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FCC RADIO TEST REPORT

Applicant's company	**Belkin International, Inc.**
Applicant Address	12045 East Waterfront Drive, Playa Vista, CA 90094
FCC ID	**K7SF9K1116V1**

Product Name	AC750 DB Wi-Fi Dual-Band AC+ Router
Equipment Marketing Name	1. AC750 DB Wi-Fi Dual-Band AC+ Router 2. AC1200 DB Wi-Fi Dual-Band AC+ Router
Brand Name	belkin
Model No.	1. F9K1116V2 2. F9K1123V2
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. 29, 2016
Final Test Date	May 13, 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
FR4N1172-28AC	Rev. 01	Initial issue of report	Jun. 21, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	AC750 DB WI-FI Dual-Band AC+ Router
Equipment Marketing Name	:	1. AC750 DB WI-FI Dual-Band AC+ Router
		2. AC1200 DB WI-FI Dual-Band AC+ Router
Brand Name	:	belkin
Model No.	:	1. F9K1116V2
		2. F9K1123V2
Applicant	:	Belkin International, Inc.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Feb. 29, 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

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	IEEE 802.11a: WLAN (1TX, 1RX) IEEE 802.11n/ac: WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Channel Number	9 for 20MHz bandwidth ; 4 for 40MHz bandwidth 2 for 80MHz bandwidth
Channel Band Width (99%)	Band 1: IEEE 802.11a: 19.02 MHz IEEE 802.11n MCS8 (HT20): 18.41 MHz IEEE 802.11n MCS8 (HT40): 37.34 MHz IEEE 802.11ac MCS0/Nss2 (VHT20): 17.97 MHz IEEE 802.11ac MCS0/Nss2 (VHT40): 37.34 MHz IEEE 802.11ac MCS0/Nss2 (VHT80): 75.83 MHz Band 4: IEEE 802.11a: 20.75 MHz IEEE 802.11n MCS8 (HT20): 18.32 MHz IEEE 802.11n MCS8 (HT40): 37.63 MHz IEEE 802.11ac MCS0/Nss2 (VHT20): 18.76 MHz IEEE 802.11ac MCS0/Nss2 (VHT40): 38.50 MHz IEEE 802.11ac MCS0/Nss2 (VHT80): 76.70 MHz

Maximum Conducted Output Power	Band 1: IEEE 802.11a: 21.93 dBm IEEE 802.11n MCS8 (HT20): 23.05 dBm IEEE 802.11n MCS8 (HT40): 22.84 dBm IEEE 802.11ac MCS0/Nss2 (VHT20): 23.30 dBm IEEE 802.11ac MCS0/Nss2 (VHT40): 23.02 dBm IEEE 802.11ac MCS0/Nss2 (VHT80): 15.60 dBm Band 4: IEEE 802.11a: 23.10 dBm IEEE 802.11n MCS8 (HT20): 24.23 dBm IEEE 802.11n MCS8 (HT40): 24.31 dBm IEEE 802.11ac MCS0/Nss2 (VHT20): 24.55 dBm IEEE 802.11ac MCS0/Nss2 (VHT40): 24.25 dBm IEEE 802.11ac MCS0/Nss2 (VHT80): 22.30 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
Operate Condition	☒ Indoor	☐ Outdoor

Antenna and Band width

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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	1,2	MCS 0-7, MCS 8-15
802.11n (HT40)	1,2	MCS 0-7, MCS 8-15
802.11ac (VHT20)	1,2	MCS 0-9/Nss1, MCS 0-9/Nss2
802.11ac (VHT40)	1,2	MCS 0-9/Nss1, MCS 0-9/Nss2
802.11ac (VHT80)	1,2	MCS 0-9/Nss1, MCS 0-9/Nss2
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	Rating
Adapter	LEI	MU12AR120100-A1	Input: 100-240V ~ 50/60Hz 0.3A Output: 12V, 1A
Others			
RJ-45 Cable*1, Non-shielded, 1.2m			

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)		Remark
					2.4GHz	5GHz	
1	SerComm	AC900	Printed Antenna	I-PEX	3.15	4.34	TX/RX
2	SerComm	AC900	Printed Antenna	I-PEX	4.97	4.56	TX/RX

Note: The EUT has two antennas.

<For 2.4GHz Band>

For IEEE 802.11b/g mode (1TX/1RX):

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

For IEEE 802.11n mode (2TX/2RX):

Both Ant. 1 and Ant. 2 could transmit/receive simultaneously.

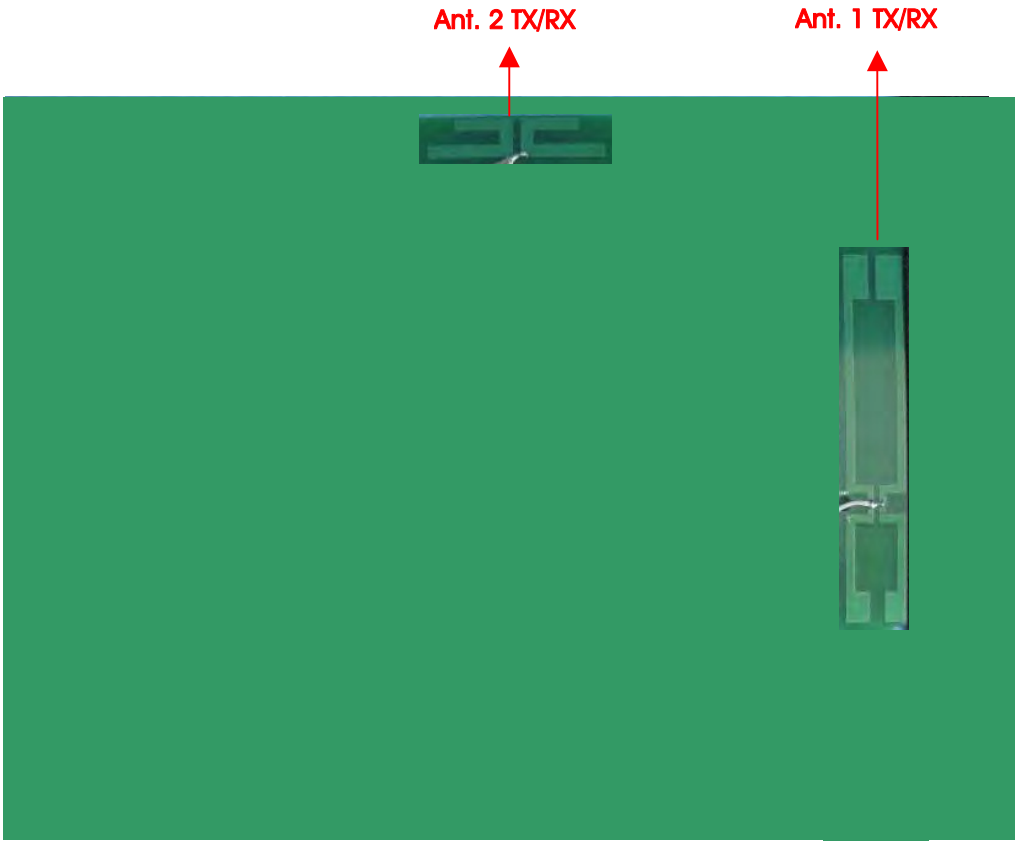
<For 5GHz Band>

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

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

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

Both Ant. 1 and Ant. 2 could transmit/receive simultaneously.



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

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

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

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

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

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Ant.
AC Power Conducted Emission	Normal Link		-	-	-
Max. Conducted Output Power	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
	11ac VHT20	Band 1&4	MCS0/Nss2	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss2	38/46/151/159	1+2
	11ac VHT80	Band 1&4	MCS0/Nss2	42/155	1+2
Power Spectral Density	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
	11ac VHT20	Band 1&4	MCS0/Nss2	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss2	38/46/151/159	1+2
	11ac VHT80	Band 1&4	MCS0/Nss2	42/155	1+2
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
	11ac VHT20	Band 1&4	MCS0/Nss2	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss2	38/46/151/159	1+2
	11ac VHT80	Band 1&4	MCS0/Nss2	42/155	1+2

6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 4	6Mbps	149/157/165	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
	11ac VHT20	Band 4	MCS0/Nss2	149/157/165	1+2
	11ac VHT40	Band 4	MCS0/Nss2	151/159	1+2
	11ac VHT80	Band 4	MCS0/Nss2	155	1+2
Radiated Emission Below 1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
	11ac VHT20	Band 1&4	MCS0/Nss2	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss2	38/46/151/159	1+2
	11ac VHT80	Band 1&4	MCS0/Nss2	42/155	1+2
Band Edge Emission	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
	11ac VHT20	Band 1&4	MCS0/Nss2	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss2	38/46/151/159	1+2
	11ac VHT80	Band 1&4	MCS0/Nss2	42/155	1+2
Frequency Stability	20 MHz	Band 1&4	-	40/157	1
	40 MHz	Band 1&4	-	38/151	1
	80 MHz	Band 1&4	-	42/155	1

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link - EUT with AC Adapter

For Radiated Emission below 1GHz test:

Mode 1. Normal Link - EUT with AC Adapter

For Radiated Emission above 1GHz test:

Mode 1. CTX - EUT

Note: The EUT can only be used in Y axis.

For Co-location MPE test:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA4N1172-28) 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 Multiple Listing and Class II Change

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

Equipment Marketing Name	Model No.	Name of F/W version
AC750 DB Wi-Fi Dual-Band AC+ Router	F9K1116V2	F9K1116V2
AC1200 DB Wi-Fi Dual-Band AC+ Router	F9K1123V2	F9K1123V2

Note: The difference between these models is only the name of F/W version. Model No.: F9K1116V2 was selected as representative model for the test and its data was recorded in this report.

This product is an extension of original one reported under Sporton project number: FR2N1310AA and AB

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

Modifications	Performance Checking
1. Adding a new power adapter (Model Name: MU12AR120100-A1).	1. AC Power Line Conducted Emissions 2. Radiated Emissions (below 1GHz)
2. Updating Band 1 to "New Rules " from "Old Rules".	1. 26dB 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
3. 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 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
4. Updating model name to "F9K1116V2" from "F9K1116V1". 5. Adding a new model number. (Model No. F9K1123V2). 6. Adding two equipment marketing name (AC750 DB Wi-Fi Dual-Band AC+ Router and AC1200 DB Wi-Fi Dual-Band AC+ Router) 7. Changing the second source DDR2. 8. Removing two adapters (Model No.: DSA-18PFG-12 FUS 120150 and Model No.: DSA-12PFE-12 BUS 120100). 9. Updating address to "12045 East Waterfront Drive, Playa Vista, CA 90094" from "12045 E. Waterfront Drive Playa Vista, CA 90094, USA". 10. Updating brand name to "belkin" from "Belkin".	It is not necessary to perform for all tests.

3.8. Table for Supporting Units

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

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
NB*2	Apple	Mac Book	DoC
Flash disk	Silicon	I-Series	DoC

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

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB*4	DELL	E6430	DoC
Flash disk	Silicon	I-Series	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 Software Version	RTL819x 2.2.4-12/07/24					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	61	63	63	63	63	63
802.11n MCS8 HT20	56/61	58/63	58/63	63/63	63/63	63/63
802.11ac MCS0/Nss2 VHT20	57/63	57/63	58/63	63/63	63/63	63/63
Mode	NCB: 40MHz					
	5190 MHz		5230 MHz	5755 MHz		5795 MHz
802.11n MCS8 HT40	48/53		58/63	62/63		62/63
802.11ac MCS0/Nss2 VHT40	51/58		58/63	62/63		62/63
Mode	NCB: 80MHz					
802.11ac MCS0/Nss2 VHT80	5210 MHz			5775 MHz		
	39/44			57/56		

3.10. EUT Operation during Test

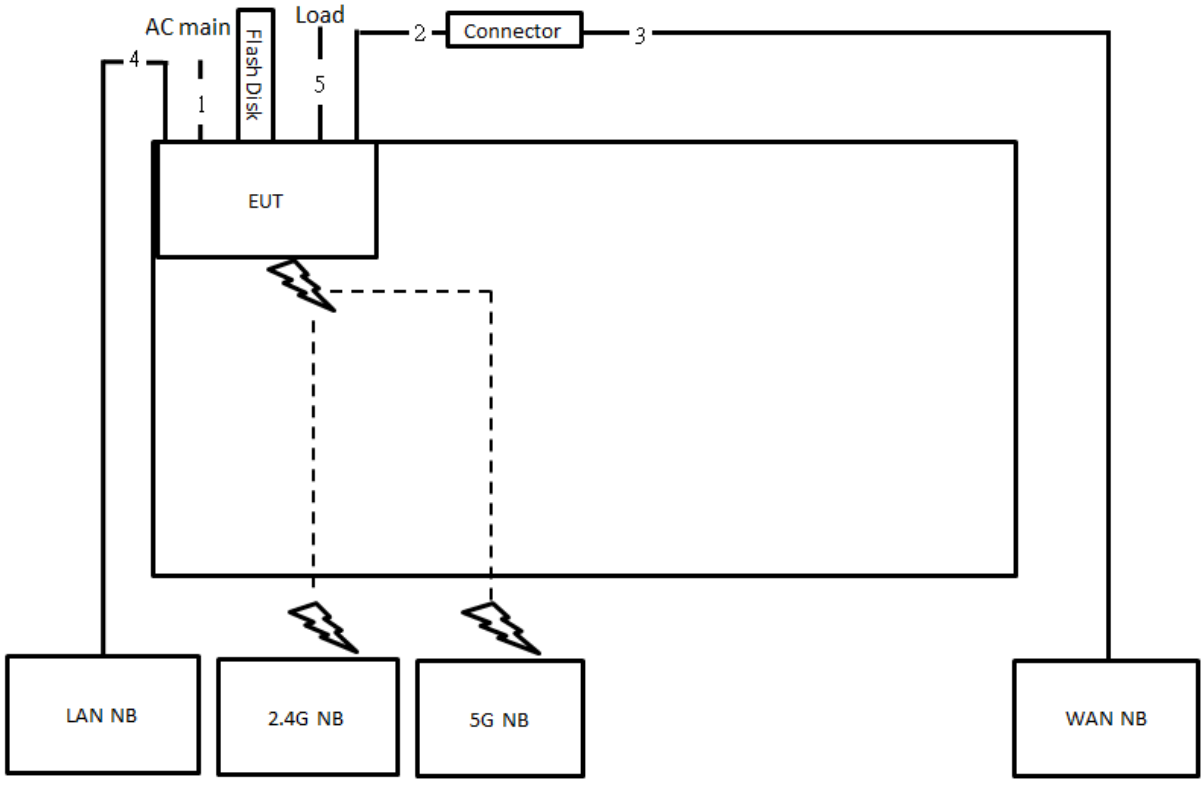
The EUT was programmed to be in continuously transmitting mode.

3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	1.400	1.560	89.74	0.47	0.71
802.11n MCS8 HT20	0.684	0.748	91.44	0.39	1.46
802.11n MCS8 HT40	0.348	0.426	81.69	0.88	2.87
802.11ac MCS0/Nss2 VHT20	0.677	0.789	85.80	0.66	1.48
802.11ac MCS0/Nss2 VHT40	0.322	0.514	62.65	2.03	3.11
802.11ac MCS0/Nss2 VHT80	0.152	0.264	57.58	2.40	6.58

3.12. Test Configurations

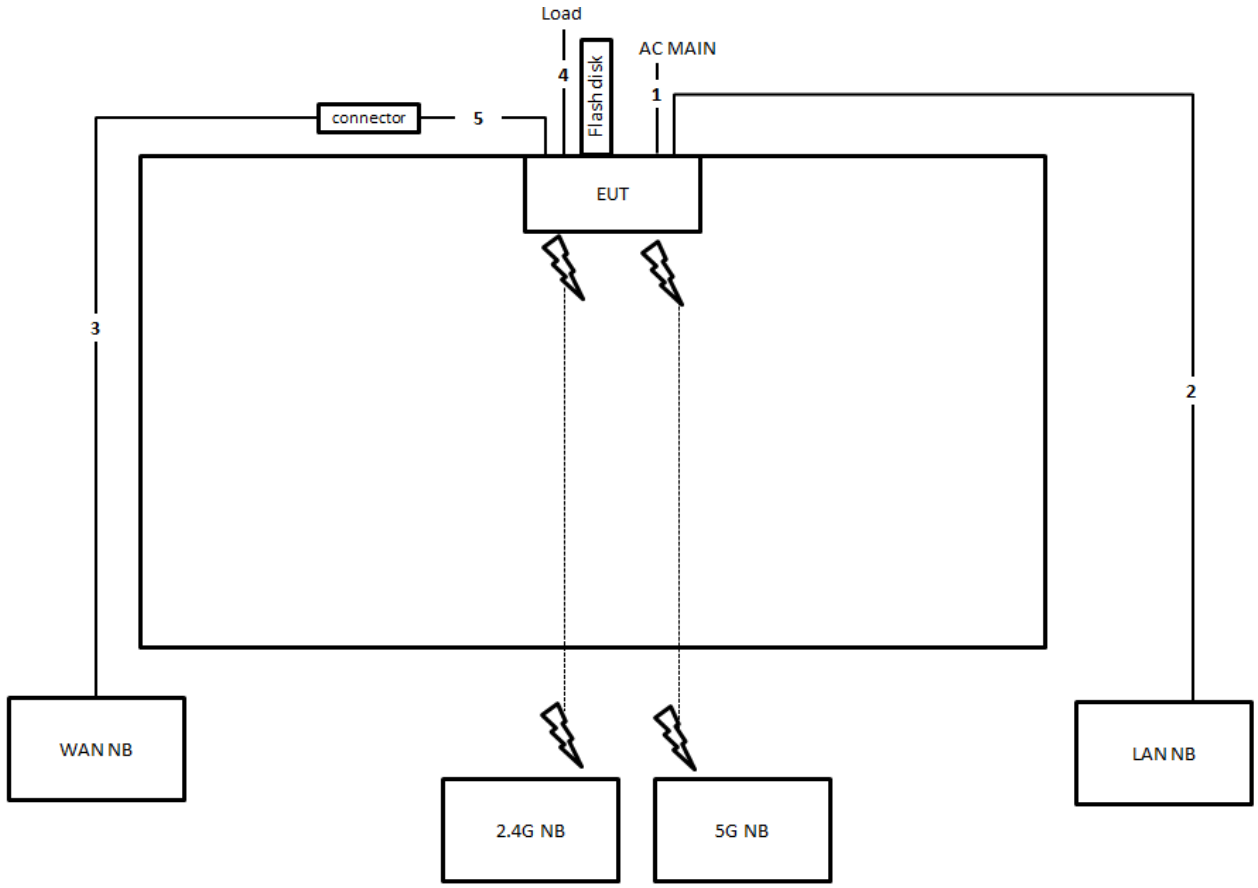
3.12.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	1.2m
3	RJ-45 cable	No	10m
4	RJ-45 cable	No	10m
5	RJ-45 cable*3	No	1.5m

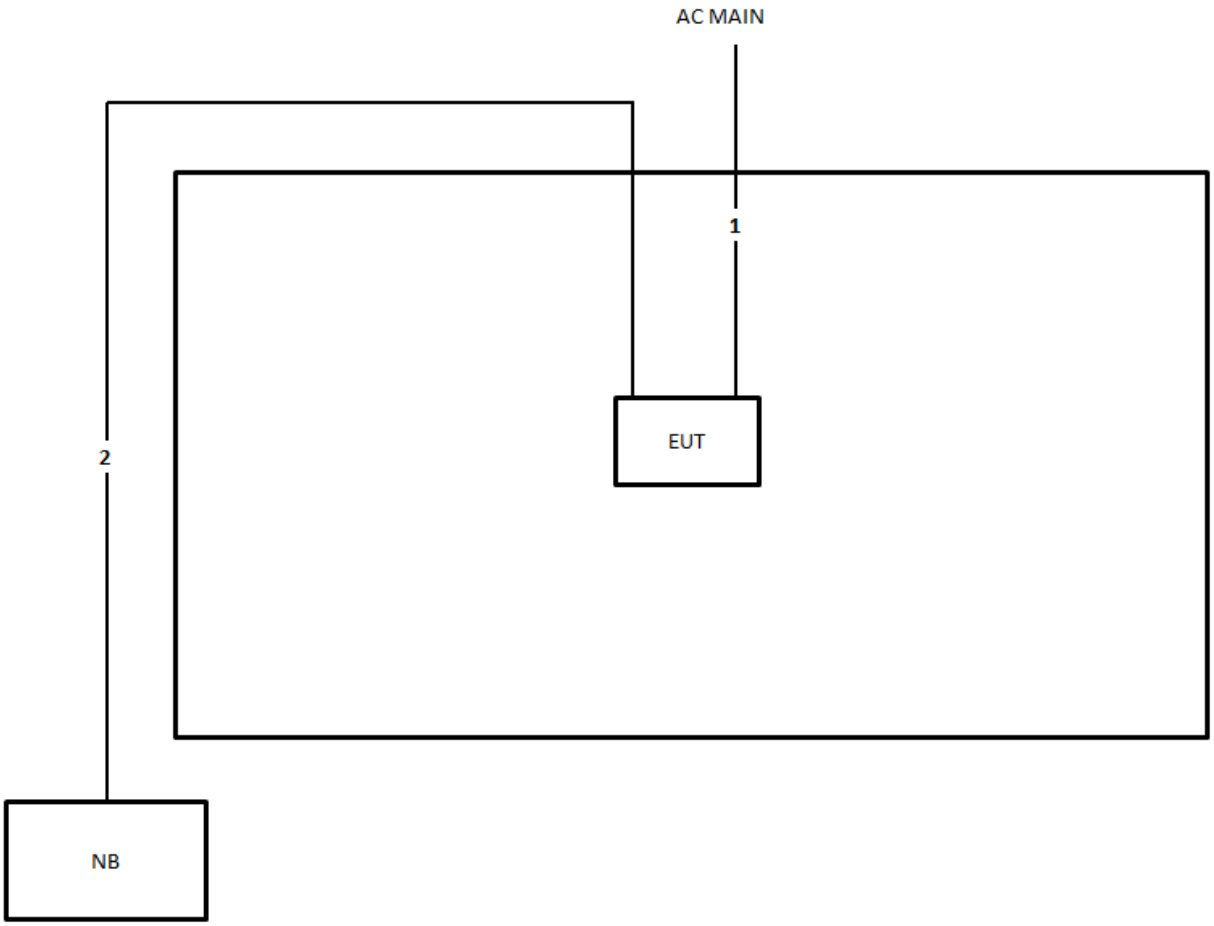
3.12.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz ~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	10m
4	RJ-45 cable*3	No	1.5m
5	RJ-45 cable	No	1.2m

