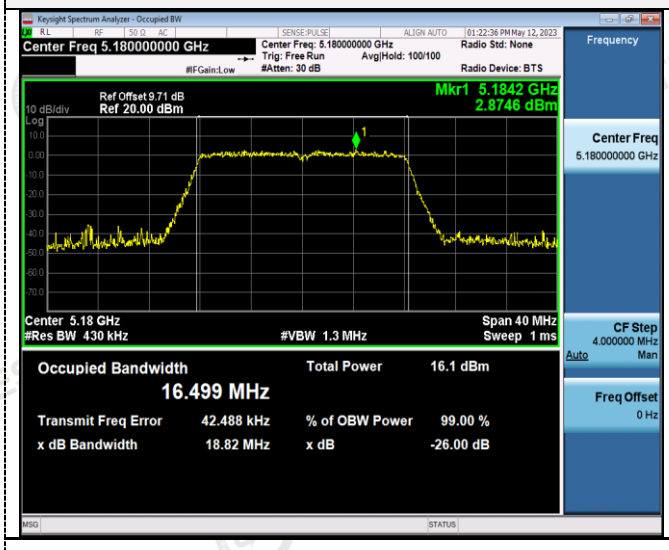
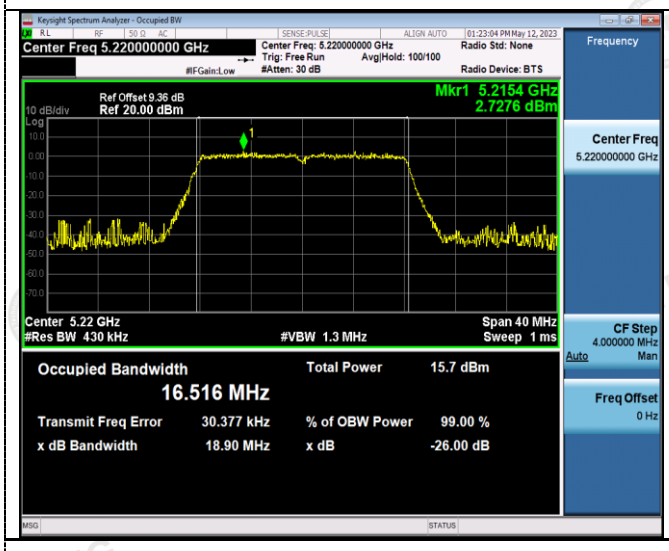
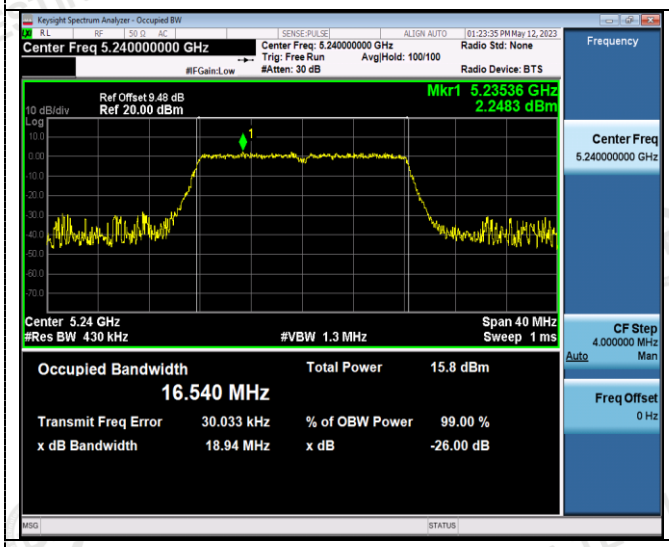
99% Bandwidth

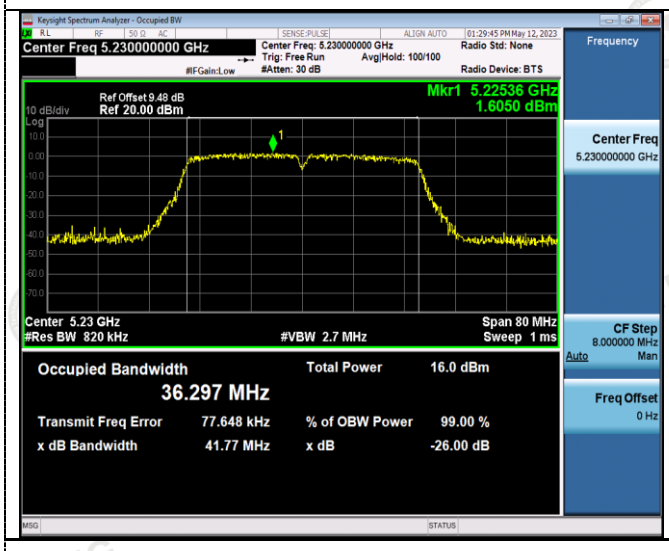
802.11a	802.11n(HT20)
	
