

FCC UNII REPORT

Certification

Applicant Name: SAMSUNG Electronics Co., Ltd.	Date of Issue: April 06, 2021
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	Report No.: HCT-RF-2103-FC031-R1

FCC ID:	A3LNP345XLA
APPLICANT:	SAMSUNG Electronics Co., Ltd.

Model:	NP345XLA
EUT Type:	Notebook Computer
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-2103-FC031-R1

REVIEWED BY



Report prepared by : Chang Hee Hwang
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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-2103-FC031	March 30, 2021	- First Approval Report
HCT-RF-2103-FC031-R1	April 06, 2021	- Revised typo. (Page 6, 16)

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	NP345XLA	
Additional Model	-	
EUT Type	Notebook Computer	
Power Supply	DC 7.72 V	
Modulation Type	OFDM : 802.11a, 802.11n, 802.11ac	
Frequency Range (MHz)	U-NII-1	20MHz BW : 5180 - 5240 40MHz BW : 5190 - 5230 80MHz BW : 5210
	U-NII-2A	20MHz BW : 5260 - 5320 40MHz BW : 5270 - 5310 80MHz BW : 5290
	U-NII-2C	20MHz BW : 5500 - 5720 40MHz BW : 5510 - 5710 80MHz BW : 5530 - 5690
	U-NII-3	20MHz BW : 5745 - 5825 40MHz BW : 5755 - 5795 80MHz BW : 5775
Straddle channel	Supported	
TDWR Band	Supported	
Dynamic Frequency Selection	Slave without radar detection	
Date(s) of Tests	February 17, 2021~ March 26, 2021	
Serial number	Radiated: FCMR01R1400364 Conducted: FCMR01R1400344	

ANTENNA CONFIGURATIONS

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

Configurations	SISO		SDM	CDD
	Ant.1	Ant.2	Ant.1 + Ant.2	Ant.1 + Ant.2
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

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

DBS	5GHz WiFi Ant.1	5GHz WiFi Ant.2	Bluetooth
5GHz WiFi MIMO + Bluetooth	On	On	On

2. MAXIMUM OUTPUT POWER

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

Band	Mode	SISO				MIMO	
		Ant.1 Power		Ant.2 Power		Ant.1 + Ant.2 Power	
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
UNII1	802.11a	15.98	0.040	15.93	0.039	18.77	0.075
	802.11n (HT20)	14.83	0.030	14.93	0.031	17.68	0.059
	802.11n (HT40)	13.11	0.020	12.60	0.018	15.87	0.039
	802.11ac (VHT20)	13.97	0.025	13.84	0.024	16.75	0.047
	802.11ac (VHT40)	12.57	0.018	11.78	0.015	15.20	0.033
	802.11ac (VHT80)	11.37	0.014	9.89	0.010	13.70	0.023
UNII2A	802.11a	15.82	0.038	15.95	0.039	18.90	0.078
	802.11n (HT20)	14.71	0.030	14.94	0.031	17.84	0.061
	802.11n (HT40)	13.95	0.025	13.95	0.025	16.96	0.050
	802.11ac (VHT20)	13.87	0.024	13.85	0.024	16.87	0.049
	802.11ac (VHT40)	12.95	0.020	12.98	0.020	15.98	0.040
	802.11ac (VHT80)	10.79	0.012	11.39	0.014	14.11	0.026
UNII2C	802.11a	15.07	0.032	15.91	0.039	18.38	0.069
	802.11n (HT20)	14.02	0.025	14.91	0.031	17.49	0.056
	802.11n (HT40)	13.19	0.021	13.46	0.022	16.34	0.043
	802.11ac (VHT20)	12.99	0.020	13.94	0.025	16.36	0.043
	802.11ac (VHT40)	12.63	0.018	12.73	0.019	15.69	0.037
	802.11ac (VHT80)	11.66	0.015	11.96	0.016	14.57	0.029
UNII3	802.11a	15.46	0.035	15.92	0.039	18.71	0.074
	802.11n (HT20)	14.30	0.027	14.97	0.031	17.66	0.058
	802.11n (HT40)	12.57	0.018	13.84	0.024	16.26	0.042
	802.11ac (VHT20)	13.45	0.022	13.94	0.025	16.70	0.047
	802.11ac (VHT40)	11.54	0.014	12.60	0.018	15.09	0.032
	802.11ac (VHT80)	10.94	0.012	11.87	0.015	14.44	0.028

3. TEST METHODOLOGY

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

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 6.6.5 of ANSI C63.10. (Version: 2013)

DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment's, which is traceable to recognized national standards.

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

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

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

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203, §15.407:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- (1) The antennas of this E.U.T are permanently attached.
- (2) The E.U.T Complies with the requirement of §15.203, §15.407

7. MEASUREMENT UNCERTAINTY

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

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

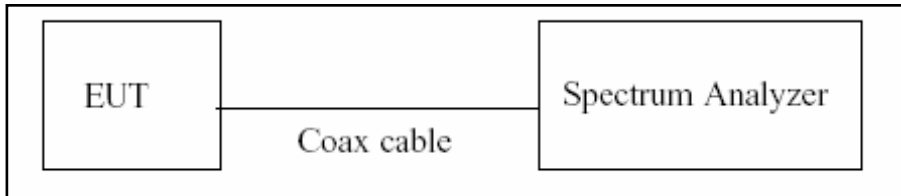
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05

8. DESCRIPTION OF TESTS

8.1. Duty Cycle

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

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

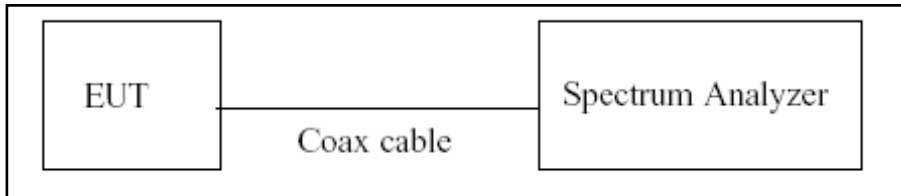
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz (\geq RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor = $10\log(1/\text{Duty Cycle})$

8.2. 6dB Bandwidth & 26dB Bandwidth

Limit

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

Test Configuration



Test Procedure(26dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

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

1. RBW = approximately 1 % of the emission bandwidth
2. VBW > RBW
3. Detector = Peak
4. Trace mode = max hold
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.
Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

Test Procedure (6dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

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

1. RBW = 100 kHz
2. VBW $\geq 3 \times$ 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.

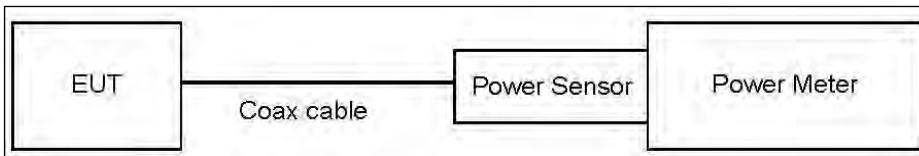
8.3. Output Power Measurement

Limit

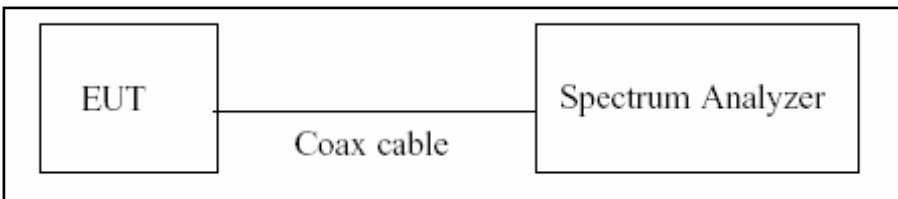
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30dBm)

Test Configuration

Power Meter



Spectrum Analyzer(Only Straddle Channel)



Test Procedure(Power Meter)

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

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Test Procedure(Spectrum Analyzer)

The transmitter output is connected to the Spectrum Analyzer.

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

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

1. Measure the duty cycle.
2. Set span to encompass the 26 dB EBW of the signal.
3. RBW = 1 MHz.
4. VBW \geq 3 MHz.
5. Number of points in sweep \geq 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) = Reading Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum reading values are not plot data.

The power results in plot is already including the actual values of loss for the attenuator and cable combination.

2. Spectrum offset = Attenuator loss(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	11.33
UNII 2A	11.33
UNII 2C	11.33
UNII 3	11.33

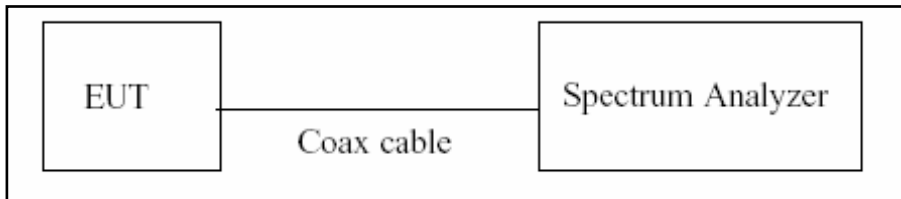
(Actual value of loss for the attenuator and cable combination)

8.4. Power Spectral Density

Limit

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

Test Configuration



Test Procedure

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

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

Sample Calculation

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

Note

1. Spectrum reading values are not plot data.

The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.

2. Spectrum offset = Attenuator loss(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	11.33
UNII 2A	11.33
UNII 2C	11.33
UNII 3	11.33

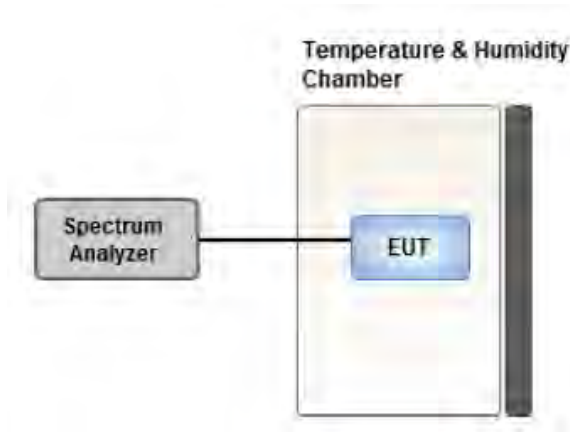
(Actual value of loss for the attenuator and cable combination)

8.5. Frequency Stability

Limit

Maintained within the band

Test Configuration



Test Procedure

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

8.6. AC Power line Conducted Emissions

Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 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) = Reading Value + Correction Factor

8.7. Radiated Test

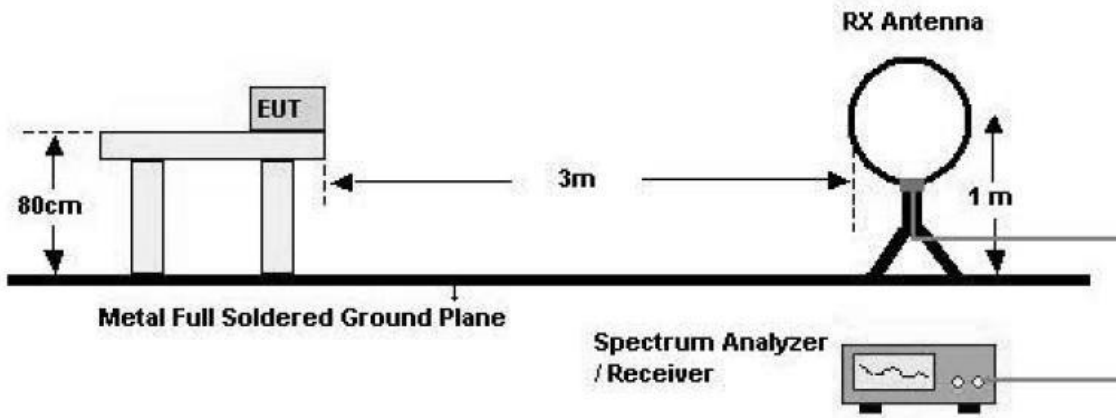
Limit

1. UNII 1: All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
2. UNII 2A, 2C: All emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
3. UNII 3: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
4. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Section 15.209.

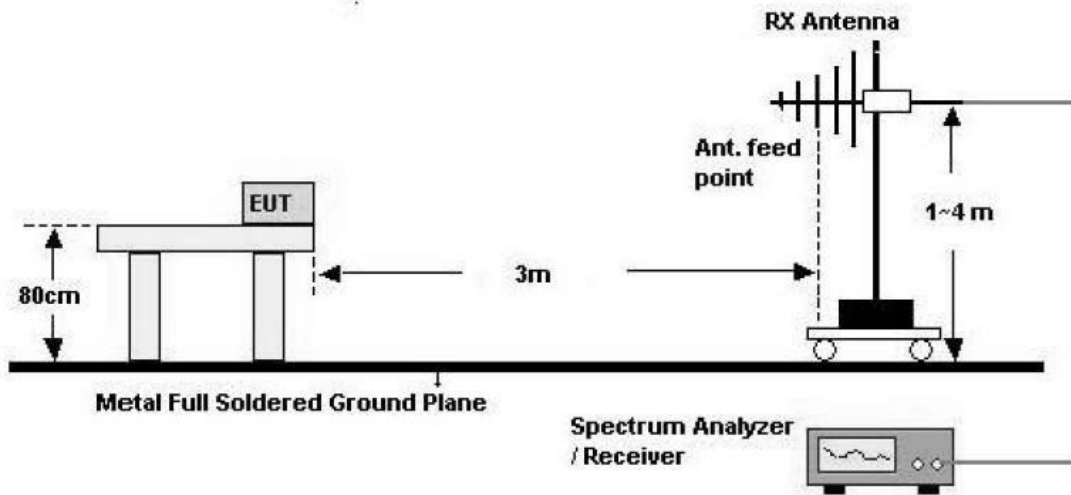
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

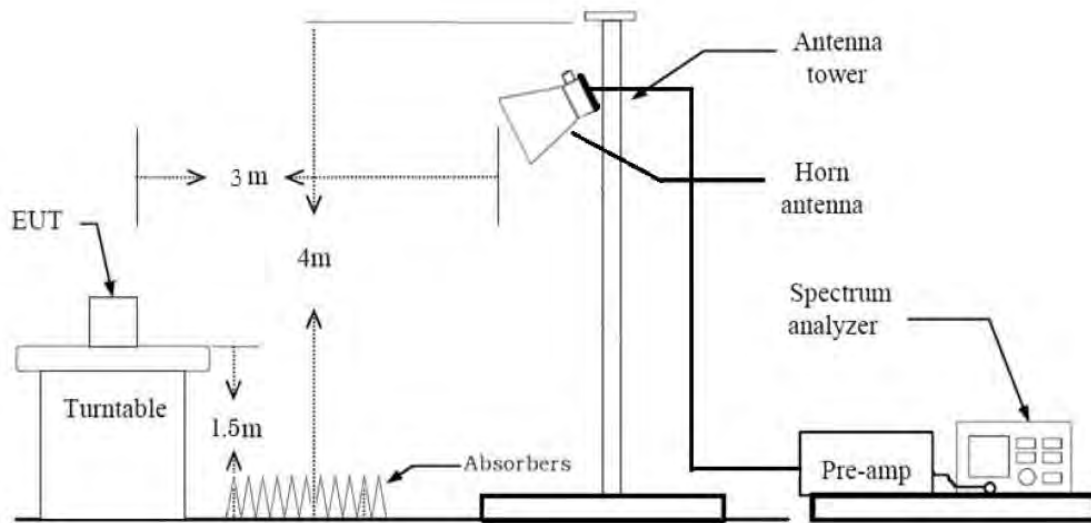
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions(Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) = $40\log(3\text{ m}/300\text{ m}) = -80\text{ dB}$
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 = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

