

FCC UNII REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.**Date of Issue:**
October 16, 2023**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-2310-FC012**FCC ID:** A3LSMS926U**APPLICANT:** SAMSUNG Electronics Co., Ltd.**Model:** SM-S926U**Additional Model:** SM-S926U1**EUT Type:** Mobile Phone**Modulation type** OFDM**FCC Classification:** Unlicensed National Information Infrastructure(NII)**FCC Rule Part(s):** Part 15.407**Engineering Statement:**

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

Report No.: HCT-RF-2310-FC012

REVIEWED BY



Report prepared by : Kyung Jun Woo
Engineer of Telecommunication Testing Center



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

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

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-2310-FC012	October 16, 2023	- First Approval Report

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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	SM-S926U	
Additional Model	SM-S926U1	
EUT Type	Mobile Phone	
Power Supply	DC 3.88 V	
Modulation Type	OFDM : 802.11a, 802.11n, 802.11ac	
Frequency Range (MHz)	U-NII-1	20 MHz BW : 5180 - 5240 40 MHz BW : 5190 - 5230 80 MHz BW : 5210 160 MHz BW : 5250
	U-NII-2A	20 MHz BW : 5260 - 5320 40 MHz BW : 5270 - 5310 80 MHz BW : 5290 160 MHz BW : 5250
	U-NII-2C	20 MHz BW : 5500 - 5720 40 MHz BW : 5510 - 5710 80 MHz BW : 5530 – 5690 160 MHz BW : 5570
	U-NII-3	20 MHz BW : 5745 - 5825 40 MHz BW : 5755 - 5795 80 MHz BW : 5775 160 MHz BW : 5815
	U-NII-4	20 MHz BW : 5845 - 5885 40 MHz BW : 5835 - 5875 80 MHz BW : 5855 160 MHz BW : 5815
Straddle channel	Supported	
TDWR Band	Supported	
Dynamic Frequency Selection	Slave without radar detection	
Date(s) of Tests	September 01, 2023 ~ October 16, 2023	
Serial number	Radiated: R3CW80MAYKF Conducted : R3CW80MAZFV	

ANTENNA CONFIGURATIONS

1. Antenna configuration

Configurations	SISO		MIMO	
	Ant.1	Ant.2	CDD	SDM
802.11a	O	O	O	X
802.11n	O	O	O	O
802.11ac	O	O	O	O

Note:

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

2.This device supports simultaneous transmission operation, which allows for two channels to operate independent of one another in the 2.4 GHz and 5 GHz or 6GHz Bands simultaneously on each antenna.

RSDB Scenario	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	Test Case
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					Scenario1
Dual Bluetooth + 5 GHz WiFi MIMO			on	on			on	on	Scenario2
Dual Bluetooth + 6 GHz WiFi MIMO					on	on	on	on	
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO		on	on	on			on		Scenario3
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 6 GHz WiFi MIMO		on			on	on	on		

3. Directional Gain Calculation

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

Directional gain(CDD) =

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

Directional gain(SDM) = $G_{max} + 10 \cdot \log(N_{ANT}/ N_{ss})$,

Band	Ant Gain (dBi)		N_{ANT}/ N_{ss}	Directional Gain CDD (dBi)	Directional Gain SDM (dBi)
	ANT1	ANT2			
UNII 1	-5.14	-5.33	CDD 2 / 1 SDM 2 / 2	-2.22	-5.14
UNII 2A	-4.32	-4.76		-1.53	-4.32
UNII 2C	-3.65	-6.25		-1.84	-3.65
UNII 3	-4.06	-5.53		-1.75	-4.06
UNII 4	-4.49	-5.25		-1.85	-4.49

Note

According to Ansi C63.10-2013 section 14.4.3, the directional gain is calculated using the formula, where GN is the gain of the nth antenna and NANT is the total number of antennas used.

$$Directional\ gain(CDD) = 10 \cdot \log \left(\frac{(10^{(ANT1\ Gain/20)} + 10^{(ANT2\ Gain/20)})^2}{2} \right) \text{ dBi}$$

$$Directional\ gain(SDM) = G_{max} + 10 \cdot \log(N_{ANT}/ N_{ss}),$$

Sample Calculation (Conducted Power, MIMO):

Ex) Ant 1 : 11.58 dBm Ant 2 : 12.08 dBm

$$Ant1 + Ant 2 = MIMO$$

$$(11.58 \text{ dBm} + 12.08 \text{ dBm}) = (14.387 \text{ mW} + 16.143 \text{ mW}) = 30.53 \text{ mW} = 14.88 \text{ dBm}$$

Sample Calculation (E.I.R.P & E.I.R.P Spectral Density, MIMO):

Ex) ANT1 : 15.35 dBm , ANT2 : 15.12 dBm, Directional Gain : 3 dBi

$$\text{Conducted Power} = (15.35 \text{ dBm} + 15.12 \text{ dBm}) = (34.276 \text{ mW} + 32.508 \text{ mW}) = 66.784 \text{ mW} = 18.25 \text{ dBm}$$

$$\text{E.I.R.P} = 18.25 \text{ dBm} + 3 \text{ dBi} = 21.25 \text{ dBm}$$

2. MAXIMUM OUTPUT POWER

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

Band	Mode	MIMO_CDD(Ant.1+ Ant.2)					
		Ant.1 Power		Ant.2 Power		Ant.1 + Ant.2 Power	
		(dBm)	(W)	(dBm)	(W)	(dBm)	(W)
UNII1	802.11a	17.81	0.060	17.24	0.053	20.54	0.113
	802.11n (HT20)	17.89	0.061	17.14	0.052	20.54	0.113
	802.11n (HT40)	15.85	0.038	15.07	0.032	18.49	0.071
	802.11ac (VHT20)	17.83	0.061	17.12	0.051	20.50	0.112
	802.11ac (VHT40)	15.88	0.039	15.03	0.032	18.49	0.071
	802.11ac (VHT80)	14.36	0.027	13.92	0.025	17.16	0.052
UNII2A	802.11a	17.47	0.056	17.19	0.052	20.34	0.108
	802.11n (HT20)	17.66	0.058	17.36	0.054	20.52	0.113
	802.11n (HT40)	15.90	0.039	15.26	0.034	18.61	0.073
	802.11ac (VHT20)	17.67	0.058	17.25	0.053	20.47	0.111
	802.11ac (VHT40)	15.91	0.039	15.26	0.034	18.61	0.073
	802.11ac (VHT80)	14.14	0.026	14.19	0.026	17.18	0.052
UNII2C	802.11a	17.19	0.052	17.15	0.052	20.18	0.104
	802.11n (HT20)	17.61	0.058	17.29	0.054	20.46	0.111
	802.11n (HT40)	15.70	0.037	14.85	0.031	18.31	0.068
	802.11ac (VHT20)	17.52	0.056	16.73	0.047	20.15	0.104
	802.11ac (VHT40)	15.69	0.037	14.83	0.030	18.29	0.067
	802.11ac (VHT80)	14.31	0.027	13.79	0.024	17.07	0.051
UNII3	802.11a	17.50	0.056	17.32	0.054	20.42	0.110
	802.11n (HT20)	17.73	0.059	17.53	0.057	20.64	0.116
	802.11n (HT40)	15.81	0.038	15.37	0.034	18.61	0.073
	802.11ac (VHT20)	17.66	0.058	17.50	0.056	20.59	0.115
	802.11ac (VHT40)	15.70	0.037	15.46	0.035	18.59	0.072
	802.11ac (VHT80)	14.27	0.027	14.03	0.025	17.16	0.052
UNII4 (Conducted For inf.)	802.11a	17.40	0.055	17.50	0.056	20.46	0.111
	802.11n (HT20)	17.70	0.059	17.70	0.059	20.71	0.118
	802.11n (HT40)	15.93	0.039	15.70	0.037	18.83	0.076
	802.11ac (VHT20)	17.63	0.058	17.65	0.058	20.65	0.116
	802.11ac (VHT40)	16.07	0.040	15.70	0.037	18.90	0.078
	802.11ac (VHT80)	14.27	0.027	14.34	0.027	17.32	0.054
UNII1-2A	802.11ac (VHT160)	13.68	0.023	12.84	0.019	16.29	0.043
UNII2C	802.11ac (VHT160)	12.32	0.017	12.14	0.016	15.24	0.033
UNII3&4	802.11ac (VHT160)	13.65	0.023	13.64	0.023	16.65	0.046

Band	Mode	MIMO_CDD(Ant.1+ Ant.2) (EIRP)											
		Ant.1 Power				Ant.2 Power				(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	17.40	-4.49	12.91	0.020	17.50	-5.25	12.25	0.017	20.46	-1.85	18.61	0.073
	802.11n (HT20)	17.70	-4.49	13.21	0.021	17.70	-5.25	12.45	0.018	20.71	-1.85	18.86	0.077
	802.11n (HT40)	15.93	-4.49	11.44	0.014	15.70	-5.25	10.45	0.011	18.83	-1.85	16.98	0.050
	802.11ac (VHT20)	17.63	-4.49	13.14	0.021	17.65	-5.25	12.40	0.017	20.65	-1.85	18.80	0.076
	802.11ac (VHT40)	16.07	-4.49	11.58	0.014	15.70	-5.25	10.45	0.011	18.90	-1.85	17.05	0.051
	802.11ac (VHT80)	14.27	-4.49	9.78	0.010	14.34	-5.25	9.09	0.008	17.32	-1.85	15.47	0.035
	802.11ac (VHT160)	13.65	-4.49	9.16	0.008	13.64	-5.25	8.39	0.007	16.65	-1.85	14.80	0.030

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 D02 EMC Measurement v01

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 March 31, 2022 (CAB identifier: 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

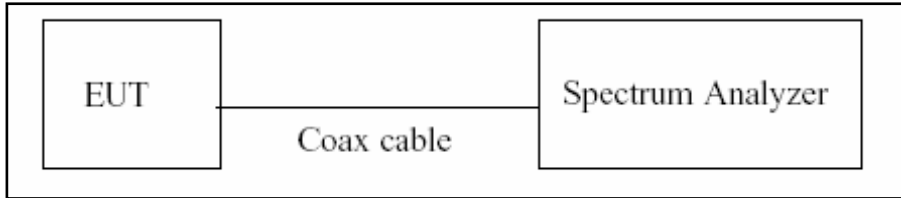
7. MEASUREMENT UNCERTAINTY

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)	1.90 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.14 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.82 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.74 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.76 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (Above 40 GHz)	5.52 (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.

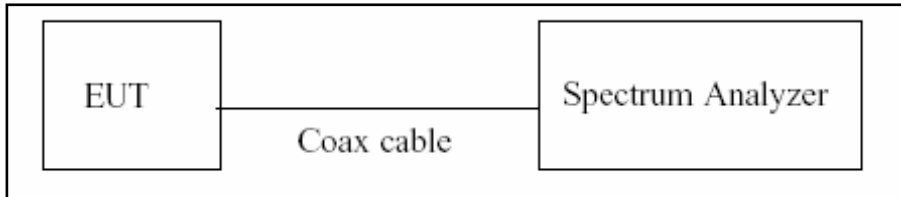
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ($\geq$ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = $T_{\text{on}} / T_{\text{total}}$ and Duty Cycle Factor = $10\log(1/\text{Duty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

8.2. 6 dB Bandwidth & 26 dB Bandwidth

Limit

Within the 5.725-5.85 GHz(NII-3) &5.85-5.925 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 $\geq 3 \times$ 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.

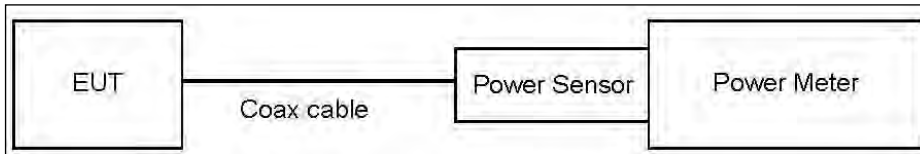
8.3. Output Power Measurement

Limit

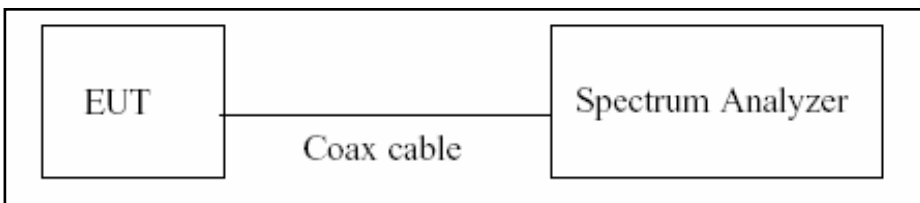
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30 dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30 dBm)
UNII 4	EIRP 30 dBm

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 $\geq$ 3 MHz.
5. Number of points in sweep $\geq 2 \times \text{span/RBW}$.
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. Actual value of loss for the attenuator and cable combination is below table.

Band	Ant.1 Loss(dB)	Ant.2 Loss(dB)
UNII 1	12.62	11.87
UNII 2A	12.62	11.87
UNII 2C	12.62	11.87
UNII 3&4	12.62	11.87

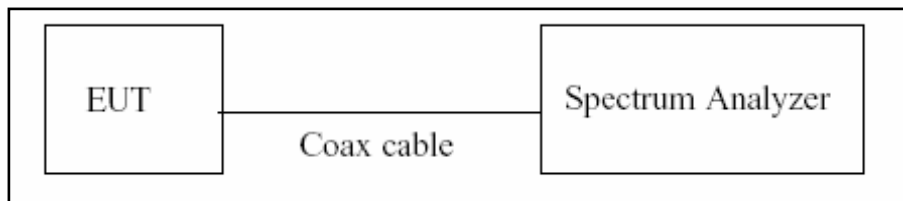
(Actual value of loss for the attenuator and cable combination)

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.

- Set span to encompass the entire emission bandwidth(EBW) of the signal.
- RBW = 1 MHz(510 kHz for UNII 3)
→ For portion within the NII-3 be used RBW 510kHz
- VBW $\geq$ 3 MHz
- Number of points in sweep $\geq$ 2 x span/RBW.
- Sweep time = auto.
- Detector = RMS(i.e., power averaging), if available. Otherwise, use sample detector mode.
- Do not use sweep triggering. Allow the sweep to “free run”.
- Trace average at least 100 traces in power averaging(RMS) mode
- Use the peak search function on the spectrum analyzer to find the peak of the spectrum.
- 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. Actual value of loss for the attenuator and cable combination is below table.

Band	Ant.1 Loss(dB)	Ant.2 Loss(dB)
UNII 1	12.62	11.87
UNII 2A	12.62	11.87
UNII 2C	12.62	11.87
UNII 3&4	12.62	11.87

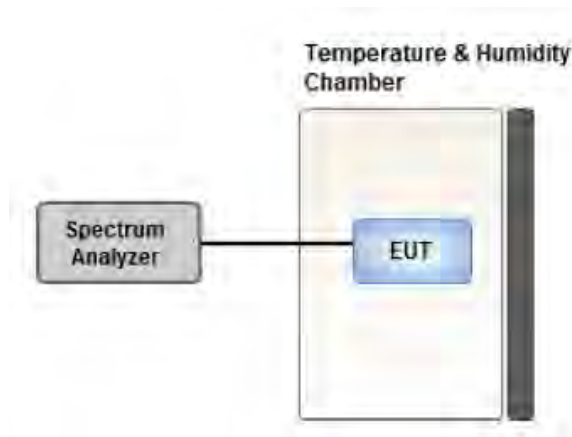
(Actual value of loss for the attenuator and cable combination)

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) = Measured 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. UNII 4: [Low Channel O.O.B.E] measured with a 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.

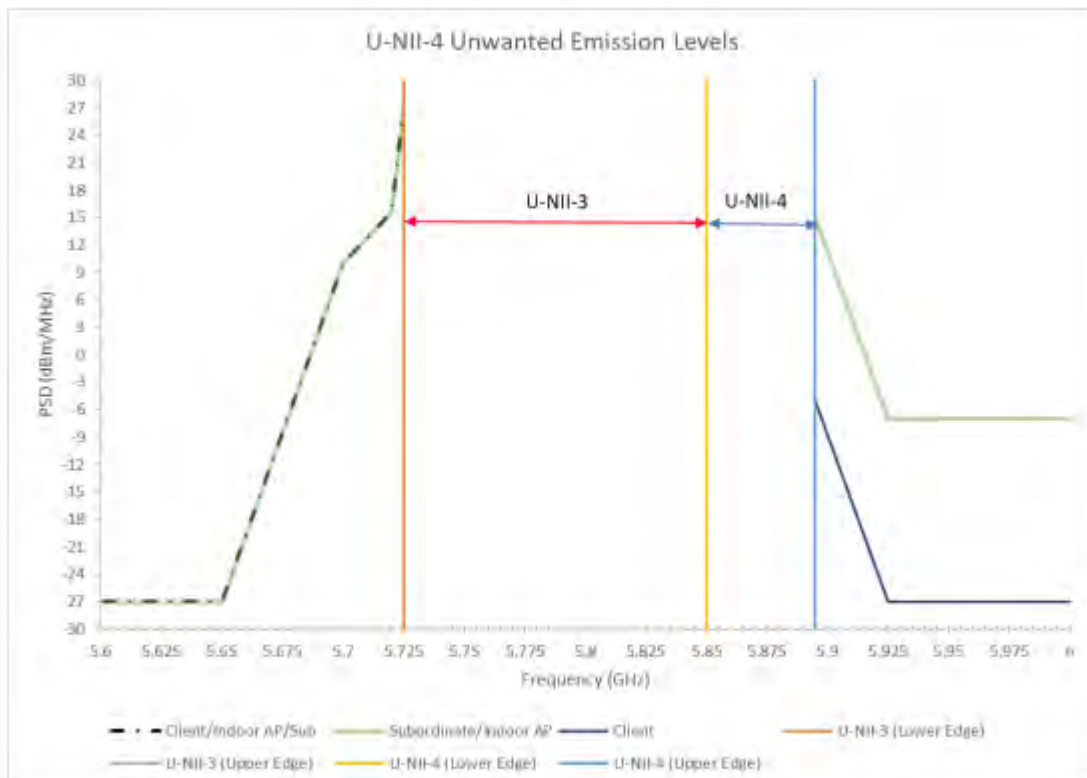


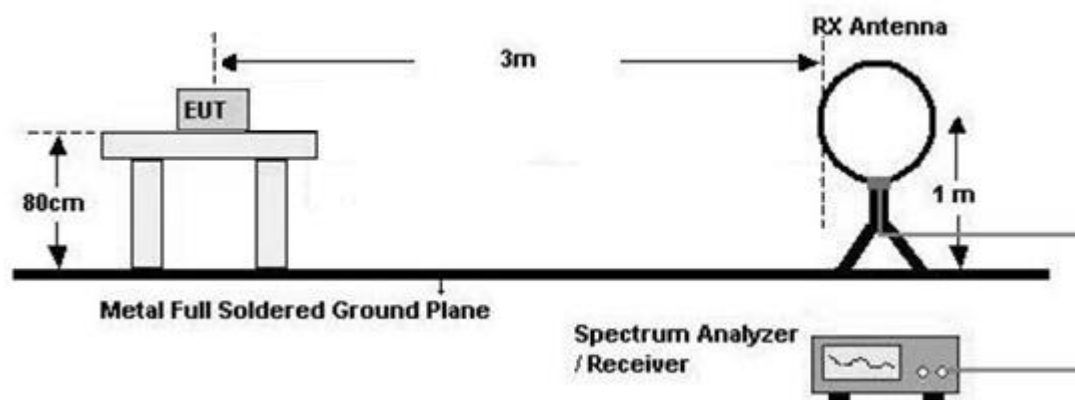
Figure 1. Out of Band Emission Mask of U-NII Devices Operating in the 5.850-5.895 GHz Band

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.