CH36	CH36
	
CH40	CH40
	
CH48	CH48

802.11n(HT40)

CH38

802.11ac(HT20)

CH36



CH46

CH40

CH48

802.11ac(HT40)

802.11ac(HT80)

CH38

CH42

CH46

4.6 Minimum Emission Bandwidth (6dB Bandwidth)

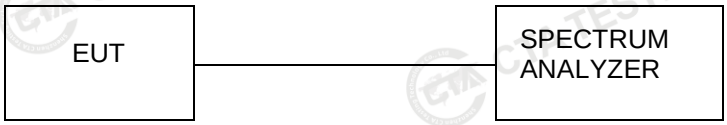
Limit

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

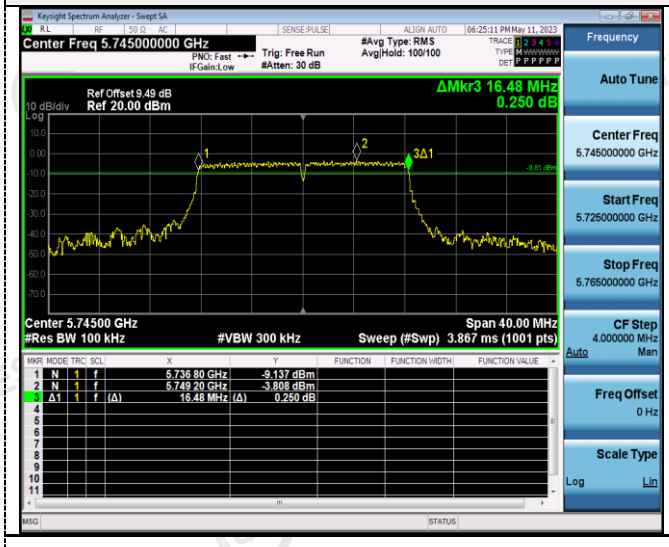
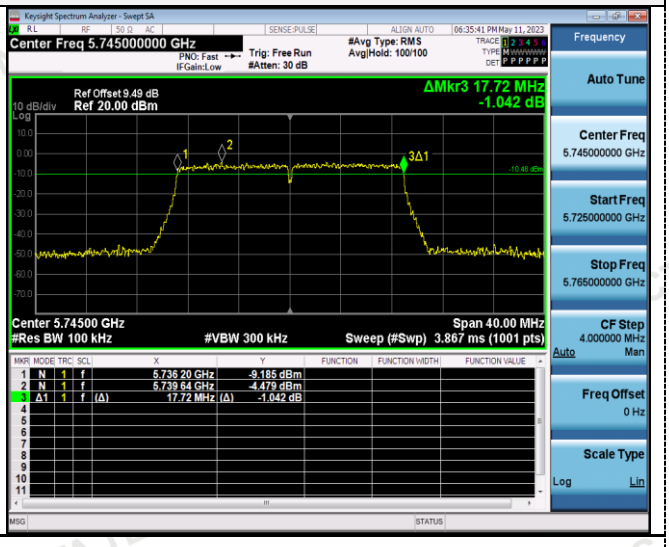
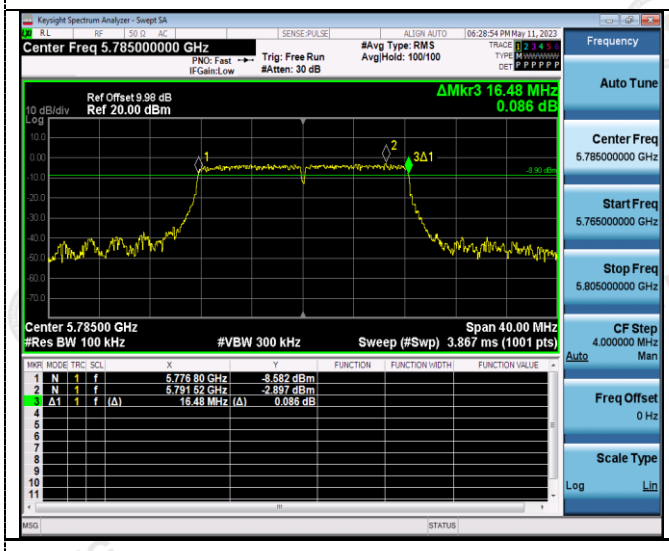
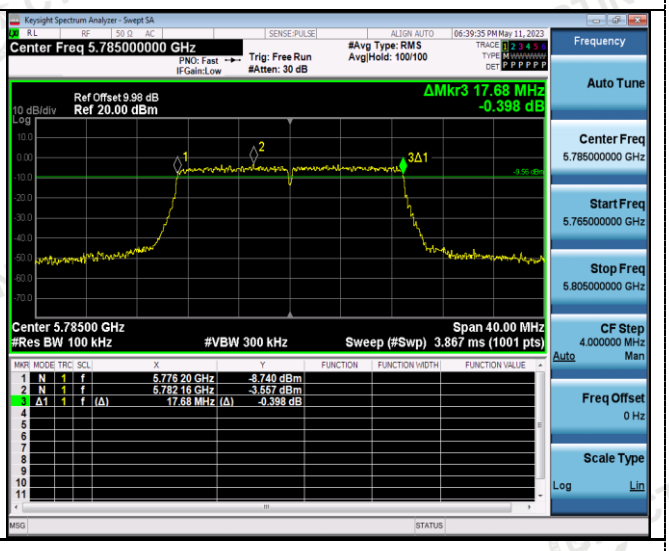
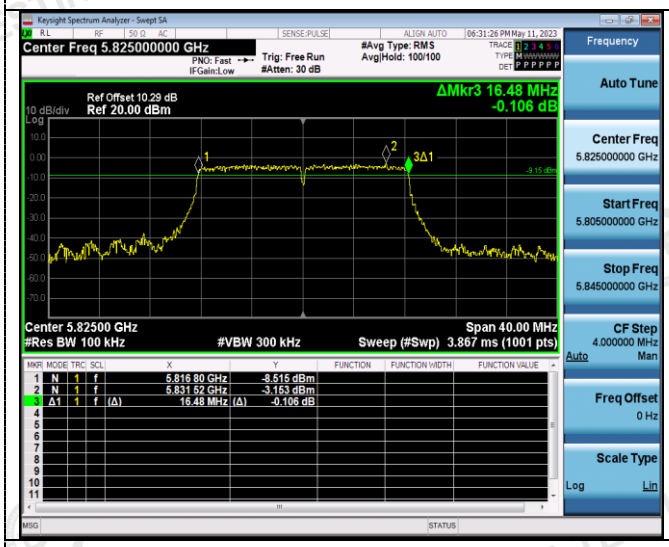
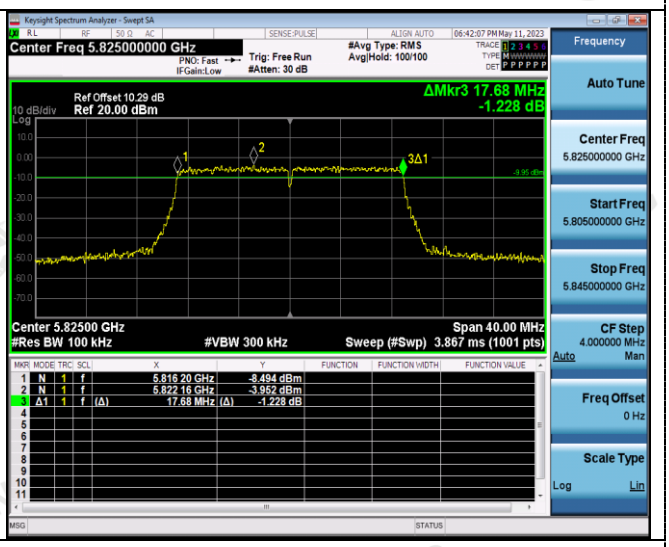


