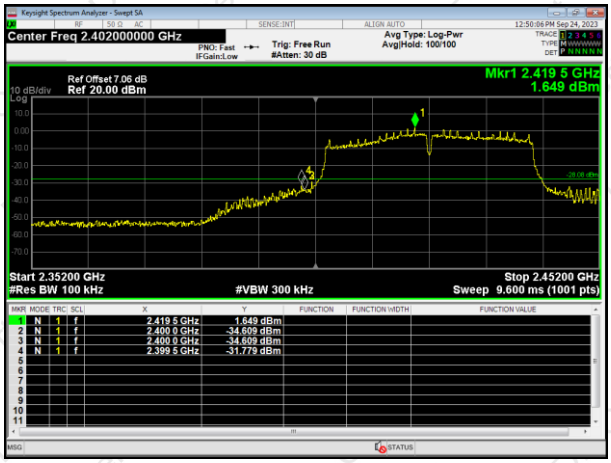
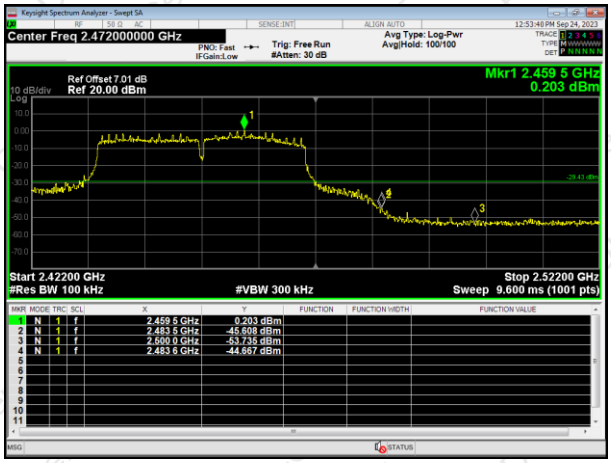
802.11n HT40

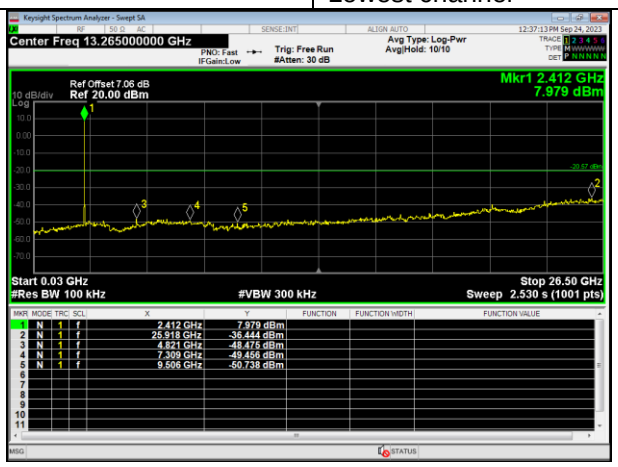

Center Freq 2.402000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
Ref Offset 7.06 dB
10 dB/div Ref 20.00 dBm
Mkr1 2.419 5 GHz
1.649 dBm
Start 2.35200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.45200 GHz
Sweep 9.600 ms (1001 pts)
1 N 1 f 2.419 5 GHz 1.649 dBm
2 N 1 f 2.400 0 GHz -34.609 dBm
3 N 1 f 2.400 0 GHz -34.609 dBm
4 N 1 f 2.399 5 GHz -31.779 dBm


Center Freq 2.472000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
Ref Offset 7.01 dB
10 dB/div Ref 20.00 dBm
Mkr1 2.459 5 GHz
0.203 dBm
Start 2.42200 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.52200 GHz
Sweep 9.600 ms (1001 pts)
1 N 1 f 2.459 5 GHz 0.203 dBm
2 N 1 f 2.483 5 GHz -45.608 dBm
3 N 1 f 2.500 0 GHz -53.735 dBm
4 N 1 f 2.483 5 GHz -44.667 dBm

For Conducted

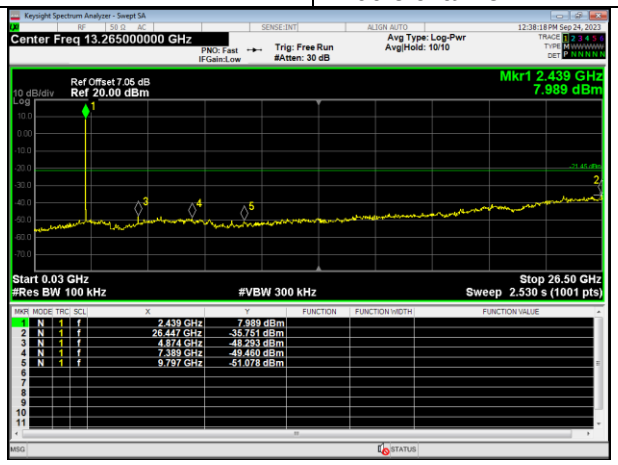
During the test, pre-scan the all modulation, and found the 802.11b mode which it is worse case.

