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FCC UNII REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Date of Issue:
November 28, 2018

Test Site/Location:
HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-RF-1811-FC021-R2

FCC ID:	**A3LSMG8870**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**
Model:	SM-G8870
EUT Type:	Mobile Phone
Modulation type	OFDM
FCC Classification:	Unlicensed National Information Infrastructure(UNII)
FCC Rule Part(s):	Part 15.407

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)

Report prepared by : Jung Ki Lim
Engineer of Telecommunication testing center

Approved by : Kwon Jeong
Manager of Telecommunication testing center

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1811-FC021	November 22, 2018	- First Approval Report
HCT-RF-1811-FC021-R1	November 22, 2018	- Added the 6dB bandwidth(straddle channel) - Revised the column title of power measurement table
HCT-RF-1811-FC021-R2	November 28, 2018	- Revised the power limit of straddle channels

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1. GENERAL INFORMATION

Model	SM-G8870	
EUT Type	Mobile Phone	
Power Supply	DC 3.85 V	
Battery Information	Model: EB-BA750ABU Type: Li-ion Battery	
Travel Adapter Information	Model: EP-TA200 Manufacture: SOLUM	
Modulation Type	OFDM : 802.11a, 802.11n, 802.11ac	
Frequency Range (MHz)	UNII 1	20MHz BW : 5180 - 5240 40MHz BW : 5190 - 5230 80MHz BW : 5210
	UNII 2A	20MHz BW : 5260 - 5320 40MHz BW : 5270 - 5310 80MHz BW : 5290
	UNII 2C	20MHz BW : 5500 - 5720 40MHz BW : 5510 - 5710 80MHz BW : 5530 – 5690
	UNII 3	20MHz BW : 5745 - 5825 40MHz BW : 5755 - 5795 80MHz BW : 5775
Antenna	Ant 1 : BT/WLAN antenna / Ant 2: WLAN 2nd antenna	
Antenna Specification	Type : [Ant 1] Metal Frame Antenna Peak Gain : -0.99 dBi Type : [Ant 2] FPCB Peak Gain : -0.42 dBi	
TDWR Band	Supported	
Dynamic Frequency Selection	Slave without radar detection	
Date(s) of Tests	October 29, 2018 ~ November 24, 2018	

2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted average output power as follows:

Band	Mode	Ant1 Power (dBm)	Ant2 Power (dBm)	Ant1+ Ant2 Power (dBm)	Ant1+ Ant2 Power (W)
UNII1	802.11a	13.990	13.813	16.91	0.0491
	802.11n (HT20)	12.980	12.878	15.94	0.0393
	802.11n (HT40)	11.930	11.760	14.86	0.0306
	802.11ac (VHT20)	11.985	11.853	14.93	0.0311
	802.11ac (VHT40)	11.246	10.909	14.09	0.0256
	802.11ac (VHT80)	9.060	8.830	11.96	0.0157
UNII2A	802.11a	13.990	13.803	16.90	0.0490
	802.11n (HT20)	12.970	12.788	15.88	0.0387
	802.11n (HT40)	11.990	11.764	14.87	0.0307
	802.11ac (VHT20)	11.975	11.743	14.87	0.0307
	802.11ac (VHT40)	11.046	10.449	13.76	0.0238
	802.11ac (VHT80)	11.270	10.860	14.06	0.0255
UNII2C	802.11a	13.870	13.983	16.94	0.0494
	802.11n (HT20)	12.990	12.978	15.93	0.0392
	802.11n (HT40)	11.455	11.671	14.54	0.0284
	802.11ac (VHT20)	11.955	11.979	14.94	0.0312
	802.11ac (VHT40)	10.376	10.603	13.45	0.0221
	802.11ac (VHT80)	10.960	11.020	14.00	0.0251
UNII3	802.11a	13.950	13.983	16.96	0.0497
	802.11n (HT20)	12.980	12.998	15.94	0.0393
	802.11n (HT40)	11.885	11.884	14.86	0.0306
	802.11ac (VHT20)	11.975	11.979	14.98	0.0315
	802.11ac (VHT40)	10.862	10.749	13.82	0.0241
	802.11ac (VHT80)	10.120	10.770	13.43	0.0220

3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 dated December 14, 2017 entitled "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part15, Subpart E" and ANSI C63.10(Version : 2013) 'the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices' were used in the measurement.

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.

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.

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 6.2 of ANSI C63.10. (Version :2013) 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 below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3.75 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 8 of ANSI C63.10. (Version: 2013)

Conducted Antenna Terminal

See Section from 8.1 to 8.4.(KDB 789033 D02 v02r01)

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.

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 equipment's, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

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, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (Registration Number: KR0032).

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. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

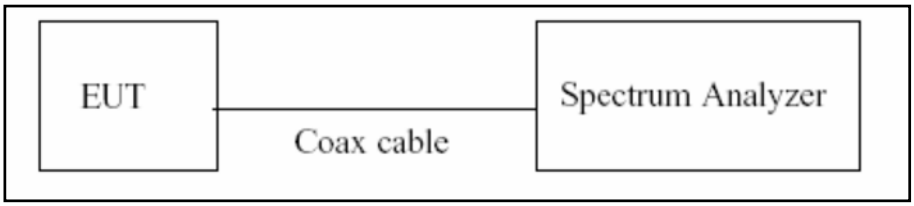
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.71

8. DESCRIPTION OF TESTS

8.1. Duty Cycle

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure B.2 in KDB 789033 D02 v02r01.

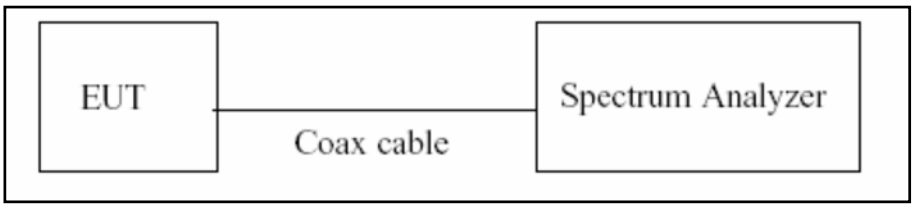
1. RBW = 8 MHz (the largest availble value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10*log(1/Duty Cycle)

8.2. Bandwidth Measurement

Limit

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Configuration



Test Procedure(26dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure C.1 in KDB 789033 D02 v02r01.

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 maximum 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 %.

Test Procedure(6dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure C.2 in KDB 789033 D02 v02r01.

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:

1. We tested X dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.
2. DFS test channels should be defined. So, We performed the OBW test to prove that no part of the fundamental emissions of any channels belong to UNII1 and UNII3 band for DFS.
3. The 26 dB bandwidth is used to determine the conducted power limits.

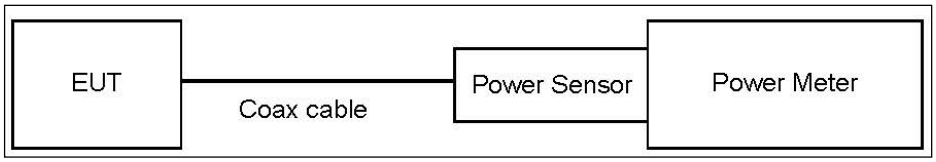
8.3. Output Power Measurement

Limit

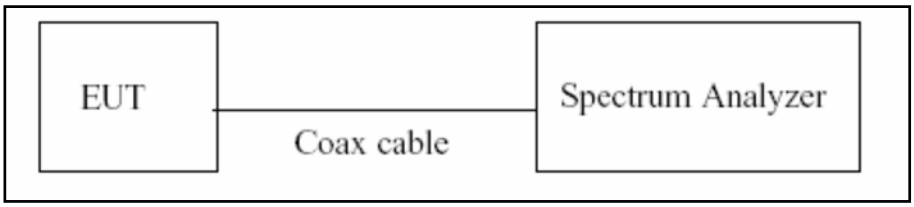
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30dBm)

Test Configuration

Power Meter(BW : 20MHz)



Spectrum Analyzer(BW : 40MHz, 80MHz)



Test Procedure(Power Meter)

We tested according to Procedure E.3.a in KDB 789033 D02 v02r01.

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.

Test Procedure(Spectrum Analyzer)

The transmitter output is connected to the Spectrum Analyzer.

We use the spectrum analyzer's integrated band power measurement function.

We tested according to Procedure E.2.d) in KDB 789033 D02 v02r01.

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.

Sample Calculation

Total Power(dBm) = Reading Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum reading values are not plot data.
   The power results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss + Cable loss
3. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1	11.1
UNII 2A	11.1
UNII 2C	11.1
UNII 3	11.1

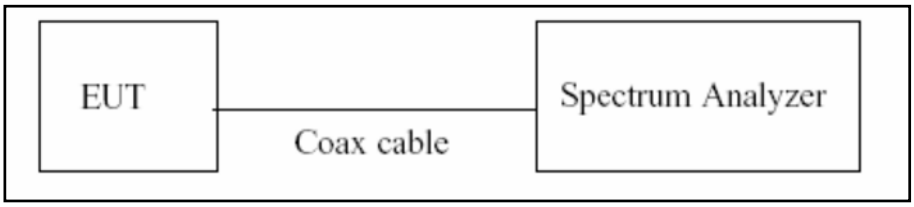
(Actual value of loss for the attenuator and cable combination)

8.4. Power Spectral Density

Limit

Band	Limit
UNII 1	11 dBm/MHz
UNII 2A, 2C	11 dBm/MHz
UNII 3	30 dBm/500 kHz

Test Configuration



Test Procedure

We tested according to Procedure F in KDB 789033 D02 v02r01.

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz(510 kHz for UNII 3)
3. VBW ≥ 3 MHz
4. Number of points in sweep ≥ 2*span/RBW.
5. Sweep time = auto.
6. Detector = RMS(i.e., power averaging), if available. Otherwise, use sample detector mode.
7. Do not use sweep triggering. Allow the sweep to “free run”.
8. Trace average at least 100 traces in power averaging(RMS) mode
9. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.
10. If Method SA-2 was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum.

Sample Calculation

Total PSD(dBm) = Reading Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum reading values are not plot data.
   The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss + Cable loss
3. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1	11.1
UNII 2A	11.1
UNII 2C	11.1
UNII 3	11.1

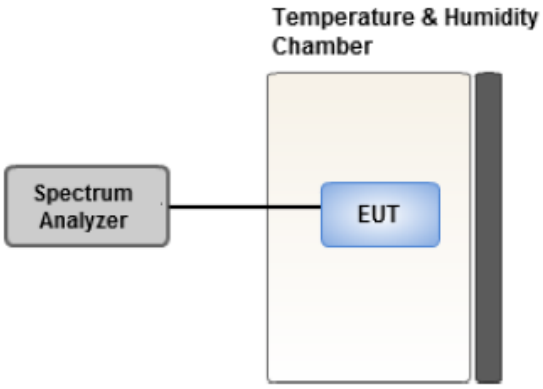
(Actual value of loss for the attenuator and cable combination)

8.5. Frequency Stability

Limit

Maintained within the band

Test Configuration



Test Procedure

1. The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between -30 ℃ and 50 ℃.
2. The temperature was incremented by 10 ℃ intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.
3. The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battety operating end point which shall be specified by the manufacturer.
4. While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

8.6. AC Power line Conducted Emissions

Limit

For an intentional radiator that is designed to be connected to the public utility (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 the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

*Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors : Quasi Peak and Average Detector.

Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

8.7. Radiated Test

Limit

1. UNII 1: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of −27 dBm/MHz.

2. UNII 2A, 2C: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.

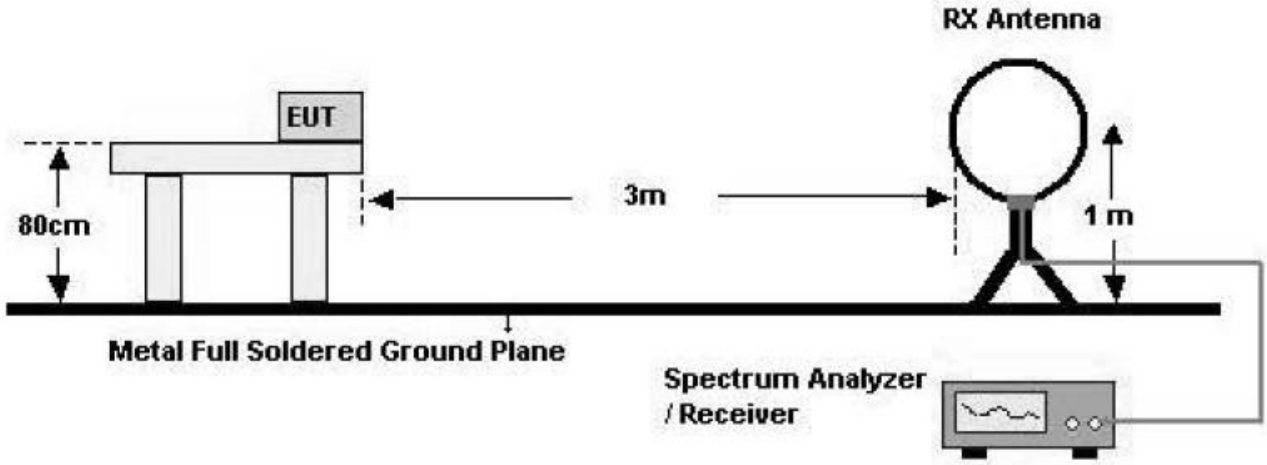
3. UNII 3: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below 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.

4. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Section 15.209.

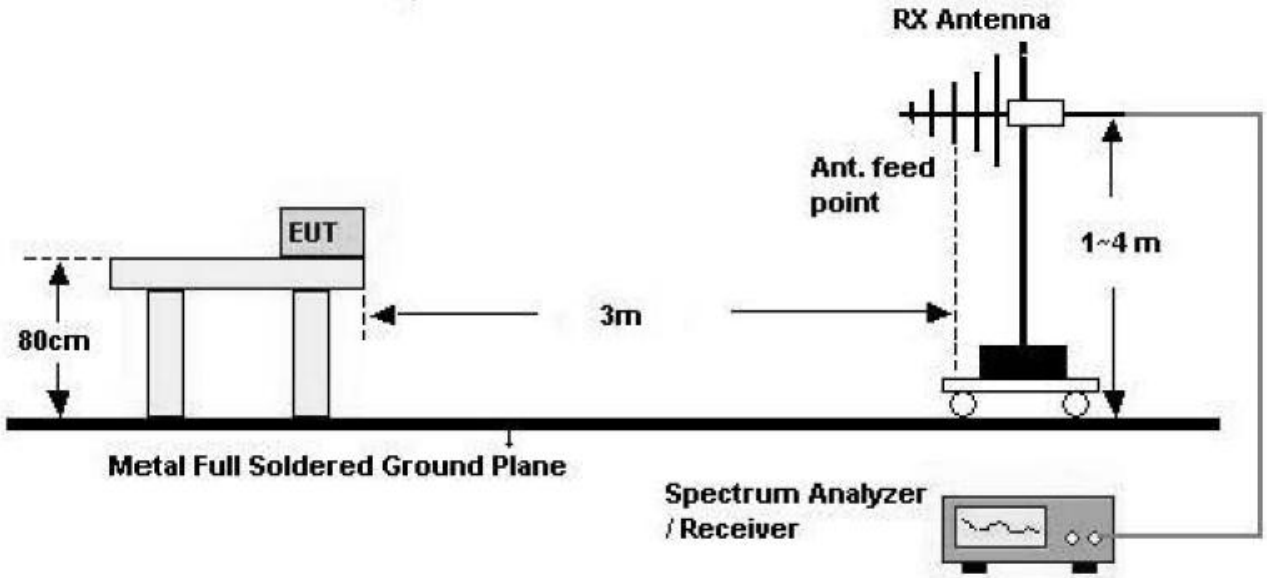
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

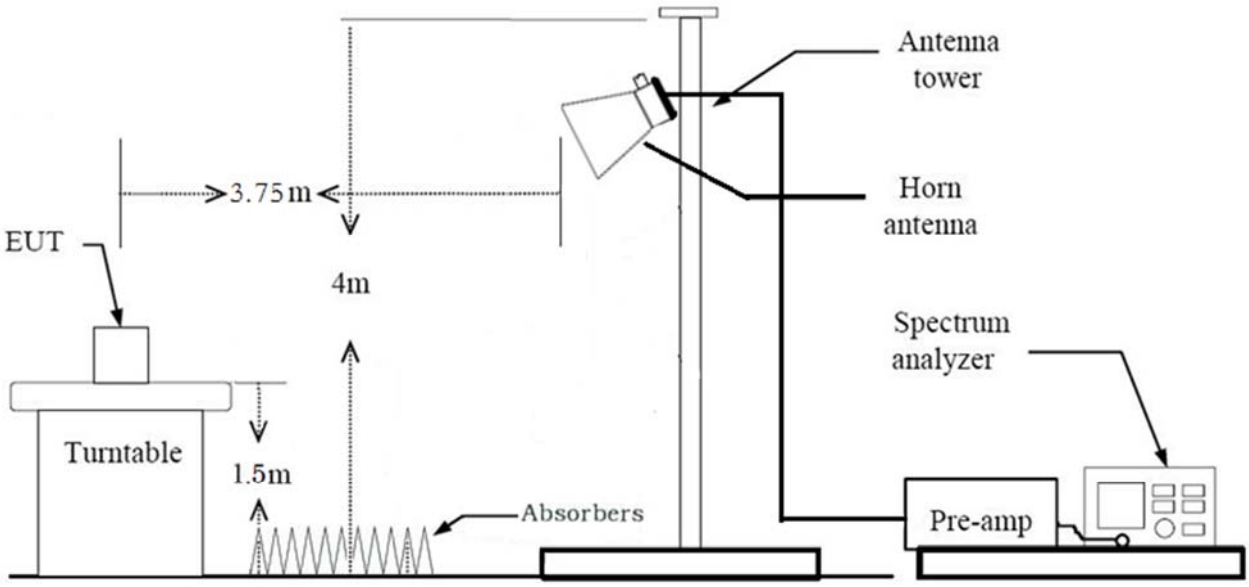
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz


Antenna
tower
Horn
antenna
3.75m
EUT
4m
Spectrum
analyzer
Turntable
1.5m
Absorbers
Pre-amp

Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3.75 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor(reference distance : 3 m).
   *Distance extrapolation factor = 20*log (test distance / specific distance) (dB)
6. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
7. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
8. The unit was tested with its standard battery.
9. Spectrum Setting
   (1) Measurement Type(Peak, G.5 in KDB 789033 v02r01):
   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep Time = auto
   - Trace mode = max hold
   - Allow sweeps to continue until the trace stabilizes.
     Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle.

   (2) Measurement Type(Average, G.6.d in KDB 789033 v02r01):
   - RBW = 1 MHz
   - VBW(Duty cycle ≥ 98 percent) = VBW ≤ RBW/100(i.e., 10 kHz) but not less than 10 Hz.
   - VBW(Duty cycle is < 98 percent) = VBW ≥ 1/T, where T is the minimum transmission duration.
   - The analyzer is set to linear detector mode.
   - Detector = Peak.
   - Sweep time = auto.
   - Trace mode = max hold.
   - Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimym number of traces by a factor of 1/x, where x is the duty cycle.

10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor

11. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency

12. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

Test Procedure of Radiated Restricted Band Edge

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3.75 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. According to SVSWR requirement in ANSI 63.4-2014, We performed the radiated test at 3.75 m distance from center of turn table. So, we applied the distance factor(reference distance : 3 m).
   *Distance extrapolation factor = 20*log (test distance / specific distance) (dB)
6. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
7. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
8. The unit was tested with its standard battery.
9. Spectrum Setting
   (1) Measurement Type(Peak, G.5 in KDB 789033 v02r01):
   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep Time = auto
   - Trace mode = max hold
   - Allow sweeps to continue until the trace stabilizes.
     Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle.

   (2) Measurement Type(Average, G.6.d in KDB 789033 v02r01):
   - RBW = 1 MHz
   - VBW(Duty cycle ≥ 98 percent) = VBW ≤ RBW/100(i.e., 10 kHz) but not less than 10 Hz.
   - VBW(Duty cycle is < 98 percent) = VBW ≥ 1/T, where T is the minimum transmission duration.
   - The analyzer is set to linear detector mode.
   - Detector = Peak.
   - Sweep time = auto.
   - Trace mode = max hold.
   - Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimym number of traces by a factor of 1/x, where x is the duty cycle.

10. Measured Frequency Range :
- 4500MHz ~ 5150MHz
- 5350MHz ~ 5460MHz
- 5460MHz ~ 5470MHz
- (75 MHz or more below the 5725MHz) ~ 5725MHz
- 5850MHz ~ (75 MHz or more above the 5850MHz)

11. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

The actual setting value of VBW

Mode	Worst Data rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	VBW(1/T) (Hz)	The actual setting value of VBW (Hz)
a	6	1.432	1.469	0.97468354	698	1000
802.11n(HT20)	MCS 0	1.342	1.378	0.97420877	745	1000
802.11ac(VHT20)	MCS 0	1.347	1.385	0.98323095	742	1000
802.11n(HT40)	MCS 0	0.664	0.700	0.94800000	1507	3000
802.11ac(VHT40)	MCS 0	0.672	0.708	0.94823970	1489	3000
802.11ac(VHT80)	MCS 0	0.333	0.368	0.90434783	3005	10000

8.8. Worst case configuration and mode

Radiated test

▣ Operating mode

Mode	Operating Mode	Operating Ant.
802.11a/n/ac	SISO	Ant 1
		Ant 2
	MIMO	Ant 1& 2

Note : We have done all test case. Worst case is MIMO(CDD) for 802.11a/n/ac mode.
So, we attached the result of MIMO(CDD) for 802.11a/n/ac mode

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + external accessories(earphone, etc)
   - Worstcase : Stand alone
2. EUT Axis
   - Radiated Spurious Emissions : MIMO, RSDB [X]
   - Radiated Restricted Band Edge : MIMO
     802.11a, 802.11n_HT20, 802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80 : Y
     802.11ac_VHT20 : Z
3. All data rate of operation were investigated and the test results are worst case in lowest datarate of each mode.
   - 802.11a : 6Mbps
   - 802.11n : MCS0
   - 802.11ac : MCS0

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone+Earphone+Travel Adapter, Stand alone+Travel Adapter
   - Worstcase : Stand alone+Travel Adapter

Conducted test

The EUT was configured with data rate of highest power.

9. 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)		PASS
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) §2.1055	Maintained within the band		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) cf. Section 8.7 (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

10. TEST RESULT

10.1 DUTY CYCLE

[Ant1]

Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11a	6	1.432	1.469	0.97468354	0.111
	9	0.959	0.996	0.96265559	0.165
	12	0.728	0.764	0.95238095	0.212
	18	0.491	0.528	0.93103448	0.310
	24	0.376	0.413	0.91118932	0.404
	36	0.256	0.292	0.87656063	0.572
	48	0.200	0.236	0.84748817	0.719
	54	0.180	0.216	0.83333102	0.792

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11n(HT20)	0	1.342	1.378	0.97420877	0.113
	1	0.689	0.725	0.94980695	0.224
	2	0.472	0.510	0.92674058	0.330
	3	0.364	0.400	0.90909091	0.414
	4	0.256	0.292	0.87694704	0.570
	5	0.200	0.236	0.84778420	0.717
	6	0.184	0.220	0.83677686	0.774
	7	0.168	0.204	0.82405345	0.840
802.11n(HT40)	0	0.664	0.700	0.94800000	0.232
	1	0.352	0.388	0.90737318	0.422
	2	0.249	0.285	0.87371236	0.586
	3	0.196	0.232	0.84482759	0.732
	4	0.144	0.180	0.80000000	0.969
	5	0.116	0.152	0.76218518	1.179
	6	0.108	0.144	0.74897325	1.255
	7	0.100	0.136	0.73420550	1.342

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ac(VHT20)	0	1.347	1.385	0.97308248	0.119
	1	0.695	0.733	0.94800043	0.232
	2	0.476	0.513	0.92787524	0.325
	3	0.368	0.405	0.90864198	0.416
	4	0.260	0.296	0.87867427	0.562
	5	0.204	0.240	0.84807276	0.716
	6	0.188	0.224	0.83941723	0.760
	7	0.172	0.208	0.82722646	0.824
	8	0.152	0.188	0.80887708	0.921
802.11ac(VHT40)	0	0.672	0.708	0.94823970	0.231
	1	0.356	0.392	0.90841199	0.417
	2	0.252	0.287	0.87499783	0.580
	3	0.200	0.236	0.84677300	0.722
	4	0.148	0.184	0.80310771	0.952
	5	0.120	0.156	0.76985689	1.136
	6	0.112	0.148	0.75751089	1.206
	7	0.104	0.140	0.74149422	1.299
	8	0.096	0.132	0.72836394	1.377
	9	0.088	0.124	0.70967742	1.489
802.11ac(VHT80)	0	0.333	0.368	0.90434783	0.437
	1	0.188	0.224	0.83966866	0.759
	2	0.140	0.176	0.79578880	0.992
	3	0.116	0.152	0.76155537	1.183
	4	0.092	0.128	0.71883883	1.434
	5	0.080	0.116	0.68965517	1.614
	6	0.076	0.112	0.67857143	1.684
	7	0.072	0.108	0.66666667	1.761
	8	0.069	0.104	0.66346154	1.782
	9	0.065	0.100	0.65000000	1.871

