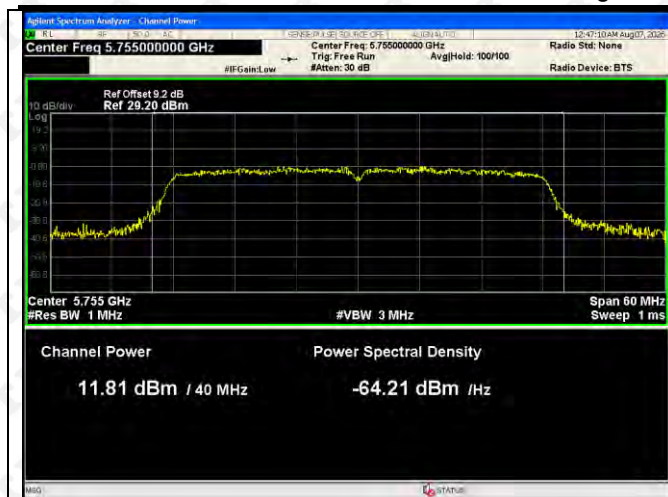
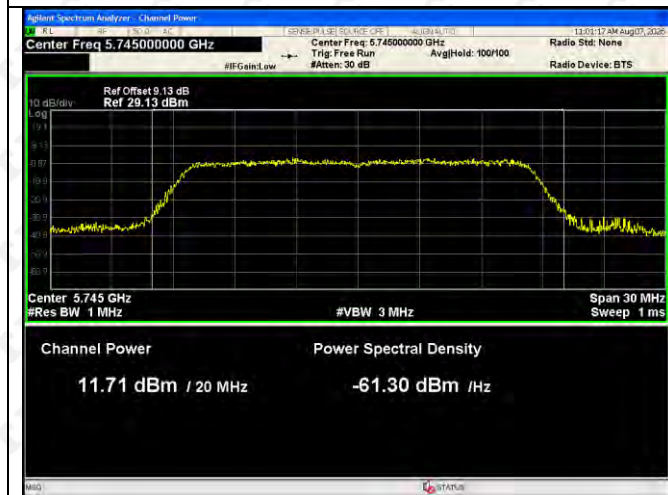


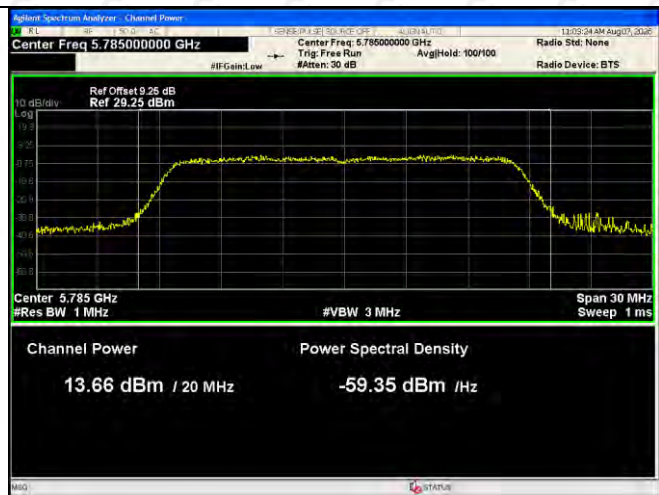


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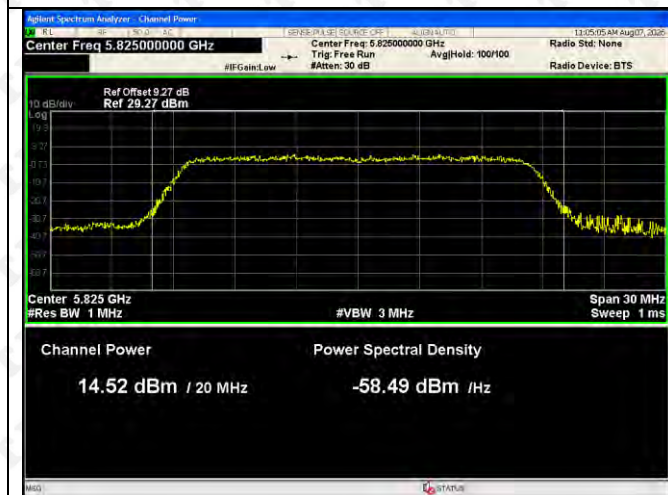
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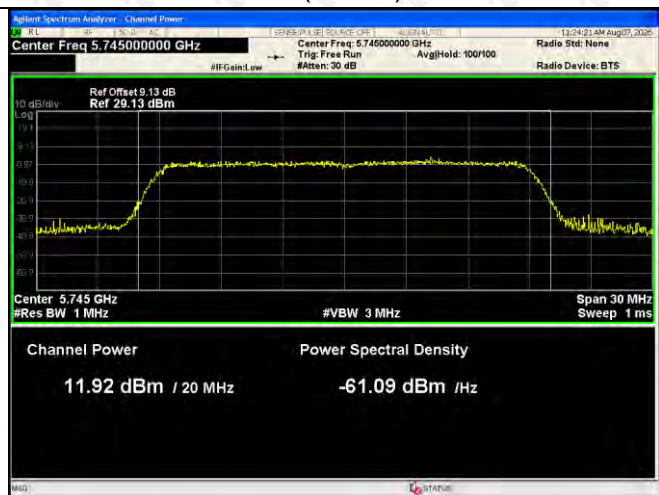
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802.11a-5825

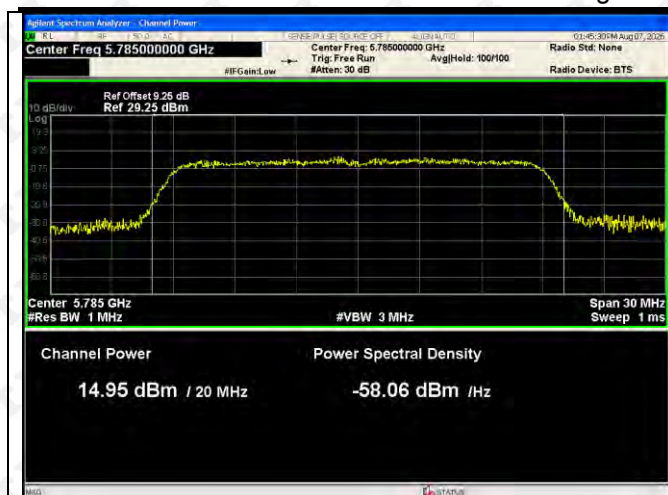


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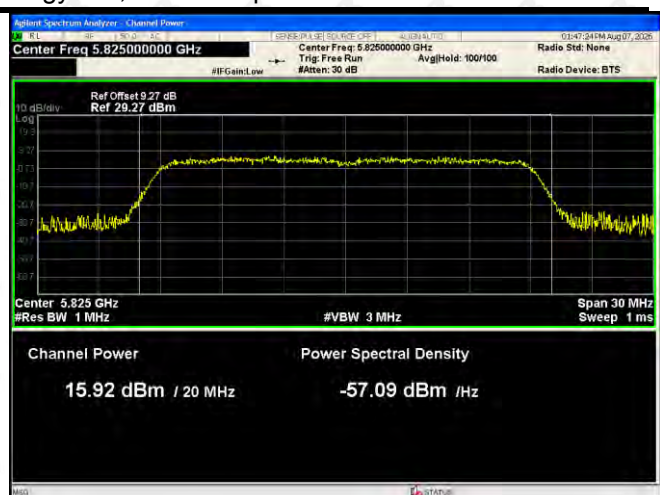


