SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

FCC RADIO TEST REPORT

Applicant's company	**Zebra Technologies, Corp.**
Applicant Address	1 Zebra Plaza Holtsville, NY 11742 USA
FCC ID	**UZ7TW522**
Manufacturer's company	**Wistron NeWeb Corporation**
Manufacturer Address	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308 Taiwan

Product Name	TW-522 Dual radio Wireless Wallplate, 802.11n/ac.
Brand Name	ZEBRA
Model No.	TW-522
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Sep. 02, 2015
Final Test Date	Oct. 09, 2015
Submission Type	Original Equipment

Statement

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

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

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01, KDB662911 D01 v02r01, KDB644545 D03 v01.**

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

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR290357-11AB	Rev. 01	Initial issue of report	Nov. 04, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	TW-522 Dual radio Wireless Wallplate, 802.11n/ac.
Brand Name	:	ZEBRA
Model No.	:	TW-522
Applicant	:	Zebra Technologies, Corp.
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 Sep. 02, 2015 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	19.82 dB
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	12.35 dB
4.5	15.407(a)	Power Spectral Density	Complies	8.85 dB
4.6	15.407(b)	Radiated Emissions	Complies	3.50 dB
4.7	15.407(b)	Band Edge Emissions	Complies	1.03 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (1TX/2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From power adaptor or over RJ-11
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
Channel Band Width (99%)	**1TX (Chain 2)** Band 1: IEEE 802.11a: 17.04 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.24 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.40 MHz Band 4: IEEE 802.11a: 17.45 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.58 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.77 MHz **2TX (Chain 1 + Chain 2)** Band 1: IEEE 802.11a: 17.11 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.63 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.19 MHz Band 4: IEEE 802.11a: 17.28 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 18.41 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.63 MHz

Maximum Conducted Output Power	**1TX (Chain 2)** Band 1: IEEE 802.11a: 14.96 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 14.87 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 14.96 dBm Band 4: IEEE 802.11a: 14.83 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 14.79 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 14.88 dBm **2TX (Chain 1 + Chain 2)** Band 1: IEEE 802.11a: 17.54 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 17.50 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 17.62 dBm Band 4: IEEE 802.11a: 17.37 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 17.61 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 17.65 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
Beamforming Function	☐ With beamforming	☒ Without beamforming
Operating Mode	☐ Outdoor access point	
	☒ Indoor access point	
	☐ Fixed point-to-point access points	
	☐ Mobile and portable client devices	

Antenna and Band width

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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	1	MCS 0-7
802.11n (HT40)	1	MCS 0-7
802.11ac (VHT20)	1	MCS 0-9/Nss1
802.11ac (VHT40)	1	MCS 0-9/Nss1
802.11n (HT20)	2	MCS 0-15
802.11n (HT40)	2	MCS 0-15
802.11ac (VHT20)	2	MCS 0-9/Nss1-2
802.11ac (VHT40)	2	MCS 0-9/Nss1-2
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 and VHT40. Note 3: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n, VHT20/VHT40: IEEE 802.11ac		

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	WNC	XKAA-N03	PCB Antenna	I-PEX	4	5
2	WNC	XKAA-N03	PCB Antenna	I-PEX	4	5

Note: The EUT has two antennas.

The EUT can support both 1TX and 2TX functions.

For 1TX function (1TX, 2RX):

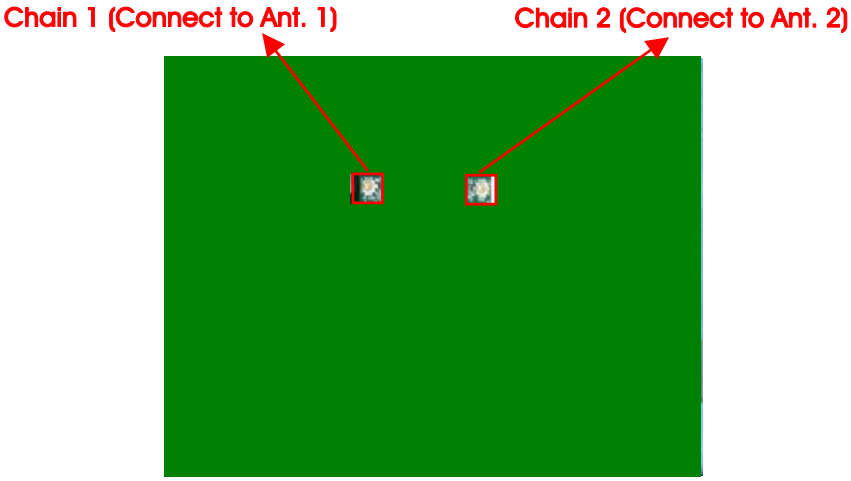
The EUT supports the antenna with TX diversity function.

The Chain 2 generated the worst case, so it was selected to test and record in the report.

Chain 1 and Chain 2 could both receive simultaneously.

For 2TX function (2TX, 2RX):

Chain 1 and Chain 2 could both transmit/receive simultaneously.



3.4. Table for Carrier Frequencies

There are two 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.

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
5725~5850 MHz Band 4	149	5745 MHz	159	5795 MHz
	151	5755 MHz	161	5805 MHz
	153	5765 MHz	165	5825 MHz
	157	5785 MHz	-	-

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Chain
AC Power Conducted Emission	CTX		-	-	-
Max. Conducted Output Power	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	2
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2
Power Spectral Density	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	2
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	2
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2

6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 4	6Mbps	149/157/165	2
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	2
	11ac VHT40	Band 4	MCS0/Nss1	151/159	2
	11a/BPSK	Band 4	6Mbps	149/157/165	1+2
	11ac VHT20	Band 4	MCS0/Nss1	149/157/165	1+2
	11ac VHT40	Band 4	MCS0/Nss1	151/159	1+2
Radiated Emission Below 1GHz	CTX		-	-	-
Radiated Emission Above 1GHz	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	2
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2
Band Edge Emission	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	2
	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1+2
	11ac VHT20	Band 1&4	MCS0/Nss1	36/40/48/149/157/165	1+2
	11ac VHT40	Band 1&4	MCS0/Nss1	38/46/151/159	1+2
Frequency Stability	20 MHz	Band 1&4	-	40/157	2
	40 MHz	Band 1&4	-	38/151	2

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

2. The adapter and ADSL 2+ Simulator (Terminal system) are for measurement only, would not be marketed, and their information as below:

Support Unit	Brand	Model	FCC ID
AC adaptor	FAIRWAY	WRG10F-120A	N/A
ADSL 2+ Simulator (Terminal system)	MOTOROLA	TS-524	DoC

The following test modes were performed for all tests:

AC Power Line Conducted Emissions	
There are two modes of EUT, one is EUT with 2.4GHz WLAN function, the other is EUT with 5GHz WLAN function. EUT with 5GHz WLAN function has been evaluated to be the worst case for radiated emission below 1GHz test, thus the measurement for AC power line conducted emissions test will follow this same test configuration.	
Test Mode	Description
1	EUT with 5GHz WLAN function-power by adapter

Radiated Emission below 1GHz	
The EUT was performed at Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at Y axis. So the measurement will follow this same test configuration.	
Test Mode	Description
1	Place EUT in Y axis with 2.4GHz WLAN function-power by adapter
2	Place EUT in Y axis with 5GHz WLAN function-power by adapter
Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow this same test mode.	
3	Place EUT in Y axis with 5GHz WLAN function-power over RJ-11
Mode 2 is the worst case, so it was selected to record in this test report.	

Radiated Emission above 1GHz	
The EUT was performed at Y axis and Z axis position, after evaluating, Y axis has been evaluated to be the worst case, so it was selected to test and record in this test report.	
Test Mode	Description
1	Place EUT in Y axis

Co-location MPE and Radiated Emission Co-location
The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA290357-11) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

Test Site Location					
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.				
TEL:	886-3-656-9065				
FAX:	886-3-656-9085				
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.7. Table for Supporting Units

For Test Site No: 03CH01-CB and TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC
AC adaptor	FAIRWAY	WRG10F-120A	N/A

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC
AC adaptor	FAIRWAY	WRG10F-120A	N/A

3.8. 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		ART2-GUI Version 2.3					
Mode	Chain	Test Frequency (MHz)					
		NCB: 20MHz					
		5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	Chain 2	15	15	15	15	15.5	16
802.11ac MCS0/Nss1 VHT20	Chain 2	15	15	15	15	15.5	16
802.11a	Chain 1 + Chain 2	13.5	14	14	14	14	14.5
802.11ac MCS0/Nss1 VHT20	Chain 1 + Chain 2	14	14	13.5	14	14.5	15
Mode	Chain	NCB: 40MHz					
		5190 MHz		5230 MHz	5755 MHz	5795 MHz	
802.11ac MCS0/Nss1 VHT40	Chain 2	13.3		16	14	16.5	
802.11ac MCS0/Nss1 VHT40	Chain 1 + Chain 2	12.5		15.5	13	15.5	

3.9. EUT Operation during Test

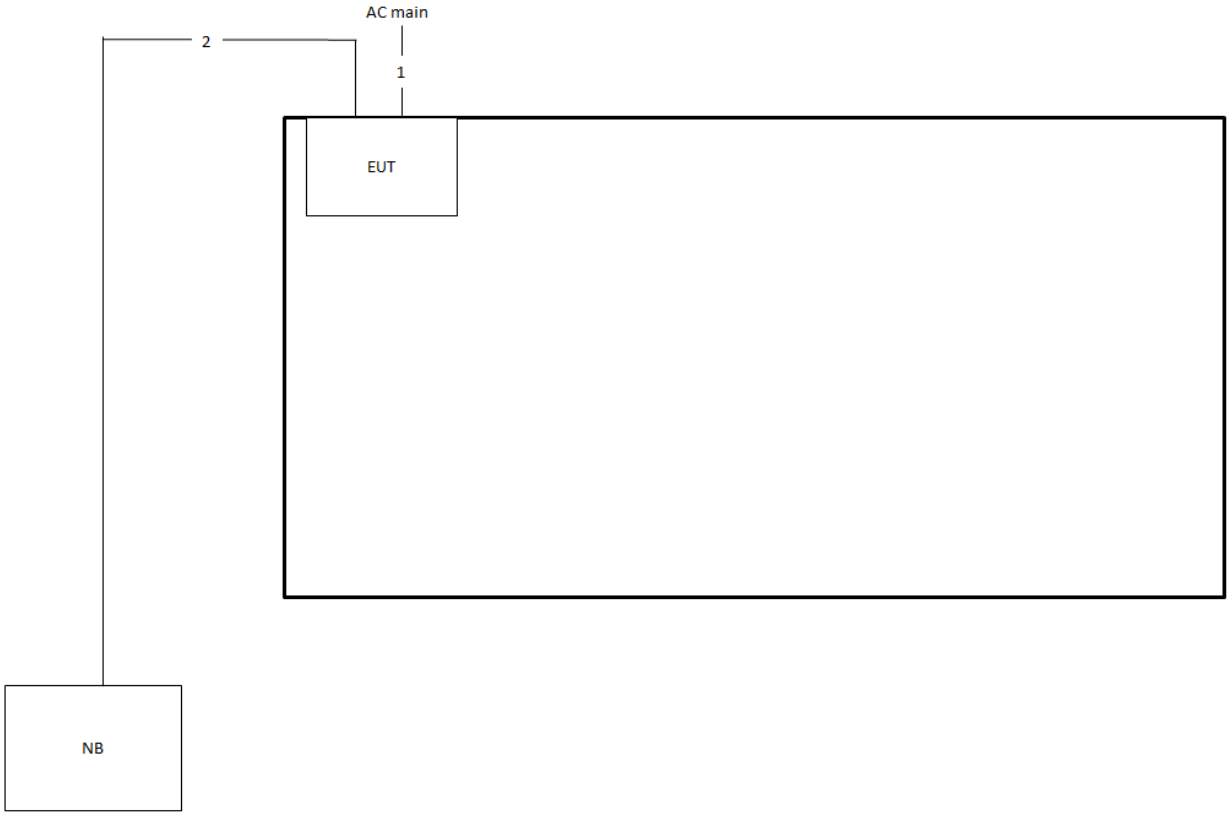
The EUT was programmed to be in continuously transmitting mode.

3.10. Duty Cycle

Mode	Chain	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	Chain 2	1.000	1.000	100.00	0.00	0.01
802.11ac MCS0/Nss1 VHT20	Chain 2	1.000	1.000	100.00	0.00	0.01
802.11ac MCS0/Nss1 VHT40	Chain 2	1.000	1.000	100.00	0.00	0.01
802.11a	Chain 1 + Chain 2	1.000	1.000	100.00	0.00	0.01
802.11ac MCS0/Nss1 VHT20	Chain 1 + Chain 2	1.000	1.000	100.00	0.00	0.01
802.11ac MCS0/Nss1 VHT40	Chain 1 + Chain 2	1.000	1.000	100.00	0.00	0.01

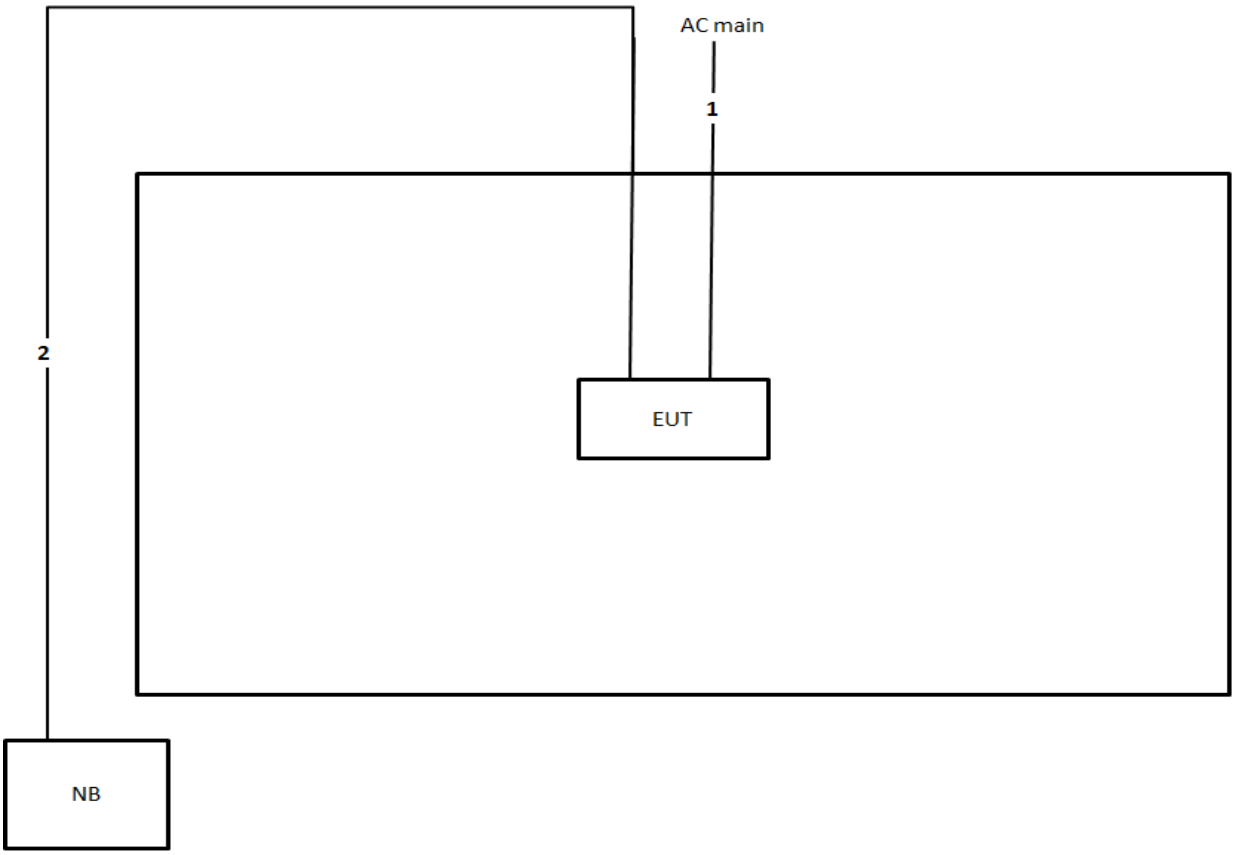
3.11. Test Configurations

3.11.1. AC Power Line Conduction Emissions Test Configuration



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

3.11.2. Radiation Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
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

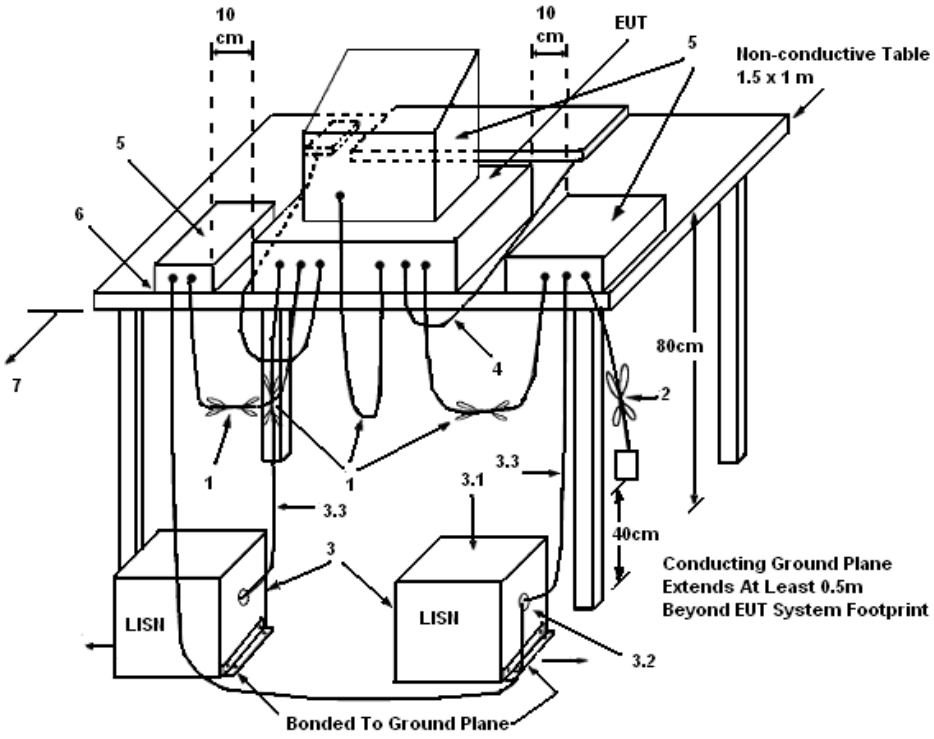
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

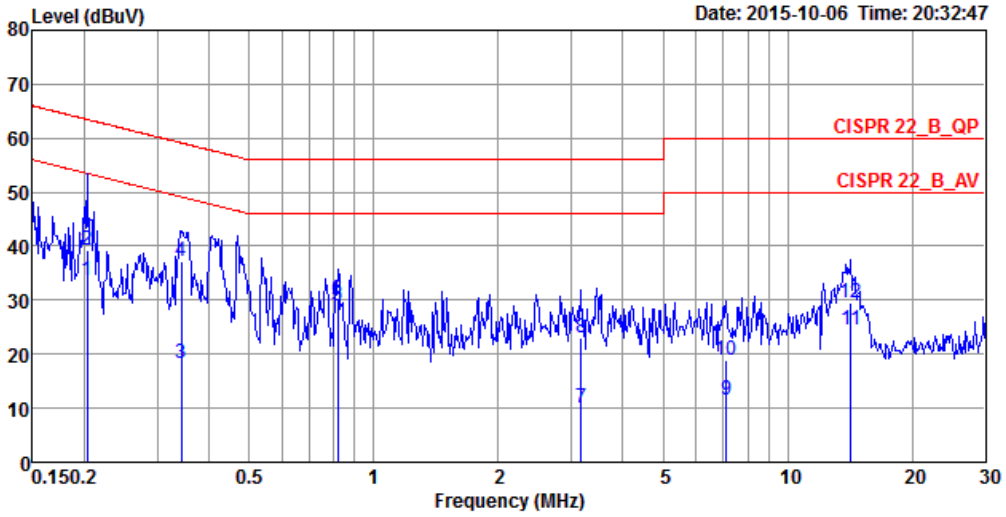
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

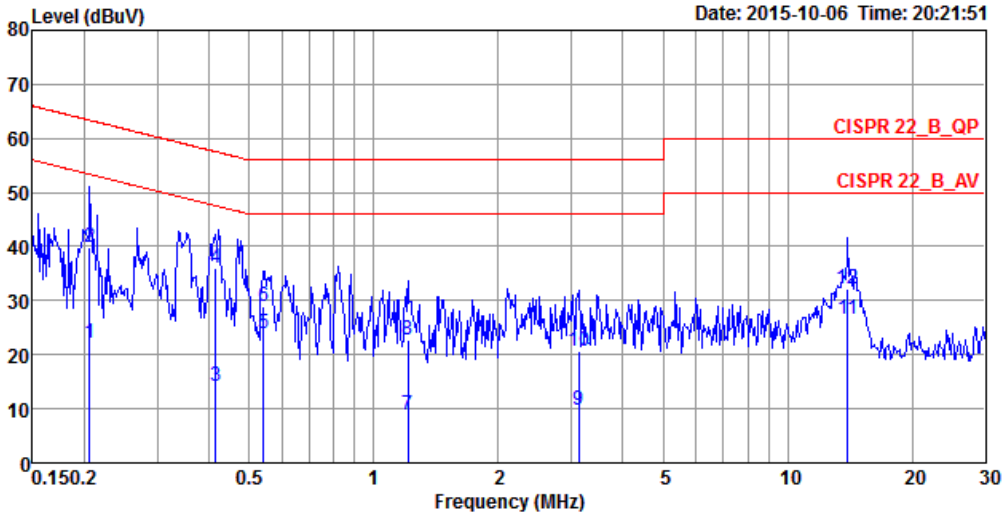
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	25°C	Humidity	59%
Test Engineer	Parody Lin	Phase	Line
Configuration	CTX	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.2029	33.67	-19.82	53.49	23.72	9.93	0.02	LINE	Average
2	0.2029	39.20	-24.29	63.49	29.25	9.93	0.02	LINE	QP
3	0.3428	18.37	-30.76	49.13	8.40	9.93	0.04	LINE	Average
4	0.3428	37.14	-21.99	59.13	27.17	9.93	0.04	LINE	QP
5	0.8174	29.06	-16.94	46.00	19.07	9.95	0.04	LINE	Average
6	0.8174	30.10	-25.90	56.00	20.11	9.95	0.04	LINE	QP
7	3.1731	9.93	-36.07	46.00	-0.13	10.01	0.05	LINE	Average
8	3.1731	23.07	-32.93	56.00	13.01	10.01	0.05	LINE	QP
9	7.0997	11.41	-38.59	50.00	1.15	10.12	0.14	LINE	Average
10	7.0997	19.00	-41.00	60.00	8.74	10.12	0.14	LINE	QP
11	14.2127	24.37	-25.63	50.00	13.80	10.31	0.26	LINE	Average
12	14.2127	29.63	-30.37	60.00	19.06	10.31	0.26	LINE	QP

