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FCC RADIO TEST REPORT

Applicant's company	**NETGEAR, Inc.**
Applicant Address	350 East Plumeria Drive, San Jose, California 95134, USA
FCC ID	**PY314100253**

Product Name	AC750 Wireless Dual Band Gigabit Router
Brand Name	NETGEAR
Model No.	R6050, JR6150
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Sep. 23, 2015
Final Test Date	Oct. 05, 2015
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 v01, 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
FR360734-04	Rev. 01	Initial issue of report	Oct. 14, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	AC750 Wireless Dual Band Gigabit Router
Brand Name	:	NETGEAR
Model No.	:	R6050, JR6150
Applicant	:	NETGEAR, 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 Sep. 23, 2015 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.407(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	3.86 dB
4.4	15.407(a)	Power Spectral Density	Complies	3.90 dB
4.5	15.407(b)	Radiated Emissions	Complies	0.03 dB
4.6	15.407(b)	Band Edge Emissions	Complies	0.03 dB
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 (1TX, 1RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
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: 19.08 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 21.72 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.40 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.00 MHz Band 4: IEEE 802.11a: 18.72 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 20.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 38.20 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.00 MHz
Maximum Conducted Output Power	Band 1: IEEE 802.11a: 26.14 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 25.98 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 24.86 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.36 dBm Band 4: IEEE 802.11a: 25.17 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 25.11 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.98 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 20.14 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
Operating Mode	☐ Outdoor access point	
	☒ Indoor access point	
	☐ Fixed point-to-point access points	
	☐ Mobile and portable client devices	

Antenna and Band width

Antenna	Single (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)	1	MCS 0-7
802.11n (HT40)	1	MCS 0-7
802.11ac (VHT20)	1	MCS 0-9/Nss1
802.11ac (VHT40)	1	MCS 0-9/Nss1
802.11ac (VHT80)	1	MCS 0-9/Nss1

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	P/N	Rating
Adapter 1	NETGEAR	SAL018F1 NA	332-10375-01	INPUT: 100-120V~47-63Hz 0.6A OUTPUT: 12V, 1.5A
Adapter 2	NETGEAR	AD817F10	332-10301-02	INPUT: 100-120V~50-60Hz 0.56A OUTPUT: 12V, 1.5A
Others				
RJ-45 Cable, Non-shielded, 1m				

Note: The power adapter does not affect the test result of RF tests, so only adapter 2 was tested and recorded in this report.

3.3. Table for Filed Antenna

For 5GHz information

Ant.	Model Name	Antenna Type	Connector	Gain (dBi)	
				5GHz B1	5GHz B4
1	98613UIPF000	8613 Flying Lead Ant.	UFL	5.08	5.22

Note:

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

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

Chain 1 (Connect to Ant. 1 for 5GHz)

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

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

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

The following test modes were performed for all tests:

For Radiated Emissions Test above 1GHz:

The EUT was performed at 3-axis and the worst-case was found at X axis.

So the measurement will follow this same mode

Mode 1. Place EUT in X 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 FA360734-04) test is added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

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

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

3.7. Table for Multiple Listing and Class II Change

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

Modifications	Performance Checking
Updating 5GHz Band 1 and Band 4 to "new rules" from "old rules"	1. 26dB Bandwidth and 99% Occupied Bandwidth 2. 6dB Spectrum Bandwidth 3. Maximum Conducted Output Power 4. Power Spectral Density 5. Radiated Emissions above 1GHz 6. Band Edge Emissions 7. Frequency Stability

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

Equipment Name	Model No.	Description
AC750 Wireless Dual Band Gigabit Router	R6050	All the models are identical, the different model names served as marketing strategy.
	JR6150	

Note: The above difference does not affect the test result of RF tests, so only model No.: JR6150 was tested and recorded in this report.

3.8. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

3.9. Table for Parameters of Test Software Setting

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

Test Software Version	MT76xxE QA V2.0.10.3					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	20	26	24	1C	22	20
802.11ac MCS0/Nss1 VHT20	1F	26	22	1B	22	1F
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	15		23		19	1F
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	10				17	

3.10. EUT Operation during Test

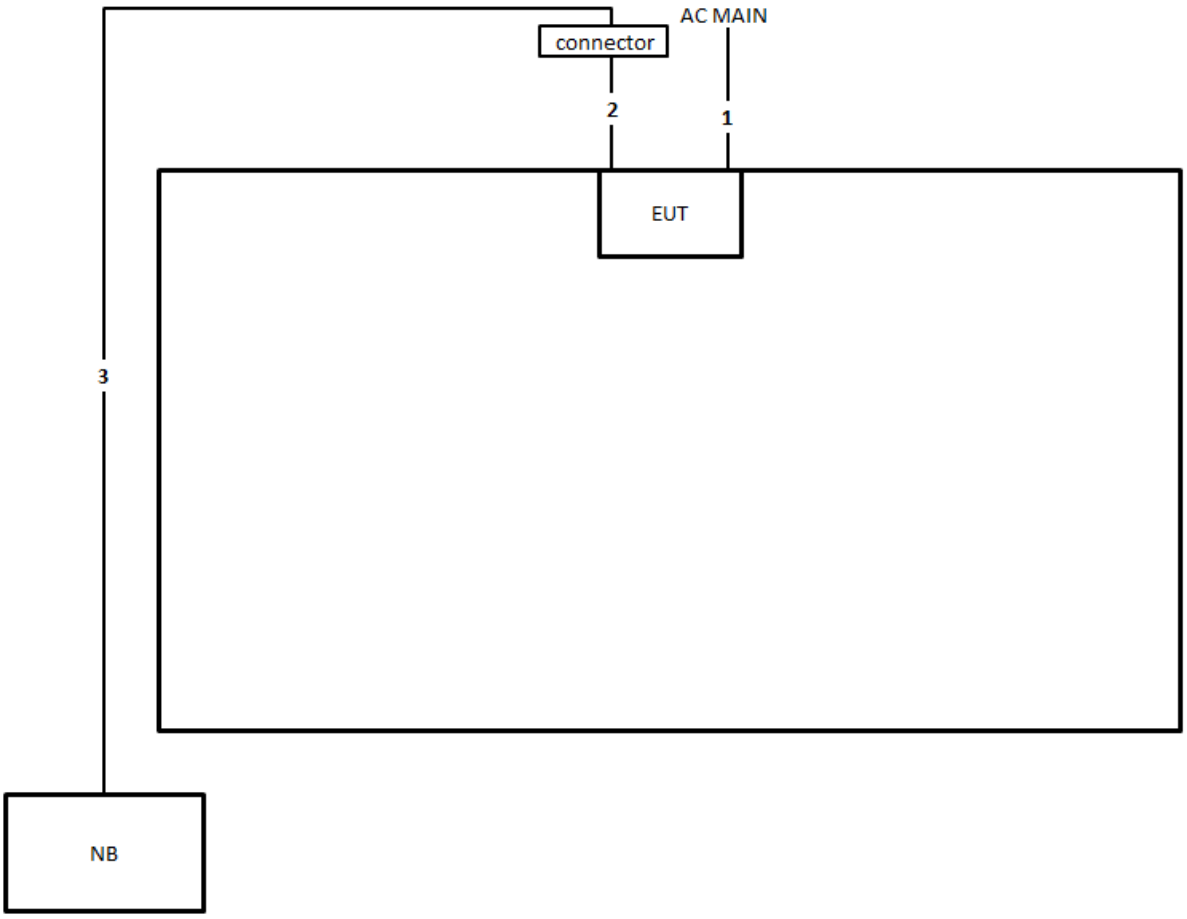
The EUT was programmed to be in continuously transmitting mode.

3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	1.000	1.000	100	0.00	0.01
802.11ac MCS0/Nss1 VHT20	1.000	1.000	100	0.00	0.01
802.11ac MCS0/Nss1 VHT40	0.648	0.684	94.74	0.23	1.54
802.11ac MCS0/Nss1 VHT80	0.304	0.340	89.41	0.49	3.29

3.12. Test Configurations

3.12.1. Radiation Emissions Test Configuration



Item	Connection	Shielded	Length(m)
1	Power cable	No	1.8
2	RJ-45 cable	No	1
3	RJ-45 cable	No	10

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

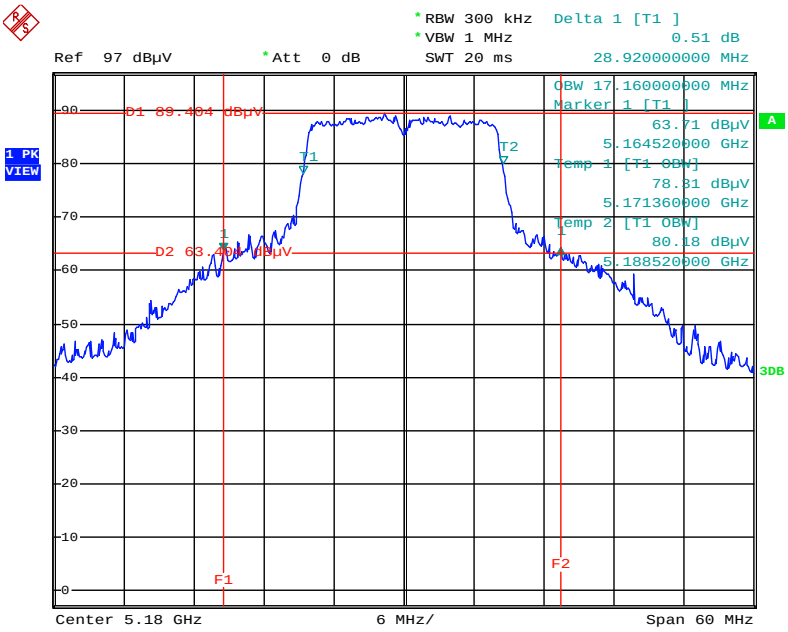
The EUT was programmed to be in continuously transmitting mode.

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

Temperature	25℃	Humidity	45%
Test Engineer	Eddie Weng		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	28.92	17.16
	5200 MHz	36.60	19.08
	5240 MHz	29.64	17.40
	5745 MHz	20.04	16.80
	5785 MHz	35.04	18.72
	5825 MHz	33.48	17.52
802.11ac MCS0/Nss1 VHT20	5180 MHz	29.52	18.00
	5200 MHz	38.64	21.72
	5240 MHz	30.24	18.00
	5745 MHz	21.48	17.76
	5785 MHz	40.08	20.76
	5825 MHz	32.88	18.12
802.11ac MCS0/Nss1 VHT40	5190 MHz	41.60	36.60
	5230 MHz	73.60	37.40
	5755 MHz	42.00	36.40
	5795 MHz	78.40	38.20
802.11ac MCS0/Nss1 VHT80	5210 MHz	82.00	76.00
	5775 MHz	81.60	76.00

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



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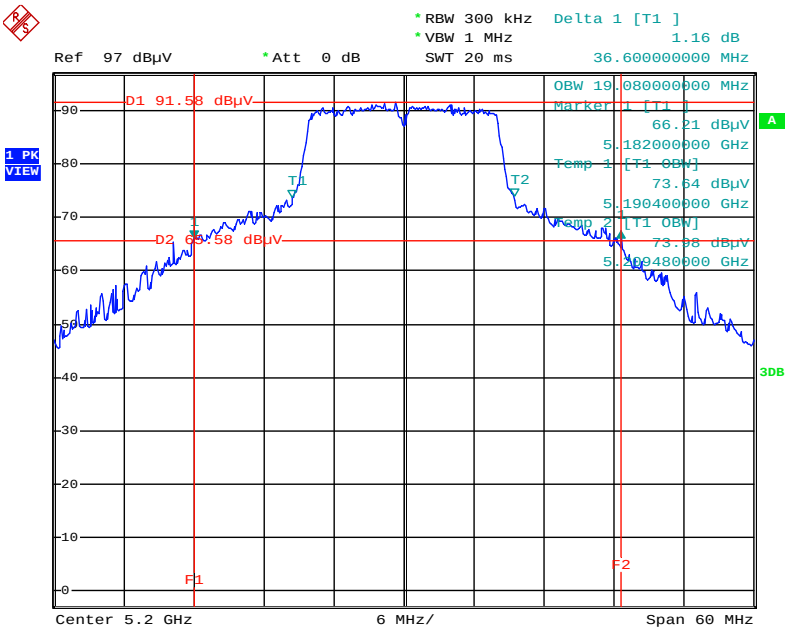
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5200 MHz



