TEST REPORT

FCC UNII Test for SM-S931B/DS
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2411-FC003

DATE OF ISSUE
November 4, 2024

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TEST REPORT

REPORT NO.
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DATE OF ISSUE
November 04, 2024

Additional Model
SM-S931B

Applicant	**SAMSUNG Electronics Co., Ltd.** 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Product Name Model Name	Mobile Phone SM-S931B/DS
FCC ID	A3LSMS931B
Date of Test	September 04, 2024 ~ November 04, 2024
FCC Classification	Unlicensed National Information Infrastructure(NII)
Test Standard Used	FCC Rule Part(s): Part 15.407
Test Results	PASS
Location of Test	■ Permanent Testing Lab ☐ On Site Testing Lab (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	November 04, 2024	Initial Release

Notice

Content
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. The laboratory is not accredited for the test results marked *. Information provided by the applicant is marked **. Test results provided by external providers are marked ***. The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated. The test results have only been applied with the test methods required by the standard(s). When confirmation of authenticity of this test report is required, please contact www.hct.co.kr The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

CONTENTS

1. GENERAL INFORMATION

EUT DESCRIPTION

Model	SM-S931B/DS	
Additional Model	SM-S931B	
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	
Antenna Specification	Type: Metal	
Serial number	Conducted : R3CX80PTALM Radiated : R3CX80PTC6A	

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 6 GHz 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	BT Ant.1	BT Ant.2	Test Case
2.4 GHz WiFi MIMO + 5 GHz WiFi MIMO	on	on	on	on	-	-	-	-	Scenario1
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi ANT.1	-	on	on	-	-	-	on	-	-
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi ANT.2	-	on	-	on	-	-	on	-	Scenario2
Bluetooth ANT.1 + 2.4 GHz WiFi ANT.2 + 5 GHz WiFi MIMO	-	on	on	on	-	-	on	-	Scenario3

3. Directional Gain Calculation

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

$$\text{Directional Gain(CDD)} = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\{\sum_{k=1}^{N_{ANT}} g_{j,k}\}^2}{N_{ANT}}\right]$$

Directional gain(SDM) = Gmax + 10·LOG(N_{ANT}/ N_{ss})

Band	Ant Gain (dBi)		N_{ANT}/ N_{ss}	Directional Gain (dBi)	
	ANT1	ANT2		CDD	SDM
UNII 1	-2.59	-6.94	2 / 2	-1.49	-2.59
UNII 2A	-2.59	-6.42		-1.29	-2.59
UNII 2C	-2.95	-4.82		-0.82	-2.95
UNII 3	-2.63	-5.70		-1.02	-2.63
UNII 4	-2.63	-5.70		-1.02	-2.63

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·log(((10$^{(ANT1\ Gain/20)}$+10$^{(ANT2\ Gain/20)}$)^2)/2) dBi

Directional gain(SDM) = Gmax + 10·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 dBm + 12.08 dBm) = (14.387 mW + 16.143 mW) = 30.53 mW = 14.88 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

Conducted Power = (15.35 dBm + 15.12 dBm) = (34.276 mW + 32.508 mW) = 66.784 mW = 18.25 dBm

E.I.R.P = 18.25 dBm + 3 dBi = 21.25 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	15.87	0.039	15.22	0.033	18.56	0.072
	802.11n (HT20)	15.71	0.037	15.00	0.032	18.38	0.069
	802.11n (HT40)	15.39	0.035	14.48	0.028	17.97	0.063
	802.11ac (VHT20)	15.81	0.038	15.11	0.032	18.49	0.071
	802.11ac (VHT40)	15.38	0.035	14.43	0.028	17.94	0.062
	802.11ac (VHT80)	12.59	0.018	12.06	0.016	15.34	0.034
UNII2A	802.11a	16.30	0.043	15.24	0.033	18.81	0.076
	802.11n (HT20)	16.33	0.043	15.20	0.033	18.82	0.076
	802.11n (HT40)	15.96	0.039	14.80	0.030	18.43	0.070
	802.11ac (VHT20)	16.34	0.043	15.25	0.033	18.84	0.077
	802.11ac (VHT40)	15.98	0.040	14.79	0.030	18.44	0.070
	802.11ac (VHT80)	13.00	0.020	12.02	0.016	15.55	0.036
UNII2C	802.11a	15.37	0.034	15.03	0.032	18.21	0.066
	802.11n (HT20)	15.44	0.035	15.02	0.032	18.25	0.067
	802.11n (HT40)	14.98	0.032	14.68	0.029	17.84	0.061
	802.11ac (VHT20)	15.46	0.035	15.10	0.032	18.29	0.068
	802.11ac (VHT40)	14.97	0.031	14.69	0.029	17.84	0.061
	802.11ac (VHT80)	14.10	0.026	13.83	0.024	16.98	0.050
UNII3	802.11a	15.37	0.034	15.06	0.032	18.23	0.066
	802.11n (HT20)	15.42	0.035	15.14	0.033	18.29	0.067
	802.11n (HT40)	15.13	0.033	14.86	0.031	18.01	0.063
	802.11ac (VHT20)	15.38	0.035	15.16	0.033	18.28	0.067
	802.11ac (VHT40)	15.05	0.032	14.85	0.031	17.96	0.062
	802.11ac (VHT80)	14.24	0.027	13.98	0.025	17.12	0.052
UNII4 (Conducted For inf.)	802.11a	15.71	0.037	15.01	0.032	18.39	0.069
	802.11n (HT20)	15.83	0.038	15.00	0.032	18.44	0.070
	802.11n (HT40)	15.06	0.032	14.88	0.031	17.98	0.063
	802.11ac (VHT20)	15.76	0.038	14.87	0.031	18.35	0.068
	802.11ac (VHT40)	15.07	0.032	14.87	0.031	17.98	0.063
	802.11ac (VHT80)	14.28	0.027	13.99	0.025	17.14	0.052
UNII1-2A	802.11ac (VHT160)	12.85	0.019	11.92	0.016	15.42	0.035
UNII2C	802.11ac (VHT160)	12.29	0.017	12.18	0.017	15.24	0.033
UNII3&4	802.11ac (VHT160)	13.58	0.023	13.42	0.022	16.51	0.045

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 (EIRP)	802.11a	15.71	-2.63	13.08	0.020	15.01	-5.70	9.31	0.009	18.39	-1.02	17.37	0.055
	802.11n (HT20)	15.83	-2.63	13.20	0.021	15.00	-5.70	9.30	0.009	18.44	-1.02	17.42	0.055
	802.11n (HT40)	15.06	-2.63	12.43	0.018	14.88	-5.70	9.18	0.008	17.98	-1.02	16.96	0.050
	802.11ac (VHT20)	15.76	-2.63	13.13	0.021	14.87	-5.70	9.17	0.008	18.35	-1.02	17.33	0.054
	802.11ac (VHT40)	15.07	-2.63	12.44	0.018	14.87	-5.70	9.17	0.008	17.98	-1.02	16.96	0.050
	802.11ac (VHT80)	14.28	-2.63	11.65	0.015	13.99	-5.70	8.29	0.007	17.14	-1.02	16.12	0.041
	802.11ac (VHT160)	13.58	-2.63	10.95	0.012	13.42	-5.70	7.72	0.006	16.51	-1.02	15.49	0.035

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 Measurement Typeor 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 11, 2024 (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 Measurement Typeors 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.

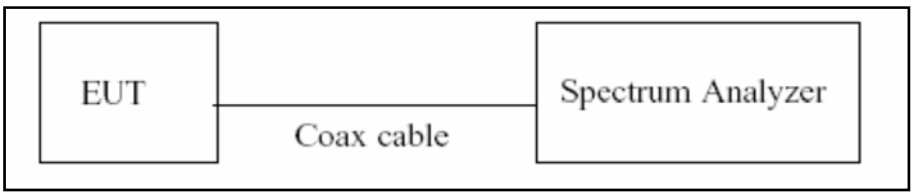
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.98 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.58 (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.

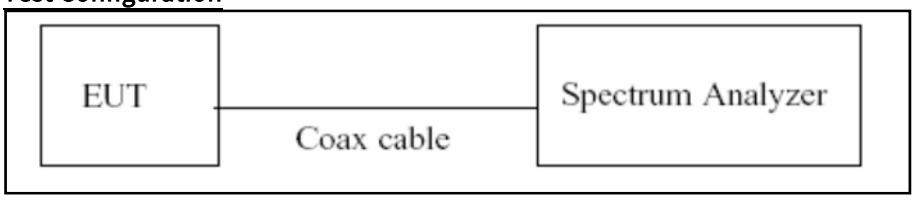
1. RBW = 8 MHz (the largest availble value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Measurement Typeor = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

8.2. 6 dB Bandwidth & 26 dB Bandwidth

Limit

Within the 5.725-5.85 GHz(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 ≥ 3 x RBW
3. Detector = Peak
4. Trace mode = max hold
5. Allow the trace to stabilize
6. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points(upper and lower frequencies) that are attenuated by 6 dB relative to the maximum lever measured in the fundamental emission.

Note:

1. We tested X dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer.
2. DFS test channels should be defined. So, we performed the OBW test to prove that no part of the fundamental emissions of any channels belong to UNII1 and UNII3 band for DFS.
3. The 26 dB bandwidth is used to determine the conducted power limits.

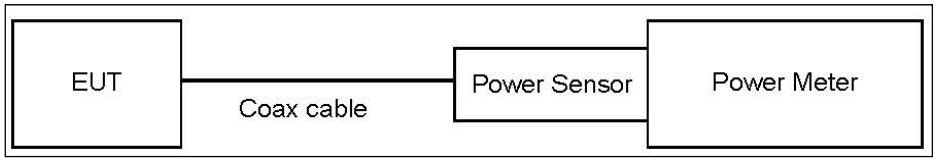
8.3. Output Power Measurement

Limit

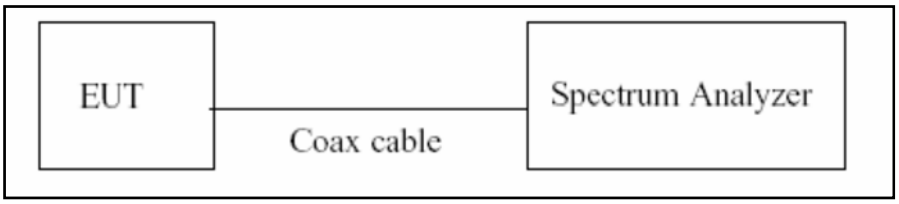
Band	Limit
UNII 1	- Master : Not exceed 1 W(=30 dBm) - Slave : Not exceed 250 mW(=23.98 dBm)
UNII 2A, 2C	Not exceed the lesser of 250 mW or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
UNII 3	Not exceed 1 W(=30 dBm)
UNII 4	EIRP 30 dBm

Test Configuration

Power Meter



Spectrum Analyzer(Only Straddle Channel)



Test Procedure(Power Meter)

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

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

Test Procedure (Spectrum Analyzer)

The transmitter output is connected to the Spectrum Analyzer.

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

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

1. Measure the duty cycle.
2. Set span to encompass the 26 dB EBW of the signal.
3. RBW = 1 MHz.
4. VBW ≥ 3 MHz.
5. Number of points in sweep ≥ 2 x span/RBW.
6. Sweep time = auto.
7. Measurement Typeor = RMS.
8. Do not use sweep triggering. Allow the sweep to "free run".
9. Trace average at least 100 traces in power averaging(RMS) mode
10. Integrated bandwidth = OBW
11. Add 10log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Sample Calculation

Total Power(dBm) = Measured Value(dBm) + ATT loss(dB) + Cable loss(dB) + Duty Cycle Factor(dB)

Note

1. Spectrum Measured 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. Actual value of loss for the attenuator and cable combination is below table.

Band	Ant.1 Loss(dB)	Ant.2 Loss(dB)
UNII 1	11.55	10.80
UNII 2A	11.55	10.80
UNII 2C	11.55	10.80
UNII 3&4	11.55	10.80

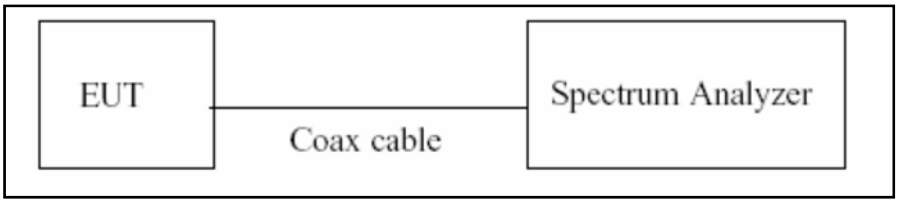
(Actual value of loss for the attenuator and cable combination)

8.4. Power Spectral Density

Limit

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

Test Configuration



Test Procedure

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

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

Sample Calculation

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

Note

1. Spectrum Measured 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. Actual value of loss for the attenuator and cable combination is below table.

Band	Ant.1 Loss(dB)	Ant.2 Loss(dB)
UNII 1	11.55	10.80
UNII 2A	11.55	10.80
UNII 2C	11.55	10.80
UNII 3&4	11.55	10.80

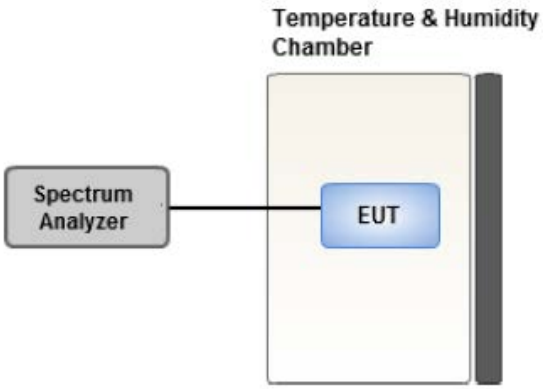
(Actual value of loss for the attenuator and cable combination)

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 battety operating end point which shall be specified by the manufacturer.
4. While maintaining a constant temperature inside the environmental chamber, turn the EUT ON
   and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after
   the EUT is energized. Four measurements in total are made.

8.6. AC Power line Conducted Emissions

Limit

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

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56[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. Measurement Typeors : Quasi Peak and Average Measurement Typeor.

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.

