

802.11n(HT40)



802.11ac(HT20)



CH38



CH36



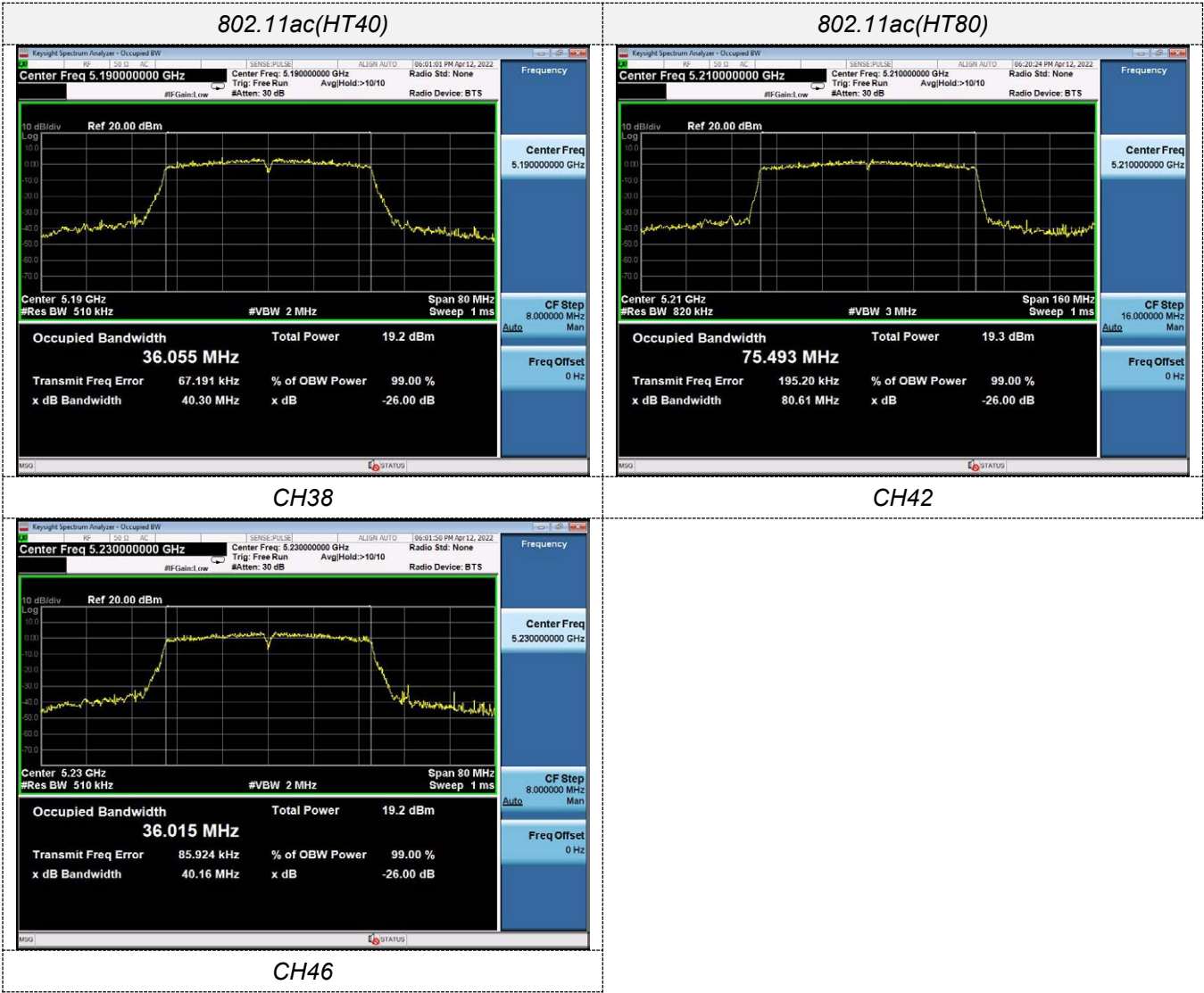
CH46



CH40



CH48



CH38

CH42

CH46

ANT 2

802.11a



802.11n(HT20)



