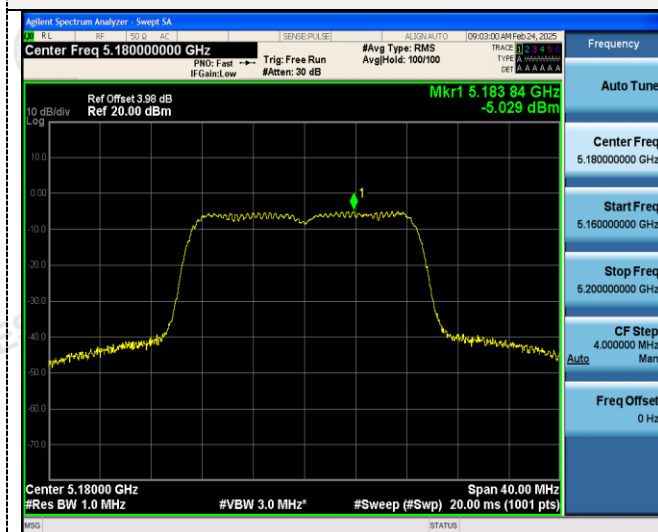
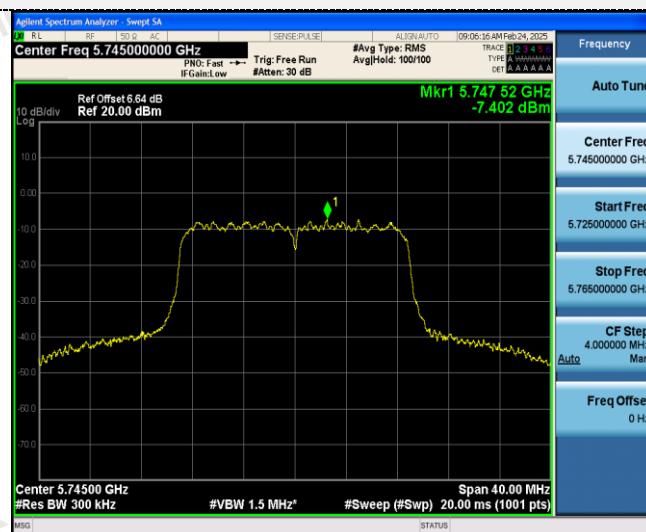


802.11ac(HT20)