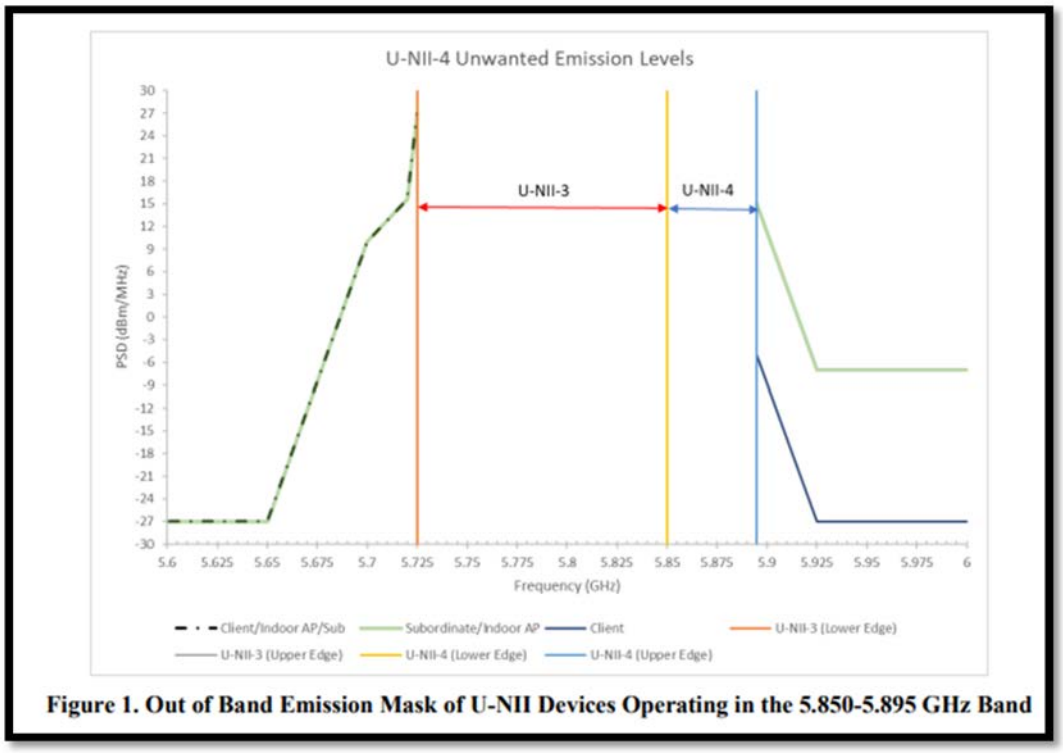


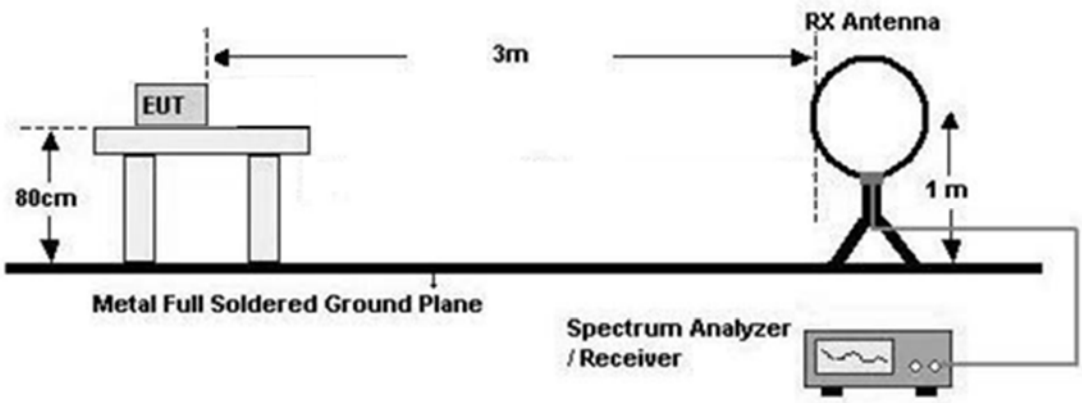
Figure 1. Out of Band Emission Mask of U-NII Devices Operating in the 5.850-5.895 GHz Band

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.

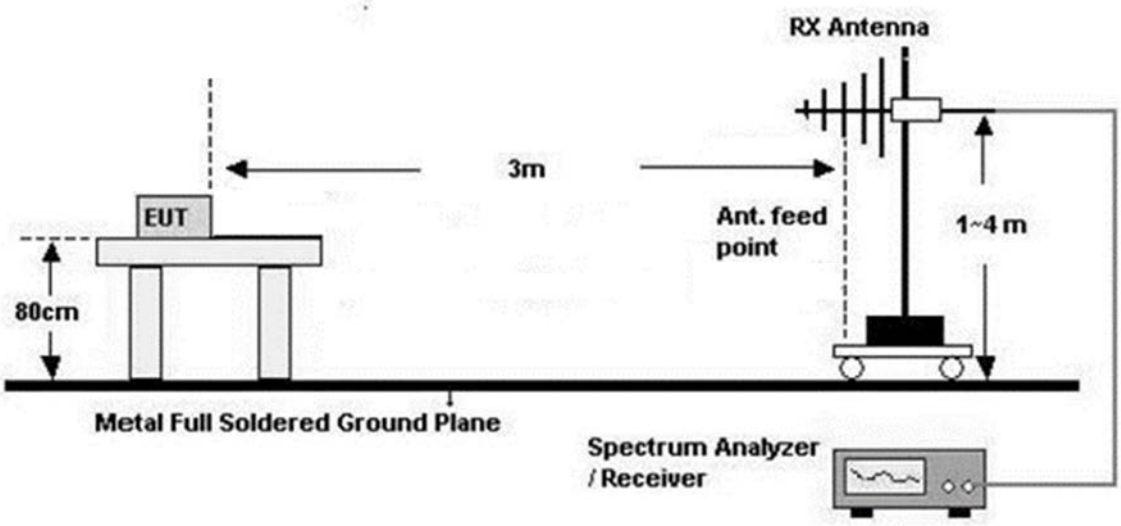
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

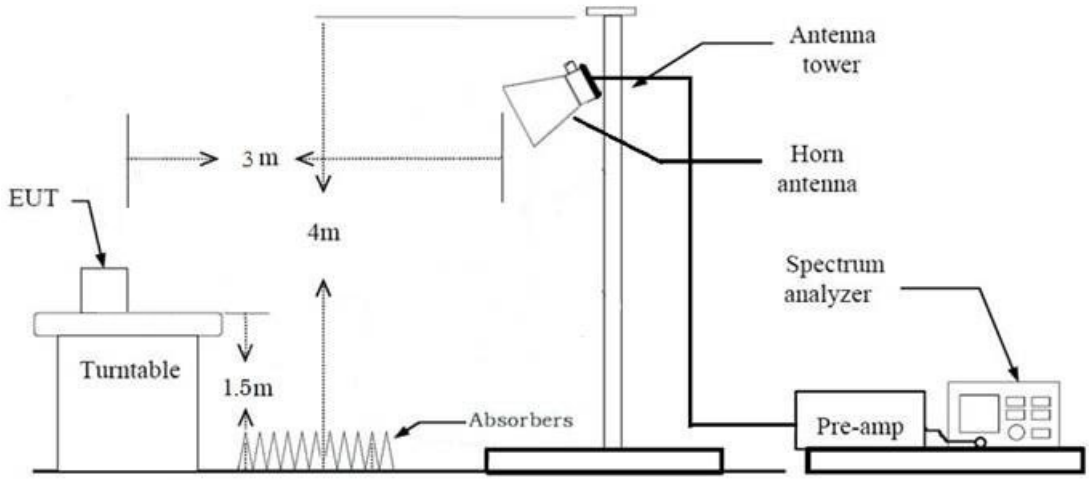
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions (Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. .We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) =40log(3 m/300 m)= - 80 dB
   Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) =40log(3 m/30 m)= - 40 dB
   Measurement Distance : 3 m
8. Spectrum Setting
   - Frequency Range = 9 kHz ~ 30 MHz
   - Detector = Peak
   - Trace = Max Hold
   - RBW = 9 kHz
   - VBW ≥ 3 x 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 0.8m 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 = Max Hold
      - RBW = 100 kHz
      - VBW ≥ 3 x RBW
   (2) Measurement Type(Quasi-peak):
      - Measured Frequency Range : 30 MHz – 1 GHz
      - Detector = Quasi-Peak
      - RBW = 120 kHz
   ※In general, (1) is used mainly
7. Total = Measured 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 ≥ 3 MHz
- Detector = Peak
- Sweep Time = auto
- Trace mode = Max Hold
- Allow sweeps to continue until the trace stabilizes.

Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle.

(2) Measurement Type (Average, G.6.d in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW(Duty cycle ≥ 98 percent) = VBW ≤ RBW/100(i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is < 98 percent) = VBW ≥ 1/T, where T is the minimum transmission duration.
- The analyzer is set to linear detector mode.
- Detector = Peak.
- Sweep time = auto.
- Trace mode = Max Hold.
- Allow Max Hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 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 = 20log (test distance / specific distance) (dB)

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

Test Procedure of Radiated Restricted Band Edge

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

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

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep Time = auto
- Trace mode = Max Hold
- Allow sweeps to continue until the trace stabilizes.
  Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately 1/x, where x is the duty cycle.

(2) Measurement Type(Average, G.6.d in KDB 789033 v02r01):

- RBW = 1 MHz
- VBW(Duty cycle ≥ 98 percent) = VBW ≤ RBW/100(i.e., 10 kHz) but not less than 10 Hz.
- VBW(Duty cycle is < 98 percent) = VBW ≥ 1/T, where T is the minimum transmission duration.
- The analyzer is set to linear detector mode.
- Detector = Peak.
- Sweep time = auto.
- Trace mode = Max Hold.
- Allow Max Hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 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 = 20log (test distance / specific distance) (dB)

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

The actual setting value of VBW

Mode	Worst Data rate (Mbps)	Duty Cycle	Duty Cycle Factor (dB)	The actual setting value of VBW (Hz)
802.11a	6	0.938	0.278	1 000
802.11n(HT20)	MCS0	0.928	0.323	1 000
802.11n(HT40)	MCS0	0.864	0.636	3 000
802.11ac(VHT20)	MCS0	0.929	0.320	1 000
802.11ac(VHT40)	MCS0	0.497	3.036	3 000
802.11ac(VHT80)	MCS0	0.763	1.175	5 000
802.11ac(VHT160)	MCS0	0.723	1.406	5 000

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-S931B/DS, SM-S931B were tested and the worst case results are reported.
(Worst case: SM-S931B/DS)

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. All Antenna of operation were investigated and the worst case results are reported
   - Mode : SISO, MIMO_CDD(Ant.1+Ant.2), MIMO_SDM(Ant.1+Ant.2)
   - Worstcase : MIMO_CDD(Ant.1+Ant.2)
3. EUT Axis
   - Radiated Spurious Emissions : Y
   - Radiated Restricted Band Edge : X
4. All datarate of operation were investigated and the worst case datarate results are reported.
   - 802.11a : 6 Mbps
   - 802.11n_HT20 : MCS0
   - 802.11n_HT40 : MCS0
   - 802.11ac_VHT20 : MCS0
   - 802.11ac_VHT40 : MCS0
   - 802.11ac_VHT80 : MCS0
   - 802.11ac_VHT160: MCS0
5. Radiated Spurious Emission
   - All modulation of operation were investigated and the worst case modulation results are reported.
   Worstcase : 802.11a_6 Mbps
6. 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
7. SM-S931B/DS, SM-S931B were tested and the worst case results are reported.
(Worstcase: SM-S931B/DS)

Radiated test(RSDB)

1. Please refer to the [DTS], [BT], [UNII ax, be] Test Report.
2. SM-S931U, SM-S931U1 were tested and the worst case results are reported.
(Worst case: SM-S931U)
6. SM-S931B/DS, SM-S931B were tested and the worst case results are reported.
(Worst case: SM-S931B/DS)

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone + External accessories (Earphone,etc) + Travel Adapter,
     Stand alone + Travel Adapter
   - Worstcase : Stand alone + Travel Adapter
2. SM-S931B/DS, SM-S931B were tested and the worst case results are reported.
(Worst case: SM-S931B/DS)

9. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26 dB Bandwidth	§ 15.407 (for Power Measurement)	N/A	Conducted	PASS
6 dB Bandwidth	§ 15.407(e)	>500 kHz (5725-5850 MHz)(UNII-3) (5850-5895 MHz)(UNII-4)		PASS
Maximum Conducted Output Power	§ 15.407(a)(1),(2),(3)	< 250 mW(5150-5250 MHz) < 250 mW or 11+10log$_{10}$ (BW) dBm (5250-5350 MHz) < 250 mW or 11+10log$_{10}$ (BW) dBm (5470-5725 MHz) <1 W (5725-5850 MHz)		PASS
Maximum EIRP Output Power	§ 15.407(a)(3)(iii)	< EIRP 30dBm (5850-5895 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	1.467	1.564	0.938	0.278
	9	0.983	1.083	0.908	0.417
	12	0.746	0.843	0.885	0.531
	18	0.506	0.603	0.838	0.765
	24	0.384	0.483	0.795	0.996
	36	0.264	0.363	0.727	1.385
	48	0.206	0.366	0.564	2.489
	54	0.186	0.382	0.486	3.130

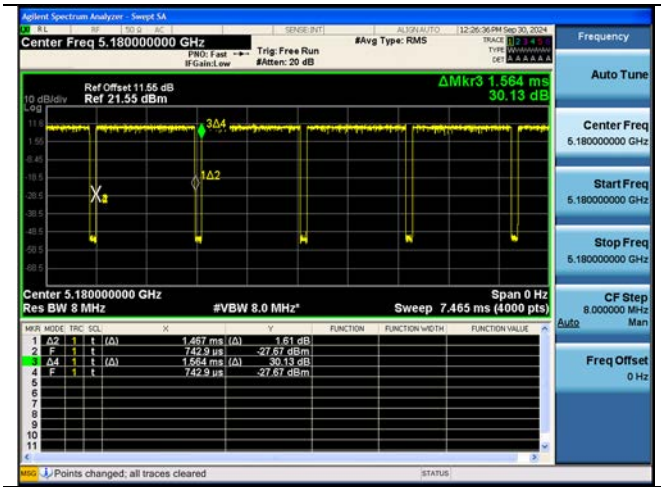
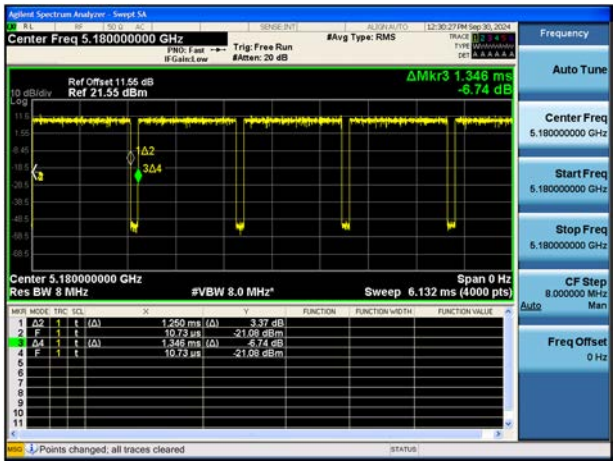
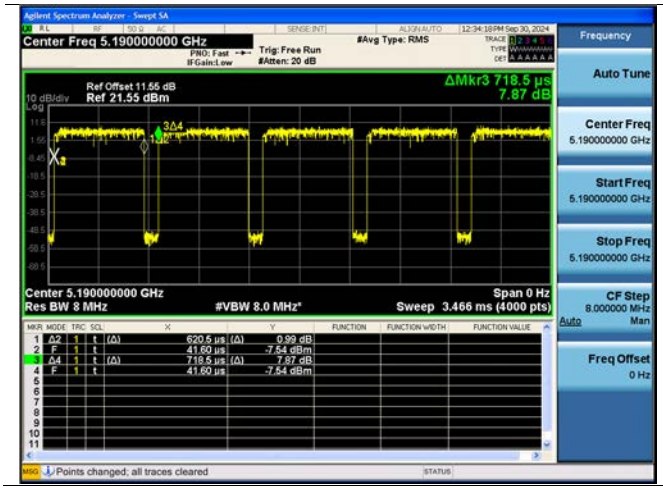
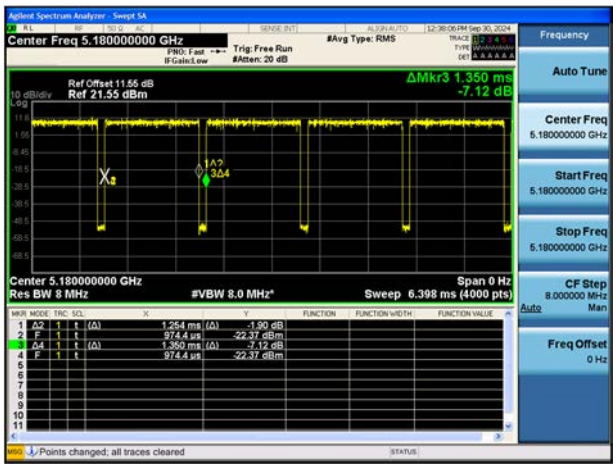
Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11n (HT20)	0	1.250	1.346	0.928	0.323
	1	0.644	0.743	0.867	0.622
	2	0.442	0.539	0.819	0.866
	3	0.342	0.439	0.779	1.085
	4	0.240	0.347	0.691	1.603
	5	0.190	0.359	0.530	2.761
	6	0.174	0.352	0.495	3.053
	7	0.162	0.349	0.464	3.331
802.11n (HT40)	0	0.621	0.718	0.864	0.636
	1	0.329	0.426	0.772	1.123
	2	0.233	0.384	0.606	2.173
	3	0.185	0.390	0.473	3.248
	4	0.137	0.387	0.354	4.512
	5	0.113	0.372	0.304	5.168
	6	0.104	0.382	0.274	5.630
	7	0.097	0.383	0.253	5.975

Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT20)	0	1.254	1.350	0.929	0.320
	1	0.650	0.747	0.870	0.604
	2	0.446	0.543	0.821	0.859
	3	0.346	0.443	0.781	1.075
	4	0.246	0.379	0.650	1.872
	5	0.192	0.354	0.543	2.654
	6	0.176	0.356	0.494	3.059
	7	0.166	0.353	0.470	3.282
	8	0.146	0.360	0.406	3.912
802.11ac (VHT40)	0	0.625	1.257	0.497	3.036
	1	0.533	1.073	0.497	3.036
	2	0.537	1.080	0.497	3.036
	3	0.538	1.080	0.498	3.030
	4	0.541	1.088	0.497	3.036
	5	0.540	1.088	0.496	3.046
	6	0.541	1.088	0.497	3.036
	7	0.540	1.088	0.496	3.044
	8	0.540	1.088	0.496	3.046
	9	0.540	1.087	0.497	3.039
802.11ac (VHT80)	0	0.313	0.410	0.763	1.175
	1	0.253	0.350	0.724	1.406
	2	0.253	0.350	0.723	1.406
	3	0.237	0.334	0.711	1.483
	4	0.193	0.326	0.593	2.270
	5	0.170	0.311	0.545	2.635
	6	0.162	0.303	0.534	2.727
	7	0.158	0.317	0.497	3.038
	8	0.145	0.305	0.476	3.223
	9	0.141	0.310	0.456	3.411

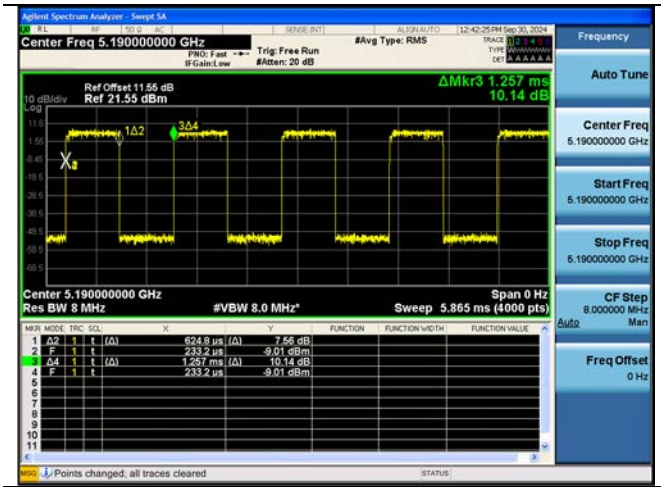
Mode	MCS Index	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor(dB)
802.11ac (VHT160)	0	0.253	0.350	0.723	1.406
	1	0.237	0.334	0.711	1.483
	2	0.193	0.353	0.548	2.615
	3	0.169	0.320	0.529	2.768
	4	0.145	0.323	0.450	3.465
	5	0.137	0.342	0.401	3.965
	6	0.133	0.320	0.416	3.808
	7	0.129	0.316	0.409	3.884
	8	0.125	0.348	0.361	4.430
	9	0.122	0.344	0.353	4.517

Note:

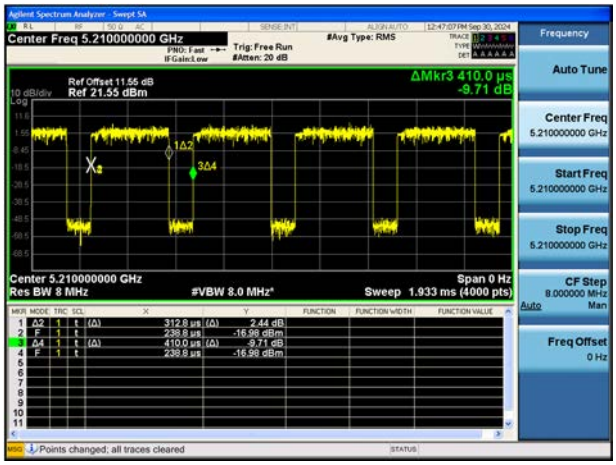
In order to simplify the report, attached plots were only the lowest data rate.

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

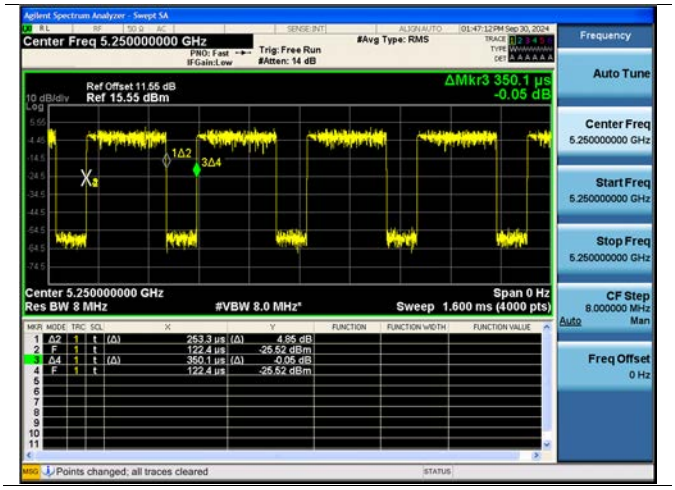
802.11ac(VHT40)



802.11ac(VHT80)



802.11ac(VHT160)



10.2 26 dB Bandwidth

Note:

Straddle channel data in the table below are for reporting purposes only. Straddle channel data were added in section 10.7.1.

[Ant.1]

Mode : 802.11a				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5180	36	20.97	16.581
	5200	40	20.65	16.596
	5240	48	20.98	16.581
UNII2A	5260	52	20.74	16.584
	5300	60	20.92	16.599
	5320	64	20.72	16.571
UNII2C	5500	100	20.68	16.582
	5600	120	20.90	16.588
	5720	144	20.62	16.580
UNII3	5745	149	20.88	16.578
	5785	157	20.87	16.583
	5825	165	20.83	16.594
UNII4	5845	169	20.96	16.576
	5865	173	20.83	16.585
	5885	177	20.90	16.576

Mode : 802.11n(HT20)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5180	36	21.22	17.722
	5200	40	20.97	17.738
	5240	48	21.21	17.733
UNII2A	5260	52	21.00	17.721
	5300	60	21.34	17.734
	5320	64	21.34	17.712
UNII2C	5500	100	21.36	17.720
	5600	120	21.26	17.730
	5720	144	21.28	17.736
UNII3	5745	149	20.88	17.737
	5785	157	21.23	17.718
	5825	165	20.99	17.728
UNII4	5845	169	21.29	17.718
	5865	173	21.31	17.734
	5885	177	21.27	17.742

Mode : 802.11ac(VHT20)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5180	36	20.99	17.741
	5200	40	20.92	17.748
	5240	48	21.31	17.727
UNII2A	5260	52	20.94	17.741
	5300	60	21.24	17.740
	5320	64	21.26	17.737
UNII2C	5500	100	21.27	17.739
	5600	120	21.27	17.737
	5720	144	21.20	17.720
UNII3	5745	149	21.29	17.735
	5785	157	21.01	17.738
	5825	165	21.15	17.742
UNII4	5845	169	20.94	17.756
	5865	173	21.24	17.743
	5885	177	20.92	17.727

Mode : 802.11n(HT40)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5190	38	42.11	36.423
	5230	46	42.31	36.375
UNII2A	5270	54	42.78	36.408
	5310	62	42.25	36.445
UNII2C	5510	102	42.08	36.385
	5590	118	42.32	36.428
	5710	142	42.15	36.413
UNII3	5755	151	42.00	36.379
	5795	159	42.14	36.418
UNII4	5835	167	42.22	36.397
	5875	175	42.29	36.426

Mode : 802.11ac(VHT40)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5190	38	42.41	36.389
	5230	46	42.63	36.409
UNII2A	5270	54	42.47	36.375
	5310	62	42.14	36.384
UNII2C	5510	102	42.46	36.385
	5590	118	42.18	36.411
	5710	142	42.32	36.407
UNII3	5755	151	42.03	36.420
	5795	159	42.43	36.417
UNII4	5835	167	42.17	36.387
	5875	175	42.38	36.416

Mode : 802.11ac(VHT80)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5210	42	91.09	76.313
UNII2A	5290	58	91.19	76.286
UNII3	5530	106	91.70	76.295
	5610	122	92.74	76.343
	5690	138	92.33	76.367
UNII4	5775	155	91.96	76.359
	5855	171	92.08	76.283

Mode : 802.11ac(VHT160)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII 1-2A	5250	50	177.0	155.47
UNII 2C	5570	114	175.1	155.32
UNII 3-4	5815	163	173.8	155.39

[Ant.2]

Mode : 802.11a				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5180	36	20.59	16.578
	5200	40	21.00	16.601
	5240	48	20.94	16.579
UNII2A	5260	52	20.60	16.581
	5300	60	21.06	16.579
	5320	64	20.63	16.582
UNII2C	5500	100	20.78	16.581
	5600	120	20.77	16.581
	5720	144	20.97	16.577
UNII3	5745	149	20.85	16.583
	5785	157	20.86	16.582
	5825	165	21.06	16.588
UNII4	5845	169	20.56	16.584
	5865	173	20.59	16.580
	5885	177	20.90	16.578

Mode : 802.11n(HT20)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5180	36	21.27	17.733
	5200	40	21.29	17.732
	5240	48	21.02	17.723
UNII2A	5260	52	21.32	17.728
	5300	60	21.38	17.729
	5320	64	20.94	17.729
UNII2C	5500	100	21.31	17.723
	5600	120	21.30	17.728
	5720	144	20.99	17.728
UNII3	5745	149	20.94	17.714
	5785	157	21.31	17.717
	5825	165	20.90	17.730
UNII4	5845	169	21.30	17.715
	5865	173	21.30	17.719
	5885	177	21.24	17.725

Mode : 802.11ac(VHT20)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5180	36	20.96	17.741
	5200	40	21.02	17.729
	5240	48	21.35	17.728
UNII2A	5260	52	20.97	17.740
	5300	60	21.09	17.739
	5320	64	21.25	17.733
UNII2C	5500	100	21.33	17.717
	5600	120	21.28	17.746
	5720	144	21.34	17.729
UNII3	5745	149	21.03	17.731
	5785	157	21.30	17.739
	5825	165	20.93	17.733
UNII4	5845	169	20.83	17.738
	5865	173	21.10	17.732
	5885	177	21.15	17.735

Mode : 802.11n(HT40)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5190	38	42.36	36.410
	5230	46	42.11	36.433
UNII2A	5270	54	42.39	36.432
	5310	62	42.45	36.414
UNII2C	5510	102	42.22	36.421
	5590	118	42.58	36.423
	5710	142	42.00	36.411
UNII3	5755	151	42.24	36.400
	5795	159	42.37	36.403
UNII4	5835	167	42.29	36.429
	5875	175	42.34	36.405

Mode : 802.11ac(VHT40)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5190	38	42.31	36.420
	5230	46	42.06	36.370
UNII2A	5270	54	42.01	36.398
	5310	62	41.93	36.400
UNII2C	5510	102	42.24	36.436
	5590	118	42.47	36.383
	5710	142	42.19	36.358
UNII3	5755	151	42.17	36.422
	5795	159	42.52	36.378
UNII4	5835	167	41.87	36.403
	5875	175	42.25	36.375

Mode : 802.11ac(VHT80)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII1	5210	42	92.29	76.292
UNII2A	5290	58	91.22	76.381
UNII3	5530	106	91.11	76.255
	5610	122	91.75	76.209
	5690	138	91.92	76.309
UNII4	5775	155	93.34	76.287
	5855	171	91.86	76.288

Mode : 802.11ac(VHT160)				
BAND	Freq. [MHz]	CH.	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]
UNII 1-2A	5250	50	174.9	155.41
UNII 2C	5570	114	177.8	155.60
UNII 3-4	5815	163	175.0	155.45

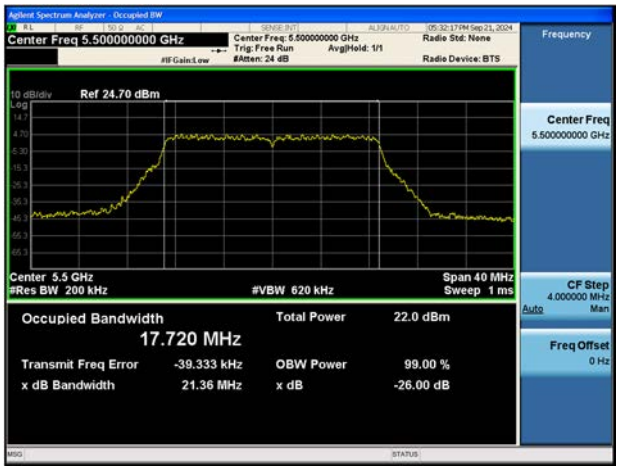
[ANT. 1]

▣ Test Plots

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

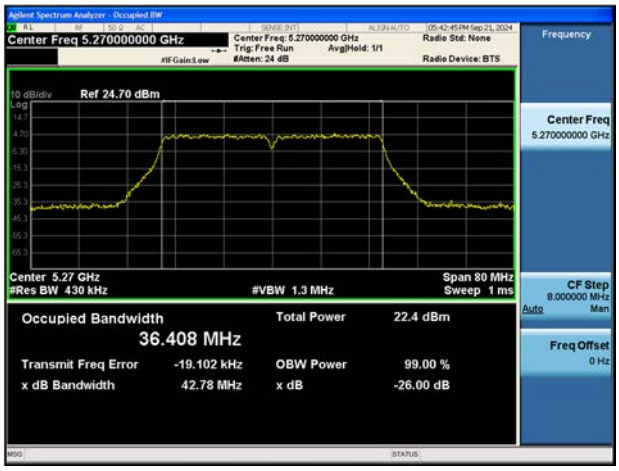
802.11a 26 dB Bandwidth (CH 48)

802.11n(HT20) 26 dB Bandwidth (CH 100)

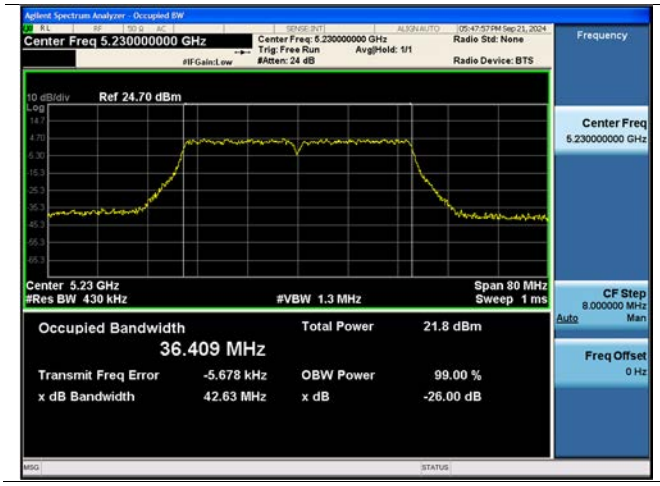


802.11ac(VHT20) 26 dB Bandwidth (CH 48)

