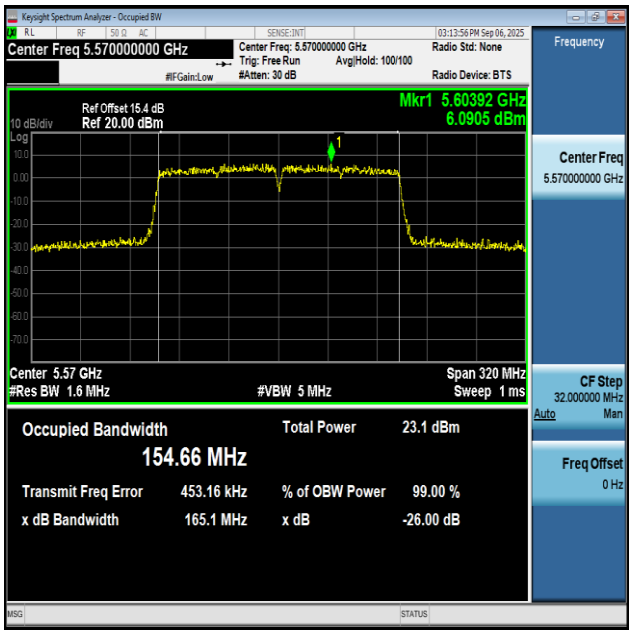
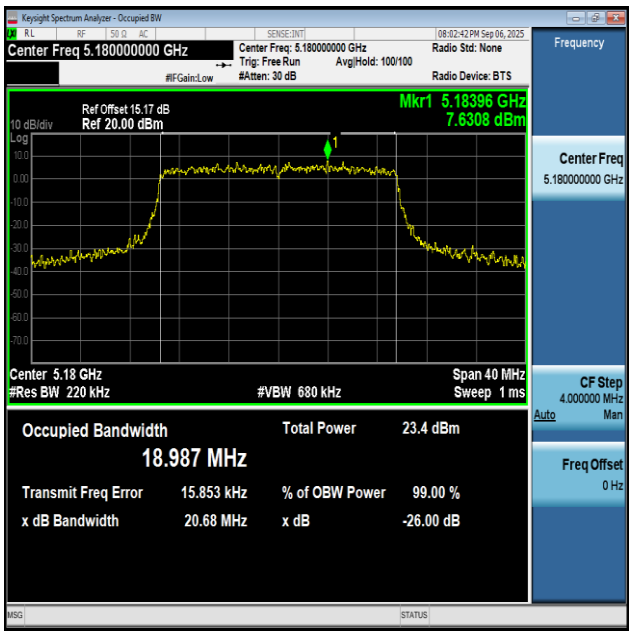


11AC160SISO-Ant1-5570



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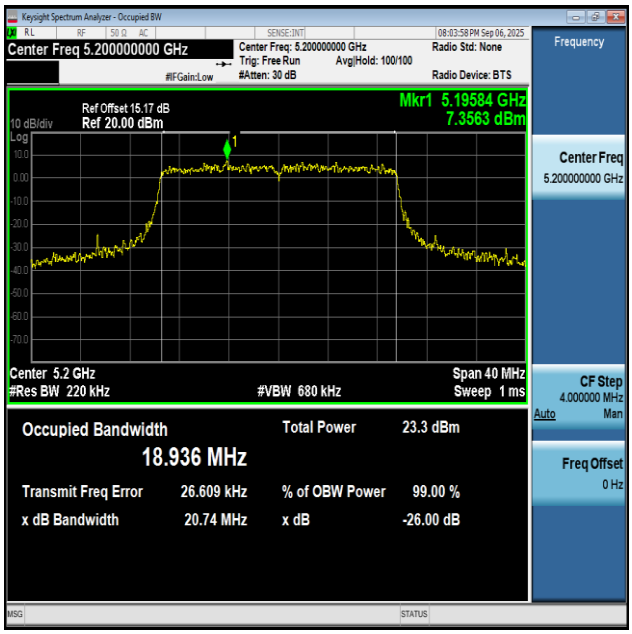

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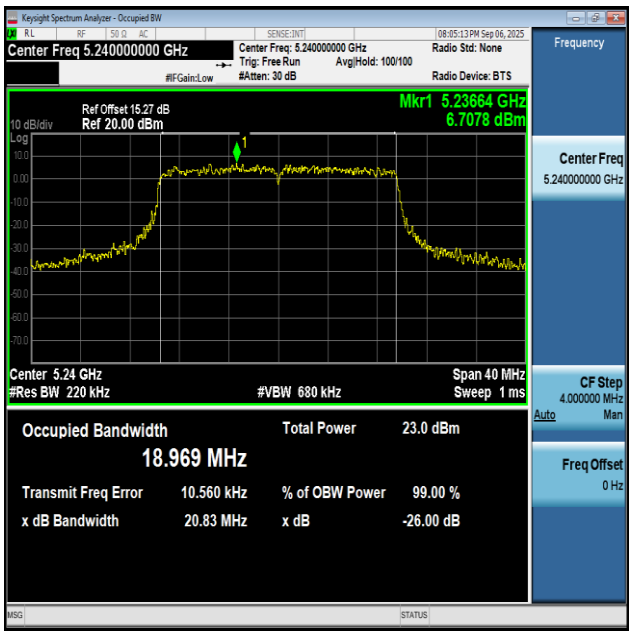

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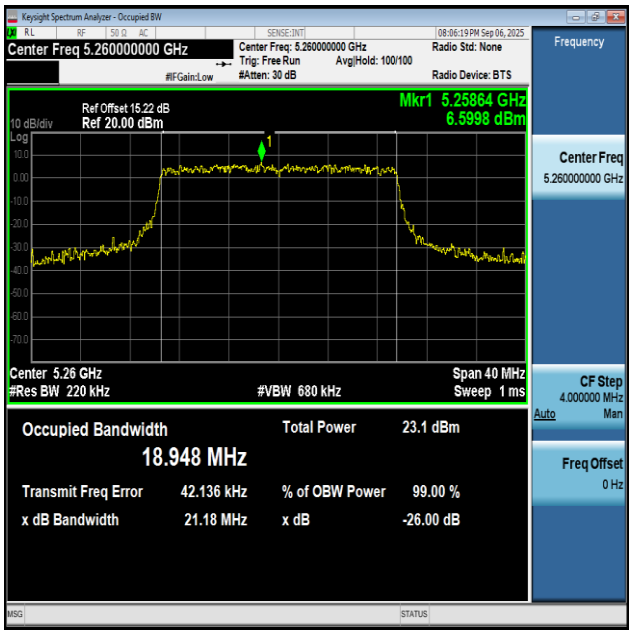

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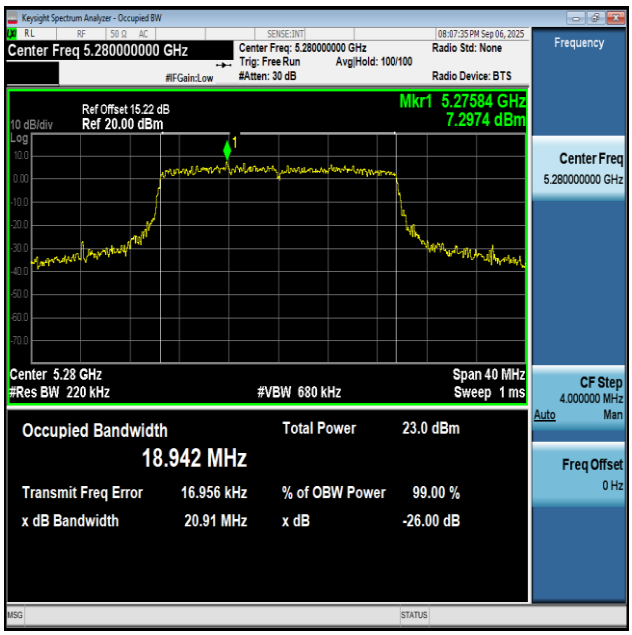

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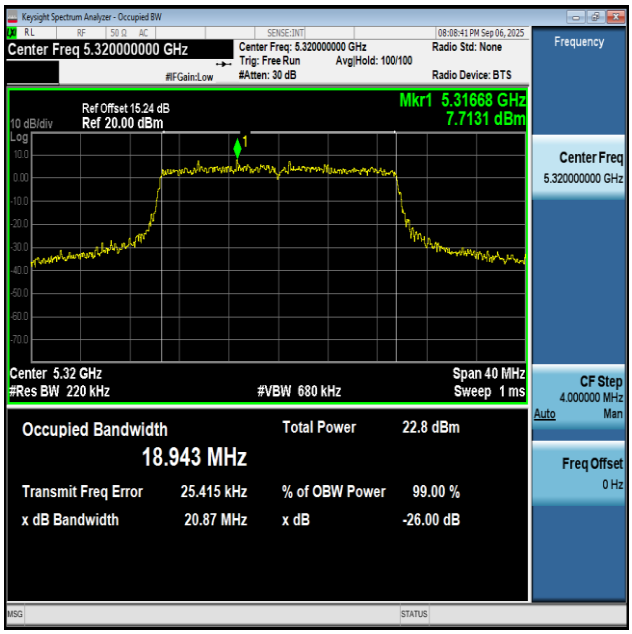

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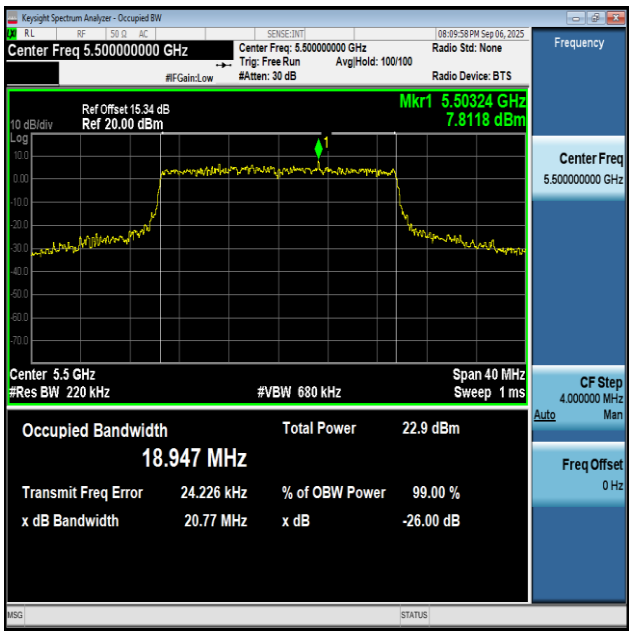

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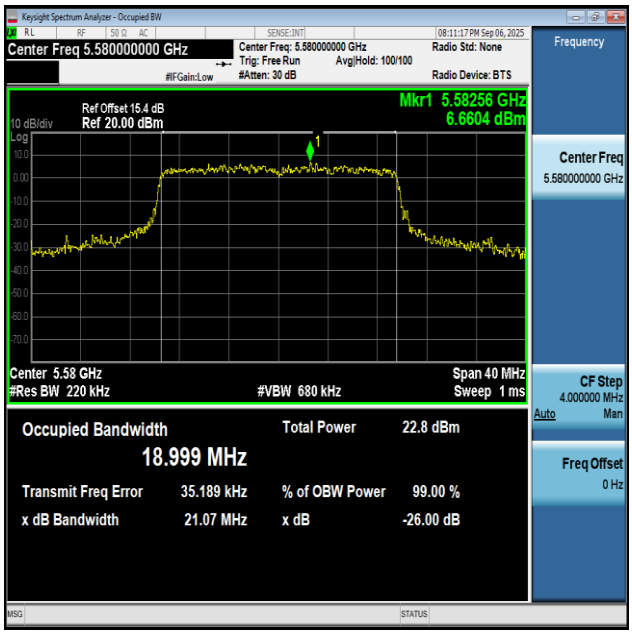

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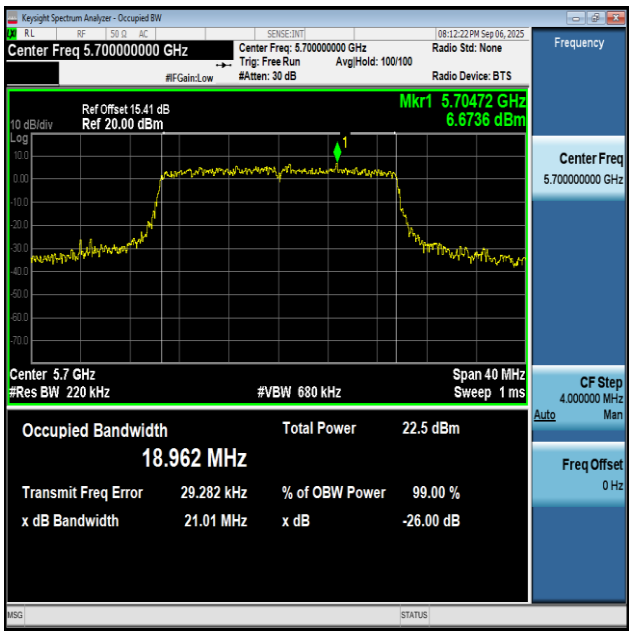

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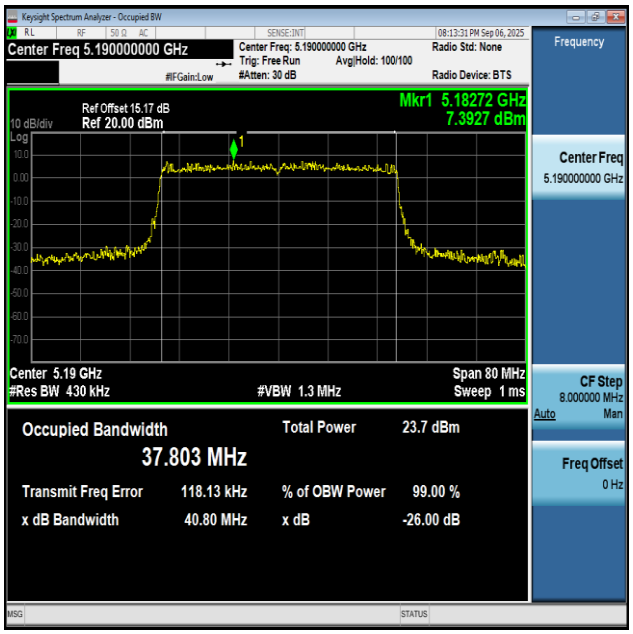

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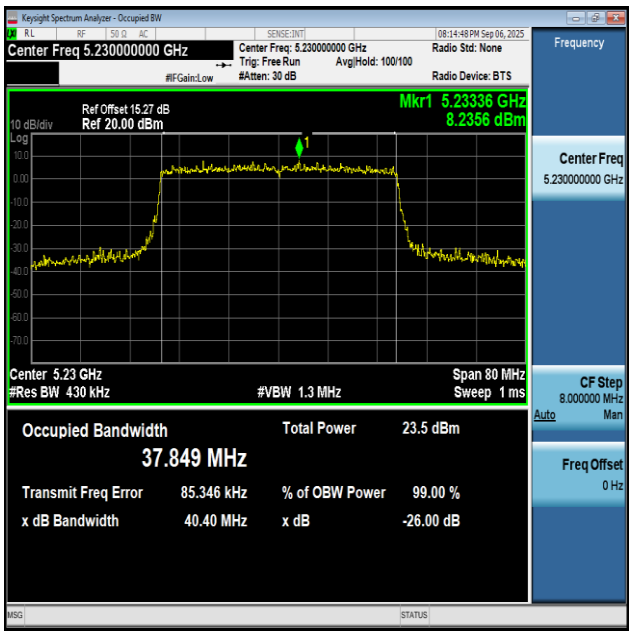

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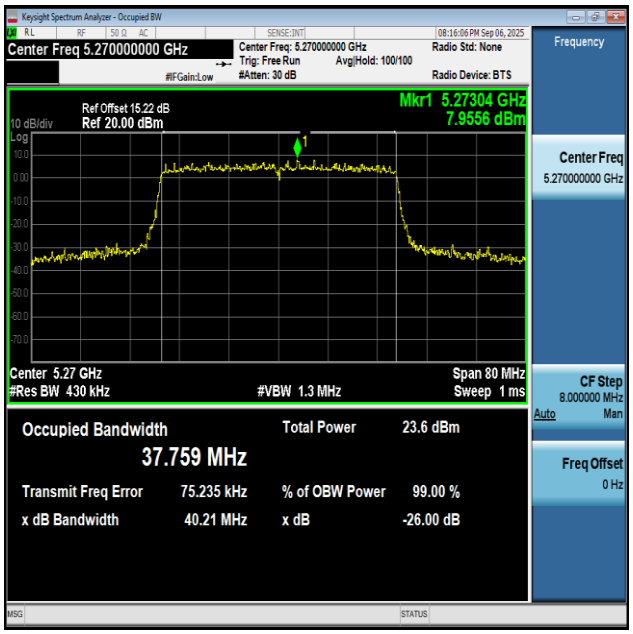

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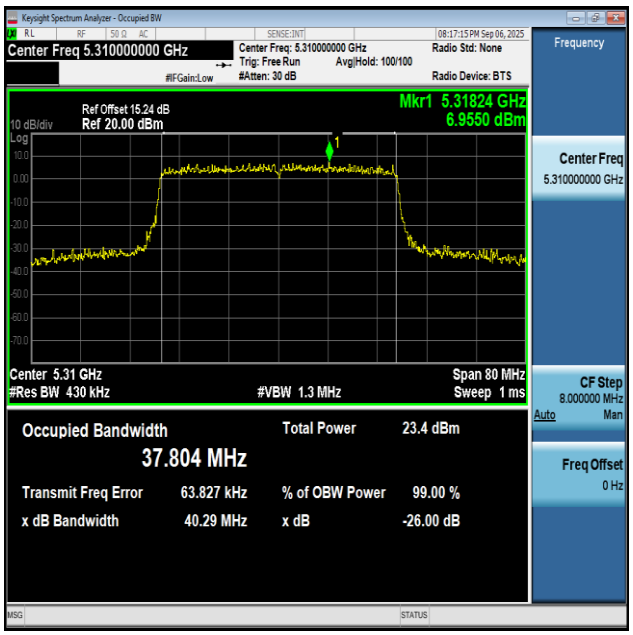

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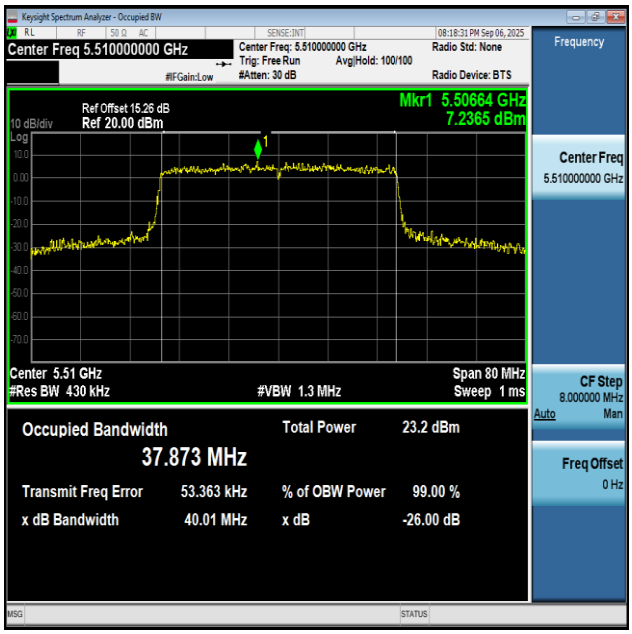

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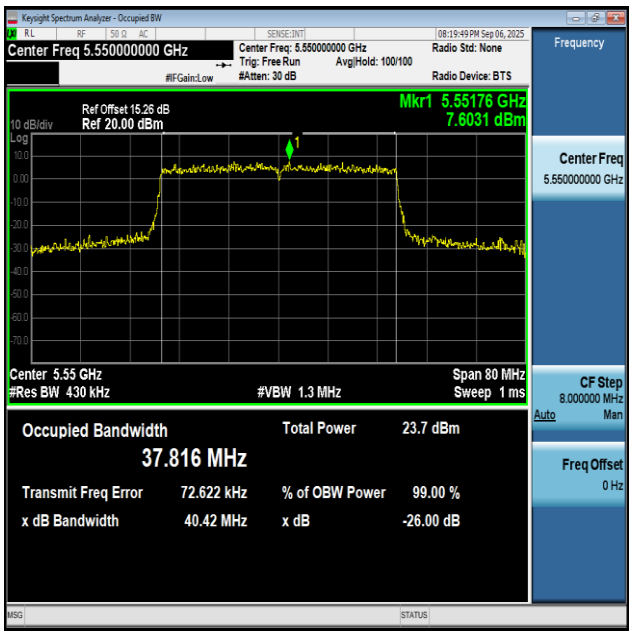

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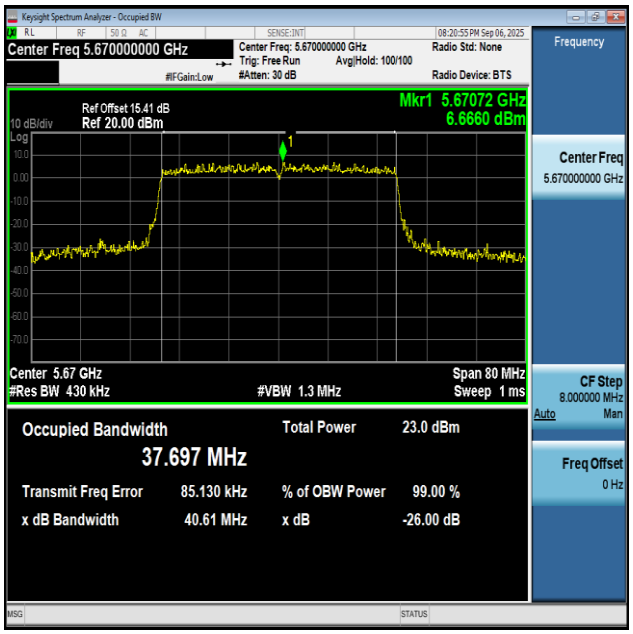

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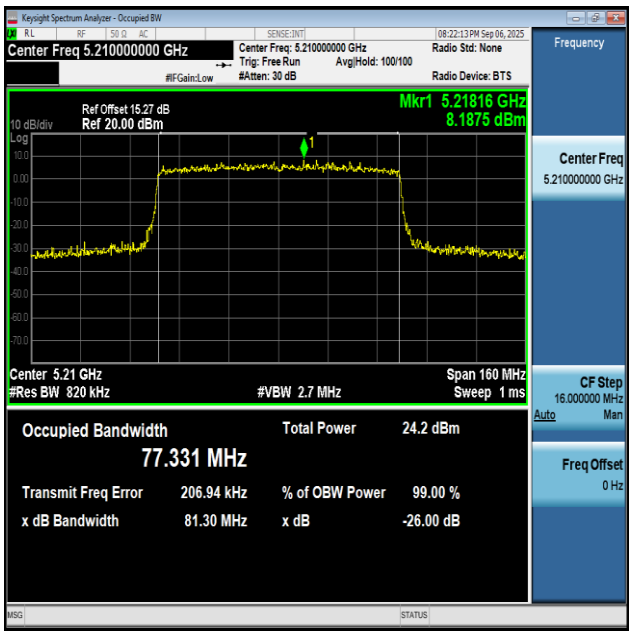

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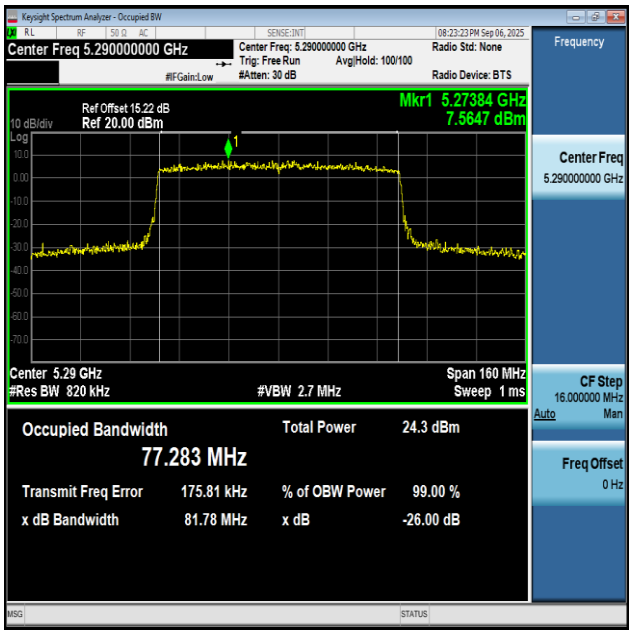

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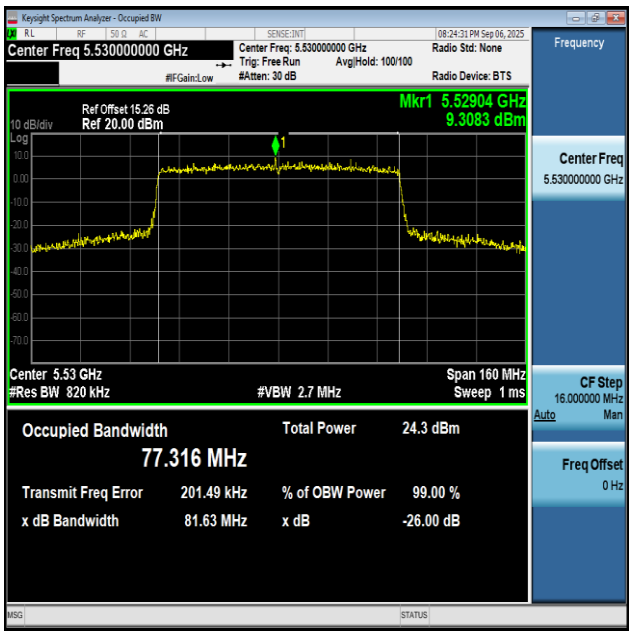

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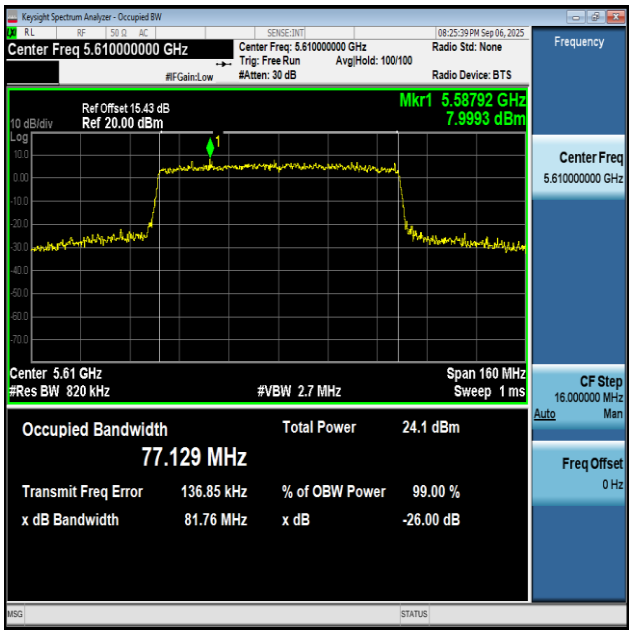

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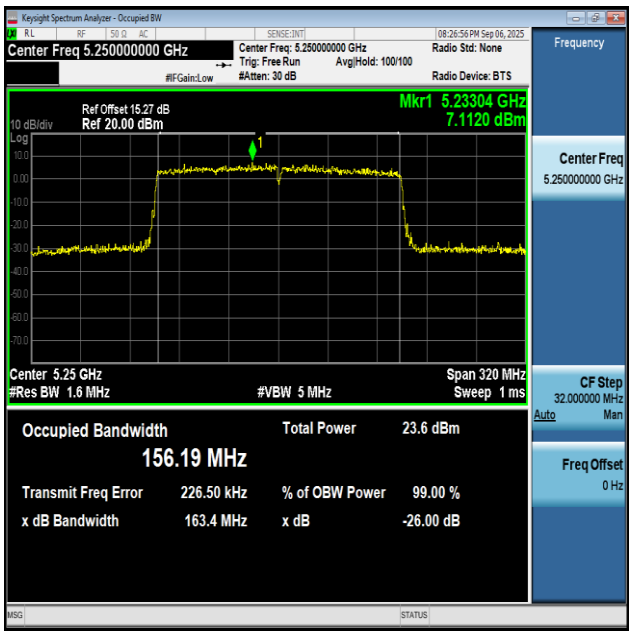

