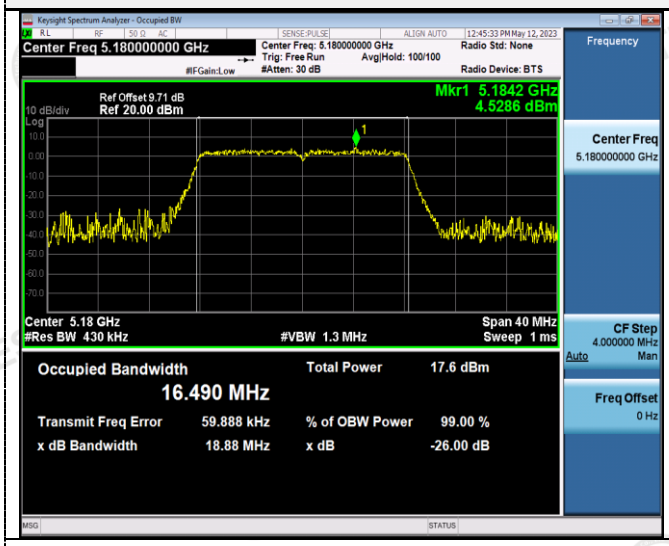
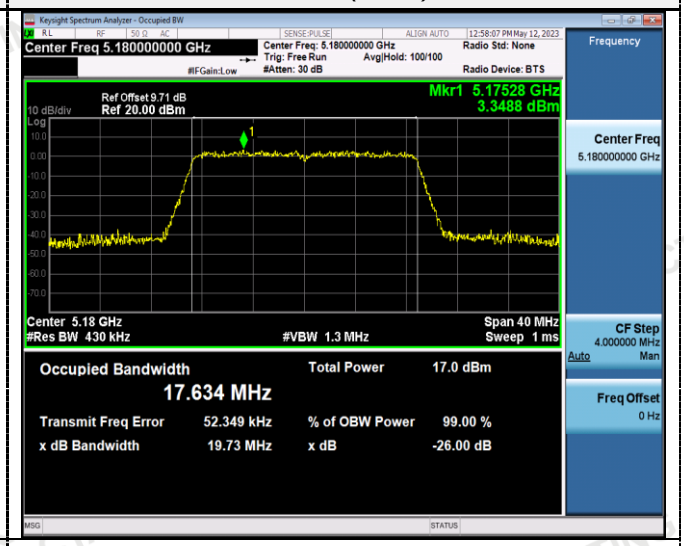
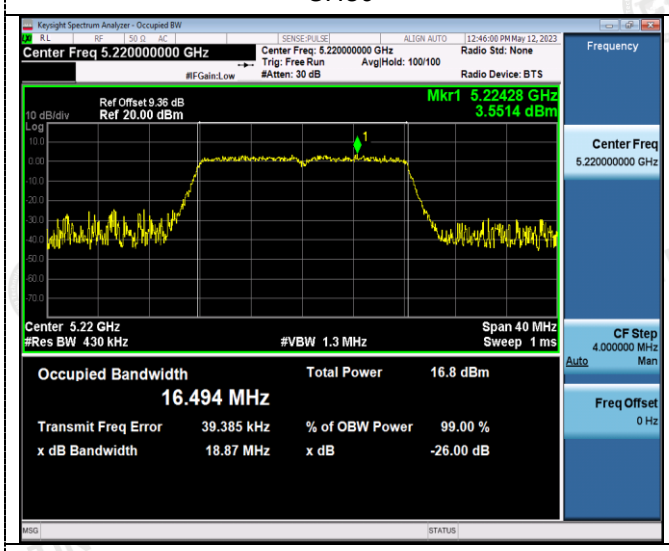
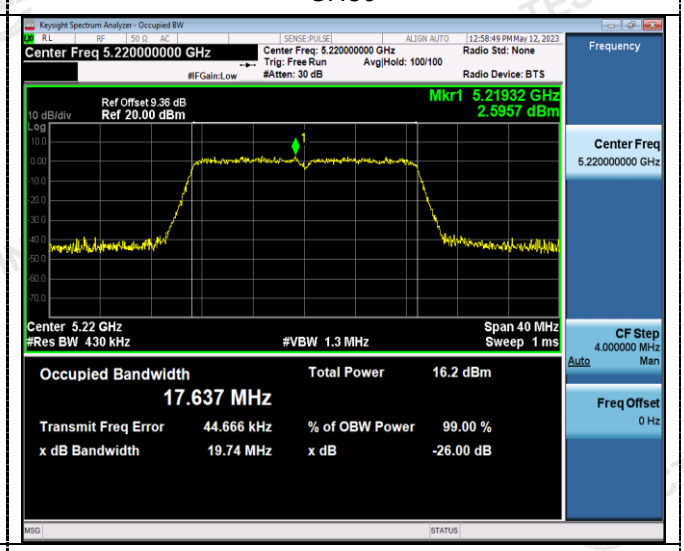
