HCT CO.,LTD.

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

FCC UNII REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

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

Date of Issue:
November 08, 2021

Test Site/Location:
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA

Report No.: HCT-RF-2110-FC061-R2

FCC ID:	**A3LSMN981B1**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model:	SM-N981B/DS
Additional Model:	SM-N981B
EUT Type:	Mobile Phone
Modulation type	OFDM
FCC Classification:	Unlicensed National Information Infrastructure(NII)
FCC Rule Part(s):	Part 15.407

Engineering Statement:

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

REVIEWED BY

Report prepared by : Jin Gwan Lee
Engineer of Telecommunication Testing Center

Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2110-FC061	October 29, 2021	- First Approval Report
HCT-RF-2110-FC061-R1	November 04, 2021	- FCC ID Revised - Page 6, 27, Typo - Page 8, 61, 32-49, 128-133 Data revised
HCT-RF-2110-FC061-R2	November 08, 2021	- Page 8, Data revised

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	SM-N981B/DS	
Additional Model	SM-N981B	
EUT Type	Mobile Phone	
Power Supply	DC 3.88 V	
Modulation Type	OFDM : 802.11a, 802.11n, 802.11ac	
Frequency Range (MHz)	U-NII-1	20 MHz BW : 5180 - 5240 40 MHz BW : 5190 - 5230 80 MHz BW : 5210
	U-NII-2A	20 MHz BW : 5260 - 5320 40 MHz BW : 5270 - 5310 80 MHz BW : 5290
	U-NII-2C	20 MHz BW : 5500 - 5720 40 MHz BW : 5510 - 5710 80 MHz BW : 5530 – 5690
	U-NII-3	20 MHz BW : 5745 - 5825 40 MHz BW : 5755 - 5795 80 MHz BW : 5775
Straddle channel	Supported	
TDWR Band	Supported	
Dynamic Frequency Selection	Slave without radar detection	
Date(s) of Tests	September 27, 2021 ~ November 04 , 2021	
Serial number	Radiated: UIR1409M Conducted: UIR1403M	

ANTENNA CONFIGURATIONS

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

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

Note:

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

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

	5GHz WIFI		2.4GHz WIFI		Test case
	Ant1	Ant2	Ant1	Ant2	
2.4 GHz + 5 GHz RSDB Only	A			B	-
		A	B		-
	A		B		-
		A		B	-
2.4 GHz + 5 GHz RSDB & MIMO	A	A	B		-
	A	A		B	-
	A		B	B	-
		A	B	B	-
2.4 GHz + 5 GHz RSDB MIMO	A	A	B	B	O

Not RSDB	5GHz WIFI		2.4GHz Bluetooth	Test case
	Ant1	Ant2	BT Ant	
Bluetooth + 5 GHz	O		O	-
		O	O	-
	O	O	O	O

3. Directional Gain Calculation

According to KDB 662911 D01 Multiple Transmitter Output v02r01 F) 2) f) (ii)

Directional gain =

- $$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$$

Band	Ant Gain (dBi)		N_{ANT}/ N_{SS}	Directional Gain (dBi)
UNII 1	ANT1	-6.77	2 / 2	0.57
	ANT2	0.43		
UNII 2A	ANT1	-8.04	2 / 2	0.29
	ANT2	0.56		
UNII 2C	ANT1	-7.24	2 / 2	-1.25
	ANT2	-2.05		
UNII 3	ANT1	-6.33	2 / 2	-1.59
	ANT2	-3.16		

2. MAXIMUM OUTPUT POWER

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

Band	Mode	Ant.1 Power		Ant.2 Power		MIMO Ant.1 + Ant.2 Power	
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
UNII1	802.11a	16.88	0.049	17.43	0.055	20.17	0.104
	802.11n (HT20)	17.11	0.051	17.27	0.053	20.18	0.104
	802.11n (HT40)	16.83	0.048	16.94	0.049	19.89	0.098
	802.11ac (VHT20)	16.98	0.050	17.26	0.053	20.18	0.104
	802.11ac (VHT40)	16.87	0.049	16.82	0.048	19.86	0.097
	802.11ac (VHT80)	12.62	0.018	12.42	0.017	15.53	0.036
UNII2A	802.11a	16.96	0.050	17.38	0.055	20.18	0.104
	802.11n (HT20)	17.17	0.052	17.40	0.055	20.30	0.107
	802.11n (HT40)	16.83	0.048	16.88	0.049	19.86	0.097
	802.11ac (VHT20)	17.21	0.053	17.40	0.055	20.31	0.107
	802.11ac (VHT40)	16.83	0.048	16.95	0.050	19.90	0.098
	802.11ac (VHT80)	12.57	0.018	12.52	0.018	15.55	0.036
UNII2C	802.11a	17.28	0.053	17.29	0.054	20.29	0.107
	802.11n (HT20)	17.21	0.053	17.26	0.053	20.24	0.106
	802.11n (HT40)	16.90	0.049	16.96	0.050	19.94	0.099
	802.11ac (VHT20)	17.38	0.055	17.27	0.053	20.33	0.108
	802.11ac (VHT40)	16.93	0.049	16.88	0.049	19.92	0.098
	802.11ac (VHT80)	15.59	0.036	15.76	0.038	18.68	0.074
UNII3	802.11a	17.74	0.059	17.42	0.055	20.59	0.114
	802.11n (HT20)	17.70	0.059	17.37	0.055	20.53	0.113
	802.11n (HT40)	16.97	0.050	16.96	0.050	19.97	0.099
	802.11ac (VHT20)	17.77	0.060	17.37	0.055	20.58	0.114
	802.11ac (VHT40)	16.90	0.049	16.91	0.049	19.92	0.098
	802.11ac (VHT80)	15.95	0.039	15.77	0.038	18.87	0.077

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 30 MHz 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 1 GHz. Above 1 GHz with 1.5 m 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.

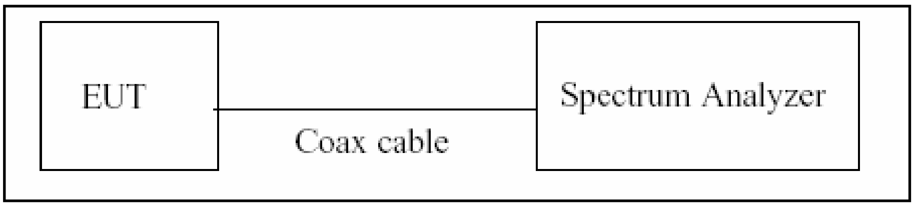
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82 (Confidence level about 95 %, *k*=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40 (Confidence level about 95 %, *k*=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80 (Confidence level about 95 %, *k*=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70 (Confidence level about 95 %, *k*=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05 (Confidence level about 95 %, *k*=2)

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.

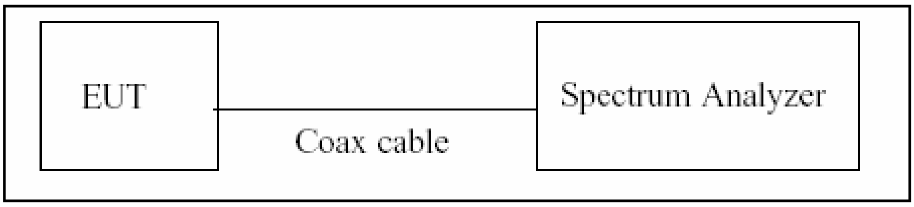
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

8.2. 6 dB Bandwidth & 26 dB 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(26 dB 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 (6 dB 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.

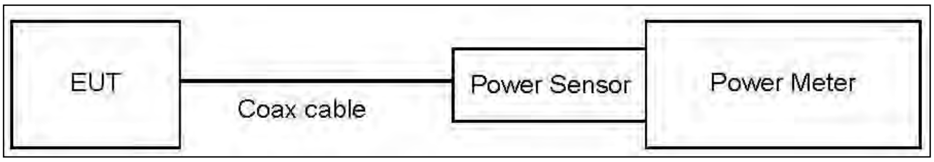
8.3. Output Power Measurement

Limit

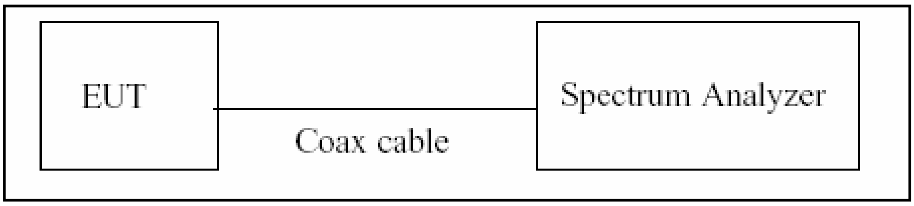
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30 dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30 dBm)

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) = Measured Level(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum Measured Levels 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
   Loss = Attenuator loss(10 dB) + Cable loss + EUT Cable loss
   - Ant1 EUT Cable loss : 0.82 dB
3. Actual value of loss for the attenuator and cable combination is below table.

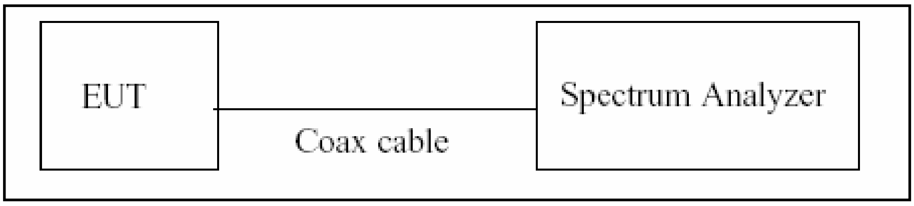
Band	Ant 1 Loss(dB)	Ant 2 Loss(dB)
UNII 1	11.55	10.73
UNII 2A	11.55	10.73
UNII 2C	11.55	10.73
UNII 3	11.55	10.73

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) = Measured Level(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum Measured Levels 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
   Loss = Attenuator loss(10 dB) + Cable loss + EUT Cable loss
   - Ant1 EUT Cable loss : 0.82 dB
3. Actual value of loss for the attenuator and cable combination is below table.

Band	Ant 1 Loss(dB)	Ant 2 Loss(dB)
UNII 1	11.55	10.73
UNII 2A	11.55	10.73
UNII 2C	11.55	10.73
UNII 3	11.55	10.73

8.5. AC Power line Conducted Emissions

Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).

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

[(a)]Decreases with the logarithm of the frequency.

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

Test Configuration

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

Test Procedure

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

Sample Calculation

Quasi-peak(Final Result) = Measured Level + Correction Factor

8.6. 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.

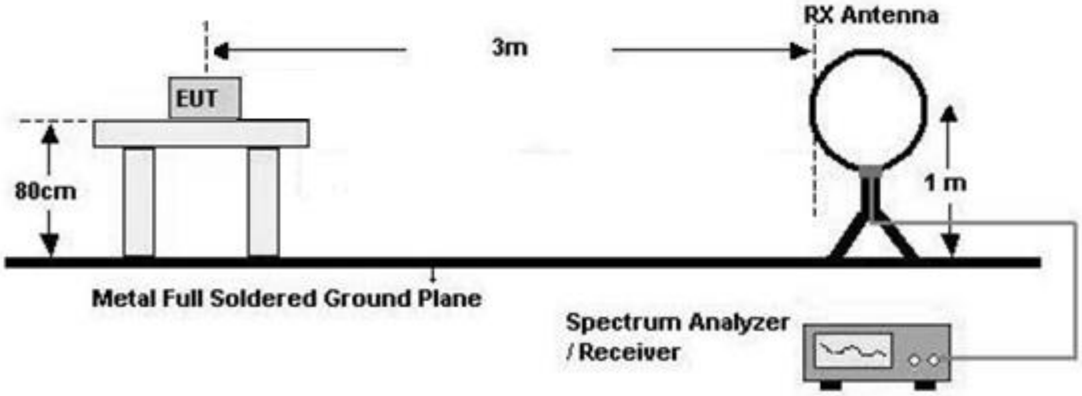
3. UNII 3: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below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

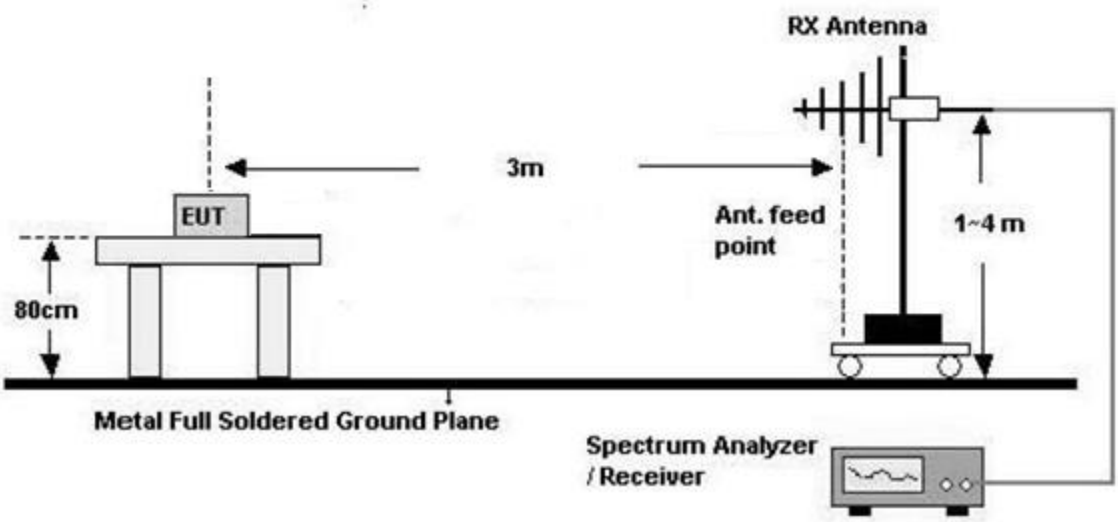
Frequency (MHz)	Field Strength (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

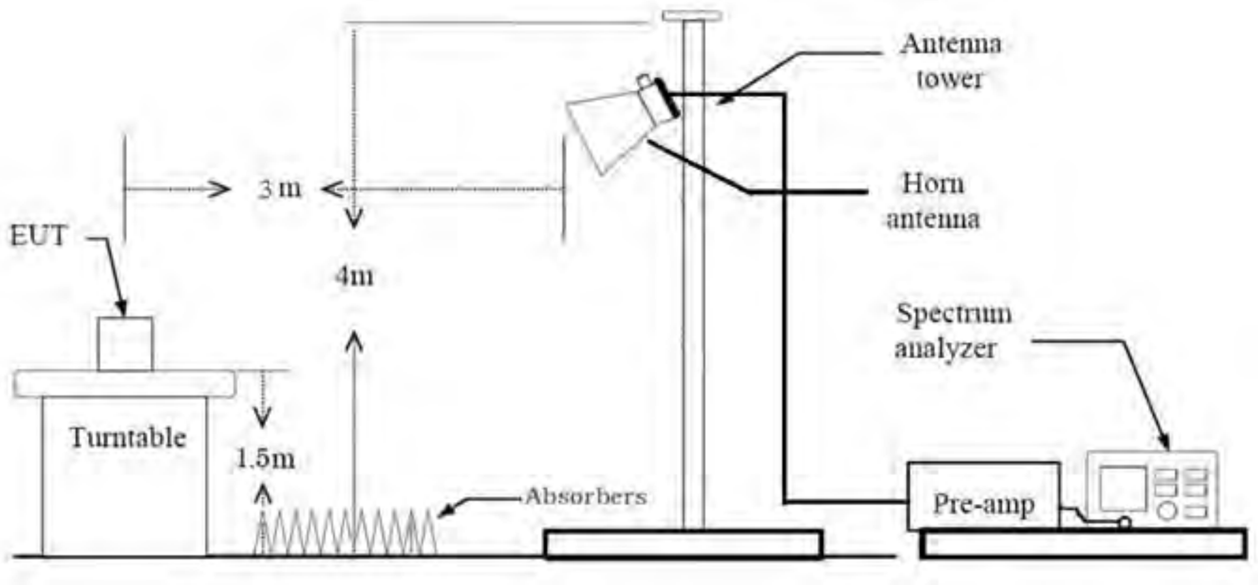
Below 30 MHz



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 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8 m 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 = Measured Level + 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 1 GHz)

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 0.8 m above ground plane.
3. The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1 m to 4 m 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 = Measured Level + 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 1 m to 4 m 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.d in KDB 789033 v02r01):

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

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 = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.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 1 m to 4 m 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.d in KDB 789033 v02r01):
   - RBW = 1 MHz
   - VBW(Duty cycle ≥ 98 %) = VBW ≤ RBW/100(i.e., 10 kHz) but not less than 10 Hz.
   - VBW(Duty cycle is < 98 %) = VBW ≥ 1/T, where T is the minimum transmission duration.
   - The analyzer is set to linear detector mode.
   - Detector = Peak.
   - Sweep time = auto.
   - Trace mode = max hold.
   - Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 % duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of 1/x, where x is the duty cycle.

9. Measured Frequency Range :
- 4 500 MHz ~ 5 150 MHz
- 5 350 MHz ~ 5 460 MHz
- 5 460 MHz ~ 5 470 MHz
- (75 MHz or more below the 5 725 MHz) ~ 5 725 MHz
- 5 850 MHz ~ (75 MHz or more above the 5 850 MHz)

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

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

The actual setting value of VBW

Mode	Worst Data rate (Mbps)	Duty Cycle	Duty Cycle Factor (dB)	The actual setting value of VBW (Hz)
802.11a	6	0.934	0.298	1000
802.11n(HT20)	MCS0	0.929	0.318	1000
802.11n(HT40)	MCS0	0.868	0.617	2000
802.11ac(VHT20)	MCS0	0.930	0.316	1000
802.11ac(VHT40)	MCS0	0.874	0.584	2000
802.11ac(VHT80)	MCS0	0.765	1.165	5000

8.7. Worst case configuration and mode

Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
   - Worstcase : Stand alone
2. EUT Axis
   - Radiated Spurious Emissions : Y, Z
   - Radiated Restricted Band Edge : Y, Z
3. All datarate of operation were investigated and the worst case datarate results are reported
   - Mode : Ant1(SISO), Ant2(SISO), Ant1+Ant2(SDM), Ant1+Ant2(CDD)
   - Worstcase : Ant1+Ant2(CDD)
   - 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. 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
5. SM-N981B/DS, SM-N981B were tested and the worst case results are reported.
   (Worst case : SM-N981B/DS)
6. All Modes of operation were investigated and the worst case configuration results are reported.
   In order to simplify the report, We only have attached RSE result of worst mode.
   - Worst mode : 802.11a

Radiated test(DBS)

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
   - Worstcase : Stand alone
2. EUT Axis
   - Radiated Spurious Emissions : Y
3. The following tables show the worst case configurations determined during testing.