[Ant2]

Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11a	6	1.433	1.471	0.97380138	0.115
	9	0.961	0.997	0.96363702	0.161
	12	0.728	0.765	0.95190379	0.214
	18	0.492	0.529	0.93043478	0.313
	24	0.376	0.413	0.91085271	0.406
	36	0.256	0.292	0.87671233	0.571
	48	0.200	0.236	0.84727830	0.720
	54	0.180	0.216	0.83295374	0.794

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11n(HT20)	0	1.339	1.376	0.97291424	0.119
	1	0.688	0.725	0.94939361	0.226
	2	0.472	0.509	0.92730845	0.328
	3	0.365	0.402	0.90822611	0.418
	4	0.257	0.292	0.87826143	0.564
	5	0.200	0.236	0.84677300	0.722
	6	0.184	0.220	0.83622705	0.777
	7	0.168	0.204	0.82157914	0.854
802.11n(HT40)	0	0.664	0.700	0.94968553	0.224
	1	0.353	0.388	0.90926268	0.413
	2	0.249	0.284	0.87583687	0.576
	3	0.197	0.232	0.84805094	0.716
	4	0.145	0.180	0.80423465	0.946
	5	0.117	0.152	0.76744537	1.150
	6	0.109	0.144	0.75694444	1.209
	7	0.101	0.136	0.74264706	1.292

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ac(VHT20)	0	1.348	1.386	0.97257763	0.121
	1	0.695	0.733	0.94818653	0.231
	2	0.476	0.513	0.92839571	0.323
	3	0.368	0.406	0.90811884	0.419
	4	0.260	0.296	0.87804648	0.565
	5	0.204	0.240	0.84953796	0.708
	6	0.189	0.225	0.83910998	0.762
	7	0.172	0.208	0.82562141	0.832
	8	0.152	0.188	0.80708946	0.931
802.11ac(VHT40)	0	0.673	0.708	0.95031056	0.221
	1	0.357	0.392	0.90972111	0.411
	2	0.253	0.288	0.87712845	0.569
	3	0.200	0.236	0.84988681	0.706
	4	0.149	0.184	0.80867865	0.922
	5	0.121	0.156	0.77441808	1.110
	6	0.113	0.148	0.76225409	1.179
	7	0.105	0.140	0.75129471	1.242
	8	0.096	0.132	0.72727273	1.383
	9	0.089	0.124	0.71774194	1.440
802.11ac(VHT80)	0	0.332	0.368	0.90239126	0.446
	1	0.189	0.224	0.84255068	0.744
	2	0.140	0.176	0.79783469	0.981
	3	0.117	0.152	0.76618095	1.157
	4	0.092	0.128	0.72208176	1.414
	5	0.080	0.116	0.69125590	1.604
	6	0.076	0.112	0.68241813	1.659
	7	0.072	0.108	0.66993963	1.740
	8	0.068	0.104	0.65384615	1.845
	9	0.064	0.100	0.64000000	1.938

10.2 26DB BANDWIDTH

[Ant1]

802.11a Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	22.35
5200	40	20.50
5240	48	21.24
5260	52	22.16
5300	60	22.05
5320	64	21.13
5500	100	20.22
5600	120	22.14
5720	144	21.05
5745	149	20.87
5785	157	20.55
5825	165	22.13

802.11n(HT20) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	22.05
5200	40	21.63
5240	48	22.38
5260	52	21.81
5300	60	22.17
5320	64	22.67
5500	100	21.96
5600	120	22.26
5720	144	22.02
5745	149	22.00
5785	157	22.37
5825	165	22.46

802.11n(HT40) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	40.94
5230	46	41.37
5270	54	40.98
5310	62	40.58
5510	102	41.42
5590	118	41.19
5710	142	41.28
5755	151	40.81
5795	159	41.21

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	21.89
5200	40	21.98
5240	48	22.30
5260	52	21.99
5300	60	21.89
5320	64	22.10
5500	100	21.35
5600	120	22.07
5720	144	21.85
5745	149	21.67
5785	157	22.28
5825	165	22.53

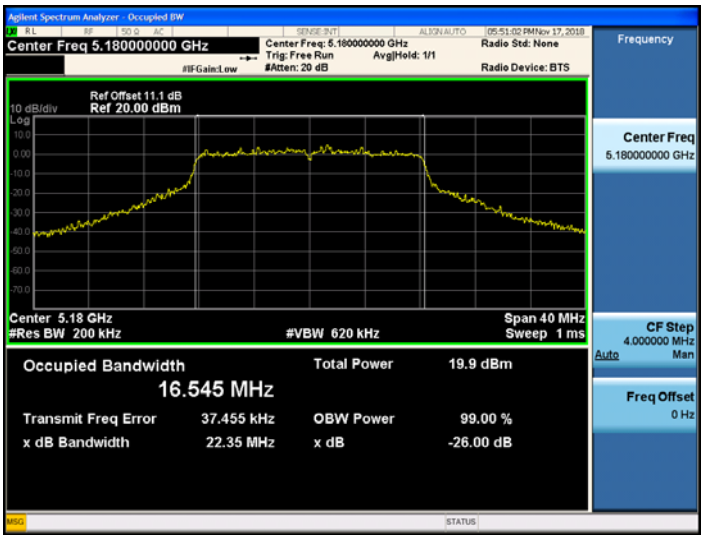
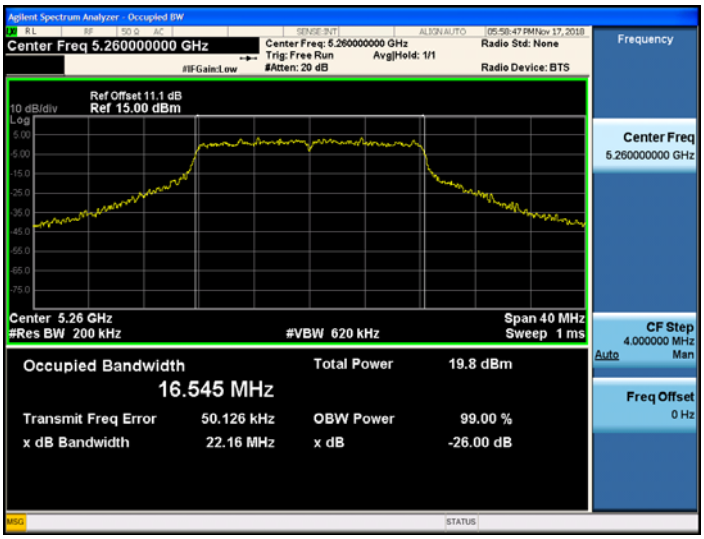
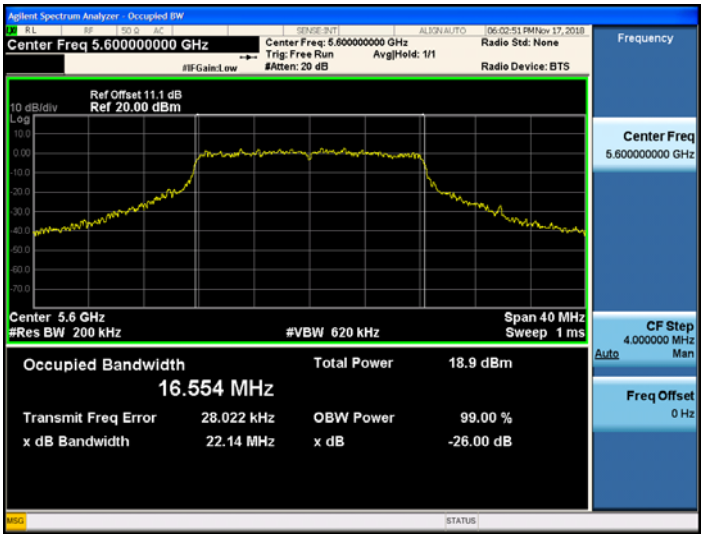
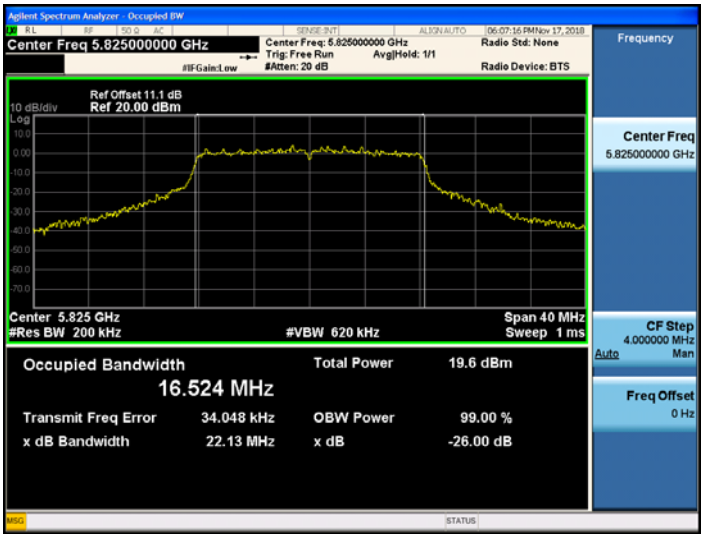
802.11ac(VHT40) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	41.31
5230	46	40.44
5270	54	40.99
5310	62	41.01
5510	102	41.20
5590	118	40.90
5710	142	41.06
5755	151	41.25
5795	159	40.38

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5210	42	83.63
5290	58	83.34
5530	106	82.99
5610	122	83.82
5690	138	83.49
5775	155	84.45

▣ Test Plots(802.11a)

Note:

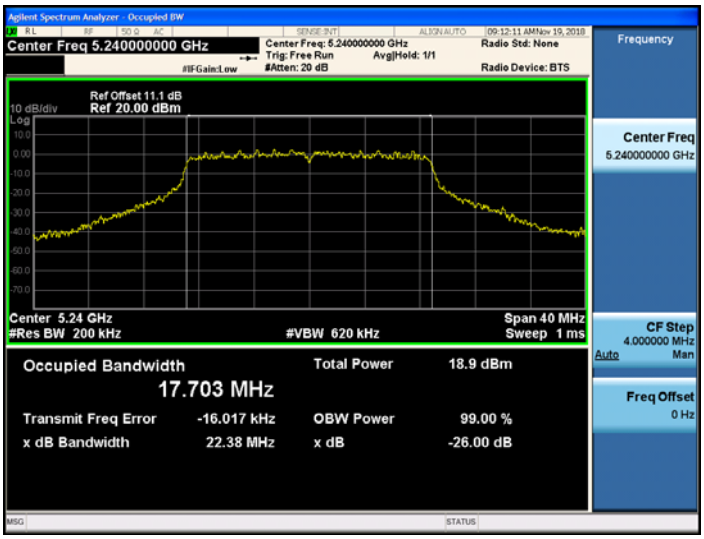
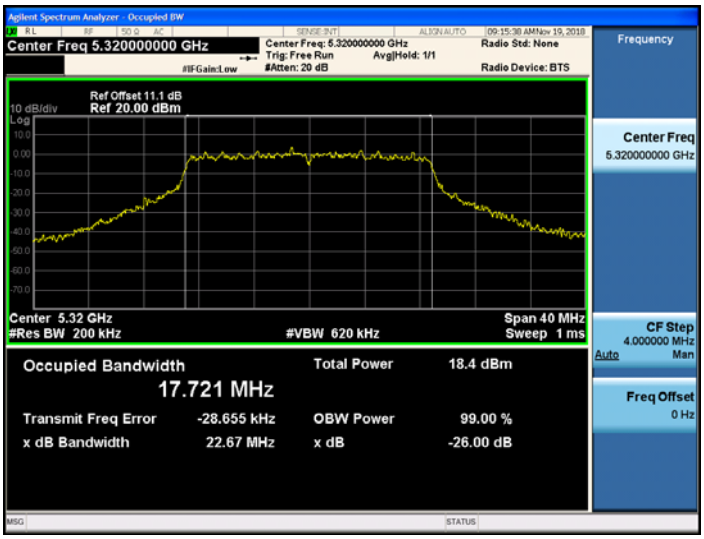
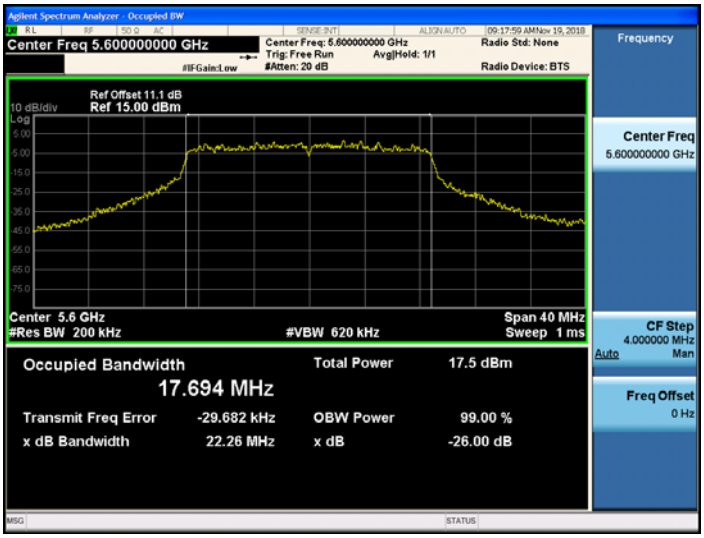
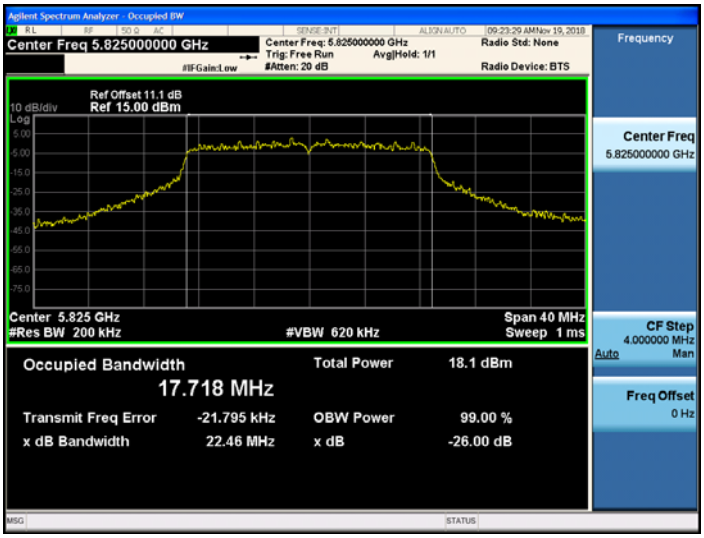
In order to simplify the report, attached plots were only the most wide channel.

