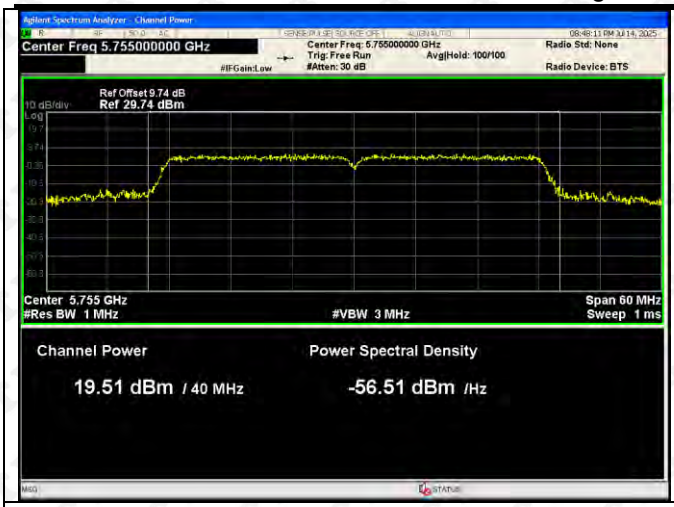
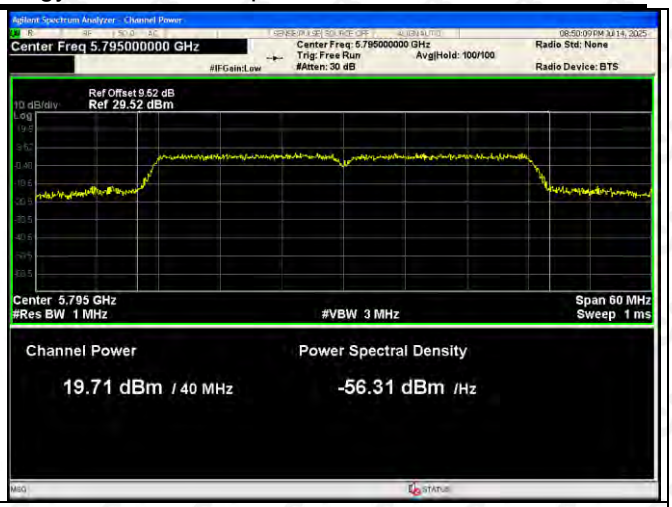


802.11ax(VH20)-5745



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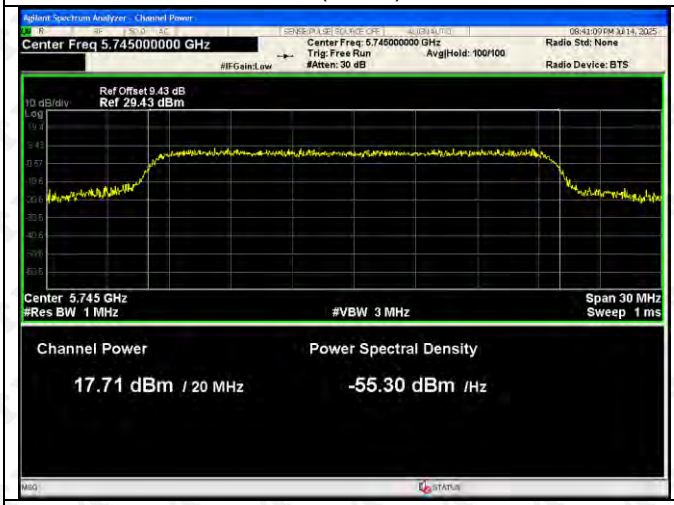

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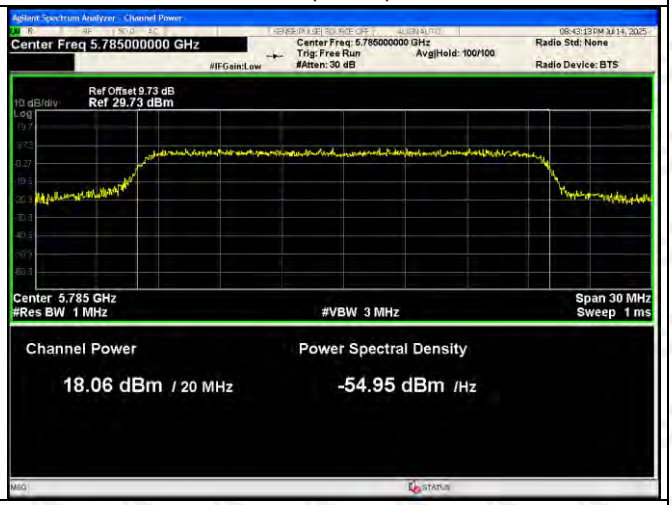

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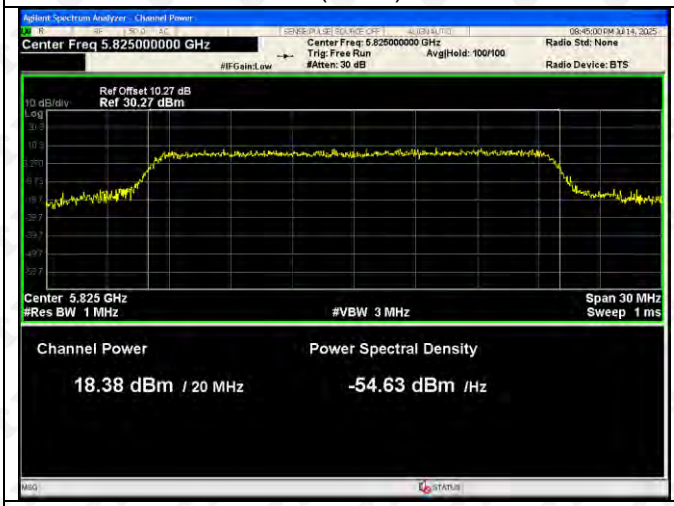
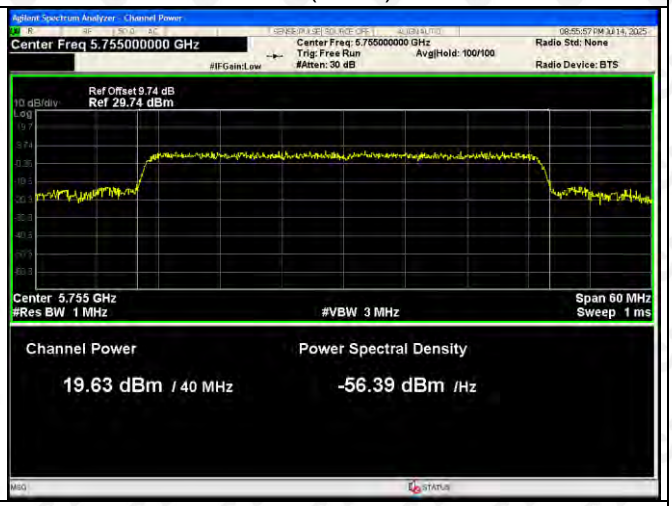
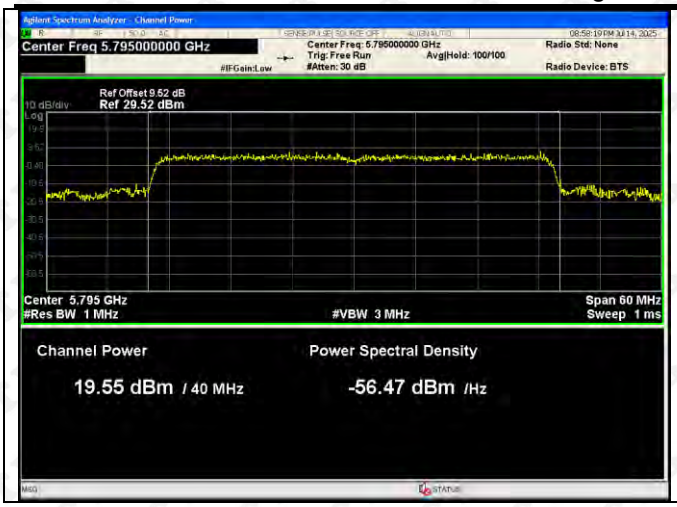
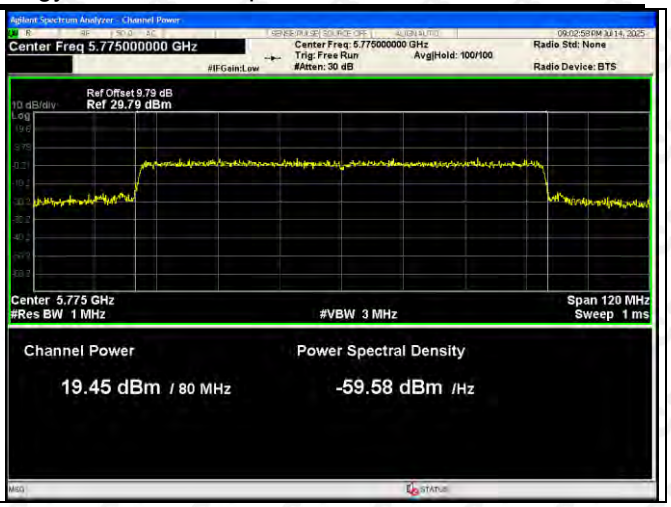


802.11ax(VH40)-5795



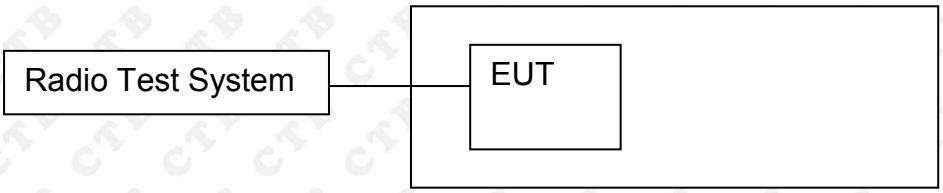
802.11ax(VH80)-5775


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
#IFGain:Low
Ref Offset 9.52 dB
10 dB/div
Ref 29.52 dBm
Log
Center 5.795 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 60 MHz
Sweep 1 ms
Channel Power
19.55 dBm / 40 MHz
Power Spectral Density
-56.47 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
#IFGain:Low
Ref Offset 9.79 dB
10 dB/div
Ref 29.79 dBm
Log
Center 5.775 GHz
#Res BW 1 MHz
#VBW 3 MHz
Span 120 MHz
Sweep 1 ms
Channel Power
19.45 dBm / 80 MHz
Power Spectral Density
-59.58 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

5150-5250MHz

Test mode Ant 1	Test Channel (MHz)	26dB Bandwidth (MHz)
802.11a	5180	22.843
	5200	27.965
	5240	27.834
802.11ac(VHT20)	5180	25.035
	5200	26.818
	5240	24.704
802.11ac(VHT40)	5190	40.237
	5230	38.911
802.11ac(VHT80)	5210	78.533
802.11n(HT20)	5180	25.817
	5200	25.307
	5240	25.935
802.11n(HT40)	5190	39.353
	5230	39.265
802.11ax(HE20)	5180	28.931
	5200	29.87
	5240	29.508
802.11ax(HE40)	5190	40.949
	5230	40.549
802.11ax(HE80)	5210	80.898

Test mode Ant 2	Test Channel (MHz)	26dB Bandwidth (MHz)
802.11a	5180	25.463
	5200	26.19
	5240	26.674
802.11ac(VHT20)	5180	26.742
	5200	28.513
	5240	26.537
802.11ac(VHT40)	5190	39.915
	5230	39.179
802.11ac(VHT80)	5210	102.406
802.11n(HT20)	5180	25.605
	5200	27.966
	5240	28.527
802.11n(HT40)	5190	39.48
	5230	39.336
802.11ax(HE20)	5180	29.443
	5200	29.109
	5240	27.103
802.11ax(HE40)	5190	41.209
	5230	41.1
802.11ax(HE80)	5210	81.407

5725-5850 MHz

Test mode Ant 1	Test Channel (MHz)	6dB Bandwidth (MHz)	Result
802.11a	5745	16.463	Pass
	5785	16.509	Pass
	5825	16.402	Pass
802.11ac(VHT20)	5745	17.708	Pass
	5785	17.721	Pass
	5825	17.692	Pass
802.11ac(VHT40)	5755	36.457	Pass
	5795	36.476	Pass
802.11ac(VHT80)	5775	75.204	Pass
802.11n(HT20)	5745	17.741	Pass
	5785	17.708	Pass
	5825	17.676	Pass
802.11n(HT40)	5755	36.475	Pass
	5795	36.459	Result
802.11ax(HE20)	5745	18.997	Pass
	5785	18.893	Pass
	5825	18.979	Pass
802.11ax(HE40)	5755	38.037	Pass
	5795	38.042	Pass
802.11ax(HE80)	5775	77.943	Pass

Test mode Ant 2	Test Channel (MHz)	6dB Bandwidth (MHz)	Result
802.11a	5745	16.447	Pass
	5785	16.459	Pass
	5825	16.494	Pass
802.11ac(VHT20)	5745	17.706	Pass
	5785	17.695	Pass
	5825	17.711	Pass
802.11ac(VHT40)	5755	36.41	Pass
	5795	36.411	Pass
802.11ac(VHT80)	5775	75.207	Pass
802.11n(HT20)	5745	16.482	Pass
	5785	16.496	Pass
	5825	16.466	Pass
802.11n(HT40)	5755	36.449	Pass
	5795	36.428	Result
802.11ax(HE20)	5745	18.969	Pass
	5785	18.806	Pass
	5825	18.844	Pass
802.11ax(HE40)	5755	38.019	Pass
	5795	37.931	Pass
802.11ax(HE80)	5775	78.09	Pass

