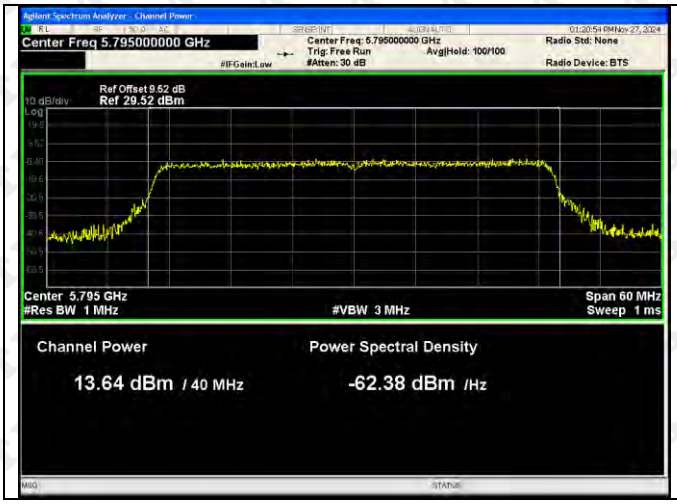
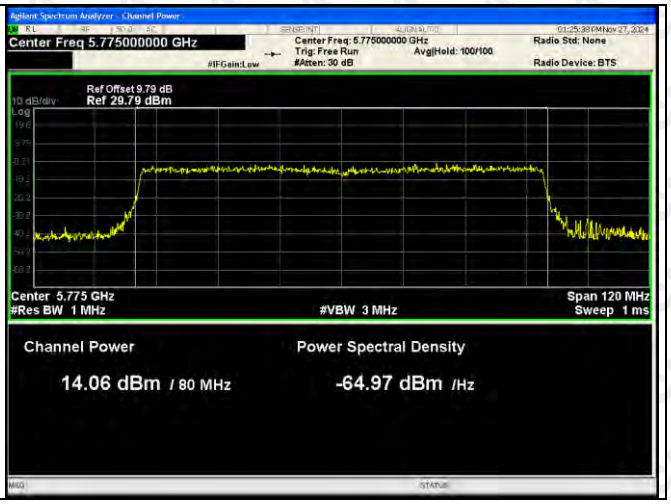
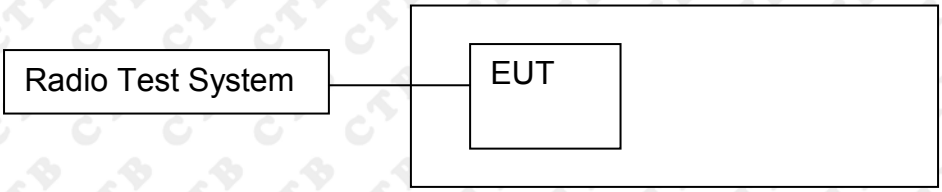

Agilent Spectrum Analyzer - Channel Power
Center Freq 5.795000000 GHz
Center Freq: 5.795000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.52 dB
10 dB/div
Ref 29.52 dBm
Center 5.795 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
13.64 dBm / 40 MHz
Power Spectral Density
-62.38 dBm /Hz


Agilent Spectrum Analyzer - Channel Power
Center Freq 5.775000000 GHz
Center Freq: 5.775000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Ref Offset 9.79 dB
10 dB/div
Ref 29.79 dBm
Center 5.775 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
14.06 dBm / 80 MHz
Power Spectral Density
-64.97 dBm /Hz

10. EMISSION BANDWIDTH& OCCUPIED BANDWIDTH

10.1 Block Diagram Of Test Setup



10.2 Limits

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

10.3 Test Procedure

According to KDB789033 D02v02r01 sectionE, the following is the measurement procedure.

1. Emission Bandwidth (EBW)
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) 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%.
2. Minimum Emission Bandwidth for the band 5.725−5.85 GHz
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 kHz for the band 5.725−5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 * RBW.
c) Detector = Peak.

d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) 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: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described in this section. For devices that use channel aggregation refer to III.A and III.C for determining emission bandwidth.

D. 99% Occupied Bandwidth

The 99% occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. Measurement of the 99% occupied bandwidth is *required* only as a condition for using the optional band-edge measurement techniques described in II.G.3.d). Measurements of 99% occupied bandwidth may also optionally be used in lieu of the EBW to define the minimum frequency range over which the 789033 D02 General UNII Test Procedures New Rules v02r01 Page 4 spectrum is integrated when measuring maximum conducted output power as described in II.E. However, the EBW must be measured to determine bandwidth dependent limits on maximum conducted output power in accordance with Section 15.407(a).
The following procedure shall be used for measuring (99%) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.

2. Set span = 1.5 times to 5.0 times the OBW.

3. Set RBW = 1% to 5% of the OBW

4. Set VBW ≥ 3 * RBW

5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

6. Use the 99% power bandwidth function of the instrument (if available).

7. If the instrument does not have a 99% power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

10.4 Test Results

Test mode Ant 1	Test Channel (MHz)	26dB Bandwidth (MHz)
802.11a	5180	19.252
	5200	19.819
	5240	19.702
802.11ac20	5180	21.53
	5200	21.44
	5240	21.769
802.11ac40	5190	40.79
	5230	40.09
802.11ac80	5210	81.157
802.11n(HT20)	5180	20.037
	5200	20.183
	5240	20.753
802.11n(HT40)	5190	39.14
	5230	39.269
802.11ax20	5180	21.447
	5200	21.77
	5240	21.871
802.11ax40	5190	40.964
	5230	40.844
802.11ax80	5210	81.238

Test mode Ant 2	Test Channel (MHz)	26dB Bandwidth (MHz)
802.11a	5180	19.596
	5200	20.077
	5240	19.747
802.11ac20	5180	21.245
	5200	21.463
	5240	21.268
802.11ac40	5190	40.078
	5230	39.693
802.11ac80	5210	80.352
802.11n(HT20)	5180	20.709
	5200	20.631
	5240	20.741
802.11n(HT40)	5190	39.527
	5230	39.433
802.11ax20	5180	21.611
	5200	21.782
	5240	21.481
802.11ax40	5190	41.195
	5230	41.149
802.11ax80	5210	80.759

5725-5850 MHz

Test mode Ant 1	Test Channel (MHz)	6dB Bandwidth (MHz)	Result
802.11a	5745	16.456	Pass
	5785	16.479	Pass
	5825	16.478	Pass
802.11ac20	5745	17.773	Pass
	5785	17.732	Pass
	5825	17.706	Pass
802.11ac40	5755	36.162	Pass
	5795	36.456	Pass
802.11ac80	5775	76.544	Pass
802.11n(HT20)	5745	17.723	Pass
	5785	17.668	Pass
	5825	17.734	Pass
802.11n(HT40)	5755	35.816	Pass
	5795	35.79	Result
802.11ax20	5745	19.026	Pass
	5785	19.082	Pass
	5825	18.938	Pass
802.11ax40	5755	37.923	Pass
	5795	37.996	Pass
802.11ax80	5775	73.848	Pass

Test mode Ant 2	Test Channel (MHz)	6dB Bandwidth (MHz)	Result
802.11a	5745	16.358	Pass
	5785	16.312	Pass
	5825	16.323	Pass
802.11ac20	5745	17.739	Pass
	5785	17.662	Pass
	5825	17.739	Pass
802.11ac40	5755	36.451	Pass
	5795	36.415	Pass
802.11ac80	5775	76.541	Pass
802.11n(HT20)	5745	17.71	Pass
	5785	17.728	Pass
	5825	17.724	Pass
802.11n(HT40)	5755	36.439	Pass
	5795	36.449	Result
802.11ax20	5745	18.996	Pass
	5785	18.913	Pass
	5825	19.026	Pass
802.11ax40	5755	37.971	Pass
	5795	37.956	Pass
802.11ax80	5775	78.094	Pass

