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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	**PY312400225**

Product Name	R6100 WiFi Router
Brand Name	NETGEAR
Model No.	R6100
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Jun. 29, 2015
Final Test Date	Sep. 18, 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, 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
FR330625-05	Rev. 01	Initial issue of report	Dec. 21, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	R6100 WiFi Router
Brand Name	:	NETGEAR
Model No.	:	R6100
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 Jun. 29, 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	0.62 dB
4.4	15.407(a)	Power Spectral Density	Complies	0.79 dB
4.5	15.407(b)	Radiated Emissions	Complies	0.04 dB
4.6	15.407(b)	Band Edge Emissions	Complies	0.11 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 (2TX, 2RX)
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: 20.58 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 20.93 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 40.09 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.99 MHz Band 4: IEEE 802.11a: 30.04 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 25.09 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.92 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.70 MHz

Maximum Conducted Output Power	Band 1: IEEE 802.11a: 29.38 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.37 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 29.05 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.86 dBm Band 4: IEEE 802.11a: 29.07 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.09 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.94 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 16.92 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
TPC Function	☒ With TPC	☐ Without TPC
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	Two (TX)		
Band width Mode	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X
IEEE 802.11n	V	V	X
IEEE 802.11ac	V	V	V

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	2	MCS 0-15
802.11n (HT40)	2	MCS 0-15
802.11ac (VHT20)	2	MCS 0-9/Nss1-2
802.11ac (VHT40)	2	MCS 0-9/Nss1-2
802.11ac (VHT80)	2	MCS 0-9/Nss1-2
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40. Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40 and VHT80. Note 3: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac		

3.2. Accessories

Power	Brand Name	Model Name	P/N	Rating
Adapter 1	NETGEAR	AD817F20	332-10307-02	I/P:100-240Vac, 50~60Hz, 0.56A O/P:12Vdc, 1.5A
Adapter 2	NETGEAR	SAL018F1 NA	332-10375-01	I/P:100-120Vac, 47~63Hz, 0.6A O/P:12Vdc, 1.5A
Adapter 3	NETGEAR	MU18-D120150-A1	332-10268-01	I/P:100-240Vac, 50~60Hz, 0.6A O/P:12Vdc, 1.5A
Adapter 4	NETGEAR	AD817F10	332-10301-02	I/P:100-120Vac, 50~60Hz, 0.56A O/P:12Vdc, 1.5A
Other				
RJ-45 cable*1, shielded, 1.5m				

3.3. Table for Filed Antenna

For 5GHz information

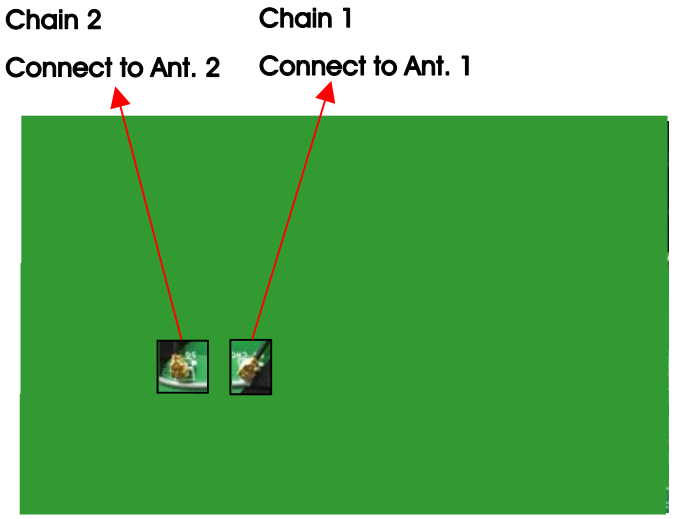
Ant.	Ant. Cat.	Antenna Type	Connector	Gain (dBi)	
				5G B1	5G B4
1	Integral	Printed Antenna	UFL	2.9	2.7
2	Integral	Printed Antenna	UFL	2.9	2.7

Note:

For IEEE 802.11a/n/ac mode (2TX/2RX)

Chain 1 and Chain 2 can be used as transmitting/receiving antenna.

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

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

The following test modes were performed for all tests:

For Radiated Emission test above 1GHz:

Mode 1: Place EUT in Y axis

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 FA330625-05) 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 Class II Change

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

Modifications	Performance Checking
Update 5 GHz Band 1 and Band 4 to FCC "New Rules" from "Old Rules" for the model: R6100.	1. 26dB Bandwidth and 99% Occupied Bandwidth Measurement 2. 6dB Spectrum Bandwidth Measurement 3. Maximum Conducted Output Power Measurement 4. Power Spectral Density Measurement 5. Radiated Emissions Measurement above 1GHz 6. Band Edge Emissions Measurement 7. Frequency Stability Measurement

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	DoS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	23	26	27	19	27	21.5
802.11ac MCS0/Nss1 VHT20	23.5	26	27	19.5	27	21.5
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	19.5		26.5		17	24
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	14				14	

3.10. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

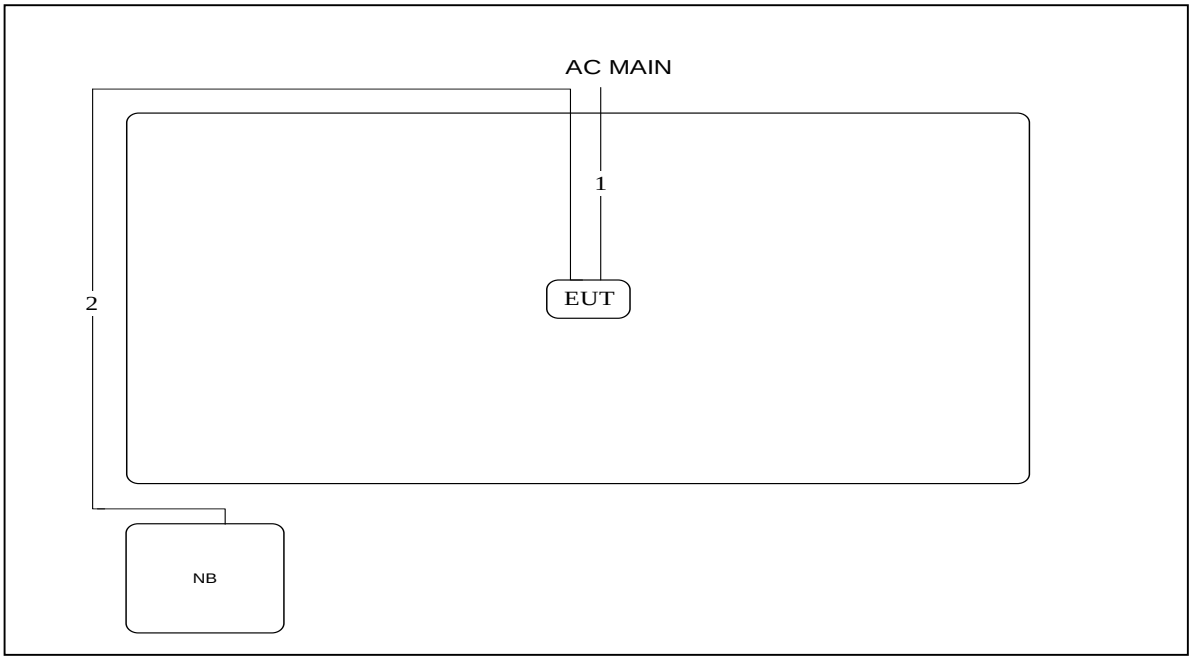
3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	5.359	5.424	98.80%	0.05	0.01
802.11ac MCS0/Nss1 VHT20	4.980	5.023	99.16%	0.04	0.01
802.11ac MCS0/Nss1 VHT40	4.158	4.242	98.03%	0.09	0.01
802.11ac MCS0/Nss1 VHT80	3.596	3.666	98.10%	0.08	0.01

3.12. Test Configurations

3.12.1. Radiation Emissions Test Configuration

Test Configuration: above 1GHz



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

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

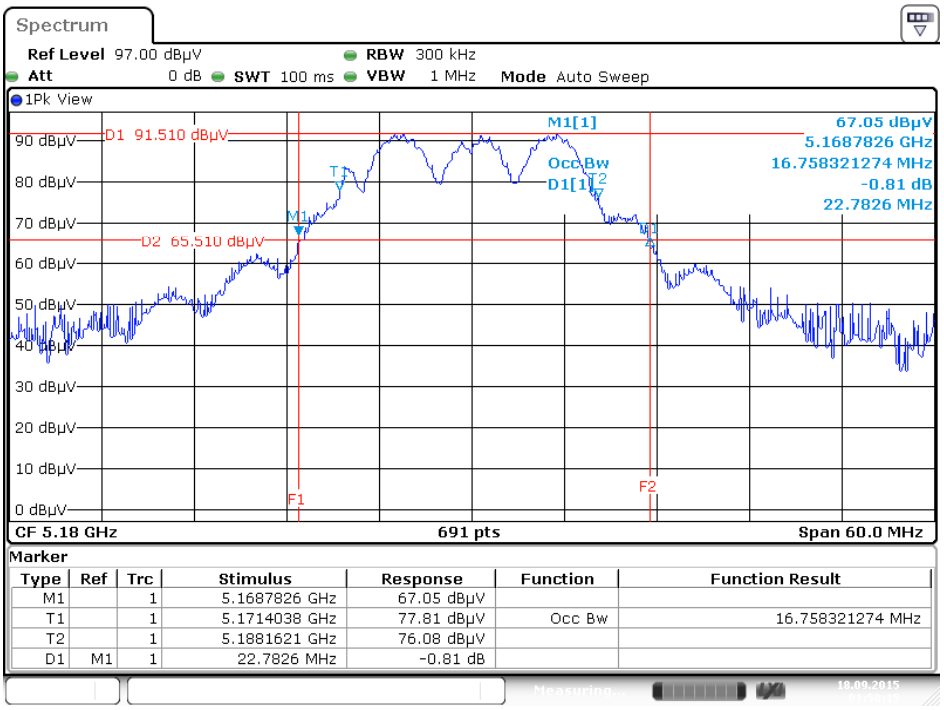
The EUT was programmed to be in continuously transmitting mode.

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

Temperature	24°C	Humidity	60%
Test Engineer	Nick Peng & Clemens Fang		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	22.78	16.76
	5200 MHz	31.83	20.58
	5240 MHz	35.48	20.32
	5745 MHz	22.43	16.76
	5785 MHz	41.83	30.04
	5825 MHz	25.22	17.11
802.11ac MCS0/Nss1 VHT20	5180 MHz	25.57	18.76
	5200 MHz	29.74	20.93
	5240 MHz	27.83	19.88
	5745 MHz	25.57	18.84
	5785 MHz	34.43	25.09
	5825 MHz	25.22	18.58
802.11ac MCS0/Nss1 VHT40	5190 MHz	48.70	38.06
	5230 MHz	66.09	40.09
	5755 MHz	46.96	37.92
	5795 MHz	46.23	36.47
802.11ac MCS0/Nss1 VHT80	5210 MHz	92.17	76.99
	5775 MHz	90.15	76.70

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



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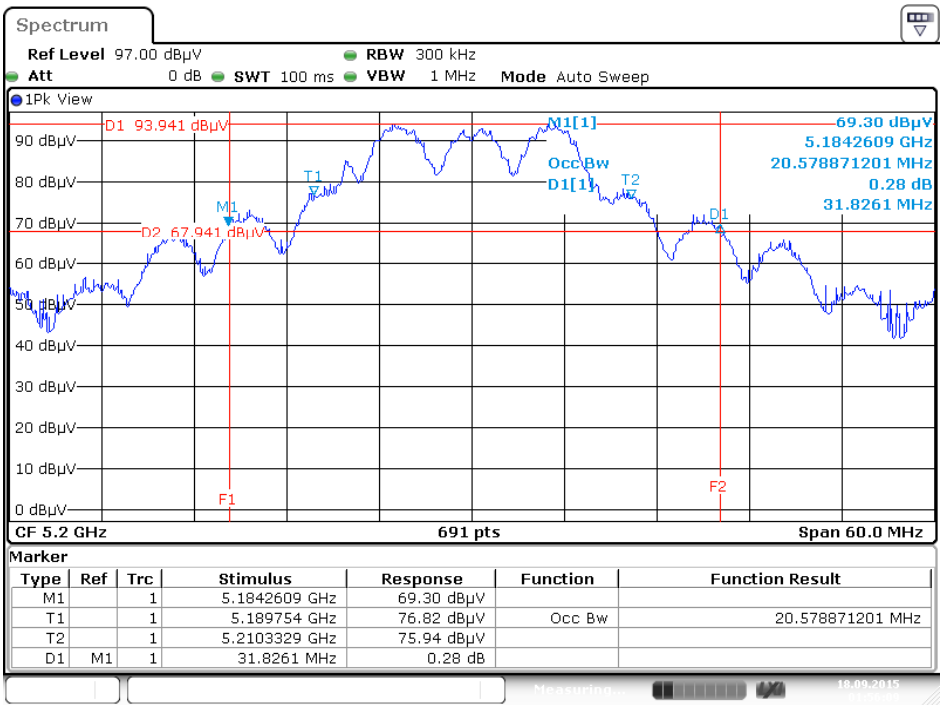
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5200 MHz