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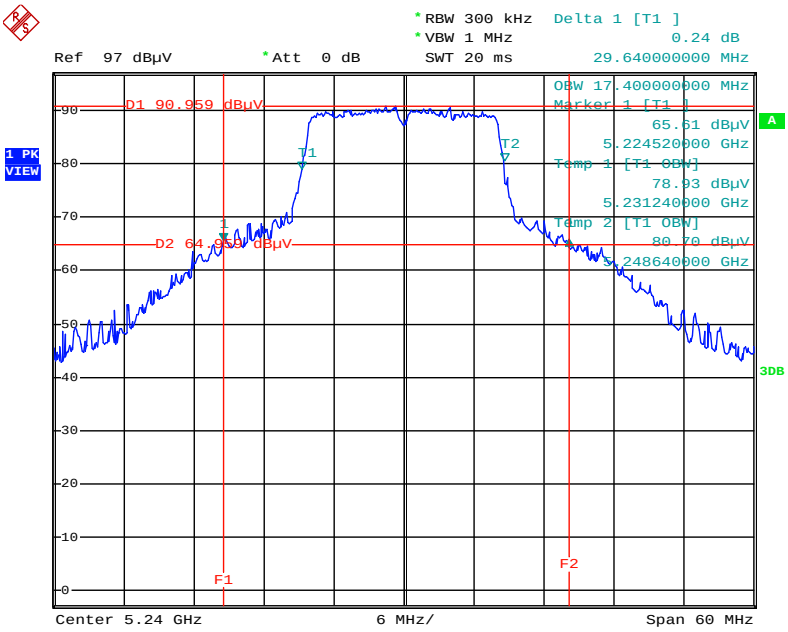
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5240 MHz



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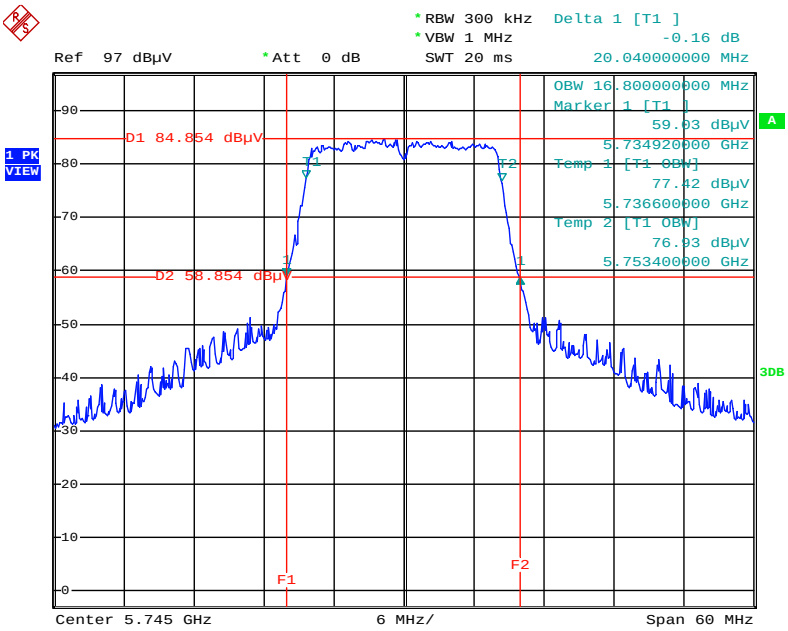
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5745 MHz



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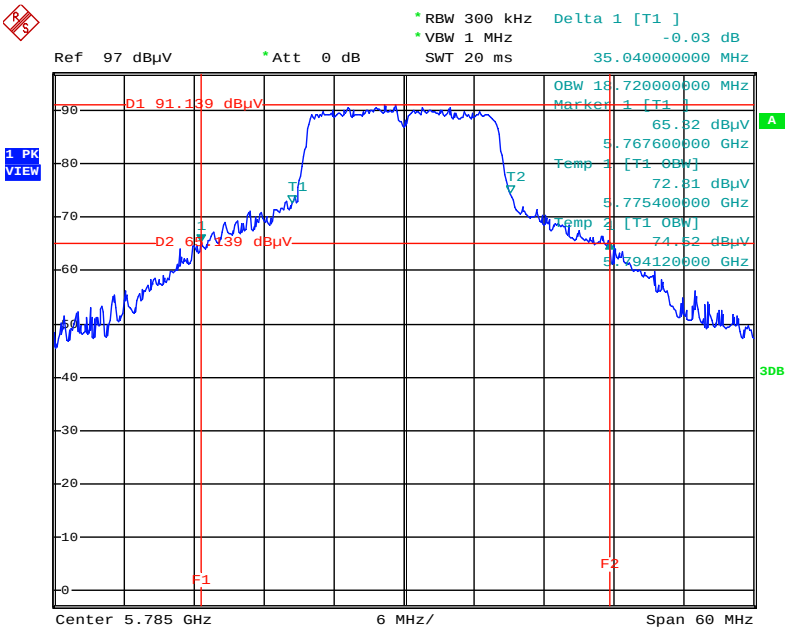
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5785 MHz



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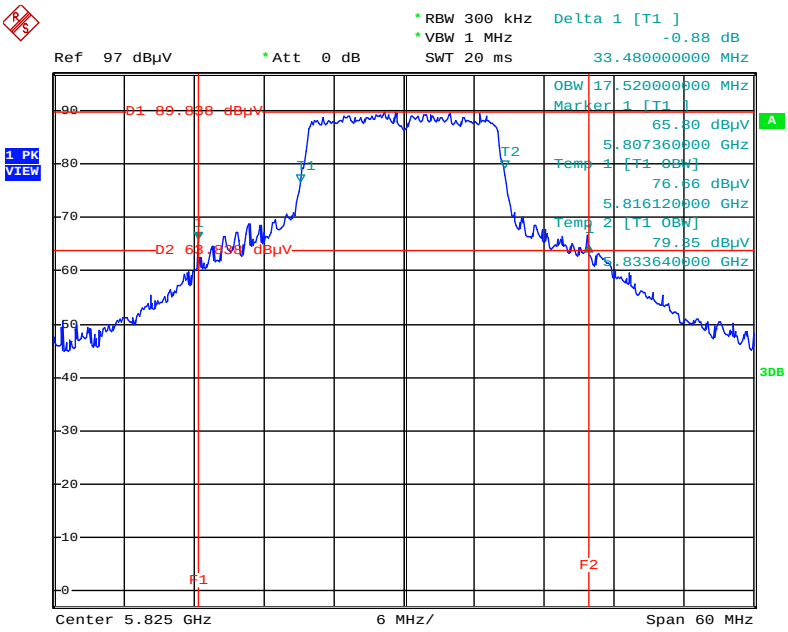

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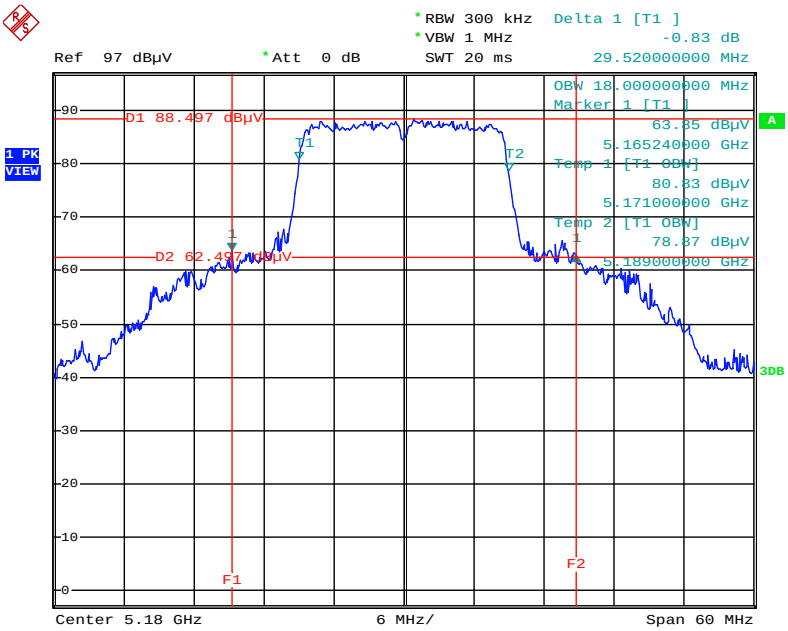
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5180 MHz



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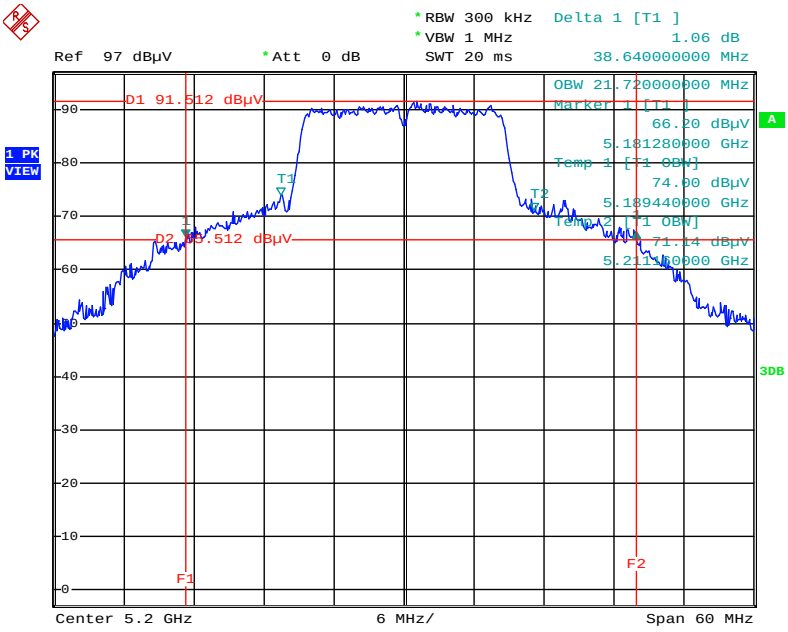

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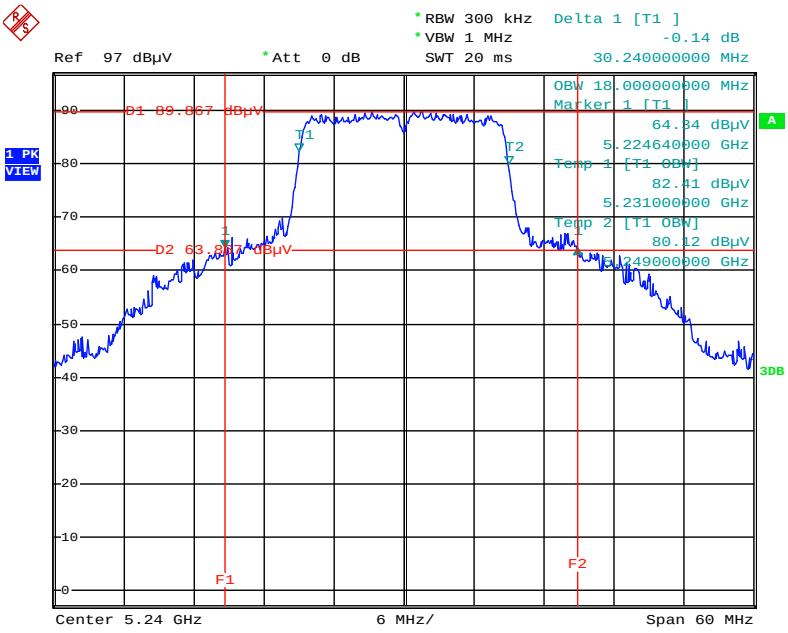
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5240 MHz