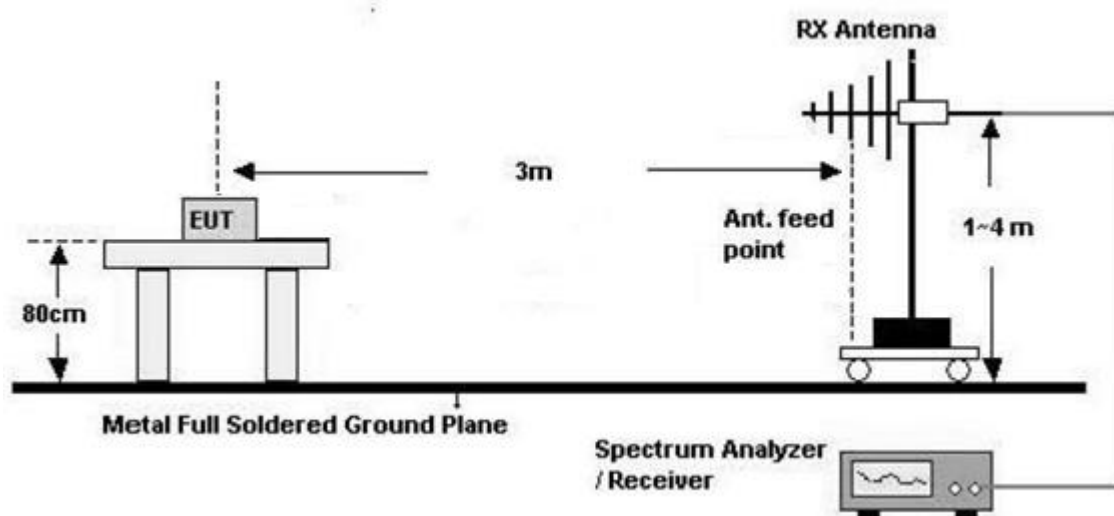
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

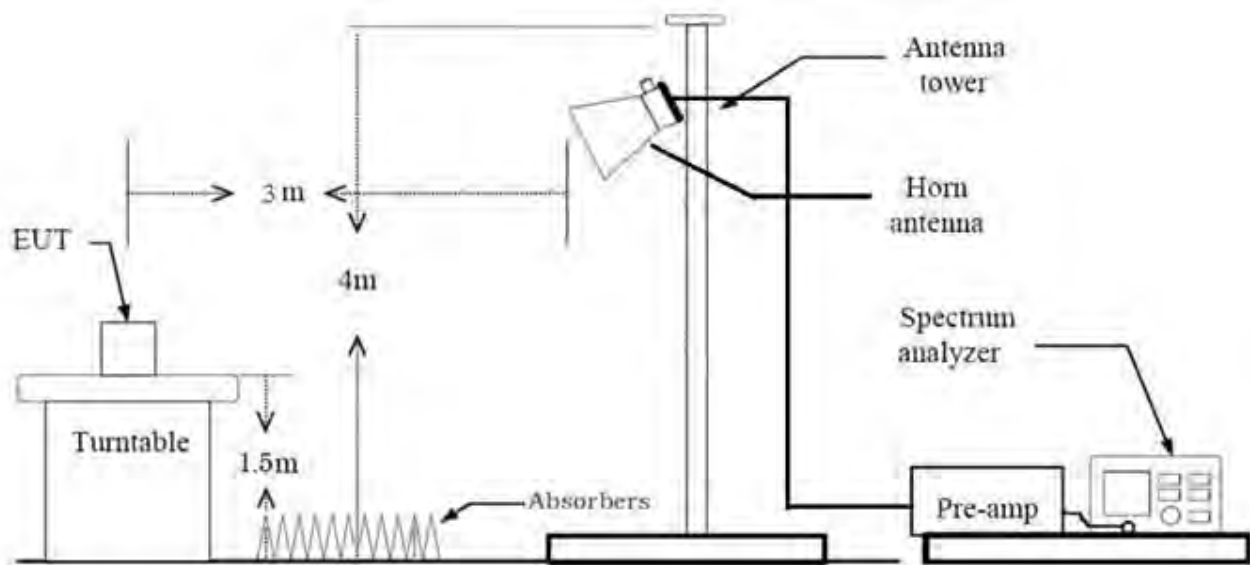
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions(Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8 m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) = $40\log(3\text{ m}/300\text{ m}) = -80\text{ dB}$
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 $\geq 3 \times$ 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
 - (1)Measurement(Peak)
= Measured Value(Peak)
 - (2)Measurement(Avg)
= Measured Value (Avg)
 - We apply to the offset in the range 1 GHz - 18 GHz.
 - The offset = Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F) – Amp. Gain(A.G)

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 minimym number of traces by a factor of 1/x, where x is the duty cycle.
 - (3) Measurement Type (Average, G.6.c in KDB 789033 v02r01):
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - The analyzer is set to linear detector mode.
 - Detector = RMS
 - Sweep time = auto.
 - Trace mode = Average (at least 100 traces).
 - Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 % duty cycle.
 - Duty Cycle Factor (dB) : Please refer to the please refer to section 10.1.
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

(1)Measurement(Peak)

= Measured Value(Peak)

(2)Measurement(Avg)

- G.6.d in KDB 789033 v02r01 & G.6.c in KDB 789033 v02r01(Duty cycle $\geq 98\%$)

= Measured Value (Avg)

(3)Measurement(Avg, Duty cycle < 98 %)(Average, G.6.c in KDB 789033 v02r01)

= Measured Value (Avg)+Duty Cycle Factor

- We apply to the offset in the range 1 GHz - 18 GHz.

- The offset = Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F) – Amp. Gain(A.G)

The actual setting value of VBW

Mode	Worst Data rate (Mbps)	Duty Cycle	Duty Cycle Factor (dB)	The actual setting value of VBW (Hz)
802.11a	6	0.934	0.296	1000
802.11n(HT20)	MCS0	0.923	0.348	1000
802.11n(HT40)	MCS0	0.860	0.653	2000
802.11ac(VHT20)	MCS0	0.925	0.337	1000
802.11ac(VHT40)	MCS0	0.863	0.641	2000
802.11ac(VHT80)	MCS0	0.760	1.191	5000
802.11ac(VHT160)	MCS0	0.533	2.736	10000

8.8. Worst case configuration and mode

Conducted test

1. All datarate of operation were investigated and the worst case datarate results are reported.
2. SM-S926U, SM-S926U1 were tested and the worst case results are reported.
(Worst case: SM-S926U)

Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
 - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
 - Worstcase : Stand alone
2. EUT Axis
 - Radiated Spurious Emissions : X
 - Radiated Restricted Band Edge : X
3. All datarate of operation were investigated and the worst case datarate results are reported.
 - Mode : 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
 - 802.11ac_VHT160: MCS0
4. Radiated Spurious Emission
 - All modulation of operation were investigated and the worst case modulation results are reported.
Worst case: 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

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, Keyboard, etc)
- Worstcase : Stand alone

2. All of RSDB Scenario were investigated and the worst case configuration results are reported.

RSDB Scenario	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	Test Case
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					Scenario1
Dual Bluetooth + 5 GHz WiFi MIMO			on	on			on	on	Scenario2
Dual Bluetooth + 6 GHz WiFi MIMO					on	on	on	on	
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO		on	on	on			on		Scenario3
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 6 GHz WiFi MIMO		on			on	on	on		

3. The RSDB mode test investigated both intermodulation and radiated spurious emissions.

And the worst results were reported.

- Worst result: Radiated spurious emissions
- Intermodulation: No signals are generated.
- Radiated spurious emissions: cf. Section 10.6.2.

4. EUT Axis

- Scenario1 Radiated Spurious Emissions : Y
- Scenario2 Radiated Spurious Emissions : Y
- Scenario3 Radiated Spurious Emissions : Y

5. The following tables show the worst case configurations determined during testing.

(Worst case: The lowest margin condition the channels and modes were selected for test.)

RSDB Scenario 1	Description	2.4GHz Emission	5 GHz Emission
2.4 GHz WiFi MIMO + 5 GHz WiFi MIMO	Antenna	Ant All	Ant All
	Channel	11	177
	Data Rate	1 Mbps	6 Mbps
	Mode	802.11b	802.11a

Note : DTS RSDB Data refer to [DTS] Test Report

RSDB Scenario 2	Description	Bluetooth Emission	5 GHz Emission
Dual Bluetooth + 5 GHz WiFi MIMO	Antenna	Dual	Ant All
	Channel	39	177
	Data Rate	1 Mbps	6 Mbps
	Mode	GFSK	802.11a

Note :BT RSDB Data refer to [BT] Test Report

RSDB Scenario 3	Description	Bluetooth Emission	2.4GHz Emission	5 GHz Emission
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO	Antenna	ANT1	ANT2	Ant All
	Channel	78	11	177
	Data Rate	1 Mbps	1 Mbps	6 Mbps
	Mode	8DPSK	802.11b	802.11a

Note : DTS, BT RSDB Data refer to [DTS], [BT] Test Report

6. SM-S926U, SM-S926U1 were tested and the worst case results are reported.

(Worst case: SM-S926U)

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

- Worst case: Stand alone + Travel Adapter

2. SM-S926U, SM-S926U1 were tested and the worst case results are reported.

(Worst case: SM-S926U)

9. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26 dB Bandwidth	§15.407 (for Power Measurement)	N/A	Conducted	PASS
6 dB Bandwidth	§15.407(e)	>500 kHz (5725-5850 MHz)(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 $11+10\log_{10}$ (BW) dBm (5250-5350 MHz) < 250 mW or $11+10\log_{10}$ (BW) dBm (5470-5725 MHz) <1 W (5725-5850 MHz)		PASS
Maximum EIRP Output Power	§15.407(a)(1)(3)(iii)	< EIRP 30dBm (5850-5925 MHz)		PASS
Maximum Power Spectral Density	§15.407(a)(1),(2),(3)	<11 dBm/ MHz (5150-5250 MHz) <11 dBm/ MHz (5250-5350 MHz) <11 dBm/ MHz (5470-5725 MHz) <30 dBm/500 kHz(5725-5850 MHz) < EIRP 14 dBm/MHz(5850-5895 MHz)		PASS
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) §15.407(b)(5)(ii),(iii) §15.35(b)	<-27 dBm/MHz EIRP (UNII1, 2A, 2C) cf. Section 8.6 (UNII 3&4)	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	1.462	1.565	0.934	0.296
	9	0.985	1.084	0.909	0.415
	12	0.742	0.844	0.880	0.556
	18	0.504	0.605	0.833	0.795
	24	0.385	0.484	0.796	0.992
	36	0.263	0.365	0.722	1.413
	48	0.205	0.367	0.559	2.529
	54	0.185	0.356	0.519	2.844

Mode	MCS Index	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11n (HT20)	0	1.246	1.350	0.923	0.348
	1	0.643	0.745	0.864	0.635
	2	0.441	0.540	0.817	0.878
	3	0.339	0.438	0.775	1.109
	4	0.241	0.352	0.683	1.653
	5	0.187	0.367	0.510	2.921
	6	0.175	0.362	0.483	3.165
	7	0.160	0.358	0.446	3.509
802.11n (HT40)	0	0.617	0.718	0.860	0.653
	1	0.327	0.426	0.768	1.147
	2	0.231	0.383	0.603	2.199
	3	0.182	0.390	0.468	3.302
	4	0.137	0.370	0.370	4.320
	5	0.111	0.408	0.273	5.634
	6	0.104	0.393	0.265	5.775
	7	0.094	0.383	0.245	6.108

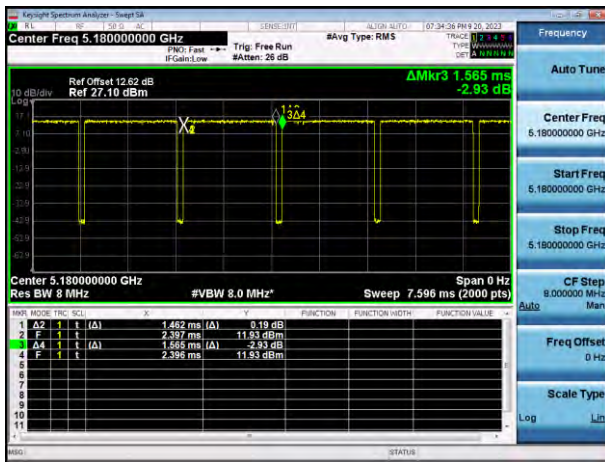
Mode	MCS Index	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT20)	0	1.251	1.352	0.925	0.337
	1	0.649	0.747	0.868	0.616
	2	0.446	0.545	0.819	0.869
	3	0.345	0.443	0.777	1.095
	4	0.246	0.371	0.662	1.789
	5	0.193	0.365	0.528	2.775
	6	0.177	0.366	0.485	3.147
	7	0.165	0.362	0.455	3.424
	8	0.144	0.360	0.401	3.967
802.11ac (VHT40)	0	0.623	0.722	0.863	0.641
	1	0.332	0.431	0.771	1.132
	2	0.236	0.388	0.608	2.162
	3	0.187	0.386	0.486	3.137
	4	0.142	0.383	0.371	4.308
	5	0.117	0.384	0.303	5.179
	6	0.106	0.385	0.276	5.586
	7	0.099	0.388	0.255	5.936
	8	0.091	0.387	0.236	6.277
	9	0.084	0.386	0.217	6.644
802.11ac (VHT80)	0	0.312	0.410	0.760	1.191
	1	0.177	0.312	0.568	2.454
	2	0.132	0.311	0.424	3.731
	3	0.109	0.314	0.347	4.600
	4	0.089	0.310	0.286	5.436
	5	0.076	0.309	0.246	6.091
	6	0.073	0.310	0.237	6.253
	7	0.066	0.308	0.214	6.699
	8	0.063	0.307	0.207	6.848
	9	0.062	0.306	0.203	6.933

Mode	MCS Index	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT160)	0	0.176	0.330	0.533	2.736
	1	0.109	0.322	0.339	4.703
	2	0.089	0.322	0.276	5.597
	3	0.076	0.365	0.208	6.812
	4	0.066	0.324	0.203	6.922
	5	0.065	0.325	0.200	6.990
	6	0.056	0.324	0.172	7.648
	7	0.054	0.323	0.167	7.768
	8	0.053	0.323	0.164	7.852
	9	0.053	0.324	0.164	7.856

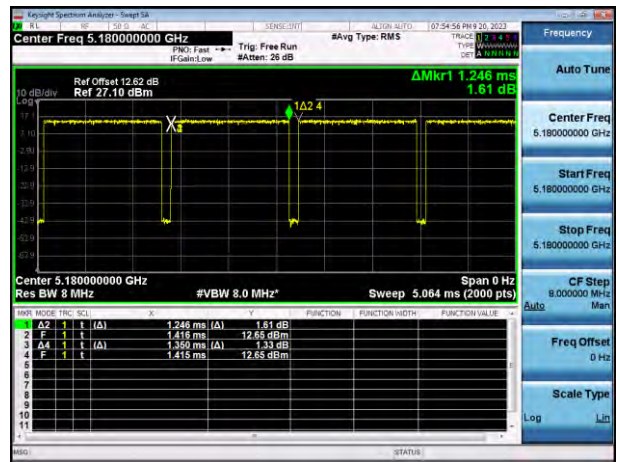
Note:

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

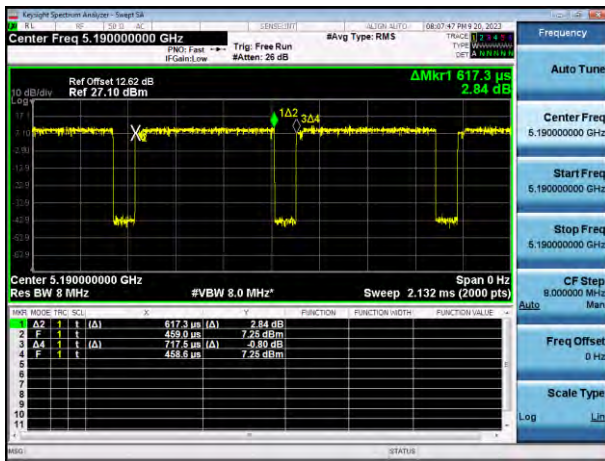
802.11a



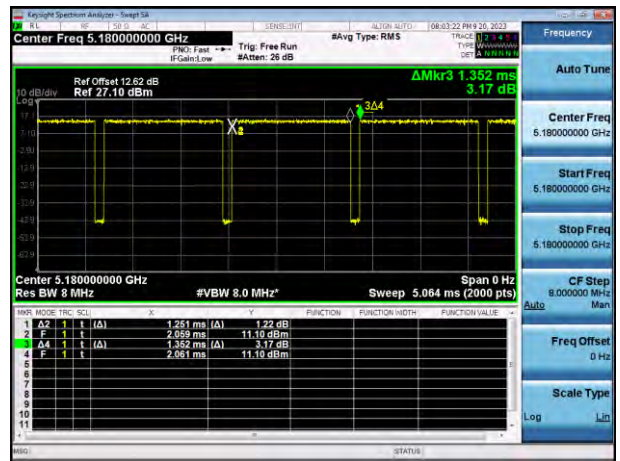
802.11n(HT20)



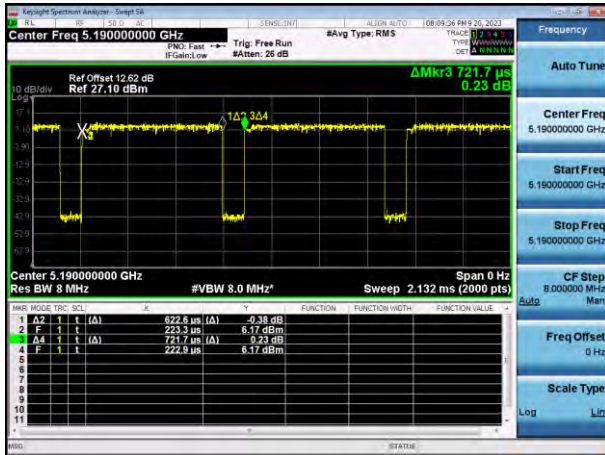
802.11n(HT40)