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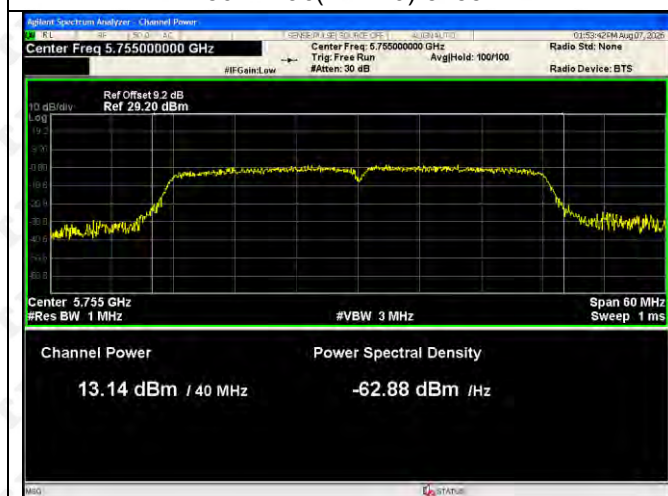
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802.11ac(VHT40)-5755



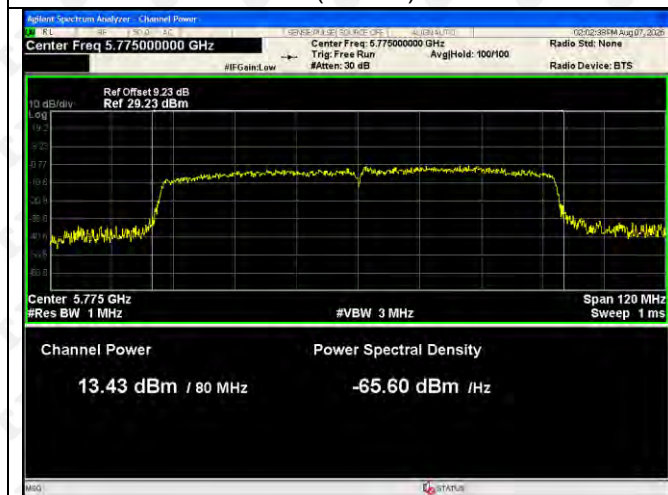
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802.11ac(VHT80)-5775



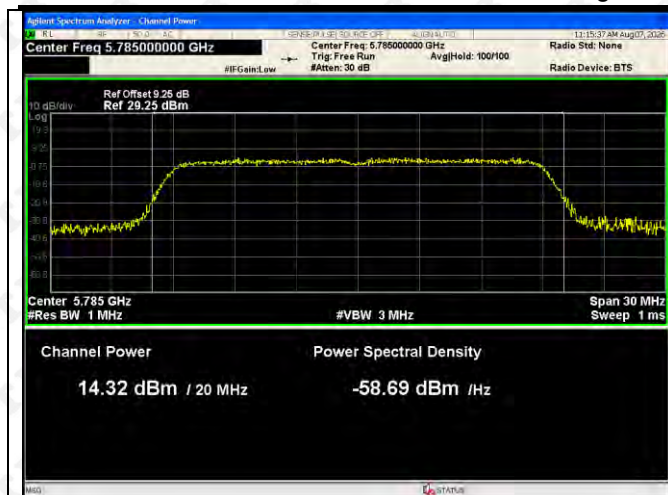
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802.11n(HT20)-5785



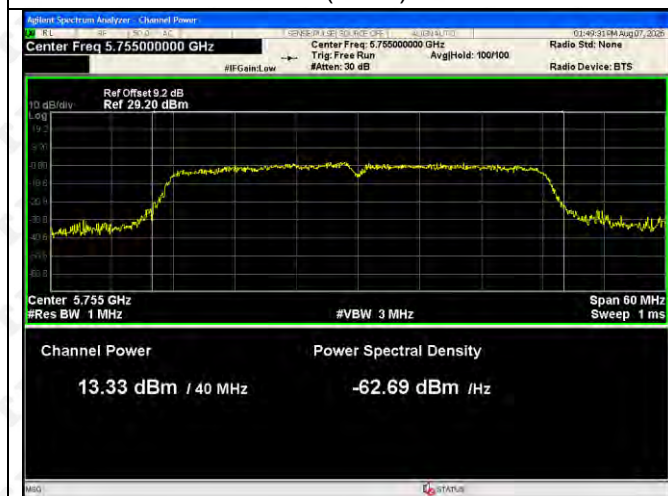
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5802.11n(HT40)-5755

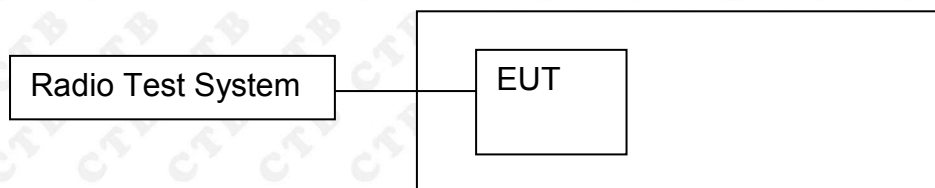


802.11n(HT40)-5795



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 $11 \text{ dBm} + 10 \log B$, 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)

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- 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:

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 * \text{RBW}$.
- Detector = Peak.
- 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 $\geq 3 * \text{RBW}$
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	18.667
	5200	18.265
	5240	18.671
802.11ac(VHT20)	5180	19.588
	5200	19.024
	5240	19.347
802.11ac(VHT40)	5190	39.341
	5230	39.297
802.11ac(VHT80)	5210	78.603
802.11n(HT20)	5180	19.515
	5200	19.132
	5240	19.511
802.11n(HT40)	5190	39.058
	5230	39.345

