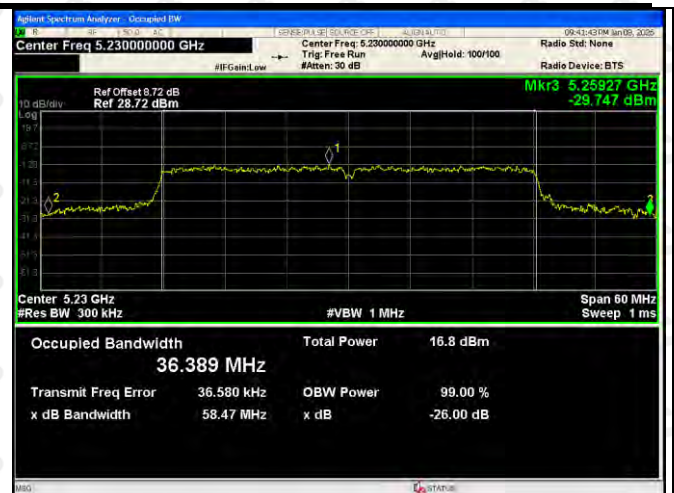
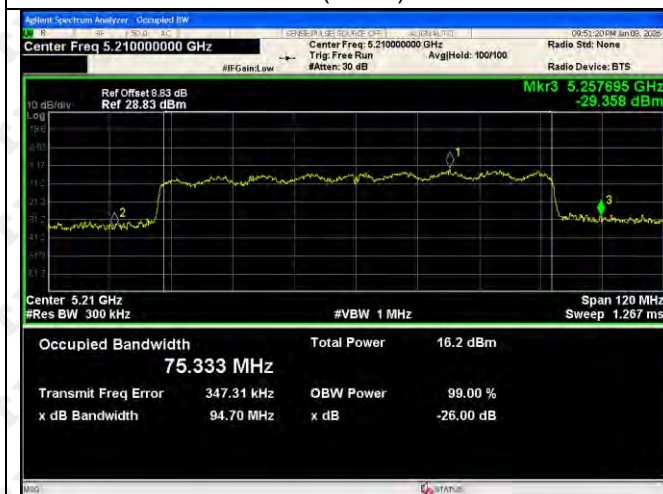




