SPORTON International Inc.
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FCC RADIO TEST REPORT

Applicant's company	**Belkin International, Inc.**
Applicant Address	12045 East Waterfront Drive, Playa Vista, CA 90094
FCC ID	**K7SF9K1105V2**

Product Name	N450 Dual Band Wireless Router
Brand Name	belkin
Model No.	F9K1105V4
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250 MHz / 5725 ~ 5850 MHz
Received Date	Mar. 04, 2016
Final Test Date	Jun. 26, 2016
Submission Type	Class II Change

Statement

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

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

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

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

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

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR4N1172-30AB	Rev. 01	Initial issue of report	Jul. 12, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	N450 Dual Band Wireless Router
Brand Name	:	belkin
Model No.	:	F9K1105V4
Applicant	:	Belkin International, Inc.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart E § 15.407

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Mar. 04, 2016 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

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

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	IEEE 802.11a: WLAN (1TX, 1RX) IEEE 802.11n: WLAN (1TX/1RX, 2TX/2RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	IEEE 802.11a: OFDM IEEE 802.11n: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n: 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%)	Band 1: IEEE 802.11a: 17.37 MHz IEEE 802.11n MCS0 (HT20): 18.49 MHz (1TX) IEEE 802.11n MCS0 (HT40): 36.90 MHz (1TX) IEEE 802.11n MCS8 (HT20): 18.15 MHz (2TX) IEEE 802.11n MCS8 (HT40): 36.76 MHz (2TX) Band 4: IEEE 802.11a: 17.19 MHz IEEE 802.11n MCS0 (HT20): 18.32 MHz (1TX) IEEE 802.11n MCS0 (HT40): 36.90 MHz (1TX) IEEE 802.11n MCS8 (HT20): 18.06 MHz (2TX) IEEE 802.11n MCS8 (HT40): 36.61 MHz (2TX)
Maximum Conducted Output Power	Band 1: IEEE 802.11a: 17.25 dBm IEEE 802.11n MCS0 (HT20): 16.57 dBm (1TX) IEEE 802.11n MCS0 (HT40): 15.98 dBm (1TX) IEEE 802.11n MCS8 (HT20): 19.30 dBm (2TX) IEEE 802.11n MCS8 (HT40): 19.21 dBm (2TX) Band 4: IEEE 802.11a: 14.85 dBm IEEE 802.11n MCS0 (HT20): 13.75 dBm (1TX) IEEE 802.11n MCS0 (HT40): 13.83 dBm (1TX) IEEE 802.11n MCS8 (HT20): 16.56 dBm (2TX) IEEE 802.11n MCS0 (HT40): 16.45 dBm (2TX)
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
Beamforming Function	☐ With beamforming	☒ Without beamforming
Operate Condition	☒ Indoor	☐ Outdoor

Antenna and Band width

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

IEEE 11n Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	1	MCS0-7
802.11n (HT20)	2	MCS8-15
802.11n (HT40)	1	MCS0-7
802.11n (HT40)	2	MCS8-15
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40. Note 2: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n		

3.2. Accessories

Power	Brand	Model	Rating
Adapter	Belkin	MU12AR120100-A1	Input: 100-240V~50/60Hz, 0.3A Output: 12V, 1A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	-	-	PCB Antenna	I-PEX	4.4	5.06
2	-	-	PCB Antenna	I-PEX	-	4.53

Note: The EUT has two antennas

For 2.4GHz function:

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

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

For 5GHz function:

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

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

For IEEE 802.11n mode (1TX/1RX , 2TX/2RX)

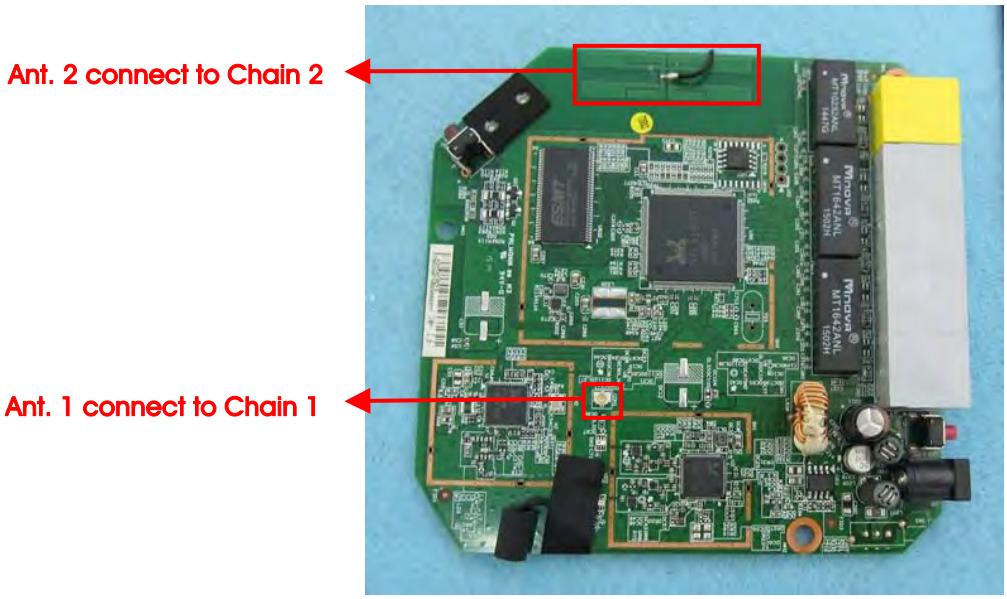
For 1TX/1RX

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

For 2TX/2RX

Ant. 1 and Ant. 2 will transmit/receive the same signal simultaneously.

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



3.4. Table for Carrier Frequencies

The EUT has two bandwidth system.

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	Normal Link		-	-	-
Max. Conducted Output Power	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS0	36/40/48/149/157/165	1
	11n HT40	Band 1&4	MCS0	38/46/151/159	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
Power Spectral Density	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS0	36/40/48/149/157/165	1
	11n HT40	Band 1&4	MCS0	38/46/151/159	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS0	36/40/48/149/157/165	1
	11n HT40	Band 1&4	MCS0	38/46/151/159	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
6dB Spectrum Bandwidth Measurement	11a/BPSK	Band 4	6Mbps	149/157/165	1
	11n HT20	Band 4	MCS0	149/157/165	1
	11n HT40	Band 4	MCS0	151/159	1
	11n HT20	Band 4	MCS8	149/157/165	1+2
	11n HT40	Band 4	MCS8	151/159	1+2

Radiated Emission Below 1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS0	36/40/48/149/157/165	1
	11n HT40	Band 1&4	MCS0	38/46/151/159	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
Band Edge Emission	11a/BPSK	Band 1&4	6Mbps	36/40/48/149/157/165	1
	11n HT20	Band 1&4	MCS0	36/40/48/149/157/165	1
	11n HT40	Band 1&4	MCS0	38/46/151/159	1
	11n HT20	Band 1&4	MCS8	36/40/48/149/157/165	1+2
	11n HT40	Band 1&4	MCS8	38/46/151/159	1+2
Frequency Stability	20 MHz	Band 1&4	-	40/157	1
	40 MHz	Band 1&4	-	38/151	1

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link

For Radiated Emission test (Below 1GHz):

Mode 1. Normal Link

For Radiated Emission test (Above 1GHz):

Mode 1. CTX

For Co-location MPE Test:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA4N1172-30) test is added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

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

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

3.7. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR222334AN and FR222334AI.

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

Modifications	Performance Checking
1. Adding a new power adapter (Model name: MU12AR120100-A1). 2. Updating the Flash version.	1. AC Conducted Emissions 2. Radiated Emissions below 1GHz
3. Updating 5GHz Band 1 to “New Rules” from “Old Rules”.	1. 26dB Bandwidth and 99% Occupied Bandwidth 2. Maximum Conducted Output Power 3. Power Spectral Density 4. Radiated Emissions above 1GHz 5. Band Edge Emissions 6. Frequency Stability
4. Updating test rule of 5GHz band 4 to “15.407 (b)(4)(i) of New Rules (ET Docket No. 13–49; FCC 16–24)” from “Old Rules”.	1. 26dB Bandwidth and 99% Occupied Bandwidth 2. 6dB Spectrum Bandwidth 3. Maximum Conducted Output Power 4. Power Spectral Density 5. Radiated Emissions above 1GHz 6. Band Edge Emissions 7. Frequency Stability
5. Updating the Model Name from "F9K1101V1, F9K1105V2" to "F9K1105V4". 6. Updating the Applicant address from "12045 E. Waterfront Drive Playa Viste, CA 90094, USA" to "12045 East Waterfront Drive, Playa Vista, CA 90094".	Do not effect the test results.

3.8. Table for Supporting Units

For Test Site No: CO01-CB

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

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

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

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

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

3.9. Table for Parameters of Test Software Setting

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

Test Software Version	RTL891x 2.2.4 -11/12/20					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
802.11a	63	63	63	63	63	63
802.11n MCS0 HT20	60	63	63	63	63	63
802.11n MCS8 HT20	63/62	63/62	63/61	63/61	63/61	63/62

Mode	NCB: 40MHz			
802.11n MCS0 HT40	5190 MHz	5230 MHz	5755 MHz	5795 MHz
	51	62	63	63
802.11n MCS8 HT40	59/58	63/61	63/61	63/62

3.10. EUT Operation during Test

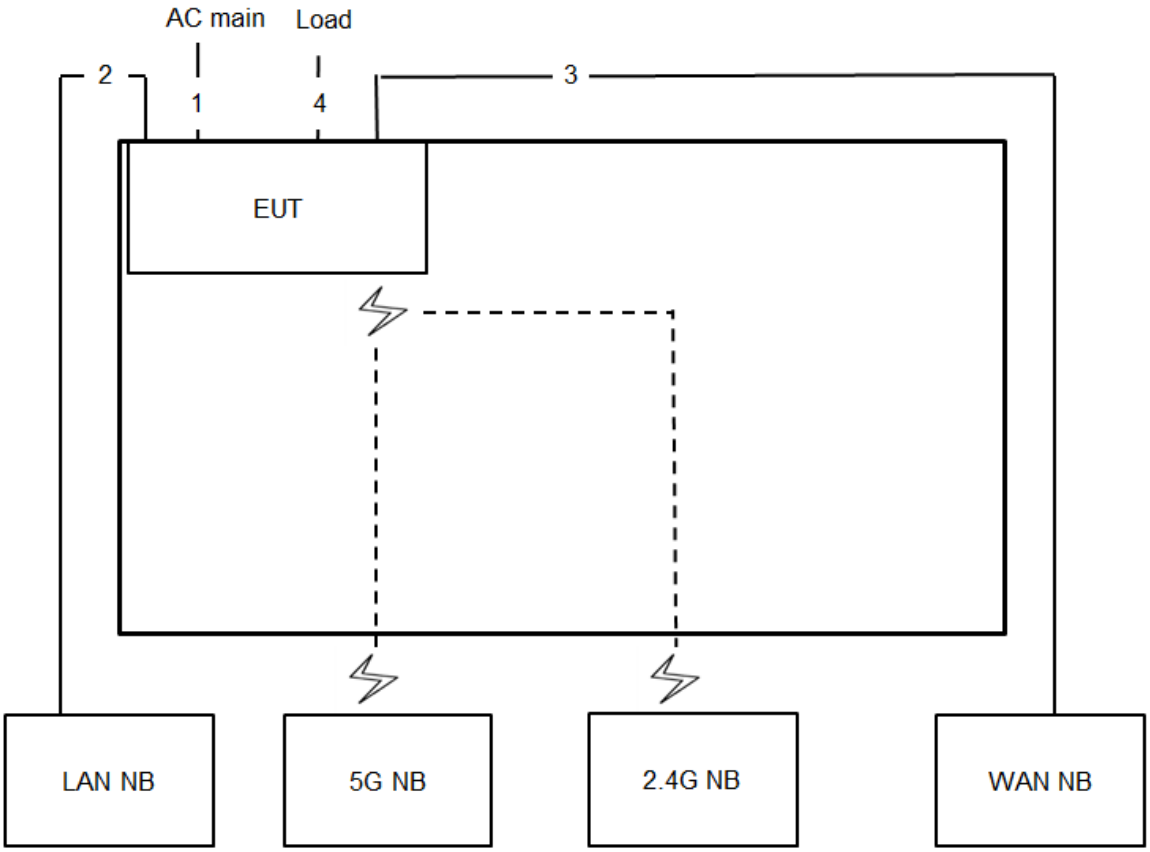
The EUT was programmed to be in continuously transmitting mode.

3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	1.000	1.000	100.00	0.00	0.01
802.11n MCS0 HT20	1.000	1.000	100.00	0.00	0.01
802.11n MCS8 HT20	1.000	1.000	100.00	0.00	0.01
802.11n MCS0 HT40	1.000	1.000	100.00	0.00	0.01
802.11n MCS8 HT40	1.000	1.000	100.00	0.00	0.01

3.12. Test Configurations

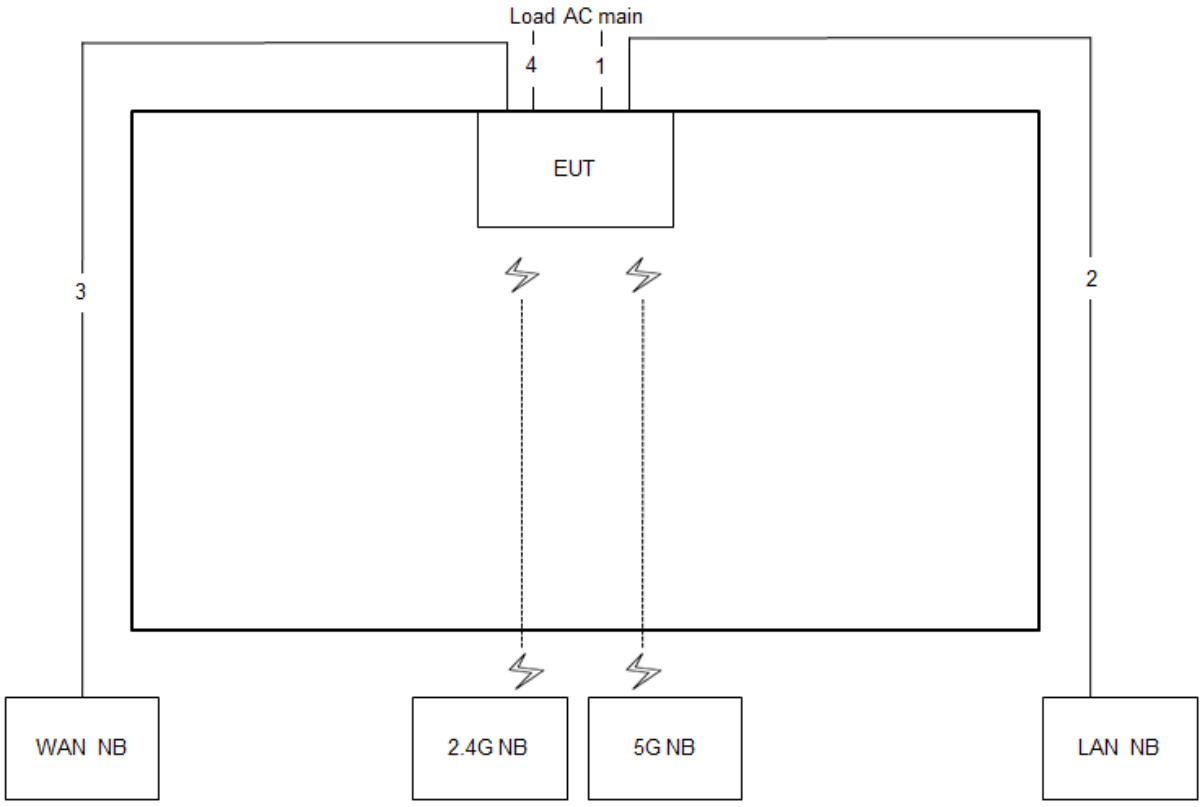
3.12.1. AC Power Line Conduction Emissions Test Configuration



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

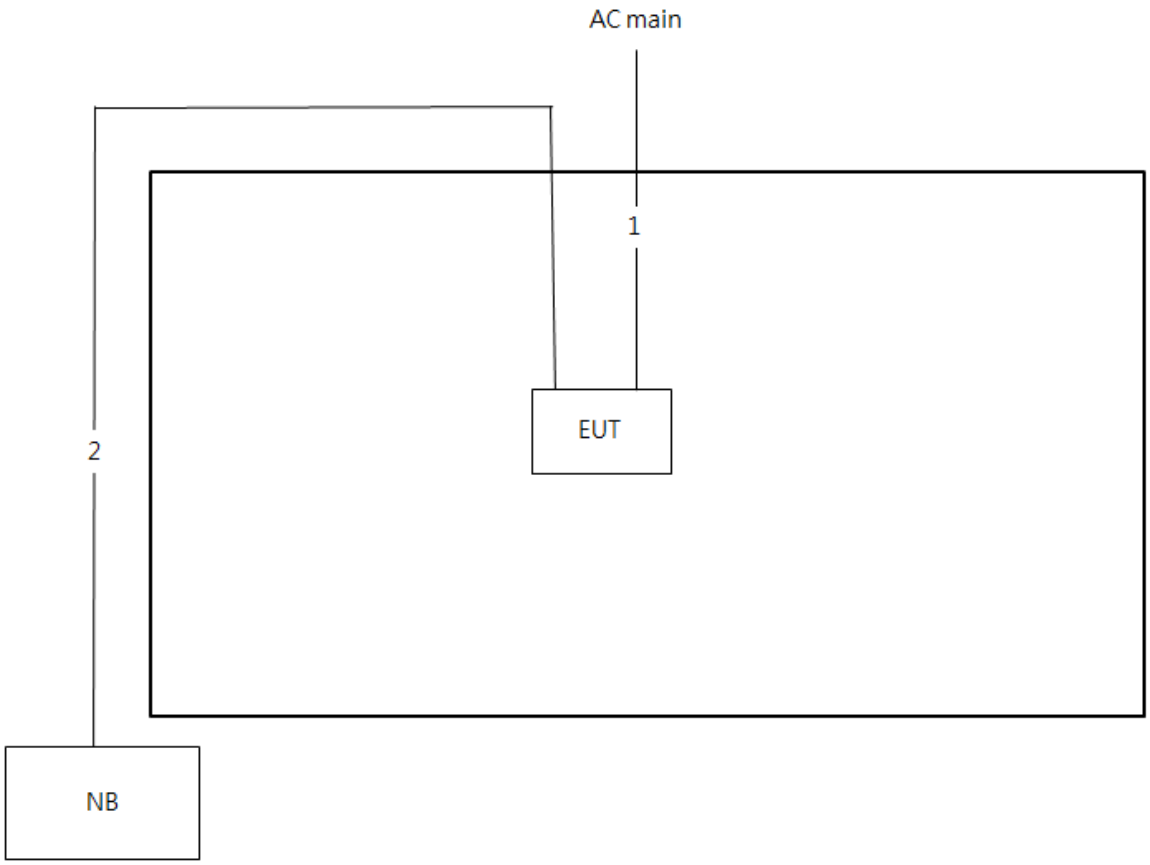
3.12.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz ~1GHz



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

Test Configuration: above 1GHz



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

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

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

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

4.1.2. Measuring Instruments and Setting

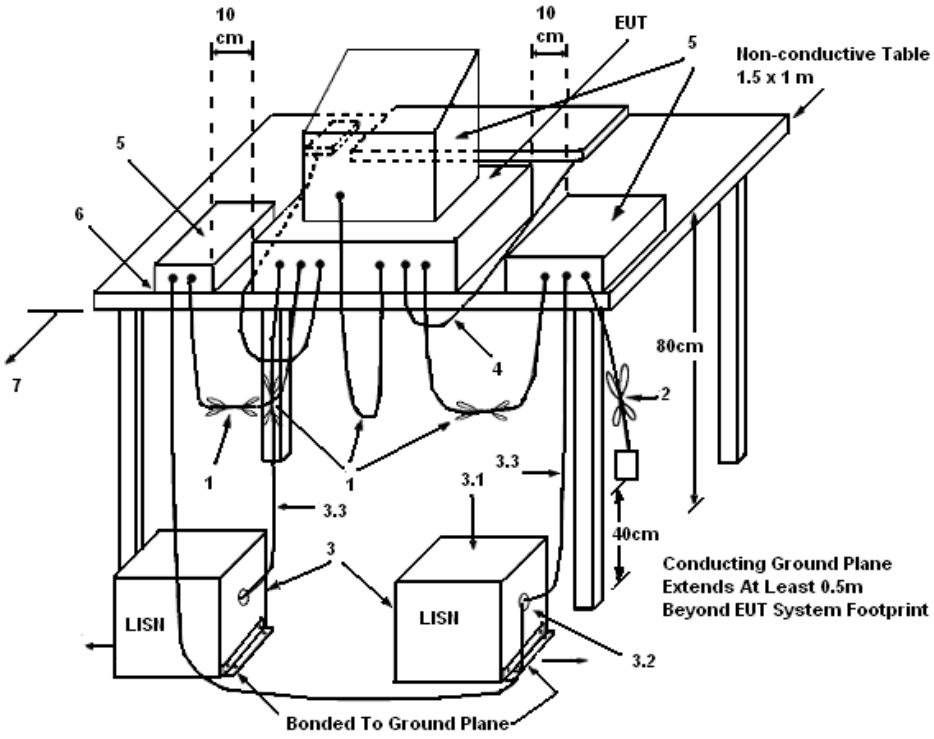
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

