

FCC UNII REPORT

Certification

Applicant Name: SAMSUNG Electronics Co., Ltd.	Date of Issue: December 13, 2021
Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea	Test Site/Location: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA
	Report No.: HCT-RF-2112-FC018-R1

FCC ID:	A3LSMX800
APPLICANT:	SAMSUNG Electronics Co., Ltd.
Full test (Because of changing target power)	
-UNII1/2A/2C 40MHz BW CH46 Mode	
-UNII1/2A/2C 20MHz BW ALL Mode	
-UNII3/4 ALL BW & Mode	
According to the Evaluation report, all of the data contained herein is reused from the reference FCC ID : A3LSMX808U report. (Except for above mode)	

Model:	SM-X800
EUT Type:	Tablet
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.

Report No.: HCT-RF-2112-FC018-R1

REVIEWED BY



Report prepared by : Woong Jin Kim
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)

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2112-FC018	December 03, 2021	- First Approval Report
HCT-RF-2111-FC018-R1	December 13, 2021	- Revised Antenna Configurations (Page 6) - Added Sample Calculation (Page 8) - Typo (Page 53, 112, 118)

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	SM-X800	
Additional Model	-	
EUT Type	Tablet	
Power Supply	DC 3.86 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
	U-NII-4	20 MHz BW : 5845 - 5885 40 MHz BW : 5835 - 5875 80 MHz BW : 5855
Straddle channel	Supported	
TDWR Band	Supported	
Dynamic Frequency Selection	Slave without radar detection	
Date(s) of Tests	September 13, 2021 ~ December 02, 2021	
Serial number	Radiated : R32RD00VRVM Conducted : R32RA00DAPN	

ANTENNA CONFIGURATIONS

Configurations	SISO		MIMO	
	Ant.1	Ant.2	SDM	CDD
802.11a	X	X	X	O
802.11n	X	X	O	O
802.11ac	X	X	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
- (5) SISO test was performed for the MIMO test result.

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

RSDB Scenario	2.4 GHz	2.4 GHz	5 GHz	5 GHz	6 GHz	6 GHz	Bluetooth Ant.1	Bluetooth Ant.2
	WiFi Ant.1	WiFi Ant.2	WiFi Ant.1	WiFi Ant.2	WiFi Ant.1	WiFi Ant.2		
2.4 GHz WiFi MIMO + 6 GHz WiFi MIMO	on	on			on	on		
2.4 GHz WiFi MIMO + 5 GHz WiFi MIMO	on	on	on	on				
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO		on	on	on			on	
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 6 GHz WiFi MIMO		on			on	on	on	

Non-DBS	2.4 GHz WiFi Ant.1	2.4 GHz WiFi Ant.2	5 GHz WiFi Ant.1	5 GHz WiFi Ant.2	6 GHz WiFi Ant.1	6 GHz WiFi Ant.2	Bluetooth Ant.1	Bluetooth Ant.2
Bluetooth ANT.2 + 6 GHz WiFi MIMO					on	on		on
Bluetooth ANT.2 + 5GHz WiFi MIMO			on	on				on
Bluetooth ANT.1 + 6 GHz WiFi MIMO					on	on	on	
Bluetooth ANT.1 + 5GHz WiFi MIMO			on	on	-	-	on	-

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	-8.45	2 / 2	-5.21
	ANT2	-7.99		
UNII 2A	ANT1	-5.99	2 / 2	-4.23
	ANT2	-8.70		
UNII 2C	ANT1	-5.75	2 / 2	-3.60
	ANT2	-7.56		
UNII 3	ANT1	-6.11	2 / 2	-3.86
	ANT2	-7.70		
UNII 4	ANT1	-6.11	2 / 2	-3.86
	ANT2	-7.70		

Sample Calculation

Directional Gain = 10*LOG(((10^(ANT1 Gain/20)+10^(ANT2 Gain/20))²)/2) dBi

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	15.85	0.038	16.88	0.049	19.41	0.087
	802.11n (HT20)	15.96	0.039	16.64	0.046	19.31	0.085
	802.11n (HT40)	14.96	0.031	14.49	0.028	17.74	0.059
	802.11ac (VHT20)	15.98	0.040	16.59	0.046	19.30	0.085
	802.11ac (VHT40)	15.04	0.032	14.43	0.028	17.76	0.060
	802.11ac (VHT80)	14.48	0.028	13.30	0.021	16.94	0.049
UNII2A	802.11a	16.82	0.048	16.98	0.050	19.90	0.098
	802.11n (HT20)	16.63	0.046	16.98	0.050	19.82	0.096
	802.11n (HT40)	15.95	0.039	15.31	0.034	18.65	0.073
	802.11ac (VHT20)	16.64	0.046	16.99	0.050	19.81	0.096
	802.11ac (VHT40)	15.98	0.040	15.20	0.033	18.62	0.073
	802.11ac (VHT80)	13.12	0.021	11.91	0.016	15.57	0.036
UNII2C	802.11a	16.07	0.040	16.75	0.047	19.43	0.088
	802.11n (HT20)	15.87	0.039	16.55	0.045	19.23	0.084
	802.11n (HT40)	16.46	0.044	15.64	0.037	19.08	0.081
	802.11ac (VHT20)	15.88	0.039	16.55	0.045	19.24	0.084
	802.11ac (VHT40)	16.26	0.042	15.53	0.036	18.92	0.078
	802.11ac (VHT80)	15.69	0.037	14.50	0.028	18.14	0.065
UNII3	802.11a	14.95	0.031	14.98	0.031	17.97	0.063
	802.11n (HT20)	14.83	0.030	14.98	0.031	17.85	0.061
	802.11n (HT40)	14.96	0.031	14.97	0.031	17.98	0.063
	802.11ac (VHT20)	14.86	0.031	14.98	0.031	17.87	0.061
	802.11ac (VHT40)	14.94	0.031	14.98	0.032	17.97	0.063
	802.11ac (VHT80)	13.75	0.024	13.80	0.024	17.04	0.051
UNII4 Conducted For inf.	802.11a	14.83	0.030	14.97	0.031	17.78	0.060
	802.11n (HT20)	14.62	0.029	14.98	0.031	17.74	0.059
	802.11n (HT40)	13.84	0.024	14.31	0.027	17.09	0.051
	802.11ac (VHT20)	14.64	0.029	14.98	0.031	17.70	0.059
	802.11ac (VHT40)	13.80	0.024	14.30	0.027	17.07	0.051
	802.11ac (VHT80)	14.09	0.026	13.98	0.025	17.04	0.051

Band	Mode	Ant.1 Power				Ant.2 Power				MIMO Ant.1 + Ant.2 Power			
		(dBm)	ANT Gain(dBi)	EIRP (dBm)	(W)	(dBm)	ANT Gain(dBi)	EIRP (dBm)	(W)	(dBm)	ANT Gain(dBi)	EIRP (dBm)	(W)
UNII4 (E.I.R.P)	802.11a	14.83	-3.86	10.97	0.013	14.97	-3.86	11.11	0.013	17.78	-3.86	13.92	0.025
	802.11n (HT20)	14.62	-3.86	10.76	0.012	14.98	-3.86	11.12	0.013	17.74	-3.86	13.88	0.024
	802.11n (HT40)	13.84	-3.86	9.98	0.010	14.31	-3.86	10.45	0.011	17.09	-3.86	13.23	0.021
	802.11ac (VHT20)	14.64	-3.86	10.78	0.012	14.98	-3.86	11.12	0.013	17.70	-3.86	13.84	0.024
	802.11ac (VHT40)	13.80	-3.86	9.94	0.010	14.30	-3.86	10.44	0.011	17.07	-3.86	13.21	0.021
	802.11ac (VHT80)	14.09	-3.86	10.23	0.011	13.98	-3.86	10.12	0.010	17.04	-3.86	13.18	0.021

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. Additionally, for U-NII-4 band, use the following measurement procedure KDB 291074 U-NII-4 5.9 Band DR01-44460

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.

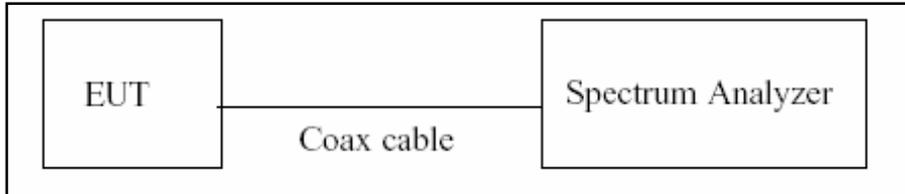
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

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.

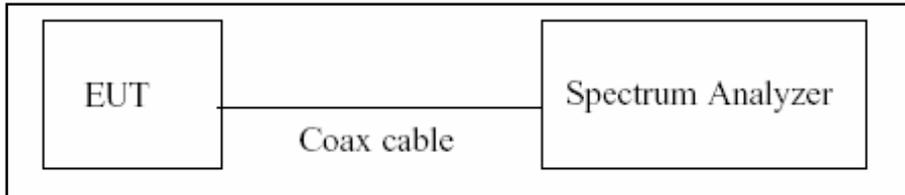
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz (\geq RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor = $10\log(1/\text{Duty Cycle})$

8.2. 6 dB Bandwidth & 26 dB Bandwidth

Limit

Within the 5.725-5.85 GHz(NII-3) &5.85-5.895 GHz(NII-4) 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 \geq 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 level 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.

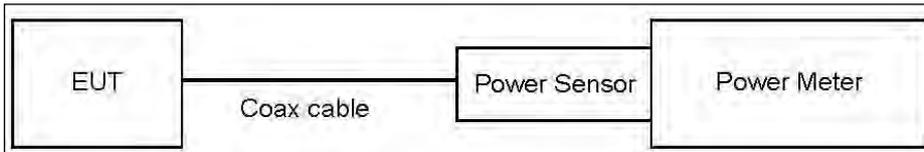
8.3. Output Power Measurement

Limit

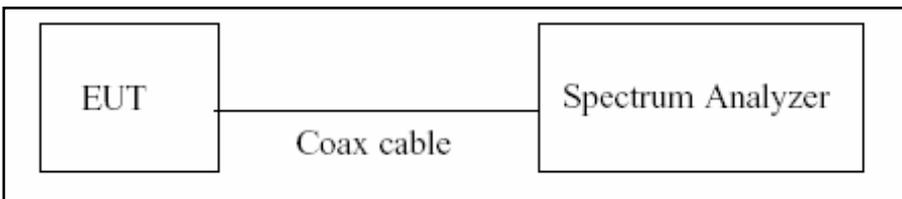
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30 dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30 dBm)
UNII 4	EIRP 30 dBm

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 $10\log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Sample Calculation

Total Power(dBm) = Measured Value(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

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

Band	Loss(dB)
UNII 1	11.31
UNII 2A	11.31
UNII 2C	11.31
UNII 3&4	11.31

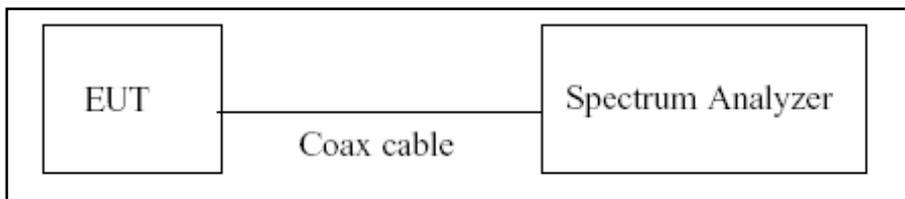
(Actual value of loss for the attenuator and cable combination)

8.4. Power Spectral Density

Limit

Band	Limit
UNII 1	11 dBm/MHz
UNII 2A, 2C	11 dBm/MHz
UNII 3	30 dBm/500 kHz
UNII 4	EIRP 14 dBm/MHz

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 Value(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

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

Band	Loss(dB)
UNII 1	11.31
UNII 2A	11.31
UNII 2C	11.31
UNII 3&4	11.31

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

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 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB μ V)	
	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 Value + 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. UNII 4: [Low Channel O.O.B.E] measured with an Peak detector
For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

[High Channel O.O.B.E] measured with an RMS detector

For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.

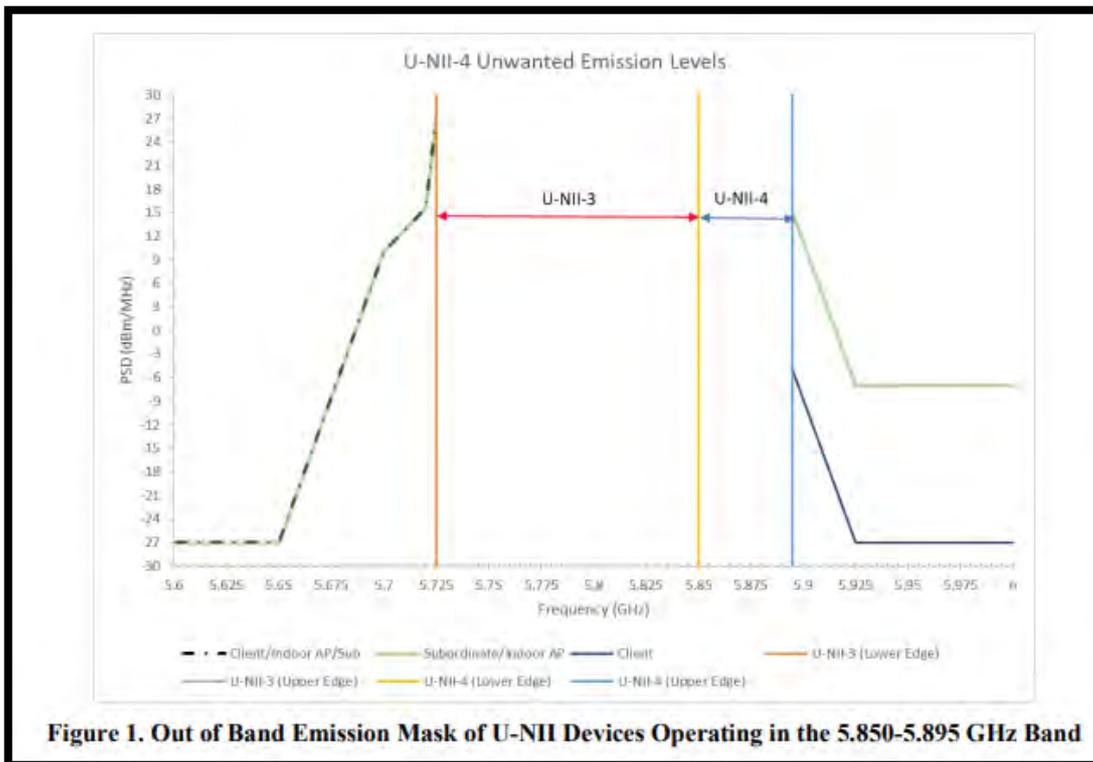


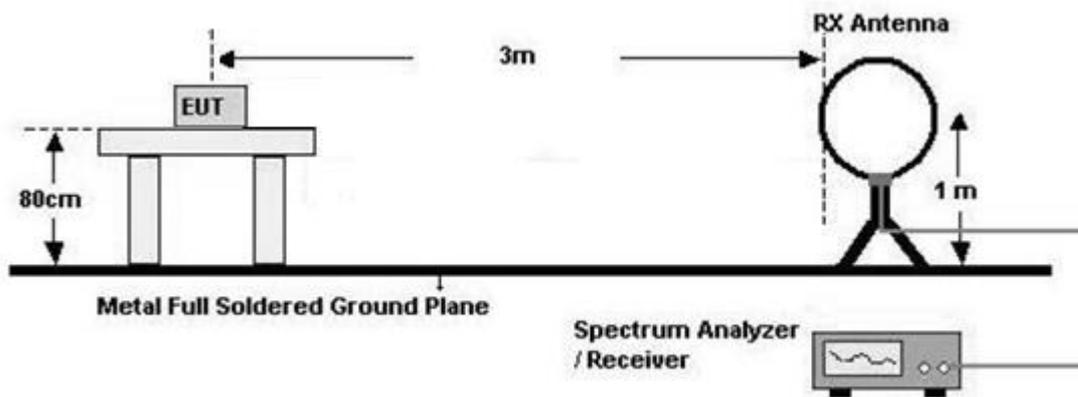
Figure 1. Out of Band Emission Mask of U-NII Devices Operating in the 5.850-5.895 GHz Band

5. 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.

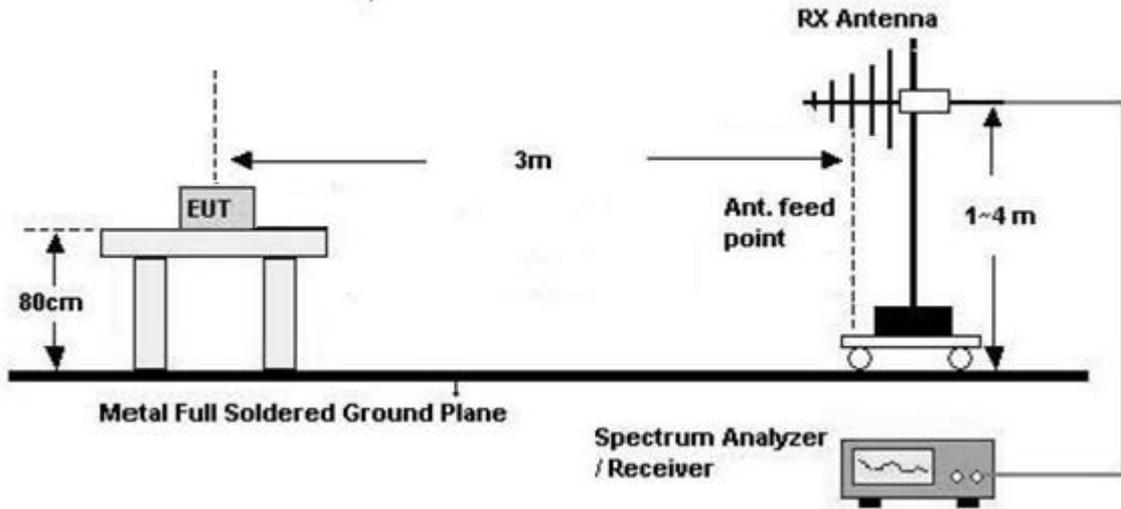
Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

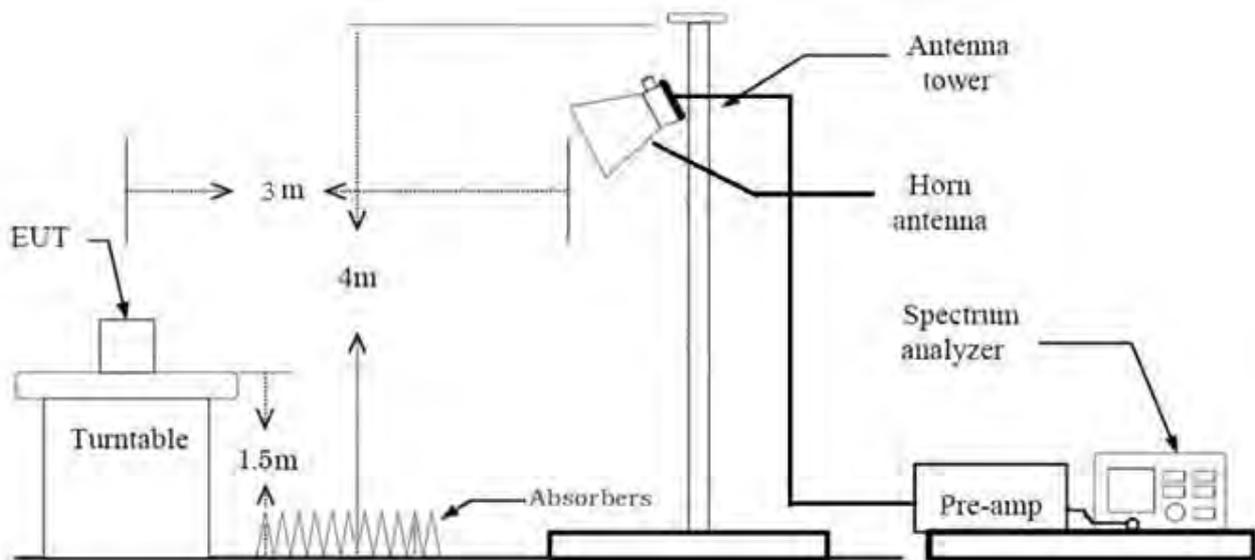
Below 30 MHz



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) = $40\log(3 \text{ m}/300 \text{ m}) = - 80 \text{ dB}$
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = $40\log(3 \text{ m}/30 \text{ m}) = - 40 \text{ dB}$
Measurement Distance : 3 m
8. Spectrum Setting
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Maxhold
 - RBW = 9 kHz
 - VBW $\geq 3 \times$ RBW
9. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Test Procedure of Radiated spurious emissions(Below 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 \geq 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 Value + Antenna Factor(A.F) + Cable Loss(C.L)
8. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 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 \geq 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 \geq 98 %) = $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is $<$ 98 %) = $VBW \geq 1/T$, 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 = $20\log(\text{test distance} / \text{specific distance})$ (dB)
12. Total = Measured Value + 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 \geq 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 \geq 98 %) = $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is < 98 %) = $VBW \geq 1/T$, 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 = $20\log(\text{test distance} / \text{specific distance})$ (dB)

