HCT CO.,LTD
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEL: +82-31-645-6300 FAX: +82-31-645-6401

FCC UNII REPORT

FCC Certification

Applicant Name:
LG Electronics MobileComm U.S.A., Inc.

Address:
1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Issue:
October 14, 2015
Test Site/Location:
HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of Korea
Report No.: HCT-R-1510-F008
HCT FRN: 0005866421
IC Recognition No.: 5944A-5

FCC ID :ZNFH815PX

APPLICANT :LG Electronics MobileComm U.S.A., Inc.

FCC Model(s): LG-H815PX
FCC Additional Model(s): LGH815PX, H815PX, LG-H815Px, LGH815Px, H815Px, LG-H815pX, LGH815pX, H815pX, LG-H815px, LGH815px, H815px

EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC

Max. RF Output Power(Average):

Band	Mode	Channel Bandwidth (MHz)	Frequency Range (MHz)	Power (dBm)
UNII 1	802.11a	20	5180 – 5240	12.53 dBm
	802.11n	20	5180 – 5240	12.52 dBm
	802.11n	40	5190 - 5230	10.49 dBm
	802.11ac	20	5180 – 5240	12.65 dBm
	802.11ac	40	5190 - 5230	10.50 dBm
	802.11ac	80	5210	11.46 dBm
UNII 2A	802.11a	20	5260 – 5320	12.46 dBm
	802.11n	20	5260 – 5320	12.50 dBm
	802.11n	40	5270 – 5310	10.50 dBm
	802.11ac	20	5260 – 5320	12.54 dBm
	802.11ac	40	5270 – 5310	10.50 dBm
	802.11ac	80	5290	12.00 dBm
UNII2C	802.11a	20	5500 – 5720	12.66 dBm
	802.11n	20	5500 – 5720	12.67 dBm
	802.11n	40	5510 – 5710	10.50 dBm
	802.11ac	20	5500 – 5720	12.68 dBm
	802.11ac	40	5510 – 5710	10.41 dBm
	802.11ac	80	5530 – 5690	12.00 dBm
UNII3	802.11a	20	5745 – 5825	12.43 dBm
	802.11n	20	5745 – 5825	12.43 dBm
	802.11n	40	5755 – 5795	10.40 dBm
	802.11ac	20	5745 – 5825	12.30 dBm
	802.11ac	40	5755 – 5795	10.25 dBm
	802.11ac	80	5775	12.00 dBm

Modulation type OFDM
FCC Classification: Unlicensed National Information Infrastructure(UNII)

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

Note: The device, LG-H815PX (FCC ID: ZNFH815PX) is electrically identical compare to LG-H815 (FCC ID: ZNFH815), and there is no hardware change. Simply enable software to WCDMA Band4. So, we will reuse the data of model LG-H815 (FCC ID: ZNFH815) test result.

Report prepared by **: Kyung Soo Kang** **Test engineer of RF Team**	**Approved by** **: Sang Jun Lee** **Manager of RF Team**

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1510-F008	October 14, 2015	- First Approval Report

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1. GENERAL INFORMATION

Applicant:	LG Electronics MobileComm U.S.A., Inc
Address:	1000 Sylvan Avenue, Englewood Cliffs NJ 07632
FCC ID:	ZNFH815PX
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC
FCC Model name(s):	LG-H815PX
FCC Additional Model name(s):	LGH815PX, H815PX, LG-H815Px, LGH815Px, H815Px, LG-H815pX, LGH815pX, H815pX, LG-H815px, LGH815px, H815px
Date(s) of Tests:	March 27, 2015 ~ April 06, 2015
Place of Tests:	HCT Co., Ltd. 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea. (IC Recognition No. : 5944A-5)

2. EUT DESCRIPTION

FCC/ IC Model Name	LG-H815PX	
FCC/IC Additional Model Name	LGH815PX, H815PX, LG-H815Px, LGH815Px, H815Px, LG-H815pX, LGH815pX, H815pX, LG-H815px, LGH815px, H815px	
EUT Type	Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	
Power Supply	DC 3.8 V	
Frequency Range	TX_20 MHz BW:	5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2A)/ 5500 MHz - 5720 MHz (UNII 2C)/ 5745 MHz - 5825 MHz (UNII 3)
	40 MHz BW:	5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2A)/ 5510 MHz - 5710 MHz (UNII 2C) / 5755 MHz - 5795 MHz (UNII 3)
	80 MHz BW:	5210 MHz(UNII 1)/ 5290 MHz(UNII 2A)/ 5530 MHz - 5690 MHz(UNII 2C)/ 5775 MHz (UNII 3)
	RX_20 MHz BW:	5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2A)/ 5500 MHz - 5720 MHz (UNII 2C)/ 5745 MHz - 5825 MHz (UNII 3)
	40 MHz BW:	5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2A)/ 5510 MHz - 5710 MHz (UNII 2C) / 5755 MHz - 5795 MHz (UNII 3)
	80 MHz BW:	5210 MHz(UNII 1)/ 5290 MHz(UNII 2A)/ 5530 MHz - 5690 MHz(UNII 2C)/ 5775 MHz (UNII 3)
Modulation Type	OFDM(802.11a, 802.11n, 802.11ac)	
Antenna Specification	Manufacturer: Koma-tech.com Antenna type:FPCB Antenna Peak Gain : -0.55 dBi (5180~5240 UNII1 BAND) / -0.48 dBi (5260~5320 UNII2A BAND) 0.65 dBi (5500~5620 UNII2C BAND) / 0.08 dBi (5745~5825 UNII3 BAND)	

3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D02 General UNII Test Procedures New Rules v01 dated June 06, 2014 entitled " Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part15, Subpart E" and the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) were used in the measurement. For 802.11ac, KDB644545 D03 v01 dated August 14, 2014 measurement.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version :2003) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version: 2003)

Conducted Antenna Terminal

See Section from 8.1 to 8.4.(KDB 789033)

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low, mid and high with highest data rate (worst case) is chosen for full testing.

4. INSTRUMENT CALIBRATION

The. measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2003) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated February 28, 2014 (Registration Number: 90661)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203, §15.407

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 antennas of this E.U.T are permanently attached.

* The E.U.T Complies with the requirement of §15.203, §15.407

7. SUMMARY OF TEST RESULTS

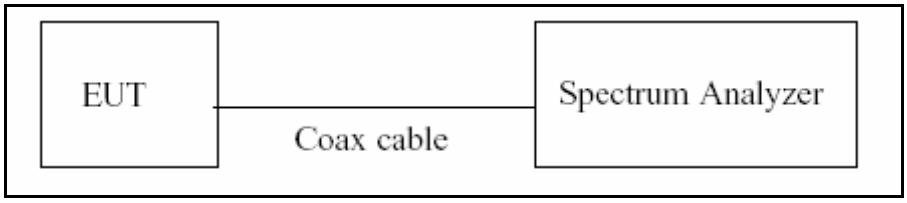
Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26dB Bandwidth	§15.407 (for Power Measurement)	N/A	CONDUCTED	PASS
6 dB Bandwidth	§15.407(e)	>500 kHz (5725-5850 MHz)		
Maximum Conducted Output Power	§15.407(a)(1)	< 250 mW (5150-5250 MHz) < 250 mW or 11+10 log log $_{10}$ (BW) dBm (5250-5350 MHz) < 250 mW or 11+10 log log $_{10}$ (BW) dBm (5470-5725 MHz) <1 W (5725-5850 MHz)		PASS
Peak Power Spectral Density	§15.407(a)(1),(5)	<11 dBm/ MHz (5150-5250 MHz) <11 dBm/ MHz (5250-5350 MHz) <11 dBm/ MHz (5470-5725 MHz) <30 dBm/500 kHz(5725-5850 MHz)		PASS
Frequency Stability	§15.407(g)	NA		PASS
AC Conducted Emissions 150 kHz-30 MHz	15.207	<FCC 15.207 limits		PASS
Undesirable Emissions	§15.407(b)	<-27 dBm/MHz EIRP (UNII1, 2A, 2C) <-17 dBm/MHz EIRP within 5715-5725 MHz and 5850-5860 MHz (UNII3) <-27 dBm/MHz EIRP outside 5715-5860 MHz (UNII 3)	RADIATED	PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	15.205, 15.407(b)(5), (6)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS

8. TEST RESULT

8.1 DUTY CYCLE

The zero-span mode on a spectrum analyzer or EMI receiver ,if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/*T*, where *T* is defined in section B)1)a), and the number of sweep points across duration *T* exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if *T* ≤ 16.7 microseconds.)

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. We tested according to the zero-span measurement method, (B.2 in KDB 789033 D02, issued 06/06/2014)
The largest availble value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if T ≤ 6.25 microseconds. (50/6.25 = 8)
The zero-span method was used becaure all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/*T*.

1. RBW = 8 MHz (the largest availble value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10*log(1/Duty Cycle)

▣ **Duty Cycle Factor**

Mode	Data Rate	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11a	6	2.058	2.167	0.94970005	0.224
	9	1.367	1.483	0.92178018	0.354
	12	1.038	1.146	0.90575916	0.430
	18	0.702	0.807	0.86988848	0.605
	24	0.528	0.633	0.83412322	0.788
	36	0.364	0.467	0.77944325	1.082
	48	0.275	0.378	0.72751323	1.382
	54	0.247	0.351	0.70370370	1.526
802.11n_HT20	6.5	1.910	2.020	0.94554455	0.243
	13	0.970	1.080	0.89814815	0.467
	19.5	0.655	0.765	0.85620915	0.674
	26	0.504	0.610	0.82622951	0.829
	39	0.348	0.452	0.76991150	1.136
	52	0.268	0.374	0.71657754	1.447
	58.5	0.244	0.350	0.69714286	1.567
	65	0.226	0.330	0.68484848	1.644
802.11n_HT40	13.5	0.942	1.046	0.90057361	0.455
	27	0.490	0.592	0.82770270	0.821
	40.5	0.338	0.442	0.76470588	1.165
	54	0.262	0.366	0.71584699	1.452
	81	0.186	0.290	0.64137931	1.929
	108	0.151	0.253	0.59683794	2.241
	121.5	0.139	0.240	0.57916667	2.372
	135	0.127	0.228	0.55701754	2.541

