

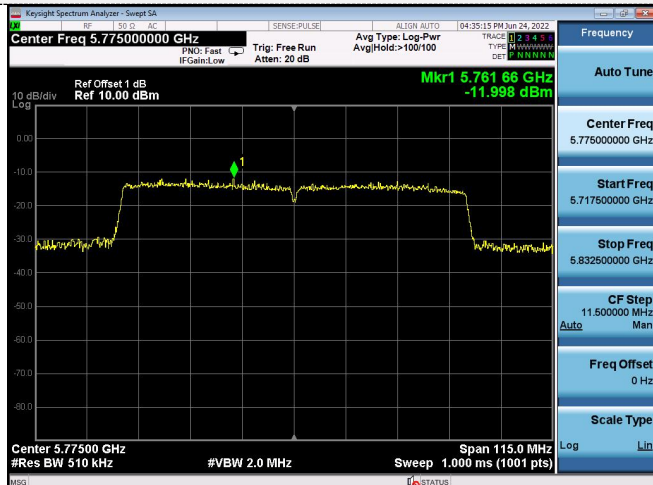
802.11ac(HT40)

U-NII 3



802.11ac(HT80)

U-NII 3



CH151



CH159

CH155



4.5 Emission Bandwidth (26dB Bandwidth)

Limit

N/A

Test Procedure

1. Set resolution bandwidth (RBW) = approximately 1 % of the EBW.
2. Set the video bandwidth (VBW) > RBW.
3. Detector = Peak.
4. Trace mode = Max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW / EBW ratio is approximately 1 %.