11. Total = Measured Value + 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	0.935	0.291	1000
802.11n(HT20)	MCS0	0.925	0.339	1000
802.11n(HT40)	MCS0	0.866	0.624	3000
802.11ac(VHT20)	MCS0	0.925	0.338	1000
802.11ac(VHT40)	MCS0	0.867	0.619	3000
802.11ac(VHT80)	MCS0	0.763	1.178	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 : X, Y, Z
 - Radiated Restricted Band Edge : Z
3. All datarate of operation were investigated and the worst case datarate results are reported.
 - Mode : Ant.1(SISO), Ant.2(SISO), Ant.1+Ant.2(SDM), Ant.1+Ant.2(CDD)
 - Worstcase : Ant.1+Ant.2(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. Radiated Spurious Emission
 - All modulation of operation were investigated and the worst case modulation results are reported.
(Worstcase : 802.11a_6Mbps)
5. All position of loop antenna were investigated and the test result is a no critical peak found at all positions.
 - Position : Horizontal, Vertical, Parallel to the ground plane

AC Power line Conducted Emissions

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

Conducted test

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

9. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26 dB Bandwidth	§15.407 (for Power Measurement)	N/A		PASS
6 dB Bandwidth	§15.407(e)	>500 kHz (5725-5850 MHz)(UNII-3) (5850-5895 MHz)(UNII-4)		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 EIRP Output Power	§15.407(a)(1)(3)(iii)	< EIRP 30dBm (5850-5895 MHz)		
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) < EIRP 14 dBm/MHz(5850-5895 MHz)		PASS
AC Conducted Emissions 150 kHz-30 MHz	15.207 15.407(b)(8)	<FCC 15.207 limits		PASS
Undesirable Emissions	§15.407(b)(1),(2),(3),(4) §15.407(b)(5)(ii),(iii)	<-27 dBm/MHz EIRP (UNII1, 2A, 2C) cf. Section 8.6 (UNII 3&4)		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	1.464	1.566	0.935	0.291
	9	0.983	1.084	0.907	0.426
	12	0.745	0.841	0.886	0.528
	18	0.502	0.603	0.832	0.799
	24	0.385	0.481	0.800	0.969
	36	0.263	0.365	0.722	1.413
	48	0.203	0.299	0.678	1.688
	54	0.184	0.294	0.625	2.041

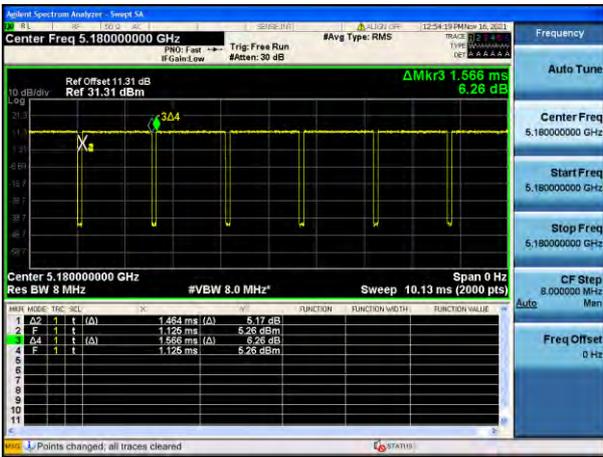
Mode	MCS Index	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11n (HT20)	0	1.246	1.348	0.925	0.339
	1	0.643	0.740	0.870	0.605
	2	0.441	0.537	0.821	0.858
	3	0.339	0.436	0.779	1.084
	4	0.243	0.339	0.716	1.448
	5	0.187	0.314	0.597	2.242
	6	0.172	0.314	0.548	2.609
	7	0.160	0.304	0.525	2.795
802.11n (HT40)	0	0.623	0.719	0.866	0.624
	1	0.329	0.426	0.774	1.114
	2	0.233	0.329	0.708	1.502
	3	0.182	0.319	0.571	2.430
	4	0.137	0.324	0.422	3.748
	5	0.111	0.334	0.333	4.771
	6	0.101	0.309	0.328	4.843
	7	0.096	0.319	0.302	5.206

Mode	MCS Index	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT20)	0	1.251	1.353	0.925	0.338
	1	0.643	0.745	0.864	0.635
	2	0.446	0.542	0.822	0.849
	3	0.345	0.441	0.782	1.070
	4	0.243	0.339	0.716	1.448
	5	0.193	0.299	0.644	1.911
	6	0.177	0.319	0.556	2.553
	7	0.163	0.298	0.546	2.626
	8	0.144	0.304	0.475	3.236
802.11ac (VHT40)	0	0.628	0.725	0.867	0.619
	1	0.329	0.426	0.774	1.114
	2	0.238	0.334	0.712	1.474
	3	0.187	0.313	0.598	2.232
	4	0.137	0.319	0.429	3.680
	5	0.117	0.329	0.354	4.512
	6	0.107	0.322	0.333	4.773
	7	0.101	0.314	0.323	4.914
	8	0.091	0.309	0.295	5.301
	9	0.086	0.329	0.262	5.825
802.11ac (VHT80)	0	0.309	0.405	0.763	1.178
	1	0.177	0.329	0.538	2.688
	2	0.132	0.319	0.414	3.834
	3	0.106	0.329	0.323	4.907
	4	0.086	0.324	0.266	5.757
	5	0.074	0.334	0.220	6.573
	6	0.071	0.328	0.215	6.676
	7	0.066	0.324	0.203	6.922
	8	0.064	0.321	0.201	6.976
	9	0.064	0.322	0.199	7.017

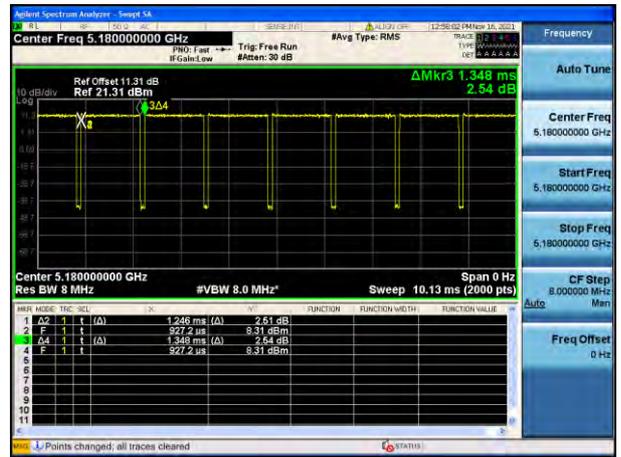
Note:

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

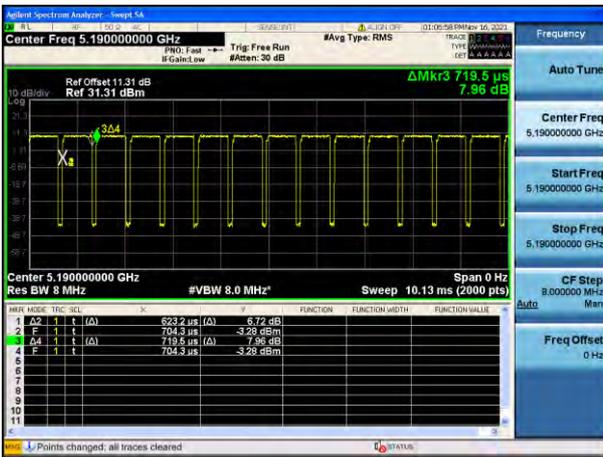
802.11a



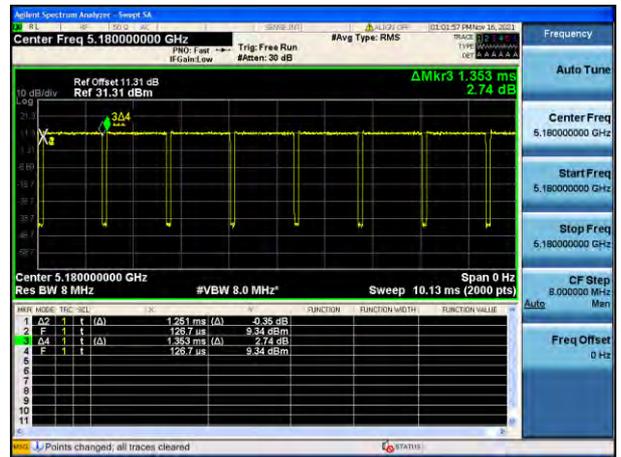
802.11n(HT20)



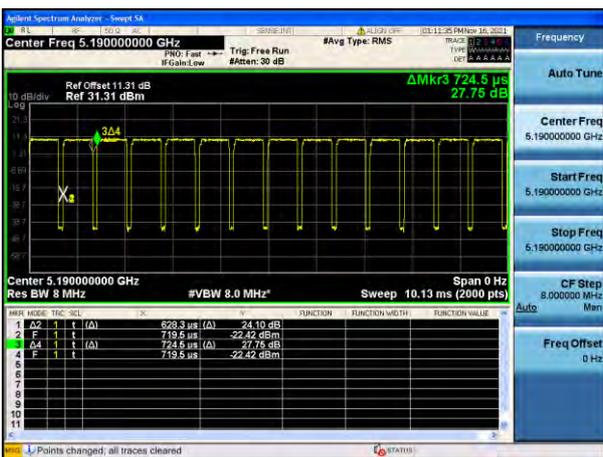
802.11n(HT40)



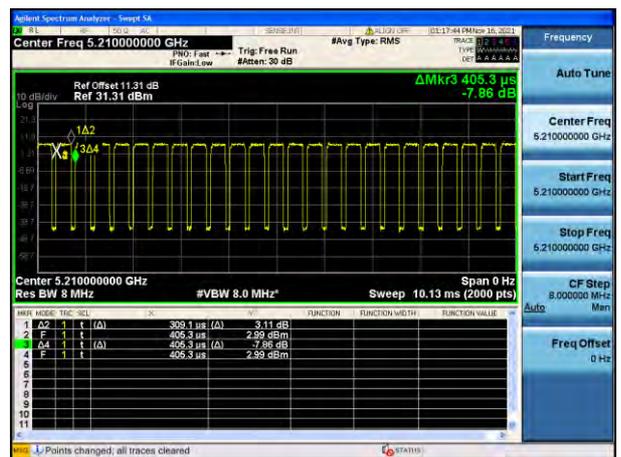
802.11ac(VHT20)



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	18.48	16.245
5200	40	18.17	16.239
5240	48	18.34	16.243
5260	52	18.45	16.253
5300	60	18.30	16.256
5320	64	18.36	16.245
5500	100	18.46	16.246
5600	120	18.44	16.247
5720	144	18.17	16.225
5745	149	18.72	16.256
5785	157	18.41	16.235
5825	165	18.24	16.220
5845	169	18.27	16.238
5865	173	18.29	16.235
5885	177	18.42	16.223

802.11n(HT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	19.39	17.435
5200	40	19.16	17.443
5240	48	19.64	17.462
5260	52	19.54	17.442
5300	60	19.31	17.432
5320	64	19.50	17.418
5500	100	19.53	17.467
5600	120	19.32	17.441
5720	144	19.47	17.448
5745	149	19.48	17.441
5785	157	19.85	17.442
5825	165	19.42	17.407
5845	169	19.31	17.439
5865	173	19.38	17.438
5885	177	19.78	17.451

802.11n(HT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.05	35.717
5230	46	39.04	35.738
5270	54	38.97	35.710
5310	62	39.00	35.740
5510	102	39.04	35.728
5590	118	39.09	35.703
5710	142	39.15	35.752
5755	151	39.05	35.725
5795	159	38.91	35.707
5835	167	39.16	35.779
5875	175	39.09	35.766

802.11ac(VHT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	19.41	17.405
5200	40	19.47	17.448
5240	48	19.39	17.454
5260	52	19.95	17.451
5300	60	19.50	17.445
5320	64	19.40	17.449
5500	100	19.44	17.452
5600	120	19.30	17.406
5720	144	19.59	17.465
5745	149	19.37	17.443
5785	157	19.19	17.415
5825	165	19.21	17.415
5845	169	19.42	17.405
5865	173	19.51	17.449
5885	177	19.28	17.425

802.11ac(VHT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.18	35.784
5230	46	39.13	35.764
5270	54	39.12	35.762
5310	62	39.31	35.750
5510	102	39.08	35.745
5590	118	39.14	35.764
5710	142	38.94	35.727
5755	151	39.09	35.737
5795	159	39.02	35.733
5835	167	38.79	35.716
5875	175	38.73	35.758

802.11ac(VHT80) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	79.88	74.917
5290	58	80.34	74.820
5530	106	80.28	74.851
5610	122	80.41	74.805
5690	138	80.33	74.874
5775	155	80.15	74.883
5855	171	80.19	74.724

[Ant.2]

802.11a Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	18.46	16.254
5200	40	18.58	16.266
5240	48	18.32	16.247
5260	52	18.40	16.237
5300	60	18.37	16.248
5320	64	18.31	16.246
5500	100	18.21	16.250
5600	120	18.26	16.228
5720	144	18.29	16.255
5745	149	18.37	16.252
5785	157	18.32	16.246
5825	165	18.25	16.230
5845	169	18.38	16.236
5865	173	18.60	16.261
5885	177	18.28	16.235

802.11n(HT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	20.19	17.447
5200	40	19.57	17.451
5240	48	19.54	17.429
5260	52	19.82	17.417
5300	60	19.93	17.435
5320	64	19.64	17.430
5500	100	19.53	17.458
5600	120	19.36	17.439
5720	144	19.68	17.431
5745	149	19.42	17.438
5785	157	19.56	17.449
5825	165	19.50	17.441
5845	169	19.88	17.456
5865	173	19.70	17.453
5885	177	19.40	17.428

802.11n(HT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.23	35.734
5230	46	39.25	35.704
5270	54	39.34	35.740
5310	62	38.99	35.722
5510	102	39.02	35.761
5590	118	38.90	35.744
5710	142	38.95	35.730
5755	151	38.83	35.723
5795	159	39.42	35.718
5835	167	39.00	35.717
5875	175	39.14	35.754

802.11ac(VHT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	19.63	17.462
5200	40	19.49	17.450
5240	48	19.92	17.446
5260	52	19.43	17.447
5300	60	19.34	17.432
5320	64	19.44	17.434
5500	100	19.43	17.438
5600	120	19.96	17.440
5720	144	19.47	17.452
5745	149	19.73	17.441
5785	157	19.96	17.442
5825	165	19.99	17.452
5845	169	19.51	17.443
5865	173	19.55	17.449
5885	177	19.42	17.434

802.11ac(VHT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.36	35.707
5230	46	39.16	35.718
5270	54	39.34	35.740
5310	62	39.27	35.755
5510	102	38.88	35.711
5590	118	39.12	35.729
5710	142	38.87	35.741
5755	151	38.89	35.721
5795	159	39.10	35.708
5835	167	38.90	35.736
5875	175	39.10	35.723

802.11ac(VHT80) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	79.84	74.869
5290	58	80.04	74.889
5530	106	80.10	74.867
5610	122	80.00	74.818
5690	138	80.26	74.836
5775	155	79.98	74.888
5855	171	80.02	74.803

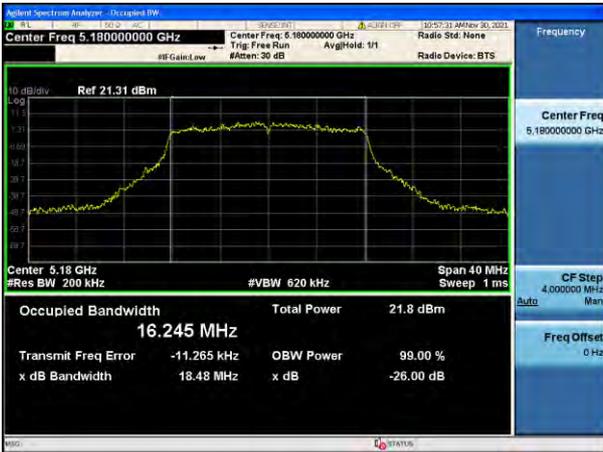
[Ant.1]

☐ Test Plots(802.11a)

Note:

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

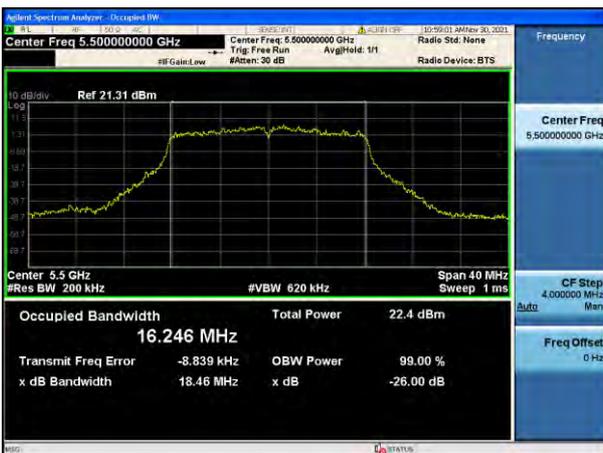
802.11a UNII 1 BAND 26 dB Bandwidth (CH 36)



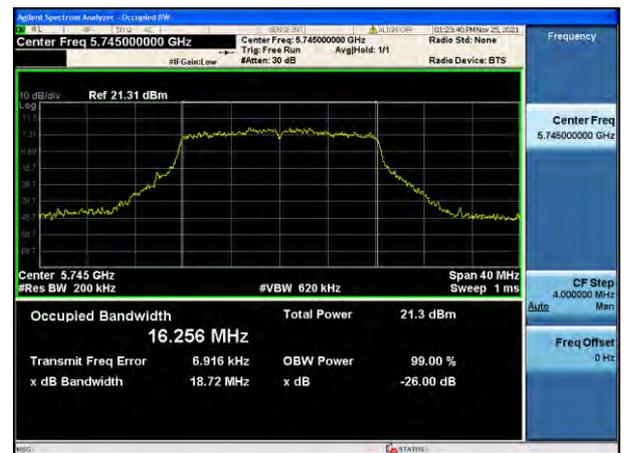
802.11a UNII 2A BAND 26 dB Bandwidth (CH 52)



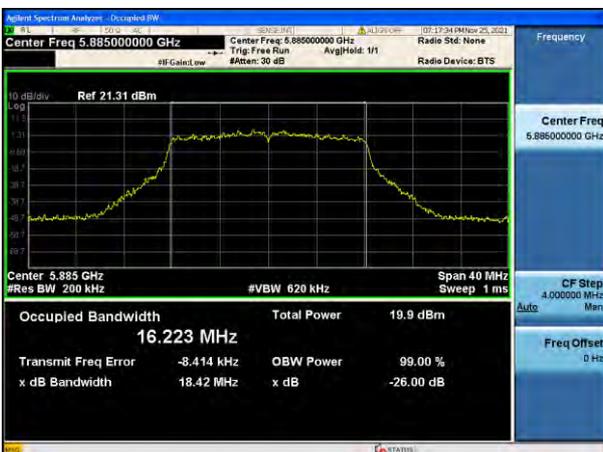
802.11a UNII 2C BAND 26 dB Bandwidth (CH 100)



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



802.11a UNII 4 BAND 26 dB Bandwidth (CH 177)



☐ 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 52)



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



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



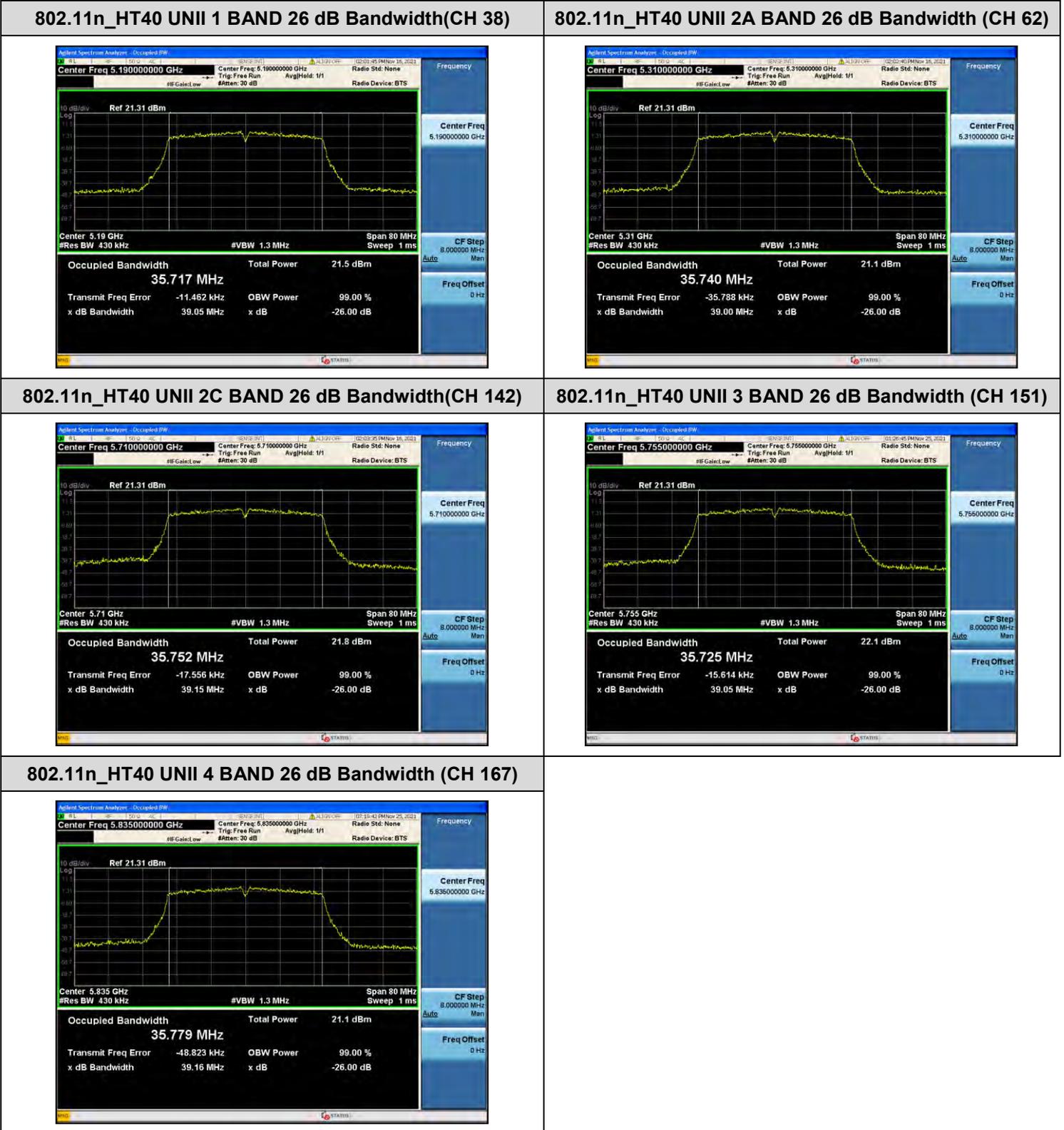
802.11n_HT20 UNII 4 BAND 26 dB Bandwidth(CH 177)