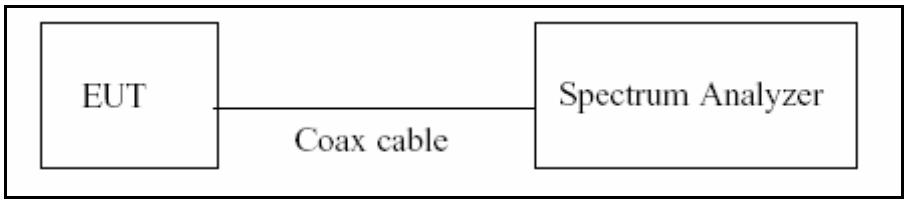
Mode	Data Rate	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ac_VHT20	6.5	1.921	2.034	0.94444444	0.248
	13	0.986	1.092	0.90293040	0.443
	19.5	0.668	0.774	0.86304910	0.640
	26	0.512	0.618	0.82847896	0.817
	39	0.354	0.458	0.77292576	1.119
	52	0.278	0.382	0.72774869	1.380
	58.5	0.250	0.354	0.70621469	1.511
	65	0.228	0.334	0.68263473	1.658
	78	0.198	0.302	0.65562914	1.833
802.11ac_VHT40	13.5	0.950	1.054	0.90132827	0.451
	27	0.494	0.598	0.82608696	0.830
	40.5	0.340	0.444	0.76576577	1.159
	54	0.266	0.370	0.71891892	1.433
	81	0.190	0.293	0.64846416	1.881
	108	0.154	0.256	0.60156250	2.207
	121.5	0.142	0.245	0.57959184	2.369
	135	0.131	0.233	0.56223176	2.501
	162	0.115	0.217	0.52995392	2.758
	180	0.111	0.213	0.52112676	2.831
802.11ac_VHT80	29.3	0.458	0.561	0.81639929	0.881
	58.5	0.251	0.353	0.71104816	1.481
	87.8	0.179	0.281	0.63701068	1.959
	117	0.146	0.249	0.58634538	2.318
	175.5	0.111	0.213	0.52112676	2.831
	234	0.095	0.197	0.48223350	3.167
	263.3	0.087	0.189	0.46031746	3.369
	292.5	0.083	0.184	0.45108696	3.457
	351	0.075	0.177	0.42372881	3.729
	390	0.071	0.173	0.41040462	3.868

8.2 EMISSION BANDWIDTH AND MINIMUM EMISSION BANDWIDTH MEASUREMENT

The bandwidth at 26 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033 D02(issued 06/06/2014), at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26 dB bandwidth and 6 dB bandwidth.

The 26 dB bandwidth is used to determine the conducted power limits.
The 6 dB bandwidth is at least 500 kHz.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE(26 dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.
The Spectrum Analyzer is set to(C.1 in KDB 789033 D02, issued 06/06/2014)

1. RBW = approximately 1 % of the emission bandwidth
2. VBW > RBW
3. Detector = Peak
4. Trace mode = max hold
5. 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 %.

Note : We tested 26 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 26 dB.

▣ TEST PROCEDURE (for the band 5.725-5.85 GHz, 6 dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to(C.2 in KDB 789033 D02, issued 06/06/2014)

1. RBW = 100 kHz
2. VBW ≥ 3*RBW
3. Detector = Peak
4. Trace mode = max hold
5. Allow the trace to stabilize
6. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points(upper and lower frequencies) that are attenuated by 6 dB relative to the maximum lever measured in the fundamental emission.

Note : We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

Conducted 26 dB Bandwidth

▣ TEST RESULTS for 802.11a_20MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	21.617	N/A	Pass
5200	40	21.606	N/A	Pass
5240	48	21.505	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	21.583	N/A	Pass
5300	60	21.620	N/A	Pass
5320	64	21.557	N/A	Pass

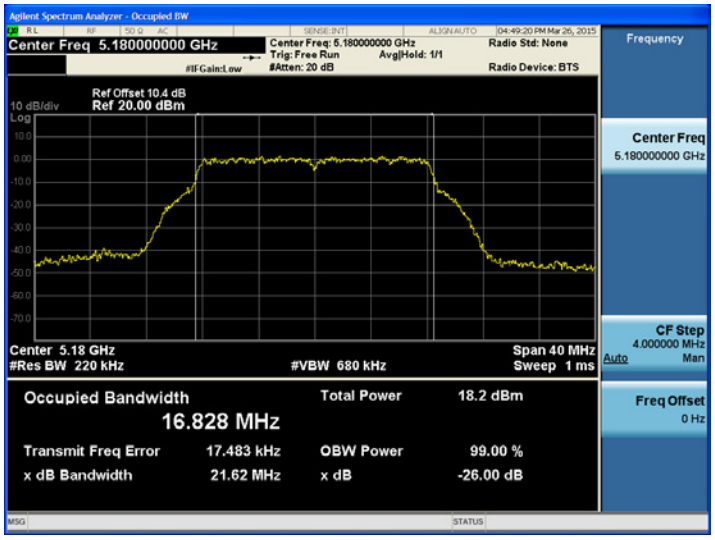
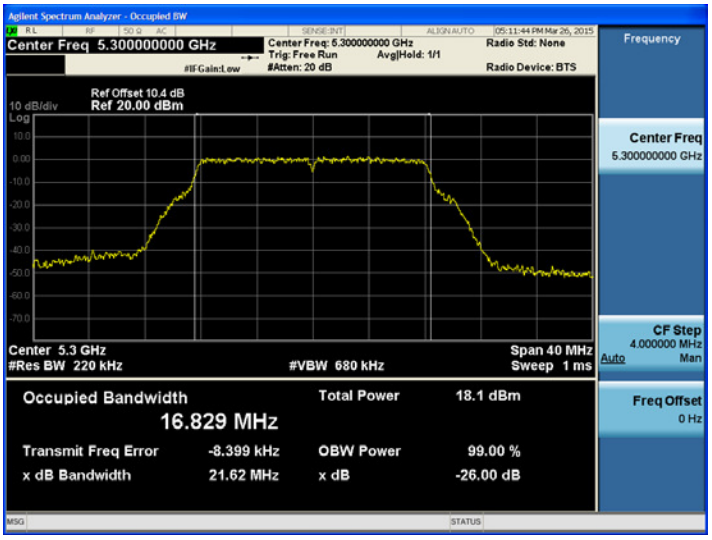
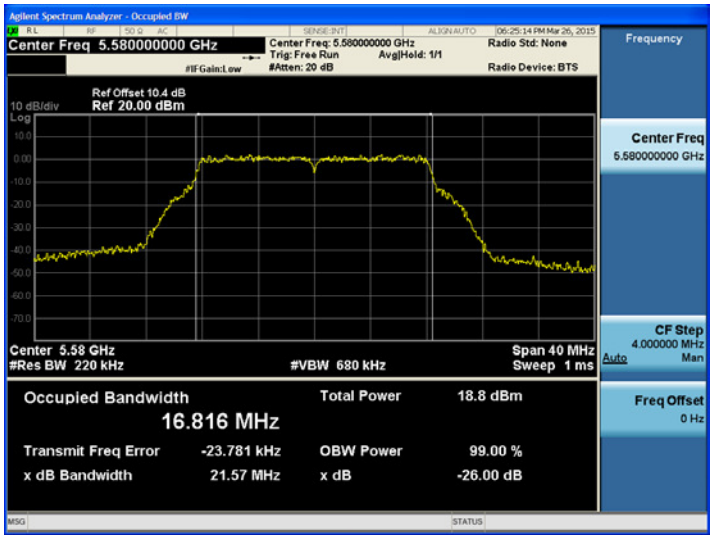
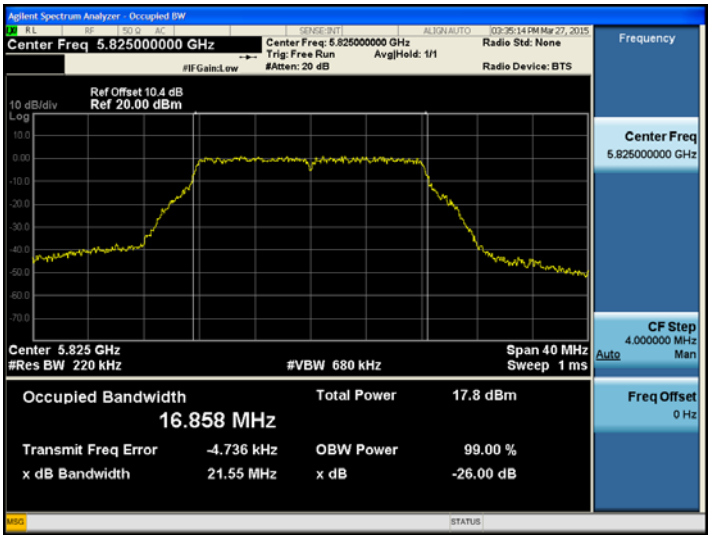
Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	21.509	N/A	Pass
5580	116	21.572	N/A	Pass
5720	144	21.480	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	21.544	N/A	Pass
5785	157	21.445	N/A	Pass
5825	165	21.549	N/A	Pass

▣ TEST Plot for 802.11a _20MHz BW

802.11a UNII 1 BAND 26dB Bandwidth	802.11a UNII 2A BAND 26dB Bandwidth
	
802.11a UNII 2C BAND 26dB Bandwidth	**802.11a UNII 3 BAND 26dB Bandwidth**
	

Note :

In order to simplify the report, attached plots were only the most wide channel.

▣ TEST RESULTS for 802.11n _20MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	21.693	N/A	Pass
5200	40	21.713	N/A	Pass
5240	48	21.900	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	21.653	N/A	Pass
5300	60	21.666	N/A	Pass
5320	64	21.693	N/A	Pass