KDB 414788 OFS and Chamber Correlation Justification

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

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

Test Procedure of Radiated spurious emissions(Below 1GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. The Hybrid antenna was placed at a location 3m from the EUT, which is varied from 1m to 4m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Spectrum Setting
 - (1) Measurement Type(Peak):
 - Measured Frequency Range : 30 MHz – 1 GHz
 - Detector = Peak
 - Trace = Maxhold
 - RBW = 100 kHz
 - VBW \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 = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L)
8. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

(1) Measurement Type (Peak, G.5 in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW \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 percent) = VBW \leq RBW/100(i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is < 98 percent) = 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 percent 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 = Reading 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 1m to 4m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting

(1) Measurement Type(Peak, G.5 in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW \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 percent) = $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is < 98 percent) = $VBW \geq 1/T$, 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 percent 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 = Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Attenuator + 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	0.977	0.103	1000
802.11n(HT20)	MCS0	0.974	0.113	1000
802.11n(HT40)	MCS0	0.950	0.224	2000
802.11ac(VHT20)	MCS0	0.975	0.109	1000
802.11ac(VHT40)	MCS0	0.950	0.222	2000
802.11ac(VHT80)	MCS0	0.902	0.447	5000

8.8. Worst case configuration and mode

Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
 - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
 - Worstcase : Stand alone
2. EUT Axis
 - Radiated Spurious Emissions : X(90 degree), Y(0 degree), Y(180 degree), Z(0 degree), Z(180 degree)
 - Radiated Restricted Band Edge : Y(180 degree), Z(0 degree), Z(180 degree)
3. All datarate of operation were investigated and the worst case datarate results are reported
 - 802.11a : 6 Mbps
 - 802.11n_HT20 : MCS0
 - 802.11n_HT40 : MCS0
 - 802.11ac_VHT20 : MCS0
 - 802.11ac_VHT40 : MCS0
 - 802.11ac_VHT80 : MCS0
 - Mode : Ant.1+Ant.2(SDM), Ant.1+Ant.2(CDD)
 - Worstcase : Ant.1+Ant.2(CDD)
4. Radiated Spurious Emission
 - All modulation of operation were investigated and the worst case modulation results are reported.
(Worstcase : 802.11a_6 Mbps)
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
6. We were performed the RSE test in condition of co-location. There has no significant emission raised.
 - WWAN+WLAN 5GHz+BT

Radiated test(DBS)

1. All modes of operation were investigated and the worst case configuration results are reported.
 - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
 - Worstcase : Stand alone
2. EUT Axis
 - Radiated Spurious Emissions : Z(180 degree)
3. The following tables show the worst case configurations determined during testing.
 - Worstcase : The lowest margin condition the channels and modes were selected for test.

Description	Bluetooth Emission	5 GHz Emission
Antenna	Ant1	Ant All
Channel	0	144
Data Rate	1 Mbps	6 Mbps
Mode	GFSK : DH5	802.11a

AC Power line Conducted Emissions

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

Conducted test

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

9. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26dB Bandwidth	§15.407 (for Power Measurement)	N/A	Conducted	PASS
6 dB Bandwidth	§15.407(e)	>500 kHz (5725-5850 MHz)		PASS
Maximum Conducted Output Power	§15.407(a)(1),(2)(3)	< 250 mW(5150-5250 MHz)		PASS
		< 250 mW or 11+10log ₁₀ (BW) dBm (5250-5350 MHz)		
		< 250 mW or 11+10log ₁₀ (BW) dBm (5470-5725 MHz)		
Maximum Power Spectral Density	§15.407(a)(1),(2),(3)	<1 W(5725-5850 MHz)		PASS
		<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)		
Frequency Stability	§15.407(g) §2.1055	Maintained within the band	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)	<-27 dBm/MHz EIRP (UNII1, 2A, 2C) cf. Section 8.7 (UNII 3)	Radiated	PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	15.205, 15.407(b)(9), (10)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		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	1.433	1.468	0.977	0.103
	9	0.961	0.998	0.963	0.163
	12	0.729	0.766	0.952	0.214
	18	0.492	0.529	0.930	0.315
	24	0.376	0.414	0.909	0.413
	36	0.256	0.292	0.876	0.575
	48	0.200	0.236	0.847	0.722
	54	0.180	0.217	0.832	0.800

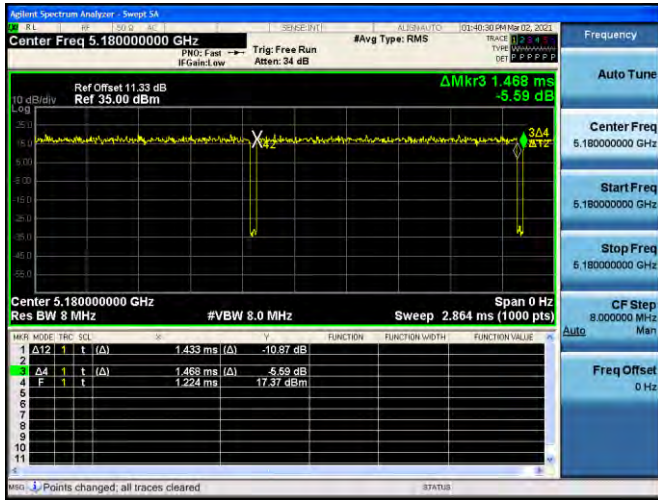
Mode	MCS Index	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11n (HT20)	0	1.342	1.378	0.974	0.113
	1	0.687	0.724	0.950	0.224
	2	0.472	0.510	0.926	0.335
	3	0.364	0.401	0.907	0.424
	4	0.256	0.292	0.876	0.574
	5	0.200	0.237	0.847	0.721
	6	0.184	0.220	0.837	0.775
	7	0.168	0.204	0.822	0.851
802.11n (HT40)	0	0.664	0.700	0.950	0.224
	1	0.352	0.388	0.907	0.422
	2	0.248	0.285	0.873	0.591
	3	0.196	0.232	0.846	0.726
	4	0.145	0.180	0.806	0.937
	5	0.117	0.152	0.766	1.155
	6	0.109	0.144	0.757	1.209
	7	0.101	0.136	0.742	1.297

Mode	MCS Index	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT20)	0	1.350	1.385	0.975	0.109
	1	0.695	0.733	0.948	0.232
	2	0.476	0.513	0.928	0.325
	3	0.369	0.405	0.909	0.414
	4	0.260	0.296	0.878	0.567
	5	0.204	0.240	0.850	0.705
	6	0.188	0.224	0.839	0.763
	7	0.172	0.208	0.826	0.828
	8	0.152	0.188	0.808	0.925
802.11ac (VHT40)	0	0.673	0.708	0.950	0.222
	1	0.356	0.392	0.908	0.418
	2	0.252	0.288	0.875	0.580
	3	0.201	0.236	0.850	0.708
	4	0.148	0.184	0.804	0.946
	5	0.120	0.156	0.769	1.139
	6	0.112	0.148	0.759	1.198
	7	0.105	0.140	0.748	1.263
	8	0.097	0.132	0.732	1.353
	9	0.089	0.124	0.722	1.416
802.11ac (VHT80)	0	0.332	0.368	0.902	0.447
	1	0.189	0.224	0.842	0.746
	2	0.141	0.176	0.799	0.973
	3	0.117	0.152	0.768	1.149
	4	0.093	0.128	0.724	1.403
	5	0.081	0.116	0.698	1.562
	6	0.077	0.112	0.688	1.627
	7	0.073	0.108	0.676	1.701
	8	0.069	0.104	0.665	1.773
	9	0.065	0.100	0.648	1.885

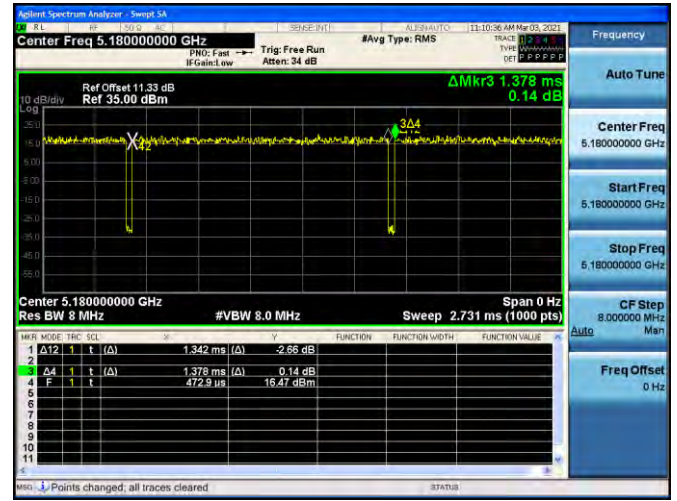
Note:

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

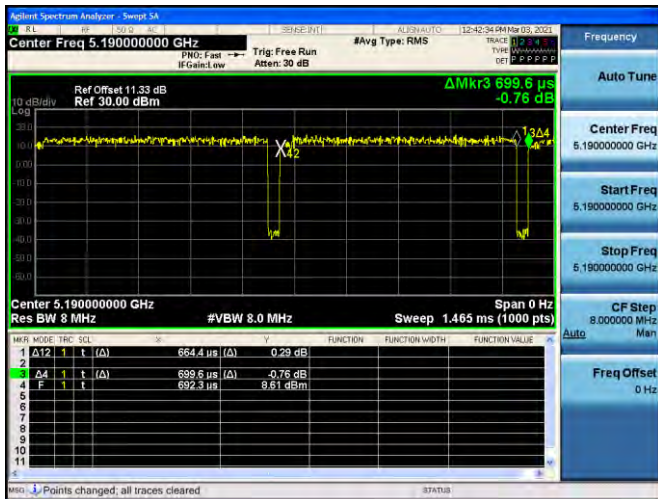
802.11a



802.11n(HT20)



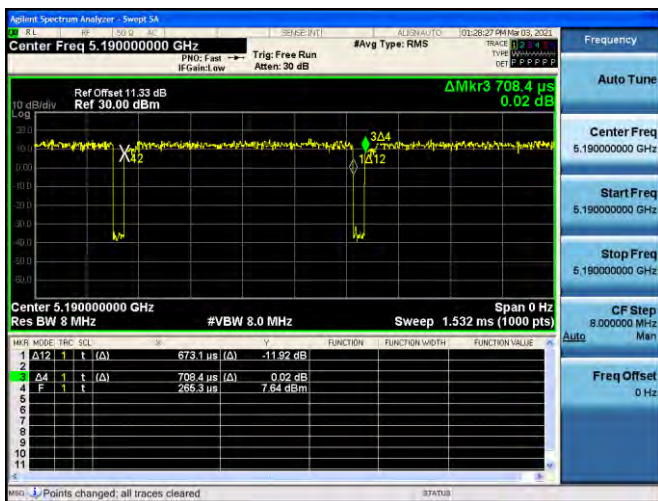
802.11n(HT40)



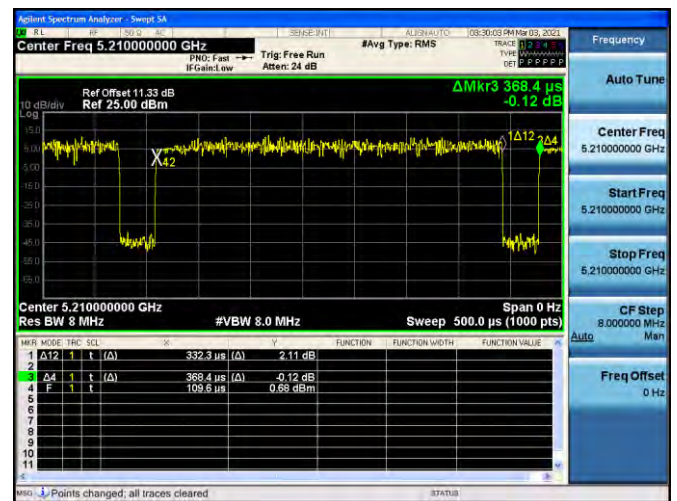
802.11ac(VHT20)



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		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.19	16.386
5200	40	21.53	16.436
5240	48	21.08	16.360
5260	52	21.18	16.397
5300	60	21.23	16.382
5320	64	20.98	16.415
5500	100	20.68	16.366
5600	120	21.76	16.349
5720	144	21.00	16.376
5745	149	20.86	16.342
5785	157	20.51	16.366
5825	165	20.64	16.356

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.58	17.584
5200	40	20.91	17.602
5240	48	20.85	17.624
5260	52	21.53	17.597
5300	60	21.73	17.586
5320	64	20.75	17.597
5500	100	20.81	17.608
5600	120	20.75	17.607
5720	144	22.55	17.618
5745	149	21.58	17.637
5785	157	21.60	17.592
5825	165	20.93	17.622

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.85	35.924
5230	46	39.88	35.896
5270	54	39.68	35.929
5310	62	40.14	35.918
5510	102	40.05	35.946
5590	118	39.94	35.973
5710	142	40.20	35.878
5755	151	39.76	35.936
5795	159	39.60	35.903

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	20.53	17.593
5200	40	20.87	17.604
5240	48	20.95	17.601
5260	52	21.90	17.609
5300	60	20.72	17.588
5320	64	20.65	17.579
5500	100	21.48	17.597
5600	120	20.54	17.597
5720	144	20.66	17.624
5745	149	21.07	17.609
5785	157	21.24	17.600
5825	165	21.12	17.629

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	40.11	35.926
5230	46	39.82	35.913
5270	54	39.71	35.892
5310	62	39.98	35.925
5510	102	40.04	35.923
5590	118	40.09	35.926
5710	142	39.32	35.919
5755	151	40.00	35.889
5795	159	39.73	35.938

802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	81.56	75.165
5290	58	81.27	75.166
5530	106	80.88	75.108
5610	122	81.21	75.163
5690	138	81.20	75.162
5775	155	81.38	75.255

[Ant.2]

802.11a Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.04	16.360
5200	40	20.52	16.335
5240	48	21.06	16.393
5260	52	21.06	16.372
5300	60	21.51	16.390
5320	64	21.37	16.360
5500	100	20.46	16.343
5600	120	20.67	16.389
5720	144	21.15	16.398
5745	149	21.12	16.413
5785	157	21.00	16.373
5825	165	20.73	16.360