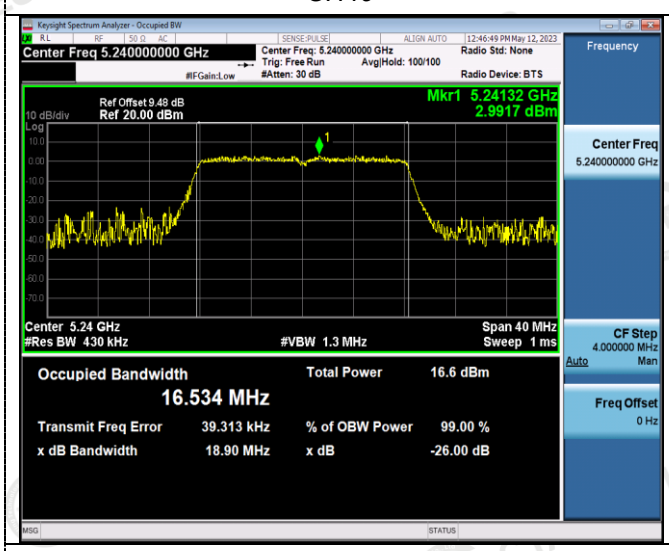
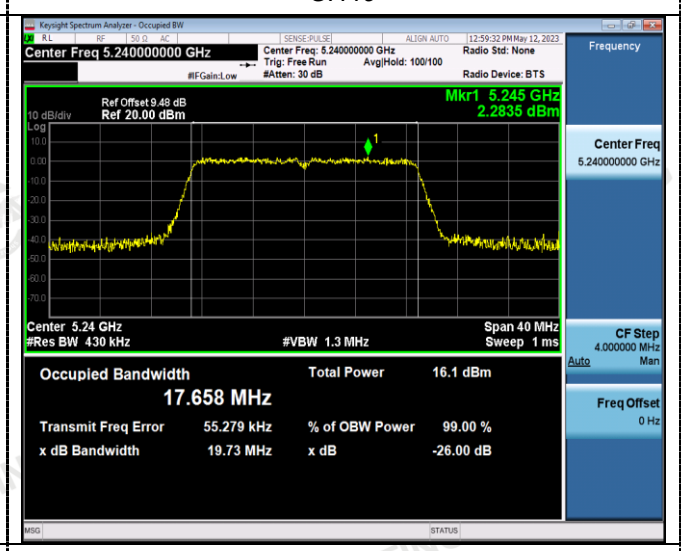
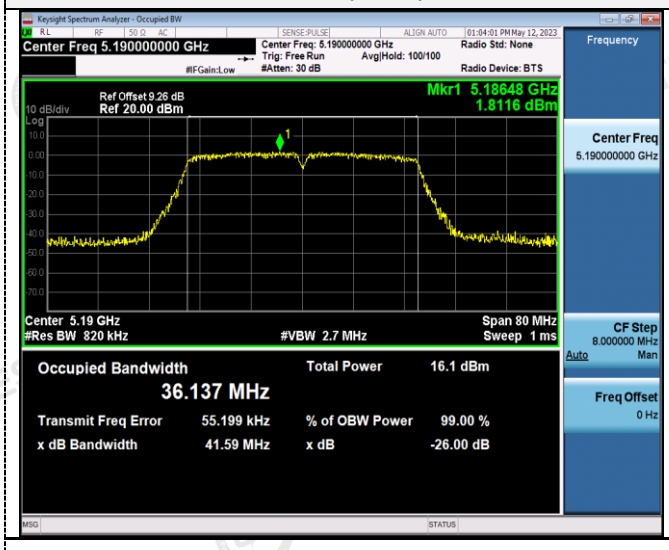
99% Bandwidth

