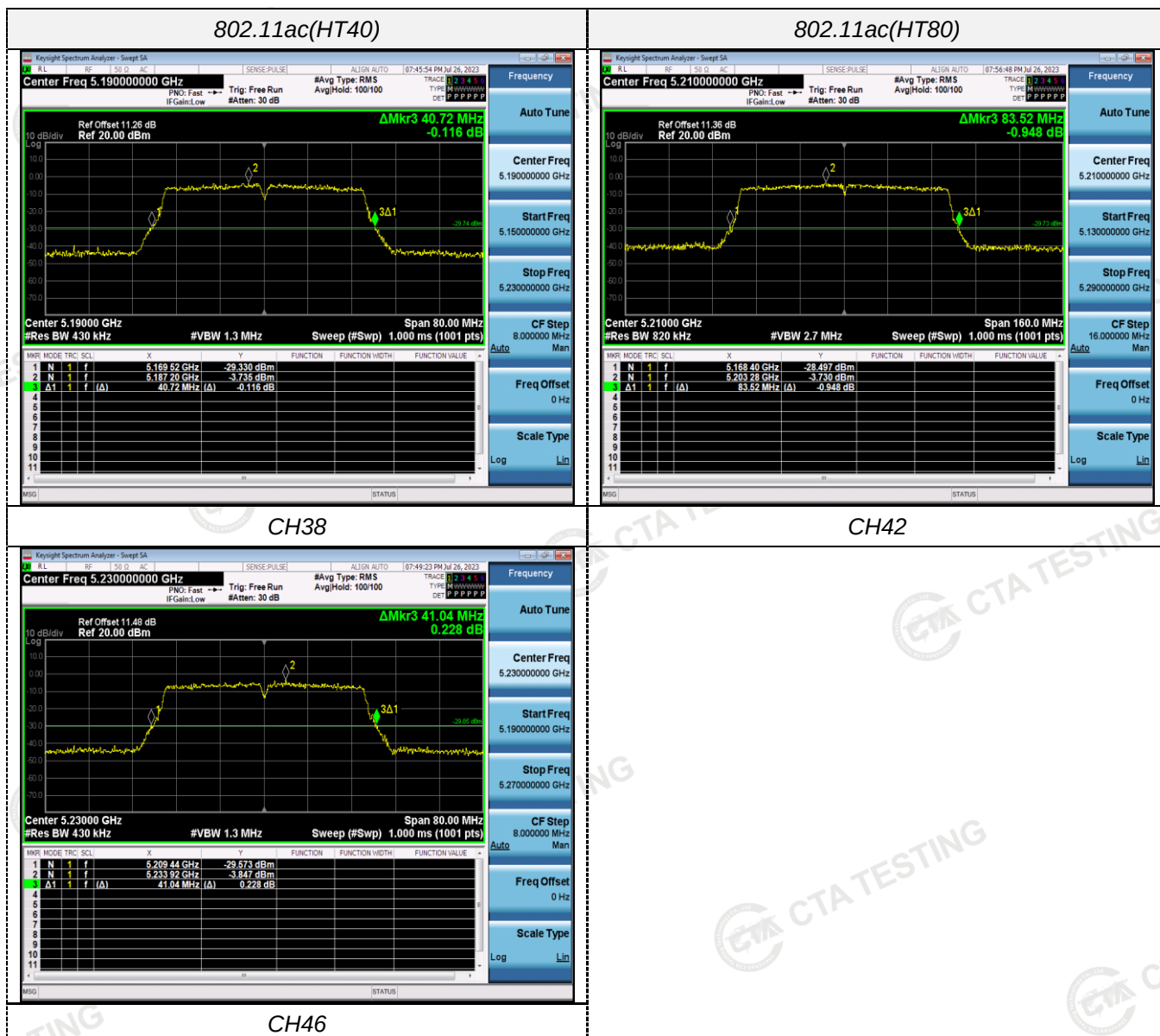




4.6 Minimum Emission Bandwidth (6dB Bandwidth)

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

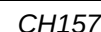
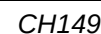
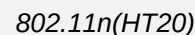
Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	16.000	≥500KHz	Pass
		157	14.960		
		165	15.920		
802.11n(HT20)	U-NII 3	149	16.240		
		157	15.600		
		165	14.960		
802.11n(HT40)	U-NII 3	151	35.840		
		159	36.320		
802.11ac(HT20)	U-NII 3	149	13.840		
		157	15.960		
		165	17.040		
802.11ac(HT40)	U-NII 3	151	35.920		
		159	36.320		
802.11ac(HT80)	U-NII 3	155	75.200		

