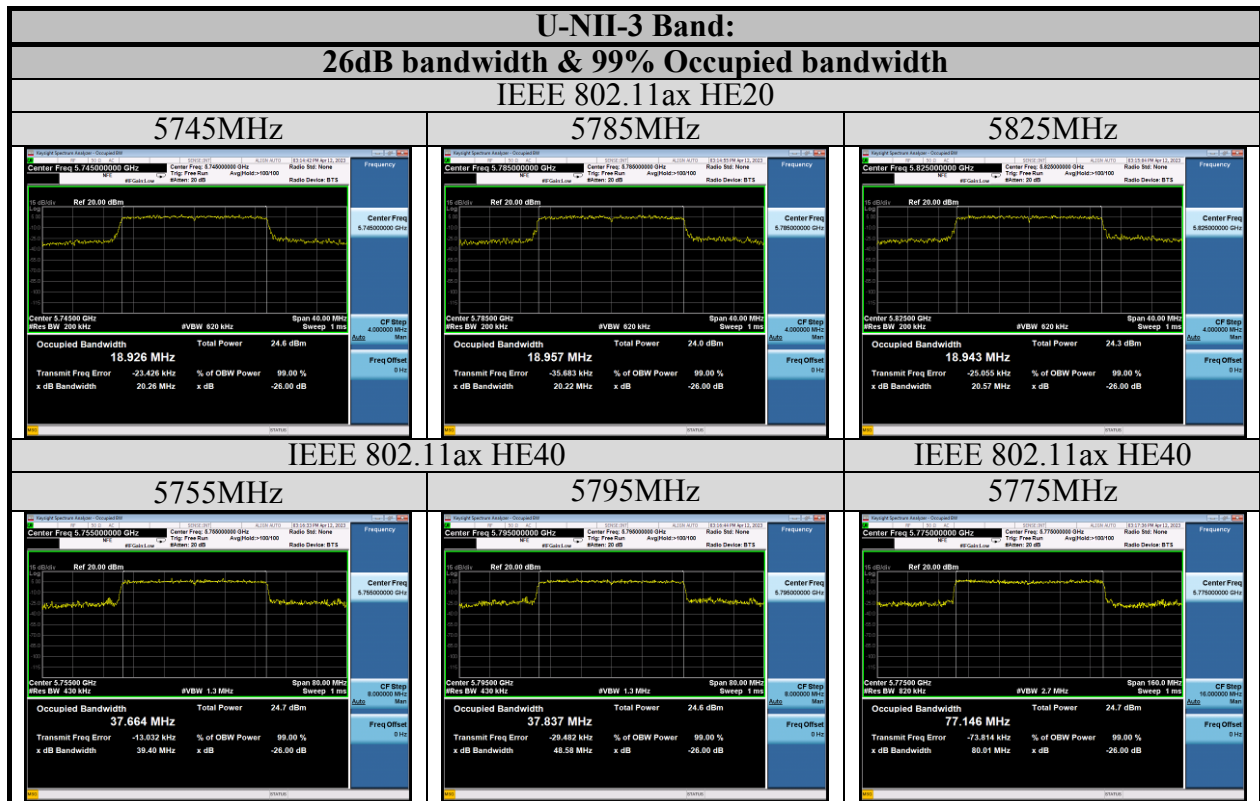




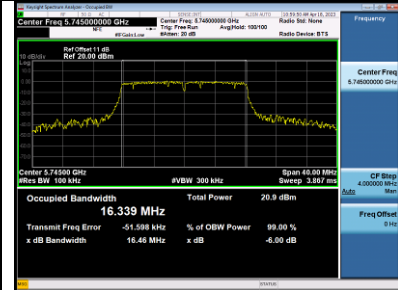
ANT1:

U-NII-3 Band:

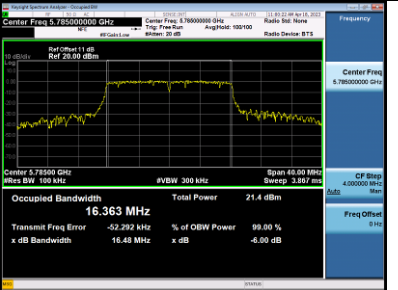
6dB bandwidth

IEEE 802.11a

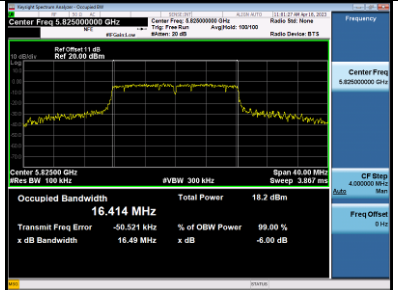
5745MHz



5785MHz

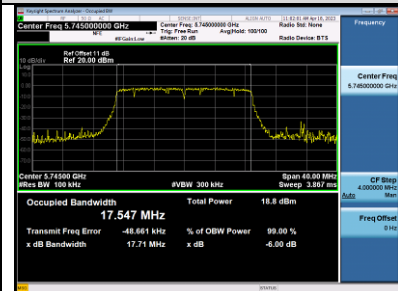


5825MHz

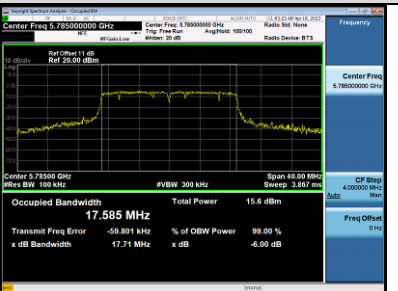


IEEE 802.11n HT20

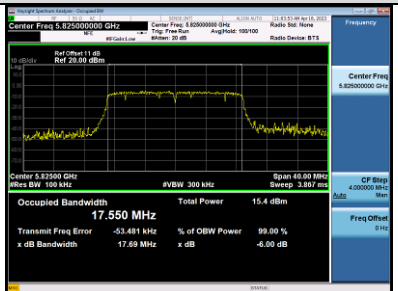
5745MHz



5785MHz

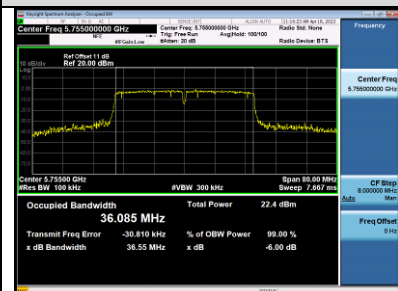


5825MHz

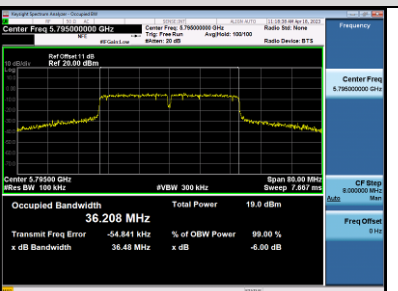


IEEE 802.11n HT40

5755MHz

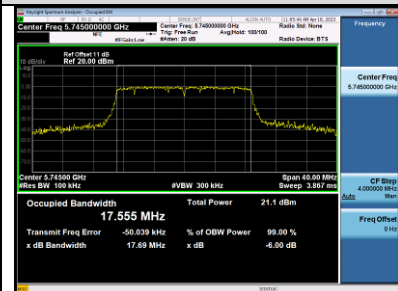