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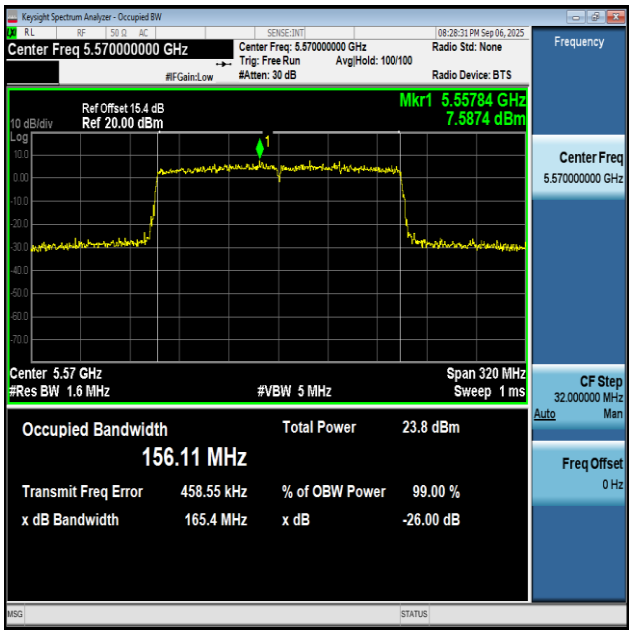
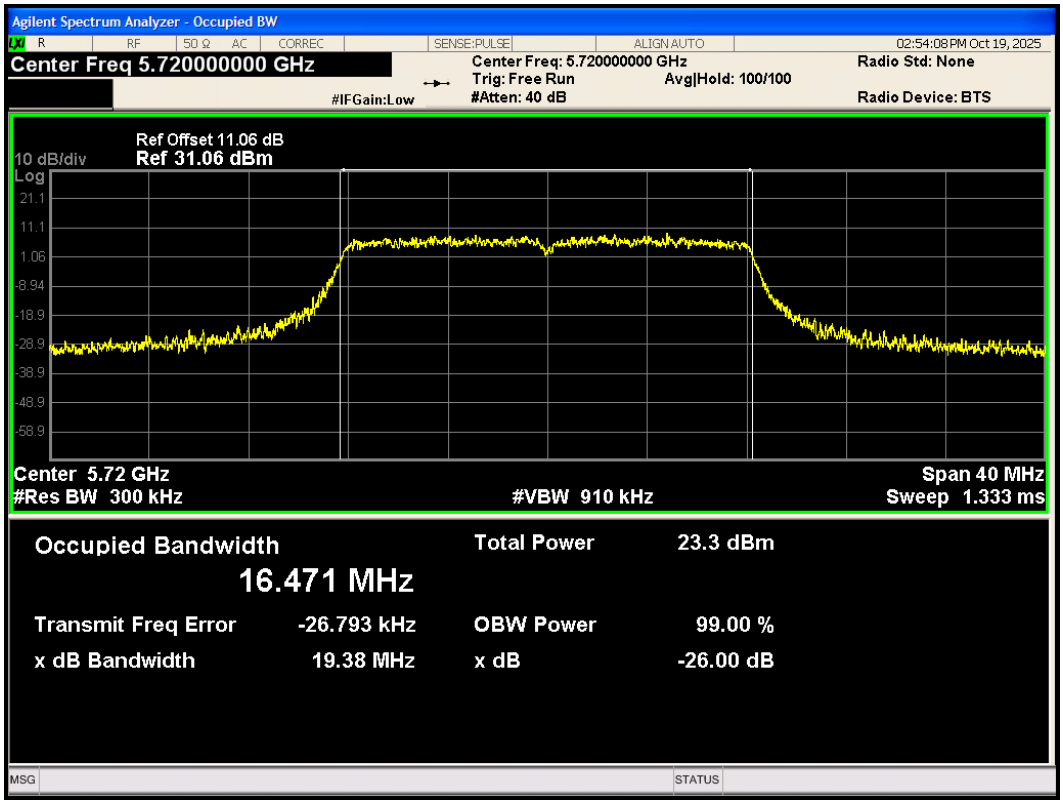
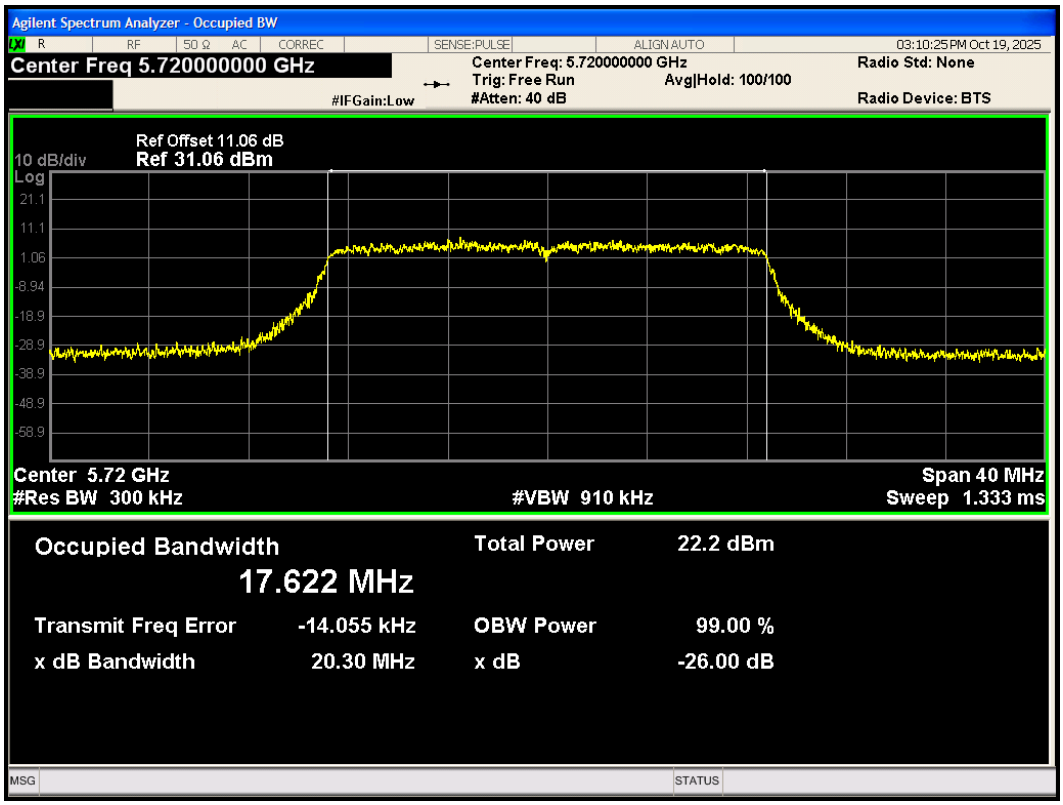