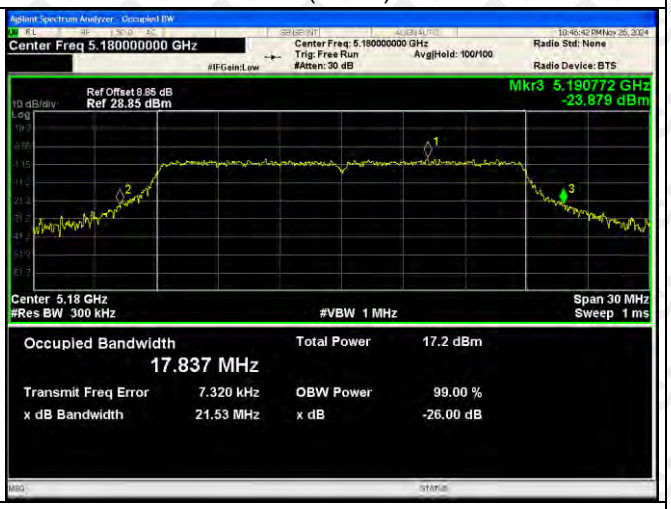
Test Graph ANT 1

802.11a-5180

802.11a-5200

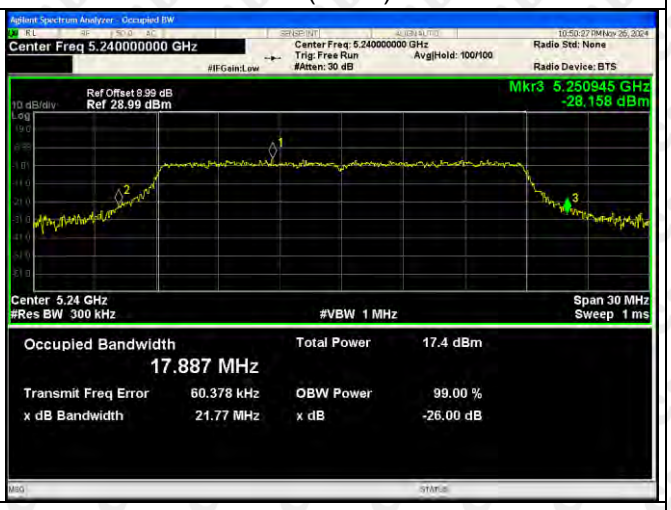
802.11a-5240

802.11ac(VH20)-5180



802.11ac(VH20)-5200

802.11ac(VH20)-5240

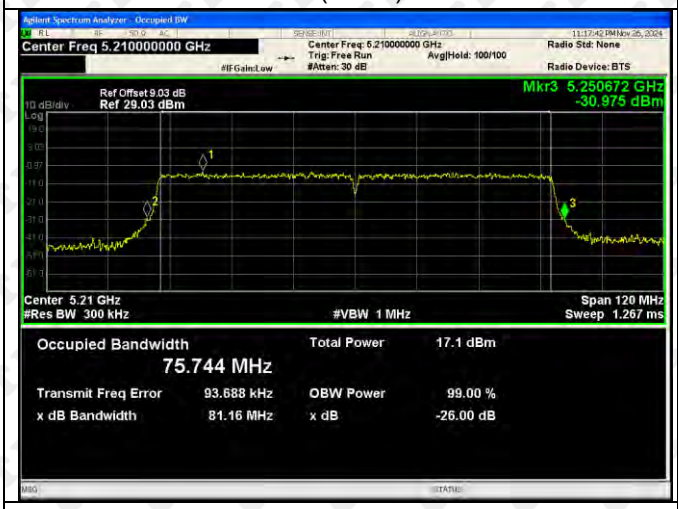


802.11ac(VH40)-5190

802.11ac(VH40)-5230

802.11ac(VH80)-5210

802.11n(HT20)-5180



802.11n(HT20)-5200

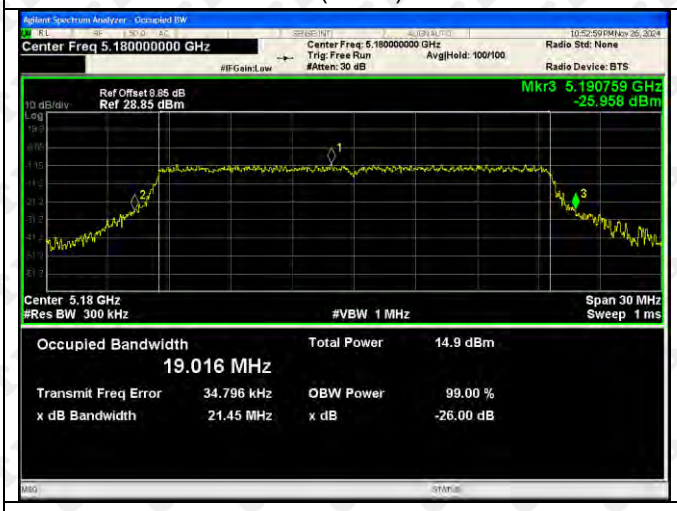
802.11n(HT20)-5240

802.11n(HT40)-5190

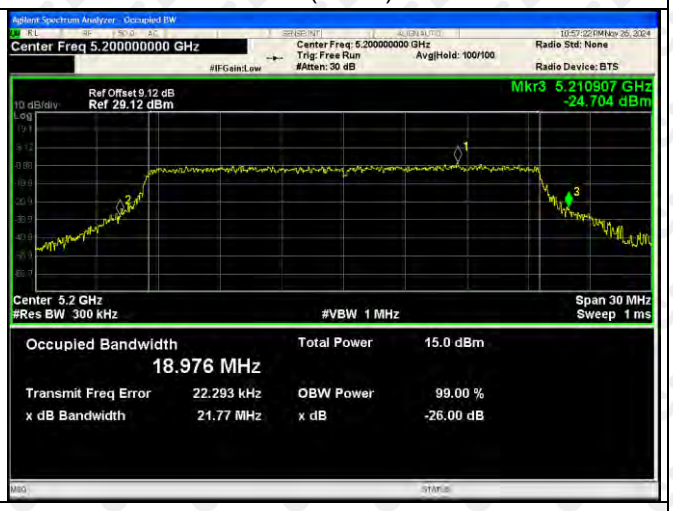
802.11n(HT40)-5230

802.11ax(VH20)-5180

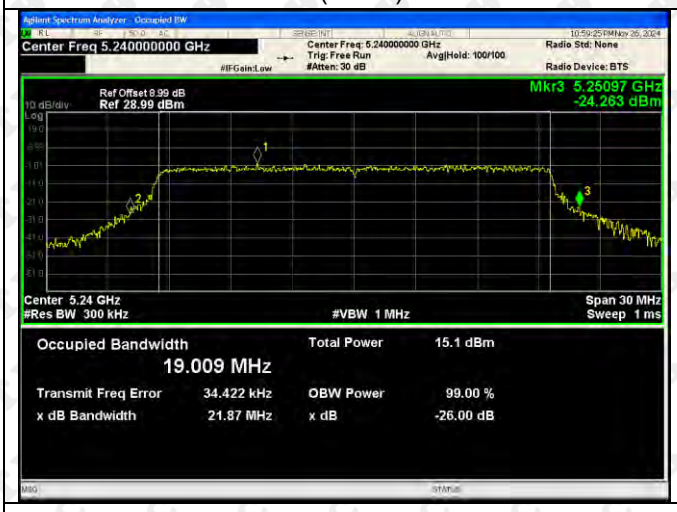
802.11ax(VH20)-5200



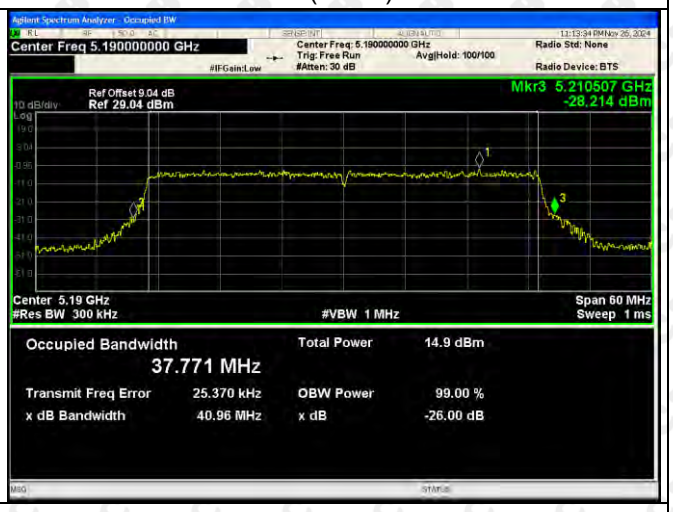
802.11ax(VH20)-5240



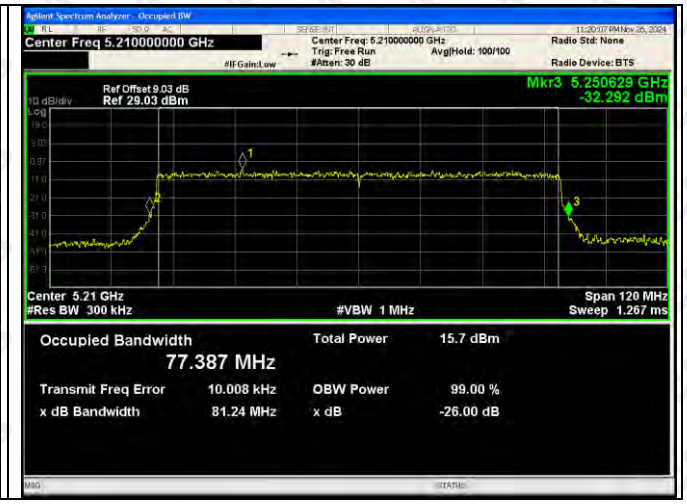
802.11ax(VH40)-5190



802.11ax(VH40)-5230



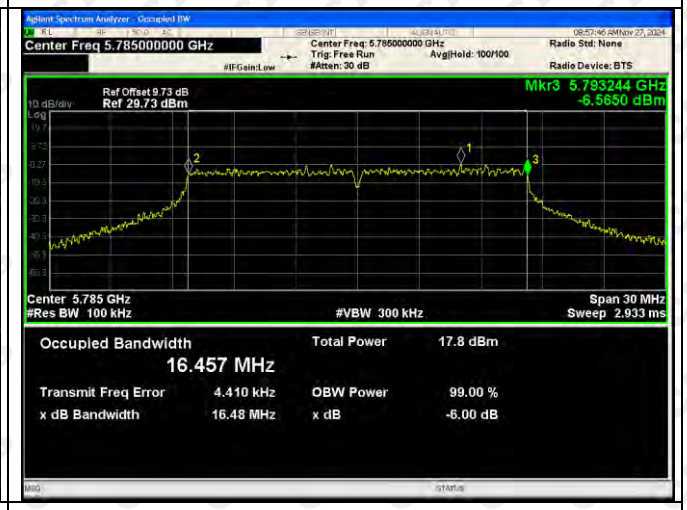
802.11ax(VH80)-5210



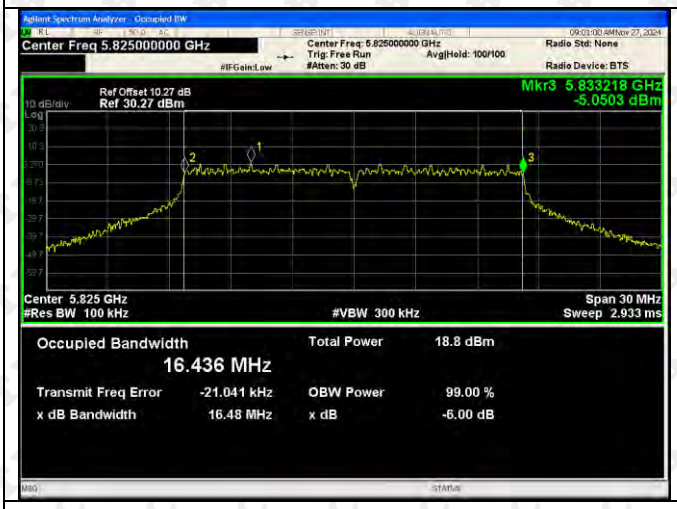
ANT1:
5725-5850MHz

802.11a-5745

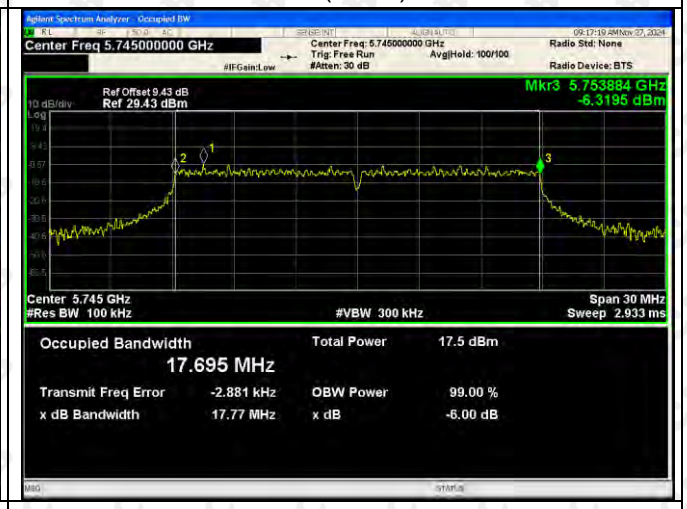
802.11a-5785



802.11a-5825



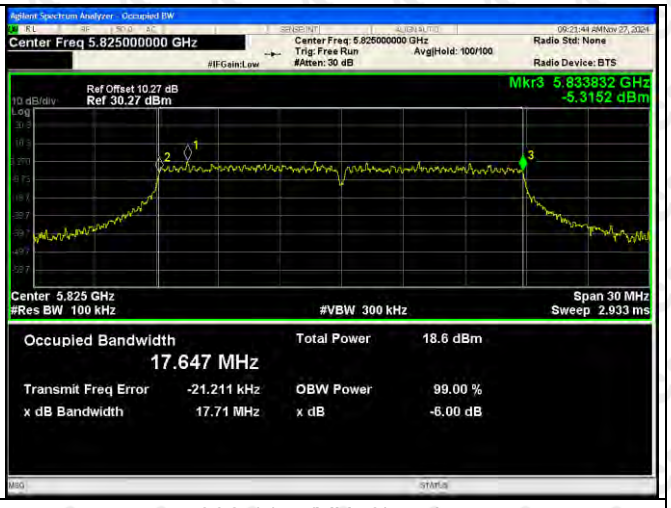
802.11ac(VH20)-5745



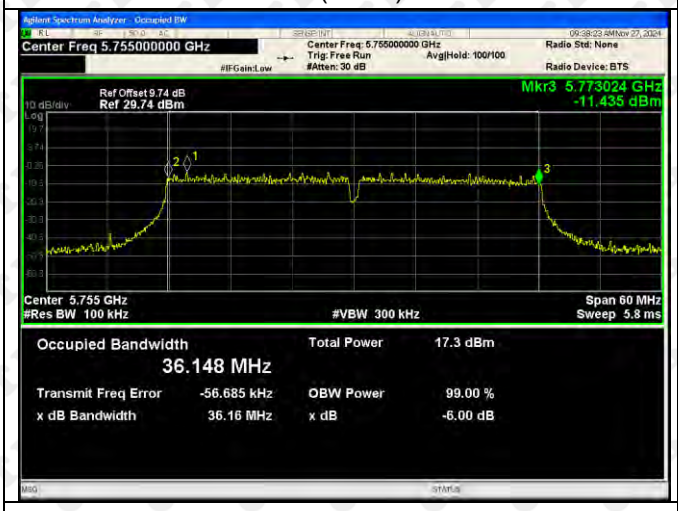
802.11ac(VH20)-5785

802.11ac(VH20)-5825

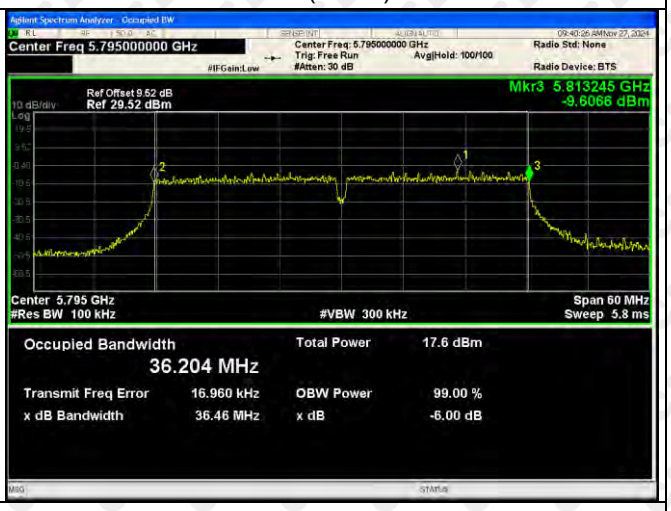
802.11ac(VH40)-5755



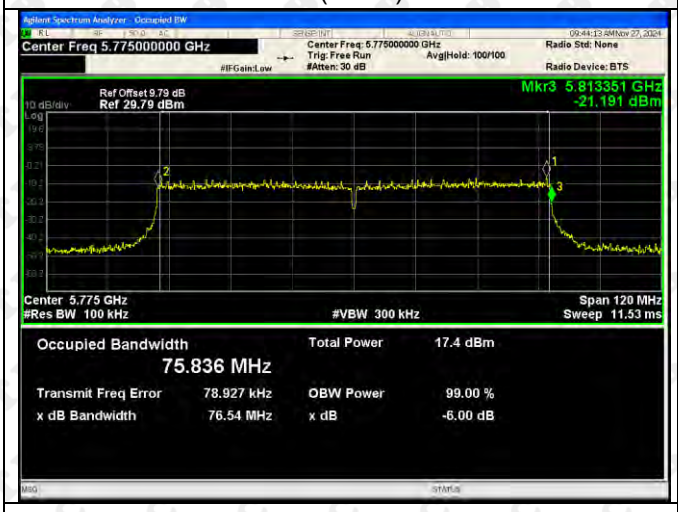
802.11ac(VH40)-5795



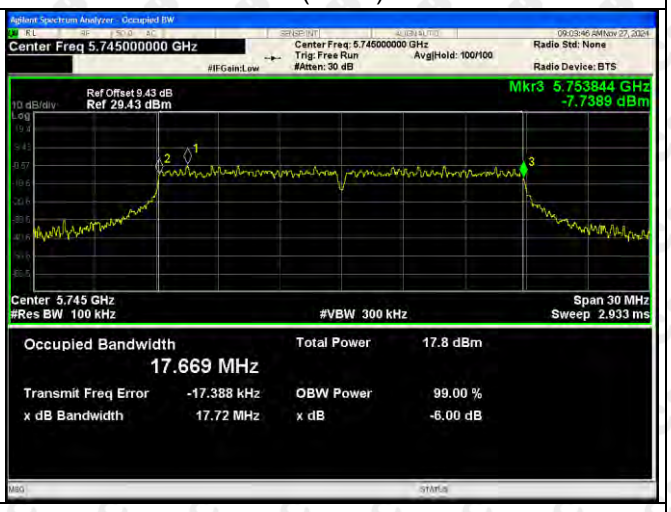
802.11ac(VH80)-5775



802.11n(HT20)-5745



802.11n(HT20)-5785



802.11n(HT20)-5825

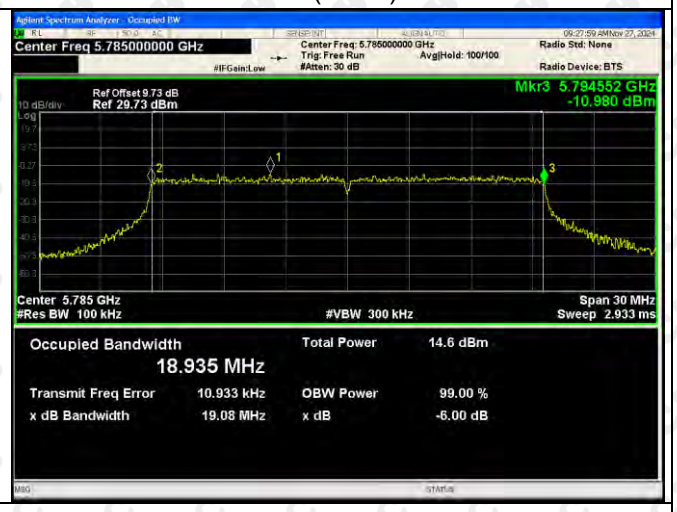
5802.11n(HT40)-5755

802.11n(HT40)-5795

802.11ax(VH20)-5745

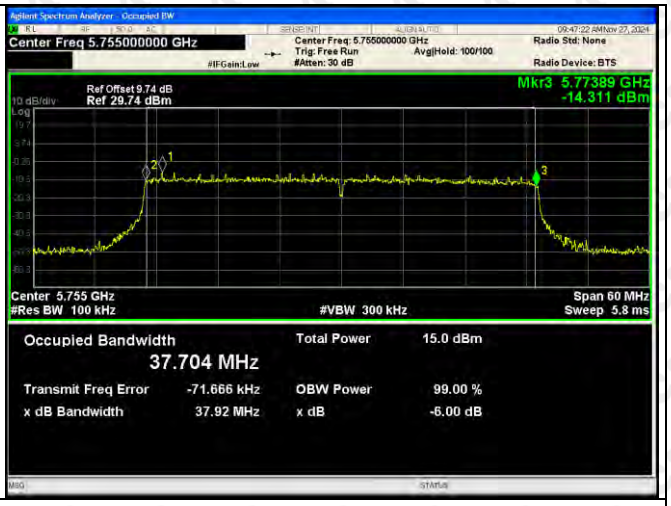