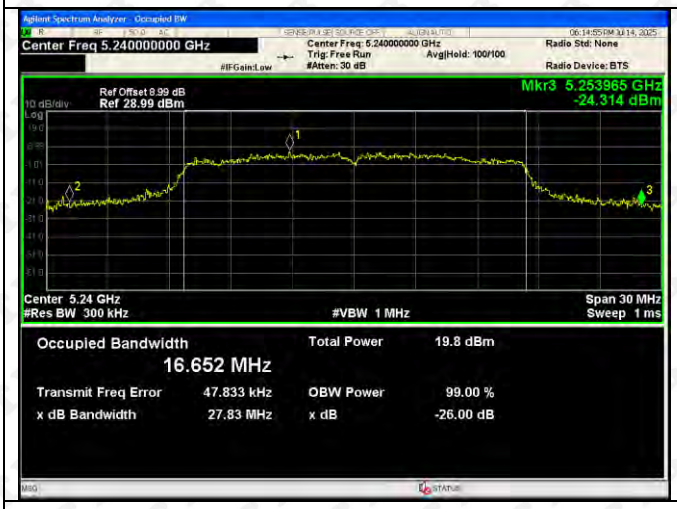
Test Graph
5150MHz ~5250MHz

ANT 1:

802.11a-5180

802.11a-5200

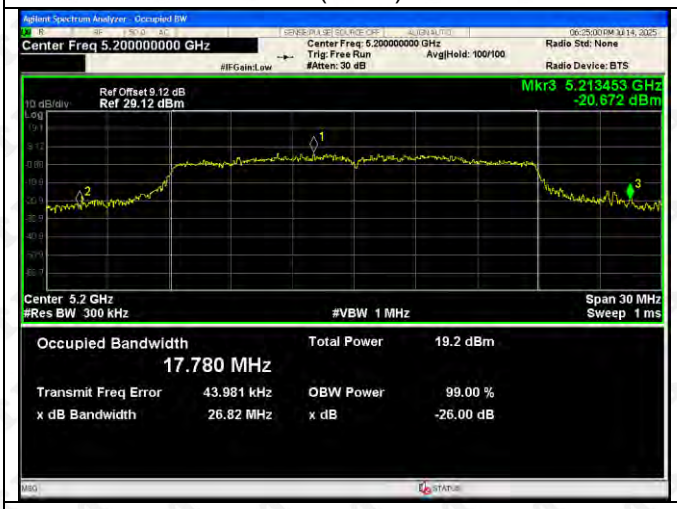
802.11a-5240

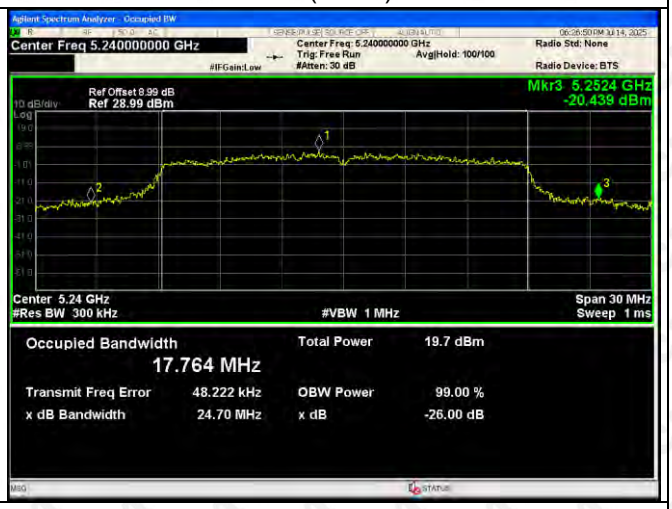


802.11ac(VH20)-5180

802.11ac(VH20)-5200

802.11ac(VH20)-5240

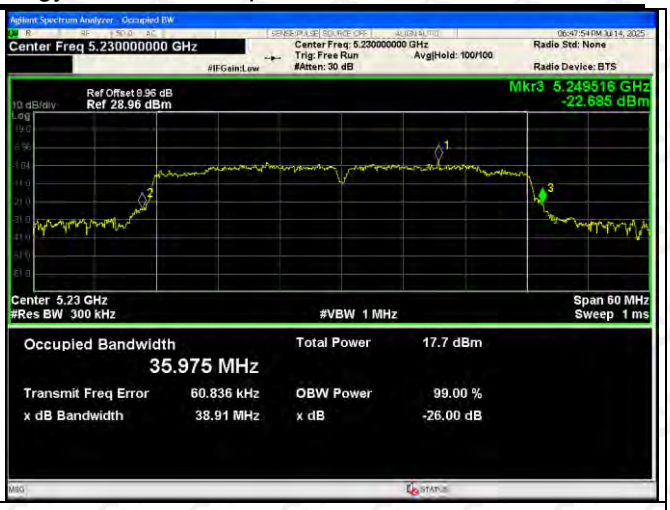




802.11ac(VH40)-5190

802.11ac(VH40)-5230

802.11ac(VH80)-5210



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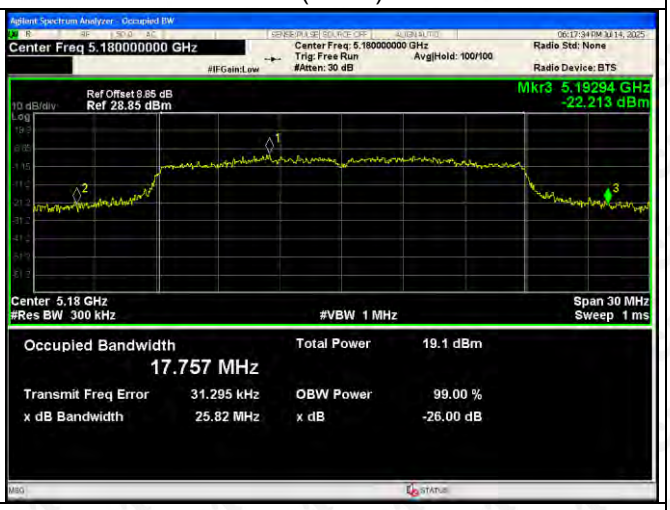
802.11n(HT20)-5200



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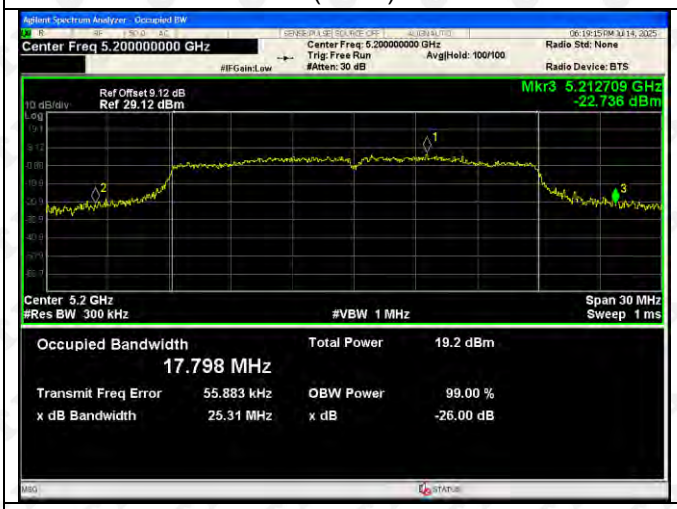

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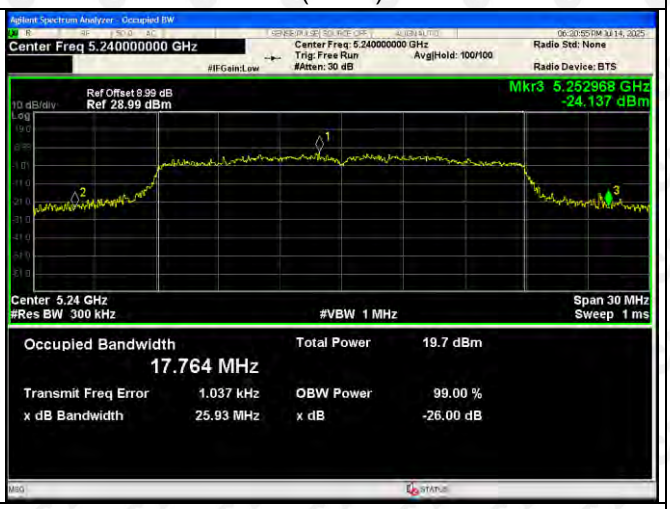

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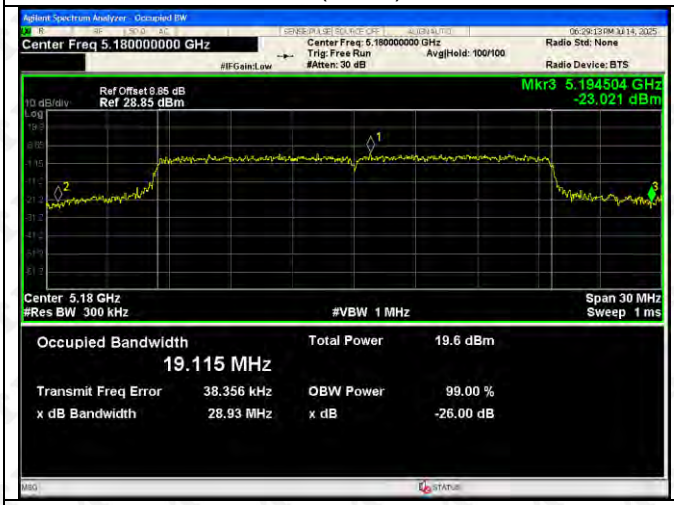
802.11ax(VH20)-5200



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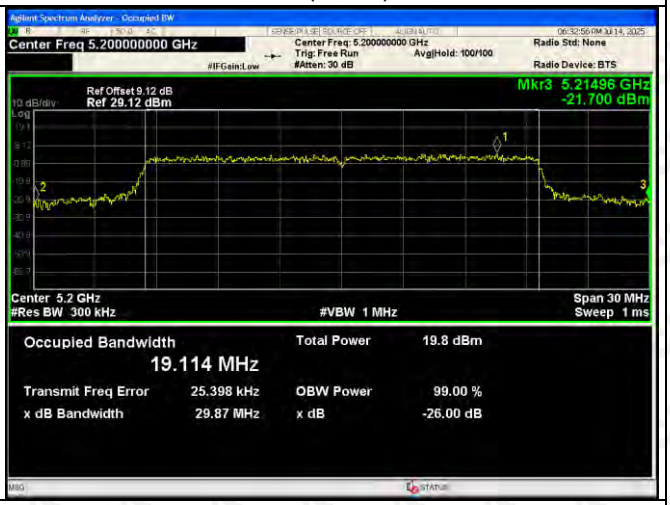

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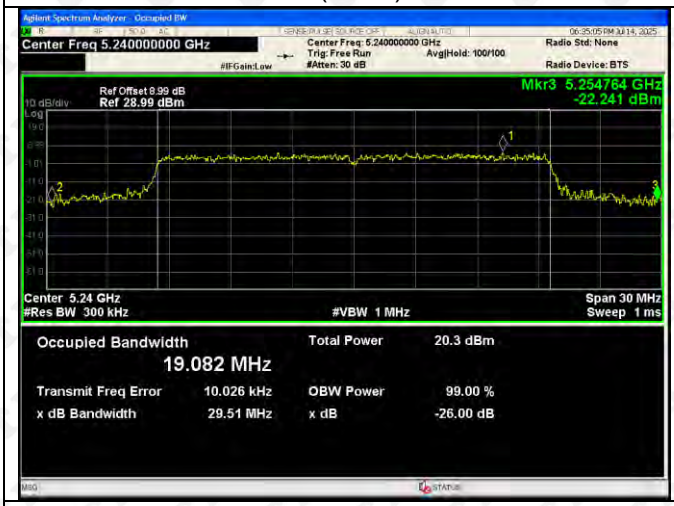

