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FCC RADIO TEST REPORT

Applicant's company	**PEGATRON CORPORATION**
Applicant Address	5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY 11259 Taiwan
FCC ID	**VUIDPC3848V**
Manufacturer's company	**MAINTEK COMPUTER**
Manufacturer Address	233 Jinfeng Rd., Suzhou, Jiangsu, PRC

Product Name	Wireless Residential Gateway
Brand Name	technicolor
Model No.	DPC3848V / DPC3848VM
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Mar. 06, 2014
Final Test Date	Aug. 17, 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 v01r02, 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
FR462770-01AB	Rev. 01	Initial issue of report	Aug. 15, 2016
FR462770-01AB	Rev. 02	Re-test bandedge of VHT40 CH151.	Aug. 17, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	Wireless Residential Gateway
Brand Name	:	technicolor
Model No.	:	DPC3848V / DPC3848VM
Applicant	:	PEGATRON CORPORATION
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Mar. 06, 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(e)	6dB Spectrum Bandwidth	Complies
4.3	15.407(a)	Maximum Conducted Output Power	Complies
4.4	15.407(a)	Power Spectral Density	Complies
4.5	15.407(b)	Radiated Emissions	Complies
4.6	15.407(b)	Band Edge Emissions	Complies
4.7	15.407(g)	Frequency Stability	Complies
4.8	15.203	Antenna Requirements	Complies

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Internal Power Supply
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Channel Number	9 for 20MHz bandwidth ; 4 for 40MHz bandwidth 2 for 80MHz bandwidth
Channel Band Width (99%)	Band 1: IEEE 802.11a: 16.85 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.58 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.18 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 73.23 MHz Band 4: IEEE 802.11a: 20.84 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 22.92 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.47 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.54 MHz
Maximum Conducted Output Power	Band 1: IEEE 802.11a: 26.85 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 27.56 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 28.46 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 19.80 dBm Band 4: IEEE 802.11a: 29.25 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.67 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.81 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 21.22 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	Three (TX)		
Band width Mode	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X
IEEE 802.11n	V	V	X
IEEE 802.11ac	V	V	V

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	3	MCS 0-23
802.11n (HT40)	3	MCS 0-23
802.11ac (VHT20)	3	MCS 0-9/Nss1-3
802.11ac (VHT40)	3	MCS 0-9/Nss1-3
802.11ac (VHT80)	3	MCS 0-9/Nss1-3

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

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

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

3.2. Accessories

Power cable*1, Non-shielded, 1.8m

RJ-45 cable*1, Non-shielded, 1.2m

3.3. Table for Filed Antenna

For Model Name: DPC3848V

Ant.	Brand	Model Name	P/N	Antenna Type	Connector	Gain (dBi)	
						2.4GHz	5GHz
1	WANSHIH	WPB279	UC3WFI0134	PCB Antenna	MHF	2.81	3.62
2	WANSHIH	WPB287	UC3WFI0147	PCB Antenna	MHF	2.63	3.62
3	WANSHIH	WPB289	UC3WFI0132	PCB Antenna	MHF	2.95	3.73

For Model Name: DPC3848VM

Ant.	Brand	Model Name	P/N	Antenna Type	Connector	Gain (dBi)	
						2.4GHz	5GHz
4	WANSHIH	WPB279	UC3WFI0125	PCB Antenna	MHF	2.47	3.62
5	WANSHIH	WPB287	UC3WFI0124	PCB Antenna	MHF	2.26	3.62
6	WANSHIH	WPB289	UC3WFI0123	PCB Antenna	MHF	2.56	3.73

Note:

Ant. 1～ 6 are the same type antennas. Only the higher gain antennas “Ant. 1～3” were tested and recorded in the report.

According to the above antennas, there are three antennas will transit simultaneously (one is Horizontal and the others are Vertical), so array gain only add 10log(2).

<For 2.4GHz Band>

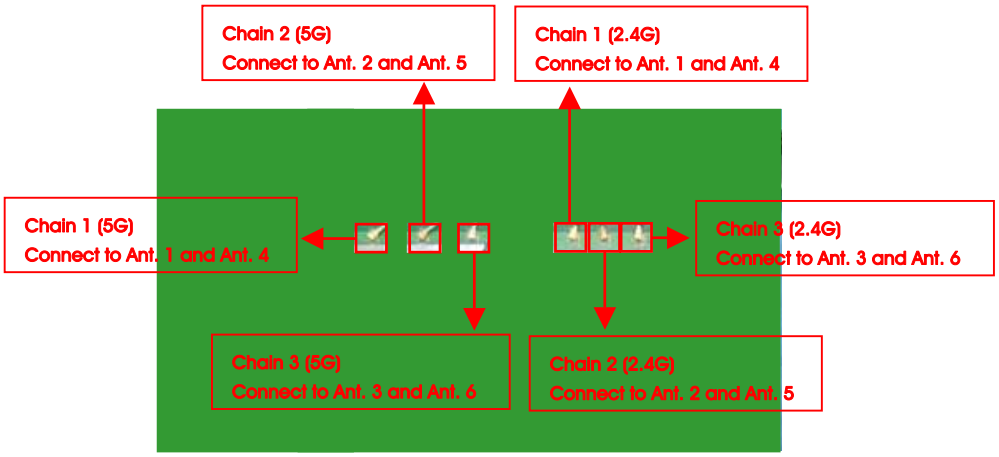
For IEEE 802.11b/g/n mode (3TX/3RX):

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

<For 5GHz Band>

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

Chain 1, Chain 2 and Chain 3 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	Chain
Max. Conducted Output Power	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3
Power Spectral Density	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3
6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 4	6Mbps	149/157/165	1+2+3
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	1+2+3
	11ac VHT40	Band 4	MCS0/Nss1	151/159	1+2+3
	11ac VHT80	Band 4	MCS0/Nss1	155	1+2+3
Radiated Emission Above 1GHz	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3

Band Edge Emission	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3
Frequency Stability	20 MHz	Band 1&4	-	40/157	2
	40 MHz	Band 1&4	-	38/151	2
	80 MHz	Band 1&4	-	42/155	2

Note 1: 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.

Note 2: The EUT can only be used at Y axis position.

The following test modes were performed for all tests:

For Radiated Emission test:

Test Mode 1 : CTX

For Co-location MPE Test:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA462770-01) test is added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	**Site Category**	**Location**	**FCC 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 List

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

Model Name	MoCA Schematic
DPC3848V	X
DPC3848VM	V

From the table above, model name: DPC3848V was selected as representative model for the test and its data was recorded in this report.

3.8. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR462770AA and FR462770AB

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

Modifications	Performance Checking
1. Changing the applicant address to "5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY 11259 Taiwan" from "5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY 112 Taiwan". 2. Changing the brand name to "technicolor" from "Cisco".	No influence on the test results.
3. Changing 2.4GHz PA to P/N: E2605L-RN from P/N: SE2605L due to changing of manufacturing process.	No influence on the 5GHz test results.
4. Updating 5GHz Band 1 to “New Rules” from “Old Rules”.	1. 26dB Bandwidth and 99% Occupied Bandwidth 2. Maximum Conducted Output Power 3. Power Spectral Density 4. Radiated Emissions above 1GHz 5. Band Edge Emissions 6. Frequency Stability
5. Updating 5GHz Band 4 to “New Rules” from “Old Rules”.	1. 26dB Bandwidth and 99% Occupied Bandwidth 2. 6dB Spectrum Bandwidth 3. Maximum Conducted Output Power 4. Power Spectral Density 5. Radiated Emissions above 1GHz 6. Band Edge Emissions 7. Frequency Stability

3.9. Table for Supporting Units

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	DOS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	22	21.5	21.5	23	26.5	23.5
802.11ac MCS0/Nss1 VHT20	21	22.5	22.5	23	27	24
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	17.5		24		21.5	24
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	15.5				17	

3.11. EUT Operation during Test

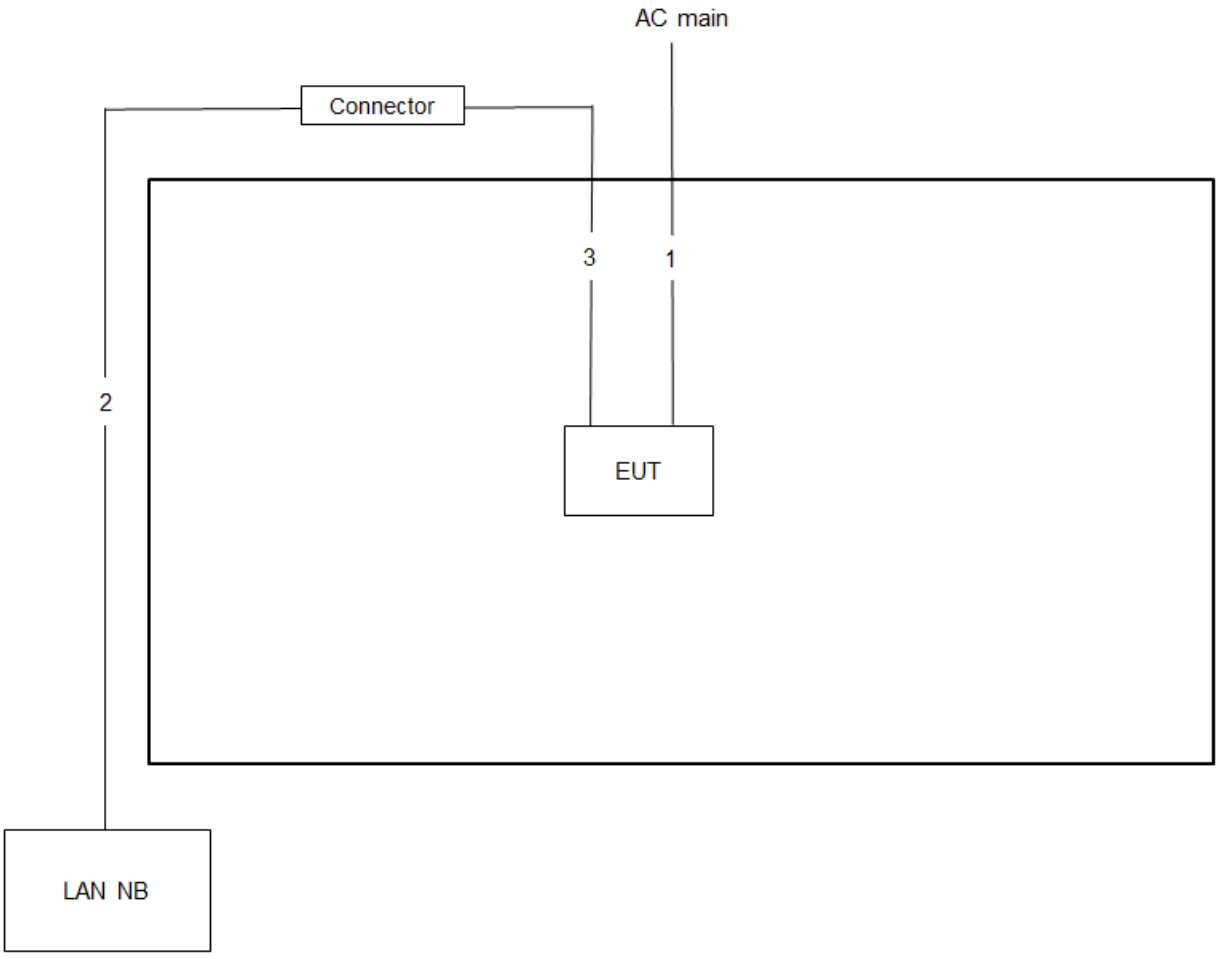
The EUT was programmed to be in continuously transmitting mode.

3.12. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.030	2.090	97.13	0.13	0.49
802.11ac MCS0/Nss1 VHT20	1.910	1.970	96.95	0.13	0.52
802.11ac MCS0/Nss1 VHT40	0.942	0.990	95.15	0.22	1.06
802.11ac MCS0/Nss1 VHT80	0.459	0.516	88.95	0.51	2.18

3.13. Test Configurations

3.13.1. Radiation Emissions Test Configuration



Item	Connection	Shilded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	1.2m

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 4.5.4.

4.1.5. Test Deviation

There is no deviation with the original standard.

4.1.6. EUT Operation during Test

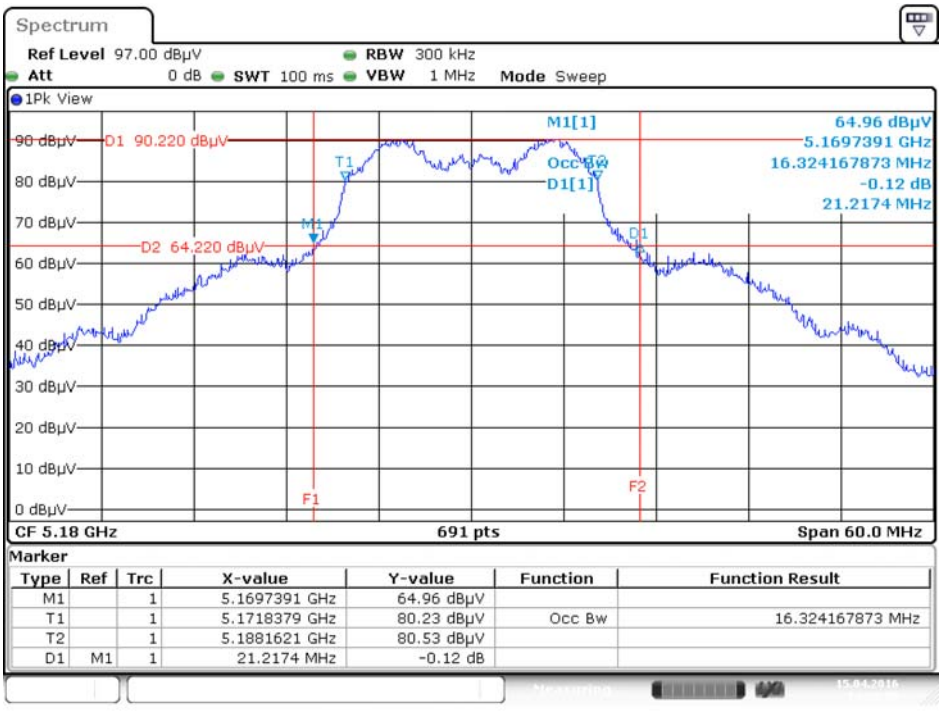
The EUT was programmed to be in continuously transmitting mode.