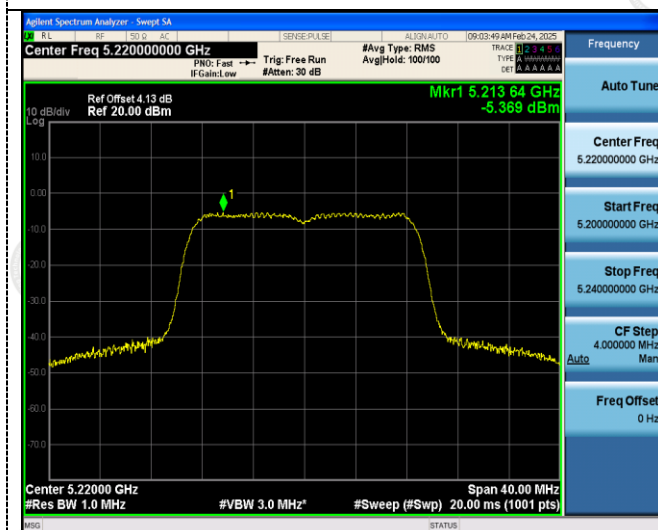
U-NII 1



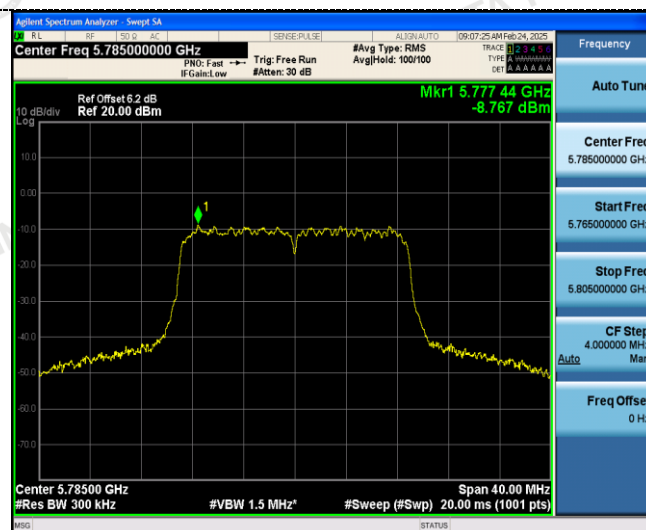
U-NII 3



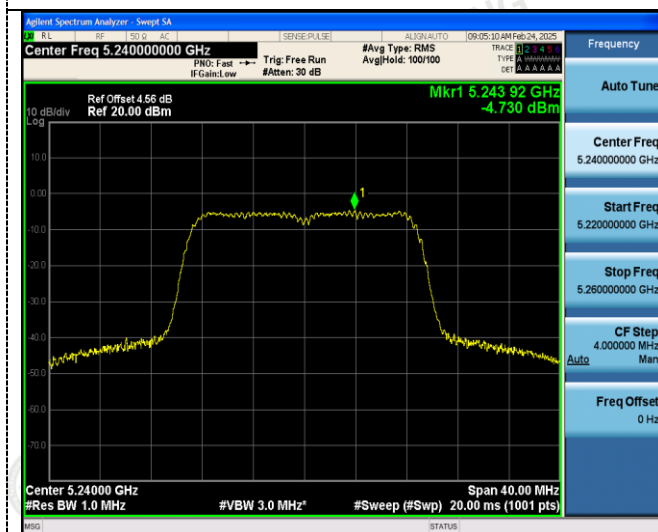
CH36



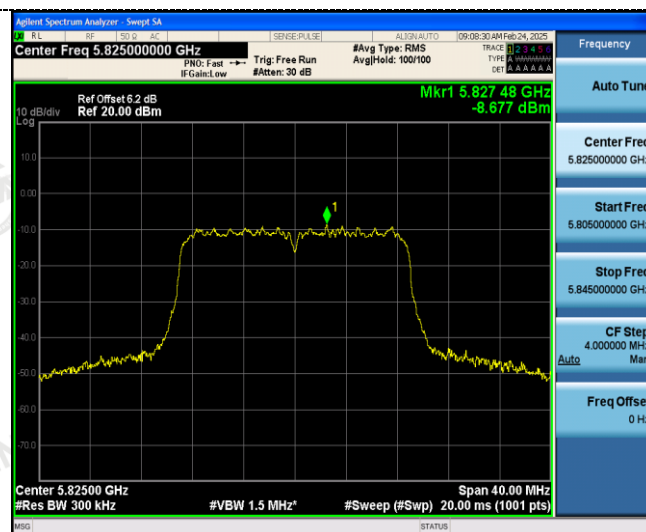
CH149



CH40



CH157

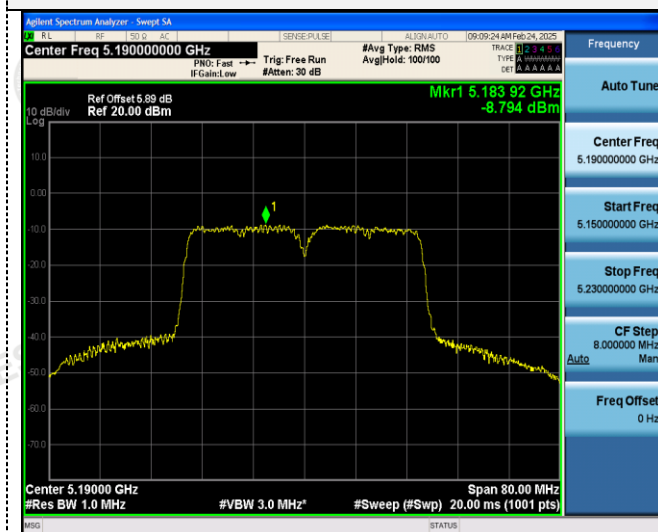


CH4

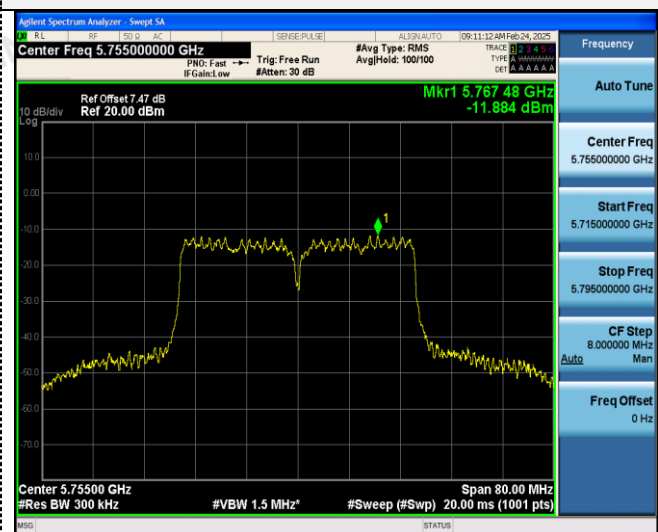
CH165

802.11ac(HT40)