Temperature	25°C	Humidity	59%
Test Engineer	Parody Lin	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.2061	22.10	-31.26	53.36	12.29	9.79	0.02	NEUTRAL	Average
2	0.2061	39.95	-23.41	63.36	30.14	9.79	0.02	NEUTRAL	QP
3	0.4148	14.15	-33.40	47.55	4.32	9.79	0.04	NEUTRAL	Average
4	0.4148	36.16	-21.39	57.55	26.33	9.79	0.04	NEUTRAL	QP
5	0.5407	23.96	-22.04	46.00	14.12	9.80	0.04	NEUTRAL	Average
6	0.5407	29.08	-26.92	56.00	19.24	9.80	0.04	NEUTRAL	QP
7	1.2098	8.84	-37.16	46.00	-1.03	9.82	0.05	NEUTRAL	Average
8	1.2098	22.63	-33.37	56.00	12.76	9.82	0.05	NEUTRAL	QP
9	3.1231	9.62	-36.38	46.00	-0.29	9.86	0.05	NEUTRAL	Average
10	3.1231	20.79	-35.21	56.00	10.88	9.86	0.05	NEUTRAL	QP
11	13.9886	26.60	-23.40	50.00	16.26	10.09	0.25	NEUTRAL	Average
12	13.9886	32.11	-27.89	60.00	21.77	10.09	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	Andy Tsai		

Chain 2

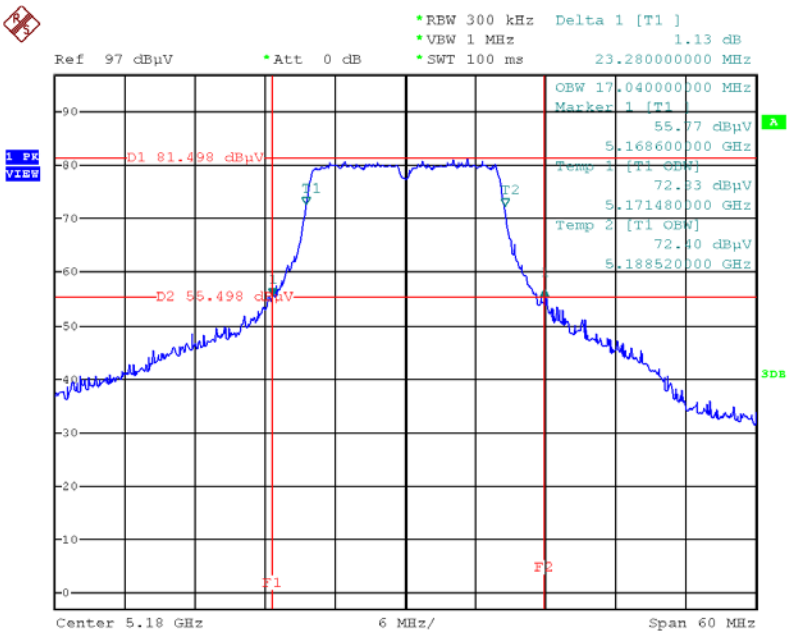
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	23.28	17.04
	5200 MHz	23.40	17.04
	5240 MHz	23.52	17.04
	5745 MHz	28.26	17.11
	5785 MHz	31.22	17.45
	5825 MHz	33.30	17.45
802.11ac MCS0/Nss1 VHT20	5180 MHz	24.12	18.12
	5200 MHz	23.64	18.00
	5240 MHz	24.84	18.24
	5745 MHz	29.65	18.32
	5785 MHz	30.87	18.41
	5825 MHz	34.26	18.58
802.11ac MCS0/Nss1 VHT40	5190 MHz	48.40	37.20
	5230 MHz	47.80	37.40
	5755 MHz	54.49	37.48
	5795 MHz	63.04	37.77

Temperature	25°C	Humidity	45%
Test Engineer	Andy Tsai		

Chain 1 + Chain 2

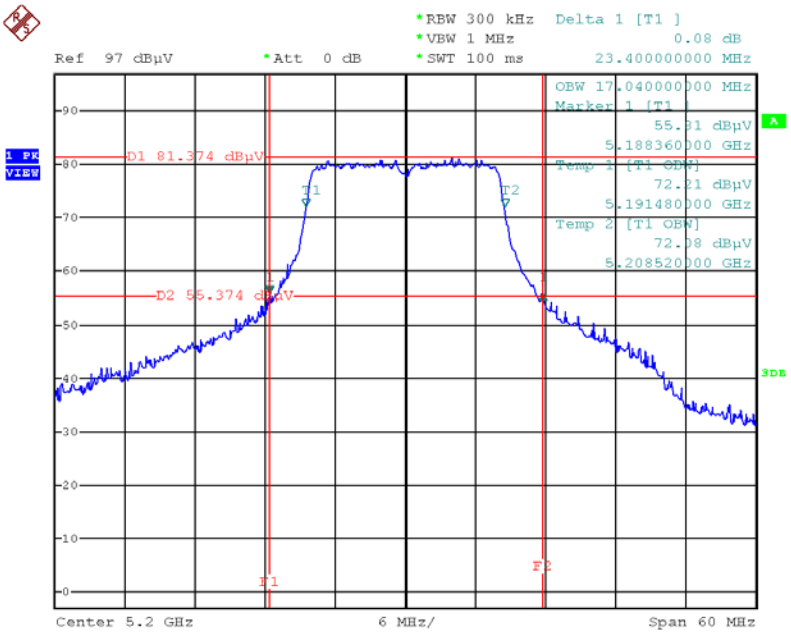
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	26.00	17.11
	5200 MHz	25.48	17.11
	5240 MHz	23.83	17.11
	5745 MHz	26.52	17.28
	5785 MHz	26.35	17.11
	5825 MHz	26.78	17.19
802.11ac MCS0/Nss1 VHT20	5180 MHz	21.04	17.54
	5200 MHz	21.04	17.54
	5240 MHz	21.39	17.63
	5745 MHz	20.78	17.37
	5785 MHz	26.52	18.41
	5825 MHz	24.70	17.71
802.11ac MCS0/Nss1 VHT40	5190 MHz	45.65	37.19
	5230 MHz	45.80	37.19
	5755 MHz	49.13	37.63
	5795 MHz	66.23	36.32

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



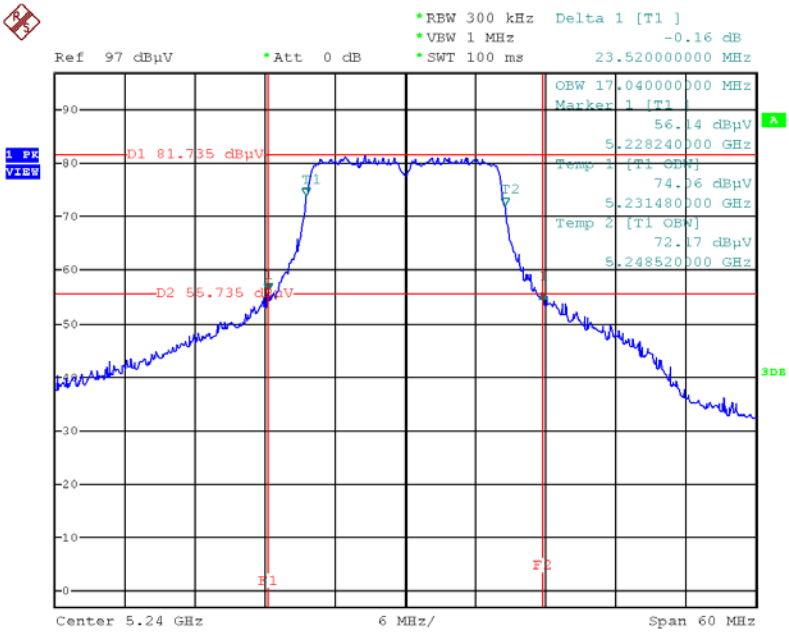
Date: 8.SEP.2015 03:27:27

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



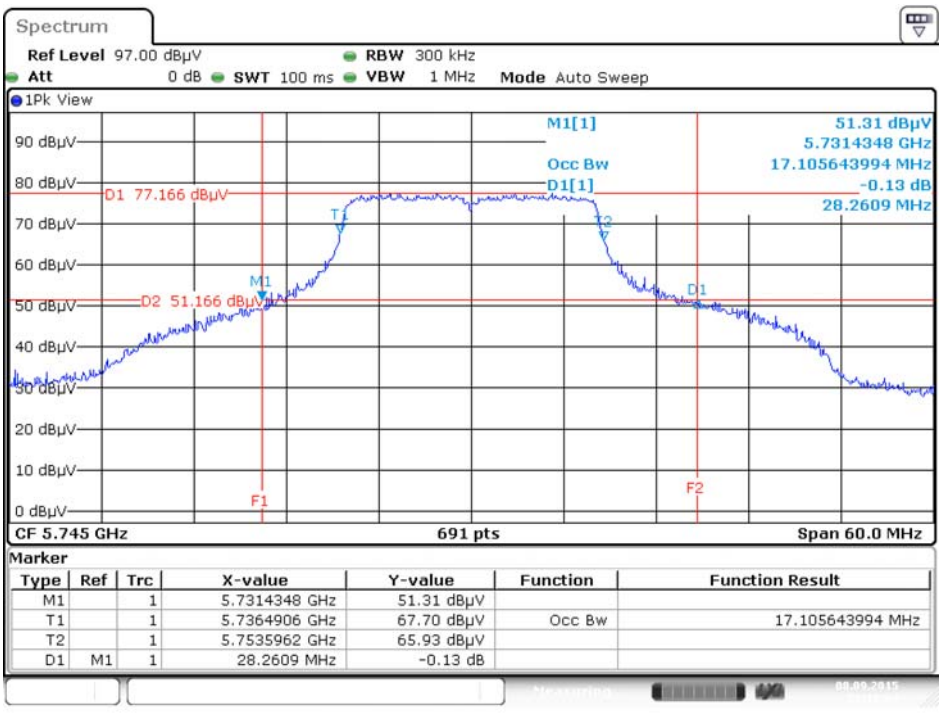
Date: 8.SEP.2015 03:28:00

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



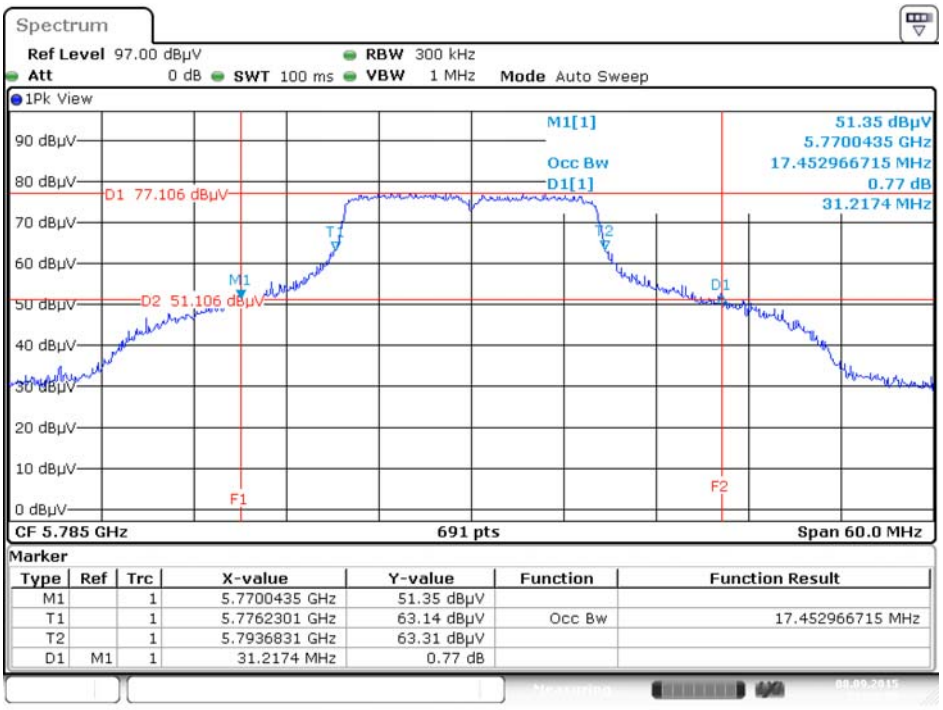
Date: 8.SEP.2015 03:28:34

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



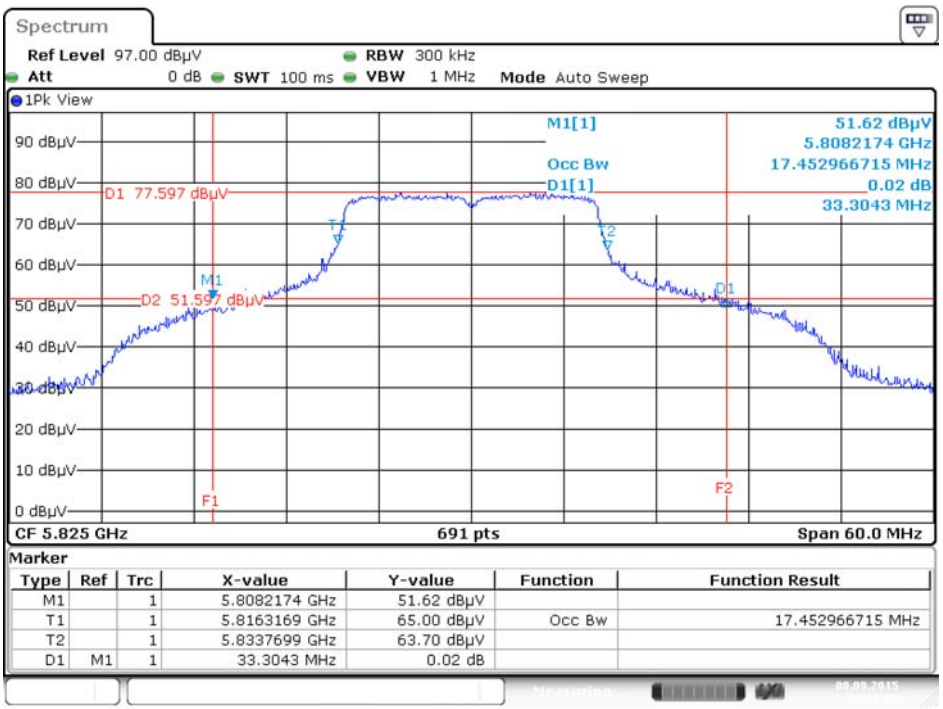
Date: 8.SEP.2015 23:18:04

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



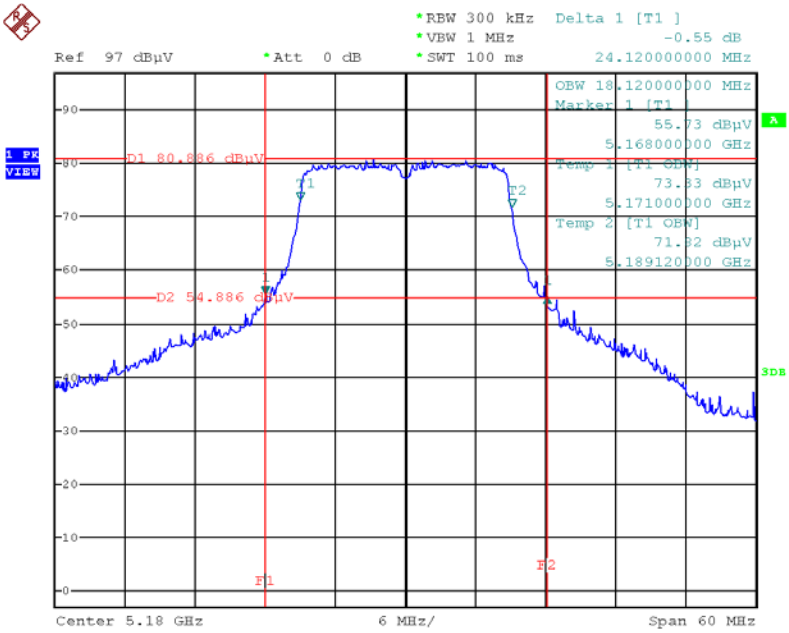
Date: 8.SEP.2015 23:20:50

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

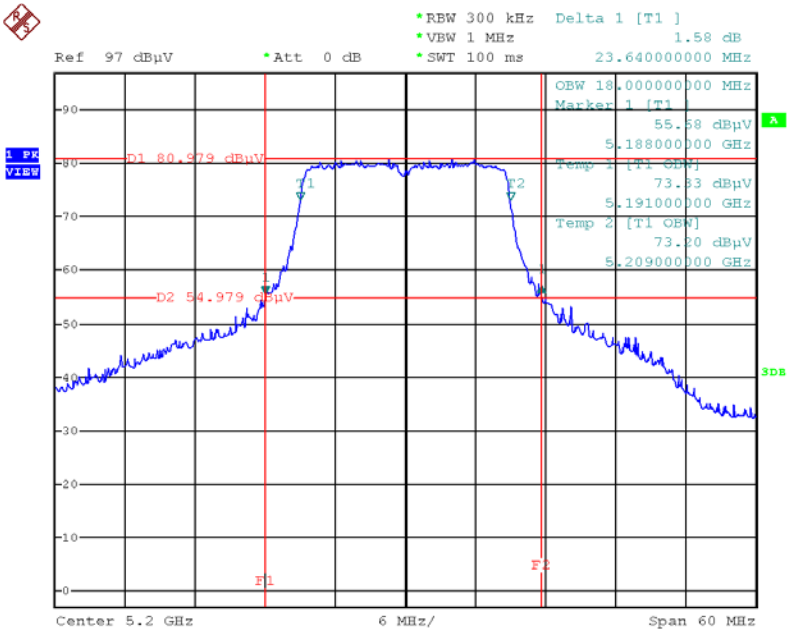


Date: 8.SEP.2015 23:22:00

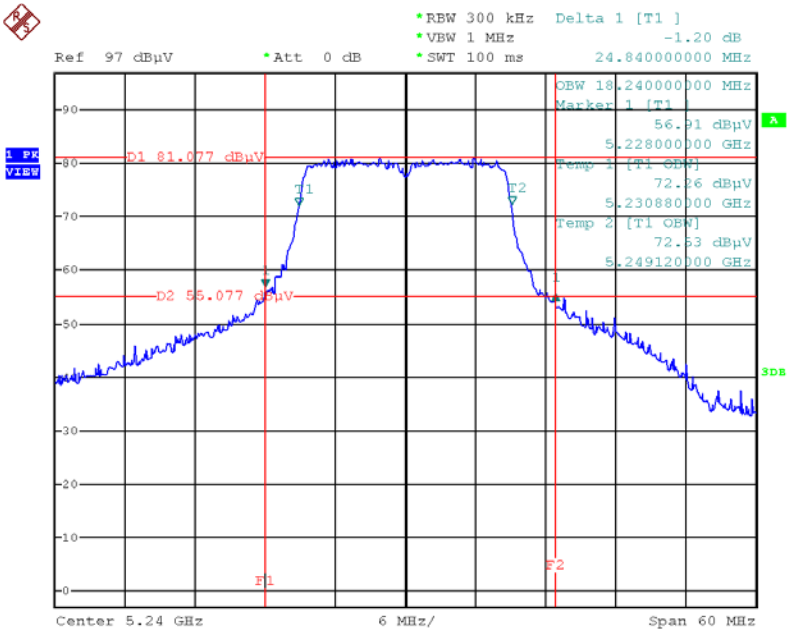
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5180 MHz