Test Configuration: above 1GHz



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

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

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

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

4.1.2. Measuring Instruments and Setting

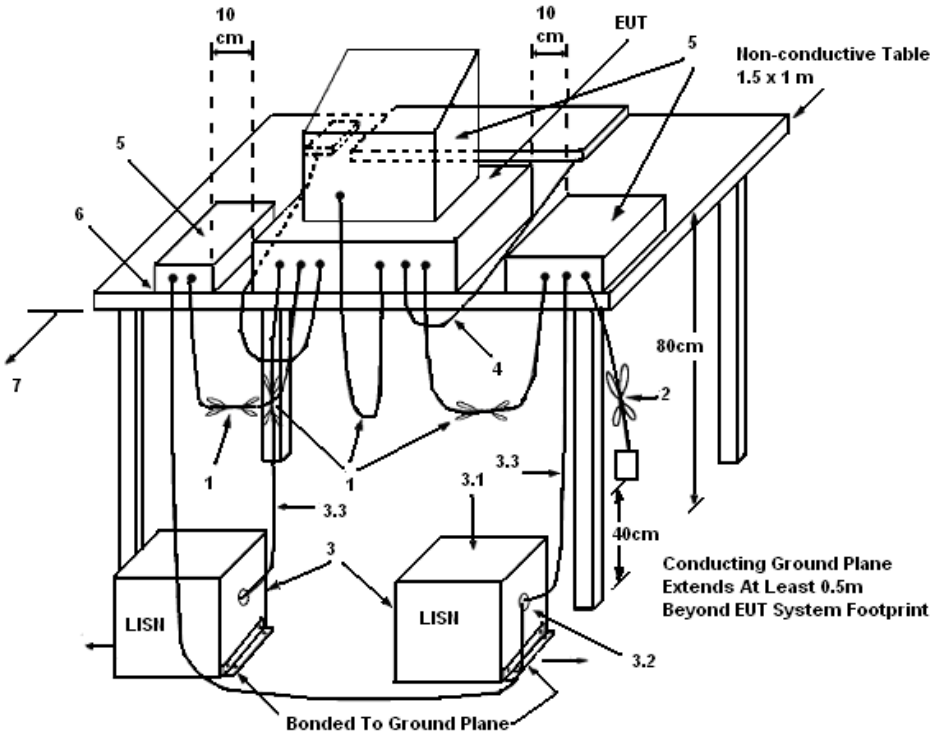
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

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

4.1.4. Test Setup Layout



LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

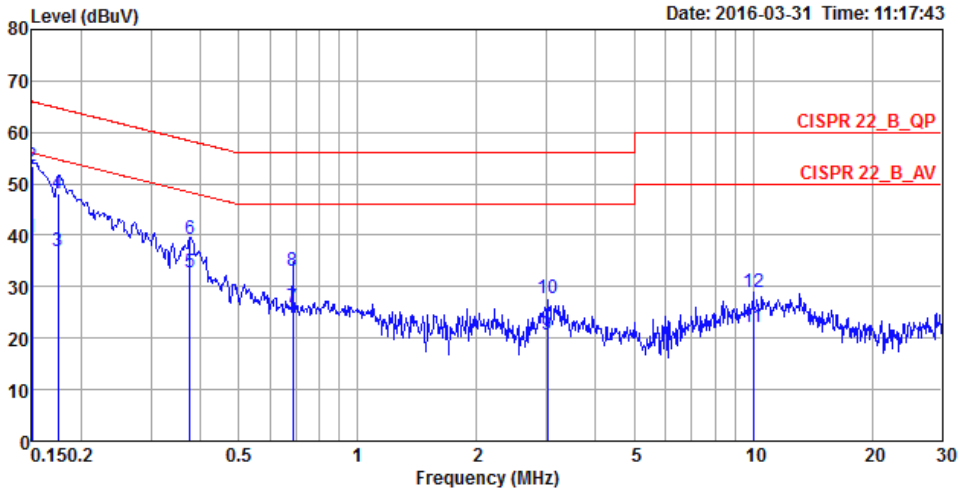
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

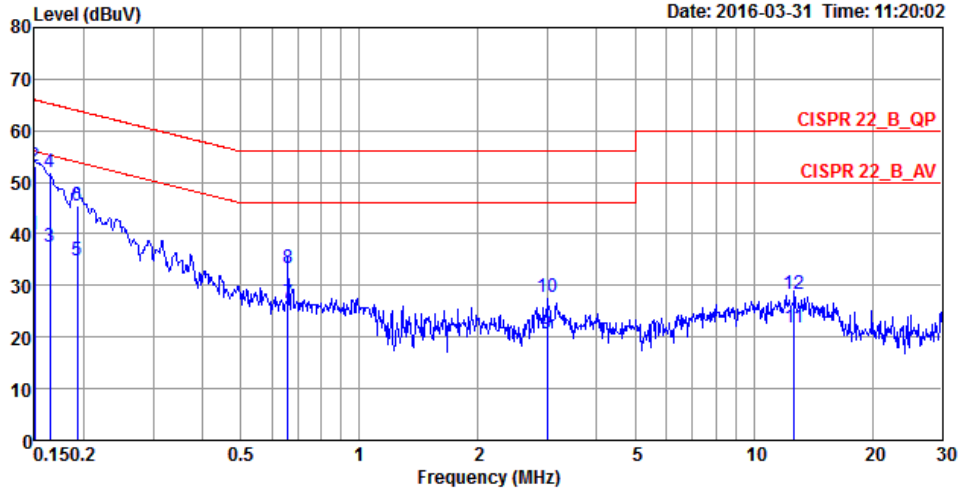
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23℃	Humidity	58%
Test Engineer	Deven Huang	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1500	39.56	-16.44	56.00	29.52	10.02	0.02	LINE	Average
2	0.1500	53.51	-12.49	66.00	43.47	10.02	0.02	LINE	QP
3	0.1749	36.95	-17.77	54.72	27.01	9.92	0.02	LINE	Average
4	0.1749	48.24	-16.48	64.72	38.30	9.92	0.02	LINE	QP
5	0.3771	32.83	-15.51	48.34	22.87	9.92	0.04	LINE	Average
6	0.3771	39.35	-18.99	58.34	29.39	9.92	0.04	LINE	QP
7	0.6863	26.07	-19.93	46.00	16.10	9.93	0.04	LINE	Average
8	0.6863	32.96	-23.04	56.00	22.99	9.93	0.04	LINE	QP
9	3.0253	20.75	-25.25	46.00	10.72	9.98	0.05	LINE	Average
10	3.0253	27.76	-28.24	56.00	17.73	9.98	0.05	LINE	QP
11	10.0186	22.23	-27.77	50.00	11.83	10.15	0.25	LINE	Average
12	10.0186	28.90	-31.10	60.00	18.50	10.15	0.25	LINE	QP

Temperature	23℃	Humidity	58%
Test Engineer	Deven Huang	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1500	39.74	-16.26	56.00	29.70	10.02	0.02	NEUTRAL	Average
2	0.1500	53.05	-12.95	66.00	43.01	10.02	0.02	NEUTRAL	QP
3	0.1641	37.49	-17.76	55.25	27.45	10.02	0.02	NEUTRAL	Average
4	0.1641	51.82	-13.43	65.25	41.78	10.02	0.02	NEUTRAL	QP
5	0.1924	34.89	-19.04	53.93	24.95	9.92	0.02	NEUTRAL	Average
6	0.1924	45.34	-18.59	63.93	35.40	9.92	0.02	NEUTRAL	QP
7	0.6578	26.47	-19.53	46.00	16.50	9.93	0.04	NEUTRAL	Average
8	0.6578	33.27	-22.73	56.00	23.30	9.93	0.04	NEUTRAL	QP
9	2.9935	20.80	-25.20	46.00	10.77	9.98	0.05	NEUTRAL	Average
10	2.9935	27.79	-28.21	56.00	17.76	9.98	0.05	NEUTRAL	QP
11	12.6489	21.92	-28.08	50.00	11.48	10.19	0.25	NEUTRAL	Average
12	12.6489	28.38	-31.62	60.00	17.94	10.19	0.25	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

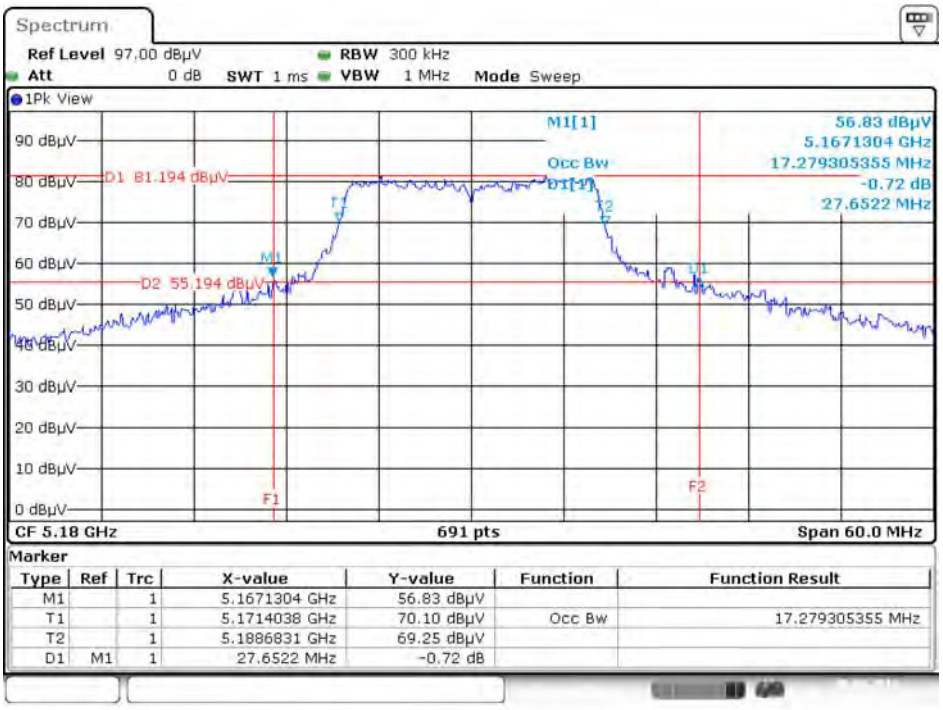
The EUT was programmed to be in continuously transmitting mode.

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

Temperature	25°C	Humidity	45%
Test Engineer	Wen Chao		

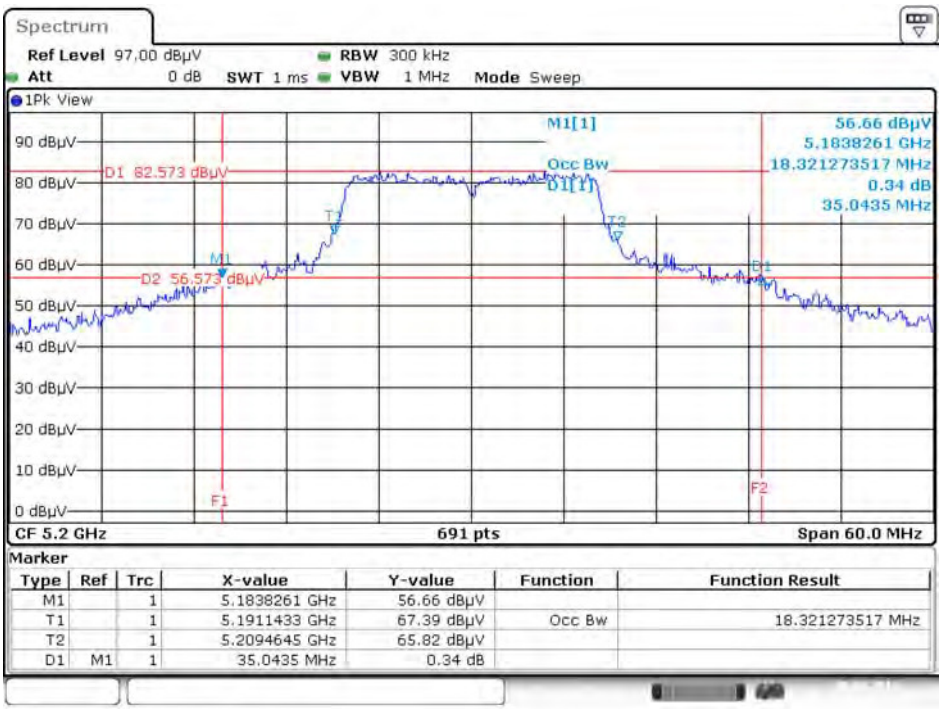
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	27.65	17.28
	5200 MHz	35.04	18.32
	5240 MHz	35.91	19.02
	5745 MHz	37.13	19.10
	5785 MHz	37.13	19.97
	5825 MHz	37.74	20.75
802.11n MCS8 HT20	5180 MHz	24.87	17.89
	5200 MHz	26.61	18.06
	5240 MHz	32.35	18.41
	5745 MHz	28.52	18.32
	5785 MHz	32.17	18.32
	5825 MHz	30.09	18.23
802.11n MCS8 HT40	5190 MHz	42.90	36.47
	5230 MHz	72.61	37.34
	5755 MHz	73.91	37.63
	5795 MHz	75.36	37.63
802.11ac MCS0/Nss2 VHT20	5180 MHz	22.35	17.89
	5200 MHz	24.00	17.89
	5240 MHz	28.35	17.97
	5745 MHz	31.13	18.41
	5785 MHz	31.30	18.41
	5825 MHz	32.70	18.76
802.11ac MCS0/Nss2 VHT40	5190 MHz	43.19	36.61
	5230 MHz	75.65	37.34
	5755 MHz	73.19	37.92
	5795 MHz	75.51	38.50
802.11ac MCS0/Nss2 VHT80	5210 MHz	82.90	75.83
	5775 MHz	142.61	76.70

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



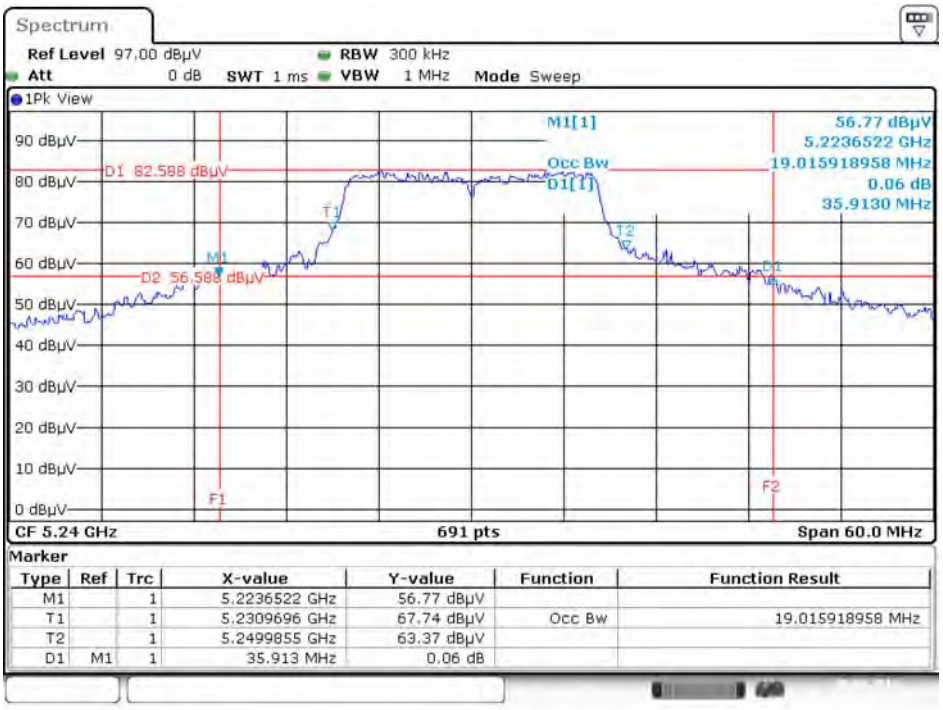
Date: 30.MAR.2016 20:20:21

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



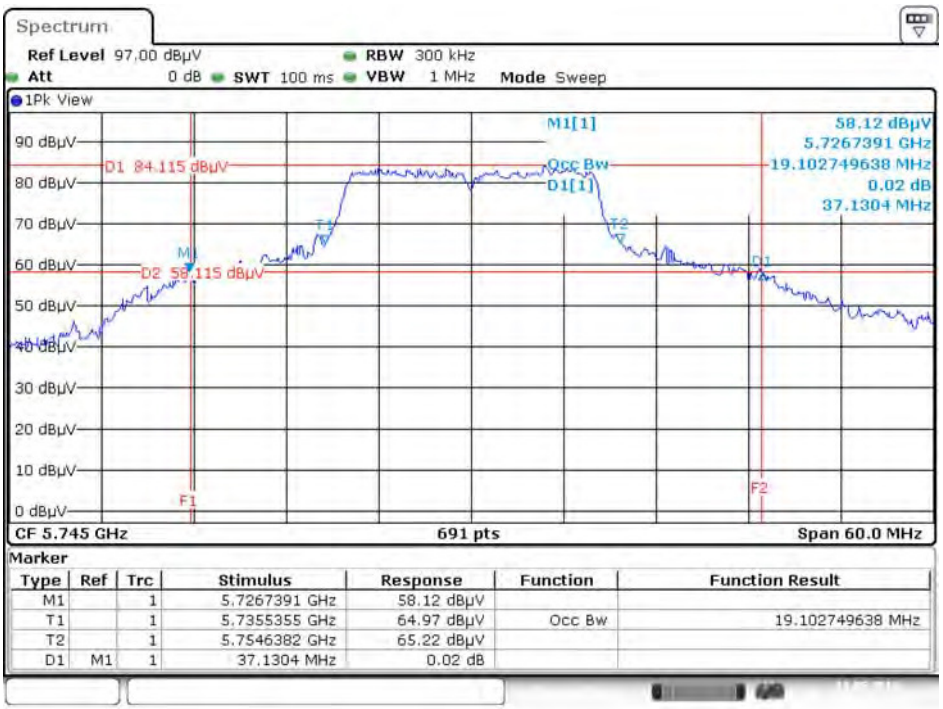
Date: 30.MAR.2016 20:21:13

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



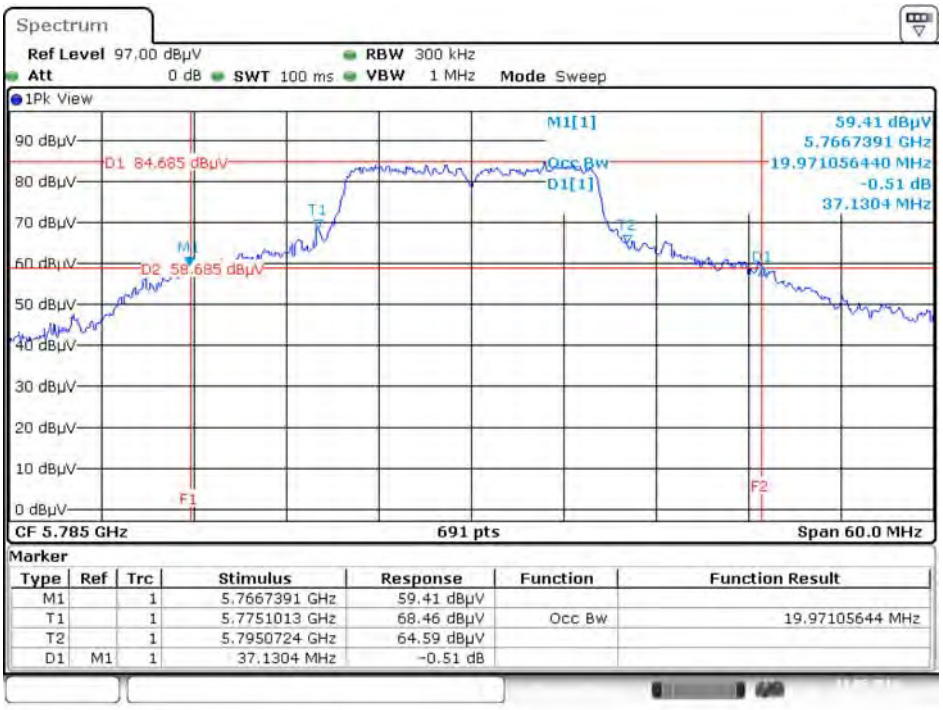
Date: 30.MAR.2016 20:23:15

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

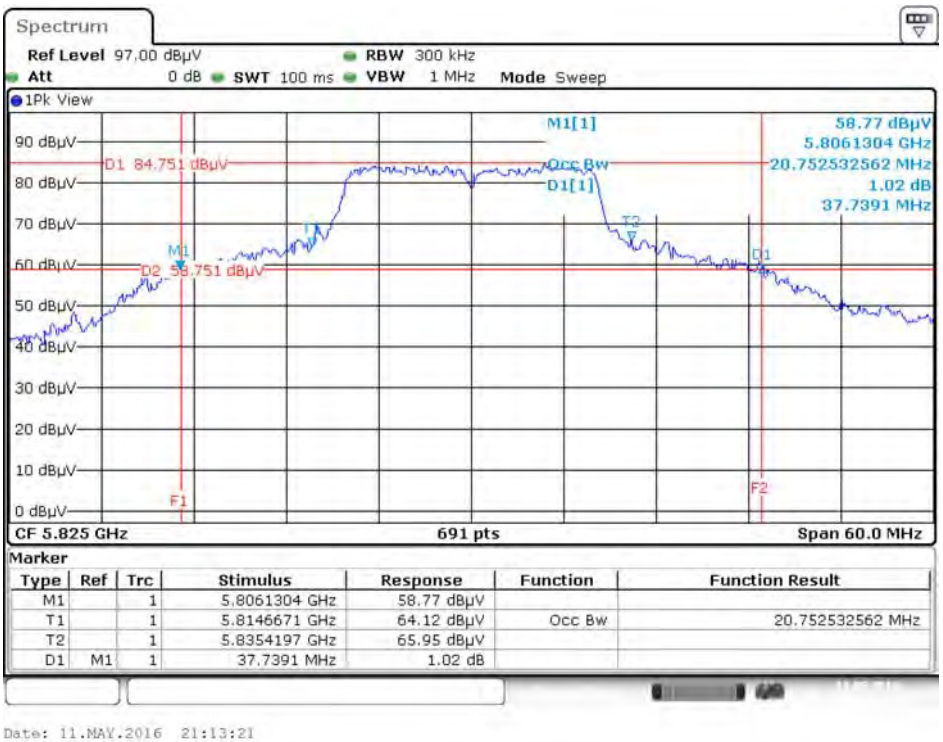


Date: 11.MAY.2016 21:12:05

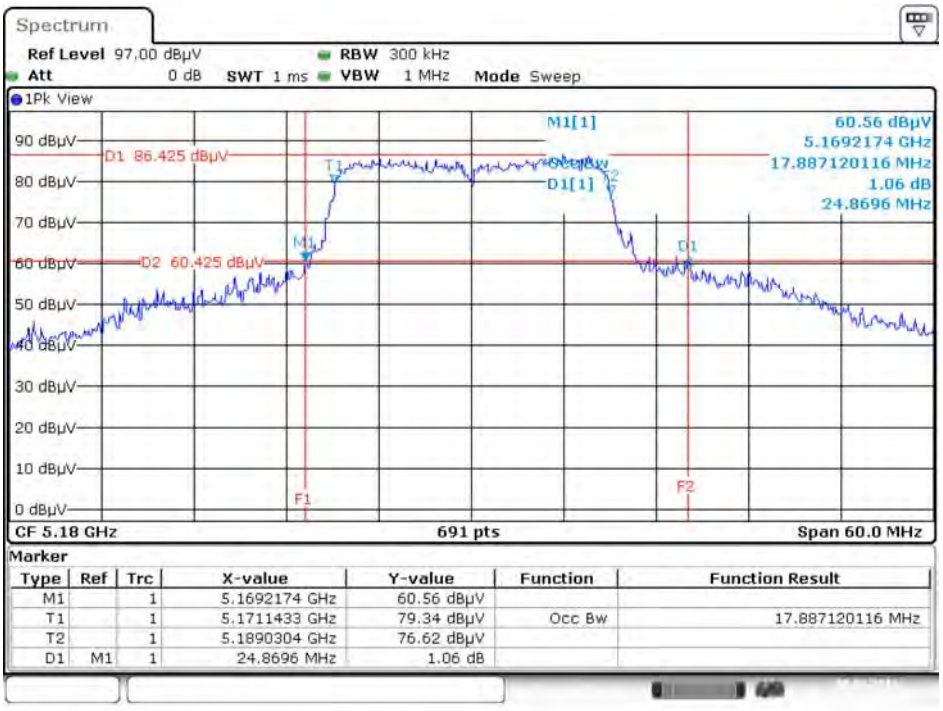
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Ant. 1 / 5785 MHz