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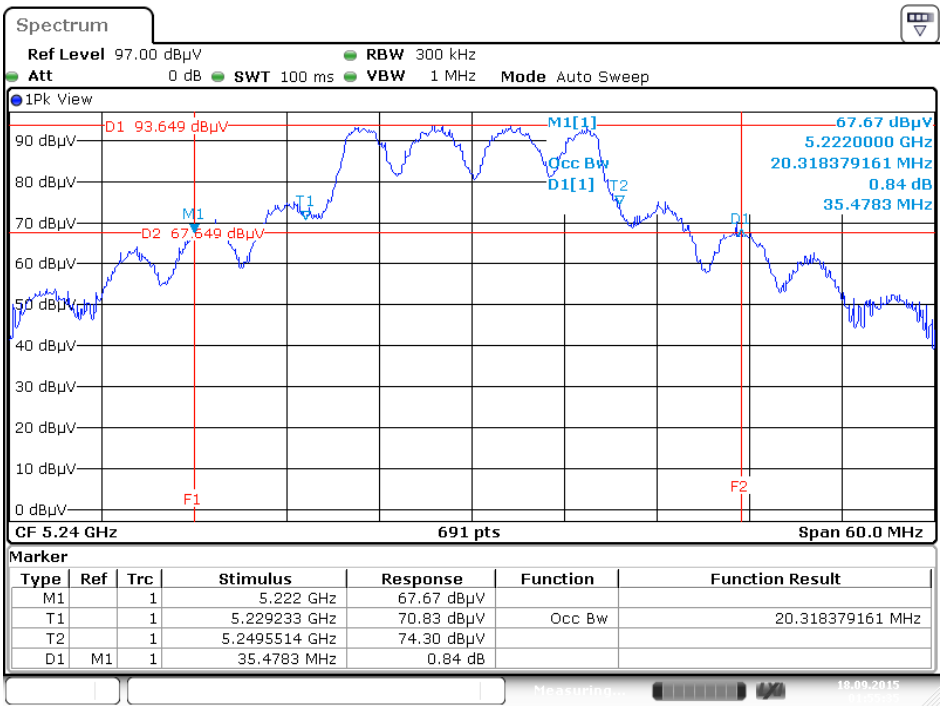
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5240 MHz



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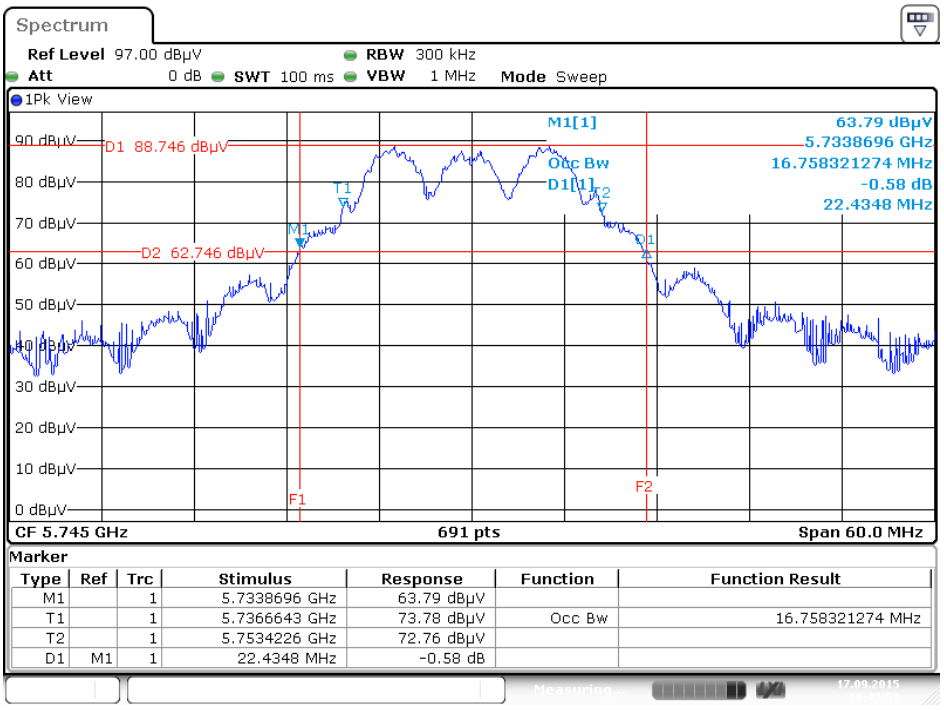
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5745 MHz



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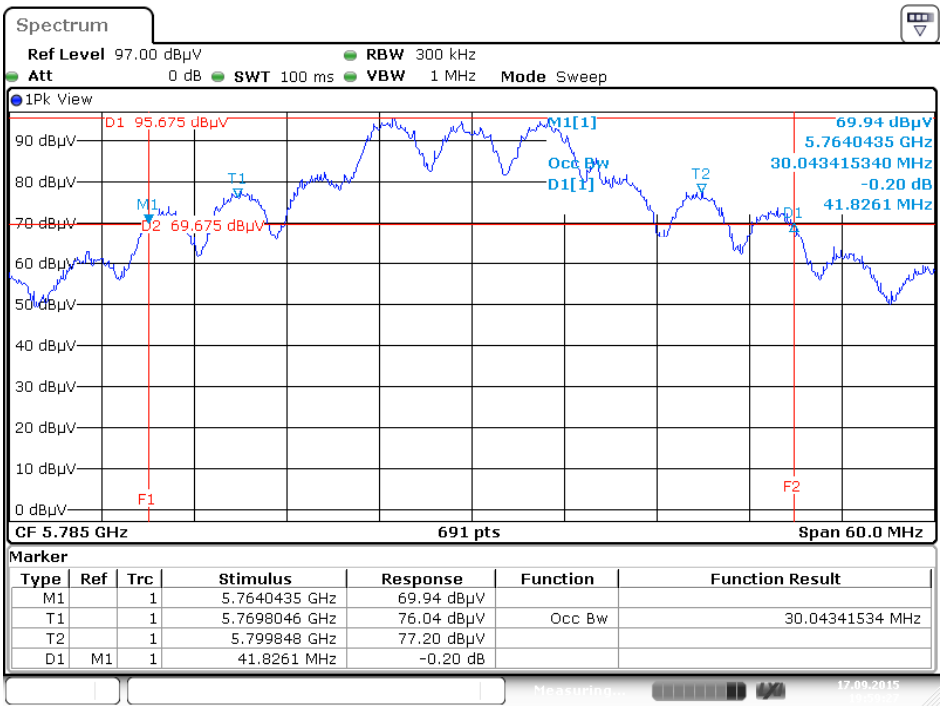
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5785 MHz



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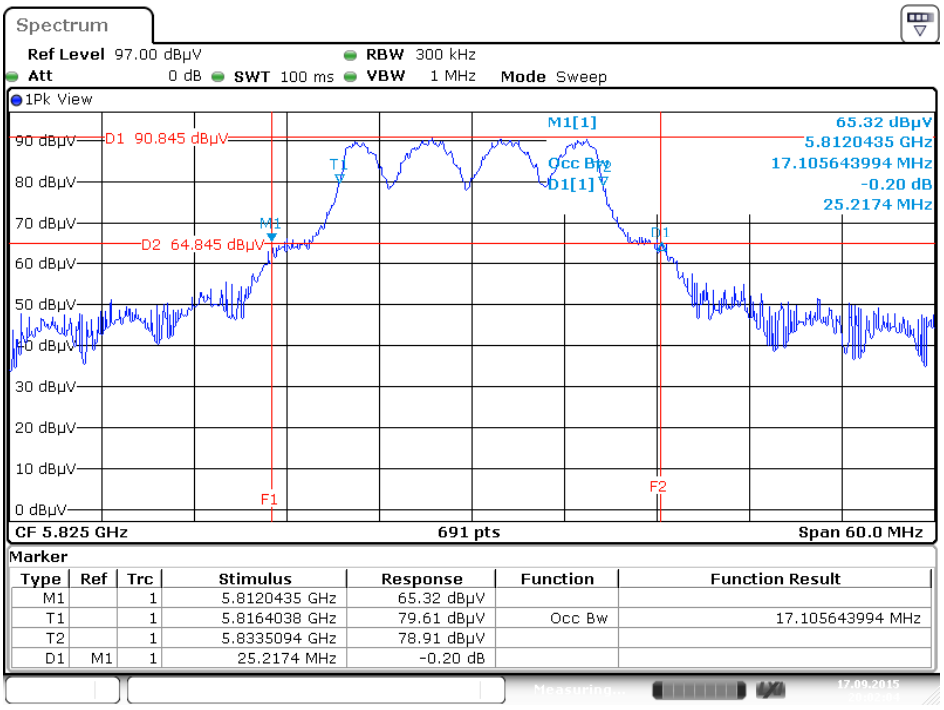
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5825 MHz



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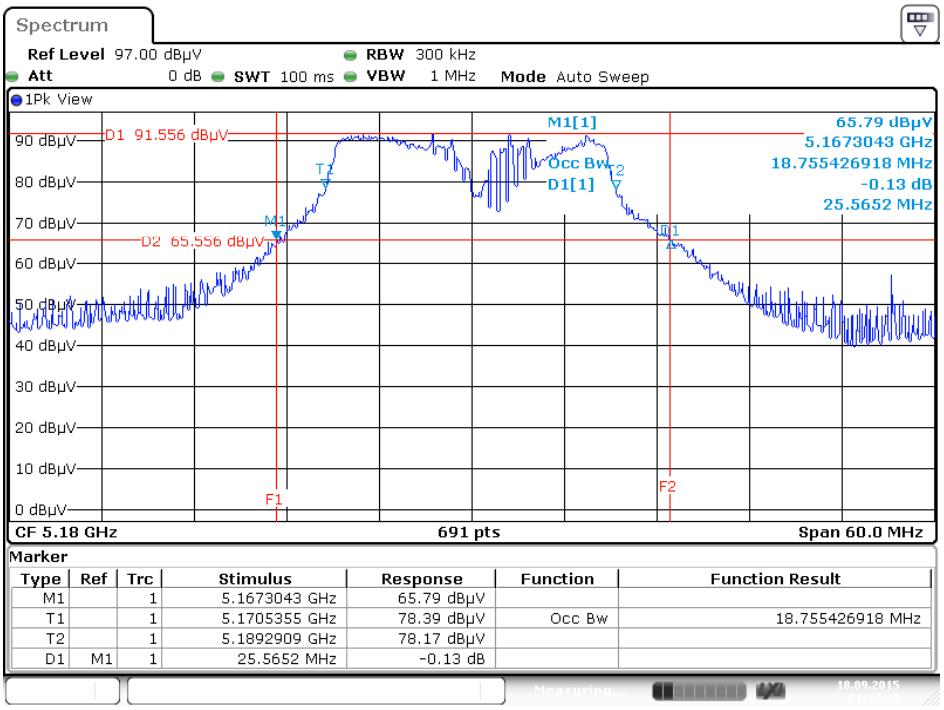
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5180 MHz



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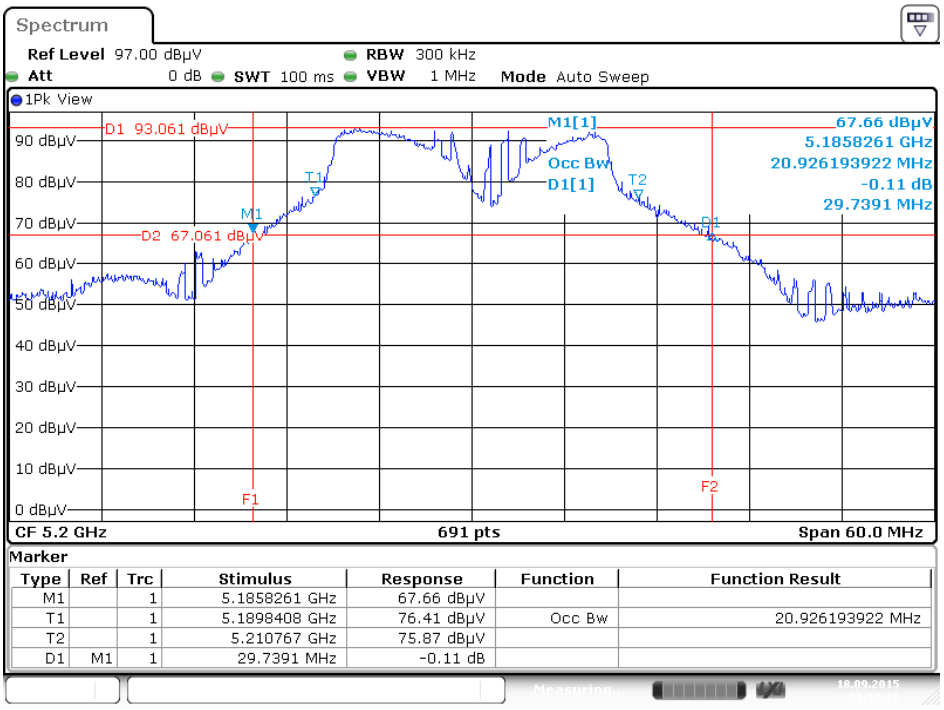
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5200 MHz



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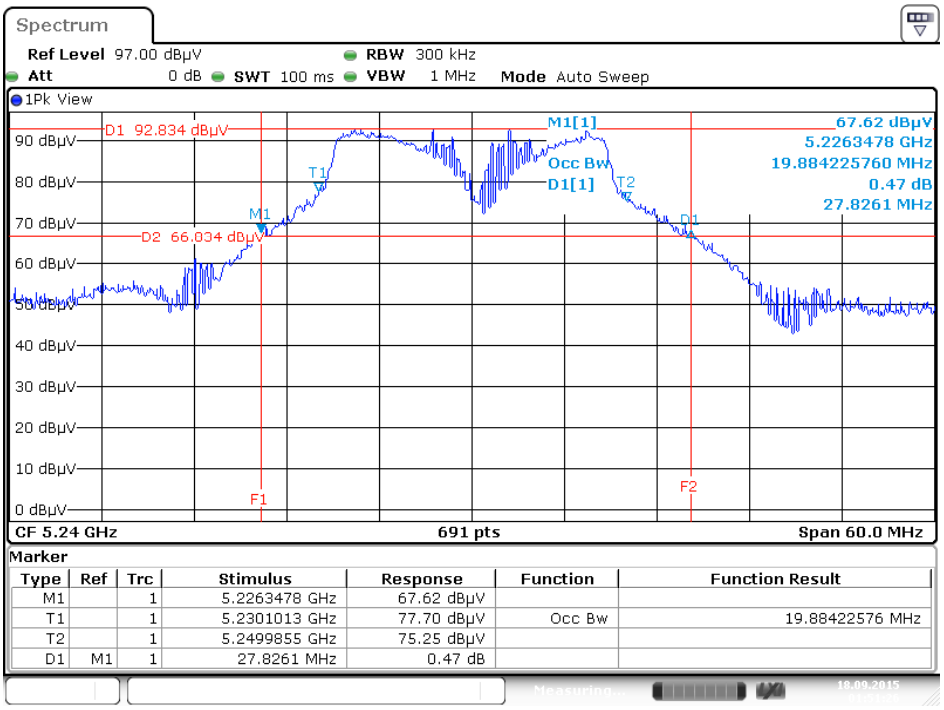
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5240 MHz