802.11ax(HE80)-5210



802.11n(HT20)-5180



802.11n(HT20)-5200



802.11n(HT20)-5240



802.11n(HT40)-5190



802.11n(HT40)-5230



ANT2

802.11a-5180



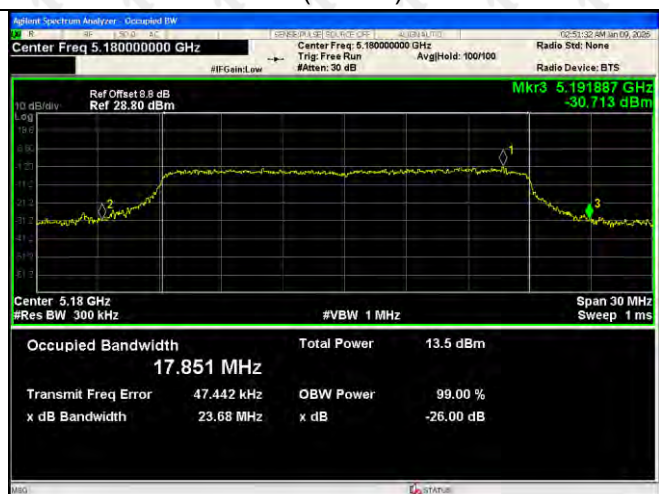
802.11a-5200



802.11a-5240

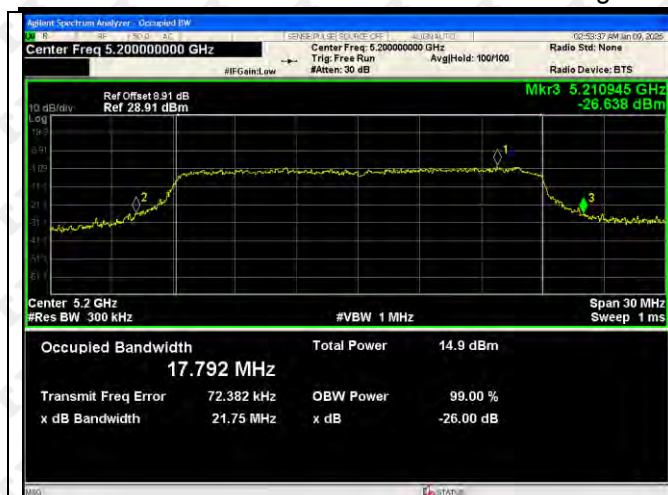


802.11ac(VHT20)-5180



802.11ac(VHT20)-5200

802.11ac(VHT20)-5240



802.11ac(VHT40)-5190



802.11ac(VHT40)-5230



802.11ac(VHT80)-5210



802.11ax(HE20)-5180



802.11ax(HE20)-5200



802.11ax(HE20)-5240



802.11ax(HE40)-5190



802.11ax(HE40)-5230



802.11ax(HE80)-5210



802.11n(HT20)-5180



802.11n(HT20)-5200



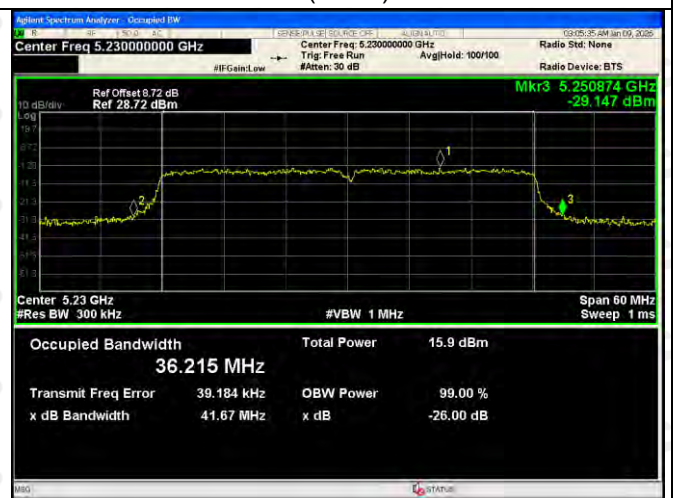
802.11n(HT20)-5240



802.11n(HT40)-5190



802.11n(HT40)-5230



5250-5350MHz
ANT1

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



802.11ac(VH80)-5290



802.11ax(VH20)-5260



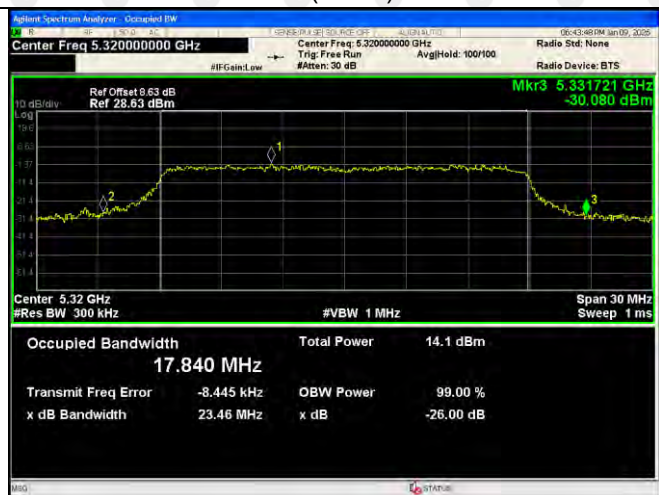
802.11ax(VH20)-5280



802.11ax(VH20)-5320



802.11ax(VH40)-5270



802.11ax(VH40)-5310



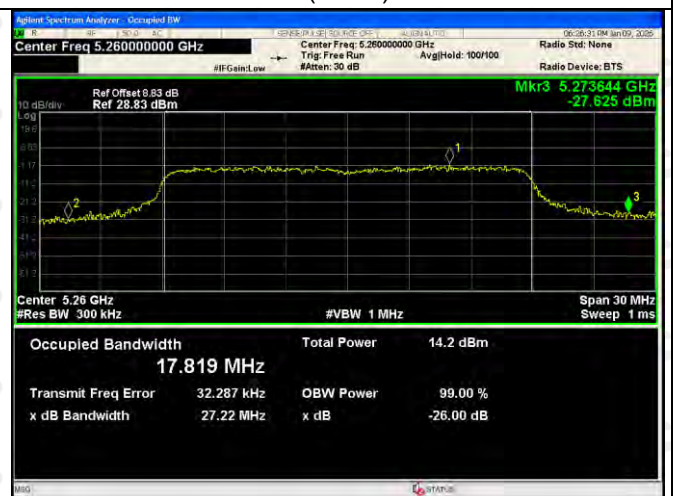
802.11ac(VH80)-5290



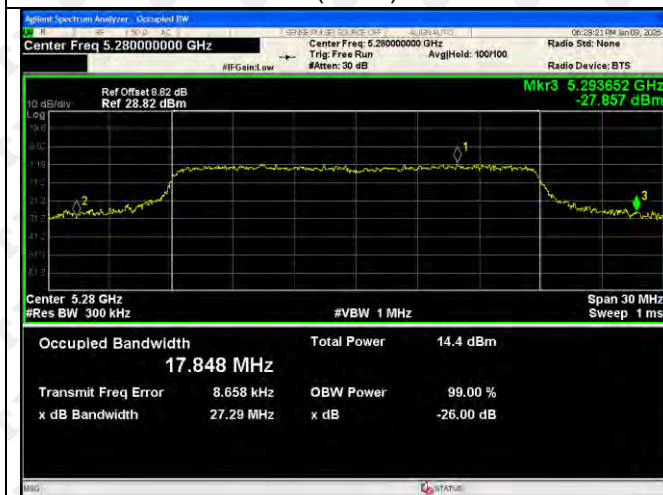
802.11n(HT20)-5260



802.11n(HT20)-5280



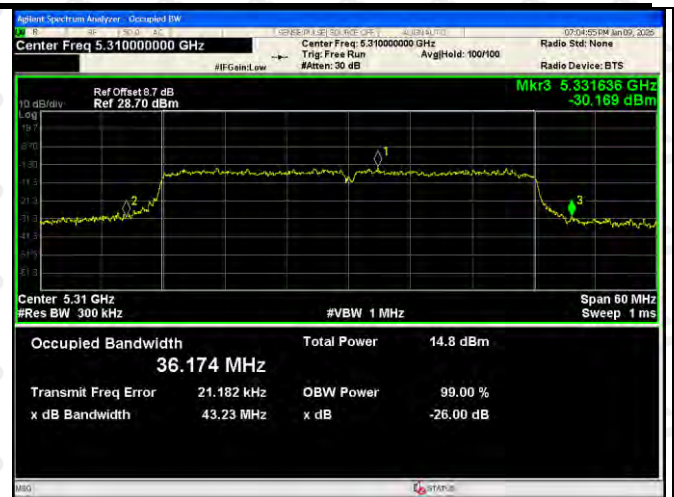
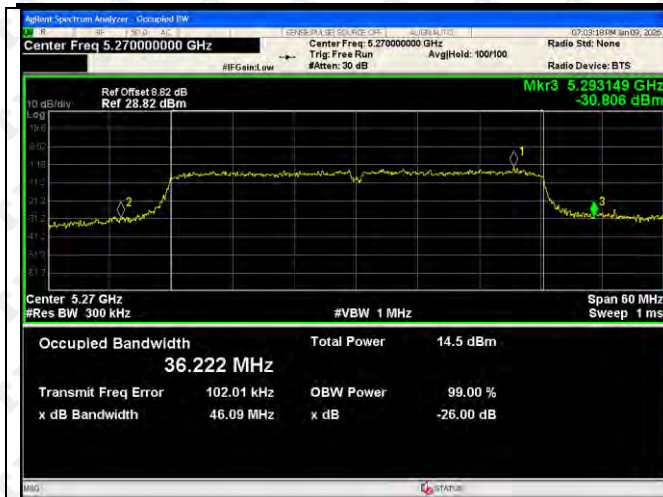
802.11n(HT20)-5320