Test Results

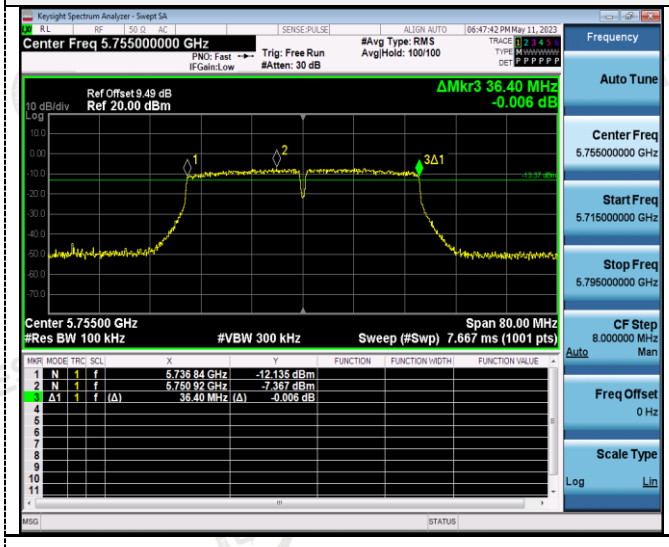
Type	Bands	Channel	6dB Bandwidth (MHz)	Occupied Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	16.480	16.533	≥500KHz	Pass
		157	16.480	16.529		
		165	16.480	16.510		
802.11n(HT20)	U-NII 3	149	17.720	17.679		
		157	17.680	17.630		
		165	17.680	17.646		
802.11n(HT40)	U-NII 3	151	36.400	36.342		
		159	36.400	36.240		
802.11ac(HT20)	U-NII 3	149	17.720	17.643		
		157	17.680	17.634		
		165	17.680	17.666		
802.11ac(HT40)	U-NII 3	151	36.400	36.218		
		159	36.320	36.178		
802.11ac(HT80)	U-NII 3	155	76.320	75.142		

Test plot as follows:

6dB Bandwidth

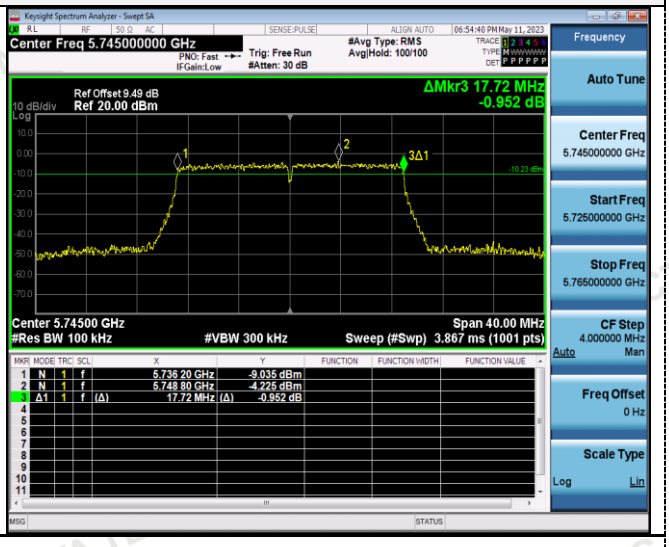
802.11a	802.11n(HT20)
	
CH149	CH149
	
CH157	CH157
	
CH165	CH165

802.11n(HT40)