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

Temperature	23°C	Humidity	62%
Test Engineer	Peter Wu		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	21.22	16.32
	5200 MHz	21.74	16.41
	5240 MHz	22.87	16.85
	5745 MHz	23.13	17.02
	5785 MHz	32.52	20.84
	5825 MHz	23.04	16.76
802.11ac MCS0/Nss1 VHT20	5180 MHz	22.09	17.89
	5200 MHz	22.78	17.11
	5240 MHz	25.13	18.58
	5745 MHz	22.78	17.63
	5785 MHz	31.13	22.92
	5825 MHz	18.96	16.50
802.11ac MCS0/Nss1 VHT40	5190 MHz	45.22	35.17
	5230 MHz	54.78	36.18
	5755 MHz	42.61	36.47
	5795 MHz	44.35	35.75
802.11ac MCS0/Nss1 VHT80	5210 MHz	82.03	73.23
	5775 MHz	87.83	75.54

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5180 MHz



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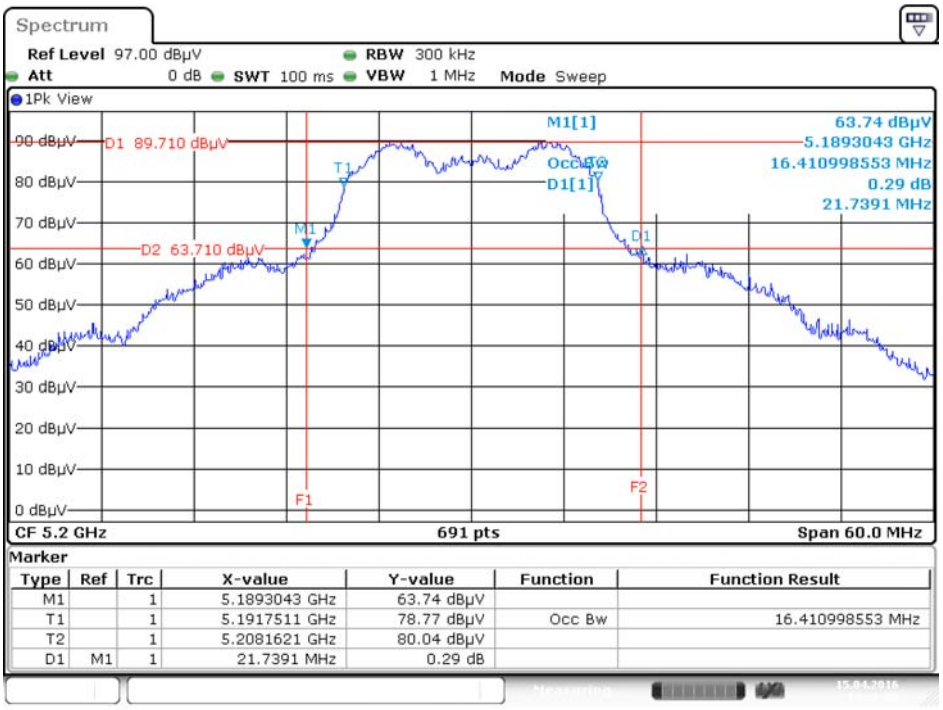
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5200 MHz



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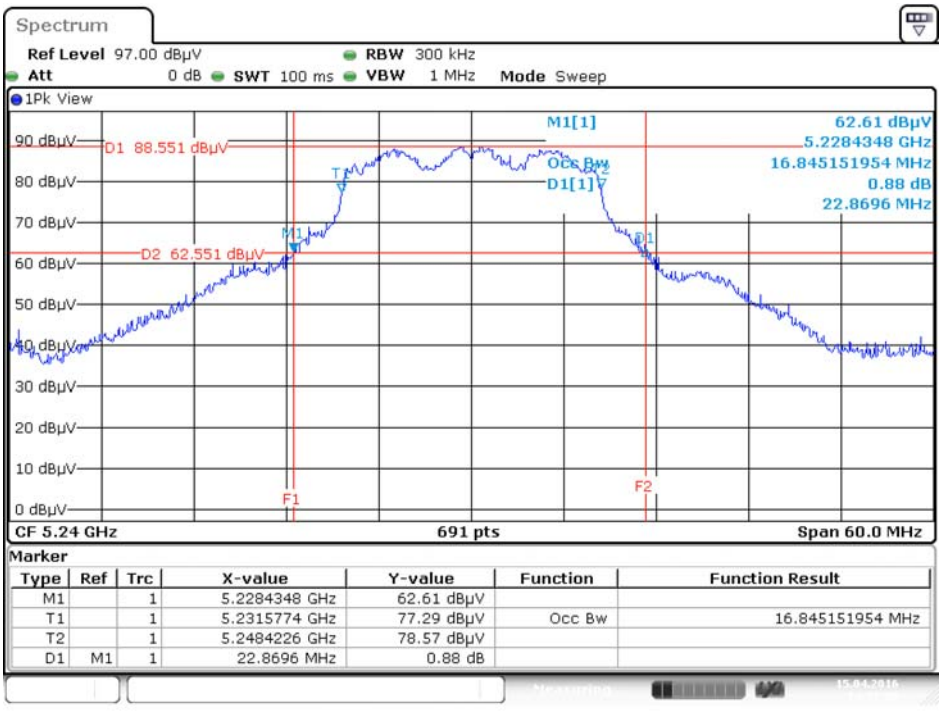

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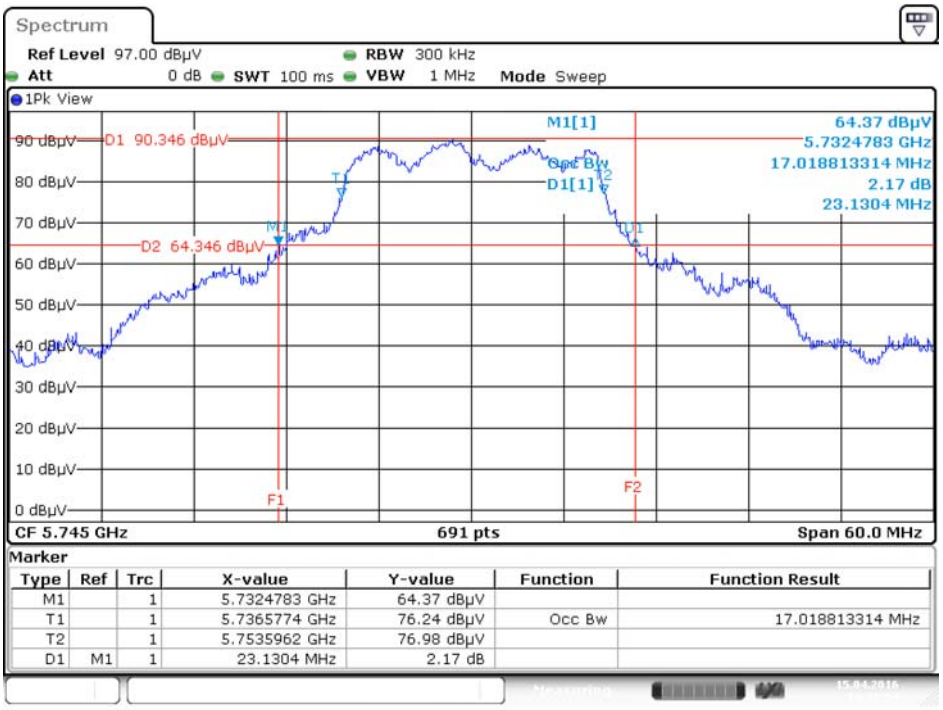
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5745 MHz



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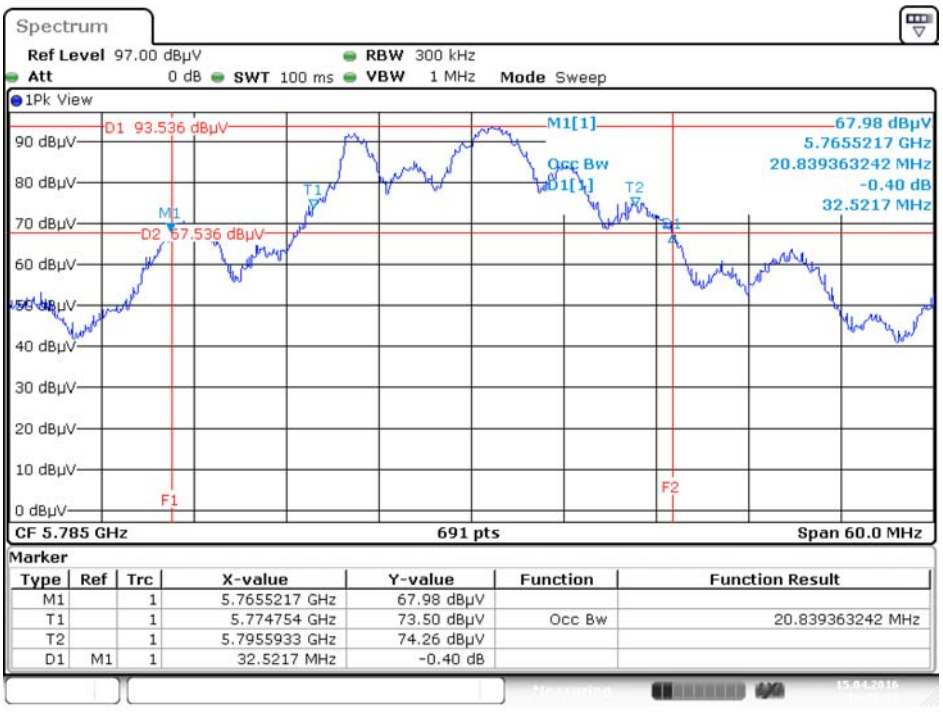
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5785 MHz



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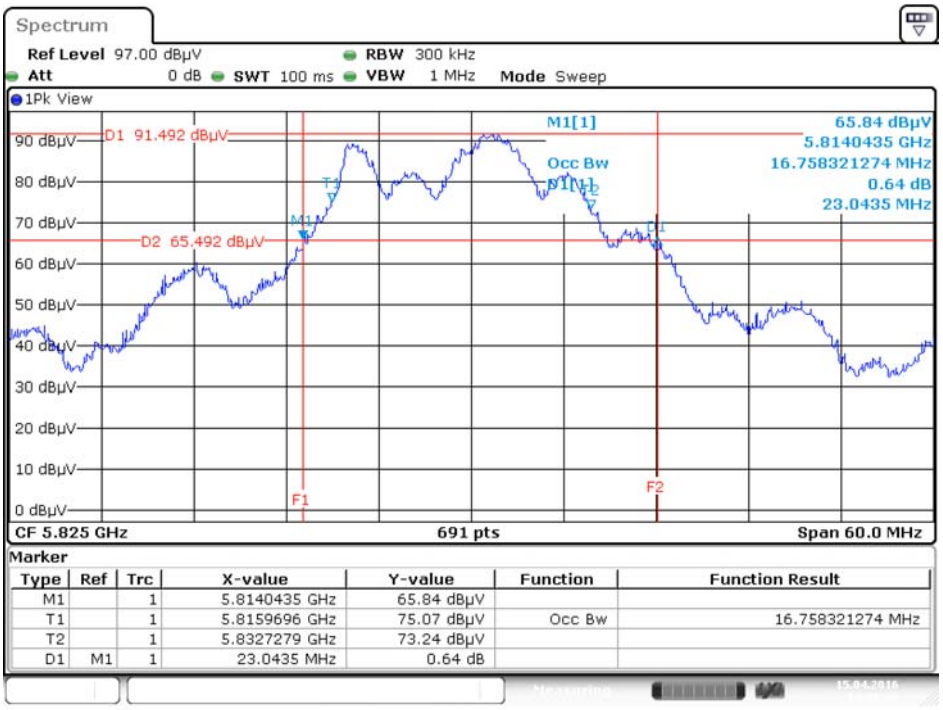
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5825 MHz



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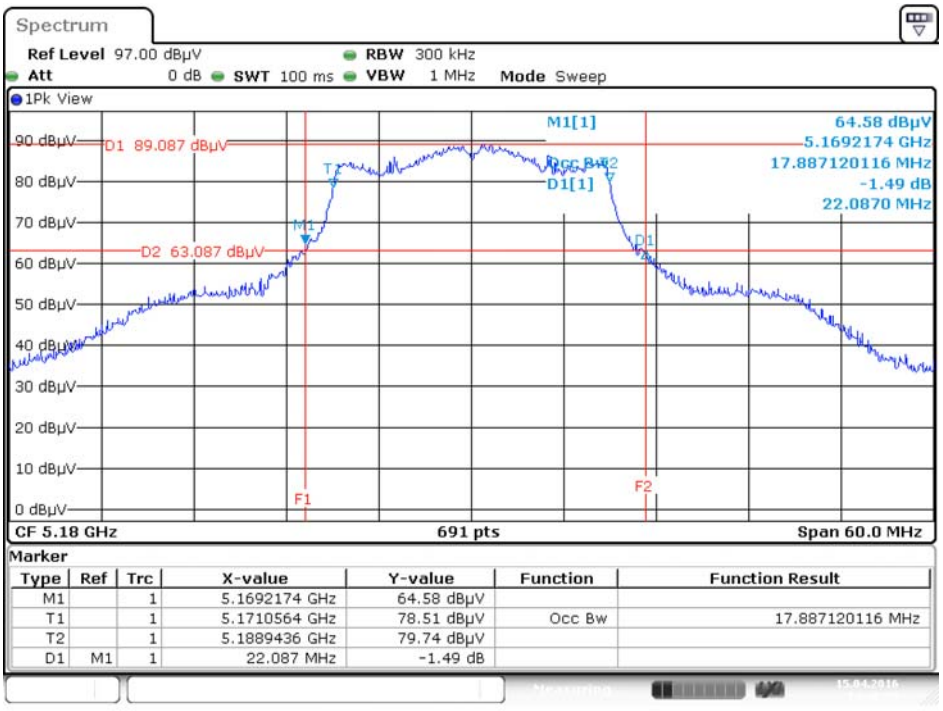
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5180 MHz