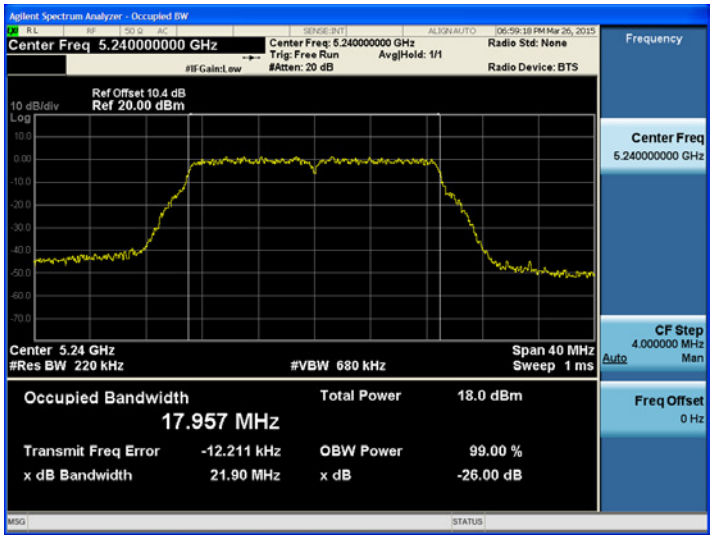
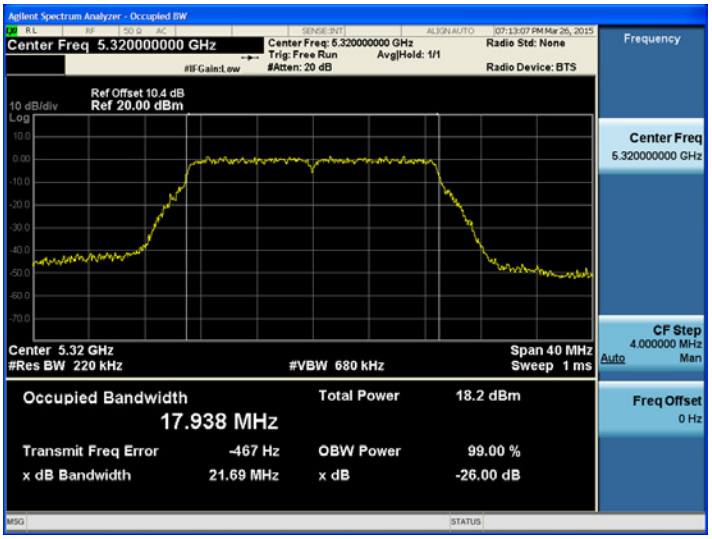
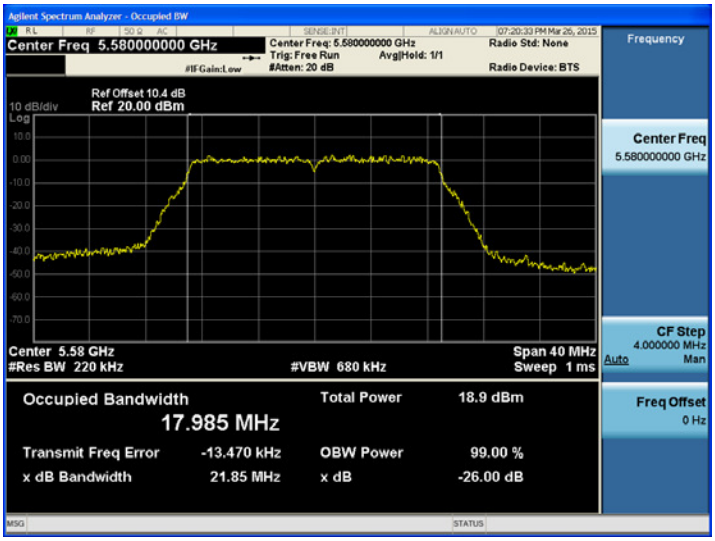
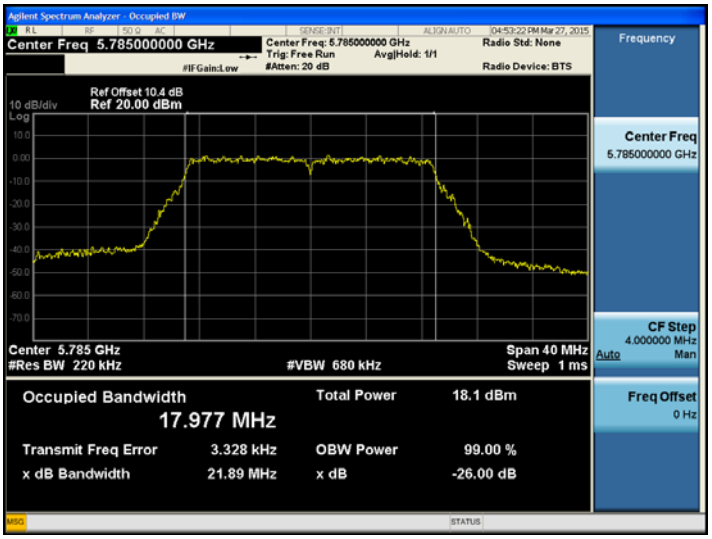
Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	21.823	N/A	Pass
5580	116	21.853	N/A	Pass
5720	144	21.847	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	21.804	N/A	Pass
5785	157	21.890	N/A	Pass
5825	165	21.617	N/A	Pass

▣ TEST Plot for 802.11n _20MHz BW

802.11n_20 MHz BW UNII 1 BAND 26dB Bandwidth	802.11n_20 MHz BW UNII 2A BAND 26dB Bandwidth
	
802.11n_20 MHz BW UNII 2C BAND 26dB Bandwidth	**802.11n_20 MHz BW UNII 3 BAND 26dB Bandwidth**
	

Note :

In order to simplify the report, attached plots were only the most wide channel.

▣ TEST RESULTS for 802.11ac _20MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	21.772	N/A	Pass
5200	40	21.845	N/A	Pass
5240	48	21.719	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	21.699	N/A	Pass
5300	60	21.625	N/A	Pass
5320	64	21.455	N/A	Pass

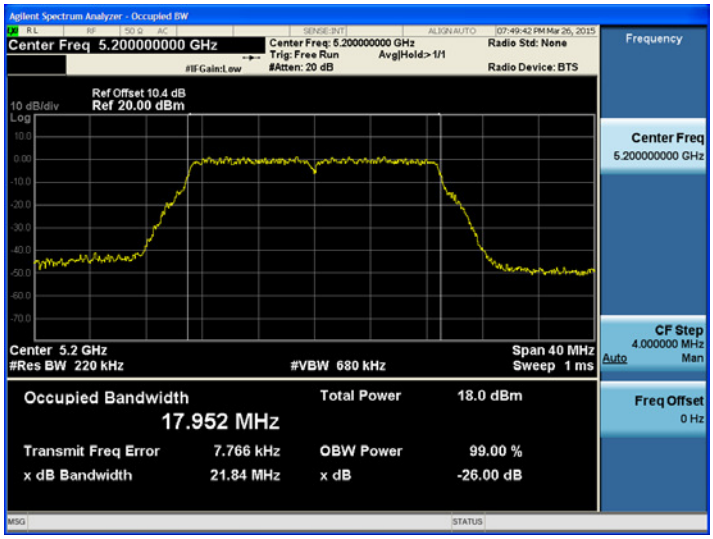
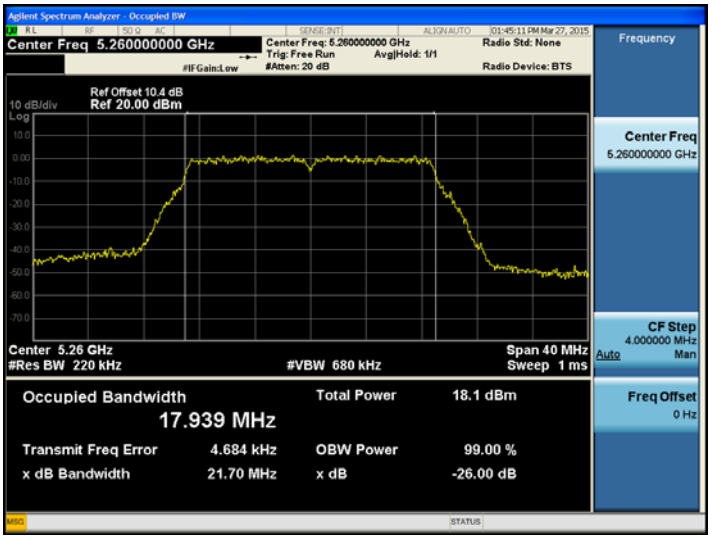
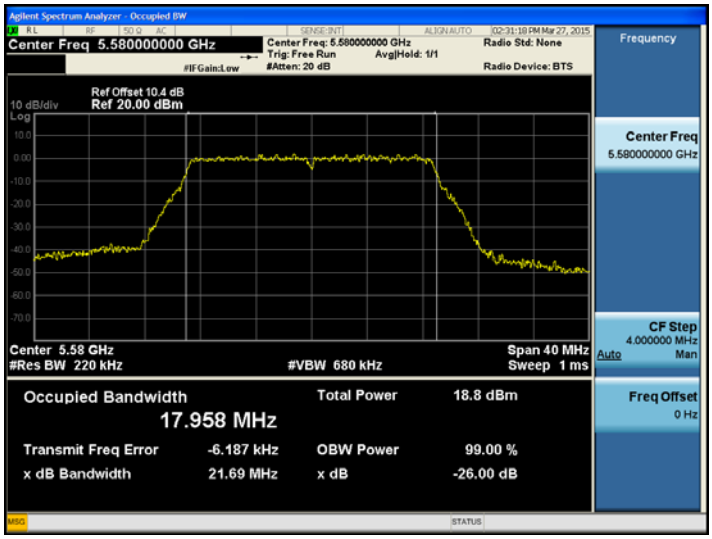
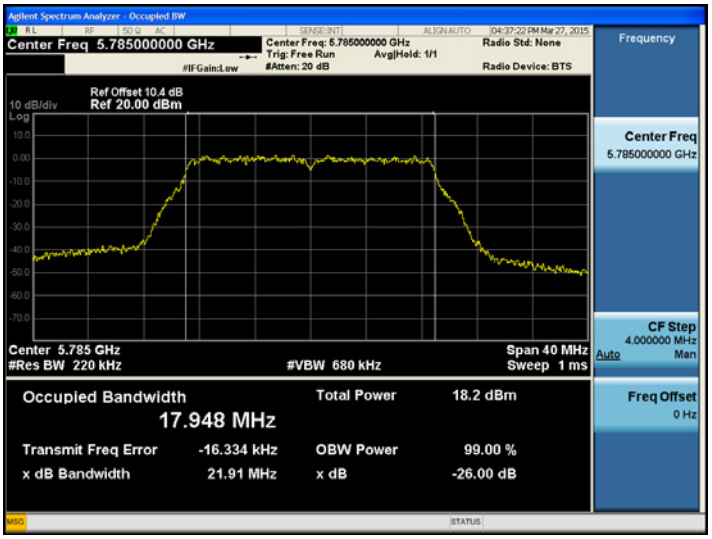
Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	21.689	N/A	Pass
5580	116	21.694	N/A	Pass
5720	144	21.625	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	21.649	N/A	Pass
5785	157	21.906	N/A	Pass
5825	165	21.778	N/A	Pass

▣ TEST Plot for 802.11ac _20MHz BW

802.11ac_20 MHz BW UNII 1 BAND 26dB Bandwidth	802.11ac_20 MHz BW UNII 2A BAND 26dB Bandwidth
	
802.11ac_20 MHz BW UNII 2C BAND 26dB Bandwidth	**802.11ac_20 MHz BW UNII 3 BAND 26dB Bandwidth**
	

Note :

In order to simplify the report, attached plots were only the most wide channel.

