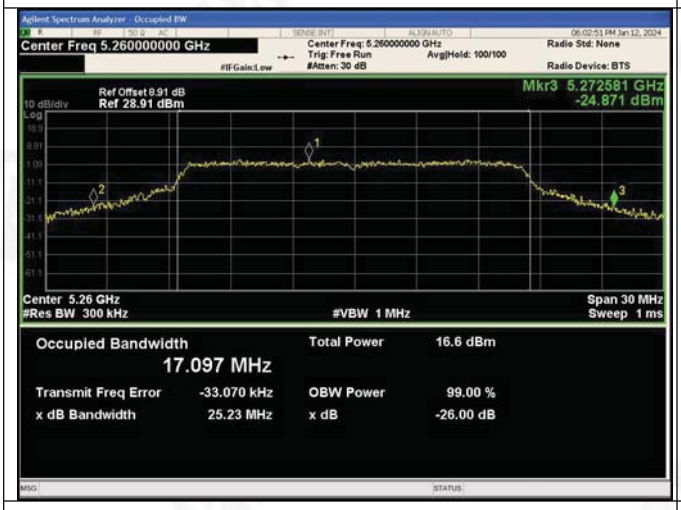
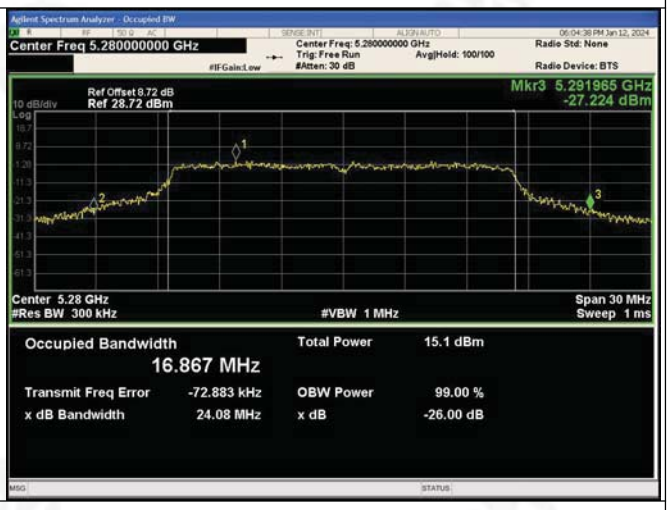
5260-5320MHz

802.11a-5260



802.11a-5280



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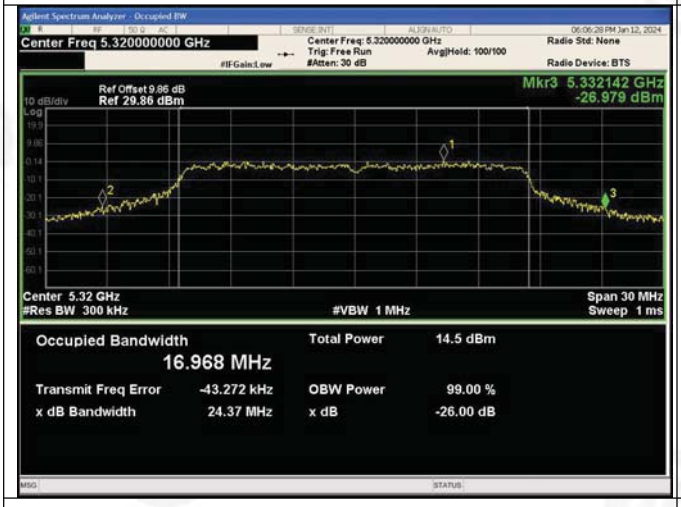

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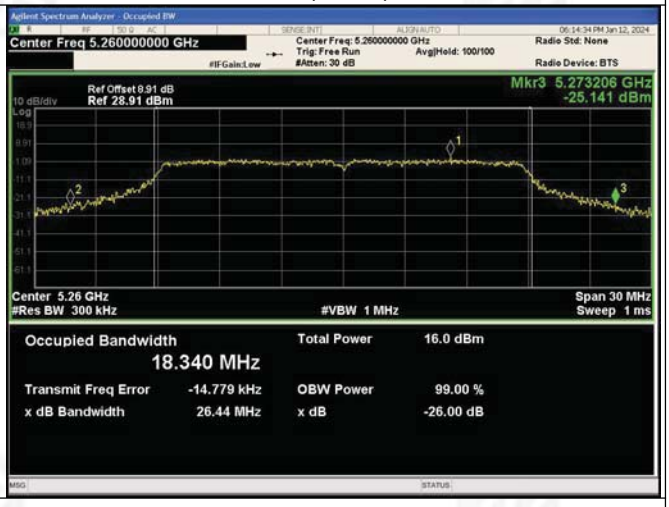

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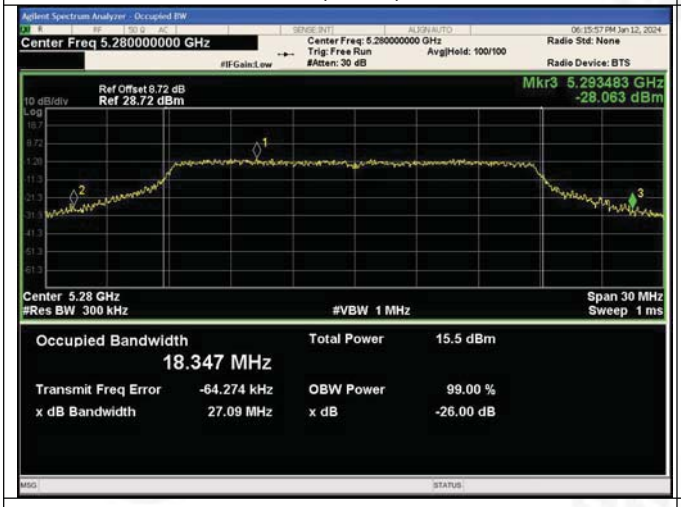

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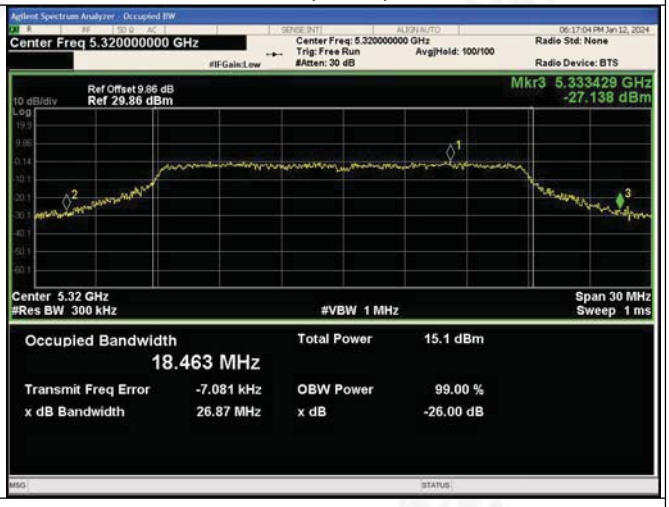

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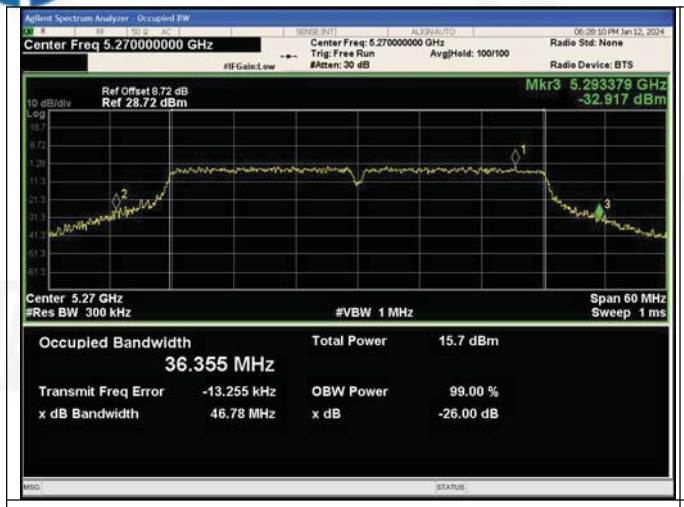
802.11ac(VH40)-5310



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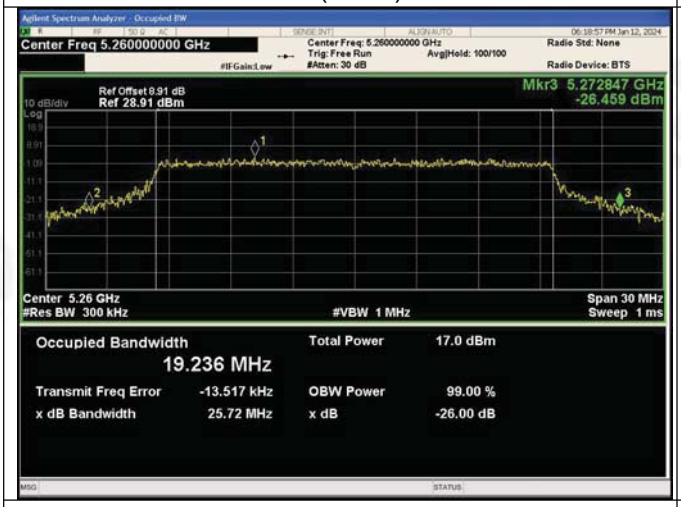

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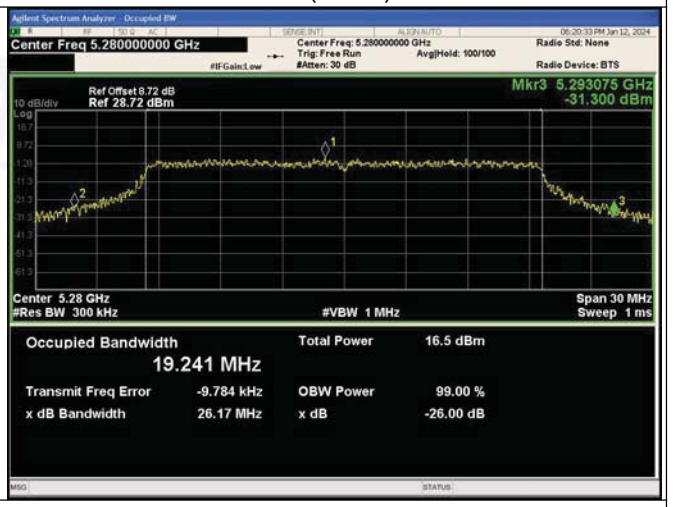

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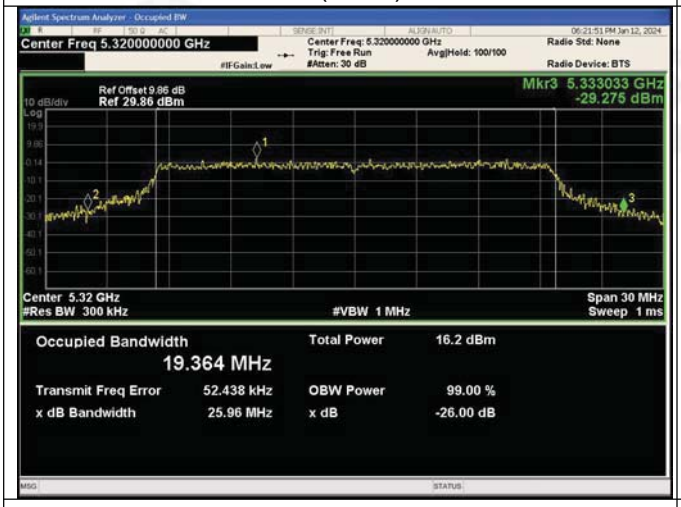

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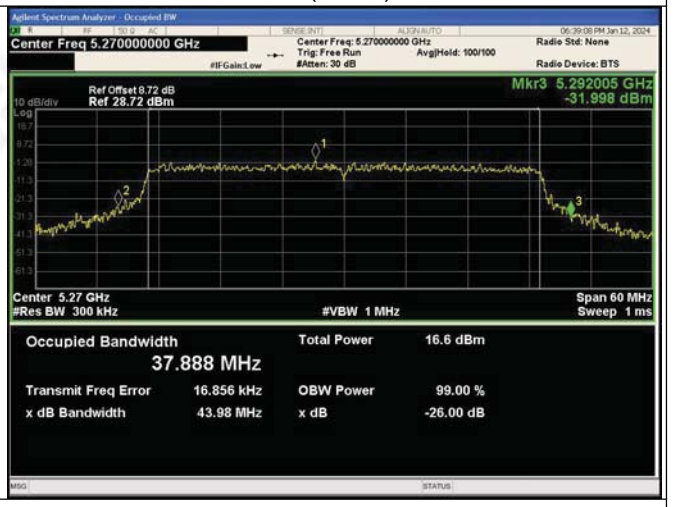

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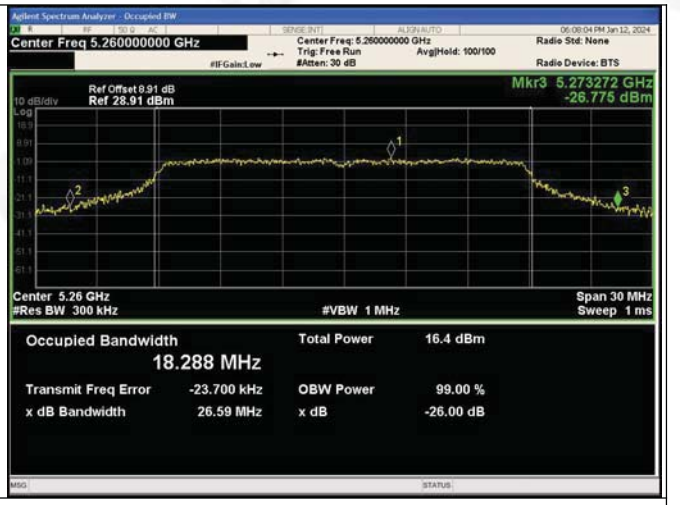
802.11n(HT20)-5280



