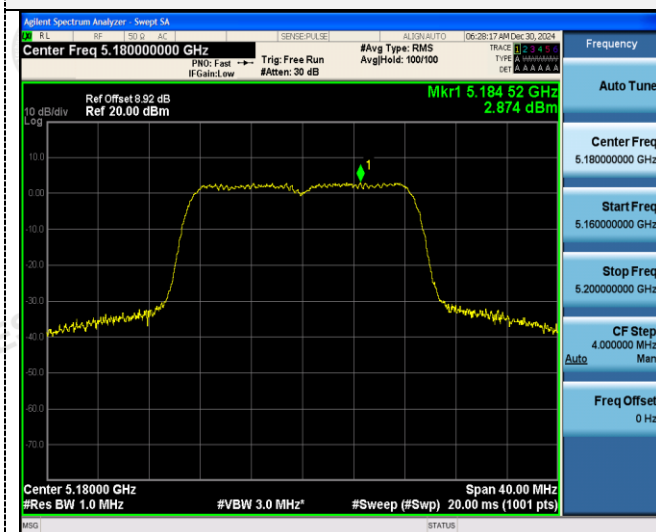
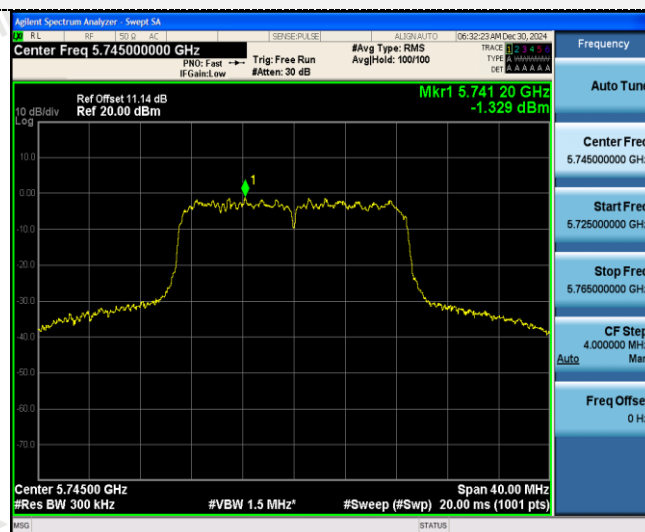


802.11ax(HT20)