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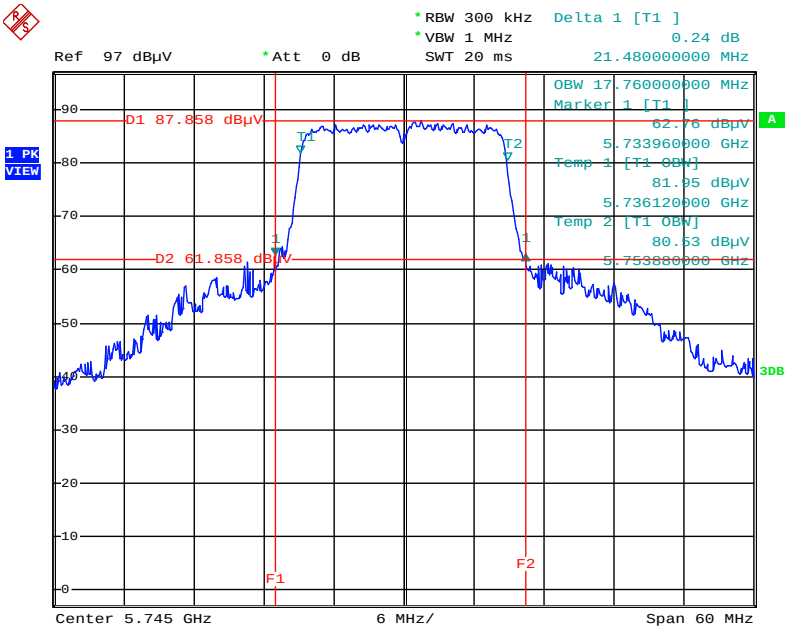
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5745 MHz



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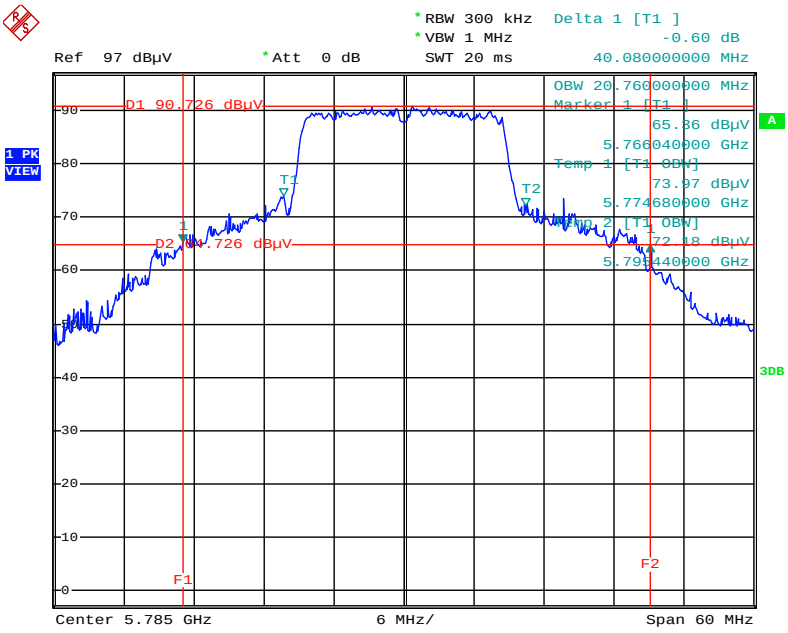
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5785 MHz



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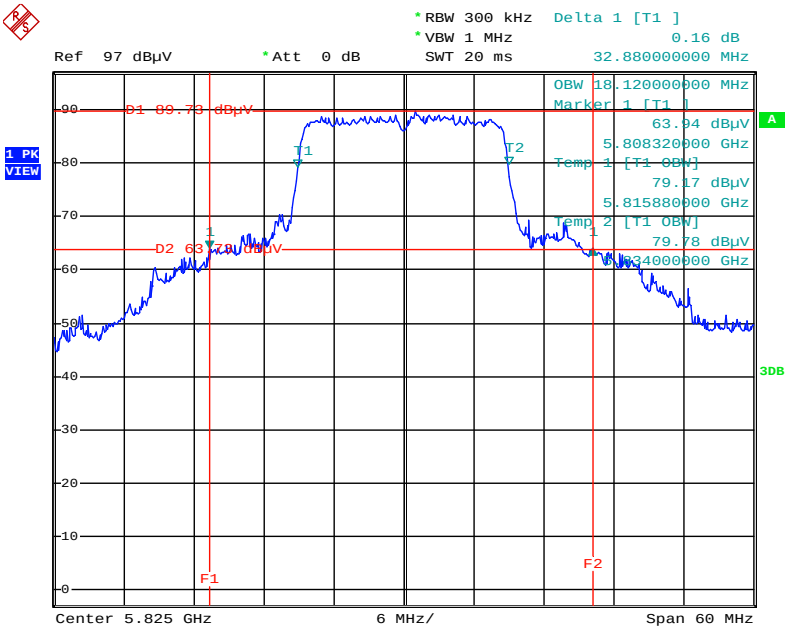
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5825 MHz



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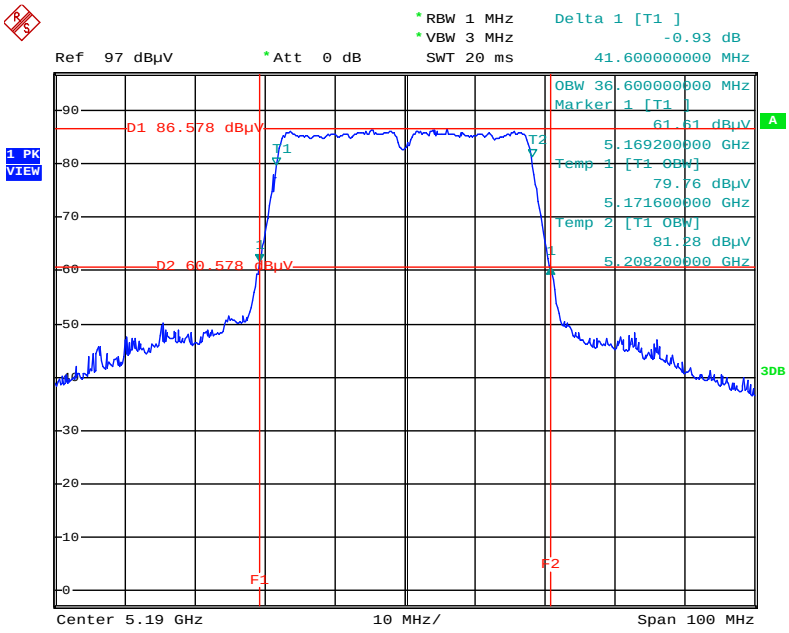
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5190 MHz



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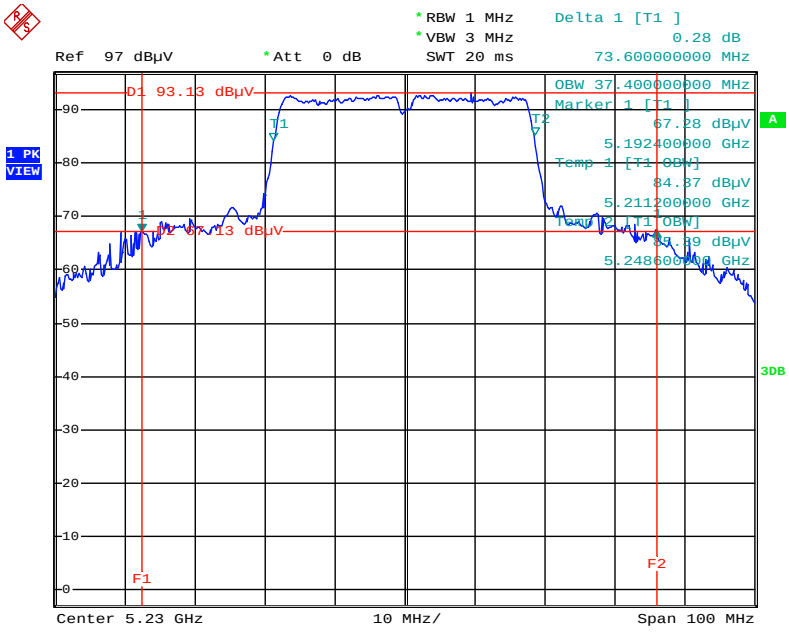
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5230 MHz



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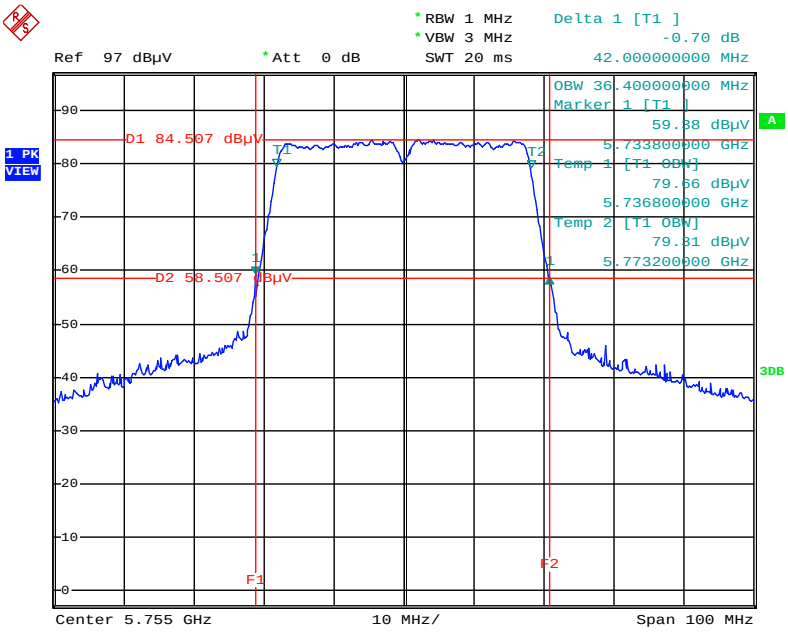
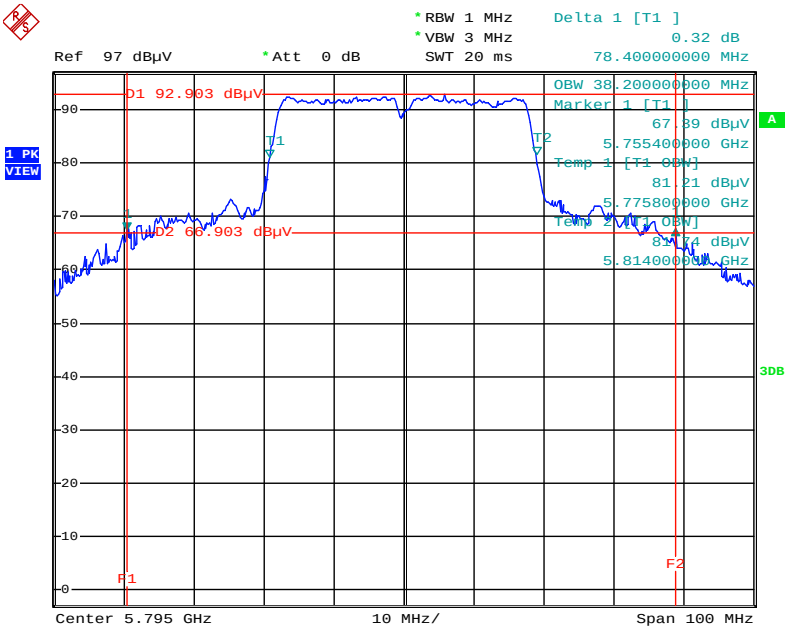
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5755 MHz