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)

CH38

802.11ac(HT80)

CH42

CH46

4.6 Minimum Emission Bandwidth (6dB Bandwidth)

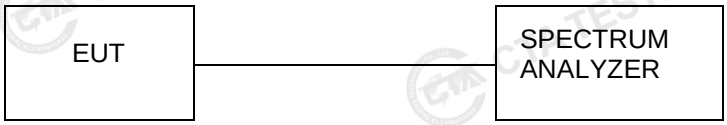
Limit

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

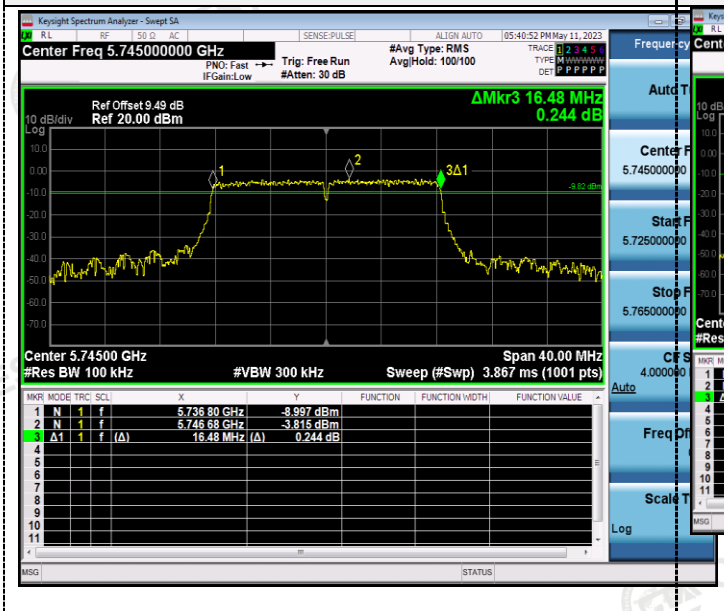
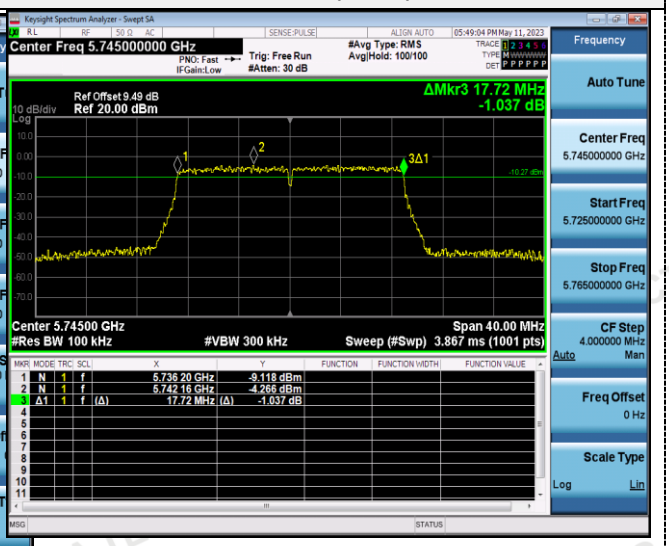
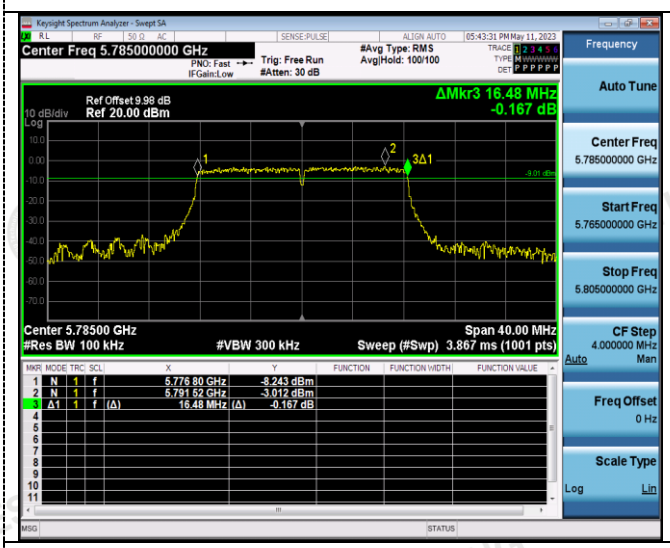
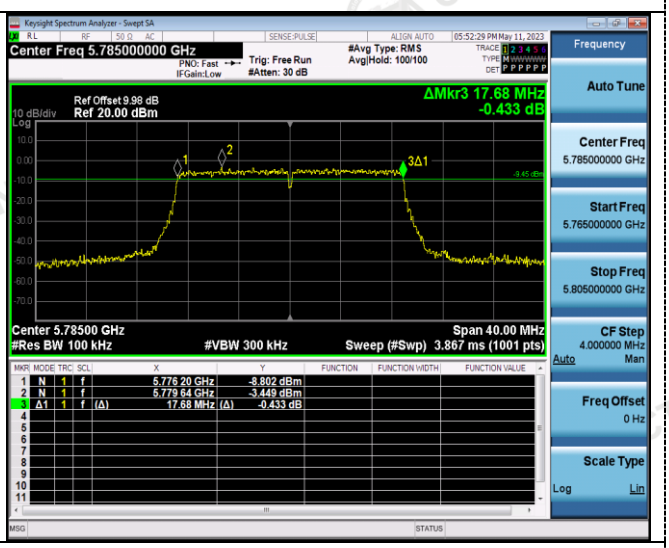
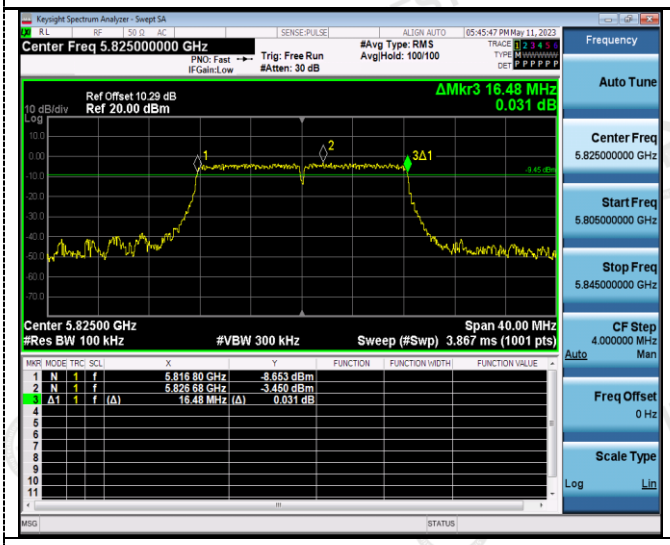
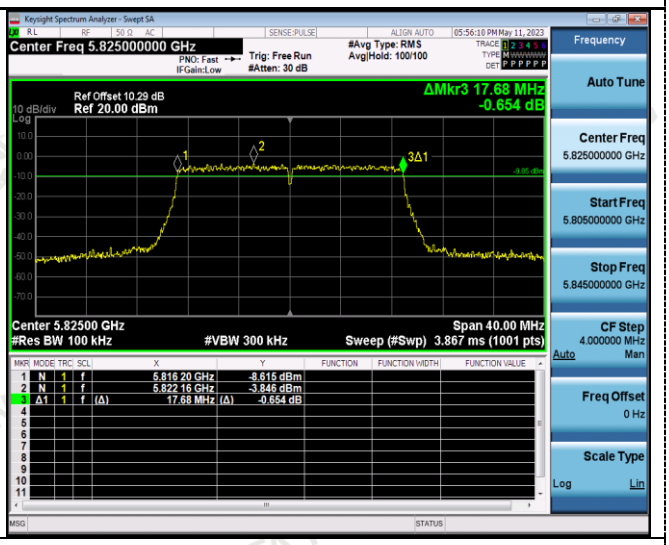


