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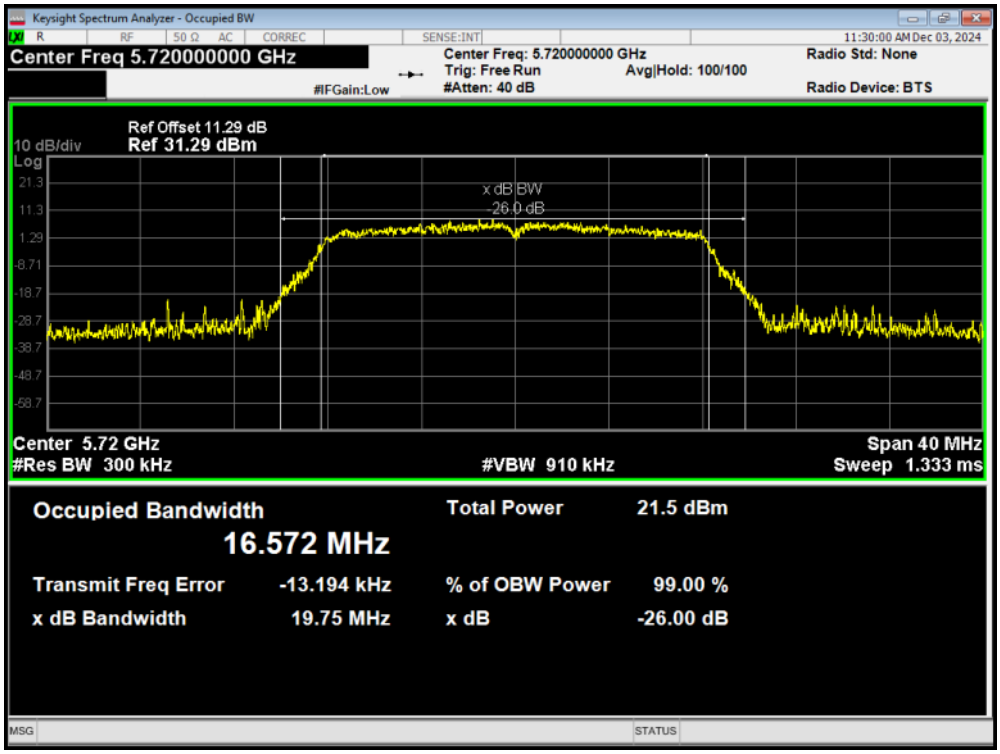
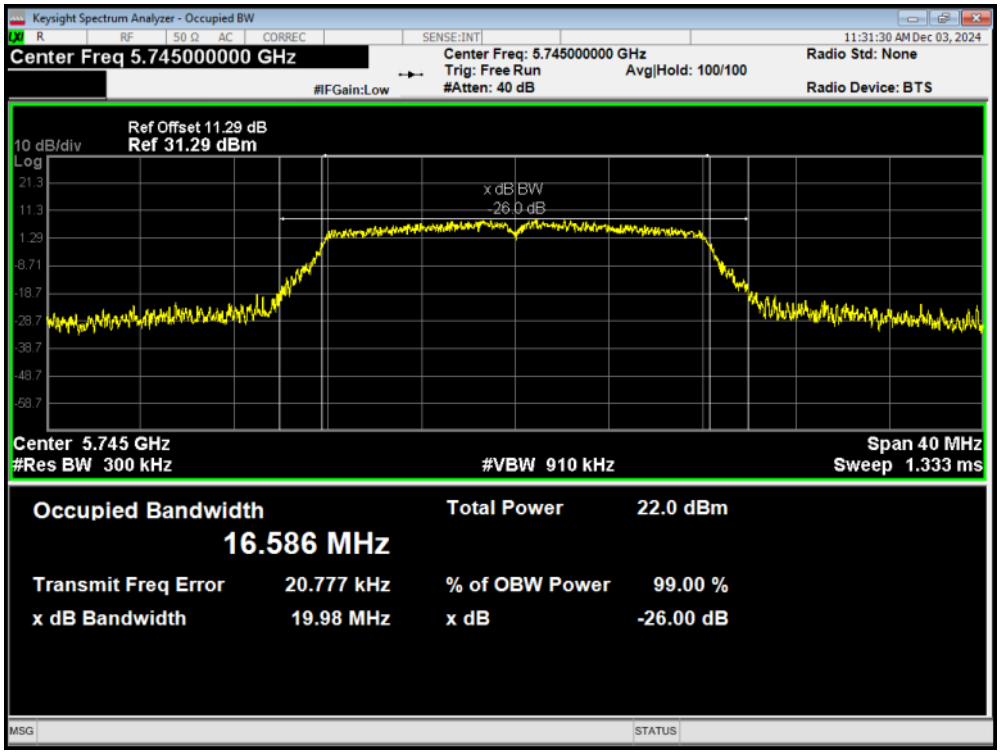
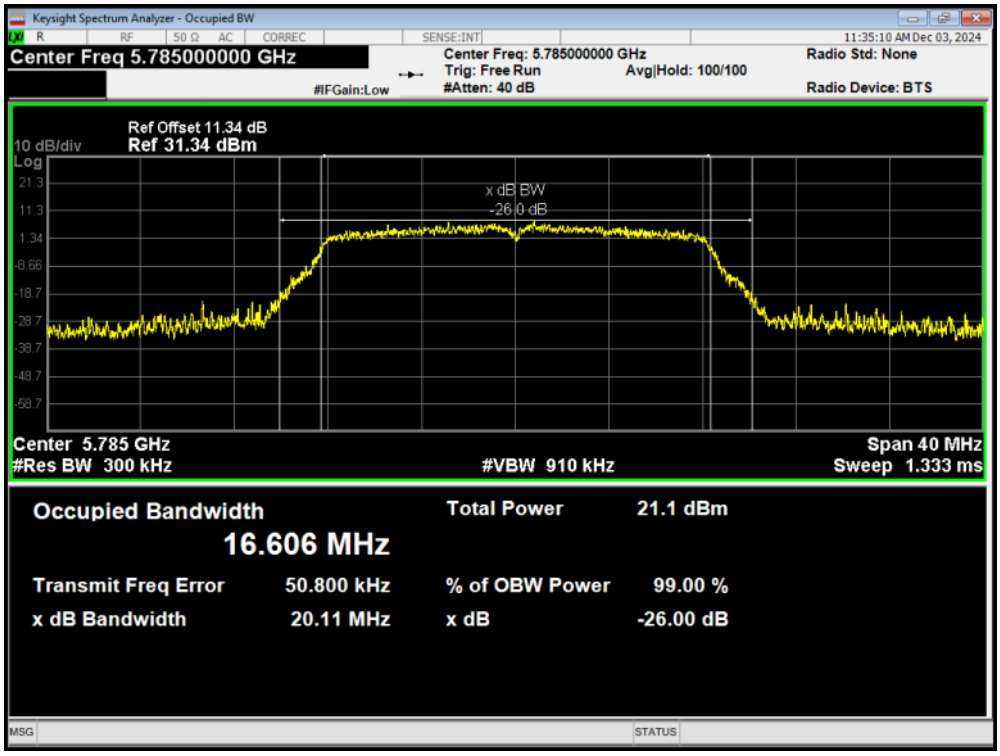
OBW 802.11a 5720MHz