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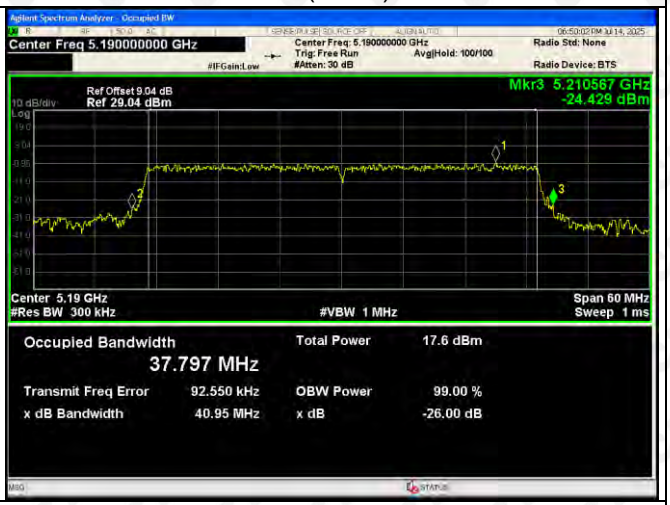
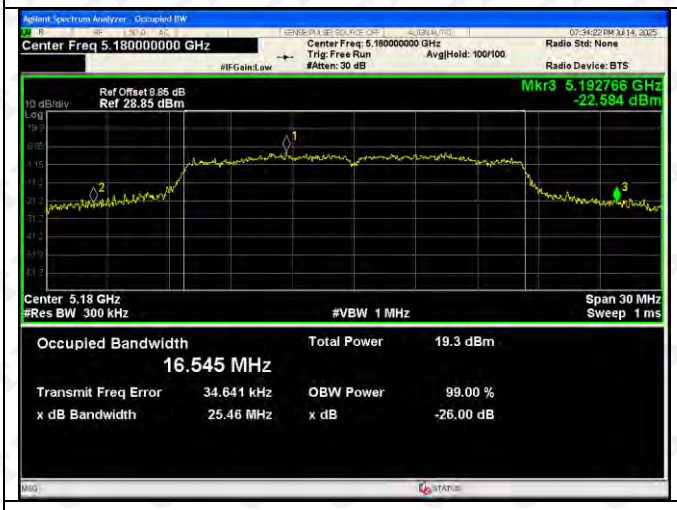


802.11ax(VH80)-5210

5150MHz ~5250MHz

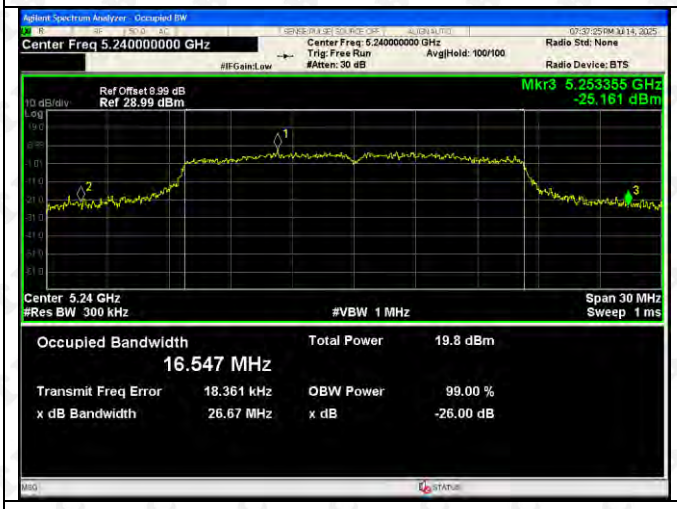
ANT 2:

802.11a-5180

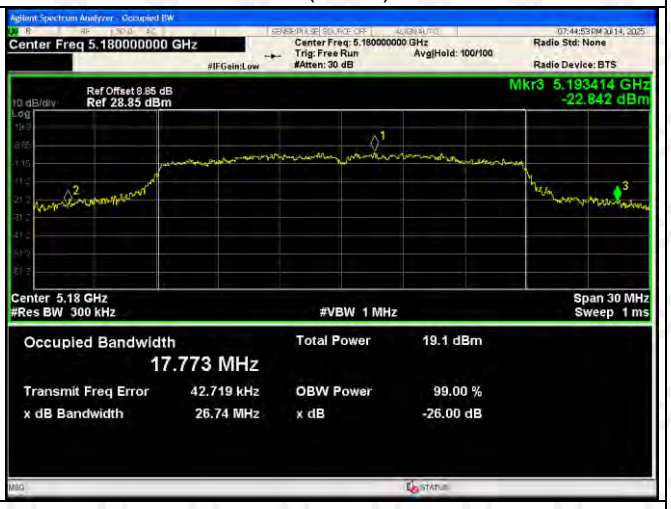


802.11a-5200

802.11a-5240



802.11ac(VH20)-5180



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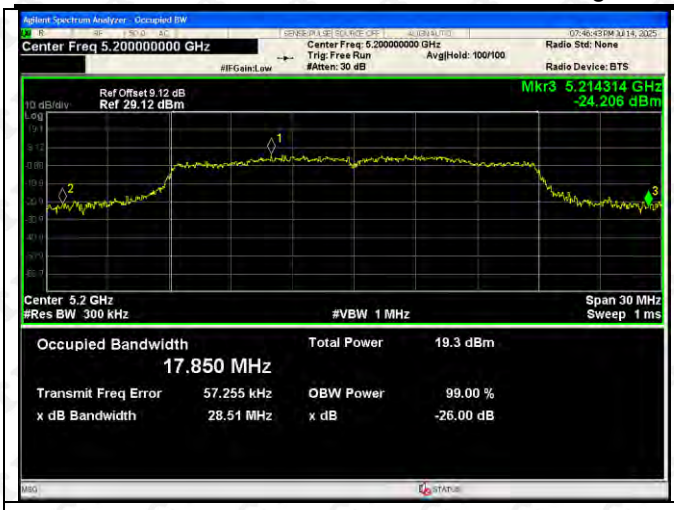
802.11ac(VH20)-5240



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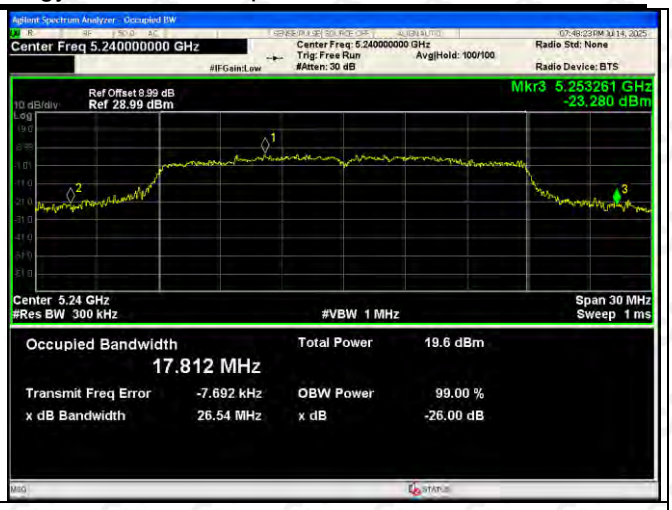
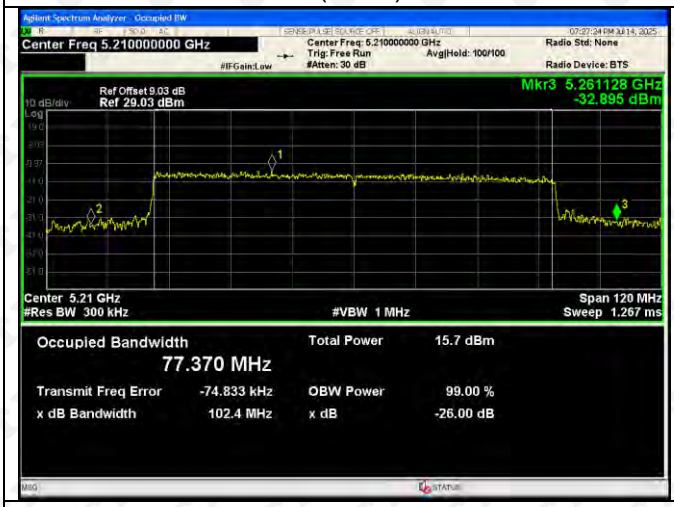


802.11ac(VH40)-5230

802.11ac(VH80)-5210

802.11n(HT20)-5180



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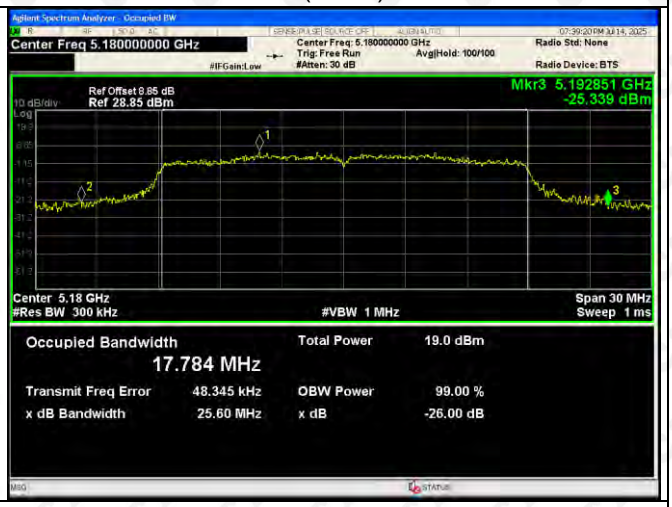

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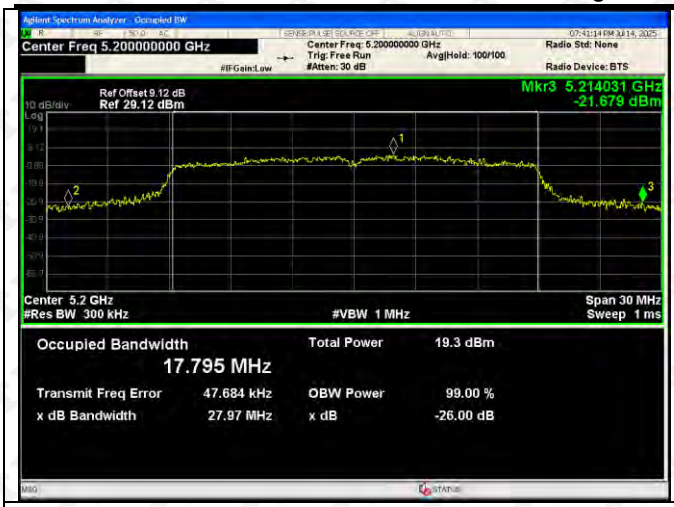

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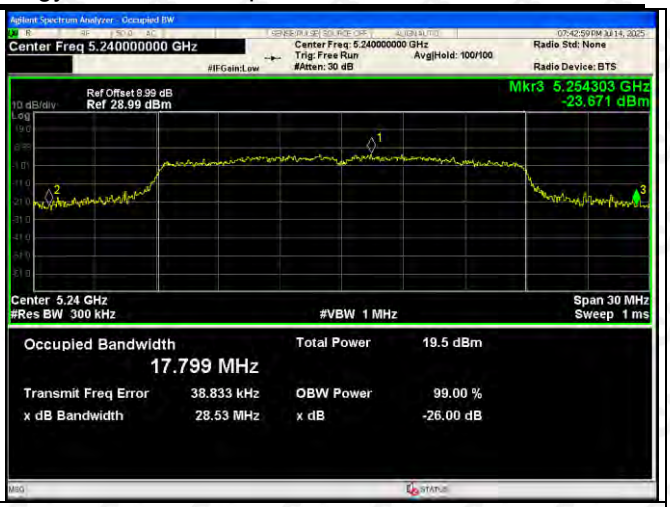
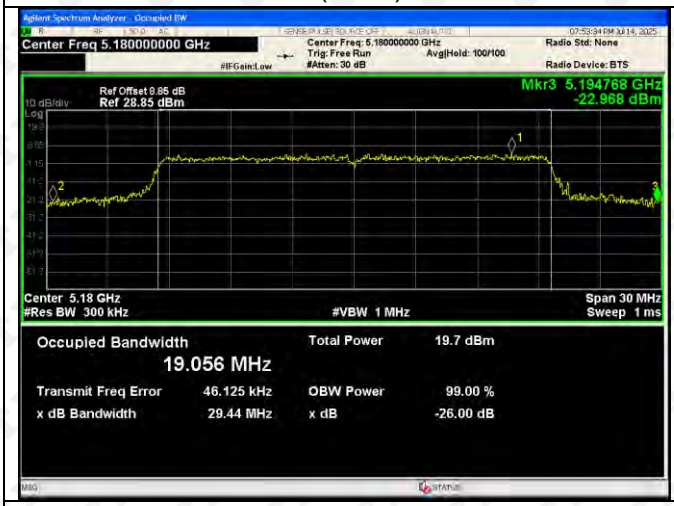