Test channel:	Lowest channel



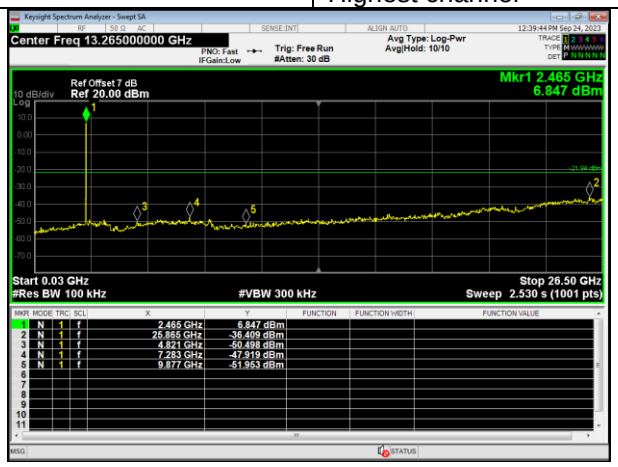
0.03GHz~26.5GHz

Test channel:	Middle channel



0.03GHz~26.5GHz

Test channel:	Highest channel



0.03GHz~26.5GHz

4. AVERAGE OUTPUT POWER

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (b)(3)	Average Output Power	1 watt or 30dBm	2400-2483.5	PASS

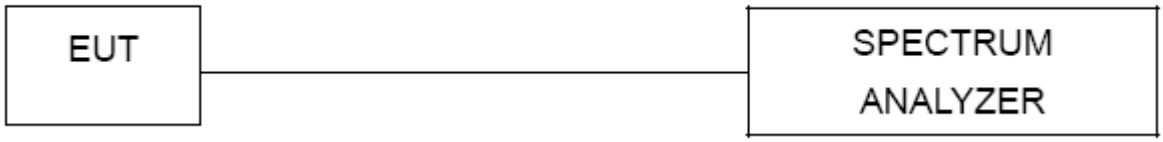
4.1.1 TEST PROCEDURE

a.The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b.Set span to at least 1.5 times the OBW.
c.Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.
d.Set VBW ≥ [3 × RBW].
e.Number of points in sweep ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
f.Sweep time = auto.
g.Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
h.If transmit duty cycle < 98%, use a sweep trigger with the level set to enable triggering only on full power pulses. The transmitter shall operate at the maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no OFF intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."
i.Trace average at least 100 traces in power averaging (rms) mode.
j.Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