Test Case	Description	Bluetooth Emission	5 GHz Emission
1	Antenna	Ant 1	Ant ALL
	Channel	39	151
	Data Rate	3 Mbps	MCS 0
	Mode	8DPSK: 3-DH5	802.11ax (HE40)
	Tone / RU	-	52 / 41
Test Case	**Description**	**2.4 GHz Emission**	**5 GHz Emission**
2	Antenna	Ant ALL	Ant ALL
	Channel	11	151
	Data Rate	MCS 0	MCS 0
	Mode	802.11ax (HE20)	802.11ax (HE40)
	Tone / RU	52 / 40	52 / 41

4. SM-N981B/DS, SM-N981B were tested and the worst case results are reported.
(Worst case : SM-N981B/DS)
5. Please refer to the SM-N981B/DS [BT], [UNII] 802.11ax Test Report.

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone + External accessories(Earphone, etc)+Travel Adapter,
     Stand alone + Travel Adapter
   - Worstcase : Stand alone + Travel Adapter
2. SM-N981B/DS, SM-N981B were tested and the worst case results are reported.
(Worst case : SM-N981B/DS)

Conducted test

1. All datarate of operation were investigated and the worst case datarate results are reported
2. SM-N981B/DS, SM-N981B were tested and the worst case results are reported.
(Worst case : SM-N981B/DS)

9. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26 dB Bandwidth	§15.407 (for Power Measurement)	N/A	Conducted	PASS
6 dB Bandwidth	§15.407(e)	>500 kHz (5725-5850 MHz)	Conducted	PASS
Maximum Conducted Output Power	§15.407(a)(1),(2),(3)	< 250 mW(5150-5250 MHz) < 250 mW or 11+10log$_{10}$ (BW) dBm (5250-5350 MHz) < 250 mW or 11+10log$_{10}$ (BW) dBm (5470-5725 MHz) <1 W(5725-5850 MHz)	Conducted	PASS
Maximum Power Spectral Density	§15.407(a)(1),(2),(3)	<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)	Conducted	PASS
Frequency Stability	§15.407(g) §2.1055	Maintained within the band	Conducted	PASS
AC Conducted Emissions 150 kHz-30 MHz	15.207 15.407(b)(8)	<FCC 15.207 limits	Conducted	PASS
Undesirable Emissions	§15.407(b)(1),(2),(3),(4)	<-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)(9),(10)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	PASS

10. TEST RESULT

10.1 DUTY CYCLE

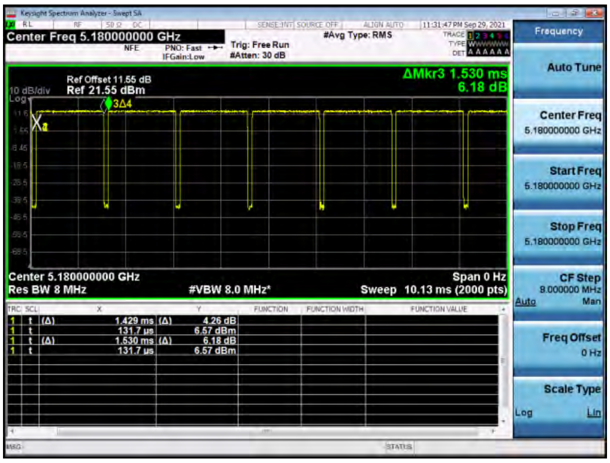
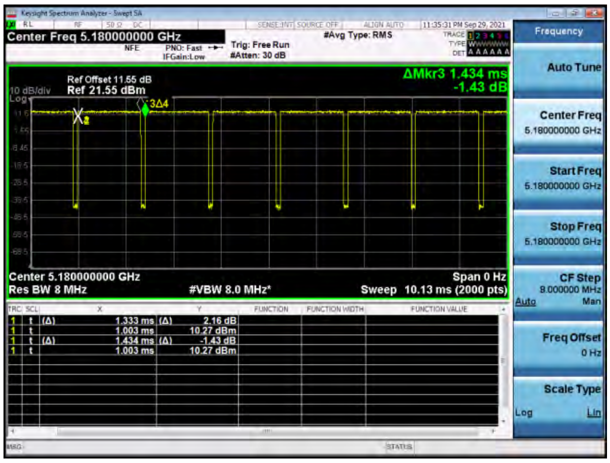
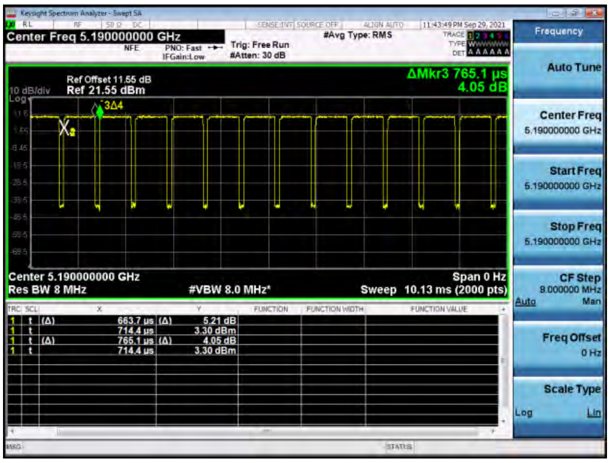
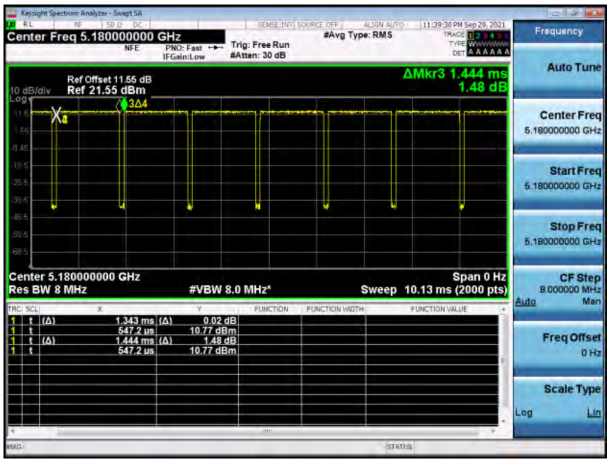
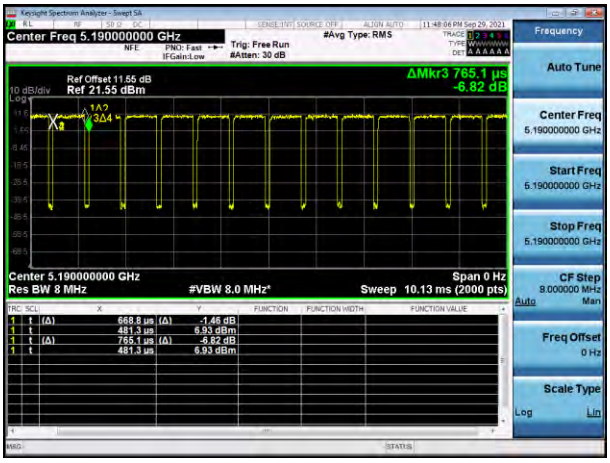
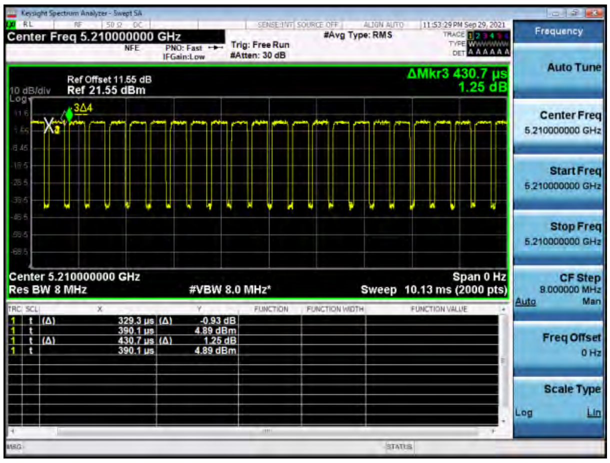
Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11a	6	1.429	1.530	0.934	0.298
	9	0.958	1.059	0.904	0.437
	12	0.725	0.826	0.877	0.569
	18	0.486	0.588	0.828	0.822
	24	0.370	0.471	0.785	1.052
	36	0.258	0.355	0.729	1.375
	48	0.193	0.294	0.655	1.836
	54	0.177	0.279	0.636	1.963

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11n (HT20)	0	1.333	1.434	0.929	0.318
	1	0.684	0.785	0.871	0.600
	2	0.471	0.573	0.823	0.846
	3	0.360	0.461	0.780	1.078
	4	0.253	0.355	0.714	1.461
	5	0.198	0.299	0.661	1.798
	6	0.182	0.284	0.643	1.919
	7	0.167	0.269	0.623	2.058
802.11n (HT40)	0	0.664	0.765	0.868	0.617
	1	0.355	0.451	0.787	1.043
	2	0.248	0.350	0.710	1.487
	3	0.198	0.299	0.661	1.798
	4	0.142	0.243	0.583	2.341
	5	0.111	0.213	0.524	2.808
	6	0.106	0.203	0.525	2.798
	7	0.096	0.198	0.487	3.123

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT20)	0	1.343	1.444	0.930	0.316
	1	0.689	0.790	0.872	0.596
	2	0.471	0.573	0.823	0.846
	3	0.370	0.466	0.793	1.005
	4	0.258	0.360	0.718	1.437
	5	0.203	0.304	0.667	1.761
	6	0.187	0.289	0.649	1.877
	7	0.172	0.274	0.630	2.009
	8	0.152	0.253	0.600	2.218
802.11ac (VHT40)	0	0.669	0.765	0.874	0.584
	1	0.355	0.456	0.778	1.091
	2	0.253	0.355	0.714	1.461
	3	0.203	0.299	0.678	1.688
	4	0.147	0.248	0.592	2.278
	5	0.122	0.223	0.545	2.632
	6	0.111	0.213	0.524	2.808
	7	0.106	0.208	0.512	2.906
	8	0.101	0.203	0.500	3.010
	9	0.091	0.187	0.486	3.129
802.11ac (VHT80)	0	0.329	0.431	0.765	1.165
	1	0.193	0.289	0.667	1.761
	2	0.142	0.243	0.583	2.341
	3	0.117	0.218	0.535	2.717
	4	0.096	0.198	0.487	3.123
	5	0.081	0.182	0.444	3.522
	6	0.076	0.177	0.429	3.680
	7	0.071	0.172	0.412	3.854
	8	0.066	0.167	0.394	4.046
	9	0.061	0.162	0.375	4.260

Note:

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

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

10.2 26 dB Bandwidth

Straddle channel data in the table below are for reporting purposes only.

Straddle channel data were added in section 10.7.1.

[Ant.1]

802.11a Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	20.72	16.655
5200	40	20.76	16.666
5240	48	20.91	16.632
5260	52	20.56	16.638
5300	60	20.78	16.686
5320	64	20.91	16.719
5500	100	20.94	16.666
5600	120	20.99	16.682
5720	144	21.16	16.781
5745	149	21.68	16.789
5785	157	21.65	16.866
5825	165	22.48	16.790

802.11n(HT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	20.99	17.875
5200	40	20.91	17.824
5240	48	21.32	17.799
5260	52	21.05	17.825
5300	60	21.25	17.869
5320	64	21.01	17.879
5500	100	21.13	17.871
5600	120	21.23	17.859
5720	144	22.76	17.919
5745	149	22.78	17.870
5785	157	24.34	18.090
5825	165	22.63	18.017

802.11n(HT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.52	36.257
5230	46	39.97	36.276
5270	54	39.42	36.324
5310	62	39.81	36.246
5510	102	39.48	36.233
5590	118	42.94	36.202
5710	142	48.13	36.415
5755	151	47.84	36.451
5795	159	53.55	36.473

802.11ac(VHT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.40	17.837
5200	40	21.13	17.845
5240	48	20.88	17.800
5260	52	21.11	17.808
5300	60	21.28	17.858
5320	64	21.39	17.840
5500	100	21.20	17.851
5600	120	23.43	17.992
5720	144	22.97	17.893
5745	149	21.96	17.951
5785	157	25.59	17.980
5825	165	22.64	17.970

802.11ac(VHT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.42	36.295
5230	46	39.70	36.202
5270	54	39.63	36.207
5310	62	39.49	36.197
5510	102	39.17	36.216
5590	118	39.99	36.367
5710	142	44.64	36.360
5755	151	52.42	36.408
5795	159	46.77	36.316

802.11ac(VHT80) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	81.31	75.651
5290	58	81.19	75.778
5530	106	81.53	75.521
5610	122	80.92	75.818
5690	138	81.00	75.708
5775	155	80.77	75.717

[Ant.2]

802.11a Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.14	16.670
5200	40	20.88	16.728
5240	48	21.16	16.737
5260	52	20.75	16.695
5300	60	20.79	16.666
5320	64	20.84	16.657
5500	100	21.05	16.684
5600	120	21.38	16.725
5720	144	21.31	16.694
5745	149	20.81	16.729
5785	157	21.44	16.680
5825	165	21.63	16.753

802.11n(HT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.46	17.857
5200	40	21.46	17.848
5240	48	21.10	17.890
5260	52	21.04	17.851
5300	60	21.22	17.833
5320	64	21.17	17.777
5500	100	21.04	17.849
5600	120	21.34	17.837
5720	144	21.43	17.847
5745	149	21.26	17.848
5785	157	21.91	17.808
5825	165	22.22	17.977

802.11n(HT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.56	36.234
5230	46	40.12	36.215
5270	54	39.67	36.281
5310	62	39.43	36.264
5510	102	39.44	36.227
5590	118	39.55	36.259
5710	142	39.39	36.319
5755	151	45.08	36.233
5795	159	48.24	36.373

802.11ac(VHT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.21	17.855
5200	40	21.08	17.914
5240	48	21.12	17.883
5260	52	21.21	17.837
5300	60	21.02	17.767
5320	64	21.38	17.857
5500	100	20.93	17.810
5600	120	21.39	17.935
5720	144	24.51	18.045
5745	149	21.91	17.991
5785	157	24.69	18.049
5825	165	21.39	17.895

802.11ac(VHT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.80	36.336
5230	46	39.29	36.371
5270	54	39.27	36.343
5310	62	39.32	36.309
5510	102	39.73	36.272
5590	118	39.47	36.314
5710	142	39.42	36.299
5755	151	39.22	36.308
5795	159	42.66	36.299

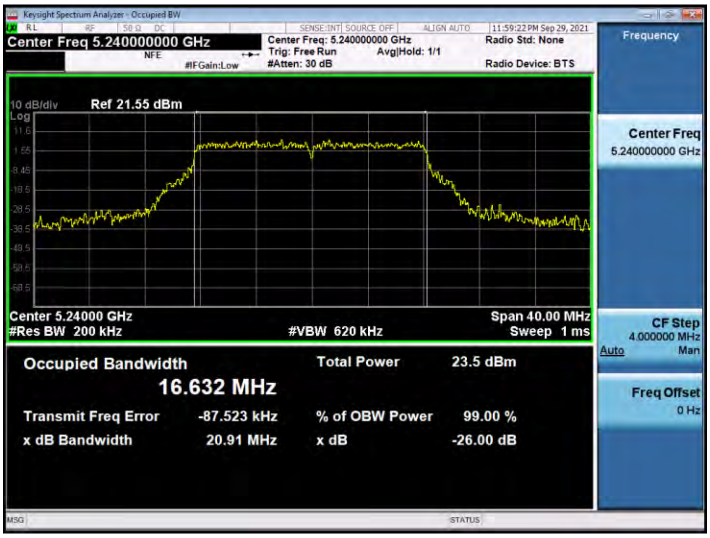
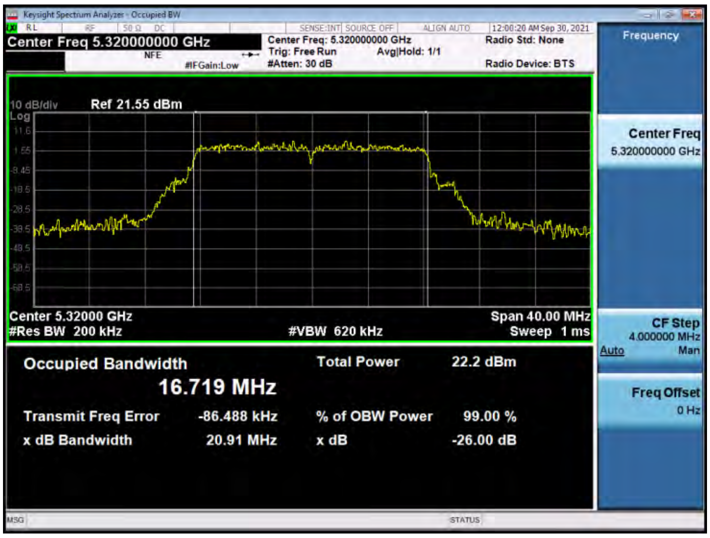
802.11ac(VHT80) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	81.19	75.516
5290	58	80.63	75.538
5530	106	81.32	75.561
5610	122	81.52	75.656
5690	138	80.74	75.720
5775	155	80.77	75.862

[Ant.1]

▣ Test Plots(802.11a)

Note:

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

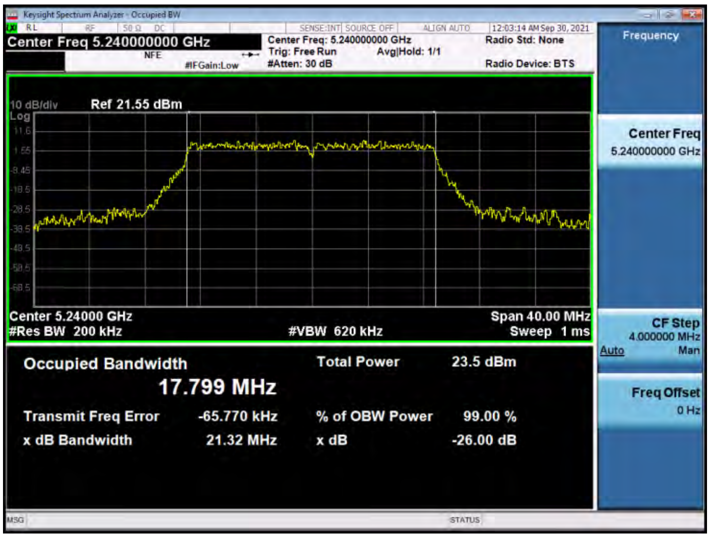
802.11a UNII 1 BAND 26 dB Bandwidth (CH 48)	802.11a UNII 2A BAND 26 dB Bandwidth (CH 64)
	
802.11a UNII 2C BAND 26 dB Bandwidth (CH 144)	**802.11a UNII 3 BAND 26 dB Bandwidth (CH 165)**
	

▣ Test Plots(802.11n(HT20))

Note:

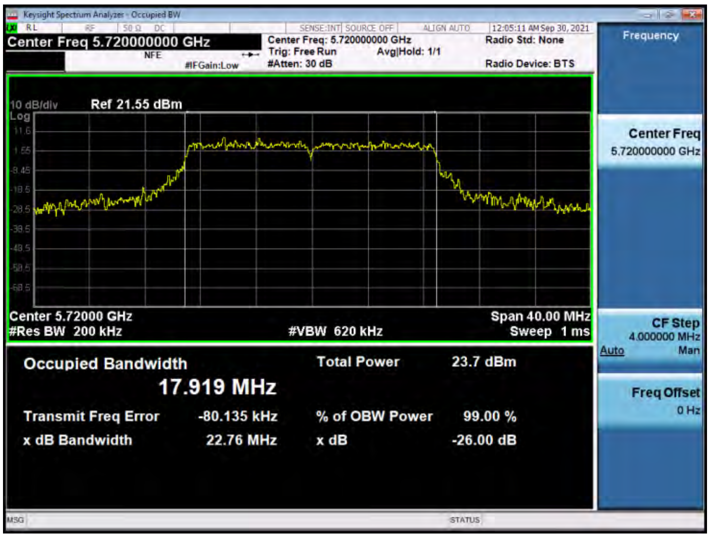
In order to simplify the report, attached plots were only the most wide channel.