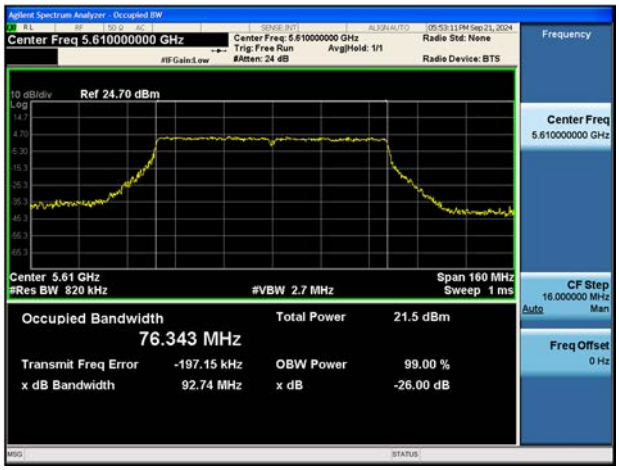
802.11n(HT40) 26 dB Bandwidth (CH 54)



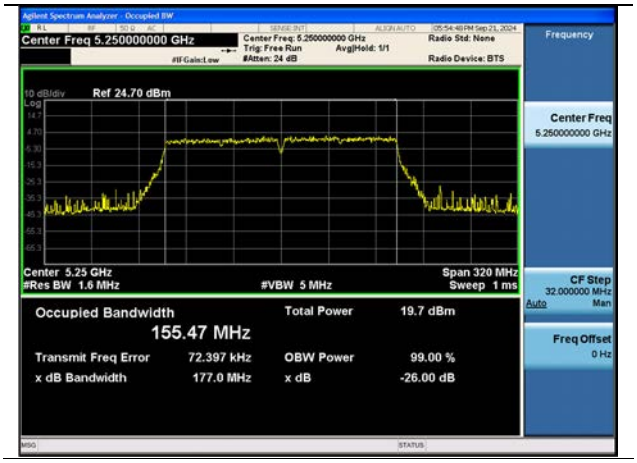
802.11ac(VHT40) 26 dB Bandwidth (CH 46)



802.11ac(VHT80) 26 dB Bandwidth (CH 122)



802.11ac(VHT160) 26 dB Bandwidth (CH 50)

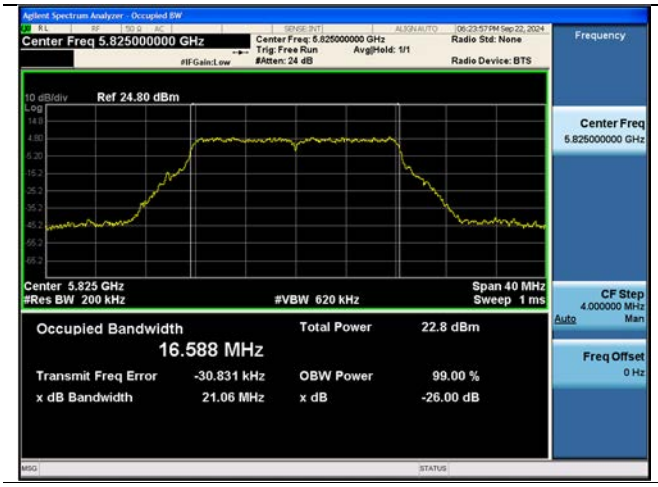


[ANT. 2]

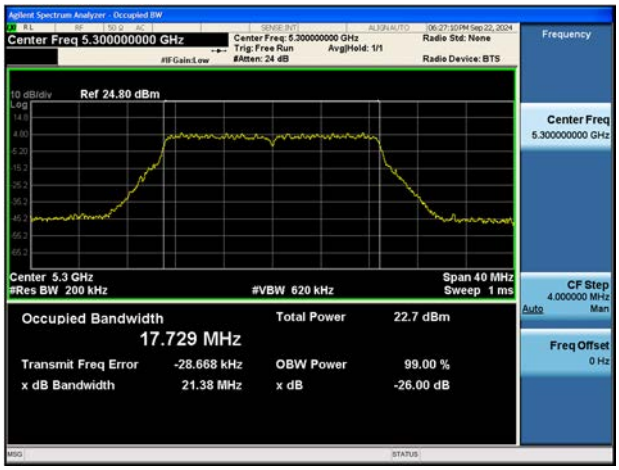
☑ Test Plots

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

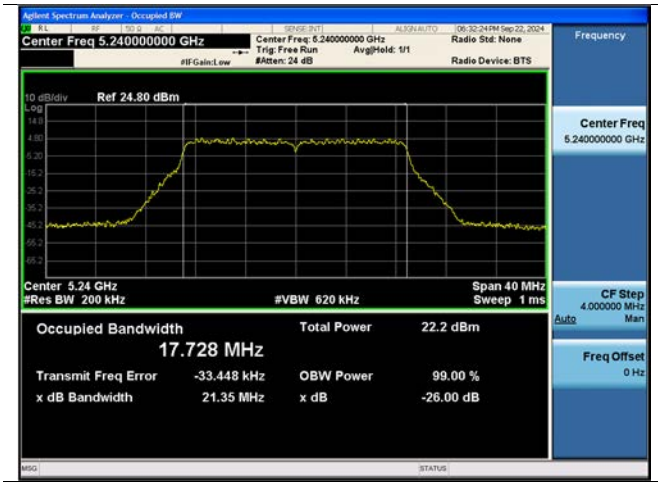
802.11a 26 dB Bandwidth (CH 165)



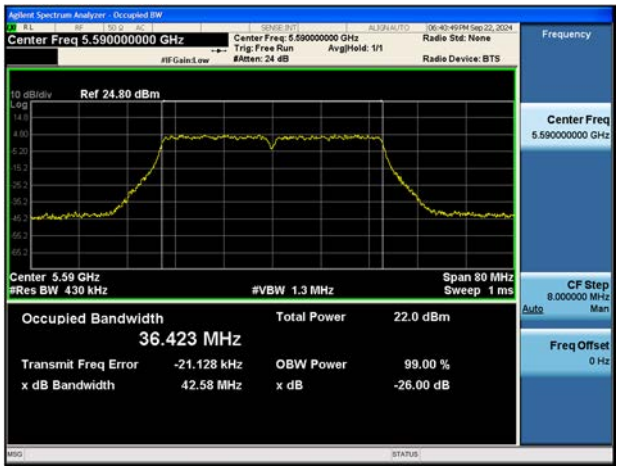
802.11n(HT20) 26 dB Bandwidth (CH 60)



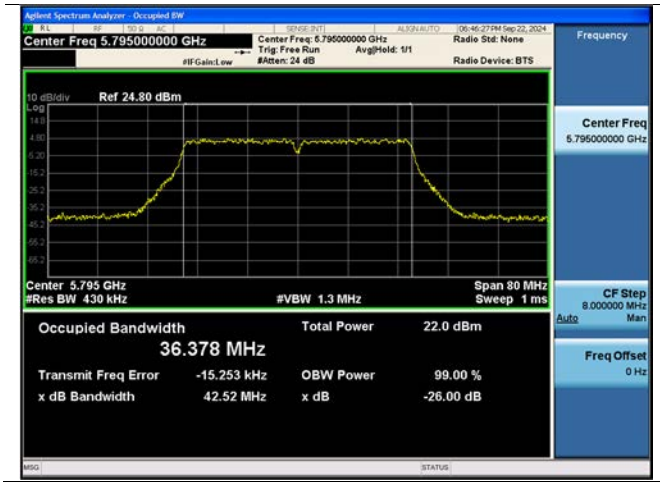
802.11ac(VHT20) 26 dB Bandwidth (CH 48)



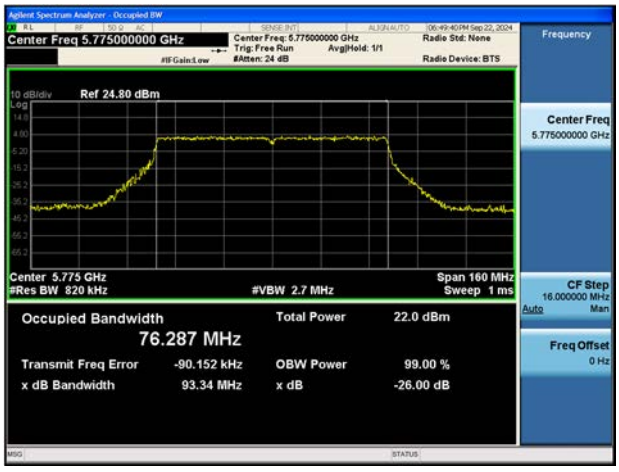
802.11n(HT40) 26 dB Bandwidth (CH 118)



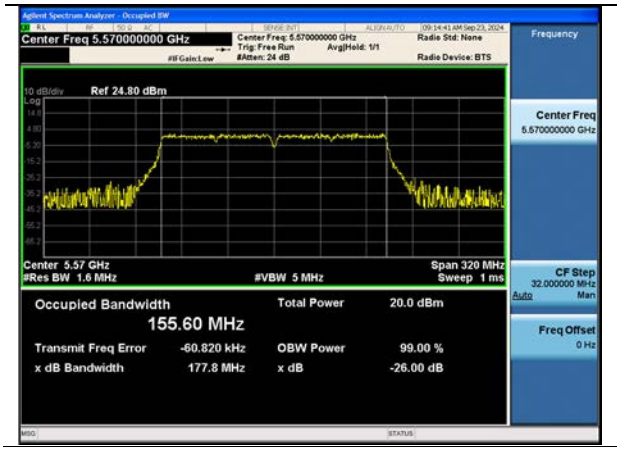
802.11ac(VHT40) 26 dB Bandwidth (CH 159)



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



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



10.3 6 dB BANDWIDTH

[Ant.1]

Mode : 802.11a				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5745	149	16.41	> 0.5
	5785	157	16.41	> 0.5
	5825	165	16.40	> 0.5
UNII4	5845	169	16.40	> 0.5
	5865	173	16.39	> 0.5
	5885	177	16.40	> 0.5

Mode : 802.11n(HT20)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5745	149	17.62	> 0.5
	5785	157	17.65	> 0.5
	5825	165	17.62	> 0.5
UNII4	5845	169	17.62	> 0.5
	5865	173	17.62	> 0.5
	5885	177	17.63	> 0.5

Mode : 802.11ac(VHT20)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5745	149	17.63	> 0.5
	5785	157	17.63	> 0.5
	5825	165	17.65	> 0.5
UNII4	5845	169	17.63	> 0.5
	5865	173	17.64	> 0.5
	5885	177	17.62	> 0.5

Mode : 802.11n(HT40)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5755	151	36.44	> 0.5
	5795	159	36.43	> 0.5
UNII4	5835	167	36.43	> 0.5
	5875	175	36.43	> 0.5

Mode : 802.11ac(VHT40)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5755	151	36.43	> 0.5
	5795	159	36.44	> 0.5
UNII4	5835	167	36.43	> 0.5
	5875	175	36.44	> 0.5

Mode : 802.11ac(VHT80)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5775	155	76.44	> 0.5
UNII4	5855	171	76.40	> 0.5

Mode : 802.11ac(VHT160)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3-4	5815	163	156.3	> 0.5

[Ant.2]

Mode : 802.11a				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5745	149	16.40	> 0.5
	5785	157	16.39	> 0.5
	5825	165	16.40	> 0.5
UNII4	5845	169	16.39	> 0.5
	5865	173	16.40	> 0.5
	5885	177	16.39	> 0.5

Mode : 802.11n(HT20)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5745	149	17.63	> 0.5
	5785	157	17.63	> 0.5
	5825	165	17.63	> 0.5
UNII4	5845	169	17.63	> 0.5
	5865	173	17.61	> 0.5
	5885	177	17.63	> 0.5

Mode : 802.11ac(VHT20)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5745	149	17.63	> 0.5
	5785	157	17.63	> 0.5
	5825	165	17.62	> 0.5
UNII4	5845	169	17.62	> 0.5
	5865	173	17.63	> 0.5
	5885	177	17.63	> 0.5

Mode : 802.11n(HT40)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5755	151	36.43	> 0.5
	5795	159	36.43	> 0.5
UNII4	5835	167	36.43	> 0.5
	5875	175	36.45	> 0.5

Mode : 802.11ac(VHT40)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5755	151	36.43	> 0.5
	5795	159	36.42	> 0.5
UNII4	5835	167	36.44	> 0.5
	5875	175	36.45	> 0.5

Mode : 802.11ac(VHT80)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3	5775	155	76.46	> 0.5
UNII4	5855	171	76.46	> 0.5

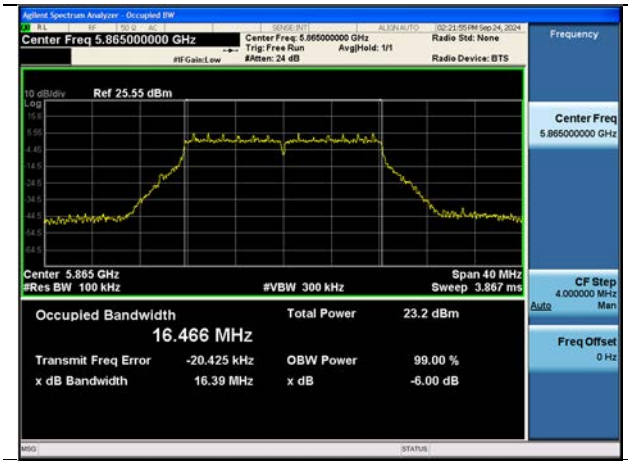
Mode : 802.11ac(VHT160)				
BAND	Freq. [MHz]	CH.	6 dB Bandwidth [MHz]	Limit [MHz]
UNII3-4	5815	163	156.3	> 0.5

[ANT. 1]

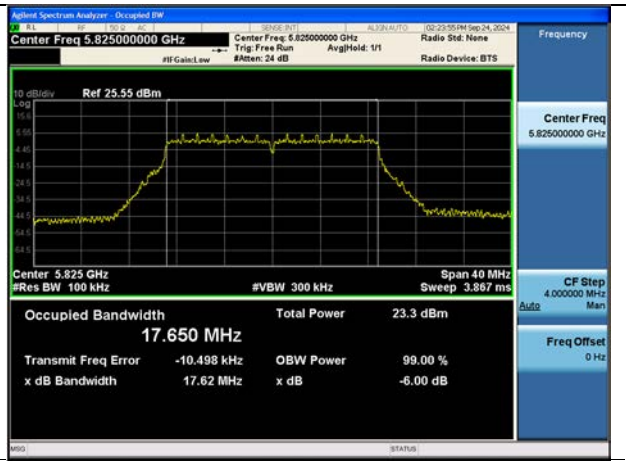
▣ Test Plots

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

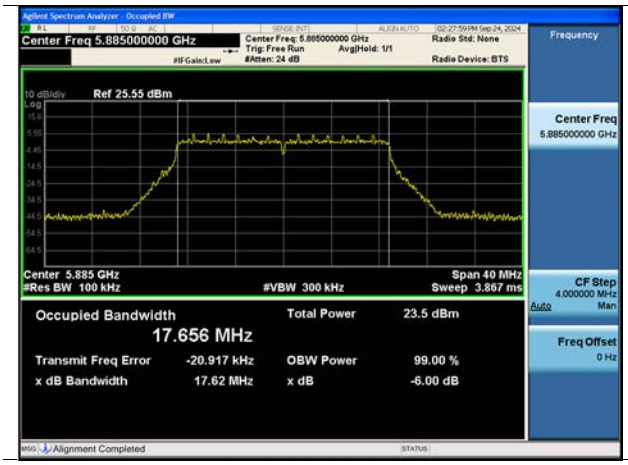
802.11a (CH.173)



802.11n(HT20) (CH.165)

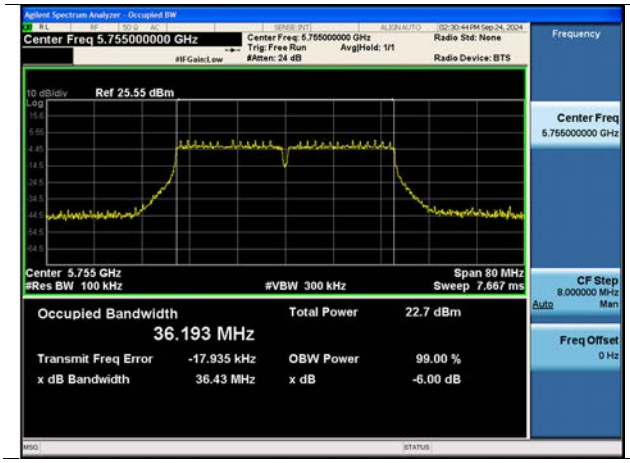


802.11ac(VHT20) (CH.177)