▣ TEST RESULTS for 802.11n_40MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	39.899	N/A	Pass
5230	46	40.044	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	39.986	N/A	Pass
5310	62	39.835	N/A	Pass

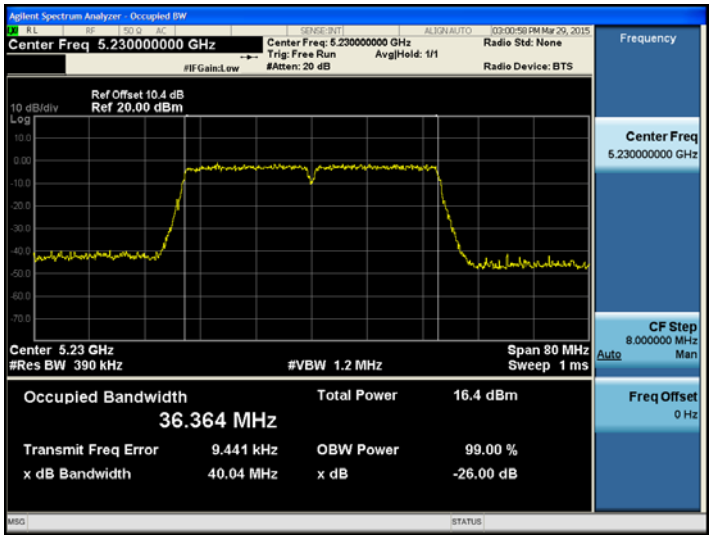
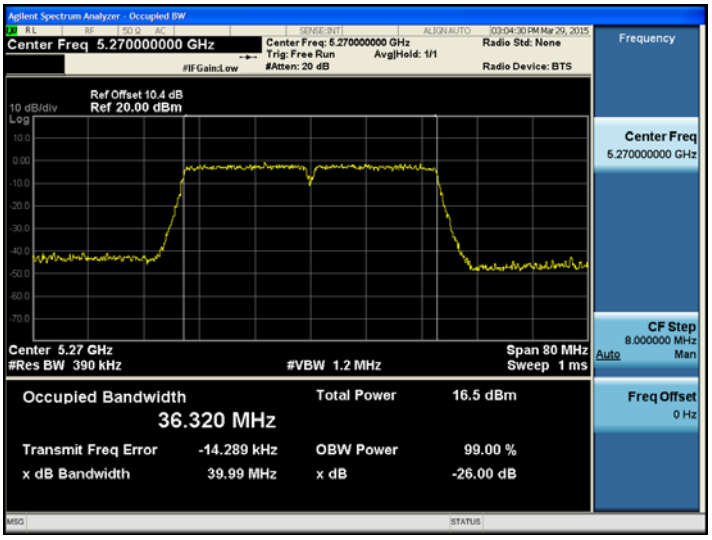
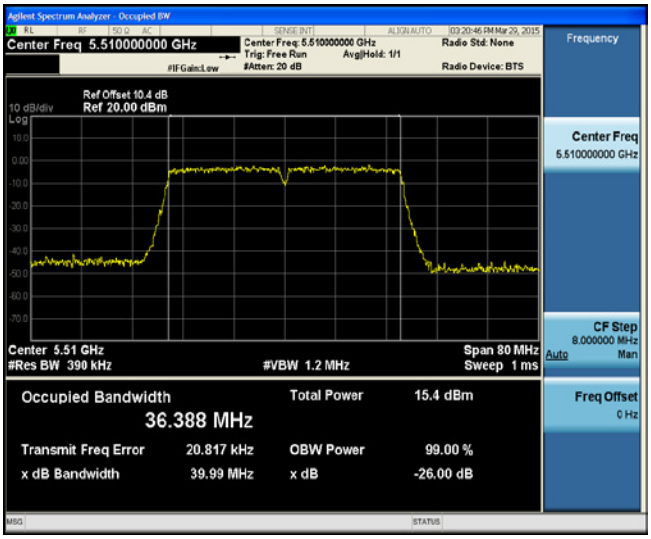
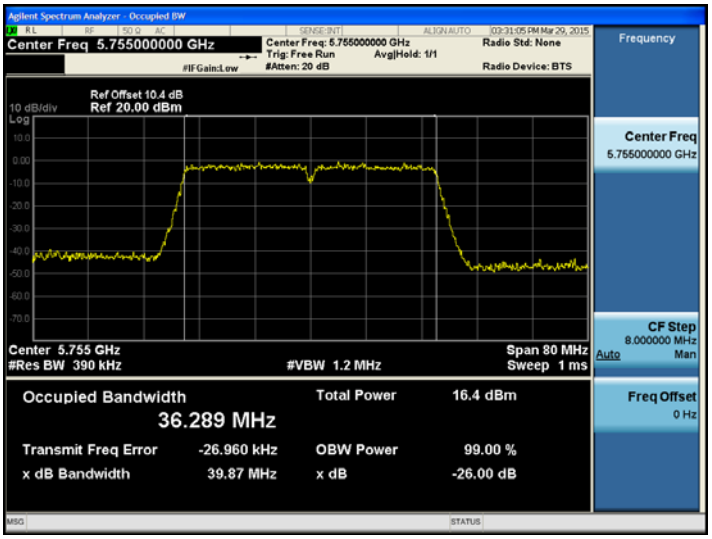
Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	39.991	N/A	Pass
5590	118	39.758	N/A	Pass
5710	142	39.990	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	39.870	N/A	Pass
5795	159	39.828	N/A	Pass

▣ TEST Plot for 802.11n_40MHz BW

802.11n_40 MHz BW UNII 1 BAND 26dB Bandwidth	802.11n_40 MHz BW UNII 2A BAND 26dB Bandwidth
	
802.11n_40 MHz BW UNII 2C BAND 26dB Bandwidth	**802.11n_40 MHz BW UNII 3 BAND 26dB Bandwidth**
	

Note :

In order to simplify the report, attached plots were only the most wide channel.

▣ TEST RESULTS for 802.11ac_40MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11ac_40 MHz BW

802.11ac(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	39.982	N/A	Pass
5230	46	39.897	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_40 MHz BW

802.11ac(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	39.817	N/A	Pass
5310	62	40.096	N/A	Pass

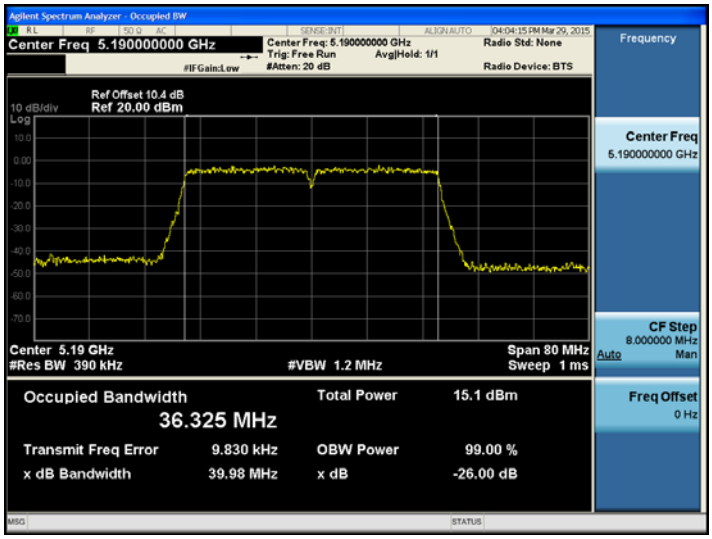
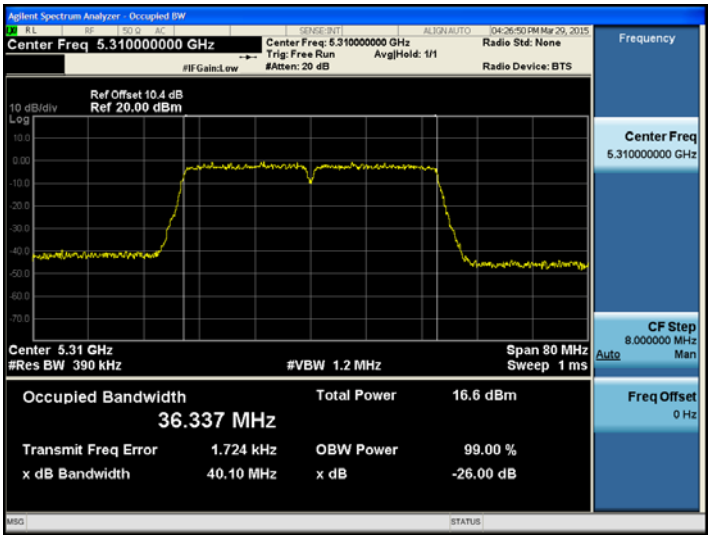
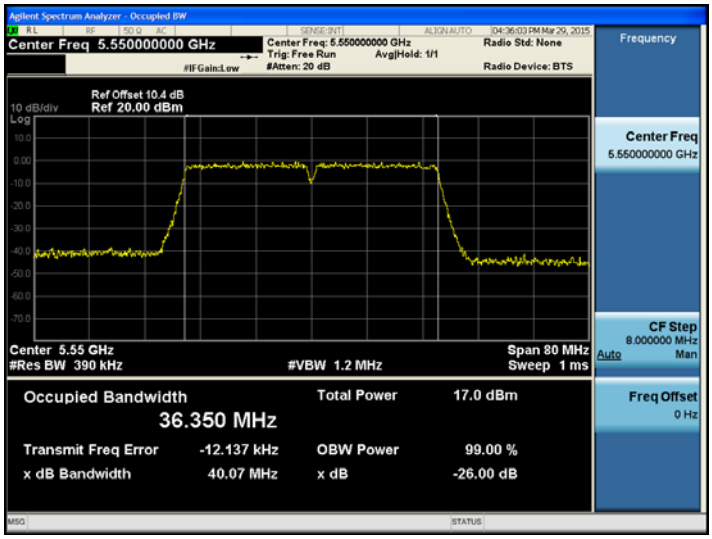
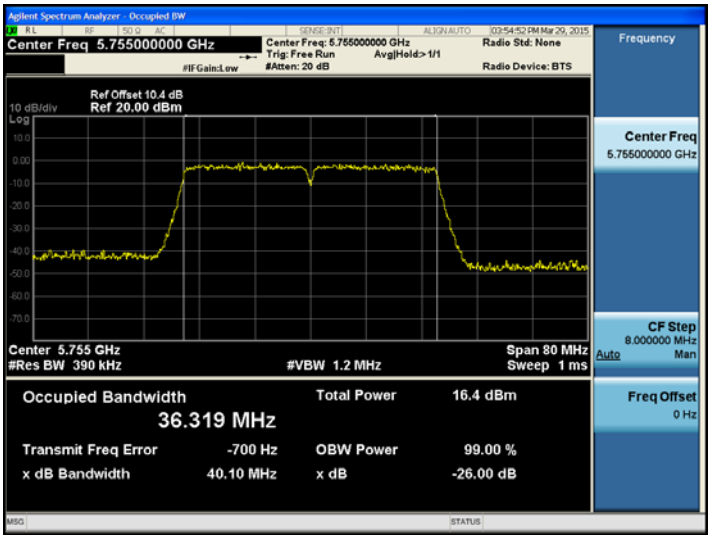
Conducted 26 dB Bandwidth Measurements for 802.11ac_40 MHz BW

802.11ac(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	39.857	N/A	Pass
5590	118	40.070	N/A	Pass
5710	142	39.954	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_40 MHz BW

802.11ac(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	40.102	N/A	Pass
5795	159	39.978	N/A	Pass

▣ TEST Plot for 802.11ac_40MHz BW

802.11ac_40 MHz BW UNII 1 BAND 26dB Bandwidth	802.11ac_40 MHz BW UNII 2A BAND 26dB Bandwidth
	
802.11ac_40 MHz BW UNII 2C BAND 26dB Bandwidth	**802.11ac_40 MHz BW UNII 3 BAND 26dB Bandwidth**
	

Note :

In order to simplify the report, attached plots were only the most wide channel.