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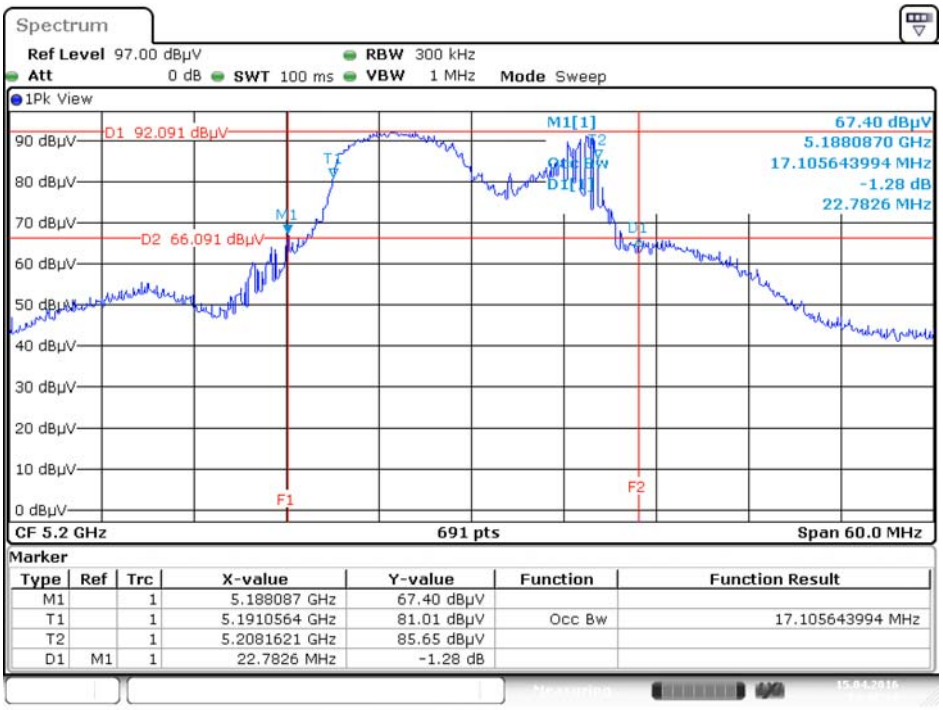

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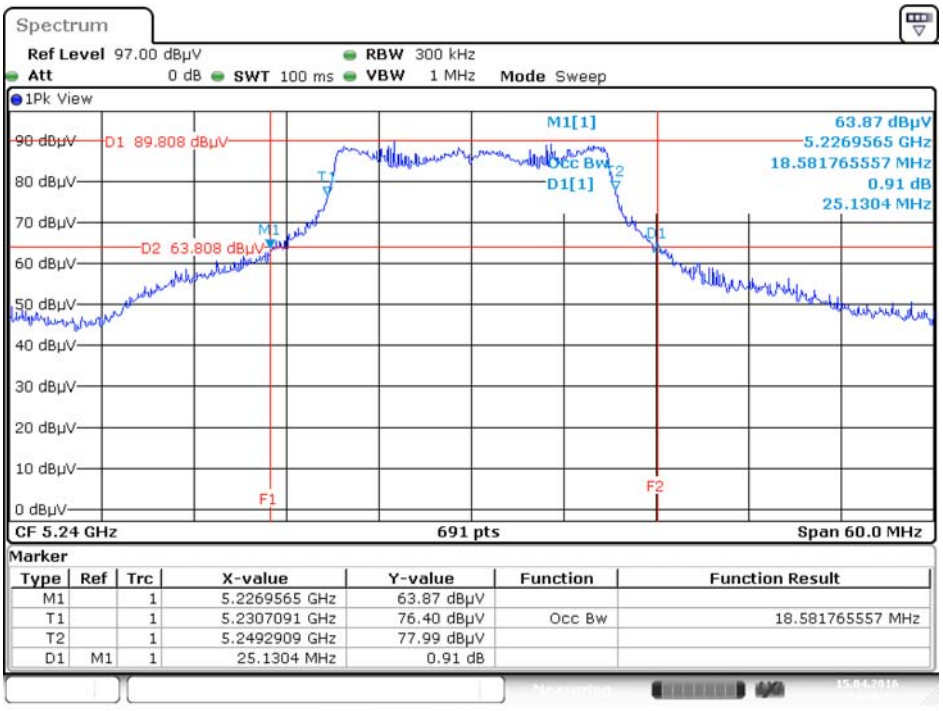
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5240 MHz



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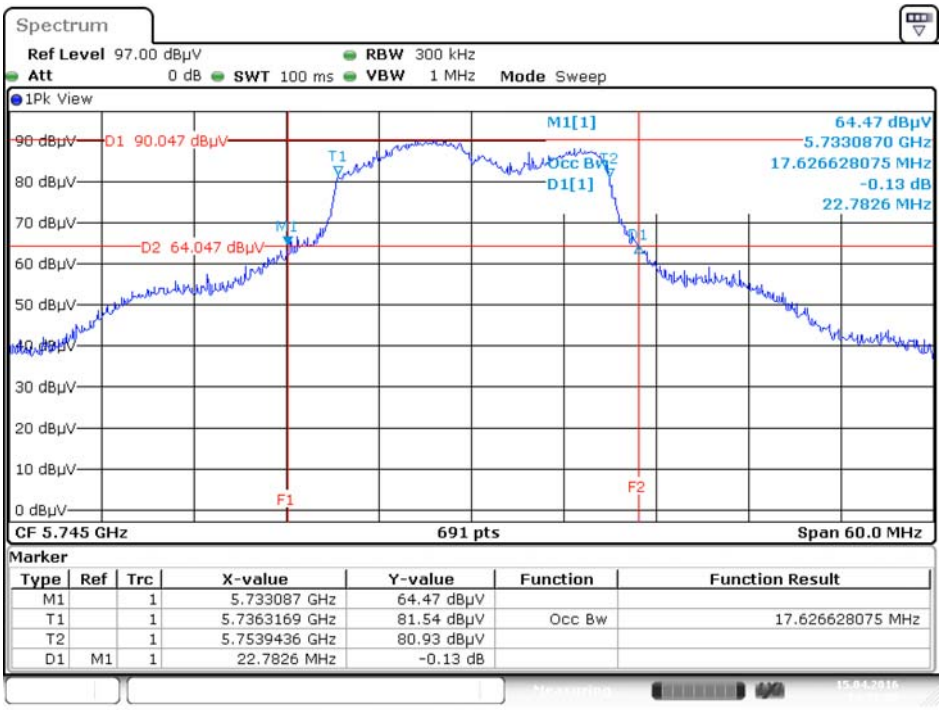
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5745 MHz



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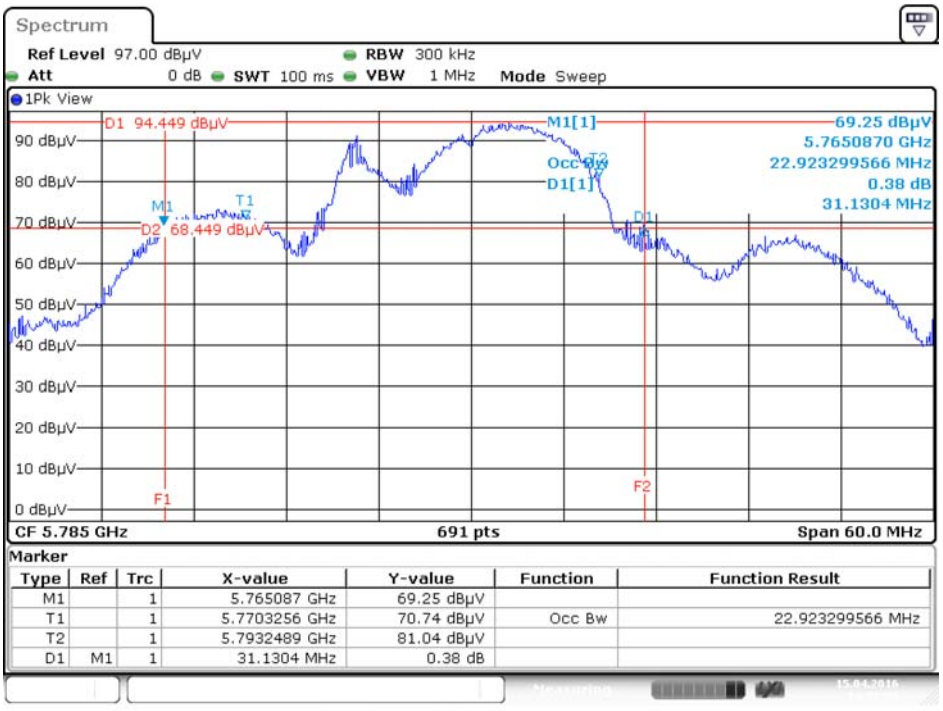
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5785 MHz



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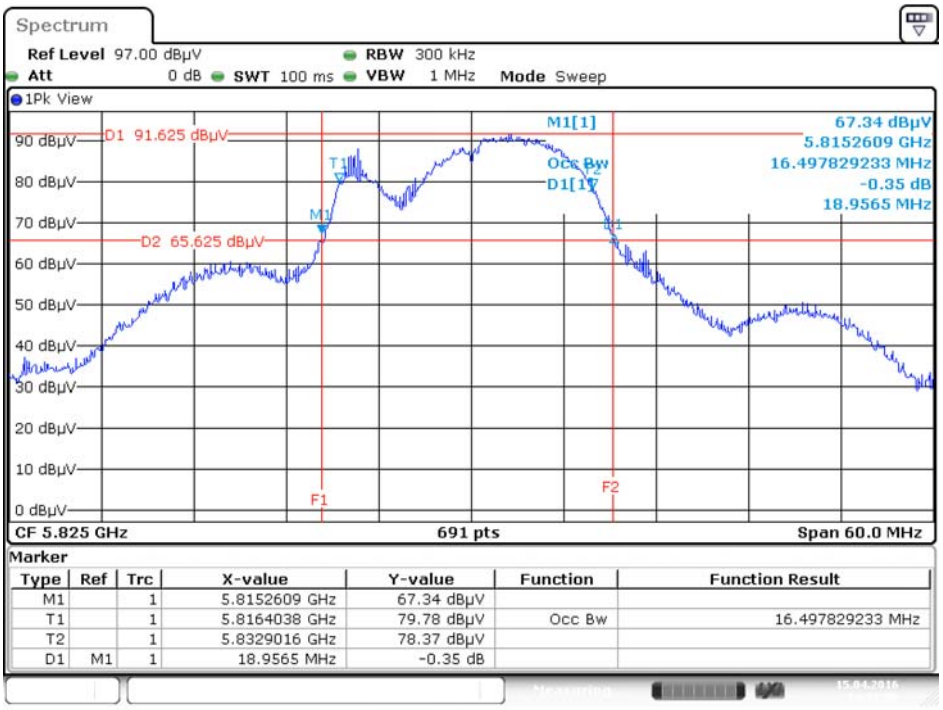
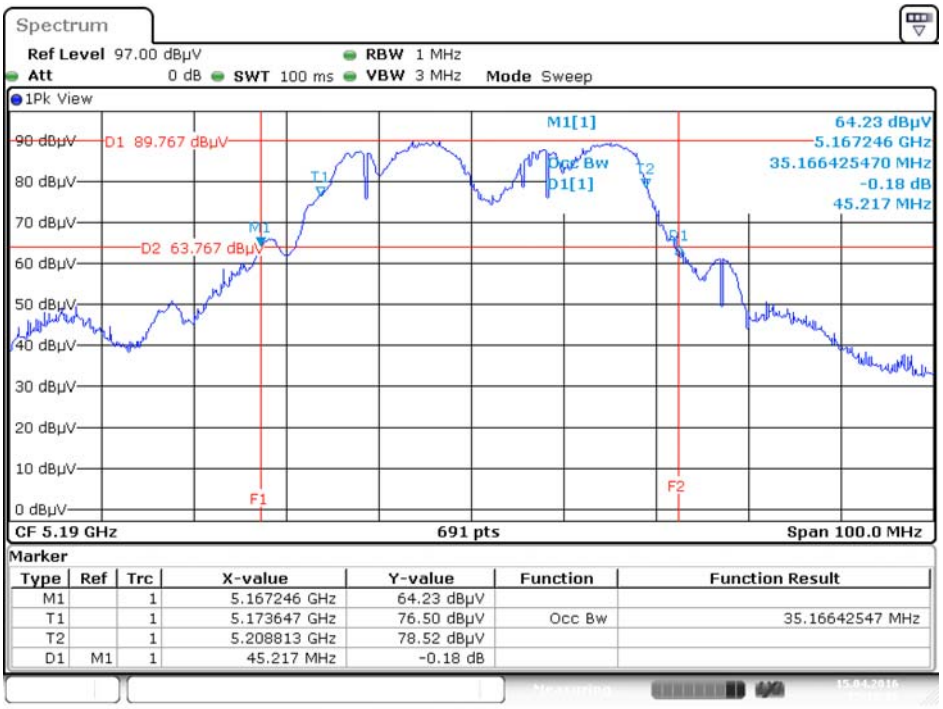
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5825 MHz



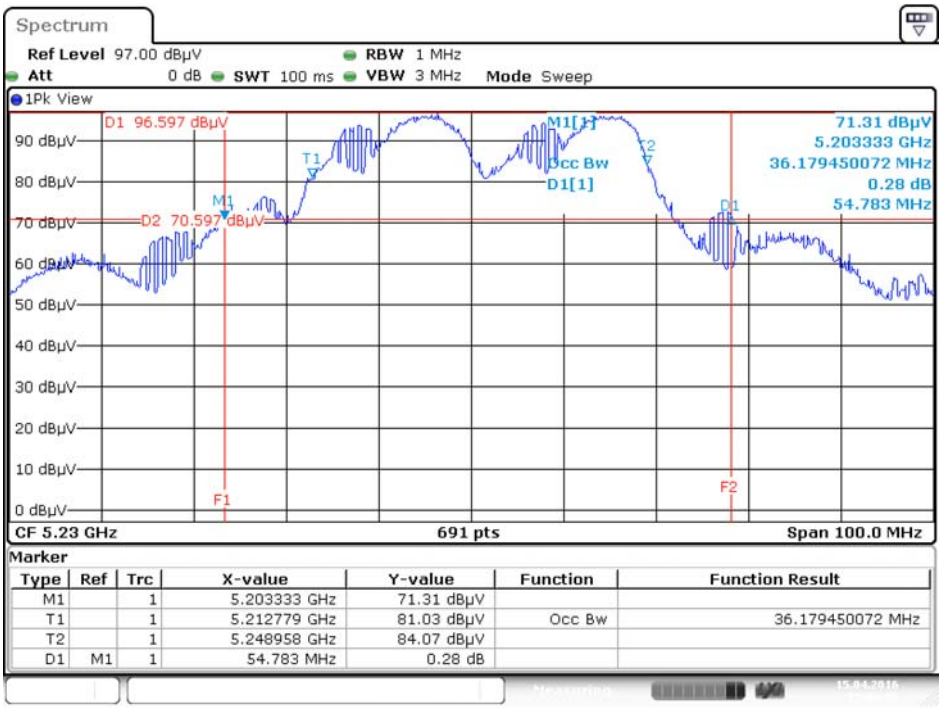
Date: 15.APR.2016 14:57:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5190 MHz



