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FCC RADIO TEST REPORT

Applicant's company	**D-Link Corporation**
Applicant Address	No.289, Shinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.
FCC ID	**KA2WL8610APA1**

Product Name	Dual-Band 802.11ac Unified Wireless Access Point
Brand Name	D-Link
Model No.	DWL-8610AP
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250MHz / 5725 ~ 5850 MHz
Received Date	May 29, 2013
Final Test Date	Dec. 27, 2014
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
FR372691-03AA	Rev. 01	Initial issue of report	Jul. 29, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	Dual-Band 802.11ac Unified Wireless Access Point
Brand Name	:	D-Link
Model No.	:	DWL-8610AP
Applicant	:	D-Link Corporation
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on May 29, 2013 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	2.13 dB
4.4	15.407(a)	Power Spectral Density	Complies	0.25 dB
4.5	15.407(b)	Radiated Emissions	Complies	0.73 dB
4.6	15.407(b)	Band Edge Emissions	Complies	0.02 dB
4.7	15.407(g)	Frequency Stability	Complies	-
4.8	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n/ac

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter or PoE
Modulation	see the below table for IEEE 802.11n/ac
Data Modulation	For 802.11n: OFDM (BPSK / QPSK / 16QAM / 64QAM) For 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n/ac
Frequency Range	5150 ~ 5250MHz / 5725 ~ 5850 MHz
Channel Number	9 for 20MHz bandwidth ; 4 for 40MHz bandwidth 2 for 80MHz bandwidth
Channel Band Width (99%)	Band 1: 802.11ac MCS0/Nss1 (VHT20): 37.20 MHz ; 802.11ac MCS0/Nss1 (VHT40): 38.80 MHz ; 802.11ac MCS0/Nss1 (VHT80): 76.60 MHz Band 4: 802.11ac MCS0/Nss1 (VHT20): 24.00 MHz ; 802.11ac MCS0/Nss1 (VHT40): 43.40 MHz ; 802.11ac MCS0/Nss1 (VHT80): 76.60 MHz
Maximum Conducted Output Power	Band 1: 802.11ac MCS0/Nss1 (VHT20): 27.79 dBm ; 802.11ac MCS0/Nss1 (VHT40): 23.61 dBm ; 802.11ac MCS0/Nss1 (VHT80): 18.71 dBm Band 4: 802.11ac MCS0/Nss1 (VHT20): 25.23 dBm ; 802.11ac MCS0/Nss1 (VHT40): 25.01 dBm ; 802.11ac MCS0/Nss1 (VHT80): 19.51 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

IEEE 802.11a

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter or PoE
Modulation	OFDM for IEEE 802.11a
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	OFDM (6/9/12/18/24/36/48/54)
Frequency Range	5150 ~ 5250MHz / 5725 ~ 5850 MHz
Channel Number	9
Channel Band Width (99%)	Band 1: 36.36 MHz ; Band 4: 23.76 MHz
Maximum Conducted Output Power	Band 1: 27.87 dBm ; Band 4: 25.50 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	Three (TX)		
Band width Mode	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X
IEEE 802.11n	V	V	X
IEEE 802.11ac	V	V	V

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	3	MCS 0-23
802.11n (HT40)	3	MCS 0-23
802.11ac (VHT20)	3	MCS 0-9/Nss1-3
802.11ac (VHT40)	3	MCS 0-9/Nss1-3
802.11ac (VHT80)	3	MCS 0-9/Nss1-3
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT support VHT20, VHT40 and VHT80. Note 3: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac		

3.2. Accessories

Power	Brand	Model No.	Rating
Adapter	APD	WA-24E12	Input: 100-240VAC, 50-60Hz, 0.65A Output: 12VDC, 2A
Others			
RJ-45 cable*1, Non-shielded, 1m			
Plug*1			

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Original Gain (dBi)		Cable loss (dB)	Test Gain (dBi)
1	WHA YU	C037-511242-A	PIFA Antenna	I-PEX	2.4GHz	3	0.3	2.7
2	WHA YU	C037-511242-A	PIFA Antenna	I-PEX	2.4GHz	3	0.3	2.7
3	WHA YU	C037-511242-A	PIFA Antenna	I-PEX	2.4GHz	3	0.3	2.7
4	WHA YU	C037-511242-A	PIFA Antenna	I-PEX	5GHz	4	0.8	3.2
5	WHA YU	C037-511242-A	PIFA Antenna	I-PEX	5GHz	4	0.8	3.2
6	WHA YU	C037-511242-A	PIFA Antenna	I-PEX	5GHz	4	0.8	3.2

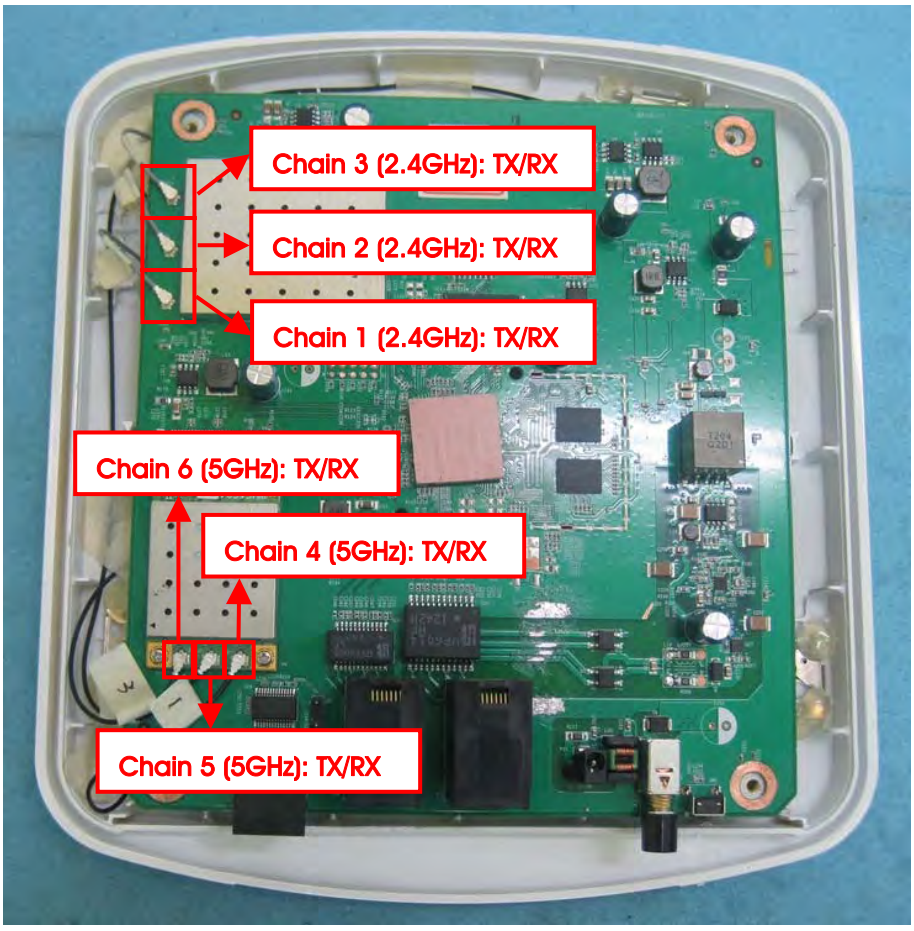
Note: There are six antennas of EUT.

For 2.4GHz band: (3TX/3RX)

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

For 5GHz band: (3TX/3RX)

Chain 4, Chain 5 and Chain 6 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	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46//151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6
Power Spectral Density	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46//151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46//151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6
6dB Spectrum Bandwidth	11ac VHT20	Band 4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 4	MCS0/Nss1	38/46//151/159	4+5+6
	11ac VHT80	Band 4	MCS0/Nss1	42/155	4+5+6
	11a/BPSK	Band 4	6Mbps	36/40/48/149/157/165	4+5+6
Radiated Emission Below 1GHz	CTX		-	-	-
Radiated Emission Above 1GHz	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165/	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6

Band Edge Emission	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	4+5+6
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	4+5+6
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	4+5+6
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	4+5+6
Frequency Stability	Un-modulation		-	40/157	4+5+6

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 Emission test:

Mode 1. EUT laying with Adapter

Mode 2. EUT standing with Adapter

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

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

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

3.6. Table for Testing Locations

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

This product is an extension of original one reported under Sporton project number: 372691

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

Modifications	Performance Checking
Changing 5GHz Band 1 and Band 4 to "New Rules" from "Old Rules".	1. 26dB Spectrum Bandwidth and 99% Occupied Bandwidth 2. 6dB Spectrum Bandwidth 3. Maximum Conducted Output Power 4. Power Spectral Density 5. Radiated Emissions 6. Band Edge Emissions 7. Frequency Stability 8. Maximum Permissible Exposure 9. Radiated Emission Co-location Report

Note: There is no change in hardware or in existing RF relevant portion.

3.8. Table for Supporting Units

For Test Site No: 03CH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	M1330	E2K4965AGNM

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	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.

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT20

Test Software Version	Mtool 2.0.0.8					
Frequency	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
MCS0/Nss1 VHT20	66	67	88	72	87	82

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT40

Test Software Version	Mtool 2.0.0.8			
Frequency	5190 MHz	5230 MHz	5755 MHz	5795 MHz
MCS0/Nss1 VHT40	58	75	61	83

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT80

Test Software Version	Mtool 2.0.0.8	
Frequency	5210 MHz	5775 MHz
MCS0/Nss1 VHT80	52	61

Power Parameters of IEEE 802.11a

Test Software Version	Mtool 2.0.0.8					
Frequency	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	66	70	88	75	88	86

3.10. EUT Operation during Test

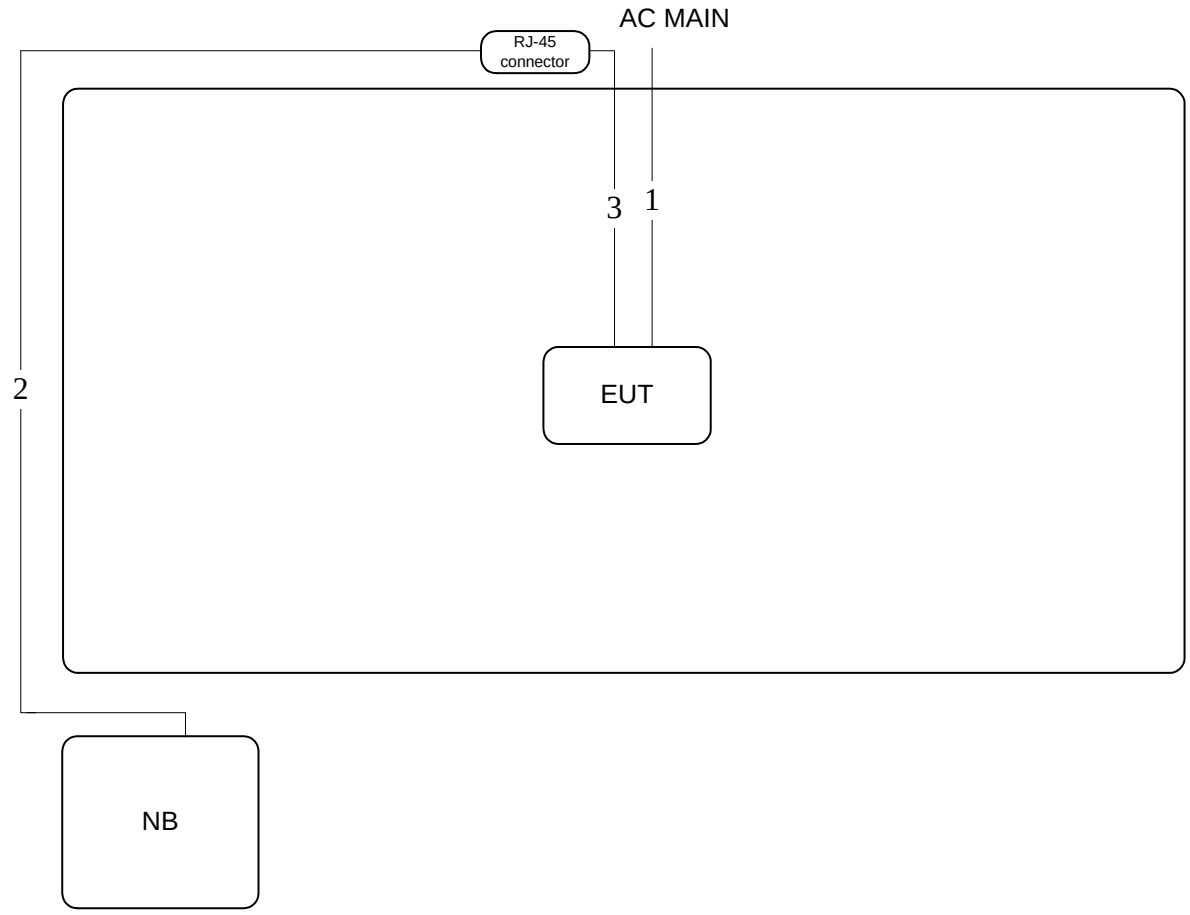
The EUT was programmed to be in continuously transmitting mode.

3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	1.910	1.950	97.95	0.09	0.52
802.11ac MCS0/Nss1 VHT40	0.928	0.984	94.31	0.25	1.08
802.11ac MCS0/Nss1 VHT80	0.432	0.492	87.80	0.56	2.31
802.11a	2.020	2.060	98.06	0.09	0.01

3.12. Test Configurations

3.12.1. Radiation Emissions Test Configuration



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

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	26°C	Humidity	63%
Test Engineer	James Chou	Configurations	IEEE 802.11ac

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	20.28	17.76
40	5200 MHz	25.44	17.88
48	5240 MHz	55.68	37.20
149	5745 MHz	19.08	17.40
157	5785 MHz	45.72	24.00
165	5825 MHz	44.40	20.16

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	41.00	37.40
46	5230 MHz	80.40	38.80
151	5755 MHz	41.00	37.40
159	5795 MHz	81.00	43.40

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6

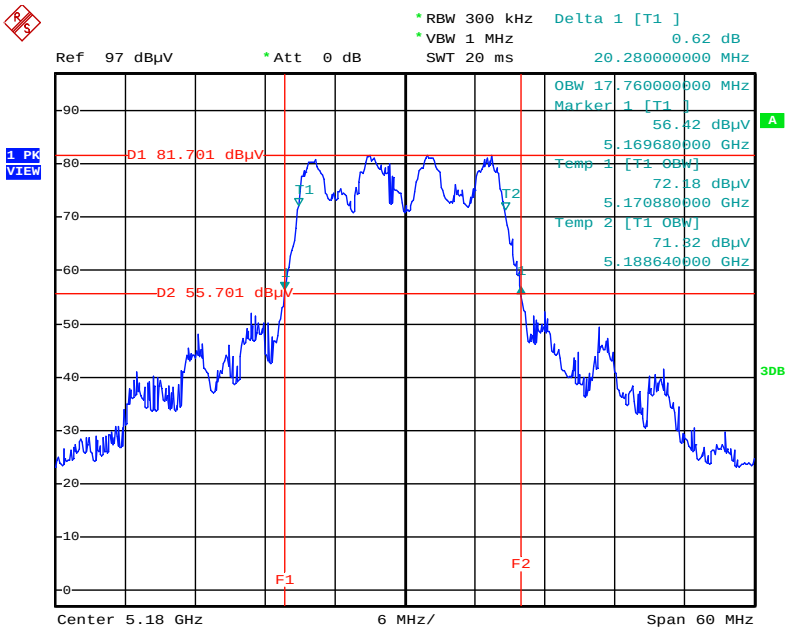
Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
42	5210 MHz	82.20	76.60
155	5775 MHz	82.80	76.60

