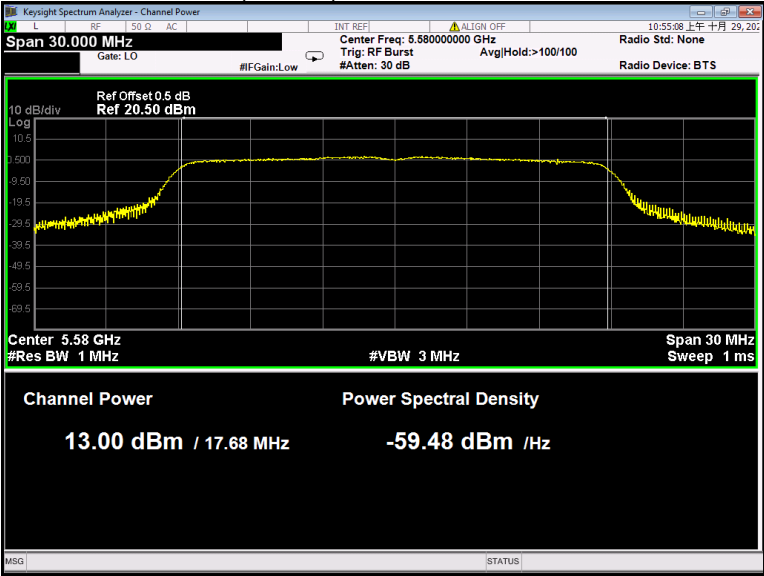
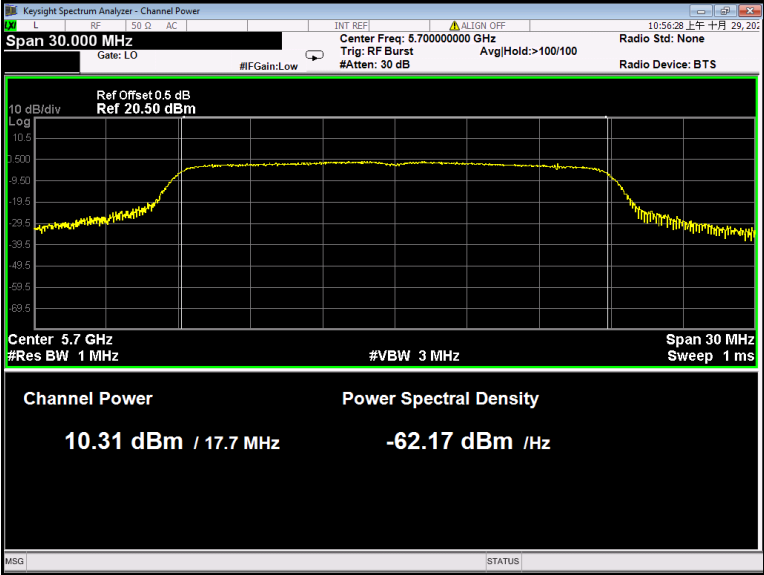