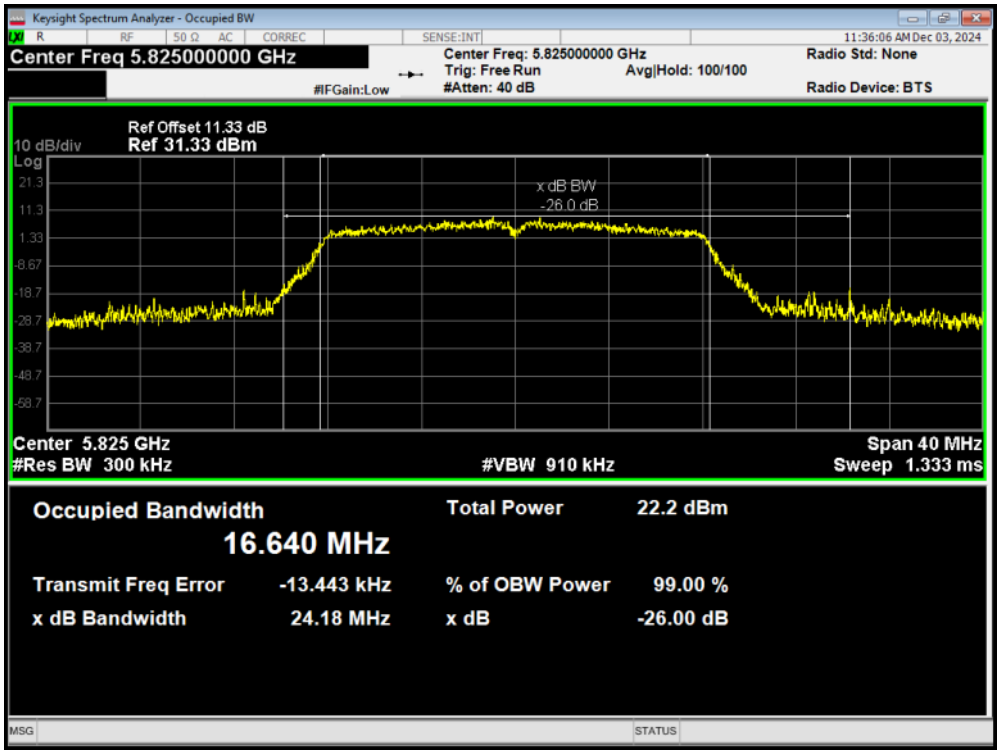
OBW 802.11a 5745MHz



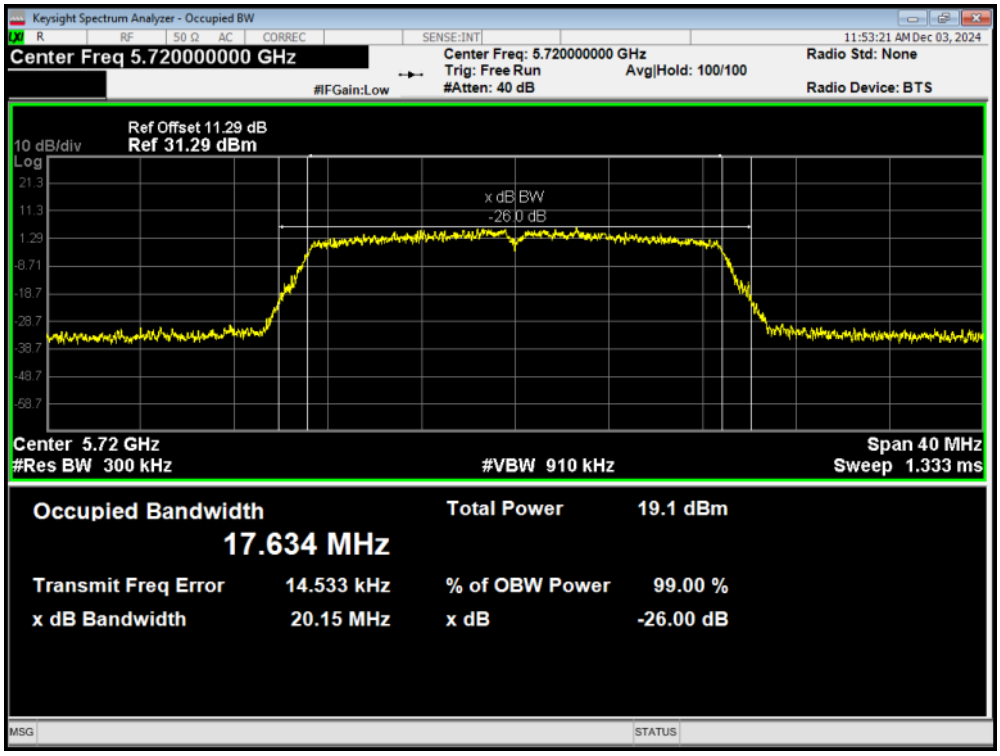
OBW 802.11a 5785MHz



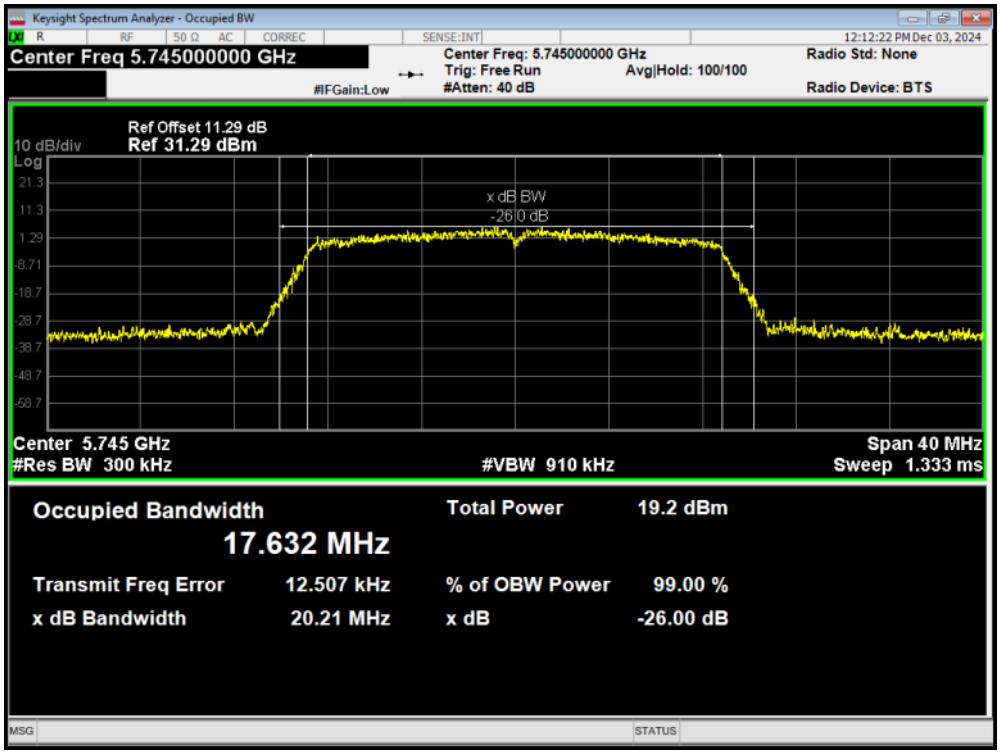
OBW 802.11a 5825MHz



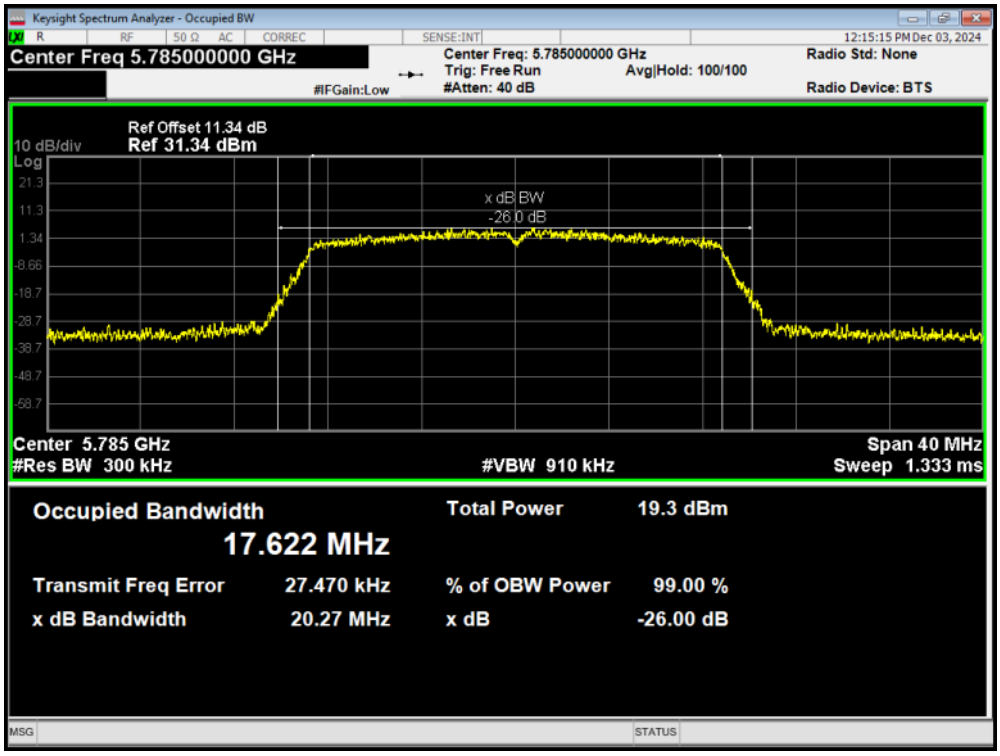
OBW 802.11ac(VHT20) 5720MHz



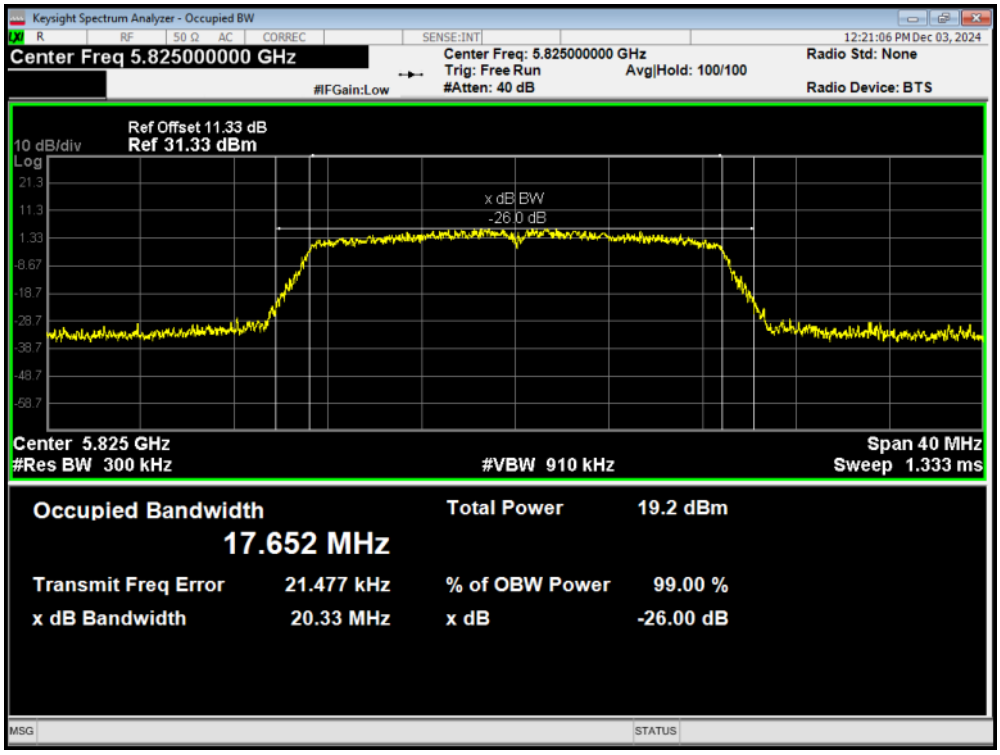
OBW 802.11ac(VHT20) 5745MHz



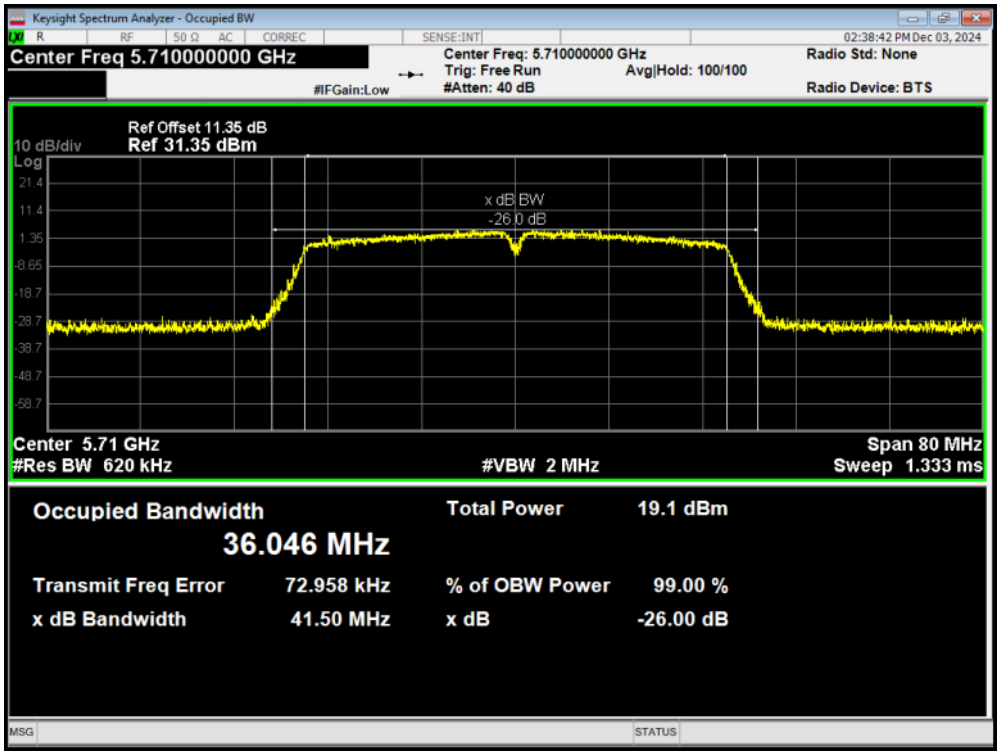
OBW 802.11ac(VHT20) 5785MHz



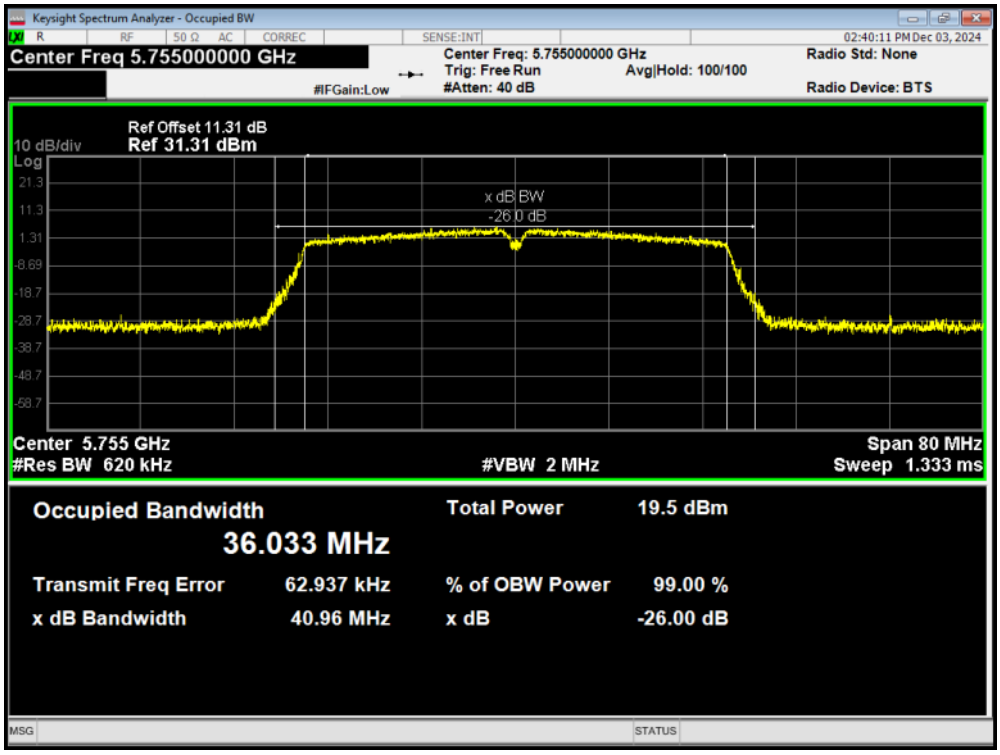
OBW 802.11ac(VHT20) 5825MHz



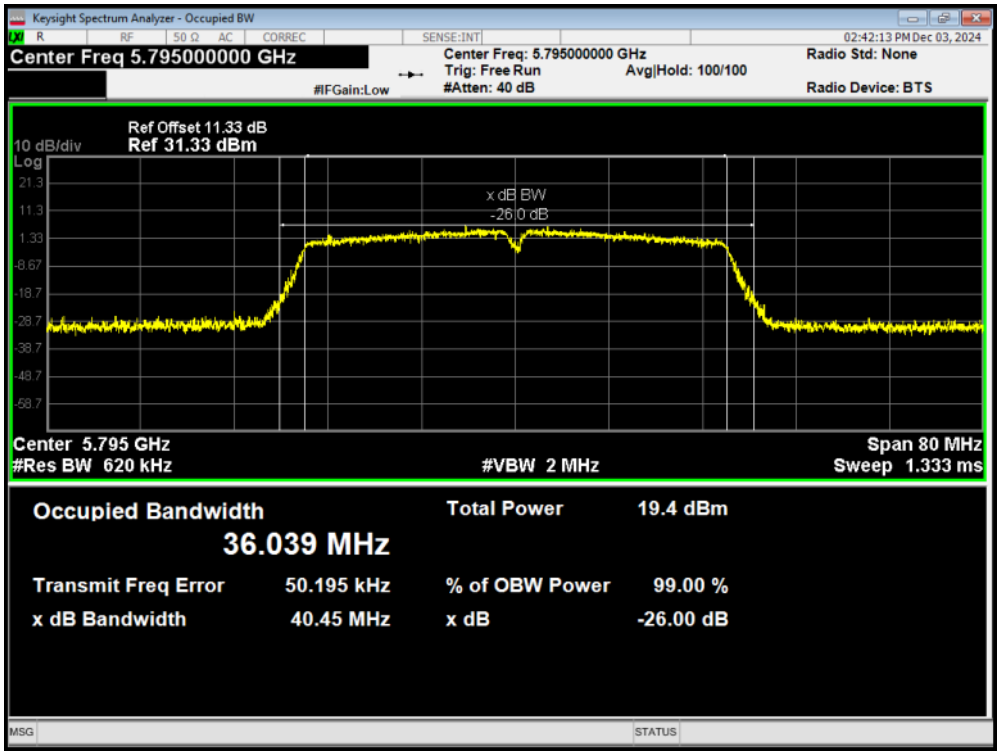
OBW 802.11ac(VHT40) 5710MHz



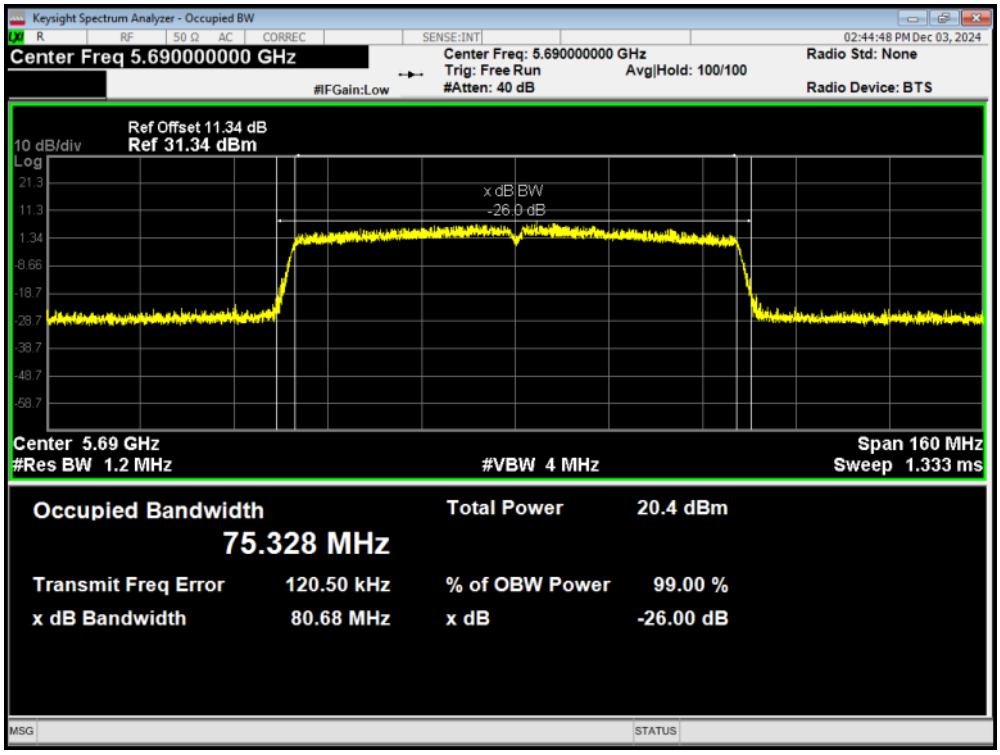
OBW 802.11ac(VHT40) 5755MHz



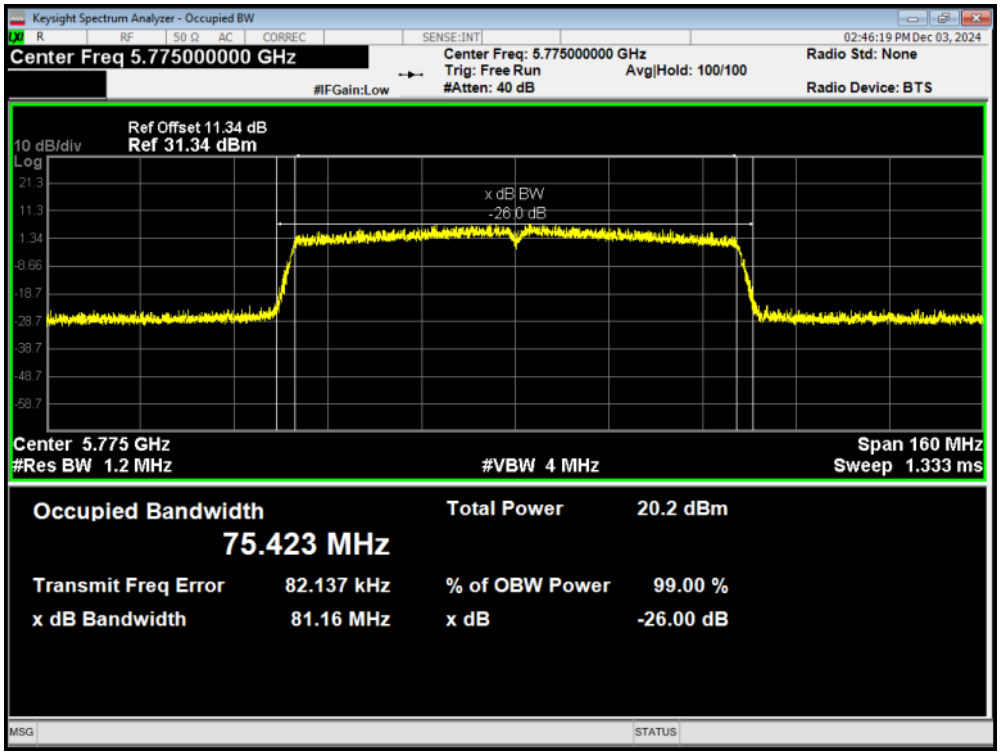
OBW 802.11ac(VHT40) 5795MHz



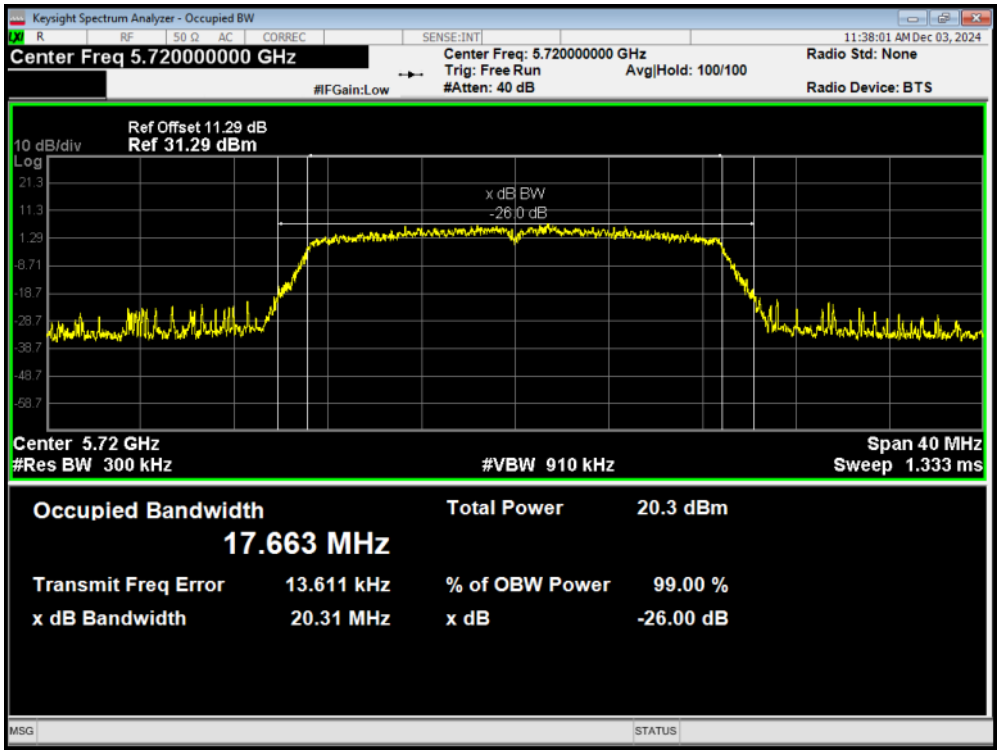
OBW 802.11ac(VHT80) 5690MHz



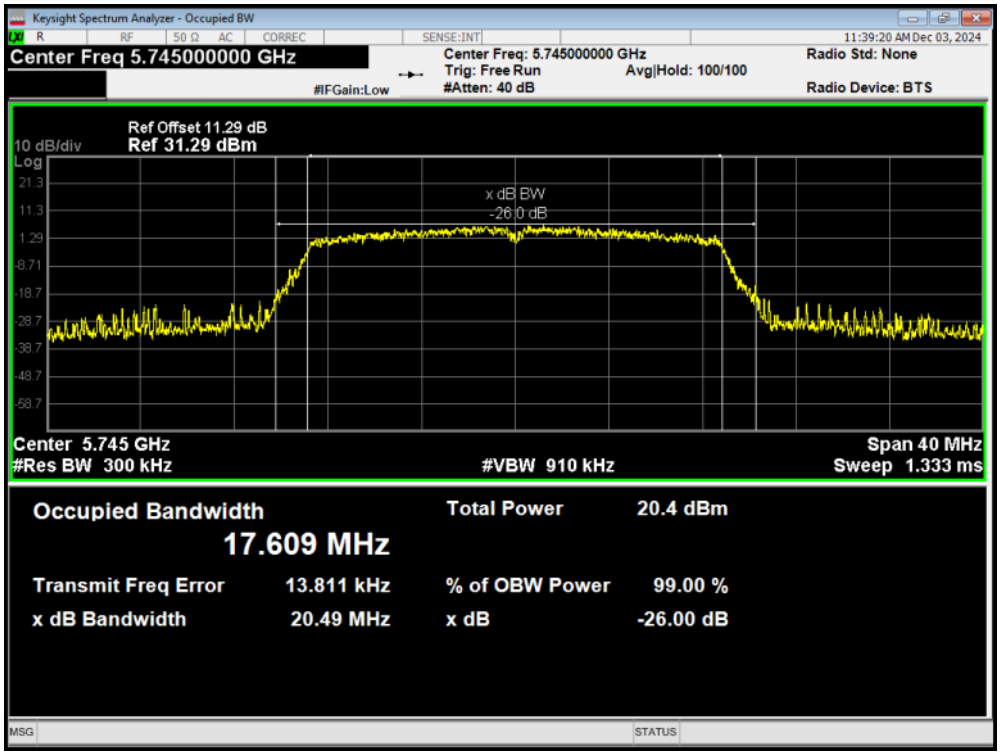
OBW 802.11ac(VHT80) 5775MHz



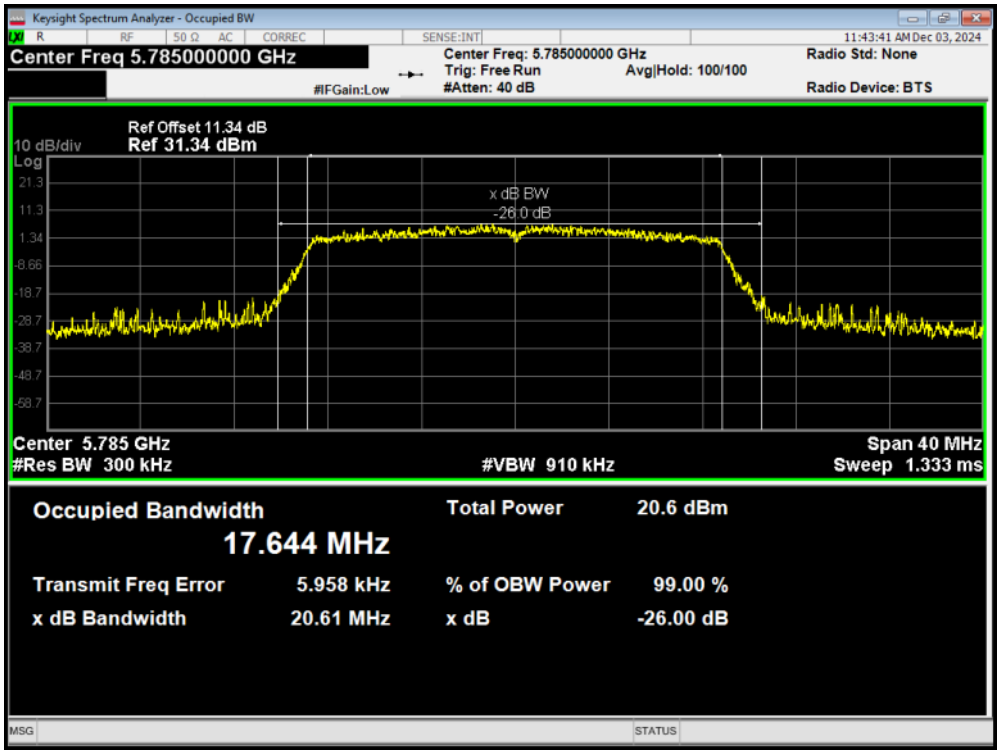
OBW 802.11n(HT20) 5720MHz



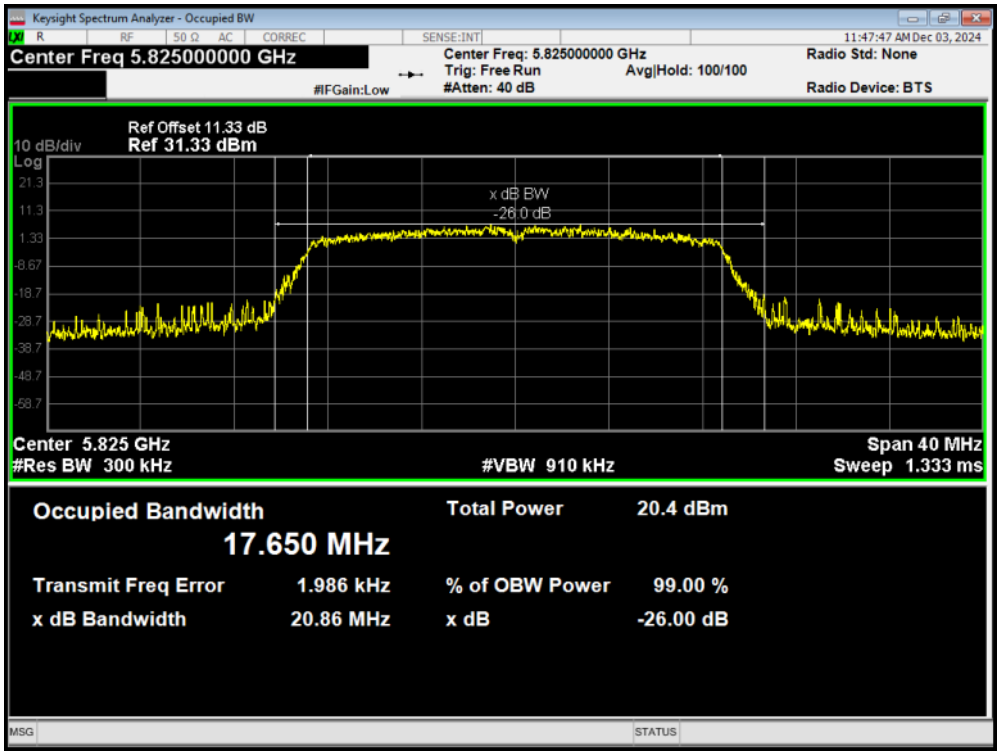