802.11n(HT40)-5270



802.11n(HT40)-5310



ANT2

802.11a-5260



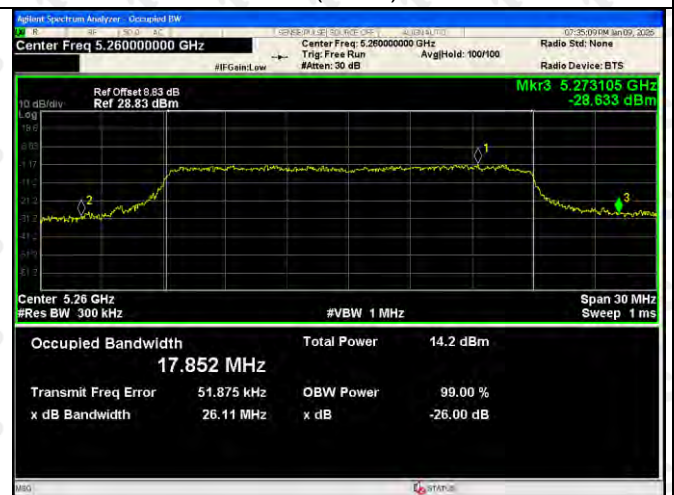
802.11a-5280



802.11a-5320



802.11ac(VH20)-5260

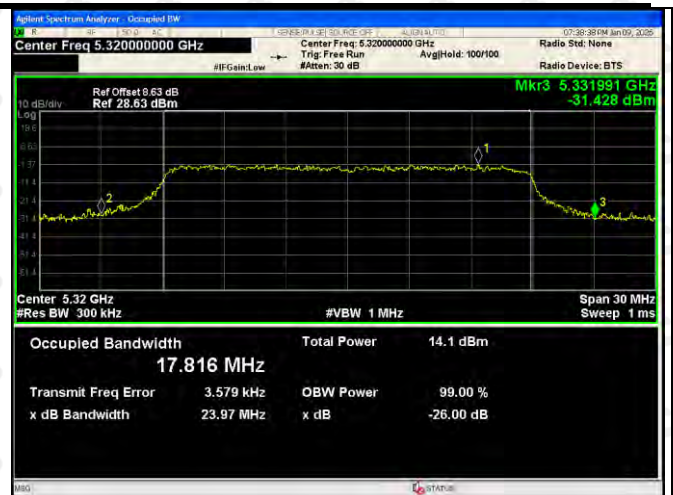


802.11ac(VH20)-5280

802.11ac(VH20)-5320



802.11ac(VH40)-5270



802.11ac(VH40)-5310



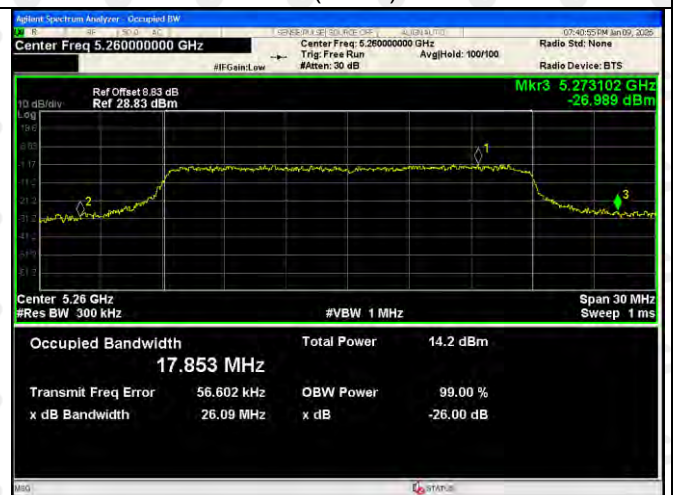
802.11ac(VH80)-5290



802.11ax(VH20)-5260



802.11ax(VH20)-5280



802.11ax(VH20)-5320



802.11ax(VH40)-5270



802.11ax(VH40)-5310



802.11ac(VH80)-5290



802.11n(HT20)-5260



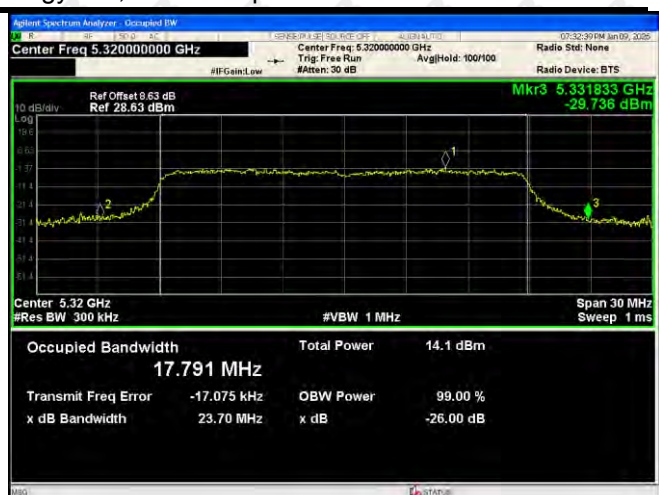
802.11n(HT20)-5280



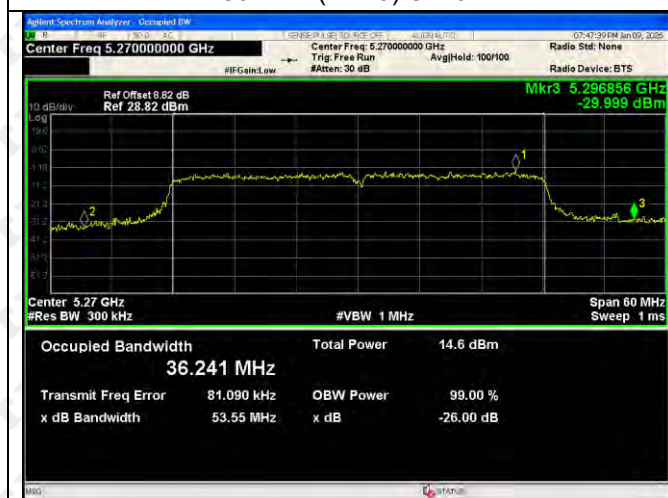
802.11n(HT20)-5320



802.11n(HT40)-5270

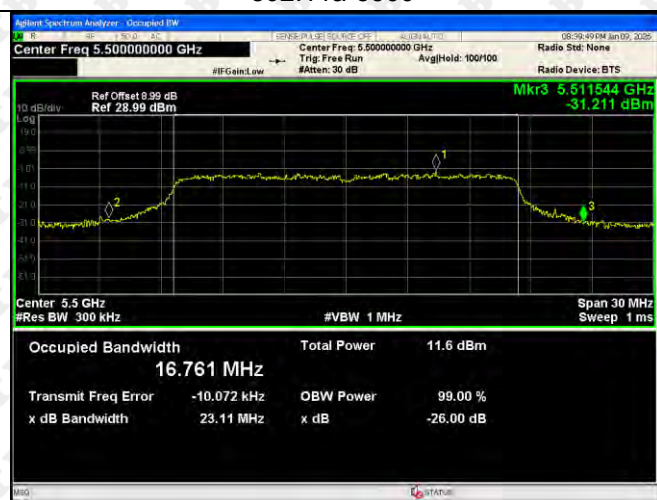