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

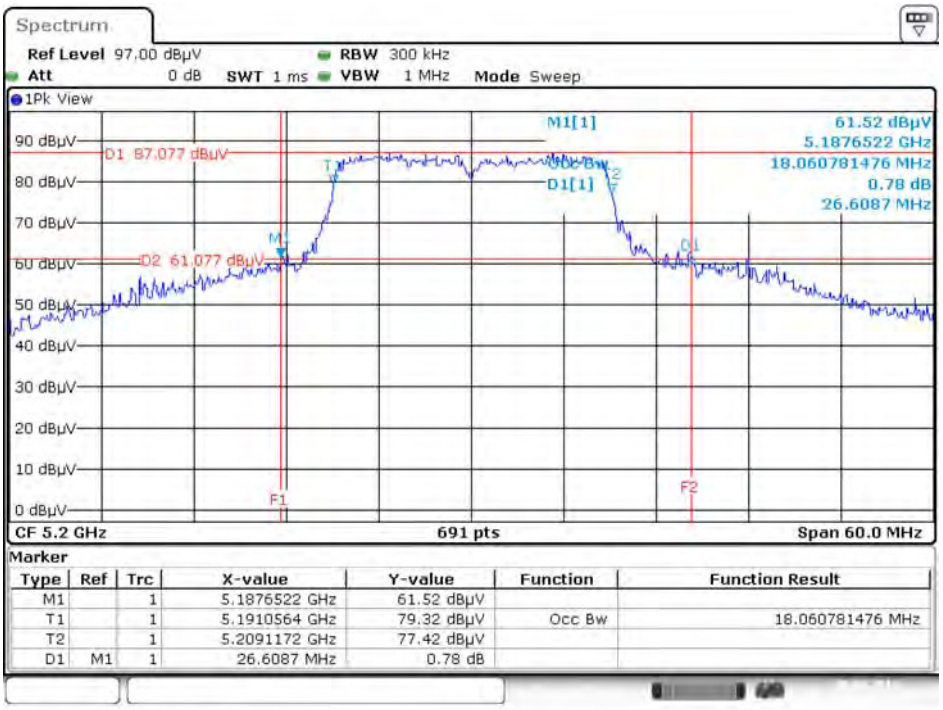


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2 / 5180 MHz



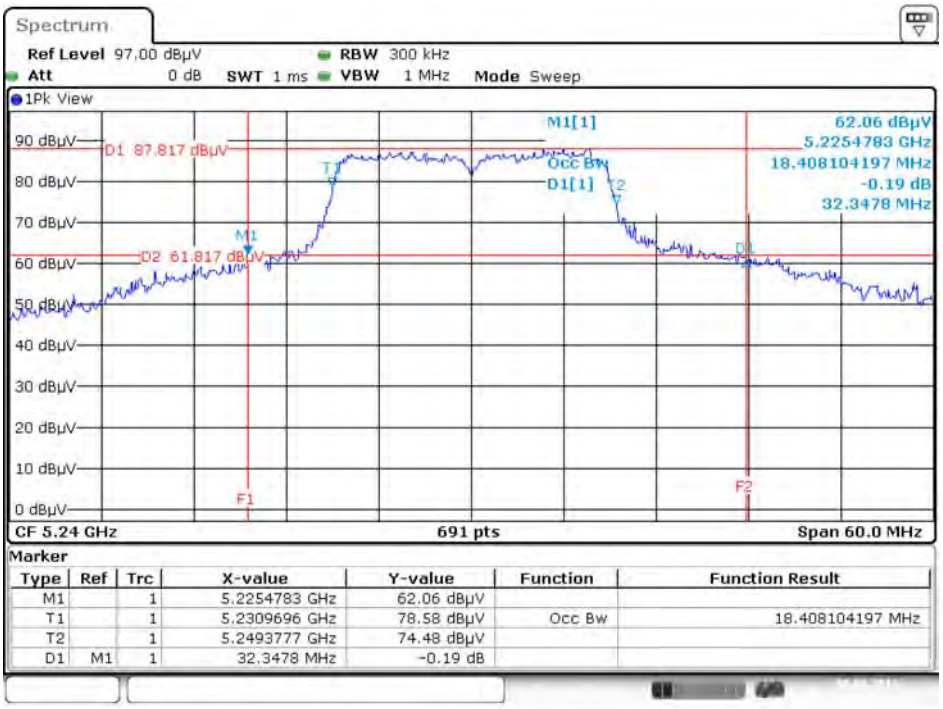
Date: 30.MAR.2016 20:30:38

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2 / 5200 MHz



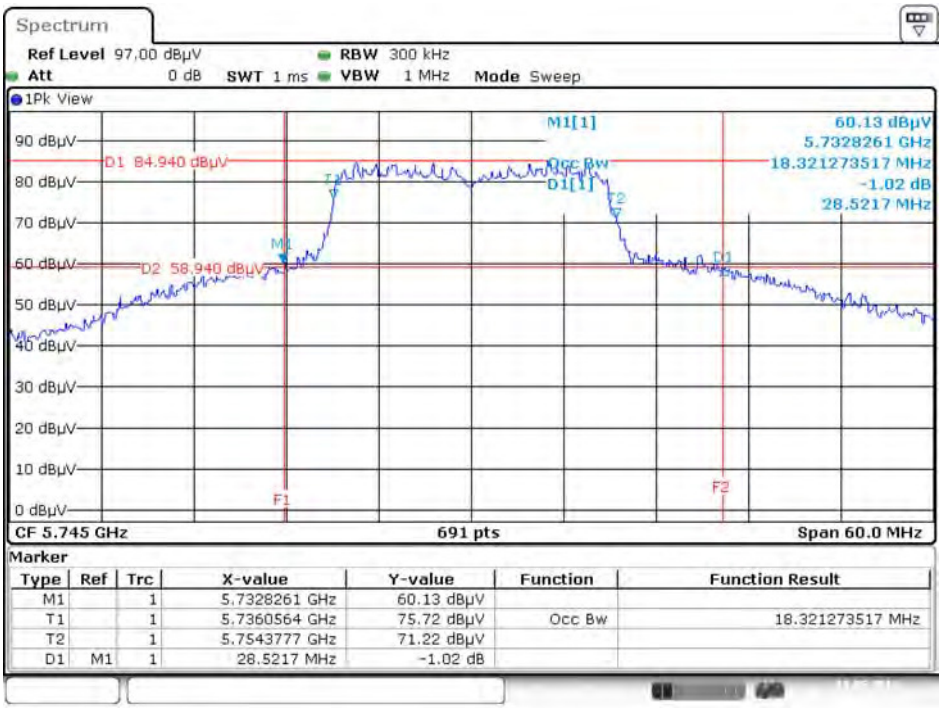
Date: 30.MAR.2016 20:31:01

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2 / 5240 MHz



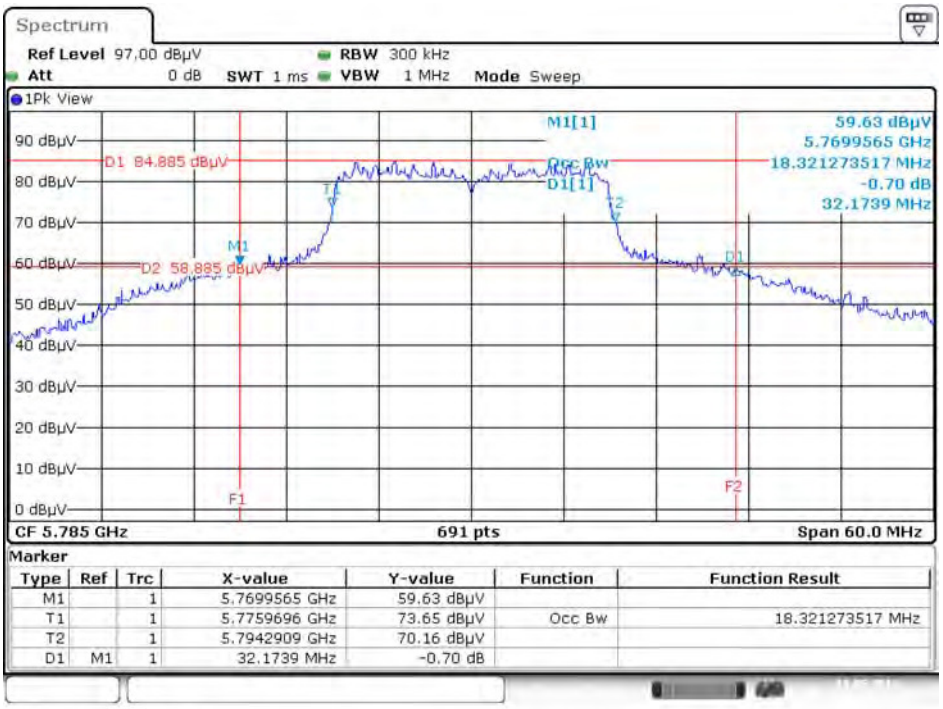
Date: 30.MAR.2016 20:31:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2 / 5745 MHz



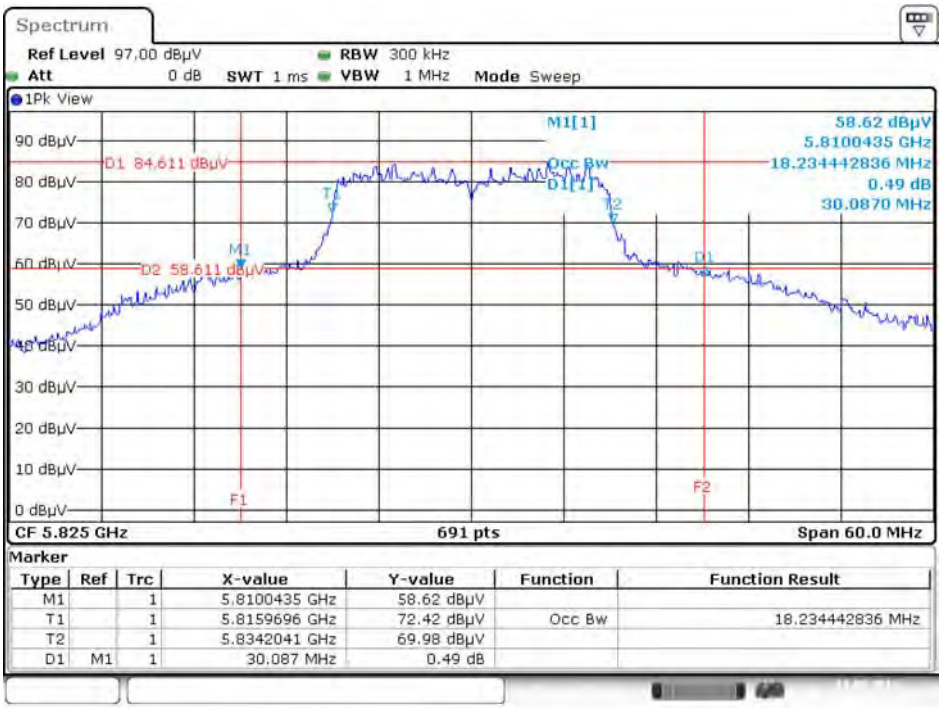
Date: 19.MAY.2016 14:30:17

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2 / 5785 MHz



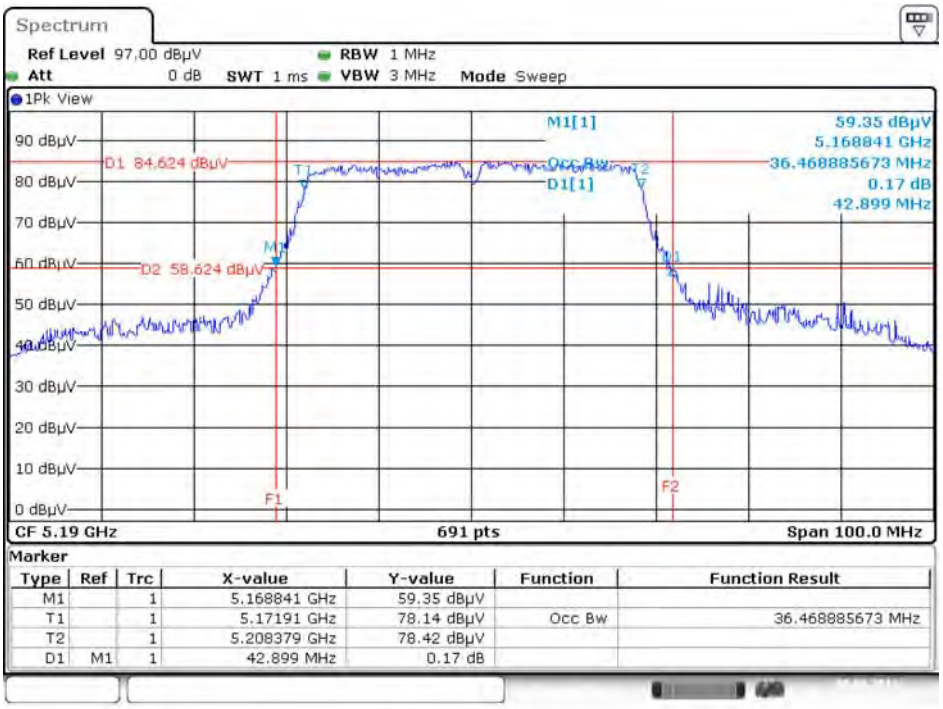
Date: 19.MAY.2016 14:30:45

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2 / 5825 MHz



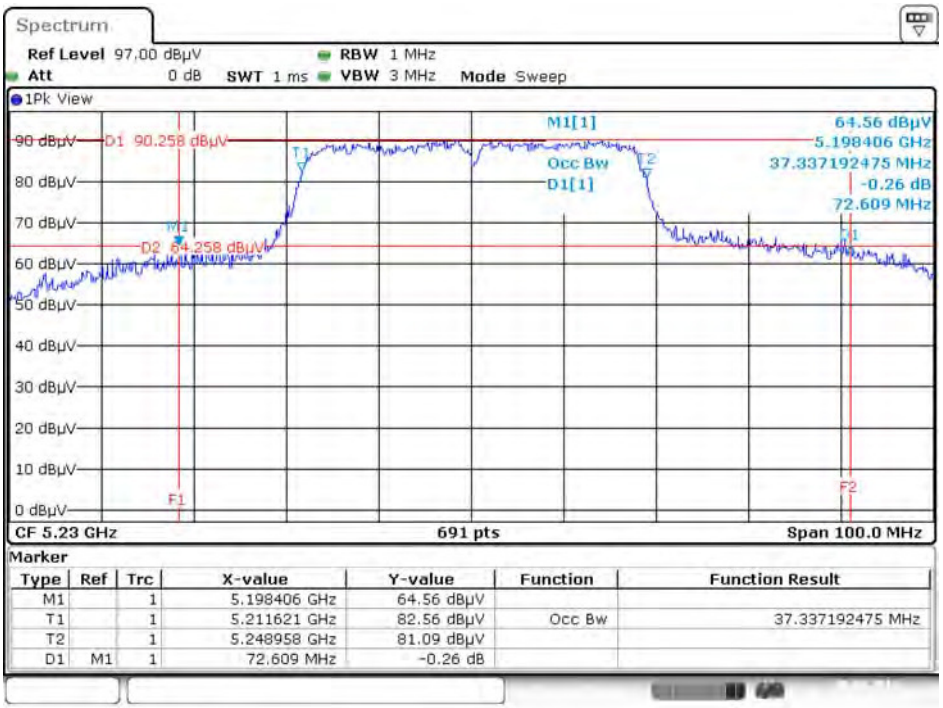
Date: 19.MAY.2016 14:31:10

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT40 / Ant. 1 + Ant. 2 / 5190 MHz



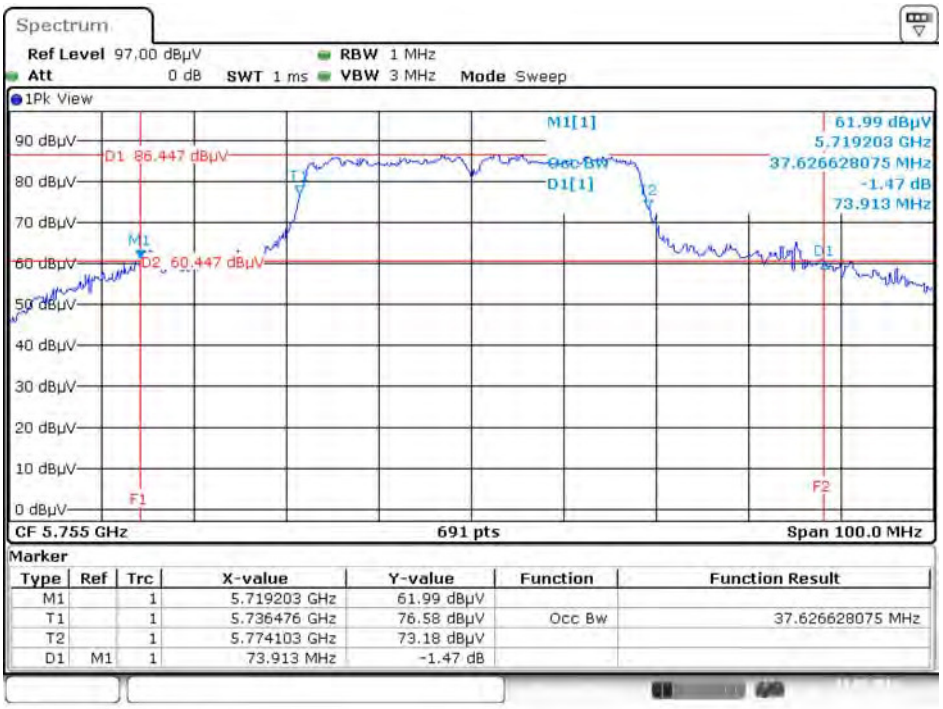
Date: 30.MAR.2016 20:35:16

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT40 / Ant. 1 + Ant. 2 / 5230 MHz



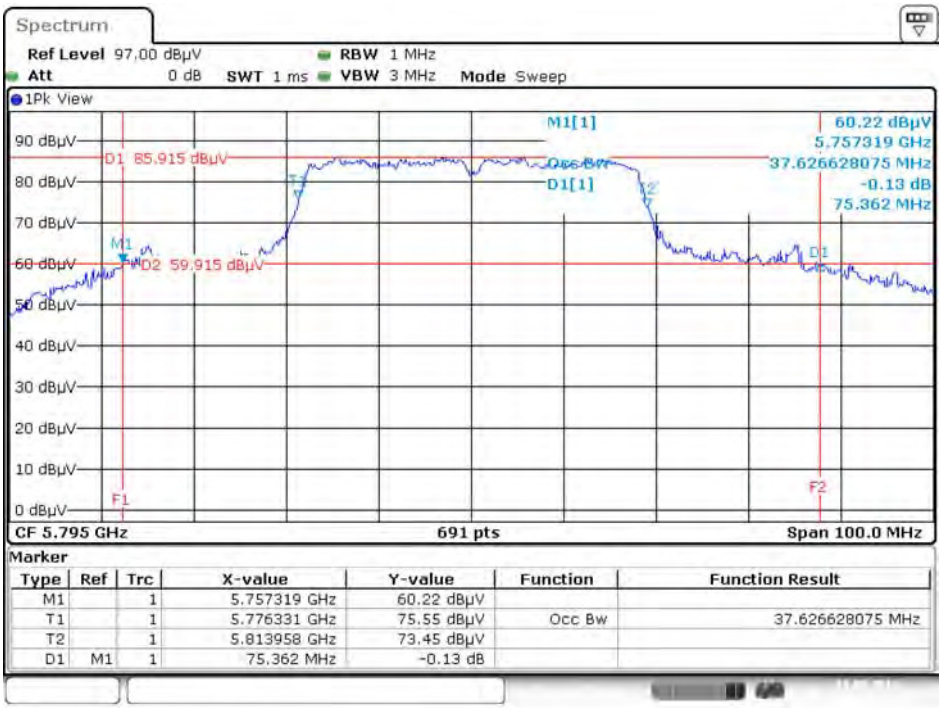
Date: 30.MAR.2016 20:35:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT40 / Ant. 1 + Ant. 2 / 5755 MHz