Test Plots(802.11n(HT40))

Note:

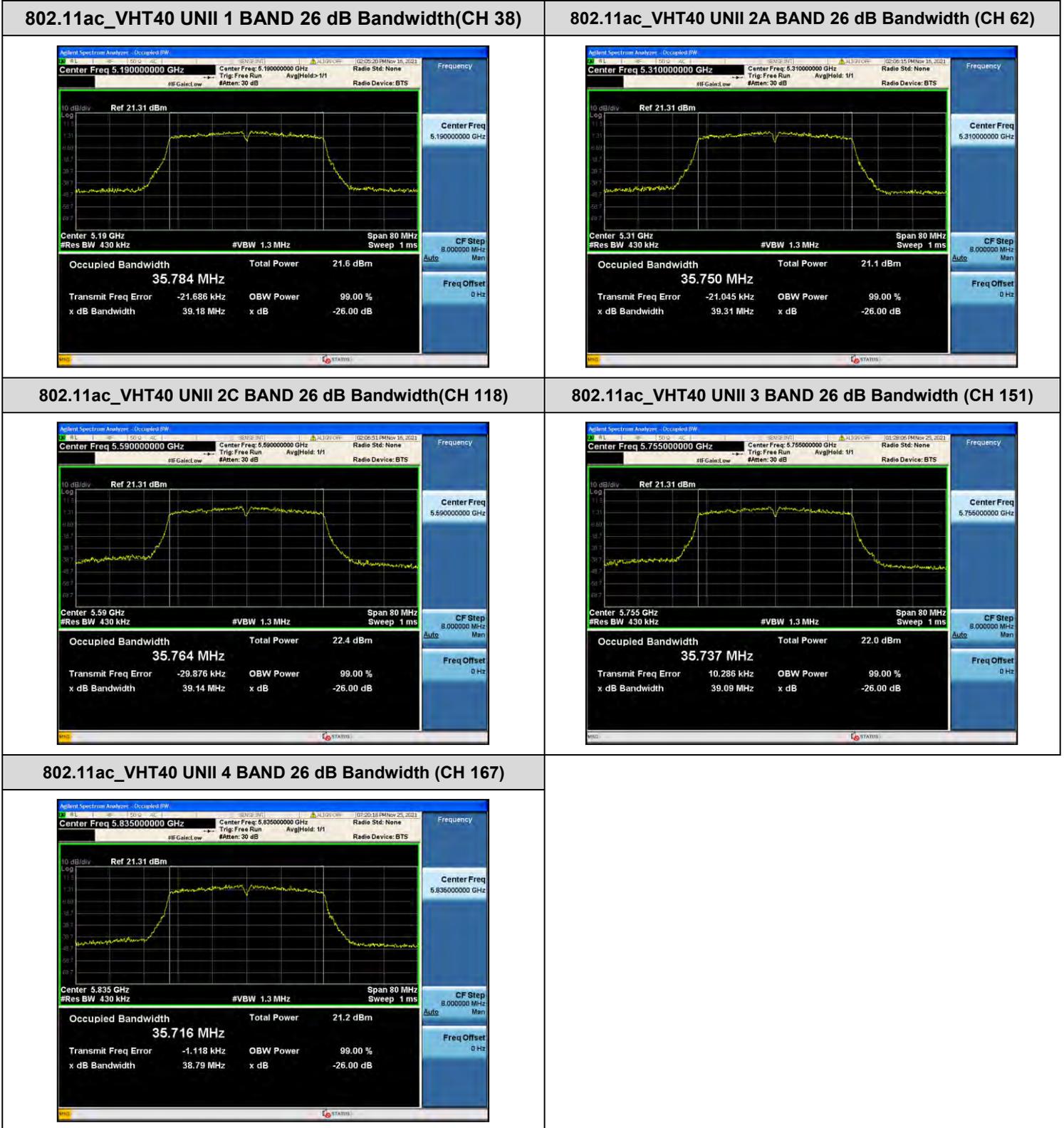
In order to simplify the report, attached plots were only the most wide channel.



☐ Test Plots(802.11ac(VHT40))

Note:

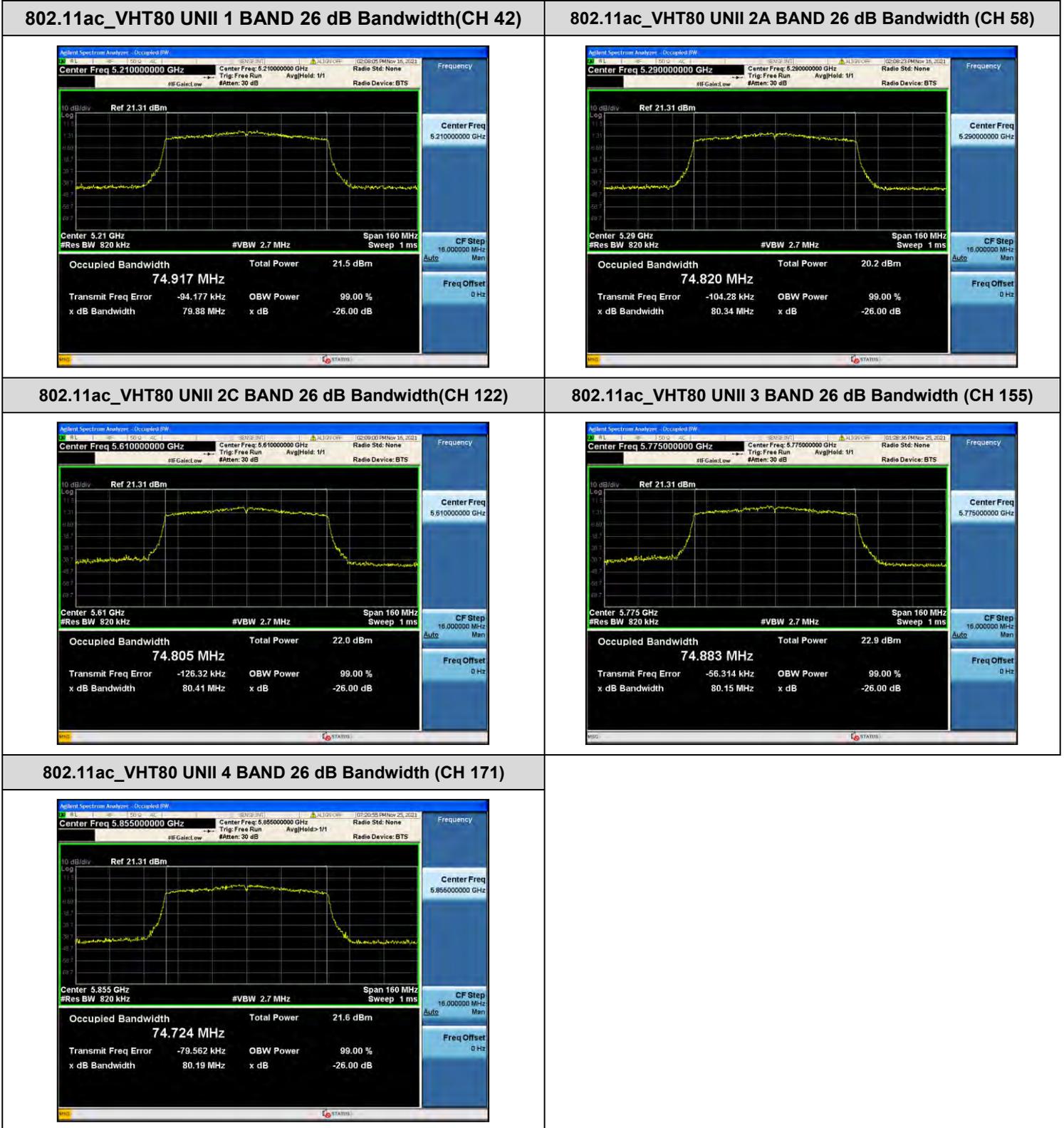
In order to simplify the report, attached plots were only the most wide channel.



☐ Test Plots(802.11ac(VHT80))

Note:

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



[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 40)



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



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



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



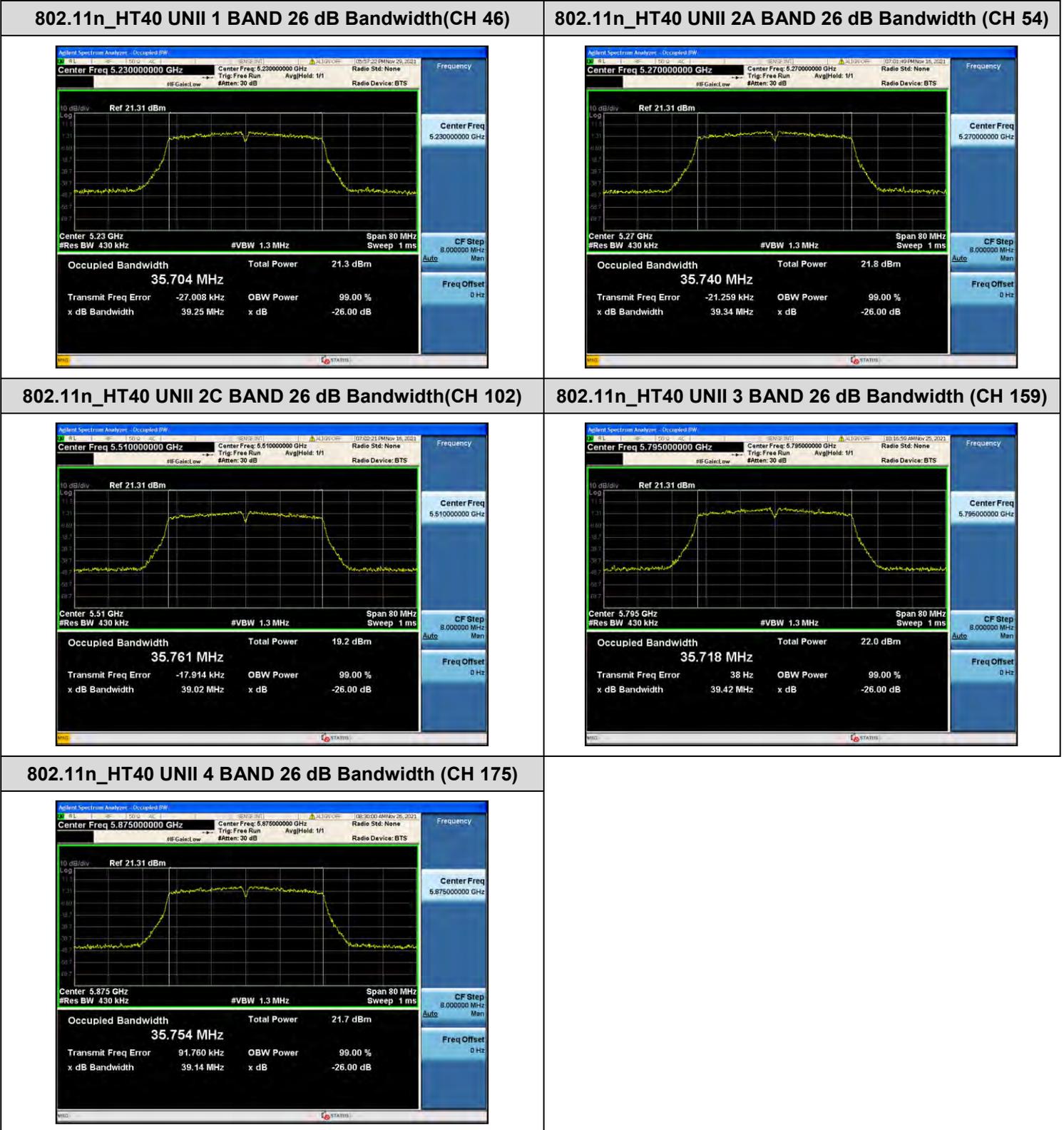
802.11a UNII 4 BAND 26 dB Bandwidth (CH 173)



☑ Test Plots(802.11n(HT40))

Note:

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

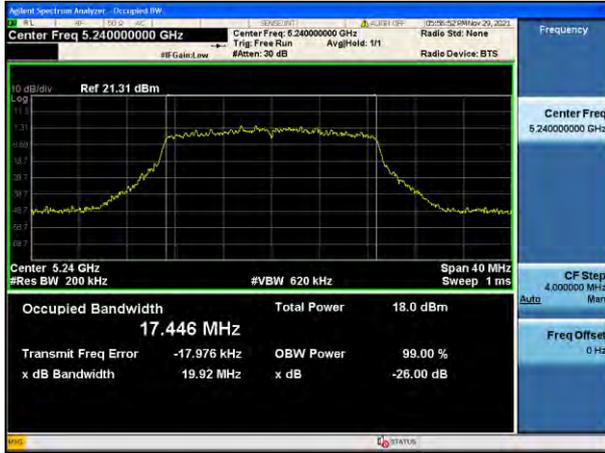


☐ Test Plots(802.11ac(VHT20))

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 48)



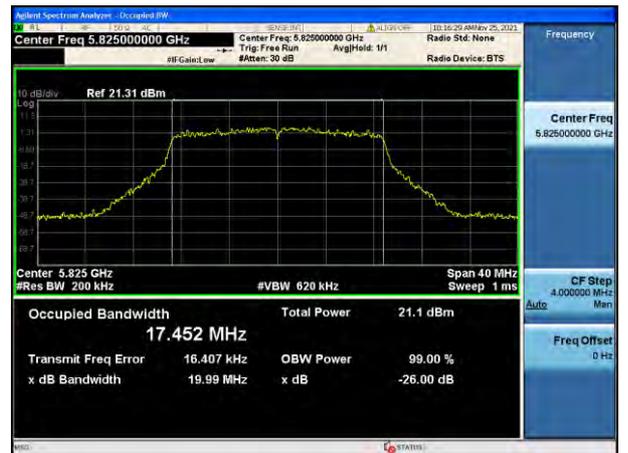
802.11ac_VHT20 UNII 2A BAND 26 dB Bandwidth(CH 64)



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



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



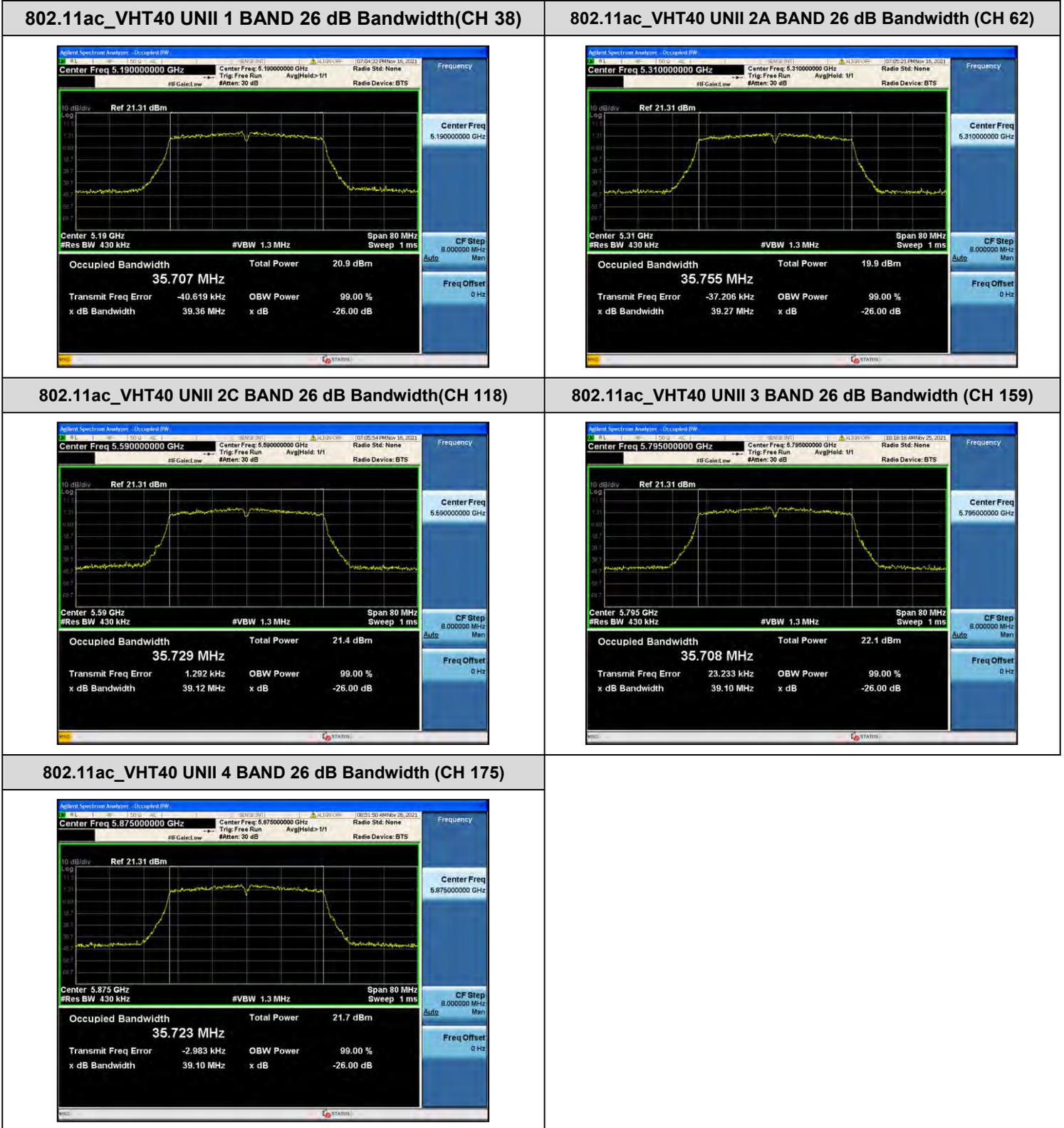
802.11ac_VHT20 UNII 4 BAND 26 dB Bandwidth(CH 173)



☑ Test Plots(802.11ac(VHT40))

Note:

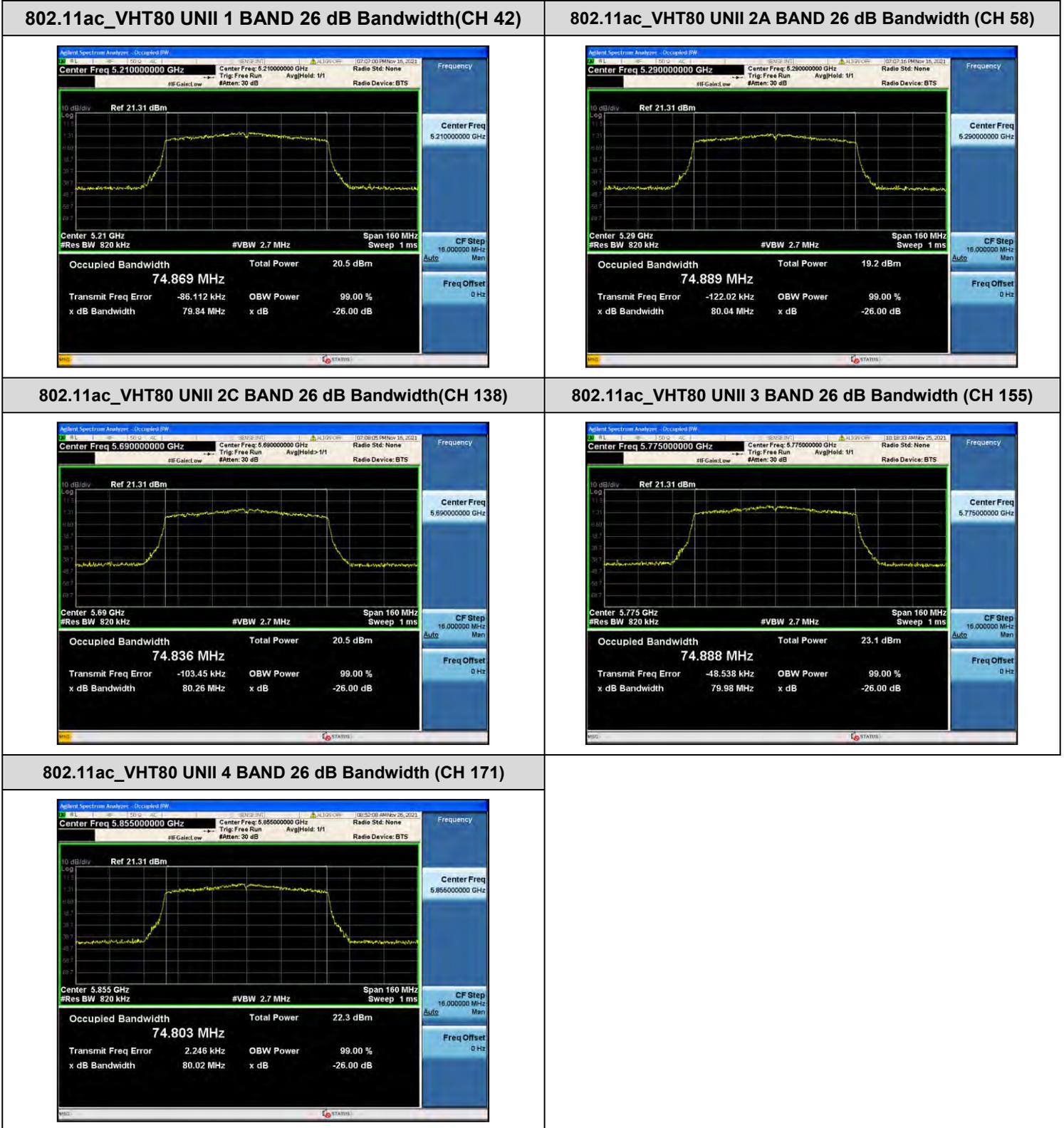
In order to simplify the report, attached plots were only the most wide channel.



