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FCC RADIO TEST REPORT

Applicant's company	**Linksys LLC**
Applicant Address	121 Theory Drive, Irvine, CA 92617, USA
FCC ID	**Q87-LAPAC1750PO**
Manufacturer's company	**Linksys LLC**
Manufacturer Address	121 Theory Drive, Irvine, CA 92617, USA

Product Name	AC1750 Pro Dual Band Access Point
Brand Name	LINKSYS
Model No.	LAPAC1750PRO
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Feb. 24, 2016
Final Test Date	May 27, 2016
Submission Type	Class II Change

Statement

Test result included is for the IEEE 802.11n and IEEE 802.11a/ac of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01r02, KDB662911 D01 v02r01, KDB644545 D03 v01, ET Docket No. 13–49; FCC 16–24.**

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR4N1172-39AB	Rev. 01	Initial issue of report	Jun. 21, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	AC1750 Pro Dual Band Access Point
Brand Name	:	LINKSYS
Model No.	:	LAPAC1750PRO
Applicant	:	Linksys LLC
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 Feb. 24, 2016 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen
SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E			
Part	**Rule Section**	**Description of Test**	**Result**
4.1	15.207	AC Power Line Conducted Emissions	Complies
4.2	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies
4.3	15.407(e)	6dB Spectrum Bandwidth	Complies
4.4	15.407(a)	Maximum Conducted Output Power	Complies
4.5	15.407(a)	Power Spectral Density	Complies
4.6	15.407(b)	Radiated Emissions	Complies
4.7	15.407(b)	Band Edge Emissions	Complies
4.8	15.407(g)	Frequency Stability	Complies
4.9	15.203	Antenna Requirements	Complies

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter or PoE
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Channel Number	9 for 20MHz bandwidth ; 4 for 40MHz bandwidth 2 for 80MHz bandwidth
Channel Band Width (99%)	For non-beamforming function: Band 1: IEEE 802.11a: 16.76 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.63 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.32 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.83 MHz Band 4: IEEE 802.11a: 24.57 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 29.52 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.77 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 75.54 MHz For beamforming function: Band 1: IEEE 802.11ac MCS2/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS2/Nss1 (VHT40): 36.76 MHz IEEE 802.11ac MCS2/Nss1 (VHT80): 76.12 MHz Band 4: IEEE 802.11ac MCS2/Nss1 (VHT20): 17.97 MHz IEEE 802.11ac MCS2/Nss1 (VHT40): 37.19 MHz IEEE 802.11ac MCS2/Nss1 (VHT80): 76.12 MHz

Maximum Conducted Output Power	For non-beamforming function: Band 1: IEEE 802.11a: 22.57 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 24.82 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.23 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 22.06 dBm Band 4: IEEE 802.11a: 28.93 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.03 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 26.92 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 26.02 dBm For beamforming function: Band 1: IEEE 802.11ac MCS2/Nss1 (VHT20): 24.79 dBm IEEE 802.11ac MCS2/Nss1 (VHT40): 25.47 dBm IEEE 802.11ac MCS2/Nss1 (VHT80): 23.43 dBm Band 4: IEEE 802.11ac MCS2/Nss1 (VHT20): 26.17 dBm IEEE 802.11ac MCS2/Nss1 (VHT40): 25.95 dBm IEEE 802.11ac MCS2/Nss1 (VHT80): 26.02 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
Beamforming Function	☒ With beamforming	☐ Without beamforming
	The product has beamforming function for 802.11n/ac in 5GHz.	
Operate Condition	☒ Indoor	☐ Outdoor

Antenna and Band width

Antenna	Three (TX)		
Band width Mode	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X
IEEE 802.11n	V	V	X
IEEE 802.11ac	V	V	V

IEEE 11n/ac Spec.

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

3.2. Accessories

Power	Brand	Model No.	Rating
Adapter	HON-KWANG	HK-AY-120A200-US	INPUT: 100-240Vac, 50/60Hz, 0.8A OUTPUT: 12Vdc, 2.0A
Other			
Cradle*1			

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)		
					2.4GHz band	5GHz band 1	5GHz band 4
1	Airgain	M2410DCR-G200U	PIFA Antenna	I-PEX	4.3	-	-
	Airgain	M2410DCR-G130U	PIFA Antenna	I-PEX	-	3.6	4.4
2	Airgain	M2410DCR-G65U	PIFA Antenna	I-PEX	4.4	-	-
	Airgain	M2410DCR-G65U	PIFA Antenna	I-PEX	-	3.0	5.2
3	Airgain	M2410DCR-G130U	PIFA Antenna	I-PEX	4.1	-	-
	Airgain	M2410DCR-G200U	PIFA Antenna	I-PEX	-	3.6	5.0

Note: The EUT has three antennas.

2.4GHz WLAN function (3TX/3RX):

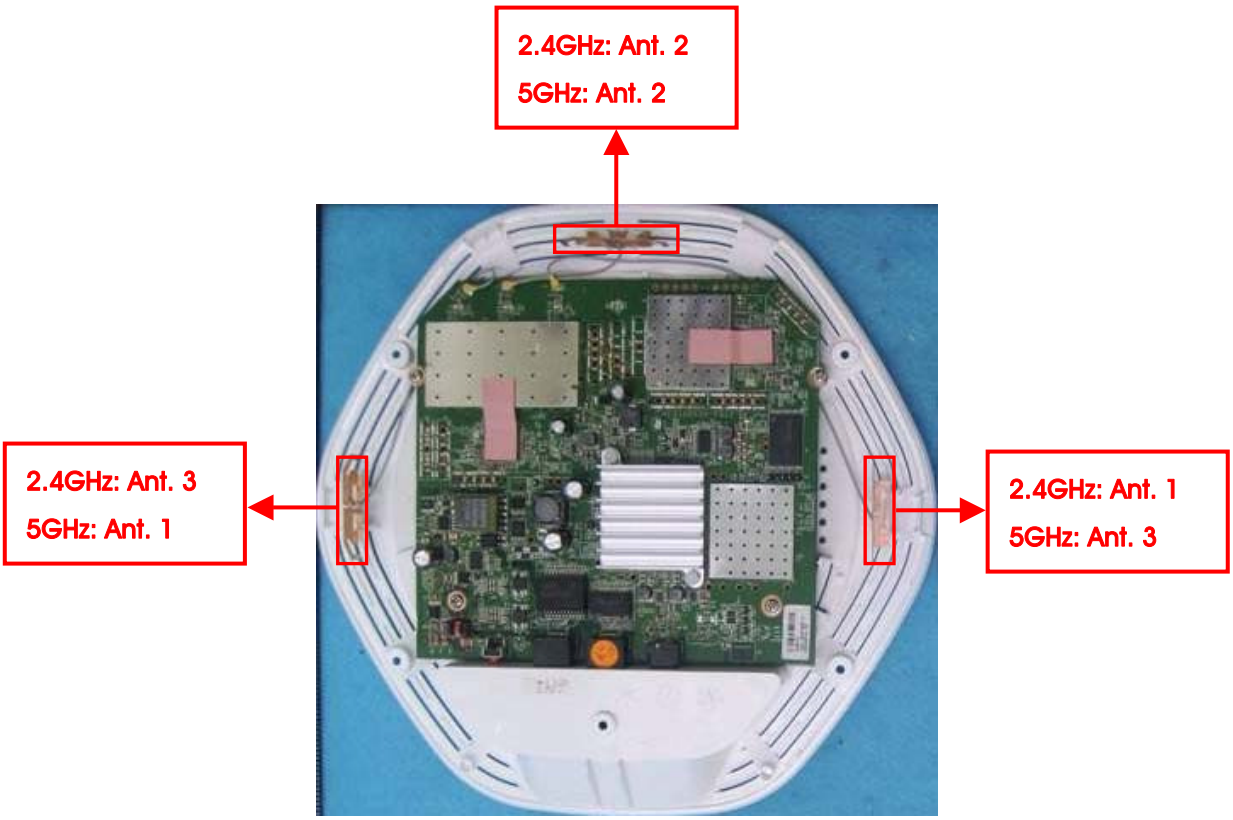
Ant. 1, Ant. 2 and Ant. 3 can be used as transmitting/receiving antennas.

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

5GHz WLAN function (3TX/3RX):

Ant. 1, Ant. 2 and Ant. 3 can be used as transmitting/receiving antennas.

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



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 38, 46, 151, 159.

For 80MHz bandwidth systems, use Channel 42, 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz	-	-
5725~5850 MHz Band 4	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode		Data Rate	Channel	Ant.
AC Power Conducted Emission	Normal Link		-	-	-
Max. Conducted Output Power	For non-beamforming function:				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3
	For beamforming function:				
	11ac VHT20	Band 1&4	MCS2/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS2/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS2/Nss1	42/155	1+2+3
Power Spectral Density	For non-beamforming function:				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3
	For beamforming function:				
	11ac VHT20	Band 1&4	MCS2/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS2/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS2/Nss1	42/155	1+2+3
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	For non-beamforming function:				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3
	For beamforming function:				
	11ac VHT20	Band 1&4	MCS2/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS2/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS2/Nss1	42/155	1+2+3

6dB Spectrum Bandwidth Measurement	For non-beamforming function:				
	11a/BPSK	Band 4	6Mbps	149/157/165	1+2+3
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	1+2+3
	11ac VHT40	Band 4	MCS0/Nss1	151/159	1+2+3
	11ac VHT80	Band 4	MCS0/Nss1	155	1+2+3
	For beamforming function:				
	11ac VHT20	Band 4	MCS2/Nss1	149/157/165	1+2+3
	11ac VHT40	Band 4	MCS2/Nss1	151/159	1+2+3
	11ac VHT80	Band 4	MCS2/Nss1	155	1+2+3
Radiated Emission Below 1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	For non-beamforming function:				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3
	For beamforming function:				
	11ac VHT20	Band 1&4	MCS2/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS2/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS2/Nss1	42/155	1+2+3
Band Edge Emission	For non-beamforming function:				
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2+3
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS0/Nss1	42/155	1+2+3
	For beamforming function:				
	11ac VHT20	Band 1&4	MCS2/Nss1	36/40/48/149/157/165	1+2+3
	11ac VHT40	Band 1&4	MCS2/Nss1	38/46/151/159	1+2+3
	11ac VHT80	Band 1&4	MCS2/Nss1	42/155	1+2+3
Frequency Stability	20 MHz	Band 1&4	-	40/157	1
	40 MHz	Band 1&4	-	38/151	1
	80 MHz	Band 1&4	-	42/155	1

Note: 1. VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

2. There are two functions of EUT, one is beamforming function, and the other is non-beamforming function for 802.11n/ac in 5GHz. All test results were recorded in the report.

3. The PoE is for measurement only, would not be marketed and its information as below:

Support Unit	Brand	Model	FCC ID
PoE	LINKSYS	P1021A	DoC

The following test modes were performed for all tests:

AC Power Conducted Emission	
Test Mode	Description
1	EUT + Adapter
2	EUT + PoE
Mode 2 generated the worst test result, so it was recorded in this report.	

Radiated Emission Below 1GHz	
There are two modes of EUT, one is EUT in Z axis with cradle, and the other is EUT in Y axis without cradle. EUT in Y axis without cradle generated the worst test result for original test report, thus measurement will follow this same test configuration.	
Test Mode	Description
1	EUT in Y axis without cradle + Adapter
2	EUT in Y axis without cradle + PoE
Mode 1 generated the worst test result, so it was recorded in this report.	

Radiated Emission Above 1GHz and Band Edge Emission	
There are two modes of EUT, one is EUT in Z axis with cradle, and the other is EUT in Y axis without cradle. EUT in Y axis without cradle generated the worst test result for original test report, thus measurement will follow this same test configuration.	
Test Mode	Description
1	EUT in Y axis without cradle

Co-location MPE
The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA4N1172-39) test is added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	Site Category	Location	FCC Designation No.	IC File No.	VCCI Reg. No
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	TW0006	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.7. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR431102

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

Modifications	Performance Checking
1. Changing applicant address and manufacturer address to "121 Theory Drive, Irvine, CA 92617, USA" from "131 Theory Drive Irvine California 92617 United States". 2. Changing brand name to "LINKSYS" from "Linksys".	It does not need to test.
3. Adding a new adapter (Model No.: HK-AY-120A200-US). 4. Adding measurement of PoE (Model No.: P1021A), and it is would not be marketed.	1. AC Power Conducted Emission. 2. Radiated Emissions Below 1GHz.
5. Updating test rule of 5GHz band 1 to "New Rules" from "Old Rules".	1. 26dB Spectrum Bandwidth and 99% Occupied Bandwidth. 2. Maximum Conducted Output Power. 3. Power Spectral Density. 4. Radiated Emissions Above 1GHz. 5. Band Edge Emissions. 6. Frequency Stability.
6. Updating test rule of 5GHz band 4 to "15.407 (b)(4)(i) of New Rules (ET Docket No. 13–49; FCC 16–24)" from "Old Rules".	1. 26dB Spectrum Bandwidth and 99% Occupied Bandwidth. 2. 6dB Spectrum Bandwidth. 3. Maximum Conducted Output Power. 4. Power Spectral Density. 5. Radiated Emissions Above 1GHz. 6. Band Edge Emissions. 7. Frequency Stability.

3.8. Table for Supporting Units

For Test Site No: 03CH01-CB (below 1GHz)

Support Unit	Brand	Model	FCC ID
NB*4	DELL	E4300	DoC

For Test Site No: 03CH01-CB (above 1GHz)

For non-beamforming function:

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

For beamforming function:

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
WLAN module (Rx Device)	Boardcom	BCM943162ZP	QDS-BRCM1075

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB*4	DELL	E6430	DoC
PoE	LINKSYS	P1021A	DoC

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

3.9. Table for Parameters of Test Software Setting

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

Test Function	Non-beamforming function					
Test Software Version	Mtool_2.0.0.6					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	70	61	61	96	80	80
802.11ac MCS0/Nss1 VHT20	78	62	66	96	77	78
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	71		72		87	87
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5210 MHz				5775 MHz	
	68				85	

Test Function	Beamforming function					
Test Software Version	Mtool_2.0.0.6					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11ac MCS2/Nss1 VHT20	77	68	66	82	80	80
Mode	NCB: 40MHz					
802.11ac MCS2/Nss1 VHT40	5190 MHz		5230 MHz		5755 MHz	5795 MHz
	77		80		82	82
Mode	NCB: 80MHz					
802.11ac MCS2/Nss1 VHT80	5210 MHz				5775 MHz	
	74				85	

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 Telnet、iperf.
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

For non-beamforming function:

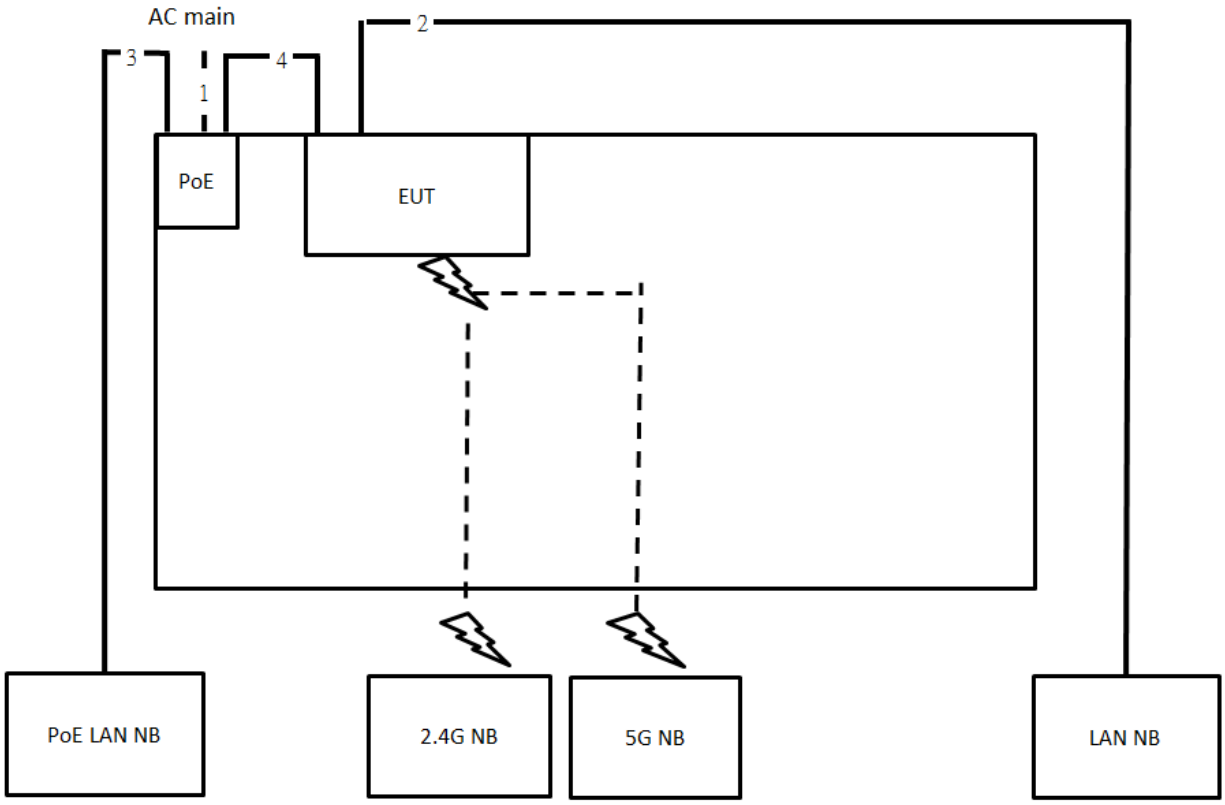
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.058	2.094	98.27	0.08	0.01
802.11ac MCS0/Nss1 VHT20	1.920	1.960	97.96	0.09	0.52
802.11ac MCS0/Nss1 VHT40	0.911	0.989	92.11	0.36	1.10
802.11ac MCS0/Nss1 VHT80	0.449	0.488	92.01	0.36	2.23

For beamforming function:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11ac MCS2/Nss1 VHT20	4.828	5.134	94.04	0.27	0.21
802.11ac MCS2/Nss1 VHT40	5.400	5.660	95.41	0.20	0.19
802.11ac MCS2/Nss1 VHT80	5.360	5.460	98.17	0.08	0.01

3.12. Test Configurations

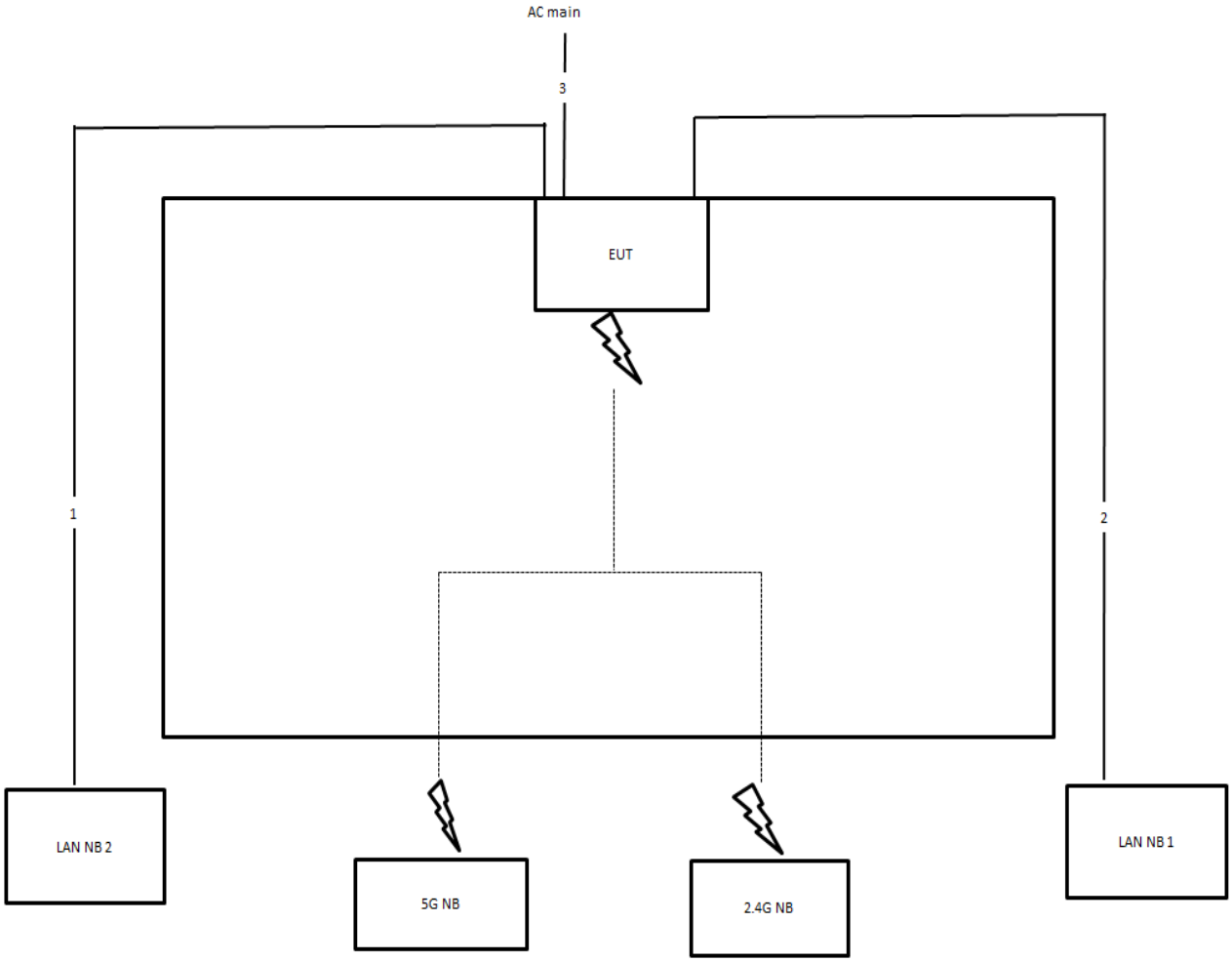
3.12.1. AC Power Line Conduction Emissions Test Configuration



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

3.12.2. Radiation Emissions Test Configuration

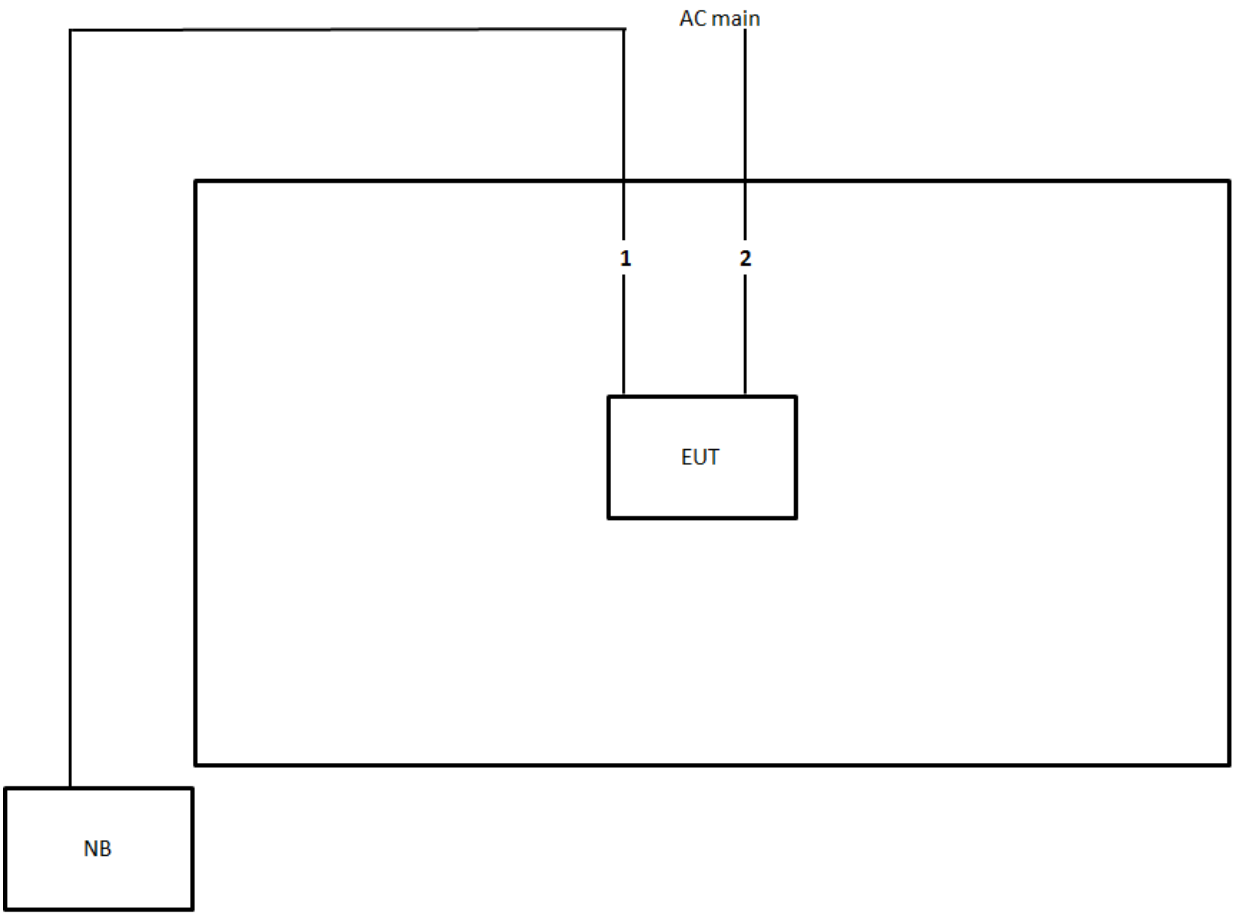
Test Configuration: 30MHz ~1GHz



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

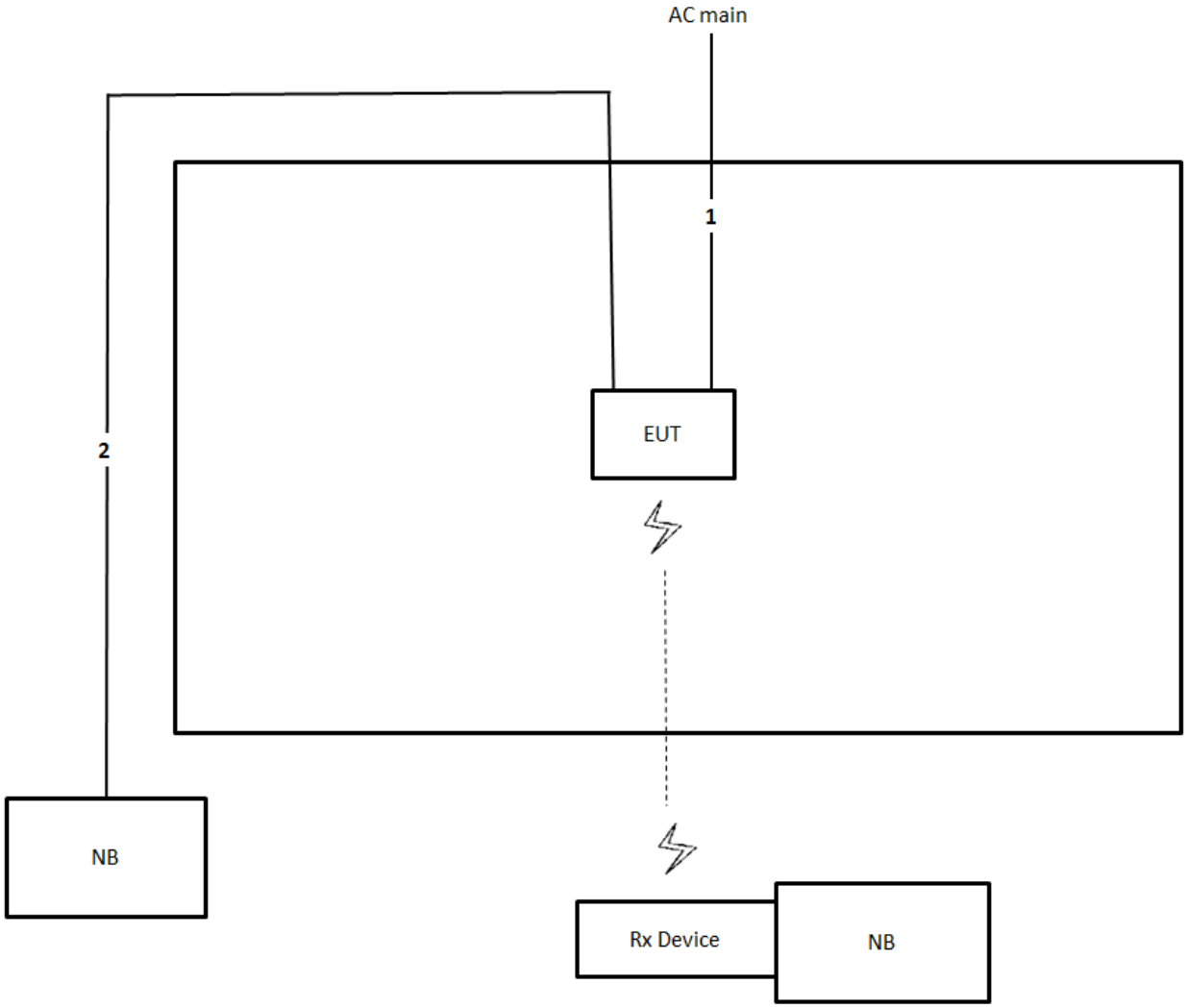
Test Configuration: above 1GHz

For non-beamforming function:



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

For beamforming function:



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

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

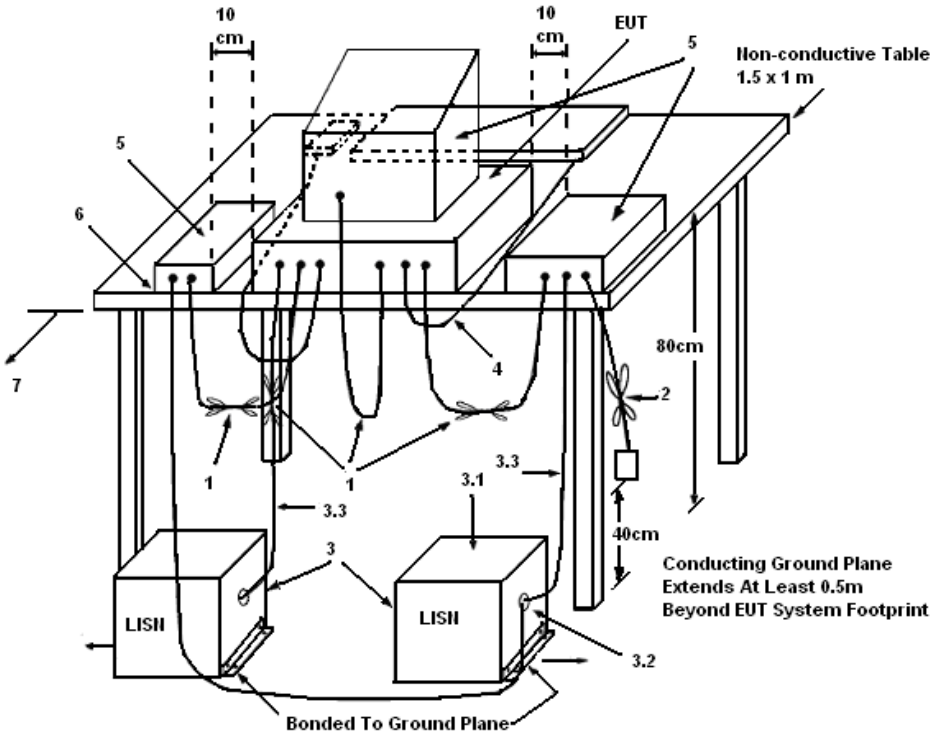
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

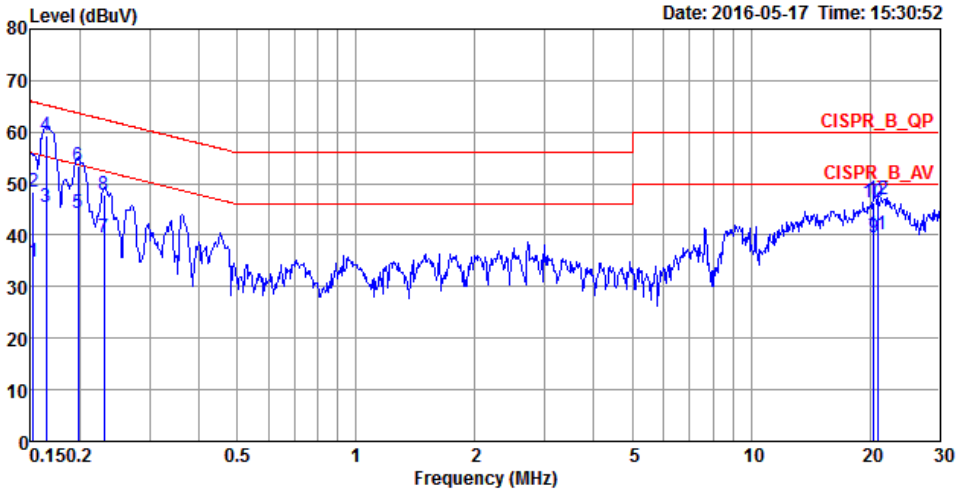
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

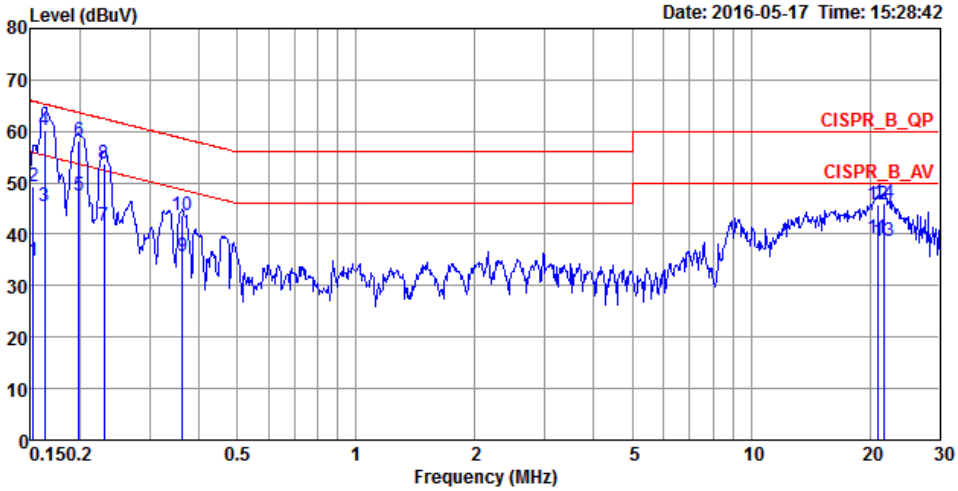
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23°C	Humidity	60%
Test Engineer	Deven Huang	Phase	Line
Configuration	Normal Link	Test Mode	Mode 2



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1524	34.89	-20.98	55.87	24.85	10.02	0.02	LINE	Average
2	0.1524	48.44	-17.43	65.87	38.40	10.02	0.02	LINE	QP
3	0.1641	45.46	-9.79	55.25	35.42	10.02	0.02	LINE	Average
4	0.1641	59.37	-5.88	65.25	49.33	10.02	0.02	LINE	QP
5	0.1976	44.27	-9.44	53.71	34.33	9.92	0.02	LINE	Average
6	0.1976	53.36	-10.35	63.71	43.42	9.92	0.02	LINE	QP
7	0.2304	39.70	-12.74	52.44	29.75	9.92	0.03	LINE	Average
8	0.2304	47.86	-14.58	62.44	37.91	9.92	0.03	LINE	QP
9	20.4855	39.67	-10.33	50.00	29.09	10.32	0.26	LINE	Average
10	20.4855	46.27	-13.73	60.00	35.69	10.32	0.26	LINE	QP
11	20.9243	40.20	-9.80	50.00	29.61	10.33	0.26	LINE	Average
12	20.9243	46.91	-13.09	60.00	36.32	10.33	0.26	LINE	QP

Temperature	23°C	Humidity	60%
Test Engineer	Deven Huang	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 2



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1524	34.98	-20.89	55.87	24.94	10.02	0.02	NEUTRAL	Average
2	0.1524	49.43	-16.44	65.87	39.39	10.02	0.02	NEUTRAL	QP
3	0.1624	45.37	-9.97	55.34	35.33	10.02	0.02	NEUTRAL	Average
4	0.1624	60.21	-5.13	65.34	50.17	10.02	0.02	NEUTRAL	QP
5	0.1986	47.41	-6.26	53.67	37.47	9.92	0.02	NEUTRAL	Average
6	0.1986	58.25	-5.42	63.67	48.31	9.92	0.02	NEUTRAL	QP
7	0.2304	41.51	-10.93	52.44	31.56	9.92	0.03	NEUTRAL	Average
8	0.2304	53.81	-8.63	62.44	43.86	9.92	0.03	NEUTRAL	QP
9	0.3634	35.63	-13.02	48.65	25.67	9.92	0.04	NEUTRAL	Average
10	0.3634	43.83	-14.82	58.65	33.87	9.92	0.04	NEUTRAL	QP
11	20.9243	39.12	-10.88	50.00	28.53	10.33	0.26	NEUTRAL	Average
12	20.9243	45.79	-14.21	60.00	35.20	10.33	0.26	NEUTRAL	QP
13	21.7149	38.72	-11.28	50.00	28.11	10.35	0.26	NEUTRAL	Average
14	21.7149	46.09	-13.91	60.00	35.48	10.35	0.26	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	≥ 3 x 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 4.6.4.

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	20°C	Humidity	61%
Test Engineer	Akina Chiu	Test Function	Non-beamforming function

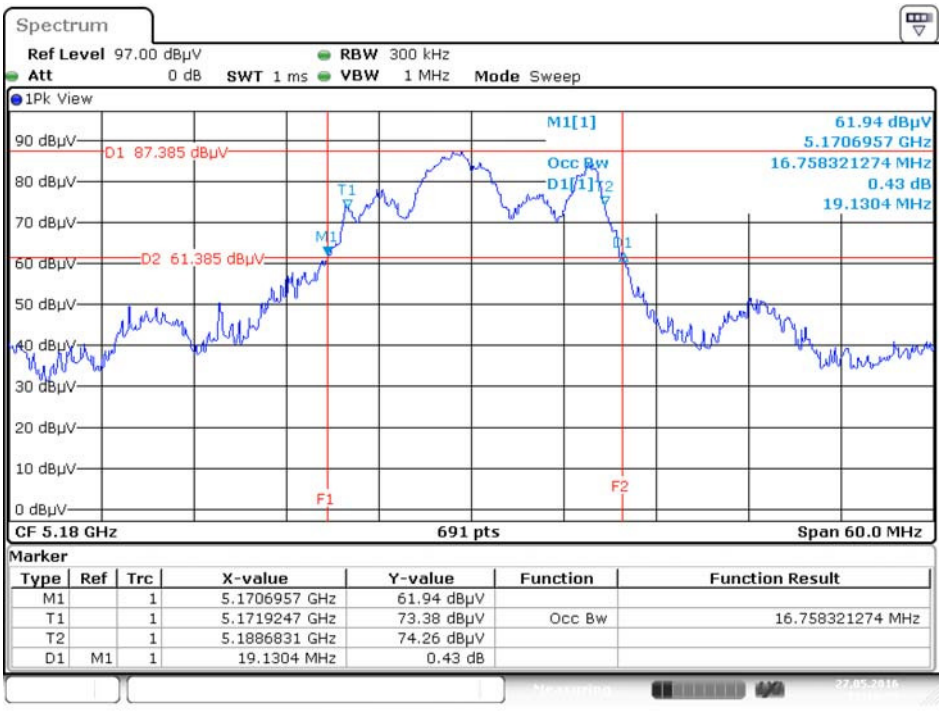
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	19.13	16.76
	5200 MHz	19.13	16.67
	5240 MHz	19.22	16.76
	5745 MHz	41.04	24.57
	5785 MHz	21.30	17.11
	5825 MHz	21.65	17.02
802.11ac MCS0/Nss1 VHT20	5180 MHz	19.91	17.45
	5200 MHz	19.83	17.63
	5240 MHz	20.00	17.45
	5745 MHz	41.48	29.52
	5785 MHz	20.87	17.54
	5825 MHz	19.83	17.54
802.11ac MCS0/Nss1 VHT40	5190 MHz	39.57	36.32
	5230 MHz	39.71	36.32
	5755 MHz	76.67	37.77
	5795 MHz	74.78	37.48
802.11ac MCS0/Nss1 VHT80	5210 MHz	81.45	75.83
	5775 MHz	115.07	75.54

Temperature	20℃	Humidity	61%
Test Engineer	Akina Chiu	Test Function	Beamforming function

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS2/Nss1 VHT20	5180 MHz	20.17	17.89
	5200 MHz	20.17	17.97
	5240 MHz	20.17	17.80
	5745 MHz	20.61	17.97
	5785 MHz	20.35	17.89
	5825 MHz	20.26	17.89
802.11ac MCS2/Nss1 VHT40	5190 MHz	40.00	36.61
	5230 MHz	53.19	36.76
	5755 MHz	53.91	37.19
	5795 MHz	54.06	37.19
802.11ac MCS2/Nss1 VHT80	5210 MHz	81.16	76.12
	5775 MHz	106.67	76.12

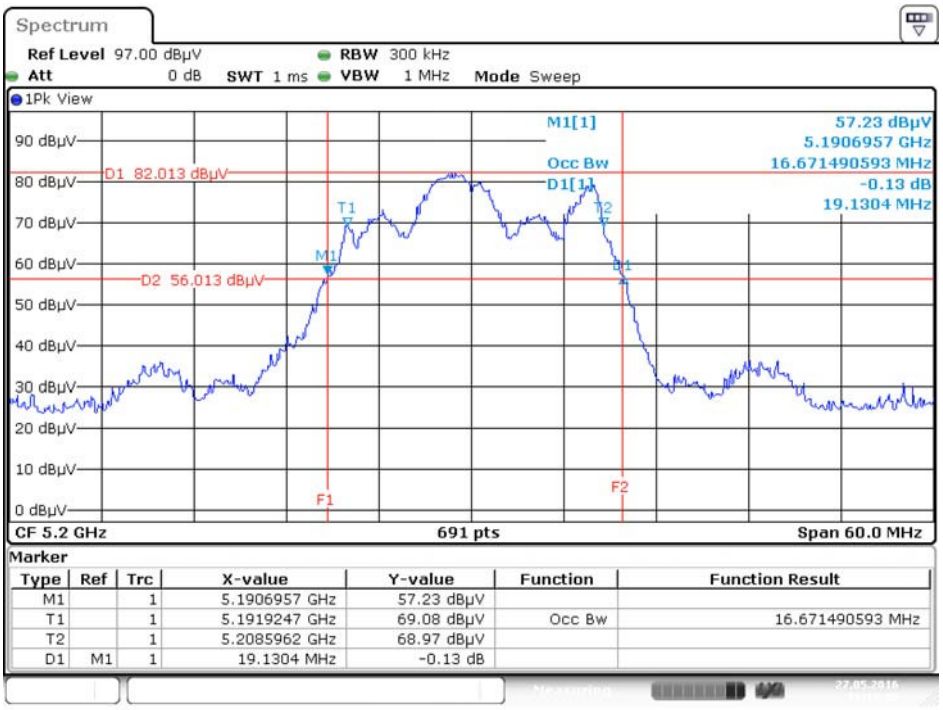
For non-beamforming function:

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



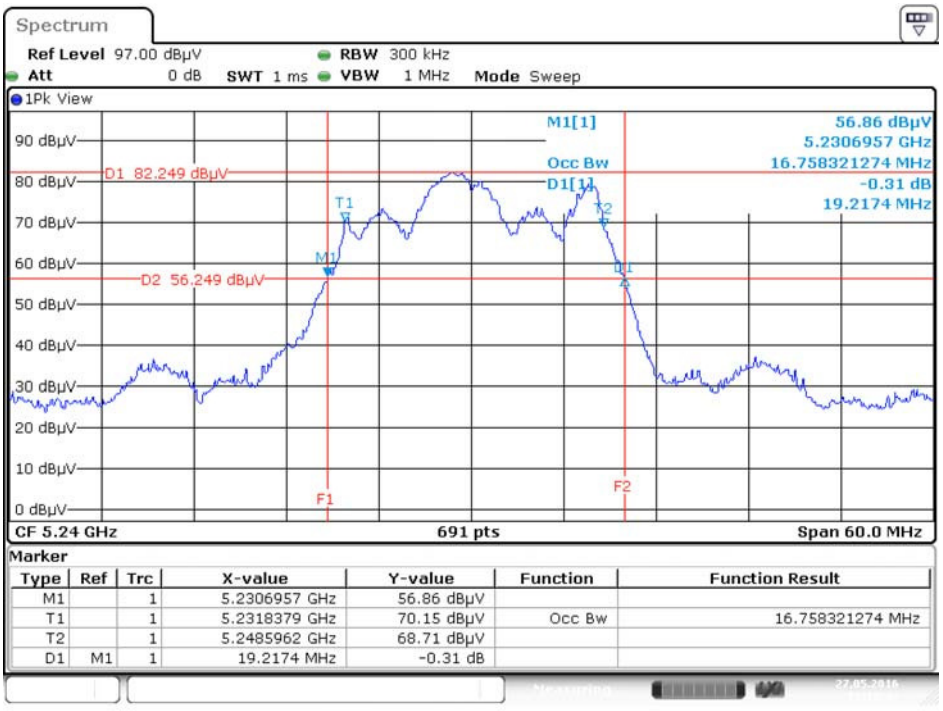
Date: 27.MAY.2016 11:14:54

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



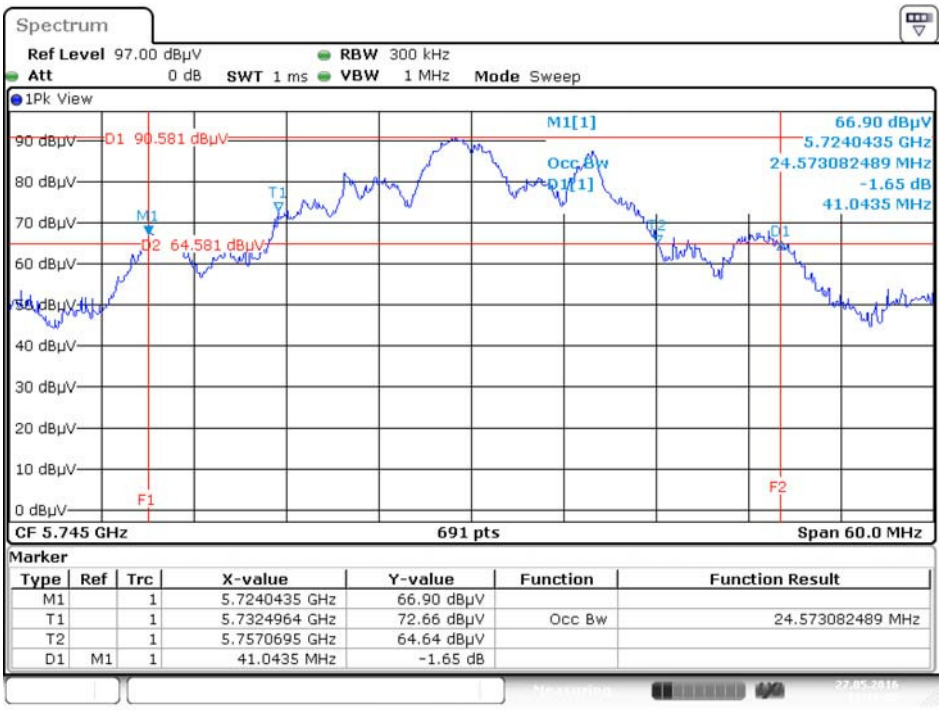
Date: 27.MAY.2016 11:15:19

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



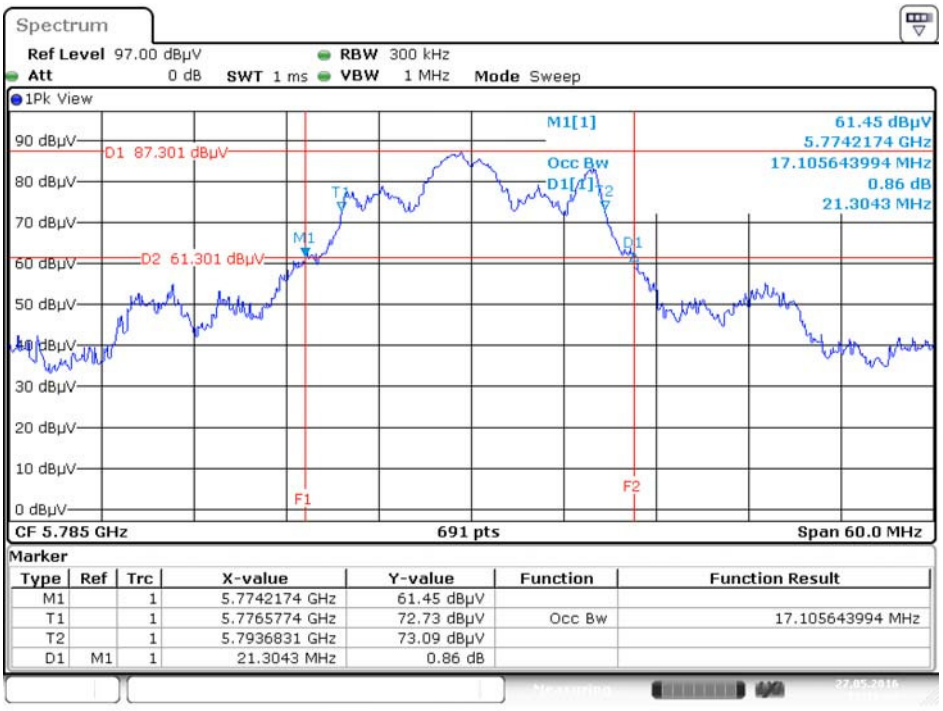
Date: 27.MAY.2016 11:15:43

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



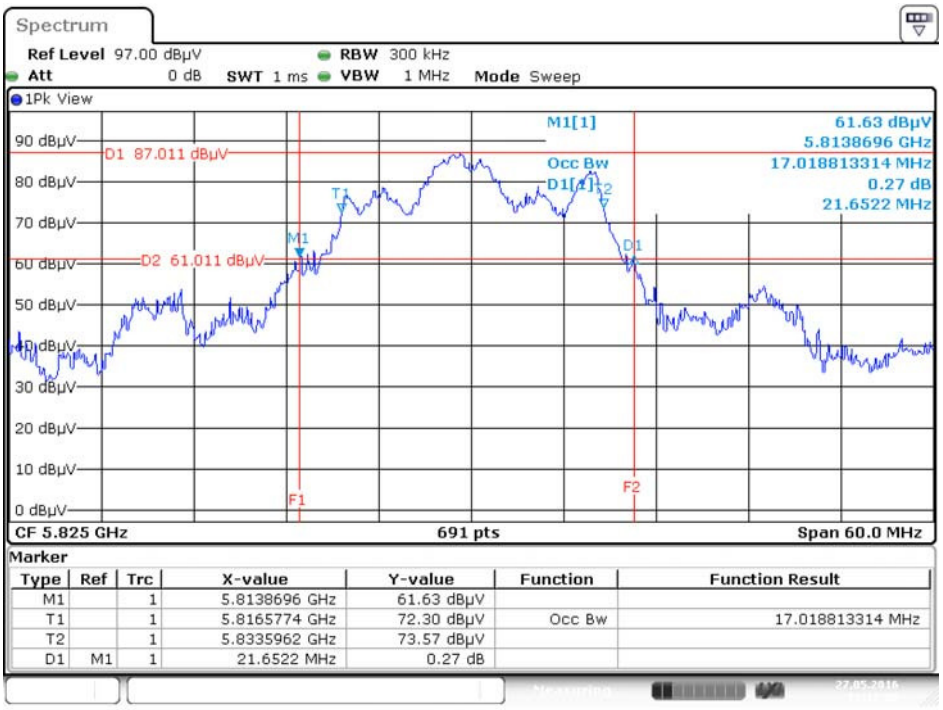
Date: 27.MAY.2016 11:16:09

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



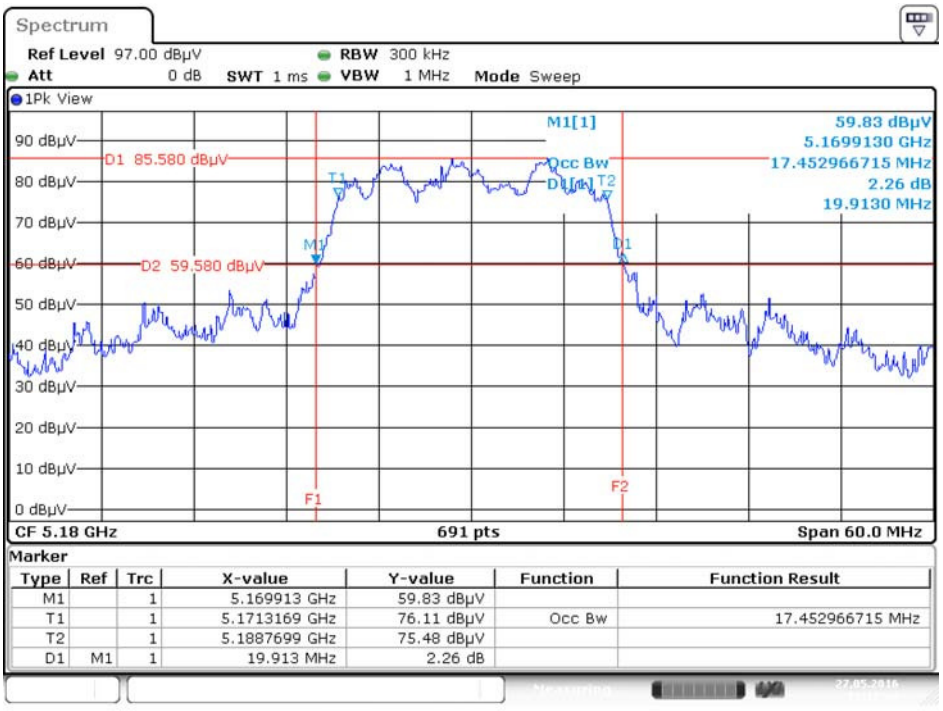
Date: 27.MAY.2016 11:16:34

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



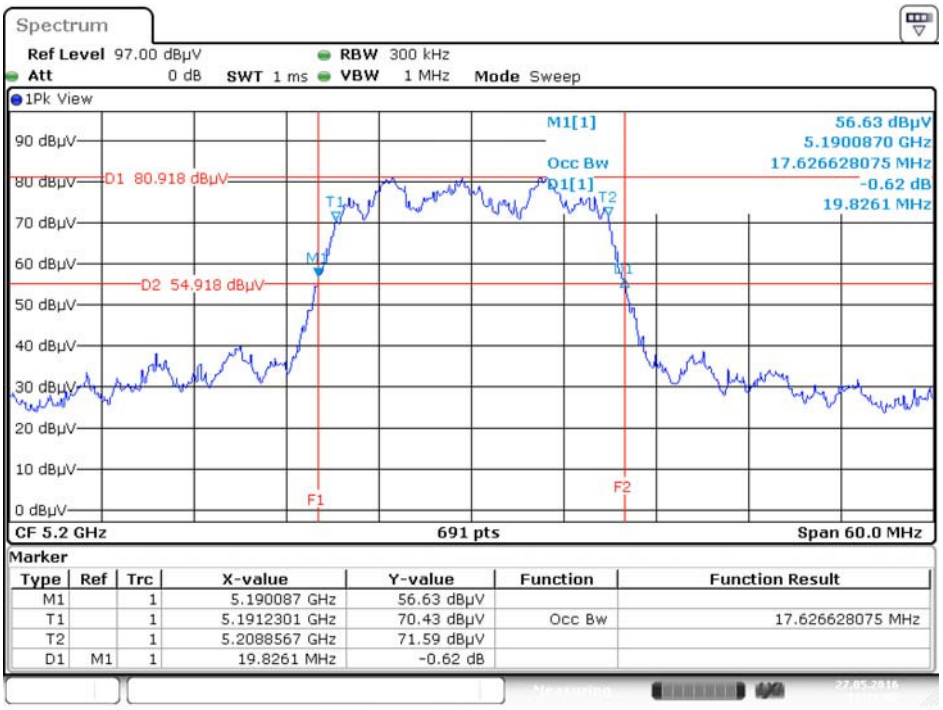
Date: 27.MAY.2016 11:17:00

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



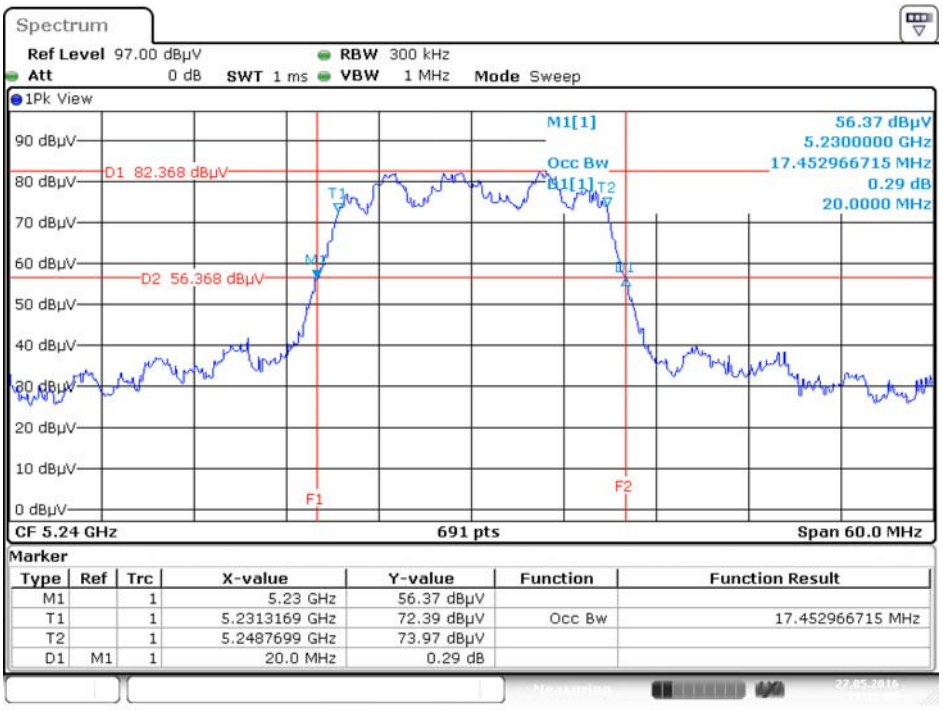
Date: 27.MAY.2016 11:17:34

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



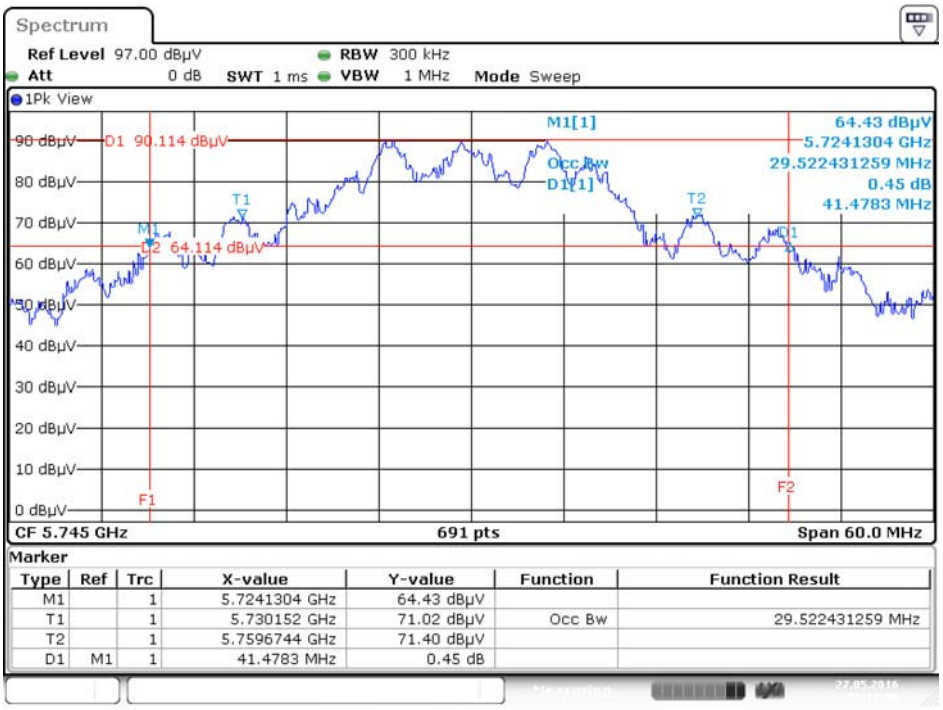
Date: 27.MAY.2016 11:18:02

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



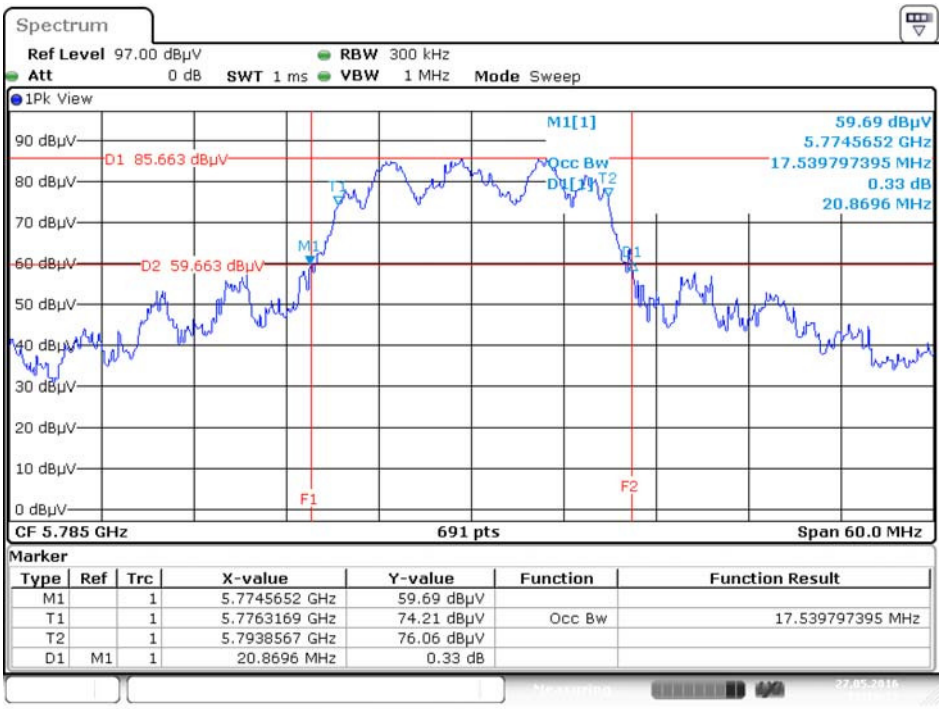
Date: 27.MAY.2016 11:18:29

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



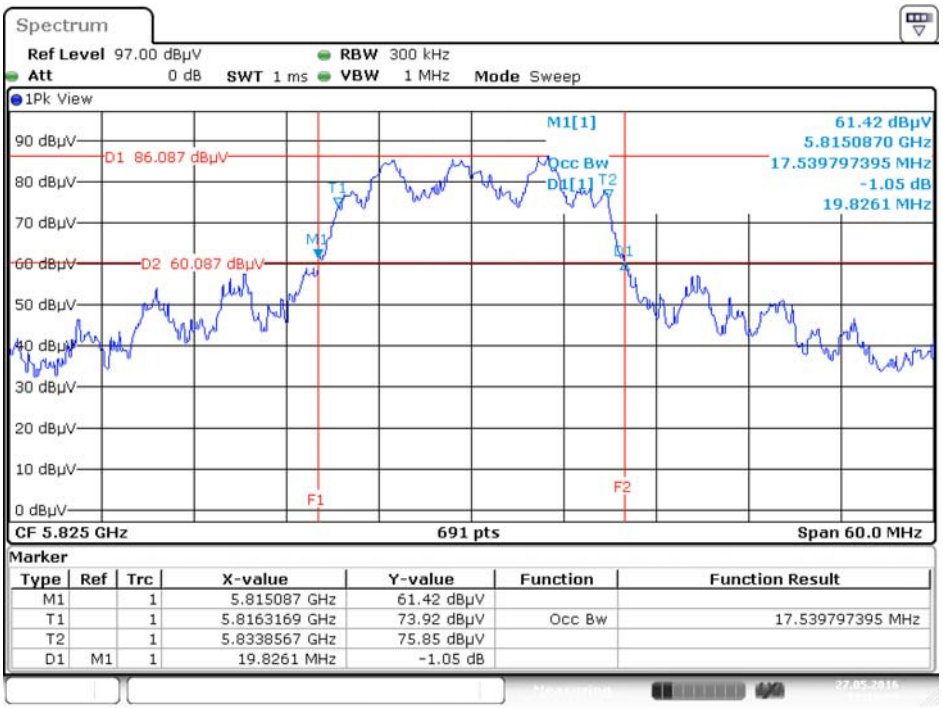
Date: 27.MAY.2016 11:18:57

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



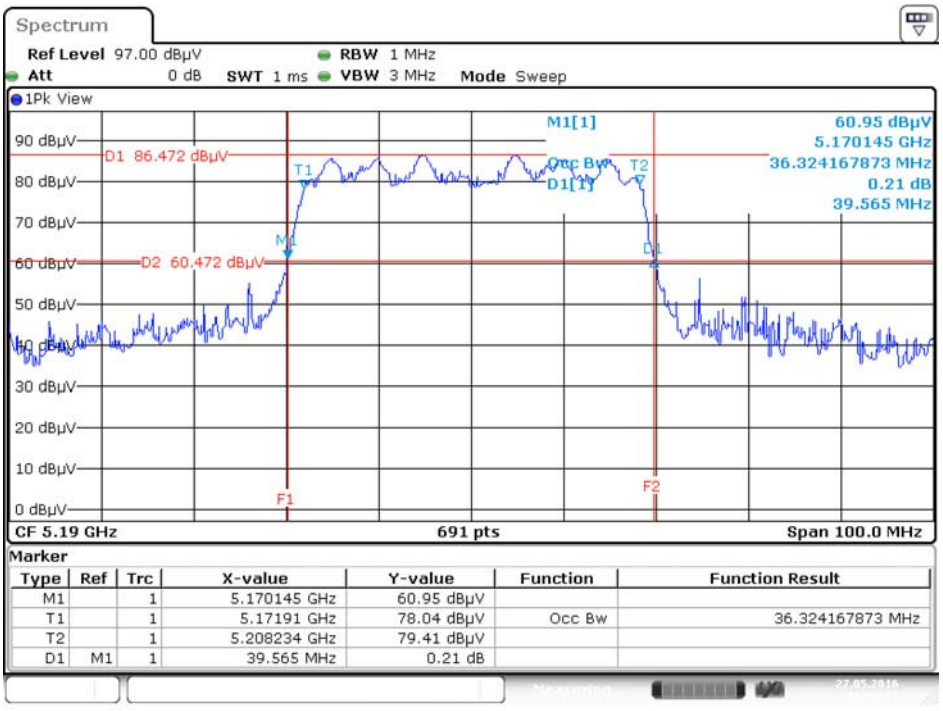
Date: 27.MAY.2016 11:19:27

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



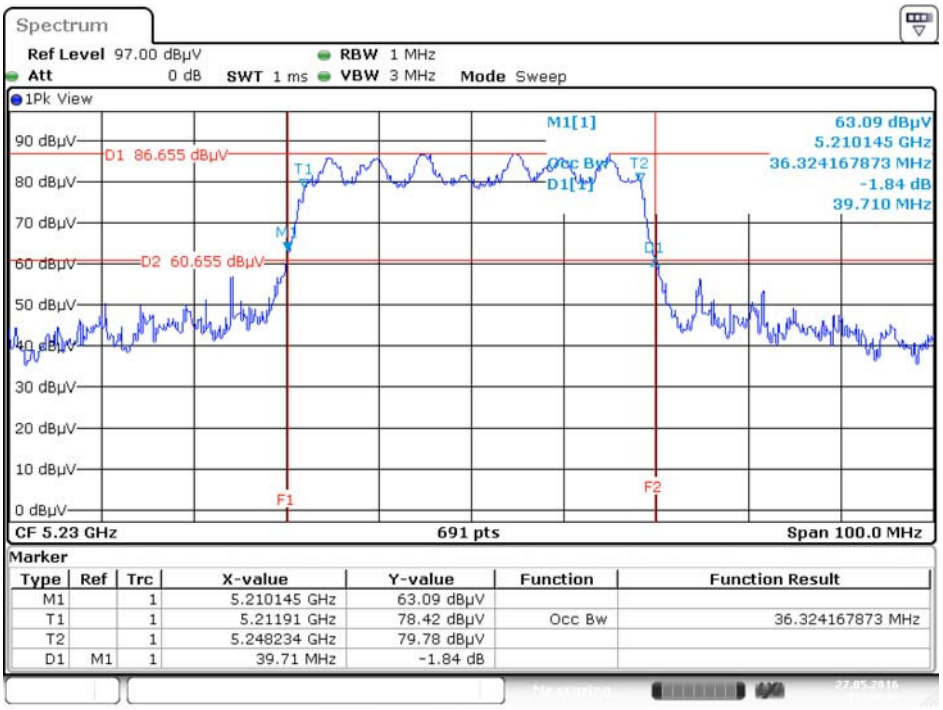
Date: 27.MAY.2016 11:19:53

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



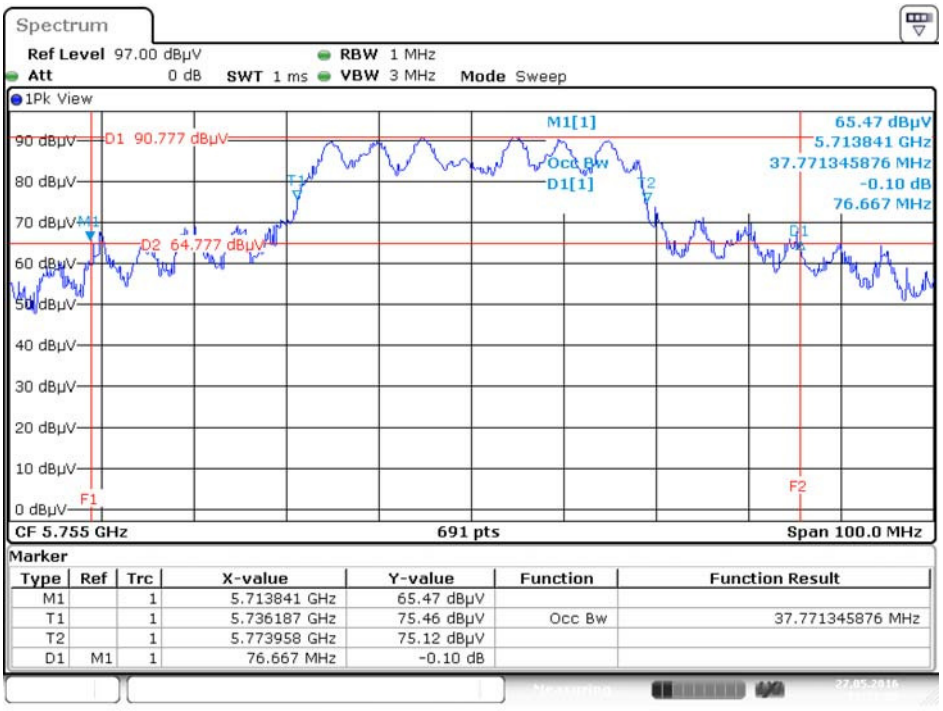
Date: 27.MAY.2016 11:20:21

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



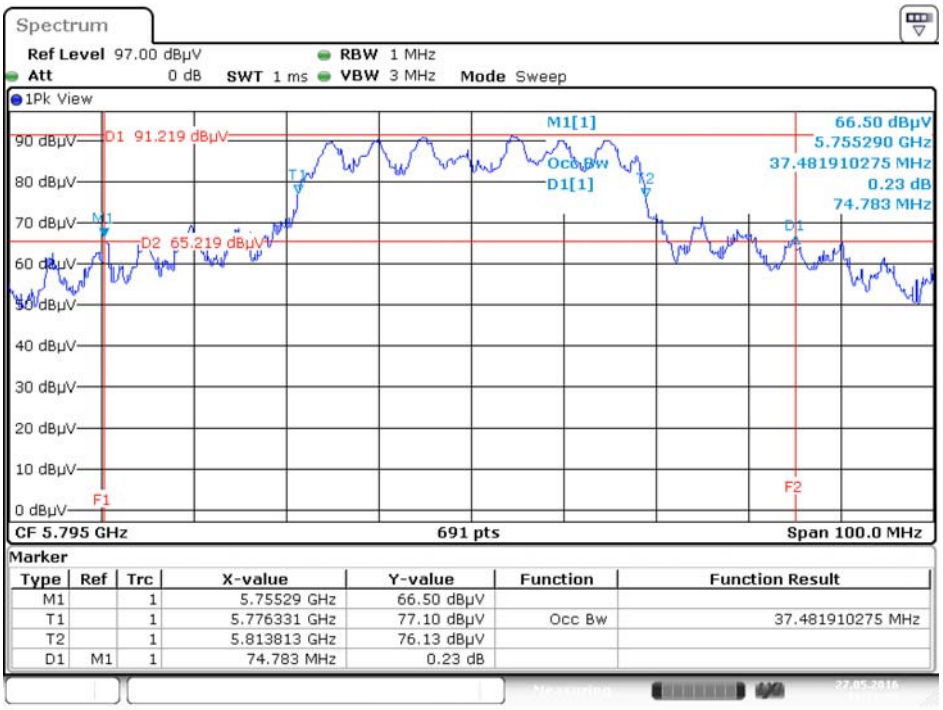
Date: 27.MAY.2016 11:20:42

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



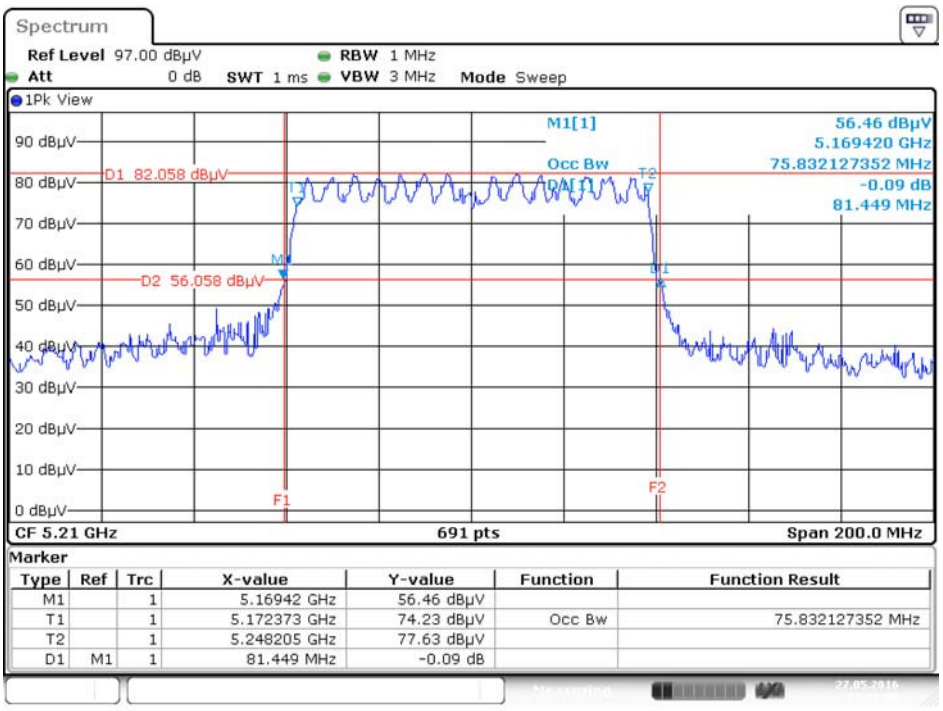
Date: 27.MAY.2016 11:21:08

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



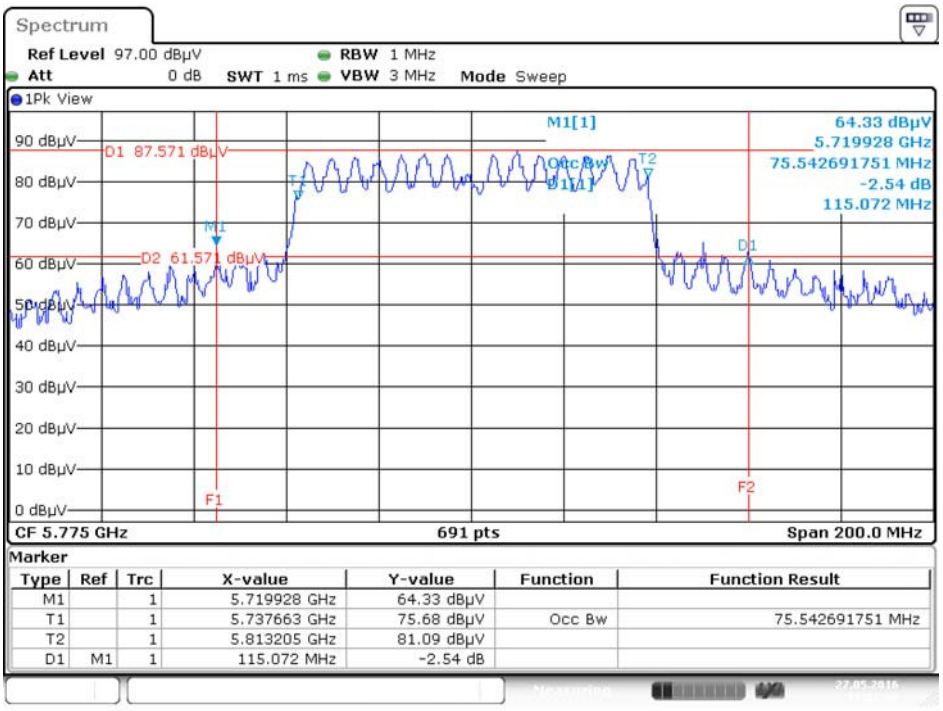
Date: 27.MAY.2016 11:21:35

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



Date: 27.MAY.2016 11:22:20

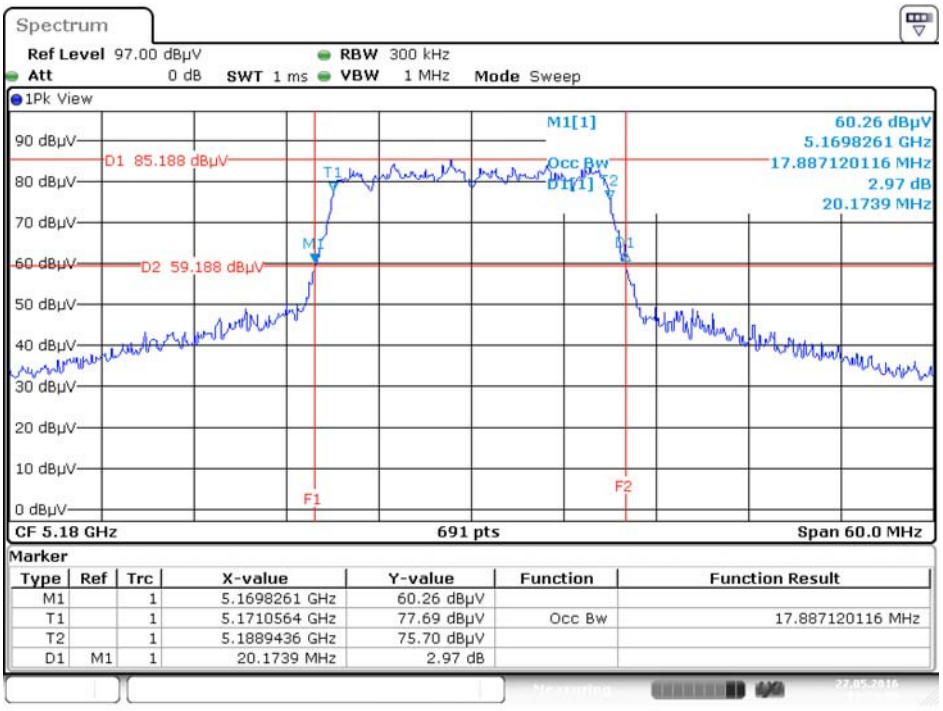
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5775 MHz