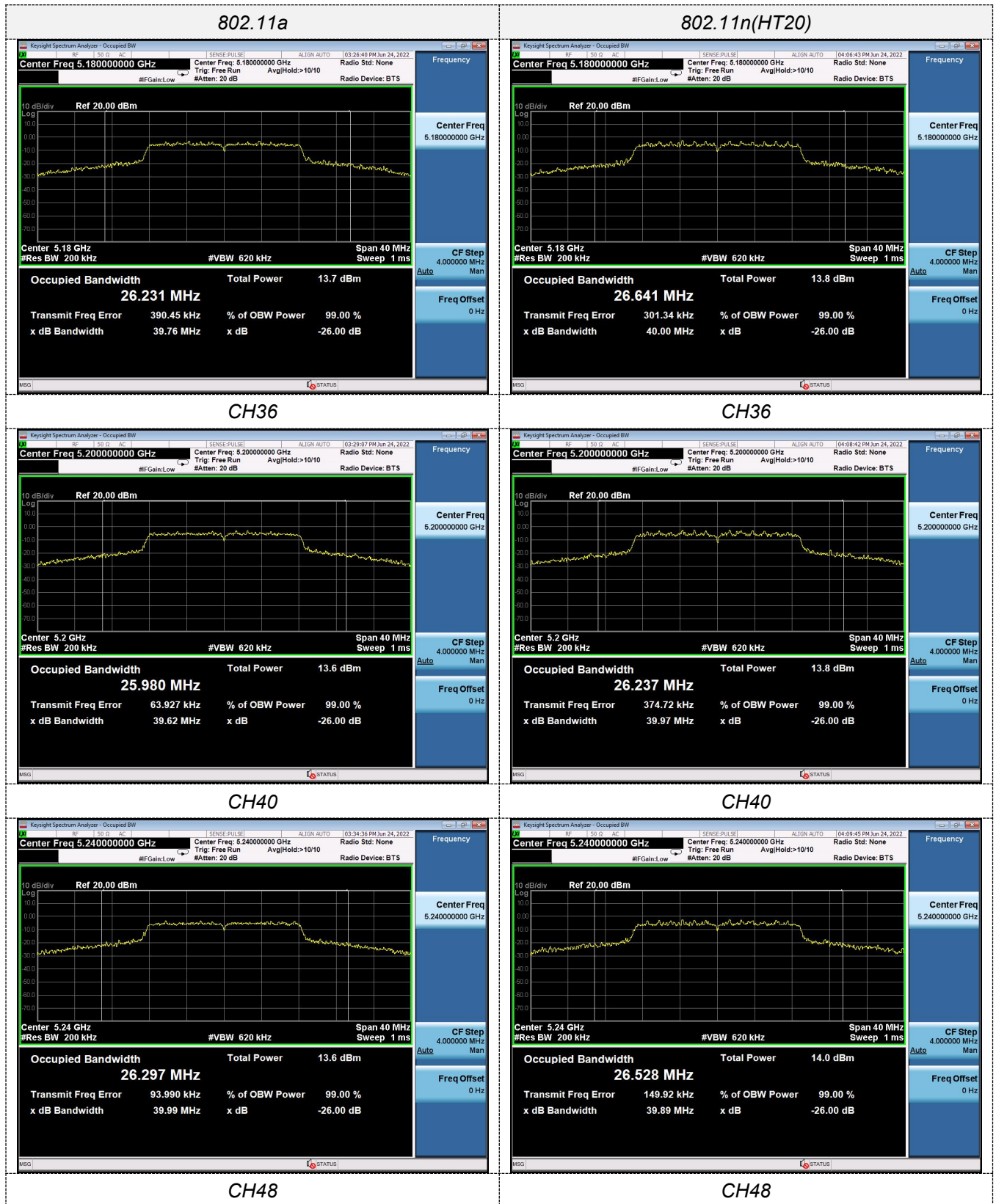
Test Configuration



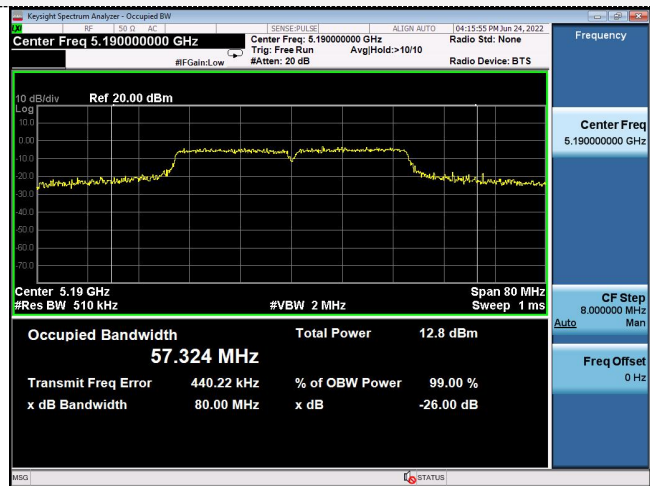
Test Results

Type	Bands	Channel	26dB Bandwidth (MHz)	Limit (MHz)	Result
802.11a	U-NII 1	36	39.76	N/A	Pass
		40	39.62		
		48	39.99		
802.11n(HT20)	U-NII 1	36	40.00		
		40	39.97		
		48	39.89		
802.11n(HT40)	U-NII 1	38	80.00		
		46	80.00		
802.11ac(HT20)	U-NII 1	36	39.99		
		40	39.98		
		48	40.00		
802.11ac(HT40)	U-NII 1	38	80.00		
		46	80.00		
802.11ac(HT80)	U-NII 1	42	160.0		

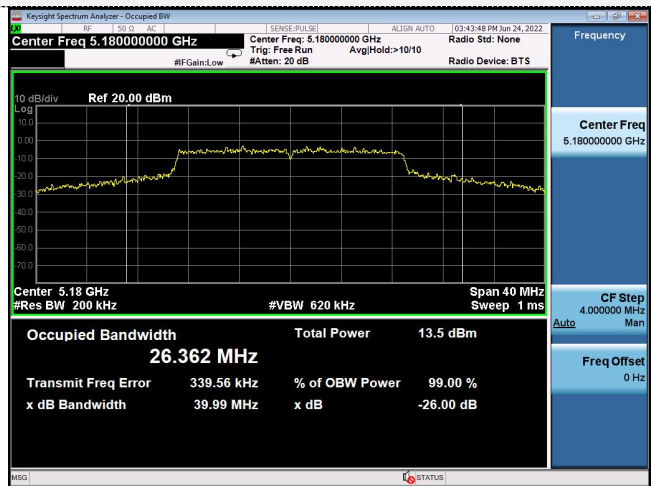
Test plot as follows:



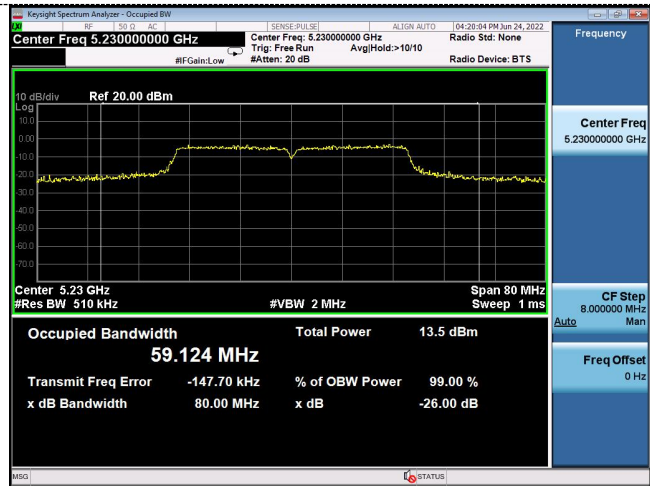
802.11n(HT40)



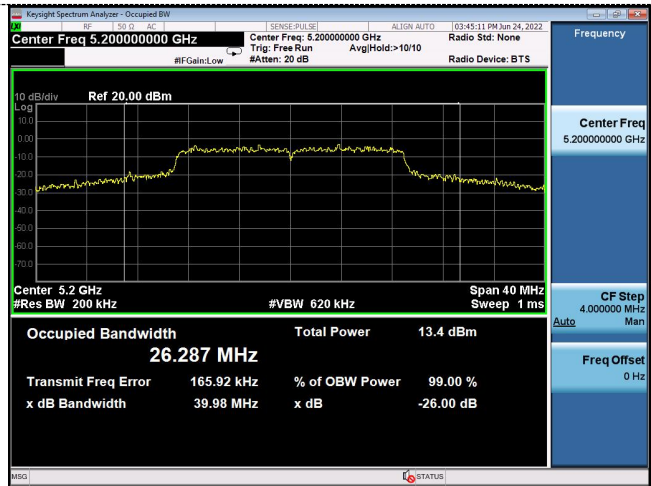
802.11ac(HT20)



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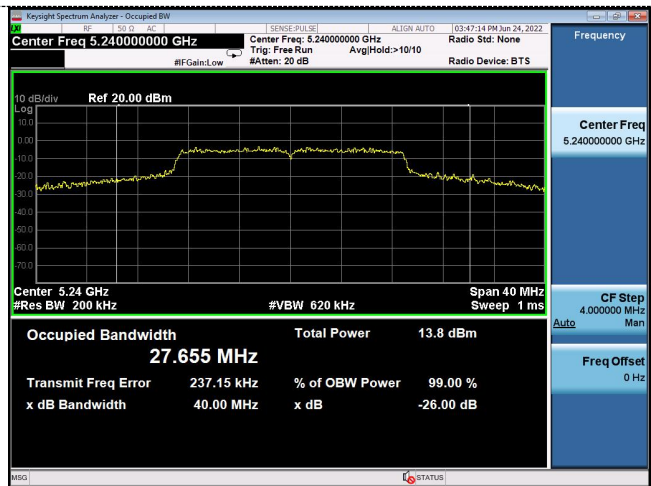
CH36



CH46



CH40



CH48



CH38

CH42

CH46

4.6 Minimum Emission Bandwidth (6dB Bandwidth)

Limit

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth 3 x RBW.
3. Detector = Peak.
4. Trace mode = Max hold.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