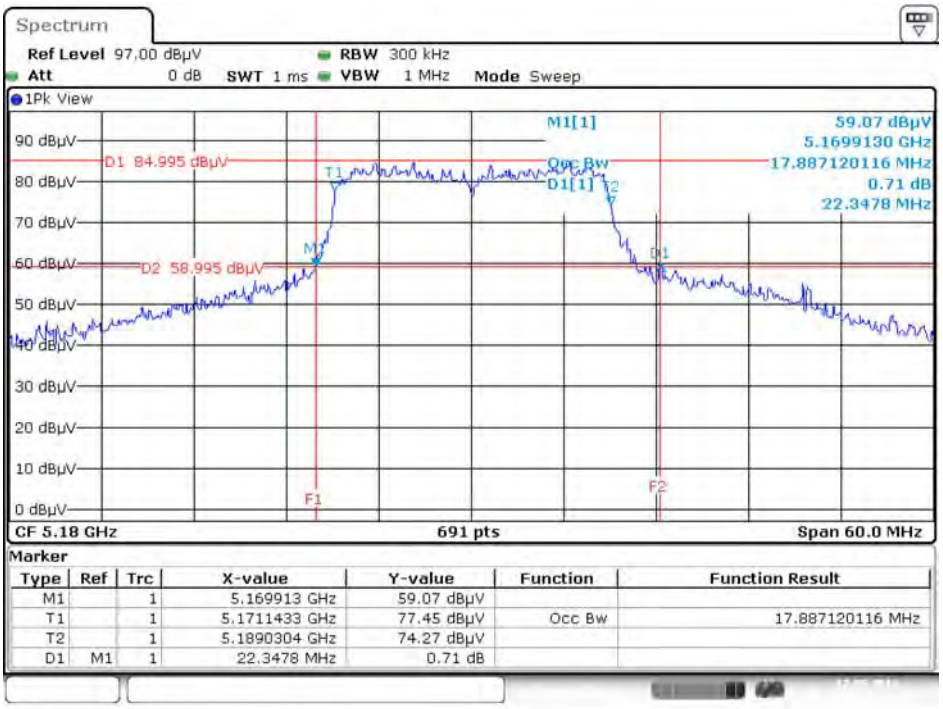
Date: 19.MAY.2016 14:29:37

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT40 / Ant. 1 + Ant. 2 / 5795 MHz



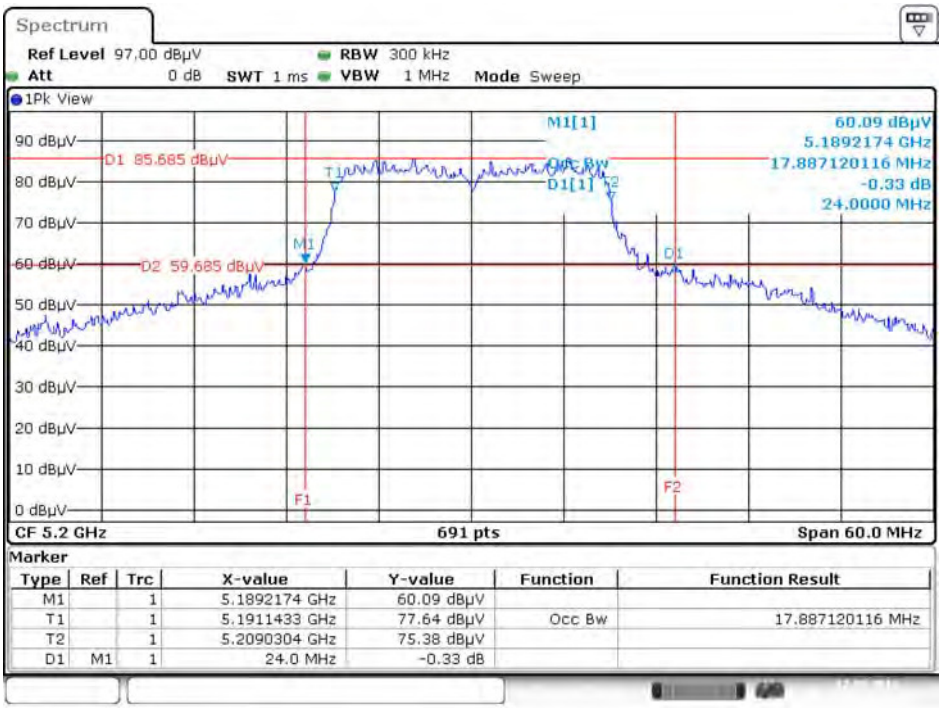
Date: 19.MAY.2016 14:28:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2 / 5180 MHz



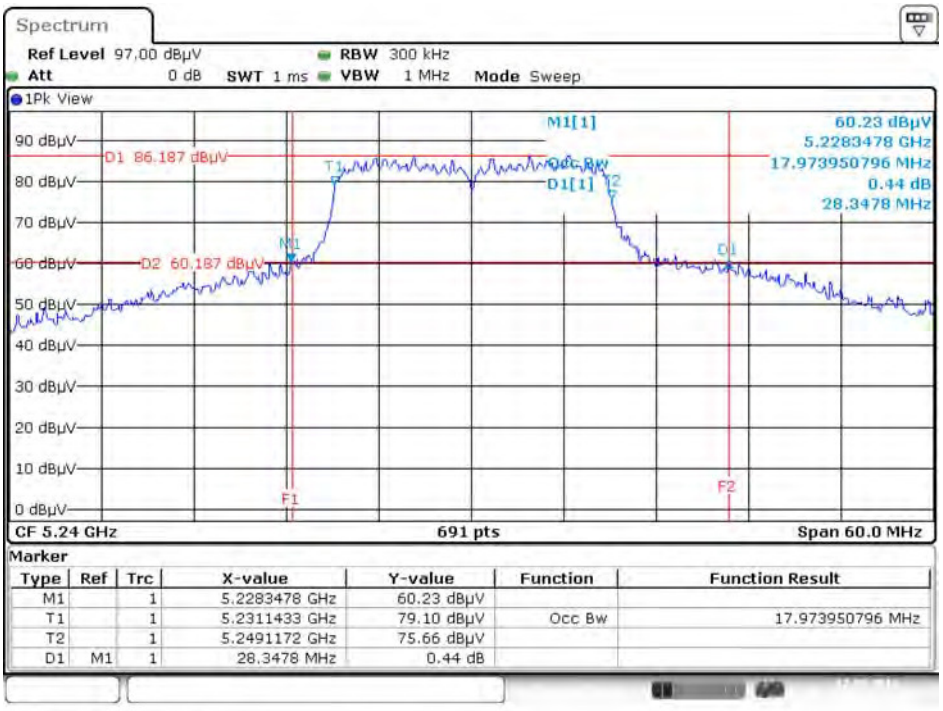
Date: 12.MAY.2016 10:53:47

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2 / 5200 MHz



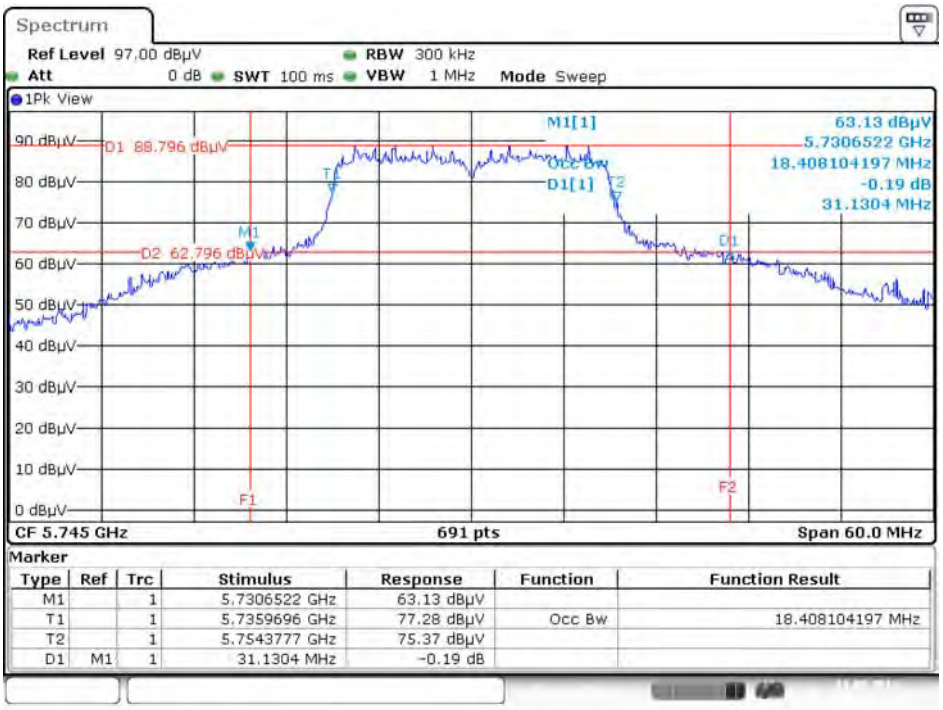
Date: 12.MAY.2016 10:59:31

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2 / 5240 MHz



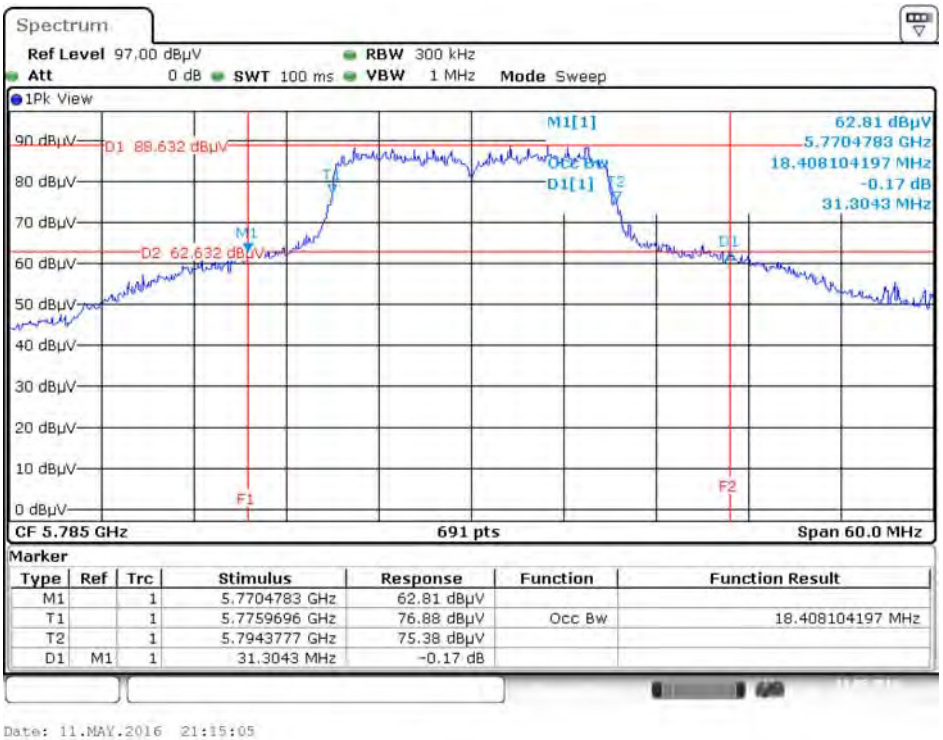
Date: 12.MAY.2016 11:00:45

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2 / 5745 MHz

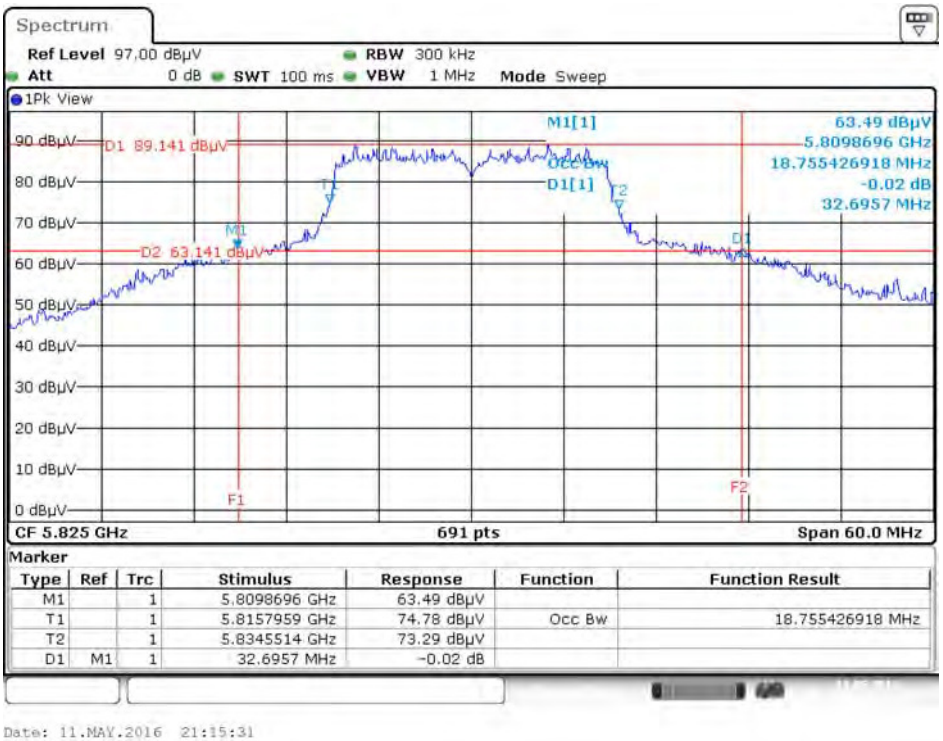


Date: 11.MAY.2016 21:14:08

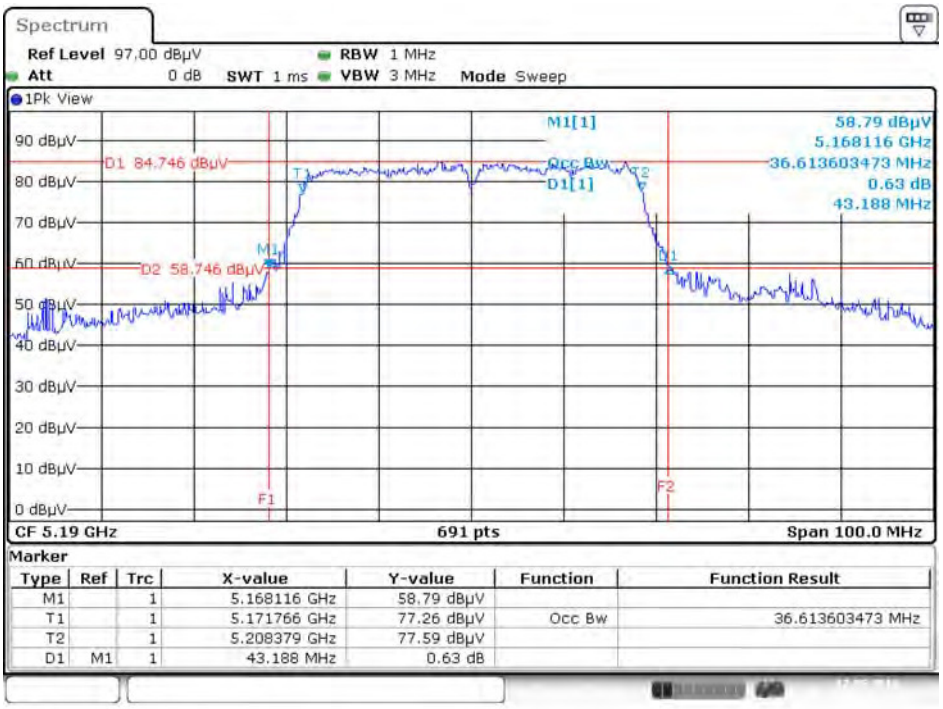
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2 / 5785 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2 / 5825 MHz

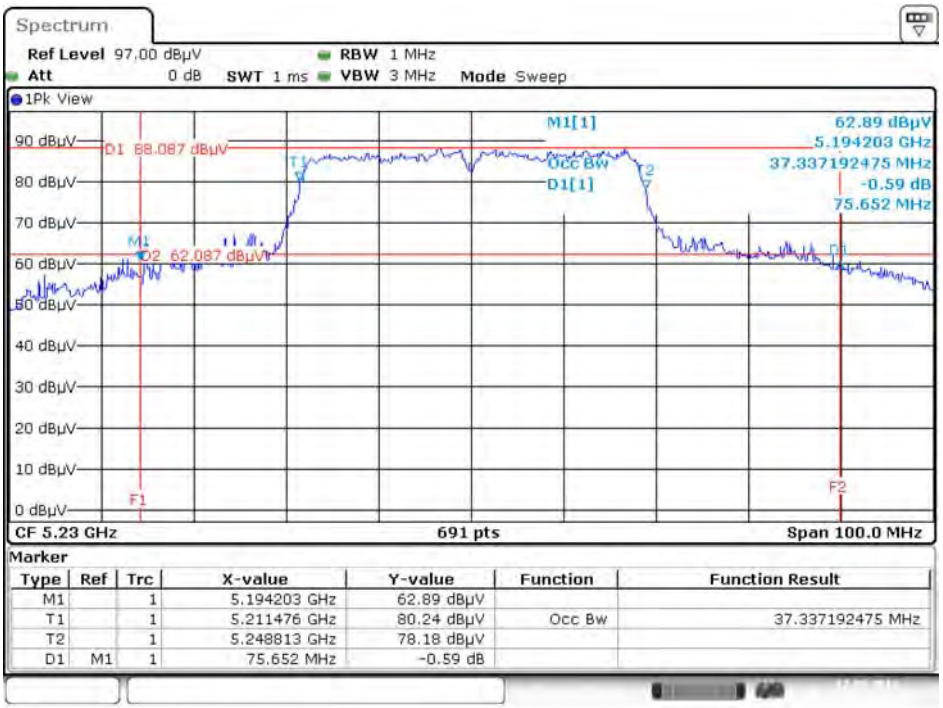


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Ant. 1 + Ant. 2 / 5190 MHz



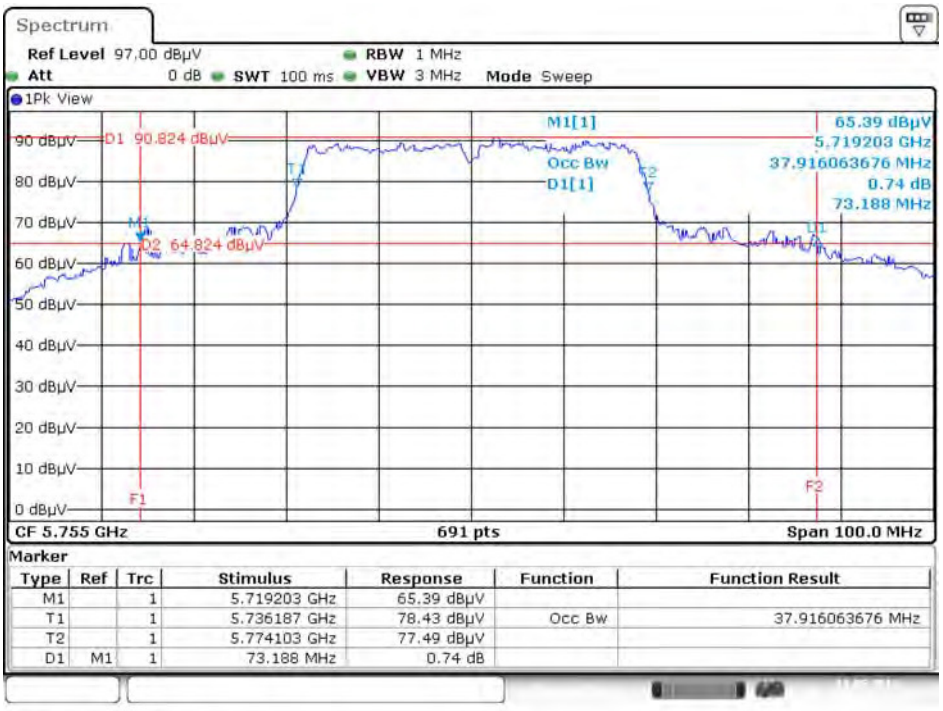
Date: 12.MAY.2016 11:09:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Ant. 1 + Ant. 2 / 5230 MHz

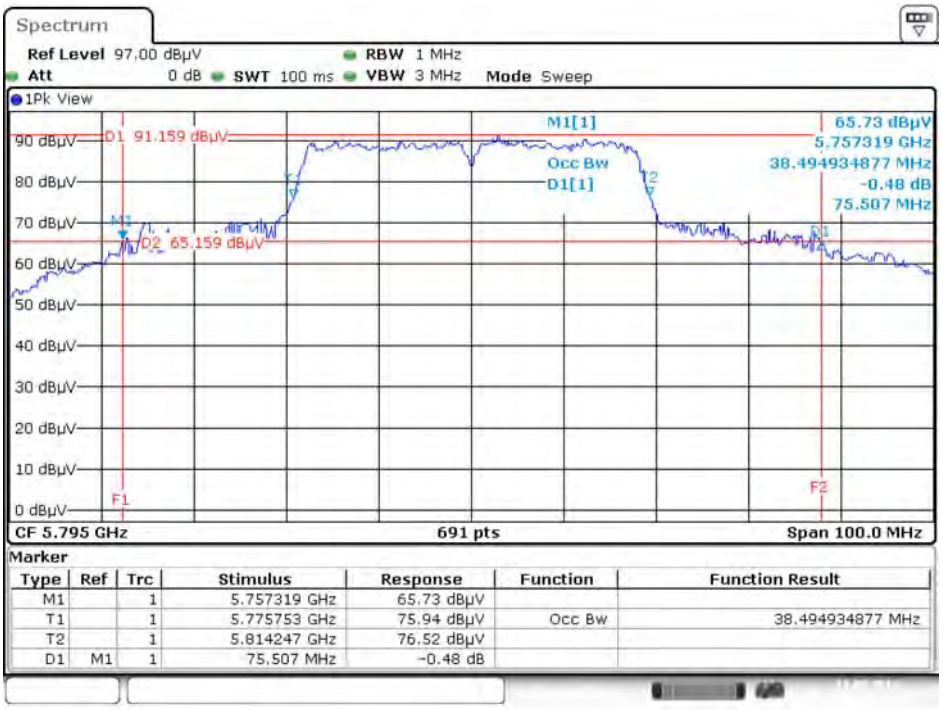


Date: 12.MAY.2016 11:10:41

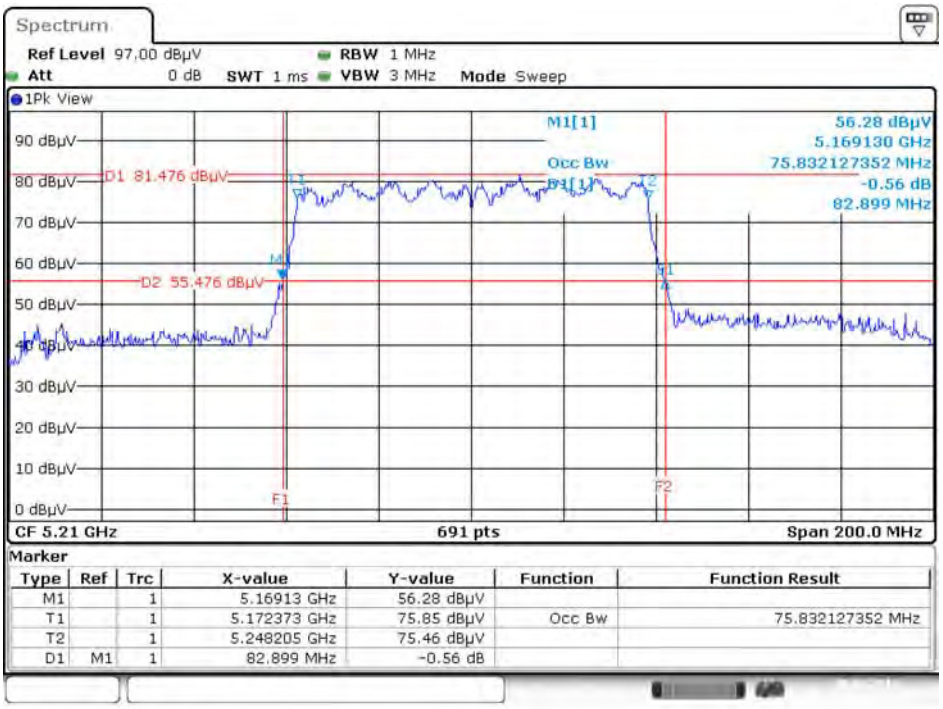
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Ant. 1 + Ant. 2 / 5755 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Ant. 1 + Ant. 2 / 5795 MHz