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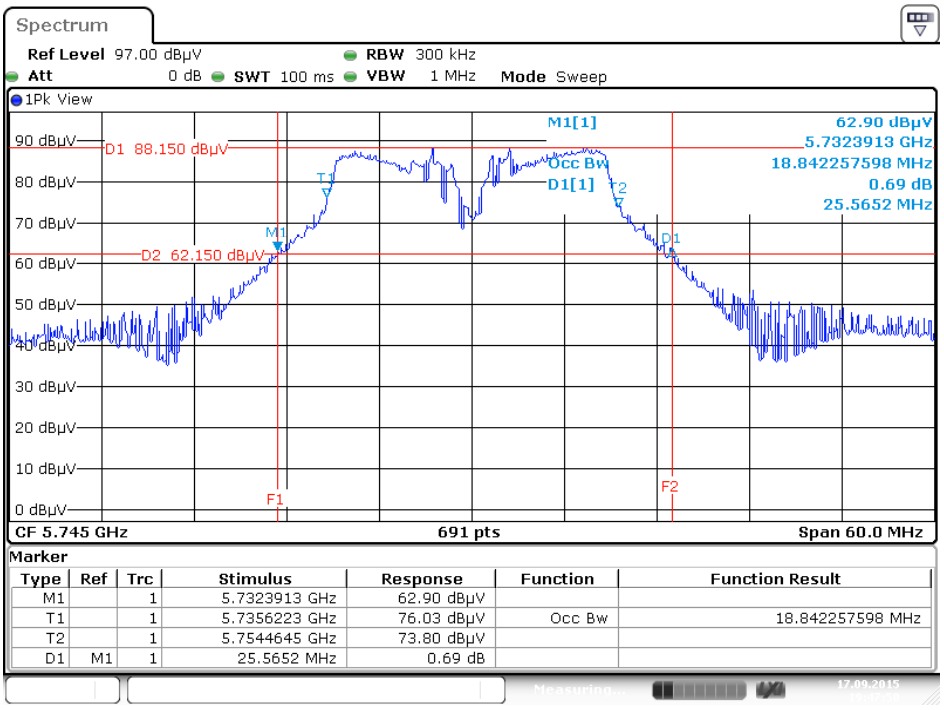
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5745 MHz



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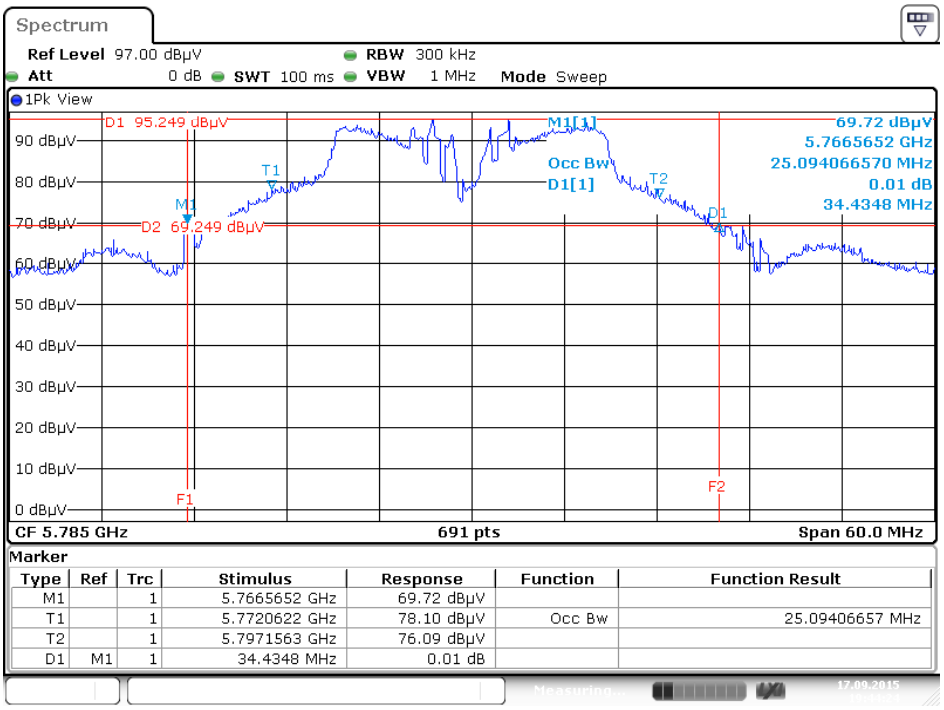
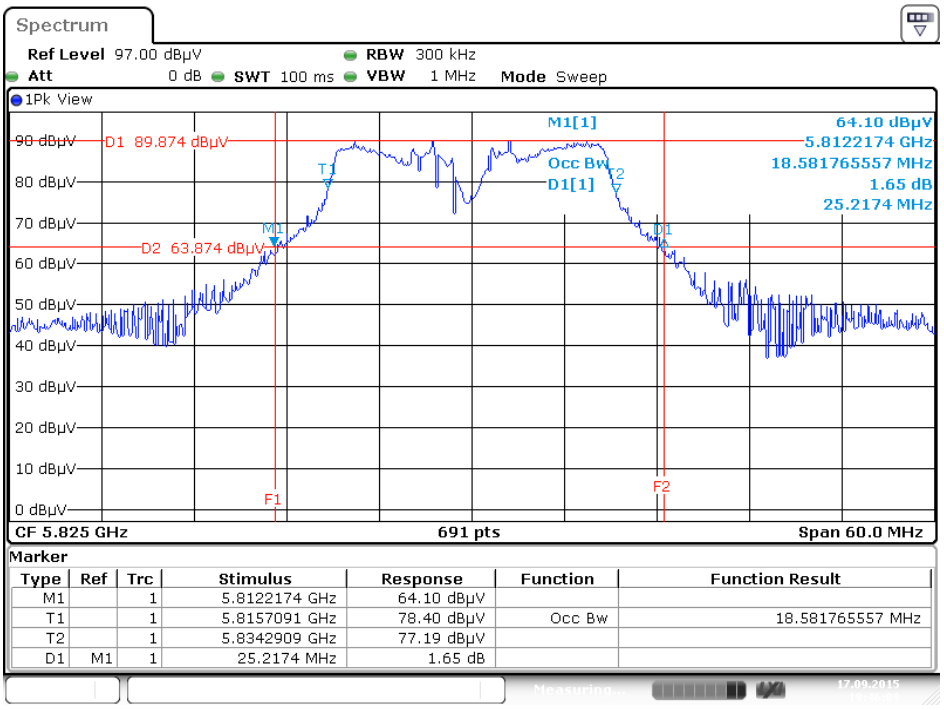
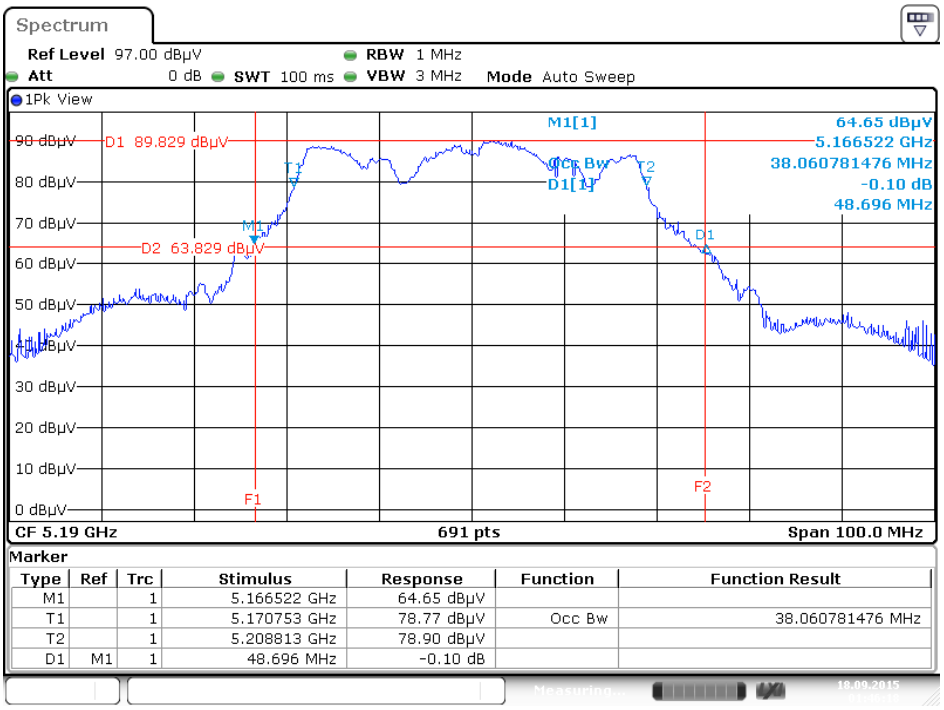
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5785 MHz



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



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



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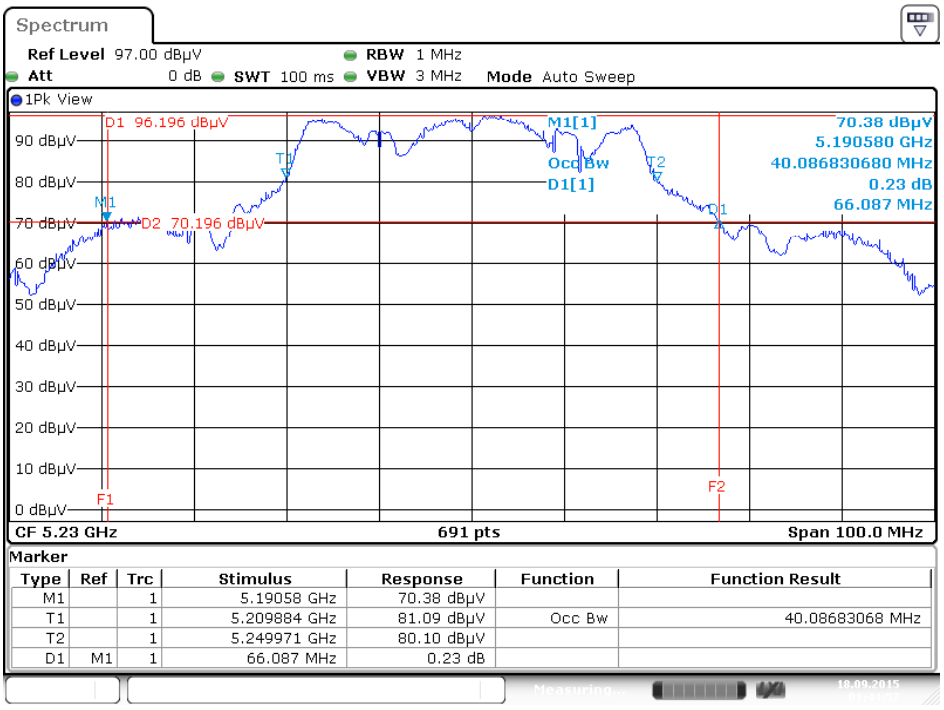
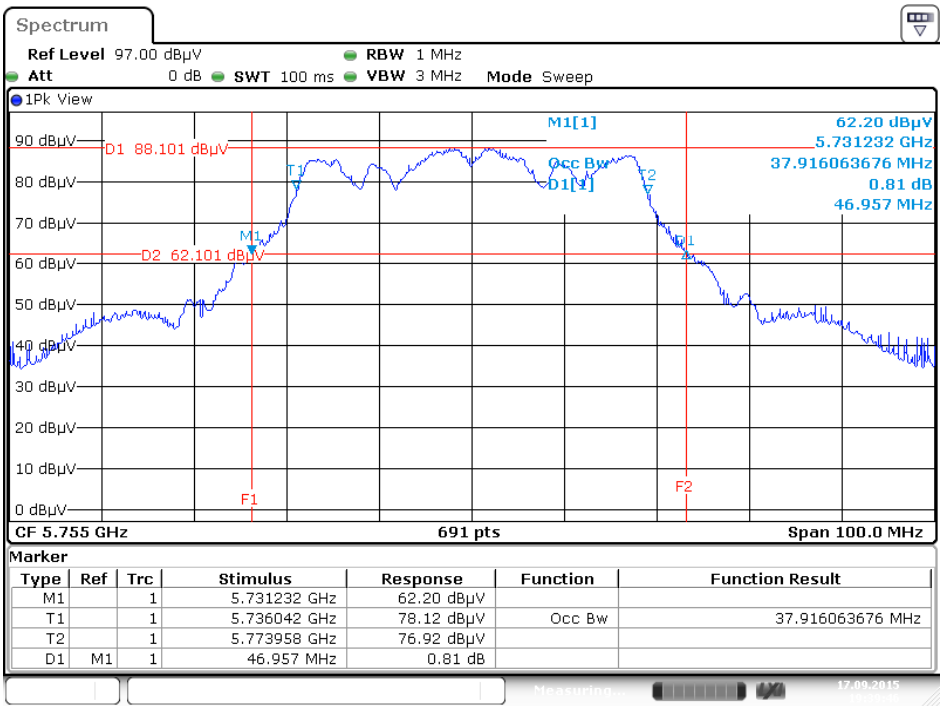
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5230 MHz