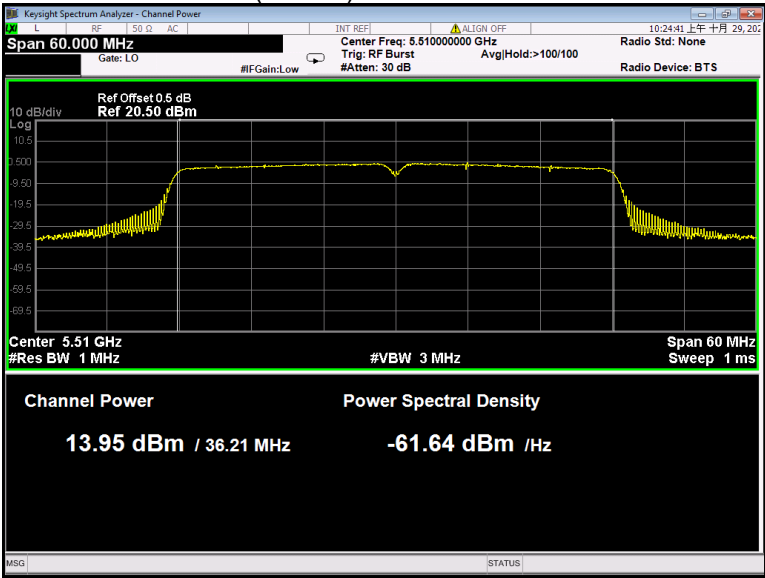
802.11ac(VHT20) U-NII-2C Middle channel



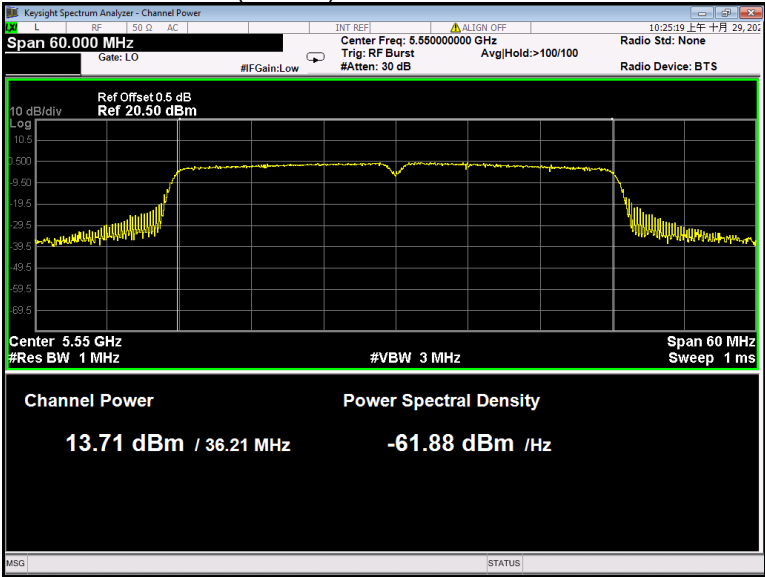
802.11ac(VHT20) U-NII-2C High channel



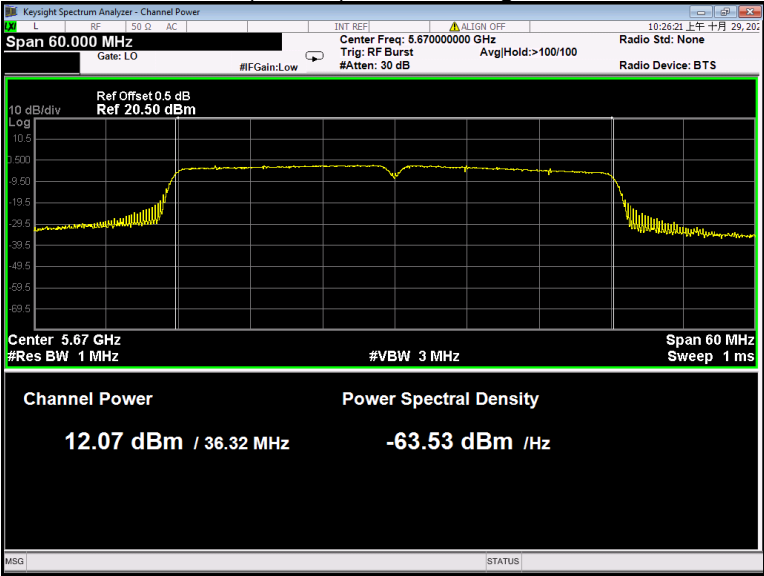
802.11ac(VHT40) U-NII-2C Low channel



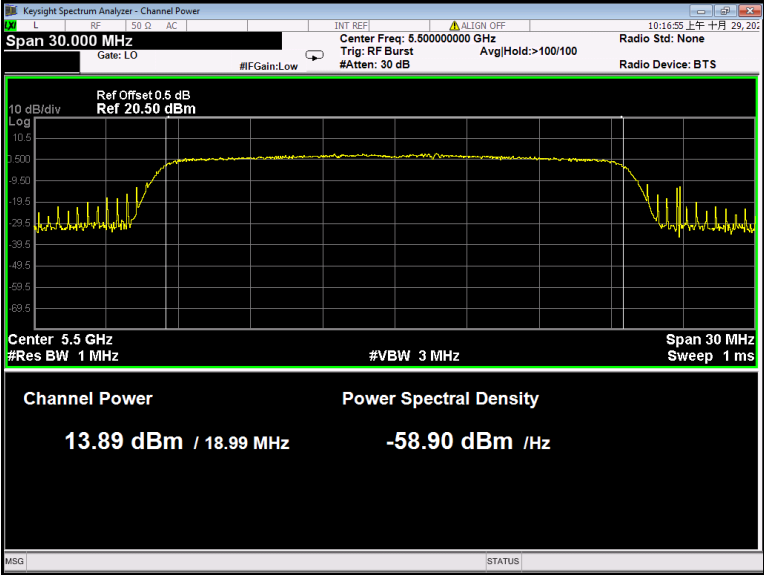
802.11ac(VHT40) U-NII-2C Middle channel



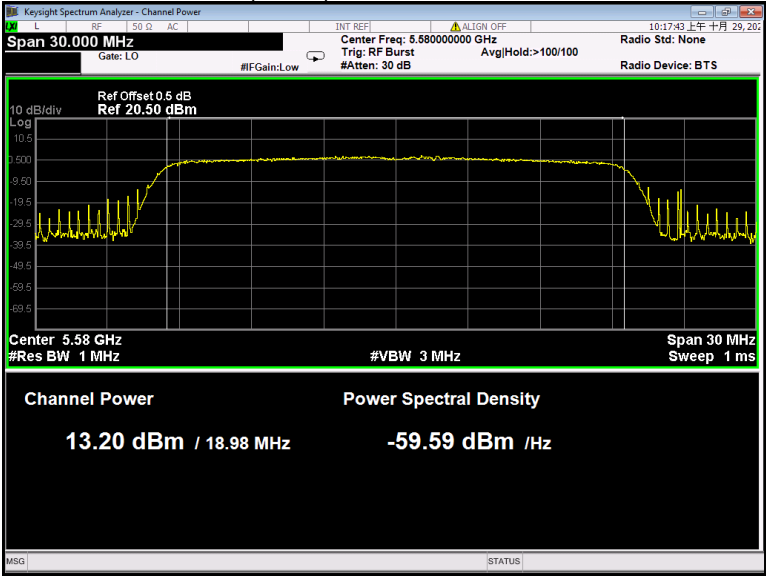
802.11ac(VHT40) U-NII-2C High channel



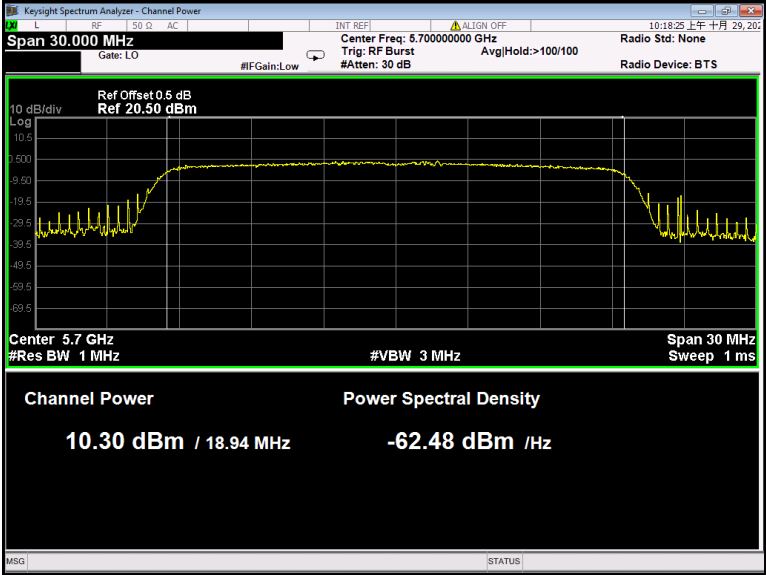
802.11ax(HE20)U-NII-2C Low channel



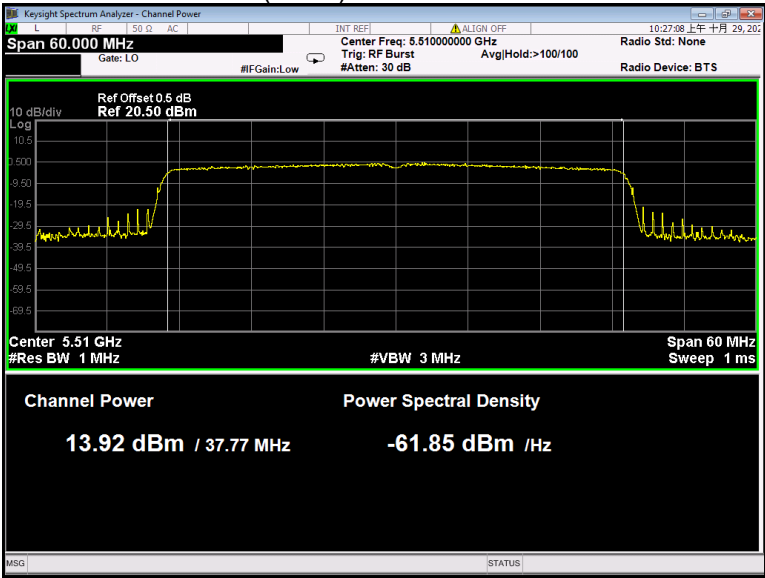
802.11ax(HE20) U-NII-2C Middle channel



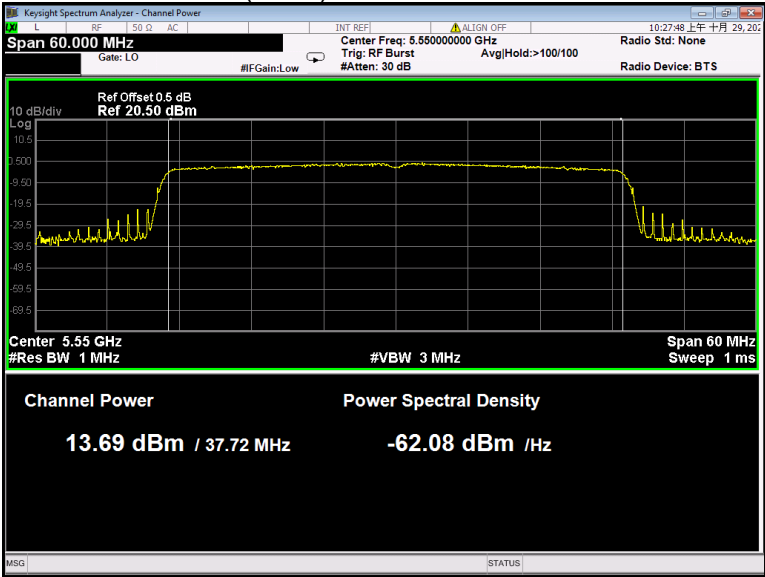
8802.11ax(HE20) U-NII-2C High channel



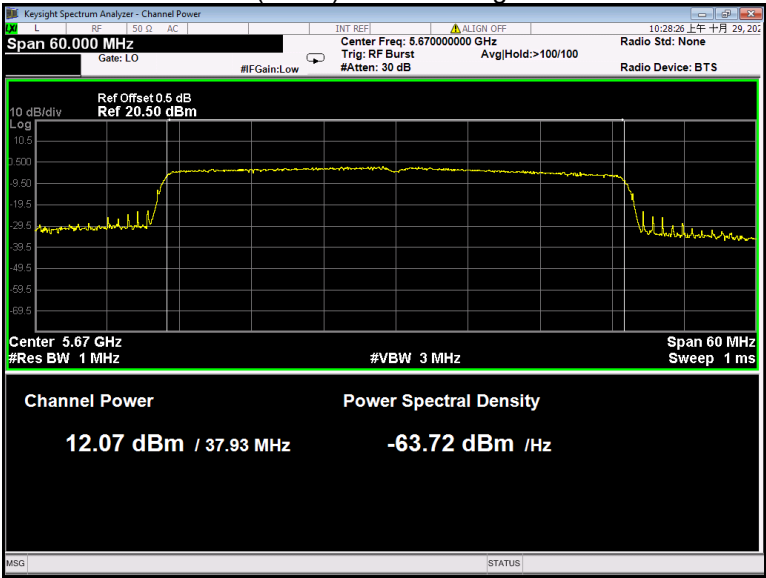
802.11ax(HE40) U-NII-2C Low channel



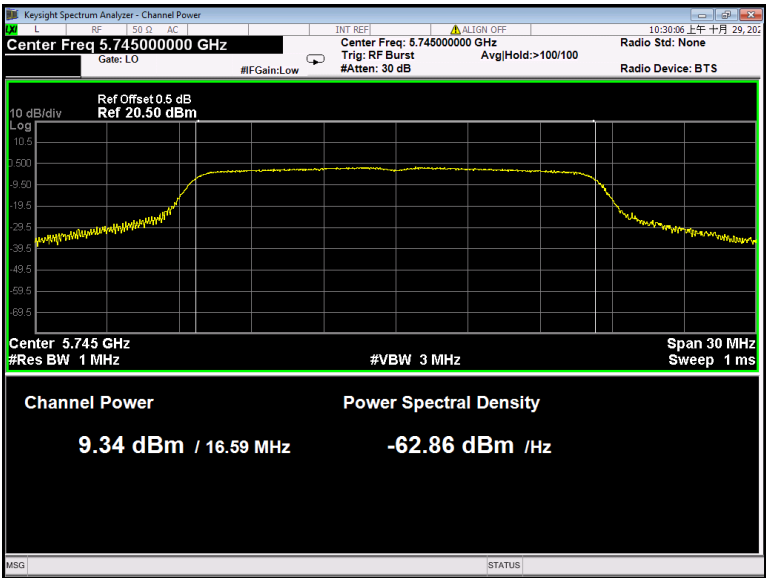
802.11ax(HE40) U-NII-2C Middle channel



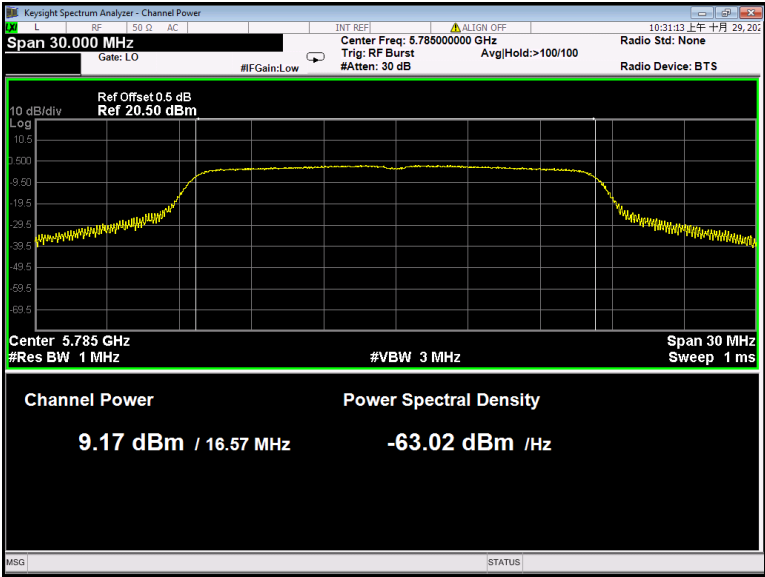
802.11ax(HE40) U-NII-2C High channel



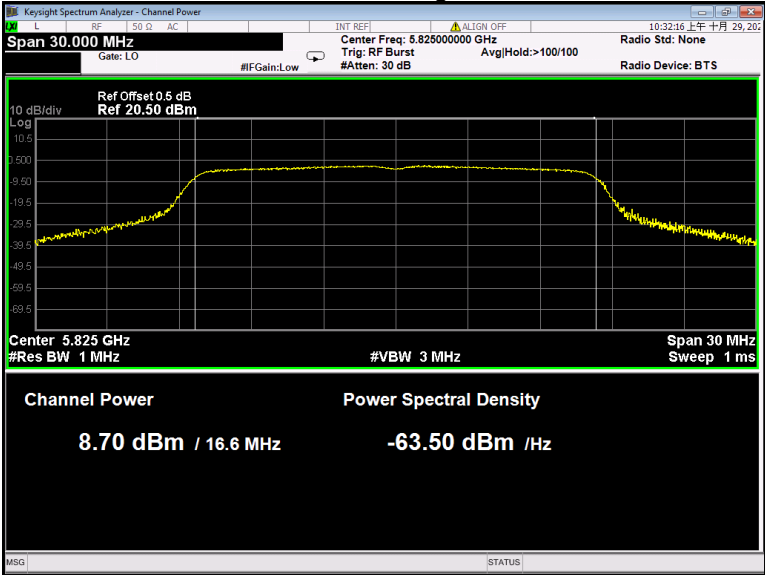
802.11a U-NII-3 Low channel



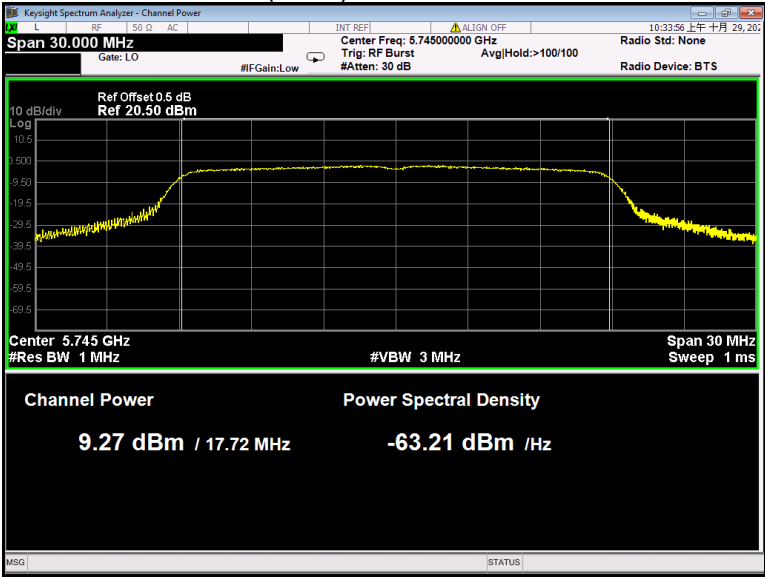
802.11a U-NII-3 Middle channel



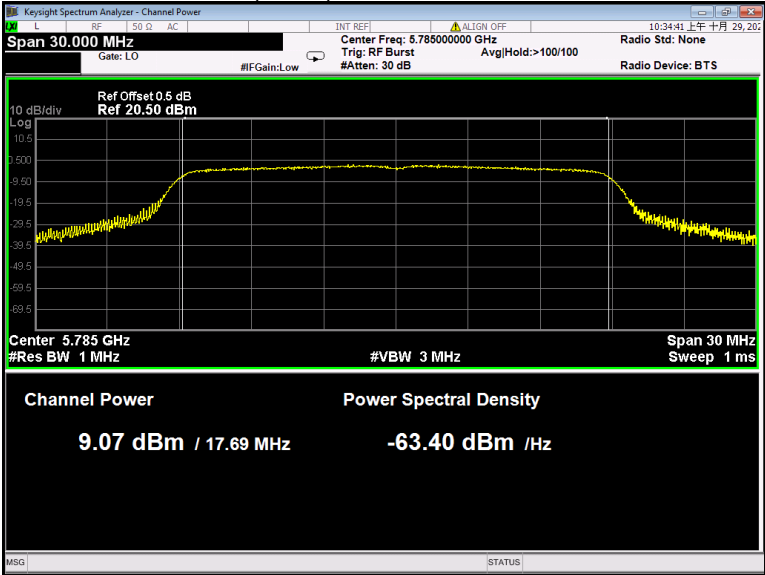
802.11a U-NII-3 High channel



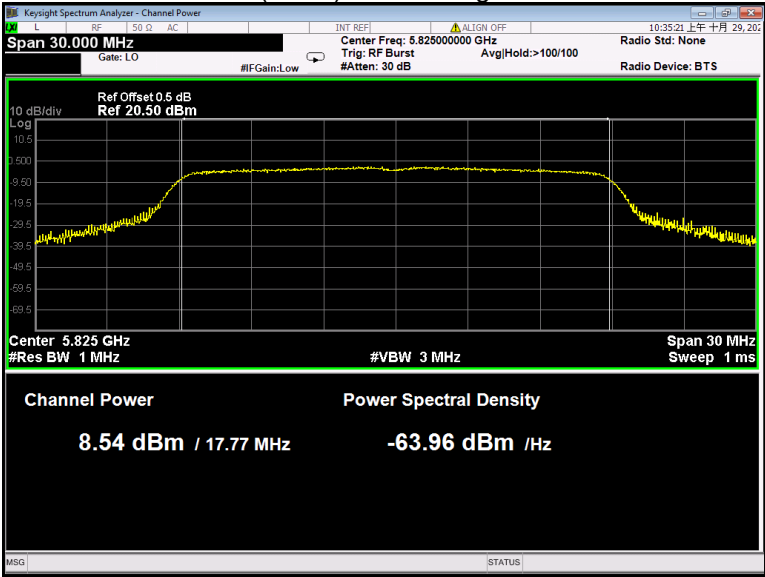
802.11n(HT20) U-NII-3 Low channel



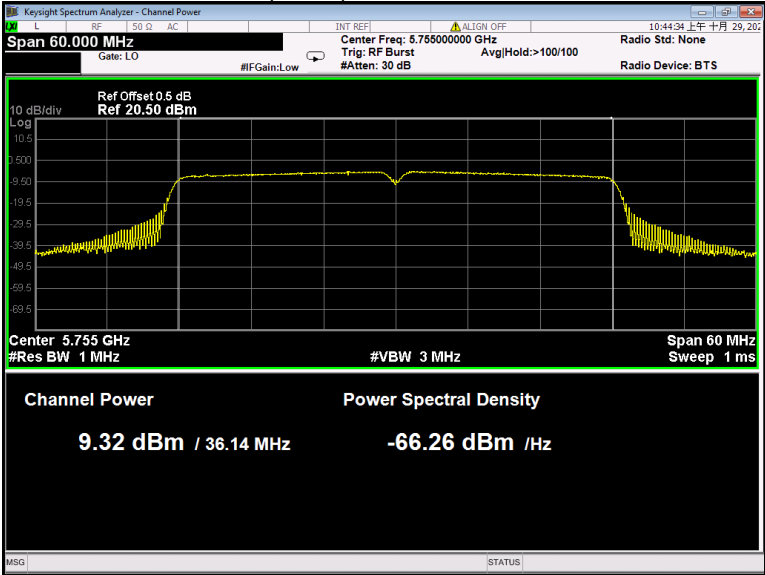
802.11n(HT20) U-NII-3 Middle channel



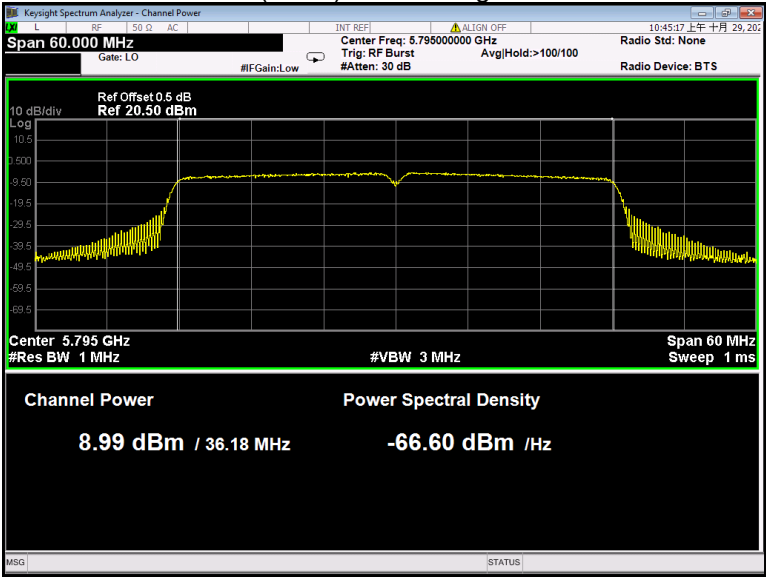
802.11n(HT20) U-NII-3 High channel



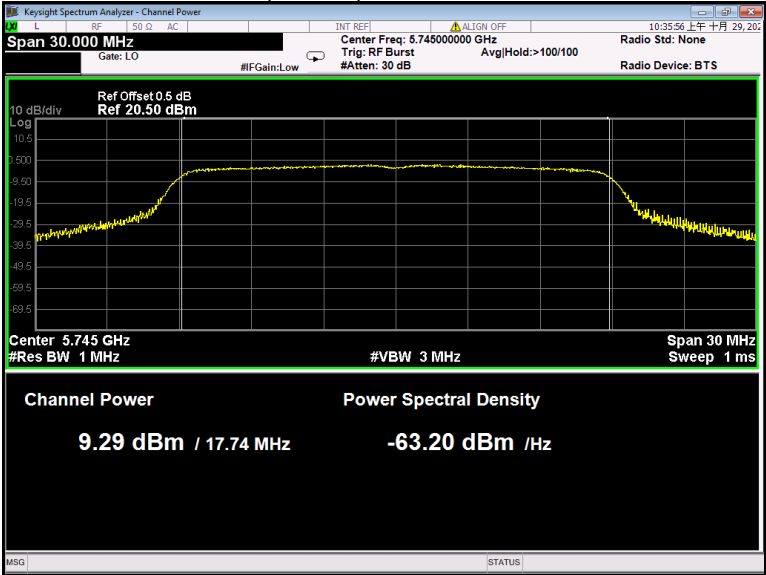
802.11n(HT40) U-NII-3 Low channel



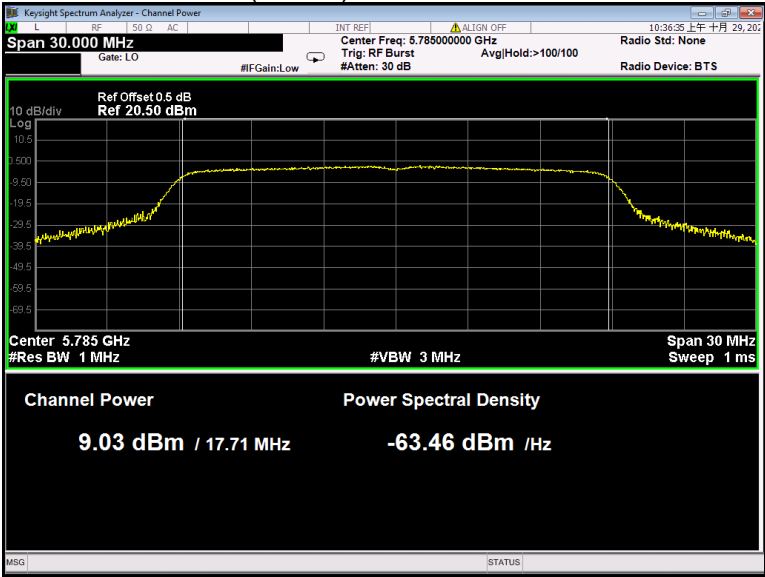
802.11n(HT40) U-NII-3 High channel



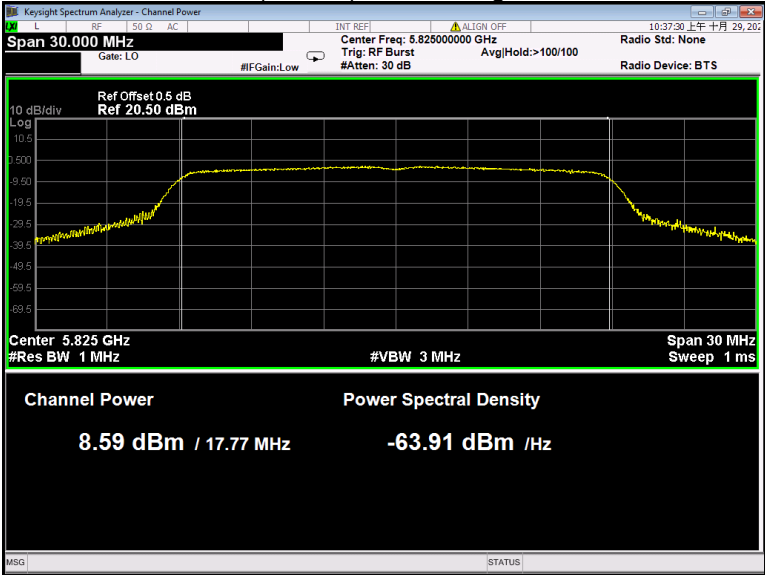
802.11ac(VHT20) U-NII-3 Low channel

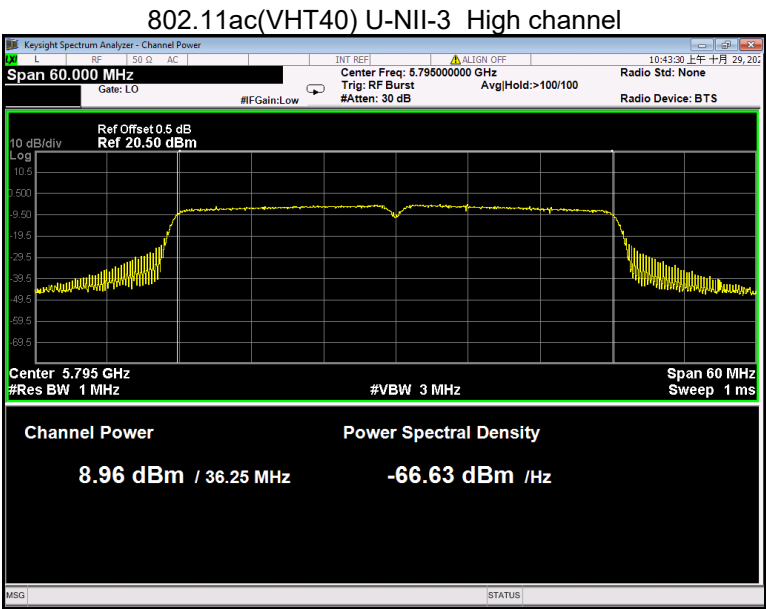
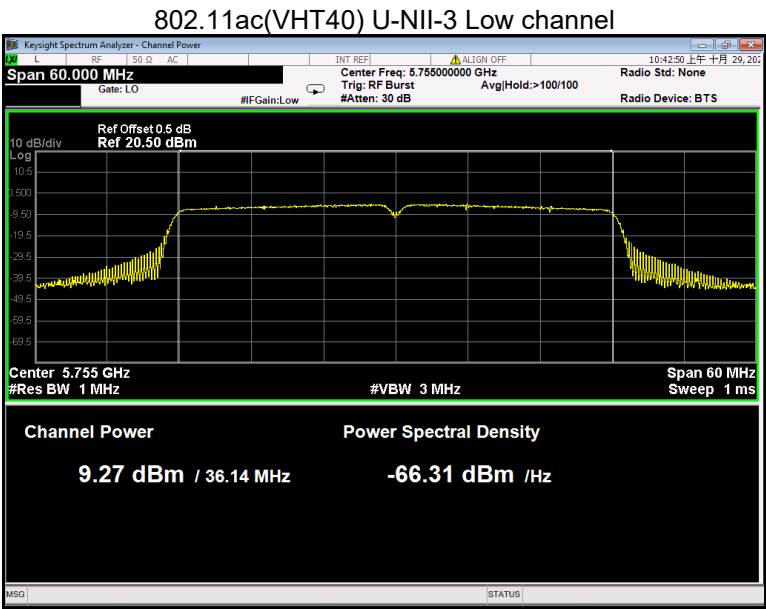