CH36



CH36



CH40



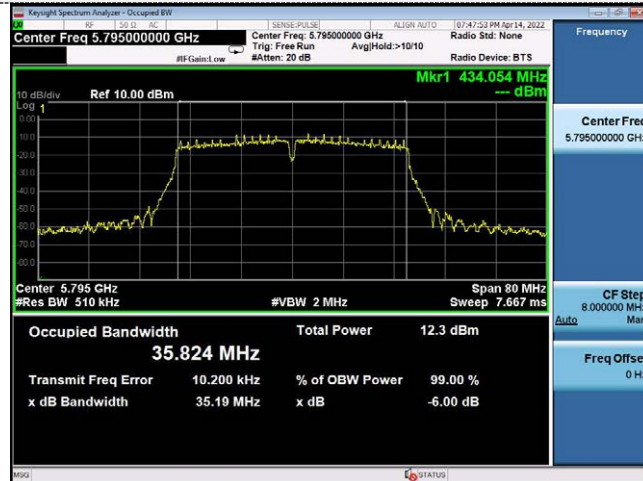
CH40



CH48

CH48

802.11n(HT40)



802.11ac(HT20)



CH38



CH36



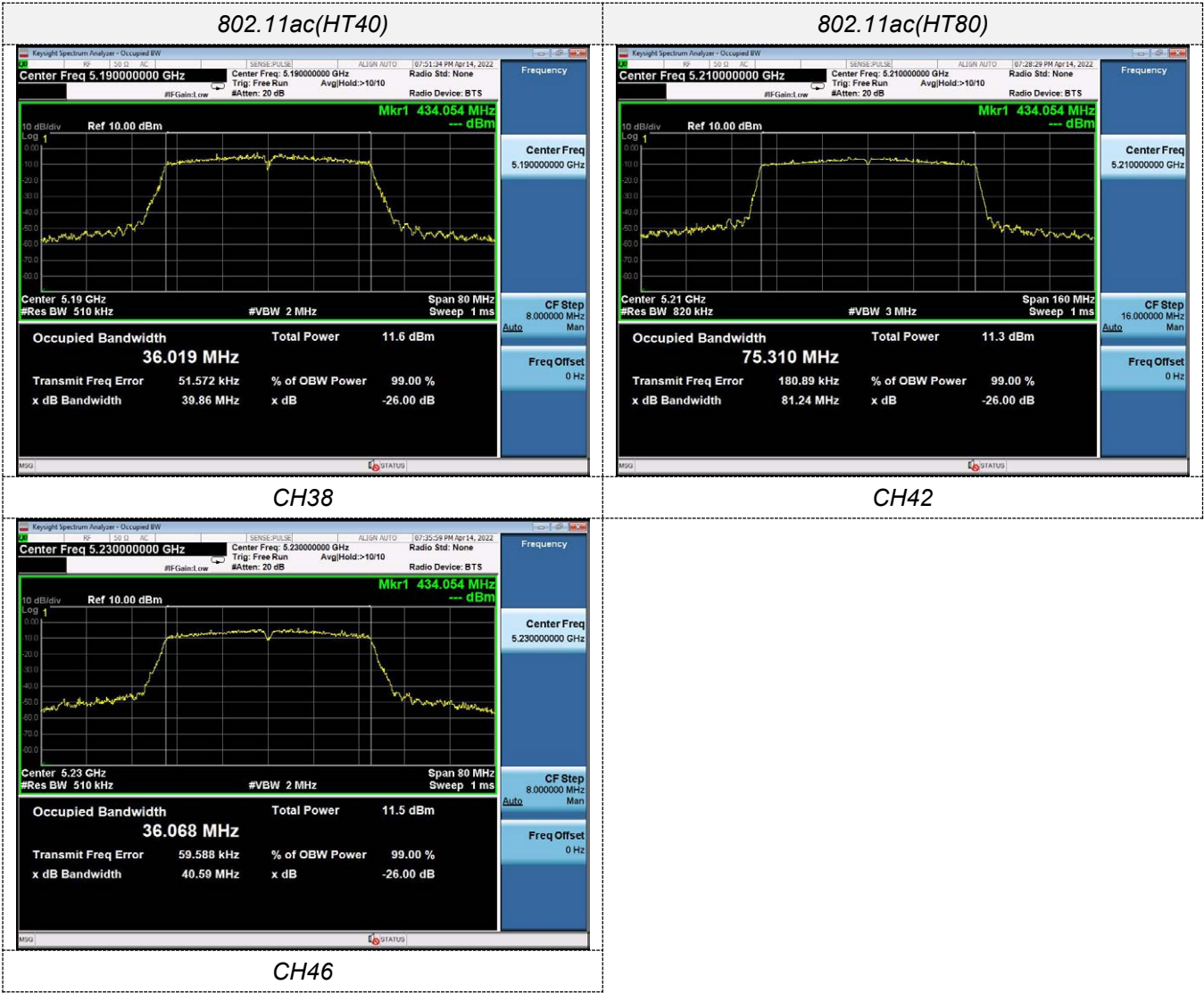
CH46



CH40



CH48



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

ANT 1

Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	15.29	≥500KHz	Pass
		157	15.37		
		165	15.18		
802.11n(HT20)	U-NII 3	149	16.58		
		157	16.56		
		165	15.68		
802.11n(HT40)	U-NII 3	151	35.39		
		159	35.47		
802.11ac(HT20)	U-NII 3	149	15.13		
		157	15.07		
		165	15.13		