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

4.1.4. Test Setup Layout



LEGEND:

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

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

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

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

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

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

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

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

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

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

4.1.5. Test Deviation

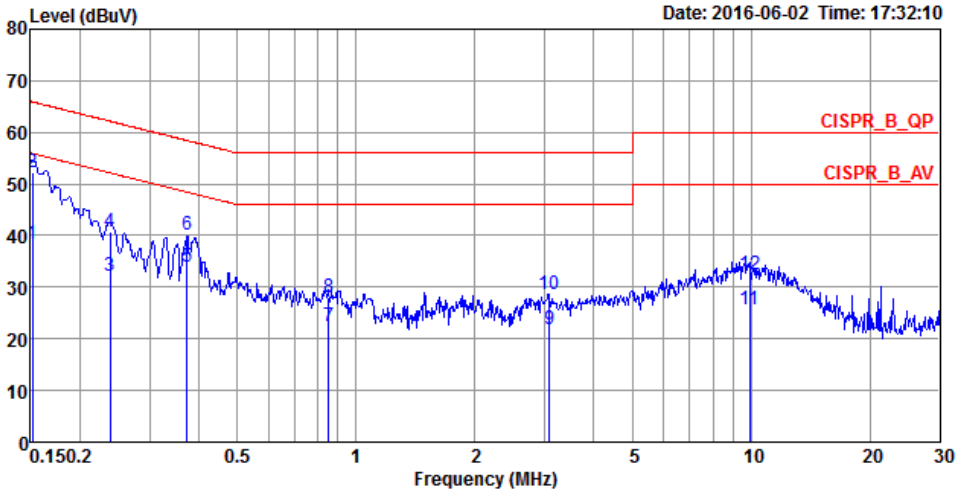
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

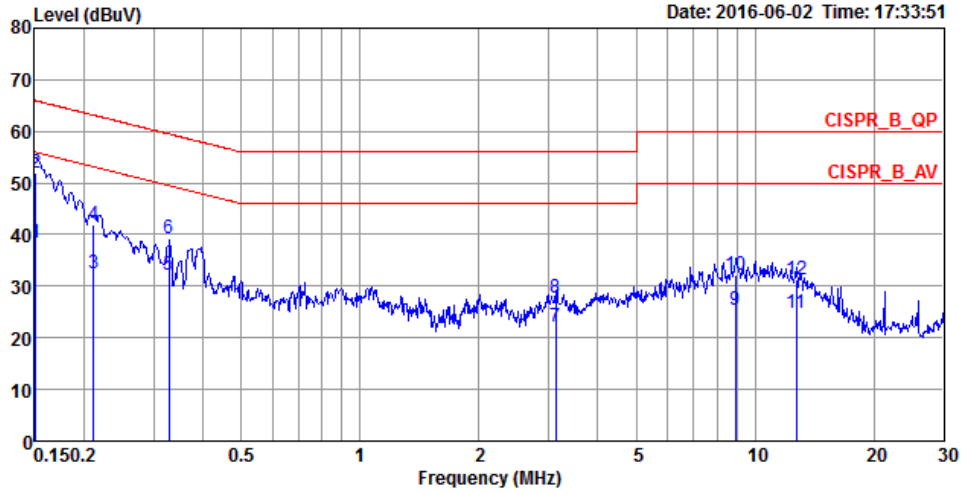
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23°C	Humidity	63%
Test Engineer	Deven Huang / Da Deng	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1516	38.49	-17.42	55.91	28.37	9.96	0.16	Average	LINE
2	0.1516	52.22	-13.69	65.91	42.10	9.96	0.16	QP	LINE
3	0.2378	32.22	-19.95	52.17	22.06	9.97	0.19	Average	LINE
4	0.2378	40.60	-21.57	62.17	30.44	9.97	0.19	QP	LINE
5	0.3731	33.88	-14.55	48.43	23.68	10.00	0.20	Average	LINE
6	0.3731	40.07	-18.36	58.43	29.87	10.00	0.20	QP	LINE
7	0.8528	22.54	-23.46	46.00	12.31	10.04	0.19	Average	LINE
8	0.8528	28.15	-27.85	56.00	17.92	10.04	0.19	QP	LINE
9	3.0901	21.85	-24.15	46.00	11.45	10.10	0.30	Average	LINE
10	3.0901	28.70	-27.30	56.00	18.30	10.10	0.30	QP	LINE
11	9.9130	25.61	-24.39	50.00	15.08	10.15	0.38	Average	LINE
12	9.9130	32.38	-27.62	60.00	21.85	10.15	0.38	QP	LINE

Temperature	23°C	Humidity	63%
Test Engineer	Deven Huang / Da Deng	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1508	38.41	-17.55	55.96	28.29	9.96	0.16	Average	NEUTRAL
2	0.1508	52.07	-13.89	65.96	41.95	9.96	0.16	QP	NEUTRAL
3	0.2117	32.50	-20.64	53.14	22.36	9.96	0.18	Average	NEUTRAL
4	0.2117	41.77	-21.37	63.14	31.63	9.96	0.18	QP	NEUTRAL
5	0.3286	32.29	-17.20	49.49	22.13	9.97	0.19	Average	NEUTRAL
6	0.3286	39.26	-20.23	59.49	29.10	9.97	0.19	QP	NEUTRAL
7	3.1231	22.08	-23.92	46.00	11.77	10.01	0.30	Average	NEUTRAL
8	3.1231	27.82	-28.18	56.00	17.51	10.01	0.30	QP	NEUTRAL
9	8.9163	25.31	-24.69	50.00	14.81	10.13	0.37	Average	NEUTRAL
10	8.9163	32.03	-27.97	60.00	21.53	10.13	0.37	QP	NEUTRAL
11	12.7161	24.77	-25.23	50.00	14.16	10.20	0.41	Average	NEUTRAL
12	12.7161	31.28	-28.72	60.00	20.67	10.20	0.41	QP	NEUTRAL

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

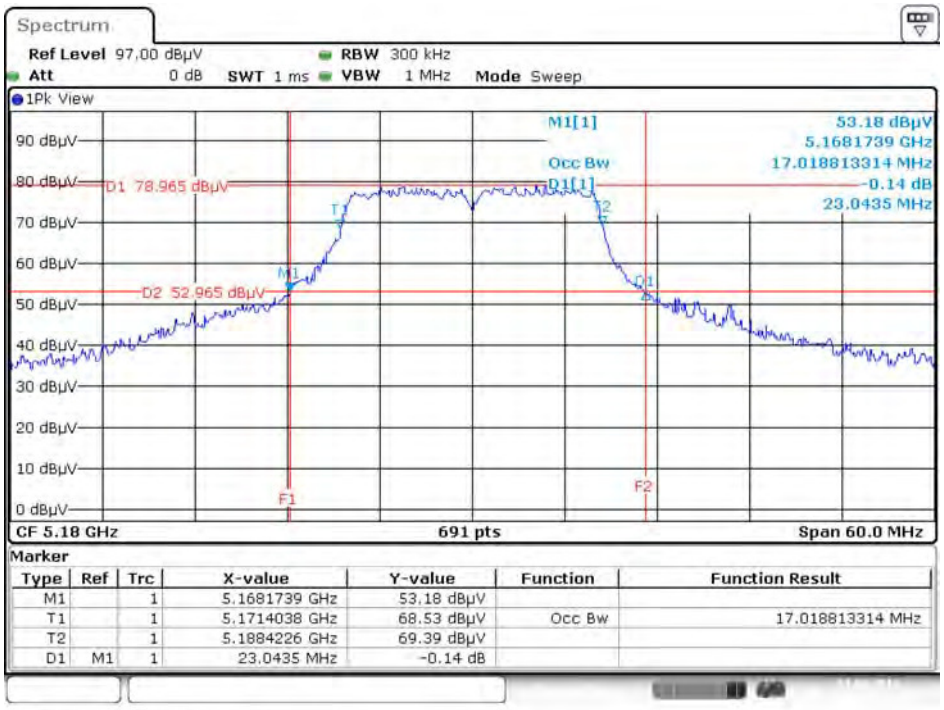
The EUT was programmed to be in continuously transmitting mode.

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

Temperature	25°C	Humidity	65%
Test Engineer	Andy Tsai		

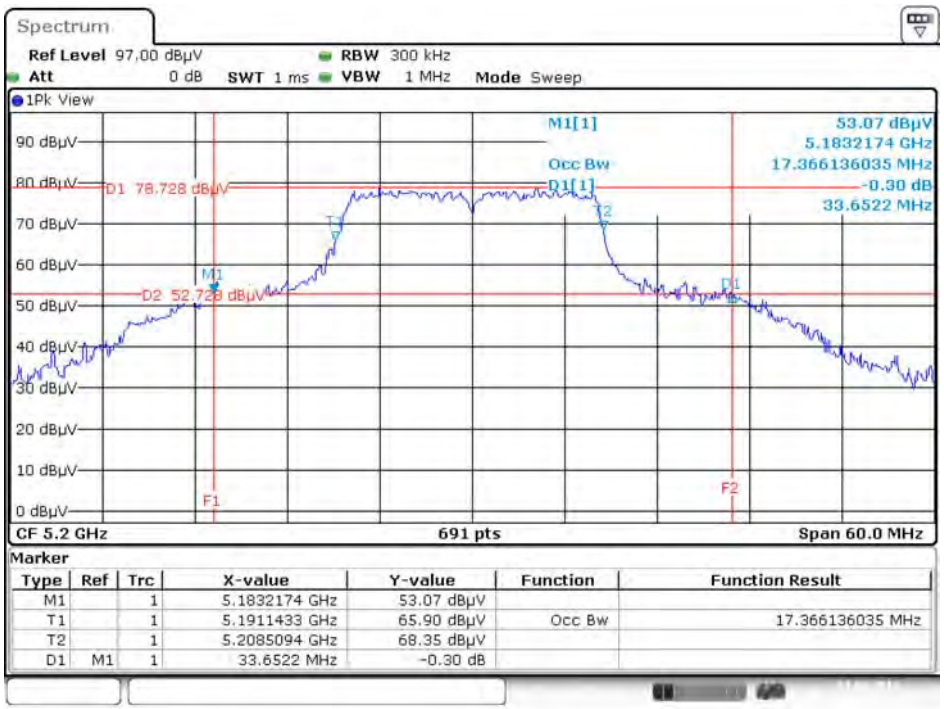
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	23.04	17.02
	5200 MHz	33.65	17.37
	5240 MHz	33.04	17.28
	5745 MHz	31.83	17.11
	5785 MHz	31.83	17.19
	5825 MHz	31.74	17.11
802.11n MCS0 HT20	5180 MHz	30.26	18.15
	5200 MHz	35.74	18.41
	5240 MHz	36.17	18.49
	5745 MHz	33.30	18.32
	5785 MHz	30.35	18.32
	5825 MHz	29.91	18.23
802.11n MCS0 HT40	5190 MHz	42.75	36.32
	5230 MHz	72.75	36.90
	5755 MHz	57.83	36.76
	5795 MHz	53.77	36.90
802.11n MCS8 HT20	5180 MHz	25.48	18.06
	5200 MHz	23.04	18.15
	5240 MHz	22.87	18.15
	5745 MHz	22.00	17.89
	5785 MHz	22.78	18.06
	5825 MHz	21.91	17.89
802.11n MCS8 HT40	5190 MHz	41.88	36.47
	5230 MHz	41.88	36.76
	5755 MHz	42.17	36.47
	5795 MHz	42.32	36.61