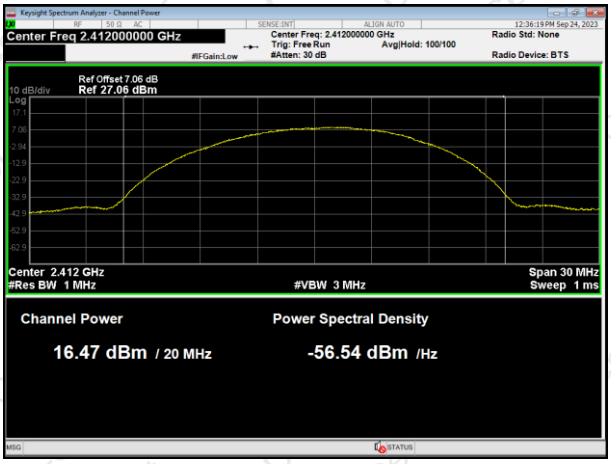
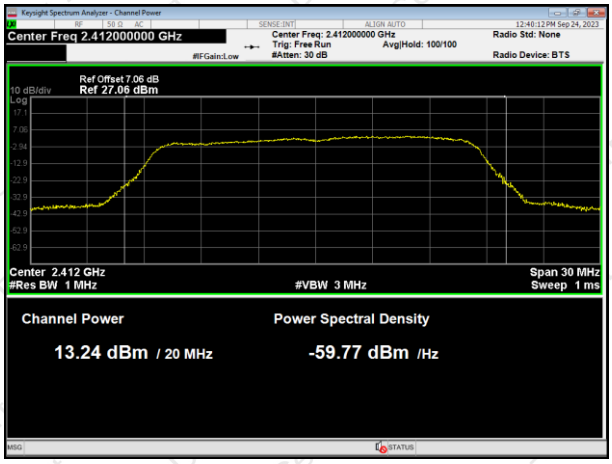
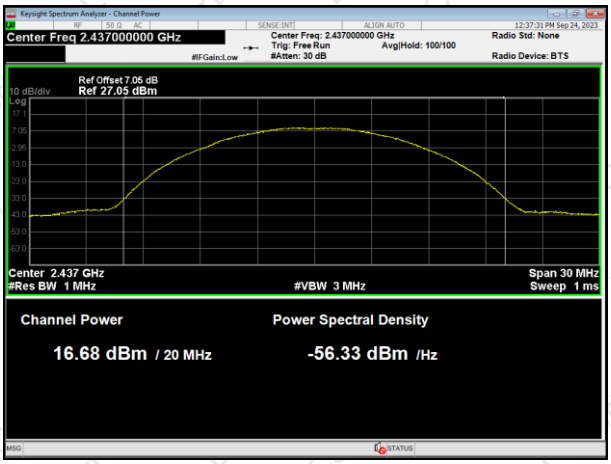
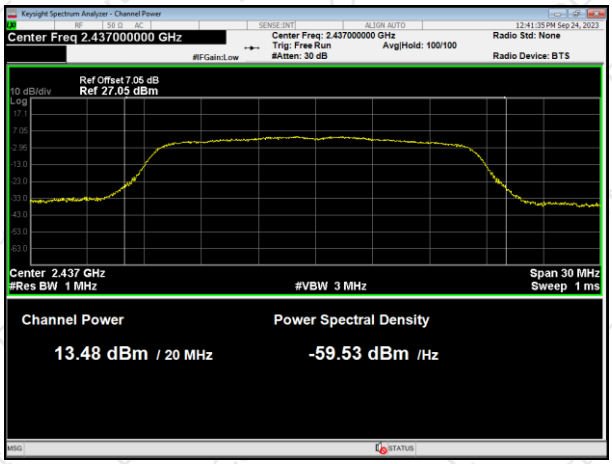
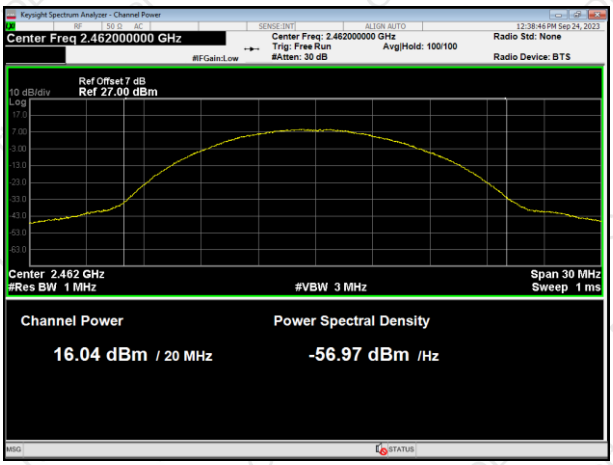
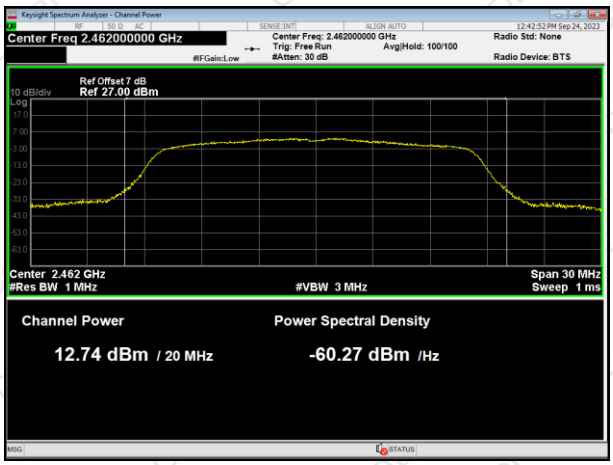
4.1.4 EUT OPERATION CONDITIONS