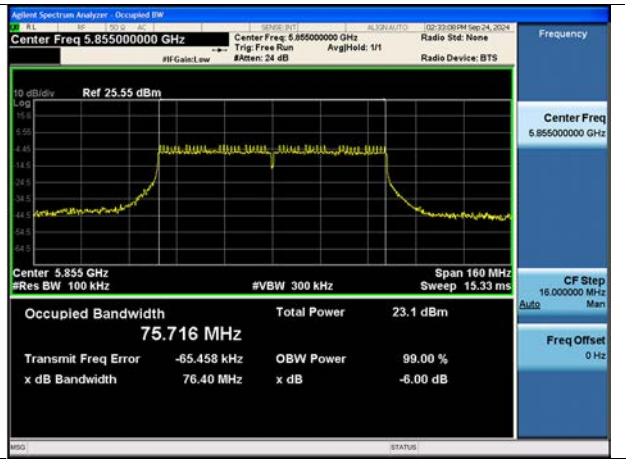


802.11n(HT40) (CH.159)

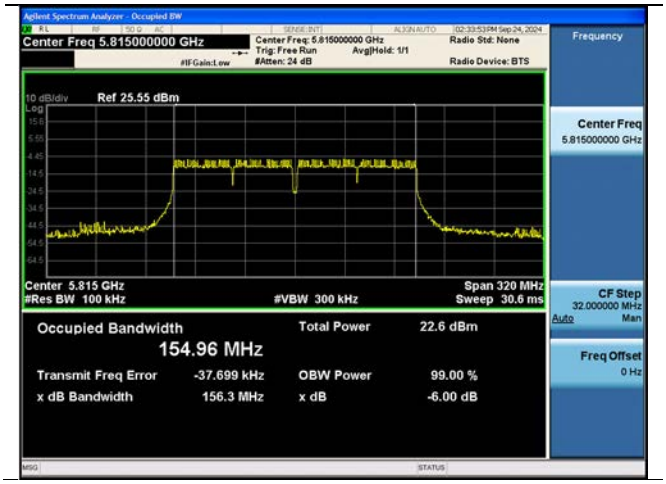
802.11ac(VHT40) (CH.151)



802.11ac(VHT80) (CH.171)



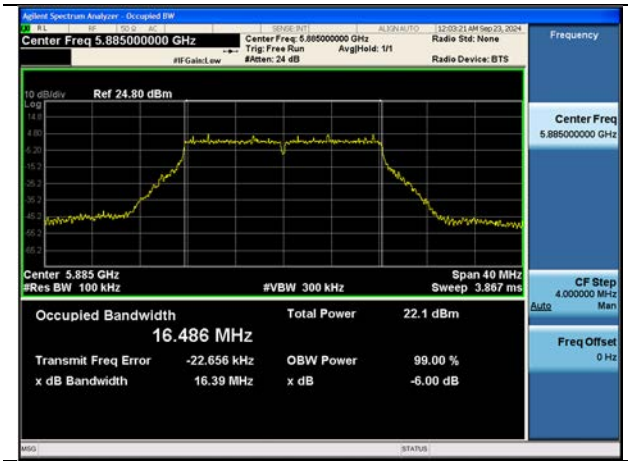
802.11ac(VHT160) (CH.163)



[ANT. 2]

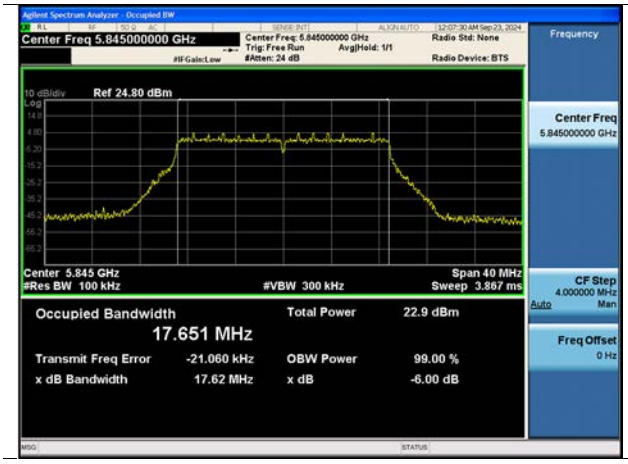
Note: In order to simplify the report, attached plots were only the narrowest channel.

802.11a (CH.177)



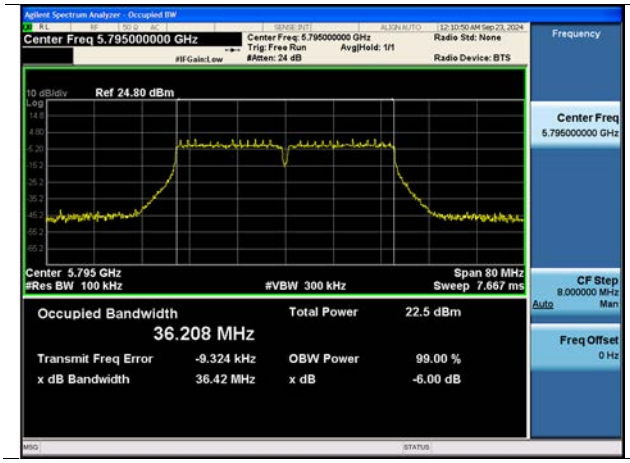
802.11n(HT20) (CH.173)

802.11ac(VHT20) (CH.169)



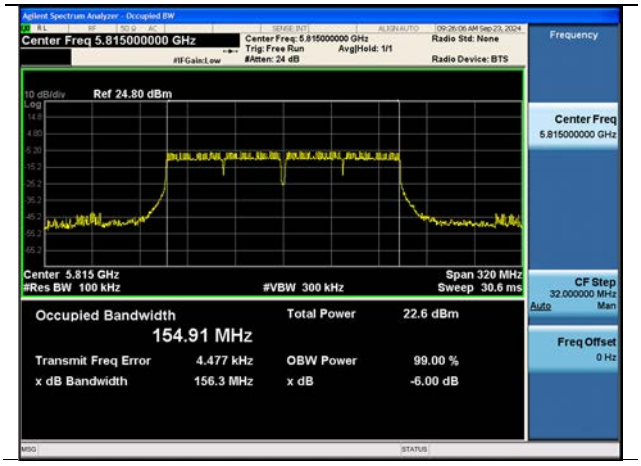
802.11n(HT40) (CH.167)

802.11ac(VHT40) (CH.159)



802.11ac(VHT80) (CH.171)

802.11ac(VHT160) (CH.163)



10.4 OUTPUT POWER MEASUREMENT

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

 # Limit

(UNII 1) : 23.98 dBm
(UNII 2A, 2C) : 23.98 dBm or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.)
(UNII 3) : 30.00 dBm
(UNII 4) : EIRP 30.0 dBm/MHz
(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]

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Average Power [dBm]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm]	[dBm]
5180	36	6M	a	15.87	15.22	18.56	-	-	-	-	23.98
5200	40	6M	a	15.77	15.11	18.46	-	-	-	-	23.98
5240	48	6M	a	15.94	15.01	18.51	-	-	-	-	23.98
5260	52	6M	a	16.20	15.26	18.77	-	-	-	-	23.98
5300	60	6M	a	16.30	15.24	18.81	-	-	-	-	23.98
5320	64	6M	a	15.40	15.20	18.31	-	-	-	-	23.98
5500	100	6M	a	15.37	15.03	18.21	-	-	-	-	23.98
5600	120	6M	a	15.30	15.04	18.18	-	-	-	-	23.98
5720	144	6M	a	15.04	15.09	18.07	-	-	-	-	23.98
5745	149	6M	a	15.37	15.06	18.23	-	-	-	-	30.00
5785	157	6M	a	15.36	15.05	18.22	-	-	-	-	30.00
5825	165	6M	a	15.32	15.08	18.21	-	-	-	-	30.00
5845	169	6M	a	15.33	15.08	18.22	-2.63	-5.70	-1.02	17.20	30 EIRP
5865	173	6M	a	15.44	15.02	18.25	-2.63	-5.70	-1.02	17.23	30 EIRP
5885	177	6M	a	15.71	15.01	18.39	-2.63	-5.70	-1.02	17.37	30 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Average Power [dBm]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm]	[dBm]
5180	36	MCS0	n20	15.71	15.00	18.38	-	-	-	-	23.98
5200	40	MCS0	n20	15.64	14.98	18.33	-	-	-	-	23.98
5240	48	MCS0	n20	15.90	14.73	18.36	-	-	-	-	23.98
5260	52	MCS0	n20	16.18	15.18	18.72	-	-	-	-	23.98
5300	60	MCS0	n20	16.33	15.20	18.82	-	-	-	-	23.98
5320	64	MCS0	n20	15.45	15.14	18.31	-	-	-	-	23.98
5500	100	MCS0	n20	15.44	15.02	18.25	-	-	-	-	23.98
5600	120	MCS0	n20	15.34	14.97	18.17	-	-	-	-	23.98
5720	144	MCS0	n20	14.90	15.15	18.04	-	-	-	-	23.98
5745	149	MCS0	n20	15.42	15.14	18.29	-	-	-	-	30.00
5785	157	MCS0	n20	15.31	15.10	18.22	-	-	-	-	30.00
5825	165	MCS0	n20	15.33	15.06	18.21	-	-	-	-	30.00
5845	169	MCS0	n20	15.46	15.10	18.29	-2.63	-5.70	-1.02	17.27	30 EIRP
5865	173	MCS0	n20	15.59	15.15	18.39	-2.63	-5.70	-1.02	17.37	30 EIRP
5885	177	MCS0	n20	15.83	15.00	18.44	-2.63	-5.70	-1.02	17.42	30 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Average Power [dBm]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm]	[dBm]
5180	36	MCS0	ac20	15.81	15.11	18.49	-	-	-	-	23.98
5200	40	MCS0	ac20	15.76	15.04	18.42	-	-	-	-	23.98
5240	48	MCS0	ac20	15.95	14.80	18.42	-	-	-	-	23.98
5260	52	MCS0	ac20	16.21	15.28	18.78	-	-	-	-	23.98
5300	60	MCS0	ac20	16.34	15.25	18.84	-	-	-	-	23.98
5320	64	MCS0	ac20	15.48	15.23	18.37	-	-	-	-	23.98
5500	100	MCS0	ac20	15.46	15.10	18.29	-	-	-	-	23.98
5600	120	MCS0	ac20	15.41	14.98	18.21	-	-	-	-	23.98
5720	144	MCS0	ac20	14.94	15.13	18.05	-	-	-	-	23.98
5745	149	MCS0	ac20	15.42	15.11	18.28	-	-	-	-	30.00
5785	157	MCS0	ac20	15.38	15.16	18.28	-	-	-	-	30.00
5825	165	MCS0	ac20	15.33	15.20	18.28	-	-	-	-	30.00
5845	169	MCS0	ac20	15.38	15.14	18.27	-2.63	-5.70	-1.02	17.25	30 EIRP
5865	173	MCS0	ac20	15.45	15.11	18.30	-2.63	-5.70	-1.02	17.28	30 EIRP
5885	177	MCS0	ac20	15.76	14.87	18.35	-2.63	-5.70	-1.02	17.33	30 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Average Power [dBm]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm]	[dBm]
5190	38	MCS0	n40	12.70	12.36	15.54	-	-	-	-	23.98
5230	46	MCS0	n40	15.39	14.48	17.97	-	-	-	-	23.98
5270	54	MCS0	n40	15.96	14.80	18.43	-	-	-	-	23.98
5310	62	MCS0	n40	13.18	12.62	15.92	-	-	-	-	23.98
5510	102	MCS0	n40	13.99	13.71	16.86	-	-	-	-	23.98
5590	118	MCS0	n40	14.98	14.68	17.84	-	-	-	-	23.98
5710	142	MCS0	n40	14.64	14.80	17.73	-	-	-	-	23.98
5755	151	MCS0	n40	15.13	14.86	18.01	-	-	-	-	30.00
5795	159	MCS0	n40	15.00	14.85	17.94	-	-	-	-	30.00
5835	167	MCS0	n40	15.06	14.88	17.98	-2.63	-5.70	-1.02	16.96	30 EIRP
5875	175	MCS0	n40	15.14	14.50	17.85	-2.63	-5.70	-1.02	16.83	30 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Average Power [dBm]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm]	[dBm]
5190	38	MCS0	ac40	13.67	13.27	16.48	-	-	-	-	23.98
5230	46	MCS0	ac40	15.38	14.43	17.94	-	-	-	-	23.98
5270	54	MCS0	ac40	15.98	14.79	18.44	-	-	-	-	23.98
5310	62	MCS0	ac40	13.62	13.11	16.39	-	-	-	-	23.98
5510	102	MCS0	ac40	14.04	13.76	16.91	-	-	-	-	23.98
5590	118	MCS0	ac40	14.97	14.69	17.84	-	-	-	-	23.98
5710	142	MCS0	ac40	14.61	14.78	17.71	-	-	-	-	23.98
5755	151	MCS0	ac40	15.06	14.83	17.96	-	-	-	-	30.00
5795	159	MCS0	ac40	15.05	14.85	17.96	-	-	-	-	30.00
5835	167	MCS0	ac40	15.07	14.87	17.98	-2.63	-5.70	-1.02	16.96	30 EIRP
5875	175	MCS0	ac40	15.17	14.50	17.86	-2.63	-5.70	-1.02	16.84	30 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Average Power [dBm]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm]	[dBm]
5210	42	MCS0	ac80	12.59	12.06	15.34	-	-	-	-	23.98
5290	58	MCS0	ac80	13.00	12.02	15.55	-	-	-	-	23.98
5530	106	MCS0	ac80	12.17	12.03	15.11	-	-	-	-	23.98
5610	122	MCS0	ac80	14.10	13.83	16.98	-	-	-	-	23.98
5690	138	MCS0	ac80	13.68	13.90	16.80	-	-	-	-	23.98
5775	155	MCS0	ac80	14.24	13.98	17.12	-	-	-	-	30.00
5855	171	MCS0	ac80	14.28	13.99	17.14	-2.63	-5.70	-1.02	16.12	30 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Average Power [dBm]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm]	[dBm]
5250	50	MCS0	ac160	12.85	11.92	15.42	-	-	-	-	23.98
5570	114	MCS0	ac160	12.29	12.18	15.24	-	-	-	-	23.98
5815	163	MCS0	ac160	13.58	13.42	16.51	-2.63	-5.70	-1.02	15.49	30 EIRP