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



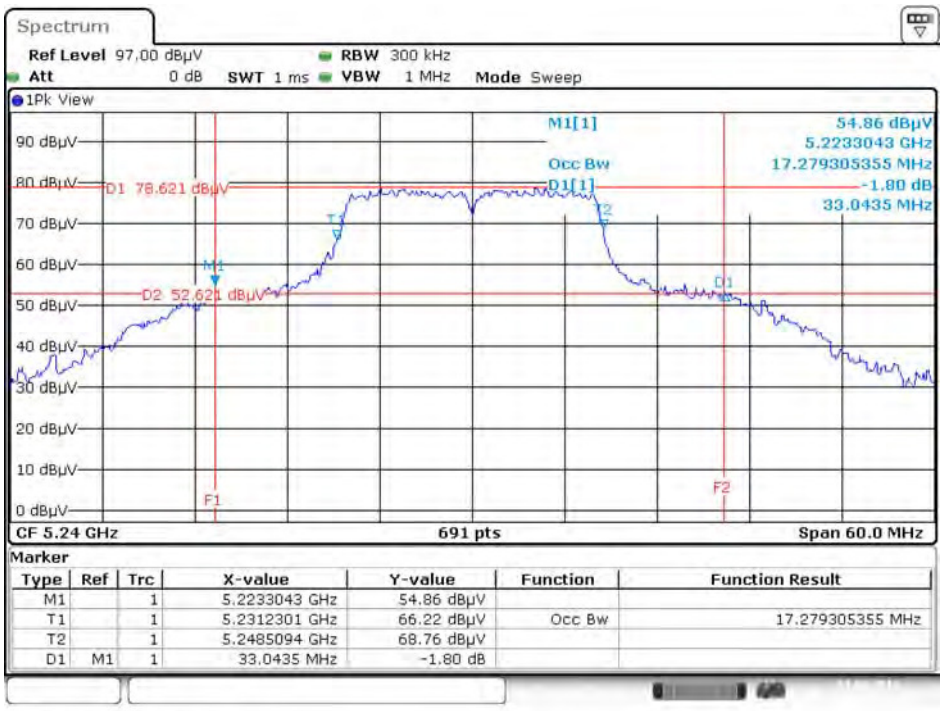
Date: 3.JUN.2016 14:17:55

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



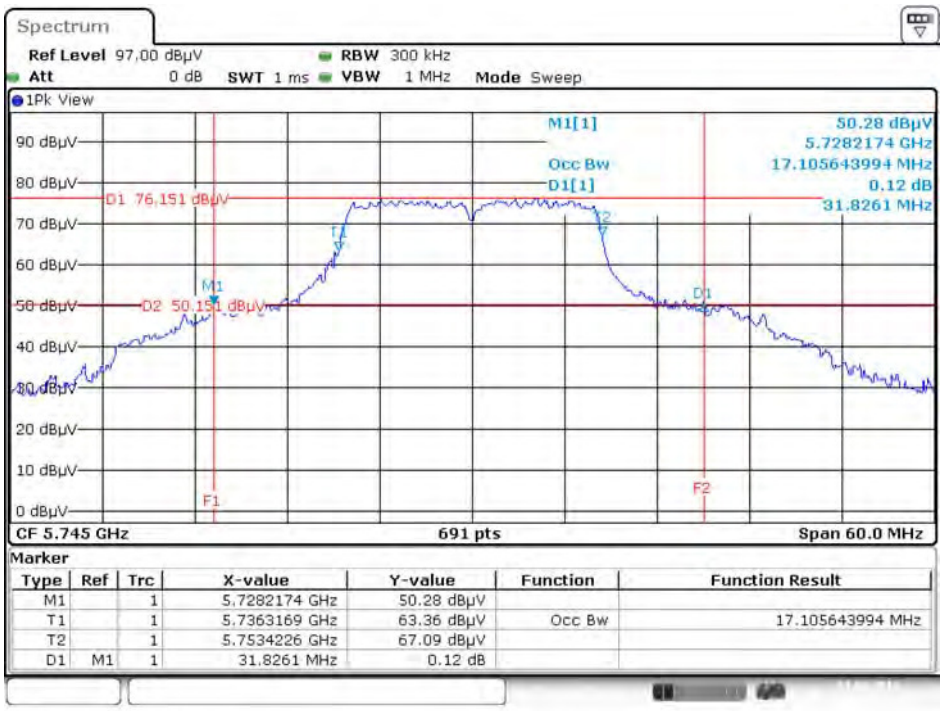
Date: 3.JUN.2016 14:19:13

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



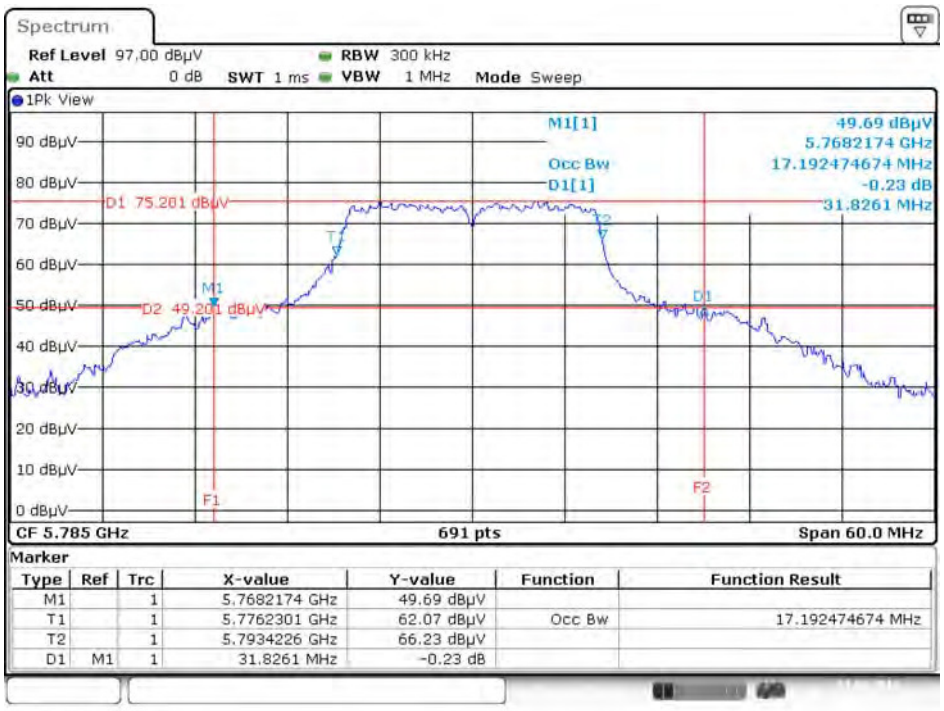
Date: 3.JUN.2016 14:19:55

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



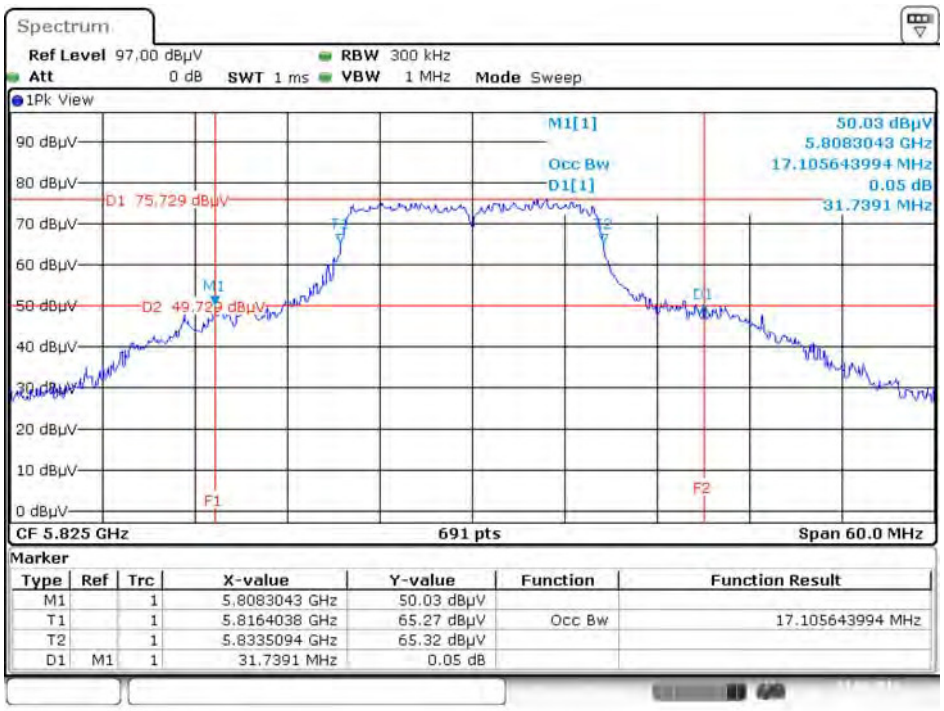
Date: 3.JUN.2016 14:21:38

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



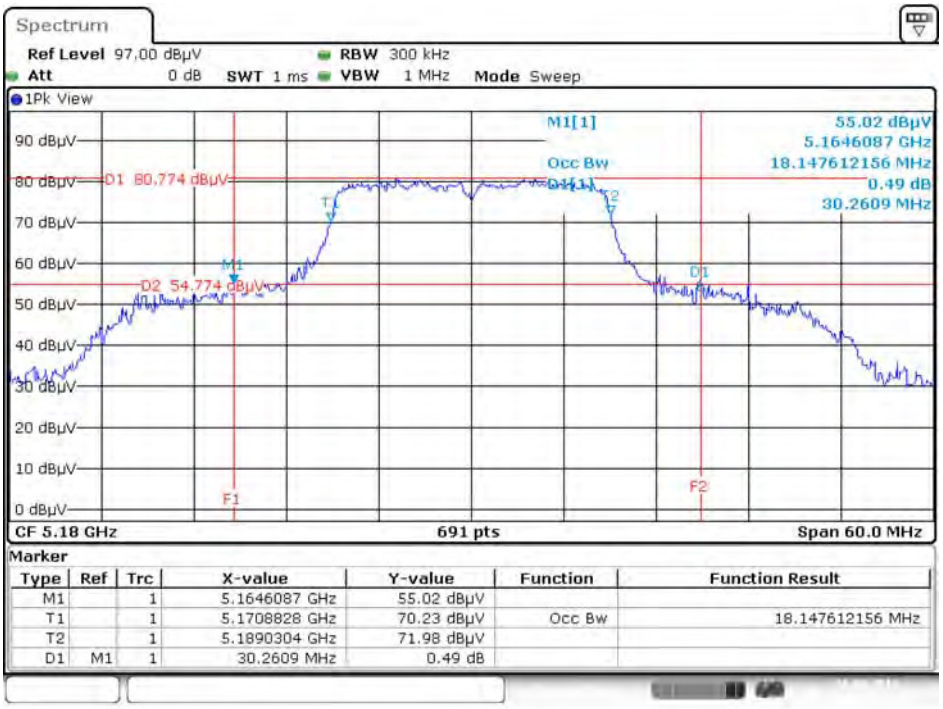
Date: 3.JUN.2016 14:22:11

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



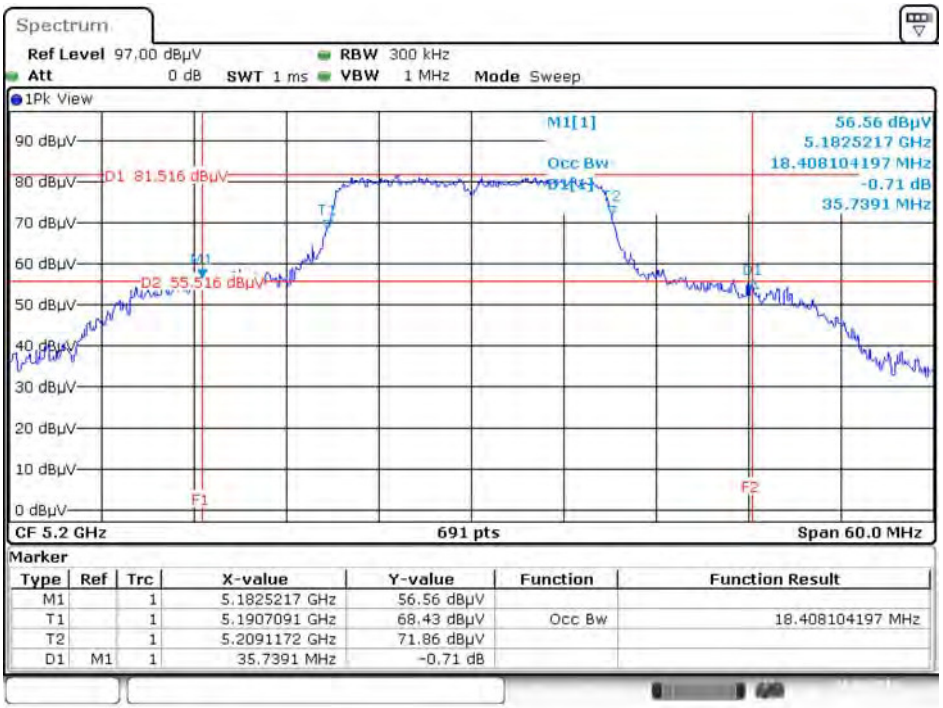
Date: 3.JUN.2016 14:22:46

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 / 5180 MHz



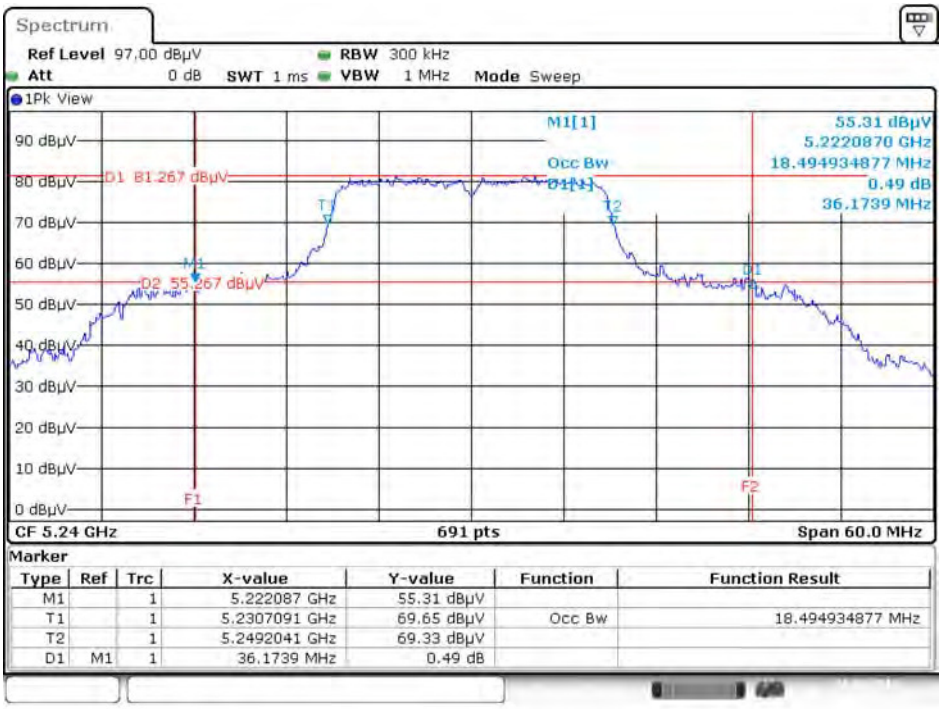
Date: 26.JUN.2016 04:51:28

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 / 5200 MHz



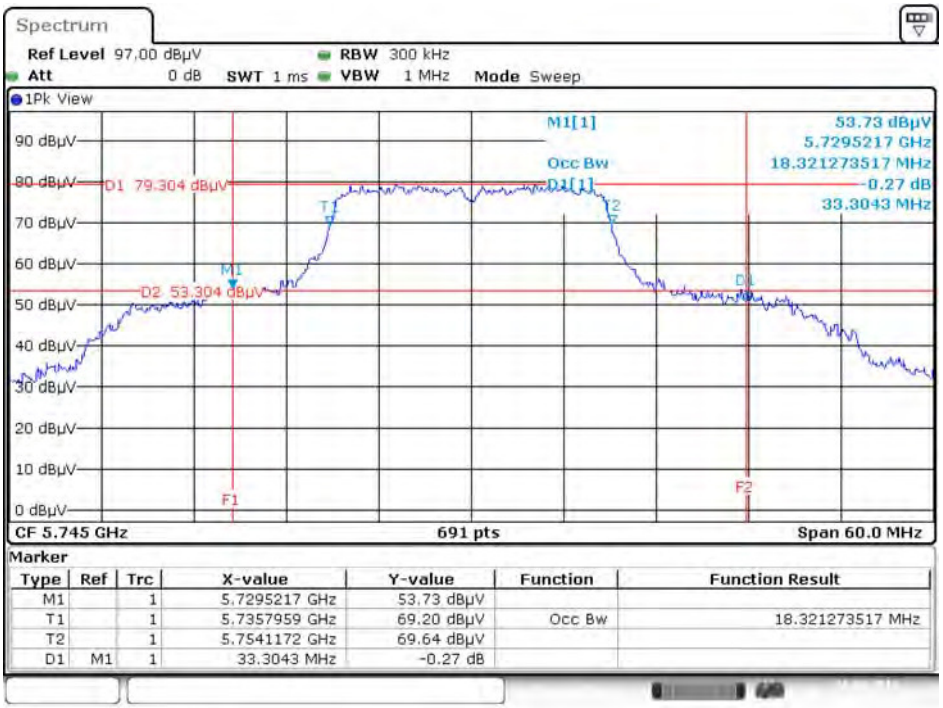
Date: 26.JUN.2016 04:53:10

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 / 5240 MHz



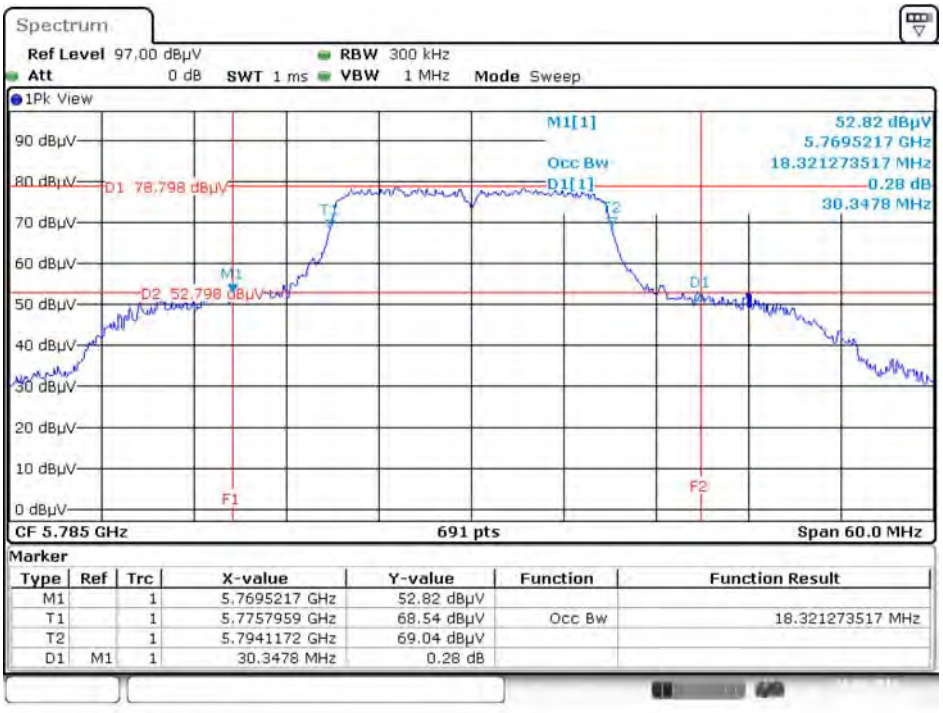
Date: 26.JUN.2016 04:54:10

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 / 5745 MHz



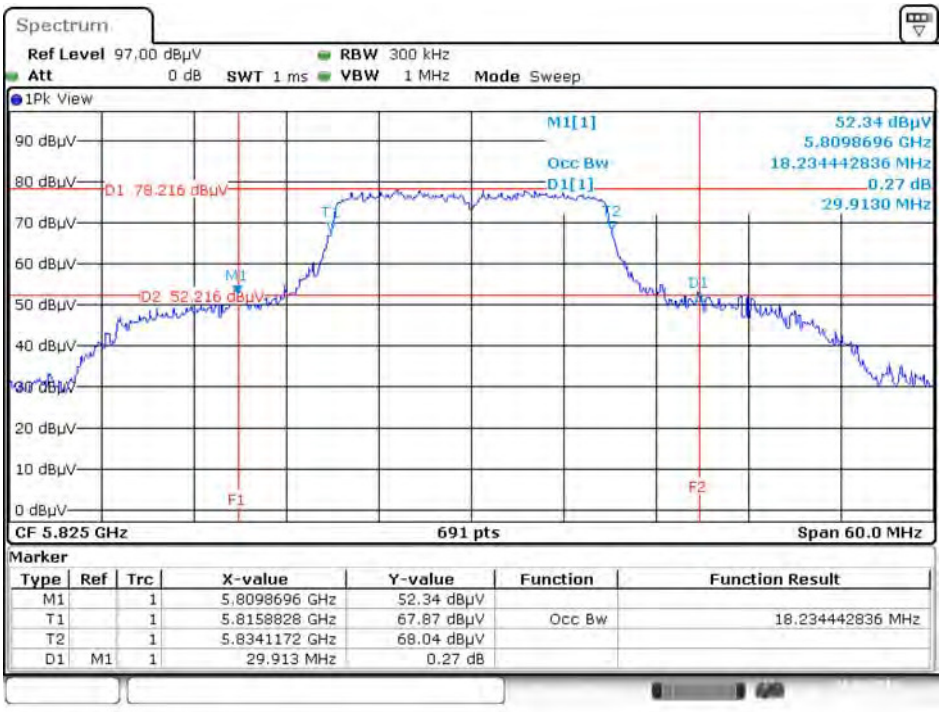
Date: 26.JUN.2016 05:00:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 / 5785 MHz



