

802.11n(HT40)



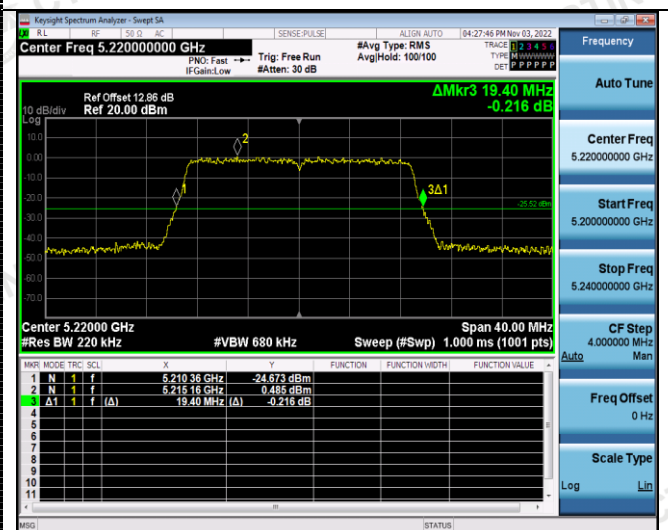
802.11ac(HT20)



CH38



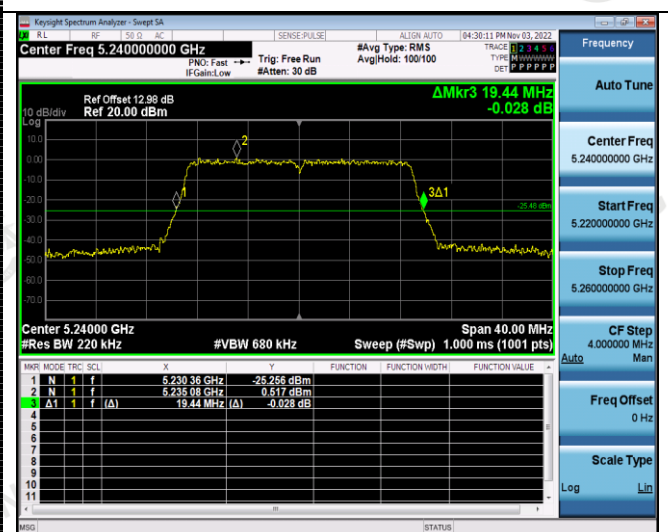
CH36



CH46

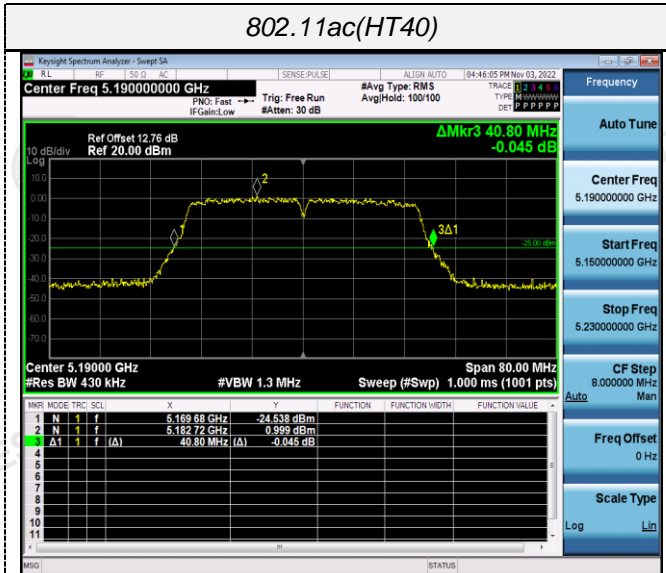


CH40

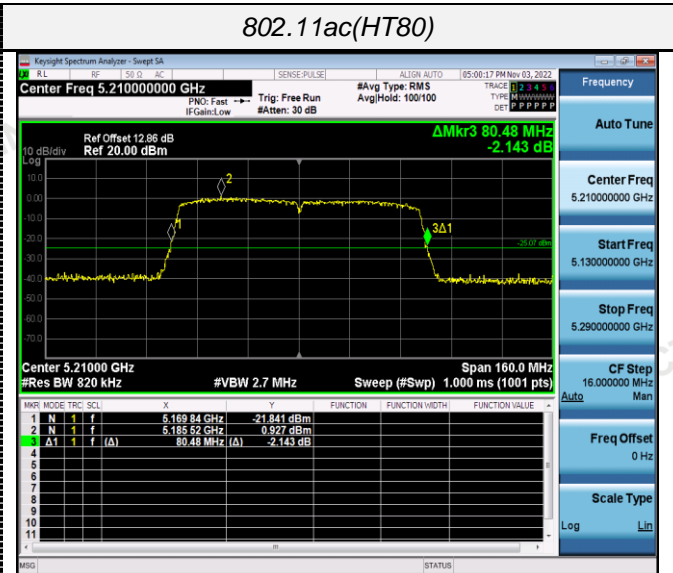


CH48

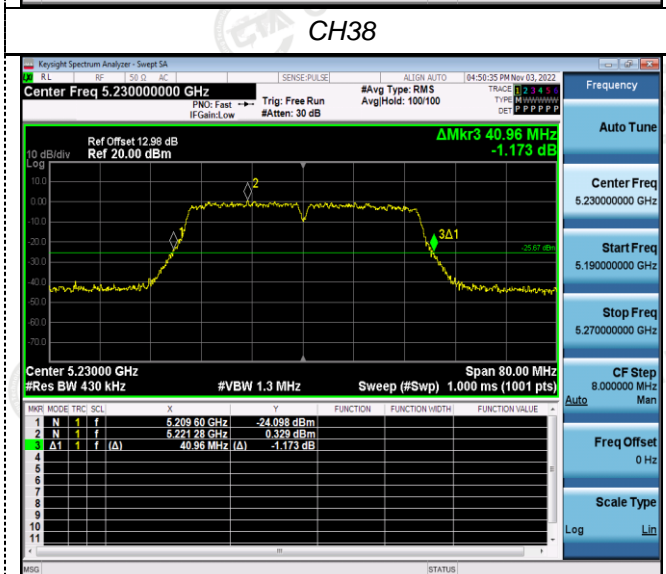
802.11ac(HT40)



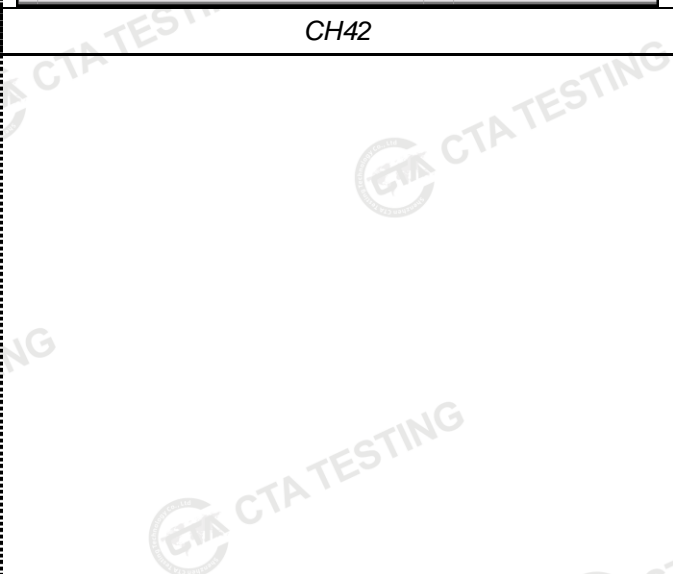
802.11ac(HT80)



CH38



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## 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