10.5 POWER SPECTRAL DENSITY

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

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

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

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Power Spectral Density [dBm/MHz]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm/MHz]	[dBm/MHz]
5180	36	6M	a	4.580	3.578	7.118	-	-	-	-	11.00
5200	40	6M	a	4.478	3.510	7.031	-	-	-	-	11.00
5240	48	6M	a	4.988	3.339	7.252	-	-	-	-	11.00
5260	52	6M	a	5.124	3.996	7.607	-	-	-	-	11.00
5300	60	6M	a	5.208	3.918	7.621	-	-	-	-	11.00
5320	64	6M	a	4.622	3.860	7.268	-	-	-	-	11.00
5500	100	6M	a	4.298	3.733	7.035	-	-	-	-	11.00
5600	120	6M	a	4.239	3.479	6.886	-	-	-	-	11.00
5720	144	6M	a	3.916	3.753	6.846	-	-	-	-	11.00
5745	149	6M	a	1.492	1.095	4.309	-	-	-	-	30 dBm/500kHz
5785	157	6M	a	1.427	1.192	4.322	-	-	-	-	30 dBm/500kHz
5825	165	6M	a	1.614	1.264	4.453	-	-	-	-	30 dBm/500kHz
5845	169	6M	a	4.571	4.073	7.340	-2.63	-5.70	-1.02	6.320	14 EIRP
5865	173	6M	a	4.420	3.994	7.223	-2.63	-5.70	-1.02	6.203	14 EIRP
5885	177	6M	a	4.525	3.771	7.175	-2.63	-5.70	-1.02	6.155	14 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Power Spectral Density [dBm/MHz]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm/MHz]	[dBm/MHz]
5180	36	MCS0	n20	4.337	3.330	6.873	-	-	-	-	11.00
5200	40	MCS0	n20	4.528	3.390	7.007	-	-	-	-	11.00
5240	48	MCS0	n20	4.968	3.322	7.233	-	-	-	-	11.00
5260	52	MCS0	n20	5.019	3.625	7.388	-	-	-	-	11.00
5300	60	MCS0	n20	5.396	3.925	7.733	-	-	-	-	11.00
5320	64	MCS0	n20	4.325	3.945	7.150	-	-	-	-	11.00
5500	100	MCS0	n20	4.212	3.359	6.817	-	-	-	-	11.00
5600	120	MCS0	n20	4.081	3.530	6.825	-	-	-	-	11.00
5720	144	MCS0	n20	3.349	3.643	6.509	-	-	-	-	11.00
5745	149	MCS0	n20	1.253	0.715	4.003	-	-	-	-	30 dBm/500kHz
5785	157	MCS0	n20	1.373	0.879	4.144	-	-	-	-	30 dBm/500kHz
5825	165	MCS0	n20	1.460	1.122	4.305	-	-	-	-	30 dBm/500kHz
5845	169	MCS0	n20	4.144	3.886	7.028	-2.63	-5.70	-1.02	6.008	14 EIRP
5865	173	MCS0	n20	4.161	3.757	6.974	-2.63	-5.70	-1.02	5.954	14 EIRP
5885	177	MCS0	n20	4.433	3.407	6.961	-2.63	-5.70	-1.02	5.941	14 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Power Spectral Density [dBm/MHz]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm/MHz]	[dBm/MHz]
5180	36	MCS0	ac20	4.364	3.396	6.917	-	-	-	-	11.00
5200	40	MCS0	ac20	4.516	3.464	7.032	-	-	-	-	11.00
5240	48	MCS0	ac20	4.613	3.362	7.043	-	-	-	-	11.00
5260	52	MCS0	ac20	5.071	3.814	7.498	-	-	-	-	11.00
5300	60	MCS0	ac20	5.109	3.922	7.566	-	-	-	-	11.00
5320	64	MCS0	ac20	4.159	3.664	6.929	-	-	-	-	11.00
5500	100	MCS0	ac20	4.206	3.469	6.864	-	-	-	-	11.00
5600	120	MCS0	ac20	4.294	3.733	7.033	-	-	-	-	11.00
5720	144	MCS0	ac20	3.513	3.784	6.661	-	-	-	-	11.00
5745	149	MCS0	ac20	1.537	0.839	4.213	-	-	-	-	30 dBm/500kHz
5785	157	MCS0	ac20	1.346	0.887	4.133	-	-	-	-	30 dBm/500kHz
5825	165	MCS0	ac20	1.534	0.944	4.260	-	-	-	-	30 dBm/500kHz
5845	169	MCS0	ac20	4.186	4.068	7.138	-2.63	-5.70	-1.02	6.118	14 EIRP
5865	173	MCS0	ac20	4.243	3.748	7.013	-2.63	-5.70	-1.02	5.993	14 EIRP
5885	177	MCS0	ac20	4.444	3.355	6.944	-2.63	-5.70	-1.02	5.924	14 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Power Spectral Density [dBm/MHz]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm/MHz]	[dBm/MHz]
5190	38	MCS0	n40	-1.288	-2.164	1.307	-	-	-	-	11.00
5230	46	MCS0	n40	1.141	0.002	3.619	-	-	-	-	11.00
5270	54	MCS0	n40	1.856	0.507	4.244	-	-	-	-	11.00
5310	62	MCS0	n40	-1.045	-1.802	1.604	-	-	-	-	11.00
5510	102	MCS0	n40	-0.217	-0.808	2.508	-	-	-	-	11.00
5590	118	MCS0	n40	0.872	0.056	3.494	-	-	-	-	11.00
5710	142	MCS0	n40	0.082	0.238	3.171	-	-	-	-	11.00
5755	151	MCS0	n40	-1.998	-2.566	0.738	-	-	-	-	30 dBm/500kHz
5795	159	MCS0	n40	-1.994	-2.218	0.906	-	-	-	-	30 dBm/500kHz
5835	167	MCS0	n40	1.202	0.705	3.971	-2.63	-5.70	-1.02	2.951	14 dBm/EIRP
5875	175	MCS0	n40	0.647	-0.017	3.338	-2.63	-5.70	-1.02	2.318	14 dBm/EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Power Spectral Density [dBm/MHz]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm/MHz]	[dBm/MHz]
5190	38	MCS0	ac40	-0.653	-0.734	2.317	-	-	-	-	11.00
5230	46	MCS0	ac40	1.516	-0.132	3.780	-	-	-	-	11.00
5270	54	MCS0	ac40	2.433	0.544	4.600	-	-	-	-	11.00
5310	62	MCS0	ac40	-0.025	-1.281	2.402	-	-	-	-	11.00
5510	102	MCS0	ac40	0.361	-0.677	2.883	-	-	-	-	11.00
5590	118	MCS0	ac40	1.678	0.370	4.083	-	-	-	-	11.00
5710	142	MCS0	ac40	0.336	0.649	3.505	-	-	-	-	11.00
5755	151	MCS0	ac40	-1.316	-1.902	1.411	-	-	-	-	30 dBm/500kHz
5795	159	MCS0	ac40	-1.803	-2.042	1.089	-	-	-	-	30 dBm/500kHz
5835	167	MCS0	ac40	1.128	0.531	3.850	-2.63	-5.70	-1.02	2.830	14 EIRP
5875	175	MCS0	ac40	1.114	0.736	3.939	-2.63	-5.70	-1.02	2.919	14 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Power Spectral Density [dBm/MHz]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm/MHz]	[dBm/MHz]
5210	42	MCS0	ac80	-4.057	-5.068	-1.523	-	-	-	-	11.00
5290	58	MCS0	ac80	-4.030	-5.628	-1.746	-	-	-	-	11.00
5530	106	MCS0	ac80	-4.675	-5.192	-1.916	-	-	-	-	11.00
5610	122	MCS0	ac80	-2.863	-3.526	-0.172	-	-	-	-	11.00
5690	138	MCS0	ac80	-3.385	-3.581	-0.472	-	-	-	-	11.00
5775	155	MCS0	ac80	-5.706	-6.211	-2.941	-	-	-	-	30 dBm/500kHz
5855	171	MCS0	ac80	-2.478	-3.292	0.144	-2.63	-5.70	-1.02	-0.876	14 EIRP

Freq. [MHz]	CH.	Datarate	Mode (802.11)	Total Power Spectral Density [dBm/MHz]			ANT1 Gain	ANT2 Gain	Directional Gain	Max EIRP	Limit
				ANT1	ANT2	MIMO	[dBi]	[dBi]	[dBi]	[dBm/MHz]	[dBm/MHz]
5250	50	MCS0	ac160	-7.519	-8.958	-5.169	-	-	-	-	11.00
5570	114	MCS0	ac160	-8.168	-8.703	-5.417	-	-	-	-	11.00
5815	163	MCS0	ac160	-6.774	-6.932	-3.842	-2.63	-5.70	-1.02	-4.862	14 EIRP

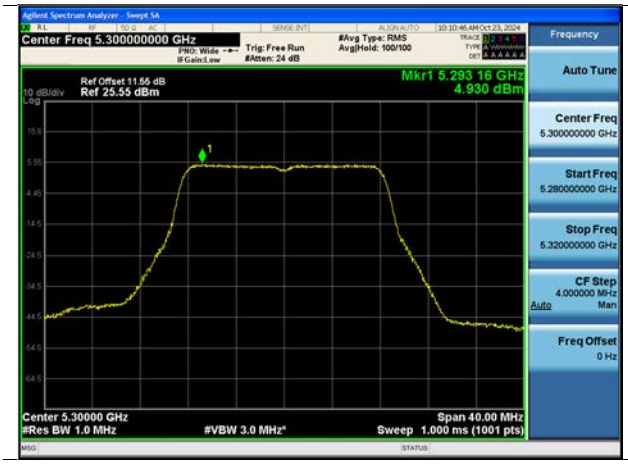
[MIMO_CDD(Ant.1+ Ant.2)]

▣ Test Plots

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

ANT. 1	ANT. 2

802.11a UNII 1-2C (Ch. 60)



802.11a UNII 3 (Ch. 165)

802.11a UNII 4 (Ch. 169)

ANT. 1	ANT. 2

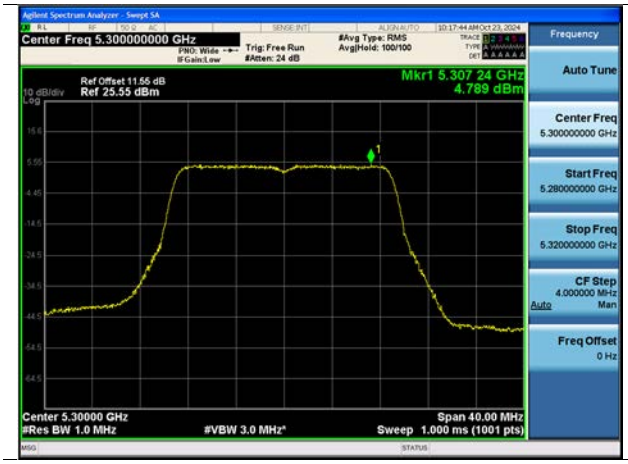
802.11n(HT20) UNII 1-2C (Ch. 60)

802.11 n(HT20) UNII 3 (Ch. 165)

802.11 n(HT20) UNII 4 (Ch. 169)

ANT. 1	ANT. 2

802.11ac(VHT20) UNII 1-2C (Ch. 60)



802.11 ac(VHT20) UNII 3 (Ch. 165)

802.11 ac(VHT20) UNII 4 (Ch. 169)

ANT. 1	ANT. 2

802.11n(HT40) UNII 1-2C (Ch. 54)

802.11 n(HT40) UNII 3 (Ch. 159)

802.11 n(HT40) UNII 4 (Ch. 167)

ANT. 1	ANT. 2

802.11ac(VHT40) UNII 1-2C (Ch. 54)

802.11 ac(VHT40) UNII 3 (Ch. 151)

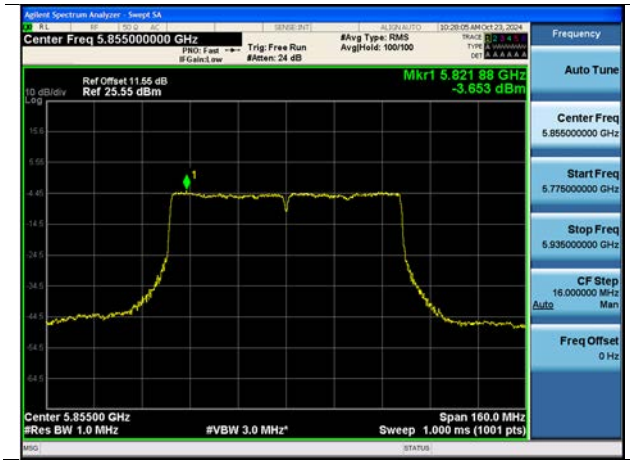
802.11 ac(VHT40) UNII 4 (Ch. 175)

ANT. 1	ANT. 2

802.11ac(VHT80) UNII 1-2C (Ch. 122)

802.11 ac(VHT80) UNII 3 (Ch. 155)

802.11 ac(VHT80) UNII 4 (Ch. 171)



ANT. 1	ANT. 2

802.11ac(VHT160) UNII 1-2C (Ch. 50)

802.11 ac(VHT160) UNII 3-4 (Ch. 163)

10.6 FREQUENCY STABILITY

Note:

1. All modes of operation were investigated and the worst case configuration results are reported.
2. 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.

10.6.1 802.11ac 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)	5250060.61	60.61
100%		-30	5250048.27	48.27
100%		-20	5250051.90	51.90
100%		-10	5250053.89	53.89
100%		0	5250056.38	56.38
100%		+10	5250060.41	60.41
100%		+30	5250064.23	64.23
100%		+40	5250068.39	68.39
100%		+50	5250069.58	69.58
High	4.45	+20	5250061.44	61.44
Low	3.70	+20	5250060.25	60.25

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)	5570063.61	63.61
100%		-30	5570046.23	46.23
100%		-20	5570051.95	51.95
100%		-10	5570052.90	52.90
100%		0	5570054.50	54.50
100%		+10	5570057.72	57.72
100%		+30	5570063.88	63.88
100%		+40	5570069.71	69.71
100%		+50	5570072.03	72.03
High	4.45	+20	5570061.20	61.20
Low	3.70	+20	5570060.56	60.56

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)	5815060.41	60.41
100%		-30	5815045.26	45.26
100%		-20	5815049.06	49.06
100%		-10	5815051.81	51.81
100%		0	5815054.13	54.13
100%		+10	5815057.29	57.29
100%		+30	5815065.73	65.73
100%		+40	5815066.63	66.63
100%		+50	5815070.49	70.49
High	4.45	+20	5815061.55	61.55
Low	3.70	+20	5815061.43	61.43

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)	5250062.54	62.54
100%		-30	5250048.93	48.93
100%		-20	5250050.52	50.52
100%		-10	5250054.23	54.23
100%		0	5250057.63	57.63
100%		+10	5250060.55	60.55
100%		+30	5250065.30	65.30
100%		+40	5250067.04	67.04
100%		+50	5250071.25	71.25
High	4.45	+20	5250060.54	60.54
Low	3.70	+20	5250061.10	61.10

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)	5570064.51	64.51
100%		-30	5570046.80	46.80
100%		-20	5570051.93	51.93
100%		-10	5570052.75	52.75
100%		0	5570054.39	54.39
100%		+10	5570060.10	60.10
100%		+30	5570066.31	66.31
100%		+40	5570067.29	67.29
100%		+50	5570070.87	70.87
High	4.45	+20	5570061.74	61.74
Low	3.70	+20	5570060.33	60.33

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)	5815062.26	62.26
100%		-30	5815045.66	45.66
100%		-20	5815051.61	51.61
100%		-10	5815053.48	53.48
100%		0	5815054.49	54.49
100%		+10	5815059.12	59.12
100%		+30	5815064.41	64.41
100%		+40	5815067.91	67.91
100%		+50	5815070.97	70.97
High	4.45	+20	5815061.55	61.55
Low	3.70	+20	5815059.81	59.81

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)	5250061.14	61.14
100%		-30	5250045.10	45.10
100%		-20	5250048.64	48.64
100%		-10	5250051.37	51.37
100%		0	5250054.74	54.74
100%		+10	5250059.15	59.15
100%		+30	5250064.22	64.22
100%		+40	5250068.24	68.24
100%		+50	5250072.67	72.67
High	4.45	+20	5250059.38	59.38
Low	3.70	+20	5250060.46	60.46

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)	5570062.53	62.53
100%		-30	5570046.26	46.26
100%		-20	5570050.63	50.63
100%		-10	5570053.73	53.73
100%		0	5570055.63	55.63
100%		+10	5570060.80	60.80
100%		+30	5570065.76	65.76
100%		+40	5570068.41	68.41
100%		+50	5570069.78	69.78
High	4.45	+20	5570060.84	60.84
Low	3.70	+20	5570059.42	59.42