802.11n(HT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	20.83	17.593
5200	40	20.82	17.602
5240	48	21.10	17.601
5260	52	20.79	17.573
5300	60	21.82	17.597
5320	64	20.70	17.585
5500	100	21.18	17.615
5600	120	20.86	17.603
5720	144	20.72	17.582
5745	149	21.70	17.622
5785	157	21.04	17.603
5825	165	20.95	17.616

802.11n(HT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	39.87	35.924
5230	46	39.97	35.911
5270	54	39.71	35.971
5310	62	39.94	35.940
5510	102	40.26	35.967
5590	118	40.10	35.970
5710	142	39.95	35.891
5755	151	39.66	35.877
5795	159	40.37	35.961

802.11ac(VHT20) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	20.91	17.573
5200	40	20.46	17.583
5240	48	20.97	17.585
5260	52	20.84	17.567
5300	60	20.79	17.595
5320	64	20.98	17.603
5500	100	20.80	17.616
5600	120	20.92	17.619
5720	144	20.86	17.593
5745	149	21.73	17.600
5785	157	20.73	17.614
5825	165	20.68	17.584

802.11ac(VHT40) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	40.15	35.888
5230	46	39.85	35.889
5270	54	40.23	35.909
5310	62	40.14	35.841
5510	102	39.71	35.936
5590	118	39.86	35.943
5710	142	40.20	35.931
5755	151	39.91	35.917
5795	159	39.72	35.932

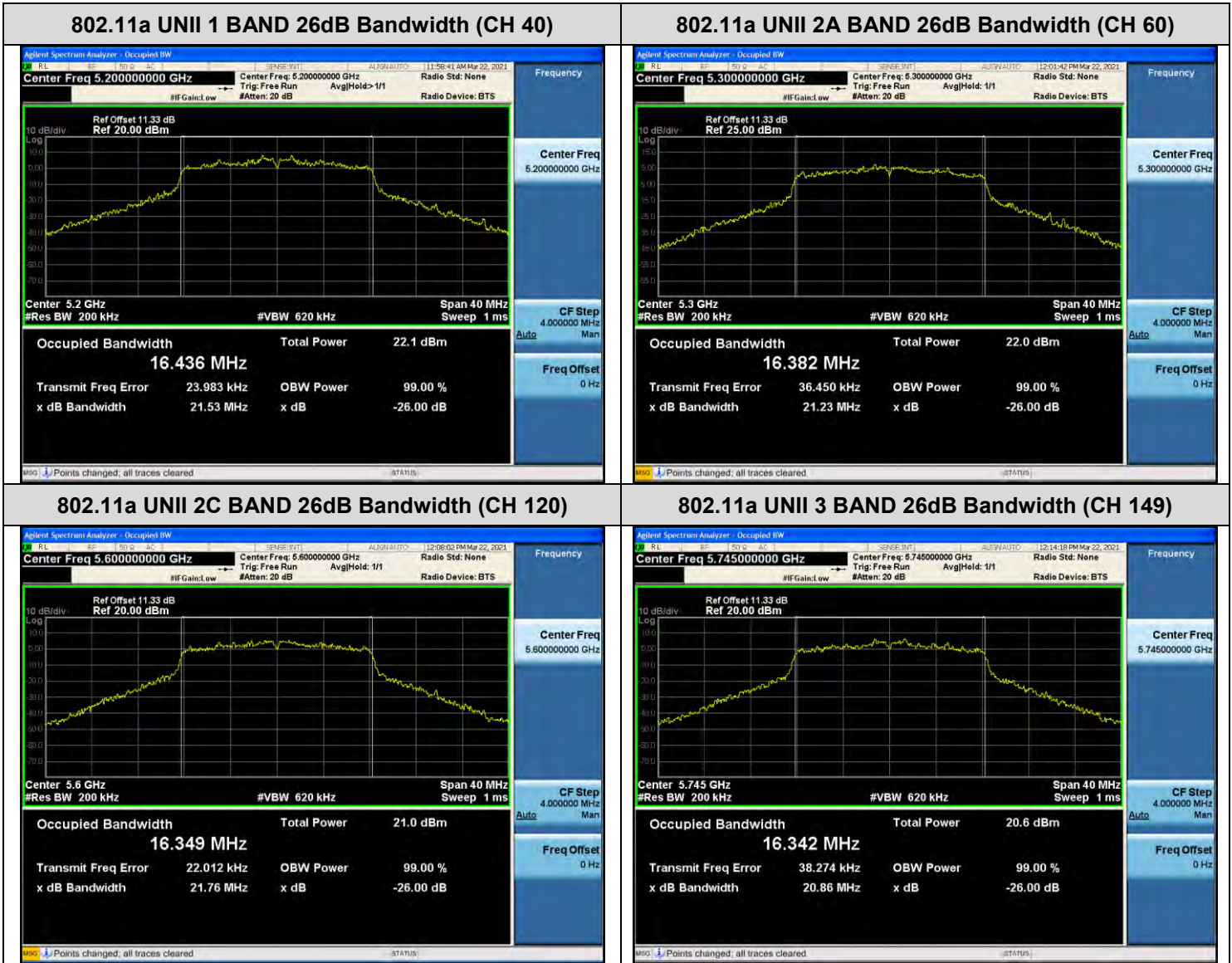
802.11ac(VHT80) Mode		26dB Bandwidth [MHz]	99% bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	81.60	75.147
5290	58	81.20	75.191
5530	106	81.00	75.183
5610	122	81.06	75.154
5690	138	80.47	75.244
5775	155	80.90	75.267

[Ant.1]

☑ Test Plots(802.11a)

Note:

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



☐ Test Plots(802.11n(HT20))

Note:

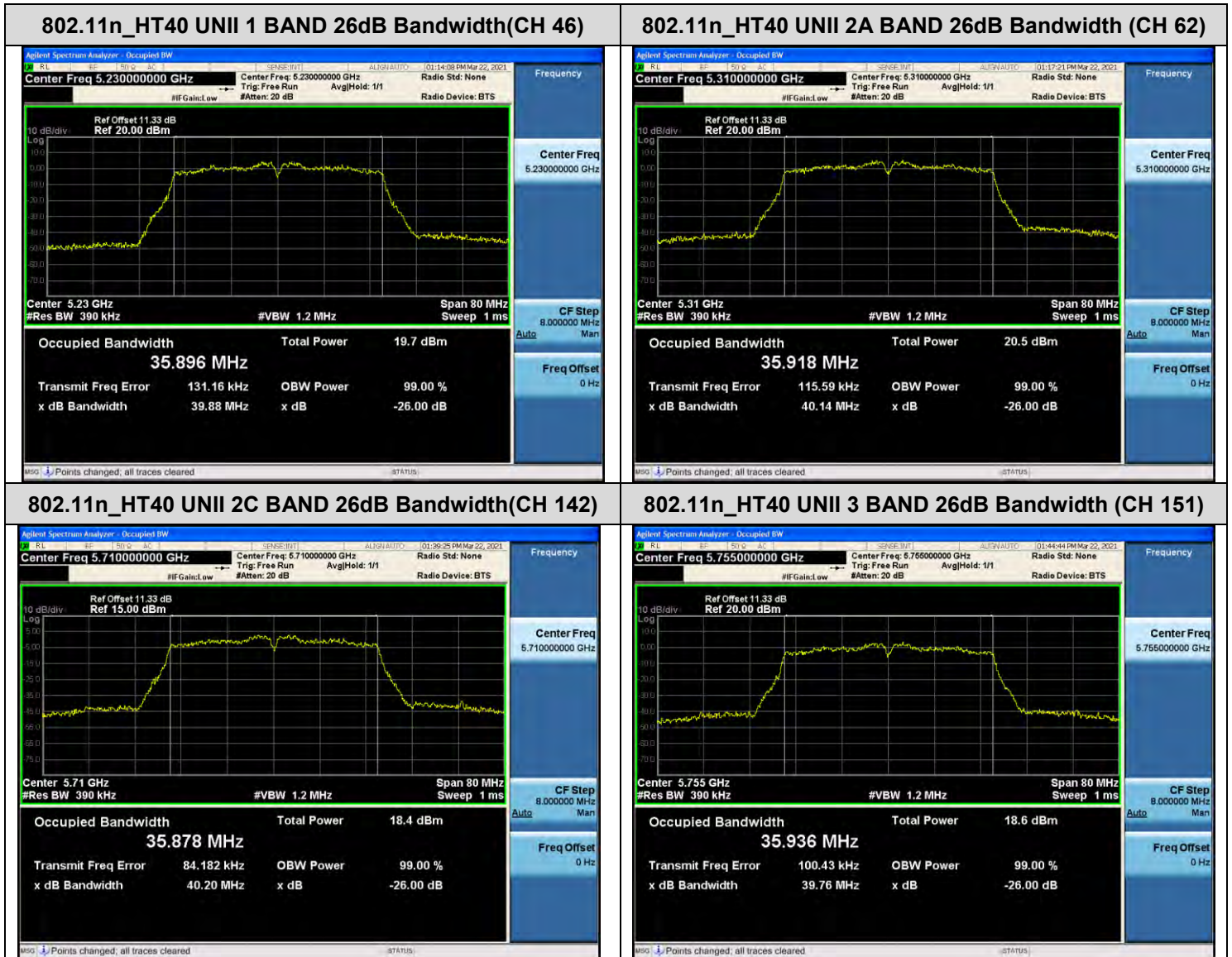
In order to simplify the report, attached plots were only the most wide channel.



☐ Test Plots(802.11n(HT40))

Note:

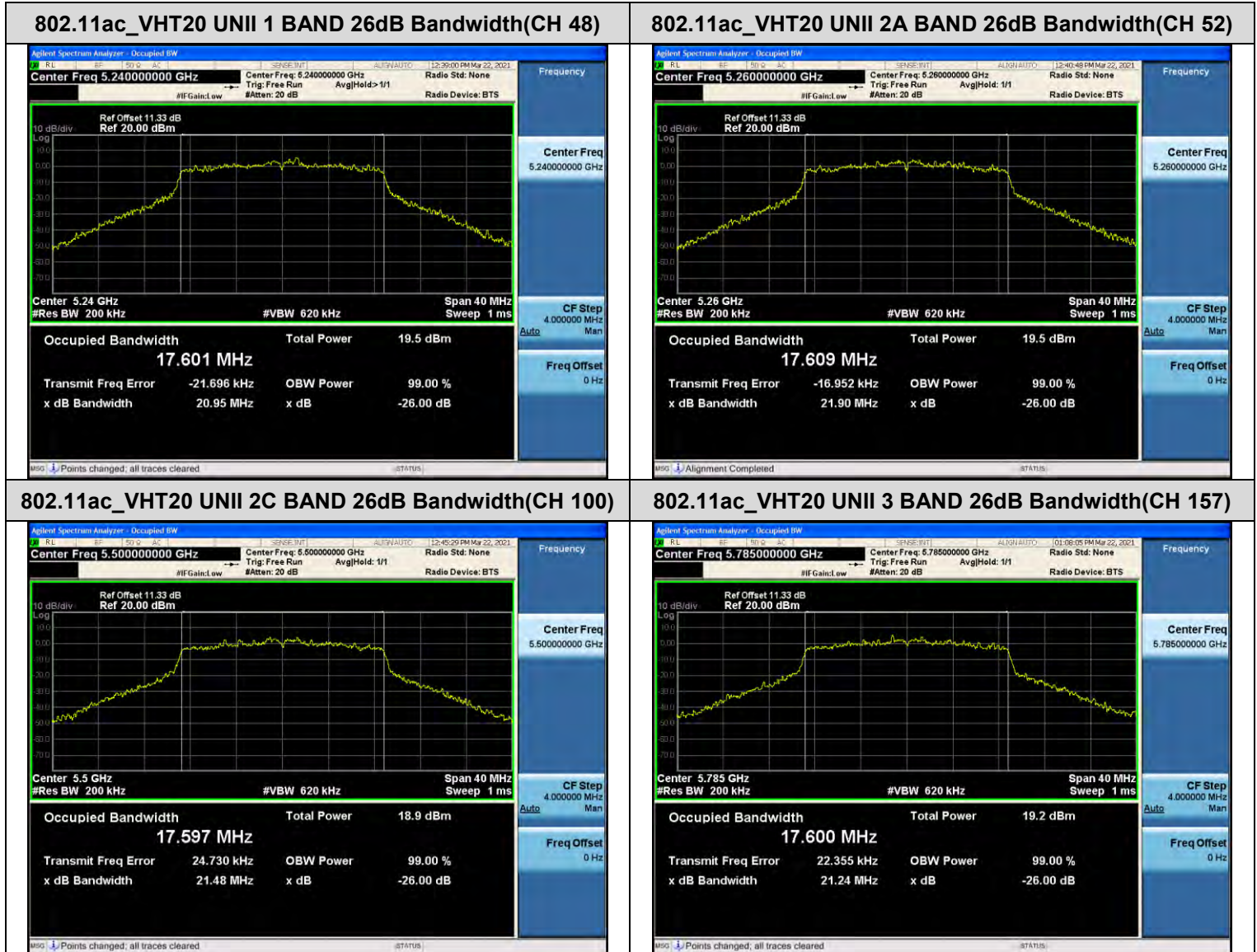
In order to simplify the report, attached plots were only the most wide channel.