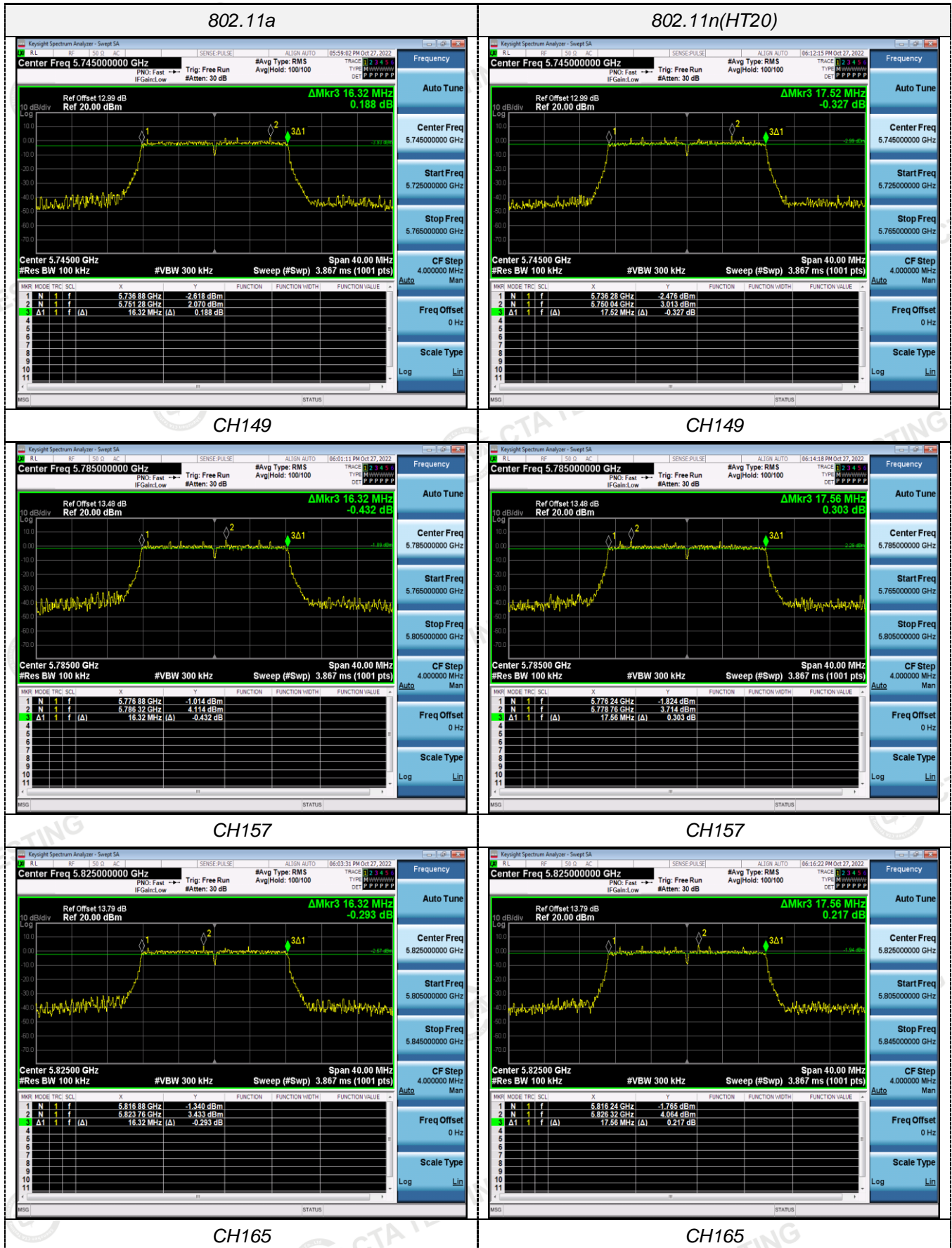
Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	16.320	≥500KHz	Pass
		157	16.320		
		165	16.320		
802.11n(HT20)	U-NII 3	149	17.520		
		157	17.560		
		165	17.560		
802.11n(HT40)	U-NII 3	151	35.120		
		159	35.040		
802.11ac(HT20)	U-NII 3	149	17.520		
		157	17.600		
		165	17.560		
802.11ac(HT40)	U-NII 3	151	35.440		
		159	35.040		
802.11ac(HT80)	U-NII 3	155	75.200		

