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TEST REPORT

FCC UNII Test for SM-A908B

Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-1908-FC038-R3

DATE OF ISSUE
10 September 2019

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FCC ID
A3LSMA908B

Applicant	**SAMSUNG Electronics Co., Ltd.** 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Eut Type Model Name	Mobile Phone SM-A908B
Modulation type	OFDM
FCC Classification	Unlicensed National Information Infrastructure(UNII)
FCC Rule Part(s)	Part 15.407

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test results were applied only to the test methods required by the standard.

Tested by
Jeong Ho Kim (signature)

Technical Manager
Jong Seok Lee (signature)

HCT CO., LTD.
Soo Chan Lee
SooChan Lee / CEO

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	27 August 2019	Initial Release
1	5 September 2019	Added the ISO 17025 KOLAS logo.
2	7 September 2019	-Add the HCT Accreditation No. for ISO 17025 KOLAS -Changed the * mark except for page 3
3	10 September 2019	-* identification mark do not use for different identification mark

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

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. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

CONTENTS

1. GENERAL INFORMATION

EUT DESCRIPTION

Model	SM-A908B	
Additional Model	-	
EUT Type	Mobile Phone	
Power Supply	DC 3.85 V	
Battery Information	Model: EB-BA908ABY Type: Li-ion Battery	
Travel Adapter Information	Model : EP-TA800 Manufacture: SOLUM	
Data Cable Information	Model : EP-DA905BBE Manufacture: Luxshare	
Ear-jack Information	Model : GHSS028-K4 Manufacture: BUJEON Electronics	
Modulation Type	OFDM : 802.11a, 802.11n, 802.11ac	
Frequency Range (MHz)	U-NII-1	20MHz BW : 5180 - 5240 40MHz BW : 5190 - 5230 80MHz BW : 5210
	U-NII-2A	20MHz BW : 5260 - 5320 40MHz BW : 5270 - 5310 80MHz BW : 5290
	U-NII-2C	20MHz BW : 5500 - 5720 40MHz BW : 5510 - 5710 80MHz BW : 5530 – 5690
	U-NII-3	20MHz BW : 5745 - 5825 40MHz BW : 5755 - 5795 80MHz BW : 5775
Antenna Specification	Antenna type: LDS Ant.1 Peak Gain : -3.55 dBi(UNII 1, 2A, 2C, 3) Ant.2 Peak Gain : -3.38 dBi(UNII 1, 2A, 2C, 3)	
Straddle channel	Supported	
TDWR Band	Supported	
Dynamic Frequency Selection	Slave without radar detection	
Date(s) of Tests	July 17, 2019 ~ August 27, 2019	

ANTENNA CONFIGURATIONS

1. The device employs MIMO technology. Below are the possible configurations

Configurations	SISO		SDM	CDD
	Ant1	Ant2	Ant1 + Ant2	Ant1 + Ant2
802.11a	O	O	X	O
802.11n	O	O	O	O
802.11ac	O	O	O	O

Note:

1. O = Support, X = Not Support
2. SISO = Single Input Single Output
3. SDM = Spatial Diversity Multiplexing
4. CDD = Cyclic Delay Diversity

2. This device supports simultaneous transmission operation, which allows for two SISO channels to operate independent of one another in the 2.4GHz and 5GHz bands simultaneously on each antenna.

Frequency	Supported
2.4 GHz Ant 1 + 5 GHz Ant 2	O
2.4 GHz Ant 2 + 5 GHz Ant 1	X
2.4 GHz Ant 1 + 5 GHz Ant 1	X
2.4 GHz Ant 2 + 5 GHz Ant 2	X

3. Directional Gain Calculation

According to KDB 662911 D01 Multiple Transmitter Output v02r01 F) 2) e) (iii)

Directional gain = $G_{ANT\ MAX}$ + 10 log(N_{ANT}/N_{SS}) dBi

(N_{ANT} = 2, N_{SS} = 2, $G_{ANT\ MAX}$ is.the gain of the antenna having the highest gain)

Band	Ant Gain (dBi)		N_{ANT}/ N_{ss}	Directional Gain (= $G_{ANT\ MAX}$ + 10 log(N_{ANT}/N_{SS})) (dBi)
UNII 1,2A,2C,3	ANT1	-3.55	2 / 2	-0.45
	ANT2	-3.38		

2. MAXIMUM OUTPUT POWER

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

Band	Mode	SISO				MIMO	
		Ant1 Power		Ant2 Power		Ant 1 + Ant 2 Power	
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
UNII1	802.11a	14.98	0.031	15.47	0.035	18.24	0.067
	802.11n (HT20)	14.96	0.031	15.39	0.035	18.19	0.066
	802.11n (HT40)	13.32	0.021	14.37	0.027	16.89	0.049
	802.11ac (VHT20)	15.45	0.035	15.79	0.038	18.64	0.073
	802.11ac (VHT40)	13.78	0.024	14.25	0.027	17.03	0.050
	802.11ac (VHT80)	11.01	0.013	11.26	0.013	14.15	0.026
UNII2A	802.11a	14.96	0.031	15.37	0.034	18.18	0.066
	802.11n (HT20)	14.86	0.031	15.30	0.034	18.10	0.065
	802.11n (HT40)	13.93	0.025	14.99	0.032	17.51	0.056
	802.11ac (VHT20)	14.73	0.030	15.75	0.038	18.28	0.067
	802.11ac (VHT40)	13.97	0.025	14.96	0.031	17.50	0.056
	802.11ac (VHT80)	9.26	0.008	9.86	0.010	12.58	0.018
UNII2C	802.11a	15.09	0.032	15.23	0.033	18.17	0.066
	802.11n (HT20)	14.96	0.031	15.05	0.032	18.02	0.063
	802.11n (HT40)	13.58	0.023	14.50	0.028	17.07	0.051
	802.11ac (VHT20)	15.15	0.033	14.99	0.032	18.08	0.064
	802.11ac (VHT40)	13.63	0.023	14.36	0.027	17.02	0.050
	802.11ac (VHT80)	13.08	0.020	13.88	0.024	16.51	0.045
UNII3	802.11a	15.53	0.036	14.96	0.031	18.26	0.067
	802.11n (HT20)	15.75	0.038	14.94	0.031	18.37	0.069
	802.11n (HT40)	13.54	0.023	13.84	0.024	16.70	0.047
	802.11ac (VHT20)	15.68	0.037	14.85	0.031	18.30	0.068
	802.11ac (VHT40)	13.59	0.023	13.86	0.024	16.74	0.047
	802.11ac (VHT80)	13.36	0.022	13.44	0.022	16.41	0.044

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 6.6.5 of ANSI C63.10. (Version: 2013)

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."

(1) The antennas of this E.U.T are permanently attached.
(2) 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.

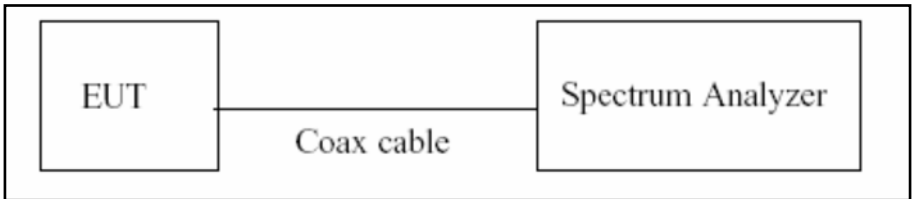
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

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)	5.05

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.

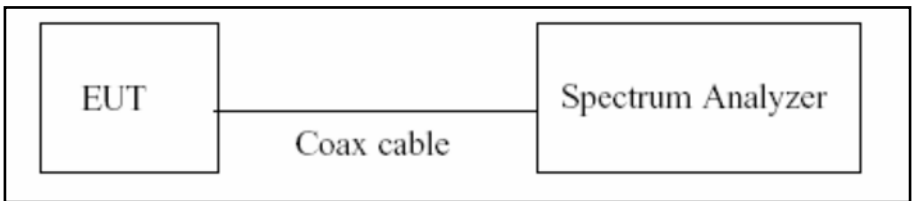
1. RBW = 8 MHz (the largest availble value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

8.2. 6dB Bandwidth & 26dB Bandwidth

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 x 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.

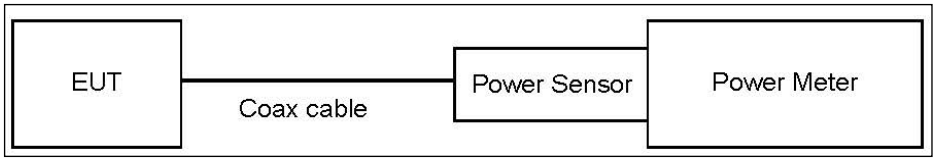
8.3. Output Power Measurement

Limit

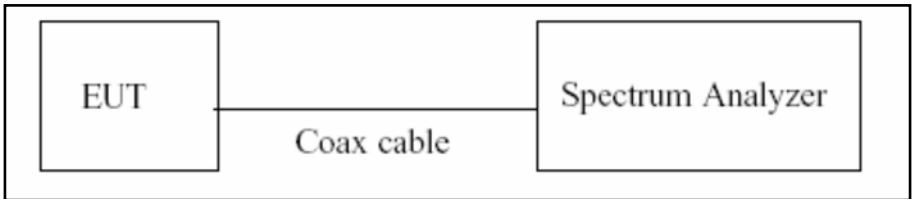
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30dBm)

Test Configuration

Power Meter



Spectrum Analyzer(Only Straddle Channel)



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 x 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(20 dB) + Cable loss
3. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1	20.63
UNII 2A	20.63
UNII 2C	20.63
UNII 3	20.63

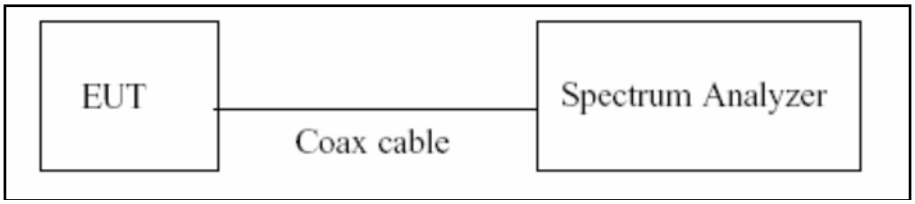
(Actual value of loss for the attenuator and cable combination)

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 x 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(20 dB) + Cable loss
3. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1	20.63
UNII 2A	20.63
UNII 2C	20.63
UNII 3	20.63

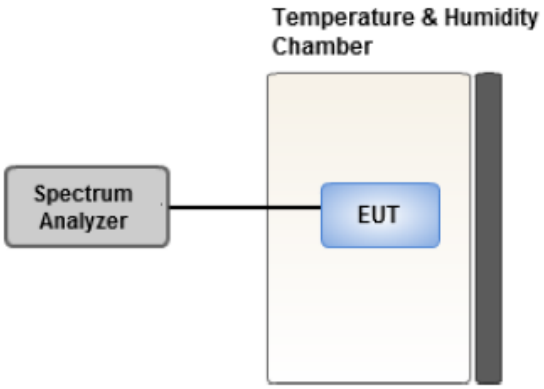
(Actual value of loss for the attenuator and cable combination)

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[(a)]	56 to 46[(a)]
0.50 to 5	56	46
5 to 30	60	50

[(a)]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.