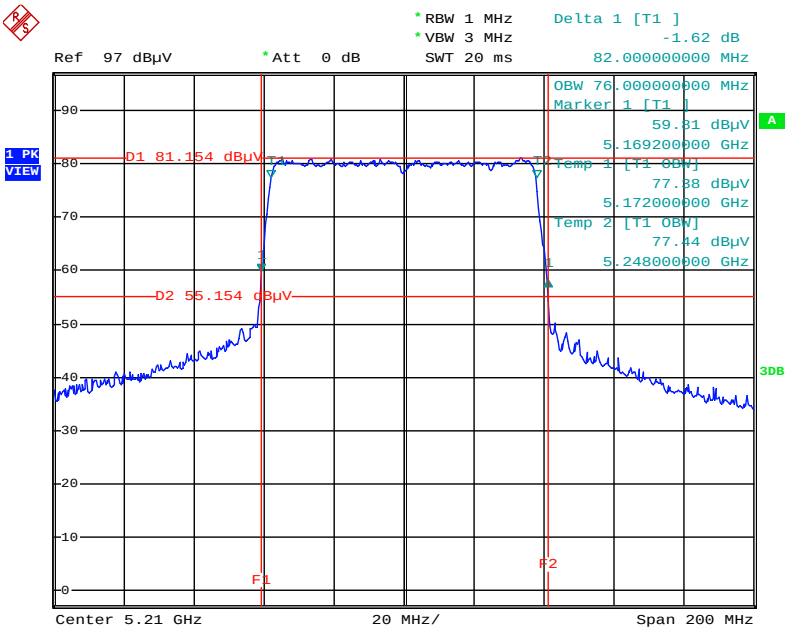
Date: 5.OCT.2015 11:28:29

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



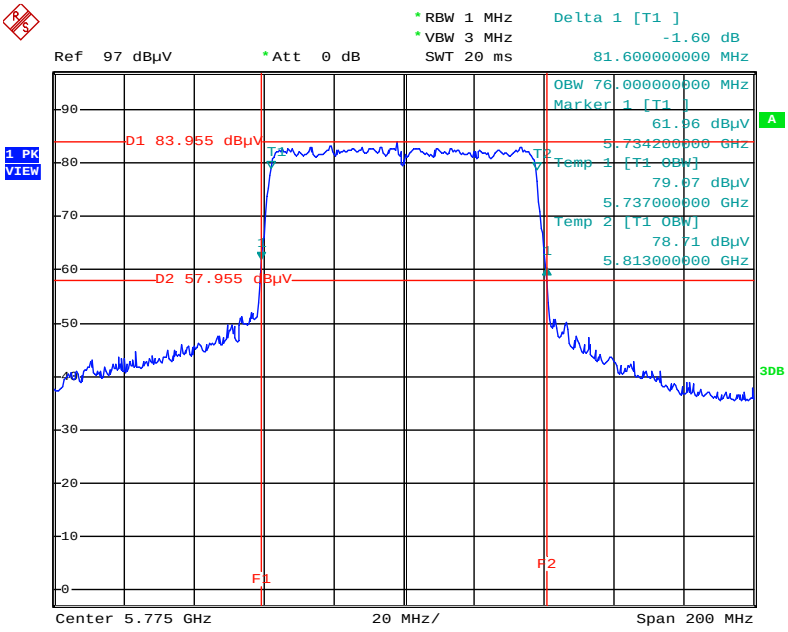
Date: 5.OCT.2015 11:28:55

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



Date: 5.OCT.2015 11:32:21

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



Date: 5.OCT.2015 11:32:54

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 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth.
3. 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

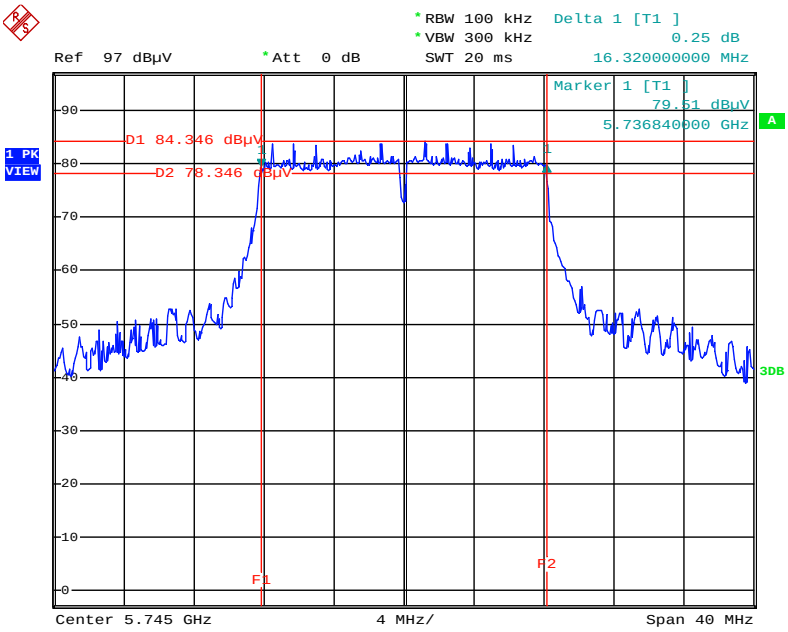
Temperature	25°C	Humidity	45%
Test Engineer	Eddie Weng		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	16.32	500	Complies
	5785 MHz	16.32	500	Complies
	5825 MHz	16.32	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.12	500	Complies
	5785 MHz	16.96	500	Complies
	5825 MHz	17.04	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	35.84	500	Complies
	5795 MHz	35.68	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	75.20	500	Complies

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

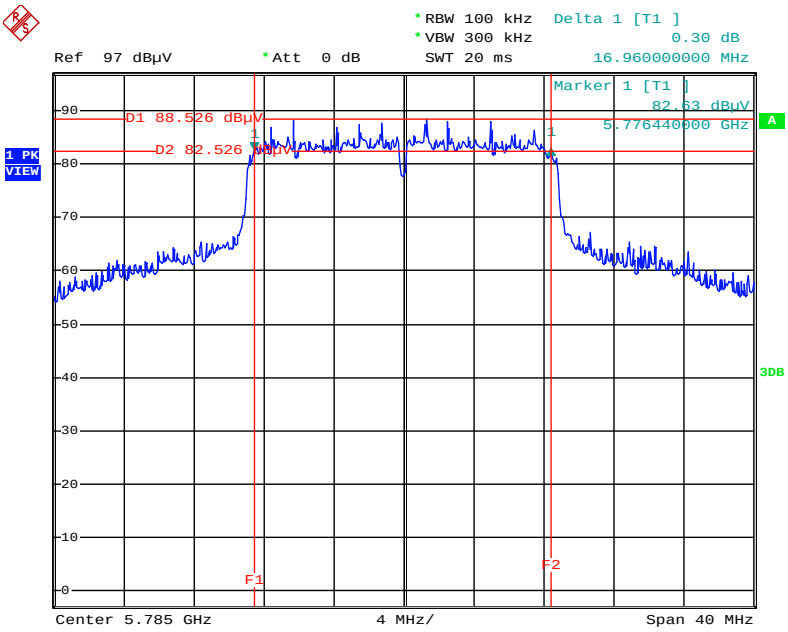
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 / 5745 MHz



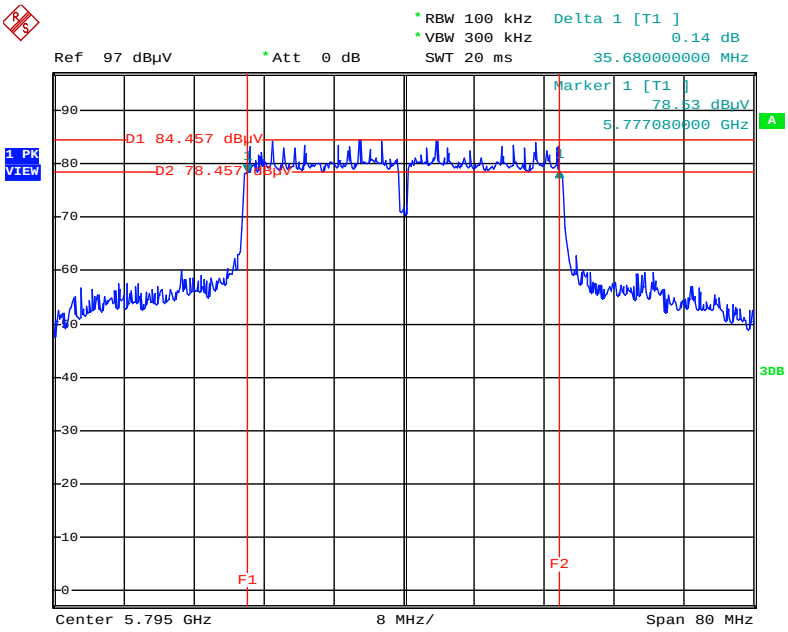
Date: 5.OCT.2015 11:18:13

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



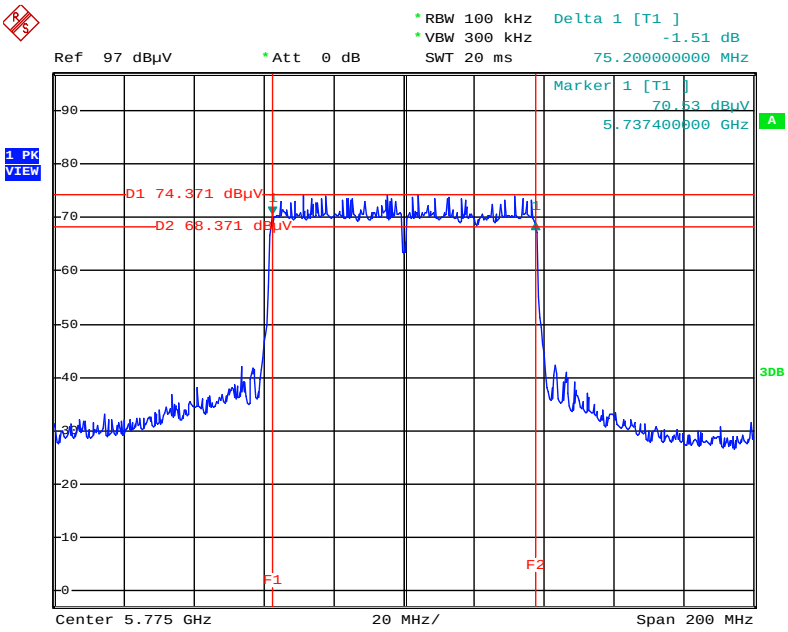
Date: 5.OCT.2015 11:25:21

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5795MHz



Date: 5.OCT.2015 11:30:19

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



Date: 5.OCT.2015 11:34:06

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

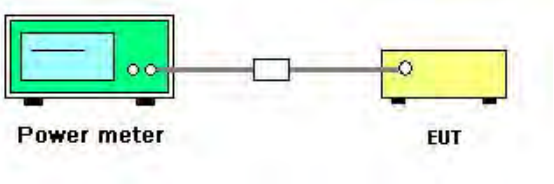
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. 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	25°C	Humidity	45%
Test Engineer	Eddie Weng	Test Date	Oct. 05, 2015

Mode	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1		
802.11a	5180 MHz	24.04	30.00	Complies
	5200 MHz	26.14	30.00	Complies
	5240 MHz	25.42	30.00	Complies
	5745 MHz	22.87	30.00	Complies
	5785 MHz	25.17	30.00	Complies
	5825 MHz	24.45	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	23.43	30.00	Complies
	5200 MHz	25.98	30.00	Complies
	5240 MHz	24.54	30.00	Complies
	5745 MHz	22.36	30.00	Complies
	5785 MHz	25.11	30.00	Complies
	5825 MHz	24.01	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	18.81	30.00	Complies
	5230 MHz	24.86	30.00	Complies
	5755 MHz	21.34	30.00	Complies
	5795 MHz	23.98	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	16.36	30.00	Complies
	5775 MHz	20.14	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