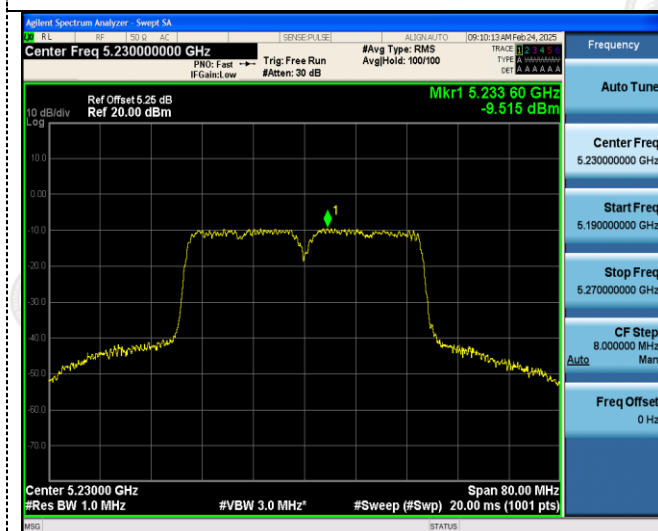
U-NII 1



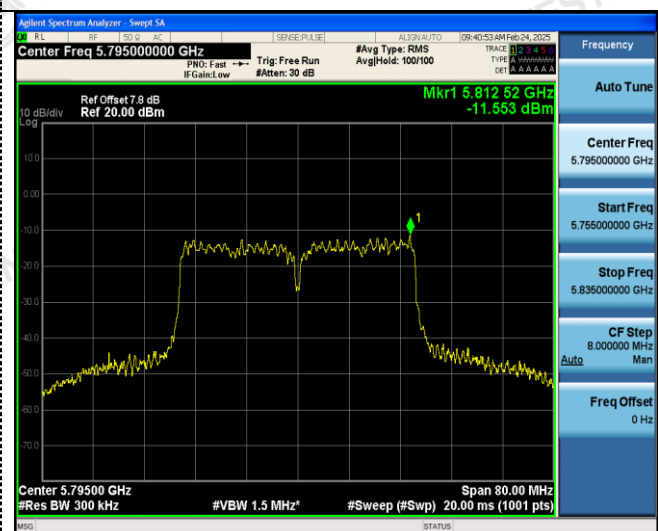
U-NII 3



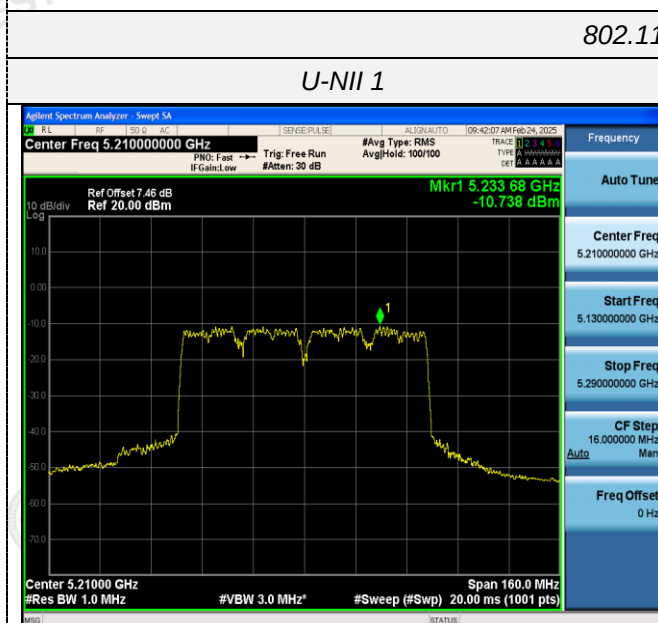
CH38



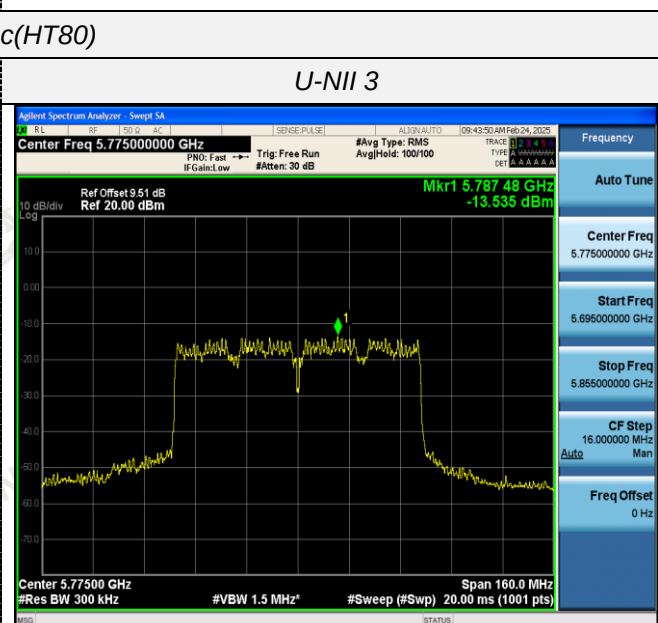
CH151



CH46



CH159



CH42

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

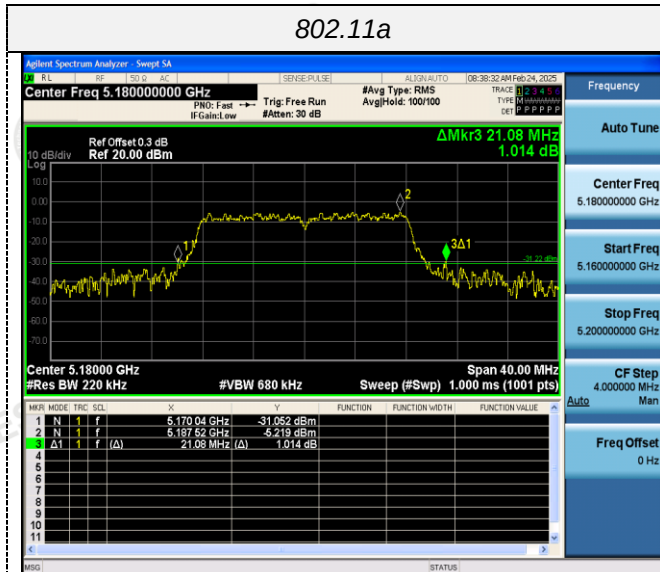


Test Results

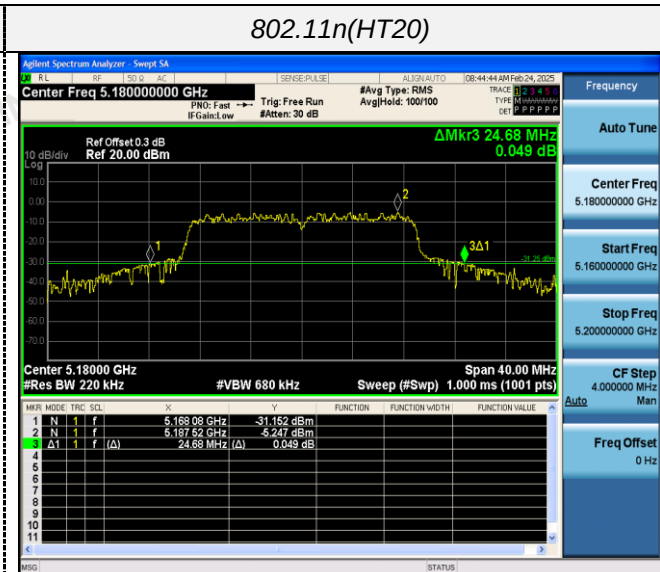
Type	Bands	Channel	26dB Bandwidth (MHz)	Limit (MHz)	Result
802.11a	U-NII 1	36	21.080	N/A	Pass
		40	21.360		
		48	23.400		
802.11n(HT20)	U-NII 1	36	24.680		
		40	24.280		
		48	25.680		
802.11n(HT40)	U-NII 1	38	43.520		
		46	43.760		
802.11ac(HT20)	U-NII 1	36	27.120		
		40	20.200		
		48	23.480		
802.11ac(HT40)	U-NII 1	38	42.640		
		46	41.600		
802.11ac(HT80)	U-NII 1	42	87.040		

Test plot as follows:

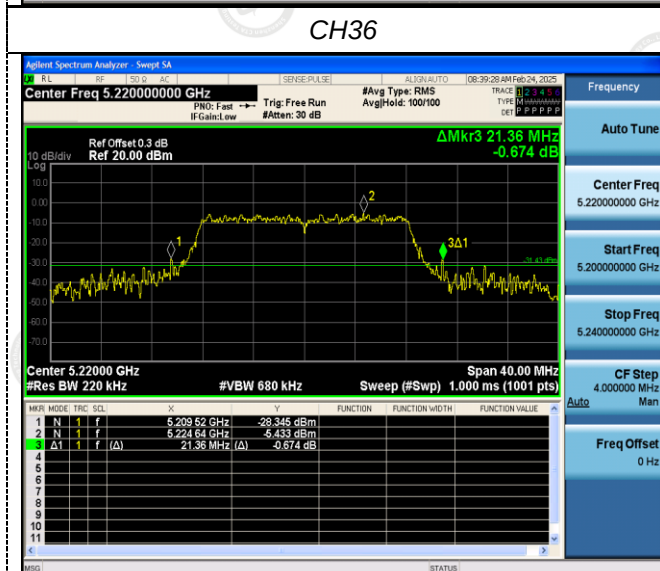
802.11a



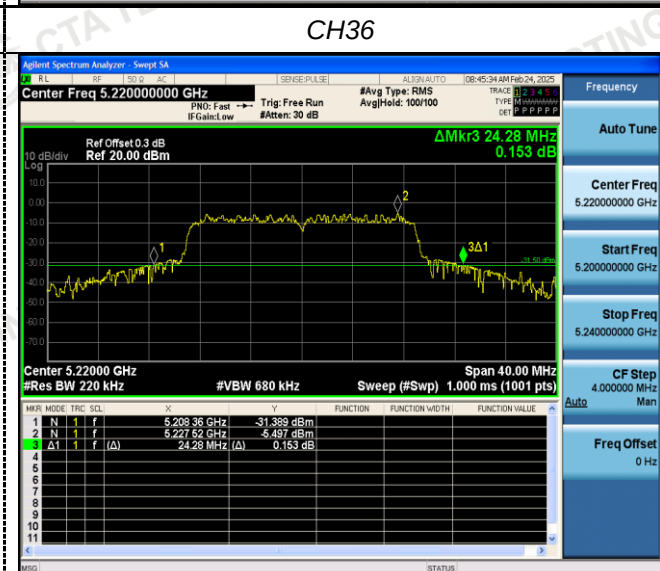
802.11n(HT20)