## ANT 2

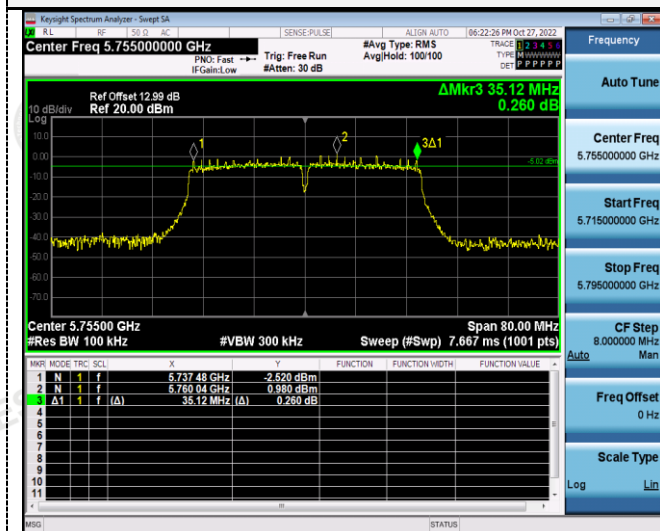
Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	16.520	≥500KHz	Pass
		157	16.520		
		165	16.480		
802.11n(HT20)	U-NII 3	149	17.720		
		157	17.640		
		165	17.680		
802.11n(HT40)	U-NII 3	151	36.400		
		159	36.400		
802.11ac(HT20)	U-NII 3	149	17.680		
		157	17.680		
		165	17.680		
802.11ac(HT40)	U-NII 3	151	36.400		
		159	36.400		
802.11ac(HT80)	U-NII 3	155	75.840		

Test plot as follows:

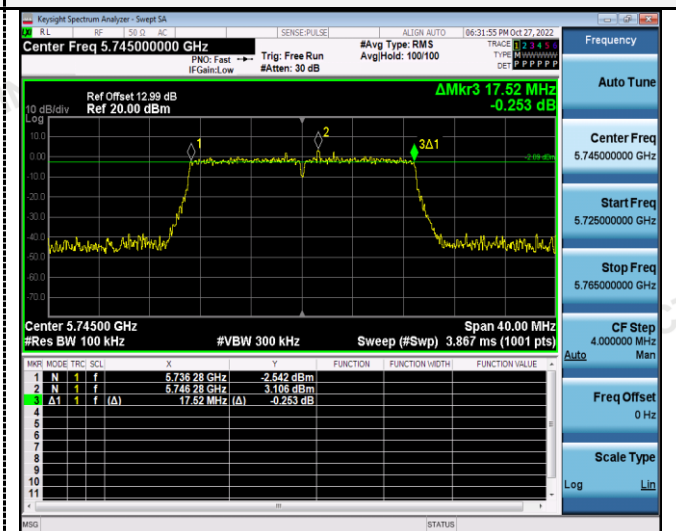
ANT 1



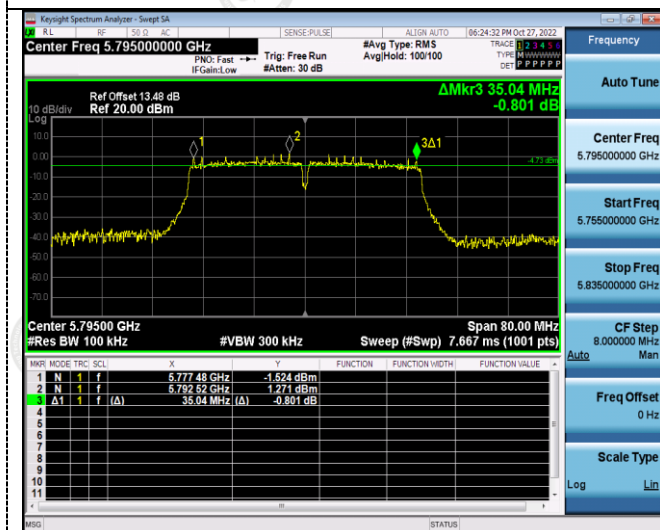
802.11n(HT40)



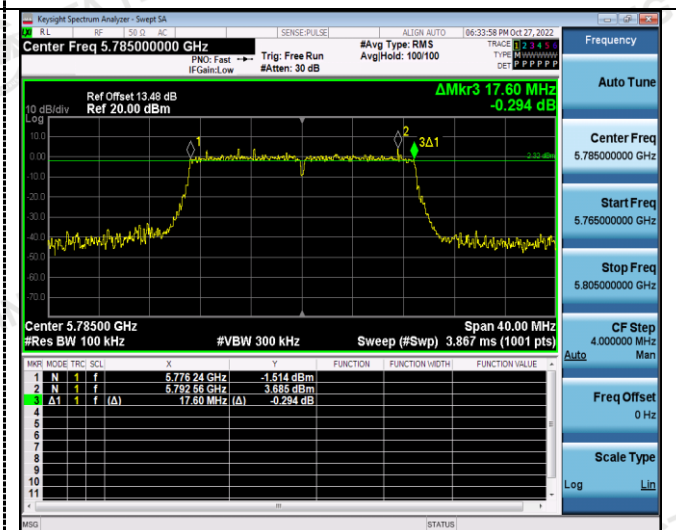
802.11ac(HT20)