Test mode ANT 2	Test Channel (MHz)	26dB Bandwidth (MHz)
802.11a	5180	18.435
	5200	18.502
	5240	18.22
802.11ac(VHT20)	5180	19.455
	5200	19.344
	5240	19.381
802.11ac(VHT40)	5190	39.402
	5230	39.268
802.11ac(VHT80)	5210	94.499
802.11n(HT20)	5180	19.397
	5200	19.177
	5240	19.478
802.11n(HT40)	5190	39.199
	5230	39.416

5725-5850 MHz

Test mode Ant 1	Test Channel (MHz)	6dB Bandwidth (MHz)	Result
802.11a	5745	16.375	Pass
	5785	16.406	Pass
	5825	16.318	Pass
802.11ac(VHT20)	5745	17.625	Pass
	5785	17.621	Pass
	5825	17.563	Pass
802.11ac(VHT40)	5755	35.197	Pass
	5795	35.429	Pass
802.11ac(VHT80)	5775	75.218	Pass
802.11n(HT20)	5745	17.68	Pass
	5785	17.62	Pass
	5825	17.482	Pass
802.11n(HT40)	5755	35.25	Pass
	5795	35.188	Pass

Test mode Ant 2	Test Channel (MHz)	6dB Bandwidth (MHz)	Result
802.11a	5745	16.267	Pass
	5785	16.345	Pass
	5825	16.444	Pass
802.11ac(VHT20)	5745	17.302	Pass
	5785	17.342	Pass
	5825	17.603	Pass
802.11ac(VHT40)	5755	35.169	Pass
	5795	35.104	Pass
802.11ac(VHT80)	5775	70.165	Pass
802.11n(HT20)	5745	17.676	Pass
	5785	17.253	Pass
	5825	17.71	Pass
802.11n(HT40)	5755	35.186	Pass
	5795	35.178	Pass

5180-5240MHz
ANT 1

802.11a-5180



802.11a-5200



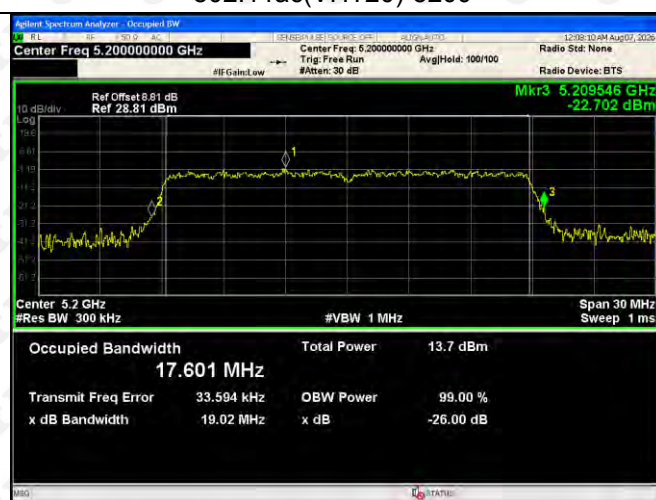
802.11a-5240



802.11ac(VHT20)-5180



802.11ac(VHT20)-5200



802.11ac(VHT20)-5240



802.11ac(VHT40)-5190

802.11ac(VHT40)-5230



802.11ac(VHT80)-5210



802.11n(HT20)-5180



802.11ac(VHT80)-5210



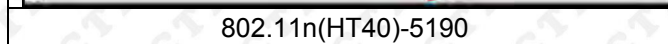
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802.11n(HT20)-5200



802.11n(HT20)-5240



802.11n(HT40)-5190



802.11n(HT40)-5230



ANT2

802.11a-5180



802.11a-5200



802.11a-5240



802.11ac(VHT20)-5180



802.11ac(VHT20)-5200

802.11ac(VHT20)-5240



802.11ac(VHT40)-5190



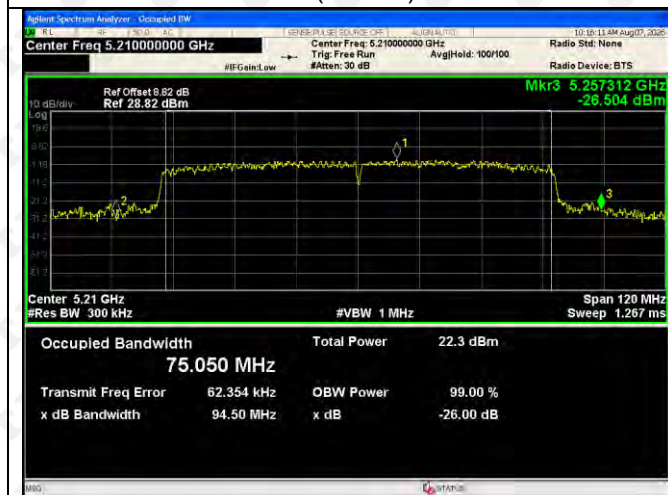
802.11ac(VHT40)-5230



802.11ac(VHT80)-5210



802.11ac(VHT80)-5230



802.11n(HT20)-5210



802.11n(HT20)-5240



802.11n(HT40)-5190



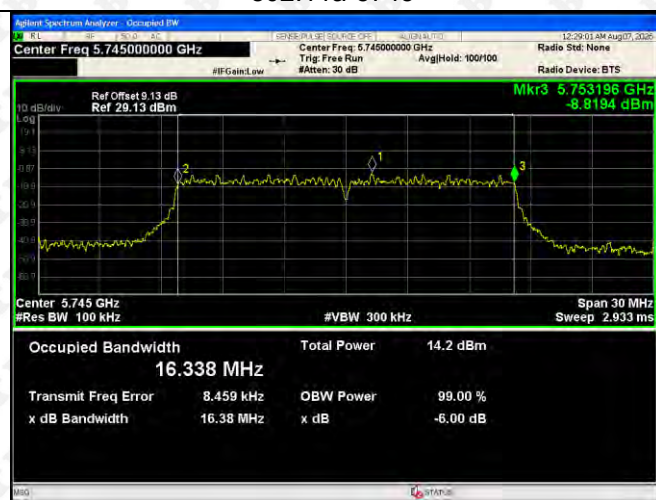
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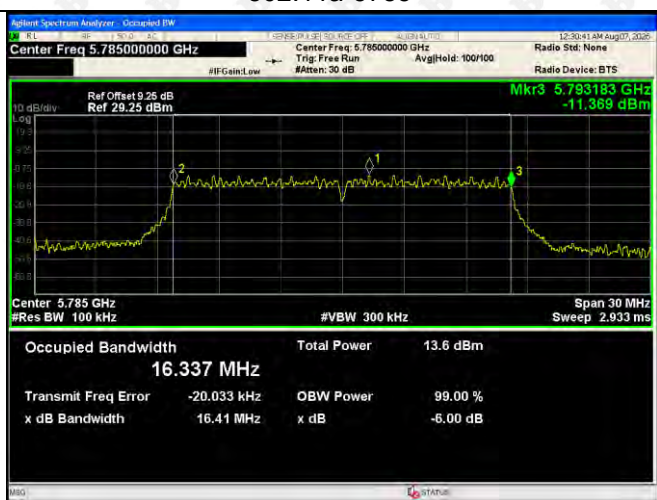
5745-5825MHz