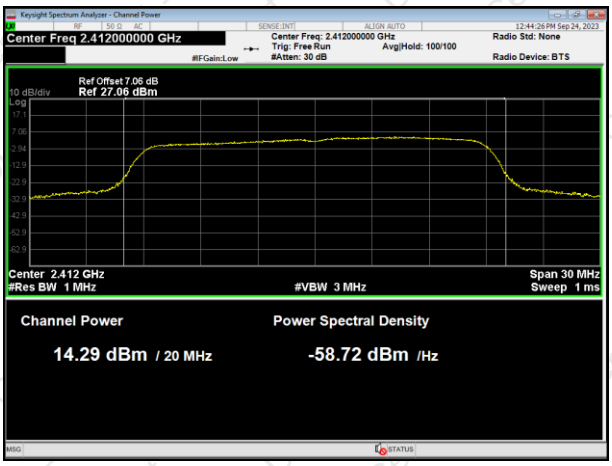
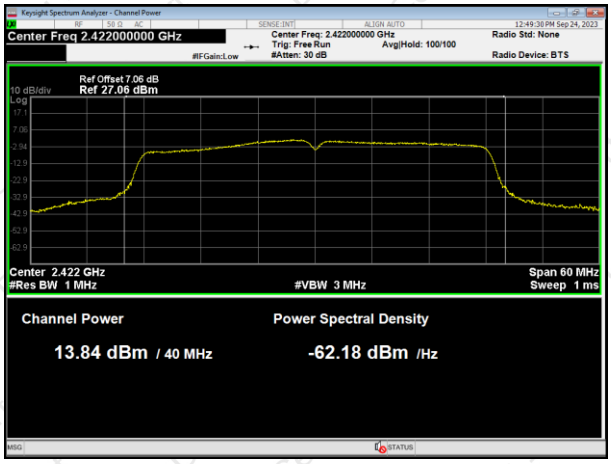
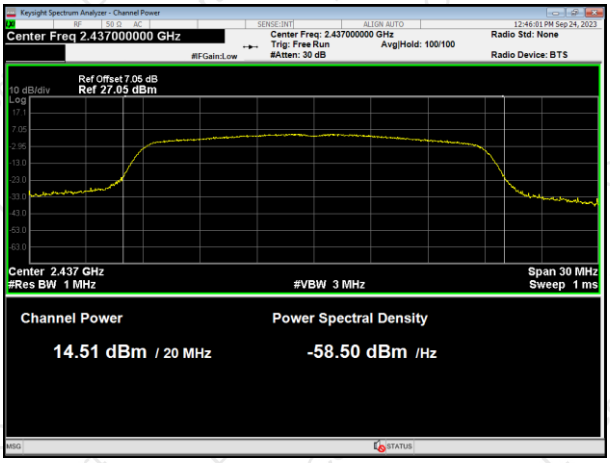
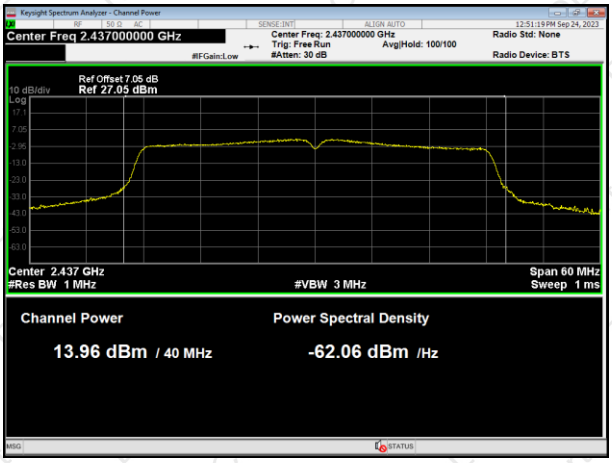
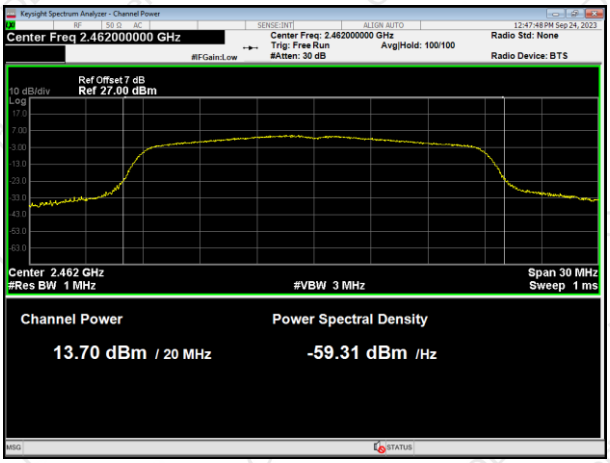
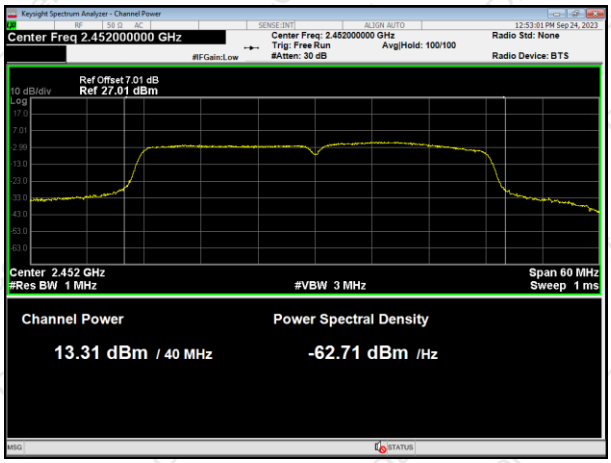
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage :	AC 120V/60Hz

Mode	Test Channel	Average Output Power (dBm)	LIMIT (dBm)
802.11b	Low	16.47	30.00
	Middle	16.68	30.00
	High	16.04	30.00
802.11g	Low	13.24	30.00
	Middle	13.48	30.00
	High	12.74	30.00
802.11n HT20	Low	14.29	30.00
	Middle	14.51	30.00
	High	13.70	30.00
802.11n HT40	Low	13.84	30.00
	Middle	13.96	30.00
	High	13.31	30.00