CH151



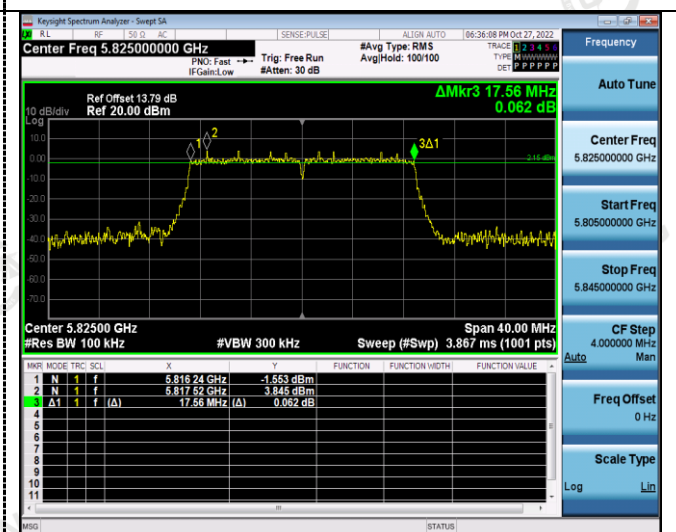
CH149



CH159

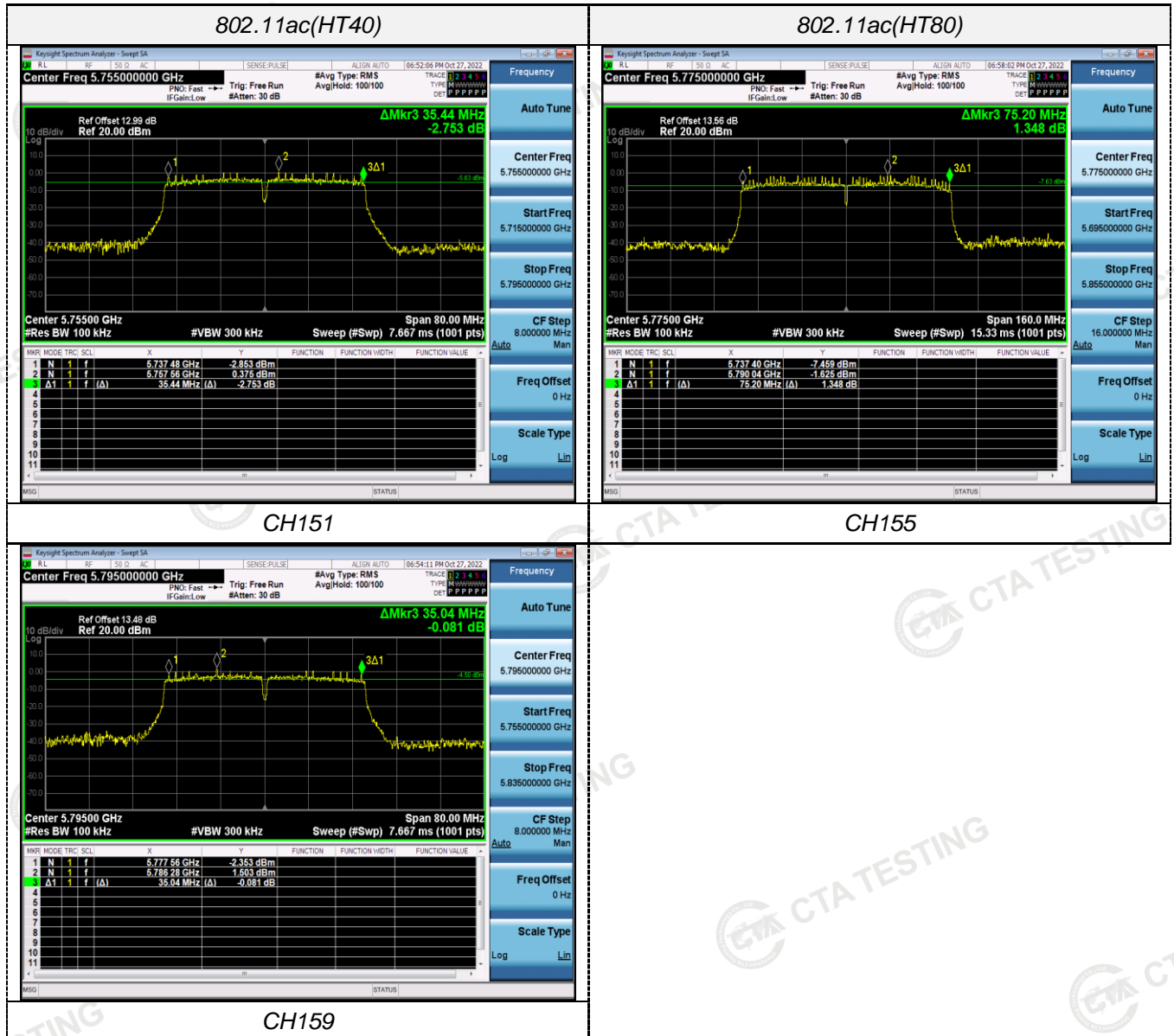


CH157

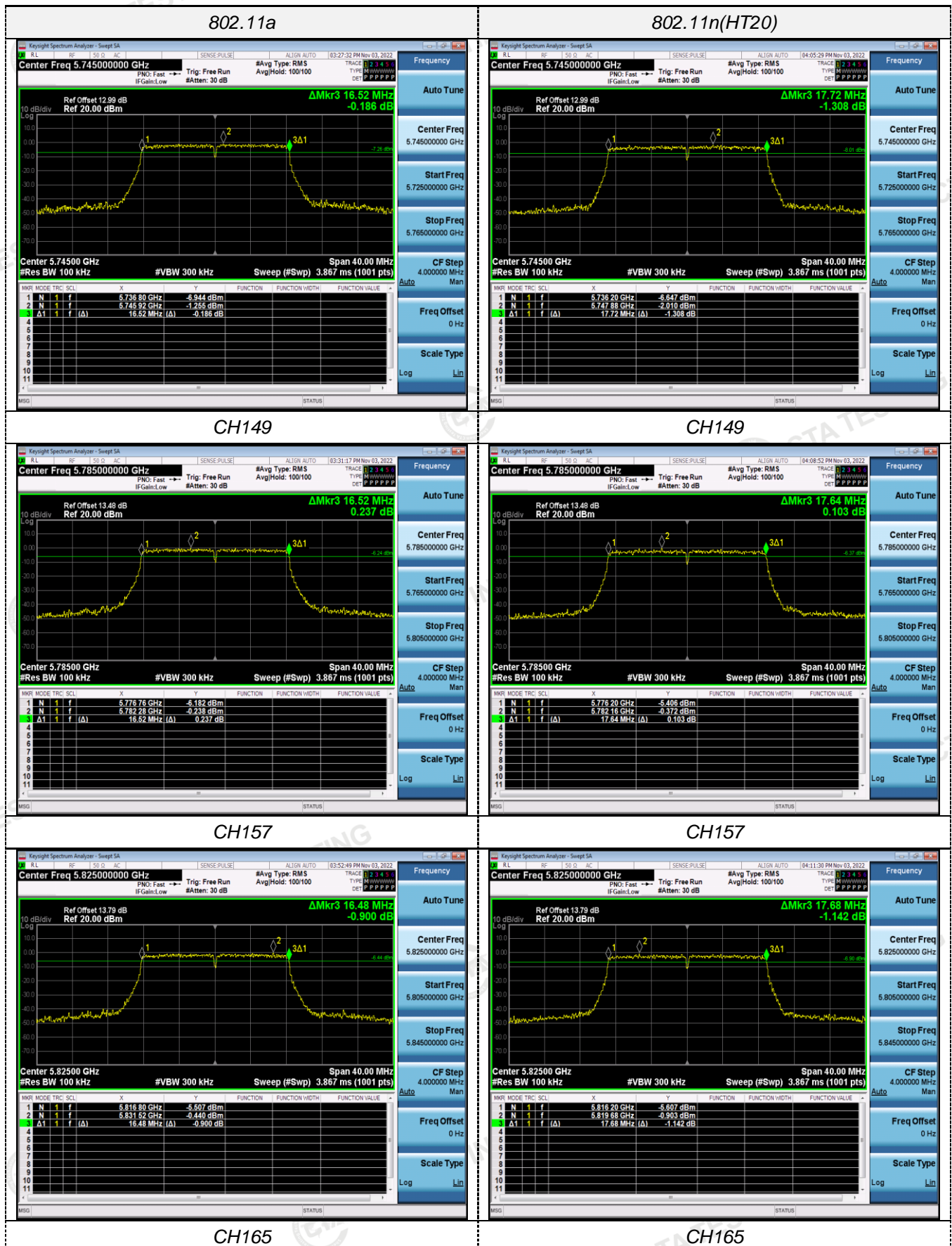