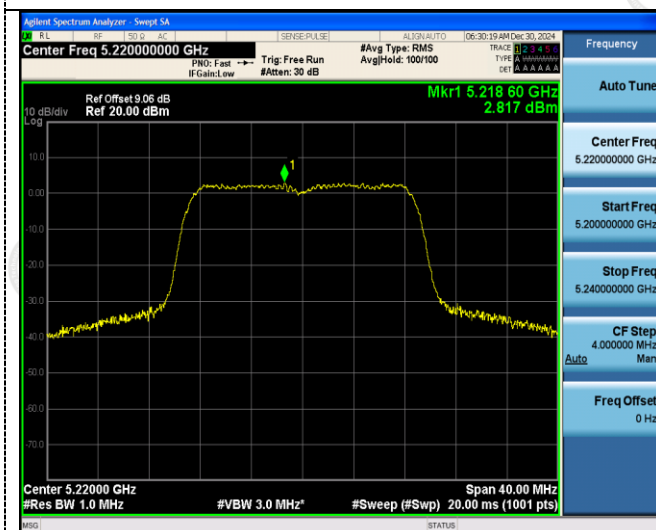
U-NII 1



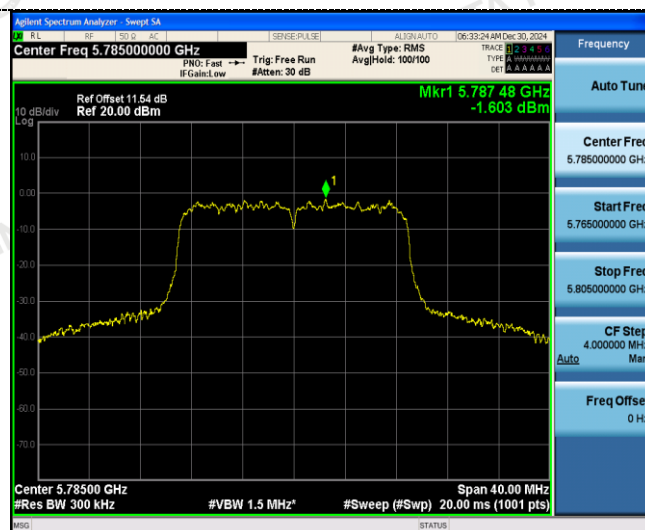
U-NII 3



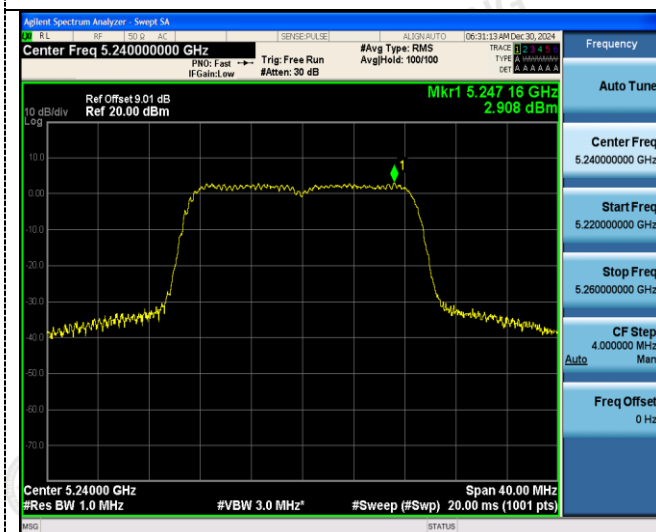
CH36



CH149



CH40



CH157

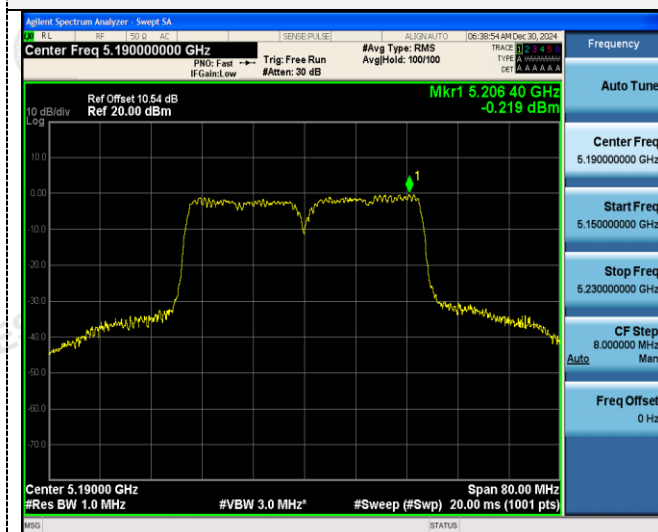


CH48

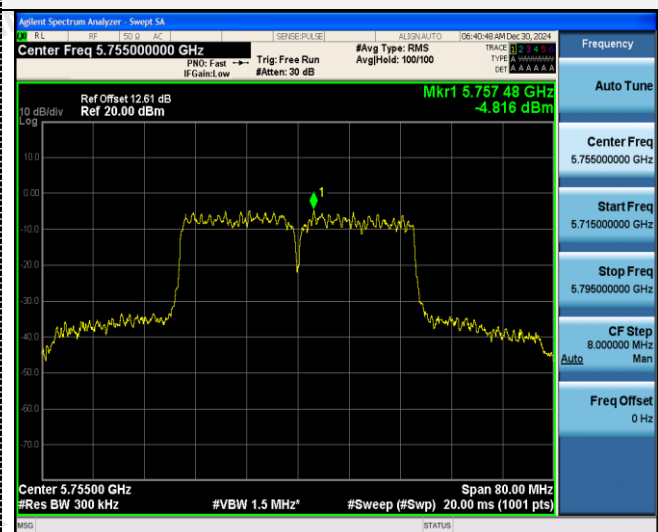
CH165

802.11ax(HT40)

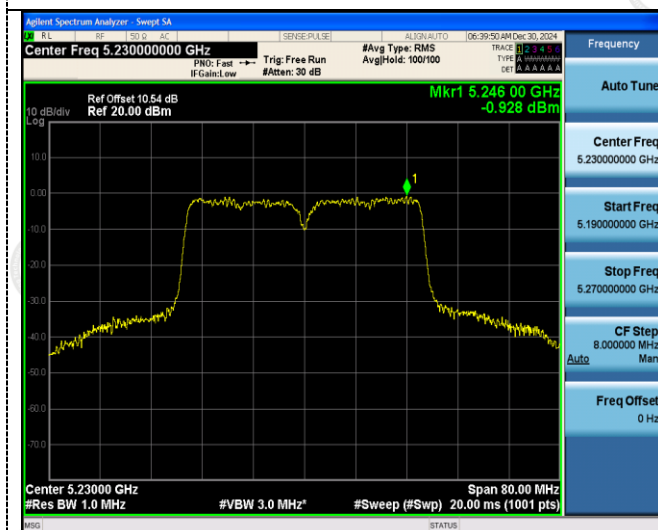
U-NII 1



U-NII 3



CH38



CH151



CH46



CH159



4.5 Emission Bandwidth (26dB Bandwidth)

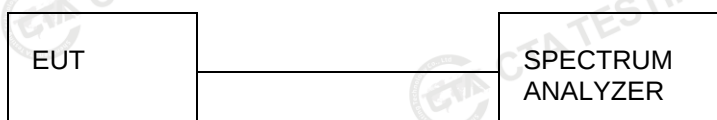
Limit

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

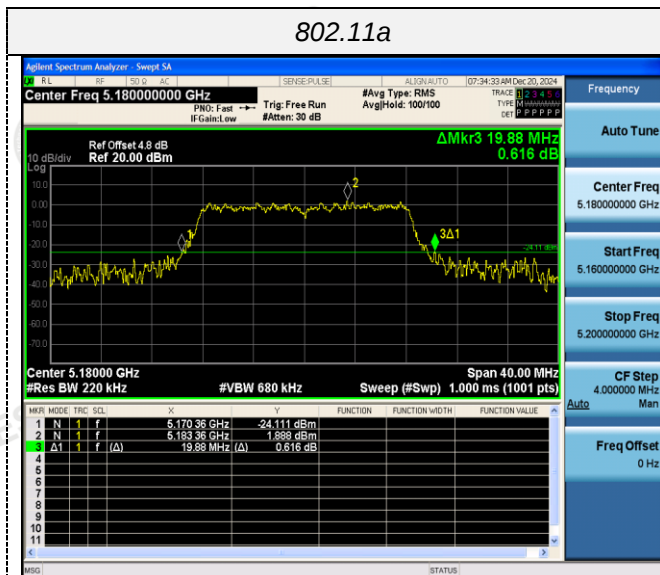


Test Results

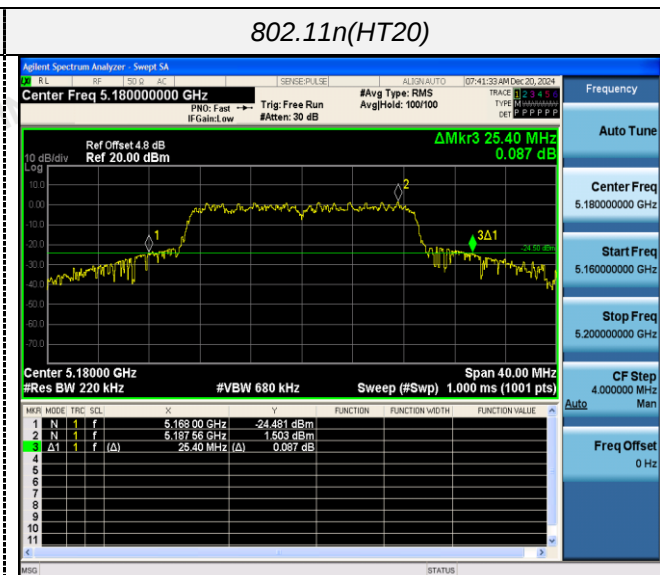
Type	Bands	Channel	26dB Bandwidth (MHz)	Limit (MHz)	Result
802.11a	U-NII 1	36	19.880	N/A	Pass
		40	21.920		
		48	23.200		
802.11n(HT20)	U-NII 1	36	25.400		
		40	26.880		
		48	25.720		
802.11n(HT40)	U-NII 1	38	48.800		
		46	43.280		
802.11ac(HT20)	U-NII 1	36	22.520		
		40	23.320		
		48	20.360		
802.11ac(HT40)	U-NII 1	38	49.440		
		46	49.440		
802.11ax(HT20)	U-NII 1	36	23.960		
		40	21.680		
		48	22.440		
802.11ax(HT40)	U-NII 1	38	47.680		
		46	52.320		

Test plot as follows:

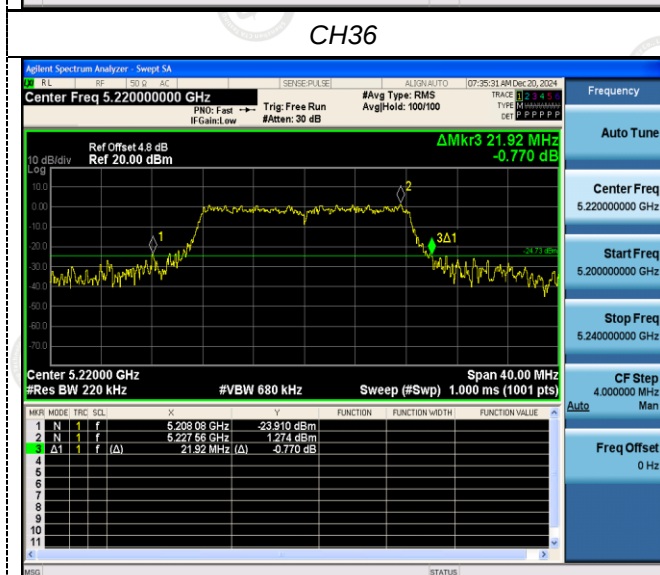
802.11a



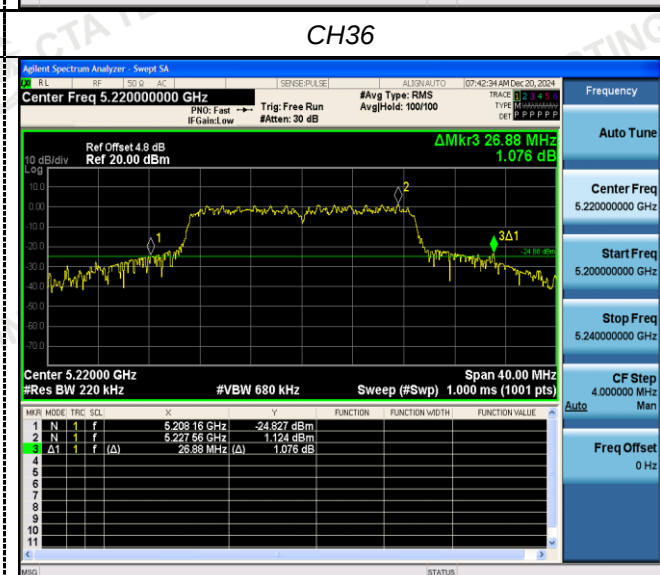
802.11n(HT20)