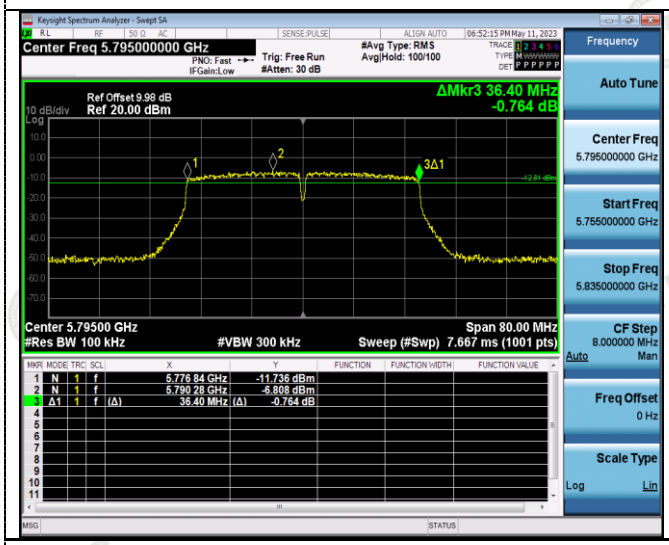


CH151

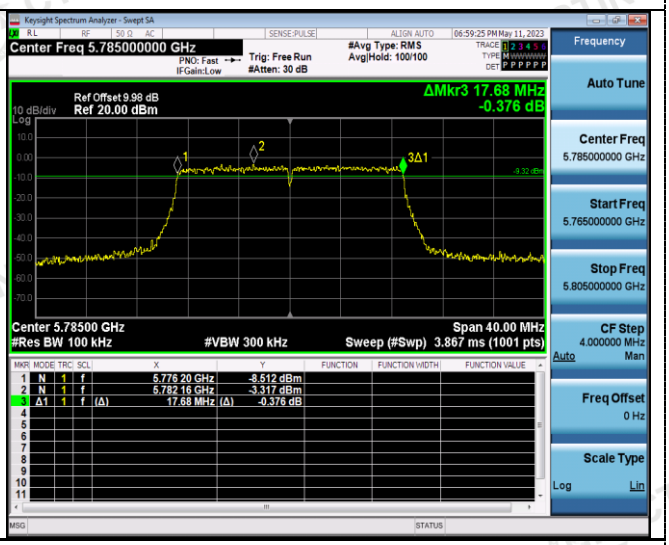
802.11ac(HT20)



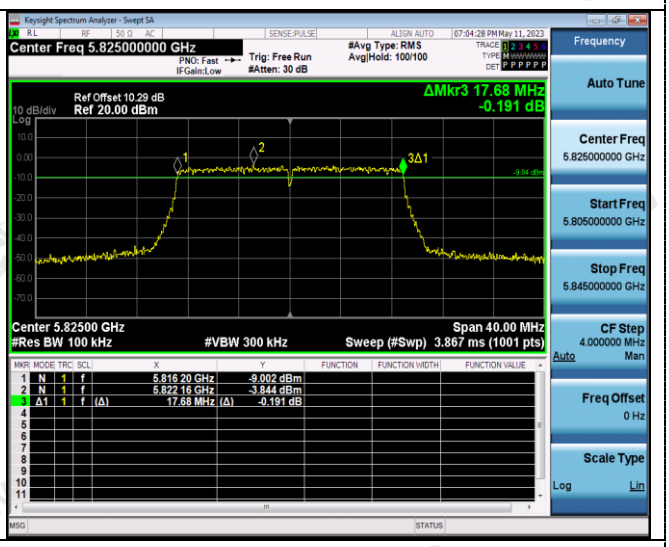
CH149



CH159

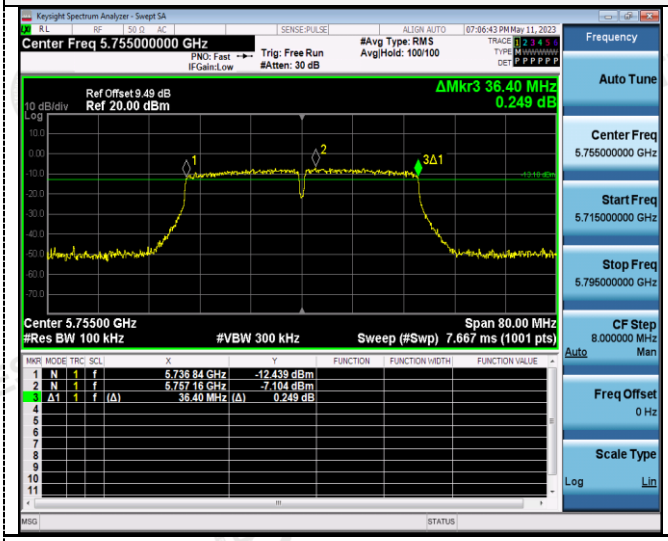


CH157



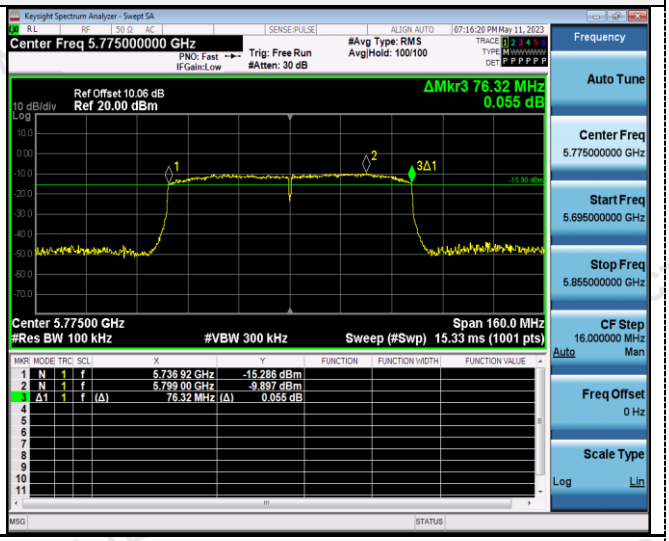
CH165

802.11ac(HT40)