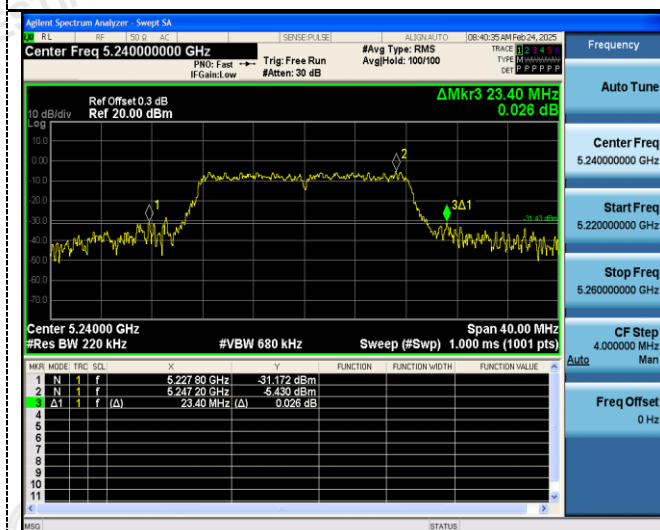
CH36



CH36



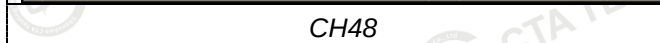
CH40



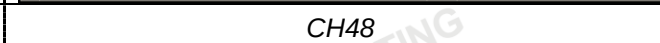
CH40



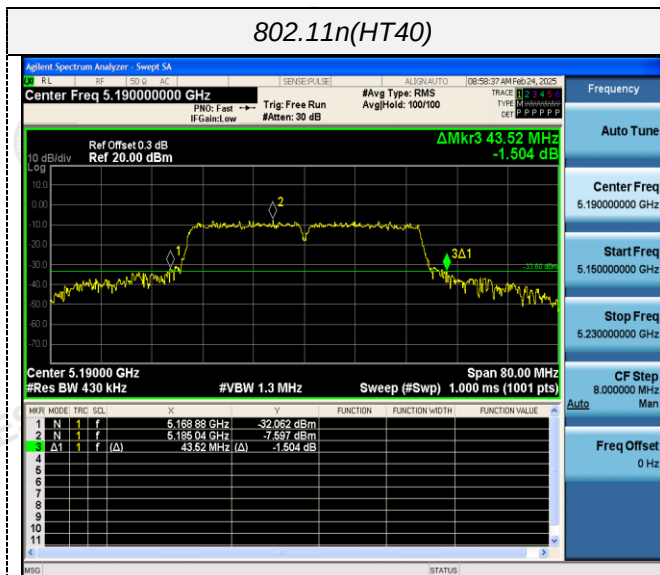
CH48



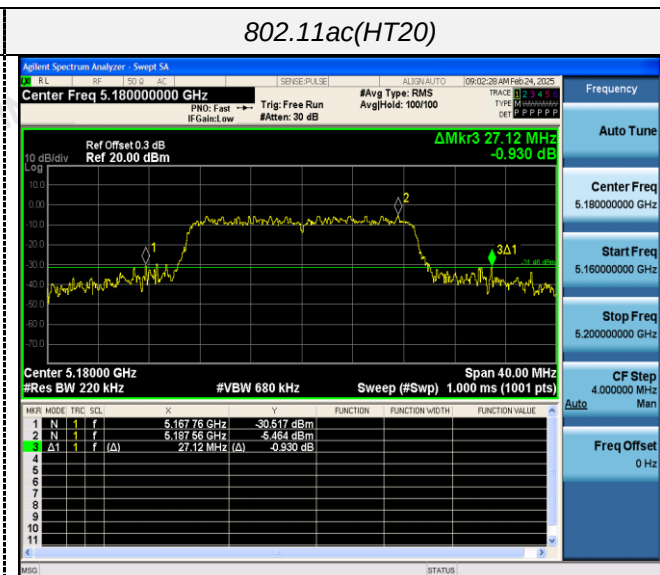
CH48



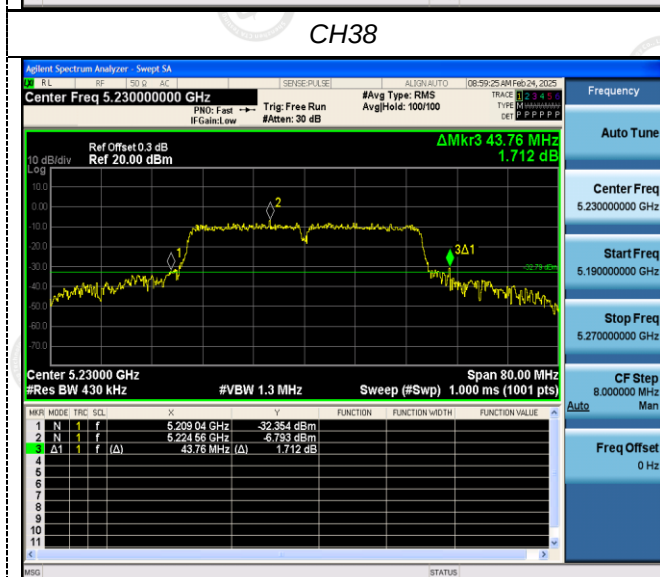
802.11n(HT40)



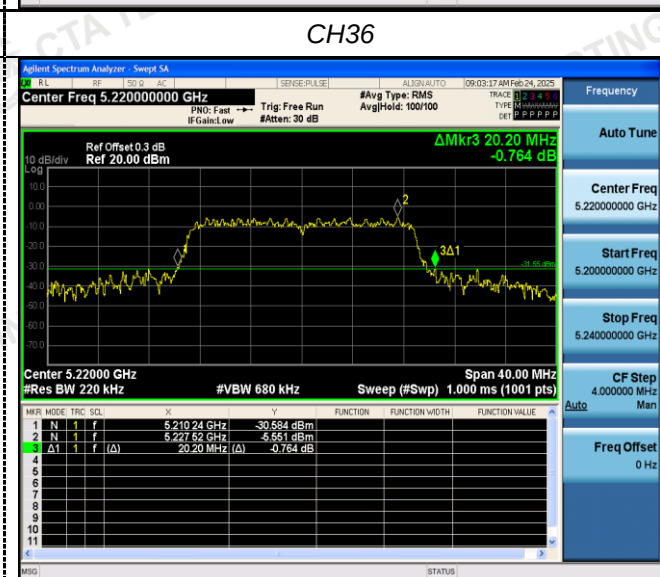
802.11ac(HT20)



