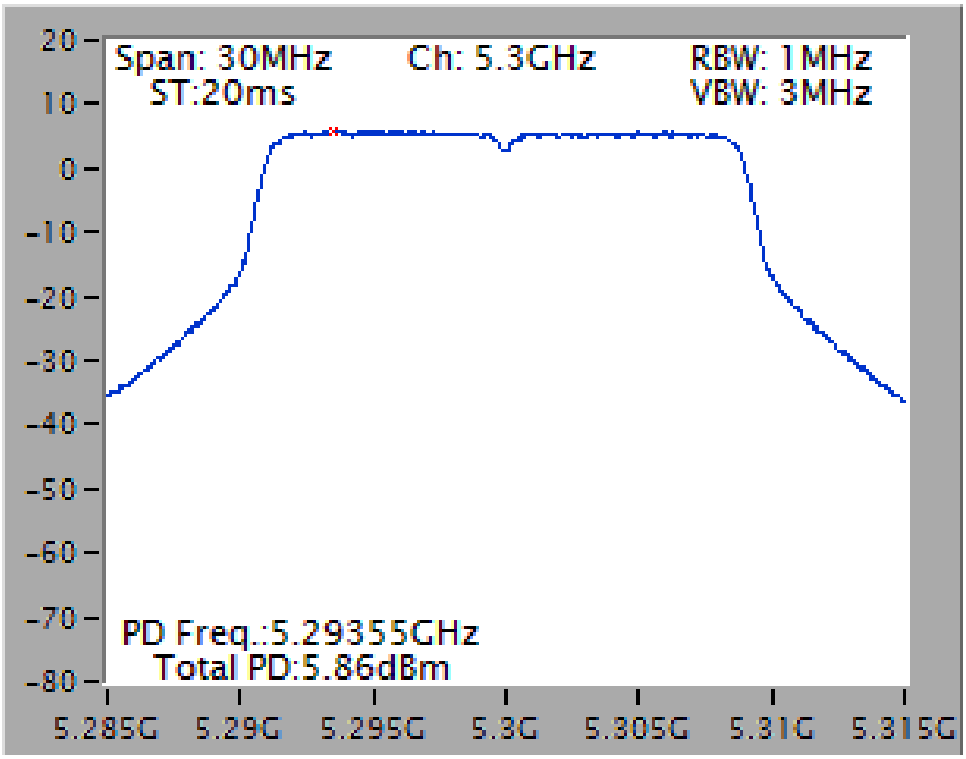
Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5300 MHz



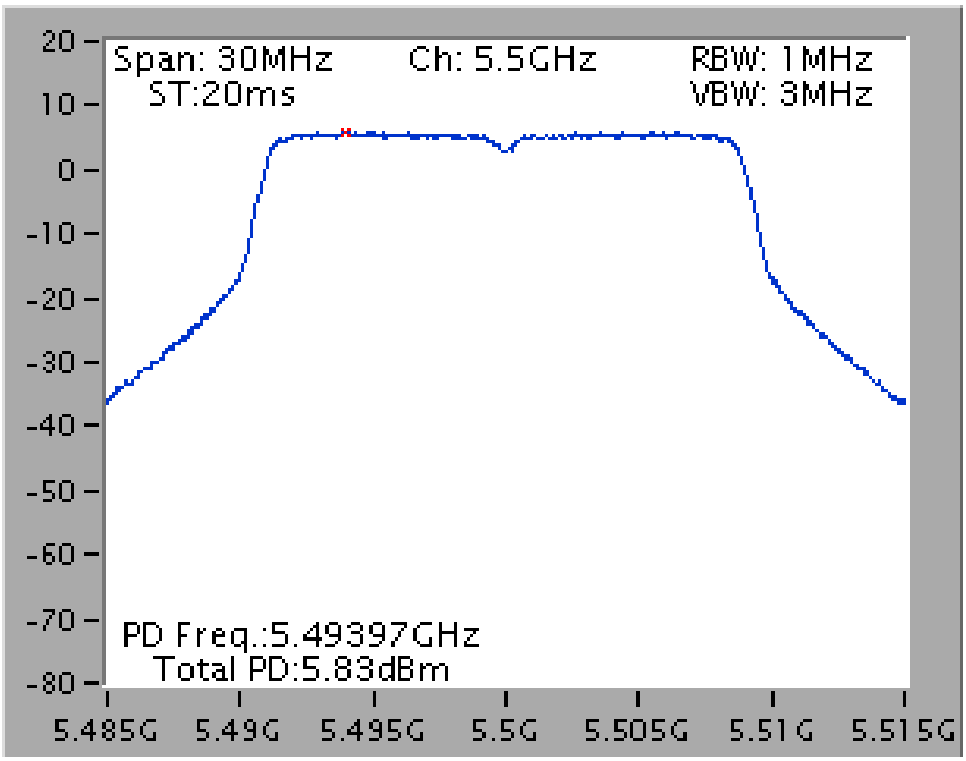
Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5580 MHz



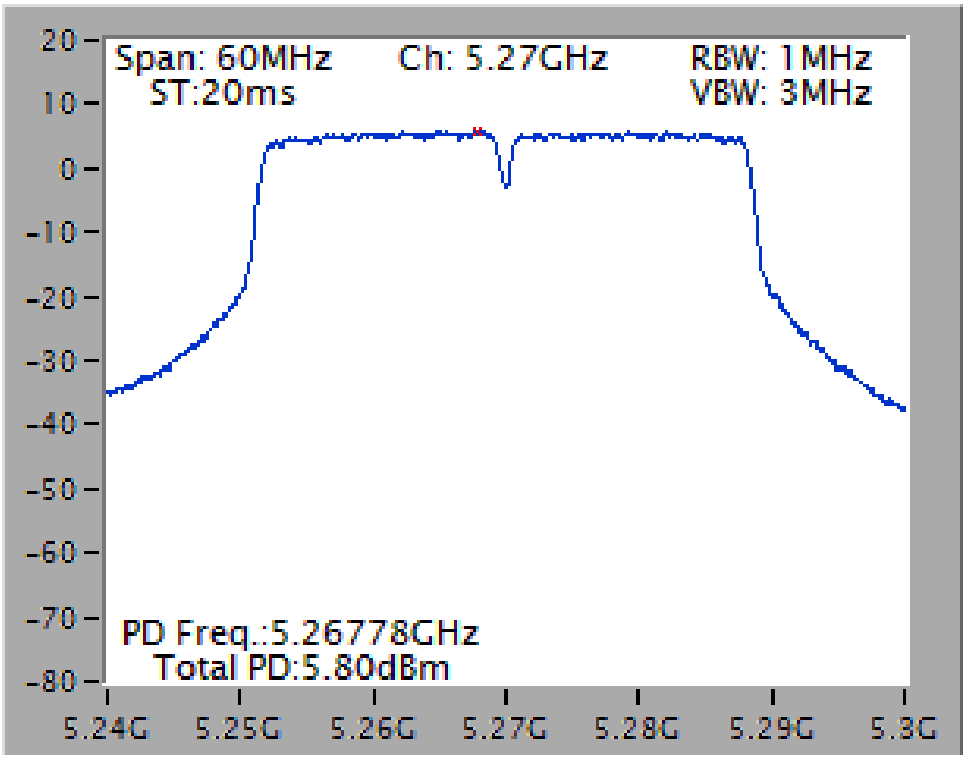
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5300 MHz



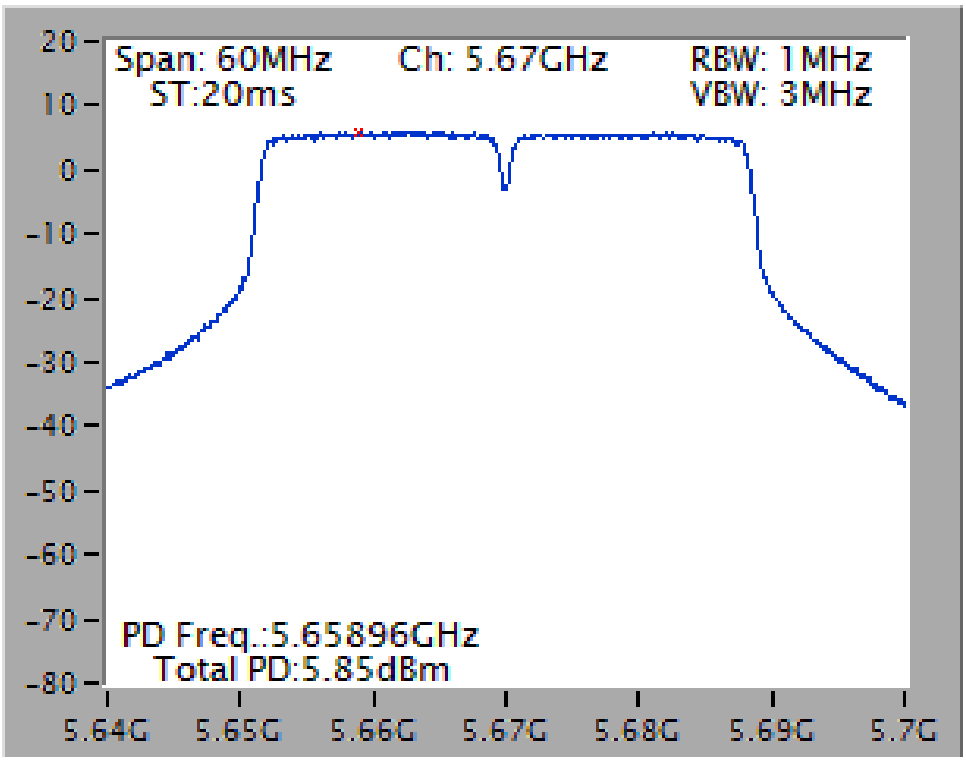
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5500 MHz



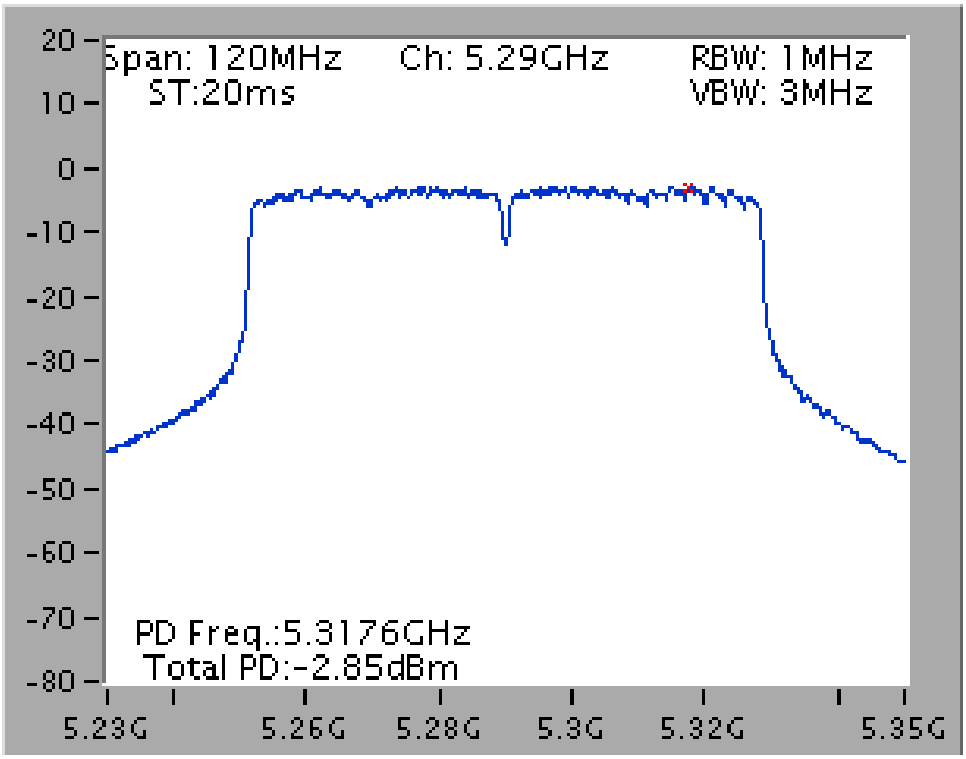
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5270 MHz