OBW 802.11n(HT20) 5745MHz



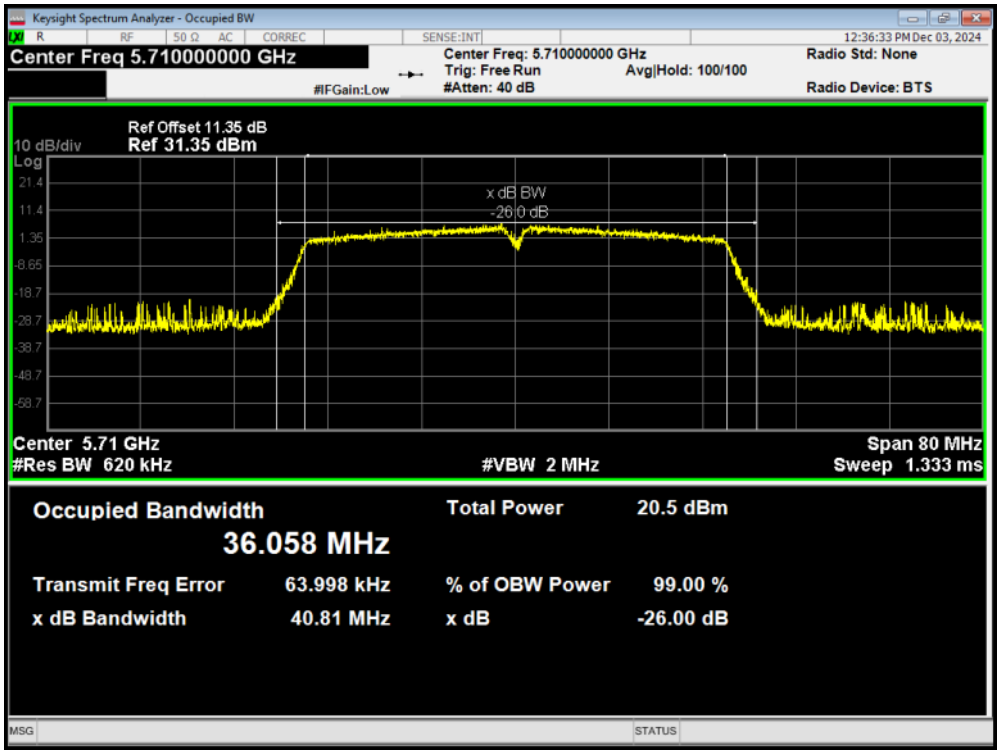
OBW 802.11n(HT20) 5785MHz



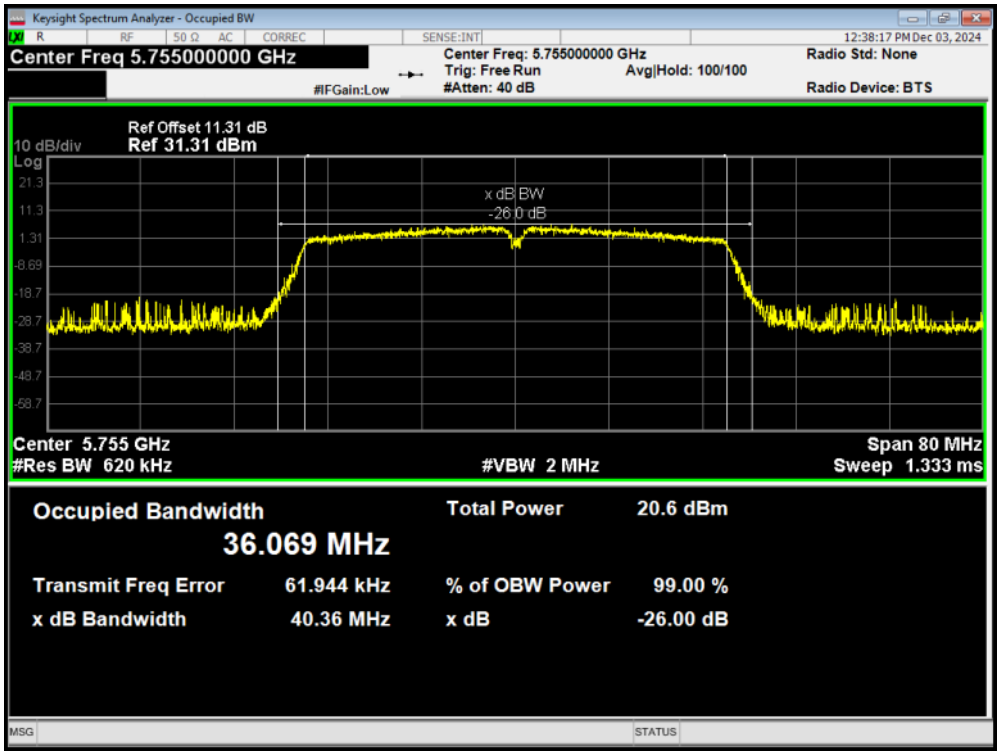
OBW 802.11n(HT20) 5825MHz



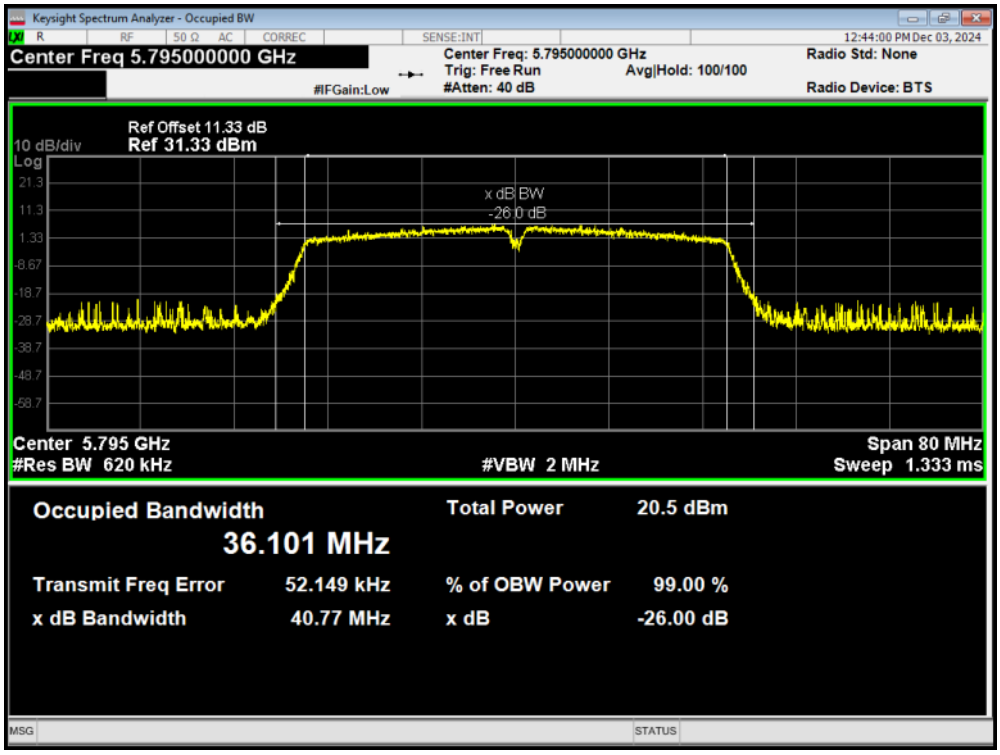
OBW 802.11n(HT40) 5710MHz



OBW 802.11n(HT40) 5755MHz



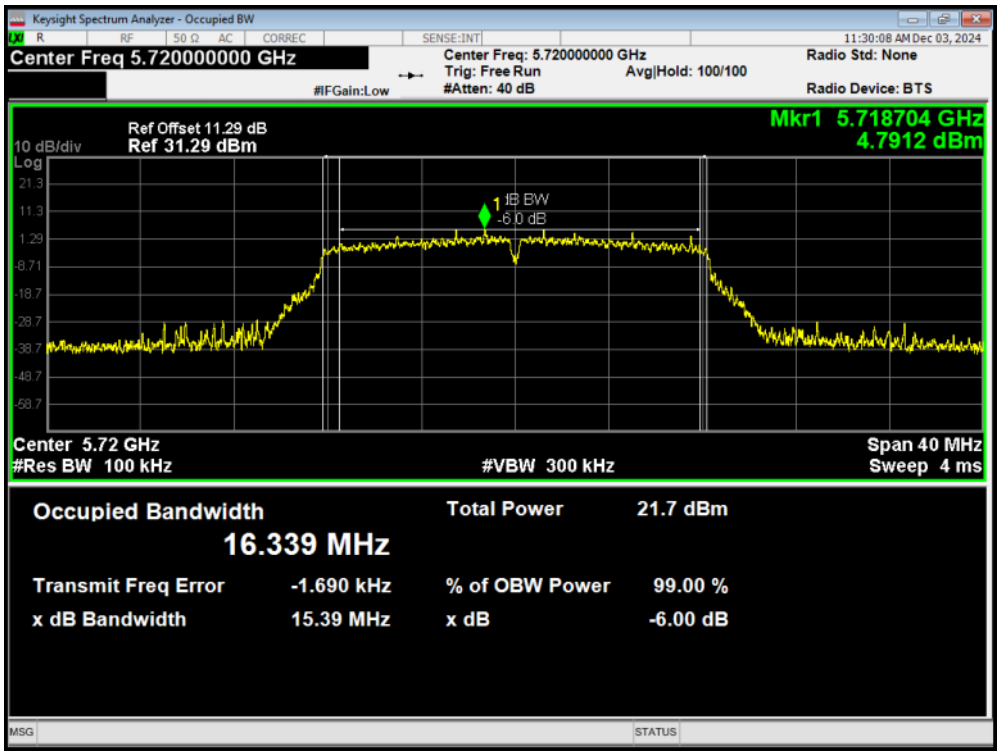
OBW 802.11n(HT40) 5795MHz



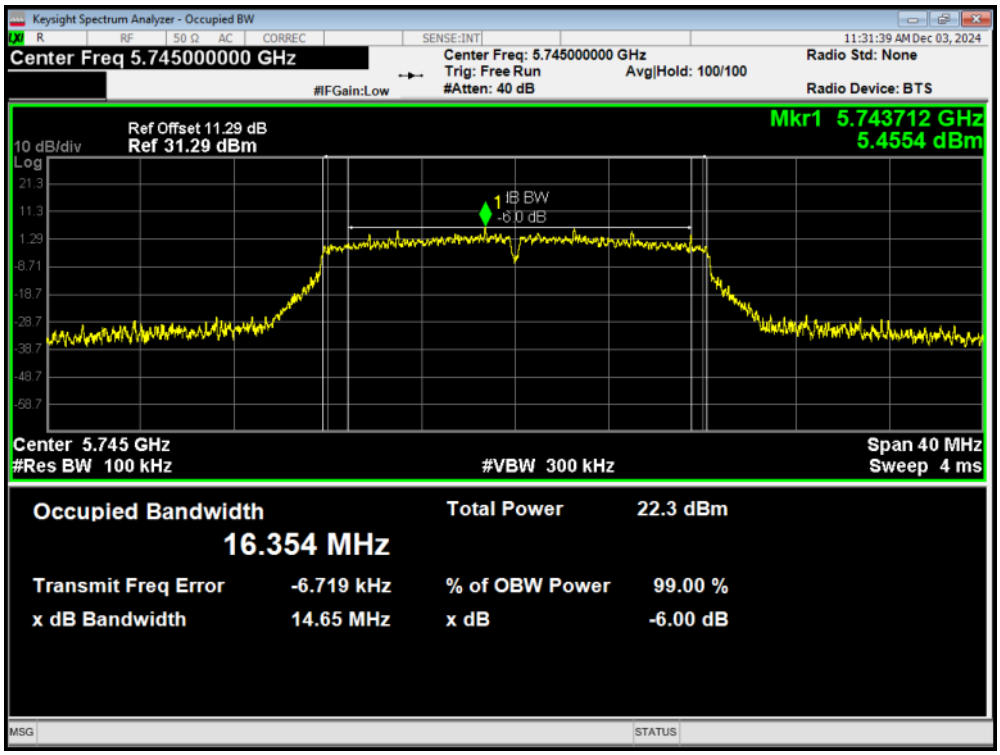
Minimum 6 dB bandwidth

U-NII-3

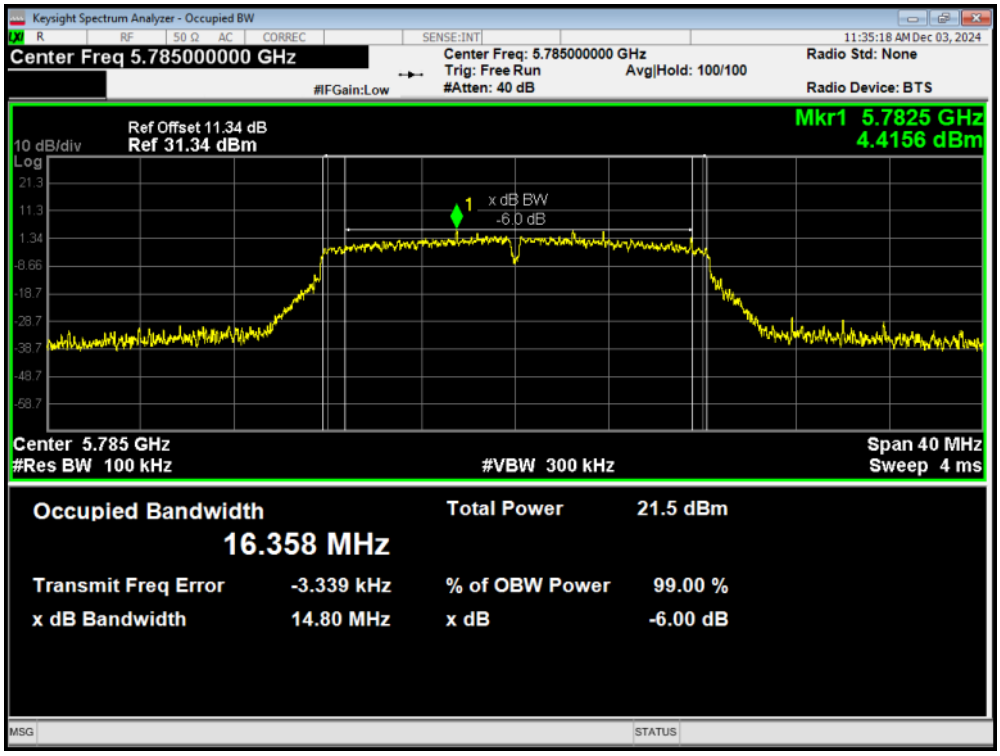
-6dB Bandwidth 802.11a 5720MHz



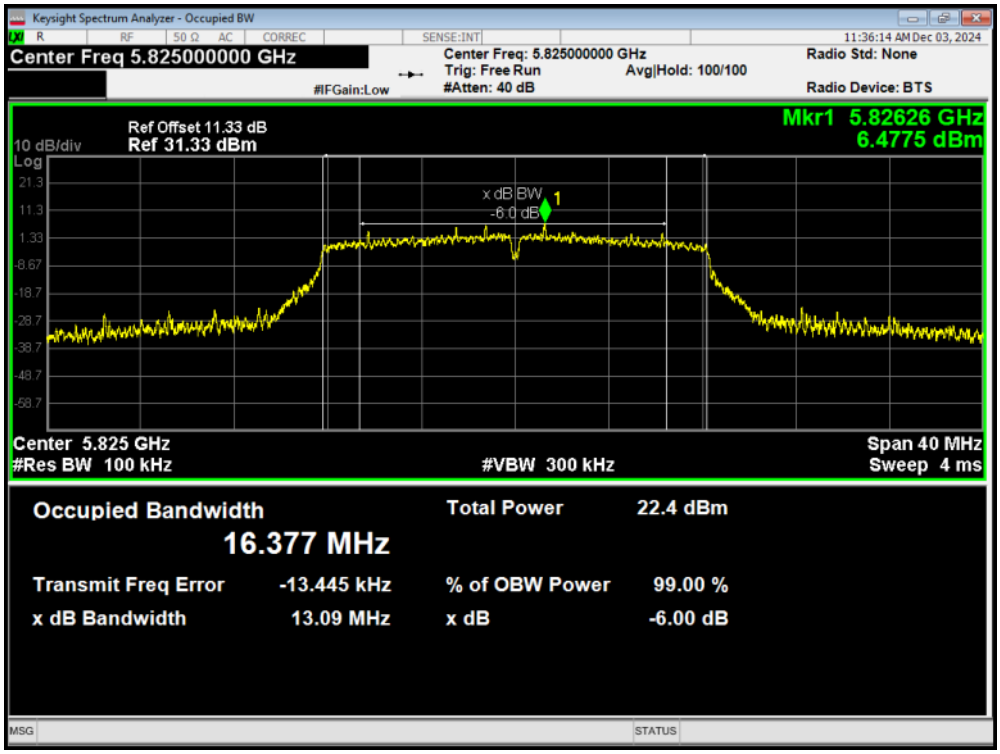
-6dB Bandwidth 802.11a 5745MHz



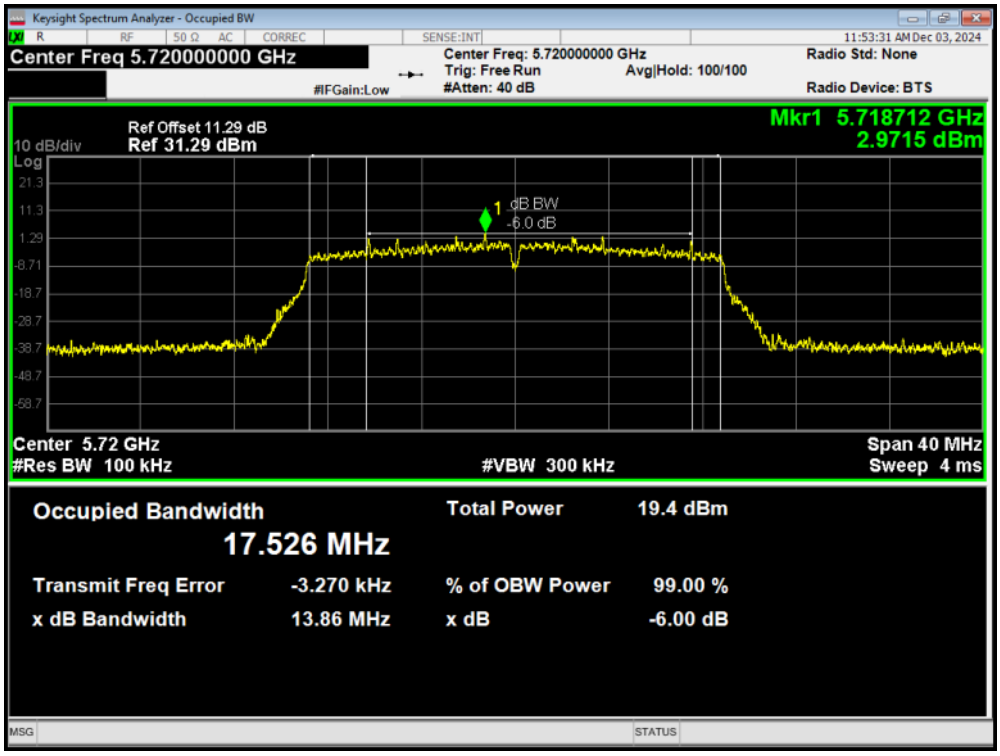
-6dB Bandwidth 802.11a 5785MHz



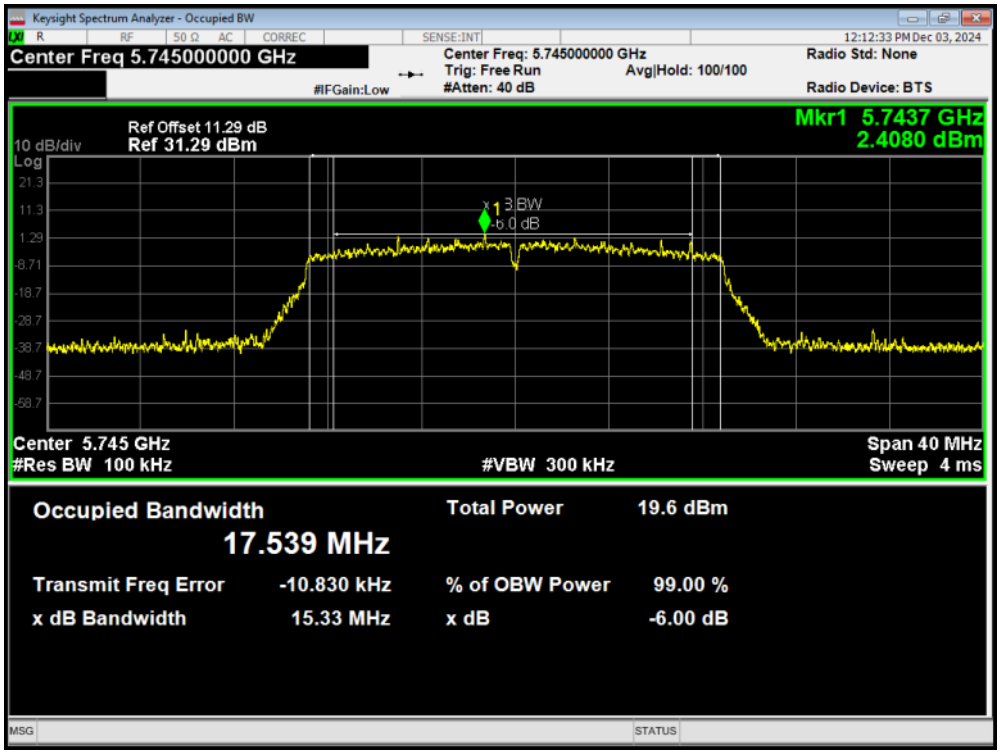
-6dB Bandwidth 802.11a 5825MHz



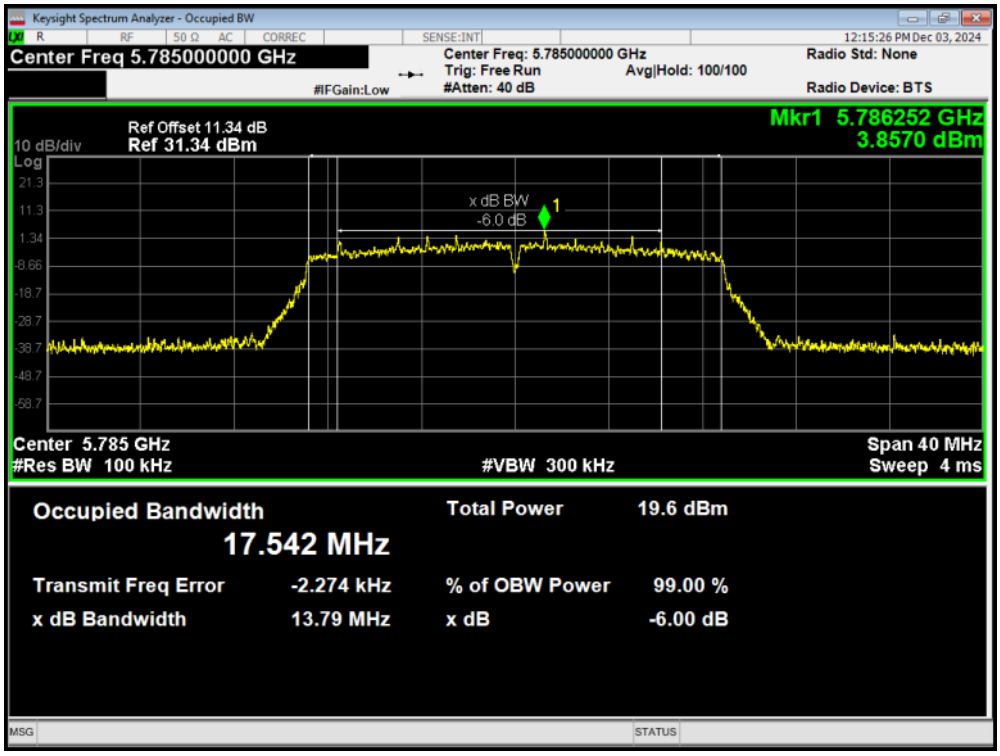
-6dB Bandwidth 802.11ac(VHT20) 5720MHz



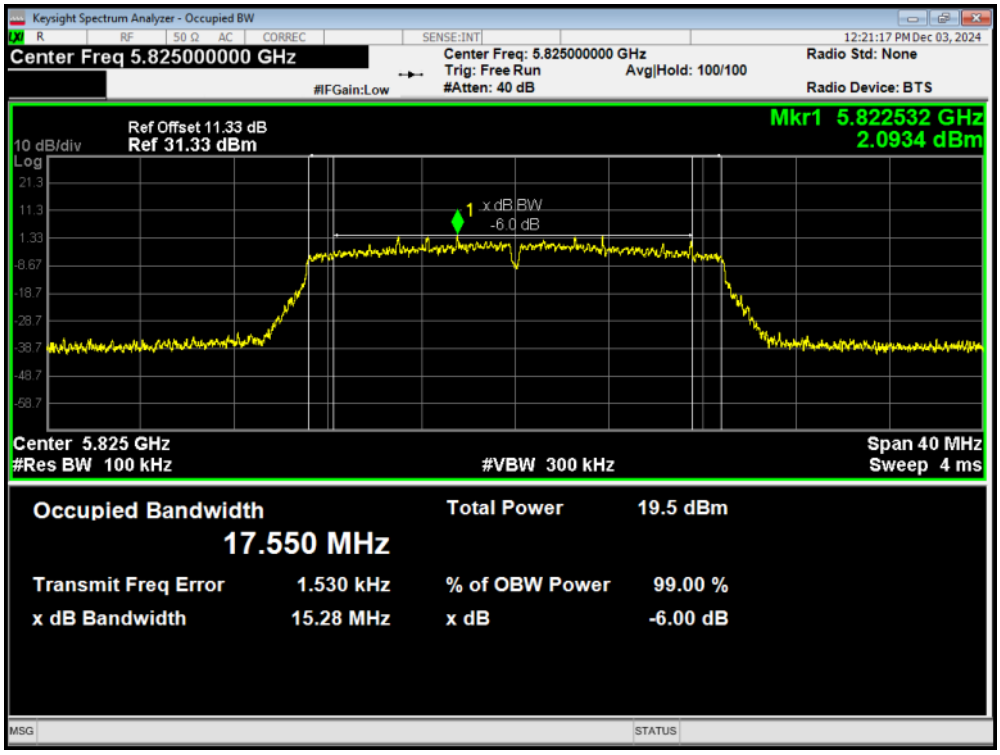
-6dB Bandwidth 802.11ac(VHT20) 5745MHz



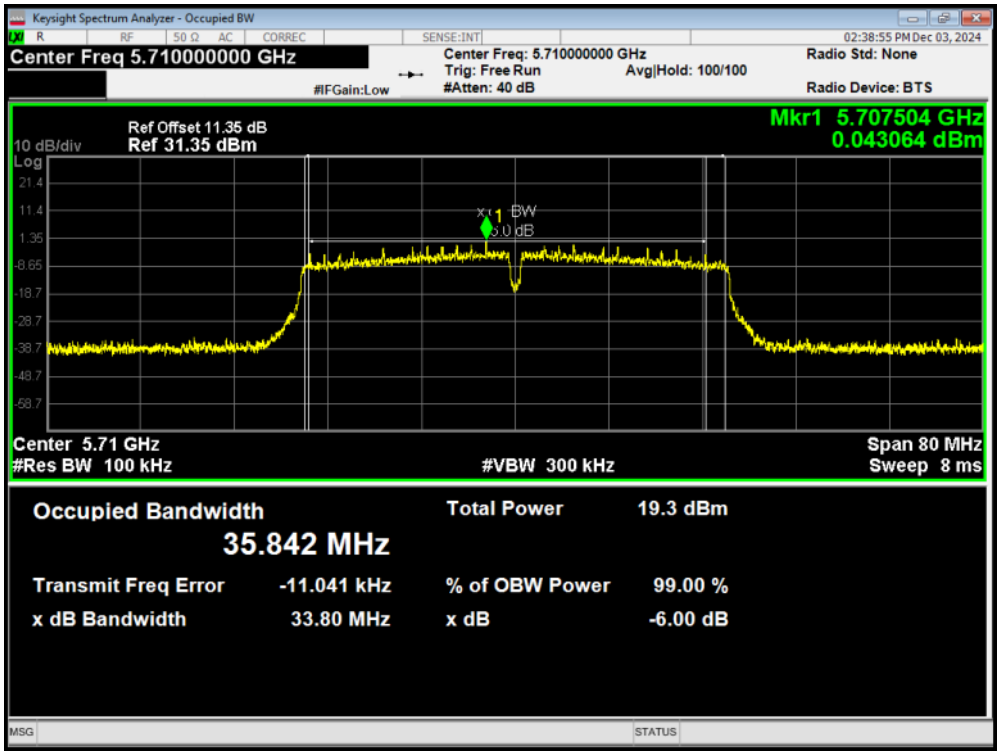