☐ Test Plots(802.11ac(VHT80))

Note:

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



10.3 6 dB BANDWIDTH
[Ant.1]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	14.08	> 0.5	Pass
5785	157	13.93	> 0.5	Pass
5825	165	13.89	> 0.5	Pass
5845	169	15.13	> 0.5	Pass
5865	173	15.12	> 0.5	Pass
5885	177	15.36	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.08	> 0.5	Pass
5785	157	15.15	> 0.5	Pass
5825	165	15.12	> 0.5	Pass
5845	169	15.16	> 0.5	Pass
5865	173	15.06	> 0.5	Pass
5885	177	15.09	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	33.84	> 0.5	Pass
5795	159	35.13	> 0.5	Pass
5835	167	35.14	> 0.5	Pass
5875	175	33.94	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	13.84	> 0.5	Pass
5785	157	15.07	> 0.5	Pass
5825	165	15.05	> 0.5	Pass
5845	169	13.90	> 0.5	Pass
5865	173	13.90	> 0.5	Pass
5885	177	15.13	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.12	> 0.5	Pass
5795	159	33.26	> 0.5	Pass
5835	167	35.13	> 0.5	Pass
5875	175	35.09	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	72.52	> 0.5	Pass
5855	171	53.83	> 0.5	Pass

[Ant.2]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.08	> 0.5	Pass
5785	157	15.02	> 0.5	Pass
5825	165	13.87	> 0.5	Pass
5845	169	13.86	> 0.5	Pass
5865	173	15.13	> 0.5	Pass
5885	177	15.13	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.12	> 0.5	Pass
5785	157	15.05	> 0.5	Pass
5825	165	15.05	> 0.5	Pass
5845	169	15.08	> 0.5	Pass
5865	173	15.19	> 0.5	Pass
5885	177	15.07	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	33.93	> 0.5	Pass
5795	159	35.12	> 0.5	Pass
5835	167	35.16	> 0.5	Pass
5875	175	35.12	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.09	> 0.5	Pass
5785	157	15.11	> 0.5	Pass
5825	165	12.69	> 0.5	Pass
5845	169	13.89	> 0.5	Pass
5865	173	15.09	> 0.5	Pass
5885	177	13.92	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.08	> 0.5	Pass
5795	159	35.14	> 0.5	Pass
5835	167	35.13	> 0.5	Pass
5875	175	35.11	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	71.38	> 0.5	Pass
5855	171	72.49	> 0.5	Pass

[Ant.1]

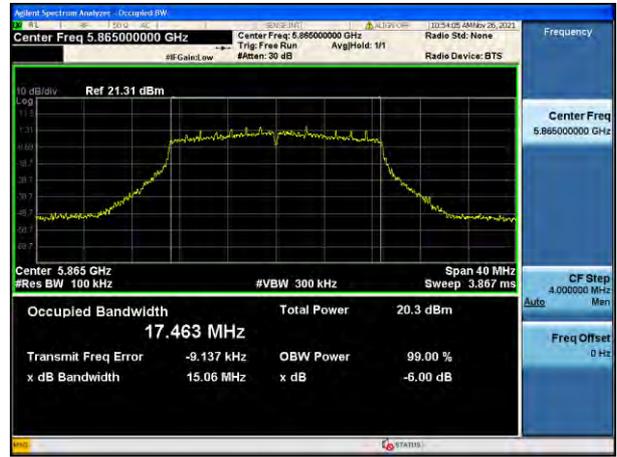
☑ Test Plots

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

802.11a (CH.165)



802.11n(HT20) (CH.173)



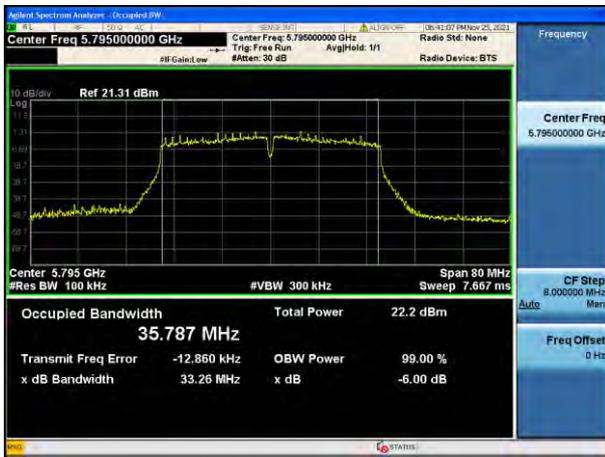
802.11n(HT40) (CH.151)



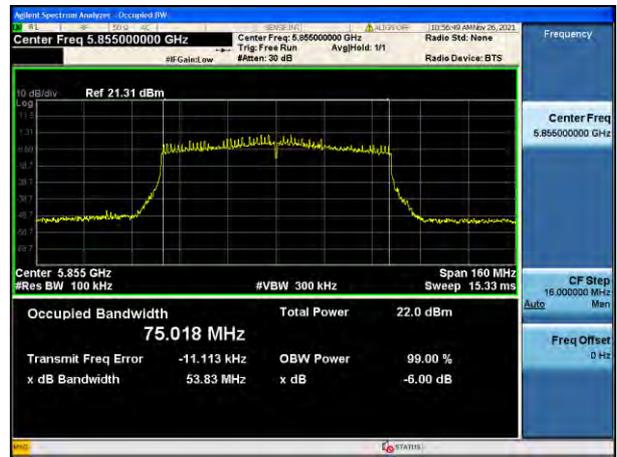
802.11ac(VHT20) (CH.149)



802.11ac(VHT40) (CH.159)



802.11ac(VHT80) (CH.171)



[Ant.2]

☑ Test Plots

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

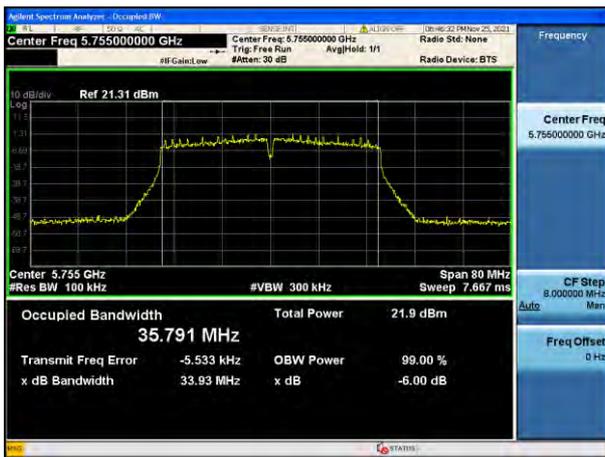
802.11a (CH.169)



802.11n(HT20) (CH.165)



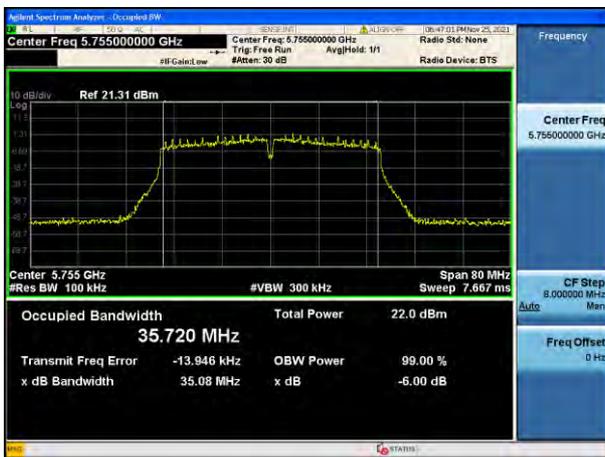
802.11n(HT40) (CH.151)



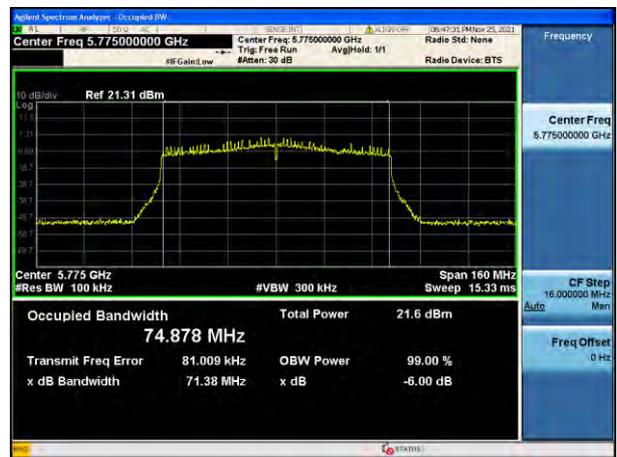
802.11ac(VHT20) (CH.165)



802.11ac(VHT40) (CH.151)



802.11ac(VHT80) (CH.155)



10.4 OUTPUT POWER MEASUREMENT

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

Straddle channel data were added in section 10.7.3.

Limit

(UNII 1) : 23.98 dBm

(UNII 2A, 2C) : 23.98 dBm or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)

(UNII 3) : 30.00 dBm

(UNII 4) : EIRP 30.0 dBm/MHz

[Ant.1] UNII1 ~ UNII3

802.11a Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate [Mbps]
Frequency [MHz]	Channel No.					
5180	36	15.04	0.799	15.83	23.98	18M
5200	40	15.05	0.799	15.85	23.98	18M
5240	48	10.06	0.799	10.85	23.98	18M
5260	52	15.53	0.799	16.33	23.98	18M
5300	60	15.54	0.799	16.34	23.98	18M
5320	64	16.02	0.799	16.82	23.98	18M
5500	100	14.87	0.799	15.67	23.98	18M
5600	120	14.92	0.799	15.72	23.98	18M
5720	144	15.27	0.799	16.07	23.98	18M
5745	149	13.56	0.799	14.36	30.00	18M
5785	157	14.15	0.799	14.95	30.00	18M
5825	165	13.60	0.799	14.40	30.00	18M

802.11n(20 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5180	36	15.10	0.858	15.96	23.98	MCS2
5200	40	15.08	0.858	15.94	23.98	MCS2
5240	48	9.76	0.858	10.62	23.98	MCS2
5260	52	15.30	0.858	16.16	23.98	MCS2
5300	60	15.28	0.858	16.14	23.98	MCS2
5320	64	15.77	0.858	16.63	23.98	MCS2
5500	100	14.62	0.858	15.48	23.98	MCS2
5600	120	14.68	0.858	15.54	23.98	MCS2
5720	144	15.01	0.858	15.87	23.98	MCS2
5745	149	13.18	0.858	14.03	30.00	MCS2
5785	157	13.97	0.858	14.83	30.00	MCS2
5825	165	13.44	0.858	14.30	30.00	MCS2

802.11n(40 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5190	38	13.84	1.114	14.96	23.98	MCS1
5230	46	12.43	0.624	13.05	23.98	MCS0
5270	54	14.84	1.114	15.95	23.98	MCS1
5310	62	13.49	1.114	14.61	23.98	MCS1
5510	102	12.88	1.114	14.00	23.98	MCS1
5590	118	14.66	1.114	15.77	23.98	MCS1
5710	142	15.35	1.114	16.46	23.98	MCS1
5755	151	13.82	0.624	14.45	30.00	MCS0
5795	159	14.34	0.624	14.96	30.00	MCS0

802.11ac(20 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5180	36	15.13	0.849	15.98	23.98	MCS2
5200	40	15.12	0.849	15.97	23.98	MCS2
5240	48	9.78	0.849	10.63	23.98	MCS2
5260	52	15.31	0.849	16.16	23.98	MCS2
5300	60	15.26	0.849	16.11	23.98	MCS2
5320	64	15.79	0.849	16.64	23.98	MCS2
5500	100	14.63	0.849	15.48	23.98	MCS2
5600	120	14.65	0.849	15.50	23.98	MCS2
5720	144	15.03	0.849	15.88	23.98	MCS2
5745	149	13.21	0.849	14.06	30.00	MCS2
5785	157	14.01	0.849	14.86	30.00	MCS2
5825	165	13.44	0.849	14.29	30.00	MCS2

802.11ac(40 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5190	38	13.92	1.114	15.04	23.98	MCS1
5230	46	11.86	1.114	12.98	23.98	MCS1
5270	54	14.86	1.114	15.98	23.98	MCS1
5310	62	13.45	1.114	14.57	23.98	MCS1
5510	102	12.91	1.114	14.02	23.98	MCS1
5590	118	14.67	1.114	15.78	23.98	MCS1
5710	142	15.15	1.114	16.26	23.98	MCS1
5755	151	13.32	1.114	14.43	30.00	MCS1
5795	159	13.83	1.114	14.94	30.00	MCS1

802.11ac(80 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5210	42	7.90	6.573	14.48	23.98	MCS5
5290	58	6.55	6.573	13.12	23.98	MCS5
5530	106	7.50	6.573	14.07	23.98	MCS5
5610	122	9.12	6.573	15.69	23.98	MCS5
5690	138	8.82	6.573	15.39	23.98	MCS5
5775	155	12.57	1.178	13.75	30.00	MCS0

[Ant.1] UNII4

802.11a Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase Datarate [Mbps]
Frequency [MHz]	Channel No.							
5845	169	13.76	0.799	14.56	-3.86	10.70	30	18M
5865	173	13.66	0.799	14.46	-3.86	10.60	30	18M
5885	177	14.03	0.799	14.83	-3.86	10.97	30	18M

802.11n(20MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	13.60	0.858	14.46	-3.86	10.60	30	MCS2
5865	173	13.52	0.858	14.38	-3.86	10.52	30	MCS2
5885	177	13.76	0.858	14.62	-3.86	10.76	30	MCS2

802.11n(40MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	13.21	0.624	13.84	-3.86	9.98	30	MCS0
5875	175	13.01	0.624	13.64	-3.86	9.78	30	MCS0

802.11ac(20MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	13.53	0.849	14.38	-3.86	10.52	30	MCS2
5865	173	13.45	0.849	14.30	-3.86	10.44	30	MCS2
5885	177	13.79	0.849	14.64	-3.86	10.78	30	MCS2

802.11ac(40MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	12.69	1.114	13.80	-3.86	9.94	30	MCS1
5875	175	12.53	1.114	13.64	-3.86	9.78	30	MCS1

802.11ac(80MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5855	171	12.91	1.178	14.09	-3.86	10.23	30	MCS0

[Ant.2] UNII1 ~ UNII3

802.11a Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate [Mbps]
Frequency [MHz]	Channel No.					
5180	36	16.02	0.799	16.82	23.98	18M
5200	40	16.08	0.799	16.88	23.98	18M
5240	48	10.73	0.799	11.53	23.98	18M
5260	52	16.17	0.799	16.97	23.98	18M
5300	60	16.18	0.799	16.98	23.98	18M
5320	64	16.15	0.799	16.95	23.98	18M
5500	100	15.44	0.799	16.24	23.98	18M
5600	120	15.81	0.799	16.61	23.98	18M
5720	144	15.95	0.799	16.75	23.98	18M
5745	149	13.84	0.799	14.64	30.00	18M
5785	157	14.18	0.799	14.98	30.00	18M
5825	165	14.14	0.799	14.94	30.00	18M

802.11n(20 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5180	36	15.72	0.858	16.58	23.98	MCS2
5200	40	15.78	0.858	16.64	23.98	MCS2
5240	48	10.27	0.858	11.13	23.98	MCS2
5260	52	16.05	0.858	16.91	23.98	MCS2
5300	60	16.12	0.858	16.98	23.98	MCS2
5320	64	16.12	0.858	16.98	23.98	MCS2
5500	100	15.21	0.858	16.07	23.98	MCS2
5600	120	15.51	0.858	16.37	23.98	MCS2
5720	144	15.69	0.858	16.55	23.98	MCS2
5745	149	13.43	0.858	14.29	30.00	MCS2
5785	157	14.00	0.858	14.86	30.00	MCS2
5825	165	14.12	0.858	14.98	30.00	MCS2

802.11n(40 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5190	38	13.37	1.114	14.49	23.98	MCS1
5230	46	12.88	0.624	13.50	23.98	MCS0
5270	54	14.20	1.114	15.31	23.98	MCS1
5310	62	12.31	1.114	13.42	23.98	MCS1
5510	102	11.80	1.114	12.92	23.98	MCS1
5590	118	13.77	1.114	14.88	23.98	MCS1
5710	142	14.52	1.114	15.64	23.98	MCS1
5755	151	14.07	0.624	14.69	30.00	MCS0
5795	159	14.35	0.624	14.97	30.00	MCS0

802.11ac(20 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5180	36	15.64	0.849	16.49	23.98	MCS2
5200	40	15.74	0.849	16.59	23.98	MCS2
5240	48	10.32	0.849	11.17	23.98	MCS2
5260	52	16.10	0.849	16.95	23.98	MCS2
5300	60	16.14	0.849	16.99	23.98	MCS2
5320	64	16.10	0.849	16.95	23.98	MCS2
5500	100	15.28	0.849	16.13	23.98	MCS2
5600	120	15.57	0.849	16.42	23.98	MCS2
5720	144	15.70	0.849	16.55	23.98	MCS2
5745	149	13.47	0.849	14.32	30.00	MCS2
5785	157	14.01	0.849	14.86	30.00	MCS2
5825	165	14.13	0.849	14.98	30.00	MCS2

802.11ac(40 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5190	38	13.32	1.114	14.43	23.98	MCS1
5230	46	12.39	1.114	13.50	23.98	MCS1
5270	54	14.09	1.114	15.20	23.98	MCS1
5310	62	12.21	1.114	13.33	23.98	MCS1
5510	102	11.66	1.114	12.77	23.98	MCS1
5590	118	13.63	1.114	14.74	23.98	MCS1
5710	142	14.41	1.114	15.53	23.98	MCS1
5755	151	13.72	1.114	14.83	30.00	MCS1
5795	159	13.87	1.114	14.98	30.00	MCS1

802.11ac(80 MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.					
5210	42	6.73	6.573	13.30	23.98	MCS5
5290	58	5.34	6.573	11.91	23.98	MCS5
5530	106	6.28	6.573	12.85	23.98	MCS5
5610	122	7.92	6.573	14.50	23.98	MCS5
5690	138	7.76	6.573	14.34	23.98	MCS5
5775	155	12.62	1.178	13.80	30.00	MCS0

[Ant.2] UNII4

802.11a Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase Datarate [Mbps]
Frequency [MHz]	Channel No.							
5845	169	14.17	0.799	14.97	-3.86	11.11	30	18M
5865	173	14.13	0.799	14.93	-3.86	11.07	30	18M
5885	177	13.21	0.799	14.01	-3.86	10.15	30	18M

802.11n(20MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	14.12	0.858	14.98	-3.86	11.12	30	MCS2
5865	173	14.12	0.858	14.97	-3.86	11.11	30	MCS2
5885	177	13.05	0.858	13.91	-3.86	10.05	30	MCS2

802.11n(40MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	13.69	0.624	14.31	-3.86	10.45	30	MCS0
5875	175	13.50	0.624	14.12	-3.86	10.26	30	MCS0

802.11ac(20MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	14.13	0.849	14.98	-3.86	11.12	30	MCS2
5865	173	14.06	0.849	14.91	-3.86	11.05	30	MCS2
5885	177	13.02	0.849	13.87	-3.86	10.01	30	MCS2

802.11ac(40MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	13.19	1.114	14.30	-3.86	10.44	30	MCS1
5875	175	12.99	1.114	14.10	-3.86	10.24	30	MCS1

802.11ac(80MHz) Mode		Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Ant Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5855	171	12.80	1.178	13.98	-3.86	10.12	30	MCS0

[MIMO] UNII1 ~ 3

802.11a Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power (dBm) + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Limit [dBm]	Worstcase Datarate [Mbps]
Frequency [MHz]	Channel No.					
5180	36	15.83	16.82	19.37	23.98	18M
5200	40	15.85	16.88	19.41	23.98	18M
5240	48	10.85	11.53	14.22	23.98	18M
5260	52	16.33	16.97	19.67	23.98	18M
5300	60	16.34	16.98	19.68	23.98	18M
5320	64	16.82	16.95	19.90	23.98	18M
5500	100	15.67	16.24	18.97	23.98	18M
5600	120	15.72	16.61	19.20	23.98	18M
5720	144	16.07	16.75	19.43	23.98	18M
5745	149	14.36	14.64	17.51	30.00	18M
5785	157	14.95	14.98	17.97	30.00	18M
5825	165	14.40	14.94	17.69	30.00	18M