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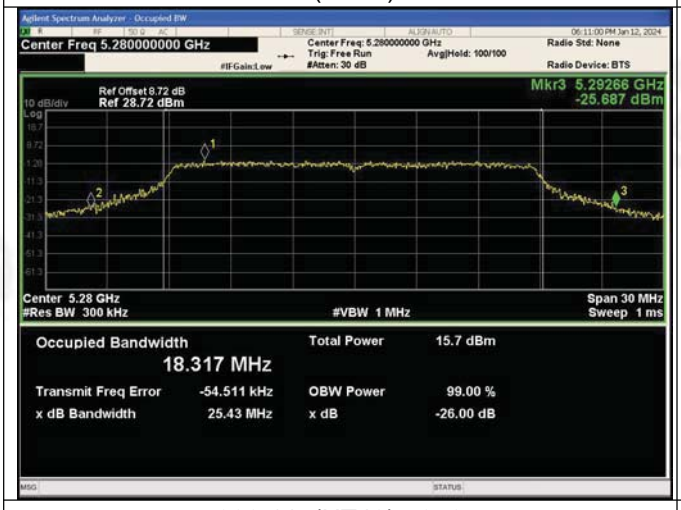

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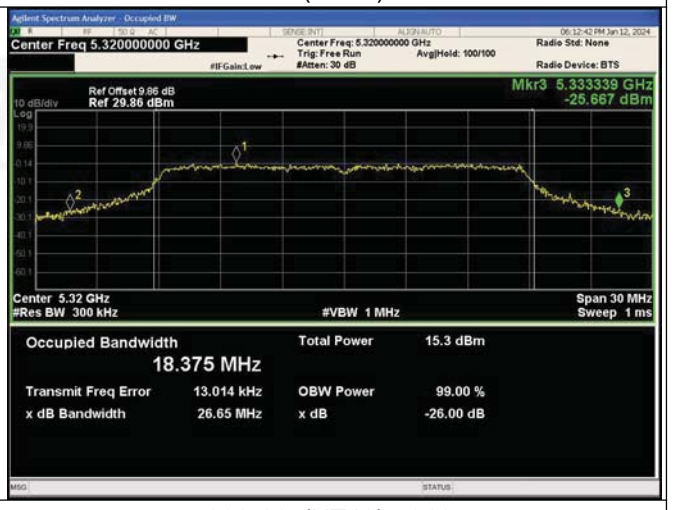

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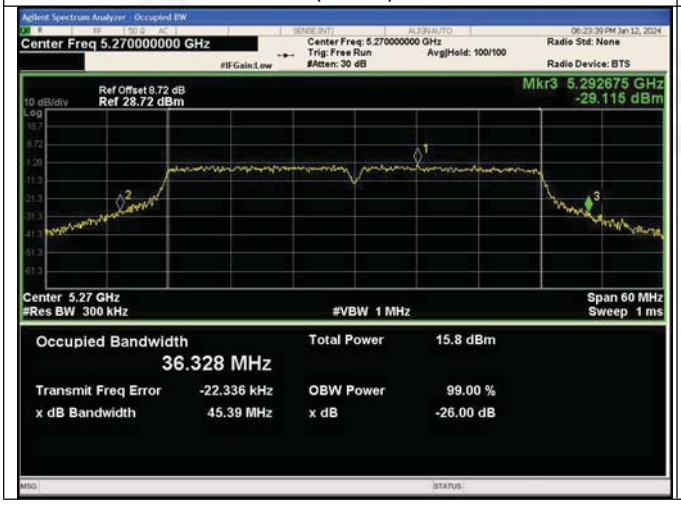
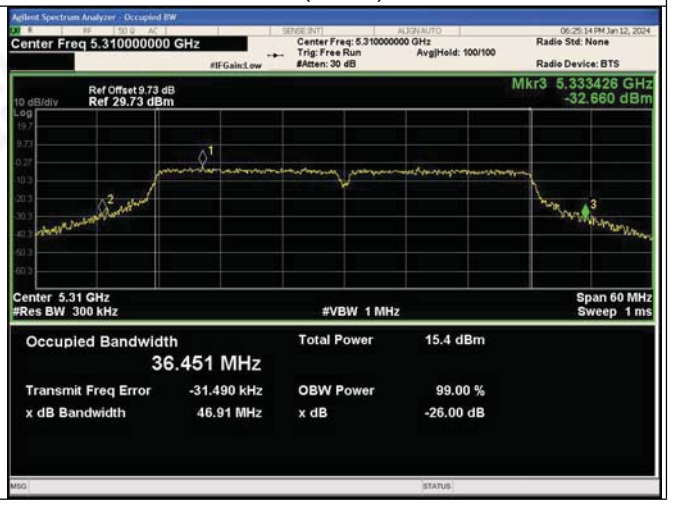
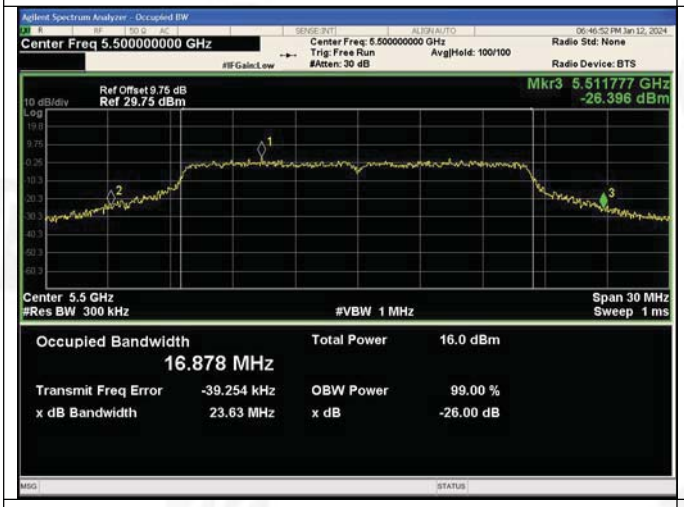


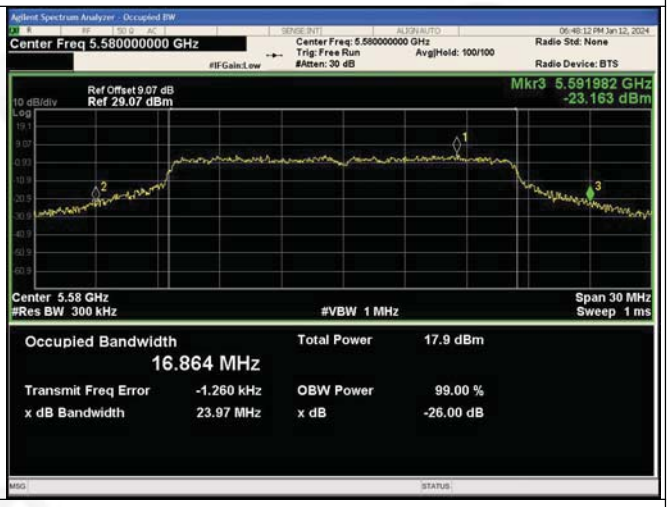


5500-5700MHz

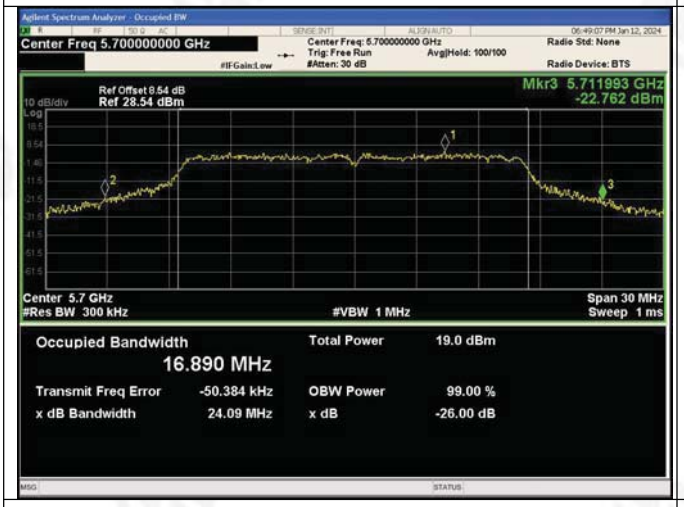
802.11a-5500



802.11a-5580



802.11a-5700



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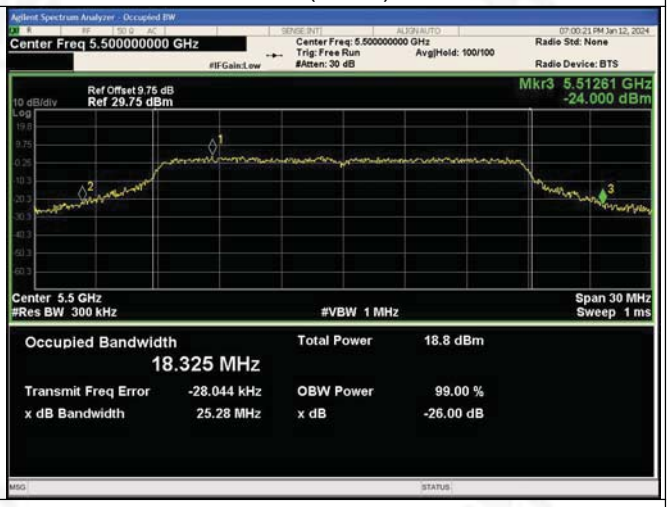

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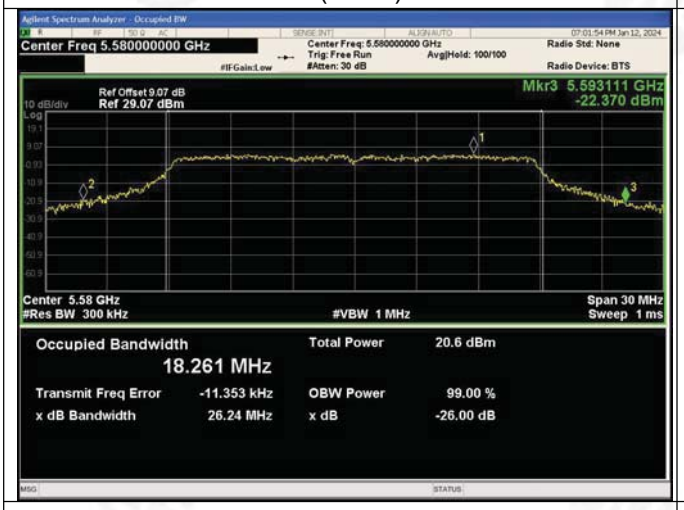

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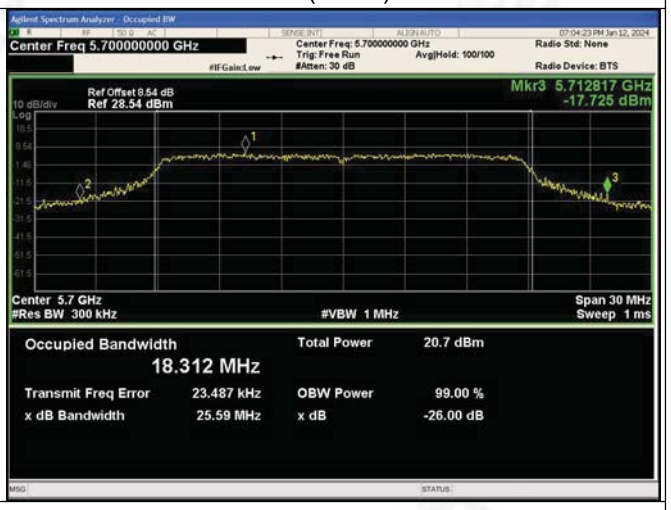
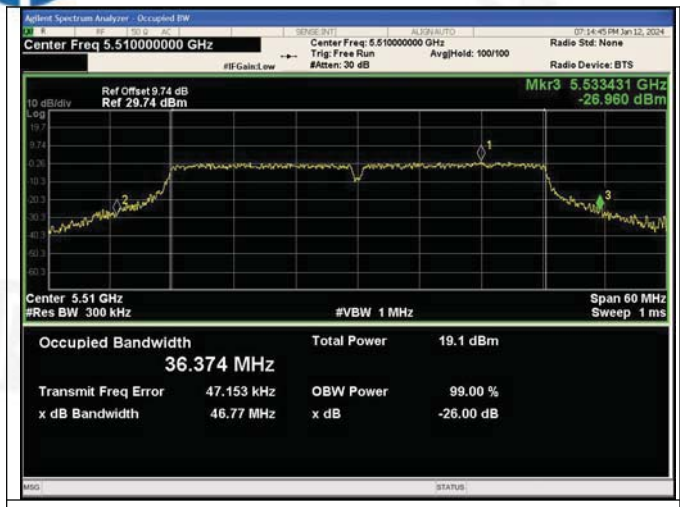
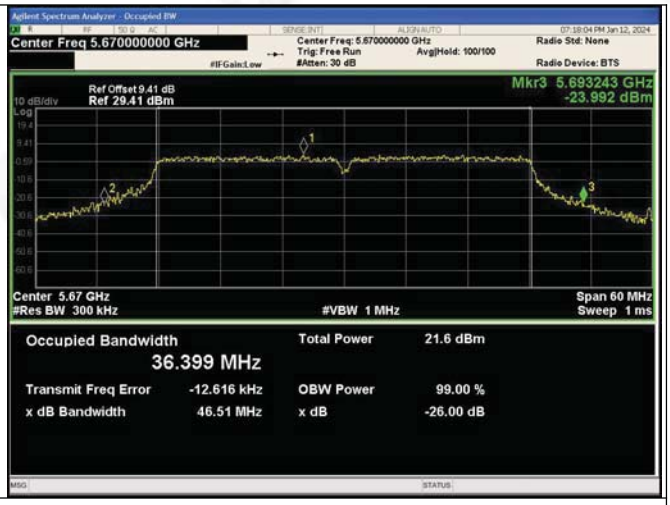


