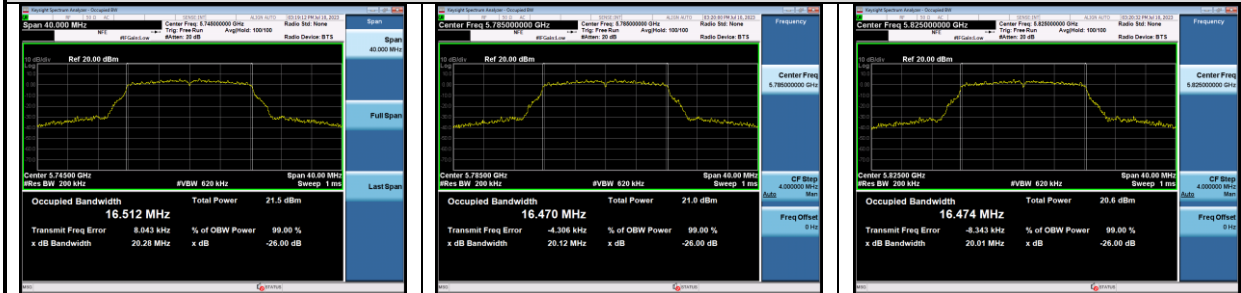


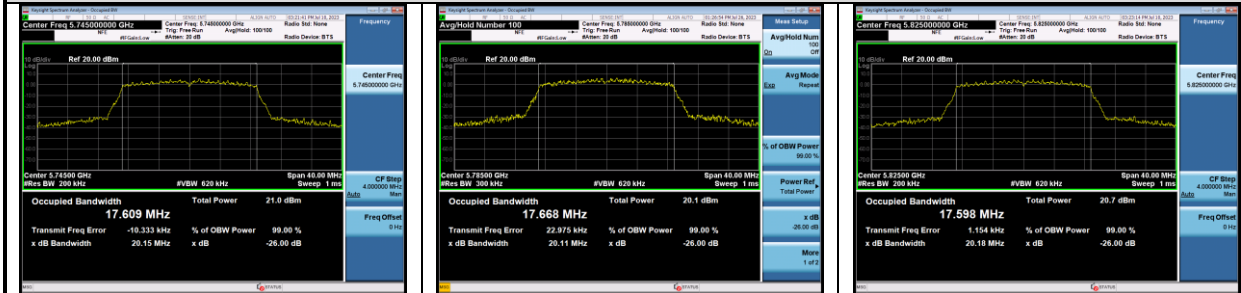
26dB bandwidth & 99% Occupied bandwidth

U-NII-3 Band: ANTA

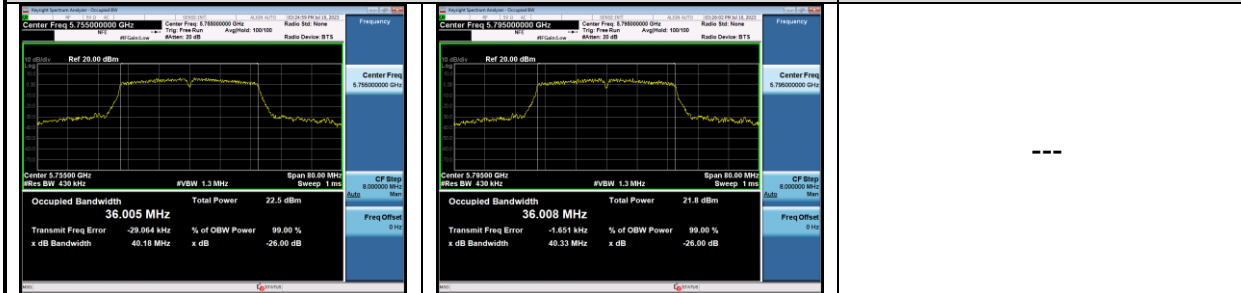
IEEE 802.11a



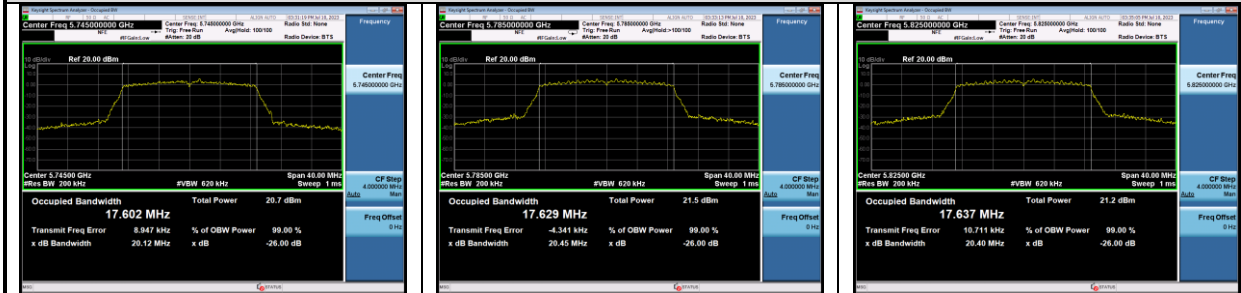
IEEE 802.11n HT20



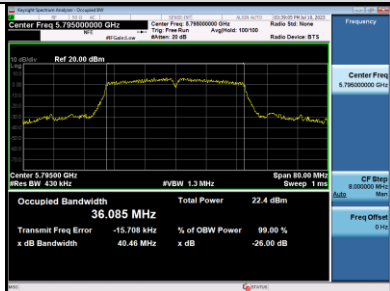
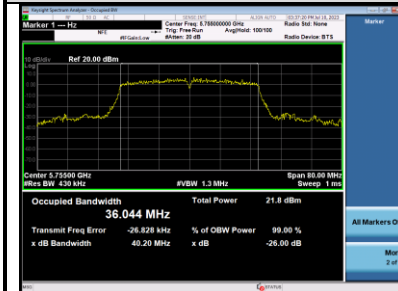
IEEE 802.11n HT40