-6dB Bandwidth 802.11ac(VHT20) 5785MHz



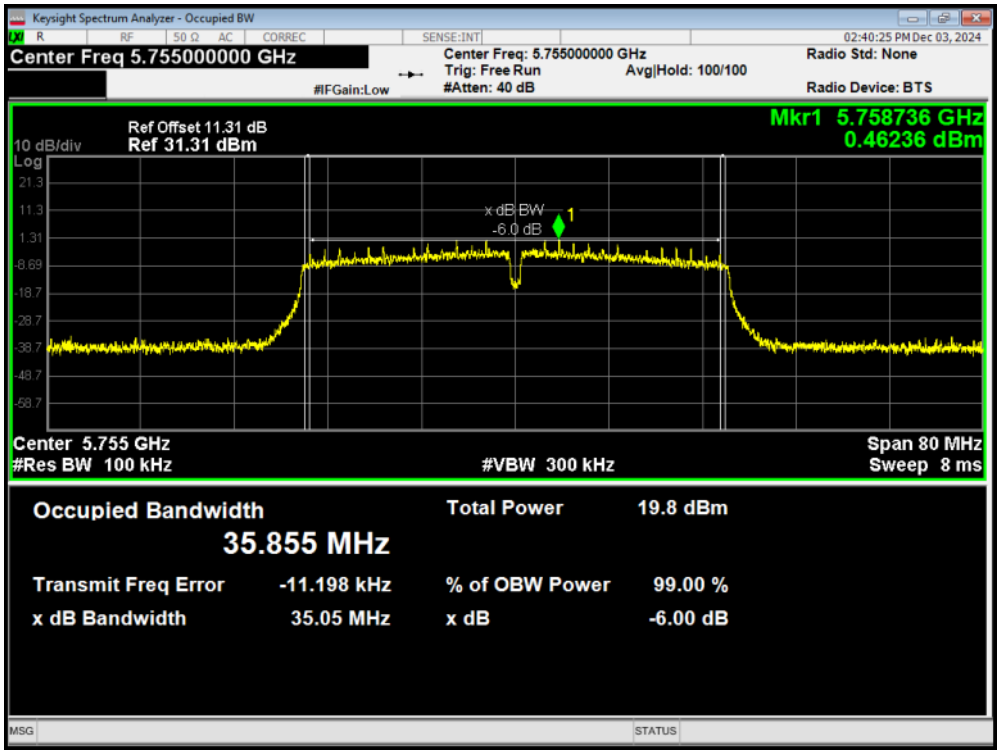
-6dB Bandwidth 802.11ac(VHT20) 5825MHz



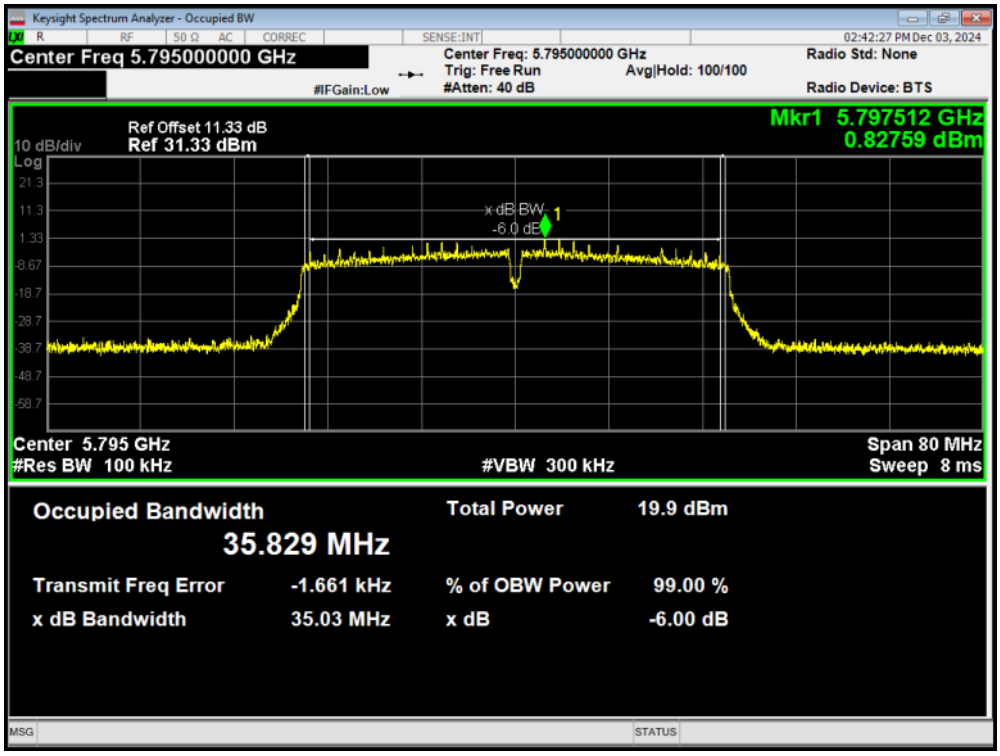
-6dB Bandwidth 802.11ac(VHT40) 5710MHz



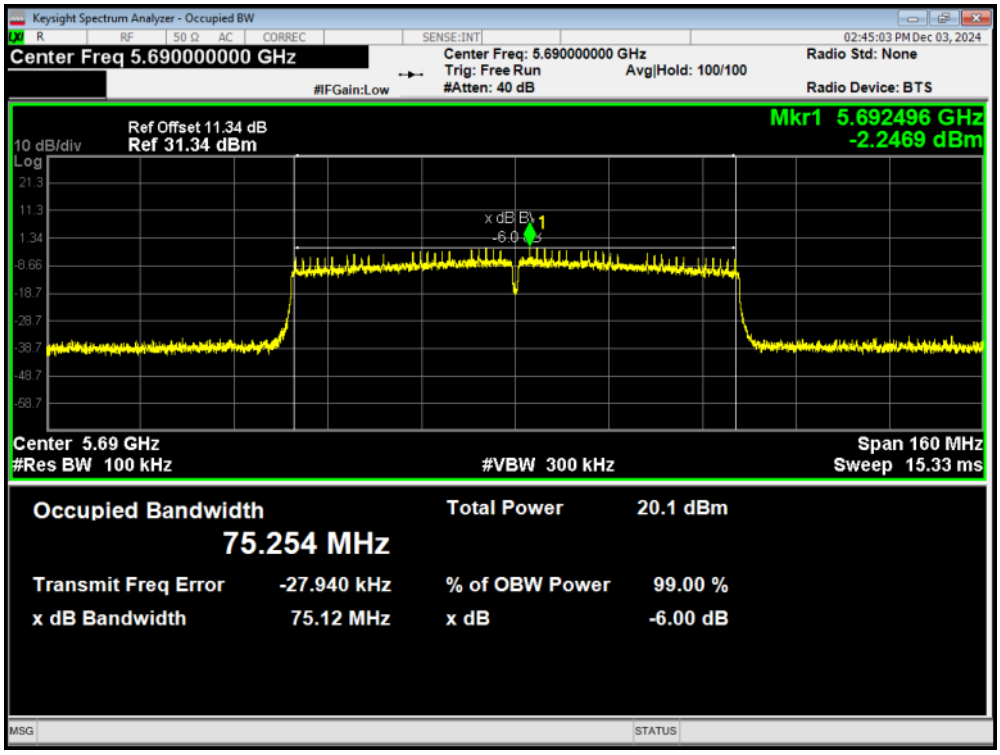
-6dB Bandwidth 802.11ac(VHT40) 5755MHz



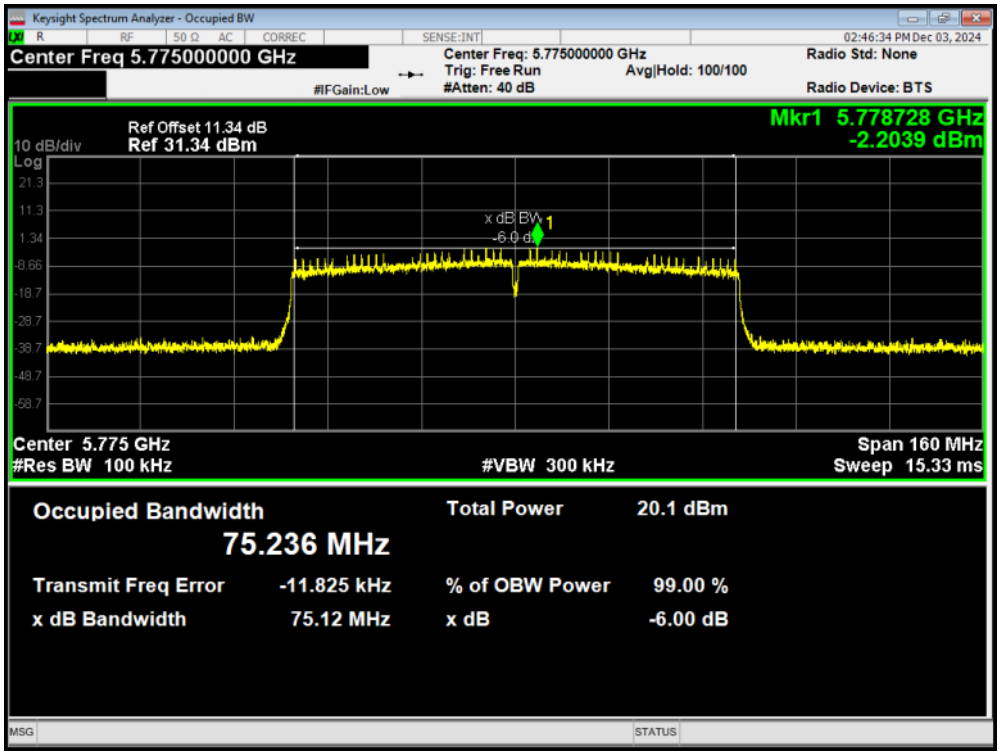
-6dB Bandwidth 802.11ac(VHT40) 5795MHz



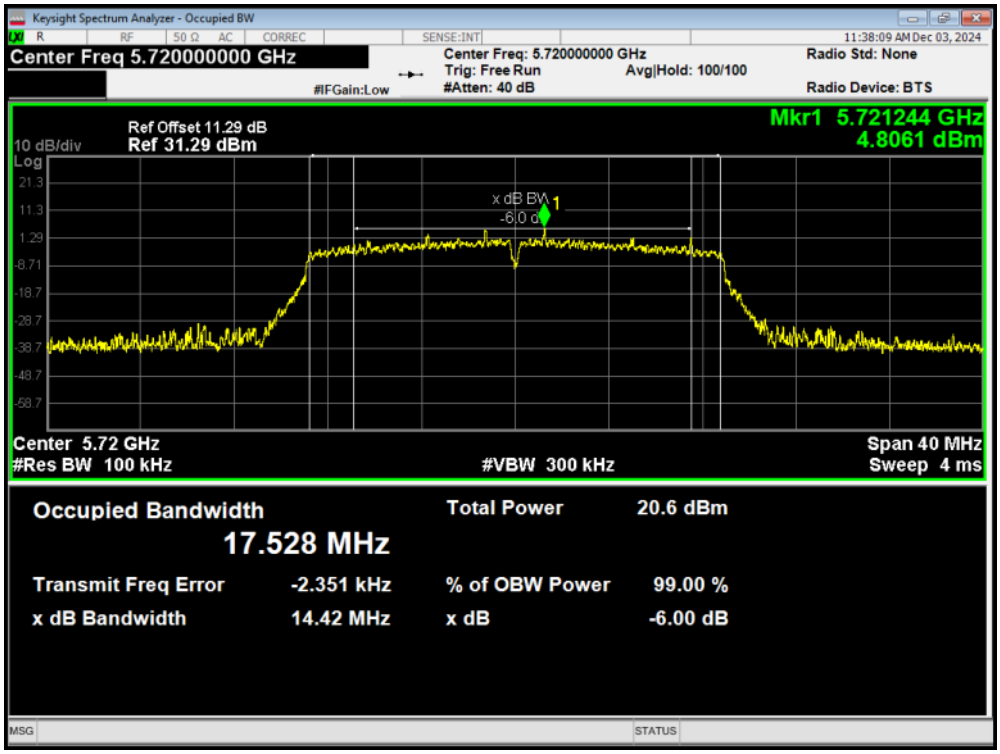
-6dB Bandwidth 802.11ac(VHT80) 5690MHz



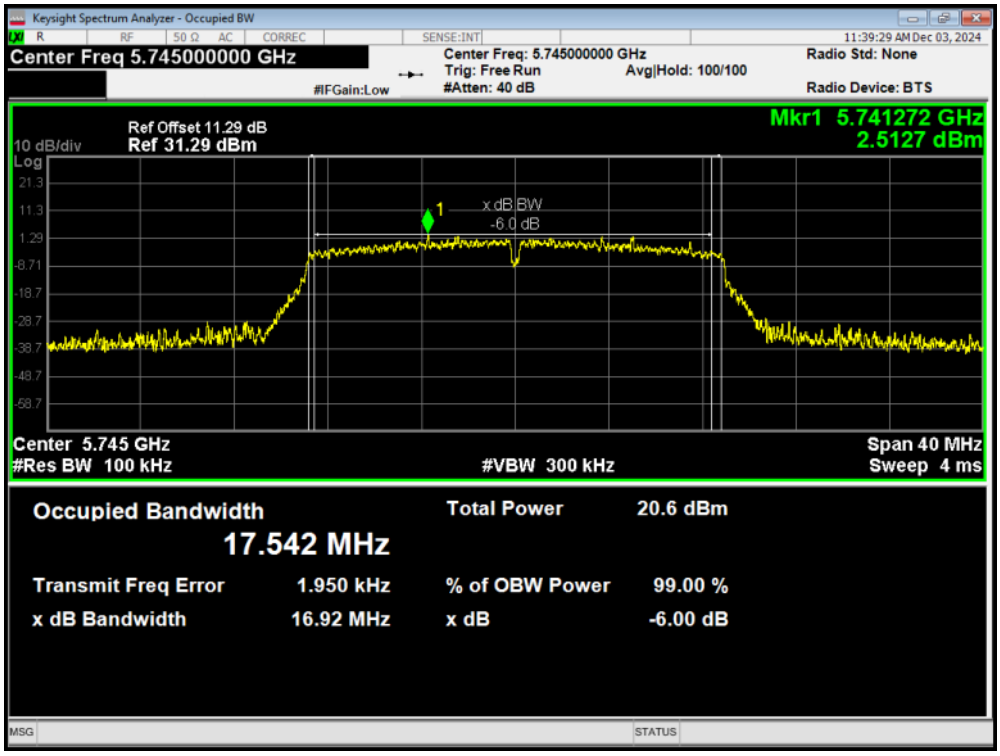
-6dB Bandwidth 802.11ac(VHT80) 5775MHz



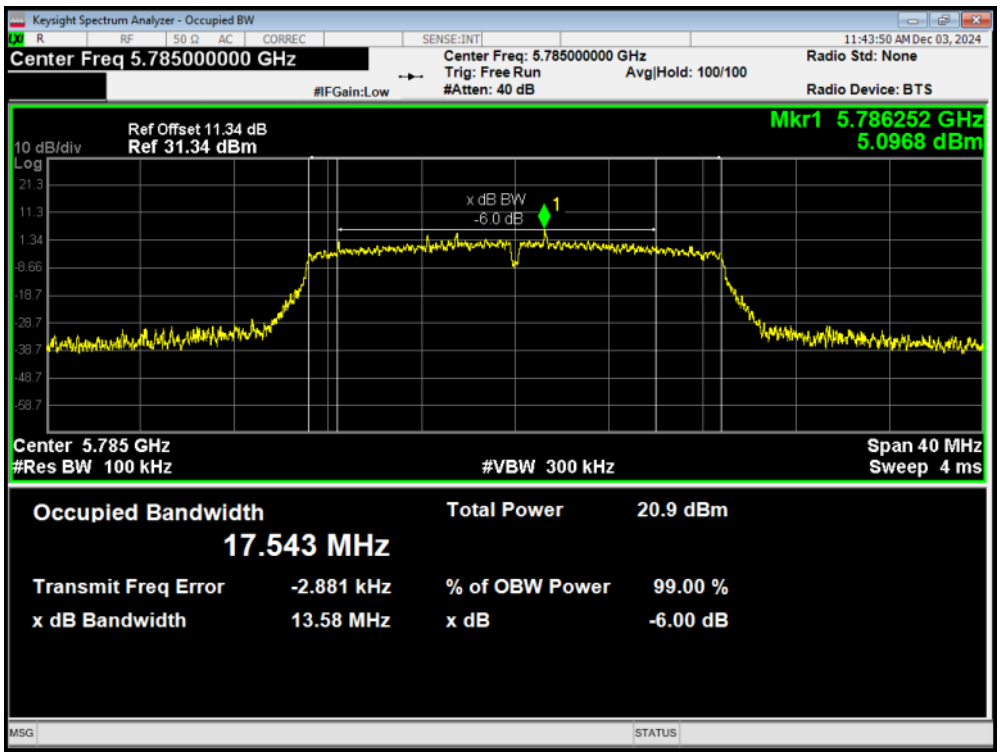
-6dB Bandwidth 802.11n(HT20) 5720MHz



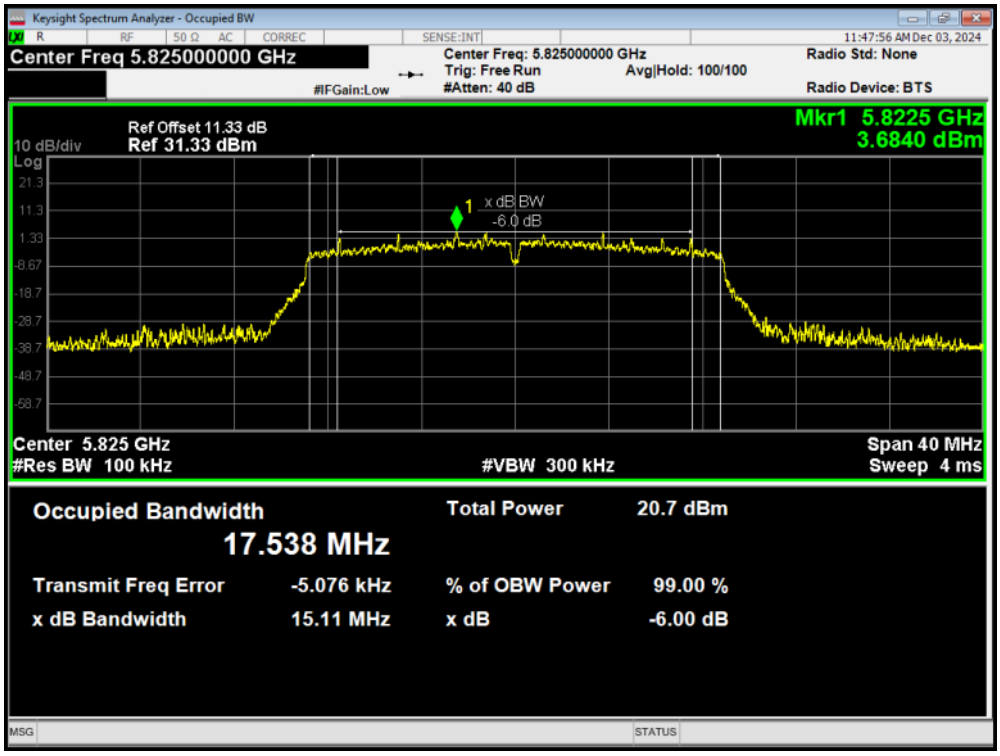
-6dB Bandwidth 802.11n(HT20) 5745MHz



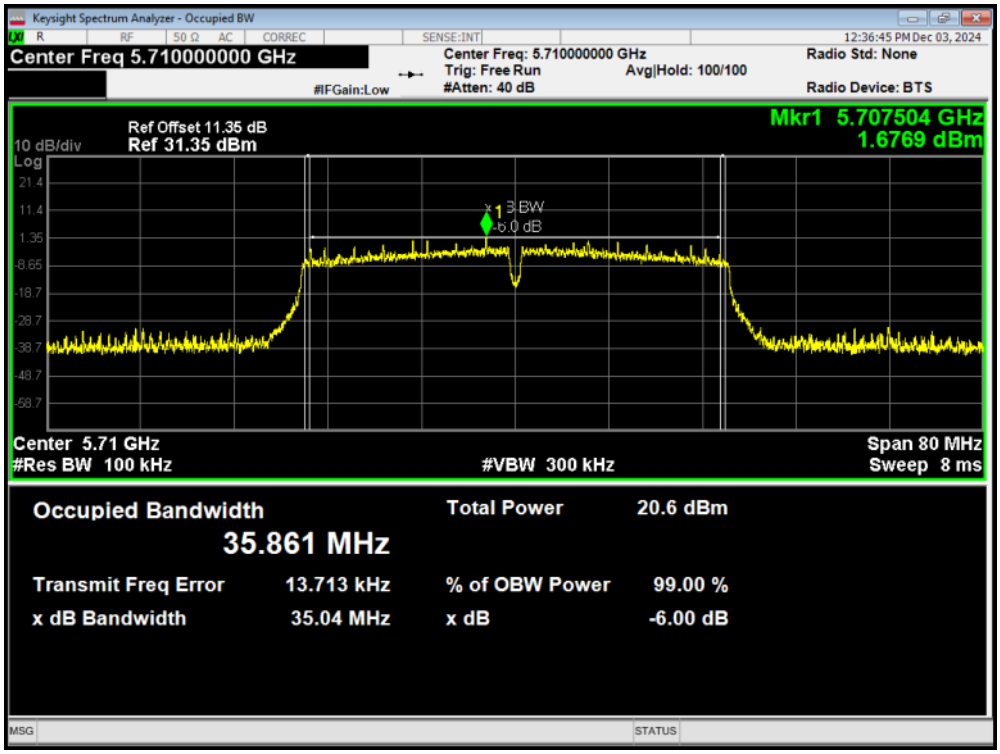
-6dB Bandwidth 802.11n(HT20) 5785MHz



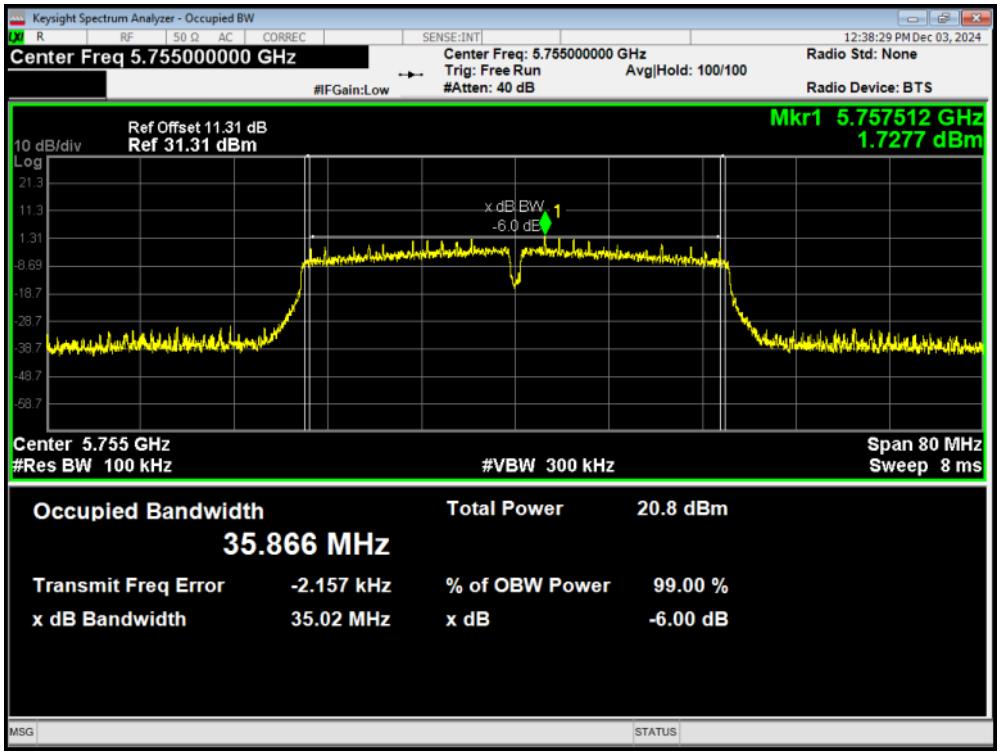
-6dB Bandwidth 802.11n(HT20) 5825MHz



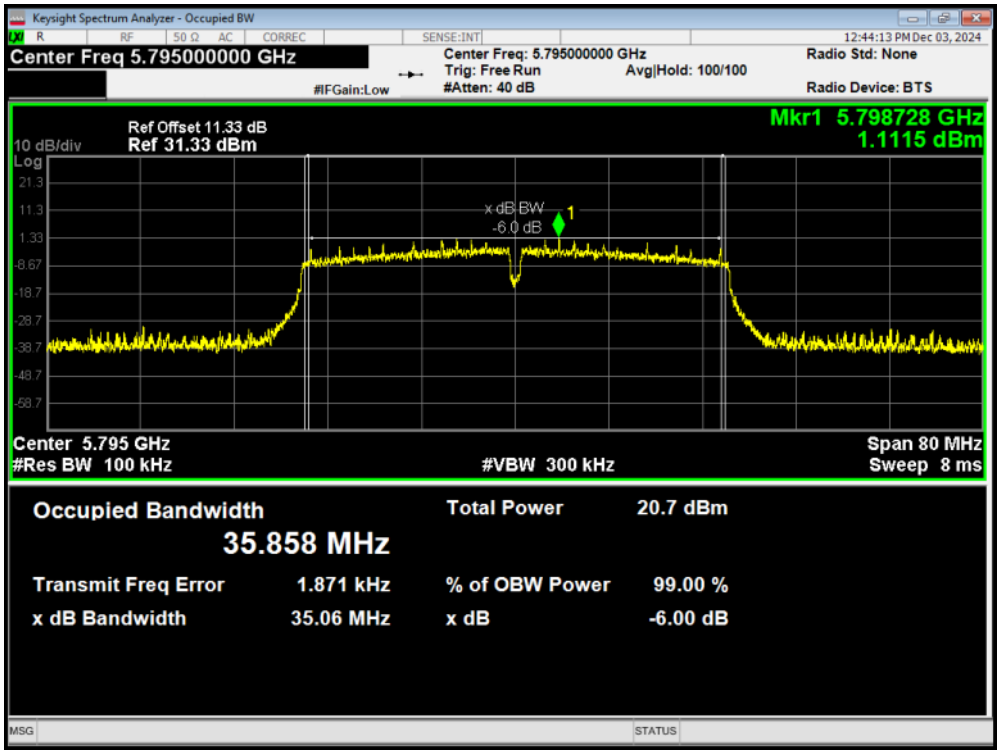
-6dB Bandwidth 802.11n(HT40) 5710MHz



-6dB Bandwidth 802.11n(HT40) 5755MHz



-6dB Bandwidth 802.11n(HT40) 5795MHz



5.2. Average Power Output

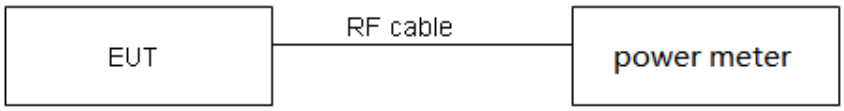
Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the average power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use Maximum average Conducted Output Power Level Method in KDB789033 for this test

Test Setup



Limits

Rule FCC Part 15.407(a)(1) / FCC Part 15.407(a) (2) / FCC Part 15.407(a) (3)
(1) For the band 5.15-5.25 GHz.
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 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.
(iii) For fixed point-to-point access points operating in the band 5.15-5.25 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 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. 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.
(iv) For 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.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.44 dB.