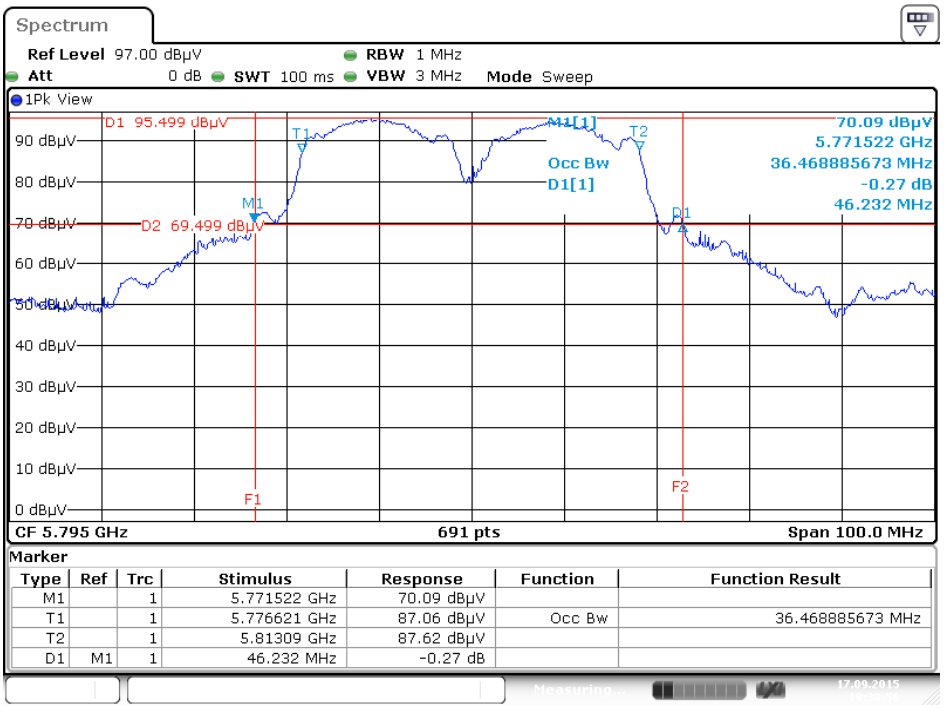
Date: 18.SEP.2015 01:44:57

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



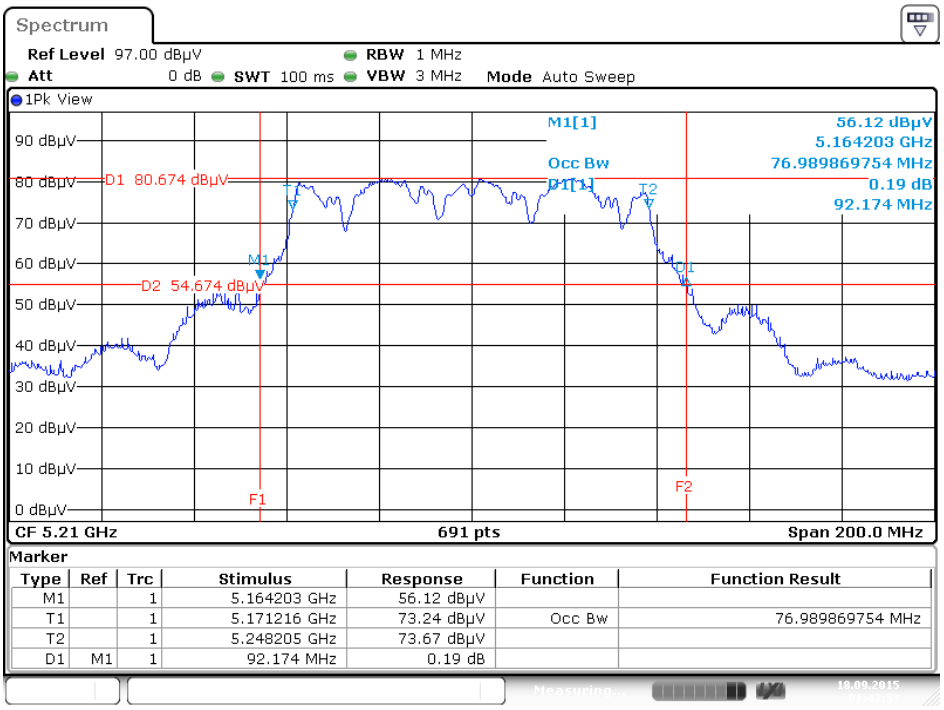
Date: 17.SEP.2015 19:39:46

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



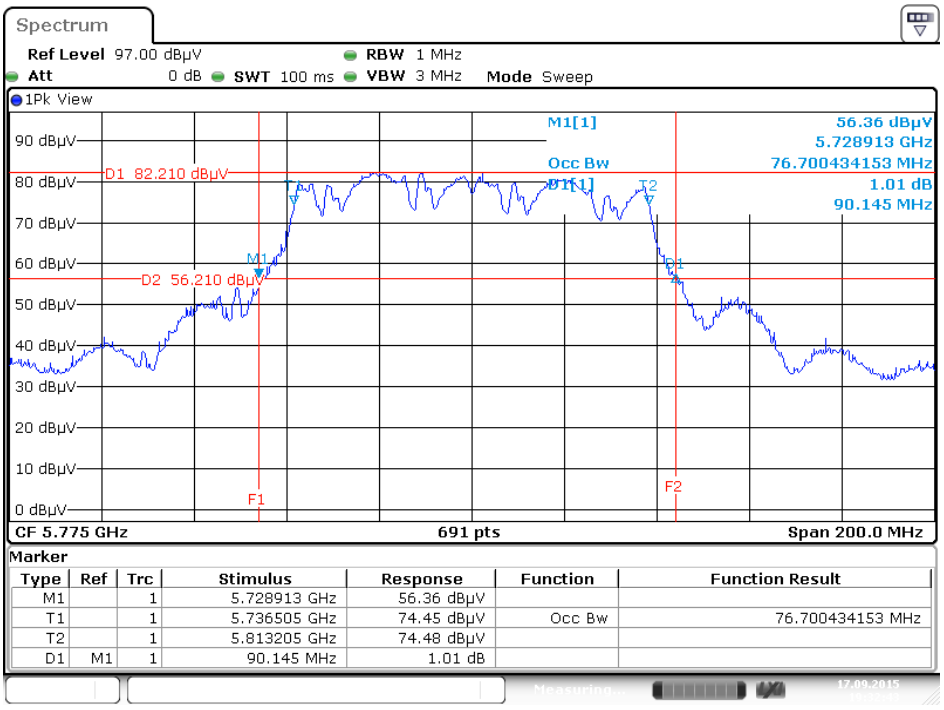
Date: 17.SEP.2015 19:38:56

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



Date: 18.SEP.2015 01:43:53

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



Date: 17.SEP.2015 19:32:43

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. 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

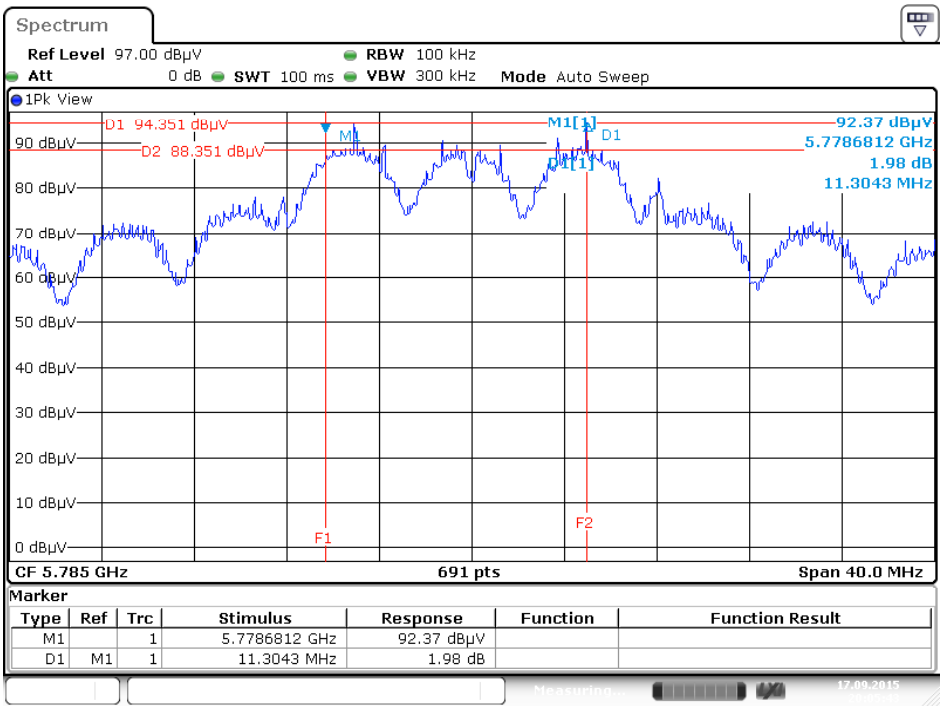
Temperature	24°C	Humidity	60%
Test Engineer	Nick Peng & Clemens Fang		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	12.52	500	Complies
	5785 MHz	11.30	500	Complies
	5825 MHz	16.06	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.16	500	Complies
	5785 MHz	16.87	500	Complies
	5825 MHz	17.04	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	34.09	500	Complies
	5795 MHz	35.36	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	61.74	500	Complies

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

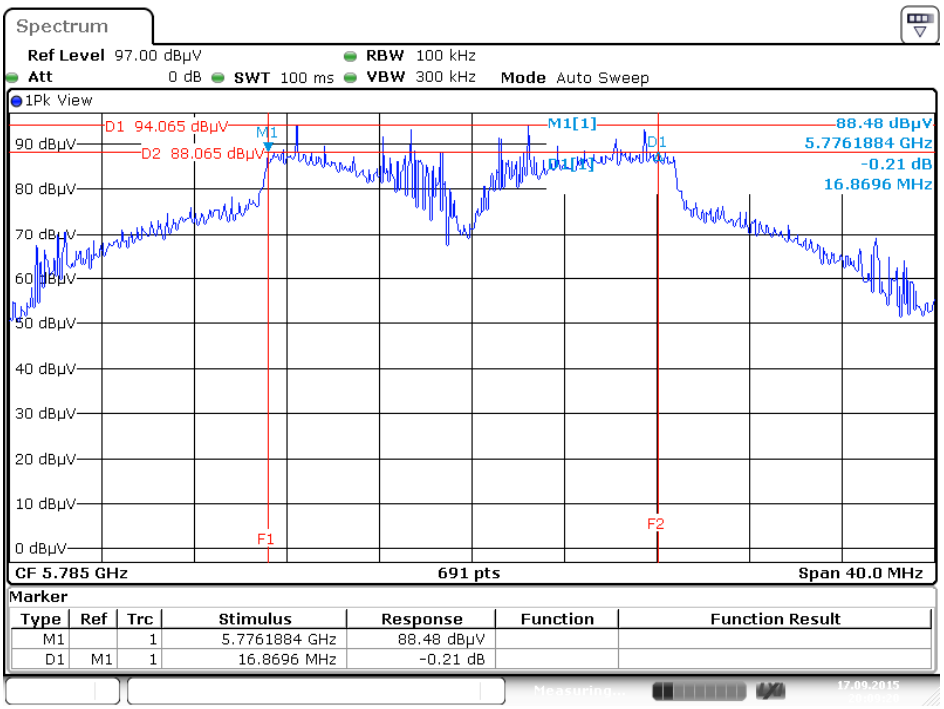
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5785 MHz



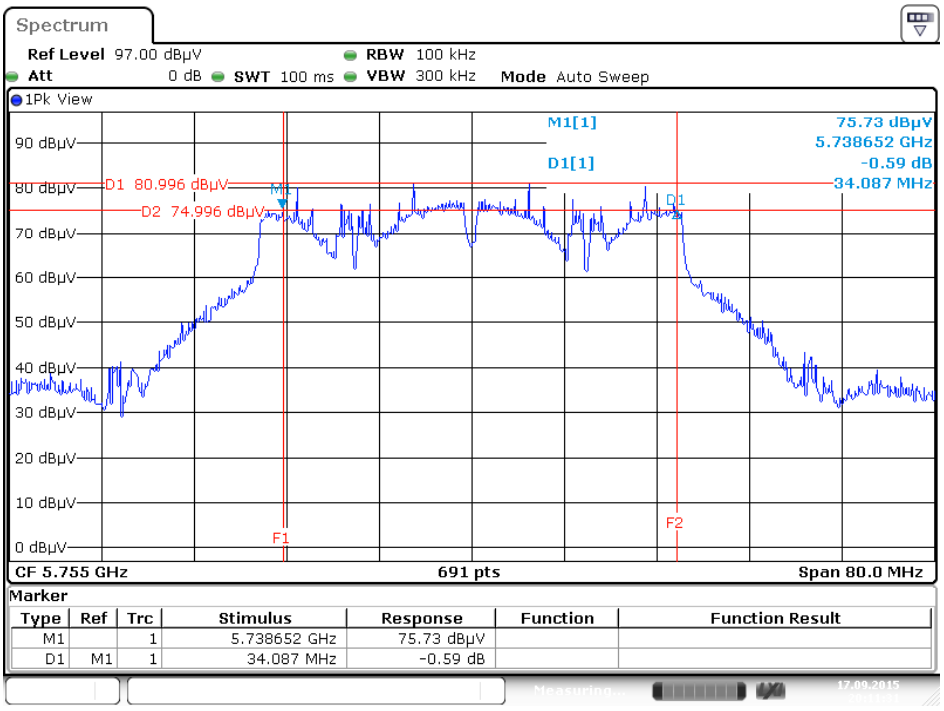
Date: 17.SEP.2015 20:05:43

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5785 MHz



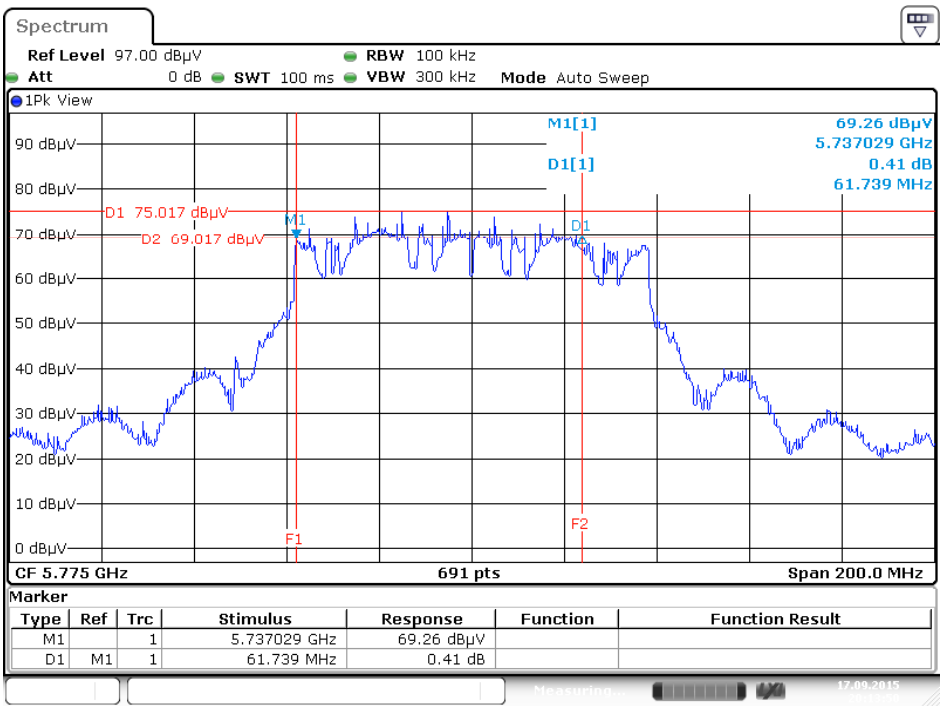
Date: 17.SEP.2015 20:09:21

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



Date: 17.SEP.2015 20:11:31

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



Date: 17.SEP.2015 20:13:51

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.