802.11ac(VHT20) U-NII-3 Middle channel

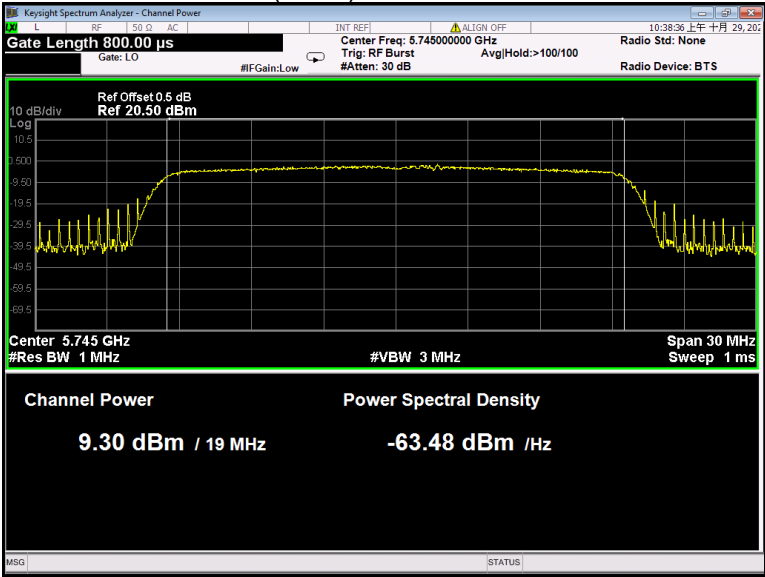


802.11ac(VHT20) U-NII-3 High channel

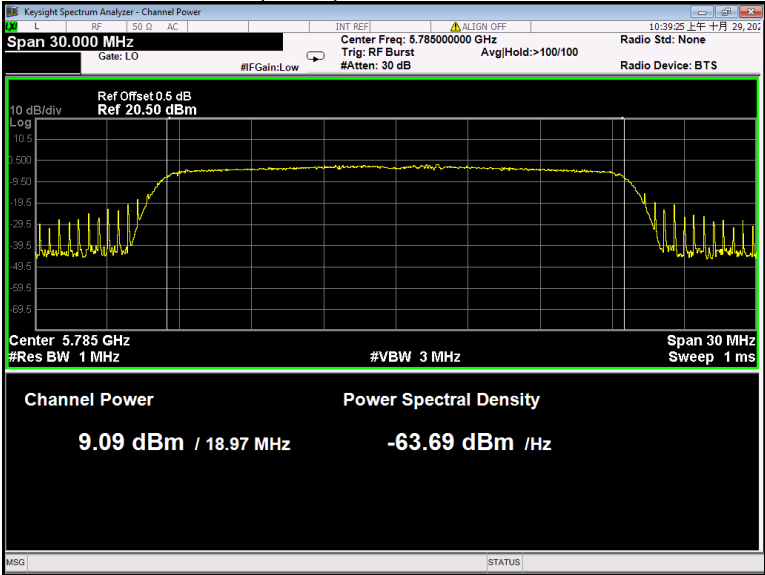




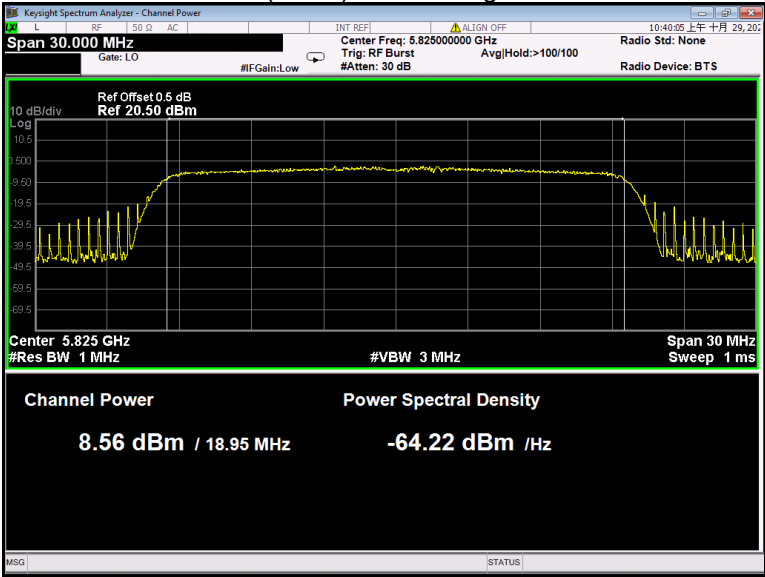
802.11ax(HE20) U-NII-3 Low channel



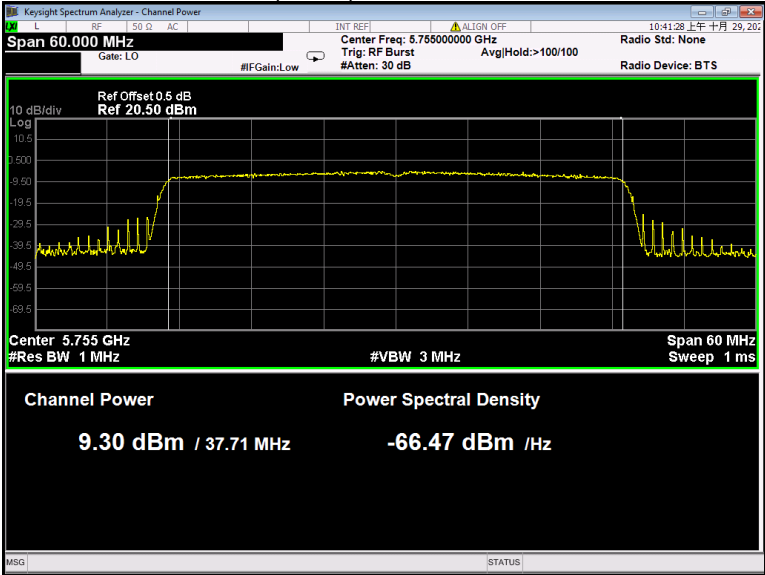
802.11ax(HE20) U-NII-3 Middle channel

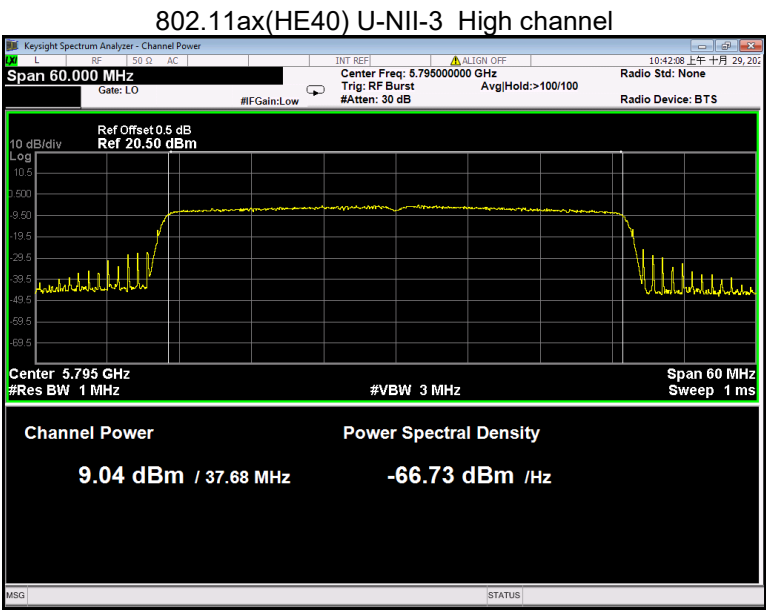


802.11ax(HE20) U-NII-3 High channel



802.11ax(HE40) U-NII-3 Low channel





14 Power Spectral density

Test Requirement:	FCC 47CFR Part 15 Section 15.407(a) KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Test Method:	ANSI C63.10-2020+A1-2024
Test Limit:	For the band 5.15-5.25 GHz For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. For the band 5.725-5.850 GHz The maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.
Test Result:	PASS

14.1 Test Procedure

- a) Create an average power spectrum for the EUT operating mode being tested by following the instructions in 12.4.2 for measuring maximum conducted output power using a spectrum analyzer that is, select the appropriate test method (SA-1, SA-2, SA-3, or their respective alternatives) and apply it up to, but not including, the step labeled, "Compute power....".
- b) Use the peak search function on the instrument to find the peak of the spectrum.

14.2 Test Result

Band	Operation mode	Channel	Measurements (dBm/MHz)	Limit
U-NII-1	802.11a	Low	2.850	11dBm/MHz
		Middle	2.116	
		High	1.825	
	802.11n(HT20)	Low	2.798	
		Middle	2.238	
		High	1.992	
	802.11n(HT40)	Low	-0.342	
		Middle	/	
		High	-0.933	
	802.11ac(VHT20)	Low	2.170	
		Middle	2.113	
		High	1.358	
	802.11ac(VHT40)	Low	-0.543	
		Middle	/	
		High	-0.966	
	802.11ax(HE20)	Low	2.588	
		Middle	2.182	
		High	1.801	
	802.11ax(HE40)	Low	-0.506	
		Middle	/	
		High	-0.795	

Band	Operation mode	Channel	Measurements (dBm/MHz)	Limit
U-NII-2A	802.11a	Low	1.974	11dBm/MHz
		Middle	1.659	
		High	2.108	
	802.11n(HT20)	Low	1.927	
		Middle	1.647	
		High	1.655	
	802.11n(HT40)	Low	-1.488	
		Middle	/	
		High	-1.242	
	802.11ac(VHT20)	Low	1.681	
		Middle	1.458	
		High	2.053	
	802.11ac(VHT40)	Low	-0.806	
		Middle	/	
		High	-0.871	
	802.11ax(HE20)	Low	1.725	
		Middle	1.525	
		High	1.213	
	802.11ax(HE40)	Low	-1.494	
		Middle	/	
		High	-1.615	

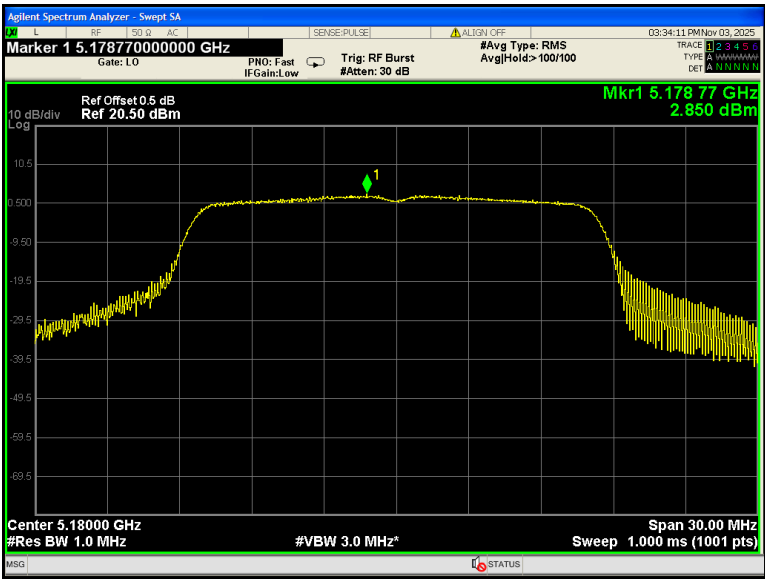
Band	Operation mode	Channel	Measurements (dBm/MHz)	Limit
U-NII-2C	802.11a	Low	5.365	11dBm/MHz
		Middle	4.515	
		High	2.448	
	802.11n(HT20)	Low	4.954	
		Middle	4.230	
		High	2.098	
	802.11n(HT40)	Low	2.022	
		Middle	1.541	
		High	0.266	
	802.11ac(VHT20)	Low	4.732	
		Middle	4.037	
		High	2.373	
	802.11ac(VHT40)	Low	2.479	
		Middle	2.100	
		High	1.141	
	802.11ax(HE20)	Low	5.112	
		Middle	4.029	
		High	1.996	
	802.11ax(HE40)	Low	1.911	
		Middle	1.331	
		High	0.165	

Band	Operation mode	Channel	Measurements (dBm/500kHz)	Limit
U-NII-3	802.11a	Low	-1.666	30dBm/500kHz
		Middle	-2.962	
		High	-3.005	
	802.11n(HT20)	Low	-1.956	
		Middle	-3.392	
		High	-3.061	
	802.11n(HT40)	Low	-5.465	
		Middle	/	
		High	-6.486	
	802.11ac(VHT20)	Low	-2.246	
		Middle	-3.275	
		High	-3.423	
	802.11ac(VHT40)	Low	-4.309	
		Middle	/	
		High	-5.609	
	802.11ax(HE20)	Low	-2.391	
		Middle	-3.395	
		High	-3.592	
	802.11ax(HE40)	Low	-5.162	
		Middle	/	
		High	-6.274	

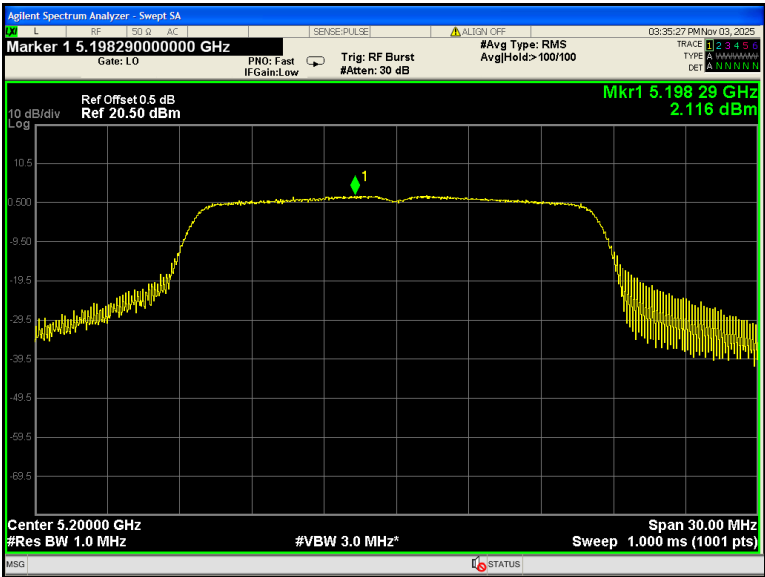
* All transmit signals are completely uncorrelated with each other, Directional gain = G_{ANT} which is less than 6dBi. So the limit does not be reduced.

Test result plots shown as follows:

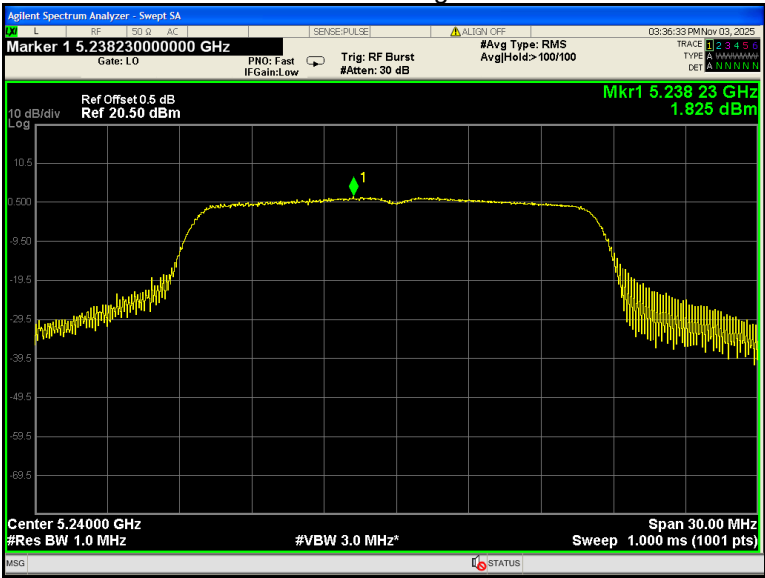
802.11a U-NII-1 Low channel



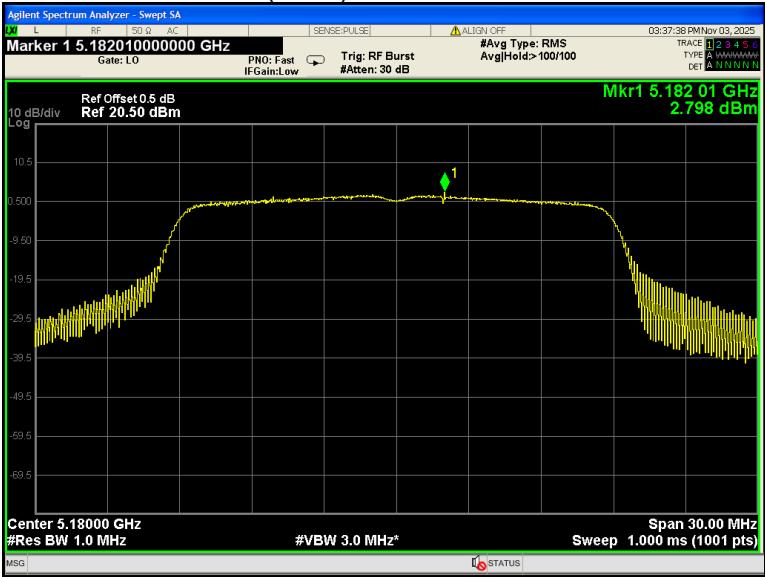
802.11a U-NII-1 Middle channel



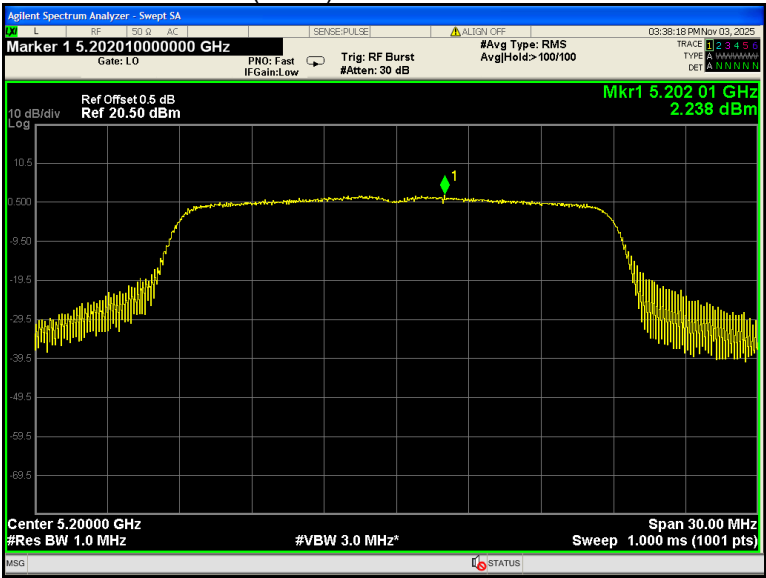
802.11a U-NII-1 High channel



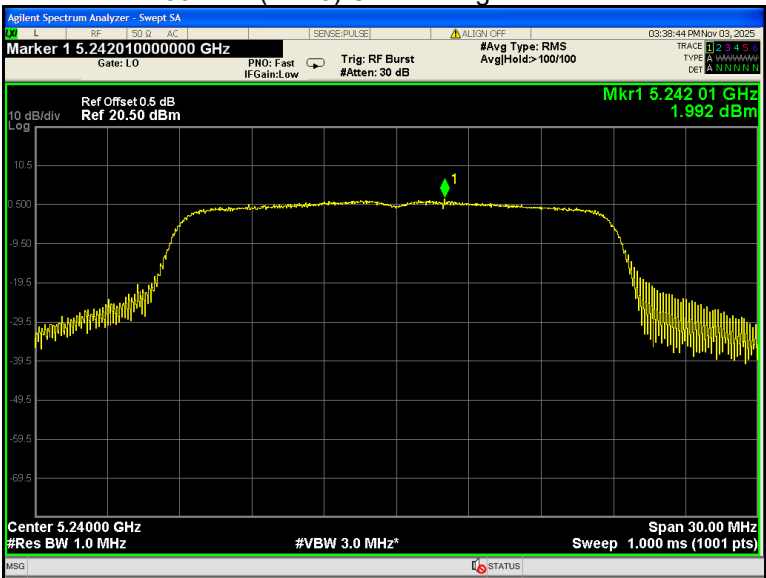
802.11n(HT20) U-NII-1 Low channel



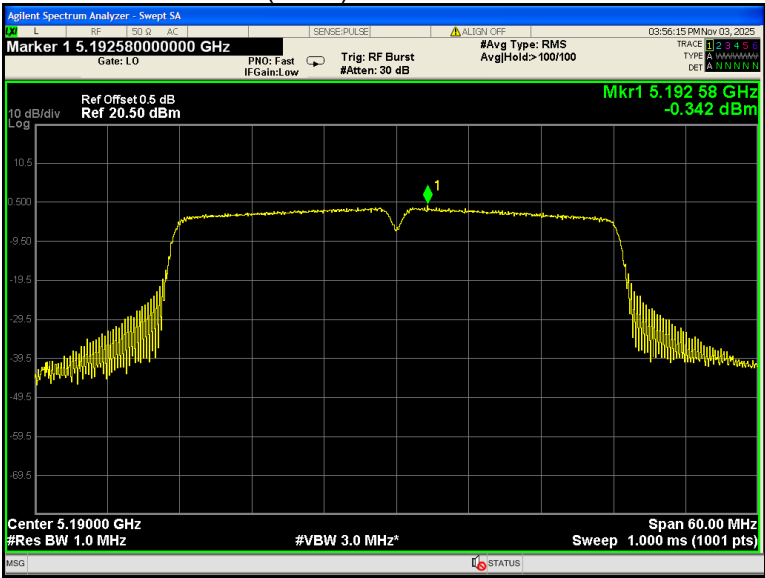
802.11n(HT20) U-NII-1 Middle channel



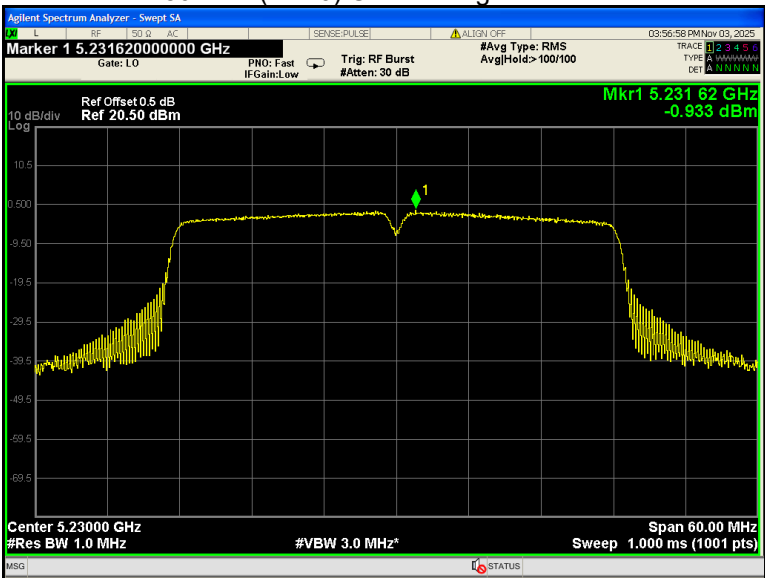
802.11n(HT20) U-NII-1 High channel



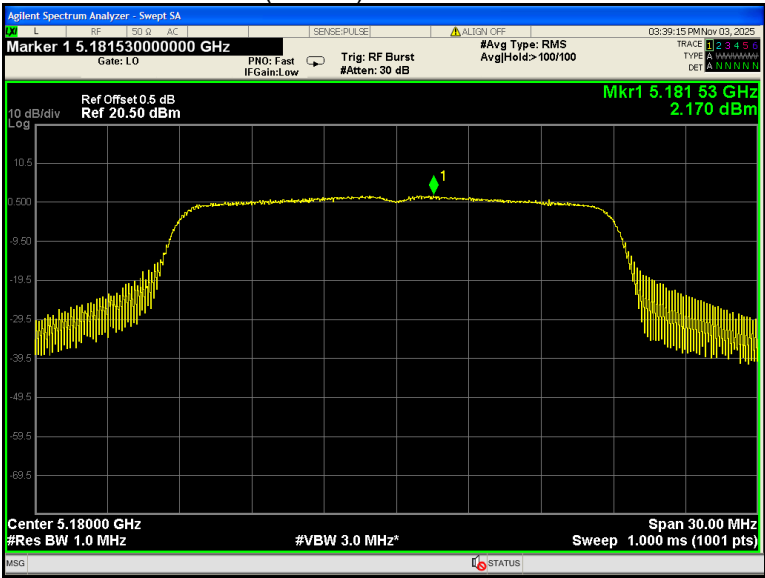
802.11n(HT40) U-NII-1 Low channel



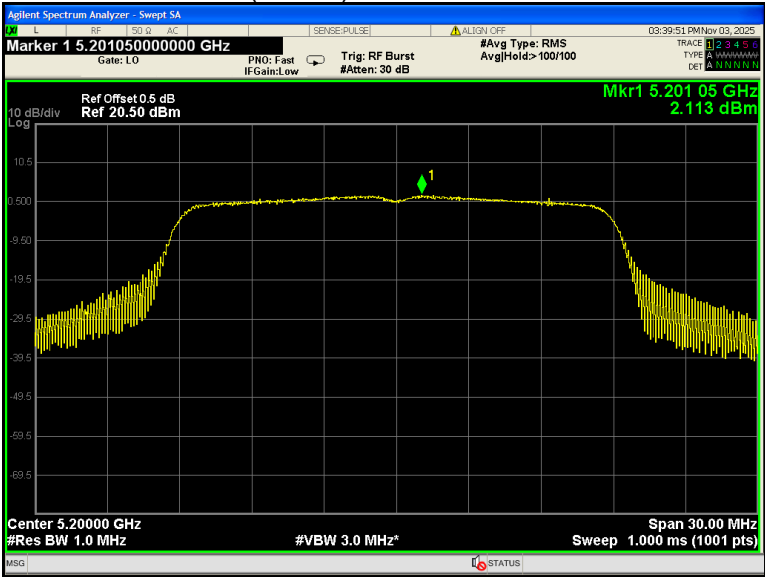
802.11n(HT40) U-NII-1 High channel



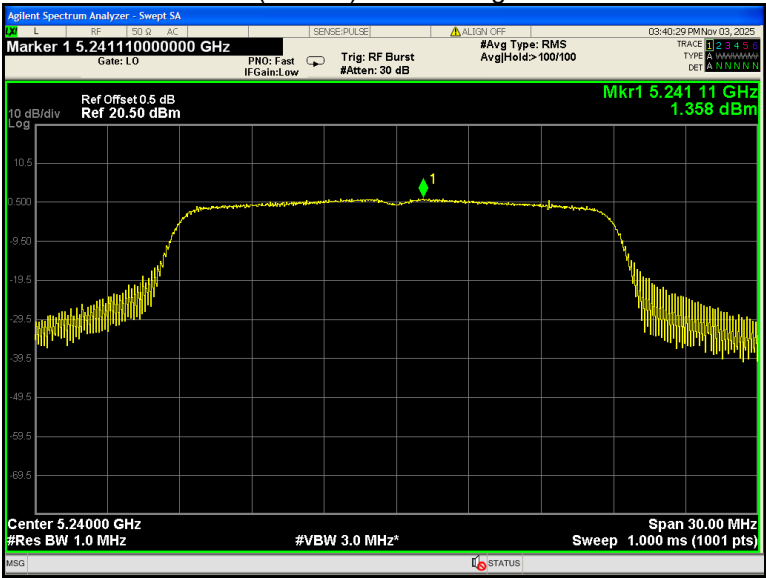
802.11ac(VHT20) U-NII-1 Low channel



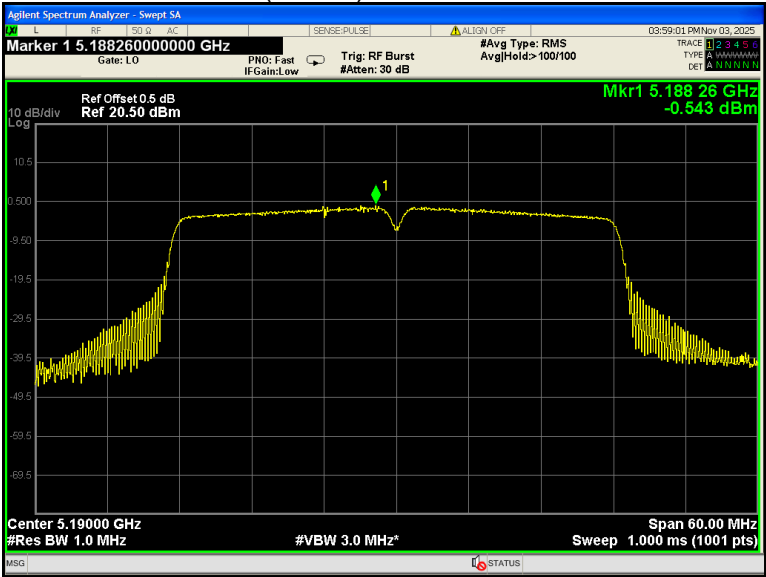
802.11ac(VHT20) U-NII-1 Middle channel



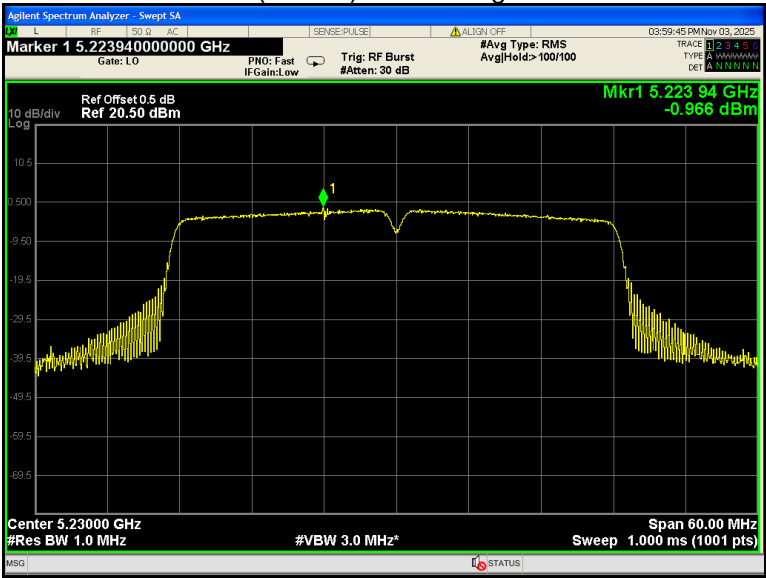
802.11ac(VHT20) U-NII-1 High channel



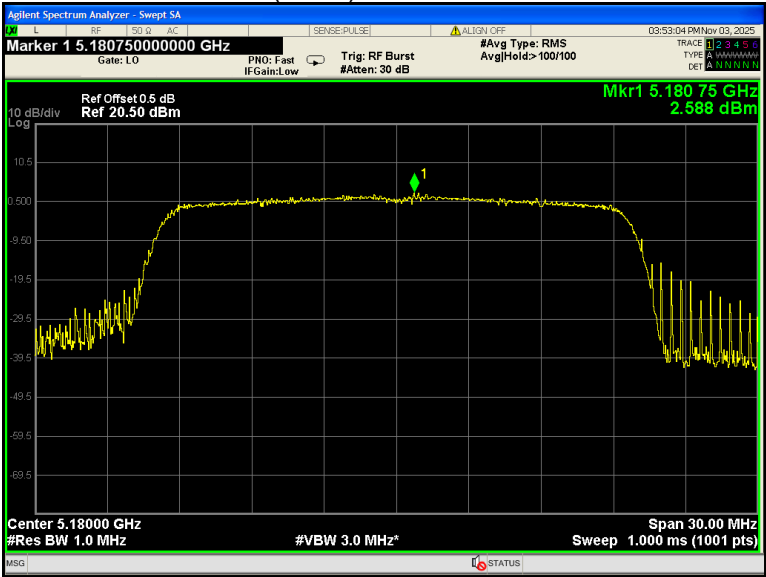
802.11ac(VHT40) U-NII-1 Low channel



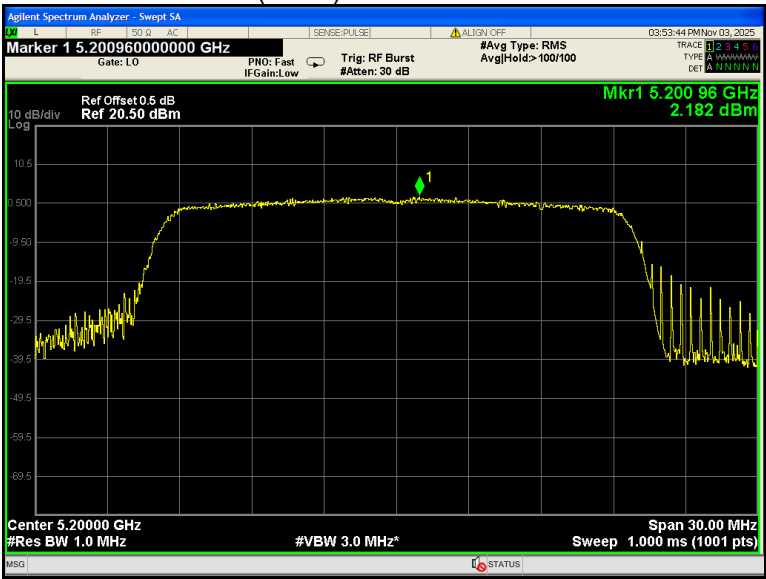
802.11ac(VHT40) U-NII-1 High channel



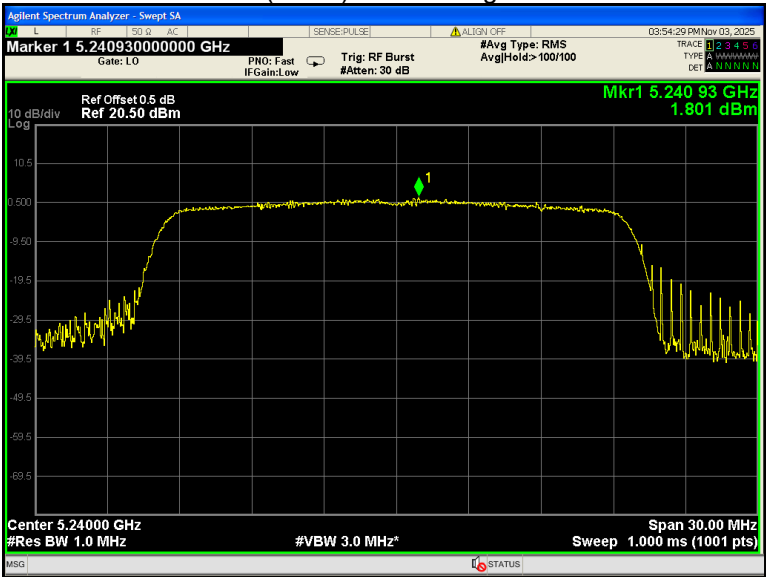
802.11ax(HE20) U-NII-1 Low channel



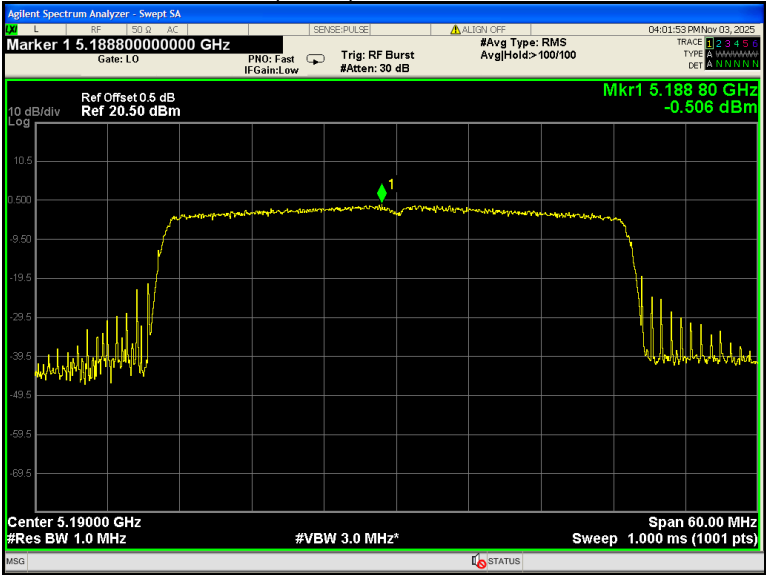
802.11ax(HE20) U-NII-1 Middle channel



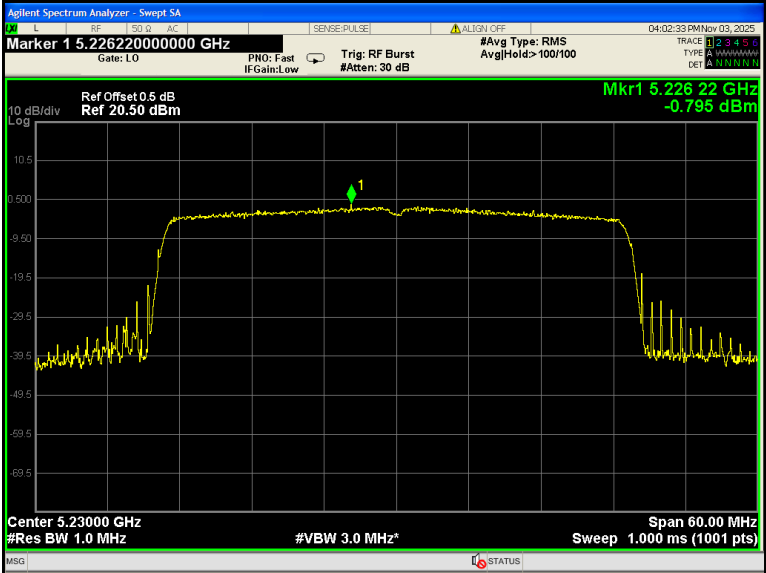
802.11ax(HE20) U-NII-1 High channel



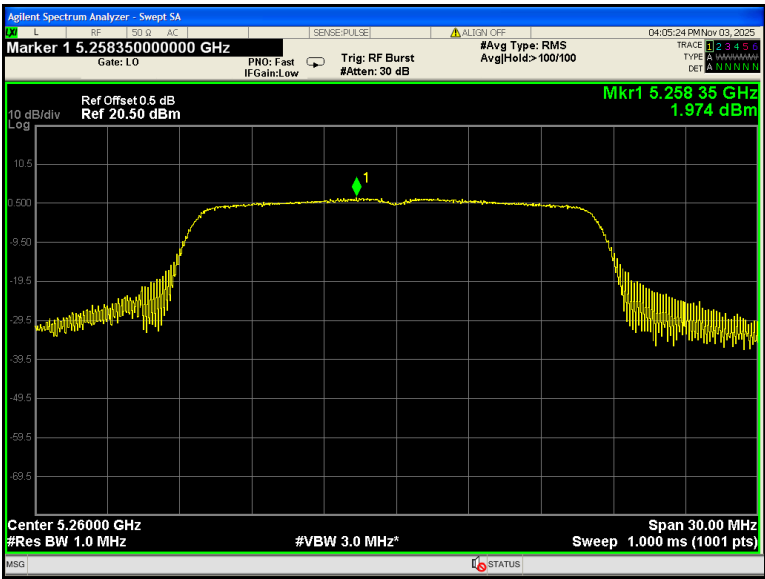
802.11ax(HE40) U-NII-1 Low channel



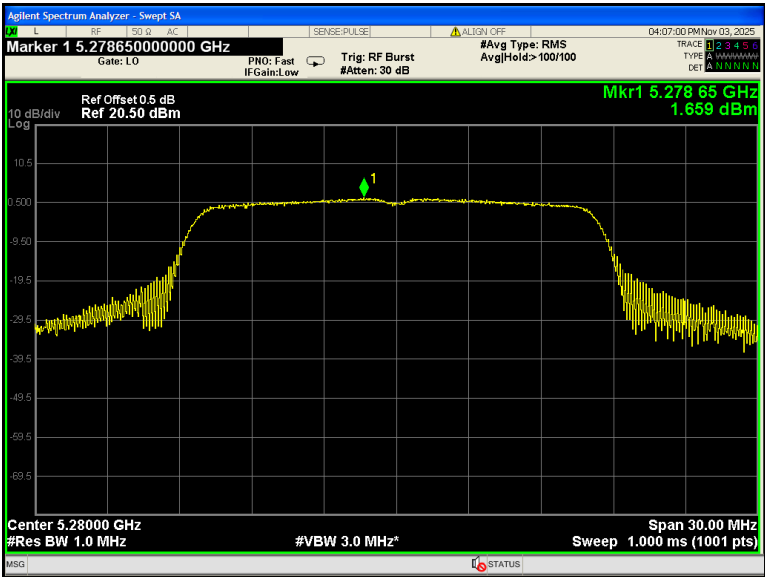
802.11ax(HE40) U-NII-1 High channel



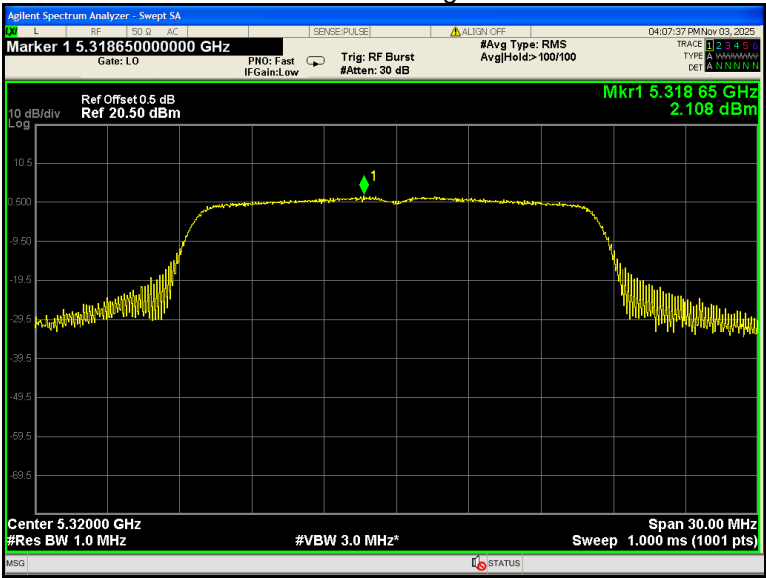
802.11a U-NII-2A Low channel



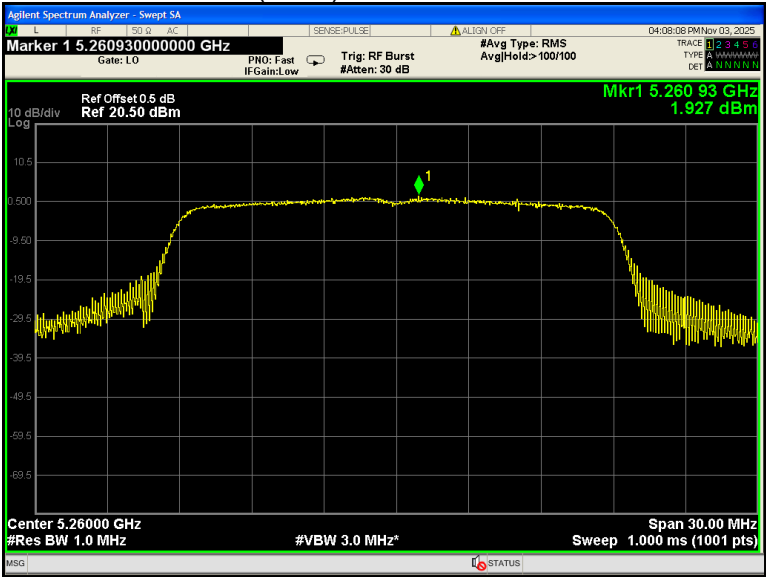
802.11a U-NII-2A Middle channel



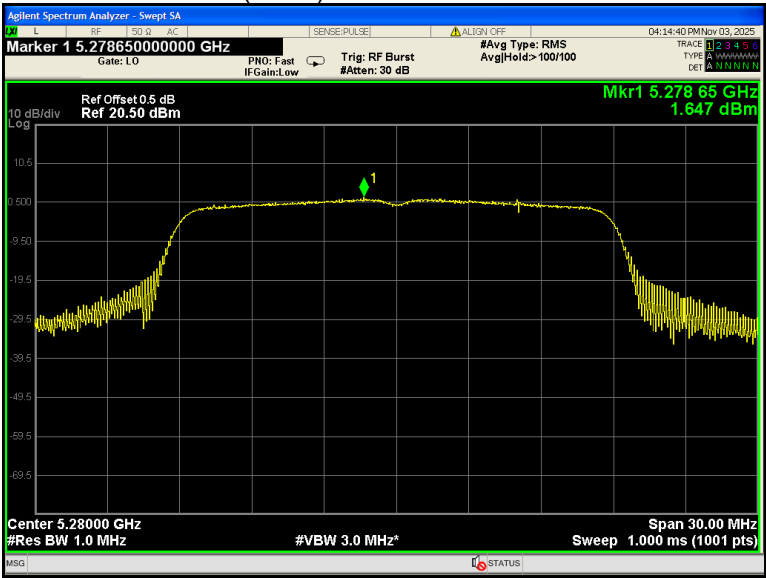
802.11a U-NII-2A High channel