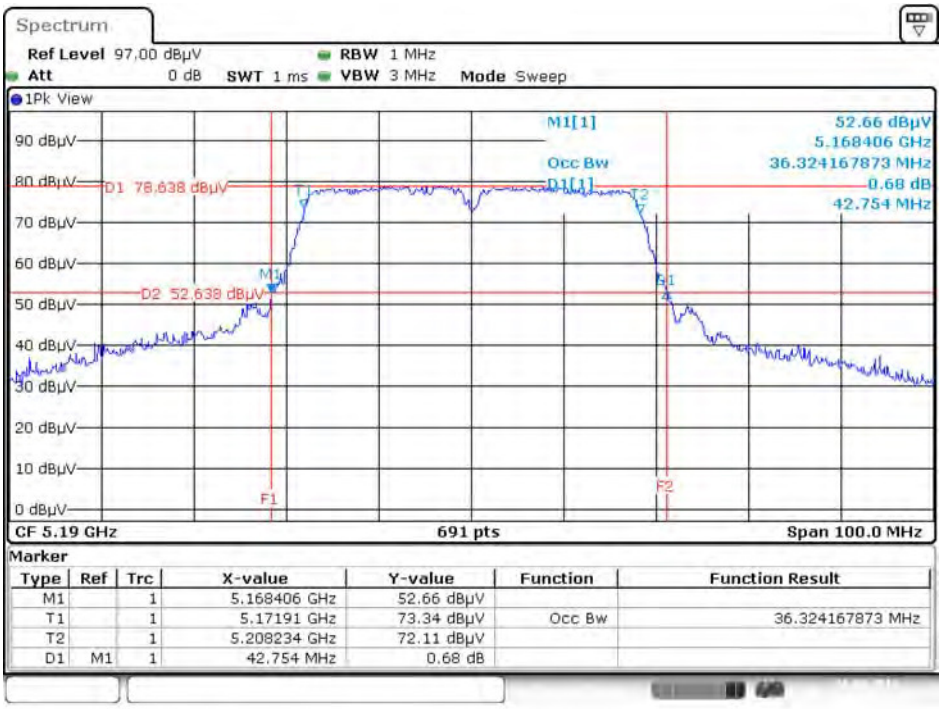
Date: 26.JUN.2016 05:02:03

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 / 5825 MHz



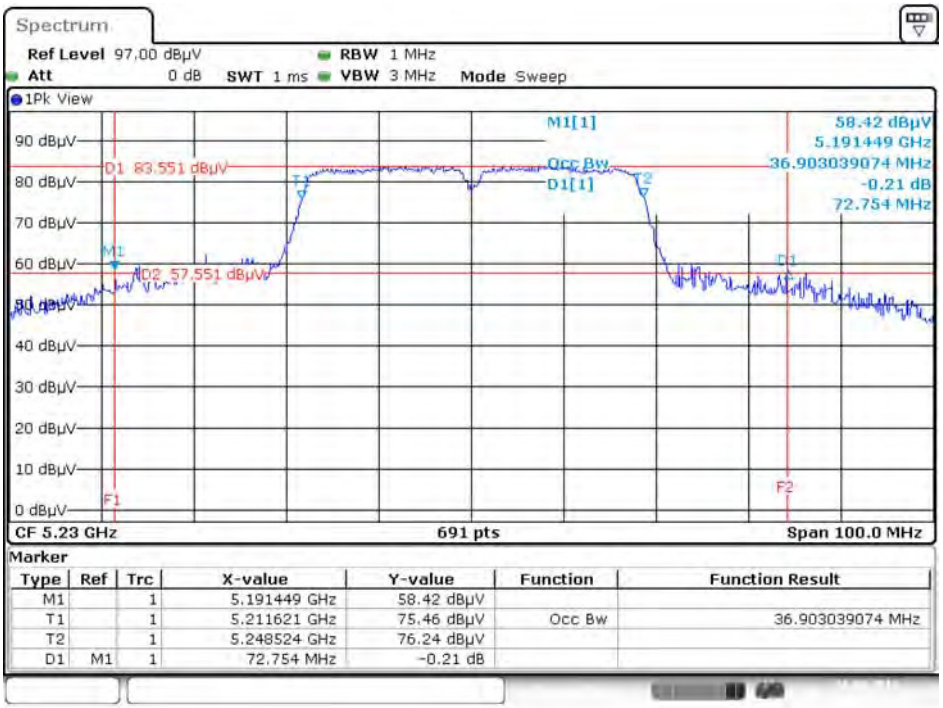
Date: 26.JUN.2016 05:03:33

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 / 5190 MHz



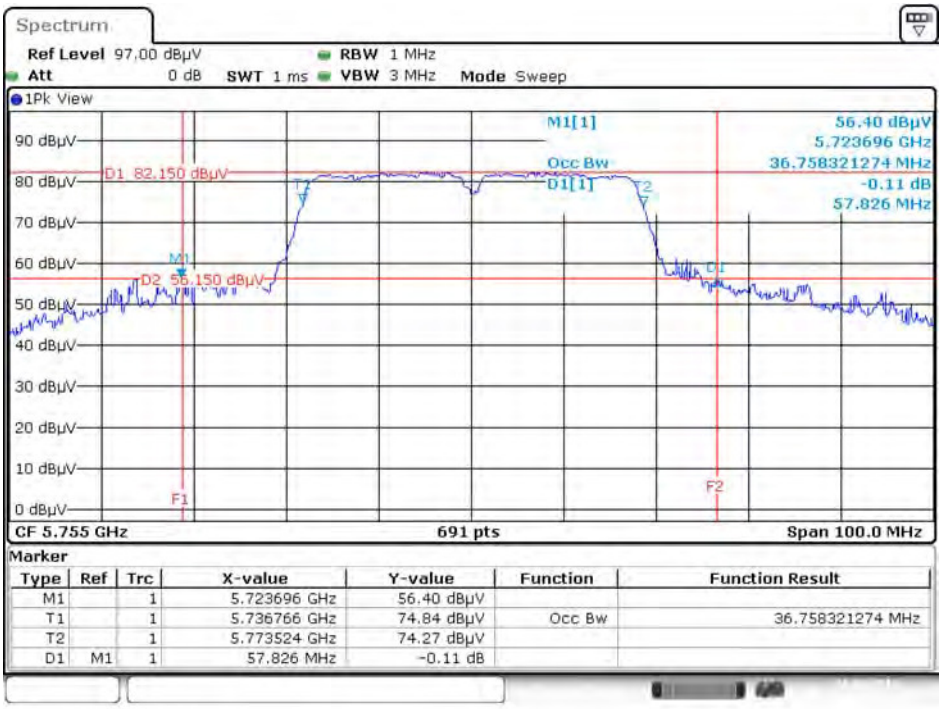
Date: 26.JUN.2016 05:07:03

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 / 5230 MHz



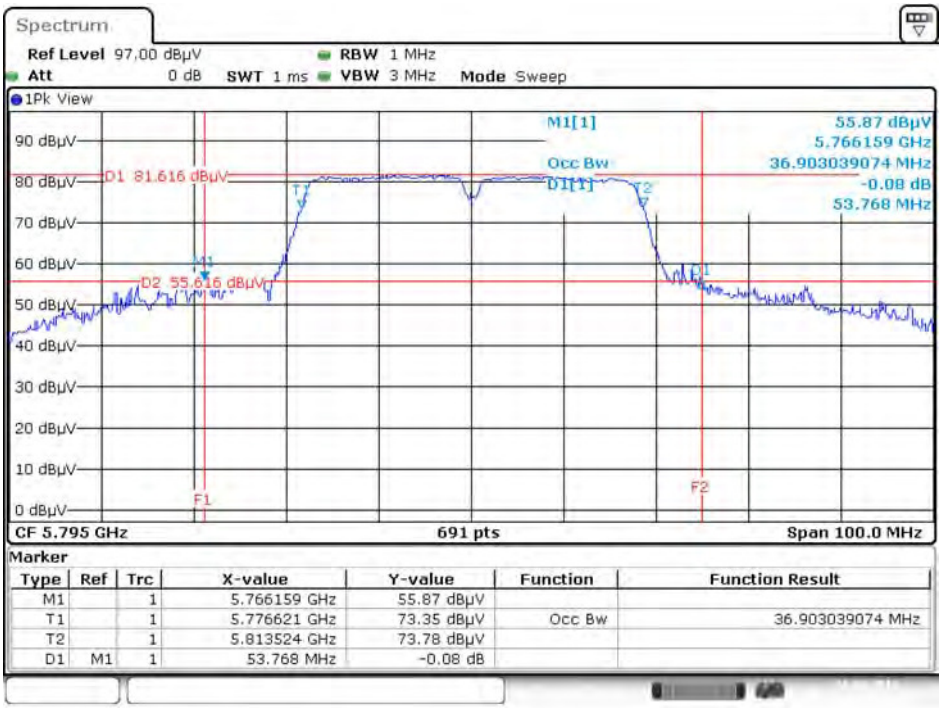
Date: 26.JUN.2016 05:08:54

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 / 5755 MHz



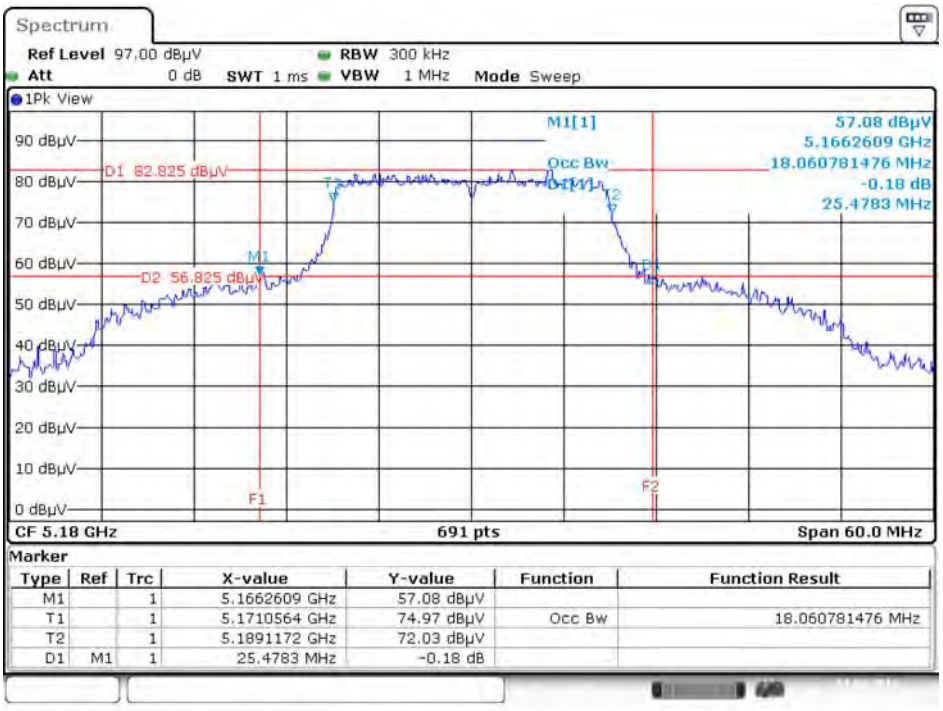
Date: 26.JUN.2016 05:10:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 / 5795 MHz