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

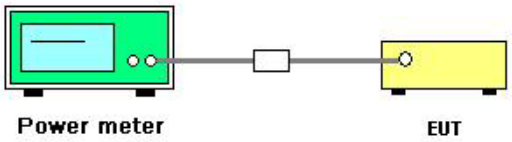
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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. 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	24°C	Humidity	60%
Test Engineer	Nick Peng & Clemens Fang	Test Date	Sep. 17, 2015 ~ Sep. 18, 2015

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11a	5180 MHz	23.90	23.84	26.88	30.00	Complies
	5200 MHz	26.04	26.14	29.10	30.00	Complies
	5240 MHz	26.44	26.29	29.38	30.00	Complies
	5745 MHz	20.35	19.36	22.89	30.00	Complies
	5785 MHz	25.83	26.28	29.07	30.00	Complies
	5825 MHz	21.68	22.52	25.13	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	24.23	24.73	27.50	30.00	Complies
	5200 MHz	26.03	26.02	29.04	30.00	Complies
	5240 MHz	26.35	26.37	29.37	30.00	Complies
	5745 MHz	20.75	19.79	23.31	30.00	Complies
	5785 MHz	26.01	26.15	29.09	30.00	Complies
	5825 MHz	21.62	22.58	25.14	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	19.68	19.79	22.75	30.00	Complies
	5230 MHz	25.91	26.17	29.05	30.00	Complies
	5755 MHz	16.66	17.01	19.85	30.00	Complies
	5795 MHz	23.75	24.10	26.94	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	13.68	14.02	16.86	30.00	Complies
	5775 MHz	13.65	14.16	16.92	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
☐	5.25-5.35 GHz		11 dBm/MHz
☐	5.470-5.725 GHz		11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

4.4.2. Measuring Instruments and Setting

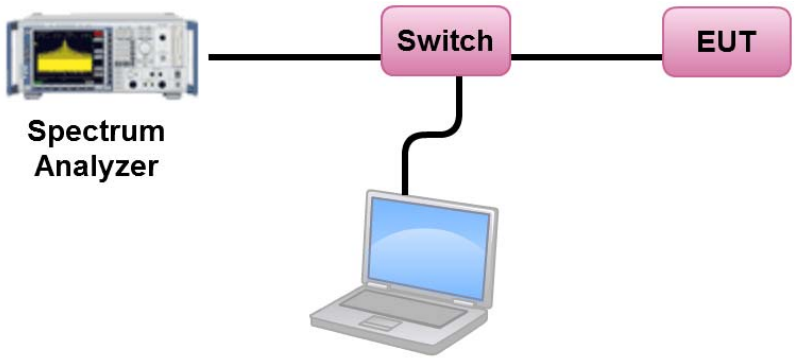
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements (a) Measure and sum the spectra across the outputs.
4. When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.
5. For 5.725~5.85 GHz, the measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.4.4. 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	24°C	Humidity	60%
Test Engineer	Nick Peng & Clemens Fang	Test Date	Sep. 17, 2015 ~ Sep. 18, 2015

Configuration IEEE 802.11a / Chain 1 + Chain 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	13.80	17.00	Complies
40	5200 MHz	15.95	17.00	Complies
48	5240 MHz	16.08	17.00	Complies

Note:

5G Band 1 = $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.91dBi <6dBi, so the limit doesn't reduce.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	9.76	-3.01	6.75	30.00	Complies
157	5785 MHz	15.79	-3.01	12.78	30.00	Complies
165	5825 MHz	12.12	-3.01	9.11	30.00	Complies

Note:

5G Band 4 = $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.71dBi <6dBi, so the limit doesn't reduce.

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	14.19	17.00	Complies
40	5200 MHz	15.84	17.00	Complies
48	5240 MHz	16.21	17.00	Complies

Note:

5G Band 1= $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.91dBi <6dBi, so the limit doesn't reduce.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	10.29	-3.01	7.28	30.00	Complies
157	5785 MHz	15.72	-3.01	12.71	30.00	Complies
165	5825 MHz	12.11	-3.01	9.10	30.00	Complies

Note:

5G Band 4 = $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.71dBi <6dBi, so the limit doesn't reduce.

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	6.41	17.00	Complies
46	5230 MHz	12.89	17.00	Complies

Note:

5G Band 1 = $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.91dBi <6dBi, so the limit doesn't reduce.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	3.72	-3.01	0.71	30.00	Complies
159	5795 MHz	10.93	-3.01	7.92	30.00	Complies

Note:

5G Band 4 = $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.71dBi <6dBi, so the limit doesn't reduce.

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-2.45	17.00	Complies

Note:

5G Band 1 = $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.91dBi <6dBi, so the limit doesn't reduce.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	-2.25	-3.01	-5.26	30.00	Complies

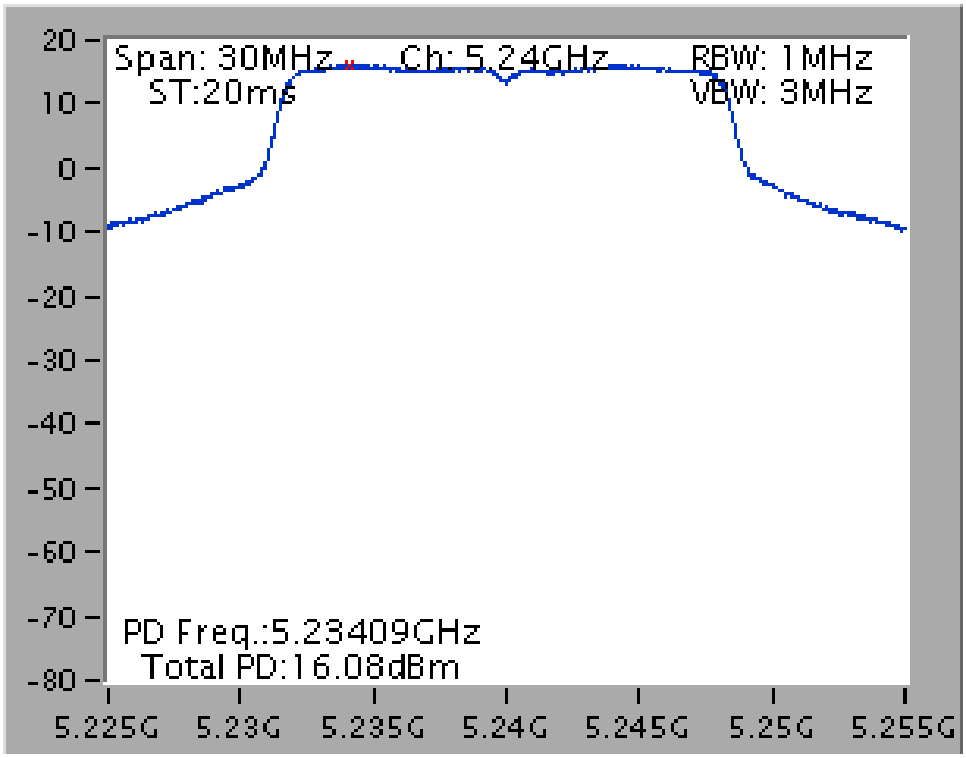
Note:

5G Band 4 = $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ = 5.71dBi <6dBi, so the limit doesn't reduce.

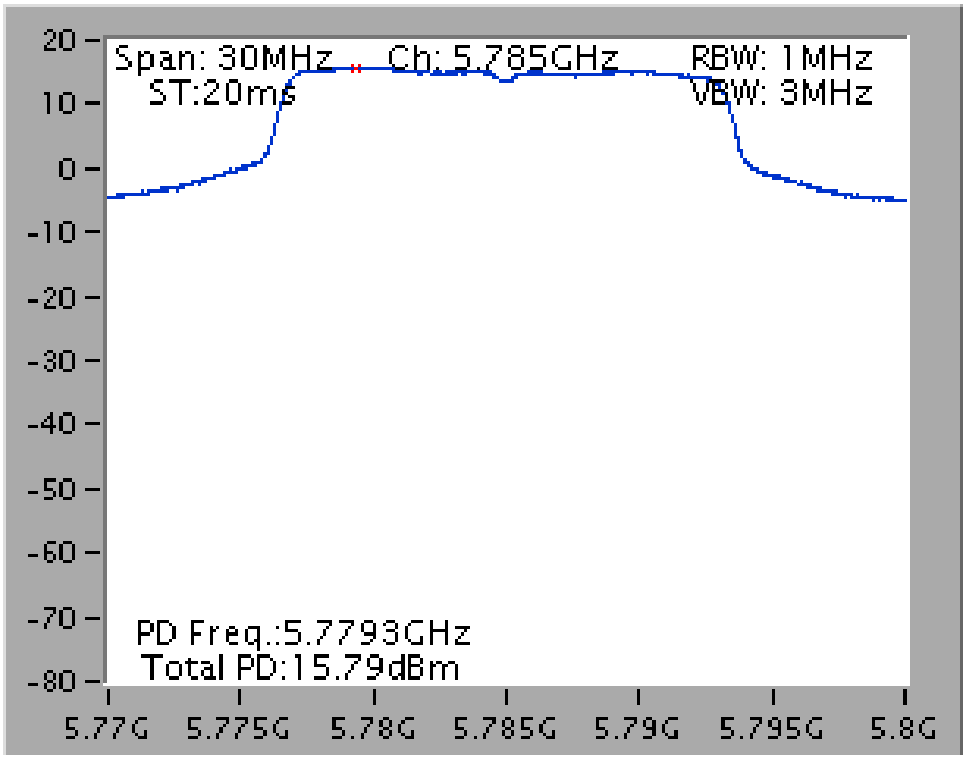
Note: All the test values were listed in the report.

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

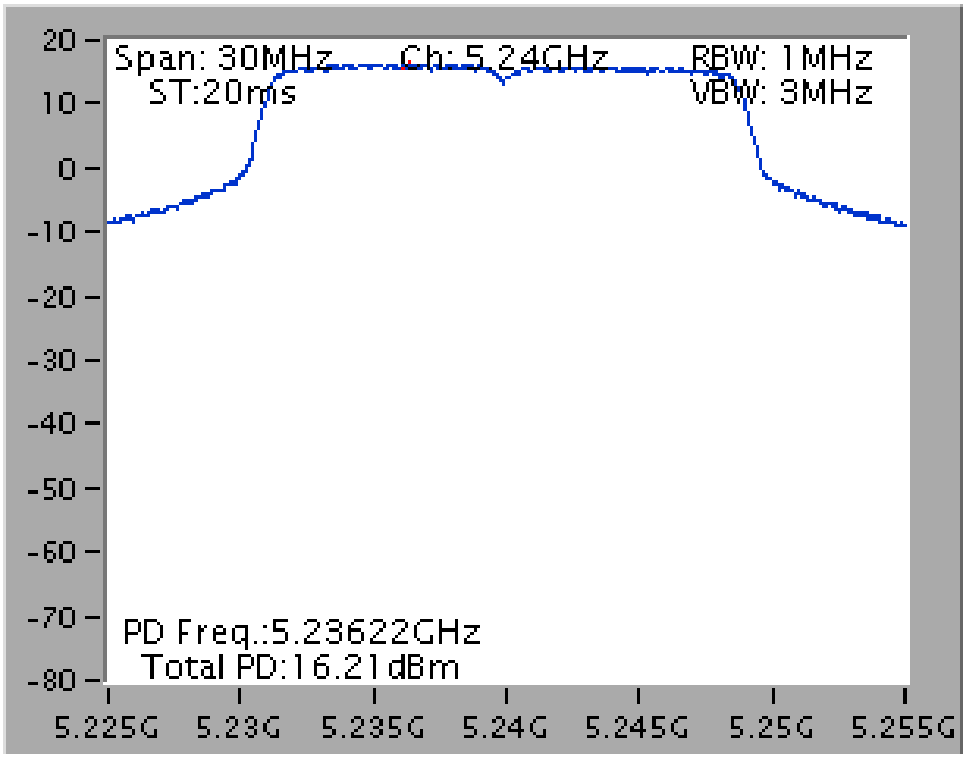
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5240 MHz