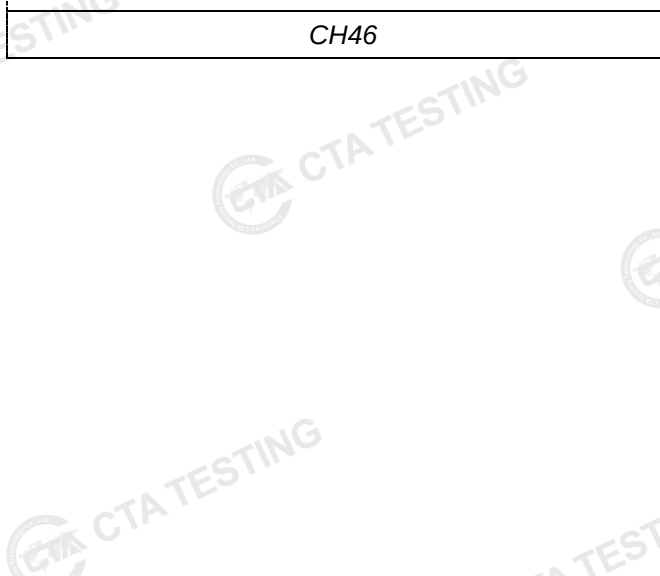
CH38



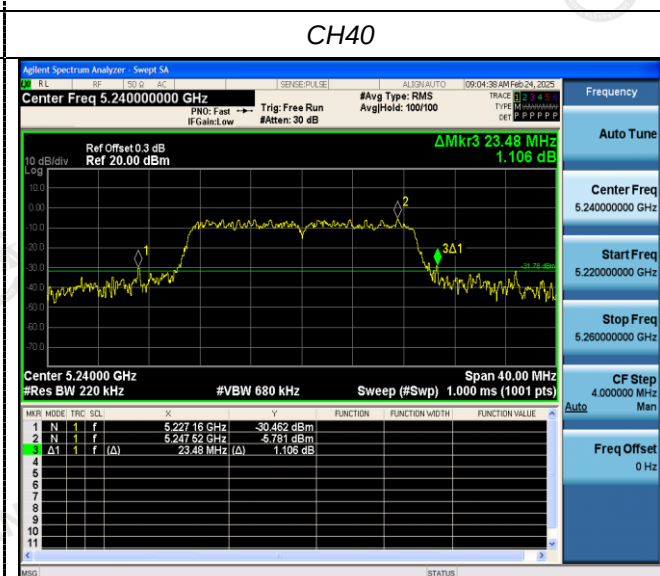
CH36



CH46

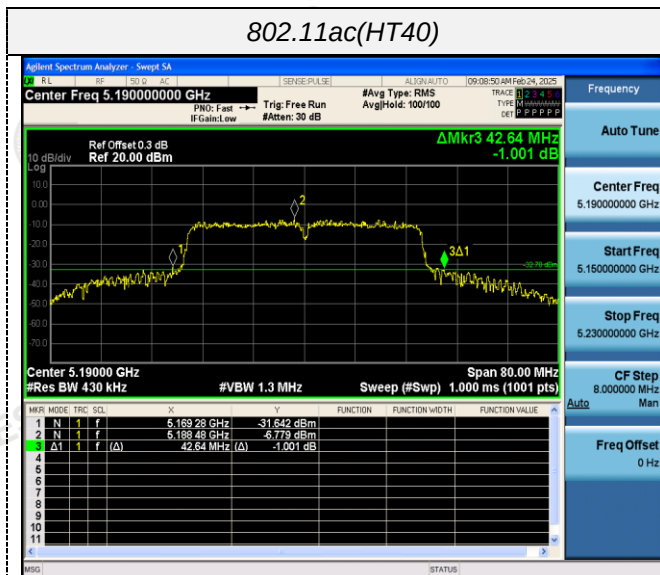


CH40

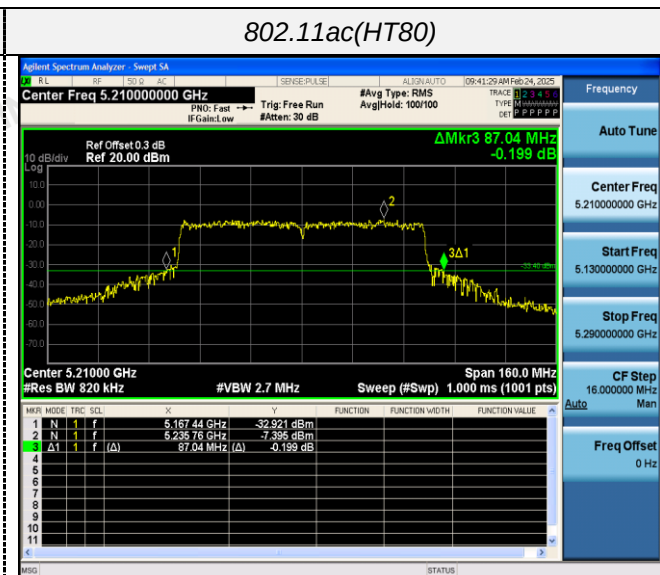


CH48

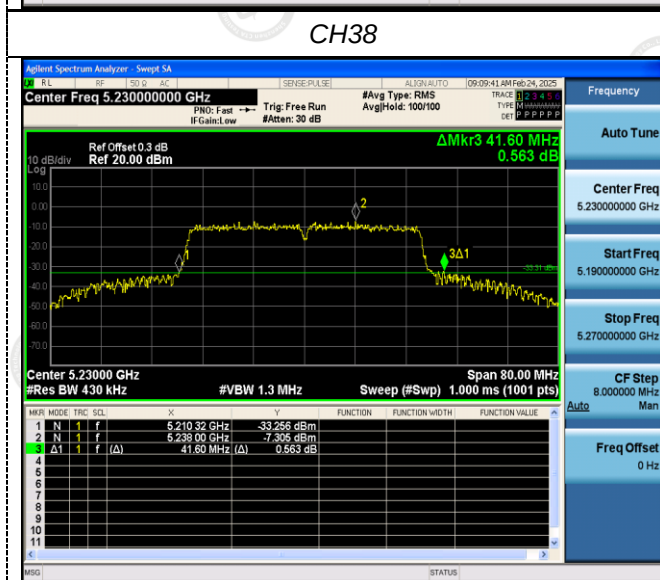
802.11ac(HT40)



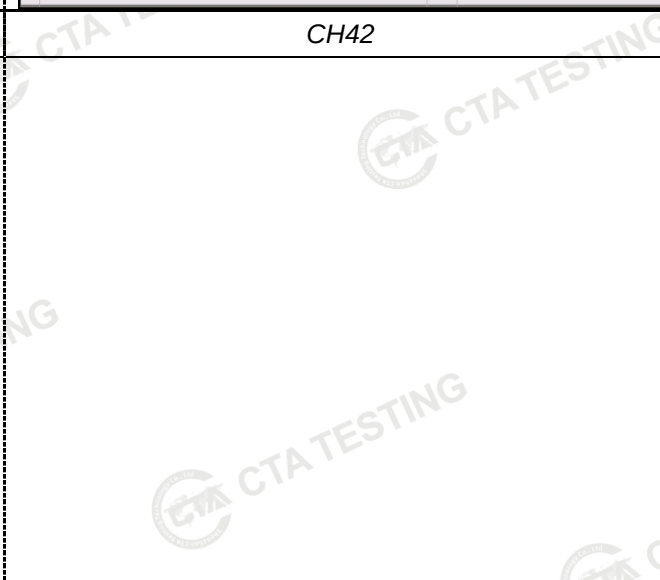
802.11ac(HT80)