802.11ax(VH20)-5785

802.11ax(VH20)-5825

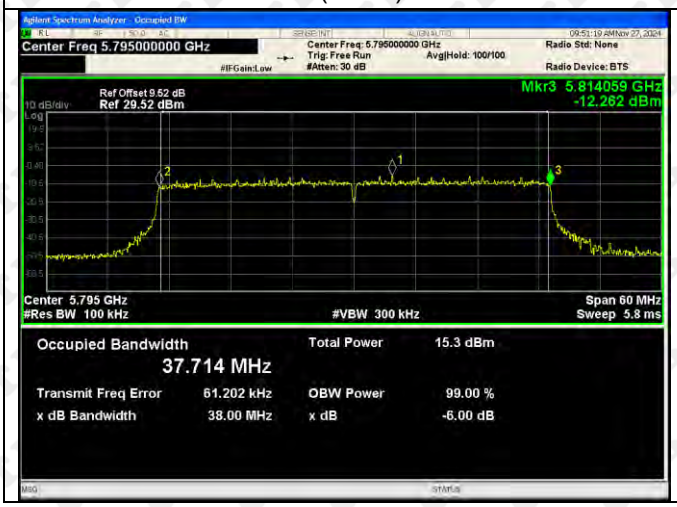


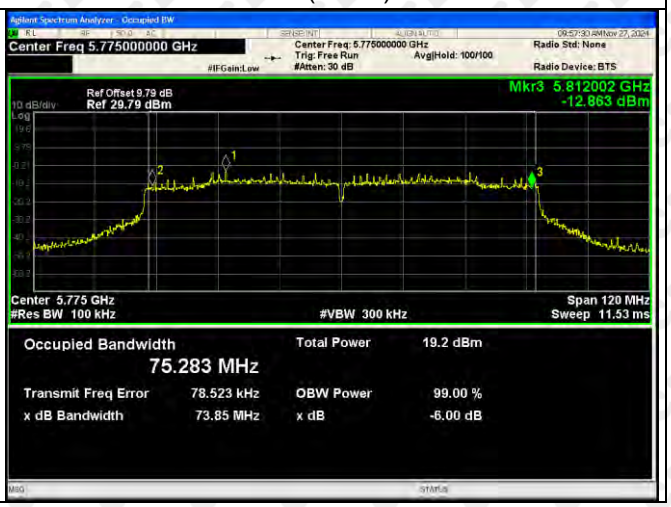
802.11ax(VH40)-5755

802.11ax(VH40)-5795



802.11ax(VH80)-5775

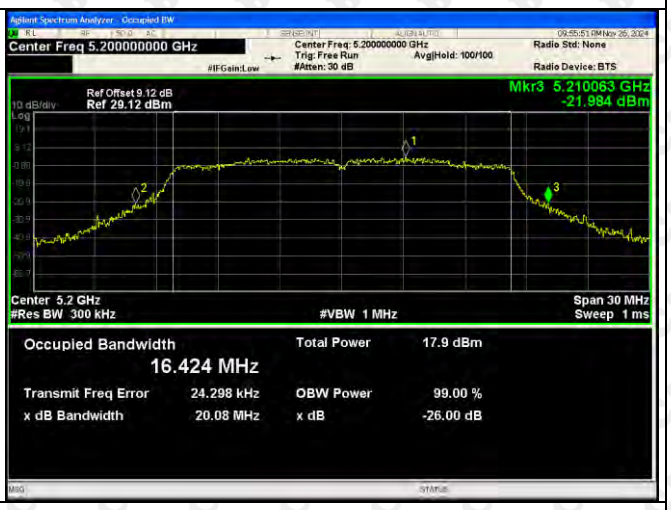




Test Graph ANT 2

802.11a-5180

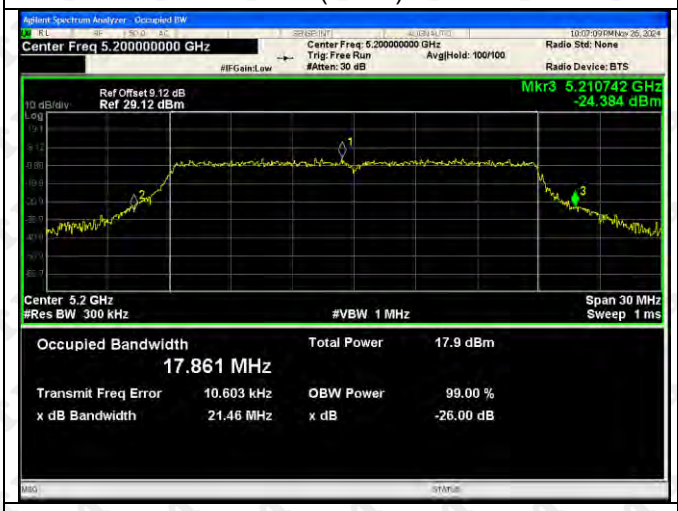
802.11a-5200



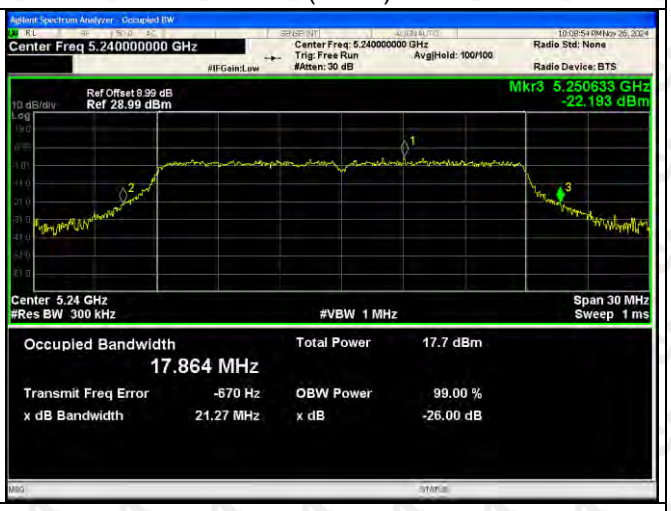
802.11a-5240

802.11ac(VH20)-5180

802.11ac(VH20)-5200



802.11ac(VH20)-5240

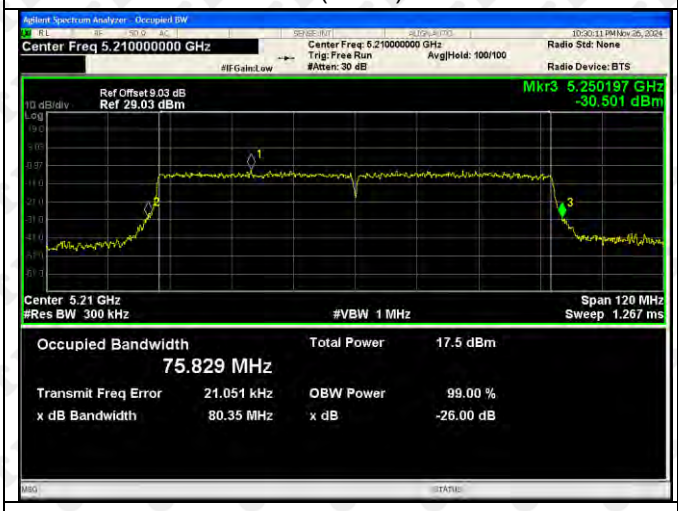


802.11ac(VH40)-5190

802.11ac(VH40)-5230

802.11ac(VH80)-5210

802.11n(HT20)-5180



802.11n(HT20)-5200

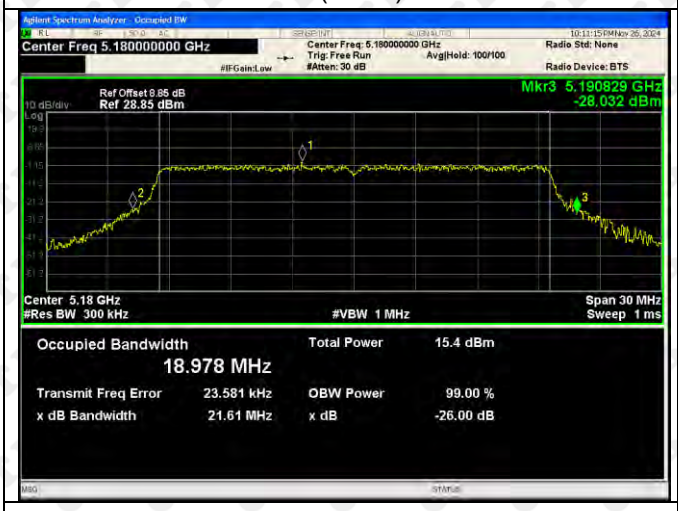
802.11n(HT20)-5240

802.11n(HT40)-5190

802.11n(HT40)-5230

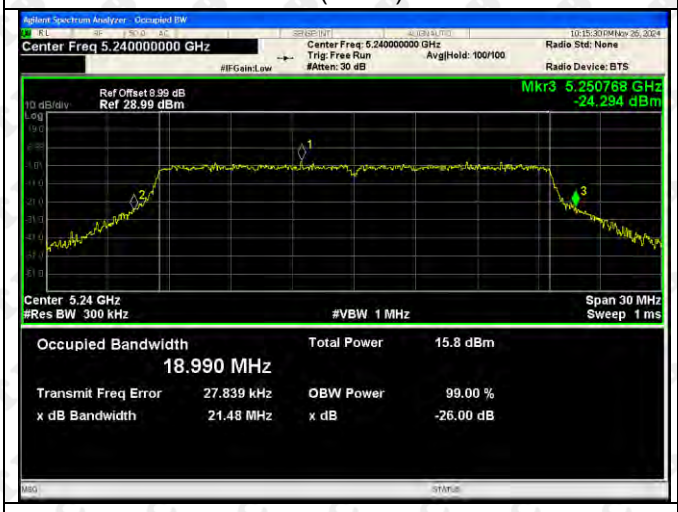
802.11ax(VH20)-5180

802.11ax(VH20)-5200

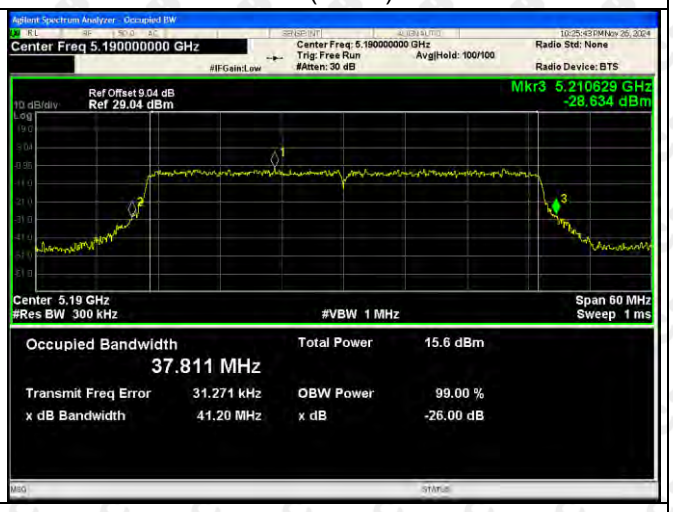


802.11ax(VH20)-5240

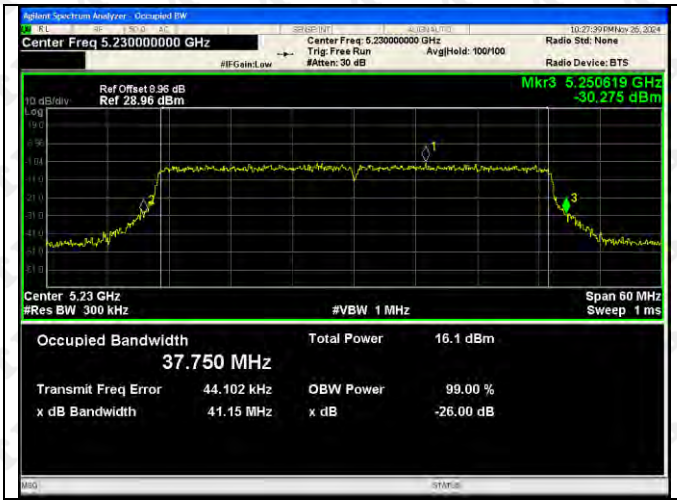
802.11ax(VH40)-5190

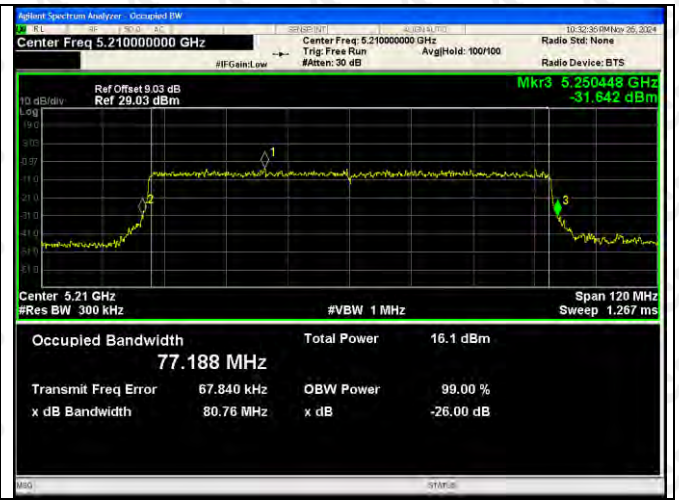


802.11ax(VH40)-5230



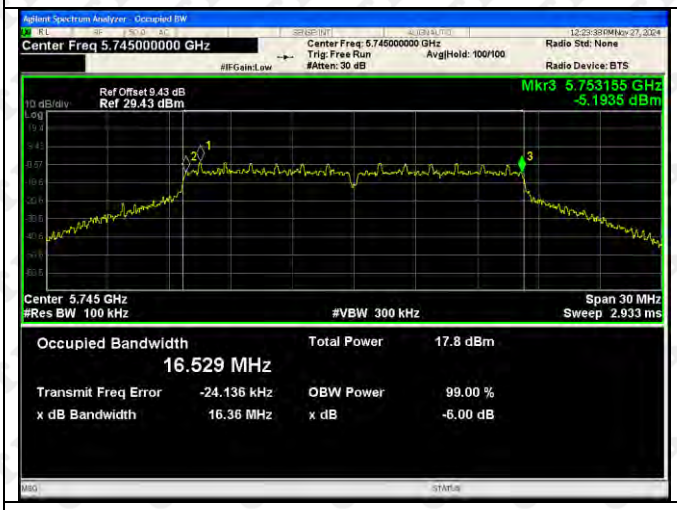
802.11ax(VH80)-5210





ANT2:
5725-5850MHz

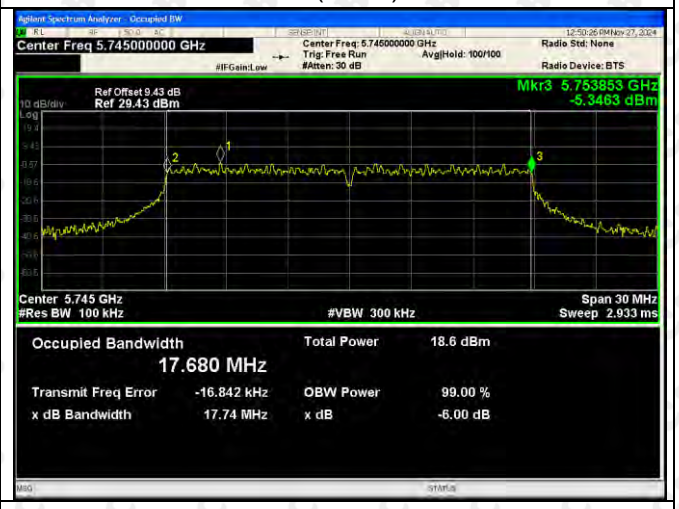
802.11a-5745



802.11a-5785

802.11a-5825

802.11ac(VH20)-5745

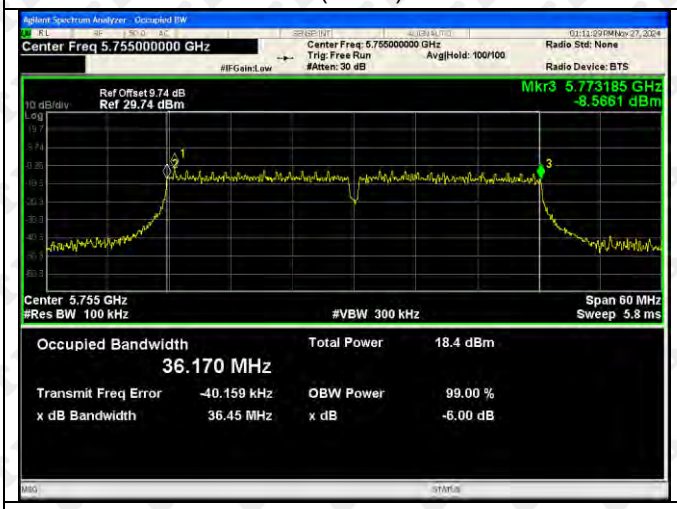


802.11ac(VH20)-5785

802.11ac(VH20)-5825

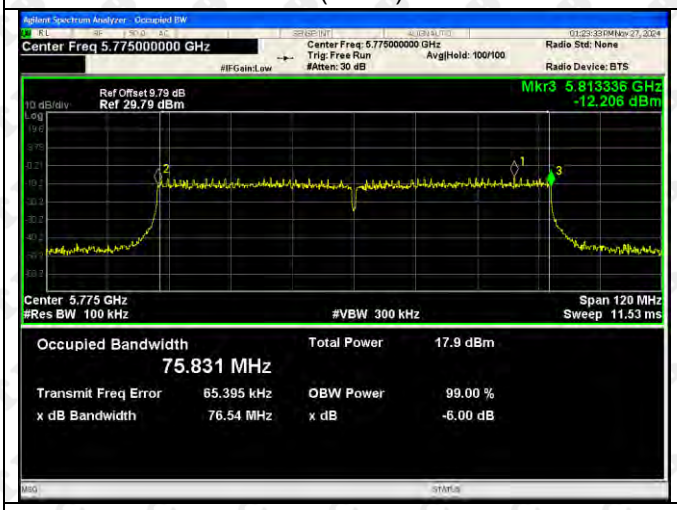
802.11ac(VH40)-5755

802.11ac(VH40)-5795



802.11ac(VH80)-5775

802.11n(HT20)-5745



802.11n(HT20)-5785

802.11n(HT20)-5825

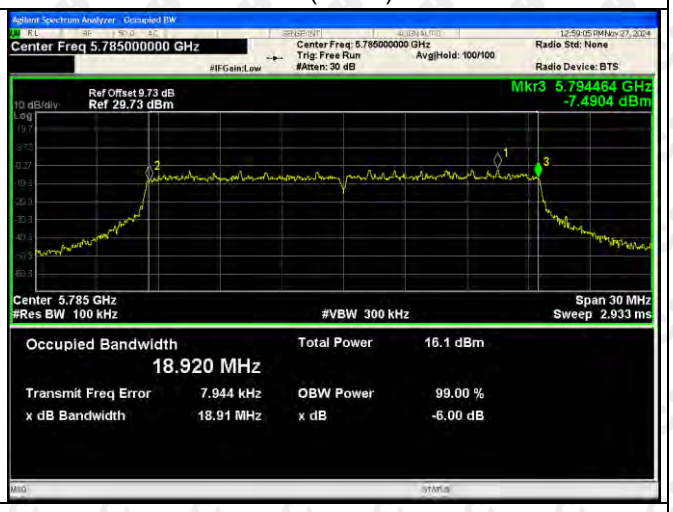
5802.11n(HT40)-5755