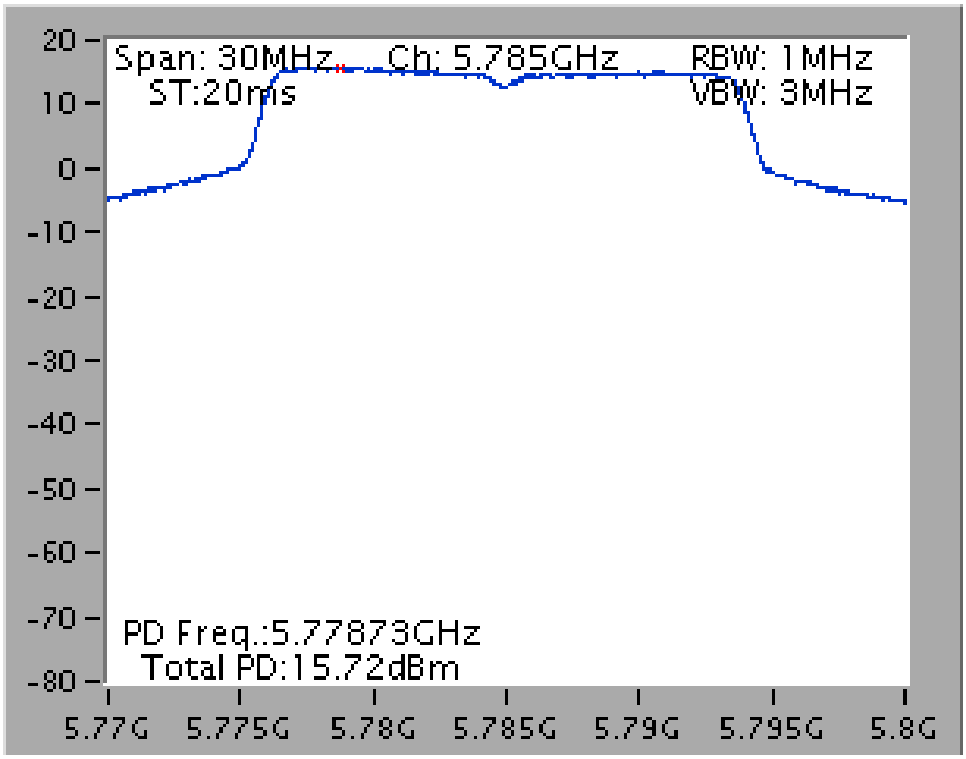
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5785 MHz



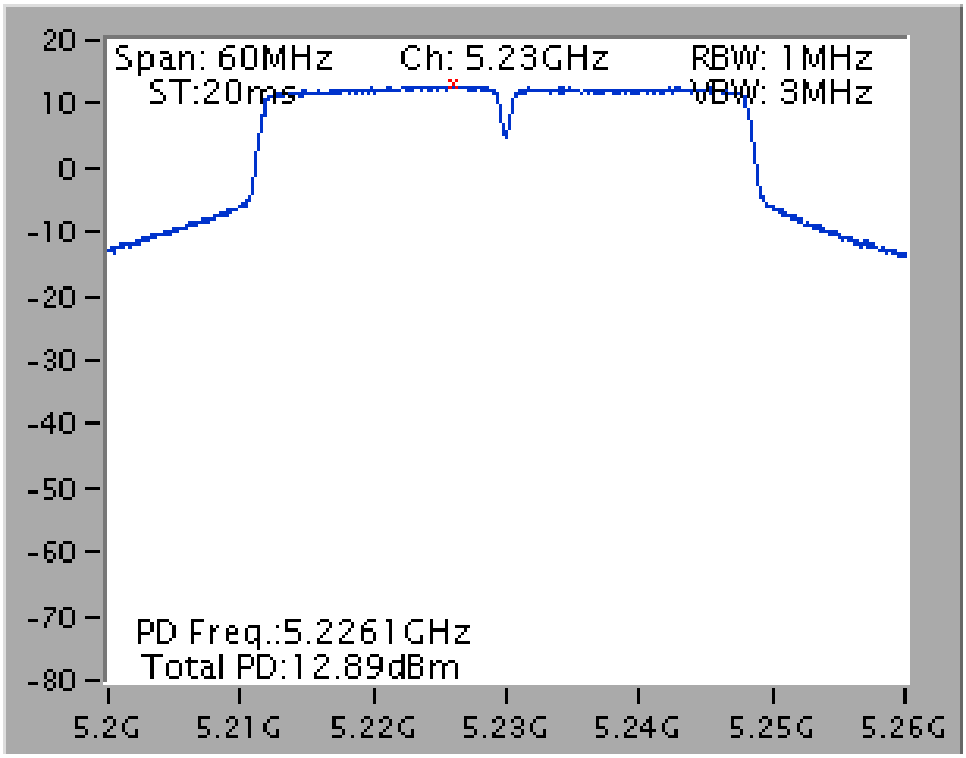
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5240 MHz



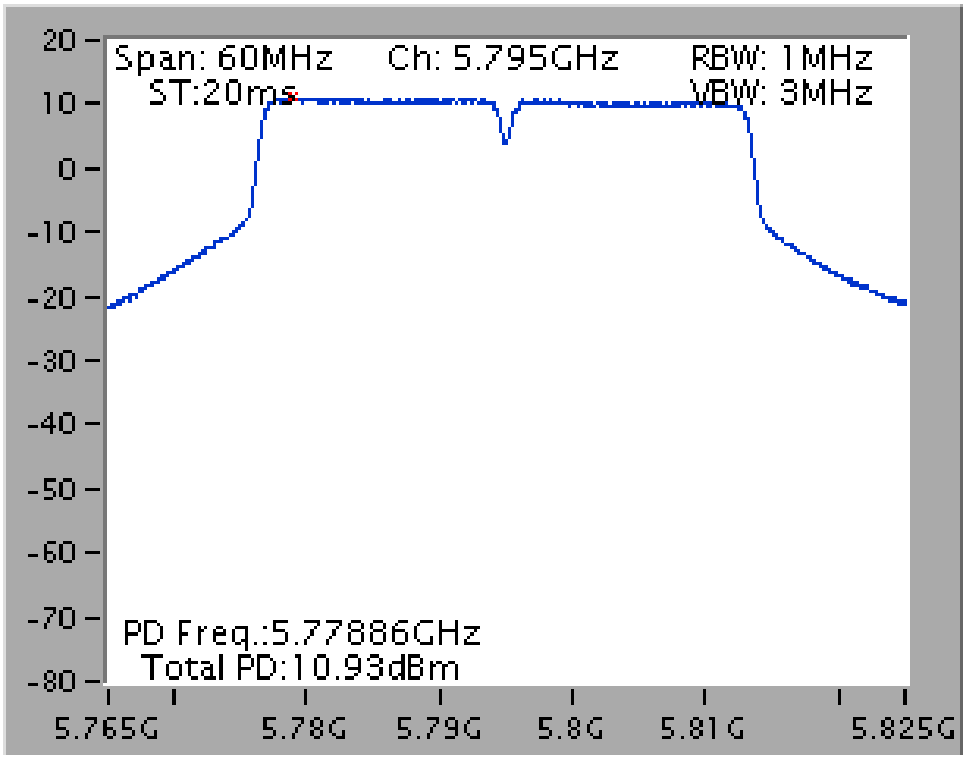
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5785 MHz



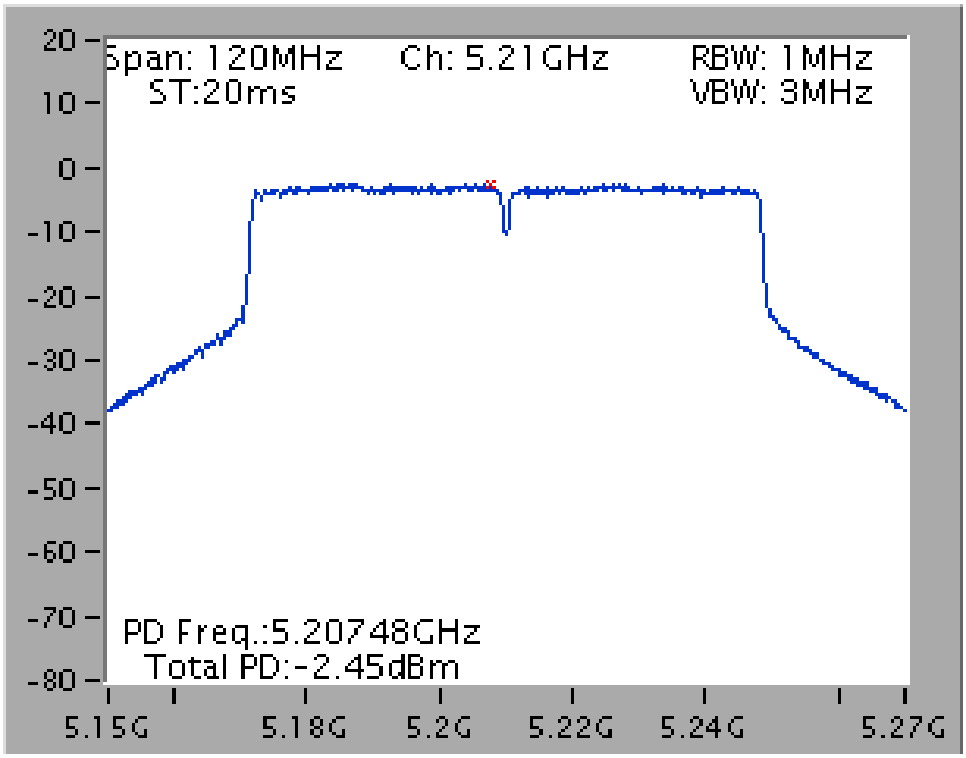
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5230 MHz



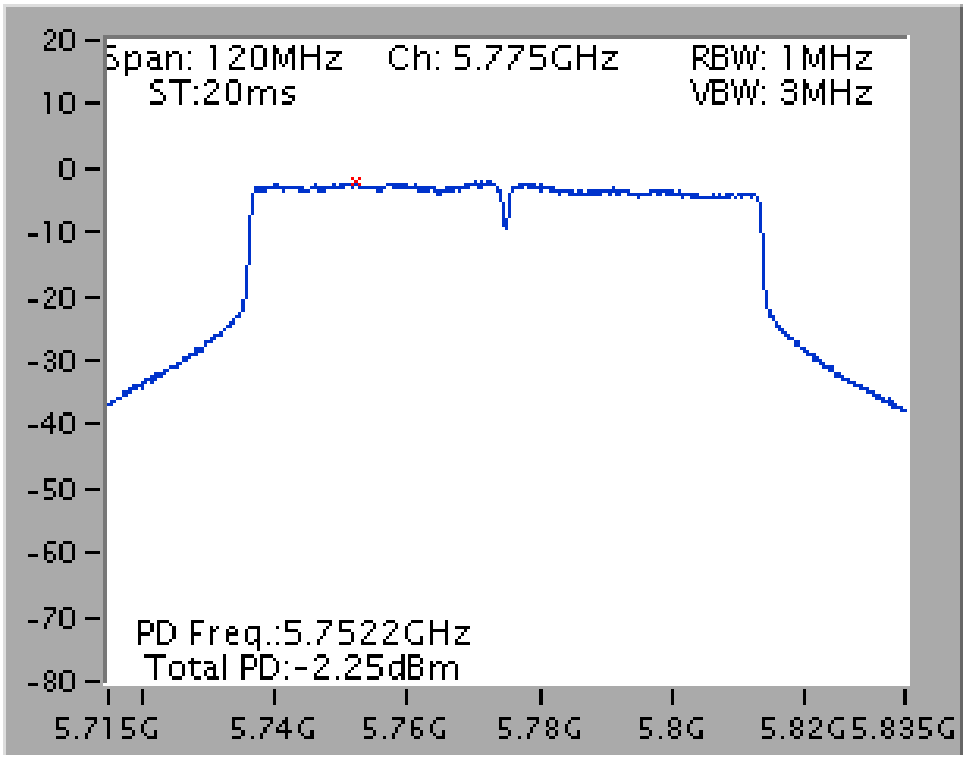
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5795 MHz



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



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 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 5.15-5.25 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.