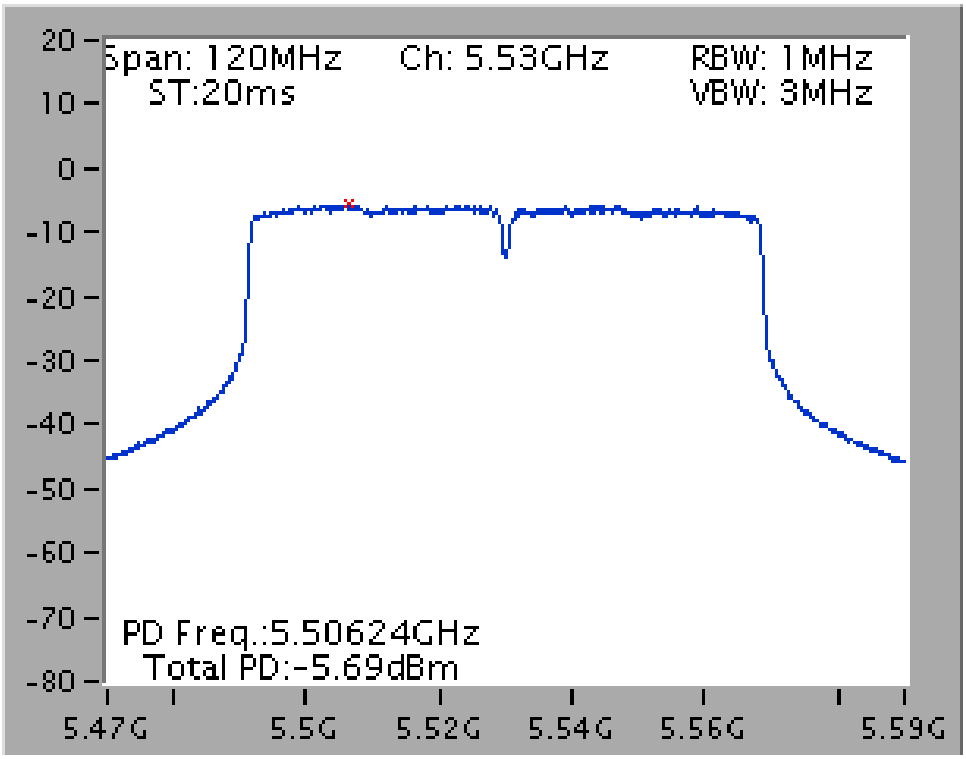
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5670 MHz



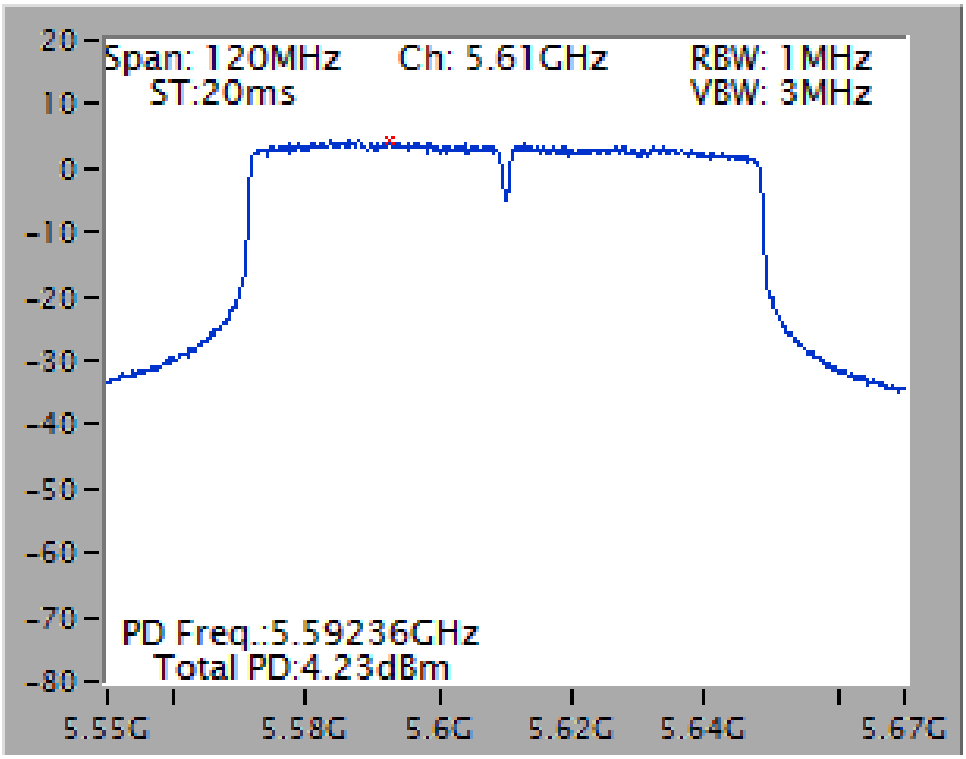
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5290 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5530 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5610 MHz



4.4. Radiated Emissions Measurement

4.4.1. Limit

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

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

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

4.4.2. 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.

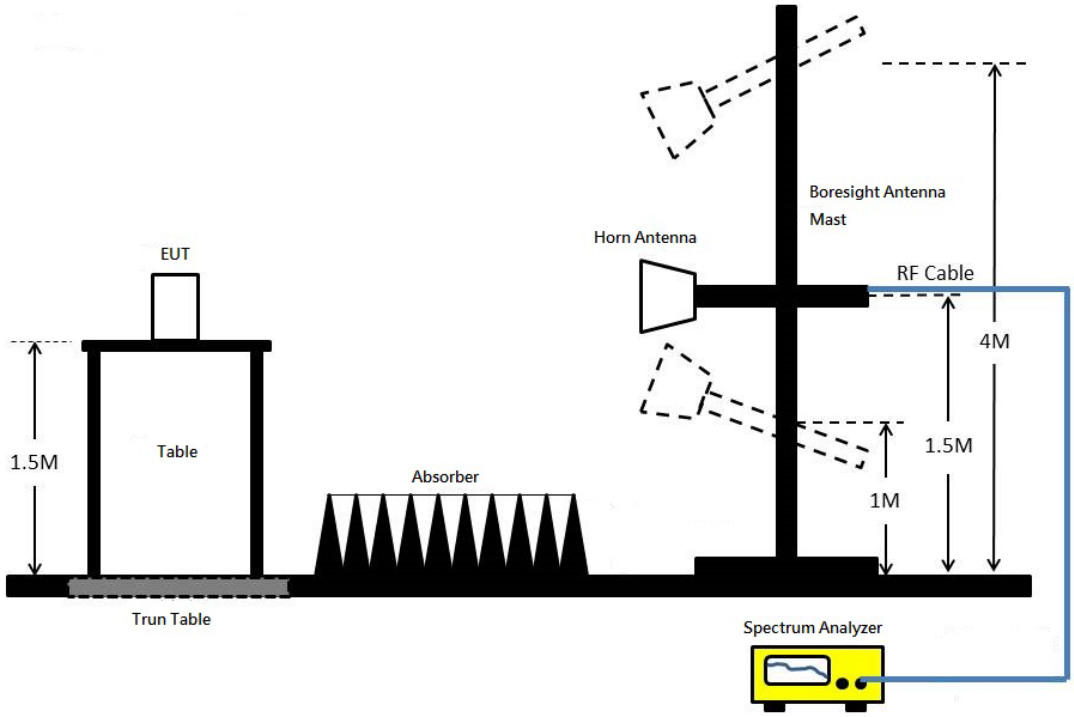
Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

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

4.4.3. 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.

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

Temperature	23°C	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11a CH 52 / Ant. 1
Test Date	May 20, 2016~Aug. 09, 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	15777.24	47.26	54.00	-6.74	31.31	13.37	37.97	35.39	109	255	Average	HORIZONTAL
2	15784.94	60.10	74.00	-13.90	44.18	13.39	37.92	35.39	109	255	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	15776.80	60.14	74.00	-13.86	44.19	13.37	37.97	35.39	127	130	Peak	VERTICAL
2	15777.12	48.25	54.00	-5.75	32.30	13.37	37.97	35.39	127	130	Average	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11a CH 60 / Ant. 1
Test Date	May 20, 2016~Aug. 09, 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	10596.80	46.96	54.00	-7.04	31.08	10.96	39.88	34.96	120	266	Average	HORIZONTAL
2	10596.82	61.17	74.00	-12.83	45.29	10.96	39.88	34.96	120	266	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	10595.68	48.38	54.00	-5.62	32.50	10.96	39.88	34.96	120	91	Average	VERTICAL
2	10603.36	58.32	74.00	-15.68	42.44	10.96	39.88	34.96	120	91	Peak	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11a CH 64 / Ant. 1
Test Date	May 20, 2016~Aug. 09, 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	10643.72	58.21	74.00	-15.79	42.32	10.98	39.90	34.99	118	301	Peak	HORIZONTAL
2	10643.82	45.86	54.00	-8.14	29.97	10.98	39.90	34.99	118	301	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	10639.16	60.01	74.00	-13.99	44.12	10.98	39.90	34.99	113	324	Peak	VERTICAL
2	10641.90	45.79	54.00	-8.21	29.90	10.98	39.90	34.99	113	324	Average	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11a CH 100 / Ant. 1
Test Date	May 20, 2016~Aug. 09, 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	11000.32	45.54	54.00	-8.46	29.26	11.25	40.20	35.17	122	358	Average	HORIZONTAL
2	11000.62	58.15	74.00	-15.85	41.87	11.25	40.20	35.17	122	358	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	11003.48	45.71	54.00	-8.29	29.43	11.25	40.20	35.17	111	318	Average	VERTICAL
2	11003.72	58.38	74.00	-15.62	42.10	11.25	40.20	35.17	111	318	Peak	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11a CH 116 / Ant. 1
Test Date	May 20, 2016~Aug. 09, 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	11157.46	46.56	54.00	-7.44	30.25	11.37	40.13	35.19	119	305	Average	HORIZONTAL
2	11160.60	59.17	74.00	-14.83	42.86	11.37	40.13	35.19	119	305	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	11157.66	59.17	74.00	-14.83	42.86	11.37	40.13	35.19	128	224	Peak	VERTICAL
2	11163.22	47.67	54.00	-6.33	31.36	11.37	40.13	35.19	128	224	Average	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11a CH 140 / Ant. 1
Test Date	May 20, 2016~Aug. 09, 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	11398.96	58.83	74.00	-15.17	42.48	11.53	40.04	35.22	112	137	Peak	HORIZONTAL
2	11402.30	45.59	54.00	-8.41	29.24	11.53	40.04	35.22	112	137	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	11399.16	45.68	54.00	-8.32	29.33	11.53	40.04	35.22	106	202	Average	VERTICAL
2	11402.32	58.74	74.00	-15.26	42.39	11.53	40.04	35.22	106	202	Peak	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	15781.04	59.57	74.00	-14.43	43.62	13.37	37.97	35.39	116	2	Peak	HORIZONTAL
2	15782.50	46.95	54.00	-7.05	31.03	13.39	37.92	35.39	116	2	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	15778.08	46.84	54.00	-7.16	30.89	13.37	37.97	35.39	115	93	Average	VERTICAL
2	15779.94	59.54	74.00	-14.46	43.59	13.37	37.97	35.39	115	93	Peak	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	10595.88	59.54	74.00	-14.46	43.66	10.96	39.88	34.96	113	183	Peak	HORIZONTAL
2	10596.58	46.05	54.00	-7.95	30.17	10.96	39.88	34.96	113	183	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	10597.72	59.13	74.00	-14.87	43.25	10.96	39.88	34.96	112	110	Peak	VERTICAL
2	10603.22	46.17	54.00	-7.83	30.29	10.96	39.88	34.96	112	110	Average	VERTICAL