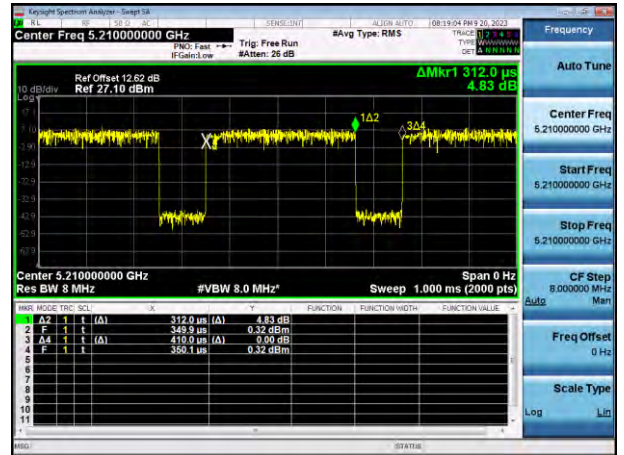
802.11ac(VHT20)



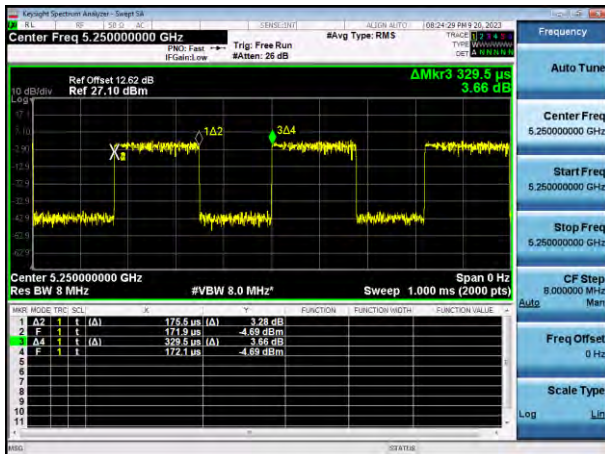
802.11ac(VHT40)



802.11ac(VHT80)



802.11ac(VHT160)



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	21.06	16.628
5200	40	21.10	16.609
5240	48	20.99	16.618
5260	52	21.07	16.637
5300	60	21.04	16.628
5320	64	21.05	16.634
5500	100	20.92	16.632
5600	120	21.08	16.623
5720	144	20.81	16.620
5745	149	21.00	16.640
5785	157	21.02	16.635
5825	165	21.01	16.637
5845	169	21.02	16.613
5865	173	21.37	16.617
5885	177	21.00	16.621

802.11n(HT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.38	17.769
5200	40	21.47	17.758
5240	48	21.20	17.767
5260	52	21.47	17.776
5300	60	21.27	17.751
5320	64	21.28	17.769
5500	100	21.29	17.770
5600	120	21.38	17.772
5720	144	21.75	17.772
5745	149	21.49	17.774
5785	157	21.55	17.775
5825	165	21.40	17.761
5845	169	21.42	17.760
5865	173	21.37	17.772
5885	177	21.39	17.772

802.11ac(VHT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.46	17.775
5200	40	21.35	17.782
5240	48	21.39	17.786
5260	52	21.70	17.786
5300	60	21.44	17.774
5320	64	21.41	17.780
5500	100	21.50	17.779
5600	120	21.38	17.778
5720	144	21.31	17.778
5745	149	21.46	17.778
5785	157	21.48	17.796
5825	165	21.40	17.774
5845	169	21.59	17.774
5865	173	21.40	17.799
5885	177	21.47	17.791

802.11n(HT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	42.45	36.421
5230	46	42.41	36.392
5270	54	42.11	36.409
5310	62	42.19	36.388
5510	102	42.38	36.431
5590	118	42.39	36.392
5710	142	42.35	36.419
5755	151	42.10	36.398
5795	159	42.32	36.423
5835	167	41.97	36.373
5875	175	42.59	36.389

802.11ac(VHT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	42.42	36.403
5230	46	42.17	36.416
5270	54	42.33	36.394
5310	62	42.34	36.374
5510	102	42.30	36.433
5590	118	42.55	36.408
5710	142	42.55	36.390
5755	151	42.25	36.387
5795	159	42.33	36.420
5835	167	42.18	36.386
5875	175	41.87	36.415

802.11ac(VHT80) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	92.11	76.493
5290	58	92.39	76.468
5530	106	92.16	76.525
5610	122	92.46	76.493
5690	138	92.51	76.577
5775	155	92.83	76.588
5855	171	91.34	76.541

802.11ac(VHT160) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5250	50	176.7	155.71
5570	114	180.1	155.82
5815	163	182.2	155.95

[Ant.2]

802.11a Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	20.98	16.625
5200	40	21.36	16.642
5240	48	20.95	16.616
5260	52	21.06	16.644
5300	60	20.90	16.641
5320	64	21.03	16.629
5500	100	20.97	16.635
5600	120	21.18	16.636
5720	144	21.10	16.631
5745	149	21.36	16.622
5785	157	21.07	16.641
5825	165	20.96	16.634
5845	169	21.39	16.634
5865	173	21.42	16.640
5885	177	20.93	16.621

802.11n(HT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.46	17.780
5200	40	21.43	17.769
5240	48	21.41	17.779
5260	52	21.39	17.762
5300	60	21.43	17.770
5320	64	21.69	17.782
5500	100	21.38	17.759
5600	120	21.44	17.772
5720	144	21.41	17.772
5745	149	21.35	17.776
5785	157	21.47	17.755
5825	165	21.43	17.771
5845	169	21.40	17.762
5865	173	21.36	17.767
5885	177	21.56	17.779

802.11ac(VHT20) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5180	36	21.39	17.787
5200	40	21.42	17.788
5240	48	21.41	17.769
5260	52	21.45	17.774
5300	60	21.35	17.779
5320	64	21.46	17.792
5500	100	21.38	17.779
5600	120	21.45	17.795
5720	144	21.44	17.770
5745	149	21.51	17.780
5785	157	21.53	17.777
5825	165	21.48	17.779
5845	169	21.71	17.778
5865	173	21.45	17.785
5885	177	21.42	17.792

802.11n(HT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	42.45	36.408
5230	46	42.14	36.394
5270	54	42.26	36.387
5310	62	42.42	36.400
5510	102	42.26	36.415
5590	118	42.26	36.403
5710	142	42.33	36.442
5755	151	42.62	36.379
5795	159	42.58	36.417
5835	167	42.08	36.416
5875	175	42.06	36.404

802.11ac(VHT40) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5190	38	42.41	36.401
5230	46	42.48	36.401
5270	54	42.20	36.437
5310	62	42.32	36.383
5510	102	41.89	36.438
5590	118	42.33	36.414
5710	142	42.10	36.406
5755	151	41.91	36.407
5795	159	42.52	36.438
5835	167	42.42	36.428
5875	175	42.31	36.409

802.11ac(VHT80) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5210	42	93.00	76.460
5290	58	93.18	76.600
5530	106	91.93	76.420
5610	122	91.93	76.533
5690	138	93.02	76.411
5775	155	93.45	76.471
5855	171	92.31	76.409

802.11ac(VHT160) Mode		26 dB Bandwidth [MHz]	99 % bandwidth [MHz]
Frequency [MHz]	Channel No.		
5250	50	176.4	155.77
5570	114	185.3	155.84
5815	163	177.2	155.72

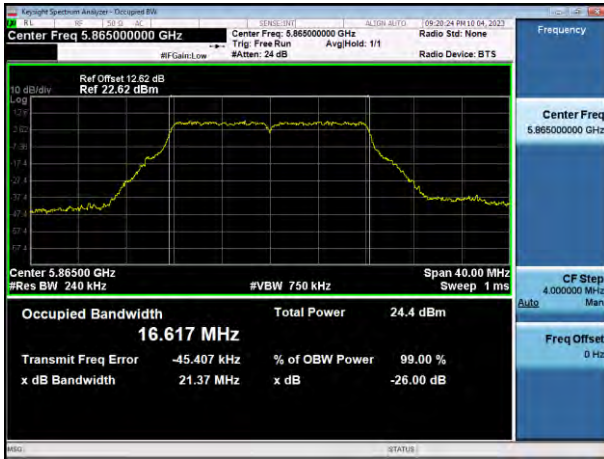
[ANT. 1]

Test Plots

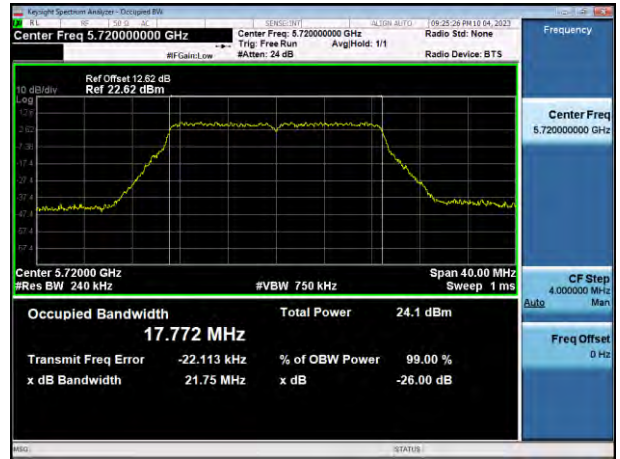
Note:

In order to simplify the report, attached plots were only the widest channel per channel bandwidth.

802.11a 26 dB Bandwidth (CH 173)



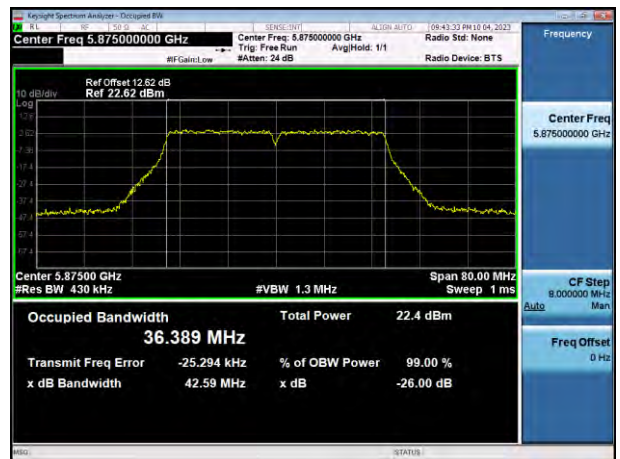
802.11n(HT20) 26 dB Bandwidth (CH 144)



802.11ac(VHT20) 26 dB Bandwidth (CH 52)



802.11n(HT40) 26 dB Bandwidth (CH 175)

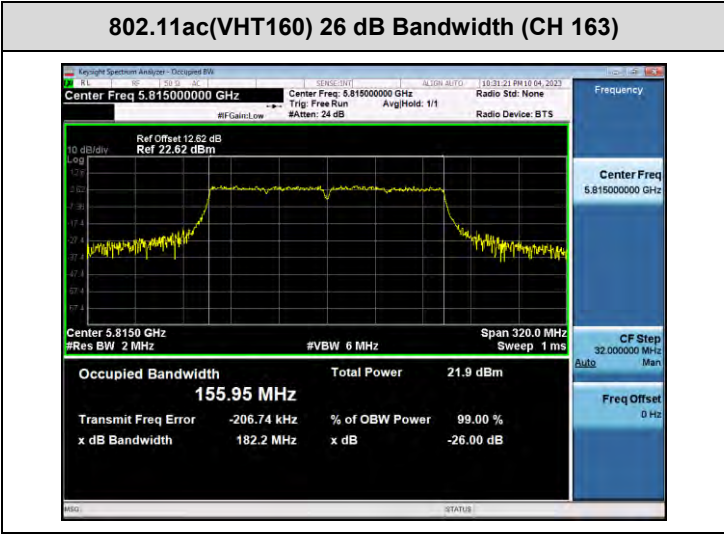


802.11ac(VHT40) 26 dB Bandwidth (CH 142)



802.11ac(VHT80) 26 dB Bandwidth (CH 155)





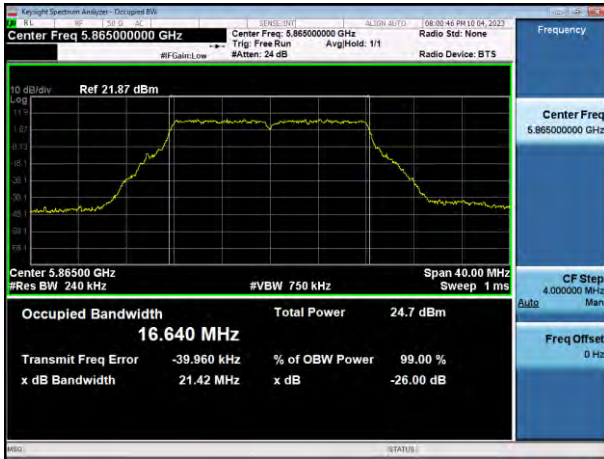
[ANT. 2]

☐ Test Plots

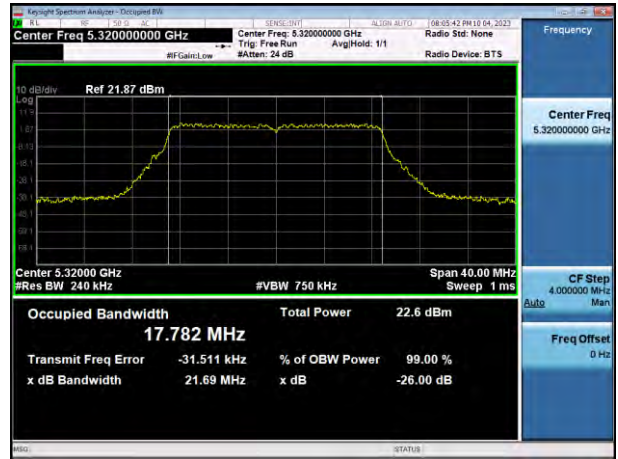
Note:

In order to simplify the report, attached plots were only the widest channel per channel bandwidth.

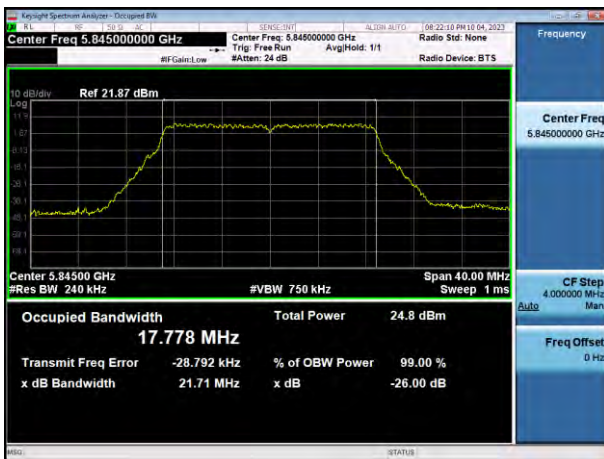
802.11a 26 dB Bandwidth (CH 173)



802.11n(HT20) 26 dB Bandwidth (CH 64)



802.11ac(VHT20) 26 dB Bandwidth (CH 169)



802.11n(HT40) 26 dB Bandwidth (CH 151)



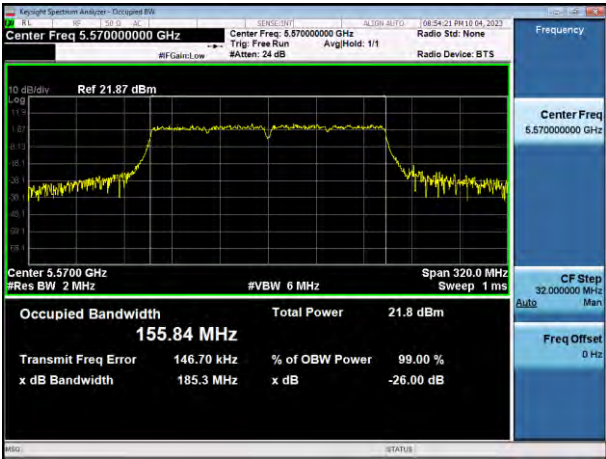
802.11ac(VHT40) 26 dB Bandwidth (CH 159)



802.11ac(VHT80) 26 dB Bandwidth (CH 155)



802.11ac(VHT160) 26 dB Bandwidth (CH 114)



10.3 6 dB BANDWIDTH

[Ant.1]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.40	> 0.5	Pass
5785	157	16.40	> 0.5	Pass
5825	165	16.40	> 0.5	Pass
5845	169	16.40	> 0.5	Pass
5865	173	16.40	> 0.5	Pass
5885	177	16.38	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.63	> 0.5	Pass
5785	157	17.63	> 0.5	Pass
5825	165	17.63	> 0.5	Pass
5845	169	17.61	> 0.5	Pass
5865	173	17.61	> 0.5	Pass
5885	177	17.62	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.63	> 0.5	Pass
5785	157	17.64	> 0.5	Pass
5825	165	17.62	> 0.5	Pass
5845	169	17.62	> 0.5	Pass
5865	173	17.62	> 0.5	Pass
5885	177	17.63	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.43	> 0.5	Pass
5795	159	36.42	> 0.5	Pass
5835	167	36.44	> 0.5	Pass
5875	175	36.43	> 0.5	Pass

802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.44	> 0.5	Pass
5795	159	36.43	> 0.5	Pass
5835	167	36.43	> 0.5	Pass
5875	175	36.43	> 0.5	Pass

802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	76.43	> 0.5	Pass
5855	171	76.40	> 0.5	Pass

802.11ac(VHT160) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5815	163	156.2	> 0.5	Pass

[Ant.2]

802.11a Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.39	> 0.5	Pass
5785	157	16.40	> 0.5	Pass
5825	165	16.39	> 0.5	Pass
5845	169	16.40	> 0.5	Pass
5865	173	16.39	> 0.5	Pass
5885	177	16.41	> 0.5	Pass

802.11n(HT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.62	> 0.5	Pass
5785	157	17.62	> 0.5	Pass
5825	165	17.64	> 0.5	Pass
5845	169	17.63	> 0.5	Pass
5865	173	17.64	> 0.5	Pass
5885	177	17.63	> 0.5	Pass

802.11ac(VHT20) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.64	> 0.5	Pass
5785	157	17.63	> 0.5	Pass
5825	165	17.63	> 0.5	Pass
5845	169	17.61	> 0.5	Pass
5865	173	17.62	> 0.5	Pass
5885	177	17.64	> 0.5	Pass

