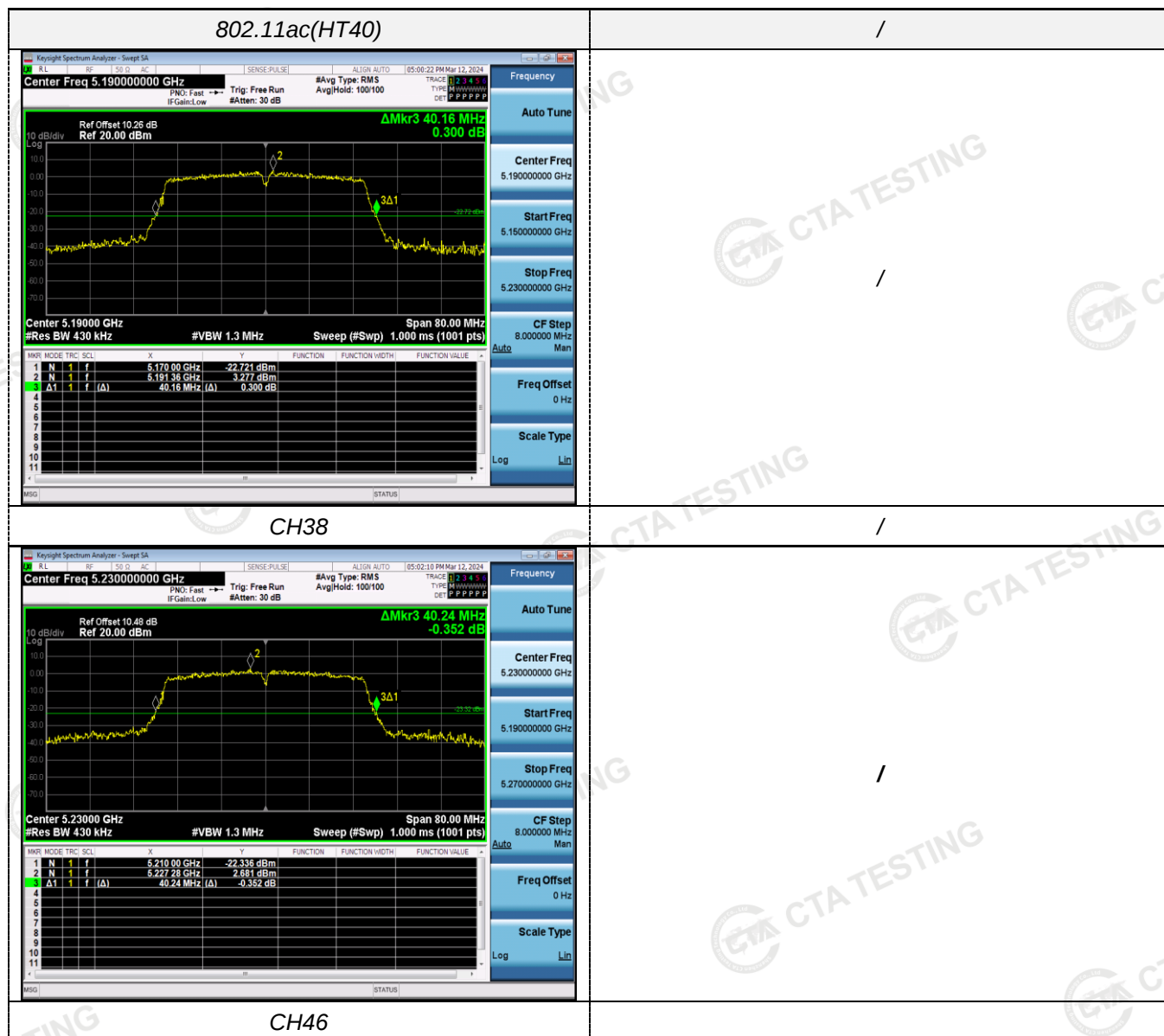




4.6 Minimum Emission Bandwidth (6dB Bandwidth)

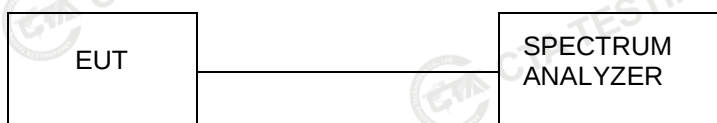
Limit

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

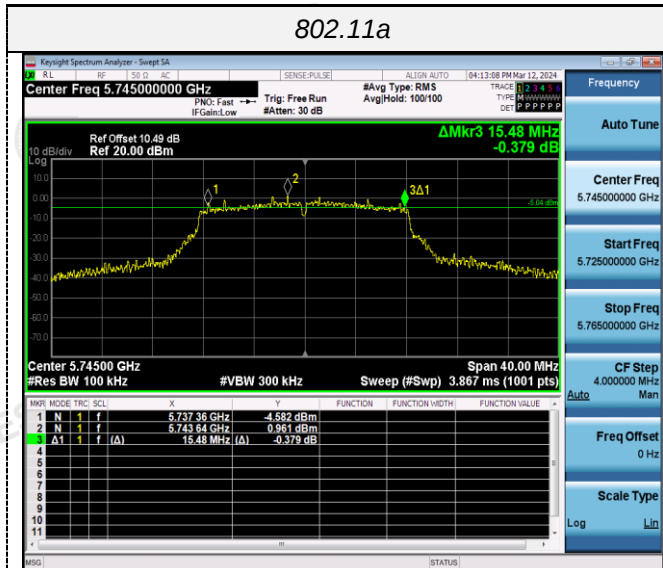


Test Results

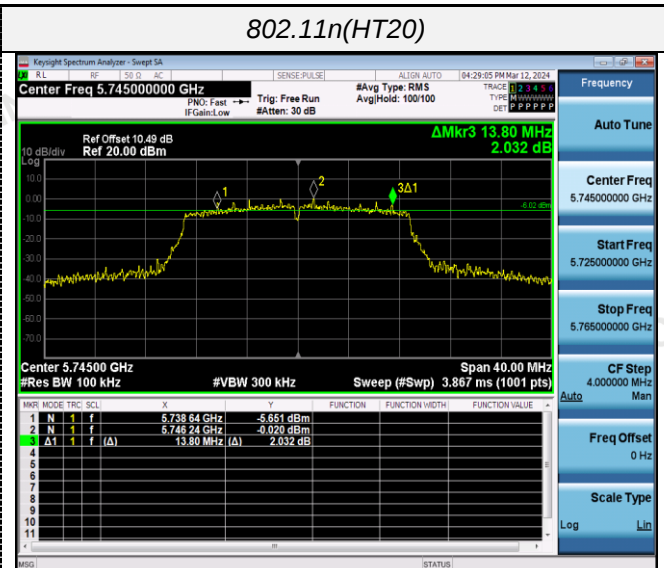
Type	Bands	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11a	U-NII 3	149	15.480	≥500KHz	Pass
		157	15.120		
		165	14.120		
802.11n(HT20)	U-NII 3	149	13.800		
		157	13.840		
		165	15.000		
802.11n(HT40)	U-NII 3	151	35.120		
		159	35.040		
802.11ac(HT20)	U-NII 3	149	15.680		
		157	14.960		
		165	13.800		
802.11ac(HT40)	U-NII 3	151	35.120		
		159	33.760		

Test plot as follows:

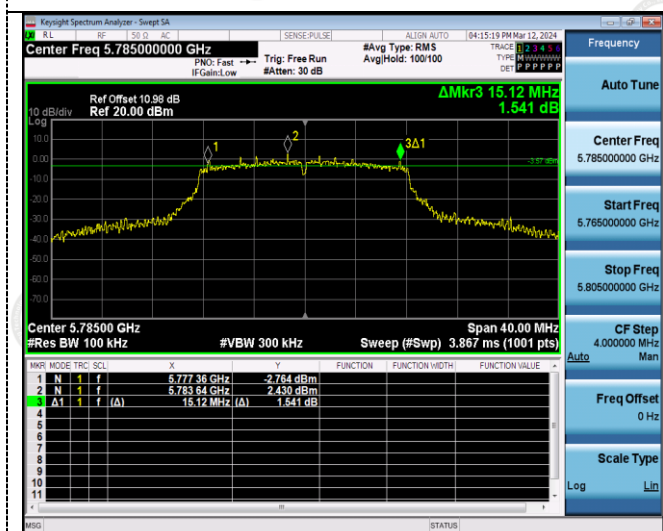
802.11a



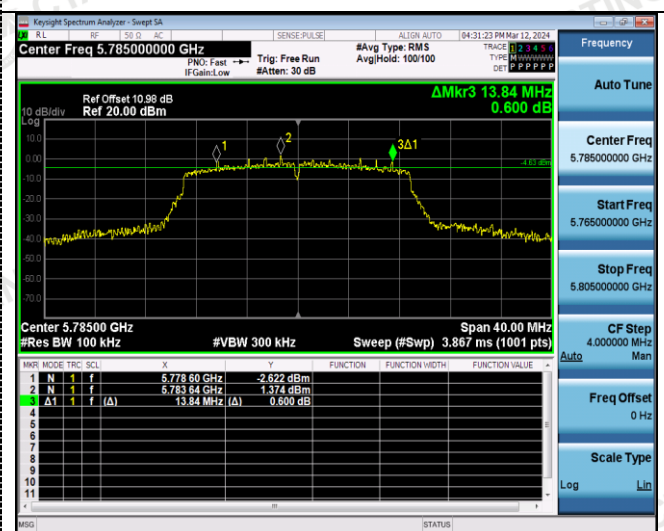
802.11n(HT20)