Temperature	23°C	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	10637.38	45.78	54.00	-8.22	29.87	10.98	39.90	34.97	110	197	Average	HORIZONTAL
2	10642.78	58.02	74.00	-15.98	42.13	10.98	39.90	34.99	110	197	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	10640.44	45.71	54.00	-8.29	29.82	10.98	39.90	34.99	113	77	Average	VERTICAL
2	10640.54	58.40	74.00	-15.60	42.51	10.98	39.90	34.99	113	77	Peak	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	10995.52	58.35	74.00	-15.65	42.12	11.23	40.17	35.17	119	145	Peak	HORIZONTAL
2	11003.18	45.45	54.00	-8.55	29.17	11.25	40.20	35.17	119	145	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	10997.42	58.69	74.00	-15.31	42.41	11.25	40.20	35.17	118	89	Peak	VERTICAL
2	11000.52	45.52	54.00	-8.48	29.24	11.25	40.20	35.17	118	89	Average	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	11158.24	46.50	54.00	-7.50	30.19	11.37	40.13	35.19	113	141	Average	HORIZONTAL
2	11161.00	60.29	74.00	-13.71	43.98	11.37	40.13	35.19	113	141	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	11157.48	46.57	54.00	-7.43	30.26	11.37	40.13	35.19	116	64	Average	VERTICAL
2	11159.92	59.45	74.00	-14.55	43.14	11.37	40.13	35.19	116	64	Peak	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	11400.42	45.36	54.00	-8.64	29.01	11.53	40.04	35.22	113	116	Average	HORIZONTAL
2	11405.00	57.83	74.00	-16.17	41.48	11.53	40.04	35.22	113	116	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	11399.40	57.74	74.00	-16.26	41.39	11.53	40.04	35.22	112	69	Peak	VERTICAL
2	11399.78	45.16	54.00	-8.84	28.81	11.53	40.04	35.22	112	69	Average	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	15805.40	46.80	54.00	-7.20	30.88	13.39	37.92	35.39	120	8	Average	HORIZONTAL
2	15808.90	59.85	74.00	-14.15	43.93	13.39	37.92	35.39	120	8	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	15806.22	59.67	74.00	-14.33	43.75	13.39	37.92	35.39	118	90	Peak	VERTICAL
2	15813.42	47.02	54.00	-6.98	31.10	13.39	37.92	35.39	118	90	Average	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	10616.36	45.73	54.00	-8.27	29.86	10.96	39.88	34.97	120	233	Average	HORIZONTAL
2	10618.86	58.80	74.00	-15.20	42.93	10.96	39.88	34.97	120	233	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	10615.08	45.84	54.00	-8.16	29.97	10.96	39.88	34.97	120	235	Average	VERTICAL
2	10624.14	58.94	74.00	-15.06	43.03	10.98	39.90	34.97	120	235	Peak	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	11020.24	45.13	54.00	-8.87	28.85	11.25	40.20	35.17	113	124	Average	HORIZONTAL
2	11020.30	57.55	74.00	-16.45	41.27	11.25	40.20	35.17	113	124	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	11017.62	45.37	54.00	-8.63	29.09	11.25	40.20	35.17	114	114	Average	VERTICAL
2	11024.16	58.21	74.00	-15.79	41.93	11.25	40.20	35.17	114	114	Peak	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	11095.98	46.22	54.00	-7.78	29.92	11.32	40.16	35.18	111	132	Average	HORIZONTAL
2	11104.60	59.08	74.00	-14.92	42.78	11.32	40.16	35.18	111	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	11095.64	46.27	54.00	-7.73	29.97	11.32	40.16	35.18	114	174	Average	VERTICAL
2	11097.80	58.77	74.00	-15.23	42.47	11.32	40.16	35.18	114	174	Peak	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	11335.88	57.70	74.00	-16.30	41.36	11.48	40.07	35.21	109	188	Peak	HORIZONTAL
2	11343.34	45.58	54.00	-8.42	29.24	11.48	40.07	35.21	109	188	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	11336.90	57.66	74.00	-16.34	41.32	11.48	40.07	35.21	108	197	Peak	VERTICAL
2	11340.20	45.42	54.00	-8.58	29.08	11.48	40.07	35.21	108	197	Average	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	15873.84	59.93	74.00	-14.07	44.08	13.44	37.81	35.40	114	163	Peak	HORIZONTAL
2	15874.88	47.40	54.00	-6.60	31.55	13.44	37.81	35.40	114	163	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	15873.90	59.39	74.00	-14.61	43.54	13.44	37.81	35.40	116	71	Peak	VERTICAL
2	15874.72	47.77	54.00	-6.23	31.92	13.44	37.81	35.40	116	71	Average	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	11056.74	46.20	54.00	-7.80	29.90	11.28	40.19	35.17	113	253	Average	HORIZONTAL
2	11061.40	58.88	74.00	-15.12	42.58	11.30	40.17	35.17	113	253	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	11058.30	58.50	74.00	-15.50	42.20	11.28	40.19	35.17	114	195	Peak	VERTICAL
2	11062.58	45.99	54.00	-8.01	29.69	11.30	40.17	35.17	114	195	Average	VERTICAL

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 20, 2016~Aug. 09, 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	11219.55	55.71	74.00	-18.29	42.19	9.66	38.50	34.64	190	145	Peak	HORIZONTAL
2	11219.58	42.56	54.00	-11.44	29.04	9.66	38.50	34.64	190	145	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	11218.68	55.55	74.00	-18.45	42.03	9.66	38.50	34.64	237	321	Peak	VERTICAL
2	11219.86	42.16	54.00	-11.84	28.64	9.66	38.50	34.64	237	321	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.

4.5. Band Edge Emissions Measurement

4.5.1. Limit

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

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

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

4.5.2. 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	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

4.5.3. Test Procedures

1. The test procedure is the same as section 4.4.3.

4.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.4.4.

4.5.5. Test Deviation

There is no deviation with the original standard.

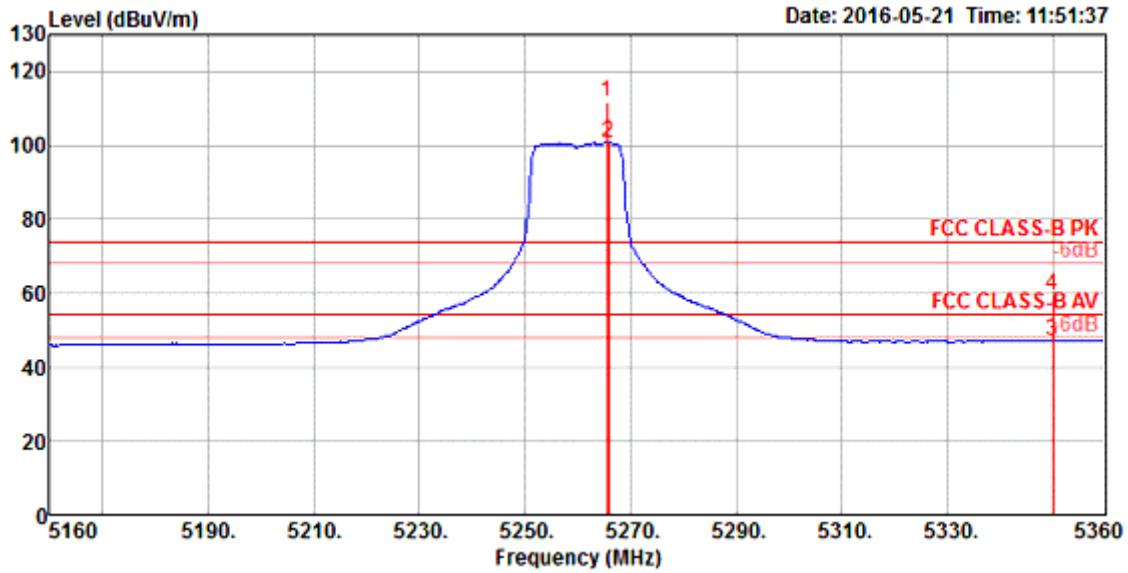
4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Band Edge and Fundamental Emissions

Temperature	23°C	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11a CH 52, 60, 64 / Ant. 1

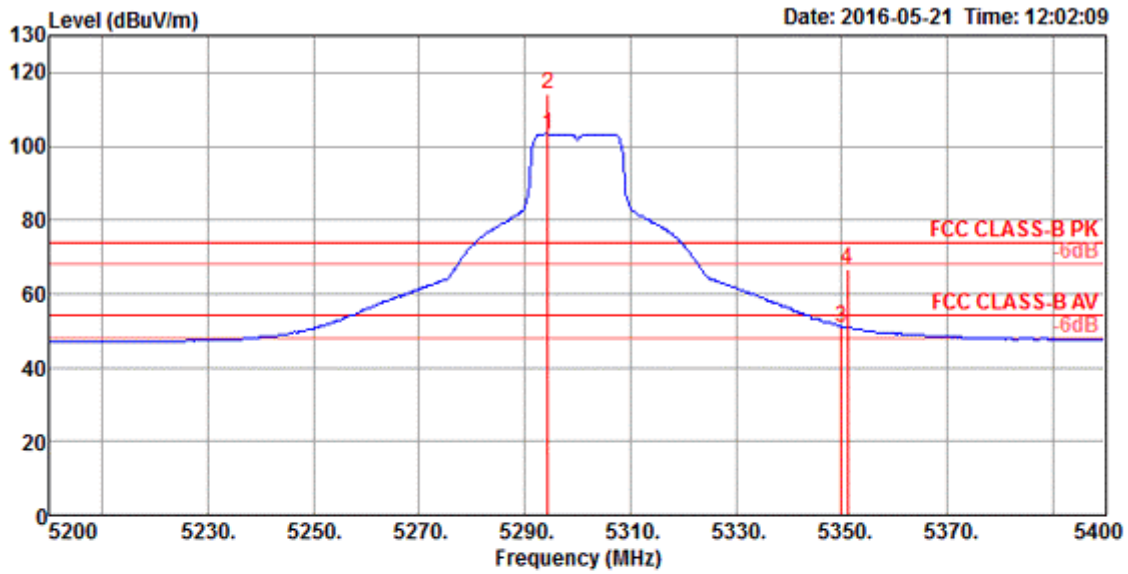
Channel 52



	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 0	5265.60	111.66			105.64	7.33	31.62	32.93	181	48	Peak	VERTICAL
2 0	5266.00	100.67			94.65	7.33	31.62	32.93	181	48	Average	VERTICAL
3	5350.00	46.88	54.00	-7.12	40.76	7.37	31.68	32.93	181	48	Average	VERTICAL
4	5350.00	59.25	74.00	-14.75	53.13	7.37	31.68	32.93	181	48	Peak	VERTICAL