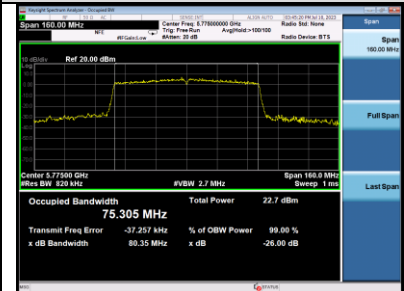
IEEE 802.11ac VHT20



IEEE 802.11ac VHT40



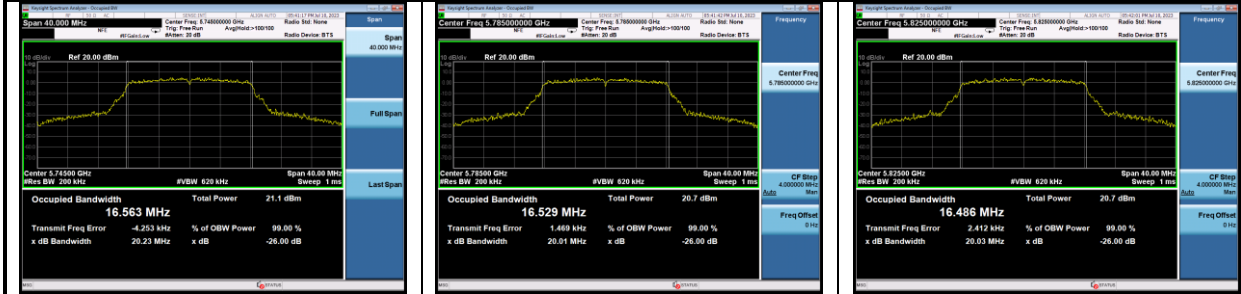
IEEE 802.11ac VHT80



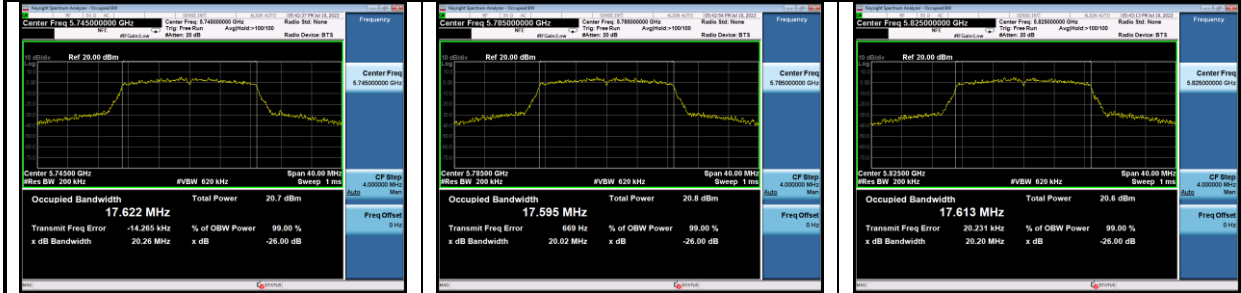
26dB bandwidth & 99% Occupied bandwidth

U-NII-3 Band: ANTB

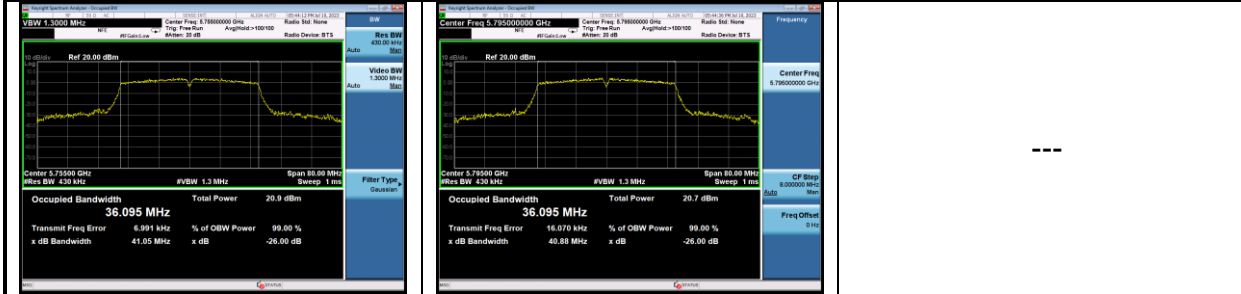
IEEE 802.11a



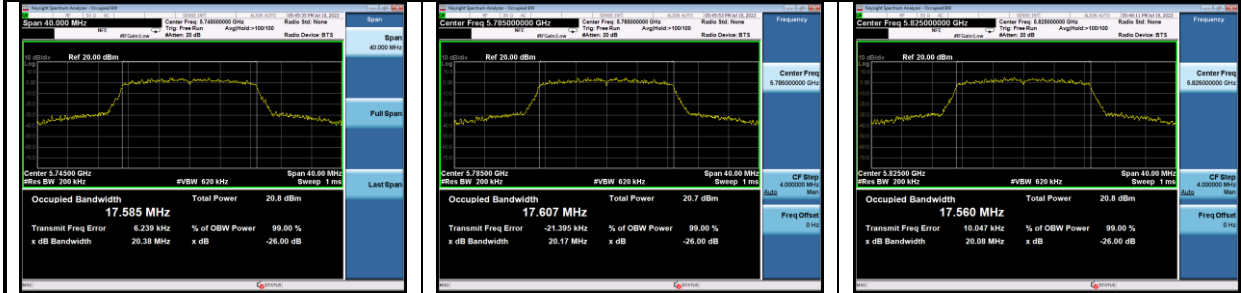
IEEE 802.11n HT20



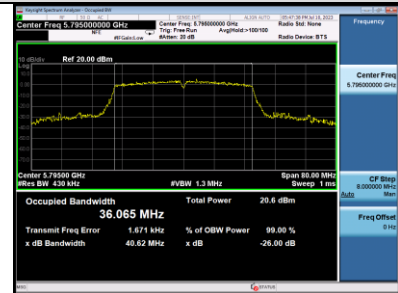
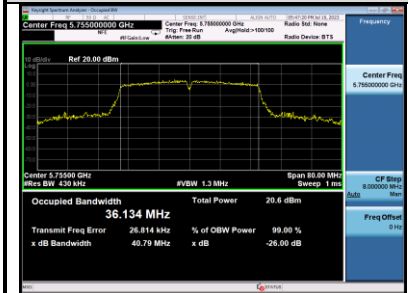
IEEE 802.11n HT40



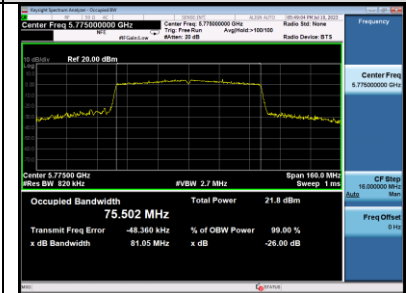
IEEE 802.11ac VHT20



IEEE 802.11ac VHT40



IEEE 802.11ac VHT80



7. OUTPUT POWER TEST

7.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	PXA Signal Analyzer	Agilent	N9030A	MY51380221	Apr.01,23	1 Year
2.	Power meter	Anritsu	ML2487A	6K00003262	Jun.26,23	1 Year
3.	Power sensor	Anritsu	MA2491A	0332516	Jun.26,23	1 Year
4.	Attenuator	Agilent	8491B	MY39269201	Oct.09,22	1 Year
5.	RF Cable	HUBER+SUHNER	SUCOFLEX-106	505238/6	Apr.02,23	1 Year

7.2. Limit

For the band 5.15–5.25 GHz.