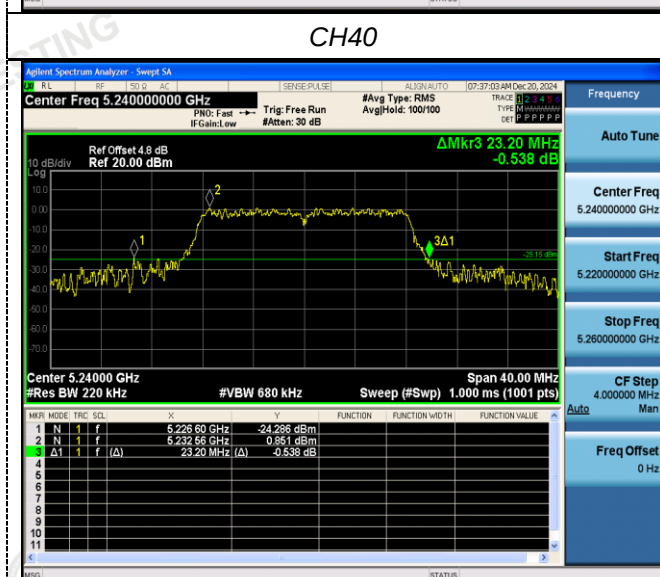
CH36



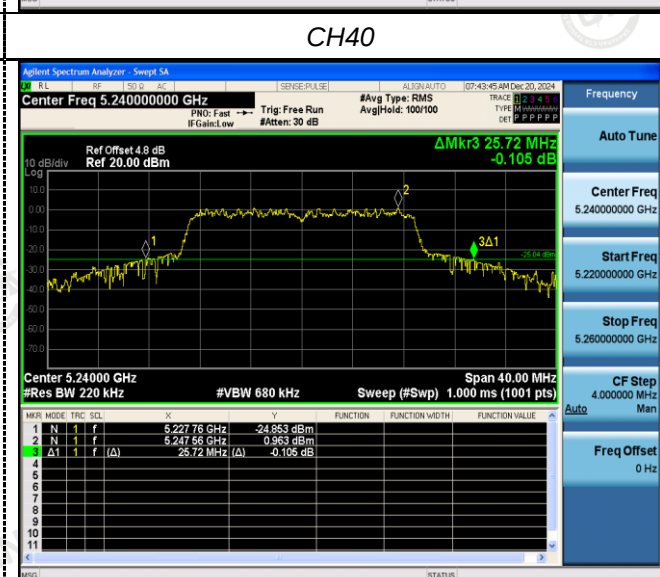
CH36



CH40



CH40



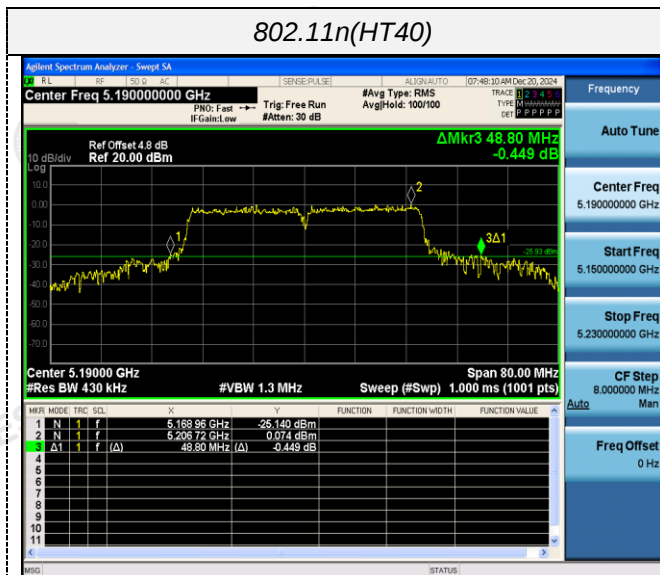
CH48



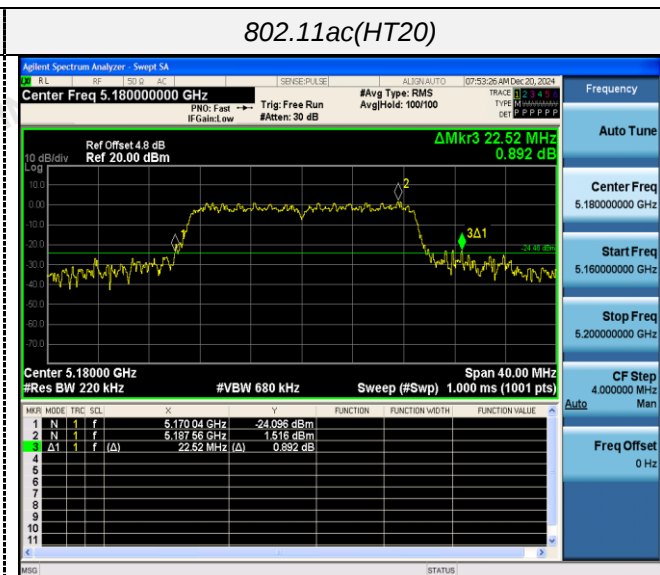
CH48



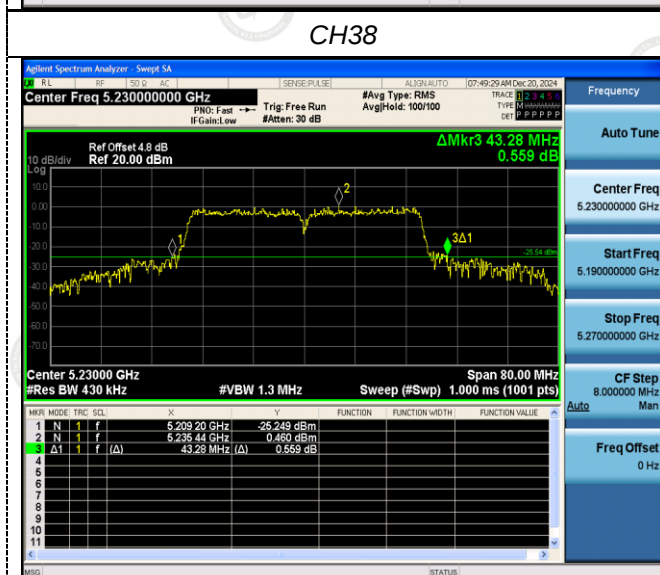
802.11n(HT40)



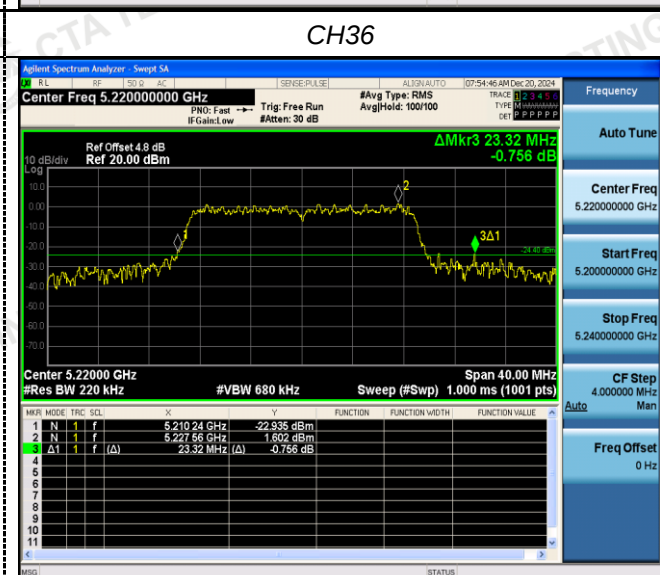
802.11ac(HT20)



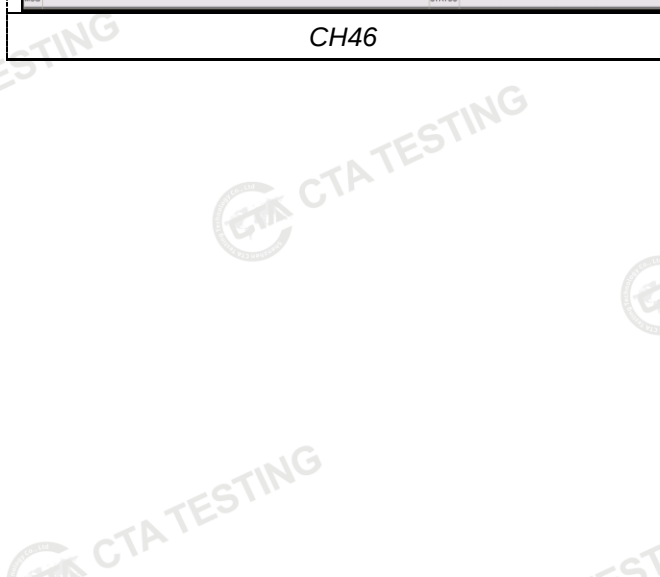
CH38



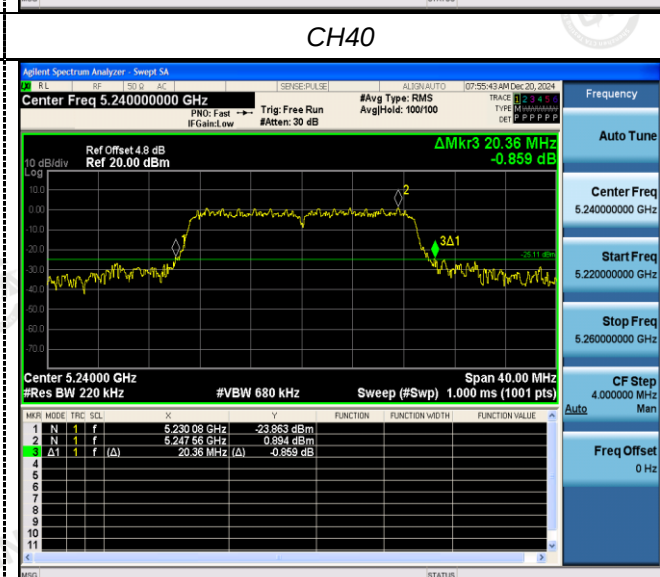
CH36



CH46



CH40



CH48

802.11ac(HT40)



802.11ax(HT20)



CH38



CH36



CH46



CH40



CH48

802.11ax(HT40)