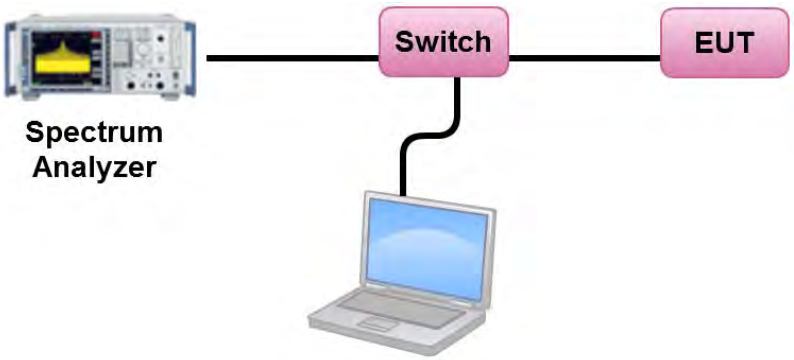
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.
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	25°C	Humidity	45%
Test Engineer	Eddie Weng	Test Date	Oct. 05, 2015

Configuration IEEE 802.11a / Chain 1

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	10.97	17.00	Complies
40	5200 MHz	13.10	17.00	Complies
48	5240 MHz	12.38	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	9.77	-3.01	6.76	30.00	Complies
157	5785 MHz	12.06	-3.01	9.05	30.00	Complies
165	5825 MHz	11.40	-3.01	8.39	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	10.40	17.00	Complies
40	5200 MHz	12.90	17.00	Complies
48	5240 MHz	11.49	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	9.20	-3.01	6.19	30.00	Complies
157	5785 MHz	11.93	-3.01	8.92	30.00	Complies
165	5825 MHz	10.86	-3.01	7.85	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	2.65	17.00	Complies
46	5230 MHz	8.64	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	5.20	-3.01	2.19	30.00	Complies
159	5795 MHz	7.81	-3.01	4.80	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1

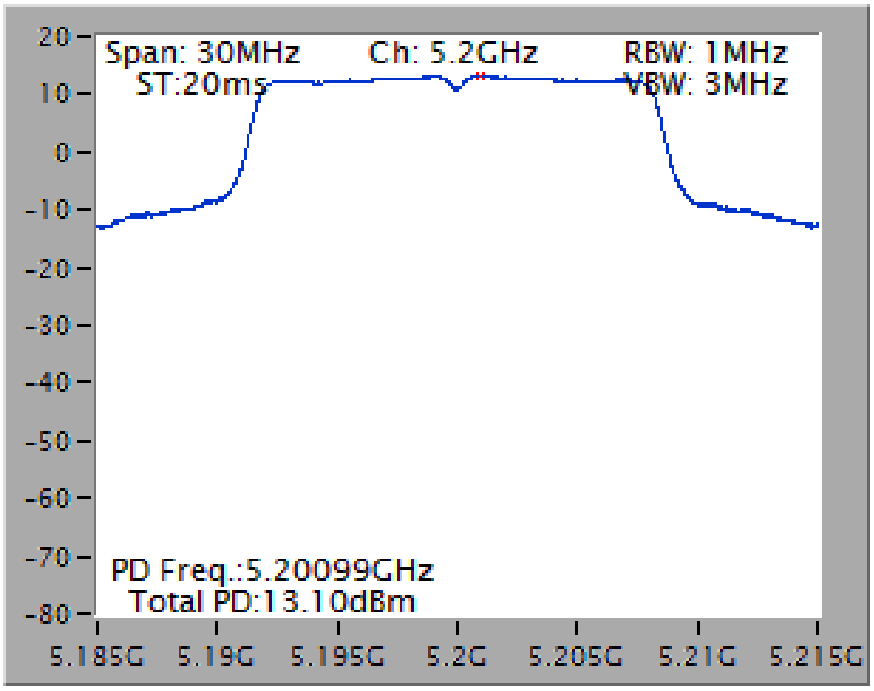
Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-2.72	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	1.02	-3.01	-1.99	30.00	Complies

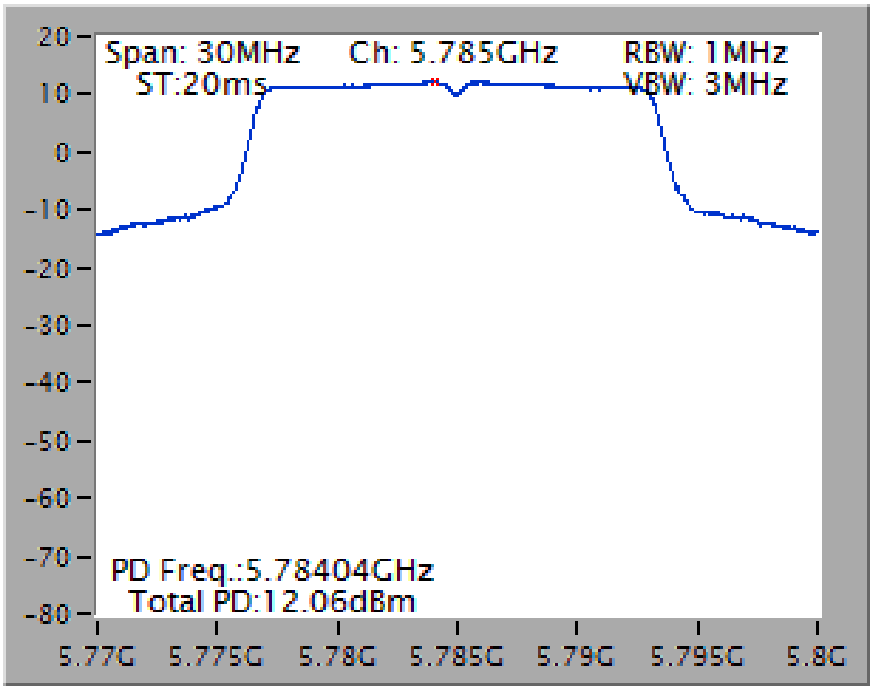
Note: All the test values were listed in the report.

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

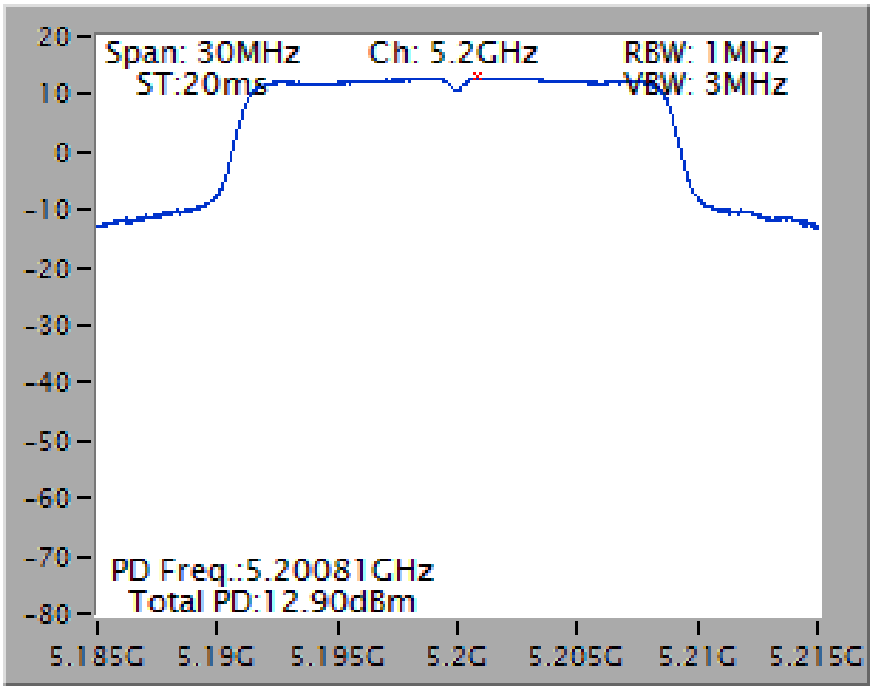
Power Density Plot on Configuration IEEE 802.11a / Chain 1 / 5200 MHz



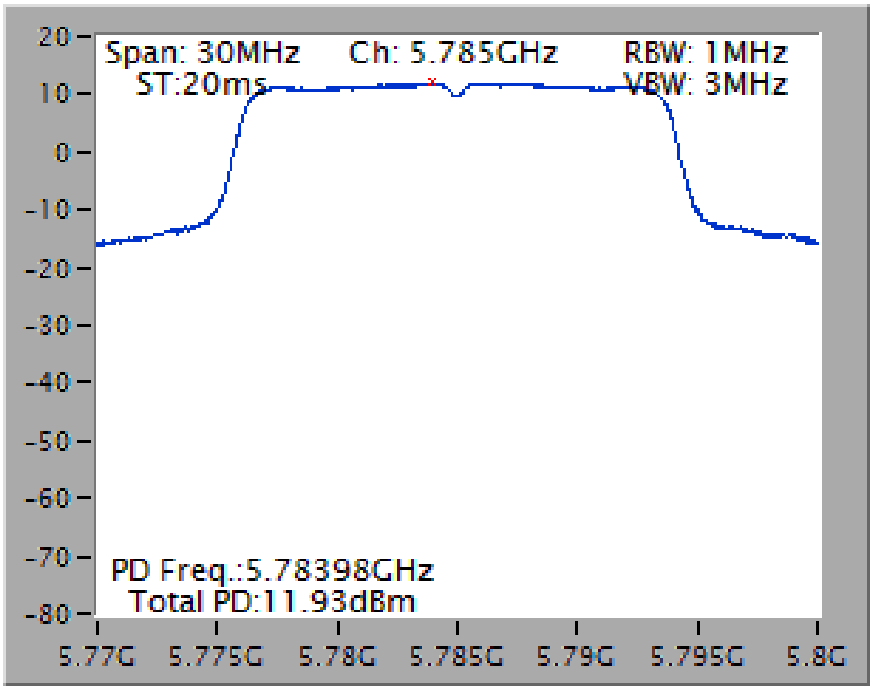
Power Density Plot on Configuration IEEE 802.11a / Chain 1 / 5785 MHz



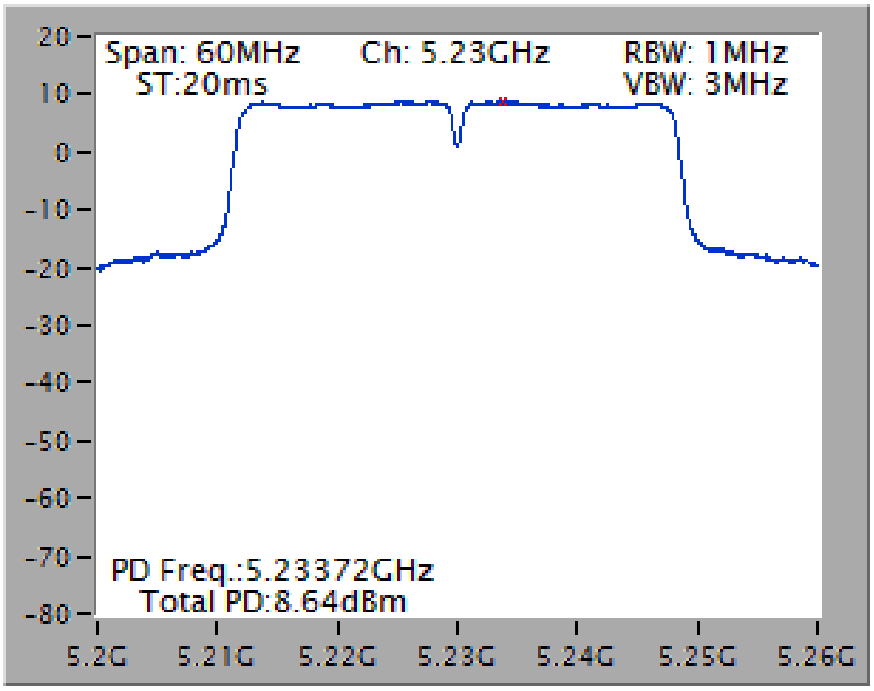
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5200 MHz