☐ Test Plots(802.11ac(VHT20))

Note:

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

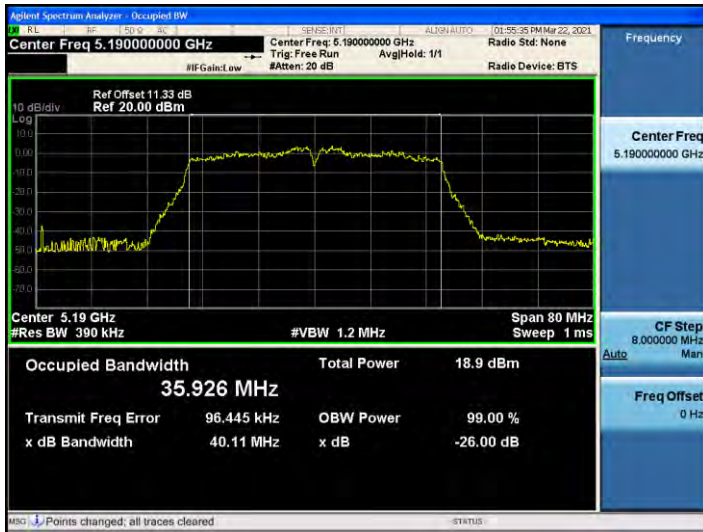


Test Plots(802.11ac(VHT40))

Note:

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

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



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



802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 118)



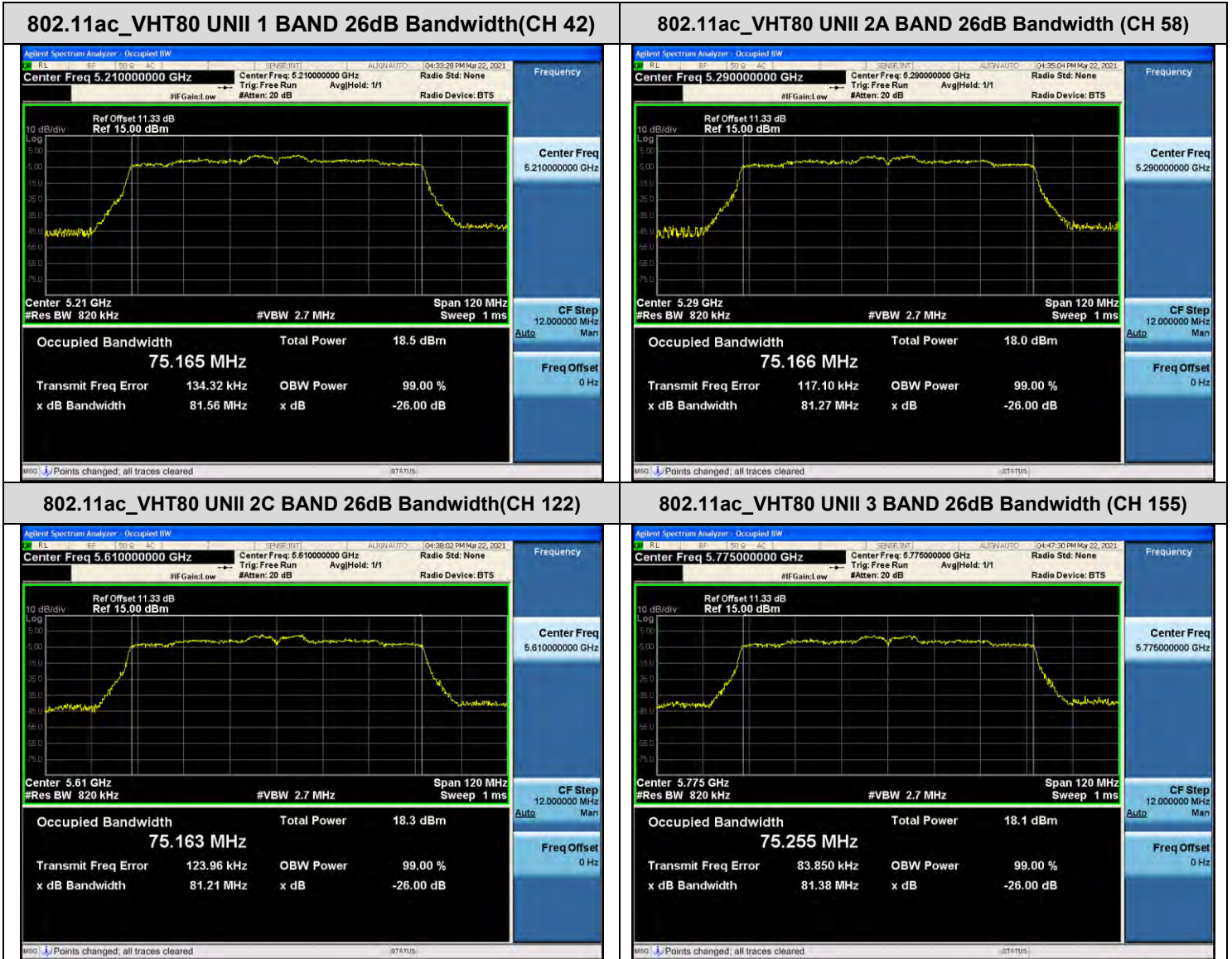
802.11ac_VHT40 UNII 3 BAND 26dB Bandwidth (CH 151)



Test Plots(802.11ac(VHT80))

Note:

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

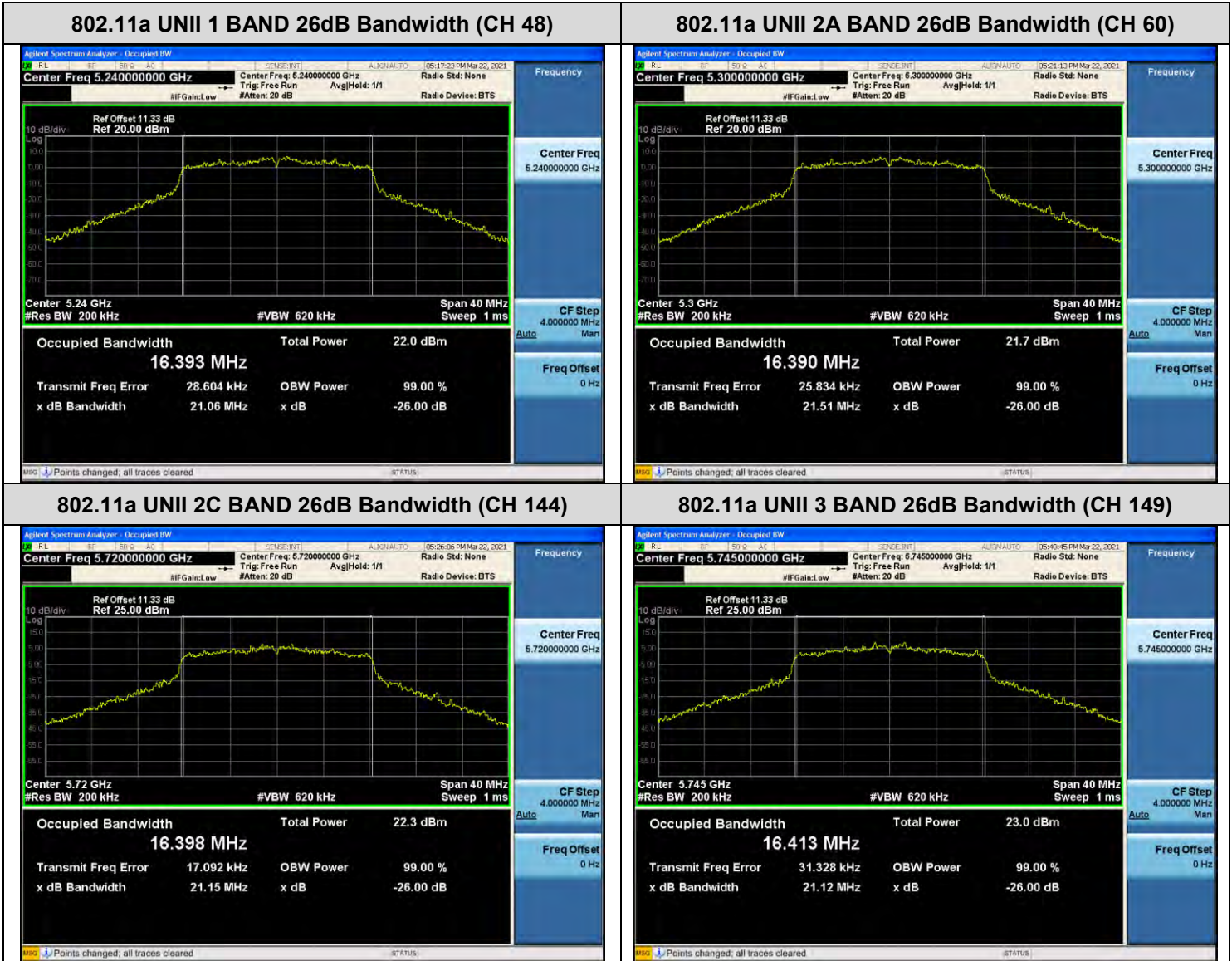


[Ant.2]

☐ Test Plots(802.11a)

Note:

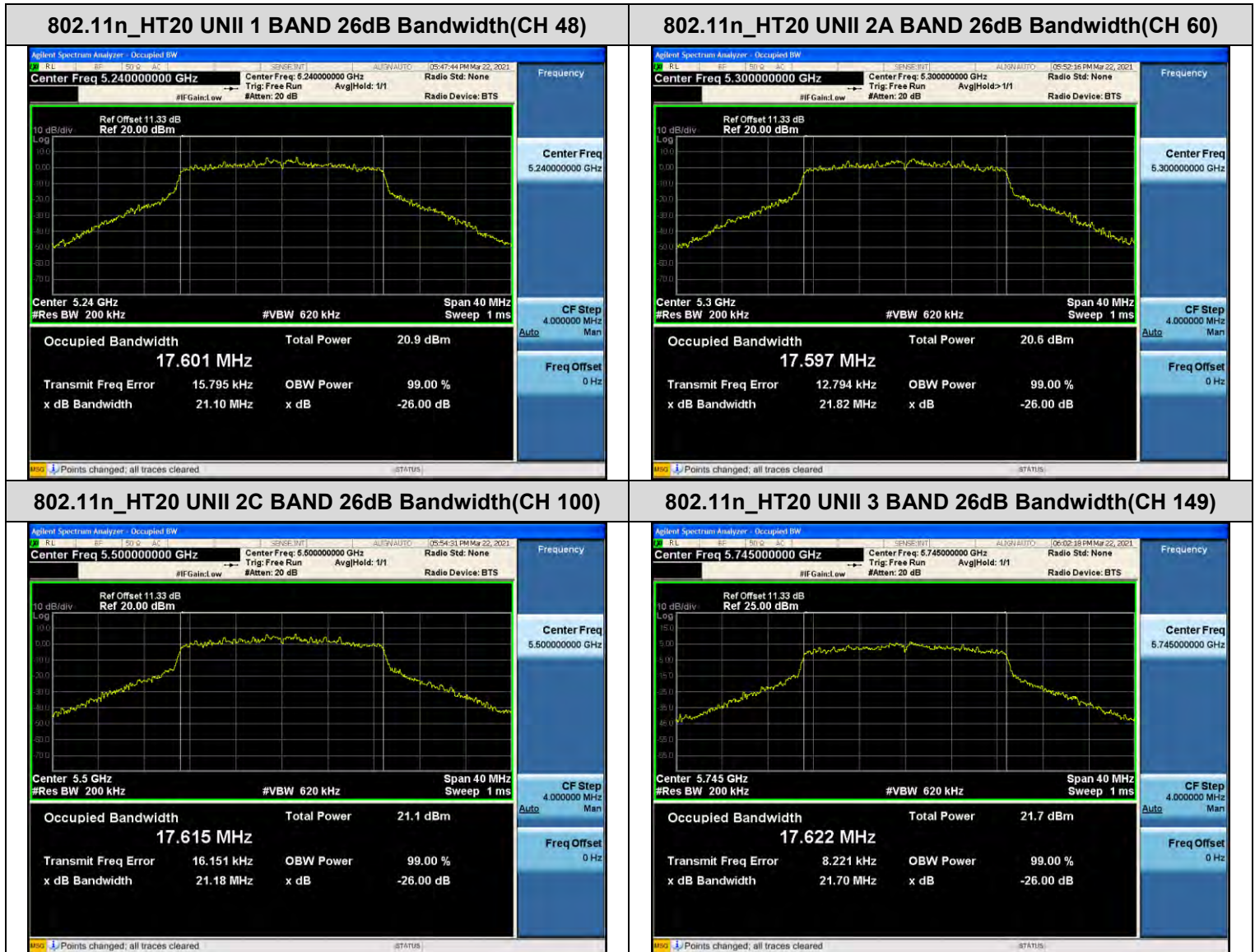
In order to simplify the report, attached plots were only the most wide channel.



☐ Test Plots(802.11n(HT20))

Note:

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



☐ 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:

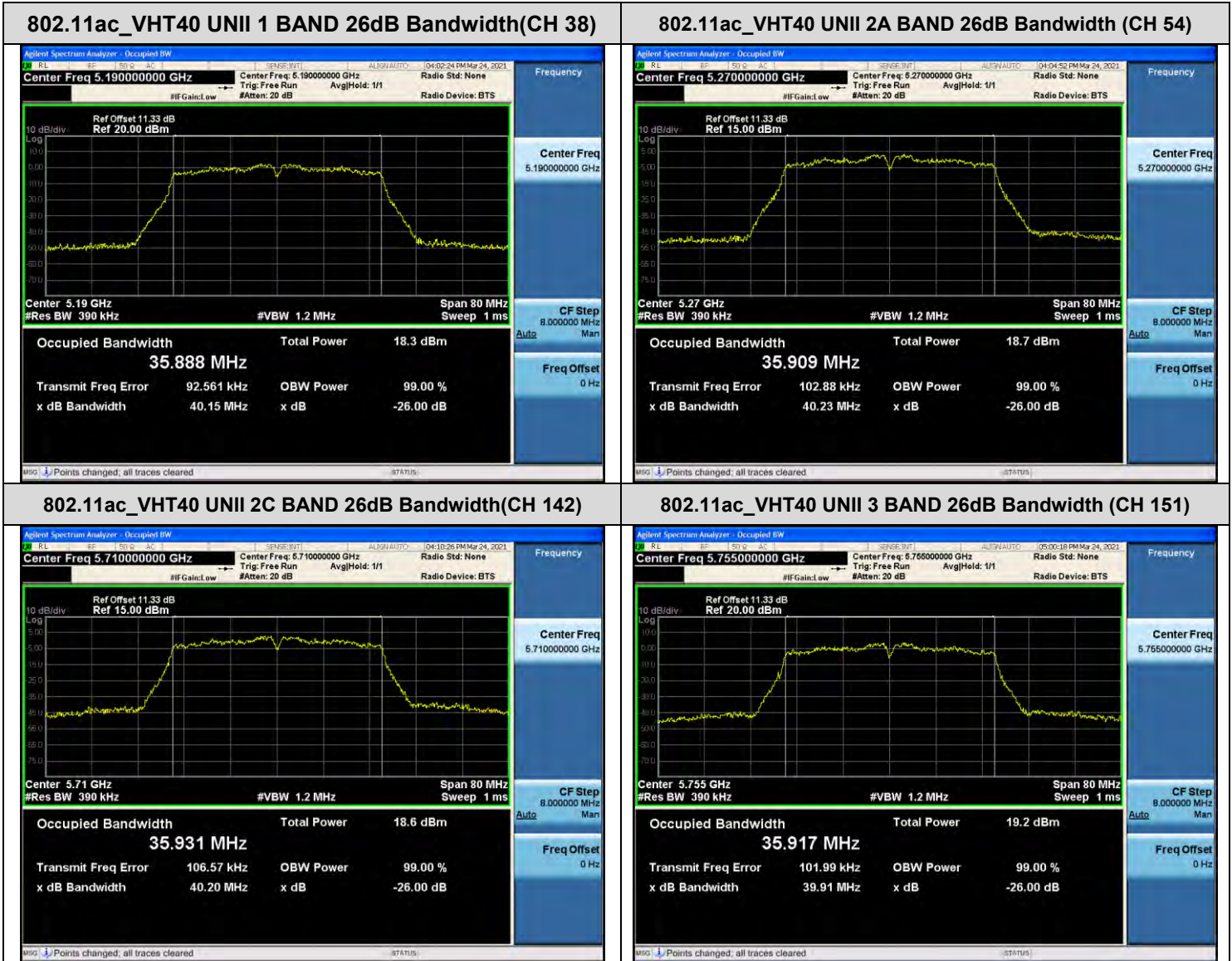
In order to simplify the report, attached plots were only the most wide channel.