802.11b	802.11g
	
2412MHz	2412MHz
	
2437MHz	2437MHz
	
2462MHz	2462MHz

802.11n HT20	802.11n HT40
	
2412MHz	2422MHz
	
2437MHz	2437MHz
	
2462MHz	2452MHz

5. POWER SPECTRAL DENSITY TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	= the frequency band of operation
RB	RBW ≥ 3kHz
VB	VBW ≥ 3RBW
Detector	power averaging (rms) or sample detector (when rms not available).
Trace	Max Hold
Sweep Time	Auto

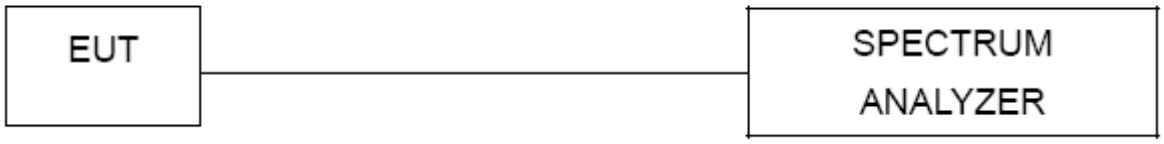
5.1.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP

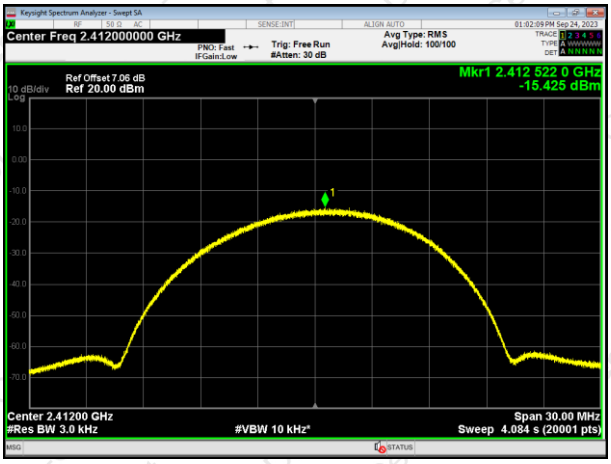
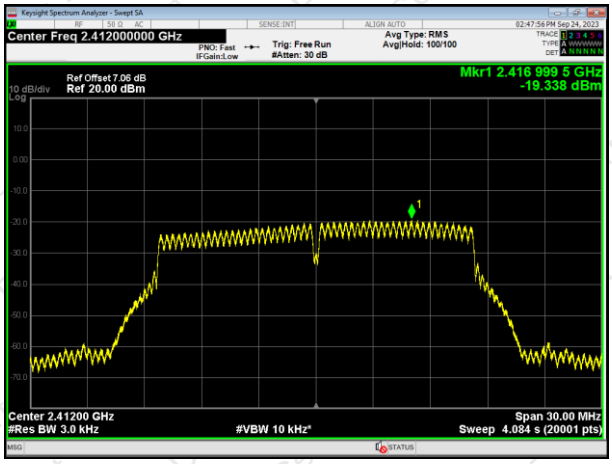
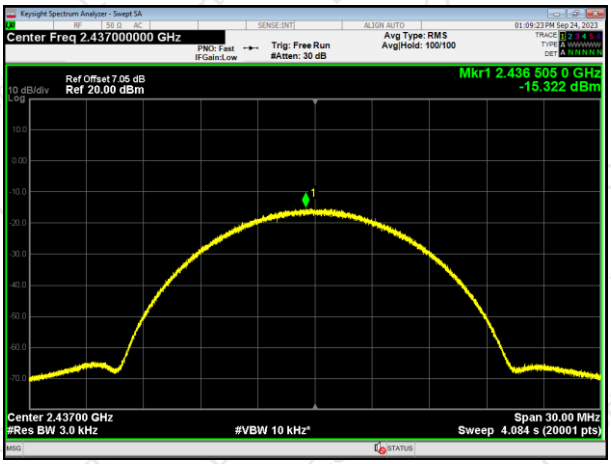
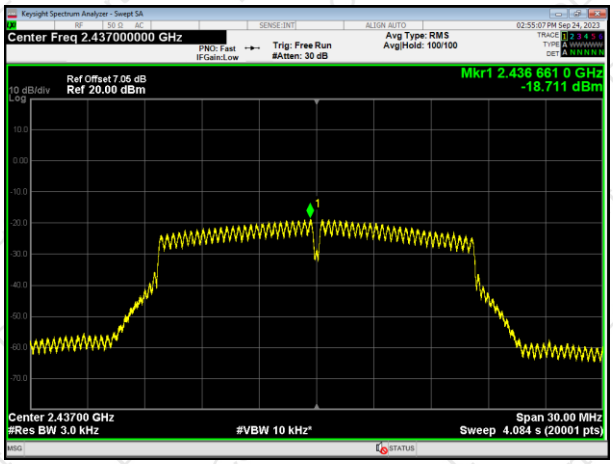
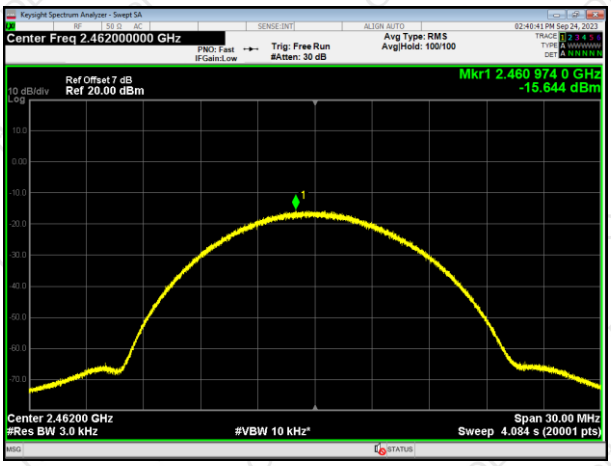
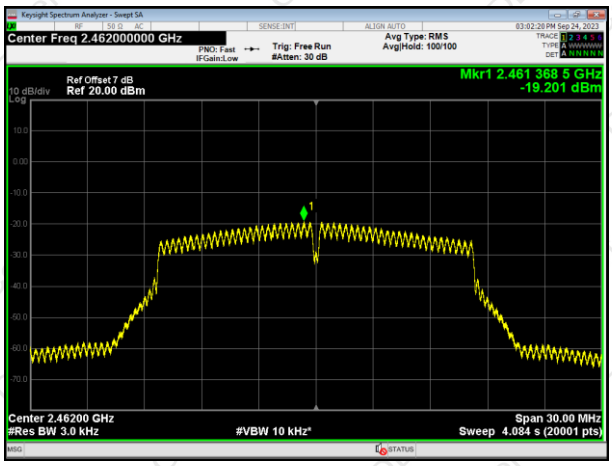