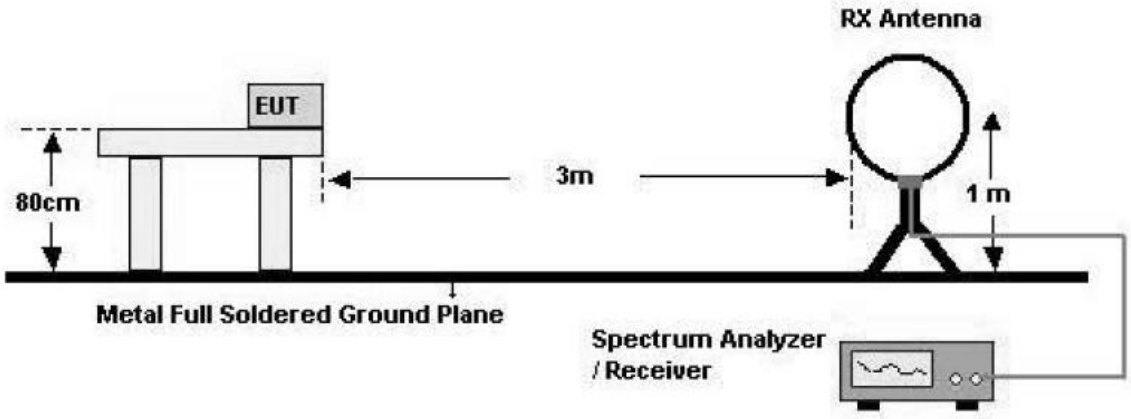
3. UNII 3: All emissions shall be limited to a level of －27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below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

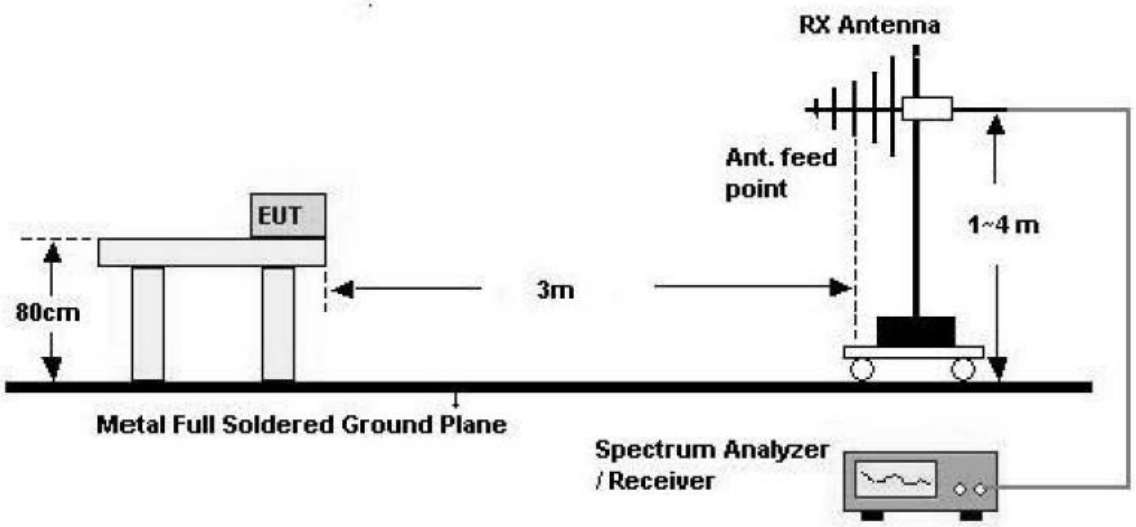
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

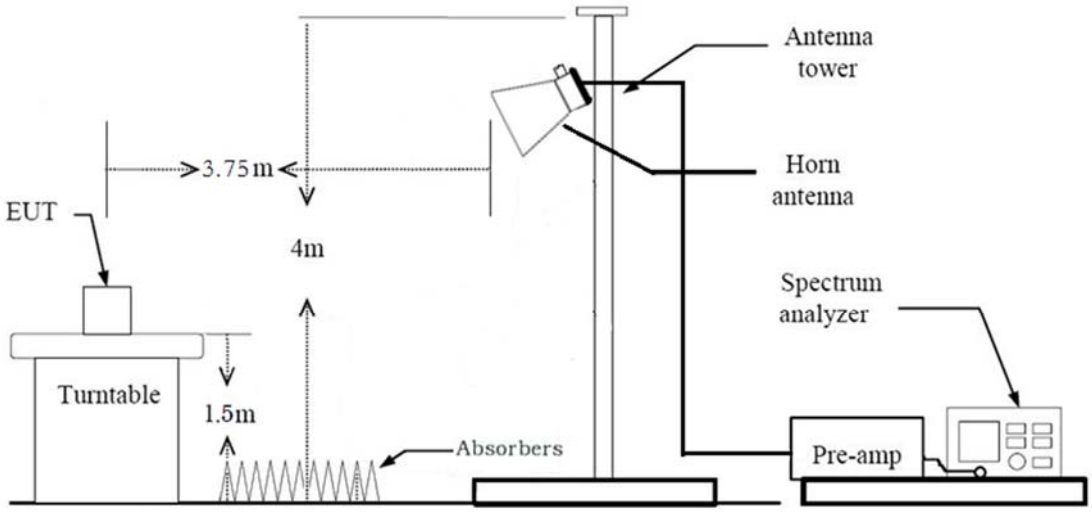
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions(Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. .We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) = 40log(3 m/300 m) = - 80 dB
   Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = 40log(3 m/30 m) = - 40 dB
   Measurement Distance : 3 m
8. Spectrum Setting
   - Frequency Range = 9 kHz ~ 30 MHz
   - Detector = Peak
   - Trace = Maxhold
   - RBW = 9 kHz
   - VBW ≥ 3 x RBW
9. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the

regulations; however, an attempt should be made to avoid making measurements in the near field.
OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Test Procedure of Radiated spurious emissions(Below 1GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.

2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
5. Spectrum Setting
   (1) Measurement Type(Peak):
      - Measured Frequency Range : 30 MHz – 1 GHz
      - Detector = Peak
      - Trace = Maxhold
      - RBW = 100 kHz
      - VBW ≥ 3 x RBW
   (2) Measurement Type(Quasi-peak):
      - Measured Frequency Range : 30 MHz – 1 GHz
      - Detector = Quasi-Peak
      - RBW = 120 kHz
   In general, (1) is used mainly
6. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)

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 = 20log (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 = 20log (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)	Duty Cycle	Duty Cycle Factor (dB)	The actual setting value of VBW (Hz)
802.11a	6	0.975	0.112	1000
802.11n(HT20)	MCS 0	0.973	0.119	1000
802.11n(HT40)	MCS 0	0.948	0.232	3000
802.11ac(VHT20)	MCS 0	0.973	0.118	1000
802.11ac(VHT40)	MCS 0	0.948	0.231	3000
802.11ac(VHT80)	MCS 0	0.902	0.446	10000

8.8. Worst case configuration and mode

Radiated test

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 : X
   - Radiated Restricted Band Edge : X
3. All datarate of operation were investigated and the worst case datarate results are reported
   - Mode : Ant1(SISO), Ant2(SISO), Ant1+Ant2(SDM), Ant1+Ant2(CDD)
   - Worstcase : Ant1+Ant2(CDD)
4. All position of loop antenna were investigated and the test result is a no critical peak found at all positions.
   - Position : Horizontal, Vertical, Parallel to the ground plane

Radiated test(DBS)

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 : X
3. The following tables show the worst case configurations determined during testing.

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1	2
Channel	11	165
Data Rate	1 Mbps	6 Mbps
Mode	802.11b	802.11a

