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	22.938
	5200	23.411
	5240	21.727
802.11ac20	5180	23.44
	5200	24.883
	5240	21.722
802.11ac40	5190	57.118
	5230	50.778
802.11ac80	5210	97.655
802.11n(HT20)	5180	25.223
	5200	26.953
	5240	22.369
802.11n(HT40)	5190	52.241
	5230	49.71

Test mode ANT 2	Test Channel (MHz)	26dB Bandwidth (MHz)
802.11a	5180	23.655
	5200	23.231
	5240	21.851
802.11ac20	5180	29.419
	5200	28.237
	5240	21.883
802.11ac40	5190	48.725
	5230	49.417
802.11ac80	5210	94.086
802.11n(HT20)	5180	29.664
	5200	29.372
	5240	22.376
802.11n(HT40)	5190	50.581
	5230	50.337

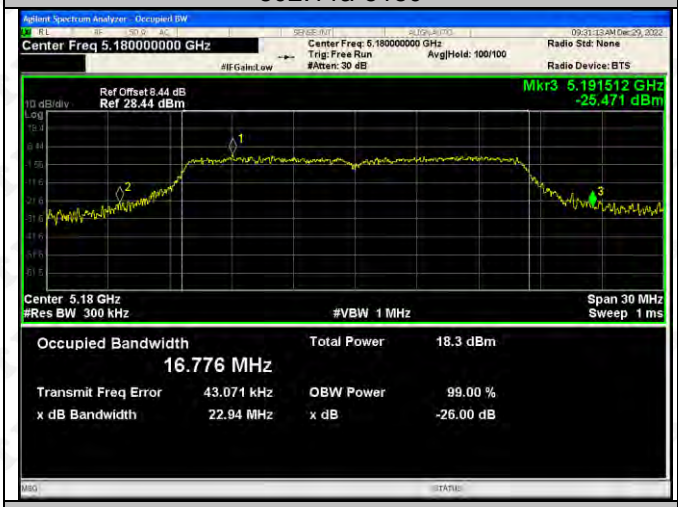
5725-5850 MHz

Test mode Ant 1	Test Channel (MHz)	6dB Bandwidth (MHz)	Result
802.11a	5745	16.529	Pass
	5785	16.538	Pass
	5825	16.516	Pass
802.11ac(VH20)	5745	17.72	Pass
	5785	17.784	Pass
	5825	17.775	Pass
802.11ac(VH40)	5755	36.442	Pass
	5795	36.455	Pass
802.11ac(VH80)	5775	76.458	Pass
802.11n(VH20)	5745	17.684	Pass
	5785	17.738	Pass
	5825	17.749	Pass
802.11n(VH40)	5755	36.431	Pass
	5795	36.462	Pass

Test mode Ant 2	Test Channel (MHz)	6dB Bandwidth (MHz)	Result
802.11a	5745	16.56	Pass
	5785	16.543	Pass
	5825	16.52	Pass
802.11ac(VH20)	5745	17.721	Pass
	5785	17.788	Pass
	5825	17.757	Pass
802.11ac(VH40)	5755	36.461	Pass
	5795	36.454	Pass
802.11ac(VH80)	5775	76.438	Pass
802.11n(VH20)	5745	17.765	Pass
	5785	17.71	Pass
	5825	17.689	Pass
802.11n(VH40)	5755	36.457	Pass
	5795	36.499	Pass