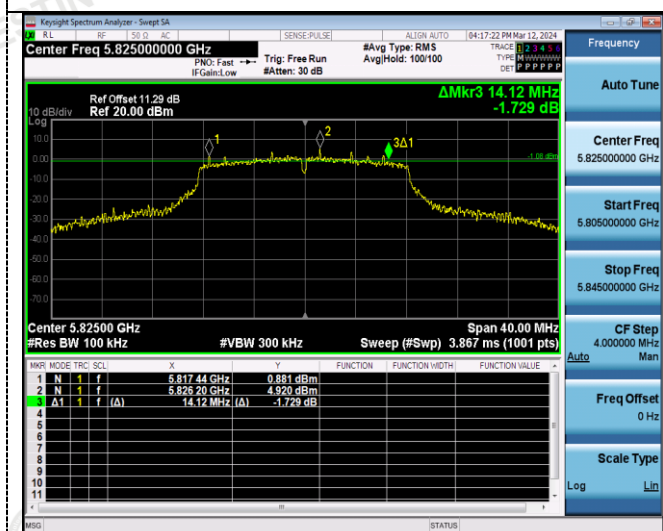
CH149



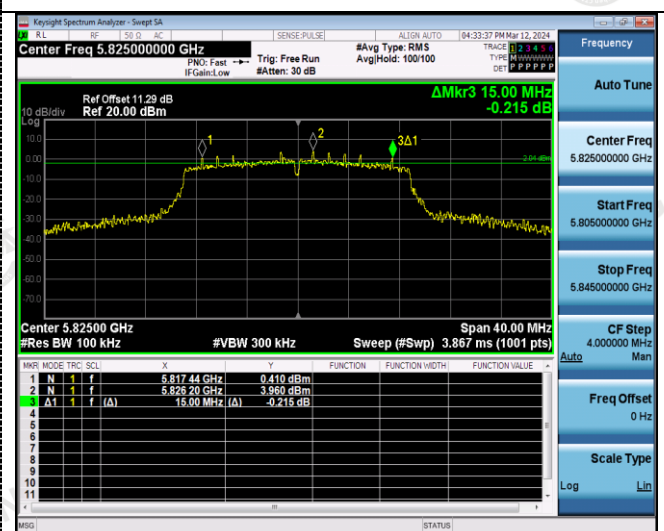
CH149



CH157



CH157



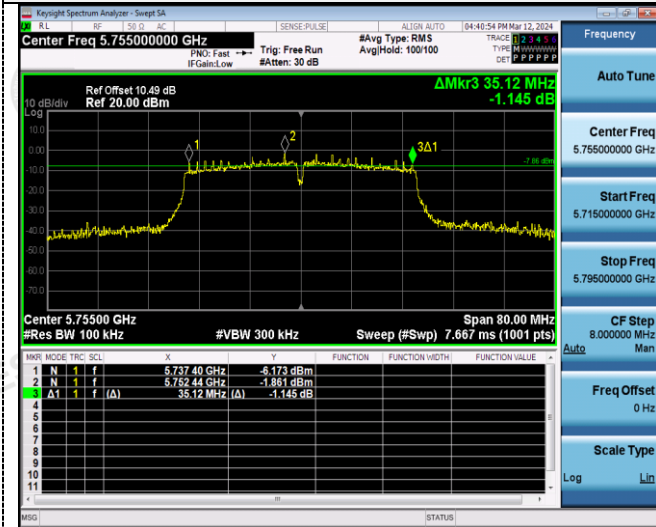
CH165



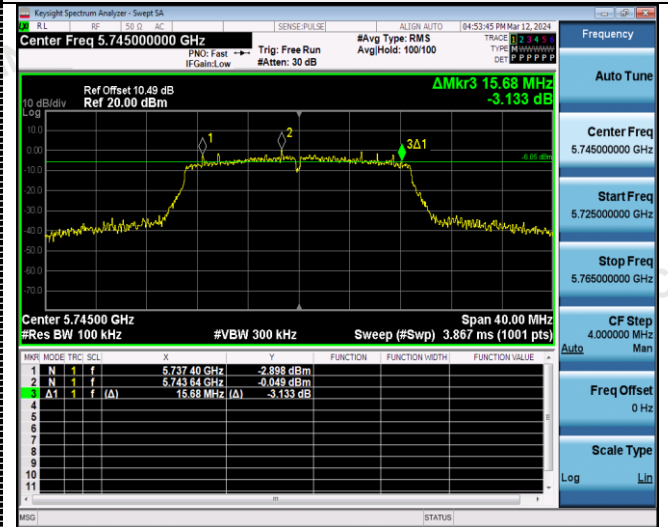
CH165



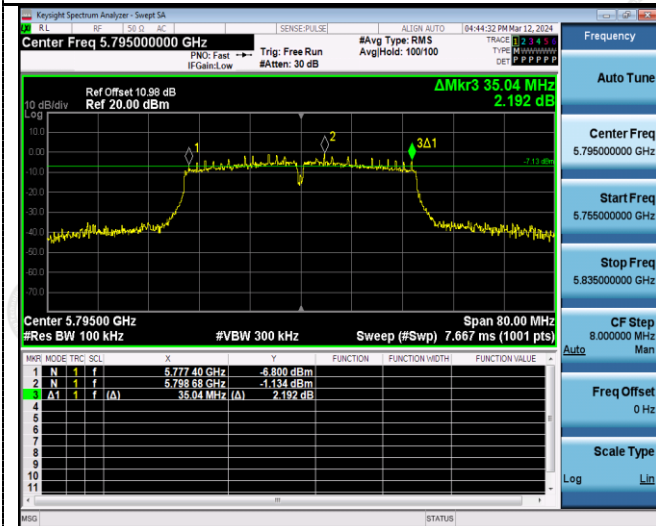
802.11n(HT40)