5795MHz

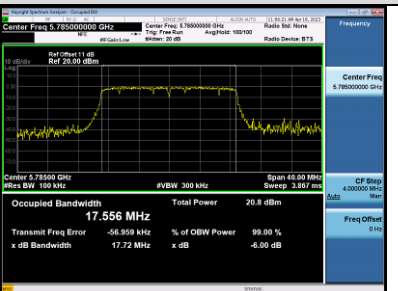


IEEE 802.11ac VHT20

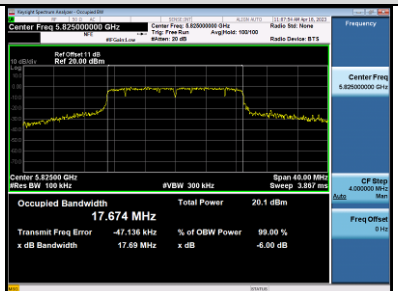
5745MHz



5785MHz

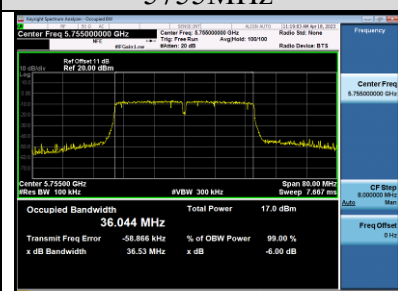


5825MHz

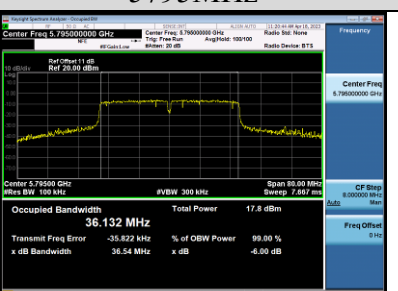


IEEE 802.11ac VHT40

5755MHz

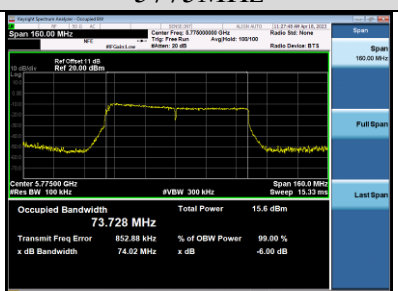


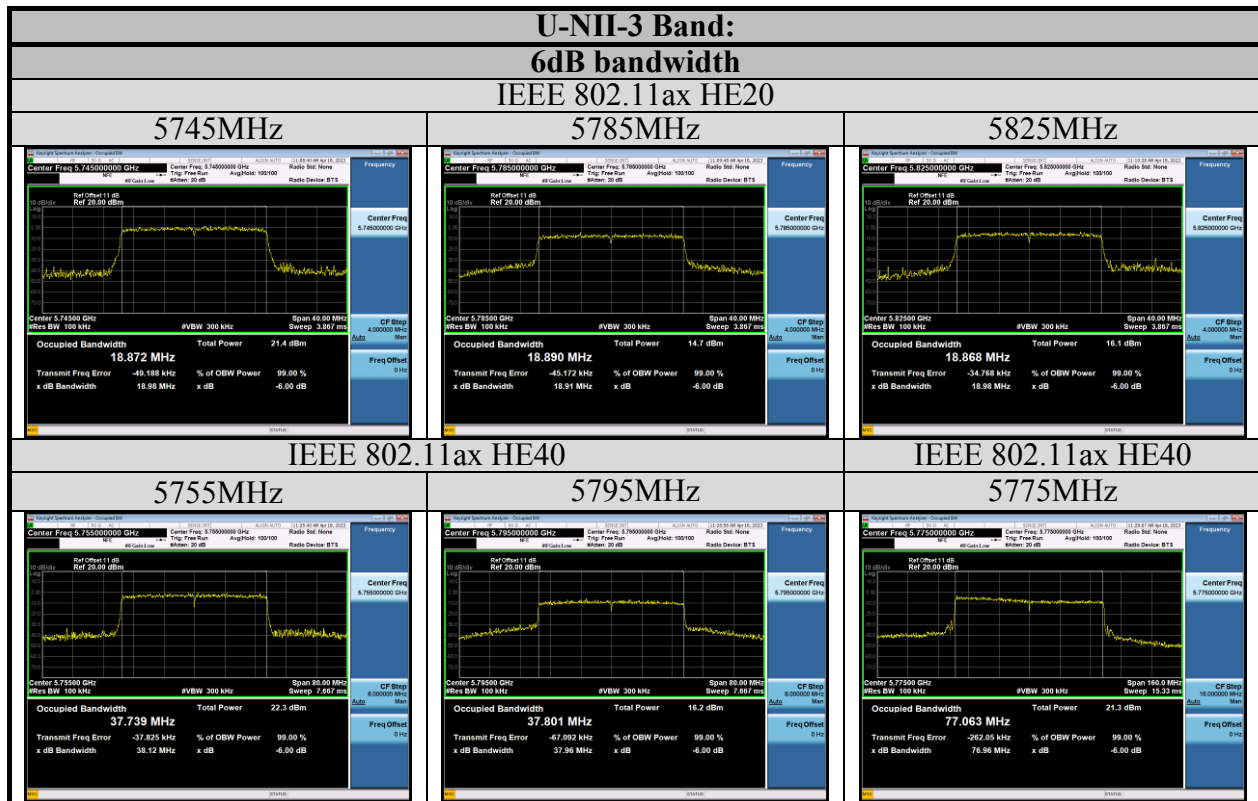
5795MHz

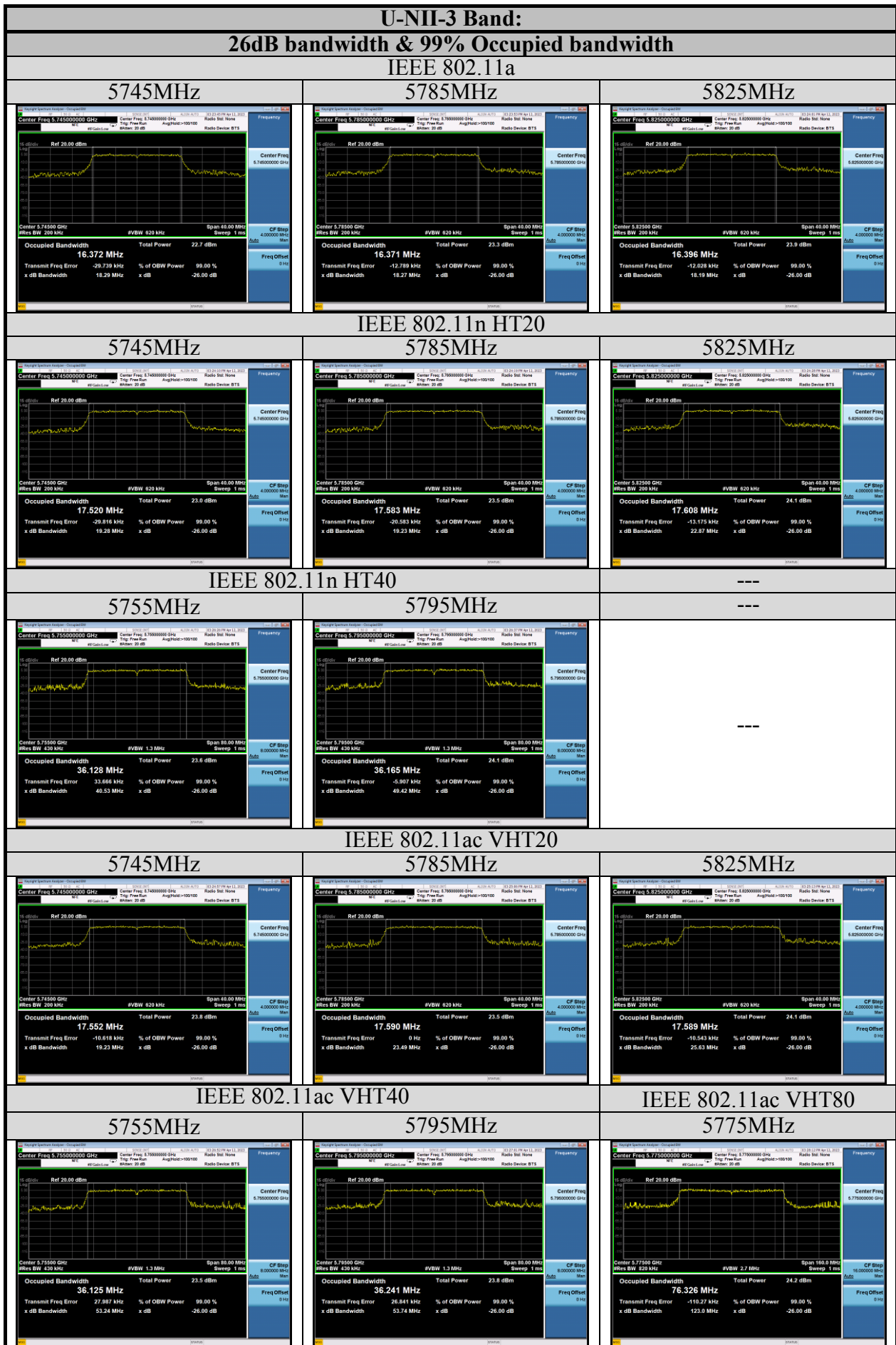


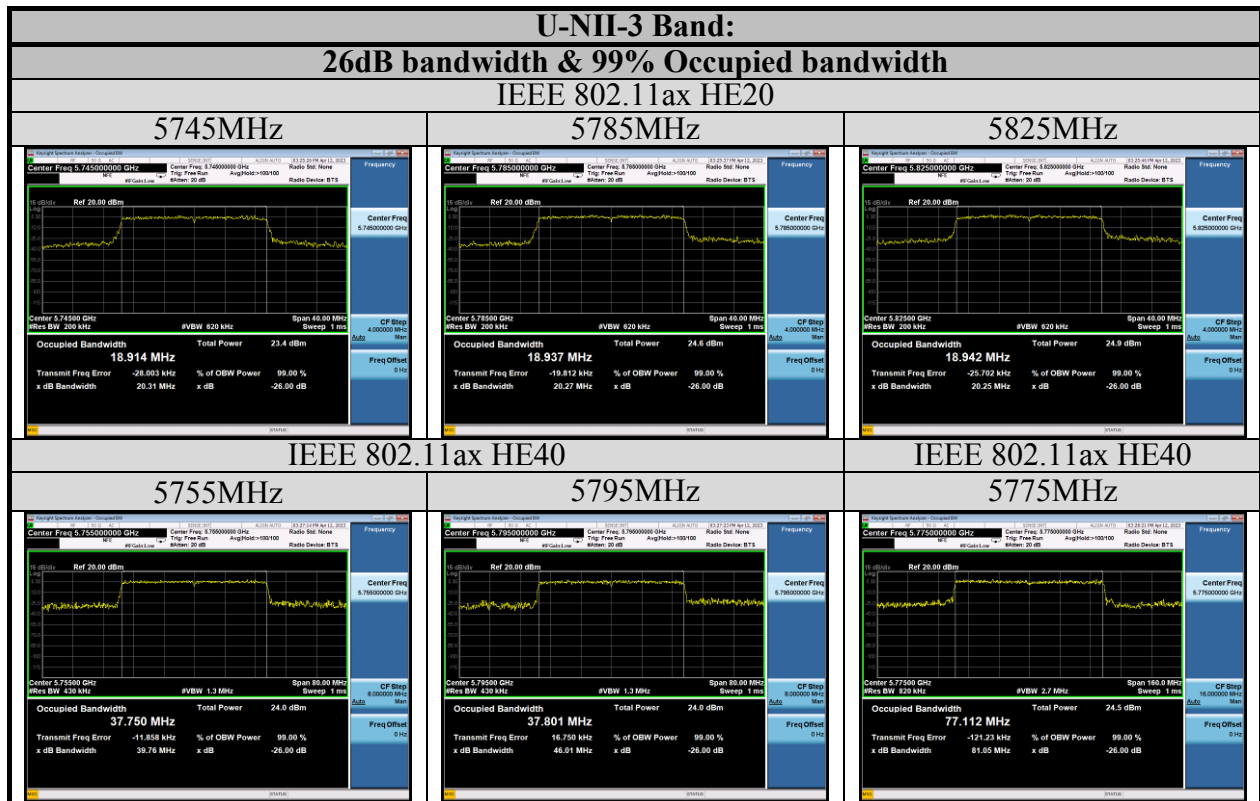
IEEE 802.11ac VHT80

5775MHz









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.07,22	1 Year
2.	Power Meter	Anritsu	ML2487A	6K00003262	Jul.07,22	1 Year
3.	Power Sensor	Anritsu	MA2491A	0332516	Jul.07,22	1 Year
4.	Attenuator	Agilent	8491B	MY39269201	Oct.09,22	1 Year
5.	RF Cable	eastsheep	141-SMA-JJ-1000	NO.1	Jul.01,22	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 is 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi, please correct the limit for this frequency band.