Test Graph ANT 1

802.11a-5180



802.11a-5200

802.11a-5240

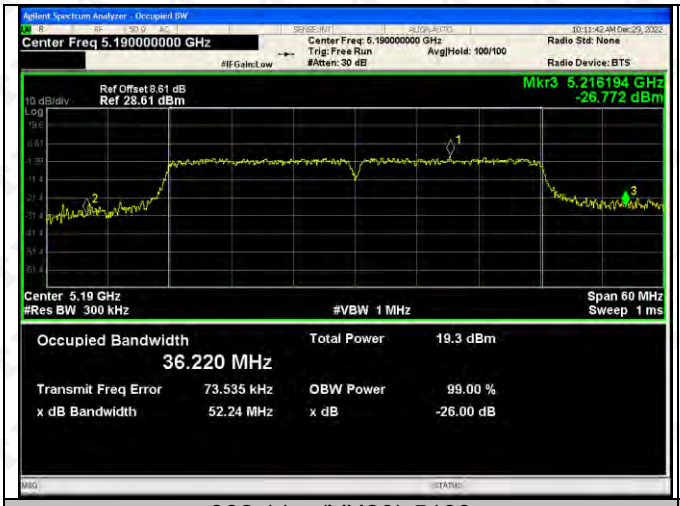
802.11n(HT20)-5180

802.11n(HT20)-5200

802.11n(HT20)-5240

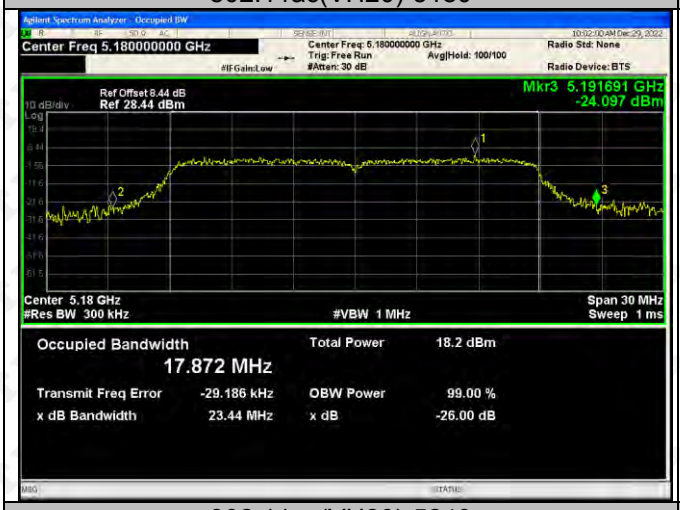
802.11n(HT40)-5190

802.11n(HT40)-5230

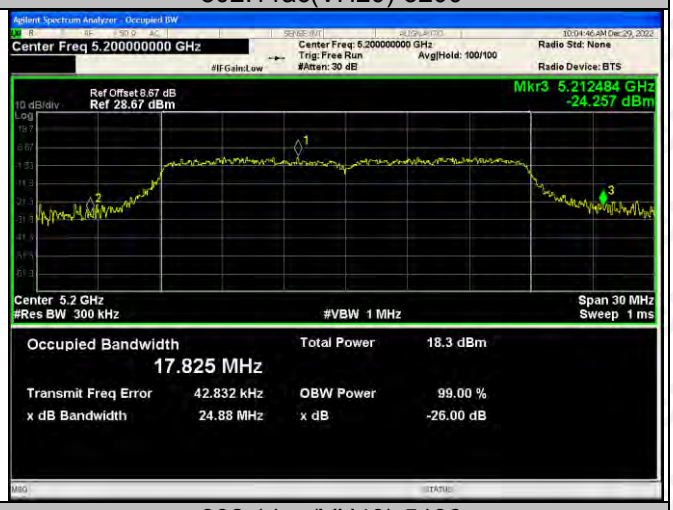


802.11ac(VH20)-5180

802.11ac(VH20)-5200



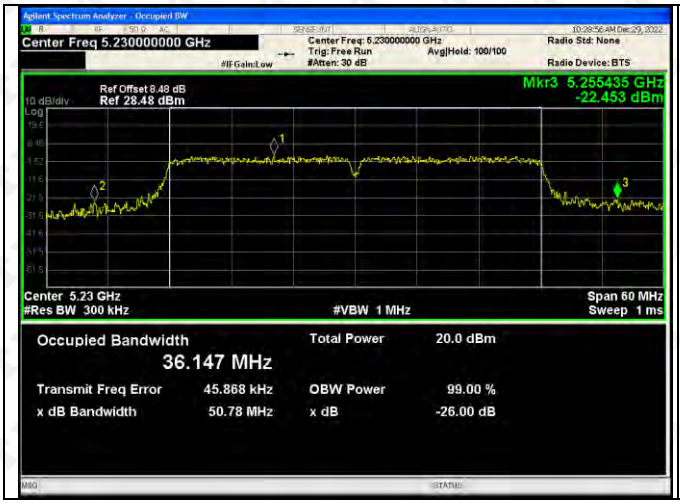
802.11ac(VH20)-5240

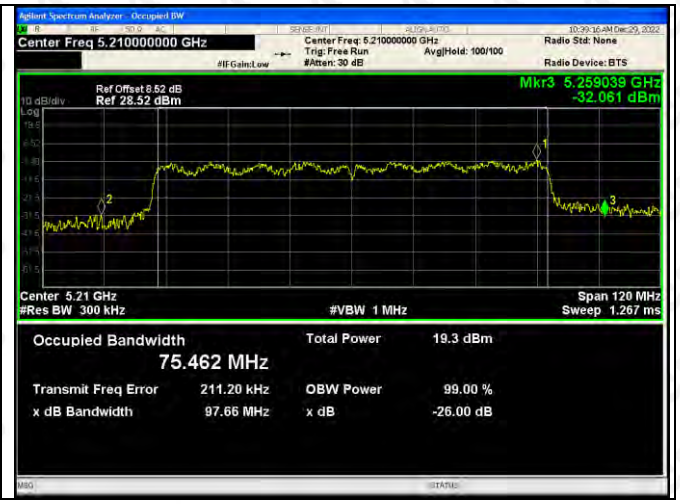


802.11ac(VH40)-5190

802.11ac(VH40)-5230

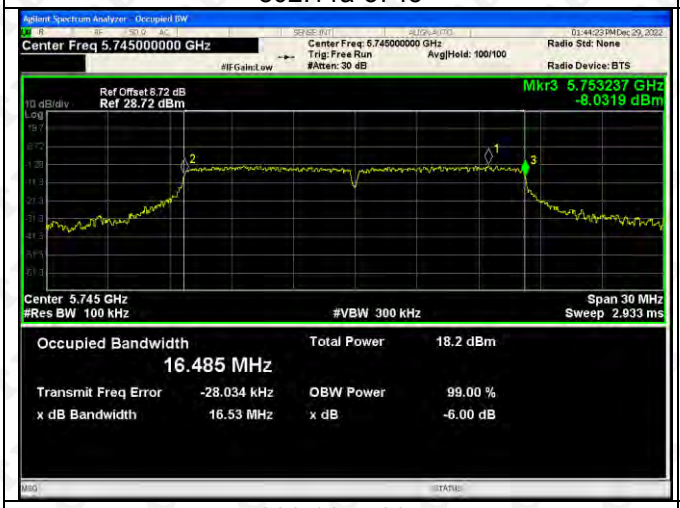
802.11ac(VH80)-5210





ANT1:
5725-5850MHz

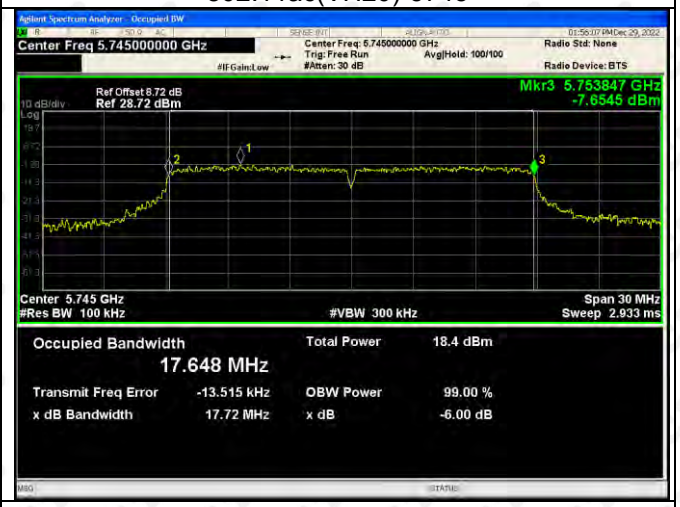
802.11a-5745



802.11a-5785