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)	5815063.20	63.20
100%		-30	5815048.06	48.06
100%		-20	5815050.84	50.84
100%		-10	5815053.80	53.80
100%		0	5815055.99	55.99
100%		+10	5815059.76	59.76
100%		+30	5815063.02	63.02
100%		+40	5815066.98	66.98
100%		+50	5815069.23	69.23
High	4.45	+20	5815061.12	61.12
Low	3.70	+20	5815059.05	59.05

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)	5250062.76	62.76
100%		-30	5250046.50	46.50
100%		-20	5250051.65	51.65
100%		-10	5250051.14	51.14
100%		0	5250057.91	57.91
100%		+10	5250059.07	59.07
100%		+30	5250066.20	66.20
100%		+40	5250069.89	69.89
100%		+50	5250069.16	69.16
High	4.45	+20	5250059.35	59.35
Low	3.70	+20	5250059.37	59.37

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)	5570060.56	60.56
100%		-30	5570048.43	48.43
100%		-20	5570050.35	50.35
100%		-10	5570051.33	51.33
100%		0	5570057.61	57.61
100%		+10	5570057.22	57.22
100%		+30	5570064.16	64.16
100%		+40	5570067.90	67.90
100%		+50	5570070.53	70.53
High	4.45	+20	5570060.59	60.59
Low	3.70	+20	5570060.98	60.98

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)	5815062.36	62.36
100%		-30	5815045.50	45.50
100%		-20	5815050.38	50.38
100%		-10	5815051.25	51.25
100%		0	5815055.83	55.83
100%		+10	5815057.69	57.69
100%		+30	5815064.47	64.47
100%		+40	5815069.62	69.62
100%		+50	5815072.52	72.52
High	4.45	+20	5815061.09	61.09
Low	3.70	+20	5815060.84	60.84

10.7 STRADDLE CHANNEL

Test Description	Note
26 dB Bandwidth	1. [UNII 2C] 26 dB Bandwidth = 5725 MHz - Measured Frequency[MHz] 2. [UNII 3] 26 dB Bandwidth = Measured Frequency[MHz] -5725 MHz
6 dB Bandwidth	1. 6 dB Bandwidth = Measured Frequency[MHz] – 5725 MHz 2. Limit : > 0.5 MHz
Output Power	1. Limit(UNII2C) : 23.98 dBm or 11 dBm + 10 log B, (where B is the 26 dB emission bandwidth in megahertz.) 2. Limit(UNII 3) : 30.00 dBm 3. Total Power (dBm) = Measured Value (dBm) + Duty Cycle Factor (dB)
Power Spectral Density	1. Limit(UNII 2C) : 11.0 dBm/MHz 2. Limit(UNII 3) : 30.0 dBm/500kHz 3. Total PSD (dBm) = Measured Value (dBm) + Duty Cycle Factor (dB)

10.7.1 Ant.1

Mode	Worstcase Datarate	Band	Freq. [MHz]	CH.	26dB BW [MHz]	6dB BW [MHz]	Total Power [dBm]	Total PSD [dBm/MHz]
802.11a	6M	UNII2C	5720	144	15.48	-	13.99	3.743
802.11n(HT20)	MCS0				15.88	-	13.89	3.418
802.11ac(VHT20)	MCS0				15.80	-	13.92	3.590
802.11a	6M	UNII3	5720	144	5.40	3.20	7.96	0.915
802.11n(HT20)	MCS0				5.52	3.80	8.52	0.267
802.11ac(VHT20)	MCS0				5.48	3.80	8.48	0.377

Mode	Worstcase Datarate	Band	Freq. [MHz]	CH.	26dB BW [MHz]	6dB BW [MHz]	Total Power [dBm]	Total PSD [dBm/MHz]
802.11n(HT40)	MCS0	UNII2C	5710	142	36.44	-	14.40	0.110
802.11ac(VHT40)	MCS0				36.28	-	14.18	0.538
802.11n(HT40)	MCS0	UNII3	5710	142	6.28	3.24	4.24	-3.221
802.11ac(VHT40)	MCS0				6.28	3.24	4.07	-3.171

Mode	Worstcase Datarate	Band	Freq. [MHz]	CH.	26dB BW [MHz]	6dB BW [MHz]	Total Power [dBm]	Total PSD [dBm/MHz]
802.11ac(VHT80)	MCS0	UNII2C	5690	138	82.20	-	11.96	-5.315
802.11ac(VHT80)	MCS0	UNII3	5690	138	9.96	3.24	-1.69	-8.788

10.7.2 Ant.2

Mode	Worstcase Datarate	Band	Freq. [MHz]	CH.	26dB BW [MHz]	6dB BW [MHz]	Total Power [dBm]	Total PSD [dBm/MHz]
802.11a	6M	UNII2C	5720	144	15.52	-	13.95	3.517
802.11n(HT20)	MCS0				15.64	-	13.90	3.311
802.11ac(VHT20)	MCS0				15.92	-	13.87	3.351
802.11a	6M	UNII3	5720	144	5.44	3.20	8.04	0.825
802.11n(HT20)	MCS0				5.48	3.84	8.48	0.369
802.11ac(VHT20)	MCS0				5.44	3.84	8.52	0.658

Mode	Worstcase Datarate	Band	Freq. [MHz]	CH.	26dB BW [MHz]	6dB BW [MHz]	Total Power [dBm]	Total PSD [dBm/MHz]
802.11n(HT40)	MCS0	UNII2C	5710	142	36.36	-	14.24	-0.181
802.11ac(VHT40)	MCS0				36.36	-	14.16	0.338
802.11n(HT40)	MCS0	UNII3	5710	142	5.96	3.24	4.35	-3.117
802.11ac(VHT40)	MCS0				6.20	3.24	4.24	-3.007

Mode	Worstcase Datarate	Band	Freq. [MHz]	CH.	26dB BW [MHz]	6dB BW [MHz]	Total Power [dBm]	Total PSD [dBm/MHz]
802.11ac(VHT80)	MCS0	UNII2C	5690	138	81.24	-	11.96	-5.367
802.11ac(VHT80)	MCS0	UNII3	5690	138	9.80	3.24	-1.03	-8.364

[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**
	

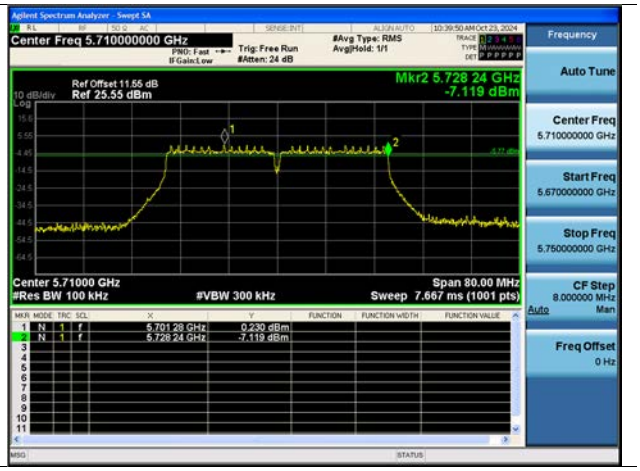
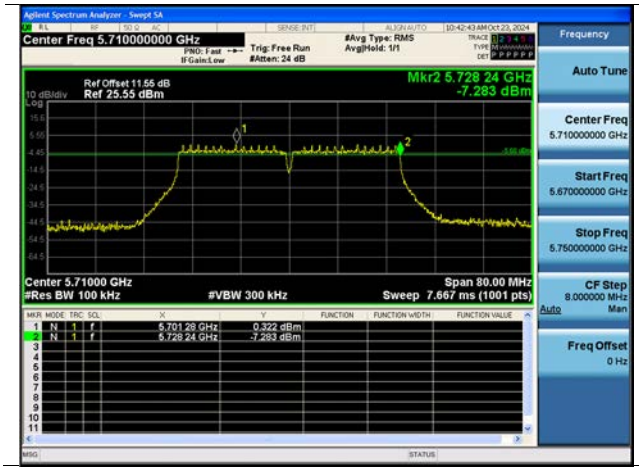
[ANT. 2]

▣ Test Plots (26 dB Bandwidth)

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**
	

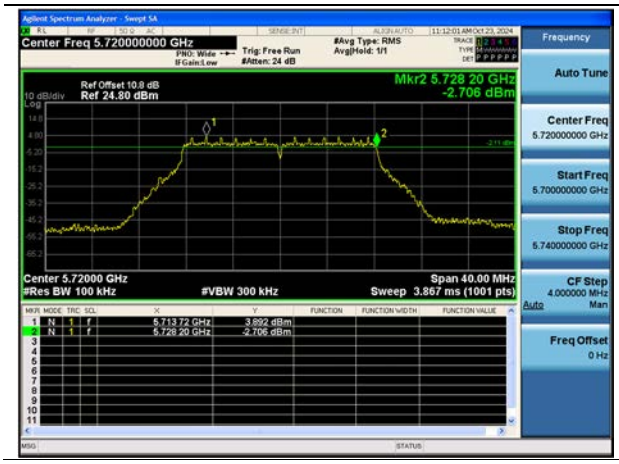
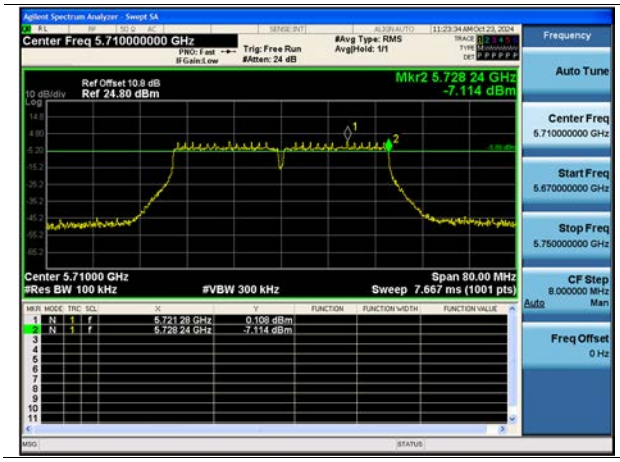
[ANT. 1]

▣ Test Plots(UNII 3 Band 6 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**
	

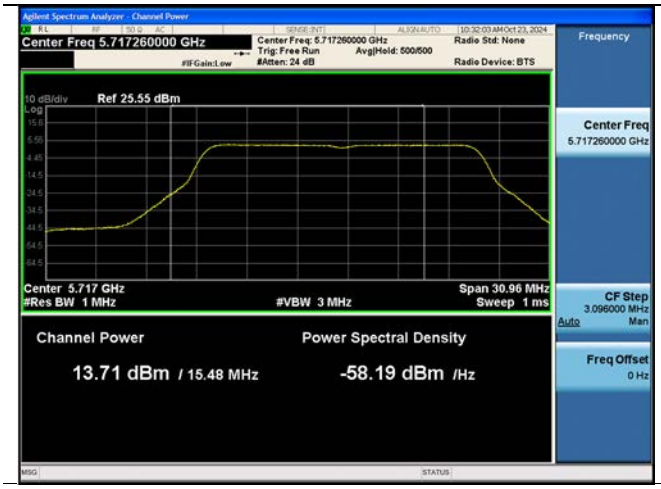
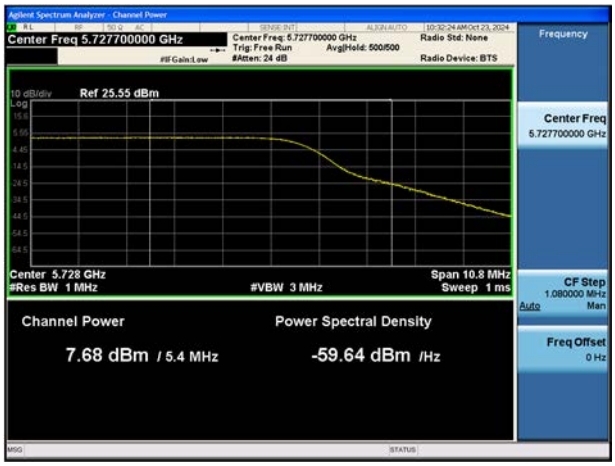
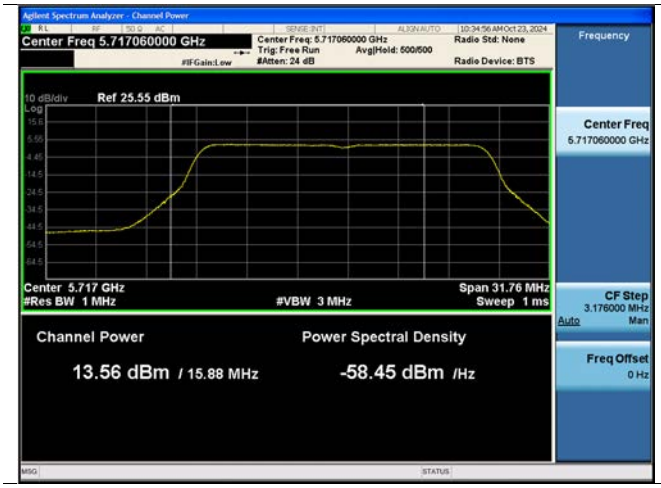
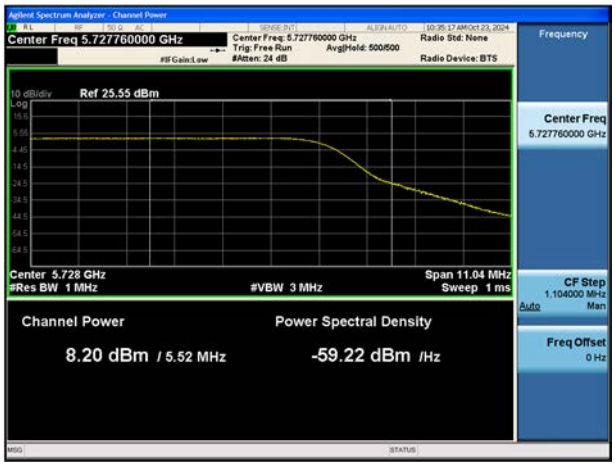
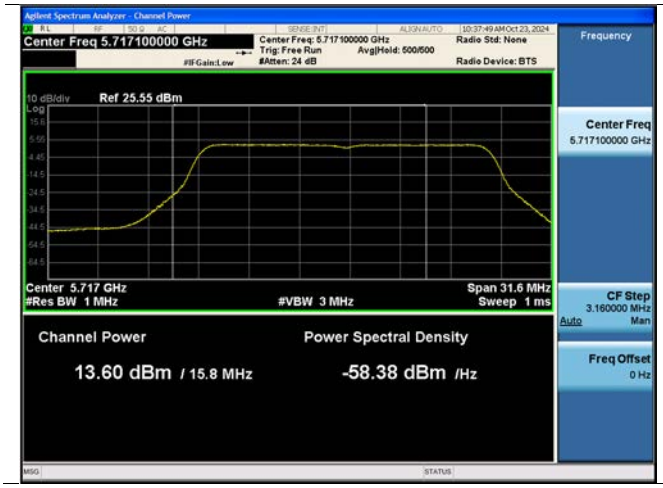
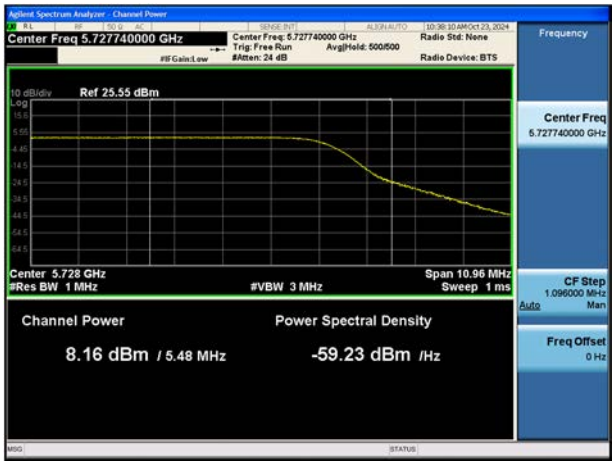
[ANT. 2]