Test Results

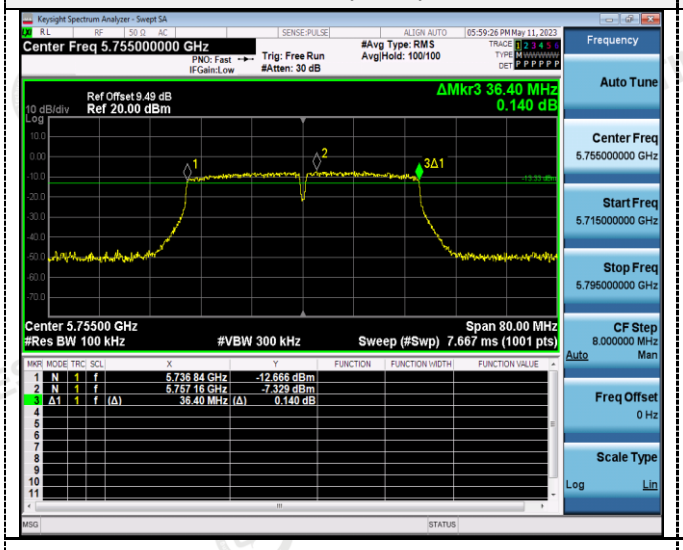
Type	Bands	Channel	6dB Bandwidth (MHz)	Occupied Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	16.480	16.539	≥500KHz	Pass
		157	16.480	16.544		
		165	16.480	16.510		
802.11n(HT20)	U-NII 3	149	17.720	17.647		
		157	17.680	17.630		
		165	17.680	17.644		
802.11n(HT40)	U-NII 3	151	36.400	36.153		
		159	36.400	36.198		
802.11ac(HT20)	U-NII 3	149	17.720	17.644		
		157	17.720	17.658		
		165	17.680	17.661		
802.11ac(HT40)	U-NII 3	151	36.400	36.216		
		159	36.400	36.156		
802.11ac(HT80)	U-NII 3	155	76.320	75.114		