CH38



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

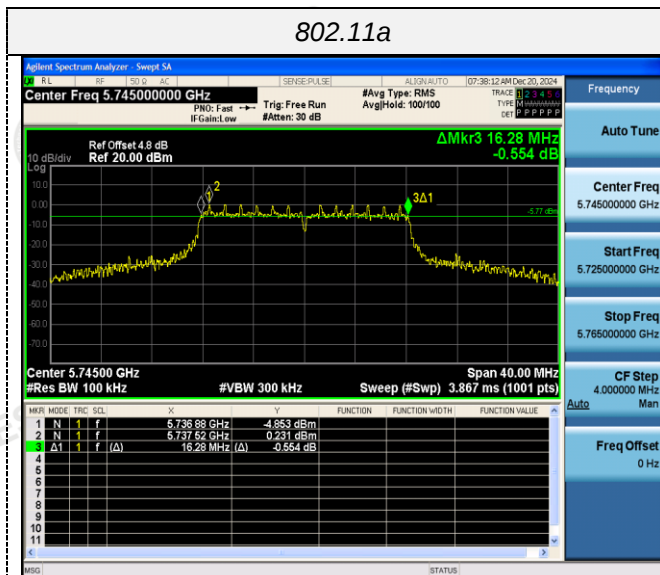


Test Results

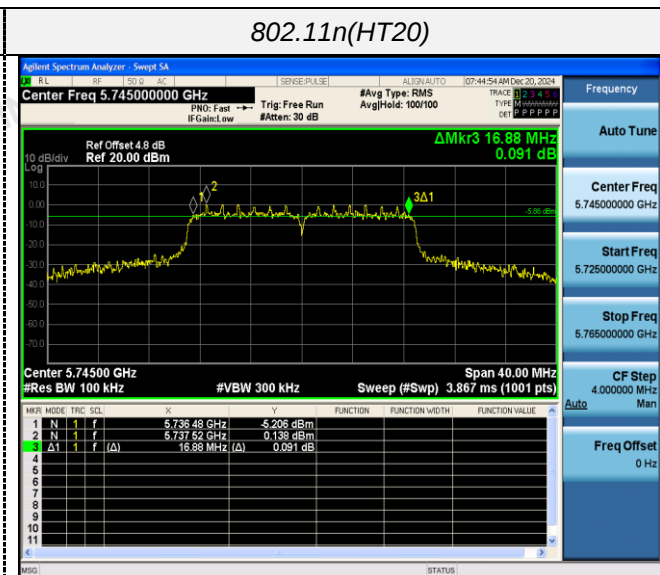
Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	16.280	≥500KHz	Pass
		157	16.280		
		165	16.320		
802.11n(HT20)	U-NII 3	149	16.880		
		157	17.040		
		165	16.960		
802.11n(HT40)	U-NII 3	151	35.520		
		159	35.200		
802.11ac(HT20)	U-NII 3	149	16.680		
		157	17.160		
		165	17.240		
802.11ac(HT40)	U-NII 3	151	35.520		
		159	35.360		
802.11ax(HT20)	U-NII 3	149	16.720		
		157	16.840		
		165	17.120		
802.11ax(HT40)	U-NII 3	151	35.360		
		159	35.360		

Test plot as follows:

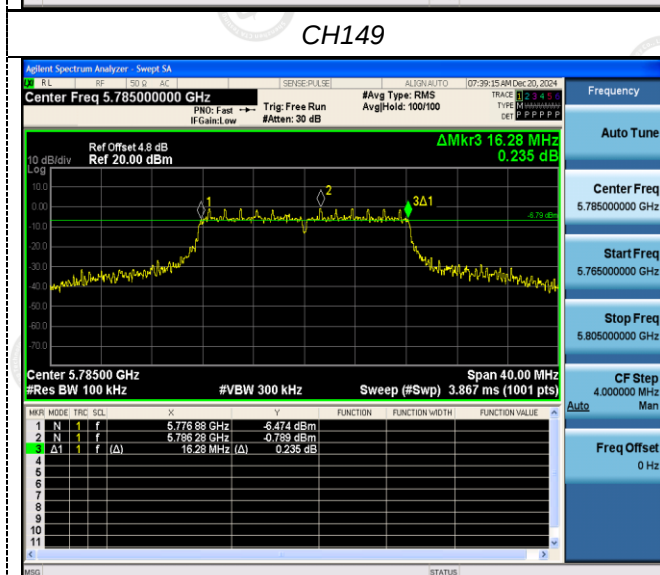
802.11a



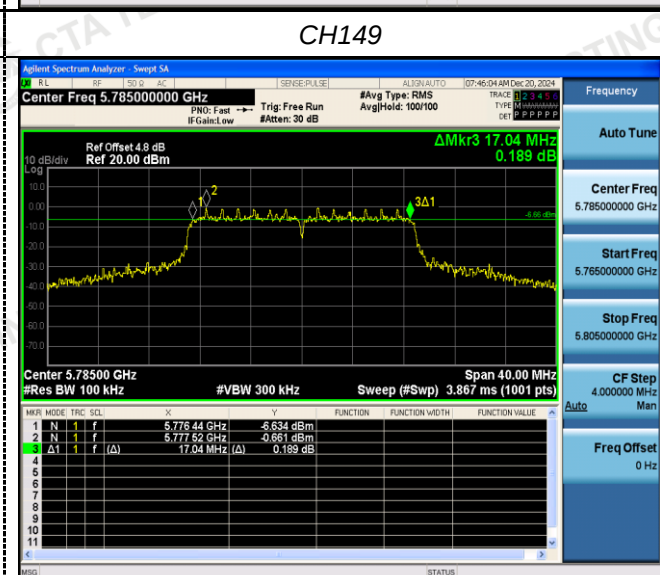
802.11n(HT20)