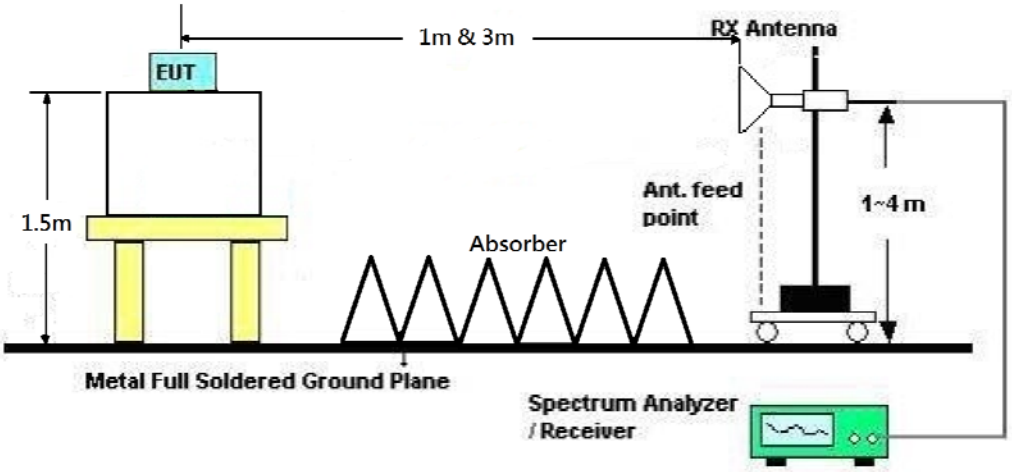
Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

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	22°C	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2
Test Date	Jul. 18, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	15540.30	47.27	54.00	-6.73	31.36	38.34	12.92	35.35	162	89	HORIZONTAL	Average
2	15540.99	58.21	74.00	-15.79	42.30	38.34	12.92	35.35	162	89	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	15542.94	57.44	74.00	-16.56	41.53	38.34	12.92	35.35	155	254	VERTICAL	Peak
2	15543.76	47.10	54.00	-6.90	31.19	38.34	12.92	35.35	155	254	VERTICAL	Average

Temperature	22°C	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2
Test Date	Jul. 28, 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	15596.50	53.69	54.00	-0.31	39.97	10.78	38.16	35.22	Average	172	303	HORIZONTAL
2	15601.70	67.44	74.00	-6.56	53.74	10.78	38.16	35.24	Peak	172	303	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	15599.50	52.12	54.00	-1.88	38.42	10.78	38.16	35.24	Average	171	360	VERTICAL
2	15599.50	65.79	74.00	-8.21	52.09	10.78	38.16	35.24	Peak	171	360	VERTICAL

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2
Test Date	Jul. 28, 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	15716.30	68.18	74.00	-5.82	54.68	10.79	37.99	35.28	Peak	165	302	HORIZONTAL
2	15719.10	53.96	54.00	-0.04	40.46	10.79	37.99	35.28	Average	165	302	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	15719.00	52.29	54.00	-1.71	38.79	10.79	37.99	35.28	Average	174	0	VERTICAL
2	15729.30	64.90	74.00	-9.10	51.41	10.79	37.99	35.29	Peak	174	0	VERTICAL

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2
Test Date	Jul. 23, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11489.72	46.72	54.00	-7.28	31.02	39.90	11.03	35.23	162	255	HORIZONTAL	Average
2	11490.38	59.60	74.00	-14.40	43.90	39.90	11.03	35.23	162	255	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11488.93	46.85	54.00	-7.15	31.15	39.90	11.03	35.23	155	136	VERTICAL	Average
2	11489.15	59.64	74.00	-14.36	43.94	39.90	11.03	35.23	155	136	VERTICAL	Peak

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2
Test Date	Jul. 28, 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	11570.88	45.52	54.00	-8.48	31.94	9.26	39.14	34.82	Average	171	301	HORIZONTAL
2	11576.08	57.85	74.00	-16.15	44.27	9.26	39.14	34.82	Peak	171	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	11569.84	46.11	54.00	-7.89	32.53	9.26	39.14	34.82	Average	165	258	VERTICAL
2	11570.64	57.16	74.00	-16.84	43.58	9.26	39.14	34.82	Peak	165	258	VERTICAL

Temperature	22°C	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2
Test Date	Jul. 23, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11650.64	46.54	54.00	-7.46	31.03	39.63	11.10	35.22	172	219	HORIZONTAL	Average
2	11651.26	59.93	74.00	-14.07	44.48	39.57	11.10	35.22	172	219	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11648.84	46.90	54.00	-7.10	31.39	39.63	11.10	35.22	169	42	VERTICAL	Average
2	11649.94	59.47	74.00	-14.53	43.96	39.63	11.10	35.22	169	42	VERTICAL	Peak

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2
Test Date	Jul. 18, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	15542.40	47.78	54.00	-6.22	31.87	38.34	12.92	35.35	172	19	HORIZONTAL	Average
2	15542.42	56.92	74.00	-17.08	41.01	38.34	12.92	35.35	172	19	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	15537.97	48.48	54.00	-5.52	32.57	38.34	12.92	35.35	156	360	VERTICAL	Average
2	15540.14	59.90	74.00	-14.10	43.99	38.34	12.92	35.35	156	360	VERTICAL	Peak

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2
Test Date	Jul. 28, 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	15594.24	67.20	74.00	-6.80	53.46	10.78	38.18	35.22	Peak	164	302	HORIZONTAL
2	15596.40	53.55	54.00	-0.45	39.83	10.78	38.16	35.22	Average	164	302	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	15597.12	63.12	74.00	-10.88	49.40	10.78	38.16	35.22	Peak	175	0	VERTICAL
2	15599.04	50.47	54.00	-3.53	36.77	10.78	38.16	35.24	Average	175	0	VERTICAL

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2
Test Date	Jul. 28, 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	15725.28	67.72	74.00	-6.28	54.22	10.79	37.99	35.28	Peak	165	302	HORIZONTAL
2	15725.40	53.46	54.00	-0.54	39.96	10.79	37.99	35.28	Average	165	302	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	15717.72	52.35	54.00	-1.65	38.85	10.79	37.99	35.28	Average	175	0	VERTICAL
2	15720.36	65.17	74.00	-8.83	51.67	10.79	37.99	35.28	Peak	175	0	VERTICAL

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2
Test Date	Jul. 23, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11489.81	59.32	74.00	-14.68	43.62	39.90	11.03	35.23	169	235	HORIZONTAL	Peak
2	11491.24	46.65	54.00	-7.35	30.95	39.90	11.03	35.23	169	235	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11488.16	59.92	74.00	-14.08	44.22	39.90	11.03	35.23	160	67	VERTICAL	Peak
2	11488.59	46.62	54.00	-7.38	30.92	39.90	11.03	35.23	160	67	VERTICAL	Average

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2
Test Date	Jul. 28, 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	11567.30	57.76	74.00	-16.24	44.17	9.26	39.14	34.81	Peak	170	73	HORIZONTAL
2	11571.40	45.84	54.00	-8.16	32.26	9.26	39.14	34.82	Average	170	73	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	11570.30	46.13	54.00	-7.87	32.55	9.26	39.14	34.82	Average	170	158	VERTICAL
2	11586.50	57.34	74.00	-16.66	43.74	9.27	39.15	34.82	Peak	170	158	VERTICAL

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2
Test Date	Jul. 23, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11647.88	59.41	74.00	-14.59	43.90	39.63	11.10	35.22	170	246	HORIZONTAL	Peak
2	11649.72	46.11	54.00	-7.89	30.60	39.63	11.10	35.22	170	246	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11648.60	46.76	54.00	-7.24	31.25	39.63	11.10	35.22	170	129	VERTICAL	Average
2	11651.95	58.79	74.00	-15.21	43.34	39.57	11.10	35.22	170	129	VERTICAL	Peak

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2
Test Date	Jul. 18, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	15570.78	47.23	54.00	-6.77	31.38	38.27	12.94	35.36	154	249	HORIZONTAL	Average
2	15572.26	56.34	74.00	-17.66	40.49	38.27	12.94	35.36	154	249	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	15568.78	57.51	74.00	-16.49	41.66	38.27	12.94	35.36	165	329	VERTICAL	Peak
2	15570.59	47.05	54.00	-6.95	31.20	38.27	12.94	35.36	165	329	VERTICAL	Average

Temperature	22°C	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2
Test Date	Jul. 28, 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	15675.44	62.65	74.00	-11.35	49.07	10.79	38.06	35.27	Peak	165	293	HORIZONTAL
2	15696.40	49.86	54.00	-4.14	36.31	10.79	38.03	35.27	Average	165	293	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	15687.12	47.78	54.00	-6.22	34.23	10.79	38.03	35.27	Average	178	0	VERTICAL
2	15689.68	59.10	74.00	-14.90	45.55	10.79	38.03	35.27	Peak	178	0	VERTICAL

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2
Test Date	Jul. 18, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11507.16	47.04	54.00	-6.96	31.33	39.90	11.04	35.23	171	158	HORIZONTAL	Average
2	11507.74	56.35	74.00	-17.65	40.64	39.90	11.04	35.23	171	158	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11505.20	56.55	74.00	-17.45	40.84	39.90	11.04	35.23	170	256	VERTICAL	Peak
2	11505.22	46.09	54.00	-7.91	30.38	39.90	11.04	35.23	170	256	VERTICAL	Average

Temperature	22°C	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2
Test Date	Jul. 28, 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	11573.90	58.21	74.00	-15.79	44.63	9.26	39.14	34.82	Peak	165	190	HORIZONTAL
2	11603.30	46.07	54.00	-7.93	32.47	9.27	39.16	34.83	Average	165	190	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	11567.70	46.13	54.00	-7.87	32.54	9.26	39.14	34.81	Average	172	258	VERTICAL
2	11601.50	57.41	74.00	-16.59	43.81	9.27	39.16	34.83	Peak	172	258	VERTICAL

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2
Test Date	Jul. 18, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	15626.32	47.15	54.00	-6.85	31.33	38.21	12.97	35.36	189	229	HORIZONTAL	Average
2	15633.11	56.48	74.00	-17.52	40.65	38.21	12.98	35.36	189	229	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	15630.22	46.96	54.00	-7.04	31.13	38.21	12.98	35.36	155	311	VERTICAL	Average
2	15631.56	57.34	74.00	-16.66	41.51	38.21	12.98	35.36	155	311	VERTICAL	Peak

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2
Test Date	Jul. 18, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11550.00	54.70	74.00	-19.30	39.04	39.83	11.06	35.23	162	247	HORIZONTAL	Peak
2	11550.00	46.14	54.00	-7.86	30.48	39.83	11.06	35.23	162	247	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11550.00	55.84	74.00	-18.16	40.18	39.83	11.06	35.23	160	317	VERTICAL	Peak
2	11550.00	46.00	54.00	-8.00	30.34	39.83	11.06	35.23	160	317	VERTICAL	Average

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 5.15-5.25 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	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2
Test Date	Jul. 17, 2015 ~ Jul. 28, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5149.71	73.27	74.00	-0.73	67.36	31.52	7.33	32.94	181	349	VERTICAL	Peak
2	5150.00	52.12	54.00	-1.88	46.21	31.52	7.33	32.94	181	349	VERTICAL	Average
3	5185.21	105.00			99.03	31.55	7.36	32.94	181	349	VERTICAL	Average
4	5185.64	115.39			109.42	31.55	7.36	32.94	181	349	VERTICAL	Peak

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	5149.20	70.40	74.00	-3.60	65.23	6.13	34.04	35.00	Peak	169	95	VERTICAL
2	5150.00	51.43	54.00	-2.57	46.26	6.13	34.04	35.00	Average	169	95	VERTICAL
3	5205.20	106.38			101.10	6.16	34.12	35.00	Average	169	95	VERTICAL
4	5205.60	116.87			111.59	6.16	34.12	35.00	Peak	169	95	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	5072.80	46.58	54.00	-7.42	41.57	6.09	33.93	35.01	Average	162	99	VERTICAL
2	5135.20	62.67	74.00	-11.33	57.54	6.12	34.01	35.00	Peak	162	99	VERTICAL
3	5237.60	107.09			101.74	6.18	34.17	35.00	Average	162	99	VERTICAL
4	5237.60	117.57			112.22	6.18	34.17	35.00	Peak	162	99	VERTICAL
5	5368.80	47.21	54.00	-6.79	41.55	6.27	34.39	35.00	Average	162	99	VERTICAL
6	5374.40	59.50	74.00	-14.50	53.83	6.27	34.39	34.99	Peak	162	99	VERTICAL

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

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 1 + Chain 2
Test Date	Jul. 23, 2015 ~ Jul. 28, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5714.57	73.89	74.00	-0.11	67.04	32.06	7.79	33.00	173	271	VERTICAL	Peak
2	5715.00	52.34	54.00	-1.66	45.49	32.06	7.79	33.00	173	271	VERTICAL	Average
3	5723.26	77.92	78.20	-0.28	71.05	32.08	7.79	33.00	173	271	VERTICAL	Peak
4	5749.78	101.98			95.09	32.10	7.81	33.02	173	271	VERTICAL	Average
5	5749.92	114.60			107.71	32.10	7.81	33.02	173	271	VERTICAL	Peak

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	5698.00	66.09	74.00	-7.91	60.05	6.43	34.64	35.03	Peak	175	10	VERTICAL
2	5713.60	50.44	54.00	-3.56	44.39	6.44	34.64	35.03	Average	175	10	VERTICAL
3	5719.60	68.40	78.20	-9.80	62.34	6.45	34.64	35.03	Peak	175	10	VERTICAL
4	5777.80	107.87			101.80	6.46	34.66	35.05	Average	175	10	VERTICAL
5	5782.60	118.67			112.60	6.46	34.66	35.05	Peak	175	10	VERTICAL
6	5850.00	73.63	78.20	-4.57	67.53	6.49	34.67	35.06	Peak	175	10	VERTICAL
7	5862.40	51.29	54.00	-2.71	45.19	6.50	34.67	35.07	Average	175	10	VERTICAL
8	5869.00	70.21	74.00	-3.79	64.11	6.50	34.67	35.07	Peak	175	10	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5822.40	115.73			108.73	32.20	7.85	33.05	166	262	VERTICAL	Peak
2	5822.40	103.55			96.55	32.20	7.85	33.05	166	262	VERTICAL	Average
3	5850.18	77.02	78.20	-1.18	69.98	32.22	7.87	33.05	166	262	VERTICAL	Peak
4	5860.31	73.63	74.00	-0.37	66.58	32.24	7.87	33.06	166	262	VERTICAL	Peak
5	5861.76	50.86	54.00	-3.14	43.81	32.24	7.87	33.06	166	262	VERTICAL	Average

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

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2
Test Date	Jul. 17, 2015 ~ Jul. 28, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5148.84	73.66	74.00	-0.34	67.75	31.52	7.33	32.94	168	351	VERTICAL	Peak
2	5150.00	53.60	54.00	-0.40	47.69	31.52	7.33	32.94	168	351	VERTICAL	Average
3	5173.63	104.11			98.15	31.55	7.35	32.94	168	351	VERTICAL	Average
4	5175.08	114.31			108.35	31.55	7.35	32.94	168	351	VERTICAL	Peak

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	5147.20	70.27	74.00	-3.73	65.10	6.13	34.04	35.00	Peak	185	16	VERTICAL
2	5150.00	52.07	54.00	-1.93	46.90	6.13	34.04	35.00	Average	185	16	VERTICAL
3	5206.40	105.86			100.58	6.16	34.12	35.00	Average	185	16	VERTICAL
4	5207.20	116.65			111.37	6.16	34.12	35.00	Peak	185	16	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	5064.00	58.89	74.00	-15.11	53.92	6.07	33.91	35.01	Peak	216	360	HORIZONTAL
2	5075.20	45.87	54.00	-8.13	40.86	6.09	33.93	35.01	Average	216	360	HORIZONTAL
3	5235.20	115.92			110.57	6.18	34.17	35.00	Peak	216	360	HORIZONTAL
4	5237.60	105.10			99.75	6.18	34.17	35.00	Average	216	360	HORIZONTAL
5	5354.40	47.12	54.00	-6.88	41.50	6.26	34.36	35.00	Average	216	360	HORIZONTAL
6	5376.00	60.61	74.00	-13.39	54.94	6.27	34.39	34.99	Peak	216	360	HORIZONTAL