11AX160SISO-Ant1-5570

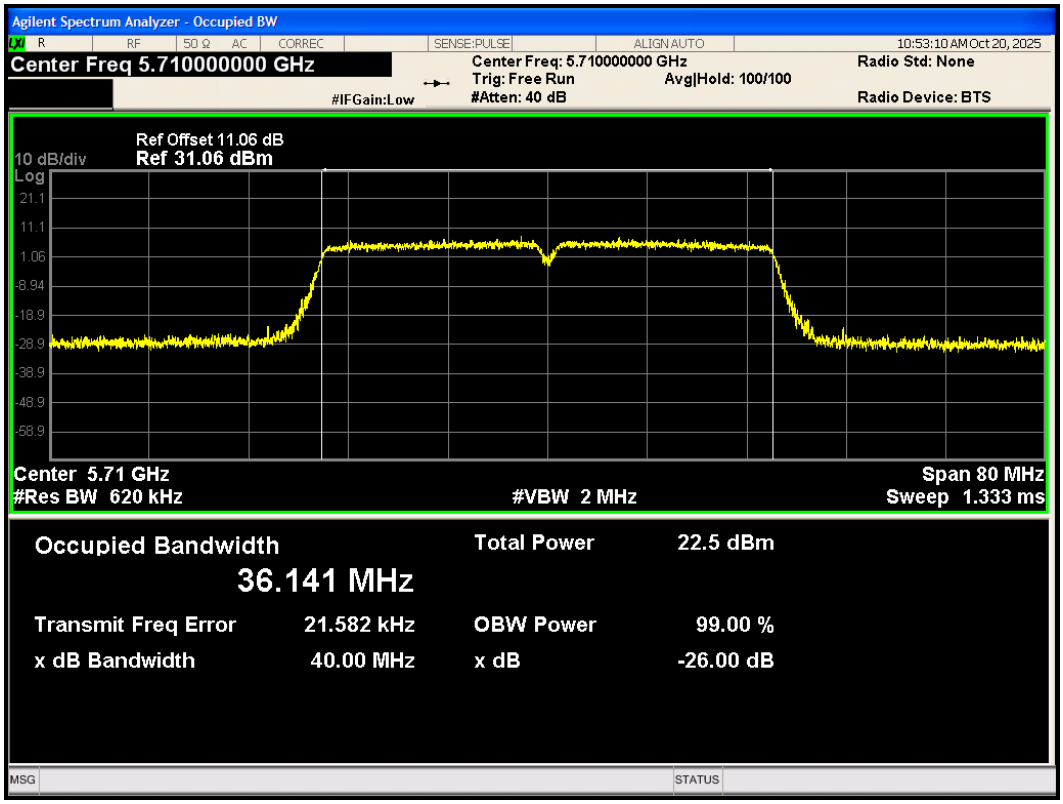
OBW 802.11a 5720MHz



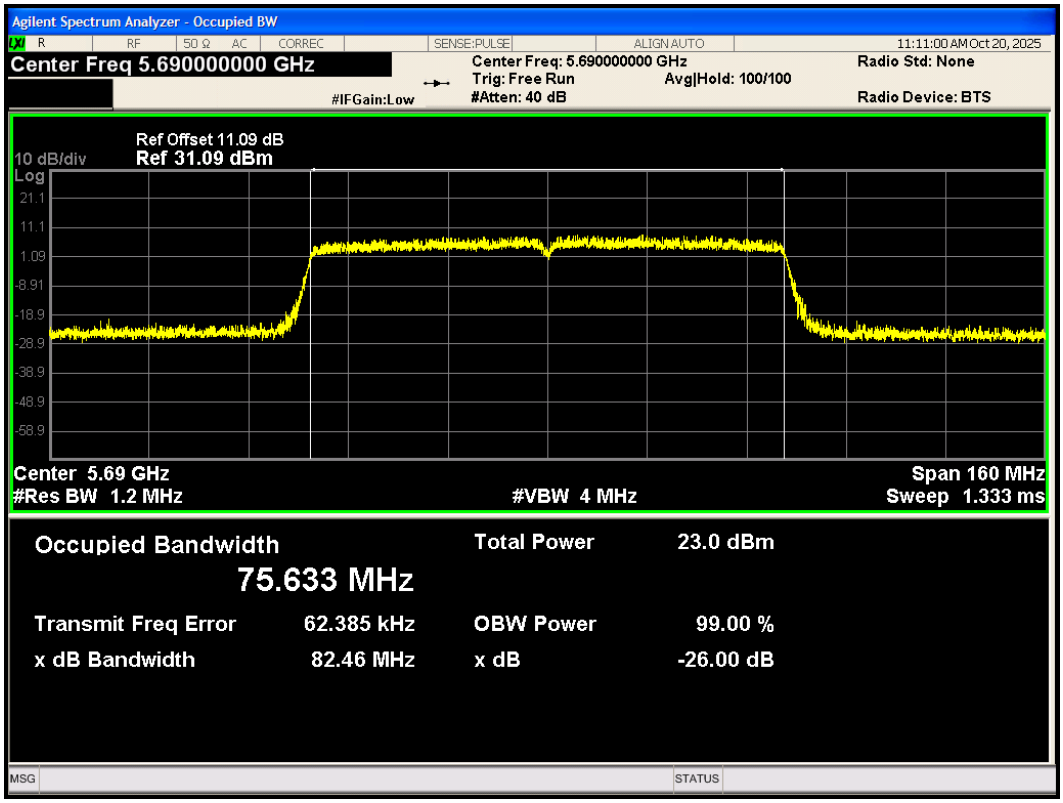
OBW 802.11ac(VHT20) 5720MHz



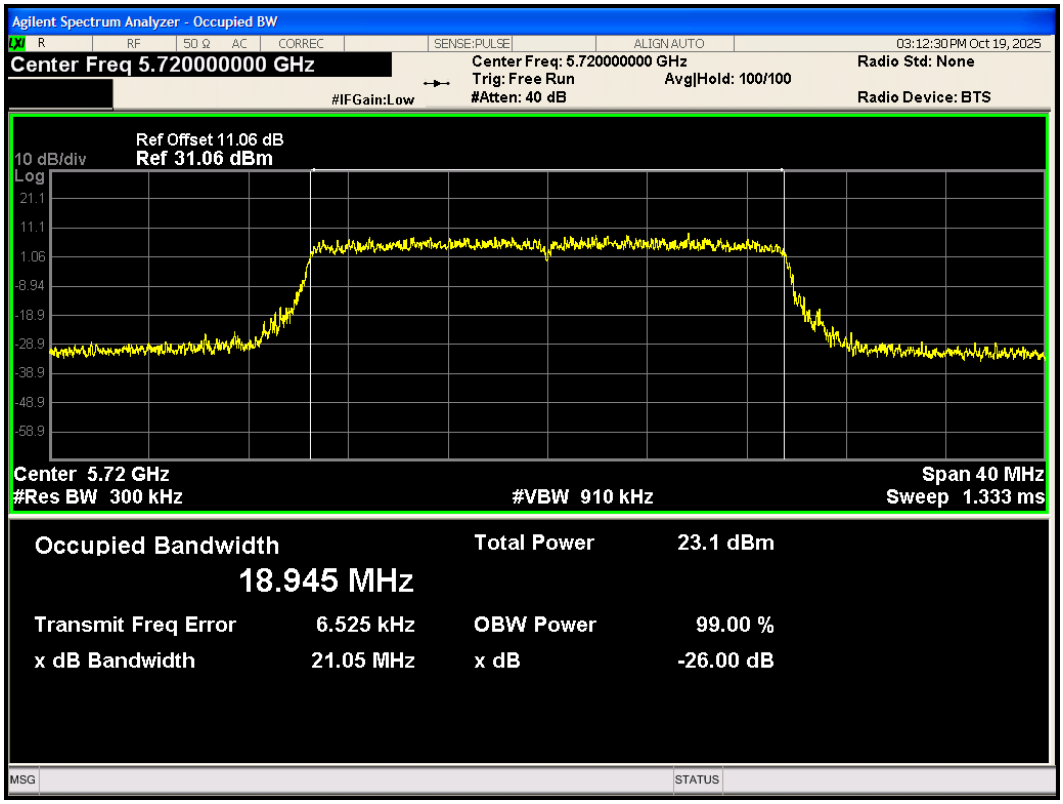
OBW 802.11ac(VHT40) 5710MHz



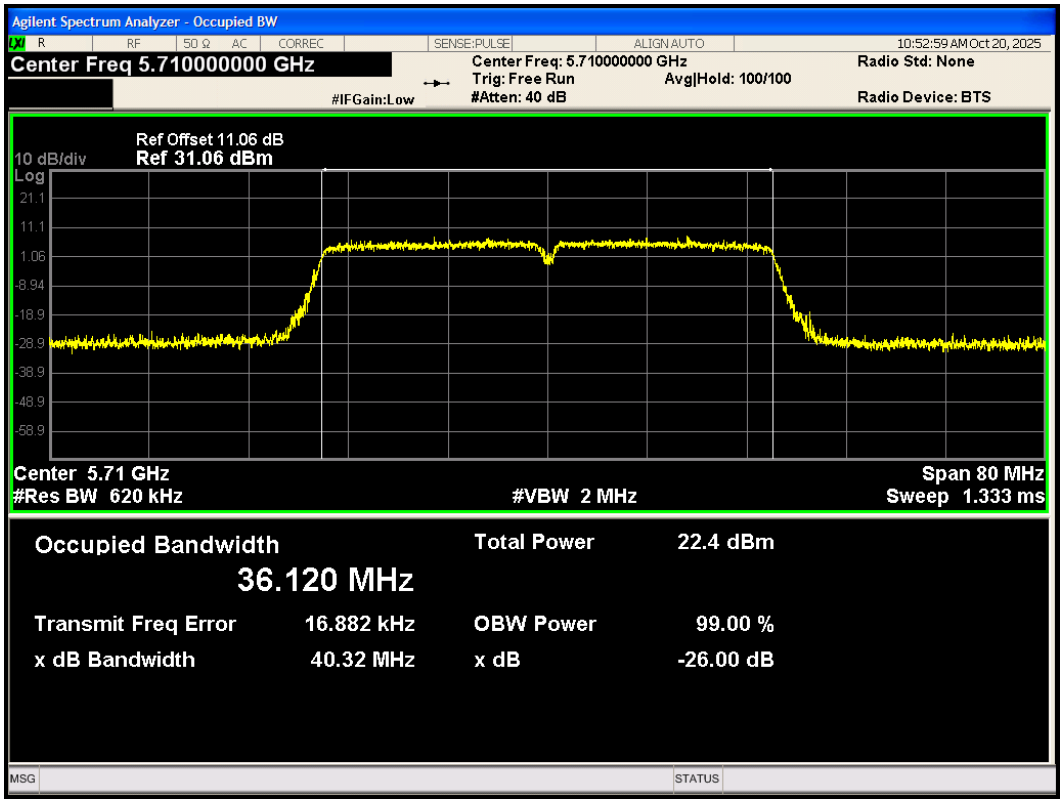
OBW 802.11ac(VHT80) 5690MHz



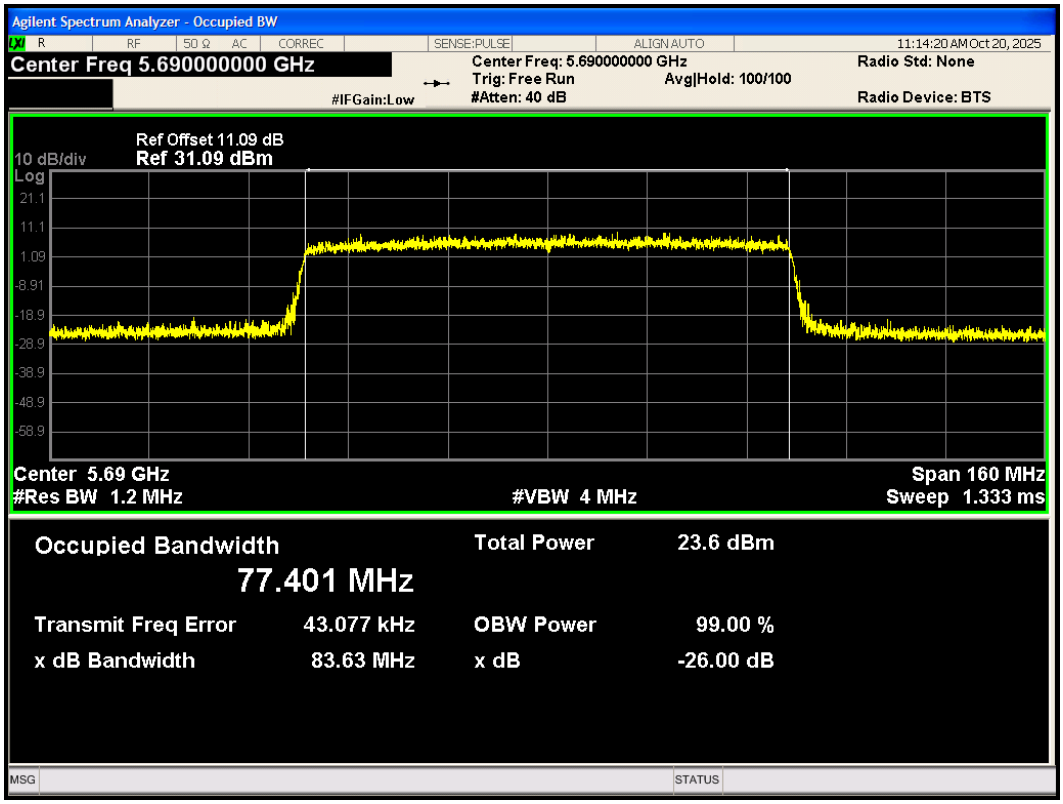
OBW 802.11ax(HE20) 5720MHz



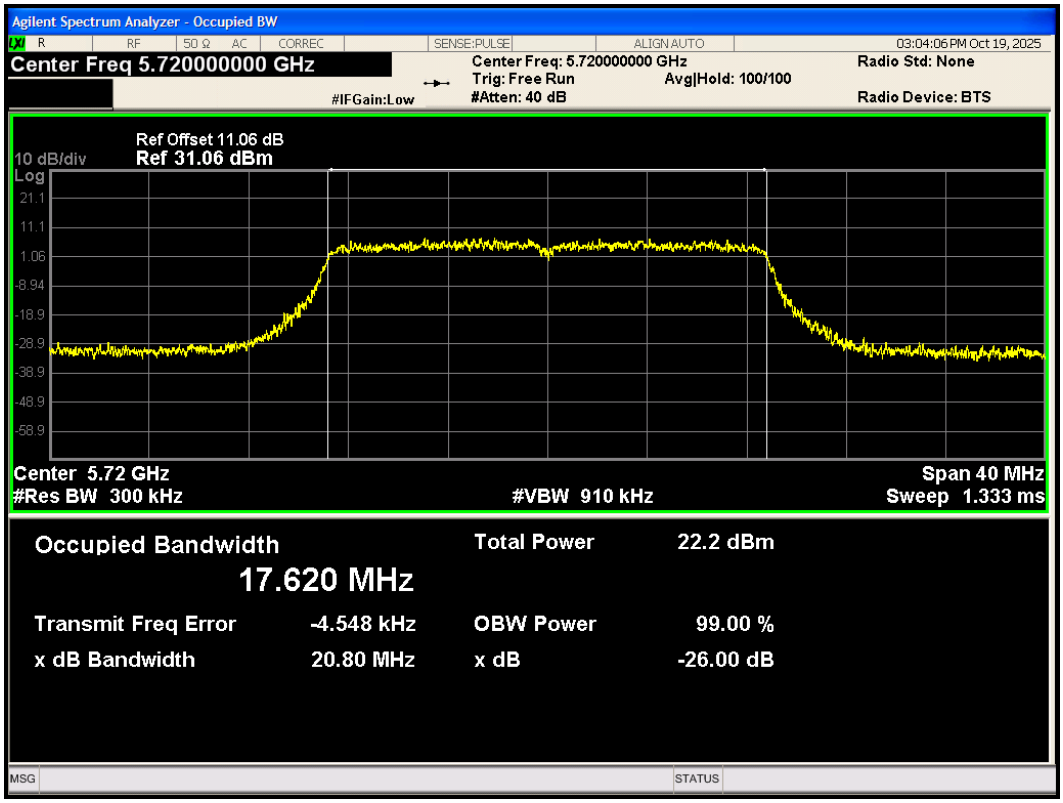
OBW 802.11ax(HE40) 5710MHz



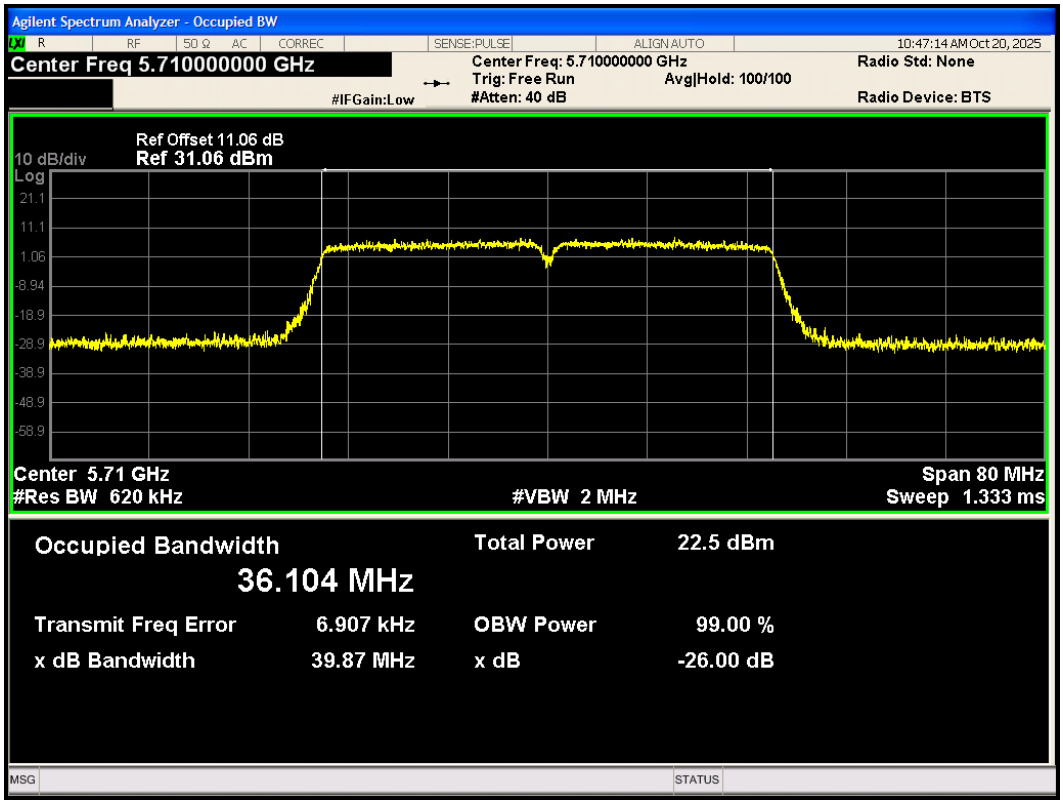
OBW 802.11ax(HE80) 5690MHz



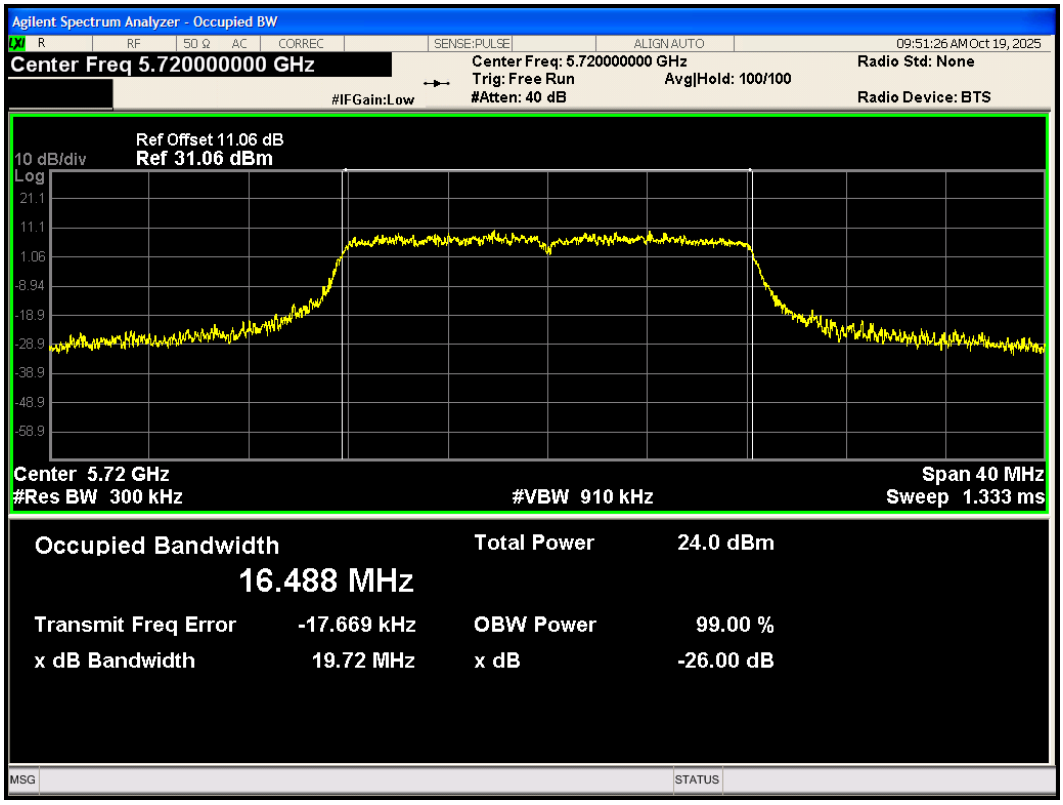
OBW 802.11n(HT20) 5720MHz



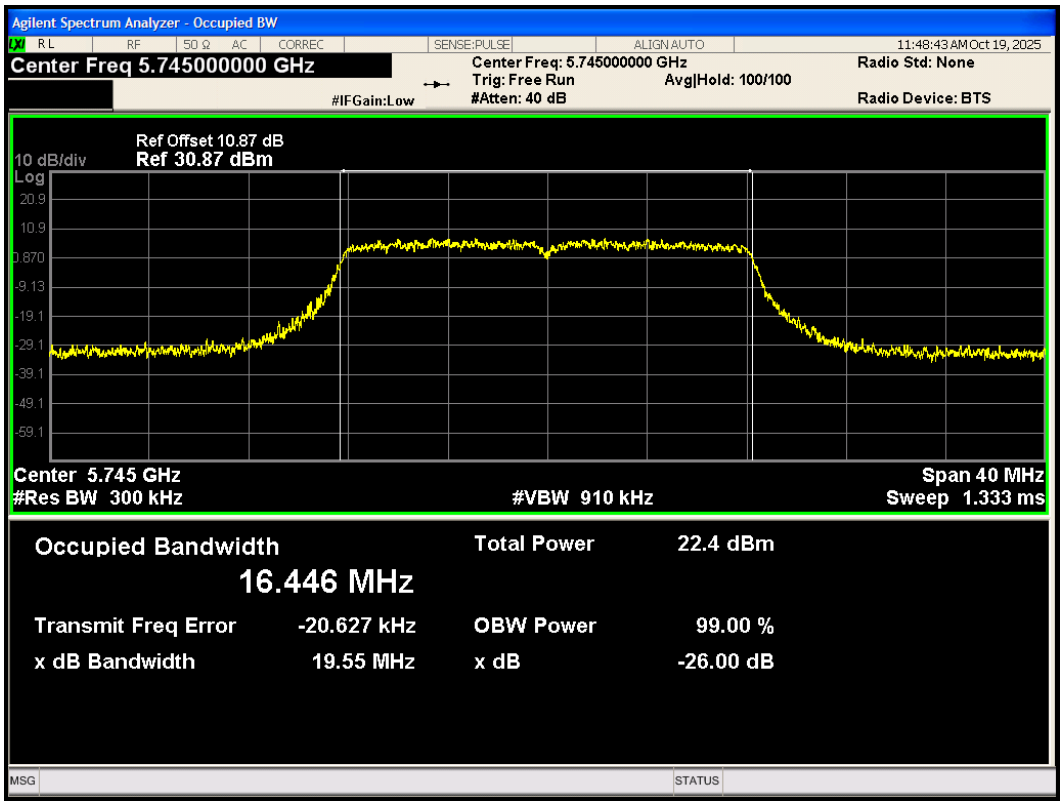
OBW 802.11n(HT40) 5710MHz



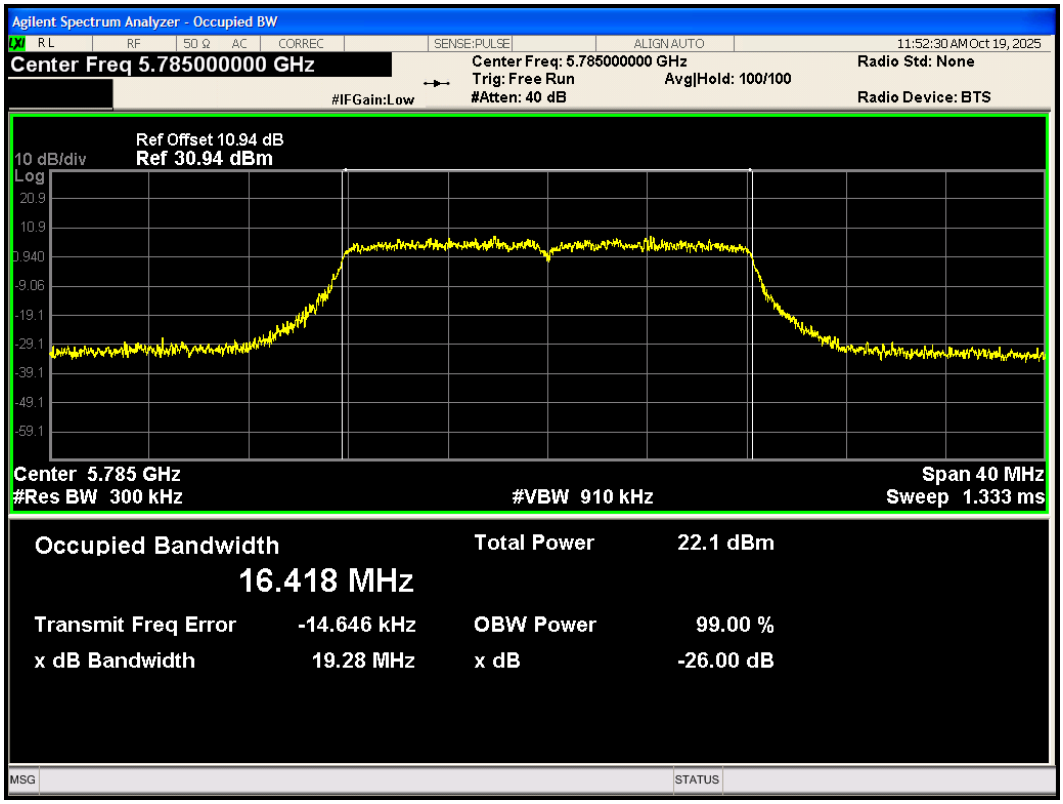
OBW 802.11a 5720MHz



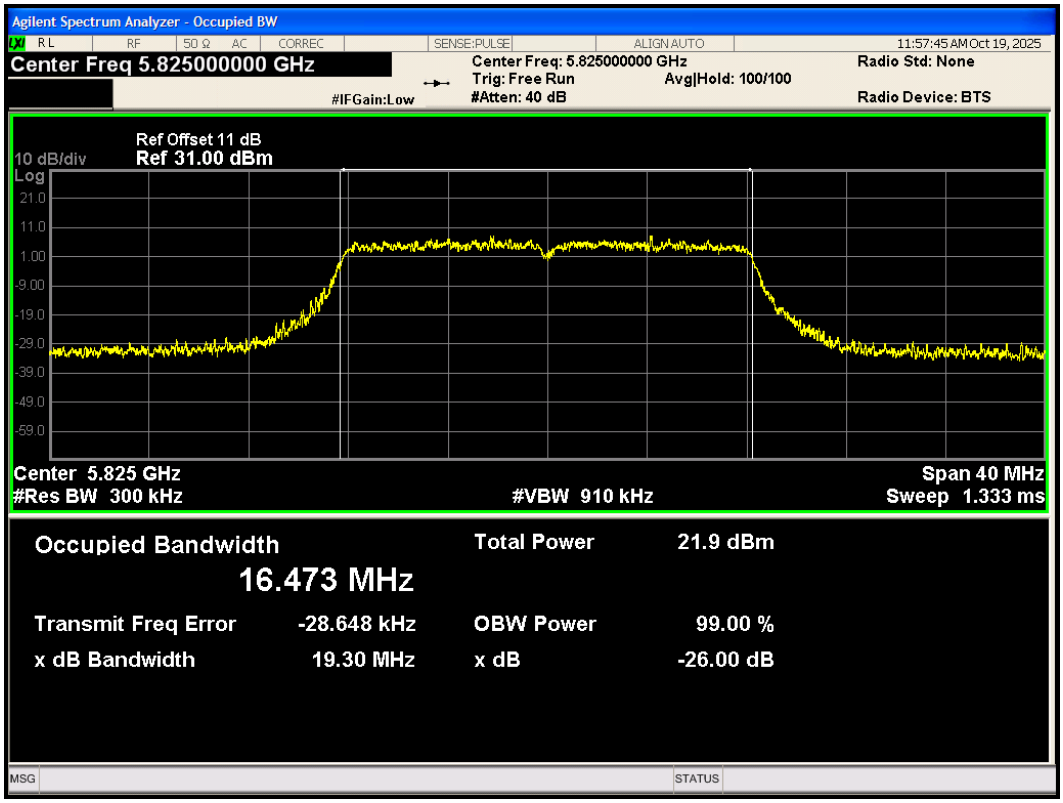
OBW 802.11a 5745MHz



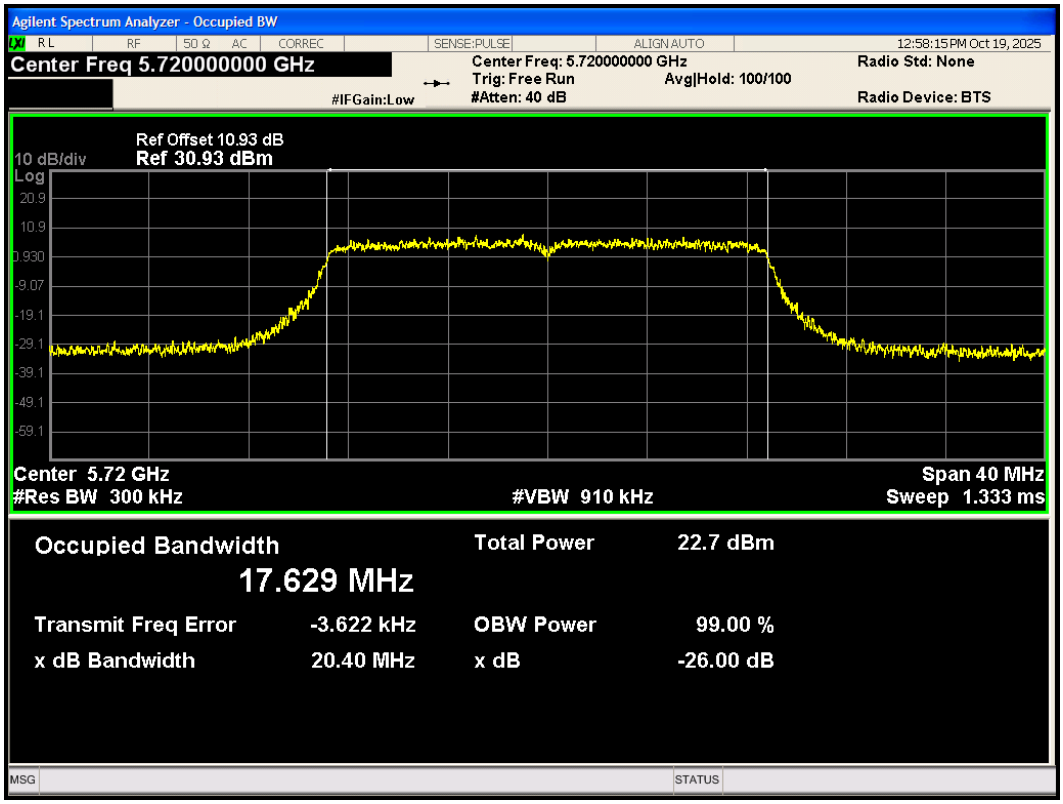
OBW 802.11a 5785MHz



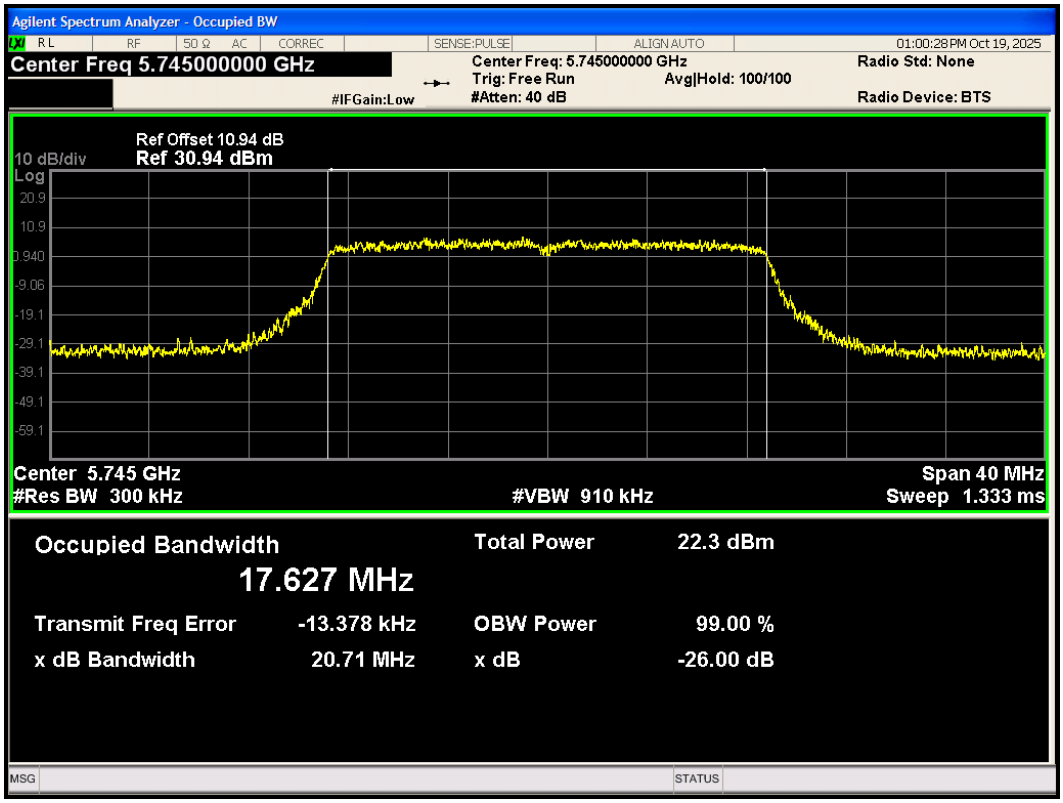
OBW 802.11a 5825MHz



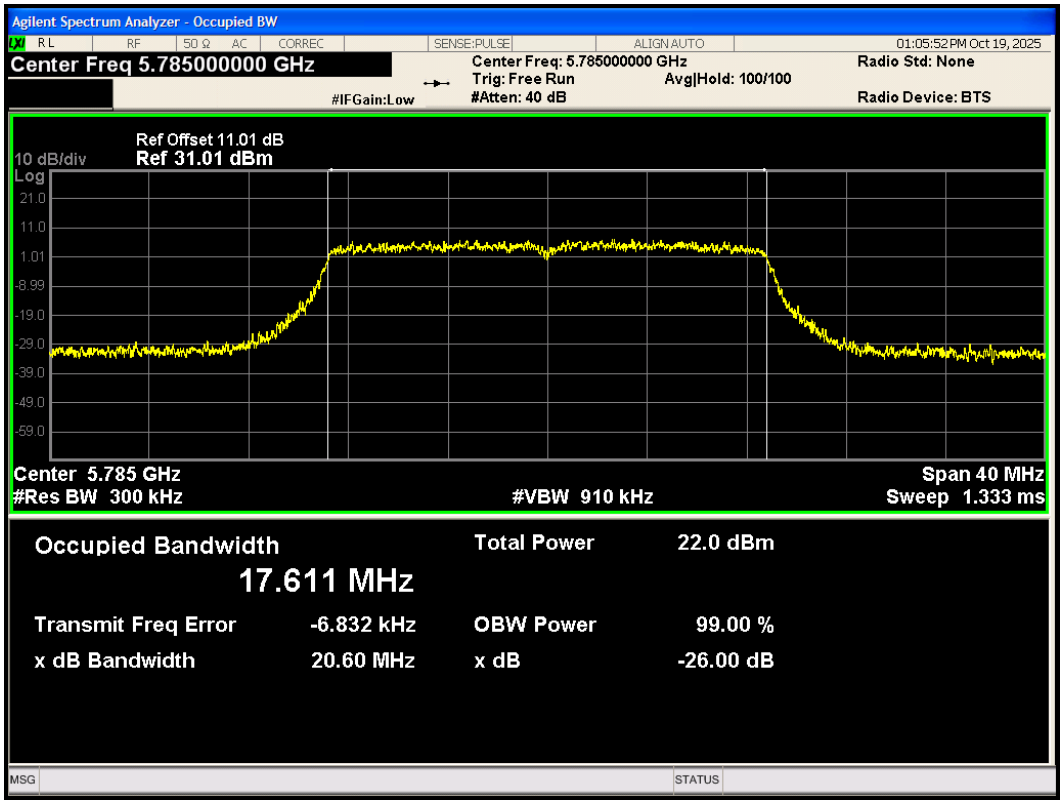
OBW 802.11ac(VHT20) 5720MHz



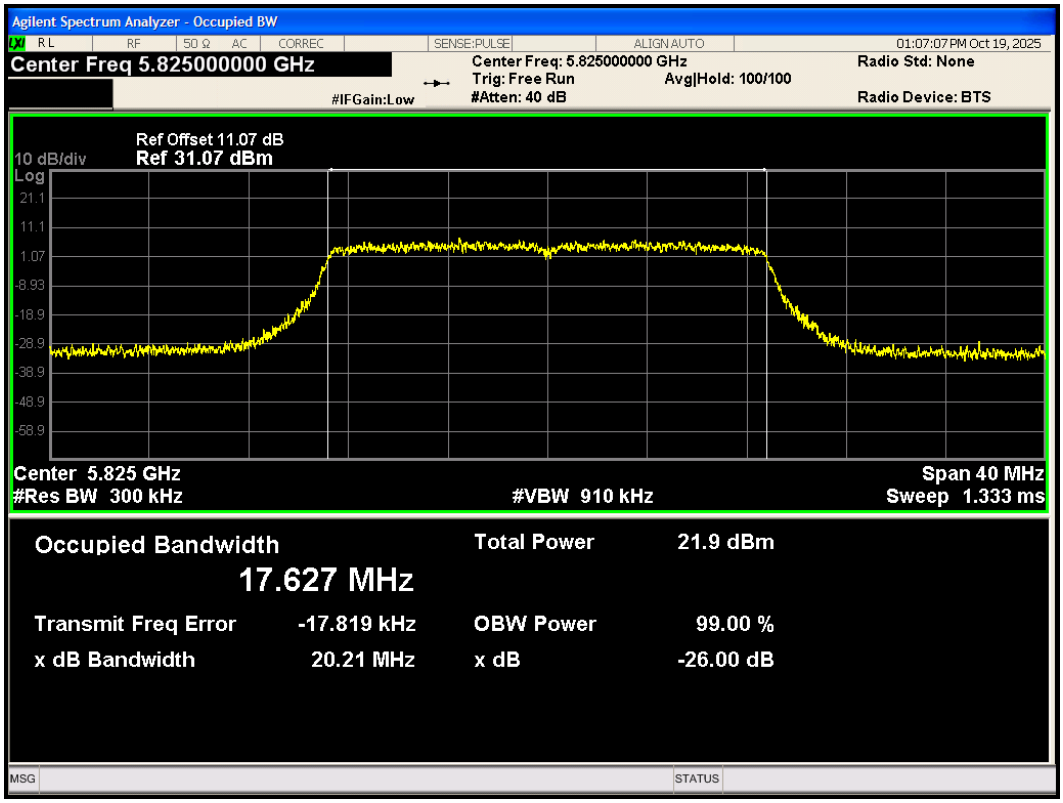
OBW 802.11ac(VHT20) 5745MHz



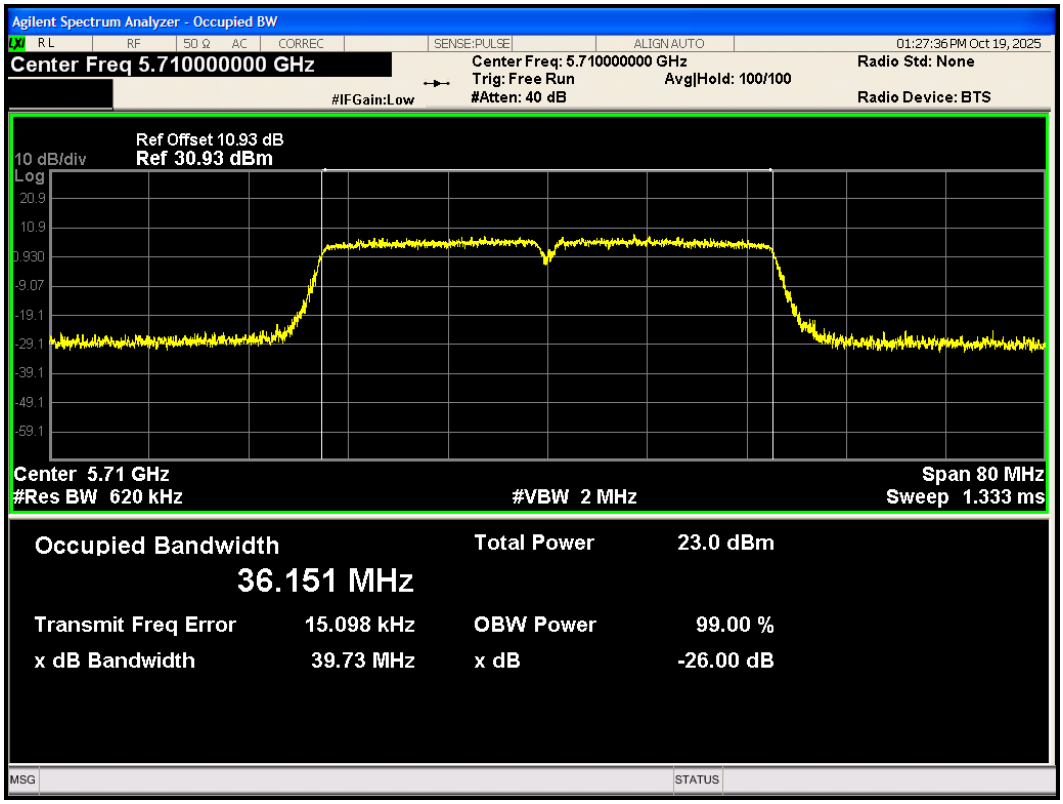
OBW 802.11ac(VHT20) 5785MHz



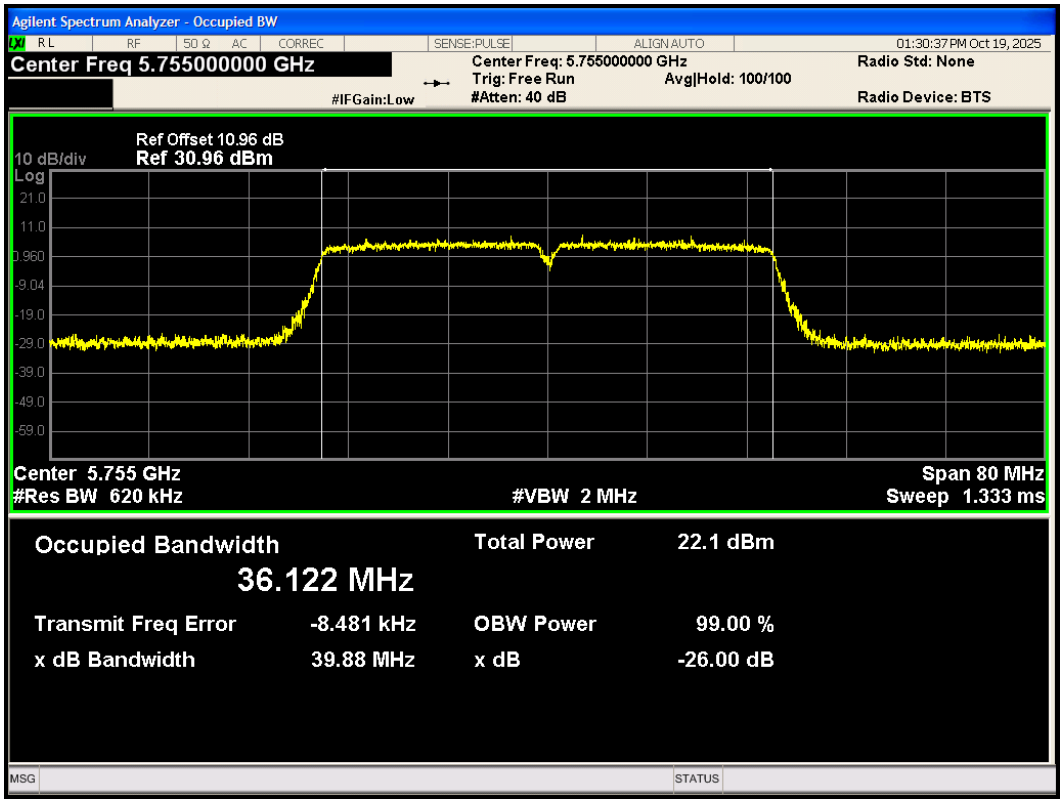
OBW 802.11ac(VHT20) 5825MHz



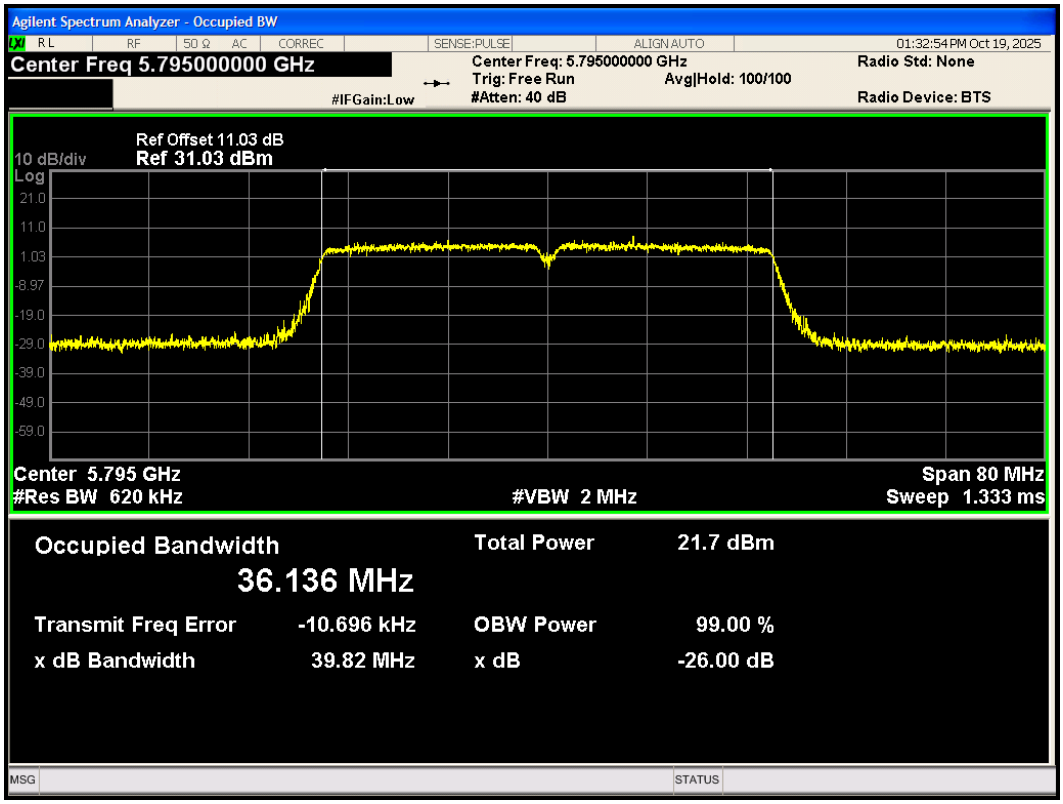
OBW 802.11ac(VHT40) 5710MHz



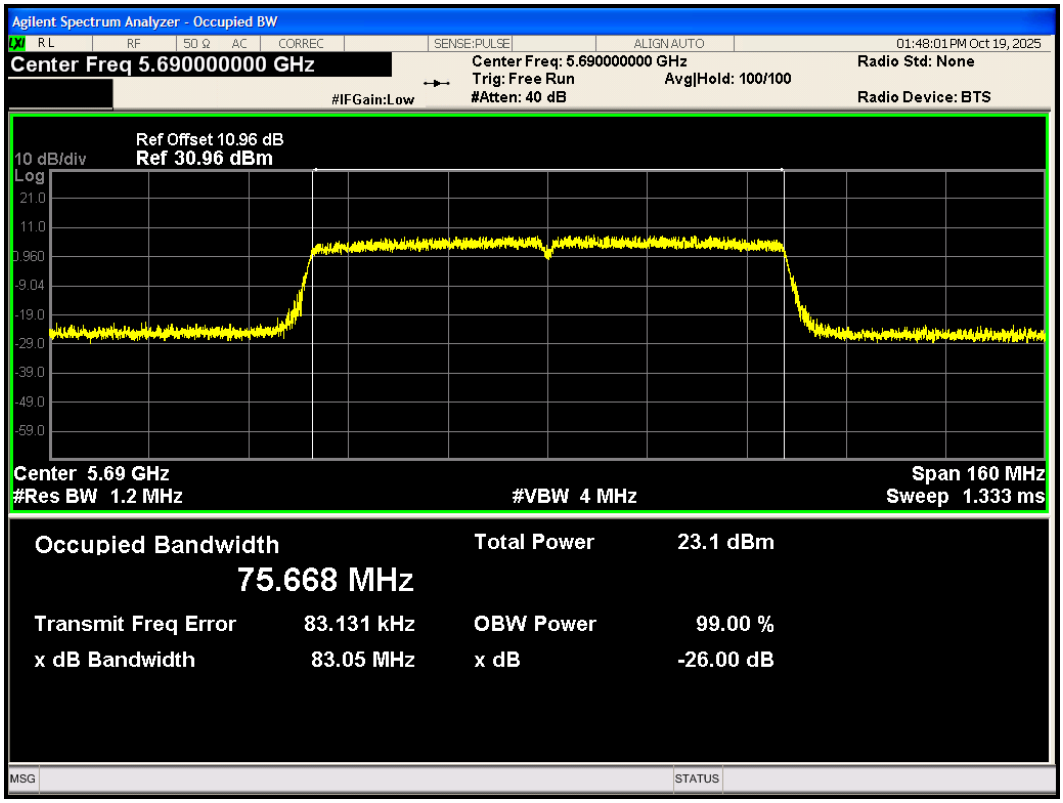
OBW 802.11ac(VHT40) 5755MHz



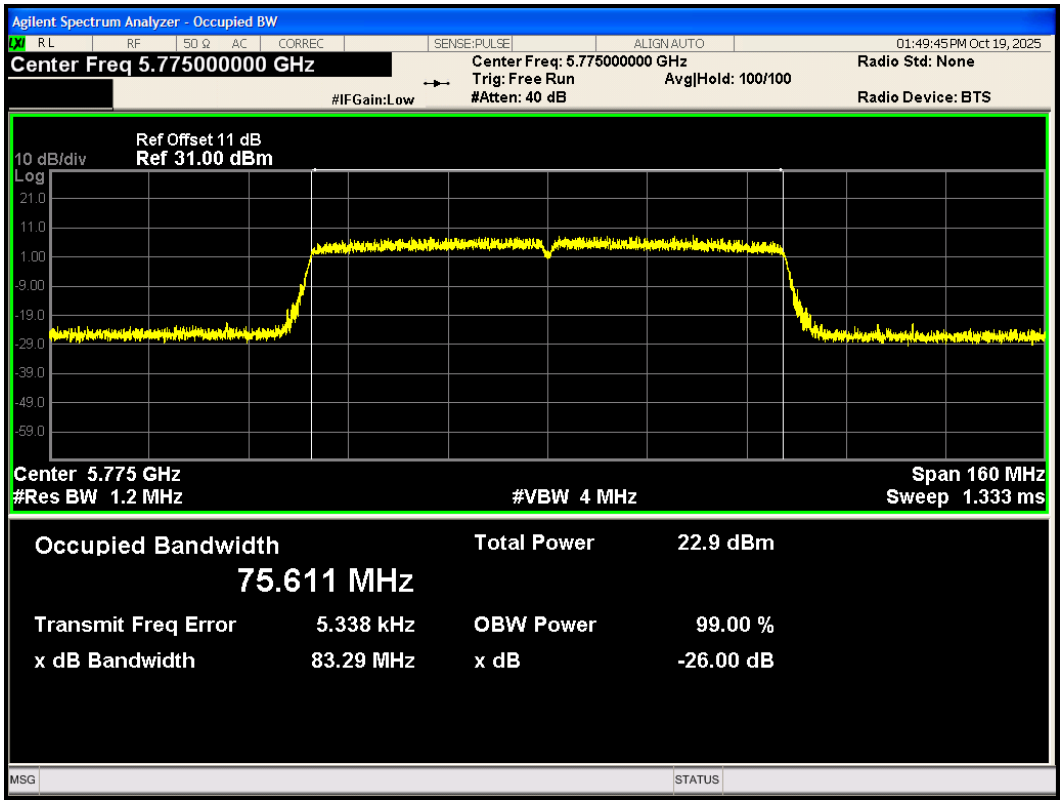
OBW 802.11ac(VHT40) 5795MHz



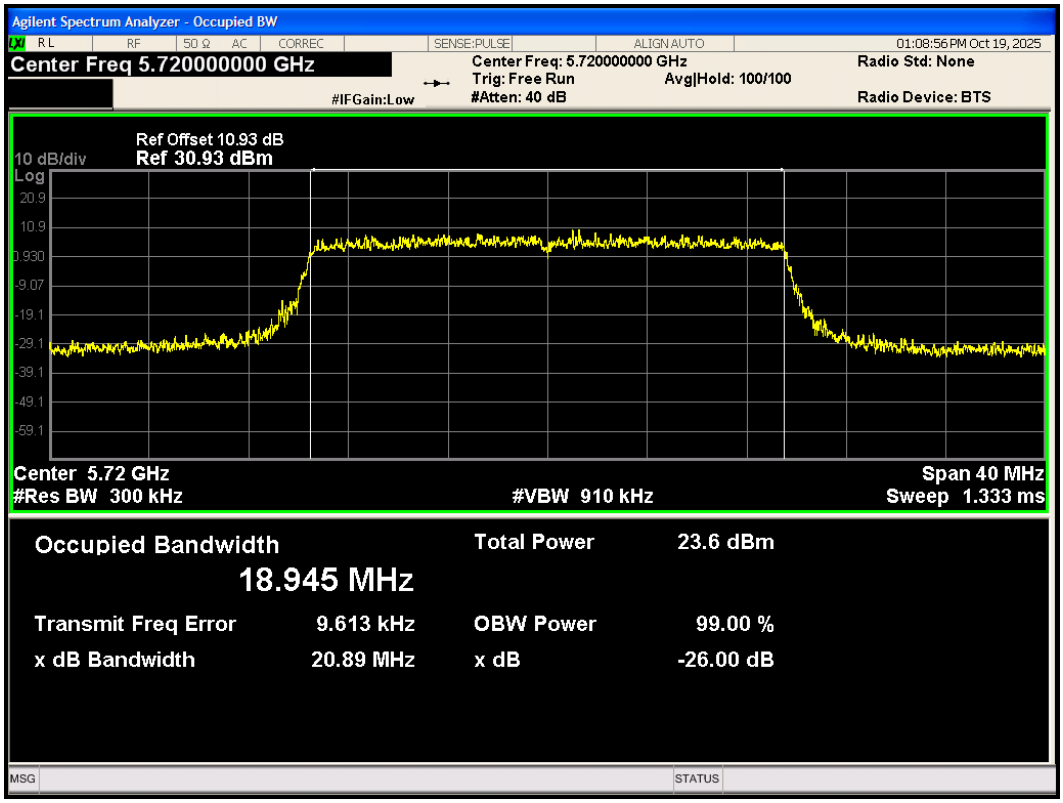
OBW 802.11ac(VHT80) 5690MHz



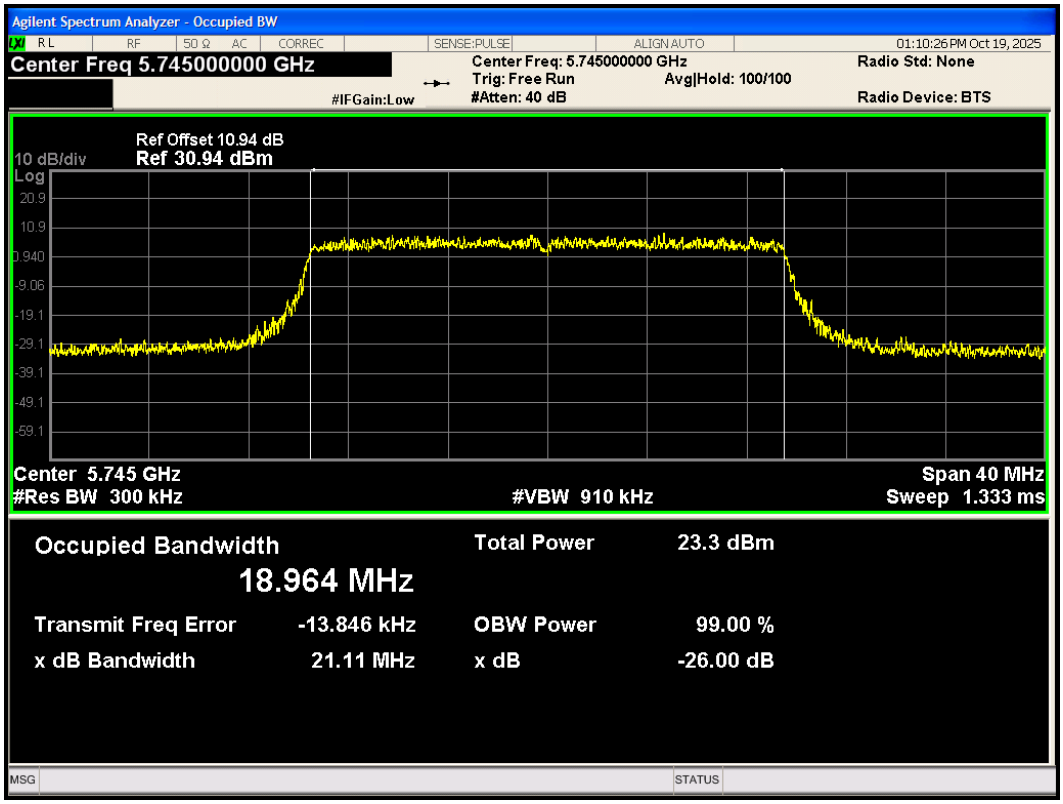
OBW 802.11ac(VHT80) 5775MHz



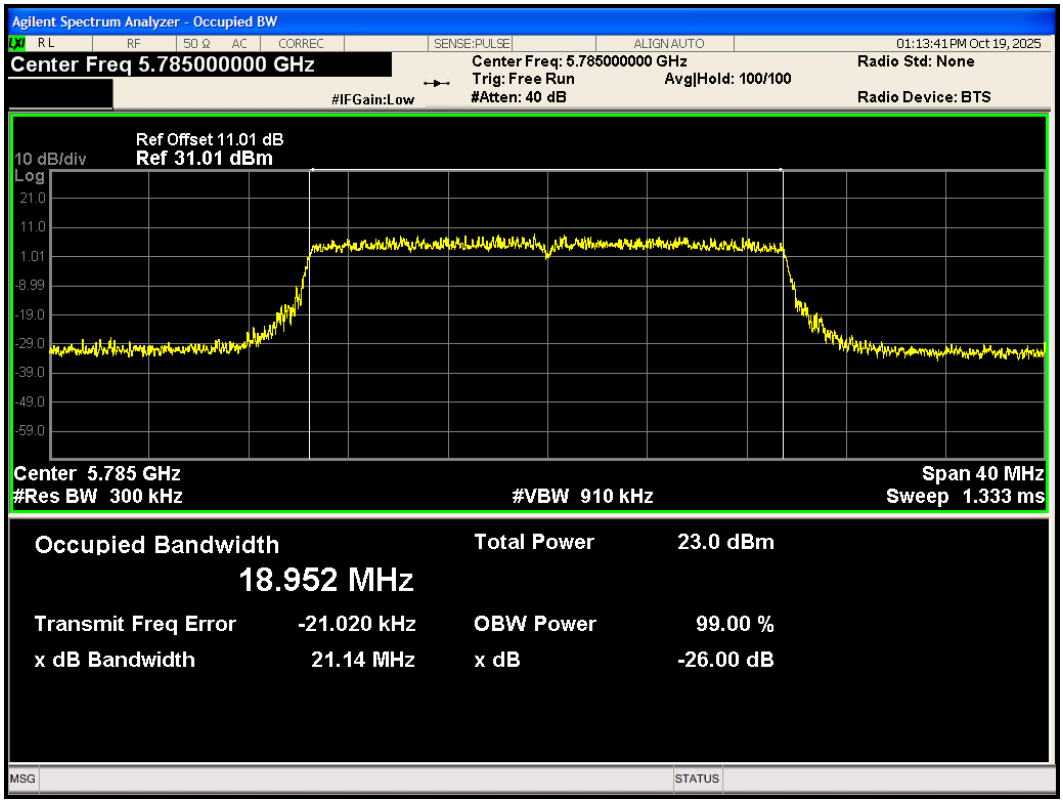
OBW 802.11ax(HE20) 5720MHz



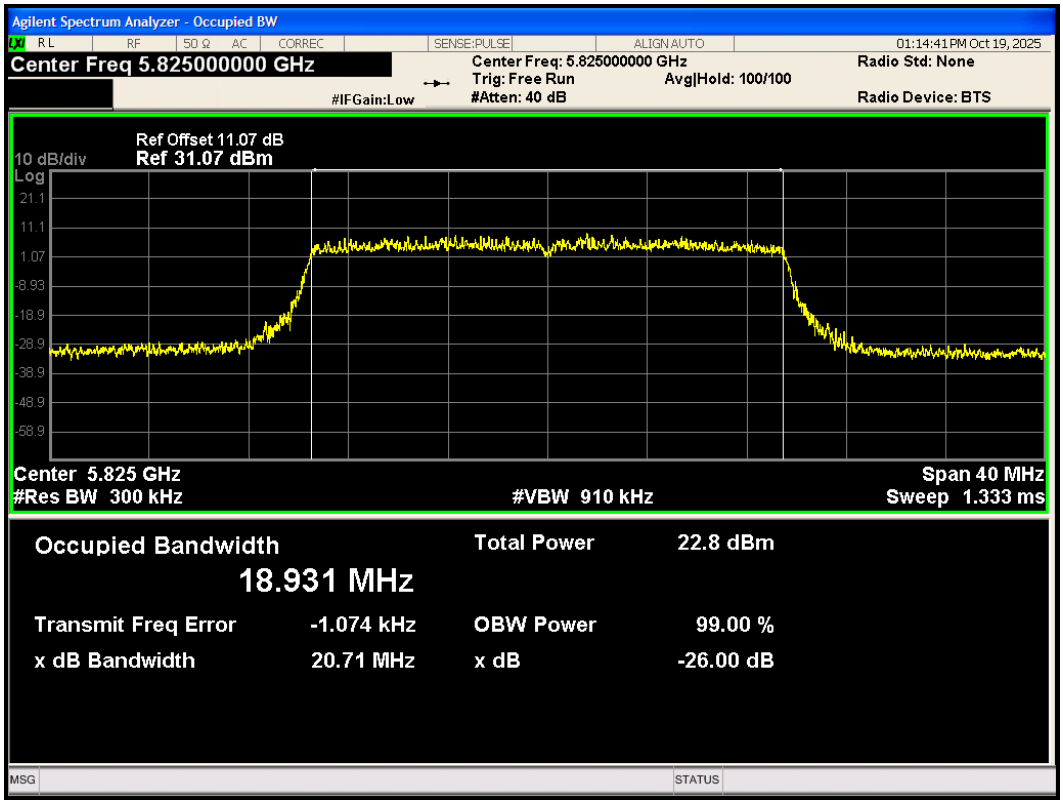
OBW 802.11ax(HE20) 5745MHz



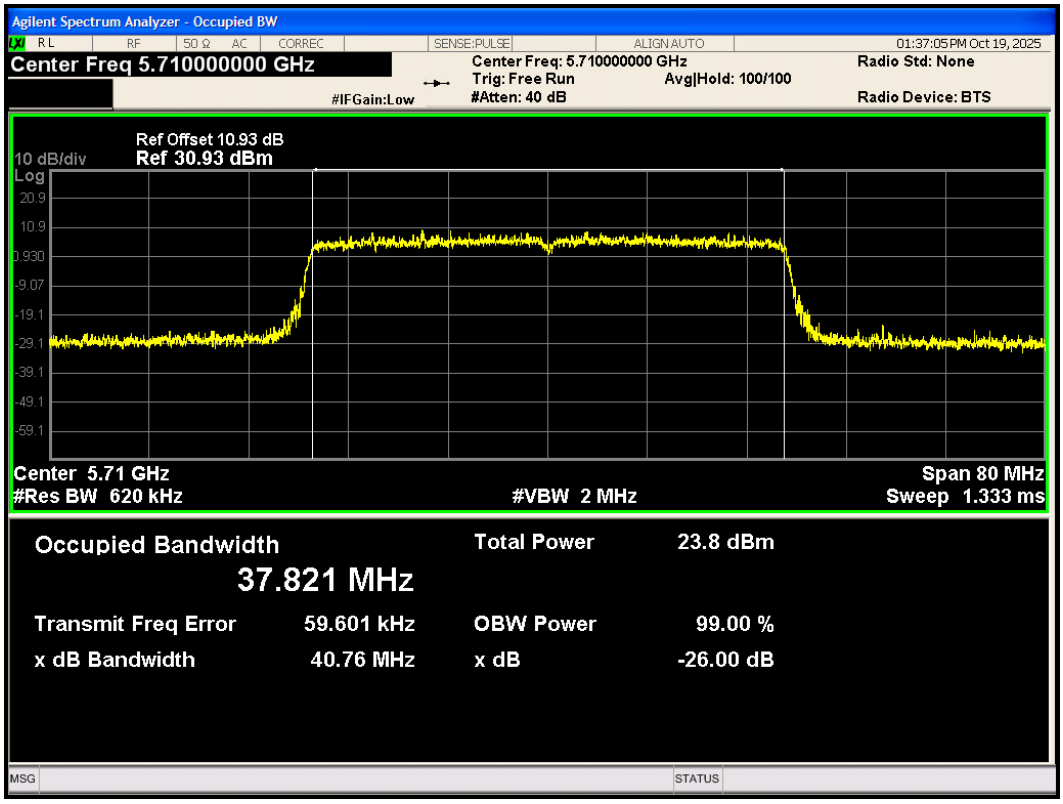
OBW 802.11ax(HE20) 5785MHz



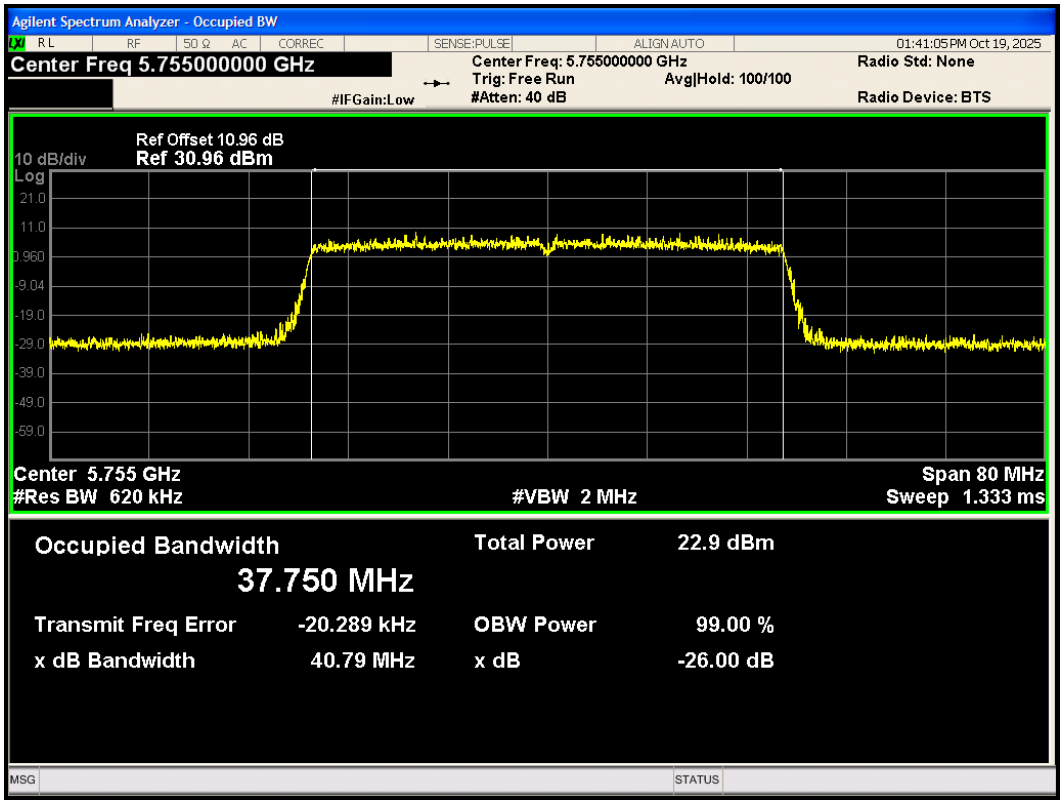
OBW 802.11ax(HE20) 5825MHz



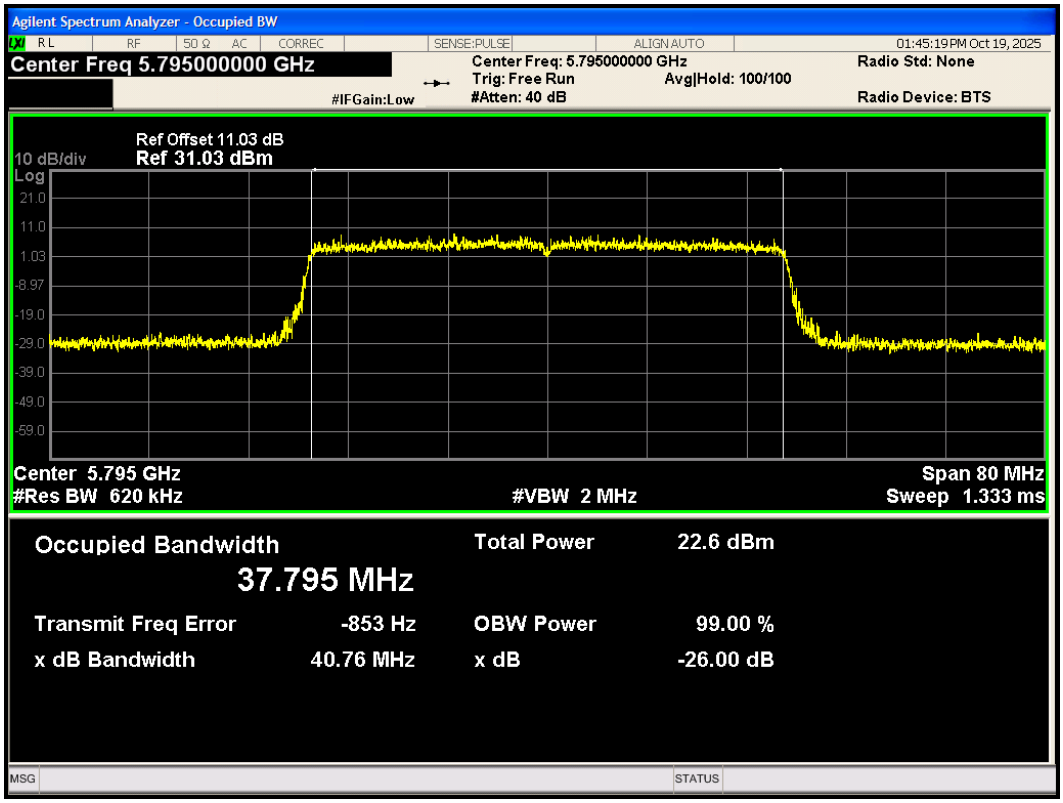
OBW 802.11ax(HE40) 5710MHz



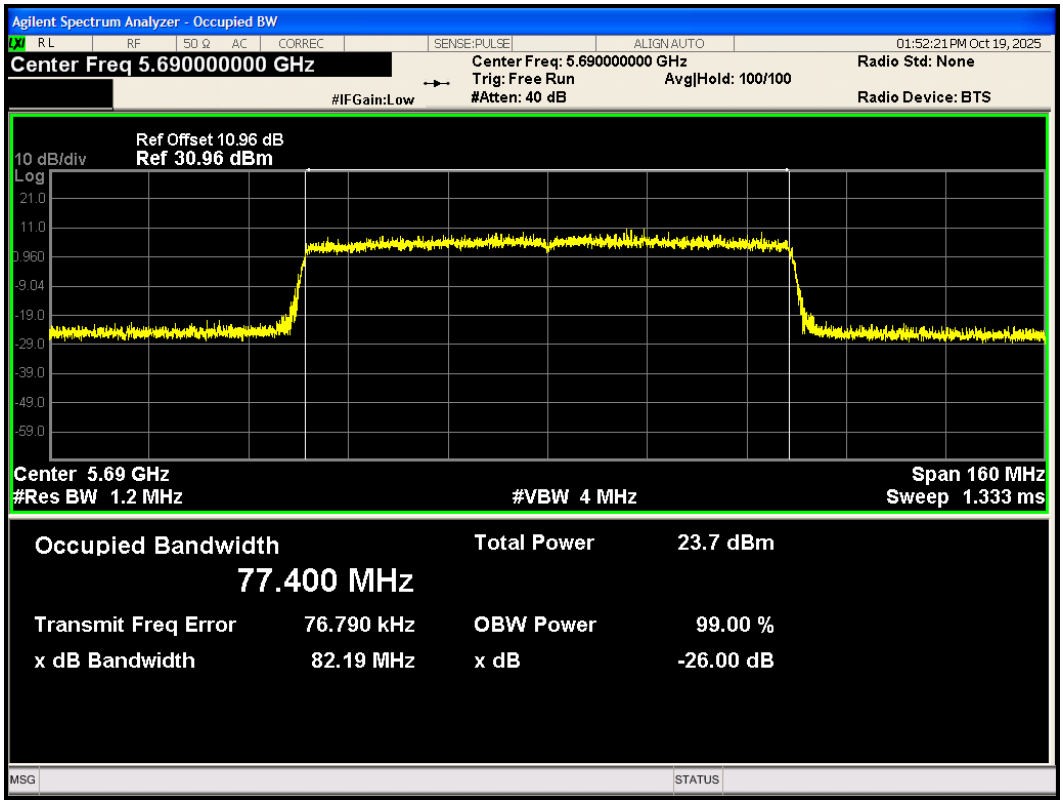
OBW 802.11ax(HE40) 5755MHz



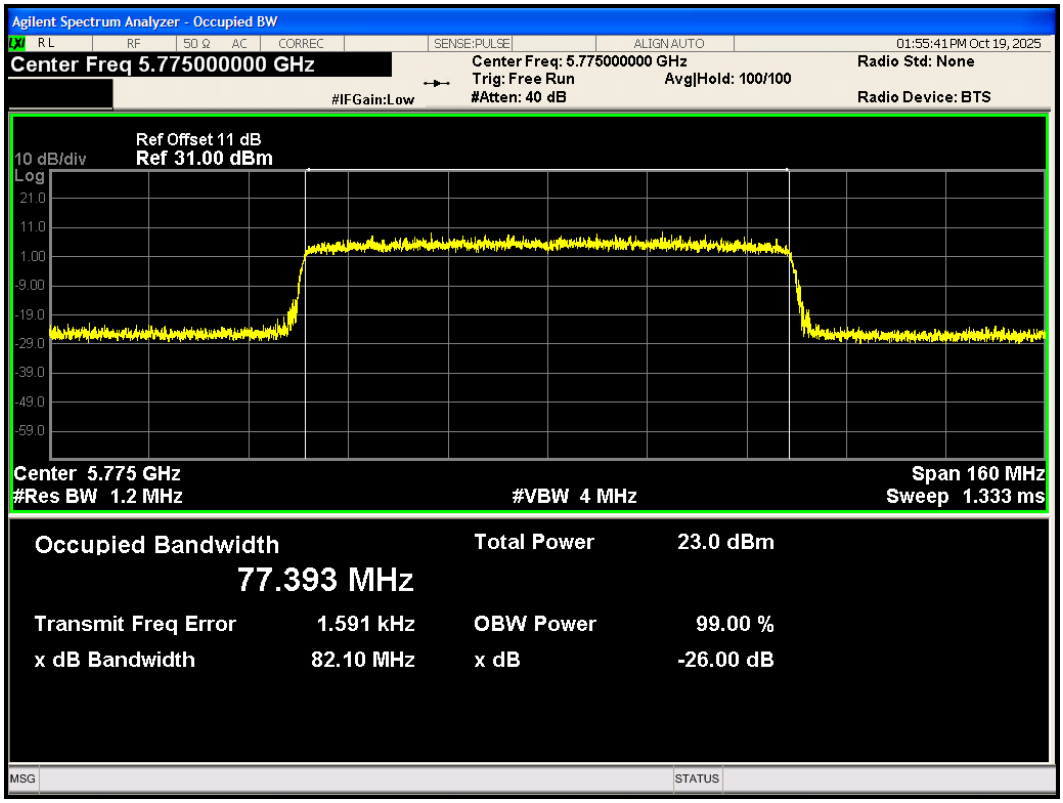
OBW 802.11ax(HE40) 5795MHz



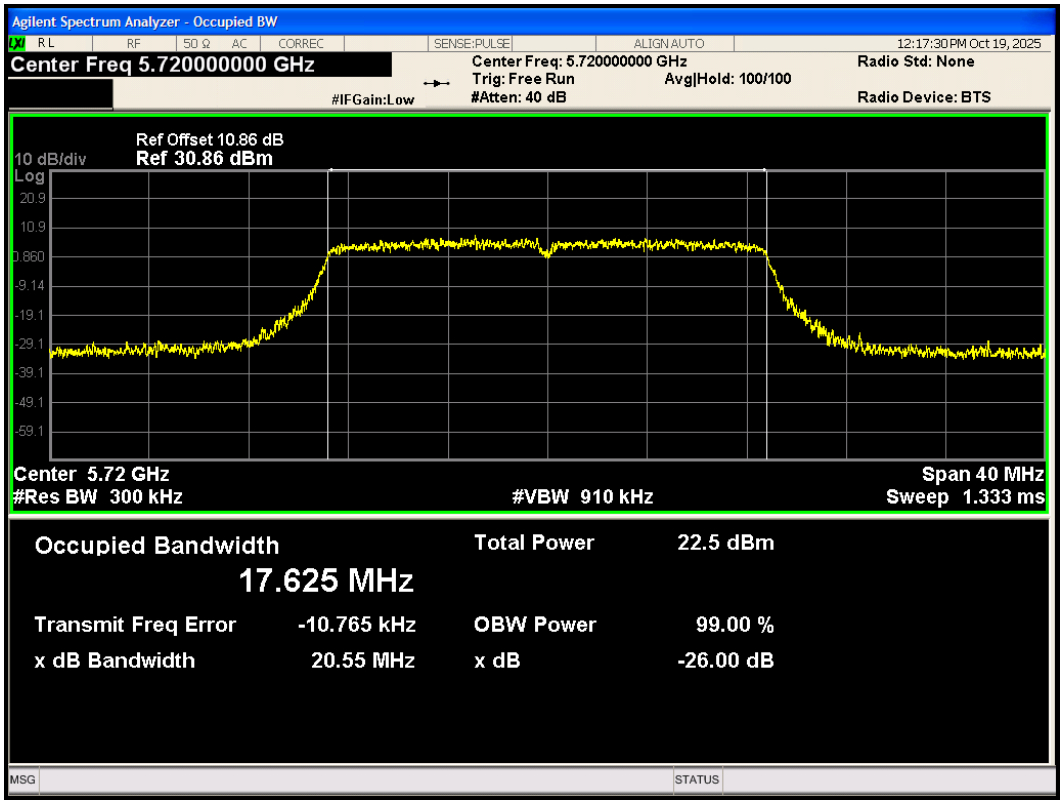
OBW 802.11ax(HE80) 5690MHz



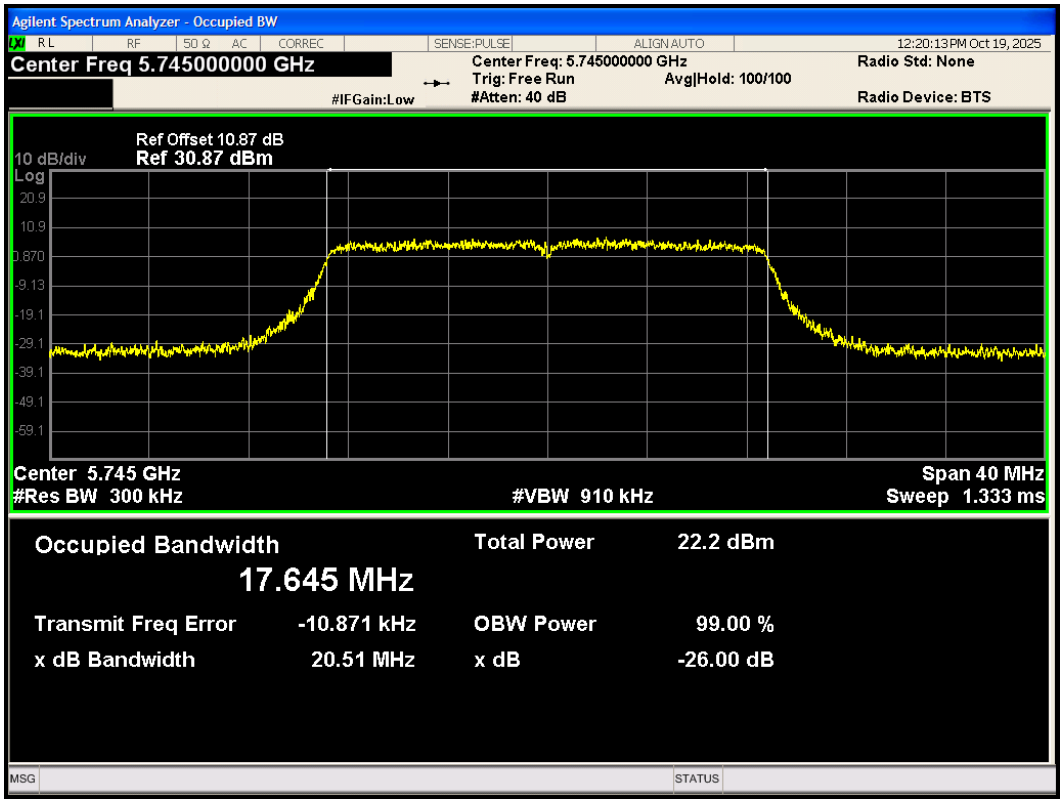
OBW 802.11ax(HE80) 5775MHz



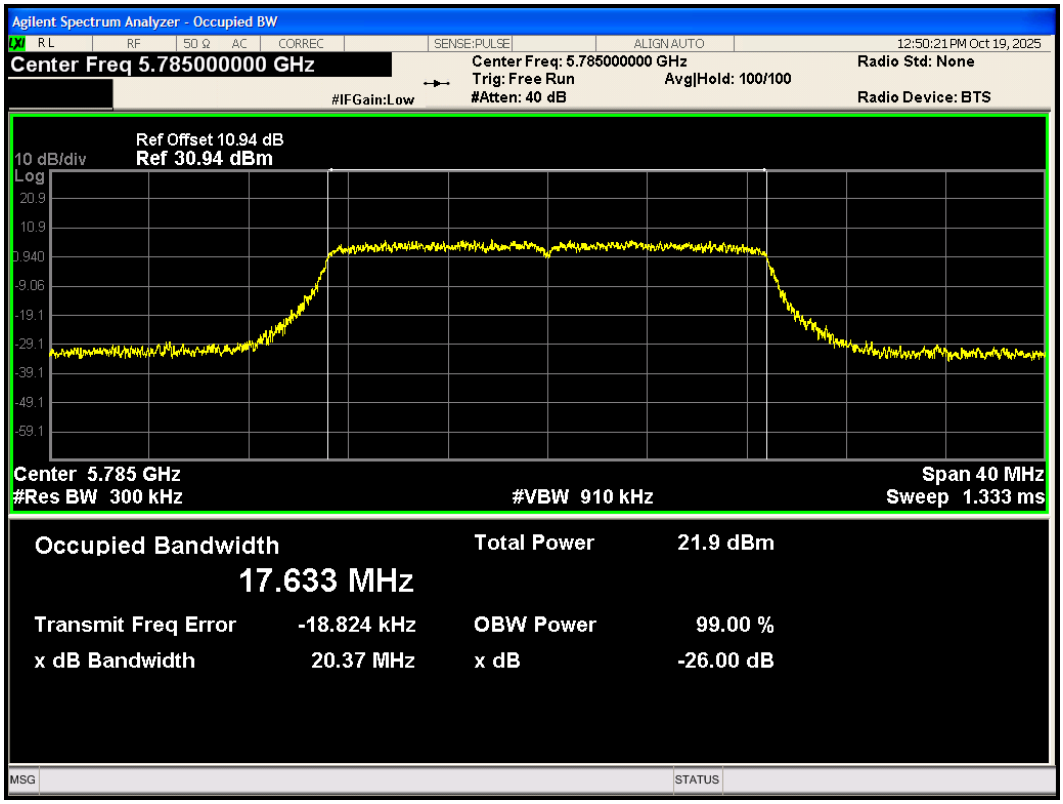
OBW 802.11n(HT20) 5720MHz



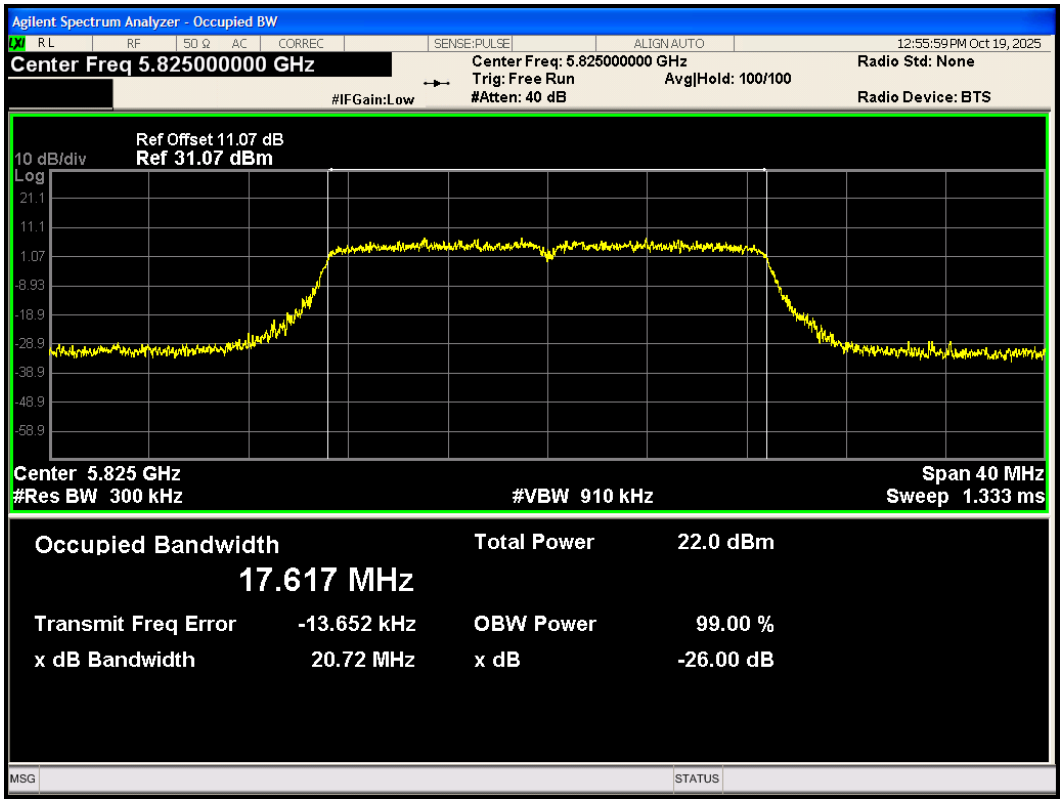
OBW 802.11n(HT20) 5745MHz



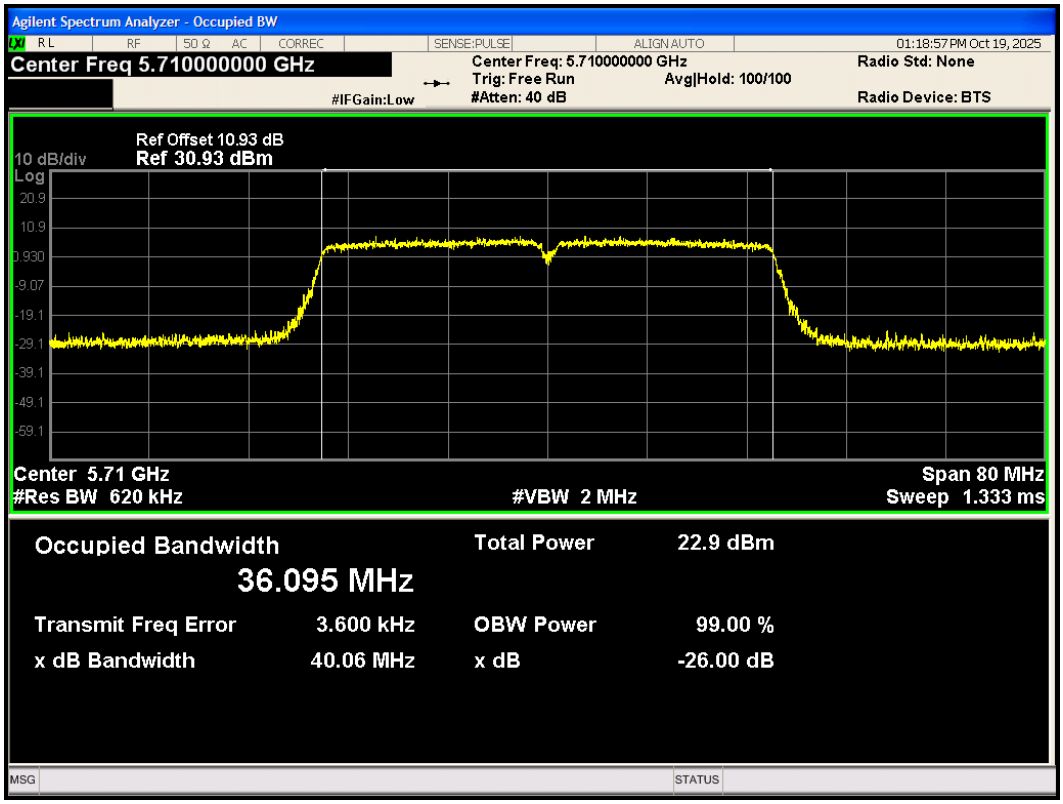
OBW 802.11n(HT20) 5785MHz



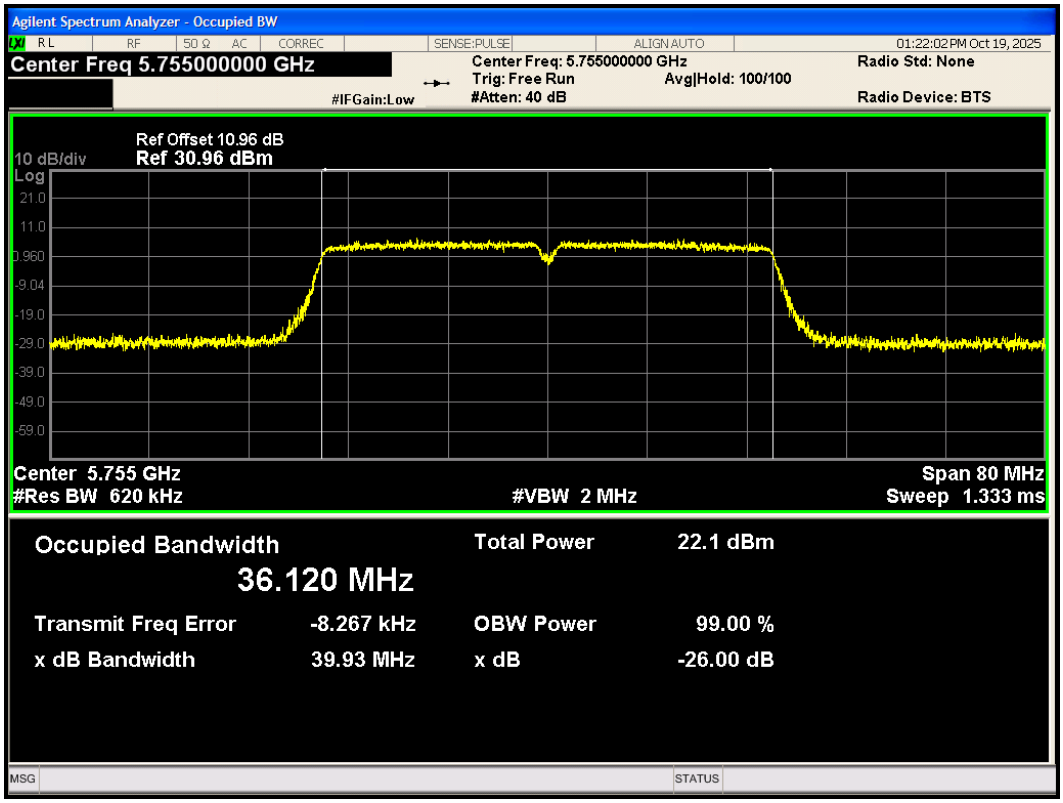
OBW 802.11n(HT20) 5825MHz



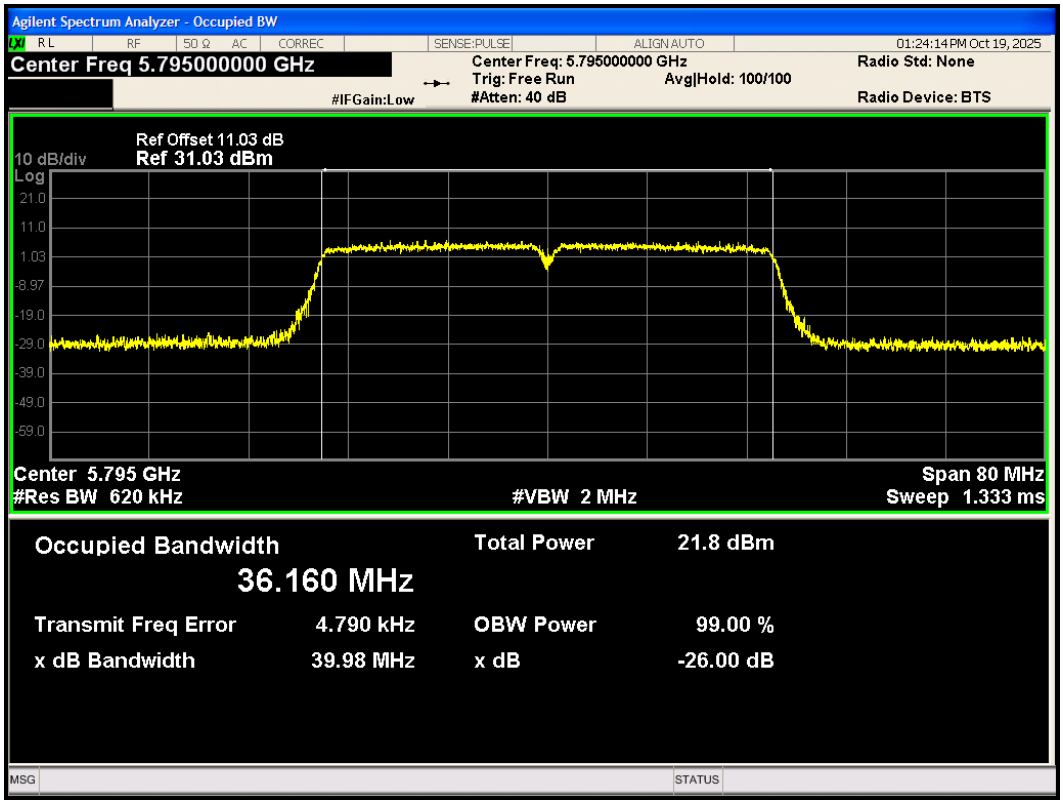
OBW 802.11n(HT40) 5710MHz



OBW 802.11n(HT40) 5755MHz



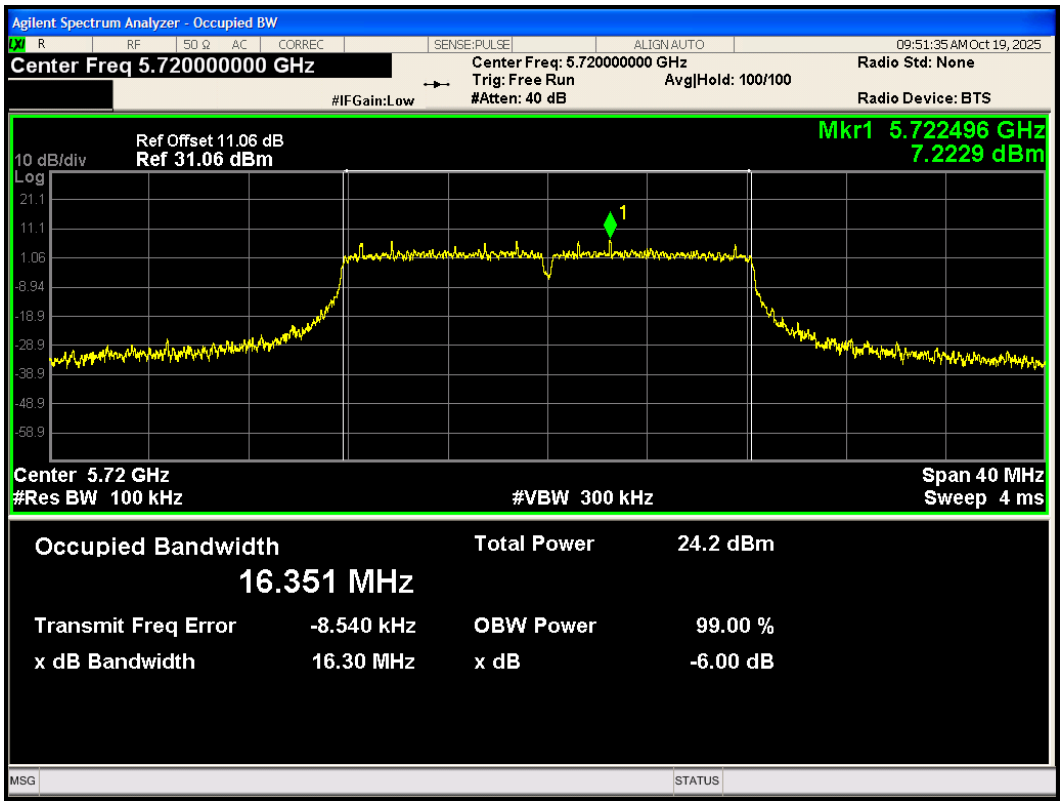
OBW 802.11n(HT40) 5795MHz



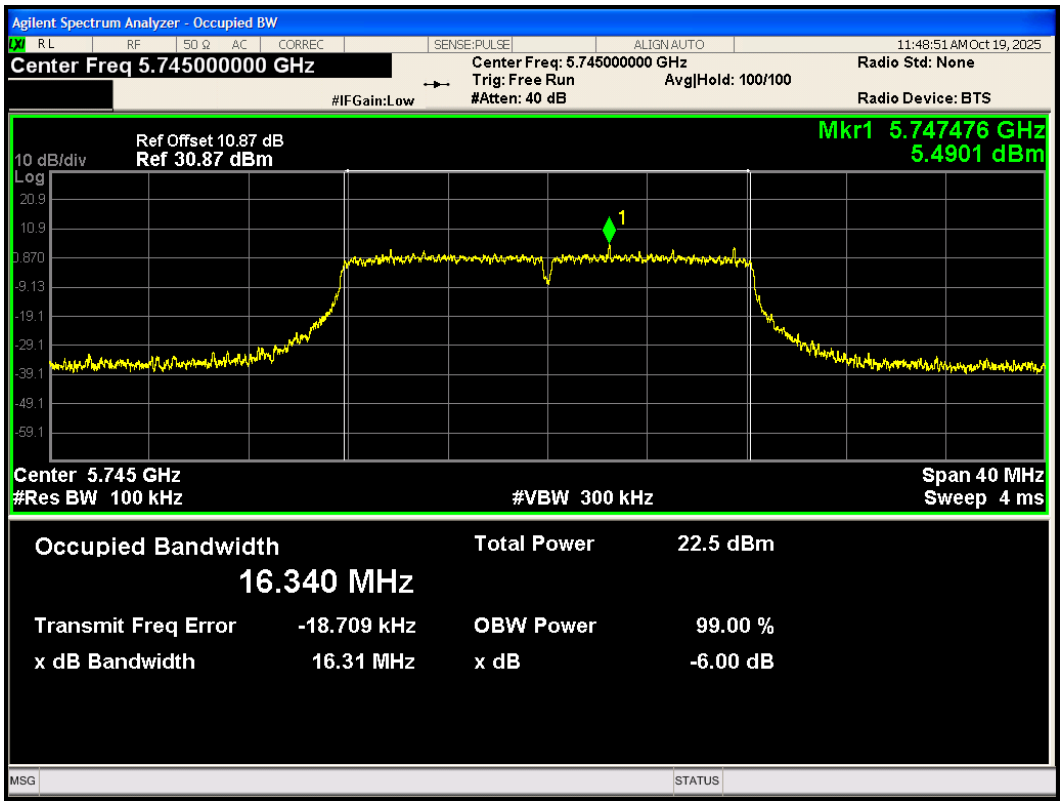
Minimum 6 dB bandwidth

U-NII-3

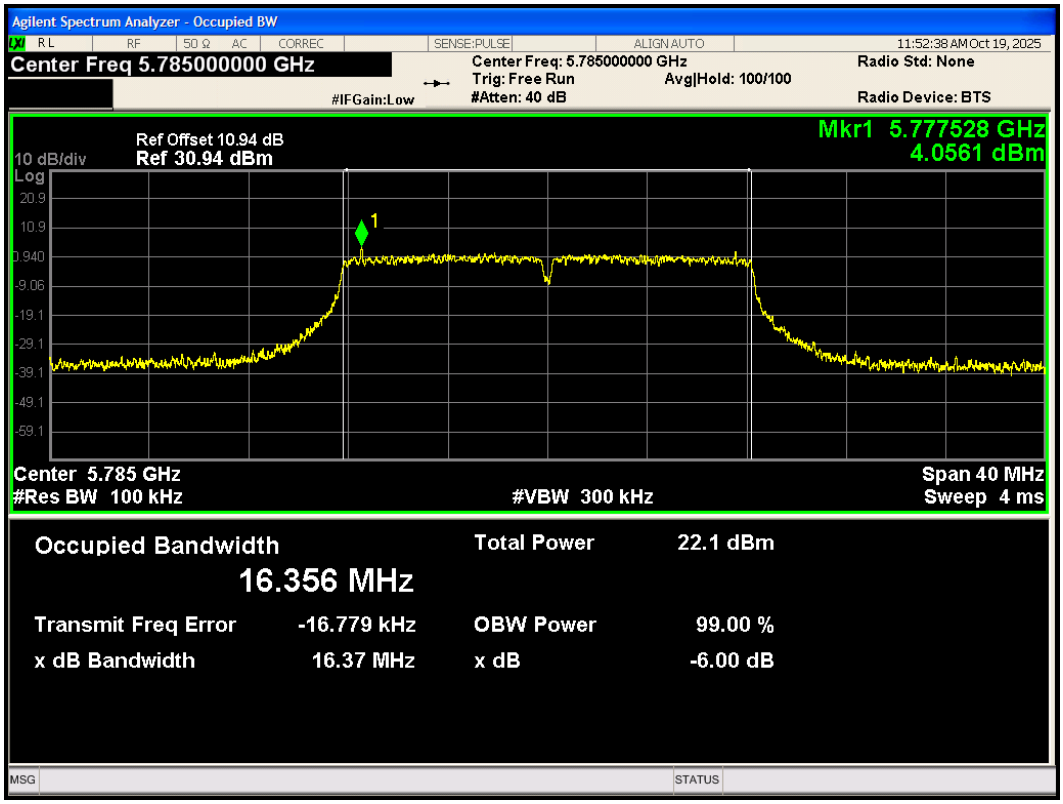
-6dB Bandwidth 802.11a 5720MHz



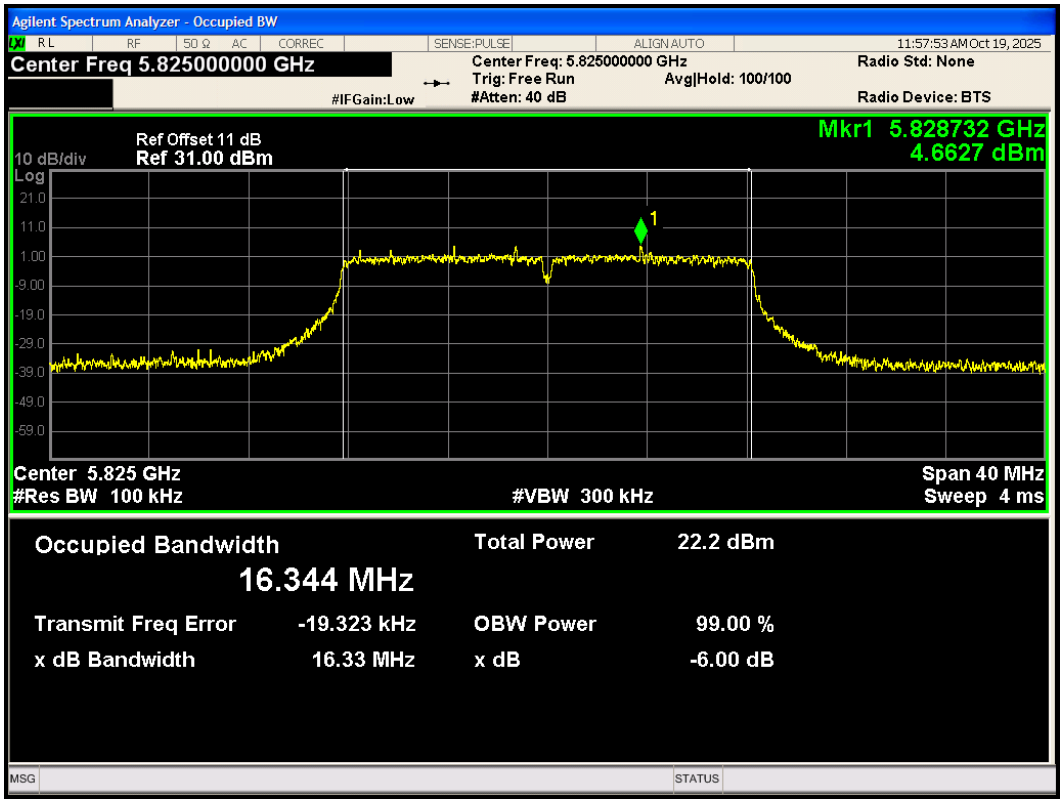
-6dB Bandwidth 802.11a 5745MHz



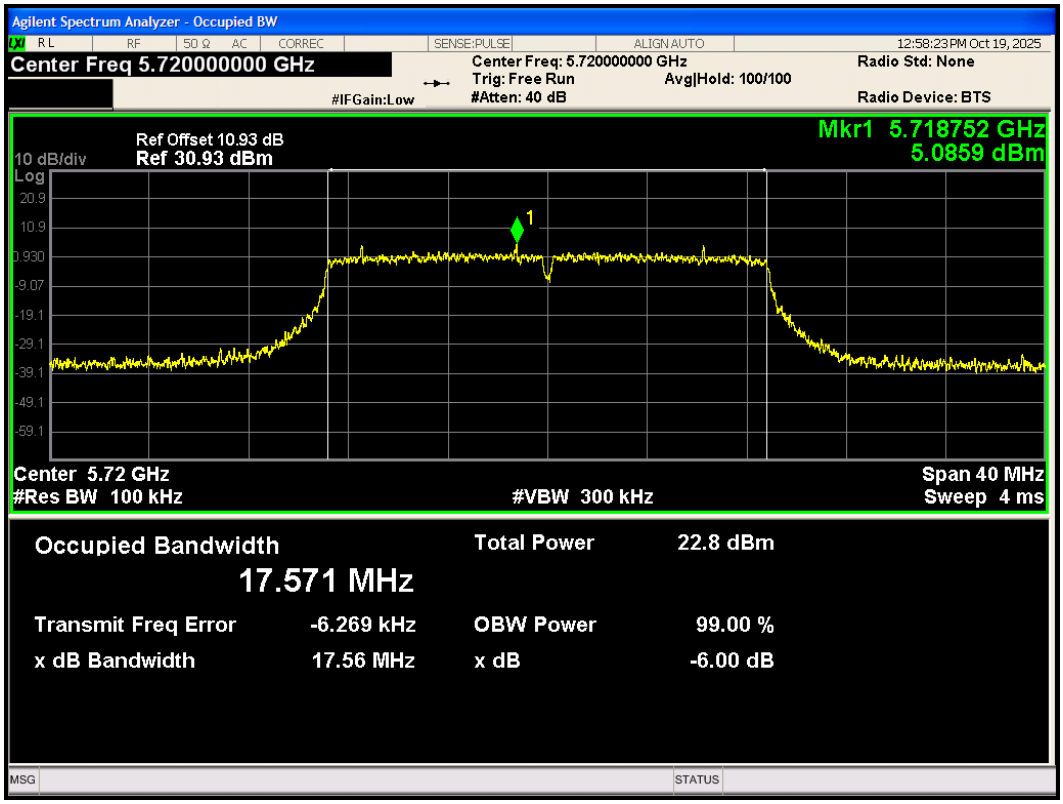
-6dB Bandwidth 802.11a 5785MHz



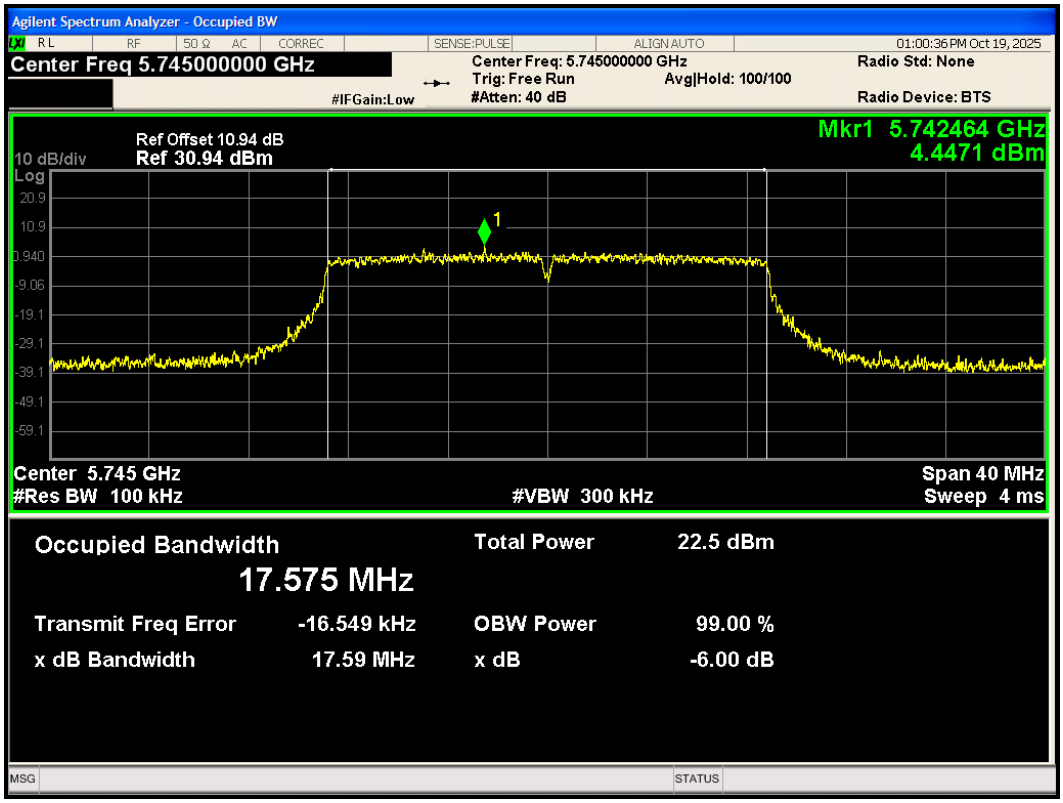
-6dB Bandwidth 802.11a 5825MHz



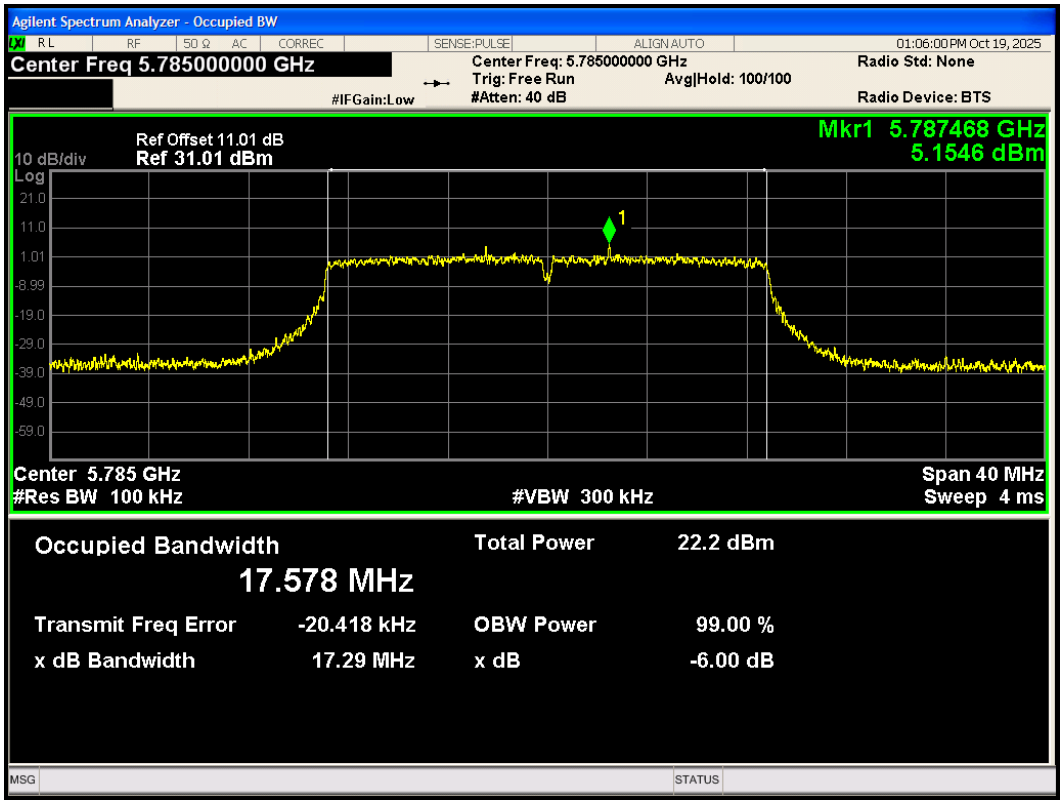
-6dB Bandwidth 802.11ac(VHT20) 5720MHz



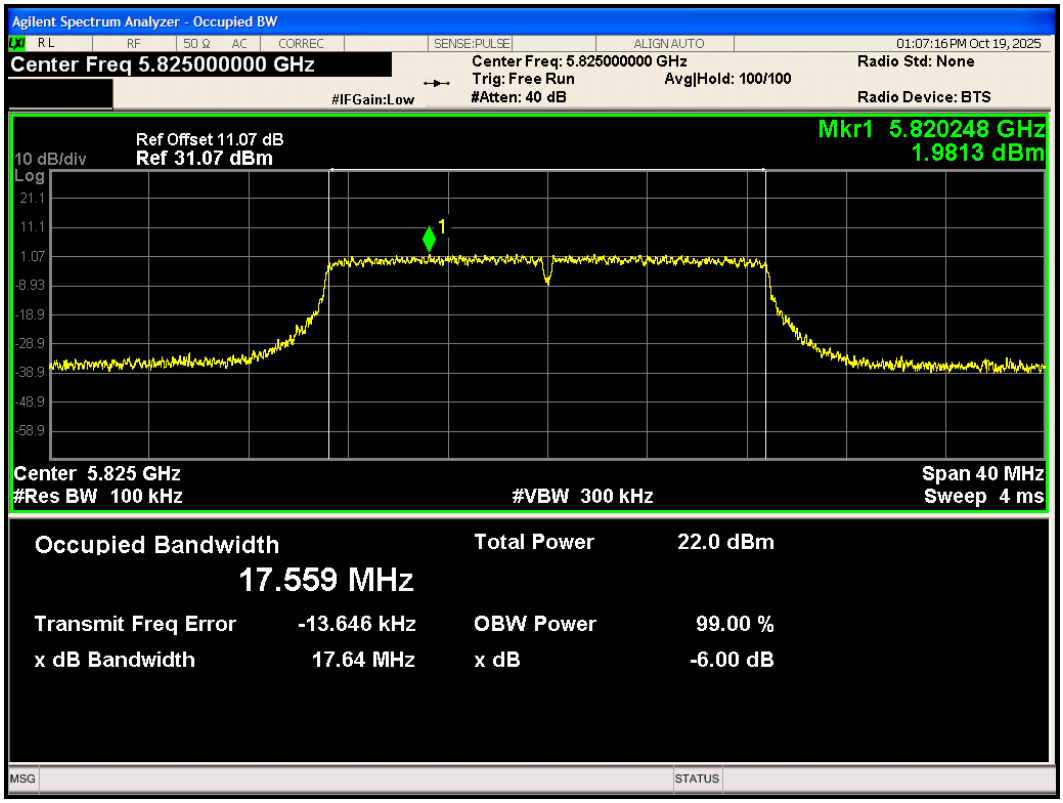
-6dB Bandwidth 802.11ac(VHT20) 5745MHz



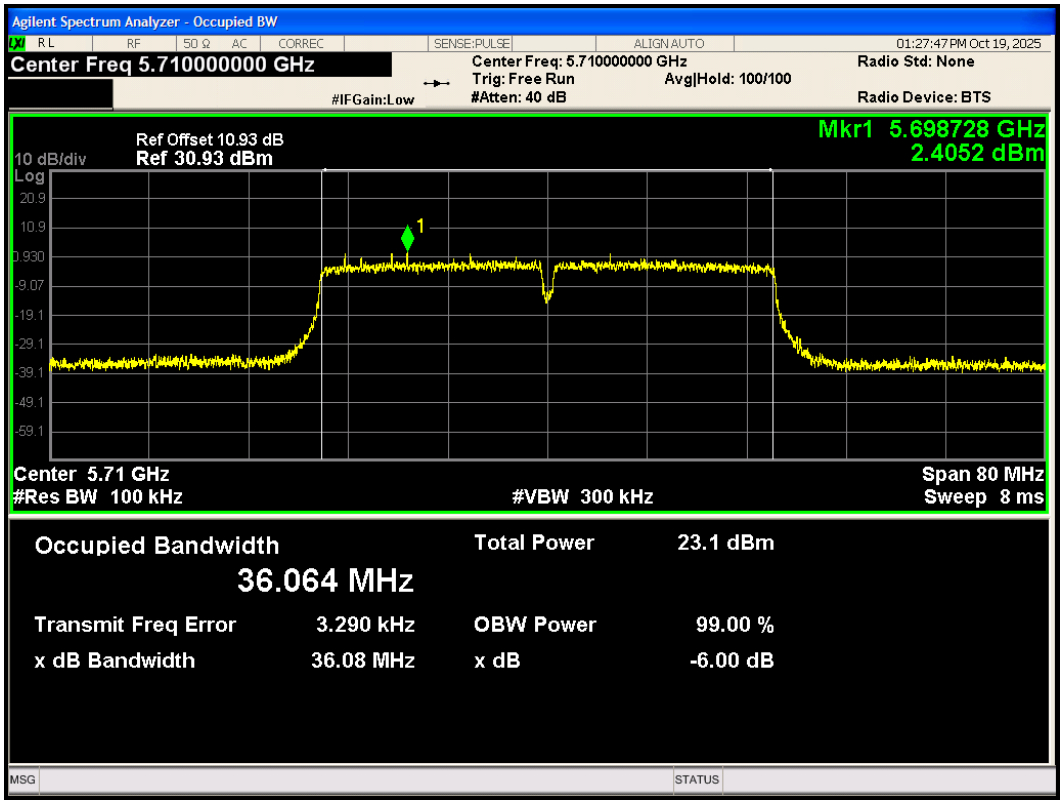
-6dB Bandwidth 802.11ac(VHT20) 5785MHz



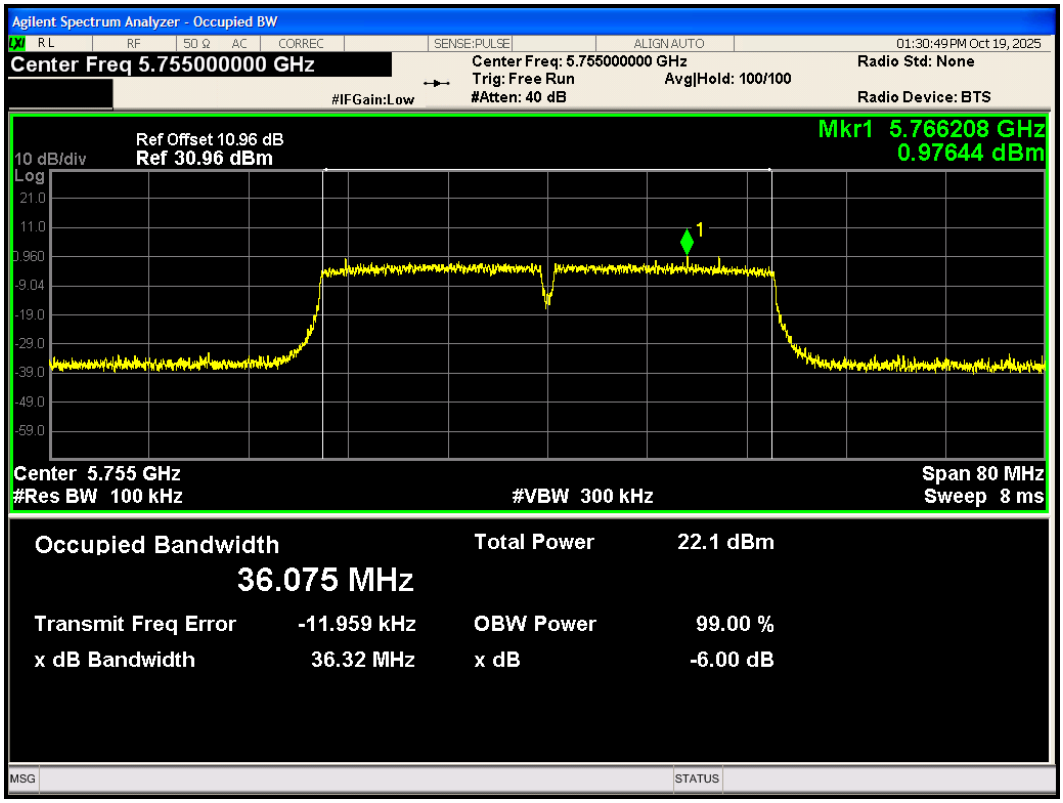
-6dB Bandwidth 802.11ac(VHT20) 5825MHz



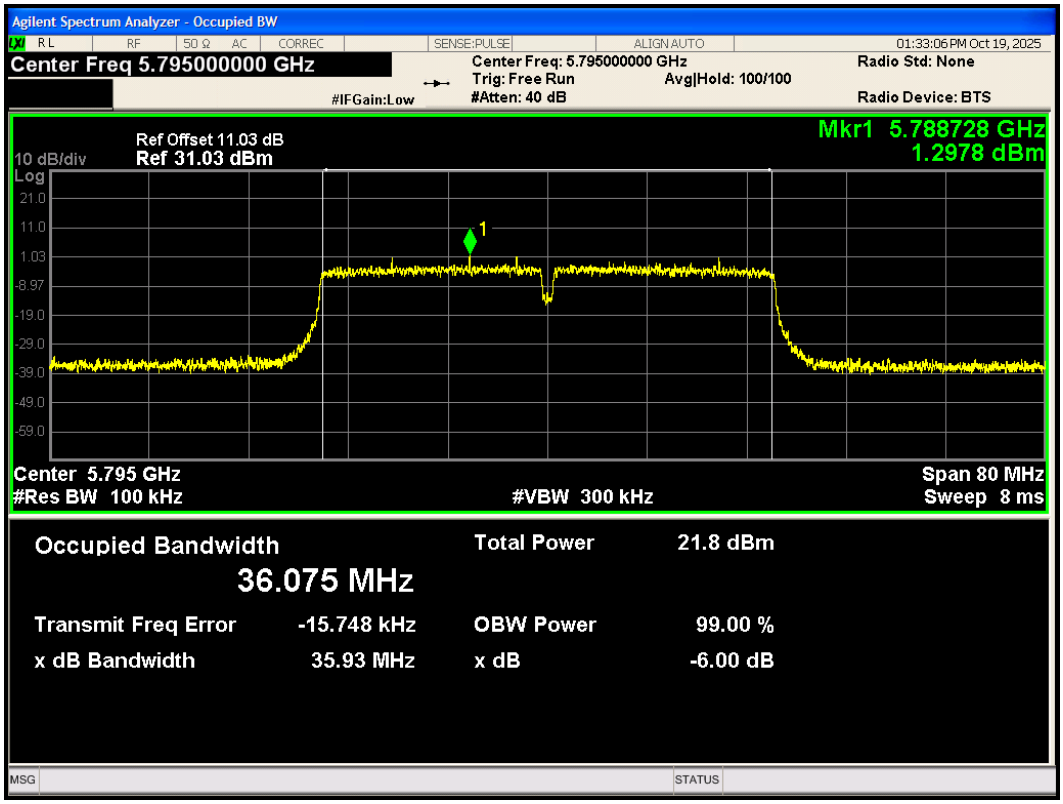
-6dB Bandwidth 802.11ac(VHT40) 5710MHz



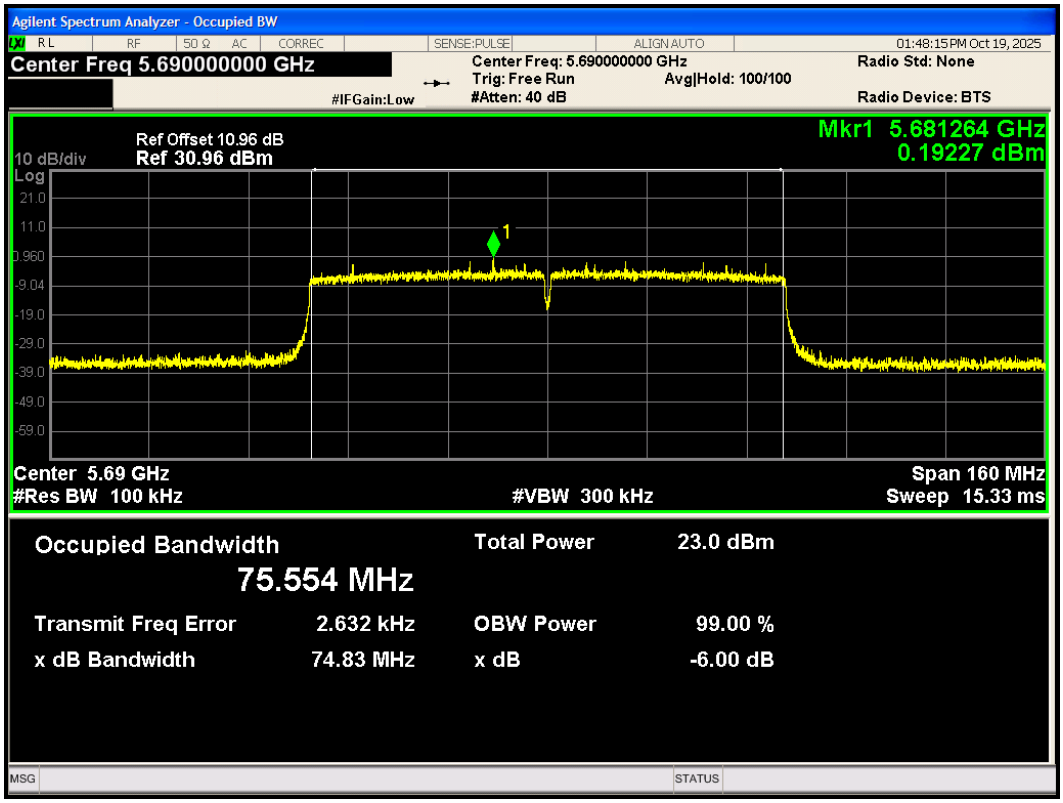
-6dB Bandwidth 802.11ac(VHT40) 5755MHz



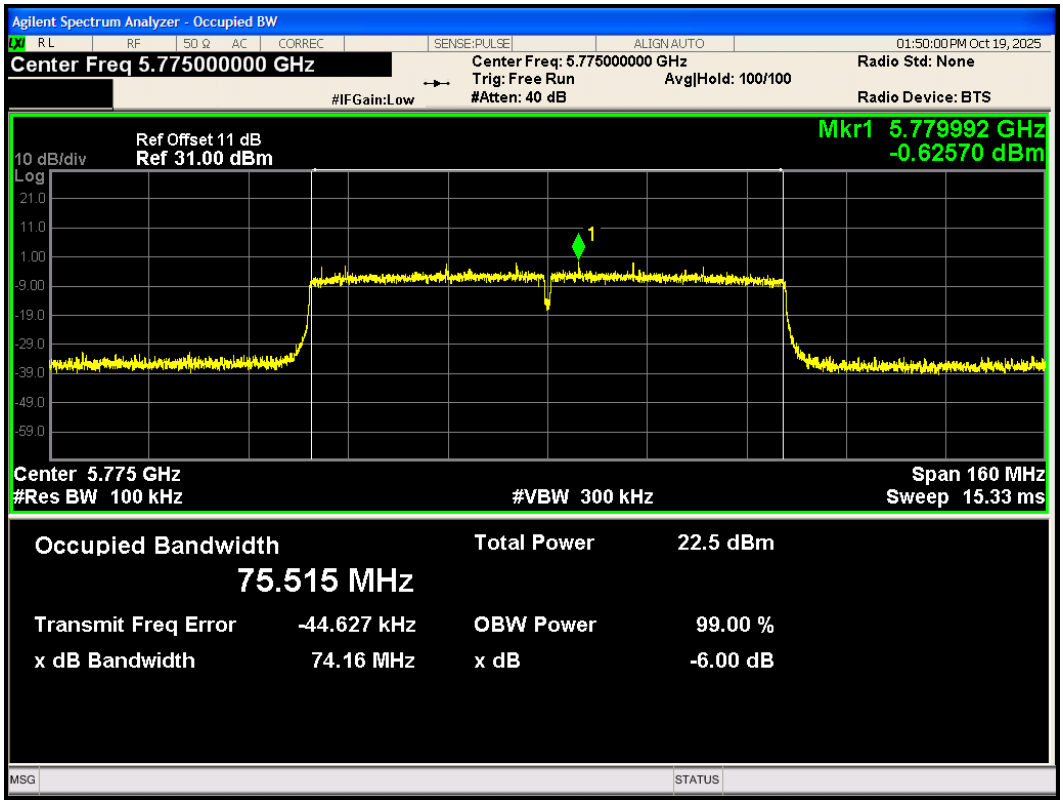
-6dB Bandwidth 802.11ac(VHT40) 5795MHz



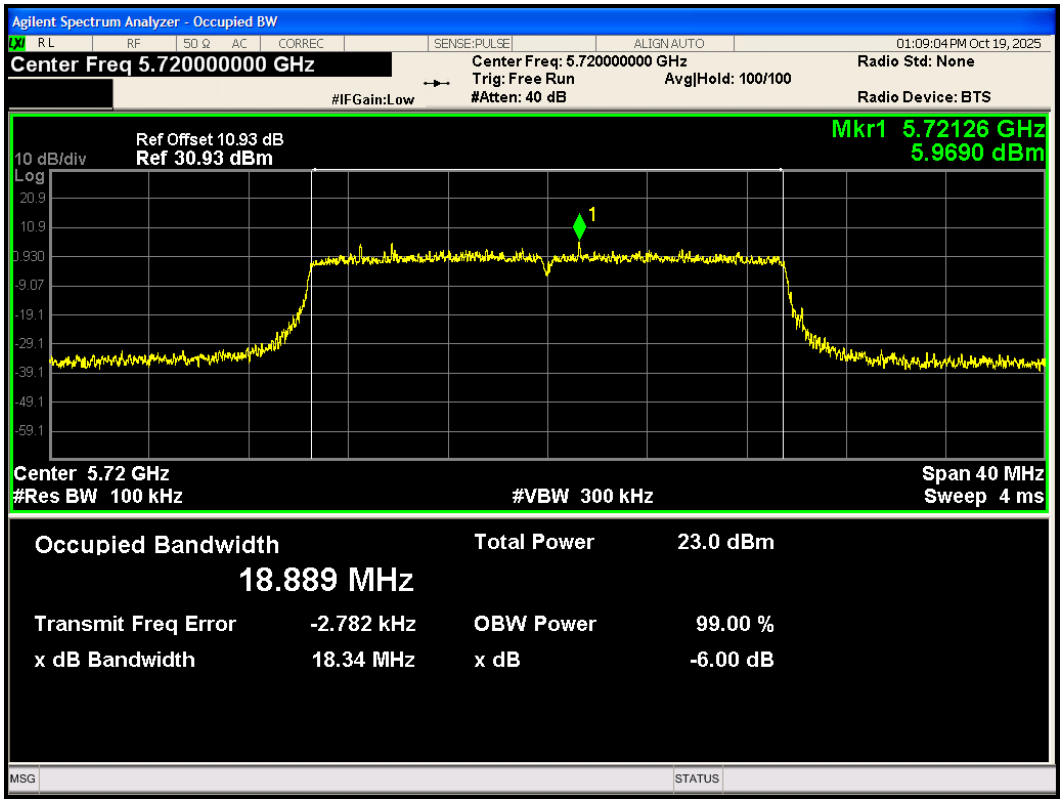