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 20dB attenuator.
 - 1) Measure the duty cycle, x , of the transmitter output signal as described in II.B.
 - 2) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
 - 3) Set RBW = 1 MHz.
 - 4) Set VBW $\geq$ 3 MHz.
 - 5) Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW}/2$, so that narrowband signals are not lost between frequency bins.)
 - 6) Sweep time = auto.
 - 7) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
 - 8) Do not use sweep triggering. Allow the sweep to "free run."
 - 9) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
 - 10) 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 signal.
 - 11) Add $10 \log (1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times

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: Mini PC		
M/N: A Series		
Test date: 2023-03-24	Pressure: 101.8±1.0 kpa	Humidity: 52.3±3.0%
Tested by: Nier	Test site: RF site	Temperature: 22.0±0.6 °C

Test Mode	Frequency (MHz)	Power Setting		Output Power (dBm)		Duty factor (dBi)	Total	Limit (dBm)
		ANT0	ANT1	ANT0	ANT1			
11a (MIMO)	5180	20	20	12.74	12.90	4.47	20.30	24
	5200	20	20	12.36	12.33	4.47	19.83	
	5240	20	20	12.33	12.29	4.47	19.79	
11n HT20 (MIMO)	5180	20	20	12.41	12.28	4.91	20.27	24
	5200	20	20	12.57	12.23	4.91	20.32	
	5240	20	20	12.42	12.08	4.91	20.17	
11n HT40 (MIMO)	5190	20	20	10.68	10.63	7.03	20.70	24
	5230	20	20	10.51	10.49	7.03	20.54	
11ac VHT20 (MIMO)	5180	20	20	12.59	12.69	4.92	20.57	24
	5200	20	20	12.60	12.52	4.92	20.49	
	5240	20	20	12.22	12.00	4.92	20.04	
11ac VHT40 (MIMO)	5190	20	20	10.32	10.49	7.05	20.47	24
	5230	20	20	10.22	10.74	7.05	20.55	
11ac VHT80 (MIMO)	5210	20	20	8.83	8.81	9.02	20.85	24
11ax HE20 (MIMO)	5180	20	20	11.76	11.61	5.39	20.09	24
	5200	20	20	11.42	12.19	5.39	20.22	
	5240	20	20	11.75	11.77	5.39	20.16	
11ax HE40 (MIMO)	5190	20	20	10.34	10.37	7.48	20.85	24
	5230	20	20	10.17	10.34	7.48	20.75	
11ax HE80 (MIMO)	5210	20	20	8.03	8.21	9.53	20.66	24

Conclusion: Pass

Notes: 1. Directional Gain(for antenna NUCBC02)= $10 \log(10^{2.47/10} + 10^{-0.7/10}/2)$ dBi=1.17dBi<6dBi.
Directional Gain(for antenna NUCAL02)= $10 \log(10^{3.28/10} + 10^{4.39/10}/2)$ dBi=3.87dBi<6dBi.
2. The transmit signals are completely uncorrelated.

U-NII-3 Band:

EUT: Mini PC		
M/N: A Series		
Test date: 2023-03-24	Pressure: 102.1±1.0 kpa	Humidity: 53.2±3.0%
Tested by: Nier	Test site: RF site	Temperature: 22.3±0.6 °C

Test Mode	Frequency (MHz)	Power Setting		Output Power (dBm)		Duty factor (dBi)	Total	Limit (dBm)
		ANT0	ANT1	ANT0	ANT1			
11a (MIMO)	5745	20	20	12.79	12.63	4.47	20.19	29.19
	5785	20	20	12.90	12.64	4.47	20.25	
	5825	20	20	13.20	13.19	4.47	20.68	
11n HT20 (MIMO)	5745	20	20	12.66	12.45	4.91	20.48	29.19
	5785	20	20	12.48	12.60	4.91	20.46	
	5825	20	20	12.71	12.59	4.91	20.57	
11n HT40 (MIMO)	5755	20	20	10.49	10.88	7.03	20.73	29.19
	5795	20	20	10.60	10.82	7.03	20.75	
11ac VHT20 (MIMO)	5745	20	20	12.71	12.63	4.92	20.60	29.19
	5785	20	20	12.86	12.40	4.92	20.57	
	5825	20	20	12.77	12.68	4.92	20.66	
11ac VHT40 (MIMO)	5755	20	20	10.81	10.50	7.05	20.72	29.19
	5795	20	20	10.66	10.29	7.05	20.54	
11ac VHT80 (MIMO)	5775	20	20	8.95	8.79	9.02	20.90	29.19
11ax HE20 (MIMO)	5745	20	20	12.00	11.59	5.39	20.20	29.19
	5785	20	20	12.24	11.80	5.39	20.43	
	5825	20	20	12.20	11.91	5.39	20.46	
11ax HE40 (MIMO)	5755	20	20	10.50	10.34	7.48	20.91	29.19
	5795	20	20	10.46	10.39	7.48	20.92	
11ax HE80 (MIMO)	5775	20	20	8.26	8.24	9.53	20.79	29.19