AC Power line Conducted Emissions

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

Conducted test

1. All datarate of operation were investigated and the worst case datarate results are reported

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

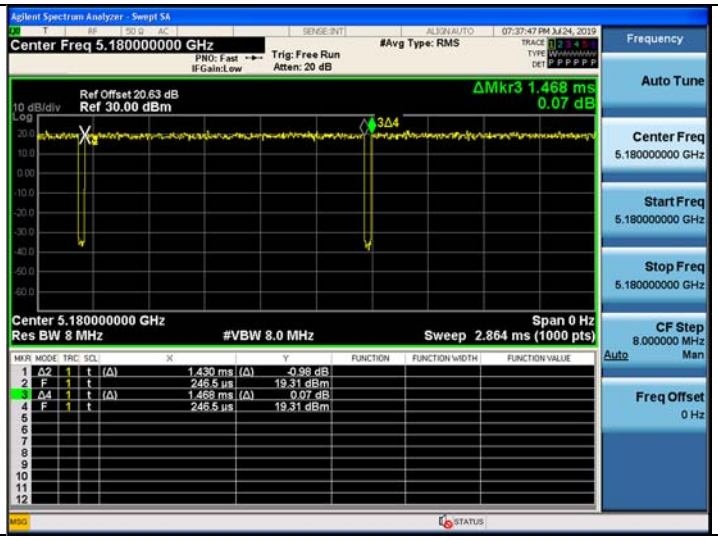
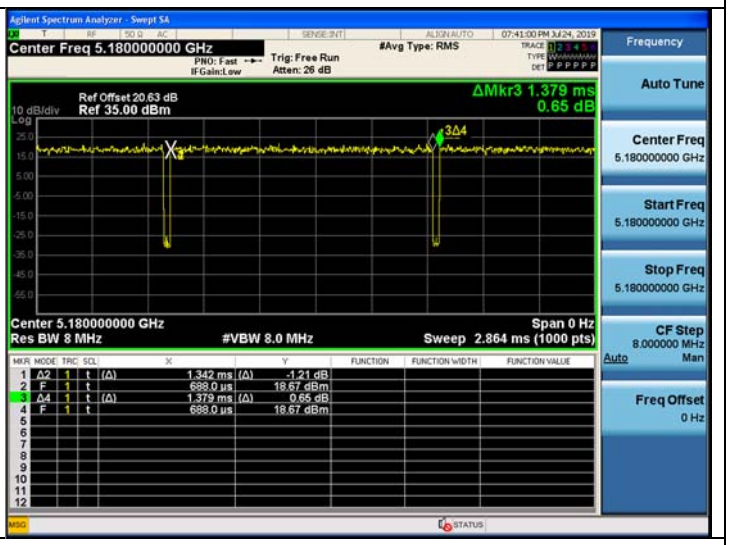
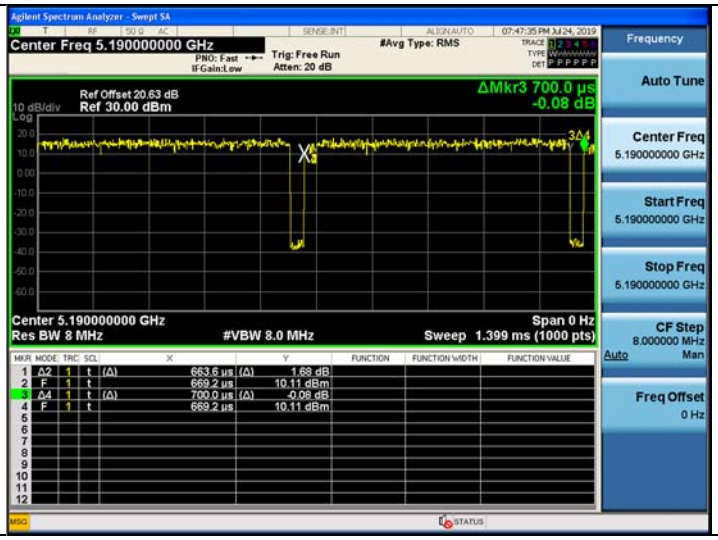
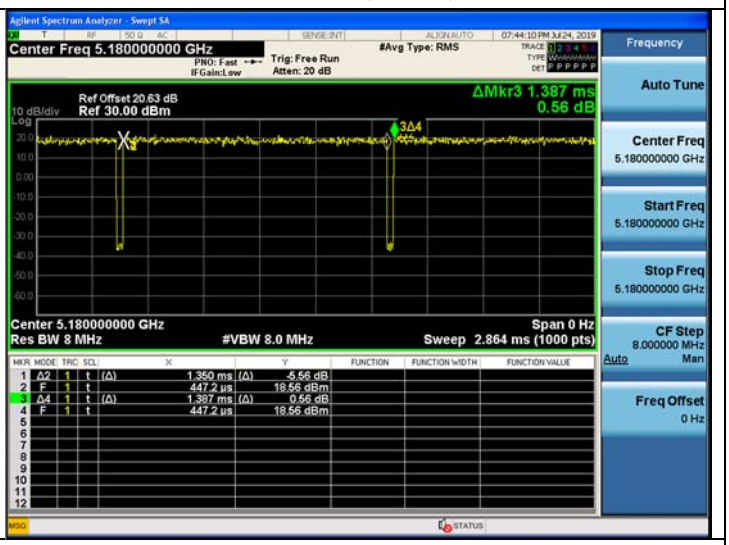
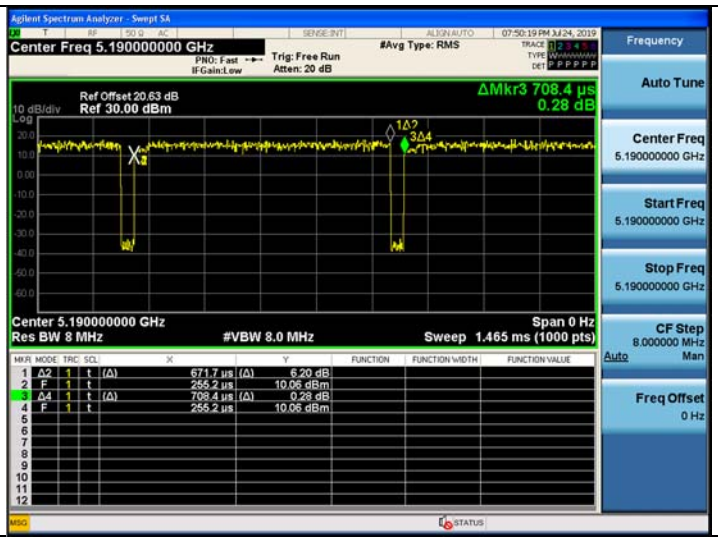
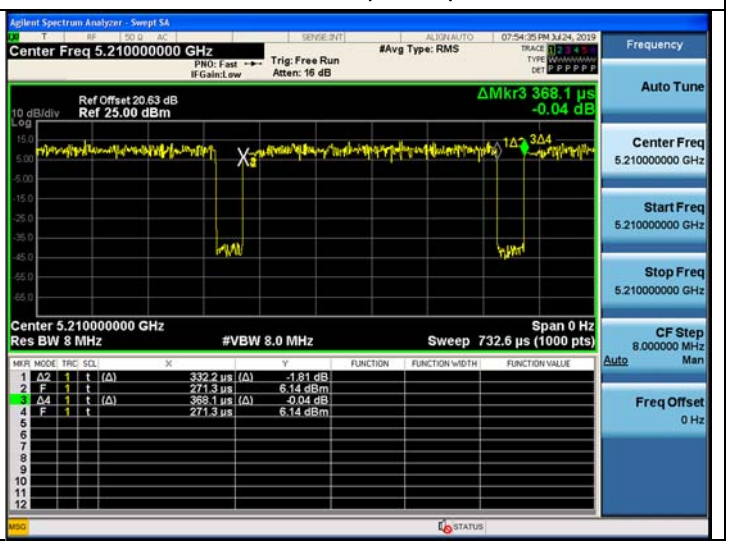
Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11a	6	1.430	1.468	0.975	0.112
	9	0.961	0.998	0.963	0.163
	12	0.729	0.766	0.952	0.214
	18	0.492	0.529	0.929	0.318
	24	0.376	0.413	0.911	0.404
	36	0.256	0.292	0.877	0.571
	48	0.200	0.236	0.847	0.721
	54	0.180	0.216	0.833	0.793

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11n (HT20)	0	1.342	1.379	0.973	0.119
	1	0.688	0.726	0.947	0.234
	2	0.472	0.509	0.927	0.328
	3	0.364	0.401	0.908	0.420
	4	0.256	0.292	0.876	0.575
	5	0.200	0.236	0.849	0.711
	6	0.184	0.220	0.837	0.775
	7	0.168	0.204	0.824	0.843
802.11n (HT40)	0	0.664	0.700	0.948	0.232
	1	0.352	0.388	0.907	0.422
	2	0.248	0.284	0.873	0.588
	3	0.196	0.232	0.845	0.732
	4	0.144	0.180	0.800	0.969
	5	0.116	0.152	0.764	1.168
	6	0.108	0.144	0.749	1.255
	7	0.100	0.136	0.734	1.342

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT20)	0	1.350	1.387	0.973	0.118
	1	0.697	0.733	0.950	0.223
	2	0.476	0.513	0.928	0.325
	3	0.368	0.405	0.909	0.416
	4	0.260	0.296	0.878	0.566
	5	0.204	0.240	0.849	0.710
	6	0.188	0.224	0.838	0.766
	7	0.173	0.208	0.828	0.818
	8	0.152	0.188	0.808	0.928
802.11ac (VHT40)	0	0.672	0.708	0.948	0.231
	1	0.356	0.392	0.908	0.417
	2	0.252	0.287	0.875	0.580
	3	0.200	0.236	0.848	0.717
	4	0.148	0.184	0.803	0.955
	5	0.120	0.156	0.770	1.137
	6	0.112	0.148	0.757	1.207
	7	0.104	0.140	0.744	1.286
	8	0.096	0.132	0.728	1.380
	9	0.088	0.125	0.706	1.512
802.11ac (VHT80)	0	0.332	0.368	0.902	0.446
	1	0.188	0.224	0.840	0.759
	2	0.140	0.176	0.796	0.991
	3	0.116	0.152	0.763	1.172
	4	0.092	0.128	0.719	1.432
	5	0.080	0.116	0.692	1.596
	6	0.076	0.112	0.677	1.692
	7	0.072	0.108	0.669	1.745
	8	0.068	0.104	0.656	1.829
	9	0.064	0.100	0.639	1.947

Note:

In order to simplify the report, attached plots were only lowest datarate.

802.11a	802.11n(HT20)
	
802.11n(HT40)	**802.11ac(VHT20)**
	
802.11ac(VHT40)	**802.11ac(VHT80)**
	

10.2 26DB BANDWIDTH

[ANT1]

802.11a Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.05	16.442
5200	40	21.30	16.412
5240	48	20.62	16.396
5260	52	20.85	16.482
5300	60	22.01	16.436
5320	64	21.50	16.468
5500	100	21.74	16.454
5600	120	21.07	16.407
5720	144	21.26	16.479
5745	149	20.74	16.430
5785	157	20.82	16.428
5825	165	21.39	16.477

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.77	17.646
5200	40	21.85	17.625
5240	48	21.72	17.630
5260	52	21.47	17.658
5300	60	21.66	17.628
5320	64	21.47	17.612
5500	100	22.72	17.622
5600	120	21.94	17.609
5720	144	21.11	17.591
5745	149	22.12	17.627
5785	157	22.25	17.616
5825	165	22.09	17.646

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	40.43	35.961
5230	46	40.01	36.041
5270	54	40.34	36.016
5310	62	39.95	35.943
5510	102	40.51	35.914
5590	118	40.62	35.938
5710	142	40.37	35.959
5755	151	40.38	36.003
5795	159	39.90	35.941

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.26	17.590
5200	40	21.60	17.622
5240	48	22.00	17.629
5260	52	21.85	17.621
5300	60	21.52	17.622
5320	64	21.07	17.608
5500	100	21.77	17.658
5600	120	22.06	17.658
5720	144	21.08	17.608
5745	149	21.42	17.611
5785	157	22.06	17.631
5825	165	22.10	17.625

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.47	35.985
5230	46	39.97	35.944
5270	54	40.00	36.010
5310	62	39.88	36.015
5510	102	40.13	35.945
5590	118	40.12	35.968
5710	142	40.18	35.960
5755	151	40.23	36.017
5795	159	39.92	36.004

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	81.25	74.912
5290	58	81.17	74.886
5530	106	81.24	74.995
5610	122	80.69	74.796
5690	138	81.23	74.941
5775	155	81.87	75.034

[ANT2]

802.11a Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	20.96	16.427
5200	40	21.72	16.456
5240	48	20.74	16.432
5260	52	20.48	16.439
5300	60	20.83	16.392
5320	64	20.95	16.429
5500	100	21.48	16.522
5600	120	20.96	16.430
5720	144	21.00	16.439
5745	149	21.50	16.403
5785	157	20.51	16.463
5825	165	21.06	16.449

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.30	17.609
5200	40	21.26	17.591
5240	48	22.15	17.627
5260	52	21.52	17.607
5300	60	21.74	17.619
5320	64	22.05	17.618
5500	100	22.87	17.618
5600	120	20.95	17.641
5720	144	22.11	17.607
5745	149	22.85	17.628
5785	157	21.91	17.625
5825	165	21.74	17.648

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.95	36.008
5230	46	40.00	36.015
5270	54	40.05	35.929
5310	62	40.15	35.985
5510	102	40.10	36.030
5590	118	40.05	36.030
5710	142	39.89	36.000
5755	151	39.85	35.922
5795	159	39.99	35.970

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.53	17.597
5200	40	21.57	17.627
5240	48	21.46	17.614
5260	52	21.73	17.636
5300	60	21.00	17.631
5320	64	21.11	17.631
5500	100	21.92	17.664
5600	120	21.74	17.600
5720	144	21.75	17.601
5745	149	21.22	17.658
5785	157	21.86	17.628
5825	165	21.13	17.616

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.96	35.945
5230	46	39.90	36.070
5270	54	39.96	35.924
5310	62	40.38	35.963
5510	102	40.30	35.945
5590	118	39.80	35.966
5710	142	39.74	36.008
5755	151	39.66	35.973
5795	159	40.77	36.005

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	81.41	75.163
5290	58	80.31	74.913
5530	106	81.75	75.063
5610	122	81.49	75.072
5690	138	81.34	74.964
5775	155	81.55	74.906

[ANT1]

▣ 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 60)
	
802.11a UNII 2C BAND 26dB Bandwidth (CH 100)	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 40)

802.11n_HT20 UNII 2A BAND 26dB Bandwidth(CH 60)

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

802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 157)

▣ 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 54)
	
802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 118)	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 48)

802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 52)