802.11n(HT40)-5795

802.11ax(VH20)-5745

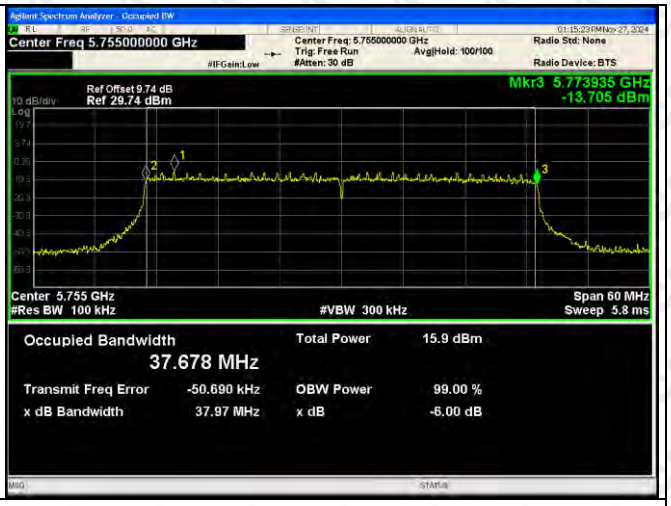
802.11ax(VH20)-5785

802.11ax(VH20)-5825

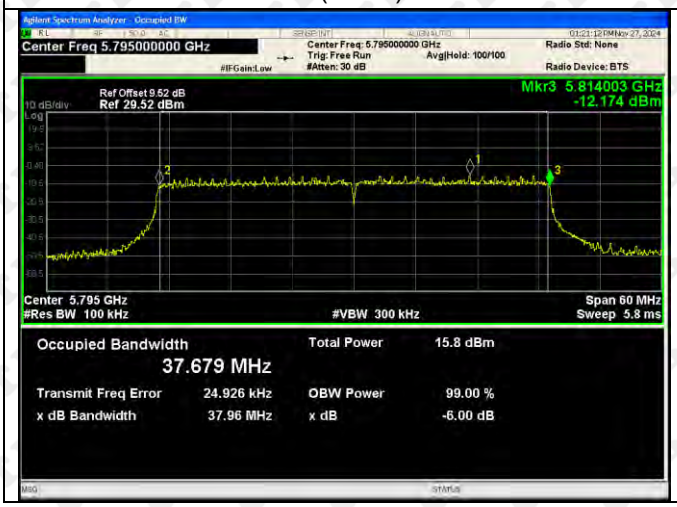


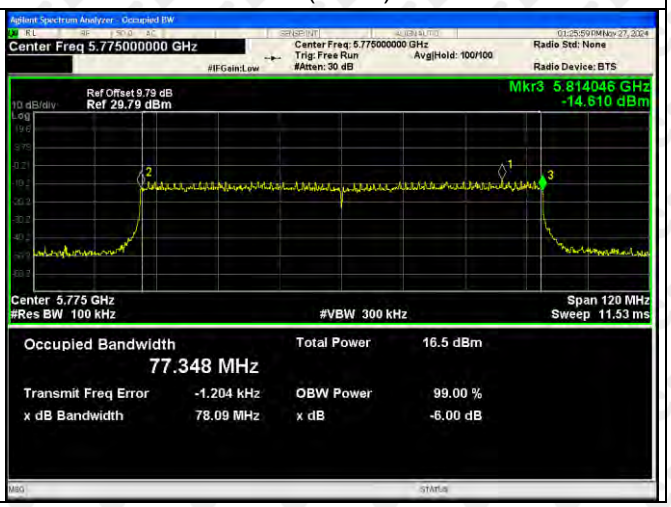
802.11ax(VH40)-5755

802.11ax(VH40)-5795



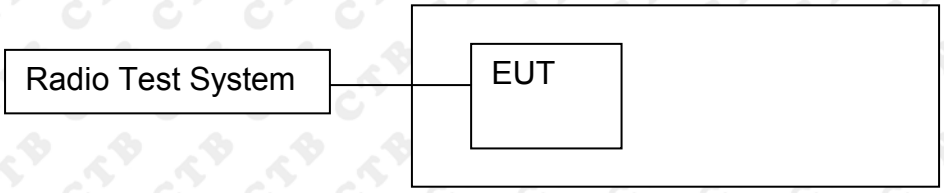
802.11ax(VH80)-5775





11. POWER SPECTRAL DENSITY

11.1 Block Diagram Of Test Setup



11.2 Limit

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

11.3 Test procedure

According to KDB789033 D02v02r01 sectionE, the following is the measurement procedure.

For devices operating in the bands 5.15−5.25 GHz, 5.25−5.35 GHz, and 5.47−5.725 GHz, the preceding procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725−5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:
a) Set RBW ≥ 1/*T*, where *T* is defined in II.B.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the

measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.
Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the II.F.5.c) and II.F.5.d), since RBW=100 kHz is available on nearly all spectrum analyzers.

11.4 Test Result

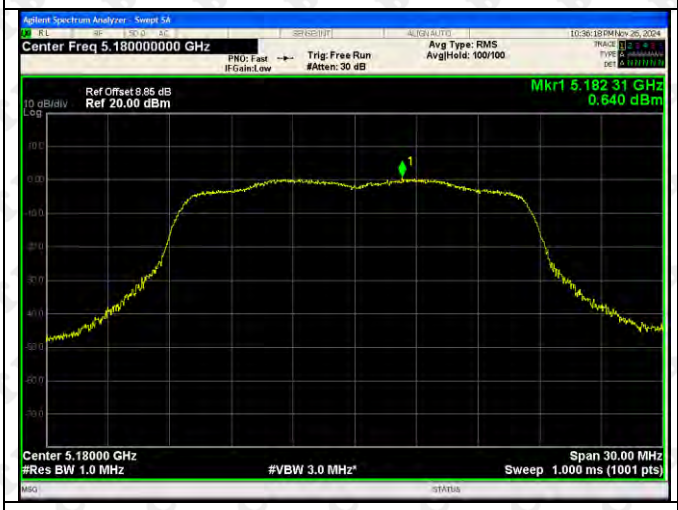
ANT 1+ANT2

Test mode	Test Channel (MHz)	PSD [dBm/MHz] ANT 1	PSD [dBm/MHz] ANT 2	PSD [dBm/MHz] Total	Limit (dBm/MHz)	Result
802.11a	5180	0.64	0.353	/	11	Pass
	5200	0.452	0.6	/	11	Pass
	5240	0.156	0.35	/	11	Pass
802.11ac(VH20)	5180	-1.145	-0.675	2.107	11	Pass
	5200	-0.572	-0.47	2.490	11	Pass
	5240	-0.791	-0.586	2.323	11	Pass