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

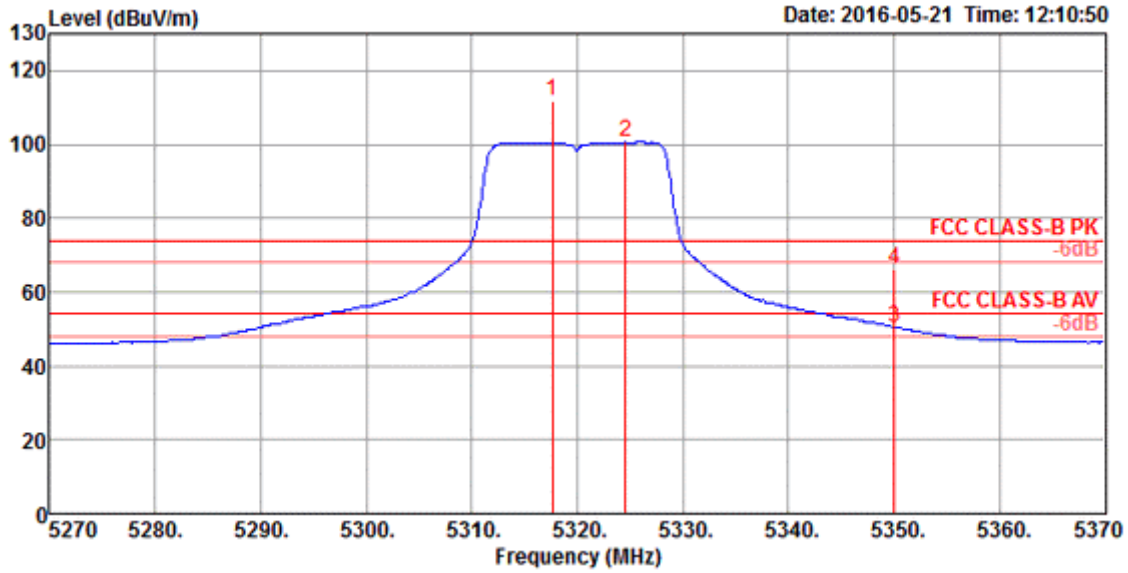
Channel 60



		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	0	5294.40	103.30			97.25	7.34	31.64	32.93	189	51	Average	VERTICAL
2	0	5294.40	114.19			108.14	7.34	31.64	32.93	189	51	Peak	VERTICAL
3		5350.00	51.02	54.00	-2.98	44.90	7.37	31.68	32.93	189	51	Average	VERTICAL
4		5351.20	66.66	74.00	-7.34	60.54	7.37	31.68	32.93	189	51	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

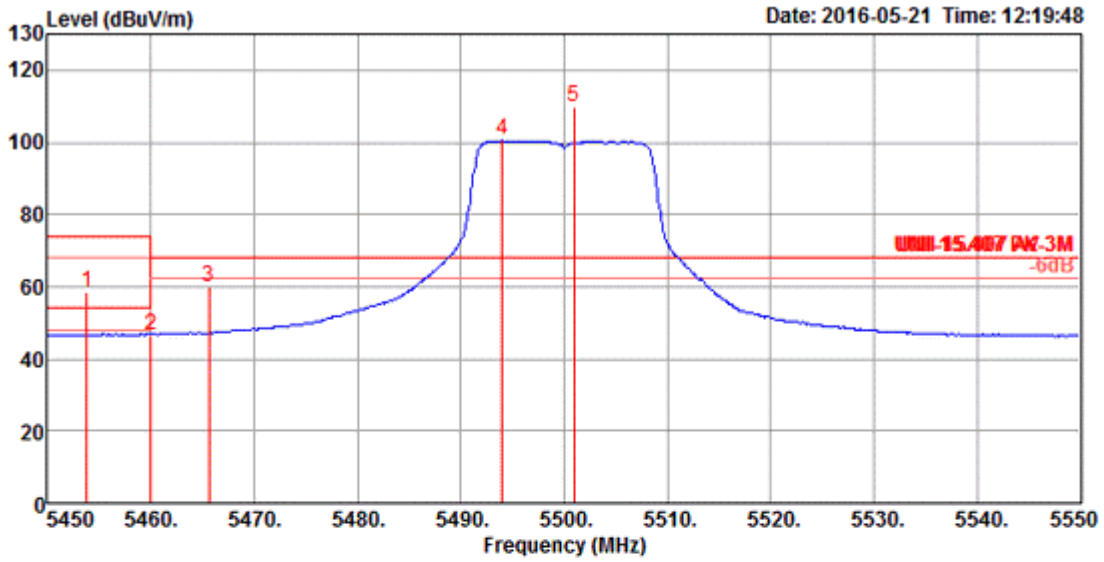


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 0	5317.60	111.65			105.58	7.35	31.65	32.93	187	40	Peak	VERTICAL
2 0	5324.60	100.55			94.45	7.36	31.67	32.93	187	40	Average	VERTICAL
3	5350.00	50.39	54.00	-3.61	44.27	7.37	31.68	32.93	187	40	Average	VERTICAL
4	5350.00	66.41	74.00	-7.59	60.29	7.37	31.68	32.93	187	40	Peak	VERTICAL

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

Temperature	23℃	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11a CH 100, 116, 140 / Ant. 1

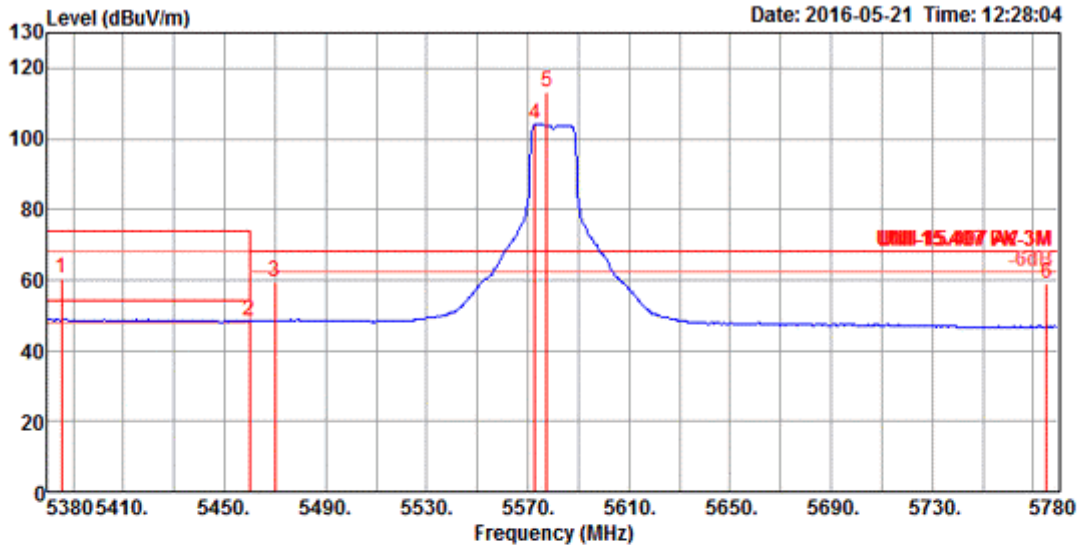
Channel 100



	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	5453.80	58.50	74.00	-15.50	52.20	7.46	31.76	32.92	160	65	Peak	VERTICAL
2	5460.00	46.74	54.00	-7.26	40.44	7.46	31.76	32.92	160	65	Average	VERTICAL
3	5465.60	59.81	68.20	-8.39	53.47	7.48	31.78	32.92	160	65	Peak	VERTICAL
4 0	5494.00	100.53			94.17	7.49	31.79	32.92	160	65	Average	VERTICAL
5 0	5501.00	110.04			103.65	7.51	31.80	32.92	160	65	Peak	VERTICAL

Item 4, 5 are the fundamental frequency at 5500 MHz.

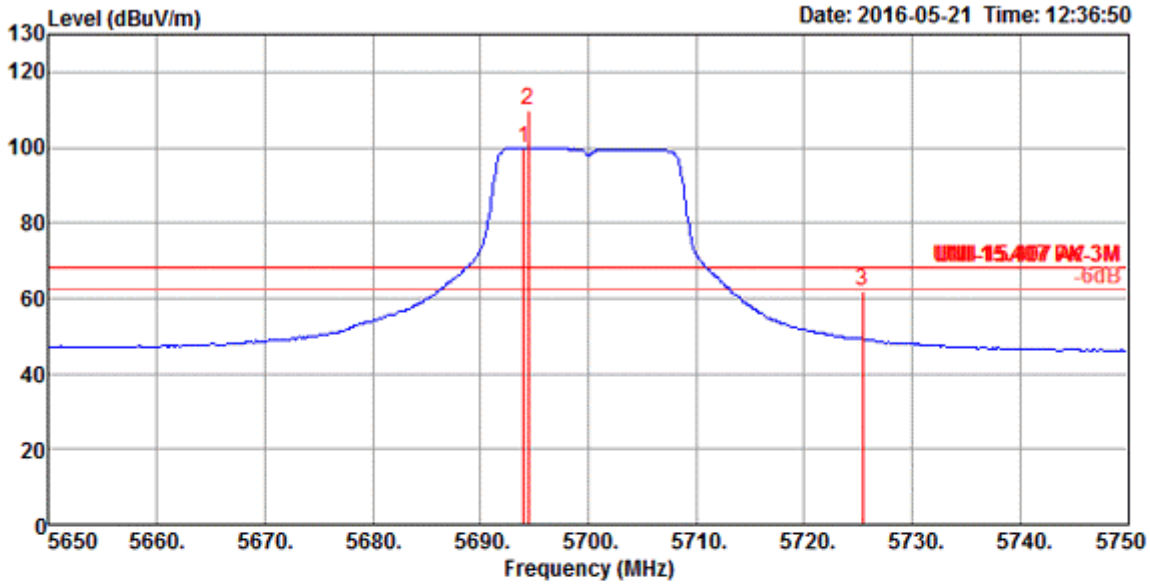
Channel 116



	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	5385.60	60.61	74.00	-13.39	54.42	7.40	31.72	32.93	185	69	Peak	VERTICAL
2	5460.00	48.40	54.00	-5.60	42.10	7.46	31.76	32.92	185	69	Average	VERTICAL
3	5470.00	59.63	68.20	-8.57	53.29	7.48	31.78	32.92	185	69	Peak	VERTICAL
4 0	5572.80	103.93			97.43	7.57	31.88	32.95	185	69	Average	VERTICAL
5 0	5577.60	113.33			106.80	7.58	31.90	32.95	185	69	Peak	VERTICAL
6	5775.20	58.97	68.20	-9.23	52.10	7.76	32.14	33.03	185	69	Peak	VERTICAL

Item 4, 5 are the fundamental frequency at 5580 MHz.