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

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.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

7.3. Test Procedure

1. Connected the EUT’s antenna port to measure device by 10dB attenuator.
2. Use the test method described in ANSI C63.10 clause 12.3 Method SA-1
 - 1) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
 - 2) Set RBW = 1 MHz.
 - 3) Set VBW ≥ 3 MHz.
 - 4) Number of points in sweep ≥ 2 × span / RBW.
 - 5) Sweep time = auto.
 - 6) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
 - 7) If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run.”
 - 8) Trace average at least 100 traces in power averaging (rms) mode.
 - 9) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

7.4. Test Results

U-NII-1 Band:

EUT: Wi-Fi Module		
M/N: U9W37		
Test date: 2023-07-13	Pressure: 103.1±1.0 kpa	Humidity: 51.5±3.0%
Tested by: Winter	Test site: RF site	Temperature: 22.5±0.6 °C

SISO:

Test Mode	Frequency (MHz)	Power Setting	Duty factor (dB)	Maximum Conducted output power (dBm)		Limit (dBm)
				ANTA	ANTB	
11a	5180	22	0.08	14.08	13.37	23.98
	5200	22	0.08	14.00	13.20	
	5240	22	0.08	14.32	13.30	
11n HT20	5180	22	0.11	14.01	13.27	23.98
	5200	22	0.11	13.78	13.15	
	5240	22	0.11	14.18	13.12	
11n HT40	5190	22	0.22	14.02	13.29	23.98
	5230	22	0.22	14.36	13.19	
11ac VHT20	5180	22	0.15	13.50	13.26	23.98
	5200	22	0.15	13.49	13.03	
	5240	22	0.15	13.75	13.07	
11ac VHT40	5190	22	0.31	13.60	13.13	23.98
	5230	22	0.31	13.84	13.05	
11ac VHT80	5210	22	0.59	13.50	12.87	23.98
Conclusion: PASS						

MIMO:

Test Mode	Frequency (MHz)	Power Setting	Duty factor (dB)	Maximum Conducted output power (dBm)		Total (dBm)	Limit (dBm)
				ANTA	ANTB		
11a	5180	22	0.08	13.61	13.41	16.52	23.98
	5200	22	0.08	13.85	13.13	16.52	
	5240	22	0.08	13.90	13.20	16.57	
11n HT20	5180	22	0.11	13.64	13.23	16.45	23.98
	5200	22	0.11	13.71	13.15	16.45	
	5240	22	0.11	13.89	13.07	16.51	
11n HT40	5190	22	0.22	13.76	13.29	16.54	23.98
	5230	22	0.22	14.02	13.20	16.64	
11ac VHT20	5180	22	0.15	13.45	13.18	16.33	23.98
	5200	22	0.15	13.54	12.99	16.28	
	5240	22	0.15	13.82	12.95	16.42	
11ac VHT40	5190	22	0.31	13.58	13.10	16.36	23.98
	5230	22	0.31	13.75	13.06	16.43	
11ac VHT80	5210	22	0.59	13.70	12.88	16.32	23.98

Conclusion: PASS

Note: 1. Directional Gain= $10 \log[(10^{2.56/20} + 10^{4.67/20})^2 / 2]$ dBi= 2.6868dB < 6dBi.

2. Directional Gain= $10 \log[(10^{2.56/10} + 10^{4.67/10}) / 2]$ dBi= 0.3024dB < 6dBi.

3. U9W37 supports and operates in both correlated MIMO signals and uncorrelated MIMO signals.

U-NII-2A Band:

EUT: Wi-Fi Module		
M/N: U9W37		
Test date: 2023-07-13	Pressure: 103.1±1.0 kpa	Humidity: 51.5±3.0%
Tested by: Winter	Test site: RF site	Temperature: 22.5±0.6 °C

SISO:

Test Mode	Frequency (MHz)	Power Setting	Duty factor (dB)	Maximum Conducted output power (dBm)		Limit (dBm)
				ANTA	ANTB	
11a	5260	22	0.08	14.37	13.21	23.98
	5300	22	0.08	14.42	13.14	
	5320	22	0.08	14.70	13.24	
11n HT20	5260	22	0.11	14.14	13.08	23.98
	5300	22	0.11	14.31	13.02	
	5320	22	0.11	14.42	13.17	
11n HT40	5270	22	0.22	14.50	13.15	23.98
	5310	22	0.22	14.62	13.20	
11ac VHT20	5260	22	0.15	14.00	13.02	23.98
	5300	22	0.15	14.12	12.94	
	5320	22	0.15	14.25	12.99	
11ac VHT40	5270	22	0.31	14.15	12.86	23.98
	5310	22	0.31	14.22	12.94	
11ac VHT80	5290	22	0.59	13.82	12.71	23.98

Conclusion: PASS

MIMO:

Test Mode	Frequency (MHz)	Power Setting	Duty factor (dB)	Maximum Conducted output power (dBm)		Total (dBm)	Limit (dBm)
				ANTA	ANTB		
11a	5260	22	0.08	14.03	13.26	16.67	23.98
	5300	22	0.08	14.33	13.12	16.78	
	5320	22	0.08	14.43	13.13	16.84	
11n HT20	5260	22	0.11	13.99	13.08	16.57	23.98
	5300	22	0.11	14.20	13.02	16.66	
	5320	22	0.11	14.34	13.08	16.77	
11n HT40	5270	22	0.22	14.17	13.10	16.68	23.98
	5310	22	0.22	14.37	13.02	16.76	
11ac VHT20	5260	22	0.15	13.82	12.99	16.44	23.98
	5300	22	0.15	14.02	12.88	16.50	
	5320	22	0.15	14.17	12.92	16.60	
11ac VHT40	5270	22	0.31	14.12	12.97	16.59	23.98
	5310	22	0.31	14.17	12.89	16.59	
11ac VHT80	5290	22	0.59	13.87	12.66	16.32	23.98

Conclusion: PASS

Note: 1. Directional Gain= $10 \log[(10^{1.82/20} + 10^{-0.16/20})^2 / 2]$ dBi=3.8966dB < 6dBi.

2. Directional Gain= $10 \log[(10^{1.82/10} + 10^{-0.16/10}) / 2]$ dBi= 0.9419dB < 6dBi.

3. U9W37 supports and operates in both correlated MIMO signals and uncorrelated MIMO signals.

U-NII-2C Band:

EUT: Wi-Fi Module		
M/N: U9W37		
Test date: 2023-07-17~26	Pressure: 103.1±1.0 kpa	Humidity: 51.5±3.0%
Tested by: Winter	Test site: RF site	Temperature: 22.5±0.6 °C

SISO:

Test Mode	Frequency (MHz)	Power Setting	Duty factor (dB)	Maximum Conducted output power (dBm)		Limit (dBm)
				ANTA	ANTB	
11a	5500	22	0.08	14.58	13.93	23.98
	5600	22	0.08	14.25	14.22	
	5700	22	0.08	14.17	14.51	
11n HT20	5500	22	0.11	14.52	13.84	23.98
	5600	22	0.11	14.25	14.03	
	5700	22	0.11	14.20	14.38	
11n HT40	5510	22	0.22	14.56	13.94	23.98
	5590	22	0.22	14.46	14.31	
	5670	22	0.22	14.35	14.62	
11ac VHT20	5500	22	0.15	14.54	13.56	23.98
	5600	22	0.15	14.49	13.74	
	5700	22	0.15	14.24	14.14	
11ac VHT40	5510	22	0.31	14.49	13.60	23.98
	5590	22	0.31	14.57	13.91	
	5670	22	0.31	14.42	14.16	
11ac VHT80	5530	22	0.59	14.40	13.62	23.98
	5610	22	0.59	14.32	13.86	