802.11ac(HT40)	U-NII 3	151	35.40		
		159	35.12		
802.11ac(HT80)	U-NII 3	155	75.80		

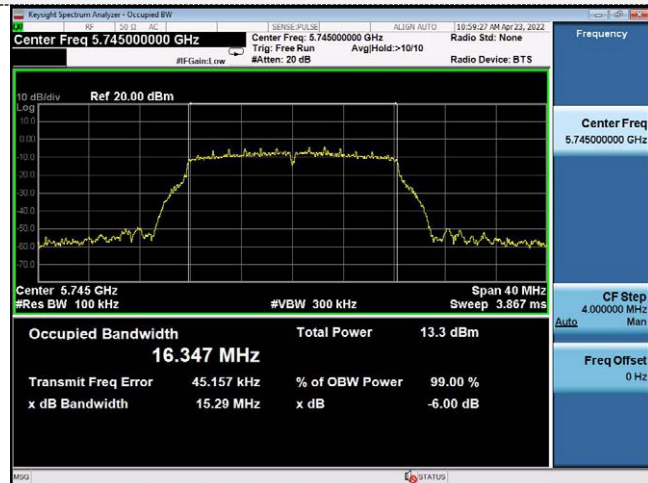
ANT 2

Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	15.08	≥500KHz	Pass
		157	15.32		
		165	15.13		
802.11n(HT20)	U-NII 3	149	15.66		
		157	15.72		
		165	15.72		
802.11n(HT40)	U-NII 3	151	35.20		
		159	35.47		
802.11ac(HT20)	U-NII 3	149	15.06		
		157	15.14		
		165	15.15		
802.11ac(HT40)	U-NII 3	151	35.14		
		159	35.19		
802.11ac(HT80)	U-NII 3	155	75.39		

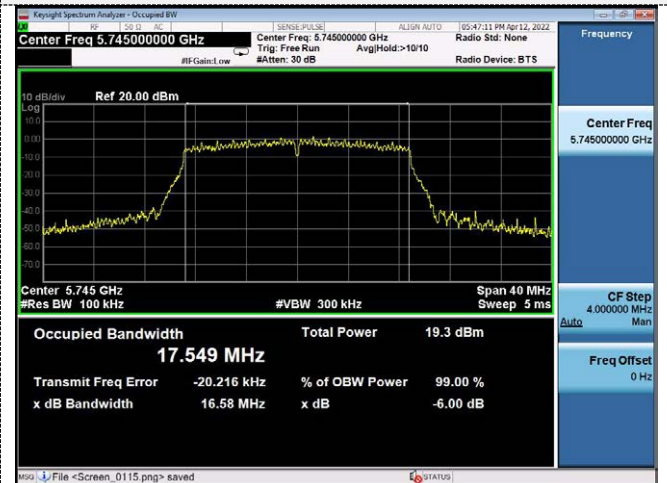
Test plot as follows:

ANT 1

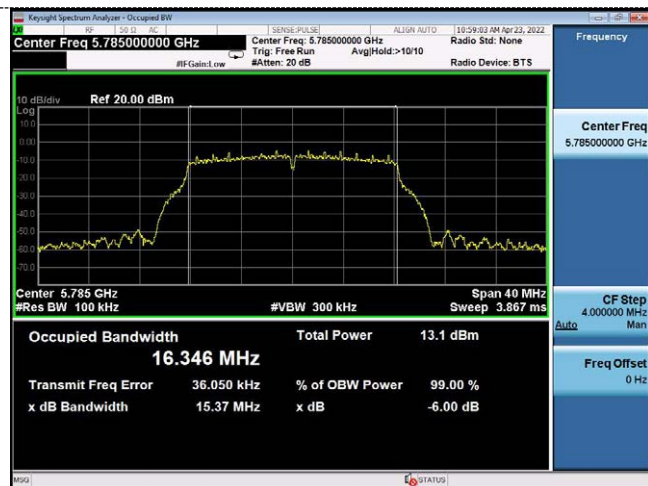
802.11a



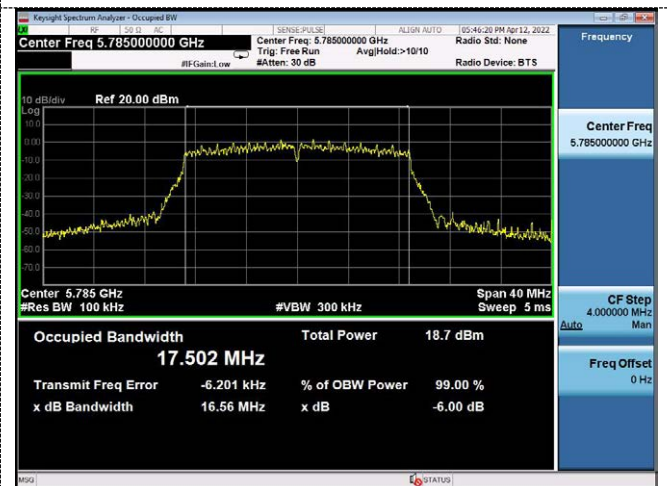
802.11n(HT20)



CH149



CH149



CH157



CH157



CH165



CH165



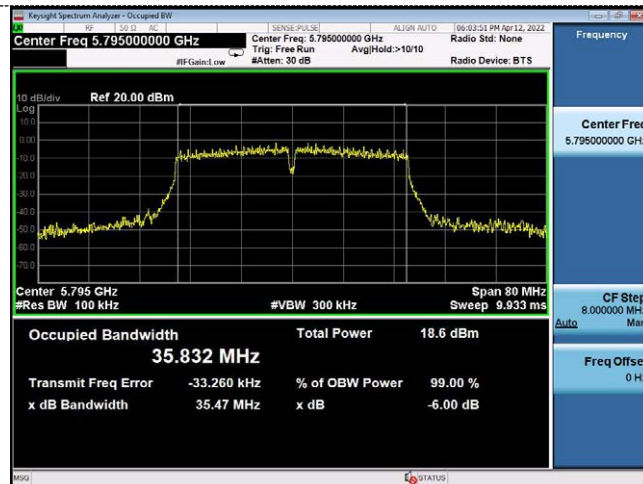
802.11n(HT40)



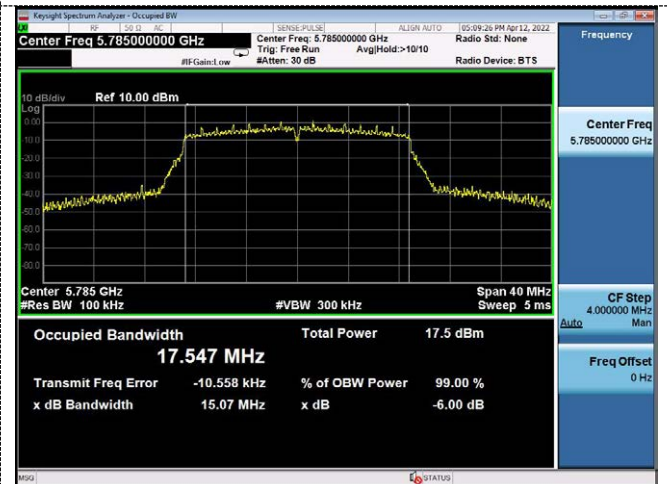
802.11ac(HT20)