802.11ac(VH40)	5190	-5.548	-5.125	-2.321	11	Pass
	5230	-4.548	-3.716	-1.102	11	Pass
802.11n(VH20)	5180	-0.088	0.043	2.988	11	Pass
	5200	0.225	0.369	3.308	11	Pass
	5240	0.023	0.231	3.139	11	Pass
802.11n(VH40)	5190	-4.647	-4.593	-1.610	11	Pass
	5230	-2.017	-1.661	1.175	11	Pass
802.11ac(VH80)	5230	-7.97	-7.841	-4.895	11	Pass
802.11ax(VH20)	5180	-4.175	-3.607	-0.871	11	Pass
	5200	-4.062	-3.434	-0.726	11	Pass
	5240	-4.253	-3.498	-0.849	11	Pass
802.11ax(VH40)	5190	-7.389	-6.728	-4.036	11	Pass
	5230	-7.211	-6.168	-3.648	11	Pass
802.11ax(VH80)	5210	-10.048	-9.674	-6.847	11	Pass

Test mode	Test Channel (MHz)	PSD [dBm/MHz] ANT 1	PSD [dBm/MHz] ANT 2	PSD [dBm/MHz] Total	Limit (dBm)	Result
802.11a	5745	-3.85	-3.506	/	30	Pass
	5785	-3.603	-3.539	/	30	Pass
	5825	-3.167	-2.669	/	30	Pass
802.11ac(VH20)	5745	-4.332	-3.078	-0.650	30	Pass
	5785	-3.865	-2.849	-0.317	30	Pass
	5825	-3.368	-2.032	0.361	30	Pass
802.11ac(VH40)	5755	-7.844	-6.689	-4.218	30	Pass
	5795	-7.525	-6.756	-4.113	30	Pass
802.11n(VH20)	5775	-4.159	-3.409	-0.758	30	Pass
	5745	-4.069	-2.768	-0.360	30	Pass
	5785	-3.193	-2.312	0.280	30	Pass
802.11n(VH40)	5825	-5.594	-4.916	-2.231	30	Pass
	5755	-5.842	-5.032	-2.408	30	Pass
802.11ac(VH80)	5795	-11.176	-10.576	-7.855	30	Pass
802.11ax(VH20)	5745	-7.663	-6.246	-3.887	30	Pass
	5785	-7.307	-5.737	-3.441	30	Pass
	5825	-6.244	-5.301	-2.737	30	Pass
802.11ax(VH40)	5755	-10.036	-9.098	-6.531	30	Pass
	5795	-10.035	-9.675	-6.841	30	Pass
802.11ax(VH80)	5775	-8.051	-11.831	-6.532	30	Pass