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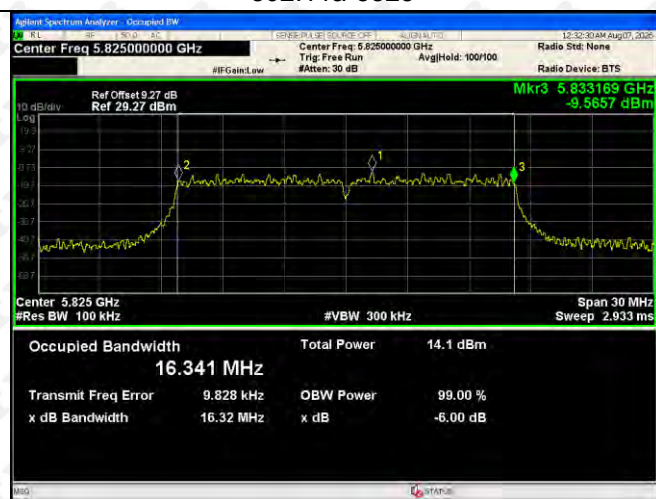
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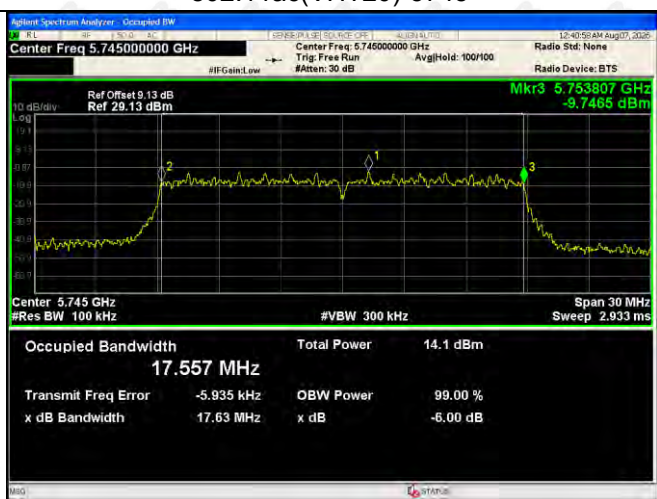
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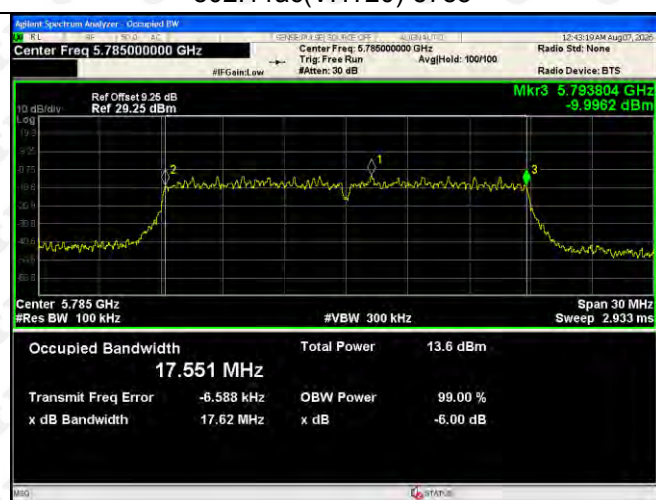
802.11a-5825



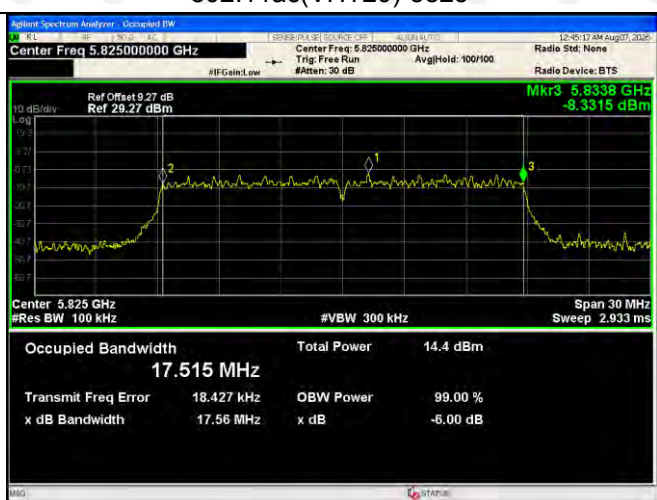
802.11ac(VHT20)-5745



802.11ac(VHT20)-5785

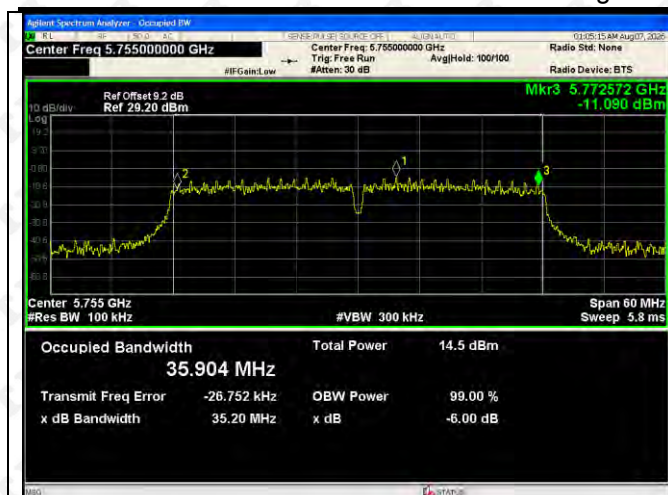


802.11ac(VHT20)-5825



802.11ac(VHT40)-5755

802.11ac(VHT40)-5795



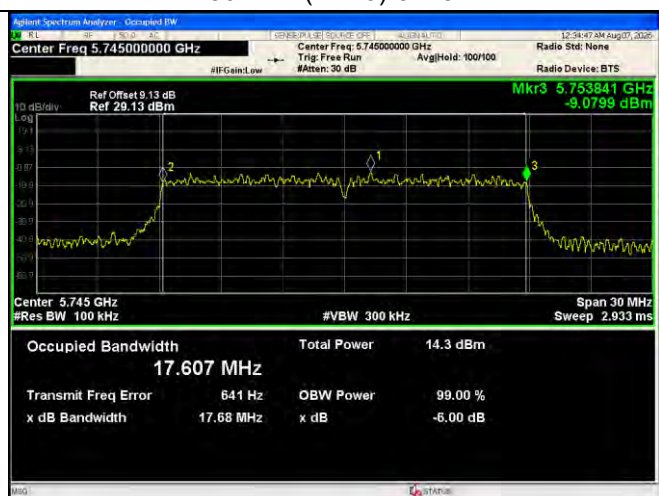
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802.11n(HT20)-5745