802.11n(20 MHz) Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power (dBm) + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Limit [dBm]	Worstcase MCS INDEX
Frequency [MHz]	Channel No.					
5180	36	15.96	16.58	19.29	23.98	MCS2
5200	40	15.94	16.64	19.31	23.98	MCS2
5240	48	10.62	11.13	13.89	23.98	MCS2
5260	52	16.16	16.91	19.56	23.98	MCS2
5300	60	16.14	16.98	19.59	23.98	MCS2
5320	64	16.63	16.98	19.82	23.98	MCS2
5500	100	15.48	16.07	18.79	23.98	MCS2
5600	120	15.54	16.37	18.98	23.98	MCS2
5720	144	15.87	16.55	19.23	23.98	MCS2
5745	149	14.03	14.29	17.17	30.00	MCS2
5785	157	14.83	14.86	17.85	30.00	MCS2
5825	165	14.30	14.98	17.66	30.00	MCS2

802.11n(40 MHz) Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power (dBm) + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Limit [dBm]	Worstcase MCS INDEX
Frequency [MHz]	Channel No.					
5190	38	14.96	14.49	17.74	23.98	MCS1
5230	46	13.05	13.50	16.29	23.98	MCS0
5270	54	15.95	15.31	18.65	23.98	MCS1
5310	62	14.61	13.42	17.06	23.98	MCS1
5510	102	14.00	12.92	16.50	23.98	MCS1
5590	118	15.77	14.88	18.36	23.98	MCS1
5710	142	16.46	15.64	19.08	23.98	MCS1
5755	151	14.45	14.69	17.58	30.00	MCS0
5795	159	14.96	14.97	17.98	30.00	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 Total Power [dBm]	Limit [dBm]	Worstcase MCS INDEX
Frequency [MHz]	Channel No.					
5180	36	15.98	16.49	19.25	23.98	MCS2
5200	40	15.97	16.59	19.30	23.98	MCS2
5240	48	10.63	11.17	13.92	23.98	MCS2
5260	52	16.16	16.95	19.58	23.98	MCS2
5300	60	16.11	16.99	19.58	23.98	MCS2
5320	64	16.64	16.95	19.81	23.98	MCS2
5500	100	15.48	16.13	18.83	23.98	MCS2
5600	120	15.50	16.42	18.99	23.98	MCS2
5720	144	15.88	16.55	19.24	23.98	MCS2
5745	149	14.06	14.32	17.20	30.00	MCS2
5785	157	14.86	14.86	17.87	30.00	MCS2
5825	165	14.29	14.98	17.66	30.00	MCS2

802.11ac(40 MHz) Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power (dBm) + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Limit [dBm]	Worstcase MCS INDEX
Frequency [MHz]	Channel No.					
5190	38	15.04	14.43	17.76	23.98	MCS1
5230	46	12.98	13.50	16.26	23.98	MCS1
5270	54	15.98	15.20	18.62	23.98	MCS1
5310	62	14.57	13.33	17.00	23.98	MCS1
5510	102	14.02	12.77	16.45	23.98	MCS1
5590	118	15.78	14.74	18.30	23.98	MCS1
5710	142	16.26	15.53	18.92	23.98	MCS1
5755	151	14.43	14.83	17.65	30.00	MCS1
5795	159	14.94	14.98	17.97	30.00	MCS1

802.11ac(80 MHz) Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power (dBm) + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Limit [dBm]	Worstcase MCS INDEX
Frequency [MHz]	Channel No.					
5210	42	14.48	13.30	16.94	23.98	MCS5
5290	58	13.12	11.91	15.57	23.98	MCS5
5530	106	14.07	12.85	16.51	23.98	MCS5
5610	122	15.69	14.50	18.14	23.98	MCS5
5690	138	15.39	14.34	17.91	23.98	MCS5
5775	155	13.75	13.80	16.79	30.00	MCS0

[MIMO] UNII4

802.11a Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.P [dBm]	Limit [dBm]	Worstcase Datarate [Mbps]
Frequency [MHz]	Channel No.							
5845	169	14.56	14.97	17.78	-3.86	13.92	30	18M
5865	173	14.46	14.93	17.71	-3.86	13.85	30	18M
5885	177	14.83	14.01	17.45	-3.86	13.59	30	18M

802.11n(20MHz) Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	14.46	14.98	17.74	-3.86	13.88	30	MCS2
5865	173	14.38	14.97	17.70	-3.86	13.84	30	MCS2
5885	177	14.62	13.91	17.29	-3.86	13.43	30	MCS2

802.11n(40MHz) Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	13.84	14.31	17.09	-3.86	13.23	30	MCS0
5875	175	13.64	14.12	16.90	-3.86	13.04	30	MCS0

802.11ac(20MHz) Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	14.38	14.98	17.70	-3.86	13.84	30	MCS2
5865	173	14.30	14.91	17.63	-3.86	13.77	30	MCS2
5885	177	14.64	13.87	17.28	-3.86	13.42	30	MCS2

802.11ac(40MHz) Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	13.80	14.30	17.07	-3.86	13.21	30	MCS1
5875	175	13.64	14.10	16.89	-3.86	13.03	30	MCS1

802.11ac(80MHz) Mode		Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.2 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.P [dBm]	Limit [dBm]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5855	171	14.09	13.98	17.04	-3.86	13.18	30	MCS0

10.5 POWER SPECTRAL DENSITY

[Ant.1] UNII1 ~ 3

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase Datarate [Mbps]	Limit
Frequency [MHz]	Channel No.					
5180	36	5.626	0.799	6.425	18M	11 dBm/MHz
5200	40	5.762	0.799	6.561	18M	
5240	48	0.327	0.799	1.126	18M	
5260	52	5.908	0.799	6.707	18M	
5300	60	6.235	0.799	7.034	18M	
5320	64	6.301	0.799	7.100	18M	
5500	100	5.367	0.799	6.166	18M	
5600	120	5.874	0.799	6.673	18M	
5720	144	5.915	0.799	6.714	18M	
5745	149	0.905	0.799	1.704	18M	
5785	157	1.833	0.799	2.632	18M	30 dBm/500 kHz
5825	165	0.742	0.799	1.541	18M	

802.11n(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	5.341	0.858	6.199	MCS2	11 dBm/MHz
5200	40	5.206	0.858	6.064	MCS2	
5240	48	0.082	0.858	0.940	MCS2	
5260	52	5.562	0.858	6.420	MCS2	
5300	60	5.165	0.858	6.023	MCS2	
5320	64	6.004	0.858	6.862	MCS2	
5500	100	5.011	0.858	5.869	MCS2	
5600	120	5.050	0.858	5.908	MCS2	
5720	144	5.426	0.858	6.284	MCS2	
5745	149	-0.015	0.858	0.843	MCS2	
5785	157	1.364	0.858	2.222	MCS2	30 dBm/500 kHz
5825	165	1.411	0.858	2.269	MCS2	

802.11n(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	1.021	1.114	2.135	MCS1	11 dBm/MHz
5230	46	-0.087	0.624	0.537	MCS0	
5270	54	1.887	1.114	3.001	MCS1	
5310	62	0.501	1.114	1.615	MCS1	
5510	102	0.446	1.114	1.560	MCS1	
5590	118	1.808	1.114	2.922	MCS1	
5710	142	2.236	1.114	3.350	MCS1	
5755	151	-1.539	0.624	-0.915	MCS0	30 dBm /500 kHz
5795	159	-0.824	0.624	-0.200	MCS0	

802.11ac(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	5.176	0.849	6.025	MCS2	11 dBm/MHz
5200	40	5.255	0.849	6.104	MCS2	
5240	48	0.345	0.849	1.194	MCS2	
5260	52	5.562	0.849	6.411	MCS2	
5300	60	5.327	0.849	6.176	MCS2	
5320	64	5.995	0.849	6.844	MCS2	
5500	100	4.958	0.849	5.807	MCS2	
5600	120	4.889	0.849	5.738	MCS2	
5720	144	5.425	0.849	6.274	MCS2	
5745	149	0.697	0.849	1.546	MCS2	
5785	157	1.440	0.849	2.289	MCS2	30 dBm/500 kHz
5825	165	0.705	0.849	1.554	MCS2	

802.11ac(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	1.208	1.114	2.322	MCS1	11 dBm/MHz
5230	46	-0.868	1.114	0.246	MCS1	
5270	54	2.275	1.114	3.389	MCS1	
5310	62	0.874	1.114	1.988	MCS1	
5510	102	0.309	1.114	1.423	MCS1	
5590	118	2.041	1.114	3.155	MCS1	
5710	142	2.407	1.114	3.521	MCS1	
5755	151	-2.040	1.114	-0.926	MCS1	30 dBm/500 kHz
5795	159	-1.728	1.114	-0.614	MCS1	

802.11ac(80 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5210	42	-7.620	6.573	-1.047	MCS5	11 dBm/MHz
5290	58	-8.876	6.573	-2.303	MCS5	
5530	106	-8.682	6.573	-2.109	MCS5	
5610	122	-7.379	6.573	-0.806	MCS5	
5690	138	-6.946	6.573	-0.373	MCS5	
5775	155	-5.485	1.178	-4.307	MCS0	30 dBm/500 kHz

[Ant.1] UNII4

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase Datarate [Mbps]
Frequency [MHz]	Channel No.							
5845	169	4.108	0.799	4.907	-3.86	1.047	14	18M
5865	173	4.288	0.799	5.087	-3.86	1.227	14	18M
5885	177	4.526	0.799	5.325	-3.86	1.465	14	18M

802.11n(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	3.736	0.858	4.594	-3.86	0.734	14	MCS2
5865	173	3.277	0.858	4.135	-3.86	0.275	14	MCS2
5885	177	3.932	0.858	4.790	-3.86	0.930	14	MCS2

802.11n(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	0.206	0.624	0.830	-3.86	-3.030	14	MCS0
5875	175	0.590	0.624	1.214	-3.86	-2.646	14	MCS0

802.11ac(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	3.402	0.849	4.251	-3.86	0.391	14	MCS2
5865	173	3.536	0.849	4.385	-3.86	0.525	14	MCS2
5885	177	4.016	0.849	4.865	-3.86	1.005	14	MCS2

802.11ac(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	-0.044	1.114	1.070	-3.86	-2.790	14	MCS1
5875	175	-0.072	1.114	1.042	-3.86	-2.818	14	MCS1

802.11ac(80MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5855	171	-2.945	1.178	-1.767	-3.86	-5.627	14	MCS0

[Ant.2] UNII1 ~ 3

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase Datarate (Mbps)	Limit
Frequency [MHz]	Channel No.					
5180	36	6.277	0.799	7.076	18M	11 dBm/MHz
5200	40	6.626	0.799	7.425	18M	
5240	48	0.909	0.799	1.708	18M	
5260	52	6.857	0.799	7.656	18M	
5300	60	7.008	0.799	7.807	18M	
5320	64	6.754	0.799	7.553	18M	
5500	100	5.996	0.799	6.795	18M	
5600	120	6.260	0.799	7.059	18M	
5720	144	6.356	0.799	7.155	18M	
5745	149	1.464	0.799	2.263	18M	
5785	157	2.199	0.799	2.998	18M	30 dBm/500 kHz
5825	165	2.477	0.799	3.276	18M	

802.11n(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	5.809	0.858	6.667	MCS2	11 dBm/MHz
5200	40	6.000	0.858	6.858	MCS2	
5240	48	0.811	0.858	1.669	MCS2	
5260	52	6.626	0.858	7.484	MCS2	
5300	60	6.346	0.858	7.204	MCS2	
5320	64	6.360	0.858	7.218	MCS2	
5500	100	5.274	0.858	6.132	MCS2	
5600	120	5.486	0.858	6.344	MCS2	
5720	144	5.655	0.858	6.513	MCS2	
5745	149	1.084	0.858	1.942	MCS2	
5785	157	1.349	0.858	2.207	MCS2	30 dBm/500 kHz
5825	165	1.880	0.858	2.738	MCS2	

802.11n(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	0.716	1.114	1.830	MCS1	11 dBm/MHz
5230	46	0.224	0.624	0.848	MCS0	
5270	54	1.318	1.114	2.432	MCS1	
5310	62	-0.257	1.114	0.857	MCS1	
5510	102	-0.735	1.114	0.379	MCS1	
5590	118	0.826	1.114	1.940	MCS1	
5710	142	1.899	1.114	3.013	MCS1	
5755	151	-1.067	0.624	-0.443	MCS0	30 dBm /500 kHz
5795	159	-1.015	0.624	-0.391	MCS0	

802.11ac(20 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	5.858	0.849	6.707	MCS2	11 dBm/MHz
5200	40	6.220	0.849	7.069	MCS2	
5240	48	0.607	0.849	1.456	MCS2	
5260	52	6.297	0.849	7.146	MCS2	
5300	60	6.551	0.849	7.400	MCS2	
5320	64	6.248	0.849	7.097	MCS2	
5500	100	5.751	0.849	6.600	MCS2	
5600	120	5.623	0.849	6.472	MCS2	
5720	144	5.757	0.849	6.606	MCS2	
5745	149	0.885	0.849	1.734	MCS2	
5785	157	1.861	0.849	2.710	MCS2	30 dBm/500 kHz
5825	165	2.097	0.849	2.946	MCS2	

802.11ac(40 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	0.897	1.114	2.011	MCS1	11 dBm/MHz
5230	46	-0.105	1.114	1.009	MCS1	
5270	54	1.264	1.114	2.378	MCS1	
5310	62	-0.481	1.114	0.633	MCS1	
5510	102	-0.521	1.114	0.593	MCS1	
5590	118	0.717	1.114	1.831	MCS1	
5710	142	1.517	1.114	2.631	MCS1	
5755	151	-1.713	1.114	-0.599	MCS1	30 dBm/500 kHz
5795	159	-1.203	1.114	-0.089	MCS1	

802.11ac(80 MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5210	42	-8.903	6.573	-2.330	MCS5	11 dBm/MHz
5290	58	-9.937	6.573	-3.364	MCS5	
5530	106	-9.626	6.573	-3.053	MCS5	
5610	122	-8.251	6.573	-1.678	MCS5	
5690	138	-8.030	6.573	-1.457	MCS5	
5775	155	-5.940	1.178	-4.762	MCS0	
						30 dBm/500 kHz

[Ant.2] UNII4

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase Datarate [Mbps]
Frequency [MHz]	Channel No.							
5845	169	4.823	0.799	5.622	-3.86	1.762	14	18M
5865	173	5.063	0.799	5.862	-3.86	2.002	14	18M
5885	177	3.554	0.799	4.353	-3.86	0.493	14	18M

802.11n(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	4.728	0.858	5.586	-3.86	1.726	14	MCS2
5865	173	4.539	0.858	5.397	-3.86	1.537	14	MCS2
5885	177	3.040	0.858	3.898	-3.86	0.038	14	MCS2

802.11n(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	0.548	0.624	1.172	-3.86	-2.688	14	MCS0
5875	175	1.209	0.624	1.833	-3.86	-2.027	14	MCS0

802.11ac(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	4.312	0.849	5.161	-3.86	1.301	14	MCS2
5865	173	4.376	0.849	5.225	-3.86	1.365	14	MCS2
5885	177	3.380	0.849	4.229	-3.86	0.369	14	MCS2

802.11ac(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5835	167	0.470	1.114	1.584	-3.86	-2.276	14	MCS1
5875	175	0.675	1.114	1.789	-3.86	-2.071	14	MCS1

802.11ac(80MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Ant Gain [dBi]	E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5855	171	-1.837	1.178	-0.659	-3.86	-4.519	14	MCS0

[MIMO] UNII1 ~ 3

802.11a Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm/MHz]	Worstcase Datarate [Mbps]	Limit
Frequency [MHz]	Channel No.					
5180	36	6.425	7.076	9.773	18M	11 dBm/MHz
5200	40	6.561	7.425	10.025	18M	
5240	48	1.126	1.708	4.437	18M	
5260	52	6.707	7.656	10.218	18M	
5300	60	7.034	7.807	10.448	18M	
5320	64	7.100	7.553	10.343	18M	
5500	100	6.166	6.795	9.502	18M	
5600	120	6.673	7.059	9.881	18M	
5720	144	6.714	7.155	9.951	18M	
5745	149	1.704	2.263	5.003	18M	30 dBm/500 kHz
5785	157	2.632	2.998	5.829	18M	
5825	165	1.541	3.276	5.505	18M	

802.11n(20 MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	6.199	6.667	9.449	MCS2	11 dBm/MHz
5200	40	6.064	6.858	9.489	MCS2	
5240	48	0.940	1.669	4.330	MCS2	
5260	52	6.420	7.484	9.995	MCS2	
5300	60	6.023	7.204	9.664	MCS2	
5320	64	6.862	7.218	10.054	MCS2	
5500	100	5.869	6.132	9.013	MCS2	
5600	120	5.908	6.344	9.142	MCS2	
5720	144	6.284	6.513	9.410	MCS2	
5745	149	0.843	1.942	4.437	MCS2	30 dBm/500 kHz
5785	157	2.222	2.207	5.225	MCS2	
5825	165	2.269	2.738	5.520	MCS2	

802.11n(40 MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	2.135	1.830	4.995	MCS1	11 dBm/MHz
5230	46	0.537	0.848	3.705	MCS0	
5270	54	3.001	2.432	5.736	MCS1	
5310	62	1.615	0.857	4.262	MCS1	
5510	102	1.560	0.379	4.019	MCS1	
5590	118	2.922	1.940	5.469	MCS1	
5710	142	3.350	3.013	6.195	MCS1	
5755	151	-0.915	-0.443	2.338	MCS0	30 dBm/500 kHz
5795	159	-0.200	-0.391	2.716	MCS0	

802.11ac(20 MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	6.025	6.707	9.390	MCS2	11 dBm/MHz
5200	40	6.104	7.069	9.624	MCS2	
5240	48	1.194	1.456	4.337	MCS2	
5260	52	6.411	7.146	9.804	MCS2	
5300	60	6.176	7.400	9.841	MCS2	
5320	64	6.844	7.097	9.983	MCS2	
5500	100	5.807	6.600	9.232	MCS2	
5600	120	5.738	6.472	9.131	MCS2	
5720	144	6.274	6.606	9.453	MCS2	
5745	149	1.546	1.734	4.651	MCS2	30 dBm/500 kHz
5785	157	2.289	2.710	5.515	MCS2	
5825	165	1.554	2.946	5.316	MCS2	

802.11ac(40 MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	2.322	2.011	5.179	MCS1	11 dBm/MHz
5230	46	0.246	1.009	3.654	MCS1	
5270	54	3.389	2.378	5.923	MCS1	
5310	62	1.988	0.633	4.373	MCS1	
5510	102	1.423	0.593	4.038	MCS1	
5590	118	3.155	1.831	5.553	MCS1	
5710	142	3.521	2.631	6.109	MCS1	
5755	151	-0.926	-0.599	2.251	MCS1	30 dBm/500 kHz
5795	159	-0.614	-0.089	2.666	MCS1	

802.11ac(80 MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm/MHz]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5210	42	-1.047	-2.330	1.369	MCS5	11 dBm/MHz
5290	58	-2.303	-3.364	0.209	MCS5	
5530	106	-2.109	-3.053	0.454	MCS5	
5610	122	-0.806	-1.678	1.790	MCS5	
5690	138	-0.373	-1.457	2.129	MCS5	
5775	155	-4.307	-4.762	-1.519	MCS0	30 dBm/500 kHz

[MIMO] UNII4

802.11a Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor[dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor[dB]	MIMO Total PSD [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase Datarate [Mbps]
Frequency [MHz]	Channel No.							
5845	169	4.907	5.622	8.290	-3.86	4.430	14	18M
5865	173	5.087	5.862	8.502	-3.86	4.642	14	18M
5885	177	5.325	4.353	7.877	-3.86	4.017	14	18M

802.11n(20MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor[dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor[dB]	MIMO Total PSD [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	4.594	5.586	8.128	-3.86	4.268	14	MCS2
5865	173	4.135	5.397	7.822	-3.86	3.962	14	MCS2
5885	177	4.790	3.898	7.377	-3.86	3.517	14	MCS2

802.11n(40MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor[dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor[dB]	MIMO Total PSD [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5865	173	0.830	1.172	4.014	-3.86	0.154	14	MCS0
5885	177	1.214	1.833	4.545	-3.86	0.685	14	MCS0

802.11ac(20MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor[dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor[dB]	MIMO Total PSD [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5845	169	4.251	5.161	7.740	-3.86	3.880	14	MCS2
5865	173	4.385	5.225	7.836	-3.86	3.976	14	MCS2
5885	177	4.865	4.229	7.569	-3.86	3.709	14	MCS2

802.11ac(40MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor[dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor[dB]	MIMO Total PSD [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5865	173	1.070	1.584	4.345	-3.86	0.485	14	MCS1
5885	177	1.042	1.789	4.442	-3.86	0.582	14	MCS1