Test Results

Mode	Duty cycle	Duty cycle correction Factor (dB)
802.11a	0.970	0.13
802.11n HT20	0.967	0.14
802.11n HT40	0.939	0.27
802.11ac VHT20	0.968	0.14
802.11ac VHT40	0.937	0.28
802.11ac VHT80	0.878	0.57
802.11ac VHT160	0.970	0.13
Note: when Duty cycle≥0.98, Duty cycle correction Factor not required.		

U-NII-1

Network Standards	Carrier frequency (MHz)	Power Index
		Antenna 1
802.11a	36/5180	17.50
	40/5200	16.00
	48/5240	17.50
802.11n HT20	36/5180	16.00
	40/5200	16.00
	48/5240	16.00
802.11n HT40	38/5190	16.00
	46/5230	15.00
802.11ac VHT20	36/5180	15.00
	40/5200	15.00
	48/5240	15.00
802.11ac VHT40	38/5190	15.00
	46/5230	15.00
802.11ac VHT80	42/5210	15.00

U-NII-2A

Network Standards	Carrier frequency (MHz)	Power Index
		Antenna 1
802.11a	52/5260	17.50
	60/5300	17.50
	64/5320	16.50
802.11n HT20	52/5260	16.00
	60/5300	16.00
	64/5320	16.00
802.11n HT40	54/5270	16.00
	62/5310	16.00
802.11ac VHT20	52/5260	15.00
	60/5300	15.00
	64/5320	15.00
802.11ac VHT40	54/5270	15.00
	62/5310	15.00
802.11ac VHT80	58/5290	15.00

U-NII-2C

Network Standards	Carrier frequency (MHz)	Power Index
		Antenna 1
802.11a	100/5500	17.50
	120/5600	17.50
	140/5700	16.00
	144/5720	17.50
802.11n HT20	100/5500	16.00
	120/5600	16.00
	140/5700	15.00
	144/5720	16.00
802.11n HT40	102/5510	15.00
	118/5590	16.00
	134/5670	16.00
	142/5710	16.00
802.11ac VHT20	100/5500	15.00
	120/5600	15.00
	140/5700	15.00
	144/5720	15.00
802.11ac VHT40	102/5510	15.00
	118/5590	15.00
	134/5670	15.00
	142/5710	15.00
802.11ac VHT80	122/5610	15.00
	138/5690	15.00

U-NII-3

Network Standards	Carrier frequency (MHz)	Power Index
		Antenna 1
802.11a	144/5720	17.50
	149/5745	17.50
	157/5785	16.50
	165/5825	17.50
802.11n HT20	144/5720	16.00
	149/5745	16.00
	157/5785	16.00
	165/5825	16.00
802.11n HT40	142/5710	16.00
	151/5755	16.00
	159/5795	16.00
802.11ac VHT20	144/5720	15.00
	149/5745	15.00
	157/5785	15.00
	165/5825	15.00
802.11ac VHT40	142/5710	15.00
	151/5755	15.00
	159/5795	15.00
802.11ac VHT80	138/5690	15.00
	155/5775	15.00

Test Mode		Channel/ Frequency (MHz)	B=26 dB bandwidth (MHz)	Limit 11 dBm + 10 log B (dBm)	Final Limit (dBm)
U-NII-2A	802.11a	52/5260	19.73	23.95 <24	23.95
		60/5300	20.07	24.03 >24	24.00
		64/5320	19.94	24.00 >24	24.00
	802.11n HT20	52/5260	20.26	24.07 >24	24.00
		60/5300	20.28	24.07 >24	24.00
		64/5320	20.23	24.06 >24	24.00
	802.11n HT40	54/5270	41.02	27.13 >24	24.00
		62/5310	40.60	27.09 >24	24.00
	802.11ac VHT20	52/5260	20.53	24.12 >24	24.00
		60/5300	20.41	24.10 >24	24.00
		64/5320	20.36	24.09 >24	24.00
	802.11ac VHT40	54/5270	40.55	27.08 >24	24.00
		62/5310	41.20	27.15 >24	24.00
	802.11ac VHT80	58/5290	80.93	30.08 >24	24.00
U-NII-2C	802.11a	100/5500	20.37	24.09 >24	24.00
		120/5600	19.95	24.00 >24	24.00
		140/5700	20.03	24.02 >24	24.00
		144/5720	19.92	23.99 >24	23.99
	802.11n HT20	100/5500	20.32	24.08 >24	24.00
		120/5600	20.88	24.20 >24	24.00
		140/5700	20.47	24.11 >24	24.00
		144/5720	20.37	24.09 >24	24.00
	802.11n HT40	102/5510	40.48	27.07 >24	24.00
		118/5590	40.65	27.09 >24	24.00
		134/5670	40.82	27.11 >24	24.00
		142/5710	41.09	27.14 >24	24.00
	802.11ac VHT20	100/5500	20.52	24.12 >24	24.00
		120/5600	20.39	24.09 >24	24.00
		140/5700	20.37	24.09 >24	24.00
		144/5720	20.23	24.06 >24	24.00
	802.11ac VHT40	102/5510	41.31	27.16 >24	24.00
		118/5590	40.92	27.12 >24	24.00
		134/5670	40.73	27.10 >24	24.00
		142/5710	40.94	27.12 >24	24.00
	802.11ac VHT80	122/5610	80.69	30.07 >24	24.00
		138/5690	81.05	30.09 >24	24.00
Note: 250mW=24dBm					

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Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	16.77	16.90	24.00	PASS
	40/5200	15.08	15.21	24.00	PASS
	48/5240	16.54	16.67	24.00	PASS
802.11n HT20	36/5180	15.05	15.19	24.00	PASS
	40/5200	15.04	15.19	24.00	PASS
	48/5240	14.84	14.99	24.00	PASS
802.11n HT40	38/5190	14.79	15.06	24.00	PASS
	46/5230	14.85	15.12	24.00	PASS
802.11ac VHT20	36/5180	13.79	13.93	24.00	PASS
	40/5200	13.90	14.04	24.00	PASS
	48/5240	13.73	13.87	24.00	PASS
802.11ac VHT40	38/5190	13.69	13.97	24.00	PASS
	46/5230	13.62	13.91	24.00	PASS
802.11ac VHT80	42/5210	13.69	14.25	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2A

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	52/5260	16.60	16.73	23.95	PASS
	60/5300	16.50	16.63	24.00	PASS
	64/5320	15.43	15.56	24.00	PASS
802.11n HT20	52/5260	15.02	15.17	24.00	PASS
	60/5300	14.93	15.08	24.00	PASS
	64/5320	14.80	14.95	24.00	PASS
802.11n HT40	54/5270	14.72	14.99	24.00	PASS
	62/5310	14.87	15.14	24.00	PASS
802.11ac VHT20	52/5260	13.99	14.13	24.00	PASS
	60/5300	13.88	14.02	24.00	PASS
	64/5320	13.91	14.05	24.00	PASS
802.11ac VHT40	54/5270	13.84	14.12	24.00	PASS
	62/5310	13.91	14.19	24.00	PASS
802.11ac VHT80	58/5290	13.84	14.41	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2C

Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	100/5500	16.50	16.63	24.00	PASS
	120/5600	16.41	16.54	24.00	PASS
	140/5700	14.80	14.93	24.00	PASS
	144/5720	15.13	15.26	23.99	PASS
802.11n HT20	100/5500	14.83	14.97	24.00	PASS
	120/5600	14.67	14.81	24.00	PASS
	140/5700	13.43	13.58	24.00	PASS
	144/5720	13.68	13.82	24.00	PASS
802.11n HT40	102/5510	13.77	14.04	24.00	PASS
	118/5590	14.57	14.84	24.00	PASS
	134/5670	14.21	14.48	24.00	PASS
	142/5710	14.03	14.30	24.00	PASS
802.11ac VHT20	100/5500	13.95	14.09	24.00	PASS
	120/5600	13.60	13.74	24.00	PASS
	140/5700	13.42	13.56	24.00	PASS
	144/5720	12.68	12.82	24.00	PASS
802.11ac VHT40	102/5510	13.58	13.87	24.00	PASS
	118/5590	13.53	13.81	24.00	PASS
	134/5670	13.37	13.65	24.00	PASS
	142/5710	13.11	13.39	24.00	PASS
802.11ac VHT80	122/5610	13.18	13.75	24.00	PASS
	138/5690	12.85	13.41	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

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Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	144/5720	7.44	7.57	30.00	PASS
	149/5745	16.33	16.46	30.00	PASS
	157/5785	15.27	15.40	30.00	PASS
	165/5825	16.60	16.73	30.00	PASS
802.11n HT20	144/5720	6.68	6.83	30.00	PASS
	149/5745	14.53	14.68	30.00	PASS
	157/5785	14.64	14.79	30.00	PASS
	165/5825	14.62	14.77	30.00	PASS
802.11n HT40	142/5710	1.64	1.91	30.00	PASS
	151/5755	14.41	14.68	30.00	PASS
	159/5795	13.86	14.13	30.00	PASS
802.11ac VHT20	144/5720	5.56	5.70	30.00	PASS
	149/5745	13.47	13.61	30.00	PASS
	157/5785	13.58	13.73	30.00	PASS
	165/5825	13.49	13.63	30.00	PASS
802.11ac VHT40	142/5710	0.50	0.79	30.00	PASS
	151/5755	13.31	13.59	30.00	PASS
	159/5795	13.45	13.73	30.00	PASS
802.11ac VHT80	138/5690	-2.70	-2.13	30.00	PASS
	155/5775	13.30	13.86	30.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

5.3. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

1. Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in 5.6.

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more that 10°C, and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

2. Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15°C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
c) Measure the frequency at each of the frequencies specified in 5.6.
d) Repeat the above procedure at 85% and 115% of the nominal supply voltage.

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.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936Hz

Test Results

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
3.8	-30	5199.995513	5199.994763	5199.986904	5199.984984
3.8	-20	5199.992807	5199.989506	5199.978674	5199.975016
3.8	-10	5199.988959	5199.983294	5199.968847	5199.967431
3.8	0	5199.987484	5199.983627	5199.973370	5199.967881
3.8	10	5199.983722	5199.981442	5199.969786	5199.967293
3.8	20	5199.976328	5199.976584	5199.968592	5199.964586
3.8	30	5199.966468	5199.973801	5199.967384	5199.958626
3.8	40	5199.961032	5199.964967	5199.961744	5199.954925
3.8	50	5199.959651	5199.960577	5199.960736	5199.949023
3.3	20	5199.956147	5199.952699	5199.956154	5199.942527
4.35	20	5199.947821	5199.944482	5199.948416	5199.932759
Max. ΔMHz		-0.052179	-0.055518	-0.051584	-0.067241
PPM		-10.034423	-10.676538	-9.920000	-12.930962

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
3.8	-30	5300.002576	5299.997952	5299.988018	5299.982607
3.8	-20	5299.999229	5299.989513	5299.978776	5299.978967
3.8	-10	5299.993674	5299.986800	5299.977257	5299.974039
3.8	0	5299.991691	5299.982124	5299.970387	5299.977726
3.8	10	5299.988158	5299.977007	5299.969895	5299.969224
3.8	20	5299.981274	5299.971726	5299.966439	5299.963387
3.8	30	5299.978055	5299.964559	5299.964361	5299.955115
3.8	40	5299.968769	5299.958599	5299.959059	5299.947918
3.8	50	5299.964031	5299.952897	5299.954723	5299.938296
3.3	20	5299.956622	5299.947604	5299.947707	5299.935272
4.35	20	5299.953471	5299.945429	5299.946435	5299.933099
Max. ΔMHz		-0.046529	-0.054571	-0.053565	-0.066901
PPM		-8.779057	-10.296415	-10.106604	-12.622830

Voltage (V)	Temperature (°C)	U-NII-2C Test Results			
		5580MHz			
		1min	2min	5min	10min
3.8	-30	5580.009772	5580.001211	5579.999299	5579.997968
3.8	-20	5580.008408	5579.991694	5579.997481	5579.995671
3.8	-10	5579.999205	5579.987781	5579.987587	5579.995505
3.8	0	5580.006344	5579.988825	5579.989539	5579.994714
3.8	10	5580.006319	5579.985742	5579.980813	5579.992111
3.8	20	5580.003170	5579.983778	5579.979772	5579.983245
3.8	30	5580.000094	5579.977244	5579.969782	5579.981124
3.8	40	5579.993992	5579.973435	5579.964052	5579.980631
3.8	50	5579.988451	5579.970298	5579.956376	5579.972163
3.3	20	5579.987350	5579.960445	5579.952147	5579.969744
4.35	20	5579.979966	5579.957642	5579.949609	5579.960787
Max. ΔMHz		-0.020034	-0.042358	-0.050391	-0.039213
PPM		-3.590323	-7.591039	-9.030645	-7.027419

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
3.8	-30	5784.993524	5784.984318	5784.983810	5784.976835
3.8	-20	5784.992551	5784.975078	5784.982745	5784.970507
3.8	-10	5784.992488	5784.974137	5784.982071	5784.964183
3.8	0	5784.990269	5784.972379	5784.982194	5784.969585
3.8	10	5784.983493	5784.965767	5784.972651	5784.966007
3.8	20	5784.975185	5784.959609	5784.972174	5784.963635
3.8	30	5784.972139	5784.951001	5784.971725	5784.960072
3.8	40	5784.968728	5784.950439	5784.962995	5784.950764
3.8	50	5784.962120	5784.940457	5784.960413	5784.949387
3.3	20	5784.959420	5784.933046	5784.951798	5784.942679
4.35	20	5784.950610	5784.924134	5784.942972	5784.932981
Max. ΔMHz		-0.049390	-0.075866	-0.057028	-0.067019
PPM		-8.537597	-13.114261	-9.857908	-11.584961

5.4. Power Spectral Density

Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

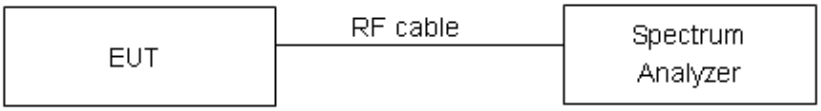
Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Set RBW = 1MHz, VBW =3MHz for the band 5.150-5.250GHz, 5.250-5.350GHz, 5.470-5.725GHz.
Set RBW = 470kHz, VBW =1.5MHz for the band 5.725-5.850GHz

The conducted PSD is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test setup



Limits

Rule FCC Part 15.407(a)(1)/ FCC Part 15.407(a)(2) / FCC Part 15.407(a)(3)
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. 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.
For 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.

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. 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.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band. If transmittingantennas 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.

Frequency Bands/GHz	Limits
5.15-5.25	11dBm/MHz
5.25-5.35 and 5.47-5.725	11dBm/MHz
5.725-5.85	30dBm/500kHz

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.75dB.