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

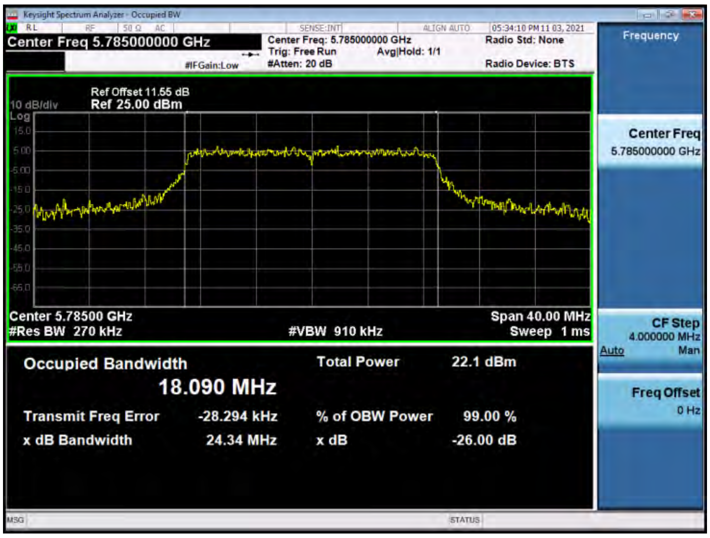


802.11n_HT20 UNII 2A BAND 26 dB Bandwidth(CH 60)

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



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

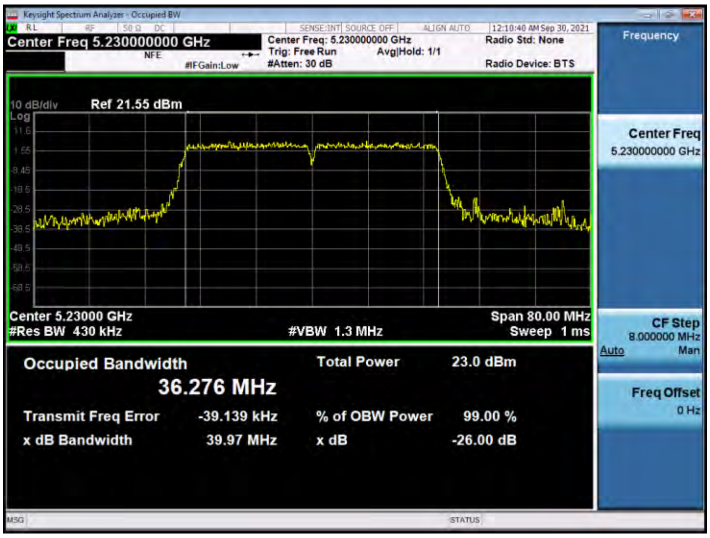


▣ Test Plots(802.11n(HT40))

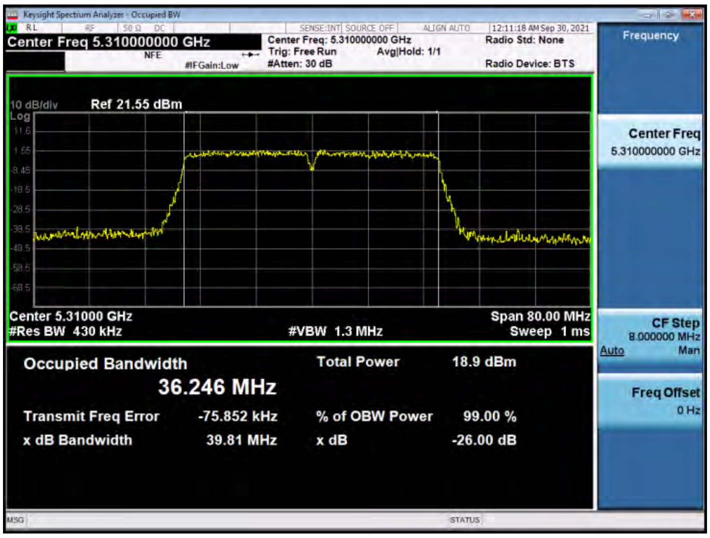
<u>Note:</u>

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

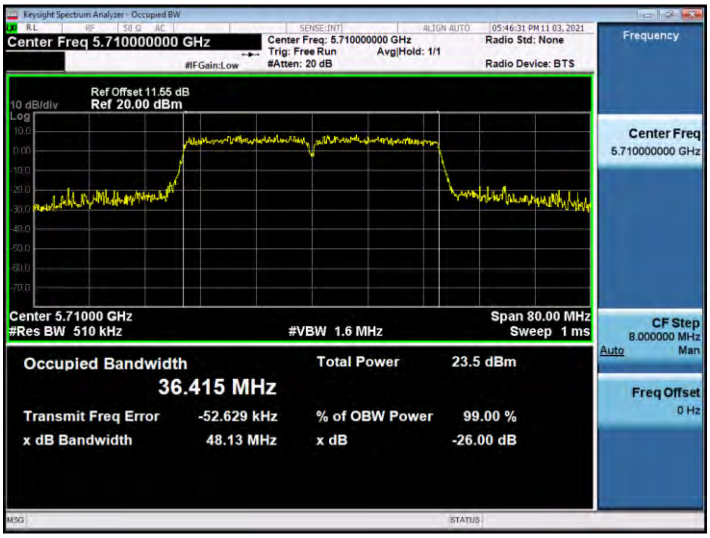
802.11n_HT40 UNII 1 BAND 26 dB Bandwidth(CH 46)



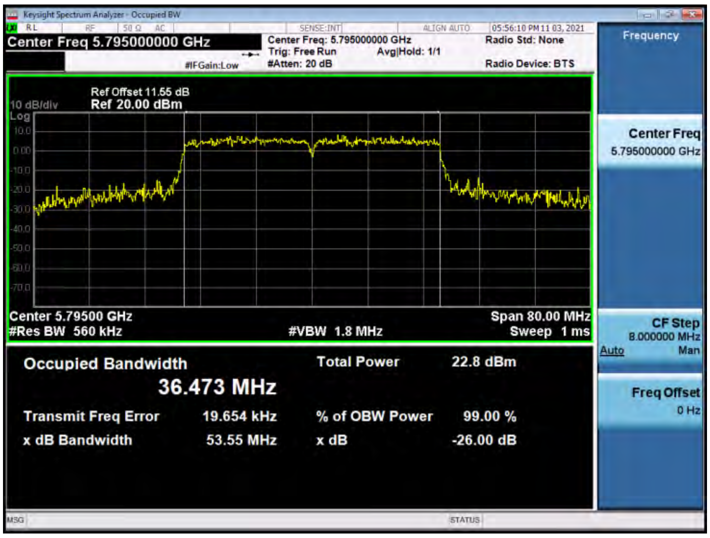
802.11n_HT40 UNII 2A BAND 26 dB Bandwidth (CH 62)



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



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



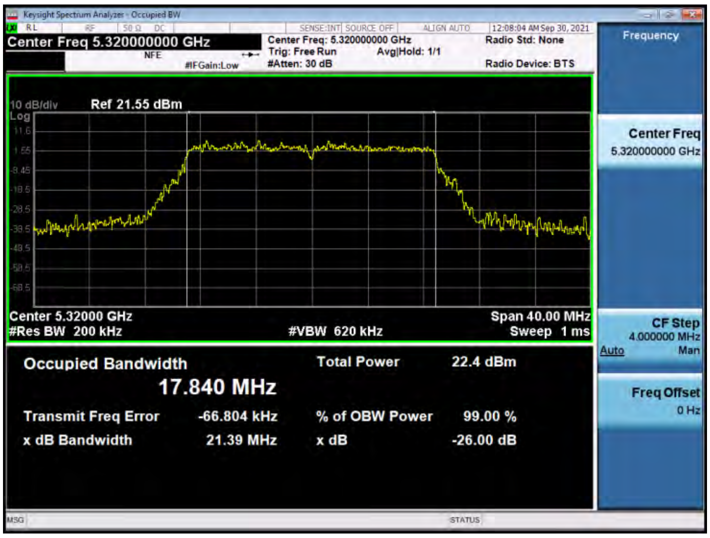
▣ Test Plots(802.11ac(VHT20))

Note:

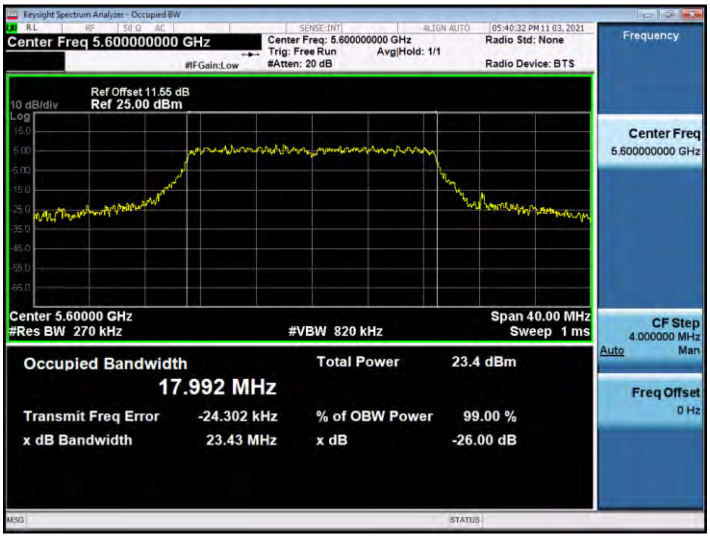
In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT20 UNII 1 BAND 26 dB Bandwidth(CH 36)

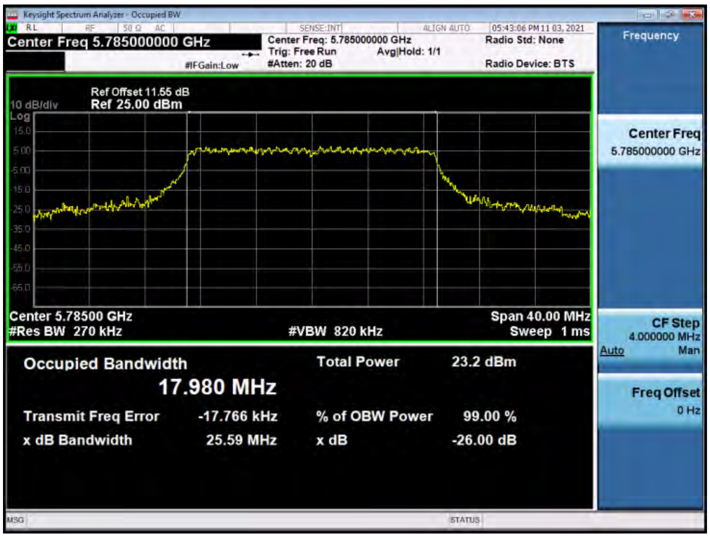
802.11ac_VHT20 UNII 2A BAND 26 dB Bandwidth(CH 64)



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



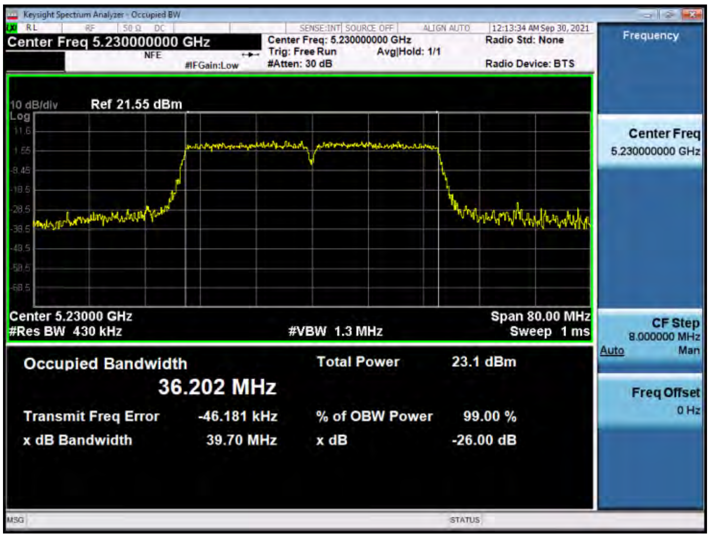
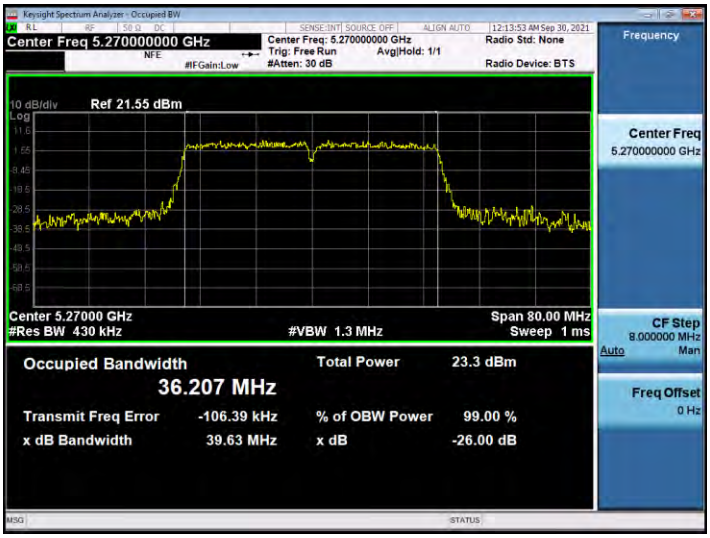
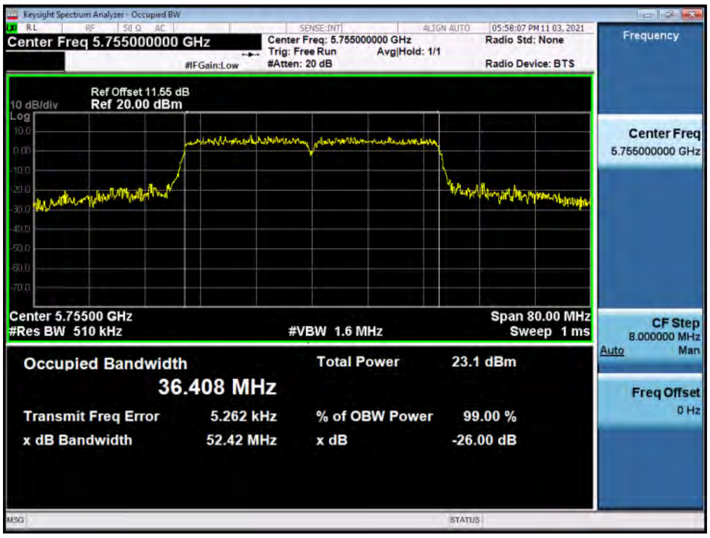
802.11ac_VHT20 UNII 3 BAND 26 dB Bandwidth(CH 157)



▣ Test Plots(802.11ac(VHT40))

Note:

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

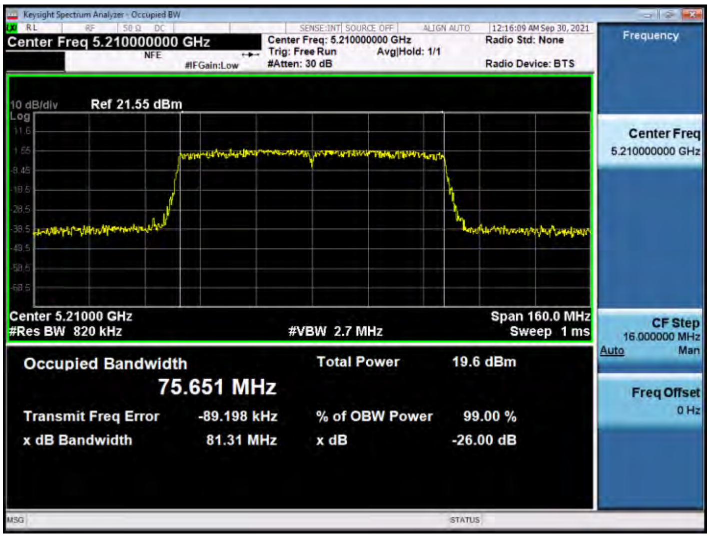
802.11ac_VHT40 UNII 1 BAND 26 dB Bandwidth(CH 46)	802.11ac_VHT40 UNII 2A BAND 26 dB Bandwidth (CH 54)
	
802.11ac_VHT40 UNII 2C BAND 26 dB Bandwidth(CH 142)	**802.11ac_VHT40 UNII 3 BAND 26 dB Bandwidth (CH 151)**
	

▣ Test Plots(802.11ac(VHT80))