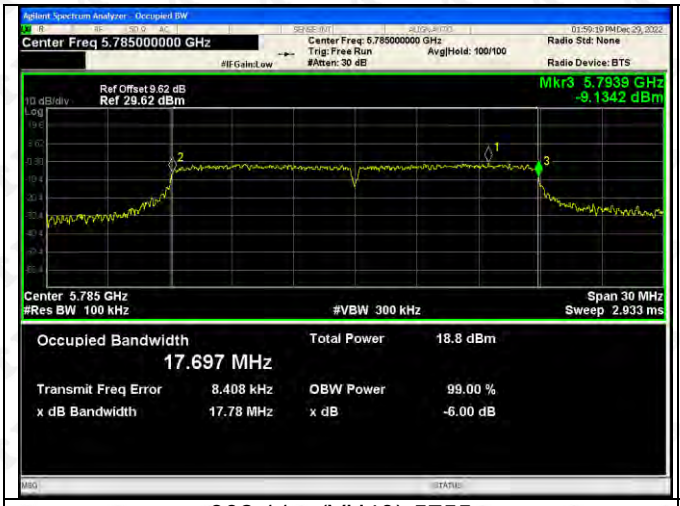
802.11a-5825

802.11ac(VH20)-5745



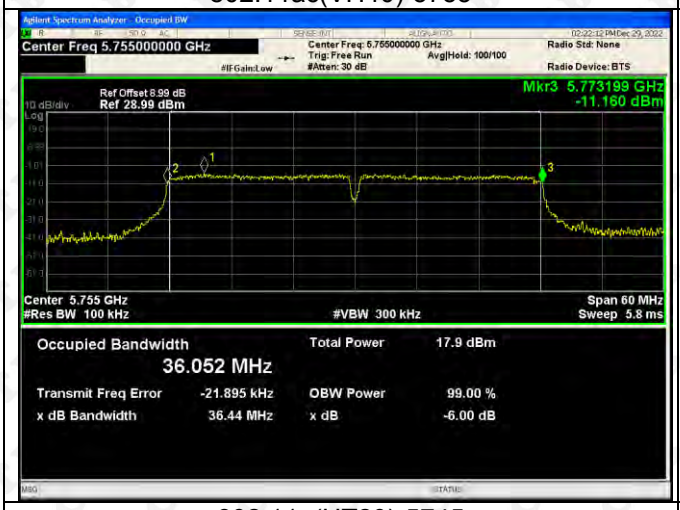
802.11ac(VH20)-5785

802.11ac(VH20)-5825

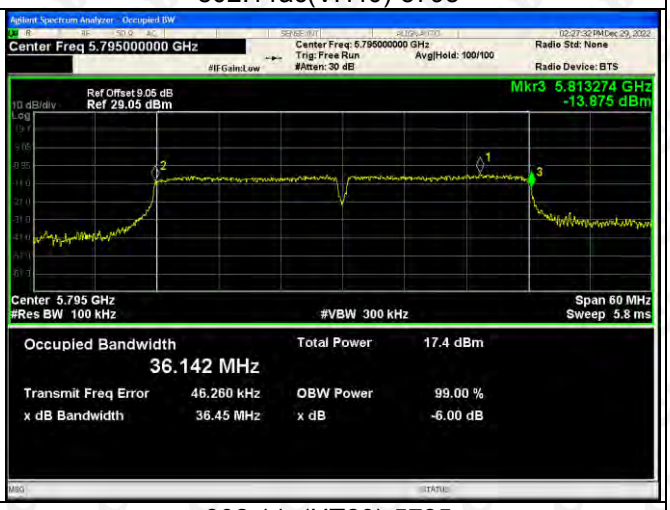


802.11ac(VH40)-5755

802.11ac(VH40)-5795



802.11n(HT20)-5745

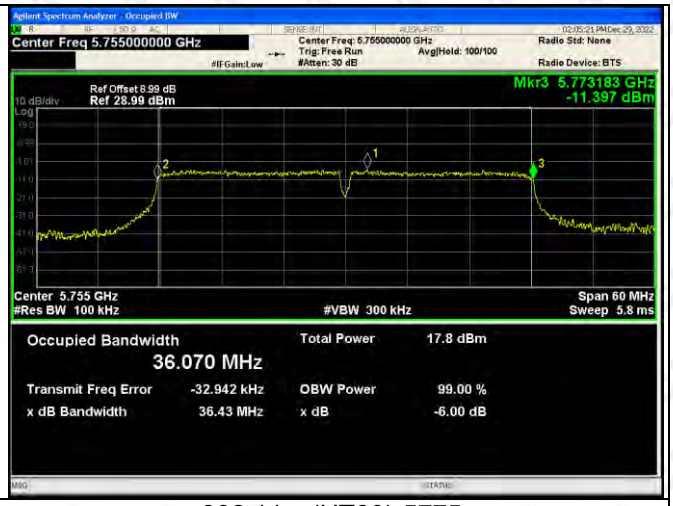


802.11n(HT20)-5785

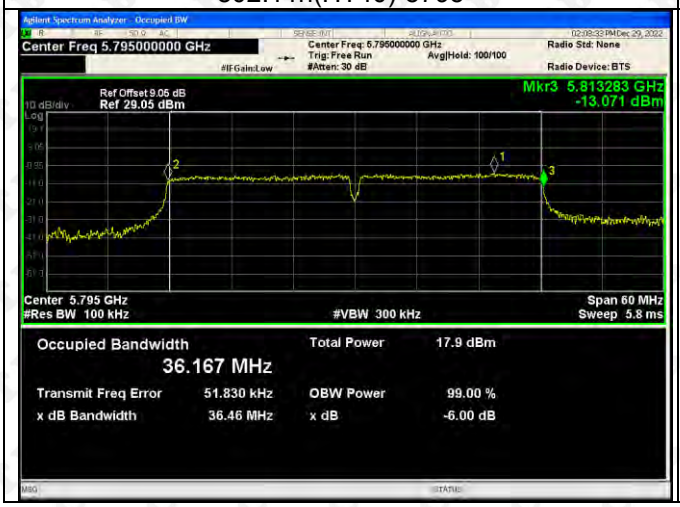
802.11n(HT20)-5825

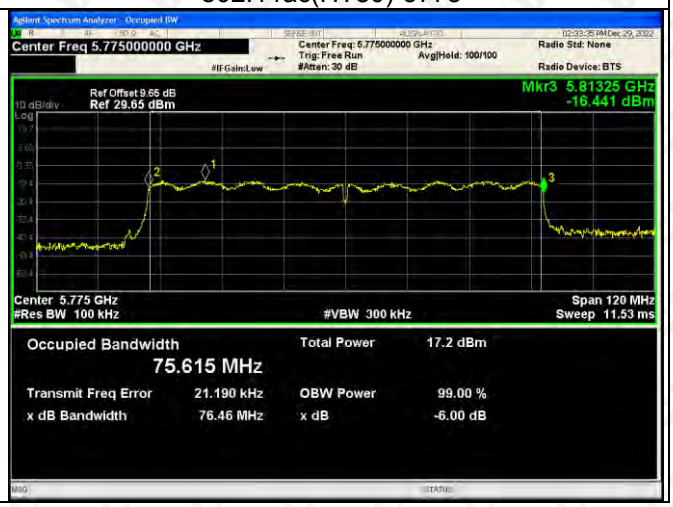
802.11n(HT40)-5755

802.11n(HT40)-5795



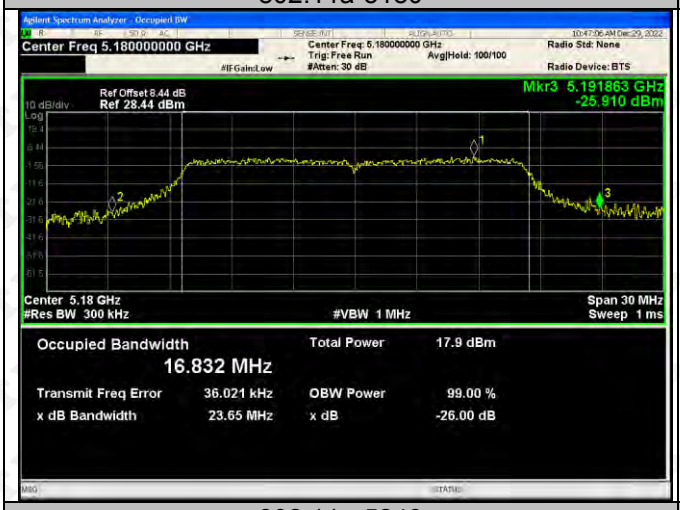
802.11ac(HT80)-5775



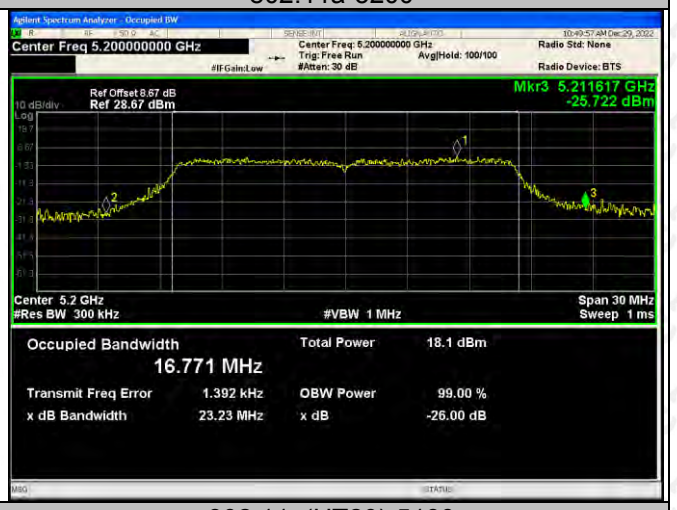


Test Graph ANT 2

802.11a-5180

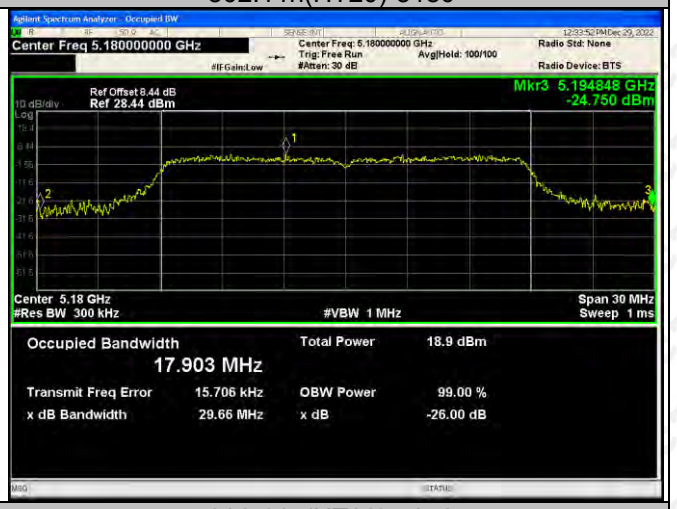