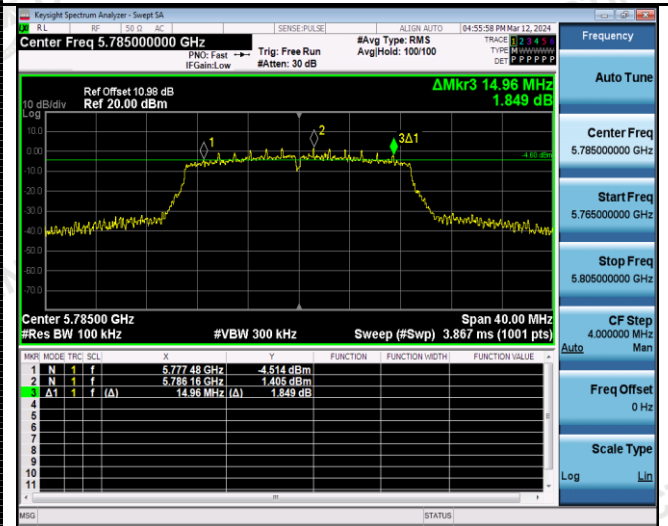
802.11ac(HT20)



CH151



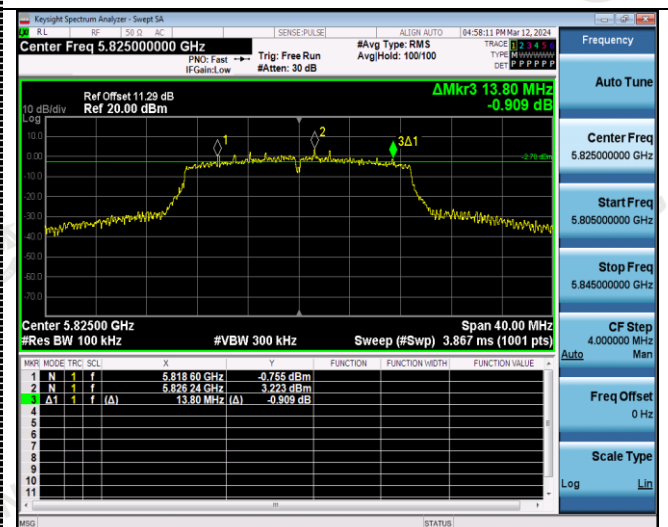
CH149



CH159



CH157



CH165

802.11ac(HT40)

/

Keysight Spectrum Analyzer - Sweep 5A

Center Freq 5.755000000 GHz

Ref Offset 10.49 dB
Ref 20.00 dBm

ΔMkr3 35.12 MHz
0.547 dB

Center 5.75500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep (#Swp) 7.667 ms (1001 pts)

MARK	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	5.737 40 GHz	-7.744 dBm			
2	N	1	f	5.757 48 GHz	-1.923 dBm			
Δ1	1	f	(Δ)	35.12 MHz (Δ)	0.547 dB			

Frequency

Auto Tune

Center Freq 5.755000000 GHz

Start Freq 5.715000000 GHz

Stop Freq 5.795000000 GHz

CF Step 8.000000 MHz

Auto Man

Freq Offset 0 Hz

Scale Type Log Lin

CH151

Keysight Spectrum Analyzer - Sweep 5A

Center Freq 5.795000000 GHz

Ref Offset 10.98 dB
Ref 20.00 dBm

ΔMkr3 33.76 MHz
0.276 dB

Center 5.79500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep (#Swp) 7.667 ms (1001 pts)

MARK	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	5.778 68 GHz	-5.089 dBm			
2	N	1	f	5.798 68 GHz	-0.969 dBm			
Δ1	1	f	(Δ)	33.76 MHz (Δ)	0.276 dB			

