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TEST REPORT

FCC UNII Test for IL7SF
Certification

APPLICANT
LG Electronics Inc.

REPORT NO.
HCT-RF-2101-FC120

DATE OF ISSUE
January 28, 2021

Tested by
Jin Gwan Lee

Technical Manager
Jong Seok Lee

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

HCT CO., LTD.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA
Tel. +82 31 634 6300 F ax. +82 31 645 6401

HCT Co., Ltd.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA
Tel. +82 31 634 6300 Fax. +82 31 645 6401

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Additional Model
-

Applicant	**LG Electronics Inc.** 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea
Eut Type Model Name	Silverbox RADIO ASM-RECEIVER IL7SF
FCC ID	BEJIL7SF2
Modulation type	OFDM
FCC Classification	Unlicensed National Information Infrastructure(NII)
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.

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	January 28, 2021	Initial Release

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.

According to the Evaluation report, all of the data contained herein is reused from the reference FCC ID : BEJIL7SB2 report.

CONTENTS

1. GENERAL INFORMATION

EUT DESCRIPTION

Model	IL7SF	
Additional Model	-	
EUT Type	Silverbox RADIO ASM-RECEIVER	
Power Supply	DC 12.0 V	
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 Peak Gain	**Internal Antenna:** Peak Gain : 4.30 dBi (UNII 1) / 4.30 dBi(UNII 2A) / 4.70 dBi(UNII 2C) / 5.40 dBi(UNII 3) **External Antenna:** Peak Gain : 1.60 dBi (UNII 1) / 1.60 dBi(UNII 2A) / 1.40 dBi(UNII 2C) / 1.60 dBi(UNII 3)	
Straddle channel	Supported	
TDWR Band	Not Supported	
Dynamic Frequency Selection	Slave without radar detection	
Date(s) of Tests	December 11, 2020 ~ January 22, 2021	
EUT serial numbers	Conduction : 012023401 Radiation : 012023405	

ANTENNA CONFIGURATIONS

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

Configurations	SISO		SDM	CDD
	Internal Ant	External Ant	Internal Ant + External Ant	Internal Ant + External Ant
802.11a	O	O	X	X
802.11n(HT20)	O	O	O	X
802.11n(HT40)	O	O	O	X
802.11ac(VHT20)	O	O	O	X
802.11ac(VHT40)	O	O	O	X
802.11ac(VHT80)	O	O	O	X

Note:

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

2. MAXIMUM OUTPUT POWER

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

Band	Mode	SISO				MIMO (SDM)	
		Internal Ant Power		External Ant Power		Internal + External Power	
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
UNII1	802.11a	7.51	0.006	12.87	0.019	-	-
	802.11n (HT20)	7.47	0.006	12.84	0.019	8.41	0.01
	802.11n (HT40)	7.83	0.006	12.72	0.019	8.81	0.01
	802.11ac (VHT20)	7.37	0.005	12.94	0.020	8.20	0.01
	802.11ac (VHT40)	7.89	0.006	12.71	0.019	8.98	0.01
	802.11ac (VHT80)	7.93	0.006	12.54	0.018	8.61	0.01
UNII2A	802.11a	8.06	0.006	12.20	0.017	-	-
	802.11n (HT20)	8.10	0.006	12.25	0.017	9.43	0.01
	802.11n (HT40)	8.76	0.008	12.15	0.016	9.80	0.01
	802.11ac (VHT20)	8.08	0.006	12.80	0.019	9.04	0.01
	802.11ac (VHT40)	8.31	0.007	12.06	0.016	9.56	0.01
	802.11ac (VHT80)	8.07	0.006	10.75	0.012	9.38	0.01
UNII2C	802.11a	20.10	0.102	18.96	0.079	-	-
	802.11n (HT20)	19.95	0.099	19.11	0.081	21.18	0.13
	802.11n (HT40)	19.59	0.091	17.92	0.062	21.79	0.15
	802.11ac (VHT20)	19.97	0.099	18.94	0.078	19.99	0.10
	802.11ac (VHT40)	19.73	0.094	17.72	0.059	21.87	0.15
	802.11ac (VHT80)	19.39	0.087	17.75	0.060	21.83	0.15
UNII3	802.11a	19.75	0.095	18.73	0.075	-	-
	802.11n (HT20)	19.76	0.095	18.68	0.074	22.34	0.17
	802.11n (HT40)	19.20	0.083	18.25	0.067	21.91	0.16
	802.11ac (VHT20)	19.58	0.091	19.46	0.088	22.27	0.17
	802.11ac (VHT40)	18.99	0.079	18.33	0.068	21.99	0.16
	802.11ac (VHT80)	18.84	0.077	17.78	0.060	21.51	0.14

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 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.

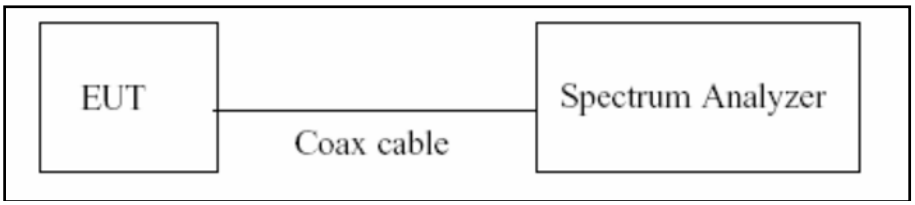
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance

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.

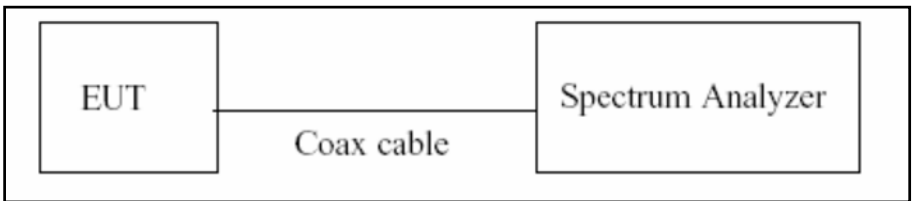
1. RBW = 8 MHz (the largest availble value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

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.

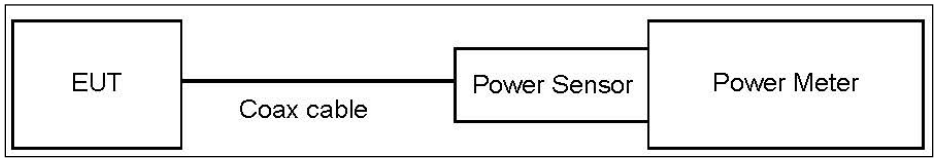
8.3. Output Power Measurement

Limit

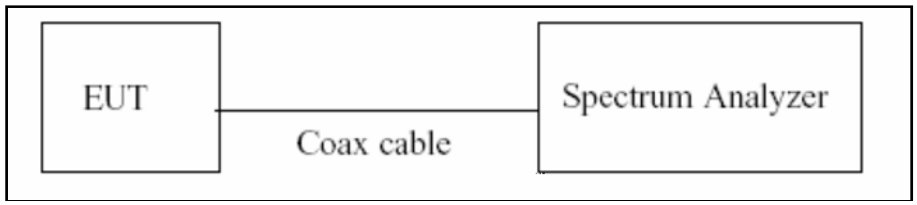
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30dBm)

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 + EUT cable loss
3. Actual value of loss for the attenuator and cable combination is below table.

Band	Internal Loss(dB)
UNII 1	21.77
UNII 2A	21.77
UNII 2C	21.87
UNII 3	21.97

Band	External Loss(dB)
UNII 1	25.57
UNII 2A	25.57
UNII 2C	24.17
UNII 3	24.97

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

Limit & Ant Gain Calculation

Ant Gain

Band	Ant Gain (dBi)		N_{ANT}/ Nss	Directional Gain (= $G_{ANT\ MAX}$ + 10 log(N_{ANT}/N_{SS})) (dBi)
UNII 1	Internal	5.1	2 / 2	5.1
	External	1.6		
UNII 2A	Internal	5.1	2 / 2	5.1
	External	1.6		
UNII 2C	Internal	5.4	2 / 2	5.4
	External	1.4		
UNII 3	Internal	5.4	2 / 2	5.4
	External	1.6		

Operating mode

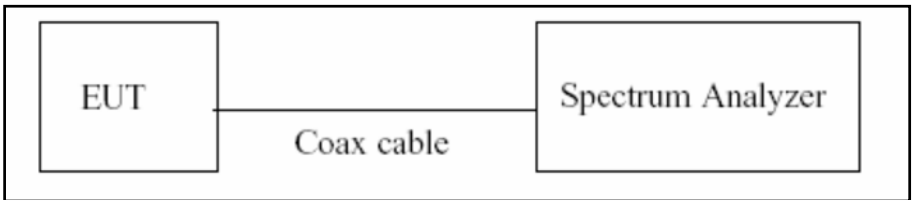
Mode	Operating Mode	Antenna
802.11a/n/ac	SISO	Internal Antenna
		External Antenna
802.11n(HT20)	MIMO	Internal Antenna + External Antenna
802.11ac(VHT20)		
802.11n(HT40)		
802.11ac(VHT40)		
802.11ac(VHT80)		

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	Internal Loss(dB)
UNII 1	21.77
UNII 2A	21.77
UNII 2C	21.87
UNII 3	21.97

Band	External Loss(dB)
UNII 1	25.57
UNII 2A	25.57
UNII 2C	24.17
UNII 3	24.97

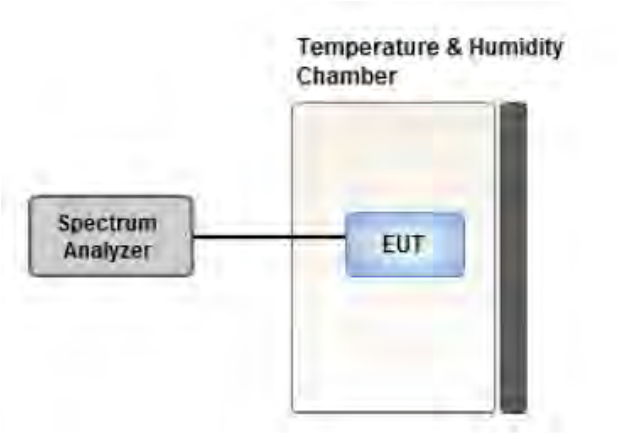
(Actual value of loss for the attenuator and cable combination)

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

[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.

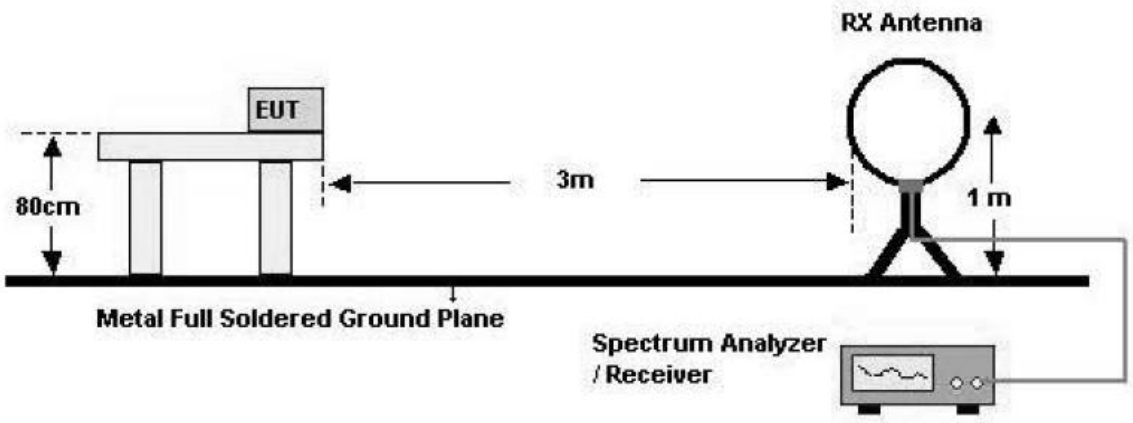
3. UNII 3: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below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

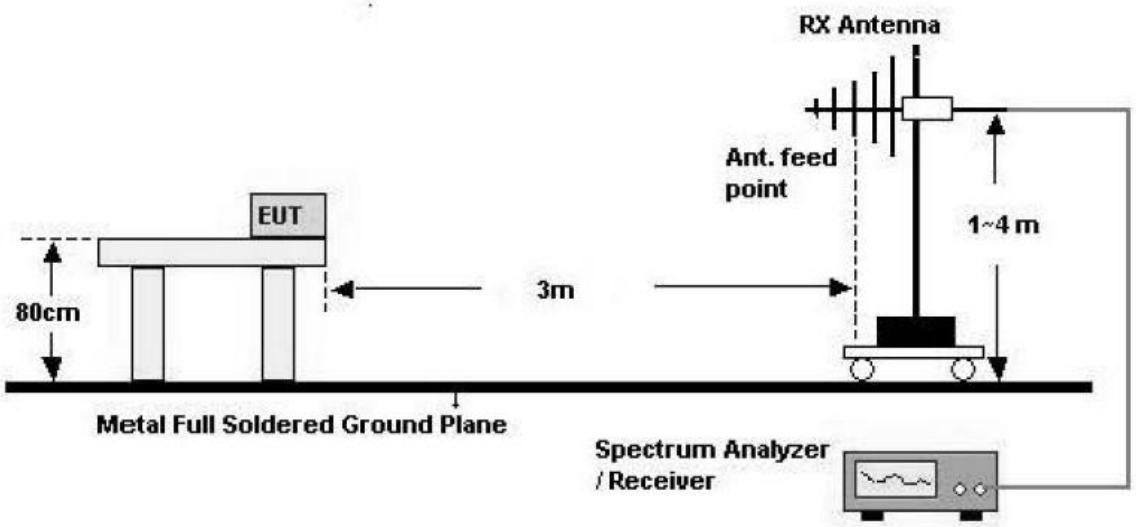
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

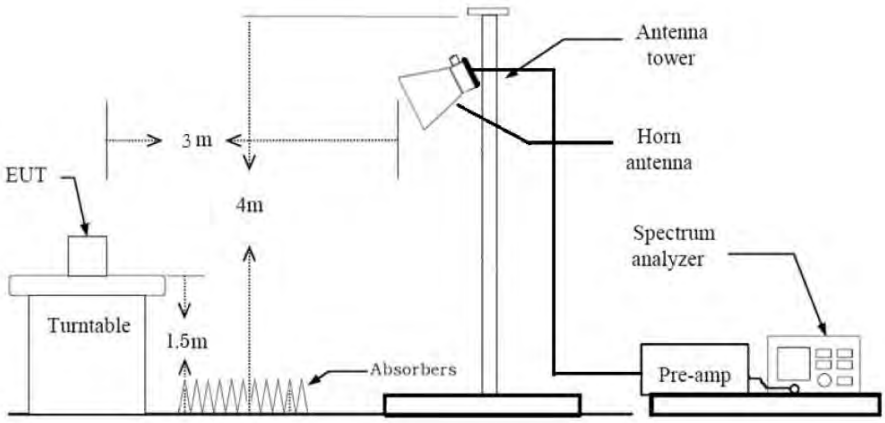
Below 30 MHz



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)
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.

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. The Hybrid antenna was placed at a location 3m from the EUT, which is varied from 1m to 4m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. 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
7. Total = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)
8. 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.

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 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. 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.c in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW ≥ 3 MHz
- The analyzer is set to linear detector mode.
- Averaging type = power (*i.e.*, RMS)
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning on and off with the transmit cycle, no duty cycle correction is required for that emission.

9. 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
10. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency
11. Distance extrapolation factor = 20log (test distance / specific distance) (dB)
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 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. 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.c in KDB 789033 v02r01):
   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - The analyzer is set to linear detector mode.
   - Averaging type = power (*i.e.*, RMS)
   - Sweep time = auto.
   - Trace mode = average (at least 100 traces).
   - If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning on and off with the transmit cycle, no duty cycle correction is required for that emission.
9. 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)

10. Distance extrapolation factor = 20log (test distance / specific distance) (dB)

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

8.8. Worst case configuration and mode

Radiated test

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

2. All configurations of antenna were investigated and the worst case configuration results are reported.

- Mode : Internal Ant(SISO), External Ant(SISO), Internal Ant+ External Ant(MIMO SDM)
- Worstcase : External Ant(SISO)

3. EUT Axis

- Radiated Spurious Emissions : X
- Radiated Restricted Band Edge : X

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

- 802.11a : 6 Mbps
- 802.11n_HT20 : MCS0
- 802.11n_HT40 : MCS0
- 802.11ac_VHT20 : MCS0
- 802.11ac_VHT40 : MCS0
- 802.11ac_VHT80 : MCS0

4. Radiated Spurious Emission

All modulation of operation were investigated and the test results are worst case modulation of each mode.

(Worst case : 802.11a 6Mbps)

5. 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

AC Power line Conducted Emissions

1. We don't perform powerline conducted emission test. Because this EUT is used with vehicle.

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		N/A(#Note)
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

#Note: Not Tested.

10. TEST RESULT

10.1 DUTY CYCLE

[SISO]

Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11a	6	2.065	2.165	0.954	0.205
	9	1.386	1.488	0.931	0.308
	12	1.044	1.146	0.911	0.405
	18	0.702	0.807	0.870	0.605
	24	0.531	0.633	0.839	0.763
	36	0.363	0.466	0.780	1.081
	48	0.276	0.377	0.732	1.357
	54	0.248	0.350	0.711	1.484

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11n (HT20)	0	1.920	2.025	0.948	0.231
	1	0.981	1.083	0.906	0.430
	2	0.664	0.766	0.867	0.621
	3	0.508	0.607	0.837	0.773
	4	0.352	0.454	0.775	1.105
	5	0.272	0.374	0.727	1.383
	6	0.248	0.350	0.709	1.496
	7	0.226	0.328	0.689	1.618
802.11n (HT40)	0	0.945	1.047	0.903	0.445
	1	0.492	0.594	0.828	0.818
	2	0.340	0.448	0.759	1.198
	3	0.264	0.364	0.725	1.395
	4	0.188	0.290	0.648	1.882
	5	0.152	0.253	0.601	2.213
	6	0.139	0.241	0.577	2.390
	7	0.128	0.229	0.559	2.526

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT20)	0	1.930	2.030	0.951	0.219
	1	0.987	1.089	0.906	0.427
	2	0.672	0.774	0.868	0.614
	3	0.516	0.618	0.835	0.783
	4	0.356	0.457	0.779	1.087
	5	0.281	0.382	0.735	1.337
	6	0.252	0.353	0.713	1.469
	7	0.232	0.333	0.696	1.575
	8	0.199	0.301	0.663	1.783
802.11ac (VHT40)	0	0.951	1.053	0.903	0.442
	1	0.496	0.597	0.831	0.805
	2	0.344	0.446	0.771	1.128
	3	0.268	0.369	0.726	1.389
	4	0.192	0.293	0.655	1.836
	5	0.156	0.257	0.607	2.168
	6	0.144	0.245	0.588	2.308
	7	0.132	0.234	0.564	2.486
	8	0.115	0.217	0.530	2.758
	9	0.111	0.213	0.521	2.831
802.11ac (VHT80)	0	0.460	0.570	0.807	0.931
	1	0.252	0.353	0.714	1.464
	2	0.180	0.281	0.641	1.934
	3	0.148	0.249	0.594	2.259
	4	0.112	0.213	0.526	2.792
	5	0.096	0.197	0.487	3.122
	6	0.088	0.189	0.466	3.320
	7	0.084	0.185	0.454	3.429
	8	0.076	0.177	0.429	3.672
	9	0.072	0.173	0.416	3.807

[MIMO]

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11n (HT20)	0	0.984	1.086	0.906	0.428
	1	0.512	0.614	0.834	0.789
	2	0.356	0.458	0.777	1.094
	3	0.276	0.378	0.730	1.366
	4	0.200	0.302	0.662	1.790
	5	0.160	0.261	0.612	2.134
	6	0.149	0.250	0.595	2.255
	7	0.135	0.236	0.571	2.431
802.11n (HT40)	0	0.492	0.600	0.820	0.862
	1	0.268	0.370	0.726	1.390
	2	0.192	0.293	0.654	1.841
	3	0.155	0.256	0.605	2.184
	4	0.116	0.217	0.535	2.716
	5	0.099	0.201	0.494	3.063
	6	0.092	0.194	0.475	3.231
	7	0.087	0.189	0.462	3.355

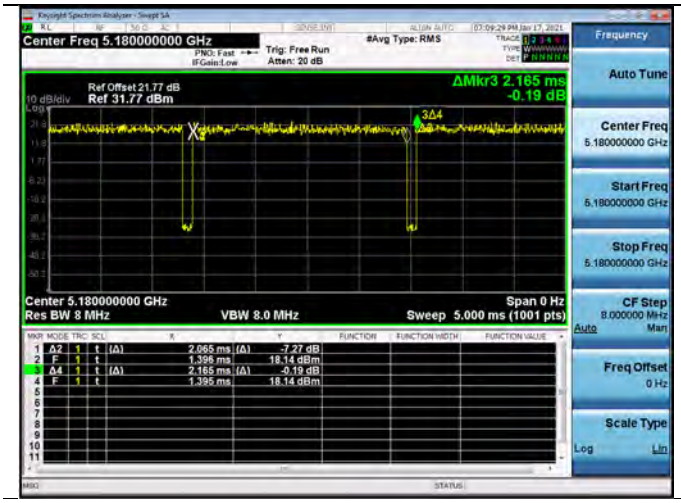
Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT20)	0	0.990	1.092	0.907	0.426
	1	0.520	0.621	0.837	0.773
	2	0.359	0.462	0.777	1.093
	3	0.284	0.385	0.737	1.325
	4	0.204	0.305	0.668	1.750
	5	0.163	0.265	0.613	2.129
	6	0.153	0.253	0.606	2.176
	7	0.140	0.241	0.580	2.369
	8	0.124	0.225	0.551	2.588
802.11ac (VHT40)	0	0.498	0.600	0.830	0.809
	1	0.272	0.373	0.730	1.369
	2	0.196	0.298	0.659	1.814
	3	0.160	0.262	0.612	2.135
	4	0.120	0.221	0.543	2.648
	5	0.104	0.205	0.508	2.943
	6	0.096	0.197	0.488	3.118
	7	0.091	0.193	0.473	3.251
	8	0.084	0.185	0.455	3.424
	9	0.080	0.181	0.442	3.541
802.11ac (VHT80)	0	0.256	0.358	0.715	1.456
	1	0.152	0.253	0.601	2.209
	2	0.116	0.218	0.533	2.732
	3	0.100	0.201	0.498	3.028
	4	0.080	0.181	0.442	3.541
	5	0.072	0.173	0.417	3.802
	6	0.068	0.170	0.401	3.969
	7	0.068	0.170	0.401	3.969
	8	0.064	0.165	0.388	4.108
	9	0.060	0.162	0.371	4.303

Note:

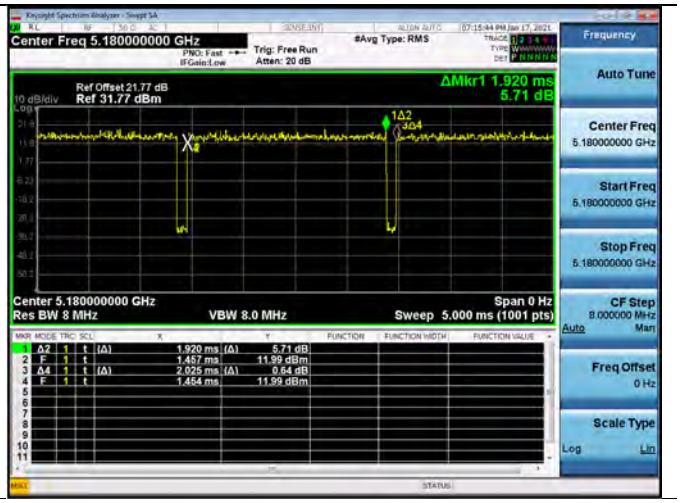
In order to simplify the report, attached plots were only lowest datarate.