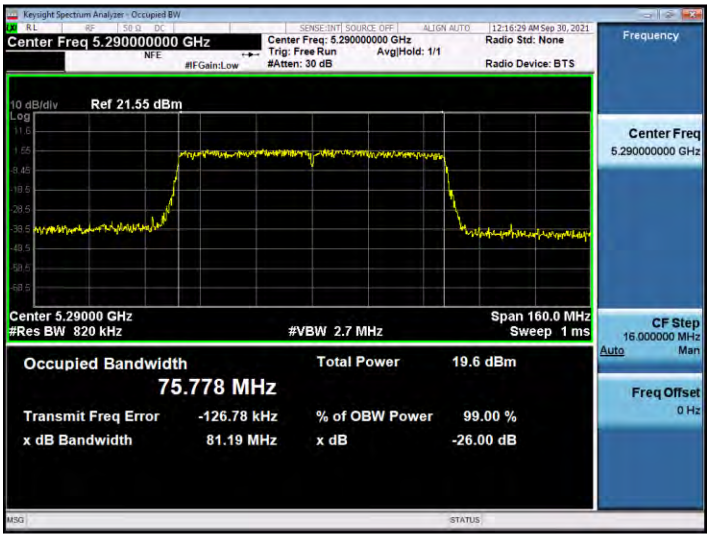
Note:

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

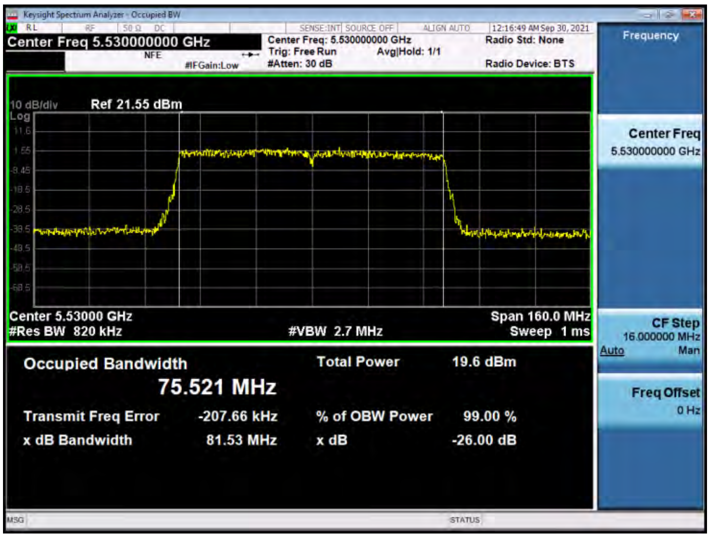
802.11ac_VHT80 UNII 1 BAND 26 dB Bandwidth(CH 42)



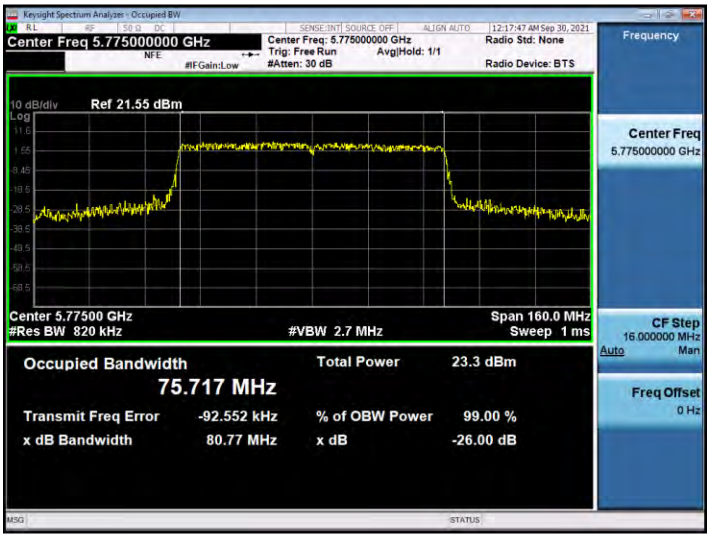
802.11ac_VHT80 UNII 2A BAND 26 dB Bandwidth (CH 58)



802.11ac_VHT80 UNII 2C BAND 26 dB Bandwidth(CH 106)



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



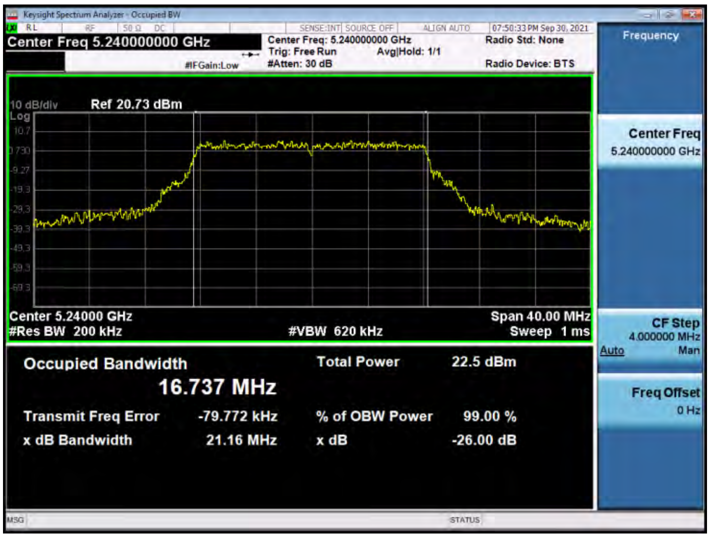
[Ant.2]

▣ Test Plots(802.11a)

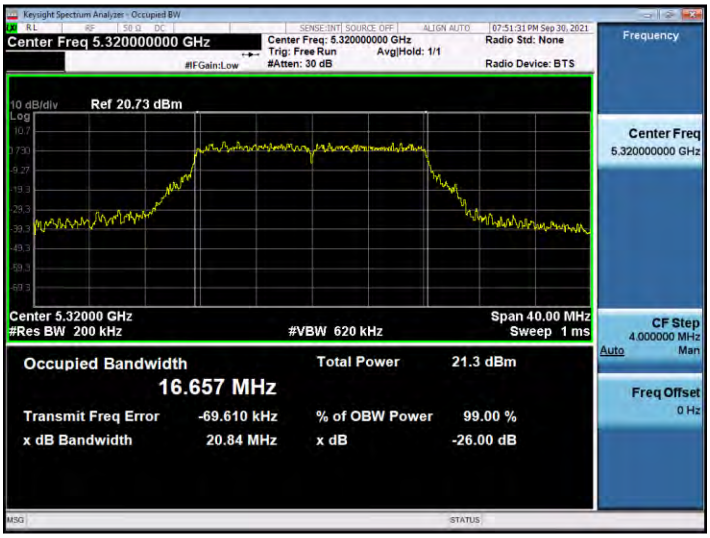
Note:

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

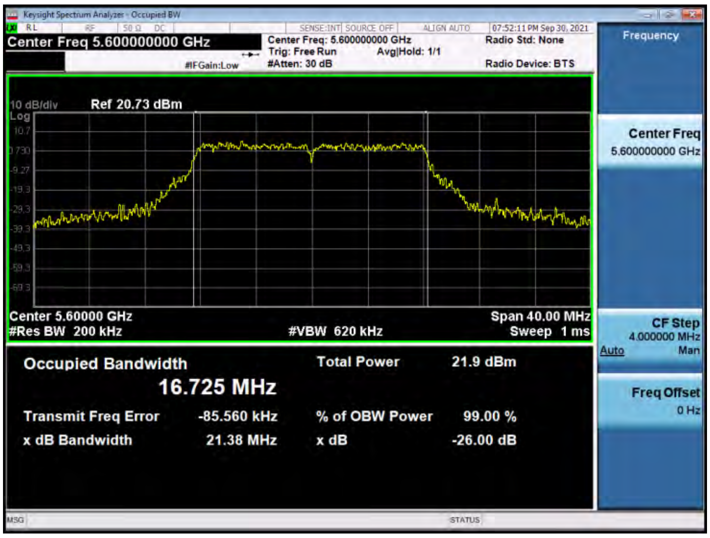
802.11a UNII 1 BAND 26 dB Bandwidth (CH 48)



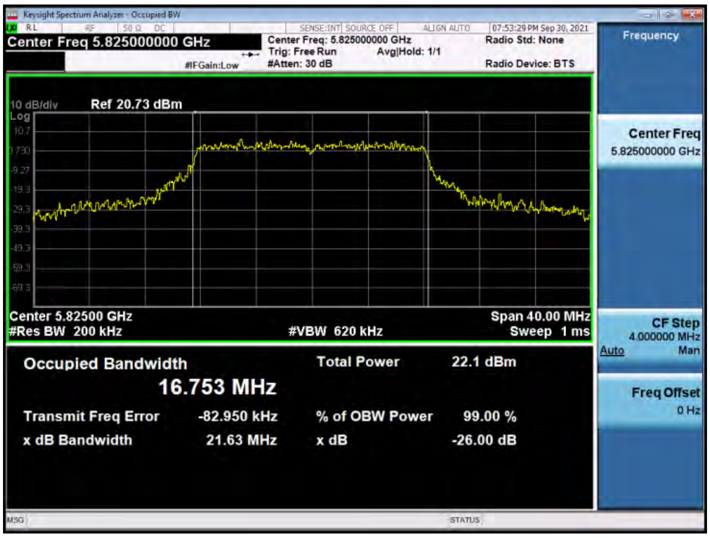
802.11a UNII 2A BAND 26 dB Bandwidth (CH 64)



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



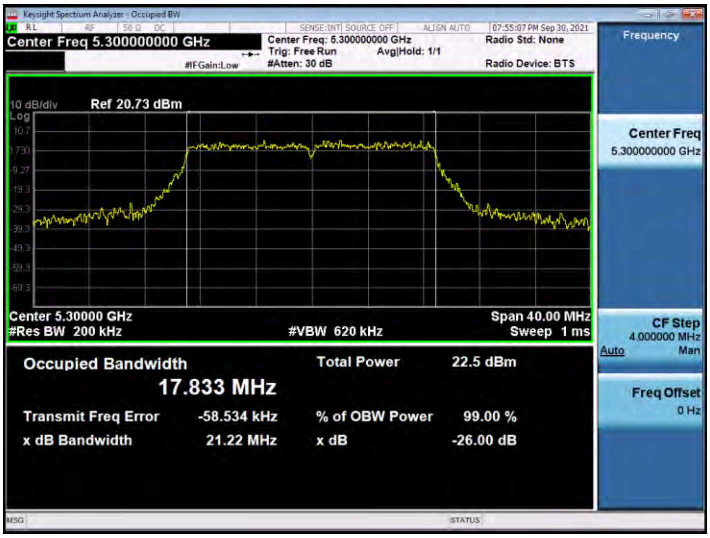
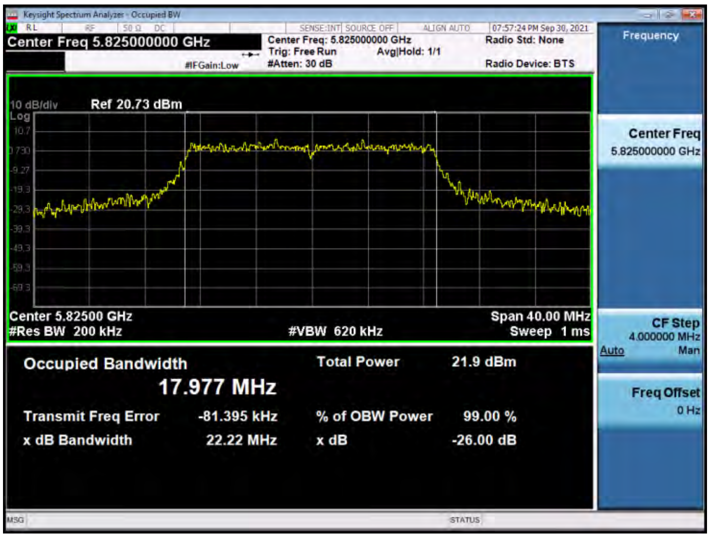
802.11a UNII 3 BAND 26 dB Bandwidth (CH 165)



▣ Test Plots(802.11n(HT20))

Note:

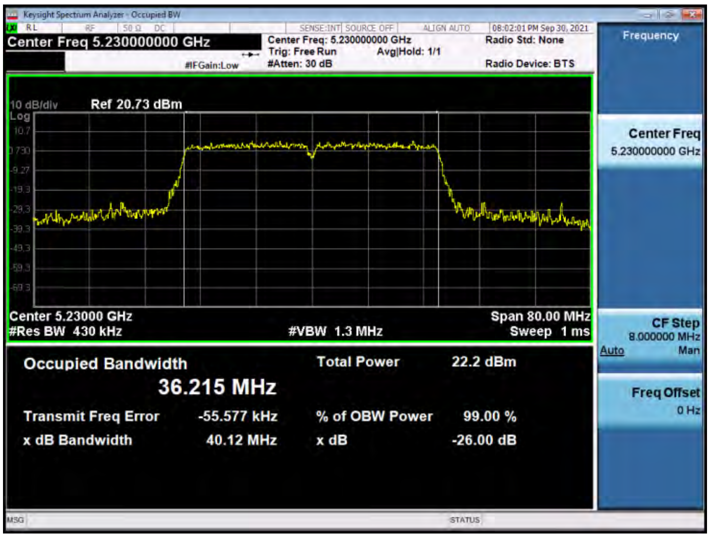
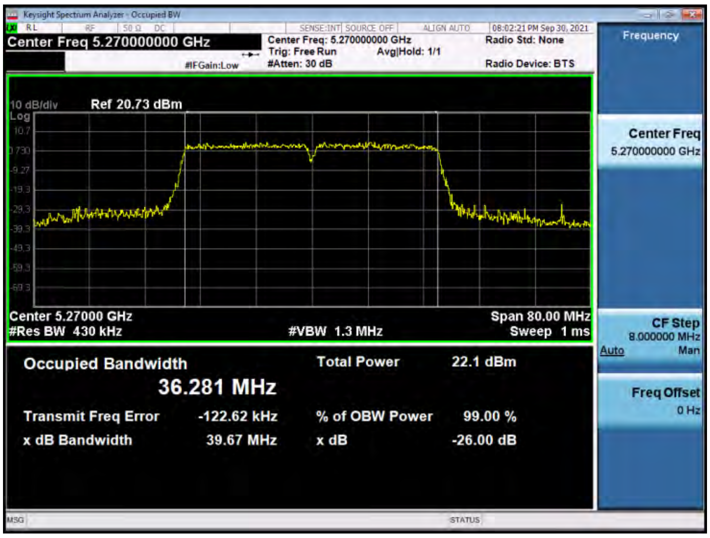
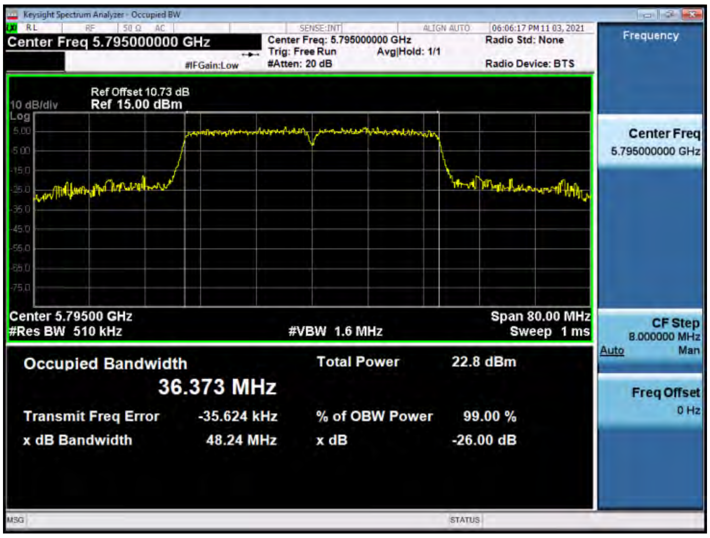
In order to simplify the report, attached plots were only the most wide channel.

802.11n_HT20 UNII 1 BAND 26 dB Bandwidth(CH 40)	802.11n_HT20 UNII 2A BAND 26 dB Bandwidth(CH 60)
	
802.11n_HT20 UNII 2C BAND 26 dB Bandwidth(CH 144)	**802.11n_HT20 UNII 3 BAND 26 dB Bandwidth(CH 165)**
	

▣ Test Plots(802.11n(HT40))

Note:

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

<table>
<tr><th>802.11n_HT40 UNII 1 BAND 26 dB Bandwidth(CH 46)</th><th>802.11n_HT40 UNII 2A BAND 26 dB Bandwidth (CH 54)</th></tr>
<tr><td>
</td><td>
</td></tr>
<tr><th>802.11n_HT40 UNII 2C BAND 26 dB Bandwidth(CH 118)</th><th>802.11n_HT40 UNII 3 BAND 26 dB Bandwidth (CH 159)</th></tr>
<tr><td>
</td><td>
</td></tr>
</table>

▣ Test Plots(802.11ac(VHT20))

Note:

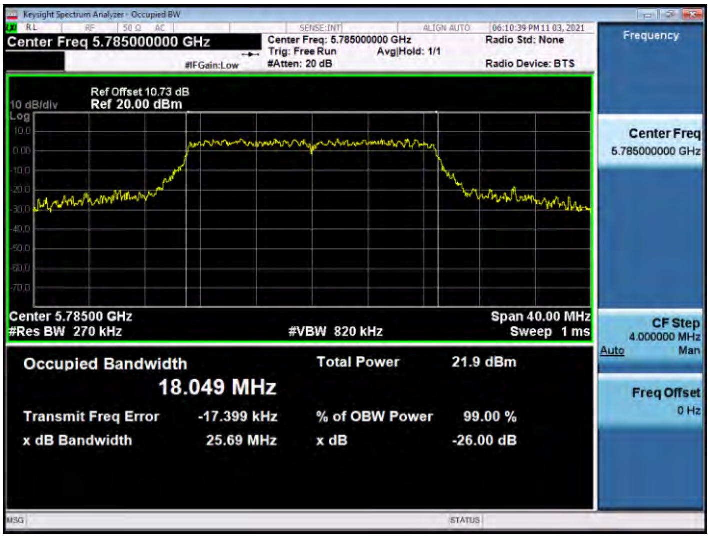
In order to simplify the report, attached plots were only the most wide channel.