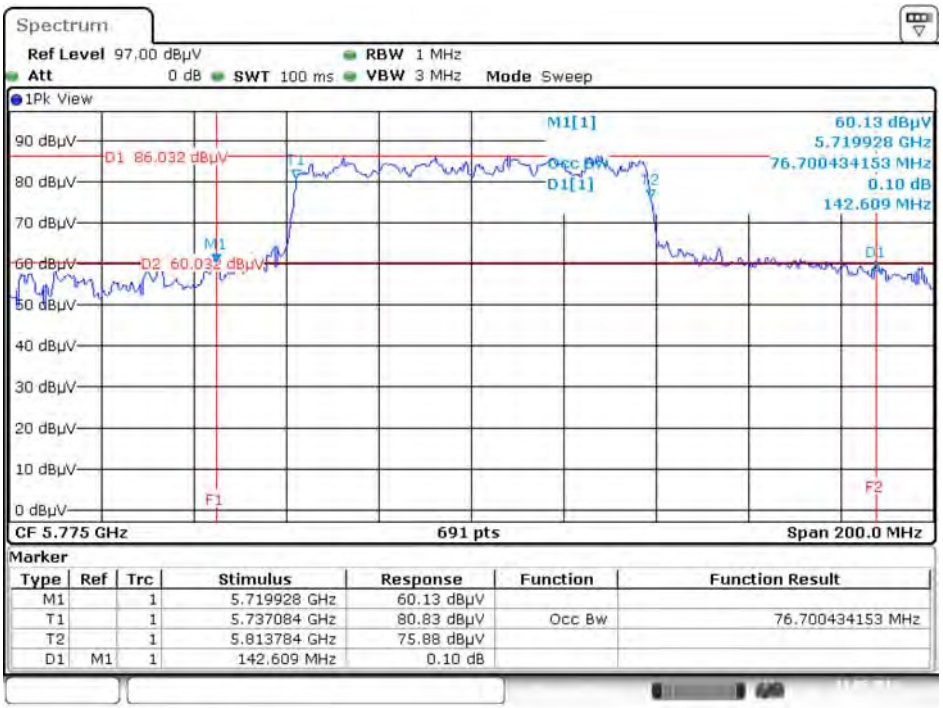


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Ant. 1 + Ant. 2 / 5210 MHz



Date: 30.MAR.2016 20:38:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Ant. 1 + Ant. 2 / 5775 MHz



Date: 11.MAY.2016 21:17:36

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

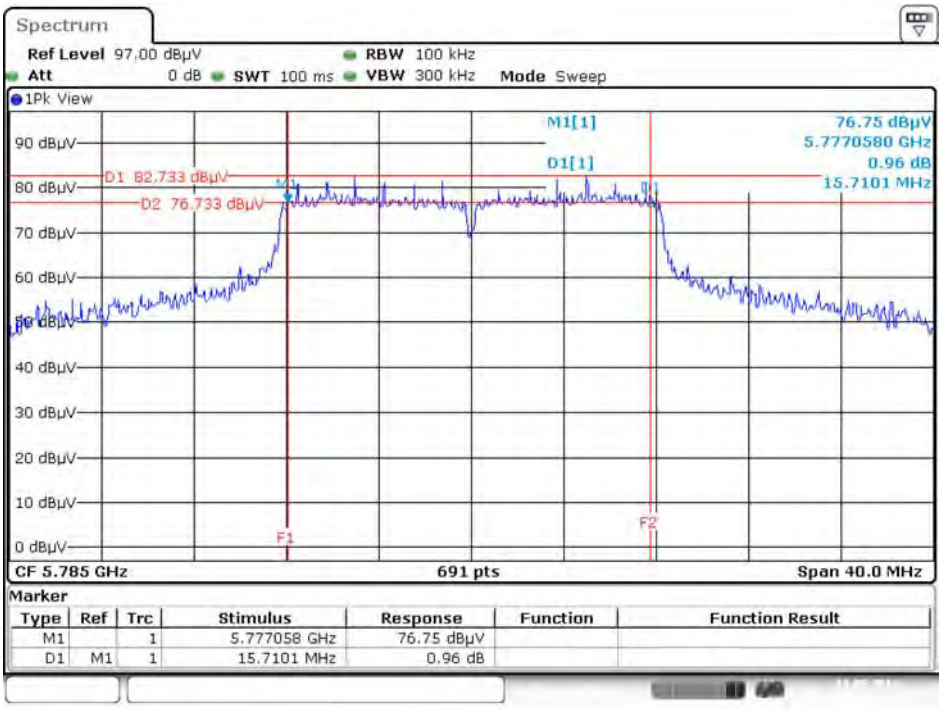
Temperature	25℃	Humidity	45%
Test Engineer	Wen Chao		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	15.94	500	Complies
	5785 MHz	15.71	500	Complies
	5825 MHz	16.29	500	Complies
802.11n MCS8 HT20	5745 MHz	13.86	500	Complies
	5785 MHz	17.62	500	Complies
	5825 MHz	15.30	500	Complies
802.11n MCS8 HT40	5755 MHz	35.25	500	Complies
	5795 MHz	35.25	500	Complies
802.11ac MCS0/Nss2 VHT20	5745 MHz	15.48	500	Complies
	5785 MHz	15.07	500	Complies
	5825 MHz	15.88	500	Complies
802.11ac MCS0/Nss2 VHT40	5755 MHz	35.13	500	Complies
	5795 MHz	35.13	500	Complies
802.11ac MCS0/Nss2 VHT80	5775 MHz	73.91	500	Complies

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

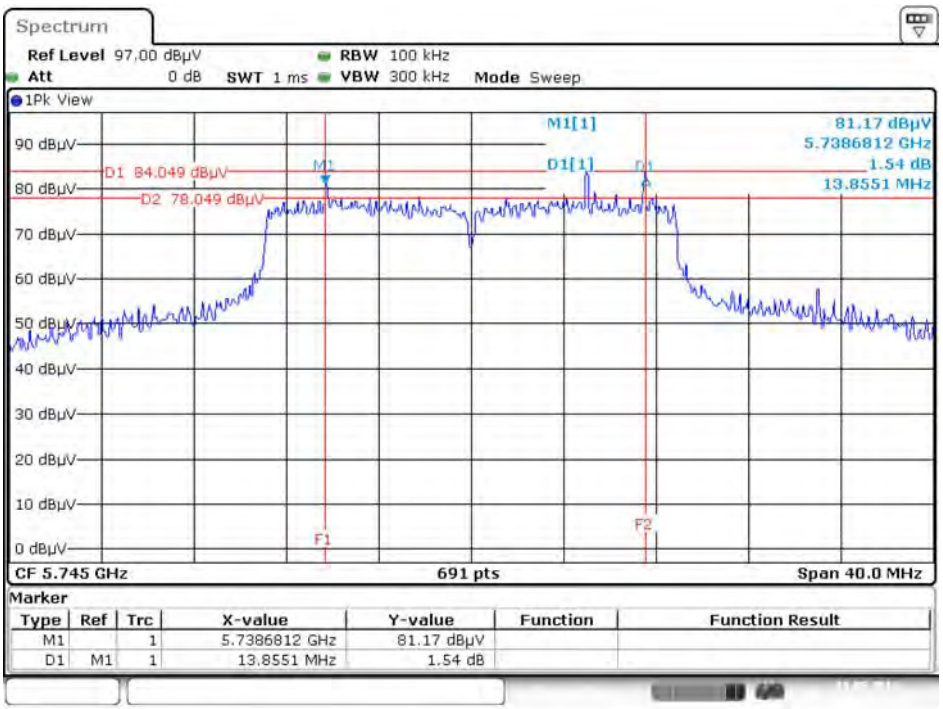
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Ant. 1 / 5785 MHz



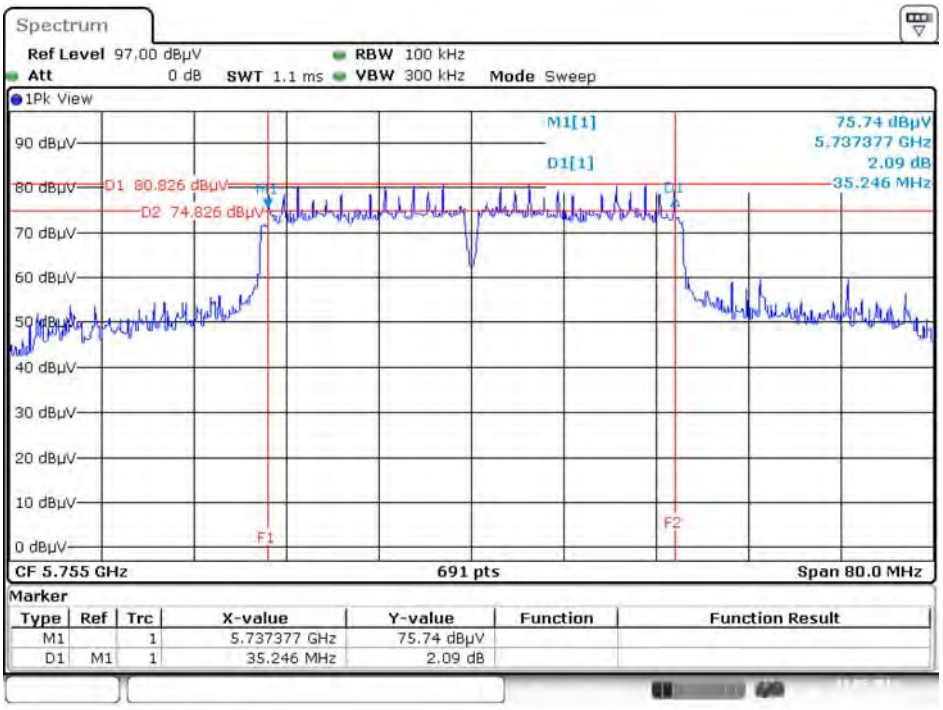
Date: 11.MAY.2016 21:22:02

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2 / 5745 MHz

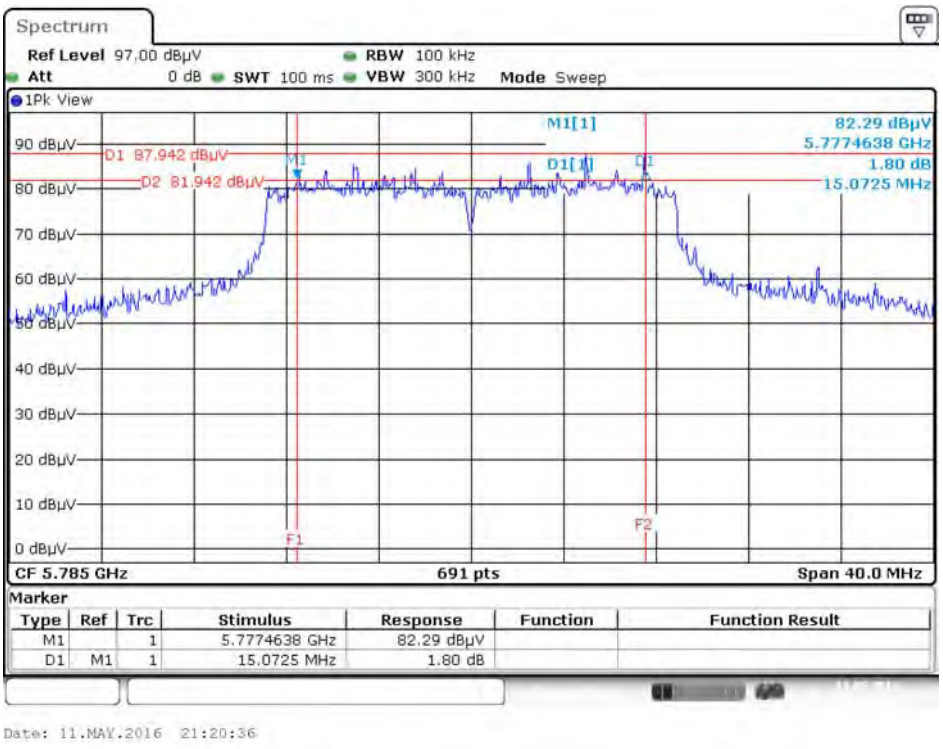


Date: 19.MAY.2016 14:33:21

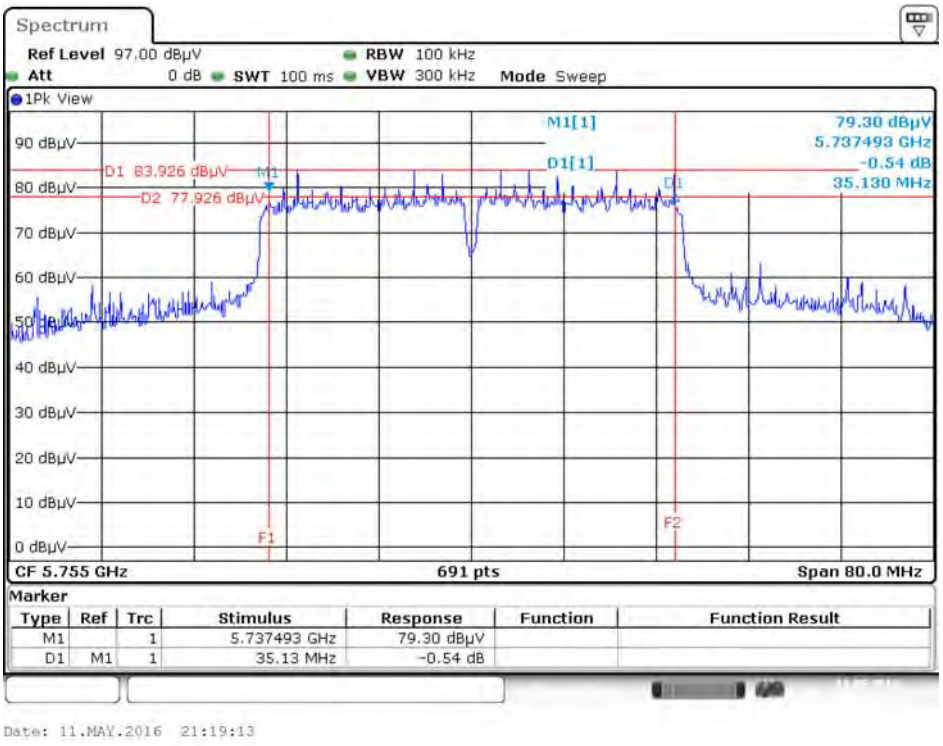
6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 HT40 / Ant. 1 + Ant. 2 / 5755 MHz



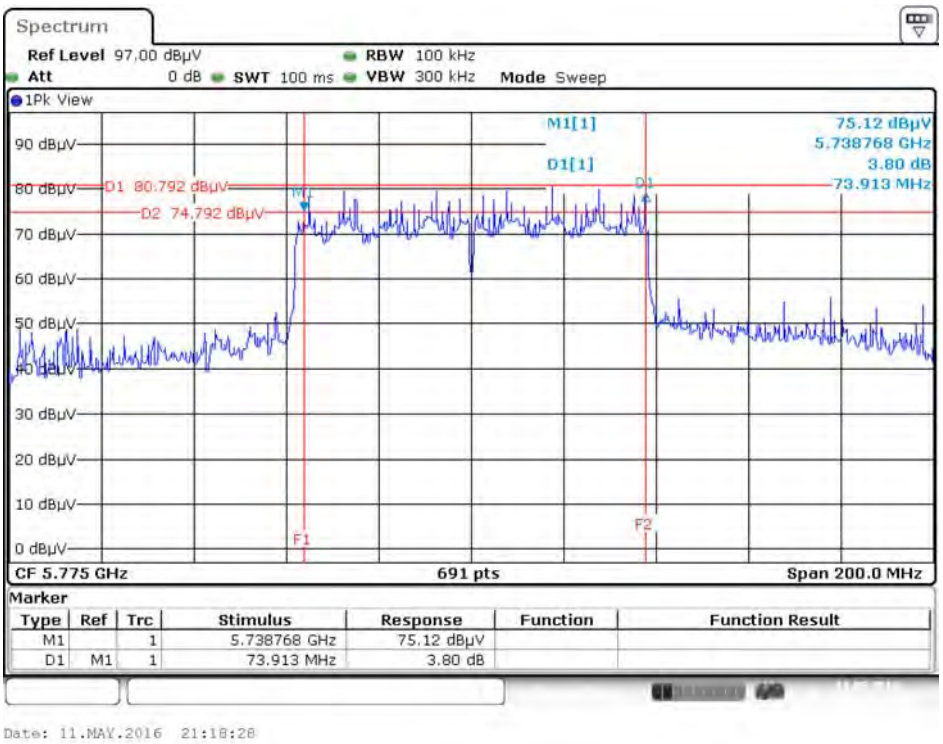
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2 / 5785 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Ant. 1 + Ant. 2 / 5755 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Ant. 1 + Ant. 2 / 5775 MHz



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

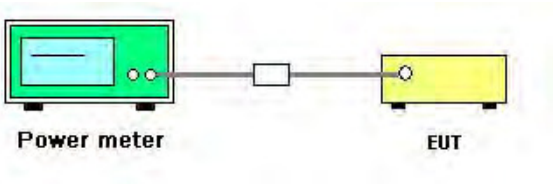
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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	25°C	Humidity	45%
Test Engineer	Wen Chao	Test Date	Mar. 30, 2016 ~ May 12, 2016

Mode	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1		
802.11a	5180 MHz	19.50	30.00	Complies
	5200 MHz	20.88	30.00	Complies
	5240 MHz	21.93	30.00	Complies
	5745 MHz	22.84	30.00	Complies
	5785 MHz	22.92	30.00	Complies
	5825 MHz	23.10	30.00	Complies

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Total		
802.11n MCS8 HT20	5180 MHz	18.02	18.37	21.21	30.00	Complies
	5200 MHz	18.87	18.46	21.68	30.00	Complies
	5240 MHz	20.27	19.79	23.05	30.00	Complies
	5745 MHz	21.19	20.12	23.70	30.00	Complies
	5785 MHz	21.35	20.98	24.18	30.00	Complies
	5825 MHz	21.41	21.03	24.23	30.00	Complies
802.11n MCS8 HT40	5190 MHz	14.68	14.93	17.82	30.00	Complies
	5230 MHz	19.91	19.75	22.84	30.00	Complies
	5755 MHz	20.93	20.61	23.78	30.00	Complies
	5795 MHz	21.34	21.25	24.31	30.00	Complies

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Total		
802.11ac MCS0/Nss2 VHT20	5180 MHz	19.29	19.37	22.34	30.00	Complies
	5200 MHz	19.60	19.54	22.58	30.00	Complies
	5240 MHz	20.34	20.23	23.30	30.00	Complies
	5745 MHz	21.36	20.92	24.16	30.00	Complies
	5785 MHz	21.45	21.08	24.28	30.00	Complies
	5825 MHz	21.72	21.35	24.55	30.00	Complies
802.11ac MCS0/Nss2 VHT40	5190 MHz	16.59	16.57	19.59	30.00	Complies
	5230 MHz	20.02	19.99	23.02	30.00	Complies
	5755 MHz	21.29	20.78	24.05	30.00	Complies
	5795 MHz	21.32	21.16	24.25	30.00	Complies
802.11ac MCS0/Nss2 VHT80	5210 MHz	12.39	12.79	15.60	30.00	Complies
	5775 MHz	19.37	19.21	22.30	30.00	Complies

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

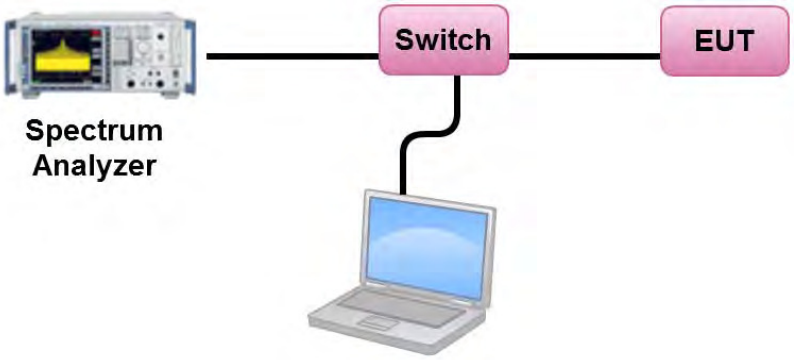
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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	25°C	Humidity	45%
Test Engineer	Wen Chao		

Configuration IEEE 802.11a / Ant. 1

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	6.35	17.00	Complies
40	5200 MHz	7.82	17.00	Complies
48	5240 MHz	8.78	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	9.50	-3.01	6.49	30.00	Complies
157	5785 MHz	9.64	-3.01	6.63	30.00	Complies
165	5825 MHz	9.81	-3.01	6.80	30.00	Complies

Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	7.95	17.00	Complies
40	5200 MHz	8.39	17.00	Complies
48	5240 MHz	9.94	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	10.44	-3.01	7.43	30.00	Complies
157	5785 MHz	10.92	-3.01	7.91	30.00	Complies
165	5825 MHz	10.86	-3.01	7.85	30.00	Complies

Configuration IEEE 802.11n MCS8 HT40 / Ant. 1 + Ant. 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	1.34	17.00	Complies
46	5230 MHz	6.82	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	7.40	-3.01	4.39	30.00	Complies
159	5795 MHz	8.00	-3.01	4.99	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	9.09	17.00	Complies
40	5200 MHz	9.51	17.00	Complies
48	5240 MHz	10.04	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	10.81	-3.01	7.80	30.00	Complies
157	5785 MHz	10.97	-3.01	7.96	30.00	Complies
165	5825 MHz	11.34	-3.01	8.33	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Ant. 1 + Ant. 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	3.67	17.00	Complies
46	5230 MHz	6.96	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	7.89	-3.01	4.88	30.00	Complies
159	5795 MHz	8.03	-3.01	5.02	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Ant. 1 + Ant. 2