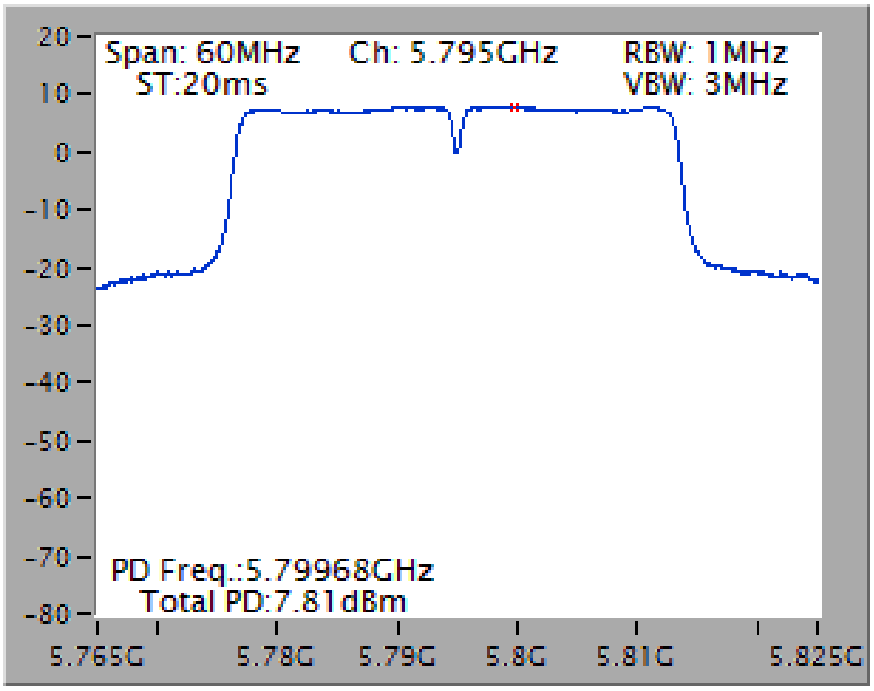
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 / 5785 MHz



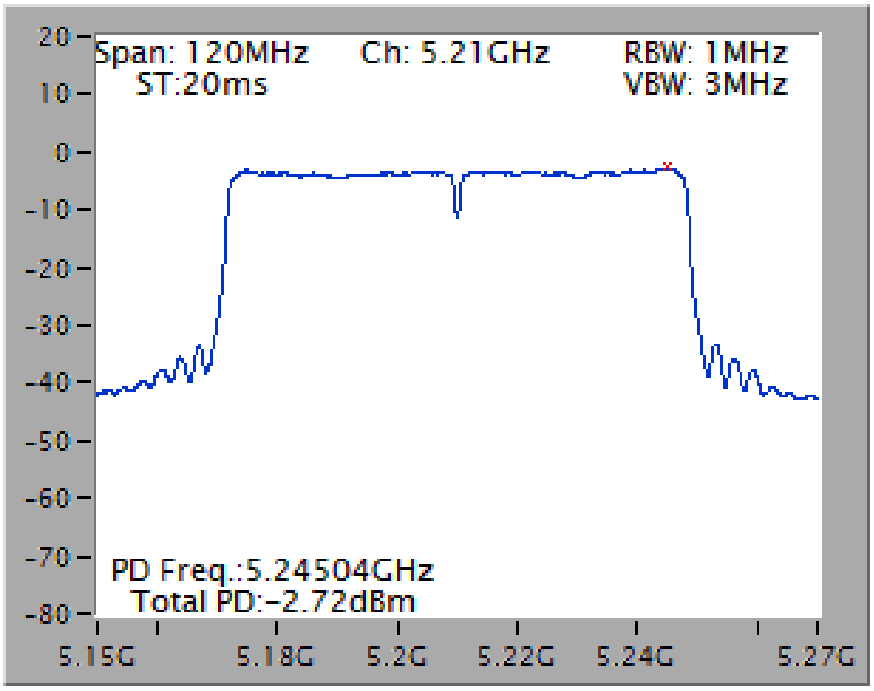
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5230 MHz



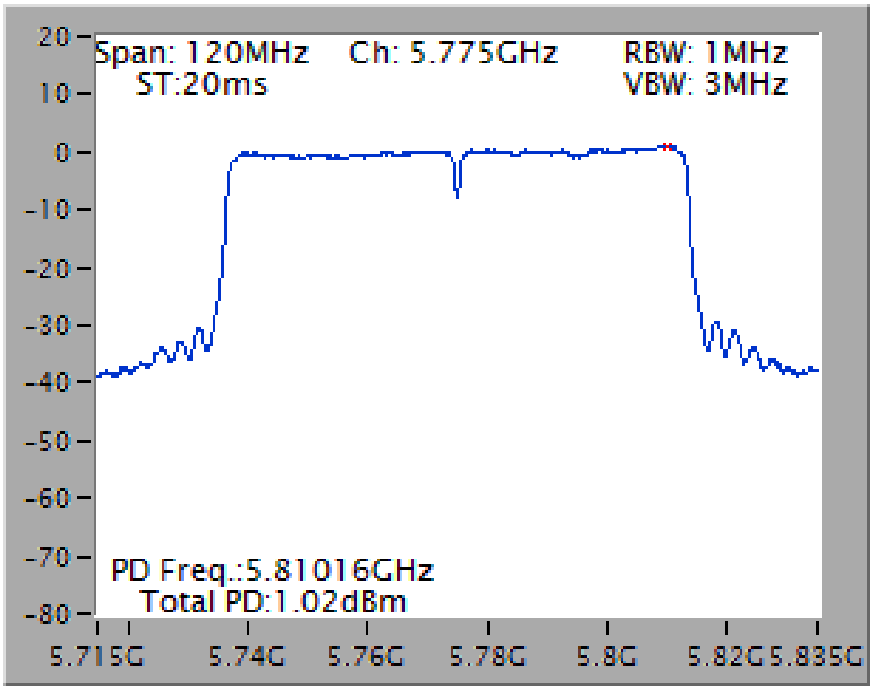
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 / 5795 MHz



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



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 / 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.

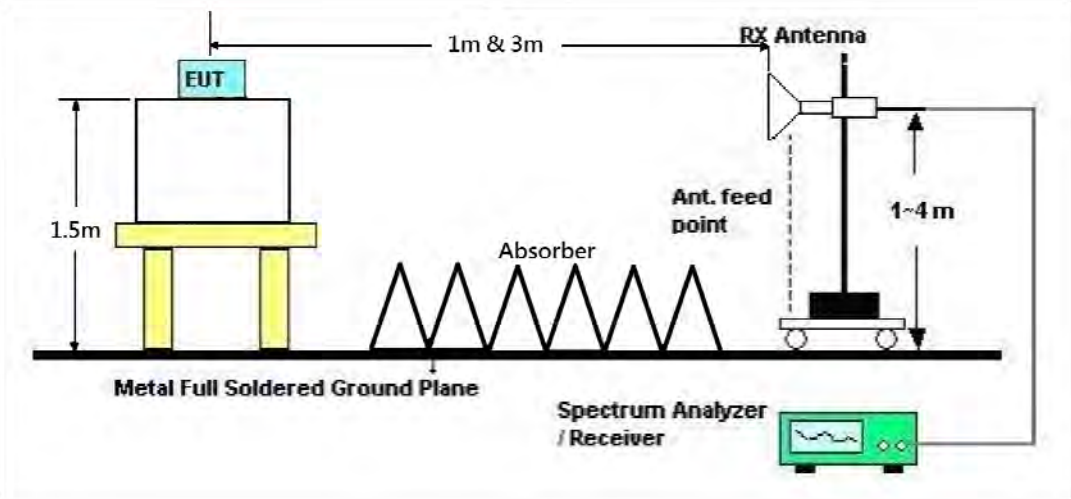
Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

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	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 36 / Chain 1
Test Date	Aug. 03, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15539.58	46.58	54.00	-7.42	32.76	10.77	38.25	35.20	Average	175	9	HORIZONTAL
2	15541.58	62.28	74.00	-11.72	48.46	10.77	38.25	35.20	Peak	175	9	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15539.90	60.18	74.00	-13.82	46.36	10.77	38.25	35.20	Peak	175	19	VERTICAL
2	15542.16	46.44	54.00	-7.56	32.62	10.77	38.25	35.20	Average	175	19	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 40 / Chain 1
Test Date	Aug. 03, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15598.34	53.97	54.00	-0.03	40.25	10.78	38.16	35.22	Average	196	10	HORIZONTAL
2	15603.00	69.53	74.00	-4.47	55.83	10.78	38.16	35.24	Peak	196	10	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15599.42	50.01	54.00	-3.99	36.31	10.78	38.16	35.24	Average	183	20	VERTICAL
2	15603.76	65.31	74.00	-8.69	51.61	10.78	38.16	35.24	Peak	183	20	VERTICAL