802.11ac_VHT20 UNII 1 BAND 26 dB Bandwidth(CH 36)

802.11ac_VHT20 UNII 2A BAND 26 dB Bandwidth(CH 64)

802.11ac_VHT20 UNII 2C BAND 26 dB Bandwidth(CH 144)

802.11ac_VHT20 UNII 3 BAND 26 dB Bandwidth(CH 157)



▣ Test Plots(802.11ac(VHT40))

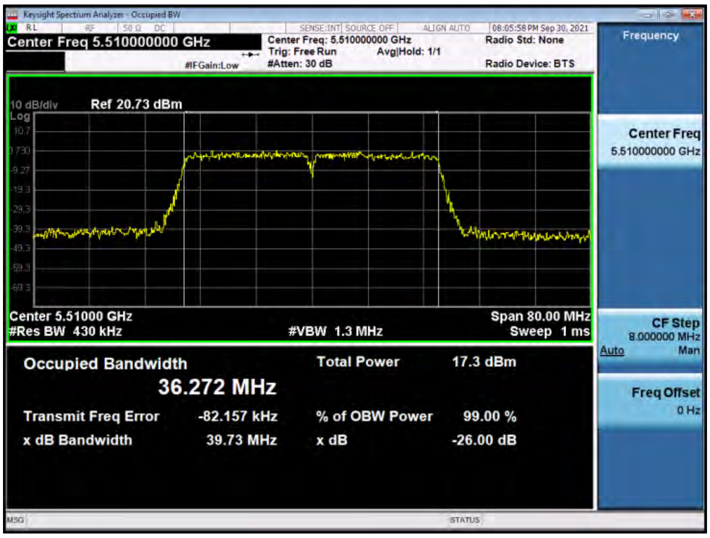
Note:

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

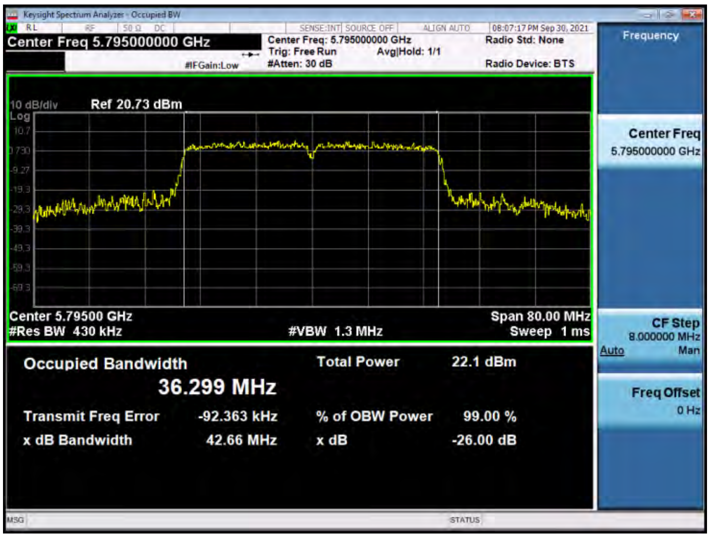
802.11ac_VHT40 UNII 1 BAND 26 dB Bandwidth(CH 38)

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

802.11ac_VHT40 UNII 2C BAND 26 dB Bandwidth(CH 102)



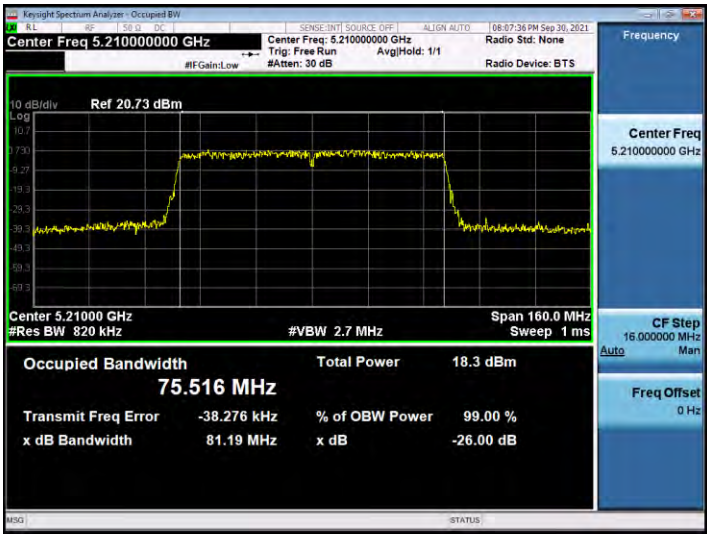
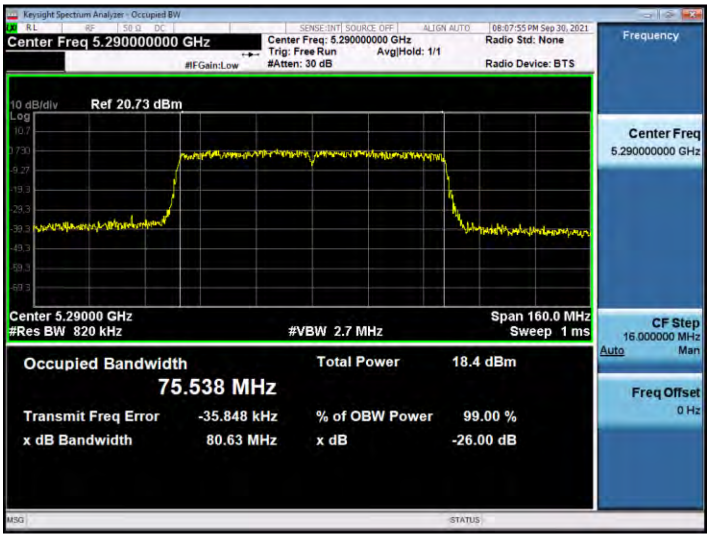
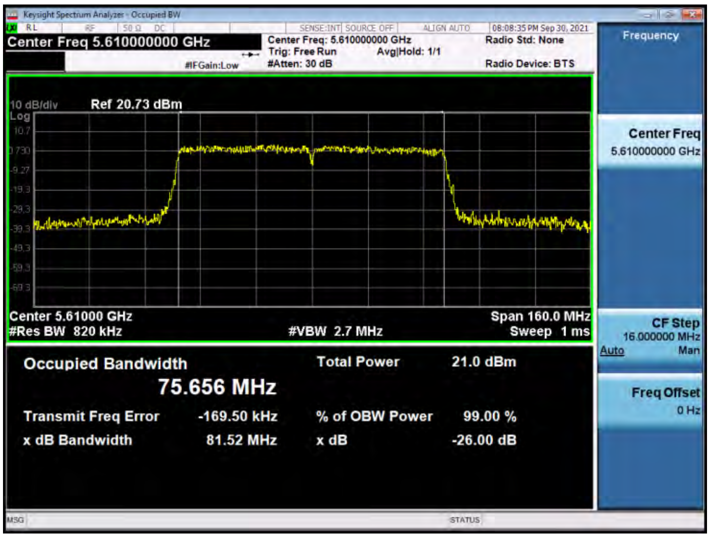
802.11ac_VHT40 UNII 3 BAND 26 dB Bandwidth (CH 159)



▣ Test Plots(802.11ac(VHT80))

Note:

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

<table>
<tr><th>802.11ac_VHT80 UNII 1 BAND 26 dB Bandwidth(CH 42)</th><th>802.11ac_VHT80 UNII 2A BAND 26 dB Bandwidth (CH 58)</th></tr>
<tr><td>
</td><td>
</td></tr>
<tr><th>802.11ac_VHT80 UNII 2C BAND 26 dB Bandwidth(CH 122)</th><th>802.11ac_VHT80 UNII 3 BAND 26 dB Bandwidth (CH 155)</th></tr>
<tr><td>
</td><td>
</td></tr>
</table>

10.3 6 dB BANDWIDTH

[Ant.1]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.35	> 0.5	Pass
5785	157	16.37	> 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	17.58	> 0.5	Pass
5785	157	17.64	> 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	36.09	> 0.5	Pass
5795	159	36.27	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.62	> 0.5	Pass
5785	157	17.59	> 0.5	Pass
5825	165	17.75	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.36	> 0.5	Pass
5795	159	35.84	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	76.05	> 0.5	Pass

[Ant.2]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.38	> 0.5	Pass
5785	157	16.37	> 0.5	Pass
5825	165	16.36	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.32	> 0.5	Pass
5785	157	17.76	> 0.5	Pass
5825	165	17.32	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.81	> 0.5	Pass
5795	159	36.35	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.61	> 0.5	Pass
5785	157	17.57	> 0.5	Pass
5825	165	17.56	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.76	> 0.5	Pass
5795	159	35.42	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.33	> 0.5	Pass

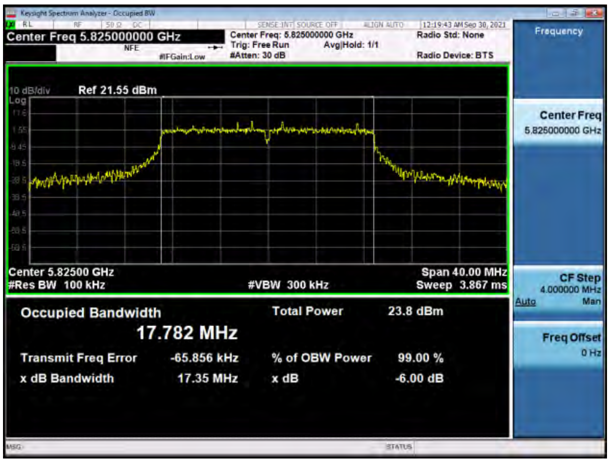
[Ant.1]

▣ Test Plots

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

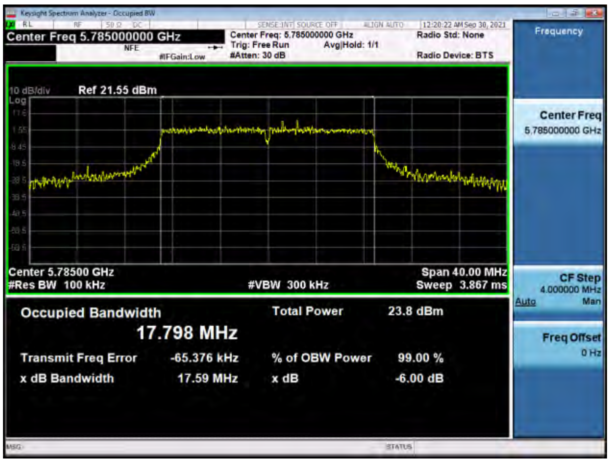
802.11a (CH.149)

802.11n(HT20) (CH.165)



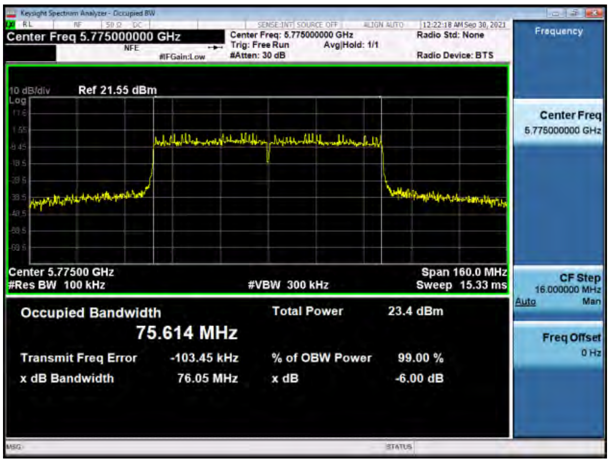
802.11n(HT40) (CH.151)

802.11ac(VHT20) (CH.157)



802.11ac(VHT40) (CH.159)

802.11ac(VHT80) (CH.155)

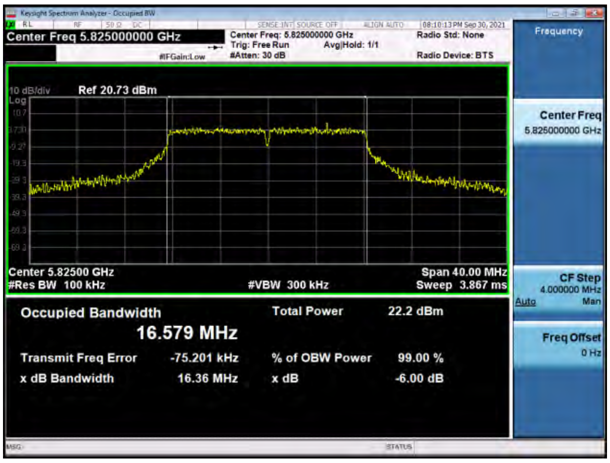


[Ant.2]

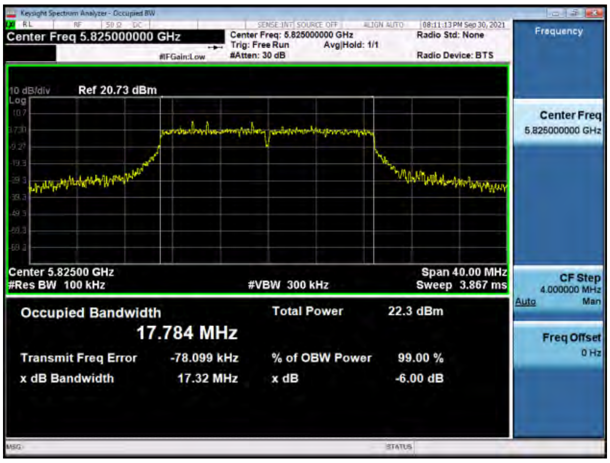
▣ **Test Plots**

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

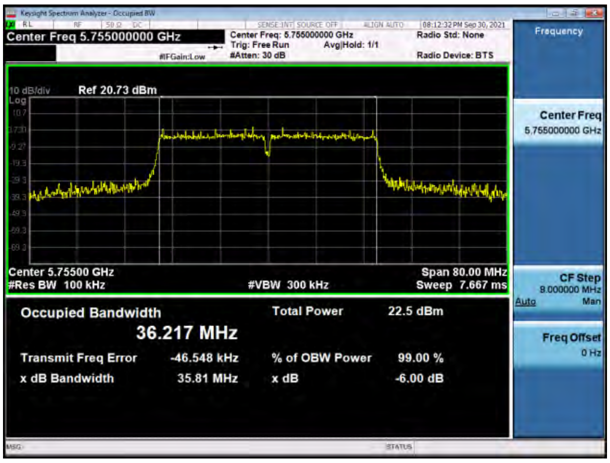
802.11a (CH.165)



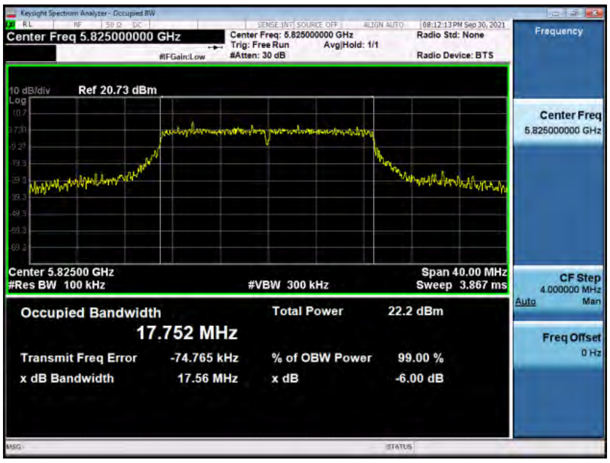
802.11n(HT20) (CH.165)



802.11n(HT40) (CH.151)

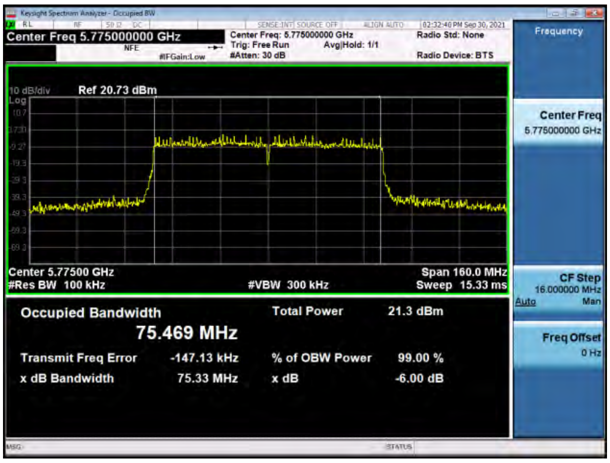


802.11ac(VHT20) (CH.165)



802.11ac(VHT40) (CH.159)

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.