802.11a UNII 1 BAND 26dB Bandwidth (CH 36)	802.11a UNII 2A BAND 26dB Bandwidth (CH 52)
	
802.11a UNII 2C BAND 26dB Bandwidth (CH120)	**802.11a UNII 3 BAND 26dB Bandwidth (CH 165)**
	

▣ Test Plots(802.11n(HT20))

Note:

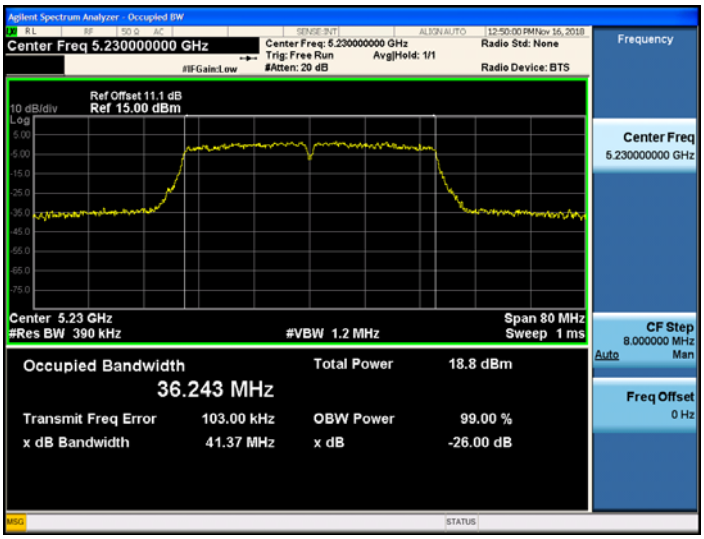
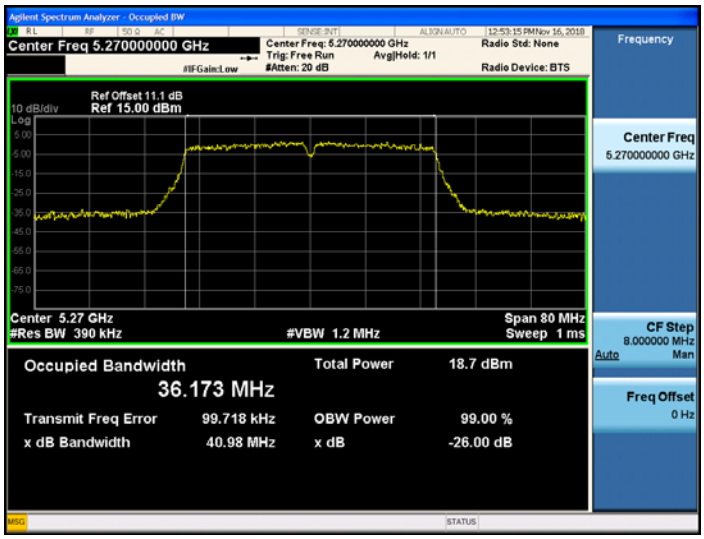
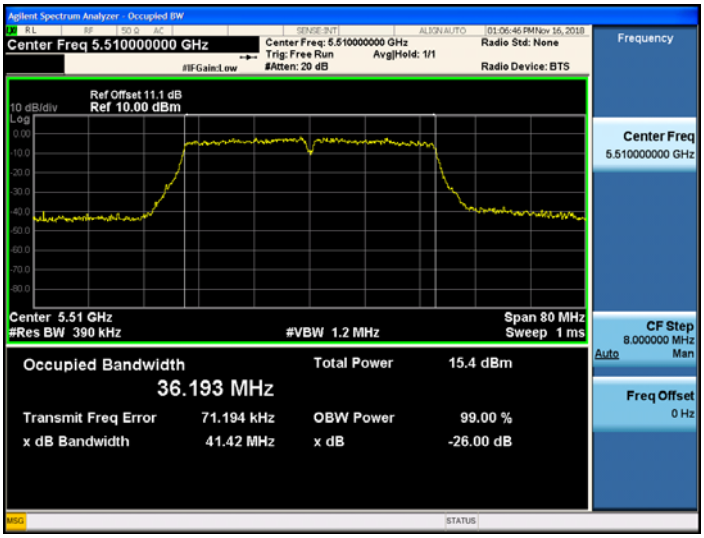
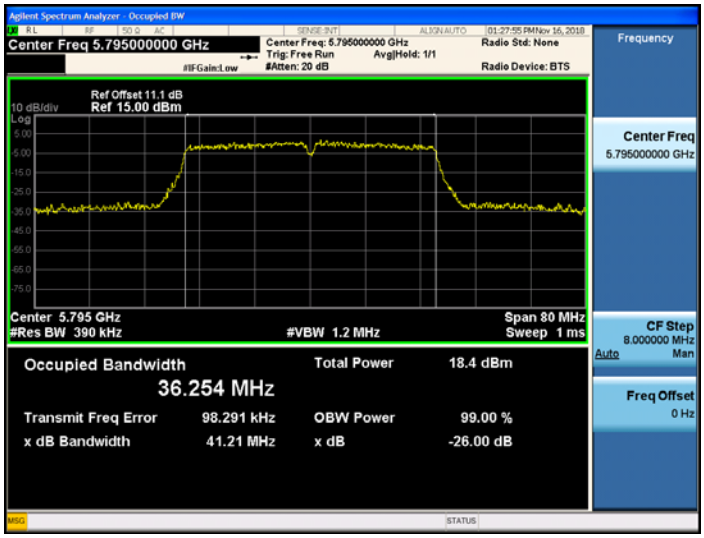
In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 48)	802.11n_HT20 UNII 2A BAND 26dB Bandwidth(CH 64)
	
802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 120)	**802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 165)**
	

▣ Test Plots(802.11n(HT40))

Note:

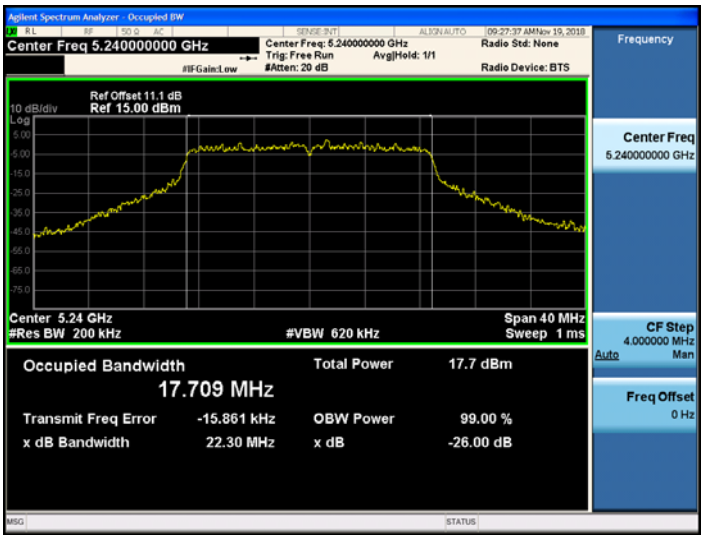
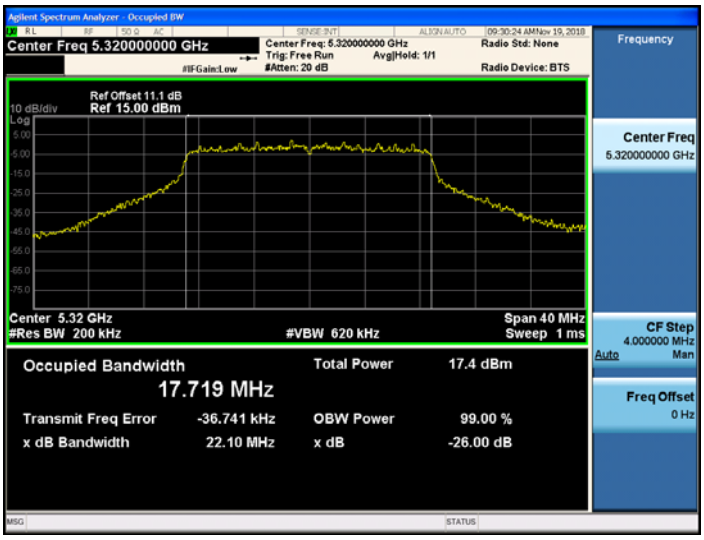
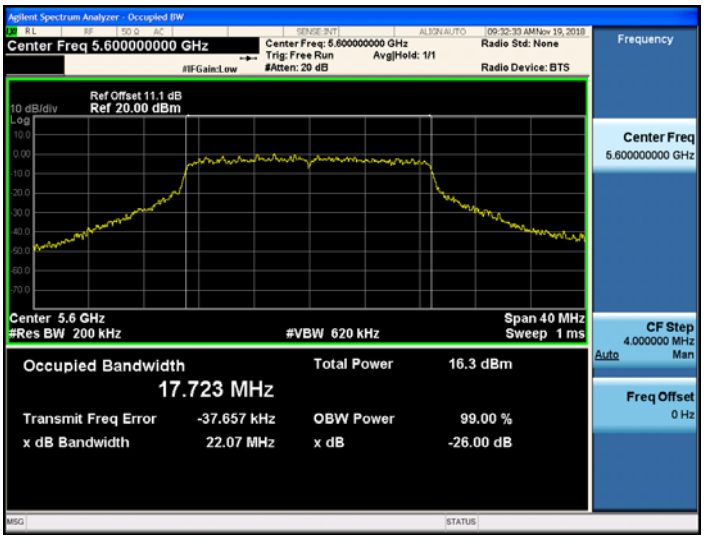
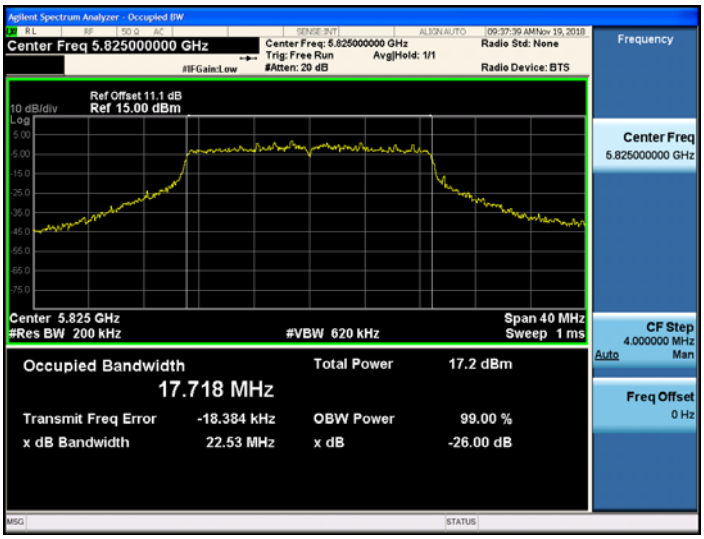
In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 46)	802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 54)
	
802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 102)	**802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 159)**
	