CH151



CH149



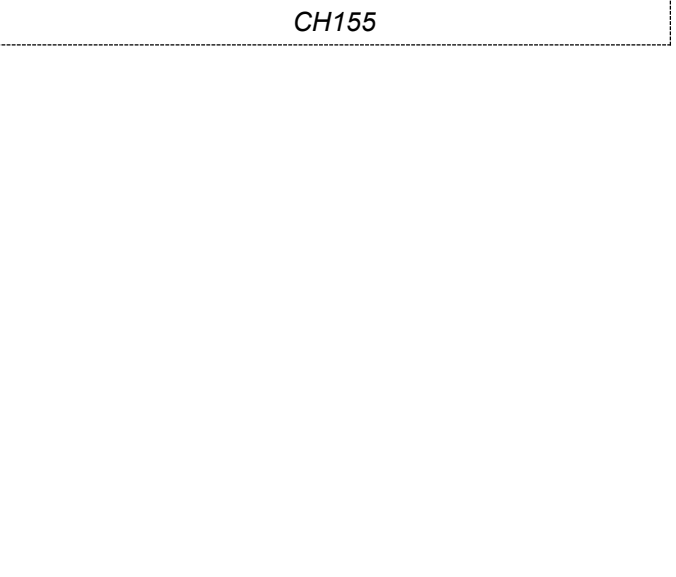
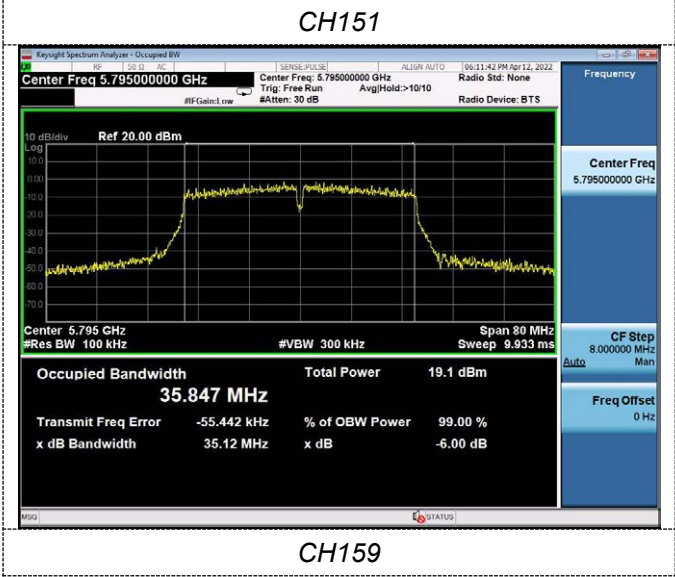
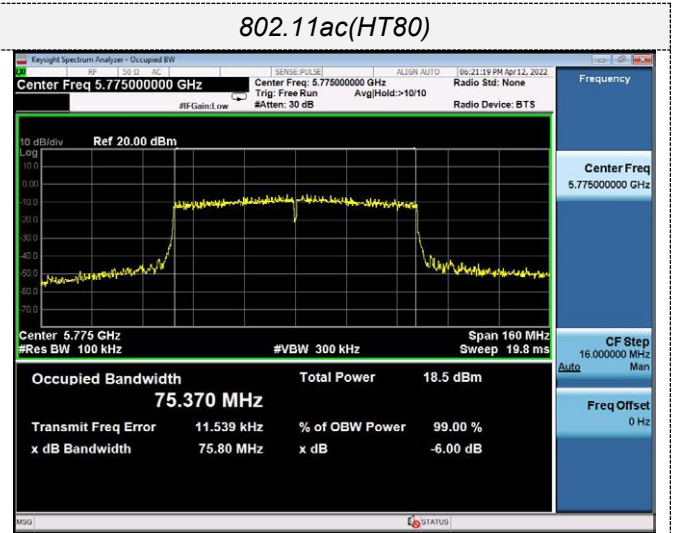
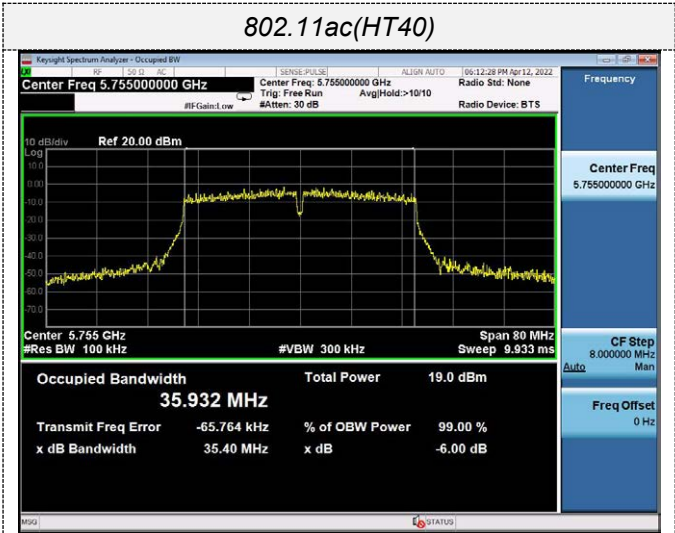
CH159