▣ TEST RESULTS for 802.11ac_80MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11ac_80 MHz BW

802.11ac(80MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5210	42	81.532	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_80 MHz BW

802.11ac(80MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5290	58	82.033	N/A	Pass

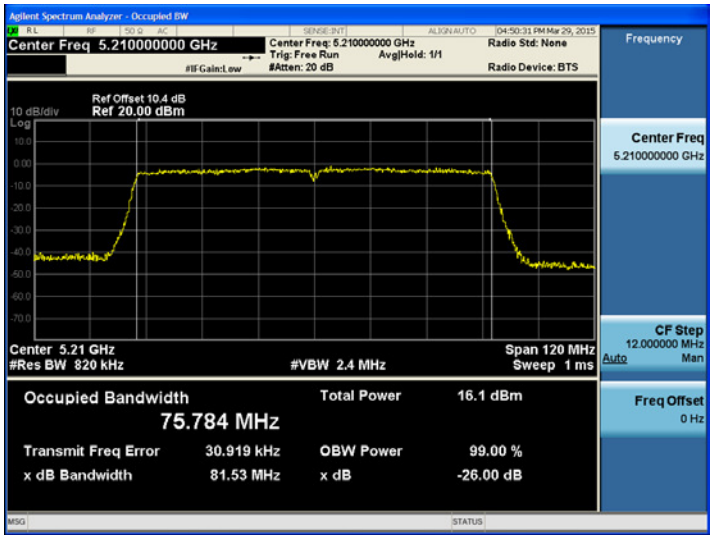
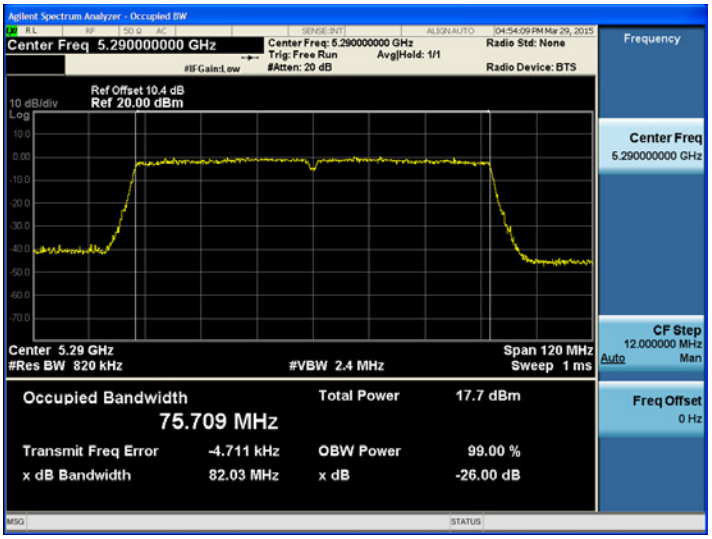
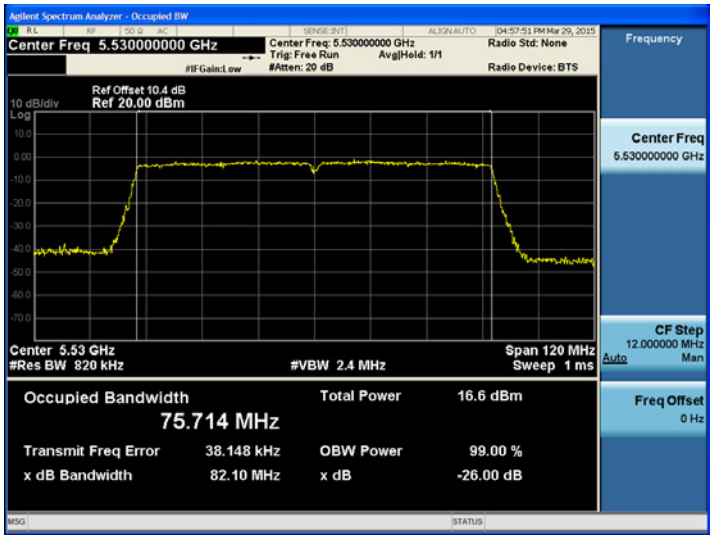
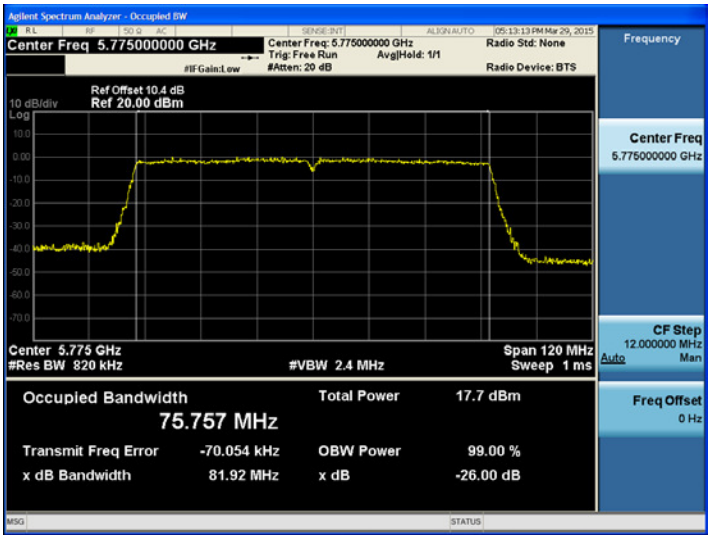
Conducted 26 dB Bandwidth Measurements for 802.11ac_80 MHz BW

802.11ac(80MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5530	106	82.102	N/A	Pass
5690	138	79.86	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_80 MHz BW

802.11ac(80MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	81.917	N/A	Pass

▣ TEST Plot for 802.11ac _80MHz BW

802.11ac_80 MHz BW UNII 1 BAND 26dB Bandwidth	802.11ac_80 MHz BW UNII 2A BAND 26dB Bandwidth
	
802.11ac_80 MHz BW UNII 2C BAND 26dB Bandwidth	**802.11ac_80 MHz BW UNII 3 BAND 26dB Bandwidth**
	

Note :

In order to simplify the report, attached plots were only the most wide channel.

Conducted 6 dB Bandwidth

▣ TEST RESULTS for 802.11a/n/ac_20MHz BW

Conducted 6 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.40	0.5	Pass
5785	157	16.46	0.5	Pass
5825	165	16.47	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11n_20MHz BW

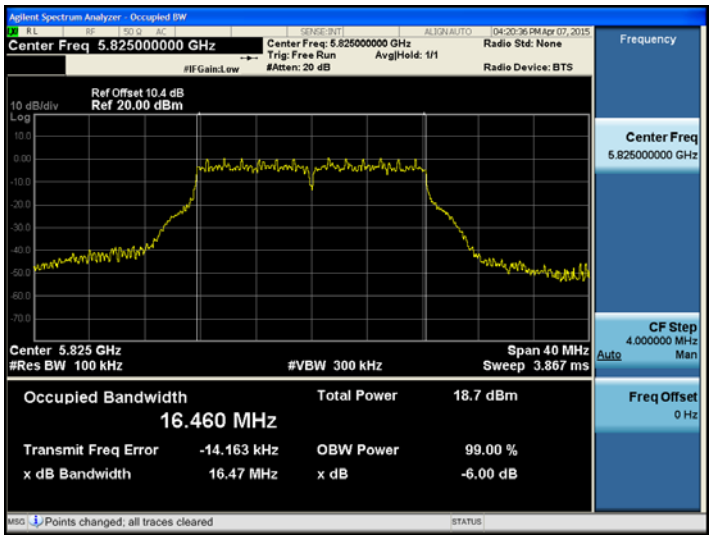
802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.75	0.5	Pass
5785	157	17.73	0.5	Pass
5825	165	17.77	0.5	Pass

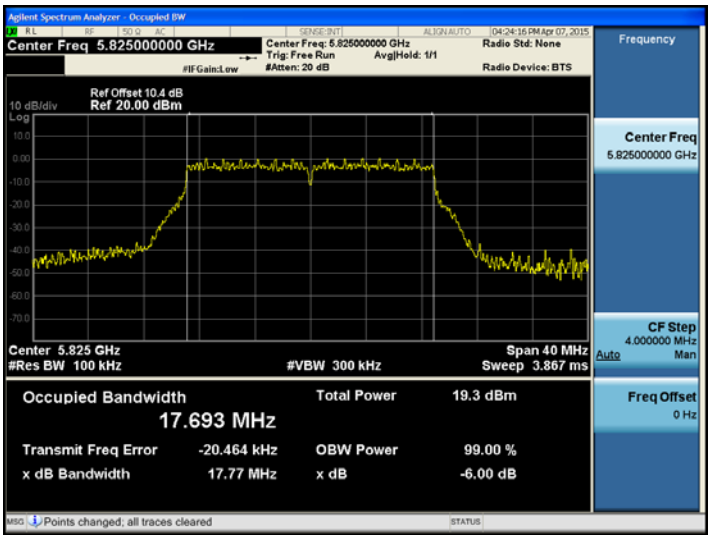
Conducted 6 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.72	0.5	Pass
5785	157	17.73	0.5	Pass
5825	165	17.73	0.5	Pass

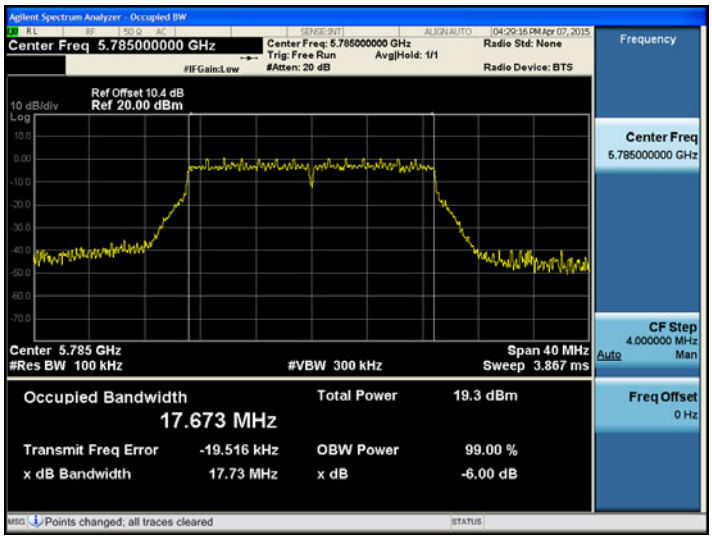
▣ TEST Plot for 802.11a/n/ac_20MHz BW

802.11a UNII 3 BAND 6dB Bandwidth	802.11n_20 MHz BW UNII 3 BAND 6dB Bandwidth





802.11ac_20 MHz BW UNII 3 BAND 6dB Bandwidth



Note :

1. **In order to simplify the report, attached plots were only the most wide channel.**