Conclusion: PASS

MIMO:

Test Mode	Frequency (MHz)	Power Setting	Duty factor (dB)	Maximum Conducted output power (dBm)		Total (dBm)	Limit (dBm)
				ANTA	ANTB		
11a	5500	21	0.08	14.40	13.39	16.93	23.98
	5600	22	0.08	14.32	13.87	17.11	
	5700	22	0.08	14.11	14.20	17.17	
11n HT20	5500	22	0.11	14.43	13.70	17.09	23.98
	5600	22	0.11	14.32	13.82	17.09	
	5700	22	0.11	14.12	14.11	17.13	
11n HT40	5510	22	0.22	14.56	13.76	17.19	23.98
	5590	22	0.22	14.60	14.06	17.35	
	5670	22	0.22	14.42	14.25	17.35	
11ac VHT20	5500	22	0.15	14.34	13.36	16.89	23.98
	5600	22	0.15	14.33	13.63	17.00	
	5700	22	0.15	14.14	13.88	17.02	
11ac VHT40	5510	22	0.31	14.42	13.57	17.03	23.98
	5590	22	0.31	14.51	13.92	17.24	
	5670	22	0.31	14.34	14.19	17.28	
11ac VHT80	5530	22	0.59	14.28	13.44	16.89	23.98
	5610	22	0.59	14.18	13.79	17.00	

Conclusion: PASS

Note: 1. Directional Gain= $10 \log[(10^{3.14/20} + 10^{0.09/20})^2 / 2]$ dB = 4.7585 dB < 6 dB.

2. Directional Gain= $10 \log[(103.14/10 + 100.09/10) / 2]$ dB = 1.8774 dB < 6 dB.

3. U9W37 supports and operates in both correlated MIMO signals and uncorrelated MIMO signals.

U-NII-3 Band:

EUT: Wi-Fi Module		
M/N: U9W37		
Test date: 2023-07-17	Pressure: 103.1±1.0 kpa	Humidity: 51.5±3.0%
Tested by: Winter	Test site: RF site	Temperature: 22.5±0.6 °C

SISO:

Test Mode	Frequency (MHz)	Power Setting	Duty factor (dB)	Maximum Conducted output power (dBm)		Limit (dBm)
				ANTA	ANTB	
11a	5745	22	0.08	14.64	14.72	30
	5785	22	0.08	14.58	14.70	
	5825	22	0.08	14.55	14.66	
11n HT20	5745	22	0.11	14.86	14.68	30
	5785	22	0.11	14.55	14.52	
	5825	22	0.11	14.54	14.56	
11n HT40	5755	22	0.22	14.84	14.82	30
	5795	22	0.22	14.64	14.79	
11ac VHT20	5745	22	0.15	14.49	14.71	30
	5785	22	0.15	14.43	14.57	
	5825	22	0.15	14.52	14.51	
11ac VHT40	5755	22	0.31	14.58	14.55	30
	5795	22	0.31	14.46	14.51	
11ac VHT80	5775	22	0.59	14.32	14.54	30

Conclusion: PASS

MIMO:

Test Mode	Frequency (MHz)	Power Setting	Duty factor (dB)	Maximum Conducted output power (dBm)		Total (dBm)	Limit (dBm)
				ANTA	ANTB		
11a	5745	22	0.08	14.42	14.91	17.68	30
	5785	22	0.08	14.34	14.62	17.49	
	5825	22	0.08	14.14	14.64	17.41	
11n HT20	5745	22	0.11	14.19	14.69	17.46	30
	5785	22	0.11	14.19	14.57	17.39	
	5825	22	0.11	14.06	14.52	17.31	
11n HT40	5755	22	0.22	14.36	14.77	17.58	30
	5795	22	0.22	14.19	14.61	17.42	
11ac VHT20	5745	22	0.15	14.16	14.58	17.39	30
	5785	22	0.15	13.89	14.55	17.24	
	5825	22	0.15	13.77	14.44	17.13	
11ac VHT40	5755	22	0.31	14.09	14.56	17.34	30
	5795	22	0.31	14.32	14.41	17.38	
11ac VHT80	5775	22	0.59	14.32	14.44	17.39	30

Conclusion: PASS

Note: 1. Directional Gain= $10 \log[(10^{0.39/20} + 10^{-4.36/20})^2 / 2]$ dBi= 1.3460 dB < 6dBi.