Temperature	26°C	Humidity	63%
Test Engineer	James Chou	Configurations	IEEE 802.11a

Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	19.68	17.12
40	5200 MHz	23.36	17.28
48	5240 MHz	49.56	36.36
149	5745 MHz	19.32	16.68
157	5785 MHz	36.48	23.76
165	5825 MHz	35.28	21.60

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5180 MHz



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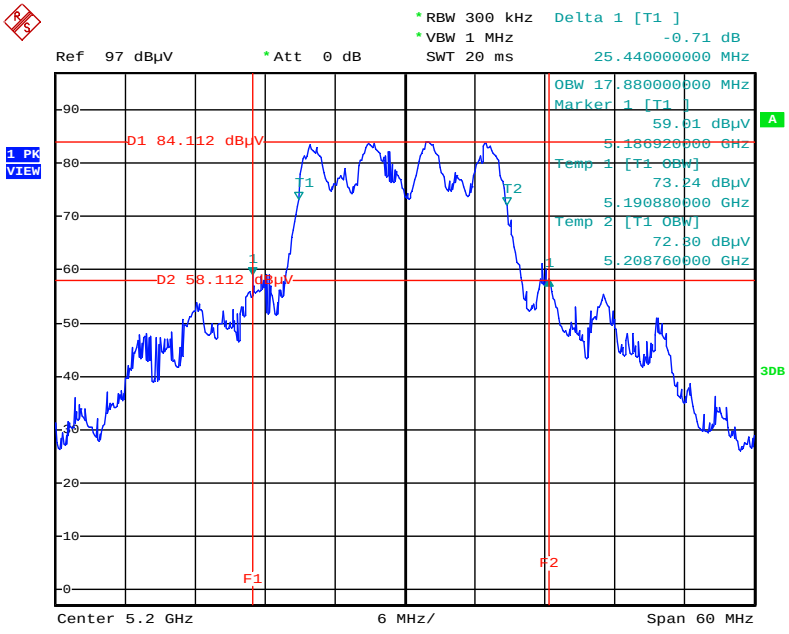

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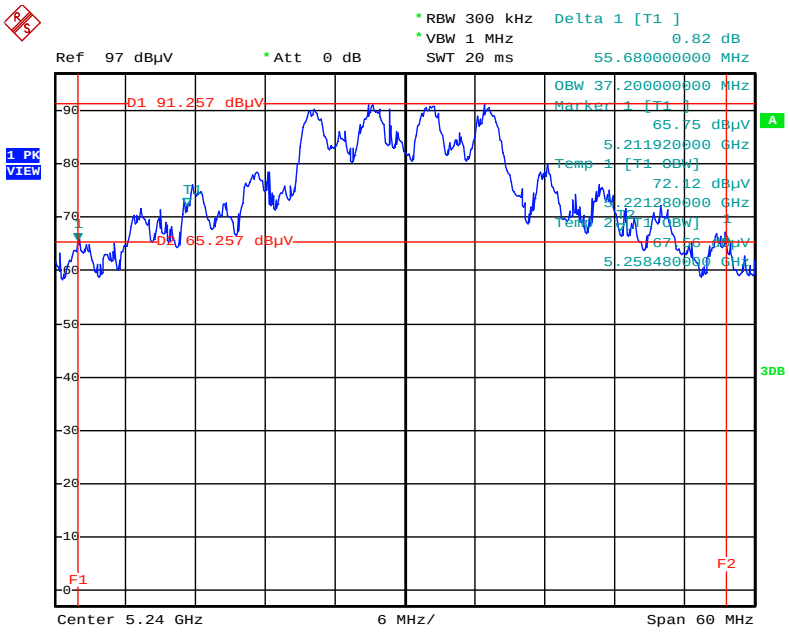

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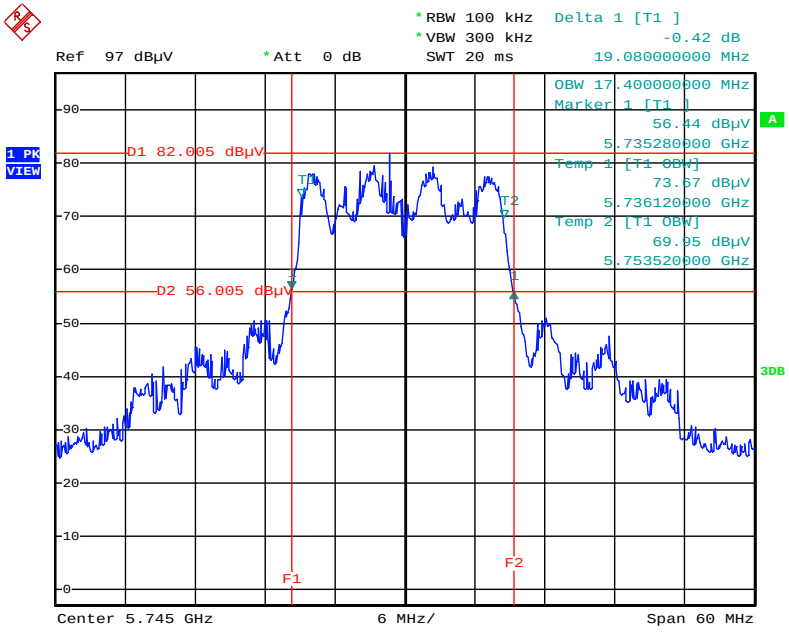
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5745 MHz



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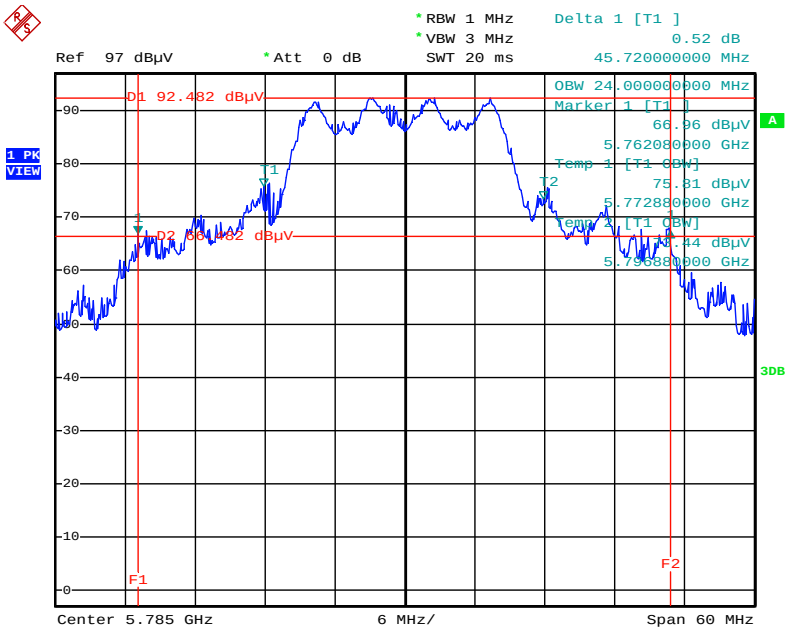
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5785 MHz



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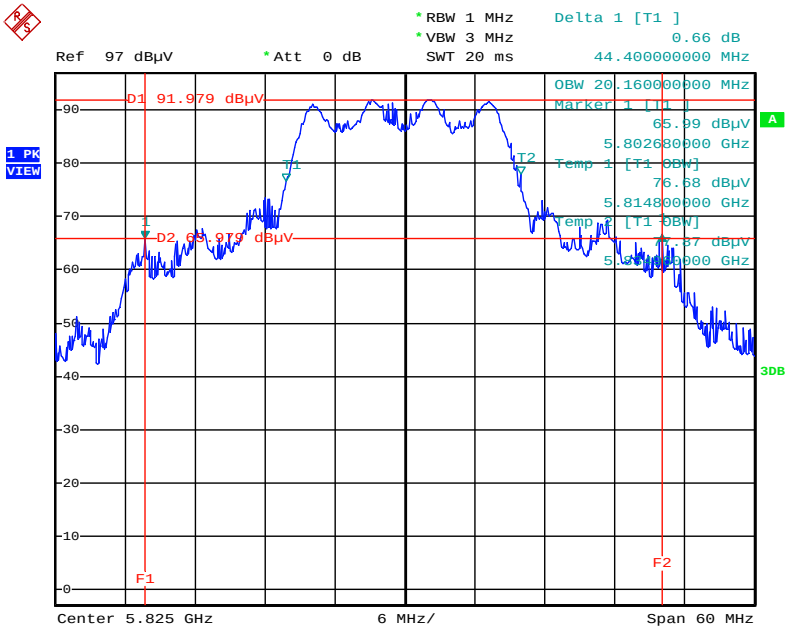
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5825 MHz



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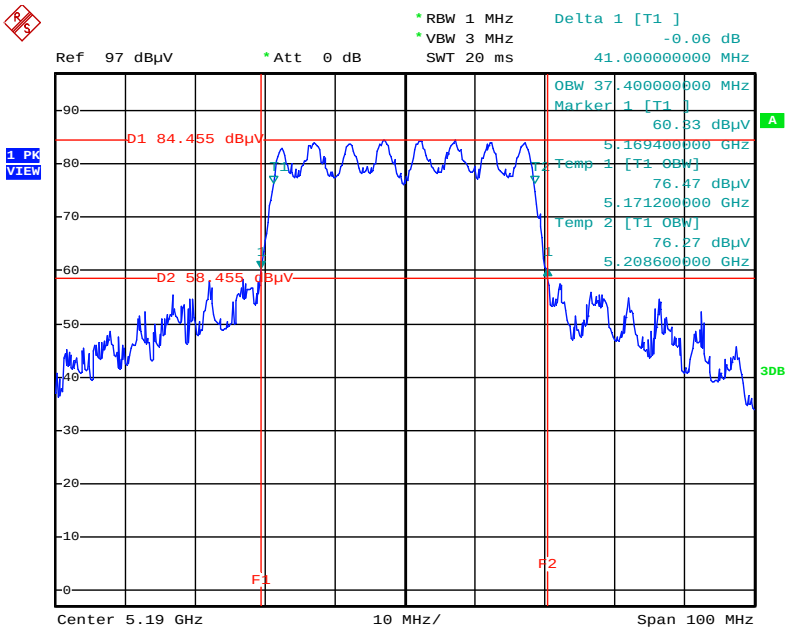

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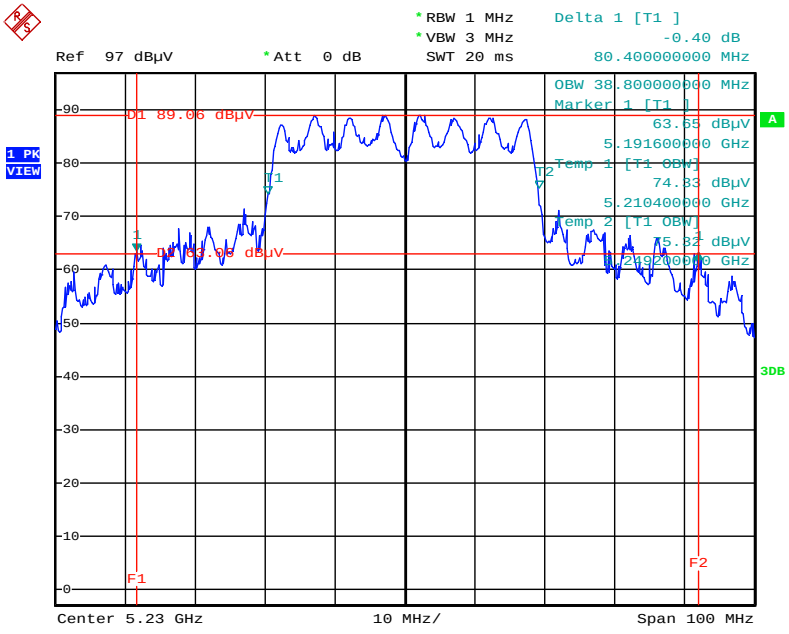

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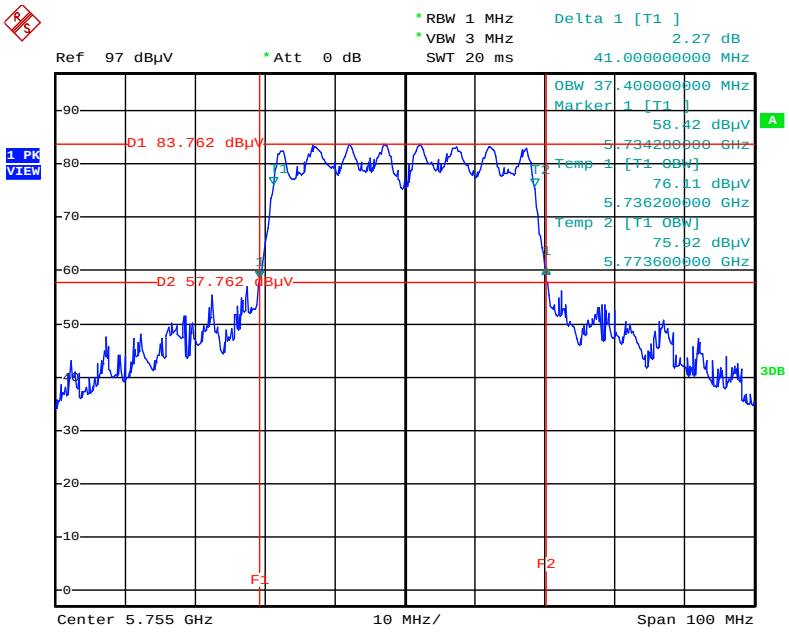
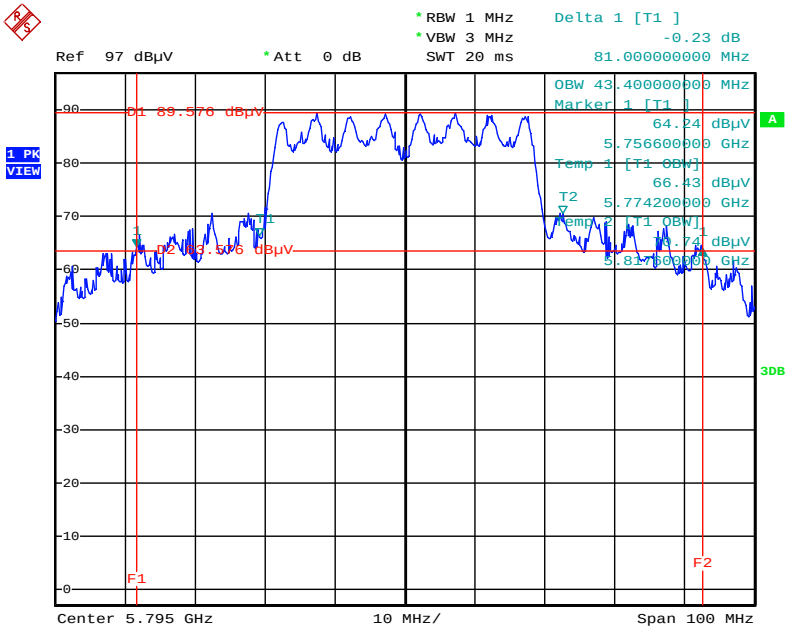
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5755 MHz