802.11ac(VH40)-5510

802.11ac(VH40)-5670



802.11ax(VH20)-5500



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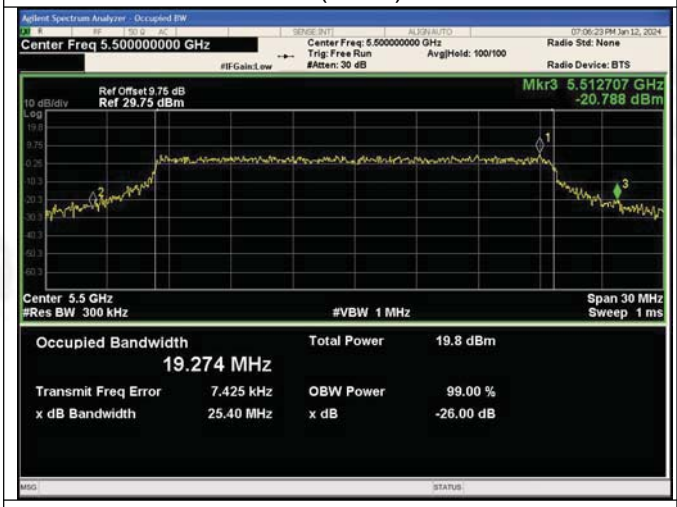

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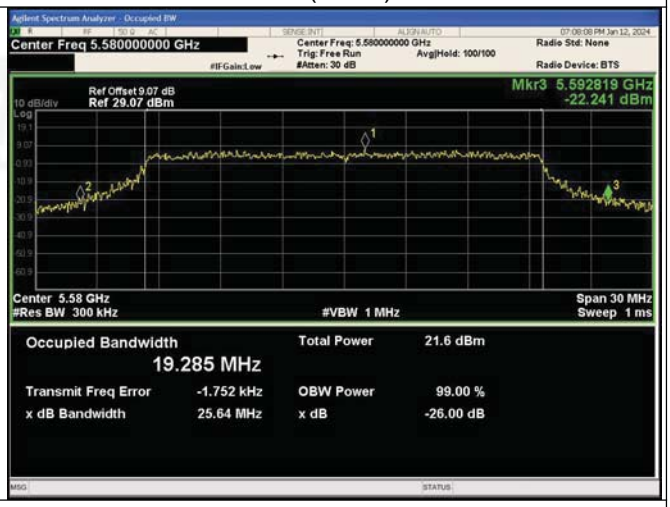

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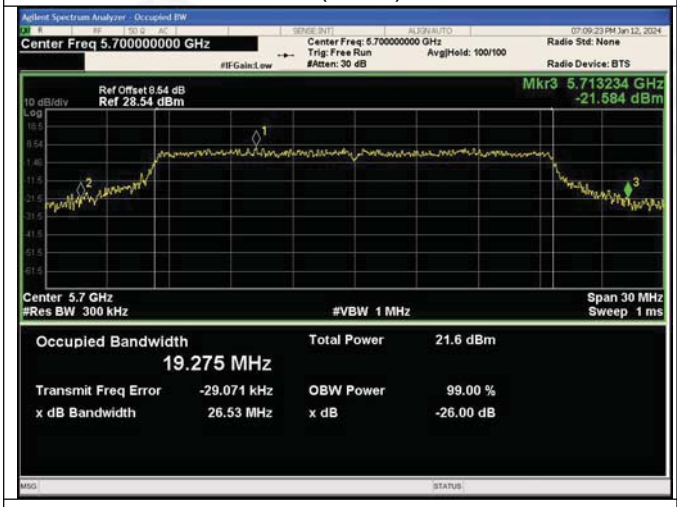

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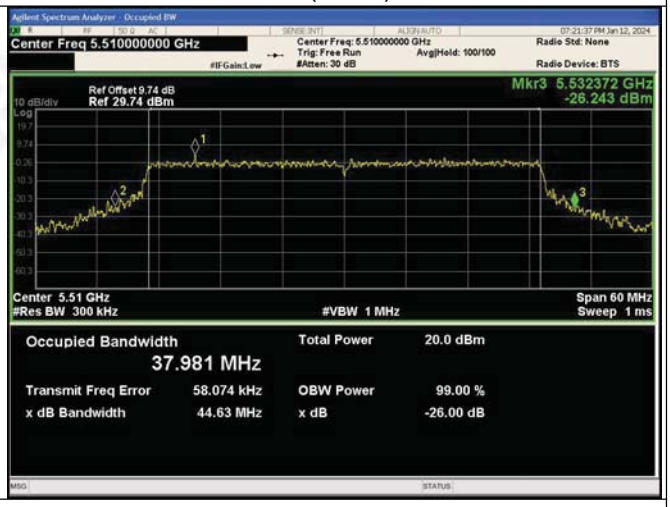

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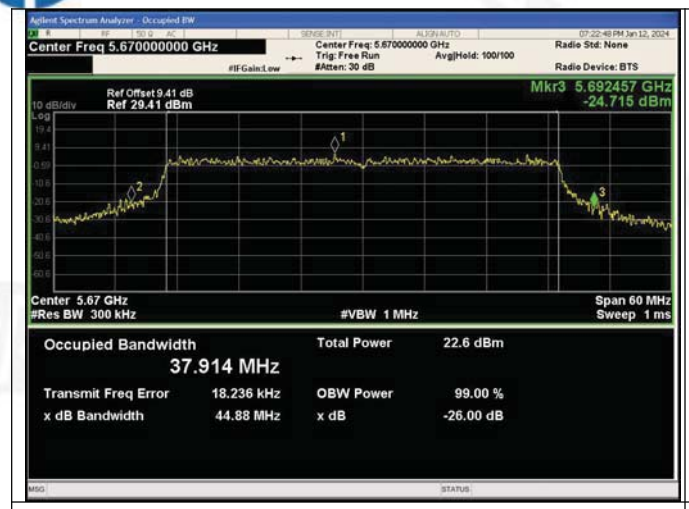

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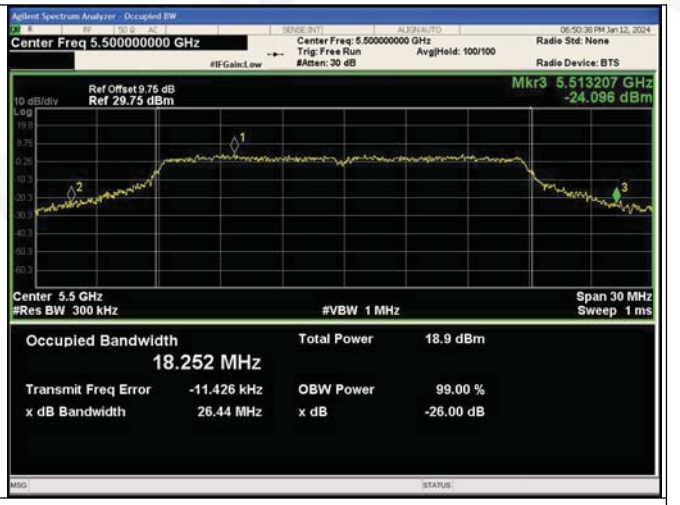

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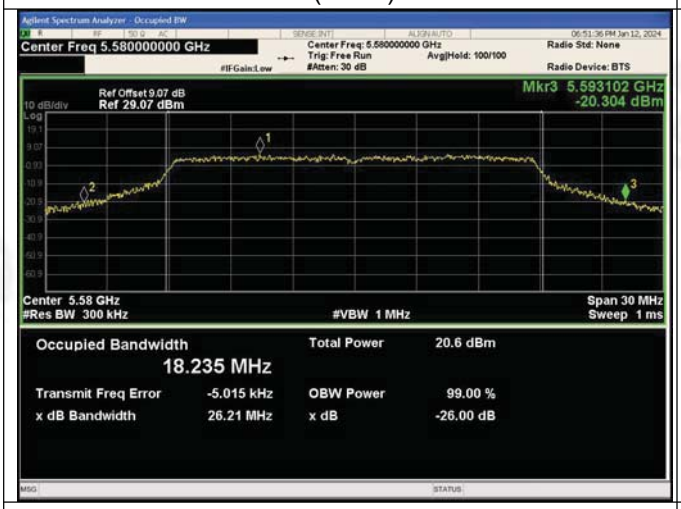

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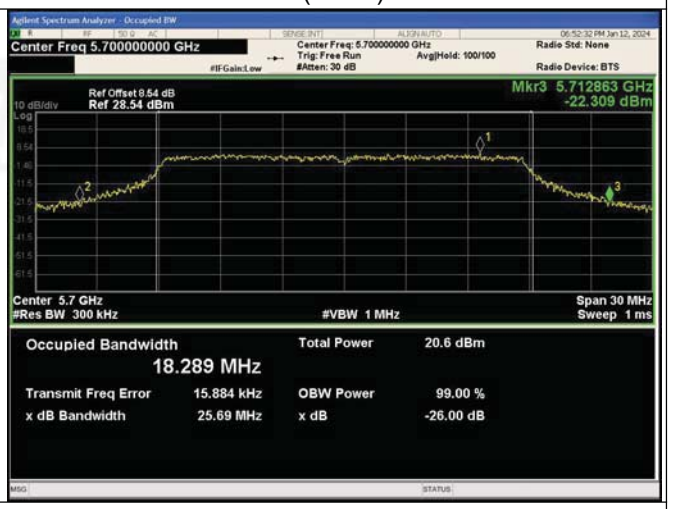

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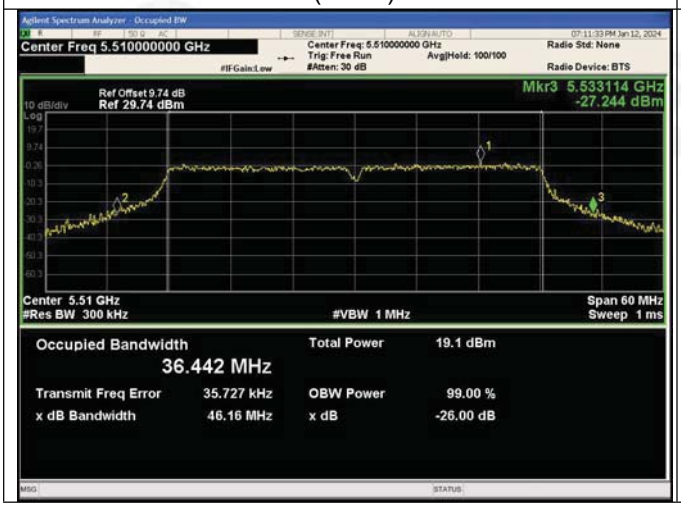
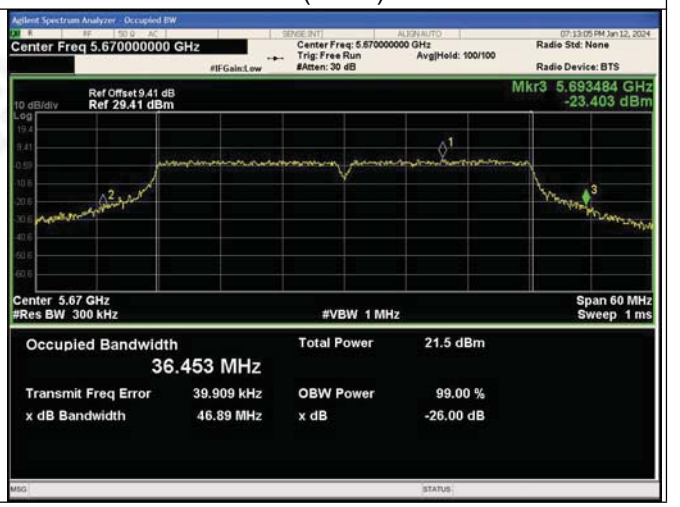
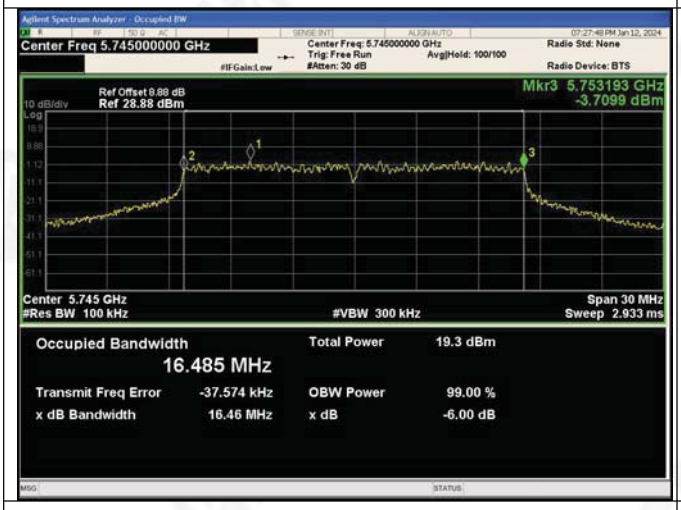