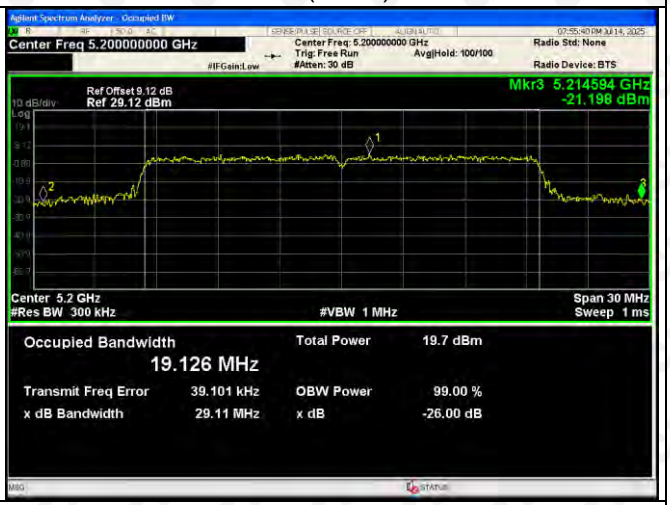
802.11n(HT40)-5230

802.11ax(VH20)-5180

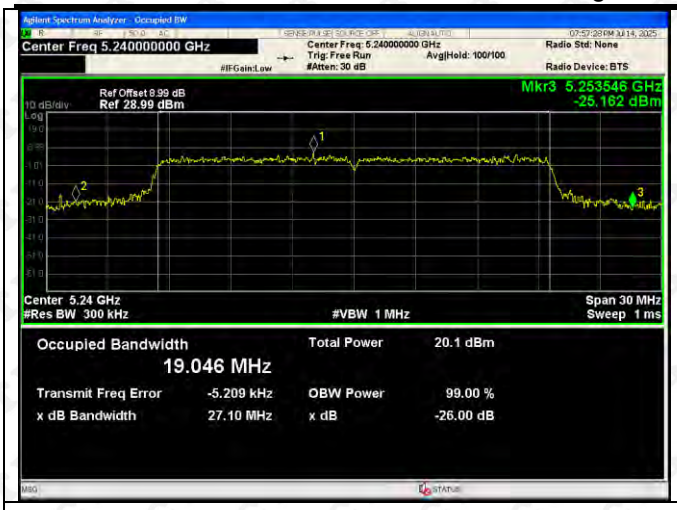
802.11ax(VH20)-5200



802.11ax(VH20)-5240



802.11ax(VH40)-5190



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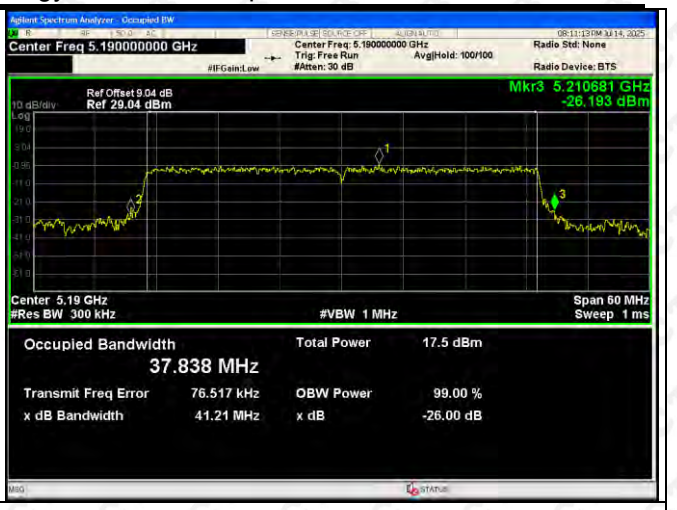

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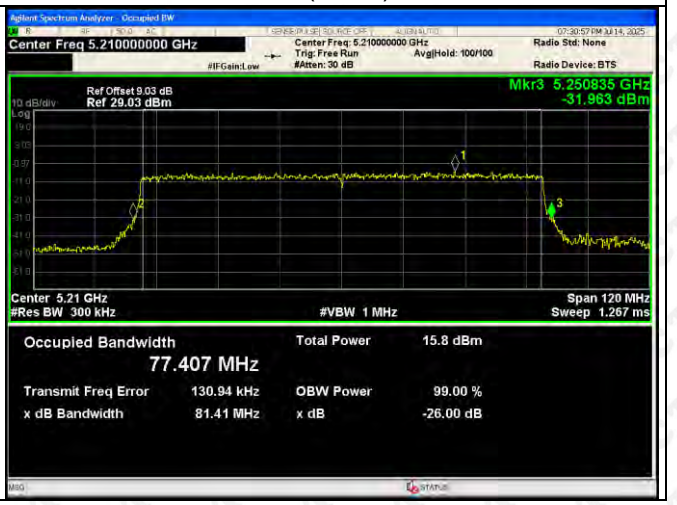
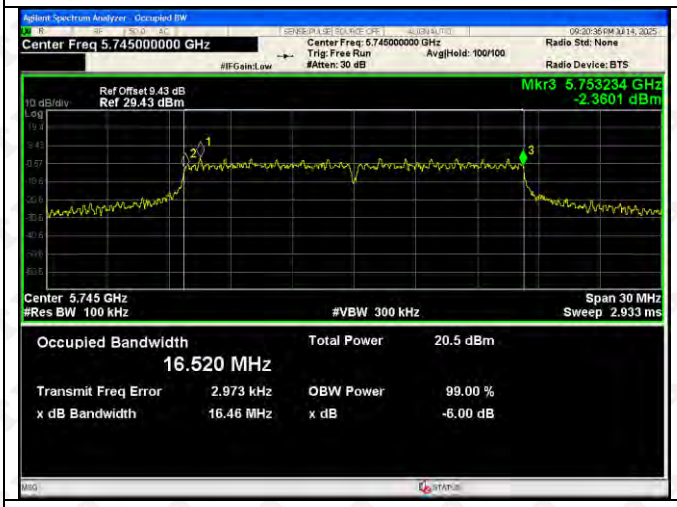


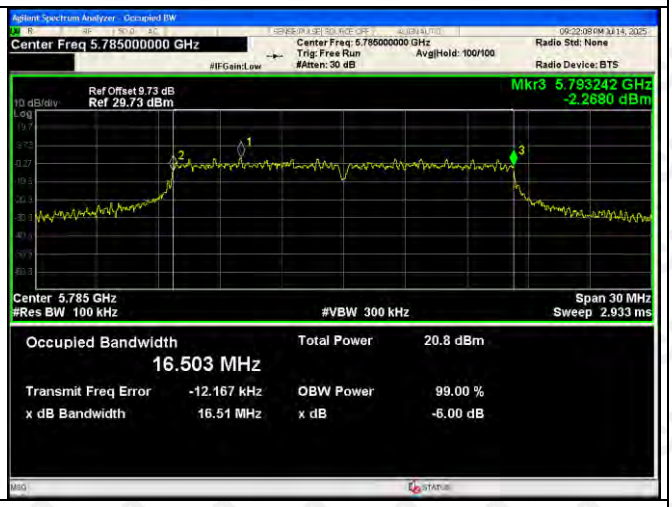
5725-5850MHz

ANT1:

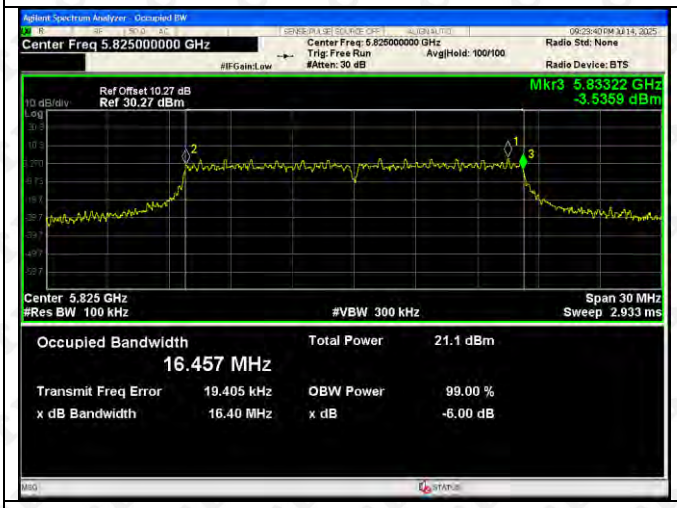
802.11a-5745



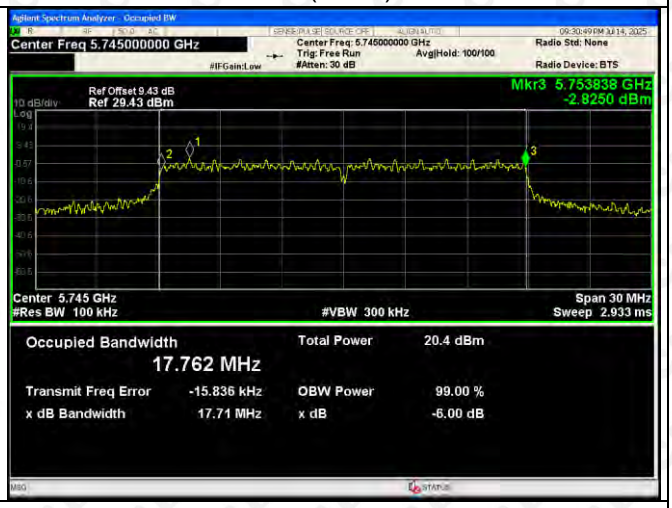
802.11a-5785



802.11a-5825



802.11ac(VH20)-5745



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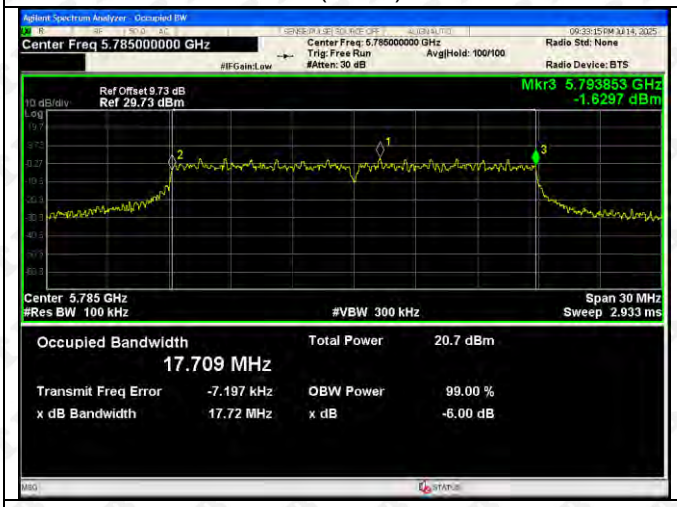

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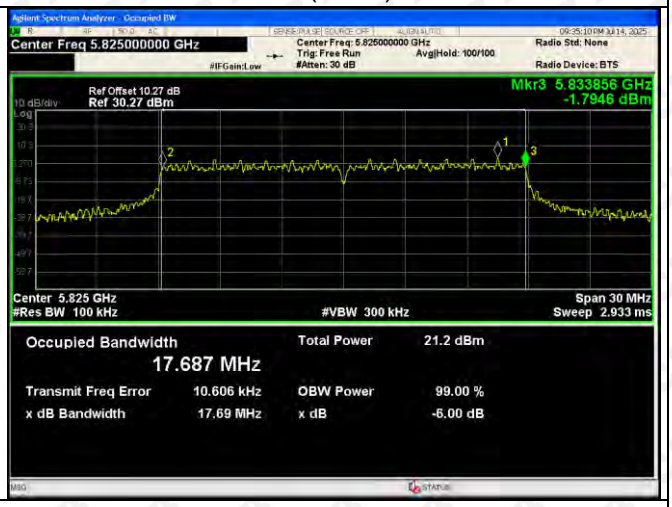
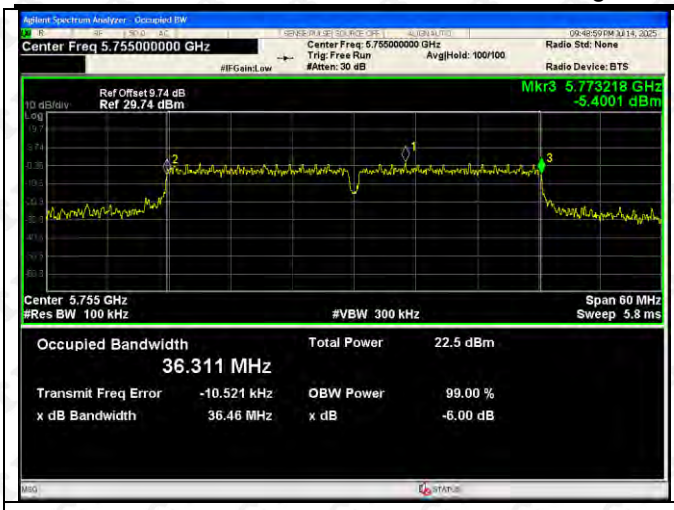


802.11ac(VH40)-5755

802.11ac(VH40)-5795



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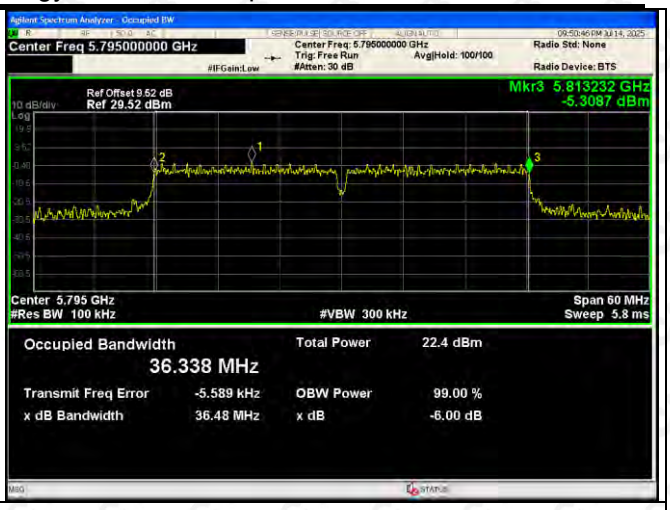