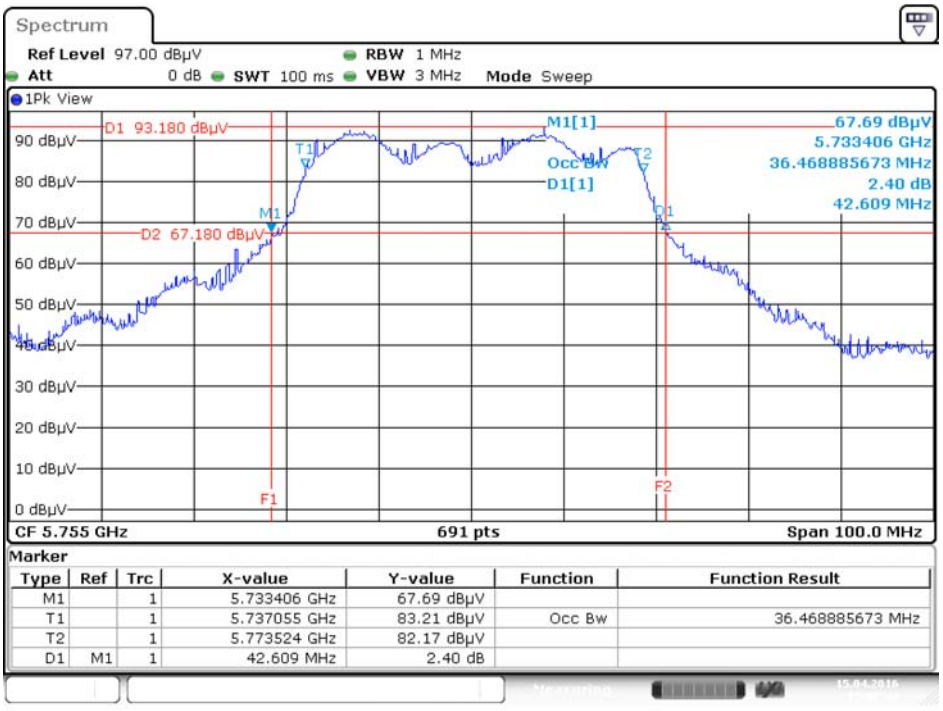
Date: 15.APR.2016 15:10:16

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5230 MHz



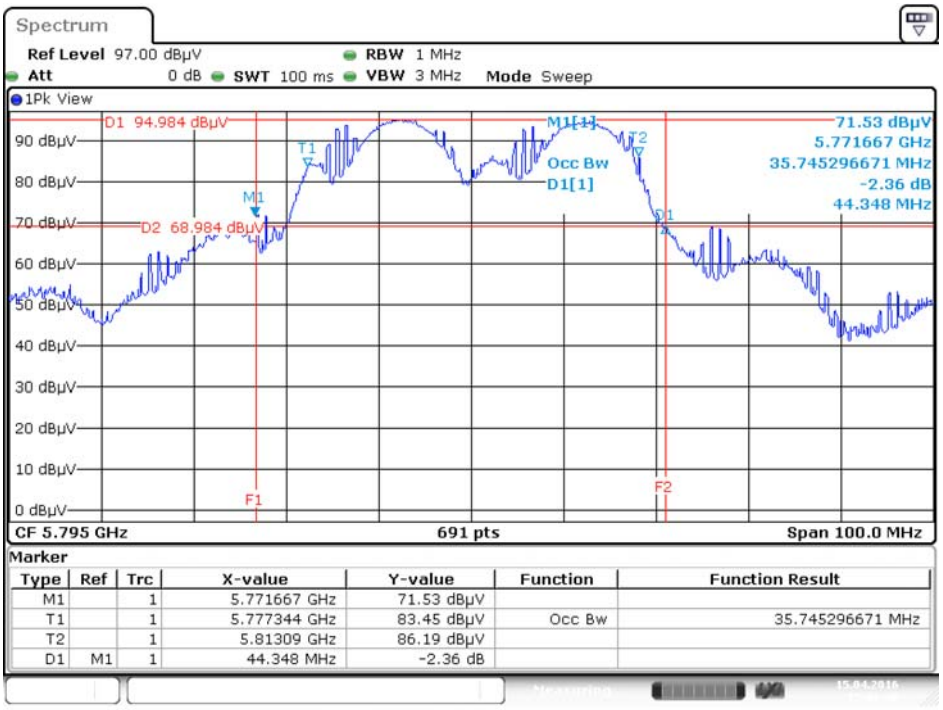
Date: 15.APR.2016 15:09:55

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5755 MHz



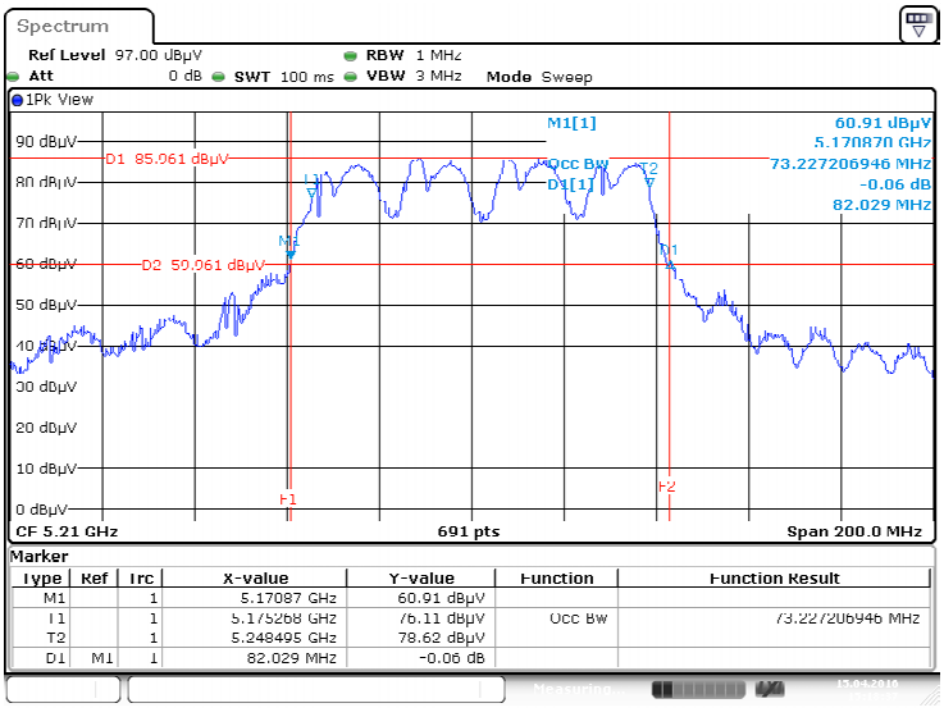
Date: 15.APR.2016 15:07:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5795 MHz



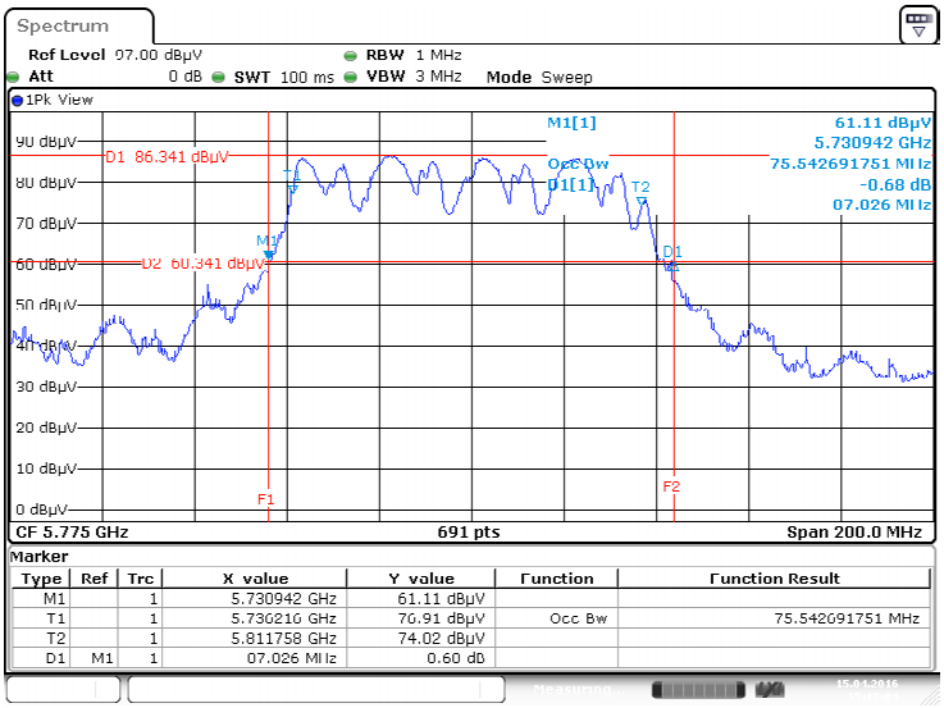
Date: 15.APR.2016 15:06:49

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5210 MHz



Date: 15.APR.2016 15:18:37

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5775 MHz



Date: 15.APR.2016 15:19:05

4.2. 6dB Spectrum Bandwidth Measurement

4.2.1. Limit

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

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 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

4.2.3. 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.

4.2.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

This test setup layout is the same as that shown in section 4.5.4.

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 6dB Spectrum Bandwidth

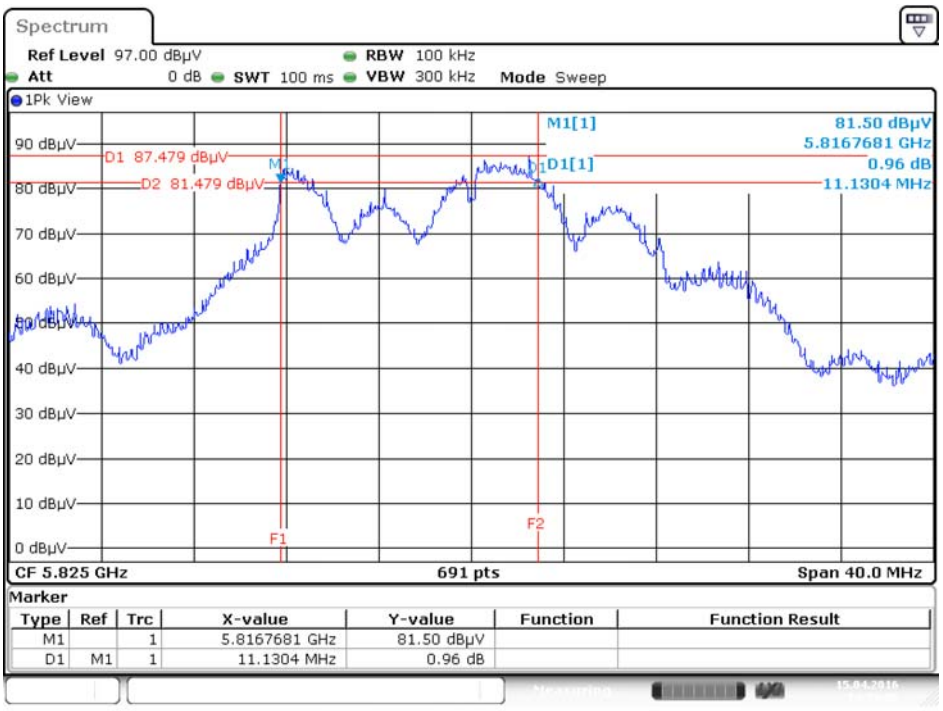
Temperature	23°C	Humidity	62%
Test Engineer	Peter Wu		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	13.22	500	Complies
	5785 MHz	15.83	500	Complies
	5825 MHz	11.13	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	15.07	500	Complies
	5785 MHz	16.23	500	Complies
	5825 MHz	13.74	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	32.70	500	Complies
	5795 MHz	32.70	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	69.57	500	Complies

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

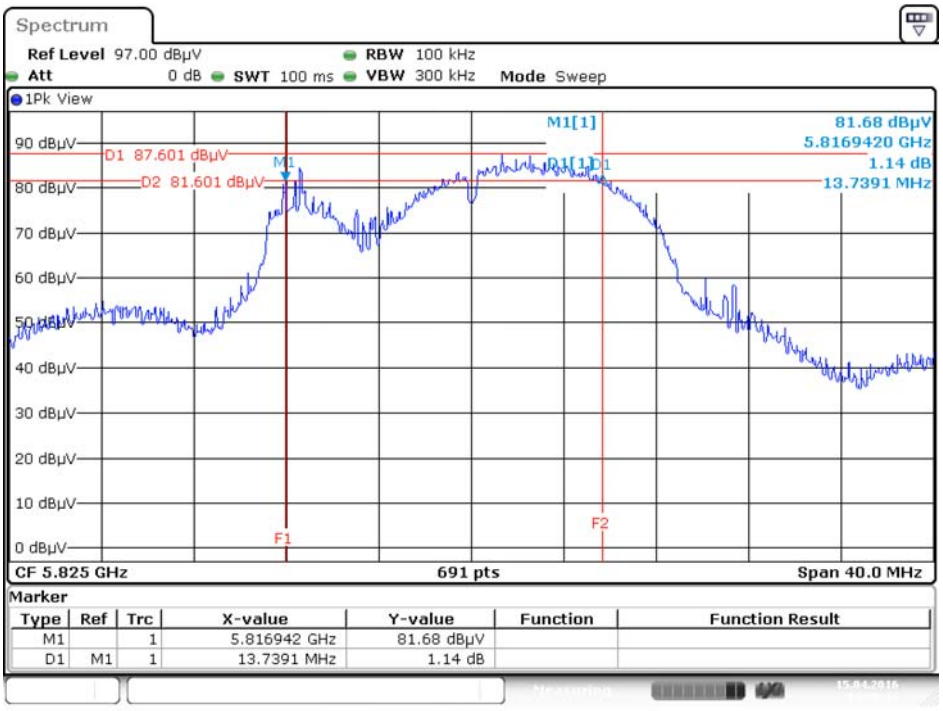
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5825 MHz