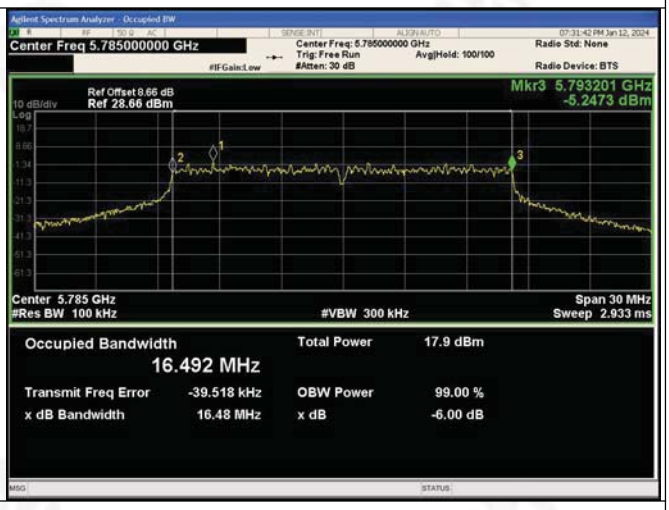


5745-5825MHz

802.11a-5745

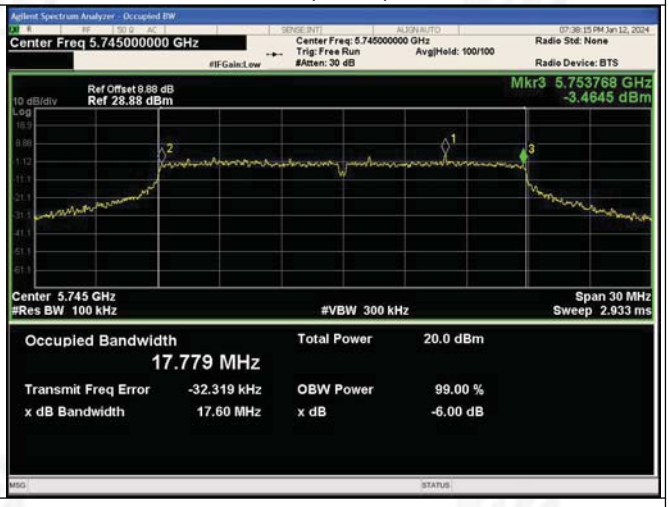


802.11a-5785



802.11a-5825

802.11ac(VH20)-5745



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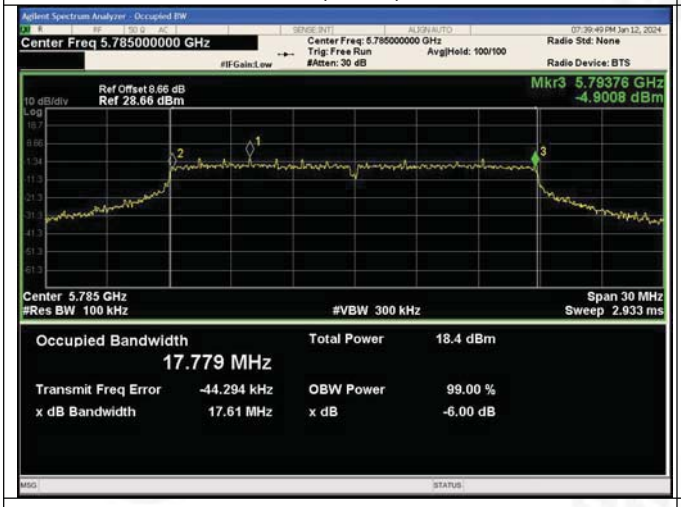
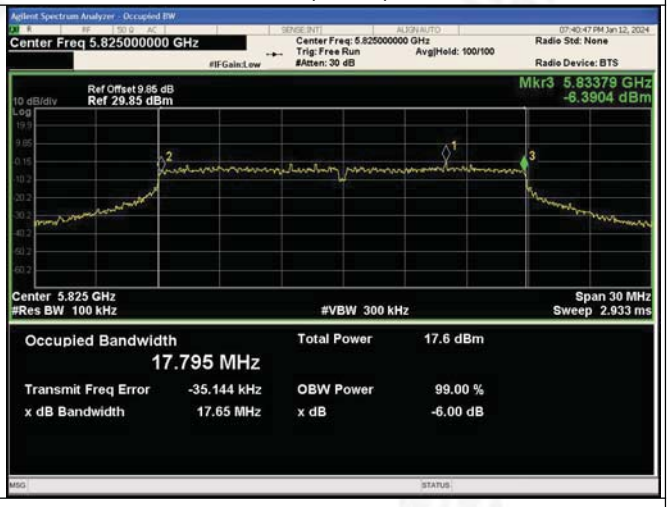


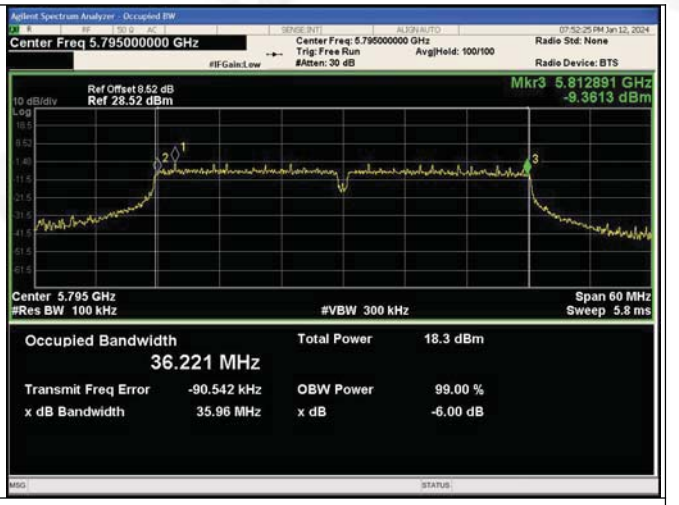
802.11ac(VH20)-5825



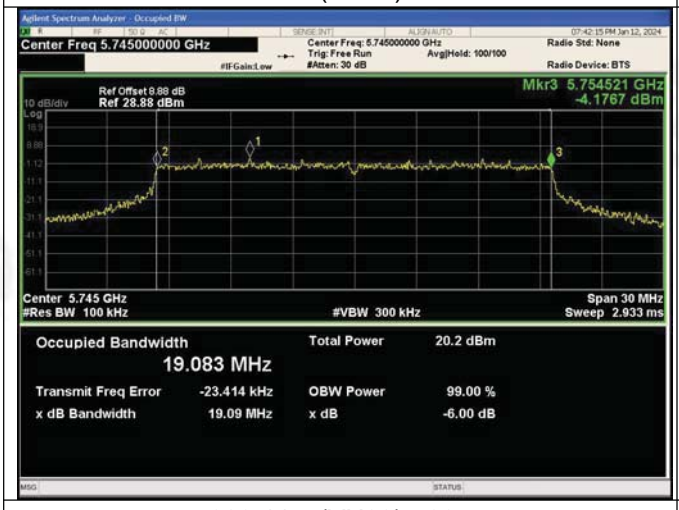
802.11ac(VH40)-5755

802.11ac(VH40)-5795

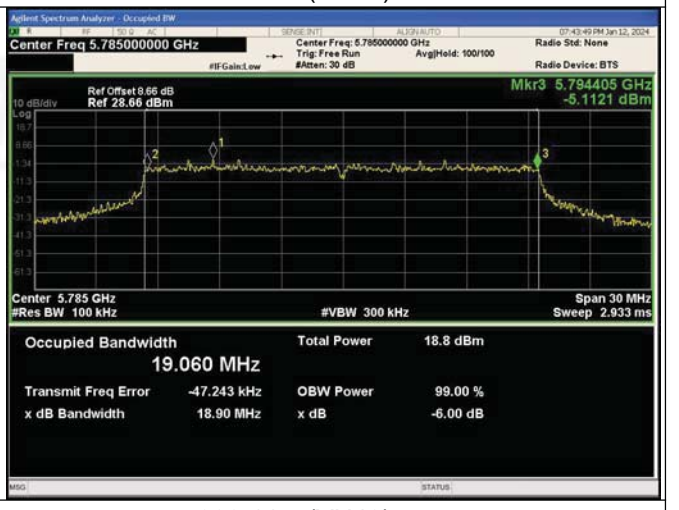
802.11ax(VH20)-5745



802.11ax(VH20)-5785



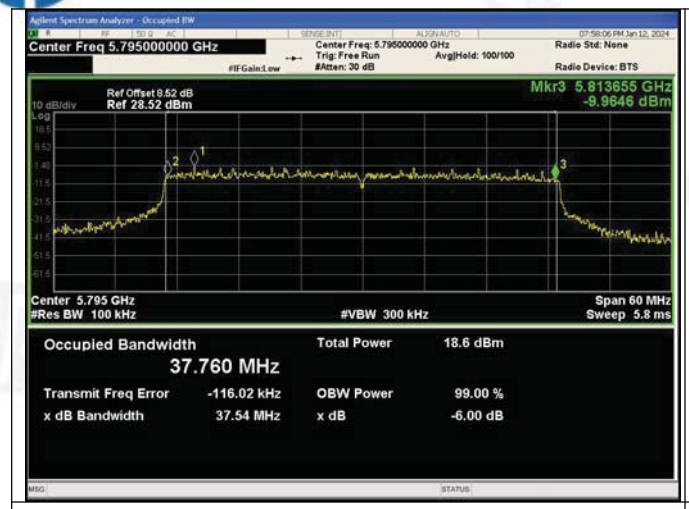
802.11ax(VH20)-5825



802.11ax(VH40)-5755

802.11ax(VH40)-5795

802.11n(HT20)-5745



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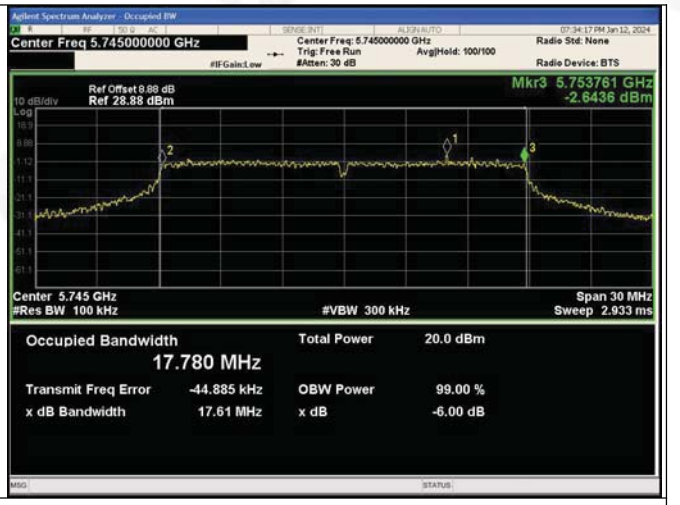

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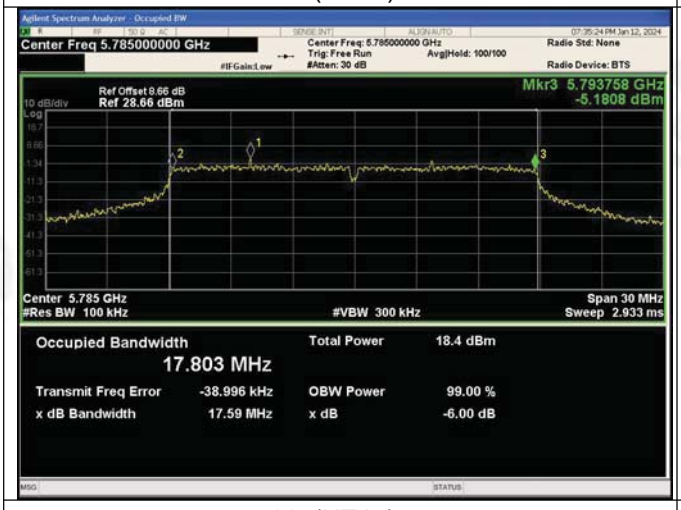
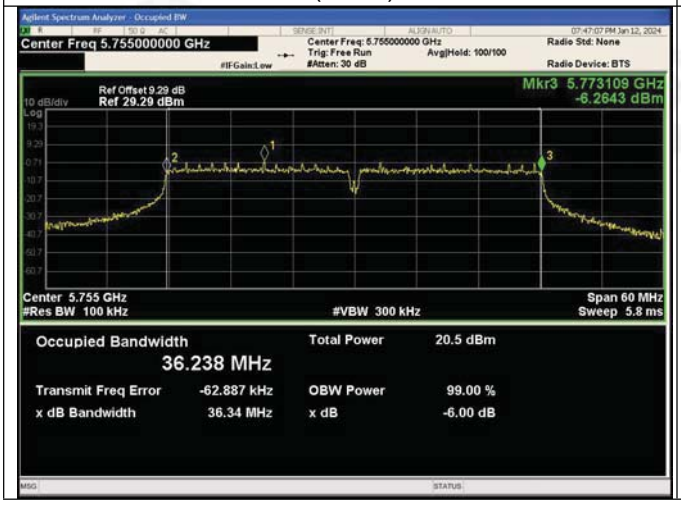
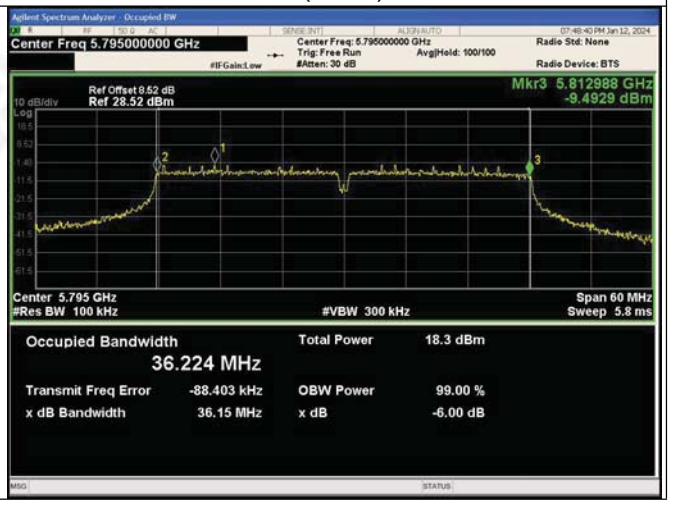