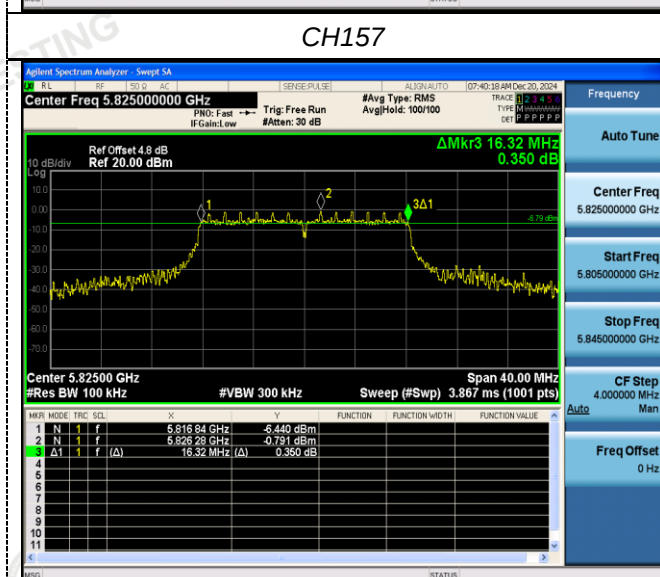
CH149



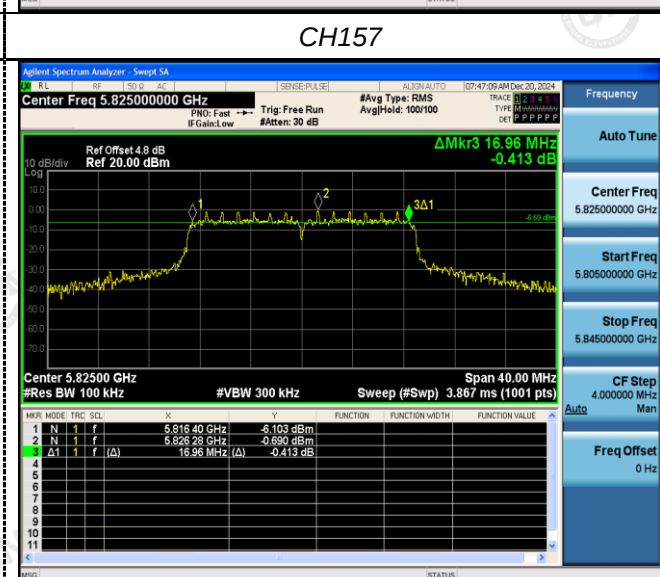
CH149



CH157



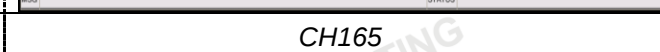
CH157



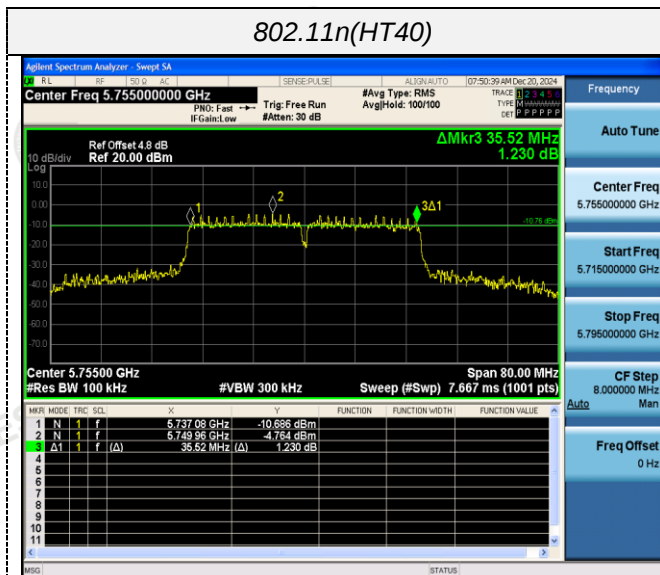
CH165



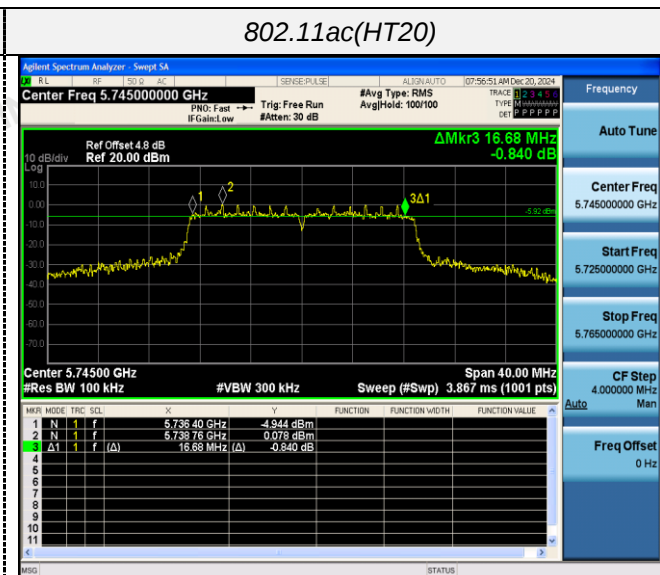
CH165



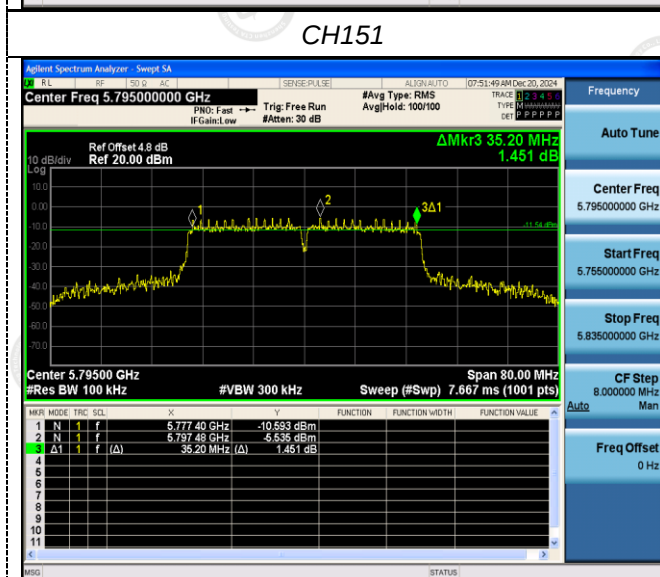
802.11n(HT40)



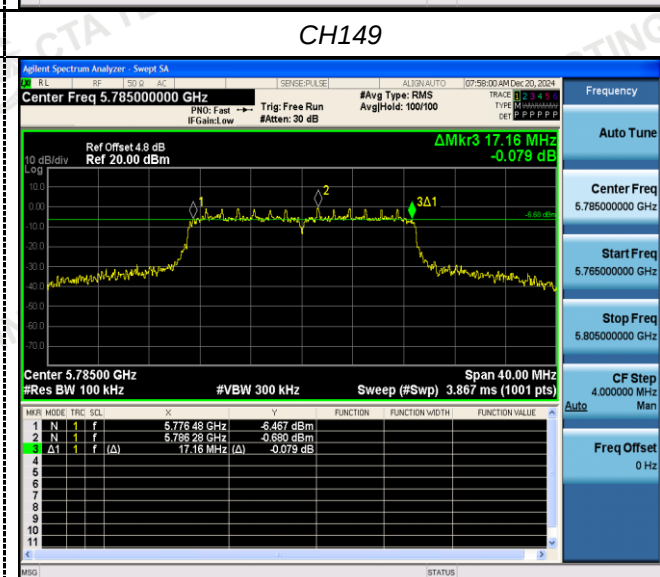
802.11ac(HT20)