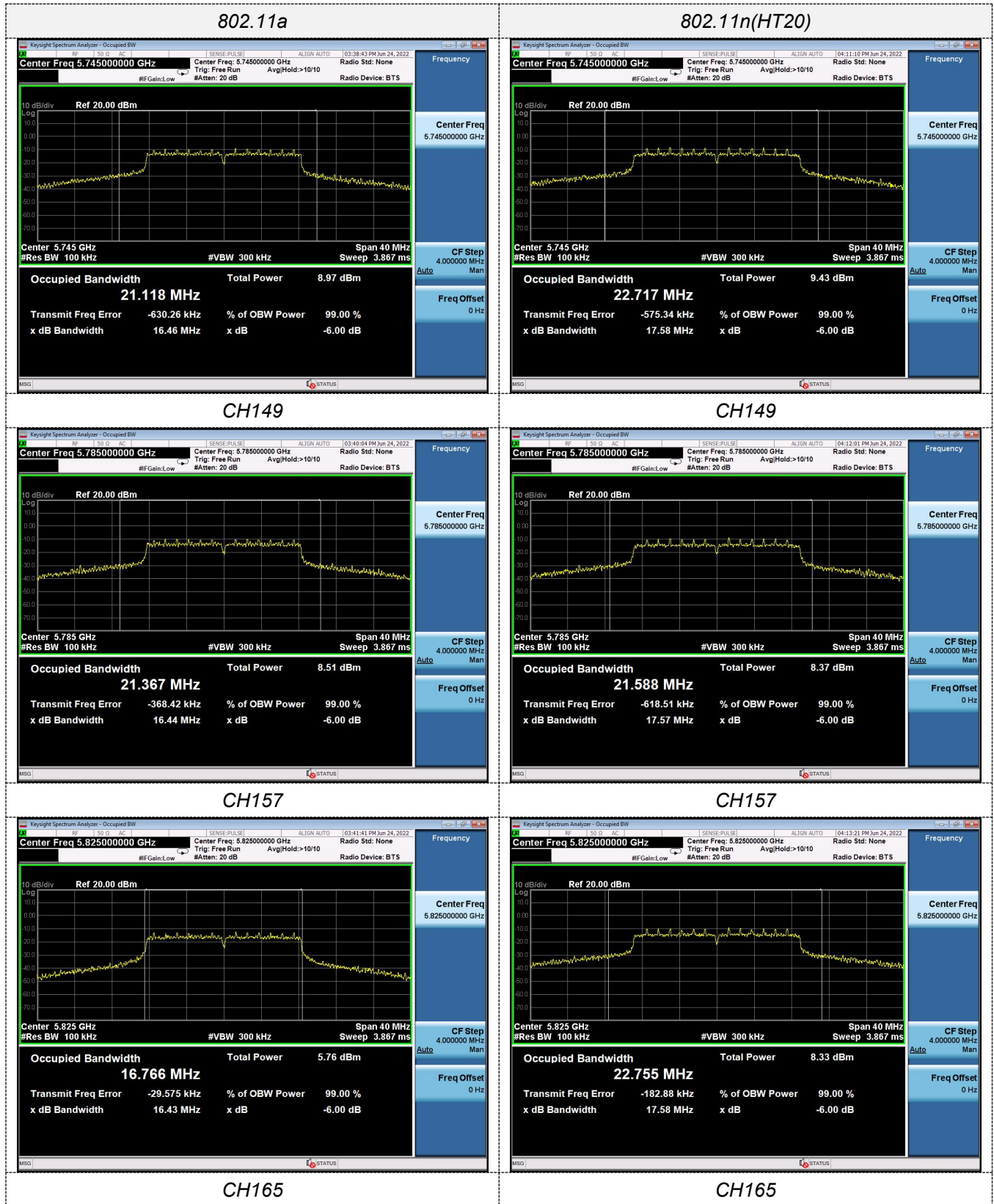
Test Configuration



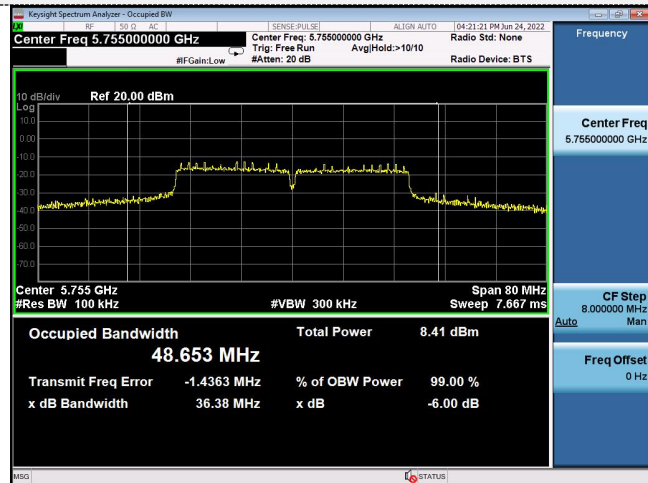
Test Results

Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	16.46	≥500KHz	Pass
		157	16.44		
		165	16.43		
802.11n(HT20)	U-NII 3	149	17.58		
		157	17.57		
		165	17.58		
802.11n(HT40)	U-NII 3	151	36.38		
		159	36.41		
802.11ac(HT20)	U-NII 3	149	17.68		
		157	17.79		
		165	17.59		
802.11ac(HT40)	U-NII 3	151	36.38		
		159	36.03		
802.11ac(HT80)	U-NII 3	155	76.29		