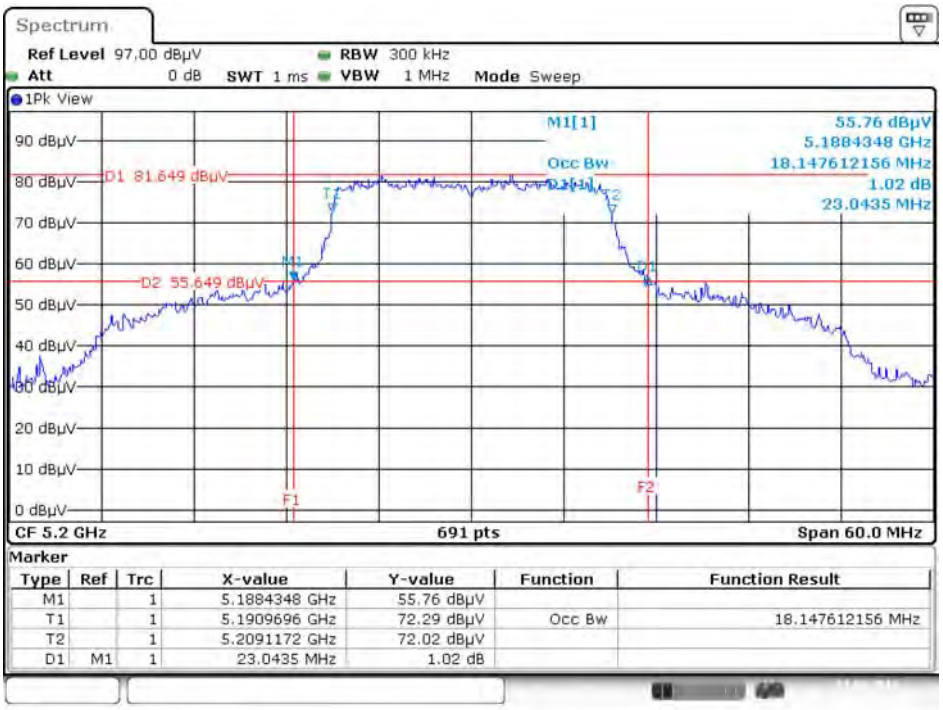
Date: 26.JUN.2016 05:11:07

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



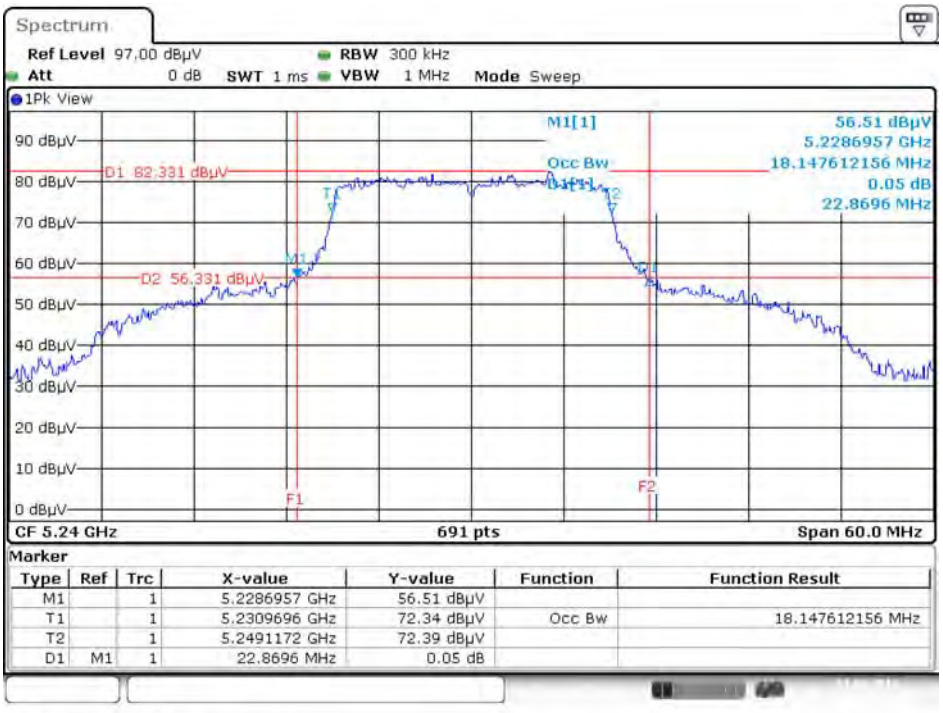
Date: 3.JUN.2016 14:24:35

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



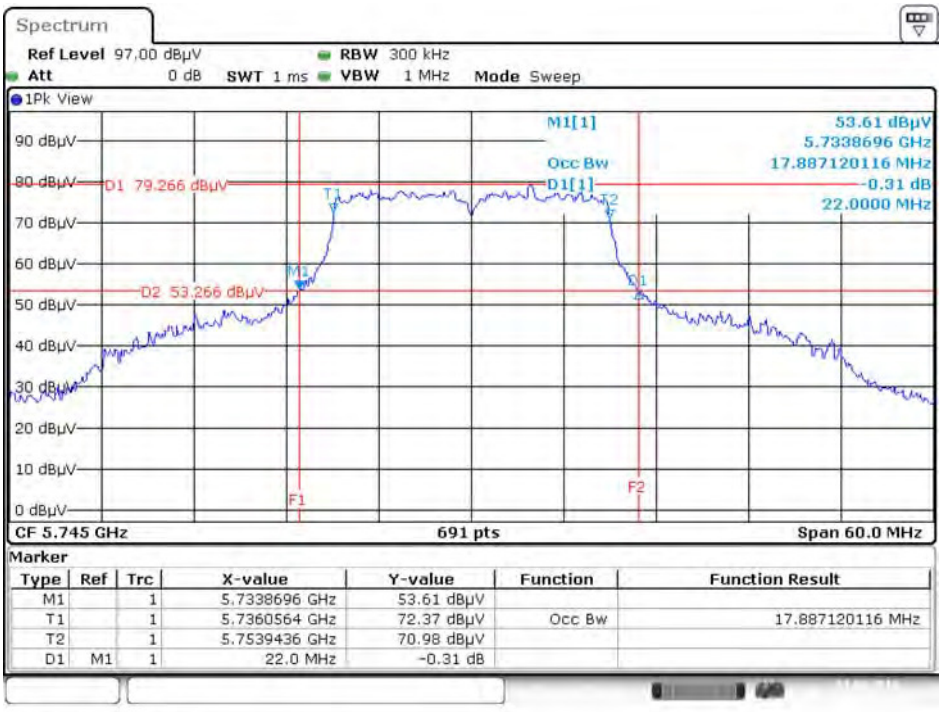
Date: 3.JUN.2016 14:25:20

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



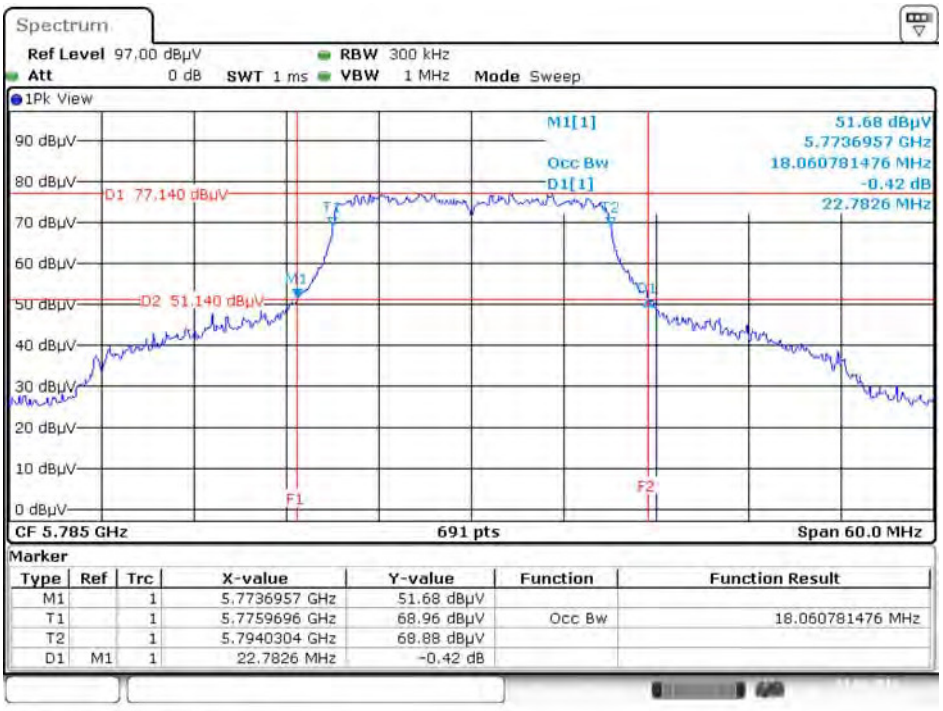
Date: 3.JUN.2016 14:26:03

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



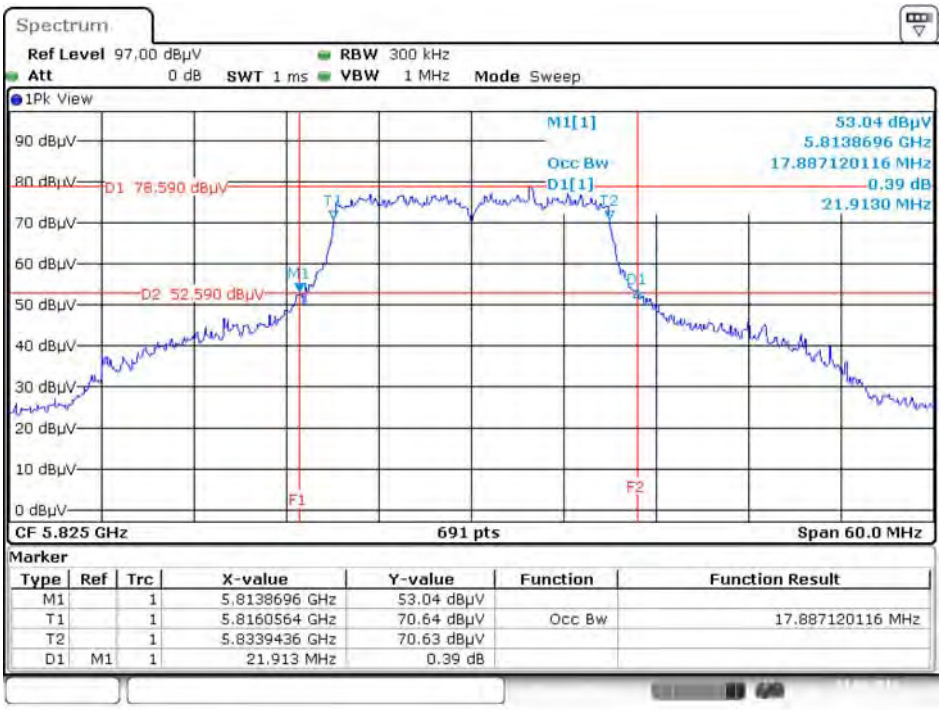
Date: 3.JUN.2016 14:34:13

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



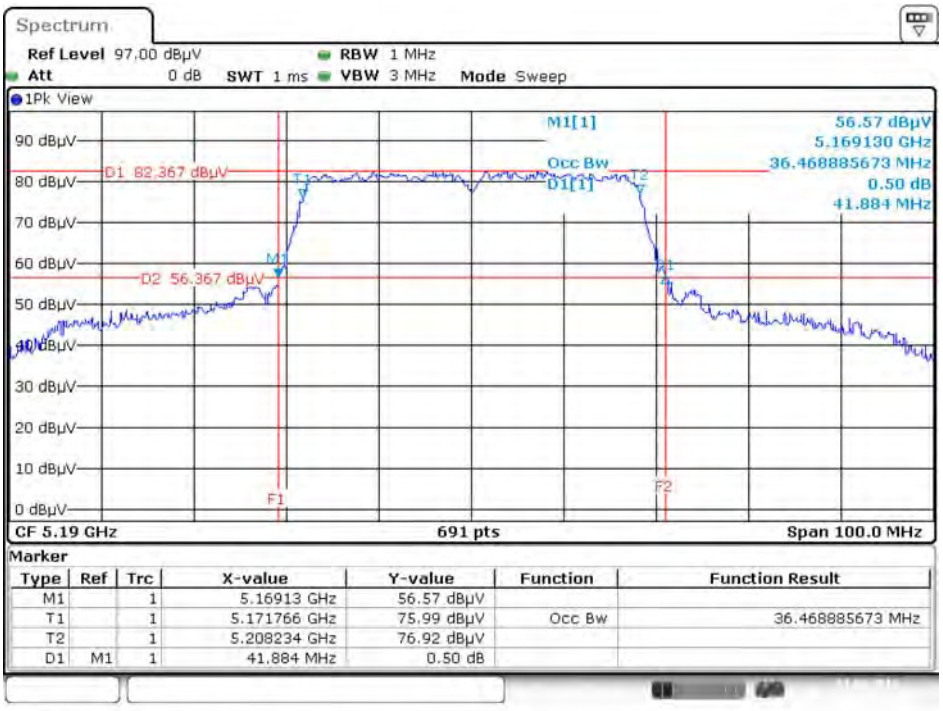
Date: 3.JUN.2016 14:37:07

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



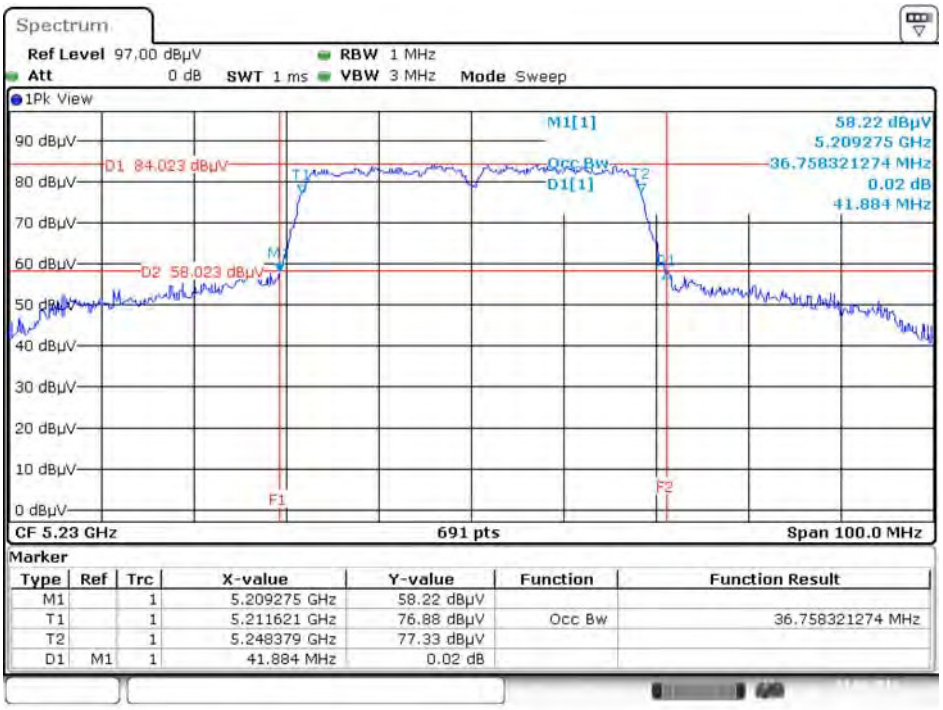
Date: 3.JUN.2016 14:37:31

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



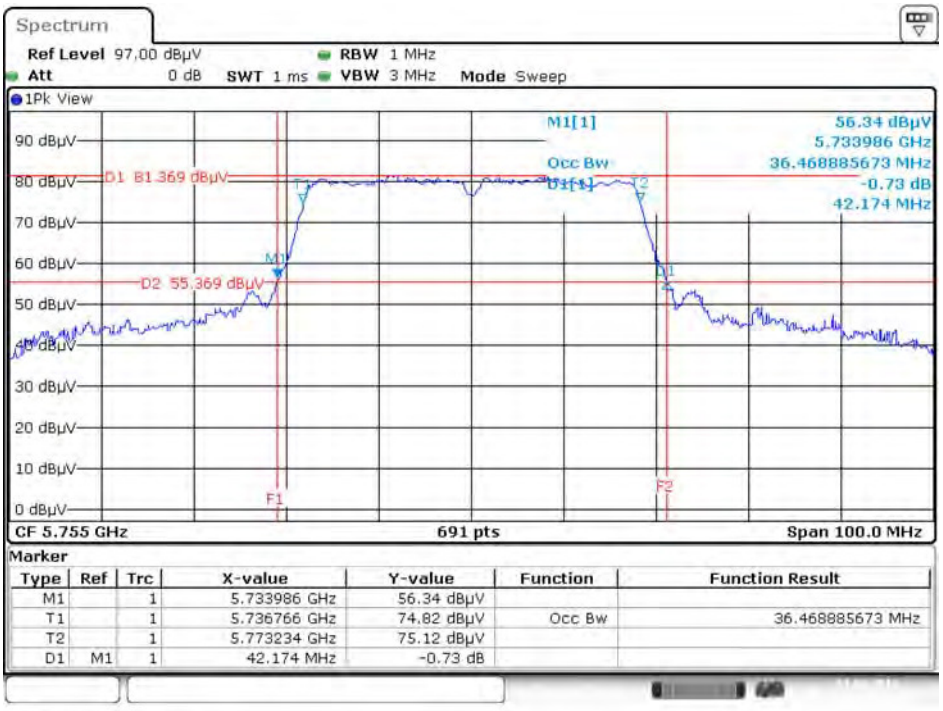
Date: 3.JUN.2016 14:41:05

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



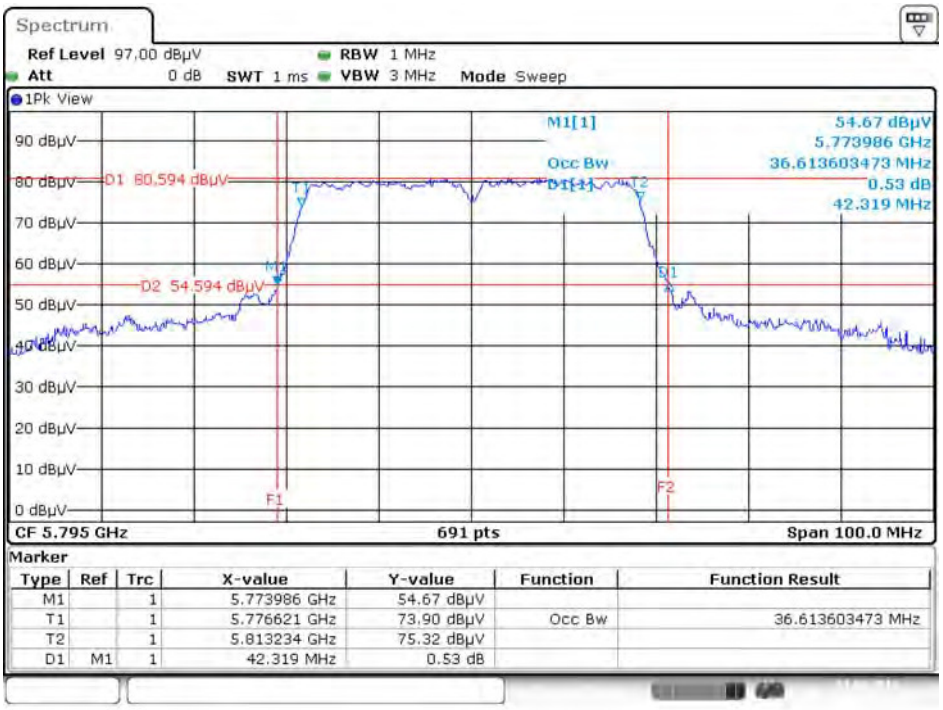
Date: 3.JUN.2016 14:41:46

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



Date: 3.JUN.2016 14:43:23

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



Date: 3.JUN.2016 14:44:02

4.3. 6dB Spectrum Bandwidth Measurement

4.3.1. Limit

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

4.3.2. Measuring Instruments and Setting

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

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

4.3.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

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

4.3.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

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

4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of 6dB Spectrum Bandwidth

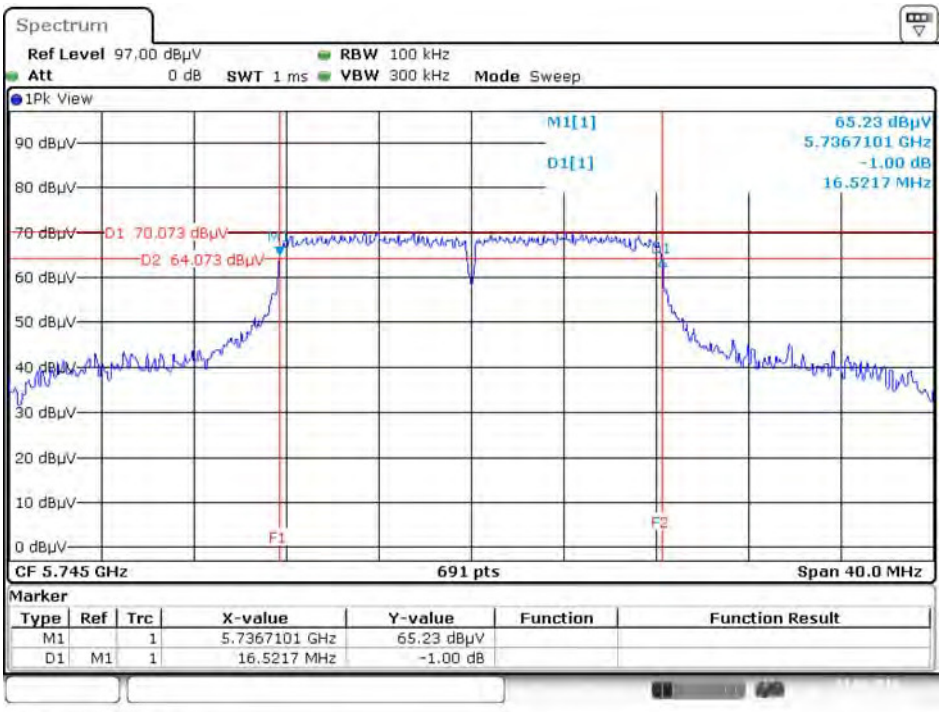
Temperature	25°C	Humidity	65%
Test Engineer	Andy Tsai		

Mode	Frequency	6dB Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	16.52	500	Complies
	5785 MHz	16.52	500	Complies
	5825 MHz	16.52	500	Complies
802.11n MCS0 HT20	5745 MHz	17.74	500	Complies
	5785 MHz	17.74	500	Complies
	5825 MHz	17.74	500	Complies
802.11n MCS0 HT40	5755 MHz	36.41	500	Complies
	5795 MHz	36.41	500	Complies
802.11n MCS8 HT20	5745 MHz	17.74	500	Complies
	5785 MHz	17.74	500	Complies
	5825 MHz	17.74	500	Complies
802.11n MCS8 HT40	5755 MHz	36.41	500	Complies
	5795 MHz	36.41	500	Complies

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

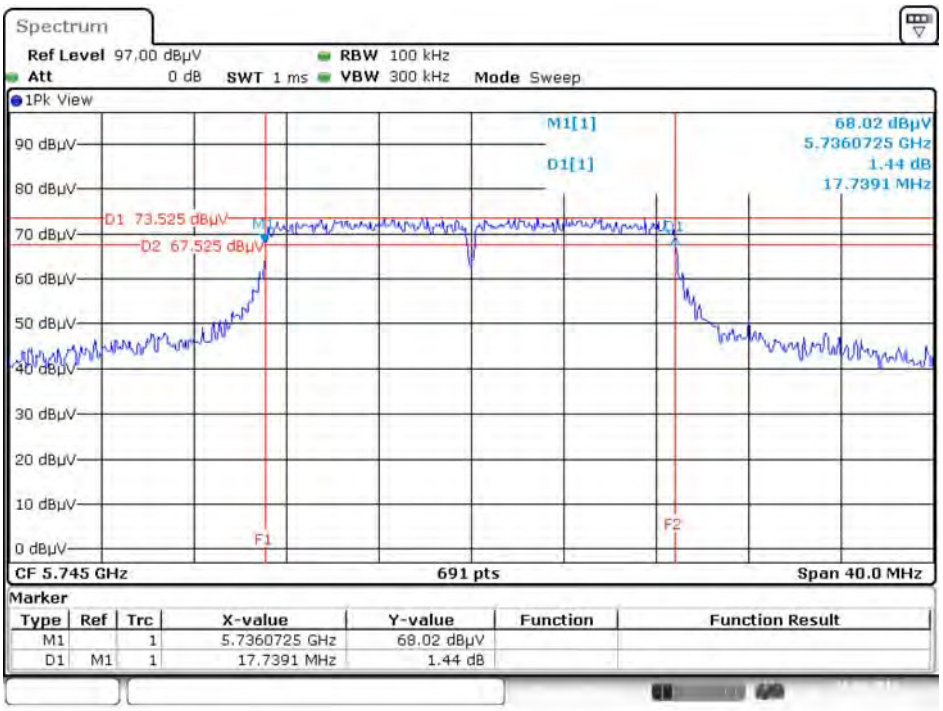
For plots, only the channel with worse result was shown.

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



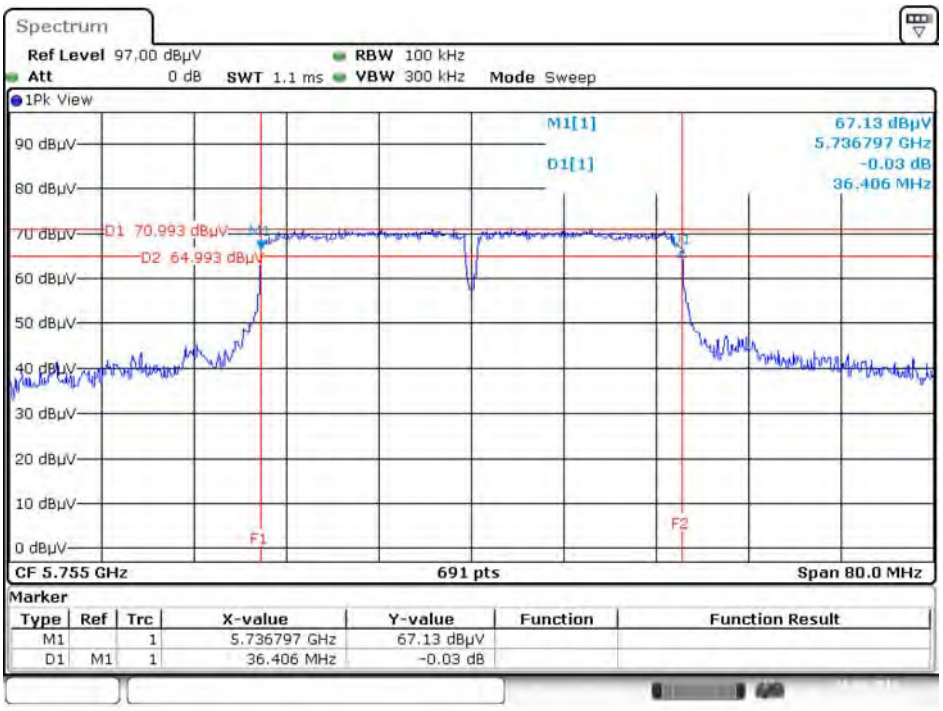
Date: 3.JUN.2016 14:51:08

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 / 5745 MHz



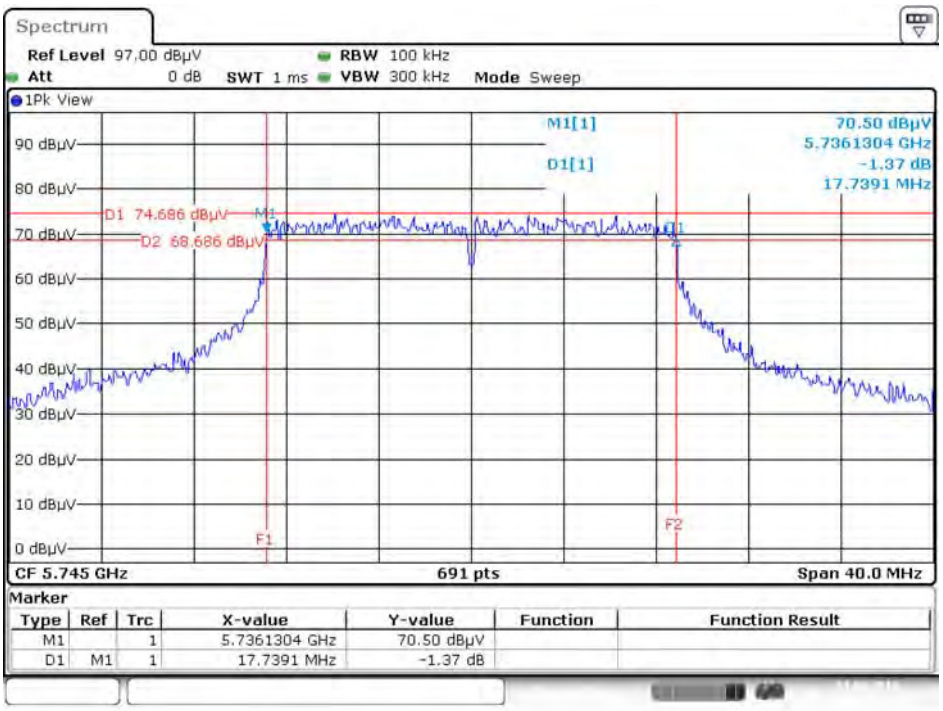
Date: 26.JUN.2016 05:17:44

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 / 5755MHz



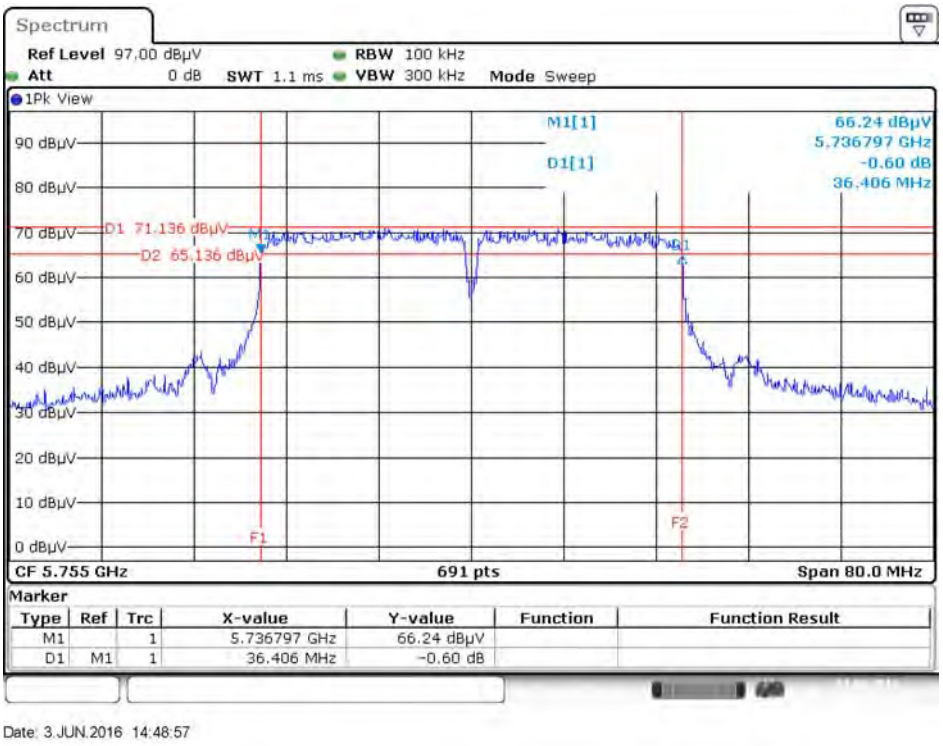
Date: 26.JUN.2016 05:14:51

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



Date: 3.JUN.2016 14:49:35

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



4.4. Maximum Conducted Output Power Measurement

4.4.1. Limit

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

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

4.4.2. Measuring Instruments and Setting

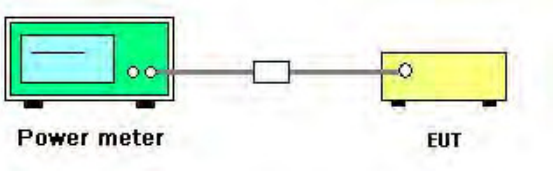
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	AVERAGE

4.4.3. Test Procedures

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

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Maximum Conducted Output Power

Temperature	25°C	Humidity	65%
Test Engineer	Andy Tsai	Test Date	Jun. 03, 2016

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11a	5180 MHz	17.24	-	17.24	30.00	Complies
	5200 MHz	17.25	-	17.25	30.00	Complies
	5240 MHz	17.05	-	17.05	30.00	Complies
	5745 MHz	14.85	-	14.85	30.00	Complies
	5785 MHz	14.65	-	14.65	30.00	Complies
	5825 MHz	14.52	-	14.52	30.00	Complies
802.11n MCS0 HT20	5180 MHz	15.48	-	15.48	30.00	Complies
	5200 MHz	16.57	-	16.57	30.00	Complies
	5240 MHz	16.33	-	16.33	30.00	Complies
	5745 MHz	13.75	-	13.75	30.00	Complies
	5785 MHz	13.62	-	13.62	30.00	Complies
	5825 MHz	13.48	-	13.48	30.00	Complies
802.11n MCS0 HT40	5190 MHz	10.83	-	10.83	30.00	Complies
	5230 MHz	15.98	-	15.98	30.00	Complies
	5755 MHz	13.83	-	13.83	30.00	Complies
	5795 MHz	13.75	-	13.75	30.00	Complies
802.11n MCS8 HT20	5180 MHz	16.32	16.26	19.30	30.00	Complies
	5200 MHz	16.22	16.14	19.19	30.00	Complies
	5240 MHz	16.18	16.12	19.16	30.00	Complies
	5745 MHz	13.65	13.45	16.56	30.00	Complies
	5785 MHz	13.58	13.52	16.56	30.00	Complies
	5825 MHz	13.51	13.48	16.51	30.00	Complies
802.11n MCS8 HT40	5190 MHz	14.43	14.45	17.45	30.00	Complies
	5230 MHz	16.12	16.28	19.21	30.00	Complies
	5755 MHz	13.35	13.52	16.45	30.00	Complies
	5795 MHz	13.25	13.55	16.41	30.00	Complies

4.5. Power Spectral Density Measurement

4.5.1. Limit

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

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

4.5.2. Measuring Instruments and Setting

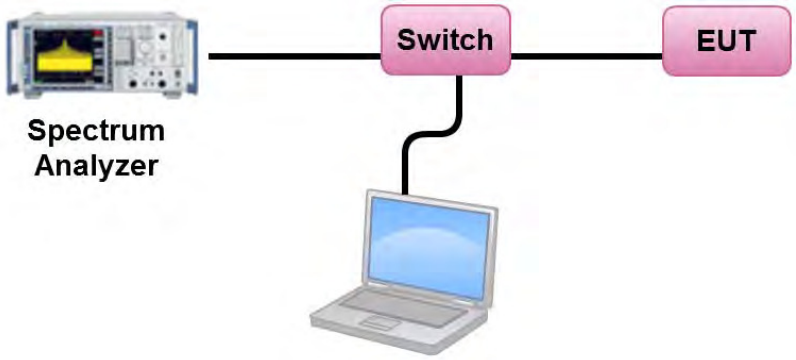
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.5.3. Test Procedures

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

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Power Spectral Density

Temperature	25°C	Humidity	65%
Test Engineer	Andy Tsai		

Configuration IEEE 802.11a / Chain 1

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	4.03	17.00	Complies
40	5200 MHz	4.02	17.00	Complies
48	5240 MHz	3.91	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	1.73	-3.01	-1.28	30.00	Complies
157	5785 MHz	1.48	-3.01	-1.53	30.00	Complies
165	5825 MHz	1.50	-3.01	-1.51	30.00	Complies

Configuration IEEE 802.11n MCS0 HT20 / Chain 1

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	2.20	17.00	Complies
40	5200 MHz	3.32	17.00	Complies
48	5240 MHz	3.06	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	0.55	-3.01	-2.46	30.00	Complies
157	5785 MHz	0.41	-3.01	-2.60	30.00	Complies
165	5825 MHz	0.29	-3.01	-2.72	30.00	Complies

Configuration IEEE 802.11n MCS0 HT40 / Chain 1

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-5.32	17.00	Complies
46	5230 MHz	-0.24	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	-2.38	-3.01	-5.39	30.00	Complies
159	5795 MHz	-2.46	-3.01	-5.47	30.00	Complies

Configuration IEEE 802.11n MCS8 HT20 / Chain 1 + Chain 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	6.22	17.00	Complies
40	5200 MHz	6.04	17.00	Complies
48	5240 MHz	6.07	17.00	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =4.8dBi<6dBi, so the limit doesn't reduce.

Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
149	5745 MHz	3.46	-3.01	0.45	30.00	Complies
157	5785 MHz	3.46	-3.01	0.45	30.00	Complies
165	5825 MHz	3.28	-3.01	0.27	30.00	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =4.8dBi<6dBi, so the limit doesn't reduce.

Configuration IEEE 802.11n MCS8 HT40 / Chain 1 + Chain 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	1.35	17.00	Complies
46	5230 MHz	3.09	17.00	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =4.8dBi<6dBi, so the limit doesn't reduce.

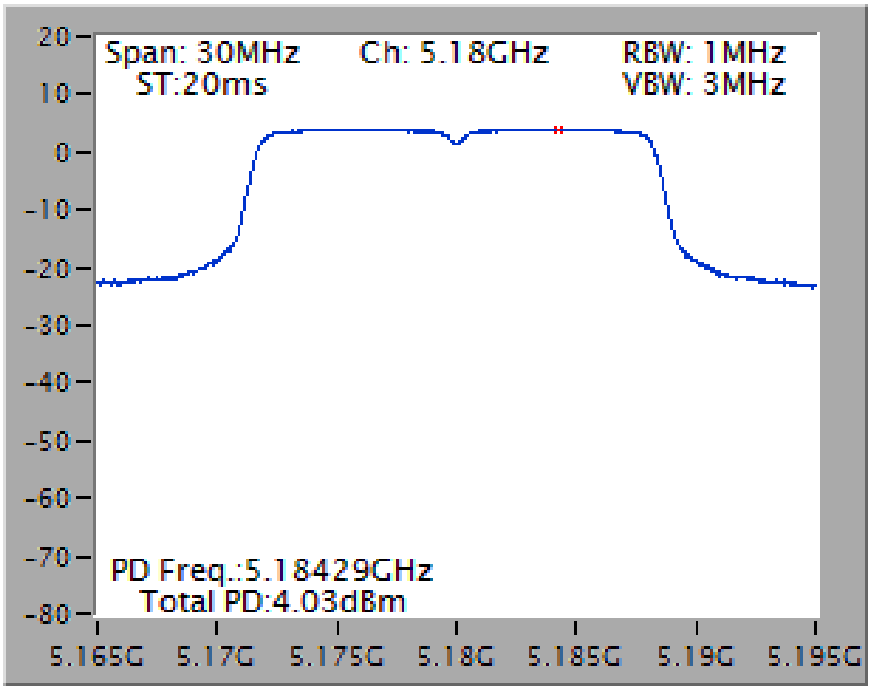
Channel	Frequency	Power Density (dBm/MHz)	10log(500kHz/RBW) Factor (dB)	Power Density (dBm/500kHz)	Power Density Limit (dBm/500kHz)	Result
151	5755 MHz	0.26	-3.01	-2.75	30.00	Complies
159	5795 MHz	0.28	-3.01	-2.73	30.00	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =4.8dBi<6dBi, so the limit doesn't reduce.

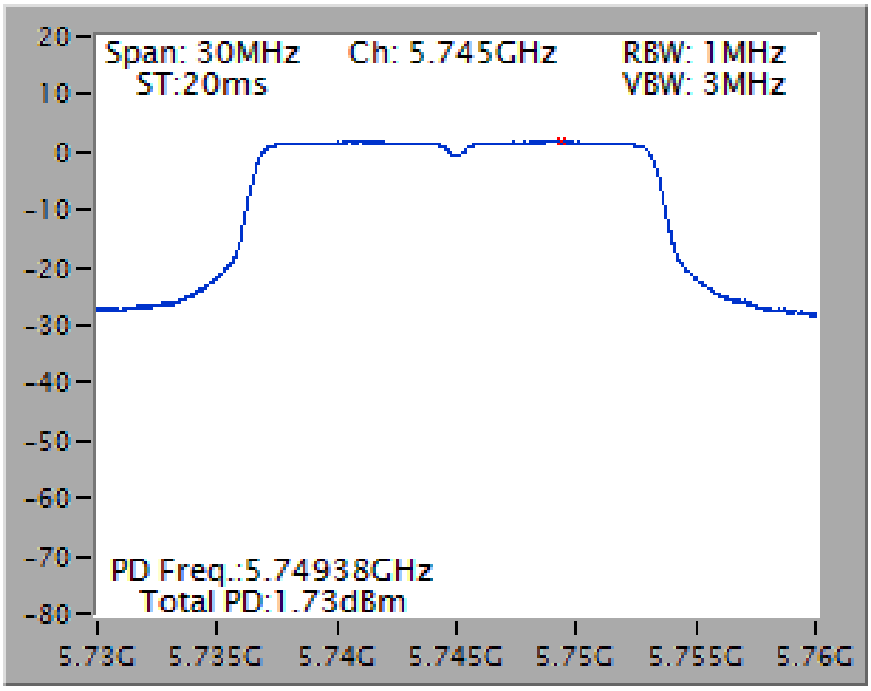
Note: All the test values were listed in the report.

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

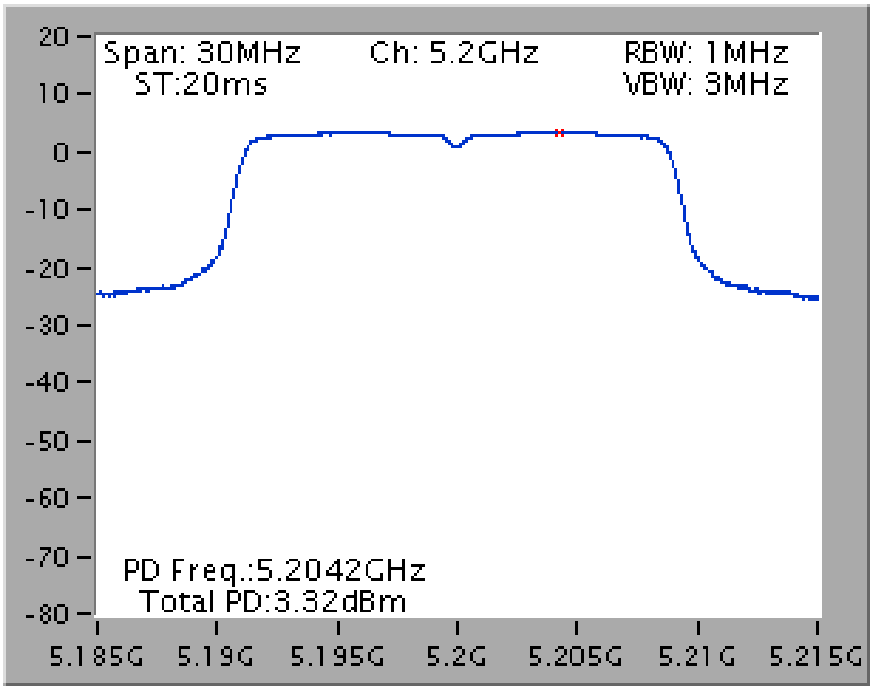
Power Density Plot on Configuration IEEE 802.11a / Chain 1 / 5180 MHz



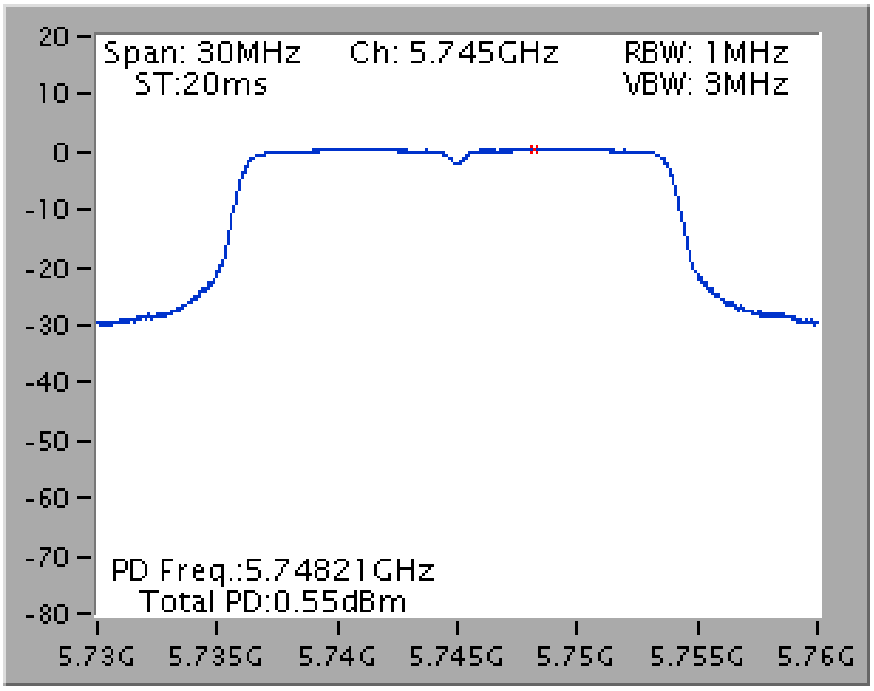
Power Density Plot on Configuration IEEE 802.11a / Chain 1 / 5745 MHz



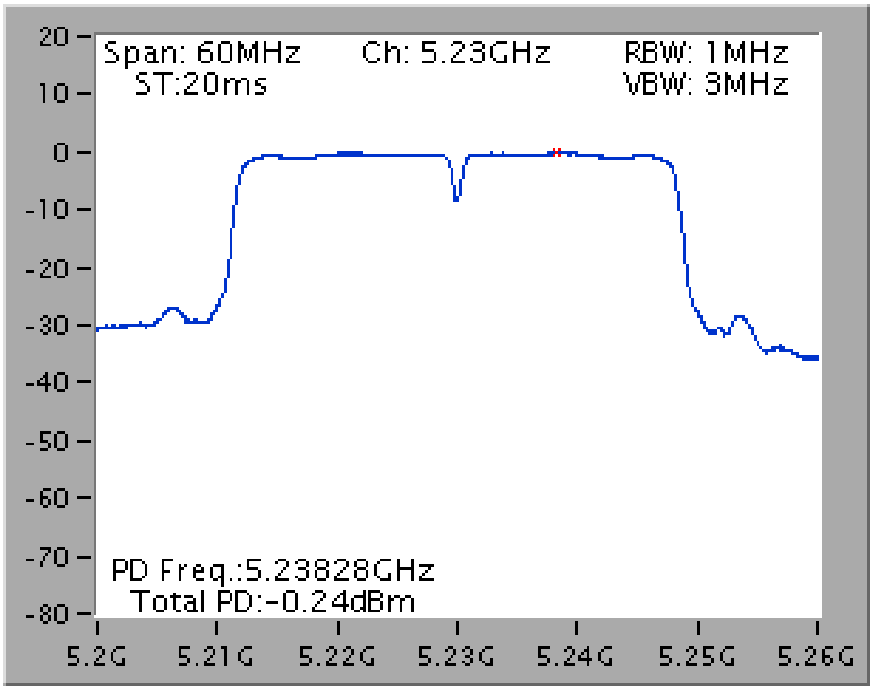
Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 / 5200 MHz



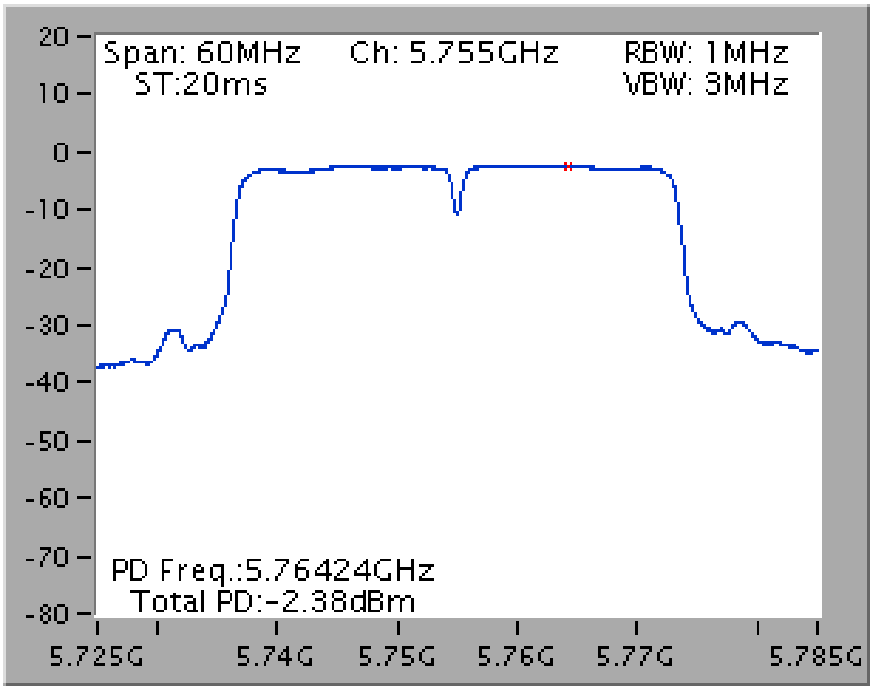
Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 / 5745 MHz



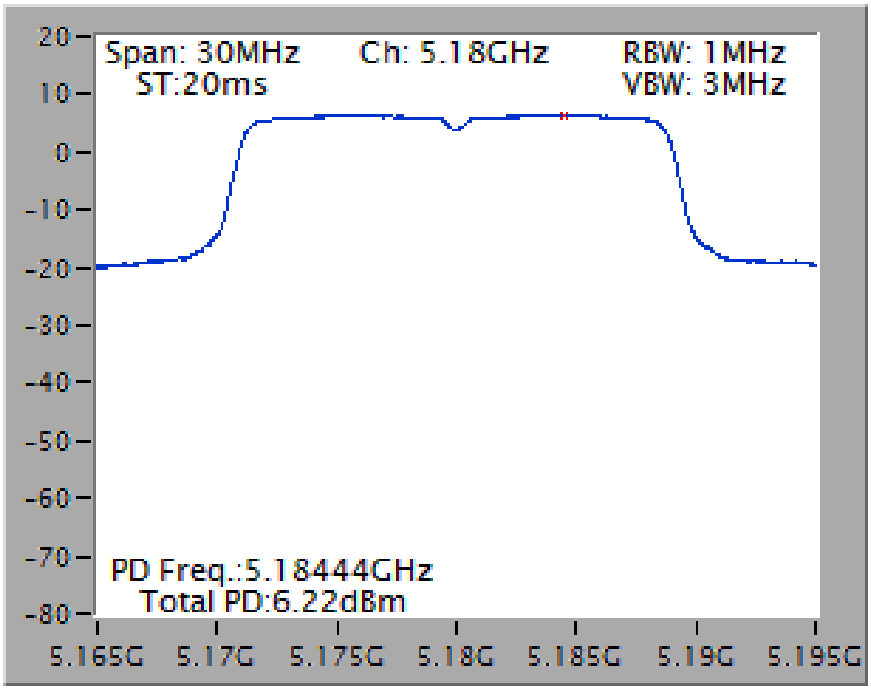
Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 / 5230 MHz



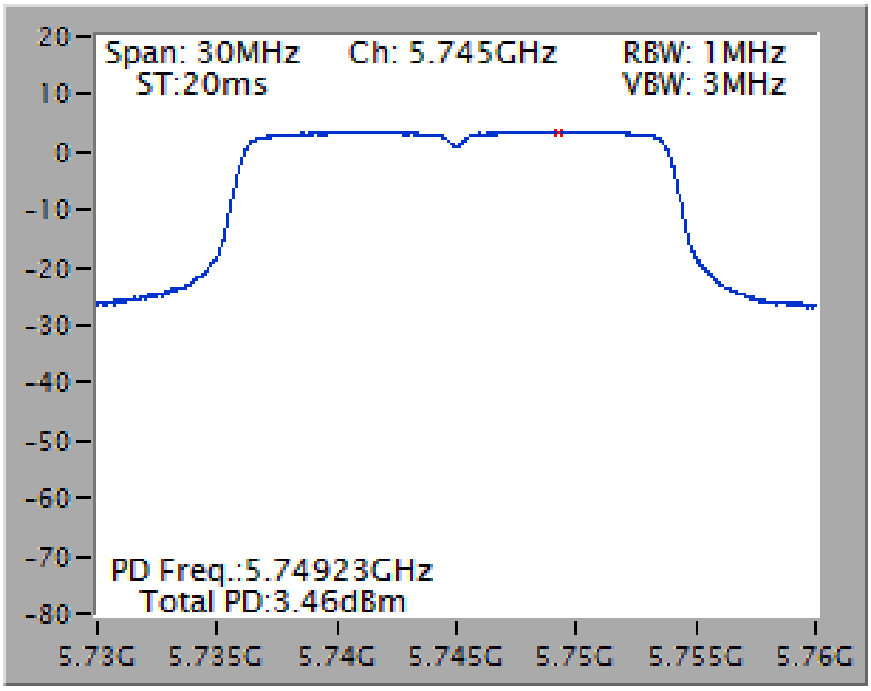
Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 / 5755 MHz



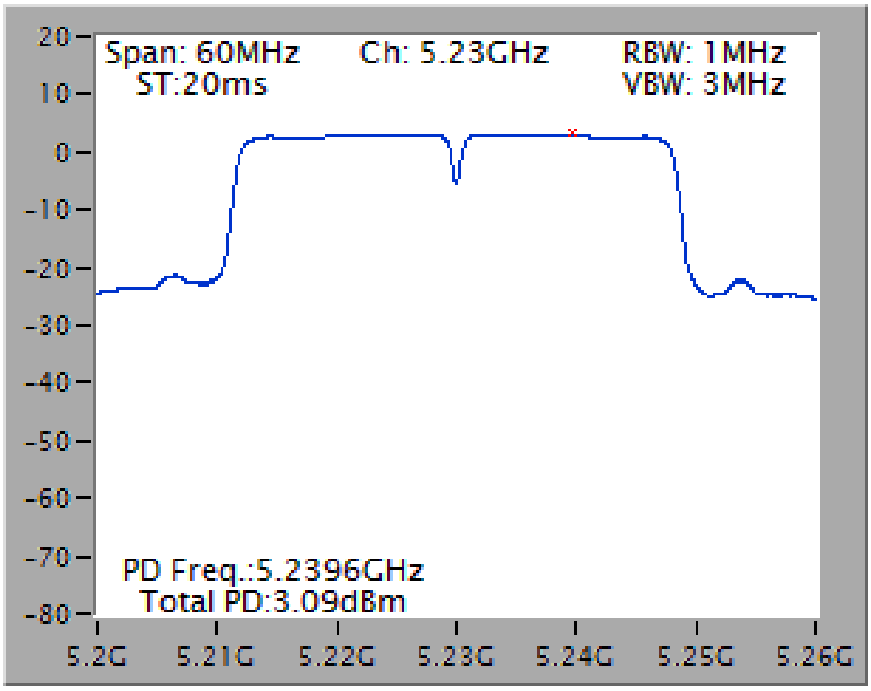
Power Density Plot on Configuration IEEE 802.11n MCS8 HT20 / Chain 1 + Chain 2 / 5180 MHz



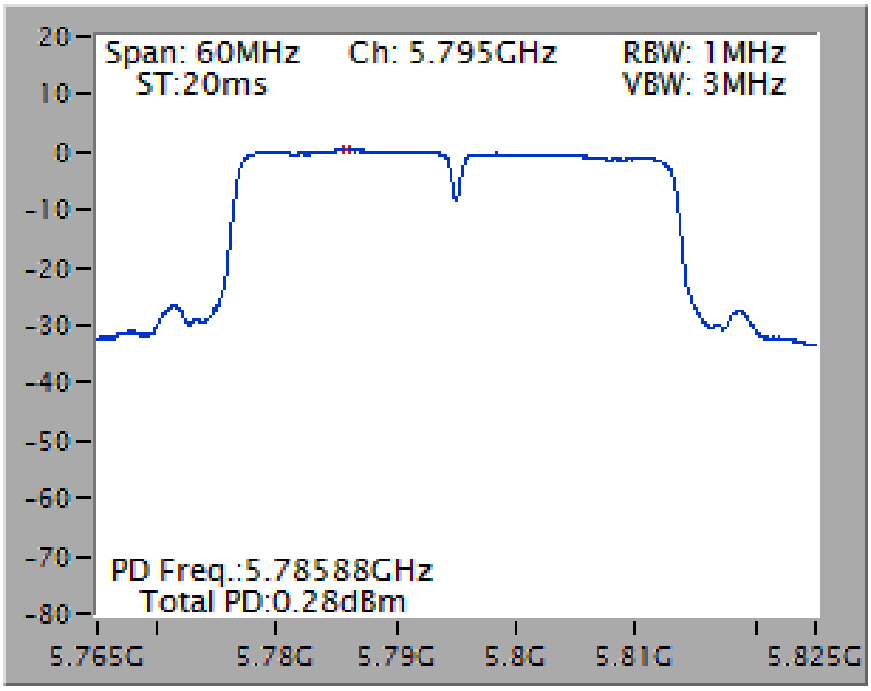
Power Density Plot on Configuration IEEE 802.11n MCS8 HT20 / Chain 1 + Chain 2 / 5745 MHz