Date: 27.MAY.2016 11:22:47

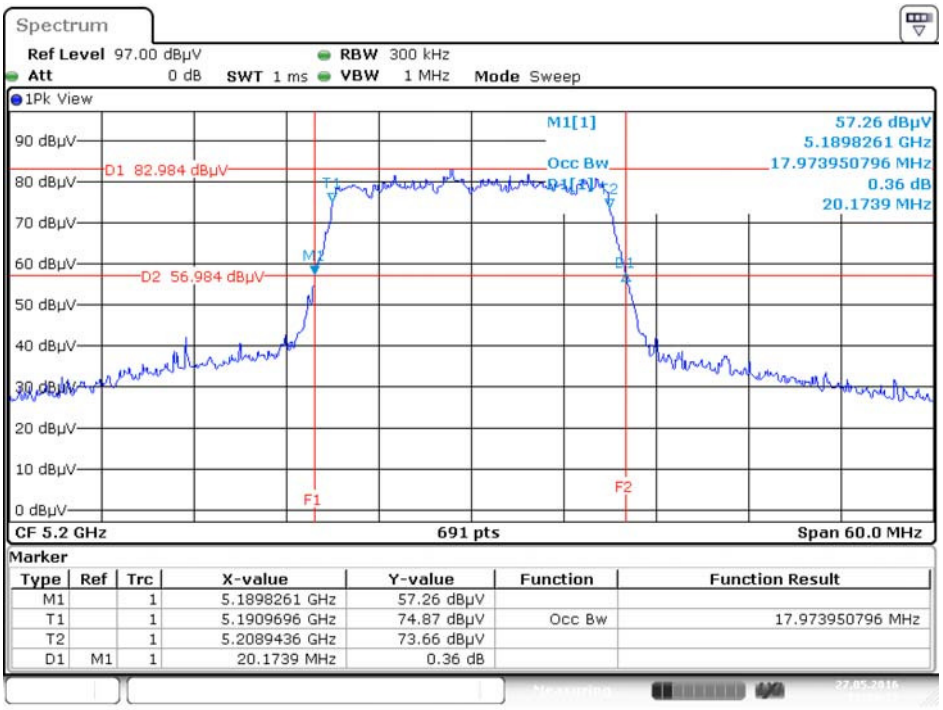
For beamforming function:

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5180 MHz



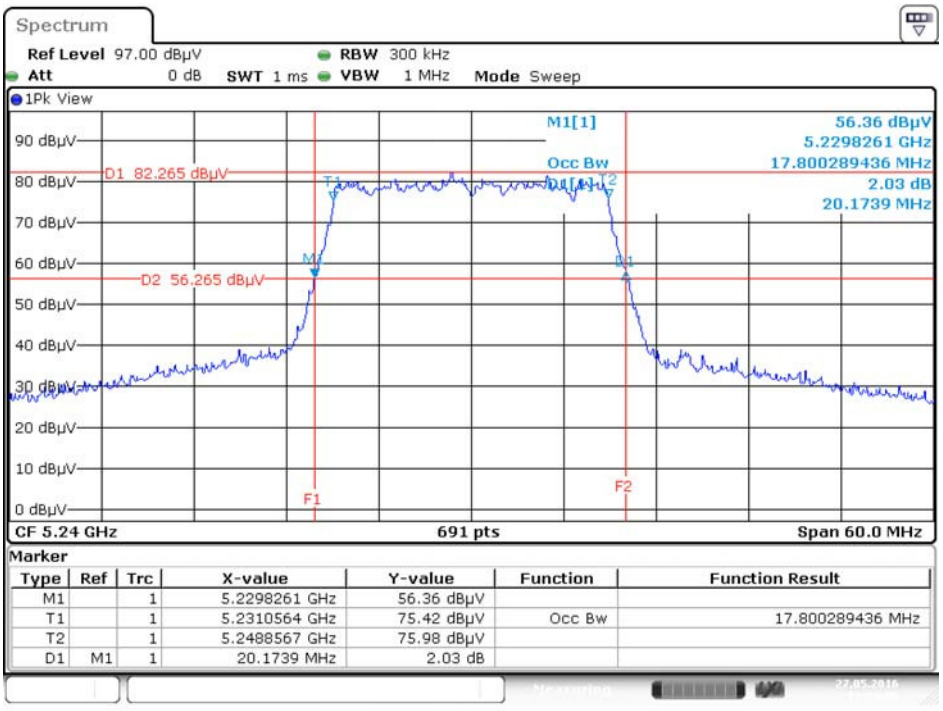
Date: 27.MAY.2016 11:23:59

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5200 MHz



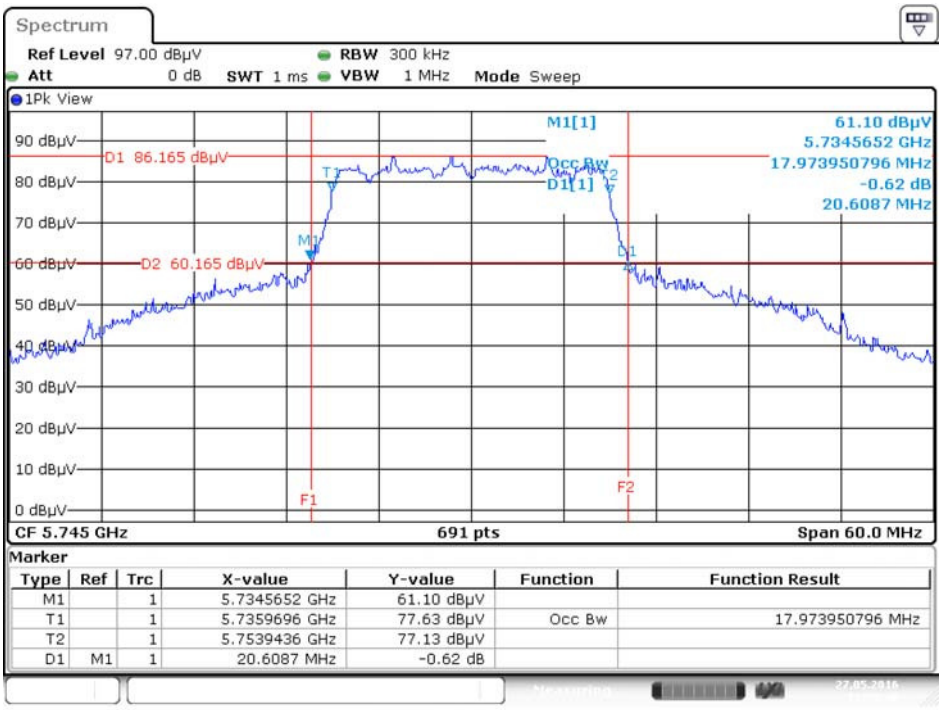
Date: 27.MAY.2016 11:24:28

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5240 MHz



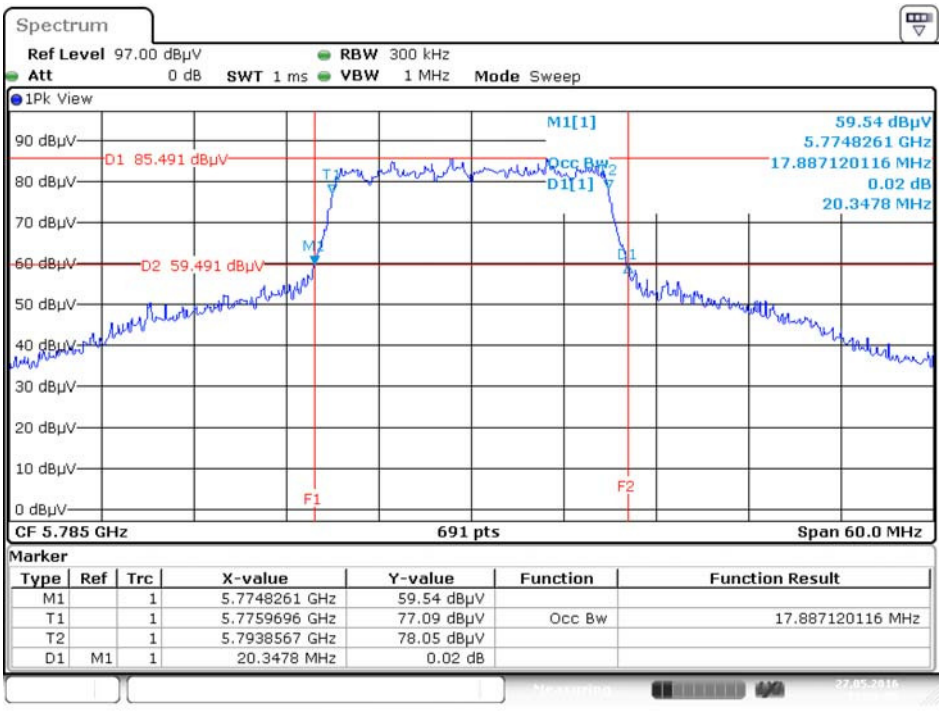
Date: 27.MAY.2016 11:24:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5745 MHz



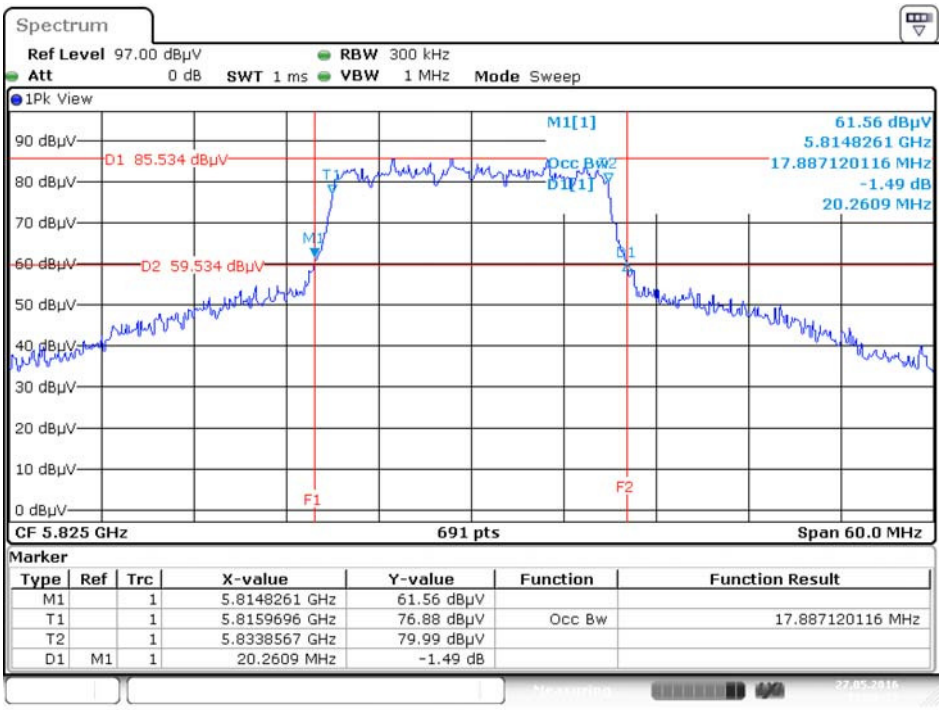
Date: 27.MAY.2016 11:25:40

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5785 MHz



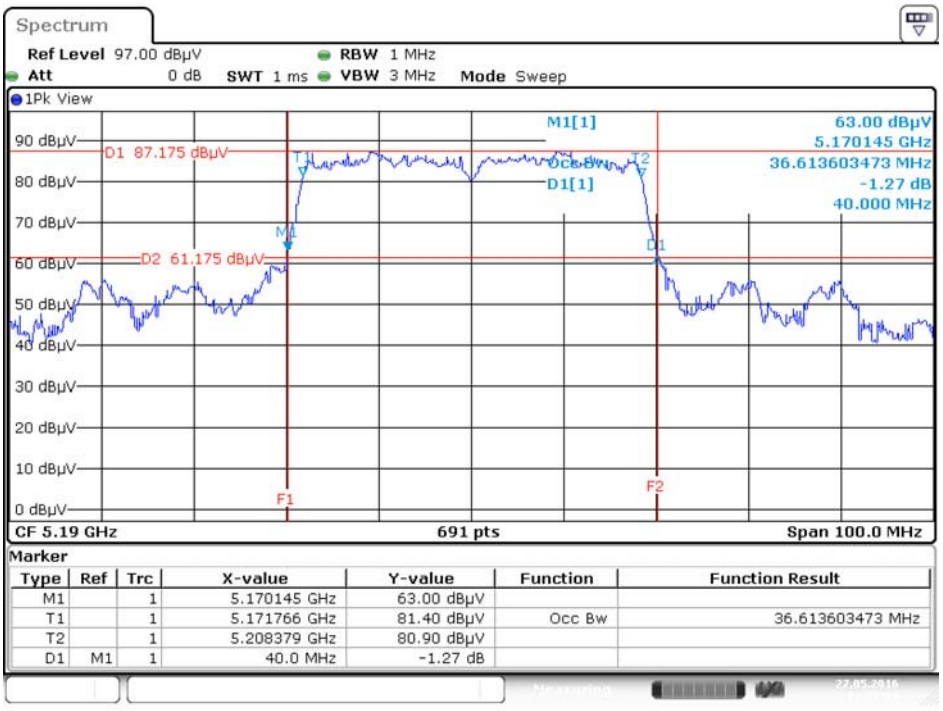
Date: 27.MAY.2016 11:26:05

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5825 MHz



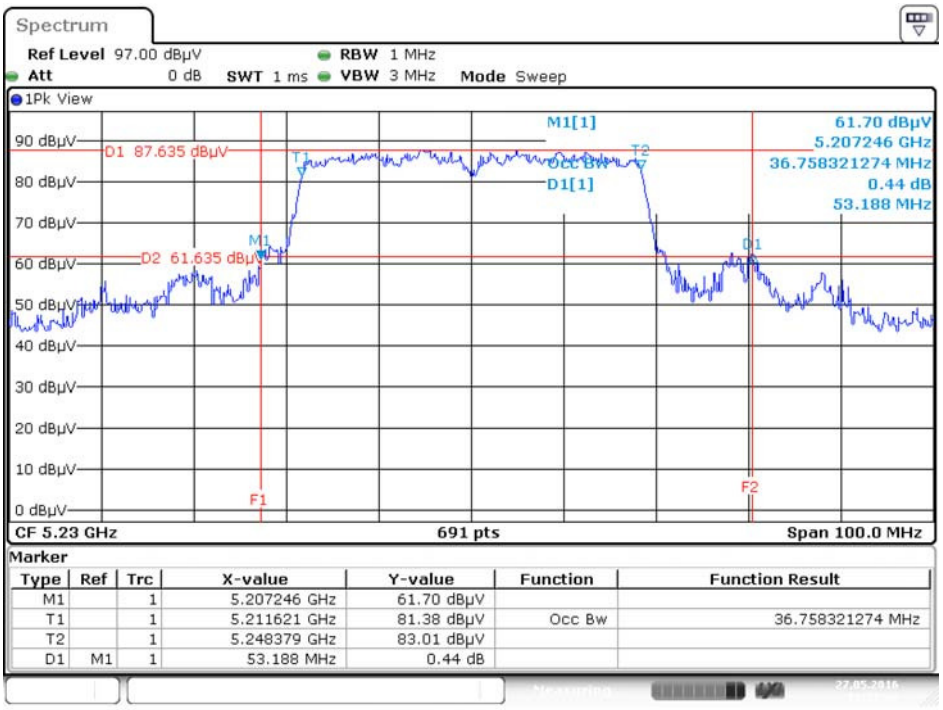
Date: 27.MAY.2016 11:26:27

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5190 MHz



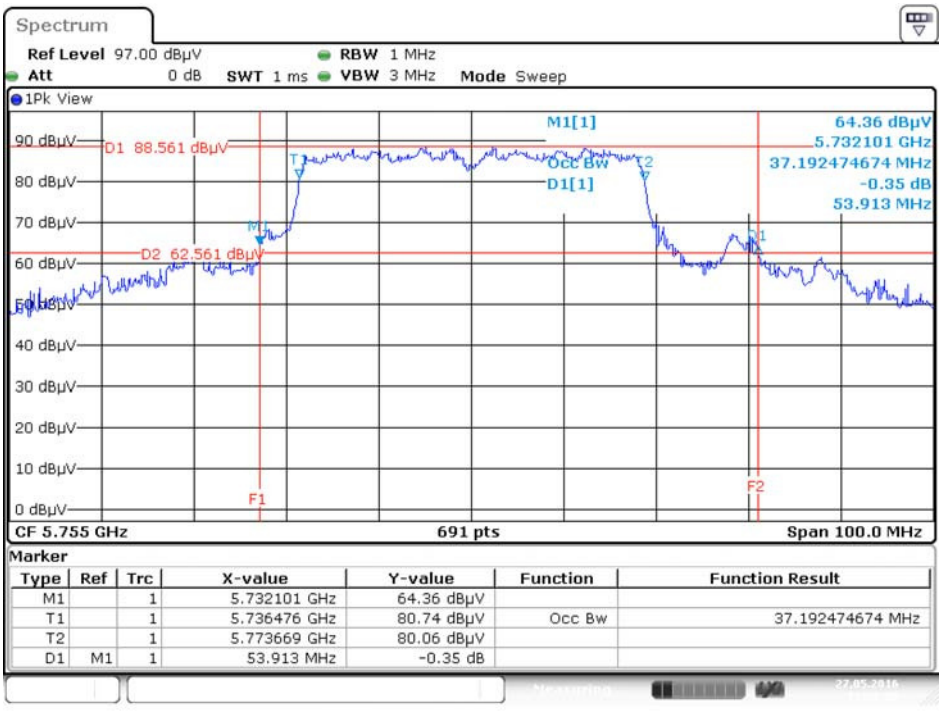
Date: 27.MAY.2016 11:27:18

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5230 MHz



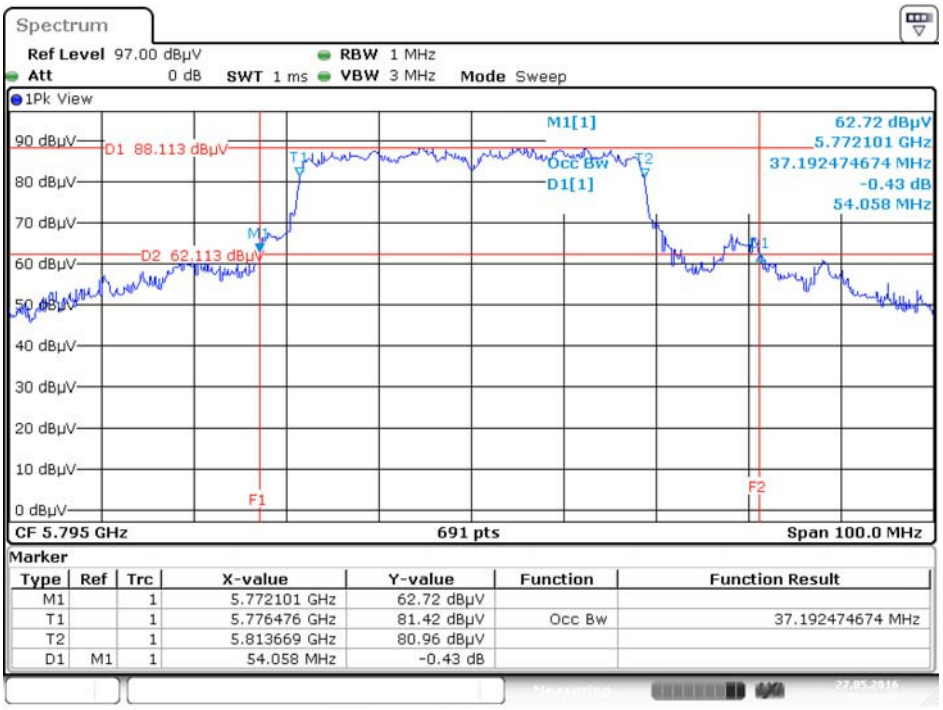
Date: 27.MAY.2016 11:27:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5755 MHz



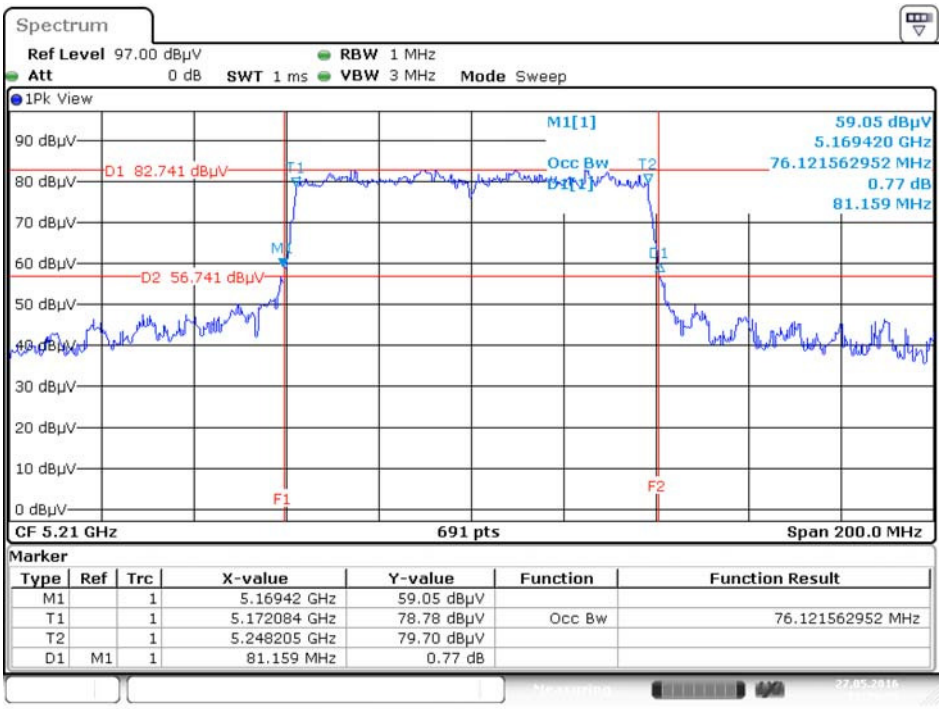
Date: 27.MAY.2016 11:28:19

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5795 MHz



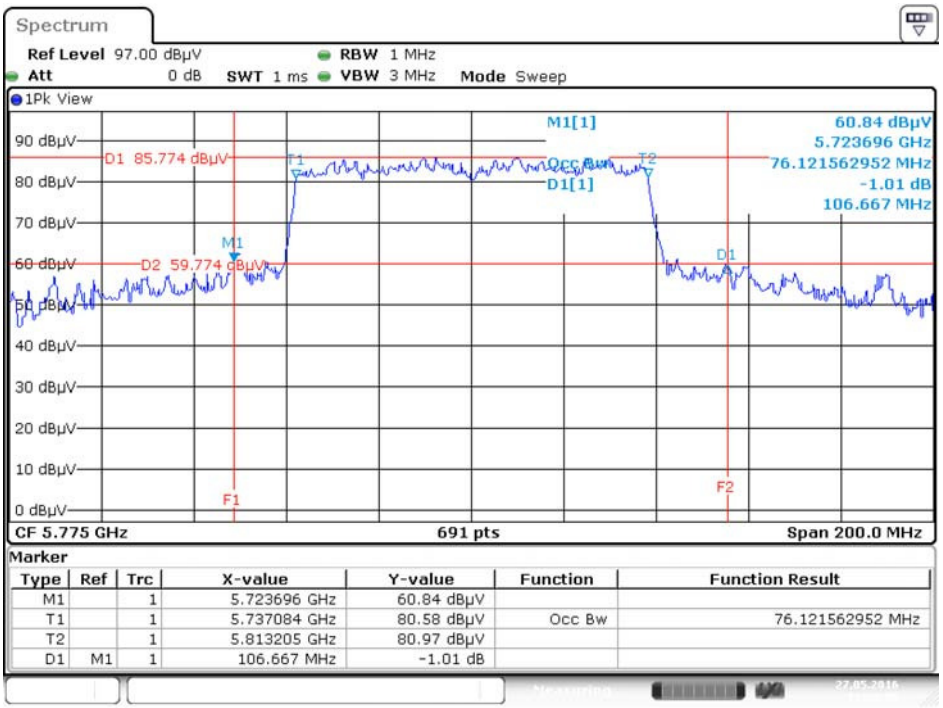
Date: 27.MAY.2016 11:28:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5210 MHz



Date: 27.MAY.2016 11:29:35

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5775 MHz



Date: 27.MAY.2016 11:30:06

4.3. 6dB Spectrum Bandwidth Measurement

4.3.1. Limit

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

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 spectrum analyzer.