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

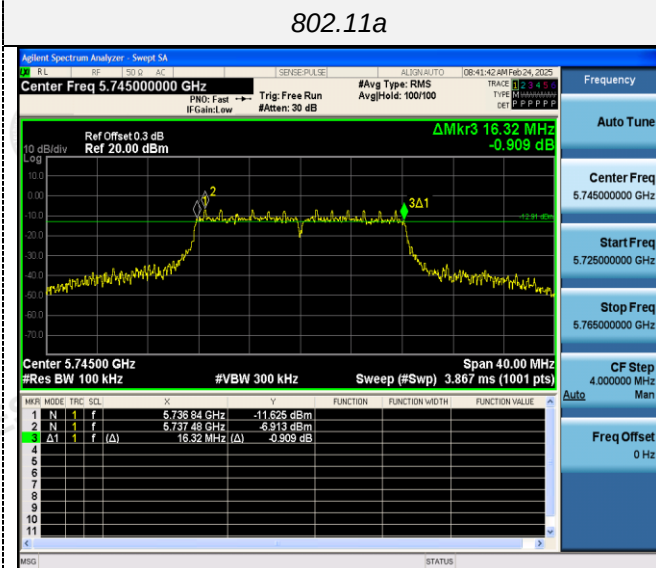


Test Results

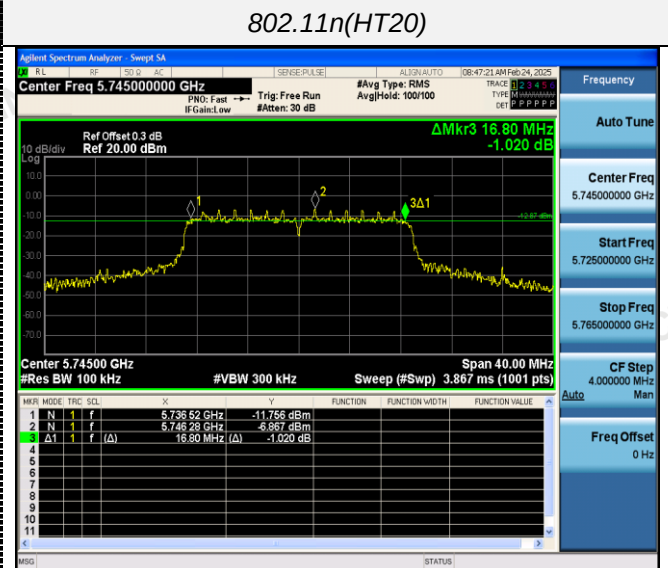
Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	16.320	≥500KHz	Pass
		157	16.320		
		165	16.360		
802.11n(HT20)	U-NII 3	149	16.800		
		157	17.160		
		165	17.080		
802.11n(HT40)	U-NII 3	151	36.080		
		159	35.680		
802.11ac(HT20)	U-NII 3	149	16.800		
		157	17.160		
		165	17.000		
802.11ac(HT40)	U-NII 3	151	35.920		
		159	36.160		
802.11ac(HT80)	U-NII 3	155	75.360		

Test plot as follows:

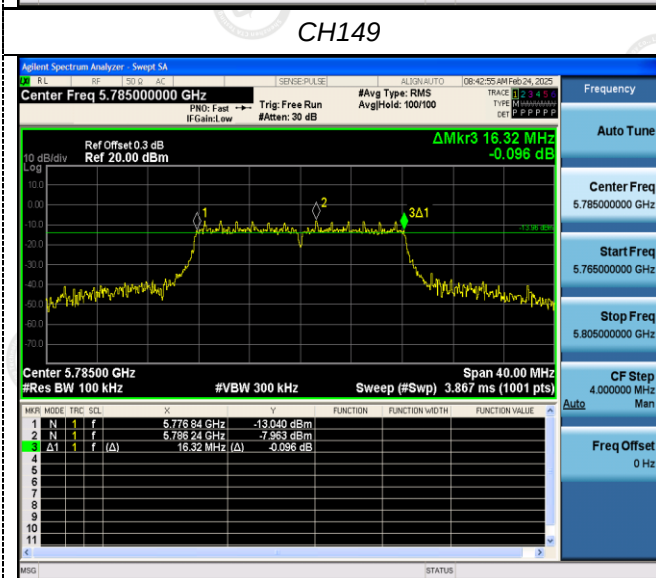
802.11a



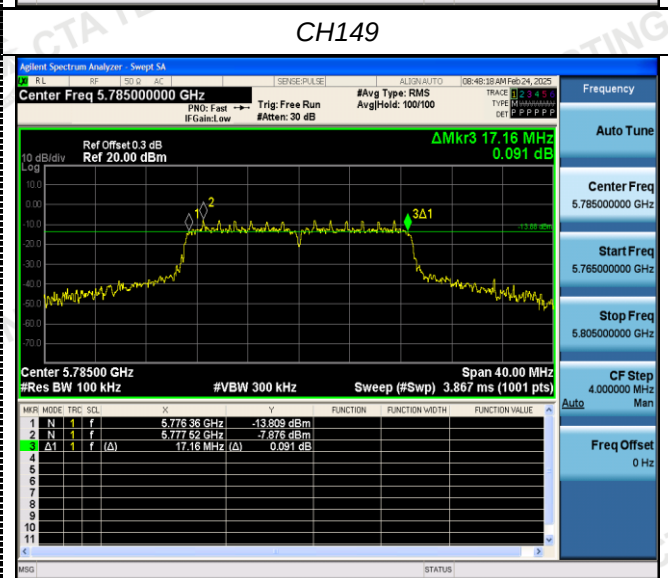
802.11n(HT20)