802.11a-5200



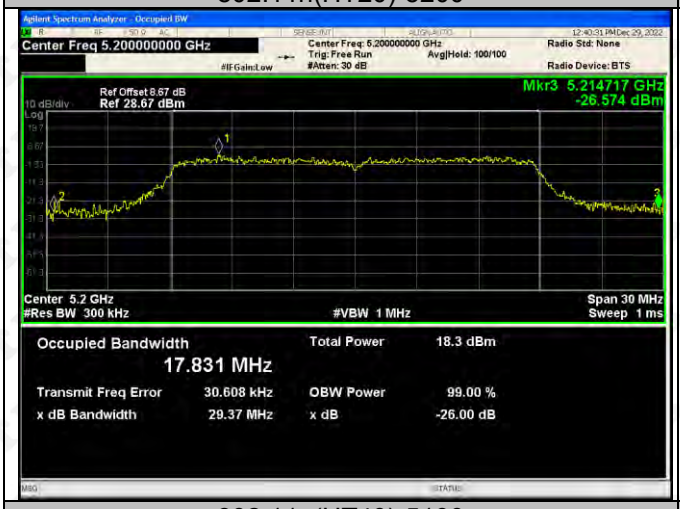
802.11a-5240

802.11n(HT20)-5180

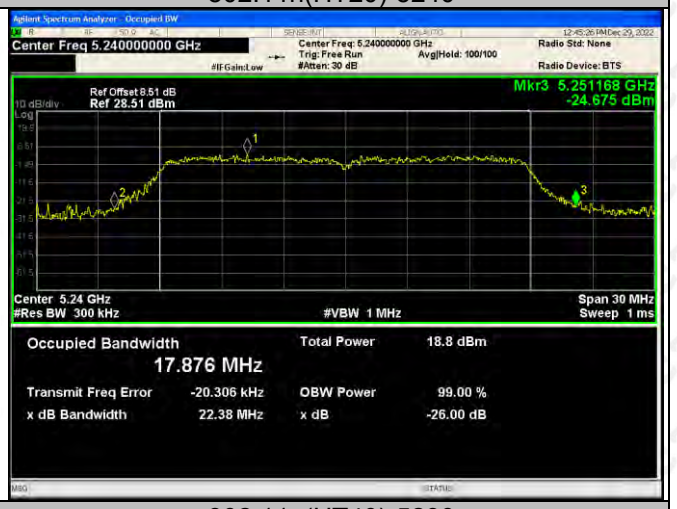


802.11n(HT20)-5200

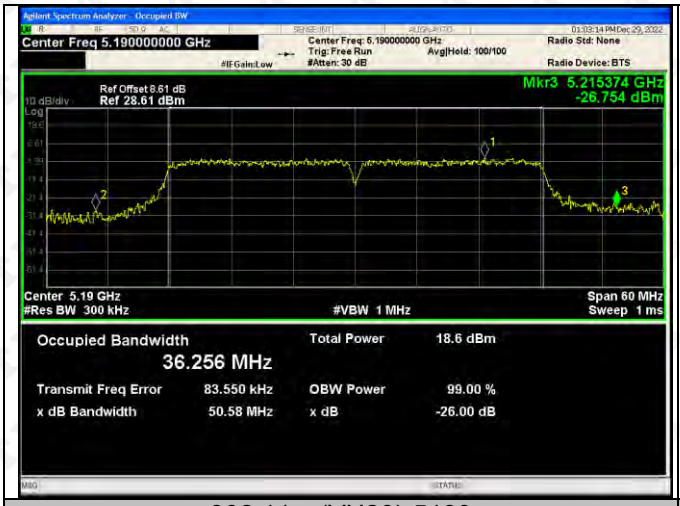
802.11n(HT20)-5240



802.11n(HT40)-5190

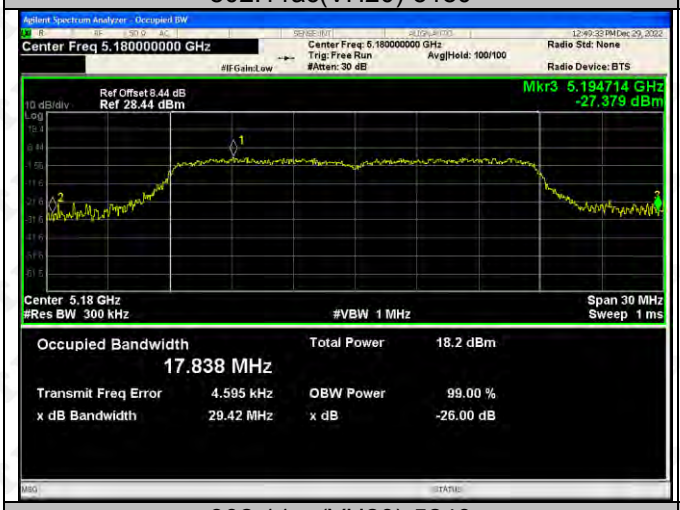


802.11n(HT40)-5230

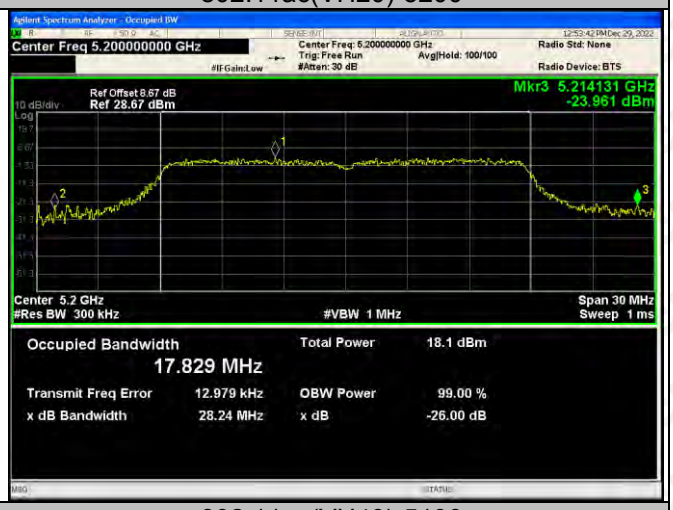


802.11ac(VH20)-5180

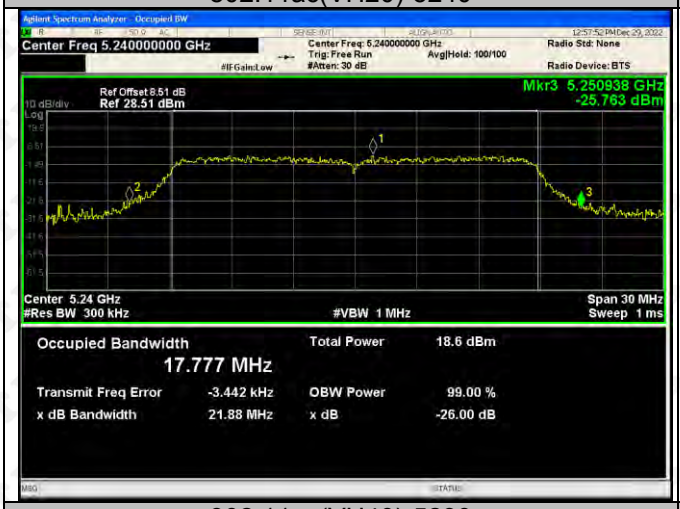
802.11ac(VH20)-5200



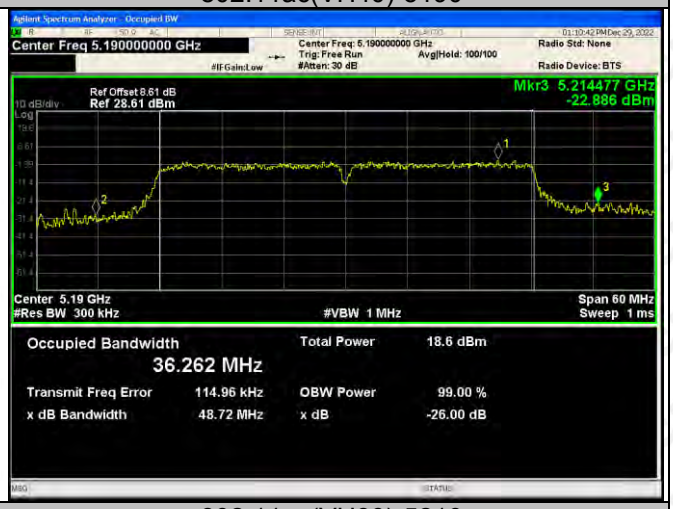
802.11ac(VH20)-5240



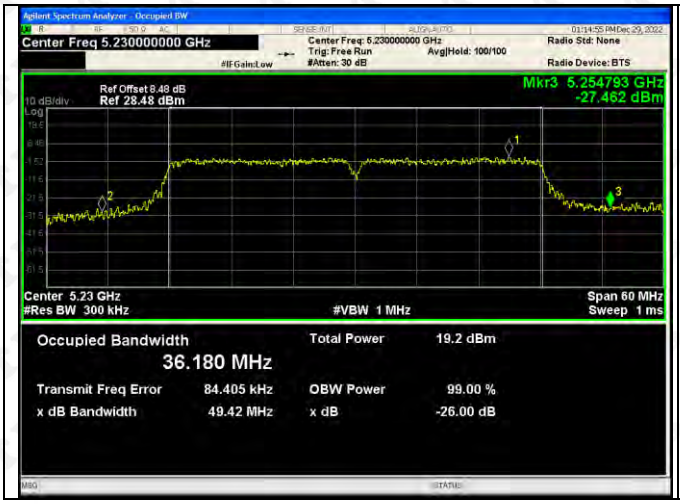
802.11ac(VH40)-5190

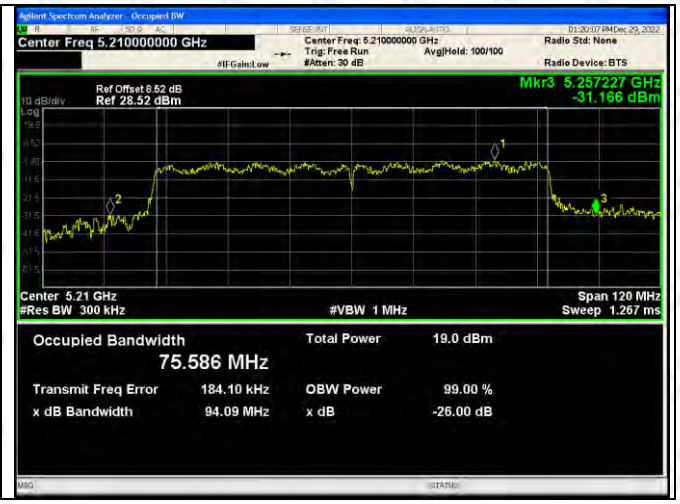


802.11ac(VH40)-5230