Test Plots(802.11ac(VHT40))

Note:

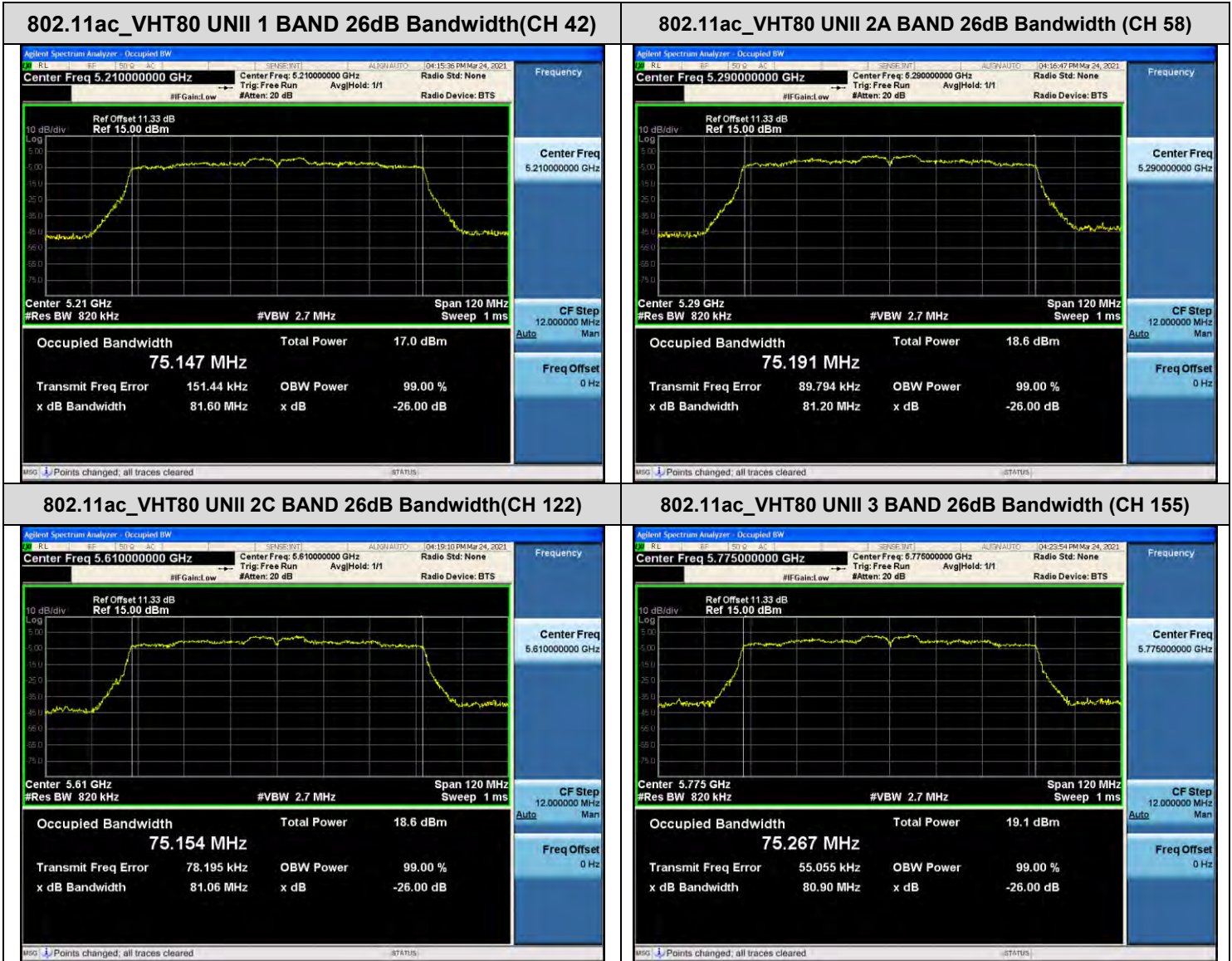
In order to simplify the report, attached plots were only the most wide channel.



Test Plots(802.11ac(VHT80))

Note:

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



10.3 6dB BANDWIDTH

[Ant.1]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	10.12	> 0.5	Pass
5785	157	15.08	> 0.5	Pass
5825	165	15.08	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	13.84	> 0.5	Pass
5785	157	15.06	> 0.5	Pass
5825	165	13.91	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.07	> 0.5	Pass
5795	159	35.07	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	13.83	> 0.5	Pass
5785	157	15.12	> 0.5	Pass
5825	165	15.06	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	33.80	> 0.5	Pass
5795	159	35.06	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	70.13	> 0.5	Pass

[Ant.2]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	13.83	> 0.5	Pass
5785	157	15.12	> 0.5	Pass
5825	165	15.03	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	11.34	> 0.5	Pass
5785	157	15.05	> 0.5	Pass
5825	165	15.06	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	33.82	> 0.5	Pass
5795	159	33.86	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.08	> 0.5	Pass
5785	157	13.84	> 0.5	Pass
5825	165	13.89	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	32.64	> 0.5	Pass
5795	159	33.86	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	71.24	> 0.5	Pass

[Ant.1]

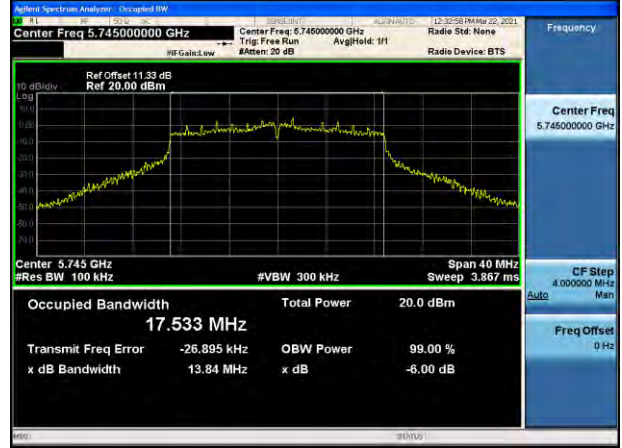
☑ Test Plots

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

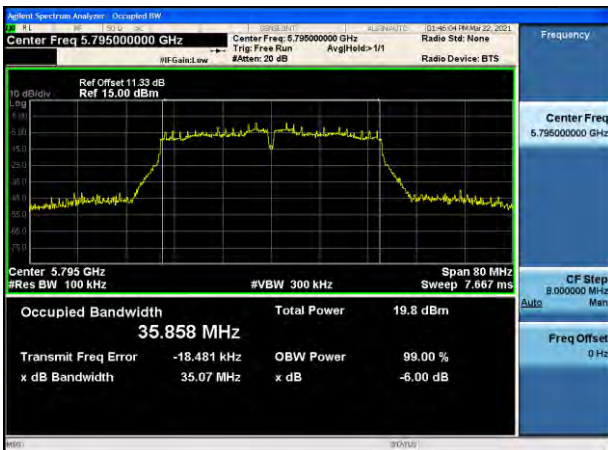
802.11a (CH.149)



802.11n(HT20) (CH.149)



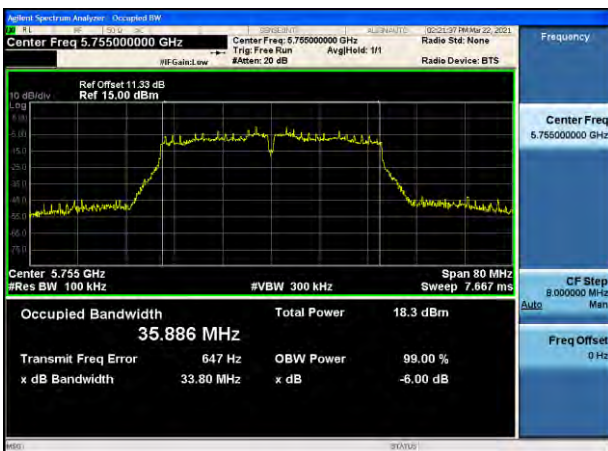
802.11n(HT40) (CH.159)



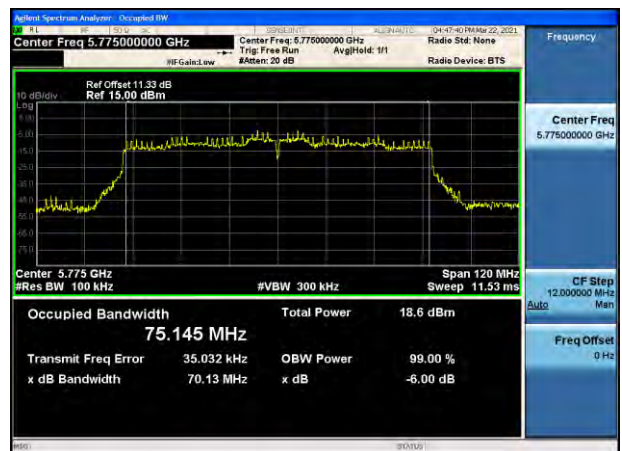
802.11ac(VHT20) (CH.149)



802.11ac(VHT40) (CH.151)



802.11ac(VHT80) (CH.155)



[Ant.2]

☑ Test Plots

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

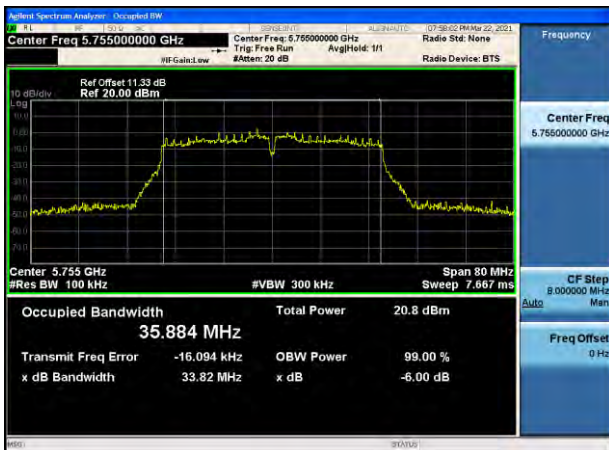
802.11a (CH.149)



802.11n(HT20) (CH.149)



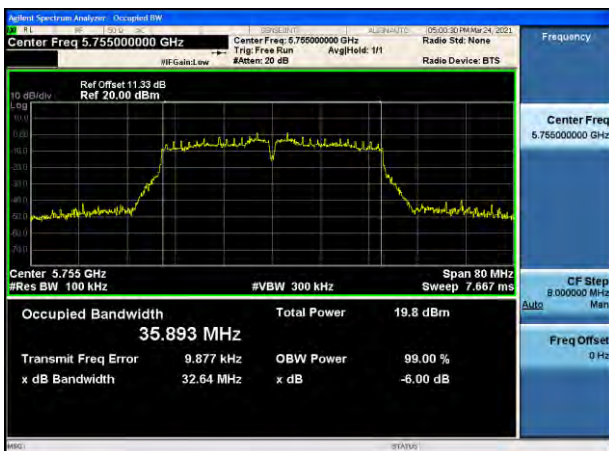
802.11n(HT40) (CH.151)



802.11ac(VHT20) (CH.157)



802.11ac(VHT40) (CH.151)



802.11ac(VHT80) (CH.155)



10.4 OUTPUT POWER MEASUREMENT

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

Straddle channel data were added in section 10.7.3.

[Ant.1]

802.11a Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	15	14.17	0.315	14.48	23.98	18
5200	40	15	15.67	0.315	15.98	23.98	18
5240	48	15	15.26	0.315	15.57	23.98	18
5260	52	15	15.51	0.315	15.82	23.98	18
5300	60	14	14.54	0.315	14.85	23.98	18
5320	64	14	14.52	0.315	14.83	23.98	18
5500	100	13	12.75	0.315	13.06	23.98	18
5600	120	15	14.76	0.315	15.07	23.98	18
5720	144	15	14.43	0.315	14.74	23.98	18
5745	149	15	14.26	0.315	14.57	30.00	18
5785	157	15	15.00	0.315	15.31	30.00	18
5825	165	15	15.15	0.315	15.46	30.00	18

802.11n(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5180	36	15	13.88	0.335	14.21	23.98	MCS2
5200	40	14	14.50	0.335	14.83	23.98	MCS2
5240	48	14	14.05	0.335	14.38	23.98	MCS2
5260	52	14	14.38	0.335	14.71	23.98	MCS2
5300	60	13	13.59	0.335	13.92	23.98	MCS2
5320	64	13	13.55	0.335	13.88	23.98	MCS2
5500	100	14	13.69	0.335	14.02	23.98	MCS2
5600	120	14	13.60	0.335	13.93	23.98	MCS2
5720	144	14	13.22	0.335	13.55	23.98	MCS2
5745	149	14	13.01	0.335	13.34	30.00	MCS2
5785	157	14	13.77	0.335	14.10	30.00	MCS2
5825	165	14	13.97	0.335	14.30	30.00	MCS2

802.11n(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5190	38	12	11.89	0.591	12.48	23.98	MCS2
5230	46	12	12.52	0.591	13.11	23.98	MCS2
5270	54	13	13.36	0.591	13.95	23.98	MCS2
5310	62	12	12.50	0.591	13.09	23.98	MCS2
5510	102	12	11.99	0.591	12.58	23.98	MCS2
5590	118	13	12.60	0.591	13.19	23.98	MCS2
5710	142	12	11.23	0.591	11.82	23.98	MCS2
5755	151	12	11.40	0.591	11.99	30.00	MCS2
5795	159	12	11.98	0.591	12.57	30.00	MCS2

802.11ac(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5180	36	13	11.65	0.763	12.41	23.98	MCS6
5200	40	13	13.21	0.763	13.97	23.98	MCS6
5240	48	13	12.86	0.763	13.62	23.98	MCS6
5260	52	13	13.11	0.763	13.87	23.98	MCS6
5300	60	12	12.10	0.763	12.86	23.98	MCS6
5320	64	12	11.96	0.763	12.72	23.98	MCS6
5500	100	13	12.19	0.763	12.95	23.98	MCS6
5600	120	13	12.23	0.763	12.99	23.98	MCS6
5720	144	13	11.90	0.763	12.66	23.98	MCS6
5745	149	13	11.75	0.763	12.51	30.00	MCS6
5785	157	13	12.43	0.763	13.19	30.00	MCS6
5825	165	13	12.69	0.763	13.45	30.00	MCS6