CH165



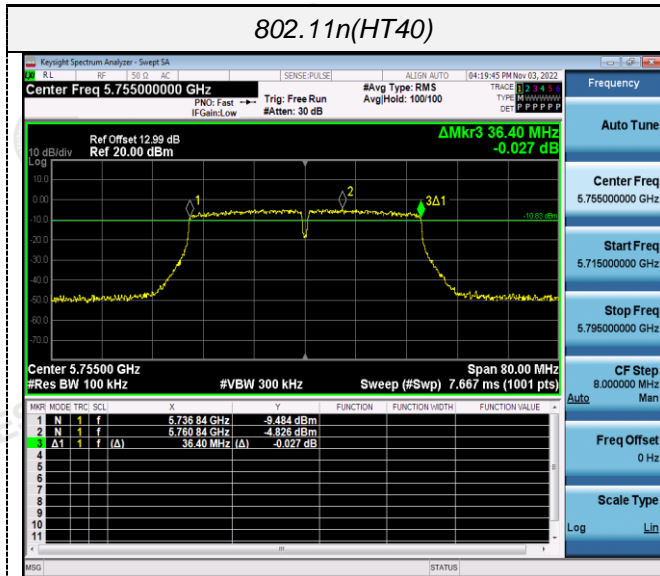


## ANT 2

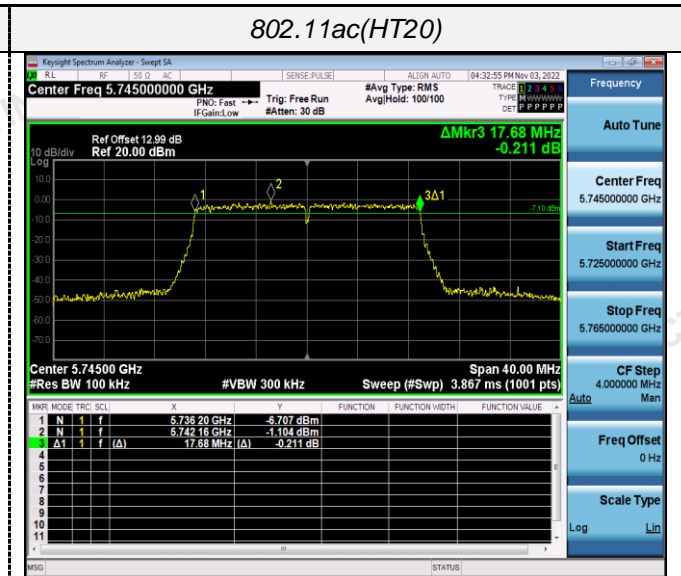




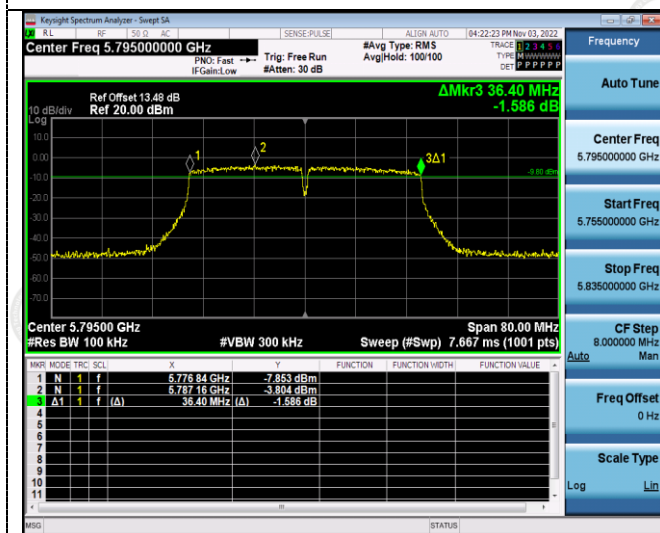
802.11n(HT40)