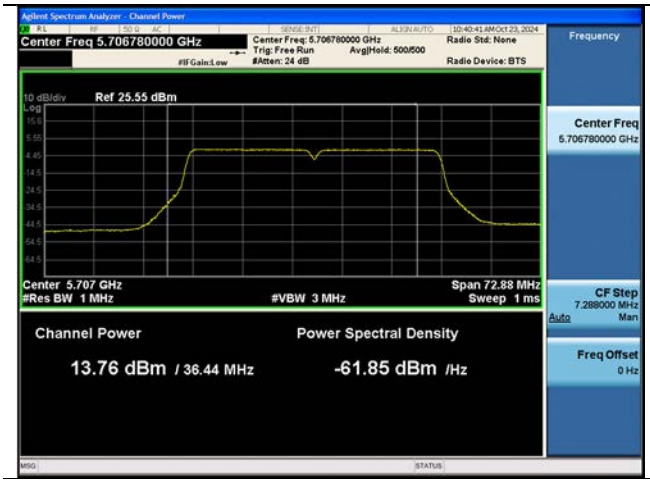
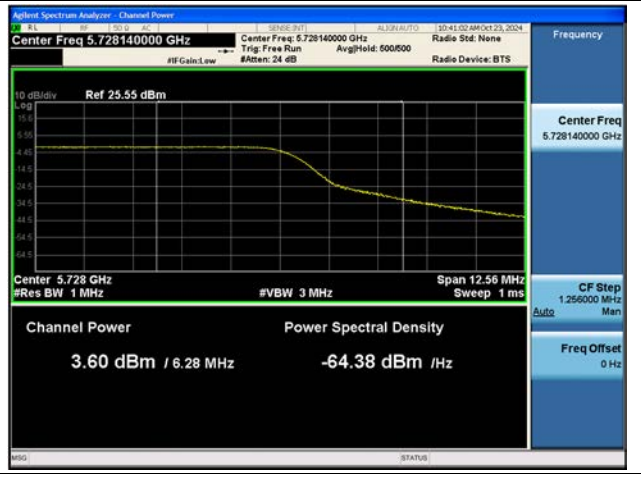
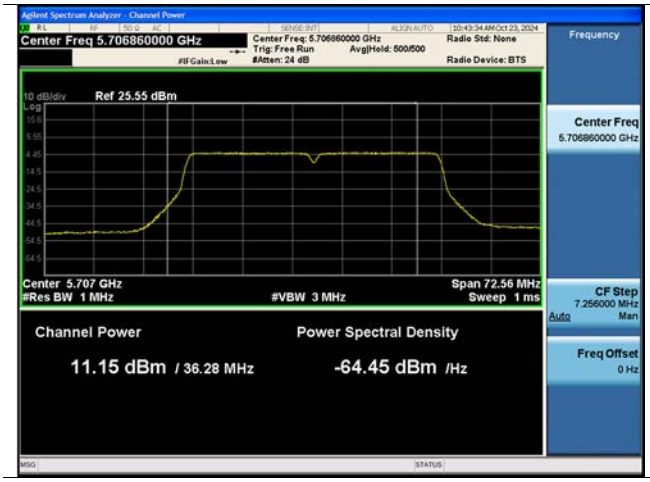
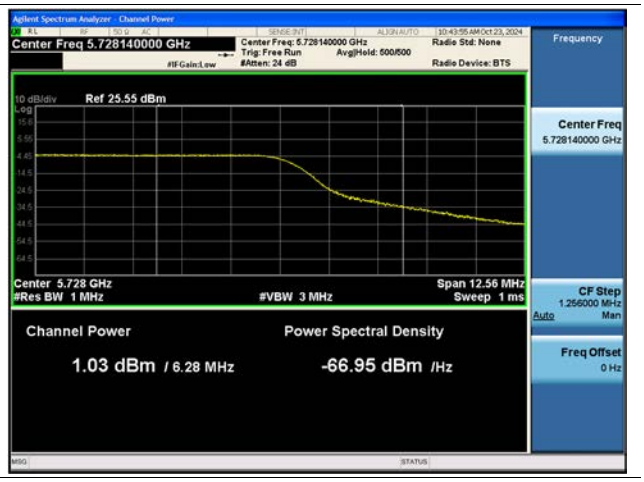
▣ Test Plots(UNII 3 Band 6 dB Bandwidth)

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. 1]

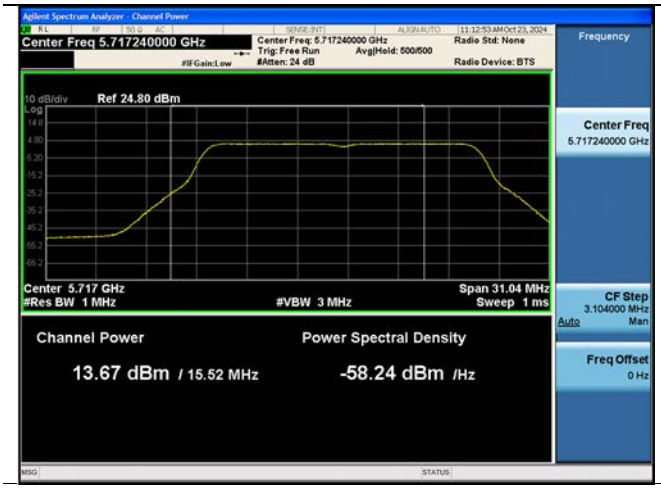
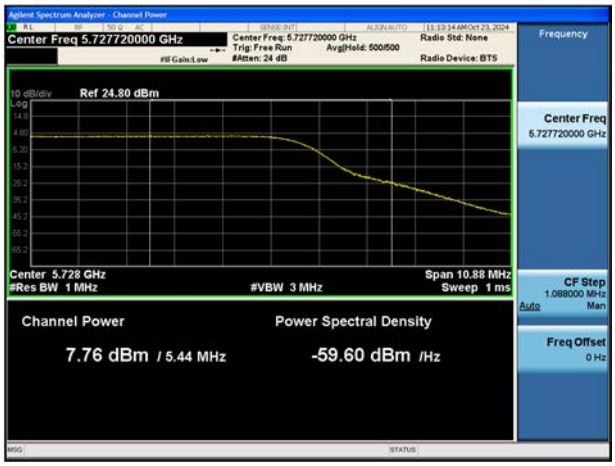
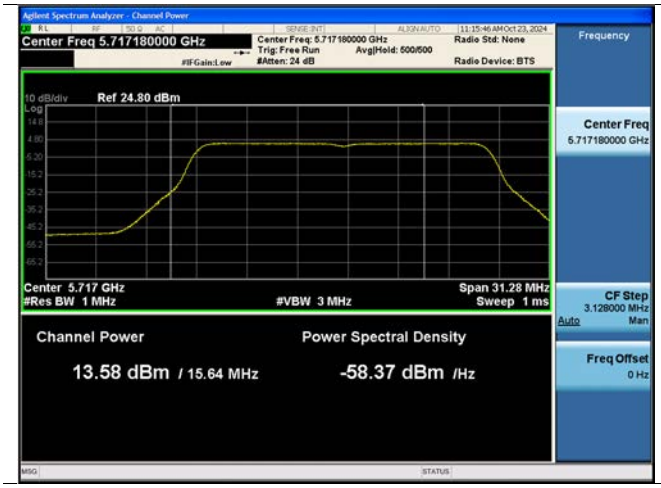
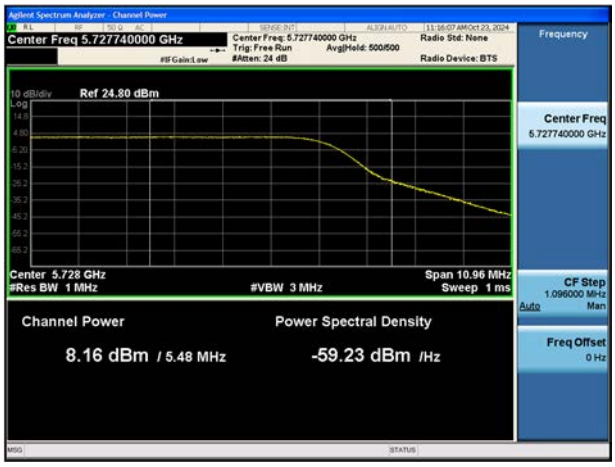
▣ Test Plots(Output Power)

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(Output Power)

802.11a UNII 2C Band	802.11a UNII 3 Band
	
802.11n(HT20) UNII 2C Band	**802.11n(HT20) UNII 3 Band**
	
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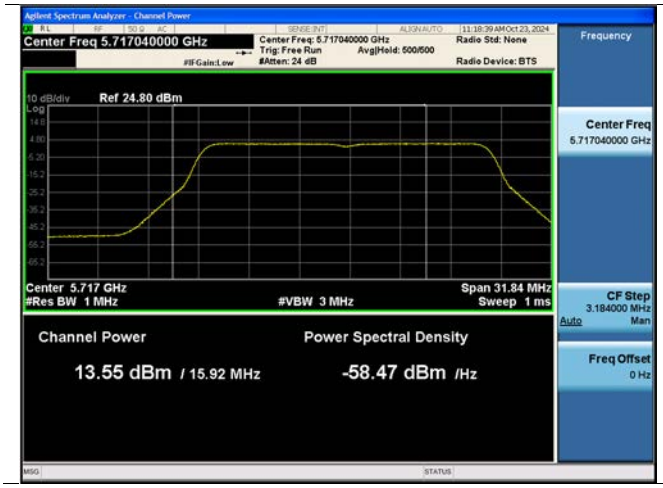	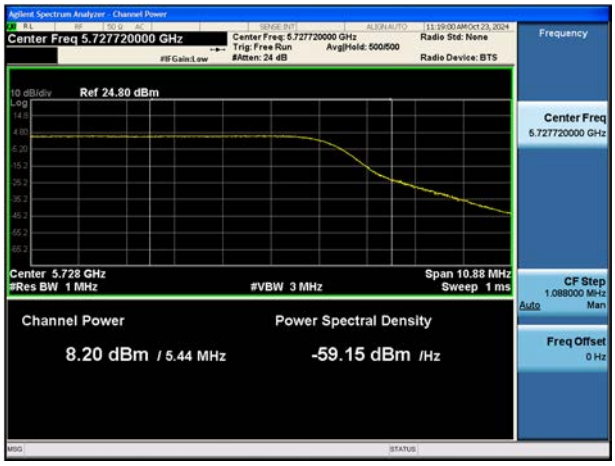

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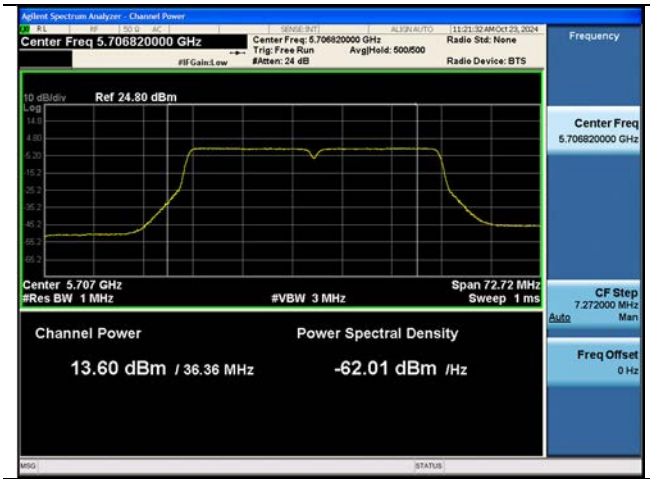	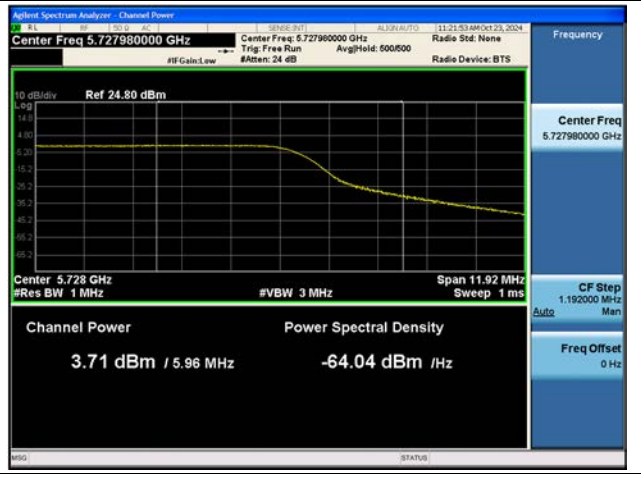
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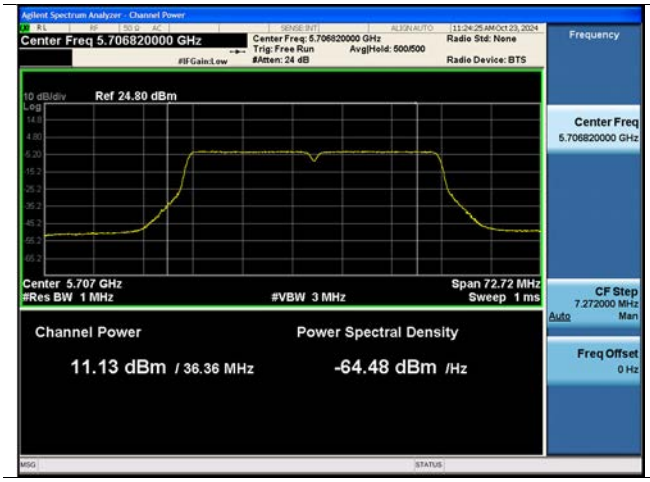
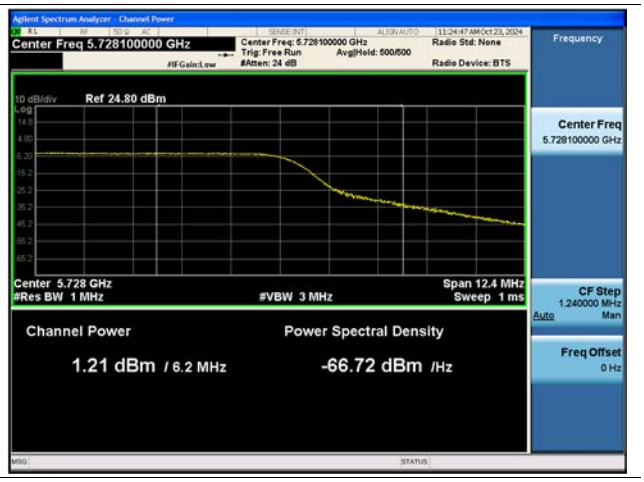
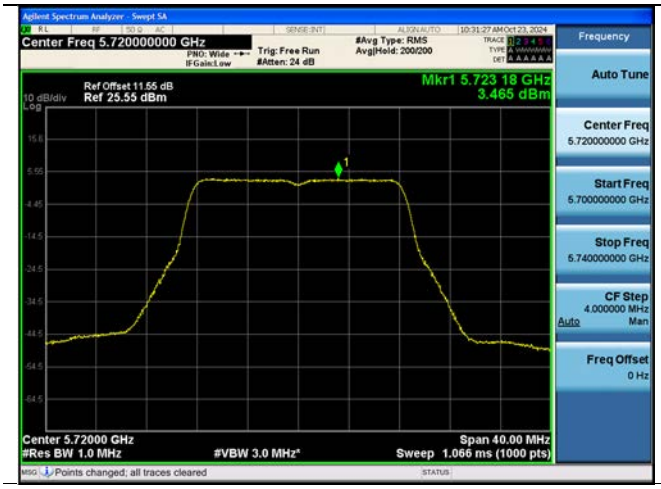
	
802.11ac(VHT80) UNII 2C Band	**802.11ac(VHT80) UNII 3 Band**
	

[ANT. 1]

▣ Test Plots(Power Spectral Density)

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**