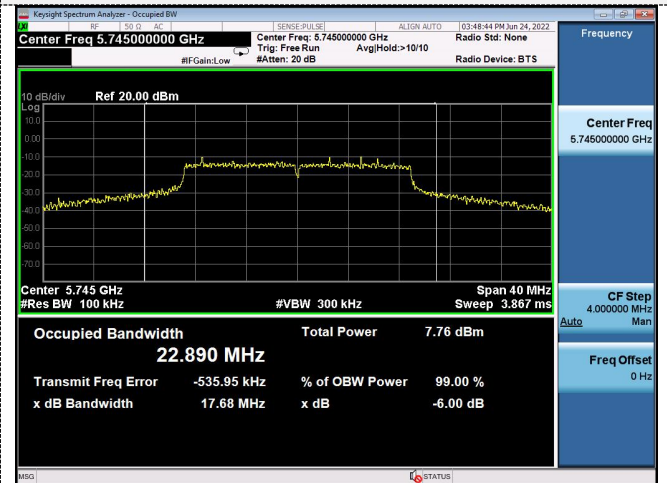
Test plot as follows:



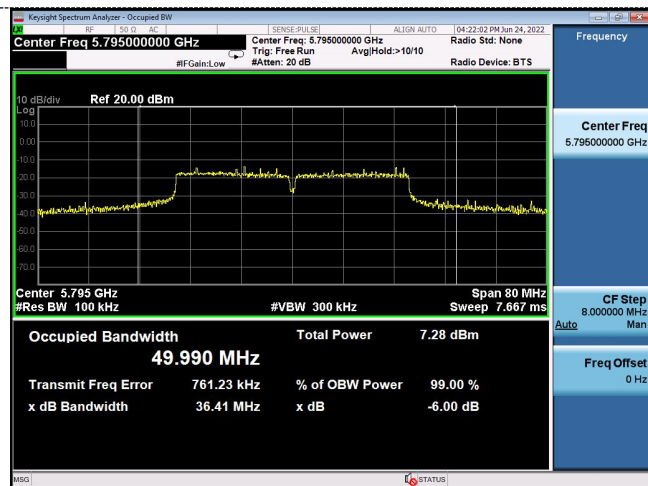
802.11n(HT40)



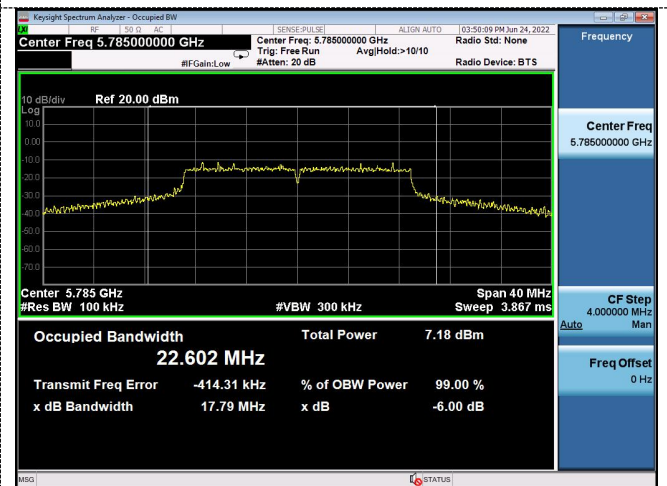
802.11ac(HT20)