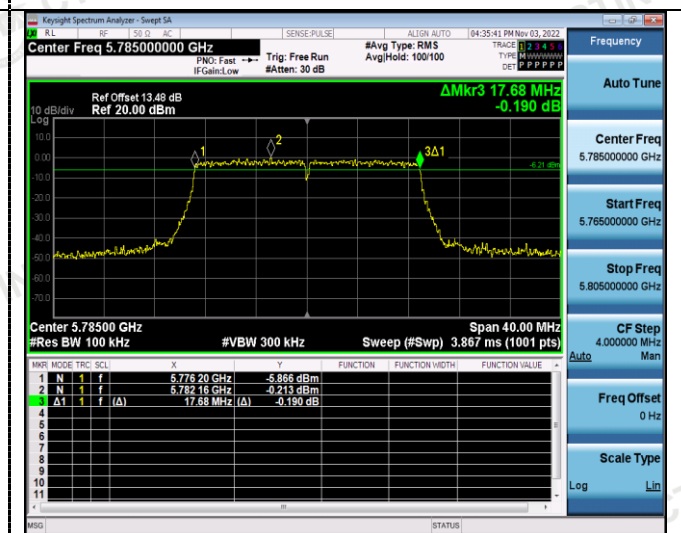
802.11ac(HT20)