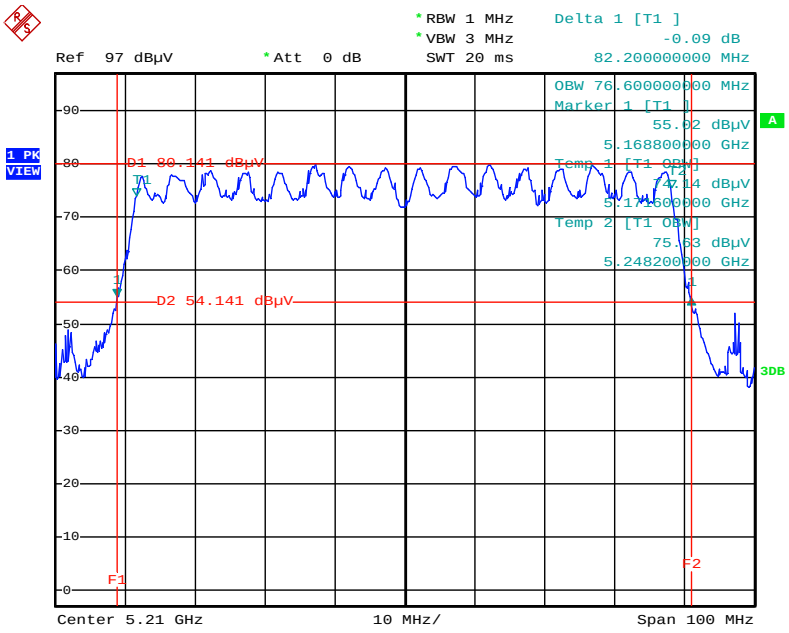
Date: 20.DEC.2014 13:28:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5795 MHz



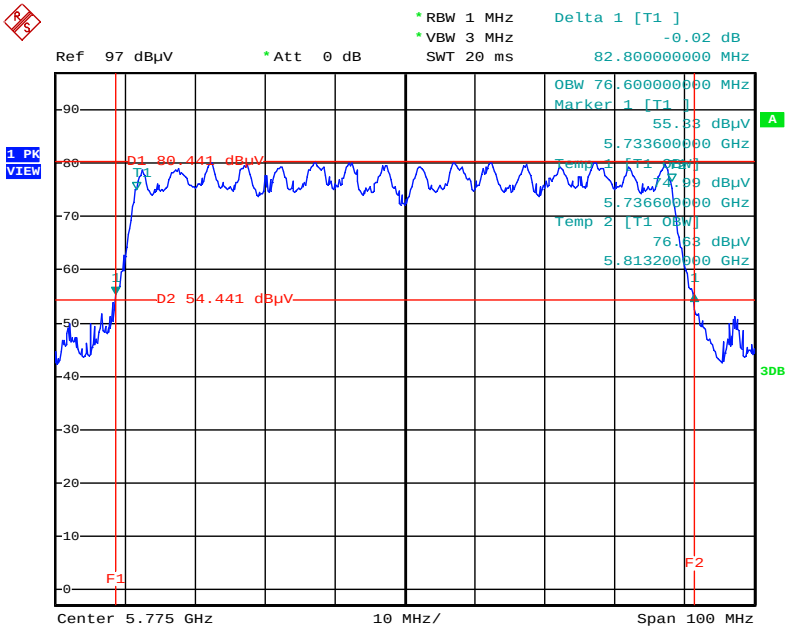
Date: 20.DEC.2014 13:31:09

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6 / 5210 MHz



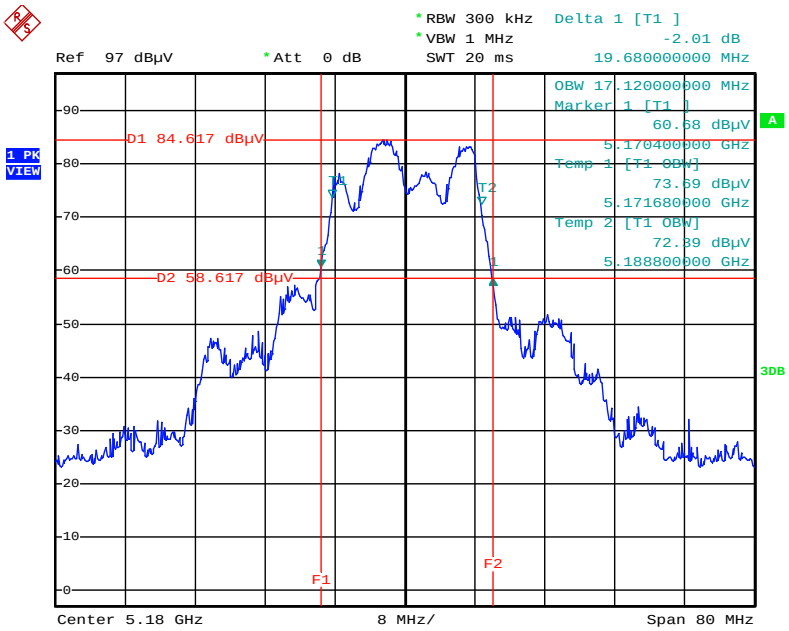
Date: 20.DEC.2014 12:11:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6 / 5775 MHz



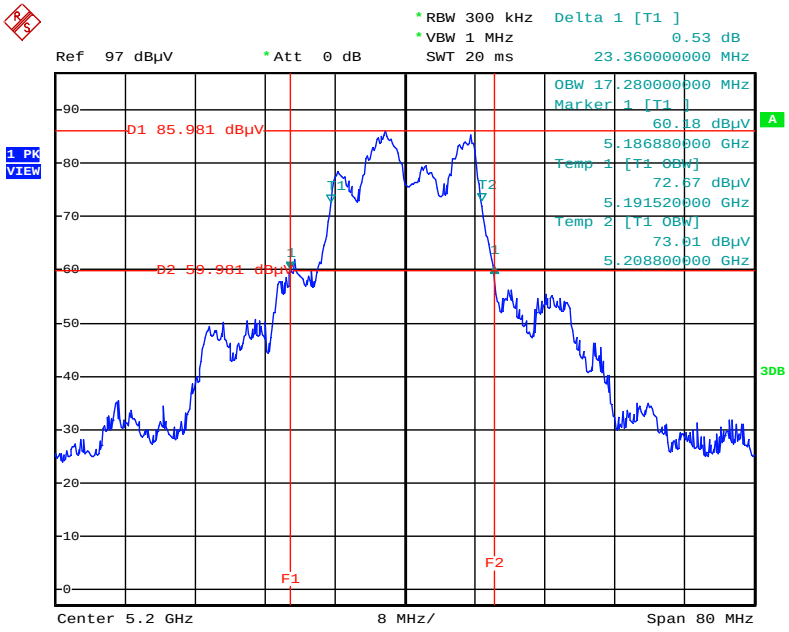
Date: 20.DEC.2014 13:33:23

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6 / 5180 MHz



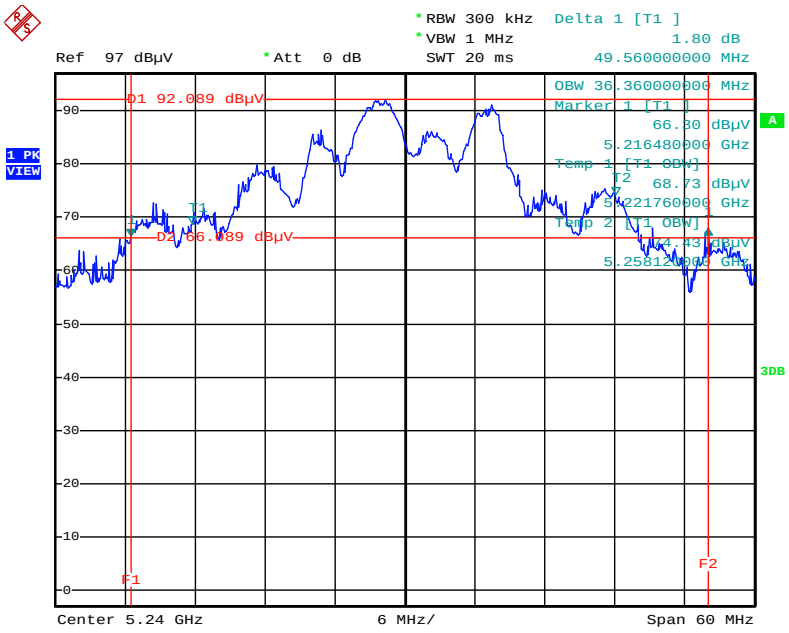
Date: 20.DEC.2014 09:25:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6 / 5200 MHz



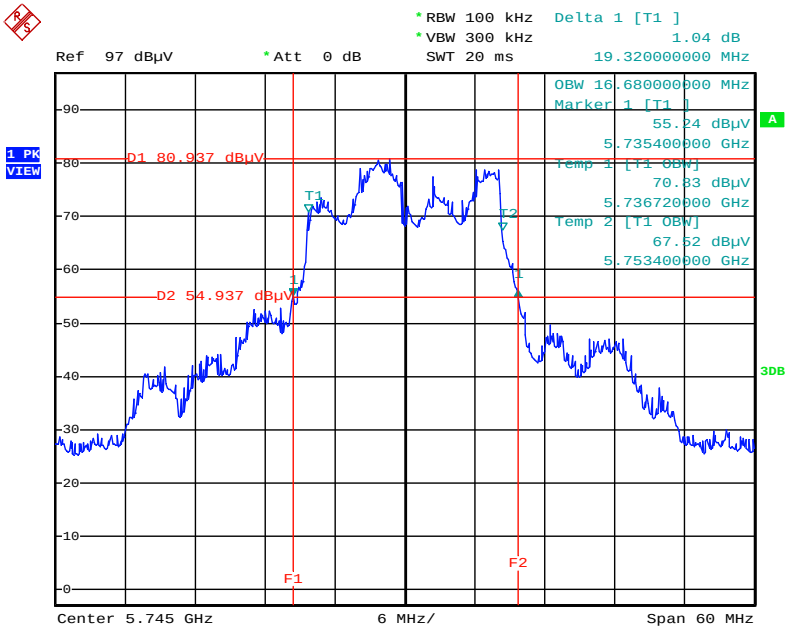
Date: 20.DEC.2014 09:26:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6 / 5240 MHz



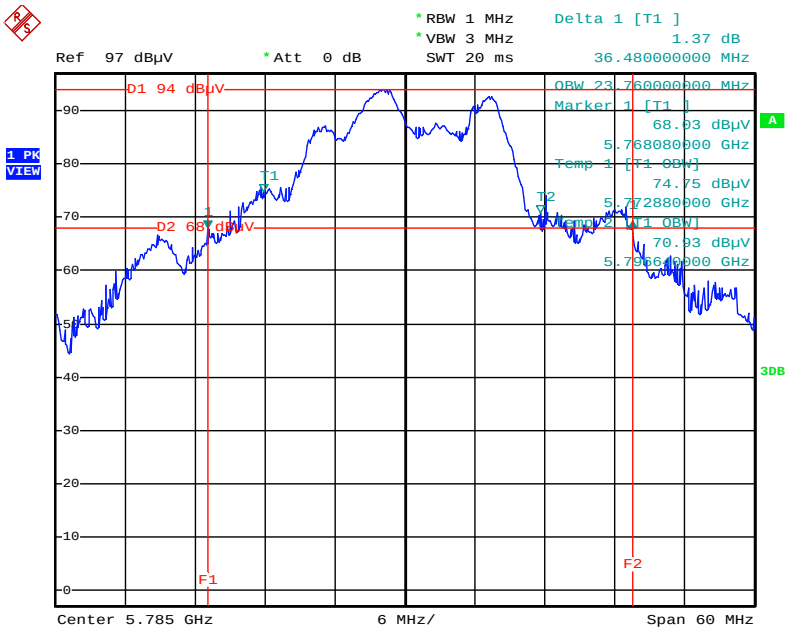
Date: 20.DEC.2014 11:04:28

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6 / 5745 MHz



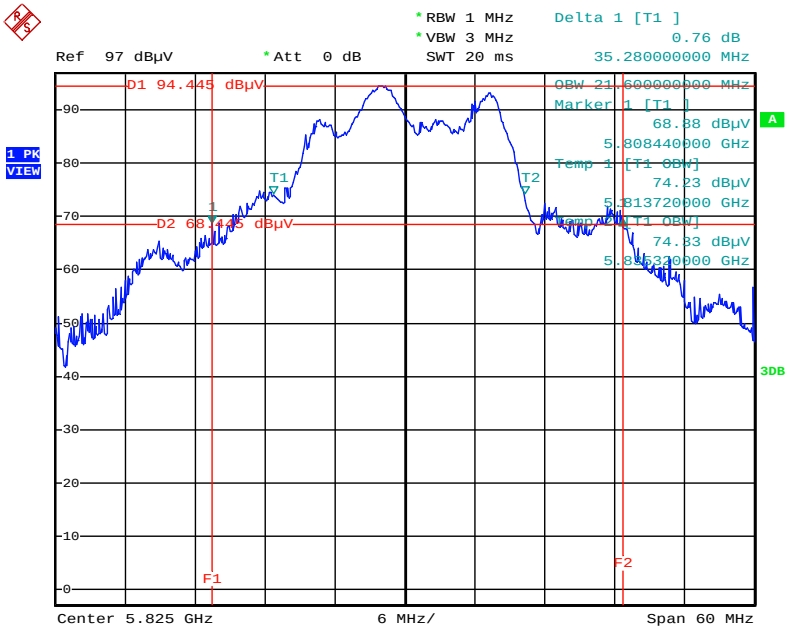
Date: 20.DEC.2014 13:13:40

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6 / 5785 MHz



Date: 20.DEC.2014 13:15:22

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6 / 5825 MHz



Date: 20.DEC.2014 13:16:07

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	approximately 1% of the emission bandwidth
VBW	VBW > 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	26°C	Humidity	63%
Test Engineer	James Chou	Configurations	IEEE 802.11ac

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	16.48	500	Complies
157	5785 MHz	16.32	500	Complies
165	5825 MHz	16.64	500	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
151	5755 MHz	36.32	500	Complies
159	5795 MHz	35.80	500	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
155	5775 MHz	75.52	500	Complies

Temperature	26°C	Humidity	63%
Test Engineer	James Chou	Configurations	IEEE 802.11a

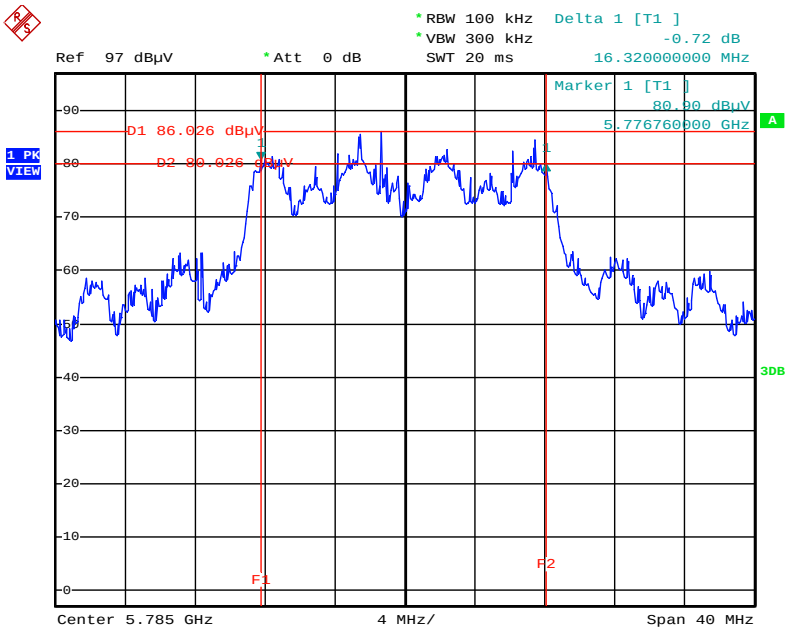
Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	11.92	500	Complies
157	5785 MHz	11.92	500	Complies
165	5825 MHz	11.92	500	Complies

