



SPORTON International Inc.

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FCC RADIO TEST REPORT

Applicant's company	ASUSTeK COMPUTER INC.
Applicant Address	4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan
FCC ID	MSQ-RTGZ00
Manufacturer's company	ASKEY TECHNOLOGY (JIANG SU) LTD
Manufacturer Address	NO1388, Jiao Tong Road, Wujiang Economic Technological Development Area Jiangsu Province 215200 China
Manufacturer's company	Compal Networking (KunShan) Co., LTD.
Manufacturer Address	No. 520, Nabbang Rd., Economic & Technical Development Zone Kunshan, Jiangsu Province China

Product Name	Wireless-AC5300 Tri-band Gigabit Router
Brand Name	ASUS
Model No.	RT-AC5300, RT-AC5300R, RT-AC5300W, RT-AC5300P, RT-AC95U, RT-AC96U
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250MHz
Received Date	Apr. 28, 2015
Final Test Date	May 22, 2015
Submission Type	Original Equipment

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 C63.10-2009, 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.

Note: Using 1.5m table as an alternative was permitted by the FCC per TCBC conference call of Dec. 02, 2014.



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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR532637AB	Rev. 01	Initial issue of report	May 26, 2015



1. VERIFICATION OF COMPLIANCE

Product Name : Wireless-AC5300 Tri-band Gigabit Router
Brand Name : ASUS
Model No. : RT-AC5300, RT-AC5300R, RT-AC5300W, RT-AC5300P, RT-AC95U, RT-AC96U
Applicant : ASUSTeK COMPUTER 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 Apr. 28, 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.

A handwritten signature in blue ink, appearing to read 'Sam Chen', is written over a horizontal line.

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	15.207	AC Power Line Conducted Emissions	Complies	14.61 dB
4.2	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies	-
4.3	15.407(a)	Maximum Conducted Output Power	Complies	0.04 dB
4.4	15.407(a)	Power Spectral Density	Complies	0.02 dB
4.5	15.407(b)	Radiated Emissions	Complies	4.00 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

Items	Description
Product Type	WLAN (4TX, 4RX)
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, 1024QAM)
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 ~ 5250MHz
Channel Number	4 for 20MHz bandwidth ; 2 for 40MHz bandwidth 1 for 80MHz bandwidth
Channel Band Width (99%)	EUT: Version 1 <u>For non-beamforming function:</u> IEEE 802.11a: 17.89 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 74.96 MHz <u>For beamforming function:</u> IEEE 802.11ac MCS0/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.61 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.41 MHz

	<p>EUT: Version 2</p> <p><u>For non-beamforming function:</u></p> <p>IEEE 802.11a: 18.92 MHz</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 18.23 MHz</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 74.67 MHz</p> <p>IEEE 802.11ac MCS0/Nss4 (VHT20): 18.06 MHz</p> <p>IEEE 802.11ac MCS0/Nss4 (VHT40): 36.76 MHz</p> <p>IEEE 802.11ac MCS0/Nss4 (VHT80): 76.12 MHz</p> <p><u>For beamforming function:</u></p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 18.23 MHz</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 37.04 MHz</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz</p>
Maximum Conducted Output Power	<p>EUT: Version 1</p> <p><u>For non-beamforming function:</u></p> <p>IEEE 802.11a: 26.90 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 26.82 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 28.33 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 24.94 dBm</p> <p><u>For beamforming function:</u></p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 26.47 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 26.39 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 24.47 dBm</p> <p>EUT: Version 2</p> <p><u>For non-beamforming function:</u></p> <p>IEEE 802.11a: 26.89 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 26.91 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 28.22 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 22.48 dBm</p> <p>IEEE 802.11ac MCS0/Nss4 (VHT20): 26.05 dBm</p> <p>IEEE 802.11ac MCS0/Nss4 (VHT40): 24.47 dBm</p> <p>IEEE 802.11ac MCS0/Nss4 (VHT80): 24.50 dBm</p> <p><u>For beamforming function:</u></p> <p>IEEE 802.11ac MCS0/Nss1 (VHT20): 26.46 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT40): 26.38 dBm</p> <p>IEEE 802.11ac MCS0/Nss1 (VHT80): 24.43 dBm</p>
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	<input checked="" type="checkbox"/> IP Based (Load Based)	<input type="checkbox"/> Frame Based
Beamforming Function	<input type="checkbox"/> With beamforming	<input checked="" type="checkbox"/> Without beamforming
Operating Mode	<input type="checkbox"/> Outdoor access point	
	<input checked="" type="checkbox"/> Indoor access point	
	<input type="checkbox"/> Fixed point-to-point access points	
	<input type="checkbox"/> Mobile and portable client devices	

Note: The product has beamforming function for 802.11n and 802.11ac.

Antenna and Band width

Antenna	Four (TX)		
	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)	4	MCS 0-31
802.11n (HT40)	4	MCS 0-31
802.11ac (VHT20)	4	MCS 0-11/Nss1-4
802.11ac (VHT40)	4	MCS 0-11/Nss1-4
802.11ac (VHT80)	4	MCS 0-11/Nss1-4

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

Then EUT supports HT20 and HT40.

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

Note 3: Modulation modes consist of below configuration:

HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac

3.2. Accessories

Power	Brand	Model No.	Rating
Adapter 1	ASUS	ADP-65DW B	Input:100-240Vac, 50-60Hz, 1.5A Output: 19Vdc, 3.42A
Adapter 2	ASUS	AD887320	Input:100-240Vac, 50-60Hz, 1.5A Output: 19Vdc, 3.42A
Adapter 3	ASUS	PA-1650-93	Input:100-240Vac, 50-60Hz, 1.7A Output: 19Vdc, 3.42A
Other			
RJ-45 cable*1: Shielded, 1.5m			

3.3. Table for Filed Antenna

Set	Brand	Part No.	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	PSA	RFDPA131000SBLB805	Dipole Antenna	Reversed-SMA	2.32	3.47

- Note: 1. The EUT has one set of antenna, and each set contains eight antennas.
 2. Chain 1, Chain 2, Chain 3 and Chain 4 could transmit/receive simultaneously.
 3. The EUT had two versions, their measure information as below:



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48.

For 40MHz bandwidth systems, use Channel 38, 46.

For 80MHz bandwidth systems, use Channel 42.

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	-	-

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.

EUT: Version 1

Test Items	Mode	Data Rate	Channel	Chain	
AC Power Conducted Emission	CTX	-	-	-	
Max. Conducted Output Power	Non-beamforming function				
	11a/BPSK	Band 1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	Beamforming function				
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	Power Spectral Density	Non-beamforming function			
11a/BPSK		Band 1	6Mbps	36/40/48	1+2+3+4
11ac VHT20		Band 1	MCS0/Nss1	36/40/48	1+2+3+4
11ac VHT40		Band 1	MCS0/Nss1	38/46	1+2+3+4
11ac VHT80		Band 1	MCS0/Nss1	42	1+2+3+4
Beamforming function					
11ac VHT20		Band 1	MCS0/Nss1	36/40/48	1+2+3+4
11ac VHT40		Band 1	MCS0/Nss1	38/46	1+2+3+4
11ac VHT80		Band 1	MCS0/Nss1	42	1+2+3+4
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement		Non-beamforming function			
	11a/BPSK	Band 1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	Beamforming function				
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	Radiated Emission Below 1GHz	CTX	-	-	-

Radiated Emission Above 1GHz	Non-beamforming function				
	11a/BPSK	Band 1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	Beamforming function				
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
Band Edge Emission	Non-beamforming function				
	11a/BPSK	Band 1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	Beamforming function				
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
Frequency Stability	20 MHz	Band 1	-	40	1+2+3+4
	40 MHz	Band 1	-	38	1+2+3+4
	80 MHz	Band 1	-	42	1+2+3+4

EUT: Version 2

Test Items	Mode	Data Rate	Channel	Chain	
AC Power Conducted Emission	CTX	-	-	-	
Max. Conducted Output Power	Non-beamforming function				
	11a/BPSK	Band 1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss4	36	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss4	38	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss4	42	1+2+3+4
	Beamforming function				
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	Power Spectral Density	Non-beamforming function			
		11a/BPSK	Band 1	6Mbps	36/40/48
11ac VHT20		Band 1	MCS0/Nss1	36/40/48	1+2+3+4
11ac VHT40		Band 1	MCS0/Nss1	38/46	1+2+3+4
11ac VHT80		Band 1	MCS0/Nss1	42	1+2+3+4
11ac VHT20		Band 1	MCS0/Nss4	36	1+2+3+4
11ac VHT40		Band 1	MCS0/Nss4	38	1+2+3+4
11ac VHT80		Band 1	MCS0/Nss4	42	1+2+3+4
Beamforming function					
11ac VHT20		Band 1	MCS0/Nss1	36/40/48	1+2+3+4
11ac VHT40		Band 1	MCS0/Nss1	38/46	1+2+3+4
11ac VHT80		Band 1	MCS0/Nss1	42	1+2+3+4

26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	Non-beamforming function				
	11a/BPSK	Band 1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss4	36	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss4	38	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss4	42	1+2+3+4
	Beamforming function				
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	Radiated Emission Below 1GHz	CTX		-	-
	Radiated Emission Above 1GHz	Non-beamforming function			
11a/BPSK		Band 1	6Mbps	36/40/48	1+2+3+4
11ac VHT20		Band 1	MCS0/Nss1	36/40/48	1+2+3+4
11ac VHT40		Band 1	MCS0/Nss1	38/46	1+2+3+4
11ac VHT80		Band 1	MCS0/Nss1	42	1+2+3+4
11ac VHT20		Band 1	MCS0/Nss4	36	1+2+3+4
11ac VHT40		Band 1	MCS0/Nss4	38	1+2+3+4
11ac VHT80		Band 1	MCS0/Nss4	42	1+2+3+4
Beamforming function					
11ac VHT20		Band 1	MCS0/Nss1	36/40/48	1+2+3+4
11ac VHT40		Band 1	MCS0/Nss1	38/46	1+2+3+4
11ac VHT80		Band 1	MCS0/Nss1	42	1+2+3+4

Band Edge Emission	Non-beamforming function				
	11a/BPSK	Band 1	6Mbps	36/40/48	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	11ac VHT20	Band 1	MCS0/Nss4	36	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss4	38	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss4	42	1+2+3+4
	Beamforming function				
	11ac VHT20	Band 1	MCS0/Nss1	36/40/48	1+2+3+4
	11ac VHT40	Band 1	MCS0/Nss1	38/46	1+2+3+4
	11ac VHT80	Band 1	MCS0/Nss1	42	1+2+3+4
	Frequency Stability	20 MHz	Band 1	-	40
40 MHz		Band 1	-	38	1+2+3+4
80 MHz		Band 1	-	42	1+2+3+4

Note: 1. There are two functions of EUT, one is beamforming function, and the other is non-beamforming function for 802.11n and 802.11ac. All test results were recorded in the report.

2. VHT20/VHT40 covers HT20/HT40, due to same modulation.

3. The EUT is used for laying only.

The following test modes were performed for all tests:

For AC Power Line Conducted Emissions test:

Mode 1. EUT 1 + Adapter 1 with 2.4GHz WLAN function

Mode 2. EUT 1 + Adapter 1 with 5GHz Band 1 WLAN function

Mode 3. EUT 1 + Adapter 1 with 5GHz Band 4 WLAN function

Mode 1 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4~5 will follow this same test mode.

Mode 4. EUT 1 + Adapter 2 with 2.4GHz WLAN function

Mode 5. EUT 1 + Adapter 3 with 2.4GHz WLAN function

Mode 1 is the worst case, so it was selected to record in this test report.

For Radiated Emissions Below 1GHz test:

Mode 1. EUT 1 + Adapter 1 with 2.4GHz WLAN function

Mode 2. EUT 1 + Adapter 1 with 5GHz Band 1 WLAN function

Mode 3. EUT 1 + Adapter 1 with 5GHz Band 4 WLAN function

Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4~5 will follow this same test mode.

Mode 4. EUT 1 + Adapter 2 with 5GHz Band 4 WLAN function

Mode 5. EUT 1 + Adapter 3 with 5GHz Band 4 WLAN function

Mode 5 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, 5GHz Band 1 WLAN function and 5GHz Band 4 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, 5GHz Band 1 WLAN function and 5GHz Band 4 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	-
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.7. Table for Multiple Listing

1. The model numbers in the following table are all refer to the identical product.

Model No.	Description
RT-AC5300	The models are identical except for the model numbers as marketing strategy.
RT-AC5300R	
RT-AC5300W	
RT-AC5300P	
RT-AC95U	
RT-AC96U	

2. The EUT has two types which are identical to each other in all aspects except for the following table:

Type	Description	Remark
1	The EUT has total LAN ports amounted to eight ports.	EUT 1
2	The EUT has total LAN ports amounted to four ports.	EUT 2

Note: Only the most complex mode for EUT 1 was performed for all the tests and recorded in this report.

3.8. Table for Supporting Units

For Test Site No: CO01-CB_

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC

For Test Site No: 03CH01-CB

For non-beamforming function:

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

For beamforming function:

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
Notebook	DELL	E4300	DoC
RX Device	Broadcom	Bcm4366	DoC

For Test Site No: TH01-CB

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.

EUT: Version 1

For non-beamforming function:

Test Software Version	MTOOL 2.0.2.7		
Mode	Test Frequency (MHz)		
	NCB: 20MHz		
	5180 MHz	5200 MHz	5240 MHz
802.11a	86	87	86
802.11ac MCS0/Nss1 VHT20	83	86	86
Mode	NCB: 40MHz		
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz
	74	92	
Mode	NCB: 80MHz		
802.11ac MCS0/Nss1 VHT80	5210 MHz		
	77		

For beamforming function:

Test Software Version	MTOOL 2.0.2.7		
Mode	Test Frequency (MHz)		
	NCB: 20MHz		
	5180 MHz	5200 MHz	5240 MHz
802.11ac MCS0/Nss1 VHT20	84	84	84
Mode	NCB: 40MHz		
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz
	74	83	
Mode	NCB: 80MHz		
802.11ac MCS0/Nss1 VHT80	5210 MHz		
	76		

EUT: Version 2

For non-beamforming function:

Test Software Version	MTOOL 2.0.2.7		
Mode	Test Frequency (MHz)		
	NCB: 20MHz		
	5180 MHz	5200 MHz	5240 MHz
802.11a	87	86	86
802.11ac MCS0/Nss1 VHT20	81	87	87
802.11ac MCS0/Nss4 VHT20	83	-	-
Mode	NCB: 40MHz		
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz
	70		92
802.11ac MCS0/Nss4 VHT40	77		-
Mode	NCB: 80MHz		
802.11ac MCS0/Nss1 VHT80	5210 MHz		
	69		
802.11ac MCS0/Nss4 VHT80	76		

For beamforming function:

Test Software Version	MTOOL 2.0.2.7		
Mode	Test Frequency (MHz)		
	NCB: 20MHz		
	5180 MHz	5200 MHz	5240 MHz
802.11ac MCS0/Nss1 VHT20	83	85	84
Mode	NCB: 40MHz		
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz
	74		83
Mode	NCB: 80MHz		
802.11ac MCS0/Nss1 VHT80	5210 MHz		
	76		

3.10. EUT Operation during Test

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN XP were executed.

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under DOS.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by RX Device and transmit duty cycle no less 98%

3.11. Duty Cycle

EUT: Version 1

For non-beamforming function:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	0.420	0.488	86.07	0.65	2.38
802.11ac MCS0/Nss1 VHT20	2.040	2.080	98.08	0.08	0.01
802.11ac MCS0/Nss1 VHT40	1.910	1.940	98.45	0.07	0.01
802.11ac MCS0/Nss1 VHT80	0.922	0.992	92.94	0.32	1.08

For beamforming function:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	3.820	4.240	90.09	0.45	0.26
802.11ac MCS0/Nss1 VHT40	4.560	5.300	86.04	0.65	0.22
802.11ac MCS0/Nss1 VHT80	5.600	7.000	80.00	0.97	0.18

EUT: Version 2

For non-beamforming function:

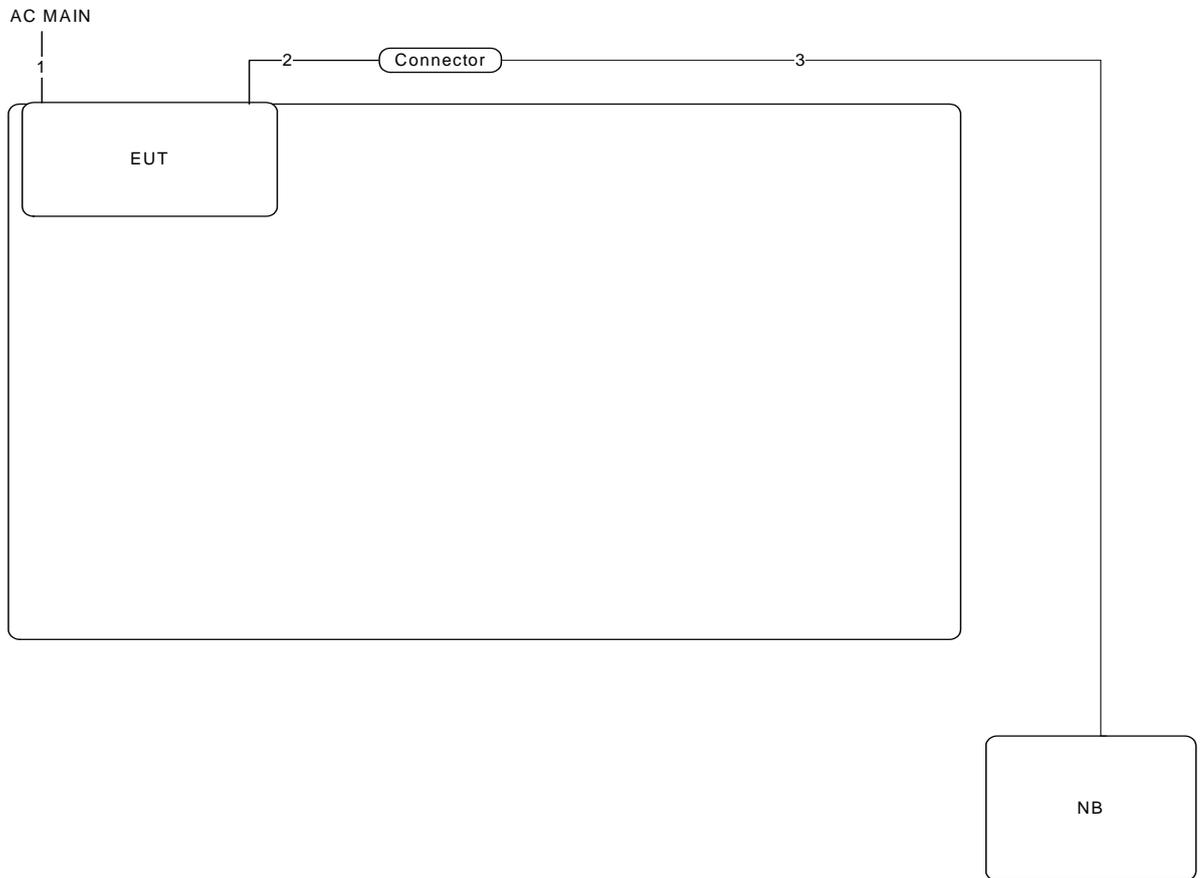
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.059	2.083	98.84	0.05	0.01
802.11ac MCS0/Nss1 VHT20	1.923	1.939	99.17	0.04	0.01
802.11ac MCS0/Nss1 VHT40	0.914	1.045	87.46	0.58	1.09
802.11ac MCS0/Nss1 VHT80	0.425	0.489	86.91	0.61	2.35
802.11ac MCS0/Nss4 VHT20	0.496	0.552	89.86	0.46	2.02
802.11ac MCS0/Nss4 VHT40	0.252	0.308	81.82	0.87	3.97
802.11ac MCS0/Nss4 VHT80	0.160	0.188	85.12	0.70	6.24

For beamforming function:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	3.846	4.191	91.78	0.37	0.26
802.11ac MCS0/Nss1 VHT40	4.585	5.012	91.48	0.39	0.22
802.11ac MCS0/Nss1 VHT80	5.090	5.446	93.47	0.29	0.20

3.12. Test Configurations

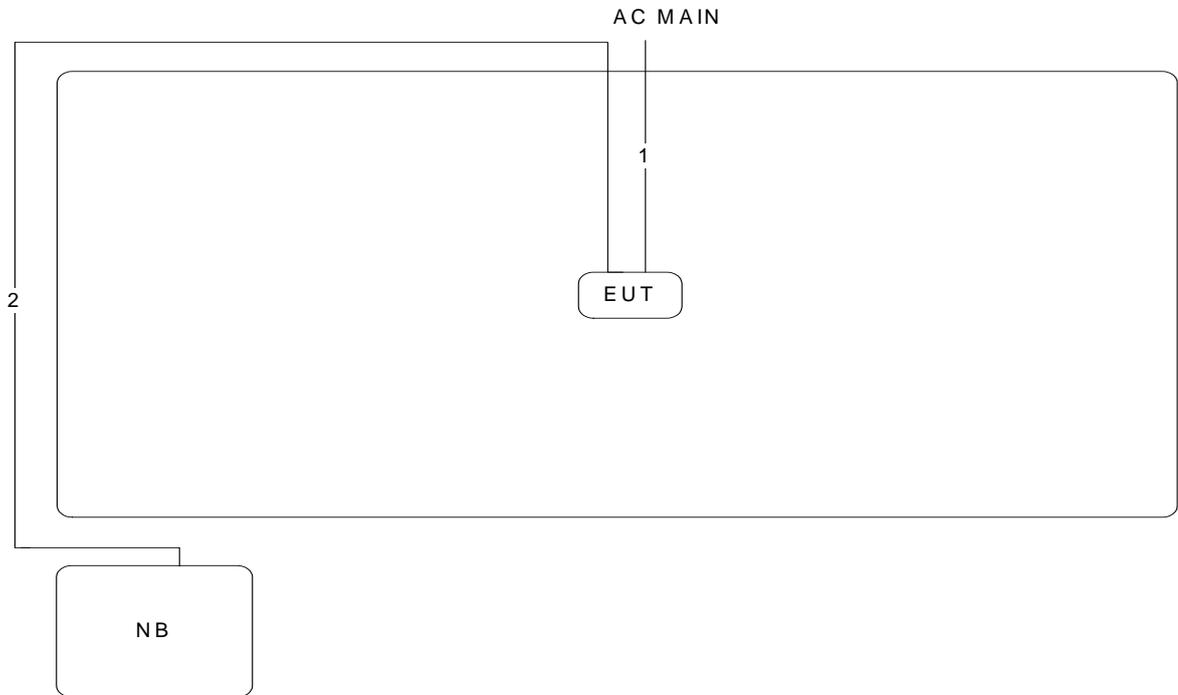
3.12.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.3m
2	RJ-45 cable	Yes	1.5m
3	RJ-45 cable	No	10m

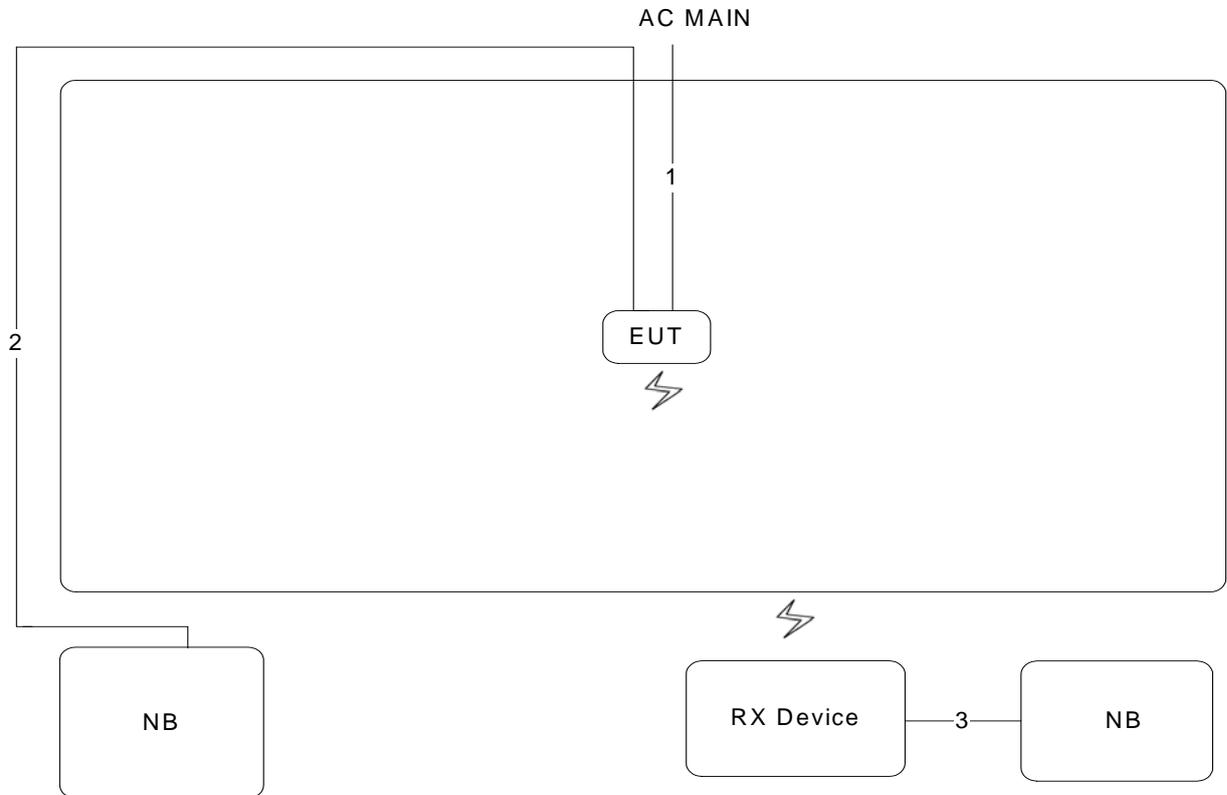
3.12.2. Radiation Emissions Test Configuration

For non-beamforming function:



Item	Connection	Shielded	Length
1	Power cable	No	2.3m
2	RJ-45 cable	No	10m

For beamforming function:



Item	Connection	Shielded	Length
1	Power cable	No	2.3m
2	RJ-45 cable	No	10m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product that is designed to connect to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