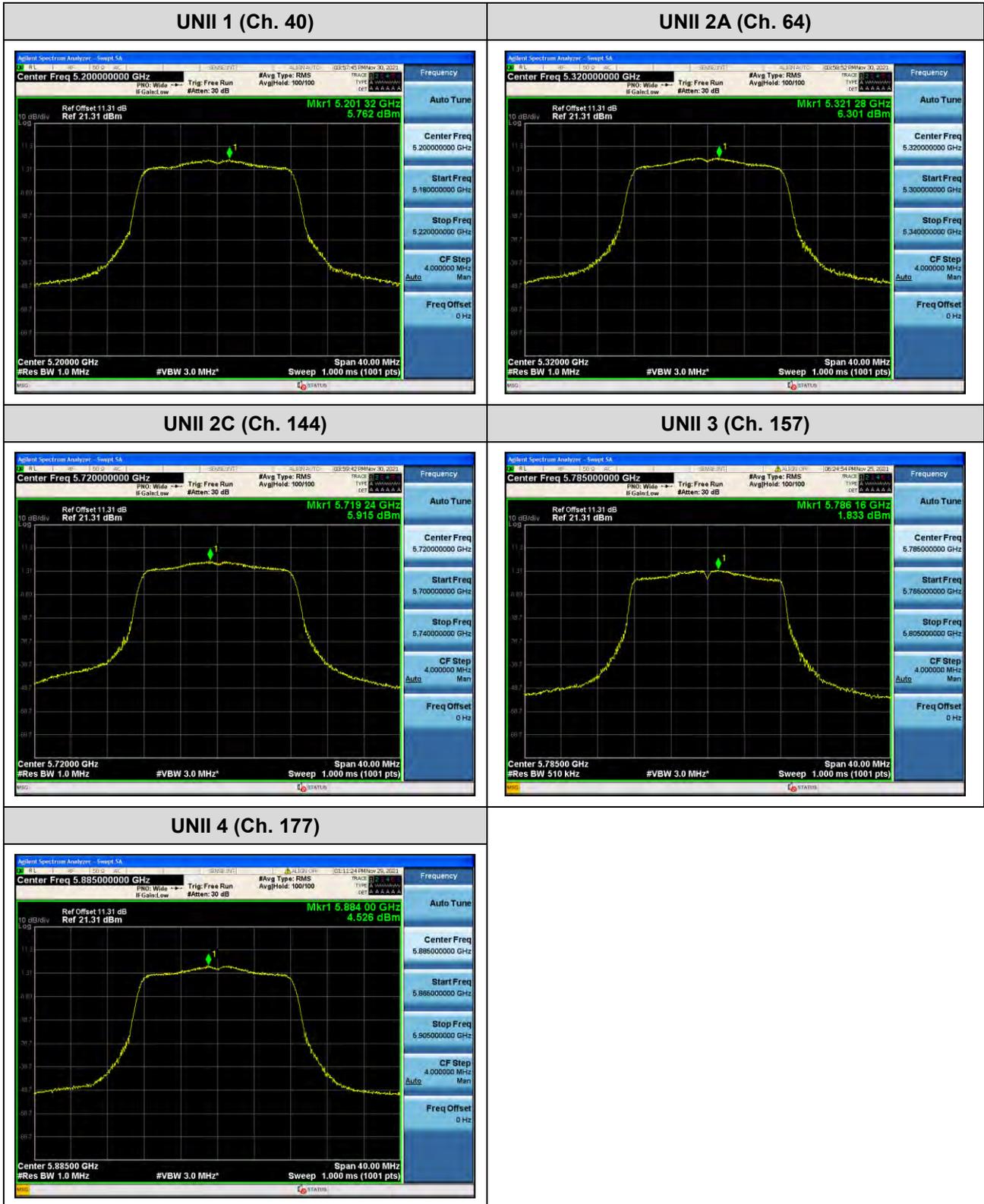
802.11ac(80MHz) Mode		ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm]	Ant Gain [dBi]	MIMO Total E.I.R.PSD [dBm/MHz]	Limit [dBm/MHz]	Worstcase MCS Index
Frequency [MHz]	Channel No.							
5855	171	-1.767	-0.659	1.832	-3.86	-2.028	14	MCS0

[Ant.1]

☑ Test Plots(802.11a)

Note:

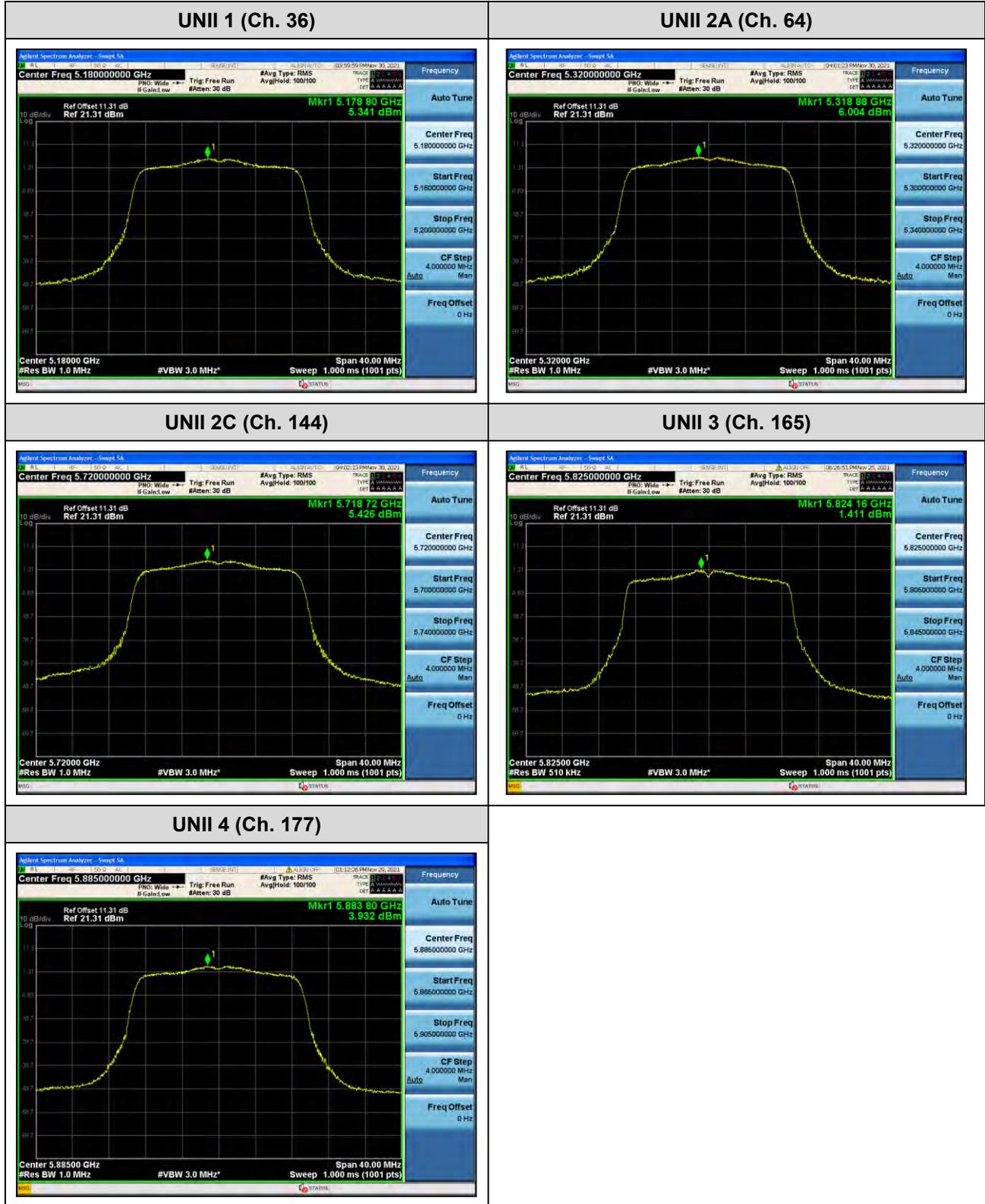
In order to simplify the report, attached plots were only channel of highest power.



☐ Test Plots(802.11n(HT20))

Note:

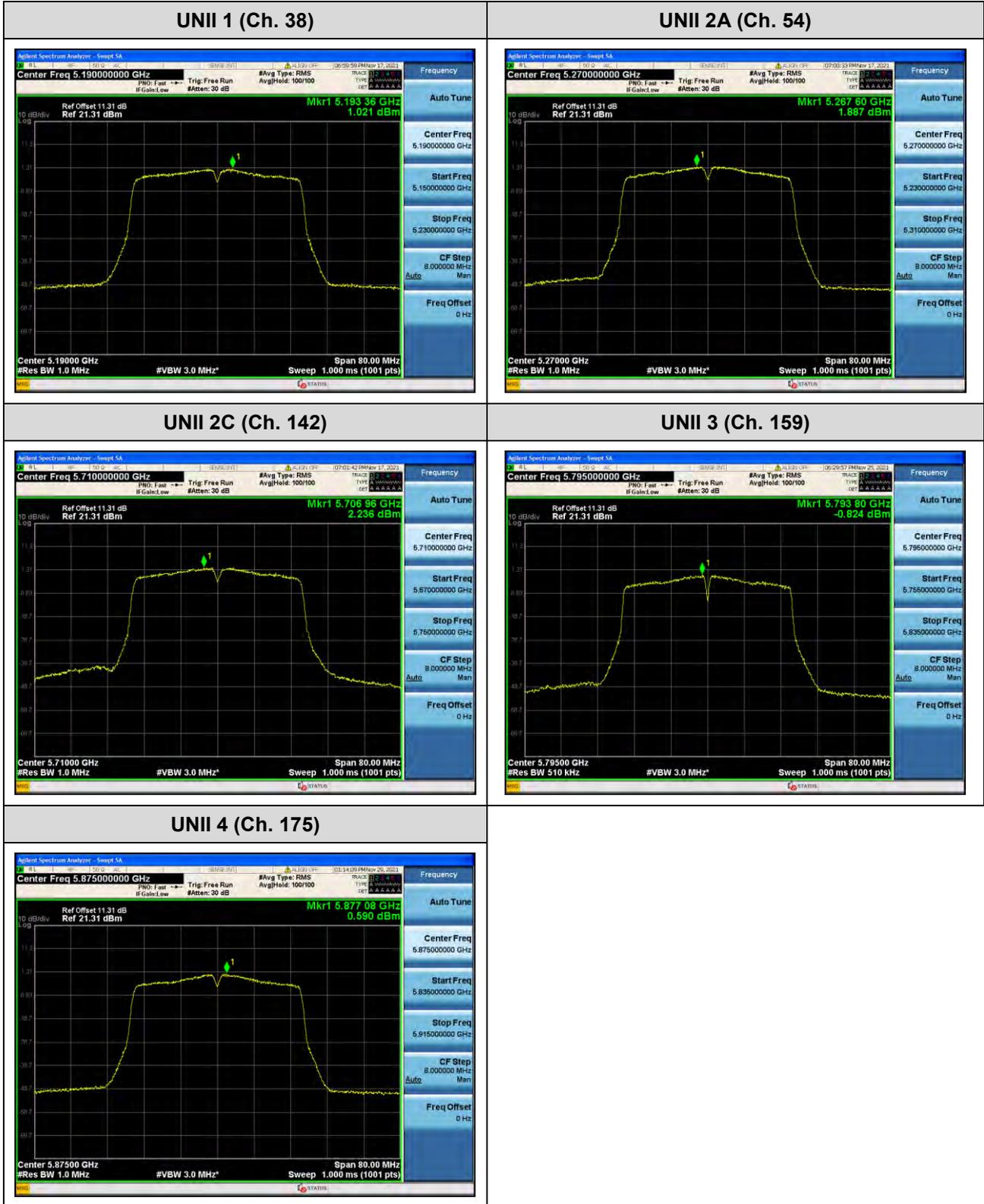
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☐ Test Plots(802.11n(HT40))

Note:

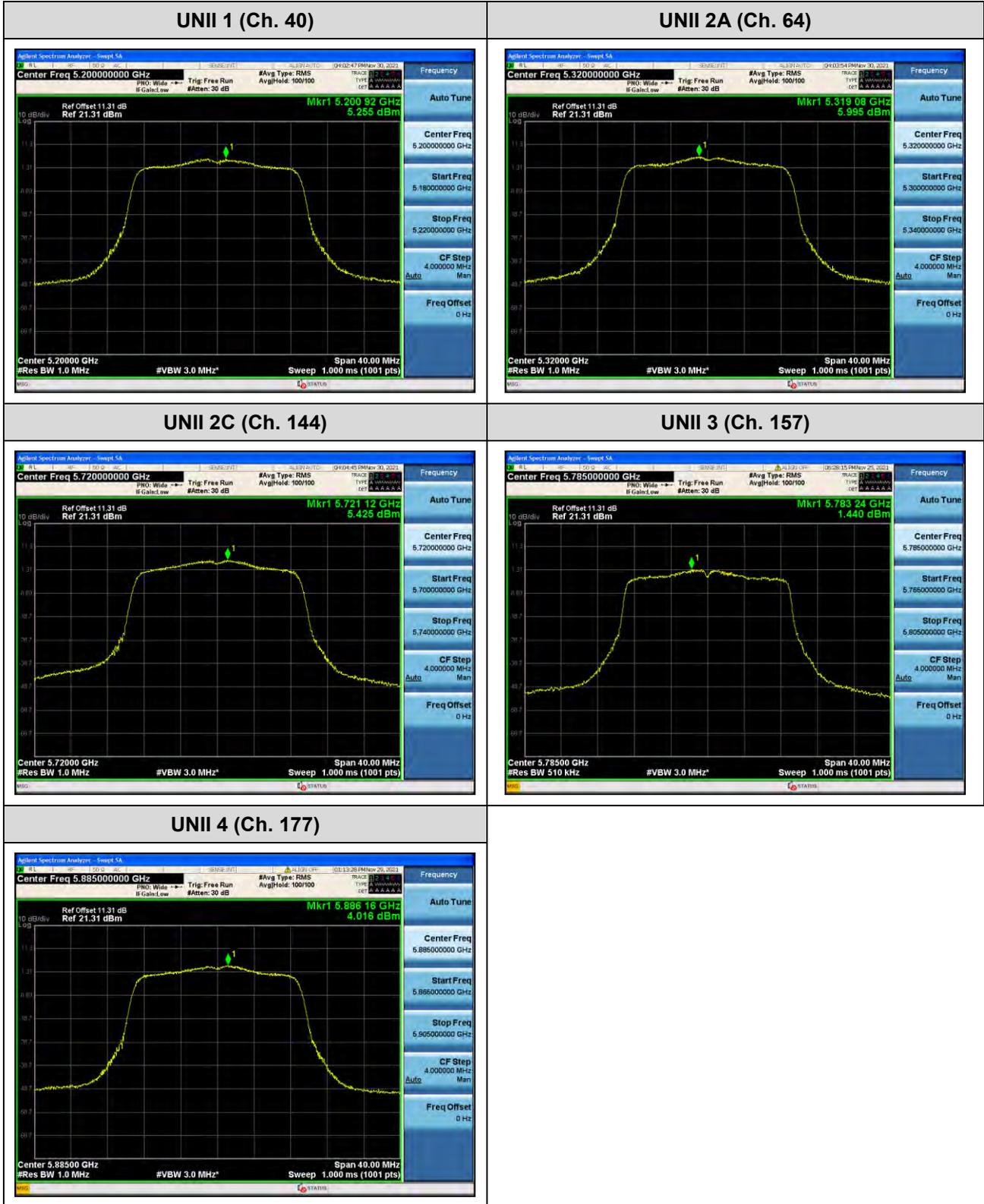
In order to simplify the report, attached plots were only channel of highest power.



☐ Test Plots(802.11ac(VHT20))

Note:

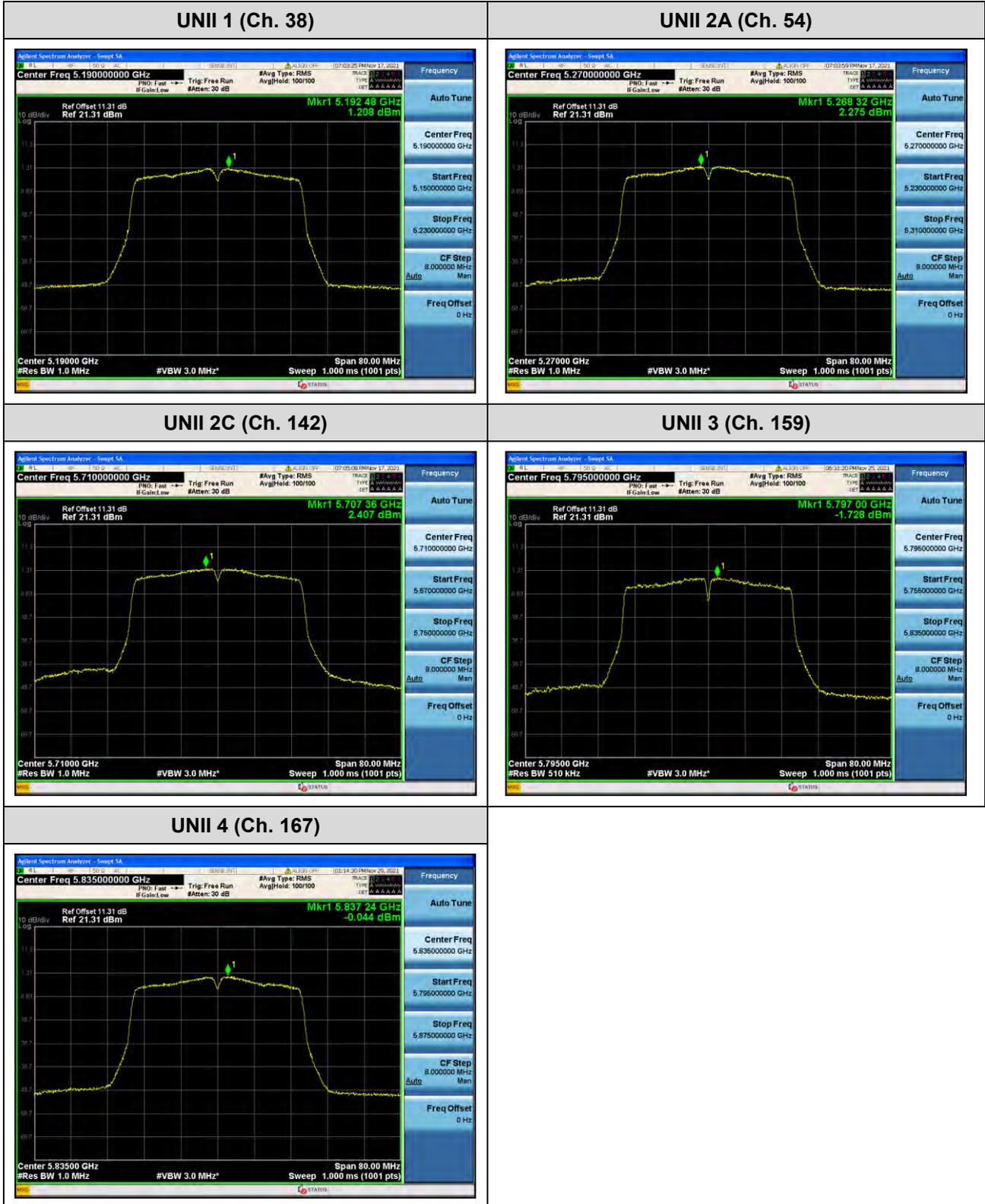
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☐ Test Plots(802.11ac(VHT40))

Note:

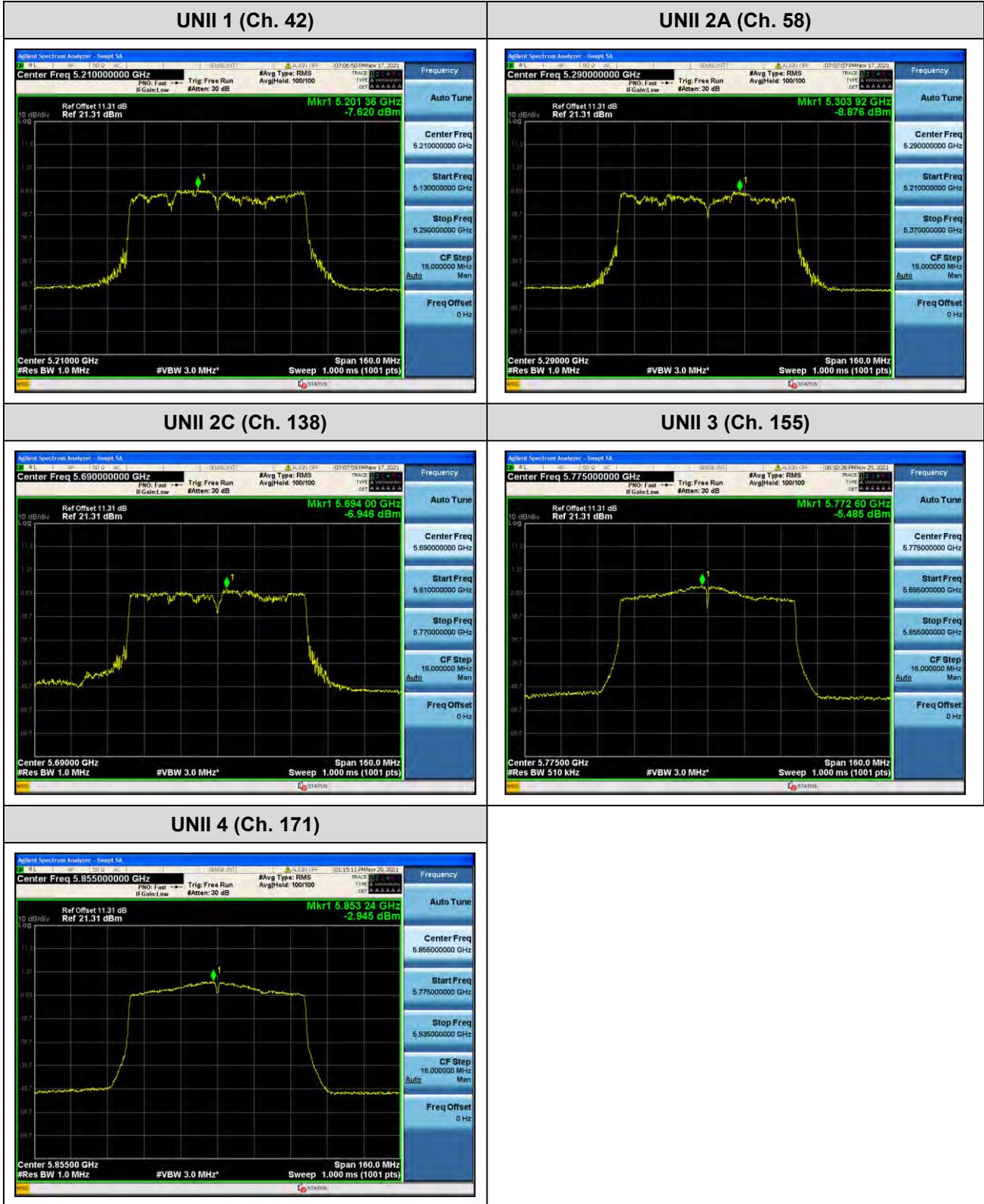
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☐ Test Plots(802.11ac(VHT80))