ANT 2

Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	12.640	≥500KHz	Pass
		157	16.280		
		165	15.960		
802.11n(HT20)	U-NII 3	149	17.520		
		157	16.920		
		165	14.800		
802.11n(HT40)	U-NII 3	151	35.040		
		159	36.080		
802.11ac(HT20)	U-NII 3	149	17.320		
		157	16.920		
		165	17.520		
802.11ac(HT40)	U-NII 3	151	35.680		
		159	36.240		
802.11ac(HT80)	U-NII 3	155	74.880		

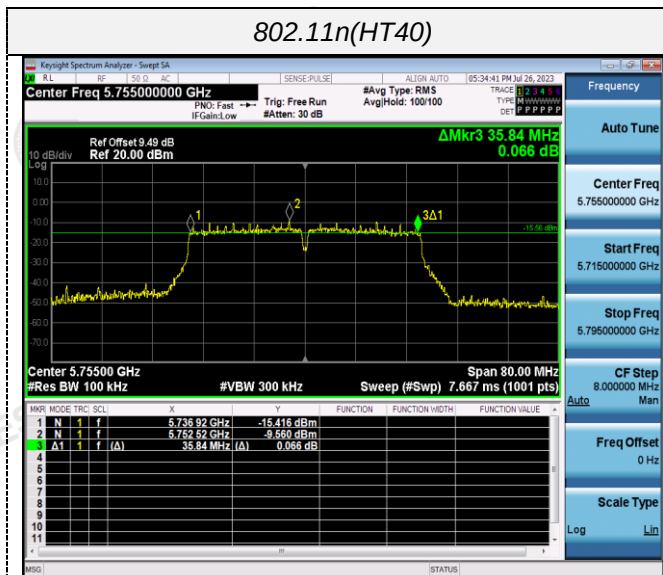
Test plot as follows:

802.11a

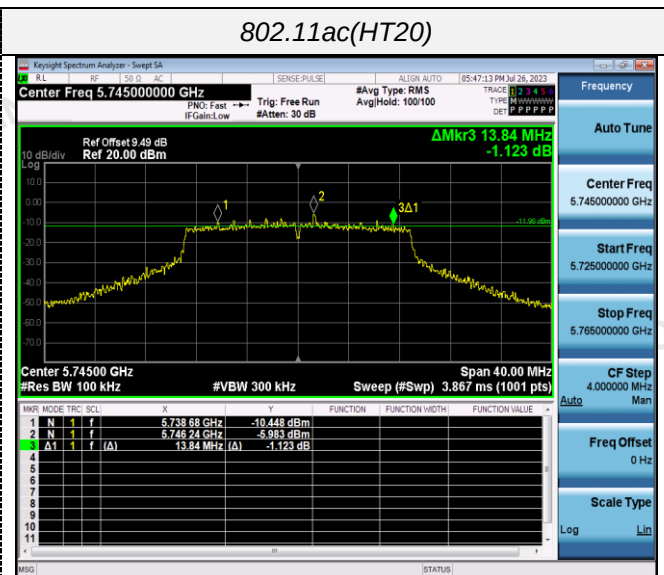


CH165

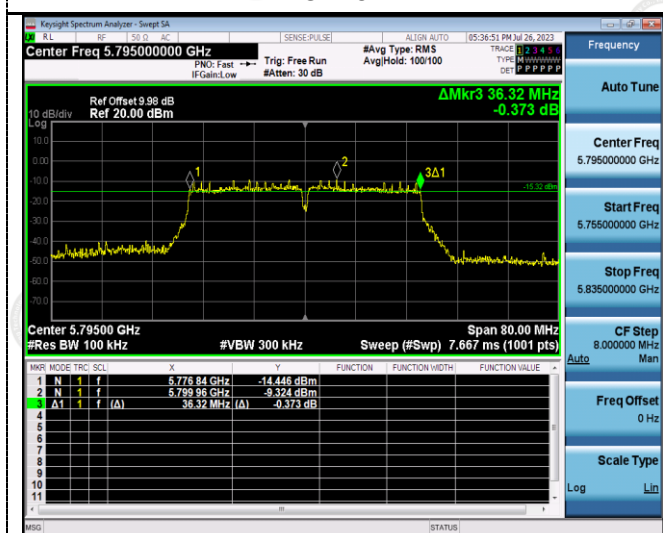
802.11n(HT40)



802.11ac(HT20)