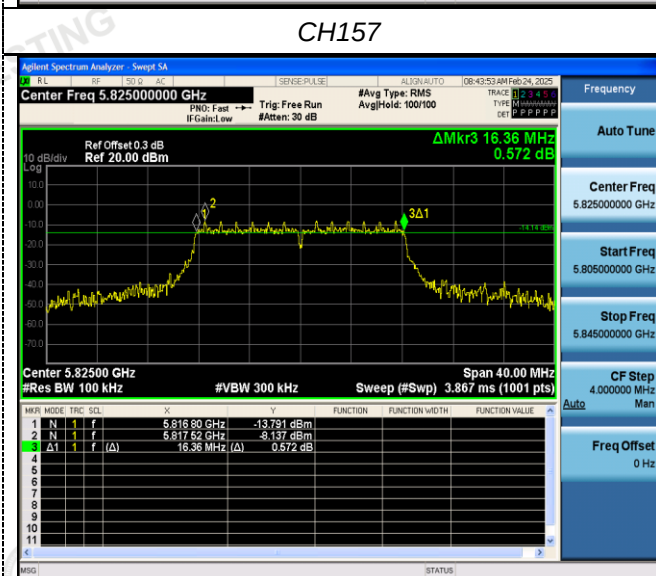
CH149



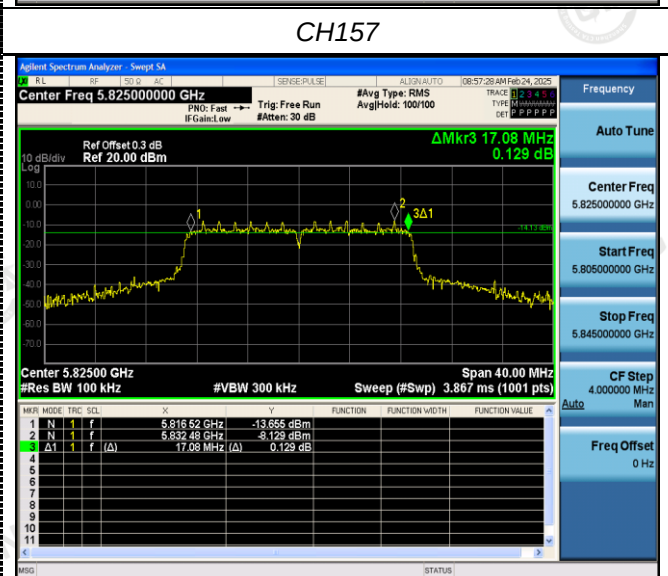
CH149



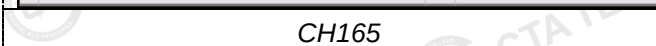
CH157



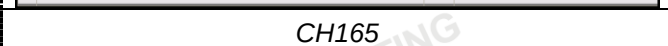
CH157



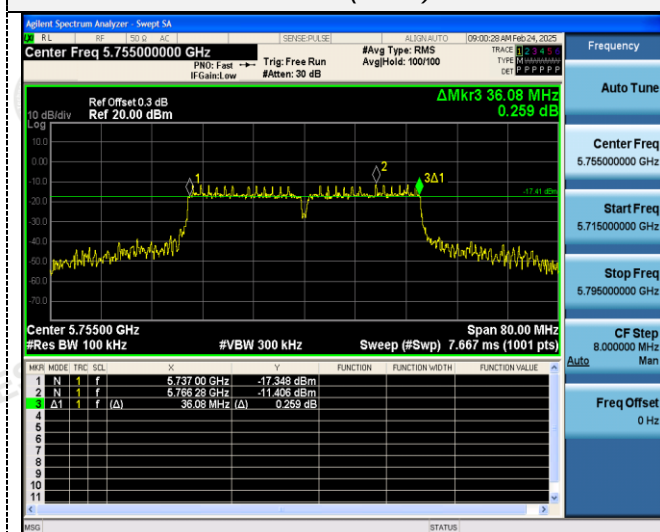
CH165



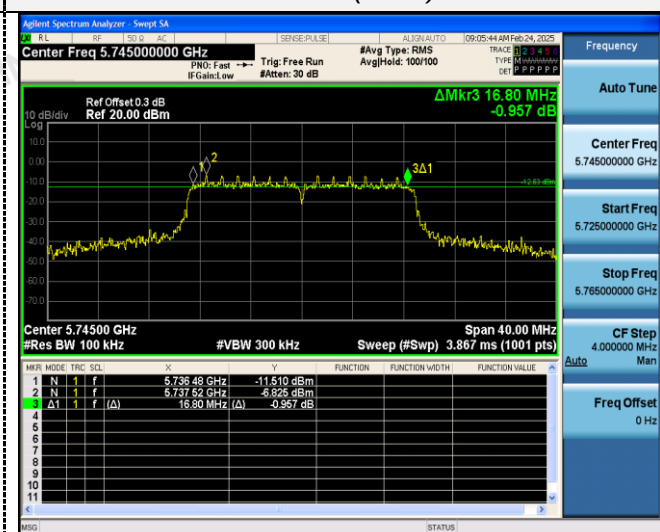
CH165



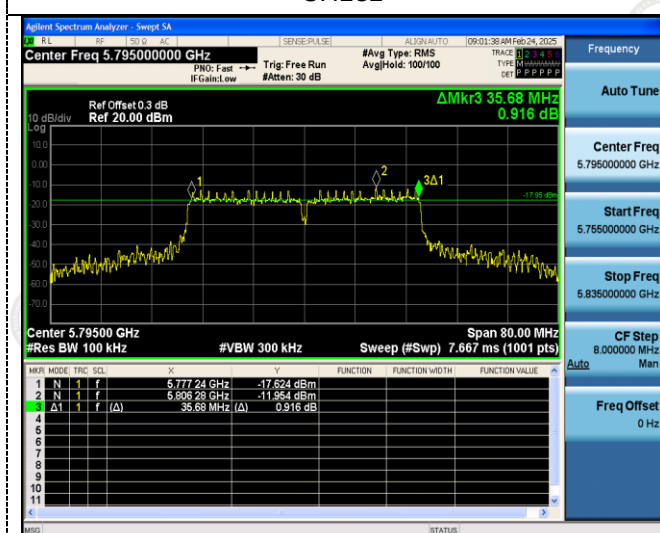
802.11n(HT40)



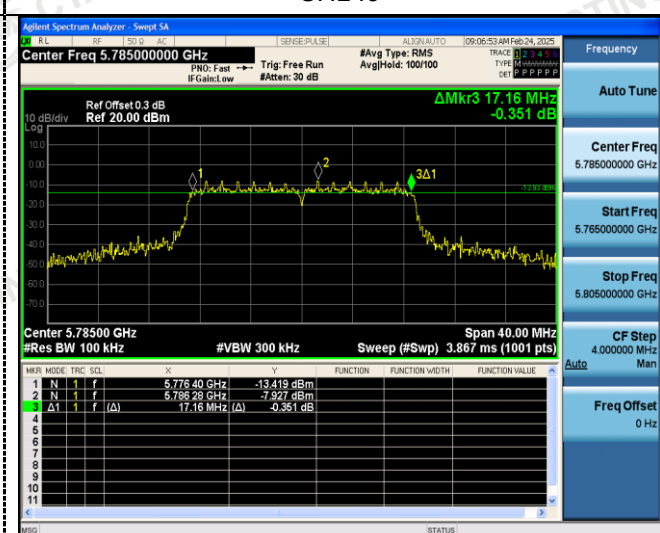
802.11ac(HT20)