Temperature	24℃	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 48 / Chain 1
Test Date	Aug. 03, 2015 ~ Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15719.30	67.26	74.00	-6.74	53.76	10.79	37.99	35.28	Peak	196	9	HORIZONTAL
2	15722.22	50.65	54.00	-3.35	37.15	10.79	37.99	35.28	Average	196	9	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15722.08	46.57	54.00	-7.43	33.07	10.79	37.99	35.28	Average	186	23	VERTICAL
2	15722.36	62.13	74.00	-11.87	48.63	10.79	37.99	35.28	Peak	186	23	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 149 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11491.70	48.84	54.00	-5.16	35.32	9.24	39.08	34.80	Average	216	47	HORIZONTAL
2	11491.86	63.84	74.00	-10.16	50.32	9.24	39.08	34.80	Peak	216	47	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11486.42	40.83	54.00	-13.17	27.31	9.24	39.08	34.80	Average	193	324	VERTICAL
2	11489.84	54.32	74.00	-19.68	40.80	9.24	39.08	34.80	Peak	193	324	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 157 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11566.34	68.11	74.00	-5.89	54.52	9.26	39.14	34.81	Peak	211	50	HORIZONTAL
2	11571.68	53.93	54.00	-0.07	40.35	9.26	39.14	34.82	Average	211	50	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11569.50	56.71	74.00	-17.29	43.12	9.26	39.14	34.81	Peak	201	40	VERTICAL
2	11572.08	43.76	54.00	-10.24	30.18	9.26	39.14	34.82	Average	201	40	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 165 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11646.26	68.45	74.00	-5.55	54.83	9.28	39.18	34.84	Peak	212	57	HORIZONTAL
2	11651.08	53.67	54.00	-0.33	40.04	9.28	39.19	34.84	Average	212	57	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11648.62	55.47	74.00	-18.53	41.85	9.28	39.18	34.84	Peak	197	50	VERTICAL
2	11650.92	42.53	54.00	-11.47	28.90	9.28	39.19	34.84	Average	197	50	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15539.00	60.07	74.00	-13.93	46.25	10.77	38.25	35.20	Peak	175	301	HORIZONTAL
2	15540.02	45.29	54.00	-8.71	31.47	10.77	38.25	35.20	Average	175	301	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15539.50	57.13	74.00	-16.87	43.31	10.77	38.25	35.20	Peak	175	240	VERTICAL
2	15541.76	43.79	54.00	-10.21	29.97	10.77	38.25	35.20	Average	175	240	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15595.68	70.88	74.00	-3.12	57.16	10.78	38.16	35.22	Peak	198	9	HORIZONTAL
2	15598.14	53.47	54.00	-0.53	39.75	10.78	38.16	35.22	Average	198	9	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15596.08	65.38	74.00	-8.62	51.66	10.78	38.16	35.22	Peak	192	17	VERTICAL
2	15598.32	49.23	54.00	-4.77	35.51	10.78	38.16	35.22	Average	192	17	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15716.72	65.60	74.00	-8.40	52.10	10.79	37.99	35.28	Peak	195	9	HORIZONTAL
2	15719.46	47.99	54.00	-6.01	34.49	10.79	37.99	35.28	Average	195	9	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15719.84	45.80	54.00	-8.20	32.30	10.79	37.99	35.28	Average	193	19	VERTICAL
2	15723.74	62.21	74.00	-11.79	48.71	10.79	37.99	35.28	Peak	193	19	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11489.18	61.84	74.00	-12.16	48.32	9.24	39.08	34.80	Peak	213	70	HORIZONTAL
2	11489.78	47.61	54.00	-6.39	34.09	9.24	39.08	34.80	Average	213	70	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11489.38	53.45	74.00	-20.55	39.93	9.24	39.08	34.80	Peak	175	58	VERTICAL
2	11494.64	40.46	54.00	-13.54	26.94	9.24	39.08	34.80	Average	175	58	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11570.68	67.82	74.00	-6.18	54.24	9.26	39.14	34.82	Peak	211	50	HORIZONTAL
2	11573.96	53.76	54.00	-0.24	40.18	9.26	39.14	34.82	Average	211	50	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11573.72	55.21	74.00	-18.79	41.63	9.26	39.14	34.82	Peak	187	36	VERTICAL
2	11574.52	42.40	54.00	-11.60	28.82	9.26	39.14	34.82	Average	187	36	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11648.86	68.96	74.00	-5.04	55.34	9.28	39.18	34.84	Peak	211	57	HORIZONTAL
2	11649.90	52.78	54.00	-1.22	39.16	9.28	39.18	34.84	Average	211	57	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11650.60	41.56	54.00	-12.44	27.93	9.28	39.19	34.84	Average	192	62	VERTICAL
2	11652.00	55.07	74.00	-18.93	41.44	9.28	39.19	34.84	Peak	192	62	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15573.42	56.37	74.00	-17.63	42.61	10.78	38.20	35.22	Peak	175	115	HORIZONTAL
2	15574.06	43.45	54.00	-10.55	29.69	10.78	38.20	35.22	Average	175	115	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15569.10	56.08	74.00	-17.92	42.31	10.78	38.20	35.21	Peak	175	51	VERTICAL
2	15572.04	43.33	54.00	-10.67	29.56	10.78	38.20	35.21	Average	175	51	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15687.58	61.50	74.00	-12.50	47.95	10.79	38.03	35.27	Peak	194	9	HORIZONTAL
2	15694.42	47.88	54.00	-6.12	34.33	10.79	38.03	35.27	Average	194	9	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15687.66	44.90	54.00	-9.10	31.35	10.79	38.03	35.27	Average	182	23	VERTICAL
2	15693.38	58.67	74.00	-15.33	45.12	10.79	38.03	35.27	Peak	182	23	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11510.02	45.85	54.00	-8.15	32.30	9.25	39.10	34.80	Average	216	68	HORIZONTAL
2	11510.98	59.81	74.00	-14.19	46.26	9.25	39.10	34.80	Peak	216	68	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11509.46	53.85	74.00	-20.15	40.30	9.25	39.10	34.80	Peak	182	36	VERTICAL
2	11513.18	40.88	54.00	-13.12	27.33	9.25	39.10	34.80	Average	182	36	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11589.96	51.79	54.00	-2.21	38.19	9.27	39.15	34.82	Average	210	52	HORIZONTAL
2	11590.90	65.69	74.00	-8.31	52.09	9.27	39.15	34.82	Peak	210	52	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11590.44	42.07	54.00	-11.93	28.47	9.27	39.15	34.82	Average	184	36	VERTICAL
2	11594.68	55.37	74.00	-18.63	41.77	9.27	39.15	34.82	Peak	184	36	VERTICAL

Temperature	24℃	Humidity	61%
Test Engineer	61%	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15627.60	57.03	74.00	-16.97	43.37	10.78	38.13	35.25	Peak	175	55	HORIZONTAL
2	15628.38	43.86	54.00	-10.14	30.20	10.78	38.13	35.25	Average	175	55	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15625.78	43.57	54.00	-10.43	29.91	10.78	38.13	35.25	Average	175	18	VERTICAL
2	15630.18	56.83	74.00	-17.17	43.19	10.78	38.11	35.25	Peak	175	18	VERTICAL

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1
Test Date	Aug. 04, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11547.76	54.75	74.00	-19.25	41.18	9.26	39.12	34.81	Peak	193	45	HORIZONTAL
2	11554.86	41.39	54.00	-12.61	27.81	9.26	39.13	34.81	Average	193	45	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11548.20	54.18	74.00	-19.82	40.61	9.26	39.12	34.81	Peak	183	51	VERTICAL
2	11549.20	40.98	54.00	-13.02	27.40	9.26	39.13	34.81	Average	183	51	VERTICAL

Note:

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

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

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

4.6. 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

1. 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	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1
Test Date	Aug. 03, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5149.80	71.28	74.00	-2.72	66.11	6.13	34.04	35.00	Peak	181	136	VERTICAL
2	5150.00	53.97	54.00	-0.03	48.80	6.13	34.04	35.00	Average	181	136	VERTICAL
3	5175.20	114.76			109.52	6.15	34.09	35.00	Peak	181	136	VERTICAL
4	5179.00	103.93			98.69	6.15	34.09	35.00	Average	181	136	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5148.00	67.13	74.00	-6.87	61.96	6.13	34.04	35.00	Peak	169	136	VERTICAL
2	5150.00	52.15	54.00	-1.85	46.98	6.13	34.04	35.00	Average	169	136	VERTICAL
3	5201.20	106.29			101.01	6.16	34.12	35.00	Average	169	136	VERTICAL
4	5202.40	116.58			111.30	6.16	34.12	35.00	Peak	169	136	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5148.80	61.20	74.00	-12.80	56.03	6.13	34.04	35.00	Peak	183	136	VERTICAL
2	5150.00	48.79	54.00	-5.21	43.62	6.13	34.04	35.00	Average	183	136	VERTICAL
3	5235.20	115.19			109.84	6.18	34.17	35.00	Peak	183	136	VERTICAL
4	5237.60	104.41			99.06	6.18	34.17	35.00	Average	183	136	VERTICAL
5	5350.00	47.07	54.00	-6.93	41.45	6.26	34.36	35.00	Average	183	136	VERTICAL
6	5350.00	58.83	74.00	-15.17	53.21	6.26	34.36	35.00	Peak	183	136	VERTICAL

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

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 1
Test Date	Aug. 03, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5711.60	67.04	74.00	-6.96	60.99	6.44	34.64	35.03	Peak	147	138	VERTICAL
2	5715.00	49.92	54.00	-4.08	43.87	6.44	34.64	35.03	Average	147	138	VERTICAL
3	5724.40	77.91	78.20	-0.29	71.85	6.45	34.64	35.03	Peak	147	138	VERTICAL
4	5740.20	112.81			106.75	6.45	34.65	35.04	Peak	147	138	VERTICAL
5	5744.00	102.03			95.97	6.45	34.65	35.04	Average	147	138	VERTICAL

Item 4, 5 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5699.00	61.35	74.00	-12.65	55.31	6.43	34.64	35.03	Peak	146	138	VERTICAL
2	5712.20	48.47	54.00	-5.53	42.42	6.44	34.64	35.03	Average	146	138	VERTICAL
3	5721.80	62.23	78.20	-15.97	56.17	6.45	34.64	35.03	Peak	146	138	VERTICAL
4	5780.20	114.56			108.49	6.46	34.66	35.05	Peak	146	138	VERTICAL
5	5786.60	103.87			97.79	6.47	34.66	35.05	Average	146	138	VERTICAL
6	5850.40	62.03	78.20	-16.17	55.93	6.49	34.67	35.06	Peak	146	138	VERTICAL
7	5868.20	50.53	54.00	-3.47	44.43	6.50	34.67	35.07	Average	146	138	VERTICAL
8	5869.00	63.04	74.00	-10.96	56.94	6.50	34.67	35.07	Peak	146	138	VERTICAL

Item 4, 5 are the fundamental frequency at 5785 MHz.

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5826.40	114.11			108.02	6.48	34.67	35.06	Peak	159	141	VERTICAL
2	5827.20	103.90			97.81	6.48	34.67	35.06	Average	159	141	VERTICAL
3	5850.00	78.04	78.20	-0.16	71.94	6.49	34.67	35.06	Peak	159	141	VERTICAL
4	5860.00	52.27	54.00	-1.73	46.17	6.50	34.67	35.07	Average	159	141	VERTICAL
5	5860.40	69.96	74.00	-4.04	63.86	6.50	34.67	35.07	Peak	159	141	VERTICAL

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

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1
Test Date	Aug. 03, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5148.80	71.62	74.00	-2.38	66.45	6.13	34.04	35.00	Peak	175	136	VERTICAL
2	5150.00	53.64	54.00	-0.36	48.47	6.13	34.04	35.00	Average	175	136	VERTICAL
3	5177.40	103.46			98.22	6.15	34.09	35.00	Average	175	136	VERTICAL
4	5183.40	113.63			108.39	6.15	34.09	35.00	Peak	175	136	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5146.80	68.19	74.00	-5.81	63.02	6.13	34.04	35.00	Peak	170	136	VERTICAL
2	5148.40	52.57	54.00	-1.43	47.40	6.13	34.04	35.00	Average	170	136	VERTICAL
3	5201.60	105.89			100.61	6.16	34.12	35.00	Average	170	136	VERTICAL
4	5202.00	116.22			110.94	6.16	34.12	35.00	Peak	170	136	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	48.03	54.00	-5.97	42.86	6.13	34.04	35.00	Average	182	138	VERTICAL
2	5150.00	61.09	74.00	-12.91	55.92	6.13	34.04	35.00	Peak	182	138	VERTICAL
3	5237.60	104.16			98.81	6.18	34.17	35.00	Average	182	138	VERTICAL
4	5237.60	114.13			108.78	6.18	34.17	35.00	Peak	182	138	VERTICAL
5	5350.00	46.78	54.00	-7.22	41.16	6.26	34.36	35.00	Average	182	138	VERTICAL
6	5350.00	59.16	74.00	-14.84	53.54	6.26	34.36	35.00	Peak	182	138	VERTICAL

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

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1
Test Date	Aug. 03, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	49.81	54.00	-4.19	43.76	6.44	34.64	35.03	Average	148	139	VERTICAL
2	5715.00	68.80	74.00	-5.20	62.75	6.44	34.64	35.03	Peak	148	139	VERTICAL
3	5725.00	78.02	78.20	-0.18	71.96	6.45	34.64	35.03	Peak	148	139	VERTICAL
4	5746.40	100.96			94.90	6.45	34.65	35.04	Average	148	139	VERTICAL
5	5747.80	111.38			105.32	6.45	34.65	35.04	Peak	148	139	VERTICAL

Item 4, 5 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5698.60	61.16	74.00	-12.84	55.12	6.43	34.64	35.03	Peak	147	139	VERTICAL
2	5711.80	48.50	54.00	-5.50	42.45	6.44	34.64	35.03	Average	147	139	VERTICAL
3	5723.40	60.83	78.20	-17.37	54.77	6.45	34.64	35.03	Peak	147	139	VERTICAL
4	5780.60	113.75			107.68	6.46	34.66	35.05	Peak	147	139	VERTICAL
5	5786.60	103.59			97.51	6.47	34.66	35.05	Average	147	139	VERTICAL
6	5850.40	61.24	78.20	-16.96	55.14	6.49	34.67	35.06	Peak	147	139	VERTICAL
7	5867.40	63.73	74.00	-10.27	57.63	6.50	34.67	35.07	Peak	147	139	VERTICAL
8	5867.80	50.48	54.00	-3.52	44.38	6.50	34.67	35.07	Average	147	139	VERTICAL

Item 4, 5 are the fundamental frequency at 5785 MHz.