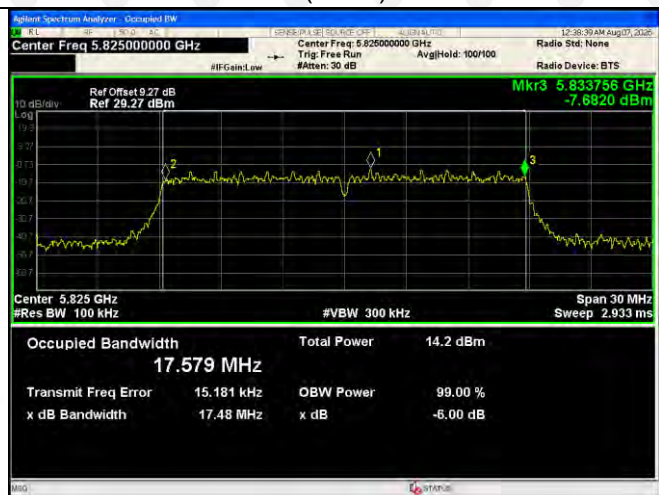
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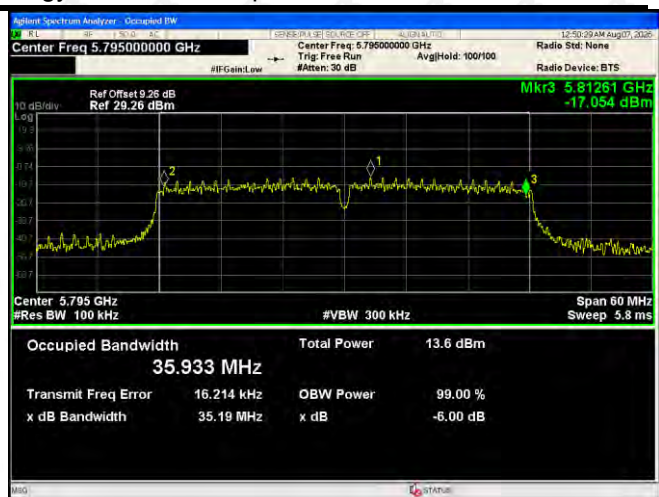
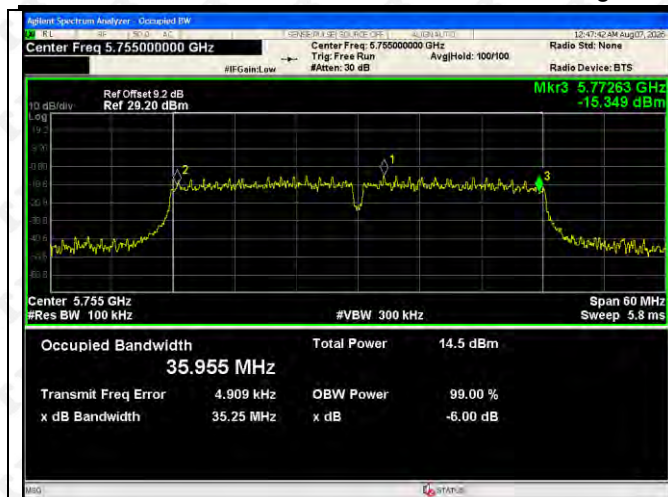
802.11n(HT20)-5745



5802.11n(HT40)-5755



802.11n(HT40)-5795

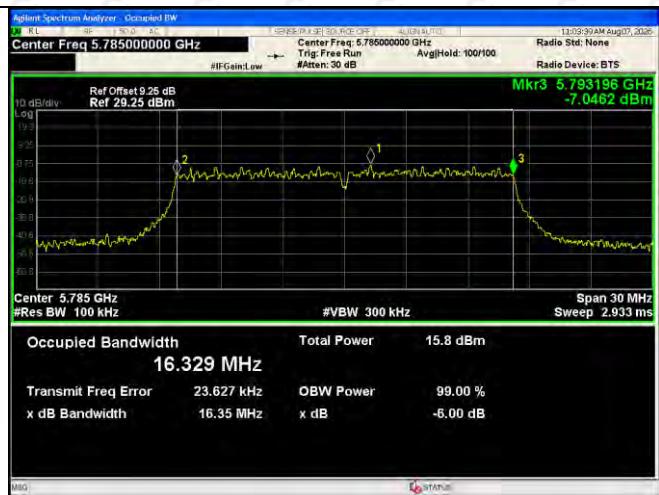


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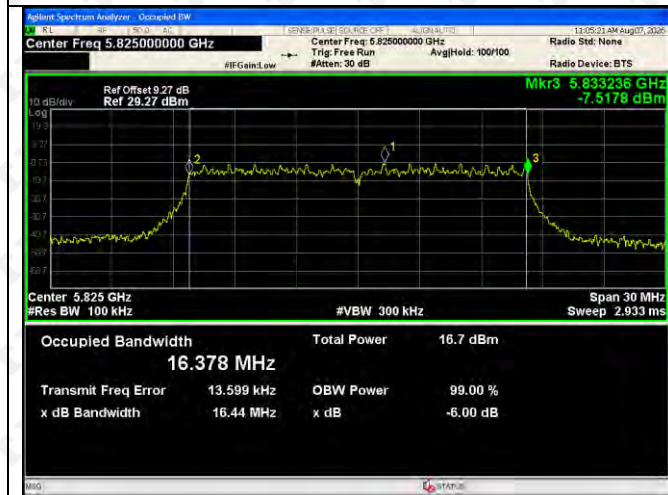
802.11a-5745