▣ Test Plots(802.11ac(VHT20))

Note:

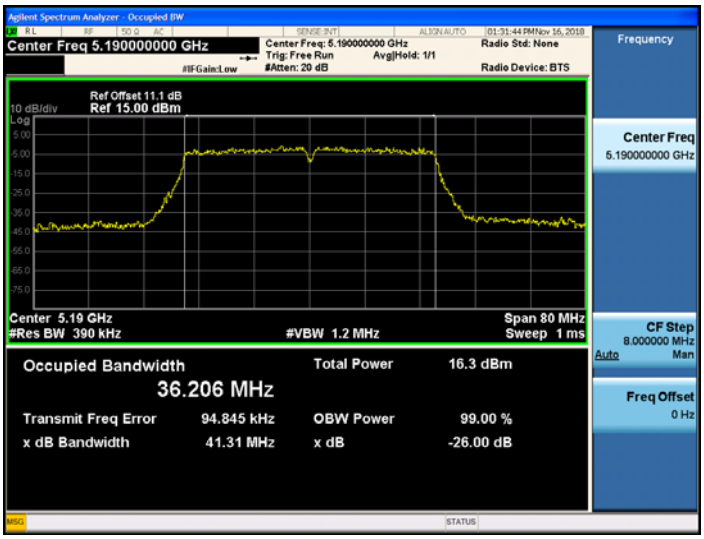
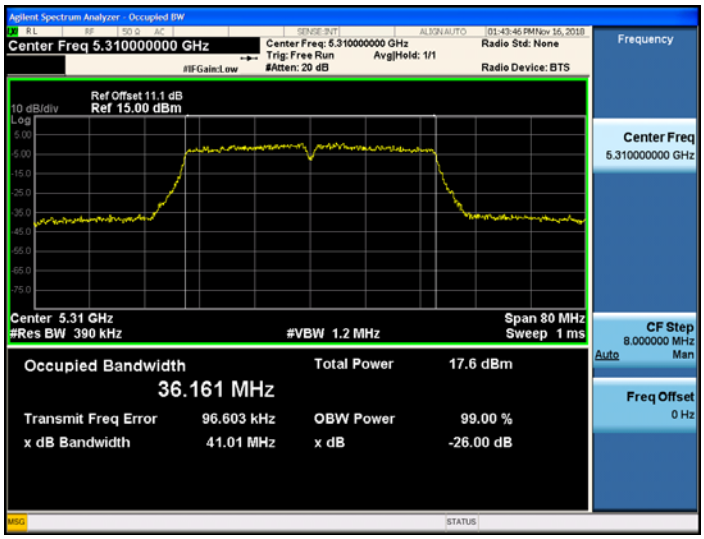
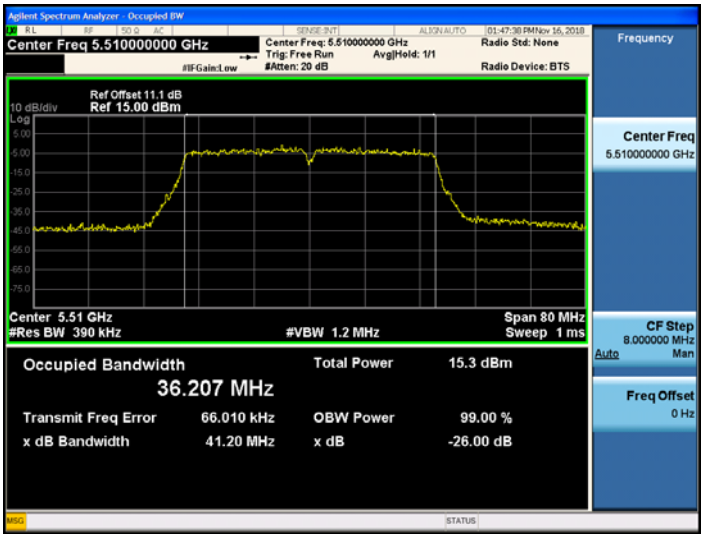
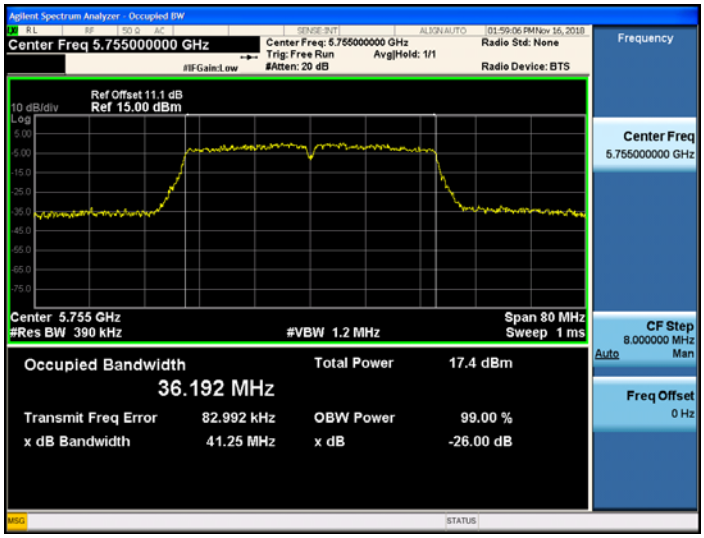
In order to simplify the report, attached plots were only the most wide channel.

802.11ac(VHT20) UNII 1 BAND 26dB Bandwidth(CH 48)	802.11ac(VHT20) UNII 2A BAND 26dB Bandwidth(CH 64)
	
802.11ac(VHT20) UNII 2C BAND 26dB Bandwidth(CH 120)	**802.11ac(VHT20) UNII 3 BAND 26dB Bandwidth(CH 165)**
	

▣ Test Plots(802.11ac(VHT40))

Note:

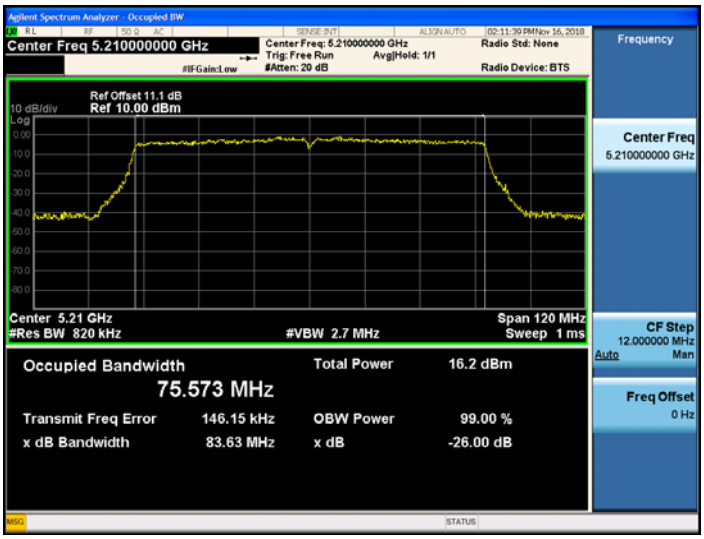
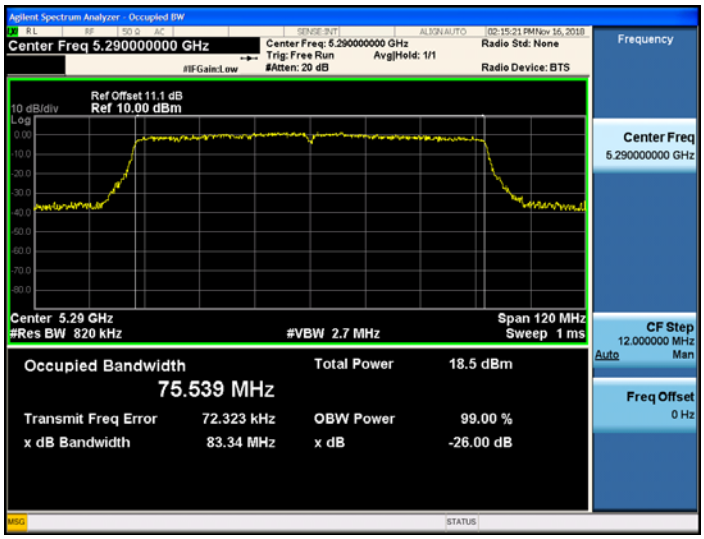
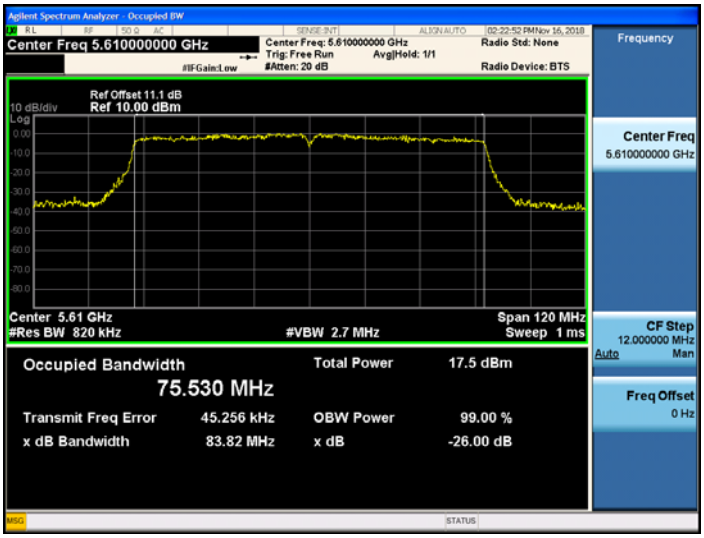
In order to simplify the report, attached plots were only the most wide channel.

802.11ac(VHT40) UNII 1 BAND 26dB Bandwidth(CH 38)	802.11ac(VHT40) UNII 2A BAND 26dB Bandwidth (CH 62)
	
802.11ac(VHT40) UNII 2C BAND 26dB Bandwidth(CH 102)	**802.11ac(VHT40) UNII 3 BAND 26dB Bandwidth (CH 151)**
	

▣ Test Plots(802.11ac(VHT80))

Note:

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

802.11ac(VHT80) UNII 1 BAND 26dB Bandwidth(CH 42)	802.11ac(VHT80) UNII 2A BAND 26dB Bandwidth (CH 58)
	
802.11ac(VHT80) UNII 2C BAND 26dB Bandwidth(CH 122)	**802.11ac(VHT80) UNII 3 BAND 26dB Bandwidth (CH 155)**
	

[Ant2]

802.11a Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	21.58
5200	40	22.71
5240	48	21.76
5260	52	23.06
5300	60	21.17
5320	64	20.75
5500	100	21.59
5600	120	21.13
5720	144	21.05
5745	149	21.22
5785	157	20.98
5825	165	21.65

802.11n(HT20) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	21.61
5200	40	21.71
5240	48	22.04
5260	52	21.80
5300	60	21.64
5320	64	22.39
5500	100	22.38
5600	120	22.10
5720	144	22.27
5745	149	22.15
5785	157	21.88
5825	165	21.47

802.11n(HT40) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	41.04
5230	46	40.67
5270	54	40.86
5310	62	40.89
5510	102	40.93
5590	118	40.96
5710	142	41.04
5755	151	41.31
5795	159	41.13

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	22.47
5200	40	21.40
5240	48	21.91
5260	52	21.74
5300	60	21.46
5320	64	22.95
5500	100	21.56
5600	120	22.15
5720	144	22.50
5745	149	22.00
5785	157	21.74
5825	165	21.73