CH157



CH165

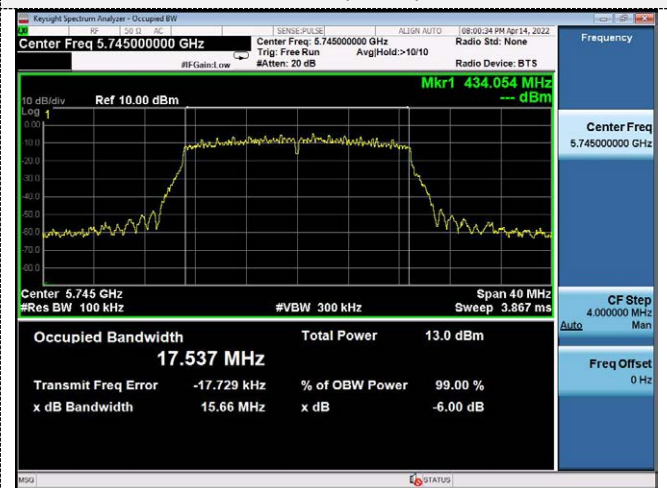


ANT 2

802.11a



802.11n(HT20)



CH149



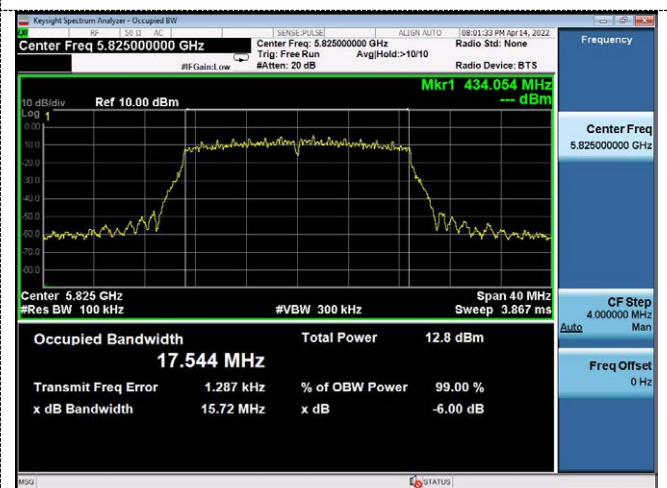
CH149



CH157



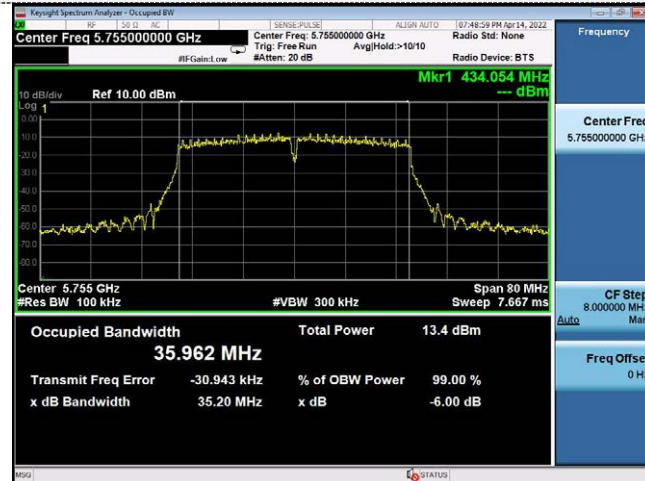