▣ TEST RESULTS for 802.11n/ac_40MHz BW

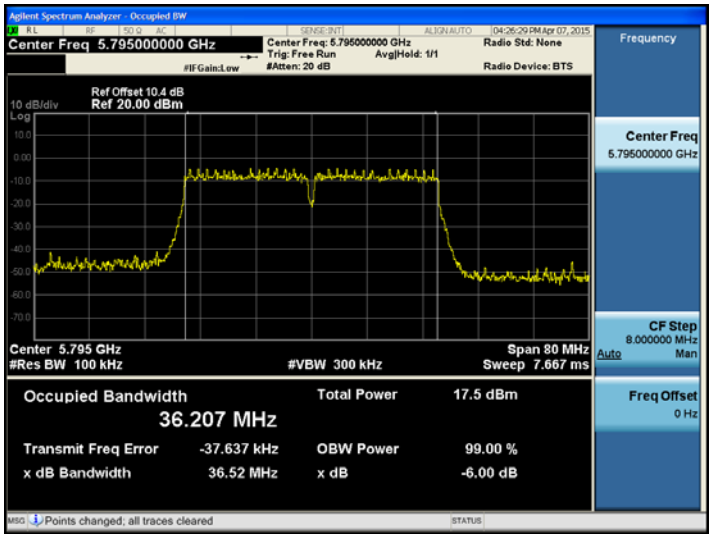
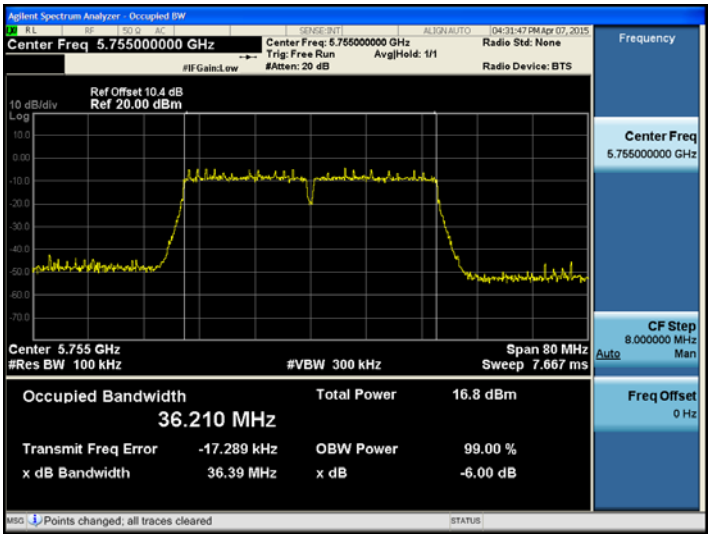
Conducted 6 dB Bandwidth Measurements for 802.11n_40MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.48	0.5	Pass
5795	159	36.52	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_40 MHz BW

802.11ac(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.39	0.5	Pass
5795	159	36.38	0.5	Pass

▣ TEST Plot for 802.11n/ac _40MHz BW

802.11n_40 MHz BW UNII 3 BAND 6dB Bandwidth	802.11ac_40 MHz BW UNII 3 BAND 6dB Bandwidth
	

Note :

1. **In order to simplify the report, attached plots were only the most wide channel.**

8.4 OUTPUT POWER MEASUREMENT

Test Requirements and limit, §15.407(a)(1)

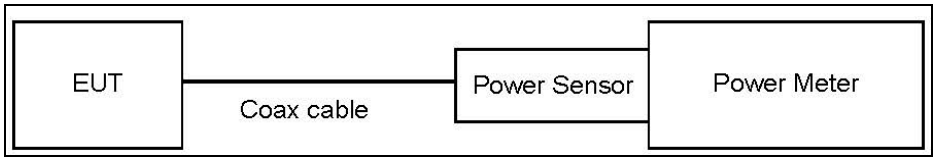
A transmitter antenna terminal of EUT is connected to the input of a Power meter or Spectrum Analyzer .Measurement is made while the EUT is operating in transmission mode at the appropriate frequencies.

▣ Limit

1. Maximum Conducted Output Power :

Band	Mode	Limit (dBm)
UNII 1,2A,2C	802.11a,n,ac	23.98
UNII 3	802.11a,n,ac	30

▣ TEST CONFIGURATION(20 MHz BW)



▣ TEST PROCEDURE(20 MHz BW)

▪ Average Power (Procedure E.3.a in KDB 789033, issued 06/06/2014).

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

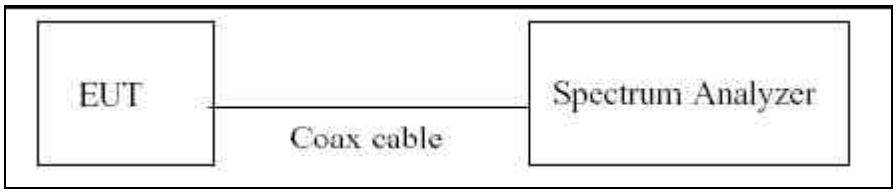
Note :

1. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1, 2A, 2C, 3	10.4

(Actual value of loss for the attenuator and cable combination)

▣ TEST CONFIGURATION(40 MHz BW & 80 MHz BW)



▣ TEST PROCEDURE(40 MHz BW & 80 MHz BW)

The transmitter output is connected to the Spectrum Analyzer. We use the spectrum analyzer's integrated band power measurement function. We tested according to Method SA-2 in KDB 789033(issued 06/06/2014).

The Spectrum Analyzer is set to

▪ Average Power

1. Measure the duty cycle.
2. Set span to encompass the 26 dB EBW of the signal.
3. RBW = 1 MHz.
4. VBW ≥ 3 MHz.
5. Number of points in sweep ≥ 2*span/RBW.
6. Sweep time = auto.
7. Detector = RMS.
8. Do not use sweep triggering. Allow the sweep to "free run".
9. Trace average at least 100 traces in power averaging(RMS) mode
10. Integrated bandwidth = OBW
11. Add 10log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Note :

1. We apply to the offset in the UNII 2A/2C band that was rounded off to the closest tenth dB. Actual value of loss for the attenuator and cable combination is below table. We used the particular cable type that is supported by manufacture.

Band	Loss(dB)
UNII 1, 2A, 2C, 3	10.4

(Actual value of loss for the attenuator and cable combination)

▣ Sample Calculation (Conducted)

Output Power = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

▣ Sample Calculation (EIRP)

Output Power = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor + Ant. Gain

802.11a_20MHz BW (UNII 1)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5180~5240)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	6	12.06	0.224	12.28	23.98
		9	11.70	0.354	12.06	23.98
		12	11.67	0.430	12.10	23.98
		18	11.50	0.605	12.11	23.98
		24	11.48	0.788	12.26	23.98
		36	10.82	1.082	11.91	23.98
		48	11.08	1.382	12.46	23.98
		54	10.93	1.526	12.45	23.98
5200	40	6	12.08	0.224	12.30	23.98
		9	11.76	0.354	12.11	23.98
		12	11.75	0.430	12.18	23.98
		18	11.56	0.605	12.17	23.98
		24	11.64	0.788	12.43	23.98
		36	11.27	1.082	12.35	23.98
		48	11.14	1.382	12.53	23.98
		54	10.98	1.526	12.51	23.98
5240	48	6	11.78	0.224	12.01	23.98
		9	11.38	0.354	11.74	23.98
		12	11.65	0.430	12.08	23.98
		18	11.25	0.605	11.86	23.98
		24	11.34	0.788	12.12	23.98
		36	11.02	1.082	12.10	23.98
		48	10.81	1.382	12.19	23.98
		54	10.72	1.526	12.24	23.98

802.11a _20MHz BW (UNII 2A)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5260~5320)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5260	52	6	12.02	0.224	12.24	23.98
		9	11.75	0.354	12.10	23.98
		12	11.73	0.430	12.16	23.98
		18	10.91	0.605	11.52	23.98
		24	11.59	0.788	12.38	23.98
		36	11.25	1.082	12.33	23.98
		48	10.75	1.382	12.13	23.98
		54	10.82	1.526	12.34	23.98
5300	60	6	12.00	0.224	12.22	23.98
		9	11.71	0.354	12.06	23.98
		12	11.67	0.430	12.10	23.98
		18	11.47	0.605	12.07	23.98
		24	11.56	0.788	12.35	23.98
		36	10.89	1.082	11.98	23.98
		48	11.05	1.382	12.43	23.98
		54	10.93	1.526	12.46	23.98
5320	64	6	11.92	0.224	12.15	23.98
		9	11.75	0.354	12.11	23.98
		12	11.64	0.430	12.07	23.98
		18	11.45	0.605	12.05	23.98
		24	10.85	0.788	11.64	23.98
		36	11.25	1.082	12.33	23.98
		48	10.99	1.382	12.37	23.98
		54	10.63	1.526	12.16	23.98

802.11a _20MHz BW (UNII 2C)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5500~5700)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5500	100	6	12.02	0.224	12.25	23.98
		9	11.74	0.354	12.09	23.98
		12	11.66	0.430	12.09	23.98
		18	11.52	0.605	12.12	23.98
		24	11.68	0.788	12.46	23.98
		36	11.29	1.082	12.37	23.98
		48	11.11	1.382	12.49	23.98
		54	10.90	1.526	12.43	23.98
5580	116	6	12.04	0.224	12.26	23.98
		9	11.73	0.354	12.08	23.98
		12	11.66	0.430	12.09	23.98
		18	11.53	0.605	12.14	23.98
		24	11.61	0.788	12.39	23.98
		36	11.31	1.082	12.39	23.98
		48	11.10	1.382	12.49	23.98
		54	10.90	1.526	12.43	23.98
5720	144	6	12.20	0.224	12.42	23.98
		9	11.94	0.354	12.29	23.98
		12	11.87	0.430	12.30	23.98
		18	11.71	0.605	12.32	23.98
		24	11.72	0.788	12.51	23.98
		36	11.38	1.082	12.46	23.98
		48	11.28	1.382	12.66	23.98
		54	10.95	1.526	12.47	23.98

802.11a _20MHz BW (UNII 3)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	6	12.03	0.224	12.25	30
		9	11.71	0.354	12.07	30
		12	11.61	0.430	12.04	30
		18	11.36	0.605	11.97	30
		24	11.57	0.788	12.36	30
		36	11.25	1.082	12.33	30
		48	11.05	1.382	12.43	30
		54	10.81	1.526	12.33	30
5785	157	6	11.76	0.224	11.99	30
		9	11.63	0.354	11.99	30
		12	11.58	0.430	12.01	30
		18	11.55	0.605	12.16	30
		24	11.32	0.788	12.11	30
		36	11.15	1.082	12.23	30
		48	10.77	1.382	12.16	30
		54	10.65	1.526	12.17	30
5825	165	6	11.88	0.224	12.10	30
		9	11.50	0.354	11.85	30
		12	11.45	0.430	11.88	30
		18	11.26	0.605	11.87	30
		24	11.41	0.788	12.19	30
		36	11.13	1.082	12.21	30
		48	10.94	1.382	12.32	30
		54	10.61	1.526	12.14	30

802.11n _20MHz BW (UNII 1)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11n_20MHz BW Mode: 5180~5240)

802.11n(20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	6	10.88	0.243	11.12	23.98
		9	10.70	0.467	11.17	23.98
		12	10.37	0.674	11.05	23.98
		18	10.71	0.829	11.54	23.98
		24	10.40	1.136	11.53	23.98
		36	9.98	1.447	11.42	23.98
		48	9.85	1.567	11.41	23.98
		54	9.78	1.644	11.42	23.98
5200	40	6	11.87	0.243	12.12	23.98
		9	11.68	0.467	12.15	23.98
		12	11.45	0.674	12.12	23.98
		18	11.69	0.829	12.51	23.98
		24	11.32	1.136	12.45	23.98
		36	10.85	1.447	12.30	23.98
		48	10.91	1.567	12.48	23.98
		54	10.61	1.644	12.25	23.98
5240	48	6	11.56	0.243	11.81	23.98
		9	11.38	0.467	11.85	23.98
		12	11.26	0.674	11.93	23.98
		18	11.40	0.829	12.23	23.98
		24	11.39	1.136	12.52	23.98
		36	10.81	1.447	12.25	23.98
		48	10.81	1.567	12.38	23.98
		54	10.70	1.644	12.34	23.98