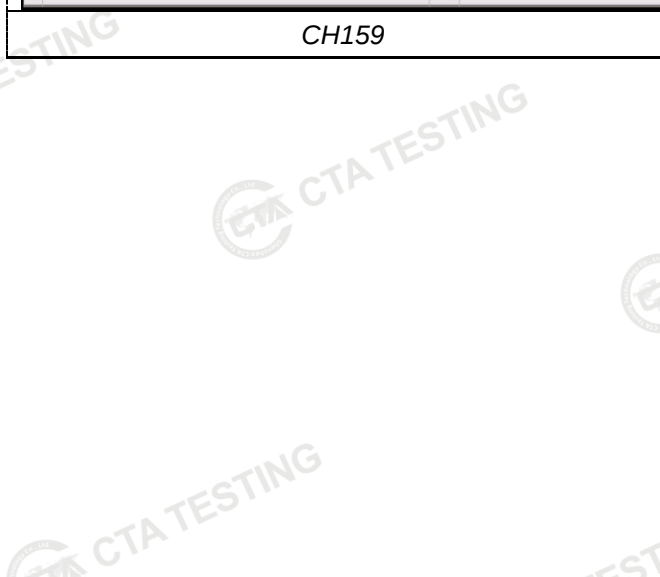
CH151



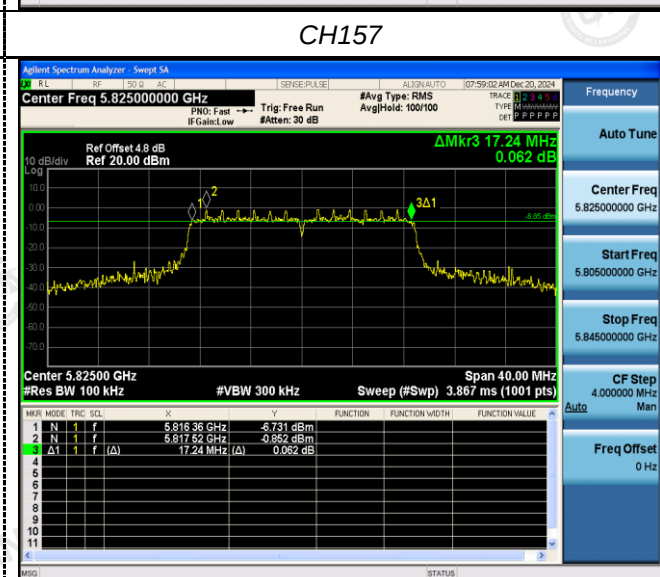
CH149



CH159

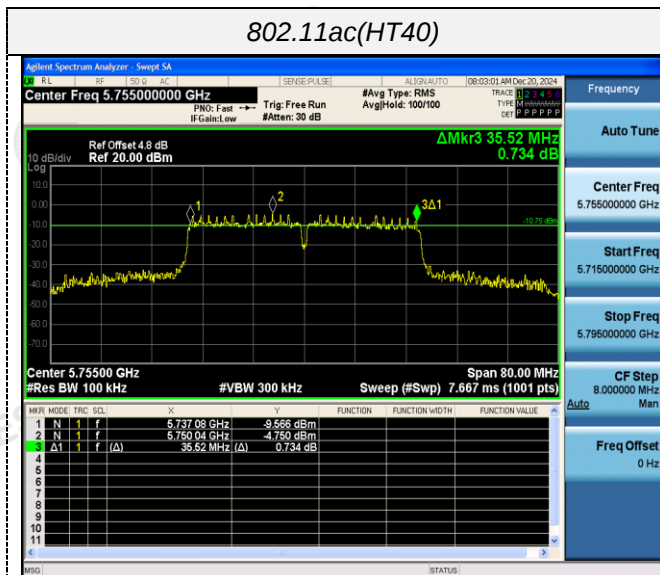


CH157

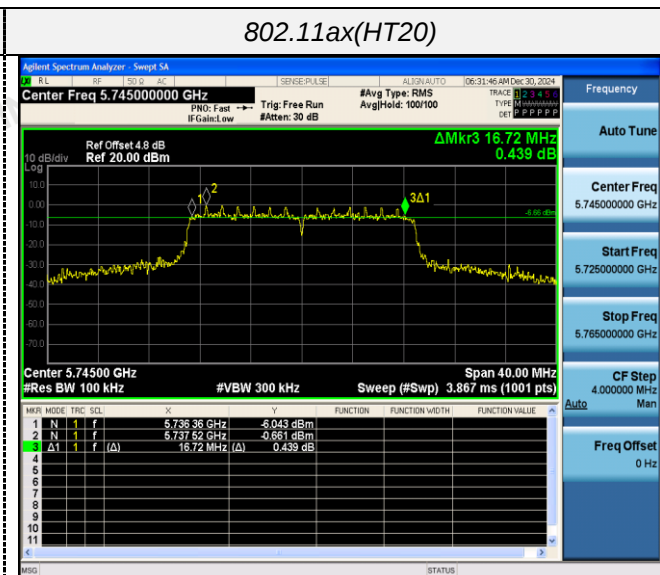


CH165

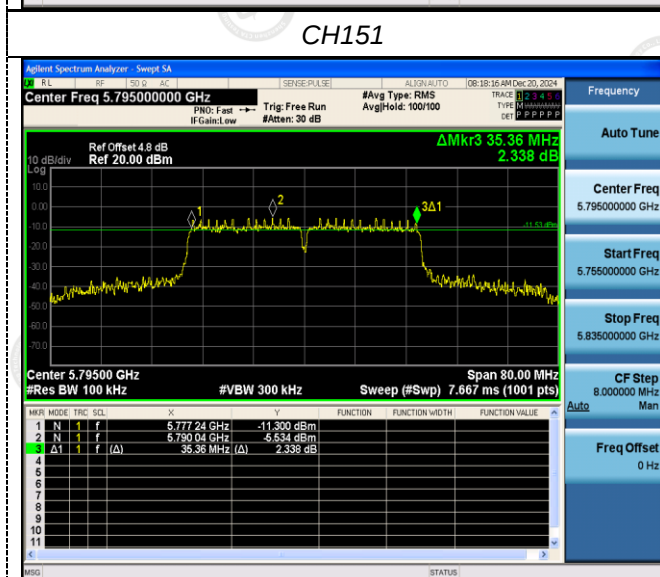
802.11ac(HT40)



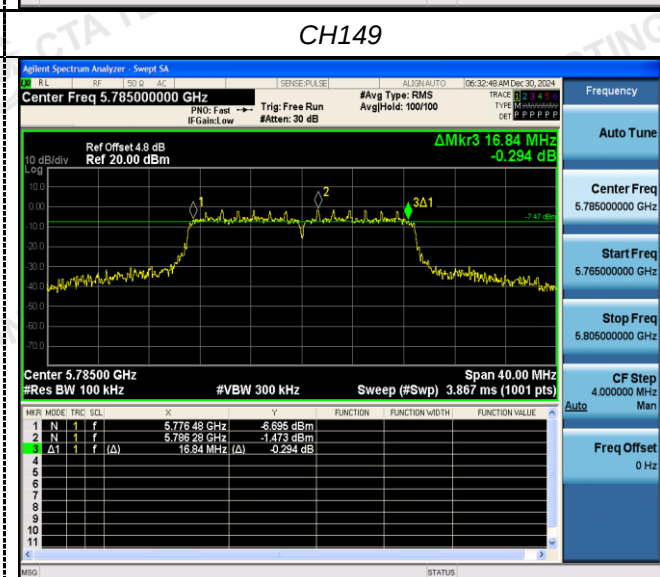
802.11ax(HT20)