6dB Spectrum Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB789033 D02 v01r02 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth.
3. Multiple antenna system was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.3.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

This test setup layout is the same as that shown in section 4.6.4.

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 6dB Spectrum Bandwidth

Temperature	20°C	Humidity	61%
Test Engineer	Akina Chiu	Test Function	Non-beamforming function

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	2.55	500	Complies
	5785 MHz	10.72	500	Complies
	5825 MHz	10.67	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	15.07	500	Complies
	5785 MHz	11.71	500	Complies
	5825 MHz	15.07	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	33.86	500	Complies
	5795 MHz	33.62	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	73.04	500	Complies

Temperature	20℃	Humidity	61%
Test Engineer	Akina Chiu	Test Function	Beamforming function

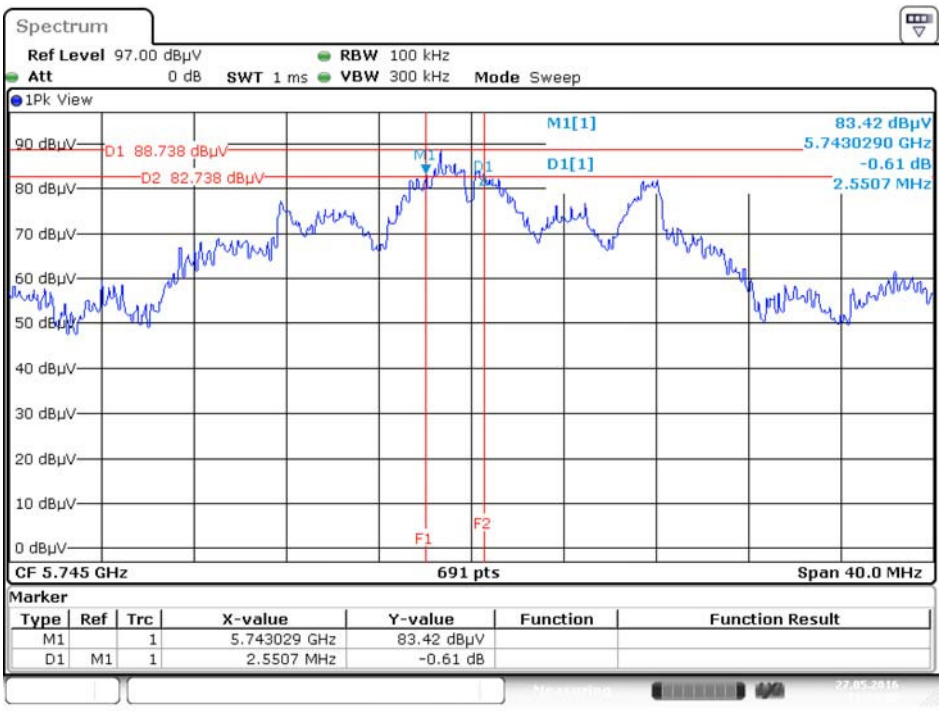
Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS2/Nss1 VHT20	5745 MHz	14.78	500	Complies
	5785 MHz	17.62	500	Complies
	5825 MHz	12.93	500	Complies
802.11ac MCS2/Nss1 VHT40	5755 MHz	36.29	500	Complies
	5795 MHz	36.29	500	Complies
802.11ac MCS2/Nss1 VHT80	5775 MHz	72.75	500	Complies

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

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

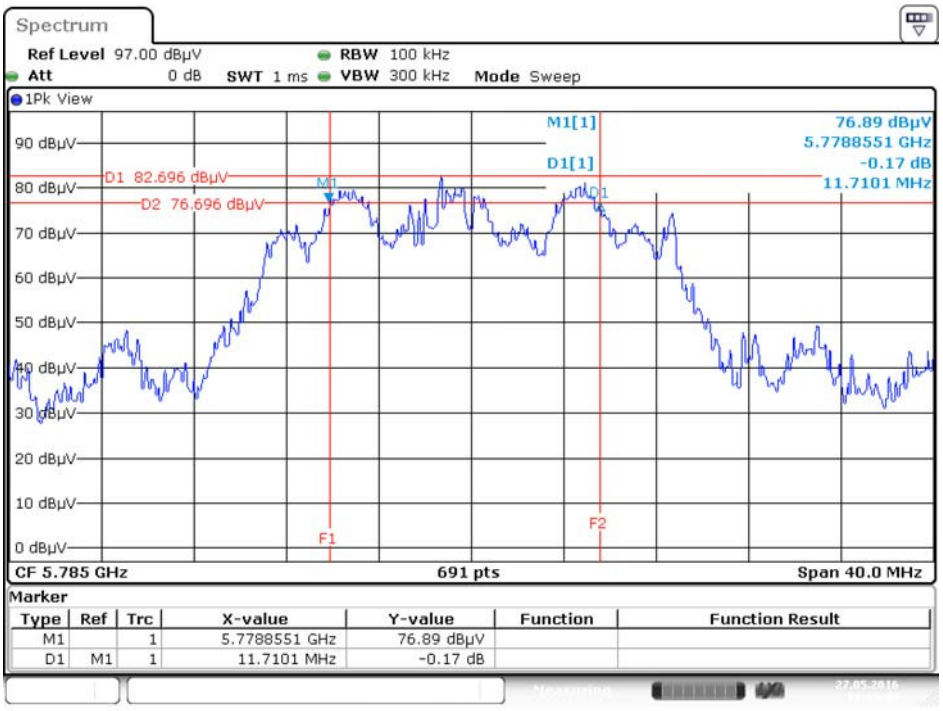
For non-beamforming function:

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Ant. 1 + Ant. 2 + Ant. 3 / 5745 MHz



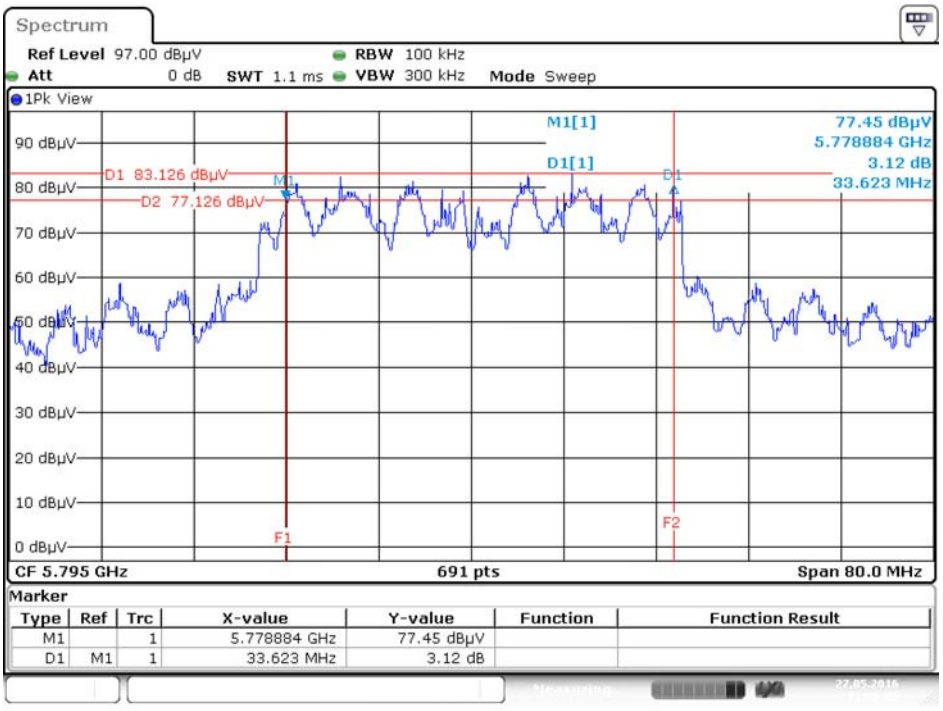
Date: 27.MAY.2016 11:33:20

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5785 MHz



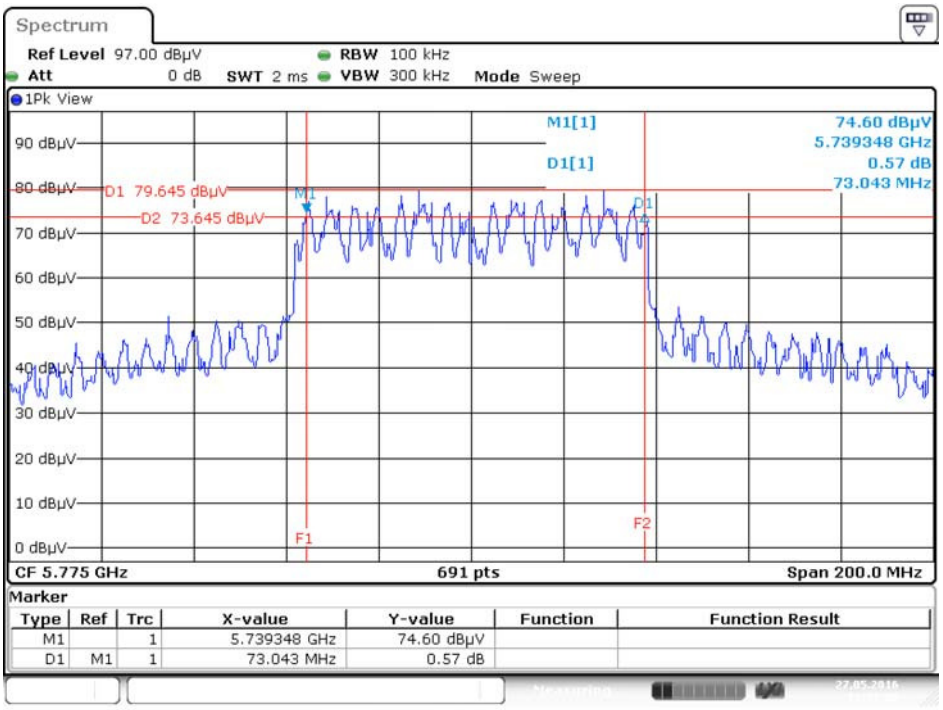
Date: 27.MAY.2016 11:34:50

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5795 MHz



Date: 27.MAY.2016 11:36:20

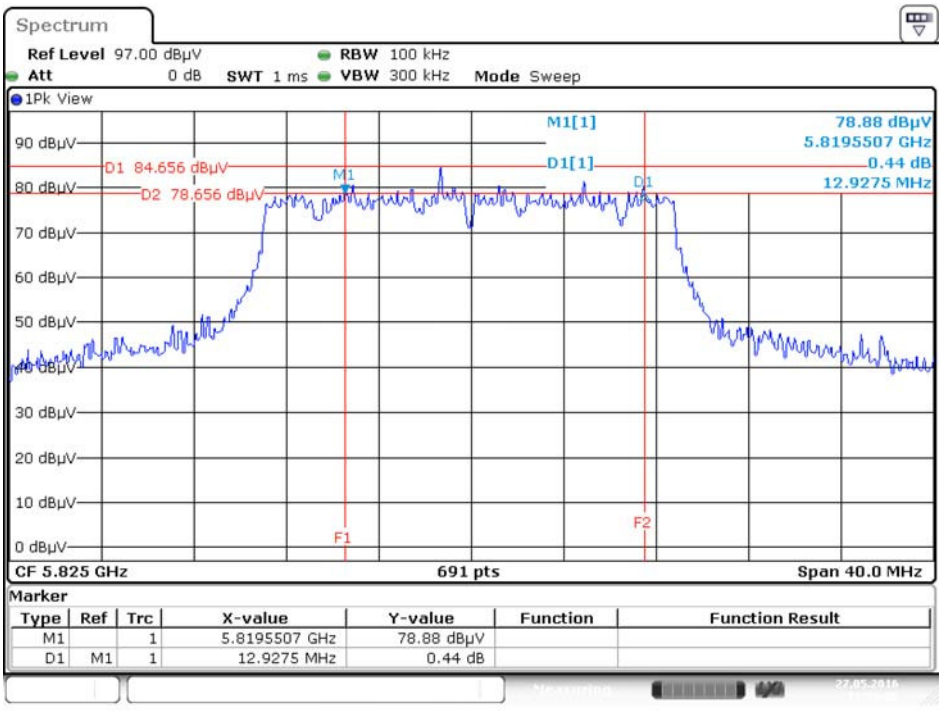
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5775 MHz



Date: 27.MAY.2016 11:37:00

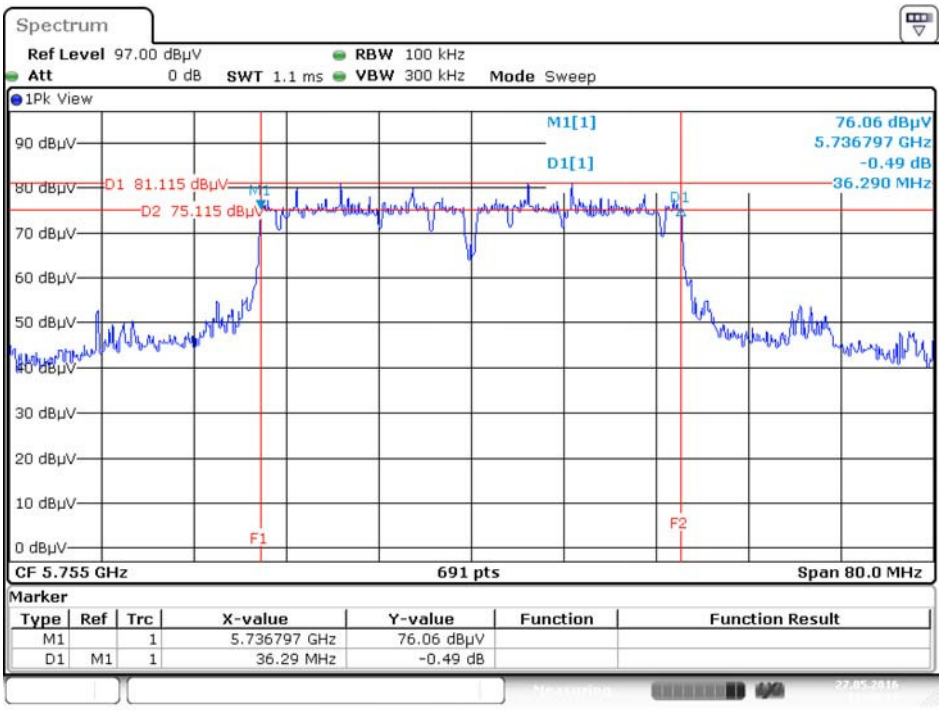
For beamforming function:

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5825 MHz



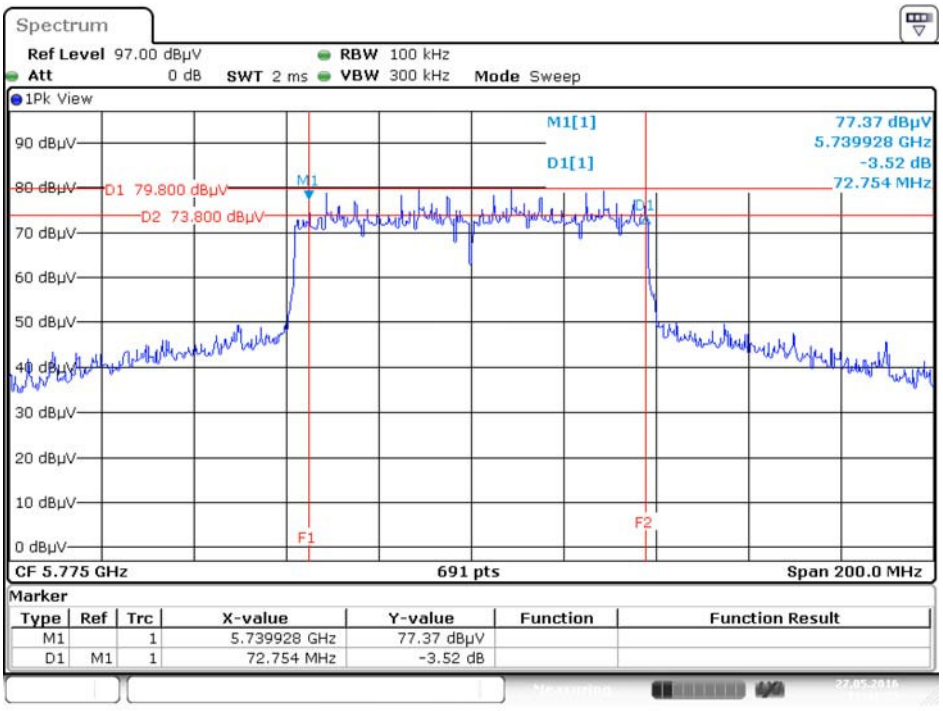
Date: 27.MAY.2016 11:39:36

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5755 MHz



Date: 27.MAY.2016 11:40:18

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5775 MHz



Date: 27.MAY.2016 11:41:24

4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

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

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

4.4.2. Measuring Instruments and Setting

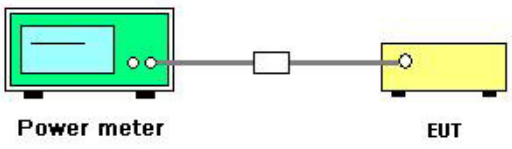
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r02 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

4.4.4. 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 Maximum Conducted Output Power

Temperature	20°C	Humidity	61%
Test Engineer	Akina Chiu	Test Function	Non-beamforming function
Test Date	May 27, 2016		

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Total		
802.11a	5180 MHz	17.79	17.88	17.74	22.57	30.00	Complies
	5200 MHz	15.77	15.56	15.44	20.36	30.00	Complies
	5240 MHz	15.40	15.52	15.64	20.29	30.00	Complies
	5745 MHz	24.30	24.22	23.95	28.93	30.00	Complies
	5785 MHz	20.43	20.34	20.44	25.17	30.00	Complies
	5825 MHz	20.40	20.23	20.20	25.05	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	20.13	20.10	19.90	24.82	30.00	Complies
	5200 MHz	16.03	16.02	15.84	20.74	30.00	Complies
	5240 MHz	16.92	16.94	16.82	21.66	30.00	Complies
	5745 MHz	24.48	24.20	24.10	29.03	30.00	Complies
	5785 MHz	20.12	20.02	20.40	24.95	30.00	Complies
	5825 MHz	20.00	19.90	20.01	24.74	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	18.02	18.22	18.17	22.91	30.00	Complies
	5230 MHz	18.42	18.60	18.34	23.23	30.00	Complies
	5755 MHz	21.90	22.30	22.10	26.87	30.00	Complies
	5795 MHz	22.30	22.10	22.03	26.92	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5210 MHz	17.42	17.22	17.21	22.06	30.00	Complies
	5775 MHz	21.15	21.20	21.40	26.02	30.00	Complies

Temperature	20°C	Humidity	61%
Test Engineer	Akina Chiu	Test Function	Beamforming function
Test Date	May 27, 2016		

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Ant. 3	Total		
802.11ac MCS2/Nss1 VHT20	5180 MHz	19.99	20.10	19.98	24.79	27.82	Complies
	5200 MHz	17.57	17.68	17.26	22.28	27.82	Complies
	5240 MHz	16.92	16.94	16.82	21.66	27.82	Complies
	5745 MHz	21.47	21.40	21.34	26.17	26.35	Complies
	5785 MHz	20.86	20.94	20.95	25.69	26.35	Complies
	5825 MHz	20.82	20.79	20.73	25.55	26.35	Complies
802.11ac MCS2/Nss1 VHT40	5190 MHz	19.89	19.92	19.93	24.68	27.82	Complies
	5230 MHz	20.72	20.75	20.64	25.47	27.82	Complies
	5755 MHz	21.20	21.02	21.30	25.95	26.35	Complies
	5795 MHz	20.96	21.10	21.20	25.86	26.35	Complies
802.11ac MCS2/Nss1 VHT80	5210 MHz	18.52	18.73	18.72	23.43	27.82	Complies
	5775 MHz	21.15	21.20	21.40	26.02	26.35	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

1. 5150~5250 MHz direction gain =8.18dBi >6dBi, so limit=30 – (8.18 – 6)=27.82dBm.
2. 5725~5850 MHz direction gain =9.65dBi >6dBi, so limit=30 – (9.65 – 6)=26.35dBm.

4.5. Power Spectral Density Measurement

4.5.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.4.1.

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

4.5.2. Measuring Instruments and Setting

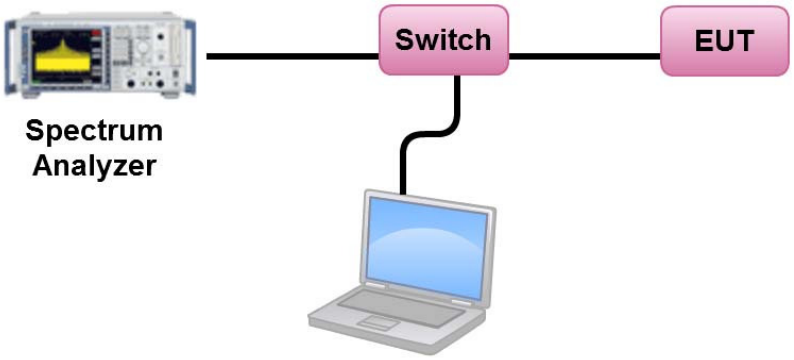
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1000 kHz
VBW	3000 kHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times
Note: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.	

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01r02 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements and sum the spectra across the outputs.
4. For 5.725~5.85 GHz, the measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Power Spectral Density

Temperature	20°C	Humidity	61%
Test Engineer	Akina Chiu	Test Function	Non-beamforming function
Test Date	May 27, 2016		

Configuration IEEE 802.11a / Ant. 1 + Ant. 2 + Ant. 3

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	9.50	14.82	Complies
40	5200 MHz	7.33	14.82	Complies
48	5240 MHz	7.26	14.82	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	15.82	-3.01	12.81	26.35	Complies
157	5785 MHz	12.05	-3.01	9.04	26.35	Complies
165	5825 MHz	11.97	-3.01	8.96	26.35	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

1. 5150~5250 MHz direction gain =8.18dBi >6dBi, so limit=17 – (8.18 – 6)=14.82dBm/500kHz.
2. 5725~5850 MHz direction gain =9.65dBi >6dBi, so limit=30 – (9.65 – 6)=26.35dBm/500kHz.

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

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
36	5180 MHz	11.70		14.82		Complies
40	5200 MHz	7.72		14.82		Complies
48	5240 MHz	8.64		14.82		Complies
Channel	**Frequency**	**Power Density (dBm/MHz)**	**10log(500kHz/RBW) Factor (dB)**	**Power Density (dBm/500kHz)**	**Power Density Limit (dBm/500kHz)**	**Result**
149	5745 MHz	15.91	-3.01	12.90	26.35	Complies
157	5785 MHz	11.91	-3.01	8.90	26.35	Complies
165	5825 MHz	11.68	-3.01	8.67	26.35	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

1. 5150~5250 MHz direction gain =8.18dBi >6dBi, so limit=17 – (8.18 – 6)=14.82dBm/500kHz.
2. 5725~5850 MHz direction gain =9.65dBi >6dBi, so limit=30 – (9.65 – 6)=26.35dBm/500kHz.

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

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
38	5190 MHz	6.87		14.82		Complies
46	5230 MHz	7.09		14.82		Complies
Channel	**Frequency**	**Power Density (dBm/MHz)**	**10log(500kHz/RBW) Factor (dB)**	**Power Density (dBm/500kHz)**	**Power Density Limit (dBm/500kHz)**	**Result**
151	5755 MHz	10.71	-3.01	7.70	26.35	Complies
159	5795 MHz	10.85	-3.01	7.84	26.35	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

1. 5150~5250 MHz direction gain =8.18dBi >6dBi, so limit=17 – (8.18 – 6)=14.82dBm/500kHz.
2. 5725~5850 MHz direction gain =9.65dBi >6dBi, so limit=30 – (9.65 – 6)=26.35dBm/500kHz.

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

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
42	5210 MHz	2.99		14.82		Complies
Channel	**Frequency**	**Power Density (dBm/MHz)**	**10log(500kHz/RBW) Factor (dB)**	**Power Density (dBm/500kHz)**	**Power Density Limit (dBm/500kHz)**	**Result**
155	5775 MHz	6.96	-3.01	3.95	26.35	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

1. 5150~5250 MHz direction gain =8.18dBi >6dBi, so limit=17 – (8.18 – 6)=14.82dBm/500kHz.
2. 5725~5850 MHz direction gain =9.65dBi >6dBi, so limit=30 – (9.65 – 6)=26.35dBm/500kHz.

Temperature	20℃	Humidity	61%
Test Engineer	Akina Chiu	Test Function	Beamforming function
Test Date	May 27, 2016		

Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
36	5180 MHz	11.67		14.82		Complies
40	5200 MHz	9.20		14.82		Complies
48	5240 MHz	8.64		14.82		Complies
Channel	**Frequency**	**Power Density (dBm/MHz)**	**10log(500kHz/RBW) Factor (dB)**	**Power Density (dBm/500kHz)**	**Power Density Limit (dBm/500kHz)**	**Result**
149	5745 MHz	13.15	-3.01	10.14	26.35	Complies
157	5785 MHz	12.65	-3.01	9.64	26.35	Complies
165	5825 MHz	12.52	-3.01	9.51	26.35	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

1. 5150~5250 MHz direction gain =8.18dBi >6dBi, so limit=17 – (8.18 – 6)=14.82dBm/500kHz.
2. 5725~5850 MHz direction gain =9.65dBi >6dBi, so limit=30 – (9.65 – 6)=26.35dBm/500kHz.

Configuration IEEE 802.11ac MCS2/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
38	5190 MHz	8.65		14.82		Complies
46	5230 MHz	9.38		14.82		Complies
Channel	**Frequency**	**Power Density (dBm/MHz)**	**10log(500kHz/RBW) Factor (dB)**	**Power Density (dBm/500kHz)**	**Power Density Limit (dBm/500kHz)**	**Result**
151	5755 MHz	9.90	-3.01	6.89	26.35	Complies
159	5795 MHz	9.71	-3.01	6.70	26.35	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

1. 5150~5250 MHz direction gain =8.18dBi >6dBi, so limit=17 – (8.18 – 6)=14.82dBm/500kHz.
2. 5725~5850 MHz direction gain =9.65dBi >6dBi, so limit=30 – (9.65 – 6)=26.35dBm/500kHz.