802.11n(HT40)-5310



5470-5725MHz
ANT1

802.11a-5500



802.11a-5580



802.11a-5700



802.11ac(VH20)-5500



802.11ac(VH20)-5580



802.11ac(VH20)-5700

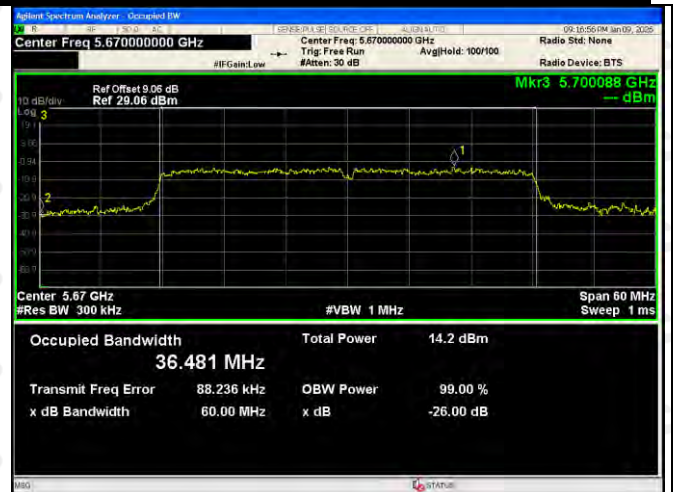


802.11ac(VH40)-5510

802.11ac(VH40)-5670



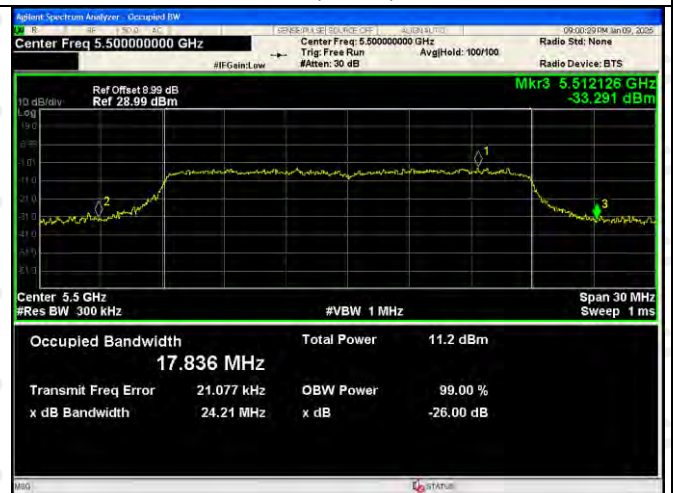
802.11ac(VH80)-5530



802.11ax(VH20)-5500



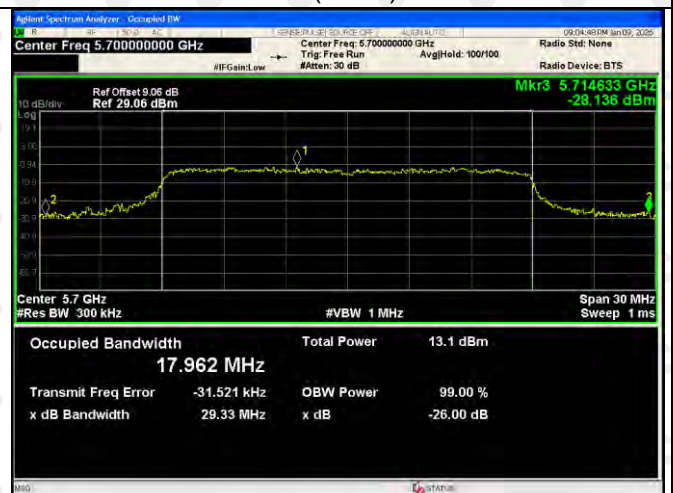
802.11ax(VH20)-5580



802.11ax(VH20)-5700



802.11ax(VH40)-5510



802.11ax(VH40)-5670



802.11ax(VH80)-5530



802.11n(HT20)-5500



802.11n(HT20)-5580



802.11n(HT20)-5700



802.11n(HT40)-5510



802.11n(HT40)-5670



ANT2

802.11a-5500



802.11a-5580



802.11a-5700



802.11ac(VH20)-5500