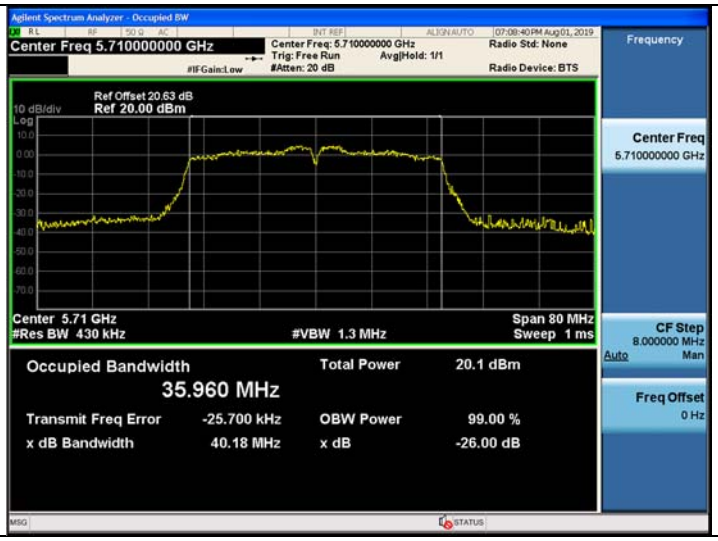
802.11ac_VHT20 UNII 2C BAND 26dB Bandwidth(CH 120)

802.11ac_VHT20 UNII 3 BAND 26dB Bandwidth(CH 165)

▣ Test Plots(802.11ac(VHT40))

Note:

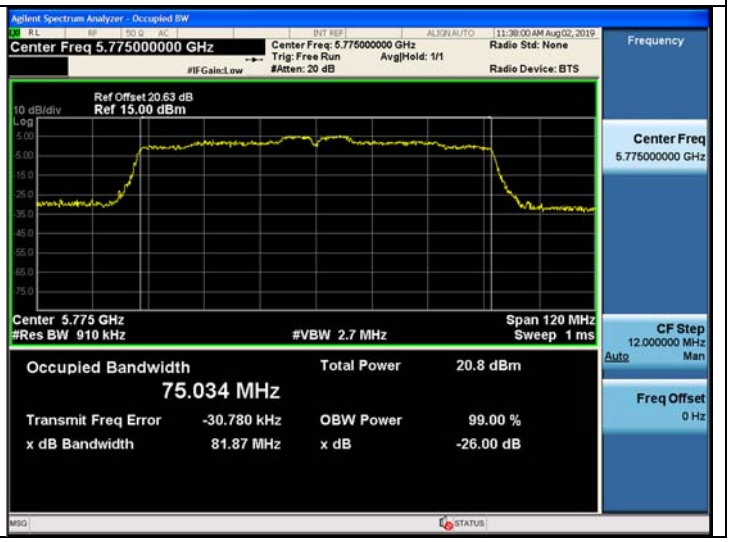
In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 46)	802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 54)
	
802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 142)	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 106)	802.11ac_VHT80 UNII 3 BAND 26dB Bandwidth (CH 155)
	

[ANT2]

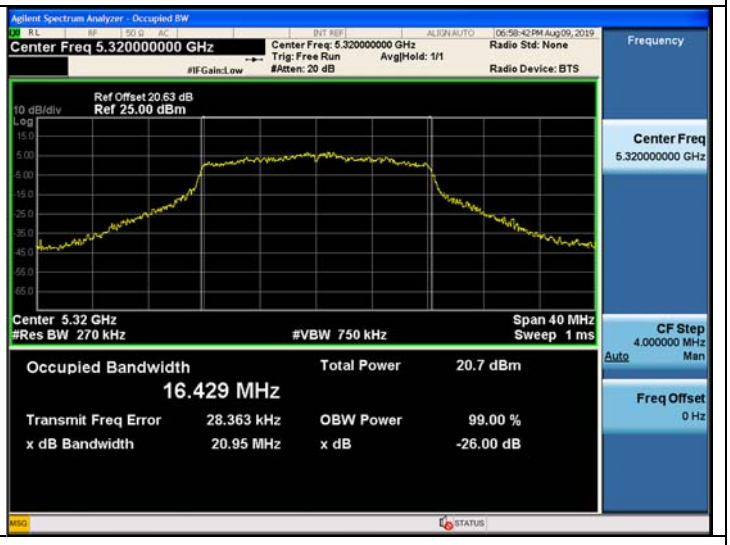
▣ Test Plots(802.11a)

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 64)



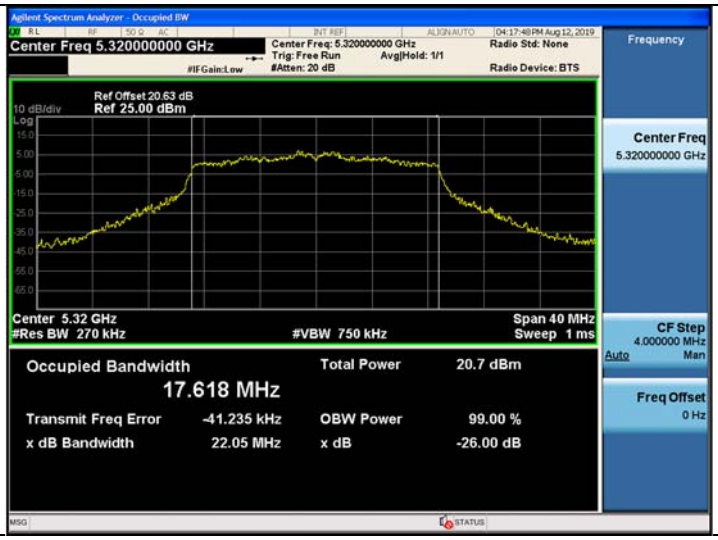
802.11a UNII 2C BAND 26dB Bandwidth (CH 100)

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

▣ 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 46)	802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 62)
	
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 40)	802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 52)
	
802.11ac_VHT20 UNII 2C BAND 26dB Bandwidth(CH 100)	802.11ac_VHT20 UNII 3 BAND 26dB Bandwidth(CH 157)
	

▣ 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 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 106)	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	15.03	> 0.5	Pass
5785	157	11.36	> 0.5	Pass
5825	165	14.22	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	12.49	> 0.5	Pass
5785	157	12.59	> 0.5	Pass
5825	165	13.83	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	33.82	> 0.5	Pass
5795	159	31.29	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.08	> 0.5	Pass
5785	157	12.61	> 0.5	Pass
5825	165	15.09	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.11	> 0.5	Pass
5795	159	33.79	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	70.15	> 0.5	Pass

[ANT2]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.08	> 0.5	Pass
5785	157	12.59	> 0.5	Pass
5825	165	15.01	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	13.85	> 0.5	Pass
5785	157	11.40	> 0.5	Pass
5825	165	13.80	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	33.81	> 0.5	Pass
5795	159	33.82	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	12.64	> 0.5	Pass
5785	157	13.79	> 0.5	Pass
5825	165	15.07	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	33.85	> 0.5	Pass
5795	159	31.32	> 0.5	Pass

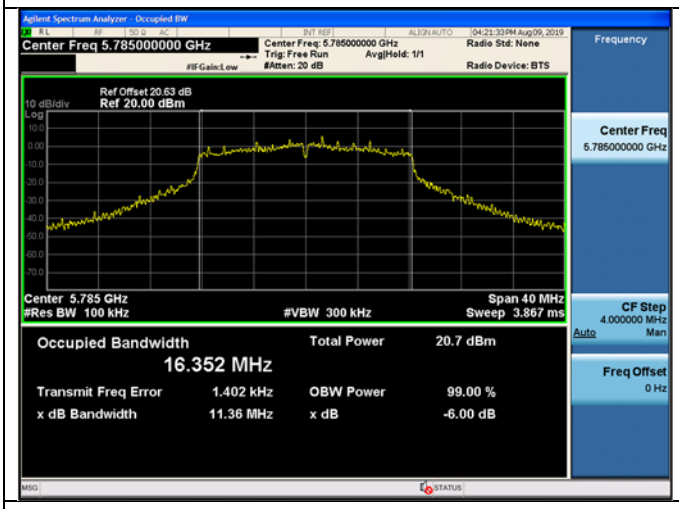
802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	66.32	> 0.5	Pass

[ANT1]

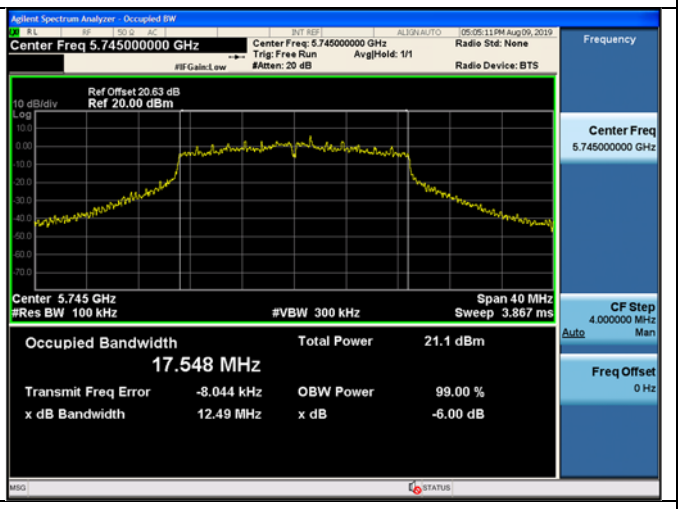
▣ Test Plots

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

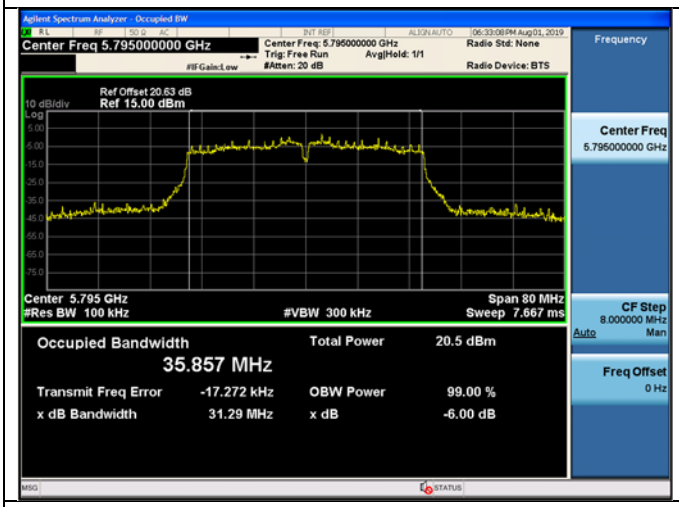
802.11a (CH.157)



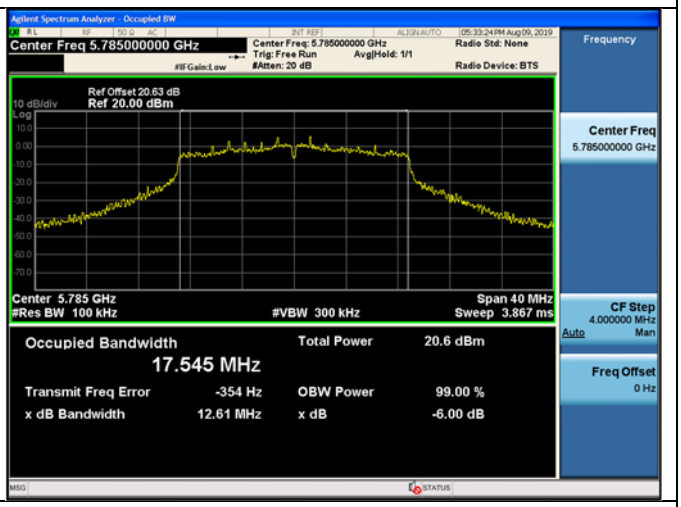
802.11n(HT20) (CH.149)