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

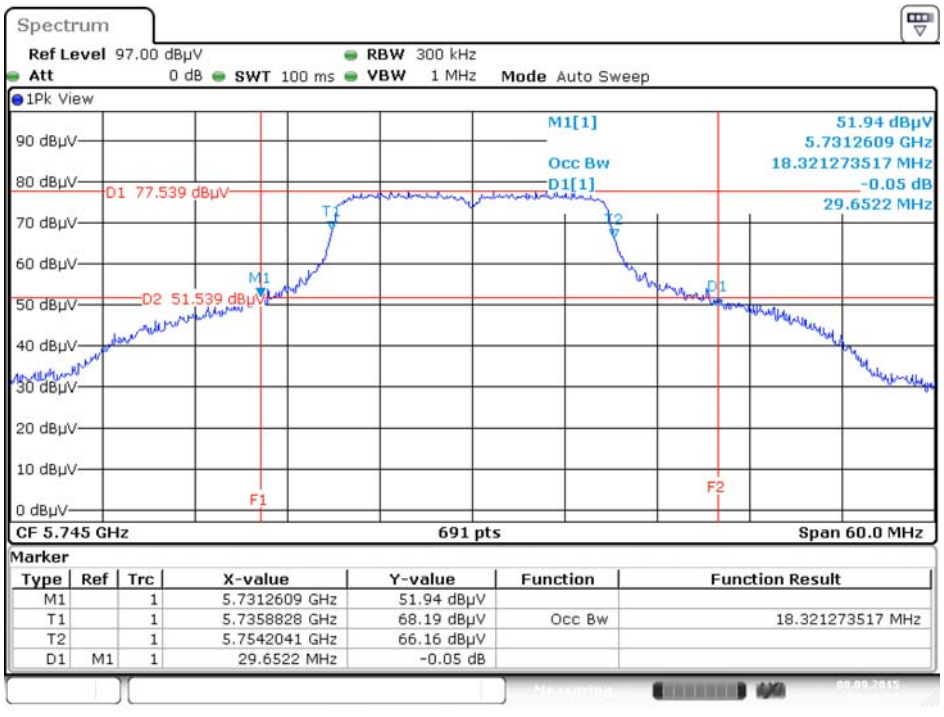


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5240 MHz



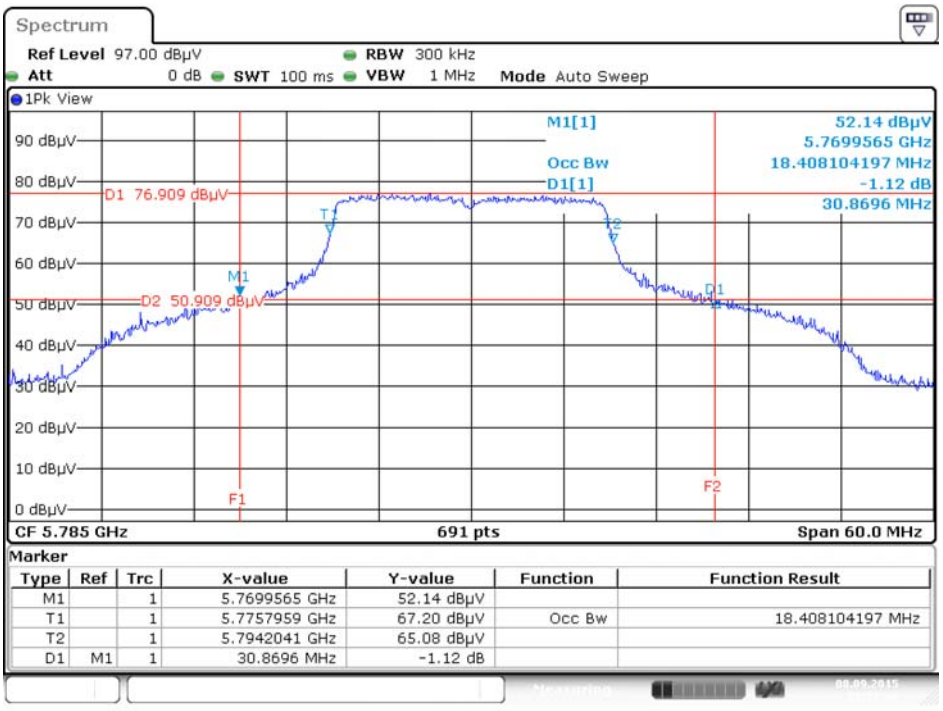
Date: 8.SEP.2015 03:30:35

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



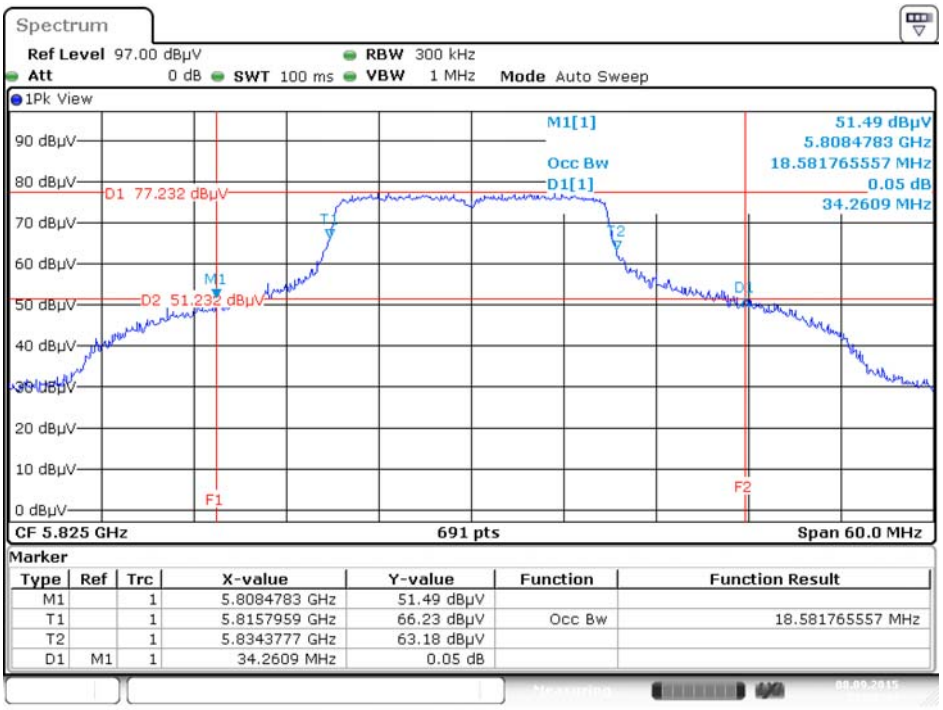
Date: 8.SEP.2015 23:26:53

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



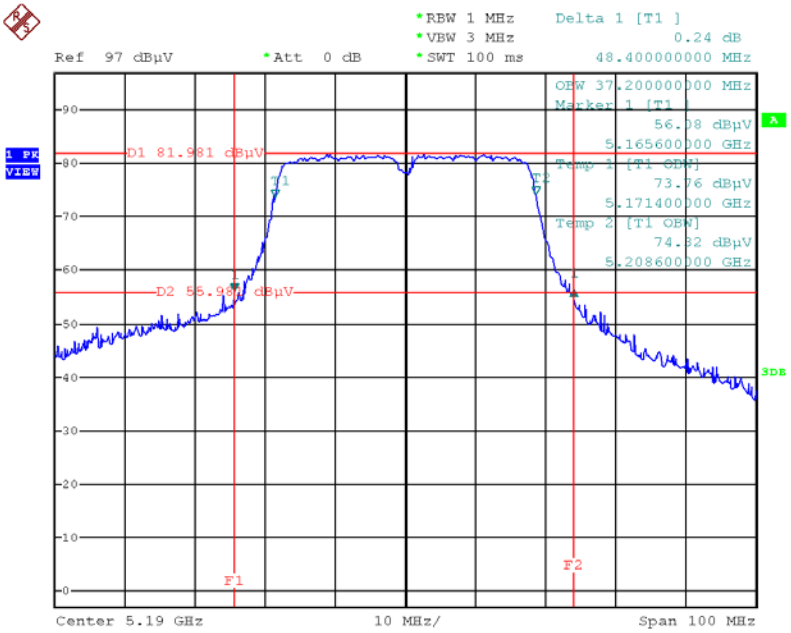
Date: 8.SEP.2015 23:27:47

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



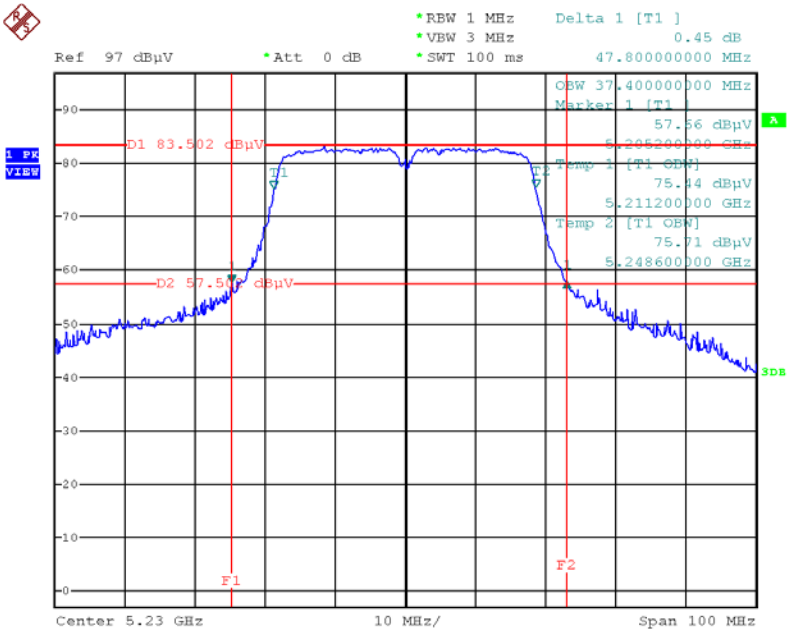
Date: 8.SEP.2015 23:28:43

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



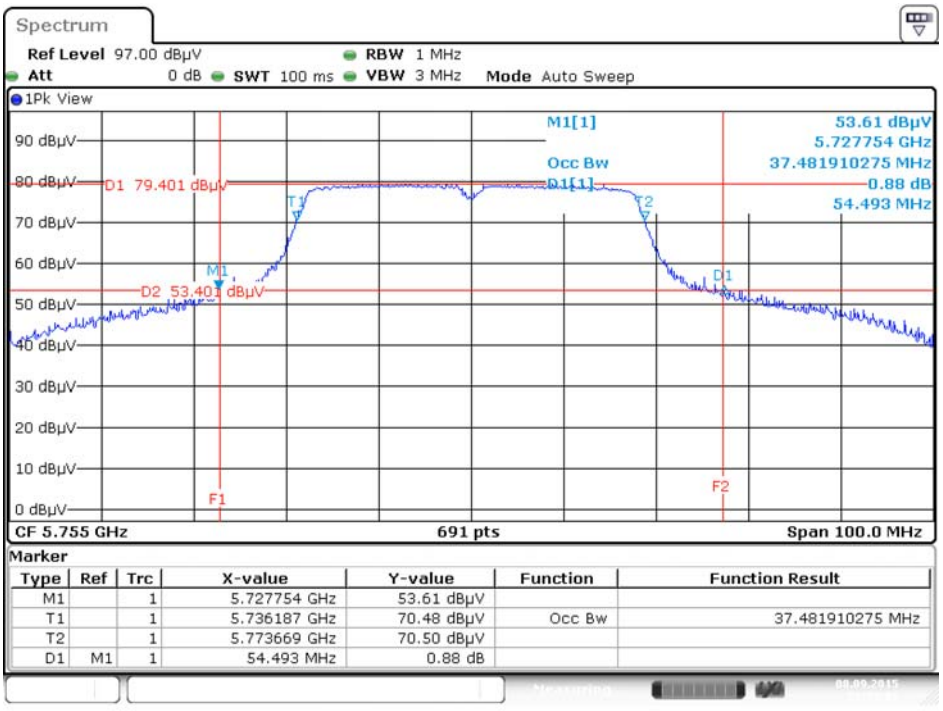
Date: 8.SEP.2015 03:31:46

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



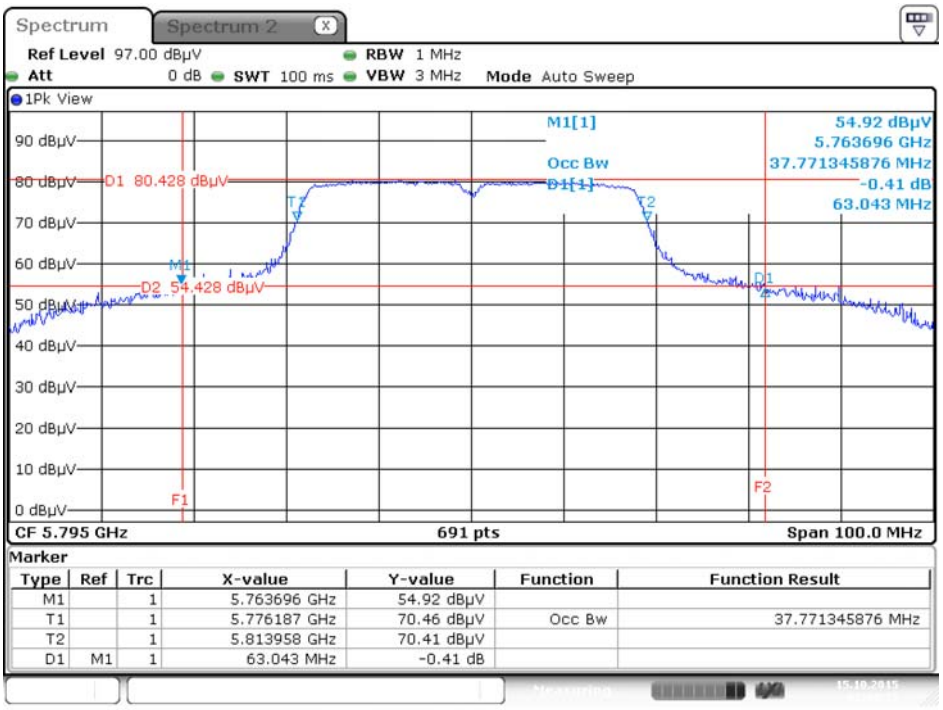
Date: 8.SEP.2015 03:32:40

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



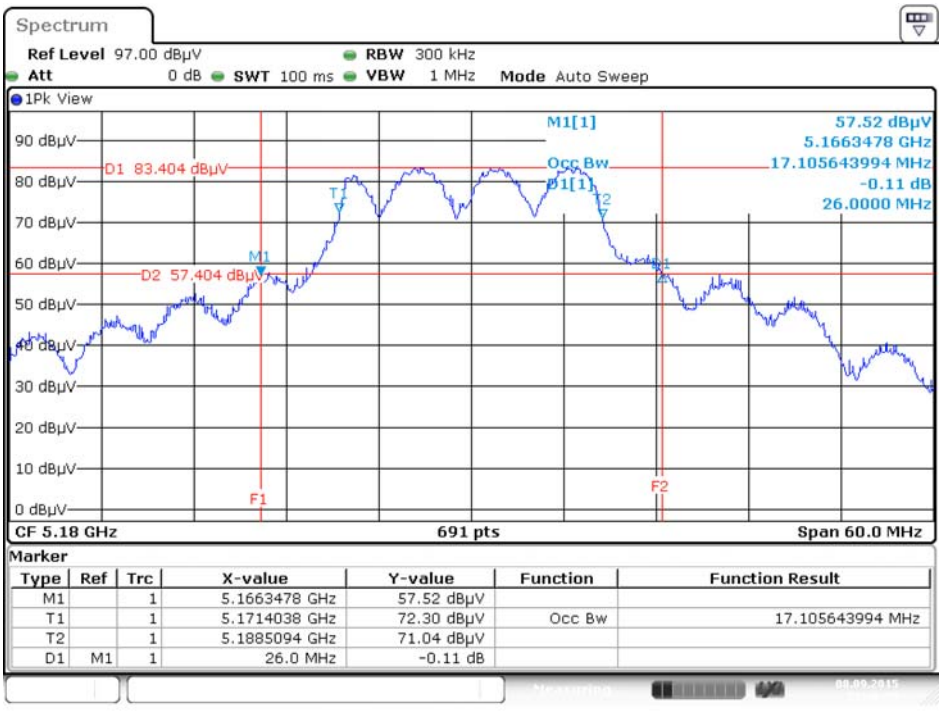
Date: 8.SEP.2015 23:35:00

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



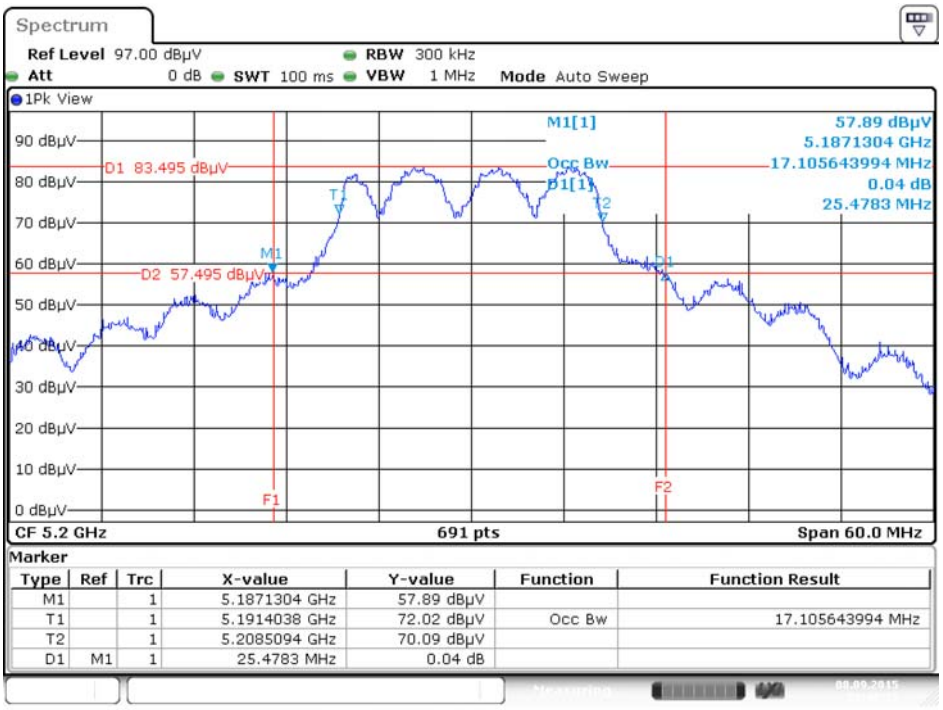
Date: 15.OCT.2015 02:43:21

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



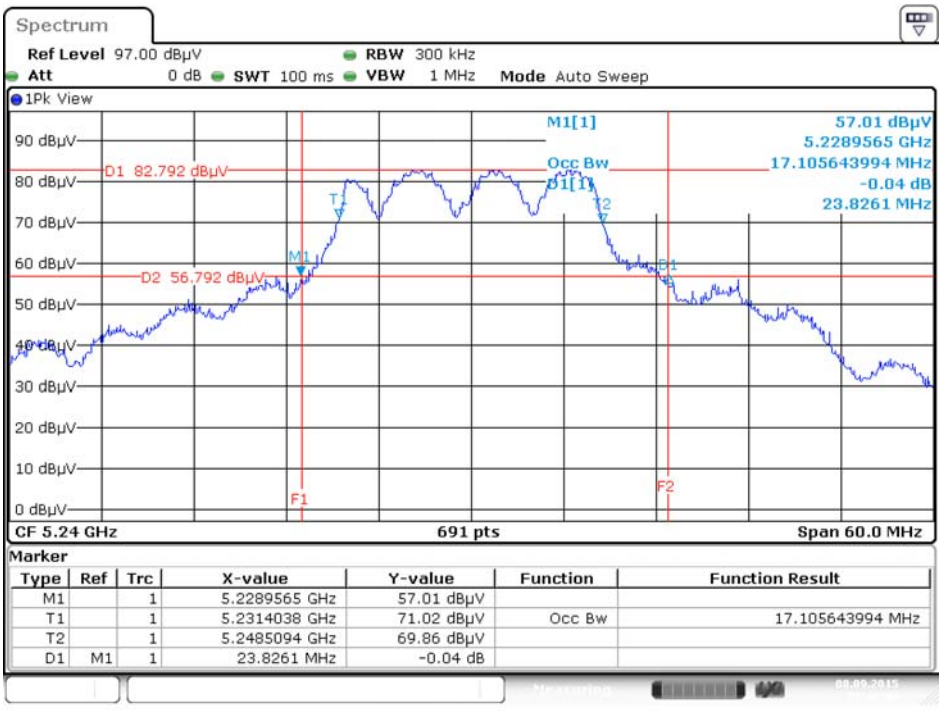
Date: 8.SEP.2015 23:46:54

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



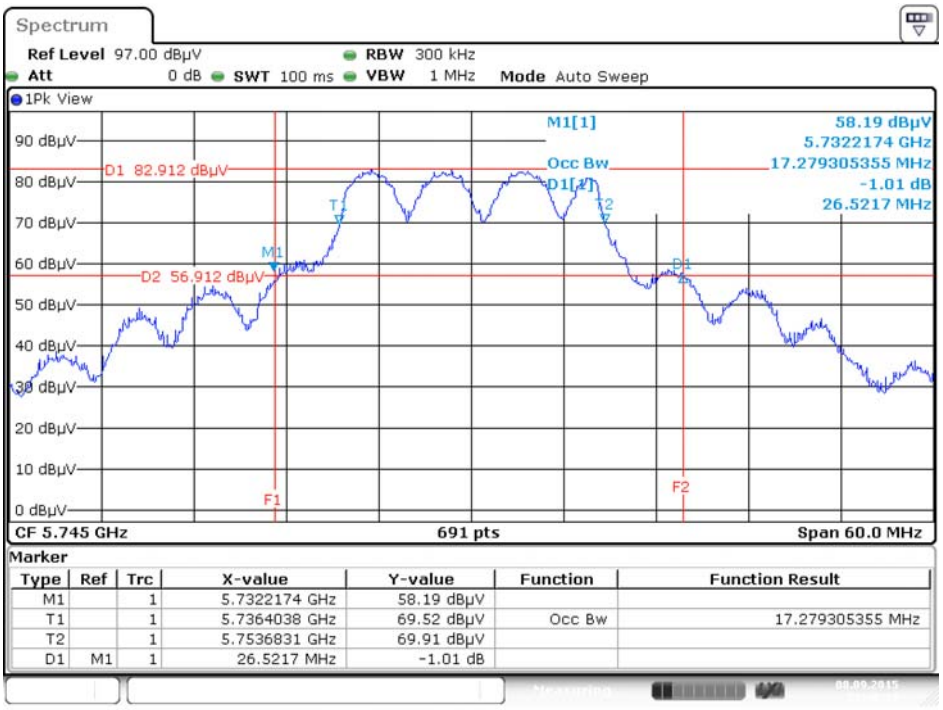
Date: 8.SEP.2015 23:47:21

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



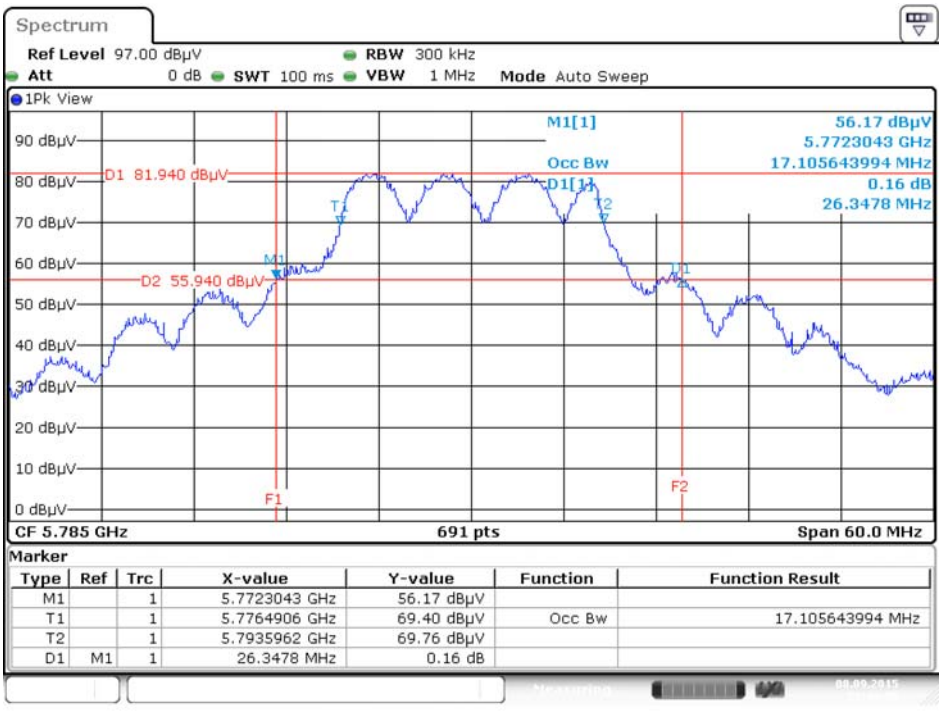
Date: 8.SEP.2015 23:47:49

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



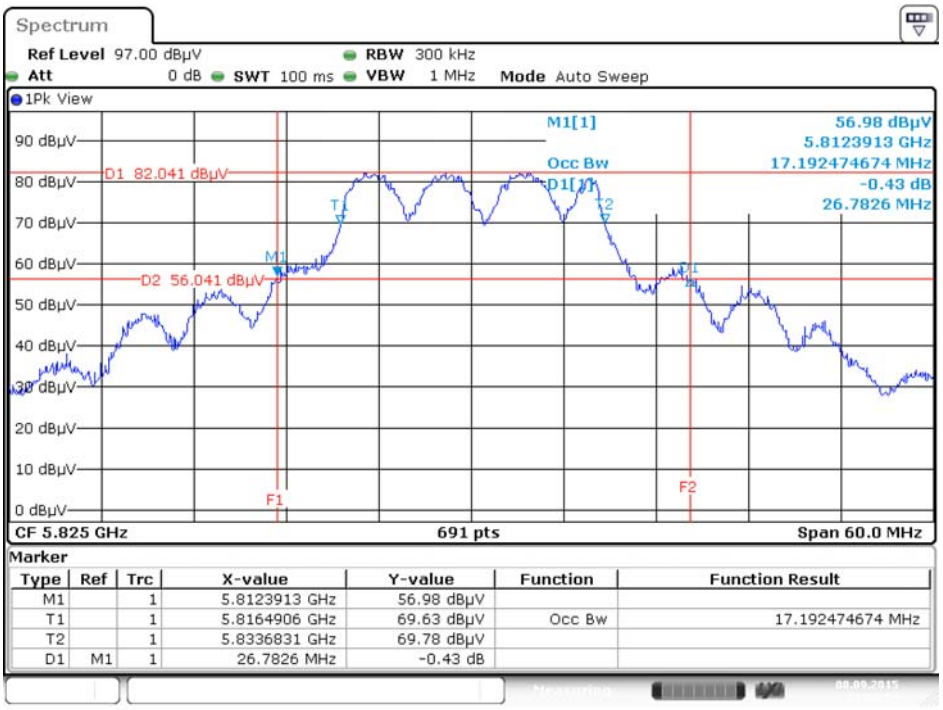
Date: 8.SEP.2015 23:48:18

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



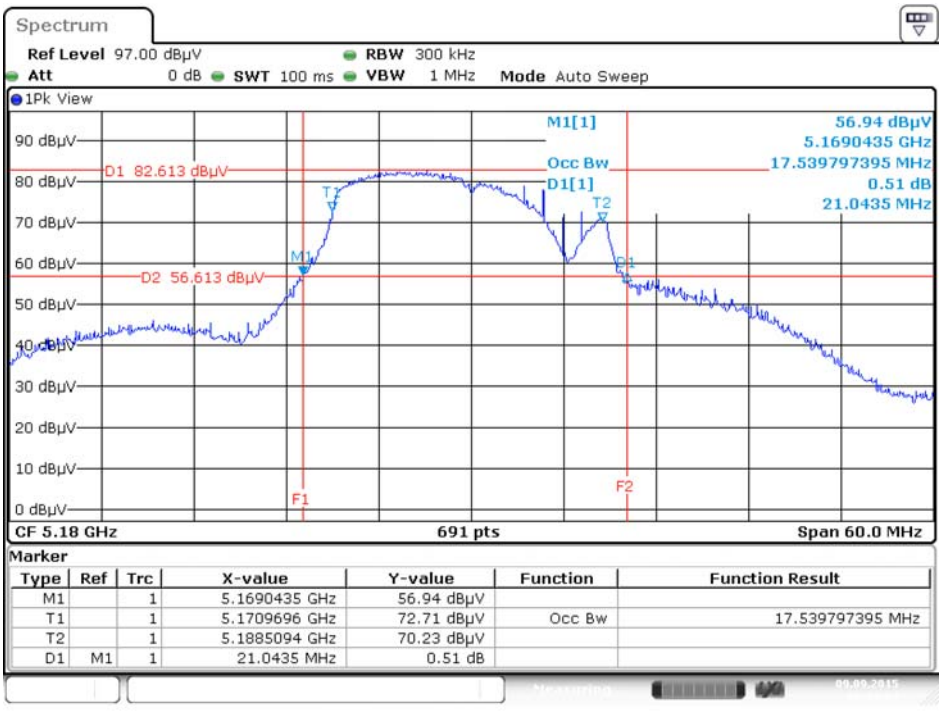
Date: 8.SEP.2015 23:49:55

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



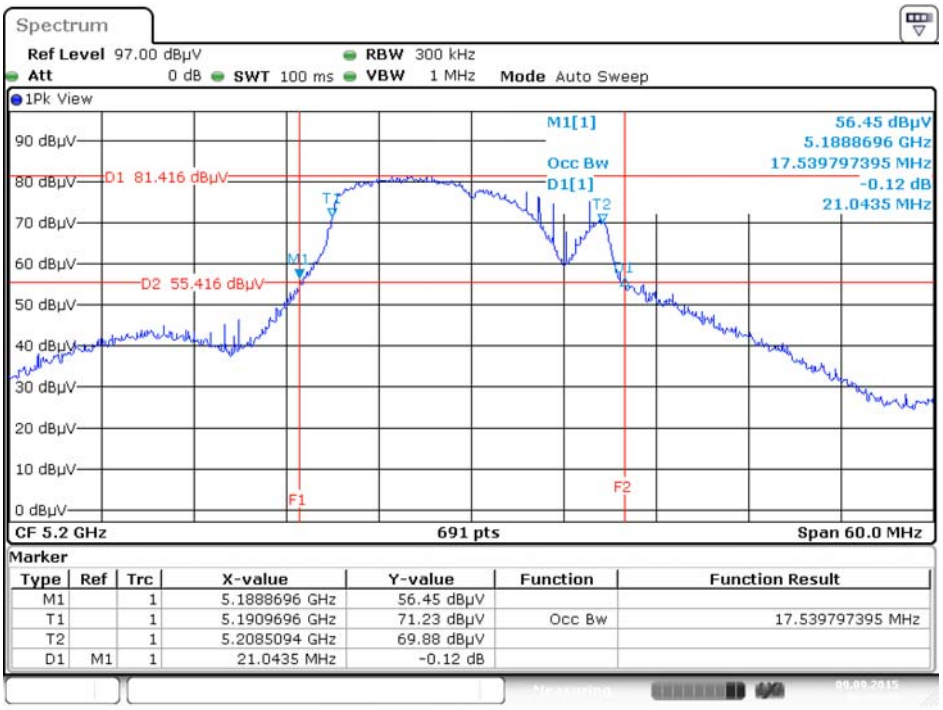