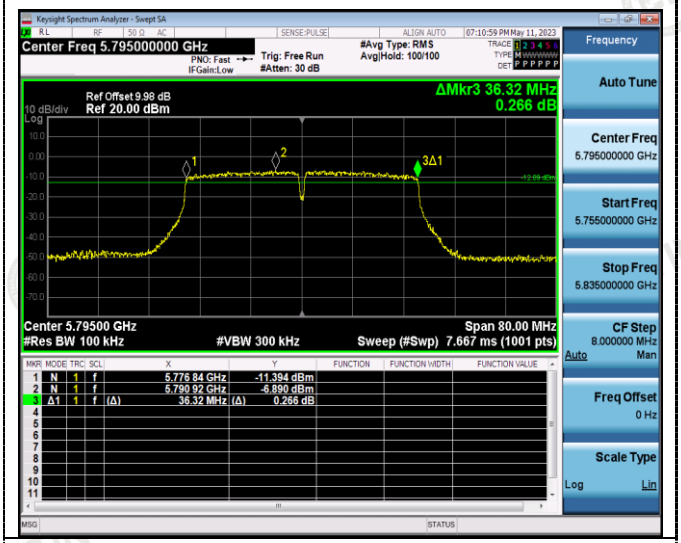


CH151

802.11ac(HT80)

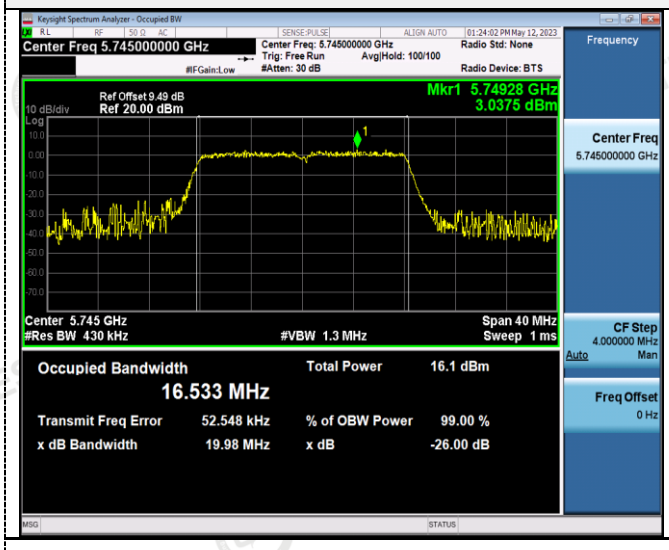
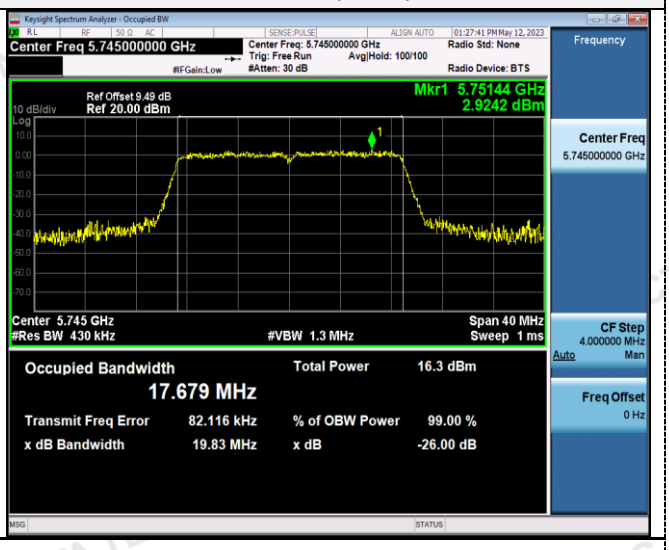
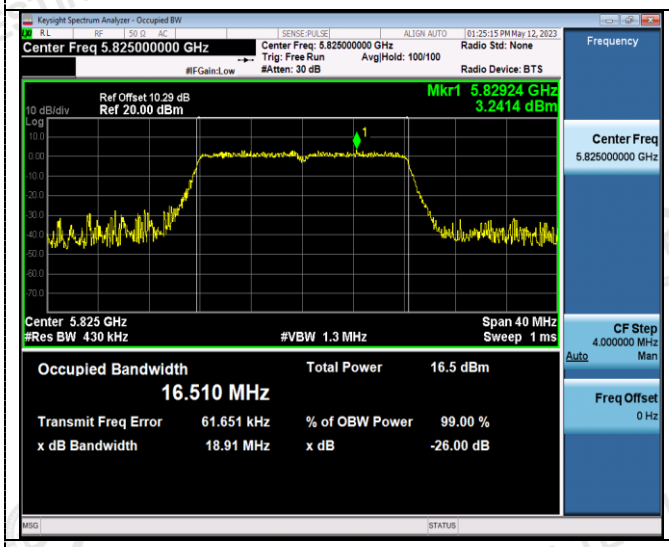