802.11n(HT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.41	> 0.5	Pass
5795	159	36.43	> 0.5	Pass
5835	167	36.44	> 0.5	Pass
5875	175	36.39	> 0.5	Pass

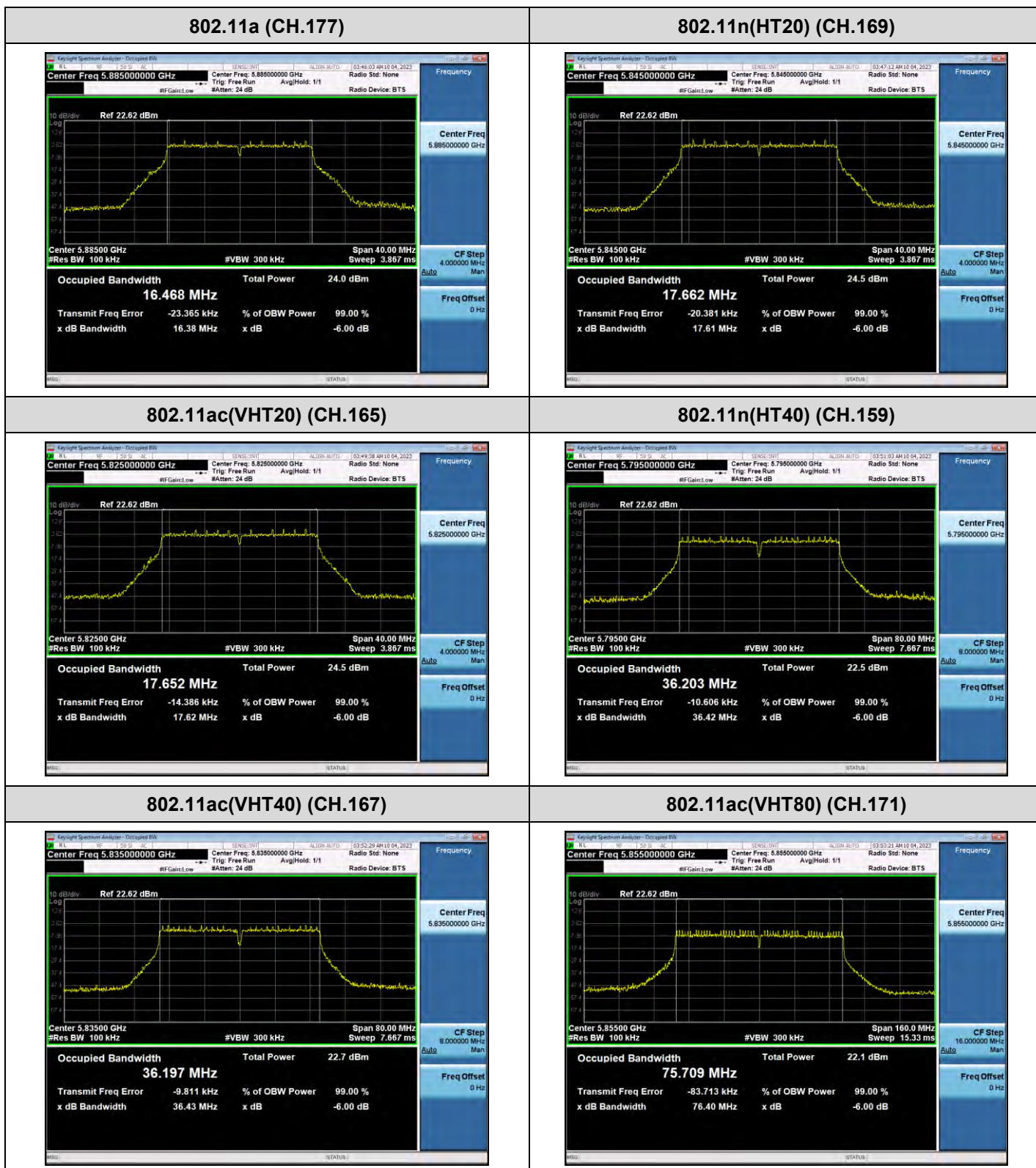
802.11ac(VHT40) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.44	> 0.5	Pass
5795	159	36.43	> 0.5	Pass
5835	167	36.41	> 0.5	Pass
5875	175	36.42	> 0.5	Pass

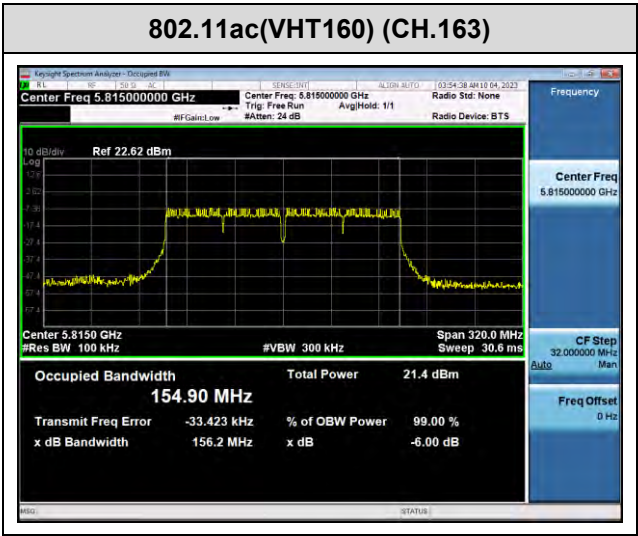
802.11ac(VHT80) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	76.49	> 0.5	Pass
5855	171	76.37	> 0.5	Pass

802.11ac(VHT160) Mode		Measured Bandwidth [MHz]	Limit [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5815	163	156.1	> 0.5	Pass

▣ Test Plots

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

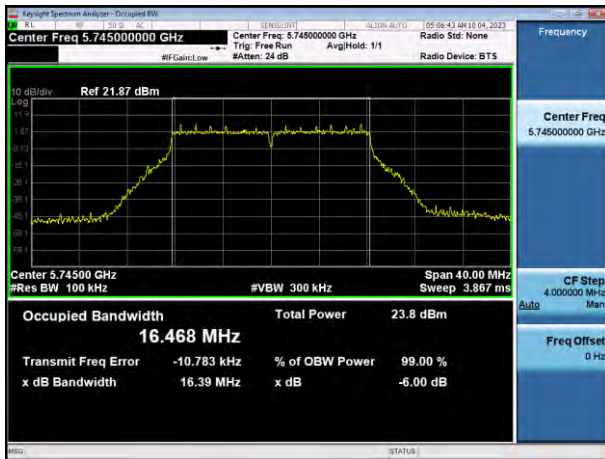




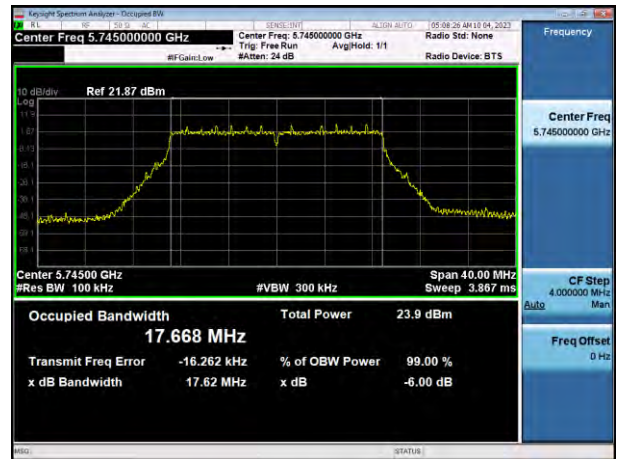
[ANT. 2]

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

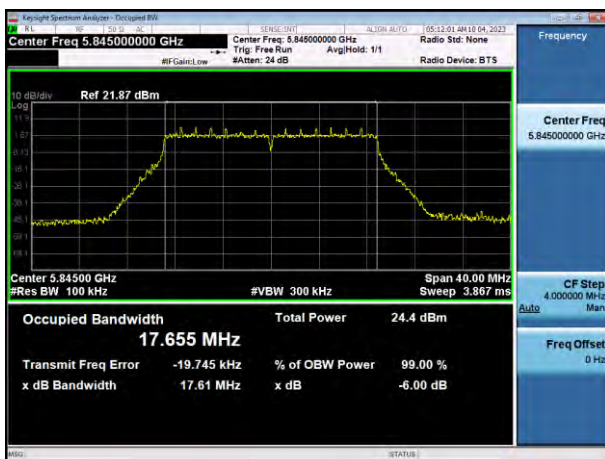
802.11a (CH.149)



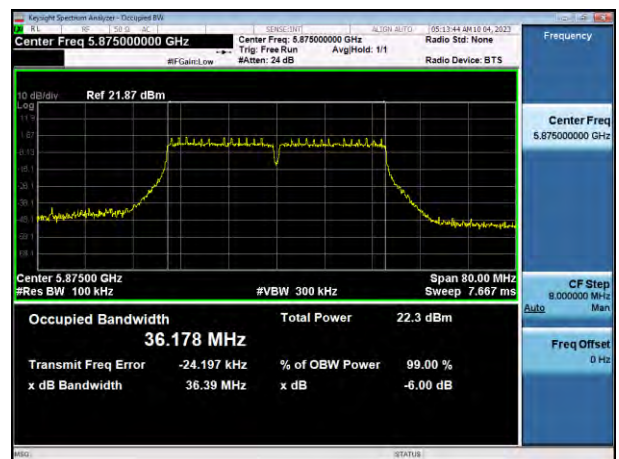
802.11n(HT20) (CH.149)



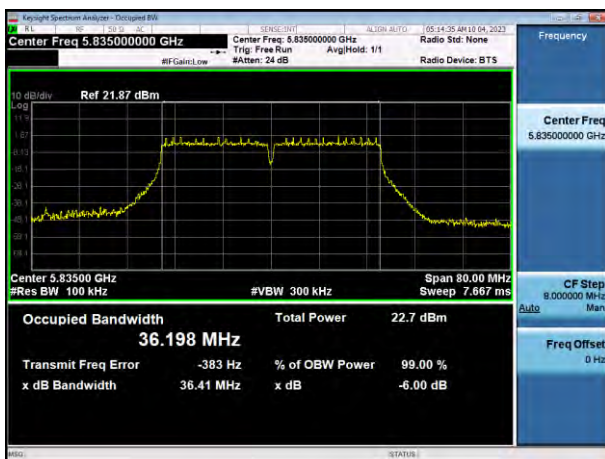
802.11ac(VHT20) (CH.169)



802.11n(HT40) (CH.175)

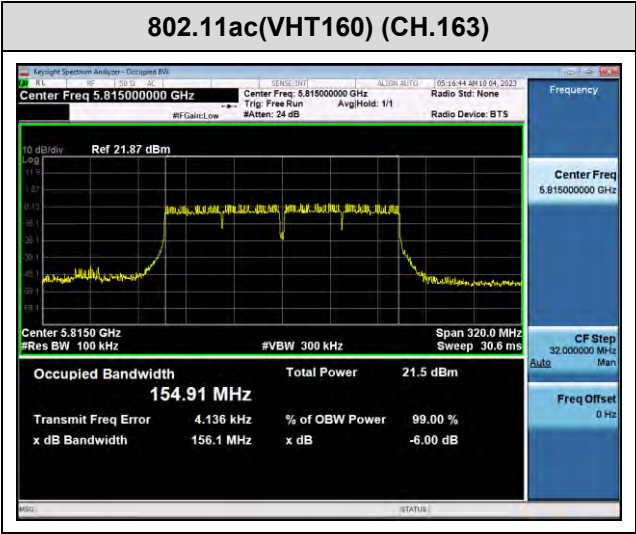


802.11ac(VHT40) (CH.167)



802.11ac(VHT80) (CH.171)





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 $11 \text{ dBm} + 10 \log B$, (where B is the 26 dB emission bandwidth in megahertz.)

(UNII 3) : 30.00 dBm

(UNII 4) : EIRP 30.0 dBm/MHz

(UNII 3&4) : Worst limit 30.00 dBm → UNII 4 Band Antenna Gain Negative

[MIMO_CDD(Ant.1+ Ant.2)]

Ant Total Power [dBm] = Measured Power [dBm] + Duty Cycle Factor [dB]

MIMO_CDD(Ant.1+ Ant.2) Total Power [dBm] = Ant.1 Total Power [dBm] + Ant.2 Total Power [dBm]

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5180	36	6M	a	16.46	15.63	19.07	-	-	23.98
5200	40	6M	a	17.58	17.21	20.40	-	-	23.98
5240	48	6M	a	17.81	17.24	20.54	-	-	23.98
5260	52	6M	a	17.55	16.69	20.15	-	-	23.98
5280	56	6M	a	17.47	17.19	20.34	-	-	23.98
5320	64	6M	a	16.41	15.63	19.04	-	-	23.98
5500	100	6M	a	17.19	17.15	20.18	-	-	23.98
5600	120	6M	a	17.30	16.85	20.09	-	-	23.98
5720	144	6M	a	17.45	16.69	20.09	-	-	23.98
5745	149	6M	a	17.55	17.22	20.39	-	-	30.00
5785	157	6M	a	17.30	17.35	20.33	-	-	30.00
5825	165	6M	a	17.50	17.32	20.42	-	-	30.00
5845	169	6M	a	17.40	17.50	20.46	-1.85	18.61	EIRP ≤ 30dBm
5865	173	6M	a	17.27	17.45	20.37	-1.85	18.52	EIRP ≤ 30dBm
5885	177	6M	a	17.22	17.29	20.26	-1.85	18.41	EIRP ≤ 30dBm

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5180	36	MCS0	n20	17.64	16.70	20.20	-	-	23.98
5200	40	MCS0	n20	17.83	17.16	20.52	-	-	23.98
5240	48	MCS0	n20	17.89	17.14	20.54	-	-	23.98
5260	52	MCS0	n20	17.77	16.86	20.35	-	-	23.98
5280	56	MCS0	n20	17.66	17.36	20.52	-	-	23.98
5320	64	MCS0	n20	16.51	15.65	19.11	-	-	23.98
5500	100	MCS0	n20	17.61	17.29	20.46	-	-	23.98
5600	120	MCS0	n20	17.44	17.07	20.27	-	-	23.98
5720	144	MCS0	n20	17.56	16.80	20.21	-	-	23.98
5745	149	MCS0	n20	17.69	17.34	20.53	-	-	30.00
5785	157	MCS0	n20	17.51	17.56	20.54	-	-	30.00
5825	165	MCS0	n20	17.73	17.53	20.64	-	-	30.00
5845	169	MCS0	n20	17.70	17.70	20.71	-1.85	18.86	EIRP ≤ 30dBm
5865	173	MCS0	n20	17.57	17.70	20.64	-1.85	18.79	EIRP ≤ 30dBm
5885	177	MCS0	n20	17.46	17.39	20.43	-1.85	18.58	EIRP ≤ 30dBm

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5180	36	MCS0	ac20	17.56	16.67	20.15	-	-	23.98
5200	40	MCS0	ac20	17.83	17.12	20.50	-	-	23.98
5240	48	MCS0	ac20	17.84	17.09	20.49	-	-	23.98
5260	52	MCS0	ac20	17.75	16.84	20.33	-	-	23.98
5280	56	MCS0	ac20	17.67	17.25	20.47	-	-	23.98
5320	64	MCS0	ac20	16.54	15.56	19.09	-	-	23.98
5500	100	MCS0	ac20	16.53	17.24	19.91	-	-	23.98
5600	120	MCS0	ac20	16.46	16.94	19.71	-	-	23.98
5720	144	MCS0	ac20	17.52	16.73	20.15	-	-	23.98
5745	149	MCS0	ac20	17.69	17.31	20.51	-	-	30.00
5785	157	MCS0	ac20	17.51	17.52	20.52	-	-	30.00
5825	165	MCS0	ac20	17.66	17.50	20.59	-	-	30.00
5845	169	MCS0	ac20	17.63	17.65	20.65	-1.85	18.80	EIRP ≤ 30dBm
5865	173	MCS0	ac20	17.57	17.64	20.61	-1.85	18.76	EIRP ≤ 30dBm
5885	177	MCS0	ac20	17.39	17.37	20.39	-1.85	18.54	EIRP ≤ 30dBm

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5190	38	MCS0	n40	15.64	14.75	18.23	-	-	23.98
5230	46	MCS0	n40	15.85	15.07	18.49	-	-	23.98
5270	54	MCS0	n40	15.90	15.26	18.61	-	-	23.98
5310	62	MCS0	n40	15.59	14.88	18.26	-	-	23.98
5510	102	MCS0	n40	14.48	13.93	17.23	-	-	23.98
5590	118	MCS0	n40	15.35	14.94	18.16	-	-	23.98
5710	142	MCS0	n40	15.70	14.85	18.31	-	-	23.98
5755	151	MCS0	n40	15.81	15.37	18.61	-	-	30.00
5795	159	MCS0	n40	15.68	15.49	18.60	-	-	30.00
5835	167	MCS0	n40	15.93	15.70	18.83	-1.85	16.98	EIRP ≤ 30dBm
5875	175	MCS0	n40	15.75	15.45	18.62	-1.85	16.77	EIRP ≤ 30dBm

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5190	38	MCS0	ac40	15.65	14.76	18.24	-	-	23.98
5230	46	MCS0	ac40	15.88	15.03	18.49	-	-	23.98
5270	54	MCS0	ac40	15.91	15.26	18.61	-	-	23.98
5310	62	MCS0	ac40	15.57	14.86	18.24	-	-	23.98
5510	102	MCS0	ac40	14.46	14.03	17.26	-	-	23.98
5590	118	MCS0	ac40	15.39	14.89	18.16	-	-	23.98
5710	142	MCS0	ac40	15.69	14.83	18.29	-	-	23.98
5755	151	MCS0	ac40	15.73	15.32	18.54	-	-	30.00
5795	159	MCS0	ac40	15.70	15.46	18.59	-	-	30.00
5835	167	MCS0	ac40	16.07	15.70	18.90	-1.85	17.05	EIRP ≤ 30dBm
5875	175	MCS0	ac40	15.74	15.46	18.61	-1.85	16.76	EIRP ≤ 30dBm

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5210	42	MCS0	ac80	14.36	13.92	17.16	-	-	23.98
5290	58	MCS0	ac80	14.14	14.19	17.18	-	-	23.98
5530	106	MCS0	ac80	14.31	13.79	17.07	-	-	23.98
5610	122	MCS0	ac80	13.89	13.73	16.82	-	-	23.98
5690	138	MCS0	ac80	14.23	13.44	16.86	-	-	23.98
5775	155	MCS0	ac80	14.27	14.03	17.16	-	-	30.00
5855	171	MCS0	ac80	14.27	14.34	17.32	-1.85	15.47	EIRP ≤ 30dBm