2. Directional Gain= $10 \log[(100.39/10 + 10^{-4.36/10}) / 2]$ dBi= -1.3656 dB < 6dBi.

3. U9W37 supports and operates in both correlated MIMO signals and uncorrelated MIMO signals.

U-NII-1 Band: ANTA

SISO

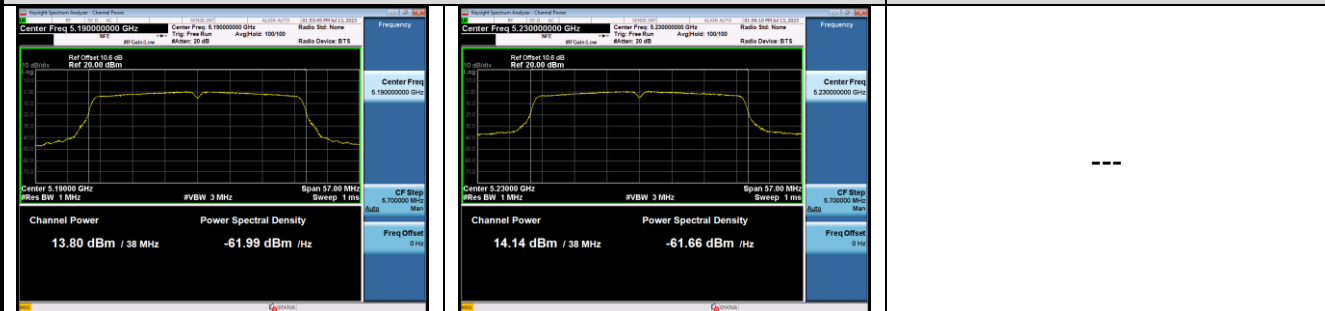
IEEE 802.11a



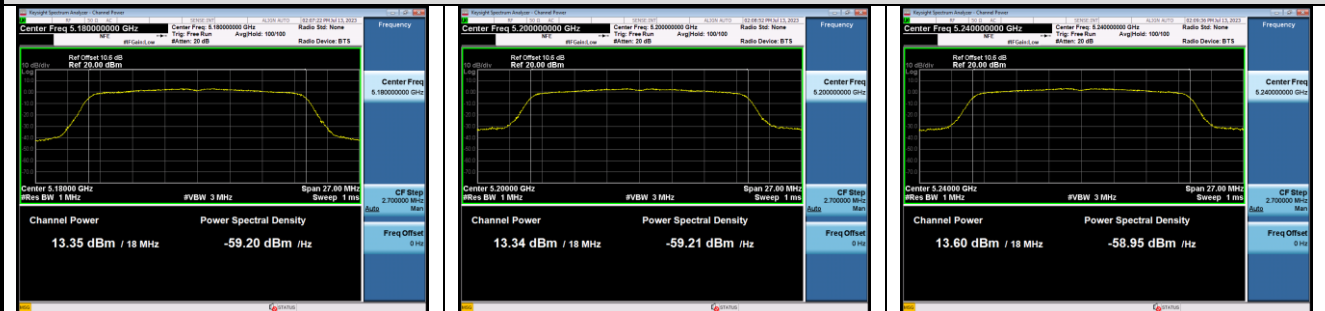
IEEE 802.11n HT20



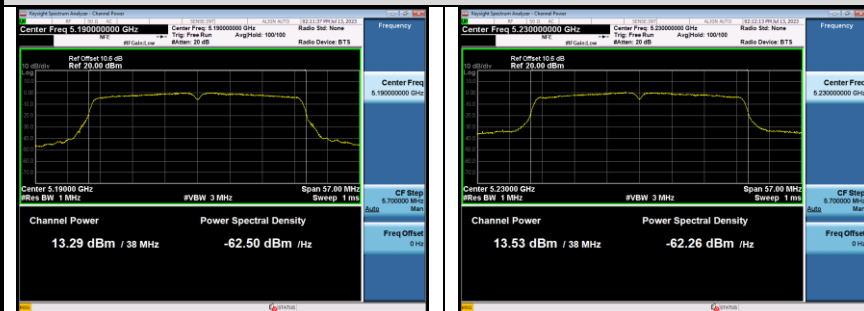
IEEE 802.11n HT40



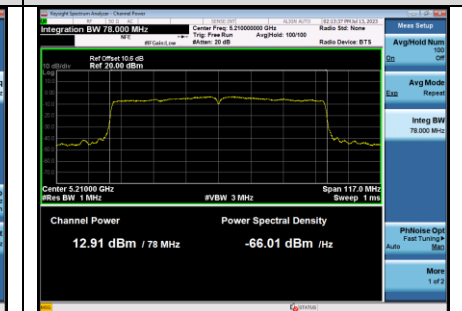
IEEE 802.11ac VHT20



IEEE 802.11ac VHT40



IEEE 802.11ac VHT80

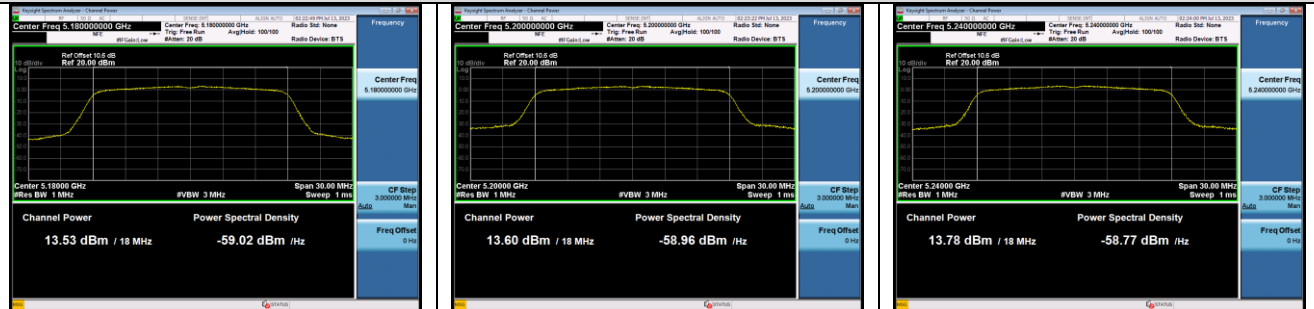


MIMO

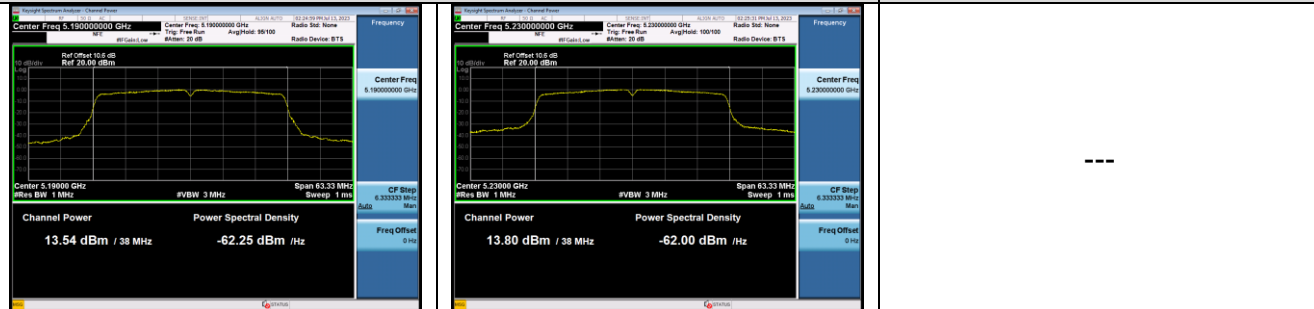
IEEE 802.11a



IEEE 802.11n HT20



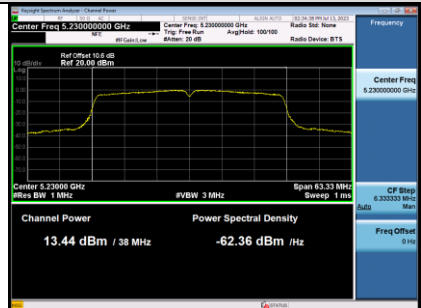
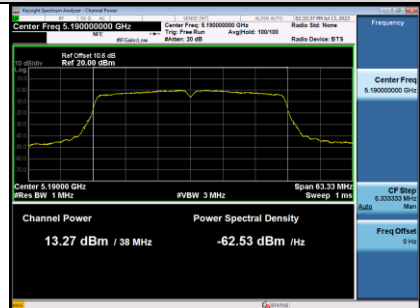
IEEE 802.11n HT40