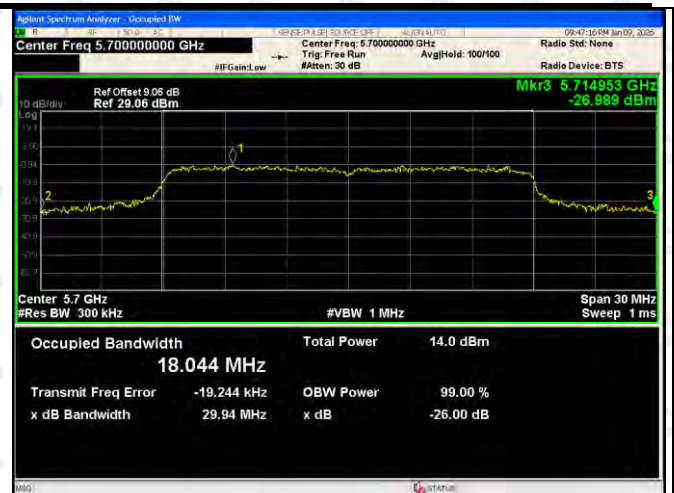


802.11ac(VH20)-5580

802.11ac(VH20)-5700



802.11ac(VH40)-5510



802.11ac(VH40)-5670



802.11ac(VH80)-5530



802.11ax(VH20)-5500



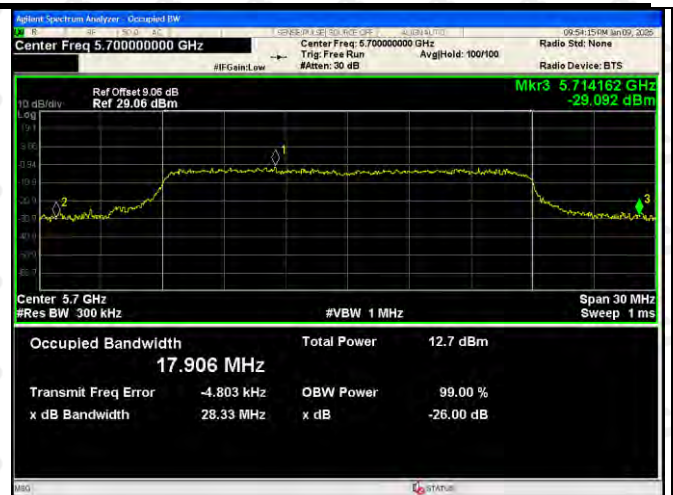
802.11ax(VH20)-5580



802.11ax(VH20)-5700



802.11ax(VH40)-5510



802.11ax(VH40)-5670



802.11ax(VH80)-5530



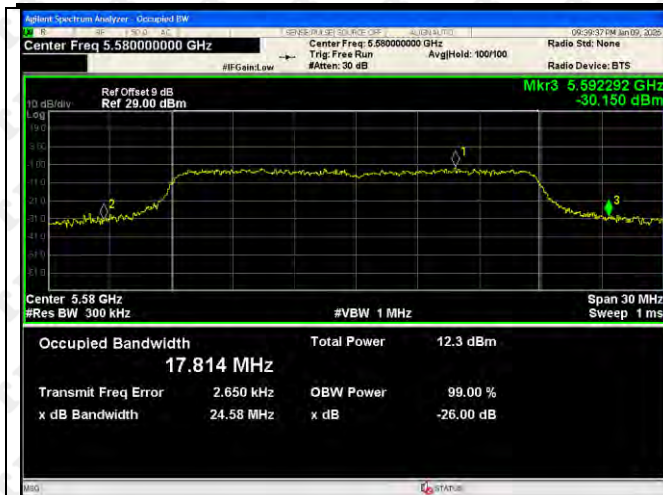
802.11n(HT20)-5500



802.11n(HT20)-5580



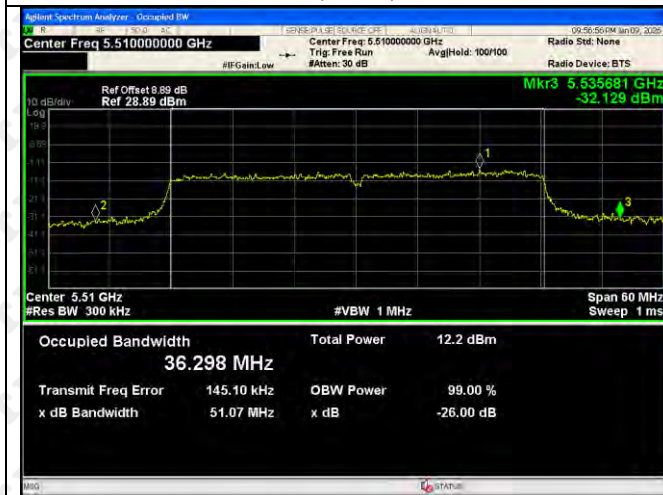
802.11n(HT20)-5700



802.11n(HT40)-5510

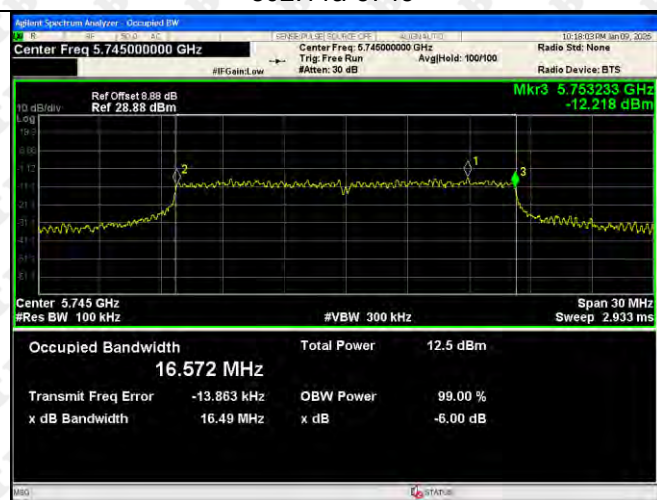


802.11n(HT40)-5670



5725-5850MHz
ANT1

802.11a-5745



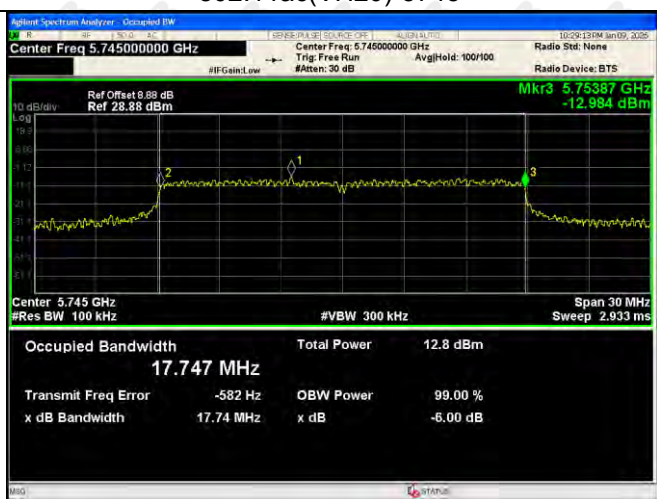
802.11a-5785



802.11a-5825



802.11ac(VH20)-5745



802.11ac(VH20)-5785