Channel 140

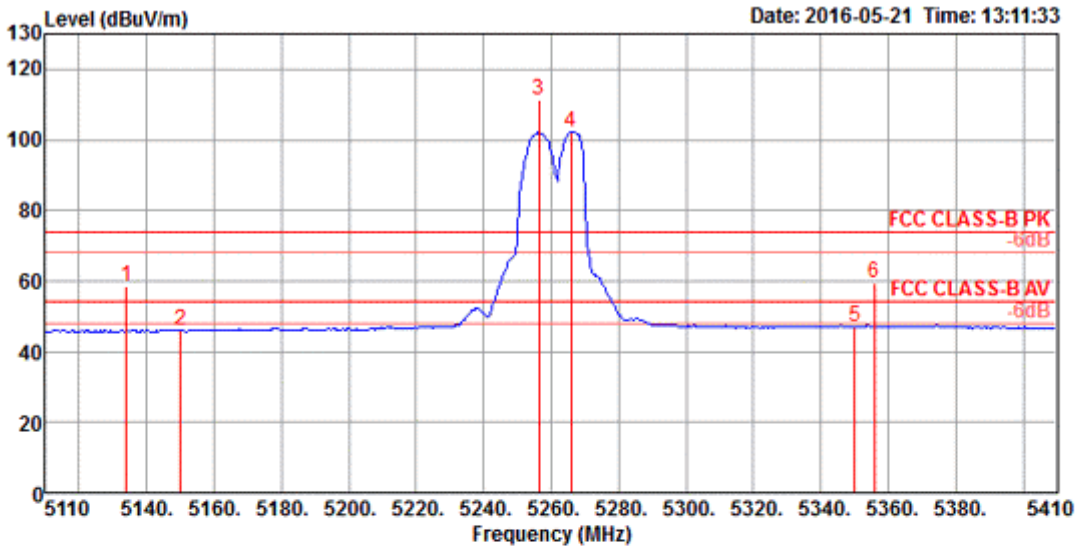


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 0	5694.00	99.85			93.13	7.68	32.04	33.00	196	67	Average	VERTICAL
2 0	5694.40	109.80			103.08	7.68	32.04	33.00	196	67	Peak	VERTICAL
3	5725.40	61.73	68.20	-6.47	54.94	7.71	32.08	33.00	196	67	Peak	VERTICAL

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

Temperature	23°C	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Ant. 1 + Ant. 2 + Ant. 3

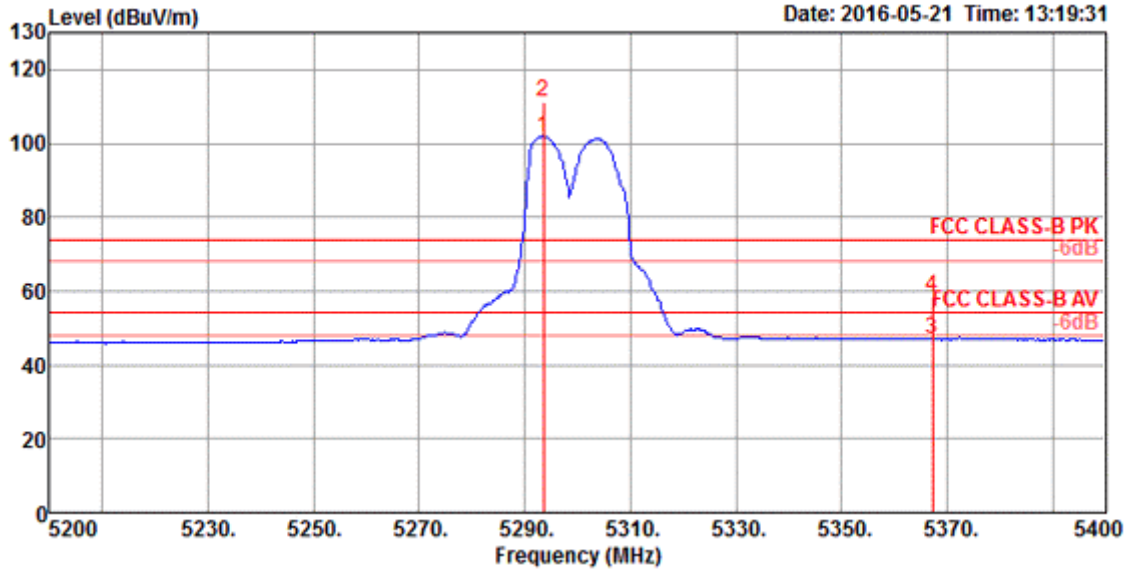
Channel 52



	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	5134.00	58.54	74.00	-15.46	52.75	7.22	31.51	32.94	206	53	Peak	VERTICAL
2	5150.00	46.04	54.00	-7.96	40.23	7.23	31.52	32.94	206	53	Average	VERTICAL
3 0	5256.40	111.52			105.52	7.32	31.61	32.93	206	53	Peak	VERTICAL
4 0	5266.00	102.25			96.23	7.33	31.62	32.93	206	53	Average	VERTICAL
5	5350.00	46.96	54.00	-7.04	40.84	7.37	31.68	32.93	206	53	Average	VERTICAL
6	5356.00	59.65	74.00	-14.35	53.51	7.38	31.69	32.93	206	53	Peak	VERTICAL

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

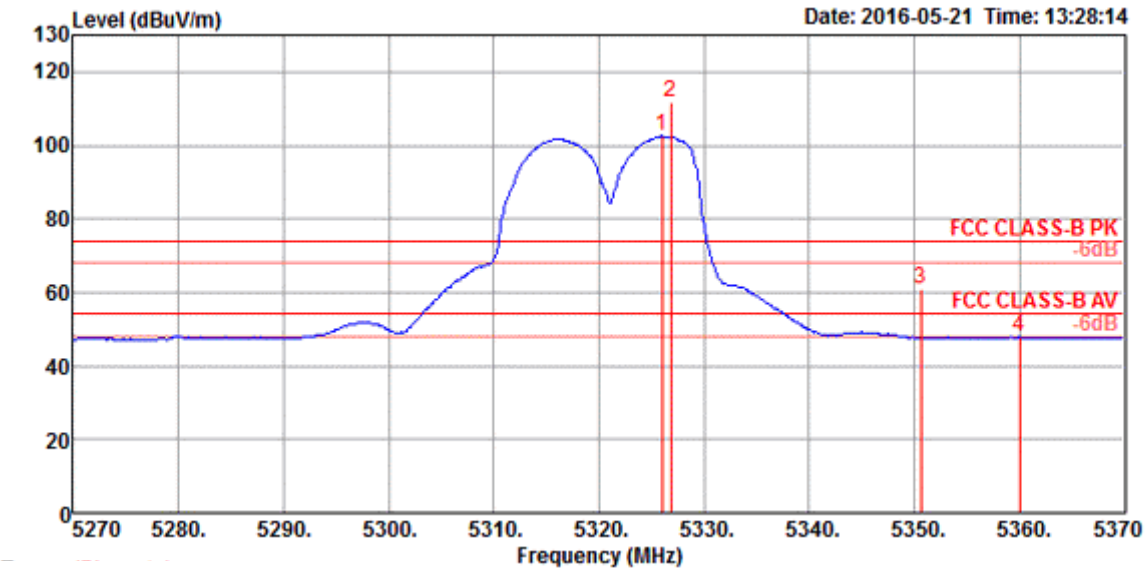
Channel 60



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 0	5293.60	101.89			95.84	7.34	31.64	32.93	192	24	Average	VERTICAL
2 0	5293.60	111.40			105.35	7.34	31.64	32.93	192	24	Peak	VERTICAL
3	5367.20	47.21	54.00	-6.79	41.07	7.38	31.69	32.93	192	24	Average	VERTICAL
4	5367.20	58.73	74.00	-15.27	52.59	7.38	31.69	32.93	192	24	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

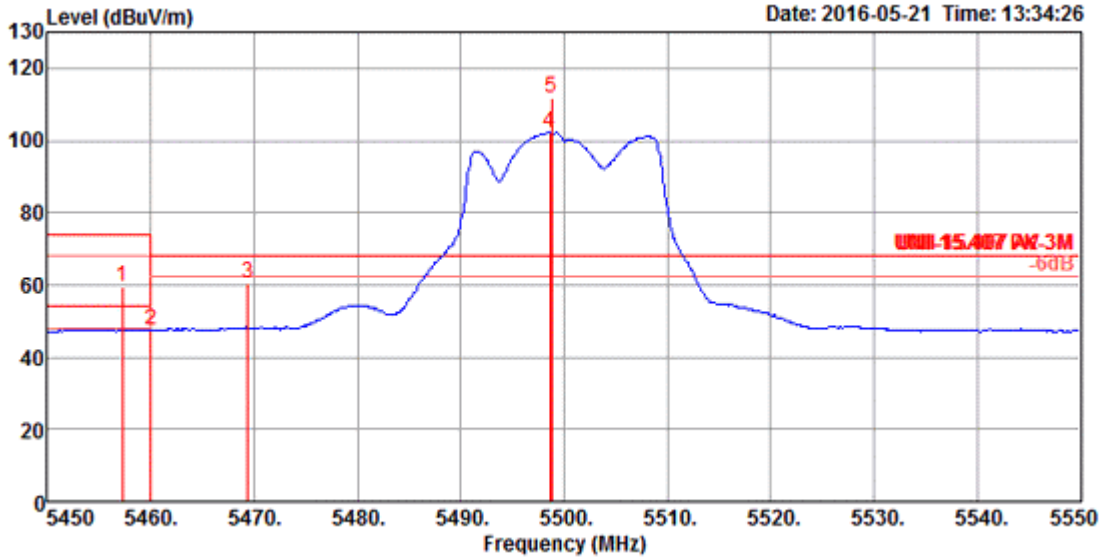


		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	0	5326.00	102.66			96.56	7.36	31.67	32.93	207	51	Average	VERTICAL
2	0	5326.80	111.88			105.78	7.36	31.67	32.93	207	51	Peak	VERTICAL
3		5350.60	60.96	74.00	-13.04	54.84	7.37	31.68	32.93	207	51	Peak	VERTICAL
4		5360.00	47.85	54.00	-6.15	41.71	7.38	31.69	32.93	207	51	Average	VERTICAL

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

Temperature	23°C	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 116, 140 / Ant. 1 + Ant. 2 + Ant. 3

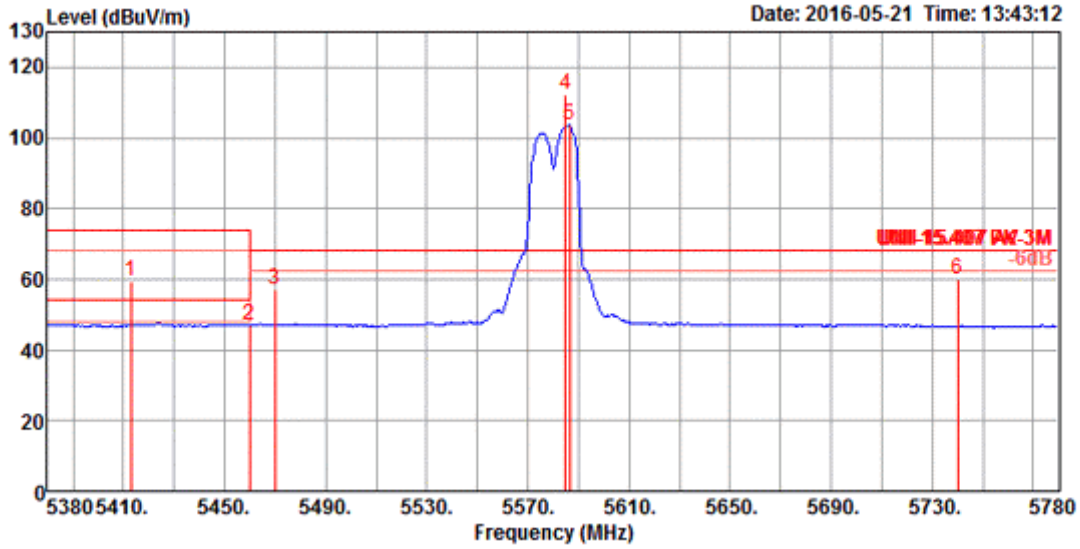
Channel 100



	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	5457.20	59.41	74.00	-14.59	53.11	7.46	31.76	32.92	185	65	Peak	VERTICAL
2	5460.00	47.40	54.00	-6.60	41.10	7.46	31.76	32.92	185	65	Average	VERTICAL
3	5469.40	60.62	68.20	-7.58	54.28	7.48	31.78	32.92	185	65	Peak	VERTICAL
4 0	5498.60	102.14			95.75	7.51	31.80	32.92	185	65	Average	VERTICAL
5 0	5498.80	111.67			105.28	7.51	31.80	32.92	185	65	Peak	VERTICAL

Item 4, 5 are the fundamental frequency at 5500 MHz.