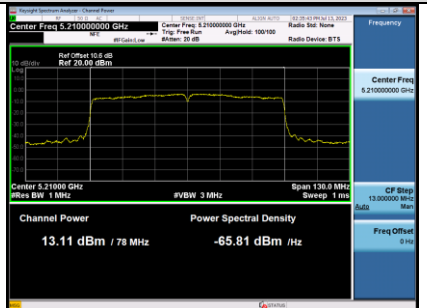
IEEE 802.11ac VHT20



IEEE 802.11ac VHT40



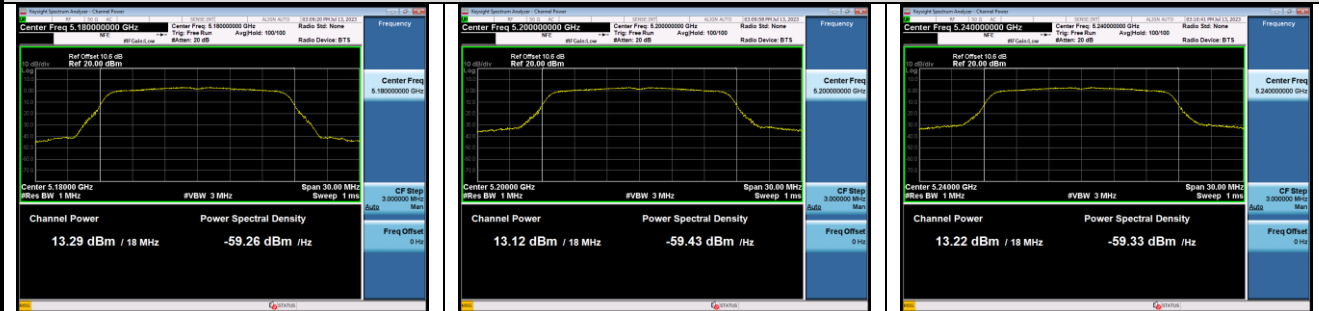
IEEE 802.11ac VHT80



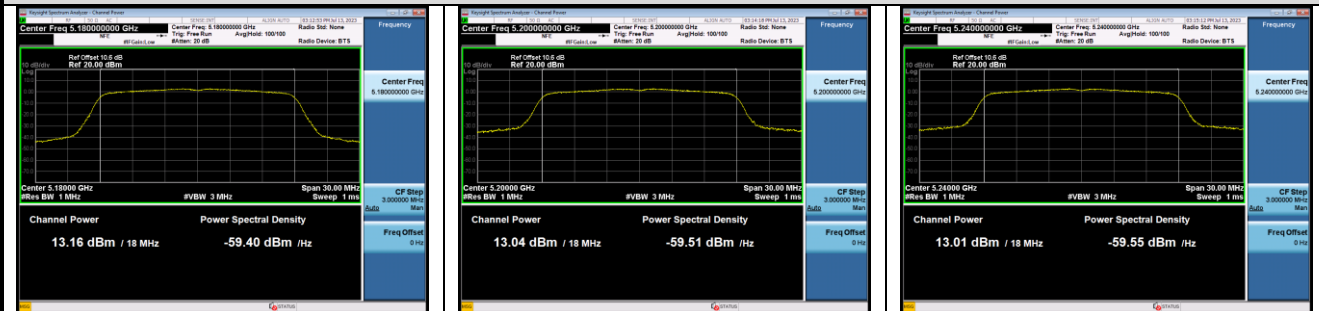
U-NII-1 Band: ANTB

SISO

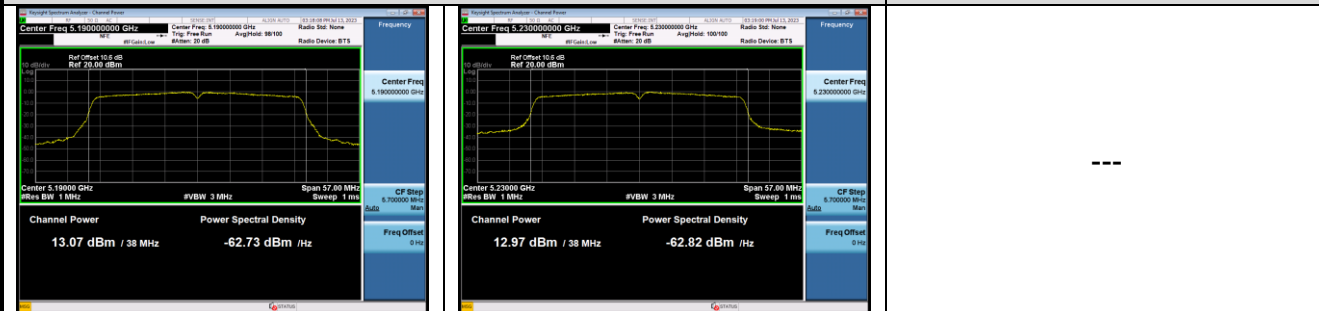
IEEE 802.11a



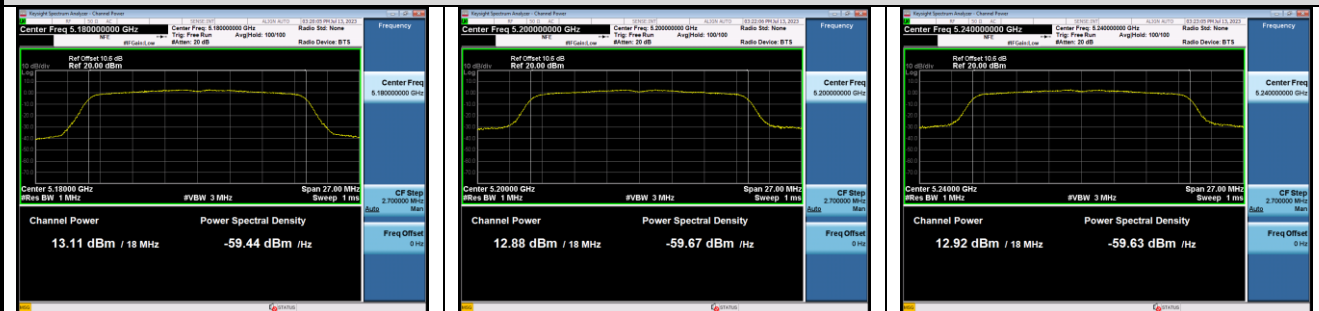
IEEE 802.11n HT20



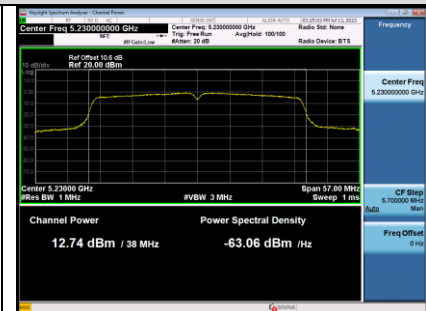
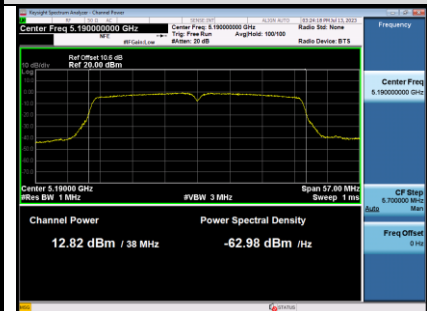
IEEE 802.11n HT40