CH151



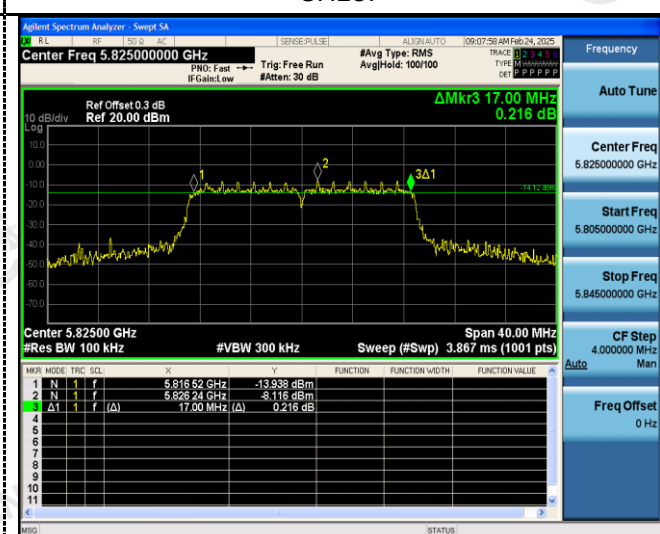
CH149



CH159

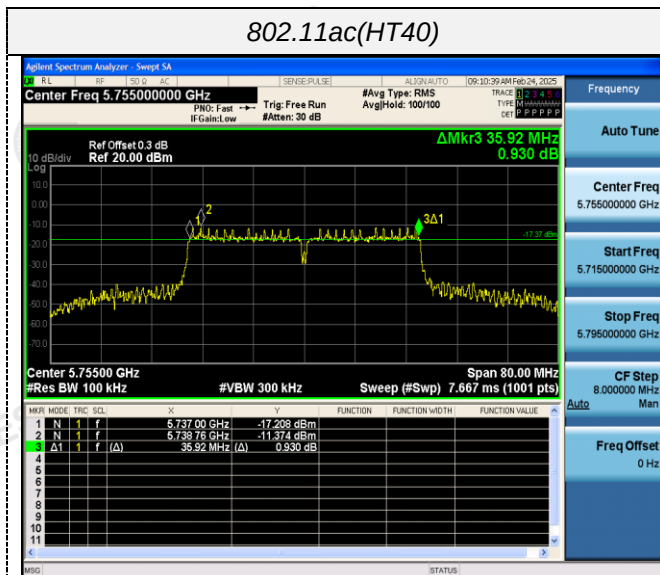


CH157

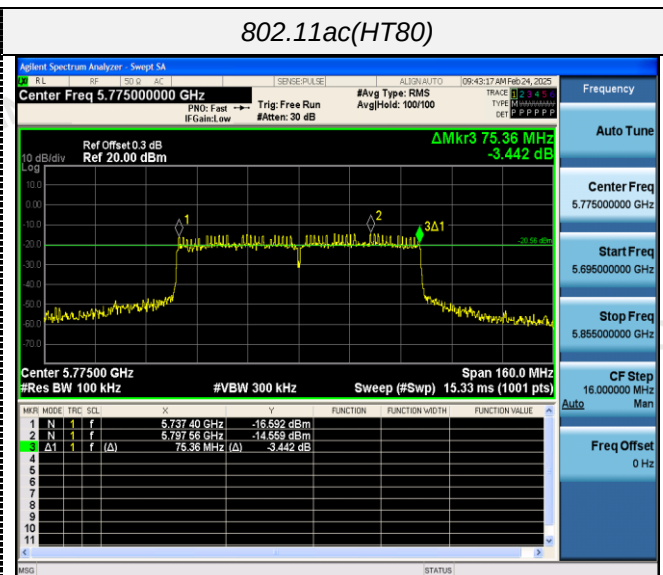


CH165

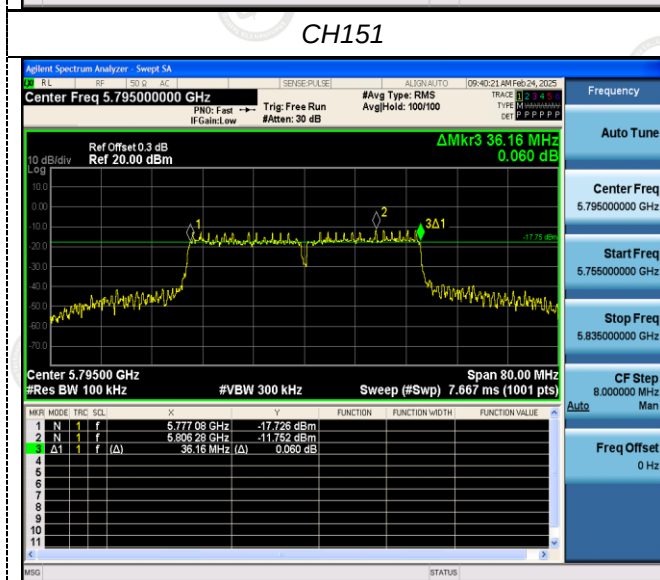
802.11ac(HT40)



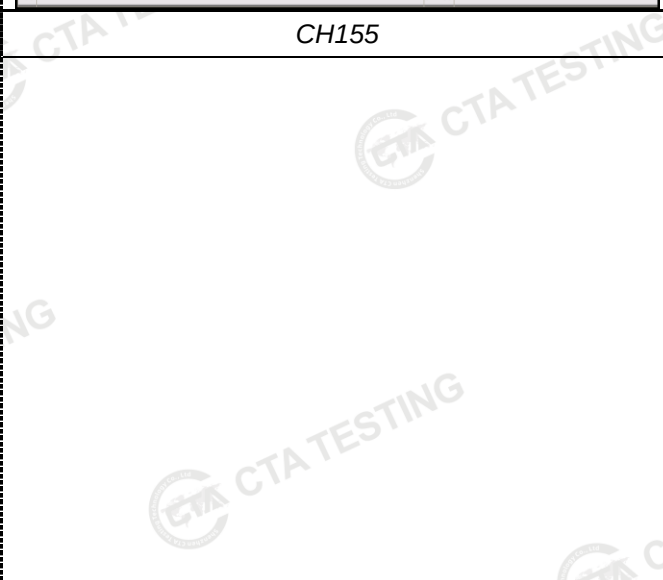
802.11ac(HT80)



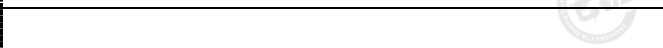
CH151



CH155



CH159

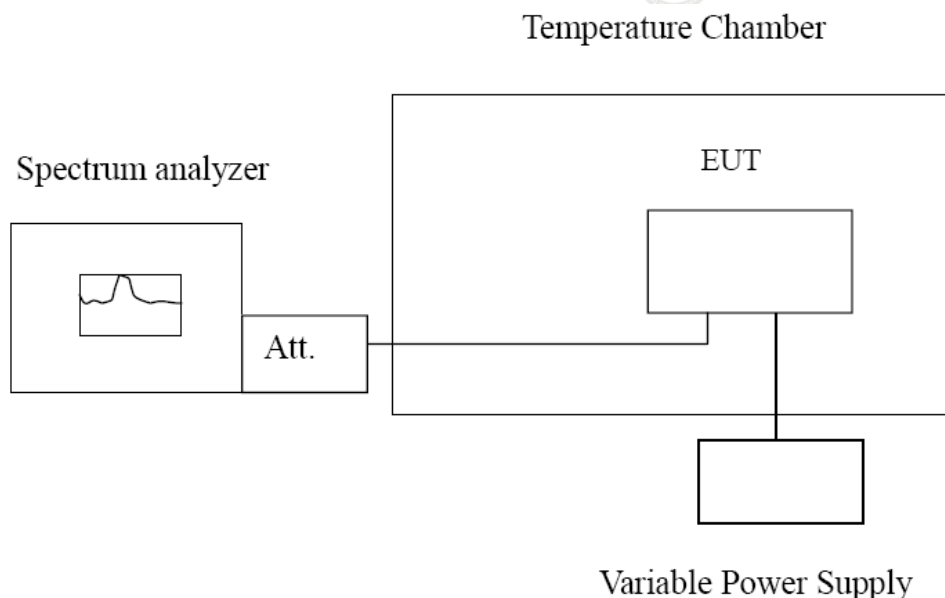


4.7 Frequency Stability

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:

Reference Frequency: 802.11ac channel=36 frequency=5180MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 7.6	-30	110.73	0.021376	Within the band of operation	Pass
	-20	174.48	0.033683		
	-10	145.44	0.028077		
	0	146.46	0.028274		
	10	146.00	0.028185		
	20	99.43	0.019195		
	30	167.12	0.032263		
	40	129.53	0.025006		
	50	128.71	0.024847		
DC 8.4	25	195.33	0.037708	Within the band of operation	Pass
DC 6.8	25	118.51	0.022878		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 7.6	-30	135.69	0.023619	Within the band of operation	Pass
	-20	129.44	0.022531		
	-10	167.19	0.029102		
	0	169.92	0.029577		
	10	136.70	0.023795		
	20	144.93	0.025227		
	30	116.75	0.020322		
	40	168.29	0.029293		
	50	160.41	0.027922		
DC 8.4	25	150.71	0.026233	Within the band of operation	Pass
DC 6.8	25	129.59	0.022557		

5 Test Setup Photos of the EUT



6 Photos of the EUT

Reference to the test report No. CTA25021701201.

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