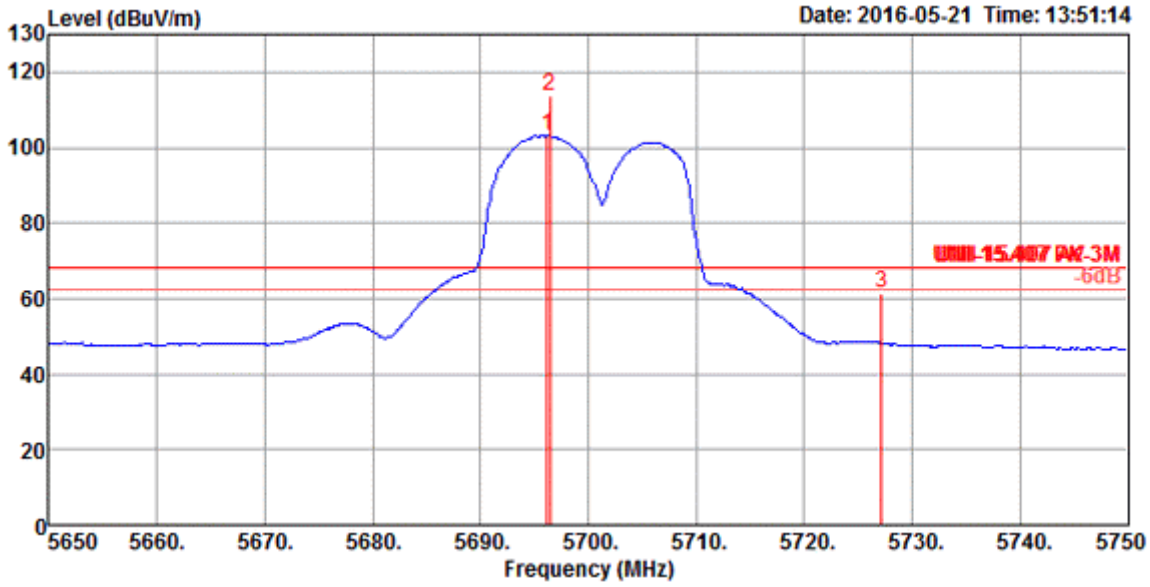
Channel 116



	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	5412.80	59.65	74.00	-14.35	53.43	7.42	31.73	32.93	210	72	Peak	VERTICAL
2	5460.00	46.89	54.00	-7.11	40.59	7.46	31.76	32.92	210	72	Average	VERTICAL
3	5470.00	57.09	68.20	-11.11	50.75	7.48	31.78	32.92	210	72	Peak	VERTICAL
4 0	5584.80	112.42			105.90	7.58	31.90	32.96	210	72	Peak	VERTICAL
5 0	5586.40	103.42			96.90	7.58	31.90	32.96	210	72	Average	VERTICAL
6	5740.00	59.75	68.20	-8.45	52.93	7.73	32.10	33.01	210	72	Peak	VERTICAL

Item 4, 5 are the fundamental frequency at 5580 MHz.

Channel 140

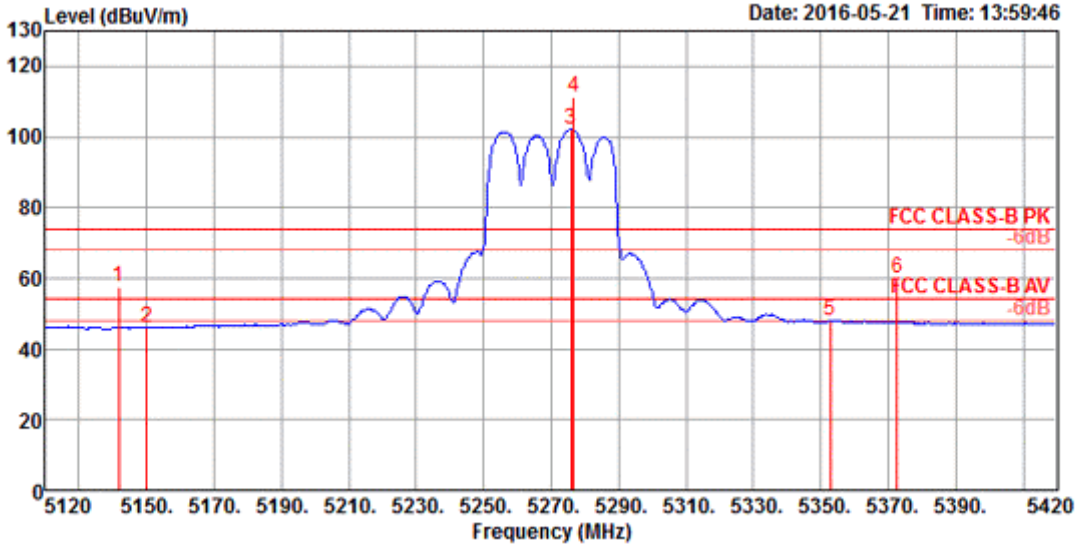


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 0	5696.20	103.01			96.29	7.68	32.04	33.00	209	69	Average	VERTICAL
2 0	5696.40	113.59			106.87	7.68	32.04	33.00	209	69	Peak	VERTICAL
3	5727.20	61.42	68.20	-6.78	54.64	7.71	32.08	33.01	209	69	Peak	VERTICAL

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

Temperature	23°C	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Ant. 1 + Ant. 2 + Ant. 3

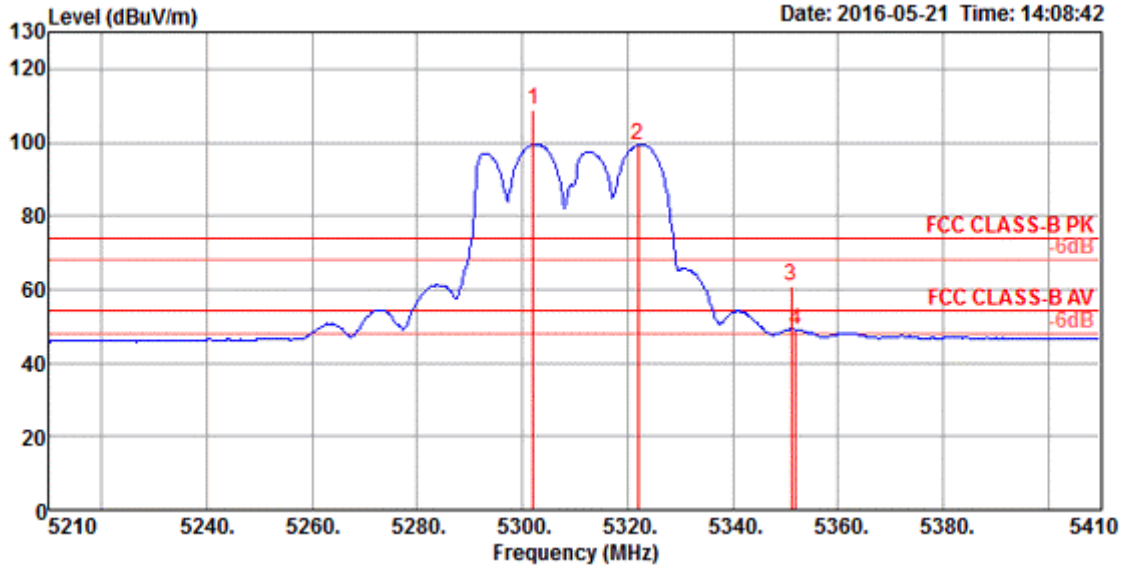
Channel 54



	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	57.73	74.00	-16.27	51.94	7.22	31.51	32.94	194	0	Peak	VERTICAL
2	5150.00	45.90	54.00	-8.10	40.09	7.23	31.52	32.94	194	0	Average	VERTICAL
3 0	5276.00	101.94			95.92	7.33	31.62	32.93	194	0	Average	VERTICAL
4 0	5276.60	111.34			105.32	7.33	31.62	32.93	194	0	Peak	VERTICAL
5	5352.80	48.05	54.00	-5.95	41.93	7.37	31.68	32.93	194	0	Average	VERTICAL
6	5372.60	59.96	74.00	-14.04	53.80	7.39	31.70	32.93	194	0	Peak	VERTICAL

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

Channel 62

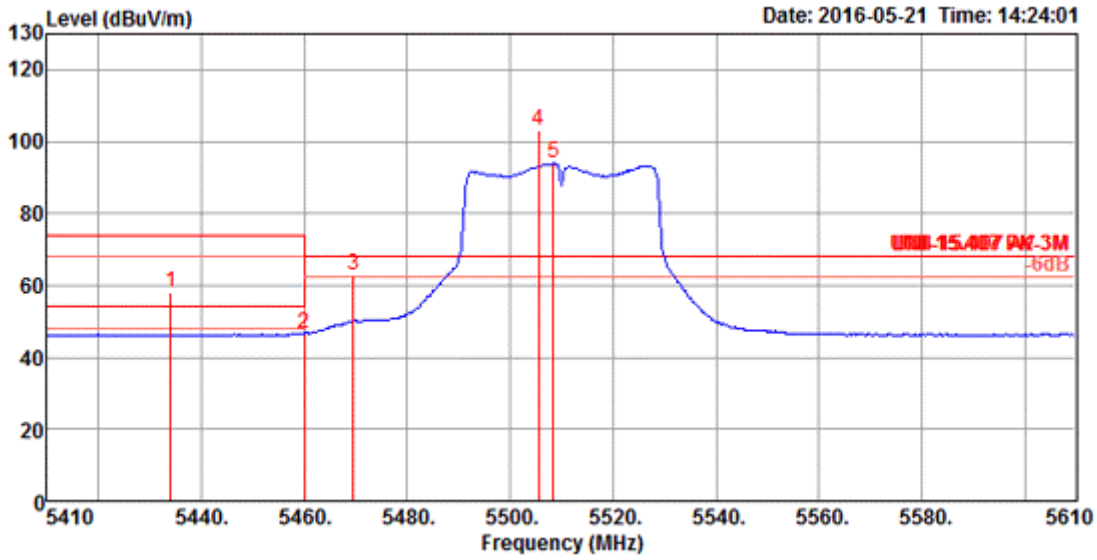


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 0	5302.00	109.01			102.96	7.34	31.64	32.93	208	56	Peak	VERTICAL
2 0	5322.00	99.49			93.42	7.35	31.65	32.93	208	56	Average	VERTICAL
3	5351.20	60.92	74.00	-13.08	54.80	7.37	31.68	32.93	208	56	Peak	VERTICAL
4	5352.00	49.11	54.00	-4.89	42.99	7.37	31.68	32.93	208	56	Average	VERTICAL