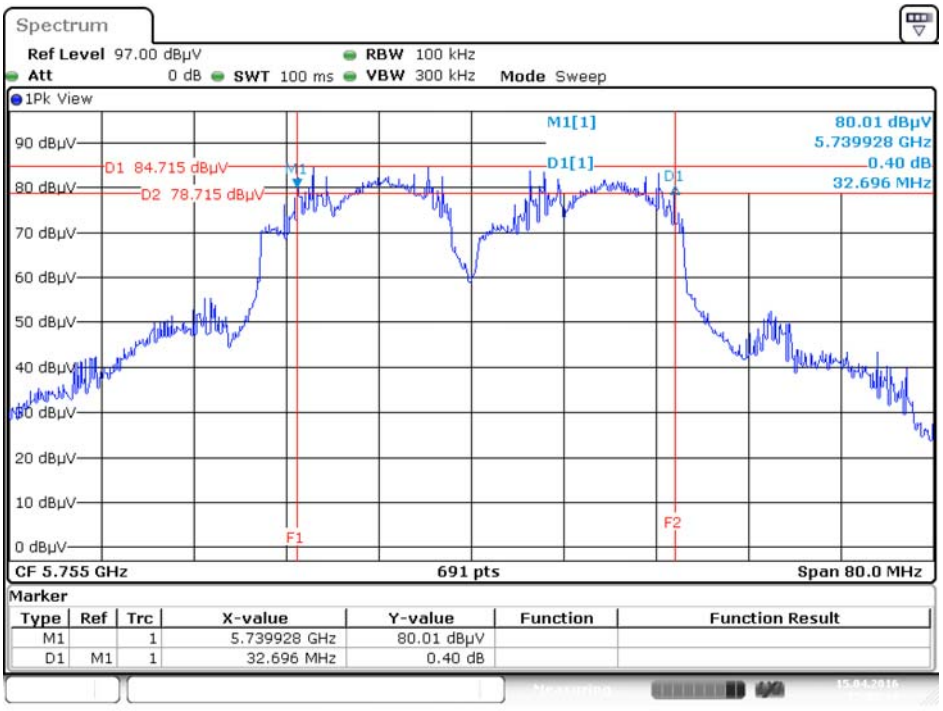
Date: 15.APR.2016 14:39:27

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5825 MHz



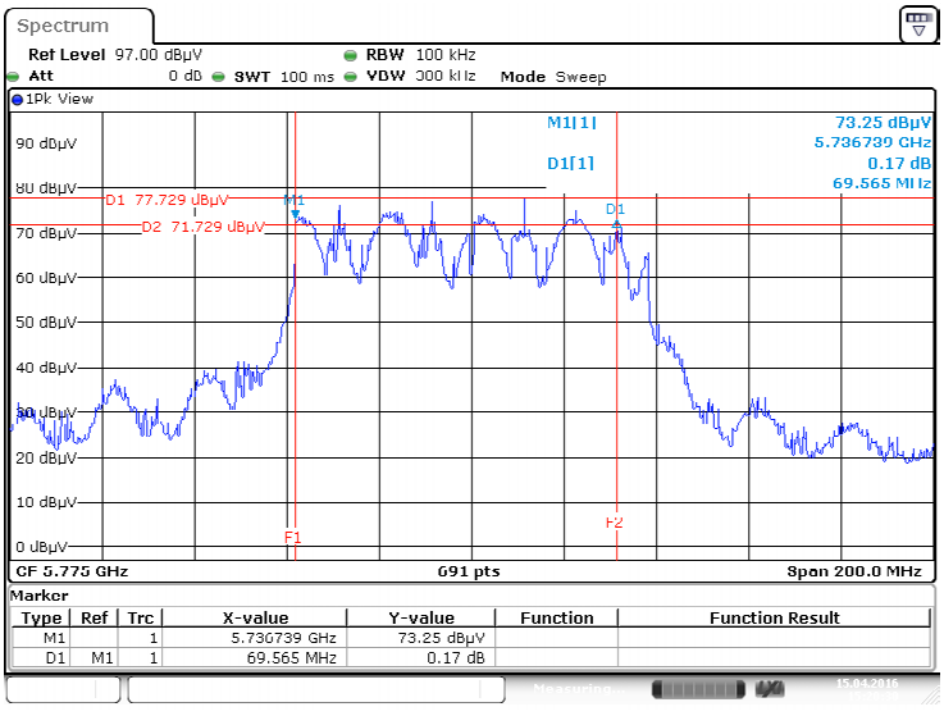
Date: 15.APR.2016 14:58:41

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5755MHz



Date: 15.APR.2016 15:05:14

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5775 MHz



Date: 15.APR.2016 15:20:31

4.3. Maximum Conducted Output Power Measurement

4.3.1. Limit

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

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

4.3.2. Measuring Instruments and Setting

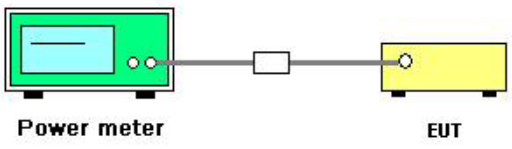
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.3.3. 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.

4.3.4. 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 Maximum Conducted Output Power

Temperature	23°C	Humidity	62%
Test Engineer	Peter Wu	Test Date	Apr. 15, 2016

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
802.11a	5180 MHz	21.87	22.83	21.42	26.85	30.00	Complies
	5200 MHz	21.26	22.46	21.44	26.52	30.00	Complies
	5240 MHz	21.48	22.65	20.82	26.49	30.00	Complies
	5745 MHz	22.56	22.59	22.67	27.38	30.00	Complies
	5785 MHz	23.98	24.67	24.75	29.25	30.00	Complies
	5825 MHz	22.82	22.53	22.14	27.28	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.38	22.21	21.44	26.46	30.00	Complies
	5200 MHz	22.42	23.41	22.43	27.55	30.00	Complies
	5240 MHz	22.44	23.51	22.31	27.56	30.00	Complies
	5745 MHz	22.20	22.63	22.58	27.25	30.00	Complies
	5785 MHz	24.59	25.07	25.03	29.67	30.00	Complies
	5825 MHz	22.37	22.51	22.44	27.21	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	16.71	17.77	16.62	21.84	30.00	Complies
	5230 MHz	23.55	24.26	23.20	28.46	30.00	Complies
	5755 MHz	20.37	21.11	20.67	25.50	30.00	Complies
	5795 MHz	22.41	22.52	21.03	26.81	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	14.52	15.81	14.62	19.80	30.00	Complies
	5775 MHz	16.11	17.04	16.12	21.22	30.00	Complies

4.4. Power Spectral Density Measurement

4.4.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.3.1.

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

4.4.2. Measuring Instruments and Setting

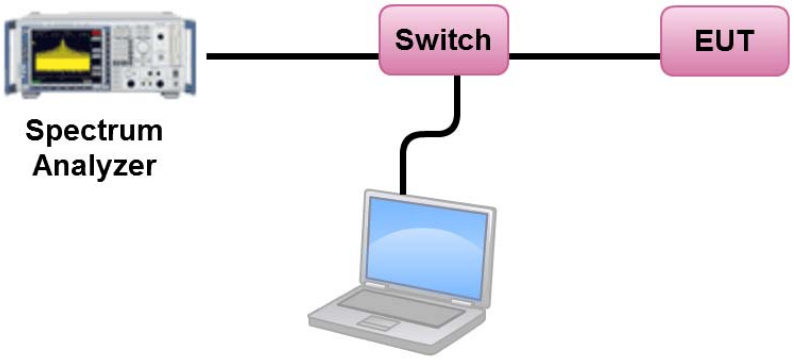
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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.	

4.4.3. 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.

4.4.4. 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 Power Spectral Density

Temperature	23°C	Humidity	62%
Test Engineer	Peter Wu	Test Date	Apr. 15, 2016

Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	13.70	16.33	Complies
40	5200 MHz	13.47	16.33	Complies
48	5240 MHz	13.51	16.33	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.67dBi >6dBi, so limit=17– (6.67 – 6)=16.33dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	14.43	-3.01	11.42	29.33	Complies
157	5785 MHz	14.93	-3.01	11.92	29.33	Complies
165	5825 MHz	14.32	-3.01	11.31	29.33	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.67dBi >6dBi, so limit=30– (8.43 – 6)=29.33dBm/500kHz.

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	13.06	16.33	Complies
40	5200 MHz	14.16	16.33	Complies
48	5240 MHz	14.30	16.33	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.67dBi >6dBi, so limit=17– (6.67 – 6)=16.33dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	14.30	-3.01	11.29	29.33	Complies
157	5785 MHz	14.81	-3.01	11.80	29.33	Complies
165	5825 MHz	14.71	-3.01	11.70	29.33	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.67dBi >6dBi, so limit=30– (8.43 – 6)=29.33dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	5.32	16.33	Complies
46	5230 MHz	12.21	16.33	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.67dBi >6dBi, so limit=17– (6.67 – 6)=16.33dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	9.65	-3.01	6.64	29.33	Complies
159	5795 MHz	11.32	-3.01	8.31	29.33	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.67dBi >6dBi, so limit=30– (8.43 – 6)=29.33dBm/500kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	0.49	16.33	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.67dBi >6dBi, so limit=17– (6.67 – 6)=16.33dBm/MHz.

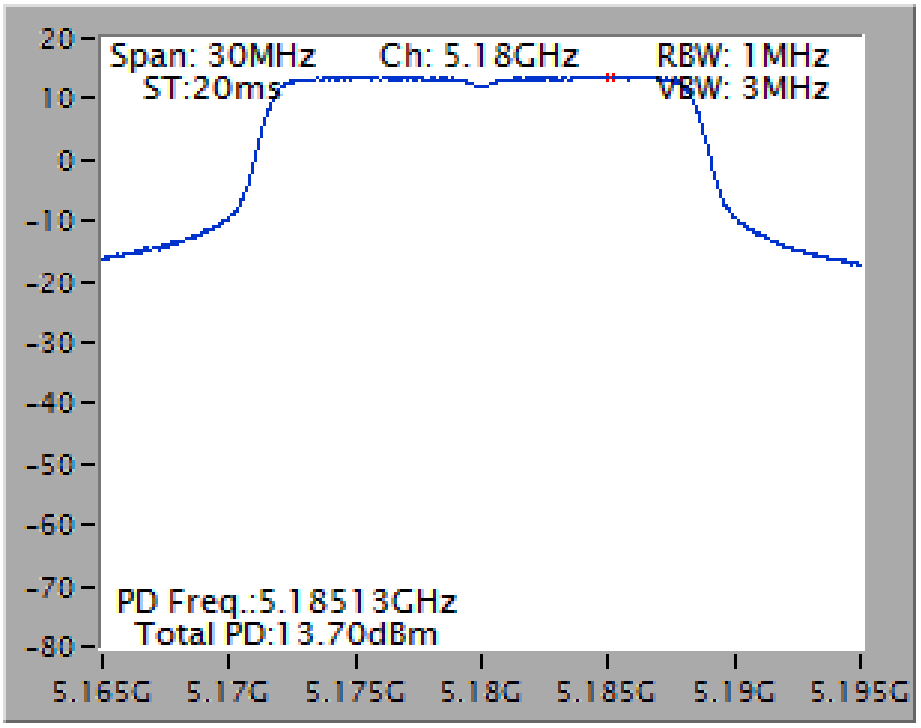
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	2.54	-3.01	-0.47	29.33	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.67dBi >6dBi, so limit=30– (8.43 – 6)=29.33dBm/500kHz.

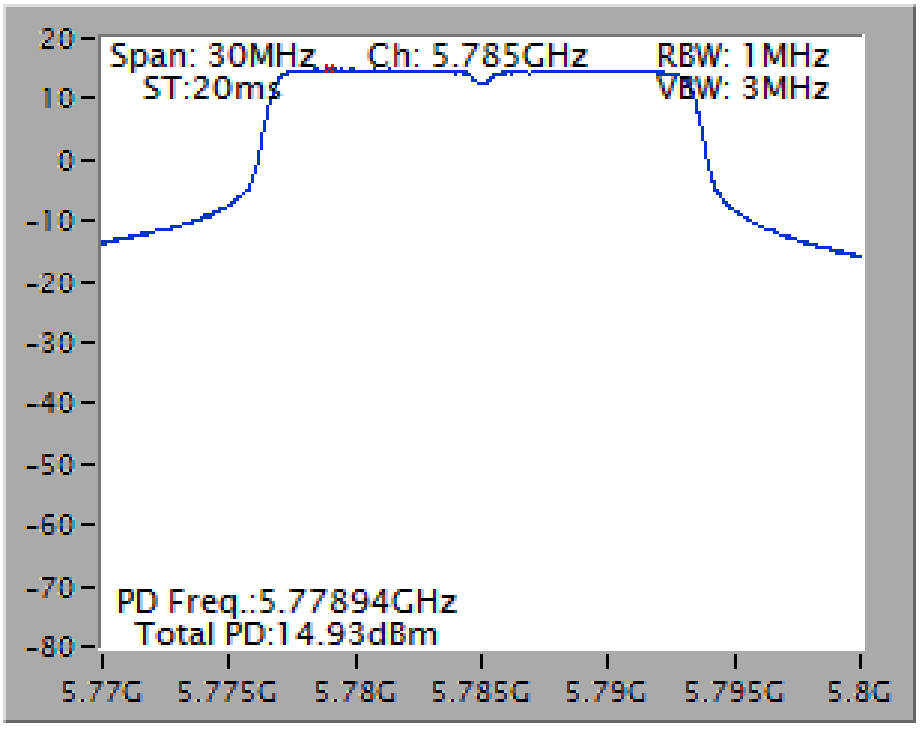
Note: All the test values were listed in the report.