Configuration IEEE 802.11ac MCS2/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
42	5210 MHz	4.32		14.82		Complies
Channel	**Frequency**	**Power Density (dBm/MHz)**	**10log(500kHz/RBW) Factor (dB)**	**Power Density (dBm/500kHz)**	**Power Density Limit (dBm/500kHz)**	**Result**
155	5775 MHz	6.97	-3.01	3.96	26.35	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

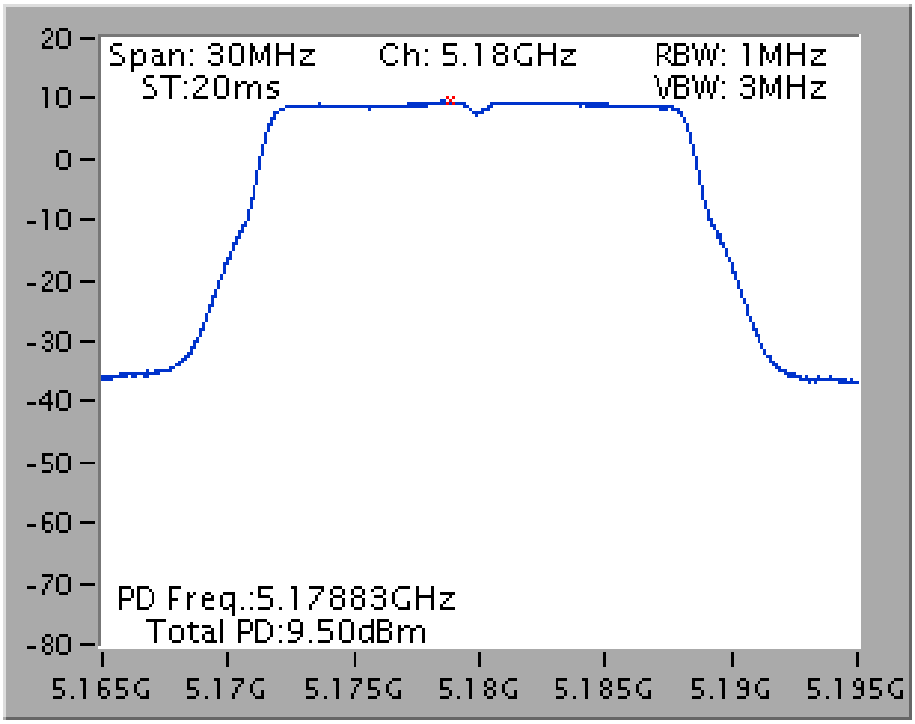
1. 5150~5250 MHz direction gain =8.18dBi >6dBi, so limit=17 – (8.18 – 6)=14.82dBm/500kHz.
2. 5725~5850 MHz direction gain =9.65dBi >6dBi, so limit=30 – (9.65 – 6)=26.35dBm/500kHz.

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

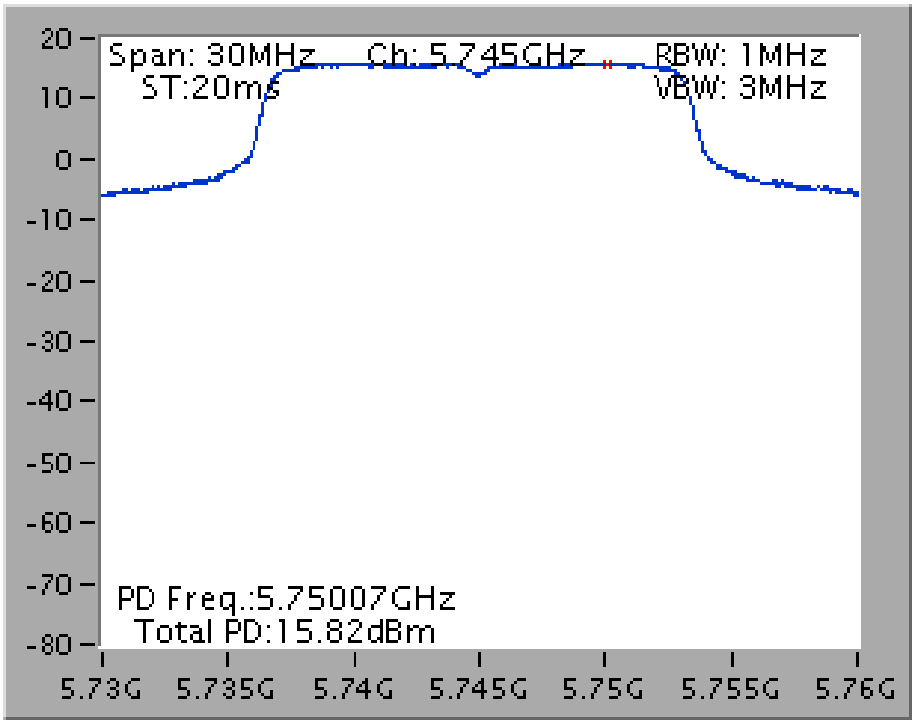
For plots, only the channel with worse result was shown.

For non-beamforming function:

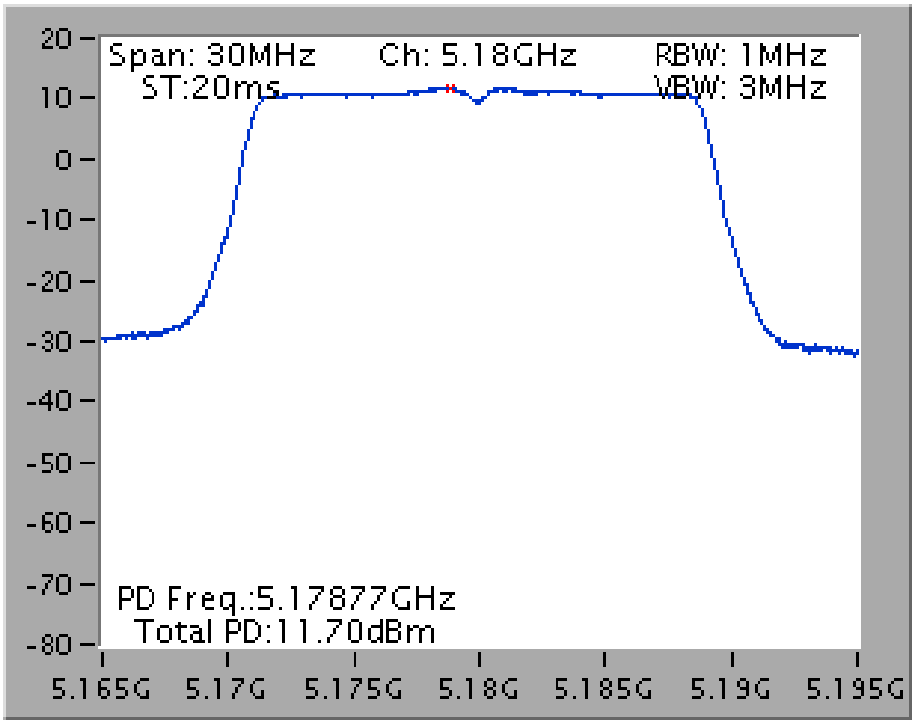
Power Density Plot on Configuration IEEE 802.11a / Ant. 1 + Ant. 2 + Ant. 3 / 5180 MHz



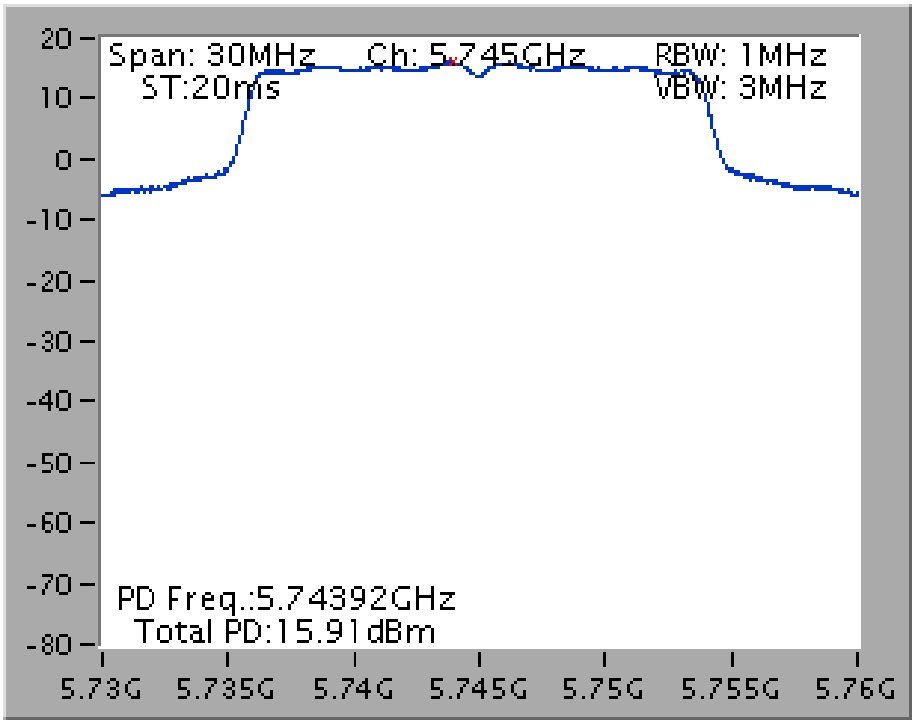
Power Density Plot on Configuration IEEE 802.11a / Ant. 1 + Ant. 2 + Ant. 3 / 5745 MHz



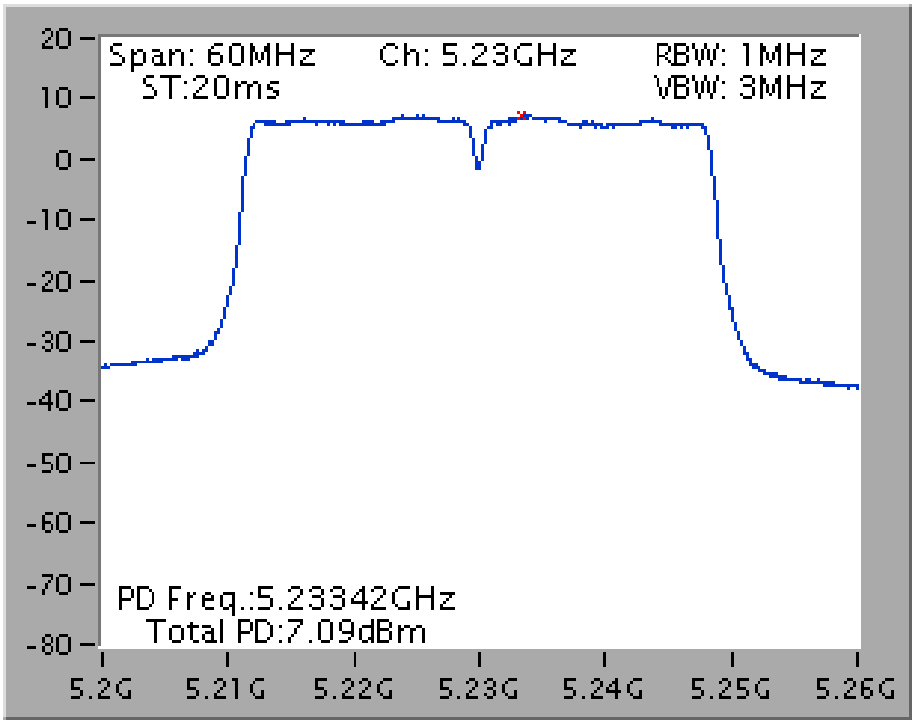
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5180 MHz



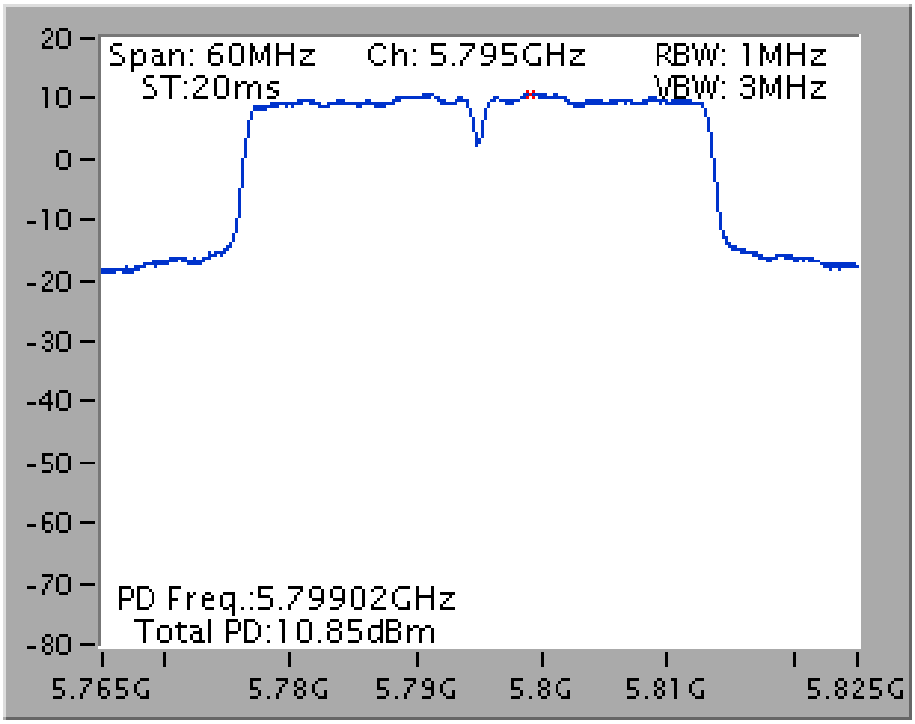
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5745 MHz



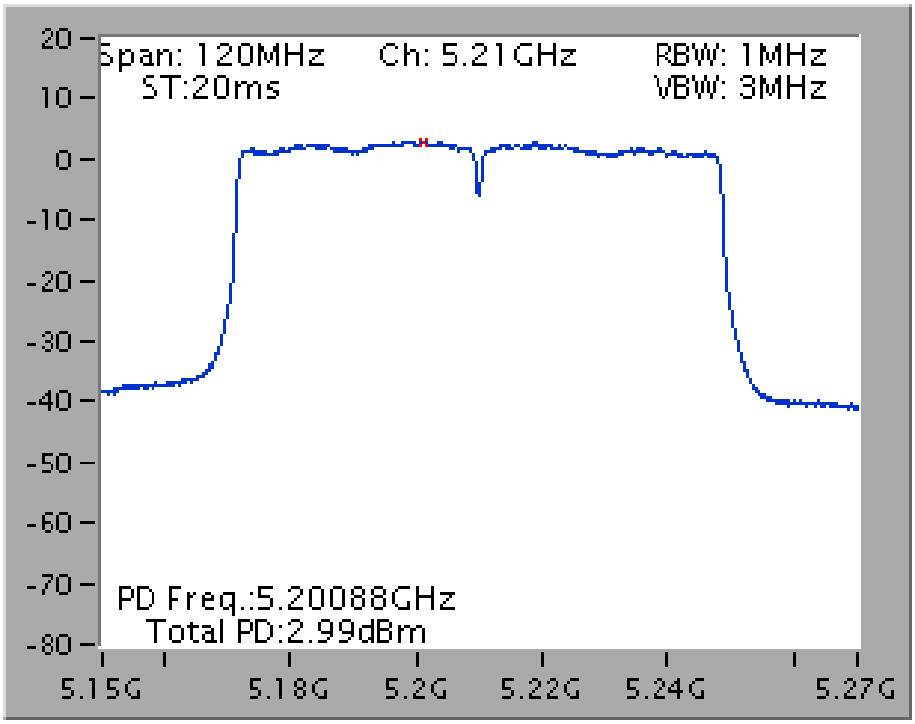
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5230 MHz



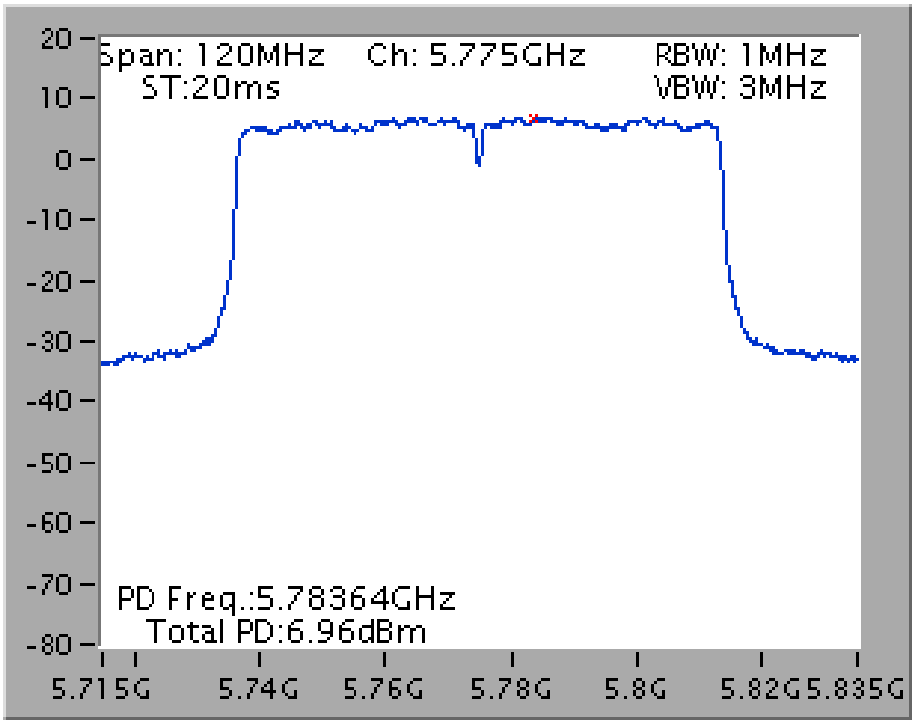
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5795 MHz



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

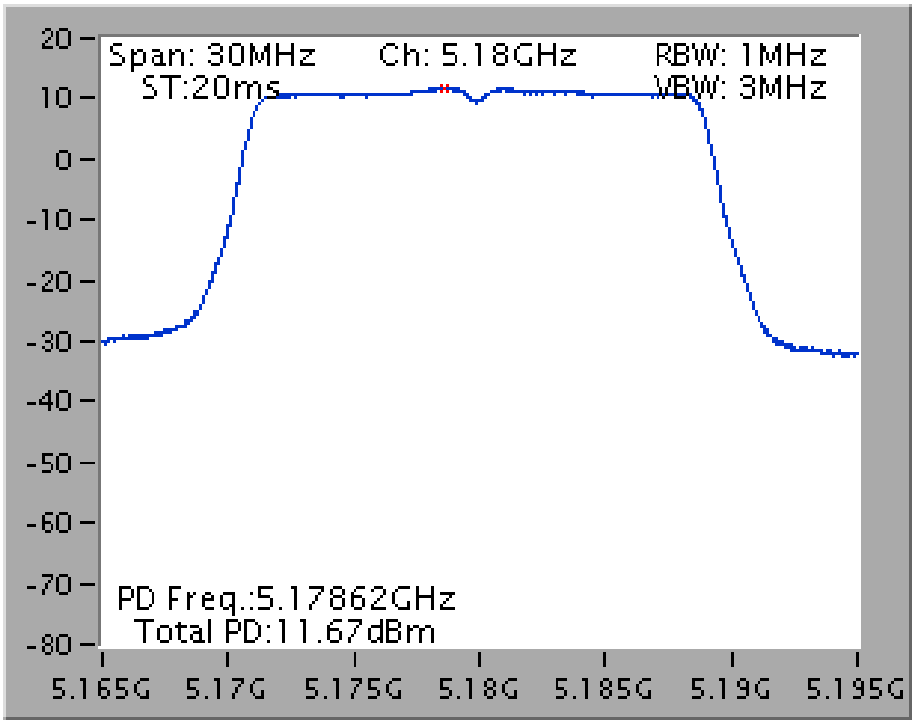


Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5775 MHz

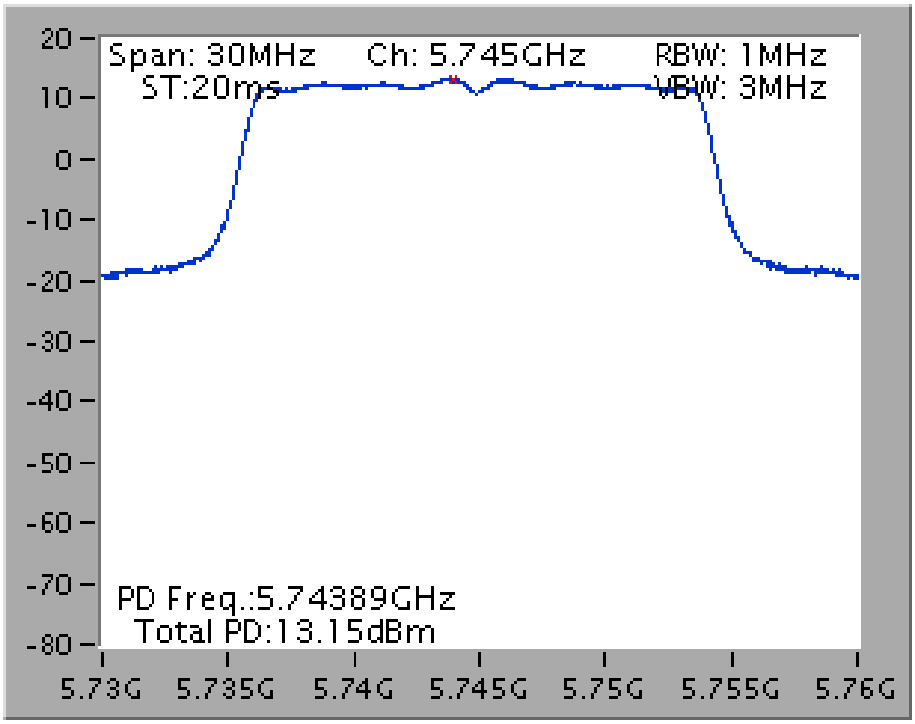


For beamforming function:

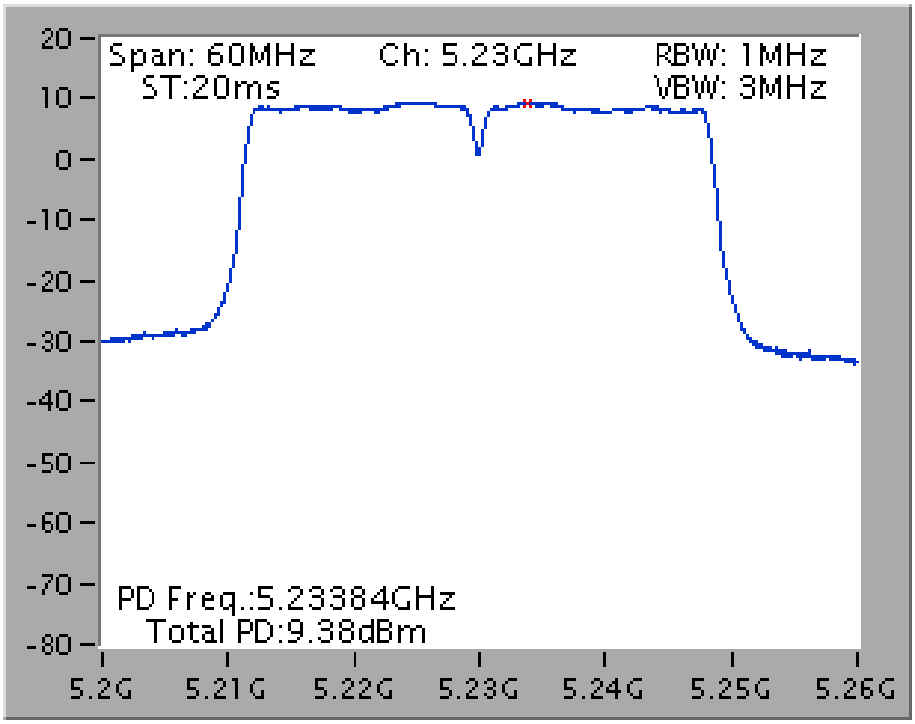
Power Density Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5180 MHz



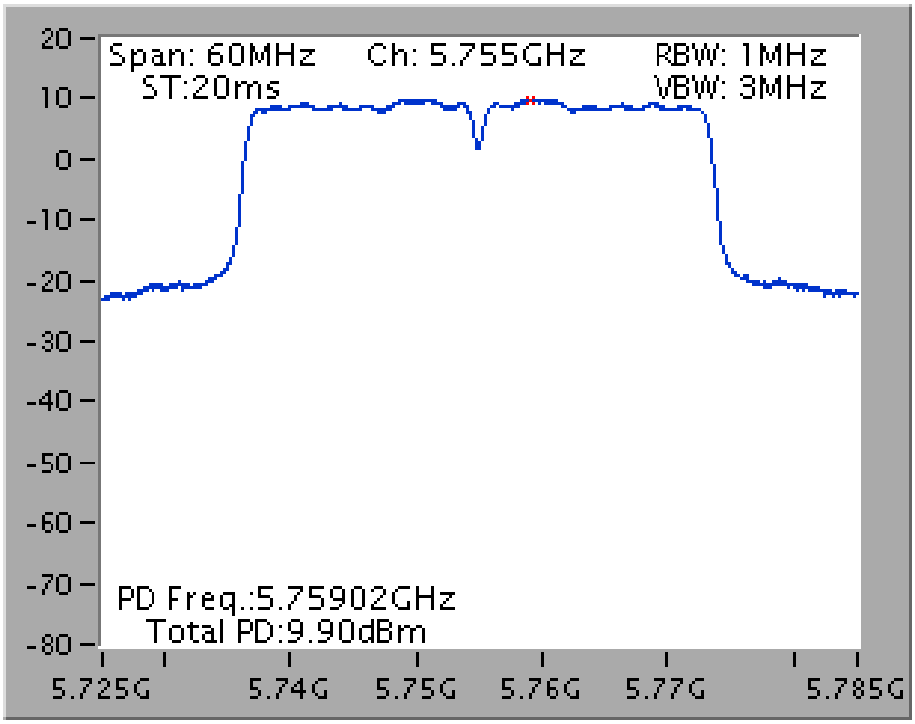
Power Density Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT20 / Ant. 1 + Ant. 2 + Ant. 3 / 5745 MHz