Note:

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

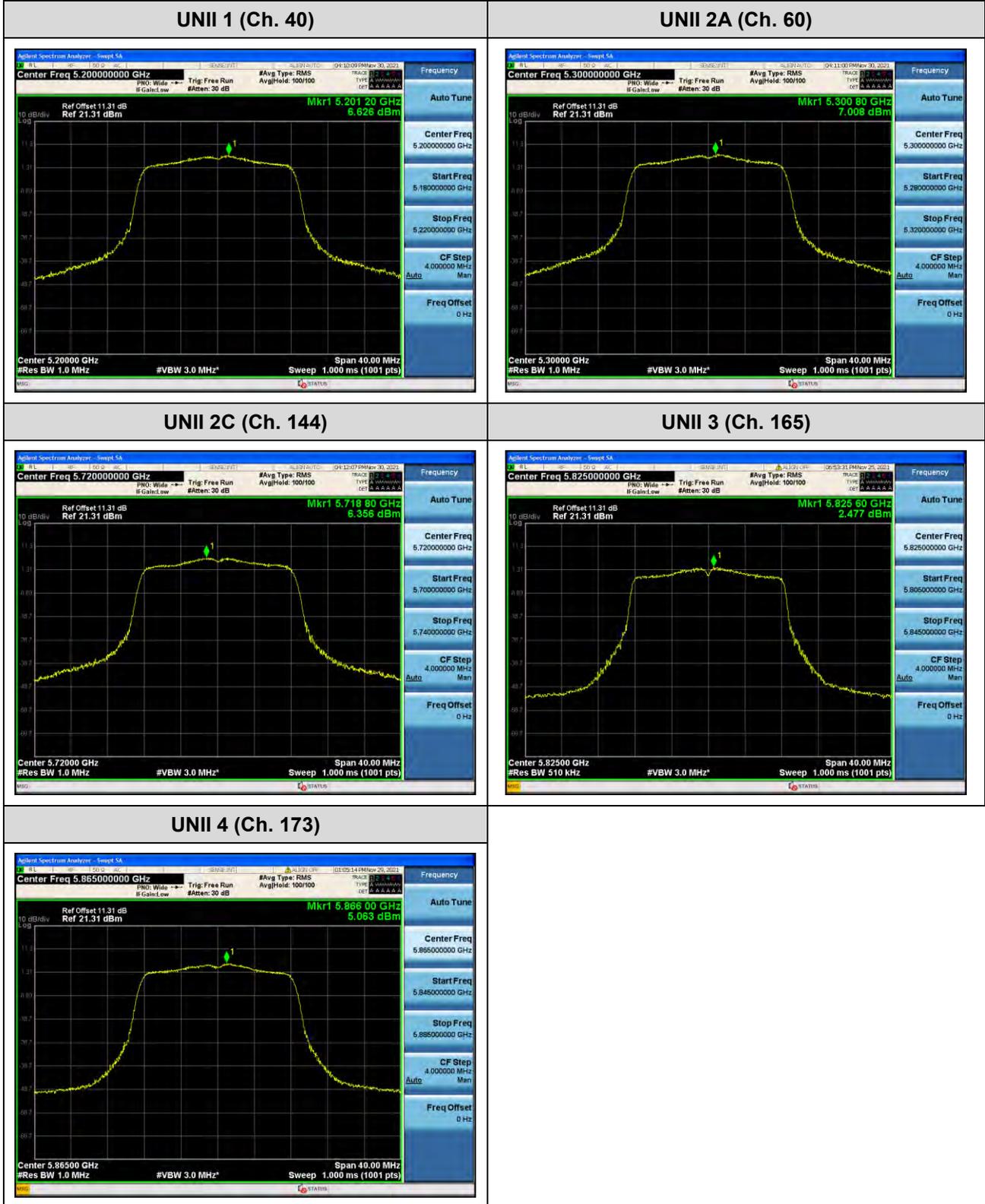


[Ant.2]

☐ Test Plots(802.11a)

Note:

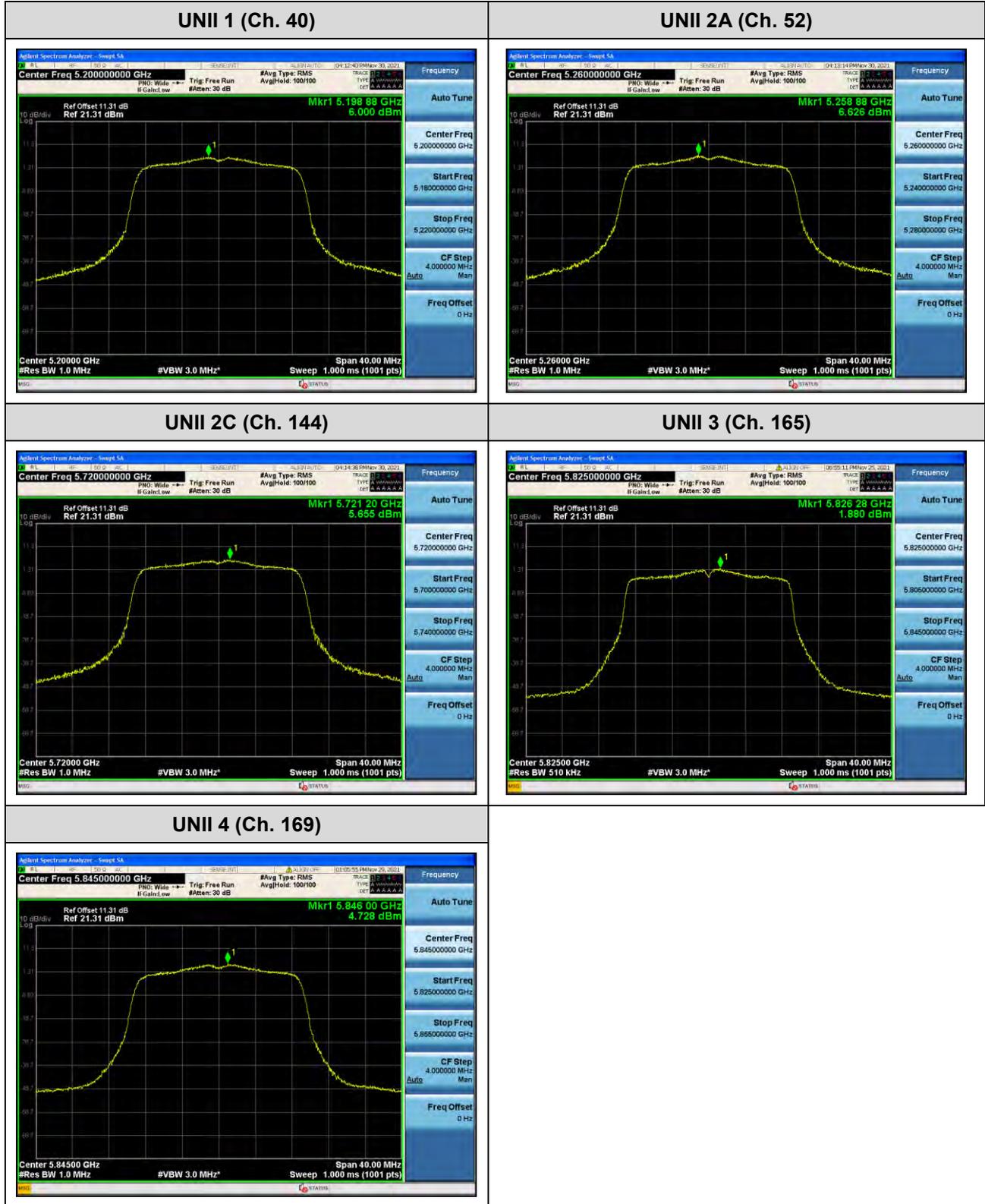
In order to simplify the report, attached plots were only channel of highest power.



☐ Test Plots(802.11n(HT20))

Note:

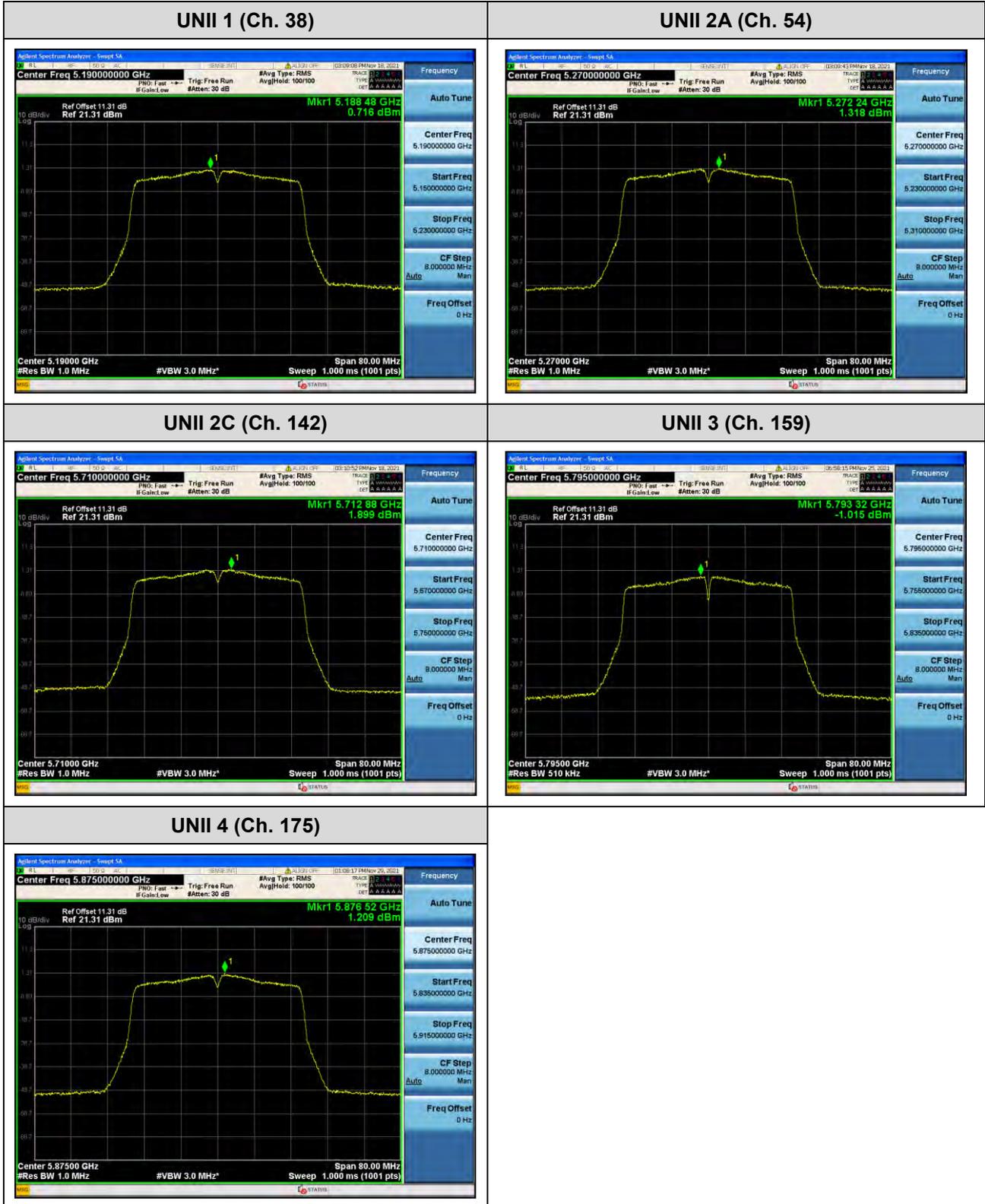
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☐ Test Plots(802.11n(HT40))

Note:

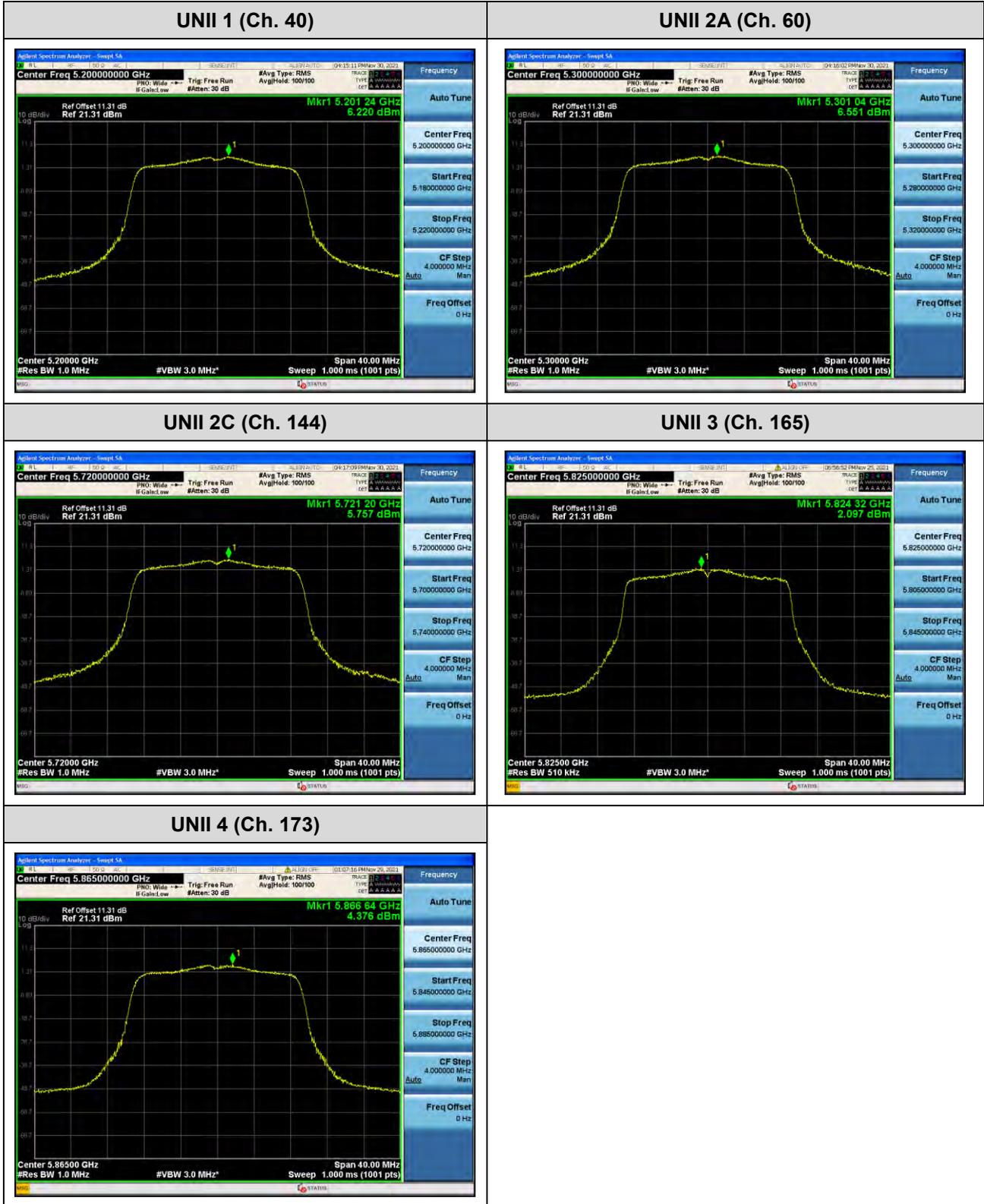
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☐ Test Plots(802.11ac(VHT20))

Note:

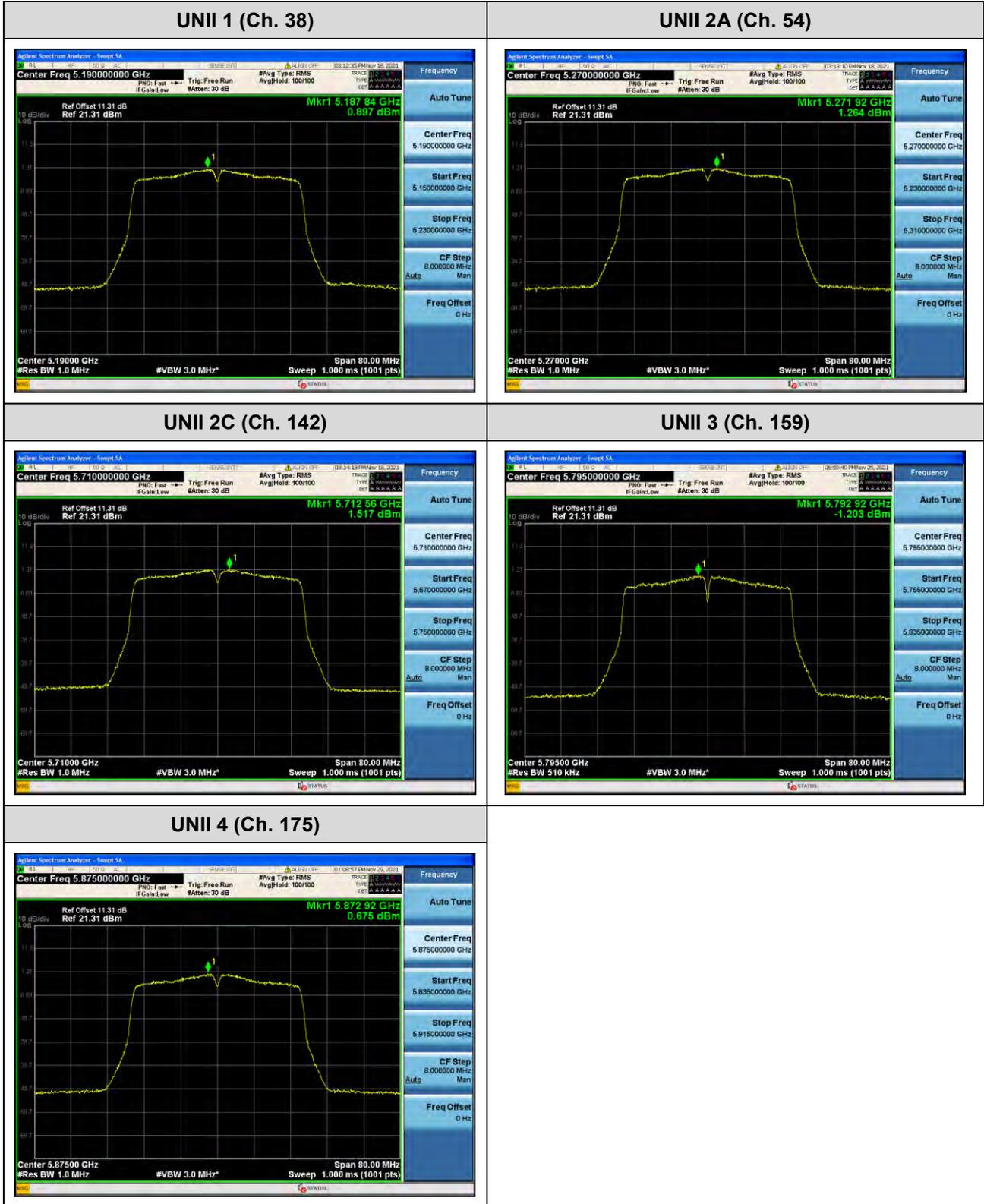
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☐ Test Plots(802.11ac(VHT40))

Note:

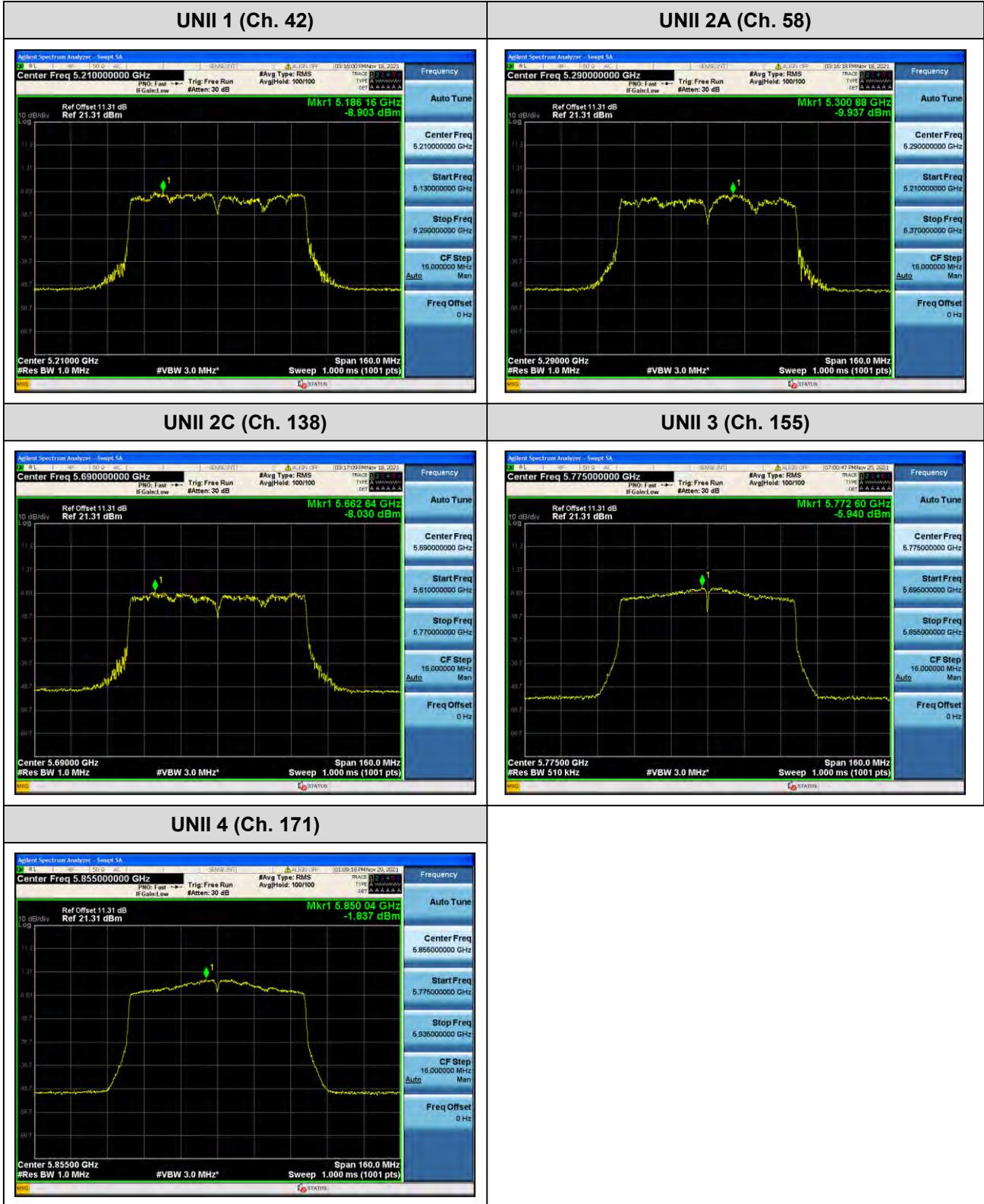
In order to simplify the report, attached plots were only channel of highest power.