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	Ant.1 Measured Power [dBm] + Duty Cycle Factor[dB]	MIMO Total Power [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5250	50	MCS0	ac160	13.68	12.84	16.29	-	-	23.98
5570	114	MCS0	ac160	12.32	12.14	15.24	-	-	23.98
5815	163	MCS0	ac160	13.65	13.64	16.65	-1.85	14.80	EIRP ≤ 30dBm

10.5 POWER SPECTRAL DENSITY

[MIMO_CDD(Ant.1+ Ant.2)]

Ant Total PSD [dBm] = Measured PSD [dBm] + Duty Cycle Factor [dB]

MIMO_CDD(ANT.1+ ANT.2)Total PSD [dBm] = Ant.1 Total PSD [dBm] + Ant.2 Total PSD [dB]

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5180	36	6M	a	4.419	3.826	7.143	-	-	11 dBm/MHz
5200	40	6M	a	5.608	5.595	8.611	-	-	11 dBm/MHz
5240	48	6M	a	5.861	5.621	8.753	-	-	11 dBm/MHz
5260	52	6M	a	5.575	5.312	8.455	-	-	11 dBm/MHz
5280	56	6M	a	5.478	5.753	8.628	-	-	11 dBm/MHz
5320	64	6M	a	4.463	3.955	7.226	-	-	11 dBm/MHz
5500	100	6M	a	5.569	5.587	8.588	-	-	11 dBm/MHz
5600	120	6M	a	5.505	5.442	8.484	-	-	11 dBm/MHz
5720	144	6M	a	5.730	5.151	8.460	-	-	11 dBm/MHz
5745	149	6M	a	2.992	2.946	5.979	-	-	30 dBm/500kHz
5785	157	6M	a	2.935	3.003	5.979	-	-	30 dBm/500kHz
5825	165	6M	a	3.314	3.179	6.257	-	-	30 dBm/500kHz
5845	169	6M	a	6.115	6.156	9.146	-1.85	7.296	14 dBm/EIRP
5865	173	6M	a	6.083	5.960	9.032	-1.85	7.182	14 dBm/EIRP
5885	177	6M	a	5.791	5.516	8.666	-1.85	6.816	14 dBm/EIRP

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5180	36	MCS0	n20	5.389	4.767	8.100	-	-	11 dBm/MHz
5200	40	MCS0	n20	5.354	5.334	8.354	-	-	11 dBm/MHz
5240	48	MCS0	n20	5.685	5.411	8.561	-	-	11 dBm/MHz
5260	52	MCS0	n20	5.368	5.109	8.251	-	-	11 dBm/MHz
5280	56	MCS0	n20	5.263	5.589	8.440	-	-	11 dBm/MHz
5320	64	MCS0	n20	4.202	3.768	7.001	-	-	11 dBm/MHz
5500	100	MCS0	n20	5.252	5.306	8.290	-	-	11 dBm/MHz
5600	120	MCS0	n20	5.230	5.161	8.206	-	-	11 dBm/MHz
5720	144	MCS0	n20	5.463	4.985	8.241	-	-	11 dBm/MHz
5745	149	MCS0	n20	2.700	2.577	5.649	-	-	30 dBm/500kHz
5785	157	MCS0	n20	2.717	2.786	5.762	-	-	30 dBm/500kHz
5825	165	MCS0	n20	3.055	2.912	5.995	-	-	30 dBm/500kHz
5845	169	MCS0	n20	5.920	5.933	8.937	-1.85	7.087	14 dBm/EIRP
5865	173	MCS0	n20	5.659	5.885	8.784	-1.85	6.934	14 dBm/EIRP
5885	177	MCS0	n20	5.350	5.498	8.435	-1.85	6.585	14 dBm/EIRP

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5180	36	MCS0	ac20	4.215	4.879	7.570	-	-	11 dBm/MHz
5200	40	MCS0	ac20	5.391	5.315	8.364	-	-	11 dBm/MHz
5240	48	MCS0	ac20	5.642	5.438	8.552	-	-	11 dBm/MHz
5260	52	MCS0	ac20	5.374	5.158	8.278	-	-	11 dBm/MHz
5280	56	MCS0	ac20	5.318	5.616	8.480	-	-	11 dBm/MHz
5320	64	MCS0	ac20	4.236	3.709	6.991	-	-	11 dBm/MHz
5500	100	MCS0	ac20	5.179	5.384	8.293	-	-	11 dBm/MHz
5600	120	MCS0	ac20	5.262	5.105	8.195	-	-	11 dBm/MHz
5720	144	MCS0	ac20	5.507	5.020	8.281	-	-	11 dBm/MHz
5745	149	MCS0	ac20	2.664	2.668	5.676	-	-	30 dBm/500kHz
5785	157	MCS0	ac20	2.610	2.930	5.783	-	-	30 dBm/500kHz
5825	165	MCS0	ac20	3.066	3.046	6.067	-	-	30 dBm/500kHz
5845	169	MCS0	ac20	5.980	5.909	8.955	-1.85	7.105	14 dBm/EIRP
5865	173	MCS0	ac20	5.789	5.842	8.826	-1.85	6.976	14 dBm/EIRP
5885	177	MCS0	ac20	5.406	5.573	8.501	-1.85	6.651	14 dBm/EIRP

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5190	38	MCS0	n40	0.212	-0.172	3.035	-	-	11 dBm/MHz
5230	46	MCS0	n40	0.542	0.294	3.430	-	-	11 dBm/MHz
5270	54	MCS0	n40	0.482	0.477	3.490	-	-	11 dBm/MHz
5310	62	MCS0	n40	0.051	0.048	3.060	-	-	11 dBm/MHz
5510	102	MCS0	n40	-0.658	-0.812	2.276	-	-	11 dBm/MHz
5590	118	MCS0	n40	0.275	0.100	3.199	-	-	11 dBm/MHz
5710	142	MCS0	n40	0.532	-0.035	3.268	-	-	11 dBm/MHz
5755	151	MCS0	n40	-2.452	-2.199	0.687	-	-	30 dBm/500kHz
5795	159	MCS0	n40	-2.155	-2.077	0.895	-	-	30 dBm/500kHz
5835	167	MCS0	n40	0.939	0.962	3.961	-1.85	2.111	14 dBm/EIRP
5875	175	MCS0	n40	0.690	0.739	3.725	-1.85	1.875	14 dBm/EIRP

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5190	38	MCS0	ac40	0.212	-0.233	3.006	-	-	11 dBm/MHz
5230	46	MCS0	ac40	0.490	0.289	3.401	-	-	11 dBm/MHz
5270	54	MCS0	ac40	0.583	0.473	3.539	-	-	11 dBm/MHz
5310	62	MCS0	ac40	0.019	0.102	3.071	-	-	11 dBm/MHz
5510	102	MCS0	ac40	-0.560	-0.821	2.322	-	-	11 dBm/MHz
5590	118	MCS0	ac40	0.274	0.287	3.291	-	-	11 dBm/MHz
5710	142	MCS0	ac40	0.503	-0.041	3.250	-	-	11 dBm/MHz
5755	151	MCS0	ac40	-2.363	-2.257	0.701	-	-	30 dBm/500kHz
5795	159	MCS0	ac40	-2.264	-2.154	0.802	-	-	30 dBm/500kHz
5835	167	MCS0	ac40	0.819	0.911	3.876	-1.85	2.026	14 dBm/EIRP
5875	175	MCS0	ac40	0.654	0.634	3.655	-1.85	1.805	14 dBm/EIRP

Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5210	42	MCS0	ac80	-3.715	-3.874	-0.783	-	-	11 dBm/MHz
5290	58	MCS0	ac80	-4.362	-3.466	-0.880	-	-	11 dBm/MHz
5530	106	MCS0	ac80	-3.807	-3.845	-0.815	-	-	11 dBm/MHz
5610	122	MCS0	ac80	-4.093	-4.009	-1.040	-	-	11 dBm/MHz
5690	138	MCS0	ac80	-3.814	-4.236	-1.009	-	-	11 dBm/MHz
5775	155	MCS0	ac80	-6.712	-6.194	-3.435	-	-	30 dBm/500kHz
5855	171	MCS0	ac80	-3.928	-3.781	-0.843	-1.85	-2.693	14 dBm/EIRP

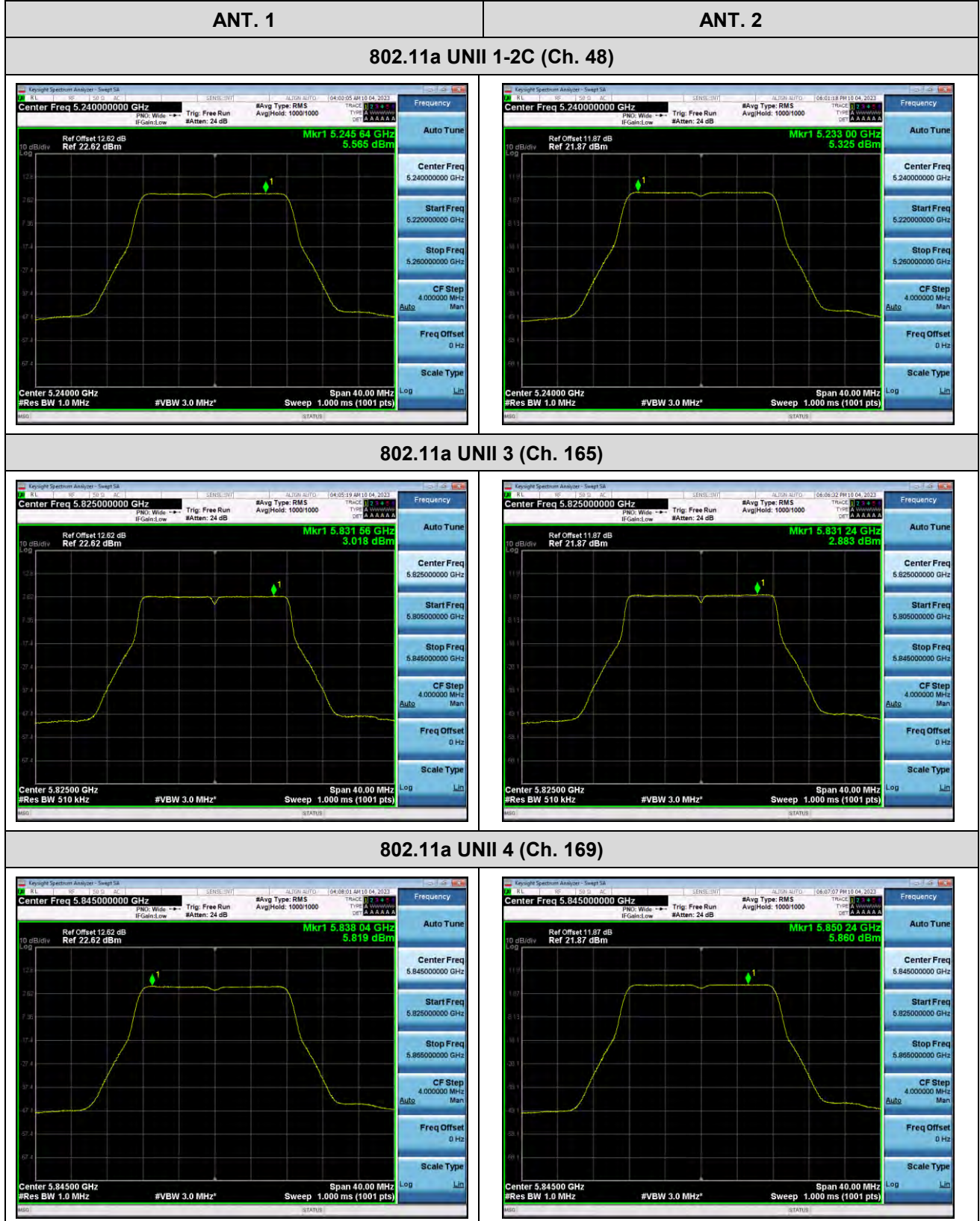
Frequency [MHz]	Channel No.	Worstcase Datarate	Mode(802.11)	ANT.1 Measured PSD[dBm] + Duty Cycle Factor [dB]	ANT.2 Measured PSD[dBm] + Duty Cycle Factor [dB]	MIMO Total PSD [dBm]	Directional Gain [dBi]	E.I.R.P [dBm]	Limit [dBm]
5250	50	MCS0	ac160	-7.577	-7.761	-4.658	-	-	11 dBm/MHz
5570	114	MCS0	ac160	-7.852	-7.781	-4.806	-	-	11 dBm/MHz
5815	163	MCS0	ac160	-7.743	-7.193	-4.449	-1.85	-6.299	14 dBm/EIRP

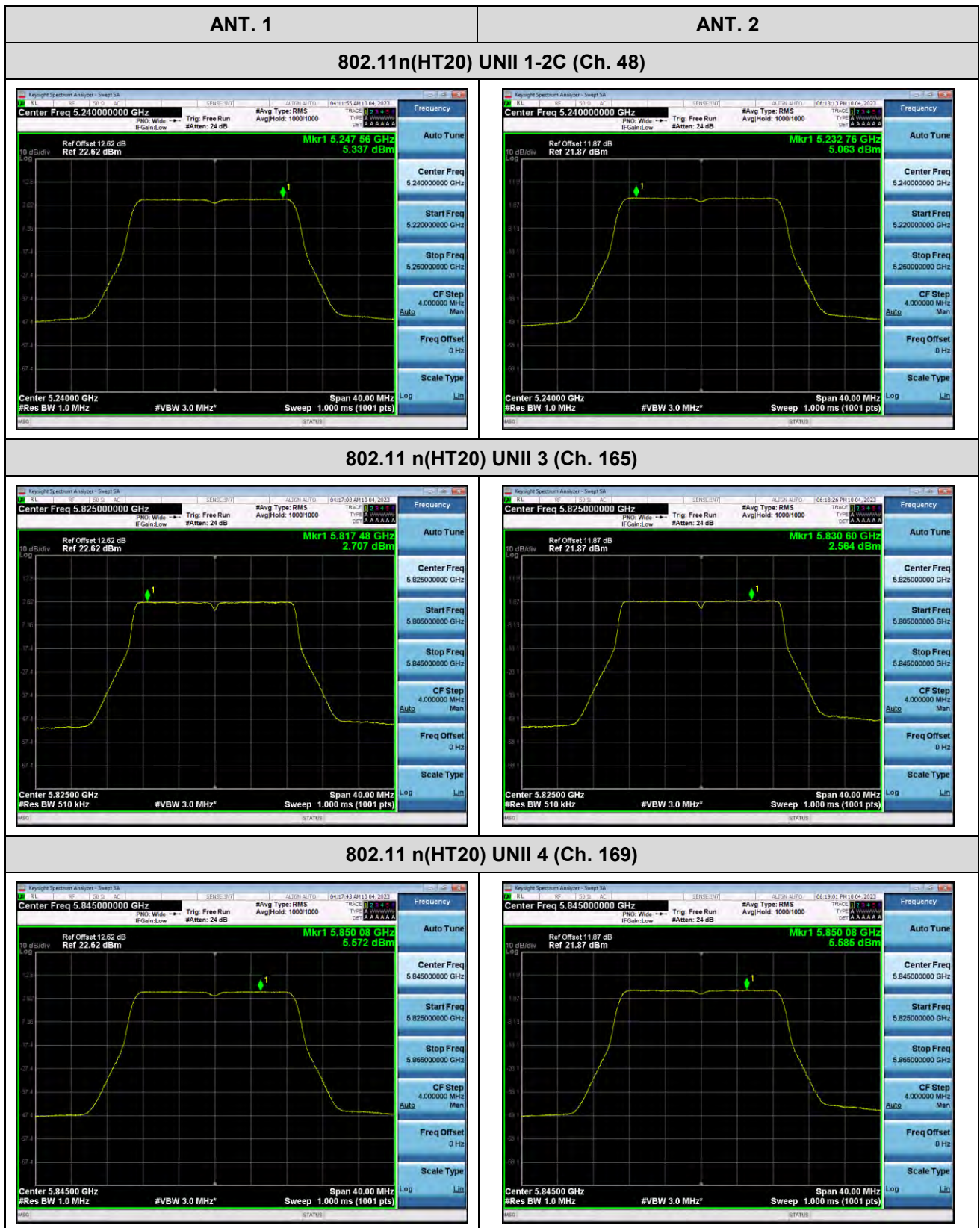
[MIMO_CDD(Ant.1+ Ant.2)]