Date: 8.SEP.2015 23:50:54

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



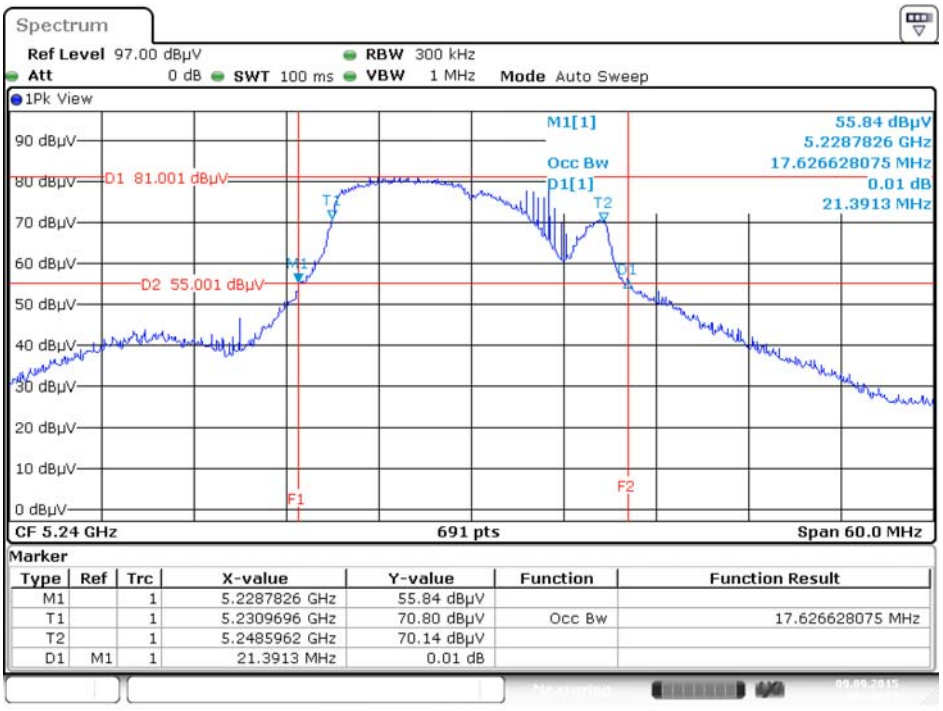
Date: 9.SEP.2015 00:44:04

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



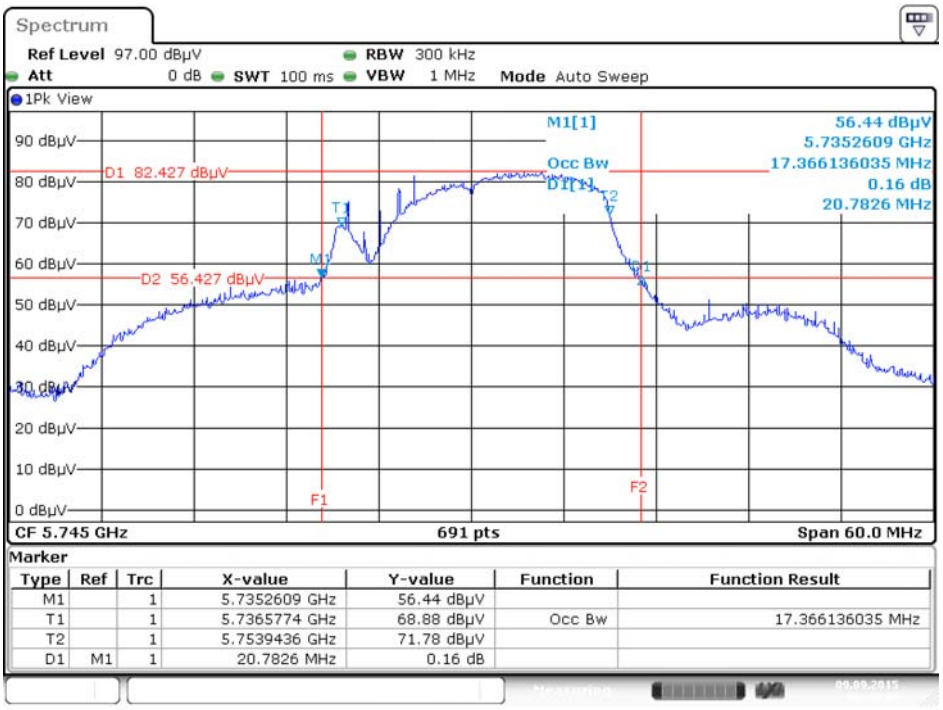
Date: 9.SEP.2015 00:44:44

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



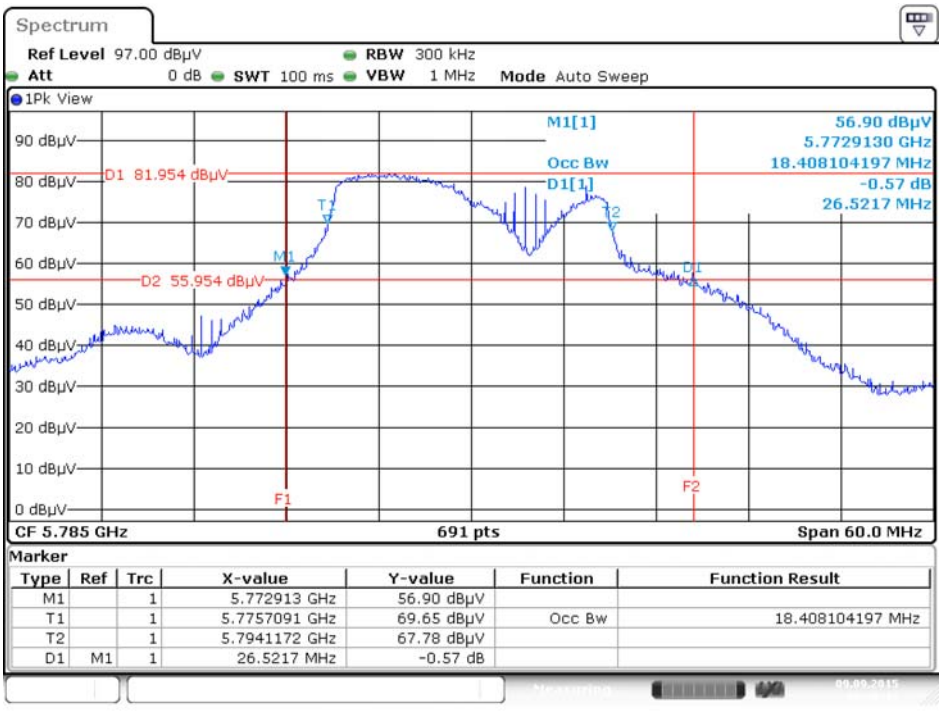
Date: 9.SEP.2015 00:45:13

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



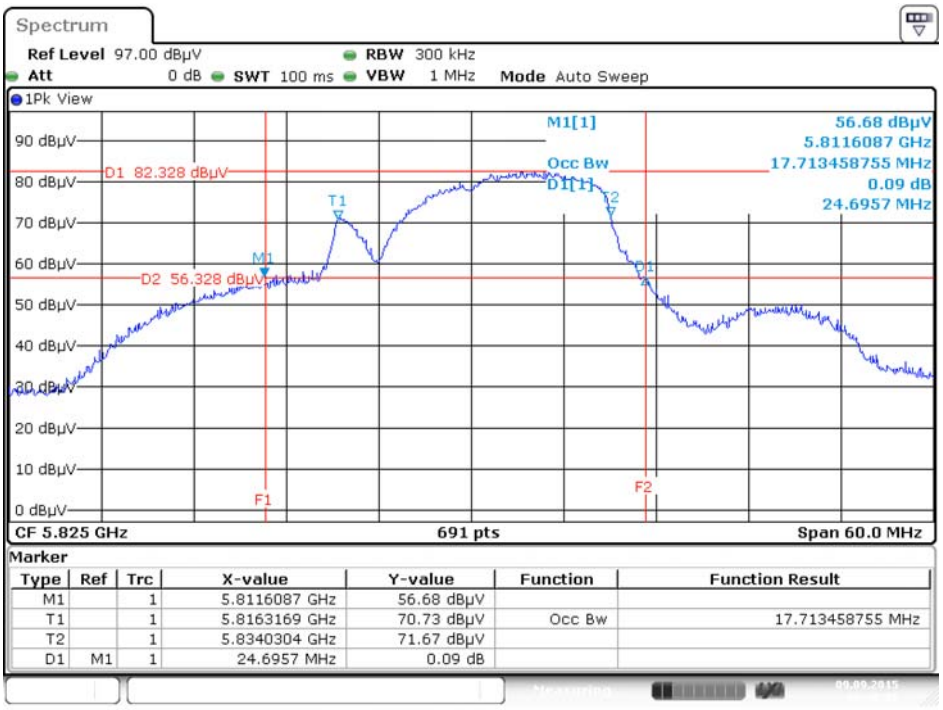
Date: 9.SEP.2015 00:45:49

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



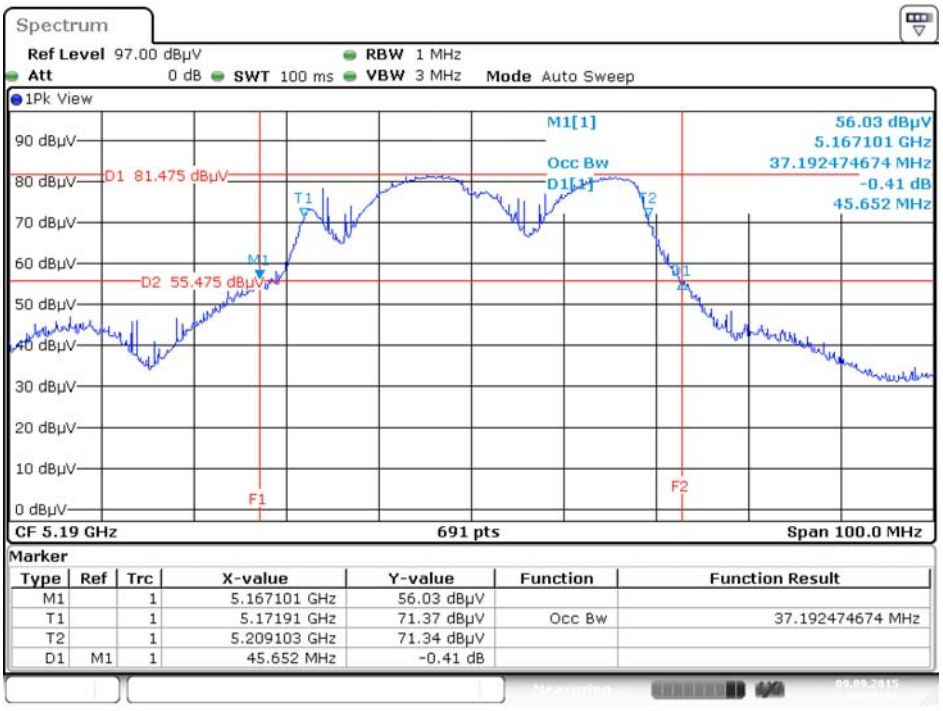
Date: 9.SEP.2015 00:46:41

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



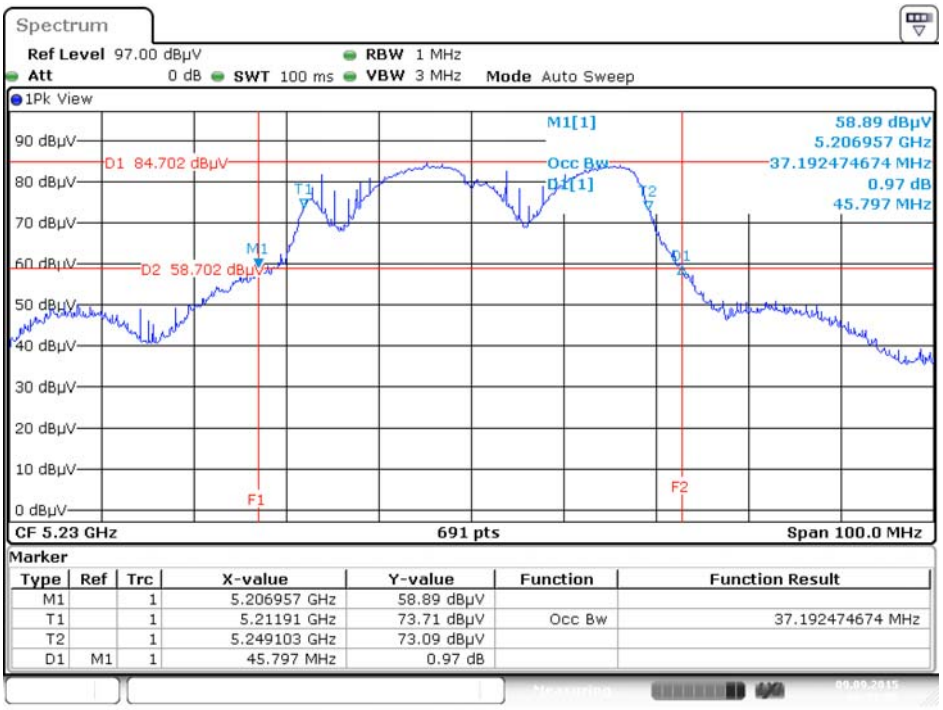
Date: 9.SEP.2015 00:48:16

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



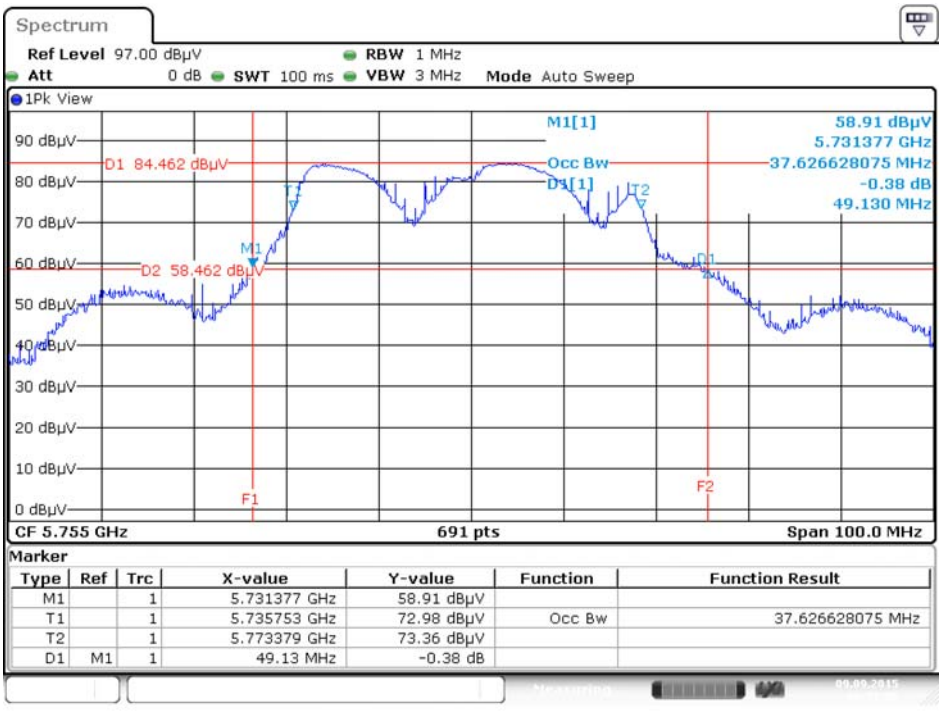
Date: 9.SEP.2015 00:51:16

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



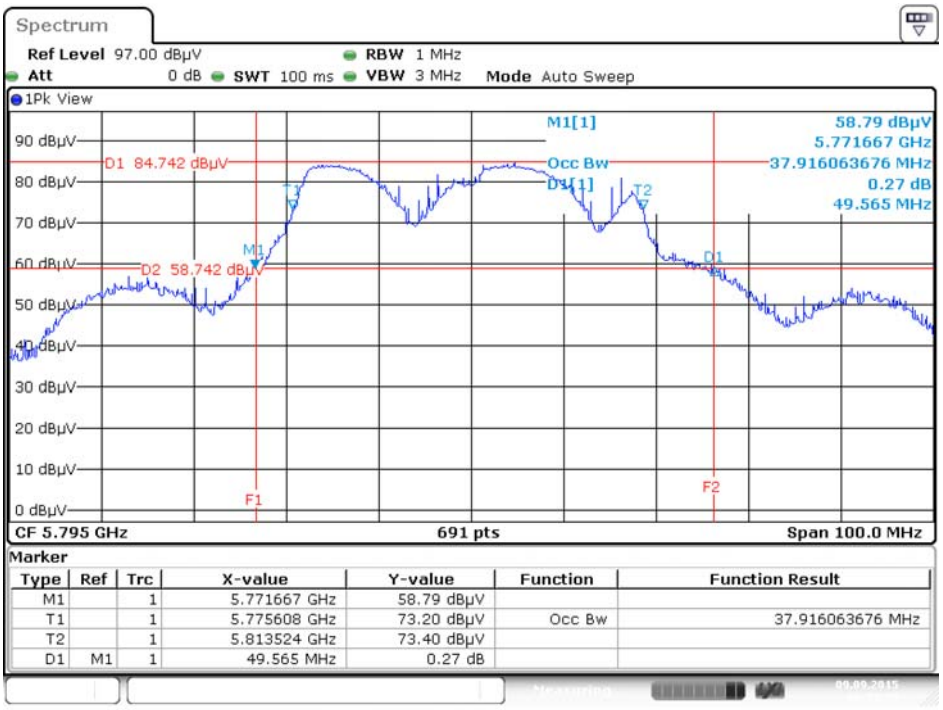
Date: 9.SEP.2015 00:51:57

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



Date: 9.SEP.2015 00:52:25

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



Date: 9.SEP.2015 00:53:29

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 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (C) Emission Bandwidth.
3. Multiple antenna system was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.3.4. 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°C	Humidity	45%
Test Engineer	Andy Tsai		

Chain 2

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	16.35	500	Complies
	5785 MHz	16.41	500	Complies
	5825 MHz	16.35	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.57	500	Complies
	5785 MHz	17.57	500	Complies
	5825 MHz	17.62	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	36.06	500	Complies
	5795 MHz	36.41	500	Complies