CH155

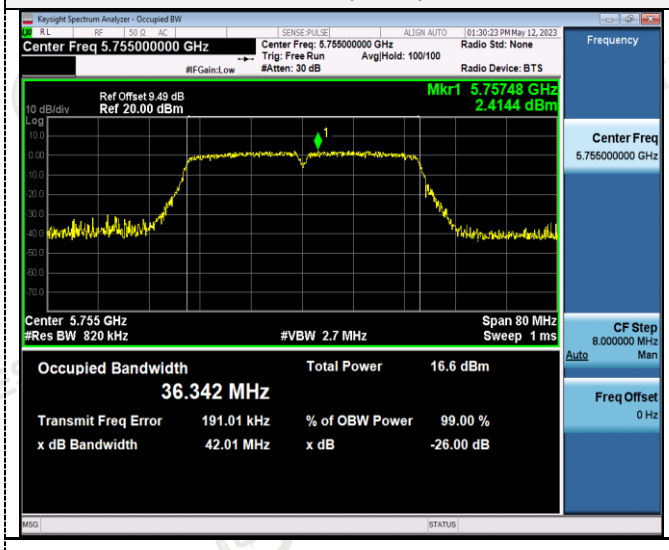


CH159

Occupied Bandwidth

802.11a	802.11n(HT20)
	
CH149	CH149
CH157	CH157
	
CH165	CH165

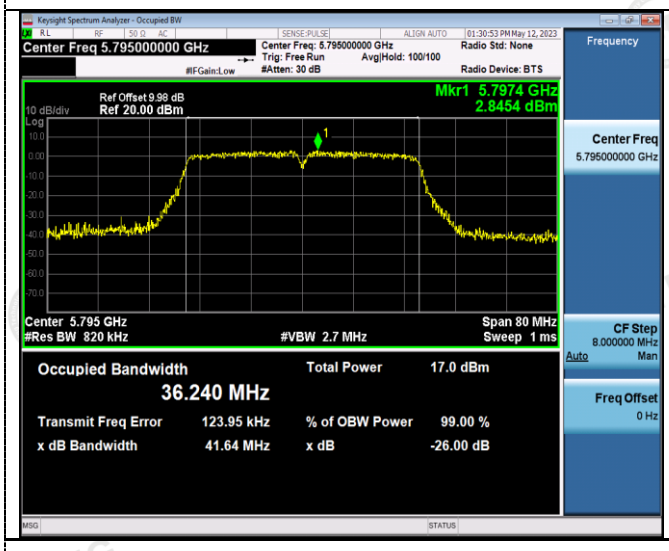
802.11n(HT40)



CH151

802.11ac(HT20)

CH149

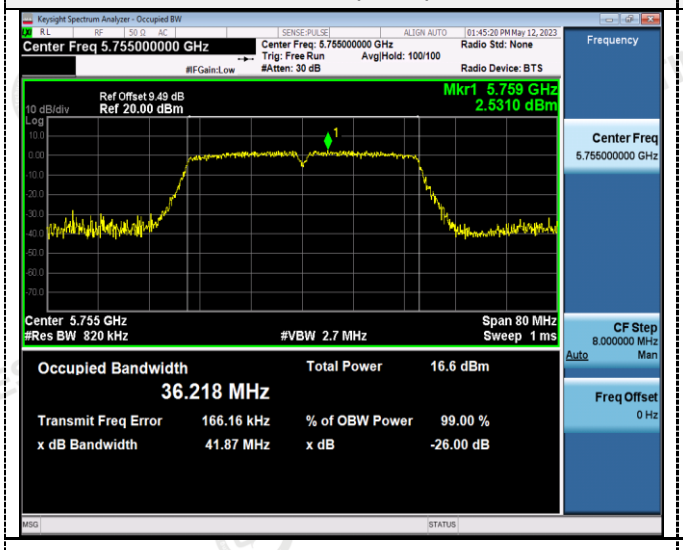


CH159

CH157

CH165

802.11ac(HT40)



CH151

802.11ac(HT80)