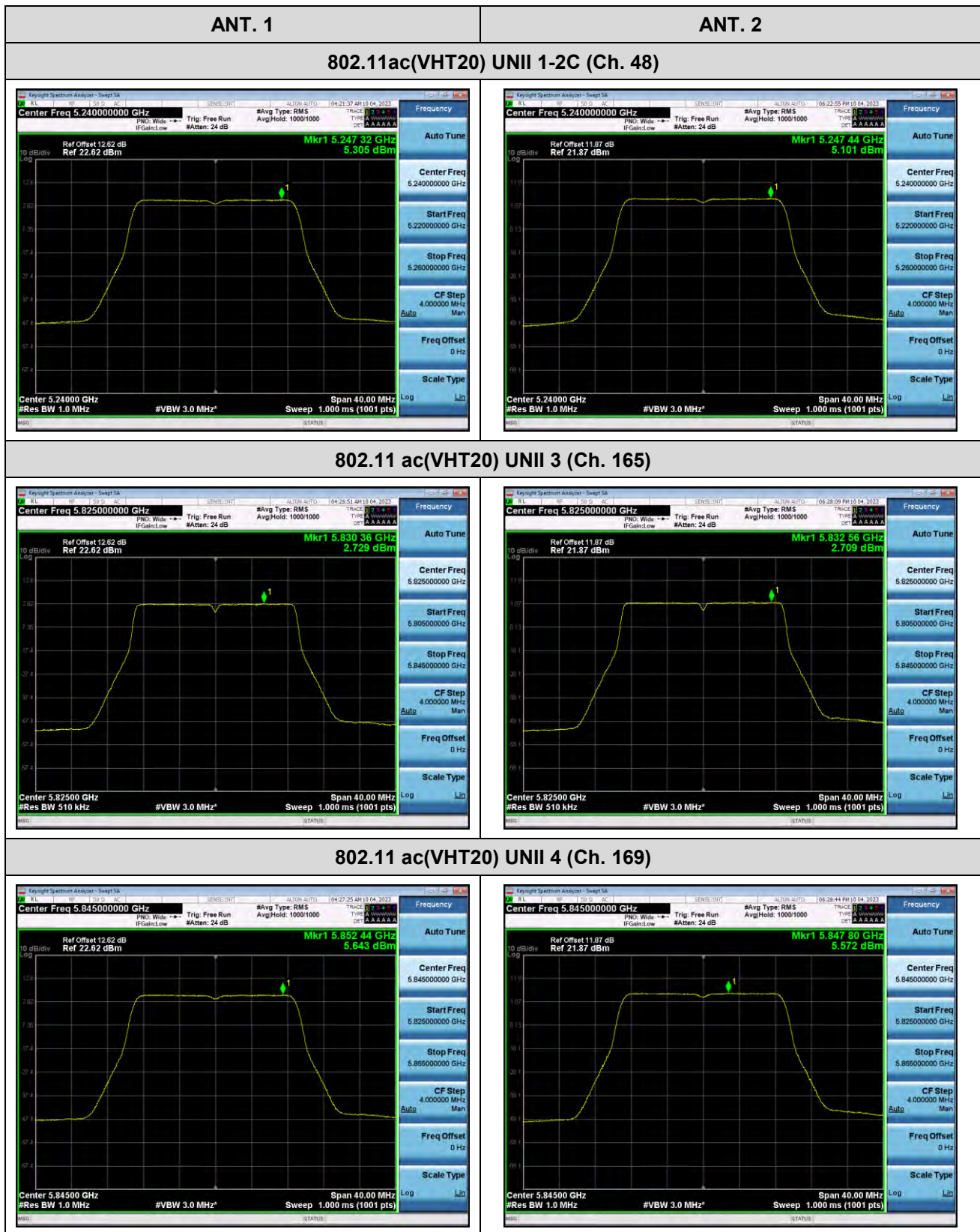
▣ Test Plots

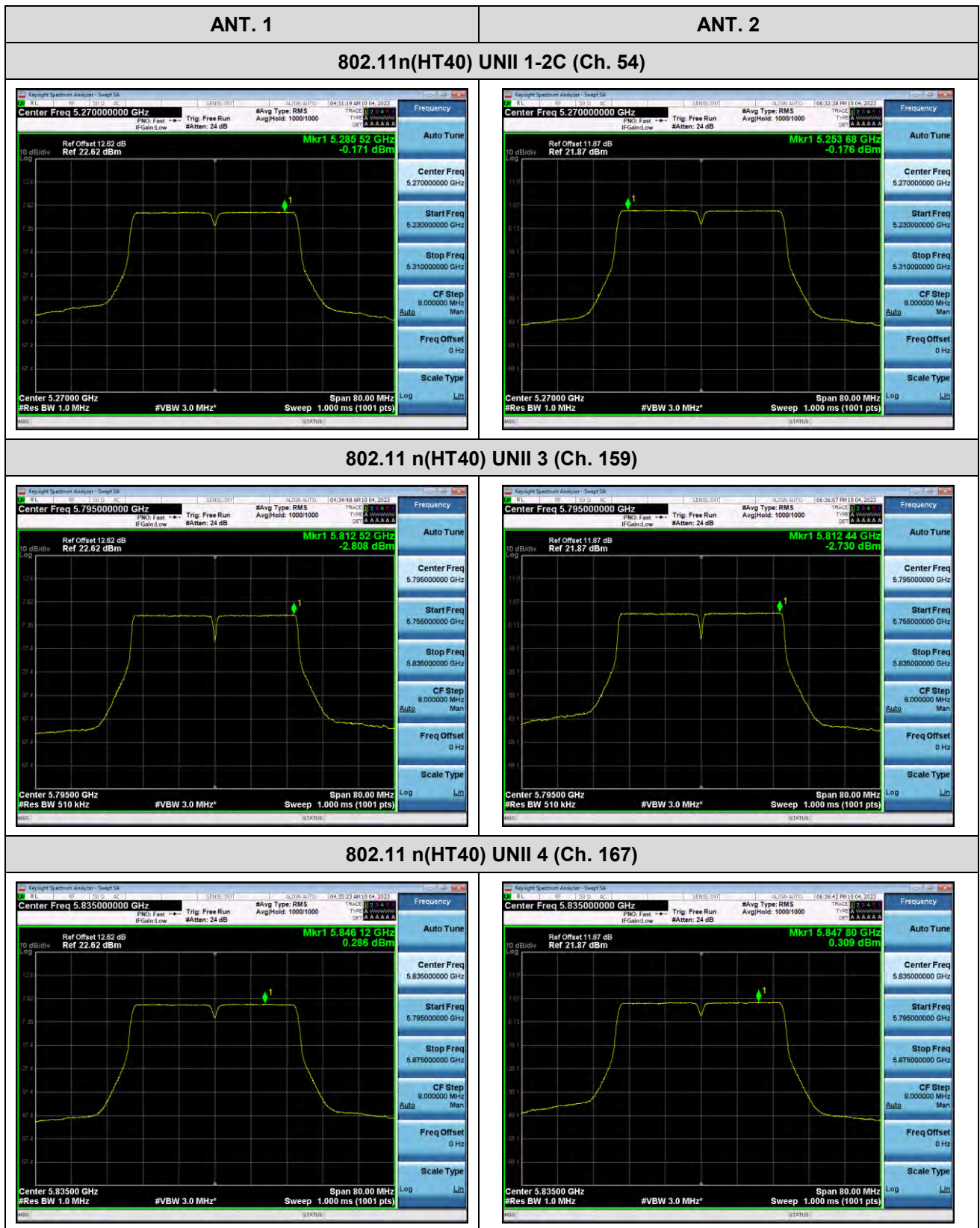
Note:

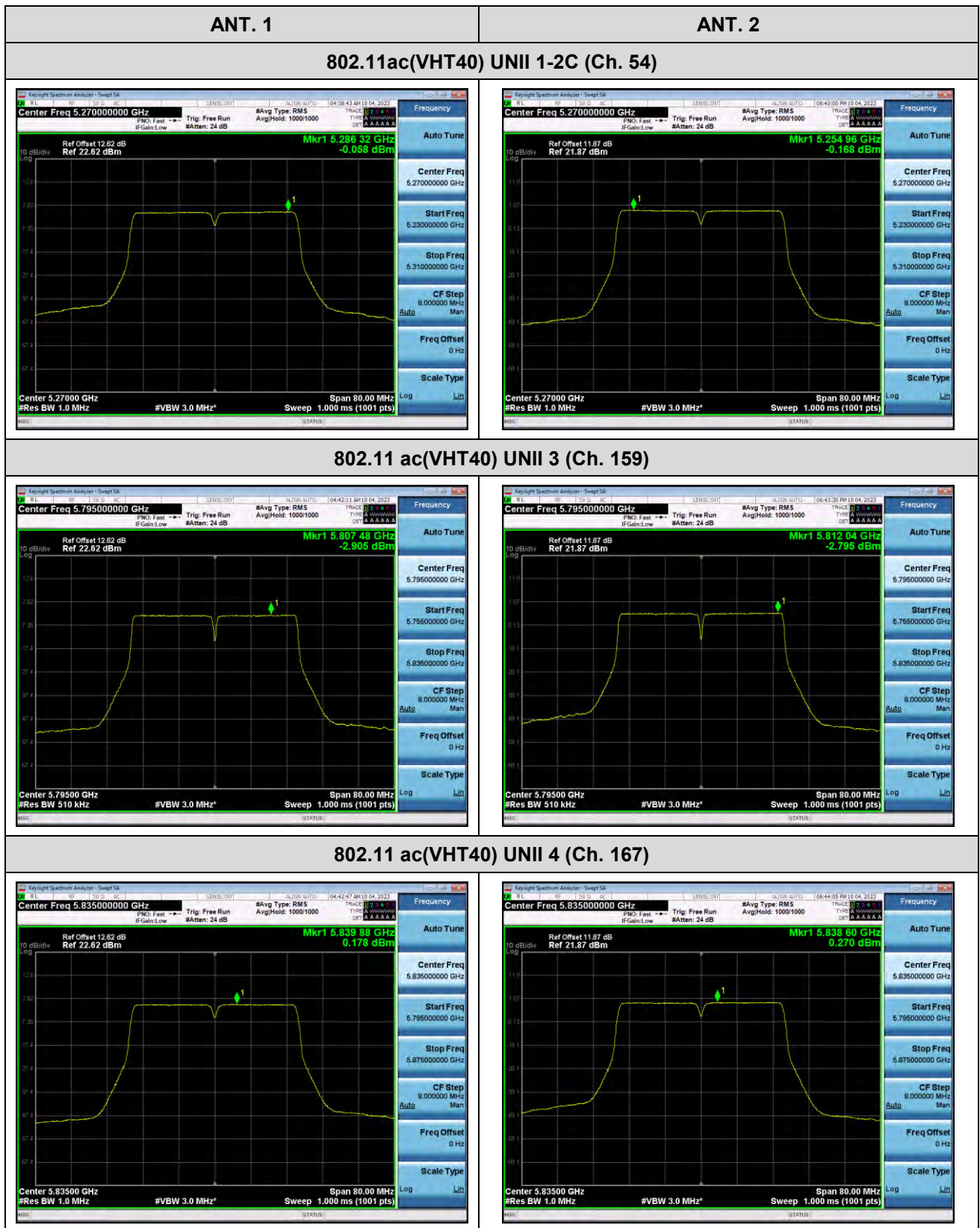
In order to simplify the report, attached plots were only channel of the highest PSD.

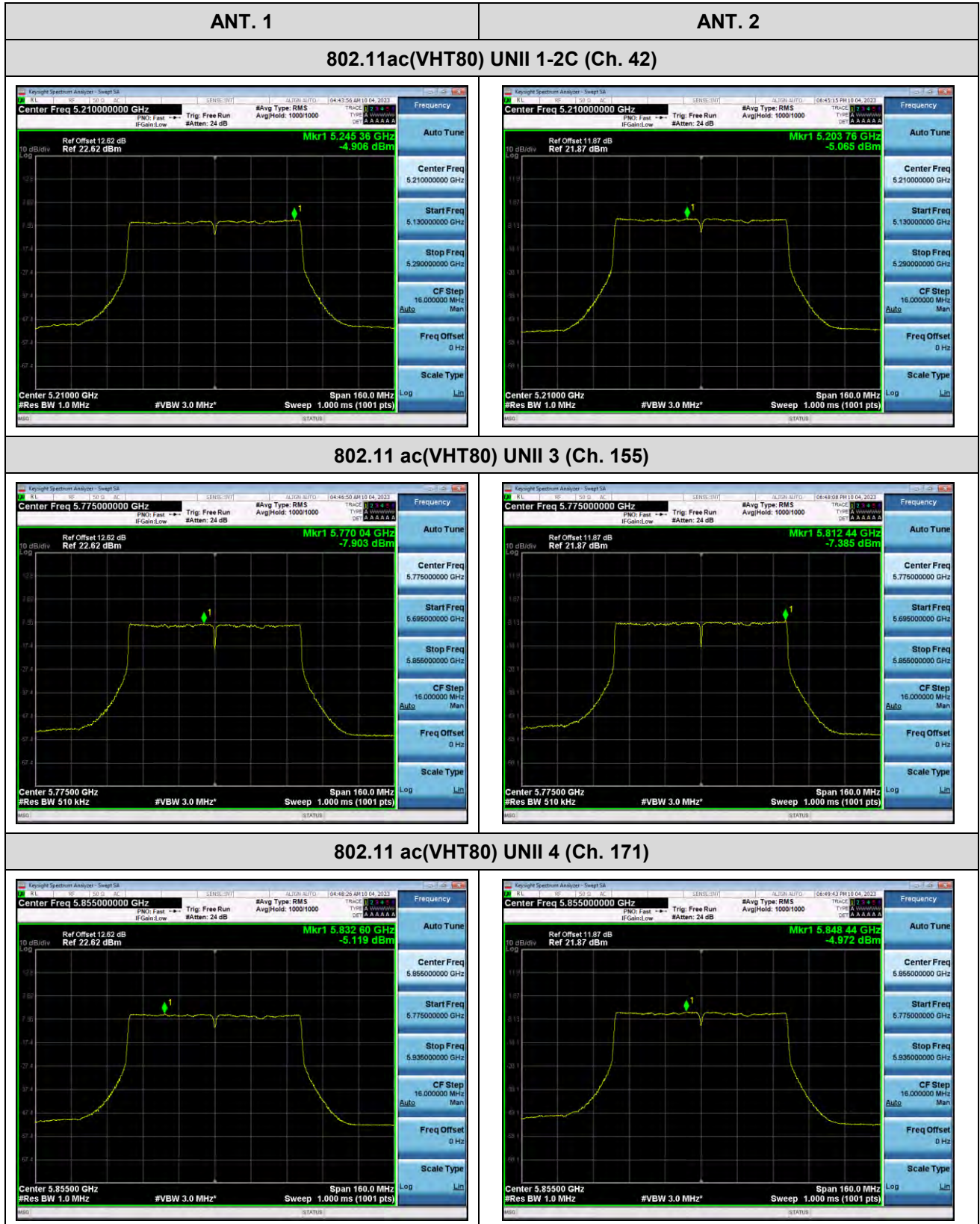


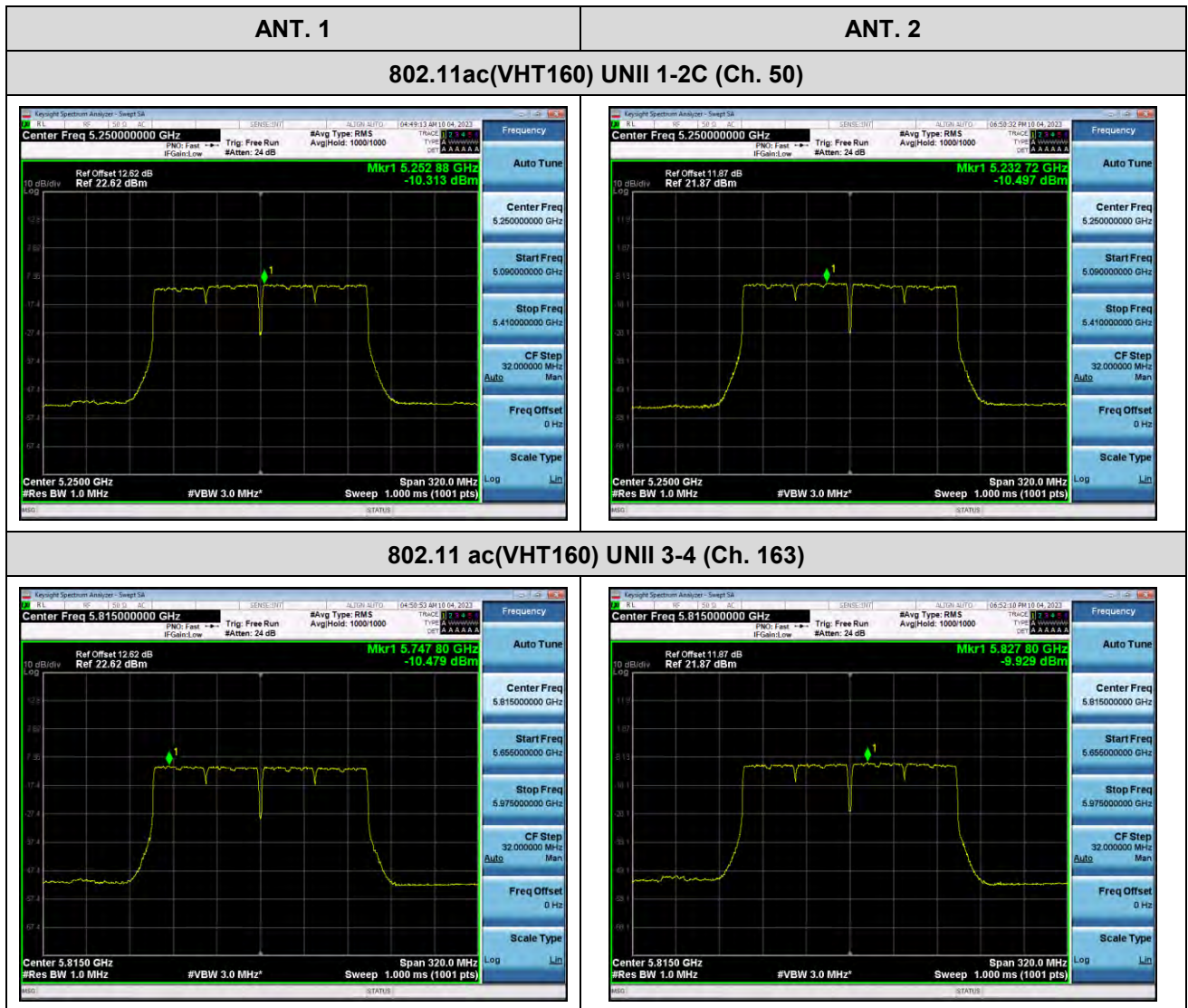












10.6 FREQUENCY STABILITY

Note:

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

10.6.1 802.11ac 160 MHz BW

[MIMO_CDD(Ant1+Ant2)]

Startup after the EUT is energized

OPERATING BAND:	UNII Band 1 & 2A
OPERATING FREQUENCY:	5,250,000,000 Hz
CHANNEL:	50
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5250052.60	52.60
100%		-30	5250023.84	23.84
100%		-20	5250096.05	96.05
100%		-10	5250026.16	26.16
100%		0	5250031.68	31.68
100%		+10	5250094.03	94.03
100%		+30	5250096.86	96.86
100%		+40	5250006.47	6.47
100%		+50	5250097.14	97.14
High	4.45	+20	5250045.60	45.60
Low	3.70	+20	5250054.62	54.62

Note:

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

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,570,000,000 Hz
CHANNEL:	114
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5570020.60	20.60
100%		-30	5570066.21	66.21
100%		-20	5570031.60	31.6
100%		-10	5570086.50	86.5
100%		0	5570071.61	71.61
100%		+10	5570011.59	11.59
100%		+30	5570034.73	34.73
100%		+40	5570064.84	64.84
100%		+50	5570024.63	24.63
High	4.45	+20	5570070.79	70.79
Low	3.70	+20	5570027.58	27.58

Note:

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

OPERATING BAND:	UNII Band 3 & 4
OPERATING FREQUENCY:	5,815,000,000 Hz
CHANNEL:	163
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5815058.02	58.02
100%		-30	5815082.95	82.95
100%		-20	5815092.18	92.18
100%		-10	5815006.86	6.86
100%		0	5815048.43	48.43
100%		+10	5815023.71	23.71
100%		+30	5815076.13	76.13
100%		+40	5815071.44	71.44
100%		+50	5815014.55	14.55
High	4.45	+20	5815011.40	11.40
Low	3.70	+20	5815051.12	51.12

Note:

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

2 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1 & 2A
OPERATING FREQUENCY:	5,250,000,000 Hz
CHANNEL:	50
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5250090.85	90.85
100%		-30	5250045.98	45.98
100%		-20	5250054.56	54.56
100%		-10	5250029.27	29.27
100%		0	5250042.95	42.95
100%		+10	5250092.63	92.63
100%		+30	5250018.82	18.82
100%		+40	5250090.20	90.20
100%		+50	5250073.24	73.24
High	4.45	+20	5250071.92	71.92
Low	3.70	+20	5250027.19	27.19