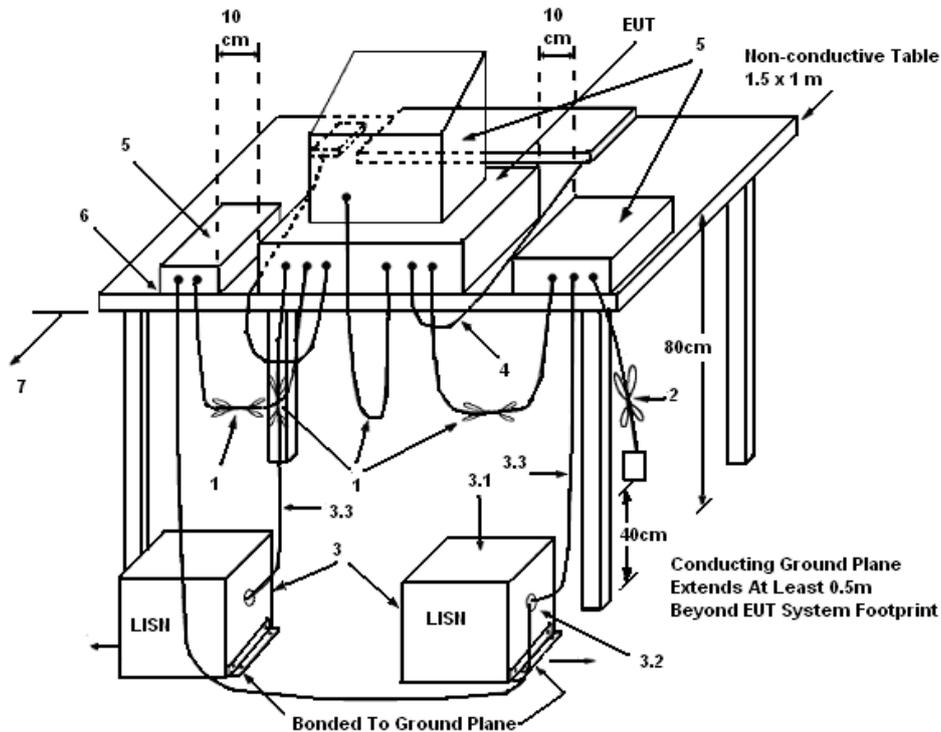
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

- (1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- (2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- (3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω . LISN can be placed on top of, or immediately beneath, reference ground plane.
 - (3.1) All other equipment powered from additional LISN(s).
 - (3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
 - (3.3) LISN at least 80 cm from nearest part of EUT chassis.
- (4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
- (5) Non-EUT components of EUT system being tested.
- (6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
- (7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

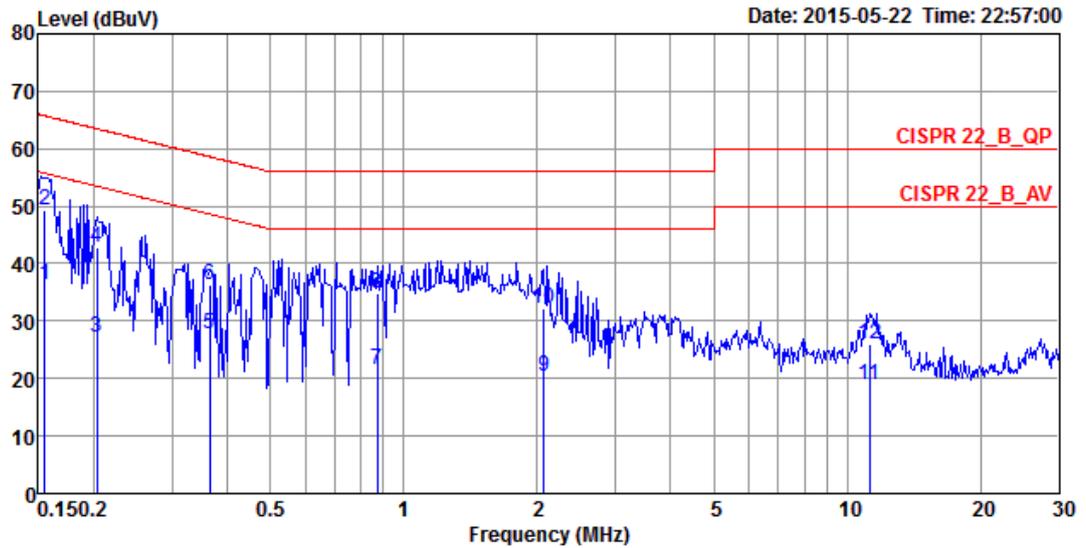
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

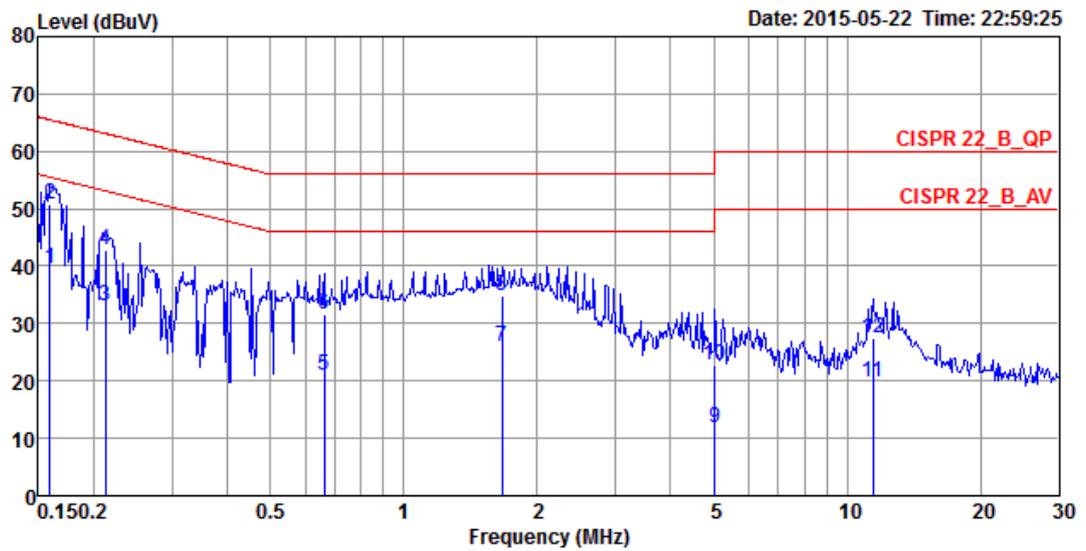
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Line
Configuration	CTX	Test Mode	Mode 1
Test EUT	EUT: Version 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.15	36.33	-19.41	55.74	26.38	9.93	0.02	LINE	Average
2	0.15	49.43	-16.31	65.74	39.48	9.93	0.02	LINE	QP
3	0.20	27.29	-26.20	53.49	17.34	9.93	0.02	LINE	Average
4	0.20	42.91	-20.58	63.49	32.96	9.93	0.02	LINE	QP
5	0.37	27.88	-20.73	48.61	17.91	9.93	0.04	LINE	Average
6	0.37	36.29	-22.32	58.61	26.32	9.93	0.04	LINE	QP
7	0.87	21.68	-24.32	46.00	11.67	9.96	0.05	LINE	Average
8	0.87	34.86	-21.14	56.00	24.85	9.96	0.05	LINE	QP
9	2.07	20.47	-25.53	46.00	10.42	9.99	0.06	LINE	Average
10	2.07	32.19	-23.81	56.00	22.14	9.99	0.06	LINE	QP
11	11.26	18.79	-31.21	50.00	8.32	10.22	0.25	LINE	Average
12	11.26	26.05	-33.95	60.00	15.58	10.22	0.25	LINE	QP

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1
Test EUT	EUT: Version 1		

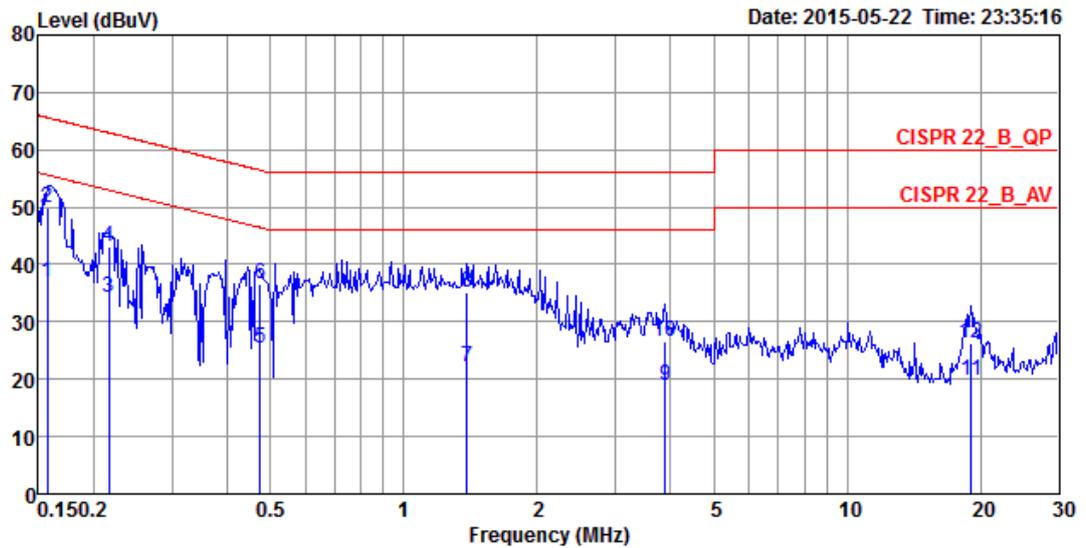


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.16	39.51	-16.01	55.52	29.71	9.78	0.02	NEUTRAL	Average
2	0.16	50.90	-14.62	65.52	41.10	9.78	0.02	NEUTRAL	QP
3	0.21	32.98	-20.12	53.10	23.17	9.79	0.02	NEUTRAL	Average
4	0.21	42.75	-20.35	63.10	32.94	9.79	0.02	NEUTRAL	QP
5	0.66	20.96	-25.04	46.00	11.12	9.80	0.04	NEUTRAL	Average
6	0.66	31.58	-24.42	56.00	21.74	9.80	0.04	NEUTRAL	QP
7	1.66	26.01	-19.99	46.00	16.12	9.83	0.06	NEUTRAL	Average
8	1.66	34.90	-21.10	56.00	25.01	9.83	0.06	NEUTRAL	QP
9	5.03	11.67	-38.33	50.00	1.67	9.90	0.10	NEUTRAL	Average
10	5.03	22.59	-37.41	60.00	12.59	9.90	0.10	NEUTRAL	QP
11	11.44	19.85	-30.15	50.00	9.56	10.04	0.25	NEUTRAL	Average
12	11.44	27.51	-32.49	60.00	17.22	10.04	0.25	NEUTRAL	QP

Note:

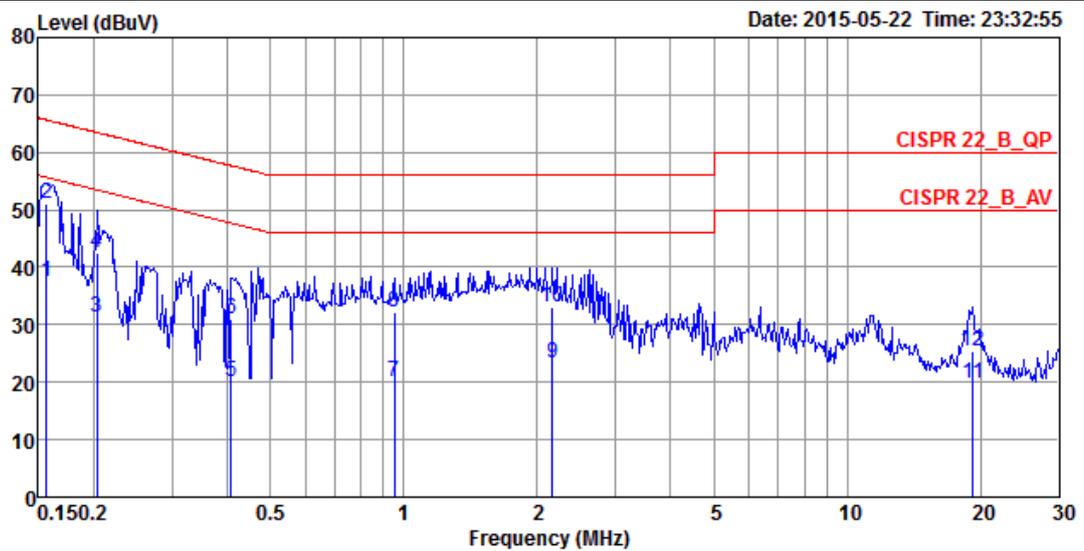
Level = Read Level + LISN Factor + Cable Loss.

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Line
Configuration	CTX	Test Mode	Mode 1
Test EUT	EUT: Version 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.16	36.86	-18.74	55.60	26.91	9.93	0.02	LINE	Average
2	0.16	49.89	-15.71	65.60	39.94	9.93	0.02	LINE	QP
3	0.22	34.35	-18.61	52.96	24.40	9.93	0.02	LINE	Average
4	0.22	43.03	-19.93	62.96	33.08	9.93	0.02	LINE	QP
5	0.47	25.29	-21.16	46.45	15.31	9.94	0.04	LINE	Average
6	0.47	36.54	-19.91	56.45	26.56	9.94	0.04	LINE	QP
7	1.39	22.00	-24.00	46.00	11.98	9.97	0.05	LINE	Average
8	1.39	34.99	-21.01	56.00	24.97	9.97	0.05	LINE	QP
9	3.88	18.82	-27.18	46.00	8.73	10.02	0.07	LINE	Average
10	3.88	26.70	-29.30	56.00	16.61	10.02	0.07	LINE	QP
11	19.02	19.73	-30.27	50.00	9.04	10.42	0.27	LINE	Average
12	19.02	26.17	-33.83	60.00	15.48	10.42	0.27	LINE	QP

Temperature	24°C	Humidity	56%
Test Engineer	Parody Lin	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1
Test EUT	EUT: Version 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.16	37.60	-18.05	55.65	27.80	9.78	0.02	NEUTRAL	Average
2	0.16	51.04	-14.61	65.65	41.24	9.78	0.02	NEUTRAL	QP
3	0.20	31.24	-22.25	53.49	21.43	9.79	0.02	NEUTRAL	Average
4	0.20	42.42	-21.07	63.49	32.61	9.79	0.02	NEUTRAL	QP
5	0.41	20.18	-27.50	47.68	10.35	9.79	0.04	NEUTRAL	Average
6	0.41	31.07	-26.61	57.68	21.24	9.79	0.04	NEUTRAL	QP
7	0.95	20.02	-25.98	46.00	10.16	9.81	0.05	NEUTRAL	Average
8	0.95	32.24	-23.76	56.00	22.38	9.81	0.05	NEUTRAL	QP
9	2.17	23.22	-22.78	46.00	13.32	9.84	0.06	NEUTRAL	Average
10	2.17	33.19	-22.81	56.00	23.29	9.84	0.06	NEUTRAL	QP
11	19.22	19.86	-30.14	50.00	9.42	10.17	0.27	NEUTRAL	Average
12	19.22	25.30	-34.70	60.00	14.86	10.17	0.27	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the 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	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max Hold

4.2.3. 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%.

4.2.4. 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.

4.2.5. 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 26dB Bandwidth and 99% Occupied Bandwidth

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	21.48	17.54
	5200 MHz	21.65	17.89
	5240 MHz	21.30	17.63
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.22	17.89
	5200 MHz	21.13	17.97
	5240 MHz	20.70	17.80
802.11ac MCS0/Nss1 VHT40	5190 MHz	40.58	36.32
	5230 MHz	79.57	36.32
802.11ac MCS0/Nss1 VHT80	5210 MHz	80.87	74.96

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test EUT / Function	EUT: Version 1 / Beamforming function

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.47	17.97
	5200 MHz	21.39	17.97
	5240 MHz	21.39	17.97
802.11ac MCS0/Nss1 VHT40	5190 MHz	40.43	36.61
	5230 MHz	40.72	36.61
802.11ac MCS0/Nss1 VHT80	5210 MHz	82.31	76.41

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	21.47	18.92
	5200 MHz	21.56	18.58
	5240 MHz	21.39	18.58
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.39	18.14
	5200 MHz	22.00	18.23
	5240 MHz	21.39	18.23
802.11ac MCS0/Nss1 VHT40	5190 MHz	40.43	35.89
	5230 MHz	88.69	36.90
802.11ac MCS0/Nss1 VHT80	5210 MHz	80.87	74.67
802.11ac MCS0/Nss4 VHT20	5180 MHz	21.57	18.06
802.11ac MCS0/Nss4 VHT40	5190 MHz	40.44	36.76
802.11ac MCS0/Nss4 VHT80	5210 MHz	81.45	76.12

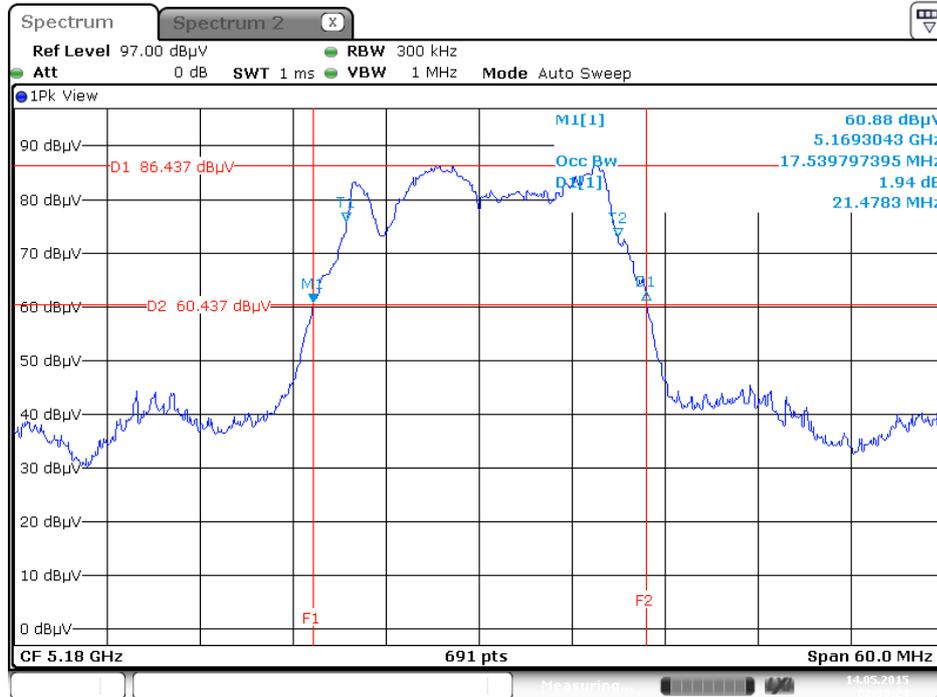
Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test EUT / Function	EUT: Version 2 / Beamforming function

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.91	18.23
	5200 MHz	21.56	18.14
	5240 MHz	21.65	18.23
802.11ac MCS0/Nss1 VHT40	5190 MHz	40.72	36.90
	5230 MHz	40.72	37.04
802.11ac MCS0/Nss1 VHT80	5210 MHz	81.73	76.12

EUT: Version 1

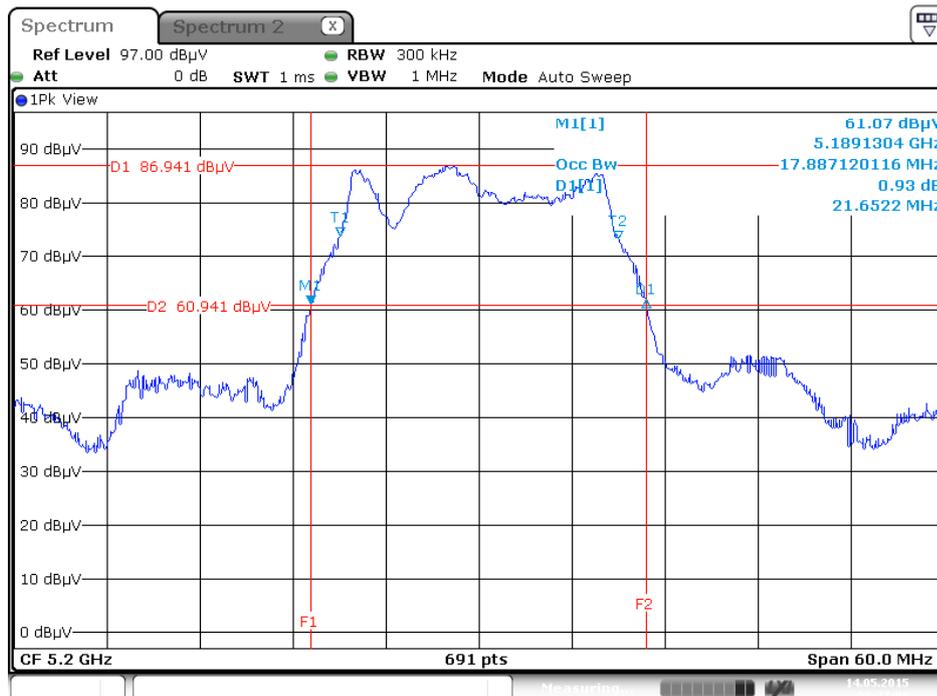
For non-beamforming function:

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



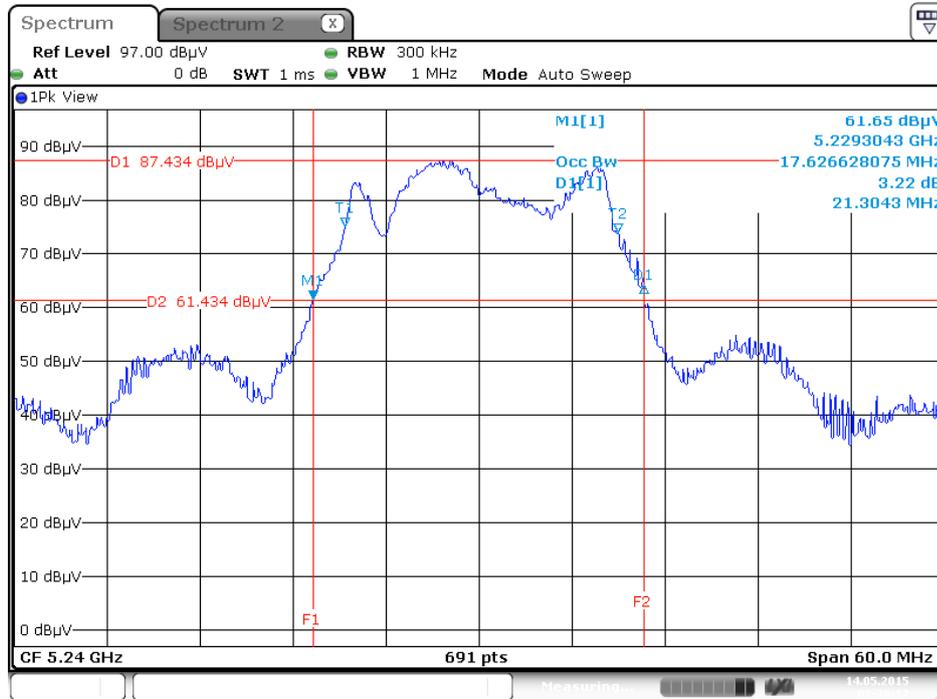
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



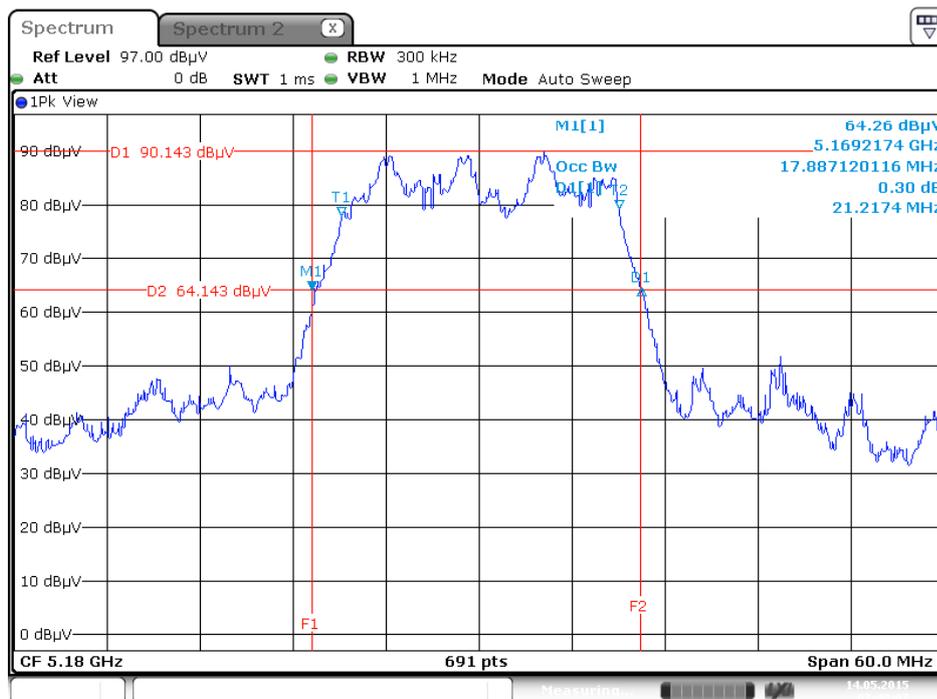
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



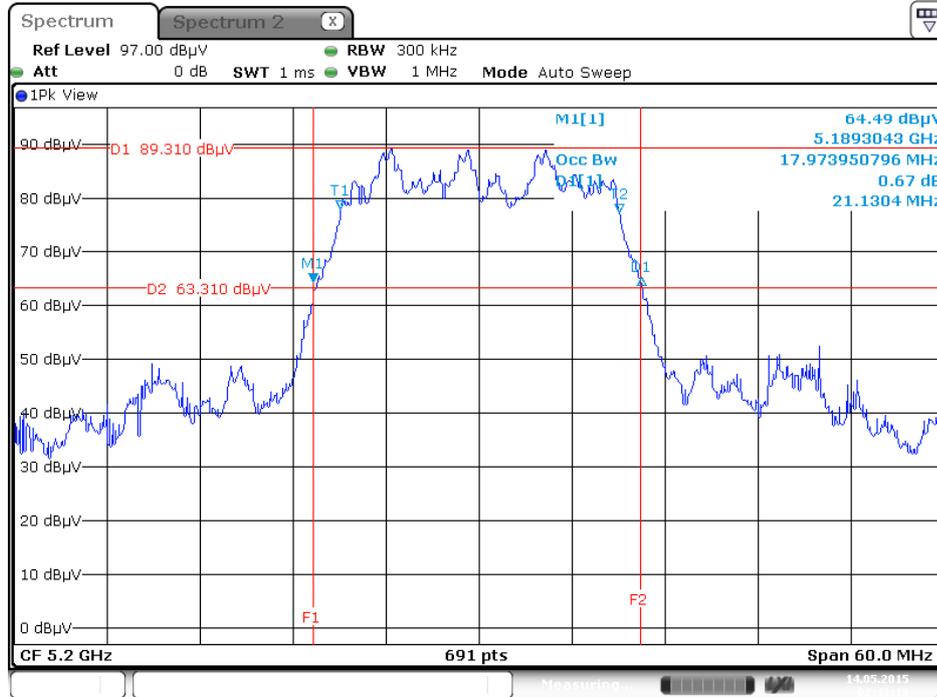
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz

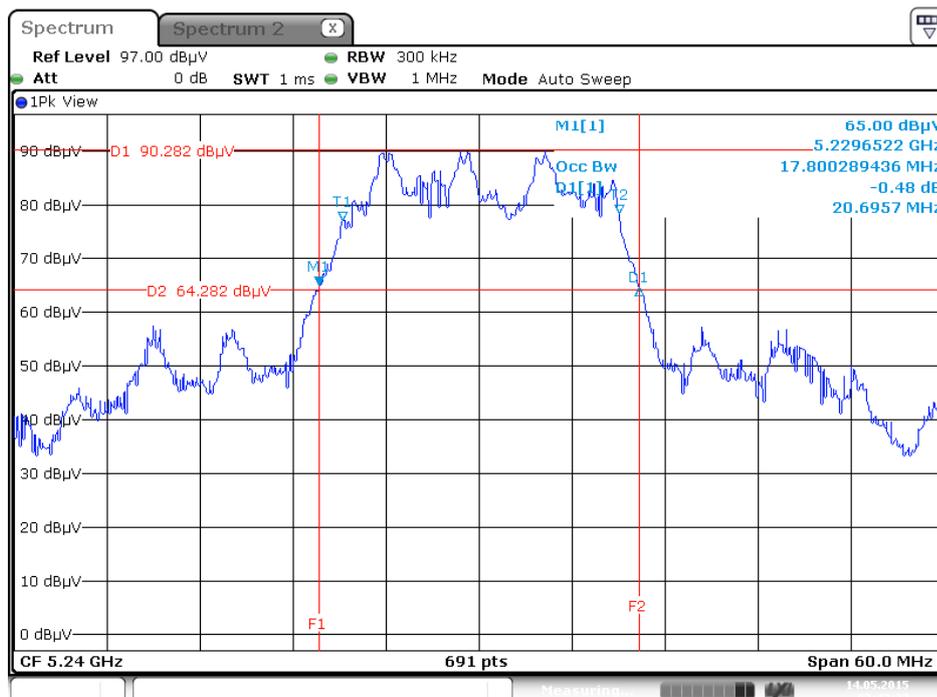


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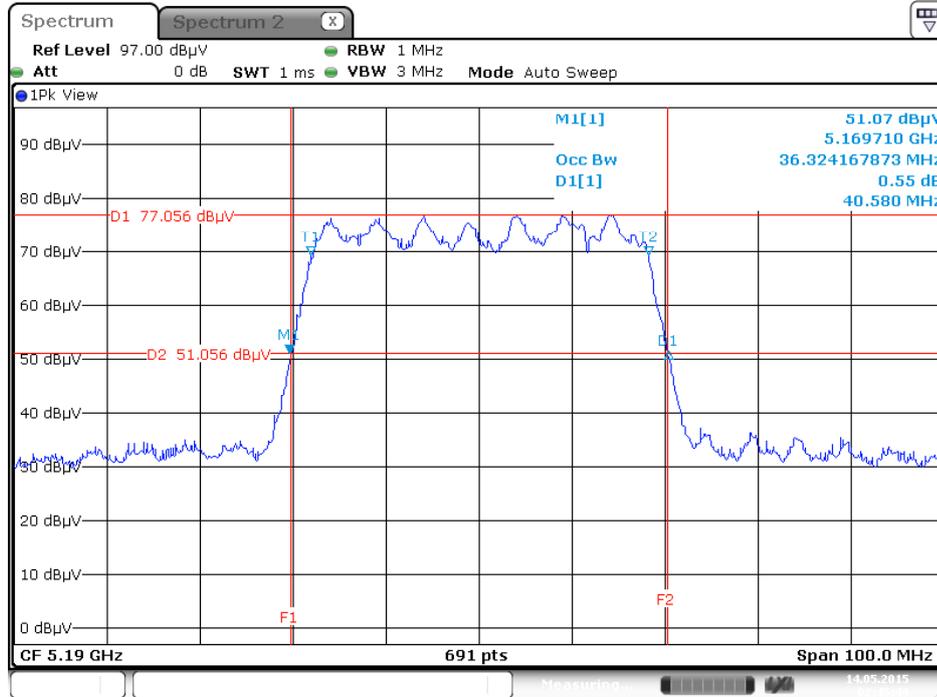
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



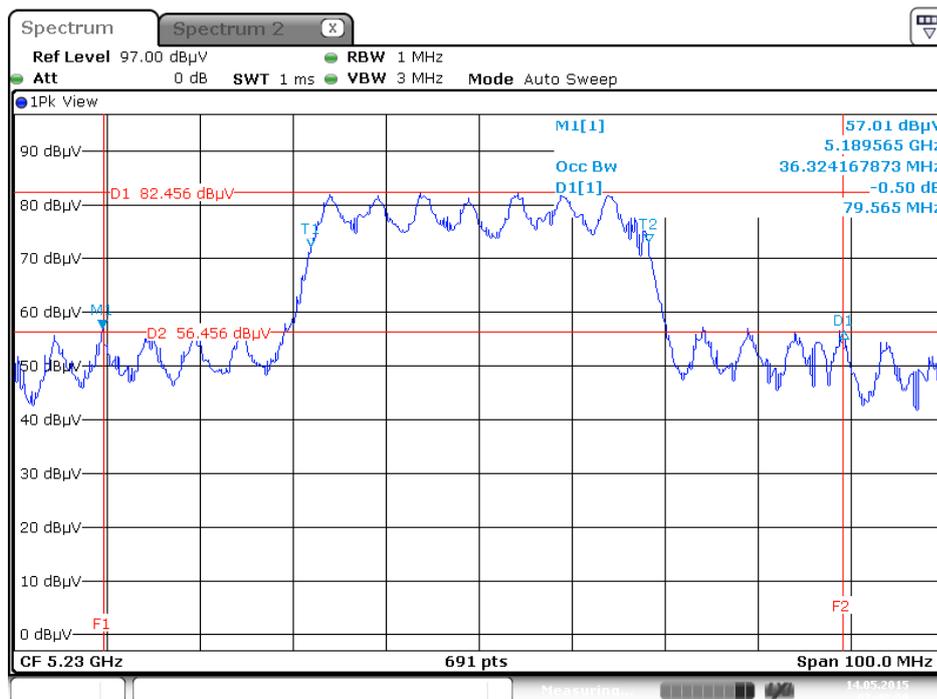
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



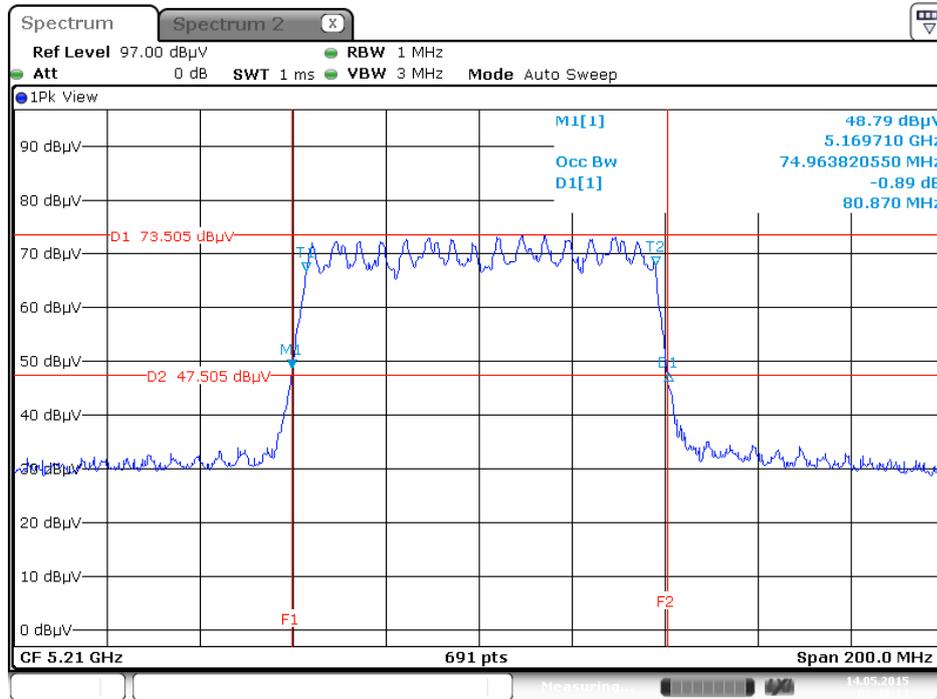
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz

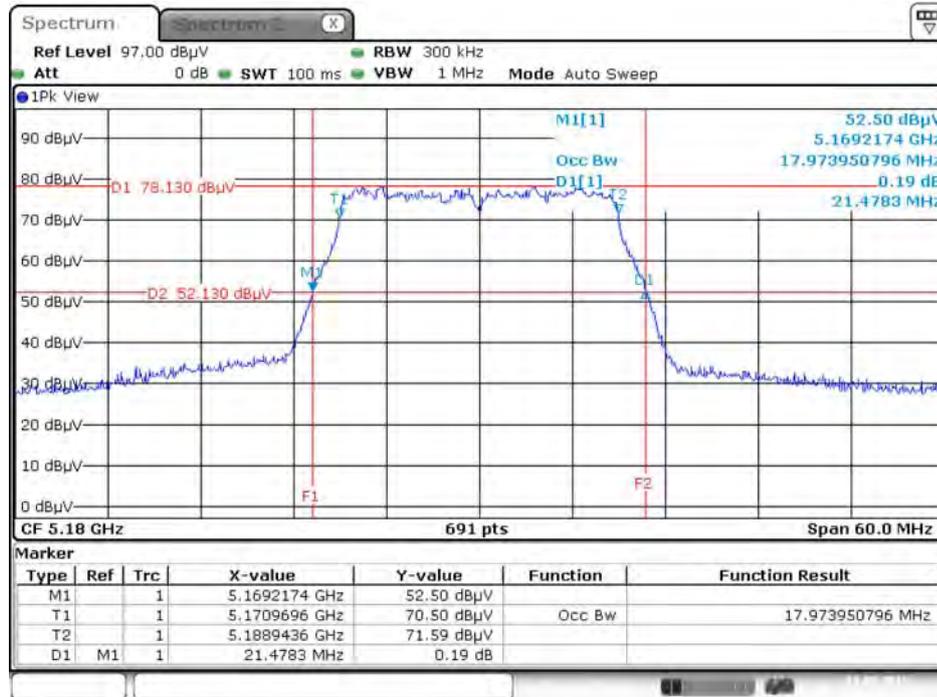


Date: 14 MAY 2015 02:48:13

EUT: Version 1

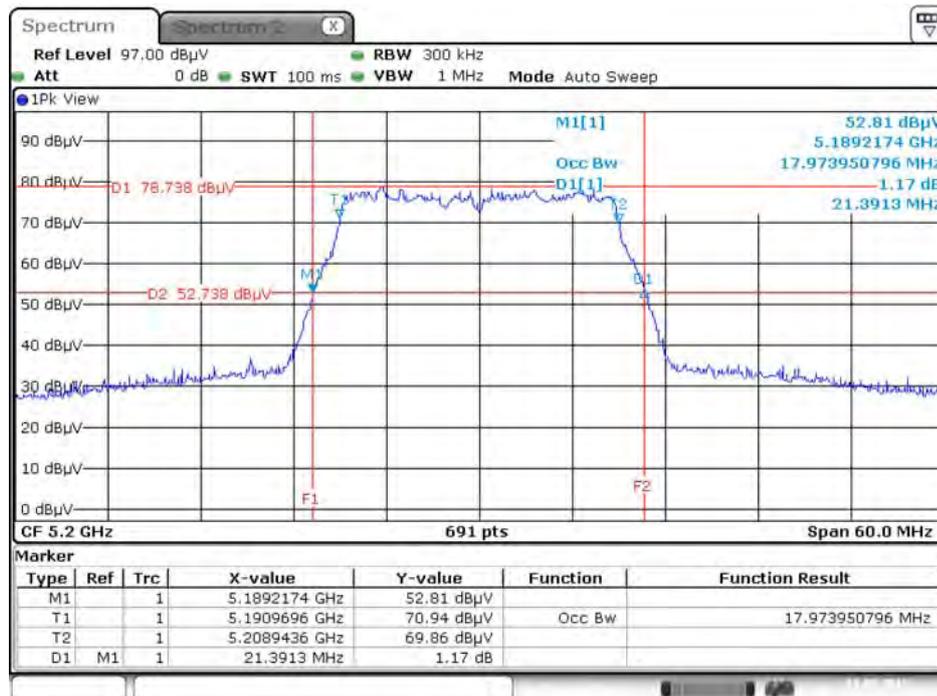
For beamforming function:

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



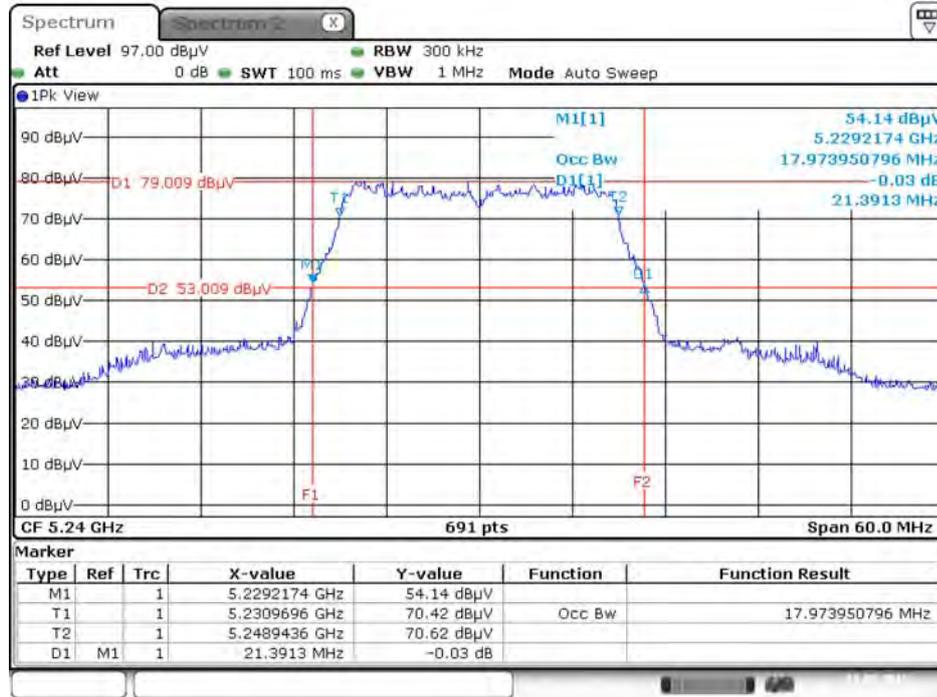
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



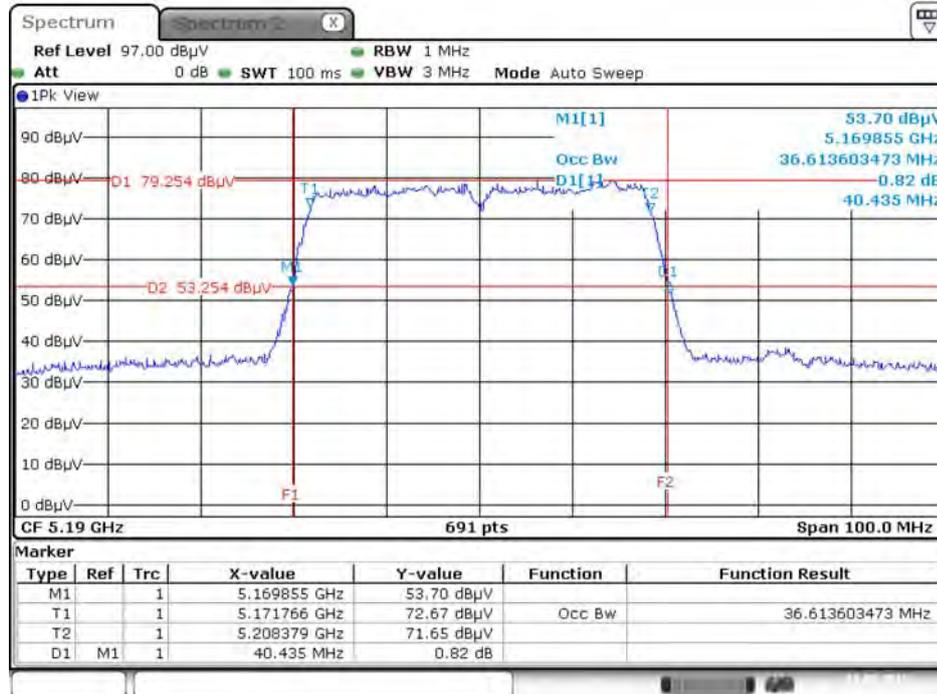
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



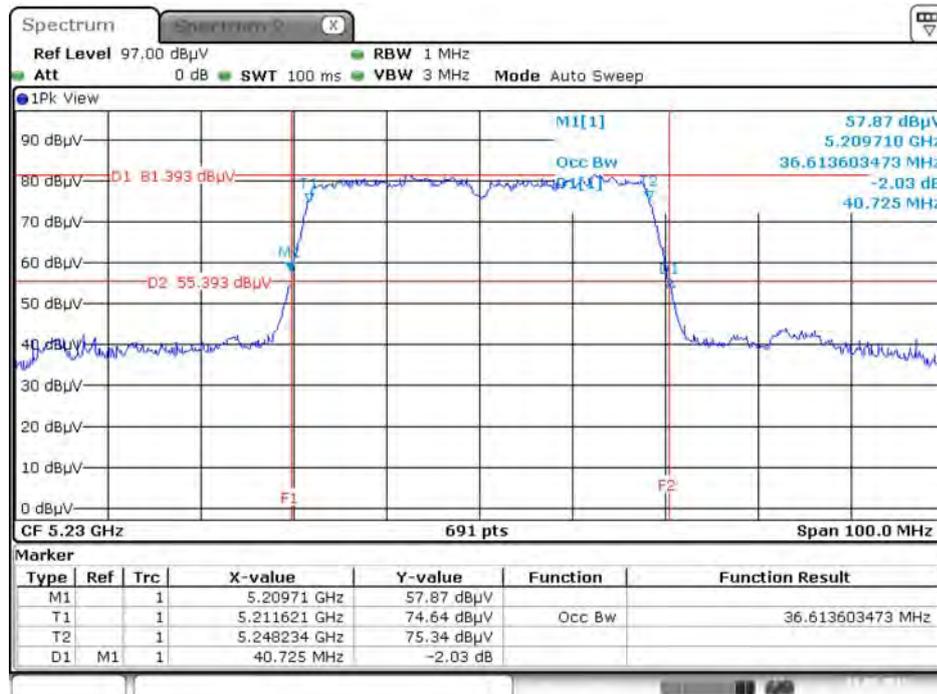
Date: 19.MAY.2015 17:45:41

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



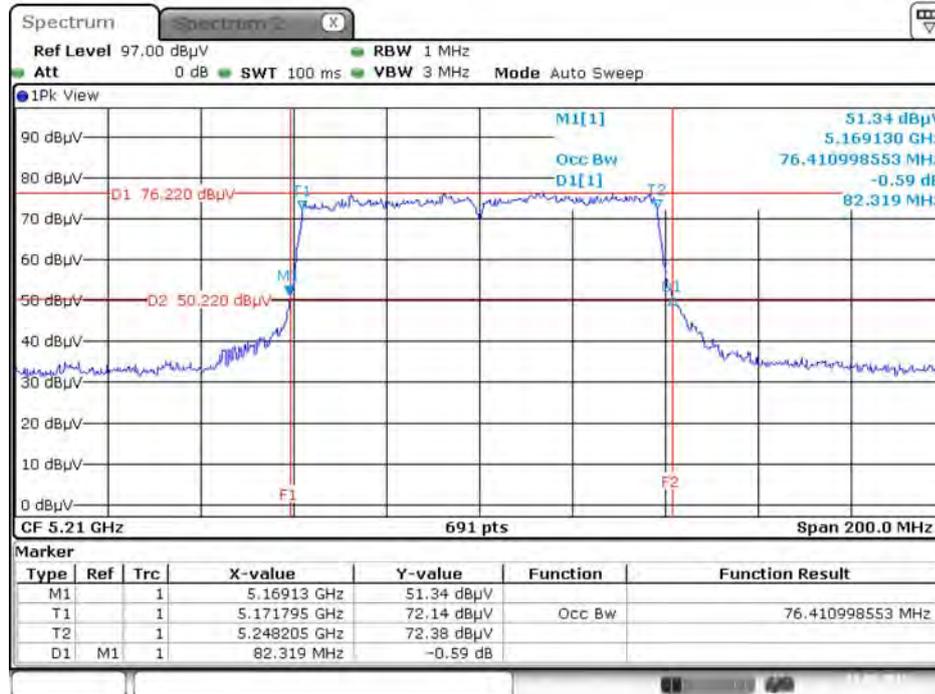
Date: 19.MAY.2015 17:48:39

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



Date: 19.MAY.2015 17:49:45

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz

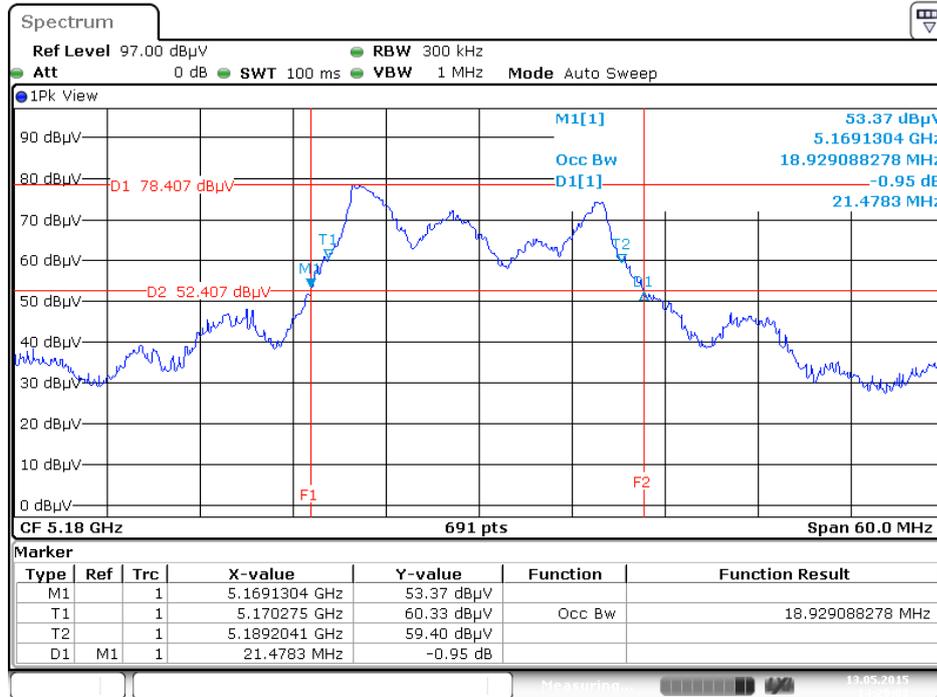


Date: 19.MAY.2015 17:51:03

EUT: Version 2

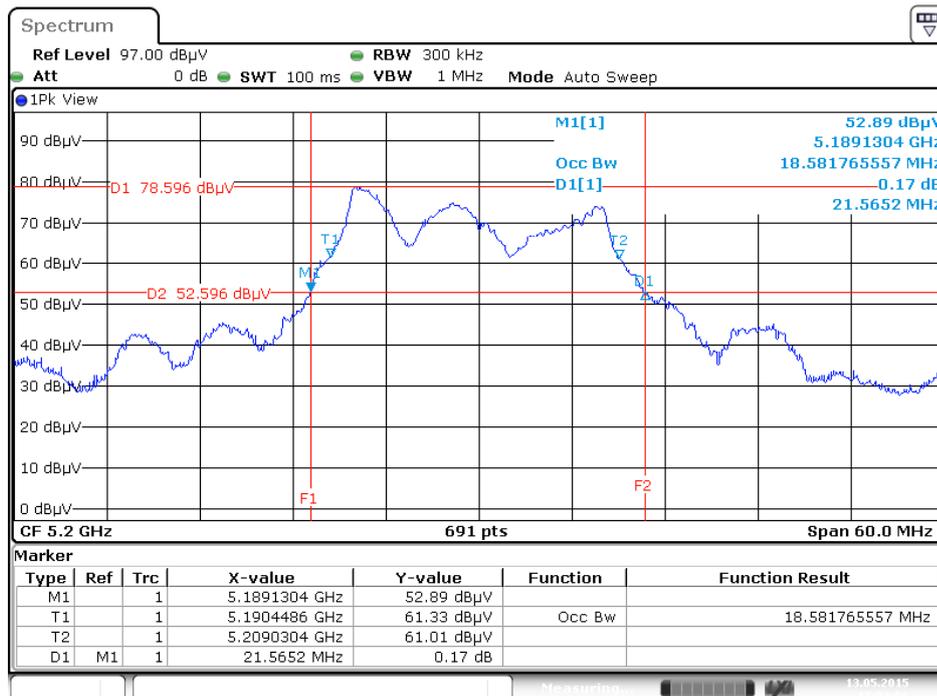
For non-beamforming function:

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



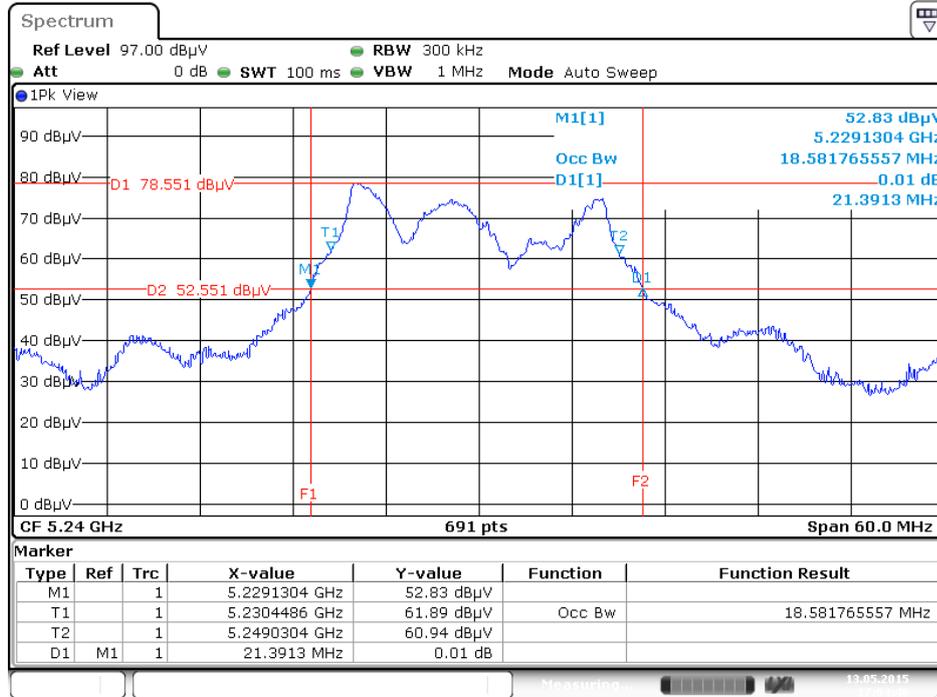
Date: 13 MAY 2015 14:29:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



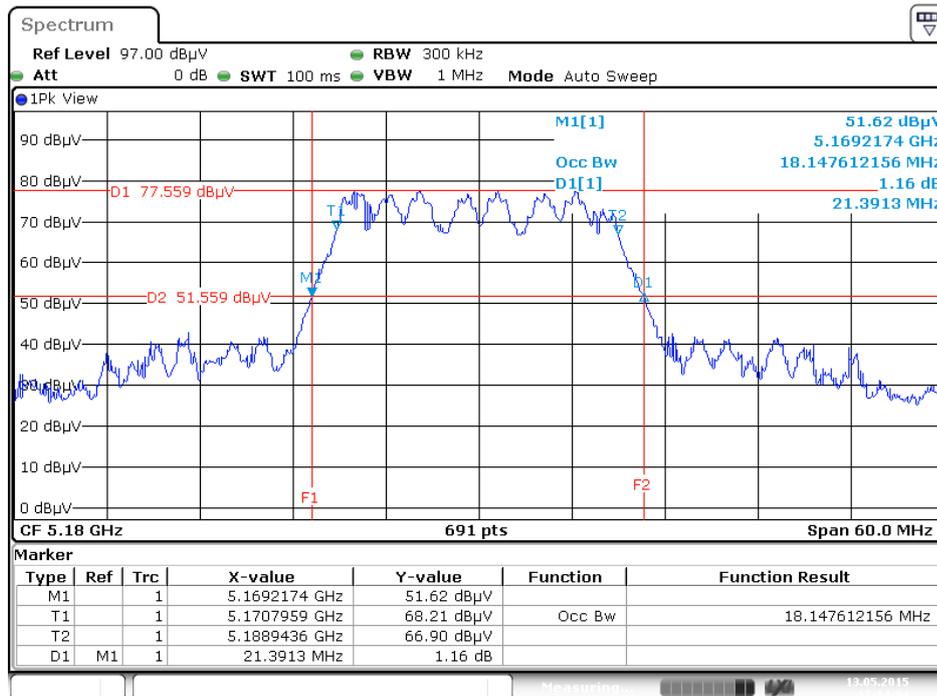
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



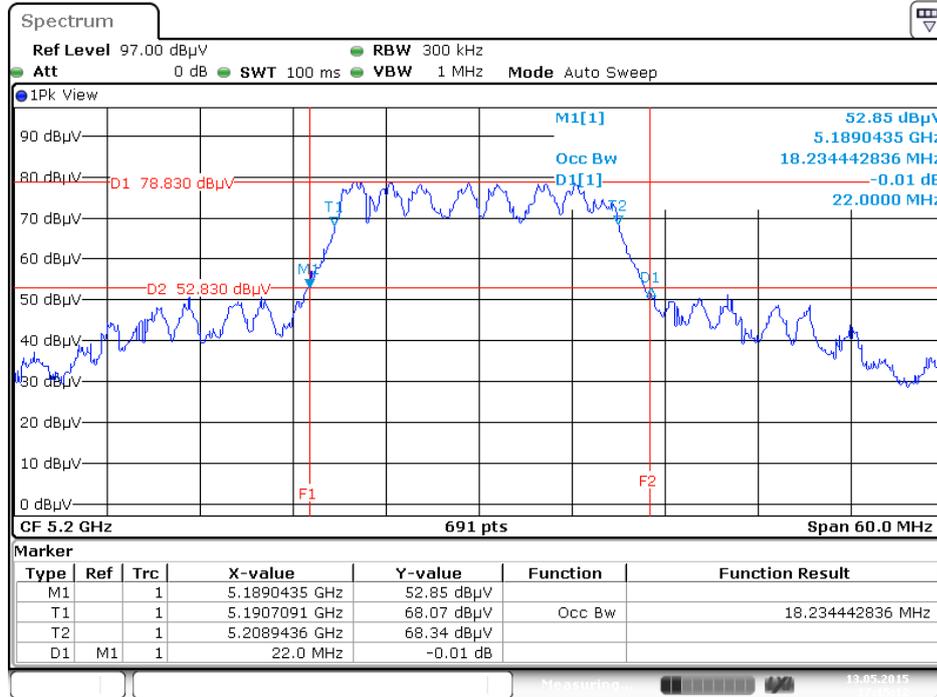
Date: 13 MAY 2015 17:04:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



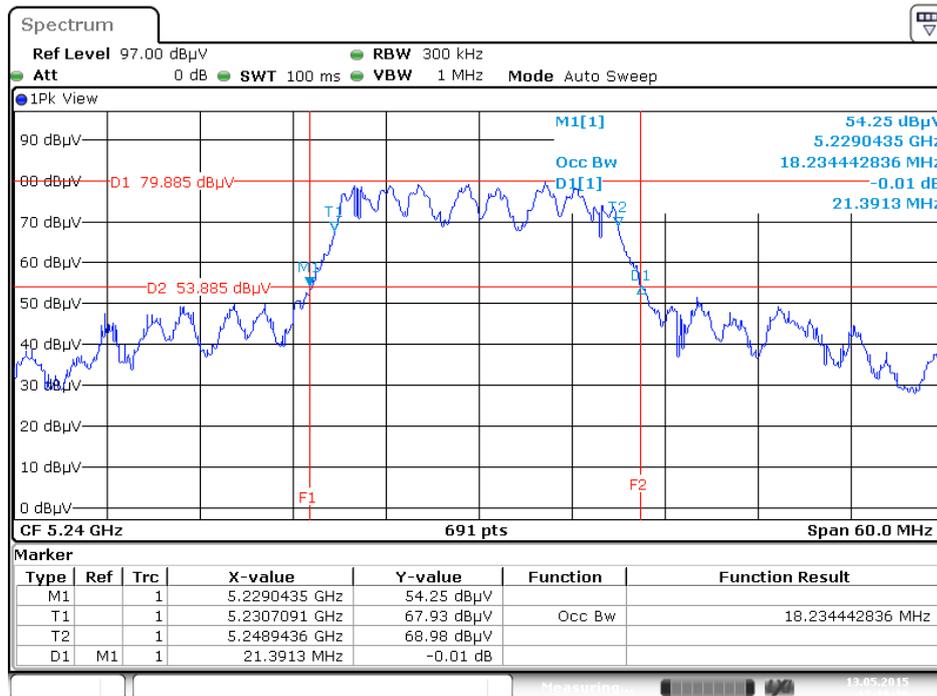
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26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



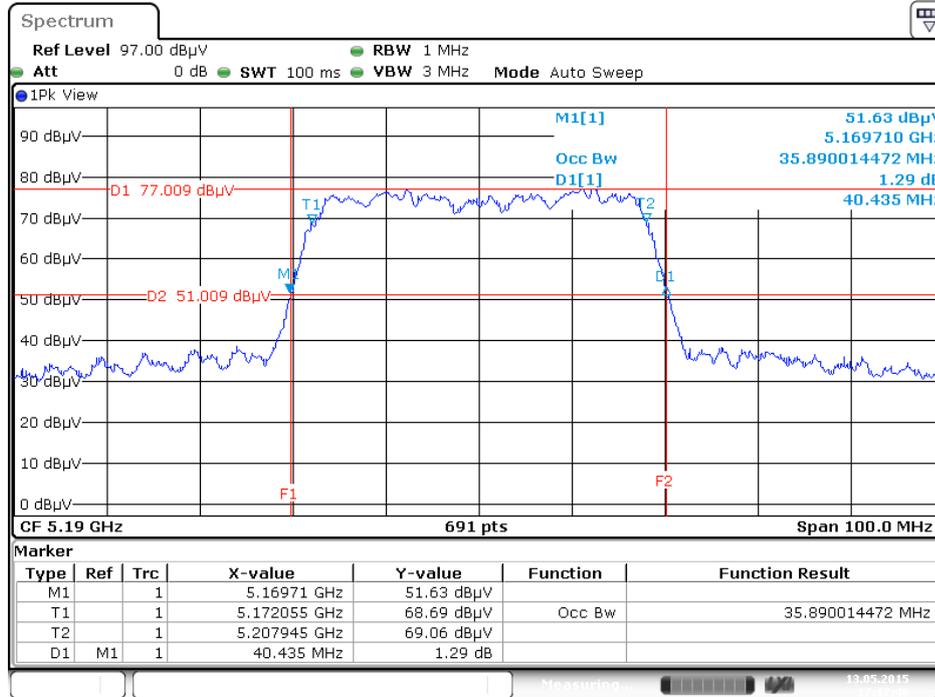
Date: 13 MAY 2015 17:15:13

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



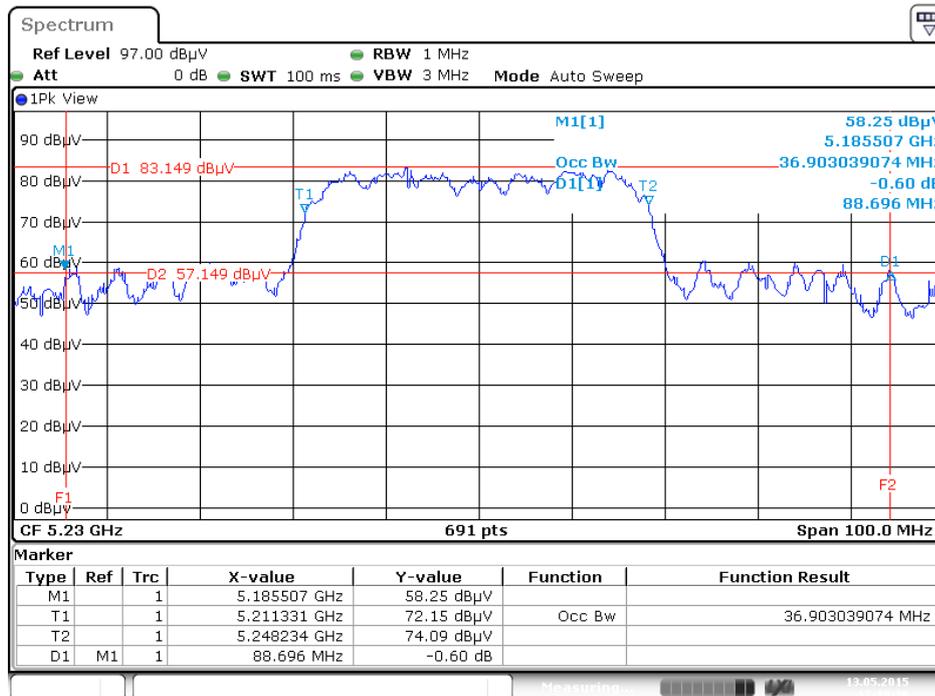
Date: 13 MAY 2015 17:16:20

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



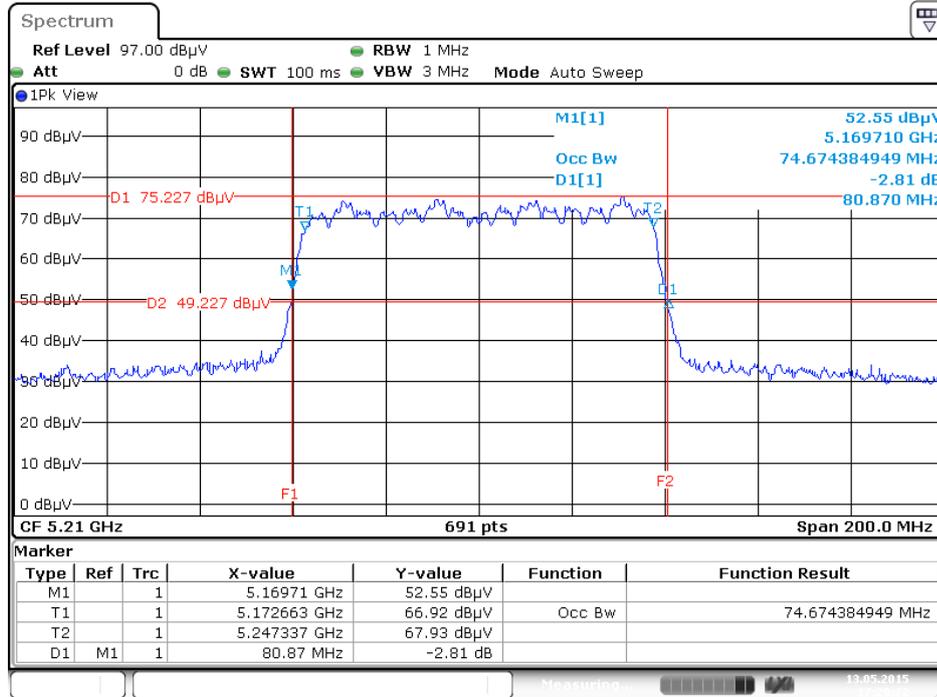
Date: 13 MAY 2015 17:17:46

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



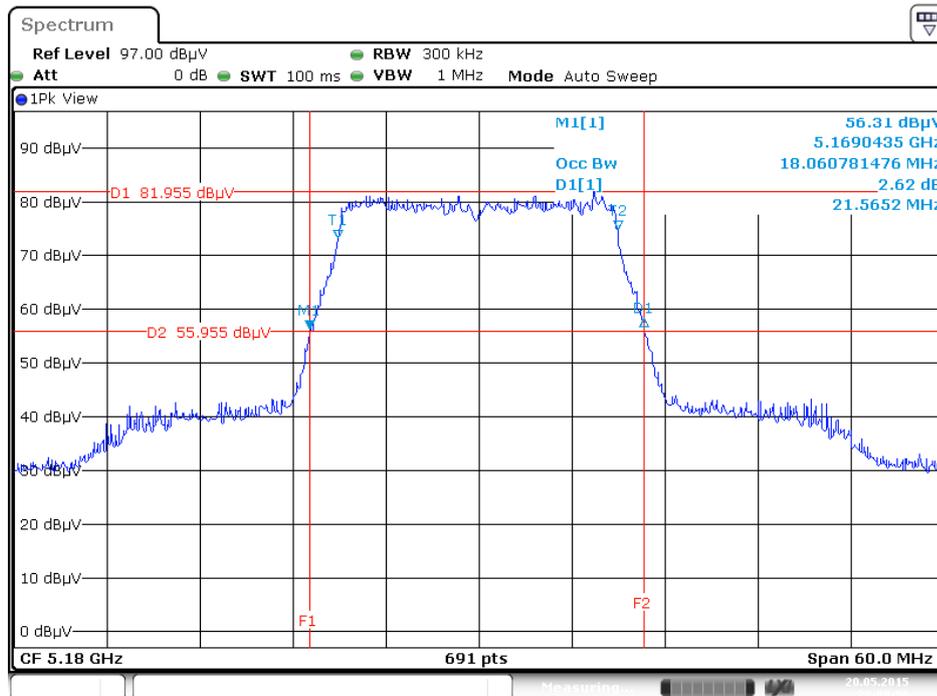
Date: 13 MAY 2015 17:19:26

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



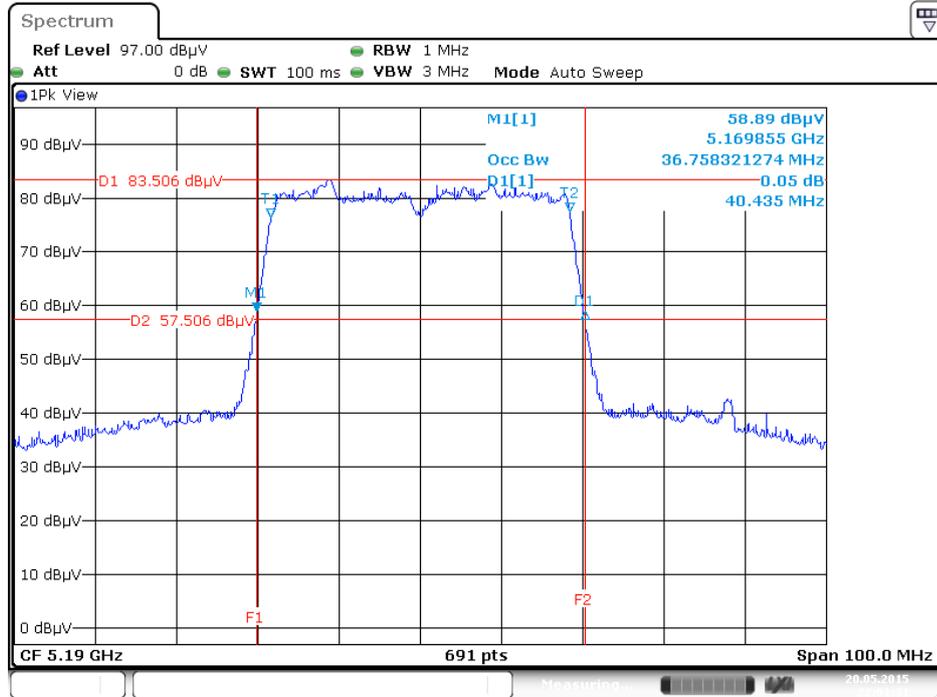
Date: 13 MAY 2015 17:20:23

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss4 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz

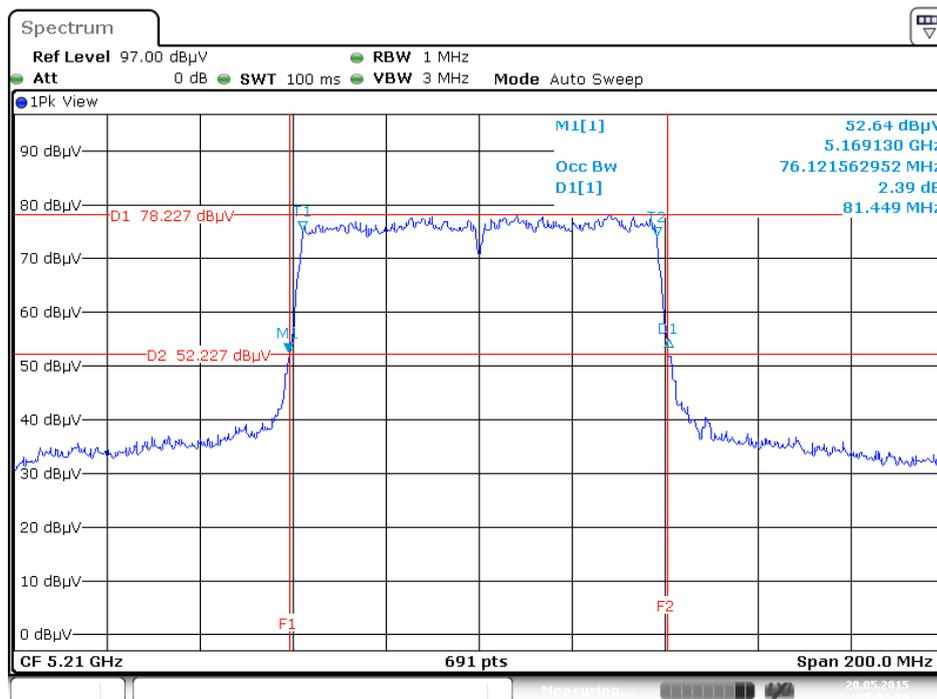


Date: 20 MAY 2015 22:00:50

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss4 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



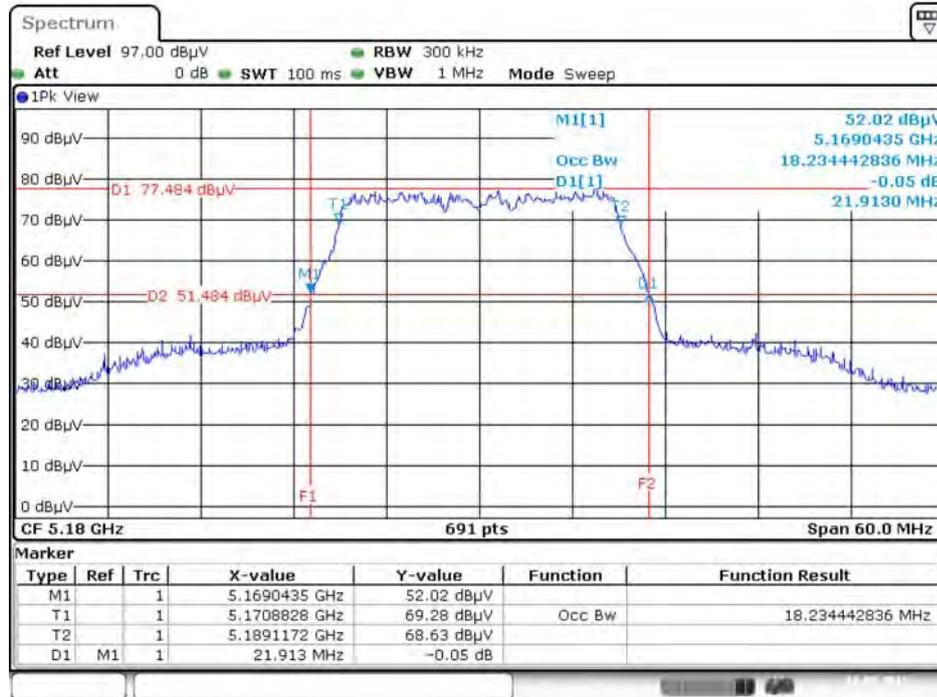
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss4 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



EUT: Version 2

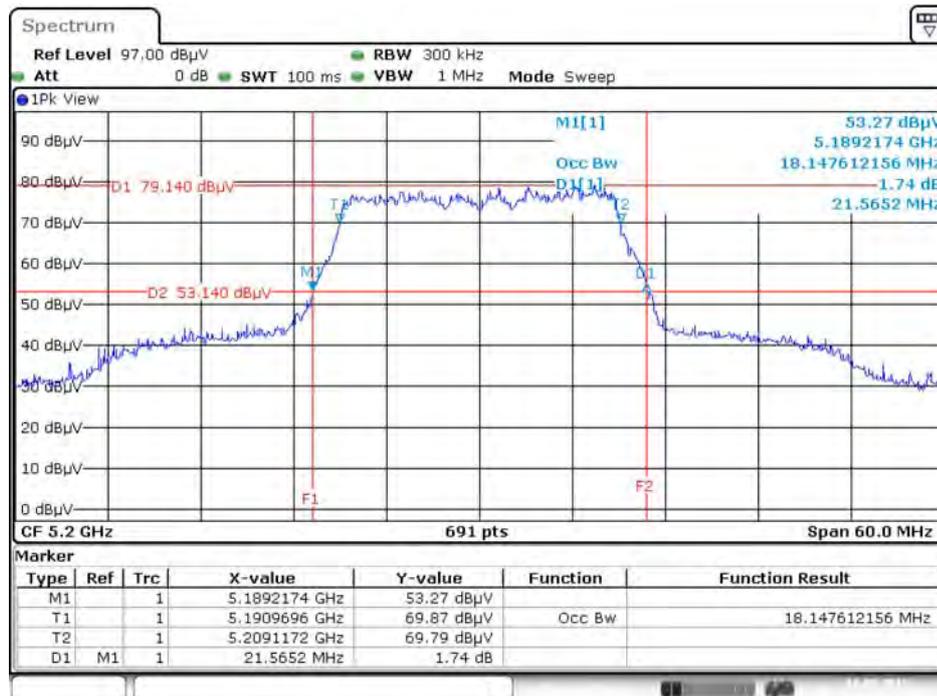
For beamforming function:

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



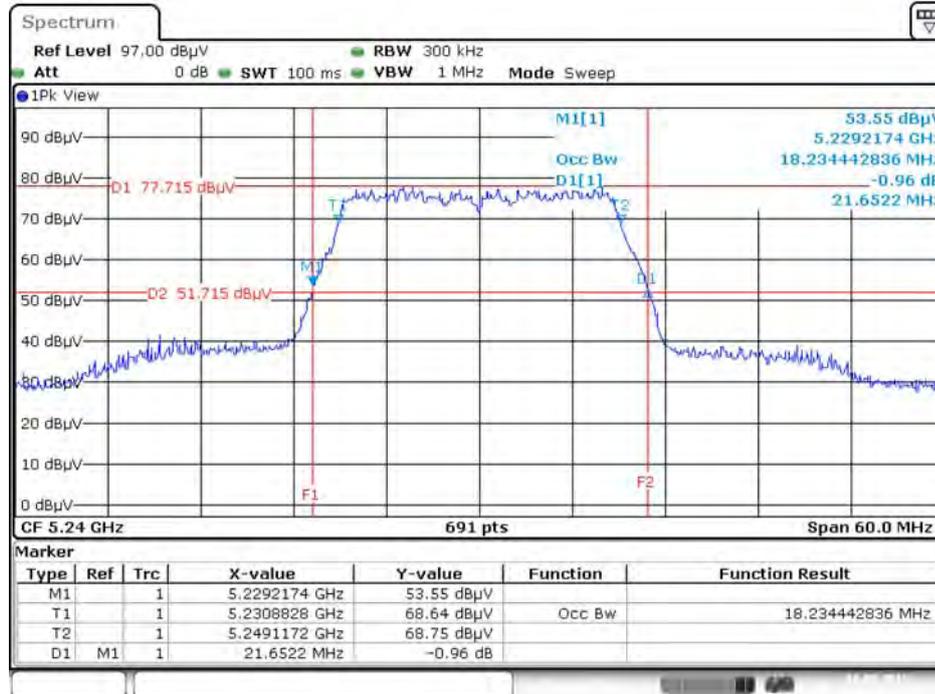
Date: 18.MAY.2015 14:32:41

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



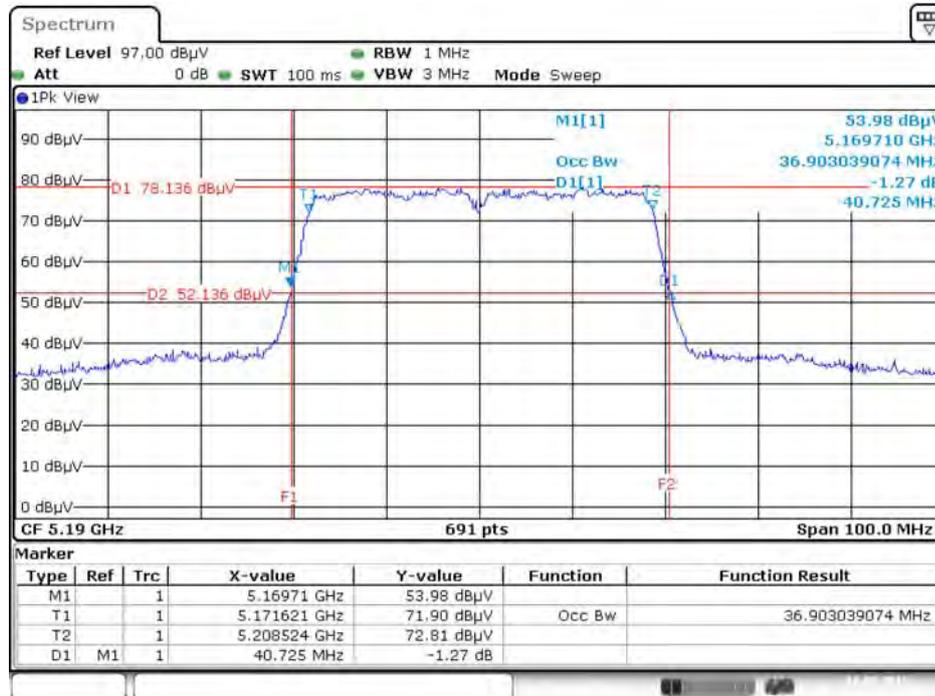
Date: 18.MAY.2015 14:34:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