CH155

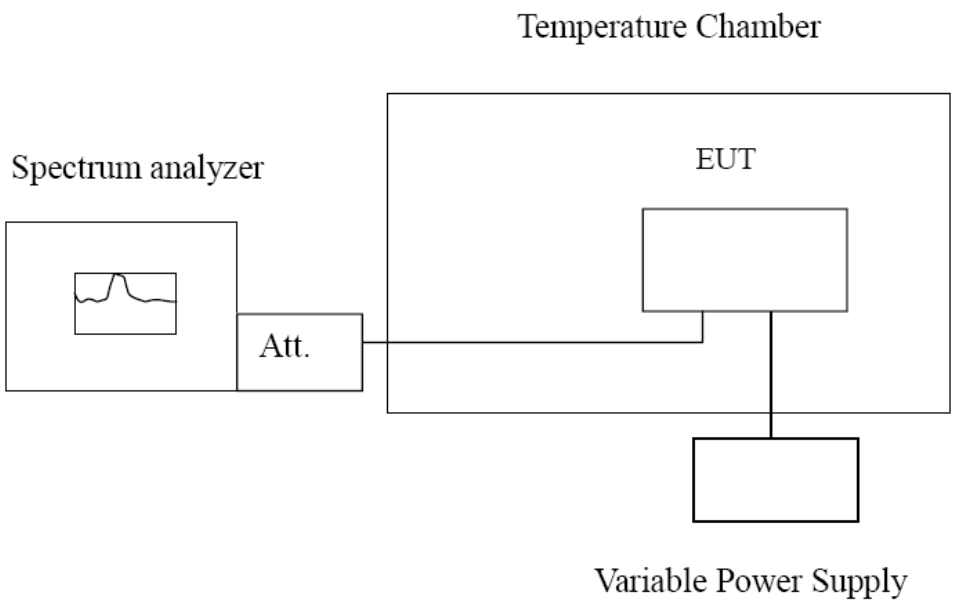
CH159

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℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability under Voltage Variations:
Set chamber temperature to 20℃. 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 (±15%) and endpoint, record the maximum frequency change.

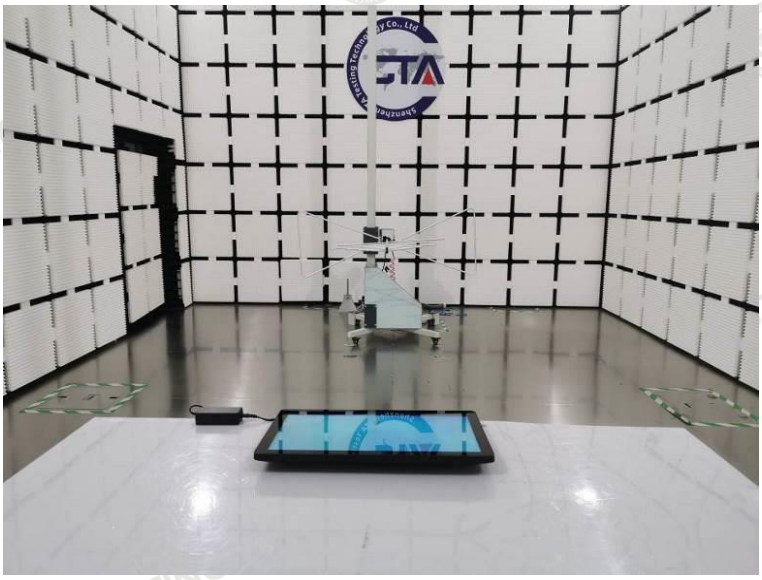
TEST RESULTS

Record worst case as below:

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
AC 230V	-30	112.07	0.021635	Within the band of operation	Pass
	-20	146.42	0.028266		
	-10	138.53	0.026743		
	0	112.96	0.021807		
	10	142.18	0.027448		
	20	98.79	0.019071		
	30	164.30	0.031718		
	40	127.24	0.024564		
	50	126.87	0.024492		
AC 240V	25	193.52	0.037359		
AC 207V	25	115.46	0.022290		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
AC 230V	-30	134.65	0.023438	Within the band of operation	Pass
	-20	128.34	0.022339		
	-10	165.16	0.028748		
	0	166.83	0.029039		
	10	133.44	0.023227		
	20	128.07	0.022292		
	30	112.36	0.019558		
	40	168.90	0.029399		
	50	157.31	0.027382		
AC 240V	25	148.47	0.025843		
AC 207V	25	114.28	0.019892		

5 Test Setup Photos of the EUT



6 Photos of the EUT

Reference to the test report No. **CTA23050900101**

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