802.11n(HT40)-5795

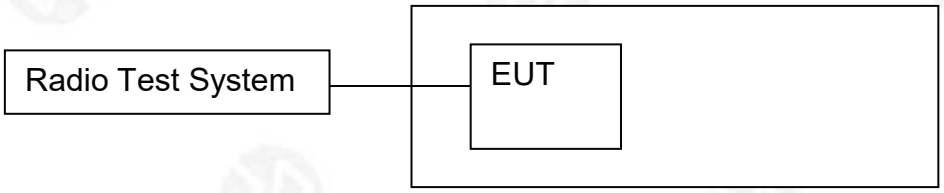
802.11n(HT40)-5825





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

5180-5240MHz

Test mode	Test Channel (MHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11a	5180	-3.006	11	Pass
	5200	-2.525	11	Pass
	5240	-2.363	11	Pass
802.11ac(HT20)	5180	-0.371	11	Pass
	5200	-0.298	11	Pass
	5240	-0.012	11	Pass
802.11ac(HT40)	5190	-3.85	11	Pass
	5230	-3.638	11	Pass
802.11ax(HT20)	5180	-0.942	11	Pass
	5200	-0.11	11	Pass
	5240	-0.381	11	Pass
802.11ax(HT40)	5190	-3.758	11	Pass
	5230	-3.861	11	Pass
802.11n(HT20)	5180	-0.822	11	Pass
	5200	-0.318	11	Pass
	5240	-0.188	11	Pass
802.11n(HT40)	5190	-3.738	11	Pass
	5230	-3.861	11	Pass

5260-5320MHz

Test mode	Test Channel (MHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11a	5260	-0.412	11	Pass
	5280	-3.418	11	Pass
	5320	-4.016	11	Pass
802.11ac(VH20)	5260	-1.197	11	Pass
	5280	-1.693	11	Pass
	5320	-2.303	11	Pass
802.11ac(VH40)	5270	-5.585	11	Pass
	5310	-5.437	11	Pass
802.11ax(VH20)	5260	-1.525	11	Pass
	5280	-1.769	11	Pass
	5320	-2.805	11	Pass
802.11ax(VH40)	5270	-5.438	11	Pass
	5310	-5.554	11	Pass
802.11n(VH20)	5260	-0.969	11	Pass
	5280	-1.478	11	Pass
	5320	-2.063	11	Pass
802.11n(VH40)	5270	-5.089	11	Pass
	5310	-5.52	11	Pass

5500-5700MHz

Test mode	Test Channel (MHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11a	5500	-2.347	11	Pass
	5580	-0.46	11	Pass
	5700	0.429	11	Pass
802.11ac(VH20)	5500	1.431	11	Pass
	5580	3.288	11	Pass
	5700	3.24	11	Pass
802.11ac(VH40)	5510	-1.513	11	Pass
	5670	0.497	11	Pass
802.11ax(VH20)	5500	1.387	11	Pass
	5580	2.923	11	Pass
	5700	3.123	11	Pass
802.11ax(VH40)	5510	-1.843	11	Pass
	5670	0.634	11	Pass
802.11n(HT20)	5500	1.46	11	Pass
	5580	3.023	11	Pass
	5700	3.137	11	Pass
802.11n(HT40)	5510	-1.556	11	Pass
	5670	0.426	11	Pass

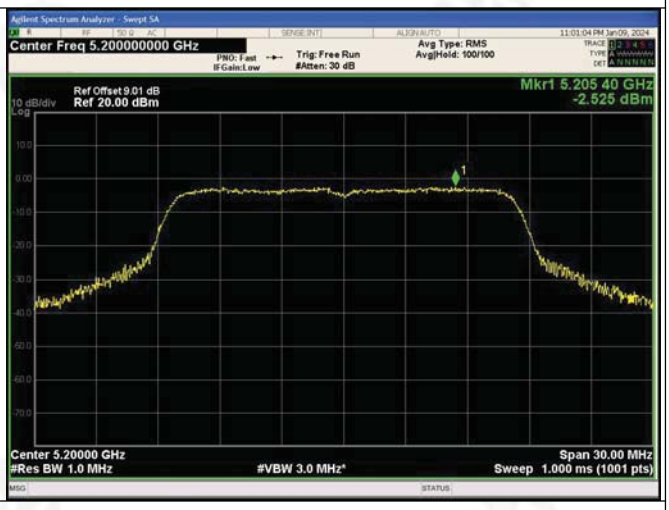
5745-5825MHz

Test mode	Test Channel (MHz)	PSD (dBm/500kHz) ANT 1	Limit (dBm/500kHz)	Result
802.11a	5745	-2.297	30	Pass
	5785	-3.894	30	Pass
	5825	-4.694	30	Pass
802.11ac(VH20)	5745	-0.528	30	Pass
	5785	-1.781	30	Pass
	5825	-2.781	30	Pass
802.11ac(VH40)	5755	-3.51	30	Pass
	5795	-5.379	30	Pass
802.11ax(VH20)	5745	-0.606	30	Pass
	5785	-2.068	30	Pass
	5825	-2.912	30	Pass
802.11ax(VH40)	5755	-3.667	30	Pass
	5795	-5.433	30	Pass
802.11n(HT20)	5745	-0.335	30	Pass
	5785	-1.817	30	Pass
	5825	-2.789	30	Pass
802.11n(HT40)	5755	-3.747	30	Pass
	5795	-5.502	30	Pass