[SISO]

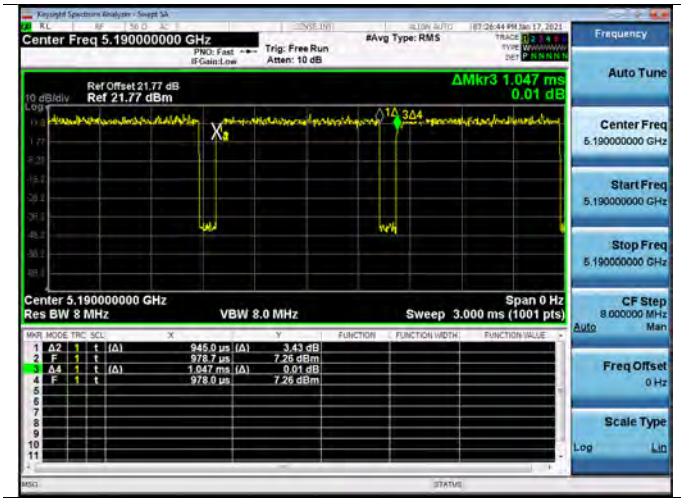
802.11a



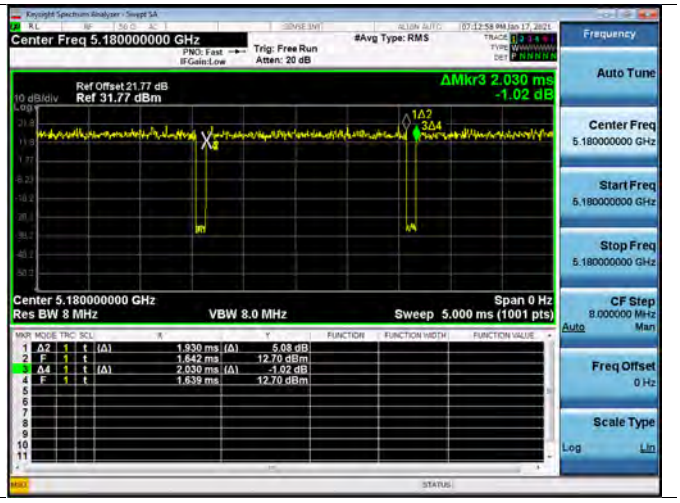
802.11n(HT20)



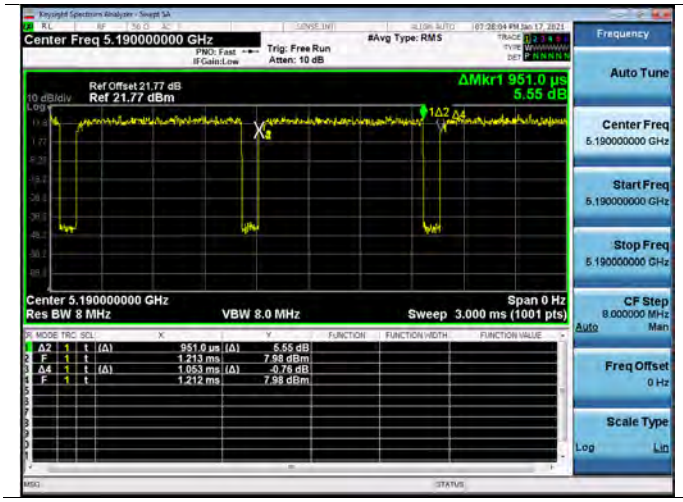
802.11n(HT40)



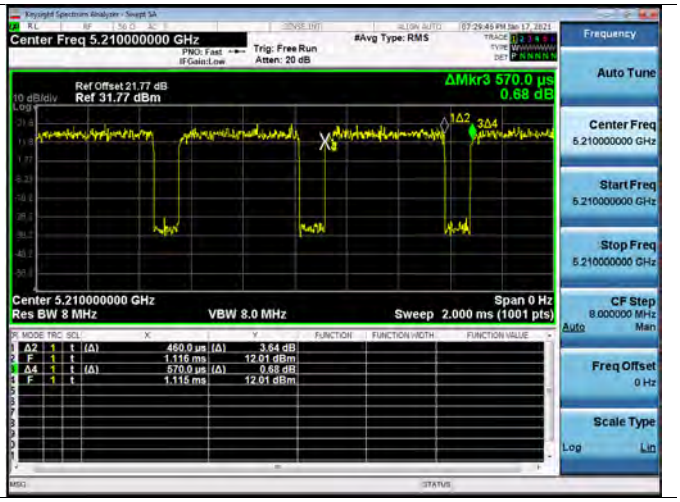
802.11ac(VHT20)



802.11ac(VHT40)

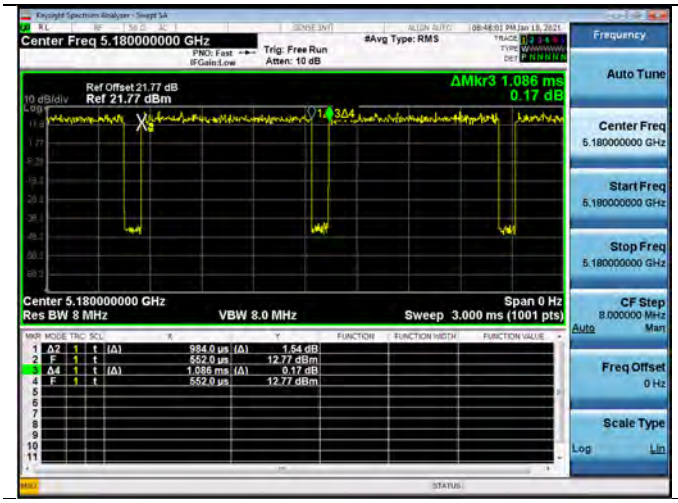


802.11ac(VHT80)

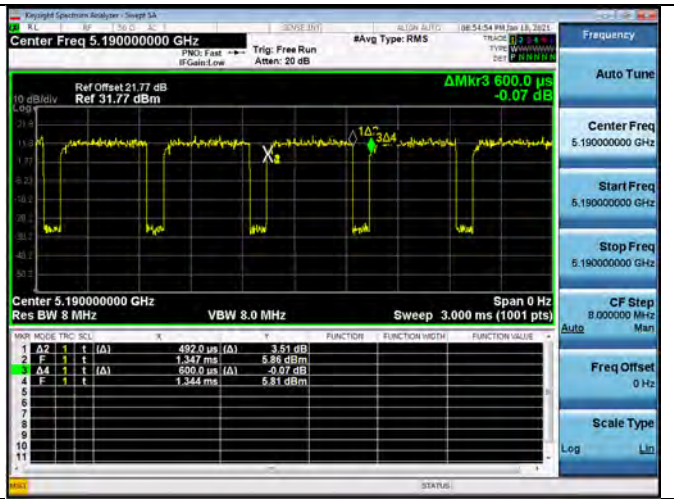


[MIMO]

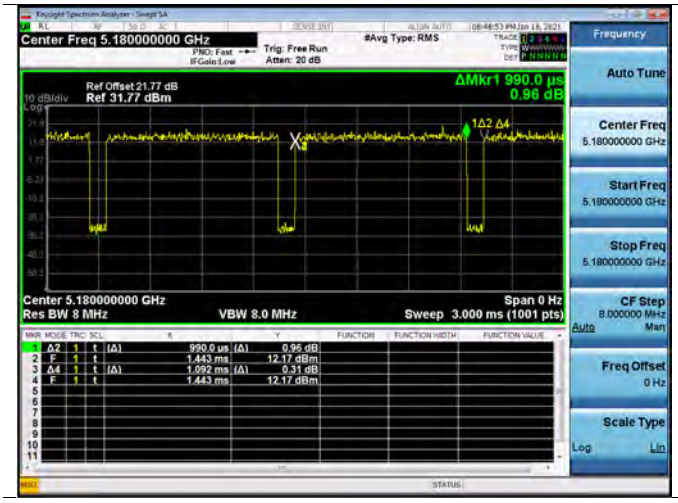
802.11n(HT20)



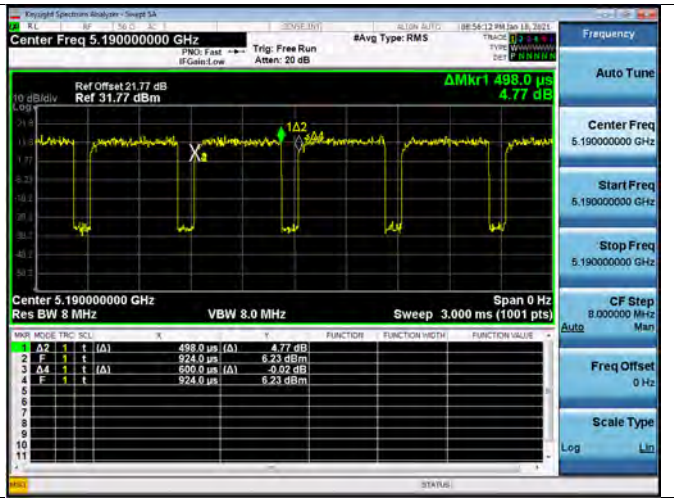
802.11n(HT40)



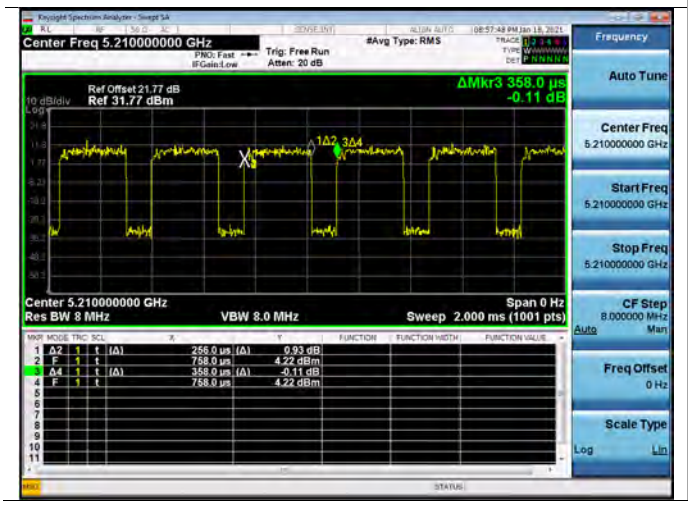
802.11ac(VHT20)



802.11ac(VHT40)



802.11ac(VHT80)



10.2 26DB BANDWIDTH

[Internal ANT_SISO]

802.11a Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.06	16.581
5200	40	21.05	16.534
5240	48	21.03	16.535
5260	52	21.03	16.549
5300	60	21.18	16.555
5320	64	21.02	16.533
5500	100	21.12	16.569
5580	116	23.03	16.627
5720	144	29.96	17.593
5745	149	26.50	16.886
5785	157	23.23	16.745
5825	165	22.07	16.656

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.41	17.804
5200	40	20.86	17.733
5240	48	21.33	17.716
5260	52	21.12	17.732
5300	60	21.33	17.734
5320	64	21.25	17.732
5500	100	21.23	17.748
5580	116	25.63	17.897
5720	144	31.24	18.455
5745	149	31.72	18.263
5785	157	27.78	18.186
5825	165	29.76	18.292

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.32	36.091
5230	46	39.05	36.179
5270	54	39.21	36.178
5310	62	39.50	36.043
5510	102	39.46	36.204
5550	110	39.15	36.198
5710	142	63.09	37.025
5755	151	57.53	36.583
5795	159	50.82	36.548

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.17	17.722
5200	40	21.38	17.712
5240	48	21.25	17.720
5260	52	21.11	17.708
5300	60	21.33	17.696
5320	64	21.09	17.694
5500	100	21.25	17.718
5580	116	25.33	17.924
5720	144	31.59	18.437
5745	149	28.46	18.429
5785	157	27.91	18.165
5825	165	22.38	17.815

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.49	36.147
5230	46	39.43	36.161
5270	54	39.40	36.206
5310	62	39.23	36.135
5510	102	39.33	36.157
5550	110	45.65	36.302
5710	142	60.75	36.906
5755	151	53.73	36.526
5795	159	49.65	36.458

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	81.41	75.517
5290	58	80.70	75.446
5530	106	80.87	75.604
5690	138	115.92	76.214
5775	155	117.91	76.065

[External ANT_SISO]

802.11a Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	20.79	16.537
5200	40	21.15	16.533
5240	48	21.07	16.528
5260	52	21.00	16.567
5300	60	21.21	16.571
5320	64	21.13	16.546
5500	100	20.80	16.560
5580	116	21.70	16.653
5720	144	24.61	16.791
5745	149	28.29	17.618
5785	157	32.22	18.783
5825	165	35.02	20.269

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.26	17.703
5200	40	21.26	17.739
5240	48	21.15	17.712
5260	52	21.18	17.728
5300	60	21.15	17.725
5320	64	21.14	17.761
5500	100	21.43	17.734
5580	116	22.11	17.784
5720	144	25.15	17.895
5745	149	29.78	18.425
5785	157	32.76	19.080
5825	165	37.42	20.698

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.40	36.159
5230	46	39.48	36.138
5270	54	39.57	36.154
5310	62	39.35	36.156
5510	102	39.37	36.181
5550	110	39.24	36.248
5710	142	42.08	36.350
5755	151	56.02	36.737
5795	159	72.52	37.354

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.39	17.729
5200	40	21.25	17.716
5240	48	21.26	17.712
5260	52	21.27	17.701
5300	60	21.20	17.730
5320	64	21.10	17.709
5500	100	21.37	17.763
5580	116	22.29	17.840
5720	144	23.41	17.860
5745	149	30.29	18.354
5785	157	35.17	19.762
5825	165	36.11	20.244

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.28	36.083
5230	46	39.25	36.147
5270	54	39.66	36.204
5310	62	39.16	36.125
5510	102	39.09	36.070
5550	110	40.10	36.241
5710	142	39.36	36.272
5755	151	61.96	36.720
5795	159	72.59	37.670

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	81.11	75.964
5290	58	80.99	75.836
5530	106	80.97	75.918
5690	138	83.00	75.680
5775	155	124.73	76.770

[Internal ANT_MIMO]

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.25	17.704
5200	40	21.32	17.695
5240	48	21.36	17.732
5260	52	21.21	17.731
5300	60	21.48	17.675
5320	64	21.31	17.734
5500	100	21.30	17.735
5580	116	21.71	17.762
5720	144	23.03	17.804
5745	149	29.84	18.378
5785	157	31.82	18.588
5825	165	31.59	18.438

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.32	36.092
5230	46	39.11	36.105
5270	54	39.12	36.152
5310	62	39.36	36.069
5510	102	39.22	36.100
5550	110	41.24	36.234
5710	142	60.20	36.713
5755	151	60.50	36.517
5795	159	61.39	36.883

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.03	17.704
5200	40	21.36	17.699
5240	48	20.98	17.685
5260	52	20.96	17.706
5300	60	21.11	17.697
5320	64	21.09	17.673
5500	100	21.35	17.726
5580	116	25.27	17.842
5720	144	22.80	17.768
5745	149	29.11	18.211
5785	157	32.47	18.523
5825	165	30.71	18.588

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.11	36.097
5230	46	39.17	36.166
5270	54	38.90	36.112
5310	62	39.18	36.154
5510	102	39.10	36.144
5550	110	40.57	36.308
5710	142	58.01	36.569
5755	151	61.56	36.658
5795	159	66.56	36.869

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	80.67	75.540
5290	58	80.72	75.532
5530	106	81.72	75.864
5690	138	117.33	76.251
5775	155	116.81	76.196

[External ANT_MIMO]

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.31	17.711
5200	40	21.15	17.715
5240	48	21.08	17.681
5260	52	21.15	17.724
5300	60	21.21	17.706
5320	64	21.11	17.715
5500	100	21.23	17.745
5580	116	21.18	17.735
5720	144	21.59	17.745
5745	149	29.94	18.395
5785	157	37.05	19.327
5825	165	37.27	19.815

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.18	36.089
5230	46	39.05	36.023
5270	54	39.59	36.107
5310	62	39.36	36.171
5510	102	39.13	36.117
5550	110	43.27	36.221
5710	142	61.34	36.400
5755	151	64.92	37.087
5795	159	76.17	41.516

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.08	17.702
5200	40	21.28	17.751
5240	48	21.31	17.695
5260	52	20.92	17.730
5300	60	21.11	17.701
5320	64	21.44	17.739
5500	100	21.27	17.695
5580	116	21.49	17.757
5720	144	21.54	17.802
5745	149	31.03	18.378
5785	157	37.12	19.323
5825	165	36.61	20.718

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.43	36.083
5230	46	38.98	36.062
5270	54	39.30	36.212
5310	62	39.04	36.088
5510	102	39.20	36.004
5550	110	39.91	36.225
5710	142	69.09	36.414
5755	151	66.18	37.272
5795	159	66.39	38.528

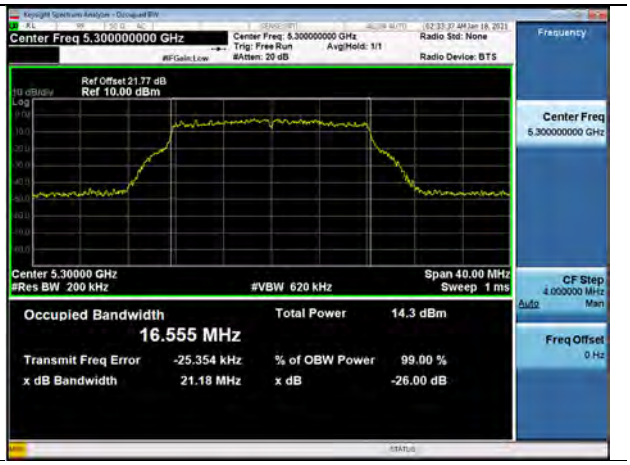
802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	80.67	75.922
5290	58	80.73	75.918
5530	106	80.90	75.502
5690	138	100.95	75.694
5775	155	131.46	77.018

[Internal ANT_SISO]

▣ 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 60)
	
802.11a UNII 2C BAND 26dB Bandwidth (CH144)	802.11a UNII 3 BAND 26dB Bandwidth (CH 149)
	

▣ Test Plots(802.11n(HT20))

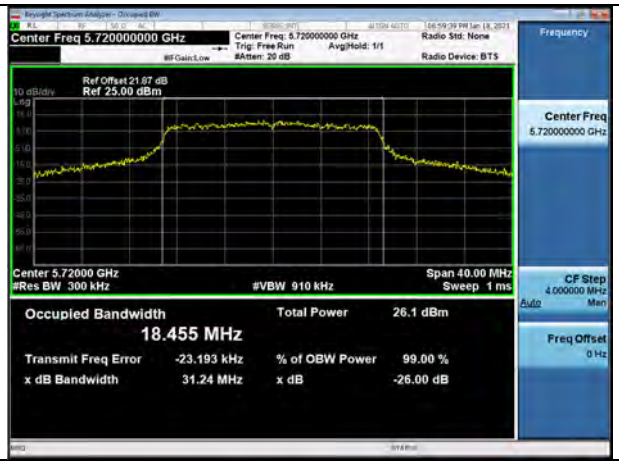
Note:

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

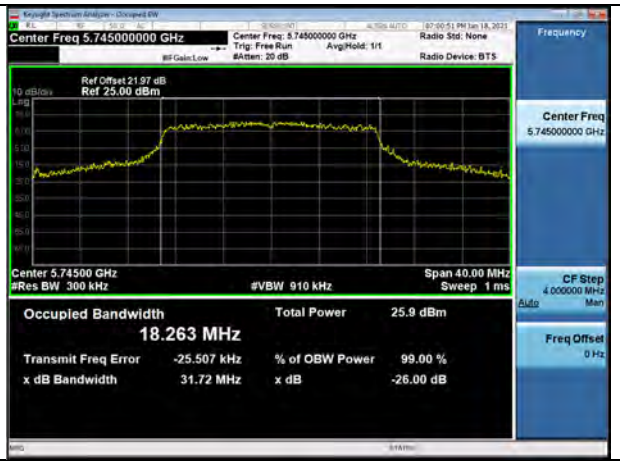
802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 36)

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

802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 144)



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



▣ Test Plots(802.11n(HT40))

Note:

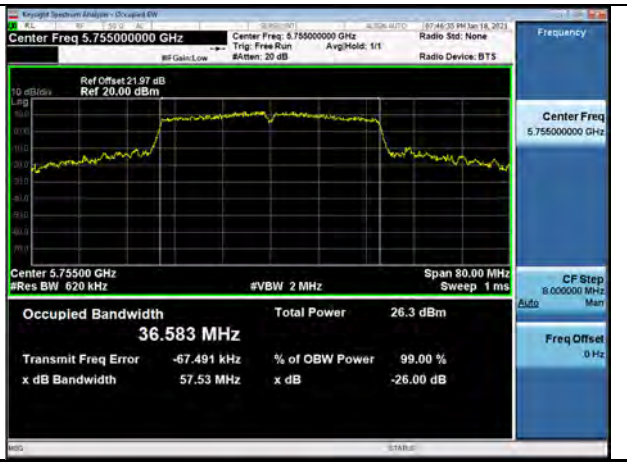
In order to simplify the report, attached plots were only the most wide channel.

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)

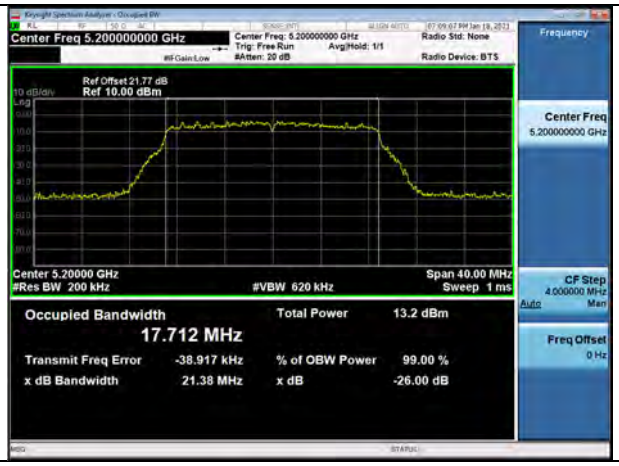
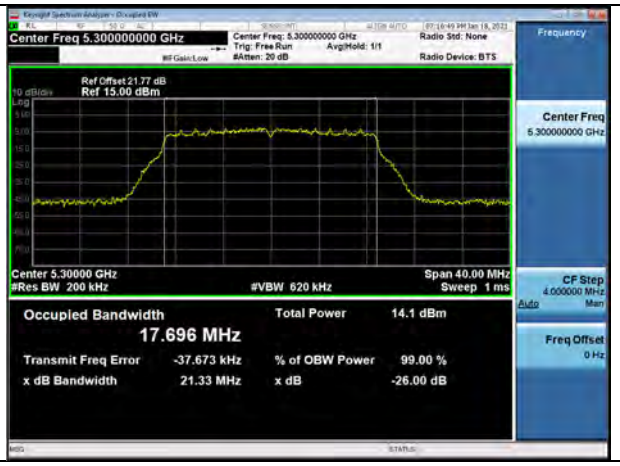
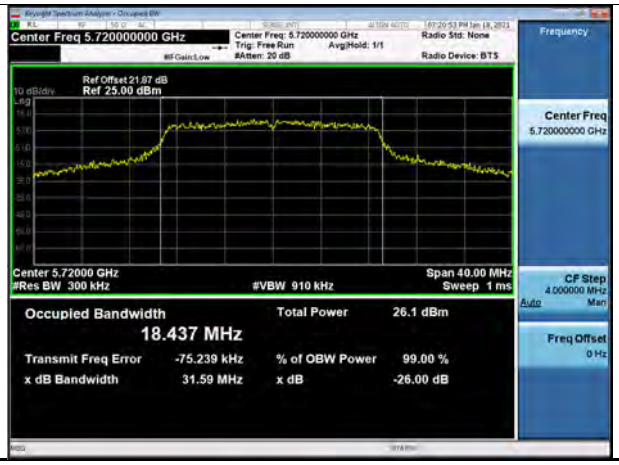
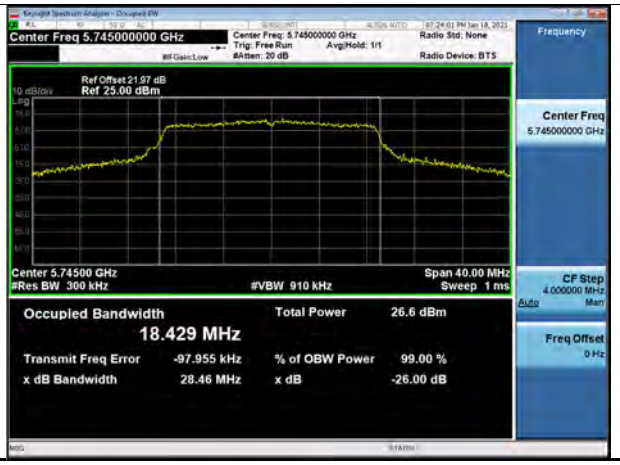
802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 151)



▣ Test Plots(802.11ac(VHT20))

Note:

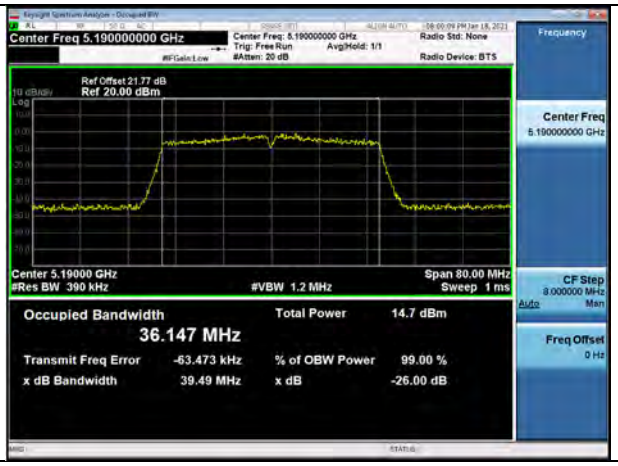
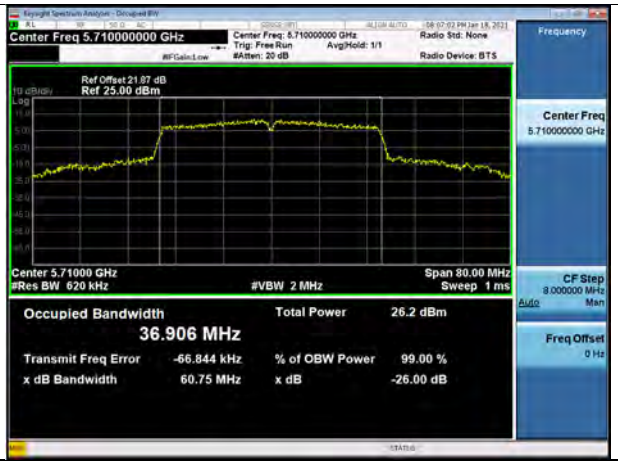
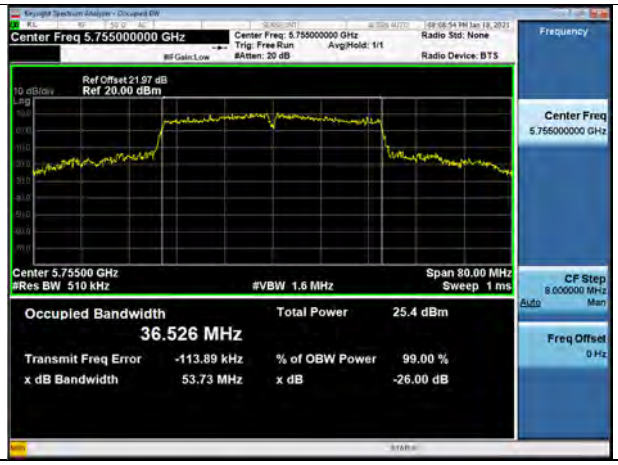
In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT20 UNII 1 BAND 26dB Bandwidth(CH 40)	802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 60)
	
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.