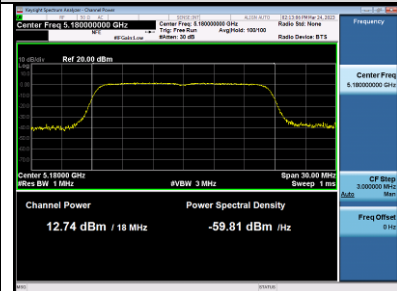
Conclusion: Pass

- Notes: 1. Directional Gain(for antenna NUCBC02)= $10 \log(10^{2.09/10} + 10^{0.03/10}/2)$ dBi=1.18dBi < 6dBi.
Directional Gain(for antenna NUCAL02)= $10 \log(10^{7.53/10} + 10^{5.95/10}/2)$ dBi=6.81dBi > 6dBi.
2. The transmit signals are completely uncorrelated.

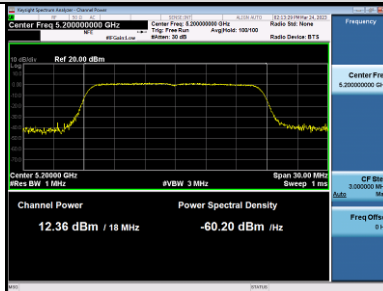
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U-NII-1 Band:
IEEE 802.11a

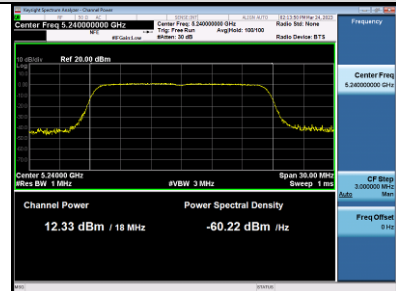
5180MHz



5200MHz

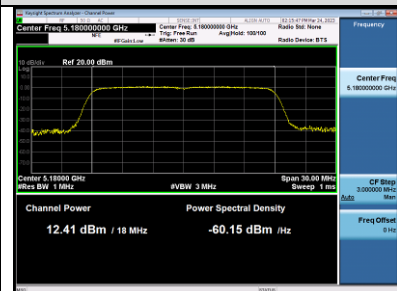


5240MHz

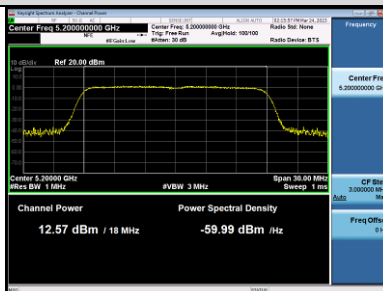


IEEE 802.11n HT20

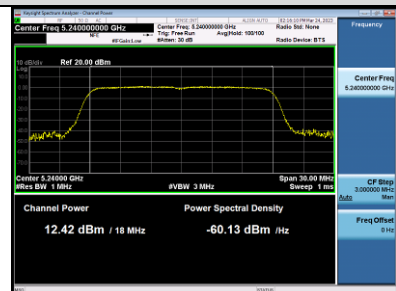
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5200MHz

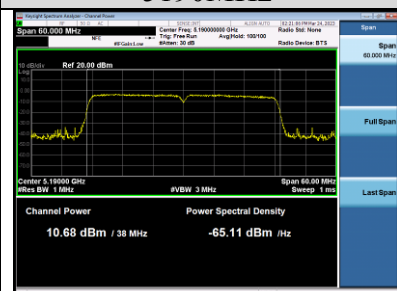


5240MHz

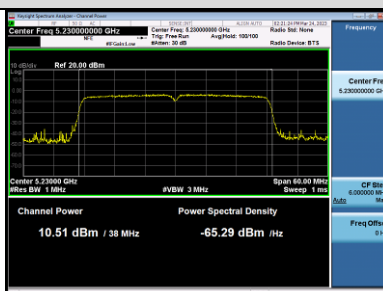


IEEE 802.11n HT40

5190MHz

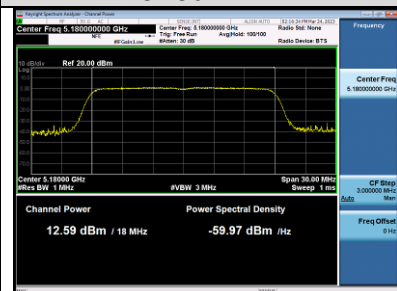


5230MHz

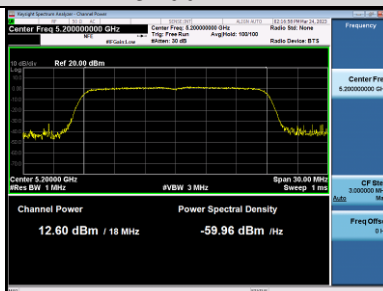


IEEE 802.11ac VHT20

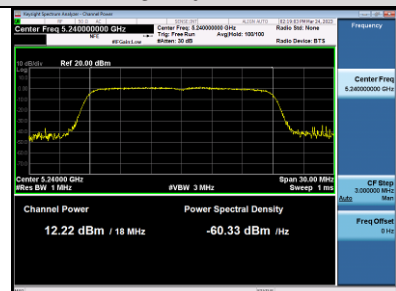
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5200MHz