Test Graph
5180-5240MHz

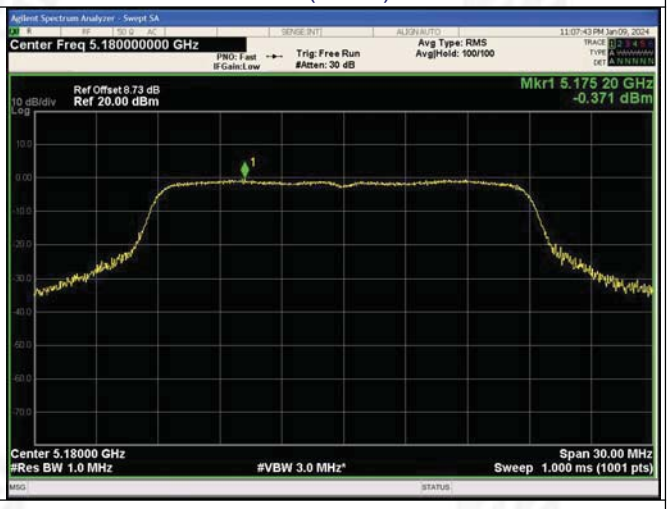
802.11a-5180

802.11a-5200



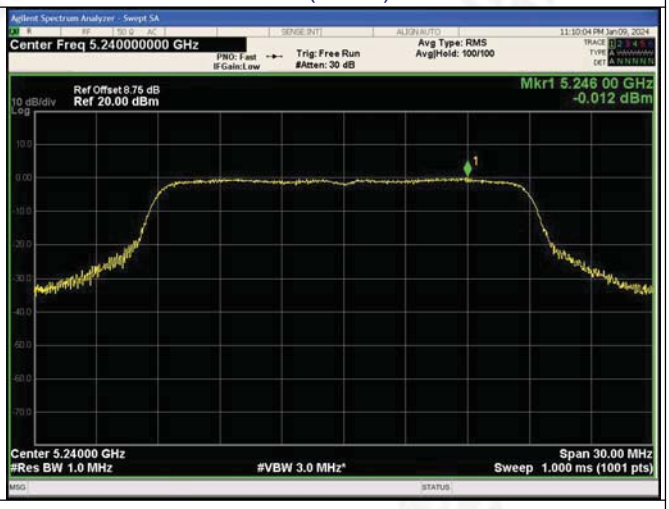
802.11a-5240

802.11ac(VH20)-5180



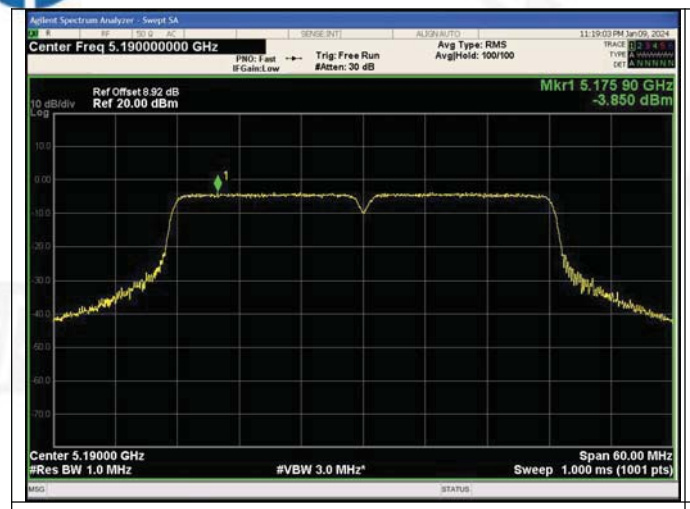
802.11ac(VH20)-5200

802.11ac(VH20)-5240

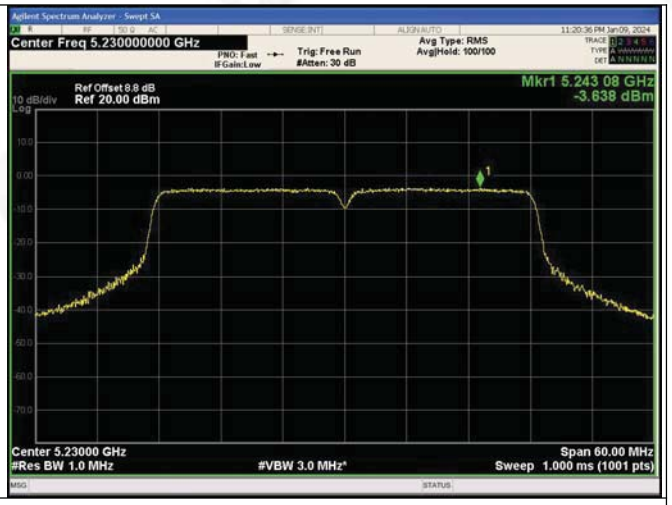


802.11ac(VH40)-5190

802.11ac(VH40)-5230

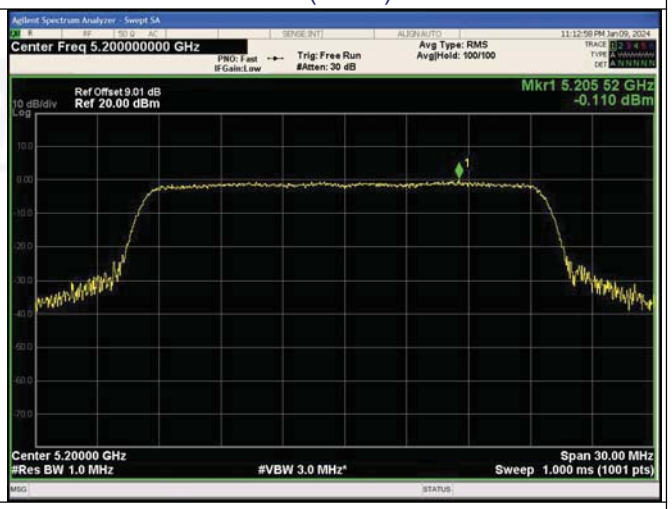


802.11ax(VH20)-5180



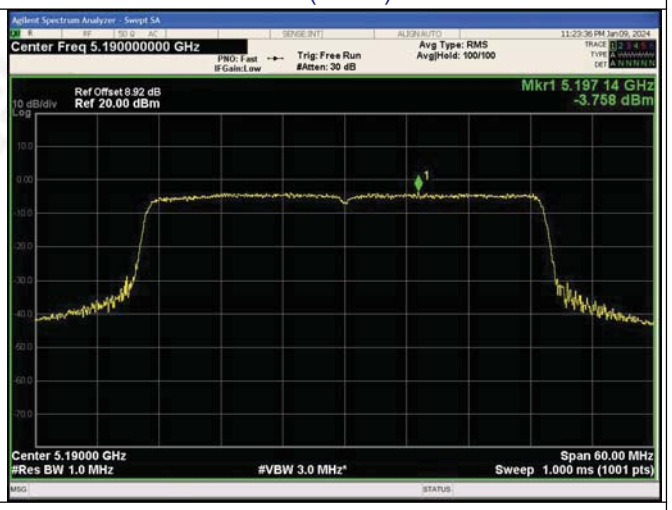
802.11ax(VH20)-5200

802.11ax(VH20)-5240



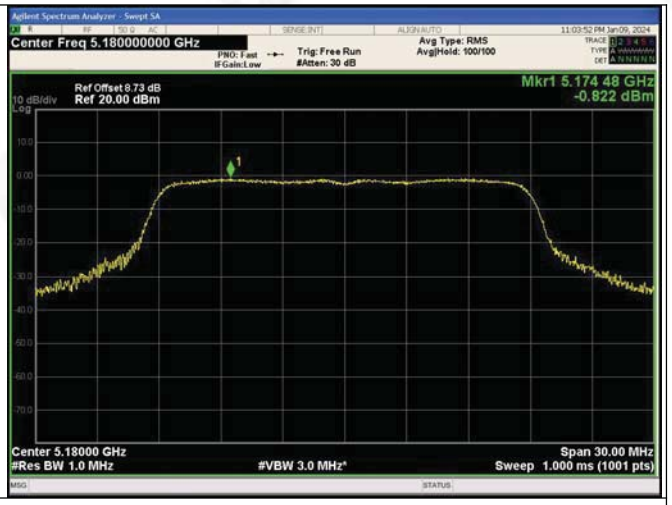
802.11ax(VH40)-5190

802.11axVH40)-5230

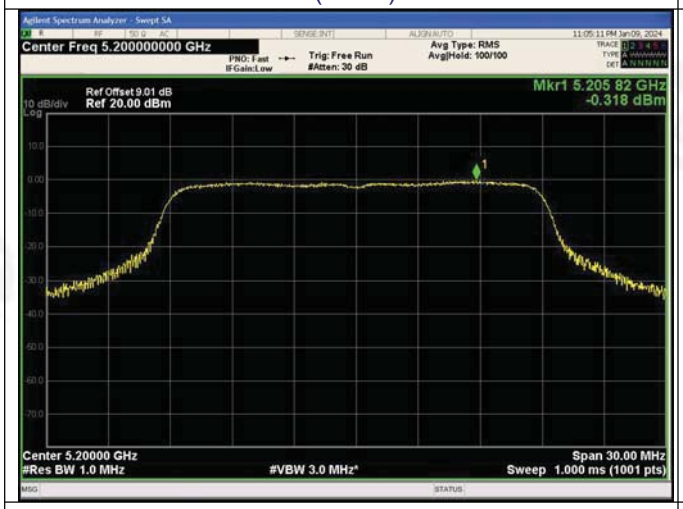


802.11n(HT20)-5180

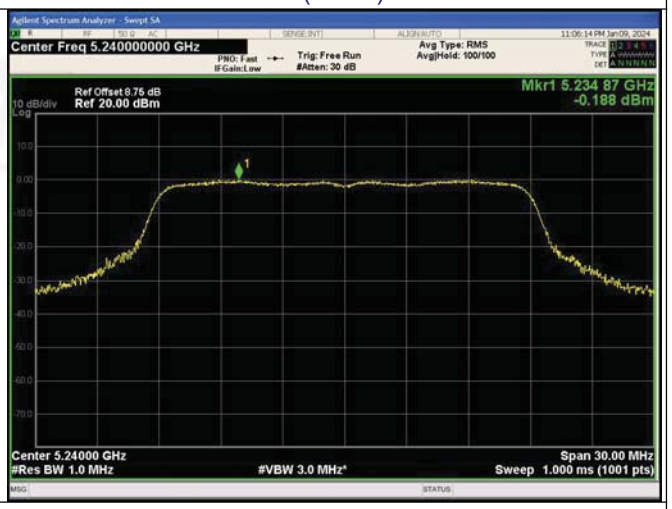
802.11n(HT20)-5200



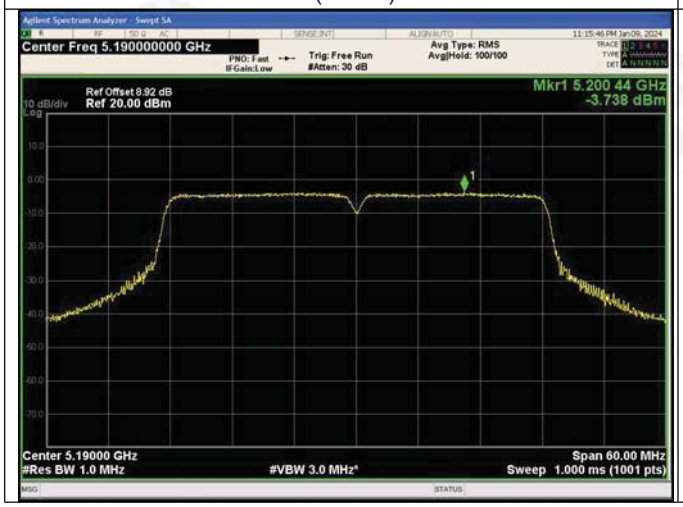
802.11n(HT20)-5240

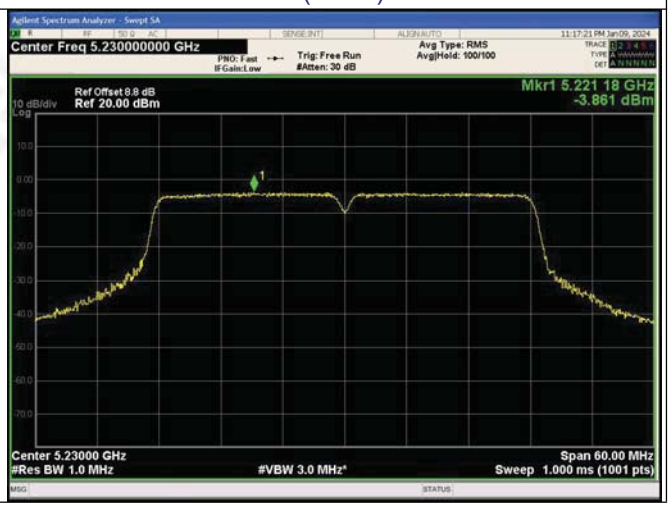


802.11n(HT40)-5190

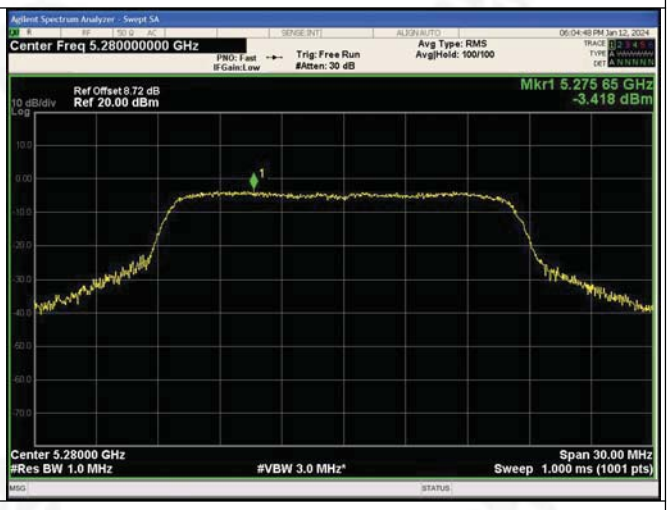
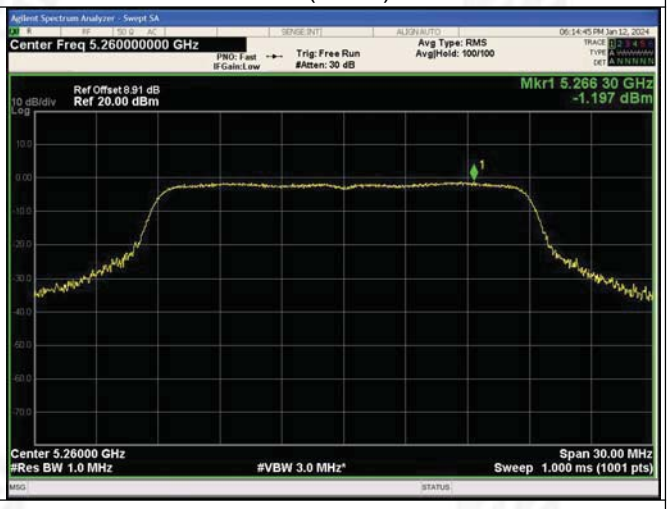
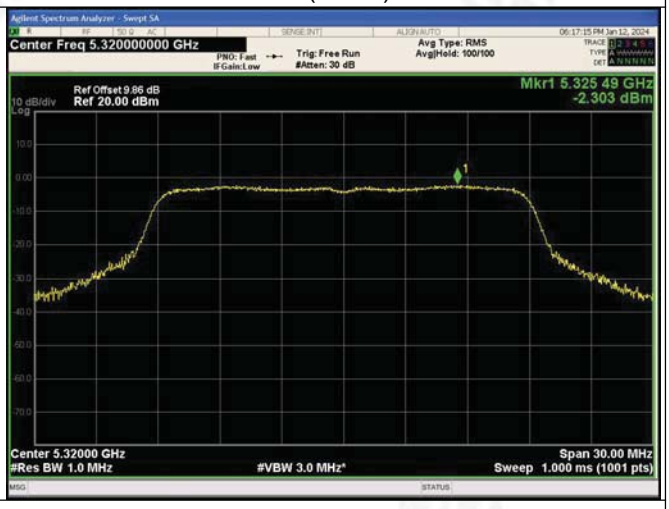