-6dB Bandwidth 802.11ac(VHT80) 5690MHz



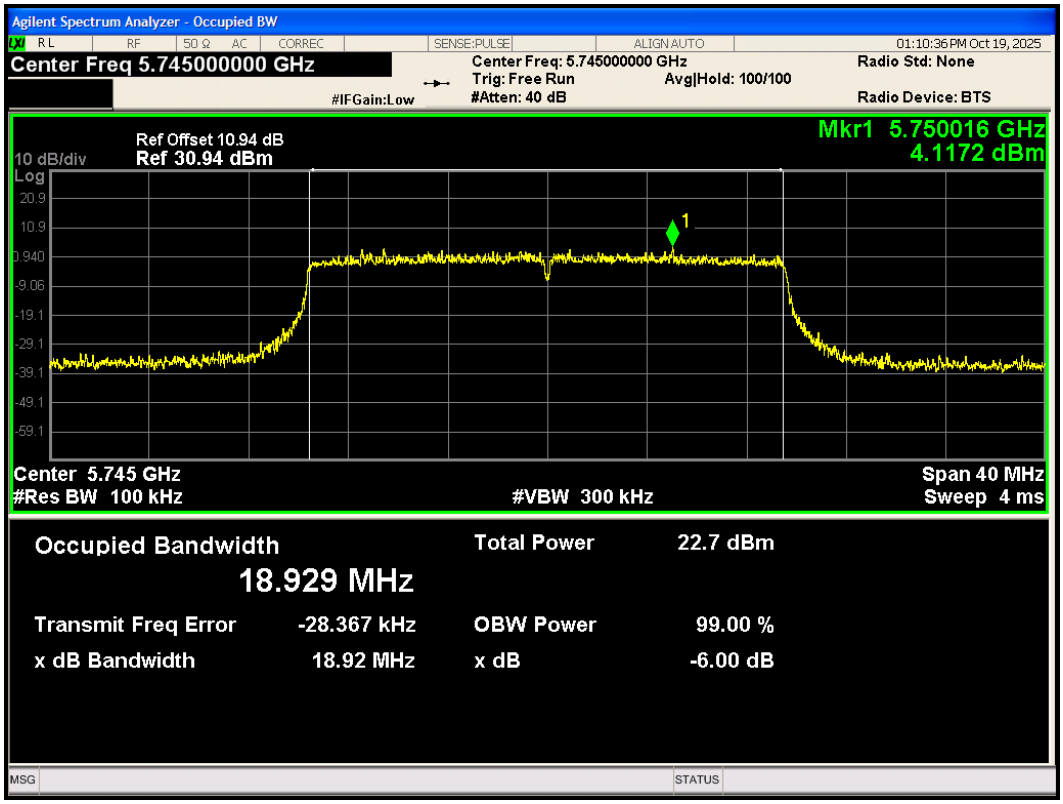
-6dB Bandwidth 802.11ac(VHT80) 5775MHz



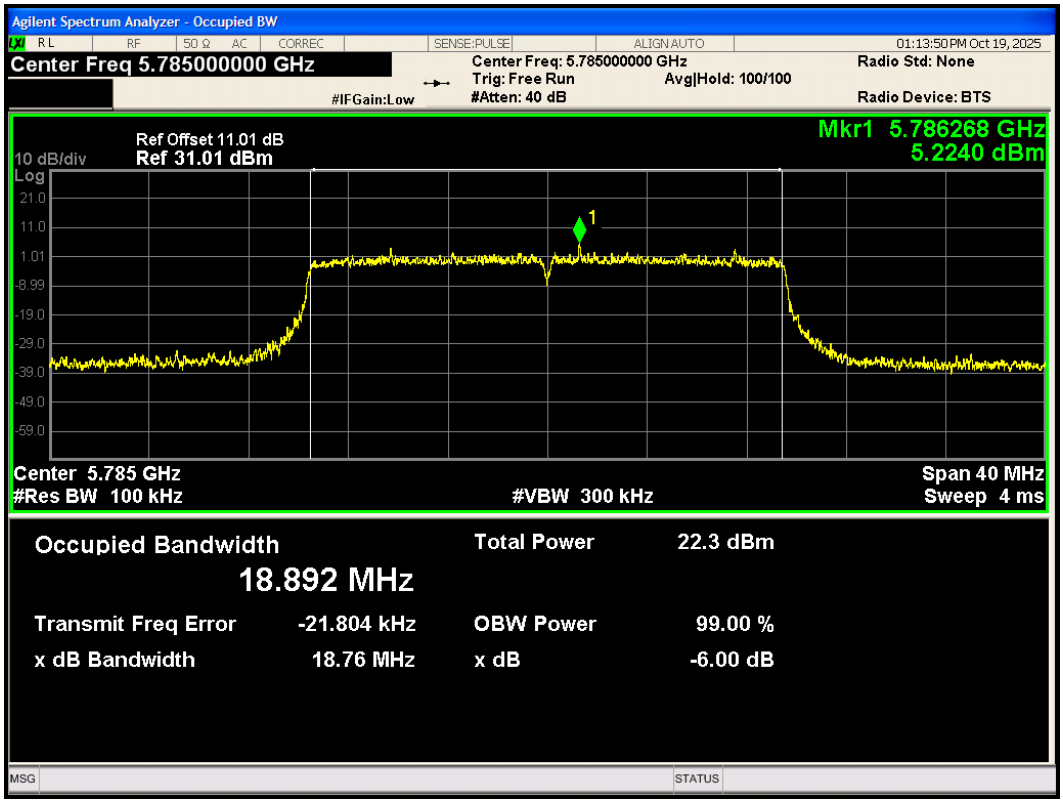
-6dB Bandwidth 802.11ax(HE20) 5720MHz



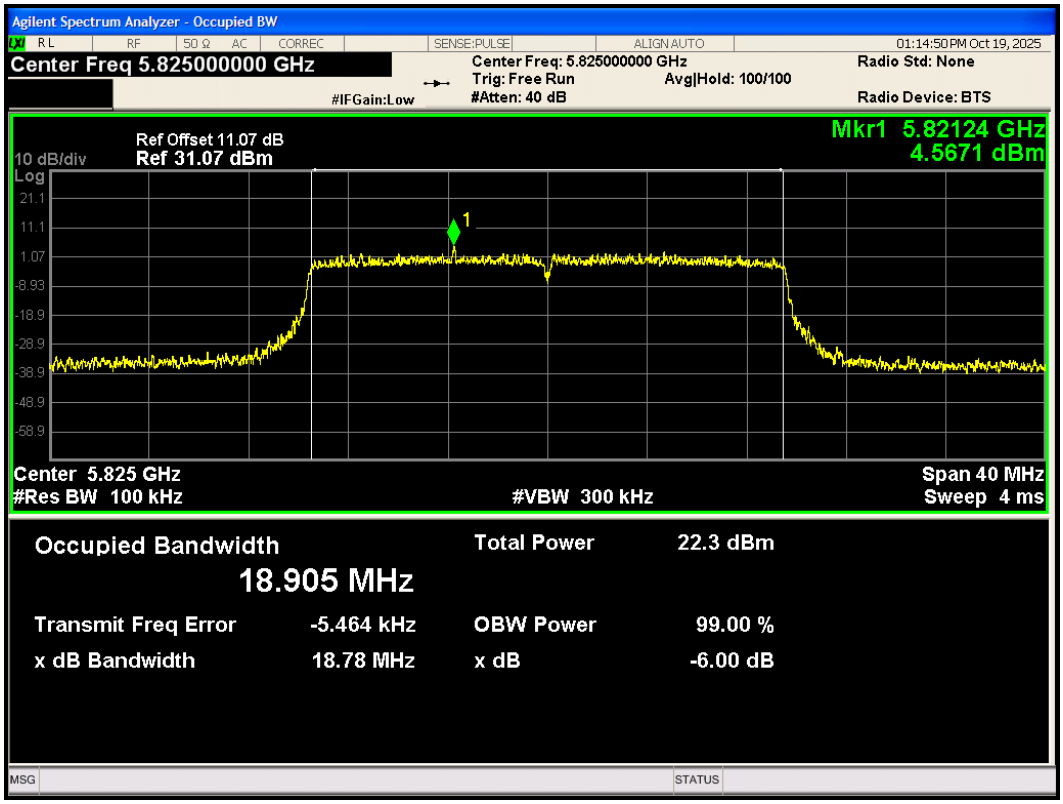
-6dB Bandwidth 802.11ax(HE20) 5745MHz



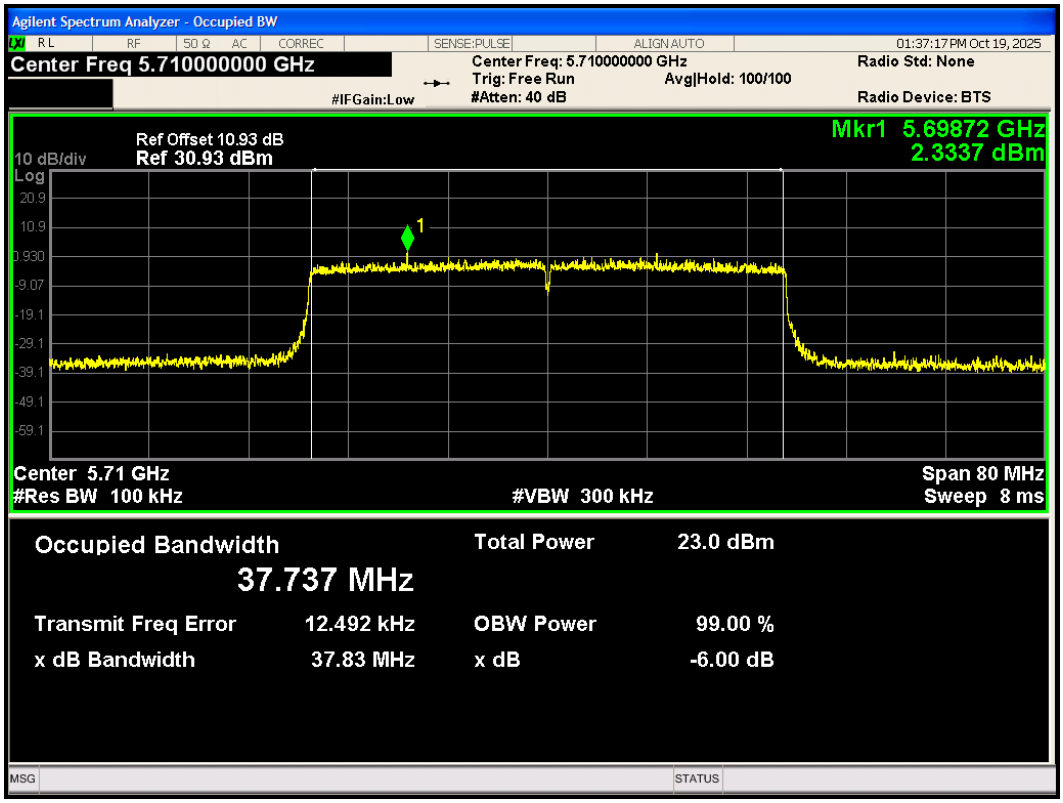
-6dB Bandwidth 802.11ax(HE20) 5785MHz



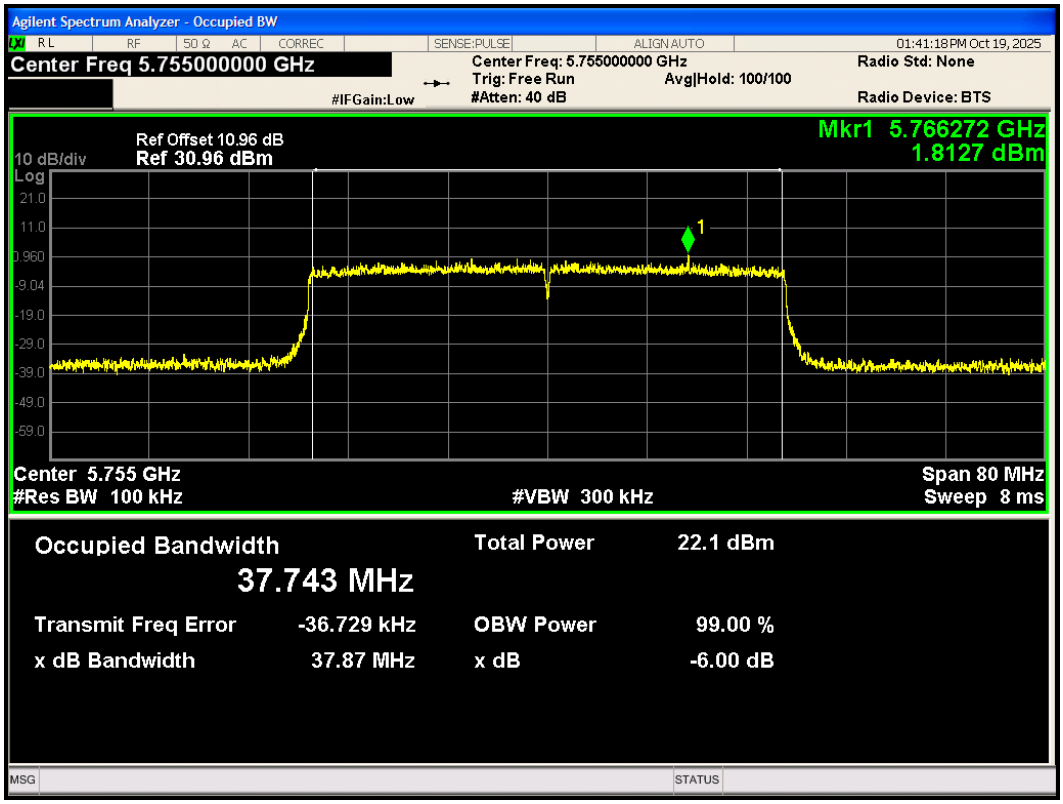
-6dB Bandwidth 802.11ax(HE20) 5825MHz



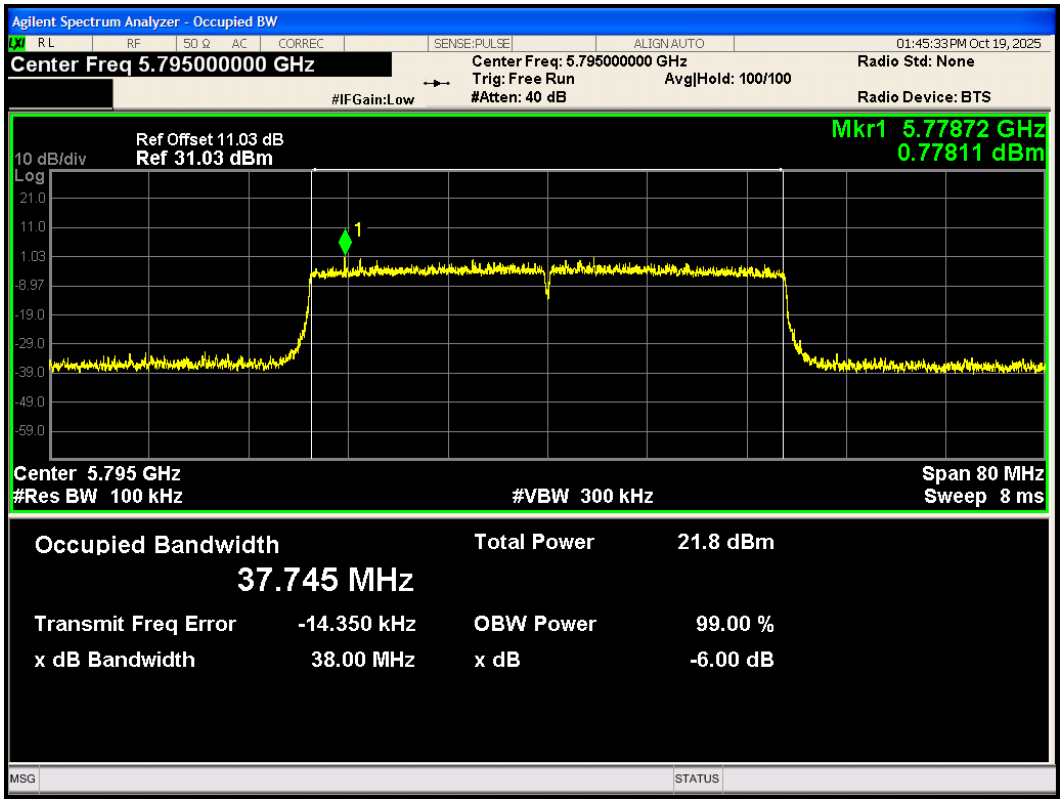
-6dB Bandwidth 802.11ax(HE40) 5710MHz



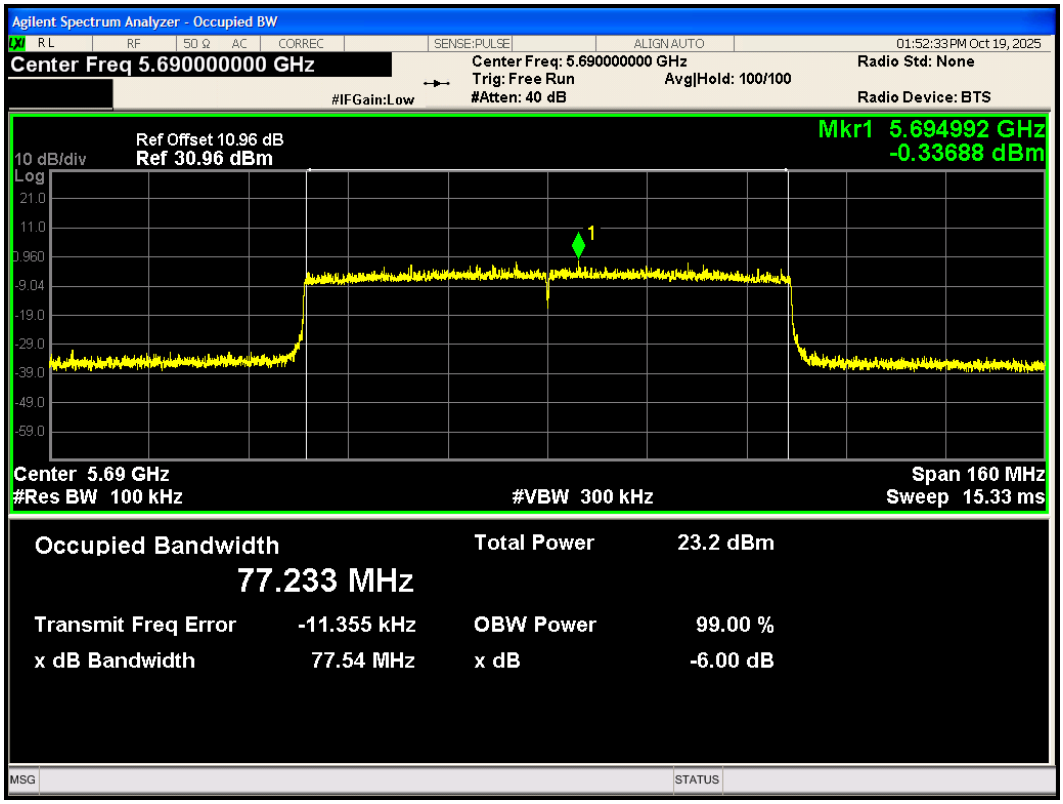
-6dB Bandwidth 802.11ax(HE40) 5755MHz



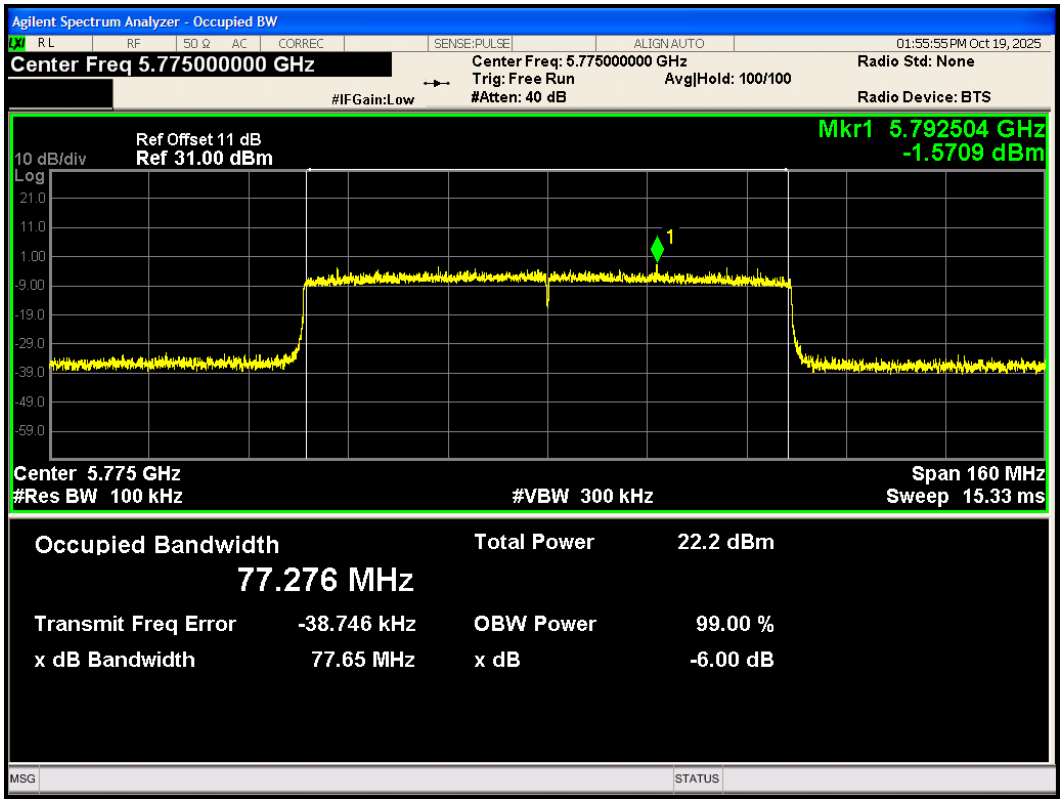
-6dB Bandwidth 802.11ax(HE40) 5795MHz



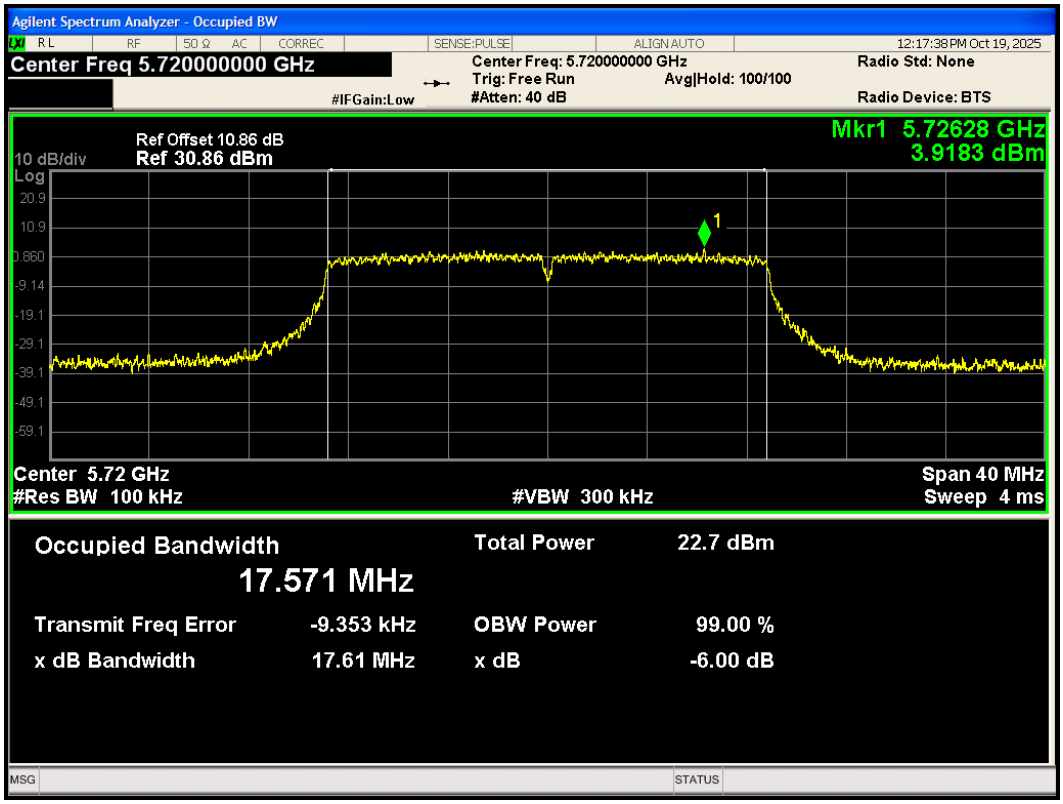
-6dB Bandwidth 802.11ax(HE80) 5690MHz



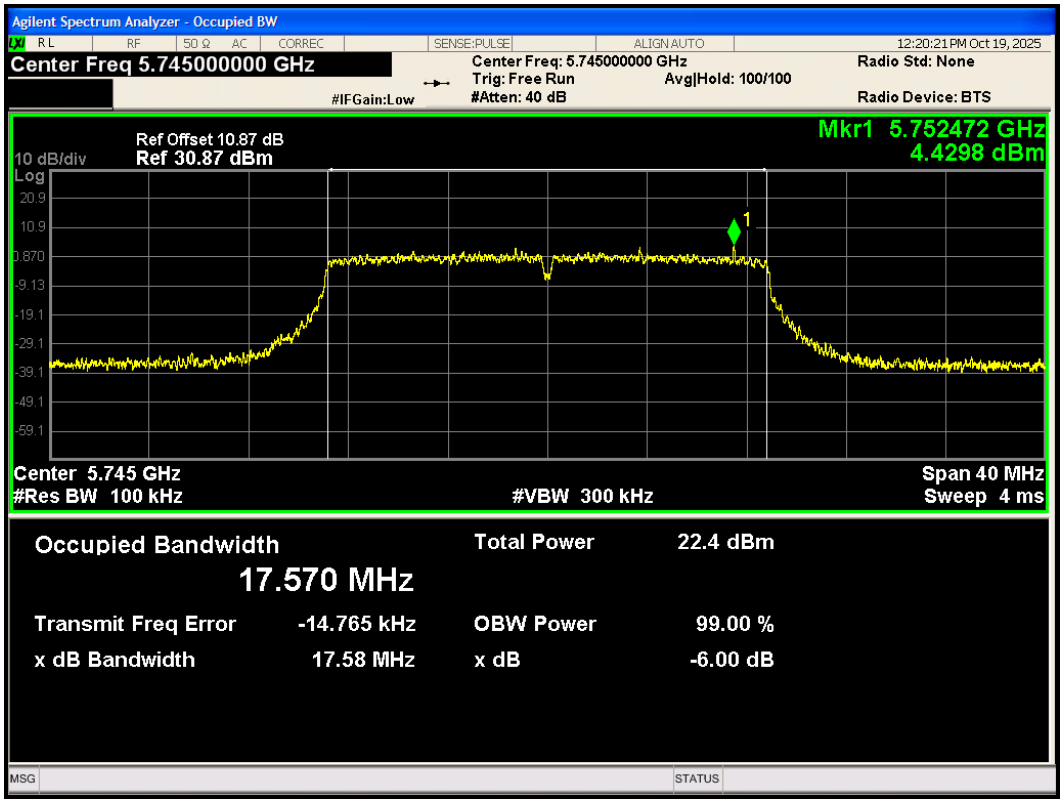
-6dB Bandwidth 802.11ax(HE80) 5775MHz



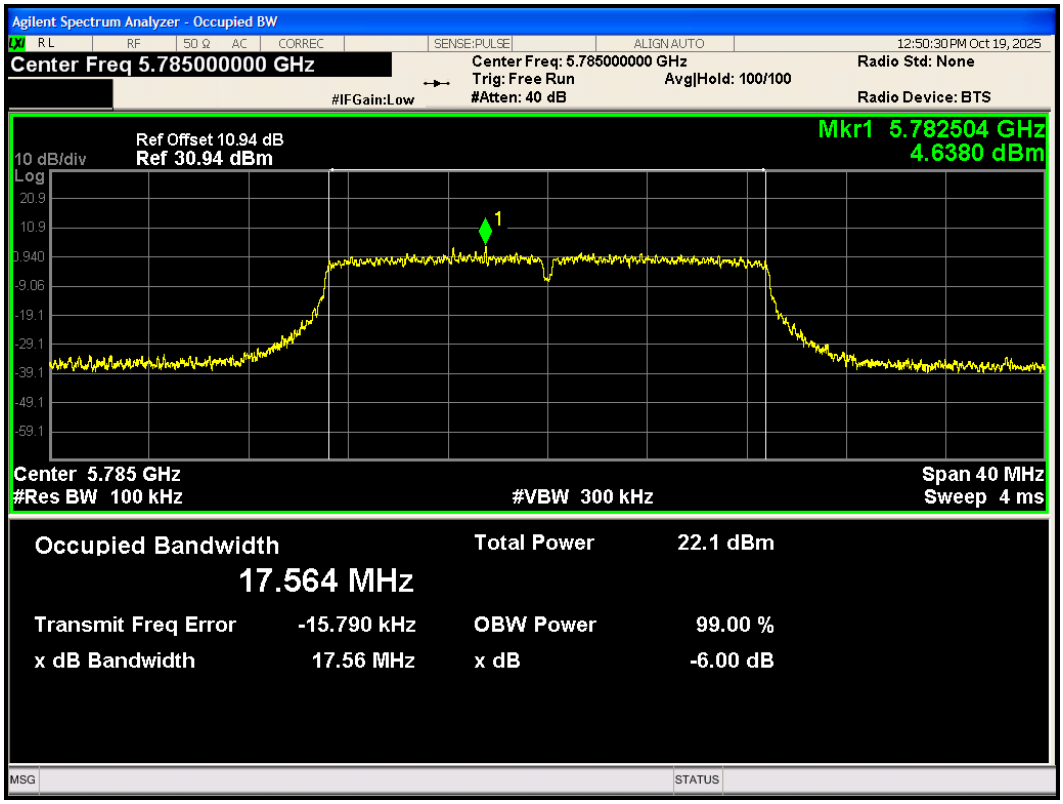
-6dB Bandwidth 802.11n(HT20) 5720MHz



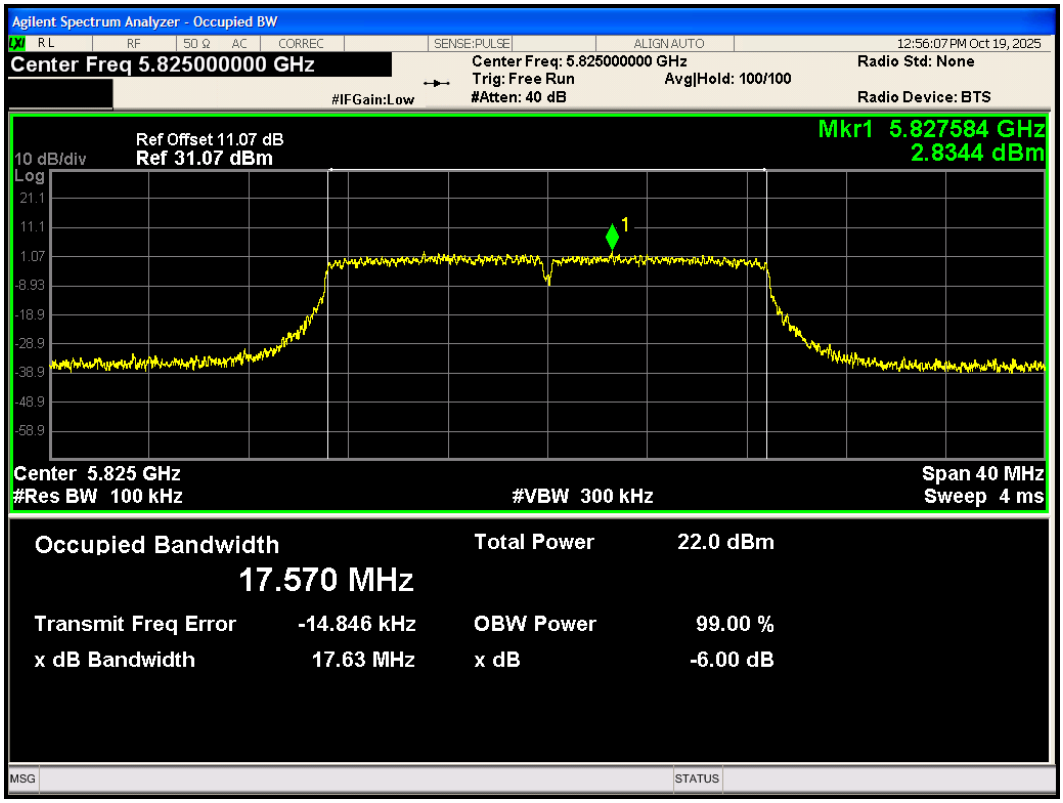
-6dB Bandwidth 802.11n(HT20) 5745MHz



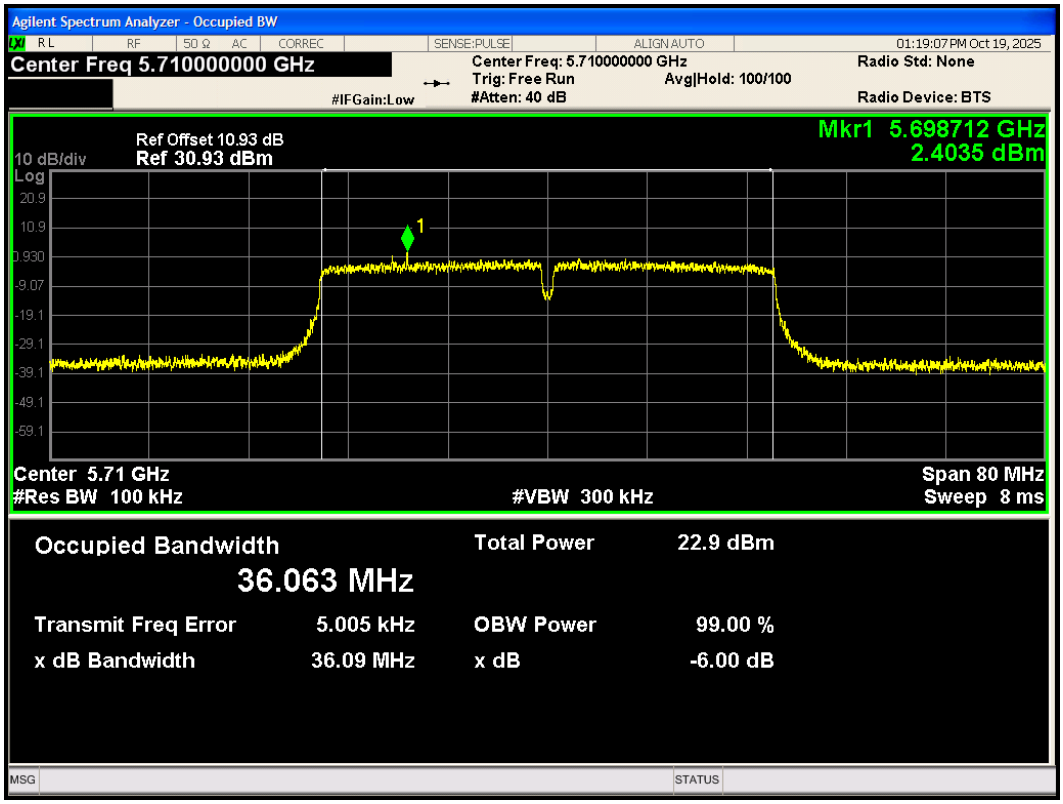
-6dB Bandwidth 802.11n(HT20) 5785MHz



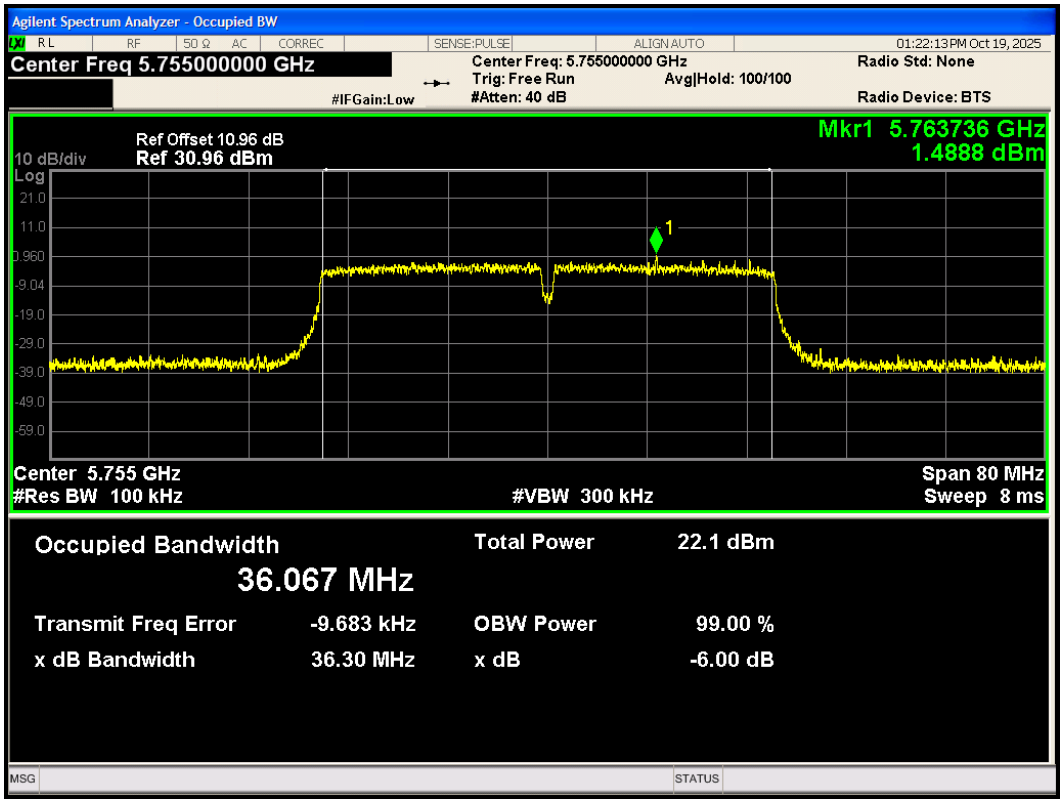
-6dB Bandwidth 802.11n(HT20) 5825MHz



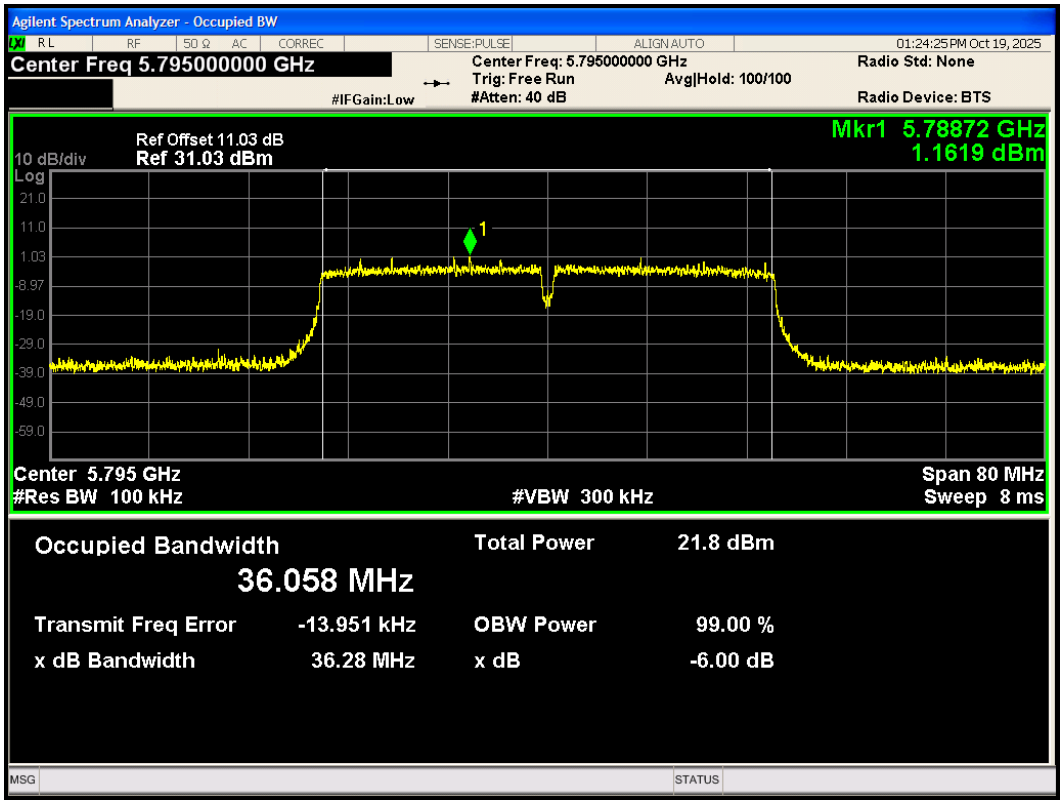
-6dB Bandwidth 802.11n(HT40) 5710MHz



-6dB Bandwidth 802.11n(HT40) 5755MHz



-6dB Bandwidth 802.11n(HT40) 5795MHz



6.2. Average Power Output

Mode	Duty cycle	Duty cycle correction Factor (dB)
802.11a	1.00	0.00
802.11n HT20	1.00	0.00
802.11n HT40	1.00	0.00
802.11ac VHT20	1.00	0.00
802.11ac VHT40	1.00	0.00
802.11ac VHT80	1.00	0.00
802.11ac VHT160	1.00	0.00
802.11ax HE20	1.00	0.00
802.11ax HE40	1.00	0.00
802.11ax HE80	1.00	0.00
802.11ax HE160	1.00	0.00
Note: when Duty cycle≥0.98, Duty cycle correction Factor not required.		

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Power Index		
Test Mode	**Channel/ Frequency (MHz)**	**CDD/MIMO**
802.11a	36/5180	18
	40/5200	18
	48/5240	18
802.11n HT20	36/5180	17
	40/5200	17
	48/5240	17
802.11n HT40	38/5190	14.5
	46/5230	17
802.11ac VHT20	36/5180	17
	40/5200	17
	48/5240	17
802.11ac VHT40	38/5190	14.5
	46/5230	17
802.11ac VHT80	42/5210	14
802.11ax HE20	36/5180	17
	40/5200	17
	48/5240	17
802.11ax HE40	38/5190	14.5
	46/5230	17
802.11ax HE80	42/5210	14

U-NII-2A

Power Index		
Test Mode	**Channel/ Frequency (MHz)**	**CDD/MIMO**
802.11a	52/5260	18
	56/5280	18
	64/5320	18
802.11n HT20	52/5260	17
	56/5280	17
	64/5320	17
802.11n HT40	54/5270	17
	62/5310	13.5
802.11ac VHT20	52/5260	17
	56/5280	17
	64/5320	17
802.11ac VHT40	54/5270	17
	62/5310	17
802.11ac VHT80	58/5290	14.5
802.11ac VHT160	50/5250	13
802.11ax HE20	52/5260	17
	56/5280	17
	64/5320	17
802.11ax HE40	54/5270	17
	62/5310	14.5
802.11ax HE80	58/5290	13.5
802.11ax HE160	50/5250	12

U-NII-2C

Power Index		
Test Mode	**Channel/ Frequency (MHz)**	**CDD/MIMO**
802.11a	100/5500	16.5
	116/5580	17
	140/5700	17
	144/5720	18
802.11n HT20	100/5500	16
	116/5580	17
	140/5700	13
	144/5720	17
802.11n HT40	102/5510	14
	110/5550	17
	134/5670	17
	142/5710	17
802.11ac VHT20	100/5500	17
	116/5580	17
	140/5700	17
	144/5720	17
802.11ac VHT40	102/5510	17
	110/5550	17
	134/5670	17
	142/5710	17
802.11ac VHT80	122/5610	12.5
	138/5690	17
802.11ac VHT160	114/5570	13.5
802.11ax HE20	100/5500	16
	116/5580	17
	140/5700	12
	144/5720	17
802.11ax HE40	102/5510	13
	110/5550	17
	134/5670	14.5
	142/5710	17
802.11ax HE80	122/5610	13
	138/5690	17
802.11ax HE160	114/5570	11.5

U-NII-3

Power Index		
Test Mode	**Channel/ Frequency (MHz)**	**CDD/MIMO**
802.11a	144/5720	18
	149/5745	17
	157/5785	17
	165/5825	18
802.11n HT20	144/5720	17
	149/5745	17
	157/5785	17
	165/5825	17