ANT 1

802.11a-5180



802.11a-5200

802.11a-5240

802.11ac(VH20)-5180

802.11ac(VH20)-5200

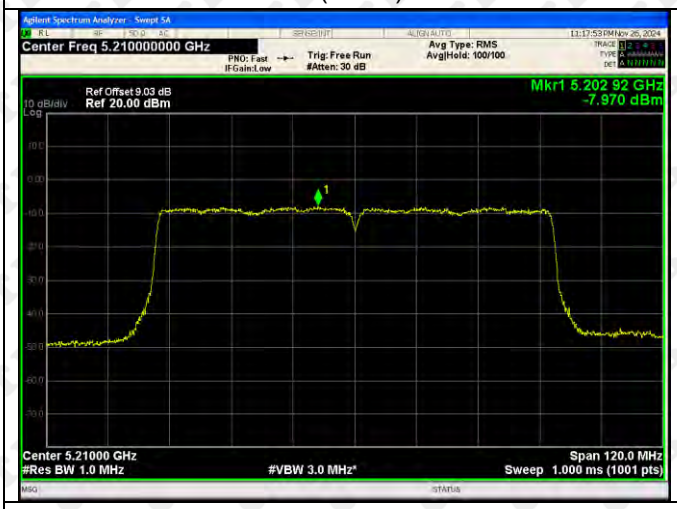
802.11ac(VH20)-5240

802.11ac(VH40)-5190

802.11ac(VH40)-5230

802.11ac(VH80)-5210

802.11n(HT20)-5180



802.11n(HT20)-5200

802.11n(HT20)-5240

802.11n(HT40)-5190

802.11n(HT40)-5230

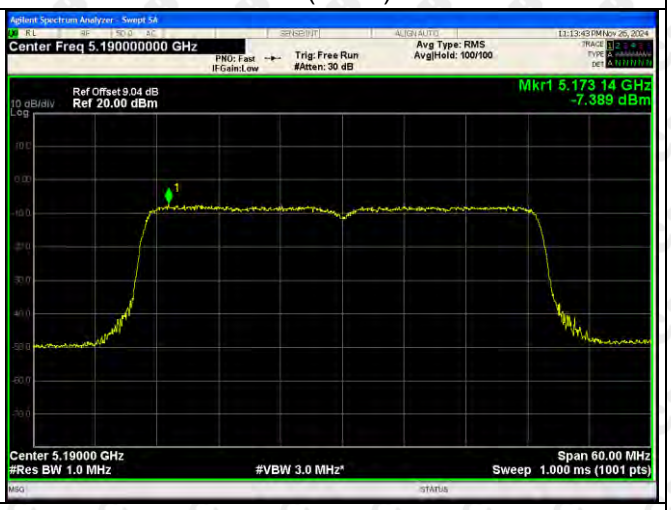
802.11ax(VH20)-5180

802.11ax(VH20)-5200

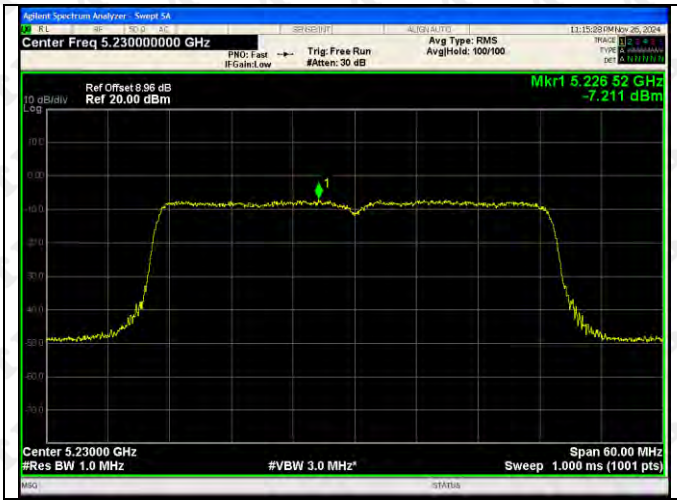
802.11ax(VH20)-5240

802.11ax(VH40)-5190

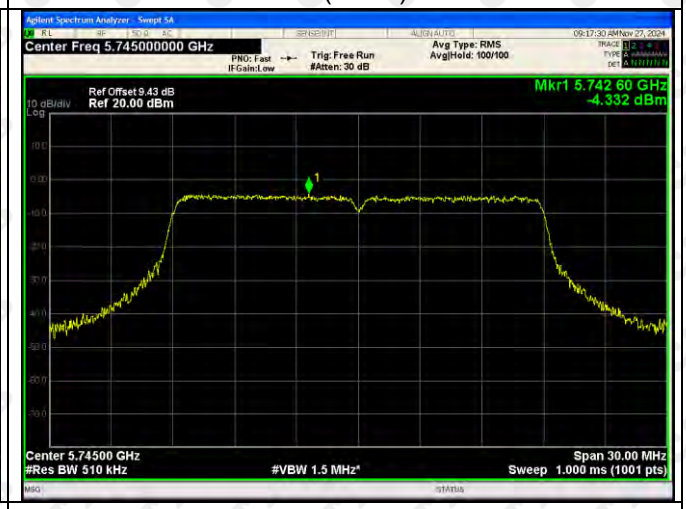
802.11ax(VH40)-5230



802.11ax(VH80)-5210

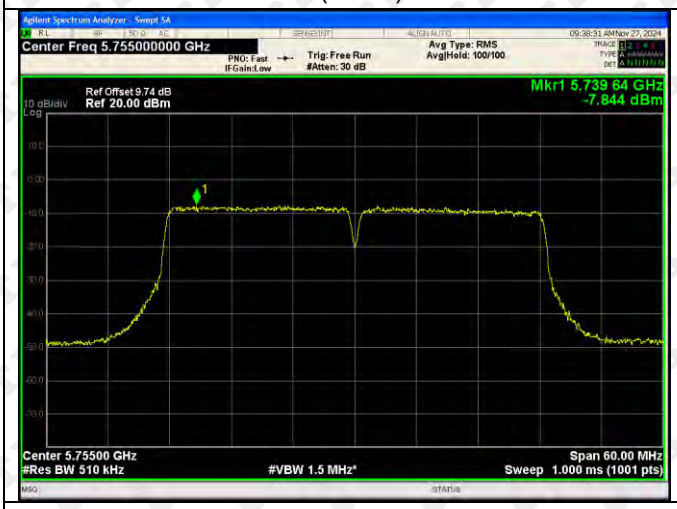


ANT1:

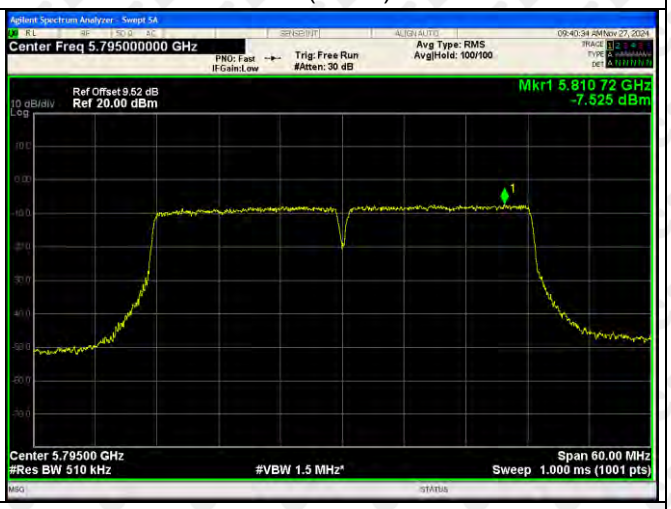
802.11a-5745	802.11a-5785
802.11a-5825	802.11ac(VH20)-5745
	