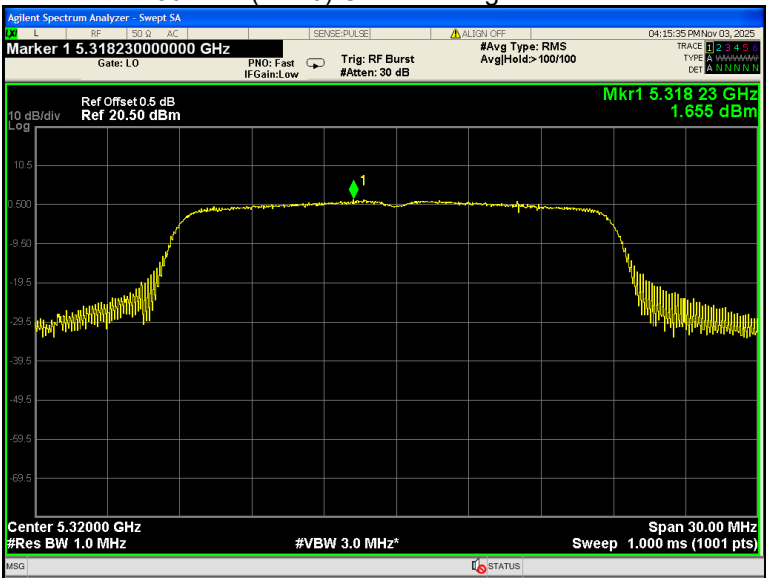
802.11n(HT20) U-NII-2A Low channel



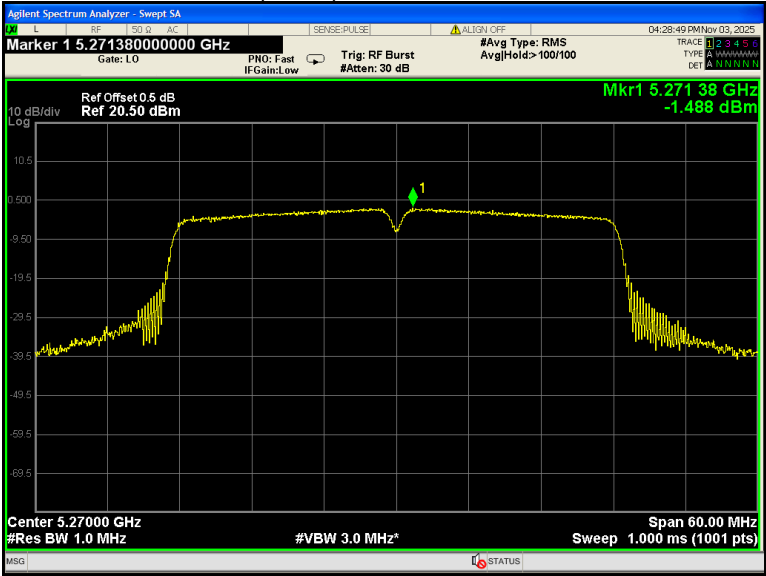
802.11n(HT20) U-NII-2A Middle channel



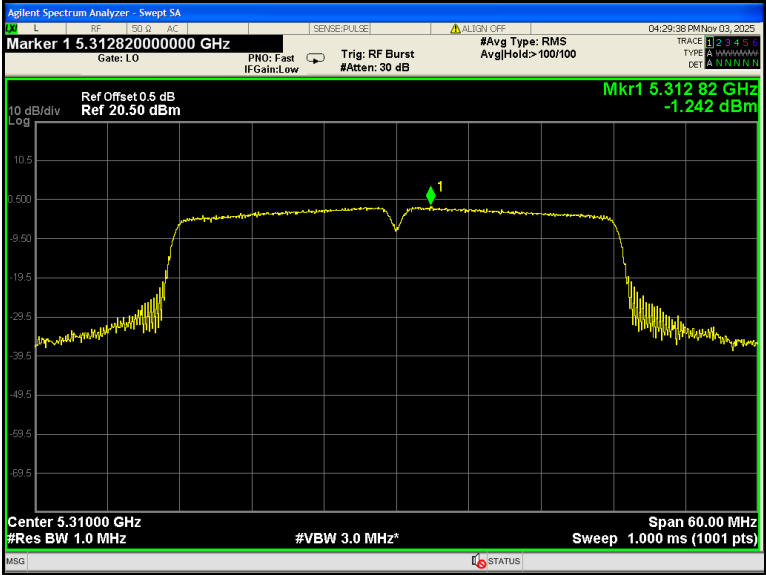
802.11n(HT20) U-NII-2A High channel



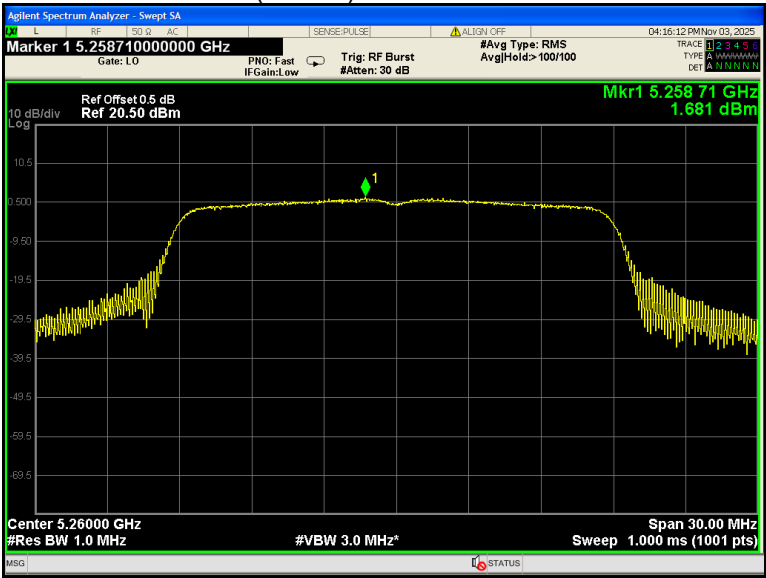
802.11n(HT40) U-NII-2A Low channel



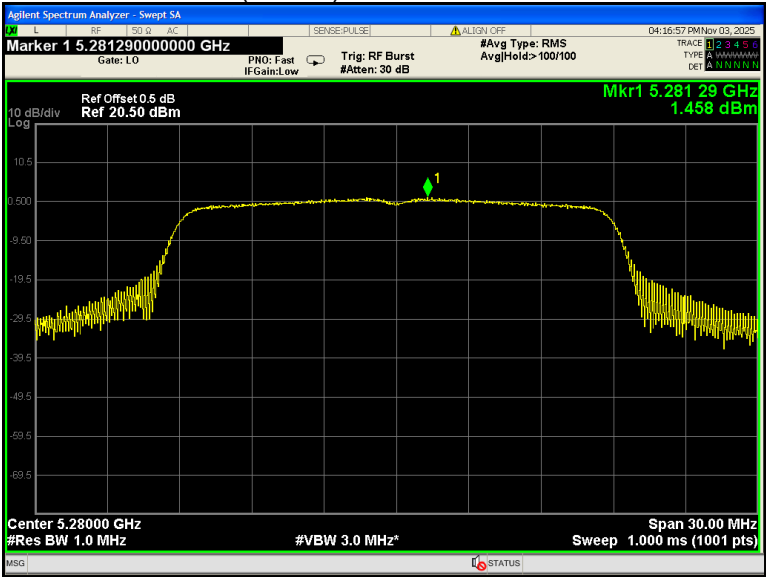
802.11n(HT40) U-NII-2A High channel



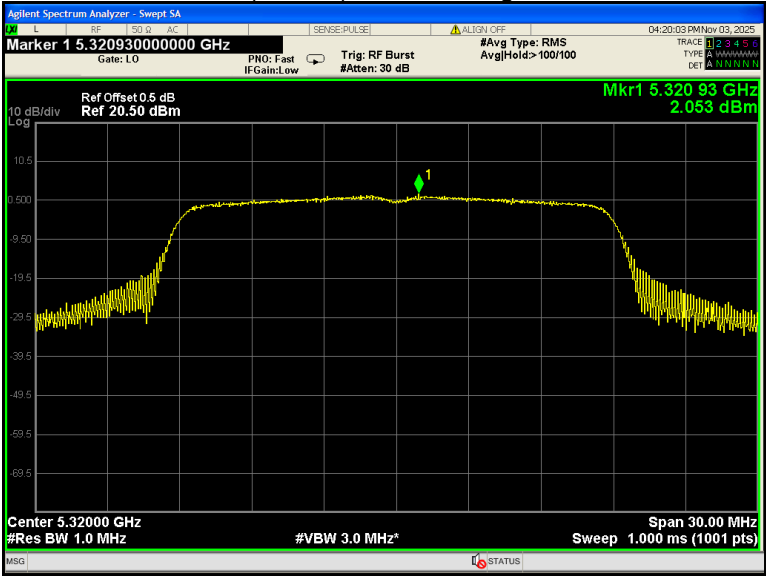
802.11ac(VHT20) U-NII-2A Low channel



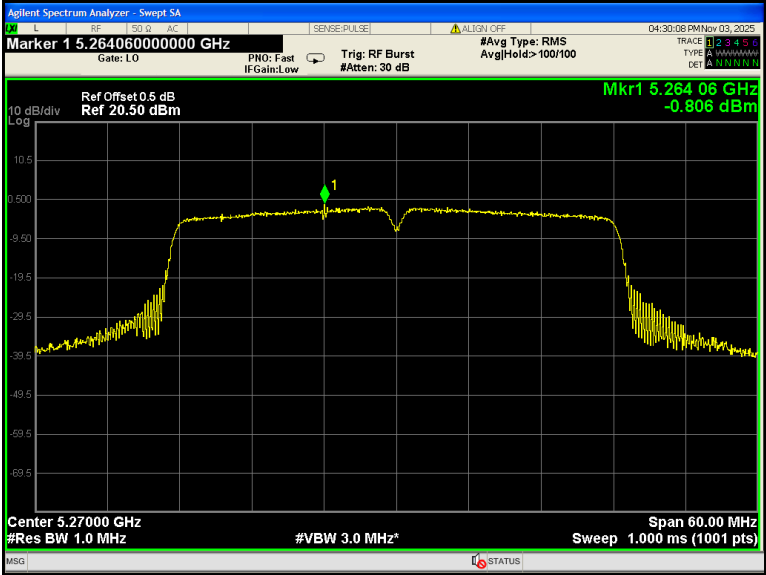
802.11ac(VHT20) U-NII-2A Middle channel



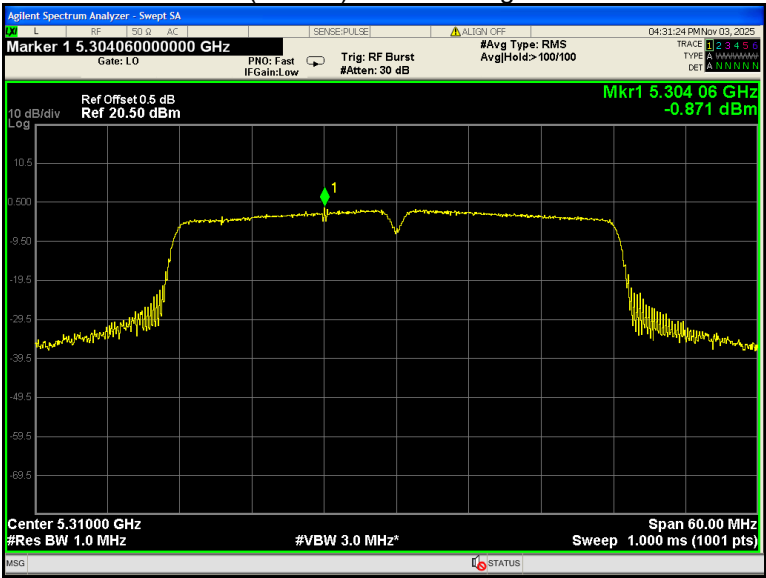
802.11ac(VHT20) U-NII-2A High channel



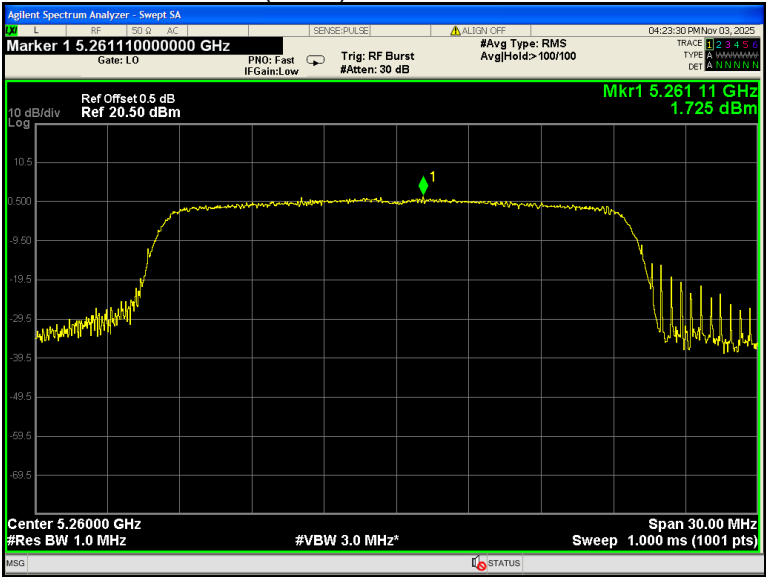
802.11ac(VHT40) U-NII-2A Low channel



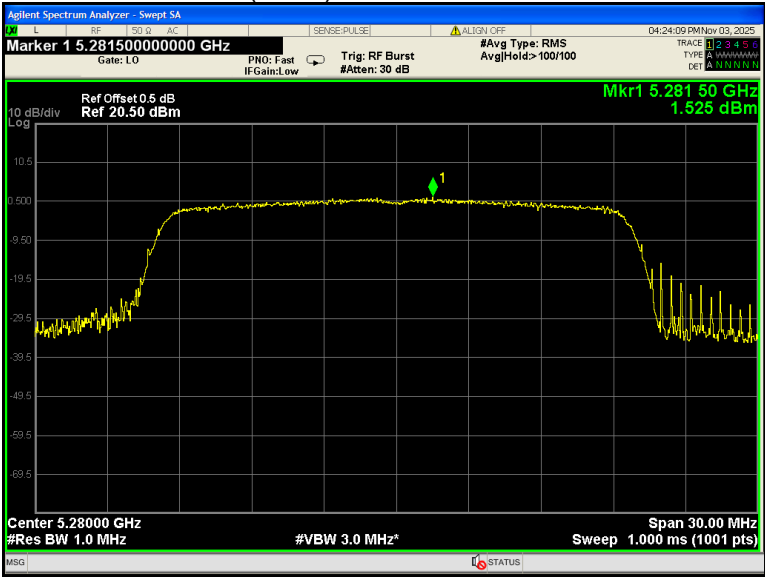
802.11ac(VHT40) U-NII-2A High channel



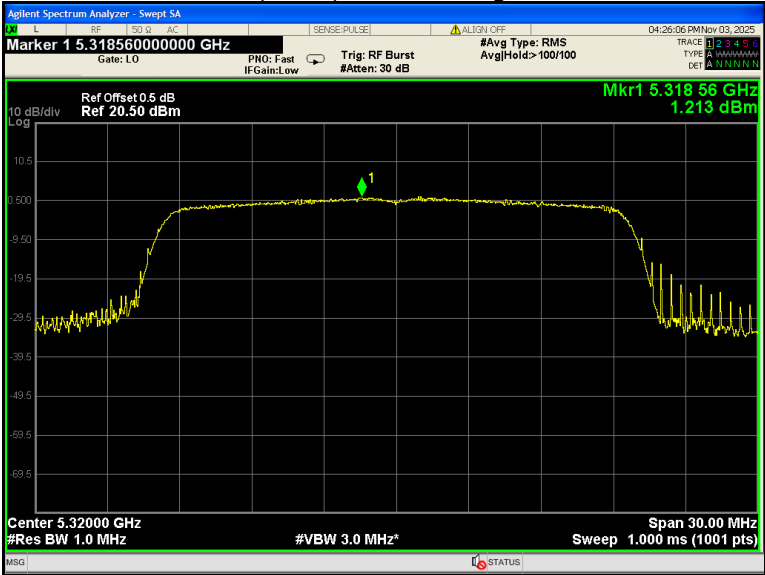
802.11ax(HE20) U-NII-2A Low channel



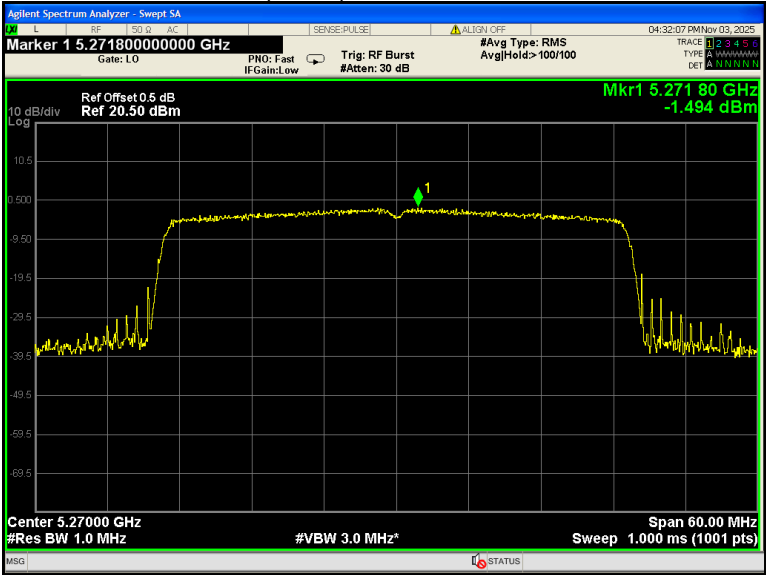
802.11ax(HE20) U-NII-2A Middle channel



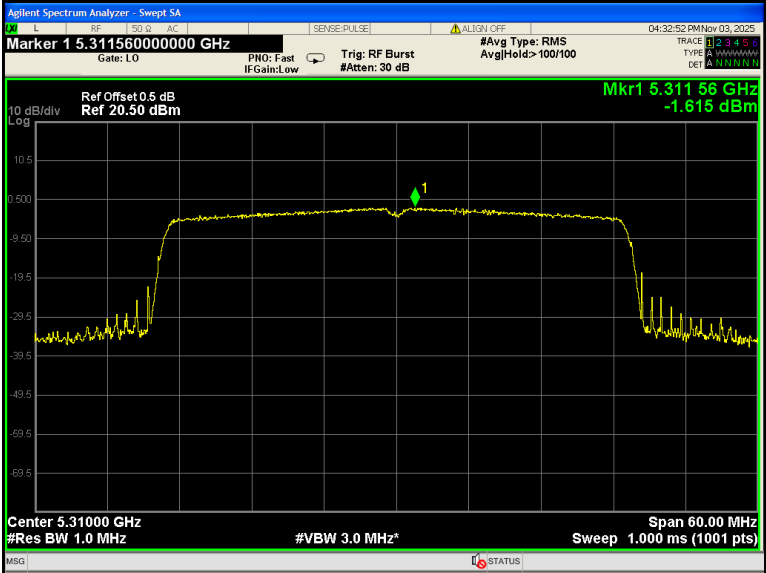
802.11ax(HE20) U-NII-2A High channel



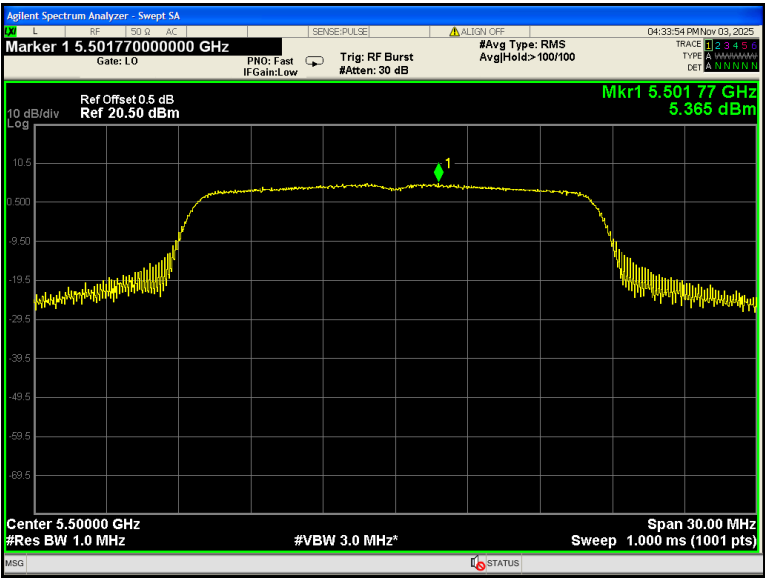
802.11ax(HE40) U-NII-2A Low channel



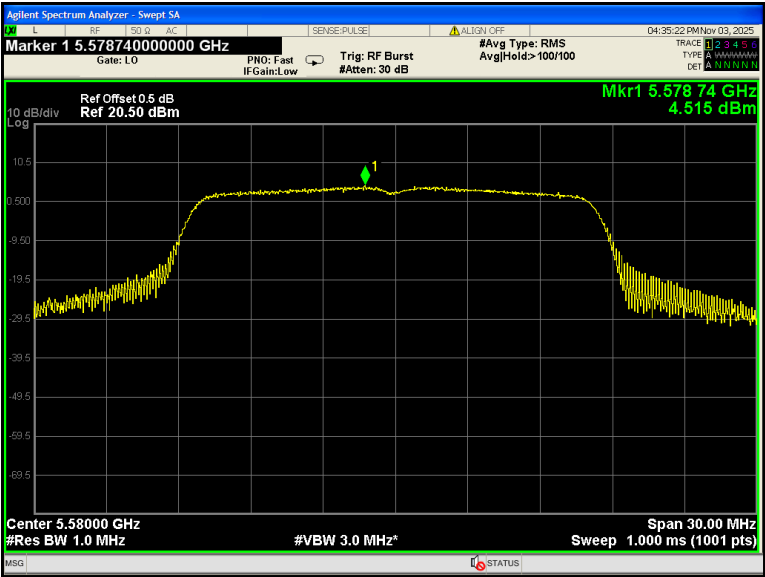
802.11ax(HE40) U-NII-2A High channel



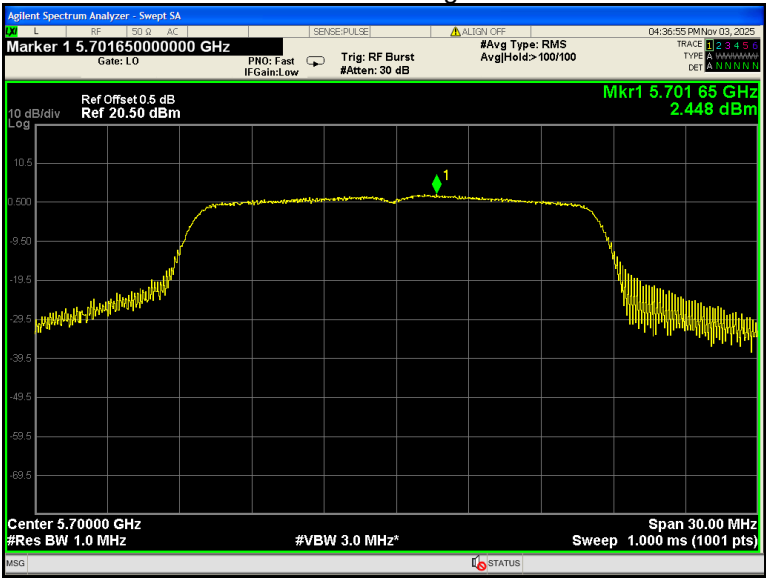
802.11a U-NII-2C Low channel



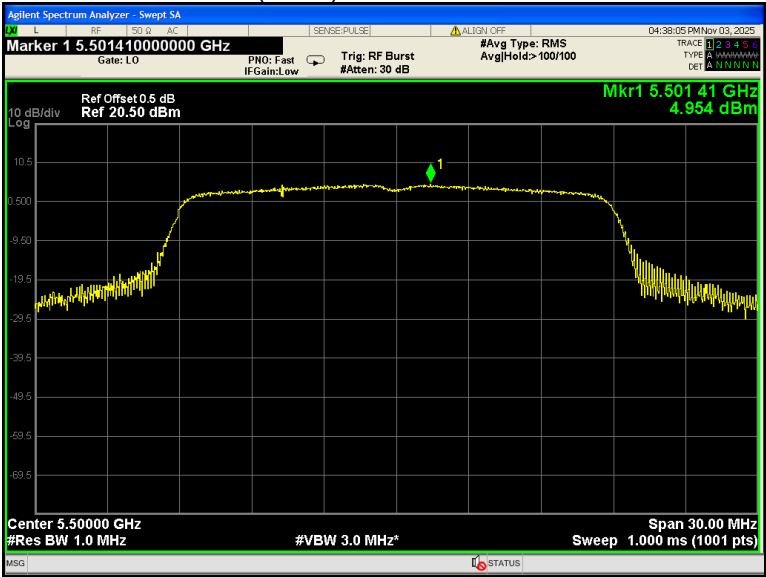
802.11a U-NII-2C Middle channel



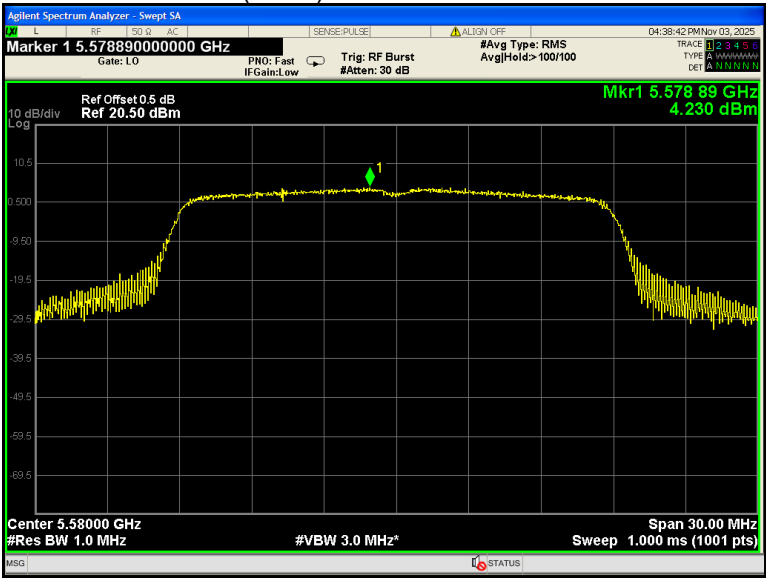
802.11a U-NII-2C High channel



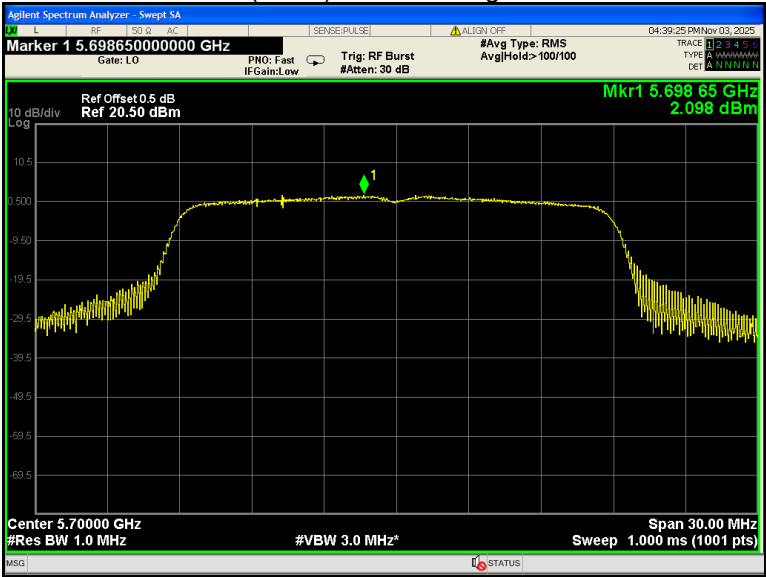
802.11n(HT20) U-NII-2C Low channel



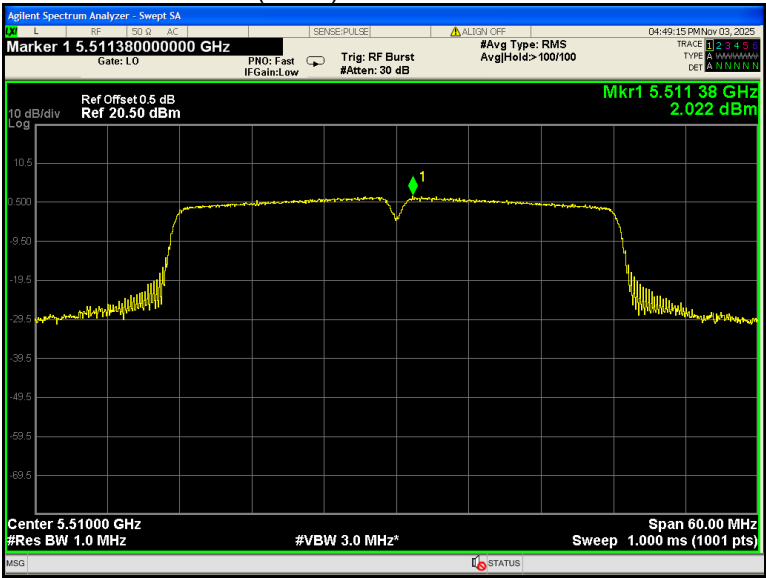
802.11n(HT20) U-NII-2C Middle channel



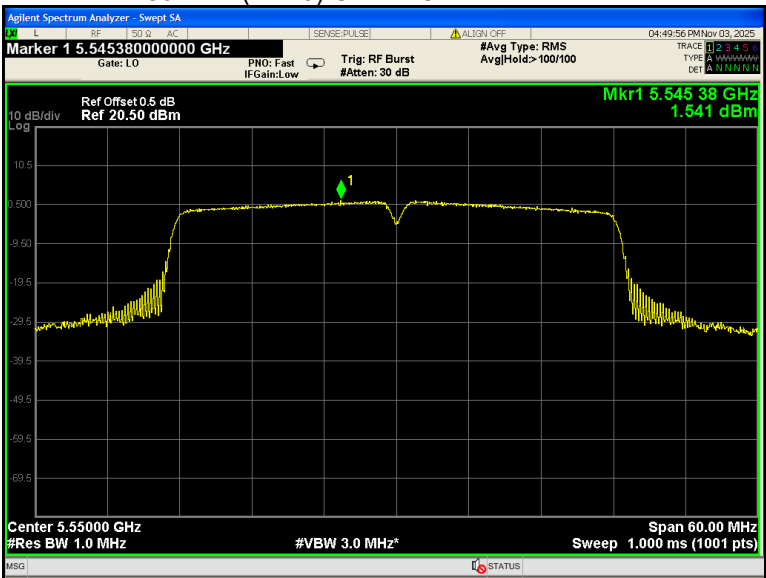