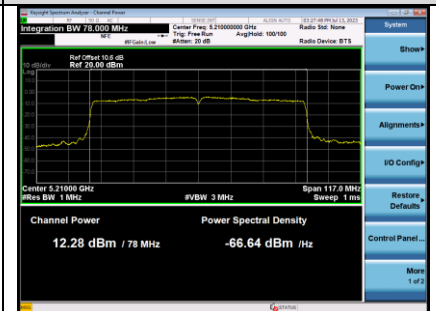
IEEE 802.11ac VHT20



IEEE 802.11ac VHT40

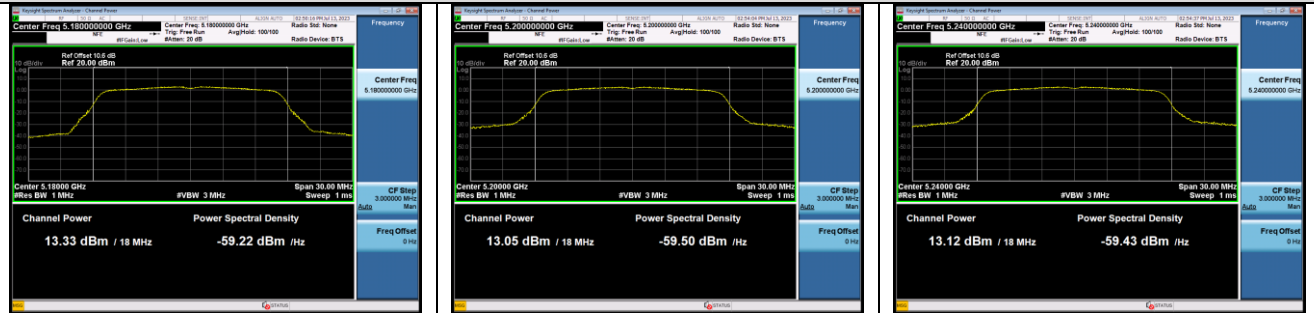


IEEE 802.11ac VHT80

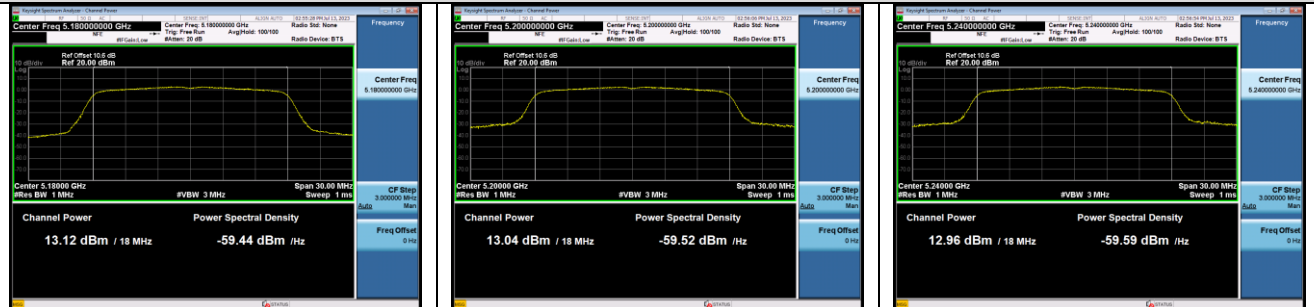


MIMO

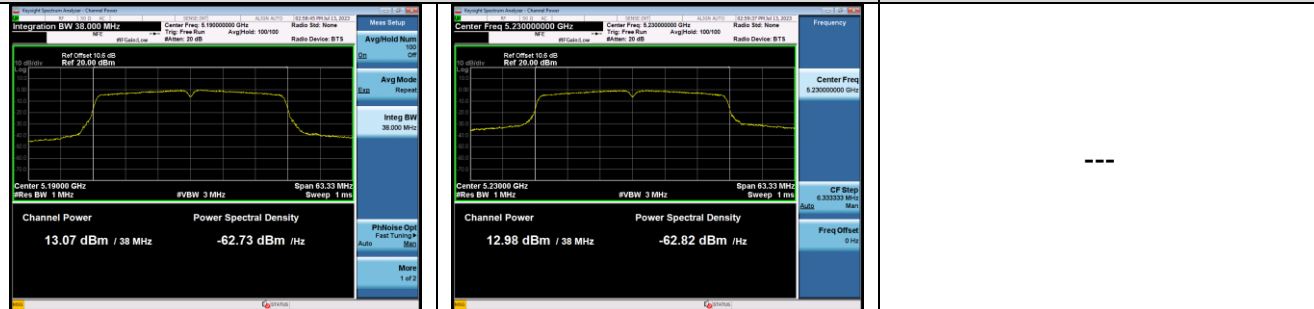
IEEE 802.11a



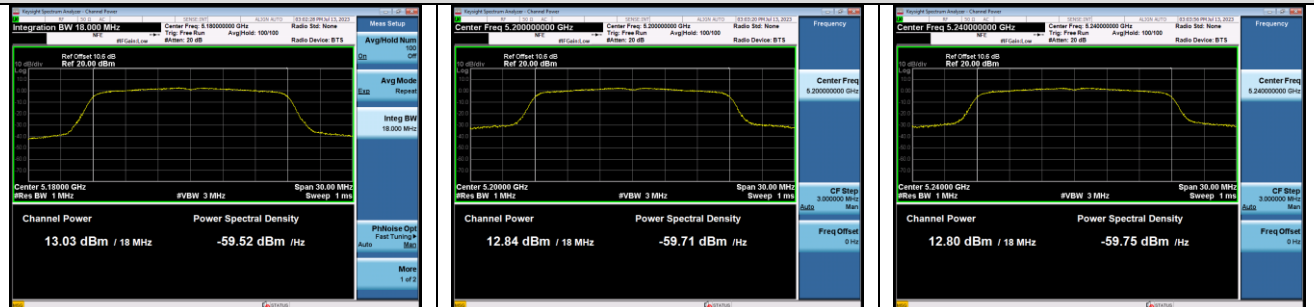
IEEE 802.11n HT20



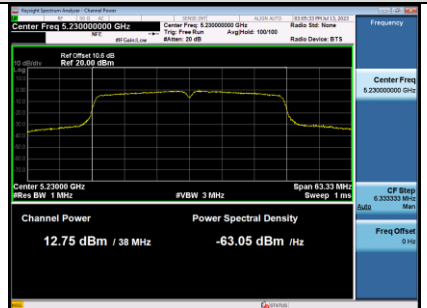
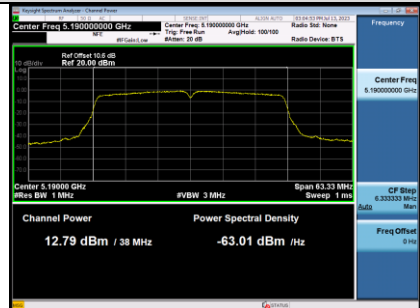
IEEE 802.11n HT40