Test plot as follows:

6dB Bandwidth

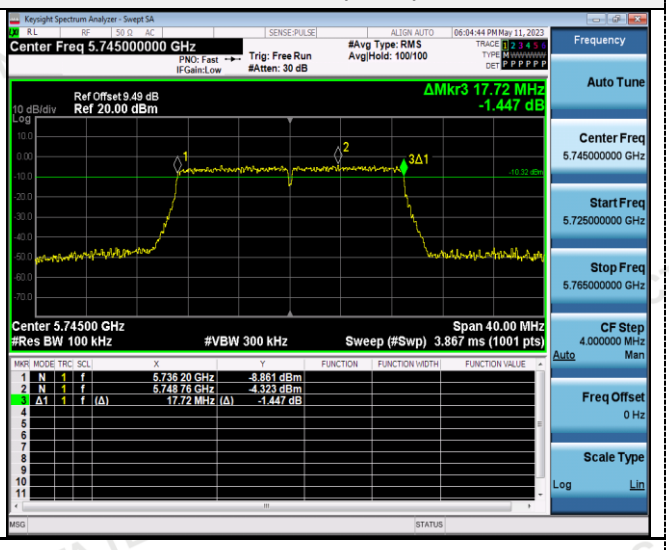
802.11a	802.11n(HT20)
	
CH149	CH149
	
CH157	CH157
	
CH165	CH165

802.11n(HT40)

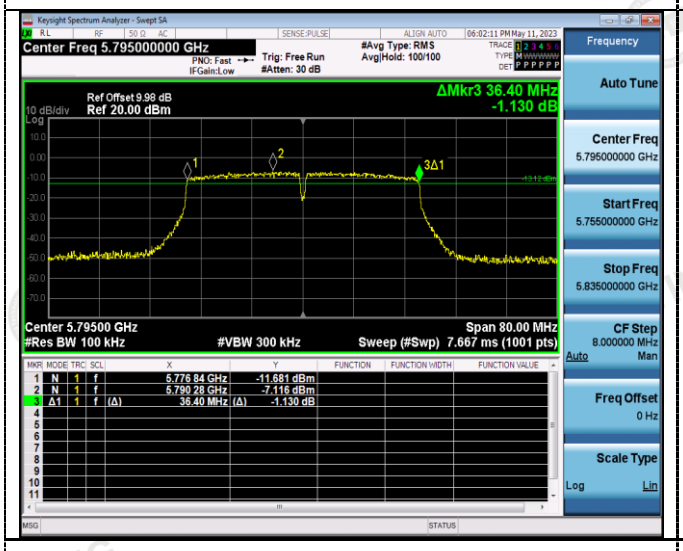


CH151

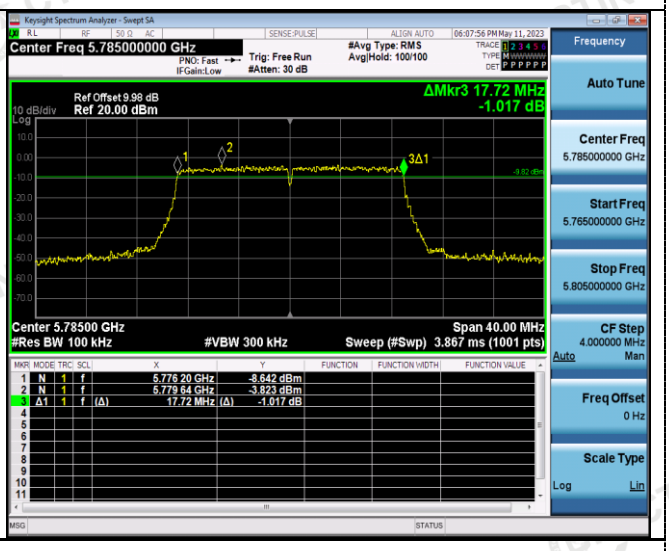
802.11ac(HT20)