802.11ac(VH20)-5825



802.11ac(VH40)-5755

802.11ac(VH40)-5795



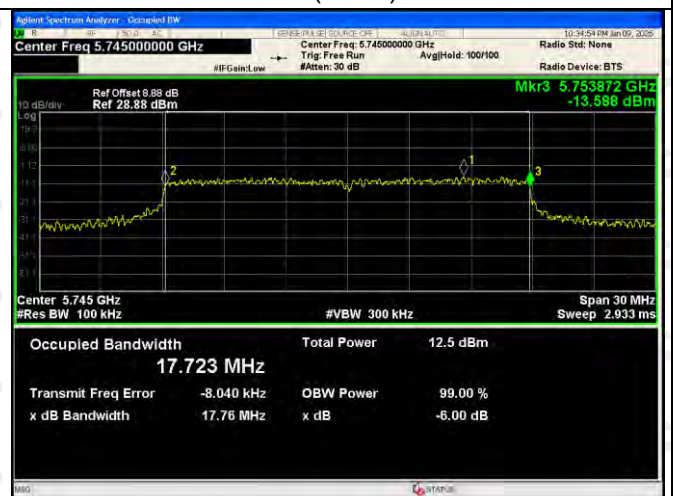
802.11ac(VH80)-5775



802.11ax(VH20)-5745



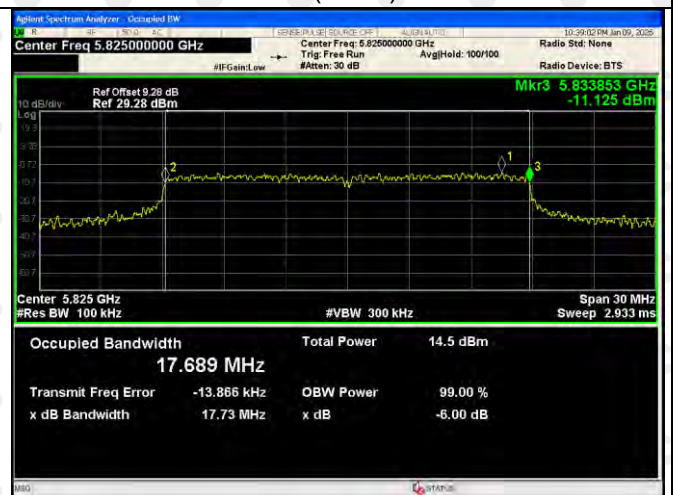
802.11ax(VH20)-5785



802.11ax(VH20)-5825



802.11ax(VH40)-5755



802.11ax(VH40)-5795



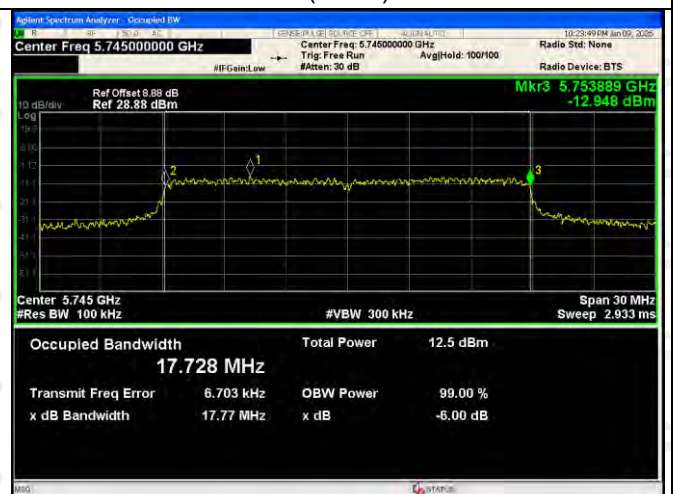
802.11ax(VH80)-5775



802.11n(HT20)-5745



802.11n(HT20)-5785



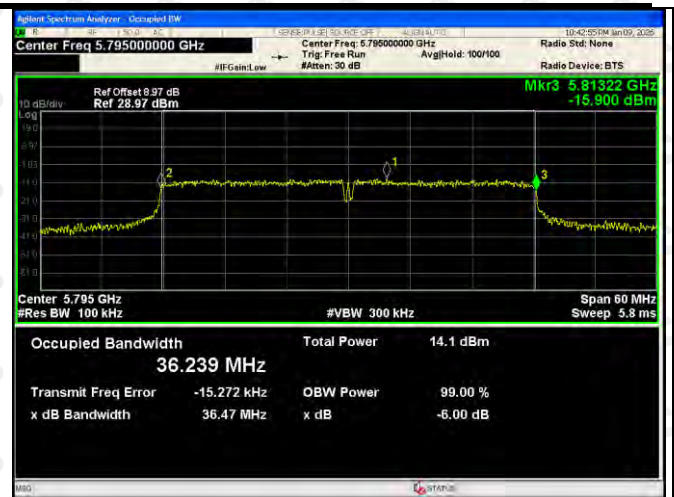
802.11n(HT20)-5825



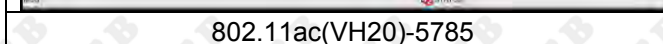
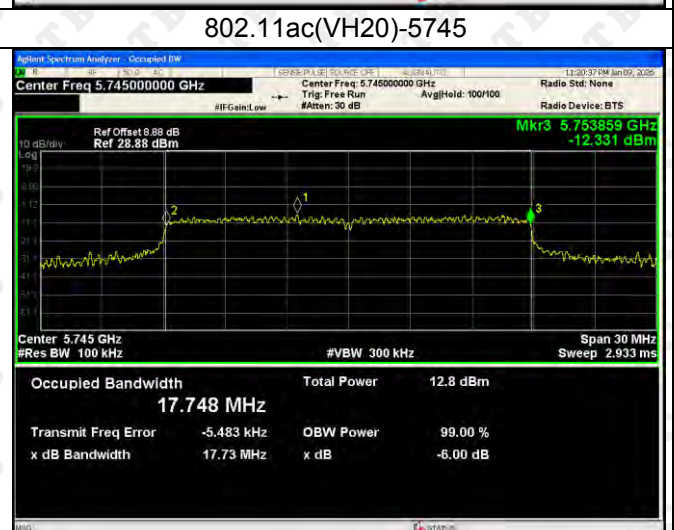
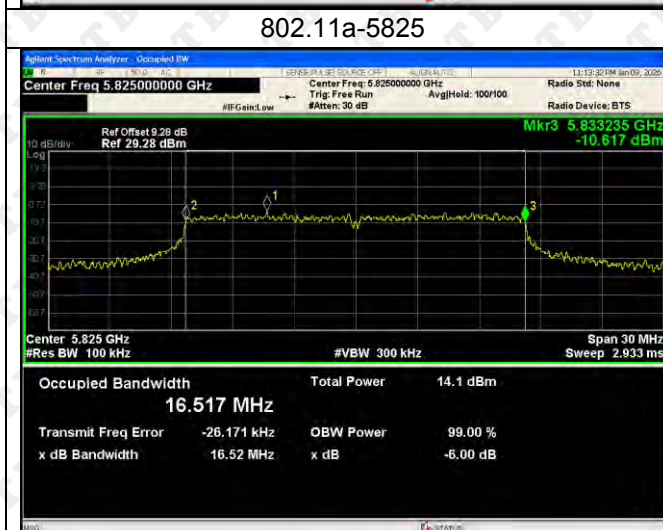
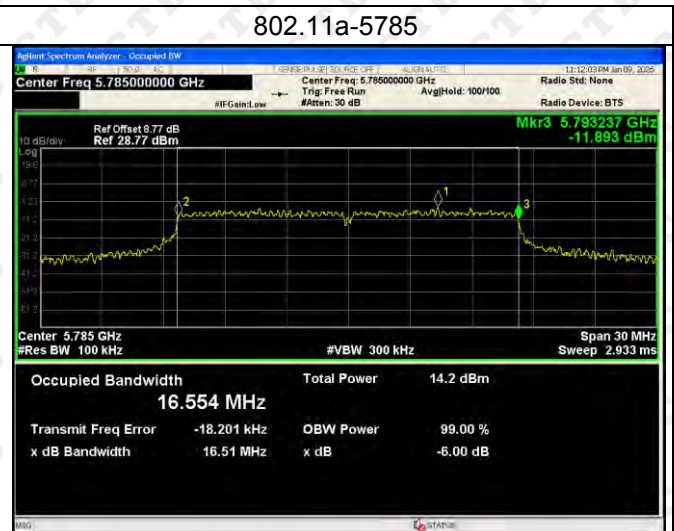
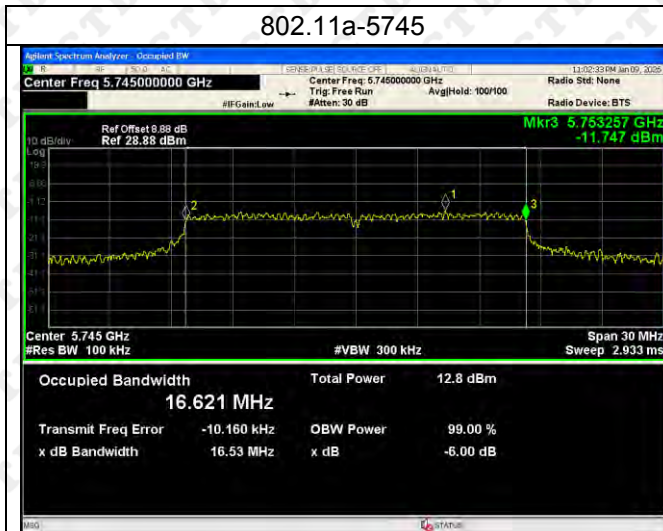
802.11n(HT40)-5775