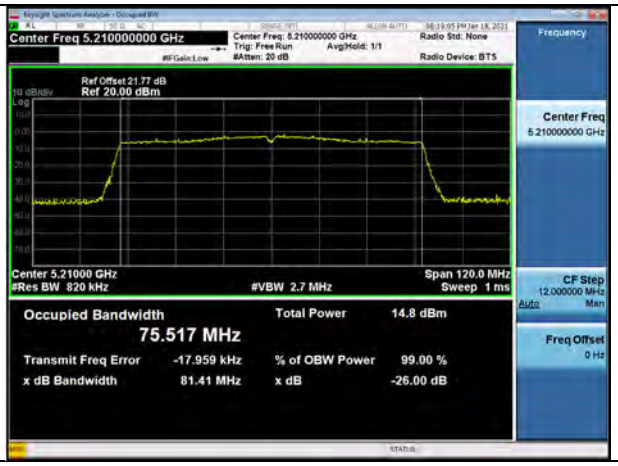
802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 38)	802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 54)
	
802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 142)	802.11ac_VHT40 UNII 3 BAND 26dB Bandwidth (CH 151)
	

▣ Test Plots(802.11ac(VHT80))

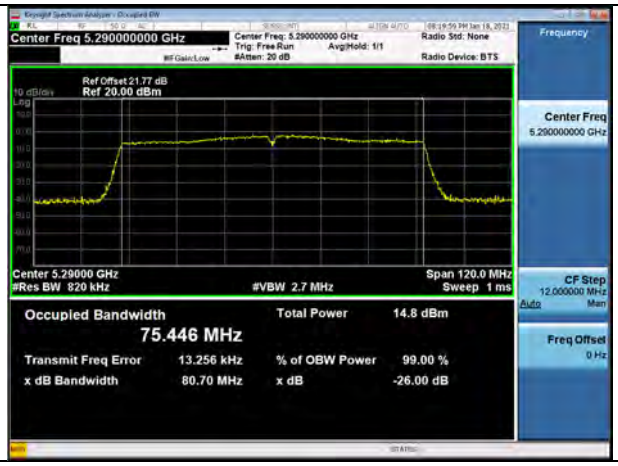
Note:

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

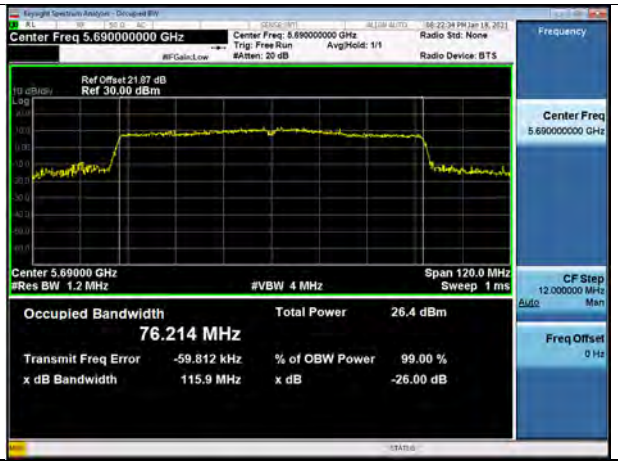
802.11ac_VHT80 UNII 1 BAND 26dB Bandwidth(CH 42)



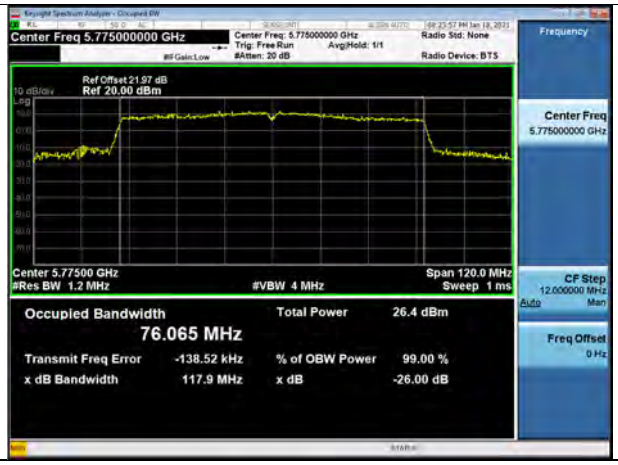
802.11ac_VHT80 UNII 2A BAND 26dB Bandwidth (CH 58)



802.11ac_VHT80 UNII 2C BAND 26dB Bandwidth(CH 138)



802.11ac_VHT80 UNII 3 BAND 26dB Bandwidth (CH 155)



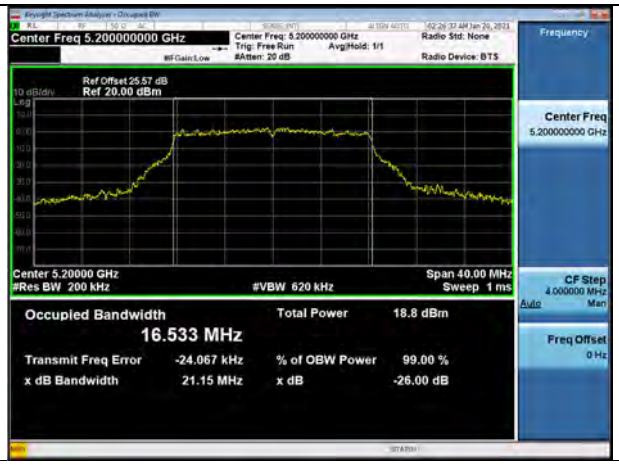
[External ANT_SISO]

▣ Test Plots(802.11a)

Note:

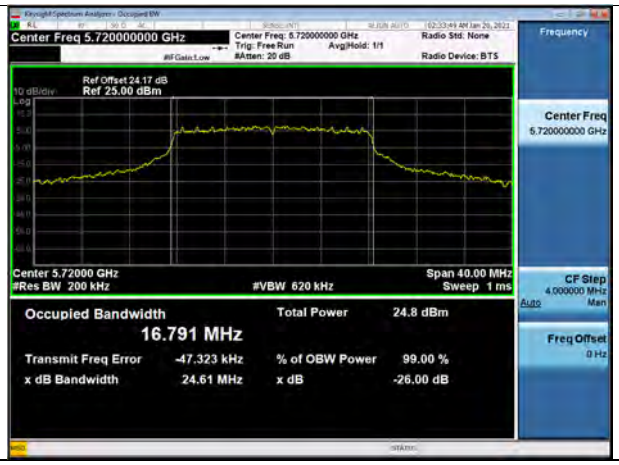
In order to simplify the report, attached plots were only the most wide channel.

802.11a UNII 1 BAND 26dB Bandwidth (CH 40)

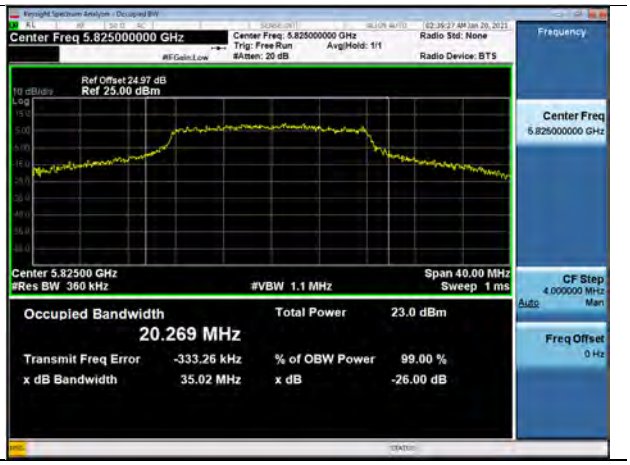


802.11a UNII 2A BAND 26dB Bandwidth (CH 60)

802.11a UNII 2C BAND 26dB Bandwidth (CH144)



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

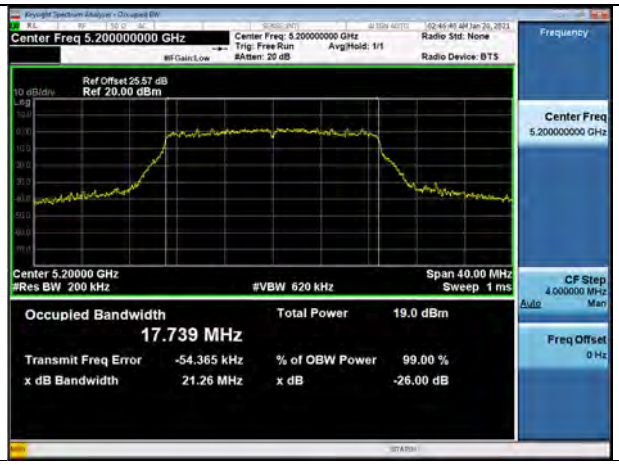


▣ Test Plots(802.11n(HT20))

Note:

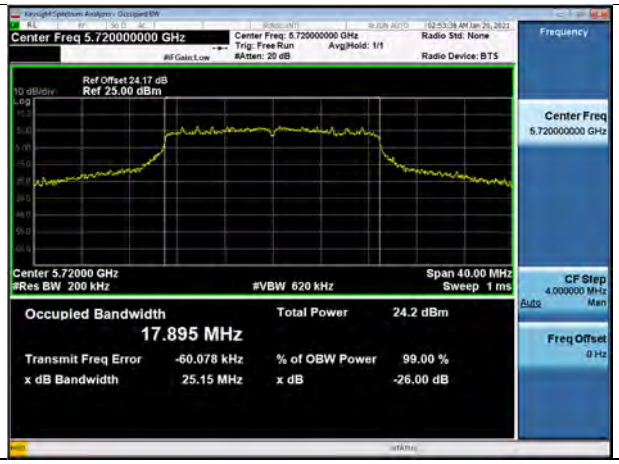
In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 40)

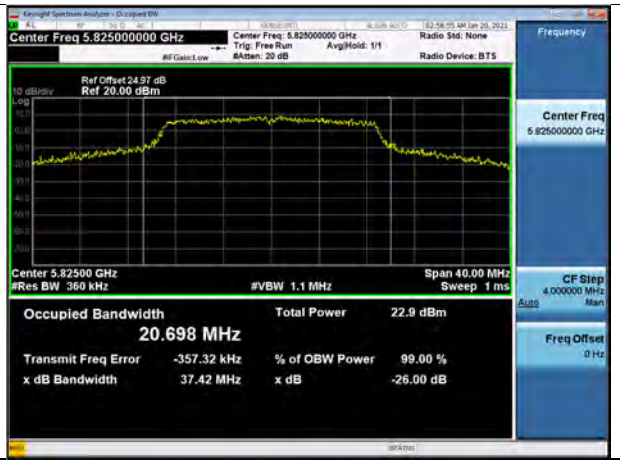


802.11n_HT20 UNII 2A BAND 26dB Bandwidth(CH 52)

802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 144)



802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 165)

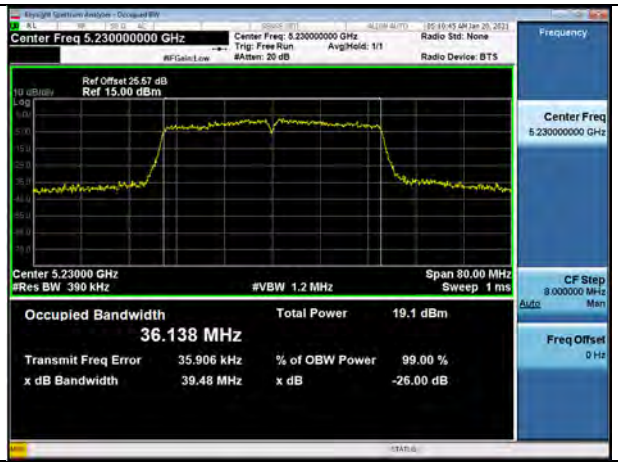


▣ Test Plots(802.11n(HT40))

Note:

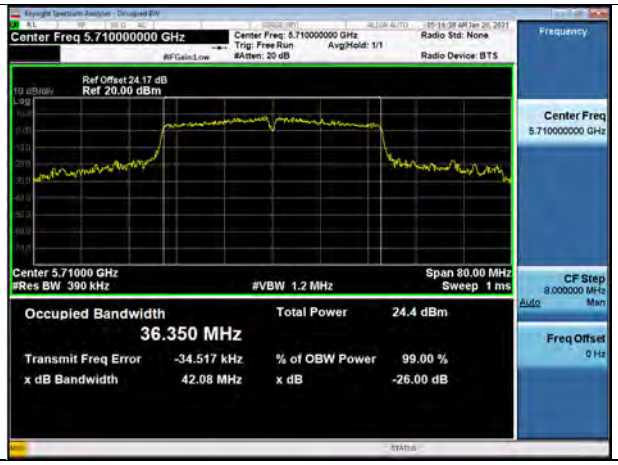
In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 46)

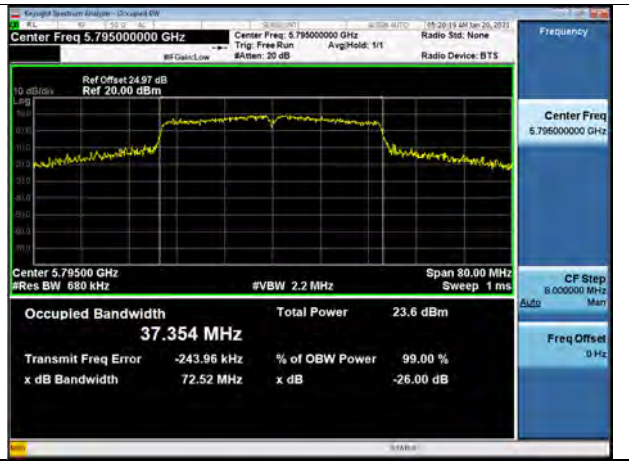


802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 54)

802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 142)



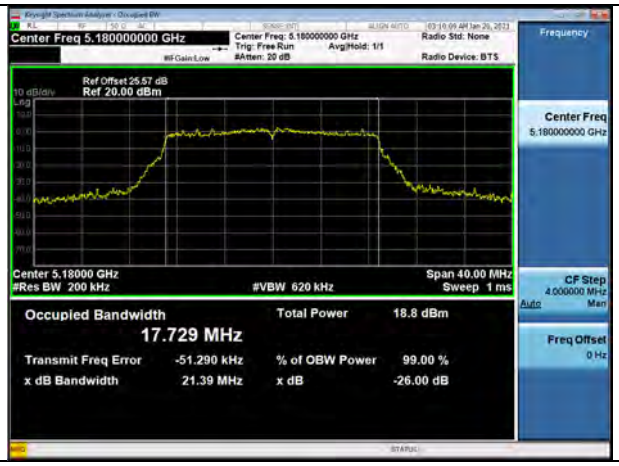
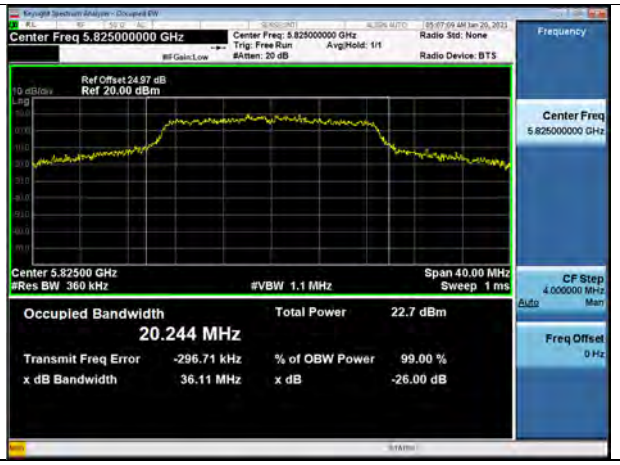
802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 159)



▣ Test Plots(802.11ac(VHT20))

Note:

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

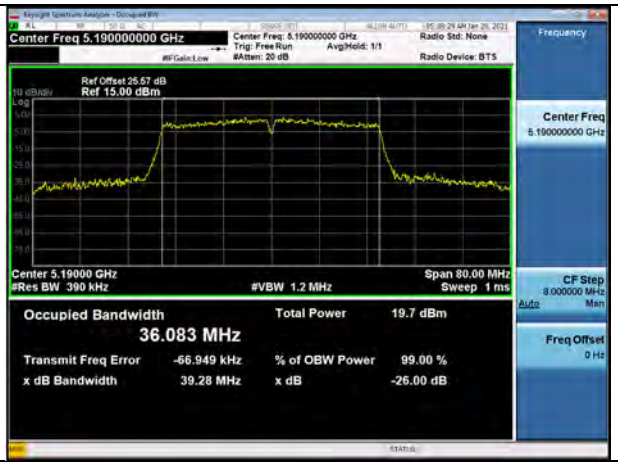
802.11ac_VHT20 UNII 1 BAND 26dB Bandwidth(CH 36)	802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 52)
	
802.11ac_VHT20 UNII 2C BAND 26dB Bandwidth(CH 144)	802.11ac_VHT20 UNII 3 BAND 26dB Bandwidth(CH 165)
	

▣ Test Plots(802.11ac(VHT40))

Note:

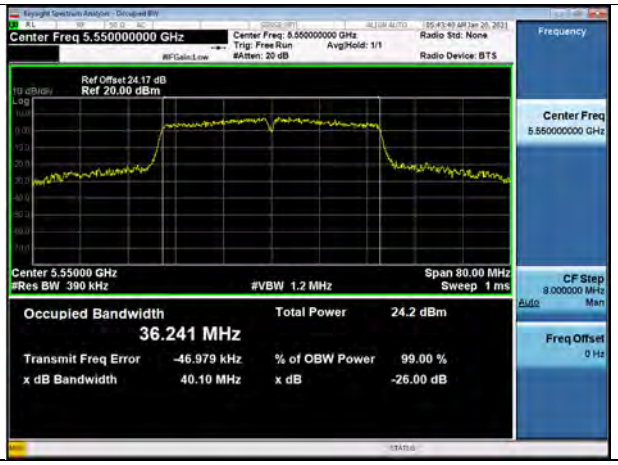
In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 38)

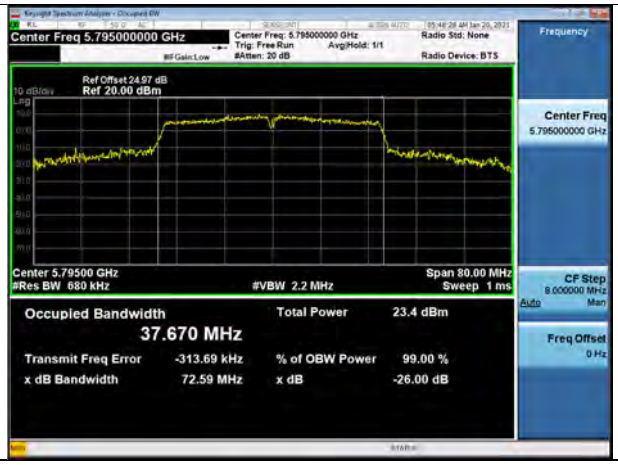


802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 54)

802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 110)



802.11ac_VHT40 UNII 3 BAND 26dB Bandwidth (CH 159)

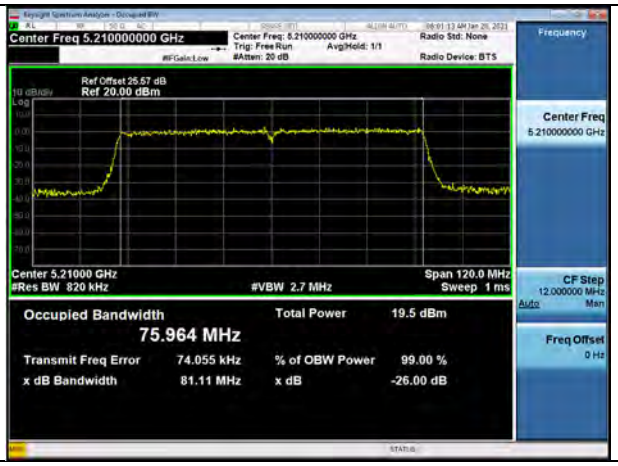


▣ Test Plots(802.11ac(VHT80))

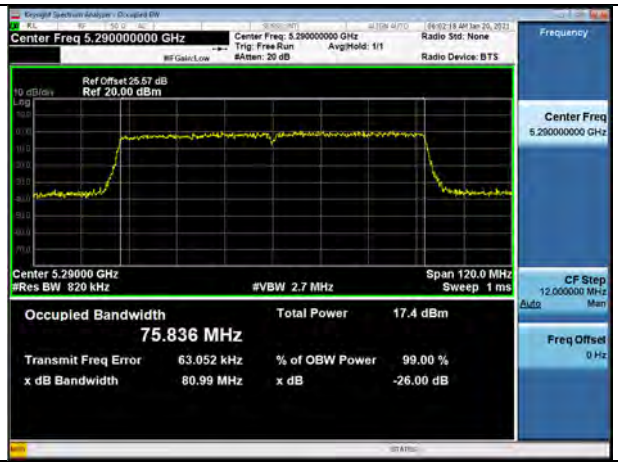
Note:

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

802.11ac_VHT80 UNII 1 BAND 26dB Bandwidth(CH 42)

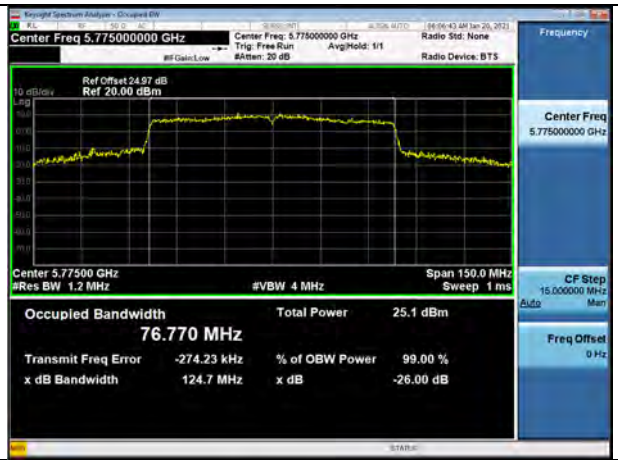


802.11ac_VHT80 UNII 2A BAND 26dB Bandwidth (CH 58)



802.11ac_VHT80 UNII 2C BAND 26dB Bandwidth(CH 138)

802.11ac_VHT80 UNII 3 BAND 26dB Bandwidth (CH 155)



[Internal ANT_MIMO]

▣ Test Plots(802.11n(HT20))

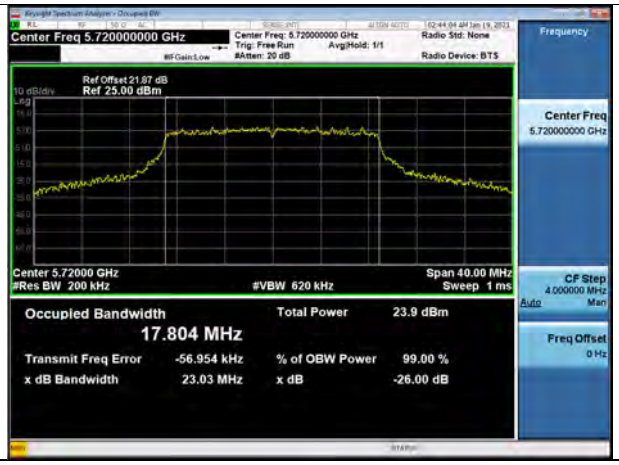
Note:

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 60)

802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 144)



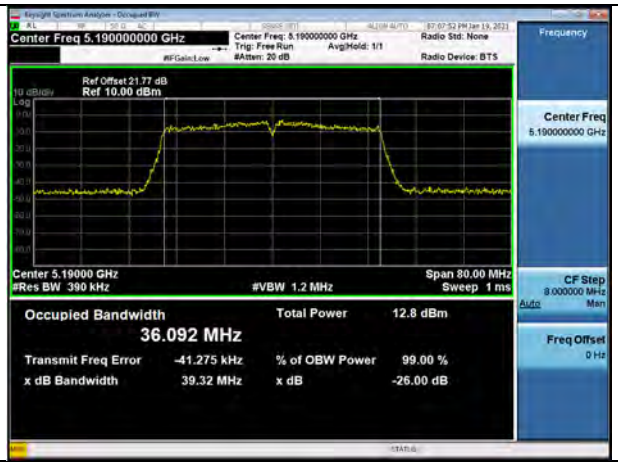
802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 157)

▣ Test Plots(802.11n(HT40))

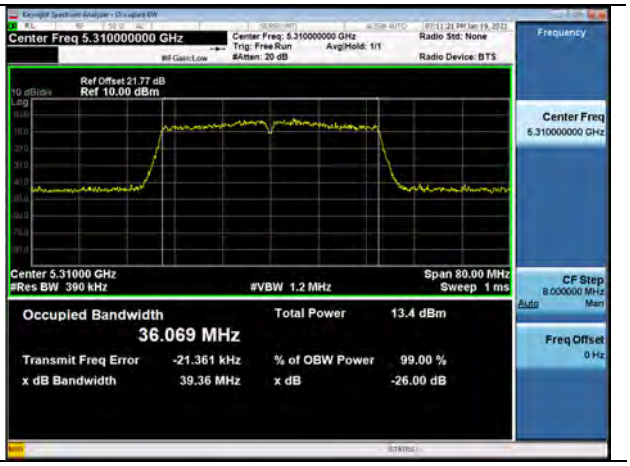
Note:

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

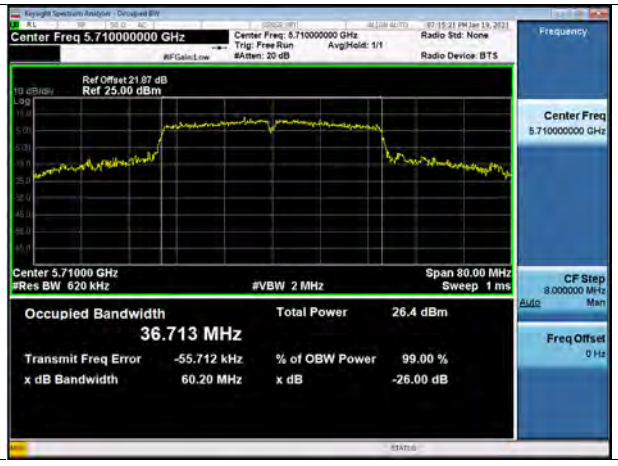
802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 38)



802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 62)



802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 142)

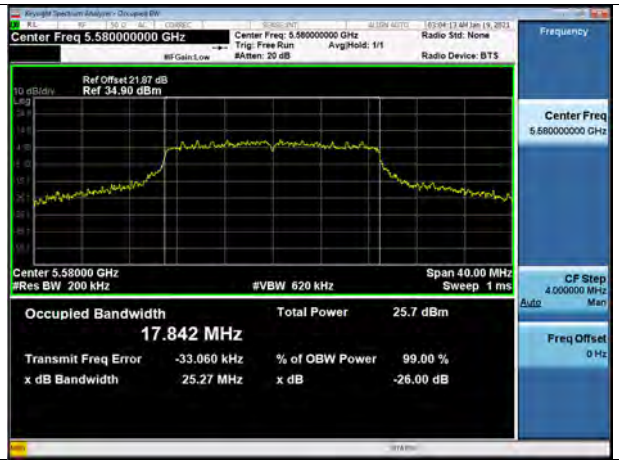


802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 159)

▣ Test Plots(802.11ac(VHT20))

Note:

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

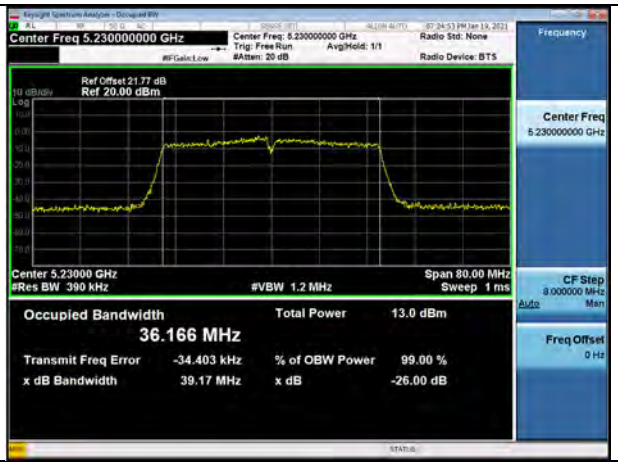
802.11ac_VHT20 UNII 1 BAND 26dB Bandwidth(CH 40)	802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 60)
	
802.11ac_VHT20 UNII 2C BAND 26dB Bandwidth(CH 116)	802.11ac_VHT20 UNII 3 BAND 26dB Bandwidth(CH 157)
	

▣ Test Plots(802.11ac(VHT40))

Note:

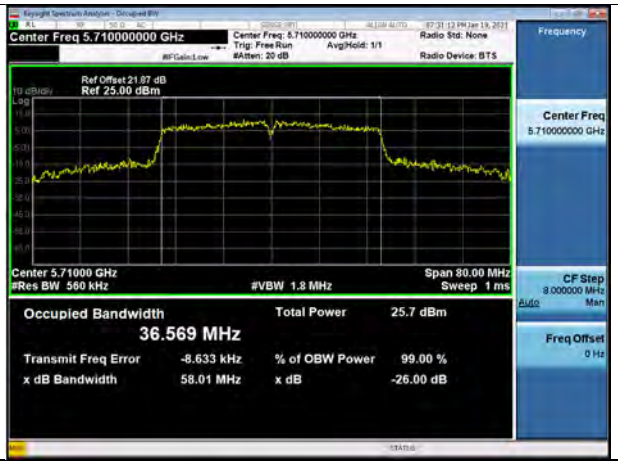
In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 46)

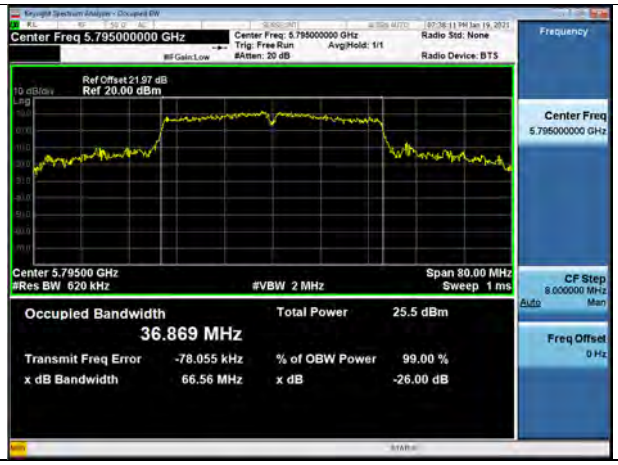


802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 62)

802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 142)



802.11ac_VHT40 UNII 3 BAND 26dB Bandwidth (CH 159)

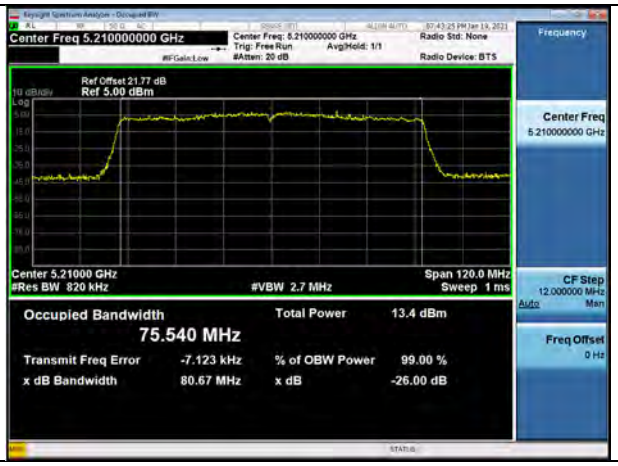


▣ Test Plots(802.11ac(VHT80))

Note:

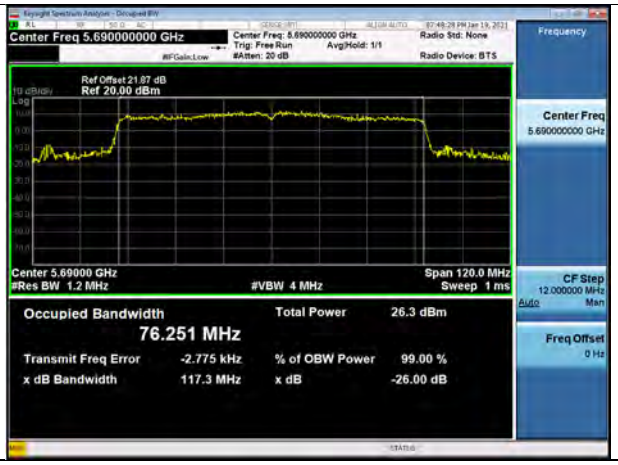
In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT80 UNII 1 BAND 26dB Bandwidth(CH 42)

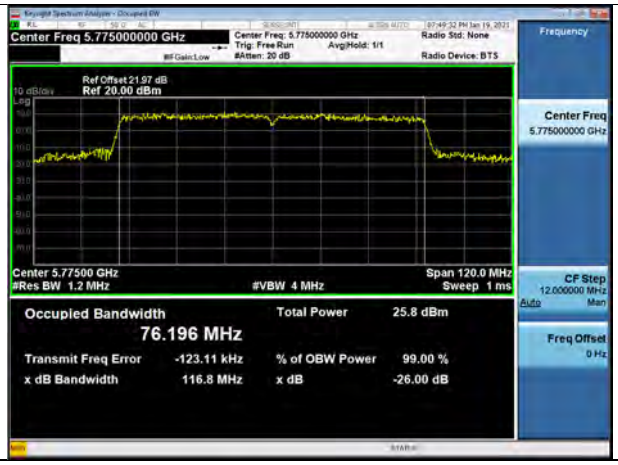


802.11ac_VHT80 UNII 2A BAND 26dB Bandwidth (CH 58)

802.11ac_VHT80 UNII 2C BAND 26dB Bandwidth(CH 138)



802.11ac_VHT80 UNII 3 BAND 26dB Bandwidth (CH 155)



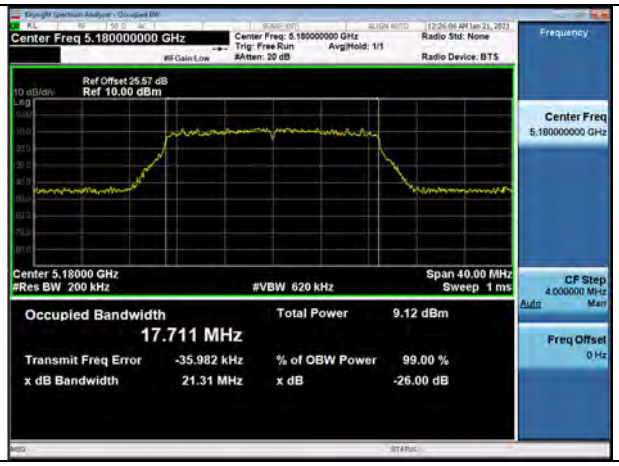
[External ANT_MIMO]

▣ Test Plots(802.11n(HT20))

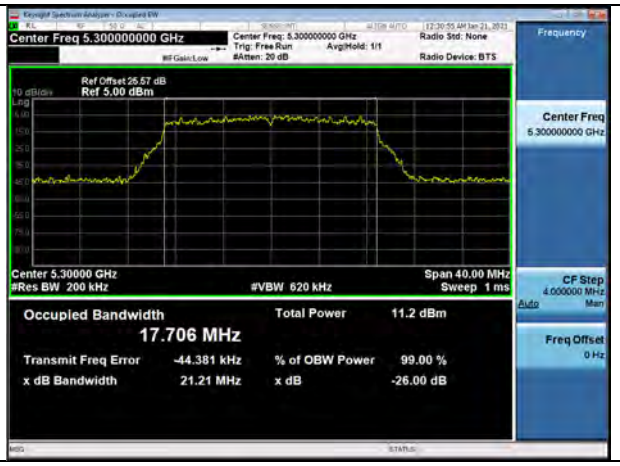
Note:

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

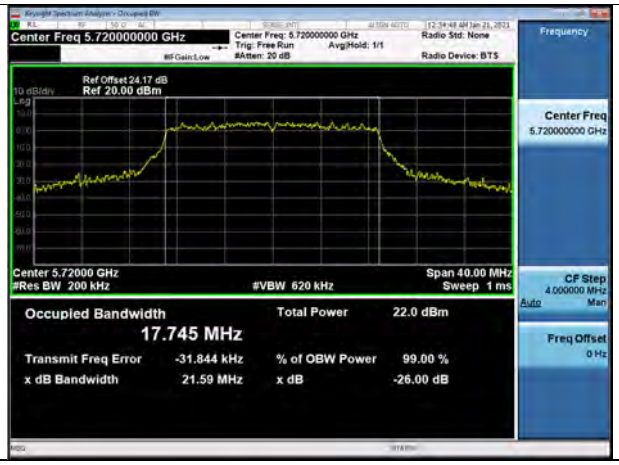
802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 36)



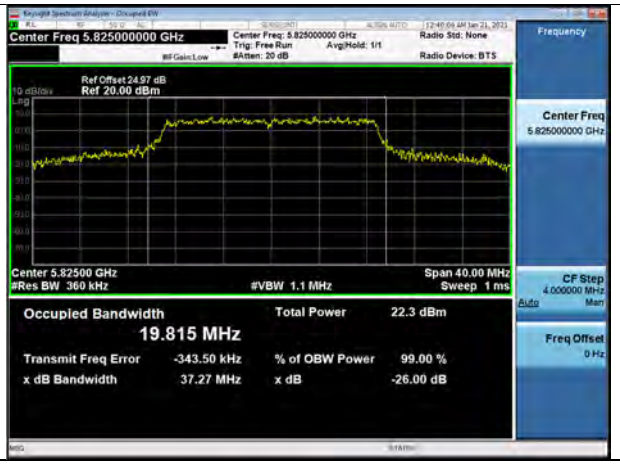
802.11n_HT20 UNII 2A BAND 26dB Bandwidth(CH 60)



802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 144)



802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 165)



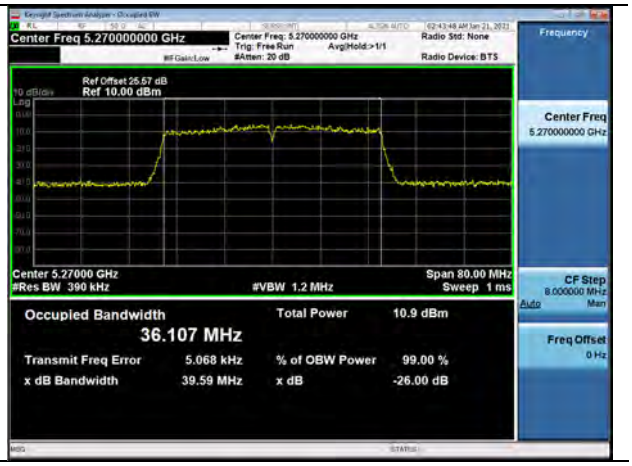
▣ Test Plots(802.11n(HT40))

Note:

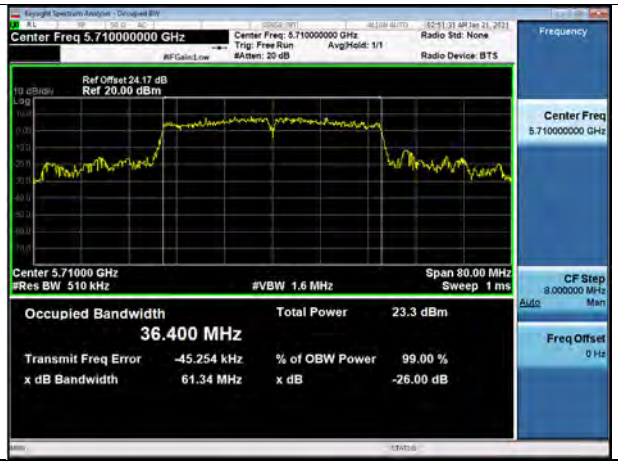
In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 38)

802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 54)



802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 142)

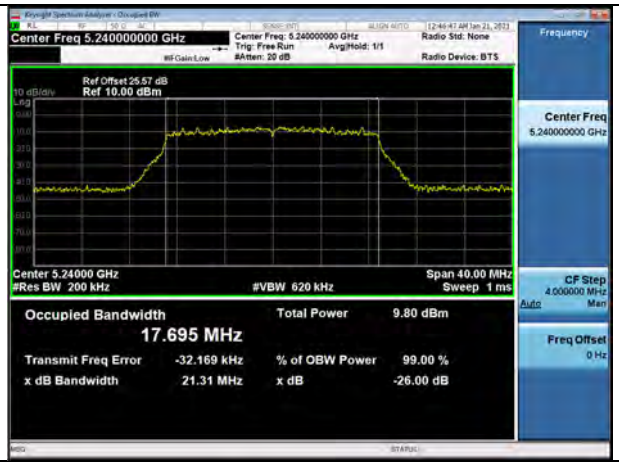
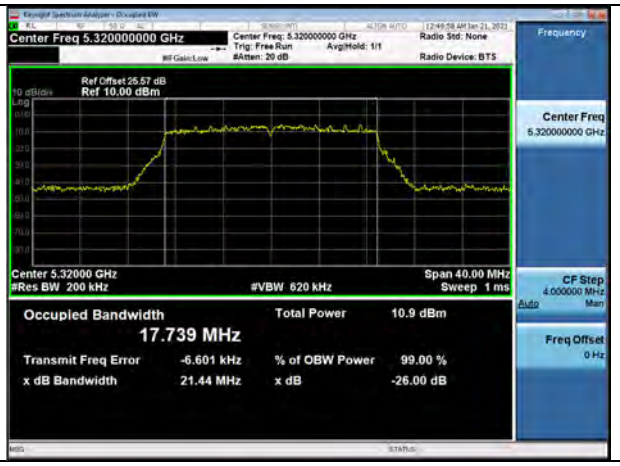
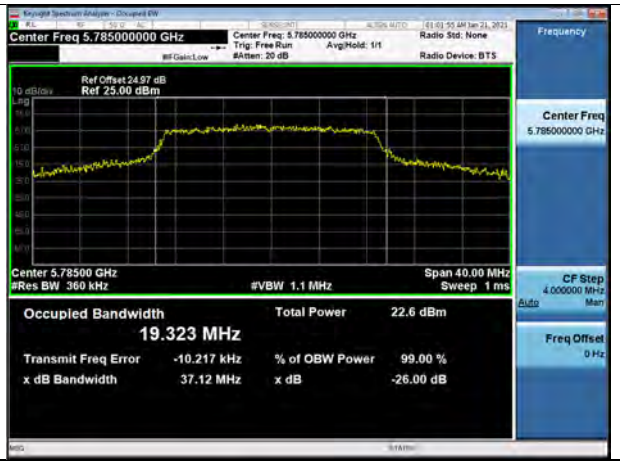


802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 159)

▣ Test Plots(802.11ac(VHT20))

Note:

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

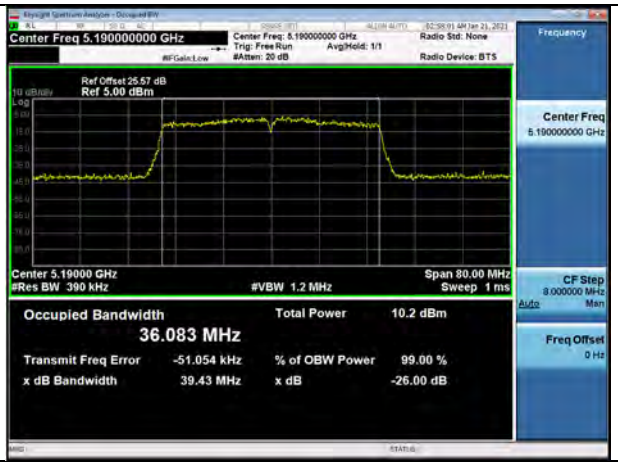
802.11ac_VHT20 UNII 1 BAND 26dB Bandwidth(CH 48)	802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 64)
	
802.11ac_VHT20 UNII 2C BAND 26dB Bandwidth(CH 144)	802.11ac_VHT20 UNII 3 BAND 26dB Bandwidth(CH 157)
	

▣ Test Plots(802.11ac(VHT40))

Note:

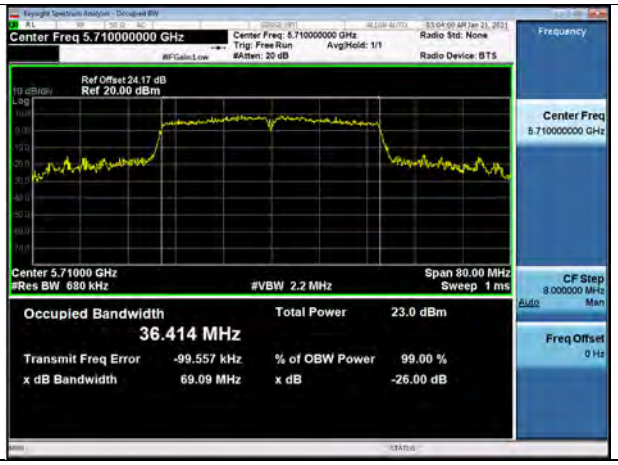
In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 38)

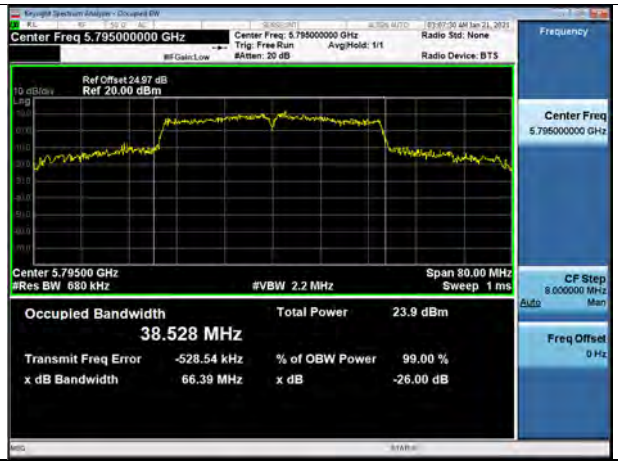


802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 54)

802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 142)



802.11ac_VHT40 UNII 3 BAND 26dB Bandwidth (CH 159)

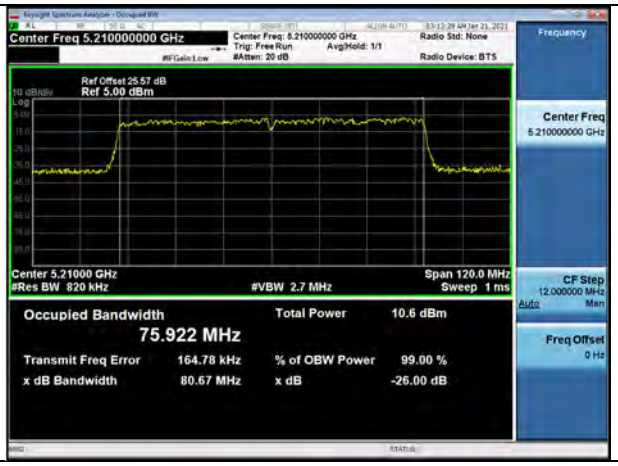


▣ Test Plots(802.11ac(VHT80))

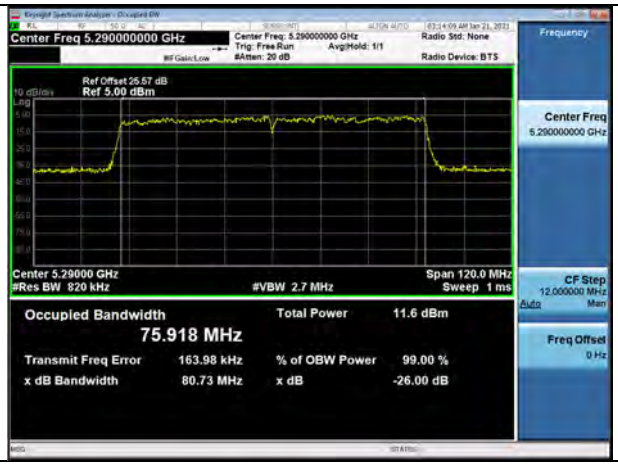
Note:

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

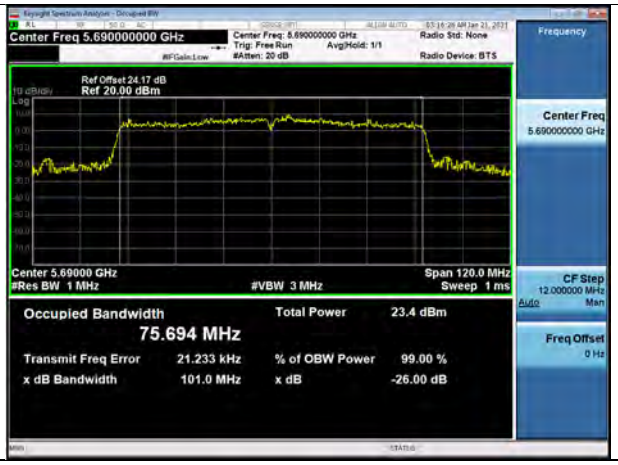
802.11ac_VHT80 UNII 1 BAND 26dB Bandwidth(CH 42)



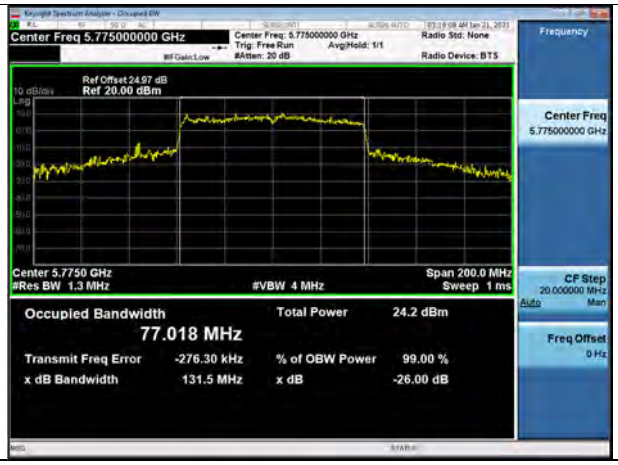
802.11ac_VHT80 UNII 2A BAND 26dB Bandwidth (CH 58)



802.11ac_VHT80 UNII 2C BAND 26dB Bandwidth(CH 138)



802.11ac_VHT80 UNII 3 BAND 26dB Bandwidth (CH 155)



10.3 6DB BANDWIDTH

[Internal ANT_SISO]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.07	> 0.5	Pass
5785	157	16.06	> 0.5	Pass
5825	165	16.35	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.28	> 0.5	Pass
5785	157	17.30	> 0.5	Pass
5825	165	17.35	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.33	> 0.5	Pass
5795	159	35.25	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.26	> 0.5	Pass
5785	157	17.60	> 0.5	Pass
5825	165	17.60	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.04	> 0.5	Pass
5795	159	36.04	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.57	> 0.5	Pass

[External ANT_SISO]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.96	> 0.5	Pass
5785	157	15.81	> 0.5	Pass
5825	165	16.02	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.27	> 0.5	Pass
5785	157	17.27	> 0.5	Pass
5825	165	17.54	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.01	> 0.5	Pass
5795	159	35.80	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.93	> 0.5	Pass
5785	157	17.53	> 0.5	Pass
5825	165	17.28	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.87	> 0.5	Pass
5795	159	35.46	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.42	> 0.5	Pass

[Internal ANT_MIMO]

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.00	> 0.5	Pass
5785	157	17.16	> 0.5	Pass
5825	165	17.57	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.33	> 0.5	Pass
5795	159	36.01	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.27	> 0.5	Pass
5785	157	16.90	> 0.5	Pass
5825	165	17.27	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.66	> 0.5	Pass
5795	159	35.86	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.84	> 0.5	Pass

[External ANT_MIMO]

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.54	> 0.5	Pass
5785	157	17.68	> 0.5	Pass
5825	165	17.70	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.83	> 0.5	Pass
5795	159	35.46	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.20	> 0.5	Pass
5785	157	17.26	> 0.5	Pass
5825	165	16.94	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.75	> 0.5	Pass
5795	159	35.54	> 0.5	Pass

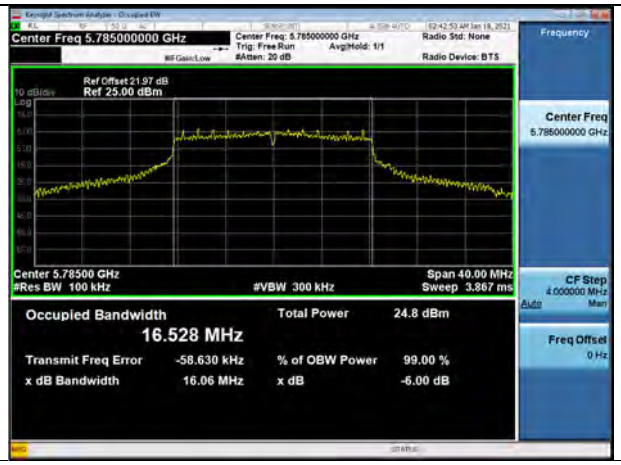
802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.27	> 0.5	Pass

[Internal ANT_SISO]

▣ Test Plots

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

802.11a (CH.157)



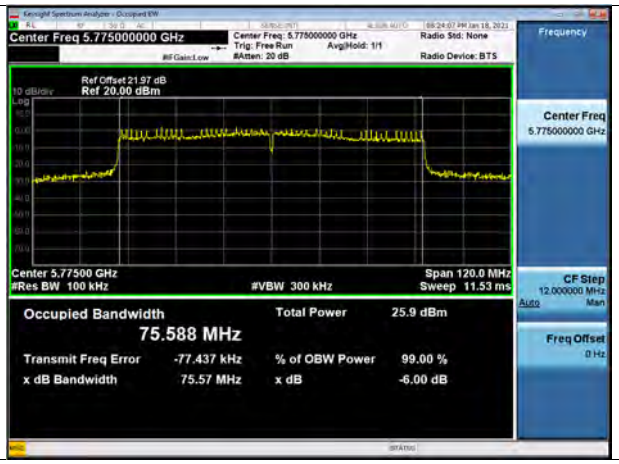
802.11n(HT20) (CH.149)

802.11n(HT40) (CH.151)

802.11ac(VHT20) (CH.149)

802.11ac(VHT40) (CH.151)

802.11ac(VHT80) (CH.155)



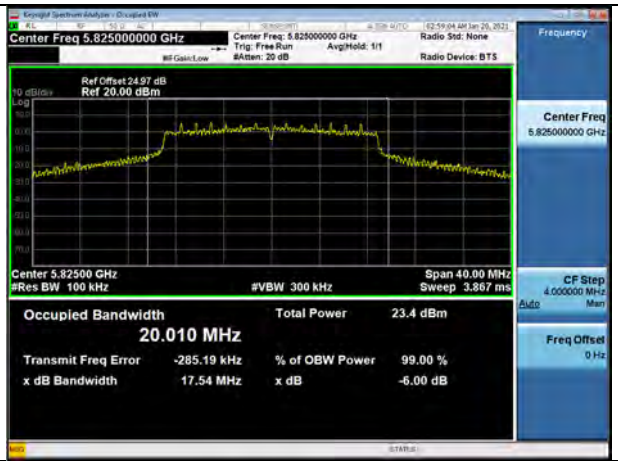
[External ANT_SISO]

▣ 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.165)