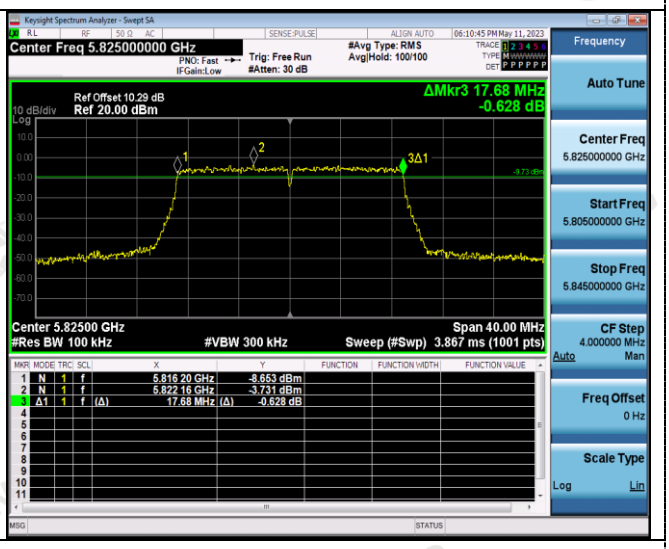
CH149



CH159

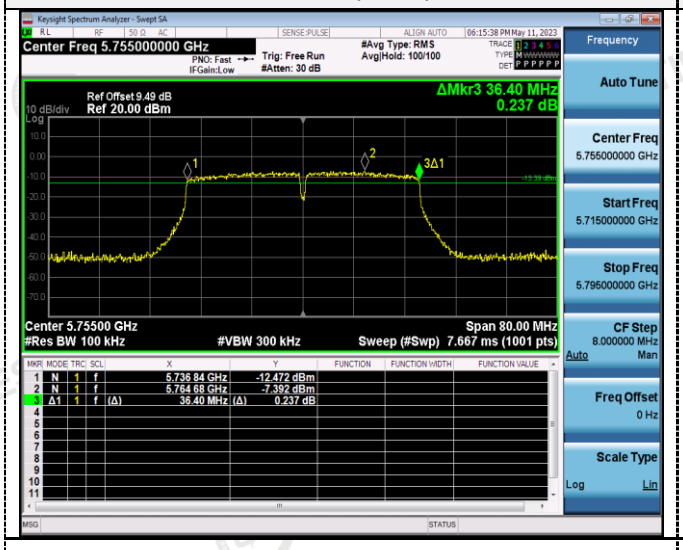


CH157



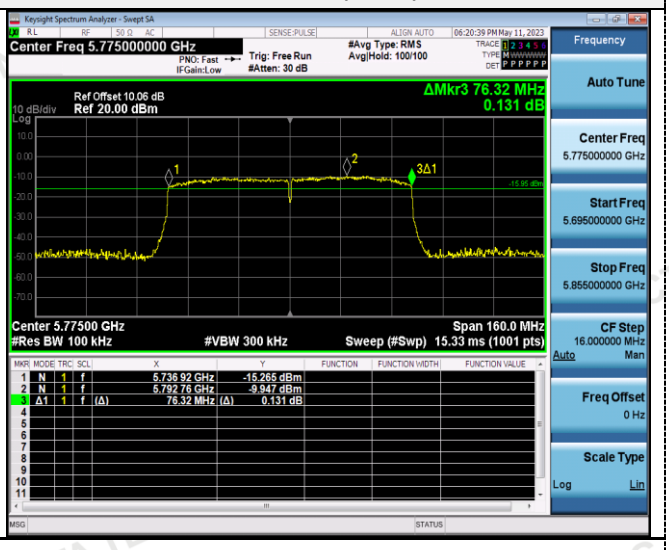
CH165

802.11ac(HT40)

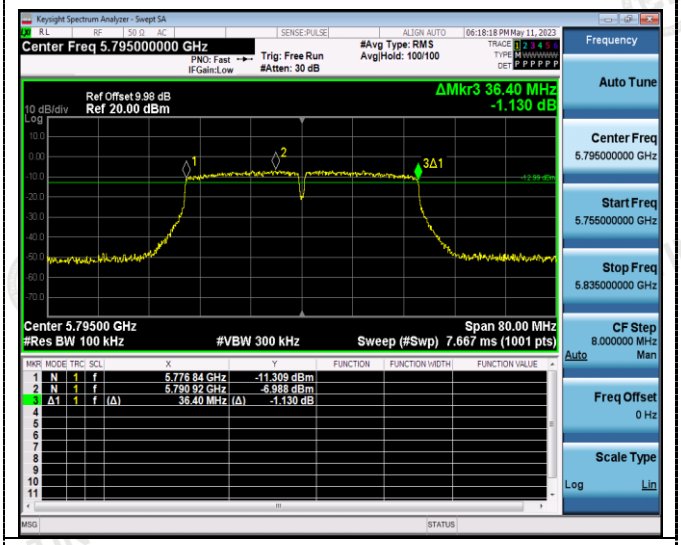


CH151

802.11ac(HT80)