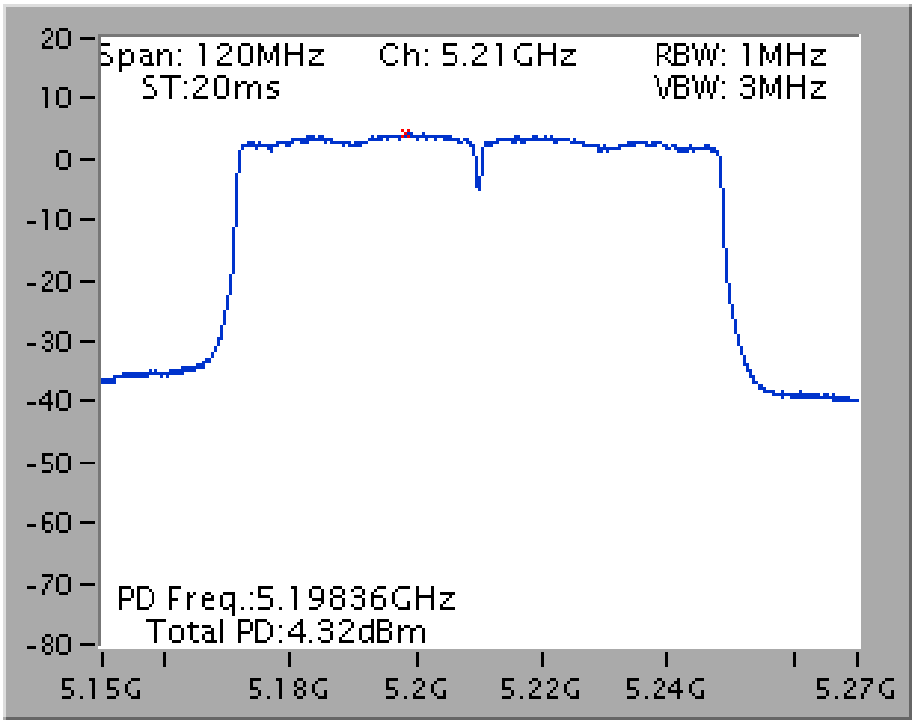
Power Density Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5230 MHz



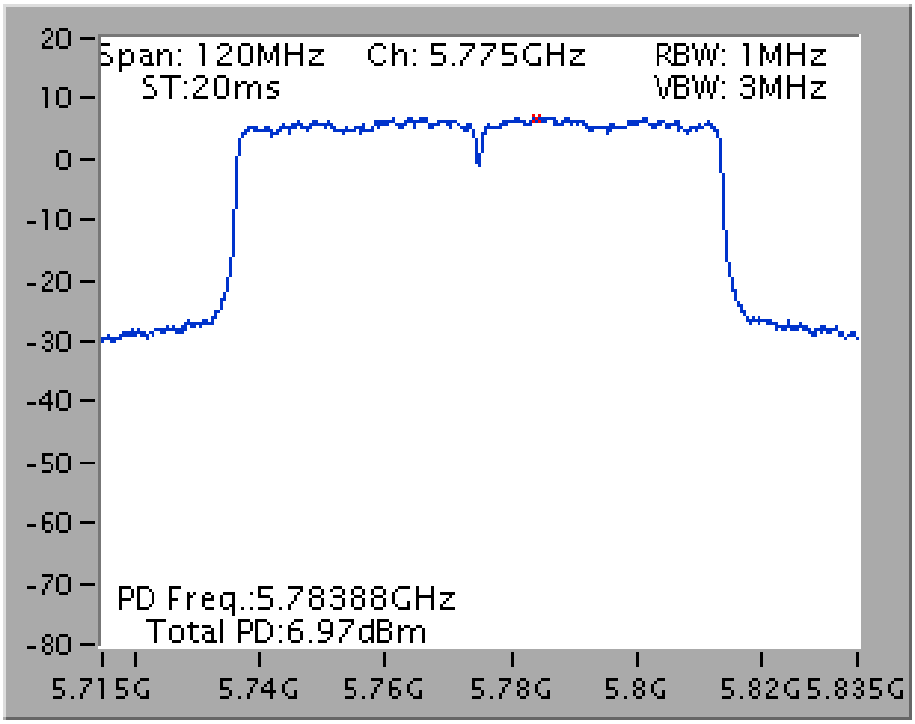
Power Density Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT40 / Ant. 1 + Ant. 2 + Ant. 3 / 5755 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5210 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS2/Nss1 VHT80 / Ant. 1 + Ant. 2 + Ant. 3 / 5775 MHz



4.6. Radiated Emissions Measurement

4.6.1. Limit

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

For transmitters operating in the 5.725-5.85 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

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

4.6.2. Measuring Instruments and Setting

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

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

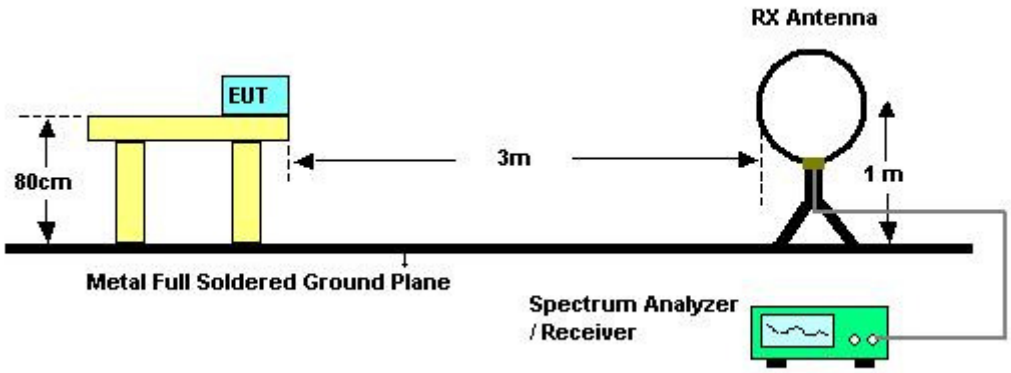
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

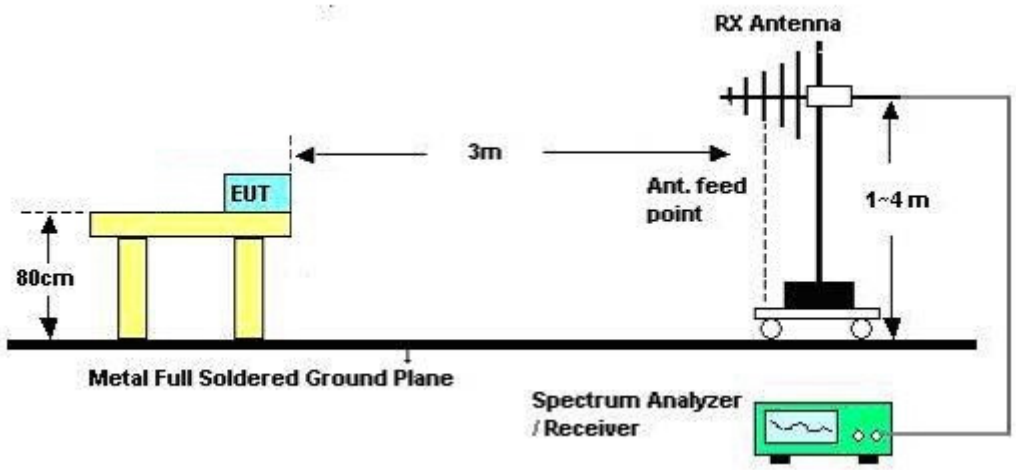
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

4.6.4. Test Setup Layout

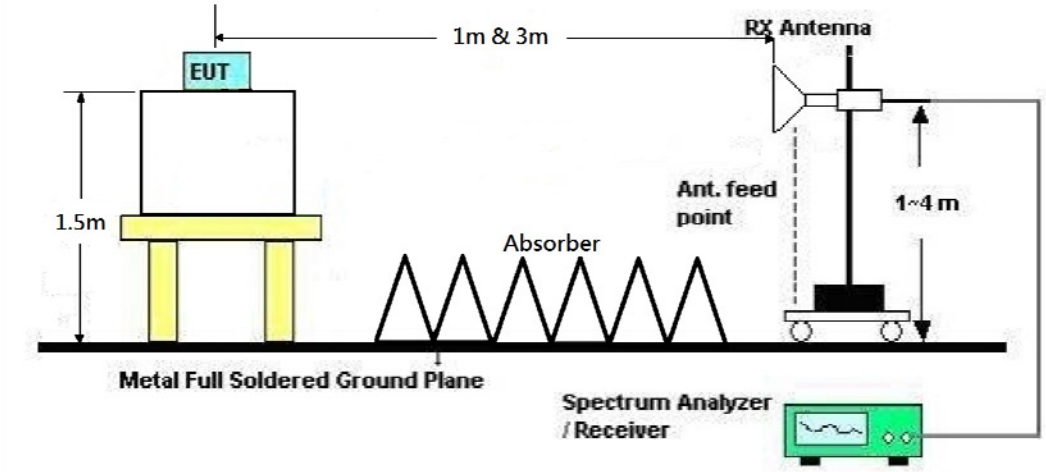
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



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

Temperature	22.6°C	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	Normal Link
Test Date	May 23, 2016	Test Mode	Mode 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 20dB below the permissible value has no need to be reported.

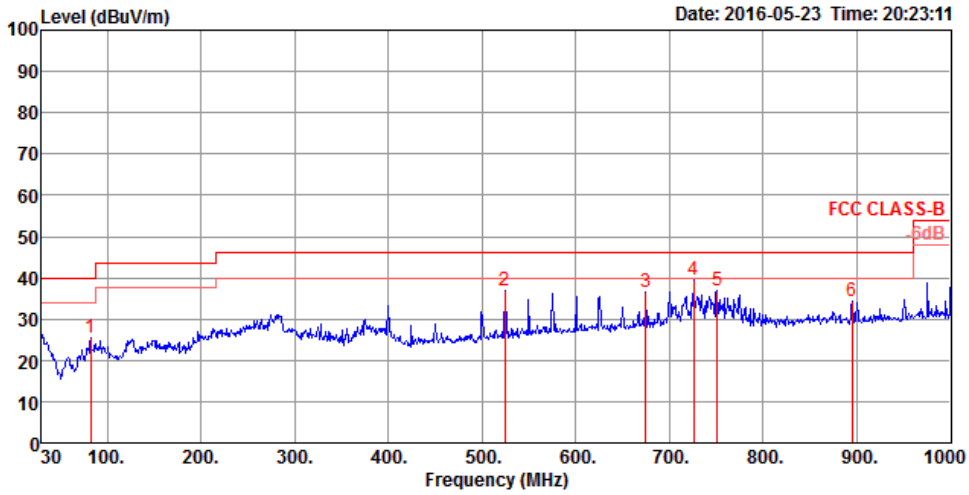
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

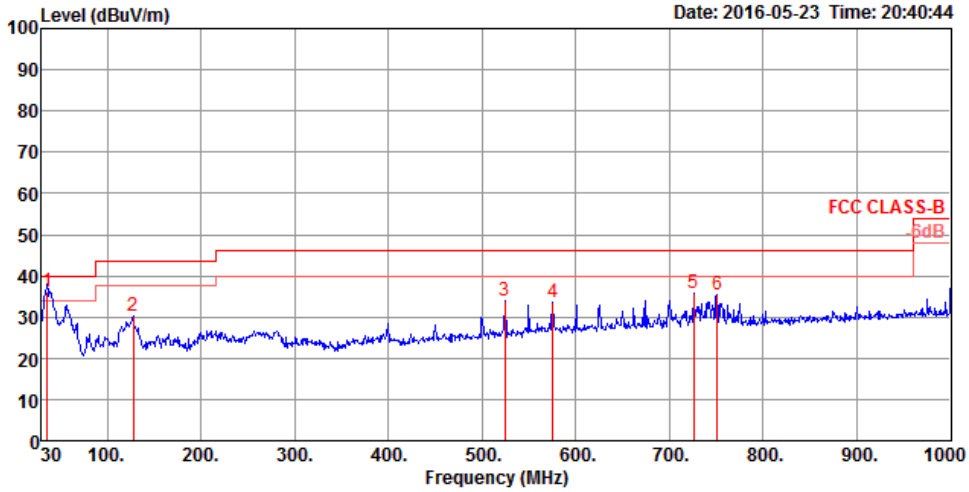
Temperature	22.6°C	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	Normal Link
Test Mode	Mode 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	82.38	25.48	40.00	-14.52	43.03	0.79	14.06	32.40	200	106	Peak	HORIZONTAL
2	524.70	36.76	46.00	-9.24	42.74	1.99	24.40	32.37	200	142	Peak	HORIZONTAL
3	675.05	36.61	46.00	-9.39	40.74	2.24	26.00	32.37	125	152	Peak	HORIZONTAL
4	725.49	39.42	46.00	-6.58	43.28	2.32	26.15	32.33	125	152	Peak	HORIZONTAL
5	750.71	36.82	46.00	-9.18	40.35	2.37	26.40	32.30	125	160	Peak	HORIZONTAL
6	895.24	34.40	46.00	-11.60	35.94	2.56	27.66	31.76	100	165	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	35.82	36.06	40.00	-3.94	45.21	0.52	22.73	32.40	150	59	QP	VERTICAL
2	127.97	30.29	43.50	-13.21	42.83	0.98	18.85	32.37	100	68	Peak	VERTICAL
3	524.70	34.00	46.00	-12.00	39.98	1.99	24.40	32.37	125	304	Peak	VERTICAL
4	575.14	33.51	46.00	-12.49	38.74	2.07	25.10	32.40	100	306	Peak	VERTICAL
5	725.49	35.72	46.00	-10.28	39.58	2.32	26.15	32.33	100	257	Peak	VERTICAL
6	750.71	35.46	46.00	-10.54	38.99	2.37	26.40	32.30	100	263	Peak	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB 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.

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

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11a CH 36 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15530.13	58.67	74.00	-15.33	43.92	11.23	38.16	34.64	138	223	Peak	HORIZONTAL
2	15542.15	45.38	54.00	-8.62	30.63	11.23	38.16	34.64	138	223	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15534.46	58.38	74.00	-15.62	43.63	11.23	38.16	34.64	159	185	Peak	VERTICAL
2	15546.03	45.04	54.00	-8.96	30.29	11.23	38.16	34.64	159	185	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11a CH 40 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15598.56	56.95	74.00	-17.05	42.16	11.24	38.23	34.68	138	159	Peak	HORIZONTAL
2	15602.98	44.97	54.00	-9.03	30.11	11.25	38.29	34.68	138	159	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15590.06	44.87	54.00	-9.13	30.08	11.24	38.23	34.68	258	159	Average	VERTICAL
2	15593.69	57.15	74.00	-16.85	42.36	11.24	38.23	34.68	258	159	Peak	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11a CH 48 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15711.19	45.31	54.00	-8.69	30.39	11.27	38.42	34.77	188	156	Average	HORIZONTAL
2	15712.56	57.65	74.00	-16.35	42.77	11.27	38.42	34.81	188	156	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15712.40	57.88	74.00	-16.12	43.00	11.27	38.42	34.81	201	254	Peak	VERTICAL
2	15715.99	45.32	54.00	-8.68	30.44	11.27	38.42	34.81	201	254	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11a CH 149 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15713.14	57.70	74.00	-16.30	42.82	11.27	38.42	34.81	133	193	Peak	HORIZONTAL
2	15720.06	45.31	54.00	-8.69	30.43	11.27	38.42	34.81	133	193	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15720.10	44.73	54.00	-9.27	29.85	11.27	38.42	34.81	269	236	Average	VERTICAL
2	15728.17	57.37	74.00	-16.63	42.49	11.27	38.42	34.81	269	236	Peak	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11a CH 157 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11562.50	55.46	74.00	-18.54	41.97	9.61	38.53	34.65	161	223	Peak	HORIZONTAL
2	11576.57	42.74	54.00	-11.26	29.25	9.61	38.53	34.65	161	223	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11569.07	55.08	74.00	-18.92	41.59	9.61	38.53	34.65	220	300	Peak	VERTICAL
2	11571.99	43.17	54.00	-10.83	29.68	9.61	38.53	34.65	220	300	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11a CH 165 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11649.04	54.85	74.00	-19.15	41.38	9.60	38.55	34.68	111	241	Peak	HORIZONTAL
2	11649.81	43.13	54.00	-10.87	29.66	9.60	38.55	34.68	111	241	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11652.24	55.75	74.00	-18.25	42.26	9.60	38.57	34.68	210	196	Peak	VERTICAL
2	11659.94	42.60	54.00	-11.40	29.11	9.60	38.57	34.68	210	196	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15536.83	57.63	74.00	-16.37	42.88	11.23	38.16	34.64	156	208	Peak	HORIZONTAL
2	15544.13	44.83	54.00	-9.17	30.08	11.23	38.16	34.64	156	208	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15536.99	58.51	74.00	-15.49	43.76	11.23	38.16	34.64	186	144	Peak	VERTICAL
2	15538.78	45.60	54.00	-8.40	30.85	11.23	38.16	34.64	186	144	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15531.57	44.61	54.00	-9.39	29.86	11.23	38.16	34.64	293	222	Average	HORIZONTAL
2	15532.88	58.20	74.00	-15.80	43.45	11.23	38.16	34.64	293	141	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15532.44	58.13	74.00	-15.87	43.38	11.23	38.16	34.64	106	265	Peak	VERTICAL
2	15533.91	44.98	54.00	-9.02	30.23	11.23	38.16	34.64	106	265	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15533.37	58.00	74.00	-16.00	43.25	11.23	38.16	34.64	222	113	Peak	HORIZONTAL
2	15548.24	44.88	54.00	-9.12	30.13	11.23	38.16	34.64	222	113	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15533.65	57.46	74.00	-16.54	42.71	11.23	38.16	34.64	193	123	Peak	VERTICAL
2	15547.34	44.84	54.00	-9.16	30.09	11.23	38.16	34.64	193	123	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11485.22	55.22	74.00	-18.78	41.72	9.62	38.50	34.62	159	148	Peak	HORIZONTAL
2	11489.42	43.40	54.00	-10.60	29.90	9.62	38.50	34.62	159	148	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11490.29	47.47	54.00	-6.53	33.97	9.62	38.50	34.62	218	23	Average	VERTICAL
2	11490.48	61.63	74.00	-12.37	48.13	9.62	38.50	34.62	218	23	Peak	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11486.70	55.50	74.00	-18.50	42.00	9.62	38.50	34.62	147	165	Peak	HORIZONTAL
2	11491.44	42.88	54.00	-11.12	29.38	9.62	38.50	34.62	147	165	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11481.76	42.81	54.00	-11.19	29.31	9.62	38.50	34.62	273	328	Average	VERTICAL
2	11498.56	54.92	74.00	-19.08	41.42	9.62	38.50	34.62	273	328	Peak	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11481.09	55.47	74.00	-18.53	41.97	9.62	38.50	34.62	197	160	Peak	HORIZONTAL
2	11490.80	42.78	54.00	-11.22	29.28	9.62	38.50	34.62	197	160	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11480.00	55.65	74.00	-18.35	42.15	9.62	38.50	34.62	189	174	Peak	VERTICAL
2	11490.93	42.89	54.00	-11.11	29.39	9.62	38.50	34.62	189	174	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15567.05	44.39	54.00	-9.61	29.60	11.24	38.23	34.68	246	225	Average	HORIZONTAL
2	15569.65	58.51	74.00	-15.49	43.72	11.24	38.23	34.68	246	225	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15569.42	57.26	74.00	-16.74	42.47	11.24	38.23	34.68	159	222	Peak	VERTICAL
2	15573.30	44.90	54.00	-9.10	30.11	11.24	38.23	34.68	159	222	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15564.17	56.90	74.00	-17.10	42.11	11.24	38.23	34.68	220	122	Peak	HORIZONTAL
2	15574.23	44.75	54.00	-9.25	29.96	11.24	38.23	34.68	220	122	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15567.02	44.80	54.00	-9.20	30.01	11.24	38.23	34.68	262	210	Average	VERTICAL
2	15569.87	58.02	74.00	-15.98	43.23	11.24	38.23	34.68	262	210	Peak	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11505.06	55.56	74.00	-18.44	42.06	9.62	38.50	34.62	173	164	Peak	HORIZONTAL
2	11509.71	42.79	54.00	-11.21	29.30	9.62	38.50	34.63	173	164	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11502.88	55.90	74.00	-18.10	42.40	9.62	38.50	34.62	320	157	Peak	VERTICAL
2	11503.78	43.40	54.00	-10.60	29.90	9.62	38.50	34.62	320	157	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11503.53	56.19	74.00	-17.81	42.69	9.62	38.50	34.62	227	139	Peak	HORIZONTAL
2	11505.93	42.66	54.00	-11.34	29.16	9.62	38.50	34.62	227	139	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11500.38	55.01	74.00	-18.99	41.51	9.62	38.50	34.62	114	41	Peak	VERTICAL
2	11501.06	42.59	54.00	-11.41	29.09	9.62	38.50	34.62	114	41	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15606.15	57.51	74.00	-16.49	42.65	11.25	38.29	34.68	108	220	Peak	HORIZONTAL
2	15629.74	45.01	54.00	-8.99	30.20	11.25	38.29	34.73	108	220	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15593.72	57.92	74.00	-16.08	43.13	11.24	38.23	34.68	188	193	Peak	VERTICAL
2	15664.36	45.00	54.00	-9.00	30.16	11.26	38.35	34.77	188	193	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 26, 2016	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11522.95	55.73	74.00	-18.27	42.24	9.61	38.51	34.63	284	138	Peak	HORIZONTAL
2	11549.74	42.63	54.00	-11.37	29.16	9.61	38.51	34.65	284	174	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11568.08	55.35	74.00	-18.65	41.86	9.61	38.53	34.65	260	214	Peak	VERTICAL
2	11578.33	42.69	54.00	-11.31	29.20	9.61	38.53	34.65	260	214	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT20 CH 36 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15539.21	46.68	54.00	-7.32	31.93	11.23	38.16	34.64	104	314	Average	HORIZONTAL
2	15541.38	60.38	74.00	-13.62	45.63	11.23	38.16	34.64	104	315	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15538.36	60.26	74.00	-13.74	45.51	11.23	38.16	34.64	106	333	Peak	VERTICAL
2	15541.15	46.98	54.00	-7.02	32.23	11.23	38.16	34.64	106	333	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT20 CH 40 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15597.84	58.98	74.00	-15.02	44.19	11.24	38.23	34.68	104	308	Peak	HORIZONTAL
2	15598.83	45.93	54.00	-8.07	31.14	11.24	38.23	34.68	104	308	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15597.62	45.99	54.00	-8.01	31.20	11.24	38.23	34.68	102	310	Average	VERTICAL
2	15598.38	59.39	74.00	-14.61	44.60	11.24	38.23	34.68	102	310	Peak	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT20 CH 48 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15718.36	58.62	74.00	-15.38	43.74	11.27	38.42	34.81	100	287	Peak	HORIZONTAL
2	15721.45	45.44	54.00	-8.56	30.56	11.27	38.42	34.81	100	287	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15720.38	58.70	74.00	-15.30	43.82	11.27	38.42	34.81	102	298	Peak	VERTICAL
2	15720.97	45.72	54.00	-8.28	30.84	11.27	38.42	34.81	102	298	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT20 CH 149 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11488.90	55.14	74.00	-18.86	41.64	9.62	38.50	34.62	102	268	Peak	HORIZONTAL
2	11490.64	41.53	54.00	-12.47	28.03	9.62	38.50	34.62	102	268	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11491.38	55.07	74.00	-18.93	41.57	9.62	38.50	34.62	103	279	Peak	VERTICAL
2	11491.60	41.96	54.00	-12.04	28.46	9.62	38.50	34.62	103	279	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT20 CH 157 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11571.32	41.47	54.00	-12.53	27.98	9.61	38.53	34.65	100	239	Average	HORIZONTAL
2	11571.59	55.27	74.00	-18.73	41.78	9.61	38.53	34.65	100	239	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11567.76	41.70	54.00	-12.30	28.21	9.61	38.53	34.65	100	247	Average	VERTICAL
2	11571.73	54.61	74.00	-19.39	41.12	9.61	38.53	34.65	100	247	Peak	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT20 CH 165 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11648.12	41.40	54.00	-12.60	27.93	9.60	38.55	34.68	105	268	Average	HORIZONTAL
2	11651.84	54.75	74.00	-19.25	41.26	9.60	38.57	34.68	105	268	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11648.65	54.83	74.00	-19.17	41.36	9.60	38.55	34.68	102	242	Peak	VERTICAL
2	11651.26	41.52	54.00	-12.48	28.03	9.60	38.57	34.68	102	242	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT40 CH 38 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15568.12	60.61	74.00	-13.39	45.82	11.24	38.23	34.68	102	248	Peak	HORIZONTAL
2	15569.65	46.49	54.00	-7.51	31.70	11.24	38.23	34.68	102	248	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15568.15	46.60	54.00	-7.40	31.81	11.24	38.23	34.68	103	257	Average	VERTICAL
2	15568.60	60.47	74.00	-13.53	45.68	11.24	38.23	34.68	103	257	Peak	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT40 CH 46 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15690.26	58.56	74.00	-15.44	43.72	11.26	38.35	34.77	103	234	Peak	HORIZONTAL
2	15692.23	45.49	54.00	-8.51	30.57	11.27	38.42	34.77	103	234	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15688.39	58.55	74.00	-15.45	43.71	11.26	38.35	34.77	105	240	Peak	VERTICAL
2	15688.47	45.53	54.00	-8.47	30.69	11.26	38.35	34.77	105	240	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT40 CH 151 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11508.11	41.62	54.00	-12.38	28.12	9.62	38.50	34.62	100	221	Average	HORIZONTAL
2	11512.18	54.86	74.00	-19.14	41.37	9.62	38.50	34.63	100	221	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11509.24	54.86	74.00	-19.14	41.37	9.62	38.50	34.63	101	239	Peak	VERTICAL
2	11512.35	41.86	54.00	-12.14	28.37	9.62	38.50	34.63	101	239	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT40 CH 159 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11589.38	54.99	74.00	-19.01	41.51	9.60	38.54	34.66	105	209	Peak	HORIZONTAL
2	11592.11	41.43	54.00	-12.57	27.95	9.60	38.54	34.66	105	209	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11588.46	54.59	74.00	-19.41	41.11	9.60	38.54	34.66	102	218	Peak	VERTICAL
2	11590.02	41.49	54.00	-12.51	28.01	9.60	38.54	34.66	102	218	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT80 CH 42 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15628.58	59.81	74.00	-14.19	45.00	11.25	38.29	34.73	106	198	Peak	HORIZONTAL
2	15629.11	45.71	54.00	-8.29	30.90	11.25	38.29	34.73	106	198	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15627.93	59.25	74.00	-14.75	44.44	11.25	38.29	34.73	108	201	Peak	VERTICAL
2	15630.43	45.87	54.00	-8.13	31.06	11.25	38.29	34.73	108	201	Average	VERTICAL

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT80 CH 155 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 27, 2016	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11548.27	54.88	74.00	-19.12	41.41	9.61	38.51	34.65	101	178	Peak	HORIZONTAL
2	11548.79	41.47	54.00	-12.53	28.00	9.61	38.51	34.65	101	178	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11550.44	41.86	54.00	-12.14	28.37	9.61	38.53	34.65	103	187	Average	VERTICAL
2	11551.39	54.56	74.00	-19.44	41.07	9.61	38.53	34.65	103	187	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.