802.11n HT40	142/5710	17
	151/5755	17
	159/5795	17
802.11ac VHT20	144/5720	17
	149/5745	17
	157/5785	17
	165/5825	17
802.11ac VHT40	142/5710	17
	151/5755	17
	159/5795	17
802.11ac VHT80	138/5690	17
	155/5775	17
802.11ax HE20	144/5720	17
	149/5745	17
	157/5785	17
	165/5825	17
802.11ax HE40	142/5710	17
	151/5755	17
	159/5795	17
802.11ax HE80	138/5690	17
	155/5775	17

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	20.19	24.05	24.00
		56/5280	19.85	23.98	23.98
		64/5320	20.49	24.12	24.00
	802.11n HT20	52/5260	20.40	24.10	24.00
		56/5280	20.47	24.11	24.00
		64/5320	20.33	24.08	24.00
	802.11n HT40	54/5270	39.59	26.98	24.00
		62/5310	39.70	26.99	24.00
	802.11ac VHT20	52/5260	20.75	24.17	24.00
		56/5280	20.56	24.13	24.00
		64/5320	20.50	24.12	24.00
	802.11ac VHT40	54/5270	39.77	27.00	24.00
		62/5310	39.97	27.02	24.00
	802.11ac VHT80	58/5290	82.47	30.16	24.00
	802.11ac VHT160	50/5250	164.30	33.16	24.00
	802.11ax HE20	52/5260	21.18	24.26	24.00
		56/5280	20.91	24.20	24.00
		64/5320	20.87	24.20	24.00
	802.11ax HE40	54/5270	40.21	27.04	24.00
		62/5310	40.29	27.05	24.00
	802.11ax HE80	58/5290	81.78	30.13	24.00
	802.11ax HE160	50/5250	163.40	33.13	24.00
Note: 250mW=24dBm					

Test Mode		Channel/ Frequency (MHz)	B=26 dB bandwidth (MHz)	Limit 11 dBm + 10 log B (dBm)	Final Limit (dBm)
U-NII-2C	802.11a	100/5500	24.47	24.89	24.00
		116/5580	23.15	24.65	24.00
		140/5700	19.49	23.90	23.90
		144/5720	19.38	23.87	23.87
	802.11n HT20	100/5500	20.50	24.12	24.00
		116/5580	20.59	24.14	24.00
		140/5700	20.54	24.13	24.00
		144/5720	20.80	24.18	24.00
	802.11n HT40	102/5510	40.03	27.02	24.00
		110/5550	39.96	27.02	24.00
		134/5670	39.66	26.98	24.00
		142/5710	39.87	27.01	24.00
	802.11ac VHT20	100/5500	21.32	24.29	24.00
		116/5580	20.95	24.21	24.00
		140/5700	20.45	24.11	24.00
		144/5720	20.30	24.07	24.00
	802.11ac VHT40	102/5510	40.11	27.03	24.00
		110/5550	39.87	27.01	24.00
		134/5670	40.19	27.04	24.00
		142/5710	40.00	27.02	24.00
	802.11ac VHT80	122/5610	82.35	30.16	24.00
		138/5690	82.46	30.16	24.00
	802.11ac VHT160	114/5570	165.10	33.18	24.00
	802.11ax HE20	100/5500	20.77	24.17	24.00
		116/5580	21.07	24.24	24.00
		140/5700	21.01	24.22	24.00
		144/5720	21.05	24.23	24.00
	802.11ax HE40	102/5510	40.01	27.02	24.00
		110/5550	40.42	27.07	24.00
		134/5670	40.61	27.09	24.00
		142/5710	40.32	27.06	24.00
	802.11ax HE80	122/5610	81.76	30.13	24.00
		138/5690	83.63	30.22	24.00
	802.11ax HE160	114/5570	165.40	33.19	24.00
Note: 250mW=24dBm					

CDD/MIMO

U-NII-1

Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	36/5180	17.38	17.38	18.09	18.09	20.76	24.00	PASS
	40/5200	17.41	17.41	18.12	18.12	20.79	24.00	PASS
	48/5240	17.19	17.19	17.64	17.64	20.43	24.00	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1)

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm/10})}+10^{(\text{Power antenna2 in dBm/10})})$.

3.According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): For Cyclic Delay Diversity (CDD) signals，If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + Array Gain, For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT\ MAX}$ + Array Gain =3.10+0= 3.10 dBi<6dBi. So the power limit is 24dBm.

Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	36/5180	16.22	17.04	16.63	16.63	19.85	24.00	PASS
	40/5200	16.24	17.09	16.60	16.60	19.86	24.00	PASS
	48/5240	16.04	16.04	16.67	16.67	19.38	24.00	PASS
802.11n HT40	38/5190	13.68	13.68	14.60	14.60	17.17	24.00	PASS
	46/5230	16.41	16.41	16.81	16.81	19.62	24.00	PASS
802.11ac VHT20	36/5180	16.21	16.21	17.05	17.05	19.66	24.00	PASS
	40/5200	16.20	16.20	17.07	17.07	19.67	24.00	PASS
	48/5240	16.02	16.02	16.64	16.64	19.35	24.00	PASS