802.11n _20MHz BW (UNII 2A)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11n_20MHz BW Mode: 5260~5320)

802.11n(20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5260	52	6	11.79	0.243	12.03	23.98
		9	11.61	0.467	12.08	23.98
		12	11.38	0.674	12.05	23.98
		18	11.60	0.829	12.43	23.98
		24	11.26	1.136	12.39	23.98
		36	11.05	1.447	12.50	23.98
		48	10.84	1.567	12.41	23.98
		54	10.70	1.644	12.35	23.98
5300	60	6	11.71	0.243	11.95	23.98
		9	11.62	0.467	12.09	23.98
		12	11.37	0.674	12.05	23.98
		18	11.48	0.829	12.31	23.98
		24	11.14	1.136	12.28	23.98
		36	10.90	1.447	12.35	23.98
		48	10.83	1.567	12.39	23.98
		54	10.71	1.644	12.36	23.98
5320	64	6	11.81	0.243	12.06	23.98
		9	11.61	0.467	12.08	23.98
		12	11.40	0.674	12.07	23.98
		18	11.63	0.829	12.46	23.98
		24	11.32	1.136	12.46	23.98
		36	11.05	1.447	12.50	23.98
		48	10.82	1.567	12.39	23.98
		54	10.70	1.644	12.35	23.98

802.11n _20MHz BW (UNII 2C)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11n_20MHz BW Mode: 5500~5700)

802.11n(20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5500	100	6	10.79	0.243	11.03	23.98
		9	10.67	0.467	11.14	23.98
		12	10.39	0.674	11.06	23.98
		18	10.46	0.829	11.29	23.98
		24	10.22	1.136	11.36	23.98
		36	10.00	1.447	11.44	23.98
		48	9.82	1.567	11.38	23.98
		54	9.77	1.644	11.41	23.98
5580	116	6	11.78	0.243	12.02	23.98
		9	11.70	0.467	12.17	23.98
		12	11.40	0.674	12.08	23.98
		18	11.58	0.829	12.41	23.98
		24	11.22	1.136	12.36	23.98
		36	10.95	1.447	12.40	23.98
		48	10.85	1.567	12.42	23.98
		54	10.80	1.644	12.44	23.98
5720	144	6	11.96	0.243	12.20	23.98
		9	11.79	0.467	12.25	23.98
		12	11.65	0.674	12.32	23.98
		18	11.74	0.829	12.57	23.98
		24	11.49	1.136	12.62	23.98
		36	11.21	1.447	12.66	23.98
		48	11.10	1.567	12.67	23.98
		54	11.02	1.644	12.66	23.98

802.11n _20MHz BW (UNII 3)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11n_20MHz Mode: 5745~5825)

802.11n(20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	6	11.81	0.243	12.06	30
		9	11.54	0.467	12.01	30
		12	11.39	0.674	12.06	30
		18	11.60	0.829	12.43	30
		24	11.25	1.136	12.39	30
		36	10.91	1.447	12.35	30
		48	10.76	1.567	12.32	30
		54	10.71	1.644	12.35	30
5785	157	6	11.72	0.243	11.96	30
		9	11.56	0.467	12.02	30
		12	11.26	0.674	11.94	30
		18	11.52	0.829	12.35	30
		24	11.21	1.136	12.35	30
		36	10.84	1.447	12.28	30
		48	10.64	1.567	12.20	30
		54	10.55	1.644	12.20	30
5825	165	6	11.59	0.243	11.83	30
		9	11.44	0.467	11.91	30
		12	11.24	0.674	11.91	30
		18	11.30	0.829	12.13	30
		24	11.13	1.136	12.27	30
		36	10.75	1.447	12.20	30
		48	10.69	1.567	12.25	30
		54	10.55	1.644	12.20	30

802.11ac _20MHz BW (UNII 1)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11ac_20MHz BW Mode: 5180~5240)

802.11ac(20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	6.5	10.90	0.248	11.15	23.98
		13	10.58	0.443	11.03	23.98
		19.5	10.54	0.640	11.18	23.98
		26	10.67	0.817	11.49	23.98
		39	10.40	1.119	11.51	23.98
		52	10.10	1.380	11.48	23.98
		58.5	9.89	1.511	11.40	23.98
		65	9.78	1.658	11.44	23.98
		78	9.61	1.833	11.44	23.98
5200	40	6.5	11.73	0.248	11.98	23.98
		13	11.58	0.443	12.03	23.98
		19.5	11.35	0.640	11.99	23.98
		26	11.57	0.817	12.38	23.98
		39	11.26	1.119	12.38	23.98
		52	10.99	1.380	12.37	23.98
		58.5	11.03	1.511	12.54	23.98
		65	10.86	1.658	12.52	23.98
		78	10.82	1.833	12.65	23.98
5240	48	6.5	11.71	0.248	11.96	23.98
		13	11.35	0.443	11.80	23.98
		19.5	11.42	0.640	12.06	23.98
		26	11.41	0.817	12.22	23.98
		39	11.09	1.119	12.21	23.98
		52	10.85	1.380	12.23	23.98
		58.5	10.71	1.511	12.22	23.98
		65	10.65	1.658	12.31	23.98
		78	10.49	1.833	12.33	23.98

802.11ac _20MHz BW (UNII 2A)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11ac_20MHz BW Mode: 5260~5320)

802.11ac(20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5260	52	6.5	11.81	0.248	12.06	23.98
		13	11.63	0.443	12.08	23.98
		19.5	11.48	0.640	12.12	23.98
		26	11.60	0.817	12.42	23.98
		39	11.35	1.119	12.47	23.98
		52	11.10	1.380	12.48	23.98
		58.5	10.84	1.511	12.36	23.98
		65	10.81	1.658	12.47	23.98
		78	10.52	1.833	12.36	23.98
5300	60	6.5	11.82	0.248	12.07	23.98
		13	11.63	0.443	12.07	23.98
		19.5	11.44	0.640	12.08	23.98
		26	11.46	0.817	12.27	23.98
		39	11.25	1.119	12.37	23.98
		52	11.16	1.380	12.54	23.98
		58.5	10.86	1.511	12.37	23.98
		65	10.70	1.658	12.36	23.98
		78	10.53	1.833	12.36	23.98
5320	64	6.5	11.76	0.248	12.01	23.98
		13	11.56	0.443	12.01	23.98
		19.5	11.41	0.640	12.05	23.98
		26	11.63	0.817	12.45	23.98
		39	11.31	1.119	12.43	23.98
		52	10.89	1.380	12.27	23.98
		58.5	10.97	1.511	12.48	23.98
		65	10.81	1.658	12.47	23.98
		78	10.61	1.833	12.44	23.98

802.11ac _20MHz BW (UNII 2C)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11ac_20MHz BW Mode: 5500~5700)

802.11ac(20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5500	100	6.5	10.81	0.248	11.05	23.98
		13	10.65	0.443	11.10	23.98
		19.5	10.45	0.640	11.09	23.98
		26	10.59	0.817	11.40	23.98
		39	10.28	1.119	11.40	23.98
		52	10.08	1.380	11.46	23.98
		58.5	9.97	1.511	11.48	23.98
		65	9.86	1.658	11.52	23.98
		78	9.69	1.833	11.53	23.98
5580	116	6.5	11.78	0.248	12.03	23.98
		13	11.69	0.443	12.13	23.98
		19.5	11.51	0.640	12.15	23.98
		26	11.58	0.817	12.40	23.98
		39	11.29	1.119	12.41	23.98
		52	11.11	1.380	12.49	23.98
		58.5	10.98	1.511	12.49	23.98
		65	10.92	1.658	12.58	23.98
		78	10.79	1.833	12.62	23.98
5720	144	6.5	12.09	0.248	12.34	23.98
		13	11.79	0.443	12.24	23.98
		19.5	11.68	0.640	12.32	23.98
		26	11.81	0.817	12.63	23.98
		39	11.50	1.119	12.62	23.98
		52	11.23	1.380	12.61	23.98
		58.5	11.17	1.511	12.68	23.98
		65	10.97	1.658	12.63	23.98
		78	10.74	1.833	12.58	23.98

802.11ac _20MHz BW (UNII 3)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11ac_20MHz Mode: 5745~5825)

802.11ac(20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	6.5	11.62	0.248	11.86	30
		13	11.44	0.443	11.89	30
		19.5	11.31	0.640	11.95	30
		26	11.42	0.817	12.24	30
		39	11.14	1.119	12.26	30
		52	10.89	1.380	12.27	30
		58.5	10.79	1.511	12.30	30
		65	10.61	1.658	12.27	30
		78	10.44	1.833	12.28	30
5785	157	6.5	11.55	0.248	11.80	30
		13	11.41	0.443	11.86	30
		19.5	11.06	0.640	11.70	30
		26	11.39	0.817	12.20	30
		39	11.03	1.119	12.14	30
		52	10.85	1.380	12.23	30
		58.5	10.70	1.511	12.21	30
		65	10.62	1.658	12.28	30
		78	10.34	1.833	12.17	30
5825	165	6.5	11.52	0.248	11.77	30
		13	11.27	0.443	11.71	30
		19.5	11.22	0.640	11.86	30
		26	11.39	0.817	12.21	30
		39	11.00	1.119	12.11	30
		52	10.81	1.380	12.19	30
		58.5	10.60	1.511	12.11	30
		65	10.56	1.658	12.21	30
		78	10.38	1.833	12.21	30

▣ 802.11n_40 MHz BW

802.11n _40MHz BW (UNII 1)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11n_40MHz Mode: 5190~5230)

802.11n(40MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5190	38	13.5	9.16	0.455	9.61	23.98
		27	8.53	0.821	9.35	23.98
		40.5	8.13	1.165	9.30	23.98
		54	8.20	1.452	9.65	23.98
		81	7.75	1.929	9.68	23.98
		108	7.44	2.241	9.68	23.98
		121.5	7.21	2.372	9.58	23.98
		135	7.13	2.541	9.67	23.98
5230	46	13.5	9.79	0.455	10.24	23.98
		27	9.39	0.821	10.22	23.98
		40.5	9.17	1.165	10.33	23.98
		54	8.97	1.452	10.43	23.98
		81	8.53	1.929	10.46	23.98
		108	8.25	2.241	10.49	23.98
		121.5	7.88	2.372	10.25	23.98
		135	7.90	2.541	10.44	23.98

802.11n _40MHz BW (UNII 2A)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11n_40MHz Mode: 5270~5310)