Temperature	25°C	Humidity	45%
Test Engineer	Andy Tsai		

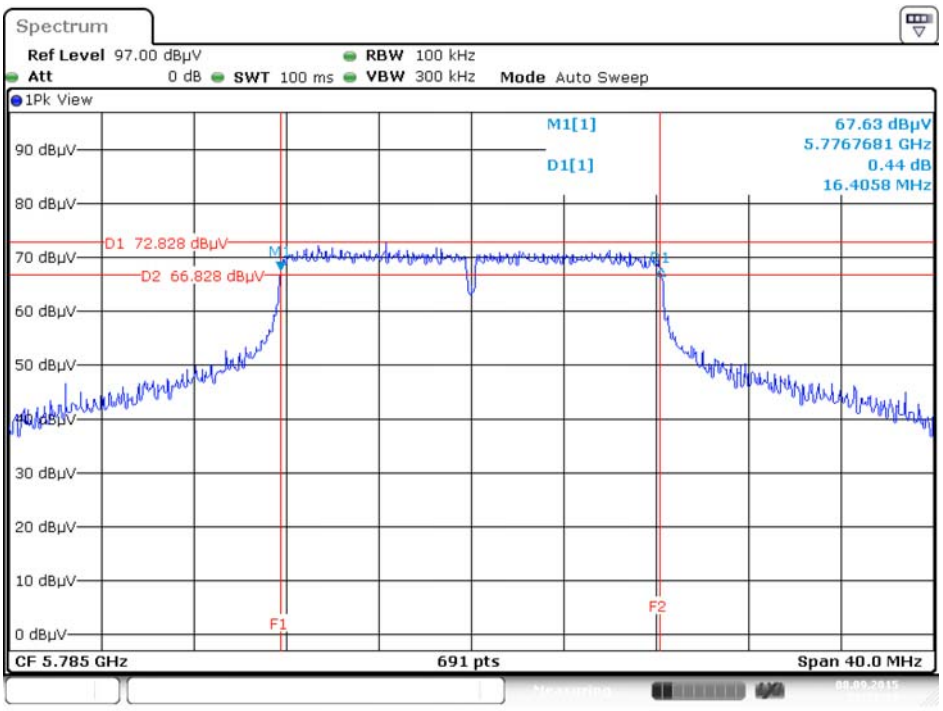
Chain 1 + Chain 2

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	16.35	500	Complies
	5785 MHz	15.71	500	Complies
	5825 MHz	15.71	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	10.03	500	Complies
	5785 MHz	16.35	500	Complies
	5825 MHz	13.16	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	34.09	500	Complies
	5795 MHz	34.55	500	Complies

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

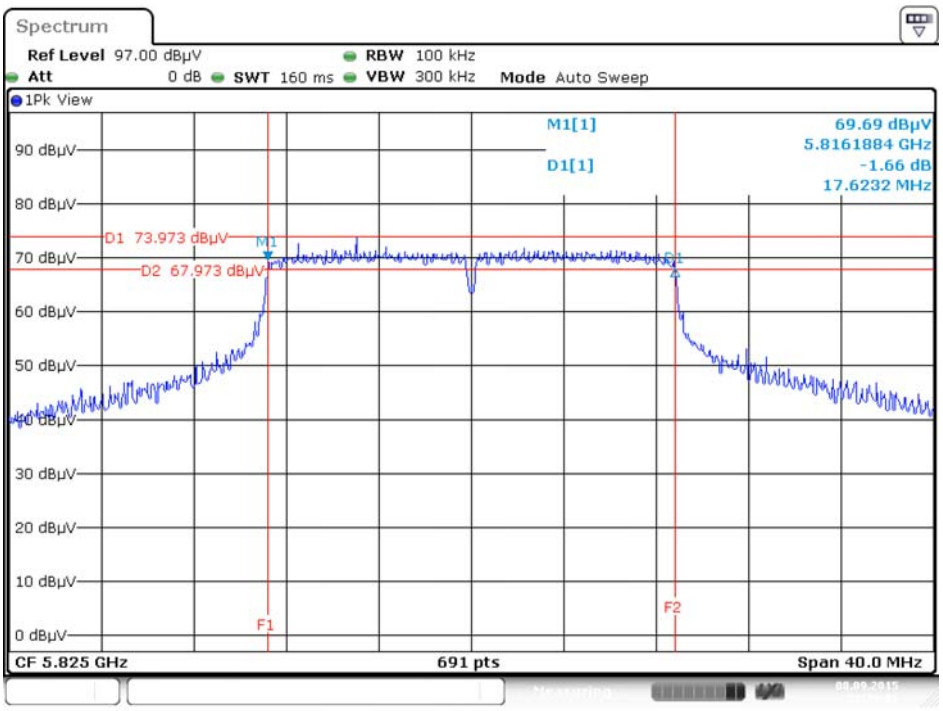
For plots, only the channel with worse result was shown.

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



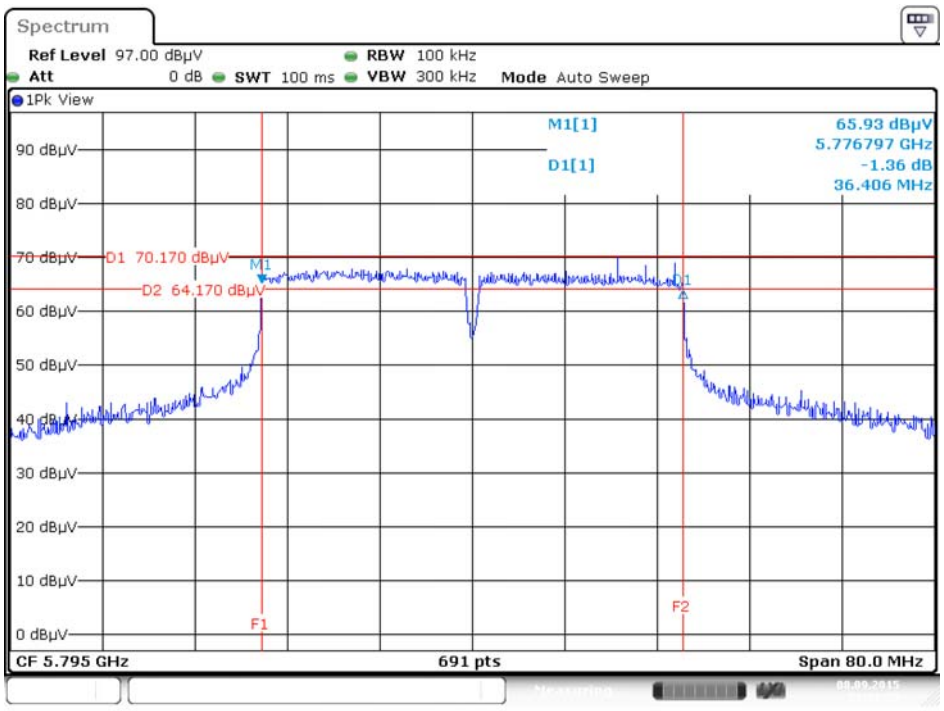
Date: 8.SEP.2015 23:21:18

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5825 MHz

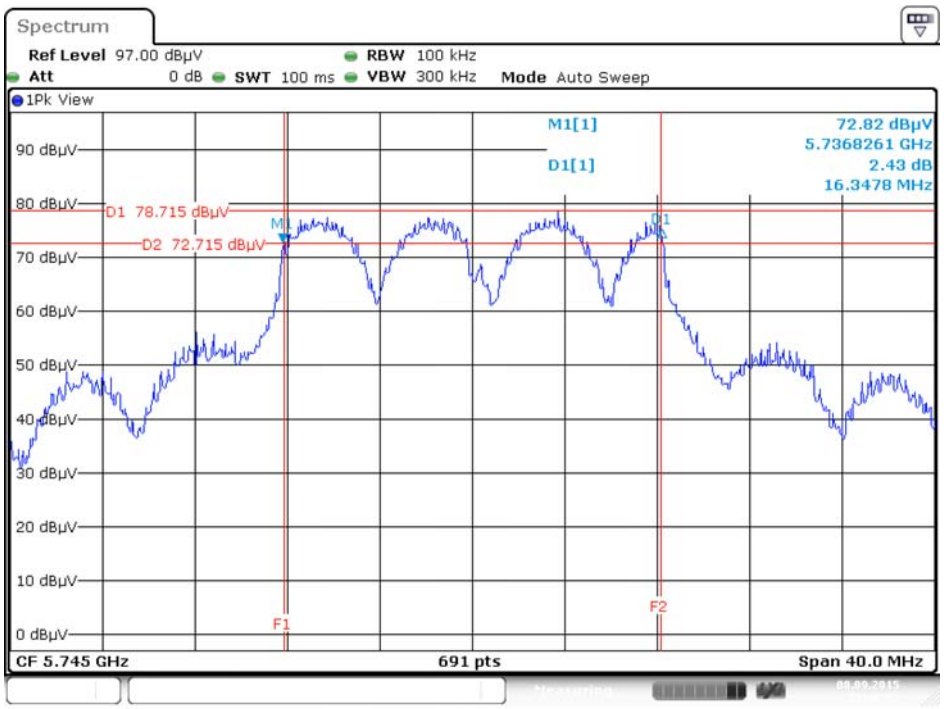


Date: 8.SEP.2015 23:29:00

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5795 MHz

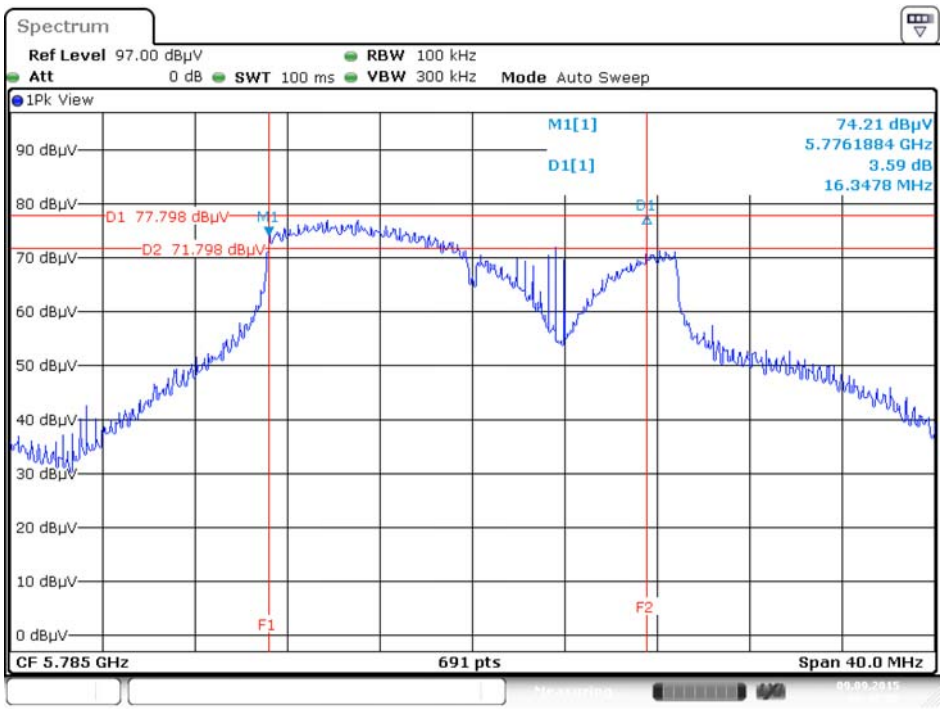


6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5745 MHz



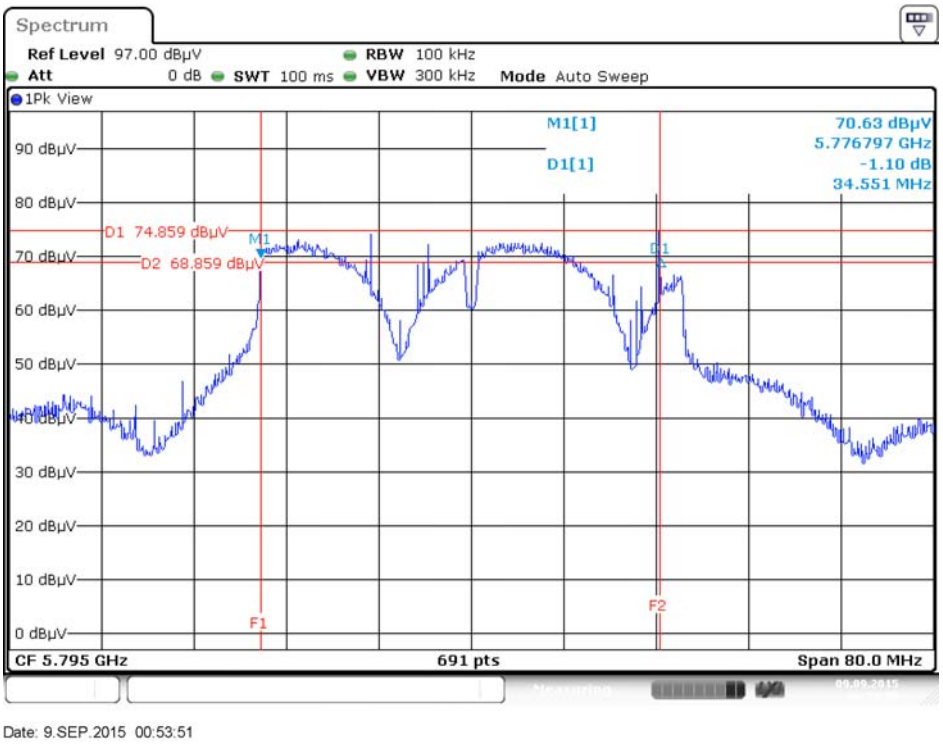
Date: 8.SEP.2015 23:48:52

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



Date: 9.SEP.2015 00:47:07

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5795 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.
	☐	Mobile and portable client devices	The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

☒	5.725~5.85 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

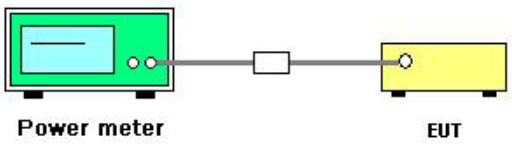
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

4.4.4. 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	Andy Tsai	Test Date	Sep. 08, 2015~Sep. 09, 2015

Mode	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 2		
802.11a	5180 MHz	14.74	30.00	Complies
	5200 MHz	14.62	30.00	Complies
	5240 MHz	14.96	30.00	Complies
	5745 MHz	14.48	30.00	Complies
	5785 MHz	14.65	30.00	Complies
	5825 MHz	14.83	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	14.72	30.00	Complies
	5200 MHz	14.58	30.00	Complies
	5240 MHz	14.87	30.00	Complies
	5745 MHz	14.32	30.00	Complies
	5785 MHz	14.65	30.00	Complies
	5825 MHz	14.79	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	11.67	30.00	Complies
	5230 MHz	14.96	30.00	Complies
	5755 MHz	12.76	30.00	Complies
	5795 MHz	14.88	30.00	Complies

Temperature	25°C	Humidity	45%
Test Engineer	Andy Tsai	Test Date	Sep. 08, 2015~Sep. 09, 2015

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11a	5180 MHz	12.88	12.97	15.94	30.00	Complies
	5200 MHz	14.62	14.22	17.43	30.00	Complies
	5240 MHz	14.59	14.47	17.54	30.00	Complies
	5745 MHz	14.56	14.06	17.33	30.00	Complies
	5785 MHz	14.80	13.81	17.34	30.00	Complies
	5825 MHz	14.75	13.92	17.37	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5180 MHz	14.69	14.27	17.50	30.00	Complies
	5200 MHz	14.56	14.12	17.36	30.00	Complies
	5240 MHz	14.15	13.97	17.07	30.00	Complies
	5745 MHz	14.78	13.96	17.40	30.00	Complies
	5785 MHz	14.95	14.22	17.61	30.00	Complies
	5825 MHz	14.72	14.18	17.47	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5190 MHz	11.54	10.92	14.25	30.00	Complies
	5230 MHz	14.75	14.46	17.62	30.00	Complies
	5755 MHz	12.03	11.74	14.90	30.00	Complies
	5795 MHz	14.93	14.32	17.65	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
	☐	Mobile and portable client devices	11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

4.5.2. Measuring Instruments and Setting

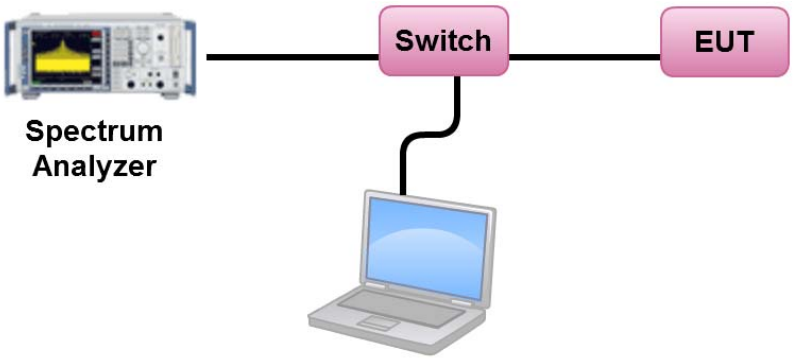
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements (a) Measure and sum the spectra across the outputs.
4. When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.
5. For 5.725~5.85 GHz, the measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.5.4. 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	Andy Tsai	Test Date	Sep. 08, 2015~Sep. 09, 2015

Configuration IEEE 802.11a / Chain 2

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
36	5180 MHz	1.58		17.00		Complies
40	5200 MHz	1.75		17.00		Complies
48	5240 MHz	1.74		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	1.68	-3.01	-1.33	30.00	Complies
157	5785 MHz	1.68	-3.01	-1.33	30.00	Complies
165	5825 MHz	1.52	-3.01	-1.49	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
36	5180 MHz	1.56		17.00		Complies
40	5200 MHz	1.80		17.00		Complies
48	5240 MHz	1.60		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	1.35	-3.01	-1.66	30.00	Complies
157	5785 MHz	1.55	-3.01	-1.46	30.00	Complies
165	5825 MHz	1.34	-3.01	-1.67	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2

Channel	Frequency	Power Density (dBm/MHz)		Max. Limit (dBm/MHz)		Result
38	5190 MHz	-0.11		17.00		Complies
46	5230 MHz	1.30		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	-1.63	-3.01	-4.64	30.00	Complies
159	5795 MHz	-1.68	-3.01	-4.69	30.00	Complies

Temperature	25°C	Humidity	45%
Test Engineer	Andy Tsai	Test Date	Sep. 08, 2015~Sep. 09, 2015

Configuration IEEE 802.11a / Chain 1 + Chain 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	6.14	14.99	Complies
40	5200 MHz	5.79	14.99	Complies
48	5240 MHz	4.42	14.99	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.01dBi >6dBi, so limit=17 – (8.01 – 6)=14.99dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	4.39	-3.01	1.38	27.99	Complies
157	5785 MHz	3.95	-3.01	0.94	27.99	Complies
165	5825 MHz	4.57	-3.01	1.56	27.99	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.01dBi >6dBi, so limit=30 – (8.01 – 6)=27.99dBm/500kHz.

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	4.46	14.99	Complies
40	5200 MHz	4.20	14.99	Complies
48	5240 MHz	4.30	14.99	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.01dBi >6dBi, so limit=17 – (8.01 – 6)=14.99dBm/MHz.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	4.66	-3.01	1.65	27.99	Complies
157	5785 MHz	4.25	-3.01	1.24	27.99	Complies
165	5825 MHz	4.34	-3.01	1.33	27.99	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.01dBi >6dBi, so limit=30 – (8.01 – 6)=27.99dBm/500kHz.

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

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-2.56	14.99	Complies
46	5230 MHz	1.24	14.99	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.01dBi >6dBi, so limit=17 – (8.01 – 6)=14.99dBm/MHz.

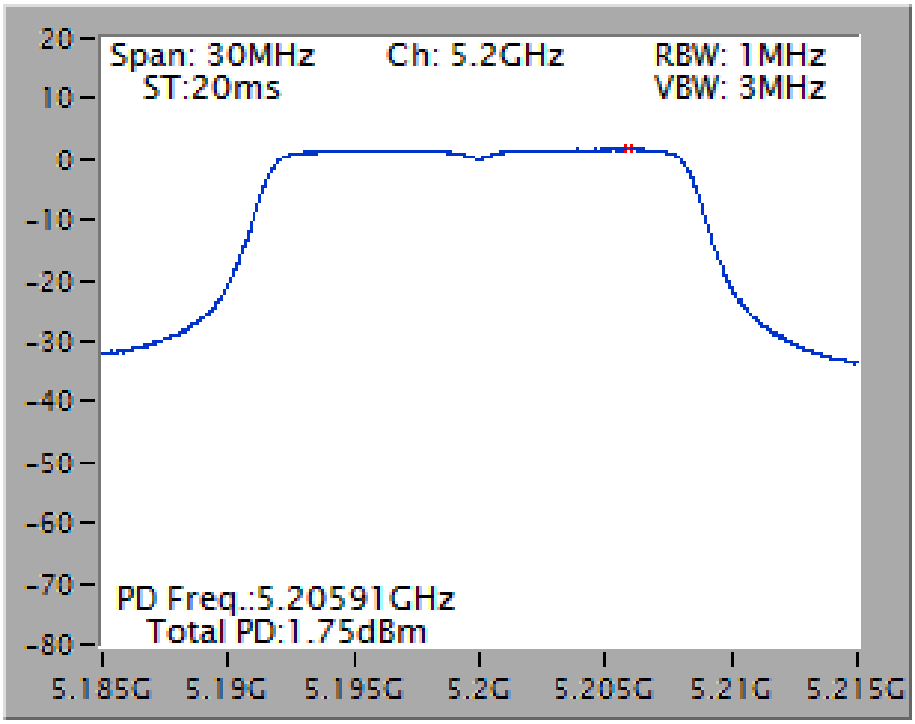
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	1.47	-3.01	-1.54	27.99	Complies
159	5795 MHz	1.09	-3.01	-1.92	27.99	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.01dBi >6dBi, so limit=30 – (8.01 – 6)=27.99dBm/500kHz.

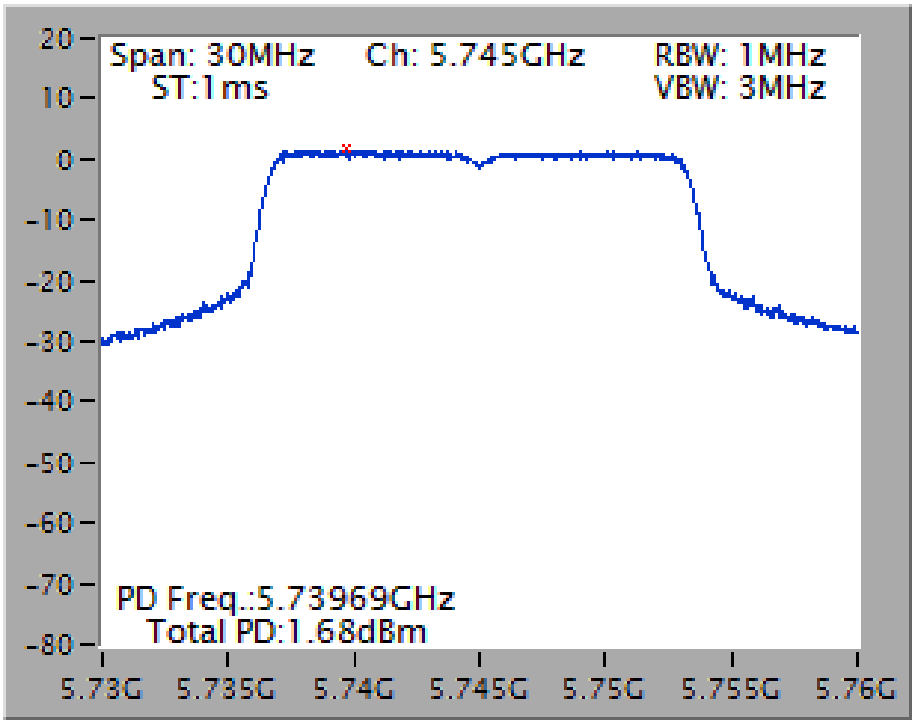
Note: All the test values were listed in the report.