802.11ac(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5190	38	12	11.99	0.580	12.57	23.98	MCS2
5230	46	11	11.50	0.580	12.08	23.98	MCS2
5270	54	12	12.37	0.580	12.95	23.98	MCS2
5310	62	11	11.52	0.580	12.10	23.98	MCS2
5510	102	12	12.05	0.580	12.63	23.98	MCS2
5590	118	12	11.65	0.580	12.23	23.98	MCS2
5710	142	11	10.21	0.580	10.79	23.98	MCS2
5755	151	11	10.39	0.580	10.97	30.00	MCS2
5795	159	11	10.96	0.580	11.54	30.00	MCS2

802.11ac(80MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5210	42	10	9.74	1.627	11.37	23.98	MCS6
5290	58	10	9.16	1.627	10.79	23.98	MCS6
5530	106	11	10.03	1.627	11.66	23.98	MCS6
5610	122	11	9.52	1.627	11.15	23.98	MCS6
5690	138	11	9.49	1.627	11.12	23.98	MCS6
5775	155	11	9.31	1.627	10.94	30.00	MCS6

[Ant.2]

802.11a Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	15	14.10	0.315	14.41	23.98	18
5200	40	15	14.13	0.315	14.44	23.98	18
5240	48	15	15.62	0.315	15.93	23.98	18
5260	52	15	15.64	0.315	15.95	23.98	18
5300	60	14	15.39	0.315	15.70	23.98	18
5320	64	14	15.36	0.315	15.67	23.98	18
5500	100	13	13.51	0.315	13.82	23.98	18
5600	120	15	15.01	0.315	15.32	23.98	18
5720	144	15	15.60	0.315	15.91	23.98	18
5745	149	15	15.60	0.315	15.91	30.00	18
5785	157	15	15.61	0.315	15.92	30.00	18
5825	165	15	15.60	0.315	15.91	30.00	18

802.11n(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5180	36	15	14.11	0.335	14.44	23.98	MCS2
5200	40	14	13.10	0.335	13.43	23.98	MCS2
5240	48	14	14.60	0.335	14.93	23.98	MCS2
5260	52	14	14.61	0.335	14.94	23.98	MCS2
5300	60	13	14.31	0.335	14.64	23.98	MCS2
5320	64	13	14.40	0.335	14.73	23.98	MCS2
5500	100	14	14.55	0.335	14.88	23.98	MCS2
5600	120	14	14.12	0.335	14.45	23.98	MCS2
5720	144	14	14.58	0.335	14.91	23.98	MCS2
5745	149	14	14.64	0.335	14.97	30.00	MCS2
5785	157	14	14.60	0.335	14.93	30.00	MCS2
5825	165	14	14.63	0.335	14.96	30.00	MCS2

802.11n(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5190	38	12	11.16	0.591	11.75	23.98	MCS2
5230	46	12	12.01	0.591	12.60	23.98	MCS2
5270	54	13	13.36	0.591	13.95	23.98	MCS2
5310	62	12	13.28	0.591	13.87	23.98	MCS2
5510	102	12	12.17	0.591	12.76	23.98	MCS2
5590	118	13	12.87	0.591	13.46	23.98	MCS2
5710	142	12	12.45	0.591	13.04	23.98	MCS2
5755	151	12	13.06	0.591	13.65	30.00	MCS2
5795	159	12	13.25	0.591	13.84	30.00	MCS2

802.11ac(20MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5180	36	13	11.76	0.763	12.52	23.98	MCS6
5200	40	13	11.59	0.763	12.35	23.98	MCS6
5240	48	13	13.08	0.763	13.84	23.98	MCS6
5260	52	13	13.09	0.763	13.85	23.98	MCS6
5300	60	12	12.84	0.763	13.60	23.98	MCS6
5320	64	12	12.98	0.763	13.74	23.98	MCS6
5500	100	13	12.92	0.763	13.68	23.98	MCS6
5600	120	13	12.50	0.763	13.26	23.98	MCS6
5720	144	13	13.18	0.763	13.94	23.98	MCS6
5745	149	13	13.18	0.763	13.94	30.00	MCS6
5785	157	13	13.17	0.763	13.93	30.00	MCS6
5825	165	13	13.15	0.763	13.91	30.00	MCS6

802.11ac(40MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5190	38	12	11.20	0.580	11.78	23.98	MCS2
5230	46	11	10.86	0.580	11.44	23.98	MCS2
5270	54	12	12.40	0.580	12.98	23.98	MCS2
5310	62	11	12.29	0.580	12.87	23.98	MCS2
5510	102	12	12.15	0.580	12.73	23.98	MCS2
5590	118	12	11.86	0.580	12.44	23.98	MCS2
5710	142	11	11.50	0.580	12.08	23.98	MCS2
5755	151	11	12.02	0.580	12.60	30.00	MCS2
5795	159	11	11.98	0.580	12.56	30.00	MCS2

802.11ac(80MHz) Mode		Power Level Setting	Measured Power [dBm]	Duty Cycle Factor (dB)	Total Power [dBm]	Limit (dBm)	Worstcase MCS Index
Frequency [MHz]	Channel No.						
5210	42	10	8.26	1.627	9.89	23.98	MCS6
5290	58	10	9.76	1.627	11.39	23.98	MCS6
5530	106	11	9.67	1.627	11.30	23.98	MCS6
5610	122	11	9.84	1.627	11.47	23.98	MCS6
5690	138	11	10.33	1.627	11.96	23.98	MCS6
5775	155	11	10.24	1.627	11.87	30.00	MCS6

[MIMO]

802.11a Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	15	14.48	14.41	17.46	23.98	18
5200	40	15	15.98	14.44	18.29	23.98	18
5240	48	15	15.57	15.93	18.77	23.98	18
5260	52	15	15.82	15.95	18.90	23.98	18
5300	60	14	14.85	15.70	18.31	23.98	18
5320	64	14	14.83	15.67	18.29	23.98	18
5500	100	13	13.06	13.82	16.47	23.98	18
5600	120	15	15.07	15.32	18.21	23.98	18
5720	144	15	14.74	15.91	18.38	23.98	18
5745	149	15	14.57	15.91	18.31	30.00	18
5785	157	15	15.31	15.92	18.64	30.00	18
5825	165	15	15.46	15.91	18.71	30.00	18

802.11n(20MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	15	14.21	14.44	17.34	23.98	MCS2
5200	40	14	14.83	13.43	17.20	23.98	MCS2
5240	48	14	14.38	14.93	17.68	23.98	MCS2
5260	52	14	14.71	14.94	17.84	23.98	MCS2
5300	60	13	13.92	14.64	17.31	23.98	MCS2
5320	64	13	13.88	14.73	17.34	23.98	MCS2
5500	100	14	14.02	14.88	17.49	23.98	MCS2
5600	120	14	13.93	14.45	17.21	23.98	MCS2
5720	144	14	13.55	14.91	17.30	23.98	MCS2
5745	149	14	13.34	14.97	17.25	30.00	MCS2
5785	157	14	14.10	14.93	17.55	30.00	MCS2
5825	165	14	14.30	14.96	17.66	30.00	MCS2

802.11n(40MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5190	38	12	12.48	11.75	15.14	23.98	MCS2
5230	46	12	13.11	12.60	15.87	23.98	MCS2
5270	54	13	13.95	13.95	16.96	23.98	MCS2
5310	62	12	13.09	13.87	16.51	23.98	MCS2
5510	102	12	12.58	12.76	15.68	23.98	MCS2
5590	118	13	13.19	13.46	16.34	23.98	MCS2
5710	142	12	11.82	13.04	15.48	23.98	MCS2
5755	151	12	11.99	13.65	15.91	30.00	MCS2
5795	159	12	12.57	13.84	16.26	30.00	MCS2

802.11ac(20MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5180	36	13	12.41	12.52	15.48	23.98	MCS6
5200	40	13	13.97	12.35	16.25	23.98	MCS6
5240	48	13	13.62	13.84	16.75	23.98	MCS6
5260	52	13	13.87	13.85	16.87	23.98	MCS6
5300	60	12	12.86	13.60	16.26	23.98	MCS6
5320	64	12	12.72	13.74	16.27	23.98	MCS6
5500	100	13	12.95	13.68	16.34	23.98	MCS6
5600	120	13	12.99	13.26	16.14	23.98	MCS6
5720	144	13	12.66	13.94	16.36	23.98	MCS6
5745	149	13	12.51	13.94	16.30	30.00	MCS6
5785	157	13	13.19	13.93	16.59	30.00	MCS6
5825	165	13	13.45	13.91	16.70	30.00	MCS6

802.11ac(40MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5190	38	12	12.57	11.78	15.20	23.98	MCS2
5230	46	11	12.08	11.44	14.78	23.98	MCS2
5270	54	12	12.95	12.98	15.98	23.98	MCS2
5310	62	11	12.10	12.87	15.51	23.98	MCS2
5510	102	12	12.63	12.73	15.69	23.98	MCS2
5590	118	12	12.23	12.44	15.35	23.98	MCS2
5710	142	11	10.79	12.08	14.49	23.98	MCS2
5755	151	11	10.97	12.60	14.87	30.00	MCS2
5795	159	11	11.54	12.56	15.09	30.00	MCS2

802.11ac(80MHz) Mode		Power Level Setting	Ant.1 Measured Power (dBm) + Duty Cycle Factor	Ant.2 Measured Power (dBm) + Duty Cycle Factor	MIMO Total Power [dBm]	Limit (dBm)	Worstcase Datarate (Mbps)
Frequency [MHz]	Channel No.						
5210	42	10	11.37	9.89	13.70	23.98	MCS6
5290	58	10	10.79	11.39	14.11	23.98	MCS6
5530	106	11	11.66	11.30	14.49	23.98	MCS6
5610	122	11	11.15	11.47	14.32	23.98	MCS6
5690	138	11	11.12	11.96	14.57	23.98	MCS6
5775	155	11	10.94	11.87	14.44	30.00	MCS6

10.5 POWER SPECTRAL DENSITY

[Ant.1]

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase Datarate (Mbps)	Limit
Frequency [MHz]	Channel No.					
5180	36	5.212	0.315	5.527	18	11 dBm/MHz
5200	40	6.479	0.315	6.794	18	
5240	48	6.249	0.315	6.564	18	
5260	52	6.677	0.315	6.992	18	
5300	60	6.574	0.315	6.889	18	
5320	64	6.561	0.315	6.876	18	
5500	100	3.748	0.315	4.063	18	
5600	120	5.713	0.315	6.028	18	
5720	144	5.488	0.315	5.803	18	
5745	149	2.653	0.315	2.968	18	30 dBm/500kHz
5785	157	3.712	0.315	4.027	18	
5825	165	3.820	0.315	4.135	18	

802.11n(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	4.498	0.335	4.833	MCS2	11 dBm/MHz
5200	40	5.304	0.335	5.639	MCS2	
5240	48	4.886	0.335	5.221	MCS2	
5260	52	5.299	0.335	5.634	MCS2	
5300	60	4.479	0.335	4.814	MCS2	
5320	64	4.180	0.335	4.515	MCS2	
5500	100	4.305	0.335	4.640	MCS2	
5600	120	4.233	0.335	4.568	MCS2	
5720	144	4.302	0.335	4.637	MCS2	
5745	149	1.121	0.335	1.456	MCS2	30 dBm/500kHz
5785	157	1.958	0.335	2.293	MCS2	
5825	165	2.450	0.335	2.785	MCS2	

802.11n(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-0.061	0.591	0.530	MCS2	11 dBm/MHz
5230	46	0.786	0.591	1.377	MCS2	
5270	54	1.670	0.591	2.261	MCS2	
5310	62	1.729	0.591	2.320	MCS2	
5510	102	0.392	0.591	0.983	MCS2	
5590	118	0.916	0.591	1.507	MCS2	
5710	142	-0.487	0.591	0.104	MCS2	
5755	151	-3.205	0.591	-2.614	MCS2	30 dBm /500kHz
5795	159	-2.793	0.591	-2.202	MCS2	

802.11ac(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	0.307	0.763	1.070	MCS6	11 dBm/MHz
5200	40	1.989	0.763	2.752	MCS6	
5240	48	1.694	0.763	2.457	MCS6	
5260	52	1.975	0.763	2.738	MCS6	
5300	60	1.165	0.763	1.928	MCS6	
5320	64	0.925	0.763	1.688	MCS6	
5500	100	0.924	0.763	1.687	MCS6	
5600	120	1.304	0.763	2.067	MCS6	
5720	144	0.624	0.763	1.387	MCS6	
5745	149	-1.771	0.763	-1.008	MCS6	30 dBm/500kHz
5785	157	-1.282	0.763	-0.519	MCS6	
5825	165	-1.140	0.763	-0.377	MCS6	

802.11ac(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	0.023	0.580	0.603	MCS2	11 dBm/MHz
5230	46	-0.567	0.580	0.013	MCS2	
5270	54	0.535	0.580	1.115	MCS2	
5310	62	-0.323	0.580	0.257	MCS2	
5510	102	0.671	0.580	1.251	MCS2	
5590	118	-0.120	0.580	0.460	MCS2	
5710	142	-1.518	0.580	-0.938	MCS2	
5755	151	-4.157	0.580	-3.577	MCS2	30 dBm/500kHz
5795	159	-3.672	0.580	-3.092	MCS2	

802.11ac(80MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5210	42	-7.118	1.627	-5.491	MCS6	11 dBm/MHz
5290	58	-7.548	1.627	-5.921	MCS6	
5530	106	-6.923	1.627	-5.296	MCS6	
5610	122	-7.309	1.627	-5.682	MCS6	
5690	138	-7.353	1.627	-5.726	MCS6	
5775	155	-9.852	1.627	-8.225	MCS6	30 dBm/500kHz

[Ant.2]

802.11a Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase Datarate (Mbps)	Limit
Frequency [MHz]	Channel No.					
5180	36	5.709	0.315	6.024	18	11 dBm/MHz
5200	40	5.273	0.315	5.588	18	
5240	48	6.681	0.315	6.996	18	
5260	52	6.676	0.315	6.991	18	
5300	60	6.377	0.315	6.692	18	
5320	64	6.631	0.315	6.946	18	
5500	100	4.581	0.315	4.896	18	
5600	120	6.258	0.315	6.573	18	
5720	144	6.856	0.315	7.171	18	
5745	149	4.733	0.315	5.048	18	30 dBm/500kHz
5785	157	4.416	0.315	4.731	18	
5825	165	4.306	0.315	4.621	18	

802.11n(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	4.881	0.335	5.216	MCS2	11 dBm/MHz
5200	40	4.041	0.335	4.376	MCS2	
5240	48	5.316	0.335	5.651	MCS2	
5260	52	5.244	0.335	5.579	MCS2	
5300	60	5.258	0.335	5.593	MCS2	
5320	64	5.760	0.335	6.095	MCS2	
5500	100	5.294	0.335	5.629	MCS2	
5600	120	4.782	0.335	5.117	MCS2	
5720	144	5.744	0.335	6.079	MCS2	
5745	149	3.718	0.335	4.053	MCS2	30 dBm/500kHz
5785	157	3.305	0.335	3.640	MCS2	
5825	165	2.955	0.335	3.290	MCS2	