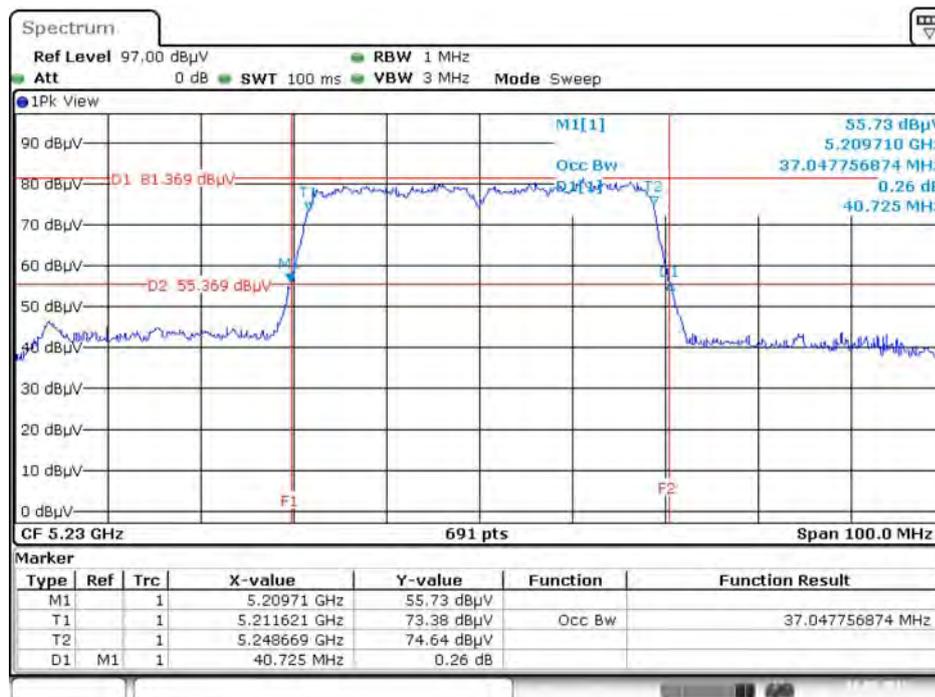
Date: 18.MAY.2015 14:34:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



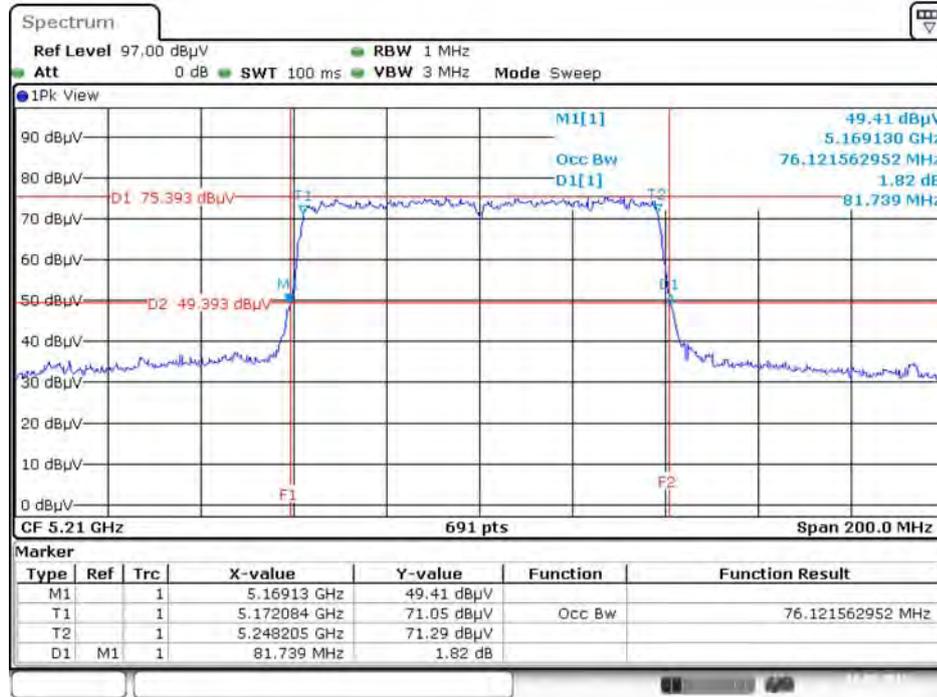
Date: 18.MAY.2015 14:35:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



Date: 18.MAY.2015 14:36:39

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



Date: 18.MAY.2015 14:37:45

4.3. Maximum Conducted Output Power Measurement

4.3.1. Limit

Frequency Band		Limit
5.15~5.25 GHz		
Operating Mode		
<input type="checkbox"/>	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).
<input checked="" type="checkbox"/>	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.
<input type="checkbox"/>	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.
<input type="checkbox"/>	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.

4.3.2. Measuring Instruments and Setting

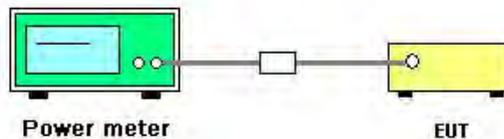
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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	22°C	Humidity	64%
Test Engineer	Magic Lai	Test Date	May 13, 2015
Test EUT / Function	EUT: Version 1 / Non-beamforming function		

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5180 MHz	20.91	20.54	20.33	20.66	26.64	30.00	Complies
	5200 MHz	20.88	20.48	20.55	21.04	26.76	30.00	Complies
	5240 MHz	21.23	20.73	21.23	20.25	26.90	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	20.41	20.11	20.21	20.45	26.32	30.00	Complies
	5200 MHz	20.54	20.34	20.38	20.45	26.45	30.00	Complies
	5240 MHz	20.89	20.66	21.33	20.24	26.82	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	17.88	17.78	17.31	17.64	23.68	30.00	Complies
	5230 MHz	22.48	22.18	22.58	21.97	28.33	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	18.92	18.76	18.91	19.08	24.94	30.00	Complies

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test Date	May 19, 2015
Test EUT / Function	EUT: Version 1 / Beamforming function		

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5180 MHz	20.59	20.25	20.34	20.39	26.41	26.51	Complies
	5200 MHz	20.45	20.24	20.36	20.42	26.39	26.51	Complies
	5240 MHz	20.58	20.18	20.54	20.48	26.47	26.51	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	18.11	17.92	17.98	18.02	24.03	26.51	Complies
	5230 MHz	20.38	20.19	20.34	20.56	26.39	26.51	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	18.81	18.43	18.48	18.06	24.47	26.51	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{K=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right] = 9.49\text{dBi} > 6\text{dBi}$, so limit = $30 - (9.49 - 6) = 26.51\text{dBm}$.

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test Date	May 13, 2015
Test EUT / Function	EUT: Version 2 / Non-beamforming function		

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11a	5180 MHz	20.94	20.95	20.72	20.87	26.89	30.00	Complies
	5200 MHz	20.93	20.72	20.63	20.35	26.68	30.00	Complies
	5240 MHz	20.89	20.63	20.57	20.86	26.76	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	19.45	19.51	19.24	19.21	25.38	30.00	Complies
	5200 MHz	21.09	20.76	20.73	20.41	26.77	30.00	Complies
	5240 MHz	21.11	20.82	20.53	21.06	26.91	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	16.79	16.82	16.68	16.42	22.70	30.00	Complies
	5230 MHz	22.56	22.13	21.85	22.24	28.22	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	16.63	16.73	16.14	16.31	22.48	30.00	Complies
802.11ac MCS0/Nss4 VHT20	5180 MHz	19.92	20.15	19.95	20.09	26.05	30.00	Complies
802.11ac MCS0/Nss4 VHT40	5190 MHz	18.39	18.59	18.28	18.55	24.47	30.00	Complies
802.11ac MCS0/Nss4 VHT80	5210 MHz	18.53	18.51	18.21	18.66	24.50	30.00	Complies

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test Date	May 18, 2015
Test EUT / Function	EUT: Version 2 / Beamforming function		

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	5180 MHz	19.43	20.11	19.84	19.82	25.83	26.51	Complies
	5200 MHz	20.22	20.47	20.52	20.55	26.46	26.51	Complies
	5240 MHz	20.19	20.52	20.07	20.81	26.43	26.51	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	17.53	17.76	18.01	17.89	23.82	26.51	Complies
	5230 MHz	20.29	20.37	20.31	20.47	26.38	26.51	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	18.12	18.79	18.12	18.58	24.43	26.51	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{k=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right] = 9.49 \text{ dBi} > 6 \text{ dBi}$, so limit = $30 - (9.49 - 6) = 26.51 \text{ dBm}$.

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		
<input type="checkbox"/>	Outdoor access point	17 dBm/MHz
<input checked="" type="checkbox"/>	Indoor access point	17 dBm/MHz
<input type="checkbox"/>	Fixed point-to-point access points	17 dBm/MHz
<input type="checkbox"/>	Mobile and portable client devices	11 dBm/MHz

4.4.2. Measuring Instruments and Setting

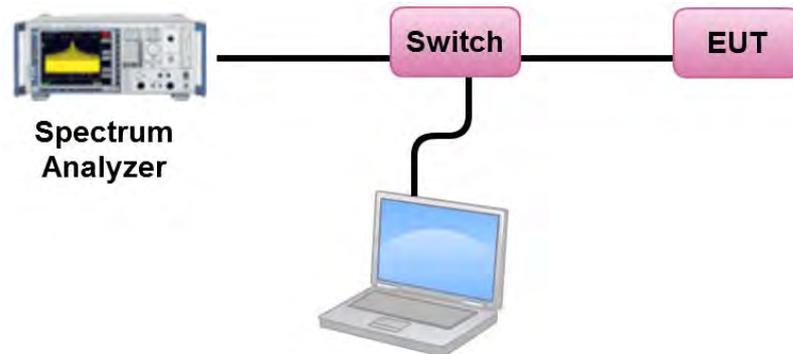
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

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.

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	22°C	Humidity	64%
Test Engineer	Magic Lai	Test Date	May 13, 2015
Test EUT / Function	EUT: Version 1 / Non-beamforming function		

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11a	5180 MHz	13.36	13.51	Complies
	5200 MHz	13.35	13.51	Complies
	5240 MHz	13.38	13.51	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	12.79	13.51	Complies
	5200 MHz	13.22	13.51	Complies
	5240 MHz	13.32	13.51	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	7.56	13.51	Complies
	5230 MHz	12.05	13.51	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	4.81	13.51	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{K=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right] = 9.49 \text{ dBi} > 6 \text{ dBi}$, so limit = $17 - (9.49 - 6) = 13.51 \text{ dBm/MHz}$.

Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test Date	May 19, 2015
Test EUT / Function	EUT: Version 1 / Beamforming function		

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11ac MCS0/Nss1 VHT20	5180 MHz	13.49	13.51	Complies
	5200 MHz	13.29	13.51	Complies
	5240 MHz	13.39	13.51	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	7.59	13.51	Complies
	5230 MHz	10.52	13.51	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	4.98	13.51	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{K=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right] = 9.49 \text{ dBi} > 6 \text{ dBi}$, so limit = $17 - (9.49 - 6) = 13.51 \text{ dBm/MHz}$.

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test Date	May 13, 2015
Test EUT / Function	EUT: Version 2 / Non-beamforming function		

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11a	5180 MHz	13.47	13.51	Complies
	5200 MHz	13.17	13.51	Complies
	5240 MHz	13.30	13.51	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	11.87	13.51	Complies
	5200 MHz	13.31	13.51	Complies
	5240 MHz	13.45	13.51	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	6.24	13.51	Complies
	5230 MHz	11.79	13.51	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	3.06	13.51	Complies
802.11ac MCS0/Nss4 VHT20	5180 MHz	12.32	17.00	Complies
802.11ac MCS0/Nss4 VHT40	5190 MHz	7.69	17.00	Complies
802.11ac MCS0/Nss4 VHT80	5210 MHz	4.15	17.00	Complies

Note: 1. 802.11a, 802.11ac 錯誤! 找不到參照來源。 VHT20/40/80:

$$Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 9.49 \text{dBi} > 6 \text{dBi}, \text{ so limit} = 17 - (9.49 - 6) = 13.51 \text{dBm/MHz}.$$

2. 802.11ac MCS0/Nss4 VHT20/40/80:

$$Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 3.47 \text{dBi} < 6 \text{dBi}, \text{ so the limit doesn't reduce}.$$

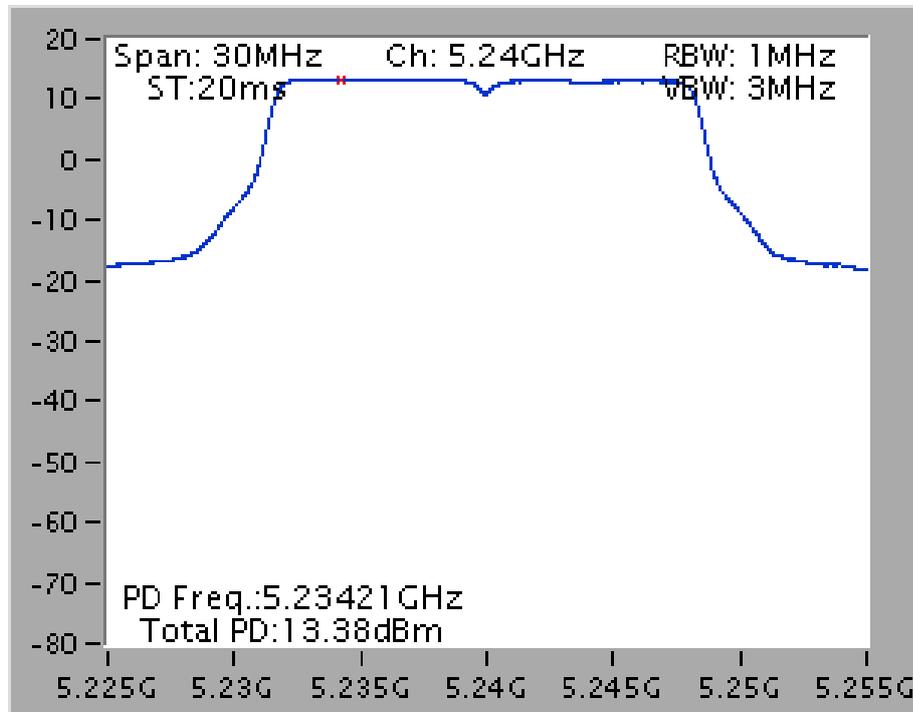
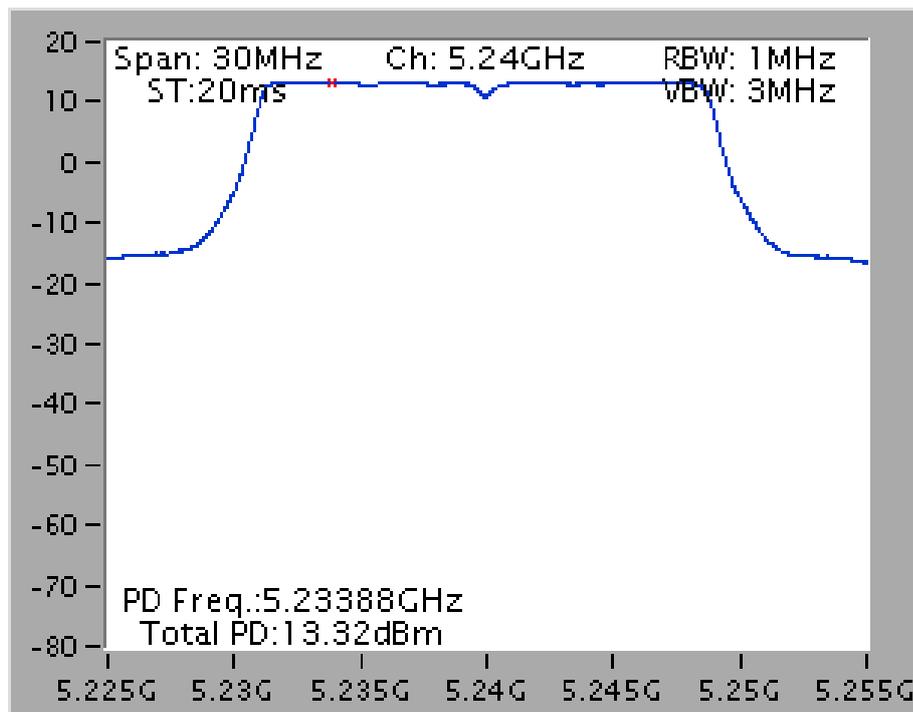
Temperature	22°C	Humidity	64%
Test Engineer	Roki Liu	Test Date	May 18, 2015
Test EUT / Function	EUT: Version 2 / Beamforming function		

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11ac MCS0/Nss1 VHT20	5180 MHz	12.20	13.51	Complies
	5200 MHz	13.35	13.51	Complies
	5240 MHz	13.09	13.51	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	7.36	13.51	Complies
	5230 MHz	12.51	13.51	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	4.98	13.51	Complies

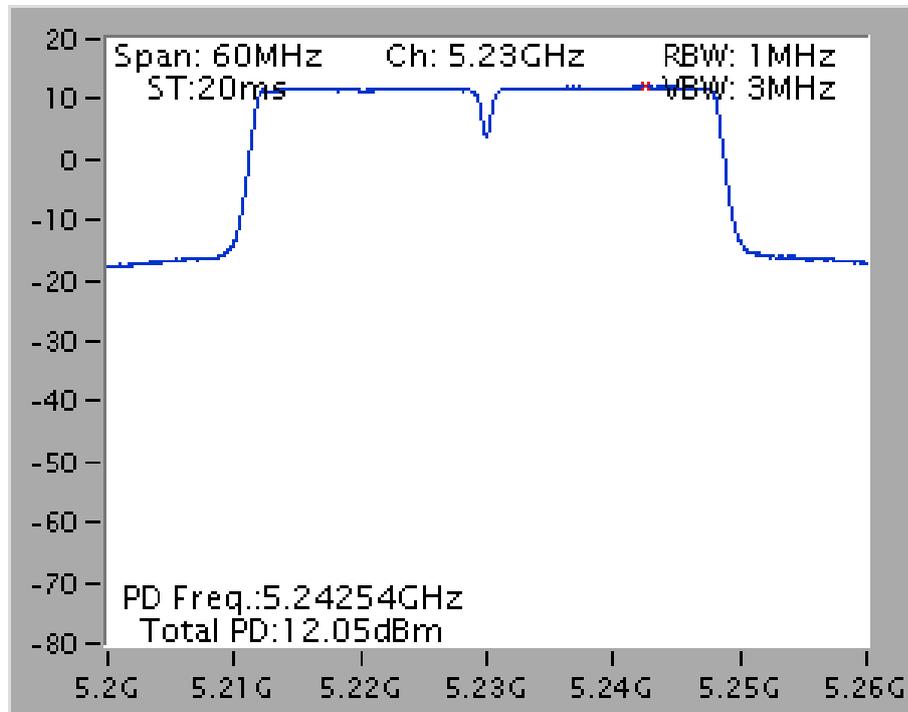
Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left(\sum_{K=1}^{N_{ANT}} g_{j,k} \right)^2}{N_{ANT}} \right] = 9.49 \text{ dBi} > 6 \text{ dBi}$, so limit = $17 - (9.49 - 6) = 13.51 \text{ dBm/MHz}$.

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

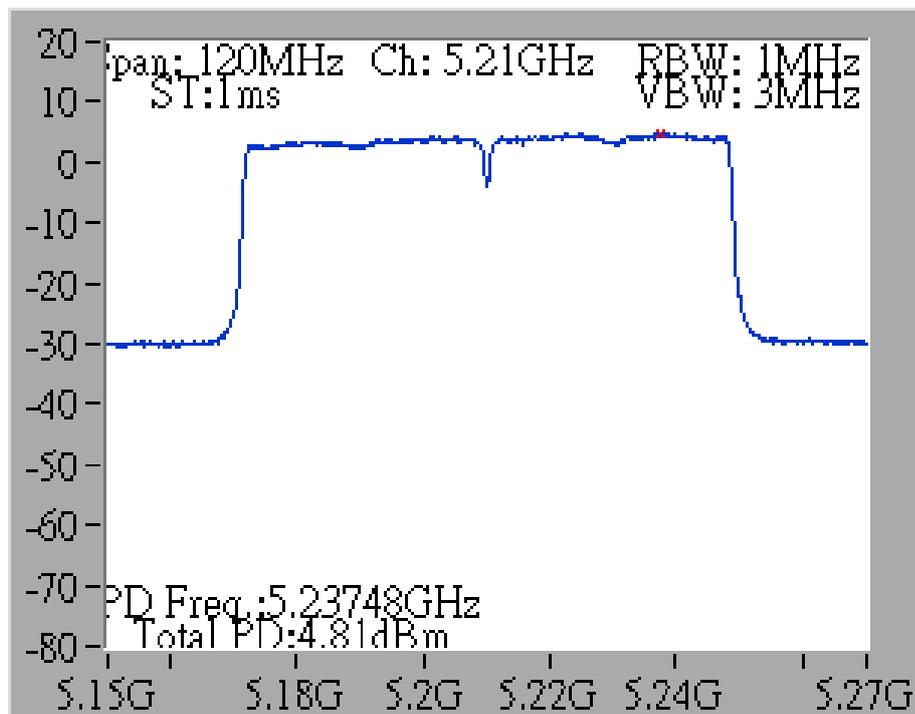
For plots, only the channel with worse result was shown.