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

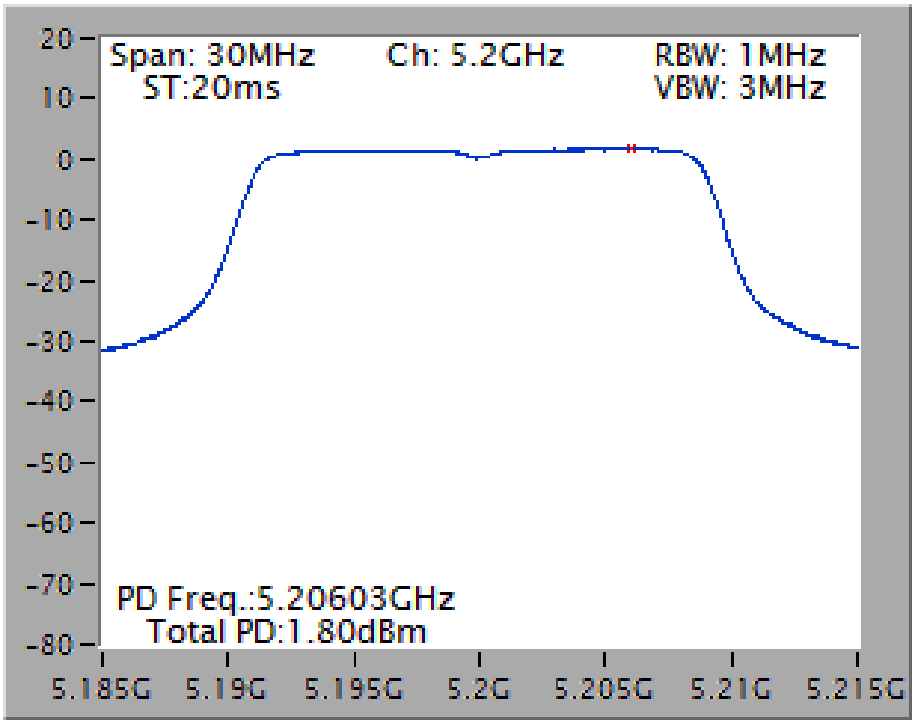
Power Density Plot on Configuration IEEE 802.11a / Chain 2 / 5200 MHz



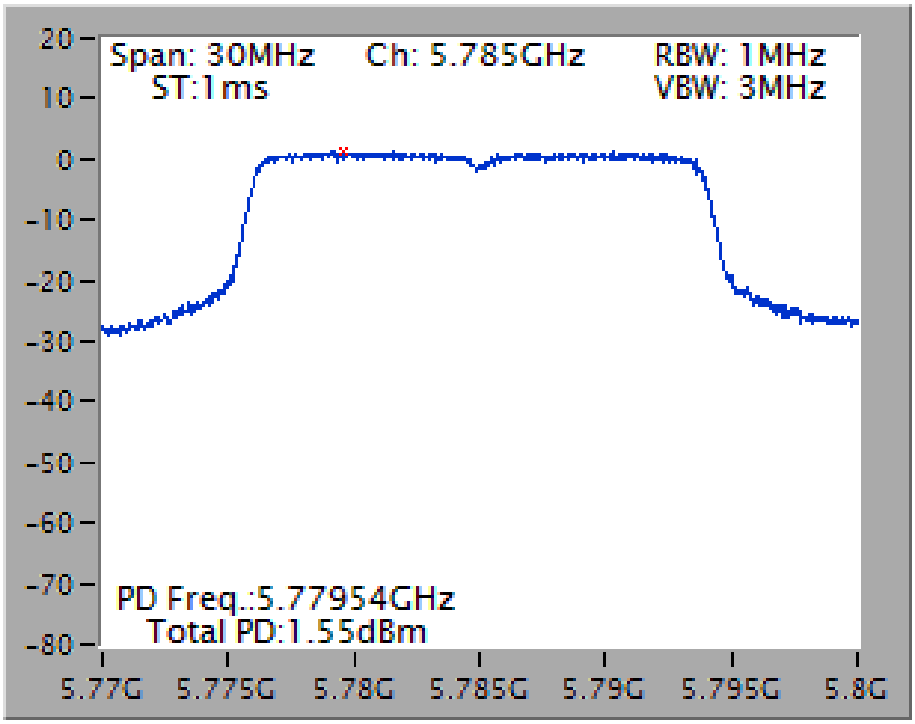
Power Density Plot on Configuration IEEE 802.11a / Chain 2 / 5745 MHz



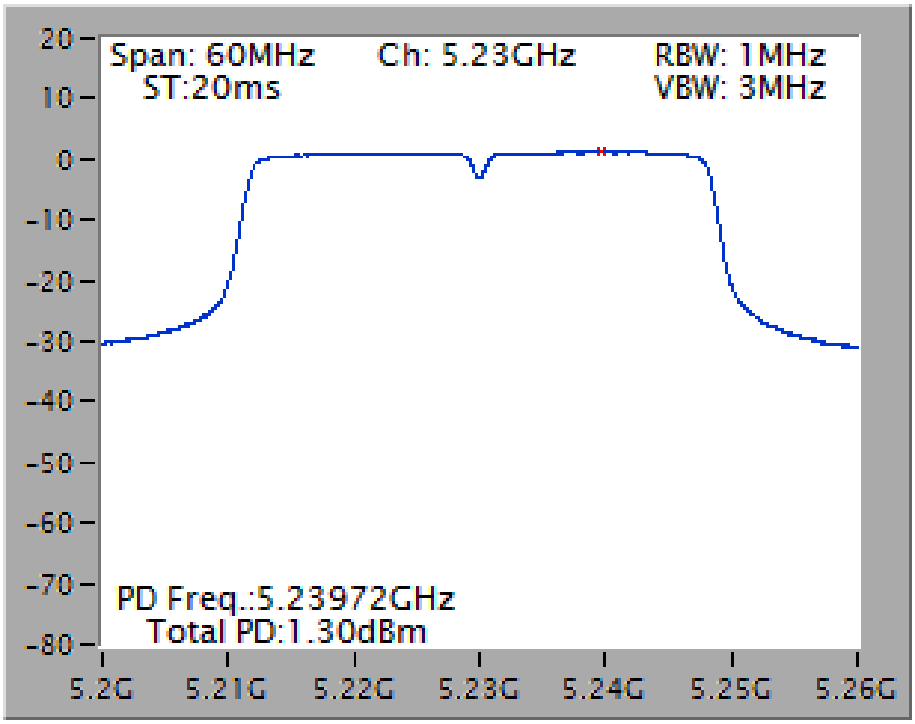
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5200 MHz



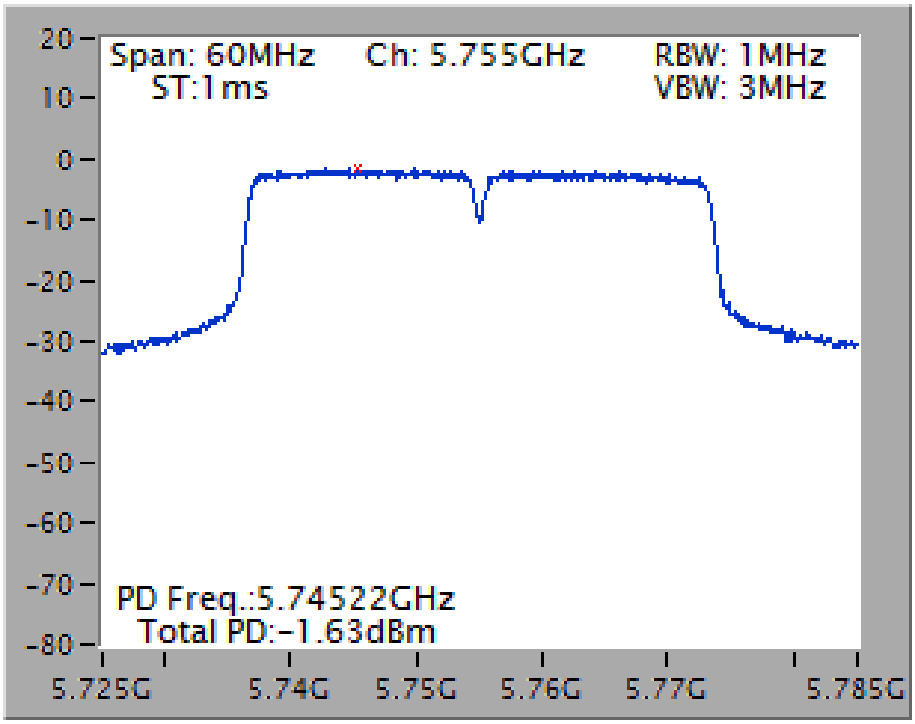
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 2 / 5785 MHz



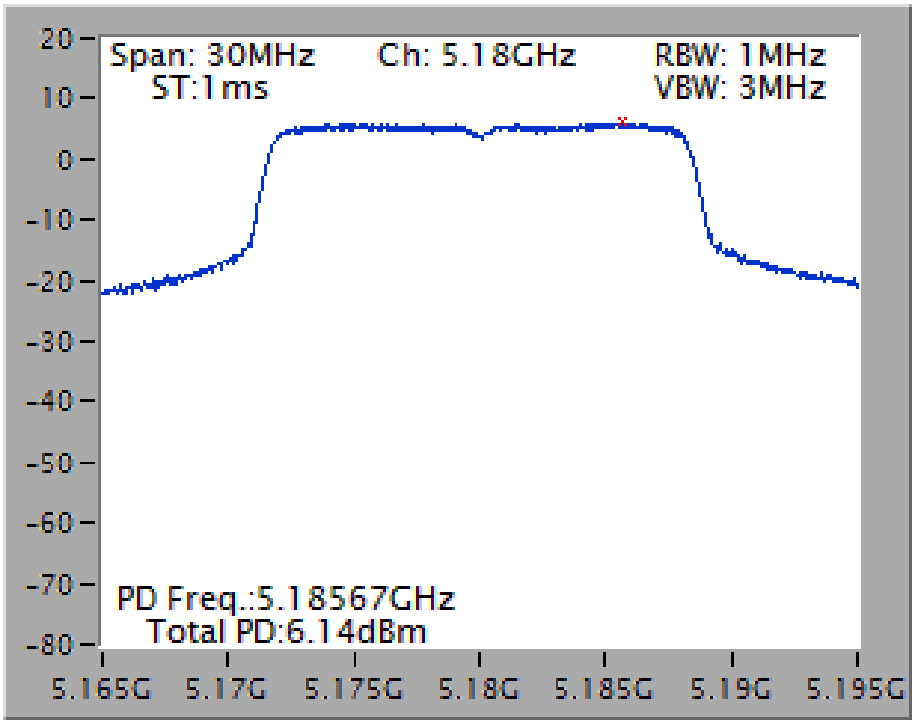
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5230 MHz



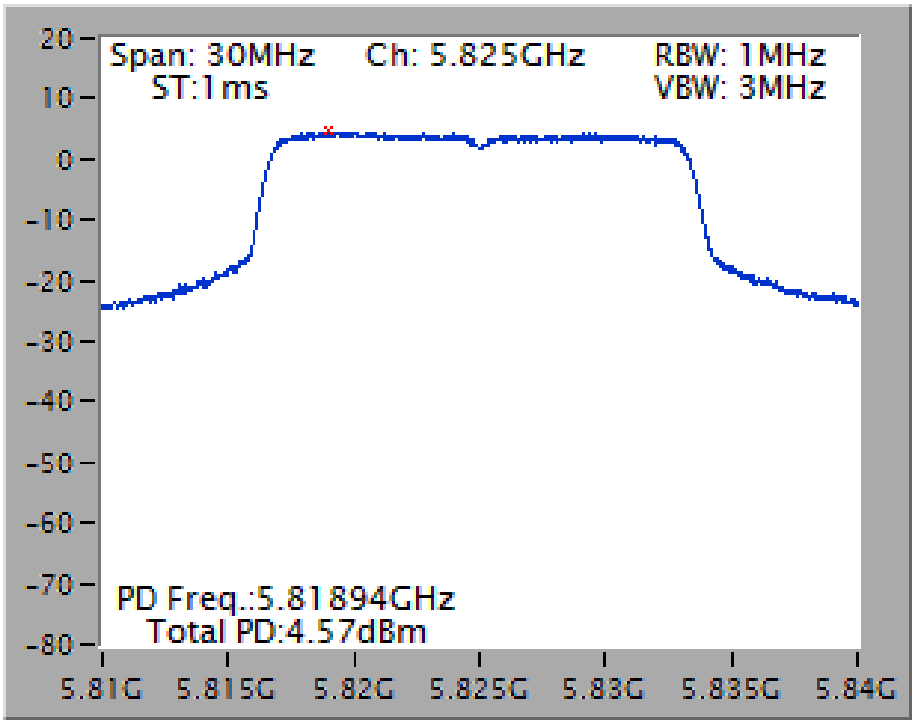
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 2 / 5755 MHz



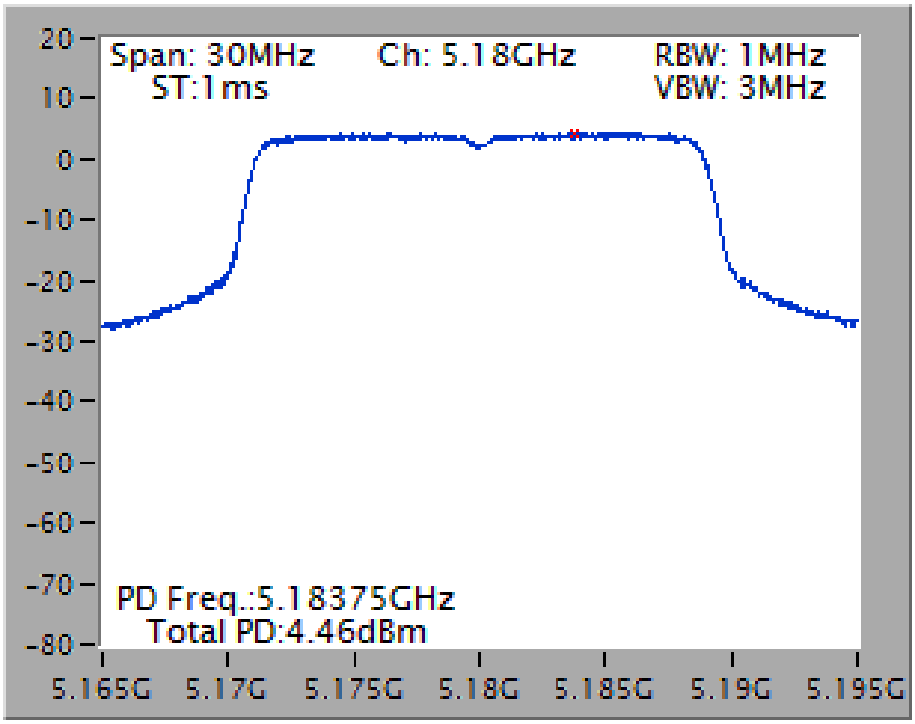
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5180 MHz



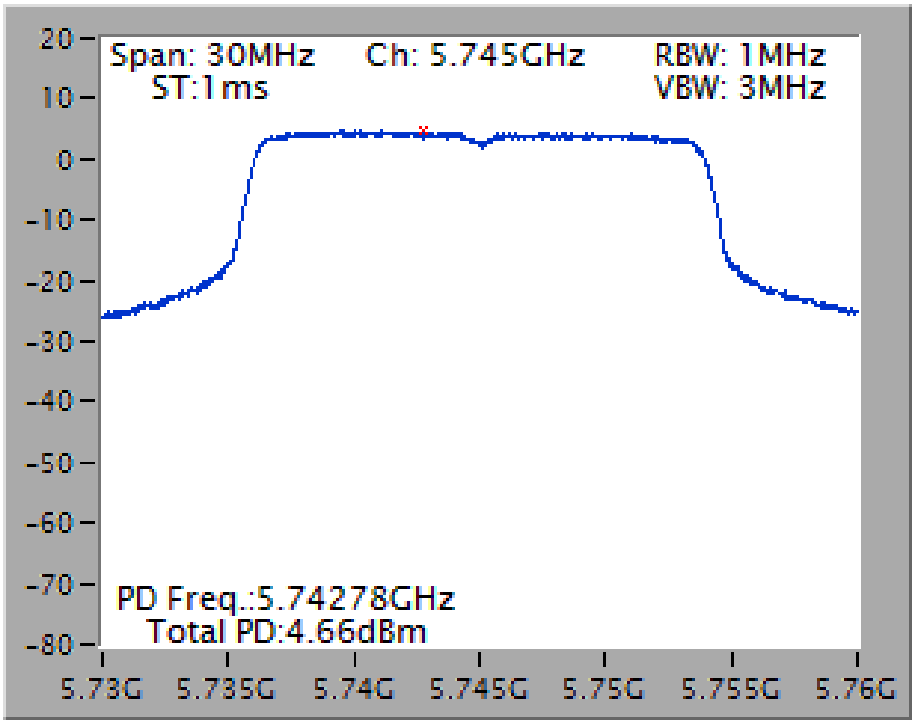
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5825 MHz



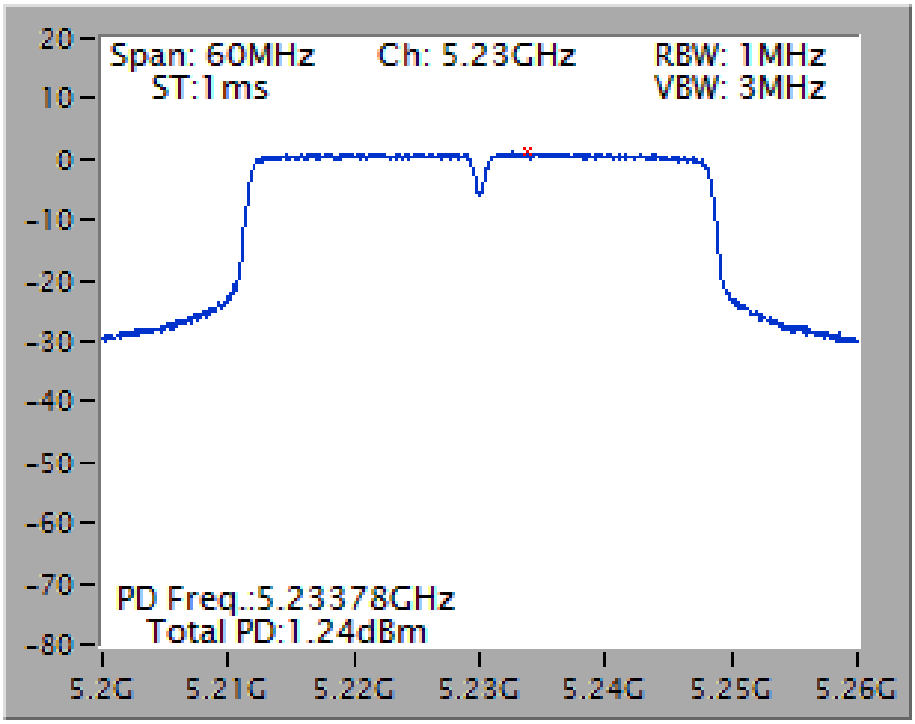
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5180 MHz



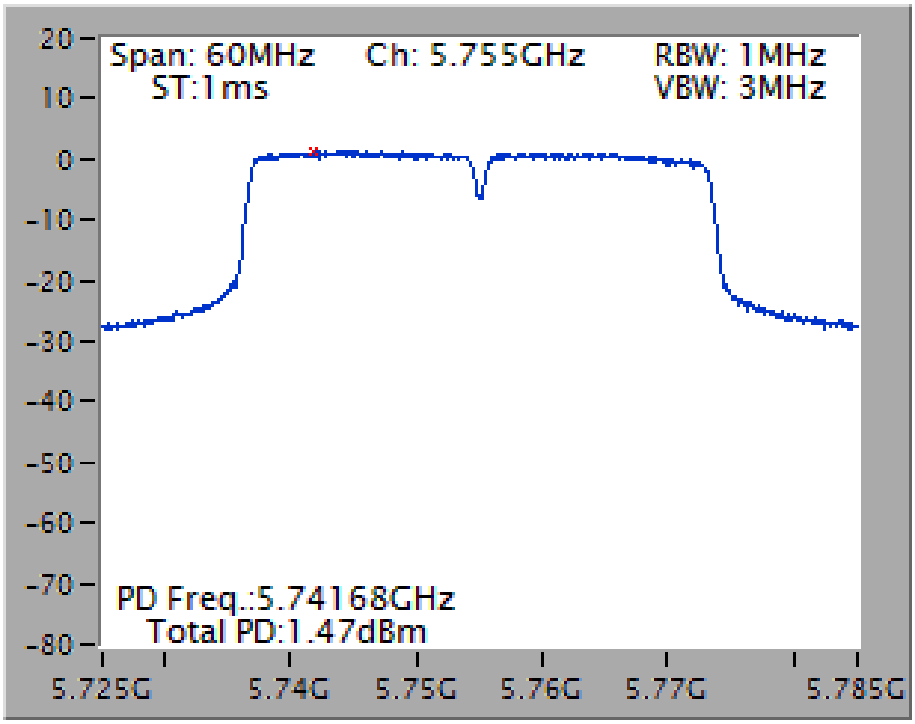
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5745 MHz



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



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5755 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 within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

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

4.6.2. Measuring Instruments and Setting

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

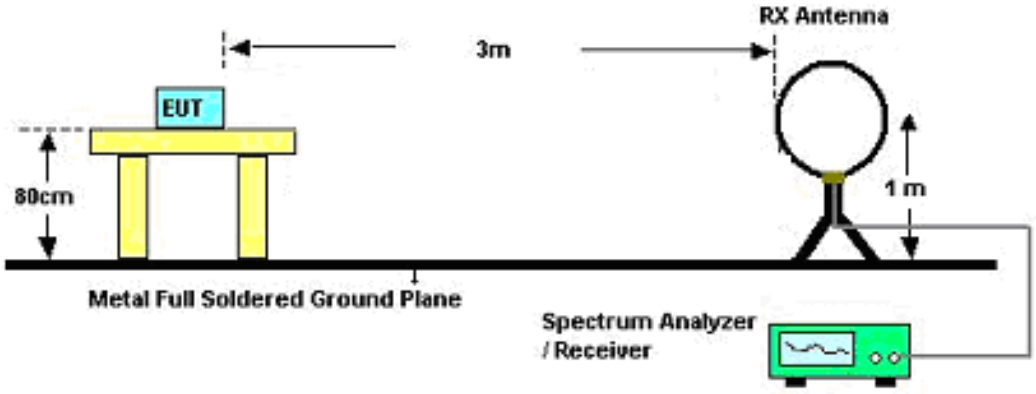
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