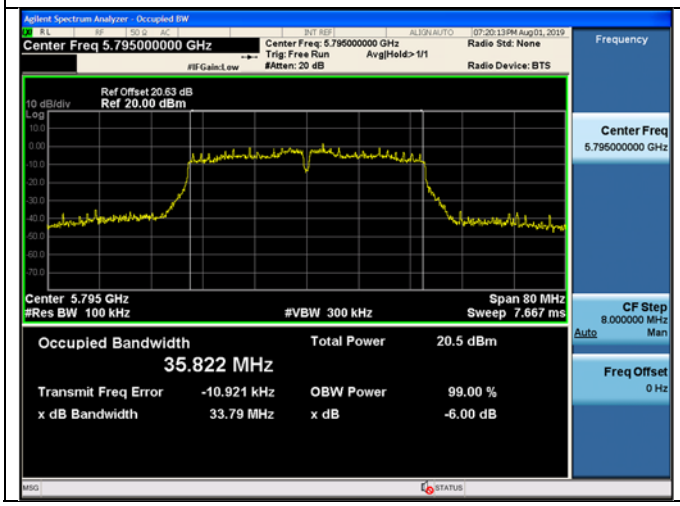
802.11n(HT40) (CH.159)



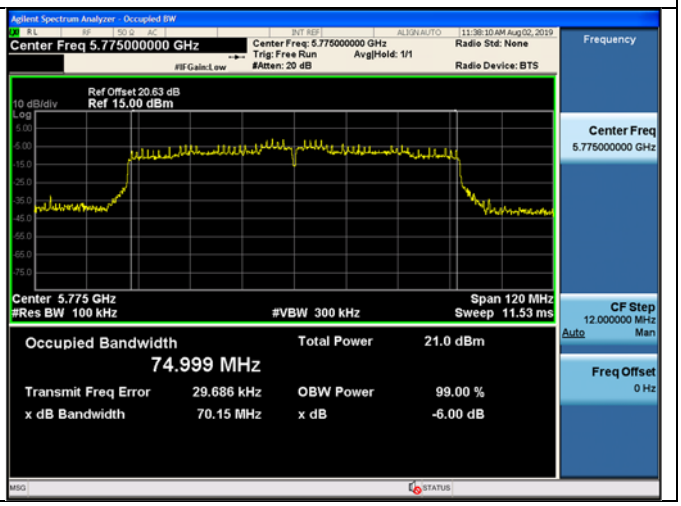
802.11ac(VHT20) (CH.157)



802.11ac(VHT40) (CH.159)



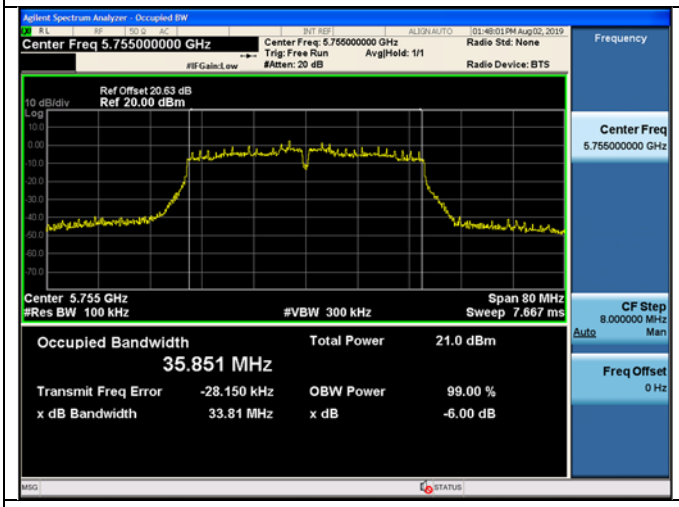
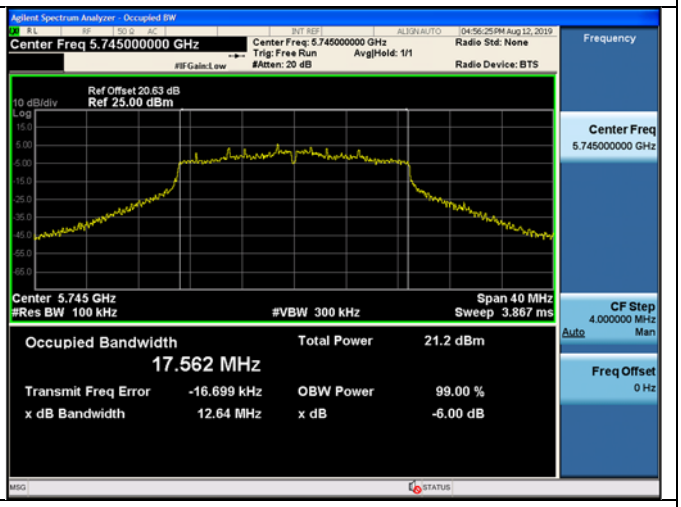
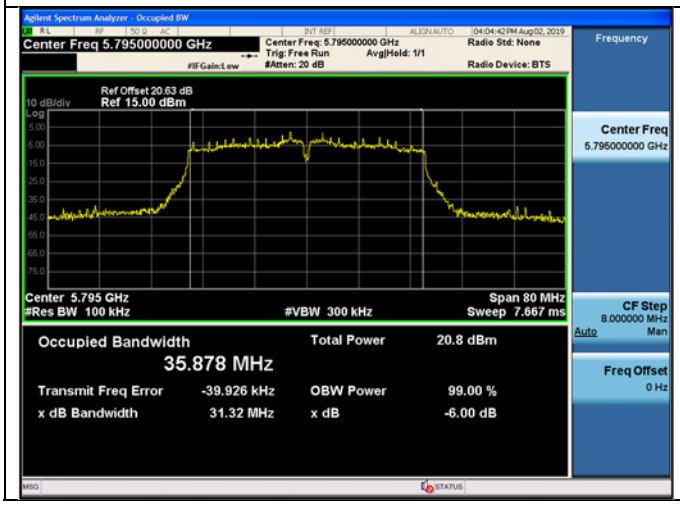
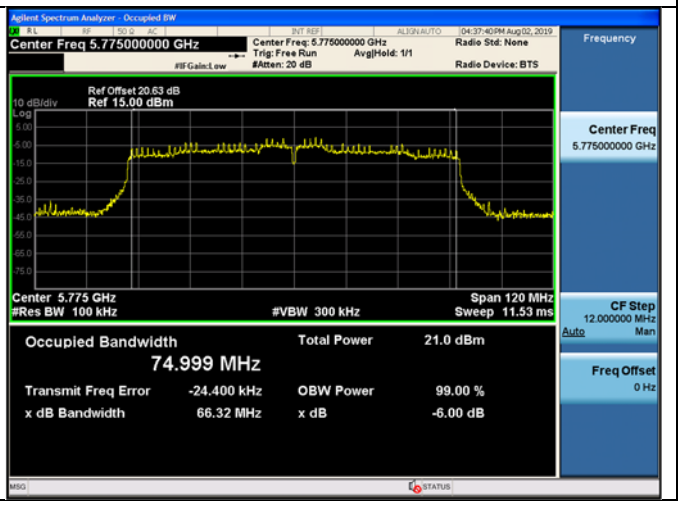
802.11ac(VHT80) (CH.155)



[ANT2]

▣ 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.157)
	
802.11n(HT40) (CH.151)	**802.11ac(VHT20) (CH.149)**
	
802.11ac(VHT40) (CH.159)	**802.11ac(VHT80) (CH.155)**
	

10.4 OUTPUT POWER MEASUREMENT

[ANT1]

802.11a Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	14.00	14.57	0.318	14.89	23.98
5200	40	14.00	14.66	0.318	14.98	23.98
5240	48	14.50	14.20	0.318	14.52	23.98
5260	52	14.50	13.92	0.318	14.24	23.98
5300	60	14.00	14.64	0.318	14.96	23.98
5320	64	14.50	14.61	0.318	14.93	23.98
5500	100	8.00	7.57	0.318	7.89	23.98
5600	120	15.00	14.69	0.318	15.01	23.98
5720	144	14.50	14.77	0.318	15.09	23.98
5745	149	14.50	14.53	0.318	14.85	30.00
5785	157	14.50	14.11	0.318	14.43	30.00
5825	165	14.50	15.21	0.318	15.53	30.00

802.11n(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	14.00	14.54	0.420	14.96	23.98
5200	40	14.00	14.42	0.420	14.84	23.98
5240	48	14.50	13.91	0.420	14.33	23.98
5260	52	14.50	13.70	0.420	14.12	23.98
5300	60	14.00	14.40	0.420	14.82	23.98
5320	64	14.50	14.44	0.420	14.86	23.98
5500	100	8.00	7.34	0.420	7.76	23.98
5600	120	15.00	14.46	0.420	14.88	23.98
5720	144	14.50	14.54	0.420	14.96	23.98
5745	149	15.00	14.91	0.328	15.23	30.00
5785	157	14.50	14.30	0.328	14.62	30.00
5825	165	14.50	15.42	0.328	15.75	30.00

802.11n(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5190	38	12.50	12.47	0.732	13.21	23.98
5230	46	13.50	12.59	0.732	13.32	23.98
5270	54	14.00	13.34	0.588	13.93	23.98
5310	62	13.50	12.98	0.732	13.72	23.98
5510	102	8.00	6.73	0.732	7.46	23.98
5590	118	13.50	12.75	0.732	13.49	23.98
5710	142	13.50	12.85	0.732	13.58	23.98
5755	151	13.50	12.81	0.732	13.54	30.00
5795	159	13.50	12.66	0.732	13.40	30.00

802.11ac(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	14.50	15.04	0.416	15.45	23.98
5200	40	14.50	14.94	0.416	15.36	23.98
5240	48	15.00	13.96	0.416	14.37	23.98
5260	52	15.00	13.80	0.416	14.22	23.98
5300	60	14.00	14.31	0.416	14.73	23.98
5320	64	14.50	14.11	0.416	14.53	23.98
5500	100	8.00	7.32	0.416	7.74	23.98
5600	120	15.00	14.37	0.416	14.79	23.98
5720	144	14.50	14.74	0.416	15.15	23.98
5745	149	15.00	14.84	0.416	15.26	30.00
5785	157	14.50	13.95	0.416	14.37	30.00
5825	165	14.50	15.36	0.325	15.68	30.00

802.11ac(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5190	38	13.00	13.07	0.717	13.78	23.98
5230	46	13.50	12.66	0.717	13.38	23.98
5270	54	14.00	13.25	0.717	13.97	23.98
5310	62	13.00	12.39	0.717	13.11	23.98
5510	102	7.00	5.59	0.717	6.31	23.98
5590	118	13.50	12.72	0.717	13.43	23.98
5710	142	13.50	12.91	0.717	13.63	23.98
5755	151	13.50	12.87	0.717	13.59	30.00
5795	159	13.50	12.69	0.717	13.41	30.00

802.11ac(80MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5210	42	10.50	10.02	0.991	11.01	23.98
5290	58	9.00	8.09	1.172	9.26	23.98
5530	106	10.00	8.22	0.991	9.21	23.98
5610	122	13.50	12.09	0.991	13.08	23.98
5690	138	13.50	11.84	1.172	13.02	23.98
5775	155	13.50	12.19	1.172	13.36	30.00