802.11n(40MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5270	54	13.5	9.78	0.455	10.23	23.98
		27	9.40	0.821	10.22	23.98
		40.5	9.14	1.165	10.30	23.98
		54	9.05	1.452	10.50	23.98
		81	8.53	1.929	10.46	23.98
		108	8.23	2.241	10.47	23.98
		121.5	8.09	2.372	10.46	23.98
		135	7.91	2.541	10.45	23.98
5310	62	13.5	9.65	0.455	10.10	23.98
		27	9.51	0.821	10.33	23.98
		40.5	8.95	1.165	10.11	23.98
		54	8.99	1.452	10.44	23.98
		81	8.54	1.929	10.47	23.98
		108	8.05	2.241	10.29	23.98
		121.5	7.96	2.372	10.34	23.98
		135	7.82	2.541	10.36	23.98

802.11n _40MHz BW (UNII 2C)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11n_40MHz Mode: 5510~5670)

802.11n(40MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5510	102	13.5	8.34	0.455	8.80	23.98
		27	7.95	0.821	8.77	23.98
		40.5	7.34	1.165	8.50	23.98
		54	7.21	1.452	8.67	23.98
		81	6.83	1.929	8.76	23.98
		108	6.54	2.241	8.78	23.98
		121.5	6.44	2.372	8.81	23.98
		135	6.33	2.541	8.87	23.98
5550	110	13.5	9.91	0.455	10.37	23.98
		27	9.51	0.821	10.33	23.98
		40.5	9.08	1.165	10.25	23.98
		54	8.91	1.452	10.36	23.98
		81	8.50	1.929	10.43	23.98
		108	8.14	2.241	10.38	23.98
		121.5	8.06	2.372	10.43	23.98
		135	7.89	2.541	10.44	23.98
5710	142	13.5	9.82	0.455	10.28	23.98
		27	9.16	0.821	9.98	23.98
		40.5	8.92	1.165	10.08	23.98
		54	8.83	1.452	10.28	23.98
		81	8.57	1.929	10.50	23.98
		108	8.04	2.241	10.28	23.98
		121.5	7.84	2.372	10.21	23.98
		135	7.55	2.541	10.09	23.98

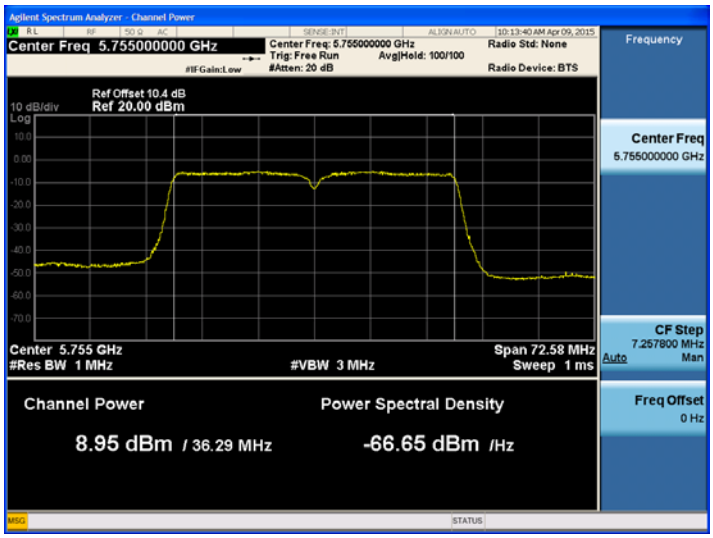
802.11n_40MHz BW (UNII 3)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11n_40MHz Mode: 5755~5795)

802.11n(40MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5755	151	13.5	9.68	0.455	10.14	30
		27	9.26	0.821	10.08	30
		40.5	8.93	1.165	10.09	30
		54	8.95	1.452	10.40	30
		81	8.25	1.929	10.18	30
		108	7.85	2.241	10.09	30
		121.5	7.77	2.372	10.14	30
		135	7.63	2.541	10.17	30
5795	159	13.5	9.40	0.455	9.86	30
		27	8.77	0.821	9.59	30
		40.5	8.55	1.165	9.72	30
		54	8.33	1.452	9.78	30
		81	8.02	1.929	9.95	30
		108	7.66	2.241	9.90	30
		121.5	7.59	2.372	9.97	30
		135	7.40	2.541	9.94	30

▣ TEST Plot for 802.11n_40MHz BW

802.11n_40 MHz BW UNII 1 BAND Average Power	802.11n_40 MHz BW UNII 2A BAND Average Power
	
802.11n_40 MHz BW UNII 2C BAND Average Power	**802.11n_40 MHz BW UNII 3 BAND Average Power**
	

▣ 802.11ac_40 MHz BW (UNII 1)

40MHz BW

▣ TEST RESULTS

Conducted Output Power Measurements (802.11ac_40MHz Mode: 5190~5230)

802.11ac(40MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5190	38	13.5	9.00	0.451	9.45	23.98
		27	8.63	0.830	9.46	23.98
		40.5	8.34	1.159	9.50	23.98
		54	8.21	1.433	9.64	23.98
		81	7.78	1.881	9.66	23.98
		108	7.43	2.207	9.64	23.98
		121.5	7.29	2.369	9.66	23.98
		135	7.07	2.501	9.57	23.98
		162	6.78	2.758	9.54	23.98
		180	6.86	2.831	9.69	23.98
5230	46	13.5	9.89	0.451	10.34	23.98
		27	9.44	0.830	10.27	23.98
		40.5	9.16	1.159	10.32	23.98
		54	9.03	1.433	10.46	23.98
		81	8.52	1.881	10.40	23.98
		108	8.18	2.207	10.38	23.98
		121.5	8.10	2.369	10.47	23.98
		135	7.72	2.501	10.22	23.98
		162	7.74	2.758	10.50	23.98
		180	7.58	2.831	10.42	23.98

802.11ac _40MHz BW (UNII 2A)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11ac_40MHz Mode: 5270~5310)

802.11ac(40MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5270	54	13.5	9.78	0.451	10.23	23.98
		27	9.42	0.830	10.25	23.98
		40.5	9.25	1.159	10.41	23.98
		54	8.99	1.433	10.42	23.98
		81	8.57	1.881	10.46	23.98
		108	8.23	2.207	10.44	23.98
		121.5	8.13	2.369	10.50	23.98
		135	7.78	2.501	10.28	23.98
		162	7.64	2.758	10.40	23.98
		180	7.65	2.831	10.48	23.98
5310	62	13.5	9.84	0.451	10.29	23.98
		27	9.34	0.830	10.17	23.98
		40.5	9.20	1.159	10.36	23.98
		54	9.03	1.433	10.47	23.98
		81	8.47	1.881	10.35	23.98
		108	8.12	2.207	10.33	23.98
		121.5	7.97	2.369	10.34	23.98
		135	7.82	2.501	10.32	23.98
		162	7.58	2.758	10.34	23.98
		180	7.51	2.831	10.34	23.98

802.11ac _40MHz BW (UNII 2C)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11ac_40MHz Mode: 5510~5670)

802.11ac(40MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5510	102	13.5	8.12	0.451	8.57	23.98
		27	7.67	0.830	8.50	23.98
		40.5	7.37	1.159	8.53	23.98
		54	7.14	1.433	8.57	23.98
		81	6.73	1.881	8.61	23.98
		108	6.38	2.207	8.59	23.98
		121.5	6.19	2.369	8.55	23.98
		135	6.12	2.501	8.62	23.98
		162	5.80	2.758	8.56	23.98
		180	5.75	2.831	8.58	23.98
5550	110	13.5	9.87	0.451	10.32	23.98
		27	9.34	0.830	10.17	23.98
		40.5	8.98	1.159	10.14	23.98
		54	8.97	1.433	10.40	23.98
		81	8.42	1.881	10.30	23.98
		108	8.10	2.207	10.31	23.98
		121.5	7.99	2.369	10.36	23.98
		135	7.84	2.501	10.34	23.98
		162	7.62	2.758	10.38	23.98
		180	7.58	2.831	10.41	23.98
5710	142	13.5	9.62	0.451	10.08	23.98
		27	9.28	0.830	10.11	23.98
		40.5	9.13	1.159	10.29	23.98
		54	8.97	1.433	10.40	23.98
		81	8.50	1.881	10.38	23.98
		108	7.95	2.207	10.16	23.98
		121.5	7.78	2.369	10.15	23.98
		135	7.60	2.501	10.10	23.98
		162	7.38	2.758	10.13	23.98
		180	7.36	2.831	10.19	23.98

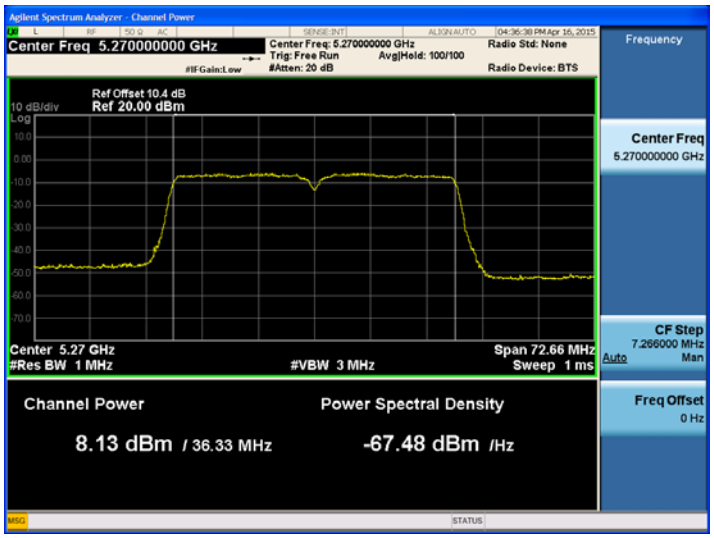
802.11ac _40MHz BW (UNII 3)

▣ TEST RESULTS

Conducted Output Power Measurements (802.11ac_40MHz Mode: 5755~5795)

802.11ac(40MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5755	151	13.5	9.56	0.451	10.02	30
		27	9.27	0.830	10.10	30
		40.5	8.90	1.159	10.06	30
		54	8.77	1.433	10.20	30
		81	8.37	1.881	10.25	30
		108	7.85	2.207	10.06	30
		121.5	7.77	2.369	10.14	30
		135	7.55	2.501	10.05	30
		162	7.37	2.758	10.13	30
		180	7.27	2.831	10.10	30
5795	159	13.5	9.35	0.451	9.80	30
		27	8.73	0.830	9.56	30
		40.5	8.39	1.159	9.55	30
		54	8.37	1.433	9.80	30
		81	8.03	1.881	9.91	30
		108	7.71	2.207	9.92	30
		121.5	7.59	2.369	9.96	30
		135	7.40	2.501	9.90	30
		162	7.18	2.758	9.94	30
		180	7.14	2.831	9.97	30

▣ TEST Plot for 802.11ac_40MHz BW

802.11ac_40 MHz BW UNII 1 BAND Average Power	802.11ac_40 MHz BW UNII 2A BAND Average Power
	
802.11ac_40 MHz BW UNII 2C BAND Average Power	**802.11ac_40 MHz BW UNII 3 BAND Average Power**