CH157



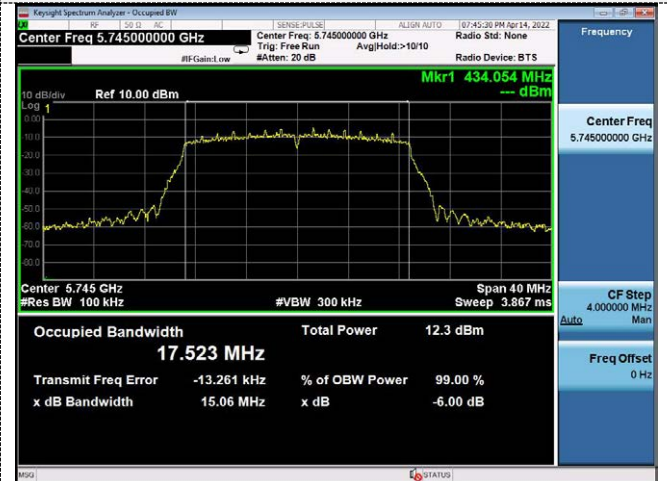
CH165

CH165

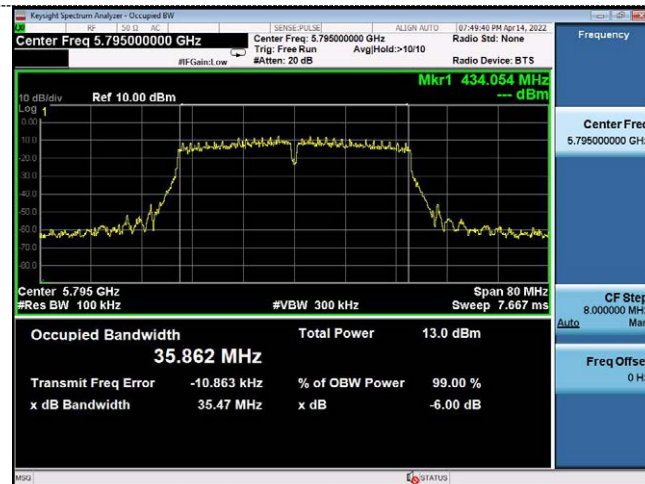
802.11n(HT40)



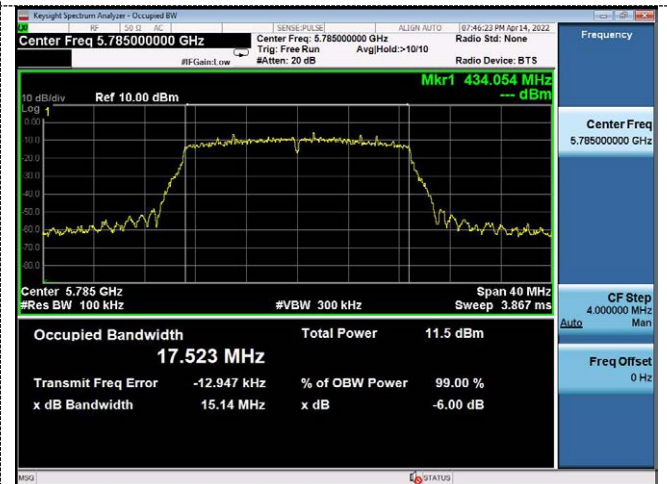
802.11ac(HT20)