CH151



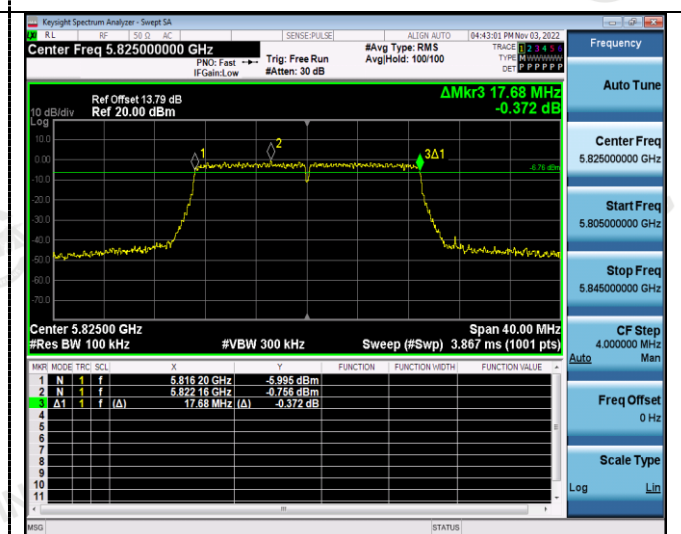
CH149



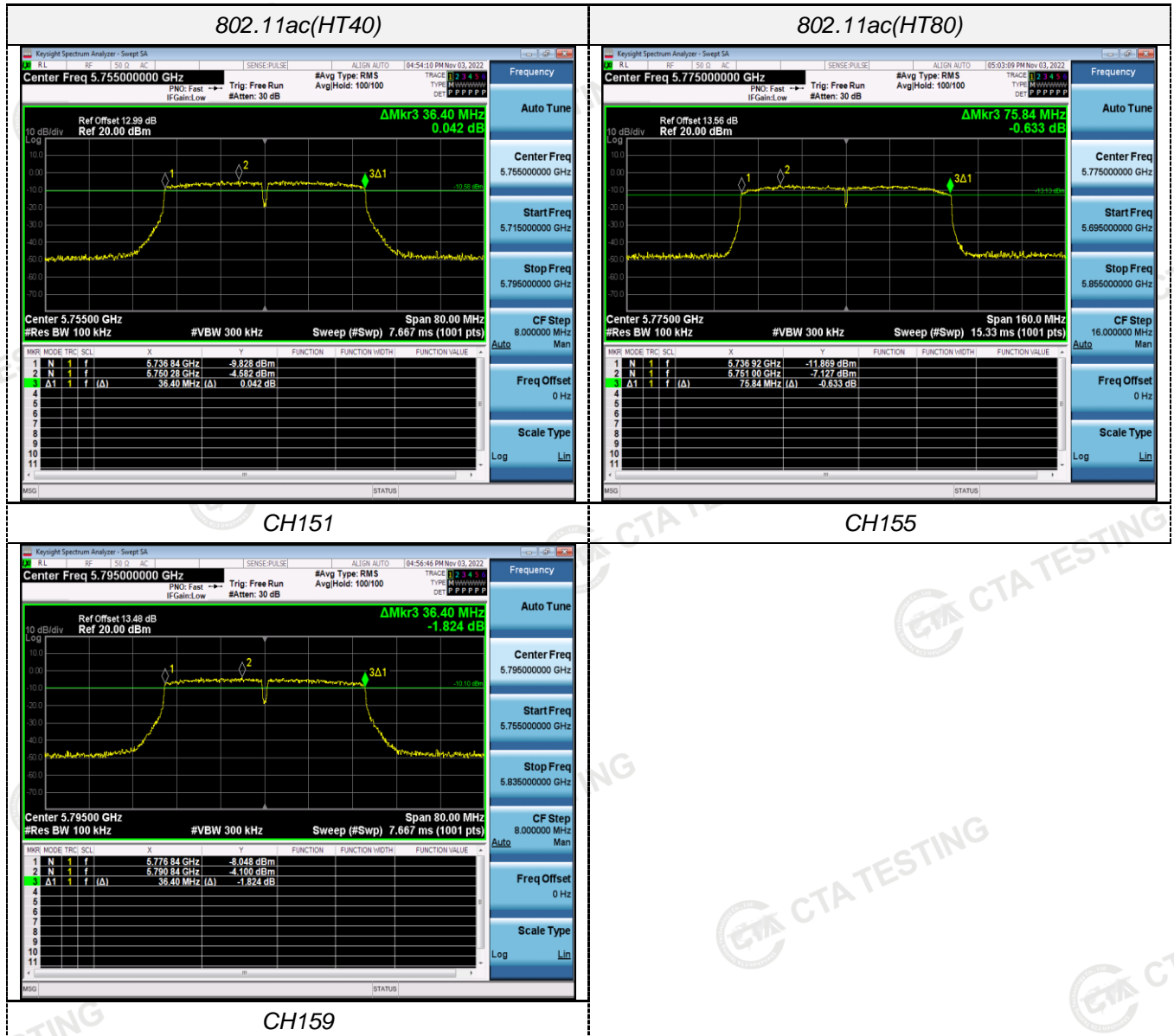
CH159



CH157



CH165

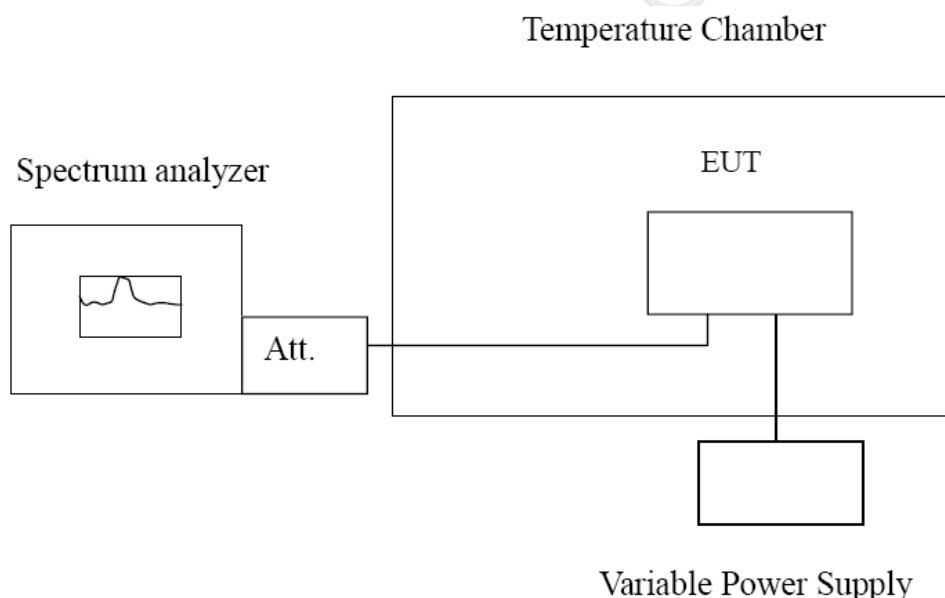


## 4.7 Frequency Stability

### 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 5.0V	-30	109.02	0.021046	Within the band of operation	Pass
	-20	172.15	0.033234		
	-10	139.63	0.026956		
	0	111.83	0.021589		
	10	142.46	0.027502		
	20	96.98	0.018722		
	30	165.44	0.031938		
	40	127.83	0.024678		
	50	126.47	0.024415		
DC 5.5V	25	193.60	0.037375	Within the band of operation	Pass
DC 4.5V	25	114.26	0.022058		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage ( V )	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
DC 5.0V	-30	135.76	0.023631	Within the band of operation	Pass
	-20	128.32	0.022336		
	-10	165.85	0.028869		
	0	166.47	0.028977		
	10	133.68	0.023269		
	20	129.05	0.022463		
	30	112.43	0.019570		
	40	169.25	0.029460		
	50	157.16	0.027356		
DC 5.5V	25	148.38	0.025828	Within the band of operation	Pass
DC 4.5V	25	117.73	0.020493		

## 5 Test Setup Photos of the EUT





## 6 Photos of the EUT

Reference to the test report No. CTA22102100201

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