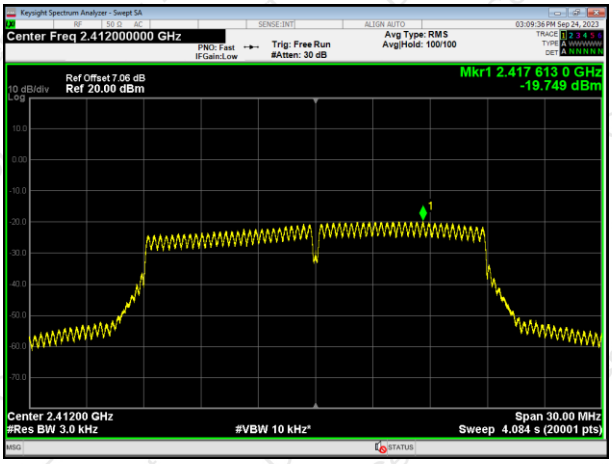
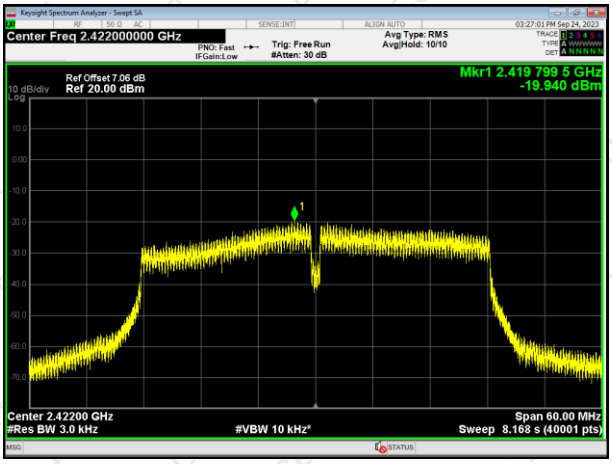
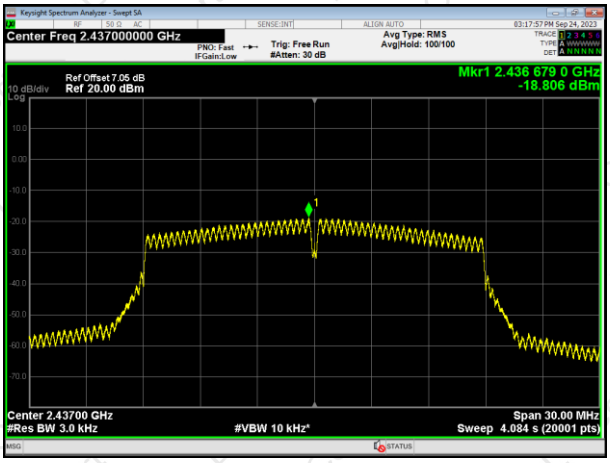
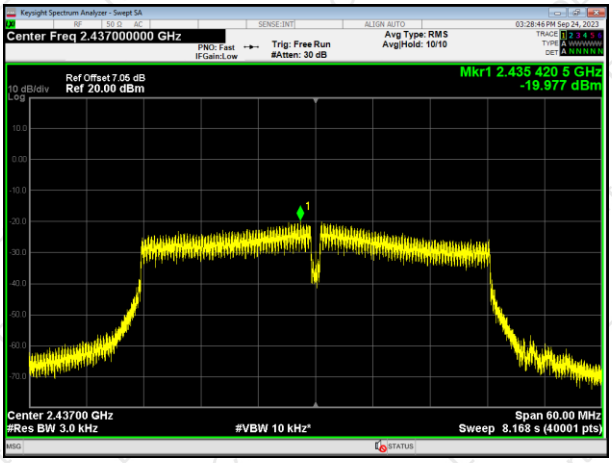
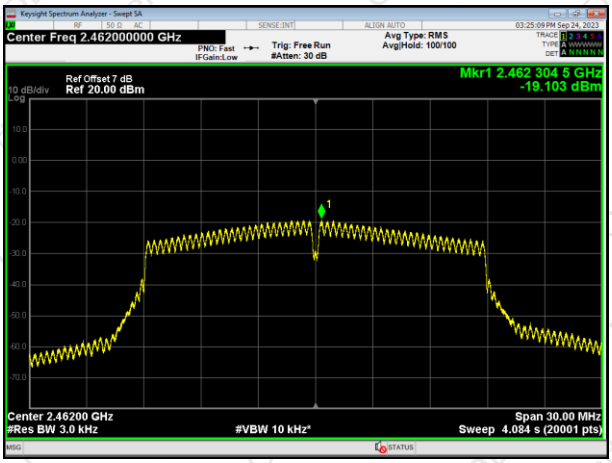
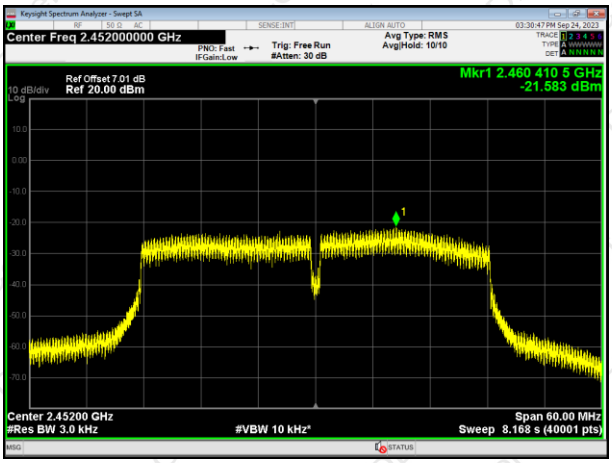
5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 TEST RESULTS