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5827.40	103.33			97.24	6.48	34.67	35.06	Average	160	140	VERTICAL
2	5829.40	113.44			107.35	6.48	34.67	35.06	Peak	160	140	VERTICAL
3	5850.00	77.49	78.20	-0.71	71.39	6.49	34.67	35.06	Peak	160	140	VERTICAL
4	5860.00	52.22	54.00	-1.78	46.12	6.50	34.67	35.07	Average	160	140	VERTICAL
5	5860.00	73.84	74.00	-0.16	67.74	6.50	34.67	35.07	Peak	160	140	VERTICAL

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

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1
Test Date	Aug. 03, 2015		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5149.60	69.46	74.00	-4.54	64.29	6.13	34.04	35.00	Peak	181	138	VERTICAL
2	5150.00	53.32	54.00	-0.68	48.15	6.13	34.04	35.00	Average	181	138	VERTICAL
3	5184.40	107.26			102.02	6.15	34.09	35.00	Peak	181	138	VERTICAL
4	5184.80	97.61			92.37	6.15	34.09	35.00	Average	181	138	VERTICAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5147.20	65.64	74.00	-8.36	60.47	6.13	34.04	35.00	Peak	176	138	VERTICAL
2	5149.60	53.50	54.00	-0.50	48.33	6.13	34.04	35.00	Average	176	138	VERTICAL
3	5213.80	102.96			97.64	6.17	34.15	35.00	Average	176	138	VERTICAL
4	5214.40	112.40			107.08	6.17	34.15	35.00	Peak	176	138	VERTICAL

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

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1
Test Date	Aug. 03, 2015		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	53.82	54.00	-0.18	47.77	6.44	34.64	35.03	Average	149	140	VERTICAL
2	5715.00	71.97	74.00	-2.03	65.92	6.44	34.64	35.03	Peak	149	140	VERTICAL
3	5723.00	74.48	78.20	-3.72	68.42	6.45	34.64	35.03	Peak	149	140	VERTICAL
4	5749.40	107.49			101.43	6.45	34.65	35.04	Peak	149	140	VERTICAL
5	5753.80	97.98			91.91	6.46	34.65	35.04	Average	149	140	VERTICAL

Item 4, 5 are the fundamental frequency at 5755 MHz.

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5712.80	49.31	54.00	-4.69	43.26	6.44	34.64	35.03	Average	148	139	VERTICAL
2	5715.00	67.65	74.00	-6.35	61.60	6.44	34.64	35.03	Peak	148	139	VERTICAL
3	5723.80	67.37	78.20	-10.83	61.31	6.45	34.64	35.03	Peak	148	139	VERTICAL
4	5789.60	100.43			94.35	6.47	34.66	35.05	Average	148	139	VERTICAL
5	5789.60	110.18			104.10	6.47	34.66	35.05	Peak	148	139	VERTICAL
6	5852.00	70.79	78.20	-7.41	64.69	6.49	34.67	35.06	Peak	148	139	VERTICAL
7	5860.00	53.79	54.00	-0.21	47.69	6.50	34.67	35.07	Average	148	139	VERTICAL
8	5864.00	68.23	74.00	-5.77	62.13	6.50	34.67	35.07	Peak	148	139	VERTICAL

Item 4, 5 are the fundamental frequency at 5795 MHz.

Temperature	24°C	Humidity	61%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Chain 1
Test Date	Aug. 03, 2015		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	53.75	54.00	-0.25	48.58	6.13	34.04	35.00	Average	170	137	VERTICAL
2	5150.00	65.07	74.00	-8.93	59.90	6.13	34.04	35.00	Peak	170	137	VERTICAL
3	5175.00	91.68			86.44	6.15	34.09	35.00	Average	170	137	VERTICAL
4	5175.00	100.66			95.42	6.15	34.09	35.00	Peak	170	137	VERTICAL
5	5350.00	46.92	54.00	-7.08	41.30	6.26	34.36	35.00	Average	170	137	VERTICAL
6	5350.00	57.29	74.00	-16.71	51.67	6.26	34.36	35.00	Peak	170	137	VERTICAL

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

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	67.64	68.20	-0.56	61.59	6.44	34.64	35.03	Peak	134	136	VERTICAL
2	5722.00	70.72	78.20	-7.48	64.66	6.45	34.64	35.03	Peak	134	136	VERTICAL
3	5808.00	104.29			98.21	6.48	34.66	35.06	Peak	134	136	VERTICAL
4	5809.00	94.66			88.58	6.48	34.66	35.06	Average	134	136	VERTICAL
5	5851.00	68.43	78.20	-9.77	62.33	6.49	34.67	35.06	Peak	134	136	VERTICAL
6	5866.00	68.12	68.20	-0.08	62.02	6.50	34.67	35.07	Peak	134	136	VERTICAL

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

Note:

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

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

4.7. 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

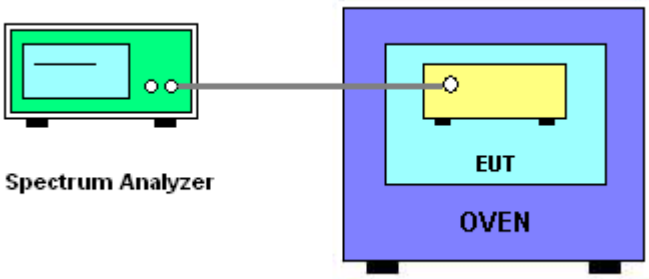
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 -20°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	25°C	Humidity	45%
Test Engineer	Eddie Weng	Test Date	Oct. 05, 2015

Mode: 20 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9844	5199.9831	5199.9815	5199.9796
110.00	5199.9832	5199.9819	5199.9803	5199.9784
93.50	5199.9818	5199.9805	5199.9789	5199.9770
Max. Deviation (MHz)	0.0182	0.0195	0.0211	0.0230
Max. Deviation (ppm)	3.50	3.75	4.06	4.42
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5199.9888	5199.9875	5199.9858	5199.9837
-10	5199.9871	5199.9858	5199.9842	5199.9823
0	5199.9857	5199.9844	5199.9828	5199.9809
10	5199.9844	5199.9831	5199.9815	5199.9796
20	5199.9832	5199.9819	5199.9803	5199.9784
30	5199.9817	5199.9804	5199.9788	5199.9769
40	5199.9802	5199.9789	5199.9773	5199.9754
50	5199.9781	5199.9767	5199.9750	5199.9729
Max. Deviation (MHz)	0.0219	0.0233	0.0250	0.0271
Max. Deviation (ppm)	4.21	4.48	4.81	5.21
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9820	5784.9807	5784.9791	5784.9772
110.00	5784.9808	5784.9795	5784.9779	5784.9760
93.50	5784.9794	5784.9781	5784.9765	5784.9746
Max. Deviation (MHz)	0.0206	0.0219	0.0235	0.0254
Max. Deviation (ppm)	3.56	3.79	4.06	4.39
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5784.9864	5784.9851	5784.9834	5784.9813
-10	5784.9847	5784.9834	5784.9818	5784.9799
0	5784.9833	5784.9820	5784.9804	5784.9785
10	5784.9820	5784.9807	5784.9791	5784.9772
20	5784.9808	5784.9795	5784.9779	5784.9760
30	5784.9793	5784.9780	5784.9764	5784.9745
40	5784.9778	5784.9765	5784.9749	5784.9730
50	5784.9757	5784.9743	5784.9726	5784.9705
Max. Deviation (MHz)	0.0243	0.0257	0.0274	0.0295
Max. Deviation (ppm)	4.20	4.44	4.74	5.10
Result	Complies			

Mode: 40 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9926	5189.9703	5189.9928	5189.9705
110.00	5189.9814	5189.9815	5189.9816	5189.9817
93.50	5189.9715	5189.9914	5189.9717	5189.9916
Max. Deviation (MHz)	0.0285	0.0297	0.0283	0.0295
Max. Deviation (ppm)	5.49	5.72	5.45	5.68
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5190.0223	5189.9406	5190.0225	5189.9408
-10	5190.0124	5189.9505	5190.0126	5189.9507
0	5190.0025	5189.9604	5190.0027	5189.9606
10	5189.9926	5189.9703	5189.9928	5189.9705
20	5189.9814	5189.9815	5189.9816	5189.9817
30	5189.9715	5189.9914	5189.9717	5189.9916
40	5189.9614	5190.0015	5189.9616	5190.0017
50	5189.9510	5190.0119	5189.9512	5190.0121
Max. Deviation (MHz)	0.0490	0.0594	0.0488	0.0592
Max. Deviation (ppm)	9.44	11.45	9.40	11.41
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9742	5754.9729	5754.9713	5754.9694
110.00	5754.9730	5754.9717	5754.9701	5754.9682
93.50	5754.9716	5754.9703	5754.9687	5754.9668
Max. Deviation (MHz)	0.0284	0.0297	0.0313	0.0332
Max. Deviation (ppm)	4.93	5.16	5.44	5.77
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5754.9786	5754.9773	5754.9756	5754.9735
-10	5754.9769	5754.9756	5754.9740	5754.9721
0	5754.9755	5754.9742	5754.9726	5754.9707
10	5754.9742	5754.9729	5754.9713	5754.9694
20	5754.9730	5754.9717	5754.9701	5754.9682
30	5754.9715	5754.9702	5754.9686	5754.9667
40	5754.9700	5754.9687	5754.9671	5754.9652
50	5754.9679	5754.9665	5754.9648	5754.9627
Max. Deviation (MHz)	0.0321	0.0335	0.0352	0.0373
Max. Deviation (ppm)	5.58	5.82	6.12	6.48
Result	Complies			

Mode: 80 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5209.9808	5209.9795	5209.9779	5209.9760
110.00	5209.9796	5209.9783	5209.9767	5209.9748
93.50	5209.9782	5209.9769	5209.9753	5209.9734
Max. Deviation (MHz)	0.0218	0.0231	0.0247	0.0266
Max. Deviation (ppm)	4.18	4.43	4.74	5.11
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5209.9852	5209.9839	5209.9822	5209.9801
-10	5209.9835	5209.9822	5209.9806	5209.9787
0	5209.9821	5209.9808	5209.9792	5209.9773
10	5209.9808	5209.9795	5209.9779	5209.9760
20	5209.9796	5209.9783	5209.9767	5209.9748
30	5209.9781	5209.9768	5209.9752	5209.9733
40	5209.9766	5209.9753	5209.9737	5209.9718
50	5209.9745	5209.9731	5209.9714	5209.9693
Max. Deviation (MHz)	0.0255	0.0269	0.0286	0.0307
Max. Deviation (ppm)	4.89	5.16	5.49	5.89
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9760	5774.9747	5774.9731	5774.9712
110.00	5774.9748	5774.9735	5774.9719	5774.9700
93.50	5774.9734	5774.9721	5774.9705	5774.9686
Max. Deviation (MHz)	0.0266	0.0279	0.0295	0.0314
Max. Deviation (ppm)	4.61	4.83	5.11	5.44
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5774.9804	5774.9791	5774.9774	5774.9753
-10	5774.9787	5774.9774	5774.9758	5774.9739
0	5774.9773	5774.9760	5774.9744	5774.9725
10	5774.9760	5774.9747	5774.9731	5774.9712
20	5774.9748	5774.9735	5774.9719	5774.9700
30	5774.9733	5774.9720	5774.9704	5774.9685
40	5774.9718	5774.9705	5774.9689	5774.9670
50	5774.9697	5774.9683	5774.9666	5774.9645
Max. Deviation (MHz)	0.0303	0.0317	0.0334	0.0355
Max. Deviation (ppm)	5.25	5.49	5.78	6.15
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. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100979	9kHz~40GHz	Dec. 12, 2014	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 03, 2014	Conducted (TH01-CB)

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%