802.11ac(VH80)-5210



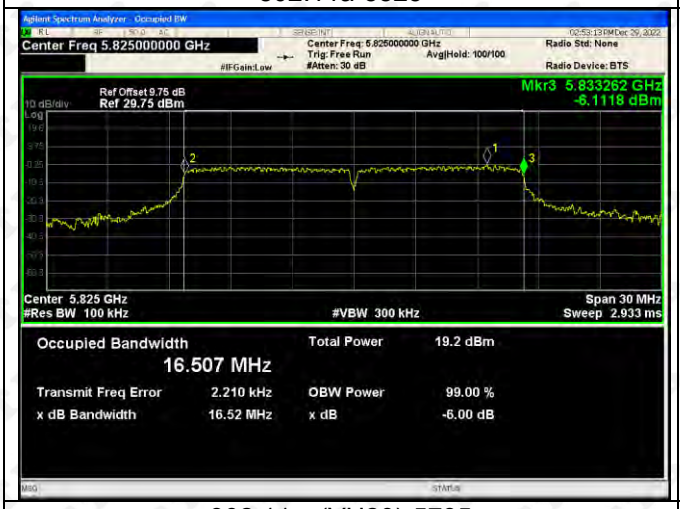


ANT2:
5725-5850MHz

802.11a-5745

802.11a-5785

802.11a-5825



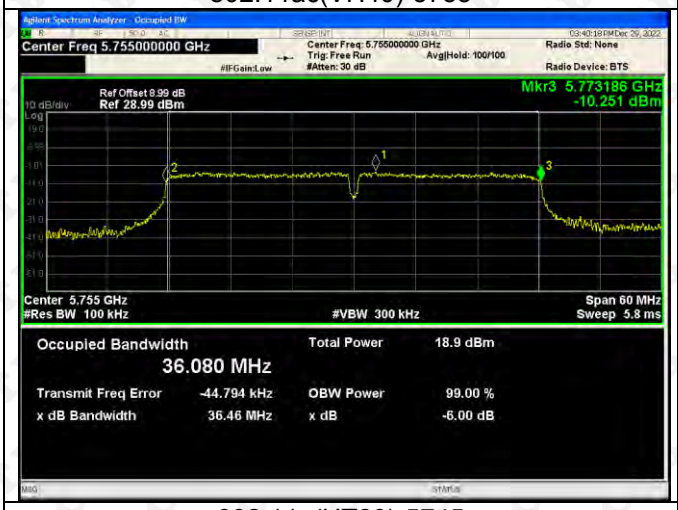
802.11ac(VH20)-5745

802.11ac(VH20)-5785

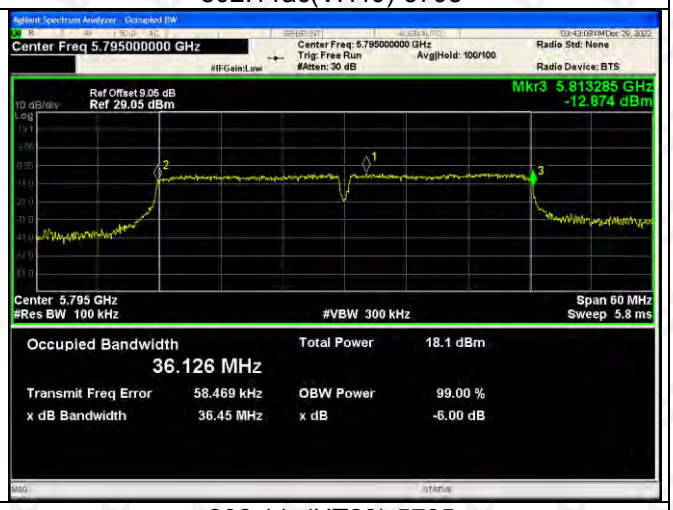
802.11ac(VH20)-5825

802.11ac(VH40)-5755

802.11ac(VH40)-5795

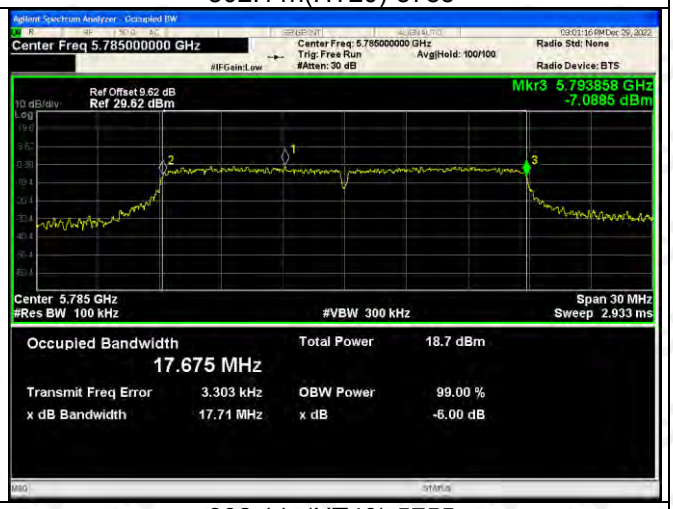


802.11n(HT20)-5745



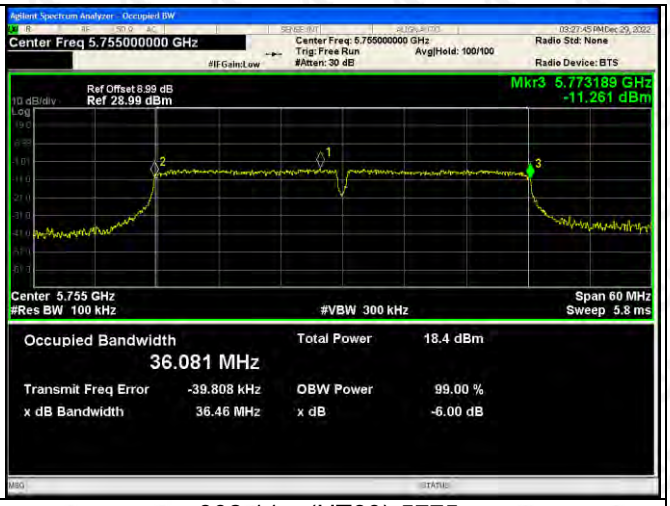
802.11n(HT20)-5785

802.11n(HT20)-5825

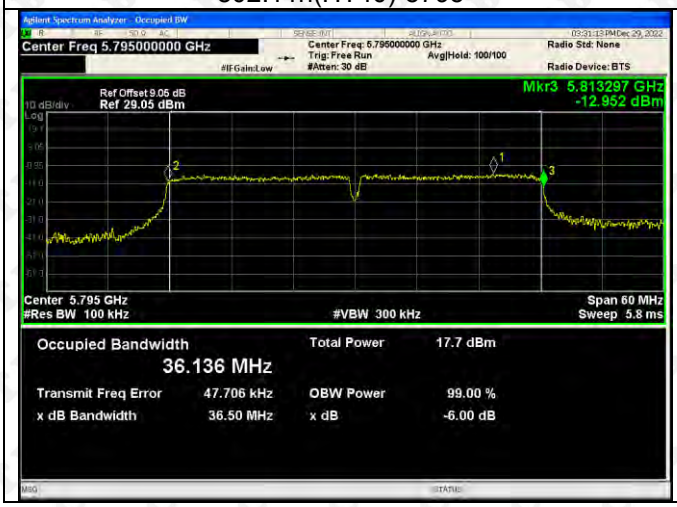


802.11n(HT40)-5755

802.11n(HT40)-5795

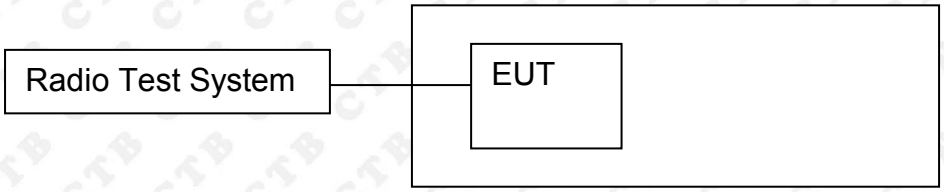


802.11ac(HT80)-5775