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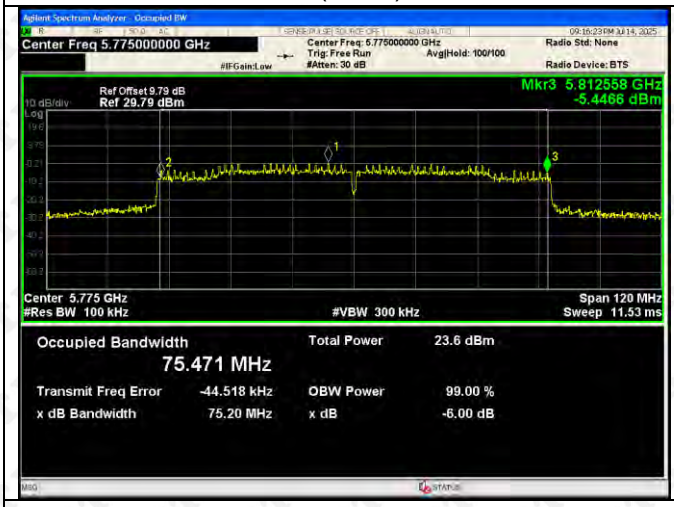

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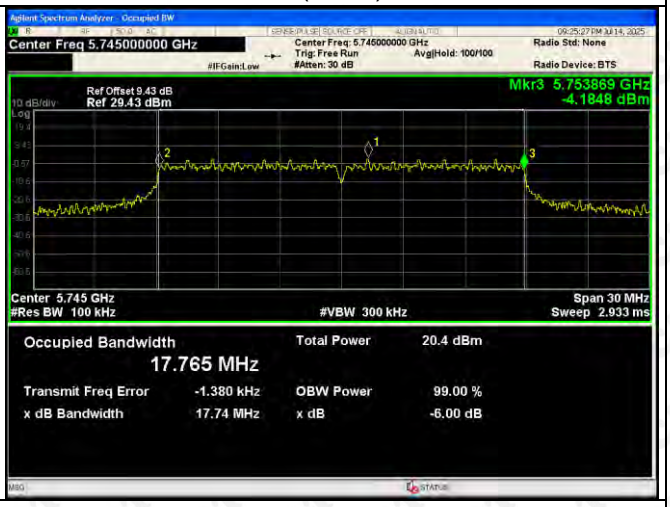

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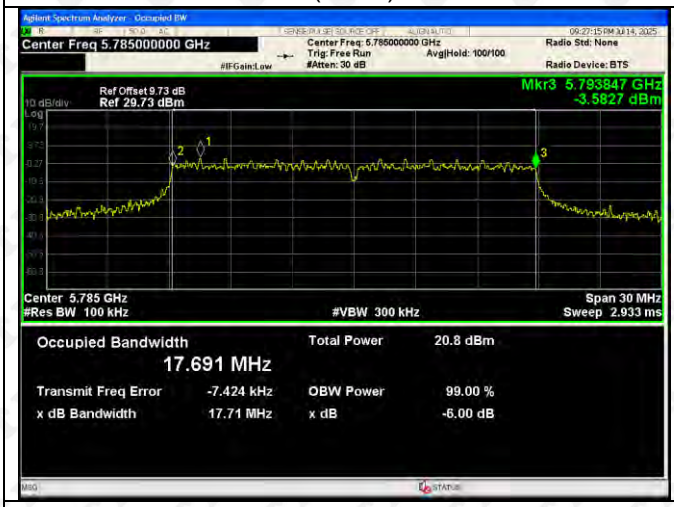
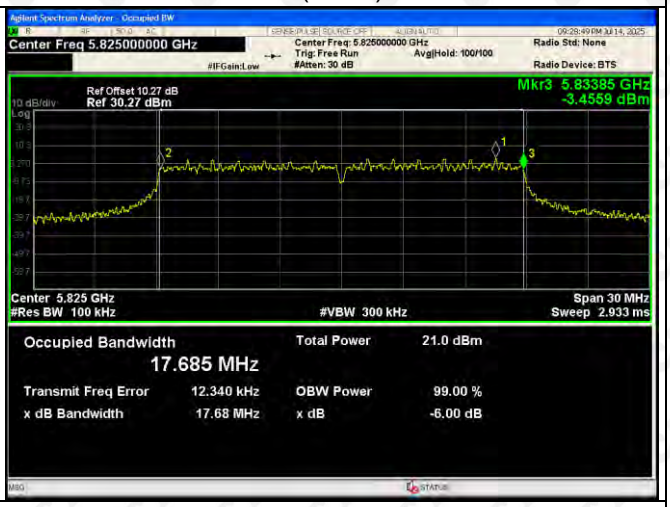


5802.11n(HT40)-5755



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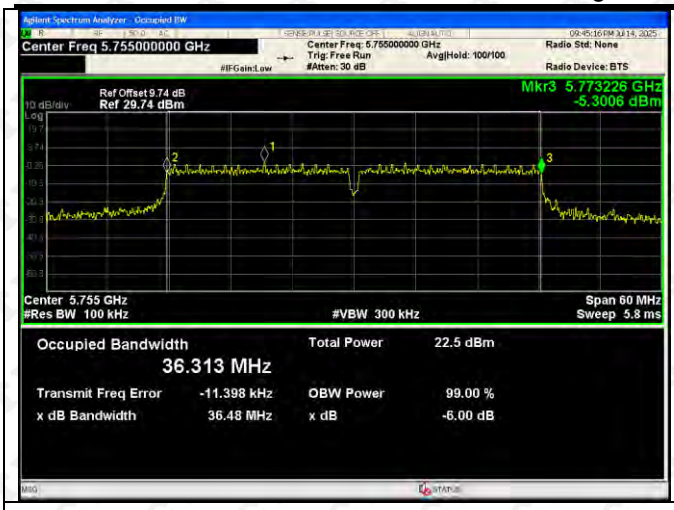
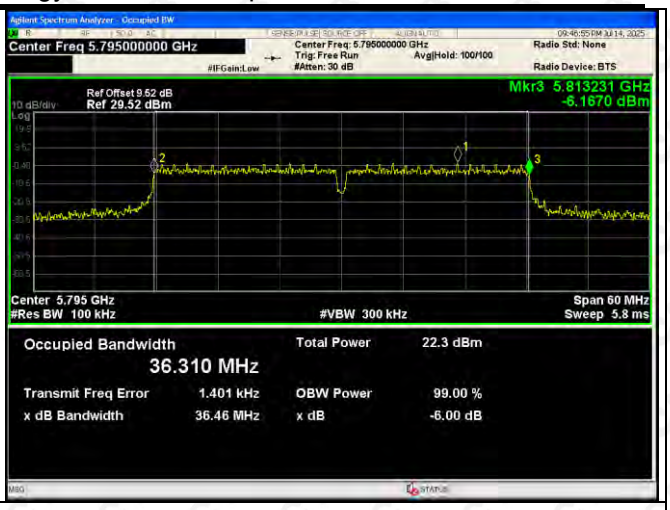


802.11ax(VH20)-5745



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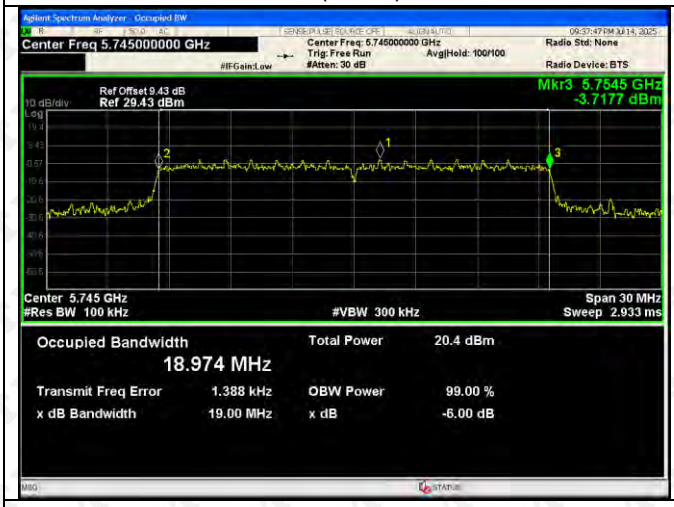
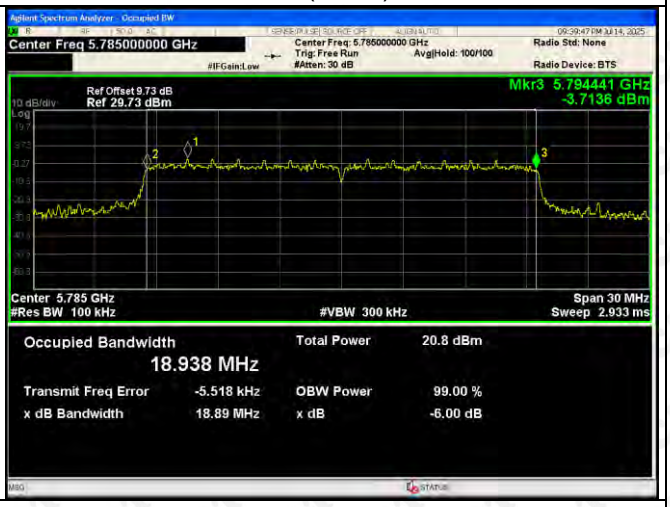


802.11ax(VH20)-5825



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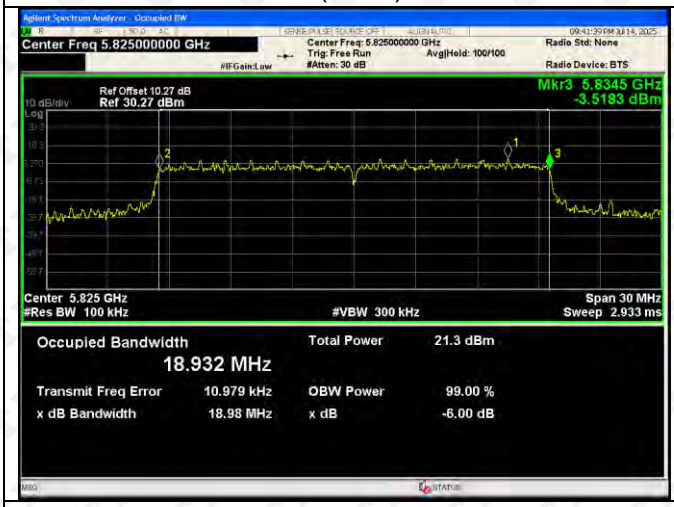
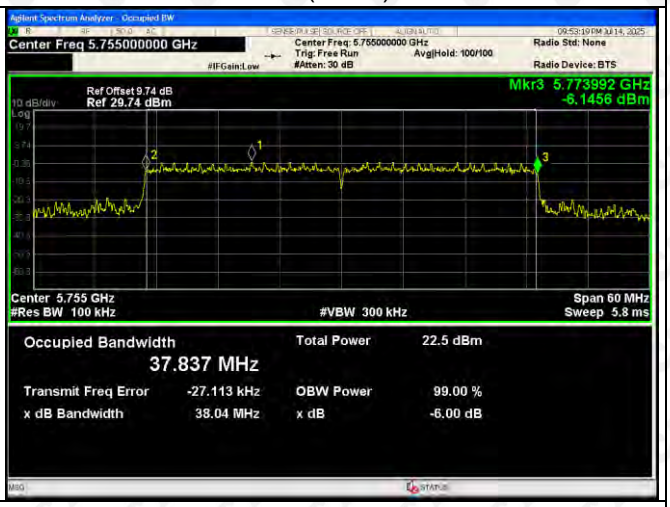
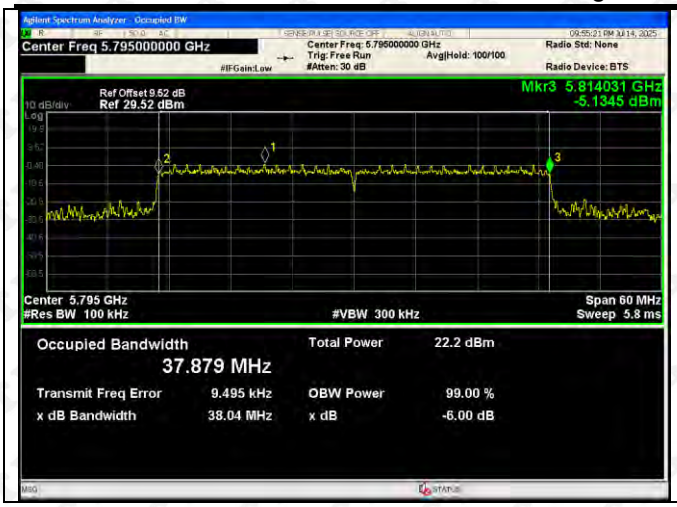
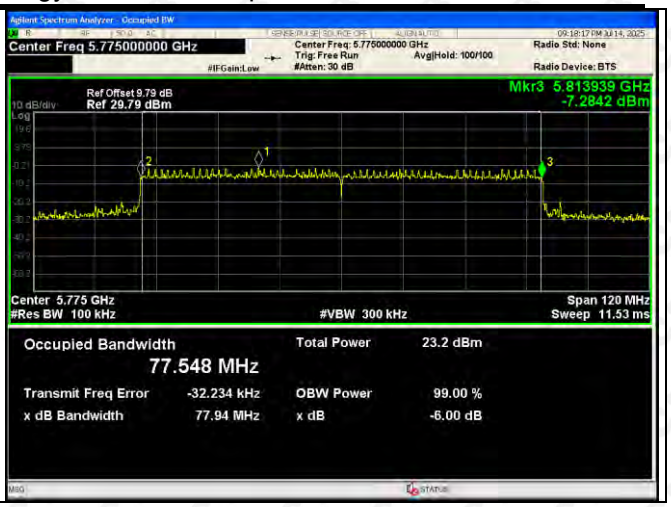