Note:

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

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,570,000,000 Hz
CHANNEL:	114
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5570097.52	97.52
100%		-30	5570061.69	61.69
100%		-20	5570068.29	68.29
100%		-10	5570025.10	25.1
100%		0	5570025.14	25.14
100%		+10	5570032.73	32.73
100%		+30	5570058.84	58.84
100%		+40	5570086.73	86.73
100%		+50	5570095.55	95.55
High	4.45	+20	5570061.32	61.32
Low	3.70	+20	5570006.11	6.11

Note:

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

OPERATING BAND:	UNII Band 3 & 4
OPERATING FREQUENCY:	5,815,000,000 Hz
CHANNEL:	163
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5815099.23	99.23
100%		-30	5815044.42	44.42
100%		-20	5815071.54	71.54
100%		-10	5815052.23	52.23
100%		0	5815018.92	18.92
100%		+10	5815073.98	73.98
100%		+30	5815048.29	48.29
100%		+40	5815068.90	68.9
100%		+50	5815050.50	50.50
High	4.45	+20	5815009.91	9.91
Low	3.70	+20	5815010.52	10.52

Note:

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

5 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1 & 2A
OPERATING FREQUENCY:	5,250,000,000 Hz
CHANNEL:	50
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5250003.79	3.79
100%		-30	5250084.32	84.32
100%		-20	5250078.29	78.29
100%		-10	5250051.29	51.29
100%		0	5250039.82	39.82
100%		+10	5250090.96	90.96
100%		+30	5250022.91	22.91
100%		+40	5250022.85	22.85
100%		+50	5250070.86	70.86
High	4.45	+20	5250040.64	40.64
Low	3.70	+20	5250083.13	83.13

Note:

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

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,570,000,000 Hz
CHANNEL:	114
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5570067.78	67.78
100%		-30	5570089.09	89.09
100%		-20	5570028.97	28.97
100%		-10	5570093.14	93.14
100%		0	5570018.58	18.58
100%		+10	5570011.46	11.46
100%		+30	5570057.29	57.29
100%		+40	5570044.34	44.34
100%		+50	5570025.46	25.46
High	4.45	+20	5570048.81	48.81
Low	3.70	+20	5570038.97	38.97

Note:

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

OPERATING BAND:	UNII Band 3 & 4
OPERATING FREQUENCY:	5,815,000,000 Hz
CHANNEL:	163
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5815032.40	32.40
100%		-30	5815057.24	57.24
100%		-20	5815001.07	1.07
100%		-10	5815017.47	17.47
100%		0	5815037.19	37.19
100%		+10	5815087.14	87.14
100%		+30	5815007.59	7.59
100%		+40	5815022.23	22.23
100%		+50	5815098.65	98.65
High	4.45	+20	5815033.62	33.62
Low	3.70	+20	5815070.95	70.95

Note:

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

10 minutes after the EUT is energized

OPERATING BAND:	UNII Band 1 & 2A
OPERATING FREQUENCY:	5,250,000,000 Hz
CHANNEL:	50
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5250071.92	71.92
100%		-30	5250046.33	46.33
100%		-20	5250021.13	21.13
100%		-10	5250090.98	90.98
100%		0	5250093.10	93.10
100%		+10	5250093.37	93.37
100%		+30	5250081.31	81.31
100%		+40	5250069.42	69.42
100%		+50	5250073.10	73.10
High	4.45	+20	5250076.60	76.60
Low	3.70	+20	5250082.36	82.36

Note:

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

OPERATING BAND:	UNII Band 2C
OPERATING FREQUENCY:	5,570,000,000 Hz
CHANNEL:	114
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5570083.28	83.28
100%		-30	5570029.87	29.87
100%		-20	5570075.37	75.37
100%		-10	5570056.27	56.27
100%		0	5570089.80	89.8
100%		+10	5570044.03	44.03
100%		+30	5570006.84	6.84
100%		+40	5570098.35	98.35
100%		+50	5570026.76	26.76
High	4.45	+20	5250020.93	20.93
Low	3.70	+20	5250028.24	28.24

Note:

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

OPERATING BAND:	UNII Band 3 & 4
OPERATING FREQUENCY:	5,815,000,000 Hz
CHANNEL:	163
REFERENCE VOLTAGE:	3.88 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.88	+20(Ref)	5815042.10	42.10
100%		-30	5815089.13	89.13
100%		-20	5815083.55	83.55
100%		-10	5815063.08	63.08
100%		0	5815032.38	32.38
100%		+10	5815088.92	88.92
100%		+30	5815092.07	92.07
100%		+40	5815009.84	9.84
100%		+50	5815031.68	31.68
High	4.45	+20	5250002.30	2.30
Low	3.70	+20	5250067.56	67.56

Note:

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

10.7 STRADDLE CHANNEL

10.7.1 26 dB Bandwidth

[ANT. 1]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11a	UNII 2C	5720	144	5709.20	15.80
802.11n(HT20)				5709.04	15.96
802.11ac(VHT20)				5709.28	15.72
802.11a	UNII 3	5720	144	5730.52	5.52
802.11n(HT20)				5730.56	5.56
802.11ac(VHT20)				5730.52	5.52

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11n(HT40)	UNII 2C	5710	142	5688.56	36.44
802.11ac(VHT40)				5688.48	36.52
802.11n(HT40)	UNII 3	5710	142	5730.96	5.96
802.11ac(VHT40)				5730.88	5.88

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11ac(VHT80)	UNII 2C	5690	138	5643.28	81.72
	UNII 3	5690	138	5735.12	10.12

Note:

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

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

[ANT. 2]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11a	UNII 2C	5720	144	5709.44	15.56
802.11n(HT20)				5709.04	15.96
802.11ac(VHT20)				5709.04	15.96
802.11a	UNII 3	5720	144	5730.48	5.48
802.11n(HT20)				5730.84	5.84
802.11ac(VHT20)				5730.56	5.56

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11n(HT40)	UNII 2C	5710	142	5688.64	36.36
802.11ac(VHT40)				5688.80	36.20
802.11n(HT40)	UNII 3	5710	142	5731.12	6.12
802.11ac(VHT40)				5731.12	6.12

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	26 dB Bandwidth [MHz]
802.11ac(VHT80)	UNII 2C	5690	138	5643.76	81.24
	UNII 3	5690	138	5736.08	11.08

Note:

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

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

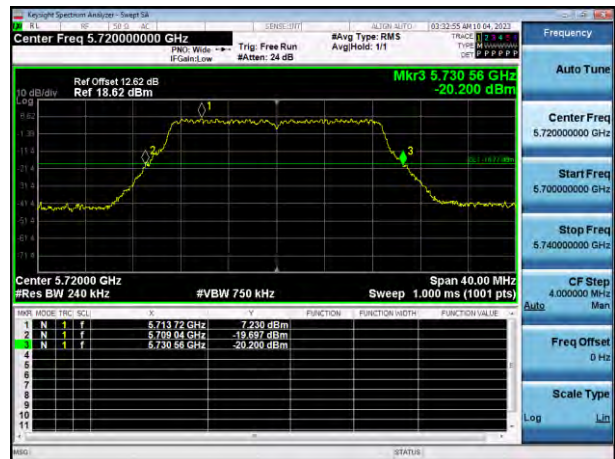
[ANT. 1]

Test Plots (26 dB Bandwidth)

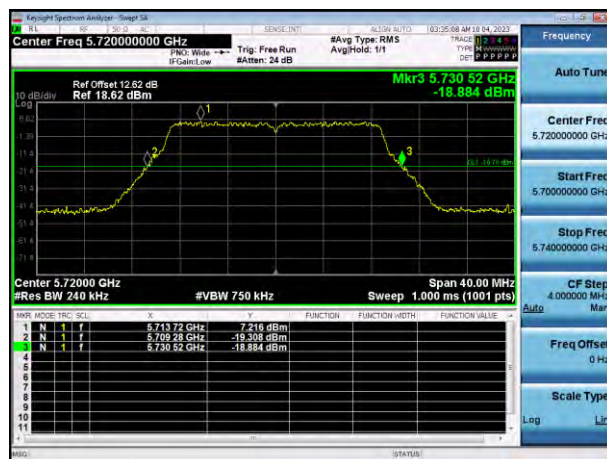
802.11a UNII Band



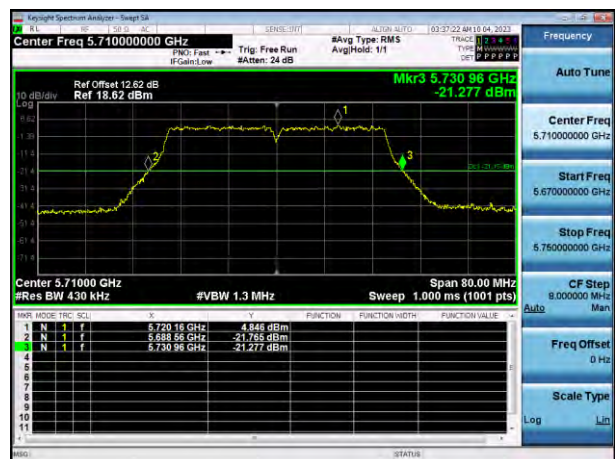
802.11n(HT20) UNII Band



802.11ac(VHT20) UNII Band



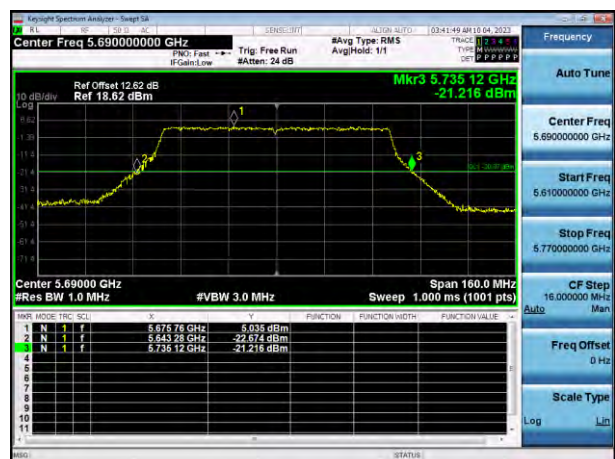
802.11n(HT40) UNII Band



802.11ac(VHT40) UNII Band



802.11ac(VHT80) UNII Band



[ANT. 2]

Test Plots (26 dB Bandwidth)



10.7.2 6 dB Bandwidth

[ANT. 1]

Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
802.11a	UNII3	5720	144	5728.20	3.20	> 0.5
802.11n(HT20)				5728.80	3.80	> 0.5
802.11ac(VHT20)				5728.80	3.80	> 0.5
802.11n(HT40)	UNII3	5710	142	5728.24	3.24	> 0.5
802.11ac(VHT40)				5728.24	3.24	> 0.5
802.11ac(VHT80)	UNII3	5690	138	5728.24	3.24	> 0.5

[ANT. 2]

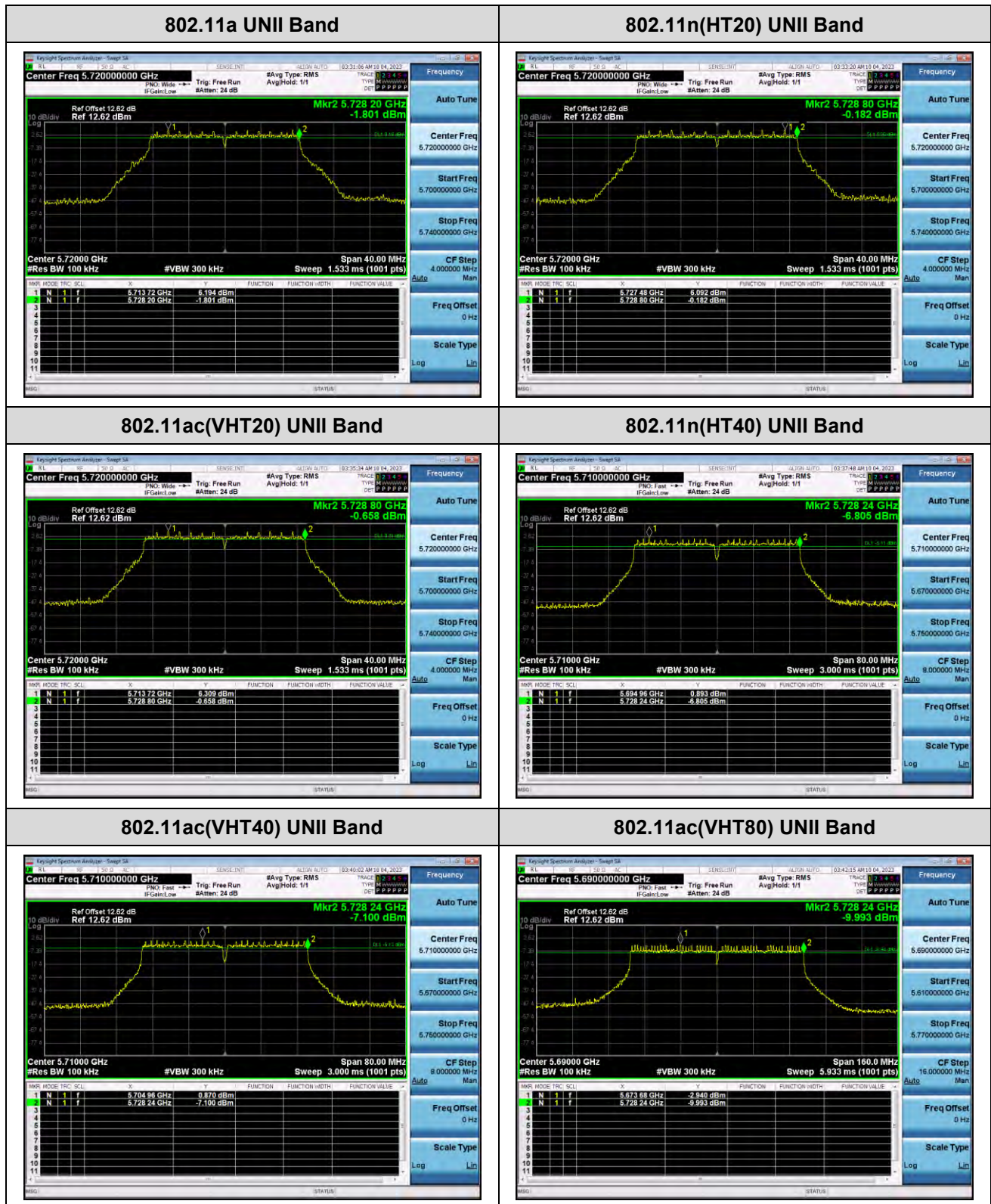
Mode	Band	Frequency [MHz]	Channel	Measured Frequency [MHz]	6dB Bandwidth [MHz]	Limit [MHz]
802.11a	UNII3	5720	144	5728.20	3.20	> 0.5
802.11n(HT20)				5728.80	3.80	> 0.5
802.11ac(VHT20)				5728.80	3.80	> 0.5
802.11n(HT40)	UNII3	5710	142	5728.24	3.24	> 0.5
802.11ac(VHT40)				5728.24	3.24	> 0.5
802.11ac(VHT80)	UNII3	5690	138	5728.40	3.40	> 0.5

Note:

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

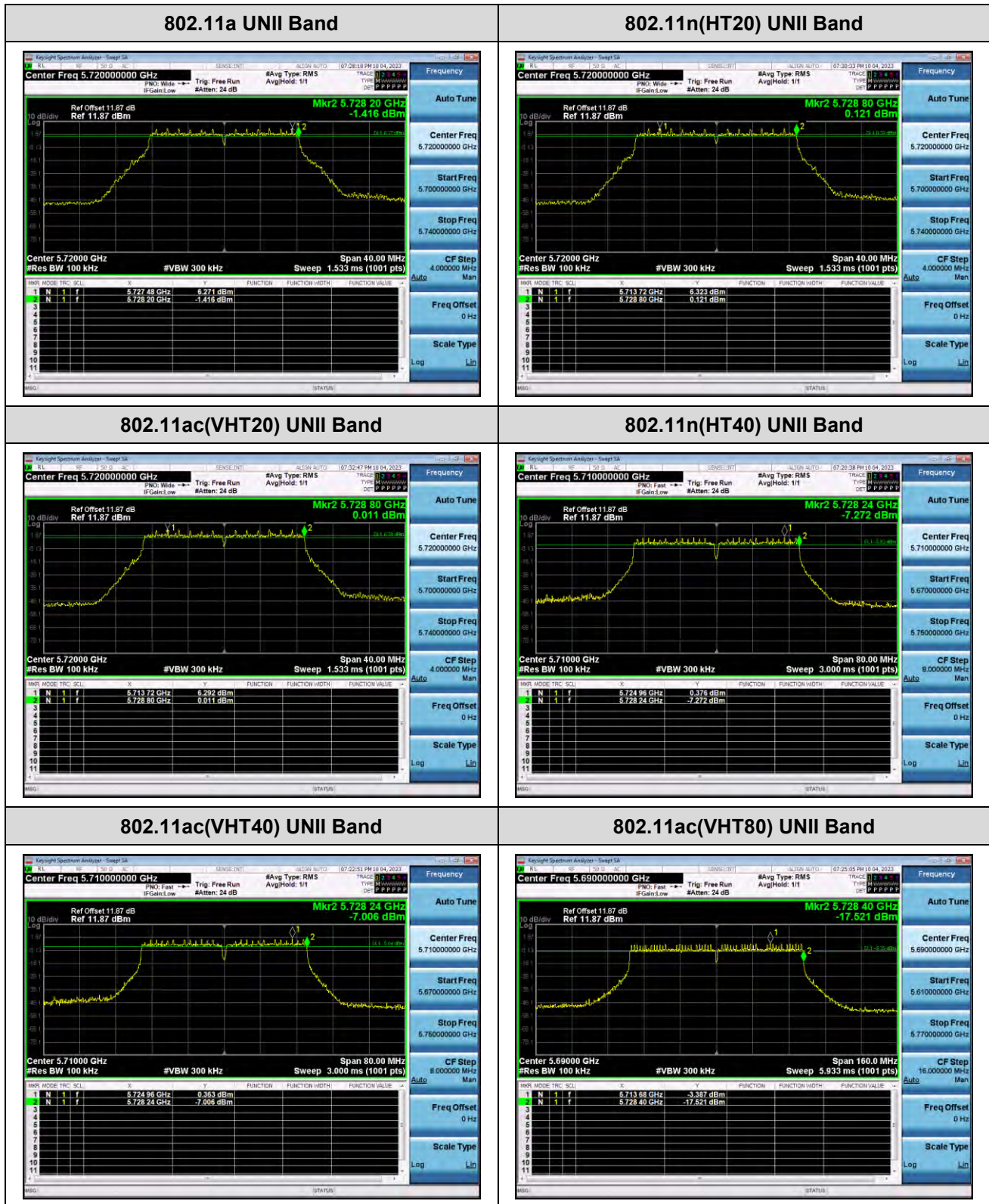
[ANT. 1]