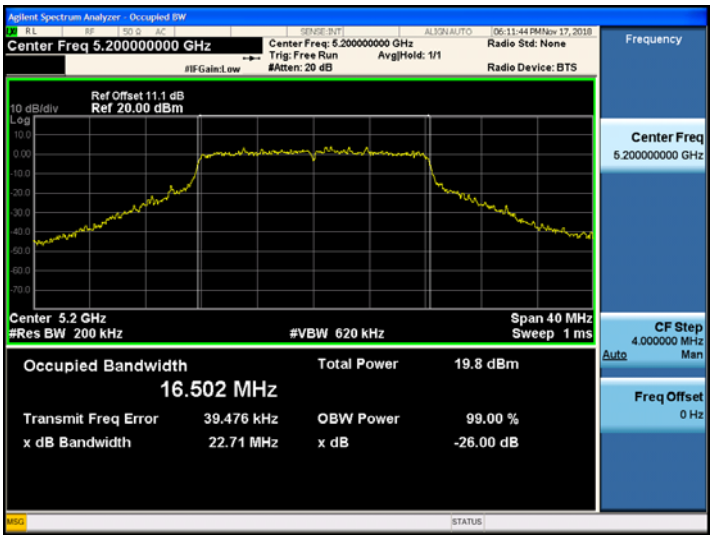
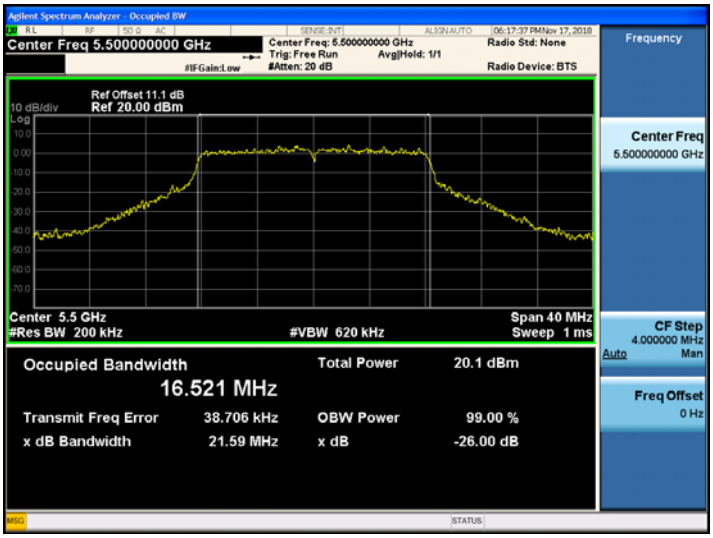
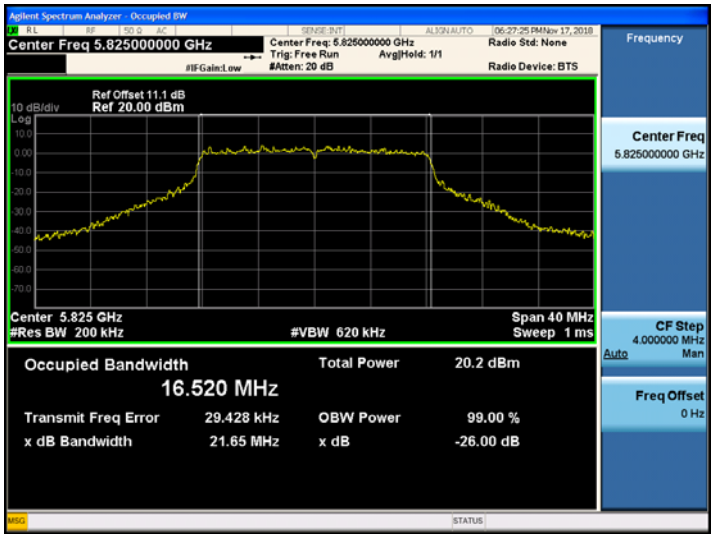
802.11ac(VHT40) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	41.72
5230	46	41.41
5270	54	41.21
5310	62	41.11
5510	102	41.27
5590	118	41.01
5710	142	40.97
5755	151	40.99
5795	159	41.50

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5210	42	83.41
5290	58	83.38
5530	106	82.18
5610	122	83.67
5690	138	83.32
5775	155	82.84

▣ Test Plots(802.11a)

Note:

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

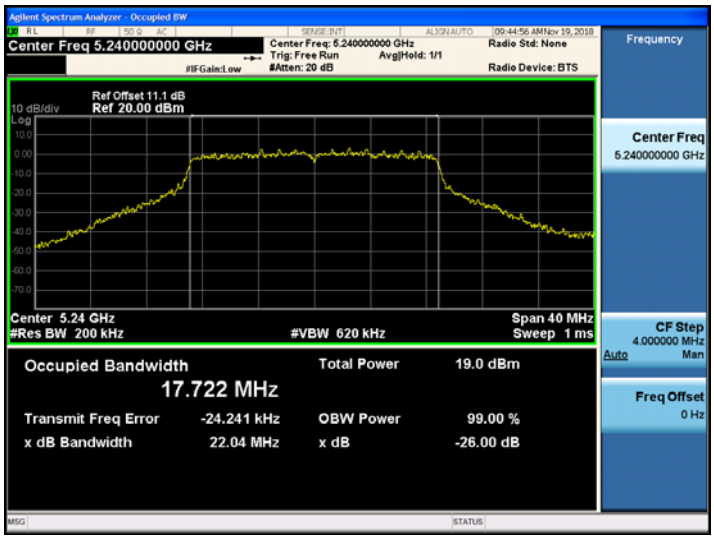
802.11a UNII 1 BAND 26dB Bandwidth (CH 40)	802.11a UNII 2A BAND 26dB Bandwidth (CH 52)
	
802.11a UNII 2C BAND 26dB Bandwidth (CH100)	**802.11a UNII 3 BAND 26dB Bandwidth (CH 165)**
	

▣ Test Plots(802.11n(HT20))

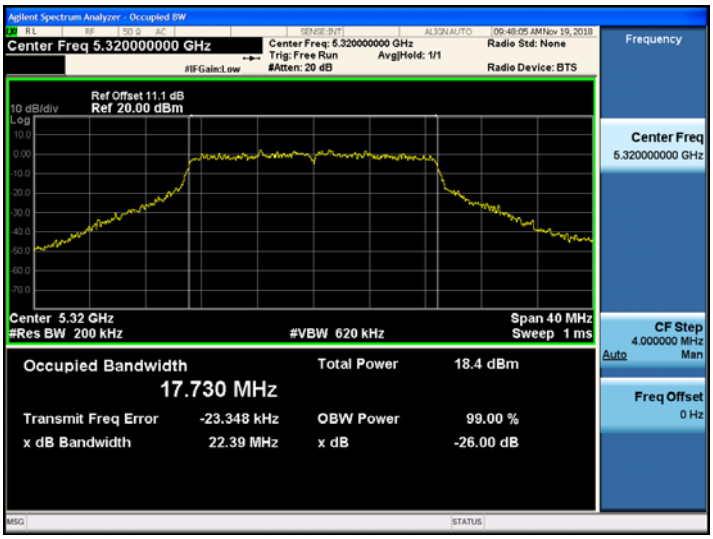
Note:

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

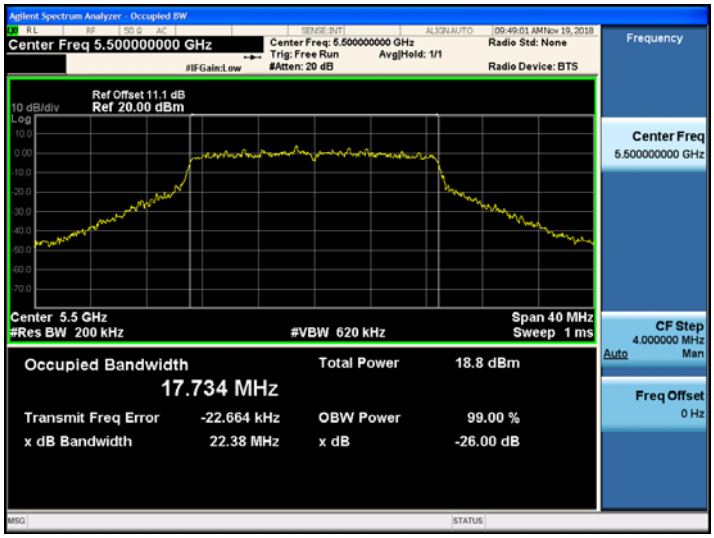
802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 48)



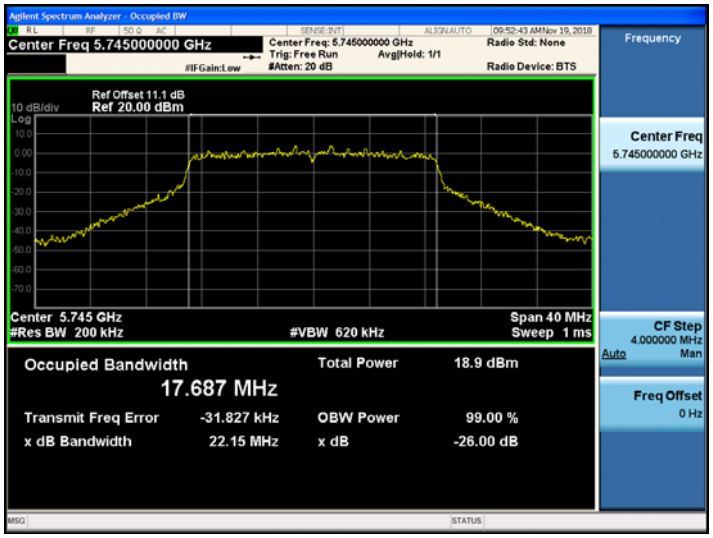
802.11n_HT20 UNII 2A BAND 26dB Bandwidth(CH 64)



802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 100)



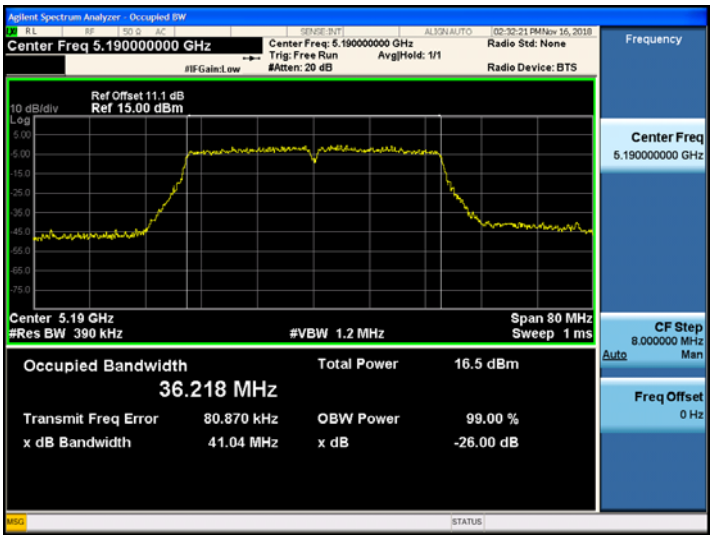
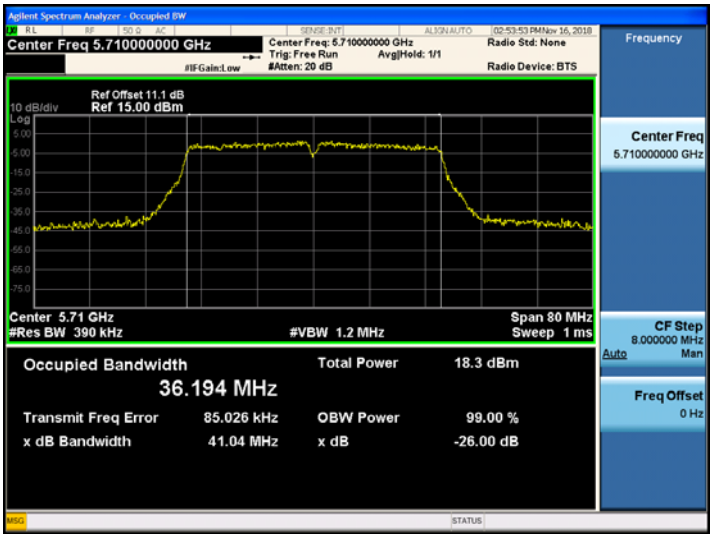
802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 149)



▣ Test Plots(802.11n(HT40))

Note:

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

802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 38)	802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 62)
	
802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 142)	**802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 151)**
	

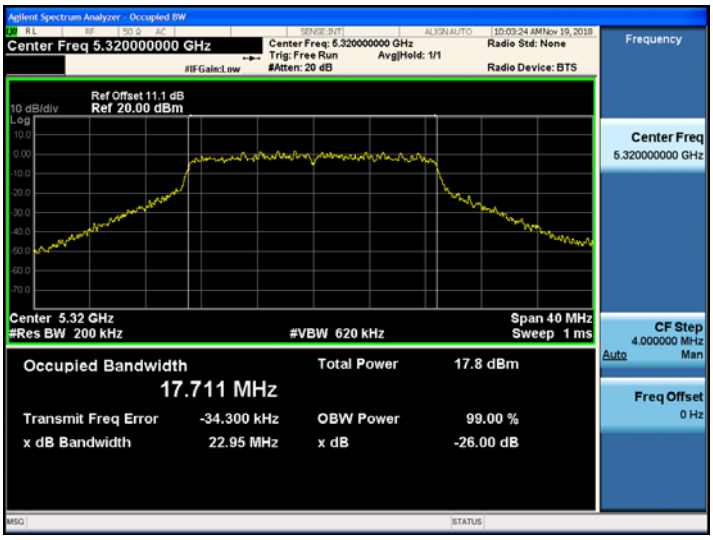
▣ Test Plots(802.11ac(VHT20))

Note:

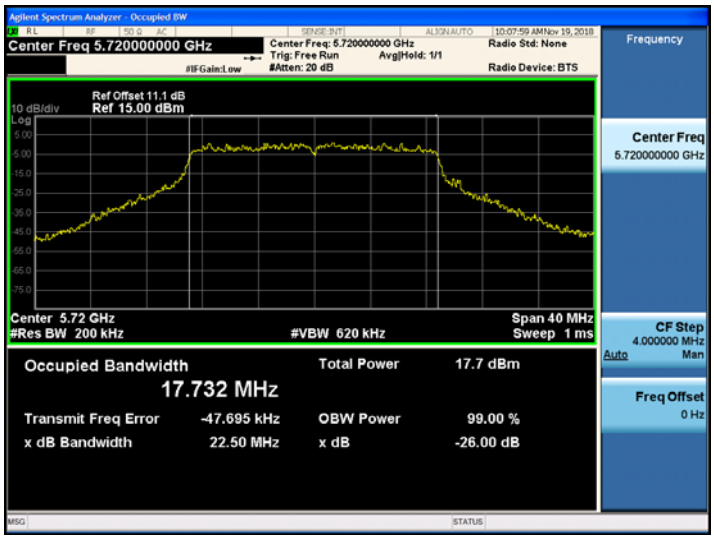
In order to simplify the report, attached plots were only the most wide channel.