802.11ax(VH40)-5795



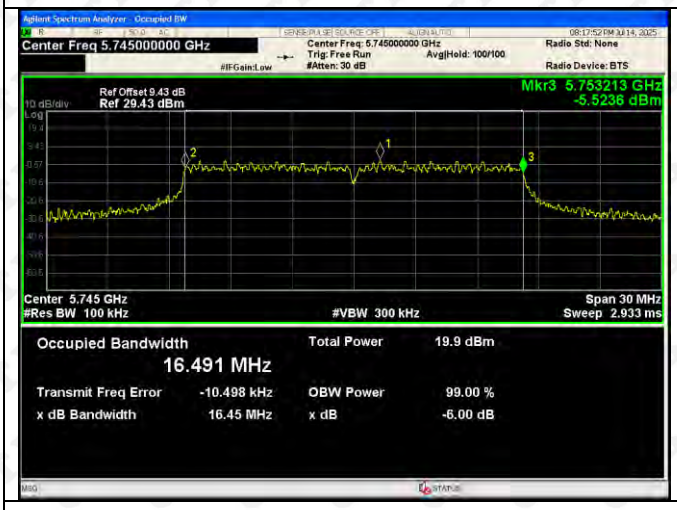
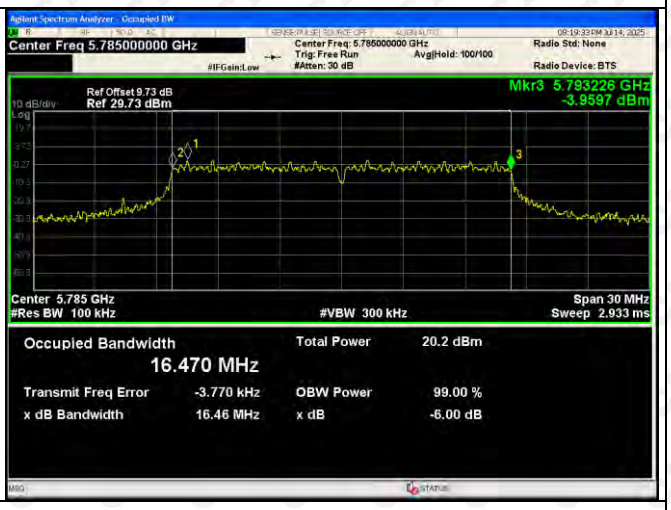
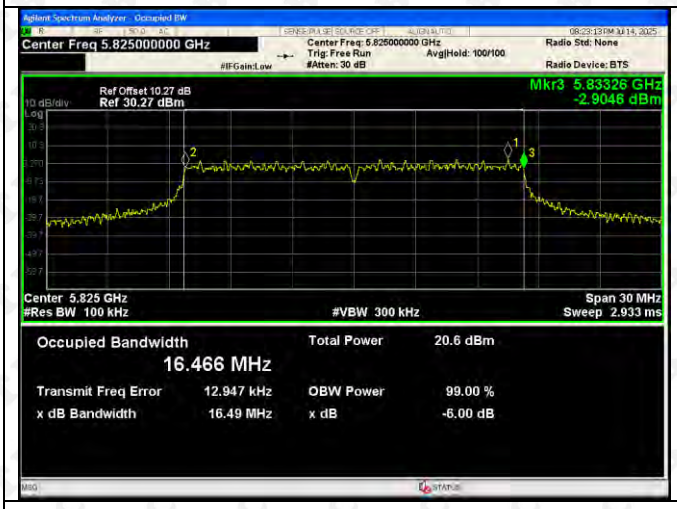
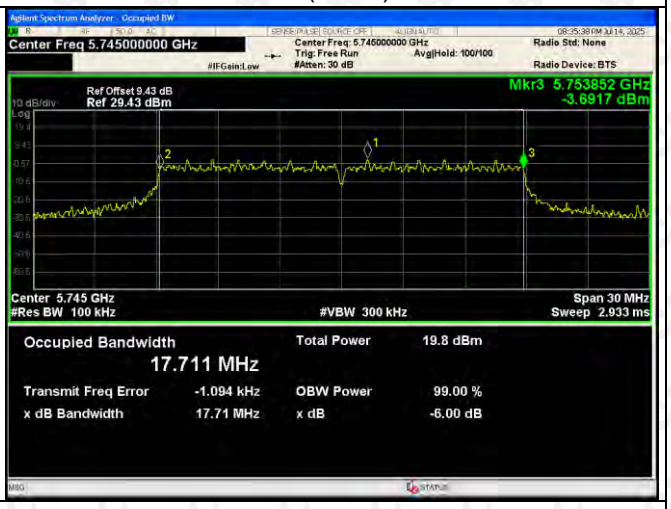
802.11ax(VH80)-5775

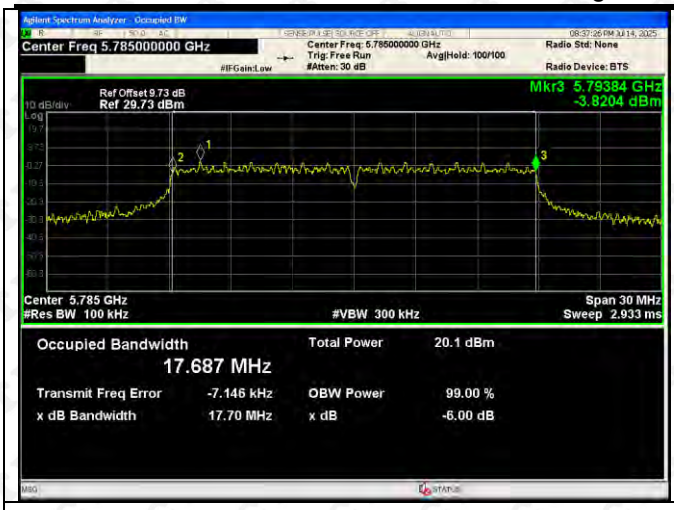




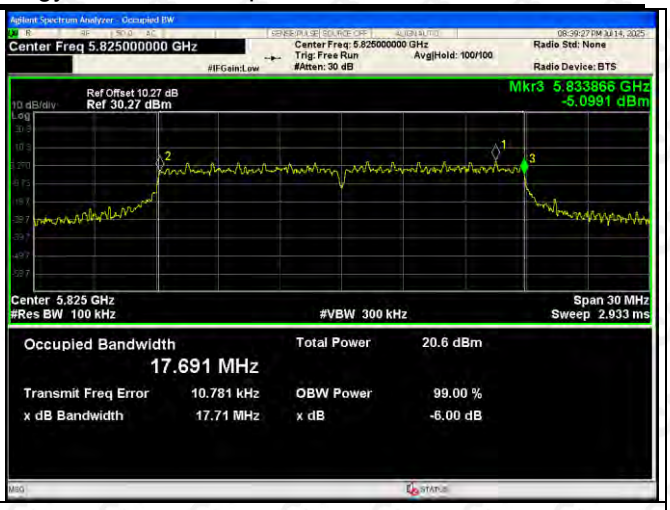
5725-5850MHz

ANT2:

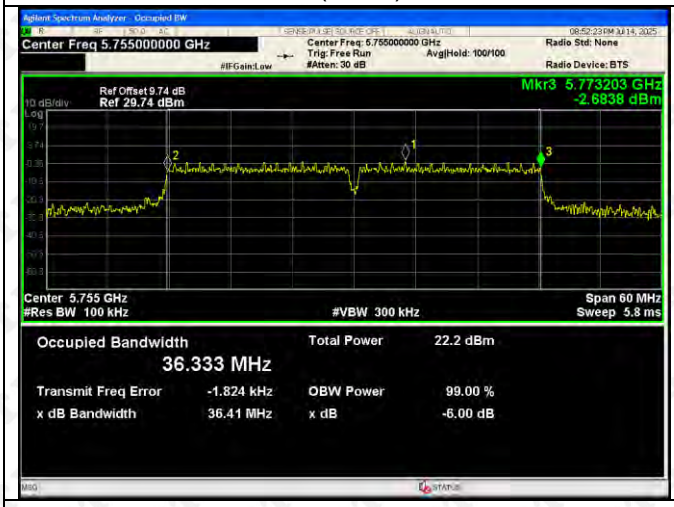
802.11a-5745	802.11a-5785
	
802.11a-5825	802.11ac(VH20)-5745
	
802.11ac(VH20)-5785	802.11ac(VH20)-5825



802.11ac(VH40)-5755



802.11ac(VH40)-5795



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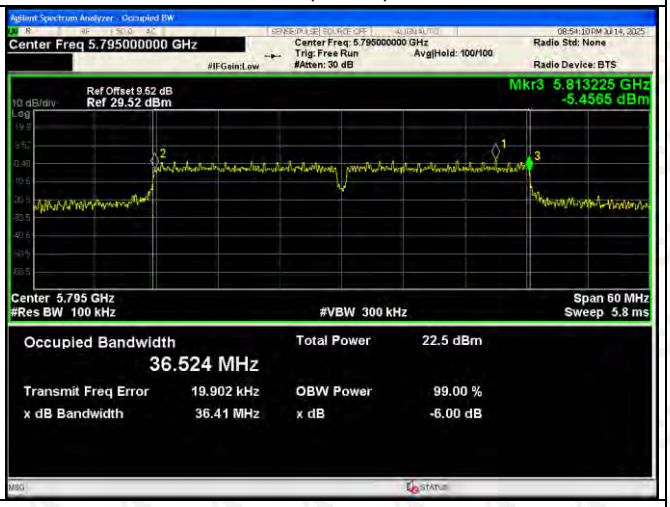
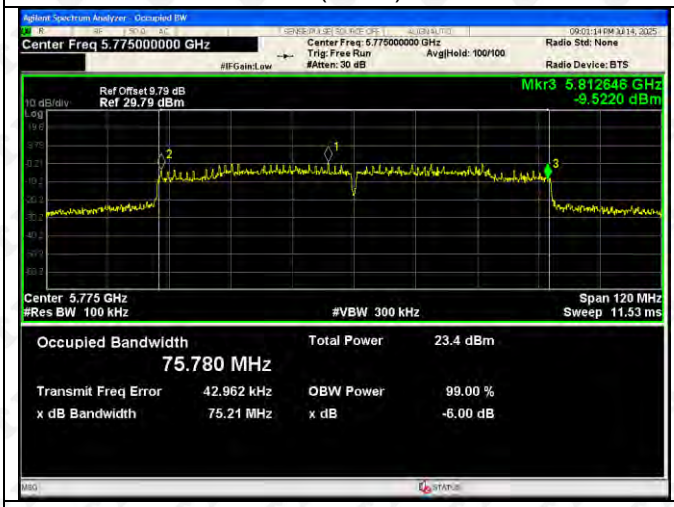


802.11n(HT20)-5745



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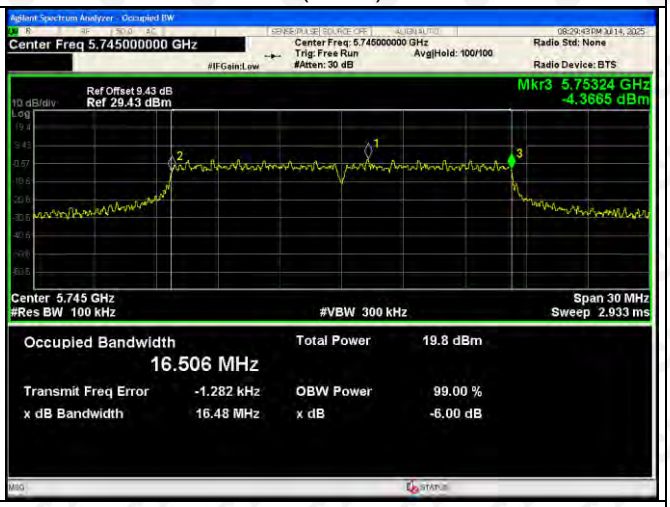

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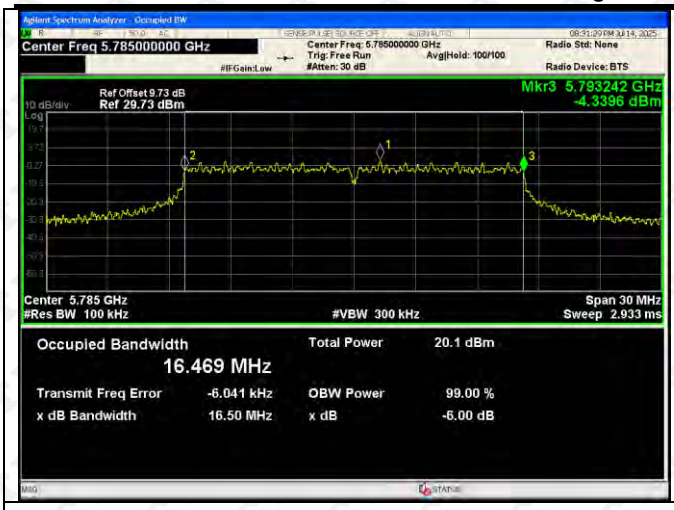
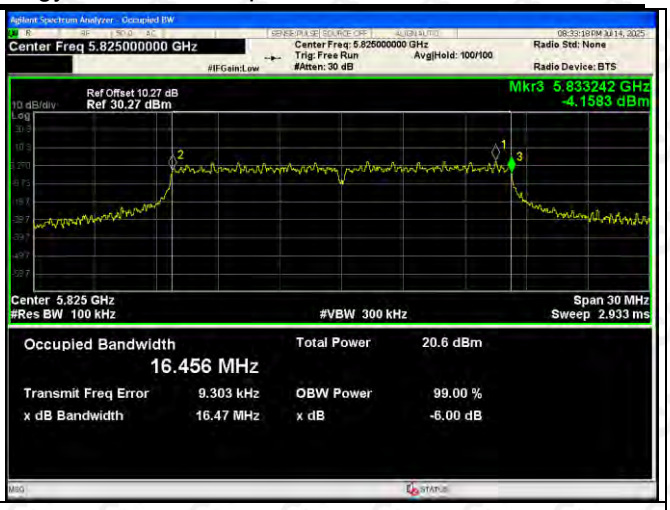