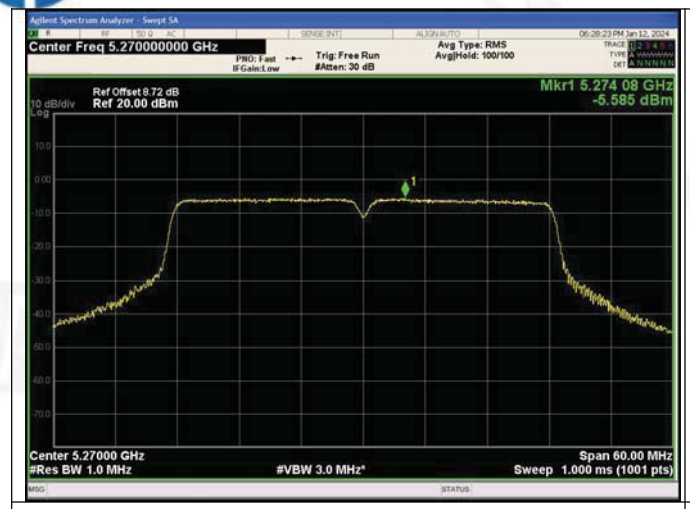
802.11n(HT40)-5230



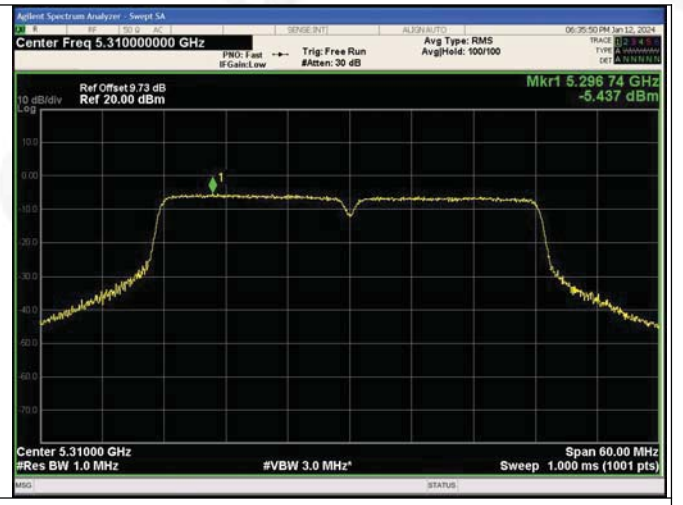


5260-5320MHz

802.11a-5260	802.11a-5280
	
802.11a-5320	802.11ac(VH20)-5260
	
802.11ac(VH20)-5280	802.11ac(VH20)-5320
	
802.11ac(VH40)-5270	802.11ac(VH40)-5310

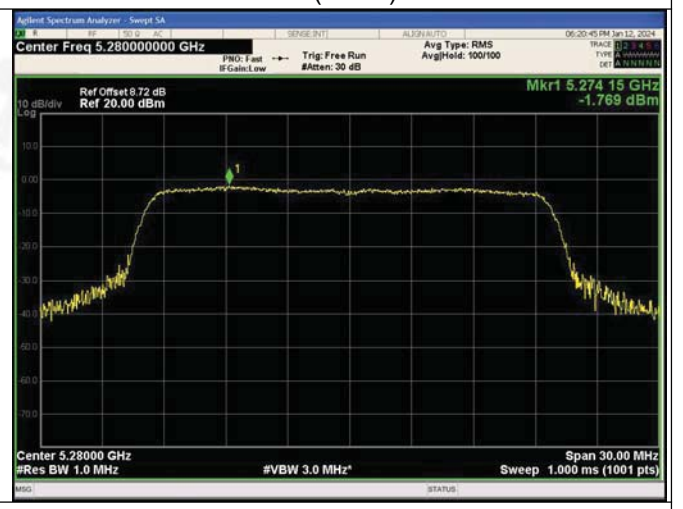


802.11ax(VH20)-5260



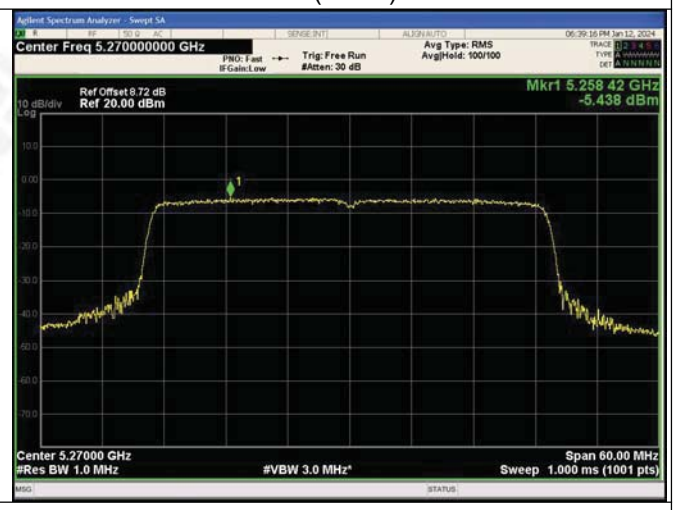
802.11ax(VH20)-5280

802.11ax(VH20)-5320

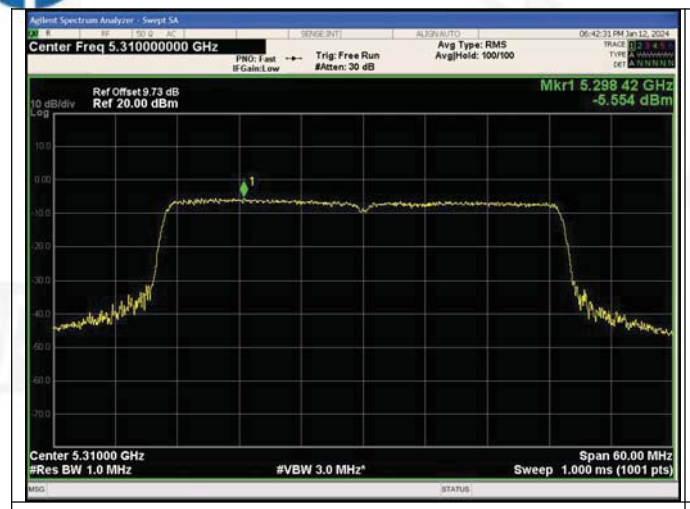


802.11ax(VH40)-5270

802.11ax(VH40)-5310

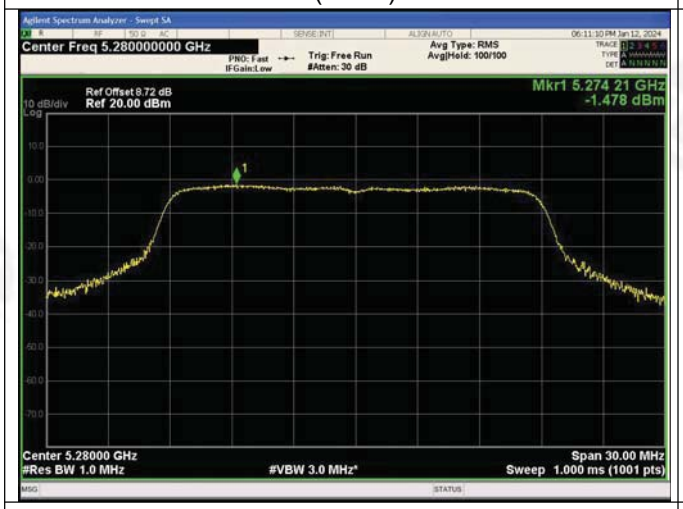


802.11n(HT20)-5260

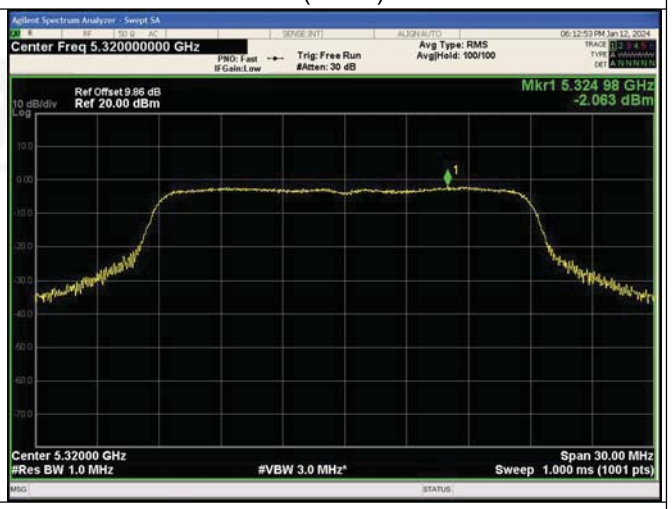


802.11n(HT20)-5280

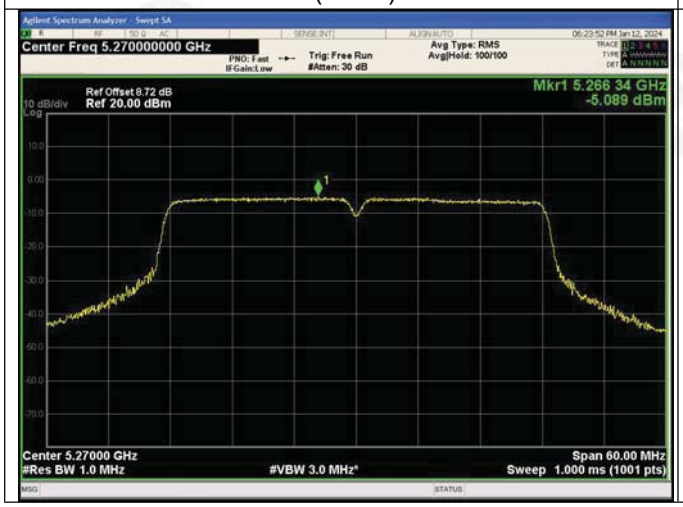
802.11n(HT20)-5320

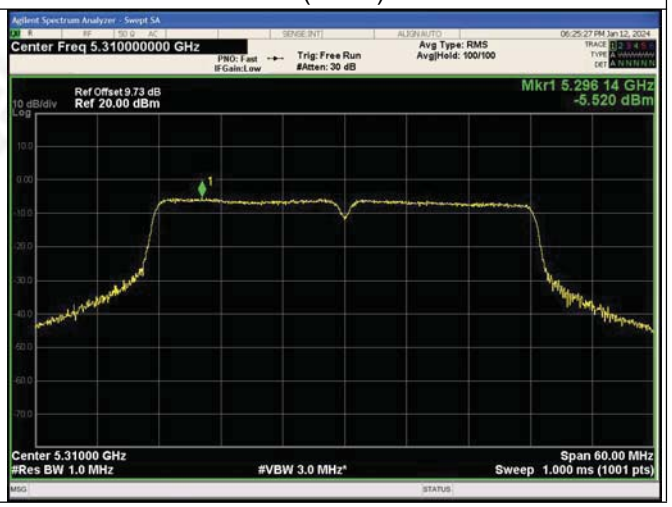


802.11n(HT40)-5270



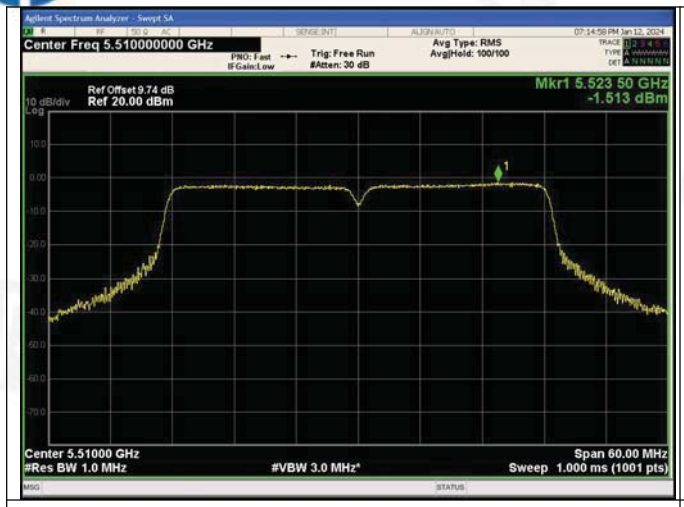
802.11n(HT40)-5310



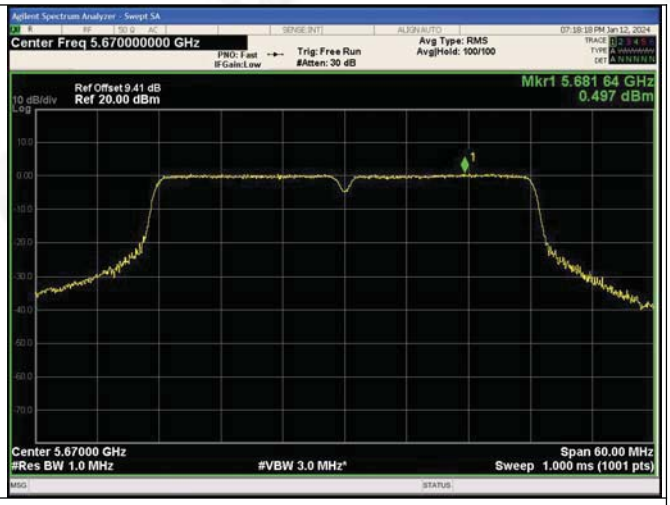


5500-5700MHz

802.11a-5500	802.11a-5580
	
802.11a-5700	802.11ac(VH20)-5500
	
802.11ac(VH20)-5580	802.11ac(VH20)-5700
	
802.11ac(VH40)-5510	802.11ac(VH40)-5670

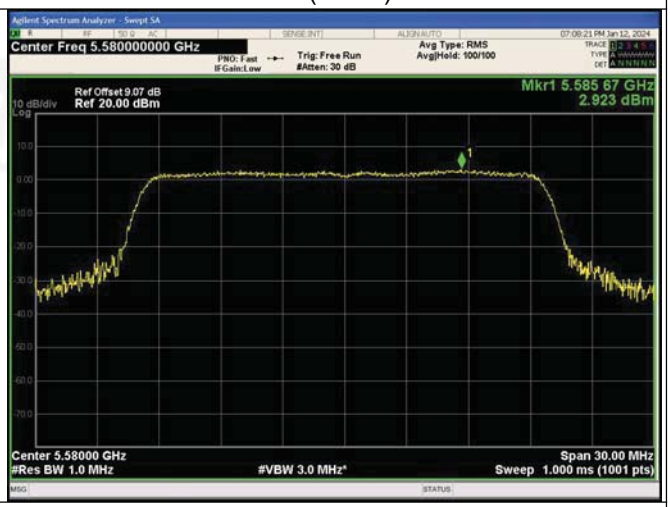


802.11ax(VH20)-5500



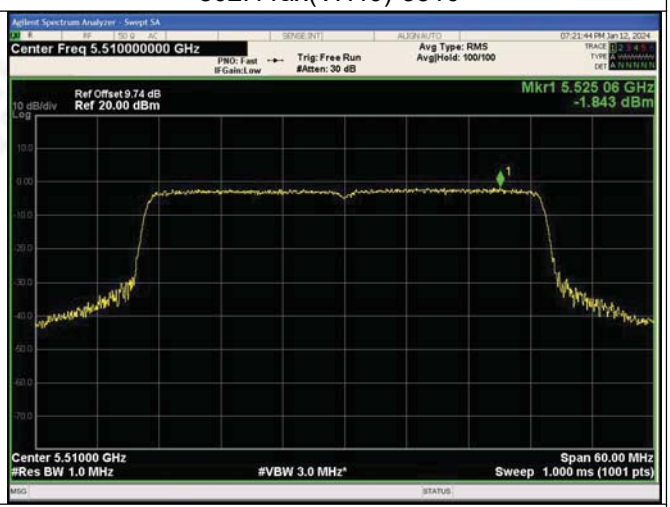