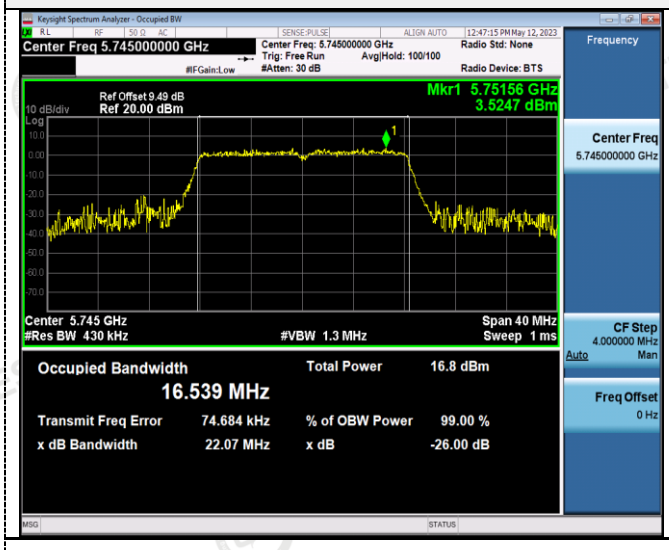
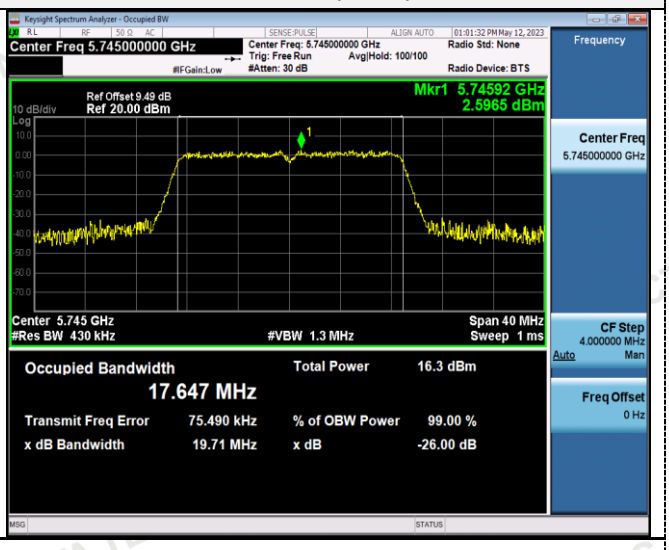
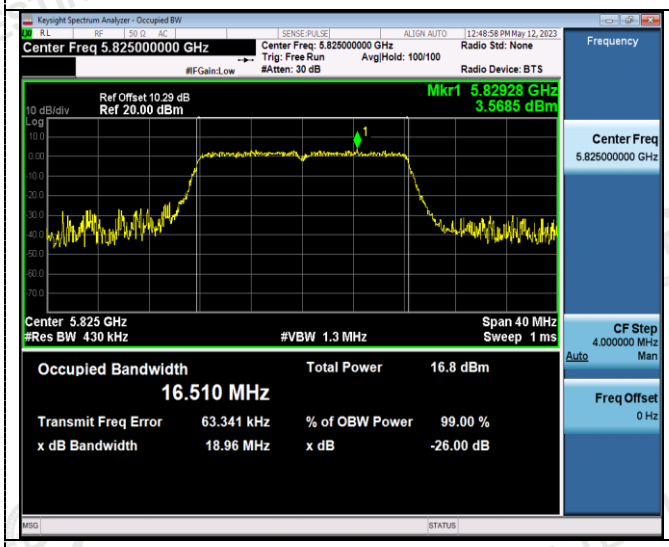