5802.11n(HT40)-5755



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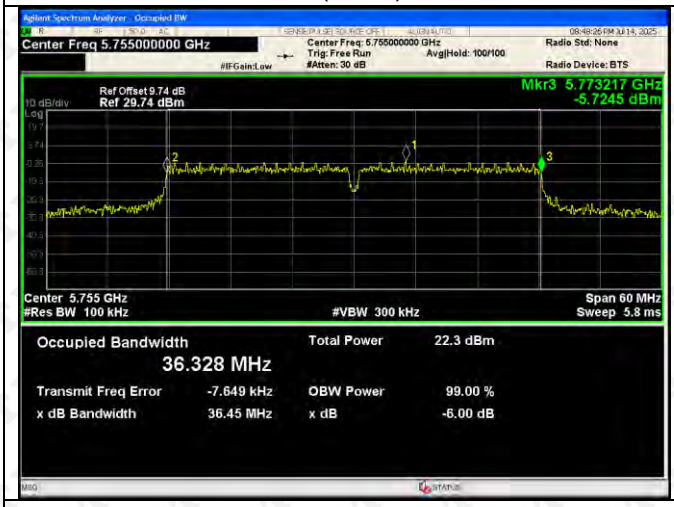
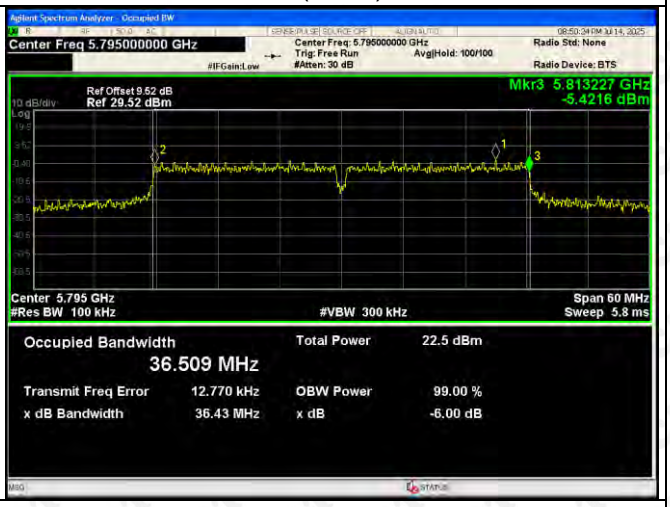
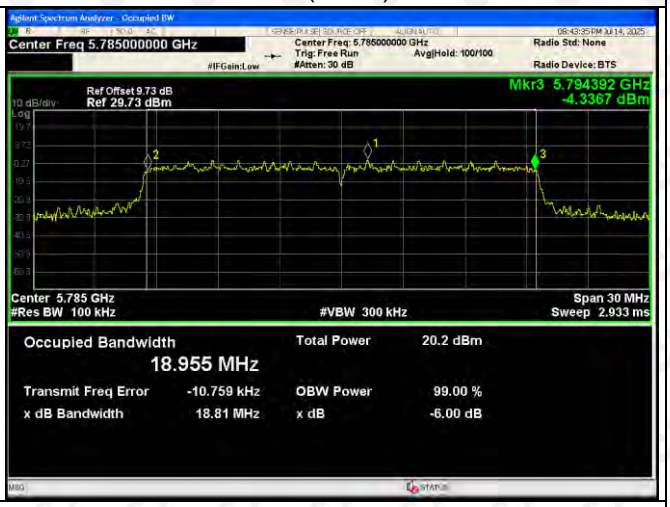


802.11ax(VH20)-5745

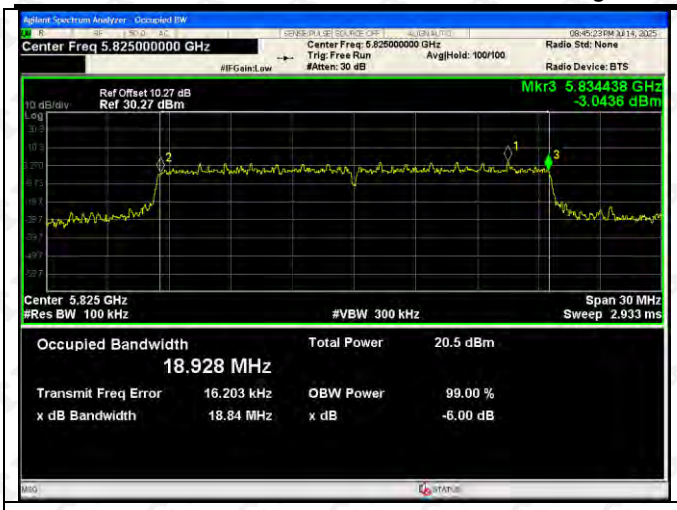


802.11ax(VH20)-5785

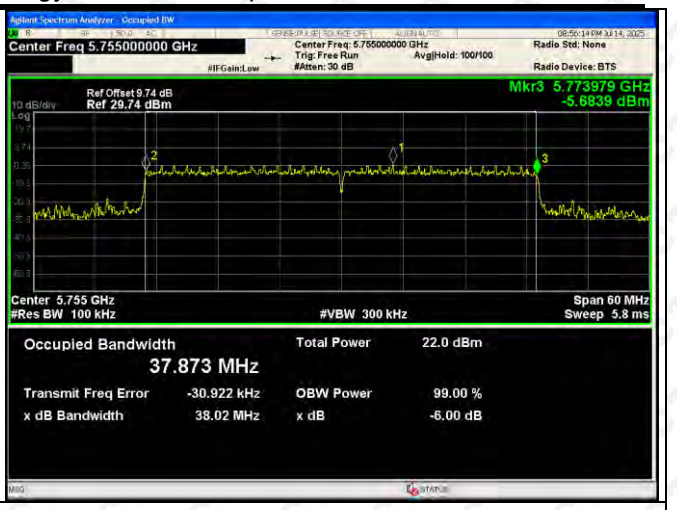
802.11ax(VH20)-5825



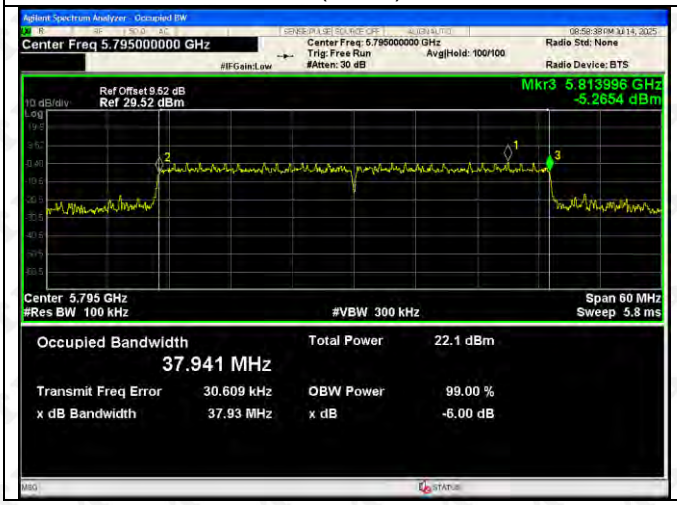
802.11ax(VH40)-5755

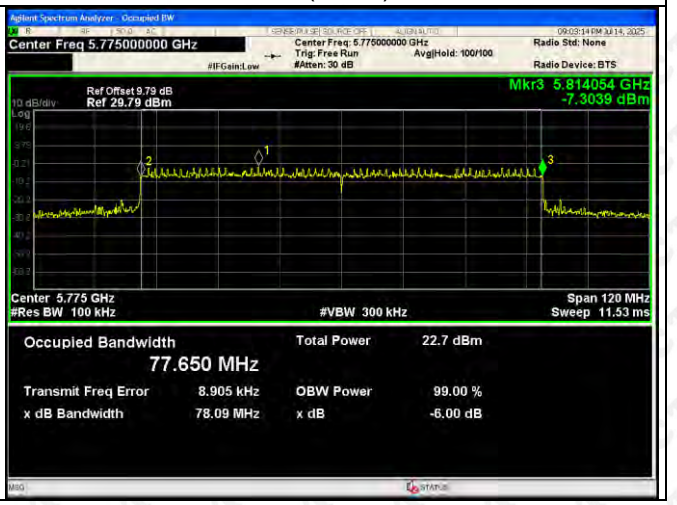


802.11ax(VH40)-5795



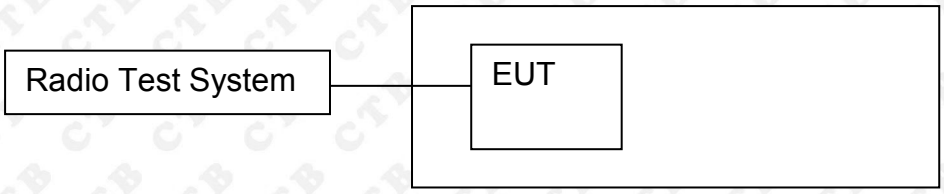
802.11ax(VH80)-5775





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

5150MHz ~5250MHz:

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	1.731	1.979	/	11	Pass
	5200	1.939	2.083	/	11	Pass
	5240	2.312	2.457	/	11	Pass
802.11ac(VHT20)	5180	1.384	1.839	4.628	11	Pass
	5200	2.011	1.79	4.912	11	Pass
	5240	2.187	2.142	5.175	11	Pass
802.11ac(VHT40)	5190	-4.207	-4.232	-1.209	11	Pass
	5230	-3.29	-3.246	-0.258	11	Pass
802.11ac(VHT80)	5230	-7.897	-9.619	-5.663	11	Pass
802.11n(HT20)	5180	1.934	1.561	4.762	11	Pass
	5200	1.775	2.143	4.973	11	Pass
	5240	2.34	2.156	5.259	11	Pass
802.11n(HT40)	5190	-4.11	-4.109	-1.099	11	Pass
	5230	-3.309	-3.345	-0.317	11	Pass
802.11ax(HE20)	5180	0.564	0.513	3.549	11	Pass
	5200	0.95	0.695	3.835	11	Pass
	5240	1.193	0.864	4.042	11	Pass
802.11ax(HE40)	5190	-4.575	-5.048	-1.795	11	Pass
	5230	-4.212	-4.365	-1.278	11	Pass
802.11ax(HE80)	5210	-8.991	-10.126	-6.511	11	Pass

5725-5850MHz:

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				30	Pass
	5785				30	Pass
	5825				30	Pass
802.11ac(VHT20)	5745				30	Pass
	5785				30	Pass
	5825				30	Pass
802.11ac(VHT40)	5755				30	Pass
	5795				30	Pass
802.11ac(VHT80)	5795				30	Pass
802.11n(HT20)	5745				30	Pass
	5785				30	Pass
	5825				30	Pass
802.11n(HT40)	5755				30	Pass
	5795				30	Pass
802.11ax(HE20)	5745				30	Pass
	5785				30	Pass
	5825				30	Pass
802.11ax(HE40)	5755				30	Pass
	5795				30	Pass
802.11ax(HE80)	5775				30	Pass

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

802.11ax(HE20)-5180

802.11ax(HE20)-5200

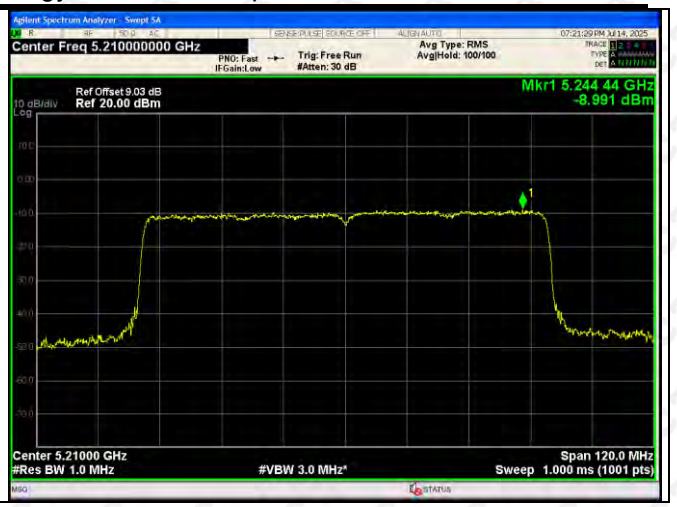
802.11ax(HE20)-5240

802.11ax(HE40)-5190

802.11ax(HE40)-5230

802.11ax(HE80)-5210


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.230000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold: 100/100
06:52:04 PM Jul 14, 2025
Ref Offset 8.96 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.245 18 GHz
-4.212 dBm
Center 5.23000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Span 60.00 MHz
Sweep 1.000 ms (1001 pts)