[ANT2]

802.11a Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	14.00	15.16	0.318	15.47	23.98
5200	40	14.00	14.74	0.318	15.06	23.98
5240	48	14.50	14.91	0.318	15.22	23.98
5260	52	14.50	14.97	0.404	15.37	23.98
5300	60	14.00	14.62	0.318	14.93	23.98
5320	64	14.50	14.63	0.318	14.95	23.98
5500	100	8.00	8.34	0.318	8.65	23.98
5600	120	15.00	14.91	0.318	15.23	23.98
5720	144	14.50	14.23	0.318	14.55	23.98
5745	149	14.50	14.22	0.318	14.54	30.00
5785	157	14.50	14.64	0.318	14.96	30.00
5825	165	14.50	14.03	0.404	14.43	30.00

802.11n(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	14.00	15.06	0.328	15.39	23.98
5200	40	14.00	14.47	0.420	14.89	23.98
5240	48	14.50	14.76	0.328	15.09	23.98
5260	52	14.50	14.88	0.420	15.30	23.98
5300	60	14.00	14.37	0.420	14.79	23.98
5320	64	14.50	14.46	0.328	14.79	23.98
5500	100	8.00	8.21	0.328	8.53	23.98
5600	120	15.00	14.73	0.328	15.05	23.98
5720	144	14.50	14.13	0.328	14.46	23.98
5745	149	15.00	14.52	0.420	14.94	30.00
5785	157	14.50	14.43	0.420	14.85	30.00
5825	165	14.50	13.91	0.420	14.34	30.00

802.11n(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5190	38	12.50	12.91	0.732	13.64	23.98
5230	46	13.50	13.63	0.732	14.37	23.98
5270	54	14.00	14.26	0.732	14.99	23.98
5310	62	13.50	13.46	0.732	14.19	23.98
5510	102	8.00	7.32	0.732	8.06	23.98
5590	118	13.50	13.77	0.732	14.50	23.98
5710	142	13.50	13.05	0.732	13.79	23.98
5755	151	13.50	13.25	0.588	13.84	30.00
5795	159	13.50	12.94	0.732	13.67	30.00

802.11ac(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	14.50	15.38	0.416	15.79	23.98
5200	40	14.50	14.93	0.325	15.26	23.98
5240	48	15.00	15.30	0.325	15.62	23.98
5260	52	15.00	15.43	0.325	15.75	23.98
5300	60	14.00	14.49	0.325	14.81	23.98
5320	64	14.50	14.47	0.325	14.80	23.98
5500	100	8.00	8.25	0.325	8.58	23.98
5600	120	15.00	14.57	0.416	14.99	23.98
5720	144	14.50	14.05	0.325	14.38	23.98
5745	149	15.00	14.43	0.416	14.85	30.00
5785	157	14.50	14.31	0.416	14.73	30.00
5825	165	14.50	13.85	0.416	14.26	30.00

802.11ac(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5190	38	13.00	13.42	0.717	14.13	23.98
5230	46	13.50	13.53	0.717	14.25	23.98
5270	54	14.00	14.25	0.717	14.96	23.98
5310	62	13.00	12.93	0.580	13.51	23.98
5510	102	7.00	6.77	0.717	7.48	23.98
5590	118	13.50	13.65	0.717	14.36	23.98
5710	142	13.50	12.95	0.717	13.67	23.98
5755	151	13.50	13.14	0.717	13.86	30.00
5795	159	13.50	13.08	0.717	13.80	30.00

802.11ac(80MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5210	42	10.50	10.09	1.172	11.26	23.98
5290	58	9.00	8.87	0.991	9.86	23.98
5530	106	10.00	8.84	1.172	10.01	23.98
5610	122	13.50	12.89	0.991	13.88	23.98
5690	138	13.50	12.49	0.991	13.48	23.98
5775	155	13.50	12.27	1.172	13.44	30.00

[MIMO]

802.11a Mode		Power Level Setting	Ant 1 Measured Power (dBm) + Duty Cycle Factor	Ant 2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	14.00	14.89	15.47	18.20	23.98
5200	40	14.00	14.98	15.06	18.03	23.98
5240	48	14.50	14.52	15.22	17.89	23.98
5260	52	14.50	14.24	15.37	17.85	23.98
5300	60	14.00	14.96	14.93	17.96	23.98
5320	64	14.50	14.93	14.95	17.95	23.98
5500	100	8.00	7.89	8.65	11.30	23.98
5600	120	15.00	15.01	15.23	18.13	23.98
5720	144	14.50	15.09	14.55	17.84	23.98
5745	149	14.50	14.85	14.54	17.71	30.00
5785	157	14.50	14.43	14.96	17.71	30.00
5825	165	14.50	15.53	14.43	18.03	30.00

802.11n(20MHz) Mode		Power Level Setting	Ant 1 Measured Power (dBm) + Duty Cycle Factor	Ant 2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	14.00	14.96	15.39	18.19	23.98
5200	40	14.00	14.84	14.89	17.88	23.98
5240	48	14.50	14.33	15.09	17.74	23.98
5260	52	14.50	14.12	15.30	17.76	23.98
5300	60	14.00	14.82	14.79	17.82	23.98
5320	64	14.50	14.86	14.79	17.84	23.98
5500	100	8.00	7.76	8.53	11.17	23.98
5600	120	15.00	14.88	15.05	17.98	23.98
5720	144	14.50	14.96	14.46	17.73	23.98
5745	149	15.00	15.23	14.94	18.10	30.00
5785	157	14.50	14.62	14.85	17.75	30.00
5825	165	14.50	15.75	14.34	18.11	30.00

802.11n(40MHz) Mode		Power Level Setting	Ant 1 Measured Power (dBm) + Duty Cycle Factor	Ant 2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5190	38	12.50	13.21	13.64	16.44	23.98
5230	46	13.50	13.32	14.37	16.89	23.98
5270	54	14.00	13.93	14.99	17.50	23.98
5310	62	13.50	13.72	14.19	16.97	23.98
5510	102	8.00	7.46	8.06	10.78	23.98
5590	118	13.50	13.49	14.50	17.03	23.98
5710	142	13.50	13.58	13.79	16.70	23.98
5755	151	13.50	13.54	13.84	16.70	30.00
5795	159	13.50	13.40	13.67	16.55	30.00

802.11ac(20MHz) Mode		Power Level Setting	Ant 1 Measured Power (dBm) + Duty Cycle Factor	Ant 2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	14.50	15.45	15.79	18.63	23.98
5200	40	14.50	15.36	15.26	18.32	23.98
5240	48	15.00	14.37	15.62	18.05	23.98
5260	52	15.00	14.22	15.75	18.06	23.98
5300	60	14.00	14.73	14.81	17.78	23.98
5320	64	14.50	14.53	14.80	17.68	23.98
5500	100	8.00	7.74	8.58	11.19	23.98
5600	120	15.00	14.79	14.99	17.90	23.98
5720	144	14.50	15.15	14.38	17.79	23.98
5745	149	15.00	15.26	14.85	18.07	30.00
5785	157	14.50	14.37	14.73	17.56	30.00
5825	165	14.50	15.68	14.26	18.04	30.00

802.11ac(40MHz) Mode		Power Level Setting	Ant 1 Measured Power (dBm) + Duty Cycle Factor	Ant 2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5190	38	13.00	13.78	14.13	16.97	23.98
5230	46	13.50	13.38	14.25	16.85	23.98
5270	54	14.00	13.97	14.96	17.50	23.98
5310	62	13.00	13.11	13.51	16.32	23.98
5510	102	7.00	6.31	7.48	9.94	23.98
5590	118	13.50	13.43	14.36	16.93	23.98
5710	142	13.50	13.63	13.67	16.66	23.98
5755	151	13.50	13.59	13.86	16.74	30.00
5795	159	13.50	13.41	13.80	16.62	30.00

802.11ac(80MHz) Mode		Power Level Setting	Ant 1 Measured Power (dBm) + Duty Cycle Factor	Ant 2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.					
5210	42	10.50	11.01	11.26	14.15	23.98
5290	58	9.00	9.26	9.86	12.58	23.98
5530	106	10.00	9.21	10.01	12.64	23.98
5610	122	13.50	13.08	13.88	16.51	23.98
5690	138	13.50	13.02	13.48	16.27	23.98
5775	155	13.50	13.36	13.44	16.41	30.00

10.5 POWER SPECTRAL DENSITY

[ANT1]

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	5.448	0.318	5.766	11
5200	40	5.045	0.318	5.363	11
5240	48	4.941	0.318	5.259	11
5260	52	5.092	0.318	5.410	11
5300	60	5.588	0.318	5.906	11
5320	64	5.273	0.318	5.591	11
5500	100	-1.617	0.318	-1.299	11
5600	120	5.563	0.318	5.881	11
5720	144	5.352	0.318	5.670	11
5745	149	2.835	0.318	3.153	30
5785	157	2.902	0.318	3.220	30
5825	165	3.626	0.318	3.944	30

802.11n(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	5.139	0.420	5.559	11
5200	40	4.862	0.420	5.282	11
5240	48	4.304	0.420	4.724	11
5260	52	4.540	0.420	4.960	11
5300	60	5.103	0.420	5.523	11
5320	64	4.672	0.420	5.092	11
5500	100	-1.968	0.420	-1.548	11
5600	120	5.060	0.420	5.480	11
5720	144	4.952	0.420	5.372	11
5745	149	2.653	0.328	2.981	30
5785	157	2.044	0.328	2.372	30
5825	165	2.847	0.328	3.175	30

802.11n(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	0.781	0.732	1.513	11
5230	46	0.598	0.732	1.330	11
5270	54	1.611	0.588	2.199	11
5310	62	0.975	0.732	1.707	11
5510	102	-5.070	0.732	-4.338	11
5590	118	0.726	0.732	1.458	11
5710	142	1.026	0.732	1.758	11
5755	151	-1.566	0.732	-0.834	30
5795	159	-1.990	0.732	-1.258	30

802.11ac(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	5.861	0.416	6.277	11
5200	40	5.349	0.416	5.765	11
5240	48	4.984	0.416	5.400	11
5260	52	5.186	0.416	5.602	11
5300	60	4.783	0.416	5.199	11
5320	64	4.750	0.416	5.166	11
5500	100	-2.011	0.416	-1.595	11
5600	120	5.117	0.416	5.533	11
5720	144	4.954	0.416	5.370	11
5745	149	2.549	0.416	2.965	30
5785	157	2.173	0.416	2.589	30
5825	165	2.826	0.325	3.151	30

802.11ac(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	1.384	0.717	2.101	11
5230	46	0.786	0.717	1.503	11
5270	54	1.730	0.717	2.447	11
5310	62	0.712	0.717	1.429	11
5510	102	-6.075	0.717	-5.358	11
5590	118	0.933	0.717	1.650	11
5710	142	0.882	0.717	1.599	11
5755	151	-2.019	0.717	-1.302	30
5795	159	-1.526	0.717	-0.809	30

802.11ac(80MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5210	42	-4.622	0.991	-3.631	11
5290	58	-6.397	1.172	-5.225	11
5530	106	-6.415	0.991	-5.424	11
5610	122	-2.585	0.991	-1.594	11
5690	138	-2.565	1.172	-1.393	11
5775	155	-5.308	1.172	-4.136	30