CH155

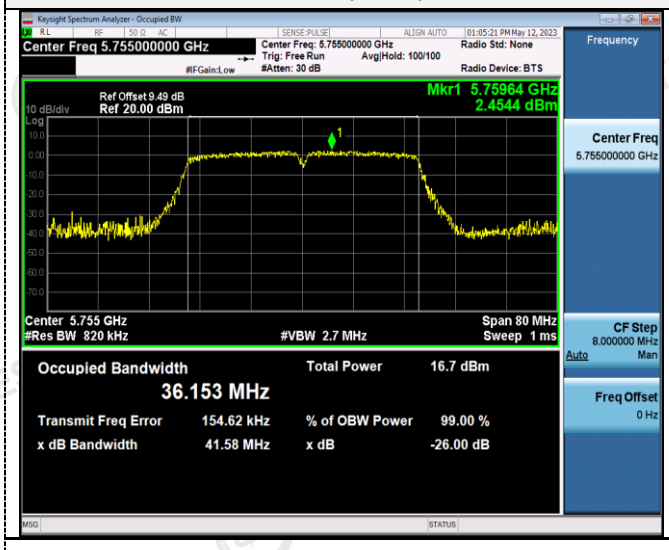


CH159

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

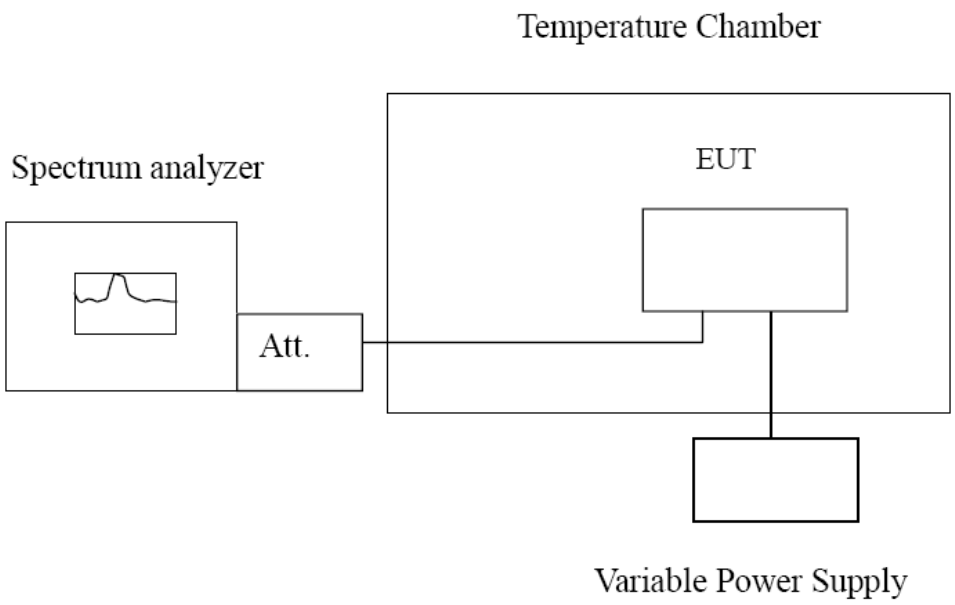
CH159

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.

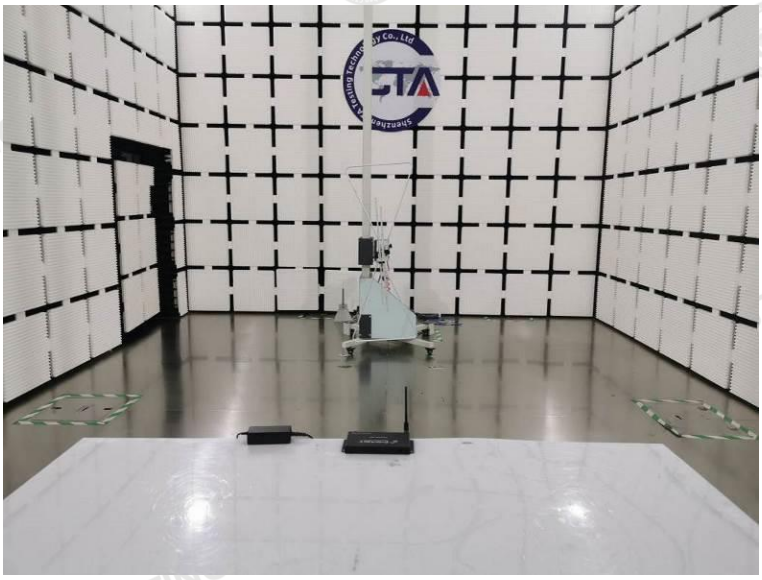
TEST RESULTS

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	113.36	0.021884	Within the band of operation	Pass
	-20	145.41	0.028071		
	-10	137.70	0.026583		
	0	111.14	0.021456		
	10	146.27	0.028237		
	20	97.67	0.018855		
	30	123.49	0.023840		
	40	164.81	0.031817		
	50	122.67	0.023681		
AC 240V	25	181.69	0.035075		
AC 207V	25	119.16	0.023004		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
AC 230V	-30	131.43	0.022877	Within the band of operation	Pass
	-20	122.71	0.021359		
	-10	166.46	0.028975		
	0	161.24	0.028066		
	10	137.48	0.023930		
	20	125.54	0.021852		
	30	119.01	0.020715		
	40	151.22	0.026322		
	50	143.22	0.024930		
AC 240V	25	142.58	0.024818		
AC 207V	25	118.72	0.020665		

5 Test Setup Photos of the EUT



6 Photos of the EUT

Reference to the test report No. **CTA23050900301**

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