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

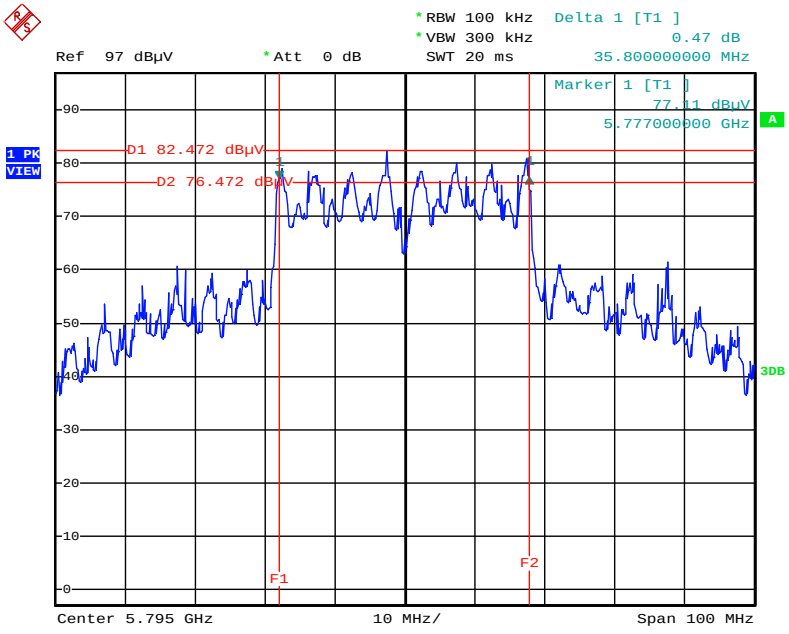
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5785 MHz



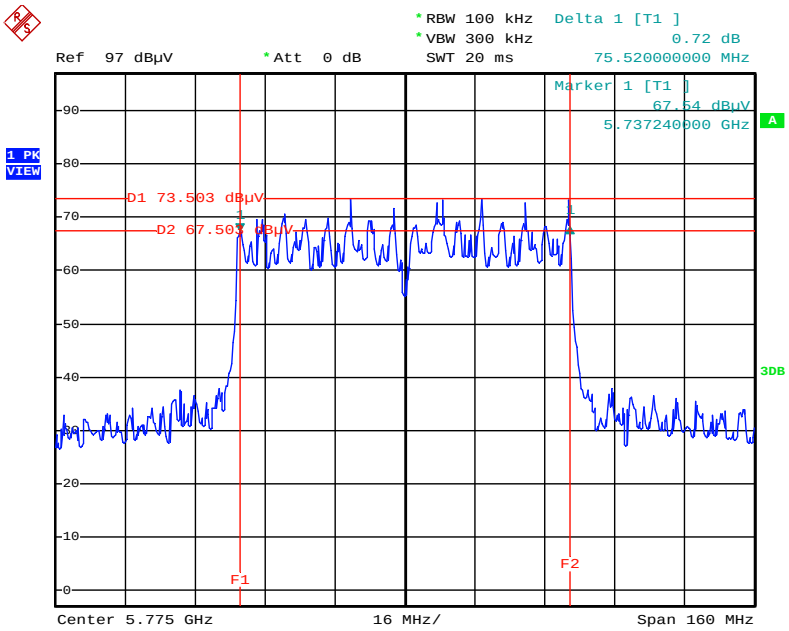
Date: 20.DEC.2014 13:22:10

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5795MHz



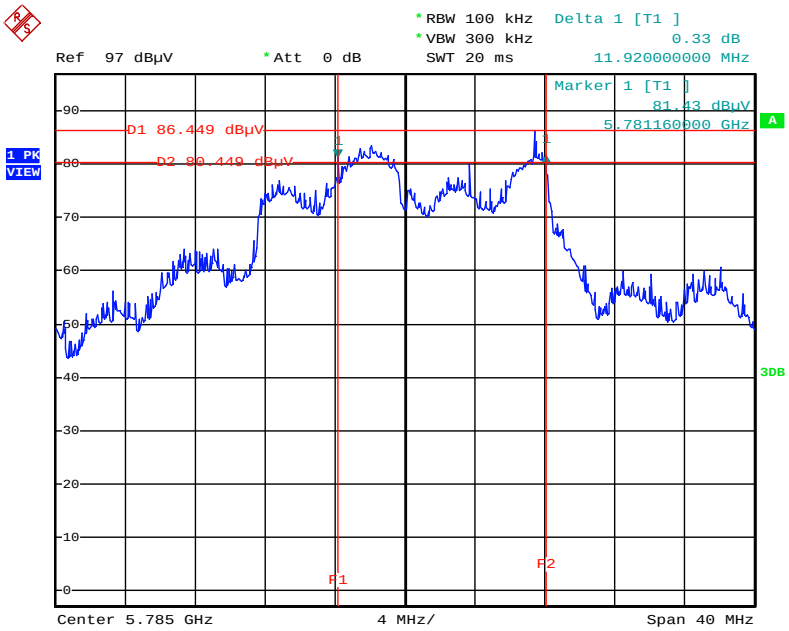
Date: 20.DEC.2014 13:31:27

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6 / 5775 MHz



Date: 20.DEC.2014 13:33:07

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6 / 5785 MHz



Date: 20.DEC.2014 13:15:01

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

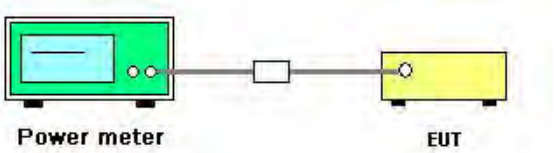
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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	26°C	Humidity	63%
Test Engineer	James Chou	Configurations	IEEE 802.11ac
Test Date	Nov. 26, 2014 ~ Dec. 20, 2014		

Configuration IEEE 802.11ac MCS0/Nss1 VHT20

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6	Total		
36	5180 MHz	16.85	16.61	16.12	21.31	30.00	Complies
40	5200 MHz	16.83	16.75	16.21	21.38	30.00	Complies
48	5240 MHz	23.25	23.15	22.63	27.79	30.00	Complies
149	5745 MHz	17.15	17.02	16.93	21.81	30.00	Complies
157	5785 MHz	20.45	20.65	20.28	25.23	30.00	Complies
165	5825 MHz	19.53	19.68	19.42	24.32	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT40

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6	Total		
38	5190 MHz	15.48	15.25	14.85	19.97	30.00	Complies
46	5230 MHz	19.16	18.82	18.52	23.61	30.00	Complies
151	5755 MHz	15.25	15.09	14.63	19.77	30.00	Complies
159	5795 MHz	20.21	20.38	20.13	25.01	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT80

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6	Total		
42	5210 MHz	13.68	13.53	12.95	18.17	30.00	Complies
155	5775 MHz	14.78	14.82	14.62	19.51	30.00	Complies

Temperature	26°C	Humidity	63%
Test Engineer	James Chou	Configurations	IEEE 802.11a
Test Date	Nov. 26, 2014 ~ Dec. 20, 2014		

Configuration IEEE 802.11a

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6	Total		
36	5180 MHz	16.84	16.45	16.18	21.27	30.00	Complies
40	5200 MHz	17.62	17.52	17.02	22.17	30.00	Complies
48	5240 MHz	23.18	23.27	22.82	27.87	30.00	Complies
149	5745 MHz	17.85	17.75	17.62	22.51	30.00	Complies
157	5785 MHz	20.61	20.91	20.65	25.50	30.00	Complies
165	5825 MHz	20.35	20.65	20.45	25.26	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.

For 5.15-5.25 GHz

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

For 5.725~5.85 GHz

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RBW	RBW ≥ 1/T
VBW	VBW ≥ 3 RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple
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

For 5.15-5.25 GHz / 5.470-5.725 GHz

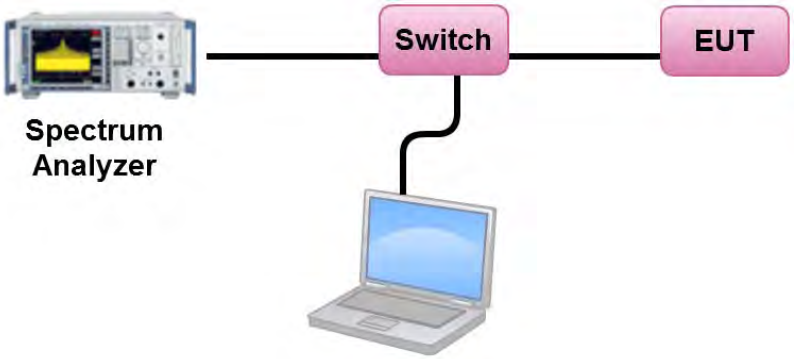
1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple 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.

For 5.725~5.85 GHz

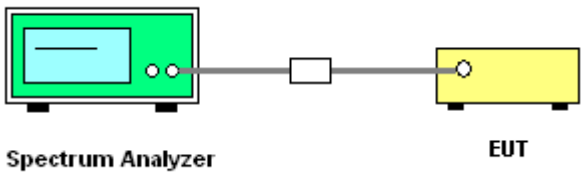
1. Test procedures refer KDB662911 D01 v02r01 section In-Band Power Spectral Density (PSD) Measurements option (b) Measure and sum spectral maximal across the outputs.
2. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
4. Use the peak marker function to determine the maximum level in any 3 kHz band segment within the fundamental EBW.
5. The measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.4.4. Test Setup Layout

For 5.15-5.25 GHz



For 5.725~5.85 GHz



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	26°C	Humidity	63%
Test Engineer	James Chou	Configurations	IEEE 802.11ac
Test Date	Nov. 26, 2014 ~ Dec. 20, 2014		

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	8.12	15.03	Complies
40	5200 MHz	8.65	15.03	Complies
48	5240 MHz	14.52	15.03	Complies

Note:

Ch36, 40, 48= $Directional Gain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.97dBi>6dBi, So Limit=17-(7.97-6)=15.03dBm/MHz

Channel	Frequency	Power Density (dBm/3kHz)				BWCF factor	Total Power Density	Power Density Limit	Result
		Chain 4	Chain 5	Chain 6	Total	3kHz to 500kHz	dBm/500kHz		
149	5745 MHz	-6.43	-6.66	-7.64	-2.11	22.22	20.11	28.03	Complies
157	5785 MHz	-4.96	-4.75	-5.2	-0.19	22.22	22.03	28.03	Complies
165	5825 MHz	-5.65	-5.38	-5.73	-0.81	22.22	21.41	28.03	Complies

Note:

Ch149, 157, 165= $Directional Gain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.97dBi>6dBi, So Limit=30-(7.97-6)=28.03dBm/500kHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	3.77	15.03	Complies
46	5230 MHz	7.69	15.03	Complies

Note:

Ch38, 46= $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.97dBi>6dBi, So Limit=17-(7.97-6)=15.03dBm/MHz

Channel	Frequency	Power Density (dBm/3kHz)				BWCF factor	Total Power Density	Power Density Limit	Result
		Chain 4	Chain 5	Chain 6	Total	3kHz to 500kHz	dBm/500kHz		
151	5755 MHz	-12.17	-12.47	-13.86	-8.00	22.22	14.22	28.03	Complies
159	5795 MHz	-8.26	-7.92	-8.23	-3.36	22.22	18.86	28.03	Complies

Note:

Ch149, 157, 165= $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.97dBi>6dBi, So Limit=30-(7.97-6)=28.03dBm/500kHz

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-1.41	15.03	Complies

Note:

Ch42= $Directional Gain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.97dBi>6dBi, So Limit=17-(7.97-6)=15.03dBm/MHz

Channel	Frequency	Power Density (dBm/3kHz)				BWCF factor	Total Power Density	Power Density Limit	Result
		Chain 4	Chain 5	Chain 6	Total	3kHz to 500kHz	dBm/500kHz		
155	5775 MHz	-16.63	-16.45	-16.7	-11.82	22.22	10.40	28.03	Complies

Note:

Ch155= $Directional Gain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.97dBi>6dBi, So Limit=30-(7.97-6)=28.03dBm/500kHz

Temperature	26°C	Humidity	63%
Test Engineer	James Chou	Configurations	IEEE 802.11a
Test Date	Nov. 26, 2014 ~ Dec. 20, 2014		

Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	8.46	15.03	Complies
40	5200 MHz	9.37	15.03	Complies
48	5240 MHz	14.78	15.03	Complies

Note:

Ch36, 40, 48=$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$=7.97dBi>6dBi, So Limit=17-(7.97-6)=15.03dBm/MHz

Channel	Frequency	Power Density (dBm/3kHz)				BWCF factor	Total Power Density	Power Density Limit	Result
		Chain 4	Chain 5	Chain 6	Total	3kHz to 500kHz	dBm/500kHz		
149	5745 MHz	-6.04	-6.09	-6.27	-1.36	22.22	20.86	28.03	Complies
157	5785 MHz	-3.83	-3.39	-3.59	1.17	22.22	23.39	28.03	Complies
165	5825 MHz	-4.36	-3.85	-4.03	0.70	22.22	22.92	28.03	Complies

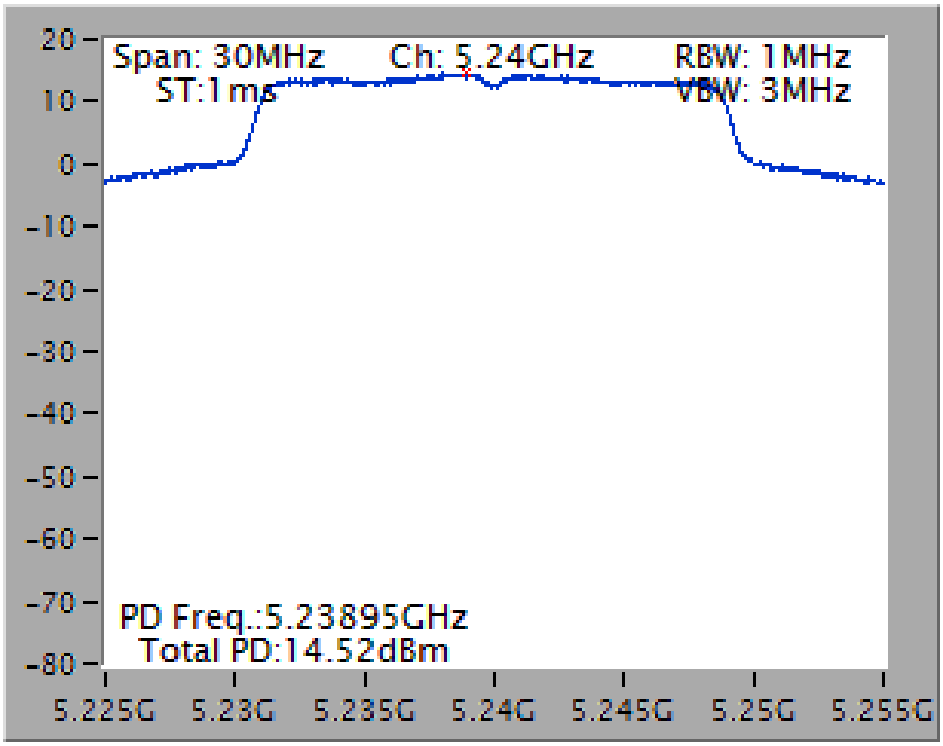
Note:

Ch149, 157, 165=$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$=7.97dBi>6dBi, So Limit=30-(7.97-6)=28.03dBm/500kHz

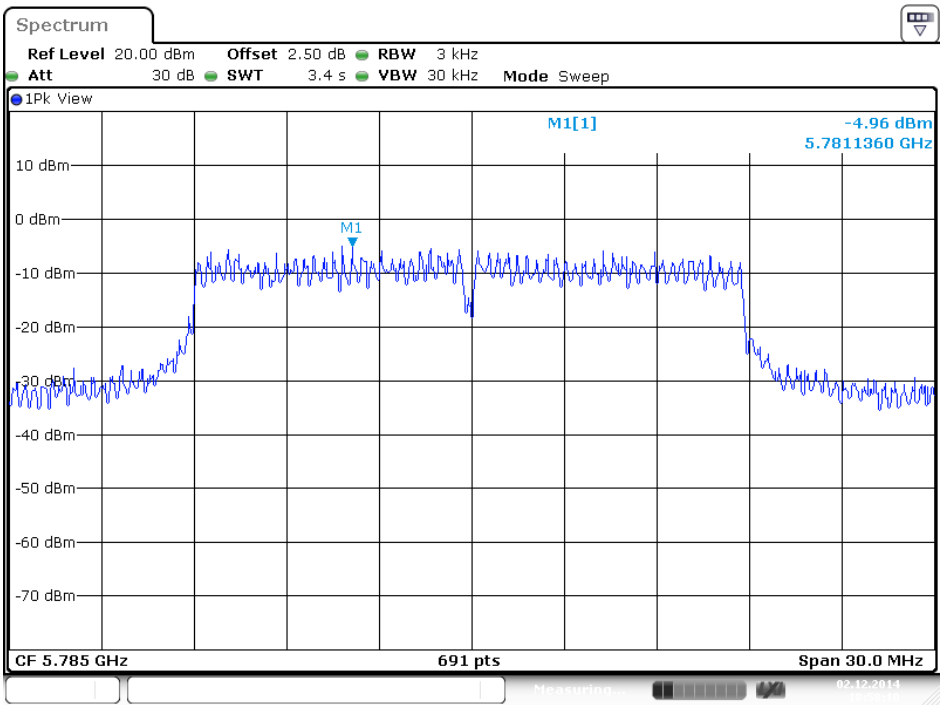
Note: All the test values were listed in the report.