802.11ac VHT40	38/5190	14.34	14.34	15.07	15.07	17.73	24.00	PASS
	46/5230	16.26	16.26	16.76	16.76	19.53	24.00	PASS
802.11ac VHT80	42/5210	13.29	13.29	13.96	13.96	16.65	24.00	PASS
802.11ax HE20	36/5180	16.26	16.26	17.10	17.10	19.71	24.00	PASS
	40/5200	16.26	16.26	17.12	17.12	19.72	24.00	PASS
	48/5240	16.63	16.63	16.18	16.18	19.42	24.00	PASS
802.11ax HE40	38/5190	14.85	14.85	14.33	14.33	17.61	24.00	PASS
	46/5230	16.29	16.29	16.89	16.89	19.61	24.00	PASS
802.11ax HE80	42/5210	14.19	14.19	13.77	13.77	16.99	24.00	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2.For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

3.Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)d)(ii): If antenna gains are not equal, If all transmit signals are completely uncorrelated, then

Directional gain = $10\log[(10^{G1/10} + 10^{G2/10})/N_{ANT}]$ dBi = $10\log[(10^{G1/10} + 10^{G2/10})/2]$ = 2.72 dBi < 6dBi. So the limit is 24 dBm.

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Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	52/5260	17.35	17.35	17.85	17.85	20.62	24.00	PASS
	56/5280	17.19	17.19	17.56	17.56	20.39	23.98	PASS
	64/5320	17.03	17.03	17.68	17.68	20.38	24.00	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1)

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

3.According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): For Cyclic Delay Diversity (CDD) signals，If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT\ MAX}$ + Array Gain =3.10+0= 3.10 dBi<6dBi. So the power limit is 24dBm.

Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	52/5260	16.19	16.19	16.77	16.77	19.50	24.00	PASS
	56/5280	16.03	16.03	16.47	16.47	19.27	24.00	PASS
	64/5320	16.39	16.39	16.64	16.64	19.53	24.00	PASS
802.11n HT40	54/5270	16.32	16.32	16.67	16.67	19.51	24.00	PASS
	62/5310	12.87	12.87	13.22	13.22	16.06	24.00	PASS
802.11ac VHT20	52/5260	16.75	16.75	16.22	16.22	19.50	24.00	PASS
	56/5280	16.14	16.14	16.42	16.42	19.29	24.00	PASS
	64/5320	16.02	16.02	16.60	16.60	19.33	24.00	PASS
802.11ac VHT40	54/5270	16.48	16.48	17.01	17.01	19.76	24.00	PASS
	62/5310	16.22	16.22	17.22	17.22	19.76	24.00	PASS
802.11ac VHT80	58/5290	13.85	13.85	14.32	14.32	17.10	24.00	PASS
802.11ac VHT160	50/5250	13.50	13.50	13.10	13.10	16.31	24.00	PASS
802.11ax HE20	52/5260	16.18	16.18	16.74	16.74	19.48	24.00	PASS
	56/5280	16.02	16.02	16.43	16.43	19.24	24.00	PASS
	64/5320	16.08	16.08	16.56	16.56	19.34	24.00	PASS
802.11ax HE40	54/5270	16.32	16.32	16.79	16.79	19.57	24.00	PASS
	62/5310	14.67	14.67	14..184	14.18	17.44	24.00	PASS

802.11ax HE80	58/5290	13.50	13.50	13.04	13.04	16.29	24.00	PASS
802.11ax HE160	50/5250	12.79	16.00	12.38	12.38	17.57	24.00	PASS

Note: 1. Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2.For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

3.Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)d)(ii): If antenna gains are not equal, If all transmit signals are completely uncorrelated, then

Directional gain = $10\log[(10^{G1/10}+10^{G2/10})/N_{ANT}]$ dBi = $10\log[(10^{G1/10}+10^{G2/10})/2]$ = 2.72 dBi < 6dBi. So the limit is 24 dBm.

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Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	100/5500	16.83	16.83	17.53	17.53	20.20	24.00	PASS
	116/5580	16.81	16.81	17.50	17.50	20.18	24.00	PASS
	140/5700	16.63	16.63	17.78	17.78	20.25	23.90	PASS
	144/5720	16.74	16.74	16.03	16.03	19.41	23.87	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1)

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