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

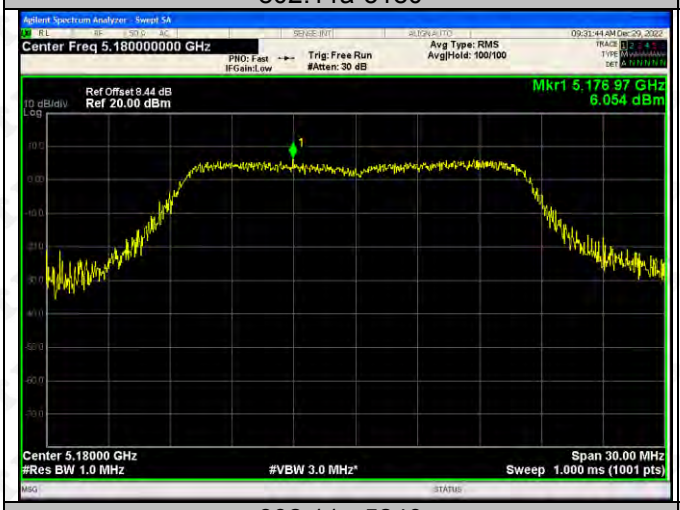
ANT 1+ANT2

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	6.054	6.581	/	11	Pass
	5200	6.743	6.703	/	11	Pass
	5240	6.506	6.563	/	11	Pass
802.11ac(VH20)	5180	6.895	6.012	9.486	11	Pass
	5200	6.923	6.35	9.656	11	Pass
	5240	6.588	6.913	9.764	11	Pass
802.11ac(VH40)	5190	4.262	4.862	7.583	11	Pass
	5230	5.28	5.434	8.368	11	Pass
802.11n(VH20)	5180	3.885	2.368	6.203	11	Pass
	5200	6.501	6.86	9.695	11	Pass
	5240	6.698	6.647	9.683	11	Pass
802.11n(VH40)	5190	6.961	7.083	10.033	11	Pass
	5230	4.441	4.227	7.346	11	Pass
802.11ac(VH80)	5230	5.313	6.115	8.743	11	Pass