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

Temperature	23°C	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110, 134 / Ant. 1 + Ant. 2 + Ant. 3

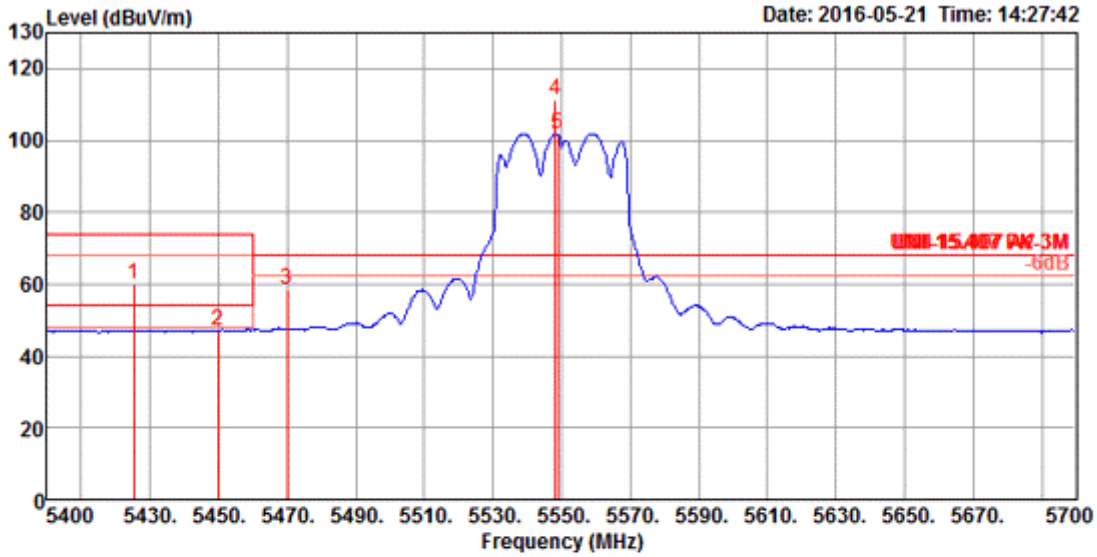
Channel 102



	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	5434.00	57.94	74.00	-16.06	51.66	7.45	31.75	32.92	185	350	Peak	HORIZONTAL
2	5460.00	46.45	54.00	-7.55	40.15	7.46	31.76	32.92	185	350	Average	HORIZONTAL
3	5469.60	62.75	68.20	-5.45	56.41	7.48	31.78	32.92	185	350	Peak	HORIZONTAL
4 0	5505.60	103.24			96.86	7.51	31.80	32.93	185	350	Peak	HORIZONTAL
5 0	5508.40	93.82			87.44	7.51	31.80	32.93	185	350	Average	HORIZONTAL

Item 4, 5 are the fundamental frequency at 5510 MHz.

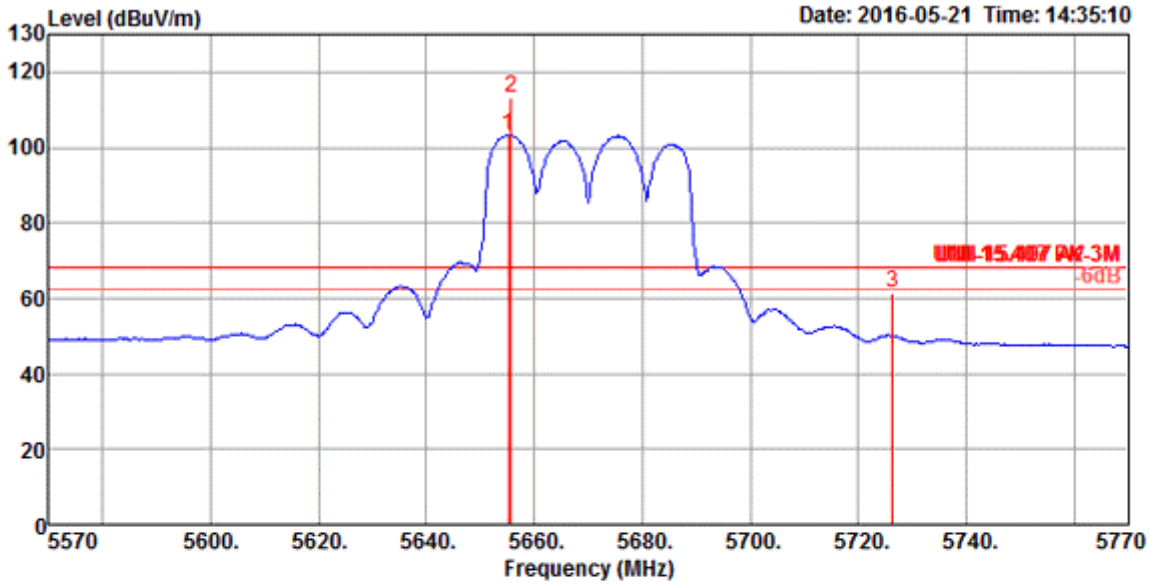
Channel 110



	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	5425.20	59.80	74.00	-14.20	53.55	7.43	31.74	32.92	179	65	Peak	VERTICAL
2	5449.80	47.18	54.00	-6.82	40.88	7.46	31.76	32.92	179	65	Average	VERTICAL
3	5470.00	58.30	68.20	-9.90	51.96	7.48	31.78	32.92	179	65	Peak	VERTICAL
4 0	5548.20	111.46			104.99	7.55	31.86	32.94	179	65	Peak	VERTICAL
5 0	5548.80	101.83			95.36	7.55	31.86	32.94	179	65	Average	VERTICAL

Item 4, 5 are the fundamental frequency at 5550 MHz.

Channel 134

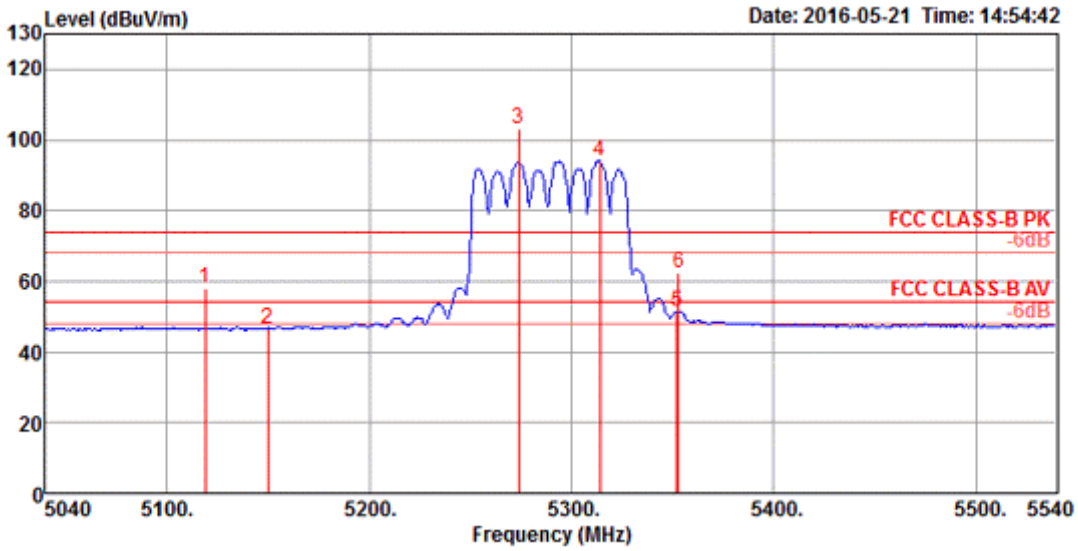


		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	0	5655.20	103.06			96.42	7.64	31.98	32.98	197	68	Average	VERTICAL
2	0	5655.60	113.00			106.36	7.64	31.98	32.98	197	68	Peak	VERTICAL
3		5726.40	61.60	68.20	-6.60	54.82	7.71	32.08	33.01	197	68	Peak	VERTICAL

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

Temperature	23°C	Humidity	63%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58, 106, 122 / Ant. 1 + Ant. 2 + Ant. 3

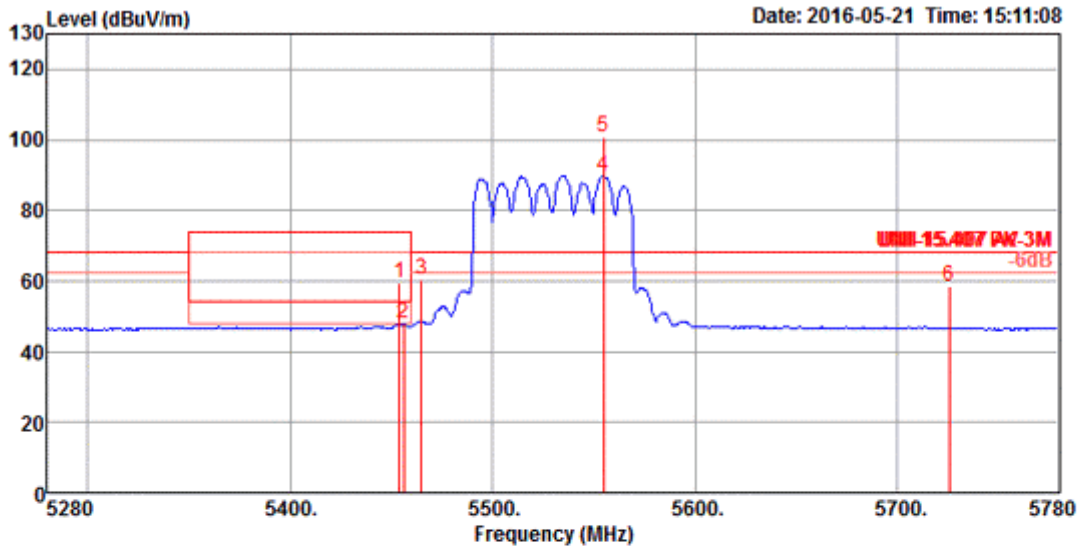
Channel 58



	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	5119.00	58.09	74.00	-15.91	52.33	7.20	31.50	32.94	189	353	Peak	VERTICAL
2	5150.00	46.74	54.00	-7.26	40.93	7.23	31.52	32.94	189	353	Average	VERTICAL
3 0	5274.00	103.07			97.05	7.33	31.62	32.93	189	353	Peak	VERTICAL
4 0	5314.00	94.00			87.93	7.35	31.65	32.93	189	353	Average	VERTICAL
5	5352.00	51.30	54.00	-2.70	45.18	7.37	31.68	32.93	189	353	Average	VERTICAL
6	5353.00	62.39	74.00	-11.61	56.27	7.37	31.68	32.93	189	353	Peak	VERTICAL