Test Results:

U-NII-1

Mode	Channel/ Frequency (MHz)	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36/5180	7.22	7.35	11	PASS
	40/5200	4.88	5.01	11	PASS
	48/5240	6.44	6.57	11	PASS
802.11n HT20	36/5180	5.40	5.54	11	PASS
	40/5200	4.66	4.80	11	PASS
	48/5240	4.87	5.01	11	PASS
802.11n HT40	38/5190	2.62	2.89	11	PASS
	46/5230	2.27	2.54	11	PASS
802.11ac VHT20	36/5180	4.24	4.38	11	PASS
	40/5200	3.86	4.00	11	PASS
	48/5240	3.86	4.00	11	PASS
802.11ac VHT40	38/5190	1.09	1.37	11	PASS
	46/5230	1.52	1.80	11	PASS
802.11ac VHT80	42/5210	-2.31	-1.74	11	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor					

U-NII-2A

Mode	Channel /Frequency (MHz)	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52/5260	7.35	7.48	11	PASS
	60/5300	6.95	7.08	11	PASS
	64/5320	5.83	5.96	11	PASS
802.11n HT20	52/5260	5.44	5.58	11	PASS
	60/5300	5.20	5.34	11	PASS
	64/5320	5.33	5.47	11	PASS
802.11n HT40	54/5270	2.15	2.42	11	PASS
	62/5310	2.14	2.41	11	PASS
802.11ac VHT20	52/5260	4.14	4.28	11	PASS
	60/5300	4.06	4.20	11	PASS
	64/5320	4.54	4.68	11	PASS
802.11ac VHT40	54/5270	1.35	1.63	11	PASS
	62/5310	1.45	1.73	11	PASS
802.11ac VHT80	58/5290	-1.90	-1.33	11	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor					

U-NII-2C

Mode	Channel /Frequency (MHz)	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100/5500	7.01	7.14	11	PASS
	120/5600	6.71	6.84	11	PASS
	140/5700	5.21	5.34	11	PASS
	144/5720	7.23	7.36	11	PASS
802.11n HT20	100/5500	5.14	5.28	11	PASS
	120/5600	4.94	5.08	11	PASS
	140/5700	3.66	3.80	11	PASS
	144/5720	4.98	5.12	11	PASS
802.11n HT40	102/5510	1.11	1.38	11	PASS
	118/5590	1.84	2.11	11	PASS
	134/5670	1.83	2.10	11	PASS
	142/5710	1.87	2.14	11	PASS
802.11ac VHT20	100/5500	4.23	4.37	11	PASS
	120/5600	3.95	4.09	11	PASS
	140/5700	3.82	3.96	11	PASS
	144/5720	3.74	3.88	11	PASS
802.11ac VHT40	102/5510	1.06	1.34	11	PASS
	118/5590	0.58	0.86	11	PASS
	134/5670	0.48	0.76	11	PASS
	142/5710	0.55	0.83	11	PASS
802.11ac VHT80	122/5610	-2.09	-1.52	11	PASS
	138/5690	-2.52	-1.95	11	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor					

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Mode	Channel /Frequency (MHz)	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	144/5720	0.73	1.13	30	PASS
	149/5745	3.23	3.63	30	PASS
	157/5785	2.52	2.92	30	PASS
	165/5825	3.72	4.12	30	PASS
802.11n HT20	144/5720	-0.67	-0.26	30	PASS
	149/5745	1.76	2.17	30	PASS
	157/5785	1.76	2.17	30	PASS
	165/5825	1.51	1.92	30	PASS
802.11n HT40	142/5710	-4.91	-4.37	30	PASS
	151/5755	-1.80	-1.26	30	PASS
	159/5795	-1.49	-0.95	30	PASS
802.11ac VHT20	144/5720	-1.94	-1.53	30	PASS
	149/5745	0.33	0.74	30	PASS
	157/5785	0.50	0.91	30	PASS
	165/5825	0.64	1.05	30	PASS
802.11ac VHT40	142/5710	-6.64	-6.09	30	PASS
	151/5755	-2.83	-2.28	30	PASS
	159/5795	-2.61	-2.06	30	PASS
802.11ac VHT80	138/5690	-10.01	-9.17	30	PASS
	155/5775	-6.05	-5.21	30	PASS
Note: PSD=Read Value+Duty cycle correction factor +10*log(500/470)					

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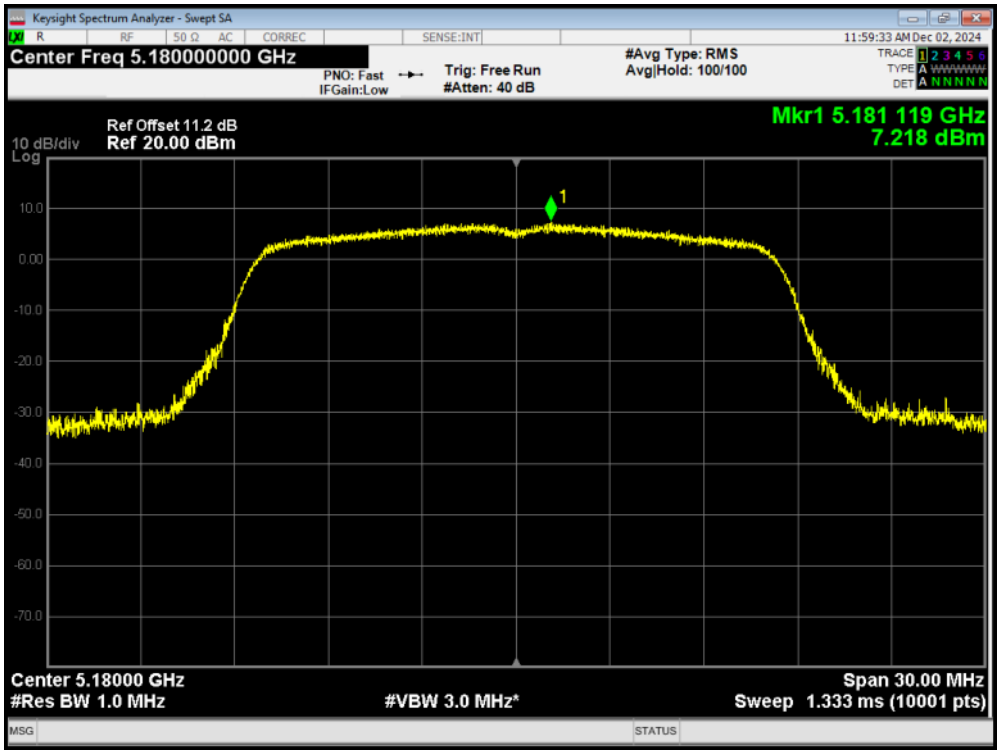
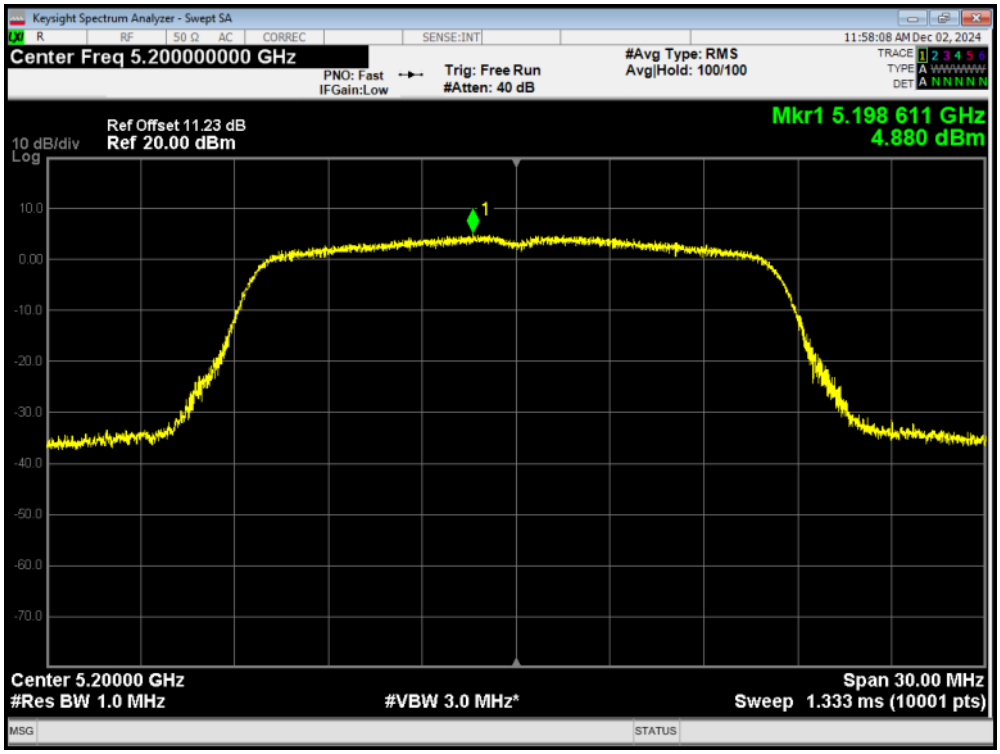
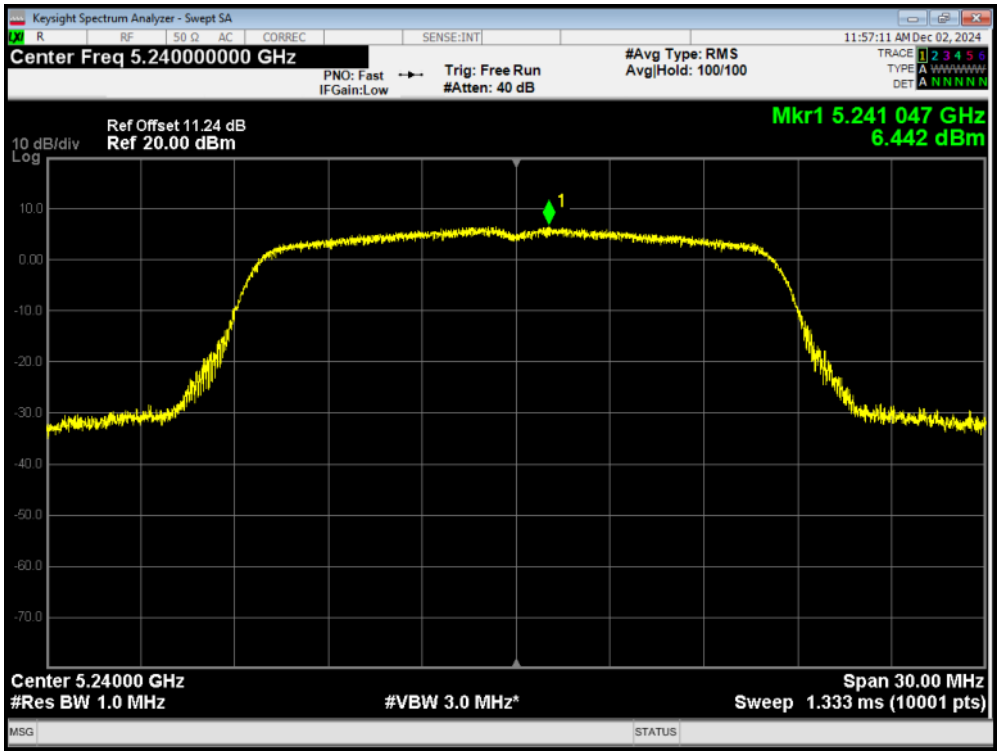
PSD 802.11a 5180MHz