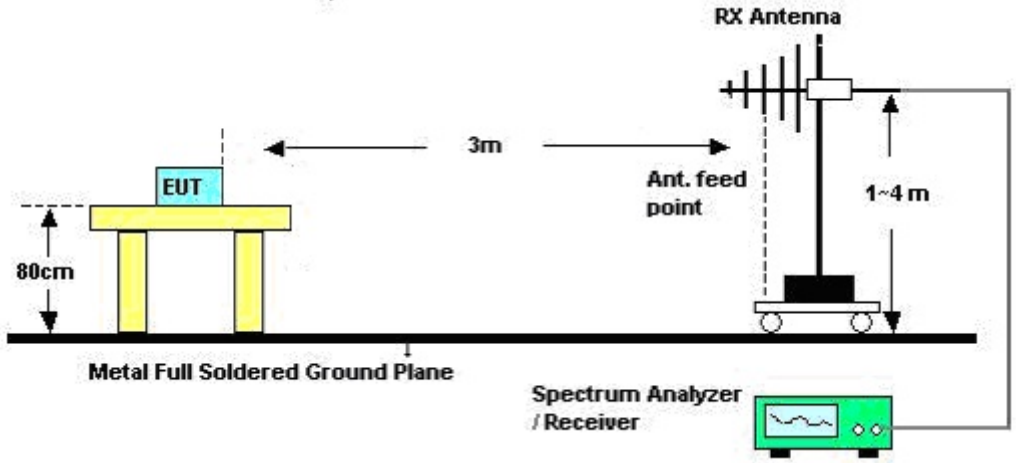
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting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

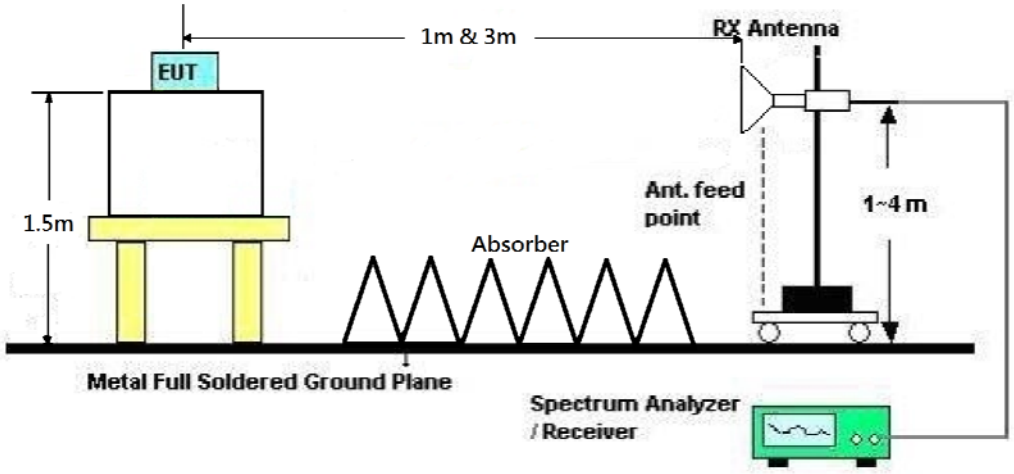
For Radiated Emissions: 9kHz ~30MHz



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	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	CTX
Test Date	Oct. 02, 2015	Test Mode	Mode 2

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

Note:

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

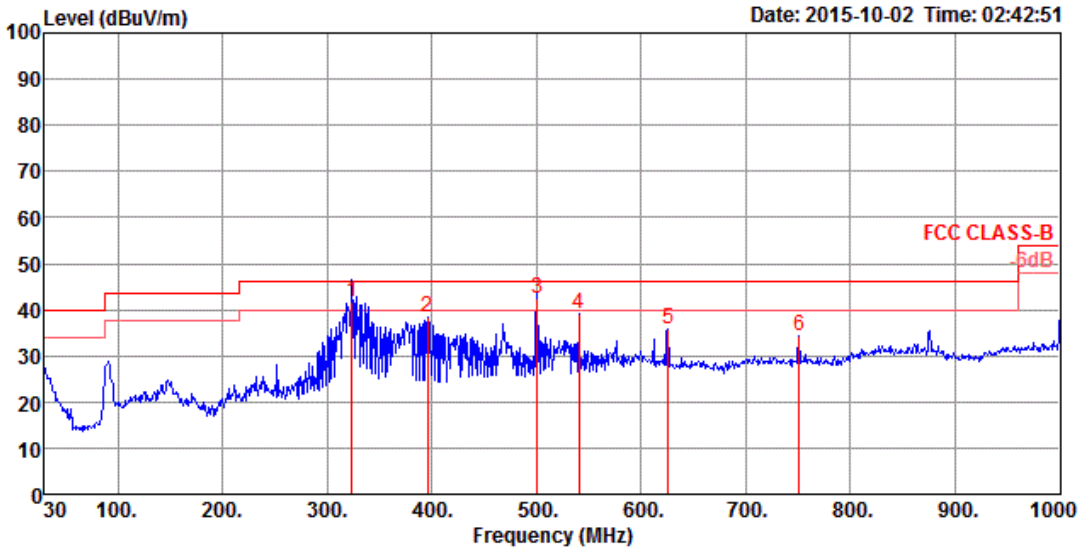
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

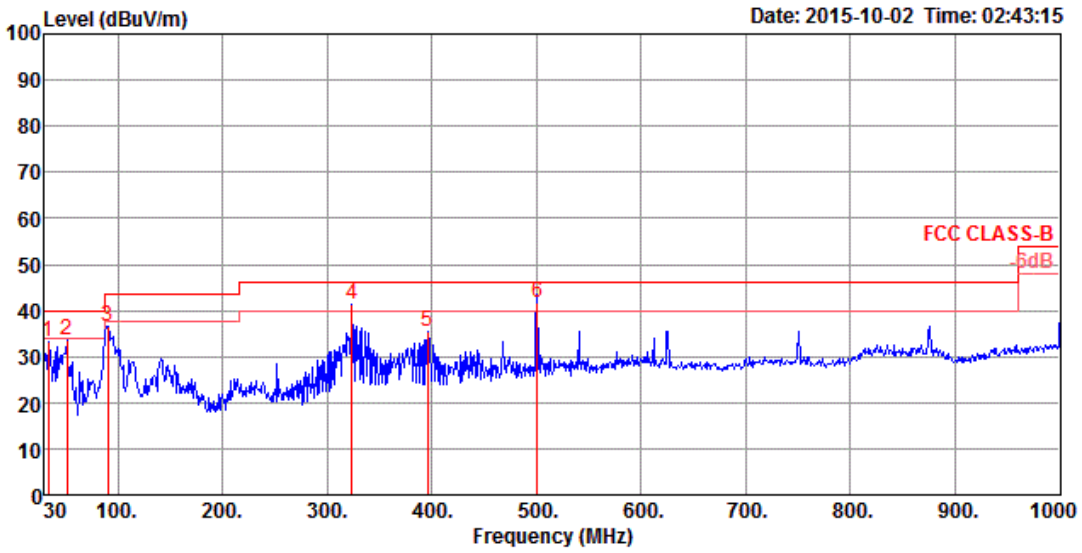
Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	CTX
Test Date	Oct. 02, 2015	Test Mode	Mode 2

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	323.91	41.61	46.00	-4.39	57.75	1.55	14.60	32.29	100	202	QP	HORIZONTAL
2	395.69	38.52	46.00	-7.48	52.72	1.72	16.41	32.33	100	99	Peak	HORIZONTAL
3	500.45	42.50	46.00	-3.50	55.12	1.90	17.83	32.35	100	61	QP	HORIZONTAL
4	540.22	39.20	46.00	-6.80	51.10	1.97	18.51	32.38	100	277	Peak	HORIZONTAL
5	625.58	35.69	46.00	-10.31	46.65	2.08	19.36	32.40	150	152	Peak	HORIZONTAL
6	750.71	34.42	46.00	-11.58	44.10	2.22	20.40	32.30	150	254	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	33.88	33.07	40.00	-6.93	47.12	0.64	17.71	32.40	100	173	Peak	VERTICAL
2	51.34	33.65	40.00	-6.35	56.61	0.73	8.72	32.41	100	28	Peak	VERTICAL
3	90.14	36.60	43.50	-6.90	58.81	0.92	9.26	32.39	200	8	Peak	VERTICAL
4	323.91	41.26	46.00	-4.74	57.40	1.55	14.60	32.29	200	63	Peak	VERTICAL
5	395.69	35.54	46.00	-10.46	49.74	1.72	16.41	32.33	125	139	Peak	VERTICAL
6	500.45	41.53	46.00	-4.47	54.15	1.90	17.83	32.35	150	1	QP	VERTICAL

Note:

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

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

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

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 36 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15538.35	56.67	74.00	-17.33	42.85	10.77	38.25	35.20	Peak	100	238	HORIZONTAL
2	15541.32	43.81	54.00	-10.19	29.99	10.77	38.25	35.20	Average	100	238	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15542.77	43.81	54.00	-10.19	29.99	10.77	38.25	35.20	Average	100	96	VERTICAL
2	15544.20	57.65	74.00	-16.35	43.84	10.78	38.23	35.20	Peak	100	96	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 40 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15599.70	42.99	54.00	-11.01	29.29	10.78	38.16	35.24	Average	100	290	HORIZONTAL
2	15602.19	56.37	74.00	-17.63	42.67	10.78	38.16	35.24	Peak	100	290	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15599.10	56.06	74.00	-17.94	42.36	10.78	38.16	35.24	Peak	100	221	VERTICAL
2	15599.64	42.99	54.00	-11.01	29.29	10.78	38.16	35.24	Average	100	221	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 48 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15717.99	42.76	54.00	-11.24	29.26	10.79	37.99	35.28	Average	100	115	HORIZONTAL
2	15721.15	56.10	74.00	-17.90	42.60	10.79	37.99	35.28	Peak	100	115	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15719.38	55.81	74.00	-18.19	42.31	10.79	37.99	35.28	Peak	100	162	VERTICAL
2	15721.30	42.59	54.00	-11.41	29.09	10.79	37.99	35.28	Average	100	162	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 149 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11489.57	55.04	74.00	-18.96	41.52	9.24	39.08	34.80	Peak	104	256	HORIZONTAL
2	11490.83	41.97	54.00	-12.03	28.45	9.24	39.08	34.80	Average	104	256	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11489.19	41.94	54.00	-12.06	28.42	9.24	39.08	34.80	Average	102	202	VERTICAL
2	11490.94	56.20	74.00	-17.80	42.68	9.24	39.08	34.80	Peak	102	202	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 157 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11567.98	41.68	54.00	-12.32	28.09	9.26	39.14	34.81	Average	100	226	HORIZONTAL
2	11569.17	54.64	74.00	-19.36	41.05	9.26	39.14	34.81	Peak	100	226	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11568.67	53.96	74.00	-20.04	40.37	9.26	39.14	34.81	Peak	100	169	VERTICAL
2	11570.39	41.59	54.00	-12.41	28.01	9.26	39.14	34.82	Average	100	169	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 165 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11651.43	54.93	74.00	-19.07	41.30	9.28	39.19	34.84	Peak	102	171	HORIZONTAL
2	11651.99	41.85	54.00	-12.15	28.22	9.28	39.19	34.84	Average	102	171	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11648.89	54.66	74.00	-19.34	41.04	9.28	39.18	34.84	Peak	105	109	VERTICAL
2	11650.75	41.91	54.00	-12.09	28.28	9.28	39.19	34.84	Average	105	109	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15538.57	57.05	74.00	-16.95	43.23	10.77	38.25	35.20	Peak	100	96	HORIZONTAL
2	15539.46	43.76	54.00	-10.24	29.94	10.77	38.25	35.20	Average	100	96	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15541.59	57.25	74.00	-16.75	43.43	10.77	38.25	35.20	Peak	100	116	VERTICAL
2	15542.28	43.63	54.00	-10.37	29.81	10.77	38.25	35.20	Average	100	116	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15600.34	42.94	54.00	-11.06	29.24	10.78	38.16	35.24	Average	100	168	HORIZONTAL
2	15600.79	56.13	74.00	-17.87	42.43	10.78	38.16	35.24	Peak	100	168	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15599.09	43.02	54.00	-10.98	29.32	10.78	38.16	35.24	Average	100	221	VERTICAL
2	15600.43	56.38	74.00	-17.62	42.68	10.78	38.16	35.24	Peak	100	221	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15718.14	55.95	74.00	-18.05	42.45	10.79	37.99	35.28	Peak	100	96	HORIZONTAL
2	15720.20	42.70	54.00	-11.30	29.20	10.79	37.99	35.28	Average	100	96	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15718.53	42.62	54.00	-11.38	29.12	10.79	37.99	35.28	Average	100	178	VERTICAL
2	15722.16	55.58	74.00	-18.42	42.08	10.79	37.99	35.28	Peak	100	178	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11489.70	42.04	54.00	-11.96	28.52	9.24	39.08	34.80	Average	100	123	HORIZONTAL
2	11491.04	54.77	74.00	-19.23	41.25	9.24	39.08	34.80	Peak	100	123	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11490.92	42.03	54.00	-11.97	28.51	9.24	39.08	34.80	Average	101	74	VERTICAL
2	11492.00	55.21	74.00	-18.79	41.69	9.24	39.08	34.80	Peak	101	74	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11568.13	55.71	74.00	-18.29	42.12	9.26	39.14	34.81	Peak	100	223	HORIZONTAL
2	11571.42	41.61	54.00	-12.39	28.03	9.26	39.14	34.82	Average	100	223	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11568.86	54.38	74.00	-19.62	40.79	9.26	39.14	34.81	Peak	100	122	VERTICAL
2	11569.28	41.70	54.00	-12.30	28.11	9.26	39.14	34.81	Average	100	122	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11648.56	41.97	54.00	-12.03	28.35	9.28	39.18	34.84	Average	100	312	HORIZONTAL
2	11652.14	54.30	74.00	-19.70	40.67	9.28	39.19	34.84	Peak	100	312	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11647.85	41.99	54.00	-12.01	28.37	9.28	39.18	34.84	Average	100	301	VERTICAL
2	11648.93	54.64	74.00	-19.36	41.02	9.28	39.18	34.84	Peak	100	301	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15567.56	56.46	74.00	-17.54	42.69	10.78	38.20	35.21	Peak	100	222	HORIZONTAL
2	15571.14	43.51	54.00	-10.49	29.74	10.78	38.20	35.21	Average	100	222	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15568.83	56.79	74.00	-17.21	43.02	10.78	38.20	35.21	Peak	100	286	VERTICAL
2	15572.44	43.47	54.00	-10.53	29.70	10.78	38.20	35.21	Average	100	286	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15687.76	55.84	74.00	-18.16	42.29	10.79	38.03	35.27	Peak	100	111	HORIZONTAL
2	15688.83	42.95	54.00	-11.05	29.40	10.79	38.03	35.27	Average	100	111	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15687.64	42.76	54.00	-11.24	29.21	10.79	38.03	35.27	Average	100	234	VERTICAL
2	15688.66	56.00	74.00	-18.00	42.45	10.79	38.03	35.27	Peak	100	234	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11509.76	54.47	74.00	-19.53	40.92	9.25	39.10	34.80	Peak	100	253	HORIZONTAL
2	11511.59	41.82	54.00	-12.18	28.27	9.25	39.10	34.80	Average	100	253	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11510.22	55.96	74.00	-18.04	42.41	9.25	39.10	34.80	Peak	100	236	VERTICAL
2	11510.99	41.80	54.00	-12.20	28.25	9.25	39.10	34.80	Average	100	236	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11588.57	41.65	54.00	-12.35	28.05	9.27	39.15	34.82	Average	100	85	HORIZONTAL
2	11589.62	54.58	74.00	-19.42	40.98	9.27	39.15	34.82	Peak	100	85	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11589.72	55.07	74.00	-18.93	41.47	9.27	39.15	34.82	Peak	100	163	VERTICAL
2	11592.01	41.83	54.00	-12.17	28.23	9.27	39.15	34.82	Average	100	163	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 36 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15537.85	41.52	54.00	-12.48	27.70	10.77	38.25	35.20	Average	190	88	HORIZONTAL
2	15540.10	54.04	74.00	-19.96	40.22	10.77	38.25	35.20	Peak	190	88	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15535.35	53.99	74.00	-20.01	40.17	10.77	38.25	35.20	Peak	142	38	VERTICAL
2	15539.55	41.31	54.00	-12.69	27.49	10.77	38.25	35.20	Average	142	38	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 40 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15597.84	53.20	74.00	-20.80	39.48	10.78	38.16	35.22	Peak	159	150	HORIZONTAL
2	15603.24	41.04	54.00	-12.96	27.34	10.78	38.16	35.24	Average	159	150	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15600.48	53.68	74.00	-20.32	39.98	10.78	38.16	35.24	Peak	188	307	VERTICAL
2	15602.82	40.90	54.00	-13.10	27.20	10.78	38.16	35.24	Average	188	307	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 48 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15720.22	54.59	74.00	-19.41	41.09	10.79	37.99	35.28	Peak	174	44	HORIZONTAL
2	15721.41	41.14	54.00	-12.86	27.64	10.79	37.99	35.28	Average	174	44	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15720.26	41.45	54.00	-12.55	27.95	10.79	37.99	35.28	Average	168	60	VERTICAL
2	15723.11	55.11	74.00	-18.89	41.61	10.79	37.99	35.28	Peak	168	60	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11489.13	40.89	54.00	-13.11	27.37	9.24	39.08	34.80	Average	185	144	HORIZONTAL
2	11489.34	53.24	74.00	-20.76	39.72	9.24	39.08	34.80	Peak	185	144	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11486.04	53.18	74.00	-20.82	39.66	9.24	39.08	34.80	Peak	154	176	VERTICAL
2	11492.84	40.80	54.00	-13.20	27.28	9.24	39.08	34.80	Average	154	176	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11569.05	53.93	74.00	-20.07	40.34	9.26	39.14	34.81	Peak	166	261	HORIZONTAL
2	11573.56	41.53	54.00	-12.47	27.95	9.26	39.14	34.82	Average	166	261	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11566.59	53.55	74.00	-20.45	39.96	9.26	39.14	34.81	Peak	182	223	VERTICAL
2	11573.99	40.47	54.00	-13.53	26.89	9.26	39.14	34.82	Average	182	223	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11652.56	41.46	54.00	-12.54	27.83	9.28	39.19	34.84	Average	164	272	HORIZONTAL
2	11654.76	54.91	74.00	-19.09	41.28	9.28	39.19	34.84	Peak	164	272	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11648.13	41.38	54.00	-12.62	27.76	9.28	39.18	34.84	Average	155	303	VERTICAL
2	11653.11	54.14	74.00	-19.86	40.51	9.28	39.19	34.84	Peak	155	303	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15542.66	54.45	74.00	-19.55	40.63	10.77	38.25	35.20	Peak	174	138	HORIZONTAL
2	15543.80	41.15	54.00	-12.85	27.34	10.78	38.23	35.20	Average	174	138	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15536.49	55.02	74.00	-18.98	41.20	10.77	38.25	35.20	Peak	171	122	VERTICAL
2	15539.05	41.41	54.00	-12.59	27.59	10.77	38.25	35.20	Average	171	122	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 40 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15601.86	41.19	54.00	-12.81	27.49	10.78	38.16	35.24	Average	173	180	HORIZONTAL
2	15603.56	54.38	74.00	-19.62	40.68	10.78	38.16	35.24	Peak	173	180	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15597.24	55.28	74.00	-18.72	41.56	10.78	38.16	35.22	Peak	168	158	VERTICAL
2	15597.60	41.08	54.00	-12.92	27.36	10.78	38.16	35.22	Average	168	158	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 48 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15719.54	54.19	74.00	-19.81	40.69	10.79	37.99	35.28	Peak	164	164	HORIZONTAL
2	15722.66	41.55	54.00	-12.45	28.05	10.79	37.99	35.28	Average	164	164	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15715.88	54.46	74.00	-19.54	40.96	10.79	37.99	35.28	Peak	161	187	VERTICAL
2	15718.04	41.30	54.00	-12.70	27.80	10.79	37.99	35.28	Average	161	187	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11493.13	53.50	74.00	-20.50	39.98	9.24	39.08	34.80	Peak	155	227	HORIZONTAL
2	11493.70	40.72	54.00	-13.28	27.20	9.24	39.08	34.80	Average	155	227	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11493.14	40.66	54.00	-13.34	27.14	9.24	39.08	34.80	Average	159	197	VERTICAL
2	11494.41	53.41	74.00	-20.59	39.89	9.24	39.08	34.80	Peak	159	197	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11575.96	54.44	74.00	-19.56	40.86	9.26	39.14	34.82	Peak	150	241	HORIZONTAL
2	11578.17	41.57	54.00	-12.43	27.99	9.26	39.14	34.82	Average	150	241	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11564.36	53.64	74.00	-20.36	40.06	9.26	39.13	34.81	Peak	146	261	VERTICAL
2	11567.56	40.50	54.00	-13.50	26.91	9.26	39.14	34.81	Average	146	261	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11641.79	53.84	74.00	-20.16	40.21	9.28	39.18	34.83	Peak	132	299	HORIZONTAL
2	11644.39	40.98	54.00	-13.02	27.35	9.28	39.18	34.83	Average	132	299	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11643.88	53.62	74.00	-20.38	39.99	9.28	39.18	34.83	Peak	137	282	VERTICAL
2	11653.14	40.99	54.00	-13.01	27.36	9.28	39.19	34.84	Average	137	282	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15568.97	53.76	74.00	-20.24	39.99	10.78	38.20	35.21	Peak	157	346	HORIZONTAL
2	15575.38	41.33	54.00	-12.67	27.57	10.78	38.20	35.22	Average	157	346	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15562.18	41.49	54.00	-12.51	27.72	10.78	38.20	35.21	Average	169	316	VERTICAL
2	15569.42	53.75	74.00	-20.25	39.98	10.78	38.20	35.21	Peak	169	316	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 46 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15688.72	41.79	54.00	-12.21	28.24	10.79	38.03	35.27	Average	175	281	HORIZONTAL
2	15699.23	54.99	74.00	-19.01	41.46	10.79	38.01	35.27	Peak	175	281	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15683.62	54.24	74.00	-19.76	40.69	10.79	38.03	35.27	Peak	170	309	VERTICAL
2	15694.42	41.58	54.00	-12.42	28.03	10.79	38.03	35.27	Average	170	309	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11509.42	41.12	54.00	-12.88	27.57	9.25	39.10	34.80	Average	181	271	HORIZONTAL
2	11519.10	54.01	74.00	-19.99	40.46	9.25	39.11	34.81	Peak	181	271	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11513.97	53.88	74.00	-20.12	40.33	9.25	39.10	34.80	Peak	172	237	VERTICAL
2	11516.47	40.77	54.00	-13.23	27.21	9.25	39.11	34.80	Average	172	237	VERTICAL

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11593.62	53.92	74.00	-20.08	40.32	9.27	39.15	34.82	Peak	173	190	HORIZONTAL
2	11599.42	40.61	54.00	-13.39	27.02	9.27	39.15	34.83	Average	173	190	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11585.71	54.26	74.00	-19.74	40.66	9.27	39.15	34.82	Peak	150	150	VERTICAL
2	11594.20	40.56	54.00	-13.44	26.96	9.27	39.15	34.82	Average	150	150	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 within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