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

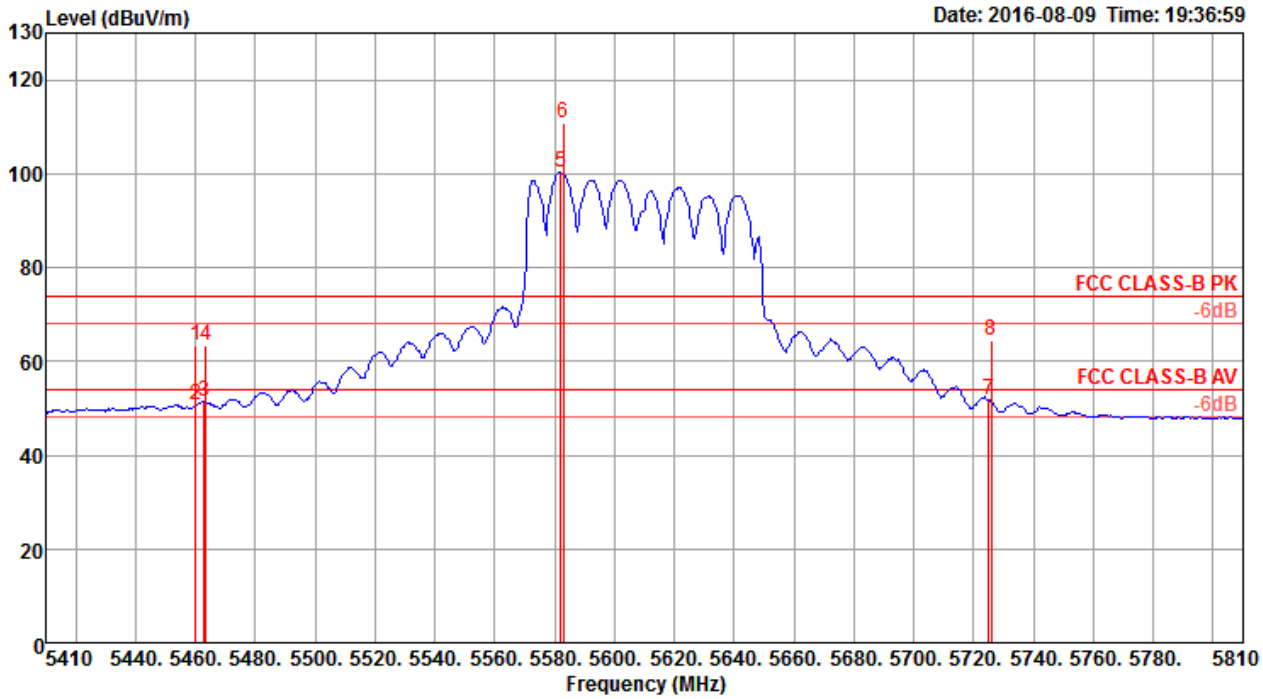
Channel 106



	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	5454.00	59.56	74.00	-14.44	53.26	7.46	31.76	32.92	204	67	Peak	VERTICAL
2	5456.00	47.76	54.00	-6.24	41.46	7.46	31.76	32.92	204	67	Average	VERTICAL
3	5465.00	60.24	68.20	-7.96	53.90	7.48	31.78	32.92	204	67	Peak	VERTICAL
4 0	5555.00	89.69			83.22	7.55	31.86	32.94	204	67	Average	VERTICAL
5 0	5555.00	100.55			94.08	7.55	31.86	32.94	204	67	Peak	VERTICAL
6	5726.00	58.34	68.20	-9.86	51.55	7.71	32.08	33.00	204	67	Peak	VERTICAL

Item 4, 5 are the fundamental frequency at 5530 MHz.

Channel 122



	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	5460.00	63.42	74.00	-10.58	56.26	7.89	33.74	34.47	319	14	Peak	HORIZONTAL
2	5460.00	50.85	54.00	-3.15	43.69	7.89	33.74	34.47	319	14	Average	HORIZONTAL
3	5462.80	51.50	54.00	-2.50	44.34	7.89	33.74	34.47	319	14	Average	HORIZONTAL
4	5463.60	63.52	74.00	-10.48	56.33	7.90	33.76	34.47	319	14	Peak	HORIZONTAL
5	5582.00	100.18			92.68	7.94	34.05	34.49	319	14	Average	HORIZONTAL
6	5582.80	110.88			103.38	7.94	34.05	34.49	319	14	Peak	HORIZONTAL
7	5725.00	51.70	54.00	-2.30	43.84	7.87	34.50	34.51	319	14	Average	HORIZONTAL
8	5726.00	64.48	74.00	-9.52	56.62	7.87	34.50	34.51	319	14	Peak	HORIZONTAL

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

Note:

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

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

4.6. Frequency Stability Measurement

4.6.1. 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).

4.6.2. Measuring Instruments and Setting

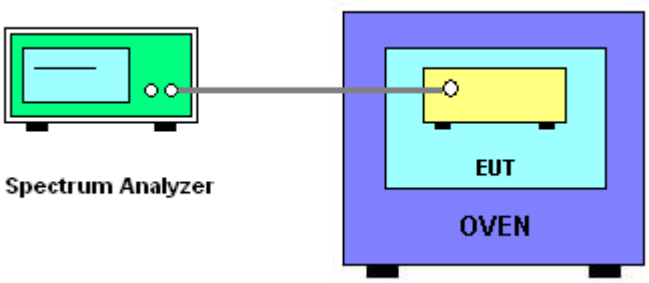
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.6.3. 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~50°C.

4.6.4. Test Setup Layout



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 un-modulation transmitting mode.

4.6.7. Test Result of Frequency Stability

Temperature	24°C	Humidity	60%
Test Engineer	Gary Chu	Test Date	May. 31, 2016~Jun. 05, 2016

Mode: 20 MHz / Ant. 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5300 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5299.9587	5299.9577	5299.9570	5299.9563
110.00	5299.9583	5299.9576	5299.9571	5299.9563
93.50	5299.9582	5299.9576	5299.9566	5299.9562
Max. Deviation (MHz)	0.0418	0.0424	0.0434	0.0438
Max. Deviation (ppm)	7.88	8.00	8.18	8.26
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5300 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5299.9606	5299.9603	5299.9594	5299.9592
10	5299.9591	5299.9582	5299.9578	5299.9576
20	5299.9583	5299.9575	5299.9571	5299.9566
30	5299.9576	5299.9567	5299.9560	5299.9559
40	5299.9567	5299.9565	5299.9555	5299.9547
50	5299.9563	5299.9558	5299.9549	5299.9539
Max. Deviation (MHz)	0.0437	0.0442	0.0451	0.0461
Max. Deviation (ppm)	8.25	8.34	8.51	8.70
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5580 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5579.9591	5579.9590	5579.9580	5579.9578
110.00	5579.9583	5579.9576	5579.9572	5579.9569
93.50	5579.9580	5579.9578	5579.9568	5579.9558
Max. Deviation (MHz)	0.0420	0.0424	0.0432	0.0442
Max. Deviation (ppm)	7.52	7.59	7.74	7.92
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5580 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5579.9593	5579.9583	5579.9578	5579.9569
10	5579.9590	5579.9588	5579.9582	5579.9572
20	5579.9583	5579.9576	5579.9570	5579.9565
30	5579.9576	5579.9572	5579.9570	5579.9562
40	5579.9559	5579.9554	5579.9545	5579.9535
50	5579.9545	5579.9536	5579.9529	5579.9519
Max. Deviation (MHz)	0.0455	0.0464	0.0471	0.0481
Max. Deviation (ppm)	8.15	8.32	8.44	8.62
Result	Complies			

Mode: 40 MHz / Ant. 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5310 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5309.9590	5309.9583	5309.9575	5309.9571
110.00	5309.9583	5309.9579	5309.9574	5309.9568
93.50	5309.9580	5309.9575	5309.9567	5309.9566
Max. Deviation (MHz)	0.0420	0.0425	0.0433	0.0434
Max. Deviation (ppm)	7.91	8.00	8.15	8.17
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5310 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5309.9602	5309.9601	5309.9598	5309.9591
10	5309.9596	5309.9587	5309.9586	5309.9578
20	5309.9583	5309.9577	5309.9574	5309.9572
30	5309.9576	5309.9574	5309.9565	5309.9564
40	5309.9562	5309.9554	5309.9549	5309.9544
50	5309.9549	5309.9548	5309.9547	5309.9544
Max. Deviation (MHz)	0.0451	0.0452	0.0453	0.0456
Max. Deviation (ppm)	8.49	8.51	8.53	8.59
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5550 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5549.9593	5549.9591	5549.9581	5549.9572
110.00	5549.9583	5549.9582	5549.9575	5549.9572
93.50	5549.9576	5549.9568	5549.9561	5549.9558
Max. Deviation (MHz)	0.0424	0.0432	0.0439	0.0442
Max. Deviation (ppm)	7.64	7.78	7.91	7.96
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5550 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5549.9598	5549.9594	5549.9586	5549.9585
10	5549.9596	5549.9595	5549.9589	5549.9579
20	5549.9583	5549.9582	5549.9577	5549.9568
30	5549.9576	5549.9574	5549.9566	5549.9561
40	5549.9575	5549.9569	5549.9567	5549.9565
50	5549.9559	5549.9549	5549.9543	5549.9541
Max. Deviation (MHz)	0.0441	0.0451	0.0457	0.0459
Max. Deviation (ppm)	7.95	8.13	8.23	8.27
Result	Complies			

Mode: 80 MHz / Ant. 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5290 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5289.9588	5289.9581	5289.9580	5289.9574
110.00	5289.9583	5289.9580	5289.9577	5289.9576
93.50	5289.9579	5289.9577	5289.9571	5289.9566
Max. Deviation (MHz)	0.0421	0.0423	0.0429	0.0434
Max. Deviation (ppm)	7.95	7.99	8.11	8.20
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5290 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5289.9603	5289.9597	5289.9593	5289.9584
10	5289.9591	5289.9582	5289.9580	5289.9575
20	5289.9583	5289.9581	5289.9578	5289.9570
30	5289.9576	5289.9567	5289.9557	5289.9553
40	5289.9556	5289.9553	5289.9547	5289.9546
50	5289.9542	5289.9539	5289.9533	5289.9524
Max. Deviation (MHz)	0.0458	0.0461	0.0467	0.0476
Max. Deviation (ppm)	8.66	8.71	8.83	9.00
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5530 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5529.9584	5529.9579	5529.9572	5529.9569
110.00	5529.9583	5529.9576	5529.9574	5529.9564
93.50	5529.9576	5529.9574	5529.9569	5529.9563
Max. Deviation (MHz)	0.0424	0.0426	0.0431	0.0437
Max. Deviation (ppm)	7.66	7.70	7.79	7.90
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5530 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5529.9591	5529.9587	5529.9577	5529.9574
10	5529.9589	5529.9583	5529.9578	5529.9570
20	5529.9583	5529.9576	5529.9567	5529.9566
30	5529.9576	5529.9569	5529.9568	5529.9560
40	5529.9572	5529.9562	5529.9556	5529.9549
50	5529.9554	5529.9553	5529.9549	5529.9547
Max. Deviation (MHz)	0.0446	0.0447	0.0451	0.0453
Max. Deviation (ppm)	8.07	8.08	8.16	8.19
Result	Complies			

4.7. Antenna Requirements

4.7.1. 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.

4.7.2. 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
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170585	15GHz ~ 40GHz	Oct. 07, 2015	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)
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)
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. 02, 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.

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%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74×10^{-8}	Confidence levels of 95%
Frequency Stability	6.06×10^{-8}	Confidence levels of 95%