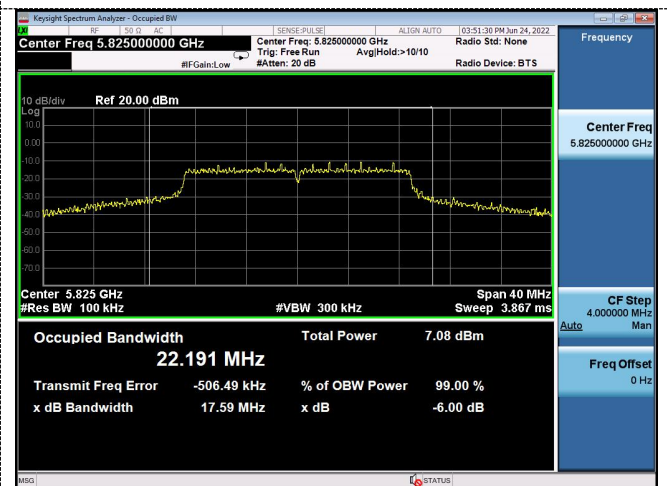
CH151



CH149



CH159



CH165



CH151

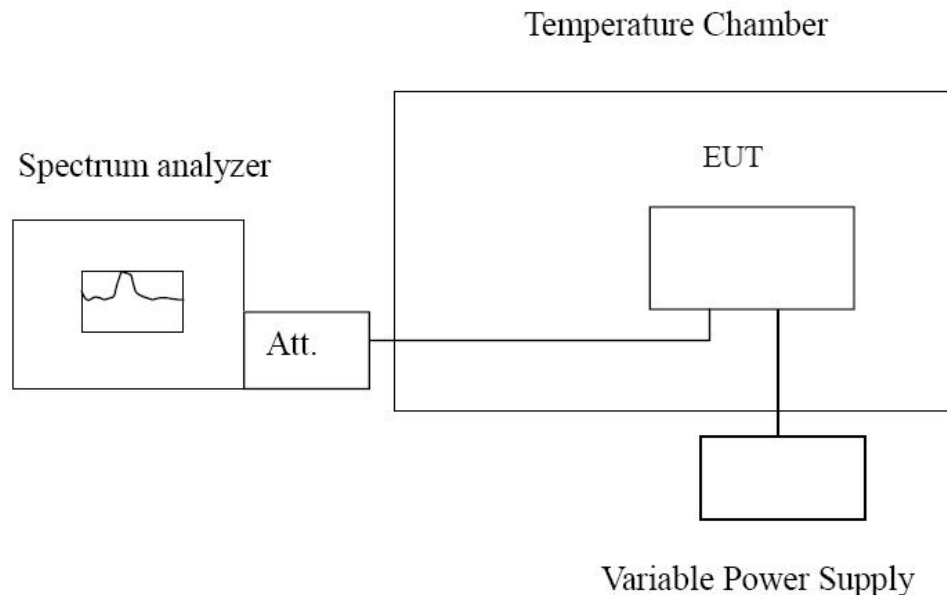
CH155

4.7 Frequency Stability

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.

TEST CONFIGURATION



TEST PROCEDURE

Frequency Stability under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Frequency Stability under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

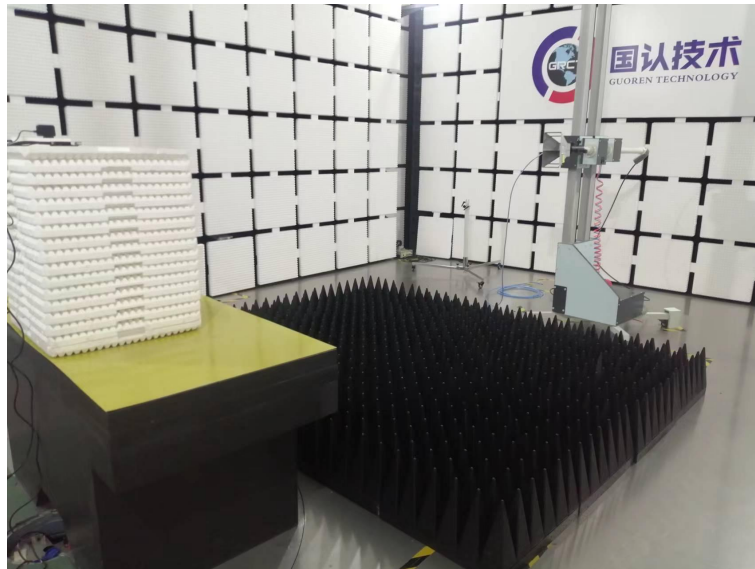
TEST RESULTS

Record worst case as below:

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
12.00	-30	128.62	0.02483	Within the band of operation	Pass
	-20	138.54	0.02675		
	-10	126.17	0.02436		
	0	133.06	0.02569		
	10	110.51	0.02133		
	20	102.74	0.01983		
	30	136.82	0.02641		
	40	120.51	0.02326		
	50	132.67	0.02561		
13.2	25	148.51	0.02867	Within the band of operation	Pass
10.8	25	136.04	0.02626		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
12.00	-30	145.18	0.02527	Within the band of operation	Pass
	-20	132.46	0.02306		
	-10	127.84	0.02225		
	0	140.75	0.02450		
	10	134.91	0.02348		
	20	118.42	0.02061		
	30	127.46	0.02219		
	40	136.58	0.02377		
	50	115.72	0.02014		
13.2	25	132.54	0.02307	Within the band of operation	Pass
10.8	25	117.54	0.02046		

5 Test Setup Photos of the EUT



6 Photos of the EUT

Reference to the test report No. GRCTR220602019-01.

***** End of Report *****