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



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



4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.35 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 5.470-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

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

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

4.6.2. Measuring Instruments and Setting

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

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

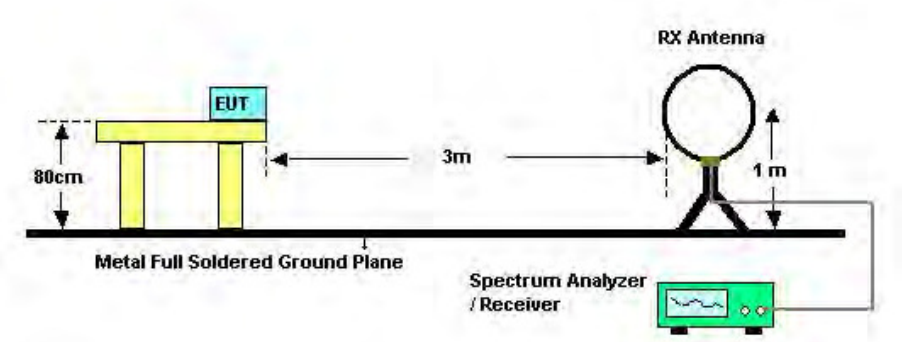
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

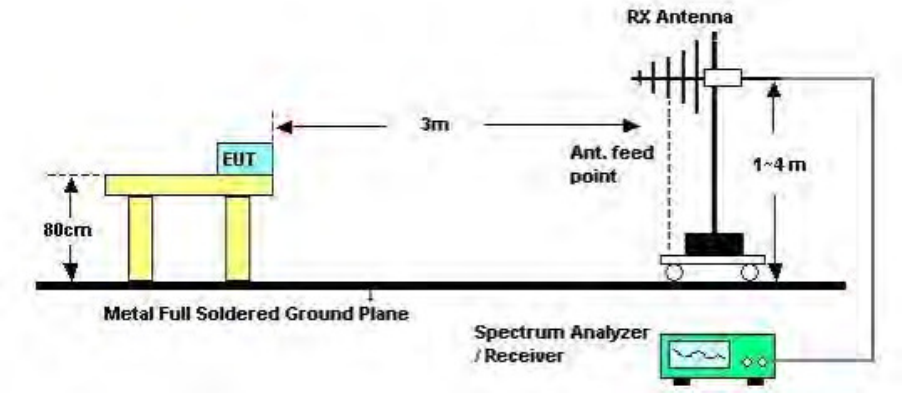
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
8. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
9. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.6.4. Test Setup Layout

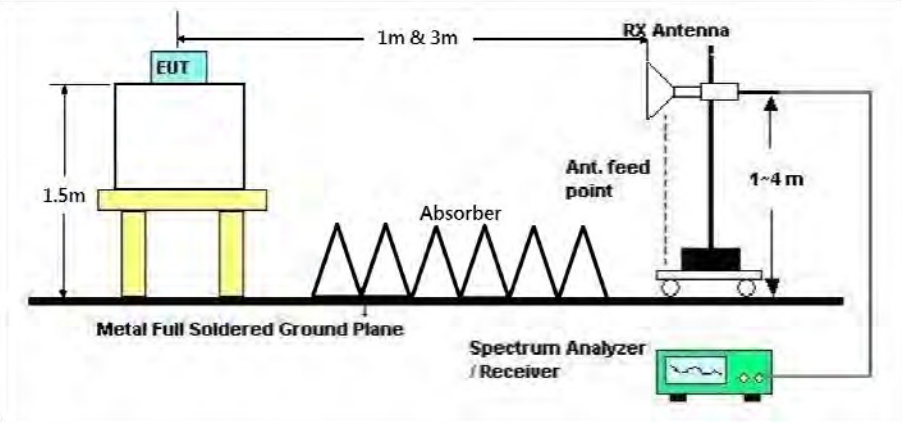
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	Normal Link
Test Date	Jun. 06, 2016		

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

Note:

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

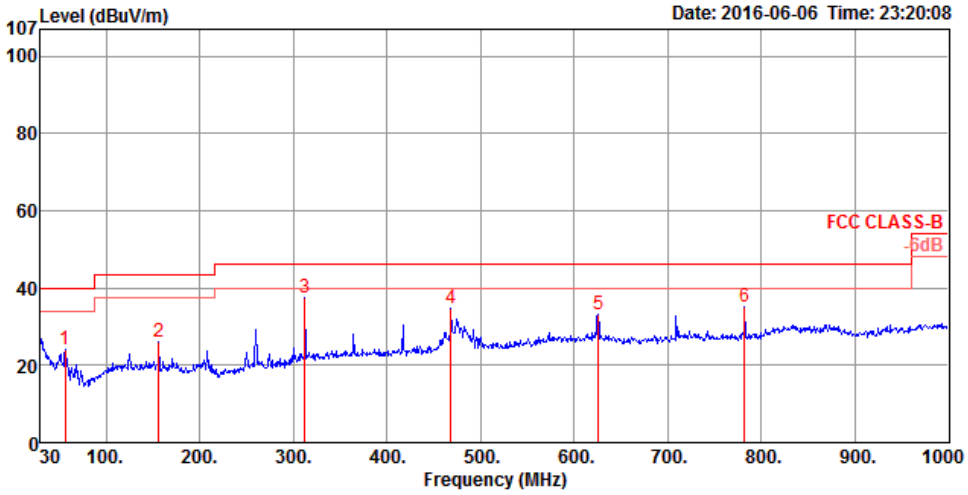
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

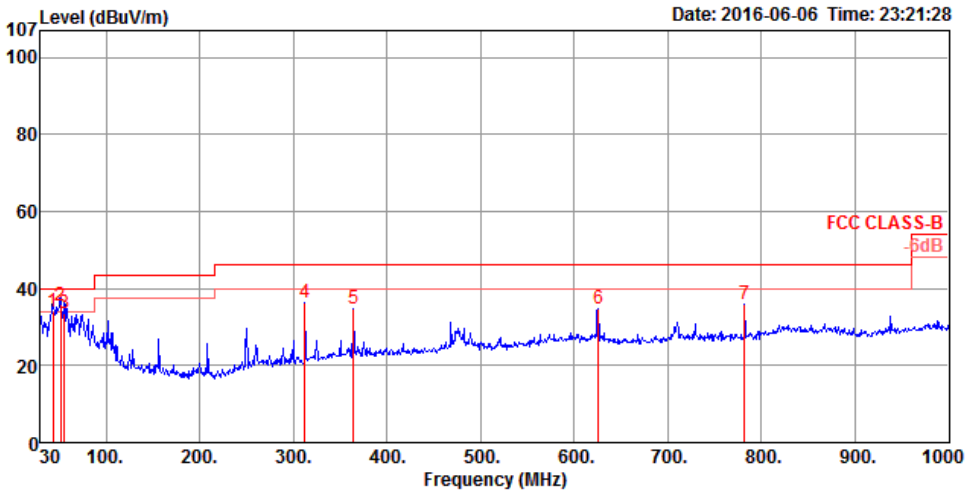
Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	Normal Link

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	56.19	24.02	40.00	-15.98	41.78	0.61	13.40	31.77	100	253	Peak	HORIZONTAL
2	156.10	26.05	43.50	-17.45	40.36	1.00	16.59	31.90	125	68	Peak	HORIZONTAL
3	312.27	37.65	46.00	-8.35	48.30	1.39	19.98	32.02	125	35	Peak	HORIZONTAL
4	468.44	34.78	46.00	-11.22	42.13	1.69	23.22	32.26	100	251	Peak	HORIZONTAL
5	625.58	33.10	46.00	-12.90	38.42	1.97	25.16	32.45	100	101	Peak	HORIZONTAL
6	781.75	34.96	46.00	-11.04	38.88	2.26	26.33	32.51	175	115	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	43.58	34.12	40.00	-5.88	47.50	0.59	17.72	31.69	100	189	QP	VERTICAL
2	51.34	35.55	40.00	-4.45	52.20	0.61	14.50	31.76	100	295	QP	VERTICAL
3	55.22	33.65	40.00	-6.35	51.19	0.61	13.62	31.77	125	229	QP	VERTICAL
4	312.27	36.49	46.00	-9.51	47.14	1.39	19.98	32.02	175	313	Peak	VERTICAL
5	364.65	34.81	46.00	-11.19	43.98	1.48	21.45	32.10	150	323	Peak	VERTICAL
6	625.58	34.94	46.00	-11.06	40.26	1.97	25.16	32.45	100	68	Peak	VERTICAL
7	781.75	35.76	46.00	-10.24	39.68	2.26	26.33	32.51	150	195	Peak	VERTICAL

Note:

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

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

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

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

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11a CH 36 / Chain 1
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15533.20	47.29	54.00	-6.71	29.72	14.67	38.25	35.35	150	181	Average	HORIZONTAL
2	15538.24	62.40	74.00	-11.60	44.83	14.67	38.25	35.35	150	181	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	15536.36	47.48	54.00	-6.52	29.91	14.67	38.25	35.35	150	189	Average	VERTICAL
2	15536.40	61.73	74.00	-12.27	44.16	14.67	38.25	35.35	150	189	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11a CH 40 / Chain 1
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15591.08	47.22	54.00	-6.78	29.70	14.69	38.19	35.36	150	99	Average	HORIZONTAL
2	15599.96	62.72	74.00	-11.28	45.20	14.69	38.19	35.36	150	99	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	15592.92	59.99	74.00	-14.01	42.47	14.69	38.19	35.36	150	129	Peak	VERTICAL
2	15599.40	47.10	54.00	-6.90	29.58	14.69	38.19	35.36	150	129	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11a CH 48 / Chain 1
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15719.92	60.93	74.00	-13.07	43.53	14.75	38.03	35.38	150	150	Peak	HORIZONTAL
2	15725.32	46.96	54.00	-7.04	29.56	14.75	38.03	35.38	150	150	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15719.04	46.98	54.00	-7.02	29.58	14.75	38.03	35.38	150	177	Average	VERTICAL
2	15729.80	59.72	74.00	-14.28	42.32	14.75	38.03	35.38	150	177	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11a CH 149 / Chain 1
Test Date	May 27, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11489.76	44.11	54.00	-9.89	28.41	10.75	39.70	34.75	112	220	Average	HORIZONTAL
2	11490.70	56.72	74.00	-17.28	41.02	10.75	39.70	34.75	112	220	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	11490.16	57.61	74.00	-16.39	41.91	10.75	39.70	34.75	201	326	Peak	VERTICAL
2	11490.30	44.38	54.00	-9.62	28.68	10.75	39.70	34.75	201	326	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11a CH 157 / Chain 1
Test Date	May 27, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11568.38	44.23	54.00	-9.77	28.58	10.76	39.65	34.76	162	111	Average	HORIZONTAL
2	11572.36	57.60	74.00	-16.40	41.95	10.76	39.65	34.76	162	111	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	11570.46	58.03	74.00	-15.97	42.38	10.76	39.65	34.76	132	23	Peak	VERTICAL
2	11572.80	44.17	54.00	-9.83	28.52	10.76	39.65	34.76	132	23	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11a CH 165 / Chain 1
Test Date	May 27, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11649.94	44.97	54.00	-9.03	29.38	10.77	39.59	34.77	194	192	Average	HORIZONTAL
2	11650.62	58.34	74.00	-15.66	42.75	10.77	39.59	34.77	194	192	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	11650.98	57.23	74.00	-16.77	41.67	10.77	39.57	34.78	171	164	Peak	VERTICAL
2	11652.50	44.02	54.00	-9.98	28.46	10.77	39.57	34.78	171	164	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT20 CH 36 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15539.04	44.60	54.00	-9.40	30.07	11.01	38.39	34.87	157	192	Average	HORIZONTAL
2	15540.38	57.34	74.00	-16.66	42.81	11.01	38.39	34.87	157	192	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	15539.63	44.39	54.00	-9.61	29.86	11.01	38.39	34.87	134	193	Average	VERTICAL
2	15539.98	57.02	74.00	-16.98	42.49	11.01	38.39	34.87	134	193	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT20 CH 40 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15599.17	45.10	54.00	-8.90	30.58	11.01	38.38	34.87	137	199	Average	HORIZONTAL
2	15599.44	58.66	74.00	-15.34	44.14	11.01	38.38	34.87	137	199	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	15599.40	44.87	54.00	-9.13	30.35	11.01	38.38	34.87	124	263	Average	VERTICAL
2	15599.90	57.93	74.00	-16.07	43.41	11.01	38.38	34.87	124	263	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT20 CH 48 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15720.15	45.31	54.00	-8.69	30.84	11.01	38.35	34.89	153	58	Average	HORIZONTAL
2	15720.64	59.14	74.00	-14.86	44.67	11.01	38.35	34.89	153	58	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	15720.48	58.60	74.00	-15.40	44.13	11.01	38.35	34.89	172	141	Peak	VERTICAL
2	15720.56	44.75	54.00	-9.25	30.28	11.01	38.35	34.89	172	141	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT20 CH 149 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11489.14	56.42	74.00	-17.58	41.34	10.51	39.20	34.63	197	154	Peak	HORIZONTAL
2	11490.71	44.10	54.00	-9.90	29.02	10.51	39.20	34.63	197	154	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11489.23	57.20	74.00	-16.80	42.12	10.51	39.20	34.63	123	270	Peak	VERTICAL
2	11491.00	44.59	54.00	-9.41	29.51	10.51	39.20	34.63	123	270	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT20 CH 157 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11569.05	55.87	74.00	-18.13	40.86	10.51	39.15	34.65	135	116	Peak	HORIZONTAL
2	11569.46	43.78	54.00	-10.22	28.77	10.51	39.15	34.65	135	116	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11569.24	57.99	74.00	-16.01	42.98	10.51	39.15	34.65	163	208	Peak	VERTICAL
2	11570.00	44.79	54.00	-9.21	29.78	10.51	39.15	34.65	163	208	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT20 CH 165 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11650.09	44.22	54.00	-9.78	29.28	10.51	39.09	34.66	206	306	Average	HORIZONTAL
2	11650.24	57.75	74.00	-16.25	42.81	10.51	39.09	34.66	206	306	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	11650.54	57.64	74.00	-16.36	42.70	10.51	39.09	34.66	172	253	Peak	VERTICAL
2	11650.64	44.44	54.00	-9.56	29.50	10.51	39.09	34.66	172	253	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT40 CH 38 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15569.10	57.44	74.00	-16.56	42.92	11.01	38.38	34.87	117	88	Peak	HORIZONTAL
2	15569.26	44.30	54.00	-9.70	29.78	11.01	38.38	34.87	117	88	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15569.56	58.96	74.00	-15.04	44.44	11.01	38.38	34.87	213	159	Peak	VERTICAL
2	15569.77	45.91	54.00	-8.09	31.39	11.01	38.38	34.87	213	159	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT40 CH 46 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15689.74	44.79	54.00	-9.21	30.30	11.01	38.36	34.88	209	196	Average	HORIZONTAL
2	15689.91	57.73	74.00	-16.27	43.24	11.01	38.36	34.88	209	196	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	15689.84	44.71	54.00	-9.29	30.22	11.01	38.36	34.88	240	259	Average	VERTICAL
2	15690.16	57.33	74.00	-16.67	42.84	11.01	38.36	34.88	240	259	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT40 CH 151 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11509.50	44.68	54.00	-9.32	29.61	10.51	39.20	34.64	214	224	Average	HORIZONTAL
2	11509.64	57.92	74.00	-16.08	42.85	10.51	39.20	34.64	214	224	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	11512.06	43.87	54.00	-10.13	28.80	10.51	39.20	34.64	261	277	Average	VERTICAL
2	11512.80	56.45	74.00	-17.55	41.38	10.51	39.20	34.64	261	277	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT40 CH 159 / Chain 1
Test Date	Jun. 13, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11589.80	43.87	54.00	-10.13	28.90	10.51	39.12	34.66	109	145	Average	HORIZONTAL
2	11590.98	57.28	74.00	-16.72	42.31	10.51	39.12	34.66	109	145	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	11589.19	57.87	74.00	-16.13	42.90	10.51	39.12	34.66	163	58	Peak	VERTICAL
2	11589.87	44.93	54.00	-9.07	29.96	10.51	39.12	34.66	163	58	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT20 CH 36 / Chain 1 + Chain 2
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15538.52	47.39	54.00	-6.61	29.82	14.67	38.25	35.35	150	127	Average	HORIZONTAL
2	15543.00	59.79	74.00	-14.21	42.22	14.67	38.25	35.35	150	127	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	15530.32	60.60	74.00	-13.40	43.03	14.67	38.25	35.35	150	146	Peak	VERTICAL
2	15538.64	47.21	54.00	-6.79	29.64	14.67	38.25	35.35	150	146	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT20 CH 40/ Chain 1 + Chain 2
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15603.32	59.75	74.00	-14.25	42.26	14.71	38.14	35.36	150	165	Peak	HORIZONTAL
2	15606.88	46.96	54.00	-7.04	29.47	14.71	38.14	35.36	150	165	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15597.88	46.90	54.00	-7.10	29.38	14.69	38.19	35.36	150	206	Average	VERTICAL
2	15604.44	60.66	74.00	-13.34	43.17	14.71	38.14	35.36	150	206	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT20 CH 48 / Chain 1 + Chain 2
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15714.32	46.78	54.00	-7.22	29.38	14.75	38.03	35.38	150	300	Average	HORIZONTAL
2	15728.16	59.58	74.00	-14.42	42.18	14.75	38.03	35.38	150	300	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	15720.16	46.86	54.00	-7.14	29.46	14.75	38.03	35.38	150	183	Average	VERTICAL
2	15724.64	59.57	74.00	-14.43	42.17	14.75	38.03	35.38	150	183	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT20 CH 149 / Chain 1 + Chain 2
Test Date	May 27, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11490.00	44.25	54.00	-9.75	28.55	10.75	39.70	34.75	129	124	Average	HORIZONTAL
2	11490.50	56.98	74.00	-17.02	41.28	10.75	39.70	34.75	129	124	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	11490.28	44.18	54.00	-9.82	28.48	10.75	39.70	34.75	109	99	Average	VERTICAL
2	11490.48	57.80	74.00	-16.20	42.10	10.75	39.70	34.75	109	99	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT20 CH 157 / Chain 1 + Chain 2
Test Date	May 27, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.70	57.28	74.00	-16.72	41.63	10.76	39.65	34.76	139	128	Peak	HORIZONTAL
2	11571.98	44.21	54.00	-9.79	28.56	10.76	39.65	34.76	139	128	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11570.14	58.25	74.00	-15.75	42.60	10.76	39.65	34.76	172	149	Peak	VERTICAL
2	11572.46	44.49	54.00	-9.51	28.84	10.76	39.65	34.76	172	149	Average	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT20 CH 165 / Chain 1 + Chain 2
Test Date	May 27, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11650.84	45.52	54.00	-8.48	29.96	10.77	39.57	34.78	254	187	Average	HORIZONTAL
2	11650.96	58.38	74.00	-15.62	42.82	10.77	39.57	34.78	254	187	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	11649.64	44.54	54.00	-9.46	28.95	10.77	39.59	34.77	291	213	Average	VERTICAL
2	11650.76	57.07	74.00	-16.93	41.51	10.77	39.57	34.78	291	213	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT40 CH 38 / Chain 1 + Chain 2
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15561.44	60.24	74.00	-13.76	42.72	14.69	38.19	35.36	150	137	Peak	HORIZONTAL
2	15571.60	47.33	54.00	-6.67	29.81	14.69	38.19	35.36	150	137	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15561.44	47.05	54.00	-6.95	29.53	14.69	38.19	35.36	150	113	Average	VERTICAL
2	15563.84	60.50	74.00	-13.50	42.98	14.69	38.19	35.36	150	113	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT40 CH 46 / Chain 1 + Chain 2
Test Date	Mar. 30, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15681.72	46.69	54.00	-7.31	29.25	14.73	38.08	35.37	150	244	Average	HORIZONTAL
2	15690.36	60.88	74.00	-13.12	43.44	14.73	38.08	35.37	150	244	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	15691.80	46.70	54.00	-7.30	29.29	14.75	38.03	35.37	150	209	Average	VERTICAL
2	15691.88	59.76	74.00	-14.24	42.35	14.75	38.03	35.37	150	209	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT40 CH 151 / Chain 1 + Chain 2
Test Date	May 27, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11510.24	57.66	74.00	-16.34	41.96	10.75	39.70	34.75	168	128	Peak	HORIZONTAL
2	11510.50	44.17	54.00	-9.83	28.47	10.75	39.70	34.75	168	128	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11510.42	44.24	54.00	-9.76	28.54	10.75	39.70	34.75	111	57	Average	VERTICAL
2	11510.64	57.71	74.00	-16.29	42.01	10.75	39.70	34.75	111	57	Peak	VERTICAL

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT40 CH 159 / Chain 1 + Chain 2
Test Date	May 27, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11590.68	57.59	74.00	-16.41	41.98	10.76	39.62	34.77	110	248	Peak	HORIZONTAL
2	11592.68	44.67	54.00	-9.33	29.06	10.76	39.62	34.77	110	248	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11589.44	44.31	54.00	-9.69	28.70	10.76	39.62	34.77	143	269	Average	VERTICAL
2	11590.08	57.13	74.00	-16.87	41.52	10.76	39.62	34.77	143	269	Peak	VERTICAL

Note:

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

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

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

4.7. Band Edge Emissions Measurement

4.7.1. Limit

For transmitters operating in the 5.15-5.35 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 5.470-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

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

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

4.7.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for Peak

4.7.3. Test Procedures

The test procedure is the same as section 4.6.3.