802.11ac(VHT20) UNII 1 BAND 26dB Bandwidth(CH 36)

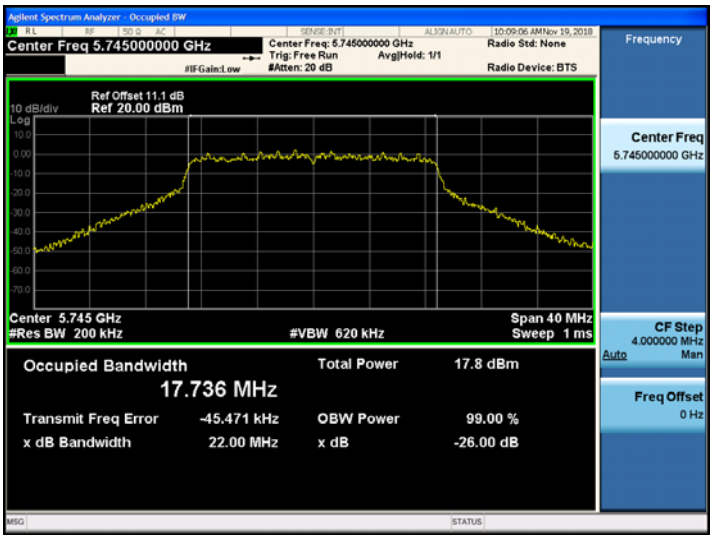
802.11ac(VHT20) UNII 2A BAND 26dB Bandwidth(CH 64)



802.11ac(VHT20) UNII 2C BAND 26dB Bandwidth(CH 144)



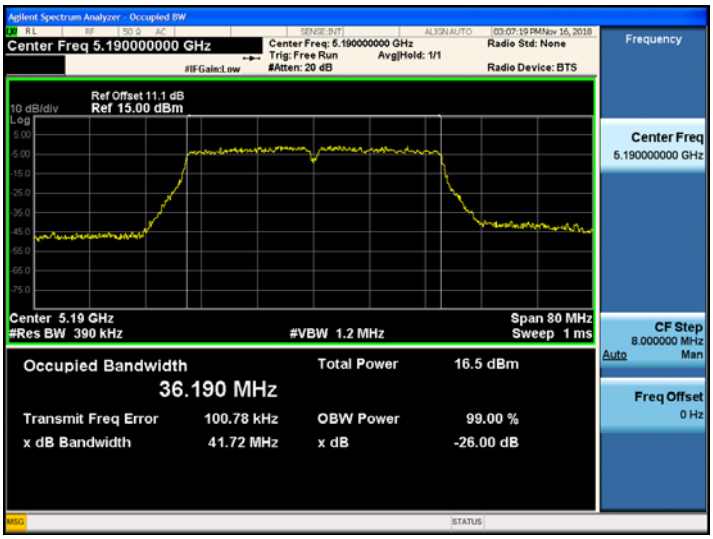
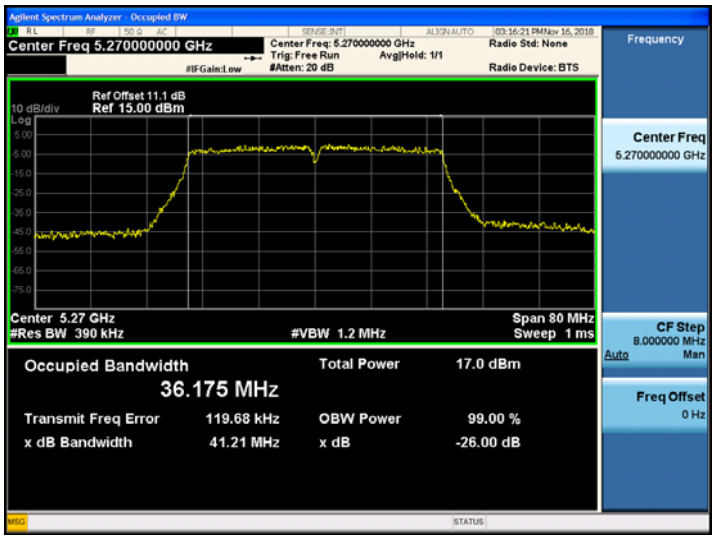
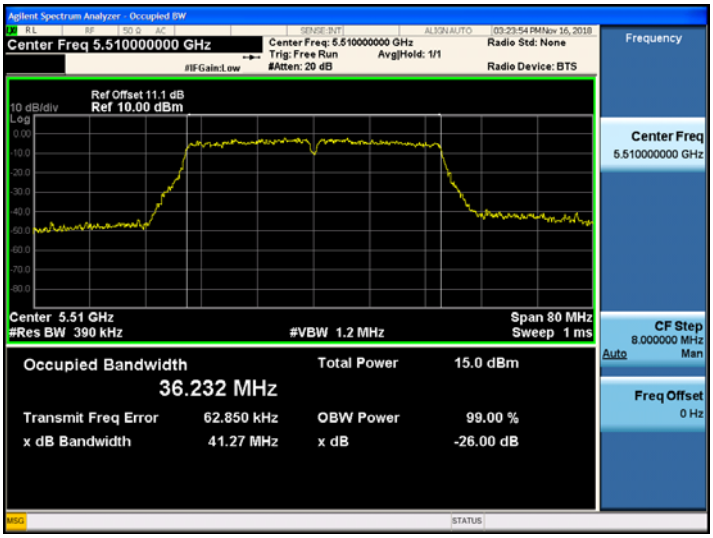
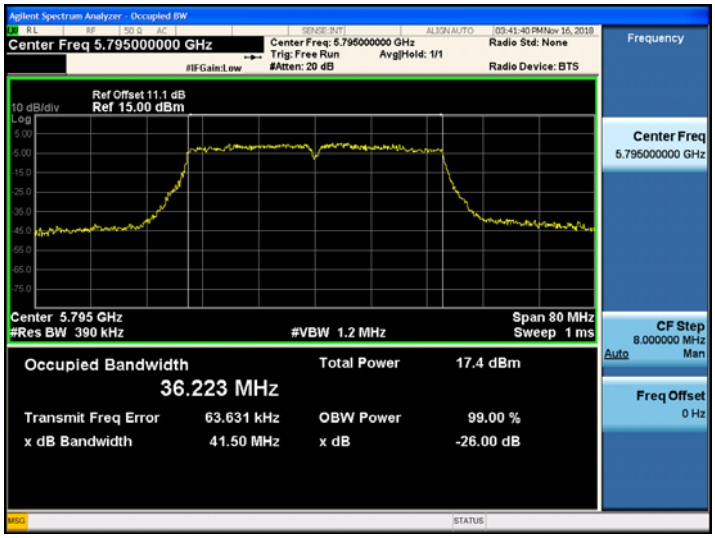
802.11ac(VHT20) UNII 3 BAND 26dB Bandwidth(CH 149)



▣ Test Plots(802.11ac(VHT40))

Note:

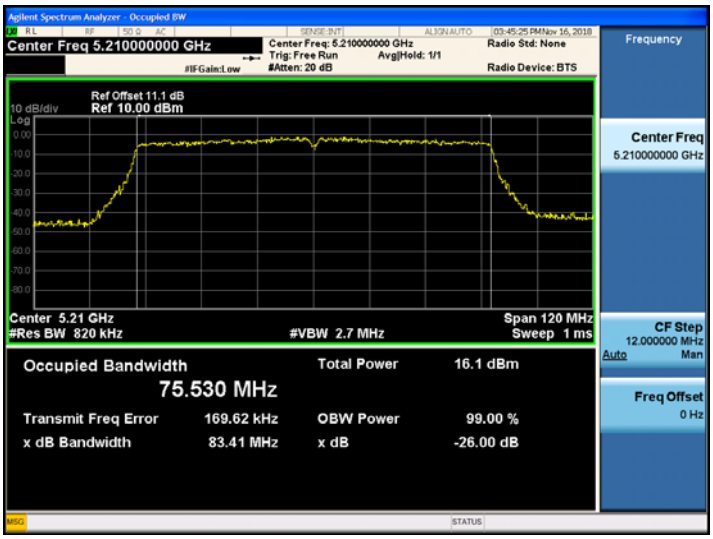
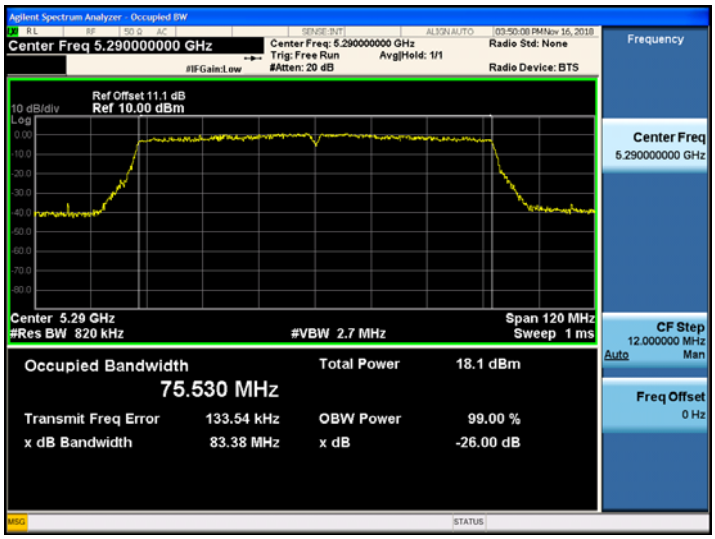
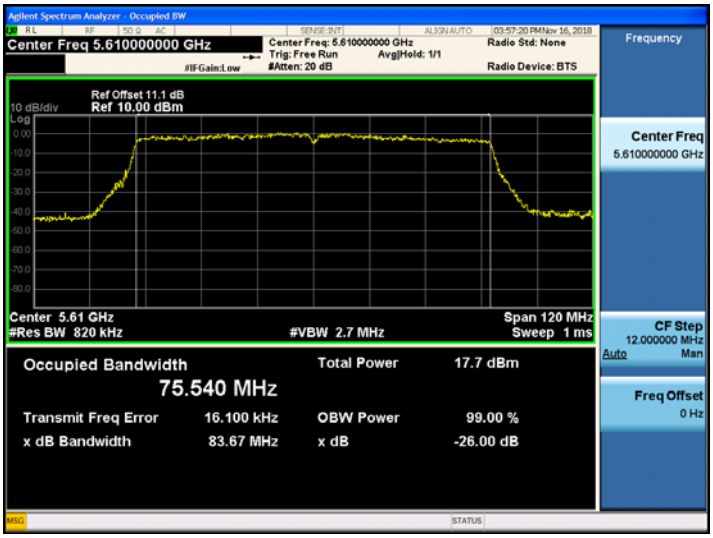
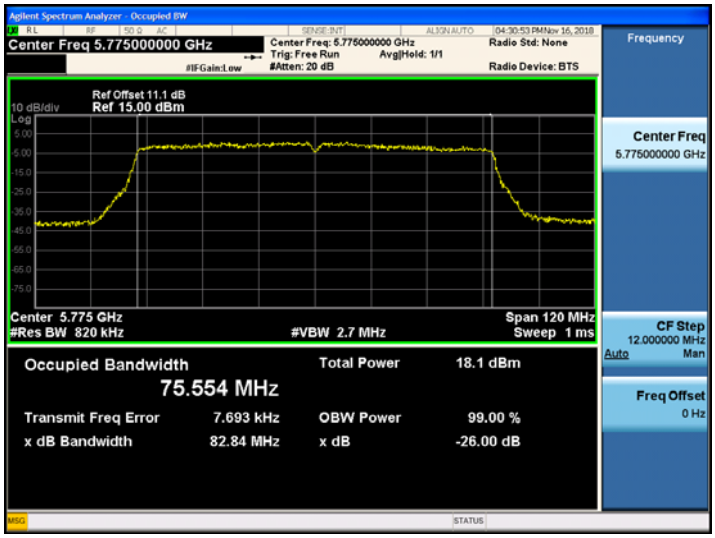
In order to simplify the report, attached plots were only the most wide channel.