802.11ac(VH20)-5785	802.11ac(VH20)-5825

802.11ac(VH40)-5755

802.11ac(VH40)-5795



802.11ac(VH80)-5775



802.11n(HT20)-5745

802.11n(HT20)-5785

802.11n(HT20)-5825

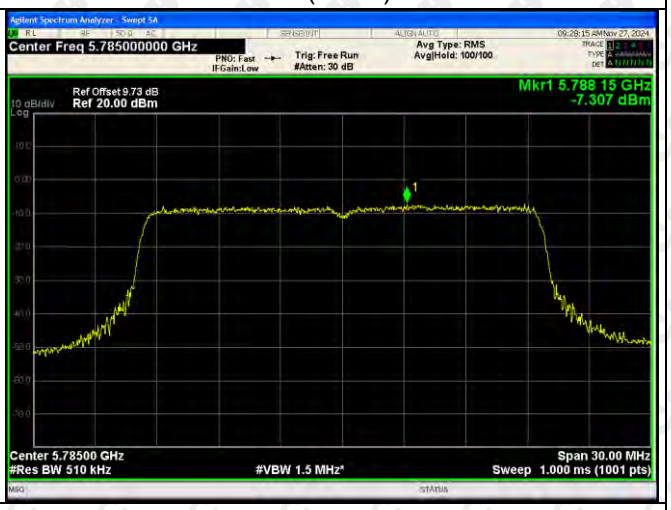
5802.11n(HT40)-5755

802.11n(HT40)-5795

802.11ax(VH20)-5745

802.11ax(VH20)-5785

802.11ax(VH20)-5825



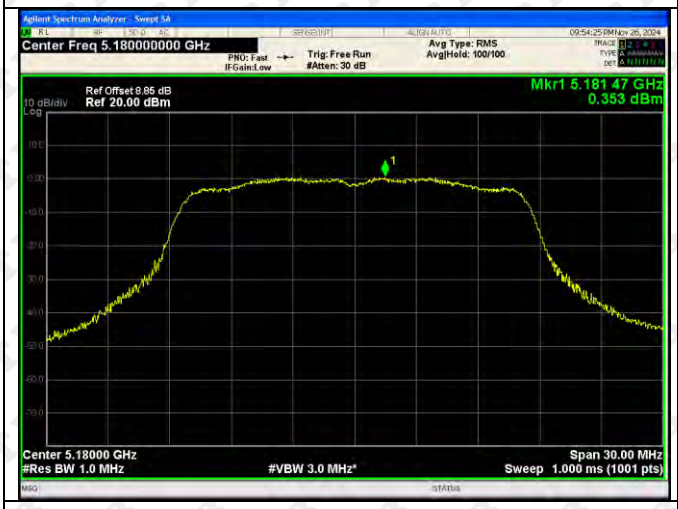
802.11ax(VH40)-5755

802.11ax(VH40)-5795

802.11ax(VH80)-5775

ANT 2

802.11a-5180



802.11a-5200

802.11a-5240

802.11ac(VH20)-5180

802.11ac(VH20)-5200

802.11ac(VH20)-5240

802.11ac(VH40)-5190

802.11ac(VH40)-5230

802.11ac(VH80)-5210

802.11n(HT20)-5180

802.11n(HT20)-5200

802.11n(HT20)-5240

802.11n(HT40)-5190

802.11n(HT40)-5230

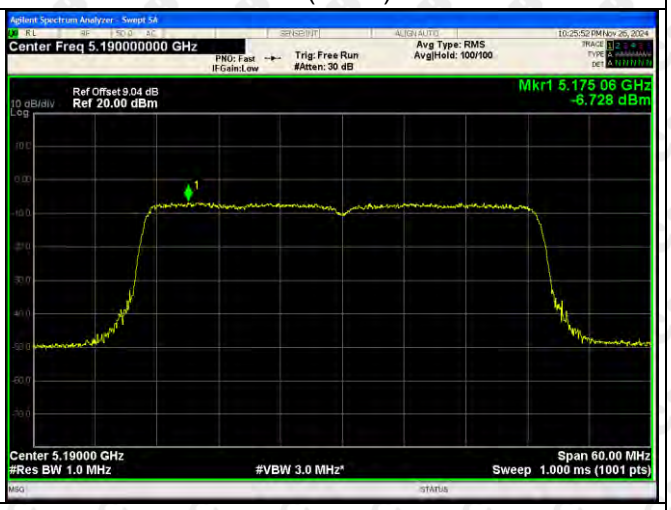
802.11ax(VH20)-5180

802.11ax(VH20)-5200

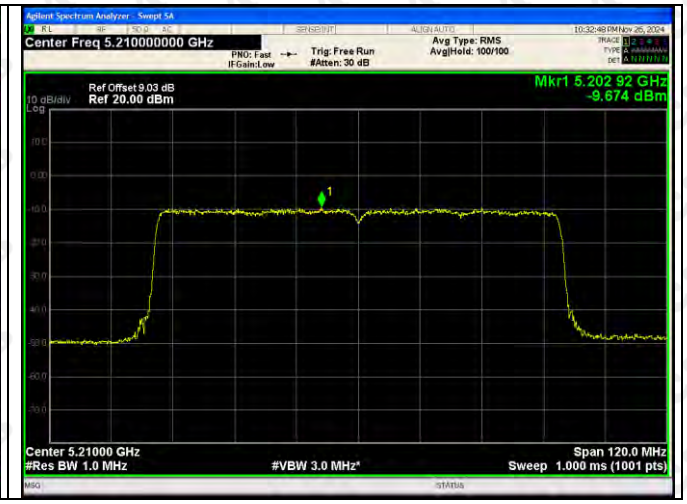
802.11ax(VH20)-5240

802.11ax(VH40)-5190

802.11ax(VH40)-5230



802.11ax(VH80)-5210



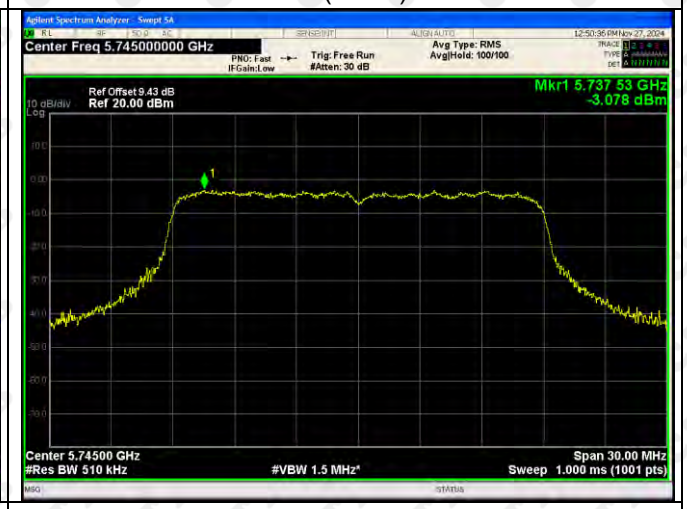
ANT2:

802.11a-5745

802.11a-5785

802.11a-5825

802.11ac(VH20)-5745



802.11ac(VH20)-5785

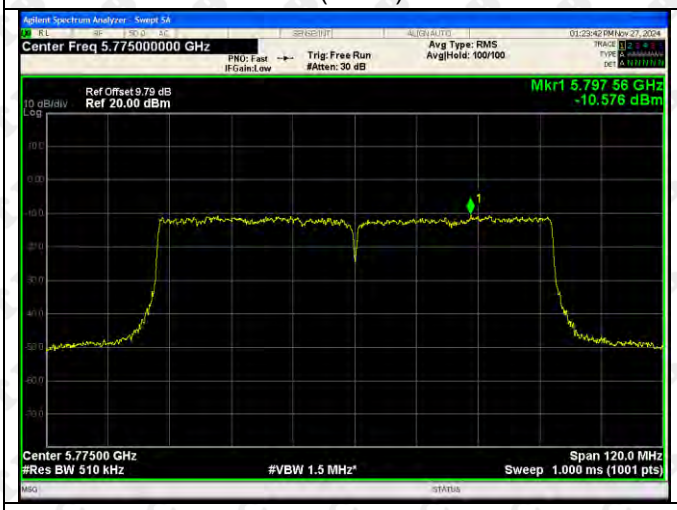
802.11ac(VH20)-5825

802.11ac(VH40)-5755

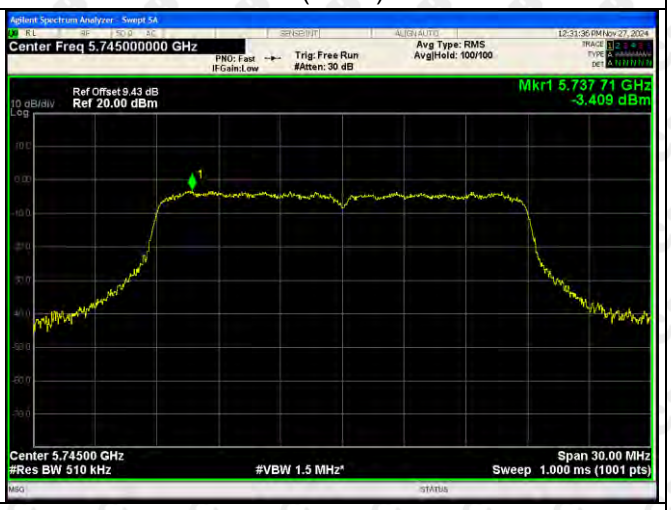
802.11ac(VH40)-5795

802.11ac(VH80)-5775

802.11n(HT20)-5745



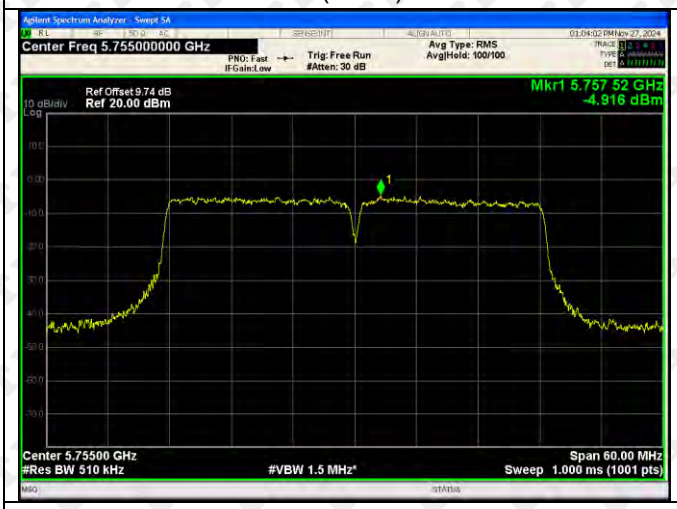
802.11n(HT20)-5785



802.11n(HT20)-5825

5802.11n(HT40)-5755

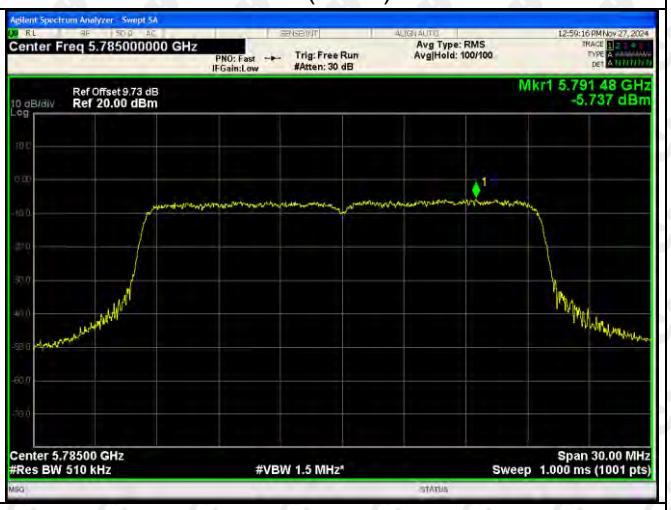
802.11n(HT40)-5795



802.11ax(VH20)-5745

802.11ax(VH20)-5785

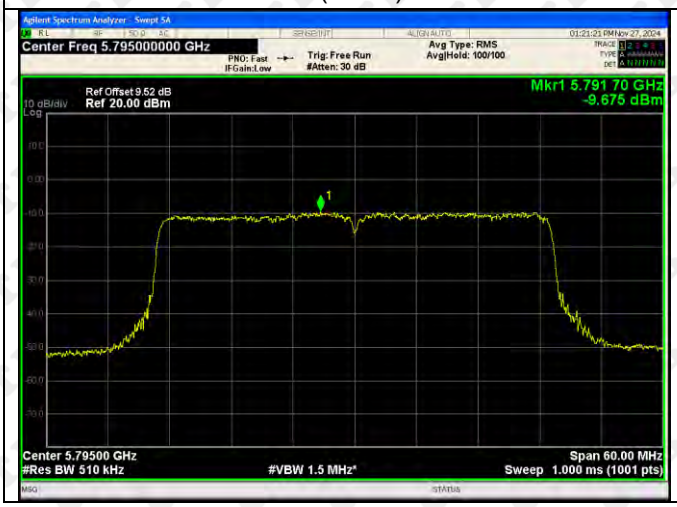
802.11ax(VH20)-5825

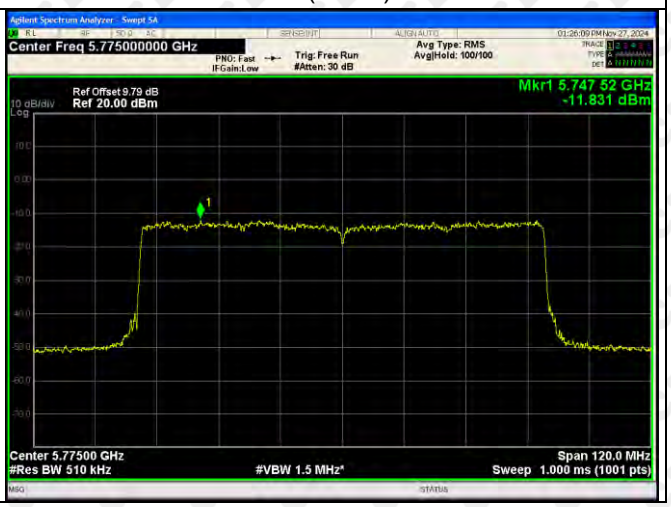


802.11ax(VH40)-5755

802.11ax(VH40)-5795

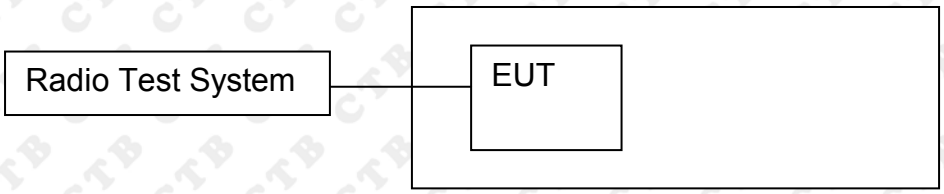
802.11ax(VH80)-5775





12. FREQUENCY STABILITY

12.1 Block Diagram Of Test Setup



12.2 Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

12.3 Test procedure

1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.

2. Set EUT as normal operation.

3. Turn the EUT on and couple its output to spectrum.

4. Turn the EUT off and set the chamber to the highest temperature specified.

5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT and measure the operating frequency.