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

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2
Test Date	Jul. 23, 2015 ~ Jul. 28, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5709.69	71.90	74.00	-2.10	65.06	32.06	7.78	33.00	174	270	VERTICAL	Peak
2	5714.61	52.89	54.00	-1.11	46.04	32.06	7.79	33.00	174	270	VERTICAL	Average
3	5724.45	77.82	78.20	-0.38	70.95	32.08	7.79	33.00	174	270	VERTICAL	Peak
4	5747.32	112.70			105.81	32.10	7.81	33.02	174	270	VERTICAL	Peak
5	5752.53	100.71			93.82	32.10	7.81	33.02	174	270	VERTICAL	Average

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	5713.00	64.46	74.00	-9.54	58.41	6.44	34.64	35.03	Peak	174	12	VERTICAL
2	5715.00	52.19	54.00	-1.81	46.14	6.44	34.64	35.03	Average	174	12	VERTICAL
3	5725.00	69.04	78.20	-9.16	62.98	6.45	34.64	35.03	Peak	174	12	VERTICAL
4	5777.80	108.23			102.16	6.46	34.66	35.05	Average	174	12	VERTICAL
5	5778.40	118.53			112.46	6.46	34.66	35.05	Peak	174	12	VERTICAL
6	5850.00	73.17	78.20	-5.03	67.07	6.49	34.67	35.06	Peak	174	12	VERTICAL
7	5860.00	53.18	54.00	-0.82	47.08	6.50	34.67	35.07	Average	174	12	VERTICAL
8	5861.80	70.40	74.00	-3.60	64.30	6.50	34.67	35.07	Peak	174	12	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5817.47	101.75			94.76	32.18	7.85	33.04	172	268	VERTICAL	Average
2	5827.32	114.18			107.18	32.20	7.85	33.05	172	268	VERTICAL	Peak
3	5853.08	77.94	78.20	-0.26	70.90	32.22	7.87	33.05	172	268	VERTICAL	Peak
4	5860.00	50.50	54.00	-3.50	43.45	32.24	7.87	33.06	172	268	VERTICAL	Average
5	5861.76	73.82	74.00	-0.18	66.77	32.24	7.87	33.06	172	268	VERTICAL	Peak

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

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2
Test Date	Jul. 18, 2015 ~ Jul. 28, 2015		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5150.00	68.03	74.00	-5.97	62.12	31.52	7.33	32.94	179	348	VERTICAL	Peak
2	5150.00	53.73	54.00	-0.27	47.82	31.52	7.33	32.94	179	348	VERTICAL	Average
3	5192.03	97.31			91.32	31.56	7.37	32.94	179	348	VERTICAL	Average
4	5193.18	108.18			102.19	31.56	7.37	32.94	179	348	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	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5149.20	53.44	54.00	-0.56	48.27	6.13	34.04	35.00	Average	177	20	VERTICAL
2	5150.00	66.36	74.00	-7.64	61.19	6.13	34.04	35.00	Peak	177	20	VERTICAL
3	5227.60	113.49			108.14	6.18	34.17	35.00	Peak	177	20	VERTICAL
4	5228.40	103.65			98.30	6.18	34.17	35.00	Average	177	20	VERTICAL
5	5350.00	48.44	54.00	-5.56	42.82	6.26	34.36	35.00	Average	177	20	VERTICAL
6	5350.00	61.35	74.00	-12.65	55.73	6.26	34.36	35.00	Peak	177	20	VERTICAL

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

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2
Test Date	Jul. 23, 2015 ~ Jul. 28, 2015		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5714.71	67.61	74.00	-6.39	60.76	32.06	7.79	33.00	160	265	VERTICAL	Peak
2	5715.00	53.83	54.00	-0.17	46.98	32.06	7.79	33.00	160	265	VERTICAL	Average
3	5724.13	69.59	78.20	-8.61	62.72	32.08	7.79	33.00	160	265	VERTICAL	Peak
4	5752.68	95.41			88.52	32.10	7.81	33.02	160	265	VERTICAL	Average
5	5753.26	106.23			99.34	32.10	7.81	33.02	160	265	VERTICAL	Peak

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	5714.60	65.38	68.20	-2.82	59.33	6.44	34.64	35.03	Peak	167	13	VERTICAL
2	5720.20	67.82	78.20	-10.38	61.76	6.45	34.64	35.03	Peak	167	13	VERTICAL
3	5778.60	113.25			107.18	6.46	34.66	35.05	Peak	167	13	VERTICAL
4	5779.40	103.02			96.95	6.46	34.66	35.05	Average	167	13	VERTICAL
5	5854.20	75.55	78.20	-2.65	69.44	6.50	34.67	35.06	Peak	167	13	VERTICAL
6	5860.60	67.94	68.20	-0.26	61.84	6.50	34.67	35.07	Peak	167	13	VERTICAL

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

Temperature	22°C	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2
Test Date	Jul. 18, 2015		

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5150.00	65.58	74.00	-8.42	59.67	31.52	7.33	32.94	168	351	VERTICAL	Peak
2	5150.00	53.23	54.00	-0.77	47.32	31.52	7.33	32.94	168	351	VERTICAL	Average
3	5212.89	88.48			82.46	31.57	7.39	32.94	168	351	VERTICAL	Average
4	5232.43	98.13			92.07	31.59	7.41	32.94	168	351	VERTICAL	Peak
5	5350.00	46.34	54.00	-7.66	40.07	31.68	7.52	32.93	168	351	VERTICAL	Average
6	5352.17	57.89	74.00	-16.11	51.62	31.68	7.52	32.93	168	351	VERTICAL	Peak

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

Temperature	22℃	Humidity	59%
Test Engineer	Stim Sung	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2
Test Date	Jul. 23, 2015 ~ Sep. 16, 2015		

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	5713.70	70.66	74.00	-3.34	63.81	32.06	7.79	33.00	171	264	VERTICAL	Peak
2	5715.00	53.72	54.00	-0.28	46.87	32.06	7.79	33.00	171	264	VERTICAL	Average
3	5725.00	72.58	78.20	-5.62	65.71	32.08	7.79	33.00	171	264	VERTICAL	Peak
4	5751.99	101.06			94.17	32.10	7.81	33.02	171	264	VERTICAL	Peak
5	5754.16	89.10			82.21	32.10	7.81	33.02	171	264	VERTICAL	Average
6	5854.34	62.41	78.20	-15.79	55.37	32.22	7.87	33.05	171	264	VERTICAL	Peak
7	5860.00	45.76	54.00	-8.24	38.71	32.24	7.87	33.06	171	264	VERTICAL	Average
8	5876.06	61.71	74.00	-12.29	54.63	32.26	7.88	33.06	171	264	VERTICAL	Peak

Item 4, 5 are the fundamental frequency at 5775 MHz.

Note:

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

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

4.7. 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

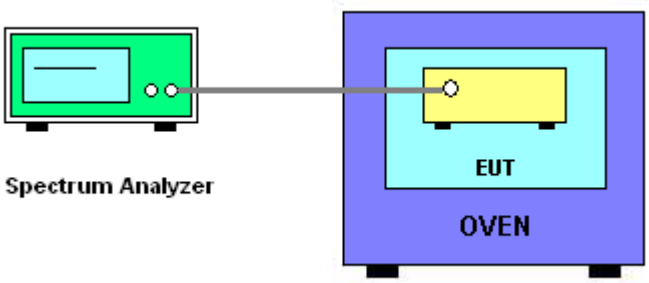
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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	24°C	Humidity	60%
Test Engineer	Nick Peng & Clemens Fang	Test Date	Sep. 17, 2015 ~ Sep. 18, 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	5199.9334	5199.9323	5199.9308	5199.9288
110.00	5199.9322	5199.9309	5199.9293	5199.9274
93.50	5199.9308	5199.9299	5199.9285	5199.9267
Max. Deviation (MHz)	0.0692	0.0701	0.0715	0.0733
Max. Deviation (ppm)	13.32	13.49	13.76	14.10
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5199.9376	5199.9363	5199.9346	5199.9325
-10	5199.9361	5199.9349	5199.9333	5199.9314
0	5199.9347	5199.9333	5199.9314	5199.9292
10	5199.9334	5199.9321	5199.9306	5199.9288
20	5199.9322	5199.9309	5199.9293	5199.9274
30	5199.9308	5199.9297	5199.9283	5199.9267
40	5199.9293	5199.9280	5199.9264	5199.9245
50	5199.9276	5199.9264	5199.9249	5199.9226
Max. Deviation (MHz)	0.0724	0.0736	0.0751	0.0774
Max. Deviation (ppm)	13.93	14.16	14.45	14.89
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9296	5784.9285	5784.9270	5784.9250
110.00	5784.9284	5784.9271	5784.9255	5784.9236
93.50	5784.9270	5784.9261	5784.9247	5784.9229
Max. Deviation (MHz)	0.0730	0.0739	0.0753	0.0771
Max. Deviation (ppm)	12.63	12.78	13.02	13.33
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5784.9338	5784.9325	5784.9308	5784.9287
-10	5784.9323	5784.9311	5784.9295	5784.9276
0	5784.9309	5784.9295	5784.9276	5784.9254
10	5784.9296	5784.9283	5784.9268	5784.9250
20	5784.9284	5784.9271	5784.9255	5784.9236
30	5784.9270	5784.9259	5784.9245	5784.9229
40	5784.9255	5784.9242	5784.9226	5784.9207
50	5784.9238	5784.9226	5784.9211	5784.9188
Max. Deviation (MHz)	0.0762	0.0774	0.0789	0.0812
Max. Deviation (ppm)	13.18	13.39	13.65	14.04
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	5189.9308	5189.9297	5189.9282	5189.9262
110.00	5189.9296	5189.9283	5189.9267	5189.9248
93.50	5189.9282	5189.9273	5189.9259	5189.9241
Max. Deviation (MHz)	0.0718	0.0727	0.0741	0.0759
Max. Deviation (ppm)	13.84	14.02	14.28	14.63
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5189.9350	5189.9337	5189.9320	5189.9299
-10	5189.9335	5189.9323	5189.9307	5189.9288
0	5189.9321	5189.9307	5189.9288	5189.9266
10	5189.9308	5189.9295	5189.9280	5189.9262
20	5189.9296	5189.9283	5189.9267	5189.9248
30	5189.9282	5189.9271	5189.9257	5189.9241
40	5189.9267	5189.9254	5189.9238	5189.9219
50	5189.9250	5189.9238	5189.9223	5189.9200
Max. Deviation (MHz)	0.0750	0.0762	0.0777	0.0800
Max. Deviation (ppm)	14.46	14.69	14.98	15.42
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9270	5754.9259	5754.9244	5754.9224
110.00	5754.9258	5754.9245	5754.9229	5754.9210
93.50	5754.9244	5754.9235	5754.9221	5754.9203
Max. Deviation (MHz)	0.0756	0.0765	0.0779	0.0797
Max. Deviation (ppm)	13.14	13.30	13.54	13.86
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5754.9312	5754.9299	5754.9282	5754.9261
-10	5754.9297	5754.9285	5754.9269	5754.9250
0	5754.9283	5754.9269	5754.9250	5754.9228
10	5754.9270	5754.9257	5754.9242	5754.9224
20	5754.9258	5754.9245	5754.9229	5754.9210
30	5754.9244	5754.9233	5754.9219	5754.9203
40	5754.9229	5754.9216	5754.9200	5754.9181
50	5754.9212	5754.9200	5754.9185	5754.9162
Max. Deviation (MHz)	0.0788	0.0800	0.0815	0.0838
Max. Deviation (ppm)	13.70	13.91	14.17	14.57
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	5209.9277	5209.9266	5209.9251	5209.9231
110.00	5209.9265	5209.9252	5209.9236	5209.9217
93.50	5209.9251	5209.9242	5209.9228	5209.9210
Max. Deviation (MHz)	0.0749	0.0758	0.0772	0.0790
Max. Deviation (ppm)	14.38	14.55	14.82	15.17
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5209.9319	5209.9306	5209.9289	5209.9268
-10	5209.9304	5209.9292	5209.9276	5209.9257
0	5209.9290	5209.9276	5209.9257	5209.9235
10	5209.9277	5209.9264	5209.9249	5209.9231
20	5209.9265	5209.9252	5209.9236	5209.9217
30	5209.9251	5209.9240	5209.9226	5209.9210
40	5209.9236	5209.9223	5209.9207	5209.9188
50	5209.9219	5209.9207	5209.9192	5209.9169
Max. Deviation (MHz)	0.0781	0.0793	0.0808	0.0831
Max. Deviation (ppm)	14.99	15.22	15.51	15.95
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9274	5774.9263	5774.9248	5774.9228
110.00	5774.9262	5774.9249	5774.9233	5774.9214
93.50	5774.9248	5774.9239	5774.9225	5774.9207
Max. Deviation (MHz)	0.0752	0.0761	0.0775	0.0793
Max. Deviation (ppm)	13.02	13.18	13.42	13.73
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5774.9316	5774.9303	5774.9286	5774.9265
-10	5774.9301	5774.9289	5774.9273	5774.9254
0	5774.9287	5774.9273	5774.9254	5774.9232
10	5774.9274	5774.9261	5774.9246	5774.9228
20	5774.9262	5774.9249	5774.9233	5774.9214
30	5774.9248	5774.9237	5774.9223	5774.9207
40	5774.9233	5774.9220	5774.9204	5774.9185
50	5774.9216	5774.9204	5774.9189	5774.9166
Max. Deviation (MHz)	0.0784	0.0796	0.0811	0.0834
Max. Deviation (ppm)	13.58	13.79	14.05	14.44
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)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	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%