802.11a-5785



802.11a-5825



802.11ac(VHT20)-5745



802.11ac(VHT20)-5785

802.11ac(VHT20)-5825



802.11ac(VHT40)-5755



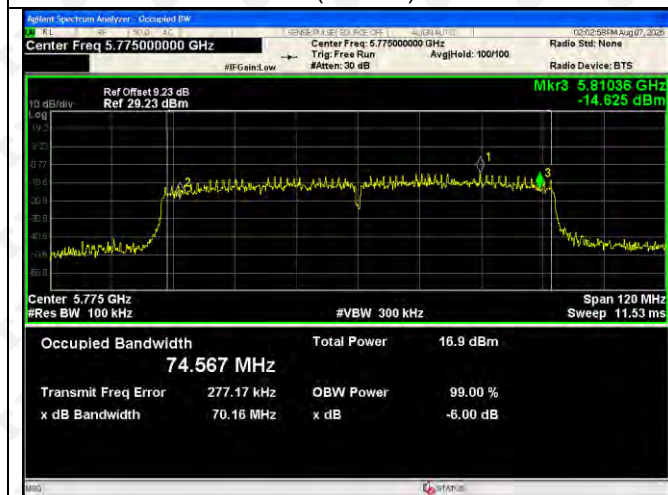
802.11ac(VHT40)-5795



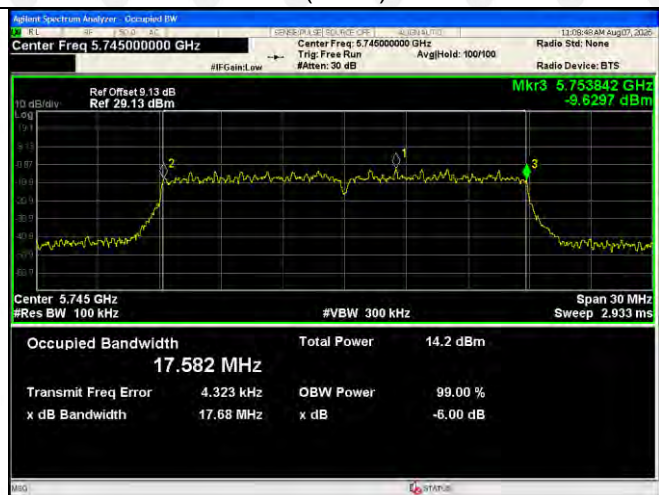
802.11ac(VHT80)-5775



802.11ac(VHT80)-5795



802.11n(HT20)-5775



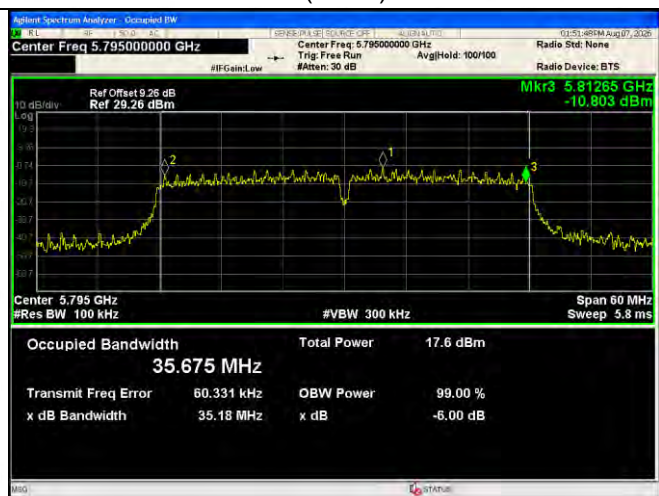
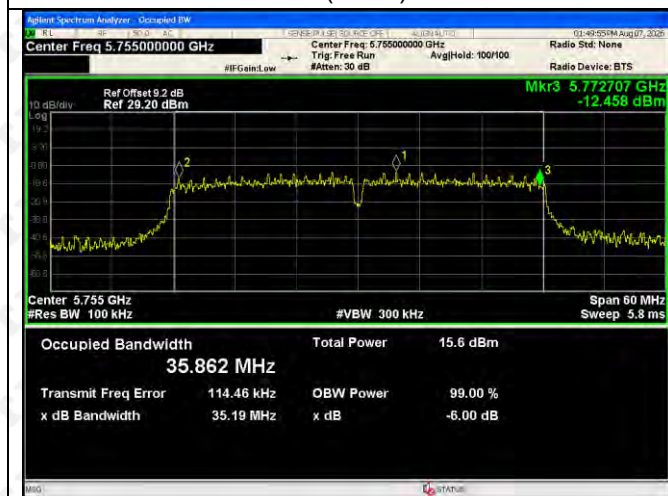
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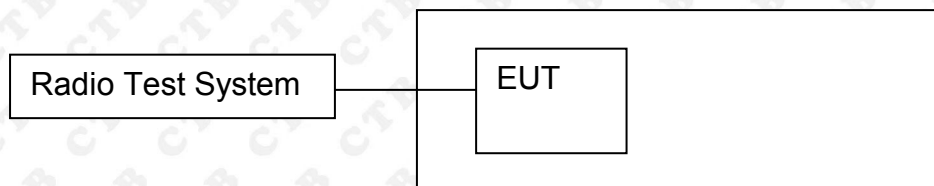


802.11n(HT40)-5795



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 $11 \text{ dBm} + 10 \log B$, 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 $\text{RBW} \geq 1/T$, where T is defined in II.B.I.a).

b) Set $\text{VBW} \geq 3 \text{ RBW}$.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10 \log (500 \text{ kHz}/\text{RBW})$ 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 $10 \log (1\text{MHz}/\text{RBW})$ 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	-3.486	2.306	/	11	Pass
	5200	-2.352	2.907	/	11	Pass
	5240	-1.345	2.839	/	11	Pass
802.11ac(VHT20)	5180	-6.052	1.402	2.120	8.18	Pass
	5200	-6.082	1.929	2.566	8.18	Pass
	5240	-4.05	1.512	2.577	8.18	Pass
802.11ac(VHT40)	5190	-8.441	-1.467	-0.673	8.18	Pass
	5230	-7.26	-1.919	-0.805	8.18	Pass
802.11ac(VHT80)	5230	-11.784	-5.162	-4.307	8.18	Pass
802.11n(HT20)	5180	-3.913	2.566	3.447	8.18	Pass
	5200	-3.019	3.057	4.015	8.18	Pass
	5240	-3.895	2.657	3.525	8.18	Pass
802.11n(HT40)	5190	-9.664	0.807	1.180	8.18	Pass
	5230	-7.897	-0.336	0.366	8.18	Pass