[Ant.1]

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	17	16.55	0.298	16.85	23.98	6M
5200	40	17	16.54	0.298	16.84	23.98	6M
5240	48	17	16.58	0.298	16.88	23.98	6M
5260	52	17	16.66	0.298	16.96	23.98	6M
5300	60	17	16.64	0.298	16.94	23.98	6M
5320	64	16	15.61	0.298	15.91	23.98	6M
5500	100	16	14.67	0.298	14.97	23.98	6M
5600	120	17	15.77	0.298	16.07	23.98	6M
5720	144	17	16.98	0.298	17.28	23.98	6M
5745	149	17	17.22	0.298	17.52	30.00	6M
5785	157	17	17.44	0.298	17.74	30.00	6M
5825	165	17	17.38	0.298	17.68	30.00	6M

802.11n(20 MHz) 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	17	16.68	0.318	17.00	23.98	MCS0
5200	40	17	16.79	0.318	17.11	23.98	MCS0
5240	48	17	16.75	0.318	17.07	23.98	MCS0
5260	52	17	16.85	0.318	17.17	23.98	MCS0
5300	60	17	16.76	0.318	17.08	23.98	MCS0
5320	64	16	15.65	0.318	15.97	23.98	MCS0
5500	100	15	14.96	0.318	15.28	23.98	MCS0
5600	120	17	15.88	0.318	16.20	23.98	MCS0
5720	144	17	16.89	0.318	17.21	23.98	MCS0
5745	149	17	17.20	0.318	17.52	30.00	MCS0
5785	157	17	17.38	0.318	17.70	30.00	MCS0
5825	165	17	17.30	0.318	17.62	30.00	MCS0

802.11n(40 MHz) 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	12	11.84	0.617	12.46	23.98	MCS0
5230	46	16	16.21	0.617	16.83	23.98	MCS0
5270	54	16	16.21	0.617	16.83	23.98	MCS0
5310	62	12	11.86	0.617	12.48	23.98	MCS0
5510	102	12	10.61	0.617	11.23	23.98	MCS0
5590	118	16	14.73	0.617	15.35	23.98	MCS0
5710	142	16	16.28	0.617	16.90	23.98	MCS0
5755	151	16	16.35	0.617	16.97	30.00	MCS0
5795	159	16	16.24	0.617	16.86	30.00	MCS0

802.11ac(20 MHz) 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	17	16.52	0.316	16.84	23.98	MCS0
5200	40	17	16.66	0.316	16.98	23.98	MCS0
5240	48	17	16.64	0.316	16.96	23.98	MCS0
5260	52	17	16.89	0.316	17.21	23.98	MCS0
5300	60	17	16.85	0.316	17.17	23.98	MCS0
5320	64	16	15.66	0.316	15.98	23.98	MCS0
5500	100	15	14.75	0.316	15.07	23.98	MCS0
5600	120	17	15.81	0.316	16.13	23.98	MCS0
5720	144	17	17.06	0.316	17.38	23.98	MCS0
5745	149	17	17.36	0.316	17.68	30.00	MCS0
5785	157	17	17.45	0.316	17.77	30.00	MCS0
5825	165	17	17.44	0.316	17.76	30.00	MCS0

802.11ac(40 MHz) 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	12	11.91	0.584	12.49	23.98	MCS0
5230	46	16	16.29	0.584	16.87	23.98	MCS0
5270	54	16	16.25	0.584	16.83	23.98	MCS0
5310	62	12	11.88	0.584	12.46	23.98	MCS0
5510	102	12	10.52	0.584	11.10	23.98	MCS0
5590	118	16	14.79	0.584	15.37	23.98	MCS0
5710	142	16	16.35	0.584	16.93	23.98	MCS0
5755	151	16	16.32	0.584	16.90	30.00	MCS0
5795	159	16	16.28	0.584	16.86	30.00	MCS0

802.11ac(80 MHz) 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	12	11.45	1.165	12.62	23.98	MCS0
5290	58	12	11.40	1.165	12.57	23.98	MCS0
5530	106	12	9.92	1.165	11.09	23.98	MCS0
5610	122	15	13.34	1.165	14.51	23.98	MCS0
5690	138	15	14.42	1.165	15.59	23.98	MCS0
5775	155	15	14.78	1.165	15.95	30.00	MCS0

[Ant.2]

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	17	16.98	0.298	17.28	23.98	6M
5200	40	17	17.08	0.298	17.38	23.98	6M
5240	48	17	17.13	0.298	17.43	23.98	6M
5260	52	17	17.08	0.298	17.38	23.98	6M
5300	60	17	16.94	0.298	17.24	23.98	6M
5320	64	16	15.70	0.298	16.00	23.98	6M
5500	100	16	15.91	0.298	16.21	23.98	6M
5600	120	17	16.84	0.298	17.14	23.98	6M
5720	144	17	16.99	0.298	17.29	23.98	6M
5745	149	17	17.09	0.298	17.39	30.00	6M
5785	157	17	17.12	0.298	17.42	30.00	6M
5825	165	17	16.99	0.298	17.29	30.00	6M

802.11n(20 MHz) 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	17	16.88	0.318	17.20	23.98	MCS0
5200	40	17	16.84	0.318	17.16	23.98	MCS0
5240	48	17	16.95	0.318	17.27	23.98	MCS0
5260	52	17	17.08	0.318	17.40	23.98	MCS0
5300	60	17	16.90	0.318	17.22	23.98	MCS0
5320	64	16	15.65	0.318	15.97	23.98	MCS0
5500	100	15	14.78	0.318	15.10	23.98	MCS0
5600	120	17	16.75	0.318	17.07	23.98	MCS0
5720	144	17	16.94	0.318	17.26	23.98	MCS0
5745	149	17	17.05	0.318	17.37	30.00	MCS0
5785	157	17	17.02	0.318	17.34	30.00	MCS0
5825	165	17	16.89	0.318	17.21	30.00	MCS0

802.11n(40 MHz) 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	12	11.74	0.617	12.36	23.98	MCS0
5230	46	16	16.32	0.617	16.94	23.98	MCS0
5270	54	16	16.26	0.617	16.88	23.98	MCS0
5310	62	12	11.48	0.617	12.10	23.98	MCS0
5510	102	12	11.77	0.617	12.39	23.98	MCS0
5590	118	16	15.68	0.617	16.30	23.98	MCS0
5710	142	16	16.34	0.617	16.96	23.98	MCS0
5755	151	16	16.34	0.617	16.96	30.00	MCS0
5795	159	16	16.28	0.617	16.90	30.00	MCS0

802.11ac(20 MHz) 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	17	16.94	0.316	17.26	23.98	MCS0
5200	40	17	16.85	0.316	17.17	23.98	MCS0
5240	48	17	16.79	0.316	17.11	23.98	MCS0
5260	52	17	17.08	0.316	17.40	23.98	MCS0
5300	60	17	16.80	0.316	17.12	23.98	MCS0
5320	64	16	15.65	0.316	15.97	23.98	MCS0
5500	100	15	14.92	0.316	15.24	23.98	MCS0
5600	120	17	16.88	0.316	17.20	23.98	MCS0
5720	144	17	16.95	0.316	17.27	23.98	MCS0
5745	149	17	17.02	0.316	17.34	30.00	MCS0
5785	157	17	17.05	0.316	17.37	30.00	MCS0
5825	165	17	16.94	0.316	17.26	30.00	MCS0

802.11ac(40 MHz) 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	12	11.77	0.584	12.35	23.98	MCS0
5230	46	16	16.24	0.584	16.82	23.98	MCS0
5270	54	16	16.37	0.584	16.95	23.98	MCS0
5310	62	12	11.60	0.584	12.18	23.98	MCS0
5510	102	12	11.67	0.584	12.25	23.98	MCS0
5590	118	16	15.69	0.584	16.27	23.98	MCS0
5710	142	16	16.30	0.584	16.88	23.98	MCS0
5755	151	16	16.33	0.584	16.91	30.00	MCS0
5795	159	16	16.20	0.584	16.78	30.00	MCS0

802.11ac(80 MHz) 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	12	11.25	1.165	12.42	23.98	MCS0
5290	58	12	11.35	1.165	12.52	23.98	MCS0
5530	106	12	11.19	1.165	12.36	23.98	MCS0
5610	122	15	14.18	1.165	15.35	23.98	MCS0
5690	138	15	14.59	1.165	15.76	23.98	MCS0
5775	155	15	14.60	1.165	15.77	30.00	MCS0

[MIMO]

802.11a Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	17	16.85	17.28	20.08	23.98	6M
5200	40	17	16.84	17.38	20.13	23.98	6M
5240	48	17	16.88	17.43	20.17	23.98	6M
5260	52	17	16.96	17.38	20.18	23.98	6M
5300	60	17	16.94	17.24	20.10	23.98	6M
5320	64	16	15.91	16.00	18.96	23.98	6M
5500	100	16	14.97	16.21	18.64	23.98	6M
5600	120	17	16.07	17.14	19.65	23.98	6M
5720	144	17	17.28	17.29	20.29	23.98	6M
5745	149	17	17.52	17.39	20.46	30.00	6M
5785	157	17	17.74	17.42	20.59	30.00	6M
5825	165	17	17.68	17.29	20.50	30.00	6M

802.11n(20 MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	17	17.00	17.20	20.11	23.98	MCS0
5200	40	17	17.11	17.16	20.14	23.98	MCS0
5240	48	17	17.07	17.27	20.18	23.98	MCS0
5260	52	17	17.17	17.40	20.30	23.98	MCS0
5300	60	17	17.08	17.22	20.16	23.98	MCS0
5320	64	16	15.97	15.97	18.98	23.98	MCS0
5500	100	15	15.28	15.10	18.20	23.98	MCS0
5600	120	17	16.20	17.07	19.67	23.98	MCS0
5720	144	17	17.21	17.26	20.24	23.98	MCS0
5745	149	17	17.52	17.37	20.45	30.00	MCS0
5785	157	17	17.70	17.34	20.53	30.00	MCS0
5825	165	17	17.62	17.21	20.43	30.00	MCS0

802.11n(40 MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5190	38	12	12.46	12.36	15.42	23.98	MCS0
5230	46	16	16.83	16.94	19.89	23.98	MCS0
5270	54	16	16.83	16.88	19.86	23.98	MCS0
5310	62	12	12.48	12.10	15.30	23.98	MCS0
5510	102	12	11.23	12.39	14.86	23.98	MCS0
5590	118	16	15.35	16.30	18.86	23.98	MCS0
5710	142	16	16.90	16.96	19.94	23.98	MCS0
5755	151	16	16.97	16.96	19.97	30.00	MCS0
5795	159	16	16.86	16.90	19.89	30.00	MCS0

802.11ac(20 MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	17	16.84	17.26	20.18	23.98	MCS0
5200	40	17	16.98	17.17	20.08	23.98	MCS0
5240	48	17	16.96	17.11	20.04	23.98	MCS0
5260	52	17	17.21	17.40	20.31	23.98	MCS0
5300	60	17	17.17	17.12	20.15	23.98	MCS0
5320	64	16	15.98	15.97	18.98	23.98	MCS0
5500	100	15	15.07	15.24	18.16	23.98	MCS0
5600	120	17	16.13	17.20	19.70	23.98	MCS0
5720	144	17	17.38	17.27	20.33	23.98	MCS0
5745	149	17	17.68	17.34	20.52	30.00	MCS0
5785	157	17	17.77	17.37	20.58	30.00	MCS0
5825	165	17	17.76	17.26	20.52	30.00	MCS0

802.11ac(40 MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5190	38	12	12.49	12.35	15.43	23.98	MCS0
5230	46	16	16.87	16.82	19.86	23.98	MCS0
5270	54	16	16.83	16.95	19.90	23.98	MCS0
5310	62	12	12.46	12.18	15.34	23.98	MCS0
5510	102	12	11.10	12.25	14.73	23.98	MCS0
5590	118	16	15.37	16.27	18.86	23.98	MCS0
5710	142	16	16.93	16.88	19.92	23.98	MCS0
5755	151	16	16.90	16.91	19.92	30.00	MCS0
5795	159	16	16.86	16.78	19.83	30.00	MCS0

802.11ac(80 MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5210	42	12	12.62	12.42	15.53	23.98	MCS0
5290	58	12	12.57	12.52	15.55	23.98	MCS0
5530	106	12	11.09	12.36	14.78	23.98	MCS0
5610	122	15	14.51	15.35	17.96	23.98	MCS0
5690	138	15	15.59	15.76	18.68	23.98	MCS0
5775	155	15	15.95	15.77	18.87	30.00	MCS0

10.5 POWER SPECTRAL DENSITY

[Ant.1]

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase Datarate (Mbps)	Limit
Frequency [MHz]	Channel No.					
5180	36	6.070	0.298	6.368	6M	11 dBm/MHz
5200	40	5.973	0.298	6.271	6M	
5240	48	6.415	0.298	6.713	6M	
5260	52	6.264	0.298	6.562	6M	
5300	60	6.344	0.298	6.642	6M	
5320	64	5.342	0.298	5.640	6M	
5500	100	5.110	0.298	5.408	6M	
5600	120	6.513	0.298	6.811	6M	
5720	144	6.903	0.298	7.201	6M	
5745	149	4.086	0.298	4.384	6M	30 dBm/500 kHz
5785	157	3.963	0.298	4.261	6M	
5825	165	4.583	0.298	4.881	6M	

802.11n(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	5.932	0.318	6.250	MCS0	11 dBm/MHz
5200	40	5.868	0.318	6.186	MCS0	
5240	48	5.975	0.318	6.293	MCS0	
5260	52	6.022	0.318	6.340	MCS0	
5300	60	6.066	0.318	6.384	MCS0	
5320	64	4.939	0.318	5.257	MCS0	
5500	100	5.163	0.318	4.481	MCS0	
5600	120	6.102	0.318	6.420	MCS0	
5720	144	6.571	0.318	6.889	MCS0	
5745	149	3.684	0.318	4.002	MCS0	30 dBm/500 kHz
5785	157	3.822	0.318	4.140	MCS0	
5825	165	4.004	0.318	4.322	MCS0	

802.11n(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-2.003	0.617	-1.386	MCS0	11 dBm/MHz
5230	46	2.289	0.617	2.906	MCS0	
5270	54	2.087	0.617	2.704	MCS0	
5310	62	-2.008	0.617	-1.391	MCS0	
5510	102	-2.078	0.617	-1.461	MCS0	
5590	118	2.229	0.617	2.846	MCS0	
5710	142	2.754	0.617	3.371	MCS0	
5755	151	-0.143	0.617	0.474	MCS0	30 dBm /500 kHz
5795	159	0.099	0.617	0.716	MCS0	

802.11ac(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	5.717	0.316	6.033	MCS0	11 dBm/MHz
5200	40	5.767	0.316	6.083	MCS0	
5240	48	6.104	0.316	6.420	MCS0	
5260	52	6.177	0.316	6.493	MCS0	
5300	60	6.070	0.316	6.386	MCS0	
5320	64	4.997	0.316	5.313	MCS0	
5500	100	5.349	0.316	4.665	MCS0	
5600	120	6.214	0.316	6.530	MCS0	
5720	144	6.493	0.316	6.809	MCS0	
5745	149	3.723	0.316	4.039	MCS0	30 dBm/500 kHz
5785	157	3.839	0.316	4.155	MCS0	
5825	165	3.894	0.316	4.210	MCS0	

802.11ac(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-2.110	0.584	-1.526	MCS0	11 dBm/MHz
5230	46	2.357	0.584	2.941	MCS0	
5270	54	2.213	0.584	2.797	MCS0	
5310	62	-1.790	0.584	-1.206	MCS0	
5510	102	-2.138	0.584	-1.554	MCS0	
5590	118	2.330	0.584	2.914	MCS0	
5710	142	2.800	0.584	3.384	MCS0	
5755	151	-0.011	0.584	0.573	MCS0	30 dBm/500 kHz
5795	159	-0.135	0.584	0.449	MCS0	

802.11ac(80 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5210	42	-5.397	1.165	-4.232	MCS0	11 dBm/MHz
5290	58	-5.085	1.165	-3.920	MCS0	
5530	106	-5.459	1.165	-4.294	MCS0	
5610	122	-2.356	1.165	-1.191	MCS0	
5690	138	-1.733	1.165	-0.568	MCS0	
5775	155	-4.791	1.165	-3.626	MCS0	30 dBm/500 kHz

[Ant.2]

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase Datarate (Mbps)	Limit
Frequency [MHz]	Channel No.					
5180	36	5.232	0.298	5.530	6M	11 dBm/MHz
5200	40	4.896	0.298	5.194	6M	
5240	48	5.136	0.298	5.434	6M	
5260	52	4.523	0.298	4.821	6M	
5300	60	5.023	0.298	5.321	6M	
5320	64	3.805	0.298	4.103	6M	
5500	100	3.907	0.298	4.205	6M	
5600	120	5.644	0.298	5.942	6M	
5720	144	5.353	0.298	5.651	6M	
5745	149	2.689	0.298	2.987	6M	30 dBm/500 kHz
5785	157	2.717	0.298	3.015	6M	
5825	165	2.791	0.298	3.089	6M	

802.11n(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	4.587	0.318	4.905	MCS0	11 dBm/MHz
5200	40	4.693	0.318	5.011	MCS0	
5240	48	4.809	0.318	5.127	MCS0	
5260	52	5.127	0.318	5.445	MCS0	
5300	60	4.802	0.318	5.120	MCS0	
5320	64	3.780	0.318	4.098	MCS0	
5500	100	3.771	0.318	3.088	MCS0	
5600	120	4.900	0.318	5.218	MCS0	
5720	144	4.911	0.318	5.229	MCS0	
5745	149	2.167	0.318	2.485	MCS0	30 dBm/500 kHz
5785	157	2.437	0.318	2.755	MCS0	
5825	165	3.079	0.318	3.397	MCS0	

802.11n(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-3.557	0.617	-2.940	MCS0	11 dBm/MHz
5230	46	0.845	0.617	1.462	MCS0	
5270	54	0.983	0.617	1.600	MCS0	
5310	62	-3.695	0.617	-3.078	MCS0	
5510	102	-3.320	0.617	-2.703	MCS0	
5590	118	0.955	0.617	1.572	MCS0	
5710	142	1.273	0.617	1.890	MCS0	
5755	151	-1.466	0.617	-0.849	MCS0	30 dBm/500 kHz
5795	159	-1.314	0.617	-0.697	MCS0	

802.11ac(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	4.999	0.316	5.315	MCS0	11 dBm/MHz
5200	40	4.565	0.316	4.881	MCS0	
5240	48	4.663	0.316	4.979	MCS0	
5260	52	4.880	0.316	5.196	MCS0	
5300	60	4.971	0.316	5.287	MCS0	
5320	64	3.554	0.316	3.870	MCS0	
5500	100	3.746	0.316	3.046	MCS0	
5600	120	4.960	0.316	5.276	MCS0	
5720	144	5.182	0.316	5.498	MCS0	
5745	149	2.199	0.316	2.515	MCS0	30 dBm/500 kHz
5785	157	2.485	0.316	2.801	MCS0	
5825	165	2.735	0.316	3.051	MCS0	

802.11ac(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-3.372	0.584	-2.788	MCS0	11 dBm/MHz
5230	46	1.172	0.584	1.756	MCS0	
5270	54	1.328	0.584	1.912	MCS0	
5310	62	-3.861	0.584	-3.277	MCS0	
5510	102	-3.514	0.584	-2.930	MCS0	
5590	118	1.046	0.584	1.630	MCS0	
5710	142	1.261	0.584	1.845	MCS0	
5755	151	-1.325	0.584	-0.741	MCS0	30 dBm/500 kHz
5795	159	-1.285	0.584	-0.701	MCS0	

802.11ac(80 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5210	42	-6.929	1.165	-5.764	MCS0	11 dBm/MHz
5290	58	-6.771	1.165	-5.606	MCS0	
5530	106	-7.037	1.165	-5.872	MCS0	
5610	122	-3.663	1.165	-2.498	MCS0	
5690	138	-3.526	1.165	-2.361	MCS0	
5775	155	-6.196	1.165	-5.031	MCS0	30 dBm/500 kHz

[MIMO]

802.11a Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Worstcase Datarate (Mbps)	Limit
Frequency [MHz]	Channel No.					
5180	36	6.368	5.530	8.979	6M	11 dBm/MHz
5200	40	6.271	5.194	8.776	6M	
5240	48	6.713	5.434	9.130	6M	
5260	52	6.562	4.821	8.788	6M	
5300	60	6.642	5.321	9.041	6M	
5320	64	5.640	4.103	7.949	6M	
5500	100	5.408	4.205	7.858	6M	
5600	120	6.811	5.942	9.408	6M	
5720	144	7.201	5.651	9.505	6M	
5745	149	4.384	2.987	6.751	6M	30 dBm/500 kHz
5785	157	4.261	3.015	6.692	6M	
5825	165	4.881	3.089	7.087	6M	