6. Repeat step with the temperature chamber set to the lowest temperature.

12.4 Test Result

TX Frequency (5150-5250MHz)
ANT1
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5180.0667	5180	0.0667	12.8778
		V max (V)	132	5180.0845	5180	0.0845	16.3070
		V min (V)	108	5180.0751	5180	0.0751	14.4955
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5180.0080	5180	0.0080	1.5405
		T (°C)	10	5180.0472	5180	0.0472	9.1159
		T (°C)	20	5180.0361	5180	0.0361	6.9743
		T (°C)	30	5180.0203	5180	0.0203	3.9160
		T (°C)	40	5180.0336	5180	0.0336	6.4946
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5200.0421	5200	0.0421	8.0916
		V max (V)	132	5200.0386	5200	0.0386	7.4282
		V min (V)	108	5200.0280	5200	0.0280	5.3894
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5200.0408	5200	0.0408	7.8396
		T (°C)	10	5200.0198	5200	0.0198	3.8103
		T (°C)	20	5200.0031	5200	0.0031	0.5982
		T (°C)	30	5200.0395	5200	0.0395	7.5899
		T (°C)	40	5200.0324	5200	0.0324	6.2283
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5240.0385	5240	0.0385	7.3383
		V max (V)	132	5240.0019	5240	0.0019	0.3716
		V min (V)	108	5240.0244	5240	0.0244	4.6569
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5240.0188	5240	0.0188	3.5905
		T (°C)	10	5240.0530	5240	0.0530	10.1235
		T (°C)	20	5240.0250	5240	0.0250	4.7630
		T (°C)	30	5240.0227	5240	0.0227	4.3336
		T (°C)	40	5240.0383	5240	0.0383	7.3051
Limits				±20ppm			
Result				Complies			

TX Frequency (5725-5850MHz)
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5745.0831	5745	0.0831	14.4626
		V max (V)	132	5745.0886	5745	0.0886	15.4259
		V min (V)	108	5745.0831	5745	0.0831	14.4626
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5745.0526	5745	0.0526	9.1610
		T (°C)	10	5745.0038	5745	0.0038	0.6593
		T (°C)	20	5745.0655	5745	0.0655	11.4023
		T (°C)	30	5745.0498	5745	0.0498	8.6683
		T (°C)	40	5745.0338	5745	0.0338	5.8819
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5785.0385	5785	0.0385	6.6632
		V max (V)	132	5785.0933	5785	0.0933	16.1364
		V min (V)	108	5785.0907	5785	0.0907	15.6862
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5785.0743	5785	0.0743	12.8453
		T (°C)	10	5785.0794	5785	0.0794	13.7230
		T (°C)	20	5785.0835	5785	0.0835	14.4374
		T (°C)	30	5785.0109	5785	0.0109	1.8844
		T (°C)	40	5785.0087	5785	0.0087	1.4968
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5825.0535	5825	0.0535	9.1880
		V max (V)	132	5825.0246	5825	0.0246	4.2249
		V min (V)	108	5825.0413	5825	0.0413	7.0864
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5825.0061	5825	0.0061	1.0514
		T (°C)	10	5825.0307	5825	0.0307	5.2753
		T (°C)	20	5825.0403	5825	0.0403	6.9100
		T (°C)	30	5825.0449	5825	0.0449	7.7083
		T (°C)	40	5825.0238	5825	0.0238	4.0877
Limits				±20ppm			
Result				Complies			

ANT2:
TX Frequency (5150-5250MHz)
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5180.0866	5180	0.0866	16.7147
		V max (V)	132	5180.0756	5180	0.0756	14.5886
		V min (V)	108	5180.0288	5180	0.0288	5.5608
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5180.0633	5180	0.0633	12.2285
		T (°C)	10	5180.0122	5180	0.0122	2.3458
		T (°C)	20	5180.0024	5180	0.0024	0.4618
		T (°C)	30	5180.0591	5180	0.0591	11.4088
		T (°C)	40	5180.0633	5180	0.0633	12.2252
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5200.0570	5200	0.0570	10.9626
		V max (V)	132	5200.0346	5200	0.0346	6.6570
		V min (V)	108	5200.0581	5200	0.0581	11.1783
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5200.0667	5200	0.0667	12.8229
		T (°C)	10	5200.0656	5200	0.0656	12.6085
		T (°C)	20	5200.0247	5200	0.0247	4.7455
		T (°C)	30	5200.0002	5200	0.0002	0.0322
		T (°C)	40	5200.0124	5200	0.0124	2.3934
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5240.0787	5240	0.0787	15.0253
		V max (V)	132	5240.0696	5240	0.0696	13.2729
		V min (V)	108	5240.0793	5240	0.0793	15.1280
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5240.0502	5240	0.0502	9.5873
		T (°C)	10	5240.0101	5240	0.0101	1.9267
		T (°C)	20	5240.0791	5240	0.0791	15.1012
		T (°C)	30	5240.0626	5240	0.0626	11.9488
		T (°C)	40	5240.0168	5240	0.0168	3.2008
Limits				±20ppm			
Result				Complies			

TX Frequency (5725-5850MHz)
Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5745.0689	5745	0.0689	11.9945
		V max (V)	132	5745.0389	5745	0.0389	6.7776
		V min (V)	108	5745.0276	5745	0.0276	4.8057
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5745.0799	5745	0.0799	13.9024
		T (°C)	10	5745.0716	5745	0.0716	12.4674
		T (°C)	20	5745.0539	5745	0.0539	9.3752
		T (°C)	30	5745.0323	5745	0.0323	5.6268
		T (°C)	40	5745.0222	5745	0.0222	3.8660
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5785.0257	5785	0.0257	4.4502
		V max (V)	132	5785.0296	5785	0.0296	5.1153
		V min (V)	108	5785.0626	5785	0.0626	10.8234
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5785.0909	5785	0.0909	15.7056
		T (°C)	10	5785.0658	5785	0.0658	11.3807
		T (°C)	20	5785.0381	5785	0.0381	6.5807
		T (°C)	30	5785.0741	5785	0.0741	12.8140
		T (°C)	40	5785.0708	5785	0.0708	12.2419
		T (°C)	50	5785.0655	5785	0.0655	11.3178
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5825.0212	5825	0.0212	3.6333
		V max (V)	132	5825.0315	5825	0.0315	5.4125
		V min (V)	108	5825.0290	5825	0.0290	4.9805
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5825.0823	5825	0.0823	14.1294
		T (°C)	10	5825.0574	5825	0.0574	9.8560
		T (°C)	20	5825.0892	5825	0.0892	15.3086
		T (°C)	30	5825.0355	5825	0.0355	6.0887
		T (°C)	40	5825.0240	5825	0.0240	4.1119
Limits				±20ppm			
Result				Complies			

13. OPERATION IN THE ABSENCE OF INFORMATION TO THE TRANSMIT

13.1 Requirement

15.407(c) requirement:
The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signal ling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

13.2 Test Results

Operation in the absence of information to the transmit:

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling
signal of ASK message transmitting from remote device and verify whether it shall resend or
discontinue transmission. (manufacturer declare)

14. ANTENNA REQUIREMENT

15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
15.247(b) (4) requirement:
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

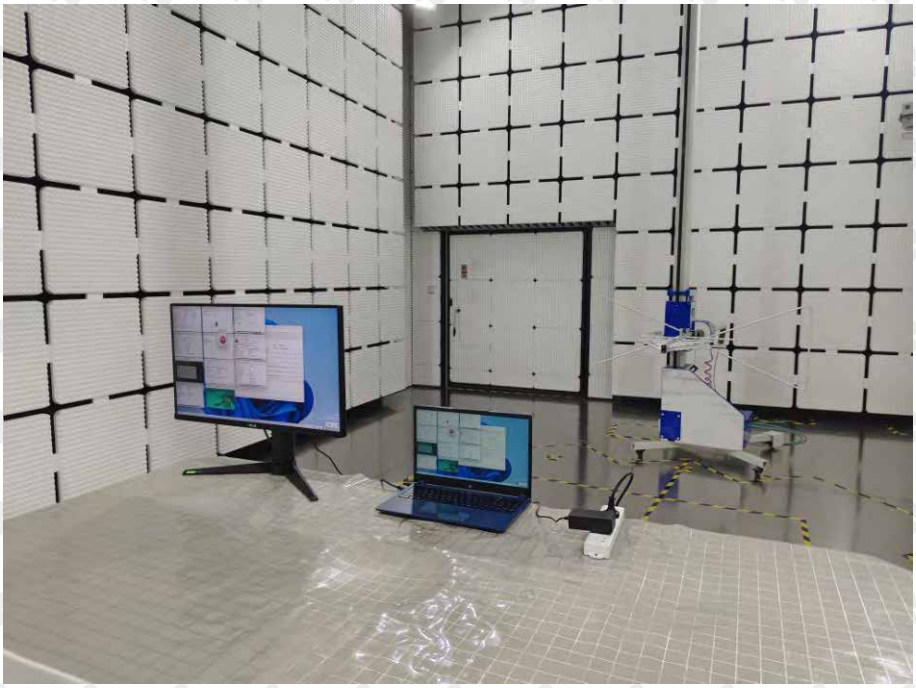
EUT Antenna:

The antenna is FPC antenna and no consideration of replacement. The best case gain of the antenna is 5.2GWIFI ANT1: 2.43dBi, ANT2:0.91dBi, 5.8GWIFI ANT1: 5.76dBi, ANT2:0.46dBi.

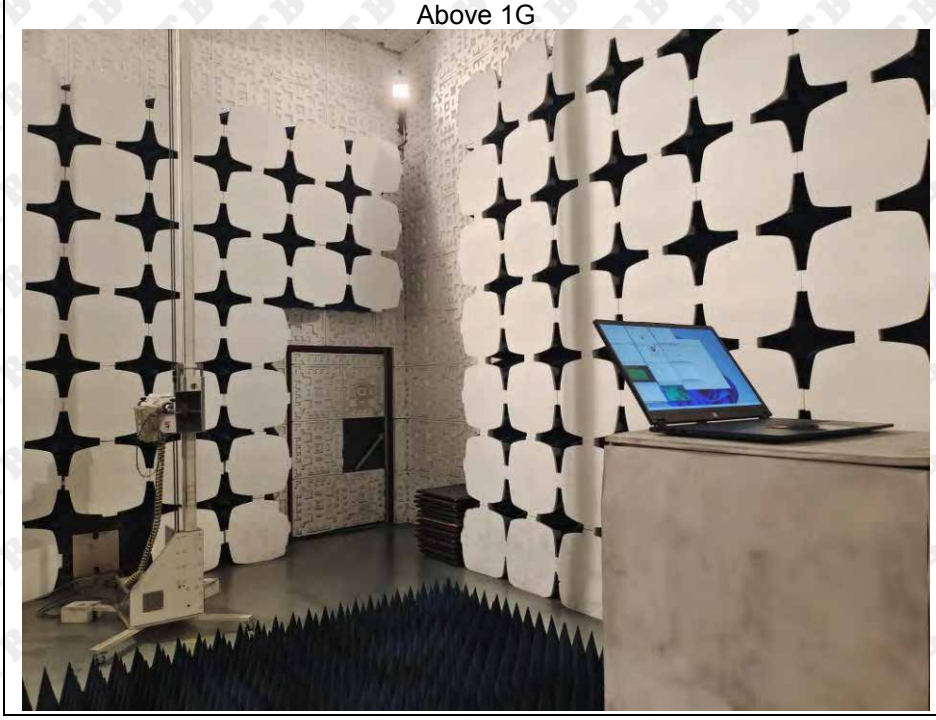
15. EUT TEST SETUP PHOTOGRAPHS

Radiated Emission

Below 1G



Above 1G



Conducted Emission

※※※※※ **END OF REPORT** ※※※※※