802.11n(HT20) U-NII-2C High channel



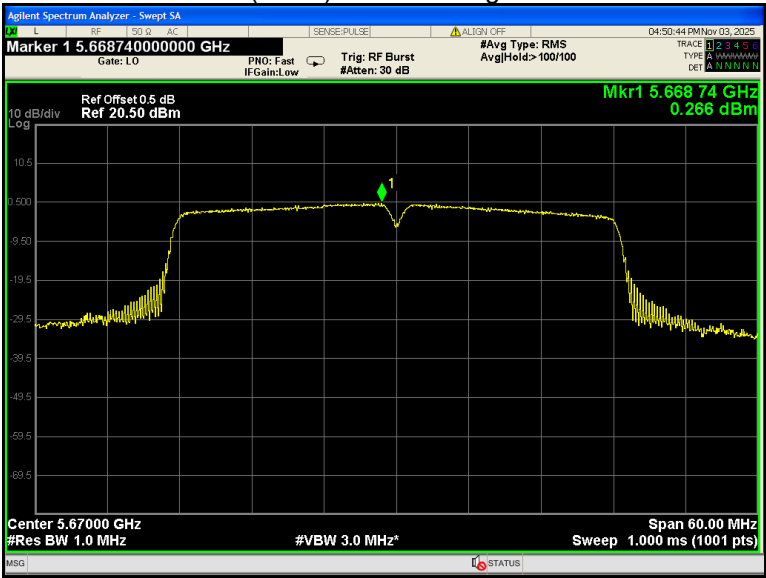
802.11n(HT40) U-NII-2C Low channel



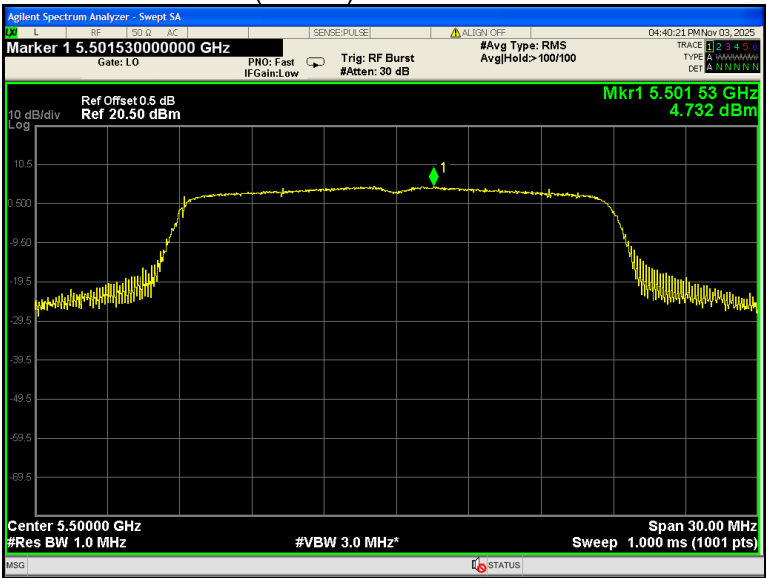
802.11n(HT40) U-NII-2C Middle channel



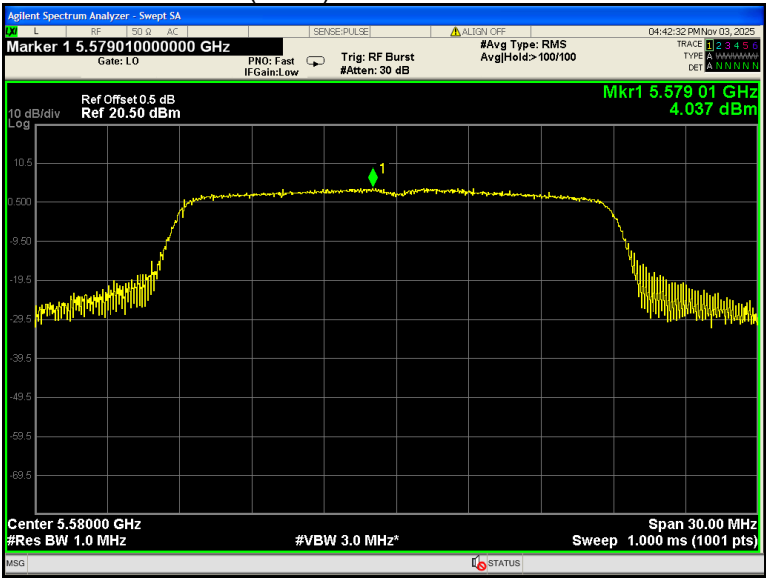
802.11n(HT40) U-NII-2C High channel



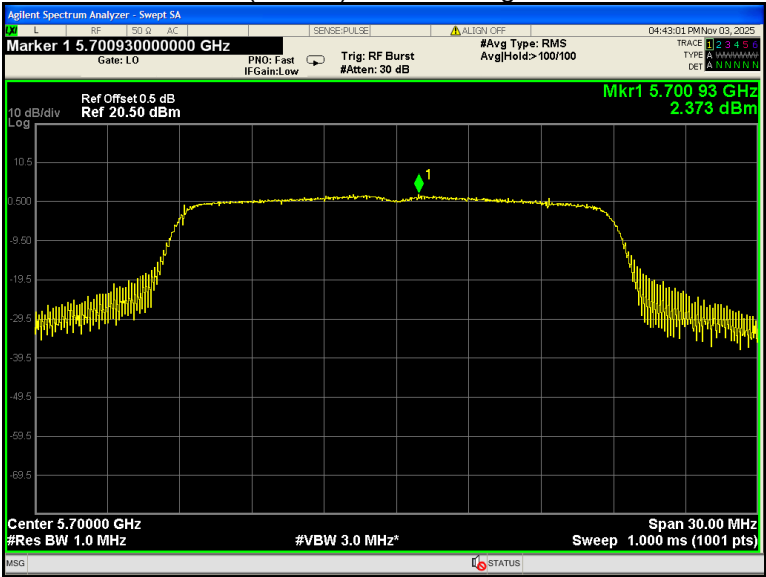
802.11ac(VHT20) U-NII-2C Low channel



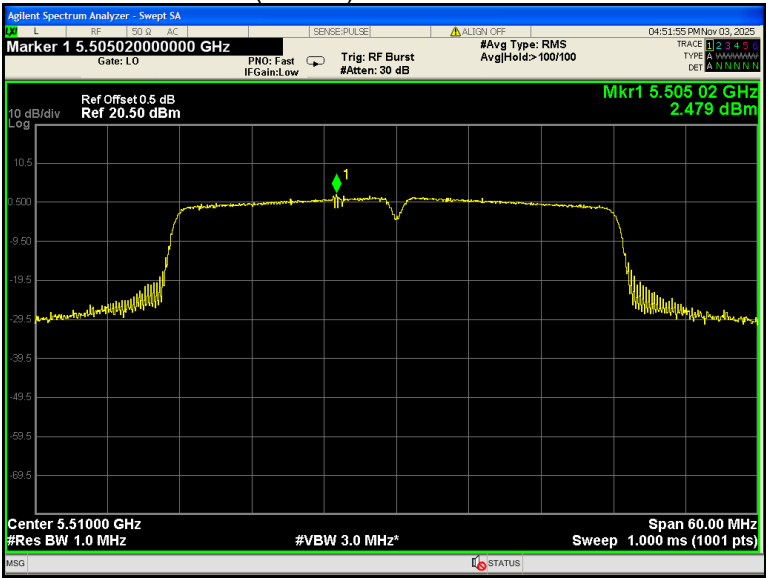
802.11ac(HT20) U-NII-2C Middle channel



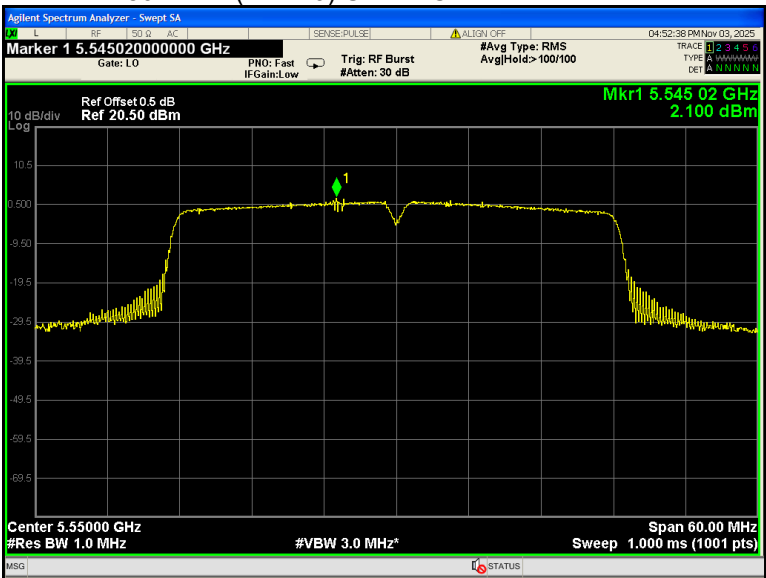
802.11ac(VHT20) U-NII-2C High channel



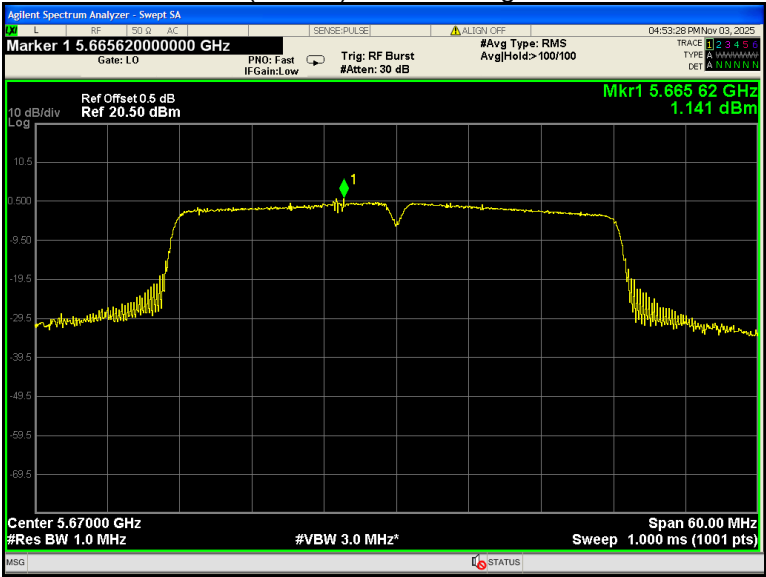
802.11ac(VHT40) U-NII-2C Low channel



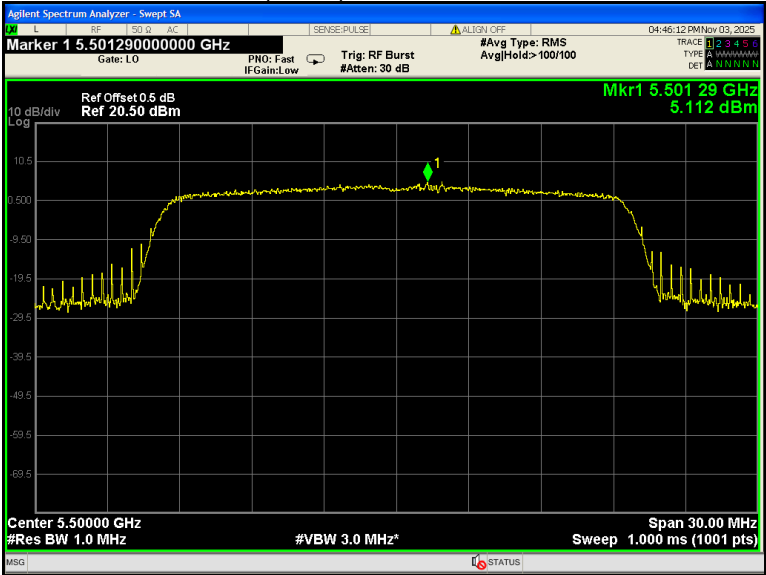
802.11ac(VHT40) U-NII-2C Middle channel



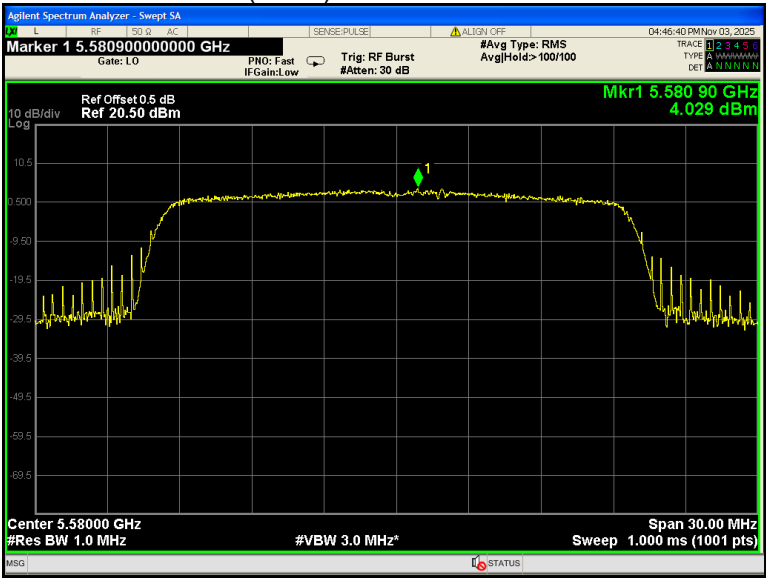
802.11ac(VHT40) U-NII-2C High channel



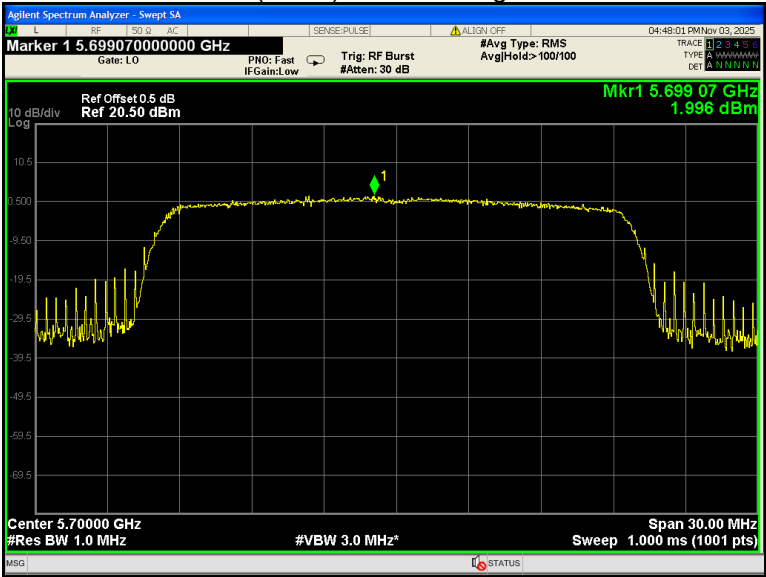
802.11ax(HE20) U-NII-2C Low channel



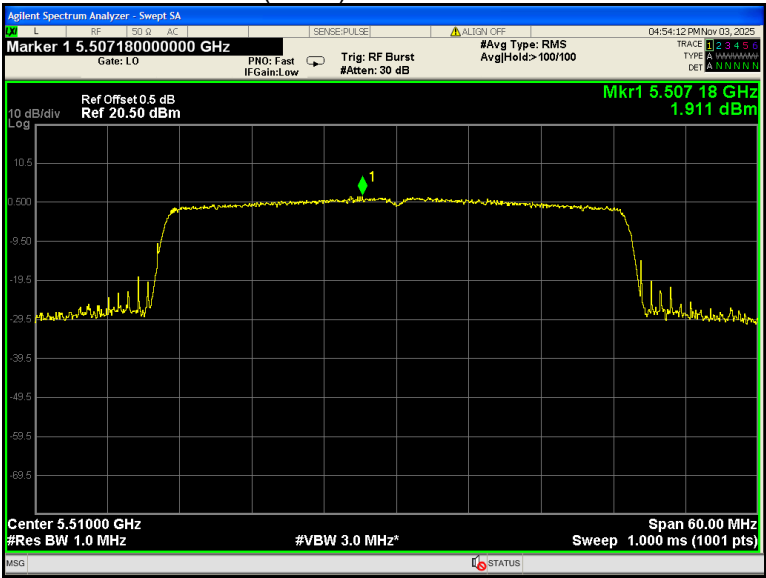
802.11ax(HE20) U-NII-2C Middle channel



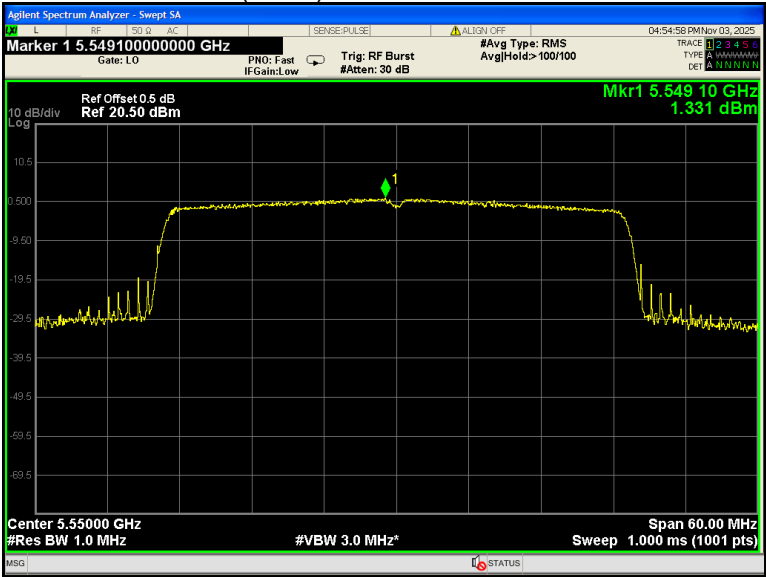
802.11ax(HE20) U-NII-2C High channel



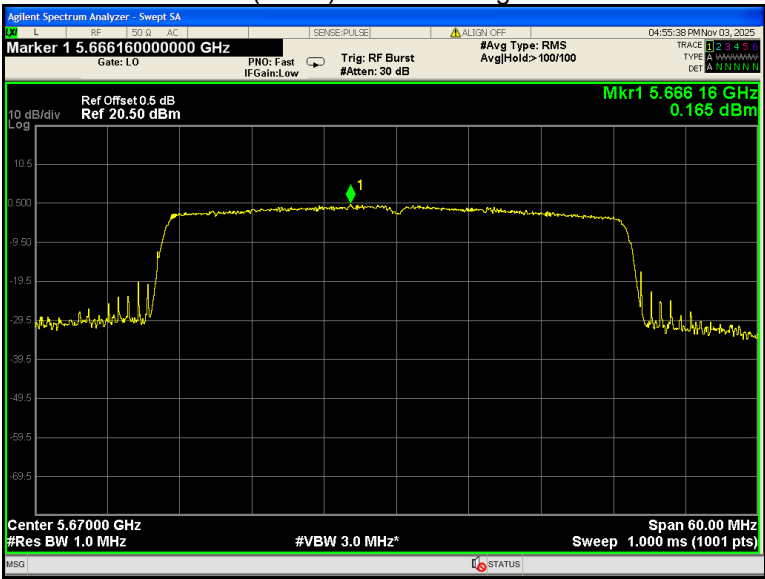
802.11ax(HE40) U-NII-2C Low channel



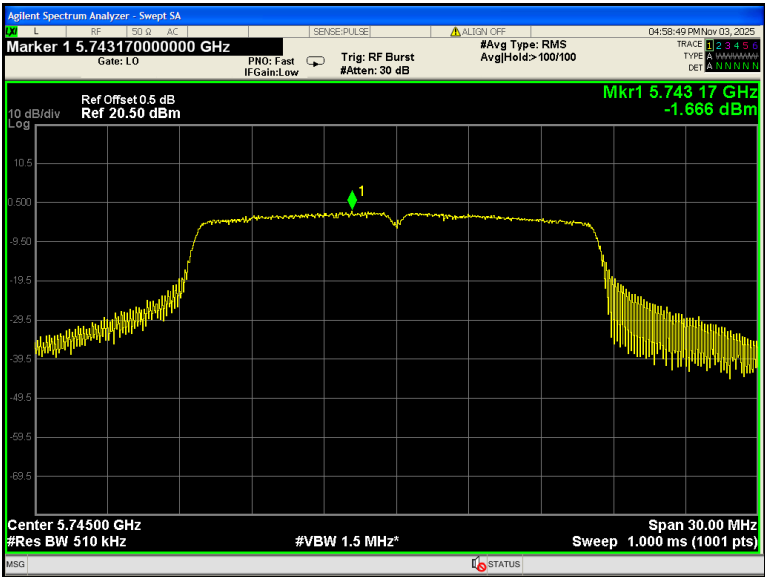
802.11ax(HE40) U-NII-2C Middle channel



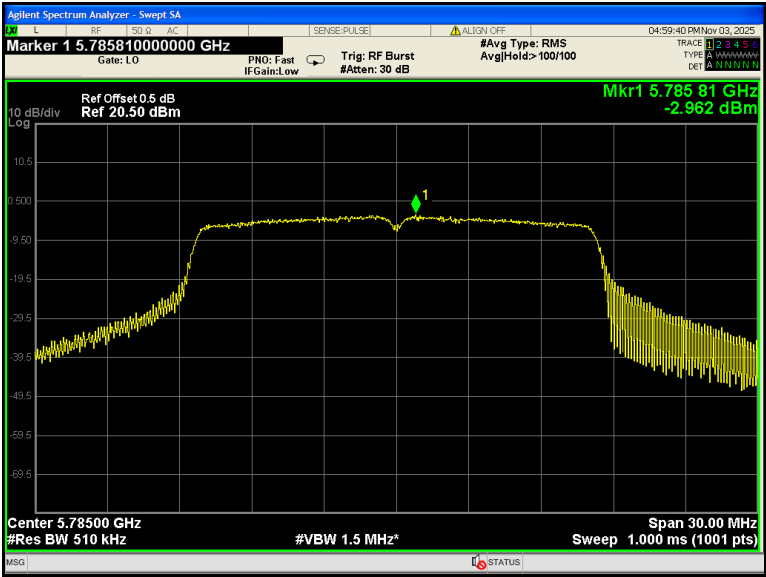
802.11ax(HE40) U-NII-2C High channel



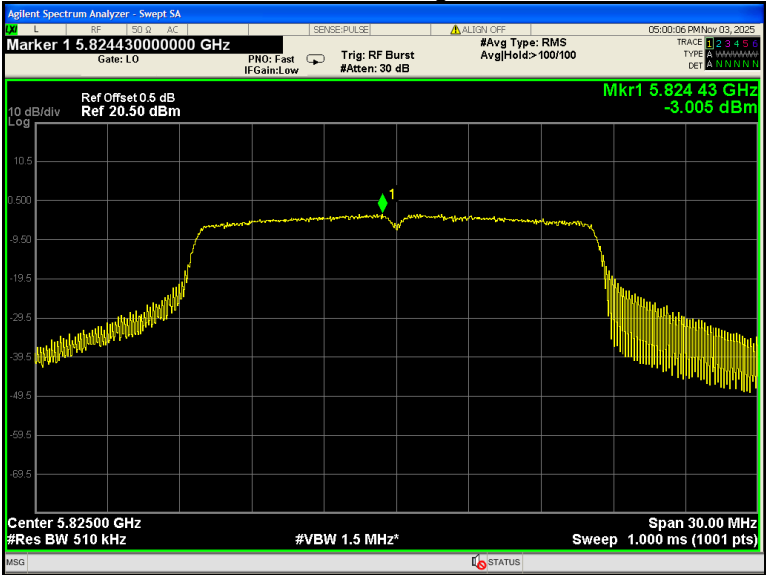
802.11a U-NII-3 Low channel



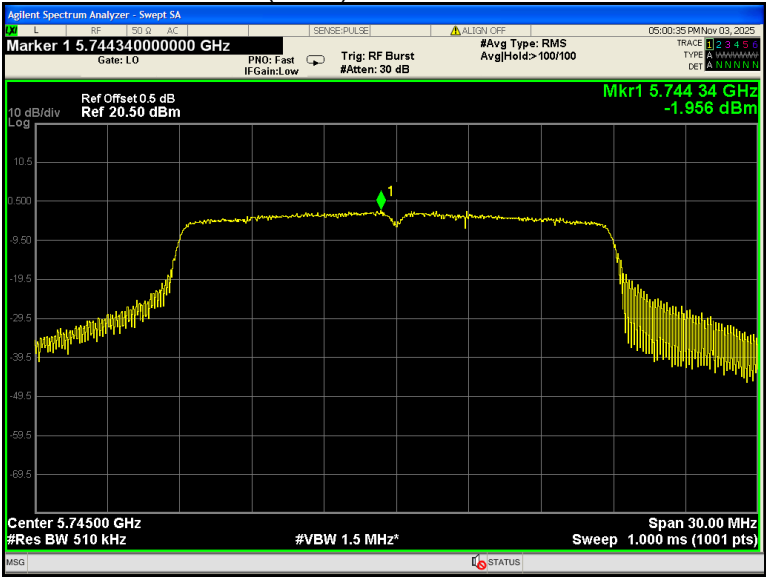
802.11a U-NII-3 Middle channel



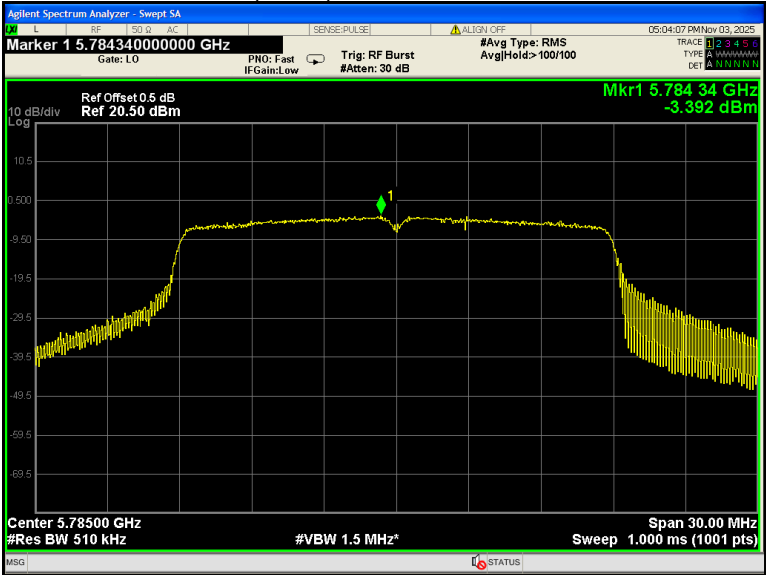
802.11a U-NII-3 High channel



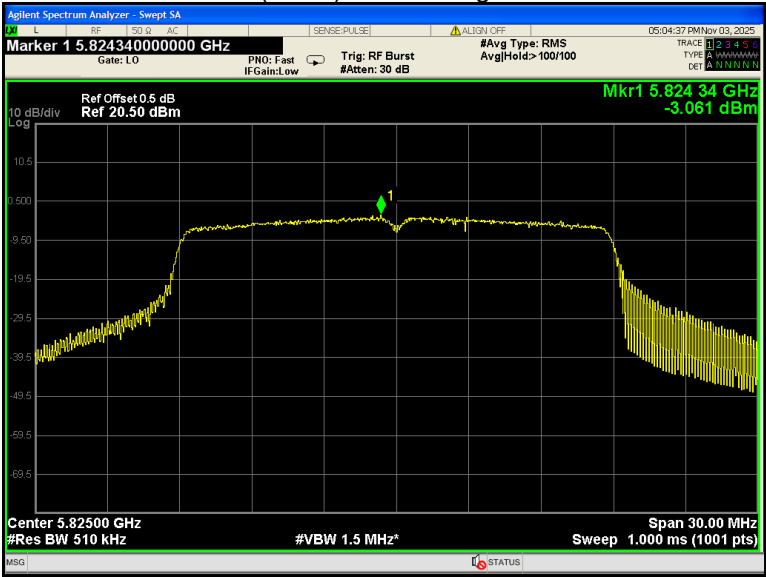
802.11n(HT20) U-NII-3 Low channel



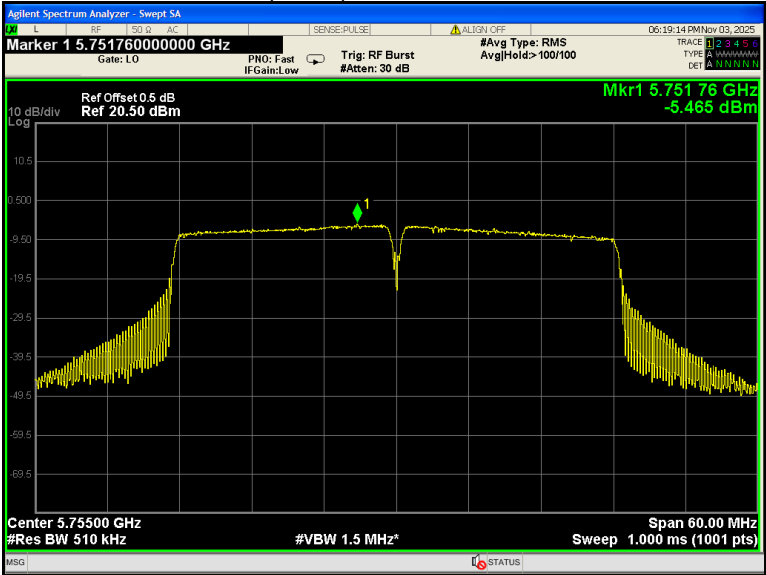
802.11n(HT20) U-NII-3 Middle channel