802.11n(HT40)-5795

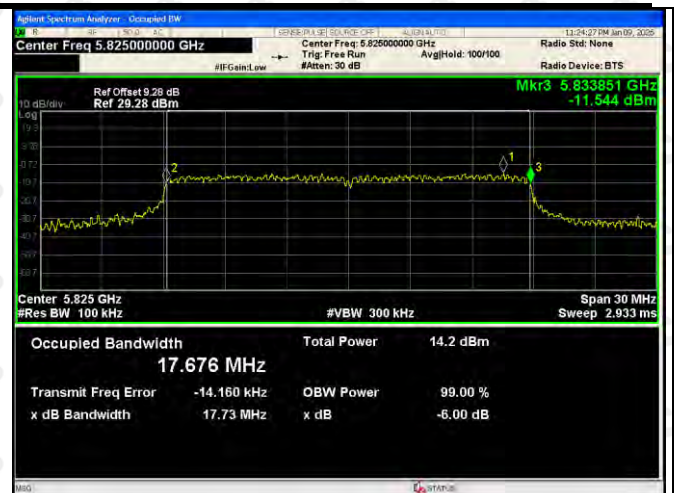


ANT2





802.11ac(VH40)-5755



802.11ac(VH40)-5795



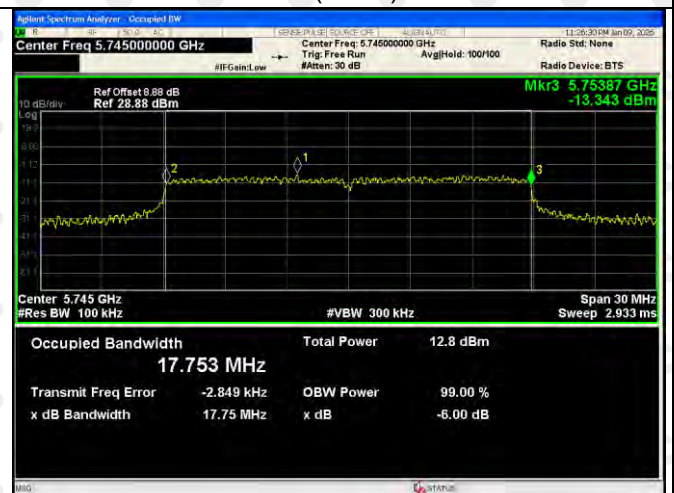
802.11ac(VH80)-5775



802.11ax(VH20)-5745



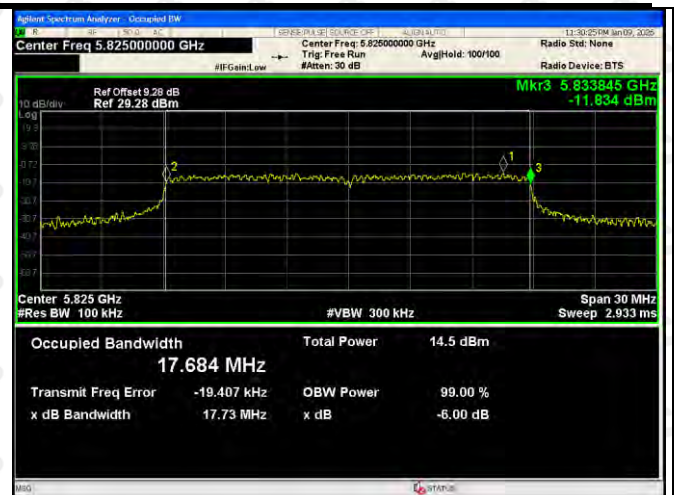
802.11ax(VH20)-5785



802.11ax(VH20)-5825



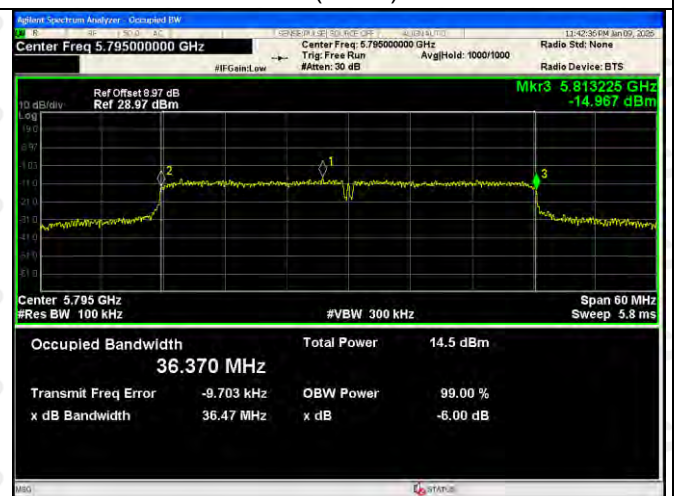
802.11ax(VH40)-5755



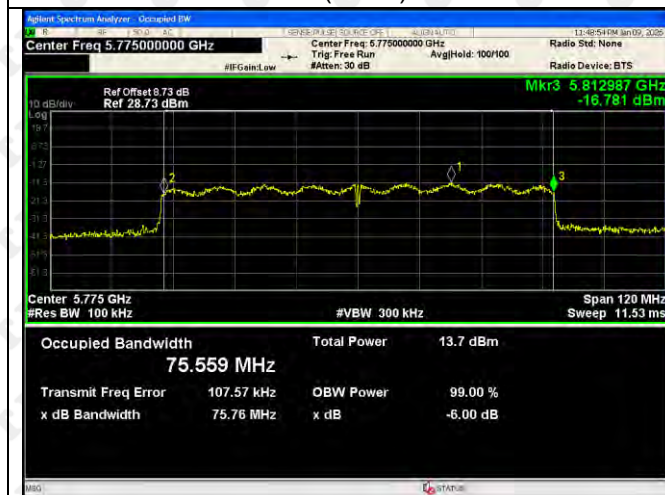
802.11ax(VH40)-5795



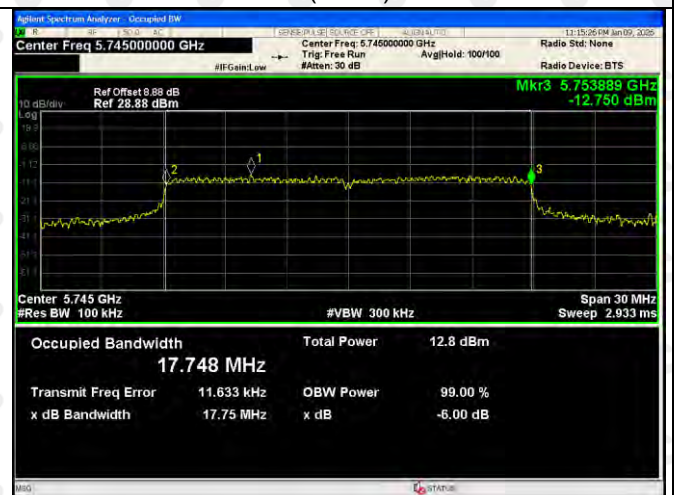
802.11ax(VH80)-5775



802.11n(HT20)-5745



802.11n(HT20)-5785



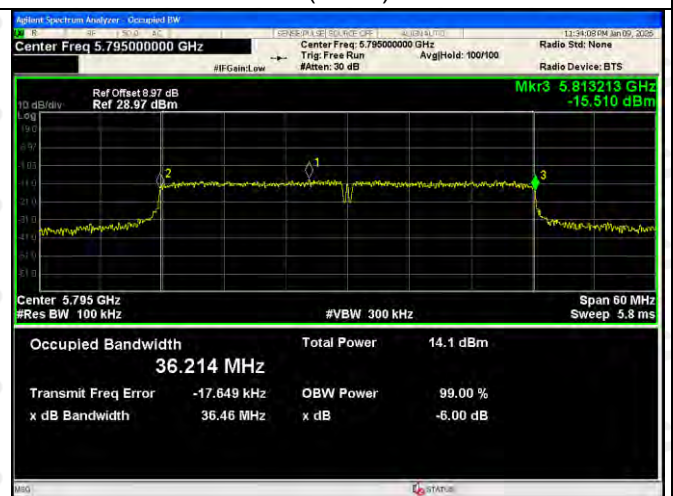
802.11n(HT20)-5825



802.11n(HT40)-5775

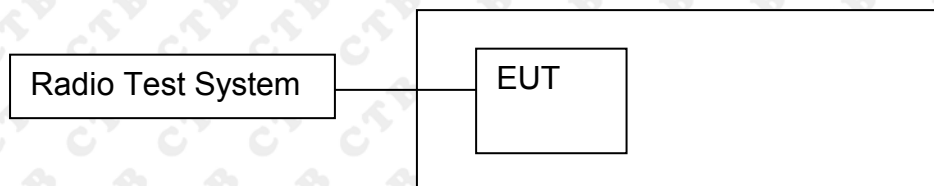


802.11n(HT40)-5795



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 ($< 1 \text{ MHz}$) 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

5150-5250MHz:MHz

ANT1+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	-3.207	-3.842	/	11	Pass
	5200	-0.364	-1.886	/	11	Pass
	5240	-0.124	-1.576	/	11	Pass
802.11ac(VHT20)	5180	-2.986	-3.859	-0.390	11	Pass
	5200	-1.029	-1.981	1.531	11	Pass
	5240	-0.624	-1.757	1.857	11	Pass
802.11ac(VHT40)	5190	-4.541	-5.663	-2.056	11	Pass
	5230	-4.017	-4.717	-1.343	11	Pass
802.11ac(VHT80)	5230	-5.887	-6.962	-3.381	11	Pass
802.11ax(HE20)	5180	-3.039	-4.027	-0.495	11	Pass
	5200	-0.984	-1.931	1.579	11	Pass
	5240	-0.732	-1.773	1.789	11	Pass
802.11ax(HE40)	5190	-4.639	-5.353	-1.971	11	Pass
	5230	-4.03	-4.947	-1.454	11	Pass
802.11ax(HE80)	5210	-6.239	-7.098	-3.637	11	Pass
802.11n(HT20)	5180	-2.502	-3.985	-0.170	11	Pass
	5200	-0.394	-2.111	1.842	11	Pass
	5240	-0.115	-1.869	2.106	11	Pass
802.11n(HT40)	5190	-4.359	-5.112	-1.709	11	Pass
	5230	-3.894	-4.679	-1.258	11	Pass

5250-5350 MHz

ANT1+ANT2

Test mode	Test Channel (MHz)	PSD [dBm/MHz] ANT 1	PSD [dBm/MHz] ANT 2	PSD [dBm/MHz] Total	Limit (dBm)	Result
802.11a	5260	-3.501	-2.956	/	11	Pass
	5280	-3.52	-2.499	/	11	Pass
	5320	-3.365	-2.961	/	11	Pass
802.11ac(VH20)	5260	-3.055	-3.317	-0.174	11	Pass
	5280	-3.083	-2.96	-0.011	11	Pass
	5320	-3.317	-3.236	-0.266	11	Pass
802.11ac(VH40)	5270	-6.036	-5.962	-2.989	11	Pass
	5310	-5.985	-5.999	-2.982	11	Pass
802.11ac(VH80)	5290	-8.156	-7.795	-4.961	11	Pass
802.11ax(VH20)	5260	-3.345	-3.168	-0.245	11	Pass
	5280	-2.986	-3.005	0.015	11	Pass
	5320	-3.189	-3.022	-0.094	11	Pass
802.11ax(VH40)	5270	-5.868	-5.976	-2.911	11	Pass
	5310	-5.971	-6.01	-2.980	11	Pass
802.11ax(VH80)	5290	-8.174	-7.947	-5.049	11	Pass
802.11n(HT20)	5260	-3.245	-3.089	-0.156	11	Pass
	5280	-3.021	-3.005	-0.003	11	Pass
	5320	-3.216	-3.086	-0.140	11	Pass
802.11n(HT40)	5270	-5.931	-5.918	-2.914	11	Pass
	5310	-5.986	-5.952	-2.959	11	Pass