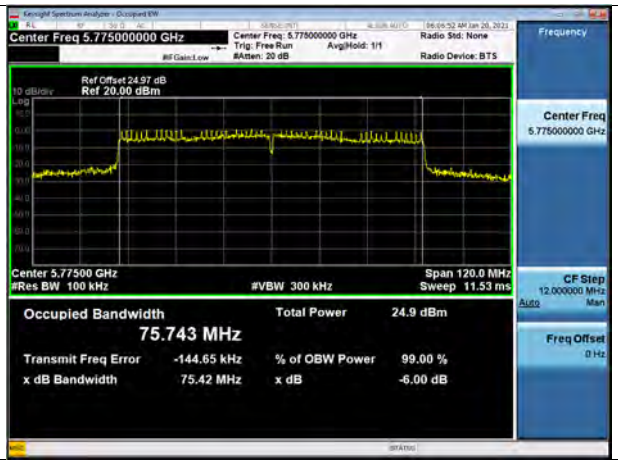


802.11n(HT40) (CH.151)

802.11ac(VHT20) (CH.157)

802.11ac(VHT40) (CH.151)

802.11ac(VHT80) (CH.155)



[Internal ANT_MIMO]

▣ Test Plots

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

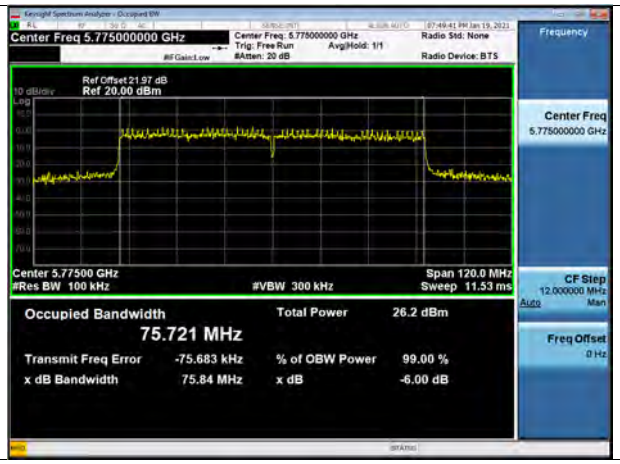
802.11n(HT20) (CH.165)

802.11n(HT40) (CH.151)

802.11ac(VHT20) (CH.149)

802.11ac(VHT40) (CH.159)

802.11ac(VHT80) (CH.155)



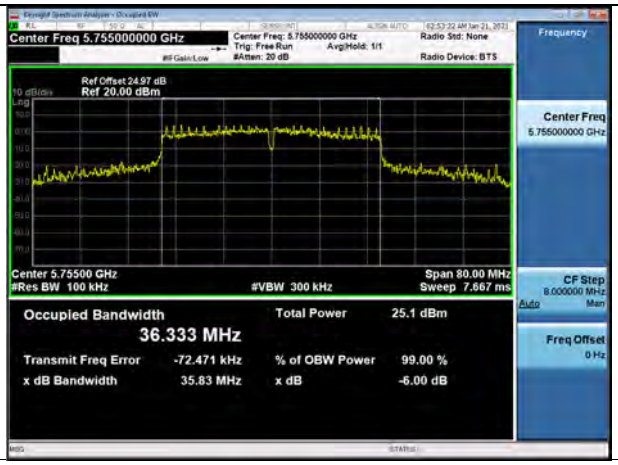
[External ANT_MIMO]

▣ Test Plots

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

802.11n(HT20) (CH.165)

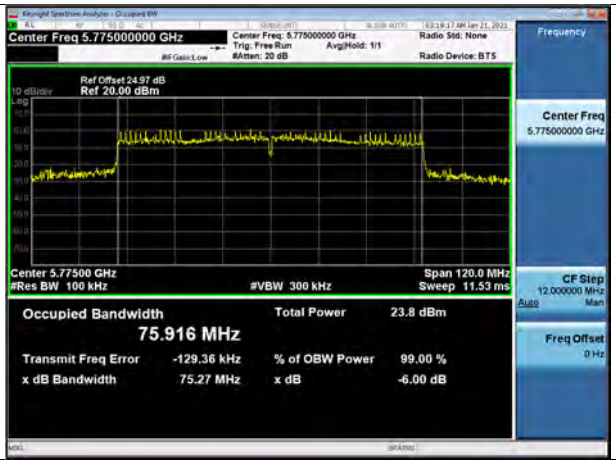
802.11n(HT40) (CH.151)



802.11ac(VHT20) (CH.157)

802.11ac(VHT40) (CH.151)

802.11ac(VHT80) (CH.155)



10.4 OUTPUT POWER MEASUREMENT

Straddle channel data in the table below are for reporting purposes only.
Straddle channel data were added in section 10.7.3.

[Internal ANT_SISO]

Limts (802.11a, 802.11n_HT20, 802.11ac_VHT20)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-3	: Total Power < 30.00 dBm

Limts (802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-3	: Total Power < 30.00 dBm

802.11a Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	6	6.93	0.40	7.33	23.98	12 Mbps
5200	40		7.11	0.40	7.51	23.98	12 Mbps
5240	48		7.02	0.40	7.42	23.98	12 Mbps
5260	52		7.32	0.40	7.72	23.98	12 Mbps
5300	60		7.59	0.40	7.99	23.98	12 Mbps
5320	64		7.66	0.40	8.06	23.98	12 Mbps
5500	100	13	14.30	0.40	14.70	23.98	12 Mbps
5580	116	18	19.52	0.40	19.92	23.98	12 Mbps
5720	144		19.70	0.40	20.10	23.98	12 Mbps
5745	149		19.35	0.40	19.75	30.00	12 Mbps
5785	157	17	17.96	0.40	18.36	30.00	12 Mbps
5825	165	16	16.84	0.40	17.24	30.00	12 Mbps

802.11n(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5180	36	6	6.82	0.43	7.25	23.98	MCS3
5200	40		6.88	0.43	7.31	23.98	MCS1
5240	48		7.04	0.43	7.47	23.98	MCS1
5260	52		7.06	0.62	7.68	23.98	MCS2
5300	60		7.66	0.43	8.09	23.98	MCS1
5320	64		7.48	0.62	8.10	23.98	MCS2
5500	100	13	14.14	0.62	14.76	23.98	MCS2
5580	116	18	19.52	0.43	19.95	23.98	MCS1
5720	144		19.17	0.62	19.79	23.98	MCS2
5745	149		19.14	0.62	19.76	30.00	MCS2
5785	157	17	17.90	0.62	18.52	30.00	MCS2
5825	165	16	16.60	0.62	17.22	30.00	MCS2

802.11n(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5190	38	7	6.59	1.20	7.79	23.98	MCS2
5230	46		5.95	1.88	7.83	23.98	MCS4
5270	54		7.56	1.20	8.76	23.98	MCS2
5310	62		7.27	1.20	8.47	23.98	MCS2
5510	102	10	10.04	1.20	11.24	23.98	MCS2
5550	110	18	18.20	1.20	19.40	23.98	MCS2
5710	142		18.39	1.20	19.59	23.98	MCS2
5755	151		16.81	2.39	19.20	30.00	MCS6
5795	159	17	16.62	1.20	17.82	30.00	MCS2

802.11ac(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5180	36	6	6.84	0.43	7.27	23.98	MCS1
5200	40		6.91	0.43	7.34	23.98	MCS1
5240	48		6.76	0.61	7.37	23.98	MCS2
5260	52		7.08	0.61	7.69	23.98	MCS2
5300	60		7.65	0.43	8.08	23.98	MCS1
5320	64		7.55	0.43	7.98	23.98	MCS1
5500	100	13	13.76	0.61	14.37	23.98	MCS2
5580	116	18	18.88	1.09	19.97	23.98	MCS4
5720	144		19.32	0.61	19.93	23.98	MCS2
5745	149		19.15	0.43	19.58	30.00	MCS1
5785	157	17	17.68	0.61	18.29	30.00	MCS2
5825	165	16	16.84	0.61	17.45	30.00	MCS2

802.11ac(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5190	38	7	5.58	2.31	7.89	23.98	MCS6
5230	46		5.56	2.31	7.87	23.98	MCS6
5270	54		5.70	2.31	8.01	23.98	MCS6
5310	62		6.00	2.31	8.31	23.98	MCS6
5510	102	10	9.12	2.31	11.43	23.98	MCS6
5550	110	18	17.15	2.31	19.46	23.98	MCS6
5710	142		17.42	2.31	19.73	23.98	MCS6
5755	151		16.68	2.31	18.99	30.00	MCS6
5795	159	17	15.42	2.31	17.73	30.00	MCS6

802.11ac(80MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5210	42	7	7.00	0.93	7.93	23.98	MCS0
5290	58		7.14	0.93	8.07	23.98	MCS0
5530	106	8	7.85	1.46	9.31	23.98	MCS1
5690	138	18	17.93	1.46	19.39	23.98	MCS1
5775	155		17.38	1.46	18.84	30.00	MCS1

[External ANT_SISO]

Limts (802.11a, 802.11n_HT20, 802.11ac_VHT20)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-3	: Total Power < 30.00 dBm

Limts (802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80)

UNII-1	: Total Power < 23.98 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-3	: Total Power < 30.00 dBm

802.11a Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	15	11.45	0.40	11.85	23.98	12 Mbps
5200	40		11.43	0.40	11.83	23.98	12 Mbps
5240	48	14	12.47	0.40	12.87	23.98	12 Mbps
5260	52	13	11.80	0.40	12.20	23.98	12 Mbps
5300	60		11.52	0.40	11.92	23.98	12 Mbps
5320	64	12	11.26	0.40	11.66	23.98	12 Mbps
5500	100	16	15.49	0.40	15.89	23.98	12 Mbps
5580	116	17	18.56	0.40	18.96	23.98	12 Mbps
5720	144		17.77	0.40	18.17	23.98	12 Mbps
5745	149	18	18.33	0.40	18.73	30.00	12 Mbps
5785	157		17.55	0.40	17.95	30.00	12 Mbps
5825	165		16.62	0.40	17.02	30.00	12 Mbps

802.11n(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5180	36	15	11.58	0.62	12.20	23.98	MCS2
5200	40		11.58	0.62	12.20	23.98	MCS2
5240	48	14	12.22	0.62	12.84	23.98	MCS2
5260	52	13	11.63	0.62	12.25	23.98	MCS2
5300	60		11.59	0.62	12.21	23.98	MCS2
5320	64	12	11.30	0.62	11.92	23.98	MCS2
5500	100	16	15.34	0.62	15.96	23.98	MCS2
5580	116	18	18.49	0.62	19.11	23.98	MCS2
5720	144		17.41	0.62	18.03	23.98	MCS2
5745	149		18.06	0.62	18.68	30.00	MCS2
5785	157		17.23	0.62	17.85	30.00	MCS2
5825	165		16.30	0.62	16.92	30.00	MCS2

802.11n(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5190	38	16	11.24	1.20	12.44	23.98	MCS2
5230	46	15	11.52	1.20	12.72	23.98	MCS2
5270	54	14	10.95	1.20	12.15	23.98	MCS2
5310	62	13	10.56	1.20	11.76	23.98	MCS2
5510	102	15	13.05	1.20	14.25	23.98	MCS2
5550	110	18	16.72	1.20	17.92	23.98	MCS2
5710	142		15.71	1.88	17.59	23.98	MCS4
5755	151		16.04	2.21	18.25	30.00	MCS5
5795	159		17.74	0.45	18.19	30.00	MCS0

802.11ac(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5180	36	15	11.68	0.61	12.29	23.98	MCS2
5200	40		11.83	0.61	12.44	23.98	MCS2
5240	48	14	12.32	0.61	12.94	23.98	MCS2
5260	52	13	11.69	0.61	12.30	23.98	MCS2
5300	60		11.88	0.43	12.31	23.98	MCS1
5320	64	12	12.58	0.22	12.80	23.98	MCS0
5500	100	16	15.29	0.61	15.90	23.98	MCS2
5580	116	18	18.33	0.61	18.94	23.98	MCS2
5720	144		17.58	0.61	18.19	23.98	MCS2
5745	149		17.94	0.43	18.37	30.00	MCS1
5785	157		17.19	0.61	17.80	30.00	MCS2
5825	165		18.18	0.43	18.61	30.00	MCS1

802.11ac(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5190	38	16	9.90	2.49	12.39	23.98	MCS7
5230	46	15	10.22	2.49	12.71	23.98	MCS7
5270	54	14	10.67	1.39	12.06	23.98	MCS3
5310	62	13	10.15	1.84	11.99	23.98	MCS4
5510	102	15	12.42	1.84	14.26	23.98	MCS4
5550	110	18	16.59	1.13	17.72	23.98	MCS2
5710	142		16.18	1.13	17.31	23.98	MCS2
5755	151		16.49	1.84	18.33	30.00	MCS4
5795	159		15.99	1.84	17.83	30.00	MCS4

802.11ac(80MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5210	42	15	8.73	3.81	12.54	23.98	MCS9
5290	58	12	7.96	2.79	10.75	23.98	MCS4
5530	106	13	9.05	3.81	12.86	23.98	MCS9
5690	138	18	15.82	1.93	17.75	23.98	MCS2
5775	155		15.85	1.93	17.78	30.00	MCS2

[MIMO]

Limts (802.11n_HT20, 802.11ac_VHT20)

UNII-1	: Total Power < 30.00 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-3	: Total Power < 30.00 dBm

Limts (802.11n_HT40, 802.11ac_VHT40, 802.11ac_VHT80)

UNII-1	: Total Power < 30.00 dBm
UNII-2A	: Total Power < 23.98 dBm
UNII-2C	: Total Power < 23.98 dBm
UNII-3	: Total Power < 30.00 dBm

802.11n(20MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5180	36	1.094	4.95	2.48	6.90	8.00	30.00	MCS10
5200	40	1.094	5.11	2.45	6.99	8.09	30.00	MCS10
5240	48	1.094	4.91	3.60	7.31	8.41	30.00	MCS10
5260	52	0.789	5.49	4.25	7.92	8.71	23.98	MCS9
5300	60	1.094	5.66	4.36	8.07	9.16	23.98	MCS10
5320	64	1.094	5.77	4.84	8.34	9.43	23.98	MCS10
5500	100	0.789	13.74	14.13	16.95	17.74	23.98	MCS9
5580	116	1.094	16.90	17.24	20.08	21.18	23.98	MCS10
5720	144	1.094	16.78	16.51	19.66	20.75	23.98	MCS10
5745	149	1.094	18.53	17.92	21.25	22.34	30.00	MCS10
5785	157	1.094	17.58	16.95	20.29	21.38	30.00	MCS10
5825	165	1.094	18.02	15.93	20.11	21.20	30.00	MCS10

802.11n(40MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5190	38	3.355	3.35	0.81	5.27	8.63	30.00	MCS15
5230	46	3.063	3.50	1.82	5.75	8.81	30.00	MCS13
5270	54	3.063	3.84	2.43	6.20	9.26	23.98	MCS13
5310	62	2.716	4.47	3.63	7.08	9.80	23.98	MCS12
5510	102	3.231	8.28	7.23	10.80	14.03	23.98	MCS14
5550	110	3.231	15.78	15.31	18.56	21.79	23.98	MCS14
5710	142	1.841	17.53	16.10	19.88	21.72	23.98	MCS10
5755	151	3.355	15.57	15.51	18.55	21.91	30.00	MCS15
5795	159	3.063	15.51	14.88	18.22	21.28	30.00	MCS13

802.11ac(20MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5180	36	0.426	5.42	3.13	7.43	7.86	30.00	MCS9
5200	40	1.093	4.74	2.28	6.69	7.79	30.00	MCS11
5240	48	0.773	5.00	3.74	7.43	8.20	30.00	MCS10
5260	52	1.093	4.93	3.99	7.50	8.59	23.98	MCS11
5300	60	0.773	5.81	4.55	8.24	9.01	23.98	MCS10
5320	64	1.093	5.21	4.65	7.95	9.04	23.98	MCS11
5500	100	1.093	13.27	12.47	15.90	16.99	23.98	MCS11
5580	116	0.426	16.58	16.52	19.56	19.99	23.98	MCS9
5720	144	1.093	16.37	14.80	18.67	19.76	23.98	MCS11
5745	149	1.093	18.39	17.93	21.18	22.27	30.00	MCS11
5785	157	1.093	17.78	16.92	20.38	21.47	30.00	MCS11
5825	165	1.093	17.86	15.91	20.00	21.10	30.00	MCS11

802.11ac(40MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5190	38	3.251	3.51	0.72	5.35	8.60	30.00	MCS17
5230	46	3.251	3.66	1.51	5.73	8.98	30.00	MCS17
5270	54	2.943	4.12	2.25	6.30	9.24	23.98	MCS15
5310	62	3.424	3.88	2.20	6.13	9.56	23.98	MCS18
5510	102	1.369	10.20	9.00	12.65	14.02	23.98	MCS11
5550	110	3.251	16.02	15.02	18.56	21.81	23.98	MCS17
5710	142	1.814	17.90	15.97	20.05	21.87	23.98	MCS12
5755	151	3.541	15.61	15.27	18.45	21.99	30.00	MCS19
5795	159	3.251	15.45	14.72	18.11	21.36	30.00	MCS17

802.11ac(80MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5210	42	4.303	2.41	-0.20	4.31	8.61	30.00	MCS19
5290	58	3.028	4.12	2.39	6.35	9.38	23.98	MCS13
5530	106	3.802	5.50	4.45	8.02	11.82	23.98	MCS15
5690	138	2.732	16.83	15.19	19.10	21.83	23.98	MCS12
5775	155	2.732	16.15	15.34	18.77	21.51	30.00	MCS12

10.5 POWER SPECTRAL DENSITY

[Internal ANT_SISO]

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5180	36	-2.909	0.405	-2.504	11 dBm/MHz
5200	40	-3.001	0.405	-2.596	
5240	48	-3.097	0.405	-2.692	
5260	52	-2.959	0.405	-2.554	
5300	60	-2.202	0.405	-1.797	
5320	64	-2.604	0.405	-2.199	
5500	100	4.317	0.405	4.722	
5580	116	9.589	0.405	9.994	
5720	144	9.736	0.405	10.141	
5745	149	6.701	0.405	7.106	30 dBm/500kHz
5785	157	5.239	0.405	5.644	
5825	165	4.019	0.405	4.424	

802.11n(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5180	36	-3.481	0.430	-3.051	11 dBm/MHz
5200	40	-3.387	0.430	-2.957	
5240	48	-3.214	0.430	-2.784	
5260	52	-3.371	0.621	-2.750	
5300	60	-2.573	0.430	-2.143	
5320	64	-3.143	0.621	-2.522	
5500	100	3.668	0.621	4.289	
5580	116	9.269	0.430	9.699	
5720	144	9.319	0.621	9.940	
5745	149	6.323	0.621	6.944	30 dBm/500kHz
5785	157	4.702	0.621	5.323	
5825	165	5.042	0.621	5.663	

802.11n(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5190	38	-6.096	1.198	-4.898	11 dBm/MHz
5230	46	-6.704	1.882	-4.822	
5270	54	-6.275	1.198	-5.077	
5310	62	-6.619	1.198	-5.421	
5510	102	-2.939	1.198	-1.741	
5510	110	4.836	1.198	6.034	
5710	142	5.312	1.198	6.510	
5755	151	1.941	2.390	4.331	30 dBm /500kHz
5795	159	0.979	1.198	2.177	

802.11ac(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5180	36	-3.594	0.427	-3.167	11 dBm/MHz
5200	40	-3.407	0.427	-2.980	
5240	48	-3.401	0.614	-2.787	
5260	52	-3.015	0.614	-2.401	
5300	60	-2.597	0.427	-2.170	
5320	64	-2.849	0.427	-2.422	
5500	100	3.705	0.614	4.319	
5580	116	7.534	1.087	8.621	
5720	144	9.151	0.614	9.765	
5745	149	6.297	0.427	6.724	30 dBm/500kHz
5785	157	5.020	0.614	5.634	
5825	165	4.230	0.614	4.844	

802.11ac(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5190	38	-6.556	2.308	-4.248	11 dBm/MHz
5230	46	-7.723	2.308	-5.415	
5270	54	-7.657	2.308	-5.349	
5310	62	-7.262	2.308	-4.954	
5510	102	-3.867	2.308	-1.559	
5510	110	3.612	2.308	5.920	
5710	142	4.648	2.308	6.956	
5755	151	1.339	2.308	3.647	30 dBm/500kHz
5795	159	-0.557	2.308	1.751	

802.11ac(80MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5210	42	-9.819	0.931	-8.888	11 dBm/MHz
5290	58	-9.124	0.931	-8.193	
5530	106	-8.593	1.464	-7.129	
5690	138	1.400	1.464	2.864	
5775	155	-1.509	1.464	-0.045	30 dBm/500kHz

[External ANT_SISO]

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5180	36	2.366	0.405	2.771	11 dBm/MHz
5200	40	2.365	0.405	2.770	
5240	48	2.428	0.405	2.833	
5260	52	1.741	0.405	2.146	
5300	60	1.800	0.405	2.205	
5320	64	1.407	0.405	1.812	
5500	100	5.682	0.405	6.087	
5580	116	8.524	0.405	8.929	
5720	144	7.447	0.405	7.852	
5745	149	5.449	0.405	5.854	30 dBm/500kHz
5785	157	4.627	0.405	5.032	
5825	165	4.026	0.405	4.431	

802.11n(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5180	36	1.805	0.621	2.426	11 dBm/MHz
5200	40	1.731	0.621	2.352	
5240	48	2.226	0.621	2.847	
5260	52	1.209	0.621	1.830	
5300	60	1.544	0.621	2.165	
5320	64	0.950	0.621	1.571	
5500	100	5.442	0.621	6.063	
5580	116	7.965	0.621	8.586	
5720	144	7.069	0.621	7.690	
5745	149	4.851	0.621	5.472	30 dBm/500kHz
5785	157	4.078	0.621	4.699	
5825	165	3.299	0.621	3.920	

802.11n(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5190	38	-1.227	1.198	-0.029	11 dBm/MHz
5230	46	-1.456	1.198	-0.258	
5270	54	-2.188	1.198	-0.990	
5310	62	-2.399	1.198	-1.201	
5510	102	0.460	1.198	1.658	
5510	110	4.182	1.198	5.380	
5710	142	2.786	1.882	4.668	
5755	151	0.627	2.213	2.840	30 dBm /500kHz
5795	159	0.987	0.445	1.432	

802.11ac(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5180	36	1.913	0.614	2.527	11 dBm/MHz
5200	40	2.107	0.614	2.721	
5240	48	2.206	0.614	2.820	
5260	52	1.132	0.614	1.746	
5300	60	1.723	0.427	2.150	
5320	64	1.408	0.219	1.627	
5500	100	5.081	0.614	5.695	
5580	116	8.004	0.614	8.618	
5720	144	6.579	0.614	7.193	
5745	149	4.991	0.614	5.605	30 dBm/500kHz
5785	157	3.996	1.783	5.779	
5825	165	3.199	0.427	3.626	

802.11ac(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5190	38	-2.318	2.486	0.168	11 dBm/MHz
5230	46	-1.955	2.486	0.531	
5270	54	-2.501	1.389	-1.112	
5310	62	-3.089	1.836	-1.253	
5510	102	1.110	0.805	1.915	
5510	110	3.542	1.128	4.670	
5710	142	1.857	2.831	4.688	
5755	151	1.597	1.836	3.433	30 dBm/500kHz
5795	159	0.524	1.128	1.652	

802.11ac(80MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Limit
Frequency [MHz]	Channel No.				
5210	42	-7.210	3.807	-3.403	11 dBm/MHz
5290	58	-8.436	2.792	-5.644	
5530	106	-7.811	3.807	-4.004	
5690	138	-0.463	1.934	1.471	
5775	155	-4.675	1.934	-2.741	30 dBm/500kHz

[MIMO]

802.11n(20MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit
Frequency [MHz]	Channel No.						
5180	36	1.063	-5.275	-7.935	-3.39	-2.33	11 dBm/MHz
5200	40	0.784	-5.367	-8.572	-3.67	-2.89	
5240	48	1.063	-5.365	-7.437	-3.27	-2.21	
5260	52	1.063	-5.054	-6.285	-2.62	-1.55	
5300	60	0.784	-4.364	-6.167	-2.16	-1.38	
5320	64	1.063	-5.017	-6.251	-2.58	-1.52	
5500	100	0.784	3.179	1.971	5.63	6.41	
5580	116	0.784	6.133	5.753	8.96	9.74	
5720	144	0.784	6.221	4.488	8.45	9.23	
5745	149	2.134	5.752	4.111	8.02	10.15	30 dBm/500kHz
5785	157	2.409	4.616	1.905	6.48	8.89	
5825	165	2.255	5.234	0.898	6.60	8.85	

802.11n(40MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit
Frequency [MHz]	Channel No.						
5190	38	2.772	-8.016	-11.672	-6.46	-3.69	11 dBm/MHz
5230	46	3.229	-8.703	-11.483	-6.86	-3.64	
5270	54	3.229	-9.411	-11.061	-7.15	-3.92	
5310	62	2.772	-7.581	-11.324	-6.05	-3.28	
5510	102	3.331	-3.953	-6.001	-1.85	1.48	
5510	110	3.229	3.958	1.238	5.82	9.05	
5710	142	3.044	4.327	0.906	5.96	9.00	
5755	151	2.772	0.999	0.079	3.57	6.35	30 dBm /500kHz
5795	159	2.772	1.148	-0.697	3.33	6.10	

802.11ac(20MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit
Frequency [MHz]	Channel No.						
5180	36	1.075	-5.927	-7.644	-3.69	-2.62	11 dBm/MHz
5200	40	1.075	-5.487	-10.253	-4.24	-3.16	
5240	48	1.075	-5.901	-6.994	-3.40	-2.33	
5260	52	1.075	-5.528	-7.242	-3.29	-2.22	
5300	60	1.075	-5.073	-6.436	-2.69	-1.62	
5320	64	2.368	-5.331	-6.510	-2.87	-0.50	
5500	100	1.075	2.709	2.037	5.40	6.47	
5580	116	1.075	5.738	5.194	8.48	9.56	
5720	144	1.075	6.311	4.332	8.44	9.52	
5745	149	2.584	5.093	3.760	7.49	10.07	30 dBm/500kHz
5785	157	2.368	4.381	2.954	6.74	9.10	
5825	165	1.075	4.251	1.562	6.12	7.20	

802.11ac(40MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit
Frequency [MHz]	Channel No.						
5190	38	3.231	-8.937	-11.586	-7.05	-3.82	11 dBm/MHz
5230	46	2.943	-9.635	-10.723	-7.13	-4.19	
5270	54	3.541	-9.269	-10.790	-6.95	-3.41	
5310	62	1.806	-9.125	-11.394	-7.10	-5.30	
5510	102	2.692	-2.597	-5.204	-0.70	1.99	
5510	110	2.943	3.617	3.074	6.36	9.31	
5710	142	3.231	3.053	1.559	5.38	8.61	
5755	151	3.541	0.497	-0.404	3.08	6.62	30 dBm/500kHz
5795	159	3.424	0.357	-0.545	2.94	6.36	