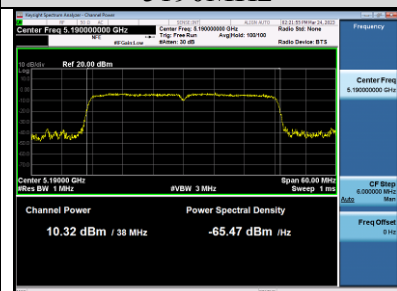


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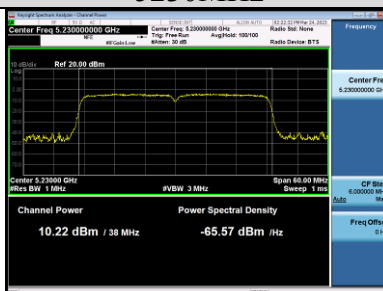


IEEE 802.11ac VHT40

5190MHz

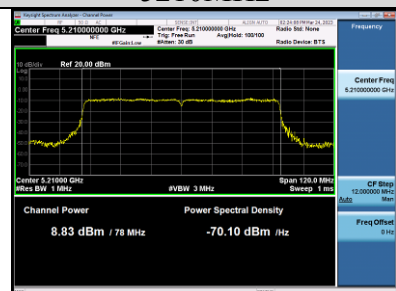


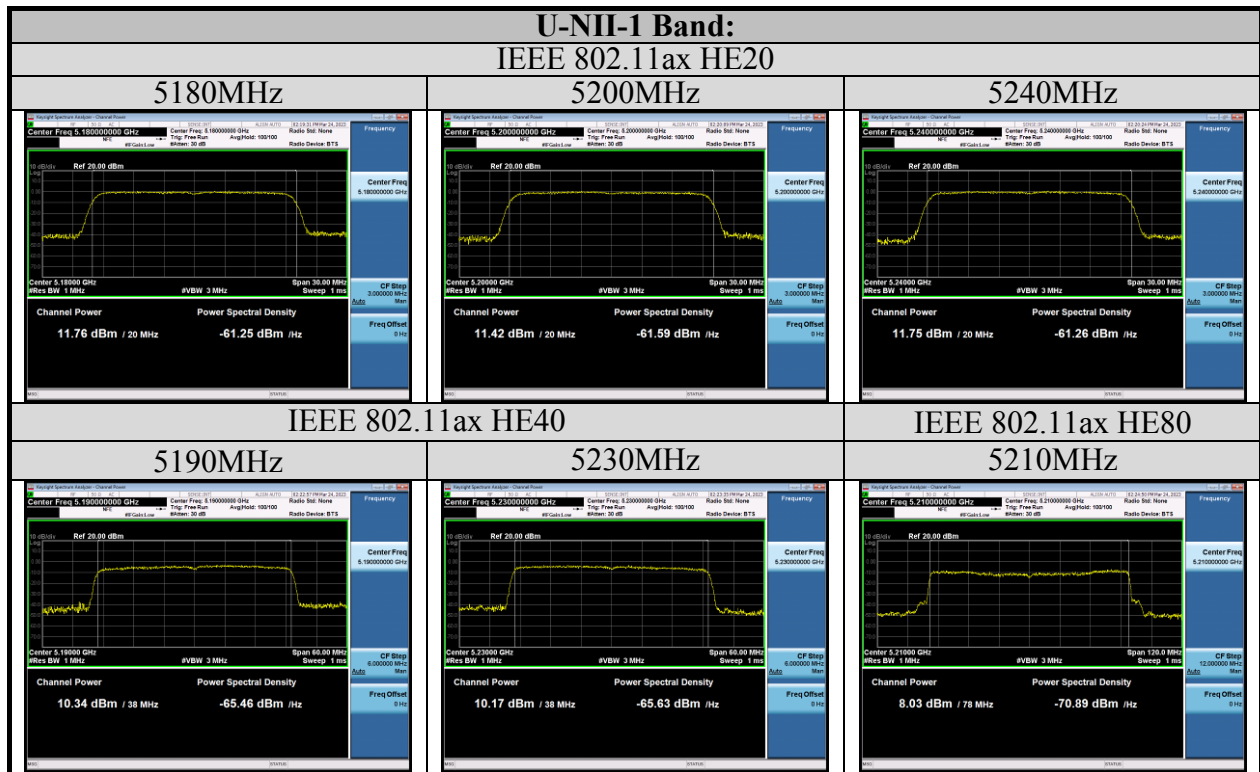
5230MHz



IEEE 802.11ac VHT80

5210MHz

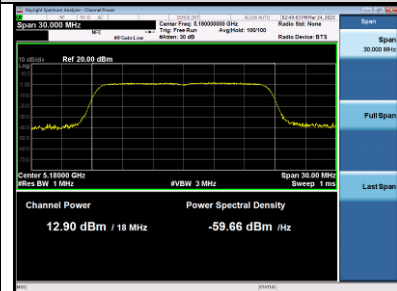




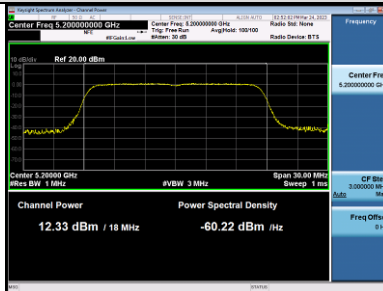
ANT1:

U-NII-1 Band:
IEEE 802.11a

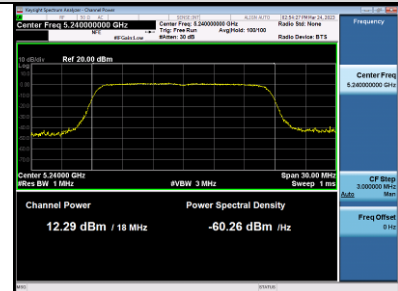
5180MHz



5200MHz

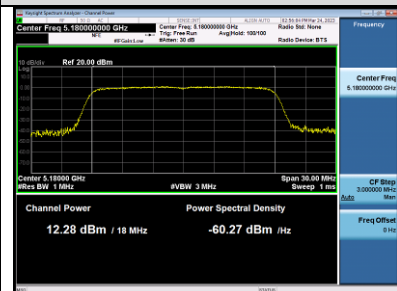


5240MHz

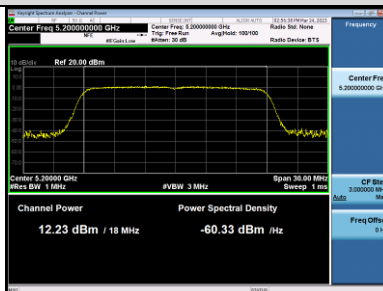


IEEE 802.11n HT20

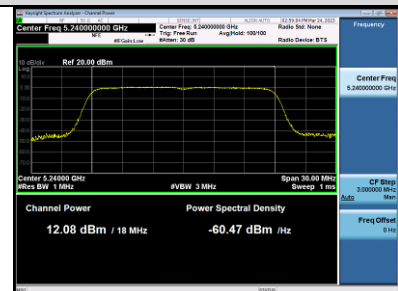
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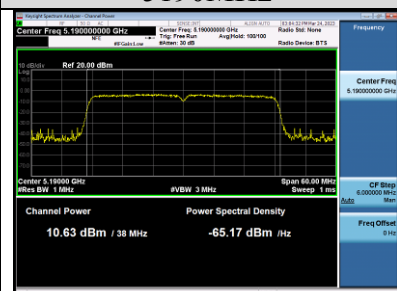


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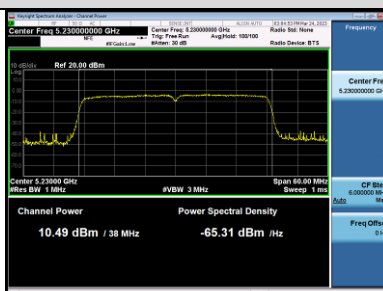


IEEE 802.11n HT40

5190MHz

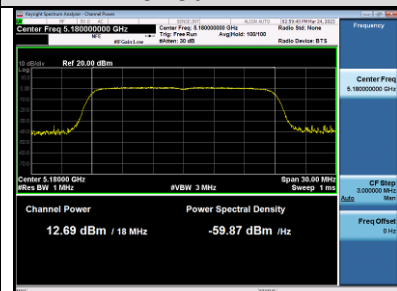


5230MHz

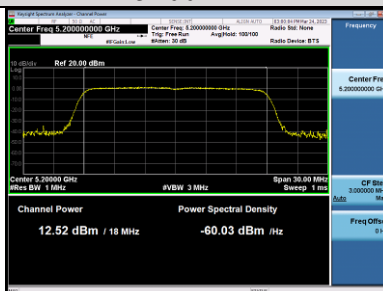


IEEE 802.11ac VHT20

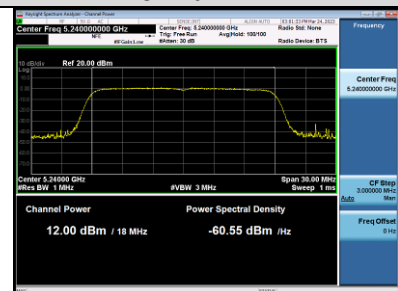
5180MHz



5200MHz

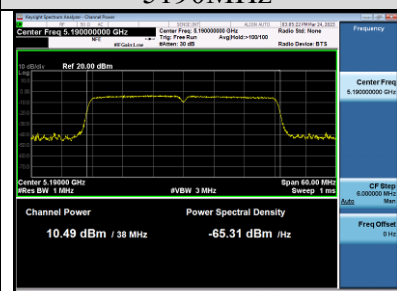


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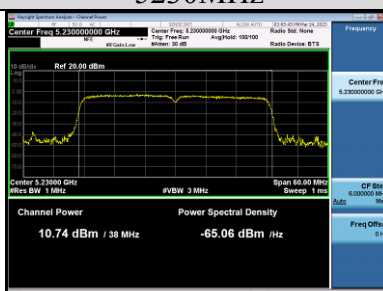


IEEE 802.11ac VHT40

5190MHz



5230MHz



IEEE 802.11ac VHT80

5210MHz