4.7.4. Test Setup Layout

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

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 1
Test Date	Mar. 29, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.20	63.03	74.00	-10.97	55.77	8.68	31.52	32.94	261	80	Peak	VERTICAL
2	5149.80	48.70	54.00	-5.30	41.44	8.68	31.52	32.94	261	80	Average	VERTICAL
3	5173.60	105.69			98.40	8.68	31.55	32.94	261	80	Peak	VERTICAL
4	5174.80	96.31			89.02	8.68	31.55	32.94	261	80	Average	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5127.60	59.96	74.00	-14.04	52.70	8.69	31.51	32.94	231	143	Peak	VERTICAL
2	5130.00	47.22	54.00	-6.78	39.96	8.69	31.51	32.94	231	143	Average	VERTICAL
3	5203.20	96.02			88.70	8.69	31.57	32.94	231	143	Average	VERTICAL
4	5203.60	105.06			97.74	8.69	31.57	32.94	231	143	Peak	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5140.80	47.12	54.00	-6.88	39.86	8.69	31.51	32.94	254	80	Average	VERTICAL
2	5142.00	59.08	74.00	-14.92	51.82	8.68	31.52	32.94	254	80	Peak	VERTICAL
3	5233.60	105.92			98.57	8.70	31.59	32.94	254	80	Peak	VERTICAL
4	5237.20	96.73			89.38	8.70	31.59	32.94	254	80	Average	VERTICAL

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

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11a CH 149, 157, 165 / Chain 1
Test Date	May 27, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5501.00	61.47	68.20	-6.73	53.42	7.77	35.20	34.92	214	124	Peak	VERTICAL
2	5581.00	60.76	68.20	-7.44	52.56	7.91	35.22	34.93	214	124	Peak	VERTICAL
3	5747.00	97.67			89.59	7.77	35.25	34.94	214	124	Average	VERTICAL
4	5748.00	106.90			98.82	7.77	35.25	34.94	214	124	Peak	VERTICAL
5	5948.00	60.01	68.20	-8.19	51.72	7.97	35.29	34.97	214	124	Peak	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5607.00	60.18	68.20	-8.02	51.95	7.94	35.22	34.93	213	128	Peak	VERTICAL
2	5779.00	106.02			97.98	7.73	35.26	34.95	213	128	Peak	VERTICAL
3	5788.00	96.73			88.69	7.73	35.26	34.95	213	128	Average	VERTICAL
4	5939.00	60.85	68.20	-7.35	52.58	7.94	35.29	34.96	213	128	Peak	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5633.00	60.28	68.20	-7.92	52.08	7.90	35.23	34.93	207	126	Peak	VERTICAL
2	5827.00	96.62			88.53	7.77	35.27	34.95	207	126	Peak	VERTICAL
3	5828.00	105.70			97.61	7.77	35.27	34.95	207	126	Peak	VERTICAL
4	5987.00	61.20	68.20	-7.00	52.85	8.02	35.30	34.97	207	126	Peak	VERTICAL

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

Temperature	24℃	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT20 CH 36, 40, 48 / Chain 1
Test Date	Jun. 13, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.40	72.03	74.00	-1.97	63.92	7.88	33.17	32.94	205	143	Peak	VERTICAL
2	5150.00	52.55	54.00	-1.45	44.44	7.88	33.17	32.94	205	143	Average	VERTICAL
3	5185.60	103.87			95.66	7.91	33.23	32.93	205	143	Average	VERTICAL
4	5186.00	113.70			105.49	7.91	33.23	32.93	205	143	Peak	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5111.60	60.74	74.00	-13.26	52.76	7.84	33.09	32.95	219	145	Peak	VERTICAL
2	5150.00	48.76	54.00	-5.24	40.65	7.88	33.17	32.94	219	145	Average	VERTICAL
3	5196.80	113.70			105.46	7.92	33.25	32.93	219	145	Peak	VERTICAL
4	5205.20	103.66			95.39	7.92	33.28	32.93	219	145	Average	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5093.00	61.76	74.00	-12.24	53.82	7.83	33.06	32.95	226	143	Peak	VERTICAL
2	5139.20	48.28	54.00	-5.72	40.20	7.87	33.15	32.94	226	143	Average	VERTICAL
3	5237.00	103.67			95.34	7.91	33.34	32.92	226	143	Average	VERTICAL
4	5237.00	113.85			105.52	7.91	33.34	32.92	226	143	Peak	VERTICAL
5	5380.40	61.09	74.00	-12.91	52.53	7.87	33.58	32.89	226	143	Peak	VERTICAL
6	5389.40	47.89	54.00	-6.11	39.30	7.87	33.61	32.89	226	143	Average	VERTICAL

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

Temperature	24℃	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT20 CH 149, 157, 165 / Chain 1
Test Date	Jun. 13, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5627.00	63.40	68.20	-4.80	53.65	8.46	34.17	32.88	211	157	Peak	VERTICAL
2	5739.00	101.32			91.29	8.42	34.50	32.89	211	157	Average	VERTICAL
3	5740.00	110.70			100.67	8.42	34.50	32.89	211	157	Peak	VERTICAL
4	5980.00	63.19	68.20	-5.01	52.60	8.36	35.15	32.92	211	157	Peak	VERTICAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5577.00	63.13	68.20	-5.07	53.56	8.42	34.03	32.88	249	98	Peak	HORIZONTAL
2	5788.00	86.73			76.63	8.41	34.59	32.90	249	98	Average	HORIZONTAL
3	5788.00	95.99			85.89	8.41	34.59	32.90	249	98	Peak	HORIZONTAL
4	5968.00	62.93	68.20	-5.27	52.37	8.37	35.11	32.92	249	98	Peak	HORIZONTAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5627.00	63.71	68.20	-4.49	53.96	8.46	34.17	32.88	200	158	Peak	VERTICAL
2	5830.00	98.63			88.41	8.39	34.73	32.90	200	158	Average	VERTICAL
3	5831.00	107.89			97.67	8.39	34.73	32.90	200	158	Peak	VERTICAL
4	6067.00	64.94	68.20	-3.26	53.99	8.59	35.29	32.93	200	158	Peak	VERTICAL

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

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT40 CH 38, 46 / Chain 1
Test Date	Jun. 13, 2016		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5150.00	52.53	54.00	-1.47	44.42	7.88	33.17	32.94	207	141	Average	VERTICAL
2	5150.00	67.11	74.00	-6.89	59.00	7.88	33.17	32.94	207	141	Peak	VERTICAL
3	5188.20	95.34			87.10	7.92	33.25	32.93	207	141	Average	VERTICAL
4	5188.20	105.04			96.80	7.92	33.25	32.93	207	141	Peak	VERTICAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5150.00	52.52	54.00	-1.48	44.41	7.88	33.17	32.94	223	140	Average	VERTICAL
2	5150.00	71.14	74.00	-2.86	63.03	7.88	33.17	32.94	223	140	Peak	VERTICAL
3	5233.00	112.63			104.30	7.91	33.34	32.92	223	140	Peak	VERTICAL
4	5238.40	102.25			93.92	7.91	33.34	32.92	223	140	Average	VERTICAL

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

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS0 HT40 CH 151, 159 / Chain 1
Test Date	Jun. 13, 2016		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5589.00	62.94	68.20	-5.26	53.37	8.42	34.03	32.88	203	146	Peak	VERTICAL
2	5745.00	98.15			88.12	8.42	34.50	32.89	203	146	Average	VERTICAL
3	5747.00	107.43			97.41	8.42	34.50	32.90	203	146	Peak	VERTICAL
4	5960.00	62.56	68.20	-5.64	52.00	8.37	35.11	32.92	203	146	Peak	VERTICAL

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

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5630.00	63.41	68.20	-4.79	53.66	8.46	34.17	32.88	251	102	Peak	HORIZONTAL
2	5785.00	83.58			73.48	8.41	34.59	32.90	251	102	Average	HORIZONTAL
3	5787.00	93.01			82.91	8.41	34.59	32.90	251	102	Peak	HORIZONTAL
4	5979.00	62.10	68.20	-6.10	51.51	8.36	35.15	32.92	251	102	Peak	HORIZONTAL

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

Temperature	24℃	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT20 CH 36, 40, 48 / Chain 1 + Chain 2
Test Date	Mar. 29, 2016		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5147.40	47.78	54.00	-6.22	40.52	8.68	31.52	32.94	271	0	Average	VERTICAL
2	5150.00	60.93	74.00	-13.07	53.67	8.68	31.52	32.94	271	0	Peak	VERTICAL
3	5173.40	105.78			98.49	8.68	31.55	32.94	271	0	Peak	VERTICAL
4	5184.60	95.42			88.13	8.68	31.55	32.94	271	0	Average	VERTICAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5103.60	47.23	54.00	-6.77	40.00	8.69	31.48	32.94	218	143	Average	VERTICAL
2	5128.80	59.33	74.00	-14.67	52.07	8.69	31.51	32.94	218	143	Peak	VERTICAL
3	5198.00	106.01			98.71	8.68	31.56	32.94	218	143	Peak	VERTICAL
4	5204.80	96.13			88.81	8.69	31.57	32.94	218	143	Average	VERTICAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5144.80	46.89	54.00	-7.11	39.63	8.68	31.52	32.94	268	350	Average	VERTICAL
2	5149.20	58.11	74.00	-15.89	50.85	8.68	31.52	32.94	268	350	Peak	VERTICAL
3	5235.60	106.57			99.22	8.70	31.59	32.94	268	350	Peak	VERTICAL
4	5244.80	96.29			88.93	8.70	31.59	32.93	268	350	Average	VERTICAL

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

Temperature	24℃	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT20 CH 149, 157, 165 / Chain 1 + Chain 2
Test Date	May 27, 2016		

Channel 149

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5619.00	59.81	68.20	-8.39	51.60	7.92	35.22	34.93	170	264	Peak	HORIZONTAL
2	5742.00	95.87			87.79	7.77	35.25	34.94	170	264	Average	HORIZONTAL
3	5747.00	107.01			98.93	7.77	35.25	34.94	170	264	Peak	HORIZONTAL
4	5941.00	60.71	68.20	-7.49	52.44	7.94	35.29	34.96	170	264	Peak	HORIZONTAL

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

Channel 157

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5627.00	60.10	68.20	-8.10	51.90	7.90	35.23	34.93	201	126	Peak	VERTICAL
2	5781.00	94.54			86.50	7.73	35.26	34.95	201	126	Average	VERTICAL
3	5781.00	105.31			97.27	7.73	35.26	34.95	201	126	Peak	VERTICAL
4	5931.00	59.70	68.20	-8.50	51.43	7.94	35.29	34.96	201	126	Peak	VERTICAL

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

Channel 165

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5638.00	60.25	68.20	-7.95	52.05	7.90	35.23	34.93	180	268	Peak	HORIZONTAL
2	5819.00	94.95			86.90	7.74	35.26	34.95	180	268	Average	HORIZONTAL
3	5828.00	106.43			98.34	7.77	35.27	34.95	180	268	Peak	HORIZONTAL
4	5957.00	61.76	68.20	-6.44	53.47	7.97	35.29	34.97	180	268	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT40 CH 38, 46 / Chain 1 + Chain 2
Test Date	Mar. 30, 2016		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5147.60	66.56	74.00	-7.44	59.30	8.68	31.52	32.94	219	143	Peak	VERTICAL
2	5150.00	52.90	54.00	-1.10	45.64	8.68	31.52	32.94	219	143	Average	VERTICAL
3	5199.20	92.52			85.22	8.68	31.56	32.94	219	143	Average	VERTICAL
4	5200.40	102.76			95.46	8.68	31.56	32.94	219	143	Peak	VERTICAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5138.80	47.37	54.00	-6.63	40.11	8.69	31.51	32.94	268	360	Average	VERTICAL
2	5144.40	59.69	74.00	-14.31	52.43	8.68	31.52	32.94	268	360	Peak	VERTICAL
3	5231.20	103.73			96.40	8.69	31.58	32.94	268	360	Peak	VERTICAL
4	5239.20	93.37			86.02	8.70	31.59	32.94	268	360	Average	VERTICAL

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

Temperature	24°C	Humidity	67%
Test Engineer	Charlie Cheng / Akina Chiu / Stim Sung / Peter Wu	Configurations	IEEE 802.11n MCS8 HT40 CH 151, 159 / Chain 1 + Chain 2
Test Date	May 27, 2016		

Channel 151

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5626.00	59.73	68.20	-8.47	51.53	7.90	35.23	34.93	223	5	Peak	VERTICAL
2	5746.00	92.13			84.05	7.77	35.25	34.94	223	5	Average	VERTICAL
3	5746.00	102.02			93.94	7.77	35.25	34.94	223	5	Peak	VERTICAL
4	5955.00	60.59	68.20	-7.61	52.30	7.97	35.29	34.97	223	5	Peak	VERTICAL

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

Channel 159

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5623.00	59.59	68.20	-8.61	51.38	7.92	35.22	34.93	175	268	Peak	HORIZONTAL
2	5784.00	92.73			84.69	7.73	35.26	34.95	175	268	Average	HORIZONTAL
3	5785.00	103.88			95.84	7.73	35.26	34.95	175	268	Peak	HORIZONTAL
4	5945.00	60.39	68.20	-7.81	52.10	7.97	35.29	34.97	175	268	Peak	HORIZONTAL

Item 2, 3 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

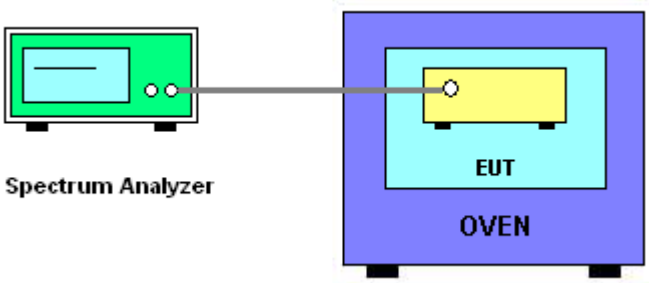
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 -30°C~50°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	65%
Test Engineer	Andy Tsai	Test Date	Jun. 03, 2016

Mode: 20 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9755	5199.9753	5199.9748	5199.9738
110.00	5199.9748	5199.9742	5199.9736	5199.9734
93.50	5199.9745	5199.9744	5199.9735	5199.9733
Max. Deviation (MHz)	0.0255	0.0258	0.0265	0.0267
Max. Deviation (ppm)	4.90	4.96	5.09	5.13
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5199.9702	5199.9701	5199.9692	5199.9684
-20	5199.9712	5199.9710	5199.9709	5199.9706
-10	5199.9720	5199.9718	5199.9713	5199.9707
0	5199.9733	5199.9727	5199.9724	5199.9716
10	5199.9737	5199.9730	5199.9723	5199.9722
20	5199.9748	5199.9742	5199.9741	5199.9732
30	5199.9757	5199.9750	5199.9743	5199.9733
40	5199.9765	5199.9758	5199.9751	5199.9743
50	5199.9771	5199.9767	5199.9763	5199.9762
Max. Deviation (MHz)	0.0298	0.0299	0.0308	0.0316
Max. Deviation (ppm)	5.73	5.75	5.92	6.07
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5784.9758	5784.9757	5784.9751	5784.9747
110.00	5784.9748	5784.9739	5784.9738	5784.9728
93.50	5784.9745	5784.9744	5784.9741	5784.9737
Max. Deviation (MHz)	0.0255	0.0261	0.0262	0.0272
Max. Deviation (ppm)	4.40	4.51	4.53	4.70
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5785 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5784.9663	5784.9660	5784.9655	5784.9648
-20	5784.9682	5784.9673	5784.9671	5784.9667
-10	5784.9701	5784.9698	5784.9689	5784.9686
0	5784.9714	5784.9707	5784.9705	5784.9700
10	5784.9730	5784.9726	5784.9721	5784.9720
20	5784.9748	5784.9746	5784.9740	5784.9739
30	5784.9757	5784.9752	5784.9745	5784.9743
40	5784.9763	5784.9759	5784.9751	5784.9746
50	5784.9773	5784.9769	5784.9759	5784.9757
Max. Deviation (MHz)	0.0337	0.0340	0.0345	0.0352
Max. Deviation (ppm)	5.82	5.87	5.96	6.08
Result	Complies			

Mode: 40 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9758	5189.9749	5189.9747	5189.9738
110.00	5189.9748	5189.9739	5189.9737	5189.9730
93.50	5189.9743	5189.9742	5189.9732	5189.9731
Max. Deviation (MHz)	0.0257	0.0261	0.0268	0.0270
Max. Deviation (ppm)	4.95	5.03	5.16	5.20
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5189.9706	5189.9699	5189.9694	5189.9688
-20	5189.9719	5189.9716	5189.9710	5189.9708
-10	5189.9732	5189.9729	5189.9719	5189.9716
0	5189.9734	5189.9726	5189.9721	5189.9717
10	5189.9740	5189.9736	5189.9731	5189.9725
20	5189.9748	5189.9739	5189.9729	5189.9724
30	5189.9757	5189.9755	5189.9751	5189.9744
40	5189.9775	5189.9772	5189.9764	5189.9756
50	5189.9790	5189.9782	5189.9774	5189.9769
Max. Deviation (MHz)	0.0294	0.0301	0.0306	0.0312
Max. Deviation (ppm)	5.66	5.80	5.89	6.01
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5754.9756	5754.9752	5754.9747	5754.9741
110.00	5754.9748	5754.9747	5754.9737	5754.9734
93.50	5754.9746	5754.9740	5754.9732	5754.9725
Max. Deviation (MHz)	0.0254	0.0260	0.0268	0.0275
Max. Deviation (ppm)	4.41	4.51	4.65	4.77
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5755 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-30	5754.9685	5754.9683	5754.9673	5754.9672
-20	5754.9704	5754.9695	5754.9686	5754.9677
-10	5754.9720	5754.9712	5754.9706	5754.9700
0	5754.9725	5754.9718	5754.9709	5754.9699
10	5754.9741	5754.9731	5754.9723	5754.9721
20	5754.9748	5754.9738	5754.9733	5754.9732
30	5754.9757	5754.9752	5754.9746	5754.9737
40	5754.9770	5754.9765	5754.9759	5754.9753
50	5754.9789	5754.9787	5754.9785	5754.9784
Max. Deviation (MHz)	0.0315	0.0317	0.0327	0.0328
Max. Deviation (ppm)	5.47	5.50	5.68	5.70
Result	Complies			

4.9. Antenna Requirements

4.9.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.9.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 2016	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 24, 2016	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
BILOG ANTENNA	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-l0-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

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

"*" Calibration Interval of instruments listed above is two years.

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

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%