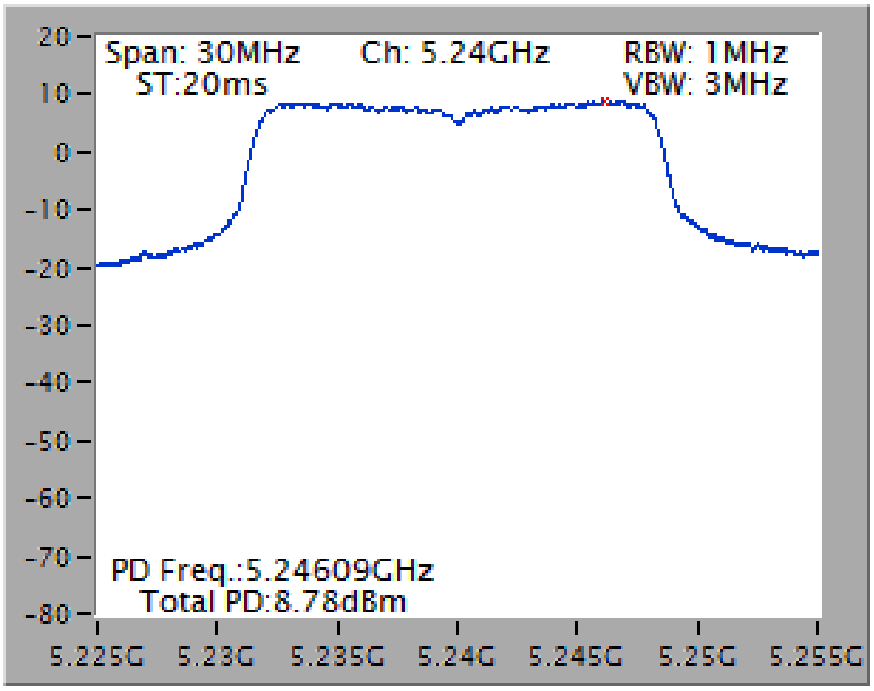
Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
42	5210 MHz	-3.80	17.00	Complies

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
155	5775 MHz	3.11	-3.01	0.10	30.00	Complies

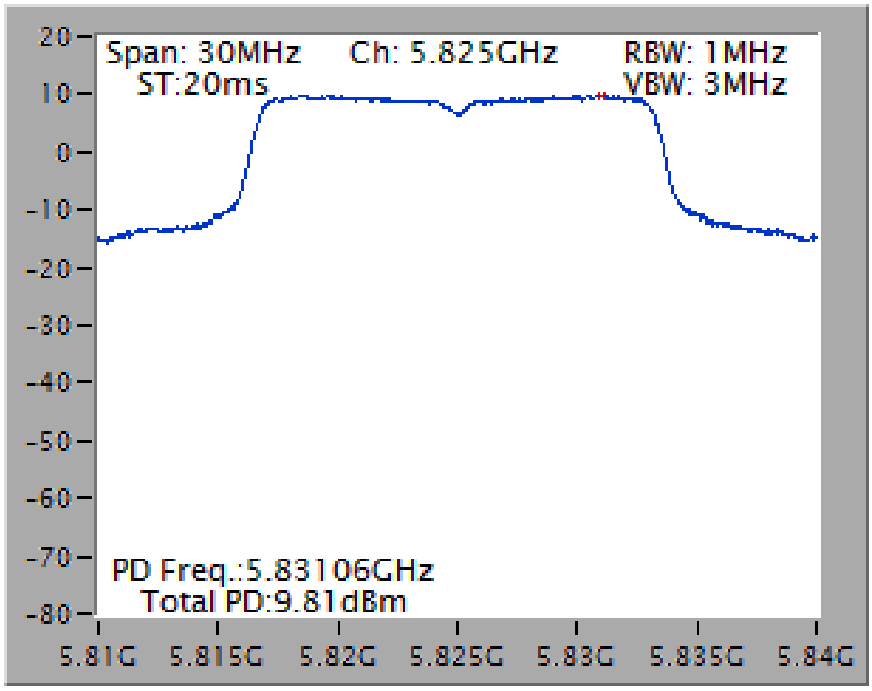
Note: All the test values were listed in the report.

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

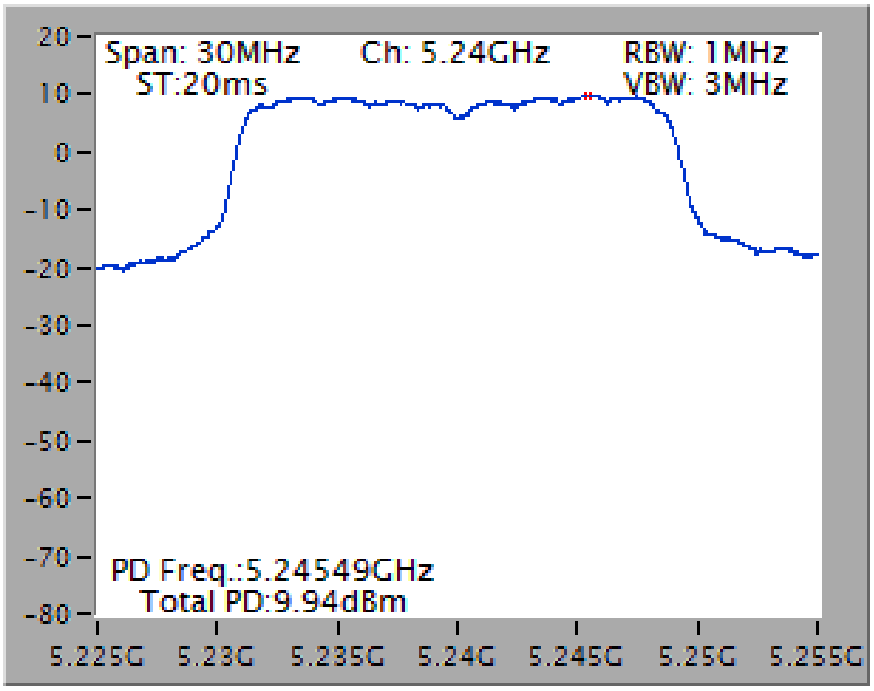
Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5240 MHz



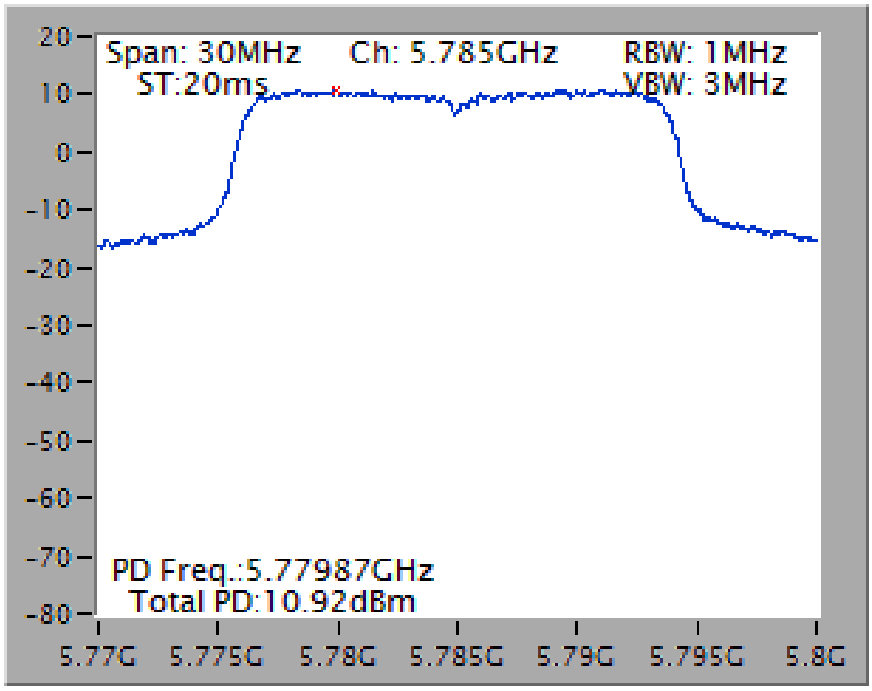
Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5825 MHz



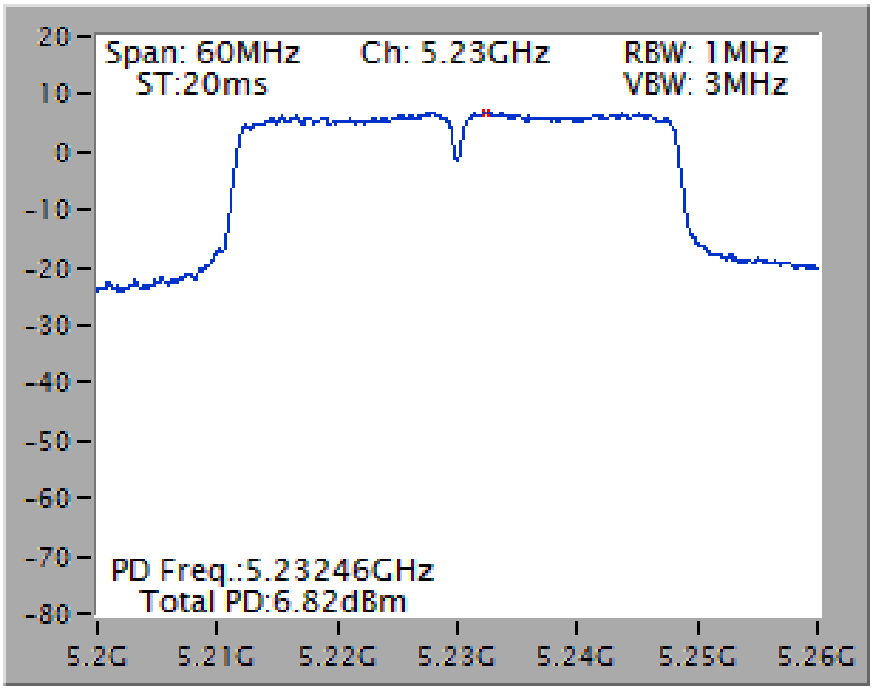
Power Density Plot on Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2 / 5240 MHz



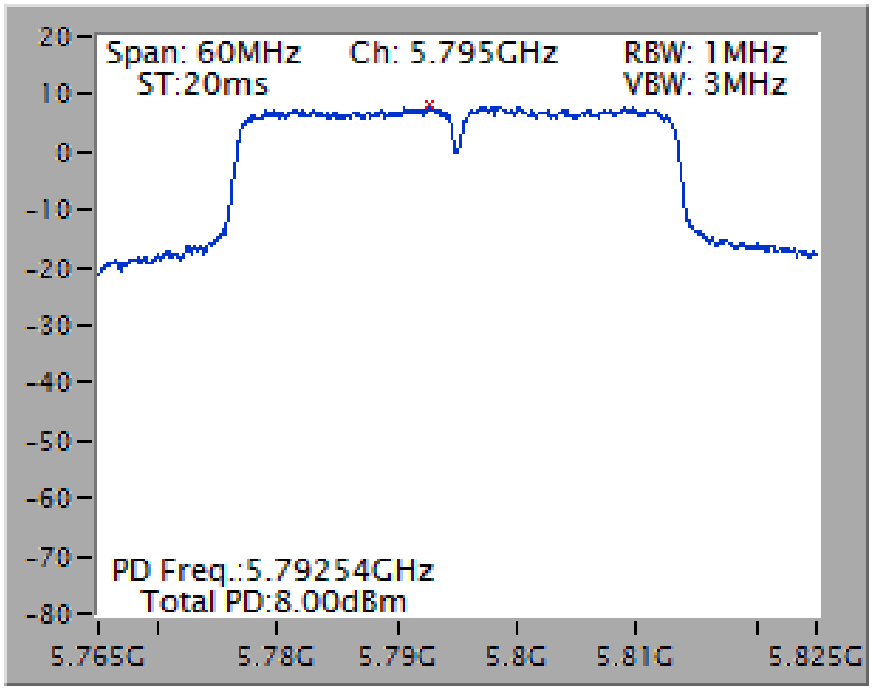
Power Density Plot on Configuration IEEE 802.11n MCS8 HT20 / Ant. 1 + Ant. 2 / 5785 MHz



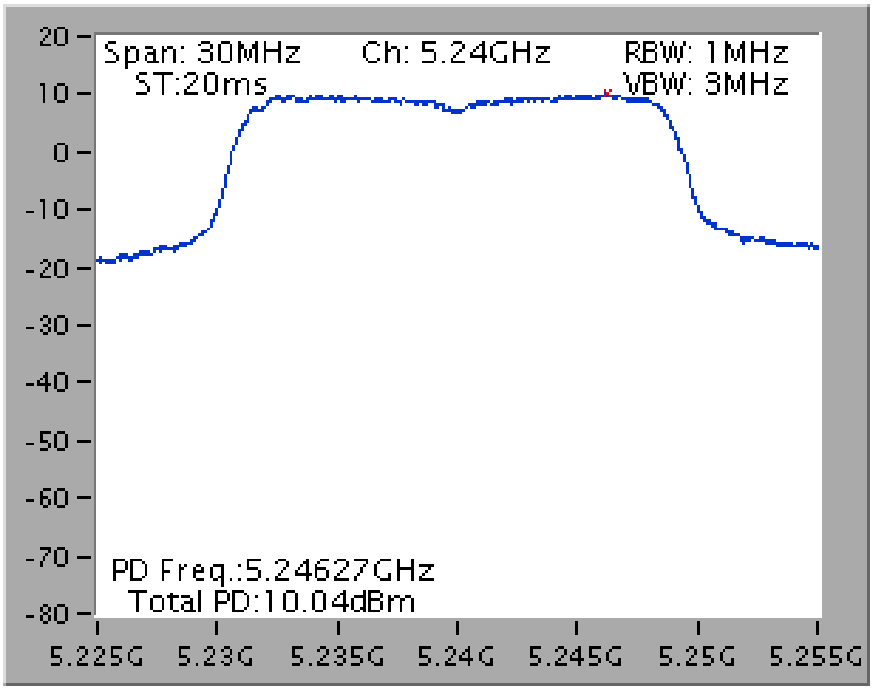
Power Density Plot on Configuration IEEE 802.11n MCS8 HT40 / Ant. 1 + Ant. 2 / 5230 MHz



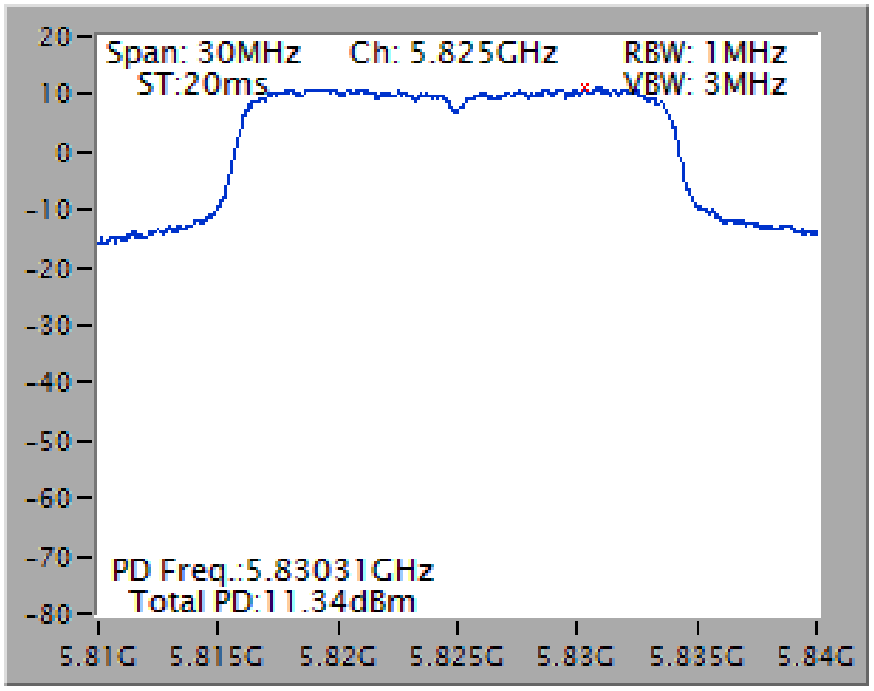
Power Density Plot on Configuration IEEE 802.11n MCS8 HT40 / Ant. 1 + Ant. 2 / 5795 MHz



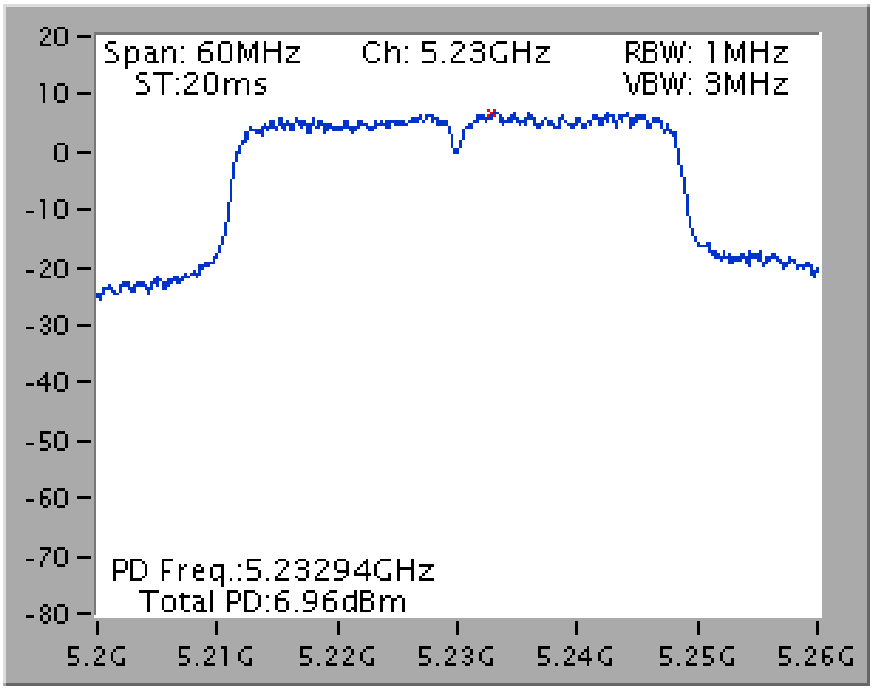
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2 / 5240 MHz



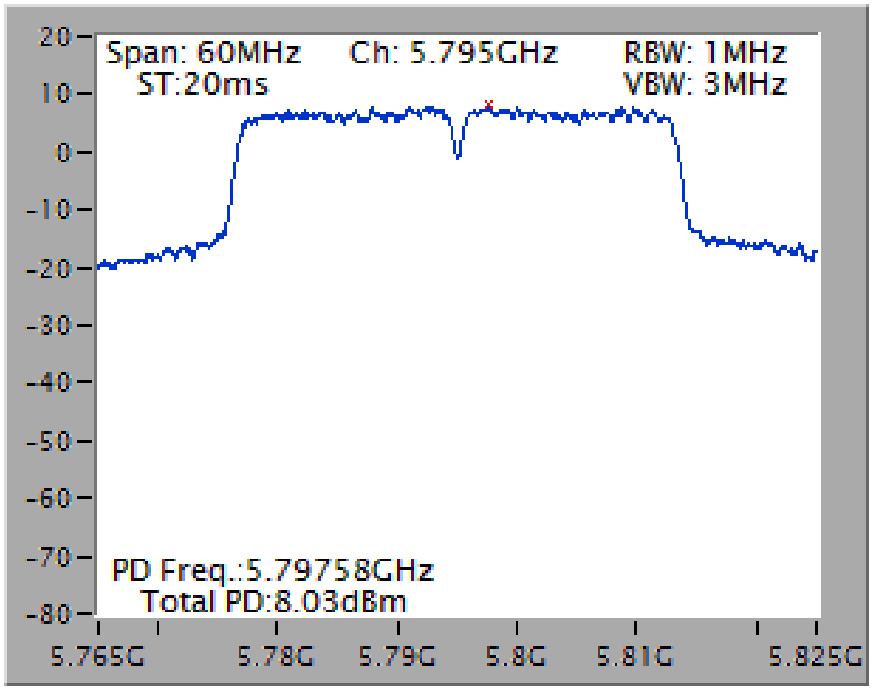
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT20 / Ant. 1 + Ant. 2 / 5825 MHz



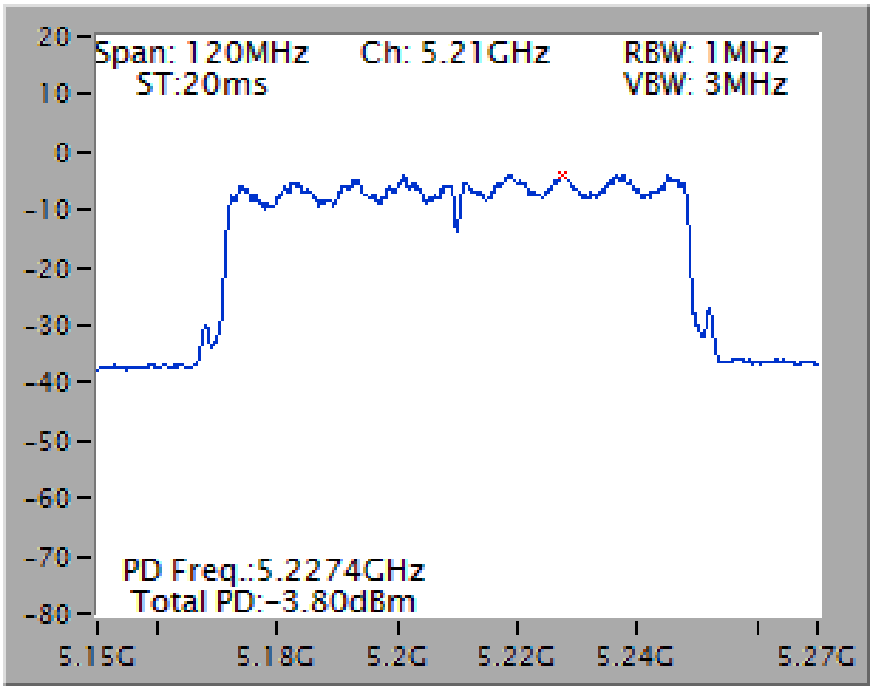
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Ant. 1 + Ant. 2 / 5230 MHz