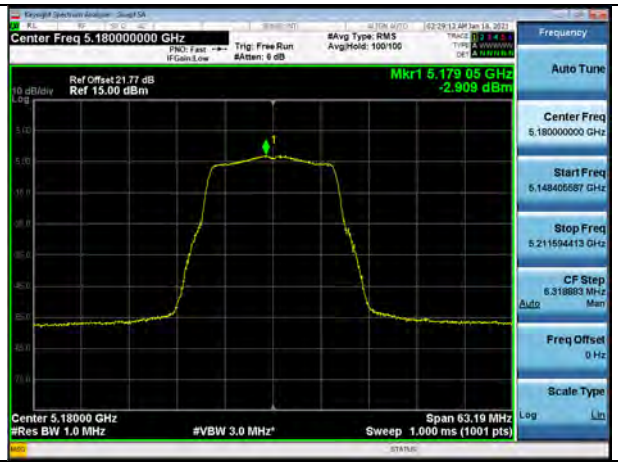
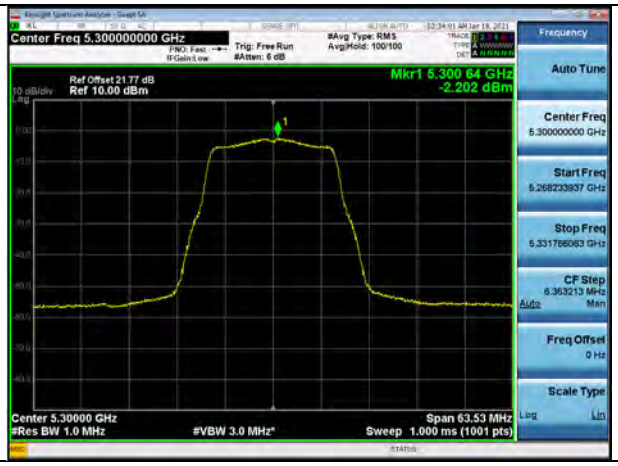
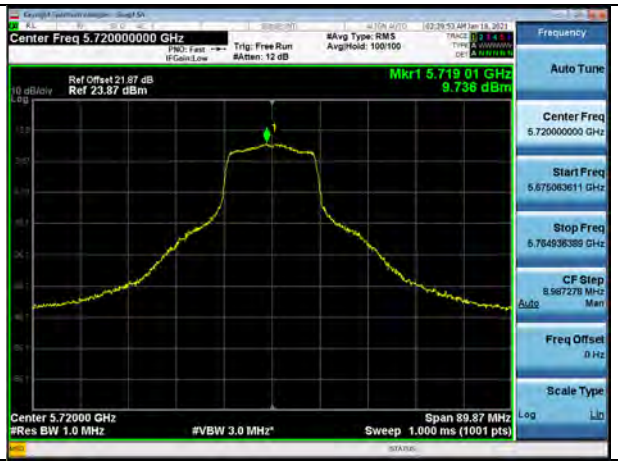
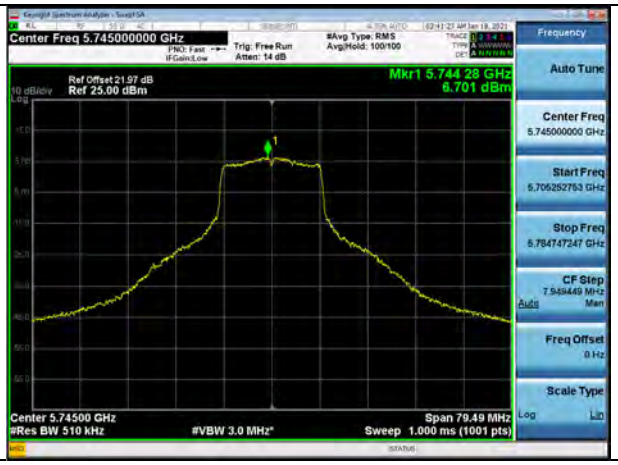
802.11ac(80MHz) Mode		Duty Cycle Factor (dB)	Internal Antenna [dBm]	External Antenna [dBm]	Sum [dBm]	Result (dBm)	Limit
Frequency [MHz]	Channel No.						
5210	42	3.967	-12.102	-16.608	-10.78	-6.82	11 dBm/MHz
5290	58	3.807	-11.425	-15.088	-9.87	-6.06	
5530	106	4.287	-11.374	-9.822	-7.52	-3.23	
5690	138	4.287	0.224	-2.209	2.19	6.47	
5775	155	4.287	-3.999	-5.326	-1.60	2.69	30 dBm/500kHz

[Internal ANT_SISO]

▣ Test Plots(802.11a)

Note:

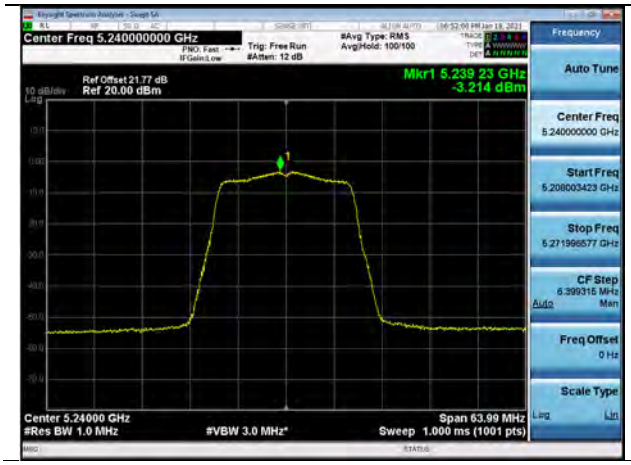
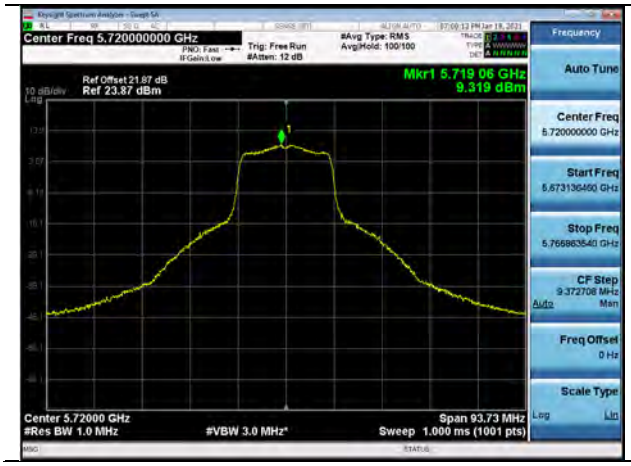
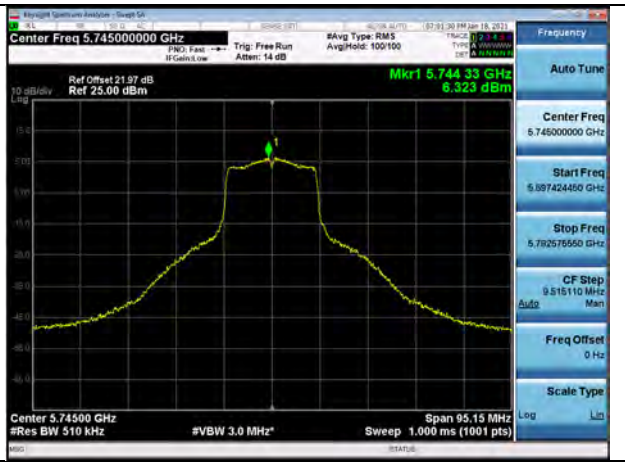
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 36)	UNII 2A (Ch. 60)
	
UNII 2C (Ch. 144)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11n(HT20))

Note:

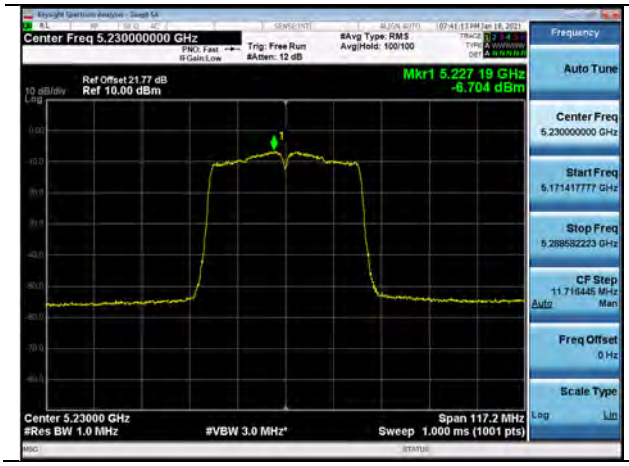
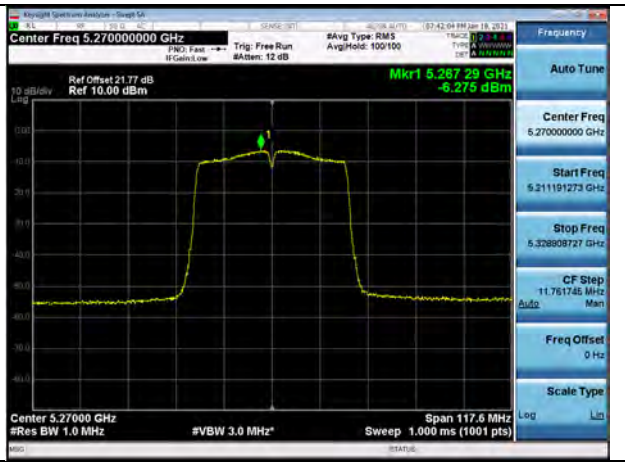
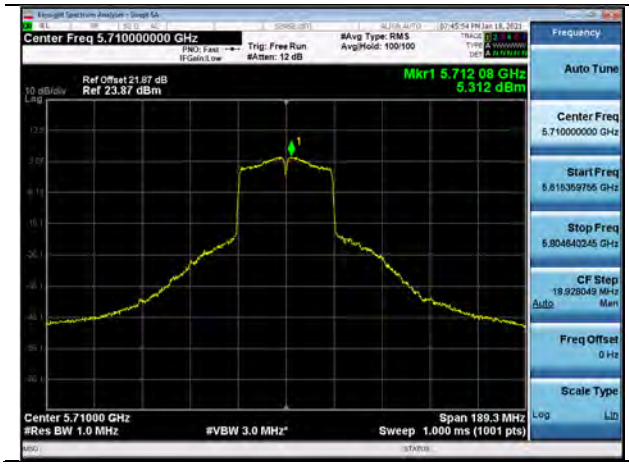
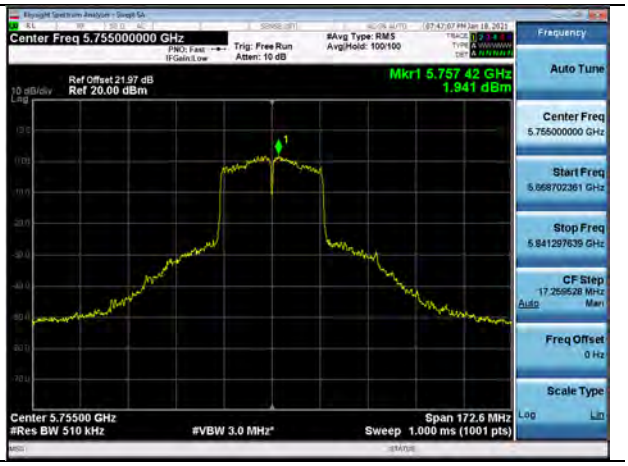
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 48)	UNII 2A (Ch. 60)
	
UNII 2C (Ch. 144)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11n(HT40))

Note:

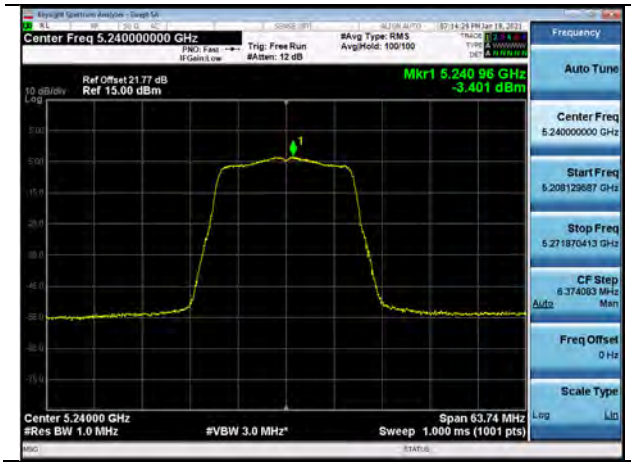
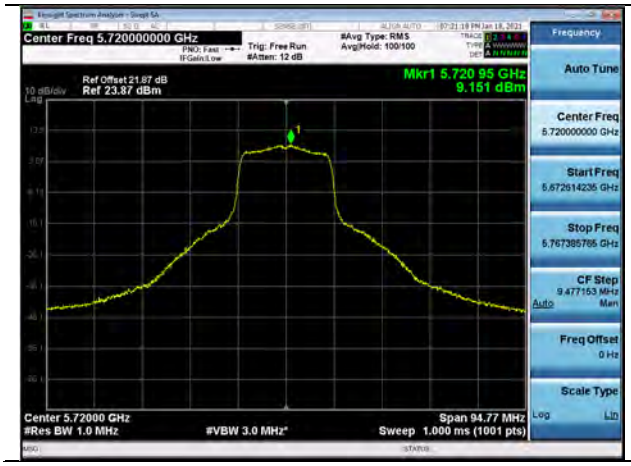
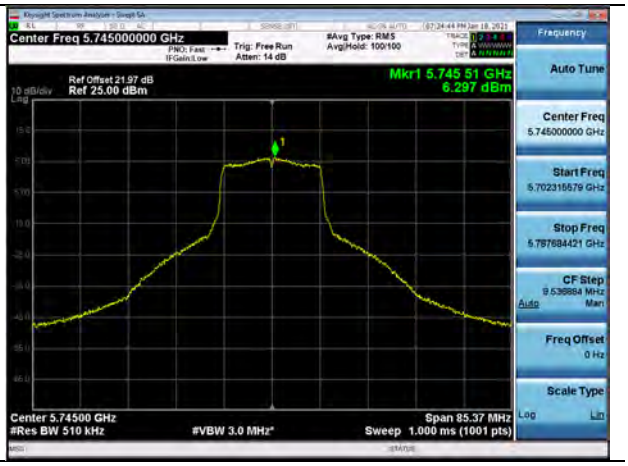
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 38)	UNII 2A (Ch. 54)
	
UNII 2C (Ch. 142)	UNII 3 (Ch. 151)
	

▣ Test Plots(802.11ac(VHT20))

Note:

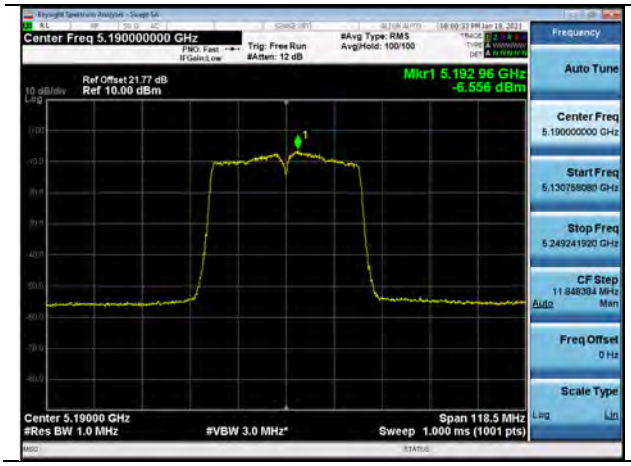
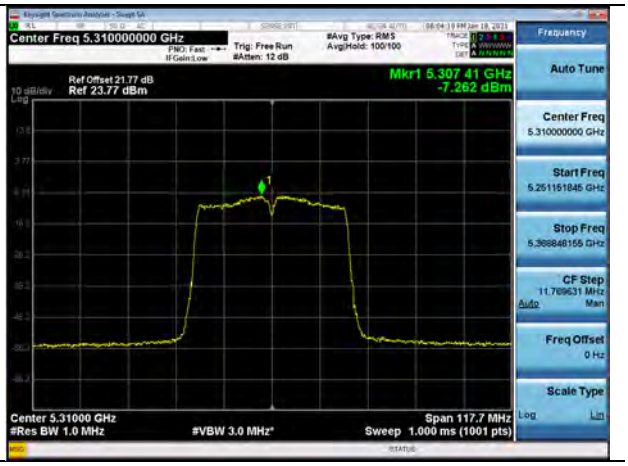
In order to simplify the report, attached plots were only channel of highest power.

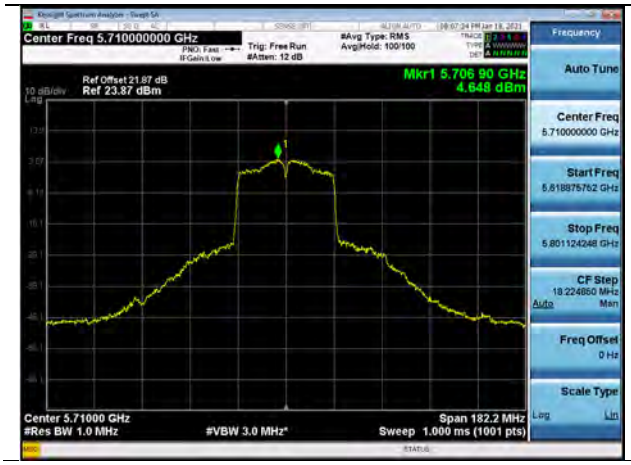
UNII 1 (Ch. 48)	UNII 2A (Ch. 60)
	
UNII 2C (Ch. 144)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11ac(VHT40))

Note:

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

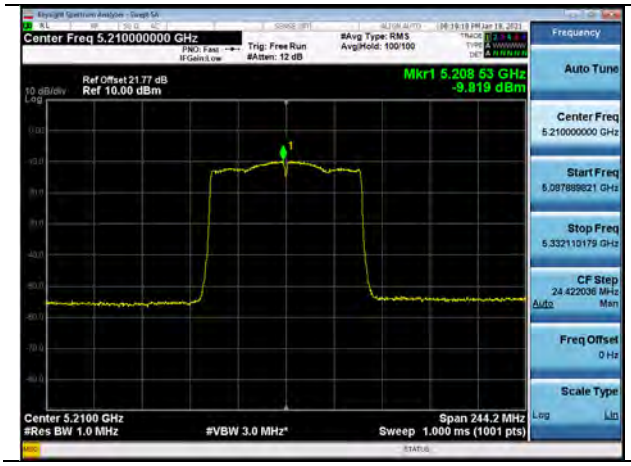
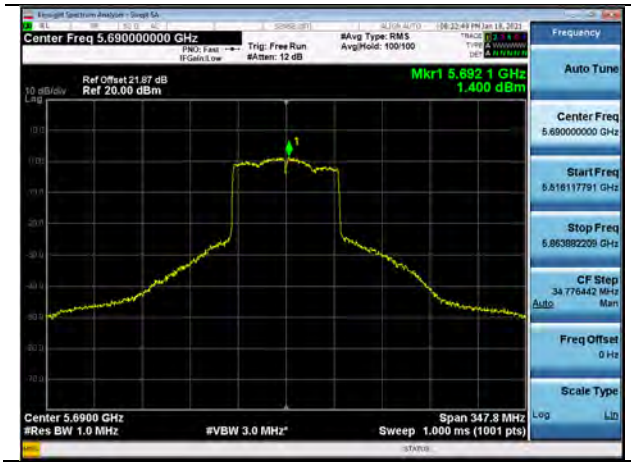
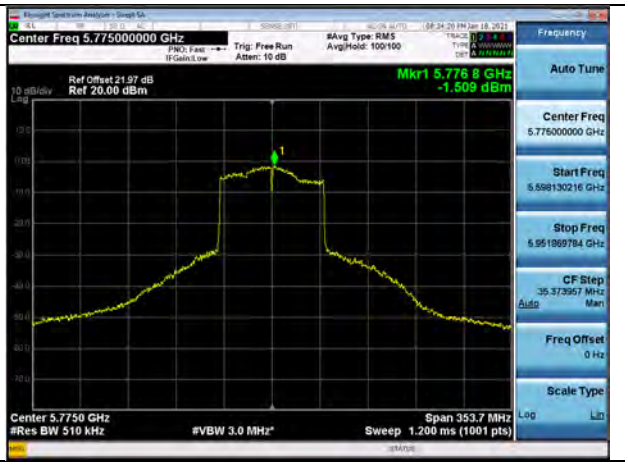
UNII 1 (Ch. 38)	UNII 2A (Ch. 62)
	

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

▣ Test Plots(802.11ac(VHT80))

Note:

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

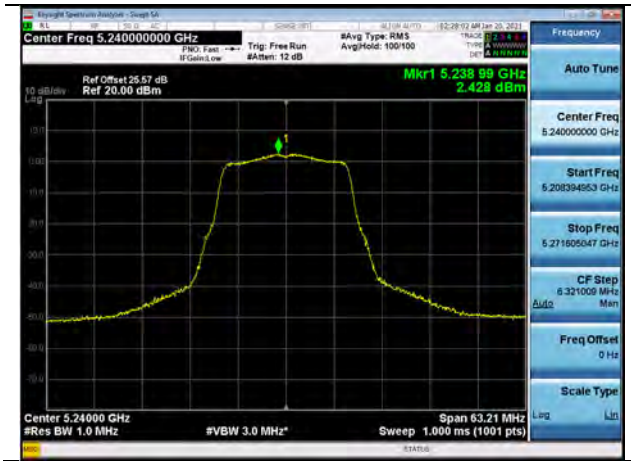
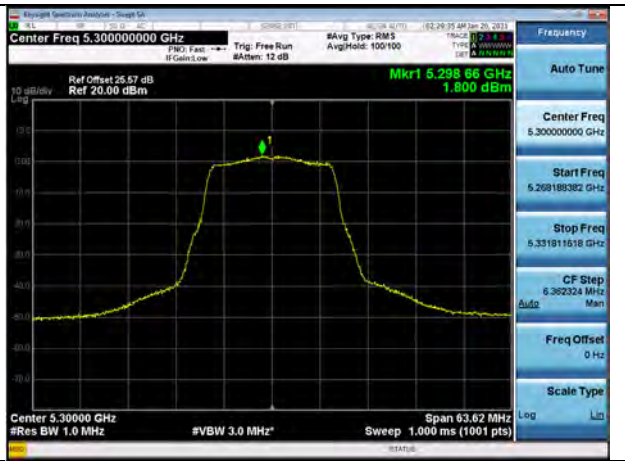
UNII 1 (Ch. 42)	UNII 2A (Ch. 58)
	
UNII 2C (Ch. 138)	UNII 3 (Ch. 155)
	

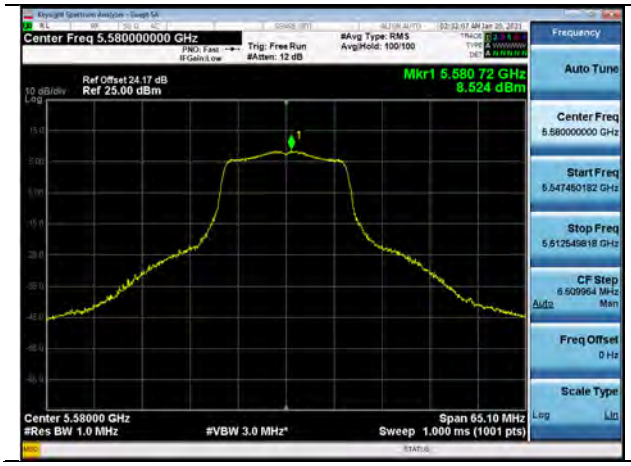
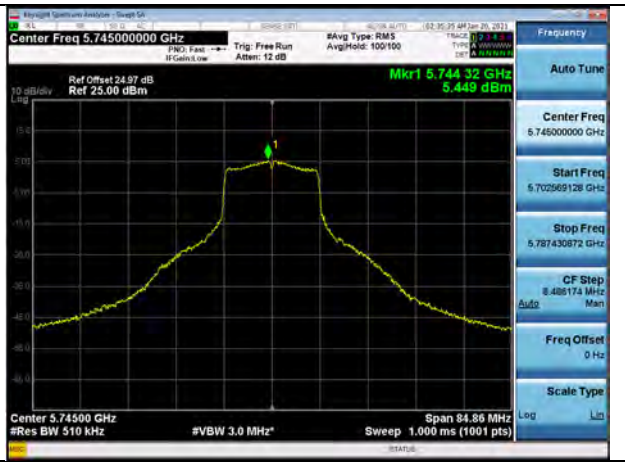
[External ANT_SISO]

▣ Test Plots(802.11a)

Note:

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

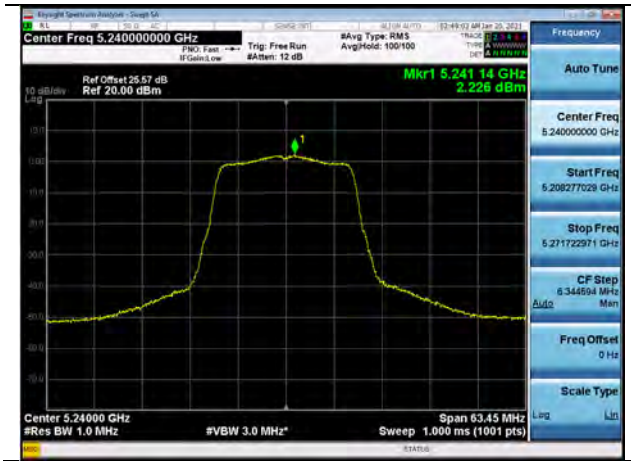
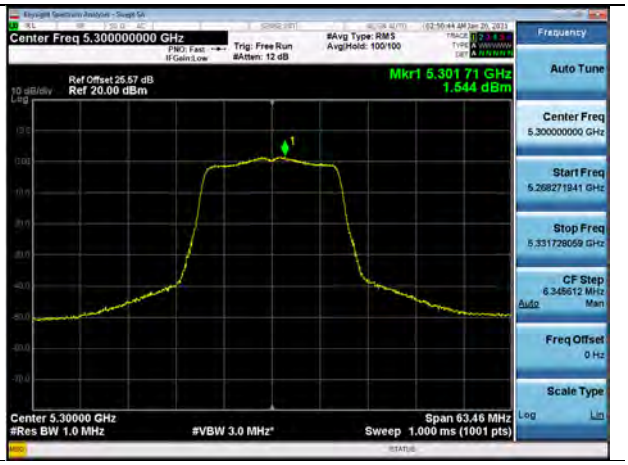
UNII 1 (Ch. 48)	UNII 2A (Ch. 60)
	