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.210000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: RMS
Avg|Hold: 100/100
07:21:29 PM Jul 14, 2025
Ref Offset 9.03 dB
10 dB/div
Ref 20.00 dBm
Mkr1 5.244 44 GHz
-8.991 dBm
Center 5.21000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Span 120.0 MHz
Sweep 1.000 ms (1001 pts)

ANT 2:

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

802.11ax(HE20)-5180

802.11ax(HE20)-5200

802.11ax(HE20)-5240

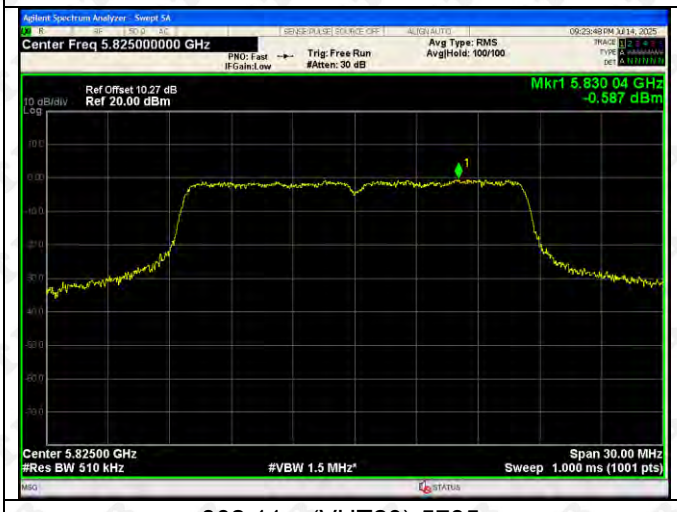
802.11ax(HE40)-5190

802.11ax(HE40)-5230

802.11ax(HE80)-5210

5725-5850MHz

ANT1:

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

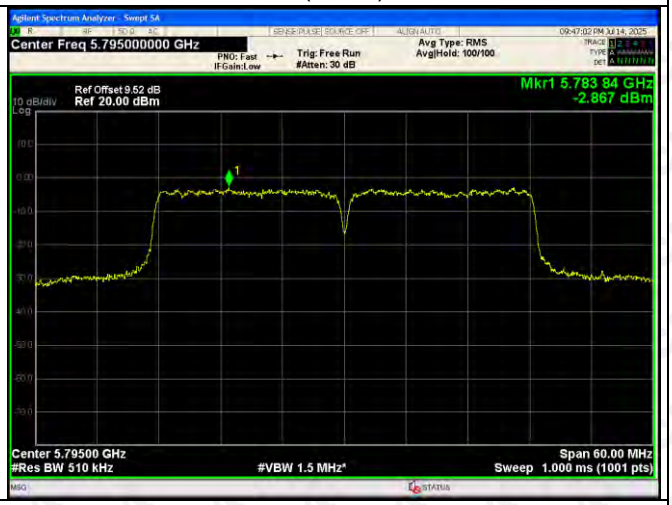
802.11n(HT20)-5785

802.11n(HT20)-5825

5802.11n(HT40)-5755

802.11n(HT40)-5795

802.11ax(HE20)-5745



802.11ax(HE20)-5785

802.11ax(HE20)-5825

802.11ax(HE40)-5755

802.11ax(HE40)-5795

802.11ax(HE80)-5775

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

802.11ax(HE20)-5745

802.11ax(HE20)-5785

802.11ax(HE20)-5825

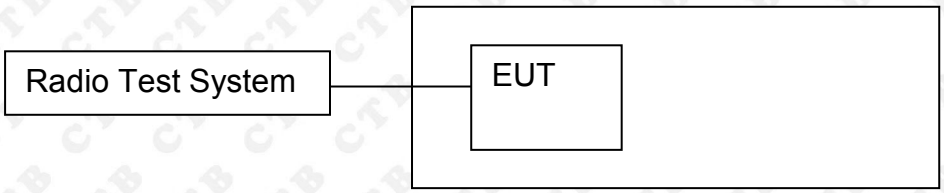
802.11ax(HE40)-5755

802.11ax(HE40)-5795

802.11ax(HE80)-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)	7.60	5180.0026	5180	0.0026	0.5071
		V max (V)	8.36	5180.0135	5180	0.0135	2.6031
		V min (V)	6.66	5180.0221	5180	0.0221	4.2675
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5180.0289	5180	0.0289	5.5738
		T (°C)	10	5180.0010	5180	0.0010	0.1936
		T (°C)	20	5180.0002	5180	0.0002	0.0348
		T (°C)	30	5180.0531	5180	0.0531	10.2491
		T (°C)	40	5180.0253	5180	0.0253	4.8816
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)	7.60	5200.0117	5200	0.0117	2.2542
		V max (V)	8.36	5200.0286	5200	0.0286	5.4939
		V min (V)	6.66	5200.0277	5200	0.0277	5.3188
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5200.0011	5200	0.0011	0.2161
		T (°C)	10	5200.0220	5200	0.0220	4.2247
		T (°C)	20	5200.0110	5200	0.0110	2.1220
		T (°C)	30	5200.0361	5200	0.0361	6.9483
		T (°C)	40	5200.0348	5200	0.0348	6.6834
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)	7.60	5240.0394	5240	0.0394	7.5167
		V max (V)	8.36	5240.0313	5240	0.0313	5.9701
		V min (V)	6.66	5240.0329	5240	0.0329	6.2731
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5240.0021	5240	0.0021	0.3924
		T (°C)	10	5240.0118	5240	0.0118	2.2541
		T (°C)	20	5240.0463	5240	0.0463	8.8320
		T (°C)	30	5240.0237	5240	0.0237	4.5256
		T (°C)	40	5240.0076	5240	0.0076	1.4545
Limits				±20ppm			
Result				Complies			

ANT2:

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	7.60	5180.0066	5180	0.0066	1.2677
		V max (V)	8.36	5180.0092	5180	0.0092	1.7772
		V min (V)	6.66	5180.0241	5180	0.0241	4.6517
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5180.0237	5180	0.0237	4.5711
		T (°C)	10	5180.0147	5180	0.0147	2.8391
		T (°C)	20	5180.0201	5180	0.0201	3.8871
		T (°C)	30	5180.0534	5180	0.0534	10.3038
		T (°C)	40	5180.0105	5180	0.0105	2.0201
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)	7.60	5200.0517	5200	0.0517	9.9453
		V max (V)	8.36	5200.0184	5200	0.0184	3.5296
		V min (V)	6.66	5200.0518	5200	0.0518	9.9659
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5200.0144	5200	0.0144	2.7687
		T (°C)	10	5200.0006	5200	0.0006	0.1099
		T (°C)	20	5200.0215	5200	0.0215	4.1303
		T (°C)	30	5200.0097	5200	0.0097	1.8617
		T (°C)	40	5200.0157	5200	0.0157	3.0136
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)	7.60	5240.0531	5240	0.0531	10.1276
		V max (V)	8.36	5240.0149	5240	0.0149	2.8374
		V min (V)	6.66	5240.0056	5240	0.0056	1.0713
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5240.0483	5240	0.0483	9.2215
		T (°C)	10	5240.0504	5240	0.0504	9.6224
		T (°C)	20	5240.0047	5240	0.0047	0.8949
		T (°C)	30	5240.0131	5240	0.0131	2.4936
		T (°C)	40	5240.0362	5240	0.0362	6.9130
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)	7.60	5745.0589	5745	0.0589	10.2577
		V max (V)	8.36	5745.0306	5745	0.0306	5.3306
		V min (V)	6.66	5745.0589	5745	0.0589	10.2577
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5745.0170	5745	0.0170	2.9673
		T (°C)	10	5745.0003	5745	0.0003	0.0509
		T (°C)	20	5745.0848	5745	0.0848	14.7567
		T (°C)	30	5745.0473	5745	0.0473	8.2363
		T (°C)	40	5745.0386	5745	0.0386	6.7167
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)	7.60	5785.0739	5785	0.0739	12.7762
		V max (V)	8.36	5785.0743	5785	0.0743	12.8502
		V min (V)	6.66	5785.0561	5785	0.0561	9.7050
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5785.0426	5785	0.0426	7.3581
		T (°C)	10	5785.0458	5785	0.0458	7.9085
		T (°C)	20	5785.0600	5785	0.0600	10.3755
		T (°C)	30	5785.0109	5785	0.0109	1.8812
		T (°C)	40	5785.0587	5785	0.0587	10.1472
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)	7.60	5825.0404	5825	0.0404	6.9381
		V max (V)	8.36	5825.0649	5825	0.0649	11.1464
		V min (V)	6.66	5825.0398	5825	0.0398	6.8355
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5825.0548	5825	0.0548	9.4118
		T (°C)	10	5825.0333	5825	0.0333	5.7171
		T (°C)	20	5825.0825	5825	0.0825	14.1643
		T (°C)	30	5825.0701	5825	0.0701	12.0391
		T (°C)	40	5825.0583	5825	0.0583	10.0064
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)	7.60	5745.0282	5745	0.0282	4.9132
		V max (V)	8.36	5745.0333	5745	0.0333	5.7915
		V min (V)	6.66	5745.0282	5745	0.0282	4.9132
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5745.0219	5745	0.0219	3.8124
		T (°C)	10	5745.0230	5745	0.0230	4.0073
		T (°C)	20	5745.0757	5745	0.0757	13.1843
		T (°C)	30	5745.0052	5745	0.0052	0.9111
		T (°C)	40	5745.0180	5745	0.0180	3.1329
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)	7.60	5785.0493	5785	0.0493	8.5302
		V max (V)	8.36	5785.0722	5785	0.0722	12.4818
		V min (V)	6.66	5785.0780	5785	0.0780	13.4909
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5785.0058	5785	0.0058	0.9986
		T (°C)	10	5785.0654	5785	0.0654	11.3082
		T (°C)	20	5785.0330	5785	0.0330	5.6962
		T (°C)	30	5785.0907	5785	0.0907	15.6834
		T (°C)	40	5785.0591	5785	0.0591	10.2206
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)	7.60	5825.0051	5825	0.0051	0.8761
		V max (V)	8.36	5825.0088	5825	0.0088	1.5116
		V min (V)	6.66	5825.0770	5825	0.0770	13.2149
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	7.6	T (°C)	0	5825.0079	5825	0.0079	1.3566
		T (°C)	10	5825.0486	5825	0.0486	8.3515
		T (°C)	20	5825.0307	5825	0.0307	5.2698
		T (°C)	30	5825.0104	5825	0.0104	1.7914
		T (°C)	40	5825.0055	5825	0.0055	0.9436
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.

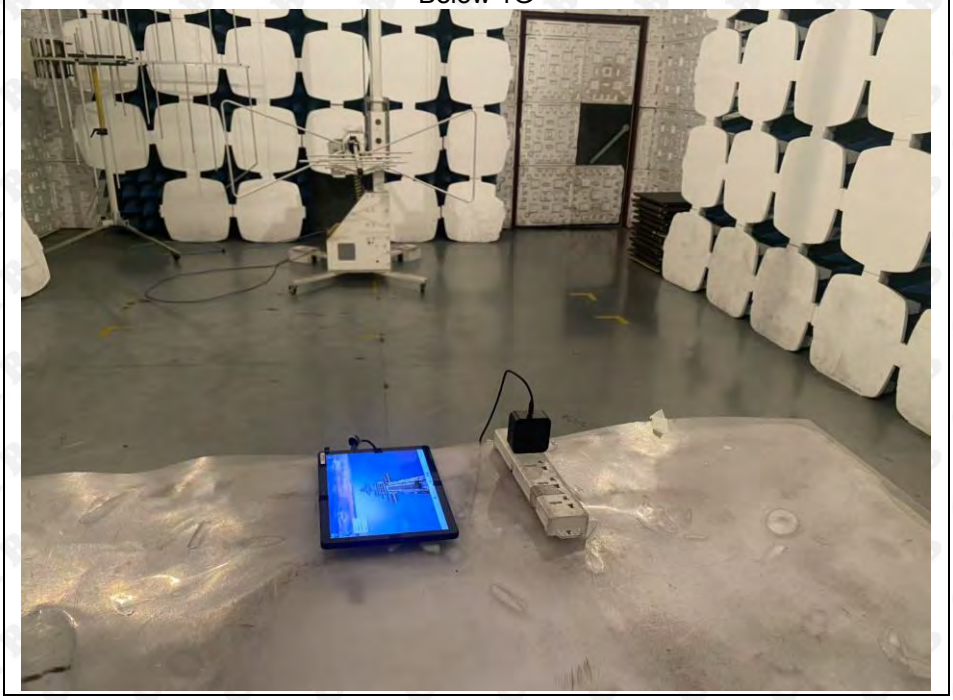
EUT Antenna:

The antenna is FPC antenna and no consideration of replacement. The best case gain of the antenna is Ant1: -4.03dBi, Ant2: -8.09dBi, WiFi (5.8G):Ant1: -7.61dBi, Ant2: -2.98dBi.

15. EUT TEST SETUP PHOTOGRAPHS

Radiated Emission

Below 1G



Above 1G

※※※※※ **END OF REPORT** ※※※※※