EUT: Version 1For non-beamforming function:**Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz****Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz**

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



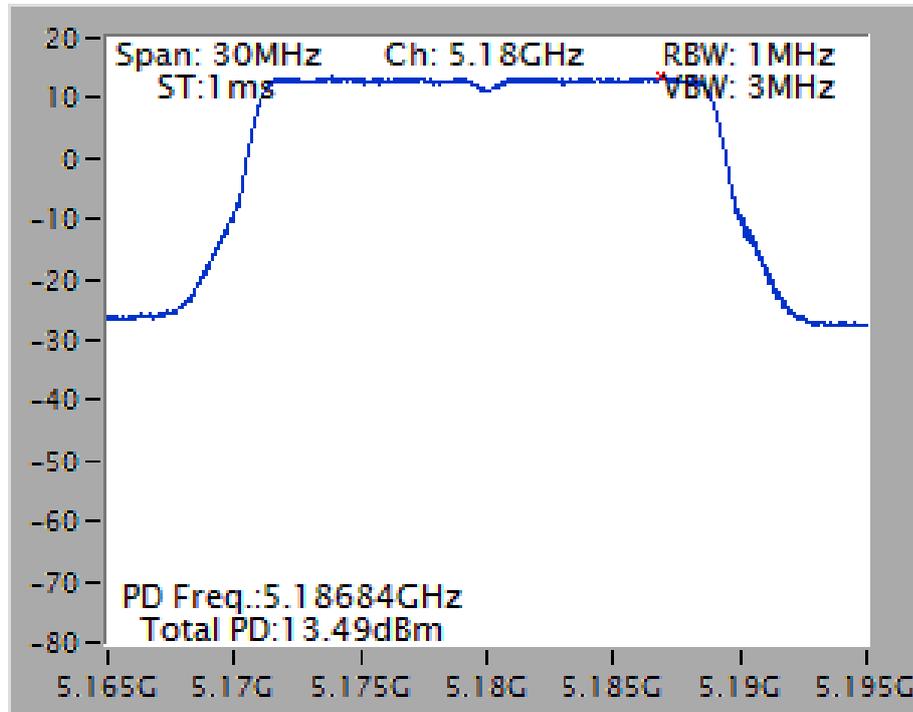
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



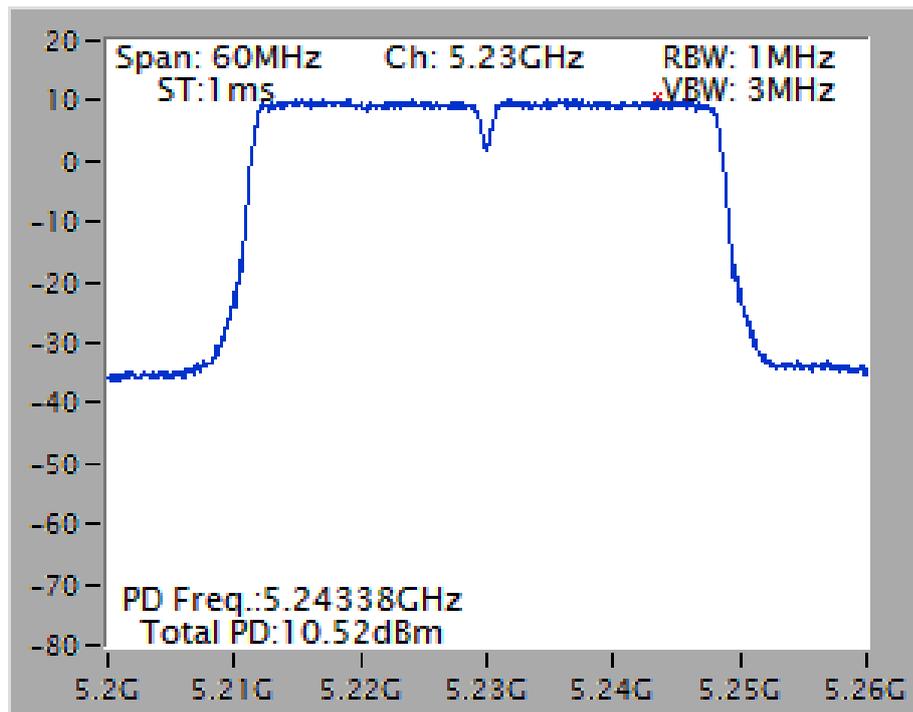
EUT: Version 1

For beamforming function:

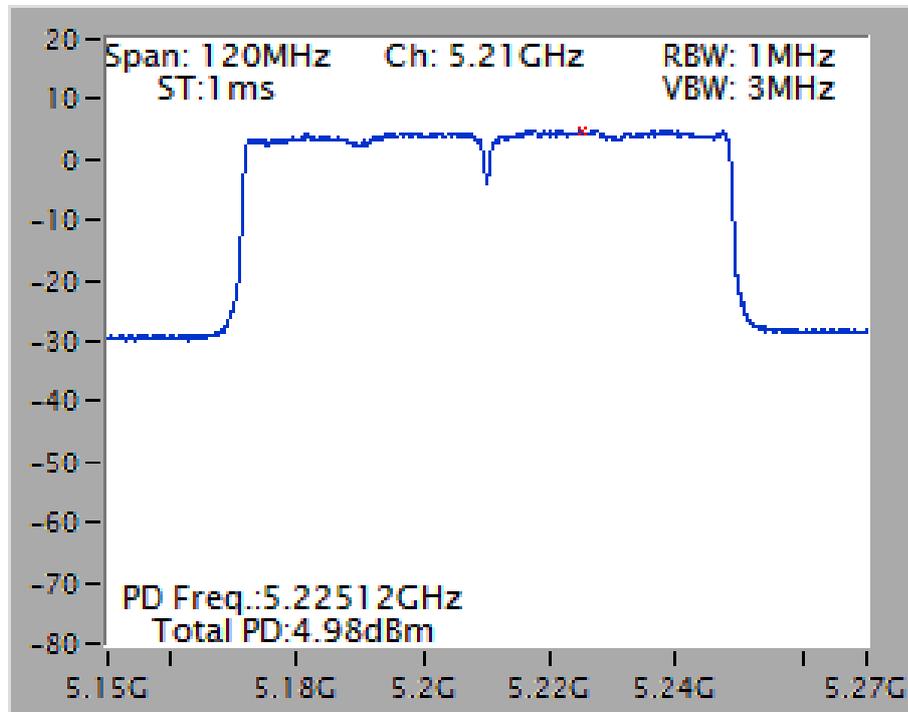
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



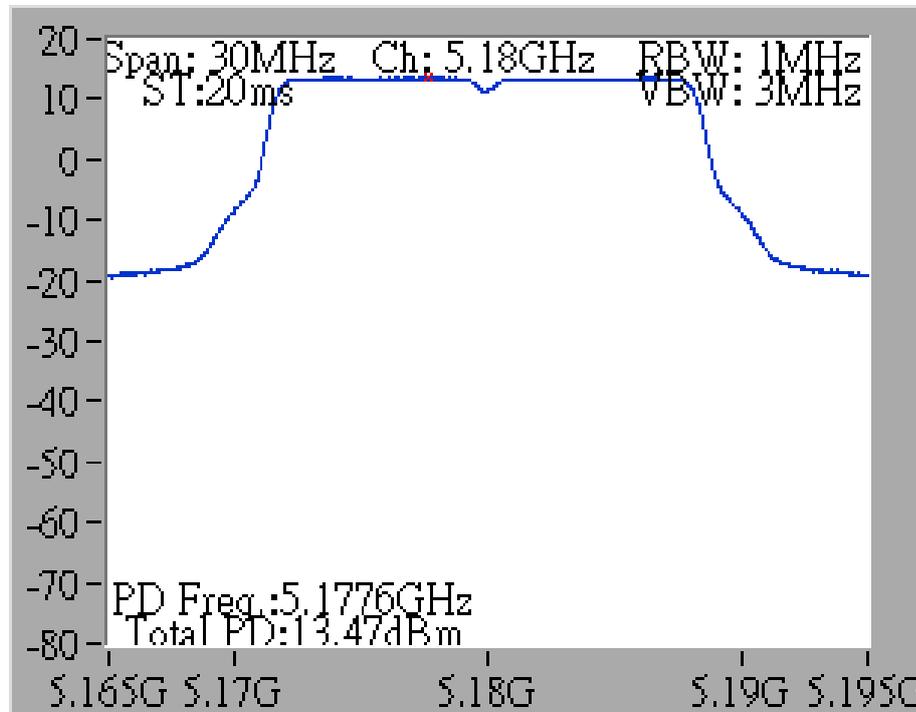
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



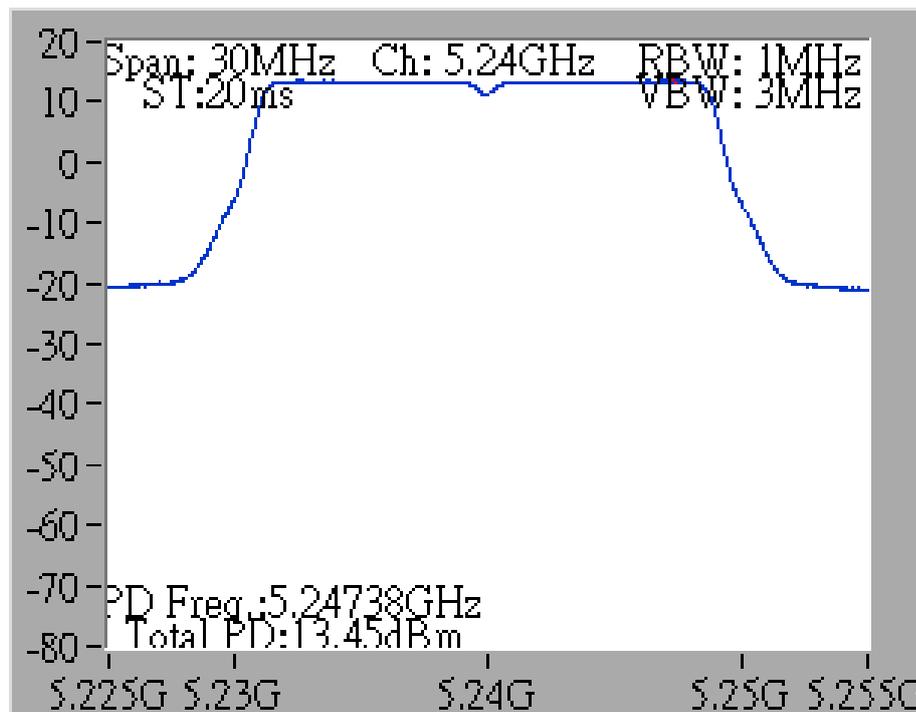
EUT: Version 2

For non-beamforming function:

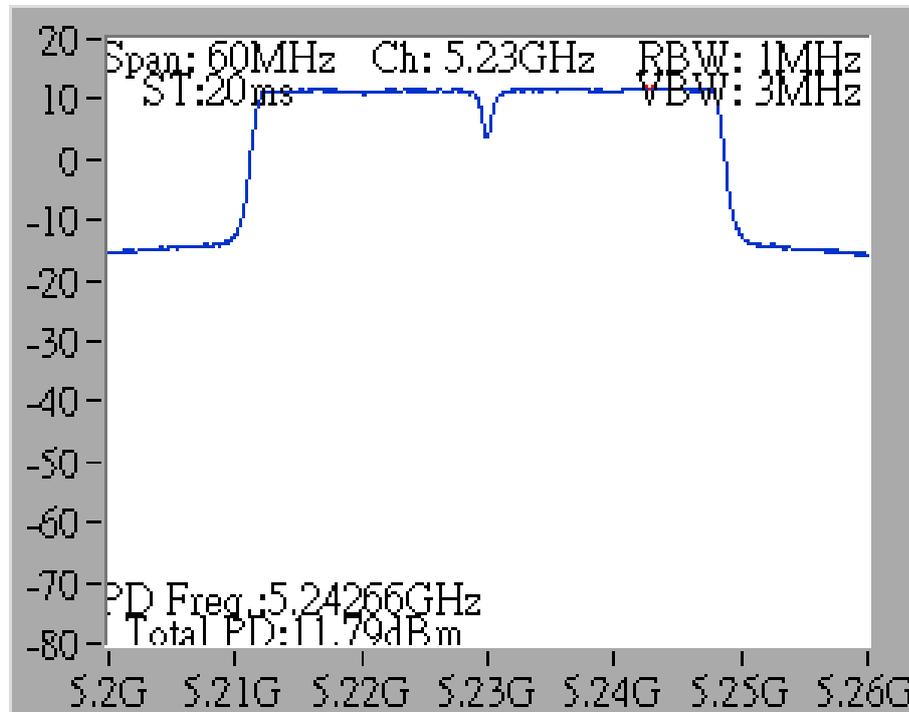
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



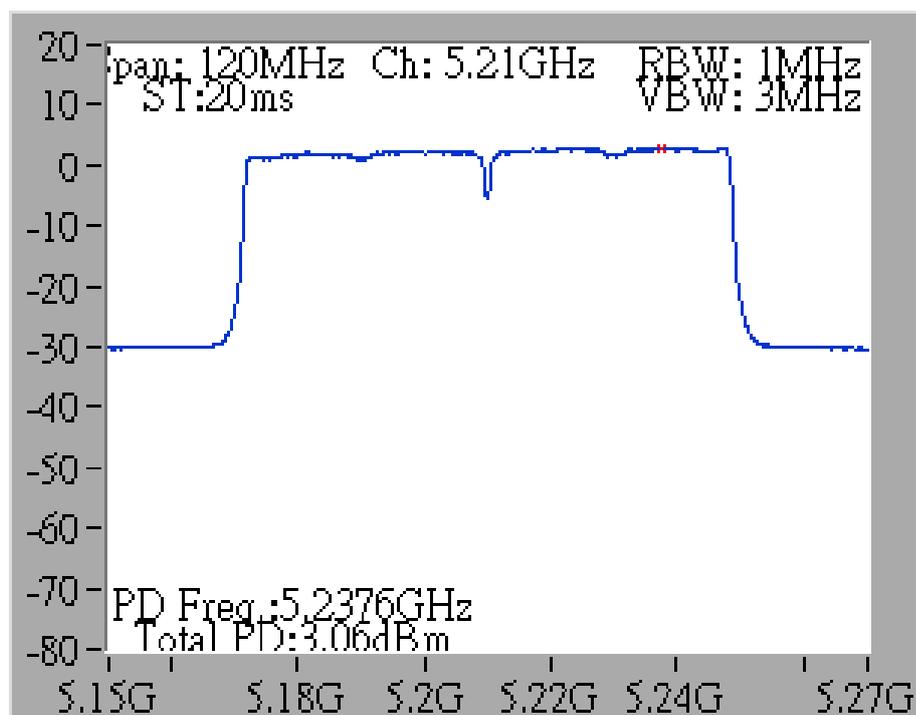
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5240 MHz



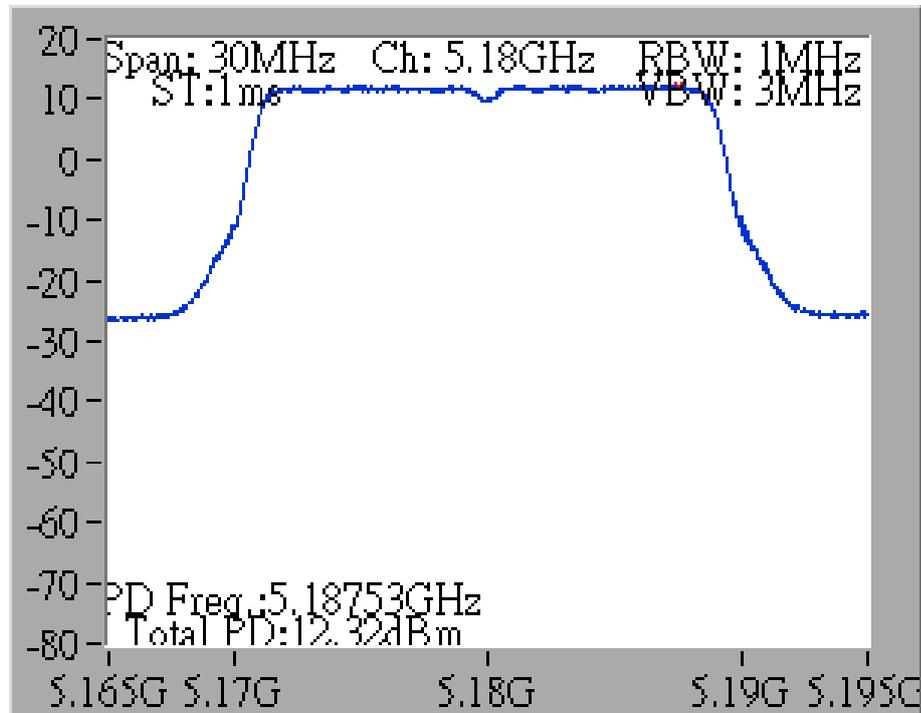
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



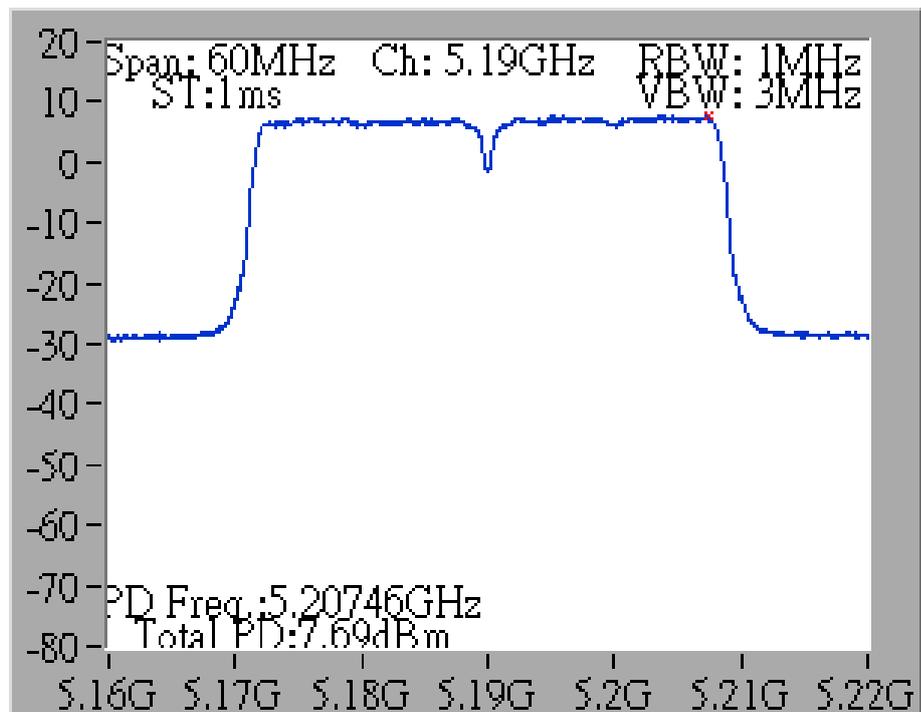
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



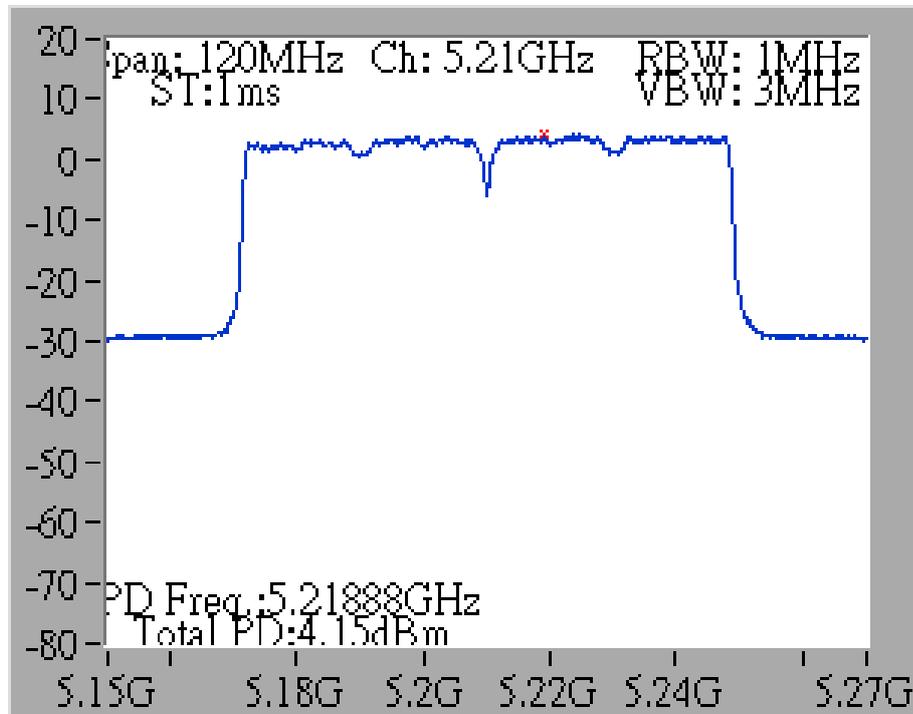
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss4 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5180 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss4 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5190 MHz



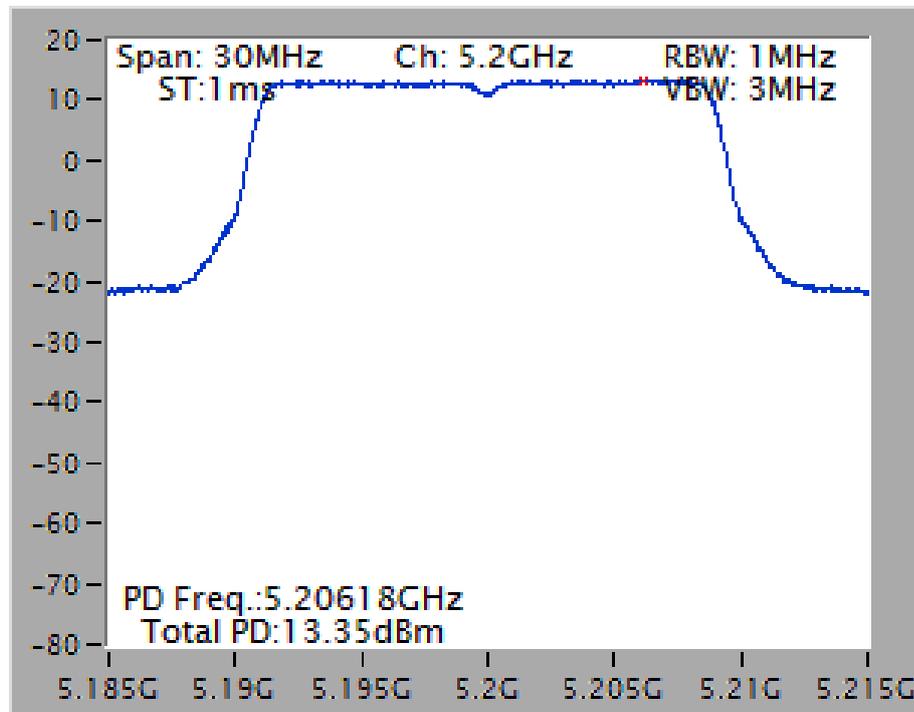
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss4 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



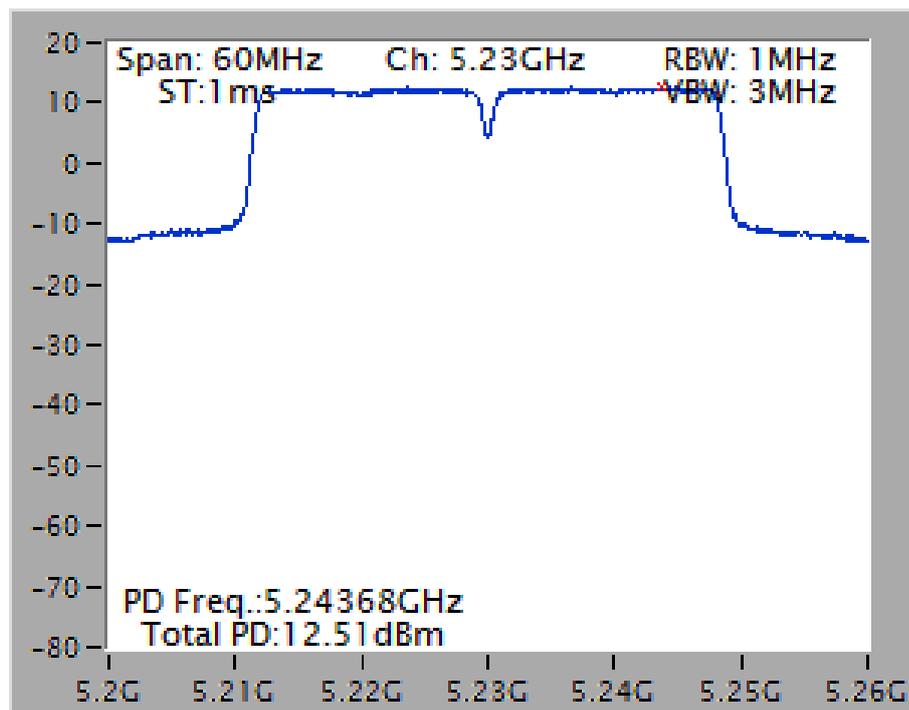
EUT: Version 1

For beamforming function:

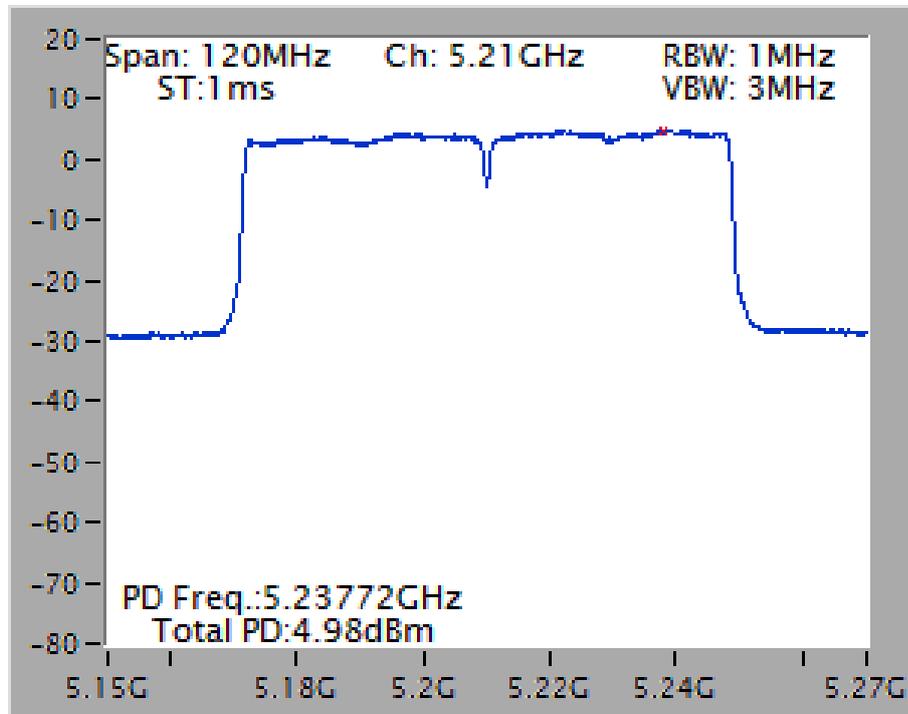
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5200 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5230 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3 + Chain 4 / 5210 MHz



4.5. Radiated Emissions Measurement

4.5.1. Limit

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

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 (micovolts/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)	1 MHz / 3MHz for Peak, 1 MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1 MHz / 3MHz for peak

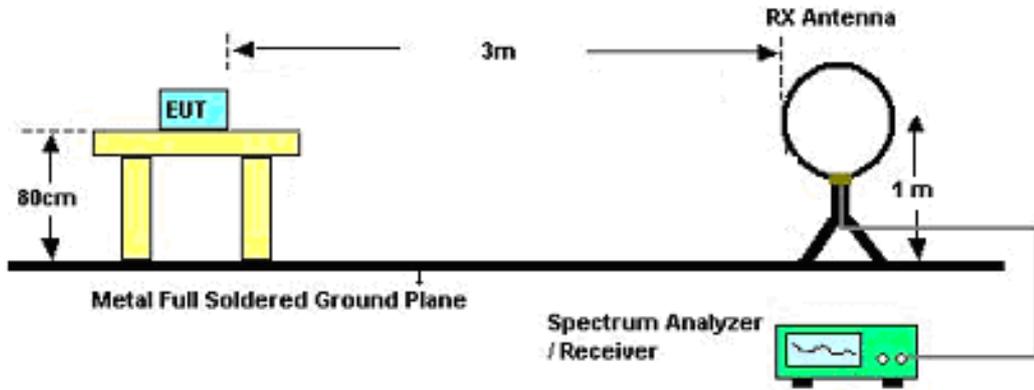
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.5.3. Test Procedures

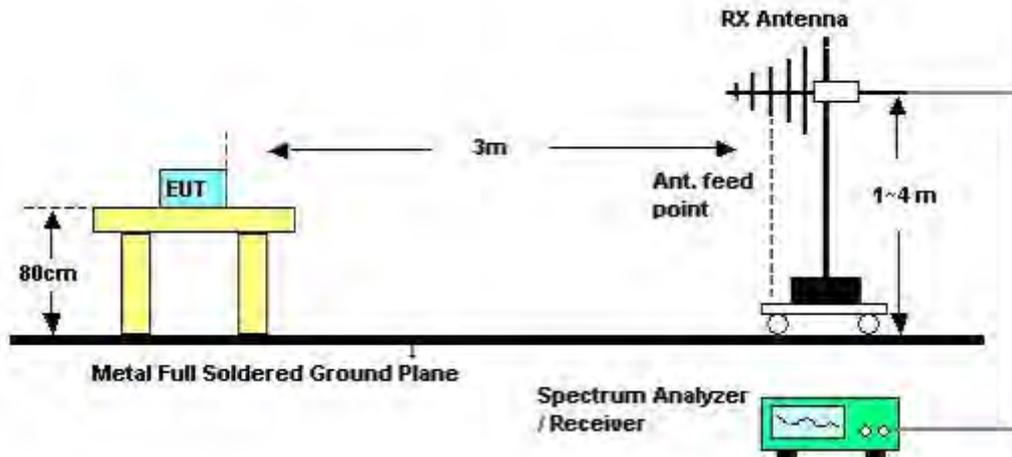
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

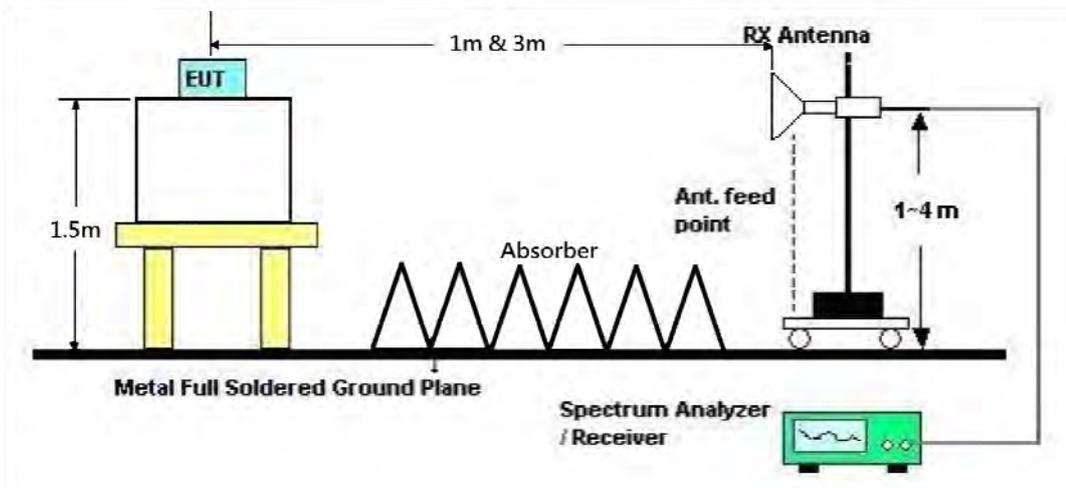
For Radiated Emissions: 9kHz ~30MHz



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

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

The EUT was programmed to be in beamforming transmitting mode.