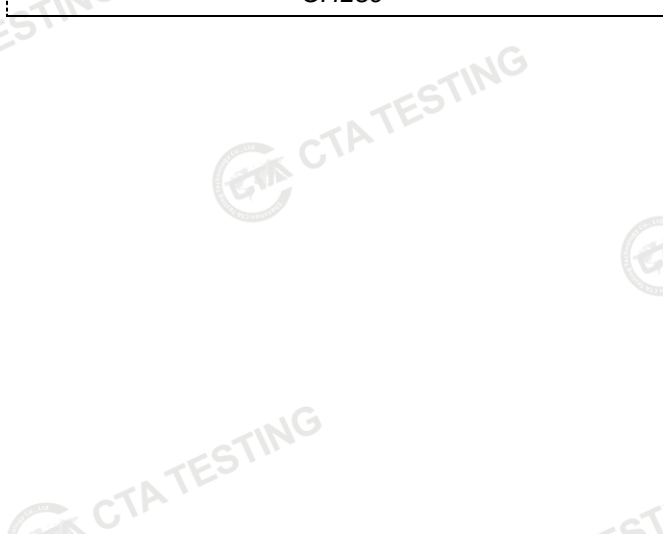
CH151



CH149



CH159

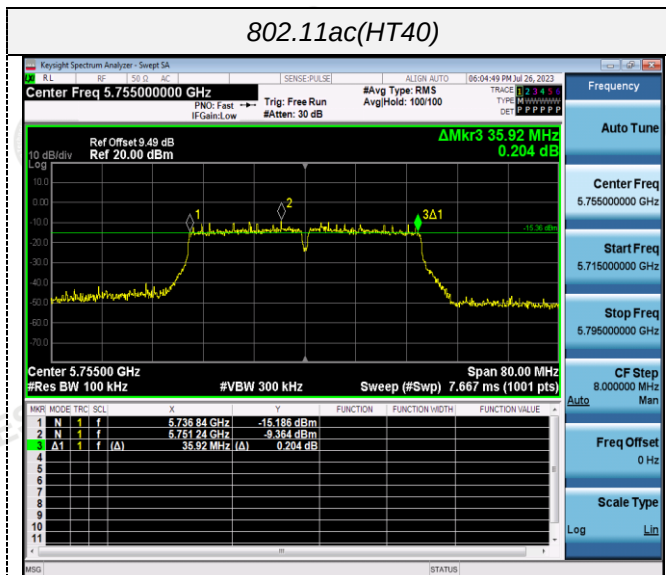


CH157



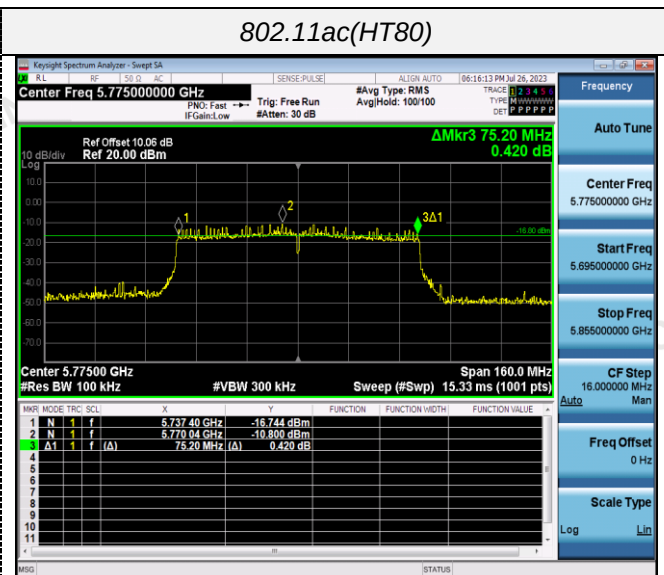
CH165

802.11ac(HT40)

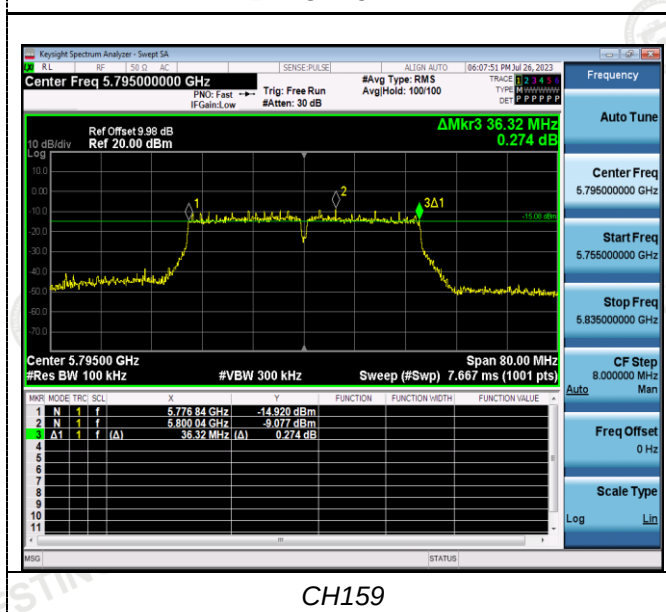


CH151

802.11ac(HT80)