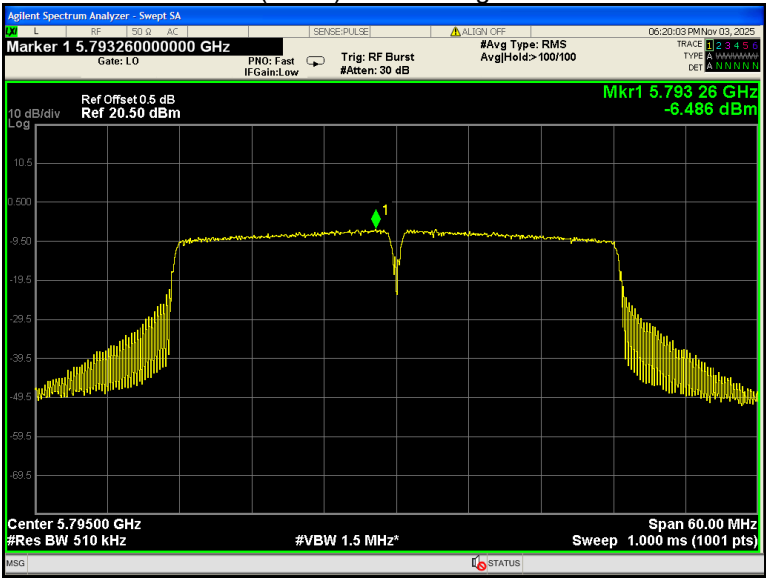
802.11n(HT20) U-NII-3 High channel



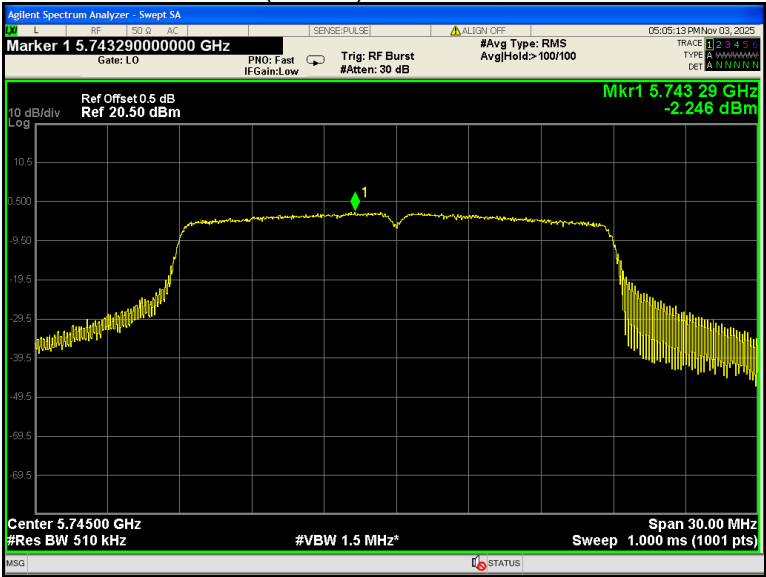
802.11n(HT40) U-NII-3 Low channel



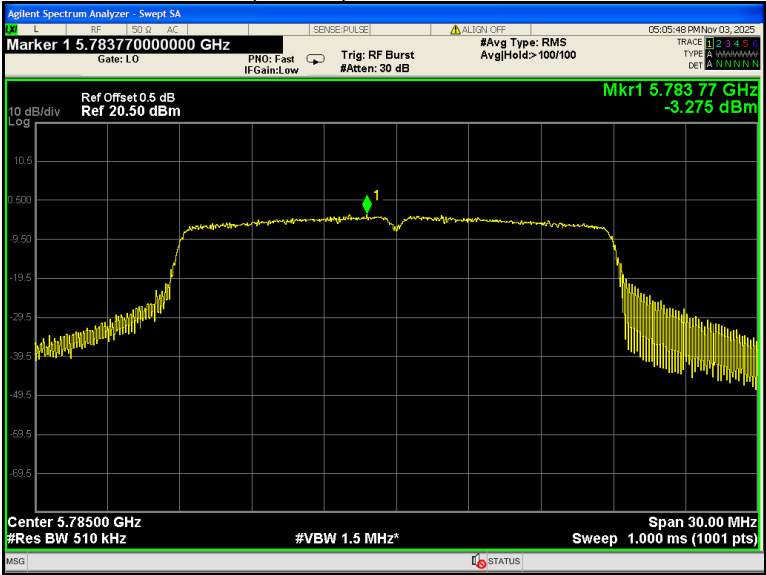
802.11n(HT40) U-NII-3 High channel



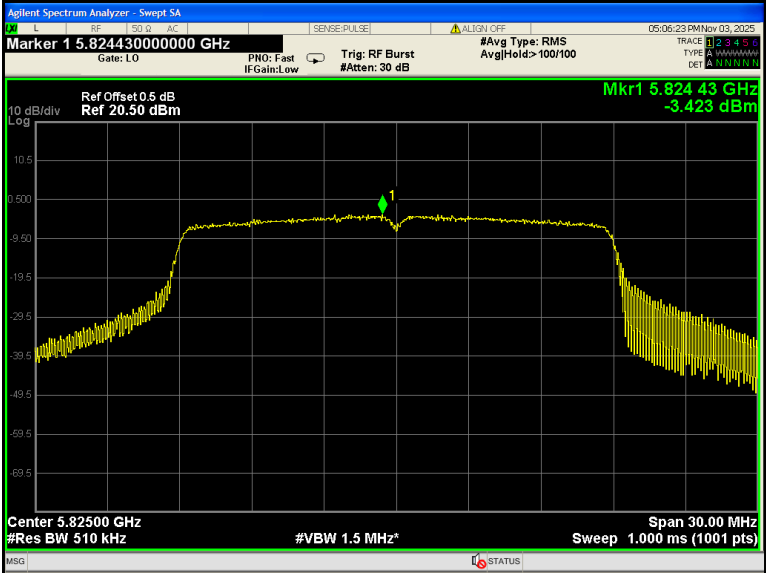
802.11ac(VHT20) U-NII-3 Low channel



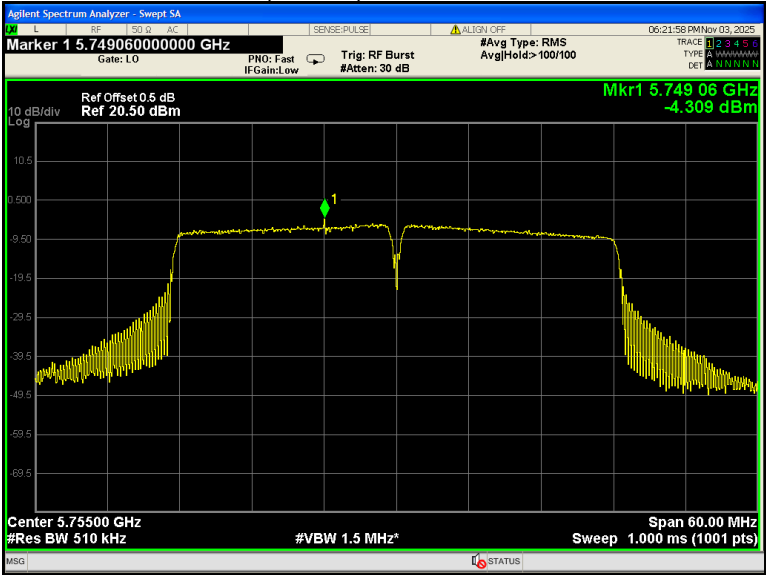
802.11ac(VHT20) U-NII-3 Middle channel



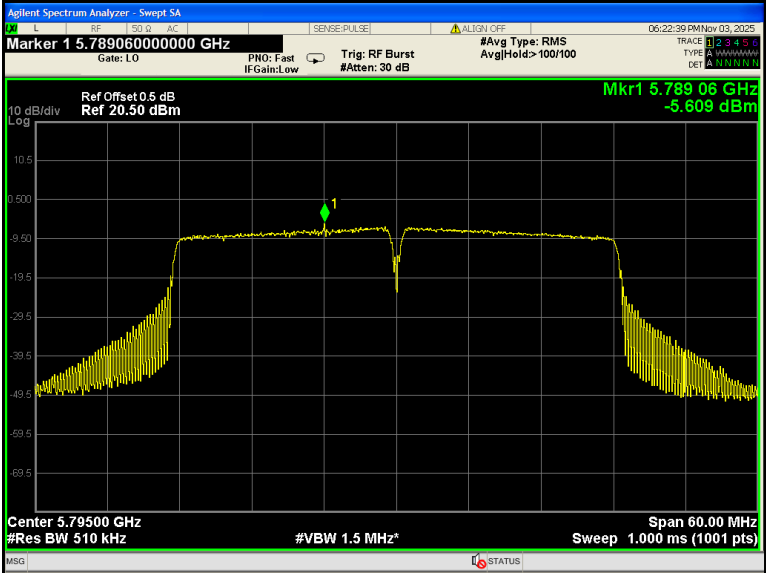
802.11ac(VHT20) U-NII-3 High channel



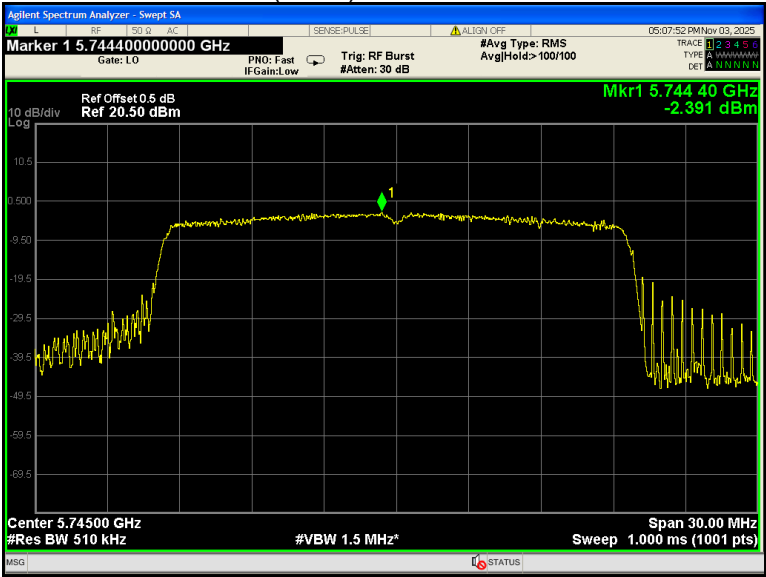
802.11ac(VHT40) U-NII-3 Low channel



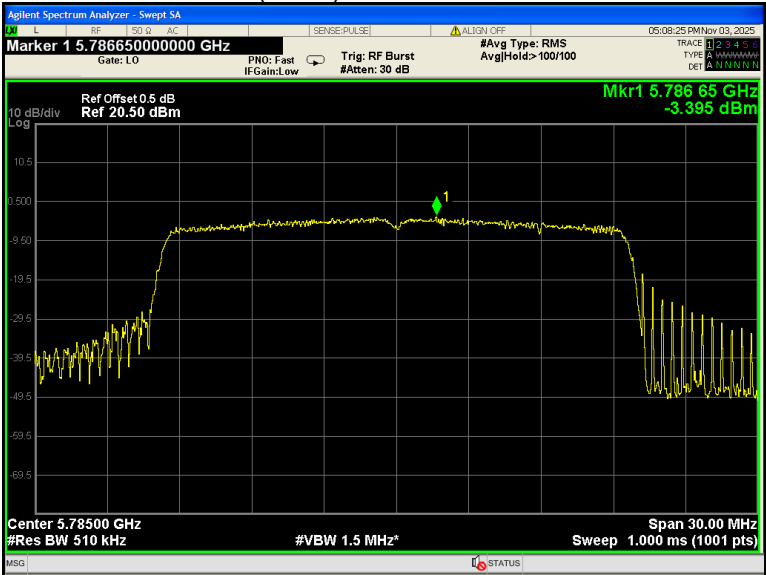
802.11ac(VHT40) U-NII-3 High channel



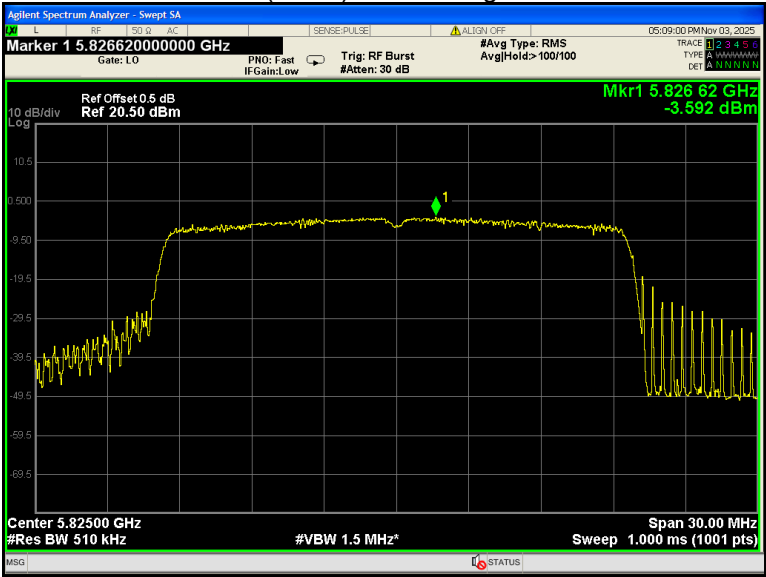
802.11ax(HE20) U-NII-3 Low channel



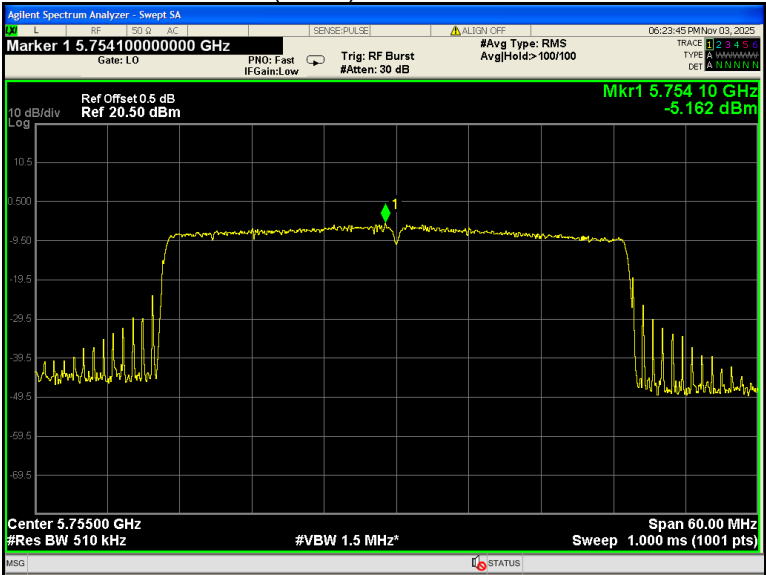
802.11ax(HE20) U-NII-3 Middle channel



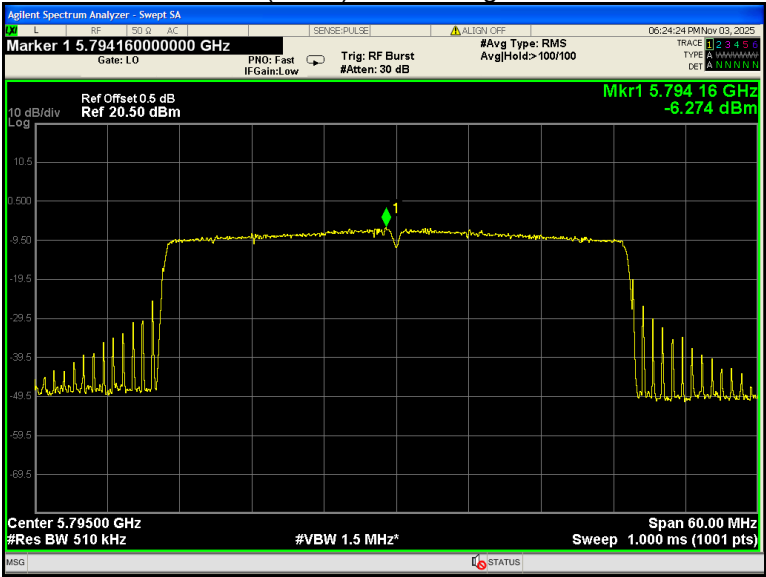
802.11ax(HE20) U-NII-3 High channel



802.11ax(HE40) U-NII-3 Low channel



802.11ax(HE40) U-NII-3 High channel



15 Frequency Stability

Test Requirement:	FCC 47CFR Part 15 Section 15.407(g) KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
Test Method:	ANSI C63.10-2020+A1-2024
Test 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 users manual or 20ppm.
Test Result:	PASS

15.1 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
EUT have transmitted absence of unmodulation signal and fixed channelise. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f)/f_c \times 10^6$ ppm and the limit is less than ± 20 ppm The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
2. Extreme temperature rule is 0°C~ 45°C.

15.2 Test Result

U-NII-1 Test Frequency:5180MHz				