Test mode	Test Channel (MHz)	PSD [dBm/500KHz] ANT 1	PSD [dBm/500KHz] ANT 2	PSD [dBm/500KHz] Total	Limit (dBm)	Result
802.11a	5745	-8.112	0.033	/	30	Pass
	5785	-8.399	2.18	/	30	Pass
	5825	-7.65	2.663	/	30	Pass
802.11ac(VHT20)	5745	-8.301	-0.408	0.246	27.18	Pass
	5785	-8.787	3.08	3.354	27.18	Pass
	5825	-7.84	4.033	4.306	27.18	Pass
802.11ac(VHT40)	5755	-11.69	-1.259	-0.883	27.18	Pass
	5795	-12.65	0.42	0.629	27.18	Pass
802.11ac(VHT80)	5795	-15.669	-4.115	-3.821	27.18	Pass
802.11n(HT20)	5775	-8.191	0.593	1.133	27.18	Pass
	5745	-8.657	2.728	3.033	27.18	Pass
	5785	-8.131	2.654	3.002	27.18	Pass
802.11n(HT40)	5825	-11.575	-0.481	-0.156	27.18	Pass
	5755	-12.969	-0.042	0.174	27.18	Pass

5180-5240MHz
ANT 1

802.11a-5180



802.11a-5200



802.11a-5240



802.11ac(VHT20)-5180



802.11ac(VHT20)-5200



802.11ac(VHT20)-5240



802.11ac(VHT40)-5190

802.11ac(VHT40)-5230



802.11ac(VHT80)-5210



802.11n(HT20)-5180



802.11n(HT20)-5200



802.11n(HT20)-5240



802.11n(HT40)-5190



802.11n(HT40)-5230



ANT2

802.11a-5180



802.11a-5200



802.11a-5240



802.11ac(VHT20)-5180



802.11ac(VHT20)-5200

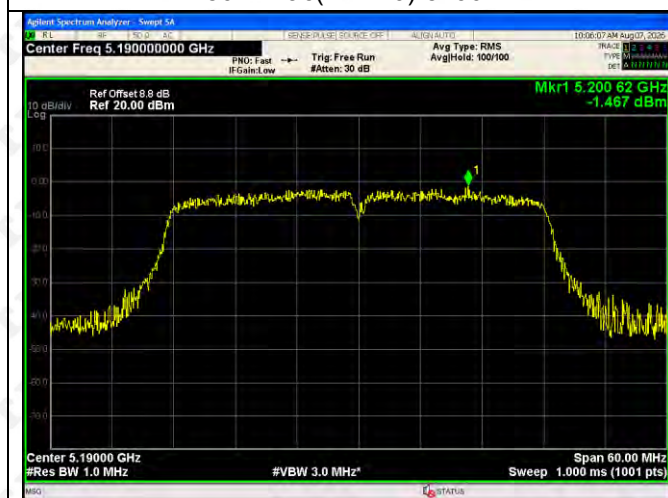
802.11ac(VHT20)-5240



802.11ac(VHT40)-5190



802.11ac(VHT40)-5230



802.11ac(VHT80)-5210



802.11n(HT20)-5180



802.11n(HT20)-5200



802.11n(HT20)-5240



802.11n(HT40)-5190



802.11n(HT40)-5230



5745-5825MHz

ANT 1:

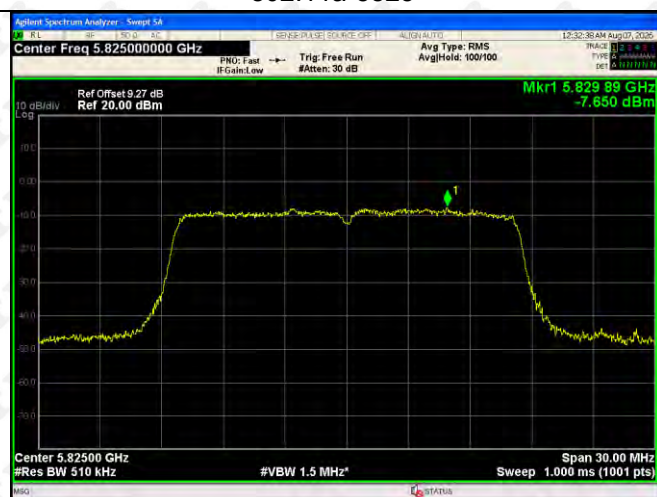
802.11a-5745



802.11a-5785



802.11a-5825



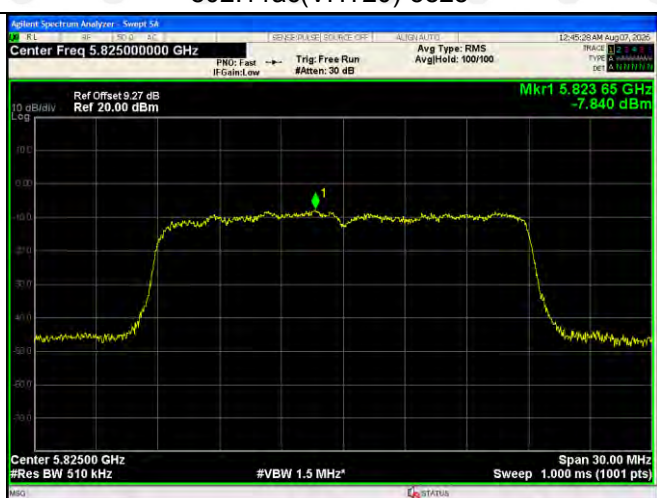
802.11ac(VHT20)-5745



802.11ac(VHT20)-5785



802.11ac(VHT20)-5825



802.11ac(VHT40)-5755

802.11ac(VHT40)-5795



802.11ac(VHT80)-5775



802.11n(HT20)-5745



802.11n(HT20)-5785



802.11n(HT20)-5825



5802.11n(HT40)-5755



802.11n(HT40)-5795



ANT2:

802.11a-5745



802.11a-5785



802.11a-5825



802.11ac(VHT20)-5745



802.11ac(VHT20)-5785

802.11ac(VHT20)-5825



802.11ac(VHT40)-5755



802.11ac(VHT40)-5795



802.11ac(VHT80)-5775



802.11n(HT20)-5745



802.11n(HT20)-5785



802.11n(HT20)-5825



5802.11n(HT40)-5755

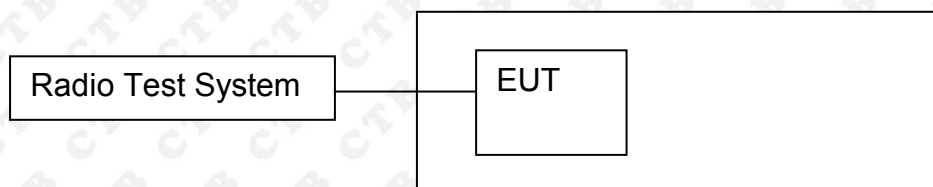


802.11n(HT40)-5795



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

ANT1:

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	5180.0069	5180	0.0069	1.3393
		V max (V)	132	5180.0128	5180	0.0128	2.4708
		V min (V)	108	5180.0058	5180	0.0058	1.1210
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	5180.0284	5180	0.0284	5.4873
		T (°C)	10	5180.0431	5180	0.0431	8.3245
		T (°C)	20	5180.0393	5180	0.0393	7.5803
		T (°C)	30	5180.0165	5180	0.0165	3.1907
		T (°C)	40	5180.0091	5180	0.0091	1.7614
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	5200.0375	5200	0.0375	7.2039
		V max (V)	132	5200.0389	5200	0.0389	7.4752
		V min (V)	108	5200.0449	5200	0.0449	8.6304
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	5200.0351	5200	0.0351	6.7526
		T (°C)	10	5200.0188	5200	0.0188	3.6178
		T (°C)	20	5200.0235	5200	0.0235	4.5243
		T (°C)	30	5200.0394	5200	0.0394	7.5741
		T (°C)	40	5200.0391	5200	0.0391	7.5249
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	5240.0452	5240	0.0452	8.6290
		V max (V)	132	5240.0203	5240	0.0203	3.8731
		V min (V)	108	5240.0520	5240	0.0520	9.9206
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	5240.0397	5240	0.0397	7.5738
		T (°C)	10	5240.0284	5240	0.0284	5.4118
		T (°C)	20	5240.0327	5240	0.0327	6.2391
		T (°C)	30	5240.0108	5240	0.0108	2.0693
		T (°C)	40	5240.0068	5240	0.0068	1.3065
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	5180.0783	5180	0.0783	15.1067
		V max (V)	132	5180.0575	5180	0.0575	11.1083
		V min (V)	108	5180.0569	5180	0.0569	10.9914
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	5180.0731	5180	0.0731	14.1125
		T (°C)	10	5180.0693	5180	0.0693	13.3832
		T (°C)	20	5180.0592	5180	0.0592	11.4373
		T (°C)	30	5180.0164	5180	0.0164	3.1716
		T (°C)	40	5180.0890	5180	0.0890	17.1756
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	5200.0812	5200	0.0812	15.6165
		V max (V)	132	5200.0378	5200	0.0378	7.2650
		V min (V)	108	5200.0793	5200	0.0793	15.2497
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	5200.0918	5200	0.0918	17.6609
		T (°C)	10	5200.0551	5200	0.0551	10.6050
		T (°C)	20	5200.0683	5200	0.0683	13.1314
		T (°C)	30	5200.0019	5200	0.0019	0.3606
		T (°C)	40	5200.0410	5200	0.0410	7.8919
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	5240.0436	5240	0.0436	8.3181
		V max (V)	132	5240.0258	5240	0.0258	4.9234
		V min (V)	108	5240.0082	5240	0.0082	1.5680
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	5240.0119	5240	0.0119	2.2624
		T (°C)	10	5240.0201	5240	0.0201	3.8426
		T (°C)	20	5240.0826	5240	0.0826	15.7580
		T (°C)	30	5240.0440	5240	0.0440	8.3993
		T (°C)	40	5240.0571	5240	0.0571	10.9052
Limits				±20ppm			
Result				Complies			

ANT1:

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	5745.0106	5745	0.0106	1.8451
		V max (V)	132	5745.0918	5745	0.0918	15.9745
		V min (V)	108	5745.0106	5745	0.0106	1.8451
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	5745.0653	5745	0.0653	11.3651
		T (°C)	10	5745.0011	5745	0.0011	0.1871
		T (°C)	20	5745.0652	5745	0.0652	11.3569
		T (°C)	30	5745.0152	5745	0.0152	2.6406
		T (°C)	40	5745.0226	5745	0.0226	3.9277
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	5785.0539	5785	0.0539	9.3164
		V max (V)	132	5785.0925	5785	0.0925	15.9896
		V min (V)	108	5785.0226	5785	0.0226	3.9014
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	5785.0515	5785	0.0515	8.9077
		T (°C)	10	5785.0716	5785	0.0716	12.3776
		T (°C)	20	5785.0050	5785	0.0050	0.8594
		T (°C)	30	5785.0068	5785	0.0068	1.1730
		T (°C)	40	5785.0253	5785	0.0253	4.3698
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	5825.0417	5825	0.0417	7.1504
		V max (V)	132	5825.0595	5825	0.0595	10.2228
		V min (V)	108	5825.0288	5825	0.0288	4.9360
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	5825.0647	5825	0.0647	11.1038
		T (°C)	10	5825.0596	5825	0.0596	10.2325
		T (°C)	20	5825.0111	5825	0.0111	1.9059
		T (°C)	30	5825.0908	5825	0.0908	15.5954
		T (°C)	40	5825.0157	5825	0.0157	2.6908
Limits				±20ppm			
Result				Complies			

ANT2:

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	5745.0280	5745	0.0280	4.8708
		V max (V)	132	5745.0008	5745	0.0008	0.1429
		V min (V)	108	5745.0156	5745	0.0156	2.7121
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	5745.0909	5745	0.0909	15.8174
		T (°C)	10	5745.0163	5745	0.0163	2.8307
		T (°C)	20	5745.0176	5745	0.0176	3.0568
		T (°C)	30	5745.0323	5745	0.0323	5.6177
		T (°C)	40	5745.0517	5745	0.0517	9.0019
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	5785.0746	5785	0.0746	12.9012
		V max (V)	132	5785.0586	5785	0.0586	10.1320
		V min (V)	108	5785.0920	5785	0.0920	15.9003
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	5785.0638	5785	0.0638	11.0271
		T (°C)	10	5785.0001	5785	0.0001	0.0258
		T (°C)	20	5785.0590	5785	0.0590	10.2058
		T (°C)	30	5785.0035	5785	0.0035	0.6075
		T (°C)	40	5785.0161	5785	0.0161	2.7815
		T (°C)	50	5785.0603	5785	0.0603	10.4219
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	5825.0136	5825	0.0136	2.3264
		V max (V)	132	5825.0319	5825	0.0319	5.4808
		V min (V)	108	5825.0013	5825	0.0013	0.2181
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	5825.0748	5825	0.0748	12.8465
		T (°C)	10	5825.0283	5825	0.0283	4.8557
		T (°C)	20	5825.0267	5825	0.0267	4.5821
		T (°C)	30	5825.0502	5825	0.0502	8.6176
		T (°C)	40	5825.0356	5825	0.0356	6.1115
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 PCB antenna and no consideration of replacement. The best case gain of the antenna is WiFi (5.2G):Ant1: 3.98dBi, Ant2: 3.77dBi, WiFi (5.8G):Ant1: 5.81dBi, Ant2: 2.63dBi.

15. EUT TEST SETUP PHOTOGRAPHS

Radiated Emissions

Below 1G



Above 1G



Conducted emission



RF Conducted



***** END OF REPORT *****