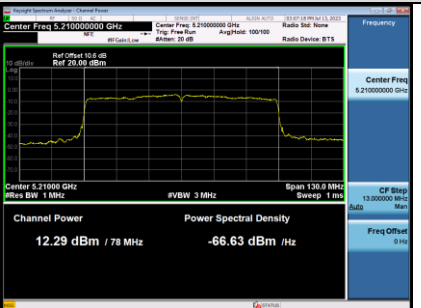
IEEE 802.11ac VHT20



IEEE 802.11ac VHT40



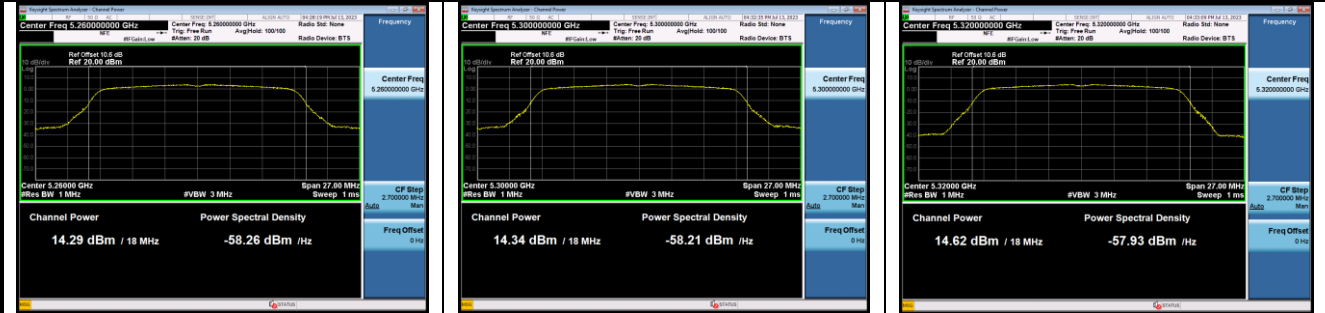
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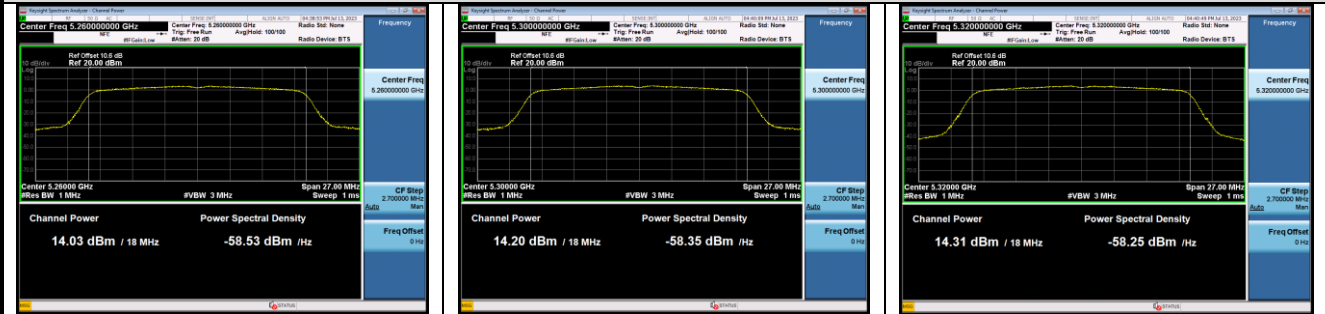
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SISO

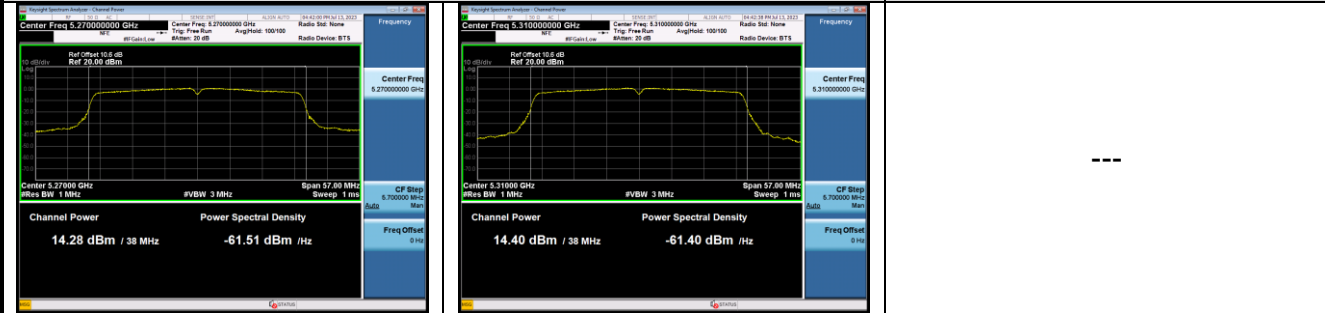
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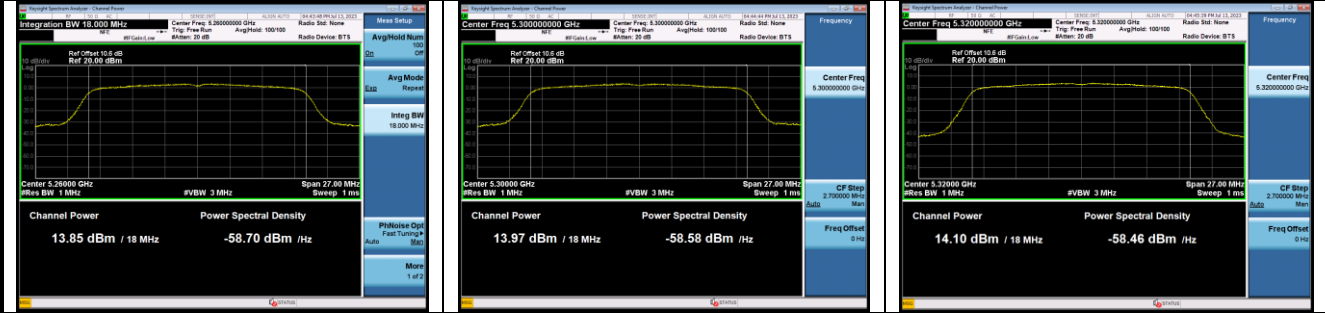
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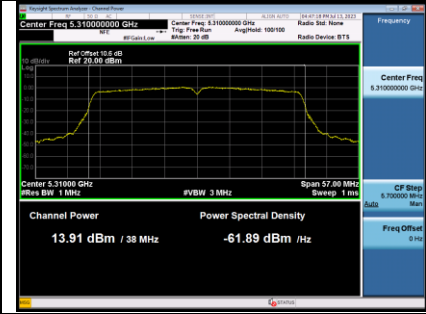
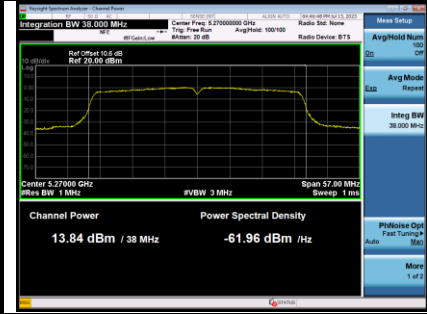
IEEE 802.11n HT40



IEEE 802.11ac VHT20



IEEE 802.11ac VHT40



IEEE 802.11ac VHT80