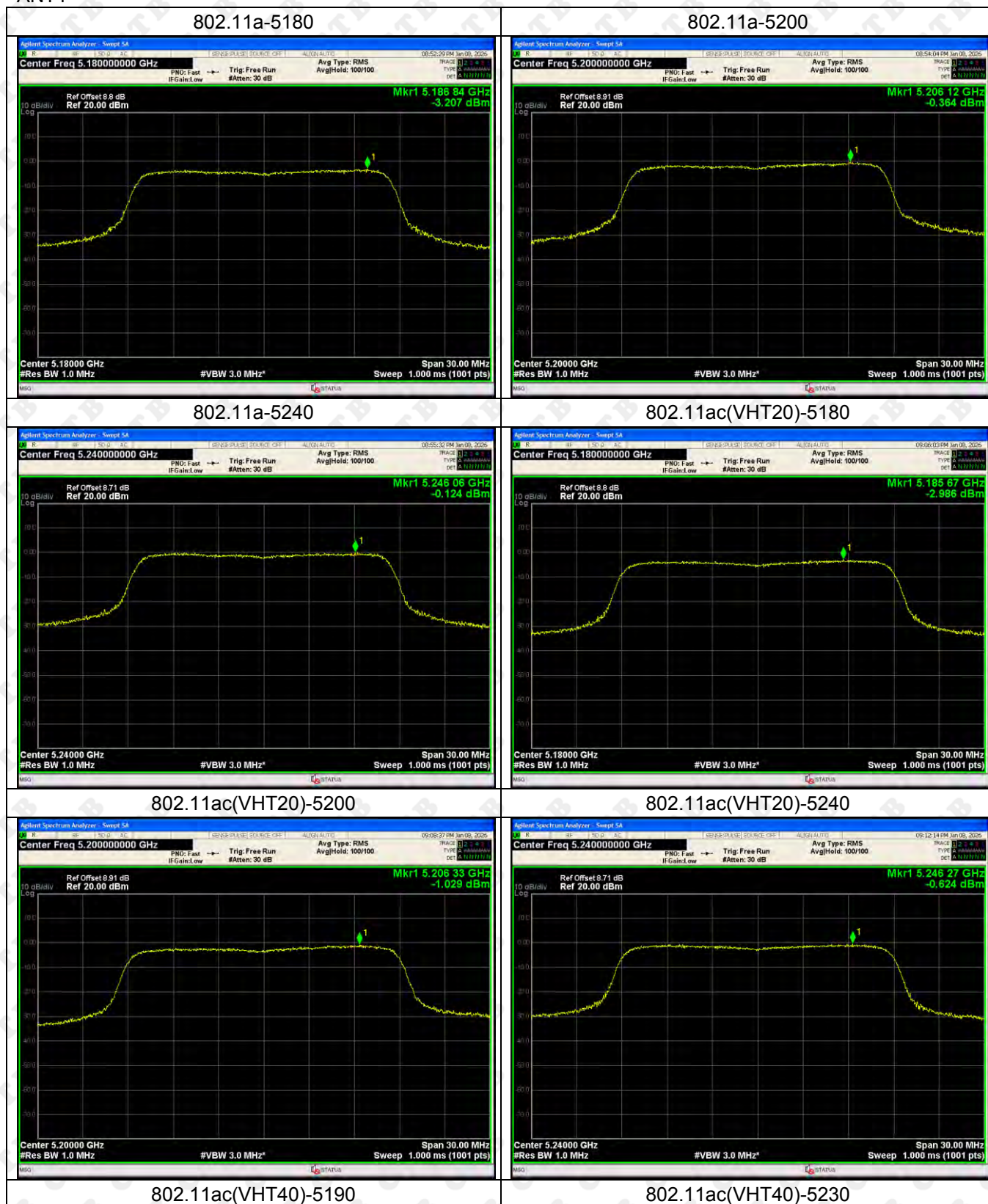
5470-5725MHz:
ANT1+ANT2

Test mode	Test Channel (MHz)	PSD [dBm/MHz] ANT 1	PSD [dBm/MHz] ANT 2	PSD [dBm/MHz] Total	Limit (dBm)	Result
802.11a	5500	-5.675	-5.744	/	30	Pass
	5580	-4.749	-5.425	/	30	Pass
	5700	-3.99	-4.068	/	30	Pass
802.11ac(VH20)	5500	-6.693	-6.263	-3.462	30	Pass
	5580	-5.861	-5.216	-2.516	30	Pass
	5700	-4.856	-3.372	-1.041	30	Pass
802.11ac(VH40)	5510	-7.958	-7.048	-4.469	30	Pass
	5670	-6.565	-6.807	-3.674	30	Pass
802.11ac(VH80)	5530	-9.083	-9.076	-6.069	30	Pass
802.11ax(VH20)	5500	-6.339	-6	-3.156	30	Pass
	5580	-5.209	-4.558	-1.861	30	Pass
	5700	-4.221	-4.66	-1.425	30	Pass
802.11ax(VH40)	5510	-7.839	-7.841	-4.830	30	Pass
	5670	-6.812	-6.461	-3.623	30	Pass
802.11ax(VH80)	5530	-12.594	-8.925	-7.373	30	Pass
802.11n(HT20)	5500	-5.777	-5.984	-2.869	30	Pass
	5580	-4.91	-5.189	-2.037	30	Pass
	5700	-4.23	-4.714	-1.455	30	Pass
802.11n(HT40)	5510	-7.427	-7.153	-4.278	30	Pass
	5670	-6.748	-6.505	-3.615	30	Pass

5725-5850MHz:
ANT1+ANT2

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	-7.798	-7.733	/	30	Pass
	5785	-6.537	-6.205	/	30	Pass
	5825	-5.67	-6.299	/	30	Pass
802.11ac(VH20)	5745	-7.775	-7.69	-4.722	30	Pass
	5785	-6.64	-6.598	-3.609	30	Pass
	5825	-6.572	-6.465	-3.508	30	Pass
802.11ac(VH40)	5755	-10.551	-10.523	-7.527	30	Pass
	5795	-10.178	-9.639	-6.890	30	Pass
802.11ac(VH80)	5775	-12.98	-12.898	-9.929	30	Pass
802.11ax(VH20)	5745	-8.162	-7.985	-5.062	30	Pass
	5785	-6.51	-6.637	-3.563	30	Pass
	5825	-6.09	-6.287	-3.177	30	Pass
802.11ax(VH40)	5755	-10.666	-10.828	-7.736	30	Pass
	5795	-10.479	-10.411	-7.435	30	Pass
802.11ax(VH80)	5775	-12.488	-12.708	-9.586	30	Pass
802.11n(HT20)	5745	-8.009	-7.861	-4.924	30	Pass
	5785	-6.443	-6.543	-3.482	30	Pass
	5825	-6.577	-6.225	-3.387	30	Pass
802.11n(HT40)	5755	-10.348	-10.071	-7.197	30	Pass
	5795	-9.982	-9.988	-6.975	30	Pass

Test Graph:
5150-5250MHz
ANT1





802.11ac(VHT80)-5210



802.11ax(HE20)-5180



802.11ax(HE20)-5200



802.11ax(HE20)-5240



802.11ax(HE40)-5190



802.11ax(HE40)-5230