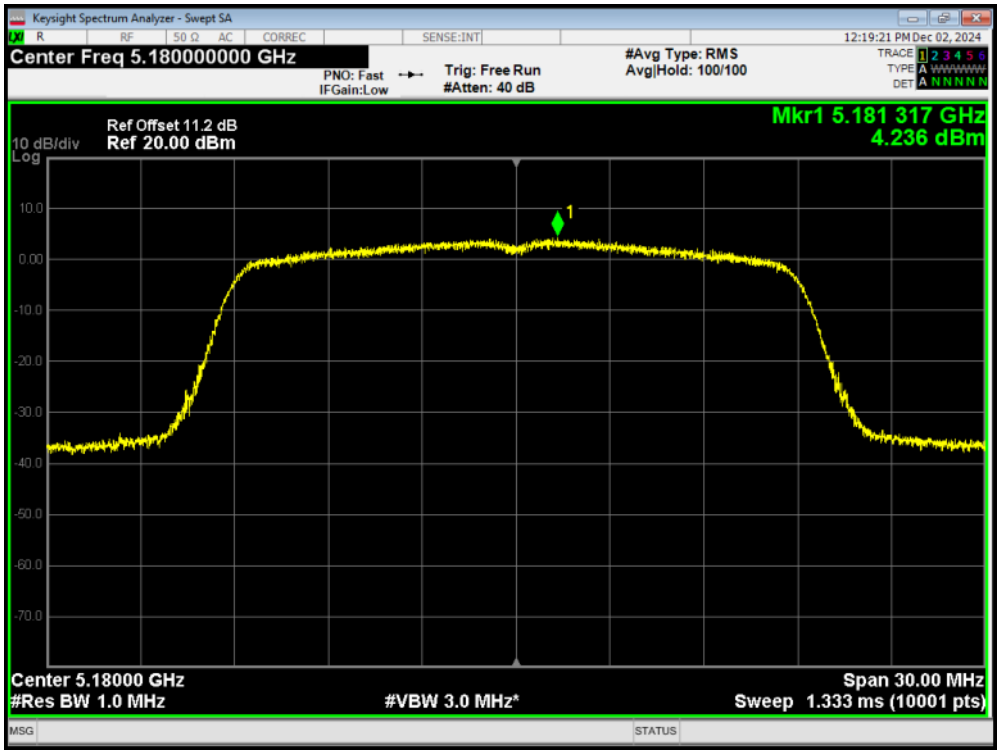
PSD 802.11a 5200MHz



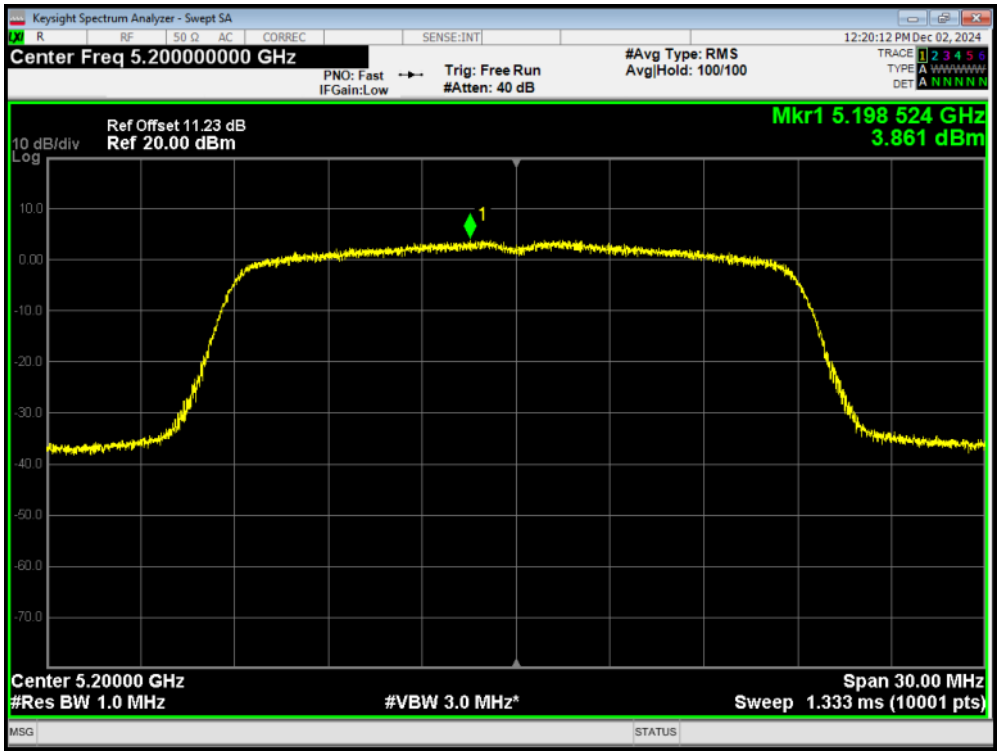
PSD 802.11a 5240MHz



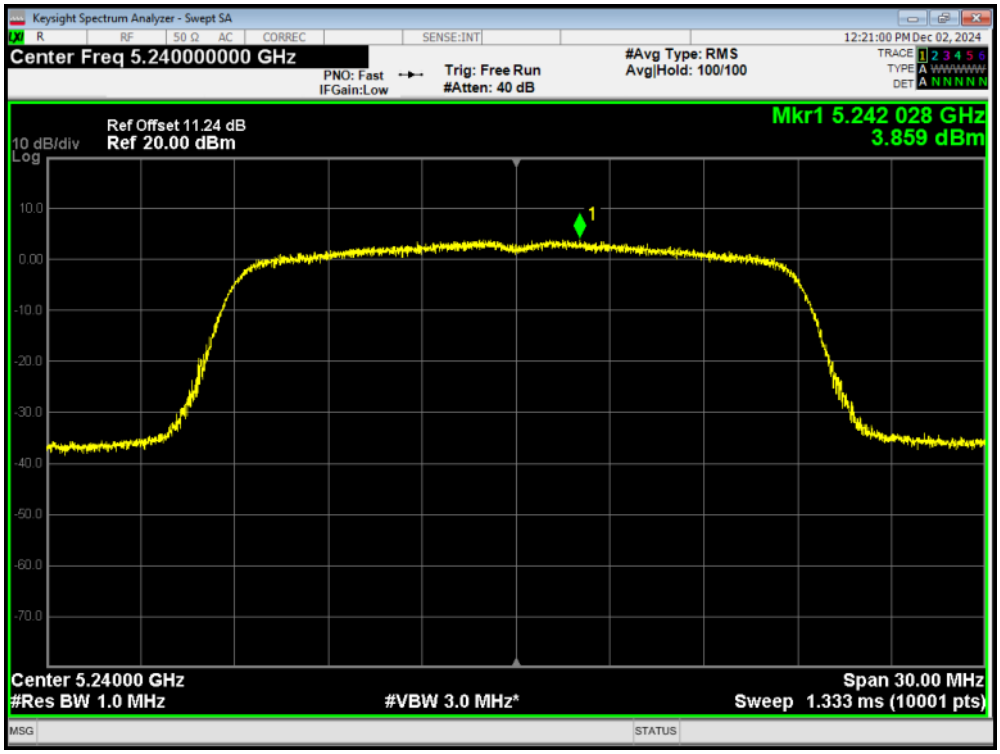
PSD 802.11ac(VHT20) 5180MHz



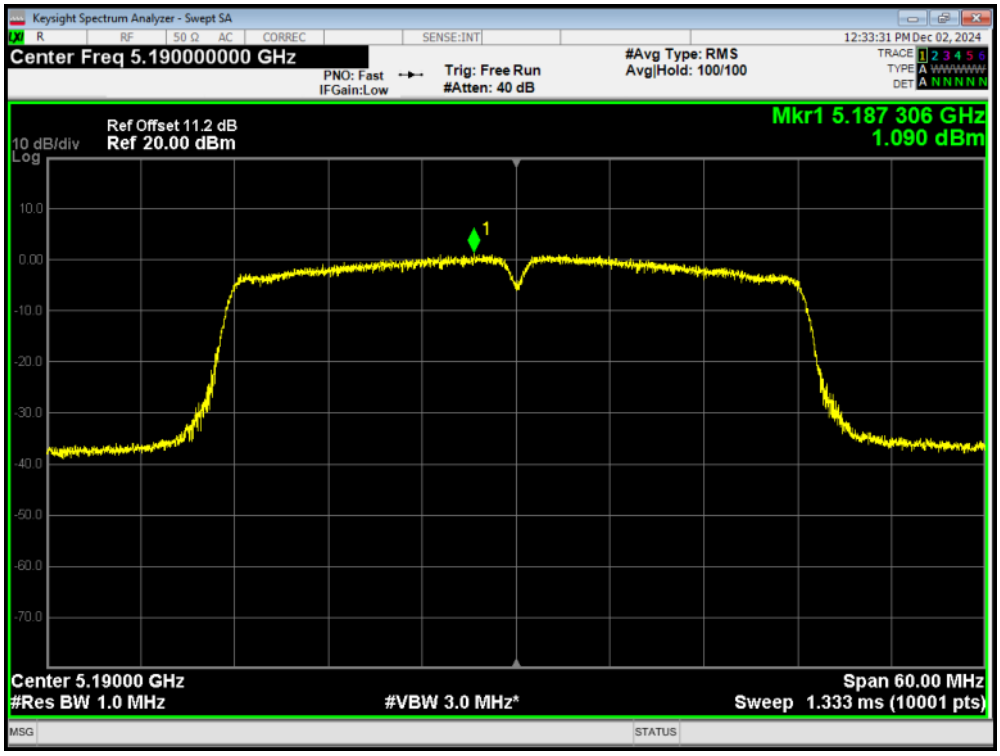
PSD 802.11ac(VHT20) 5200MHz



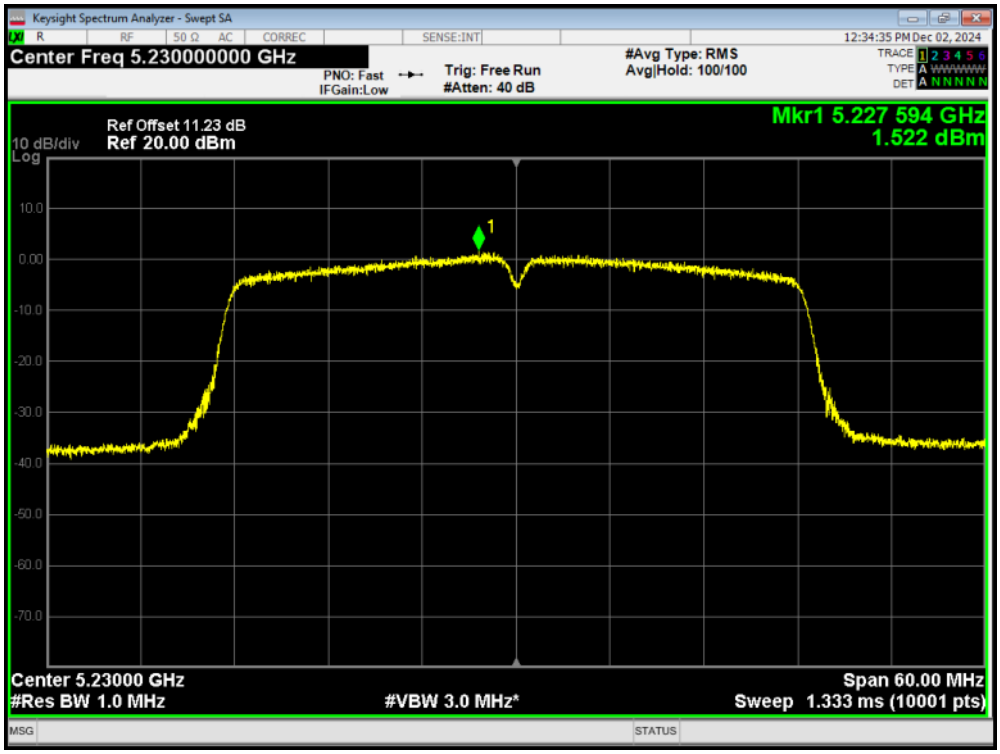
PSD 802.11ac(VHT20) 5240MHz



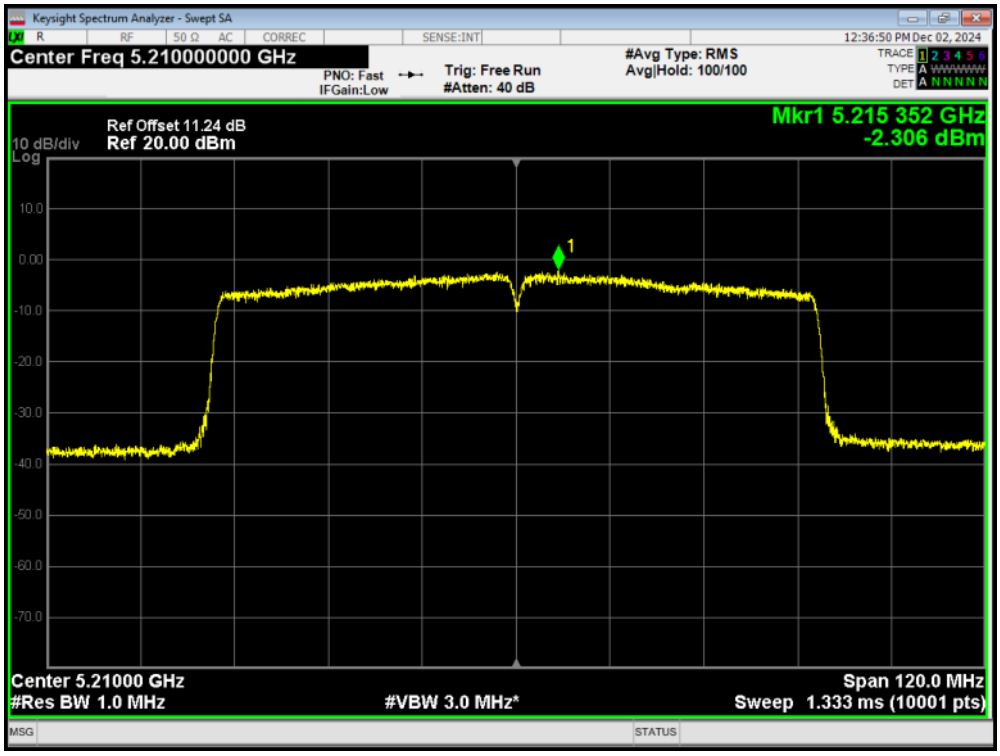
PSD 802.11ac(VHT40) 5190MHz



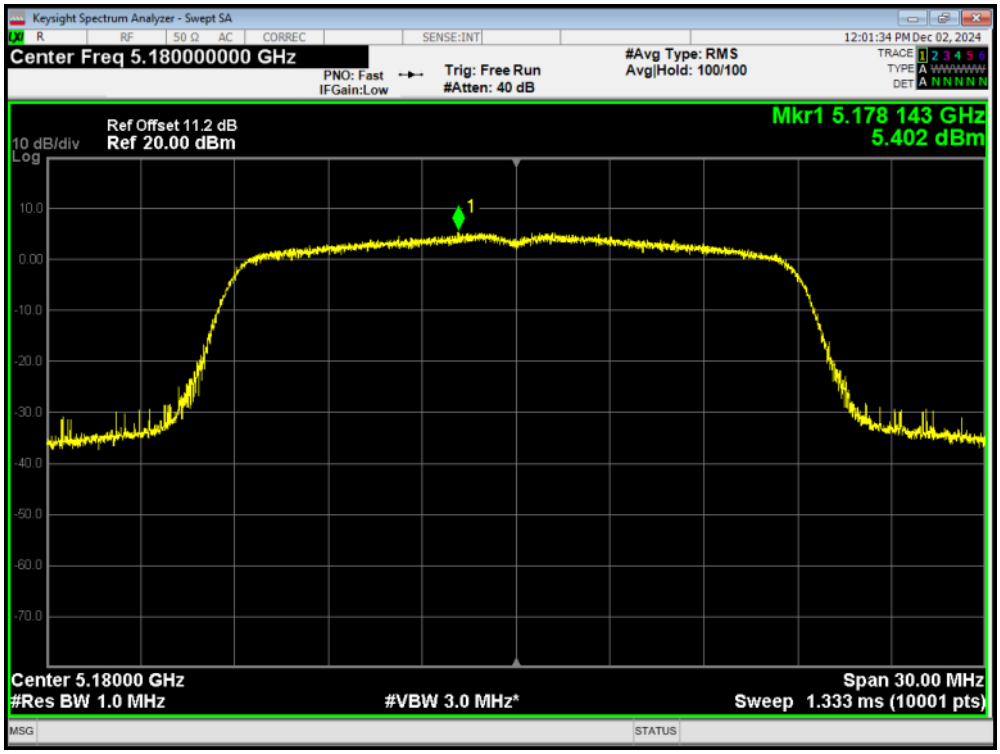
PSD 802.11ac(VHT40) 5230MHz



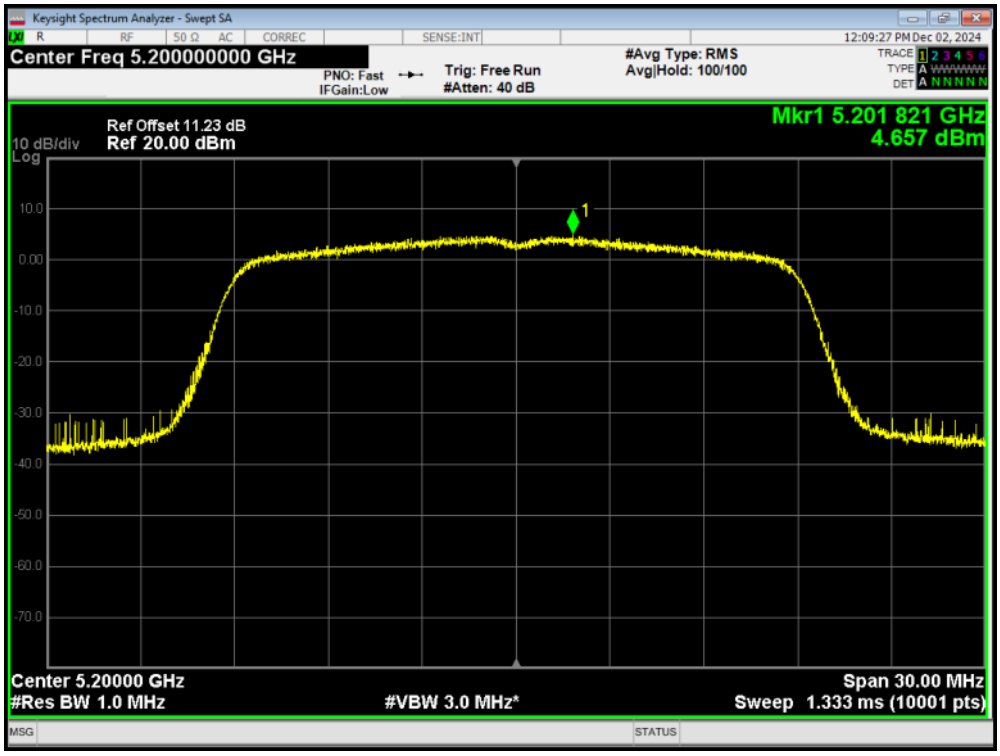
PSD 802.11ac(VHT80) 5210MHz



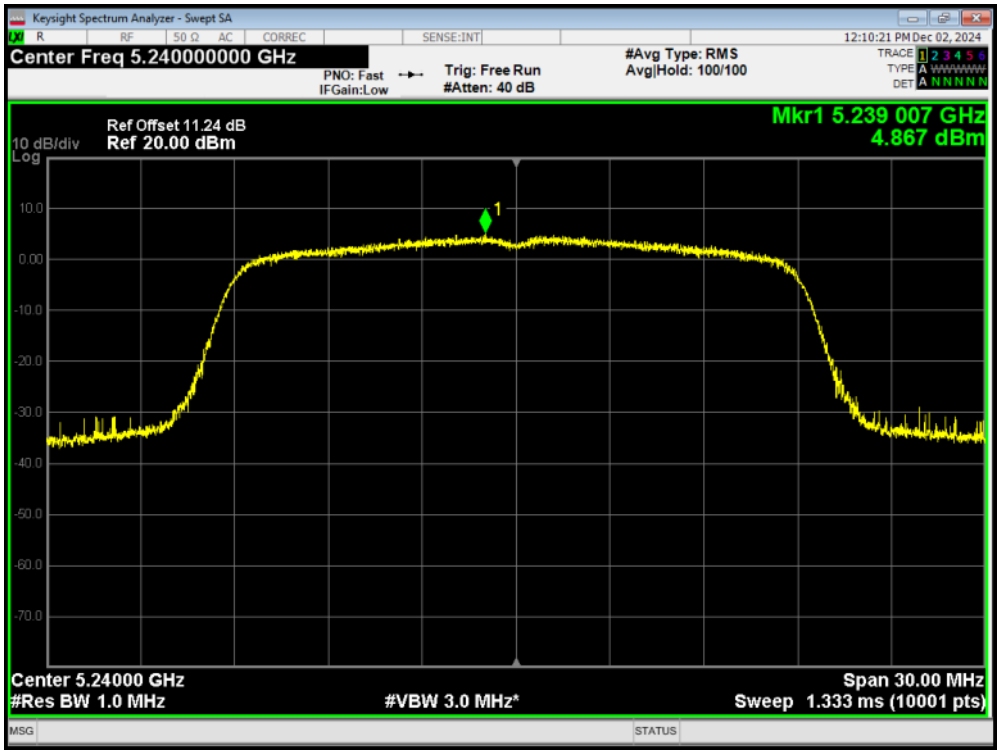
PSD 802.11n(HT20) 5180MHz



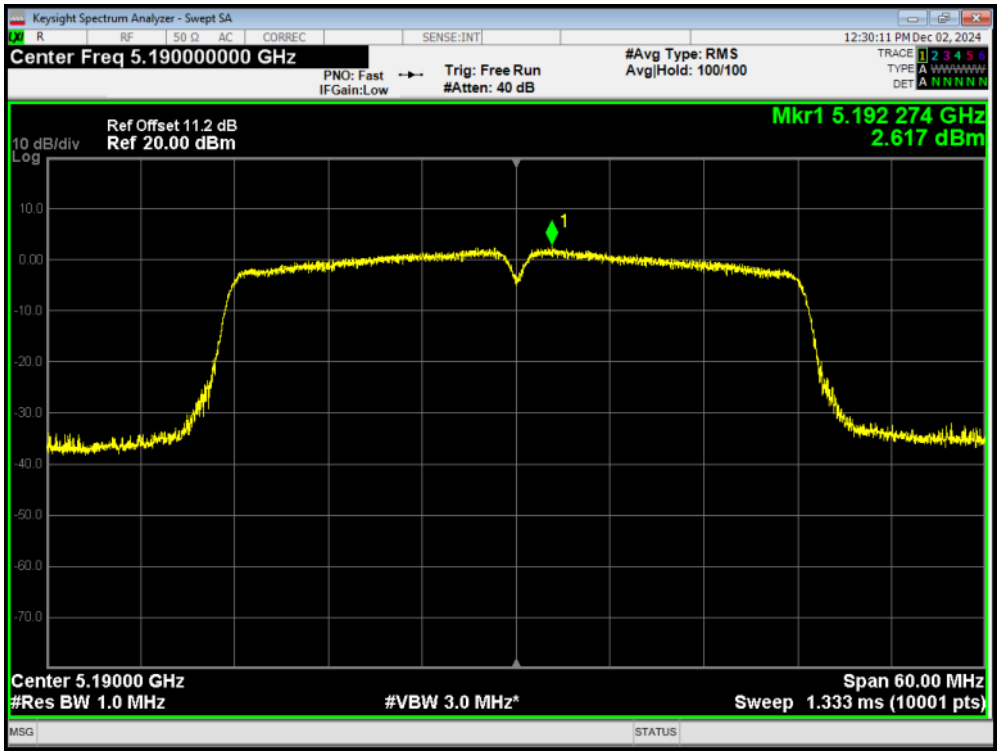
PSD 802.11n(HT20) 5200MHz



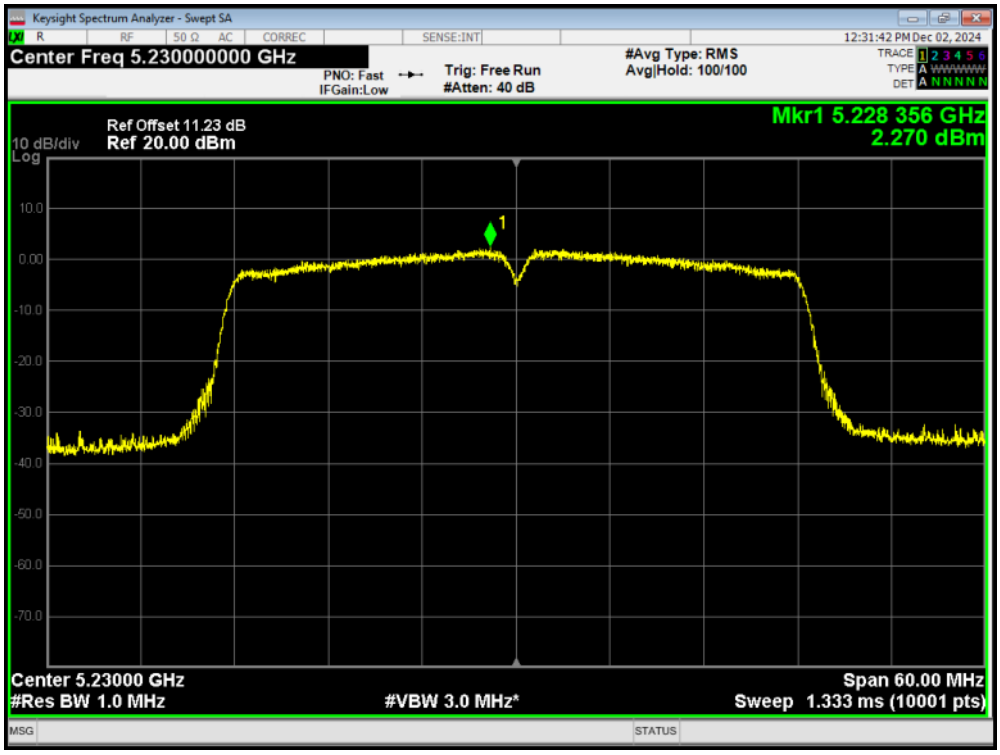
PSD 802.11n(HT20) 5240MHz



PSD 802.11n(HT40) 5190MHz



PSD 802.11n(HT40) 5230MHz



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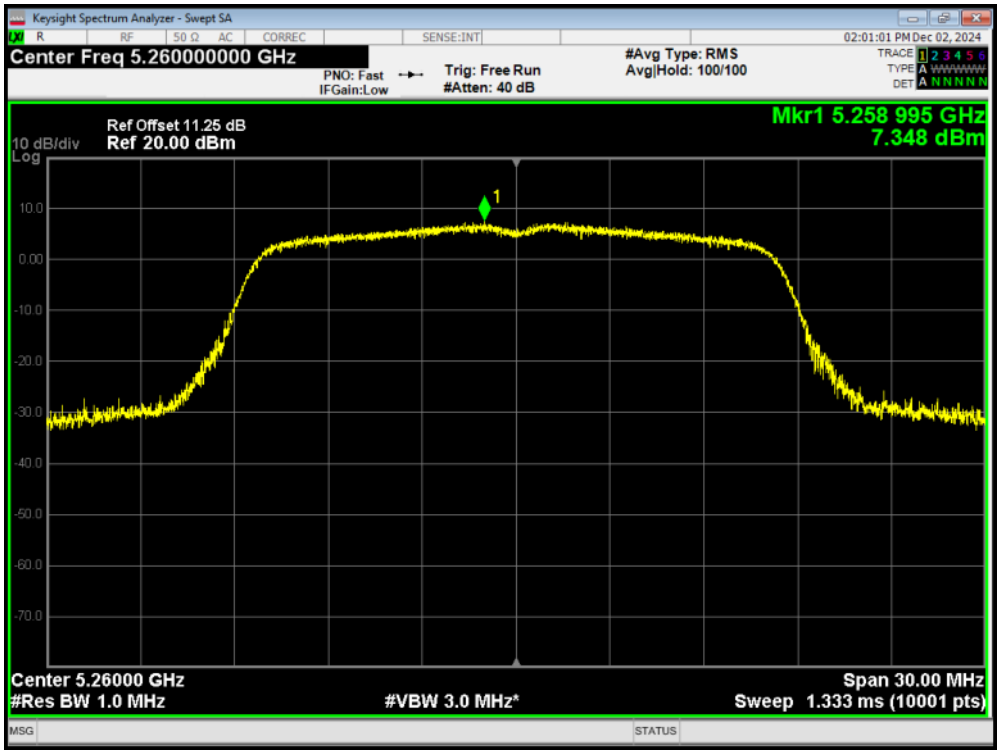
PSD 802.11a 5260MHz



PSD 802.11a 5300MHz