4.5.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	CTX
Test Date	May 16, 2015	Test Mode	Mode 5
Test EUT	EUT: Version 1		

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 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log(\text{specific distance} / \text{test distance})$ (dB);

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



Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	CTX
Test Date	May 15, 2015	Test Mode	Mode 5
Test EUT	EUT: Version 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 20 dB below the permissible value has no need to be reported.

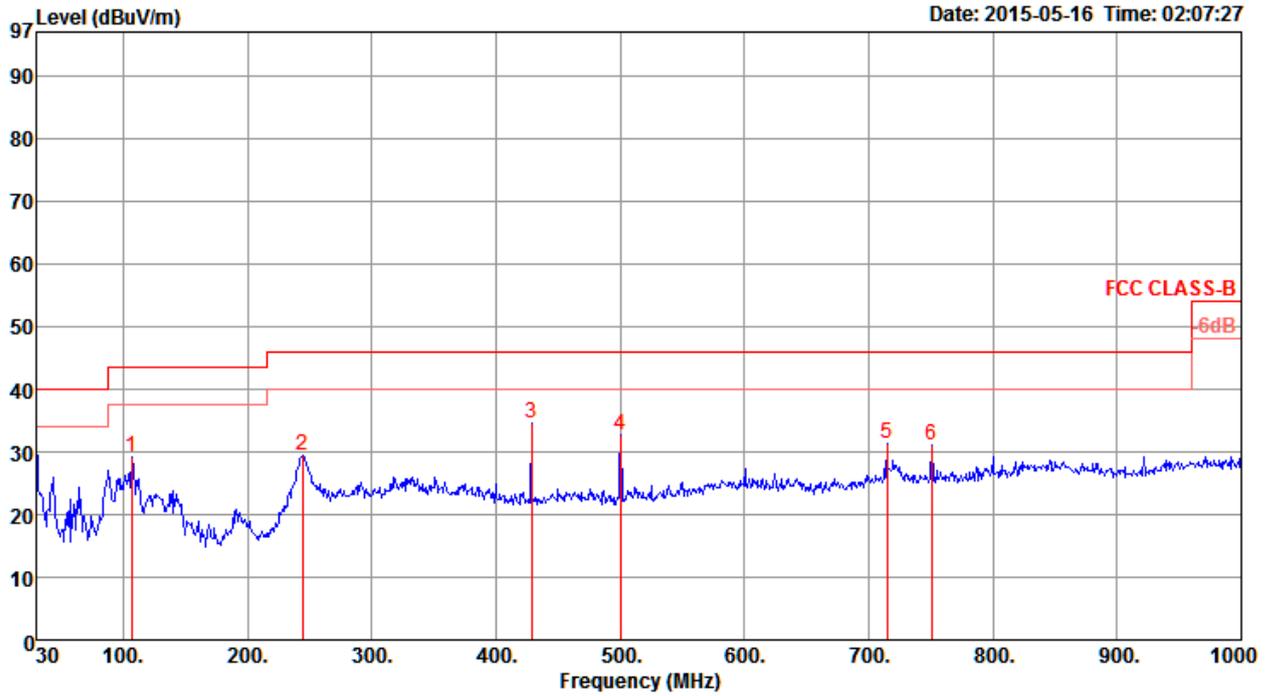
Distance extrapolation factor = $40 \log(\text{specific distance} / \text{test distance})$ (dB);

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

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

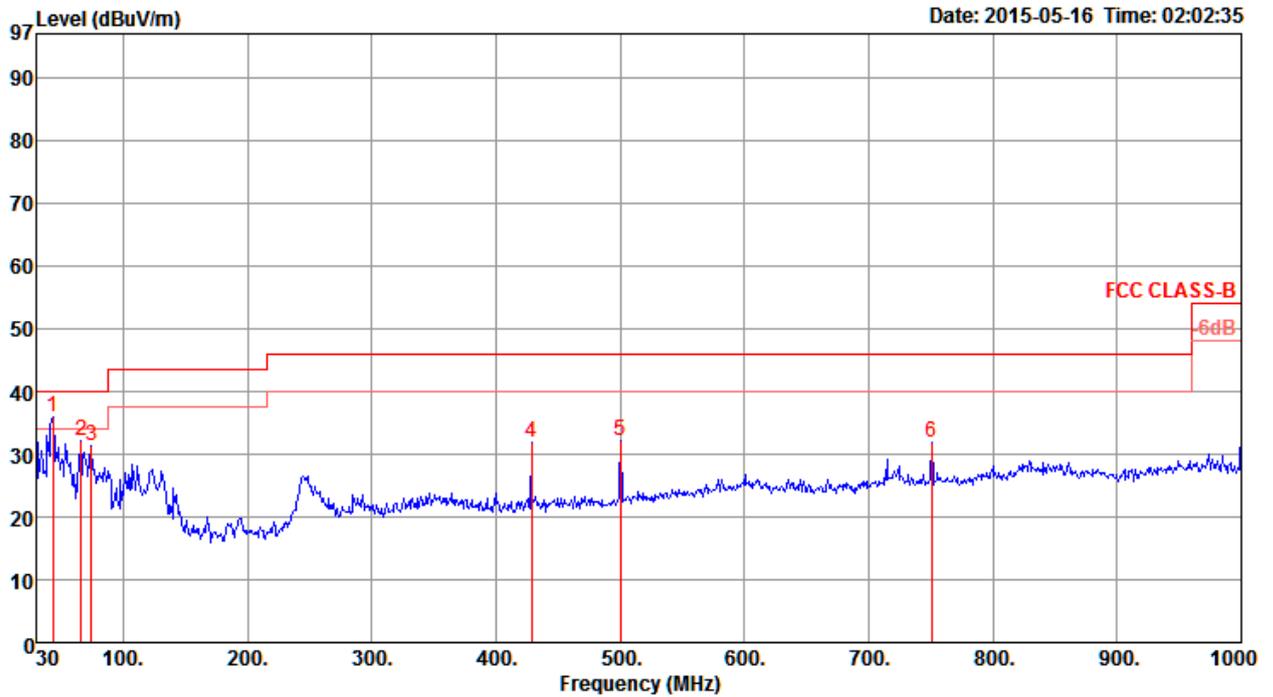
Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	CTX
Test Mode	Mode 5	Test EUT	EUT: Version 1

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	106.63	29.22	43.50	-14.28	43.85	0.89	12.24	27.76	0	200	Peak	HORIZONTAL
2	244.37	29.37	46.00	-16.63	42.38	1.31	12.65	26.97	0	200	Peak	HORIZONTAL
3	428.67	34.46	46.00	-11.54	43.60	1.70	16.85	27.69	0	200	Peak	HORIZONTAL
4	500.45	32.76	46.00	-13.24	41.06	1.83	17.80	27.93	0	200	Peak	HORIZONTAL
5	714.82	31.24	46.00	-14.76	36.07	2.15	20.11	27.09	0	200	Peak	HORIZONTAL
6	750.71	31.20	46.00	-14.80	35.50	2.21	20.61	27.12	0	200	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	43.58	35.92	40.00	-4.08	51.71	0.60	11.56	27.95	0	200	Peak	VERTICAL
2	65.89	32.02	40.00	-7.98	52.45	0.73	6.80	27.96	0	200	Peak	VERTICAL
3	74.62	31.27	40.00	-8.73	51.28	0.75	7.16	27.92	0	200	Peak	VERTICAL
4	428.67	31.88	46.00	-14.12	41.02	1.70	16.85	27.69	0	200	Peak	VERTICAL
5	500.45	32.21	46.00	-13.79	40.51	1.83	17.80	27.93	0	200	Peak	VERTICAL
6	750.71	31.81	46.00	-14.19	36.11	2.21	20.61	27.12	0	200	Peak	VERTICAL

Note:

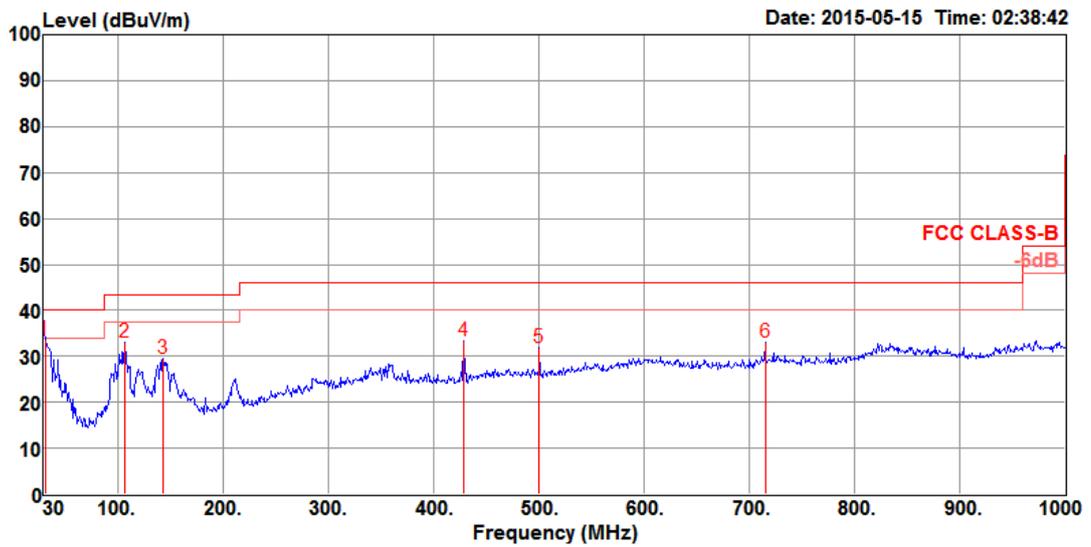
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

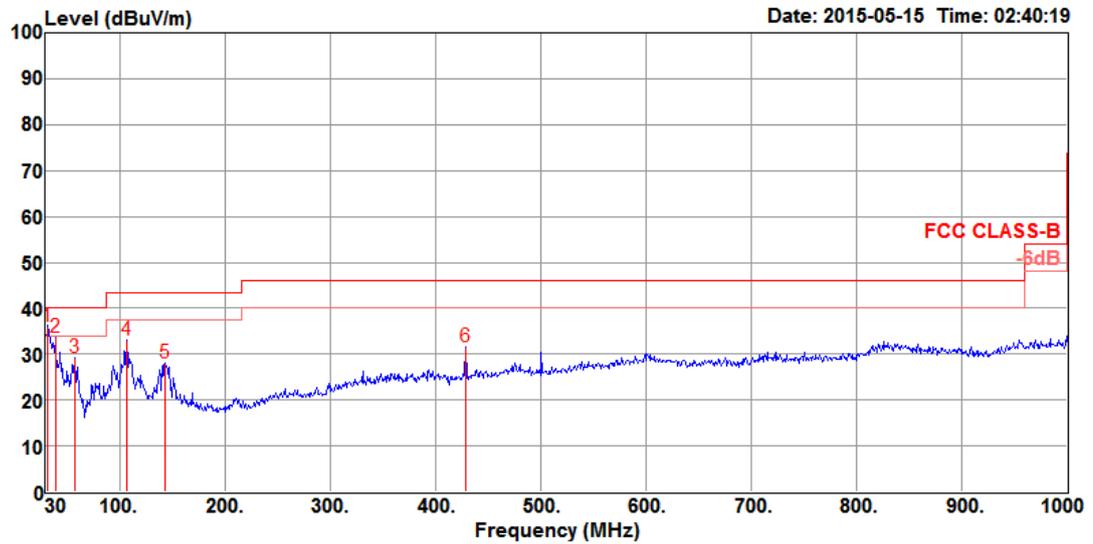
Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	CTX
Test Mode	Mode 5	Test EUT	EUT: Version 2

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	PoI/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	30.97	33.61	40.00	-6.39	45.71	0.64	19.50	32.24	300	326	Peak	HORIZONTAL
2	106.63	33.12	43.50	-10.38	52.47	0.97	11.94	32.26	300	259	Peak	HORIZONTAL
3	143.49	29.62	43.50	-13.88	48.93	1.08	11.77	32.16	200	84	Peak	HORIZONTAL
4	428.67	33.30	46.00	-12.70	46.85	1.78	16.85	32.18	100	305	Peak	HORIZONTAL
5	500.45	31.93	46.00	-14.07	44.38	1.90	17.80	32.15	200	353	Peak	HORIZONTAL
6	714.82	33.14	46.00	-12.86	43.21	2.17	19.91	32.15	125	213	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	31.94	36.00	40.00	-4.00	48.72	0.64	18.88	32.24	150	298	Peak VERTICAL
2	38.73	33.58	40.00	-6.42	50.39	0.66	14.82	32.29	200	38	Peak VERTICAL
3	58.13	29.31	40.00	-10.69	53.59	0.76	7.26	32.30	200	38	Peak VERTICAL
4	106.63	33.11	43.50	-10.39	52.49	0.97	11.91	32.26	100	1	Peak VERTICAL
5	143.49	28.15	43.50	-15.35	47.45	1.08	11.78	32.16	100	13	Peak VERTICAL
6	428.67	31.60	46.00	-14.40	45.15	1.78	16.85	32.18	100	8	Peak 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	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	10354.56	56.59	74.00	-17.41	41.18	10.15	39.02	33.76	204	133	Peak	HORIZONTAL
2	10365.36	44.27	54.00	-9.73	28.87	10.15	39.01	33.76	204	133	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	10367.00	57.69	74.00	-16.31	42.29	10.15	39.01	33.76	293	141	Peak	VERTICAL
2	10369.80	44.44	54.00	-9.56	29.04	10.15	39.01	33.76	293	141	Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

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	10398.60	56.60	74.00	-17.40	41.23	10.13	38.98	33.74	237	174	Peak	HORIZONTAL
2	10401.16	44.26	54.00	-9.74	28.89	10.13	38.98	33.74	237	174	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	10406.44	44.33	54.00	-9.67	28.96	10.13	38.98	33.74	207	189	Average	VERTICAL
2	10407.92	57.21	74.00	-16.79	41.84	10.13	38.98	33.74	207	189	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

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	10473.20	44.30	54.00	-9.70	28.97	10.11	38.93	33.71	290	113	Average	HORIZONTAL
2	10484.88	57.07	74.00	-16.93	41.75	10.10	38.91	33.69	290	113	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	10471.12	44.11	54.00	-9.89	28.78	10.11	38.93	33.71	260	145	Average	VERTICAL
2	10487.60	56.90	74.00	-17.10	41.58	10.10	38.91	33.69	260	145	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	10353.08	56.90	74.00	-17.10	41.49	10.15	39.02	33.76	164	190 Peak	HORIZONTAL
2	10369.76	44.19	54.00	-9.81	28.79	10.15	39.01	33.76	164	190 Average	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	10359.28	56.21	74.00	-17.79	40.81	10.15	39.01	33.76	290	181 Peak	VERTICAL
2	10367.68	43.91	54.00	-10.09	28.51	10.15	39.01	33.76	290	181 Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	10383.04	57.63	74.00	-16.37	42.25	10.14	38.99	33.75	167	176	Peak	HORIZONTAL
2	10383.40	44.42	54.00	-9.58	29.04	10.14	38.99	33.75	167	176	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	10379.56	44.32	54.00	-9.68	28.94	10.14	38.99	33.75	200	158	Average	VERTICAL
2	10389.24	56.58	74.00	-17.42	41.20	10.14	38.99	33.75	200	158	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	10419.24	44.86	54.00	-9.14	29.50	10.13	38.97	33.74	112	124	Average	HORIZONTAL
2	10420.76	56.42	74.00	-17.58	41.06	10.13	38.97	33.74	112	124	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	10416.12	56.59	74.00	-17.41	41.23	10.13	38.97	33.74	62	193	Peak	VERTICAL
2	10420.24	44.64	54.00	-9.36	29.28	10.13	38.97	33.74	62	193	Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

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	10364.20	44.67	54.00	-9.33	29.27	10.15	39.01	33.76	270	145	Average	HORIZONTAL
2	10379.64	58.11	74.00	-15.89	42.73	10.14	38.99	33.75	270	145	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	10368.12	44.26	54.00	-9.74	28.86	10.15	39.01	33.76	244	115	Average	VERTICAL
2	10377.56	57.02	74.00	-16.98	41.64	10.14	38.99	33.75	244	115	Peak	VERTICAL



Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

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	10416.76	44.48	54.00	-9.52	29.12	10.13	38.97	33.74	248	158	Average	HORIZONTAL
2	10419.48	58.01	74.00	-15.99	42.65	10.13	38.97	33.74	248	158	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	10414.52	44.59	54.00	-9.41	29.23	10.13	38.97	33.74	221	189	Average	VERTICAL
2	10418.84	57.22	74.00	-16.78	41.86	10.13	38.97	33.74	221	189	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	10396.24	44.25	54.00	-9.75	28.88	10.14	38.98	33.75	158	154	Average	HORIZONTAL
2	10397.44	56.48	74.00	-17.52	41.11	10.13	38.98	33.74	158	154	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	10380.12	44.33	54.00	-9.67	28.95	10.14	38.99	33.75	109	106	Average	VERTICAL
2	10391.76	56.86	74.00	-17.14	41.48	10.14	38.99	33.75	109	106	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 1 / Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	15525.30	42.52	54.00	-11.48	31.00	7.55	38.69	34.72	78	121	Average	HORIZONTAL
2	15540.90	56.20	74.00	-17.80	44.69	7.56	38.67	34.72	78	121	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	15517.60	56.00	74.00	-18.00	44.46	7.55	38.69	34.70	121	125	Peak	VERTICAL
2	15519.20	43.66	54.00	-10.34	32.12	7.55	38.69	34.70	121	125	Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 1 / Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	15593.16	55.39	74.00	-18.61	43.96	7.57	38.63	34.77	121	125	Peak	HORIZONTAL
2	15607.72	42.76	54.00	-11.24	31.35	7.58	38.62	34.79	121	125	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	15598.84	42.88	54.00	-11.12	31.47	7.58	38.62	34.79	98	176	Average	VERTICAL
2	15610.00	55.84	74.00	-18.16	44.43	7.58	38.62	34.79	98	176	Peak	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 1 / Beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	15711.68	42.21	54.00	-11.79	30.94	7.62	38.53	168	124	Average	HORIZONTAL
2	15711.92	55.80	74.00	-18.20	44.53	7.62	38.53	168	124	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	15713.52	55.65	74.00	-18.35	44.39	7.62	38.52	144	141	Peak	VERTICAL
2	15718.76	43.25	54.00	-10.75	31.99	7.62	38.52	144	141	Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 1 / Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	15572.52	55.64	74.00	-18.36	44.17	7.57	38.64	34.74	207	137	Peak	HORIZONTAL
2	15572.96	42.99	54.00	-11.01	31.52	7.57	38.64	34.74	207	137	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	15570.24	56.59	74.00	-17.41	45.12	7.57	38.64	34.74	186	122	Peak	VERTICAL
2	15570.68	42.93	54.00	-11.07	31.46	7.57	38.64	34.74	186	122	Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 1 / Beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	15680.40	42.29	54.00	-11.71	30.98	7.61	38.55	135	112	Average	HORIZONTAL
2	15681.36	55.02	74.00	-18.98	43.71	7.61	38.55	135	112	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	15684.00	57.09	74.00	-16.91	45.78	7.61	38.55	214	155	Peak	VERTICAL
2	15696.48	43.40	54.00	-10.60	32.09	7.61	38.55	214	155	Average	VERTICAL

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 1 / Beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	15624.56	55.32	74.00	-18.68	43.94	7.59	38.60	160	132	Peak	HORIZONTAL
2	15636.36	42.61	54.00	-11.39	31.24	7.59	38.59	160	132	Average	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	15620.64	55.12	74.00	-18.88	43.72	7.59	38.60	77	154	Peak	VERTICAL
2	15634.72	43.61	54.00	-10.39	32.24	7.59	38.59	77	154	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.

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15532.52	59.50	74.00	-14.50	45.20	10.03	38.78	34.51	109	236	HORIZONTAL	Peak
2	15535.88	45.80	54.00	-8.20	31.50	10.03	38.78	34.51	109	236	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15530.96	45.83	54.00	-8.17	31.52	10.03	38.78	34.50	105	300	VERTICAL	Average
2	15542.00	59.56	74.00	-14.44	45.27	10.03	38.78	34.52	105	300	VERTICAL	Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15715.24	60.16	74.00	-13.84	46.10	10.07	38.72	34.73	101	176	HORIZONTAL	Peak
2	15720.36	45.81	54.00	-8.19	31.76	10.07	38.72	34.74	101	176	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15719.84	45.86	54.00	-8.14	31.81	10.07	38.72	34.74	141	320	VERTICAL	Average
2	15720.24	59.81	74.00	-14.19	45.76	10.07	38.72	34.74	141	320	VERTICAL	Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15717.92	59.87	74.00	-14.13	45.82	10.07	38.72	34.74	110	191	HORIZONTAL Peak
2	15720.04	45.83	54.00	-8.17	31.78	10.07	38.72	34.74	110	191	HORIZONTAL Average

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15714.80	45.91	54.00	-8.09	31.85	10.07	38.72	34.73	104	247	VERTICAL Average
2	15720.44	59.77	74.00	-14.23	45.72	10.07	38.72	34.74	104	247	VERTICAL Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15536.40	45.90	54.00	-8.10	31.60	10.03	38.78	34.51	100	140	HORIZONTAL Average
2	15538.70	59.36	74.00	-14.64	45.06	10.03	38.78	34.51	100	140	HORIZONTAL Peak

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15537.10	46.82	54.00	-7.18	32.52	10.03	38.78	34.51	103	272	VERTICAL Average
2	15544.38	59.92	74.00	-14.08	45.63	10.03	38.78	34.52	103	272	VERTICAL Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15595.60	60.35	74.00	-13.65	46.12	10.04	38.77	34.58	115	23	HORIZONTAL Peak
2	15597.20	47.03	54.00	-6.97	32.81	10.04	38.77	34.59	115	23	HORIZONTAL Average

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15597.20	47.29	54.00	-6.71	33.07	10.04	38.77	34.59	107	80	VERTICAL Average
2	15602.66	59.58	74.00	-14.42	45.37	10.05	38.75	34.59	107	80	VERTICAL Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15716.84	59.53	74.00	-14.47	45.48	10.07	38.72	34.74	108	229	HORIZONTAL	Peak
2	15719.16	47.11	54.00	-6.89	33.06	10.07	38.72	34.74	108	229	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15720.72	47.18	54.00	-6.82	33.13	10.07	38.72	34.74	106	305	VERTICAL	Average
2	15721.42	59.77	74.00	-14.23	45.72	10.07	38.72	34.74	106	305	VERTICAL	Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15555.10	48.34	54.00	-5.66	34.06	10.03	38.78	34.53	177	327	HORIZONTAL Average
2	15581.30	61.30	74.00	-12.70	47.06	10.04	38.77	34.57	177	327	HORIZONTAL Peak

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15552.60	61.67	74.00	-12.33	47.39	10.03	38.78	34.53	121	244	VERTICAL Peak
2	15584.20	48.15	54.00	-5.85	33.91	10.04	38.77	34.57	121	244	VERTICAL Average

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15665.20	47.87	54.00	-6.13	33.75	10.06	38.73	34.67	100	125	HORIZONTAL Average
2	15693.50	60.72	74.00	-13.28	46.64	10.07	38.72	34.71	100	125	HORIZONTAL Peak

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15677.20	47.99	54.00	-6.01	33.88	10.07	38.73	34.69	124	99	VERTICAL Average
2	15701.60	61.24	74.00	-12.76	47.17	10.07	38.72	34.72	124	99	VERTICAL Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15626.56	60.55	74.00	-13.45	46.37	10.05	38.75	34.62	154	39	HORIZONTAL	Peak
2	15629.80	48.04	54.00	-5.96	33.87	10.05	38.75	34.63	154	39	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15626.44	61.16	74.00	-12.84	46.98	10.05	38.75	34.62	202	144	VERTICAL	Peak
2	15639.04	48.09	54.00	-5.91	33.93	10.05	38.75	34.64	202	144	VERTICAL	Average