802.11ax(VH20)-5580

802.11ax(VH20)-5700

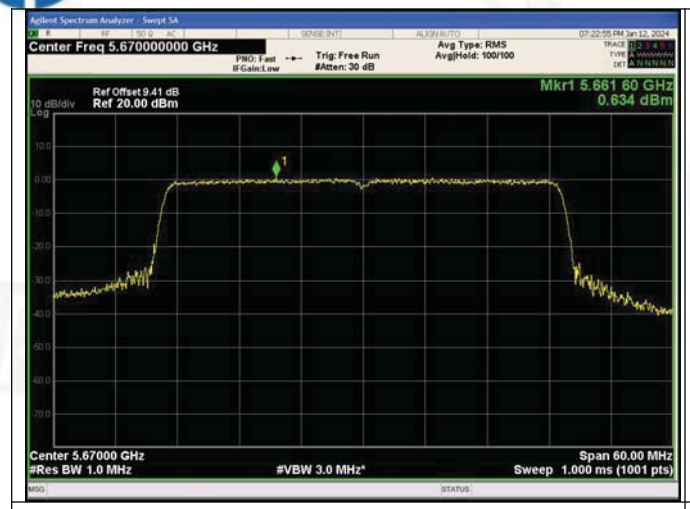


802.11ax(VH40)-5510

802.11ax(VH40)-5670

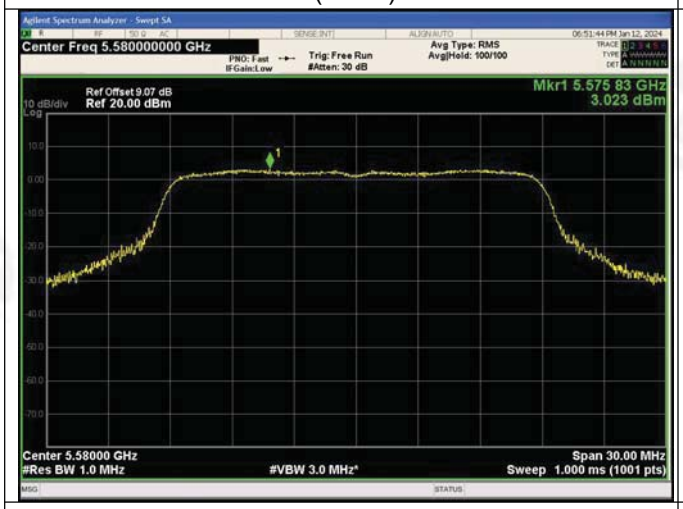


802.11n(HT20)-5500

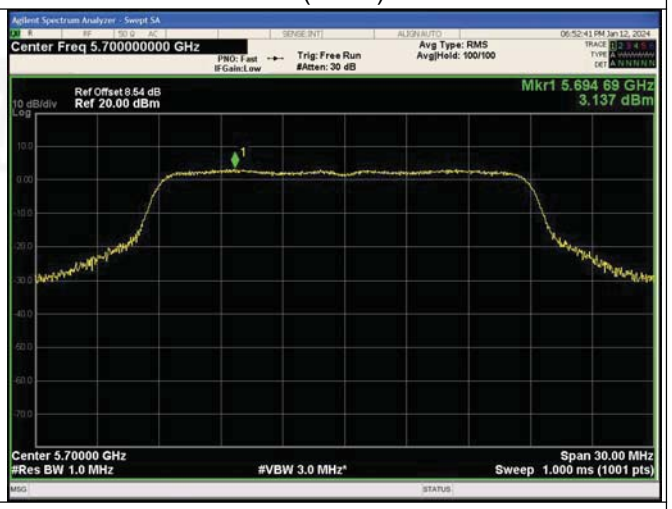


802.11n(HT20)-5580

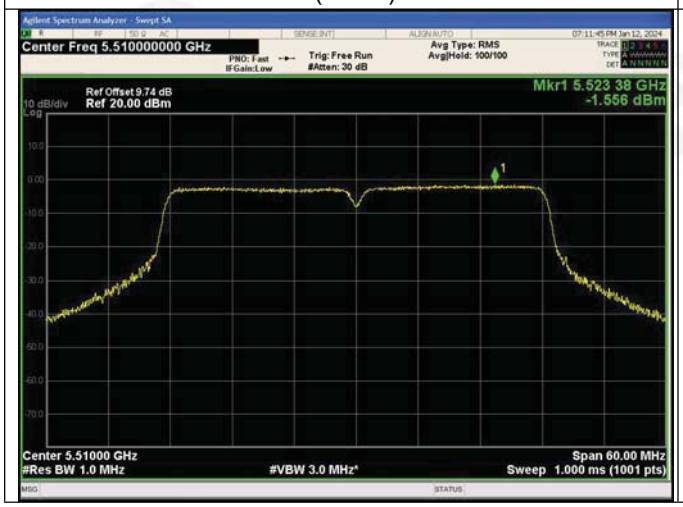
802.11n(HT20)-5700

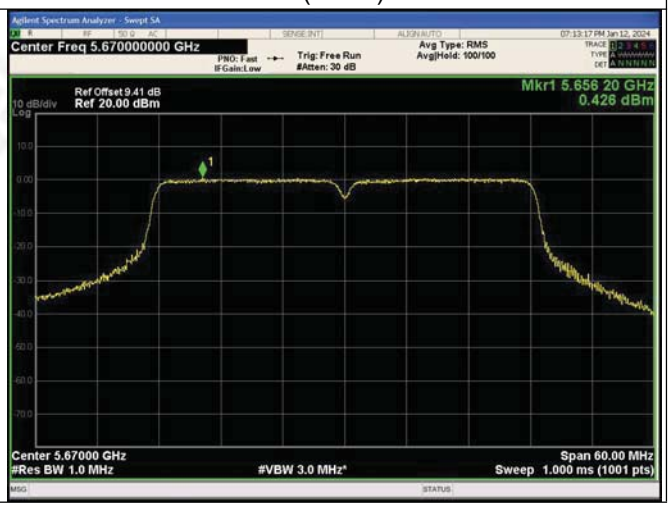


802.11n(HT40)-5510

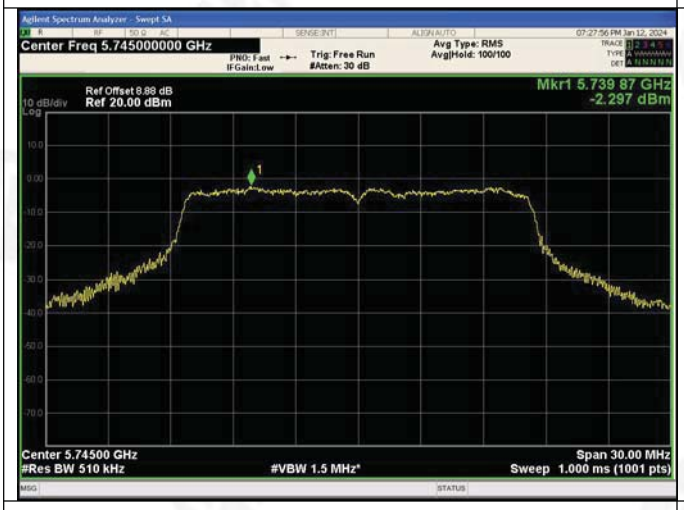
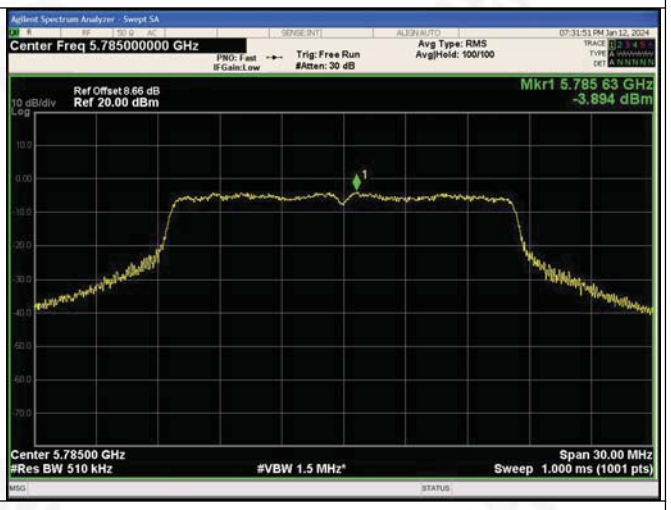
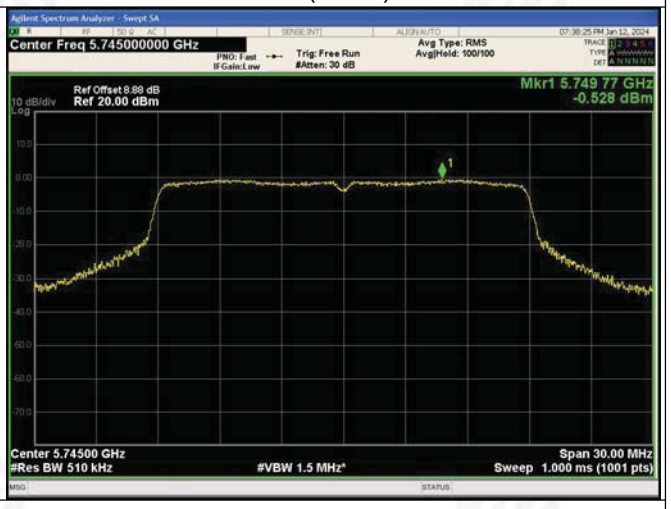
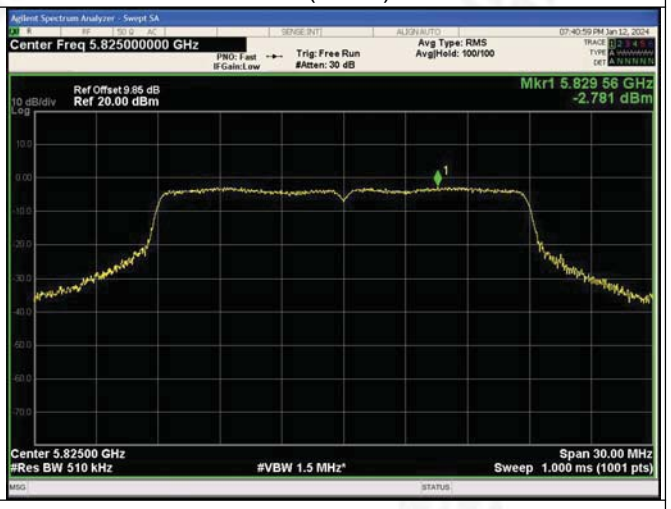


802.11n(HT40)-5670

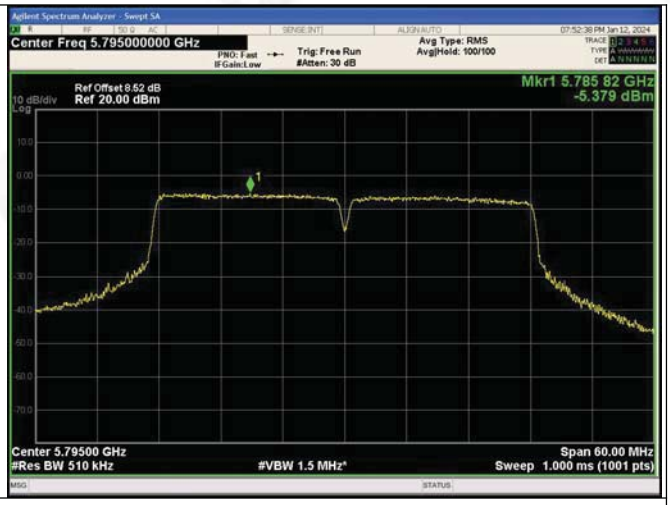




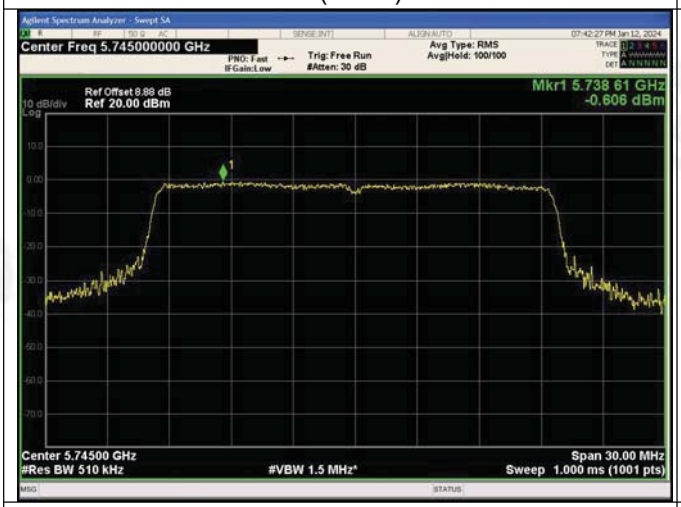
5745-5825MHz

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

802.11ax(VH20)-5745



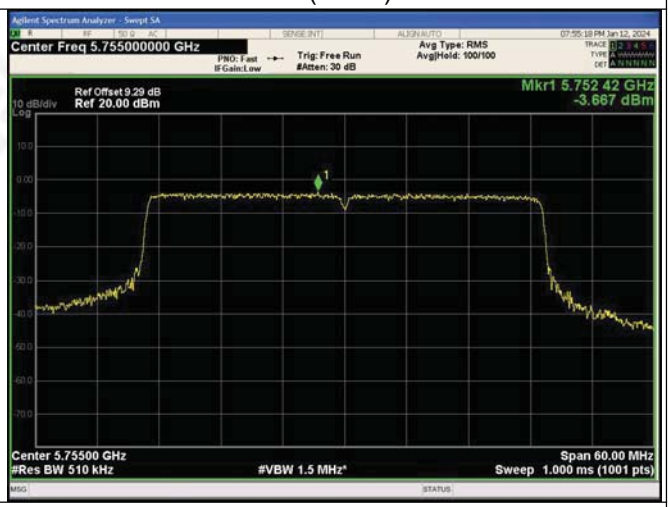
802.11ax(VH20)-5785



802.11ax(VH20)-5825

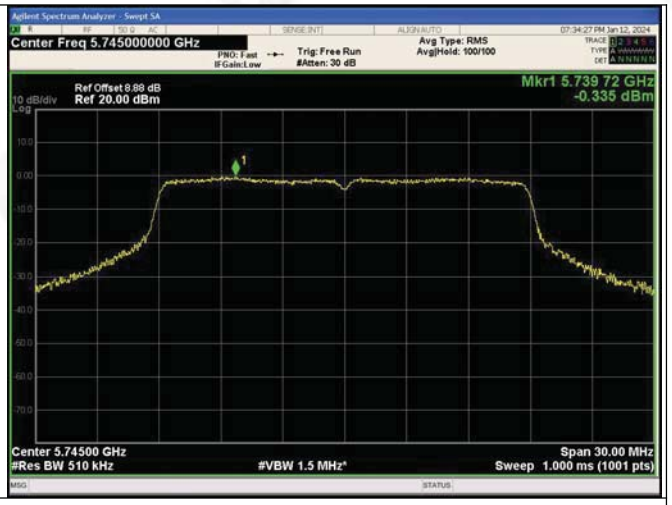
802.11ax(VH40)-5755

802.11ax(VH40)-5795

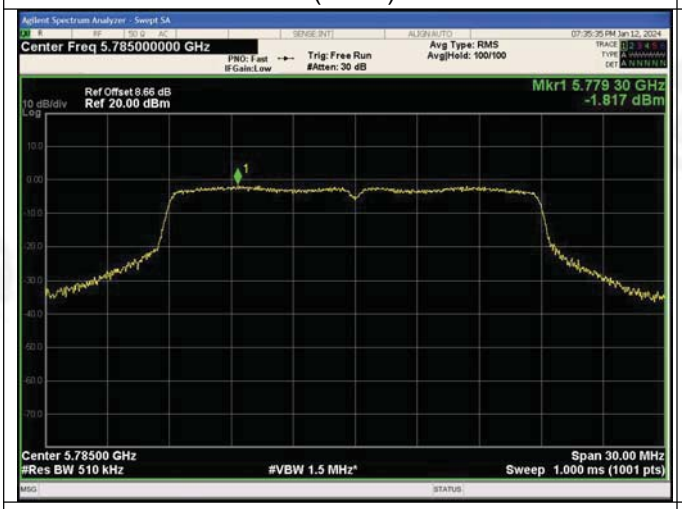


802.11n(HT20)-5745

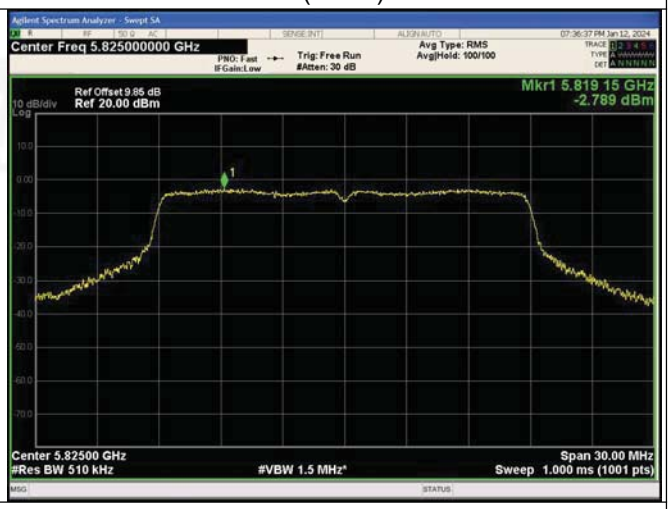
802.11n(HT20)-5785



802.11n(HT20)-5825



802.11n(HT40)-5795



802.11n(HT40)-5825