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

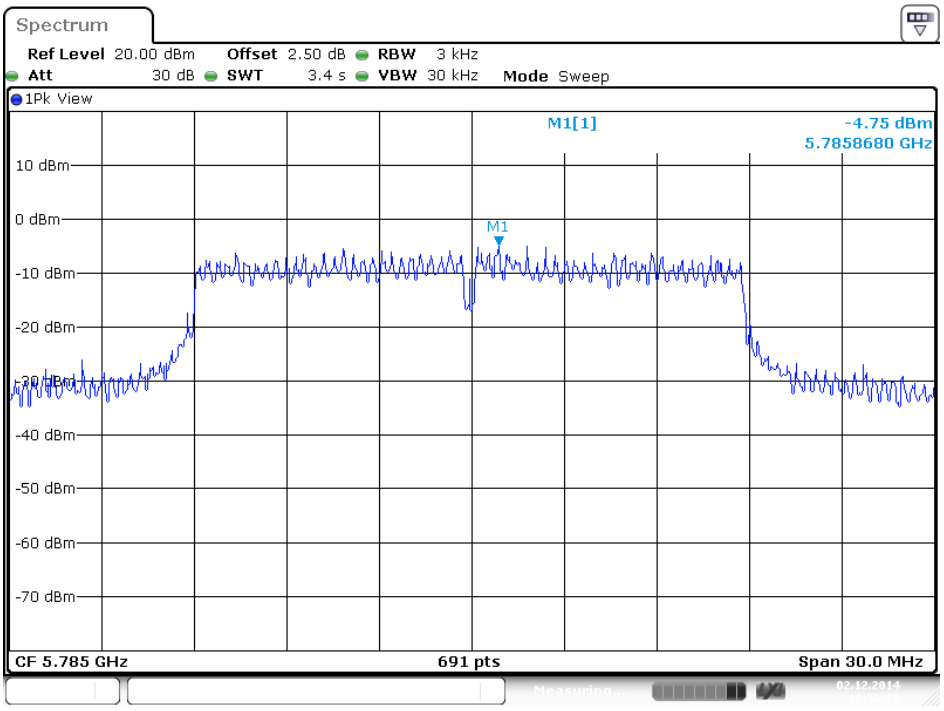
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 + Chain 5 + Chain 6 / 5240 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 4 / 5785 MHz

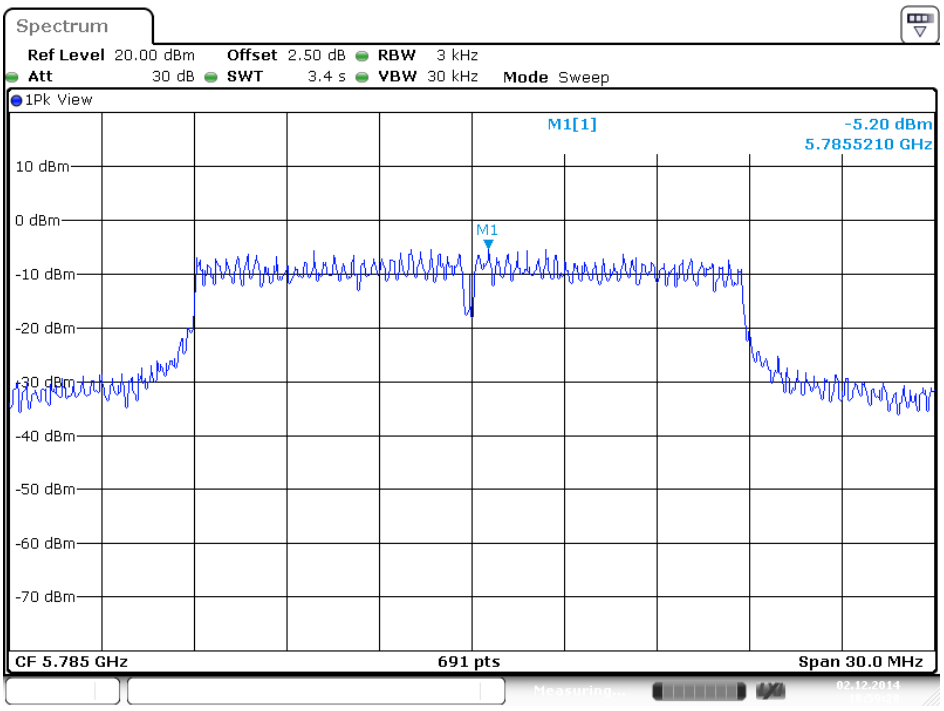


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 5 / 5785 MHz



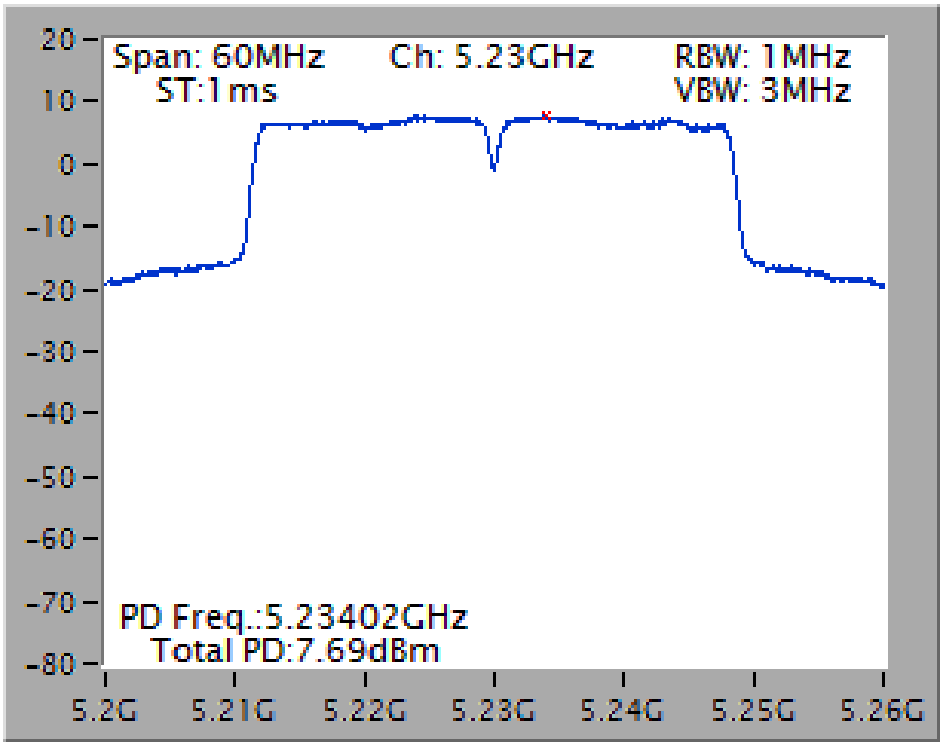
Date: 2.DEC.2014 18:56:20

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 6 / 5785 MHz

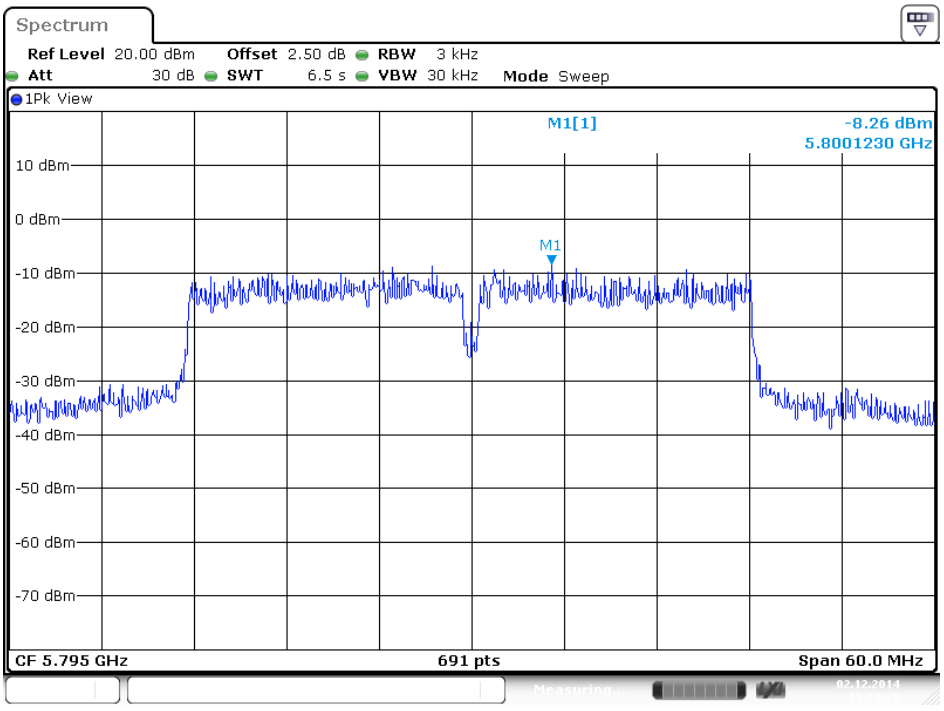


Date: 2.DEC.2014 18:59:28

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 + Chain 5 + Chain 6 / 5230 MHz