CH155

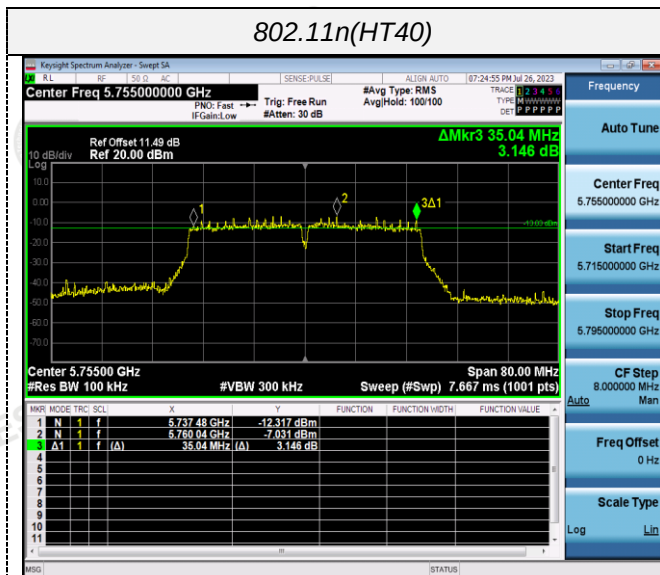


CH159

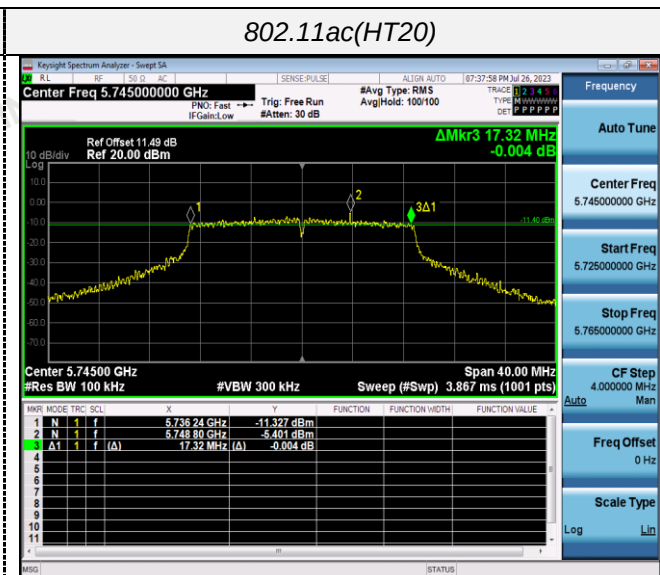
ANT 2



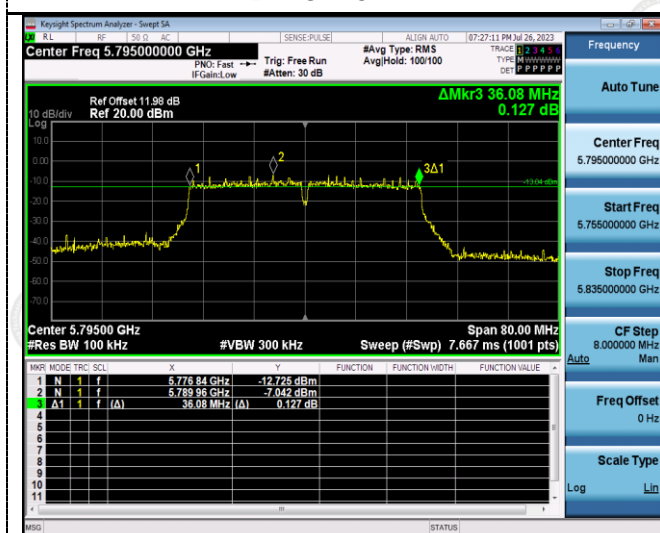
802.11n(HT40)



802.11ac(HT20)