802.11n(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-0.622	0.591	-0.031	MCS2	11 dBm/MHz
5230	46	0.138	0.591	0.729	MCS2	
5270	54	1.560	0.591	2.151	MCS2	
5310	62	1.639	0.591	2.230	MCS2	
5510	102	0.542	0.591	1.133	MCS2	
5590	118	1.135	0.591	1.726	MCS2	
5710	142	0.637	0.591	1.228	MCS2	
5755	151	-1.301	0.591	-0.710	MCS2	30 dBm /500kHz
5795	159	-1.410	0.591	-0.819	MCS2	

802.11ac(20MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5180	36	0.517	0.763	1.280	MCS6	11 dBm/MHz
5200	40	0.508	0.763	1.271	MCS6	
5240	48	2.050	0.763	2.813	MCS6	
5260	52	1.933	0.763	2.696	MCS6	
5300	60	1.655	0.763	2.418	MCS6	
5320	64	2.009	0.763	2.772	MCS6	
5500	100	1.850	0.763	2.613	MCS6	
5600	120	1.421	0.763	2.184	MCS6	
5720	144	2.319	0.763	3.082	MCS6	
5745	149	-0.130	0.763	0.633	MCS6	30 dBm/500kHz
5785	157	-0.172	0.763	0.591	MCS6	
5825	165	-0.481	0.763	0.282	MCS6	

802.11ac(40MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5190	38	-0.585	0.580	-0.005	MCS2	11 dBm/MHz
5230	46	-0.816	0.580	-0.236	MCS2	
5270	54	0.505	0.580	1.085	MCS2	
5310	62	0.544	0.580	1.124	MCS2	
5510	102	0.330	0.580	0.910	MCS2	
5590	118	0.166	0.580	0.746	MCS2	
5710	142	-0.464	0.580	0.116	MCS2	
5755	151	-2.182	0.580	-1.602	MCS2	30 dBm/500kHz
5795	159	-2.529	0.580	-1.949	MCS2	

802.11ac(80MHz) Mode		Measured PSD [dBm]	Duty Cycle Factor (dB)	Total PSD [dBm]	Worstcase MCS Index	Limit
Frequency [MHz]	Channel No.					
5210	42	-8.718	1.627	-7.091	MCS6	11 dBm/MHz
5290	58	-7.450	1.627	-5.823	MCS6	
5530	106	-7.210	1.627	-5.583	MCS6	
5610	122	-7.094	1.627	-5.467	MCS6	
5690	138	-6.844	1.627	-5.217	MCS6	
5775	155	-9.202	1.627	-7.575	MCS6	30 dBm/500kHz

[MIMO]

802.11a Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit
Frequency [MHz]	Channel No.				
5180	36	5.527	6.024	8.793	11 dBm/MHz
5200	40	6.794	5.588	9.243	
5240	48	6.564	6.996	9.796	
5260	52	6.992	6.991	10.002	
5300	60	6.889	6.692	9.802	
5320	64	6.876	6.946	9.921	
5500	100	4.063	4.896	7.510	
5600	120	6.028	6.573	9.319	
5720	144	5.803	7.171	9.551	
5745	149	2.968	5.048	7.142	
5785	157	4.027	4.731	7.403	30 dBm/500kHz
5825	165	4.135	4.621	7.395	

802.11n(20MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit
Frequency [MHz]	Channel No.				
5180	36	4.833	5.216	8.039	11 dBm/MHz
5200	40	5.639	4.376	8.063	
5240	48	5.221	5.651	8.451	
5260	52	5.634	5.579	8.617	
5300	60	4.788	5.593	8.219	
5320	64	4.515	6.095	8.386	
5500	100	4.640	5.629	8.173	
5600	120	4.568	5.117	7.861	
5720	144	4.637	6.079	8.428	
5745	149	1.456	4.053	5.956	
5785	157	2.293	3.640	6.029	30 dBm/500kHz
5825	165	2.785	3.290	6.055	

802.11n(40MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit
Frequency [MHz]	Channel No.				
5190	38	0.530	-0.031	3.269	11 dBm/MHz
5230	46	1.377	0.729	4.076	
5270	54	2.261	2.151	5.217	
5310	62	2.320	2.230	5.286	
5510	102	0.983	1.133	4.069	
5590	118	1.507	1.726	4.629	
5710	142	0.104	1.228	3.713	
5755	151	-2.614	-0.710	1.452	30 dBm / 500kHz
5795	159	-2.202	-0.819	1.555	

802.11ac(20MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit
Frequency [MHz]	Channel No.				
5180	36	1.070	1.280	4.187	11 dBm/MHz
5200	40	2.752	1.271	5.085	
5240	48	2.457	2.813	5.649	
5260	52	2.738	2.696	5.728	
5300	60	1.928	2.418	5.191	
5320	64	1.688	2.772	5.274	
5500	100	1.687	2.613	5.185	
5600	120	2.067	2.184	5.137	
5720	144	1.387	3.082	5.327	
5745	149	-1.008	0.633	2.900	30 dBm/ 500kHz
5785	157	-0.519	0.591	3.082	
5825	165	-0.377	0.282	2.976	

802.11ac(40MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit
Frequency [MHz]	Channel No.				
5190	38	0.603	-0.005	3.320	11 dBm/MHz
5230	46	0.013	-0.236	2.901	
5270	54	1.115	1.085	4.110	
5310	62	0.257	1.124	3.722	
5510	102	1.251	0.910	4.094	
5590	118	0.460	0.746	3.616	
5710	142	-0.938	0.116	2.631	30 dBm/ 500kHz
5755	151	-3.577	-1.602	0.532	
5795	159	-3.092	-1.949	0.527	

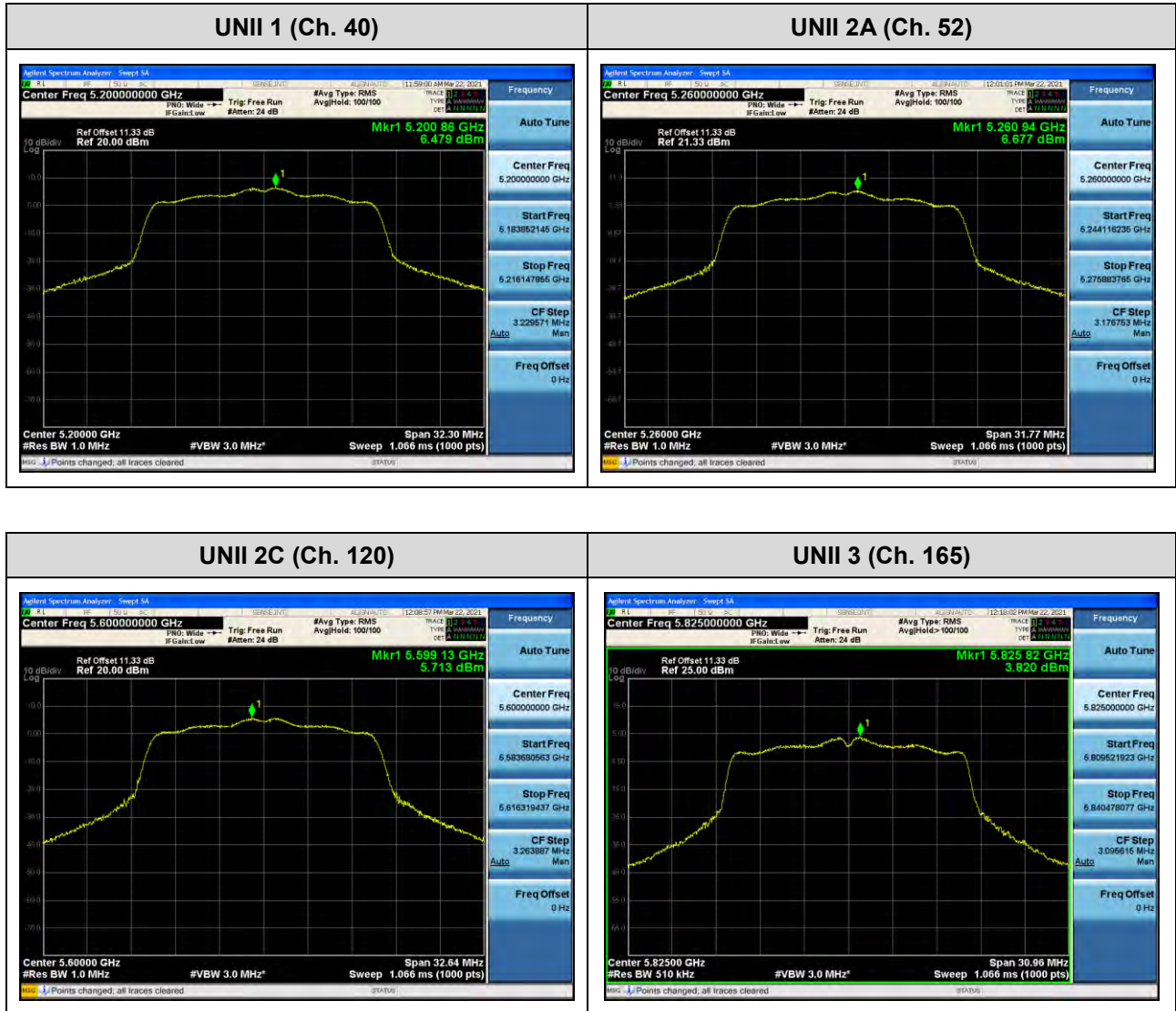
802.11ac(80MHz) Mode		ANT.1 Measured Power(dBm) + Duty Cycle Factor (dB)	ANT.2 Measured Power(dBm) + Duty Cycle Factor (dB)	MIMO Result (dBm)	Limit
Frequency [MHz]	Channel No.				
5210	42	-5.491	-7.091	-3.208	11 dBm/MHz
5290	58	-5.921	-5.823	-2.862	
5530	106	-5.296	-5.583	-2.427	
5610	122	-5.682	-5.467	-2.563	
5690	138	-5.726	-5.217	-2.454	
5775	155	-8.225	-7.575	-4.878	30 dBm/500kHz

[Ant.1]

☐ Test Plots(802.11a)

Note:

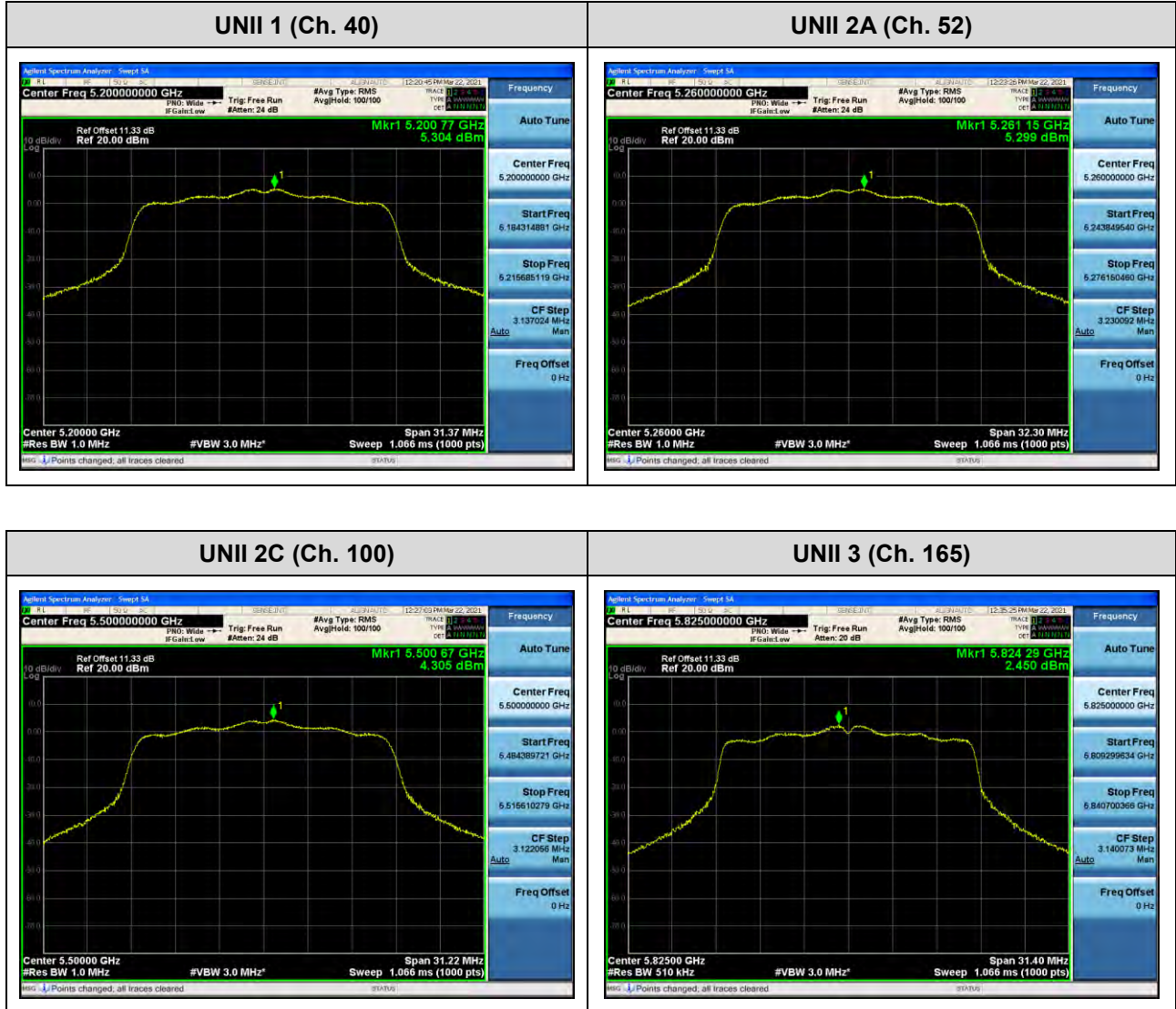
In order to simplify the report, attached plots were only channel of highest power.