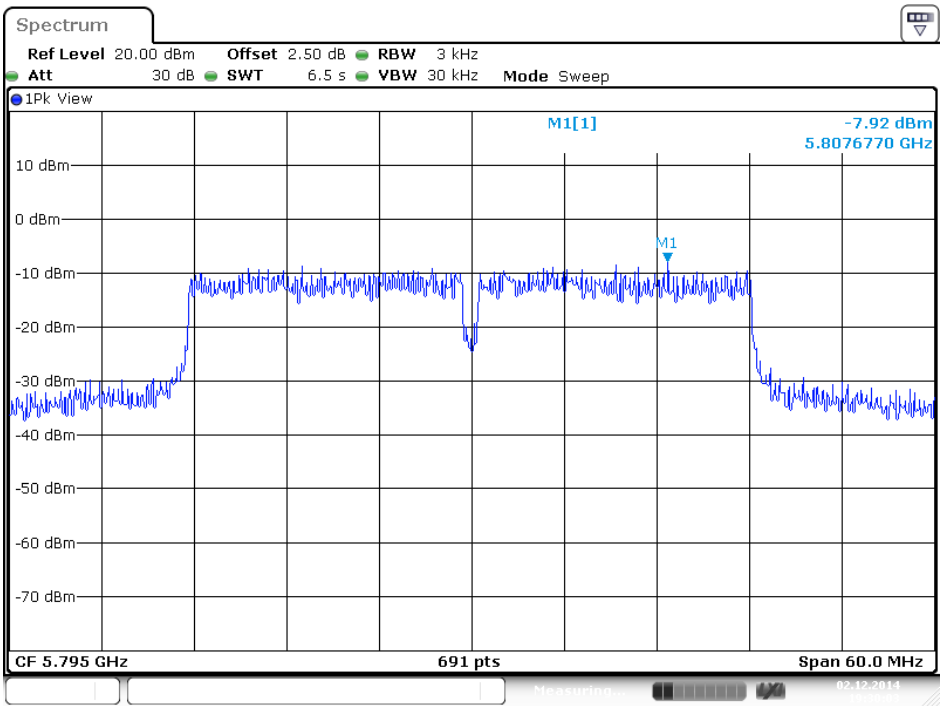


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 4 / 5795 MHz



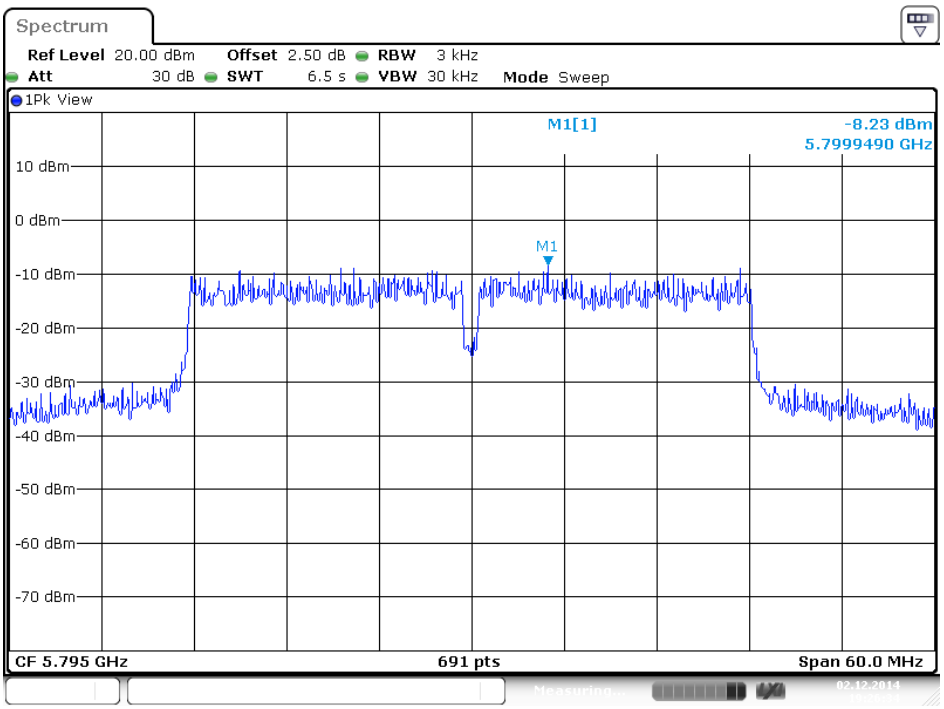
Date: 2.DEC.2014 19:28:28

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 5 / 5795 MHz



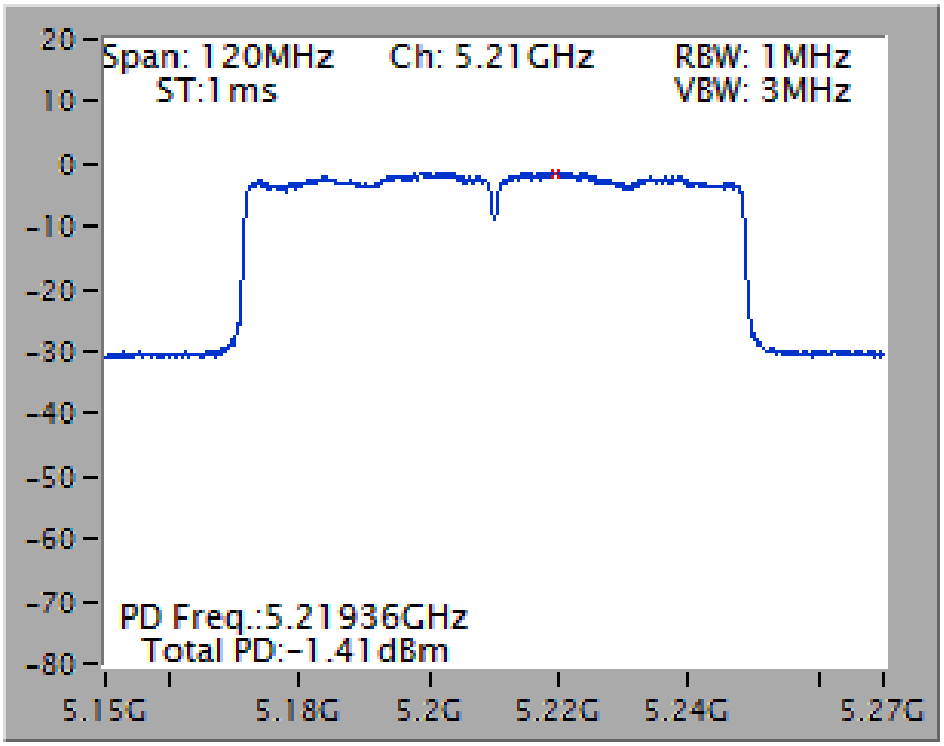
Date: 2.DEC.2014 19:30:03

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 6 / 5795 MHz

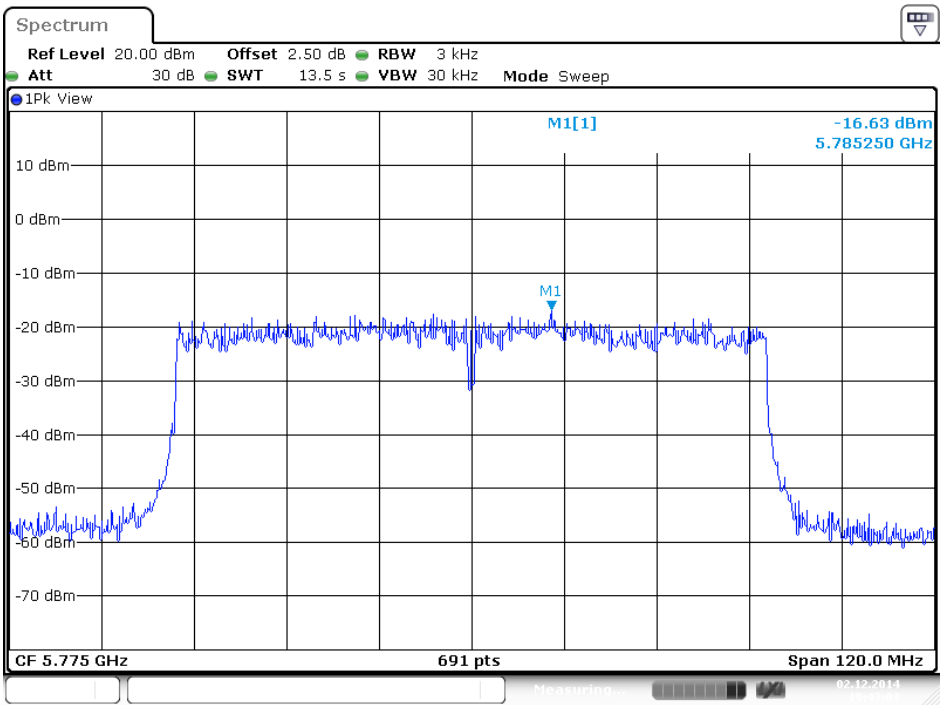


Date: 2.DEC.2014 19:26:34

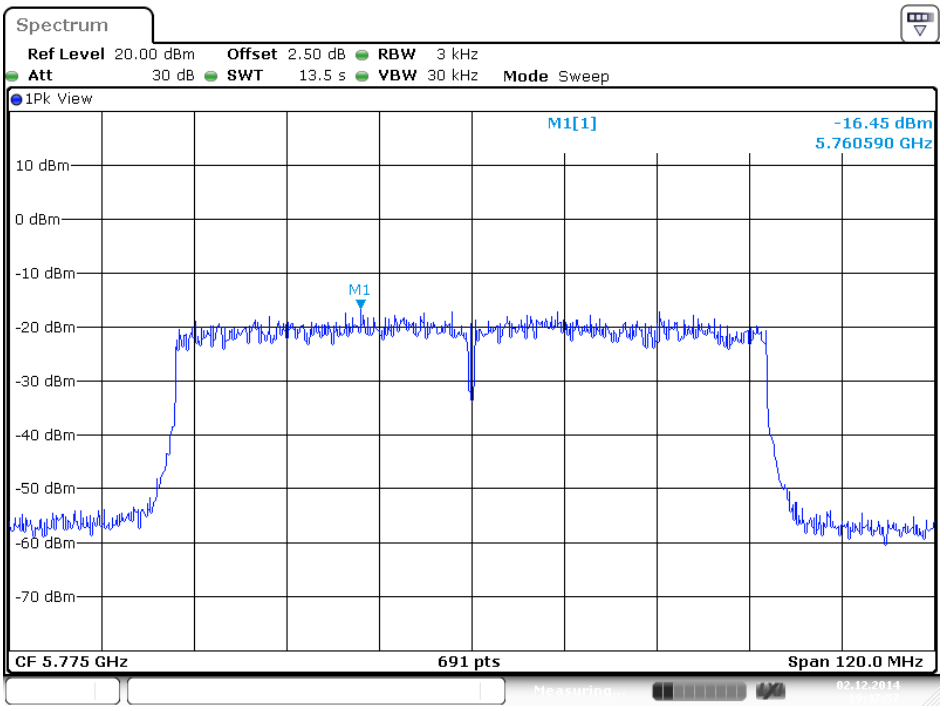
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 + Chain 5 + Chain 6 / 5210 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 4 / 5775 MHz

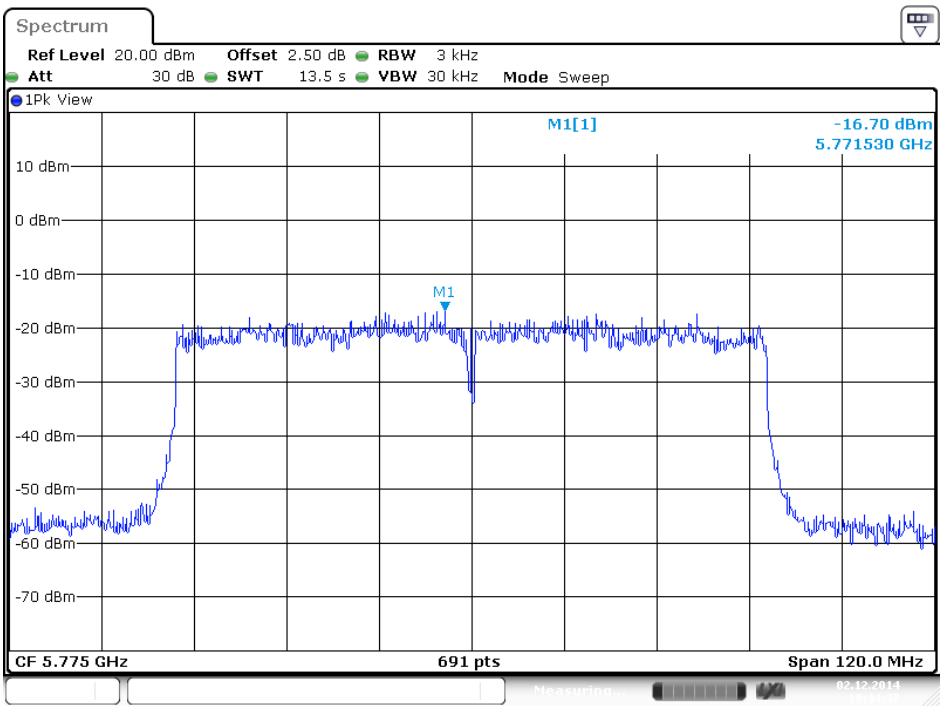


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 5 / 5775 MHz



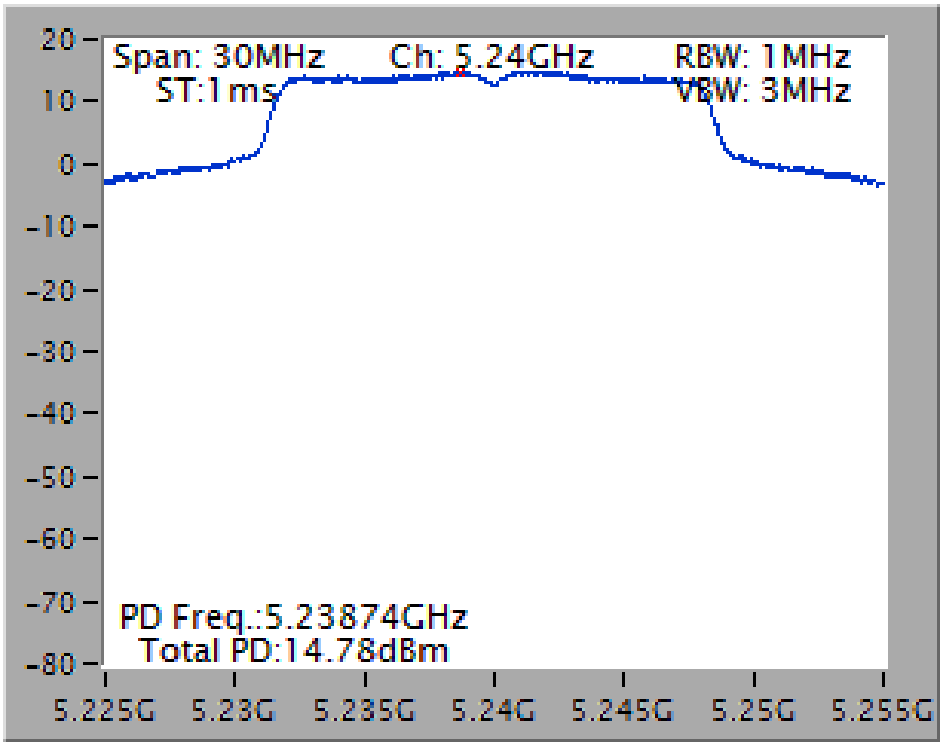
Date: 2.DEC.2014 19:47:58

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 6 / 5775 MHz

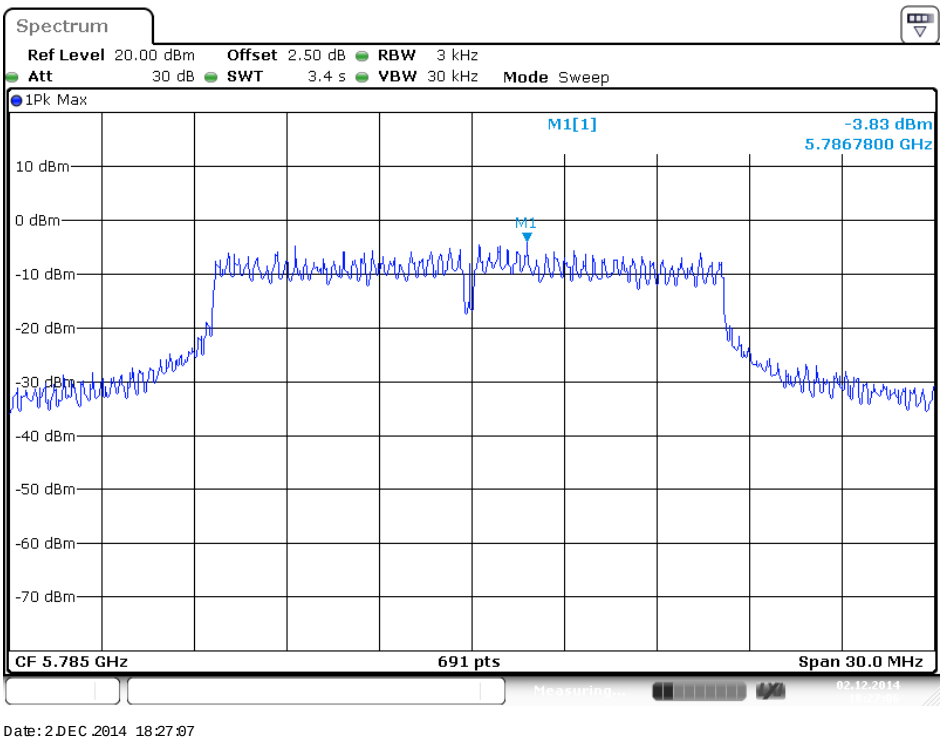


Date: 2.DEC.2014 19:44:37

Power Density Plot on Configuration IEEE 802.11a / Chain 4 + Chain 5 + Chain 6 / 5240 MHz