3.According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): For Cyclic Delay Diversity (CDD) signals，If antenna have the same gain, Directional gain = G_{ANT} + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT\ MAX}$ + Array Gain =3.20+0= 3.20 dBi<6dBi. So the power limit is 24dBm.

Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	100/5500	15.78	15.78	16.66	16.66	19.25	24.00	PASS
	116/5580	16.33	16.33	16.64	16.64	19.50	24.00	PASS
	140/5700	11.83	11.83	12.70	12.70	15.30	24.00	PASS
	144/5720	15.50	15.50	15.01	15.01	18.27	24.00	PASS
802.11n HT40	102/5510	13.39	13.39	14.11	14.11	16.78	24.00	PASS
	110/5550	16.19	16.19	17.35	17.35	19.82	24.00	PASS
	134/5670	16.08	16.08	17.54	17.54	19.88	24.00	PASS
	142/5710	16.16	16.16	15.72	15.72	18.95	24.00	PASS
802.11ac VHT20	100/5500	15.78	15.78	17.14	17.14	19.52	24.00	PASS
	116/5580	15.73	15.73	16.62	16.62	19.21	24.00	PASS
	140/5700	15.67	15.67	16.91	16.91	19.34	24.00	PASS
	144/5720	15.45	15.45	14.98	14.98	18.23	24.00	PASS
802.11ac VHT40	102/5510	16.07	16.07	17.32	17.32	19.75	24.00	PASS
	110/5550	16.07	16.07	17.32	17.32	19.75	24.00	PASS
	134/5670	15.78	15.78	17.56	17.56	19.77	24.00	PASS
	142/5710	16.14	16.14	15.66	15.66	18.91	24.00	PASS
802.11ac VHT80	122/5610	11.89	11.89	12.78	12.78	15.37	24.00	PASS
	138/5690	16.48	16.48	16.04	16.04	19.28	24.00	PASS
802.11ac VHT160	114/5570	13.87	13.87	13.68	13.68	16.78	24.00	PASS
802.11ax HE20	100/5500	15.87	15.87	16.78	16.78	19.36	24.00	PASS
	116/5580	16.01	16.01	16.64	16.64	19.35	24.00	PASS

	140/5700	12.16	12.16	11.32	11.32	14.77	24.00	PASS
	144/5720	15.33	15.33	14.84	14.84	18.10	24.00	PASS
802.11ax HE40	102/5510	12.93	12.93	12.61	12.61	15.78	24.00	PASS
	110/5550	16.71	16.71	16.60	16.60	19.67	24.00	PASS
	134/5670	14.23	14.23	14.18	14.18	17.21	24.00	PASS
	142/5710	16.28	16.28	15.66	15.66	18.99	24.00	PASS
802.11ax HE80	122/5610	13.26	13.26	12.53	12.53	15.92	24.00	PASS
	138/5690	16.44	16.44	16.06	16.06	19.27	24.00	PASS
802.11ax HE160	114/5570	11.37	11.37	11.12	11.12	14.26	24.00	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

3.Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)d)(ii): If antenna gains are not equal, If all transmit signals are completely uncorrelated, then

Directional gain = $10\log[(10^{G1/10} + 10^{G2/10})/N_{ANT}]$ dBi = $10\log[(10^{G1/10} + 10^{G2/10})/2]$ = 3.20 dBi < 6dBi. So the limit is 24 dBm.

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Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	144/5720	10.93	10.93	10.12	10.12	13.55	30.00	PASS
	149/5745	16.61	16.61	16.21	16.21	19.42	30.00	PASS
	157/5785	16.32	16.32	15.94	15.94	19.14	30.00	PASS
	165/5825	16.28	16.28	15.57	15.57	18.95	30.00	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1)

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

3.According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): For Cyclic Delay Diversity (CDD) signals，If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = $G_{ANT\ MAX}$ + Array Gain =2.70+0=2.70 dBi<6dBi. So the power limit is 30dBm.

Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	144/5720	10.07	10.07	9.73	9.73	12.91	30.00	PASS
	149/5745	16.57	16.57	16.16	16.16	19.38	30.00	PASS
	157/5785	16.27	16.27	15.90	15.90	19.10	30.00	PASS
	165/5825	16.24	16.24	15.42	15.42	18.86	30.00	PASS
802.11n HT40	142/5710	5.97	5.97	5.47	5.47	8.74	30.00	PASS
	151/5755	16.15	16.15	15.67	15.67	18.93	30.00	PASS
	159/5795	15.81	15.81	15.29	15.29	18.56	30.00	PASS
802.11ac VHT20	144/5720	10.09	10.09	9.71	9.71	12.92	30.00	PASS
	149/5745	16.65	16.65	16.11	16.11	19.40	30.00	PASS
	157/5785	16.32	16.32	15.73	15.73	19.05	30.00	PASS
	165/5825	16.22	16.22	15.38	15.38	18.83	30.00	PASS
802.11ac VHT40	142/5710	6.10	6.10	5.58	5.58	8.86	30.00	PASS
	151/5755	16.15	16.15	15.67	15.67	18.92	30.00	PASS