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

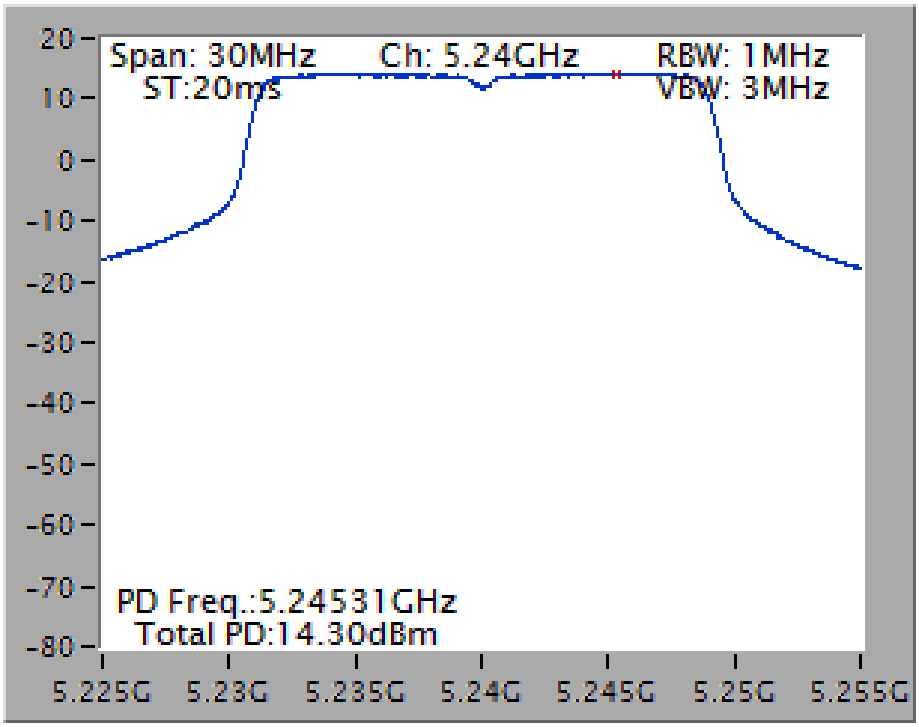
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5180 MHz



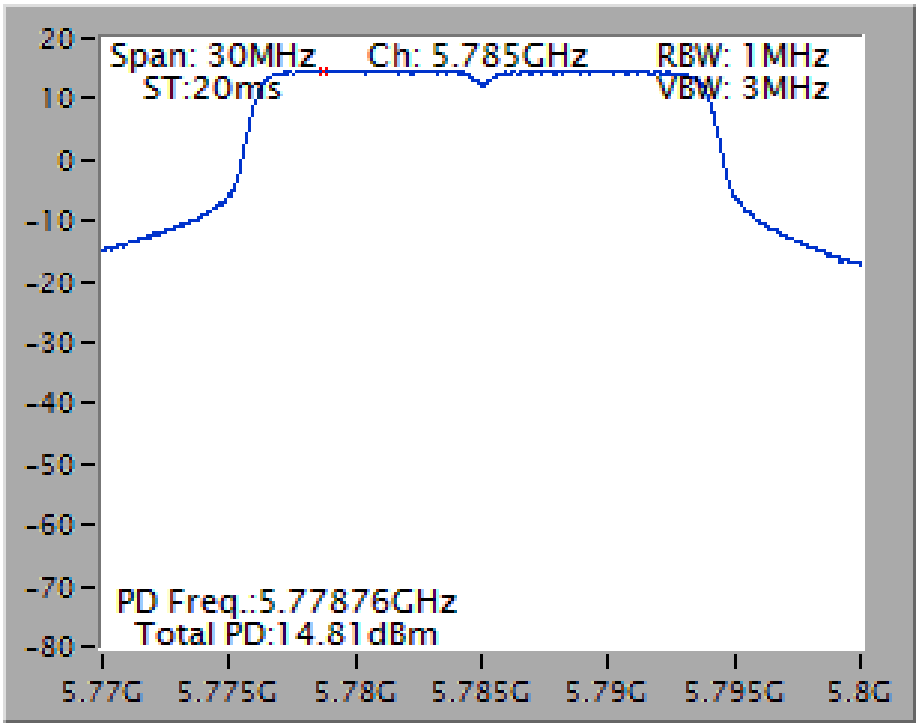
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 / 5785 MHz



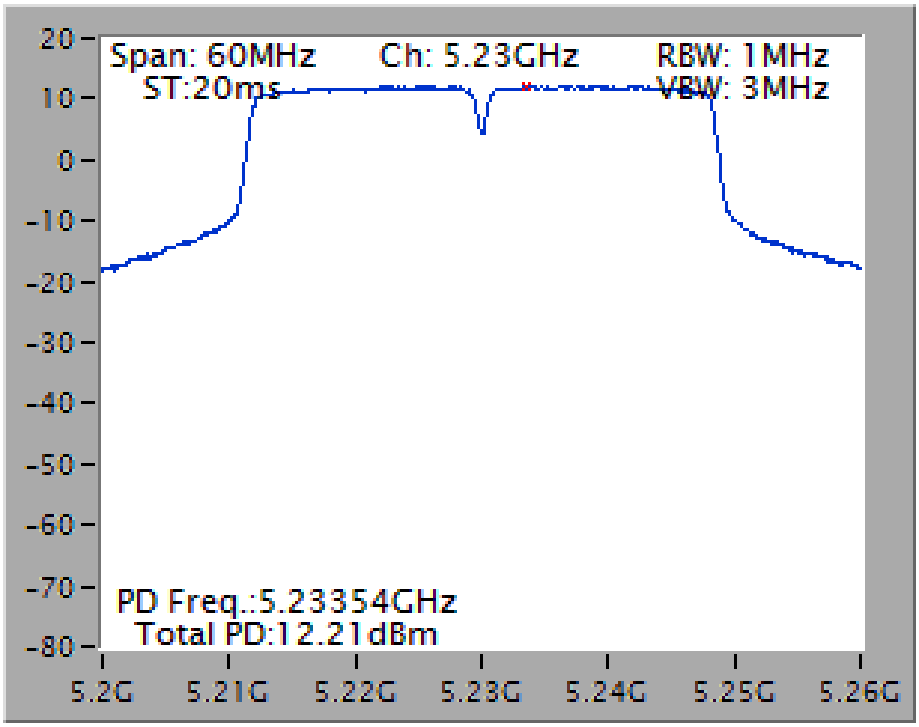
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5240 MHz



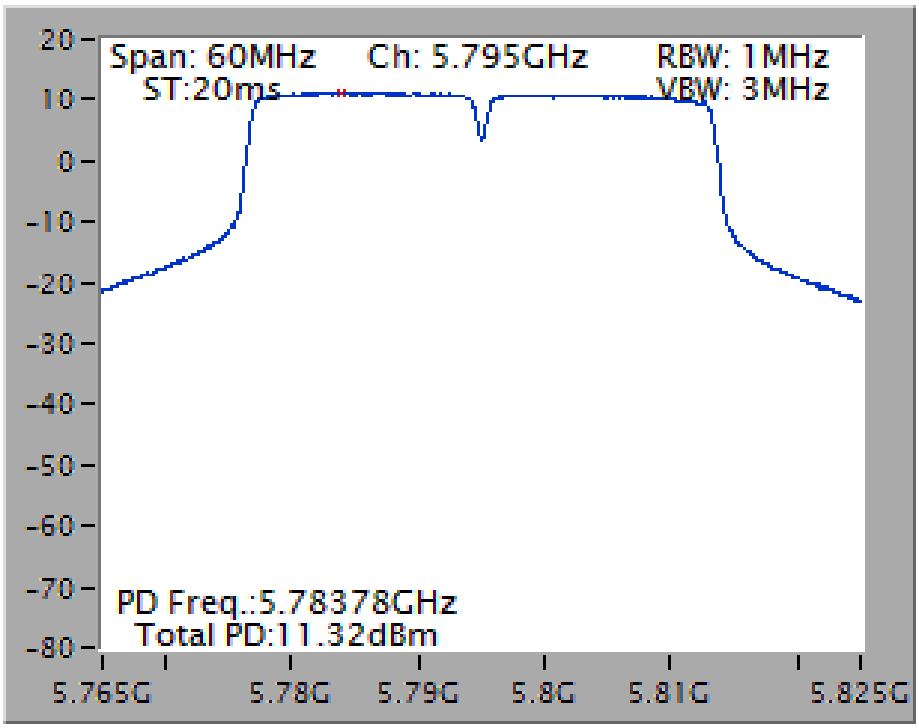
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 / 5785 MHz



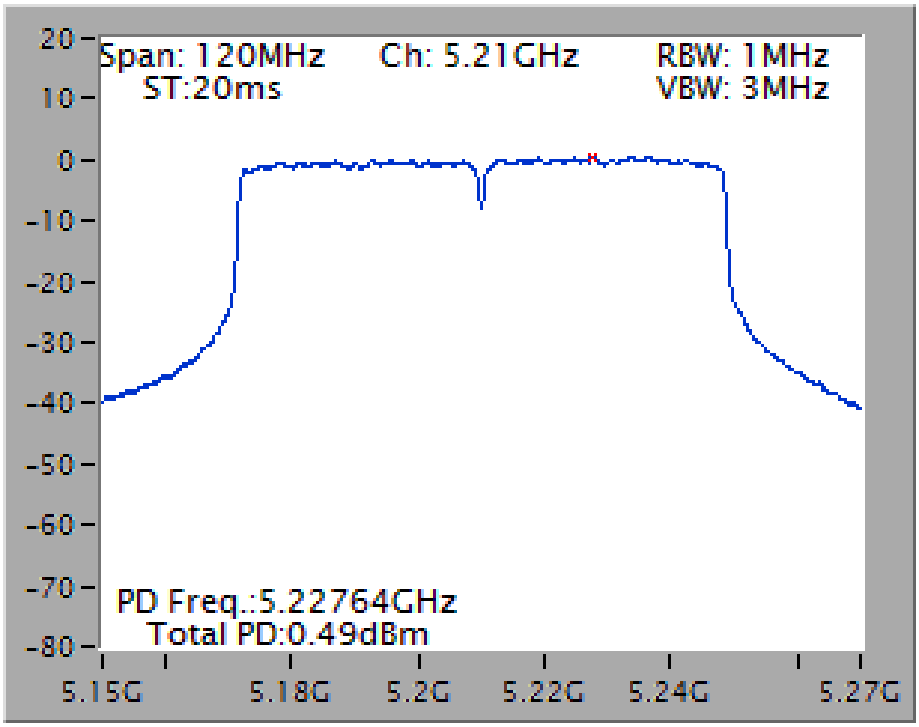
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5230 MHz



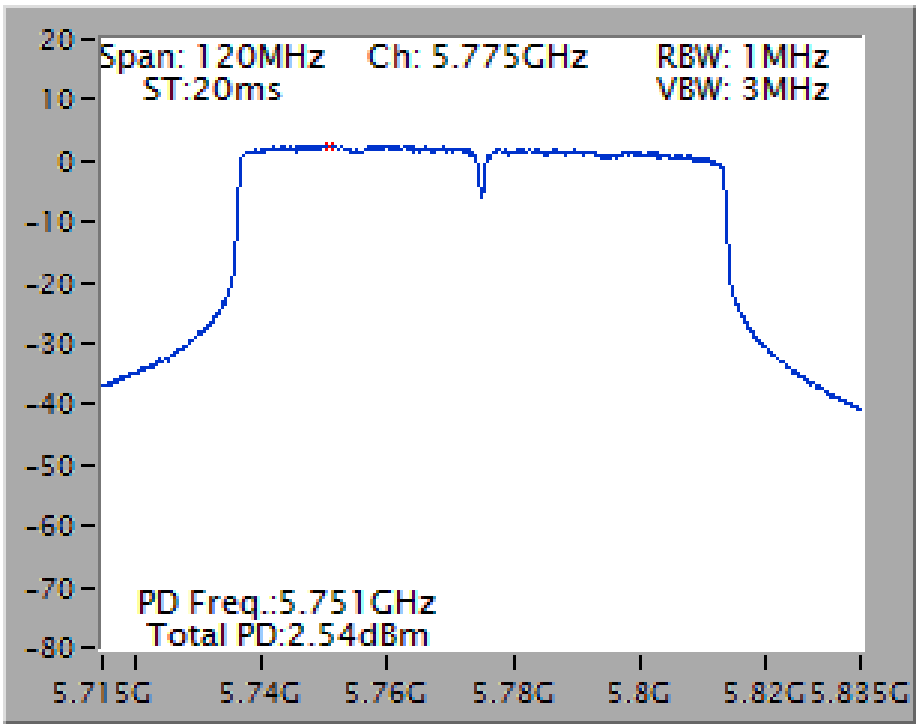
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 / 5795 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5210 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 / 5775 MHz



4.5. Radiated Emissions Measurement

4.5.1. Limit

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

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

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

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

4.5.2. 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.

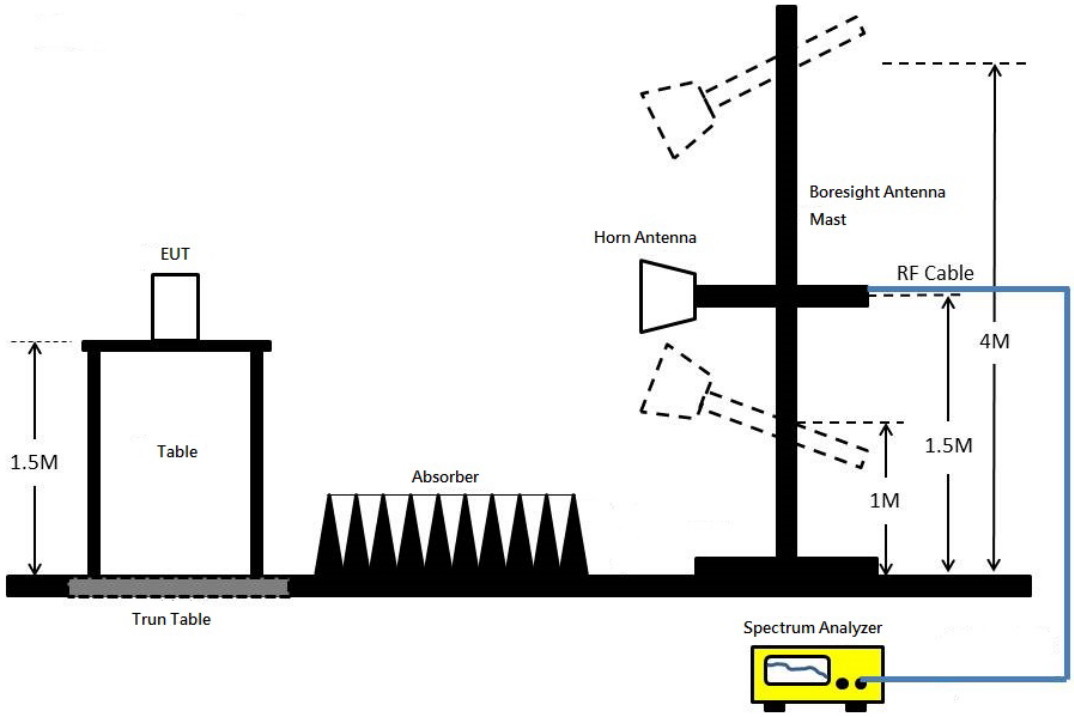
Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

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

4.5.3. 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.