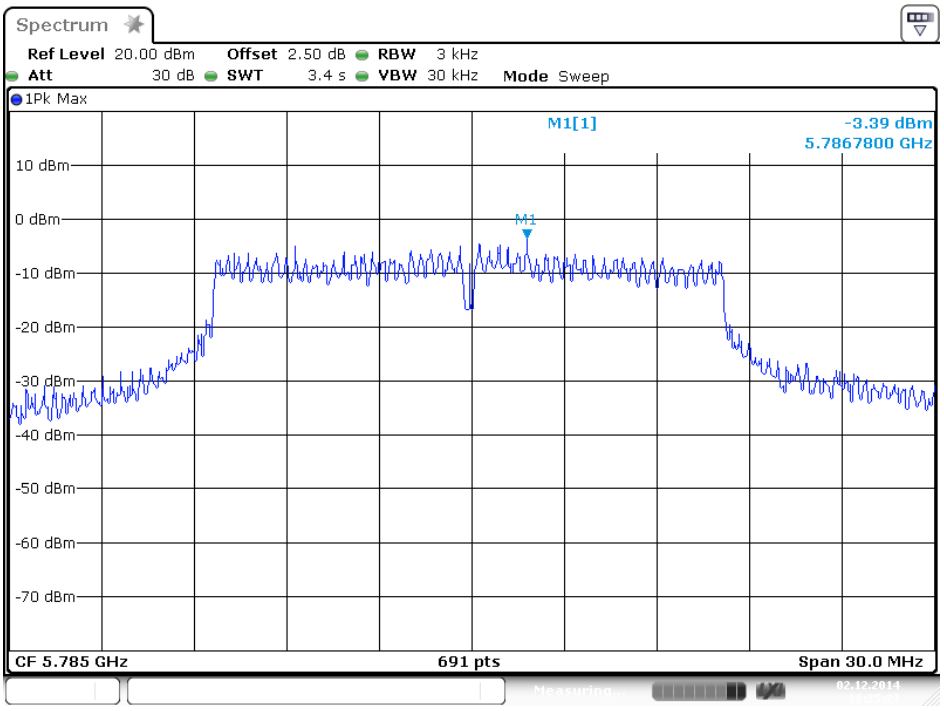


Power Density Plot on Configuration IEEE 802.11a / Chain 4 / 5785 MHz



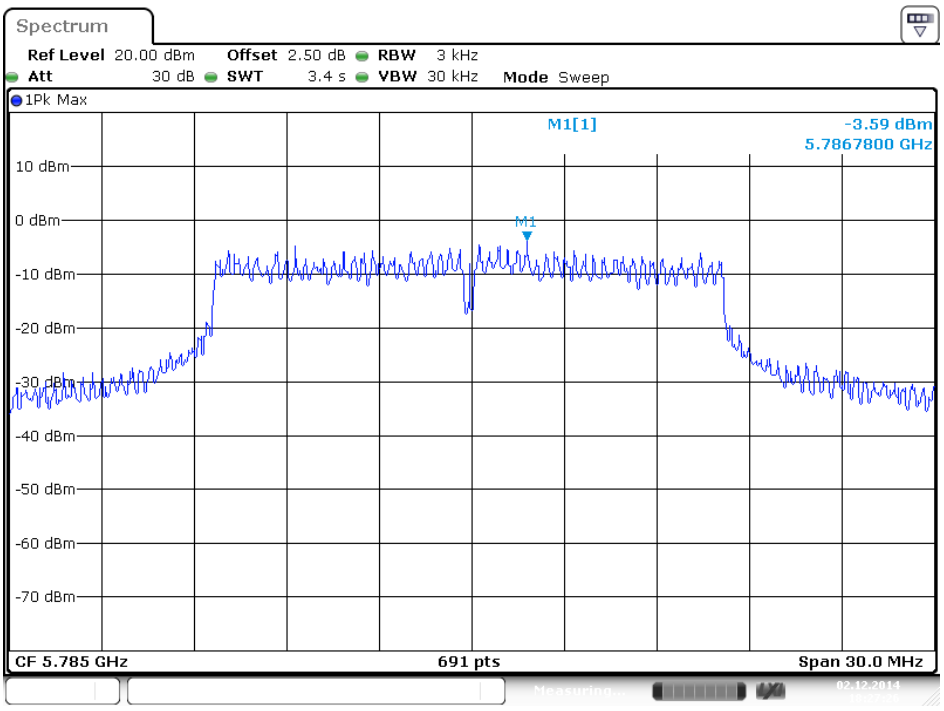
Date: 2.DEC.2014 18:27:07

Power Density Plot on Configuration IEEE 802.11a / Chain 5 / 5785 MHz



Date: 2.DEC.2014 18:25:23

Power Density Plot on Configuration IEEE 802.11a / Chain 6 / 5785 MHz



Date: 2.DEC.2014 18:27:26

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

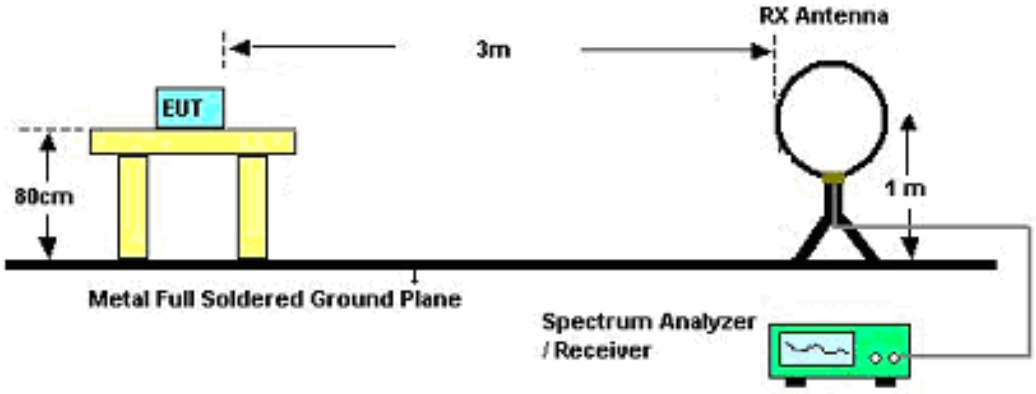
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.5.3. Test Procedures

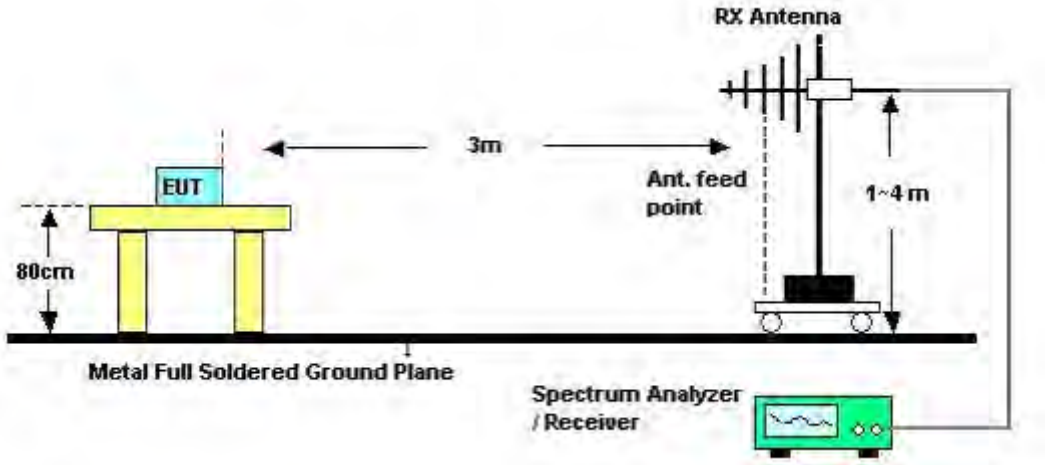
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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

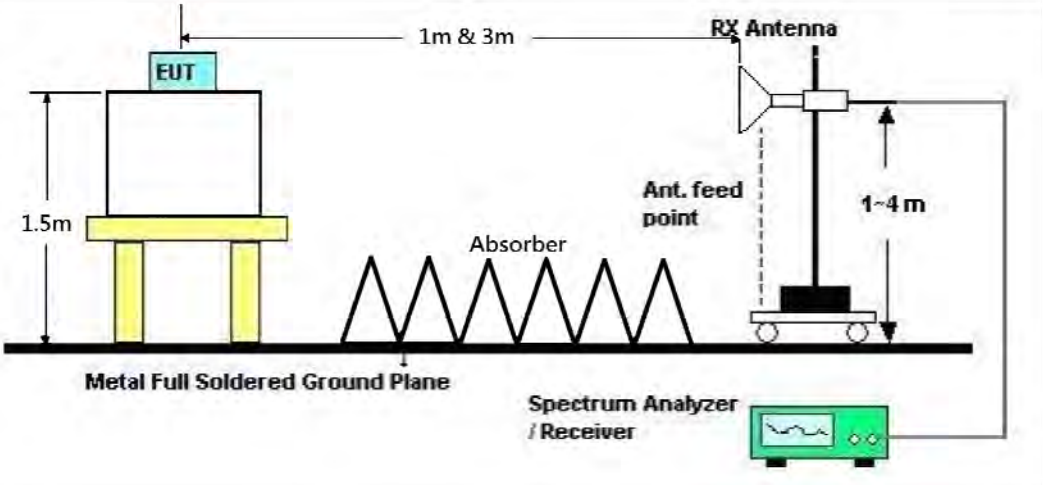
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



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 of Radiated Emissions (9kHz~30MHz)

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	CTX
Test Date	Dec. 27, 2014	Test Mode	Mode 2

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

Note:

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

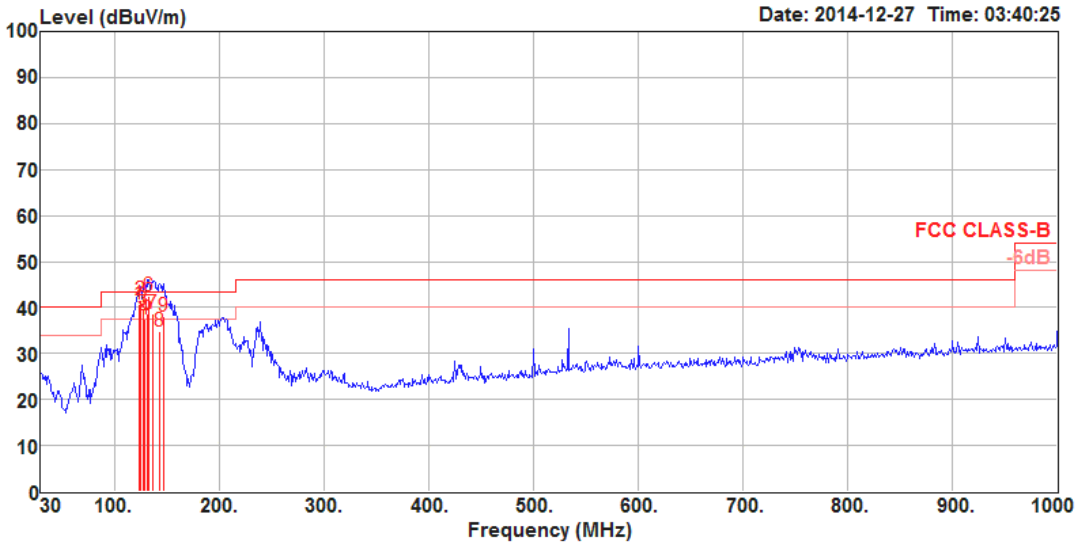
Distance extrapolation factor = 40 log (specific distance / test distance) (Db);

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

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

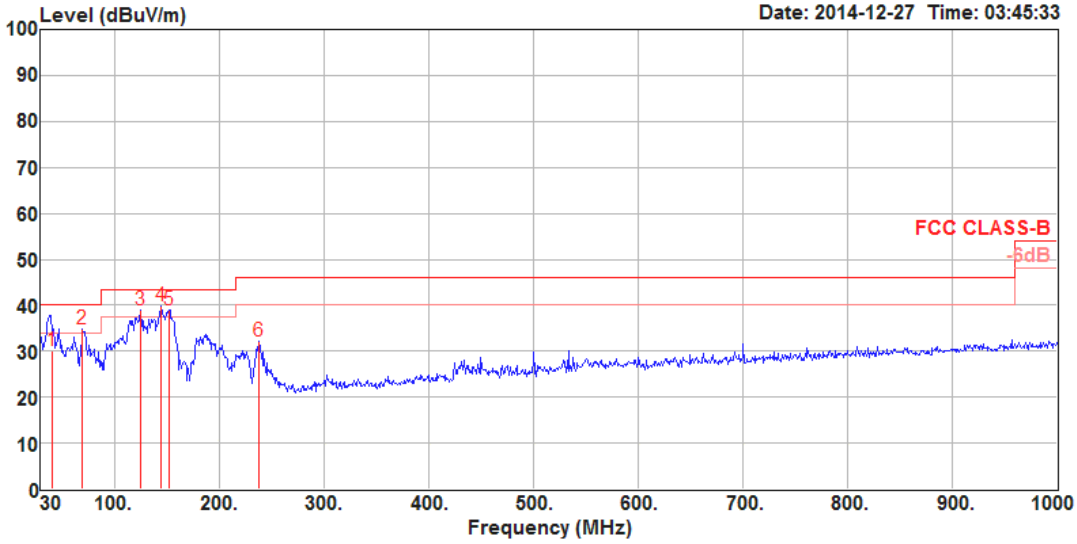
Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	CTX
Test Mode	Mode 2		

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	123.12	40.77	43.50	-2.73	59.31	0.96	12.77	32.27	QP	200	82	HORIZONTAL
2	125.06	41.56	43.50	-1.94	60.10	0.97	12.75	32.26	QP	200	102	HORIZONTAL
3	127.00	39.66	43.50	-3.84	58.19	0.98	12.73	32.24	QP	200	114	HORIZONTAL
4	128.94	37.54	43.50	-5.96	56.07	0.99	12.71	32.23	QP	200	74	HORIZONTAL
5	130.88	38.53	43.50	-4.97	57.12	0.99	12.64	32.22	QP	200	114	HORIZONTAL
6	132.82	42.45	43.50	-1.05	61.14	1.00	12.52	32.21	QP	200	114	HORIZONTAL
7	136.98	38.74	43.50	-4.76	57.62	1.02	12.28	32.18	QP	179	249	HORIZONTAL
8	143.49	34.78	43.50	-8.72	54.13	1.04	11.77	32.16	QP	200	273	HORIZONTAL
9	147.37	37.99	43.50	-5.51	57.64	1.06	11.45	32.16	QP	200	264	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	40.04	30.02	40.00	-9.98	47.70	0.56	14.07	32.31	QP	114	308	VERTICAL
2	69.77	34.88	40.00	-5.12	59.70	0.72	6.80	32.34	Peak	200	154	VERTICAL
3	125.06	38.90	43.50	-4.60	57.44	0.97	12.75	32.26	Peak	200	317	VERTICAL
4	144.46	39.98	43.50	-3.52	59.40	1.05	11.69	32.16	Peak	125	1	VERTICAL
5	152.22	39.02	43.50	-4.48	58.99	1.08	11.11	32.16	Peak	100	13	VERTICAL
6	237.58	32.12	46.00	-13.88	50.93	1.34	11.99	32.14	Peak	150	140	VERTICAL

Note:

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

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

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

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

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15538.40	48.50	54.00	-5.50	32.19	12.58	38.45	34.72	71	100	Average	HORIZONTAL
2	15541.30	61.14	74.00	-12.86	44.84	12.58	38.45	34.73	71	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15538.40	61.60	74.00	-12.40	45.29	12.58	38.45	34.72	131	100	Peak	VERTICAL
2	15539.80	48.16	54.00	-5.84	31.85	12.58	38.45	34.72	131	100	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15580.00	48.82	54.00	-5.18	32.60	12.58	38.38	34.74	178	100	Average	HORIZONTAL
2	15598.10	61.80	74.00	-12.20	45.61	12.58	38.36	34.75	178	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15584.10	48.93	54.00	-5.07	32.71	12.58	38.38	34.74	273	100	Average	VERTICAL
2	15599.70	60.22	74.00	-13.78	44.03	12.58	38.36	34.75	273	100	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15714.90	48.44	54.00	-5.56	32.48	12.57	38.19	34.80	135	101	Average	HORIZONTAL
2	15718.80	60.50	74.00	-13.50	44.54	12.57	38.19	34.80	135	101	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15713.00	60.73	74.00	-13.27	44.75	12.57	38.21	34.80	245	101	Peak	VERTICAL
2	15717.60	48.33	54.00	-5.67	32.37	12.57	38.19	34.80	245	101	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11488.32	44.37	54.00	-9.63	29.30	10.71	39.39	35.03	360	100	Average	HORIZONTAL
2	11492.72	57.33	74.00	-16.67	42.26	10.71	39.39	35.03	360	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11489.50	44.89	54.00	-9.11	29.82	10.71	39.39	35.03	13	100	Average	VERTICAL
2	11491.10	57.58	74.00	-16.42	42.51	10.71	39.39	35.03	13	100	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11568.70	50.38	54.00	-3.62	35.22	10.75	39.44	35.03	10	100	Average	HORIZONTAL
2	11568.70	63.37	74.00	-10.63	48.21	10.75	39.44	35.03	10	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11568.80	62.59	74.00	-11.41	47.43	10.75	39.44	35.03	309	100	Peak	VERTICAL
2	11569.80	50.77	54.00	-3.23	35.60	10.76	39.44	35.03	309	100	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11650.70	49.08	54.00	-4.92	33.82	10.81	39.49	35.04	344	229	Average	HORIZONTAL
2	11651.30	61.47	74.00	-12.53	46.21	10.81	39.49	35.04	344	229	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11649.90	47.78	54.00	-6.22	32.53	10.81	39.48	35.04	283	100	Average	VERTICAL
2	11650.60	60.37	74.00	-13.63	45.11	10.81	39.49	35.04	283	100	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15576.60	48.85	54.00	-5.15	32.61	12.58	38.40	34.74	121	100	Average	HORIZONTAL
2	15576.70	61.36	74.00	-12.64	45.12	12.58	38.40	34.74	121	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15570.70	60.32	74.00	-13.68	44.08	12.58	38.40	34.74	35	100	Peak	VERTICAL
2	15570.90	48.86	54.00	-5.14	32.62	12.58	38.40	34.74	35	100	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15674.30	61.39	74.00	-12.61	45.33	12.58	38.26	34.78	206	100	Peak	HORIZONTAL
2	15700.50	48.33	54.00	-5.67	32.33	12.58	38.21	34.79	206	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15689.00	60.29	74.00	-13.71	44.27	12.58	38.23	34.79	104	100	Peak	VERTICAL
2	15689.10	48.35	54.00	-5.65	32.33	12.58	38.23	34.79	104	100	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11510.30	57.05	74.00	-16.95	41.96	10.72	39.40	35.03	166	100	Peak	HORIZONTAL
2	11510.50	44.29	54.00	-9.71	29.20	10.72	39.40	35.03	166	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11508.60	56.87	74.00	-17.13	41.78	10.72	39.40	35.03	321	100	Peak	VERTICAL
2	11508.90	44.48	54.00	-9.52	29.39	10.72	39.40	35.03	321	100	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11588.10	61.11	74.00	-12.89	45.93	10.76	39.45	35.03	279	100	Peak	HORIZONTAL
2	11588.70	48.86	54.00	-5.14	33.68	10.76	39.45	35.03	279	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11591.00	59.95	74.00	-14.05	44.77	10.76	39.45	35.03	271	100	Peak	VERTICAL
2	11591.60	48.75	54.00	-5.25	33.57	10.76	39.45	35.03	271	100	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15625.70	61.88	74.00	-12.12	45.73	12.58	38.33	34.76	151	100	Peak	HORIZONTAL
2	15629.50	49.63	54.00	-4.37	33.50	12.58	38.31	34.76	151	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15626.30	50.29	54.00	-3.71	34.14	12.58	38.33	34.76	171	100	Average	VERTICAL
2	15628.30	61.95	74.00	-12.05	45.80	12.58	38.33	34.76	171	100	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11547.12	56.89	74.00	-17.11	41.75	10.75	39.42	35.03	161	101	Peak	HORIZONTAL
2	11569.20	44.47	54.00	-9.53	29.31	10.75	39.44	35.03	161	101	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11551.68	44.29	54.00	-9.71	29.14	10.75	39.43	35.03	257	100	Average	VERTICAL
2	11552.32	58.27	74.00	-15.73	43.12	10.75	39.43	35.03	257	100	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11a CH 36 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15539.92	60.81	74.00	-13.19	44.50	12.58	38.45	34.72	269	100	Peak	HORIZONTAL
2	15540.07	47.19	54.00	-6.81	30.88	12.58	38.45	34.72	269	100	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15539.88	62.02	74.00	-11.98	45.71	12.58	38.45	34.72	154	100	Peak	VERTICAL
2	15540.00	47.72	54.00	-6.28	31.41	12.58	38.45	34.72	154	100	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11a CH 40 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15599.80	60.26	74.00	-13.74	44.07	12.58	38.36	34.75	279	101	Peak	HORIZONTAL
2	15600.04	46.39	54.00	-7.61	30.20	12.58	38.36	34.75	279	101	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15599.68	46.26	54.00	-7.74	30.07	12.58	38.36	34.75	105	101	Average	VERTICAL
2	15599.92	60.16	74.00	-13.84	43.97	12.58	38.36	34.75	105	101	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11a CH 48 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15716.76	46.19	54.00	-7.81	30.23	12.57	38.19	34.80	276	100	Average	HORIZONTAL
2	15720.00	60.38	74.00	-13.62	44.42	12.57	38.19	34.80	276	100	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	15719.24	45.58	54.00	-8.42	29.62	12.57	38.19	34.80	210	100	Average	VERTICAL
2	15720.00	58.99	74.00	-15.01	43.03	12.57	38.19	34.80	210	100	Peak	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11a CH 149 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11492.28	59.06	74.00	-14.94	43.99	10.71	39.39	35.03	154	101	Peak	HORIZONTAL
2	11492.52	45.18	54.00	-8.82	30.11	10.71	39.39	35.03	154	101	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11488.44	56.98	74.00	-17.02	41.91	10.71	39.39	35.03	168	100	Peak	VERTICAL
2	11490.72	43.67	54.00	-10.33	28.60	10.71	39.39	35.03	168	100	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11a CH 157 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11573.88	68.12	74.00	-5.88	52.95	10.76	39.44	35.03	71	230	Peak	HORIZONTAL
2	11574.04	53.26	54.00	-0.74	38.09	10.76	39.44	35.03	71	230	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11572.44	66.45	74.00	-7.55	51.28	10.76	39.44	35.03	71	227	Peak	VERTICAL
2	11573.28	53.27	54.00	-0.73	38.10	10.76	39.44	35.03	71	227	Average	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11a CH 165 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11644.84	52.23	54.00	-1.77	37.00	10.79	39.48	35.04	48	159	Average	HORIZONTAL
2	11655.36	66.24	74.00	-7.76	50.98	10.81	39.49	35.04	48	159	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11646.40	62.50	74.00	-11.50	47.25	10.81	39.48	35.04	99	100	Peak	VERTICAL
2	11647.20	48.10	54.00	-5.90	32.85	10.81	39.48	35.04	99	100	Average	VERTICAL

Note:

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

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

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

4.6. 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, only the frequency range investigated is limited to 100MHz around bandedges.

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	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 27, 2014		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5096.00	64.09	74.00	-9.91	57.51	6.14	34.04	33.60	342	231	Peak	VERTICAL
2	5101.20	53.93	54.00	-0.07	47.35	6.14	34.04	33.60	342	231	Average	VERTICAL
3	5181.20	101.48			94.65	6.24	34.16	33.57	342	231	Average	VERTICAL
4	5181.20	111.14			104.31	6.24	34.16	33.57	342	231	Peak	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5120.80	53.98	54.00	-0.02	47.34	6.17	34.06	33.59	331	227	Average	VERTICAL
2	5120.80	65.23	74.00	-8.77	58.59	6.17	34.06	33.59	331	227	Peak	VERTICAL
3	5201.20	101.63			94.74	6.27	34.18	33.56	331	227	Average	VERTICAL
4	5201.20	111.52			104.63	6.27	34.18	33.56	331	227	Peak	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5150.00	49.91	54.00	-4.09	43.17	6.21	34.11	33.58	313	233	Average	VERTICAL
2	5150.00	60.87	74.00	-13.13	54.13	6.21	34.11	33.58	313	233	Peak	VERTICAL
3	5237.00	118.27			111.29	6.30	34.23	33.55	313	233	Peak	VERTICAL
4	5241.80	108.06			101.06	6.30	34.25	33.55	313	233	Average	VERTICAL
5	5352.40	59.75	74.00	-14.25	52.40	6.47	34.39	33.51	313	233	Peak	VERTICAL
6	5362.00	47.99	54.00	-6.01	40.61	6.47	34.41	33.50	313	233	Average	VERTICAL

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

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 27, 2014		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5665.80	63.76	68.20	-4.44	55.70	6.79	34.66	33.39	4	100	Peak	VERTICAL
2	5725.00	77.97	78.20	-0.23	69.82	6.83	34.69	33.37	4	100	Peak	VERTICAL
3	5741.40	99.43			91.24	6.86	34.70	33.37	4	100	Average	VERTICAL
4	5746.20	109.61			101.42	6.86	34.70	33.37	4	100	Peak	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5701.20	67.11	68.20	-1.09	59.00	6.81	34.68	33.38	29	196	Peak	VERTICAL
2	5721.40	60.63	78.20	-17.57	52.48	6.83	34.69	33.37	29	196	Peak	VERTICAL
3	5786.20	104.03			95.76	6.90	34.72	33.35	29	196	Average	VERTICAL
4	5786.80	114.42			106.15	6.90	34.72	33.35	29	196	Peak	VERTICAL
5	5857.00	67.31	78.20	-10.89	58.95	6.95	34.74	33.33	29	196	Peak	VERTICAL
6	5861.80	67.02	68.20	-1.18	58.64	6.97	34.74	33.33	29	196	Peak	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5823.80	100.72			92.41	6.92	34.73	33.34	26	110	Average	HORIZONTAL
2	5826.20	114.50			106.19	6.92	34.73	33.34	26	109	Peak	HORIZONTAL
3	5851.20	76.43	78.20	-1.77	68.07	6.95	34.74	33.33	25	107	Peak	HORIZONTAL
4	5860.00	67.96	68.20	-0.24	59.58	6.97	34.74	33.33	25	107	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 27, 2014		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5147.60	69.28	74.00	-4.72	62.54	6.21	34.11	33.58	206	100	Peak	HORIZONTAL
2	5148.00	53.68	54.00	-0.32	46.94	6.21	34.11	33.58	206	100	Average	HORIZONTAL
3	5193.20	96.45			89.60	6.24	34.18	33.57	206	100	Average	HORIZONTAL
4	5193.20	105.89			99.04	6.24	34.18	33.57	206	100	Peak	HORIZONTAL

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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5147.60	53.85	54.00	-0.15	47.11	6.21	34.11	33.58	182	115	Average	HORIZONTAL
2	5147.60	63.37	74.00	-10.63	56.63	6.21	34.11	33.58	182	115	Peak	HORIZONTAL
3	5223.40	102.29			95.34	6.30	34.20	33.55	182	115	Average	HORIZONTAL
4	5223.40	111.78			104.83	6.30	34.20	33.55	182	115	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 27, 2014 ~ Nov. 28, 2014		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5711.80	68.03	68.20	-0.17	59.90	6.83	34.68	33.38	92	100	Peak	HORIZONTAL
2	5721.80	72.67	78.20	-5.53	64.52	6.83	34.69	33.37	92	100	Peak	HORIZONTAL
3	5752.20	95.99			87.79	6.86	34.70	33.36	92	100	Average	HORIZONTAL
4	5752.20	106.28			98.08	6.86	34.70	33.36	92	100	Peak	HORIZONTAL

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

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5777.40	100.76			92.52	6.88	34.71	33.35	79	100	Average	HORIZONTAL
2	5777.40	111.70			103.46	6.88	34.71	33.35	79	100	Peak	HORIZONTAL
3	5852.80	74.64	78.20	-3.56	66.28	6.95	34.74	33.33	79	100	Peak	HORIZONTAL
4	5868.20	67.99	68.20	-0.21	59.60	6.97	34.74	33.32	79	100	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5795 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 27, 2014		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5102.00	53.69	54.00	-0.31	47.11	6.14	34.04	33.60	166	178	Average	VERTICAL
2	5102.60	63.95	74.00	-10.05	57.37	6.14	34.04	33.60	166	178	Peak	VERTICAL
3	5181.80	101.67			94.84	6.24	34.16	33.57	166	178	Average	VERTICAL
4	5182.40	112.07			105.24	6.24	34.16	33.57	166	178	Peak	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5121.80	64.03	74.00	-9.97	57.39	6.17	34.06	33.59	149	183	Peak	VERTICAL
2	5122.40	53.74	54.00	-0.26	47.10	6.17	34.06	33.59	149	183	Average	VERTICAL
3	5192.80	102.65			95.80	6.24	34.18	33.57	149	183	Average	VERTICAL
4	5192.80	113.32			106.47	6.24	34.18	33.57	149	183	Peak	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5121.80	47.54	54.00	-6.46	40.90	6.17	34.06	33.59	138	165	Average	VERTICAL
2	5121.80	61.69	74.00	-12.31	55.05	6.17	34.06	33.59	138	165	Peak	VERTICAL
3	5242.40	120.59			113.59	6.30	34.25	33.55	138	165	Peak	VERTICAL
4	5243.00	108.83			101.83	6.30	34.25	33.55	138	165	Average	VERTICAL
5	5351.60	61.61	74.00	-12.39	54.26	6.47	34.39	33.51	138	165	Peak	VERTICAL
6	5363.80	47.87	54.00	-6.13	40.49	6.47	34.41	33.50	138	165	Average	VERTICAL

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

Temperature	24°C	Humidity	51%
Test Engineer	Eason Chen & Satoshi Yang	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 27, 2014		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5666.40	64.34	68.20	-3.86	56.28	6.79	34.66	33.39	109	100	Peak	VERTICAL
2	5725.00	77.68	78.20	-0.52	69.53	6.83	34.69	33.37	109	100	Peak	VERTICAL
3	5746.20	100.66			92.47	6.86	34.70	33.37	109	100	Average	VERTICAL
4	5746.20	111.05			102.86	6.86	34.70	33.37	109	100	Peak	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5712.00	66.08	68.20	-2.12	57.95	6.83	34.68	33.38	59	100	Peak	VERTICAL
2	5723.20	60.64	78.20	-17.56	52.49	6.83	34.69	33.37	59	100	Peak	VERTICAL
3	5782.00	102.91			94.65	6.90	34.71	33.35	59	100	Average	VERTICAL
4	5782.00	113.82			105.56	6.90	34.71	33.35	59	100	Peak	VERTICAL
5	5854.20	60.81	78.20	-17.39	52.45	6.95	34.74	33.33	59	100	Peak	VERTICAL
6	5863.60	67.41	68.20	-0.79	59.03	6.97	34.74	33.33	59	100	Peak	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	5826.20	112.67			104.36	6.92	34.73	33.34	37	101	Peak	VERTICAL
2	5826.80	102.15			93.84	6.92	34.73	33.34	37	101	Average	VERTICAL
3	5856.20	72.94	78.20	-5.26	64.58	6.95	34.74	33.33	37	101	Peak	VERTICAL
4	5907.20	67.08	68.20	-1.12	58.63	6.99	34.77	33.31	37	101	Peak	VERTICAL

Item 1, 2 are the fundamental frequency at 5825 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

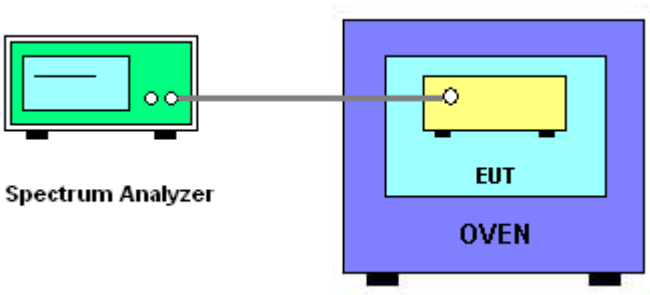
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is 0°C~40°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	26°C	Humidity	63%
Test Engineer	James Chou	Test Date	Nov. 26, 2014 ~ Dec. 20, 2014

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	5200 MHz	5785 MHz
126.50	5200.0190	5785.0210
110.00	5200.0210	5785.0280
93.50	5200.0240	5785.0340
Max. Deviation (MHz)	**0.024000**	**0.034000**
Max. Deviation (ppm)	**4.62**	**5.88**

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)	
(°C)	5200 MHz	5785 MHz
0	5200.0050	5785.0140
10	5200.0060	5785.0210
20	5200.0060	5785.0280
30	5200.0100	5785.0370
40	5200.0120	5785.0410
Max. Deviation (MHz)	**0.012000**	**0.041000**
Max. Deviation (ppm)	**2.31**	**7.09**

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
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 26, 2014	Radiation (03CH01-CB)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jul. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02009	1GHz ~ 26.5GHz	Dec. 16, 2013	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Apr. 22, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100080	9kHz ~ 40GHz	Oct. 15, 2014	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESR26	101289	9kHz~26GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R.	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO 2000	N/A	1 m - 4 m	N.C.R.	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	101026	9kHz~40GHz	Aug. 28, 2014	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2014	Conducted (TH01-CB)
RF Power Divider	Woken	2 Way	0120A02056002D	2GHz ~ 18GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Power Divider	Woken	3 Way	MDC2366	2GHz ~ 18GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Power Divider	Woken	4 Way	0120A04056002D	2GHz ~ 18GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Oct. 06, 2014	Conducted (TH01-CB)

Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Oct. 06, 2014	Conducted (TH01-CB)

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

NCR means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

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