802.11n(20 MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	6.250	4.905	8.640	MCS0	11 dBm/MHz
5200	40	6.186	5.011	8.649	MCS0	
5240	48	6.293	5.127	8.760	MCS0	
5260	52	6.340	5.445	8.926	MCS0	
5300	60	6.384	5.120	8.808	MCS0	
5320	64	5.257	4.098	7.727	MCS0	
5500	100	4.481	3.088	6.850	MCS0	
5600	120	6.420	5.218	8.871	MCS0	
5720	144	6.889	5.229	9.148	MCS0	
5745	149	4.002	2.485	6.320	MCS0	30 dBm/500 kHz
5785	157	4.140	2.755	6.513	MCS0	
5825	165	4.322	3.397	6.895	MCS0	

802.11n(40 MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-1.386	-2.940	0.916	MCS0	11 dBm/MHz
5230	46	2.906	1.462	5.254	MCS0	
5270	54	2.704	1.600	5.197	MCS0	
5310	62	-1.391	-3.078	0.857	MCS0	
5510	102	-1.461	-2.703	0.973	MCS0	
5590	118	2.846	1.572	5.266	MCS0	
5710	142	3.371	1.890	5.704	MCS0	
5755	151	0.474	-0.849	2.873	MCS0	30 dBm/500 kHz
5795	159	0.716	-0.697	3.077	MCS0	

802.11ac(20 MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	6.033	5.315	8.699	MCS0	11 dBm/MHz
5200	40	6.083	4.881	8.534	MCS0	
5240	48	6.420	4.979	8.769	MCS0	
5260	52	6.493	5.196	8.903	MCS0	
5300	60	6.386	5.287	8.881	MCS0	
5320	64	5.313	3.870	7.661	MCS0	
5500	100	4.665	3.046	6.941	MCS0	
5600	120	6.530	5.276	8.958	MCS0	
5720	144	6.809	5.498	9.213	MCS0	
5745	149	4.039	2.515	6.354	MCS0	30 dBm/500 kHz
5785	157	4.155	2.801	6.541	MCS0	
5825	165	4.210	3.051	6.679	MCS0	

802.11ac(40 MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-1.526	-2.788	0.899	MCS0	11 dBm/MHz
5230	46	2.941	1.756	5.399	MCS0	
5270	54	2.797	1.912	5.387	MCS0	
5310	62	-1.206	-3.277	0.891	MCS0	
5510	102	-1.554	-2.930	0.823	MCS0	
5590	118	2.914	1.630	5.330	MCS0	
5710	142	3.384	1.845	5.693	MCS0	
5755	151	0.573	-0.741	2.976	MCS0	30 dBm/500 kHz
5795	159	0.449	-0.701	2.922	MCS0	

802.11ac(80 MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5210	42	-4.232	-5.764	-1.920	MCS0	11 dBm/MHz
5290	58	-3.920	-5.606	-1.671	MCS0	
5530	106	-4.294	-5.872	-2.001	MCS0	
5610	122	-1.191	-2.498	1.215	MCS0	
5690	138	-0.568	-2.361	1.638	MCS0	
5775	155	-3.626	-5.031	-1.262	MCS0	30 dBm/500 kHz

[Ant.1]

▣ 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. 144)

UNII 3 (Ch. 165)

▣ Test Plots(802.11n(HT20))

Note:

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

UNII 1 (Ch. 48)

UNII 2A (Ch. 60)

UNII 2C (Ch. 144)

UNII 3 (Ch. 165)

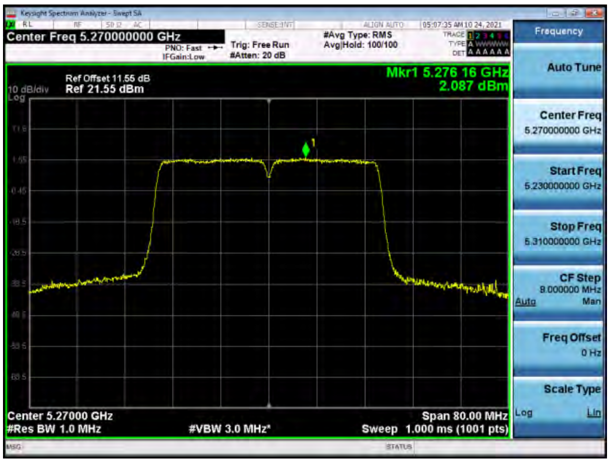
▣ Test Plots(802.11n(HT40))

Note:

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

UNII 1 (Ch. 46)

UNII 2A (Ch. 54)



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. 48)

UNII 2A (Ch. 52)

UNII 2C (Ch. 144)

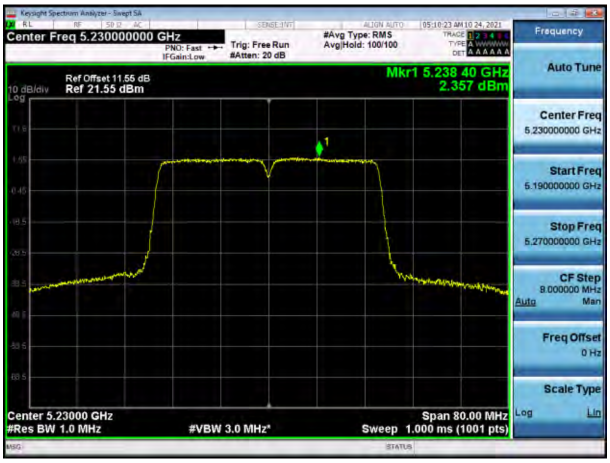
UNII 3 (Ch. 165)

▣ Test Plots(802.11ac(VHT40))

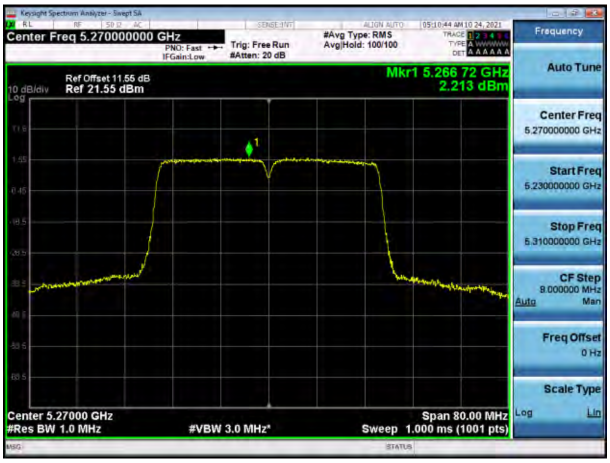
Note:

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

UNII 1 (Ch. 46)

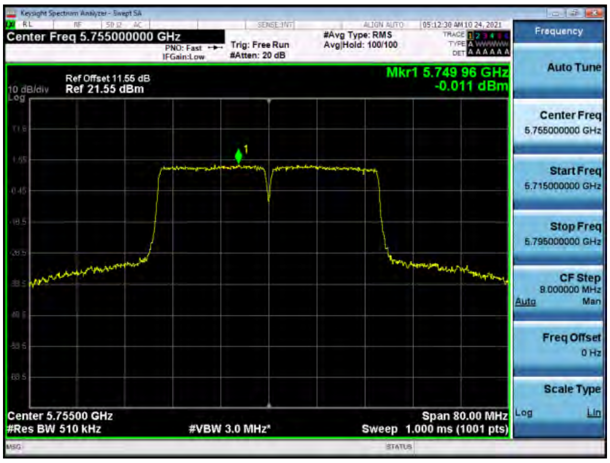


UNII 2A (Ch. 54)



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.

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<tr><td>
</td><td>
</td></tr>
<tr><th>UNII 2C (Ch. 138)</th><th>UNII 3 (Ch. 155)</th></tr>
<tr><td>
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</td></tr>
</table>

[Ant.2]

▣ Test Plots(802.11a)

<u>Note:</u>

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

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

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

▣ Test Plots(802.11n(HT20))

Note:

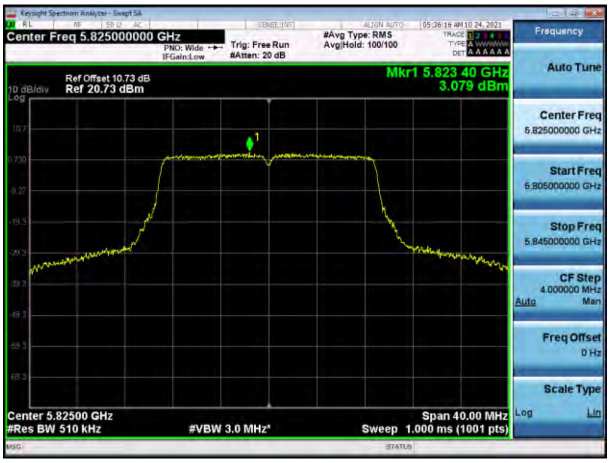
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 48)

UNII 2A (Ch. 52)

UNII 2C (Ch. 144)

UNII 3 (Ch. 165)



▣ Test Plots(802.11n(HT40))

Note:

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

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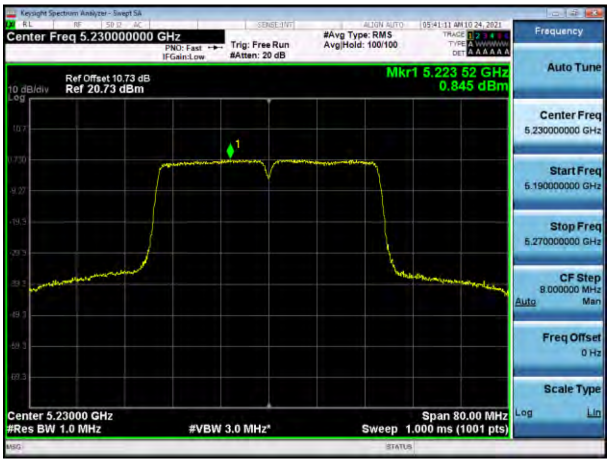
<tr><td>
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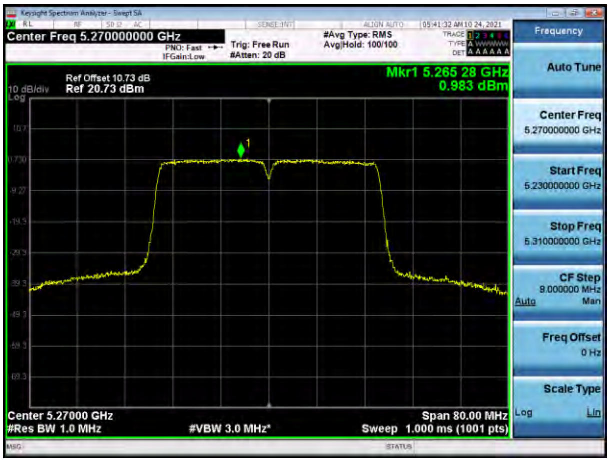
<td>
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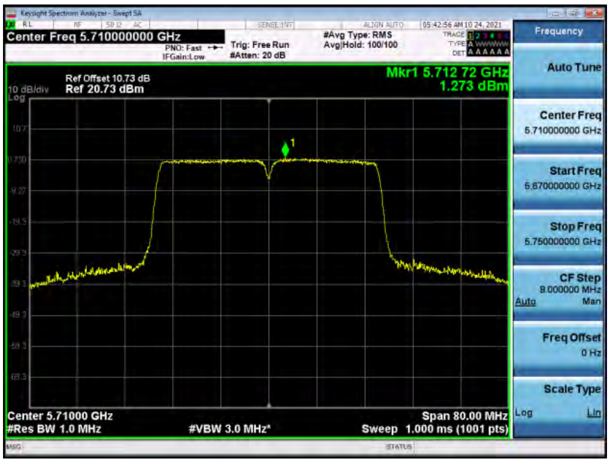
<table>
<tr><th>UNII 2C (Ch. 142)</th><th>UNII 3 (Ch. 159)</th></tr>
<tr><td>
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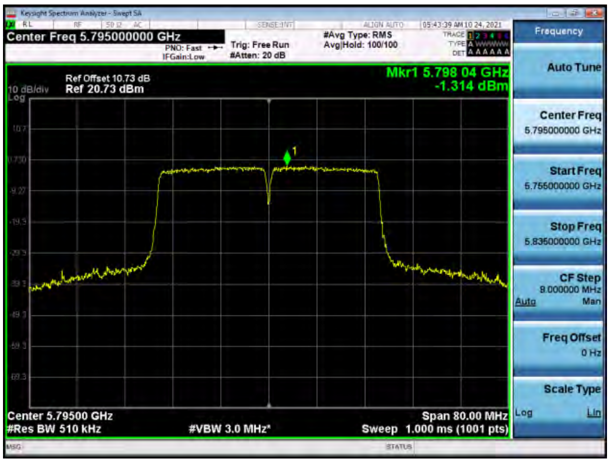
<td>
</td></tr>
</table>

▣ Test Plots(802.11ac(VHT20))

Note:

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

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

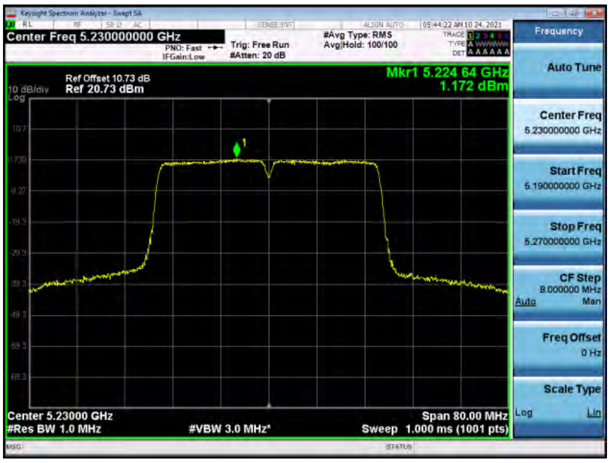
UNII 2C (Ch. 144)	UNII 3 (Ch. 165)
	

▣ Test Plots(802.11ac(VHT40))

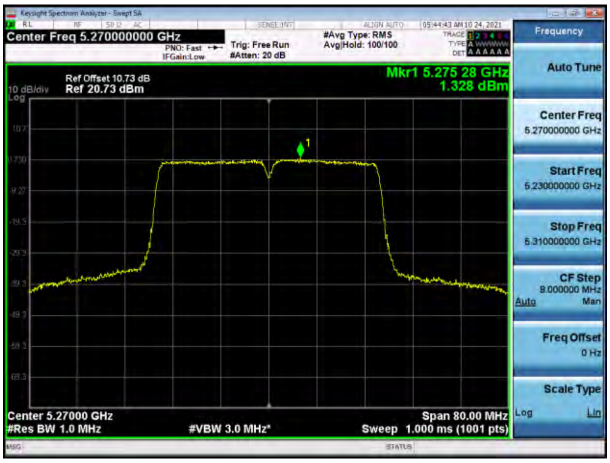
Note:

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

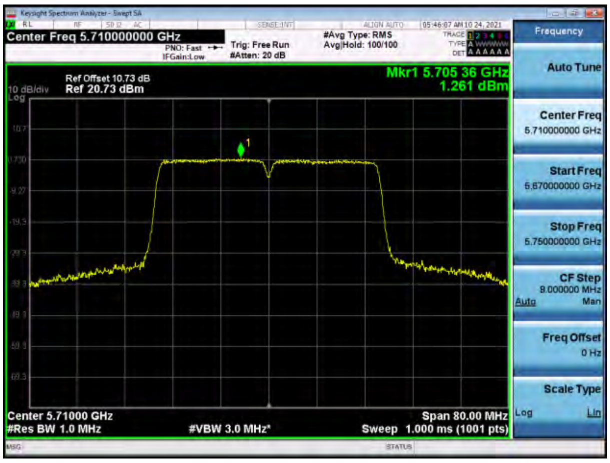
UNII 1 (Ch. 46)



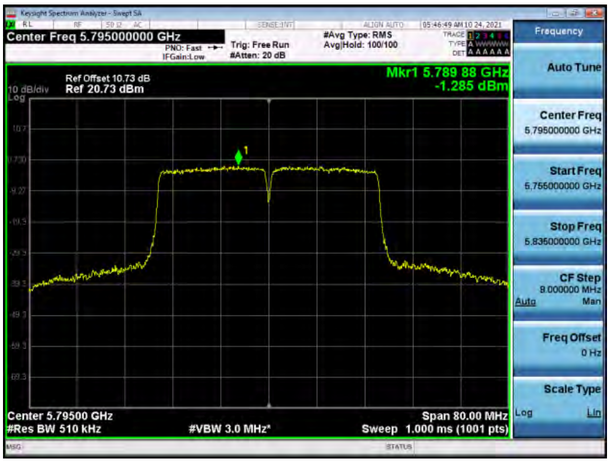
UNII 2A (Ch. 54)



UNII 2C (Ch. 142)



UNII 3 (Ch. 159)



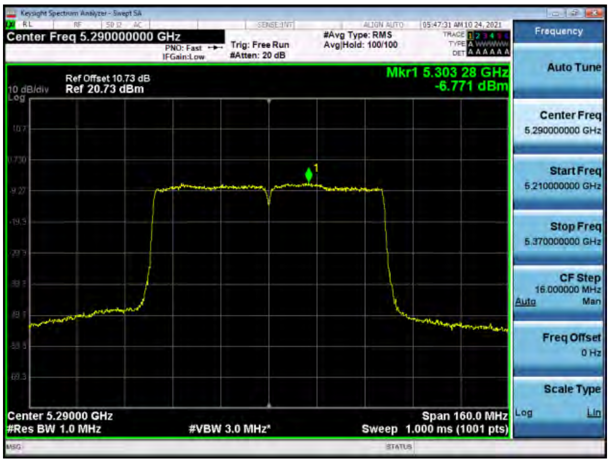
▣ Test Plots(802.11ac(VHT80))

Note:

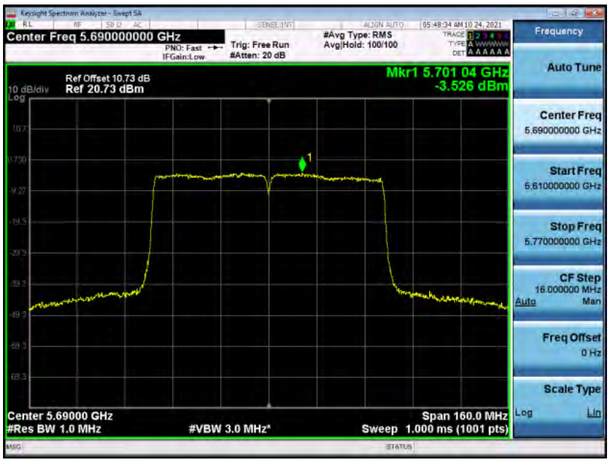
In order to simplify the report, attached plots were only channel of highest power.