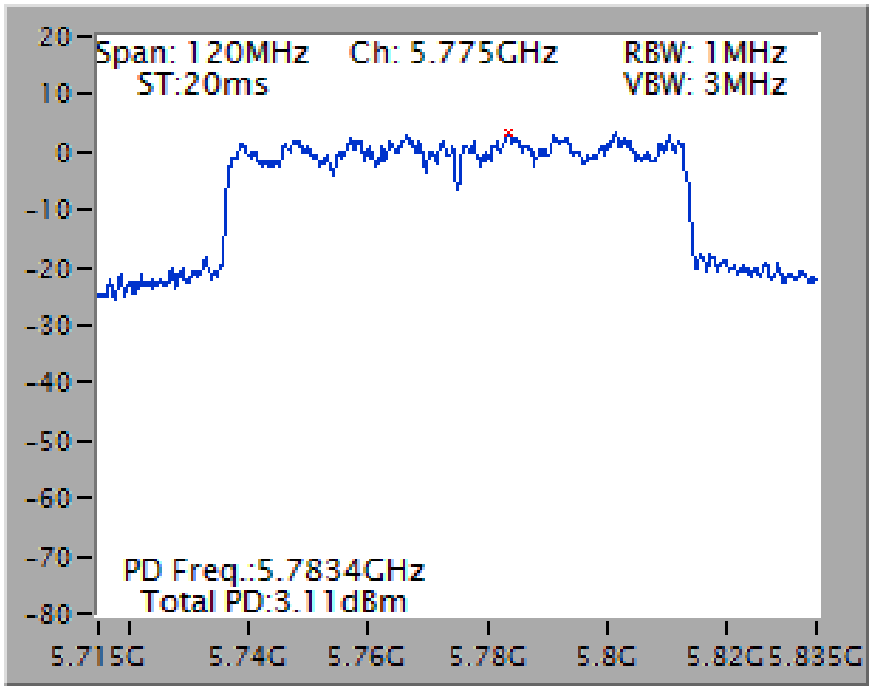
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT40 / Ant. 1 + Ant. 2 / 5795 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Ant. 1 + Ant. 2 / 5210 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss2 VHT80 / Ant. 1 + Ant. 2 / 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

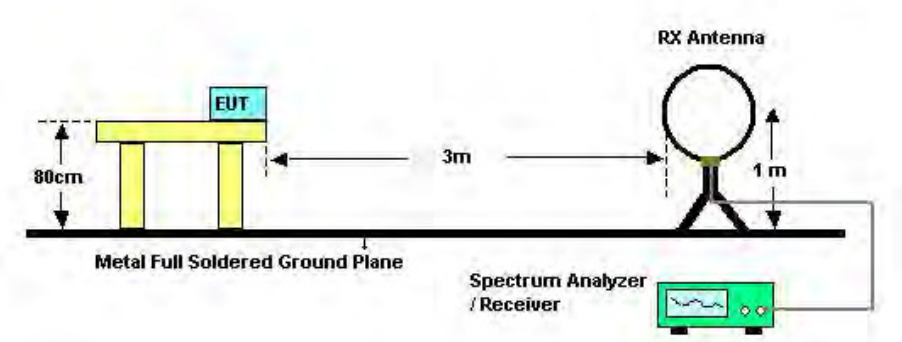
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

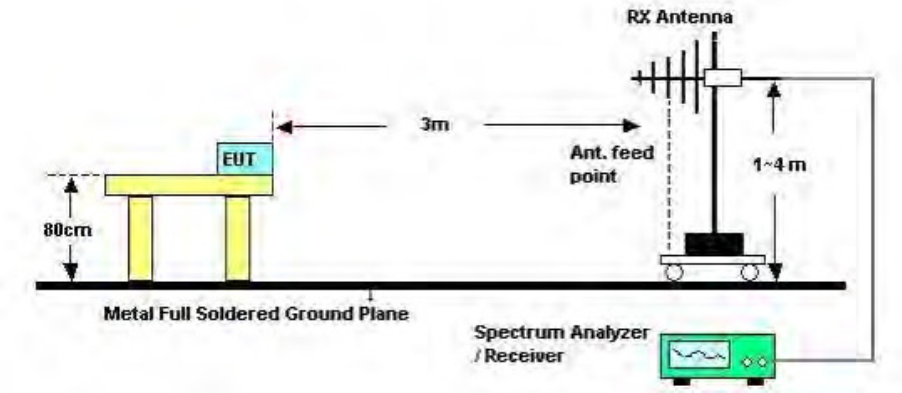
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

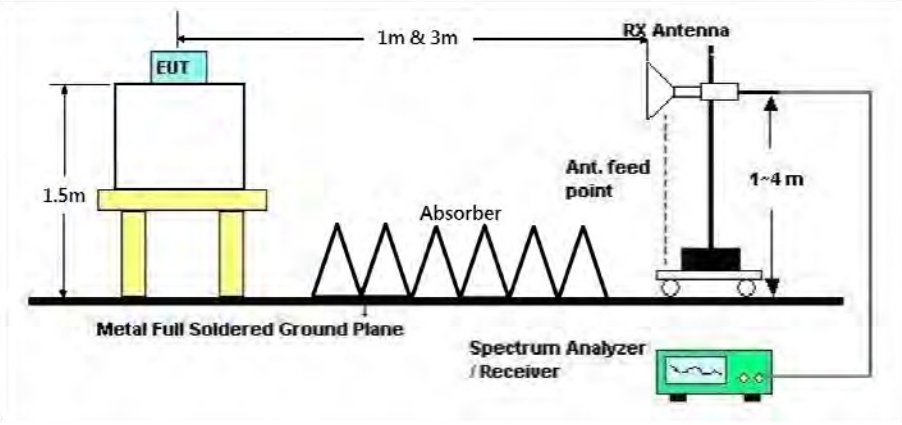
For Radiated Emissions: 9kHz ~30MHz



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

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	Normal Link
Test Date	Mar. 30, 2016		

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.

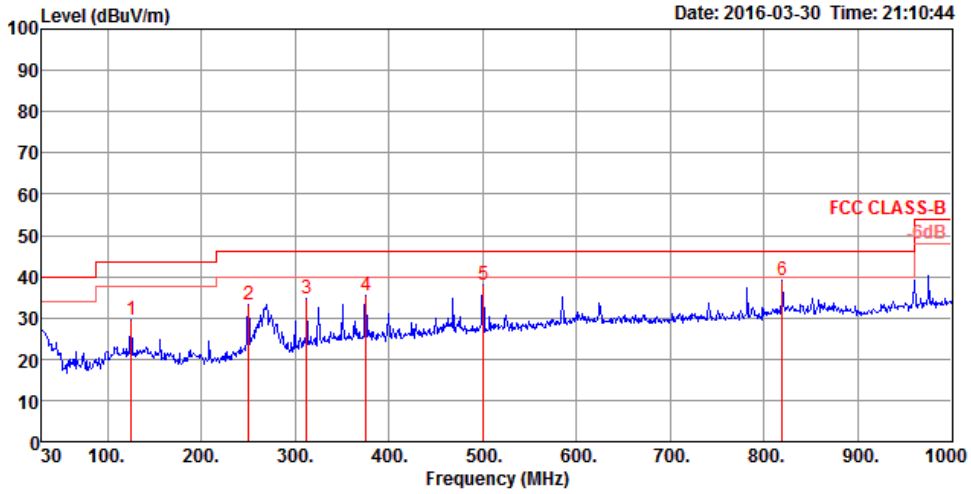
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

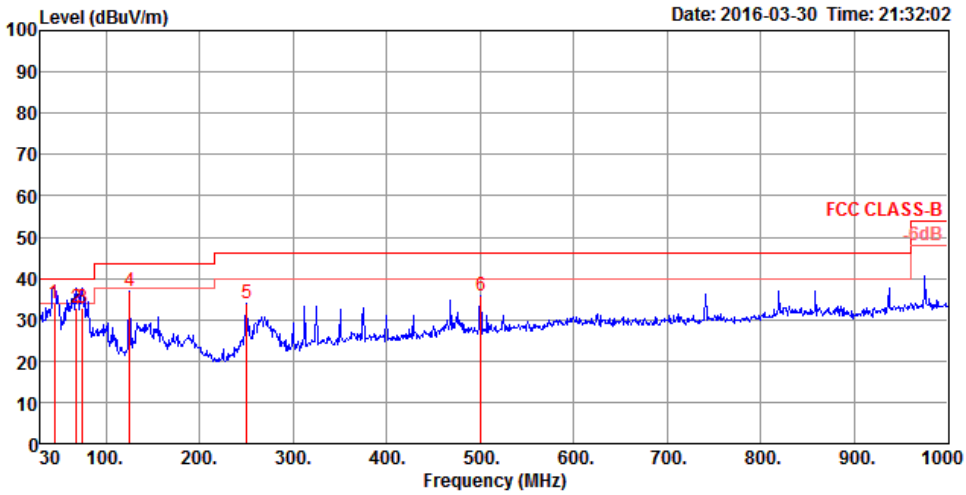
Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	Normal Link

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	125.06	29.68	43.50	-13.82	42.14	0.97	18.94	32.37	150	234	Peak	HORIZONTAL
2	250.19	33.32	46.00	-12.68	45.18	1.34	19.10	32.30	150	257	Peak	HORIZONTAL
3	312.27	34.56	46.00	-11.44	44.99	1.51	20.35	32.29	100	127	Peak	HORIZONTAL
4	375.32	35.27	46.00	-10.73	43.84	1.67	22.08	32.32	100	119	Peak	HORIZONTAL
5	500.45	37.97	46.00	-8.03	44.35	1.94	24.03	32.35	200	66	Peak	HORIZONTAL
6	819.58	39.24	46.00	-6.76	41.87	2.48	27.03	32.14	125	253	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	44.55	33.84	40.00	-6.16	48.29	0.59	17.37	32.41	100	284	QP	VERTICAL
2	68.80	32.78	40.00	-7.22	51.47	0.72	12.99	32.40	125	149	QP	VERTICAL
3	74.62	32.99	40.00	-7.01	51.41	0.75	13.23	32.40	150	25	QP	VERTICAL
4	125.06	36.72	43.50	-6.78	49.18	0.97	18.94	32.37	100	360	Peak	VERTICAL
5	250.19	34.13	46.00	-11.87	45.99	1.34	19.10	32.30	200	162	Peak	VERTICAL
6	500.45	35.85	46.00	-10.15	42.23	1.94	24.03	32.35	125	359	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.

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

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11a CH 36 / Ant. 1
Test Date	Mar. 11, 2016		

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	15534.00	58.88	74.00	-15.12	43.04	12.53	38.45	35.14	150	53	Peak	HORIZONTAL
2	15546.08	46.47	54.00	-7.53	30.63	12.53	38.45	35.14	150	53	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	15530.88	58.94	74.00	-15.06	43.10	12.53	38.45	35.14	150	266	Peak	VERTICAL
2	15539.96	46.38	54.00	-7.62	30.54	12.53	38.45	35.14	150	266	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11a CH 40 / Ant. 1
Test Date	Mar. 11, 2016		

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	15594.60	56.23	74.00	-17.77	40.47	12.53	38.39	35.16	150	12	Peak	HORIZONTAL
2	15596.96	46.26	54.00	-7.74	30.50	12.53	38.39	35.16	150	12	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	15600.16	46.07	54.00	-7.93	30.31	12.53	38.39	35.16	150	261	Average	VERTICAL
2	15601.84	58.56	74.00	-15.44	42.88	12.53	38.34	35.19	150	261	Peak	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11a CH 48 / Ant. 1
Test Date	Mar. 11, 2016		

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	15716.84	46.21	54.00	-7.79	30.68	12.54	38.23	35.24	150	92	Average	HORIZONTAL
2	15717.52	58.48	74.00	-15.52	42.95	12.54	38.23	35.24	150	92	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	15710.60	45.40	54.00	-8.60	29.87	12.54	38.23	35.24	150	276	Average	VERTICAL
2	15710.64	54.22	74.00	-19.78	38.69	12.54	38.23	35.24	150	276	Peak	VERTICAL

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11a CH 149 / Ant. 1
Test Date	May 09, 2016		

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	11490.00	46.24	54.00	-7.76	29.87	11.60	40.00	35.23	112	11	Average	HORIZONTAL
2	11491.44	58.93	74.00	-15.07	42.56	11.60	40.00	35.23	112	11	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	11486.00	46.07	54.00	-7.93	29.70	11.60	40.00	35.23	120	48	Average	VERTICAL
2	11488.84	58.94	74.00	-15.06	42.57	11.60	40.00	35.23	120	48	Peak	VERTICAL

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11a CH 157 / Ant. 1
Test Date	May 09, 2016		

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	11563.08	58.62	74.00	-15.38	42.34	11.64	39.87	35.23	146	117	Peak	HORIZONTAL
2	11579.12	46.14	54.00	-7.86	29.86	11.64	39.87	35.23	146	117	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	11571.40	46.13	54.00	-7.87	29.85	11.64	39.87	35.23	111	62	Average	VERTICAL
2	11579.36	59.32	74.00	-14.68	43.04	11.64	39.87	35.23	111	62	Peak	VERTICAL

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11a CH 165 / Ant. 1
Test Date	May 09, 2016		

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	11642.00	45.79	54.00	-8.21	29.59	11.69	39.73	35.22	134	97	Average	HORIZONTAL
2	11655.96	58.54	74.00	-15.46	42.38	11.71	39.67	35.22	134	97	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	11642.56	58.91	74.00	-15.09	42.71	11.69	39.73	35.22	131	122	Peak	VERTICAL
2	11657.40	45.86	54.00	-8.14	29.70	11.71	39.67	35.22	131	122	Average	VERTICAL

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT20 CH 36 / Ant. 1 + Ant. 2
Test Date	Mar. 11, 2016		

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	15542.40	58.83	74.00	-15.17	42.99	12.53	38.45	35.14	150	64	Peak	HORIZONTAL
2	15542.54	45.87	54.00	-8.13	30.03	12.53	38.45	35.14	150	64	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	15540.35	58.46	74.00	-15.54	42.62	12.53	38.45	35.14	150	233	Peak	VERTICAL
2	15540.86	46.41	54.00	-7.59	30.57	12.53	38.45	35.14	150	233	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT20 CH 40 / Ant. 1 + Ant. 2
Test Date	Mar. 11, 2016		

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	15596.93	54.19	74.00	-19.81	38.43	12.53	38.39	35.16	150	14	Peak	HORIZONTAL
2	15599.25	45.81	54.00	-8.19	30.05	12.53	38.39	35.16	150	14	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	15602.10	45.78	54.00	-8.22	30.10	12.53	38.34	35.19	150	283	Average	VERTICAL
2	15602.26	57.72	74.00	-16.28	42.04	12.53	38.34	35.19	150	283	Peak	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT20 CH 48 / Ant. 1 + Ant. 2
Test Date	Mar. 11, 2016		

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	15716.32	57.46	74.00	-16.54	41.93	12.54	38.23	35.24	150	25	Peak	HORIZONTAL
2	15718.51	45.28	54.00	-8.72	29.75	12.54	38.23	35.24	150	25	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	15716.32	57.95	74.00	-16.05	42.42	12.54	38.23	35.24	150	292	Peak	VERTICAL
2	15717.82	45.91	54.00	-8.09	30.38	12.54	38.23	35.24	150	292	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT20 CH 149 / Ant. 1 + Ant. 2
Test Date	May 12, 2016		

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	11487.80	65.74	74.00	-8.26	49.37	11.60	40.00	35.23	225	94	Peak	HORIZONTAL
2	11489.96	52.14	54.00	-1.86	35.77	11.60	40.00	35.23	225	94	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	11490.34	62.84	74.00	-11.16	46.47	11.60	40.00	35.23	170	94	Peak	VERTICAL
2	11491.28	49.07	54.00	-4.93	32.70	11.60	40.00	35.23	170	94	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT20 CH 157 / Ant. 1 + Ant. 2
Test Date	May 12, 2016		

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	11567.85	65.60	74.00	-8.40	49.32	11.64	39.87	35.23	225	90	Peak	HORIZONTAL
2	11569.91	52.64	54.00	-1.36	36.36	11.64	39.87	35.23	225	90	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	11569.15	48.99	54.00	-5.01	32.71	11.64	39.87	35.23	187	101	Average	VERTICAL
2	11570.85	61.70	74.00	-12.30	45.42	11.64	39.87	35.23	187	101	Peak	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT20 CH 165 / Ant. 1 + Ant. 2
Test Date	May 12, 2016		

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	11647.56	66.57	74.00	-7.43	50.37	11.69	39.73	35.22	226	95	Peak	HORIZONTAL
2	11649.98	53.46	54.00	-0.54	37.26	11.69	39.73	35.22	226	95	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	11650.09	49.68	54.00	-4.32	33.48	11.69	39.73	35.22	162	99	Average	VERTICAL
2	11650.71	63.08	74.00	-10.92	46.88	11.69	39.73	35.22	162	99	Peak	VERTICAL

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT40 CH 38 / Ant. 1 + Ant. 2
Test Date	Mar. 11, 2016		

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	15572.11	57.69	74.00	-16.31	41.93	12.53	38.39	35.16	150	34	Peak	HORIZONTAL
2	15573.34	45.71	54.00	-8.29	29.95	12.53	38.39	35.16	150	34	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	15566.91	45.63	54.00	-8.37	29.87	12.53	38.39	35.16	150	255	Average	VERTICAL
2	15573.95	58.20	74.00	-15.80	42.44	12.53	38.39	35.16	150	255	Peak	VERTICAL

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT40 CH 46 / Ant. 1 + Ant. 2
Test Date	Mar. 11, 2016		

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	15685.94	59.52	74.00	-14.48	43.91	12.54	38.28	35.21	150	52	Peak	HORIZONTAL
2	15691.12	46.74	54.00	-7.26	31.21	12.54	38.23	35.24	150	52	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	15688.94	59.27	74.00	-14.73	43.66	12.54	38.28	35.21	150	266	Peak	VERTICAL
2	15692.69	46.47	54.00	-7.53	30.94	12.54	38.23	35.24	150	266	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT40 CH 151 / Ant. 1 + Ant. 2
Test Date	May 12, 2016~May 13, 2016		

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	11509.95	50.80	54.00	-3.20	34.43	11.60	40.00	35.23	225	91	Average	HORIZONTAL
2	11511.20	63.77	74.00	-10.23	47.40	11.60	40.00	35.23	225	91	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	11509.85	47.18	54.00	-6.82	30.81	11.60	40.00	35.23	170	86	Average	VERTICAL
2	11511.25	61.37	74.00	-12.63	45.00	11.60	40.00	35.23	170	86	Peak	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11 n MCS8 HT40 CH 159 / Ant. 1 + Ant. 2
Test Date	May 13, 2016		

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	11590.09	51.03	54.00	-2.97	34.78	11.67	39.80	35.22	224	100	Average	HORIZONTAL
2	11590.92	63.21	74.00	-10.79	46.96	11.67	39.80	35.22	225	100	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	11588.95	47.39	54.00	-6.61	31.14	11.67	39.80	35.22	170	96	Average	VERTICAL
2	11591.12	61.85	74.00	-12.15	45.60	11.67	39.80	35.22	170	96	Peak	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT20 CH 36 / Ant. 1 + Ant. 2
Test Date	Apr. 02, 2016		

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	15531.70	46.07	54.00	-7.93	28.50	14.67	38.25	35.35	200	73	Average	HORIZONTAL
2	15539.07	59.11	74.00	-14.89	41.54	14.67	38.25	35.35	200	73	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	15538.40	59.73	74.00	-14.27	42.16	14.67	38.25	35.35	200	295	Peak	VERTICAL
2	15549.23	46.41	54.00	-7.59	28.84	14.67	38.25	35.35	200	295	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT20 CH 40 / Ant. 1 + Ant. 2
Test Date	Apr. 02, 2016		

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	15591.25	46.18	54.00	-7.82	28.66	14.69	38.19	35.36	200	52	Average	HORIZONTAL
2	15605.48	59.32	74.00	-14.68	41.83	14.71	38.14	35.36	200	52	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	15531.70	46.07	54.00	-7.93	28.50	14.67	38.25	35.35	200	105	Average	VERTICAL
2	15539.07	59.11	74.00	-14.89	41.54	14.67	38.25	35.35	200	105	Peak	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT20 CH 48 / Ant. 1 + Ant. 2
Test Date	Apr. 02, 2016		

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	15714.39	46.03	54.00	-7.97	28.63	14.75	38.03	35.38	200	83	Average	HORIZONTAL
2	15720.93	58.73	74.00	-15.27	41.33	14.75	38.03	35.38	200	83	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	15597.37	58.67	74.00	-15.33	41.15	14.69	38.19	35.36	200	212	Peak	VERTICAL
2	15607.98	46.08	54.00	-7.92	28.59	14.71	38.14	35.36	200	212	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT20 CH 149 / Ant. 1 + Ant. 2
Test Date	May 09, 2016		

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	11484.88	59.20	74.00	-14.80	42.83	11.60	40.00	35.23	143	104	Peak	HORIZONTAL
2	11490.04	47.12	54.00	-6.88	30.75	11.60	40.00	35.23	143	104	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	11488.76	46.66	54.00	-7.34	30.29	11.60	40.00	35.23	135	146	Average	VERTICAL
2	11495.96	58.35	74.00	-15.65	41.98	11.60	40.00	35.23	135	146	Peak	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT20 CH 157 / Ant. 1 + Ant. 2
Test Date	May 09, 2016		

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	11569.08	46.13	54.00	-7.87	29.85	11.64	39.87	35.23	149	239	Average	HORIZONTAL
2	11575.52	59.11	74.00	-14.89	42.83	11.64	39.87	35.23	149	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	11566.68	59.15	74.00	-14.85	42.87	11.64	39.87	35.23	146	173	Peak	VERTICAL
2	11571.84	46.00	54.00	-8.00	29.72	11.64	39.87	35.23	146	173	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT20 CH 165 / Ant. 1 + Ant. 2
Test Date	May 09, 2016		

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	11648.04	58.85	74.00	-15.15	42.65	11.69	39.73	35.22	137	236	Peak	HORIZONTAL
2	11654.84	45.18	54.00	-8.82	29.02	11.71	39.67	35.22	137	236	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	11645.28	58.03	74.00	-15.97	41.83	11.69	39.73	35.22	142	188	Peak	VERTICAL
2	11659.48	45.84	54.00	-8.16	29.68	11.71	39.67	35.22	142	188	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT40 CH 38 / Ant. 1 + Ant. 2
Test Date	Apr. 02, 2016		

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	15561.67	58.71	74.00	-15.29	41.19	14.69	38.19	35.36	200	64	Peak	HORIZONTAL
2	15569.84	46.24	54.00	-7.76	28.72	14.69	38.19	35.36	200	64	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	15560.45	59.45	74.00	-14.55	41.93	14.69	38.19	35.36	200	205	Peak	VERTICAL
2	15574.13	46.52	54.00	-7.48	29.00	14.69	38.19	35.36	200	205	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT40 CH 46 / Ant. 1 + Ant. 2
Test Date	Apr. 02, 2016		

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	15693.72	46.24	54.00	-7.76	28.83	14.75	38.03	35.37	200	64	Average	HORIZONTAL
2	15698.27	59.06	74.00	-14.94	41.65	14.75	38.03	35.37	200	64	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	15686.38	59.72	74.00	-14.28	42.28	14.73	38.08	35.37	200	241	Peak	VERTICAL
2	15698.21	46.10	54.00	-7.90	28.69	14.75	38.03	35.37	200	241	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT40 CH 151 / Ant. 1 + Ant. 2
Test Date	May 09, 2016		