4.7. Band Edge Emissions Measurement

4.7.1. Limit

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

For transmitters operating in the 5.725-5.85 GHz band: all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

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

4.7.2. 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	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for Peak

4.7.3. Test Procedures

The test procedure is the same as section 4.6.3.

4.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. 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.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11a CH 36, 40, 48 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 13, 2016 / May 26, 2016	Test Function	Non-beamforming function

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5098.00	63.58	74.00	-10.42	57.86	7.18	31.48	32.94	181	2	Peak	VERTICAL
2	5099.00	53.97	54.00	-0.03	48.25	7.18	31.48	32.94	181	2	Average	VERTICAL
3 0	5179.00	102.86			96.99	7.26	31.55	32.94	181	2	Average	VERTICAL
4 0	5179.00	112.14			106.27	7.26	31.55	32.94	181	2	Peak	VERTICAL
5	5396.00	50.86	54.00	-3.14	44.67	7.40	31.72	32.93	181	2	Average	VERTICAL
6	5397.00	60.75	74.00	-13.25	54.56	7.40	31.72	32.93	181	2	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5119.00	51.69	54.00	-2.31	45.93	7.20	31.50	32.94	174	2	Average	VERTICAL
2	5119.00	62.15	74.00	-11.85	56.39	7.20	31.50	32.94	174	2	Peak	VERTICAL
3 0	5199.00	99.98			94.08	7.28	31.56	32.94	174	2	Average	VERTICAL
4 0	5199.00	110.21			104.31	7.28	31.56	32.94	174	2	Peak	VERTICAL
5	5359.00	53.85	54.00	-0.15	47.71	7.38	31.69	32.93	174	2	Average	VERTICAL
6	5359.00	64.71	74.00	-9.29	58.57	7.38	31.69	32.93	174	2	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5078.00	60.82	74.00	-13.18	55.15	7.15	31.46	32.94	162	0	Peak	VERTICAL
2	5087.00	49.17	54.00	-4.83	43.47	7.17	31.47	32.94	162	0	Average	VERTICAL
3 0	5239.00	100.81			94.85	7.31	31.59	32.94	162	0	Average	VERTICAL
4 0	5239.00	110.13			104.17	7.31	31.59	32.94	162	0	Peak	VERTICAL
5	5395.00	62.65	74.00	-11.35	56.46	7.40	31.72	32.93	162	0	Peak	VERTICAL
6	5399.00	53.92	54.00	-0.08	47.73	7.40	31.72	32.93	162	0	Average	VERTICAL

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

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11a CH 149, 157, 165 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 12, 2016 / May 26, 2016	Test Function	Non-beamforming function

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5586.00	66.82	68.20	-1.38	60.30	7.58	31.90	32.96	171	11	Peak	VERTICAL
2	5747.00	109.09			102.28	7.73	32.10	33.02	171	11	Average	VERTICAL
3	5748.00	118.81			112.00	7.73	32.10	33.02	171	11	Peak	VERTICAL
4	5903.00	71.45	84.44	-12.99	64.43	7.81	32.28	33.07	171	11	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5625.00	64.28	68.20	-3.92	57.66	7.63	31.96	32.97	185	10	Peak	VERTICAL
2	5787.00	105.08			98.21	7.76	32.14	33.03	185	10	Average	VERTICAL
3	5787.00	114.12			107.25	7.76	32.14	33.03	185	10	Peak	VERTICAL
4	5943.00	68.00	68.20	-0.20	60.93	7.82	32.34	33.09	185	10	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5593.00	59.63	68.20	-8.57	53.07	7.60	31.92	32.96	176	10	Peak	VERTICAL
2	5827.00	105.14			98.21	7.78	32.20	33.05	176	10	Average	VERTICAL
3	5827.00	114.89			107.96	7.78	32.20	33.05	176	10	Peak	VERTICAL
4	5984.00	68.17	68.20	-0.03	61.06	7.83	32.38	33.10	176	10	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 13, 2016 / May 26, 2016	Test Function	Non-beamforming function

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5101.00	53.98	54.00	-0.02	48.26	7.18	31.48	32.94	174	218	Average	VERTICAL
2	5150.00	69.68	74.00	-4.32	63.87	7.23	31.52	32.94	174	218	Peak	VERTICAL
3 0	5181.00	103.47			97.60	7.26	31.55	32.94	174	218	Average	VERTICAL
4 0	5181.00	112.60			106.73	7.26	31.55	32.94	174	218	Peak	VERTICAL
5	5396.00	49.49	54.00	-4.51	43.30	7.40	31.72	32.93	174	218	Average	VERTICAL
6	5396.00	59.85	74.00	-14.15	53.66	7.40	31.72	32.93	174	218	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5121.00	50.29	54.00	-3.71	44.53	7.20	31.50	32.94	180	217	Average	VERTICAL
2	5121.00	61.33	74.00	-12.67	55.57	7.20	31.50	32.94	180	217	Peak	VERTICAL
3 0	5201.00	99.05			93.15	7.28	31.56	32.94	180	217	Average	VERTICAL
4 0	5201.00	108.86			102.96	7.28	31.56	32.94	180	217	Peak	VERTICAL
5	5361.00	53.90	54.00	-0.10	47.76	7.38	31.69	32.93	180	217	Average	VERTICAL
6	5361.00	64.10	74.00	-9.90	57.96	7.38	31.69	32.93	180	217	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5077.00	58.86	74.00	-15.14	53.19	7.15	31.46	32.94	178	220	Peak	VERTICAL
2	5078.00	47.93	54.00	-6.07	42.26	7.15	31.46	32.94	178	220	Average	VERTICAL
3 0	5241.00	100.65			94.69	7.31	31.59	32.94	178	220	Average	VERTICAL
4 0	5241.00	109.88			103.92	7.31	31.59	32.94	178	220	Peak	VERTICAL
5	5396.00	64.12	74.00	-9.88	57.93	7.40	31.72	32.93	178	220	Peak	VERTICAL
6	5401.00	53.86	54.00	-0.14	47.64	7.42	31.73	32.93	178	220	Average	VERTICAL

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

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 12, 2016 / May 26, 2016	Test Function	Non-beamforming function

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5585.00	66.81	68.20	-1.39	60.29	7.58	31.90	32.96	177	9	Peak	VERTICAL
2	5747.00	108.79			101.98	7.73	32.10	33.02	177	9	Average	VERTICAL
3	5747.00	118.34			111.53	7.73	32.10	33.02	177	9	Peak	VERTICAL
4	5983.00	62.83	68.20	-5.37	55.72	7.83	32.38	33.10	177	9	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5625.00	63.79	68.20	-4.41	57.17	7.63	31.96	32.97	178	9	Peak	VERTICAL
2	5787.00	104.72			97.85	7.76	32.14	33.03	178	9	Average	VERTICAL
3	5787.00	113.98			107.11	7.76	32.14	33.03	178	9	Peak	VERTICAL
4	5948.00	68.07	68.20	-0.13	61.00	7.82	32.34	33.09	178	9	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5582.00	60.24	68.20	-7.96	53.72	7.58	31.90	32.96	167	13	Peak	VERTICAL
2	5818.00	114.63			107.71	7.78	32.18	33.04	167	13	Peak	VERTICAL
3	5823.00	105.65			98.72	7.78	32.20	33.05	167	13	Average	VERTICAL
4	5984.00	67.99	68.20	-0.21	60.88	7.83	32.38	33.10	167	13	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 13, 2016 / May 26, 2016	Test Function	Non-beamforming function

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5150.00	53.48	54.00	-0.52	47.67	7.23	31.52	32.94	174	4	Average	VERTICAL
2	5150.00	68.29	74.00	-5.71	62.48	7.23	31.52	32.94	174	4	Peak	VERTICAL
3 0	5195.00	99.76			93.86	7.28	31.56	32.94	174	4	Average	VERTICAL
4 0	5195.00	109.10			103.20	7.28	31.56	32.94	174	4	Peak	VERTICAL
5	5355.00	53.89	54.00	-0.11	47.75	7.38	31.69	32.93	174	4	Average	VERTICAL
6	5366.00	63.45	74.00	-10.55	57.31	7.38	31.69	32.93	174	4	Peak	VERTICAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5145.00	51.66	54.00	-2.34	45.85	7.23	31.52	32.94	184	3	Average	VERTICAL
2	5145.00	62.23	74.00	-11.77	56.42	7.23	31.52	32.94	184	3	Peak	VERTICAL
3 0	5235.00	100.38			94.42	7.31	31.59	32.94	184	3	Average	VERTICAL
4 0	5235.00	110.04			104.08	7.31	31.59	32.94	184	3	Peak	VERTICAL
5	5386.00	53.80	54.00	-0.20	47.61	7.40	31.72	32.93	184	3	Average	VERTICAL
6	5395.00	63.36	74.00	-10.64	57.17	7.40	31.72	32.93	184	3	Peak	VERTICAL

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

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 12, 2016 / May 26, 2016	Test Function	Non-beamforming function

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5599.00	63.87	68.20	-4.33	57.31	7.60	31.92	32.96	173	245	Peak	VERTICAL
2	5760.00	104.18			97.34	7.74	32.12	33.02	173	245	Average	VERTICAL
3	5760.00	114.27			107.43	7.74	32.12	33.02	173	245	Peak	VERTICAL
4	5925.00	68.16	68.20	-0.04	61.10	7.82	32.32	33.08	173	245	Peak	VERTICAL
5	5931.00	68.13	68.20	-0.07	61.07	7.82	32.32	33.08	173	245	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5755 MHz.

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5640.00	65.29	68.20	-2.91	58.68	7.63	31.96	32.98	167	10	Peak	VERTICAL
2	5792.00	104.38			97.48	7.77	32.16	33.03	167	10	Average	VERTICAL
3	5797.00	114.16			107.26	7.77	32.16	33.03	167	10	Peak	VERTICAL
4	5943.00	68.02	68.20	-0.18	60.95	7.82	32.34	33.09	167	10	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5795 MHz.

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 42, 155 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 12, 2016 / May 13, 2016 / May 26, 2016	Test Function	Non-beamforming function

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.00	53.96	54.00	-0.04	48.15	7.23	31.52	32.94	187	1	Average	VERTICAL
2	5149.00	66.09	74.00	-7.91	60.28	7.23	31.52	32.94	187	1	Peak	VERTICAL
3 0	5199.00	96.34			90.44	7.28	31.56	32.94	187	1	Average	VERTICAL
4 0	5219.00	105.23			99.29	7.30	31.58	32.94	187	1	Peak	VERTICAL
5	5355.00	52.12	54.00	-1.88	45.98	7.38	31.69	32.93	187	1	Average	VERTICAL
6	5375.00	61.88	74.00	-12.12	55.72	7.39	31.70	32.93	187	1	Peak	VERTICAL

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

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5640.00	66.81	68.20	-1.39	60.20	7.63	31.96	32.98	169	4	Peak	VERTICAL
2	5785.00	99.58			92.71	7.76	32.14	33.03	169	4	Average	VERTICAL
3	5786.00	108.85			101.98	7.76	32.14	33.03	169	4	Peak	VERTICAL
4	5958.00	67.92	68.20	-0.28	60.86	7.82	32.34	33.10	169	4	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5775 MHz.

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT20 CH 36, 40, 48 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 13, 2016 / May 27, 2016	Test Function	Beamforming function

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5106.00	53.98	54.00	-0.02	48.26	7.18	31.48	32.94	166	275	Average	VERTICAL
2	5150.00	65.60	74.00	-8.40	59.79	7.23	31.52	32.94	166	275	Peak	VERTICAL
3 0	5184.00	114.35			108.48	7.26	31.55	32.94	166	275	Peak	VERTICAL
4 0	5187.00	104.19			98.29	7.28	31.56	32.94	166	275	Average	VERTICAL
5	5350.00	49.58	54.00	-4.42	43.46	7.37	31.68	32.93	166	275	Average	VERTICAL
6	5350.00	60.23	74.00	-13.77	54.11	7.37	31.68	32.93	166	275	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5111.00	52.25	54.00	-1.75	46.53	7.18	31.48	32.94	184	63	Average	VERTICAL
2	5114.00	64.04	74.00	-9.96	58.28	7.20	31.50	32.94	184	63	Peak	VERTICAL
3 0	5192.00	101.57			95.67	7.28	31.56	32.94	184	63	Average	VERTICAL
4 0	5192.00	111.40			105.50	7.28	31.56	32.94	184	63	Peak	VERTICAL
5	5352.00	53.77	54.00	-0.23	47.65	7.37	31.68	32.93	184	63	Average	VERTICAL
6	5354.00	63.10	74.00	-10.90	56.98	7.37	31.68	32.93	184	63	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5072.00	47.69	54.00	-6.31	42.03	7.15	31.46	32.95	199	330	Average	VERTICAL
2	5072.00	59.88	74.00	-14.12	54.22	7.15	31.46	32.95	199	330	Peak	VERTICAL
3 0	5233.00	100.70			94.74	7.31	31.59	32.94	199	330	Average	VERTICAL
4 0	5238.00	111.29			105.33	7.31	31.59	32.94	199	330	Peak	VERTICAL
5	5392.00	52.85	54.00	-1.15	46.66	7.40	31.72	32.93	199	330	Average	VERTICAL
6	5398.00	63.31	74.00	-10.69	57.12	7.40	31.72	32.93	199	330	Peak	VERTICAL

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

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT20 CH 149, 157, 165 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 12, 2016 / May 13, 2016 / May 27, 2016	Test Function	Beamforming function

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5578.00	66.75	68.20	-1.45	60.22	7.58	31.90	32.95	212	332	Peak	HORIZONTAL
2	5738.00	108.51			101.73	7.71	32.08	33.01	212	332	Average	HORIZONTAL
3	5740.00	118.57			111.75	7.73	32.10	33.01	212	332	Peak	HORIZONTAL
4	5981.00	61.16	68.20	-7.04	54.05	7.83	32.38	33.10	212	332	Peak	HORIZONTAL

Item 2, 3 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5631.00	62.10	68.20	-6.10	55.48	7.63	31.96	32.97	175	74	Peak	VERTICAL
2	5783.00	103.49			96.62	7.76	32.14	33.03	175	74	Average	VERTICAL
3	5784.00	114.07			107.20	7.76	32.14	33.03	175	74	Peak	VERTICAL
4	5940.00	67.33	68.20	-0.87	60.28	7.82	32.32	33.09	175	74	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5785 MHz.

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5621.00	58.40	68.20	-9.80	51.82	7.61	31.94	32.97	183	71	Peak	VERTICAL
2	5816.00	103.20			96.28	7.78	32.18	33.04	183	71	Average	VERTICAL
3	5818.00	113.67			106.75	7.78	32.18	33.04	183	71	Peak	VERTICAL
4	5977.00	67.22	68.20	-0.98	60.11	7.83	32.38	33.10	183	71	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5825 MHz.

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT40 CH 38, 46 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 13, 2016 / May 27, 2016	Test Function	Beamforming function

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.00	70.54	74.00	-3.46	64.73	7.23	31.52	32.94	174	121	Peak	VERTICAL
2	5149.00	53.89	54.00	-0.11	48.08	7.23	31.52	32.94	174	121	Average	VERTICAL
3 0	5194.00	111.98			106.08	7.28	31.56	32.94	174	121	Peak	VERTICAL
4 0	5195.00	101.58			95.68	7.28	31.56	32.94	174	121	Average	VERTICAL
5	5368.00	53.93	54.00	-0.07	47.79	7.38	31.69	32.93	174	121	Average	VERTICAL
6	5368.00	63.84	74.00	-10.16	57.70	7.38	31.69	32.93	174	121	Peak	VERTICAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5147.00	52.27	54.00	-1.73	46.46	7.23	31.52	32.94	180	119	Average	VERTICAL
2	5147.00	63.45	74.00	-10.55	57.64	7.23	31.52	32.94	180	119	Peak	VERTICAL
3 0	5225.00	101.95			96.01	7.30	31.58	32.94	180	119	Average	VERTICAL
4 0	5242.00	113.13			107.16	7.31	31.59	32.93	180	119	Peak	VERTICAL
5	5373.00	53.81	54.00	-0.19	47.65	7.39	31.70	32.93	180	119	Average	VERTICAL
6	5384.00	63.56	74.00	-10.44	57.40	7.39	31.70	32.93	180	119	Peak	VERTICAL

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

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT40 CH 151, 159 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 13, 2016 / May 26, 2016	Test Function	Beamforming function

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5590.00	63.91	68.20	-4.29	57.39	7.58	31.90	32.96	158	245	Peak	VERTICAL
2	5751.00	104.97			98.16	7.73	32.10	33.02	158	245	Average	VERTICAL
3	5751.00	115.13			108.32	7.73	32.10	33.02	158	245	Peak	VERTICAL
4	5931.00	68.00	68.20	-0.20	60.94	7.82	32.32	33.08	158	245	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5755 MHz.

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5641.00	62.10	68.20	-6.10	55.46	7.64	31.98	32.98	172	246	Peak	VERTICAL
2	5797.00	102.83			95.93	7.77	32.16	33.03	173	124	Average	VERTICAL
3	5800.00	114.17			107.27	7.77	32.16	33.03	172	246	Peak	VERTICAL
4	5950.00	68.10	68.20	-0.10	61.03	7.82	32.34	33.09	172	246	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5795 MHz.

Temperature	22.6℃	Humidity	51%
Test Engineer	Andy Tsai / Serway Li / Peter Wu	Configurations	IEEE 802.11ac MCS2/Nss1 VHT80 CH 42, 155 / Ant. 1 + Ant. 2 + Ant. 3
Test Date	May 13, 2016 / May 27, 2016	Test Function	Beamforming function

Channel 42

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5134.00	68.91	74.00	-5.09	63.12	7.22	31.51	32.94	172	359	Peak	VERTICAL
2	5140.00	53.82	54.00	-0.18	48.03	7.22	31.51	32.94	172	359	Average	VERTICAL
3 0	5182.00	96.93			91.06	7.26	31.55	32.94	172	359	Average	VERTICAL
4 0	5182.00	106.84			100.97	7.26	31.55	32.94	172	359	Peak	VERTICAL
5	5359.00	62.58	74.00	-11.42	56.44	7.38	31.69	32.93	172	359	Peak	VERTICAL
6	5361.00	51.29	54.00	-2.71	45.15	7.38	31.69	32.93	172	359	Average	VERTICAL

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

Channel 155

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5645.00	66.39	68.20	-1.81	59.75	7.64	31.98	32.98	181	243	Peak	VERTICAL
2	5785.00	110.72			103.85	7.76	32.14	33.03	181	243	Peak	VERTICAL
3	5789.00	100.30			93.40	7.77	32.16	33.03	181	243	Average	VERTICAL
4	5944.00	68.03	68.20	-0.17	60.96	7.82	32.34	33.09	181	243	Peak	VERTICAL

Item 2, 3 are the fundamental frequency at 5775 MHz.

Note:

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

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

4.8. Frequency Stability Measurement

4.8.1. 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).

4.8.2. Measuring Instruments and Setting

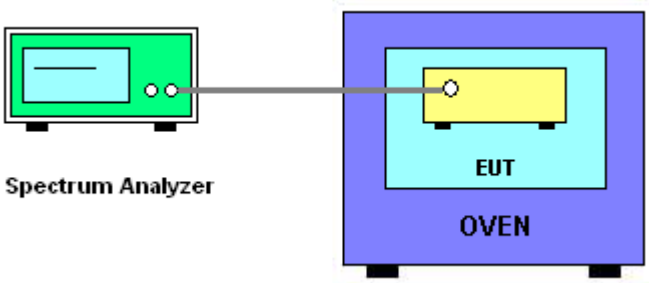
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.8.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
7. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
8. Extreme temperature is 0°C~40°C.

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

4.8.7. Test Result of Frequency Stability

Temperature	20℃	Humidity	61%
Test Engineer	Akina Chiu	Test Date	May 27, 2016

Mode: 20 MHz / Ant. 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5200.0002	5199.9993	5199.9985	5199.9978
110.00	5199.9994	5199.9987	5199.9977	5199.9968
93.50	5199.9985	5199.9976	5199.9973	5199.9965
Max. Deviation (MHz)	0.0015	0.0024	0.0027	0.0035
Max. Deviation (ppm)	0.29	0.46	0.52	0.67
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(℃)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5199.9950	5199.9938	5199.9919	5199.9897
10	5199.9937	5199.9924	5199.9909	5199.9891
20	5199.9925	5199.9912	5199.9896	5199.9877
30	5199.9911	5199.9900	5199.9886	5199.9870
40	5199.9895	5199.9880	5199.9864	5199.9844
Max. Deviation (MHz)	0.0122	0.0134	0.0149	0.0176
Max. Deviation (ppm)	2.35	2.58	2.87	3.38
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9919	5784.9913	5784.9903	5784.9897
110.00	5784.9917	5784.9914	5784.9911	5784.9904
93.50	5784.9910	5784.9903	5784.9898	5784.9892
Max. Deviation (MHz)	0.0090	0.0097	0.0102	0.0108
Max. Deviation (ppm)	1.56	1.68	1.76	1.87
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5785.0022	5785.0010	5784.9991	5784.9969
10	5785.0009	5784.9996	5784.9981	5784.9963
20	5784.9997	5784.9984	5784.9968	5784.9949
30	5784.9983	5784.9972	5784.9958	5784.9942
40	5784.9967	5784.9952	5784.9936	5784.9916
Max. Deviation (MHz)	0.0067	0.0062	0.0077	0.0104
Max. Deviation (ppm)	1.16	1.07	1.33	1.80
Result	Complies			

Mode: 40 MHz / Ant. 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9970	5189.9968	5189.9965	5189.9955
110.00	5189.9961	5189.9957	5189.9950	5189.9947
93.50	5189.9959	5189.9950	5189.9948	5189.9944
Max. Deviation (MHz)	0.0041	0.0050	0.0052	0.0056
Max. Deviation (ppm)	0.79	0.96	1.00	1.08
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5189.9984	5189.9972	5189.9953	5189.9931
10	5189.9971	5189.9958	5189.9943	5189.9925
20	5189.9959	5189.9946	5189.9930	5189.9911
30	5189.9945	5189.9934	5189.9920	5189.9904
40	5189.9929	5189.9914	5189.9898	5189.9878
Max. Deviation (MHz)	0.0088	0.0100	0.0115	0.0142
Max. Deviation (ppm)	1.70	1.93	2.22	2.74
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9944	5754.9937	5754.9936	5754.9927
110.00	5754.9938	5754.9937	5754.9927	5754.9926
93.50	5754.9933	5754.9928	5754.9920	5754.9911
Max. Deviation (MHz)	0.0067	0.0072	0.0080	0.0089
Max. Deviation (ppm)	1.16	1.25	1.39	1.55
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5754.9982	5754.9970	5754.9951	5754.9929
10	5754.9969	5754.9956	5754.9941	5754.9923
20	5754.9957	5754.9944	5754.9928	5754.9909
30	5754.9943	5754.9932	5754.9918	5754.9902
40	5754.9927	5754.9912	5754.9896	5754.9876
Max. Deviation (MHz)	0.0090	0.0102	0.0117	0.0144
Max. Deviation (ppm)	1.56	1.77	2.03	2.50
Result	Complies			

Mode: 80 MHz / Ant. 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5209.9929	5209.9922	5209.9913	5209.9912
110.00	5209.9922	5209.9921	5209.9914	5209.9904
93.50	5209.9917	5209.9912	5209.9904	5209.9896
Max. Deviation (MHz)	0.0083	0.0088	0.0096	0.0104
Max. Deviation (ppm)	1.59	1.69	1.84	2.00
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5209.9932	5209.9920	5209.9901	5209.9879
10	5209.9919	5209.9906	5209.9891	5209.9873
20	5209.9907	5209.9894	5209.9878	5209.9859
30	5209.9893	5209.9882	5209.9868	5209.9852
40	5209.9877	5209.9862	5209.9846	5209.9826
Max. Deviation (MHz)	0.0140	0.0152	0.0167	0.0194
Max. Deviation (ppm)	2.69	2.92	3.21	3.72
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9971	5774.9966	5774.9957	5774.9949
110.00	5774.9964	5774.9962	5774.9952	5774.9943
93.50	5774.9957	5774.9952	5774.9946	5774.9936
Max. Deviation (MHz)	0.0043	0.0048	0.0054	0.0064
Max. Deviation (ppm)	0.74	0.83	0.94	1.11
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5774.9925	5774.9913	5774.9894	5774.9872
10	5774.9912	5774.9899	5774.9884	5774.9866
20	5774.9900	5774.9887	5774.9871	5774.9852
30	5774.9886	5774.9875	5774.9861	5774.9845
40	5774.9870	5774.9855	5774.9839	5774.9819
Max. Deviation (MHz)	0.0147	0.0159	0.0174	0.0201
Max. Deviation (ppm)	2.55	2.75	3.01	3.48
Result	Complies			

4.9. Antenna Requirements

4.9.1. 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.

4.9.2. 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 Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 0216	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 25, 2015	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)

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)	3.2 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%