UNII 1 (Ch. 42)

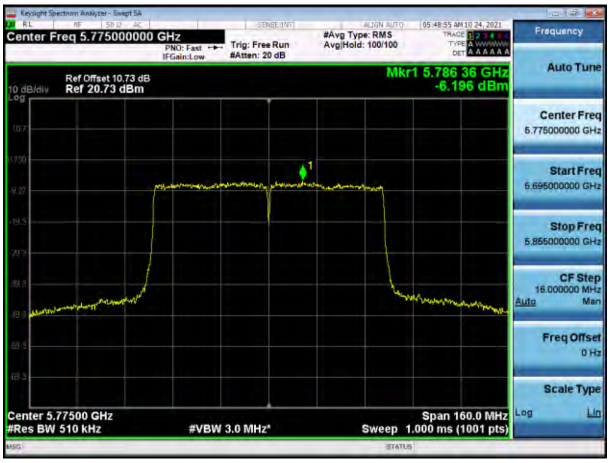
UNII 2A (Ch. 58)



UNII 2C (Ch. 138)



UNII 3 (Ch. 155)



10.6 FREQUENCY STABILITY.

10.6.1 80 MHz BW

[Ant.1]

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5210029.27	29.27
100%		-30	5210095.05	95.05
100%		-20	5210038.90	38.90
100%		-10	5210028.59	28.59
100%		0	5210089.26	89.26
100%		+10	5210096.68	96.68
100%		+30	5210027.15	27.15
100%		+40	5210051.82	51.82
100%		+50	5210059.11	59.11
Batt. Endpoint	3.40	+20	5210030.37	30.37

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5290049.08	49.08
100%		-30	5290058.95	58.95
100%		-20	5290075.16	75.16
100%		-10	5290032.80	32.8
100%		0	5290004.52	4.52
100%		+10	5290062.45	62.45
100%		+30	5290024.21	24.21
100%		+40	5290012.20	12.2
100%		+50	5290041.59	41.59
Batt. Endpoint	3.40	+20	5290024.77	24.77

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5530098.57	98.57
100%		-30	5530084.44	84.44
100%		-20	5530005.71	5.71
100%		-10	5530003.19	3.19
100%		0	5530071.91	71.91
100%		+10	5530079.07	79.07
100%		+30	5530073.71	73.71
100%		+40	5530049.51	49.51
100%		+50	5530066.14	66.14
Batt. Endpoint	3.40	+20	5530094.14	94.14

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5775029.28	29.28
100%		-30	5775098.16	98.16
100%		-20	5775032.08	32.08
100%		-10	5775023.91	23.91
100%		0	5775002.13	2.13
100%		+10	5775024.03	24.03
100%		+30	5775016.16	16.16
100%		+40	5775032.42	32.42
100%		+50	5775092.43	92.43
Batt. Endpoint	3.40	+20	5775011.73	11.73

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.

2 minutes after the EUT is energized

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5210082.83	82.83
100%		-30	5210010.43	10.43
100%		-20	5210034.88	34.88
100%		-10	5210062.96	62.96
100%		0	5210032.84	32.84
100%		+10	5210013.09	13.09
100%		+30	5210077.07	77.07
100%		+40	5210032.76	32.76
100%		+50	5210075.49	75.49
Batt. Endpoint	3.40	+20	5210059.96	59.96

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 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5290043.29	43.29
100%		-30	5290002.54	2.54
100%		-20	5290086.33	86.33
100%		-10	5290038.96	38.96
100%		0	5290035.25	35.25
100%		+10	5290090.92	90.92
100%		+30	5290015.40	15.4
100%		+40	5290067.79	67.79
100%		+50	5290043.48	43.48
Batt. Endpoint	3.40	+20	5290038.58	38.58

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.

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,530,000,000 Hz
CHANNEL:	106
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5530048.61	48.61
100%		-30	5530099.15	99.15
100%		-20	5530062.03	62.03
100%		-10	5530041.53	41.53
100%		0	5530085.83	85.83
100%		+10	5530015.33	15.33
100%		+30	5530034.75	34.75
100%		+40	5530007.53	7.53
100%		+50	5530015.55	15.55
Batt. Endpoint	3.40	+20	5530090.13	90.13

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5775010.14	10.14
100%		-30	5775078.44	78.44
100%		-20	5775064.61	64.61
100%		-10	5775039.45	39.45
100%		0	5775036.32	36.32
100%		+10	5775022.15	22.15
100%		+30	5775067.78	67.78
100%		+40	5775038.58	38.58
100%		+50	5775074.20	74.20
Batt. Endpoint	3.40	+20	5775019.17	19.17

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

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5210092.53	92.53
100%		-30	5210031.09	31.09
100%		-20	5210053.97	53.97
100%		-10	5210064.04	64.04
100%		0	5210052.49	52.49
100%		+10	5210054.54	54.54
100%		+30	5210061.55	61.55
100%		+40	5210007.17	7.17
100%		+50	5210029.86	29.86
Batt. Endpoint	3.40	+20	5210010.81	10.81

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5290090.75	90.75
100%		-30	5290033.67	33.67
100%		-20	5290089.73	89.73
100%		-10	5290082.08	82.08
100%		0	5290097.34	97.34
100%		+10	5290008.17	8.17
100%		+30	5290026.27	26.27
100%		+40	5290098.55	98.55
100%		+50	5290023.12	23.12
Batt. Endpoint	3.40	+20	5290025.17	25.17

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5530007.21	7.21
100%		-30	5530013.10	13.10
100%		-20	5530026.26	26.26
100%		-10	5530030.79	30.79
100%		0	5530032.45	32.45
100%		+10	5530075.88	75.88
100%		+30	5530047.02	47.02
100%		+40	5530094.06	94.06
100%		+50	5530091.75	91.75
Batt. Endpoint	3.40	+20	5530019.10	19.1

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5775040.76	40.76
100%		-30	5775028.74	28.74
100%		-20	5775088.27	88.27
100%		-10	5775048.69	48.69
100%		0	5775028.56	28.56
100%		+10	5775091.34	91.34
100%		+30	5775047.18	47.18
100%		+40	5775072.81	72.81
100%		+50	5775041.46	41.46
Batt. Endpoint	3.40	+20	5775010.33	10.33

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

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5210060.30	60.30
100%		-30	5210049.07	49.07
100%		-20	5210009.64	9.64
100%		-10	5210096.17	96.17
100%		0	5210028.56	28.56
100%		+10	5210064.18	64.18
100%		+30	5210029.28	29.28
100%		+40	5210028.66	28.66
100%		+50	5210024.27	24.27
Batt. Endpoint	3.40	+20	5210014.44	14.44

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5290062.35	62.35
100%		-30	5290089.20	89.20
100%		-20	5290098.69	98.69
100%		-10	5290043.18	43.18
100%		0	5290099.29	99.29
100%		+10	5290083.92	83.92
100%		+30	5290079.71	79.71
100%		+40	5290078.73	78.73
100%		+50	5290041.76	41.76
Batt. Endpoint	3.40	+20	5290036.68	36.68

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5530045.05	45.05
100%		-30	5530097.83	97.83
100%		-20	5530095.49	95.49
100%		-10	5530067.87	67.87
100%		0	5530049.98	49.98
100%		+10	5530037.84	37.84
100%		+30	5530006.26	6.26
100%		+40	5530046.33	46.33
100%		+50	5530008.72	8.72
Batt. Endpoint	3.40	+20	5530071.42	71.42

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5775067.66	67.66
100%		-30	5775036.21	36.21
100%		-20	5775025.64	25.64
100%		-10	5775023.38	23.38
100%		0	5775008.66	8.66
100%		+10	5775002.06	2.06
100%		+30	5775066.83	66.83
100%		+40	5775015.43	15.43
100%		+50	5775027.79	27.79
Batt. Endpoint	3.40	+20	5775054.33	54.33

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.

[Ant.2]

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5210033.14	33.14
100%		-30	5210084.16	84.16
100%		-20	5210012.64	12.64
100%		-10	5210031.32	31.32
100%		0	5210088.54	88.54
100%		+10	5210053.85	53.85
100%		+30	5210039.11	39.11
100%		+40	5210088.26	88.26
100%		+50	5210057.41	57.41
Batt. Endpoint	3.40	+20	5210092.22	92.22

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5290017.42	17.42
100%		-30	5290052.42	52.42
100%		-20	5290086.30	86.3
100%		-10	5290016.76	16.76
100%		0	5290038.07	38.07
100%		+10	5290091.52	91.52
100%		+30	5290089.69	89.69
100%		+40	5290075.49	75.49
100%		+50	5290012.90	12.90
Batt. Endpoint	3.40	+20	5290007.11	7.11

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5530029.19	29.19
100%		-30	5530022.05	22.05
100%		-20	5530023.66	23.66
100%		-10	5530030.69	30.69
100%		0	5530043.19	43.19
100%		+10	5530095.50	95.5
100%		+30	5530039.25	39.25
100%		+40	5530052.26	52.26
100%		+50	5530090.34	90.34
Batt. Endpoint	3.40	+20	5530039.35	39.35

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5775039.29	39.29
100%		-30	5775090.66	90.66
100%		-20	5775073.81	73.81
100%		-10	5775020.04	20.04
100%		0	5775098.05	98.05
100%		+10	5775096.69	96.69
100%		+30	5775071.92	71.92
100%		+40	5775050.84	50.84
100%		+50	5775008.92	8.92
Batt. Endpoint	3.40	+20	5775052.76	52.76

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

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5210008.57	8.57
100%		-30	5210046.65	46.65
100%		-20	5210030.34	30.34
100%		-10	5210089.74	89.74
100%		0	5210041.42	41.42
100%		+10	5210069.78	69.78
100%		+30	5210042.66	42.66
100%		+40	5210075.41	75.41
100%		+50	5210080.30	80.30
Batt. Endpoint	3.40	+20	5210030.20	30.20

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.

OPERATING BAND:	UNII Band 2A
OPERATING FREQUENCY:	5,290,000,000 Hz
CHANNEL:	58
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5290054.19	54.19
100%		-30	5290065.21	65.21
100%		-20	5290040.94	40.94
100%		-10	5290049.81	49.81
100%		0	5290057.24	57.24
100%		+10	5290011.33	11.33
100%		+30	5290025.46	25.46
100%		+40	5290033.27	33.27
100%		+50	5290027.45	27.45
Batt. Endpoint	3.40	+20	5290069.59	69.59

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5530032.45	32.45
100%		-30	5530014.51	14.51
100%		-20	5530076.11	76.11
100%		-10	5530002.66	2.66
100%		0	5530008.48	8.48
100%		+10	5530034.61	34.61
100%		+30	5530053.21	53.21
100%		+40	5530085.37	85.37
100%		+50	5530002.76	2.76
Batt. Endpoint	3.40	+20	5530077.89	77.89

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5775045.76	45.76
100%		-30	5775037.98	37.98
100%		-20	5775083.77	83.77
100%		-10	5775097.30	97.3
100%		0	5775017.18	17.18
100%		+10	5775069.30	69.3
100%		+30	5775037.40	37.4
100%		+40	5775056.49	56.49
100%		+50	5775061.17	61.17
Batt. Endpoint	3.40	+20	5775097.93	97.93

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.

5 minutes after the EUT is energized

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5210080.16	80.16
100%		-30	5210096.34	96.34
100%		-20	5210081.03	81.03
100%		-10	5210074.46	74.46
100%		0	5210024.16	24.16
100%		+10	5210041.41	41.41
100%		+30	5210086.18	86.18
100%		+40	5210077.67	77.67
100%		+50	5210094.98	94.98
Batt. Endpoint	3.40	+20	5210061.62	61.62

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5290056.48	56.48
100%		-30	5290031.68	31.68
100%		-20	5290064.80	64.8
100%		-10	5290046.98	46.98
100%		0	5290021.04	21.04
100%		+10	5290070.89	70.89
100%		+30	5290079.18	79.18
100%		+40	5290041.10	41.1
100%		+50	5290056.26	56.26
Batt. Endpoint	3.40	+20	5290002.02	2.02

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5530092.28	92.28
100%		-30	5530075.35	75.35
100%		-20	5530067.44	67.44
100%		-10	5530053.42	53.42
100%		0	5530043.28	43.28
100%		+10	5530062.85	62.85
100%		+30	5530041.99	41.99
100%		+40	5530031.53	31.53
100%		+50	5530037.40	37.40
Batt. Endpoint	3.40	+20	5530031.70	31.7

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5775007.05	7.05
100%		-30	5775051.76	51.76
100%		-20	5775015.99	15.99
100%		-10	5775095.48	95.48
100%		0	5775093.05	93.05
100%		+10	5775003.45	3.45
100%		+30	5775090.36	90.36
100%		+40	5775038.85	38.85
100%		+50	5775089.48	89.48
Batt. Endpoint	3.40	+20	5775042.94	42.94

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

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,210,000,000 Hz
CHANNEL:	42
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5210081.42	81.42
100%		-30	5210003.97	3.97
100%		-20	5210087.55	87.55
100%		-10	5210068.05	68.05
100%		0	5210079.45	79.45
100%		+10	5210081.96	81.96
100%		+30	5210077.62	77.62
100%		+40	5210007.74	7.74
100%		+50	5210052.41	52.41
Batt. Endpoint	3.40	+20	5210076.62	76.62

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5290032.64	32.64
100%		-30	5290049.54	49.54
100%		-20	5290081.41	81.41
100%		-10	5290051.96	51.96
100%		0	5290073.04	73.04
100%		+10	5290099.42	99.42
100%		+30	5290056.69	56.69
100%		+40	5290050.68	50.68
100%		+50	5290016.18	16.18
Batt. Endpoint	3.40	+20	5290053.68	53.68

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5530060.56	60.56
100%		-30	5530034.11	34.11
100%		-20	5530054.30	54.3
100%		-10	5530045.49	45.49
100%		0	5530052.41	52.41
100%		+10	5530084.98	84.98
100%		+30	5530017.06	17.06
100%		+40	5530067.65	67.65
100%		+50	5530045.70	45.70
Batt. Endpoint	3.40	+20	5530093.12	93.12

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:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5775084.35	84.35
100%		-30	5775068.24	68.24
100%		-20	5775080.33	80.33
100%		-10	5775033.57	33.57
100%		0	5775010.19	10.19
100%		+10	5775010.72	10.72
100%		+30	5775065.79	65.79
100%		+40	5775047.10	47.1
100%		+50	5775006.10	6.10
Batt. Endpoint	3.40	+20	5775037.34	37.34

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.

10.7 STRADDLE CHANNEL

10.7.1 26 dB Bandwidth

[Ant.1]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11a	UNII 2C	5720	144	5708.84	16.16
802.11n(HT20)				5708.12	16.88
802.11ac(VHT20)				5709.04	15.96
802.11a	UNII 3	5720	144	5730.84	5.84
802.11n(HT20)				5731.52	6.52
802.11ac(VHT20)				5730.84	5.84

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11n(HT40)	UNII 2C	5710	142	5680.56	44.44
802.11ac(VHT40)				5689.20	35.80
802.11n(HT40)	UNII 3	5710	142	5733.52	8.52
802.11ac(VHT40)				5738.64	13.64

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11ac(VHT80)	UNII 2C	5690	138	5648.72	76.28
	UNII 3	5690	138	5730.80	5.80

Note:

[UNII 2C] 26 dB Bandwidth = 5 725 MHz **-** Measured Frequency[MHz]

[UNII 3C] 26 dB Bandwidth = Measured Frequency[MHz] – 5 725 MHz

[Ant.2]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11a	UNII 2C	5720	144	5709.24	15.76
802.11n(HT20)				5709.24	15.76
802.11ac(VHT20)				5708.44	16.56
802.11a	UNII 3	5720	144	5730.68	5.68
802.11n(HT20)				5730.88	5.88
802.11ac(VHT20)				5731.12	6.12

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11n(HT40)	UNII 2C	5710	142	5687.92	37.08
802.11ac(VHT40)				5690.00	35.00
802.11n(HT40)	UNII 3	5710	142	5730.08	5.08
802.11ac(VHT40)				5730.40	5.40

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11ac(VHT80)	UNII 2C	5690	138	5648.88	76.12
	UNII 3	5690	138	5730.48	5.48

Note:

[UNII 2C] 26 dB Bandwidth = 5 725 MHz - Measured Frequency[MHz]

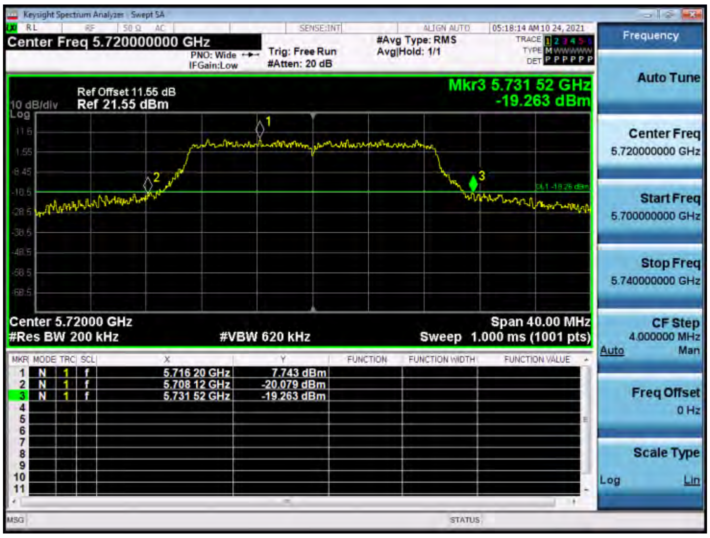
[UNII 3C] 26 dB Bandwidth = Measured Frequency[MHz] – 5 725 MHz

[Ant.1]

▣ Test Plots (26 dB Bandwidth)

802.11a UNII Band

802.11n(HT20) UNII Band



802.11ac(VHT20) UNII Band