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

4.7.2. 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	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 2
Test Date	Oct. 09, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	52.10	54.00	-1.90	46.93	6.13	34.04	35.00	Average	187	297	VERTICAL
2	5150.00	67.86	74.00	-6.14	62.69	6.13	34.04	35.00	Peak	187	297	VERTICAL
3	5173.43	96.85			91.64	6.14	34.07	35.00	Average	187	297	VERTICAL
4	5180.16	107.12			101.88	6.15	34.09	35.00	Peak	187	297	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	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	43.65	54.00	-10.35	38.48	6.13	34.04	35.00	Average	198	296	VERTICAL
2	5150.00	54.52	74.00	-19.48	49.35	6.13	34.04	35.00	Peak	198	296	VERTICAL
3	5202.89	106.43			101.15	6.16	34.12	35.00	Peak	198	296	VERTICAL
4	5205.13	96.54			91.26	6.16	34.12	35.00	Average	198	296	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	43.06	54.00	-10.94	37.89	6.13	34.04	35.00	Average	200	310	VERTICAL
2	5150.00	53.96	74.00	-20.04	48.79	6.13	34.04	35.00	Peak	200	310	VERTICAL
3	5233.27	96.12			90.77	6.18	34.17	35.00	Average	200	310	VERTICAL
4	5233.27	105.92			100.57	6.18	34.17	35.00	Peak	200	310	VERTICAL
5	5350.00	42.96	54.00	-11.04	37.34	6.26	34.36	35.00	Average	200	310	VERTICAL
6	5350.00	54.29	74.00	-19.71	48.67	6.26	34.36	35.00	Peak	200	310	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 2
Test Date	Oct. 09, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	47.47	54.00	-6.53	41.42	6.44	34.64	35.03	Average	200	308	VERTICAL
2	5715.00	61.01	74.00	-12.99	54.96	6.44	34.64	35.03	Peak	200	308	VERTICAL
3	5725.00	72.29	78.20	-5.91	66.23	6.45	34.64	35.03	Peak	200	308	VERTICAL
4	5739.55	95.69			89.63	6.45	34.65	35.04	Average	200	308	VERTICAL
5	5741.96	106.55			100.49	6.45	34.65	35.04	Peak	200	308	VERTICAL

Item 4, 5 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	43.59	54.00	-10.41	37.54	6.44	34.64	35.03	Average	200	296	VERTICAL
2	5715.00	55.40	74.00	-18.60	49.35	6.44	34.64	35.03	Peak	200	296	VERTICAL
3	5725.00	55.45	78.20	-22.75	49.39	6.45	34.64	35.03	Peak	200	296	VERTICAL
4	5780.51	95.67			89.60	6.46	34.66	35.05	Average	200	296	VERTICAL
5	5784.04	105.73			99.66	6.46	34.66	35.05	Peak	200	296	VERTICAL
6	5850.00	54.80	78.20	-23.40	48.70	6.49	34.67	35.06	Peak	200	296	VERTICAL
7	5860.00	43.55	54.00	-10.45	37.45	6.50	34.67	35.07	Average	200	296	VERTICAL
8	5860.00	54.05	74.00	-19.95	47.95	6.50	34.67	35.07	Peak	200	296	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5818.91	95.03			88.95	6.48	34.66	35.06	Average	200	289	VERTICAL
2	5828.21	105.30			99.21	6.48	34.67	35.06	Peak	200	289	VERTICAL
3	5850.00	66.33	78.20	-11.87	60.23	6.49	34.67	35.06	Peak	200	289	VERTICAL
4	5860.00	44.64	54.00	-9.36	38.54	6.50	34.67	35.07	Average	200	289	VERTICAL
5	5860.00	59.45	74.00	-14.55	53.35	6.50	34.67	35.07	Peak	200	289	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 2
Test Date	Oct. 09, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	47.43	54.00	-6.57	42.26	6.13	34.04	35.00	Average	200	309	VERTICAL
2	5150.00	58.25	74.00	-15.75	53.08	6.13	34.04	35.00	Peak	200	309	VERTICAL
3	5175.35	93.94			88.70	6.15	34.09	35.00	Average	200	309	VERTICAL
4	5185.93	104.45			99.21	6.15	34.09	35.00	Peak	200	309	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	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	43.93	54.00	-10.07	38.76	6.13	34.04	35.00	Average	197	319	VERTICAL
2	5150.00	56.85	74.00	-17.15	51.68	6.13	34.04	35.00	Peak	197	319	VERTICAL
3	5203.85	96.17			90.89	6.16	34.12	35.00	Average	197	319	VERTICAL
4	5204.17	106.30			101.02	6.16	34.12	35.00	Peak	197	319	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	43.07	54.00	-10.93	37.90	6.13	34.04	35.00	Average	191	310	VERTICAL
2	5150.00	53.51	74.00	-20.49	48.34	6.13	34.04	35.00	Peak	191	310	VERTICAL
3	5234.23	95.49			90.14	6.18	34.17	35.00	Average	191	310	VERTICAL
4	5235.19	105.42			100.07	6.18	34.17	35.00	Peak	191	310	VERTICAL
5	5350.00	42.96	54.00	-11.04	37.34	6.26	34.36	35.00	Average	191	310	VERTICAL
6	5350.00	54.68	74.00	-19.32	49.06	6.26	34.36	35.00	Peak	191	310	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 2
Test Date	Oct. 09, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	48.22	54.00	-5.78	42.17	6.44	34.64	35.03	Average	200	309	VERTICAL
2	5715.00	60.70	74.00	-13.30	54.65	6.44	34.64	35.03	Peak	200	309	VERTICAL
3	5725.00	73.91	78.20	-4.29	67.85	6.45	34.64	35.03	Peak	200	309	VERTICAL
4	5740.03	95.44			89.38	6.45	34.65	35.04	Average	200	309	VERTICAL
5	5748.05	106.29			100.23	6.45	34.65	35.04	Peak	200	309	VERTICAL

Item 4, 5 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	43.45	54.00	-10.55	37.40	6.44	34.64	35.03	Average	200	293	VERTICAL
2	5715.00	55.69	74.00	-18.31	49.64	6.44	34.64	35.03	Peak	200	293	VERTICAL
3	5725.00	54.35	78.20	-23.85	48.29	6.45	34.64	35.03	Peak	200	293	VERTICAL
4	5780.51	95.33			89.26	6.46	34.66	35.05	Average	200	293	VERTICAL
5	5785.96	105.26			99.18	6.47	34.66	35.05	Peak	200	293	VERTICAL
6	5850.00	54.91	78.20	-23.29	48.81	6.49	34.67	35.06	Peak	200	293	VERTICAL
7	5860.00	43.57	54.00	-10.43	37.47	6.50	34.67	35.07	Average	200	293	VERTICAL
8	5860.00	54.50	74.00	-19.50	48.40	6.50	34.67	35.07	Peak	200	293	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5818.59	94.76			88.68	6.48	34.66	35.06	Average	200	298	VERTICAL
2	5819.55	104.69			98.60	6.48	34.67	35.06	Peak	200	298	VERTICAL
3	5850.00	68.46	78.20	-9.74	62.36	6.49	34.67	35.06	Peak	200	298	VERTICAL
4	5860.00	45.11	54.00	-8.89	39.01	6.50	34.67	35.07	Average	200	298	VERTICAL
5	5860.00	57.58	74.00	-16.42	51.48	6.50	34.67	35.07	Peak	200	298	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 2
Test Date	Oct. 09, 2015		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	52.83	54.00	-1.17	47.66	6.13	34.04	35.00	Average	200	309	VERTICAL
2	5150.00	66.00	74.00	-8.00	60.83	6.13	34.04	35.00	Peak	200	309	VERTICAL
3	5180.71	89.06			83.82	6.15	34.09	35.00	Average	200	309	VERTICAL
4	5186.15	100.00			94.76	6.15	34.09	35.00	Peak	200	309	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	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	46.25	54.00	-7.75	41.08	6.13	34.04	35.00	Average	200	307	VERTICAL
2	5150.00	60.43	74.00	-13.57	55.26	6.13	34.04	35.00	Peak	200	307	VERTICAL
3	5223.59	102.85			97.53	6.17	34.15	35.00	Peak	200	307	VERTICAL
4	5228.08	92.84			87.49	6.18	34.17	35.00	Average	200	307	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 2
Test Date	Oct. 09, 2015		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	52.55	54.00	-1.45	46.50	6.44	34.64	35.03	Average	200	313	VERTICAL
2	5715.00	64.89	74.00	-9.11	58.84	6.44	34.64	35.03	Peak	200	313	VERTICAL
3	5725.00	70.23	78.20	-7.97	64.17	6.45	34.64	35.03	Peak	200	313	VERTICAL
4	5743.78	91.07			85.01	6.45	34.65	35.04	Average	200	313	VERTICAL
5	5750.19	101.04			94.98	6.45	34.65	35.04	Peak	200	313	VERTICAL

Item 4, 5 are the fundamental frequency at 5755 MHz.

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	44.82	54.00	-9.18	38.77	6.44	34.64	35.03	Average	212	288	VERTICAL
2	5715.00	56.93	74.00	-17.07	50.88	6.44	34.64	35.03	Peak	212	288	VERTICAL
3	5725.00	58.13	78.20	-20.07	52.07	6.45	34.64	35.03	Peak	212	288	VERTICAL
4	5786.67	92.44			86.36	6.47	34.66	35.05	Average	212	288	VERTICAL
5	5787.31	102.68			96.60	6.47	34.66	35.05	Peak	212	288	VERTICAL
6	5850.00	58.50	78.20	-19.70	52.40	6.49	34.67	35.06	Peak	212	288	VERTICAL
7	5860.00	45.11	54.00	-8.89	39.01	6.50	34.67	35.07	Average	212	288	VERTICAL
8	5860.00	58.48	74.00	-15.52	52.38	6.50	34.67	35.07	Peak	212	288	VERTICAL

Item 4, 5 are the fundamental frequency at 5795 MHz.

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5149.55	68.24	74.00	-5.76	63.07	6.13	34.04	35.00	Peak	212	38	VERTICAL
2	5149.60	52.95	54.00	-1.05	47.78	6.13	34.04	35.00	Average	212	38	VERTICAL
3	5174.55	110.63			105.39	6.15	34.09	35.00	Peak	212	38	VERTICAL
4	5174.87	100.13			94.89	6.15	34.09	35.00	Average	212	38	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	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5150.00	45.03	54.00	-8.97	39.86	6.13	34.04	35.00	Average	217	36	VERTICAL
2	5150.00	57.32	74.00	-16.68	52.15	6.13	34.04	35.00	Peak	217	36	VERTICAL
3	5204.49	109.78			104.50	6.16	34.12	35.00	Peak	217	36	VERTICAL
4	5204.81	100.20			94.92	6.16	34.12	35.00	Average	217	36	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5148.17	44.17	54.00	-9.83	39.00	6.13	34.04	35.00	Average	209	42	VERTICAL
2	5150.00	58.84	74.00	-15.16	53.67	6.13	34.04	35.00	Peak	209	42	VERTICAL
3	5234.71	99.23			93.88	6.18	34.17	35.00	Average	209	42	VERTICAL
4	5235.19	109.73			104.38	6.18	34.17	35.00	Peak	209	42	VERTICAL
5	5350.00	44.15	54.00	-9.85	38.53	6.26	34.36	35.00	Average	209	42	VERTICAL
6	5352.02	58.90	74.00	-15.10	53.28	6.26	34.36	35.00	Peak	209	42	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5713.91	68.27	74.00	-5.73	62.22	6.44	34.64	35.03	Peak	214	26	VERTICAL
2	5714.55	50.82	54.00	-3.18	44.77	6.44	34.64	35.03	Average	214	26	VERTICAL
3	5724.17	77.17	78.20	-1.03	71.11	6.45	34.64	35.03	Peak	214	26	VERTICAL
4	5739.55	100.30			94.24	6.45	34.65	35.04	Average	214	26	VERTICAL
5	5739.55	110.31			104.25	6.45	34.65	35.04	Peak	214	26	VERTICAL

Item 4, 5 are the fundamental frequency at 5745 MHz.

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5714.36	56.35	74.00	-17.65	50.30	6.44	34.64	35.03	Peak	214	15	VERTICAL
2	5715.00	44.70	54.00	-9.30	38.65	6.44	34.64	35.03	Average	214	15	VERTICAL
3	5724.36	58.04	78.20	-20.16	51.98	6.45	34.64	35.03	Peak	214	15	VERTICAL
4	5779.55	109.11			103.04	6.46	34.66	35.05	Peak	214	15	VERTICAL
5	5779.87	99.12			93.05	6.46	34.66	35.05	Average	214	15	VERTICAL
6	5850.32	56.67	78.20	-21.53	50.57	6.49	34.67	35.06	Peak	214	15	VERTICAL
7	5860.00	44.62	54.00	-9.38	38.52	6.50	34.67	35.07	Average	214	15	VERTICAL
8	5863.21	57.76	74.00	-16.24	51.66	6.50	34.67	35.07	Peak	214	15	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5819.55	98.77			92.68	6.48	34.67	35.06	Average	225	16	VERTICAL
2	5820.19	108.88			102.79	6.48	34.67	35.06	Peak	225	16	VERTICAL
3	5850.00	66.73	78.20	-11.47	60.63	6.49	34.67	35.06	Peak	225	16	VERTICAL
4	5860.00	47.28	54.00	-6.72	41.18	6.50	34.67	35.07	Average	225	16	VERTICAL
5	5860.00	62.25	74.00	-11.75	56.15	6.50	34.67	35.07	Peak	225	16	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 36, 40, 48 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5142.82	64.81	74.00	-9.19	59.64	6.13	34.04	35.00	Peak	229	26	VERTICAL
2	5143.46	48.89	54.00	-5.11	43.72	6.13	34.04	35.00	Average	229	26	VERTICAL
3	5177.12	110.53			105.29	6.15	34.09	35.00	Peak	229	26	VERTICAL
4	5178.72	100.37			95.13	6.15	34.09	35.00	Average	229	26	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	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5141.03	59.11	74.00	-14.89	53.94	6.13	34.04	35.00	Peak	207	30	VERTICAL
2	5144.87	44.75	54.00	-9.25	39.58	6.13	34.04	35.00	Average	207	30	VERTICAL
3	5200.96	110.71			105.43	6.16	34.12	35.00	Peak	207	30	VERTICAL
4	5201.28	99.99			94.71	6.16	34.12	35.00	Average	207	30	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5146.64	56.41	74.00	-17.59	51.24	6.13	34.04	35.00	Peak	234	44	VERTICAL
2	5150.00	44.17	54.00	-9.83	39.00	6.13	34.04	35.00	Average	234	44	VERTICAL
3	5236.64	99.21			93.86	6.18	34.17	35.00	Average	234	44	VERTICAL
4	5238.08	110.09			104.74	6.18	34.17	35.00	Peak	234	44	VERTICAL
5	5350.00	44.16	54.00	-9.84	38.54	6.26	34.36	35.00	Average	234	44	VERTICAL
6	5355.29	56.52	74.00	-17.48	50.90	6.26	34.36	35.00	Peak	234	44	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149, 157, 165 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	64.18	68.20	-4.02	58.13	6.44	34.64	35.03	Peak	232	40	VERTICAL
2	5723.85	77.17	78.20	-1.03	71.11	6.45	34.64	35.03	Peak	232	40	VERTICAL
3	5740.51	109.99			103.93	6.45	34.65	35.04	Peak	232	40	VERTICAL
4	5741.80	99.63			93.57	6.45	34.65	35.04	Average	232	40	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5714.36	57.02	68.20	-11.18	50.97	6.44	34.64	35.03	Peak	222	22	VERTICAL
2	5724.68	58.24	78.20	-19.96	52.18	6.45	34.64	35.03	Peak	222	22	VERTICAL
3	5782.12	109.57			103.50	6.46	34.66	35.05	Peak	222	22	VERTICAL
4	5783.72	99.24			93.17	6.46	34.66	35.05	Average	222	22	VERTICAL
5	5852.24	57.35	78.20	-20.85	51.25	6.49	34.67	35.06	Peak	222	22	VERTICAL
6	5865.45	58.44	68.20	-9.76	52.34	6.50	34.67	35.07	Peak	222	22	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5822.44	99.08			92.99	6.48	34.67	35.06	Average	233	21	VERTICAL
2	5823.08	109.05			102.96	6.48	34.67	35.06	Peak	233	21	VERTICAL
3	5850.32	69.73	78.20	-8.47	63.63	6.49	34.67	35.06	Peak	233	21	VERTICAL
4	5862.18	63.51	68.20	-4.69	57.41	6.50	34.67	35.07	Peak	233	21	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 38, 46 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5138.72	65.93	74.00	-8.07	60.80	6.12	34.01	35.00	Peak	229	30	VERTICAL
2	5139.68	51.18	54.00	-2.82	46.01	6.13	34.04	35.00	Average	229	30	VERTICAL
3	5178.78	94.93			89.69	6.15	34.09	35.00	Average	229	30	VERTICAL
4	5180.06	105.36			100.12	6.15	34.09	35.00	Peak	229	30	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	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5140.58	46.57	54.00	-7.43	41.40	6.13	34.04	35.00	Average	213	27	VERTICAL
2	5141.06	60.52	74.00	-13.48	55.35	6.13	34.04	35.00	Peak	213	27	VERTICAL
3	5218.94	96.83			91.51	6.17	34.15	35.00	Average	213	27	VERTICAL
4	5218.94	106.89			101.57	6.17	34.15	35.00	Peak	213	27	VERTICAL

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

Temperature	25°C	Humidity	66%
Test Engineer	Gary Chu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151, 159 / Chain 1 + Chain 2
Test Date	Oct. 09, 2015		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	66.93	68.20	-1.27	60.88	6.44	34.64	35.03	Peak	218	23	VERTICAL
2	5720.71	75.21	78.20	-2.99	69.15	6.45	34.64	35.03	Peak	218	23	VERTICAL
3	5741.86	105.96			99.90	6.45	34.65	35.04	Peak	218	23	VERTICAL
4	5743.46	95.90			89.84	6.45	34.65	35.04	Average	218	23	VERTICAL

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

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5715.00	58.19	68.20	-10.01	52.14	6.44	34.64	35.03	Peak	224	21	VERTICAL
2	5722.89	61.87	78.20	-16.33	55.81	6.45	34.64	35.03	Peak	224	21	VERTICAL
3	5784.42	96.92			90.85	6.46	34.66	35.05	Average	224	21	VERTICAL
4	5784.42	107.63			101.56	6.46	34.66	35.05	Peak	224	21	VERTICAL
5	5850.00	65.11	78.20	-13.09	59.01	6.49	34.67	35.06	Peak	224	21	VERTICAL
6	5864.71	62.64	68.20	-5.56	56.54	6.50	34.67	35.07	Peak	224	21	VERTICAL

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

Note:

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

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

4.8. Frequency Stability Measurement

4.8.1. Limit

In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

4.8.2. Measuring Instruments and Setting

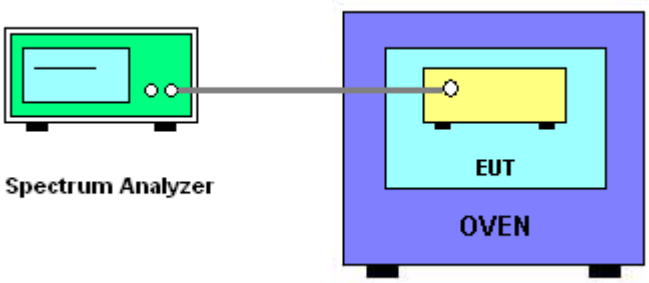
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.8.3. Test Procedures

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

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

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

4.8.7. Test Result of Frequency Stability

Temperature	25°C	Humidity	45%
Test Engineer	Andy Tsai	Test Date	Sep. 08, 2015~Sep. 09, 2015

Mode: 20 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9963	5199.9950	5199.9934	5199.9915
110.00	5199.9951	5199.9938	5199.9922	5199.9903
93.50	5199.9937	5199.9924	5199.9908	5199.9889
Max. Deviation (MHz)	0.0063	0.0076	0.0092	0.0111
Max. Deviation (ppm)	1.21	1.46	1.77	2.13
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5200.0000	5199.9987	5199.9971	5199.9952
10	5199.9999	5199.9986	5199.9970	5199.9951
20	5199.9987	5199.9974	5199.9958	5199.9939
30	5199.9972	5199.9959	5199.9943	5199.9924
40	5199.9957	5199.9944	5199.9928	5199.9909
Max. Deviation (MHz)	0.0043	0.0056	0.0072	0.0091
Max. Deviation (ppm)	0.83	1.08	1.38	1.75
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9989	5784.9976	5784.9960	5784.9941
110.00	5784.9977	5784.9964	5784.9948	5784.9929
93.50	5784.9963	5784.9950	5784.9934	5784.9915
Max. Deviation (MHz)	0.0037	0.0050	0.0066	0.0085
Max. Deviation (ppm)	0.64	0.86	1.14	1.47
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5784.9964	5784.9951	5784.9935	5784.9916
10	5784.9963	5784.9950	5784.9934	5784.9915
20	5784.9951	5784.9938	5784.9922	5784.9903
30	5784.9936	5784.9923	5784.9907	5784.9888
40	5784.9921	5784.9908	5784.9892	5784.9873
Max. Deviation (MHz)	0.0079	0.0092	0.0108	0.0127
Max. Deviation (ppm)	1.37	1.59	1.87	2.20
Result	Complies			

Mode: 40 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9954	5189.9941	5189.9925	5189.9906
110.00	5189.9942	5189.9929	5189.9913	5189.9894
93.50	5189.9928	5189.9915	5189.9899	5189.9880
Max. Deviation (MHz)	0.0072	0.0085	0.0101	0.0120
Max. Deviation (ppm)	1.39	1.64	1.95	2.31
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5189.9990	5189.9977	5189.9961	5189.9942
10	5189.9989	5189.9976	5189.9960	5189.9941
20	5189.9977	5189.9964	5189.9948	5189.9929
30	5189.9962	5189.9949	5189.9933	5189.9914
40	5189.9947	5189.9934	5189.9918	5189.9899
Max. Deviation (MHz)	0.0053	0.0066	0.0082	0.0101
Max. Deviation (ppm)	1.02	1.27	1.58	1.95
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9959	5754.9946	5754.9930	5754.9911
110.00	5754.9947	5754.9934	5754.9918	5754.9899
93.50	5754.9933	5754.9920	5754.9904	5754.9885
Max. Deviation (MHz)	0.0067	0.0080	0.0096	0.0115
Max. Deviation (ppm)	1.16	1.39	1.67	2.00
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
0	5754.9936	5754.9923	5754.9907	5754.9888
10	5754.9935	5754.9922	5754.9906	5754.9887
20	5754.9923	5754.9910	5754.9894	5754.9875
30	5754.9908	5754.9895	5754.9879	5754.9860
40	5754.9893	5754.9880	5754.9864	5754.9845
Max. Deviation (MHz)	0.0107	0.0120	0.0136	0.0155
Max. Deviation (ppm)	1.86	2.09	2.36	2.69
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 Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 02, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 02, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 03, 2014	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 06, 2015	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 28, 2014	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	Feb. 24, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015*	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP-40	100019	9kHz ~ 40GHz	Mar. 11, 2015	Conducted (TH01-CB)
Spectrum Analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 12, 2014	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 03, 2014	Conducted (TH01-CB)

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

"*" 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%