Test Plots(UNII 3 Band 6 dB Bandwidth)



[ANT. 2]

Test Plots(UNII 3 Band 6 dB Bandwidth)



10.7.3 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	16.01	0.296	16.30	22.99	6 Mbps
802.11n(HT20)	(UNII 2C		15.91	0.348	16.26	23.03	MCS0
802.11ac(VHT20)	Band)		15.92	0.337	16.26	22.96	MCS0
802.11a	5720	144	10.08	0.296	10.37	30.00	6 Mbps
802.11n(HT20)	(UNII 3		10.50	0.348	10.85	30.00	MCS0
802.11ac(VHT20)	Band)		10.52	0.337	10.86	30.00	MCS0

Mode	Frequency [MHz]	Channel	Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate
802.11n(HT40)	5710	142	14.35	0.653	15.00	23.98	MCS0
802.11ac(VHT40)	(UNII 2C Band)		14.35	0.641	14.99	23.98	MCS0
802.11n(HT40)	5710	142	4.44	0.653	5.09	30.00	MCS0
802.11ac(VHT40)	(UNII 3 Band)		4.41	0.641	5.05	30.00	MCS0

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	12.65	1.191	13.84	23.98	MCS0
	5690 (UNII 3 Band)	138	-0.64	1.191	0.55	30.00	MCS0

[ANT. 2]

Mode	Frequency [MHz]	Channel	Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate
802.11a	5720	144	16.04	0.296	16.34	22.92	6 Mbps
802.11n(HT20)	(UNII 2C		15.98	0.348	16.33	23.03	MCS0
802.11ac(VHT20)	Band)		15.95	0.337	16.29	23.03	MCS0
802.11a	5720	144	10.18	0.296	10.48	30.00	6 Mbps
802.11n(HT20)	(UNII 3		10.68	0.348	11.03	30.00	MCS0
802.11ac(VHT20)	Band)		10.70	0.337	11.04	30.00	MCS0

Mode	Frequency [MHz]	Channel	Measured Power [dBm]	Duty Cycle Factor [dB]	Total Power [dBm]	Limit [dBm]	Worstcase Datarate
802.11n(HT40)	5710	142	13.83	0.653	14.48	23.98	MCS0
802.11ac(VHT40)	(UNII 2C Band)		13.89	0.641	14.53	23.98	MCS0
802.11n(HT40)	5710	142	4.08	0.653	4.73	30.00	MCS0
802.11ac(VHT40)	(UNII 3 Band)		4.12	0.641	4.76	30.00	MCS0

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	12.15	1.191	13.34	23.98	MCS0
	5690 (UNII 3 Band)	138	-0.62	1.191	0.57	30.00	MCS0

[ANT. 1]

Test Plots

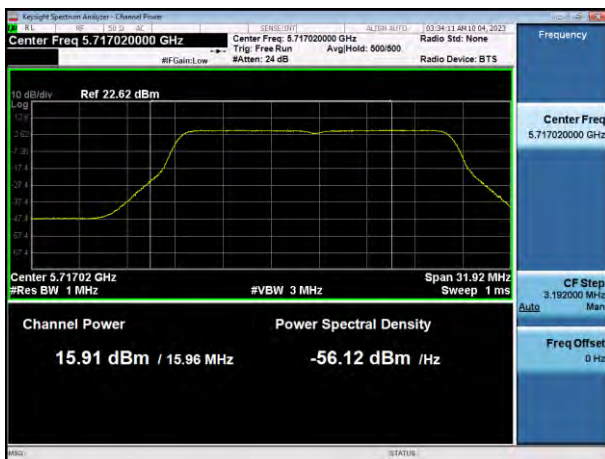
802.11a UNII 2C Band



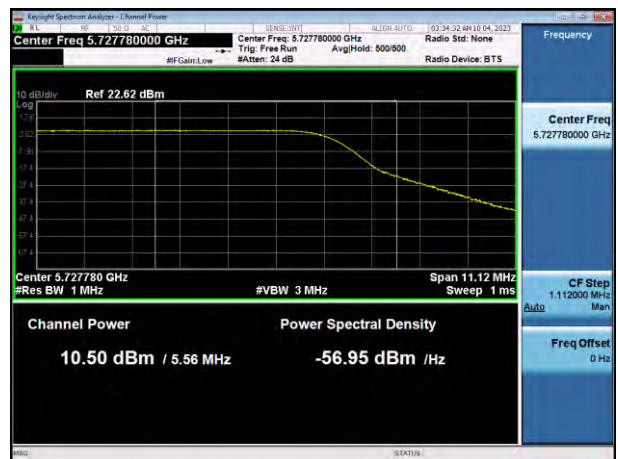
802.11a UNII 3 Band



802.11n(HT20) UNII 2C Band



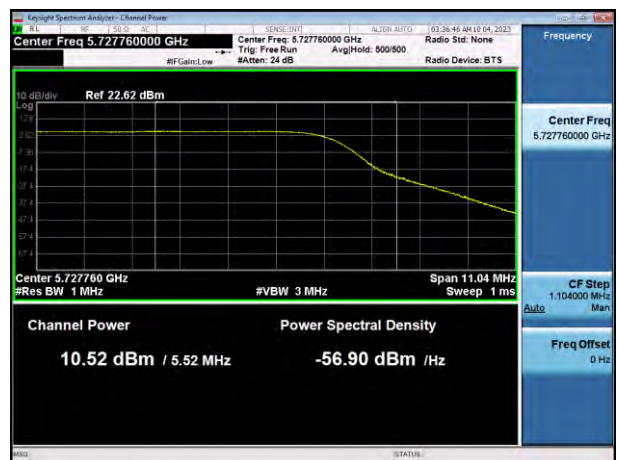
802.11n(HT20) UNII 3 Band



802.11ac(VHT20) UNII 2C Band



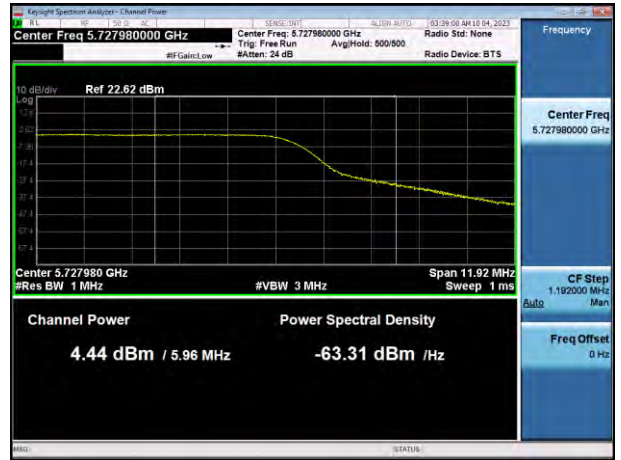
802.11ac(VHT20) UNII 3 Band



802.11n(HT40) UNII 2C Band



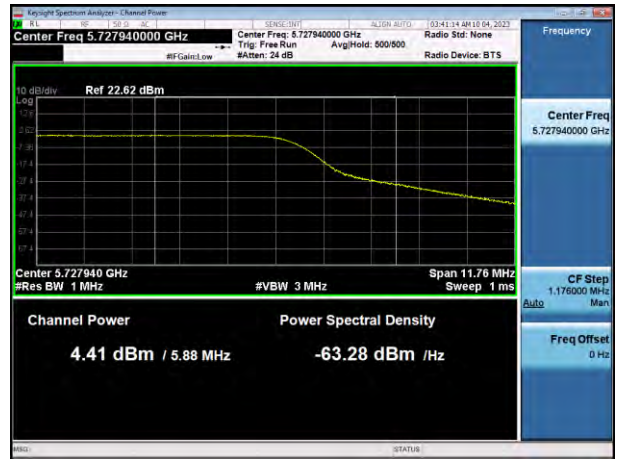
802.11n(HT40) UNII 3 Band



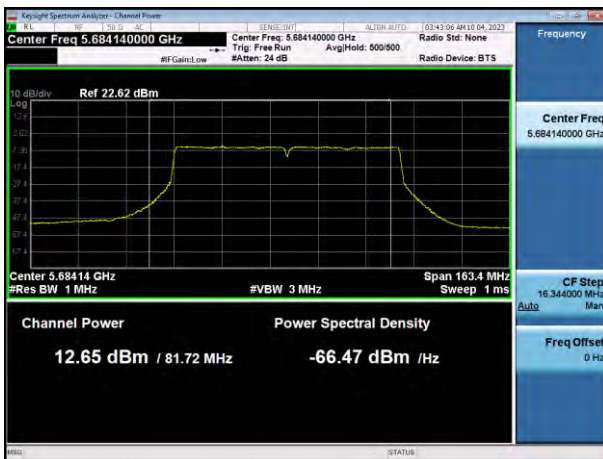
802.11ac(VHT40) UNII 2C Band



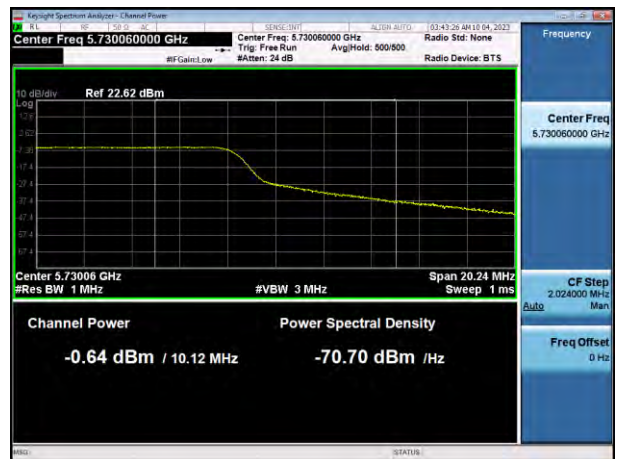
802.11ac(VHT40) UNII 3 Band



802.11ac(VHT80) UNII 2C Band



802.11ac(VHT80) UNII 3 Band



[ANT. 2]

☐ Test Plots

802.11a UNII 2C Band



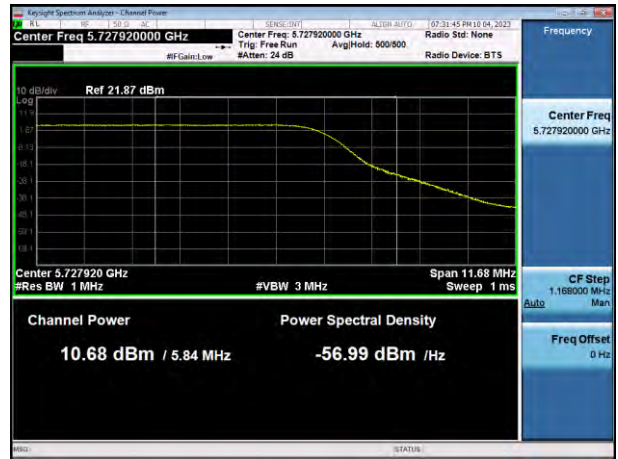
802.11a UNII 3 Band



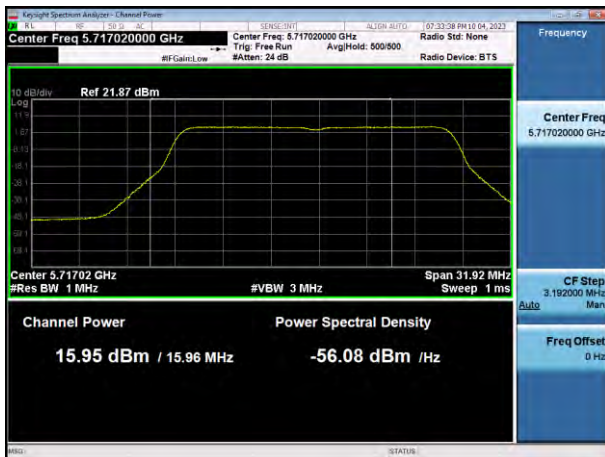
802.11n(HT20) UNII 2C Band



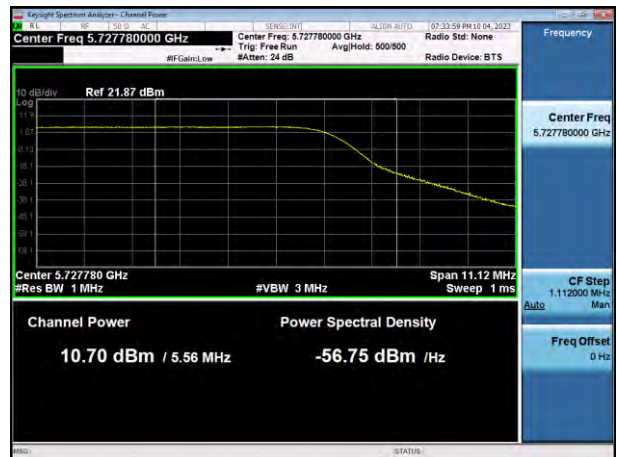
802.11n(HT20) UNII 3 Band



802.11ac(VHT20) UNII 2C Band



802.11ac(VHT20) UNII 3 Band



802.11n(HT40) UNII 2C Band



802.11n(HT40) UNII 3 Band



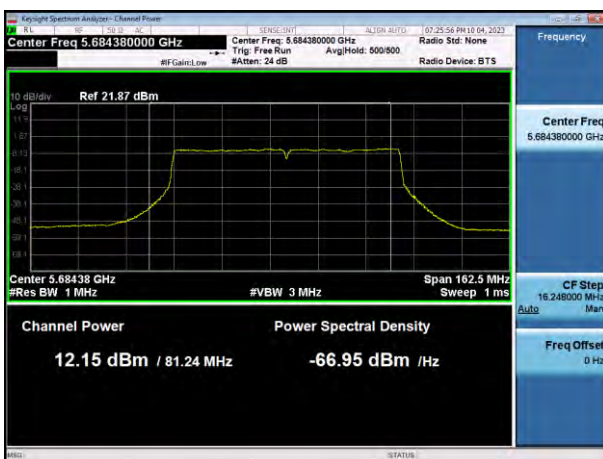
802.11ac(VHT40) UNII 2C Band



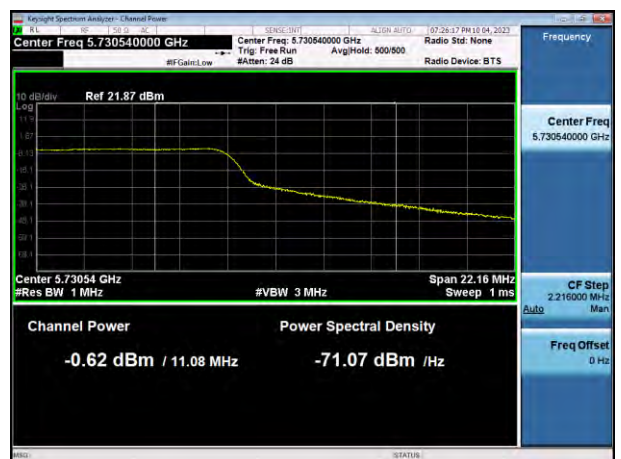
802.11ac(VHT40) UNII 3 Band



802.11ac(VHT80) UNII 2C Band



802.11ac(VHT80) UNII 3 Band



10.7.4 Power Spectral Density

[ANT. 1]

Mode	Frequency [MHz]	Channel	Measured Density [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Limit [dBm]	Worstcase Datarate
802.11a	5720	144	5.662	0.296	5.958	11 dBm/ MHz	6 Mbps
802.11n(HT20)	(UNII 2C		5.372	0.348	5.720		MCS0
802.11ac(VHT20)	Band)		5.363	0.337	5.700		MCS0
802.11a	5720	144	2.656	0.296	2.951	30 dBm/ 500 kHz	6 Mbps
802.11n(HT20)	(UNII 3		2.220	0.348	2.568		MCS0
802.11ac(VHT20)	Band)		2.491	0.337	2.828		MCS0

Mode	Frequency [MHz]	Channel	Measured Density [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Limit [dBm]	Worstcase Datarate
802.11n(HT40)	5710	142	0.233	0.653	0.887	11 dBm/ MHz	MCS0
802.11ac(VHT40)	(UNII 2C Band)		-0.007	0.641	0.635		MCS0
802.11n(HT40)	5710	142	-2.797	0.653	-2.143	30 dBm/ 500 kHz	MCS0
802.11ac(VHT40)	(UNII 3 Band)		-2.820	0.641	-2.178		MCS0

Mode	Frequency [MHz]	Channel	Measured Density [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Limit [dBm]	Worstcase Datarate
802.11ac(VHT80)	5690 (UNII 2C Band)	138	-4.923	1.191	-3.732	11 dBm/ MHz	MCS0
	5690 (UNII 3 Band)	138	-7.905	1.191	-6.714	30 dBm/ 500 kHz	MCS0

[ANT. 2]

Mode	Frequency [MHz]	Channel	Measured Density [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Limit [dBm]	Worstcase Datarate
802.11a	5720	144	5.690	0.296	5.986	11 dBm/ MHz	6 Mbps
802.11n(HT20)	(UNII 2C		5.439	0.348	5.788		MCS0
802.11ac(VHT20)	Band)		5.471	0.337	5.808		MCS0
802.11a	5720	144	3.078	0.296	3.373	30 dBm/ 500 kHz	6 Mbps
802.11n(HT20)	(UNII 3		2.832	0.348	3.180		MCS0
802.11ac(VHT20)	Band)		2.666	0.337	3.003		MCS0

Mode	Frequency [MHz]	Channel	Measured Density [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Limit [dBm]	Worstcase Datarate
802.11n(HT40)	5710	142	-0.456	0.653	0.197	11 dBm/ MHz	MCS0
802.11ac(VHT40)	(UNII 2C Band)		-0.409	0.641	0.233		MCS0
802.11n(HT40)	5710	142	-3.257	0.653	-2.604	30 dBm/ 500 kHz	MCS0
802.11ac(VHT40)	(UNII 3 Band)		-3.446	0.641	-2.805		MCS0

Mode	Frequency [MHz]	Channel	Measured Density [dBm]	Duty Cycle Factor [dB]	Total PSD [dBm]	Limit [dBm]	Worstcase Datarate
802.11ac(VHT80)	5690 (UNII 2C Band)	138	-5.376	1.191	-4.185	11 dBm/ MHz	MCS0
	5690 (UNII 3 Band)	138	-8.604	1.191	-7.413	30 dBm/ 500 kHz	MCS0

[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



802.11n(HT40) UNII 2C Band



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802.11ac(VHT40) UNII 2C Band



802.11ac(VHT40) UNII 3 Band



802.11ac(VHT80) UNII 2C Band



802.11ac(VHT80) UNII 3 Band