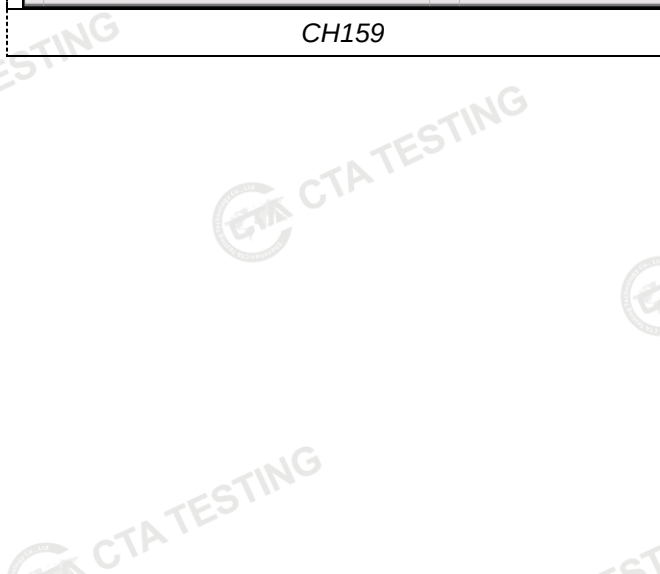
CH151



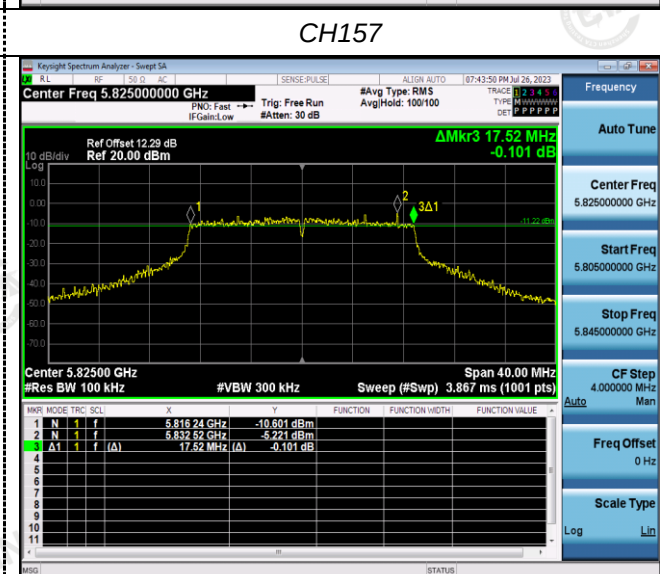
CH149



CH159

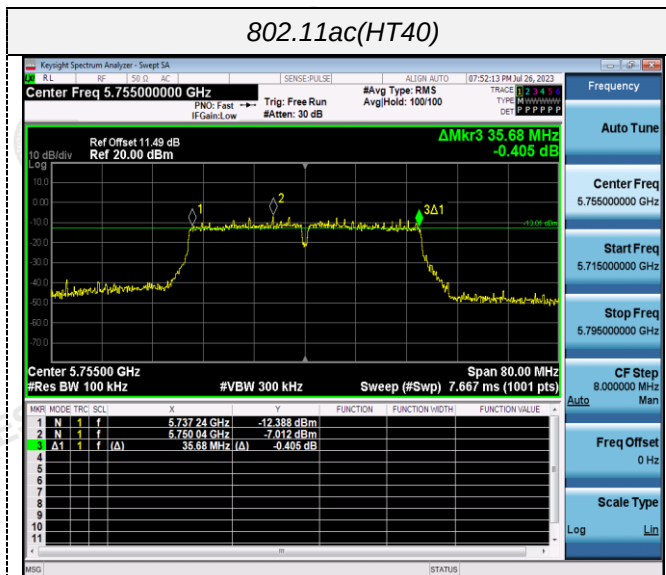


CH157



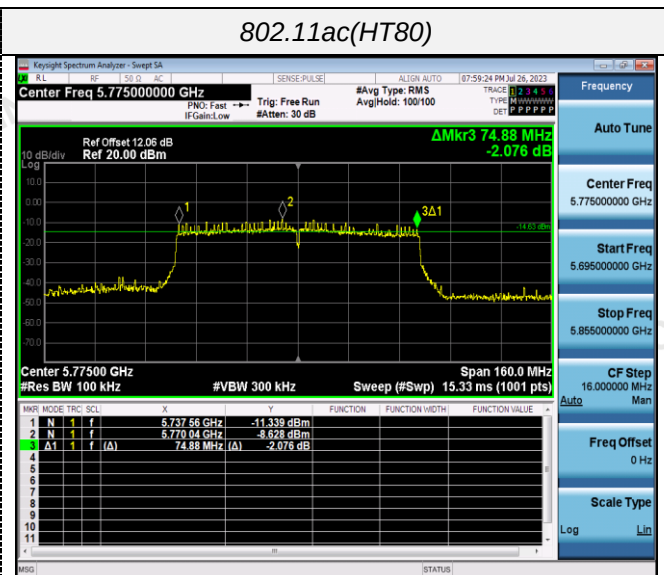
CH165

802.11ac(HT40)

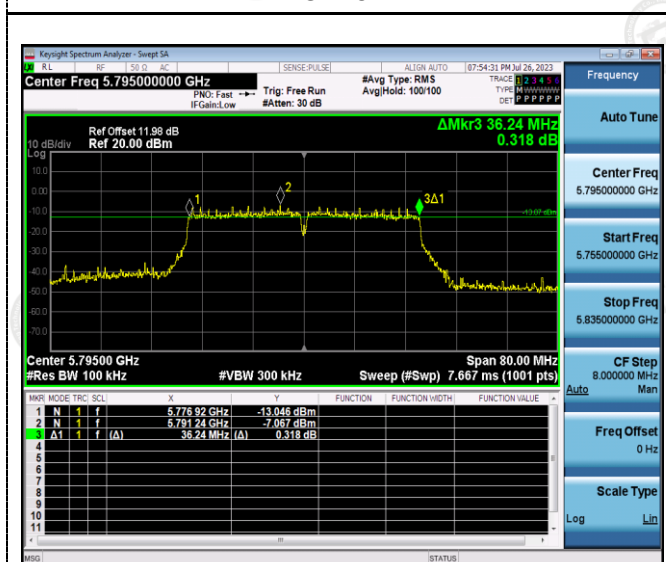


CH151

802.11ac(HT80)