	159/5795	15.81	15.81	15.27	15.27	18.56	30.00	PASS
802.11ac VHT80	138/5690	2.19	2.19	1.75	1.75	4.98	30.00	PASS
	155/5775	16.26	16.26	15.75	15.75	19.02	30.00	PASS
802.11ax HE20	144/5720	10.54	10.54	10.08	10.08	13.33	30.00	PASS
	149/5745	16.67	16.67	16.08	16.08	19.39	30.00	PASS

	157/5785	16.32	16.32	15.73	15.73	19.04	30.00	PASS
	165/5825	16.26	16.26	15.42	15.42	18.87	30.00	PASS
802.11ax HE40	142/5710	6.64	6.64	6.15	6.15	9.41	30.00	PASS
	151/5755	15.99	15.99	15.57	15.57	18.80	30.00	PASS
	159/5795	15.70	15.70	15.21	15.21	18.48	30.00	PASS
802.11ax HE80	138/5690	3.12	3.12	2.67	2.67	5.91	30.00	PASS
	155/5775	15.91	15.91	15.36	15.36	18.65	30.00	PASS

Note: 1.Average Power with duty factor = Average Power Measured +Duty cycle correction factor

2. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

3.Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)d)(ii): If antenna gains are not equal, If all transmit signals are completely uncorrelated, then

Directional gain = $10\log[(10^{G1/10}+10^{G2/10})/N_{ANT}]$ dBi = $10\log[(10^{G1/10}+10^{G2/10})/2]$ = 2.32 dBi < 6dBi. So the limit is 30 dBm.

Beamforming

U-NII-1

Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	36/5180	16.22	17.04	16.63	16.63	19.85	23.89	PASS
	40/5200	16.24	17.09	16.60	16.60	19.86	23.89	PASS
	48/5240	16.04	16.04	16.67	16.67	19.38	23.89	PASS
802.11n HT40	38/5190	13.68	13.68	14.60	14.60	17.17	23.89	PASS
	46/5230	16.41	16.41	16.81	16.81	19.62	23.89	PASS
802.11ac VHT20	36/5180	16.21	16.21	17.05	17.05	19.66	23.89	PASS
	40/5200	16.20	16.20	17.07	17.07	19.67	23.89	PASS
	48/5240	16.02	16.02	16.64	16.64	19.35	23.89	PASS
802.11ac VHT40	38/5190	14.34	14.34	15.07	15.07	17.73	23.89	PASS
	46/5230	16.26	16.26	16.76	16.76	19.53	23.89	PASS
802.11ac VHT80	42/5210	13.29	13.29	13.96	13.96	16.65	23.89	PASS
802.11ax HE20	36/5180	16.26	16.26	17.10	17.10	19.71	23.89	PASS
	40/5200	16.26	16.26	17.12	17.12	19.72	23.89	PASS
	48/5240	16.63	16.63	16.18	16.18	19.42	23.89	PASS
802.11ax HE40	38/5190	14.85	14.85	14.33	14.33	17.61	23.89	PASS
	46/5230	16.29	16.29	16.89	16.89	19.61	23.89	PASS
802.11ax HE80	42/5210	14.19	14.19	13.77	13.77	16.99	23.89	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + 10 log(N_{ANT}/Nss)=3.10+10log (2/1)= 6.11 dBi > 6dBi. So the limit is 23.89 dBm.

U-NII-2A

Test Mode	Channel/ Frequency (MHz)	Antenna 1		Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	52/5260	16.19	16.19	16.77	16.77	19.50	23.89	PASS
	56/5280	16.03	16.03	16.47	16.47	19.27	23.89	PASS
	64/5320	16.39	16.39	16.64	16.64	19.53	23.89	PASS
802.11n HT40	54/5270	16.32	16.32	16.67	16.67	19.51	23.89	PASS
	62/5310	12.87	12.87	13.22	13.22	16.06	23.89	PASS
802.11ac VHT20	52/5260	16.75	16.75	16.22	16.22	19.50	23.89	PASS
	56/5280	16.14	16.14	16.42	16.42	19.29	23.89	PASS
	64/5320	16.02	16.02	16.60	16.60	19.33	23.89	PASS
802.11ac VHT40	54/5270	16.48	16.48	17.01	17.01	19.76	23.89	PASS
	62/5310	16.22	16.22	17.22	17.22	19.76	23.89	PASS
802.11ac VHT80	58/5290	13.85	13.85	14.32	14.32	17.10	23.89	PASS
802.11ac VHT160	50/5250	13.50	13.50	13.10	13.10	16.31	23.89	PASS
802.11ax HE20	52/5260	16.18	16.18	16.74	16.74	19.48	23.89	PASS
	56/5280	16.02	16.02	16.43	16.43	19.24	23.89	PASS
	64/5320	16.08	16.08	16.56	16.56	19.34	23.89	PASS
802.11ax HE40	54/5270	16.32	16.32	16.79	16.79	19.57	23.89	PASS
	62/5310	14.67	14.67	14..184	14.18	17.44	23.89	PASS
802.11ax HE80	58/5290	13.50	13.50	13.04	13.04	16.29	23.89	PASS
802.11ax HE160	50/5250	12.79	16.00	12.38	12.38	17.57	23.89	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F)2)e)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + 10 log(N_{ANT}/Nss)=3.10+10log (2/1)= 6.11 dBi > 6dBi. So the limit is 23.89 dBm.