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

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	10360.30	68.14	68.20	-0.06	52.22	11.18	34.80	39.54	HORIZONTAL	85	169	Peak
2	15527.50	46.94	54.00	-7.06	30.85	13.19	35.35	38.25	HORIZONTAL	73	150	Average
3	15528.60	59.28	74.00	-14.72	43.19	13.19	35.35	38.25	HORIZONTAL	73	150	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	10358.40	65.51	68.20	-2.69	49.59	11.18	34.80	39.54	VERTICAL	64	169	Peak
2	15515.80	47.13	54.00	-6.87	31.04	13.19	35.35	38.25	VERTICAL	356	150	Average
3	15539.40	59.17	74.00	-14.83	43.08	13.19	35.35	38.25	VERTICAL	356	150	Peak

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	10399.30	67.81	68.20	-0.39	51.87	11.20	34.85	39.59	HORIZONTAL	82	171	Peak
2	15591.56	58.75	74.00	-15.25	42.71	13.21	35.36	38.19	HORIZONTAL	358	150	Peak
3	15595.40	46.41	54.00	-7.59	30.37	13.21	35.36	38.19	HORIZONTAL	358	150	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	10398.80	64.33	68.20	-3.87	48.39	11.20	34.85	39.59	VERTICAL	64	154	Peak
2	15580.96	46.88	54.00	-7.12	30.84	13.21	35.36	38.19	VERTICAL	355	150	Average
3	15594.40	59.60	74.00	-14.40	43.56	13.21	35.36	38.19	VERTICAL	355	150	Peak

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	10478.64	68.18	68.20	-0.02	52.09	11.24	34.90	39.75	HORIZONTAL	84	162	Peak
2	15719.04	58.47	74.00	-15.53	42.56	13.26	35.38	38.03	HORIZONTAL	23	150	Peak
3	15722.16	46.01	54.00	-7.99	30.10	13.26	35.38	38.03	HORIZONTAL	23	150	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	10476.72	63.32	68.20	-4.88	47.23	11.24	34.90	39.75	VERTICAL	62	147	Peak
2	15732.56	45.79	54.00	-8.21	29.88	13.26	35.38	38.03	VERTICAL	352	150	Average
3	15736.32	58.02	74.00	-15.98	42.15	13.28	35.38	37.97	VERTICAL	352	150	Peak

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	11491.04	60.28	74.00	-13.72	43.79	11.72	35.23	40.00	HORIZONTAL	79	185	Peak
2	11491.52	48.22	54.00	-5.78	31.73	11.72	35.23	40.00	HORIZONTAL	79	185	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	11488.64	58.81	74.00	-15.19	42.32	11.72	35.23	40.00	VERTICAL	123	186	Peak
2	11488.72	47.24	54.00	-6.76	30.75	11.72	35.23	40.00	VERTICAL	123	186	Average

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 29, 2015		

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	11574.04	67.42	74.00	-6.58	47.26	14.35	39.20	33.39	237	90	Peak	HORIZONTAL
2	11574.04	53.81	54.00	-0.19	33.65	14.35	39.20	33.39	237	90	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11571.28	65.42	74.00	-8.58	45.26	14.35	39.20	33.39	100	109	Peak	VERTICAL
2	11571.60	52.38	54.00	-1.62	32.22	14.35	39.20	33.39	100	109	Average	VERTICAL

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 21, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	11649.44	50.52	54.00	-3.48	34.23	11.78	35.22	39.73	HORIZONTAL	92	185	Average
2	11650.88	62.71	74.00	-11.29	46.46	11.80	35.22	39.67	HORIZONTAL	92	185	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	11648.24	60.98	74.00	-13.02	44.69	11.78	35.22	39.73	VERTICAL	122	179	Peak
2	11649.68	49.31	54.00	-4.69	33.02	11.78	35.22	39.73	VERTICAL	122	179	Average

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15532.24	45.41	54.00	-8.59	30.39	12.49	38.39	35.86	144	108	HORIZONTAL	Average
2	15536.28	58.31	74.00	-15.69	43.29	12.49	38.39	35.86	144	108	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15532.56	45.53	54.00	-8.47	30.51	12.49	38.39	35.86	162	297	VERTICAL	Average
2	15532.96	58.45	74.00	-15.55	43.43	12.49	38.39	35.86	162	297	VERTICAL	Peak

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15594.08	45.00	54.00	-9.00	29.96	12.52	38.38	35.86	163	325	HORIZONTAL	Average
2	15595.32	57.51	74.00	-16.49	42.47	12.52	38.38	35.86	163	325	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15598.84	44.97	54.00	-9.03	29.93	12.52	38.38	35.86	134	230	VERTICAL	Average
2	15602.12	58.02	74.00	-15.98	42.96	12.55	38.37	35.86	134	230	VERTICAL	Peak

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15720.00	44.94	54.00	-9.06	29.85	12.60	38.35	35.86	154	202	HORIZONTAL	Average
2	15724.52	58.87	74.00	-15.13	43.78	12.60	38.35	35.86	154	202	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15715.52	58.48	74.00	-15.52	43.39	12.60	38.35	35.86	146	142	VERTICAL	Peak
2	15724.96	45.09	54.00	-8.91	30.00	12.60	38.35	35.86	146	142	VERTICAL	Average

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11493.72	49.75	54.00	-4.25	35.54	10.94	39.20	35.93	196	86	HORIZONTAL	Average
2	11494.04	62.93	74.00	-11.07	48.72	10.94	39.20	35.93	196	86	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11487.96	58.64	74.00	-15.36	44.43	10.94	39.20	35.93	177	93	VERTICAL	Peak
2	11488.68	46.72	54.00	-7.28	32.51	10.94	39.20	35.93	177	93	VERTICAL	Average

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 29, 2015		

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	11571.32	53.65	54.00	-0.35	33.49	14.35	39.20	33.39	222	76	Average	HORIZONTAL
2	11574.88	67.58	74.00	-6.42	47.42	14.35	39.20	33.39	222	76	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	11574.56	52.22	54.00	-1.78	32.06	14.35	39.20	33.39	101	110	Average	VERTICAL
2	11575.44	65.05	74.00	-8.95	44.89	14.35	39.20	33.39	101	110	Peak	VERTICAL

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11649.52	49.03	54.00	-4.97	34.84	11.01	39.09	35.91	176	74	HORIZONTAL	Average
2	11649.92	62.66	74.00	-11.34	48.47	11.01	39.09	35.91	176	74	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11647.68	49.42	54.00	-4.58	35.23	11.01	39.09	35.91	178	120	VERTICAL	Average
2	11648.68	62.73	74.00	-11.27	48.54	11.01	39.09	35.91	178	120	VERTICAL	Peak

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15580.00	57.80	74.00	-16.20	42.76	12.52	38.38	35.86	180	54	HORIZONTAL	Peak
2	15583.60	44.96	54.00	-9.04	29.92	12.52	38.38	35.86	180	54	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15552.16	57.37	74.00	-16.63	42.35	12.49	38.39	35.86	141	151	VERTICAL	Peak
2	15561.52	44.65	54.00	-9.35	29.61	12.52	38.38	35.86	141	151	VERTICAL	Average

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15682.88	44.76	54.00	-9.24	29.69	12.57	38.36	35.86	187	209	HORIZONTAL	Average
2	15686.88	56.88	74.00	-17.12	41.81	12.57	38.36	35.86	187	209	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15679.60	44.90	54.00	-9.10	29.83	12.57	38.36	35.86	146	293	VERTICAL	Average
2	15699.20	57.09	74.00	-16.91	42.00	12.60	38.35	35.86	146	293	VERTICAL	Peak

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11517.20	46.37	54.00	-7.63	32.16	10.96	39.17	35.92	161	111	HORIZONTAL	Average
2	11519.20	58.66	74.00	-15.34	44.45	10.96	39.17	35.92	161	111	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11514.72	45.63	54.00	-8.37	31.41	10.94	39.20	35.92	152	240	VERTICAL	Average
2	11515.44	57.72	74.00	-16.28	43.50	10.94	39.20	35.92	152	240	VERTICAL	Peak

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11581.68	48.11	54.00	-5.89	33.90	10.98	39.15	35.92	174	125	HORIZONTAL	Average
2	11603.12	60.45	74.00	-13.55	46.25	10.99	39.12	35.91	174	125	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11586.00	59.02	74.00	-14.98	44.82	10.99	39.12	35.91	140	63	VERTICAL	Peak
2	11590.00	46.21	54.00	-7.79	32.01	10.99	39.12	35.91	140	63	VERTICAL	Average

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15626.92	57.53	74.00	-16.47	42.47	12.55	38.37	35.86	142	262	HORIZONTAL	Peak
2	15634.32	44.93	54.00	-9.07	29.87	12.55	38.37	35.86	142	262	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15623.48	57.64	74.00	-16.36	42.58	12.55	38.37	35.86	147	59	VERTICAL	Peak
2	15626.64	44.70	54.00	-9.30	29.64	12.55	38.37	35.86	147	59	VERTICAL	Average

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11547.50	43.89	54.00	-10.11	29.68	10.96	39.17	35.92	135	292	HORIZONTAL	Average
2	11547.50	54.83	74.00	-19.17	40.62	10.96	39.17	35.92	135	292	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11547.50	43.73	54.00	-10.27	29.52	10.96	39.17	35.92	185	173	VERTICAL	Average
2	11547.50	54.17	74.00	-19.83	39.96	10.96	39.17	35.92	185	173	VERTICAL	Peak

Note:

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

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

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

4.6. Band Edge Emissions Measurement

4.6.1. Limit

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

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

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

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

4.6.2. Measuring Instruments and Setting

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

4.6.3. Test Procedures

The test procedure is the same as section 4.5.3.

4.6.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.5.4.

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. Test Result of Band Edge and Fundamental Emissions

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 21, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5149.20	69.70	74.00	-4.30	63.34	7.78	32.94	31.52	HORIZONTAL	87	253	Peak
2	5150.00	53.99	54.00	-0.01	47.63	7.78	32.94	31.52	HORIZONTAL	87	253	Average
3	5181.20	102.15			95.76	7.78	32.94	31.55	HORIZONTAL	87	253	Average
4	5181.20	111.98			105.59	7.78	32.94	31.55	HORIZONTAL	87	253	Peak

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5146.00	57.88	74.00	-16.12	51.52	7.78	32.94	31.52	HORIZONTAL	89	262	Peak
2	5149.60	46.05	54.00	-7.95	39.69	7.78	32.94	31.52	HORIZONTAL	89	262	Average
3	5203.20	113.63			107.22	7.78	32.94	31.57	HORIZONTAL	89	262	Peak
4	5204.00	104.00			97.59	7.78	32.94	31.57	HORIZONTAL	89	262	Average

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5147.60	57.33	74.00	-16.67	50.97	7.78	32.94	31.52	HORIZONTAL	90	259	Peak
2	5148.00	45.49	54.00	-8.51	39.13	7.78	32.94	31.52	HORIZONTAL	90	259	Average
3	5233.20	104.04			97.61	7.78	32.94	31.59	HORIZONTAL	90	259	Average
4	5242.80	113.68			107.24	7.78	32.93	31.59	HORIZONTAL	90	259	Peak

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

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 21, 2015~Dec. 29, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5711.20	67.16	68.20	-1.04	60.08	8.02	33.00	32.06	VERTICAL	289	180	Peak
2	5725.00	77.70	78.20	-0.50	70.58	8.04	33.00	32.08	VERTICAL	289	180	Peak
3	5746.60	103.18			96.04	8.06	33.02	32.10	VERTICAL	289	180	Average
4	5746.80	113.44			106.30	8.06	33.02	32.10	VERTICAL	289	180	Peak

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5713.40	63.73	68.20	-4.47	53.92	8.51	34.43	33.13	142	269	Peak	HORIZONTAL
2	5720.60	62.80	78.20	-15.40	52.99	8.51	34.43	33.13	142	269	Peak	HORIZONTAL
3	5777.40	119.23			109.56	8.35	34.47	33.15	142	269	Peak	HORIZONTAL
4	5778.60	109.22			99.55	8.35	34.47	33.15	142	269	Average	HORIZONTAL
5	5858.80	63.60	78.20	-14.60	53.61	8.64	34.52	33.17	142	269	Peak	HORIZONTAL
6	5877.00	64.57	68.20	-3.63	54.50	8.72	34.53	33.18	142	269	Peak	HORIZONTAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5831.40	115.26			107.95	8.16	33.05	32.20	VERTICAL	295	263	Peak
2	5831.60	105.55			98.24	8.16	33.05	32.20	VERTICAL	295	263	Average
3	5851.20	74.22	78.20	-3.98	66.87	8.18	33.05	32.22	VERTICAL	295	263	Peak
4	5861.80	67.73	68.20	-0.47	60.36	8.19	33.06	32.24	VERTICAL	295	263	Peak

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

Temperature	24℃	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 21, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5149.60	69.12	74.00	-4.88	62.76	7.78	32.94	31.52	HORIZONTAL	90	262	Peak
2	5150.00	53.83	54.00	-0.17	47.47	7.78	32.94	31.52	HORIZONTAL	90	262	Average
3	5174.60	112.00			105.61	7.78	32.94	31.55	HORIZONTAL	90	262	Peak
4	5175.60	102.59			96.20	7.78	32.94	31.55	HORIZONTAL	90	262	Average