[ANT2]

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	5.930	0.318	6.248	11
5200	40	5.257	0.318	5.575	11
5240	48	5.998	0.318	6.316	11
5260	52	6.068	0.404	6.472	11
5300	60	5.517	0.318	5.835	11
5320	64	5.372	0.318	5.690	11
5500	100	-0.738	0.318	-0.420	11
5600	120	6.034	0.318	6.352	11
5720	144	4.817	0.318	5.135	11
5745	149	2.193	0.318	2.511	30
5785	157	1.931	0.318	2.249	30
5825	165	1.771	0.404	2.175	30

802.11n(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	5.527	0.328	5.855	11
5200	40	4.953	0.420	5.373	11
5240	48	5.663	0.328	5.991	11
5260	52	5.920	0.420	6.340	11
5300	60	5.284	0.420	5.704	11
5320	64	5.300	0.328	5.628	11
5500	100	-1.439	0.328	-1.111	11
5600	120	5.159	0.328	5.487	11
5720	144	4.786	0.328	5.114	11
5745	149	2.711	0.420	3.131	30
5785	157	2.590	0.420	3.010	30
5825	165	2.280	0.420	2.700	30

802.11n(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	0.971	0.732	1.703	11
5230	46	1.444	0.732	2.176	11
5270	54	2.140	0.732	2.872	11
5310	62	1.233	0.732	1.965	11
5510	102	-4.650	0.732	-3.918	11
5590	118	1.192	0.732	1.924	11
5710	142	0.672	0.732	1.404	11
5755	151	-1.919	0.588	-1.331	30
5795	159	-1.692	0.732	-0.960	30

802.11ac(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	6.017	0.416	6.433	11
5200	40	5.718	0.325	6.043	11
5240	48	6.223	0.325	6.548	11
5260	52	6.503	0.325	6.828	11
5300	60	5.168	0.325	5.493	11
5320	64	5.310	0.325	5.635	11
5500	100	-1.454	0.325	-1.129	11
5600	120	5.055	0.416	5.471	11
5720	144	4.796	0.325	5.121	11
5745	149	2.463	0.416	2.879	30
5785	157	2.888	0.416	3.304	30
5825	165	2.074	0.416	2.490	30

802.11ac(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	1.391	0.717	2.108	11
5230	46	1.363	0.717	2.080	11
5270	54	2.065	0.717	2.782	11
5310	62	1.223	0.580	1.803	11
5510	102	-5.653	0.717	-4.936	11
5590	118	1.517	0.717	2.234	11
5710	142	0.993	0.717	1.710	11
5755	151	-1.451	0.717	-0.734	30
5795	159	-1.498	0.717	-0.781	30

802.11ac(80MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit (dBm)
Frequency [MHz]	Channel No.				
5210	42	-4.806	1.172	-3.634	11
5290	58	-5.563	0.991	-4.572	11
5530	106	-5.916	1.172	-4.744	11
5610	122	-2.117	0.991	-1.126	11
5690	138	-1.947	0.991	-0.956	11
5775	155	-4.769	1.172	-3.597	30

[MIMO]

802.11a Mode		ANT 1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT 2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	5.766	6.248	9.024	11
5200	40	5.363	5.575	8.481	11
5240	48	5.259	6.316	8.830	11
5260	52	5.410	6.472	8.984	11
5300	60	5.906	5.835	8.881	11
5320	64	5.591	5.690	8.651	11
5500	100	-1.299	-0.420	2.173	11
5600	120	5.881	6.352	9.133	11
5720	144	5.670	5.135	8.421	11
5745	149	3.153	2.511	5.854	30
5785	157	3.220	2.249	5.772	30
5825	165	3.944	2.175	6.159	30

802.11n(20MHz) Mode		ANT 1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT 2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	5.559	5.855	8.720	11
5200	40	5.282	5.373	8.338	11
5240	48	4.724	5.991	8.414	11
5260	52	4.960	6.340	8.715	11
5300	60	5.523	5.704	8.625	11
5320	64	5.092	5.628	8.379	11
5500	100	-1.548	-1.111	1.686	11
5600	120	5.480	5.487	8.494	11
5720	144	5.372	5.114	8.255	11
5745	149	2.981	3.131	6.067	30
5785	157	2.372	3.010	5.713	30
5825	165	3.175	2.700	5.954	30

802.11n(40MHz) Mode		ANT 1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT 2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	1.513	1.703	4.620	11
5230	46	1.330	2.176	4.784	11
5270	54	2.199	2.872	5.559	11
5310	62	1.707	1.965	4.849	11
5510	102	-4.338	-3.918	-1.112	11
5590	118	1.458	1.924	4.708	11
5710	142	1.758	1.404	4.595	11
5755	151	-0.834	-1.331	1.935	30
5795	159	-1.258	-0.960	1.904	30

802.11ac(20MHz) Mode		ANT 1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT 2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	6.277	6.433	9.366	11
5200	40	5.765	6.043	8.917	11
5240	48	5.400	6.548	9.022	11
5260	52	5.602	6.828	9.269	11
5300	60	5.199	5.493	8.359	11
5320	64	5.166	5.635	8.417	11
5500	100	-1.595	-1.129	1.655	11
5600	120	5.533	5.471	8.512	11
5720	144	5.370	5.121	8.258	11
5745	149	2.965	2.879	5.933	30
5785	157	2.589	3.304	5.972	30
5825	165	3.151	2.490	5.843	30

802.11ac(40MHz) Mode		ANT 1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT 2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	2.101	2.108	5.115	11
5230	46	1.503	2.080	4.812	11
5270	54	2.447	2.782	5.628	11
5310	62	1.429	1.803	4.630	11
5510	102	-5.358	-4.936	-2.131	11
5590	118	1.650	2.234	4.962	11
5710	142	1.599	1.710	4.665	11
5755	151	-1.302	-0.734	2.002	30
5795	159	-0.809	-0.781	2.216	30

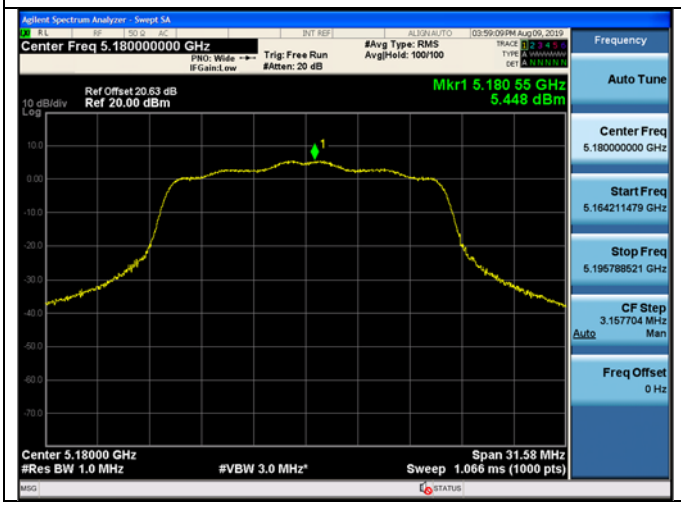
802.11ac(80MHz) Mode		ANT 1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT 2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit (dBm)
Frequency [MHz]	Channel No.				
5210	42	-3.631	-3.634	-0.622	11
5290	58	-5.225	-4.572	-1.876	11
5530	106	-5.424	-4.744	-2.060	11
5610	122	-1.594	-1.126	1.657	11
5690	138	-1.393	-0.956	1.841	11
5775	155	-4.136	-3.597	-0.848	30

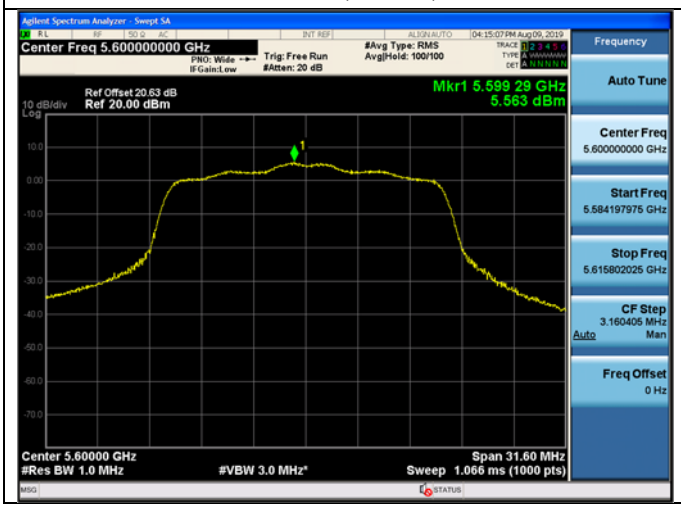
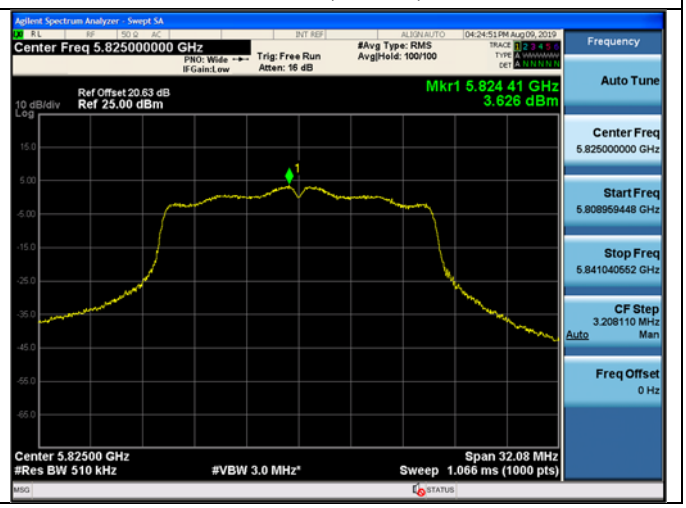
[ANT1]

▣ Test Plots(802.11a)

Note:

In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 36)	UNII 2A (Ch. 60)
	

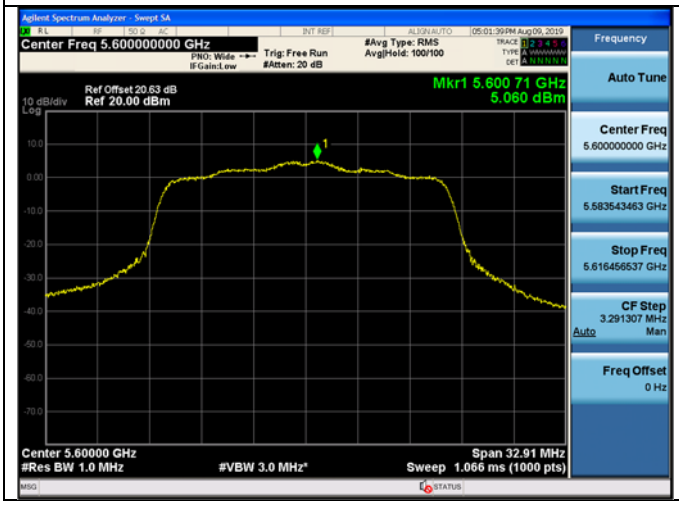
UNII 2C (Ch. 120)	UNII 3 (Ch. 165)
	

▣ Test Plots(802.11n(HT20))

Note:

In order to simplify the report, attached plots were only channel of highest power.