☐ Test Plots(802.11n(HT20))

Note:

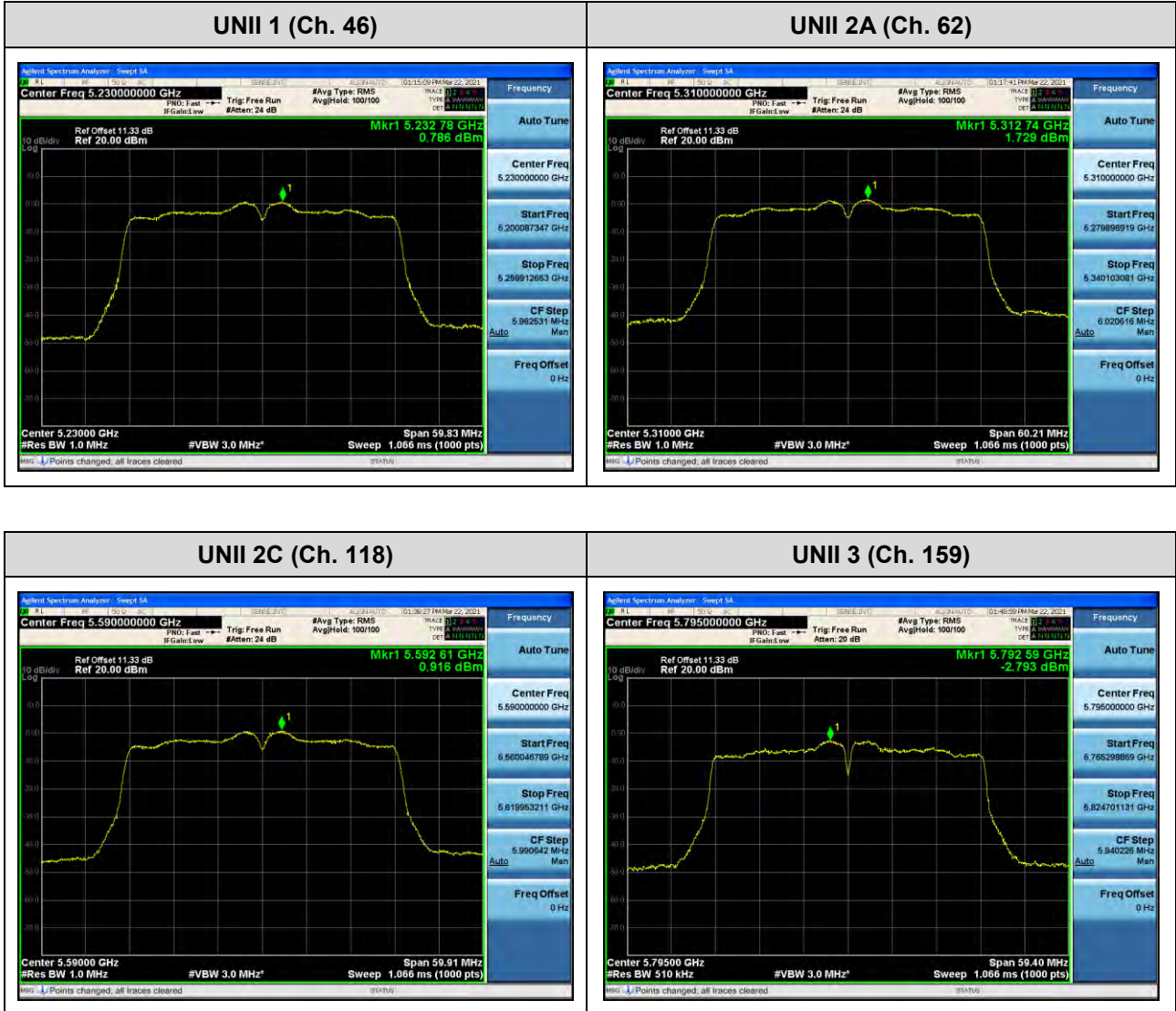
In order to simplify the report, attached plots were only channel of highest power.



Test Plots(802.11n(HT40))

Note:

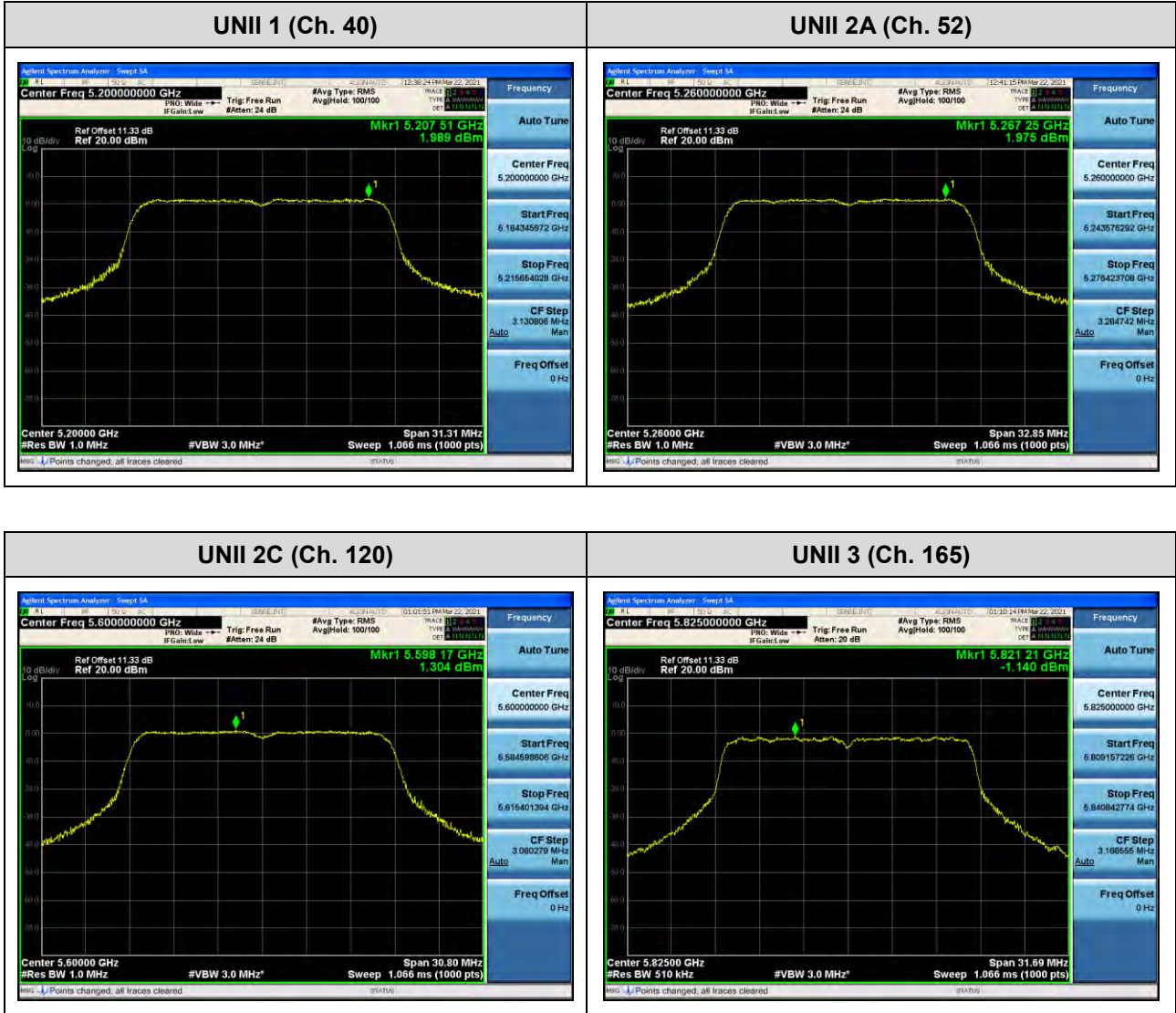
In order to simplify the report, attached plots were only channel of highest power.



Test Plots(802.11ac(VHT20))

Note:

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



Test Plots(802.11ac(VHT40))

Note:

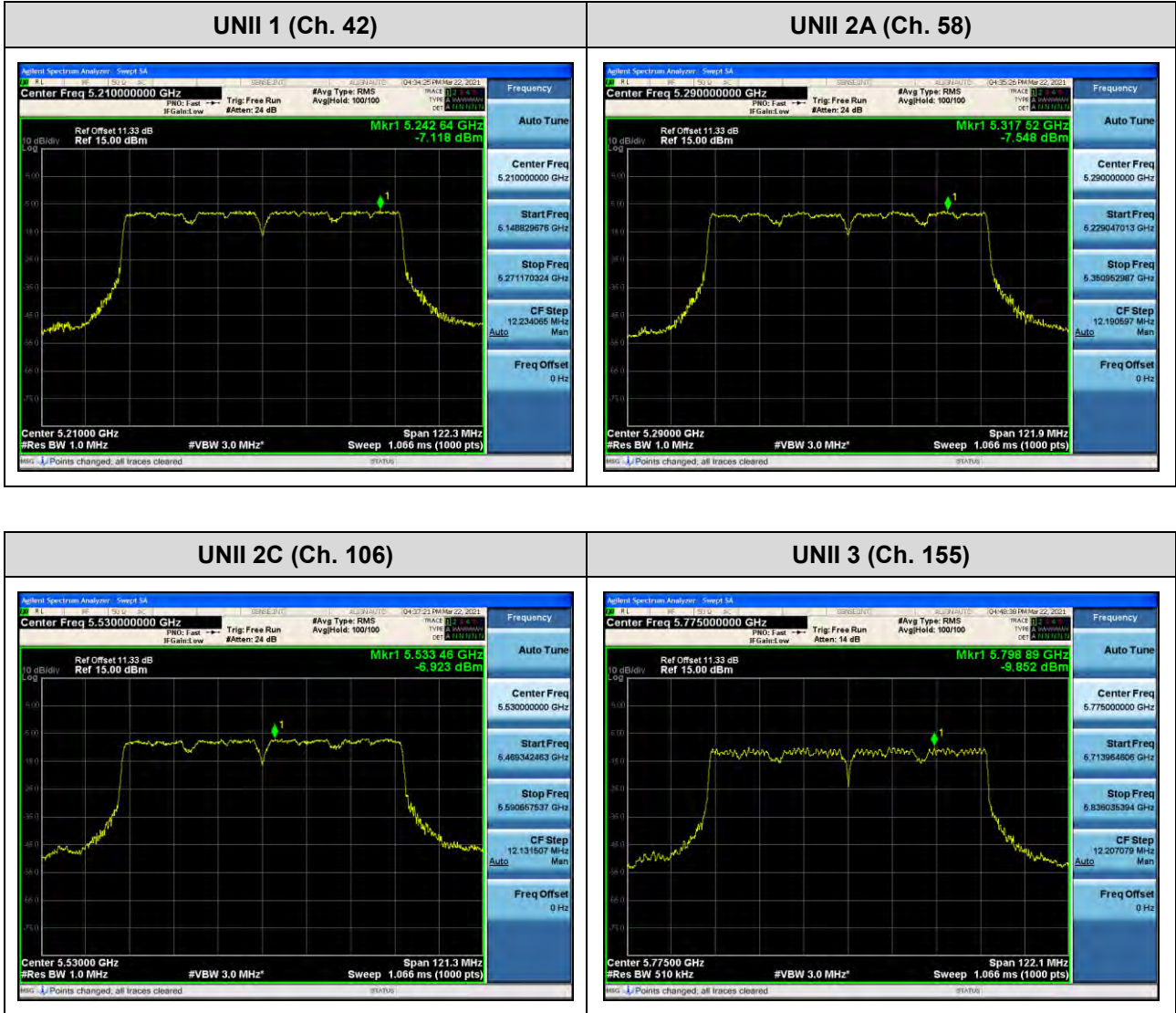
In order to simplify the report, attached plots were only channel of highest power.



Test Plots(802.11ac(VHT80))

Note:

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



[Ant.2]

☐ Test Plots(802.11a)

Note:

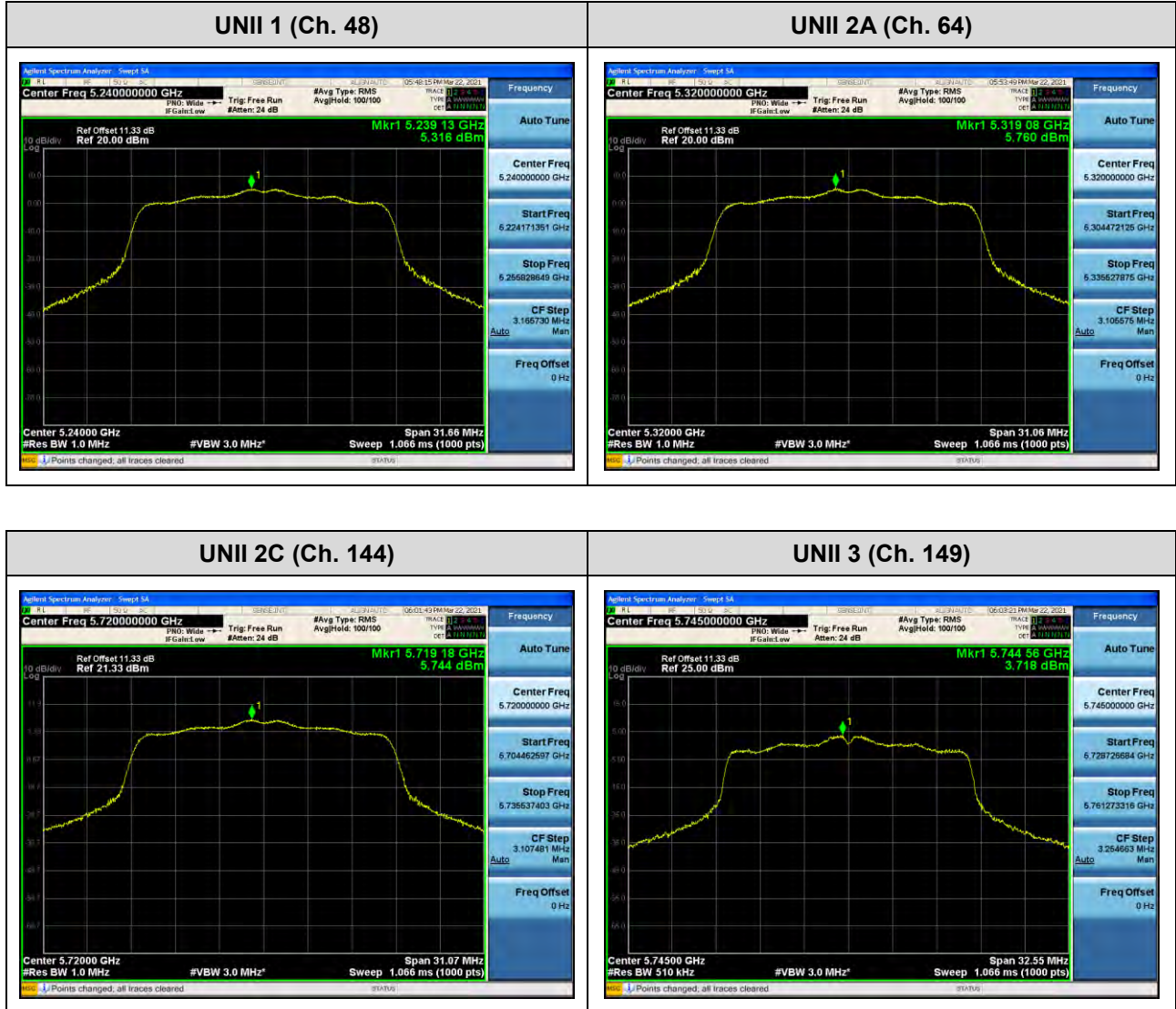
In order to simplify the report, attached plots were only channel of highest power.



☐ Test Plots(802.11n(HT20))

Note:

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



Test Plots(802.11n(HT40))

Note:

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