Temperature (°C)	Power Supply (VAC)	Frequency Error (MHz)	Frequency Error (ppm)	Limit (ppm)
50	120	/	/	/
45		1.0222	1673.85	20
30		1.0255	1679.41	20
20		1.0200	1670.32	20
10		1.0188	1668.31	20
0		1.0224	1674.20	20
-10		/	/	/
20	108	1.0227	1674.67	20
20	132	1.0234	1675.83	20

U-NII-2A Test Frequency:5260MHz				
Temperature (°C)	Power Supply (VAC)	Frequency Error (MHz)	Frequency Error (ppm)	Limit (ppm)
50	120	/	/	/
45		1.0176	1666.44	20
30		1.0208	1671.69	20
20		1.0200	1670.32	20
10		1.0232	1675.59	20
0		1.0104	1654.62	20
-10		/	/	/
20	108	1.0205	1671.21	20
20	132	1.0201	1670.43	20

U-NII-2C Test Frequency:5500MHz				
Temperature (°C)	Power Supply (VAC)	Frequency Error (MHz)	Frequency Error (ppm)	Limit (ppm)
50	120	/	/	/
45		1.0282	1683.70	20
30		1.0139	1660.40	20
20		1.0200	1670.32	20
10		1.0206	1671.30	20
0		1.0223	1674.13	20
-10		/	/	/
20	108	1.0219	1673.44	20
20	132	1.0198	1670.04	20

U-NII-3 Test Frequency:5785MHz				
Temperature (°C)	Power Supply (VAC)	Frequency Error (MHz)	Frequency Error (ppm)	Limit (ppm)
50	120	/	/	/
45		1.0213	1672.47	20
30		1.0184	1667.71	20
20		1.0200	1670.32	20
10		1.0180	1667.03	20
0		1.0226	1674.51	20
-10		/	/	/
20	108	1.0246	1677.92	20
20	132	1.0234	1675.93	20

16 Antenna 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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

This device uses of two antennas that uses a specified coupling to the intentional radiator. Antenna connectors complied with the requirement.

17 RF Exposure

Remark: refer to MPE test report: WTD25D09244215W006.

18 Photographs of test setup and EUT.

Note: Please refer to appendix: Appendix- HB588AIBU -Photos.

=====End of Report=====