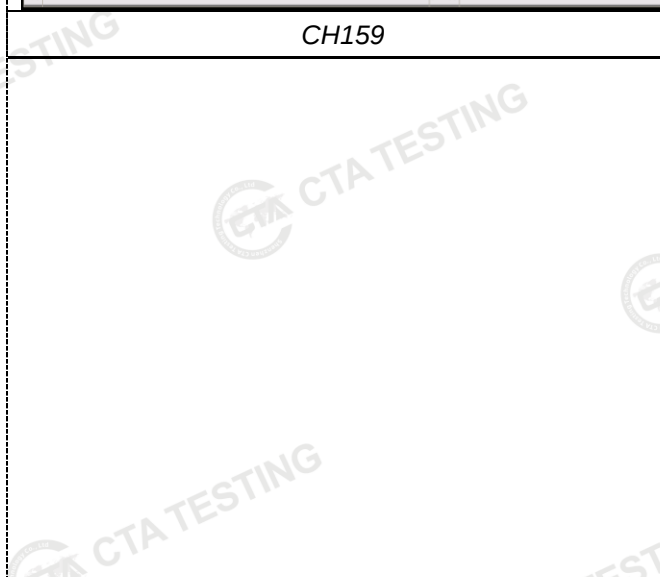
CH151



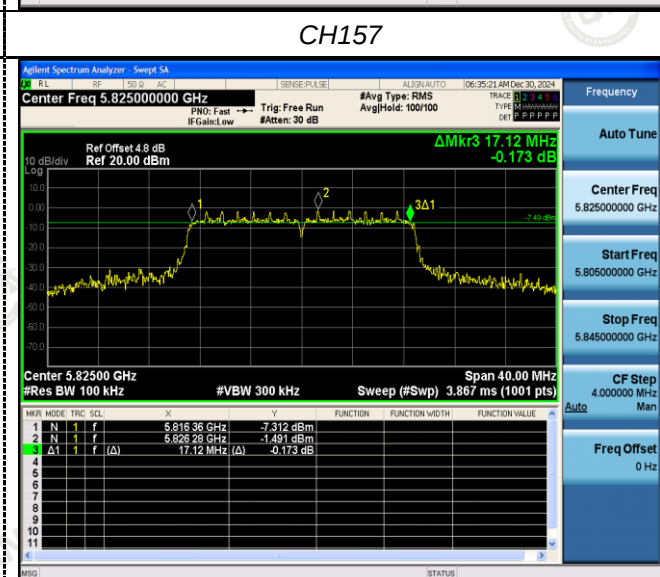
CH149



CH159

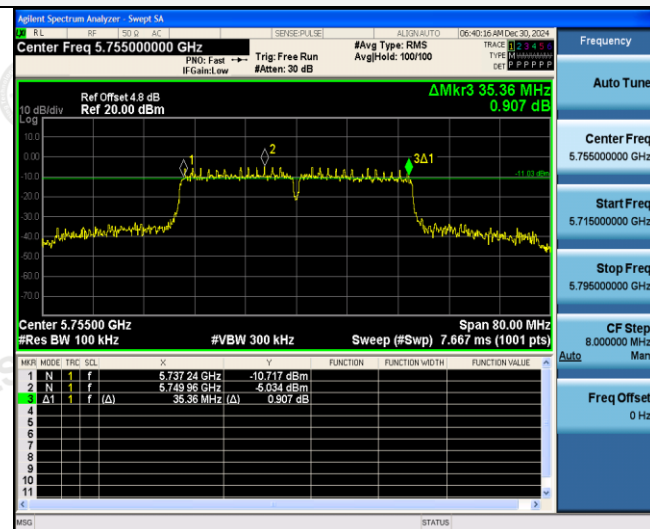


CH157

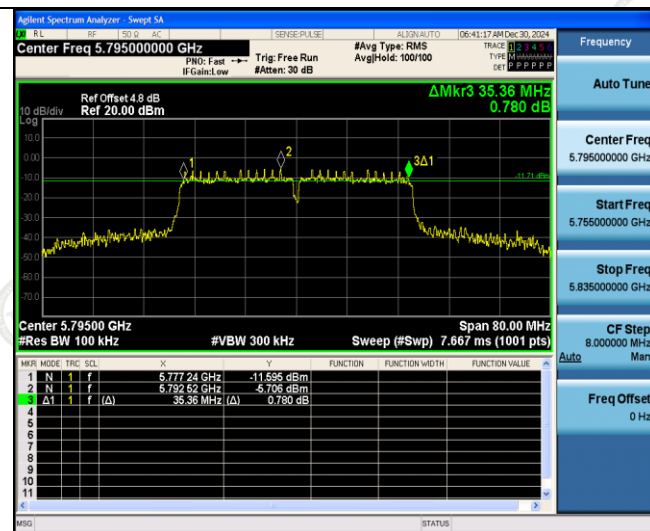


CH165

802.11ax(HT40)



CH151



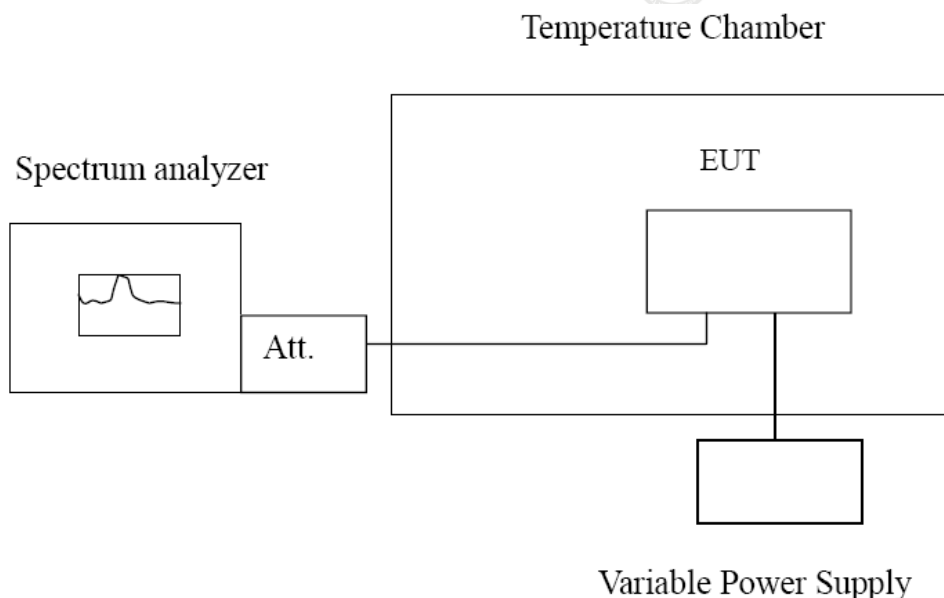
CH159

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		
AC 120	-30	110.42	0.021317	Within the band of operation	Pass
	-20	174.37	0.033662		
	-10	145.27	0.028044		
	0	146.29	0.028241		
	10	146.14	0.028212		
	20	99.74	0.019255		
	30	167.14	0.032266		
	40	129.39	0.024979		
	50	128.35	0.024778		
AC 132	25	195.39	0.037720	Within the band of operation	Pass
AC 108	25	118.56	0.022888		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
AC 120	-30	135.94	0.023662	Within the band of operation	Pass
	-20	129.41	0.022526		
	-10	167.50	0.029156		
	0	169.68	0.029535		
	10	136.57	0.023772		
	20	144.78	0.025201		
	30	116.65	0.020305		
	40	168.56	0.029340		
	50	160.75	0.027981		
AC 132	25	150.58	0.026211	Within the band of operation	Pass
AC 108	25	129.51	0.022543		

5 Test Setup Photos of the EUT



6 Photos of the EUT

Reference to the test report No. CTA24121202501.

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