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	11516.08	46.27	54.00	-7.73	29.90	11.60	40.00	35.23	125	255	Average	HORIZONTAL
2	11516.68	58.62	74.00	-15.38	42.25	11.60	40.00	35.23	125	255	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	11515.08	58.84	74.00	-15.16	42.47	11.60	40.00	35.23	127	193	Peak	VERTICAL
2	11516.76	46.08	54.00	-7.92	29.71	11.60	40.00	35.23	127	193	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT40 CH 159 / Ant. 1 + Ant. 2
Test Date	May 09, 2016		

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	11581.68	46.05	54.00	-7.95	29.77	11.64	39.87	35.23	122	290	Average	HORIZONTAL
2	11591.88	59.17	74.00	-14.83	42.92	11.67	39.80	35.22	122	290	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	11581.52	46.07	54.00	-7.93	29.79	11.64	39.87	35.23	124	198	Average	VERTICAL
2	11595.28	58.62	74.00	-15.38	42.37	11.67	39.80	35.22	124	198	Peak	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT80 CH 42 / Ant. 1 + Ant. 2
Test Date	Mar. 11, 2016		

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	15629.88	46.31	54.00	-7.69	30.63	12.53	38.34	35.19	150	208	Average	HORIZONTAL
2	15633.08	59.12	74.00	-14.88	43.44	12.53	38.34	35.19	150	208	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	15625.08	59.04	74.00	-14.96	43.36	12.53	38.34	35.19	150	81	Peak	VERTICAL
2	15629.86	46.19	54.00	-7.81	30.51	12.53	38.34	35.19	150	81	Average	VERTICAL

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT80 CH 155 / Ant. 1 + Ant. 2
Test Date	May 09, 2016		

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	11540.12	59.16	74.00	-14.84	42.84	11.62	39.93	35.23	119	283	Peak	HORIZONTAL
2	11553.64	46.30	54.00	-7.70	30.02	11.64	39.87	35.23	119	283	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	11551.84	46.09	54.00	-7.91	29.81	11.64	39.87	35.23	126	322	Average	VERTICAL
2	11557.12	58.45	74.00	-15.55	42.17	11.64	39.87	35.23	126	322	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

The EUT was programmed to be in continuously transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11a CH 36, 40, 48 / Ant. 1
Test Date	Mar. 09, 2016		

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	5149.80	68.62	74.00	-5.38	62.38	7.20	34.04	35.00	123	274	Peak	VERTICAL
2	5150.00	52.34	54.00	-1.66	46.10	7.20	34.04	35.00	123	274	Average	VERTICAL
3	5173.20	96.40			90.10	7.21	34.09	35.00	123	274	Average	VERTICAL
4	5174.80	105.65			99.35	7.21	34.09	35.00	123	274	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	5150.00	46.96	54.00	-7.04	40.72	7.20	34.04	35.00	130	270	Average	VERTICAL
2	5150.00	59.97	74.00	-14.03	53.73	7.20	34.04	35.00	130	270	Peak	VERTICAL
3	5193.20	97.37			91.04	7.21	34.12	35.00	130	270	Average	VERTICAL
4	5193.60	107.01			100.68	7.21	34.12	35.00	130	270	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	5148.80	57.86	74.00	-16.14	51.62	7.20	34.04	35.00	122	263	Peak	VERTICAL
2	5150.00	45.85	54.00	-8.15	39.61	7.20	34.04	35.00	122	263	Average	VERTICAL
3	5246.60	108.40			101.99	7.22	34.19	35.00	122	263	Peak	VERTICAL
4	5247.20	98.59			92.16	7.22	34.21	35.00	122	263	Average	VERTICAL
5	5350.00	46.49	54.00	-7.51	39.88	7.25	34.36	35.00	122	263	Average	VERTICAL
6	5353.00	59.47	74.00	-14.53	52.86	7.25	34.36	35.00	122	263	Peak	VERTICAL

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

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11a CH 149, 157, 165 / Ant. 1
Test Date	May 09, 2016		

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	5595.00	59.32	68.20	-8.88	52.76	7.60	31.92	32.96	251	22	Peak	HORIZONTAL
2	5738.00	95.80			89.02	7.71	32.08	33.01	251	22	Average	HORIZONTAL
3	5740.00	105.45			98.63	7.73	32.10	33.01	251	22	Peak	HORIZONTAL
4	5984.00	59.38	68.20	-8.82	52.27	7.83	32.38	33.10	251	22	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	5589.00	57.83	68.20	-10.37	51.31	7.58	31.90	32.96	250	22	Peak	HORIZONTAL
2	5778.00	99.80			92.93	7.76	32.14	33.03	250	22	Average	HORIZONTAL
3	5781.00	109.17			102.30	7.76	32.14	33.03	250	22	Peak	HORIZONTAL
4	5936.00	59.83	68.20	-8.37	52.77	7.82	32.32	33.08	250	22	Peak	HORIZONTAL

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	5647.00	59.07	68.20	-9.13	52.43	7.64	31.98	32.98	126	266	Peak	VERTICAL
2	5819.00	102.09			95.17	7.78	32.18	33.04	126	266	Average	VERTICAL
3	5828.00	111.20			104.27	7.78	32.20	33.05	126	266	Peak	VERTICAL
4	6044.00	59.52	68.20	-8.68	52.25	7.88	32.52	33.13	126	266	Peak	VERTICAL

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

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT20 CH 36, 40, 48 / Ant. 1 + Ant. 2
Test Date	Mar. 10, 2016		

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	5149.80	70.29	74.00	-3.71	64.05	7.20	34.04	35.00	153	276	Peak	VERTICAL
2	5150.00	52.49	54.00	-1.51	46.25	7.20	34.04	35.00	153	276	Average	VERTICAL
3	5186.40	101.84			95.54	7.21	34.09	35.00	153	276	Average	VERTICAL
4	5186.40	111.49			105.19	7.21	34.09	35.00	153	276	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	5146.80	59.86	74.00	-14.14	53.62	7.20	34.04	35.00	127	273	Peak	VERTICAL
2	5150.00	47.29	54.00	-6.71	41.05	7.20	34.04	35.00	127	273	Average	VERTICAL
3	5206.40	101.72			95.36	7.22	34.14	35.00	127	273	Average	VERTICAL
4	5206.40	111.68			105.32	7.22	34.14	35.00	127	273	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	5144.00	59.61	74.00	-14.39	53.37	7.20	34.04	35.00	167	296	Peak	VERTICAL
2	5150.00	46.03	54.00	-7.97	39.79	7.20	34.04	35.00	167	296	Average	VERTICAL
3	5246.60	103.11			96.70	7.22	34.19	35.00	167	296	Average	VERTICAL
4	5246.60	112.43			106.02	7.22	34.19	35.00	167	296	Peak	VERTICAL
5	5350.00	46.78	54.00	-7.22	40.17	7.25	34.36	35.00	167	296	Average	VERTICAL
6	5354.20	58.88	74.00	-15.12	52.24	7.26	34.38	35.00	167	296	Peak	VERTICAL

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

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT20 CH 149, 157, 165 / Ant. 1 + Ant. 2
Test Date	May 12, 2016		

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	5604.00	60.45	68.20	-7.75	53.89	7.60	31.92	32.96	200	274	Peak	VERTICAL
2	5749.00	102.33			95.52	7.73	32.10	33.02	200	274	Average	VERTICAL
3	5751.00	114.71			107.90	7.73	32.10	33.02	200	274	Peak	VERTICAL
4	5934.00	60.17	68.20	-8.03	53.11	7.82	32.32	33.08	200	274	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	5602.00	59.68	68.20	-8.52	53.12	7.60	31.92	32.96	115	266	Peak	HORIZONTAL
2	5779.00	98.22			91.35	7.76	32.14	33.03	115	266	Average	HORIZONTAL
3	5789.00	109.97			103.07	7.77	32.16	33.03	115	266	Peak	HORIZONTAL
4	5928.00	60.49	68.20	-7.71	53.43	7.82	32.32	33.08	115	266	Peak	HORIZONTAL

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	5635.00	58.92	68.20	-9.28	52.31	7.63	31.96	32.98	200	274	Peak	VERTICAL
2	5820.00	102.57			95.65	7.78	32.18	33.04	200	274	Average	VERTICAL
3	5831.00	115.09			108.16	7.78	32.20	33.05	200	274	Peak	VERTICAL
4	5961.00	60.23	68.20	-7.97	53.14	7.83	32.36	33.10	200	274	Peak	VERTICAL

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

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT40 CH 38, 46 / Ant. 1 + Ant. 2
Test Date	Mar. 10, 2016		

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	5146.00	65.93	74.00	-8.07	58.79	7.20	34.85	34.91	130	5	Peak	VERTICAL
2	5150.00	52.53	54.00	-1.47	45.39	7.20	34.85	34.91	130	5	Average	VERTICAL
3	5187.60	104.07			96.87	7.21	34.90	34.91	130	5	Peak	VERTICAL
4	5191.60	94.01			86.81	7.21	34.90	34.91	130	5	Average	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	5141.20	61.95	74.00	-12.05	54.83	7.19	34.84	34.91	147	8	Peak	VERTICAL
2	5150.00	47.65	54.00	-6.35	40.51	7.20	34.85	34.91	147	8	Average	VERTICAL
3	5231.80	98.59			91.34	7.22	34.94	34.91	147	8	Average	VERTICAL
4	5239.60	108.35			101.10	7.22	34.94	34.91	147	8	Peak	VERTICAL

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

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11n MCS8 HT40 CH 151, 159 / Ant. 1 + Ant. 2
Test Date	May 12, 2016		

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	5629.00	59.56	68.20	-8.64	52.94	7.63	31.96	32.97	125	262	Peak	HORIZONTAL
2	5752.20	105.34			98.53	7.73	32.10	33.02	125	262	Peak	HORIZONTAL
3	5754.00	95.49			88.68	7.73	32.10	33.02	125	262	Average	HORIZONTAL
4	5928.00	60.54	68.20	-7.66	53.48	7.82	32.32	33.08	125	262	Peak	HORIZONTAL

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	5621.00	59.50	68.20	-8.70	52.92	7.61	31.94	32.97	200	273	Peak	VERTICAL
2	5794.00	99.88			92.98	7.77	32.16	33.03	200	273	Average	VERTICAL
3	5809.00	109.98			103.06	7.78	32.18	33.04	200	273	Peak	VERTICAL
4	5927.00	60.04	68.20	-8.16	52.98	7.82	32.32	33.08	200	273	Peak	VERTICAL

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

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT20 CH 36, 40, 48 / Ant. 1 + Ant. 2
Test Date	Apr. 01, 2016		

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	5148.91	51.79	54.00	-2.21	44.53	8.68	31.52	32.94	211	34	Average	VERTICAL
2	5149.23	63.76	74.00	-10.24	56.50	8.68	31.52	32.94	211	34	Peak	VERTICAL
3	5173.59	100.60			93.31	8.68	31.55	32.94	211	34	Average	VERTICAL
4	5176.80	110.90			103.61	8.68	31.55	32.94	211	34	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	5149.52	46.94	54.00	-7.06	39.68	8.68	31.52	32.94	225	244	Average	HORIZONTAL
2	5150.00	58.83	74.00	-15.17	51.57	8.68	31.52	32.94	225	244	Peak	HORIZONTAL
3	5203.37	105.63			98.31	8.69	31.57	32.94	225	244	Peak	HORIZONTAL
4	5206.73	94.50			87.18	8.69	31.57	32.94	225	244	Average	HORIZONTAL

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	5150.00	46.37	54.00	-7.63	39.11	8.68	31.52	32.94	200	313	Average	VERTICAL
2	5150.00	58.09	74.00	-15.91	50.83	8.68	31.52	32.94	200	313	Peak	VERTICAL
3	5243.85	110.22			102.86	8.70	31.59	32.93	200	313	Peak	VERTICAL
4	5246.73	100.57			93.21	8.70	31.59	32.93	200	313	Average	VERTICAL
5	5350.00	46.42	54.00	-7.58	38.93	8.74	31.68	32.93	200	313	Average	VERTICAL
6	5361.06	59.57	74.00	-14.43	52.06	8.75	31.69	32.93	200	313	Peak	VERTICAL

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

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT20 CH 149, 157, 165 / Ant. 1 + Ant. 2
Test Date	May 09, 2016		

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	5634.00	58.65	68.20	-9.55	52.04	7.63	31.96	32.98	123	262	Peak	VERTICAL
2	5738.00	104.45			97.67	7.71	32.08	33.01	123	262	Average	VERTICAL
3	5739.00	114.30			107.48	7.73	32.10	33.01	123	262	Peak	VERTICAL
4	5949.00	58.97	68.20	-9.23	51.90	7.82	32.34	33.09	123	262	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	5605.00	58.52	68.20	-9.68	51.96	7.60	31.92	32.96	245	22	Peak	HORIZONTAL
2	5779.00	109.23			102.36	7.76	32.14	33.03	245	22	Peak	HORIZONTAL
3	5791.00	97.81			90.91	7.77	32.16	33.03	245	22	Average	HORIZONTAL
4	6032.00	59.17	68.20	-9.03	51.89	7.88	32.52	33.12	245	22	Peak	HORIZONTAL

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	5597.00	57.89	68.20	-10.31	51.33	7.60	31.92	32.96	124	268	Peak	VERTICAL
2	5821.00	114.46			107.55	7.78	32.18	33.05	124	268	Peak	VERTICAL
3	5832.00	103.98			97.05	7.78	32.20	33.05	124	268	Average	VERTICAL
4	5981.00	59.44	68.20	-8.76	52.33	7.83	32.38	33.10	124	268	Peak	VERTICAL

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

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT40 CH 38, 46 / Ant. 1 + Ant. 2
Test Date	Apr. 02, 2016		

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	5143.91	66.98	74.00	-7.02	59.72	8.68	31.52	32.94	200	298	Peak	VERTICAL
2	5149.04	52.85	54.00	-1.15	45.59	8.68	31.52	32.94	200	298	Average	VERTICAL
3	5192.56	103.44			96.14	8.68	31.56	32.94	200	298	Peak	VERTICAL
4	5193.53	94.13			86.83	8.68	31.56	32.94	200	298	Average	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	5146.47	61.18	74.00	-12.82	53.92	8.68	31.52	32.94	225	245	Peak	HORIZONTAL
2	5149.68	48.09	54.00	-5.91	40.83	8.68	31.52	32.94	225	245	Average	HORIZONTAL
3	5228.40	91.20			83.87	8.69	31.58	32.94	225	245	Average	HORIZONTAL
4	5231.60	101.70			94.37	8.69	31.58	32.94	225	245	Peak	HORIZONTAL

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

Temperature	22.2°C	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT40 CH 151, 159 / Ant. 1 + Ant. 2
Test Date	May 09, 2016		

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	5642.00	60.43	68.20	-7.77	53.79	7.64	31.98	32.98	127	264	Peak	VERTICAL
2	5754.00	110.67			103.86	7.73	32.10	33.02	127	264	Peak	VERTICAL
3	5758.00	100.72			93.88	7.74	32.12	33.02	127	264	Average	VERTICAL
4	6001.00	59.24	68.20	-8.96	52.11	7.84	32.40	33.11	127	264	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	5561.00	58.55	68.20	-9.65	52.05	7.57	31.88	32.95	125	267	Peak	VERTICAL
2	5787.00	101.20			94.33	7.76	32.14	33.03	125	267	Average	VERTICAL
3	5797.00	110.81			103.91	7.77	32.16	33.03	125	267	Peak	VERTICAL
4	5931.00	59.05	68.20	-9.15	51.99	7.82	32.32	33.08	125	267	Peak	VERTICAL

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

Temperature	22.2℃	Humidity	57%
Test Engineer	Lucke Hsieh	Configurations	IEEE 802.11ac MCS0/Nss2 VHT80 CH 42, 155 / Ant. 1 + Ant. 2
Test Date	Mar. 11, 2016, May 12, 2016		

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	5142.00	63.07	74.00	-10.93	55.93	7.20	34.85	34.91	224	354	Peak	VERTICAL
2	5146.00	52.66	54.00	-1.34	45.52	7.20	34.85	34.91	224	354	Average	VERTICAL
3	5228.00	91.04			83.80	7.22	34.93	34.91	224	354	Average	VERTICAL
4	5238.00	100.57			93.32	7.22	34.94	34.91	224	354	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	5626.00	67.07	68.20	-1.13	60.45	7.63	31.96	32.97	126	263	Peak	VERTICAL
2	5748.00	106.10			99.29	7.73	32.10	33.02	126	263	Peak	VERTICAL
3	5784.00	93.98			87.11	7.76	32.14	33.03	126	263	Average	VERTICAL
4	5933.00	63.58	68.20	-4.62	56.52	7.82	32.32	33.08	126	263	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

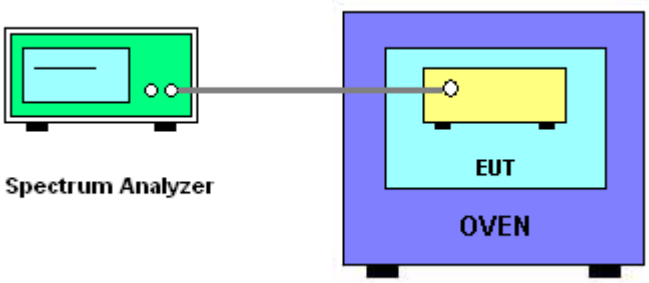
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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~55°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	25°C	Humidity	45%
Test Engineer	Wen Chao	Test Date	Mar. 30, 2016 ~ May 12, 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	5199.9970	5199.9969	5199.9964	5199.9962
110.00	5199.9969	5199.9965	5199.9961	5199.9956
93.50	5199.9963	5199.9953	5199.9948	5199.9946
Max. Deviation (MHz)	0.0037	0.0047	0.0052	0.0054
Max. Deviation (ppm)	0.71	0.90	1.00	1.04
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5199.9978	5199.9973	5199.9964	5199.9958
10	5199.9976	5199.9967	5199.9964	5199.9955
20	5199.9969	5199.9968	5199.9961	5199.9951
30	5199.9874	5199.9873	5199.9866	5199.9864
40	5199.9873	5199.9868	5199.9859	5199.9854
55	5199.9859	5199.9851	5199.9850	5199.9849
Max. Deviation (MHz)	0.0141	0.0149	0.0150	0.0151
Max. Deviation (ppm)	2.71	2.87	2.88	2.90
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9976	5784.9972	5784.9971	5784.9962
110.00	5784.9969	5784.9968	5784.9959	5784.9949
93.50	5784.9965	5784.9956	5784.9950	5784.9940
Max. Deviation (MHz)	0.0035	0.0044	0.0050	0.0060
Max. Deviation (ppm)	0.61	0.76	0.86	1.04
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5784.9989	5784.9987	5784.9983	5784.9973
10	5784.9988	5784.9983	5784.9974	5784.9966
20	5784.9969	5784.9963	5784.9957	5784.9950
30	5784.9874	5784.9865	5784.9862	5784.9854
40	5784.9859	5784.9854	5784.9845	5784.9841
55	5784.9852	5784.9847	5784.9846	5784.9844
Max. Deviation (MHz)	0.0148	0.0153	0.0155	0.0159
Max. Deviation (ppm)	2.56	2.64	2.68	2.75
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	5189.9960	5189.9950	5189.9948
110.00	5189.9969	5189.9964	5189.9957	5189.9955
93.50	5189.9966	5189.9964	5189.9954	5189.9948
Max. Deviation (MHz)	0.0034	0.0040	0.0050	0.0052
Max. Deviation (ppm)	0.66	0.77	0.96	1.00
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5189.9986	5189.9978	5189.9970	5189.9968
10	5189.9973	5189.9969	5189.9961	5189.9960
20	5189.9969	5189.9961	5189.9959	5189.9952
30	5189.9874	5189.9865	5189.9862	5189.9860
40	5189.9855	5189.9845	5189.9842	5189.9838
55	5189.9852	5189.9848	5189.9847	5189.9843
Max. Deviation (MHz)	0.0148	0.0155	0.0158	0.0162
Max. Deviation (ppm)	2.85	2.99	3.04	3.12
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9970	5754.9969	5754.9961	5754.9959
110.00	5754.9969	5754.9963	5754.9959	5754.9950
93.50	5754.9959	5754.9955	5754.9950	5754.9944
Max. Deviation (MHz)	0.0041	0.0045	0.0050	0.0056
Max. Deviation (ppm)	0.71	0.78	0.87	0.97
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5755.0005	5754.9995	5754.9986	5754.9981
10	5754.9989	5754.9984	5754.9981	5754.9980
20	5754.9969	5754.9964	5754.9955	5754.9953
30	5754.9874	5754.9869	5754.9862	5754.9858
40	5754.9871	5754.9866	5754.9860	5754.9851
55	5754.9860	5754.9854	5754.9850	5754.9841
Max. Deviation (MHz)	0.0140	0.0146	0.0150	0.0159
Max. Deviation (ppm)	2.43	2.54	2.61	2.76
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	5209.9974	5209.9972	5209.9971	5209.9970
110.00	5209.9969	5209.9967	5209.9964	5209.9955
93.50	5209.9962	5209.9960	5209.9950	5209.9944
Max. Deviation (MHz)	0.0038	0.0040	0.0050	0.0056
Max. Deviation (ppm)	0.73	0.77	0.96	1.07
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5210 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5209.9994	5209.9989	5209.9981	5209.9972
10	5209.9985	5209.9977	5209.9976	5209.9967
20	5209.9969	5209.9966	5209.9963	5209.9962
30	5209.9874	5209.9869	5209.9864	5209.9858
40	5209.9854	5209.9848	5209.9845	5209.9836
55	5209.9849	5209.9840	5209.9837	5209.9833
Max. Deviation (MHz)	0.0151	0.0160	0.0163	0.0167
Max. Deviation (ppm)	2.90	3.07	3.13	3.21
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5774.9978	5774.9970	5774.9967	5774.9959
110.00	5774.9969	5774.9960	5774.9950	5774.9943
93.50	5774.9967	5774.9959	5774.9950	5774.9947
Max. Deviation (MHz)	0.0033	0.0041	0.0050	0.0057
Max. Deviation (ppm)	0.57	0.71	0.87	0.99
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5775 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5774.9989	5774.9988	5774.9983	5774.9981
10	5774.9971	5774.9963	5774.9957	5774.9948
20	5774.9969	5774.9962	5774.9953	5774.9952
30	5774.9874	5774.9868	5774.9861	5774.9852
40	5774.9854	5774.9851	5774.9847	5774.9840
55	5774.9838	5774.9834	5774.9831	5774.9829
Max. Deviation (MHz)	0.0162	0.0166	0.0169	0.0171
Max. Deviation (ppm)	2.81	2.87	2.93	2.96
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)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	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 Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 27, 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)
Test Software	Audix	E3	6.2009-l0-7	N/A	N/A	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)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
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)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	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%