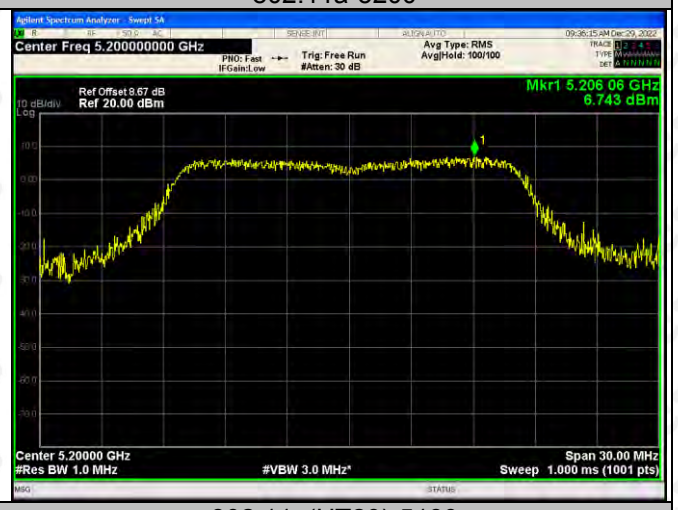
Test mode	Test Channel (MHz)	PSD [dBm/MHz] ANT 1	PSD [dBm/MHz] ANT 2	PSD [dBm/MHz] Total	Limit (dBm)	Result
802.11a	5745	4.492	4.634	/	11	Pass
	5785	4.041	4.746	/	11	Pass
	5825	5.235	5.245	/	11	Pass
802.11ac(VH20)	5745	4.717	4.72	7.729	11	Pass
	5785	4.83	4.735	7.793	11	Pass
	5825	5.122	5.025	8.084	11	Pass
802.11ac(VH40)	5755	1.028	1.759	4.419	11	Pass
	5795	0.594	0.976	3.799	11	Pass
802.11n(VH20)	5775	-2.344	-2.387	0.645	11	Pass
	5745	-1.284	4.516	5.530	11	Pass
	5785	4.641	4.818	7.741	11	Pass
802.11n(VH40)	5825	4.851	5.027	7.950	11	Pass
	5755	0.957	0.752	3.866	11	Pass
802.11ac(VH80)	5795	1.315	1.032	4.186	11	Pass