CH155



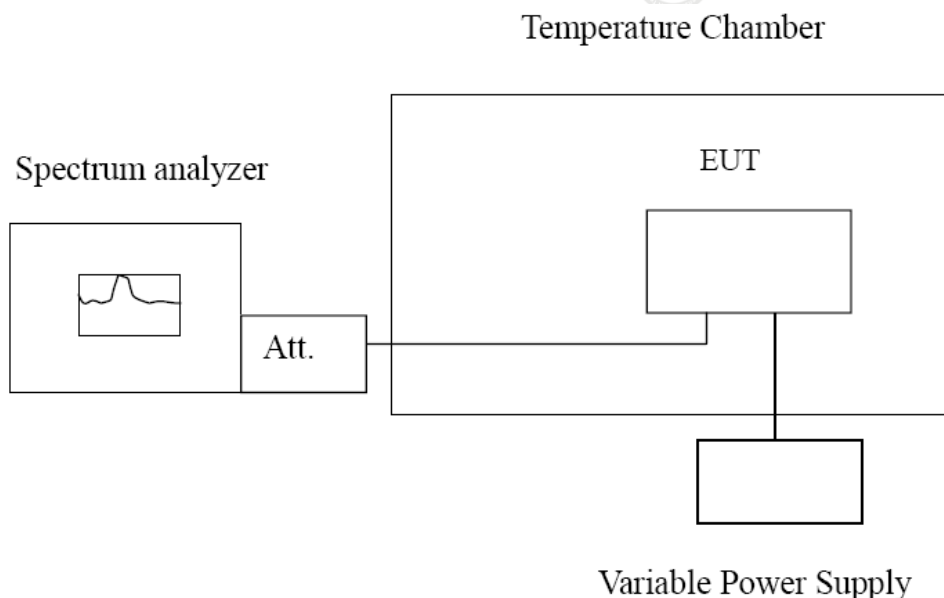
CH159

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°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:

Ant1:

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 3.85	-30	110.76	0.021382	Within the band of operation	Pass
	-20	174.58	0.033703		
	-10	145.15	0.028021		
	0	146.26	0.028236		
	10	145.74	0.028135		
	20	99.35	0.019180		
	30	167.09	0.032257		
	40	129.18	0.024938		
	50	128.61	0.024828		
DC 4.20	25	195.58	0.037757	Within the band of operation	Pass
DC 3.40	25	118.93	0.022959		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 3.85	-30	135.41	0.023570	Within the band of operation	Pass
	-20	129.26	0.022500		
	-10	167.05	0.029077		
	0	169.94	0.029581		
	10	136.23	0.023713		
	20	144.48	0.025149		
	30	116.94	0.020355		
	40	168.16	0.029271		
	50	160.37	0.027915		
DC 4.20	25	150.69	0.026230	Within the band of operation	Pass
DC 3.40	25	129.43	0.022529		

Ant2:

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 3.85	-30	110.43	0.021319	Within the band of operation	Pass
	-20	173.95	0.033581		
	-10	145.60	0.028108		
	0	146.67	0.028315		
	10	145.23	0.028037		
	20	98.49	0.019014		
	30	166.86	0.032212		
	40	129.11	0.024925		
	50	128.57	0.024820		
DC 4.20	25	195.83	0.037805	Within the band of operation	Pass
DC 3.40	25	117.24	0.022633		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 3.85	-30	135.07	0.023511	Within the band of operation	Pass
	-20	129.16	0.022482		
	-10	166.83	0.029039		
	0	168.22	0.029281		
	10	136.48	0.023756		
	20	143.61	0.024997		
	30	116.76	0.020324		
	40	168.97	0.029412		
	50	159.52	0.027767		
DC 4.20	25	150.17	0.026139	Within the band of operation	Pass
DC 3.40	25	129.46	0.022534		

5 Test Setup Photos of the EUT



6 Photos of the EUT

Reference to the test report No. **CTA23070503201**

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