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MS0/Nss4 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 14, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15317.24	57.69	74.00	-16.31	42.75	9.98	39.20	34.24	150	186	HORIZONTAL	Peak
2	15399.78	44.27	54.00	-9.73	29.61	10.00	39.00	34.34	150	186	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15503.94	44.04	54.00	-9.96	29.69	10.02	38.80	34.47	152	208	VERTICAL	Average
2	15520.77	56.67	74.00	-17.33	42.36	10.02	38.78	34.49	152	208	VERTICAL	Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MS0/Nss4 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 14, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg		
1	15398.53	44.14	54.00	-9.86	29.48	10.00	39.00	34.34	151	229	HORIZONTAL	Average
2	15506.70	55.68	74.00	-18.32	41.33	10.02	38.80	34.47	151	229	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	Factor	cm	deg		
1	15406.54	44.72	54.00	-9.28	30.07	10.00	39.00	34.35	151	241	VERTICAL	Average
2	15486.67	55.88	74.00	-18.12	41.52	10.01	38.80	34.45	151	241	VERTICAL	Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MS0/Nss4 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 14, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15657.24	56.42	74.00	-17.58	42.29	10.06	38.73	34.66	150	278	HORIZONTAL	Peak
2	15693.30	44.59	54.00	-9.41	30.51	10.07	38.72	34.71	150	278	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15408.85	45.34	54.00	-8.66	30.69	10.00	39.00	34.35	148	277	VERTICAL	Average
2	15474.55	57.01	74.00	-16.99	42.63	10.01	38.80	34.43	148	277	VERTICAL	Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 2 / Beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15538.42	44.65	54.00	-9.35	30.35	10.03	38.78	34.51	205	279	HORIZONTAL Average
2	15538.89	58.47	74.00	-15.53	44.17	10.03	38.78	34.51	205	279	HORIZONTAL Peak

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15541.37	44.64	54.00	-9.36	30.35	10.03	38.78	34.52	196	163	VERTICAL Average
2	15541.50	58.96	74.00	-15.04	44.67	10.03	38.78	34.52	196	163	VERTICAL Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 2 / Beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15598.74	44.44	54.00	-9.56	30.22	10.04	38.77	34.59	207	270	HORIZONTAL Average
2	15599.54	58.70	74.00	-15.30	44.47	10.05	38.77	34.59	207	270	HORIZONTAL Peak

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15599.19	44.41	54.00	-9.59	30.18	10.05	38.77	34.59	219	161	VERTICAL Average
2	15601.12	58.40	74.00	-15.60	44.19	10.05	38.75	34.59	219	161	VERTICAL Peak

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 2 / Beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15718.53	44.51	54.00	-9.49	30.46	10.07	38.72	34.74	205	317	HORIZONTAL Average
2	15719.02	58.87	74.00	-15.13	44.82	10.07	38.72	34.74	205	317	HORIZONTAL Peak

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15718.82	58.85	74.00	-15.15	44.80	10.07	38.72	34.74	197	272	VERTICAL Peak
2	15721.95	44.50	54.00	-9.50	30.45	10.07	38.72	34.74	197	272	VERTICAL Average

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 2 / Beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15538.84	44.69	54.00	-9.31	30.39	10.03	38.78	34.51	199	95 HORIZONTAL	Average
2	15541.40	58.87	74.00	-15.13	44.58	10.03	38.78	34.52	199	95 HORIZONTAL	Peak

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15537.58	58.58	74.00	-15.42	44.28	10.03	38.78	34.51	209	187 VERTICAL	Peak
2	15541.20	44.79	54.00	-9.21	30.50	10.03	38.78	34.52	209	187 VERTICAL	Average



Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 2 / Beamforming function

Horizontal

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15689.42	44.62	54.00	-9.38	30.52	10.07	38.73	34.70	192	112	HORIZONTAL Average
2	15690.50	59.23	74.00	-14.77	45.13	10.07	38.73	34.70	192	112	HORIZONTAL Peak

Vertical

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15690.10	58.68	74.00	-15.32	44.58	10.07	38.73	34.70	213	173	VERTICAL Peak
2	15692.44	44.56	54.00	-9.44	30.48	10.07	38.72	34.71	213	173	VERTICAL Average

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 2 / Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15629.22	58.72	74.00	-15.28	44.55	10.05	38.75	34.63	190	237	HORIZONTAL Peak
2	15632.46	44.42	54.00	-9.58	30.25	10.05	38.75	34.63	190	237	HORIZONTAL Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	15629.00	44.24	54.00	-9.76	30.07	10.05	38.75	34.63	202	150	VERTICAL Average
2	15630.41	58.07	74.00	-15.93	43.90	10.05	38.75	34.63	202	150	VERTICAL Peak

Note:

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

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

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

4.6. Band Edge Emissions Measurement

4.6.1. Limit

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

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 (micovolts/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)	1 MHz / 3MHz for Peak, 1 MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1 MHz / 3MHz for Peak

4.6.3. Test Procedures

- 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

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

The EUT was programmed to be in beamforming transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

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	5145.60	53.75	54.00	-0.25	46.48	6.21	34.11	33.05	223	279	Average	VERTICAL
2	5147.60	68.78	74.00	-5.22	61.51	6.21	34.11	33.05	223	279	Peak	VERTICAL
3	5175.20	109.08			101.73	6.24	34.16	33.05	223	279	Average	VERTICAL
4	5175.20	120.06			112.71	6.24	34.16	33.05	223	279	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	5144.80	69.41	74.00	-4.59	62.14	6.21	34.11	33.05	224	283	Peak	VERTICAL
2	5150.00	53.29	54.00	-0.71	46.02	6.21	34.11	33.05	224	283	Average	VERTICAL
3	5195.20	110.87			103.47	6.27	34.18	33.05	224	283	Average	VERTICAL
4	5195.20	121.82			114.42	6.27	34.18	33.05	224	283	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	48.99	54.00	-5.01	41.72	6.21	34.11	33.05	224	278	Average	VERTICAL
2	5150.00	62.18	74.00	-11.82	54.91	6.21	34.11	33.05	224	278	Peak	VERTICAL
3	5235.20	122.50			115.02	6.30	34.23	33.05	224	278	Peak	VERTICAL
4	5236.40	111.43			103.95	6.30	34.23	33.05	224	278	Average	VERTICAL
5	5350.00	47.46	54.00	-6.54	39.66	6.47	34.39	33.06	224	278	Average	VERTICAL
6	5351.80	59.52	74.00	-14.48	51.72	6.47	34.39	33.06	224	278	Peak	VERTICAL

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	5145.20	66.99	74.00	-7.01	59.72	6.21	34.11	33.05	188	208	Peak	VERTICAL
2	5150.00	53.61	54.00	-0.39	46.34	6.21	34.11	33.05	188	208	Average	VERTICAL
3	5185.20	105.91			98.56	6.24	34.16	33.05	188	208	Average	VERTICAL
4	5185.20	117.12			109.77	6.24	34.16	33.05	188	208	Peak	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	5149.20	53.98	54.00	-0.02	46.71	6.21	34.11	33.05	228	285	Average	VERTICAL
2	5149.20	68.51	74.00	-5.49	61.24	6.21	34.11	33.05	228	285	Peak	VERTICAL
3	5198.80	110.23			102.83	6.27	34.18	33.05	228	285	Average	VERTICAL
4	5198.80	121.64			114.24	6.27	34.18	33.05	228	285	Peak	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	5146.40	60.57	74.00	-13.43	53.30	6.21	34.11	33.05	152	285	Peak	VERTICAL
2	5150.00	48.48	54.00	-5.52	41.21	6.21	34.11	33.05	152	285	Average	VERTICAL
3	5231.60	109.04			101.56	6.30	34.23	33.05	152	285	Average	VERTICAL
4	5237.00	120.08			112.60	6.30	34.23	33.05	152	285	Peak	VERTICAL
5	5350.00	47.09	54.00	-6.91	39.29	6.47	34.39	33.06	152	285	Average	VERTICAL
6	5351.80	60.02	74.00	-13.98	52.22	6.47	34.39	33.06	152	285	Peak	VERTICAL

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	5148.00	53.38	54.00	-0.62	46.11	6.21	34.11	33.05	198	227	Average	VERTICAL
2	5148.00	66.45	74.00	-7.55	59.18	6.21	34.11	33.05	198	227	Peak	VERTICAL
3	5193.60	101.83			94.46	6.24	34.18	33.05	198	227	Average	VERTICAL
4	5203.20	111.63			104.23	6.27	34.18	33.05	198	227	Peak	VERTICAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	5146.00	65.96	74.00	-8.04	58.69	6.21	34.11	33.05	222	285	Peak	VERTICAL
2	5148.40	53.67	54.00	-0.33	46.40	6.21	34.11	33.05	222	285	Average	VERTICAL
3	5216.20	105.87			98.45	6.27	34.20	33.05	222	285	Average	VERTICAL
4	5216.20	115.25			107.83	6.27	34.20	33.05	222	285	Peak	VERTICAL

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



Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 18, 2015	Test EUT / Function	EUT: Version 1 / Non-beamforming function

Channel 42

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5148.30	53.93	54.00	-0.07	50.81	5.51	33.02	35.41	225	202 VERTICAL	Average
2	5148.30	64.96	74.00	-9.04	61.84	5.51	33.02	35.41	225	202 VERTICAL	Peak
3	5197.18	110.24			107.10	5.52	33.05	35.43	225	202 VERTICAL	Peak
4	5223.62	101.44			98.27	5.53	33.08	35.44	225	202 VERTICAL	Average
5	5353.43	57.46	74.00	-16.54	53.96	5.59	33.40	35.49	225	202 VERTICAL	Peak
6	5359.04	45.48	54.00	-8.52	41.92	5.60	33.45	35.49	225	202 VERTICAL	Average

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 1 / Beamforming function

Channel 36

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm			
1	5094.80	53.81	54.00	-0.19	51.05	4.23	33.06	34.53	198	224	Average	VERTICAL
2	5144.00	67.42	74.00	-6.58	64.55	4.26	33.14	34.53	198	224	Peak	VERTICAL
3	5172.80	110.54			107.64	4.26	33.17	34.53	198	224	Average	VERTICAL
4	5173.40	119.86			116.96	4.26	33.17	34.53	198	224	Peak	VERTICAL

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

Channel 40

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm			
1	5125.60	53.83	54.00	-0.17	51.00	4.25	33.11	34.53	109	225	Average	VERTICAL
2	5126.80	66.95	74.00	-7.05	64.12	4.25	33.11	34.53	109	225	Peak	VERTICAL
3	5205.40	110.85			107.88	4.28	33.22	34.53	109	225	Average	VERTICAL
4	5207.80	121.29			118.28	4.29	33.25	34.53	109	225	Peak	VERTICAL

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

Channel 48

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm			
1	5150.00	64.73	74.00	-9.27	61.86	4.26	33.14	34.53	145	231	Peak	VERTICAL
2	5150.00	51.73	54.00	-2.27	48.86	4.26	33.14	34.53	145	231	Average	VERTICAL
3	5232.20	125.56			122.52	4.30	33.27	34.53	145	231	Peak	VERTICAL
4	5234.00	115.55			112.51	4.30	33.27	34.53	145	231	Average	VERTICAL

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 1 / Beamforming function

Channel 38

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	5137.00	65.87	74.00	-8.13	63.04	4.25	33.11	34.53	200	224 Peak	VERTICAL
2	5150.00	53.66	54.00	-0.34	50.79	4.26	33.14	34.53	200	224 Average	VERTICAL
3	5175.00	105.85			102.92	4.27	33.19	34.53	200	224 Average	VERTICAL
4	5176.00	116.79			113.86	4.27	33.19	34.53	200	224 Peak	VERTICAL
5	5350.00	47.96	54.00	-6.04	44.68	4.35	33.46	34.53	200	224 Average	VERTICAL
6	5368.00	60.01	74.00	-13.99	56.69	4.36	33.49	34.53	200	224 Peak	VERTICAL

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

Channel 46

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	deg	cm		
1	5136.00	66.90	74.00	-7.10	64.07	4.25	33.11	34.53	145	226 Peak	VERTICAL
2	5150.00	53.75	54.00	-0.25	50.88	4.26	33.14	34.53	145	226 Average	VERTICAL
3	5233.00	120.56			117.52	4.30	33.27	34.53	145	226 Peak	VERTICAL
4	5234.00	110.34			107.30	4.30	33.27	34.53	145	226 Average	VERTICAL

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 1 / Beamforming function

Channel 42

	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	5149.00	67.20	74.00	-6.80	64.33	4.26	33.14	34.53	147	227	Peak	VERTICAL
2	5150.00	53.52	54.00	-0.48	50.65	4.26	33.14	34.53	147	227	Average	VERTICAL
3	5188.00	115.31			112.38	4.27	33.19	34.53	147	227	Peak	VERTICAL
4	5213.00	104.13			101.12	4.29	33.25	34.53	147	227	Average	VERTICAL
5	5352.00	60.83	74.00	-13.17	57.55	4.35	33.46	34.53	147	227	Peak	VERTICAL

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

Note:

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

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Channel 36

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5138.65	53.88	54.00	-0.12	50.78	5.50	33.01	35.41	236	297	VERTICAL	Average
2	5139.14	68.01	74.00	-5.99	64.91	5.50	33.01	35.41	236	297	VERTICAL	Peak
3	5179.04	108.59			105.45	5.52	33.04	35.42	236	297	VERTICAL	Average
4	5179.04	118.75			115.61	5.52	33.04	35.42	236	297	VERTICAL	Peak

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

Channel 40

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5118.27	53.85	54.00	-0.15	50.77	5.49	32.99	35.40	239	300	VERTICAL	Average
2	5148.56	69.71	74.00	-4.29	66.59	5.51	33.02	35.41	239	300	VERTICAL	Peak
3	5199.04	112.51			109.36	5.53	33.05	35.43	239	300	VERTICAL	Average
4	5199.04	122.16			119.01	5.53	33.05	35.43	239	300	VERTICAL	Peak

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

Channel 48

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5150.00	47.51	54.00	-6.49	44.39	5.51	33.02	35.41	209	51	VERTICAL	Average
2	5150.00	58.88	74.00	-15.12	55.76	5.51	33.02	35.41	209	51	VERTICAL	Peak
3	5232.79	111.07			107.88	5.54	33.09	35.44	209	51	VERTICAL	Average
4	5233.27	120.53			117.34	5.54	33.09	35.44	209	51	VERTICAL	Peak
5	5350.00	45.26	54.00	-8.74	41.76	5.59	33.40	35.49	209	51	VERTICAL	Average
6	5350.00	56.88	74.00	-17.12	53.38	5.59	33.40	35.49	209	51	VERTICAL	Peak

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 07, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5146.15	53.22	54.00	-0.78	50.11	5.50	33.02	35.41	206	50	VERTICAL	Average
2	5146.15	68.10	74.00	-5.90	64.99	5.50	33.02	35.41	206	50	VERTICAL	Peak
3	5177.12	117.41			114.27	5.52	33.04	35.42	206	50	VERTICAL	Peak
4	5186.73	106.31			103.17	5.52	33.05	35.43	206	50	VERTICAL	Average

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.52	53.63	54.00	-0.37	50.51	5.51	33.02	35.41	225	299	VERTICAL	Average
2	5149.52	71.20	74.00	-2.80	68.08	5.51	33.02	35.41	225	299	VERTICAL	Peak
3	5194.71	109.07			105.93	5.52	33.05	35.43	225	299	VERTICAL	Average
4	5204.81	120.70			117.54	5.53	33.06	35.43	225	299	VERTICAL	Peak

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5146.64	59.49	74.00	-14.51	56.38	5.50	33.02	35.41	210	296	VERTICAL	Peak
2	5150.00	47.61	54.00	-6.39	44.49	5.51	33.02	35.41	210	296	VERTICAL	Average
3	5235.19	110.64			107.45	5.54	33.09	35.44	210	296	VERTICAL	Average
4	5235.19	120.09			116.90	5.54	33.09	35.44	210	296	VERTICAL	Peak
5	5350.48	45.25	54.00	-8.75	41.75	5.59	33.40	35.49	210	296	VERTICAL	Average
6	5350.48	56.73	74.00	-17.27	53.23	5.59	33.40	35.49	210	296	VERTICAL	Peak

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 06, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Channel 38

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5150.00	53.59	54.00	-0.41	50.47	5.51	33.02	35.41	252	297	VERTICAL	Average
2	5150.00	65.71	74.00	-8.29	62.59	5.51	33.02	35.41	252	297	VERTICAL	Peak
3	5195.29	110.89			107.75	5.52	33.05	35.43	252	297	VERTICAL	Peak
4	5200.10	100.38			97.23	5.53	33.05	35.43	252	297	VERTICAL	Average

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

Channel 46

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.20	53.93	54.00	-0.07	50.81	5.51	33.02	35.41	246	282	VERTICAL	Average
2	5149.20	67.01	74.00	-6.99	63.89	5.51	33.02	35.41	246	282	VERTICAL	Peak
3	5243.62	105.76			102.58	5.54	33.09	35.45	246	282	VERTICAL	Average
4	5243.62	115.57			112.39	5.54	33.09	35.45	246	282	VERTICAL	Peak

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 08, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5149.20	53.75	54.00	-0.25	50.63	5.51	33.02	35.41	241	296 VERTICAL	Average
2	5150.00	65.15	74.00	-8.85	62.03	5.51	33.02	35.41	241	296 VERTICAL	Peak
3	5199.58	97.61			94.46	5.53	33.05	35.43	241	296 VERTICAL	Average
4	5200.39	108.08			104.93	5.53	33.05	35.43	241	296 VERTICAL	Peak

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss4 VHT20 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 14, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Channel 36

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5142.95	67.75	74.00	-6.25	64.64	5.50	33.02	35.41	227	47 VERTICAL	Peak
2	5147.12	53.57	54.00	-0.43	50.45	5.51	33.02	35.41	227	47 VERTICAL	Average
3	5182.08	105.94			102.81	5.52	33.04	35.43	227	47 VERTICAL	Average
4	5186.73	116.50			113.36	5.52	33.05	35.43	227	47 VERTICAL	Peak

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss4 VHT40 CH 36 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 14, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Channel 38

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	Loss	Factor	cm	deg		
1	5150.00	53.58	54.00	-0.42	50.46	5.51	33.02	35.41	187	344 VERTICAL	Average
2	5150.00	65.93	74.00	-8.07	62.81	5.51	33.02	35.41	187	344 VERTICAL	Peak
3	5203.14	111.51			108.35	5.53	33.06	35.43	187	344 VERTICAL	Peak
4	5206.67	101.32			98.16	5.53	33.06	35.43	187	344 VERTICAL	Average

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss4 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 14, 2015	Test EUT / Function	EUT: Version 2 / Non-beamforming function

Channel 42

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5121.96	63.31	74.00	-10.69	60.22	5.50	32.99	35.40	230	340 VERTICAL	Peak
2	5150.00	53.53	54.00	-0.47	50.41	5.51	33.02	35.41	230	340 VERTICAL	Average
3	5206.80	96.65			93.49	5.53	33.06	35.43	230	340 VERTICAL	Average
4	5207.60	107.25			104.09	5.53	33.06	35.43	230	340 VERTICAL	Peak

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 2 / Beamforming function

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5146.47	71.80	74.00	-2.20	68.69	5.50	33.02	35.41	235	312	VERTICAL	Peak
2	5150.00	53.31	54.00	-0.69	50.19	5.51	33.02	35.41	235	312	VERTICAL	Average
3	5191.99	110.45			107.31	5.52	33.05	35.43	235	312	VERTICAL	Average
4	5192.95	120.82			117.68	5.52	33.05	35.43	235	312	VERTICAL	Peak

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5147.31	53.88	54.00	-0.12	50.76	5.51	33.02	35.41	242	65	VERTICAL	Average
2	5148.27	69.69	74.00	-4.31	66.57	5.51	33.02	35.41	242	65	VERTICAL	Peak
3	5184.81	117.59			114.46	5.52	33.04	35.43	242	65	VERTICAL	Peak
4	5186.73	107.82			104.68	5.52	33.05	35.43	242	65	VERTICAL	Average

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5143.85	58.59	74.00	-15.41	55.48	5.50	33.02	35.41	247	240	VERTICAL	Peak
2	5150.00	46.53	54.00	-7.47	43.41	5.51	33.02	35.41	247	240	VERTICAL	Average
3	5242.40	108.17			104.99	5.54	33.09	35.45	247	240	VERTICAL	Average
4	5243.21	120.77			117.59	5.54	33.09	35.45	247	240	VERTICAL	Peak
5	5350.00	44.18	54.00	-9.82	40.68	5.59	33.40	35.49	247	240	VERTICAL	Average
6	5359.39	56.84	74.00	-17.16	53.28	5.60	33.45	35.49	247	240	VERTICAL	Peak

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 36, 40, 48 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 2 / Beamforming function

Channel 38

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.93	73.61	74.00	-0.39	70.50	5.50	33.02	35.41	221	100	VERTICAL	Peak
2	5150.00	53.76	54.00	-0.24	50.64	5.51	33.02	35.41	221	100	VERTICAL	Average
3	5201.22	114.26			111.11	5.53	33.05	35.43	221	100	VERTICAL	Peak
4	5202.82	103.47			100.31	5.53	33.06	35.43	221	100	VERTICAL	Average

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

Channel 46

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5144.26	66.67	74.00	-7.33	63.56	5.50	33.02	35.41	241	360	VERTICAL	Peak
2	5147.47	53.01	54.00	-0.99	49.89	5.51	33.02	35.41	241	360	VERTICAL	Average
3	5222.79	100.03			96.86	5.53	33.08	35.44	241	360	VERTICAL	Average
4	5225.19	118.65			115.47	5.54	33.08	35.44	241	360	VERTICAL	Peak

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

Temperature	22°C	Humidity	60%
Test Engineer	Akina Chiu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	May 16, 2015	Test EUT / Function	EUT: Version 2 / Beamforming function

Channel 42

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	5134.68	73.74	74.00	-0.26	70.64	5.50	33.01	35.41	246	186 VERTICAL	Peak
2	5145.10	53.24	54.00	-0.76	50.13	5.50	33.02	35.41	246	186 VERTICAL	Average
3	5186.76	113.37			110.23	5.52	33.05	35.43	246	186 VERTICAL	Peak
4	5204.39	100.93			97.77	5.53	33.06	35.43	246	186 VERTICAL	Average
5	5364.00	43.42	54.00	-10.58	39.86	5.60	33.45	35.49	246	186 VERTICAL	Average
6	5402.31	56.53	74.00	-17.47	52.82	5.61	33.60	35.50	246	186 VERTICAL	Peak

Item 3, 4 are the fundamental frequency at 5210 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

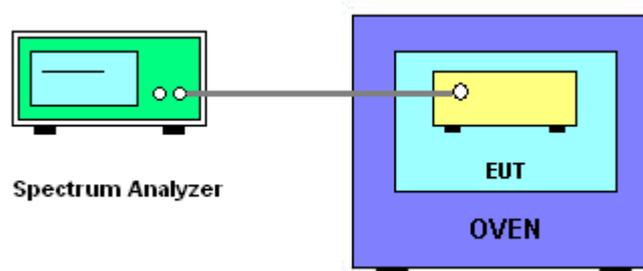
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f) / f_c \times 10^6$ ppm and the limit is less than ± 20 ppm (IEEE 802.11n specification).
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 $0^\circ\text{C} \sim 40^\circ\text{C}$.

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	22°C	Humidity	64%
Test Engineer	Magic Lai	Test Date	May 13, 2015
Test EUT	EUT: Version 1		

Mode: 20 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5200 MHz
126.50	5199.9419
110.00	5199.9418
93.50	5199.9418
Max. Deviation (MHz)	0.0582
Max. Deviation (ppm)	11.20

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	5200 MHz
0	5199.9419
10	5199.9418
20	5199.9418
30	5199.9418
40	5199.9418
Max. Deviation (MHz)	0.0582
Max. Deviation (ppm)	11.20

Mode: 40 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5190 MHz
126.50	5189.9410
110.00	5189.9410
93.50	5189.9409
Max. Deviation (MHz)	0.0591
Max. Deviation (ppm)	11.38

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	5190 MHz
0	5189.9410
10	5189.9409
20	5189.9410
30	5189.9409
40	5189.9409
Max. Deviation (MHz)	0.059140
Max. Deviation (ppm)	11.39

Mode: 80 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5210 MHz
126.50	5209.9410
110.00	5209.9410
93.50	5209.9409
Max. Deviation (MHz)	0.0591
Max. Deviation (ppm)	11.34

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	5210 MHz
0	5209.9409
10	5209.9410
20	5209.9410
30	5209.9409
40	5209.9410
Max. Deviation (MHz)	0.0591
Max. Deviation (ppm)	11.34

Temperature	22°C	Humidity	64%
Test Engineer	Magic Lai	Test Date	May 13, 2015
Test EUT	EUT: Version 2		

Mode: 20 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5200 MHz
126.50	5199.9520
110.00	5199.9519
93.50	5199.9519
Max. Deviation (MHz)	0.0481
Max. Deviation (ppm)	9.25

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	5200 MHz
0	5199.9520
10	5199.9519
20	5199.9519
30	5199.9519
40	5199.9519
Max. Deviation (MHz)	0.0481
Max. Deviation (ppm)	9.26

Mode: 40 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5190 MHz
126.50	5189.9630
110.00	5189.9629
93.50	5189.9628
Max. Deviation (MHz)	0.0372
Max. Deviation (ppm)	7.17

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	5190 MHz
0	5189.9629
10	5189.9629
20	5189.9629
30	5189.9628
40	5189.9628
Max. Deviation (MHz)	0.0372
Max. Deviation (ppm)	7.17

Mode: 80 MHz

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	5210 MHz
126.50	5209.9519
110.00	5209.9517
93.50	5209.9517
Max. Deviation (MHz)	0.0483
Max. Deviation (ppm)	9.27

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	5210 MHz
0	5209.9518
10	5209.9518
20	5209.9517
30	5209.9517
40	5209.9516
Max. Deviation (MHz)	0.0484
Max. Deviation (ppm)	9.28

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
EMI Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 02, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 02, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 03, 2014	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 06, 2015	Radiation (O3CH01-CB)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jul. 28, 2014	Radiation (O3CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 28, 2014	Radiation (O3CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2014	Radiation (O3CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Feb. 24, 2015	Radiation (O3CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Radiation (O3CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (O3CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	Radiation (O3CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Jan. 21, 2015	Radiation (O3CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R.	Radiation (O3CH01-CB)
Antenna Mast	INN CO	CO 2000	N/A	1 m ~ 4 m	N.C.R.	Radiation (O3CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 15, 2014	Radiation (O3CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 15, 2014	Radiation (O3CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 15, 2014	Radiation (O3CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (O3CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (O3CH01-CB)
Thermometer	HTC-1	HTC-1	TP-1	-50°C~70°C	Mar. 11, 2015	Radiation (O3CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 12, 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	TH01-DV-02	1GHz ~ 6GHz	Jan. 10, 2015	Conducted (TH01-CB)
RF Power Divider	Woken	4 Way	TH01-DV-01	1GHz ~ 6GHz	Jan. 10, 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)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Thermometer	HTC-1	HTC-1	TP-8	-50°C~70°C	Mar. 05, 2015	Conducted (TH01-CB)

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

“*” Calibration Interval of instruments listed above is two years.

N.C.R. means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%