802.11ac(VHT40) UNII 1 BAND 26dB Bandwidth(CH 38)	802.11ac(VHT40) UNII 2A BAND 26dB Bandwidth (CH 54)
	
802.11ac(VHT40) UNII 2C BAND 26dB Bandwidth(CH 102)	**802.11ac(VHT40) UNII 3 BAND 26dB Bandwidth (CH 159)**
	

▣ Test Plots(802.11ac(VHT80))

Note:

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

802.11ac(VHT80) UNII 1 BAND 26dB Bandwidth(CH 42)	802.11ac(VHT80) UNII 2A BAND 26dB Bandwidth (CH 58)
	
802.11ac(VHT80) UNII 2C BAND 26dB Bandwidth(CH 122)	**802.11ac(VHT80) UNII 3 BAND 26dB Bandwidth (CH 155)**
	

10.3 6DB BANDWIDTH

[Ant1]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.17	> 0.5	Pass
5785	157	15.96	> 0.5	Pass
5825	165	11.98	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.30	> 0.5	Pass
5785	157	15.12	> 0.5	Pass
5825	165	15.14	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.57	> 0.5	Pass
5795	159	35.35	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.13	> 0.5	Pass
5785	157	15.14	> 0.5	Pass
5825	165	16.85	> 0.5	Pass

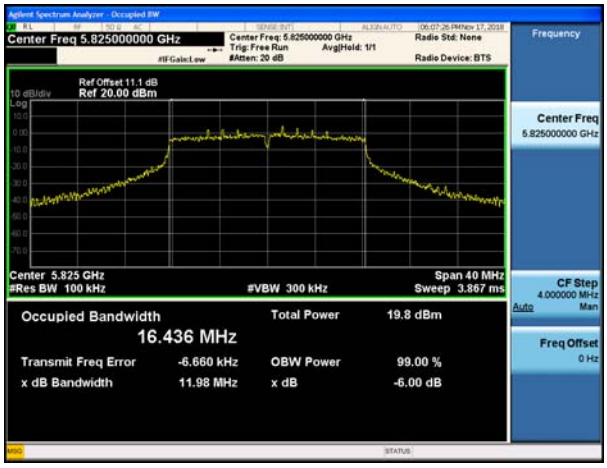
802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.19	> 0.5	Pass
5795	159	35.76	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.29	> 0.5	Pass

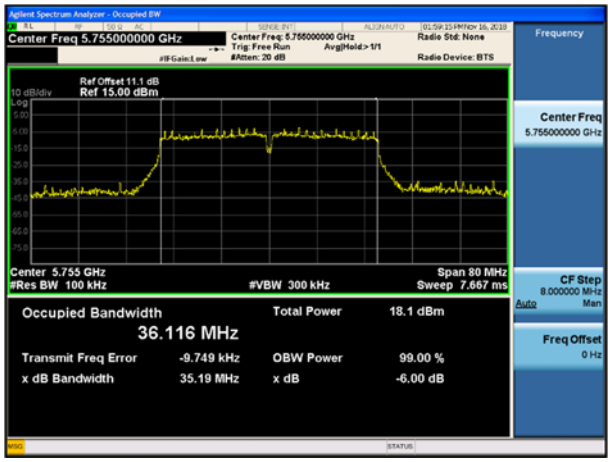
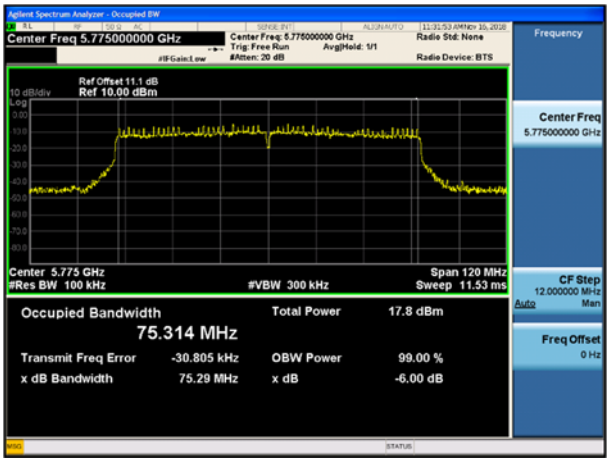
▣ Test Plots

Note:

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

802.11a (CH.165)	802.11n(HT20) (CH.157)
	

802.11n(HT40) (CH.159)	802.11ac(VHT20) (CH.149)

802.11ac(VHT40) (CH.151)	802.11ac(VHT80) (CH.155)
	

[Ant2]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.30	> 0.5	Pass
5785	157	14.44	> 0.5	Pass
5825	165	15.18	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.94	> 0.5	Pass
5785	157	16.92	> 0.5	Pass
5825	165	16.68	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.88	> 0.5	Pass
5795	159	35.29	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.11	> 0.5	Pass
5785	157	16.30	> 0.5	Pass
5825	165	16.00	> 0.5	Pass

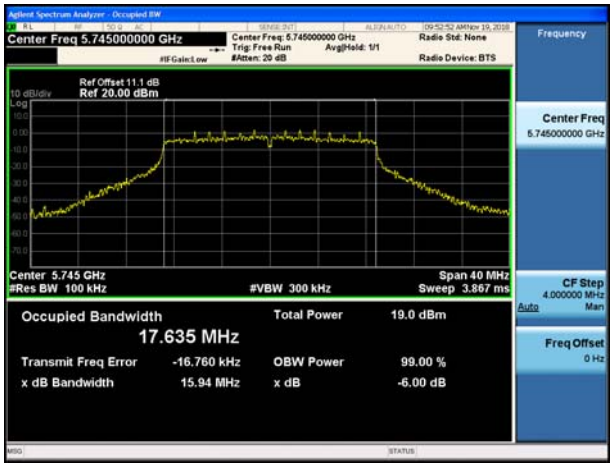
802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.42	> 0.5	Pass
5795	159	35.30	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.23	> 0.5	Pass

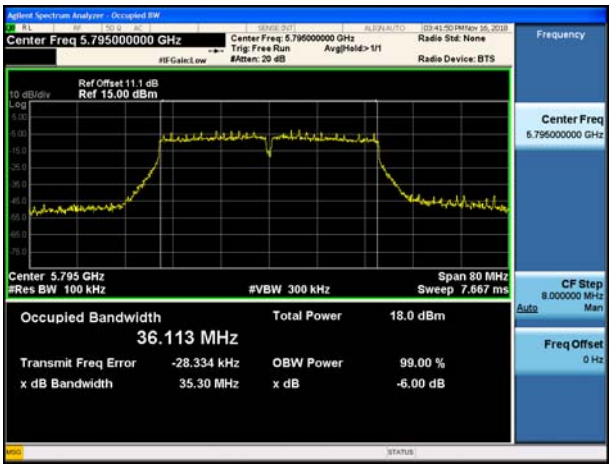
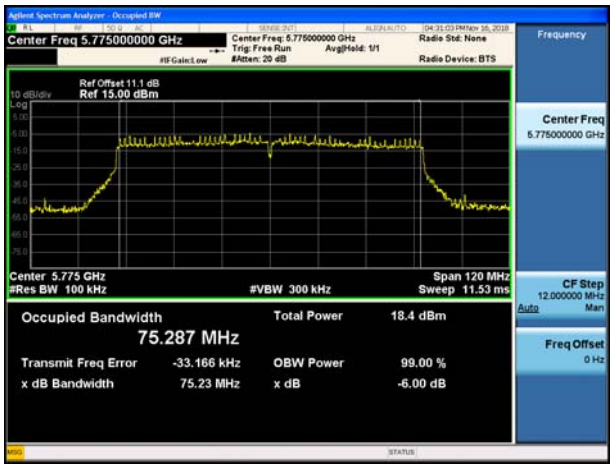
▣ Test Plots

Note:

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

802.11a (CH.157)	802.11n(HT20) (CH.149)
	

802.11n(HT40) (CH.159)	802.11ac(VHT20) (CH.149)

802.11ac(VHT40) (CH.159)	802.11ac(VHT80) (CH.155)
	

[Ant1]

▣ Straddle channels TEST RESULTS

Conducted Bandwidth Measurements for 802.11a/n_HT20/ac_VHT20 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	26dB Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	15.52	N/A	Pass
802.11n			15.32	N/A	Pass
802.11ac			15.20	N/A	Pass

Conducted Bandwidth Measurements for 802.11a/n_HT20/ac_VHT20 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	26dB Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	5.44	N/A	Pass
802.11n			5.60	N/A	Pass
802.11ac			5.36	N/A	Pass

Conducted Bandwidth Measurements for 802.11a/n_HT20/ac_VHT20 (UNII 3 Band)

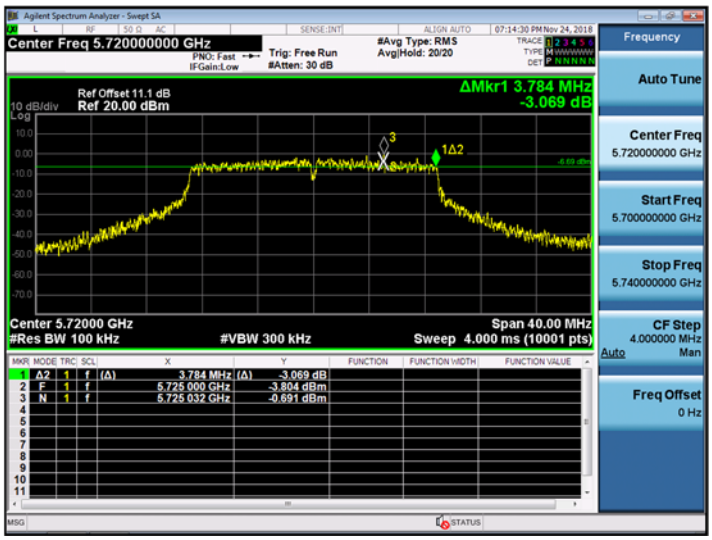
Mode	Frequency [MHz]	Channel No.	6dB Bandwidth [MHz]	Limit [MHz]	Pass / Fail
802.11a	5720	144	3.164	> 0.5	Pass
802.11n			3.784	> 0.5	Pass
802.11ac			3.404	> 0.5	Pass

▣ Test Plots(26dB Bandwidth)

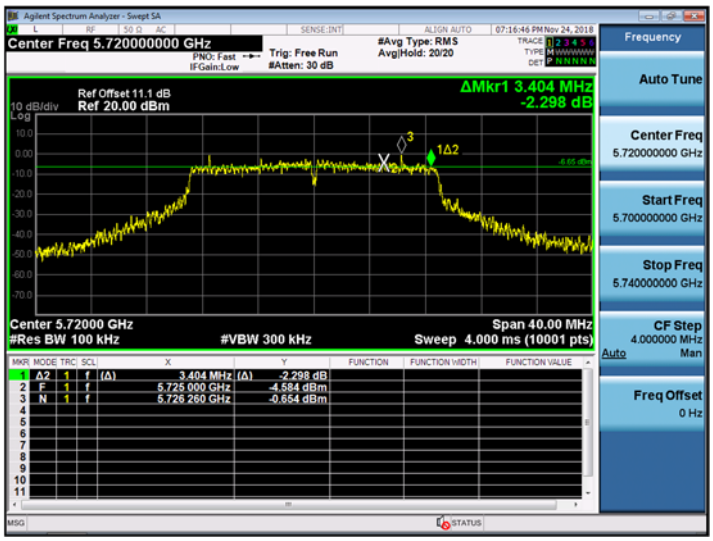
802.11a CH.144 Bandwidth	802.11n_HT20 CH.144 Bandwidth

802.11ac_VHT20 CH.144 Bandwidth

▣ Test Plots(UNII 3 Band 6dB Bandwidth)

802.11a CH.144 Bandwidth	802.11n_HT20 CH.144 Bandwidth
	

802.11ac_VHT20 CH.144 Bandwidth



▣ Straddle channels TEST RESULTS

Conducted Bandwidth Measurements for 802.11n_HT40/ac_VHT40 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	26dB Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	35.08	N/A	Pass
802.11ac			35.16	N/A	Pass

Conducted Bandwidth Measurements for 802.11n_HT40/ac_VHT40 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	26dB Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	5.24	N/A	Pass
802.11ac			5.32	N/A	Pass

Conducted Bandwidth Measurements for 802.11n_HT40/ac_VHT40 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	6dB Bandwidth [MHz]	Limit [MHz]	Pass / Fail
802.11n	5710	142	3.14	> 0.5	Pass
802.11ac			3.16	> 0.5	Pass