☐ Test Plots(802.11ac(VHT80))

Note:

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



10.6 STRADDLE CHANNEL

10.6.1 26 dB Bandwidth

[U-NII 2C & 3]

[Ant.1]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11a	UNII 2C	5720	144	5710.84	14.16
802.11n(HT20)				5710.48	14.52
802.11ac(VHT20)				5710.32	14.68
802.11a	UNII 3	5720	144	5729.04	4.04
802.11n(HT20)				5729.64	4.64
802.11ac(VHT20)				5729.92	4.92

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11n(HT40)	UNII 2C	5710	142	5690.56	34.44
802.11ac(VHT40)				5690.56	34.44
802.11n(HT40)	UNII 3	5710	142	5729.36	4.36
802.11ac(VHT40)				5729.28	4.28

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11ac(VHT80)	UNII 2C	5690	138	5647.12	77.88
	UNII 3	5690	138	5733.52	8.52

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	5710.80	14.20
802.11n(HT20)				5710.40	14.60
802.11ac(VHT20)				5710.28	14.72
802.11a	UNII 3	5720	144	5729.48	4.48
802.11n(HT20)				5729.84	4.84
802.11ac(VHT20)				5729.76	4.76

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11n(HT40)	UNII 2C	5710	142	5690.32	34.68
802.11ac(VHT40)				5690.56	34.44
802.11n(HT40)	UNII 3	5710	142	5729.52	4.52
802.11ac(VHT40)				5729.60	4.60

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11ac(VHT80)	UNII 2C	5690	138	5645.84	79.16
	UNII 3	5690	138	5733.68	8.68

Note:

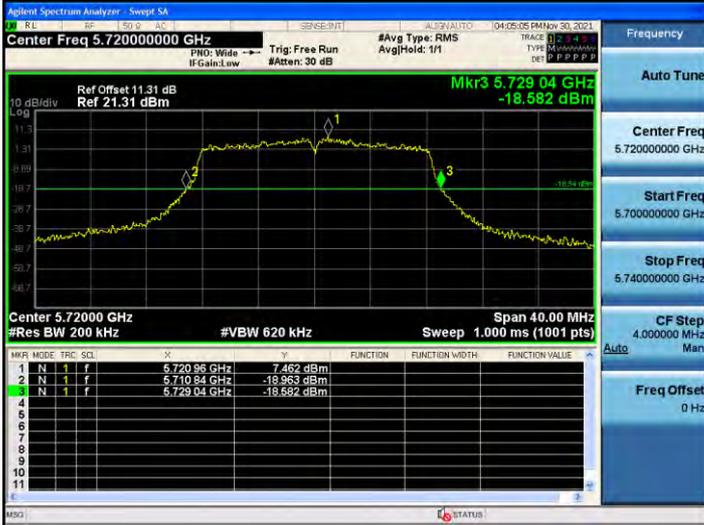
[UNII 2C] 26 dB Bandwidth = 5 725 MHz - Measured Frequency[MHz]

[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



☐ Test Plots (26 dB Bandwidth)

802.11n(HT40) UNII Band



802.11ac(VHT40) UNII Band



802.11ac(VHT80) UNII Band



[Ant.2]

☐ Test Plots (26 dB Bandwidth)

802.11a UNII Band



802.11n(HT20) UNII Band



802.11ac(VHT20) UNII Band



☐ Test Plots (26 dB Bandwidth)

802.11n(HT40) UNII Band



802.11ac(VHT40) UNII Band



802.11ac(VHT80) UNII Band



10.6.2 6 dB Bandwidth
[Ant.1]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
802.11a	UNII 3	5720	144	5727.56	2.56	> 0.5
802.11n(HT20)				5727.60	2.60	> 0.5
802.11ac(VHT20)				5727.60	2.60	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
802.11n(HT40)	UNII 3	5710	142	5727.60	2.60	> 0.5
802.11ac(VHT40)				5727.60	2.60	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
802.11ac(VHT80)	UNII 3	5690	138	5728.40	3.40	> 0.5

Note:

6 dB Bandwidth = Measured Frequency[MHz] – 5 725MHz

[Ant.2]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
802.11a	UNII 3	5720	144	5727.56	2.56	> 0.5
802.11n(HT20)				5727.60	2.60	> 0.5
802.11ac(VHT20)				5727.60	2.60	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
802.11n(HT40)	UNII 3	5710	142	5727.60	2.60	> 0.5
802.11ac(VHT40)				5727.60	2.60	> 0.5

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
802.11ac(VHT80)	UNII 3	5690	138	5727.92	2.92	> 0.5

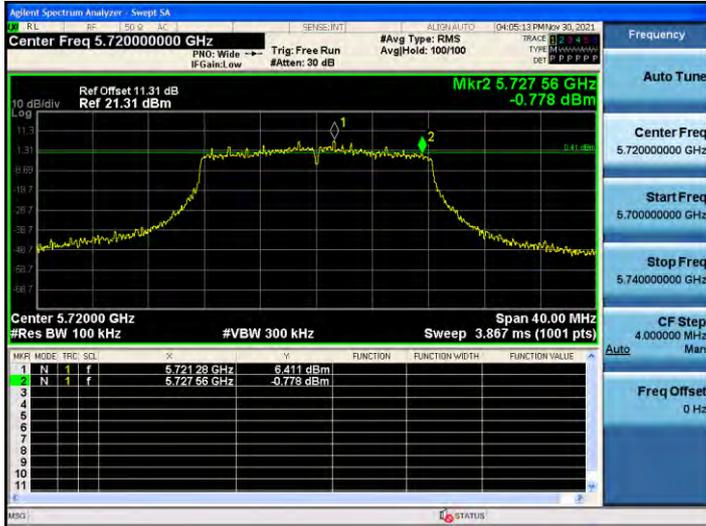
Note:

6 dB Bandwidth = Measured Frequency[MHz] – 5725MHz

[Ant.1]

☐ Test Plots(UNII 3 Band 6 dB Bandwidth)

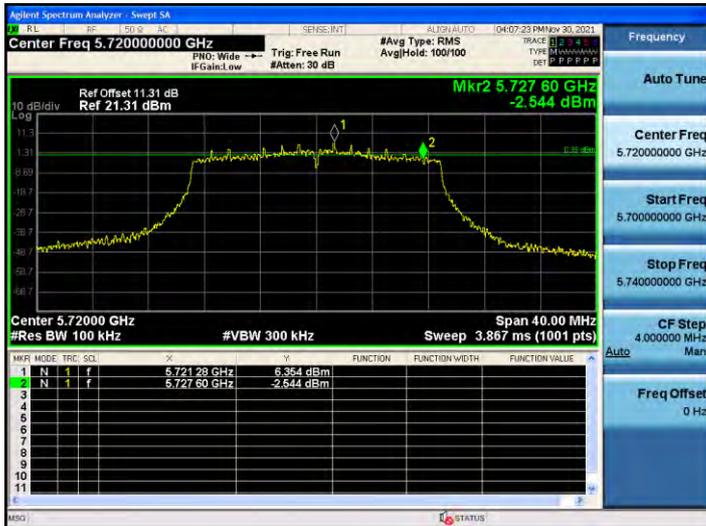
802.11a CH.144



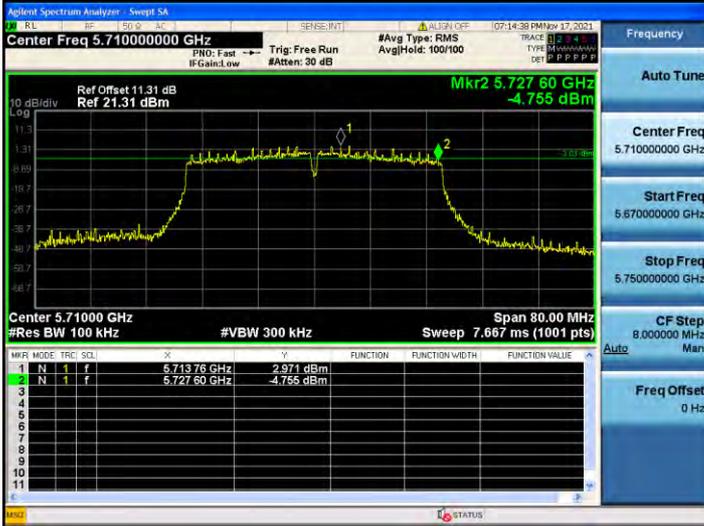
802.11n_HT20 CH.144



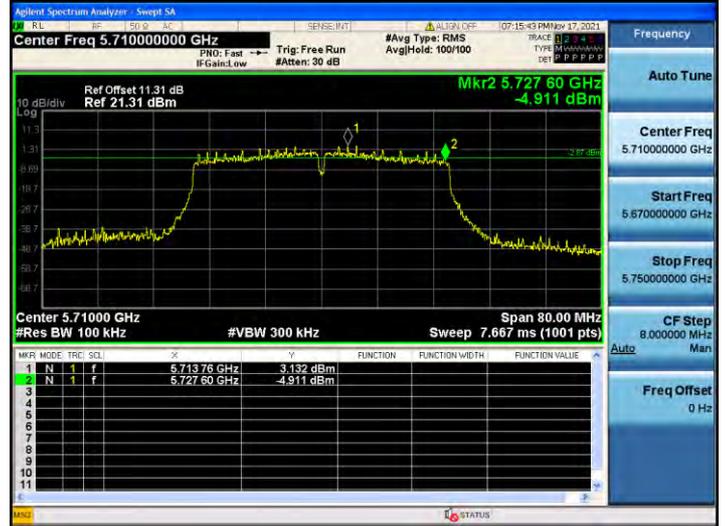
802.11ac_VHT20 CH.144



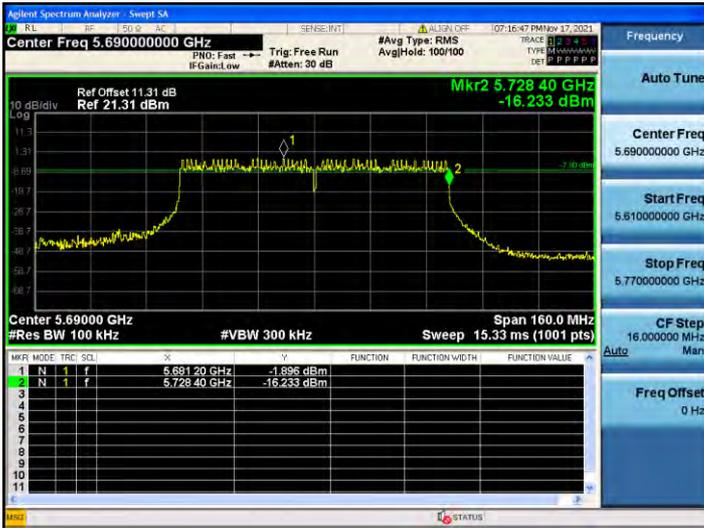
802.11n_HT40 CH.142



802.11ac_VHT40 CH.142



802.11ac_VHT80 CH.138



[Ant.2]

☐ Test Plots(UNII 3 Band 6 dB Bandwidth)

802.11a CH.144



802.11n_HT20 CH.144



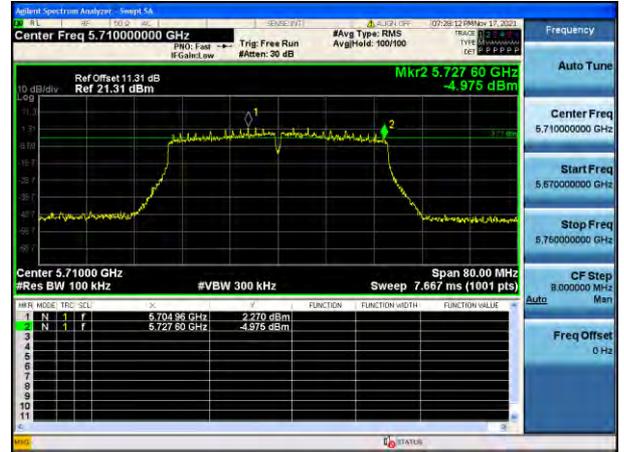
802.11ac_VHT20 CH.144



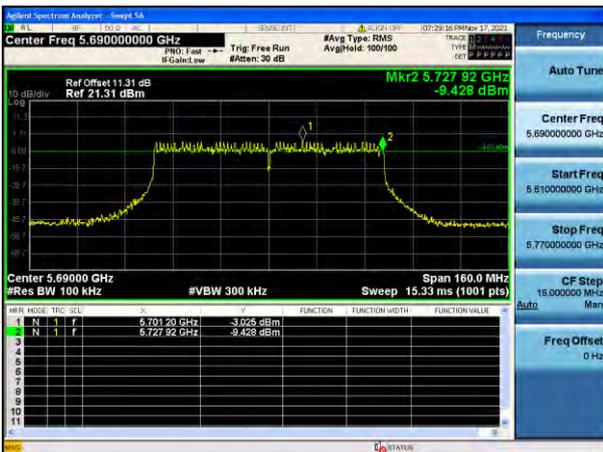
802.11n_HT40 CH.142



802.11ac_VHT40 CH.142



802.11ac_VHT80 CH.138



10.6.3 Output Power

[Ant.1]

Mode	Frequency [MHz]	Channel	Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate
802.11a	5720	144	14.74	0.799	15.54	22.51	18 Mbps
802.11n(HT20)	(UNII 2C		14.35	0.858	15.21	22.62	MCS2
802.11ac(VHT20)	Band)		14.35	0.849	15.20	22.67	MCS2
802.11a	5720	144	6.79	0.799	7.59	30.00	18 Mbps
802.11n(HT20)	(UNII 3		6.88	0.858	7.74	30.00	MCS2
802.11ac(VHT20)	Band)		6.92	0.849	7.76	30.00	MCS2

Mode	Frequency [MHz]	Channel	Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate
802.11n(HT40)	5710	142	14.90	1.114	16.02	23.98	MCS6
802.11ac(VHT40)	(UNII 2C Band)		14.93	1.114	16.04	23.98	MCS1
802.11n(HT40)	5710	142	2.34	1.114	3.45	30.00	MCS6
802.11ac(VHT40)	(UNII 3 Band)		2.34	1.114	3.45	30.00	MCS1

Mode	Frequency [MHz]	Channel	Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate
802.11ac(VHT80)	5690 (UNII 2C Band)	138	8.92	6.573	15.49	23.98	MCS5
	5690 (UNII 3 Band)	138	-5.41	6.573	1.16	30.00	MCS5

[Ant.2]

Mode	Frequency [MHz]	Channel	Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate
802.11a	5720	144	15.34	0.799	16.14	22.52	18 Mbps
802.11n(HT20)	(UNII 2C		14.99	0.858	15.85	22.64	MCS2
802.11ac(VHT20)	Band)		15.03	0.849	15.88	22.68	MCS2
802.11a	5720	144	7.44	0.799	8.24	30.00	18 Mbps
802.11n(HT20)	(UNII 3		7.56	0.858	8.41	30.00	MCS2
802.11ac(VHT20)	Band)		7.59	0.849	8.44	30.00	MCS2

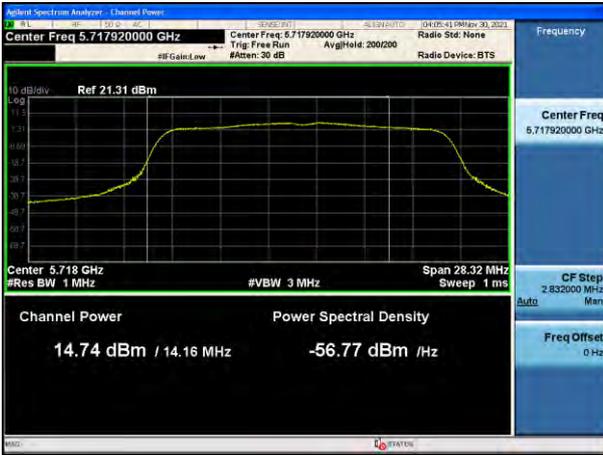
Mode	Frequency [MHz]	Channel	Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate
802.11n(HT40)	5710	142	14.17	1.114	15.29	23.98	MCS6
802.11ac(VHT40)	(UNII 2C Band)		14.21	1.114	15.33	23.98	MCS1
802.11n(HT40)	5710	142	1.75	1.114	2.87	30.00	MCS6
802.11ac(VHT40)	(UNII 3 Band)		1.74	1.114	2.85	30.00	MCS1

Mode	Frequency [MHz]	Channel	Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate
802.11ac(VHT80)	5690 (UNII 2C Band)	138	7.61	6.573	14.18	23.98	MCS5
	5690 (UNII 3 Band)	138	-5.97	6.573	0.61	30.00	MCS5

[Ant.1]

☑ Test Plots

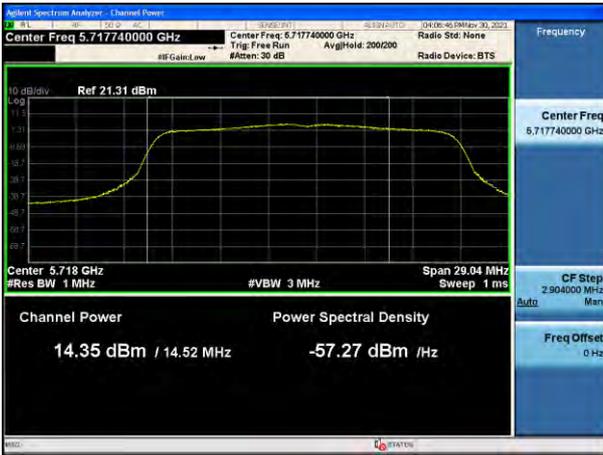
802.11a UNII 2C Band



802.11a UNII 3 Band



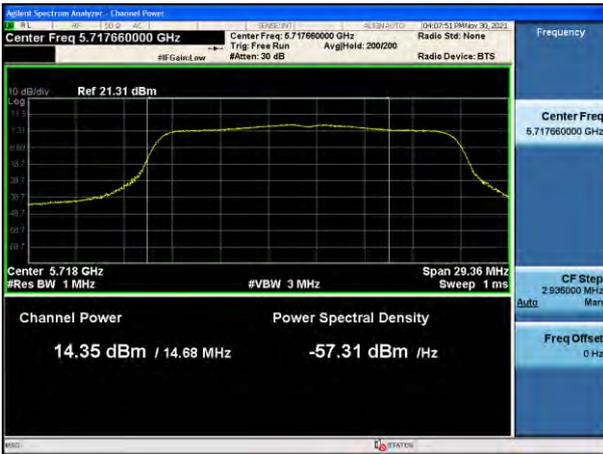
802.11n(HT20) UNII 2C Band



802.11n(HT20) UNII 3 Band



802.11ac(VHT20) UNII 2C Band



802.11ac(VHT20) UNII 3 Band