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5150.00	48.30	54.00	-5.70	41.94	7.78	32.94	31.52	HORIZONTAL	89	264	Average
2	5150.00	61.46	74.00	-12.54	55.10	7.78	32.94	31.52	HORIZONTAL	89	264	Peak
3	5206.40	105.54			99.13	7.78	32.94	31.57	HORIZONTAL	89	264	Average
4	5207.20	115.17			108.76	7.78	32.94	31.57	HORIZONTAL	89	264	Peak

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5146.40	57.92	74.00	-16.08	51.56	7.78	32.94	31.52	HORIZONTAL	89	261	Peak
2	5147.20	45.67	54.00	-8.33	39.31	7.78	32.94	31.52	HORIZONTAL	89	261	Average
3	5245.20	115.41			108.97	7.78	32.93	31.59	HORIZONTAL	89	261	Peak
4	5246.40	105.69			99.25	7.78	32.93	31.59	HORIZONTAL	89	261	Average

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

Temperature	24℃	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 21, 2015~Dec. 29, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	5712.00	67.19	68.20	-1.01	60.11	8.02	33.00	32.06	VERTICAL	301	210	Peak
2	5723.80	77.80	78.20	-0.40	70.68	8.04	33.00	32.08	VERTICAL	301	210	Peak
3	5741.40	113.18			106.03	8.06	33.01	32.10	VERTICAL	301	210	Peak
4	5741.60	103.36			96.21	8.06	33.01	32.10	VERTICAL	301	210	Average

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5707.40	62.84	68.20	-5.36	53.03	8.51	34.43	33.13	152	270	Peak	HORIZONTAL
2	5721.40	62.77	78.20	-15.43	52.96	8.51	34.43	33.13	152	270	Peak	HORIZONTAL
3	5789.40	118.53			108.89	8.31	34.48	33.15	152	270	Peak	HORIZONTAL
4	5790.20	108.43			98.79	8.31	34.48	33.15	152	270	Average	HORIZONTAL
5	5850.00	63.13	78.20	-15.07	53.23	8.56	34.51	33.17	152	270	Peak	HORIZONTAL
6	5866.60	64.54	68.20	-3.66	54.56	8.64	34.52	33.18	152	270	Peak	HORIZONTAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5819.20	118.09			111.90	7.85	34.69	36.35	164	286	VERTICAL	Peak
2	5819.40	107.59			101.40	7.85	34.69	36.35	164	286	VERTICAL	Average
3	5858.40	72.28	78.20	-5.92	65.96	7.83	34.83	36.34	164	286	VERTICAL	Peak
4	5860.00	53.51	54.00	-0.49	47.19	7.83	34.83	36.34	164	286	VERTICAL	Average
5	5860.00	70.97	74.00	-3.03	64.65	7.83	34.83	36.34	164	286	VERTICAL	Peak

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

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015~Dec. 29, 2015		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.80	67.09	74.00	-6.91	63.18	7.24	33.17	36.50	176	227	VERTICAL	Peak
2	5150.00	53.70	54.00	-0.30	49.79	7.24	33.17	36.50	176	227	VERTICAL	Average
3	5188.40	98.47			94.39	7.32	33.25	36.49	176	227	VERTICAL	Average
4	5188.80	108.32			104.24	7.32	33.25	36.49	176	227	VERTICAL	Peak

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	5144.20	66.93	74.00	-7.07	58.09	8.15	33.74	33.05	223	85	Peak	HORIZONTAL
2	5150.00	53.65	54.00	-0.35	44.81	8.15	33.74	33.05	223	85	Average	HORIZONTAL
3	5225.80	113.90			104.79	8.30	33.86	33.05	223	85	Peak	HORIZONTAL
4	5227.60	100.91			91.80	8.30	33.86	33.05	223	85	Average	HORIZONTAL
5	5353.00	63.20	74.00	-10.80	54.00	8.20	34.06	33.06	223	85	Peak	HORIZONTAL
6	5353.00	49.78	54.00	-4.22	40.58	8.20	34.06	33.06	223	85	Average	HORIZONTAL

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

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015~Dec. 29, 2015, Aug. 17, 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	5705.80	67.69	68.20	-0.51	58.50	8.82	32.06	31.69	150	280	Peak	VERTICAL
2	5724.40	77.85	78.20	-0.35	68.57	8.90	32.08	31.70	150	280	Peak	VERTICAL
3 0	5744.80	113.71			104.35	8.97	32.10	31.71	150	280	Peak	VERTICAL
4 0	5745.18	103.63			94.27	8.97	32.10	31.71	150	280	Average	VERTICAL

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

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5714.20	66.34	68.20	-1.86	56.53	8.51	34.43	33.13	274	82	Peak	VERTICAL
2	5722.60	70.77	78.20	-7.43	60.99	8.47	34.44	33.13	274	82	Peak	VERTICAL
3	5783.80	105.24			95.57	8.35	34.47	33.15	274	82	Average	VERTICAL
4	5784.20	115.28			105.61	8.35	34.47	33.15	274	82	Peak	VERTICAL
5	5855.00	71.04	78.20	-7.16	61.14	8.56	34.51	33.17	274	82	Peak	VERTICAL
6	5863.00	68.17	68.20	-0.03	58.19	8.64	34.52	33.18	274	82	Peak	VERTICAL

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

Temperature	24°C	Humidity	62%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 24, 2015		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5142.00	53.68	54.00	-0.32	49.77	7.24	33.17	36.50	261	279	VERTICAL	Average
2	5143.00	65.41	74.00	-8.59	61.50	7.24	33.17	36.50	261	279	VERTICAL	Peak
3	5182.00	94.61			90.58	7.29	33.23	36.49	261	279	VERTICAL	Average
4	5197.00	103.82			99.74	7.32	33.25	36.49	261	279	VERTICAL	Peak
5	5405.00	57.96	74.00	-16.04	53.24	7.53	33.64	36.45	261	279	VERTICAL	Peak
6	5407.00	47.20	54.00	-6.80	42.48	7.53	33.64	36.45	261	279	VERTICAL	Average

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	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5707.00	67.74	68.20	-0.46	61.83	7.88	34.41	36.38	170	292	VERTICAL	Peak
2	5725.00	75.77	78.20	-2.43	69.82	7.87	34.45	36.37	170	292	VERTICAL	Peak
3	5747.00	97.21			91.21	7.86	34.50	36.36	170	292	VERTICAL	Average
4	5761.00	108.15			102.10	7.86	34.55	36.36	170	292	VERTICAL	Peak
5	5850.00	62.11	78.20	-16.09	55.83	7.84	34.78	36.34	170	292	VERTICAL	Peak
6	5861.00	62.64	68.20	-5.56	56.32	7.83	34.83	36.34	170	292	VERTICAL	Peak

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

Note:

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

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

4.7. Frequency Stability Measurement

4.7.1. 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).

4.7.2. Measuring Instruments and Setting

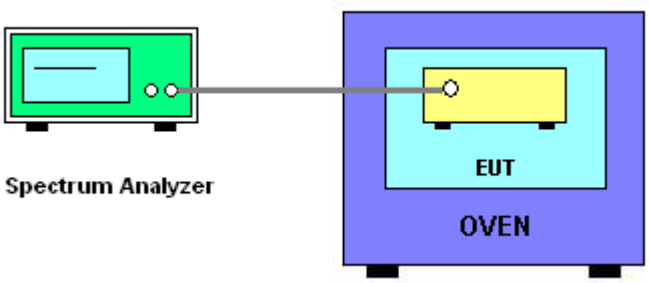
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.7.3. 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 -30°C~50°C.

4.7.4. Test Setup Layout



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 un-modulation transmitting mode.

4.7.7. Test Result of Frequency Stability

Temperature	23°C	Humidity	62%
Test Engineer	Peter Wu	Test Date	Apr. 15, 2016

Mode: 20 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9925	5199.9915	5199.9910	5199.9903
110.00	5199.9916	5199.9909	5199.9907	5199.9900
93.50	5199.9913	5199.9907	5199.9901	5199.9897
Max. Deviation (MHz)	0.0087	0.0093	0.0099	0.0103
Max. Deviation (ppm)	1.67	1.79	1.90	1.98
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5200.0020	5200.0006	5199.9988	5199.9965
-20	5200.0004	5199.9991	5199.9974	5199.9950
-10	5199.9989	5199.9977	5199.9961	5199.9942
0	5199.9975	5199.9963	5199.9944	5199.9922
10	5199.9962	5199.9949	5199.9934	5199.9916
20	5199.9950	5199.9937	5199.9921	5199.9902
30	5199.9936	5199.9925	5199.9911	5199.9895
40	5199.9920	5199.9905	5199.9889	5199.9869
50	5199.9903	5199.9891	5199.9876	5199.9849
Max. Deviation (MHz)	0.0097	0.0109	0.0124	0.0151
Max. Deviation (ppm)	1.87	2.10	2.38	2.90
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9944	5784.9941	5784.9933	5784.9923
110.00	5784.9943	5784.9936	5784.9929	5784.9920
93.50	5784.9933	5784.9924	5784.9921	5784.9920
Max. Deviation (MHz)	0.0067	0.0076	0.0079	0.0080
Max. Deviation (ppm)	1.16	1.31	1.37	1.38
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5785.0053	5785.0039	5785.0021	5784.9998
-20	5785.0037	5785.0024	5785.0007	5784.9983
-10	5785.0022	5785.0010	5784.9994	5784.9975
0	5785.0008	5784.9996	5784.9977	5784.9955
10	5784.9995	5784.9982	5784.9967	5784.9949
20	5784.9983	5784.9970	5784.9954	5784.9935
30	5784.9969	5784.9958	5784.9944	5784.9928
40	5784.9953	5784.9938	5784.9922	5784.9902
50	5784.9936	5784.9924	5784.9909	5784.9882
Max. Deviation (MHz)	0.0064	0.0076	0.0091	0.0118
Max. Deviation (ppm)	1.11	1.31	1.57	2.04
Result	Complies			

Mode: 40 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9927	5189.9923	5189.9913	5189.9905
110.00	5189.9921	5189.9918	5189.9909	5189.9906
93.50	5189.9919	5189.9915	5189.9911	5189.9902
Max. Deviation (MHz)	0.0081	0.0085	0.0091	0.0098
Max. Deviation (ppm)	1.56	1.64	1.75	1.89
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5190.0063	5190.0049	5190.0031	5190.0008
-20	5190.0047	5190.0034	5190.0017	5189.9993
-10	5190.0032	5190.0020	5190.0004	5189.9985
0	5190.0018	5190.0006	5189.9987	5189.9965
10	5190.0005	5189.9992	5189.9977	5189.9959
20	5189.9993	5189.9980	5189.9964	5189.9945
30	5189.9979	5189.9968	5189.9954	5189.9938
40	5189.9963	5189.9948	5189.9932	5189.9912
50	5189.9946	5189.9934	5189.9919	5189.9892
Max. Deviation (MHz)	0.0063	0.0066	0.0081	0.0108
Max. Deviation (ppm)	1.21	1.27	1.56	2.08
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9955	5754.9954	5754.9951	5754.9942
110.00	5754.9953	5754.9943	5754.9941	5754.9938
93.50	5754.9944	5754.9941	5754.9936	5754.9934
Max. Deviation (MHz)	0.0056	0.0059	0.0064	0.0066
Max. Deviation (ppm)	0.97	1.03	1.11	1.15
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5755.0005	5754.9991	5754.9973	5754.9950
-20	5754.9989	5754.9976	5754.9959	5754.9935
-10	5754.9974	5754.9962	5754.9946	5754.9927
0	5754.9960	5754.9948	5754.9929	5754.9907
10	5754.9947	5754.9934	5754.9919	5754.9901
20	5754.9935	5754.9922	5754.9906	5754.9887
30	5754.9921	5754.9910	5754.9896	5754.9880
40	5754.9905	5754.9890	5754.9874	5754.9854
50	5754.9888	5754.9876	5754.9861	5754.9834
Max. Deviation (MHz)	0.0112	0.0124	0.0139	0.0166
Max. Deviation (ppm)	1.95	2.15	2.42	2.88
Result	Complies			

Mode: 80 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5209.9916	5209.9912	5209.9907	5209.9901
110.00	5209.9908	5209.9905	5209.9901	5209.9898
93.50	5209.9902	5209.9895	5209.9887	5209.9880
Max. Deviation (MHz)	0.0098	0.0105	0.0113	0.0120
Max. Deviation (ppm)	1.88	2.02	2.17	2.30
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5209.9981	5209.9967	5209.9949	5209.9926
-20	5209.9965	5209.9952	5209.9935	5209.9911
-10	5209.9950	5209.9938	5209.9922	5209.9903
0	5209.9936	5209.9924	5209.9905	5209.9883
10	5209.9923	5209.9910	5209.9895	5209.9877
20	5209.9911	5209.9898	5209.9882	5209.9863
30	5209.9897	5209.9886	5209.9872	5209.9856
40	5209.9881	5209.9866	5209.9850	5209.9830
50	5209.9864	5209.9852	5209.9837	5209.9810
Max. Deviation (MHz)	0.0136	0.0148	0.0163	0.0190
Max. Deviation (ppm)	2.61	2.84	3.13	3.65
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9999	5774.9994	5774.9986	5774.9978
110.00	5774.9992	5774.9984	5774.9983	5774.9973
93.50	5774.9987	5774.9983	5774.9976	5774.9970
Max. Deviation (MHz)	0.0013	0.0017	0.0024	0.0030
Max. Deviation (ppm)	0.23	0.29	0.42	0.52
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5775.0020	5775.0006	5774.9988	5774.9965
-20	5775.0004	5774.9991	5774.9974	5774.9950
-10	5774.9989	5774.9977	5774.9961	5774.9942
0	5774.9975	5774.9963	5774.9944	5774.9922
10	5774.9962	5774.9949	5774.9934	5774.9916
20	5774.9950	5774.9937	5774.9921	5774.9902
30	5774.9936	5774.9925	5774.9911	5774.9895
40	5774.9920	5774.9905	5774.9889	5774.9869
50	5774.9903	5774.9891	5774.9876	5774.9849
Max. Deviation (MHz)	0.0097	0.0109	0.0124	0.0151
Max. Deviation (ppm)	1.68	1.89	2.15	2.61
Result	Complies			

4.8. Antenna Requirements

4.8.1. 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.

4.8.2. 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	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 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	Feb.10, 2015	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)
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
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%