ANT 1

802.11a-5180



802.11a-5200

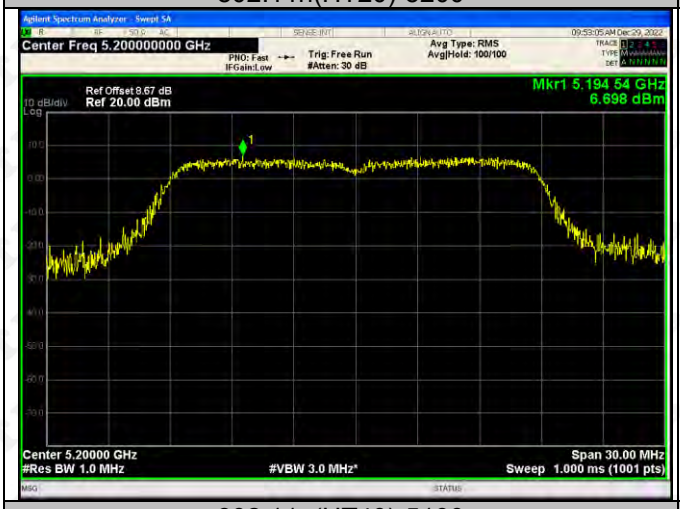


802.11a-5240

802.11n(HT20)-5180

802.11n(HT20)-5200

802.11n(HT20)-5240



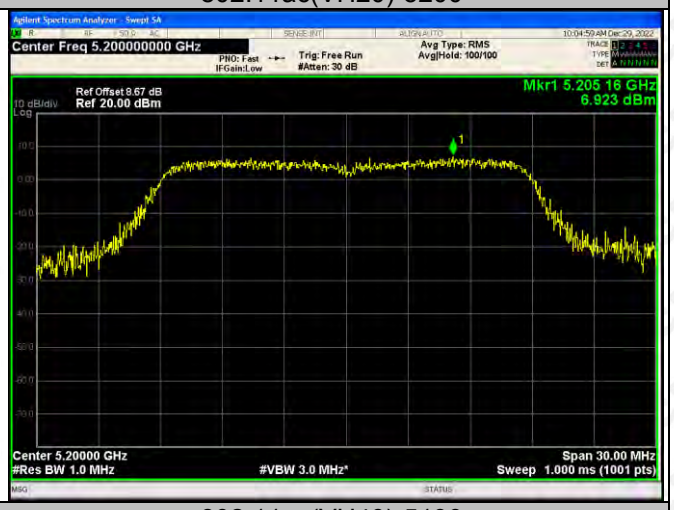
802.11n(HT40)-5190

802.11n(HT40)-5230

802.11ac(VH20)-5180

802.11ac(VH20)-5200

802.11ac(VH20)-5240



802.11ac(VH40)-5190

802.11ac(VH40)-5230

802.11ac(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

802.11n(HT20)-5745

802.11n(HT20)-5785

802.11n(HT20)-5825

802.11n(HT40)-5755

802.11n(HT40)-5795

802.11ac(HT80)-5775

ANT 2

802.11a-5180

802.11a-5200

802.11a-5240

802.11n(HT20)-5180

802.11n(HT20)-5200

802.11n(HT20)-5240

802.11n(HT40)-5190

802.11n(HT40)-5230

802.11ac(VH20)-5180

802.11ac(VH20)-5200

802.11ac(VH20)-5240

802.11ac(VH40)-5190

802.11ac(VH40)-5230

802.11ac(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

802.11n(HT20)-5745

802.11n(HT20)-5785

802.11n(HT20)-5825

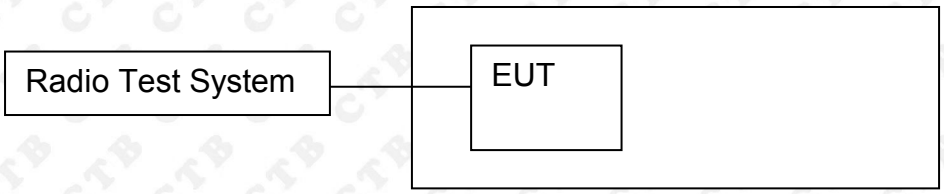
802.11n(HT40)-575

802.11n(HT40)-5795

802.11ac(HT80)-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	5180.0718	5180	0.0718	13.8698
		V max (V)	132	5180.0673	5180	0.0673	13.0015
		V min (V)	108	5180.0410	5180	0.0410	7.9062
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	5180.0399	5180	0.0399	7.7073
		T (°C)	10	5180.0233	5180	0.0233	4.4982
		T (°C)	20	5180.0126	5180	0.0126	2.4306
		T (°C)	30	5180.0033	5180	0.0033	0.6334
		T (°C)	40	5180.0347	5180	0.0347	6.7029
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	5200.0364	5200	0.0364	7.0005
		V max (V)	132	5200.0484	5200	0.0484	9.3090
		V min (V)	108	5200.0027	5200	0.0027	0.5256
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	5200.0361	5200	0.0361	6.9349
		T (°C)	10	5200.0261	5200	0.0261	5.0249
		T (°C)	20	5200.0057	5200	0.0057	1.0935
		T (°C)	30	5200.0349	5200	0.0349	6.7116
		T (°C)	40	5200.0375	5200	0.0375	7.2079
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	5240.0251	5240	0.0251	4.7826
		V max (V)	132	5240.0371	5240	0.0371	7.0894
		V min (V)	108	5240.0134	5240	0.0134	2.5599
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	5240.0032	5240	0.0032	0.6186
		T (°C)	10	5240.0100	5240	0.0100	1.9033
		T (°C)	20	5240.0177	5240	0.0177	3.3760
		T (°C)	30	5240.0023	5240	0.0023	0.4467
		T (°C)	40	5240.0356	5240	0.0356	6.7979
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	5745.0821	5745	0.0821	14.2883
		V max (V)	132	5745.0736	5745	0.0736	12.8115
		V min (V)	108	5745.0821	5745	0.0821	14.2883
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	5745.0351	5745	0.0351	6.1043
		T (°C)	10	5745.0426	5745	0.0426	7.4102
		T (°C)	20	5745.0014	5745	0.0014	0.2476
		T (°C)	30	5745.0935	5745	0.0935	16.2741
		T (°C)	40	5745.0283	5745	0.0283	4.9330
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	5785.0686	5785	0.0686	11.8617
		V max (V)	132	5785.0659	5785	0.0659	11.3845
		V min (V)	108	5785.0000	5785	0.0000	0.0044
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	5785.0052	5785	0.0052	0.9013
		T (°C)	10	5785.0892	5785	0.0892	15.4248
		T (°C)	20	5785.0934	5785	0.0934	16.1489
		T (°C)	30	5785.0615	5785	0.0615	10.6352
		T (°C)	40	5785.0321	5785	0.0321	5.5440
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	5825.0336	5825	0.0336	5.7619
		V max (V)	132	5825.0895	5825	0.0895	15.3698
		V min (V)	108	5825.0364	5825	0.0364	6.2492
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	5825.0455	5825	0.0455	7.8153
		T (°C)	10	5825.0505	5825	0.0505	8.6762
		T (°C)	20	5825.0182	5825	0.0182	3.1295
		T (°C)	30	5825.0064	5825	0.0064	1.0935
		T (°C)	40	5825.0398	5825	0.0398	6.8377
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	5180.0874	5180	0.0874	16.8794
		V max (V)	132	5180.0285	5180	0.0285	5.4963
		V min (V)	108	5180.0005	5180	0.0005	0.0871
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	5180.0203	5180	0.0203	3.9280
		T (°C)	10	5180.0031	5180	0.0031	0.5959
		T (°C)	20	5180.0087	5180	0.0087	1.6803
		T (°C)	30	5180.0063	5180	0.0063	1.2252
		T (°C)	40	5180.0698	5180	0.0698	13.4758
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	5200.0678	5200	0.0678	13.0473
		V max (V)	132	5200.0290	5200	0.0290	5.5799
		V min (V)	108	5200.0462	5200	0.0462	8.8786
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	5200.0624	5200	0.0624	11.9905
		T (°C)	10	5200.0397	5200	0.0397	7.6299
		T (°C)	20	5200.0252	5200	0.0252	4.8459
		T (°C)	30	5200.0859	5200	0.0859	16.5275
		T (°C)	40	5200.0754	5200	0.0754	14.4956
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	5240.0278	5240	0.0278	5.3017
		V max (V)	132	5240.0504	5240	0.0504	9.6209
		V min (V)	108	5240.0136	5240	0.0136	2.5945
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	5240.0859	5240	0.0859	16.3863
		T (°C)	10	5240.0583	5240	0.0583	11.1325
		T (°C)	20	5240.0266	5240	0.0266	5.0670
		T (°C)	30	5240.0803	5240	0.0803	15.3318
		T (°C)	40	5240.0127	5240	0.0127	2.4282
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	5745.0325	5745	0.0325	5.6529
		V max (V)	132	5745.0897	5745	0.0897	15.6083
		V min (V)	108	5745.0527	5745	0.0527	9.1673
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	5745.0860	5745	0.0860	14.9651
		T (°C)	10	5745.0802	5745	0.0802	13.9653
		T (°C)	20	5745.0884	5745	0.0884	15.3806
		T (°C)	30	5745.0094	5745	0.0094	1.6394
		T (°C)	40	5745.0124	5745	0.0124	2.1596
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	5785.0214	5785	0.0214	3.6943
		V max (V)	132	5785.0089	5785	0.0089	1.5425
		V min (V)	108	5785.0732	5785	0.0732	12.6515
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	5785.0776	5785	0.0776	13.4169
		T (°C)	10	5785.0670	5785	0.0670	11.5866
		T (°C)	20	5785.0165	5785	0.0165	2.8548
		T (°C)	30	5785.0444	5785	0.0444	7.6762
		T (°C)	40	5785.0124	5785	0.0124	2.1504
		T (°C)	50	5785.0478	5785	0.0478	8.2689
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	5825.0462	5825	0.0462	7.9302
		V max (V)	132	5825.0068	5825	0.0068	1.1701
		V min (V)	108	5825.0321	5825	0.0321	5.5125
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	5825.0881	5825	0.0881	15.1297
		T (°C)	10	5825.0516	5825	0.0516	8.8583
		T (°C)	20	5825.0620	5825	0.0620	10.6487
		T (°C)	30	5825.0350	5825	0.0350	6.0138
		T (°C)	40	5825.0412	5825	0.0412	7.0812
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.

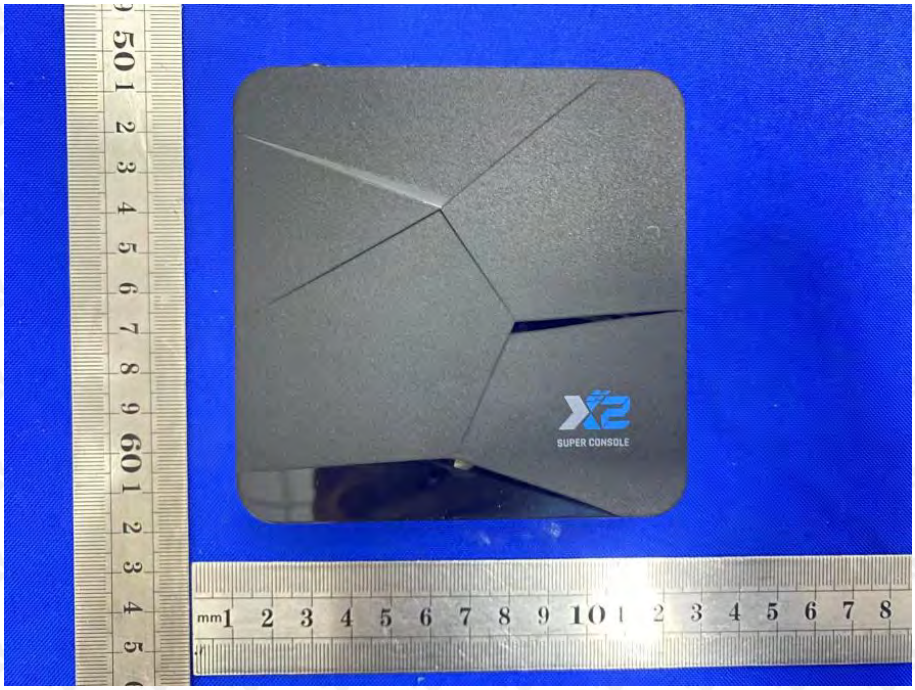
EUT Antenna:

The antenna is Internal antenna and no consideration of replacement. The best case gain of the antenna is 5.2G: 2.76dBi, 5.8G: -1.15dBi.

15. EUT PHOTOGRAPHS

EUT Photo 1

EUT Photo 2



16. EUT TEST SETUP PHOTOGRAPHS

Spurious emissions

Below 1GHz

Above 1GHz

Conducted Emission

※※※※※ END OF REPORT ※※※※※