Frequency

Auto Tune

Center Freq 5.795000000 GHz

Start Freq 5.755000000 GHz

Stop Freq 5.835000000 GHz

CF Step 8.000000 MHz

Auto Man

Freq Offset 0 Hz

Scale Type Log Lin

CH159

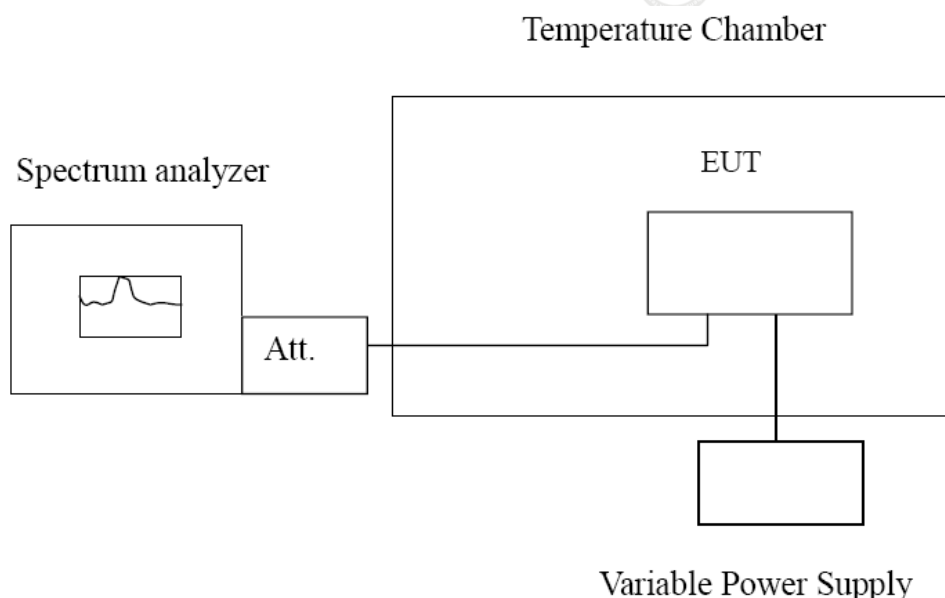
CH159

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.

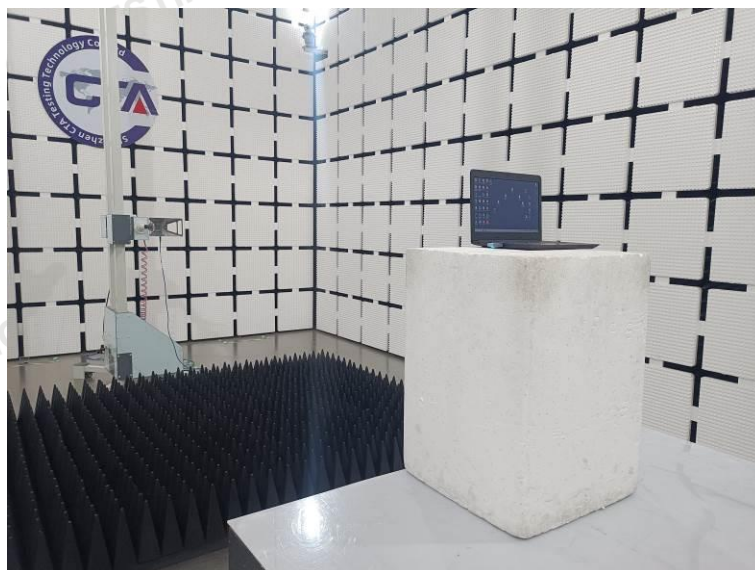
TEST RESULTS

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	110.59	0.021349	Within the band of operation	Pass
	-20	174.59	0.033705		
	-10	145.58	0.028104		
	0	146.52	0.028286		
	10	146.16	0.028216		
	20	99.42	0.019193		
	30	167.63	0.032361		
	40	129.56	0.025012		
	50	128.82	0.024869		
AC 132	25	195.55	0.037751	Within the band of operation	Pass
AC 108	25	118.70	0.022915		

Reference Frequency: 802.11ac channel=149 frequency=5745MHz					
Voltage (V)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
AC 120	-30	135.61	0.023605	Within the band of operation	Pass
	-20	129.41	0.022526		
	-10	167.06	0.029079		
	0	169.70	0.029539		
	10	136.62	0.023781		
	20	144.90	0.025222		
	30	116.52	0.020282		
	40	168.33	0.029300		
	50	160.76	0.027983		
AC 132	25	150.88	0.026263	Within the band of operation	Pass
AC 108	25	129.70	0.022576		

5 Test Setup Photos of the EUT



6 Photos of the EUT

Reference to the test report No. CTA24030702401.

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