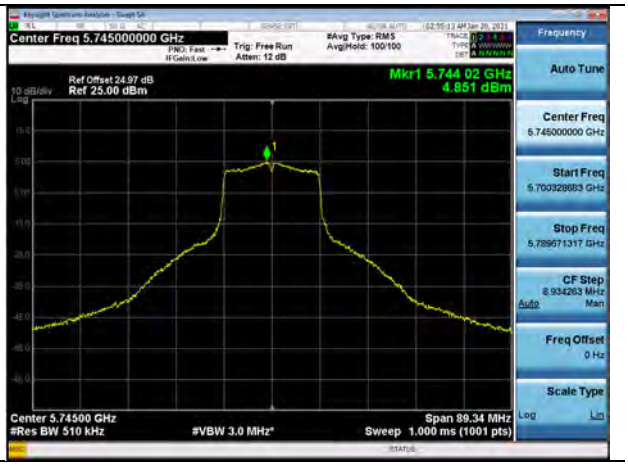
UNII 2C (Ch. 116)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11n(HT20))

Note:

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

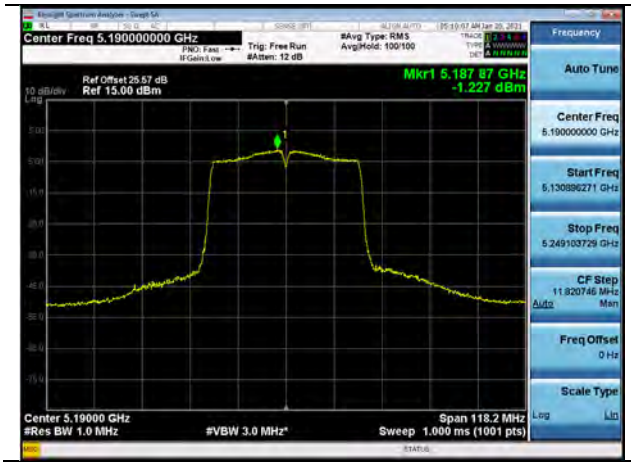
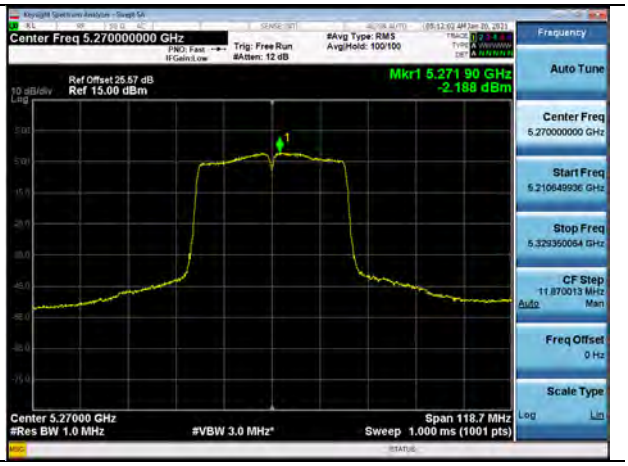
UNII 1 (Ch. 48)	UNII 2A (Ch. 60)
	

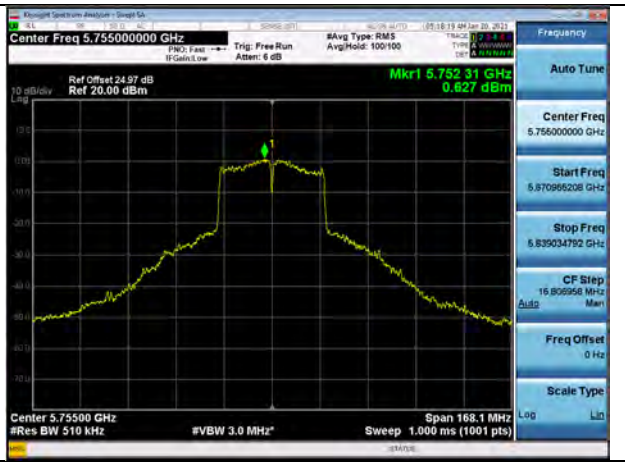
UNII 2C (Ch. 116)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11n(HT40))

Note:

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

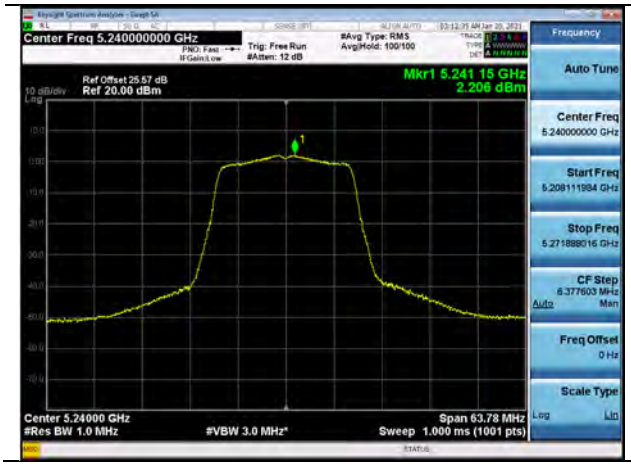
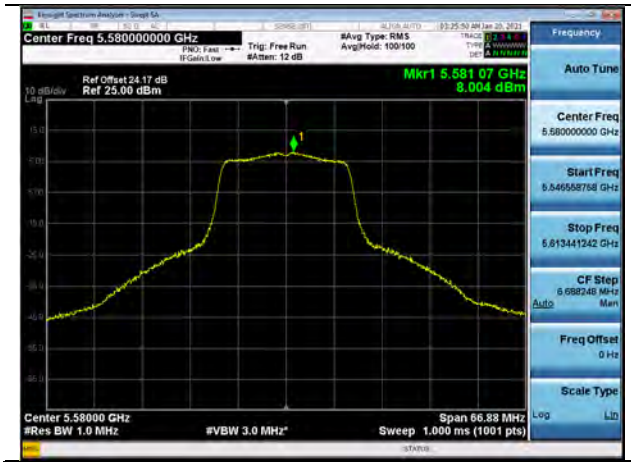
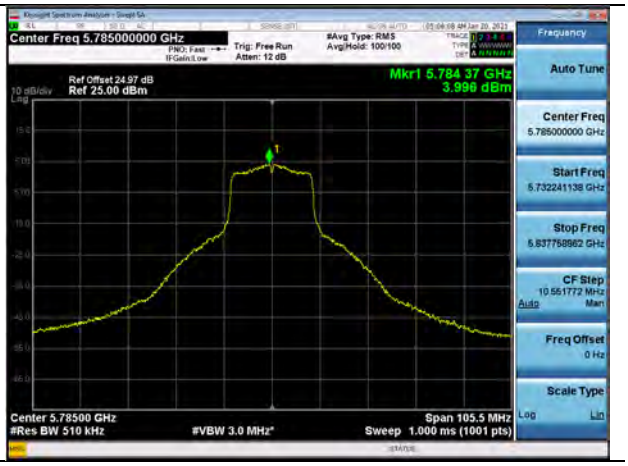
UNII 1 (Ch. 38)	UNII 2A (Ch. 54)
	

UNII 2C (Ch. 110)	UNII 3 (Ch. 159)
	

▣ Test Plots(802.11ac(VHT20))

Note:

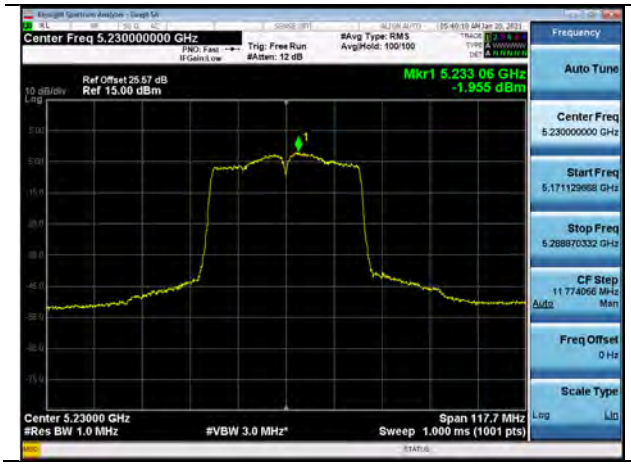
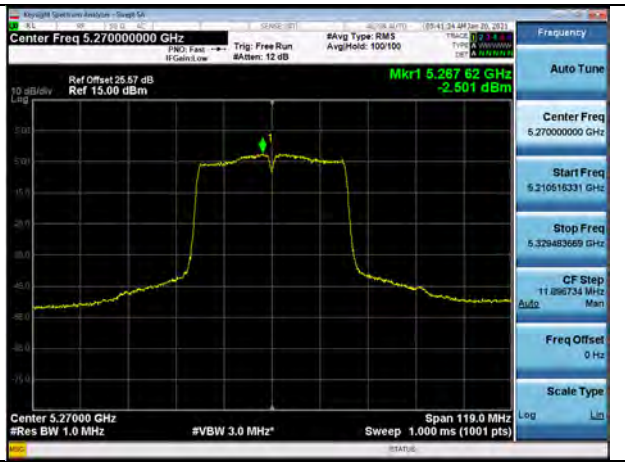
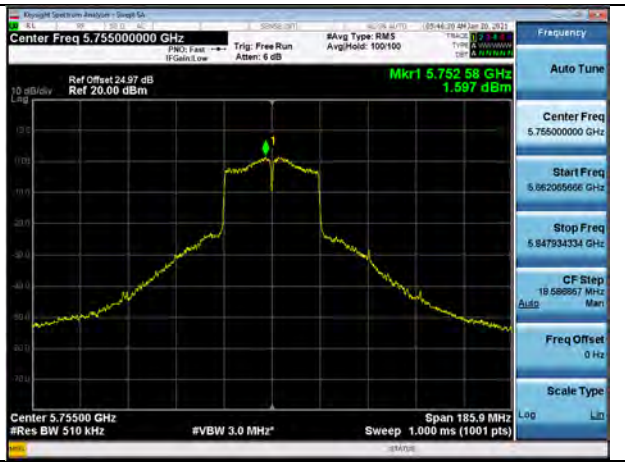
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 48)	UNII 2A (Ch. 60)
	
UNII 2C (Ch. 116)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11ac(VHT40))

Note:

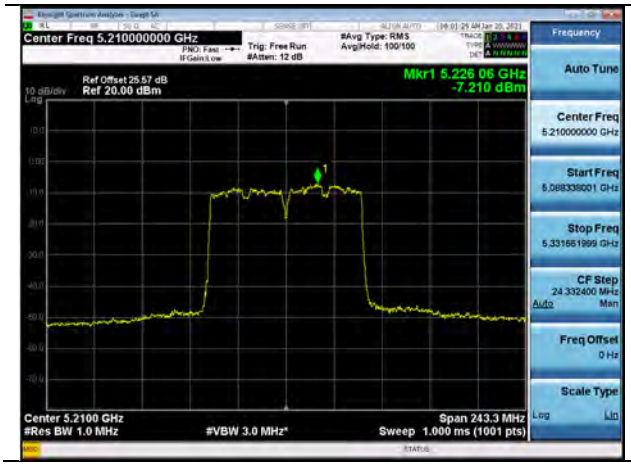
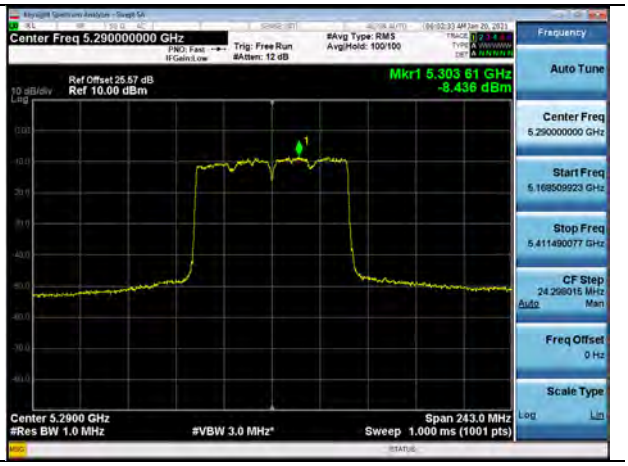
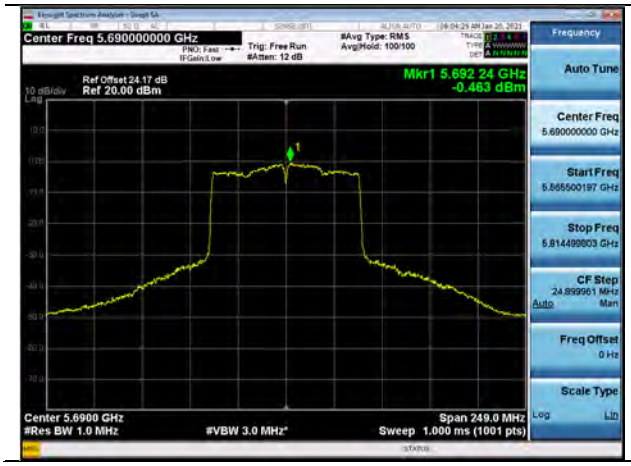
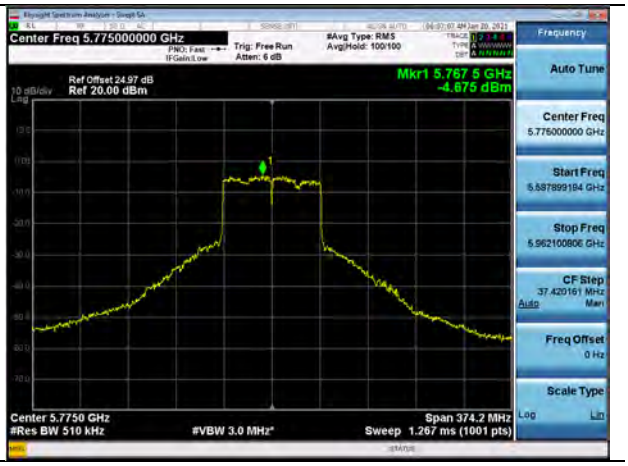
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 46)	UNII 2A (Ch. 54)
	
UNII 2C (Ch. 110)	UNII 3 (Ch. 151)
	

▣ Test Plots(802.11ac(VHT80))

Note:

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

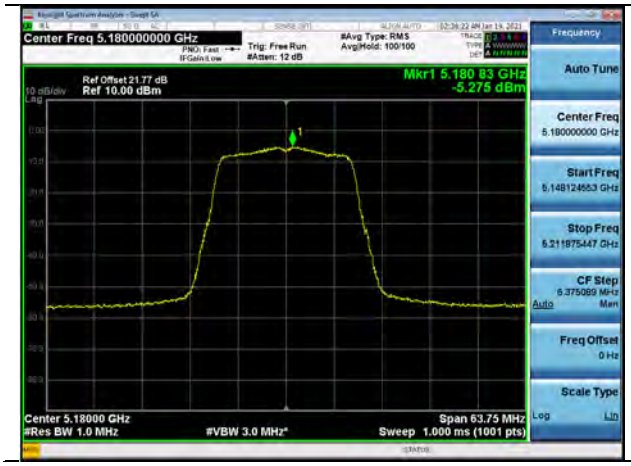
UNII 1 (Ch. 42)	UNII 2A (Ch. 58)
	
UNII 2C (Ch. 138)	UNII 3 (Ch. 155)
	

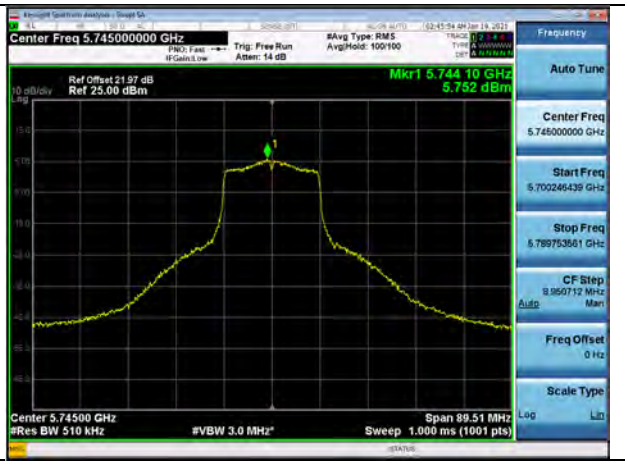
[Internal ANT_MIMO]

▣ Test Plots(802.11n(HT20))

Note:

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

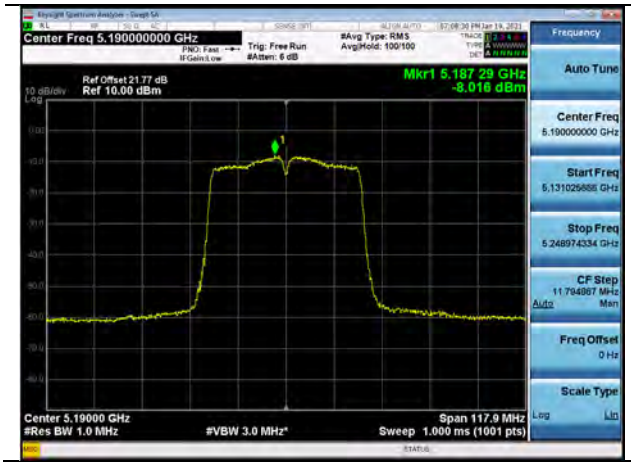
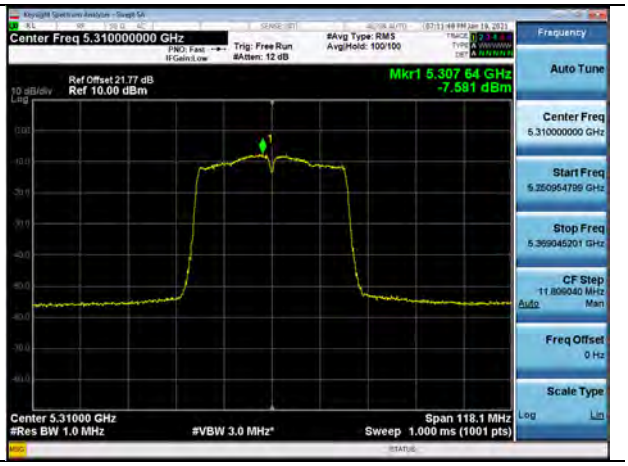
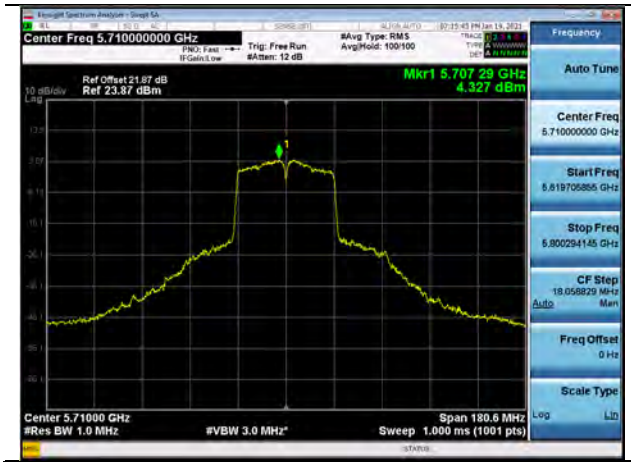
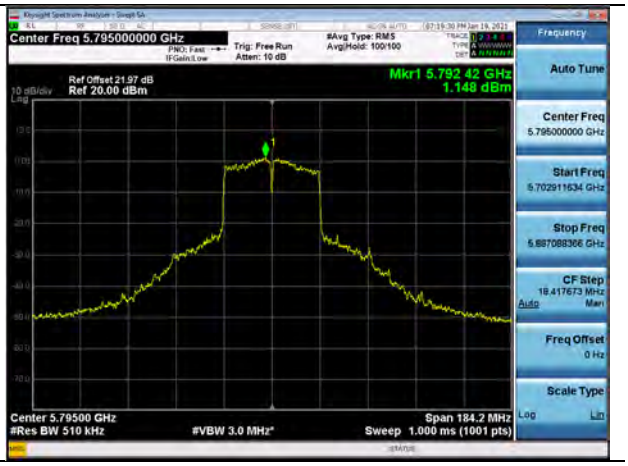
UNII 1 (Ch. 36)	UNII 2A (Ch. 60)
	

UNII 2C (Ch. 144)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11n(HT40))

Note:

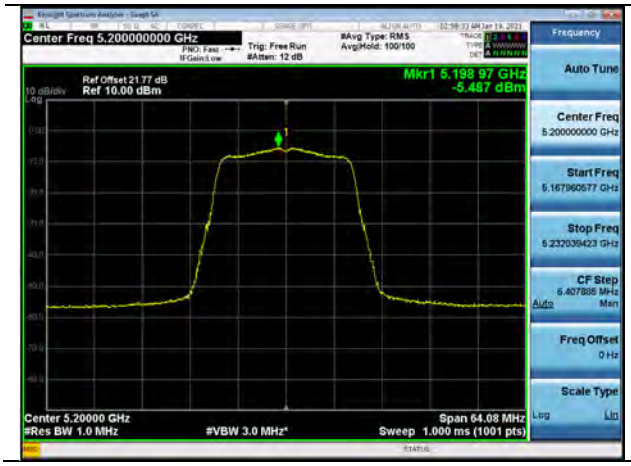
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 38)	UNII 2A (Ch. 62)
	
UNII 2C (Ch. 142)	UNII 3 (Ch. 159)
	

▣ Test Plots(802.11ac(VHT20))

Note:

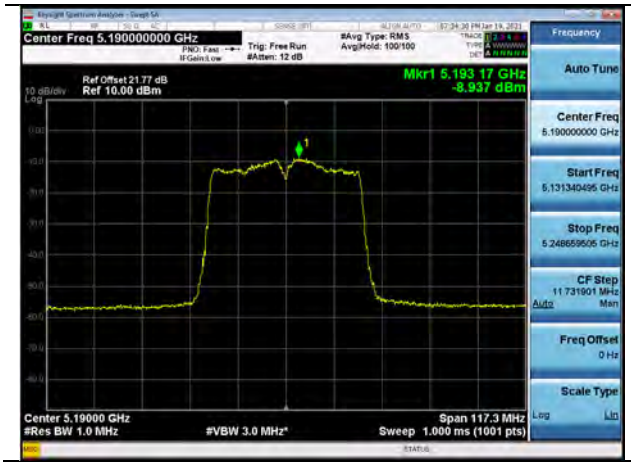
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 40)	UNII 2A (Ch. 60)
	
UNII 2C (Ch. 144)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11ac(VHT40))

Note:

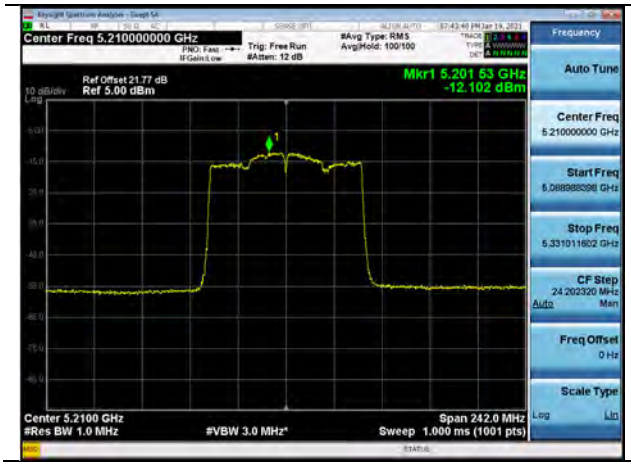
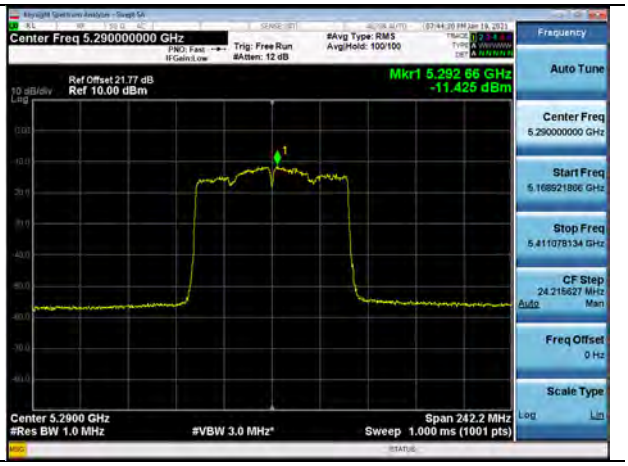
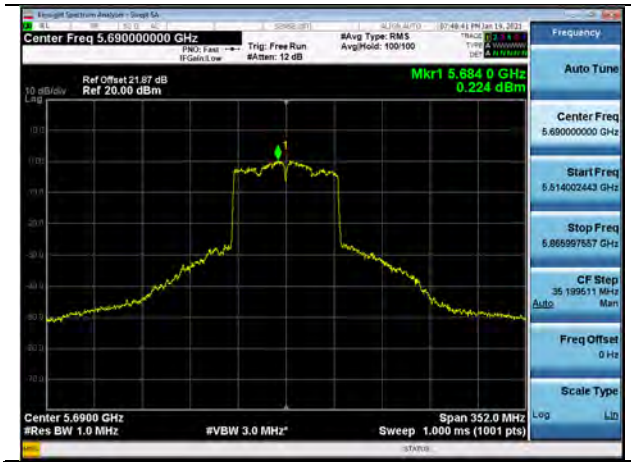
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 38)	UNII 2A (Ch. 62)
	
UNII 2C (Ch. 110)	UNII 3 (Ch. 151)
	

▣ Test Plots(802.11ac(VHT80))

Note:

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

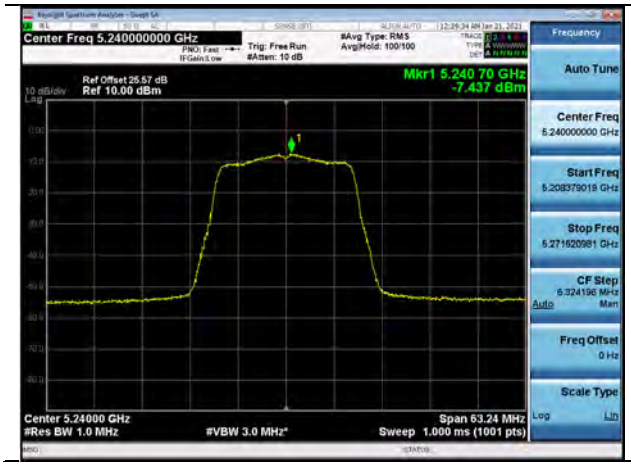
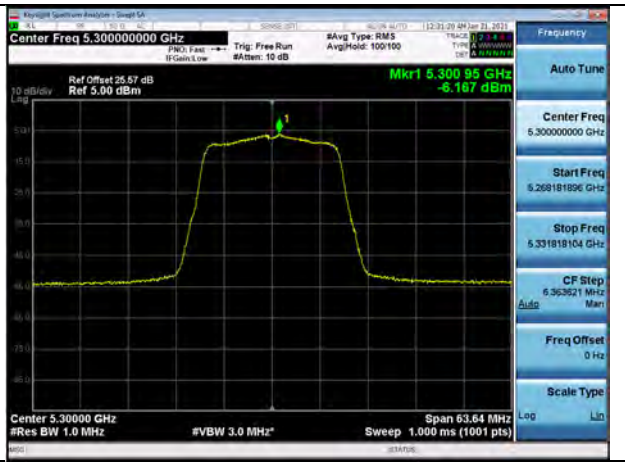
UNII 1 (Ch. 42)	UNII 2A (Ch. 58)
	