CH151



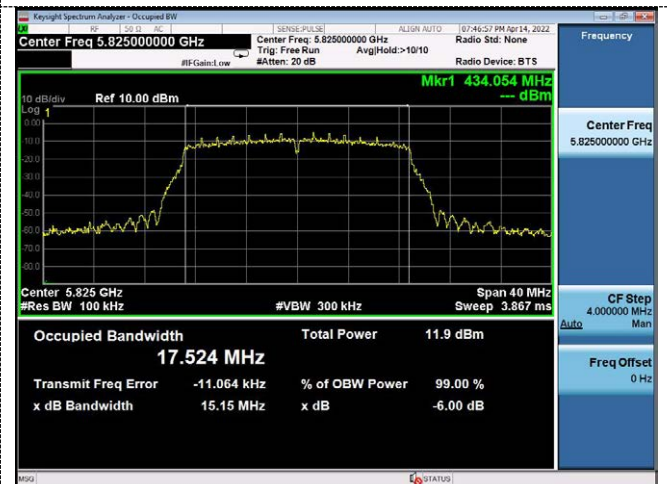
CH149



CH159



CH157



CH165

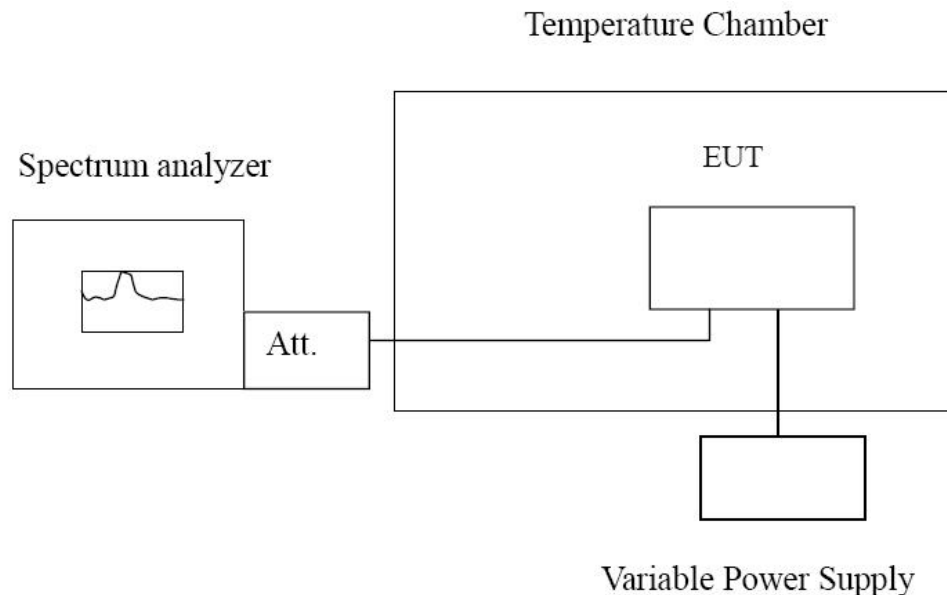


4.7 Frequency Stability

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.

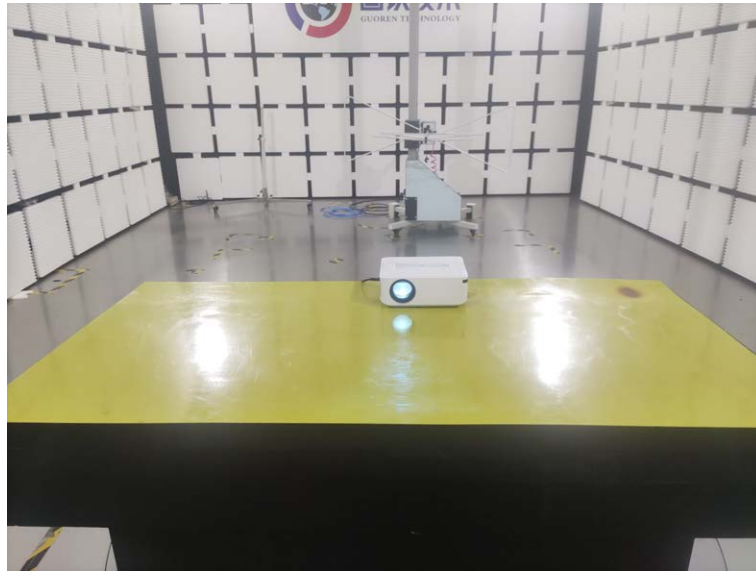
TEST RESULTS

Record worst case as below:

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
120	-30	124.82	0.0241	Within the band of operation	Pass
	-20	164.52	0.0318		
	-10	128.45	0.0248		
	0	112.36	0.0217		
	10	128.08	0.0247		
	20	102.34	0.0198		
	30	162.52	0.0314		
	40	107.43	0.0207		
	50	109.51	0.0211		
132	25	174.26	0.0336	Within the band of operation	Pass
108	25	154.42	0.0298		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
120	-30	152.41	0.0265	Within the band of operation	Pass
	-20	142.16	0.0247		
	-10	127.94	0.0223		
	0	140.35	0.0244		
	10	112.67	0.0196		
	20	114.83	0.0200		
	30	124.75	0.0217		
	40	146.17	0.0254		
	50	142.08	0.0247		
132	25	127.45	0.0222	Within the band of operation	Pass
108	25	109.57	0.0191		

5 Test Setup Photos of the EUT



6 Photos of the EUT

Reference to the test report No. GRCTR220402001-01.

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