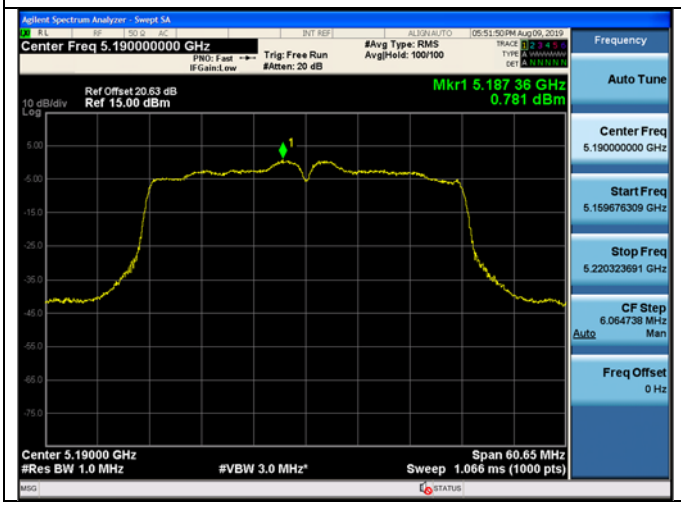
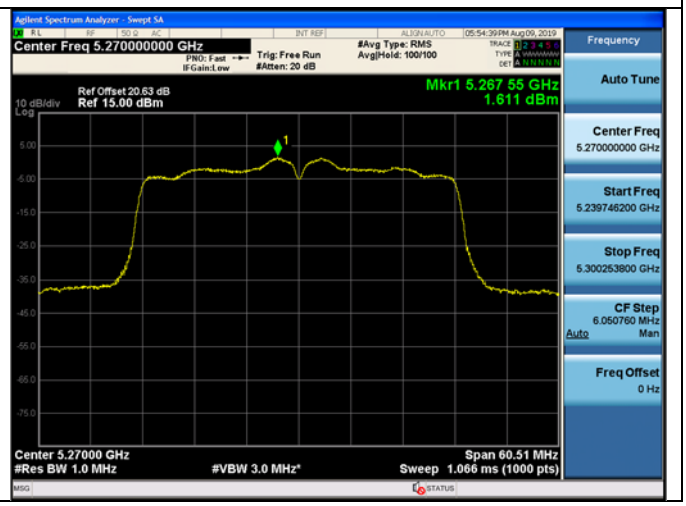
UNII 1 (Ch. 36)	UNII 2A (Ch. 60)
	

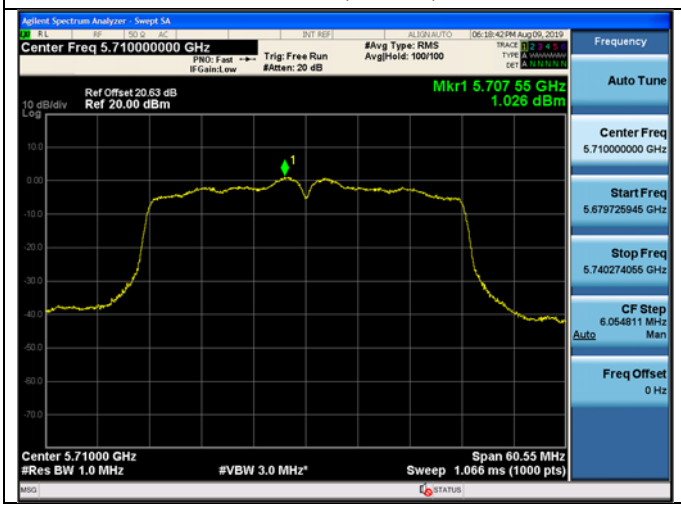
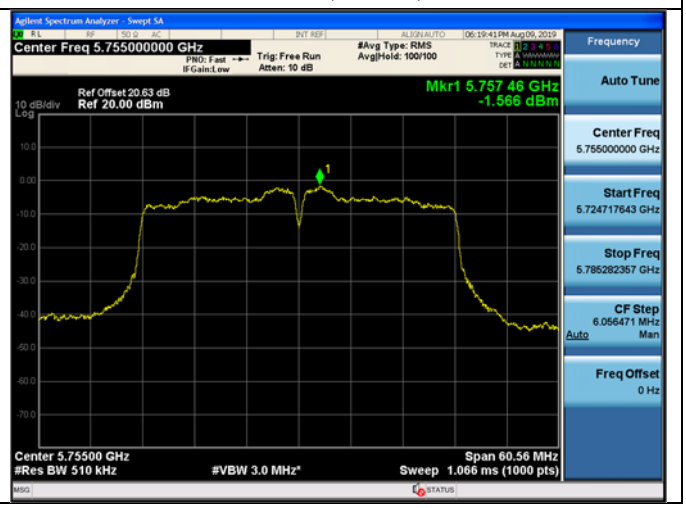
UNII 2C (Ch. 120)	UNII 3 (Ch. 165)
	

▣ Test Plots(802.11n(HT40))

Note:

In order to simplify the report, attached plots were only channel of highest power.

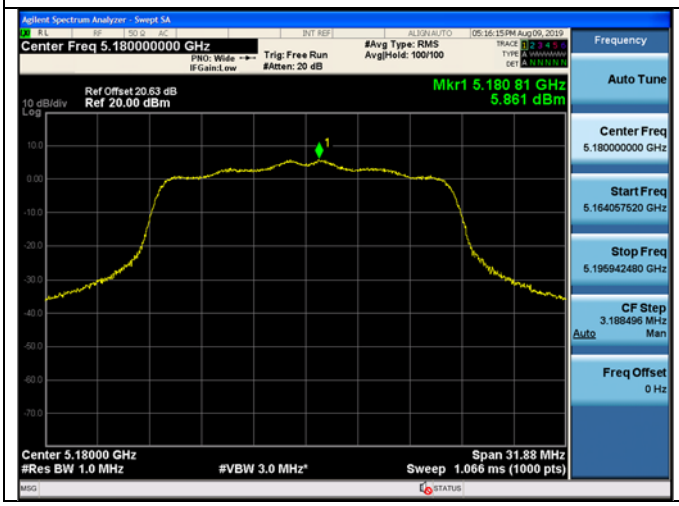
UNII 1 (Ch. 38)	UNII 2A (Ch. 54)
	

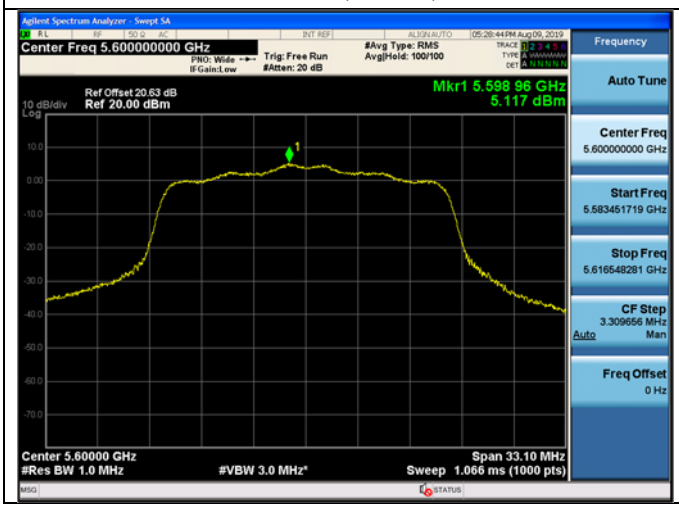
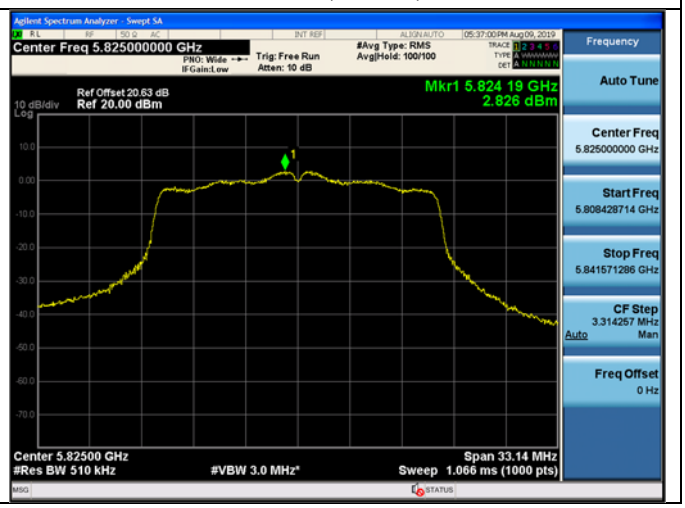
UNII 2C (Ch. 142)	UNII 3 (Ch. 151)
	

▣ Test Plots(802.11ac(VHT20))

Note:

In order to simplify the report, attached plots were only channel of highest power.

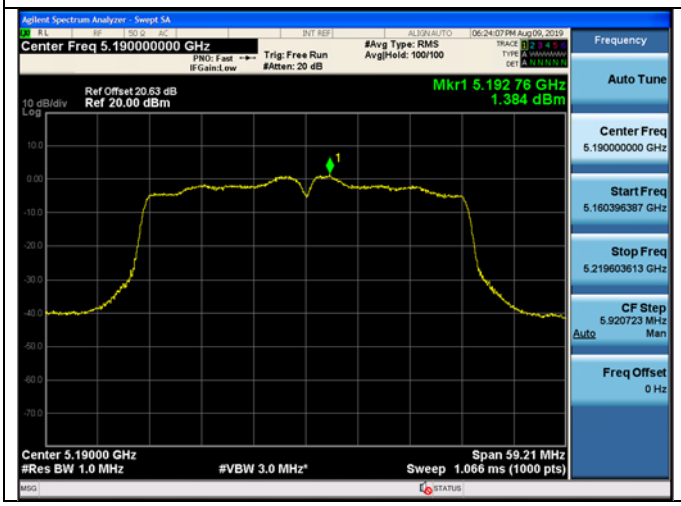
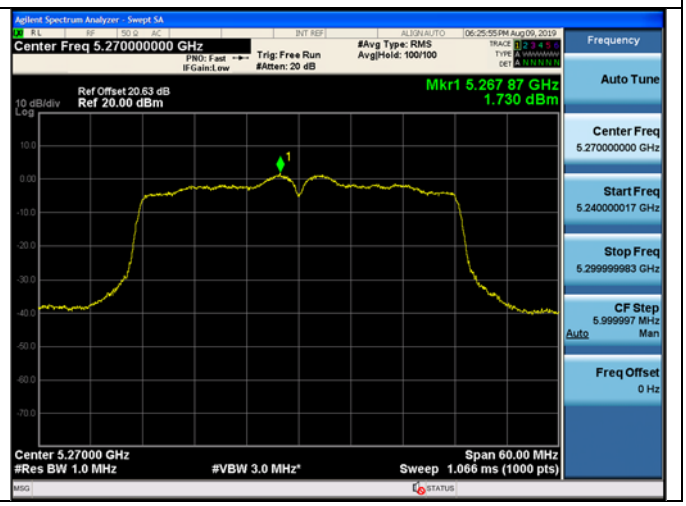
UNII 1 (Ch. 36)	UNII 2A (Ch. 52)
	

UNII 2C (Ch. 120)	UNII 3 (Ch. 165)
	

▣ Test Plots(802.11ac(VHT40))

Note:

In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 38)	UNII 2A (Ch. 54)
	

UNII 2C (Ch. 118)	UNII 3 (Ch. 159)