UNII 2C (Ch. 138)	UNII 3 (Ch. 155)
	

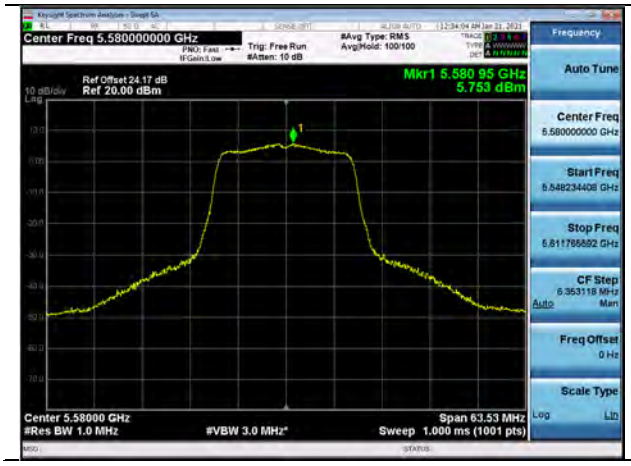
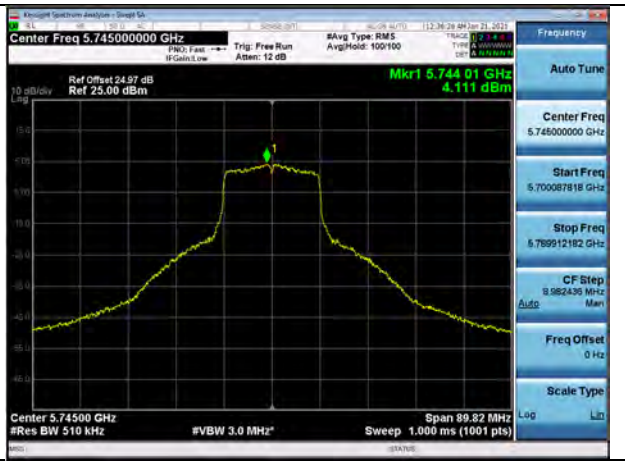
[External ANT_MIMO]

▣ Test Plots(802.11n(HT20))

Note:

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

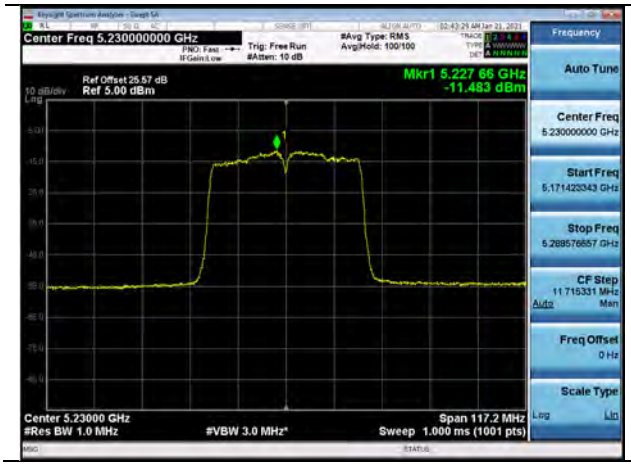
UNII 1 (Ch. 48)	UNII 2A (Ch. 60)
	

UNII 2C (Ch. 116)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11n(HT40))

Note:

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

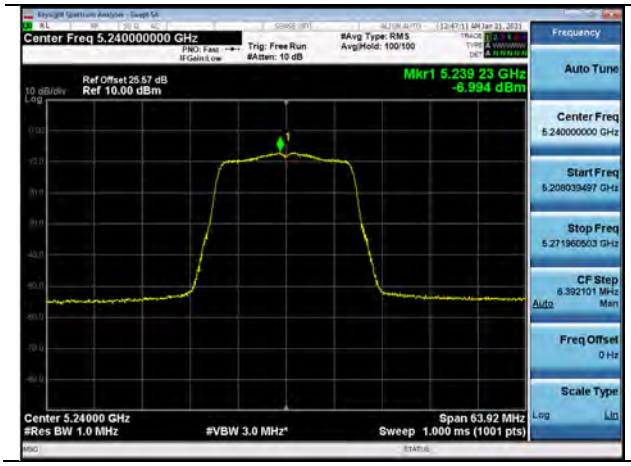
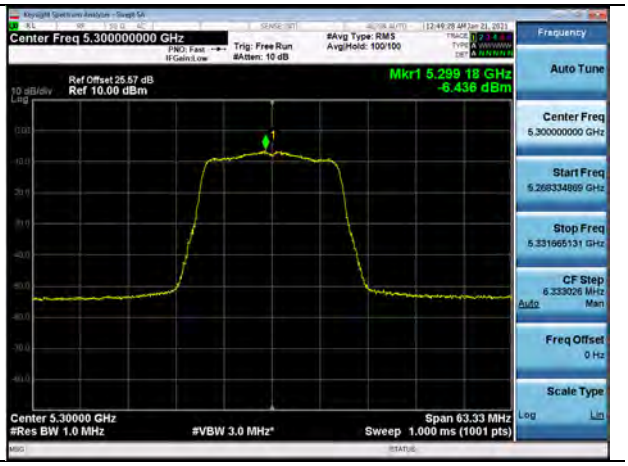
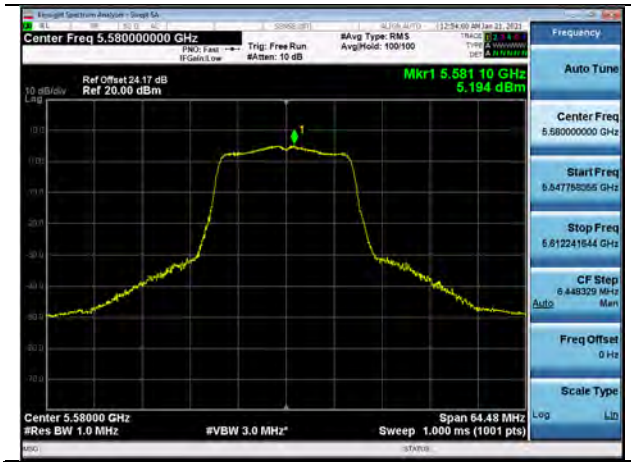
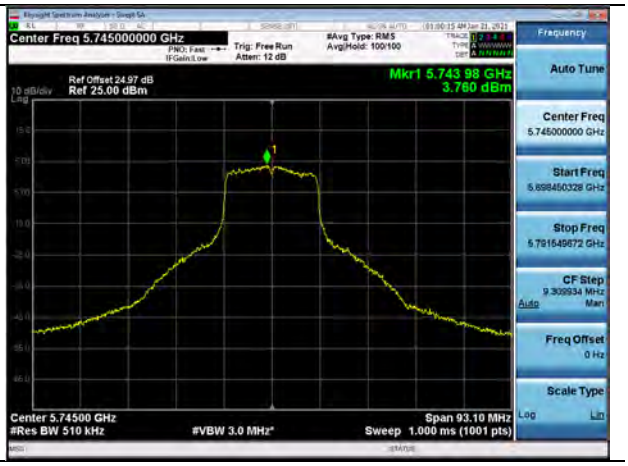
UNII 1 (Ch. 46)	UNII 2A (Ch. 54)
	

UNII 2C (Ch. 110)	UNII 3 (Ch. 151)
	

▣ Test Plots(802.11ac(VHT20))

Note:

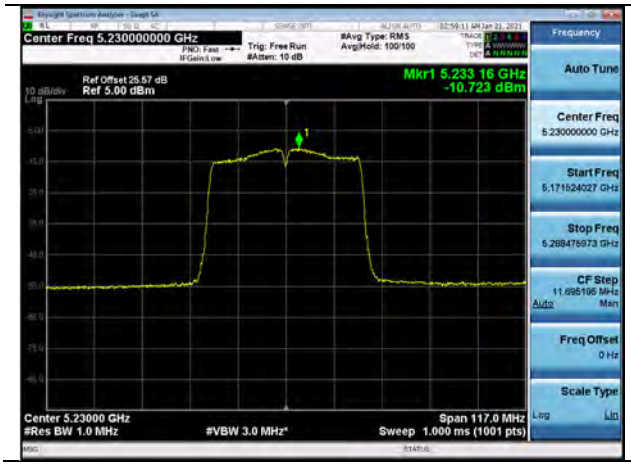
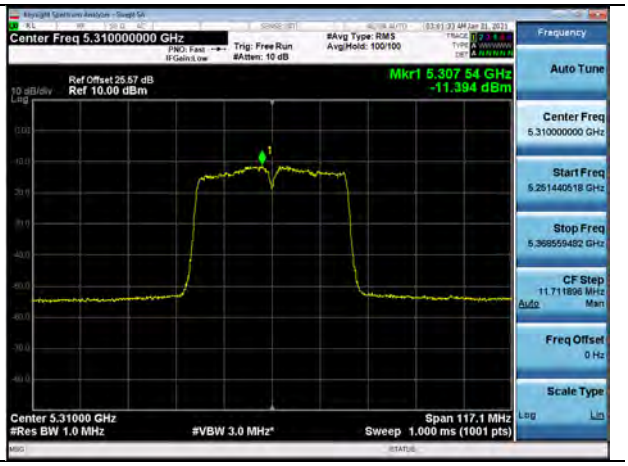
In order to simplify the report, attached plots were only channel of highest power.

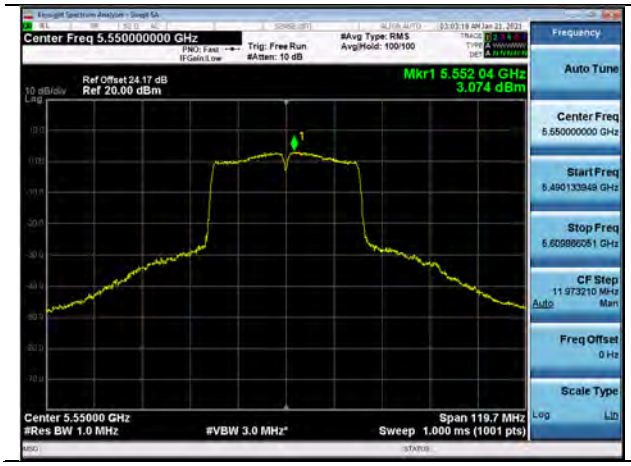
UNII 1 (Ch. 48)	UNII 2A (Ch. 60)
	
UNII 2C (Ch. 116)	UNII 3 (Ch. 149)
	

▣ Test Plots(802.11ac(VHT40))

Note:

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

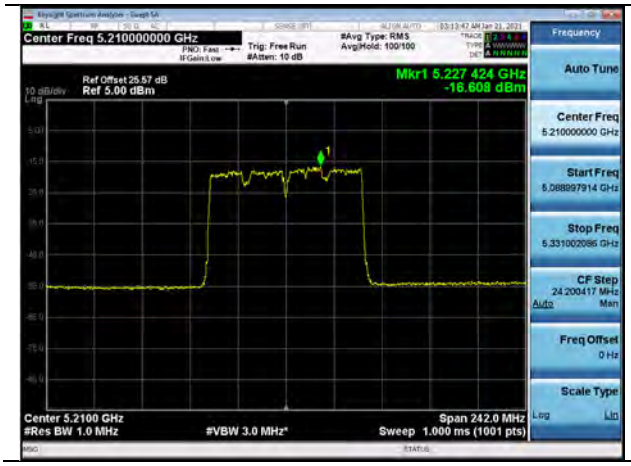
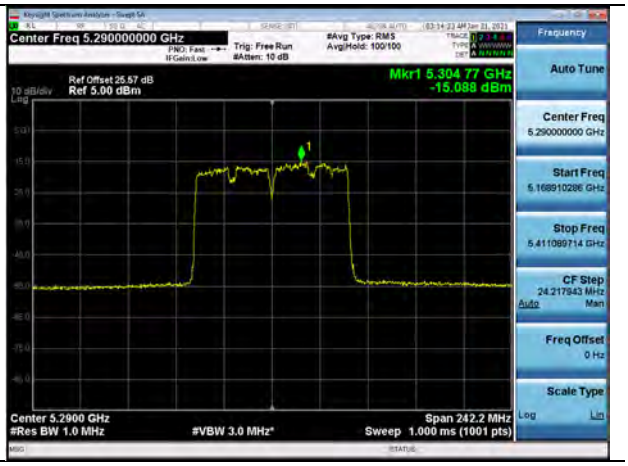
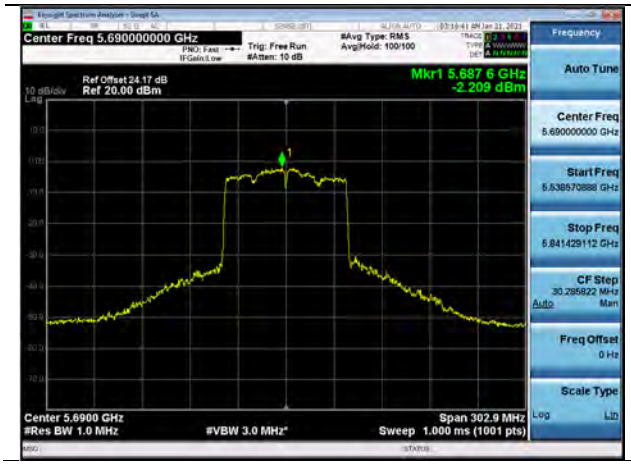
UNII 1 (Ch. 46)	UNII 2A (Ch. 54)
	

UNII 2C (Ch. 110)	UNII 3 (Ch. 151)
	

▣ Test Plots(802.11ac(VHT80))

Note:

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

UNII 1 (Ch. 42)	UNII 2A (Ch. 58)
	
UNII 2C (Ch. 138)	UNII 3 (Ch. 155)
	

10.6 FREQUENCY STABILITY.

10.6.1 80MHz BW

[Internal ANT_SISO]

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	12.0 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	12	+20(Ref)	5210063.62	63.62
100%		-30	5210087.44	87.44
100%		-20	5210093.63	93.63
100%		-10	5210085.67	85.67
100%		0	5210003.13	3.13
100%		+10	5210040.03	40.03
100%		+30	5210099.68	99.68
100%		+40	5210056.52	56.52
100%		+50	5210088.48	88.48
Max	16.00	+20	5210009.46	9.46
Min	9.00	+20	5210061.75	61.75

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5290087.75	87.75
100%		-30	5290096.21	96.21
100%		-20	5290026.83	26.83
100%		-10	5290011.97	11.97
100%		0	5290018.32	18.32
100%		+10	5290064.47	64.47
100%		+30	5290002.61	2.61
100%		+40	5290024.49	24.49
100%		+50	5290027.79	27.79
Max	16.00	+20	5210035.15	35.15
Min	9.00	+20	5210084.98	84.98

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5530055.70	55.70
100%		-30	5530063.23	63.23
100%		-20	5530003.65	3.65
100%		-10	5530098.77	98.77
100%		0	5530096.50	96.50
100%		+10	5530059.84	59.84
100%		+30	5530006.68	6.68
100%		+40	5530065.35	65.35
100%		+50	5530007.91	7.91
Max	16.00	+20	5210022.43	22.43
Min	9.00	+20	5210061.07	61.07

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	12.0 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	12	+20(Ref)	5775073.18	73.18
100%		-30	5775095.84	95.84
100%		-20	5775014.03	14.03
100%		-10	5775079.53	79.53
100%		0	5775066.02	66.02
100%		+10	5775058.22	58.22
100%		+30	5775033.57	33.57
100%		+40	5775016.33	16.33
100%		+50	5775081.93	81.93
Max	16.00	+20	5210073.88	73.88
Min	9.00	+20	5210076.38	76.38

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

2 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5210014.55	14.55
100%		-30	5210046.49	46.49
100%		-20	5210087.37	87.37
100%		-10	5210053.94	53.94
100%		0	5210071.07	71.07
100%		+10	5210075.59	75.59
100%		+30	5210001.97	1.97
100%		+40	5210082.63	82.63
100%		+50	5210070.25	70.25
Max	16.00	+20	5210027.74	27.74
Min	9.00	+20	5210049.34	49.34

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5290076.61	76.61
100%		-30	5290093.74	93.74
100%		-20	5290030.34	30.34
100%		-10	5290054.30	54.30
100%		0	5290007.78	7.78
100%		+10	5290085.77	85.77
100%		+30	5290009.72	9.72
100%		+40	5290031.95	31.95
100%		+50	5290058.43	58.43
Max	16.00	+20	5210094.14	94.14
Min	9.00	+20	5210003.16	3.16

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5530099.40	99.40
100%		-30	5530068.07	68.07
100%		-20	5530090.90	90.90
100%		-10	5530012.66	12.66
100%		0	5530004.02	4.02
100%		+10	5530042.88	42.88
100%		+30	5530012.85	12.85
100%		+40	5530017.06	17.06
100%		+50	5530022.08	22.08
Max	16.00	+20	5210088.43	88.43
Min	9.00	+20	5210026.83	26.83

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5775008.39	8.39
100%		-30	5775051.14	51.14
100%		-20	5775029.43	29.43
100%		-10	5775079.20	79.20
100%		0	5775030.57	30.57
100%		+10	5775096.26	96.26
100%		+30	5775043.06	43.06
100%		+40	5775013.91	13.91
100%		+50	5775095.72	95.72
Max	16.00	+20	5210048.19	48.19
Min	9.00	+20	5210014.69	14.69

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

5 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5210079.70	79.70
100%		-30	5210072.54	72.54
100%		-20	5210076.28	76.28
100%		-10	5210046.53	46.53
100%		0	5210070.42	70.42
100%		+10	5210023.47	23.47
100%		+30	5210042.92	42.92
100%		+40	5210034.92	34.92
100%		+50	5210013.07	13.07
Max	16.00	+20	5210003.47	3.47
Min	9.00	+20	5210045.52	45.52

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5290053.02	53.02
100%		-30	5290076.77	76.77
100%		-20	5290093.63	93.63
100%		-10	5290069.50	69.50
100%		0	5290032.06	32.06
100%		+10	5290066.85	66.85
100%		+30	5290067.44	67.44
100%		+40	5290070.89	70.89
100%		+50	5290013.75	13.75
Max	16.00	+20	5210065.31	65.31
Min	9.00	+20	5210038.96	38.96

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5530099.13	99.13
100%		-30	5530010.94	10.94
100%		-20	5530052.95	52.95
100%		-10	5530082.45	82.45
100%		0	5530083.20	83.20
100%		+10	5530027.62	27.62
100%		+30	5530053.18	53.18
100%		+40	5530090.27	90.27
100%		+50	5530074.74	74.74
Max	16.00	+20	5210074.52	74.52
Min	9.00	+20	5210003.97	3.97

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5775024.84	24.84
100%		-30	5775058.06	58.06
100%		-20	5775045.31	45.31
100%		-10	5775078.20	78.20
100%		0	5775098.37	98.37
100%		+10	5775070.31	70.31
100%		+30	5775024.69	24.69
100%		+40	5775015.92	15.92
100%		+50	5775035.88	35.88
Max	16.00	+20	5210054.57	54.57
Min	9.00	+20	5210013.95	13.95

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

10 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5210078.15	78.15
100%		-30	5210075.41	75.41
100%		-20	5210008.74	8.74
100%		-10	5210052.74	52.74
100%		0	5210046.48	46.48
100%		+10	5210033.30	33.30
100%		+30	5210001.24	1.24
100%		+40	5210099.33	99.33
100%		+50	5210074.20	74.20
Max	16.00	+20	5210099.25	99.25
Min	9.00	+20	5210034.32	34.32

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5290043.74	43.74
100%		-30	5290018.71	18.71
100%		-20	5290062.51	62.51
100%		-10	5290038.33	38.33
100%		0	5290037.61	37.61
100%		+10	5290055.56	55.56
100%		+30	5290096.97	96.97
100%		+40	5290080.17	80.17
100%		+50	5290045.38	45.38
Max	16.00	+20	5210047.02	47.02
Min	9.00	+20	5210082.83	82.83

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5530073.64	73.64
100%		-30	5530088.51	88.51
100%		-20	5530006.34	6.34
100%		-10	5530049.47	49.47
100%		0	5530097.06	97.06
100%		+10	5530043.12	43.12
100%		+30	5530050.82	50.82
100%		+40	5530093.10	93.10
100%		+50	5530024.55	24.55
Max	16.00	+20	5210069.21	69.21
Min	9.00	+20	5210095.05	95.05

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5775053.88	53.88
100%		-30	5775009.37	9.37
100%		-20	5775070.81	70.81
100%		-10	5775068.15	68.15
100%		0	5775039.72	39.72
100%		+10	5775086.42	86.42
100%		+30	5775009.94	9.94
100%		+40	5775044.78	44.78
100%		+50	5775071.77	71.77
Max	16.00	+20	5210015.65	15.65
Min	9.00	+20	5210038.73	38.73

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

[External ANT_SISO]

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5210048.54	48.54
100%		-30	5210099.93	99.93
100%		-20	5210062.81	62.81
100%		-10	5210054.60	54.60
100%		0	5210072.71	72.71
100%		+10	5210064.08	64.08
100%		+30	5210056.86	56.86
100%		+40	5210058.78	58.78
100%		+50	5210081.50	81.50
Max	16.00	+20	5210070.57	70.57
Min	9.00	+20	5210065.66	65.66

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5290038.83	38.83
100%		-30	5290047.47	47.47
100%		-20	5290094.62	94.62
100%		-10	5290018.42	18.42
100%		0	5290005.91	5.91
100%		+10	5290071.02	71.02
100%		+30	5290028.07	28.07
100%		+40	5290094.42	94.42
100%		+50	5290032.05	32.05
Max	16.00	+20	5210078.52	78.52
Min	9.00	+20	5210076.46	76.46

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5530028.39	28.39
100%		-30	5530056.49	56.49
100%		-20	5530025.09	25.09
100%		-10	5530035.56	35.56
100%		0	5530090.29	90.29
100%		+10	5530033.31	33.31
100%		+30	5530084.52	84.52
100%		+40	5530062.23	62.23
100%		+50	5530098.03	98.03
Max	16.00	+20	5210061.18	61.18
Min	9.00	+20	5210076.45	76.45

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5775080.64	80.64
100%		-30	5775084.23	84.23
100%		-20	5775077.03	77.03
100%		-10	5775057.22	57.22
100%		0	5775064.55	64.55
100%		+10	5775026.95	26.95
100%		+30	5775070.81	70.81
100%		+40	5775060.19	60.19
100%		+50	5775042.94	42.94
Max	16.00	+20	5210094.84	94.84
Min	9.00	+20	5210002.20	2.20

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

2 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5210067.93	67.93
100%		-30	5210060.69	60.69
100%		-20	5210066.20	66.20
100%		-10	5210040.29	40.29
100%		0	5210017.27	17.27
100%		+10	5210001.66	1.66
100%		+30	5210085.85	85.85
100%		+40	5210016.66	16.66
100%		+50	5210029.52	29.52
Max	16.00	+20	5210028.85	28.85
Min	9.00	+20	5210060.50	60.50

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5290087.11	87.11
100%		-30	5290041.64	41.64
100%		-20	5290090.70	90.70
100%		-10	5290080.91	80.91
100%		0	5290093.19	93.19
100%		+10	5290059.65	59.65
100%		+30	5290072.80	72.80
100%		+40	5290084.32	84.32
100%		+50	5290011.40	11.40
Max	16.00	+20	5210018.13	18.13
Min	9.00	+20	5210093.93	93.93

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5530058.04	58.04
100%		-30	5530027.70	27.70
100%		-20	5530035.28	35.28
100%		-10	5530042.47	42.47
100%		0	5530041.39	41.39
100%		+10	5530067.84	67.84
100%		+30	5530034.54	34.54
100%		+40	5530034.14	34.14
100%		+50	5530003.92	3.92
Max	16.00	+20	5210020.30	20.30
Min	9.00	+20	5210094.28	94.28

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5775058.55	58.55
100%		-30	5775088.72	88.72
100%		-20	5775061.40	61.40
100%		-10	5775088.37	88.37
100%		0	5775057.44	57.44
100%		+10	5775034.42	34.42
100%		+30	5775006.97	6.97
100%		+40	5775016.14	16.14
100%		+50	5775098.18	98.18
Max	16.00	+20	5210051.63	51.63
Min	9.00	+20	5210012.63	12.63

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

5 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5210009.05	9.05
100%		-30	5210072.82	72.82
100%		-20	5210090.90	90.90
100%		-10	5210007.38	7.38
100%		0	5210051.23	51.23
100%		+10	5210037.78	37.78
100%		+30	5210092.05	92.05
100%		+40	5210028.71	28.71
100%		+50	5210066.73	66.73
Max	16.00	+20	5210095.59	95.59
Min	9.00	+20	5210013.26	13.26

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5290040.58	40.58
100%		-30	5290061.31	61.31
100%		-20	5290022.73	22.73
100%		-10	5290061.61	61.61
100%		0	5290043.61	43.61
100%		+10	5290088.86	88.86
100%		+30	5290070.85	70.85
100%		+40	5290056.48	56.48
100%		+50	5290049.56	49.56
Max	16.00	+20	5210063.54	63.54
Min	9.00	+20	5210084.26	84.26

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	12.0 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	12	+20(Ref)	5530068.24	68.24
100%		-30	5530068.22	68.22
100%		-20	5530093.19	93.19
100%		-10	5530040.87	40.87
100%		0	5530070.14	70.14
100%		+10	5530063.95	63.95
100%		+30	5530062.26	62.26
100%		+40	5530022.14	22.14
100%		+50	5530066.09	66.09
Max	16.00	+20	5210021.88	21.88
Min	9.00	+20	5210056.64	56.64

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND:	UNII Band 3
OPERATING FREQUENCY:	5,775,000,000 Hz
CHANNEL:	155
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5775038.78	38.78
100%		-30	5775058.68	58.68
100%		-20	5775066.04	66.04
100%		-10	5775003.64	3.64
100%		0	5775005.58	5.58
100%		+10	5775065.92	65.92
100%		+30	5775094.66	94.66
100%		+40	5775099.75	99.75
100%		+50	5775002.56	2.56
Max	16.00	+20	5210007.56	7.56
Min	9.00	+20	5210002.43	2.43

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

10 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	12.0 VDC

Voltage	Power	Temp.	Frequency	Frequency
(%)	(VDC)	(°C)	(kHz)	Error (kHz)
100%	12	+20(Ref)	5210025.40	25.40
100%		-30	5210052.37	52.37
100%		-20	5210055.08	55.08
100%		-10	5210029.98	29.98
100%		0	5210027.45	27.45
100%		+10	5210068.83	68.83
100%		+30	5210091.74	91.74
100%		+40	5210079.39	79.39
100%		+50	5210065.10	65.10
Max	16.00	+20	5210064.29	64.29
Min	9.00	+20	5210058.58	58.58

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.