Mode	Test Channel	Reading Level (dBm/3kHz)	Limit (dBm/3kHz)	Result
802.11b	Low	-15.425	8	PASS
	Middle	-15.322	8	PASS
	High	-15.644	8	PASS
802.11g	Low	-19.338	8	PASS
	Middle	-18.711	8	PASS
	High	-19.201	8	PASS
802.11n20	Low	-19.749	8	PASS
	Middle	-18.806	8	PASS
	High	-19.103	8	PASS
802.11n40	Low	-19.940	8	PASS
	Middle	-19.977	8	PASS
	High	-21.583	8	PASS

802.11b	802.11g
	
2412MHz	2412MHz
	
2437MHz	2437MHz
	
2462MHz	2462MHz

802.11n HT20	802.11n HT40
	
2412MHz	2422MHz
	
2437MHz	2437MHz
	
2462MHz	2452MHz

6. 6DB BANDWIDTH TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range(MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

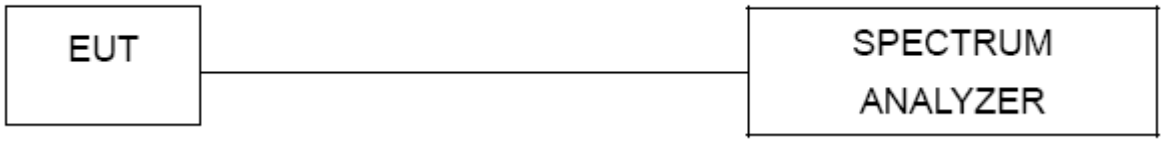
6.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. 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 20 dB relative to the maximum level measured in the fundamental emission.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP

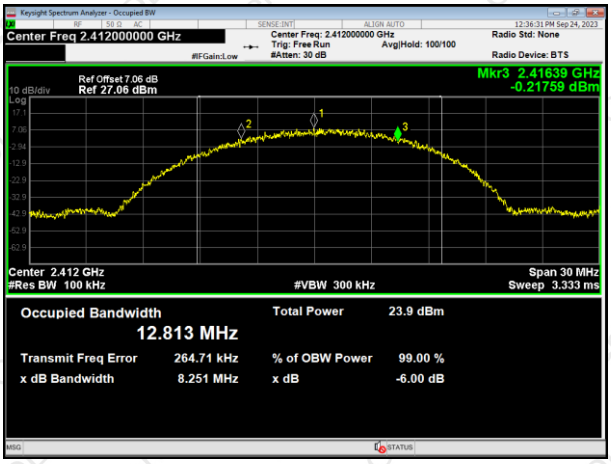
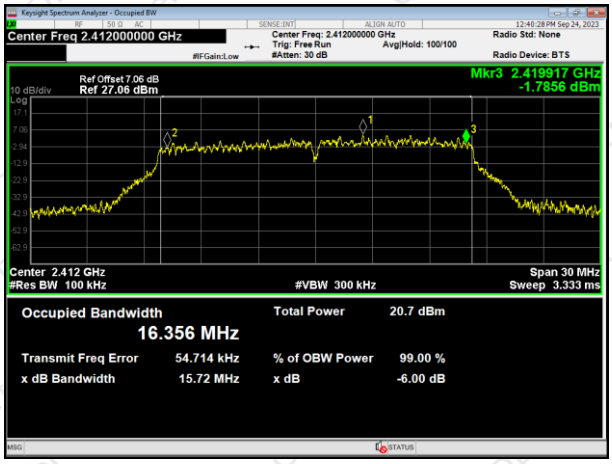
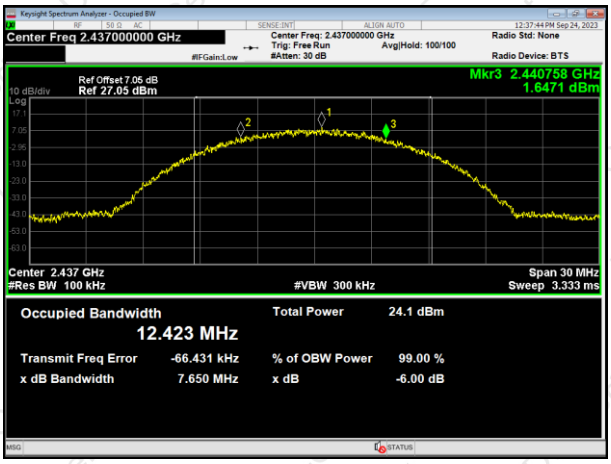
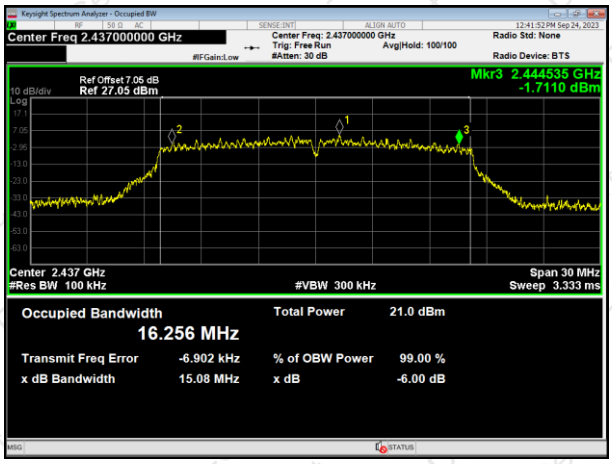
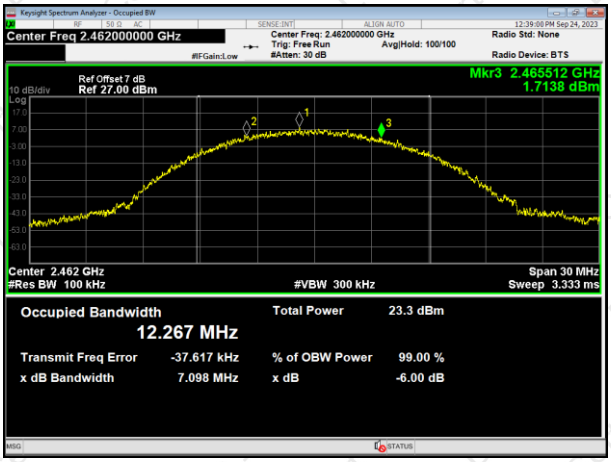
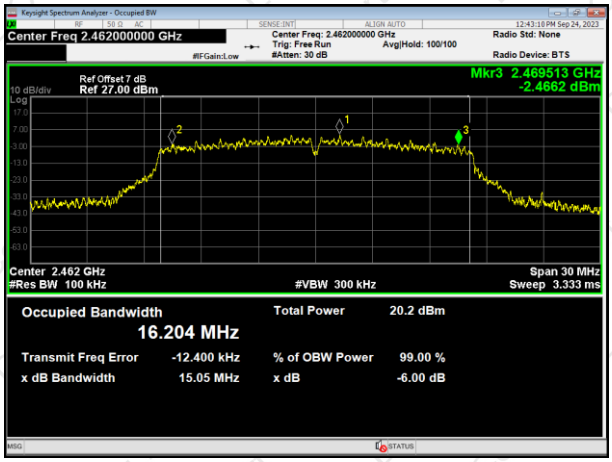


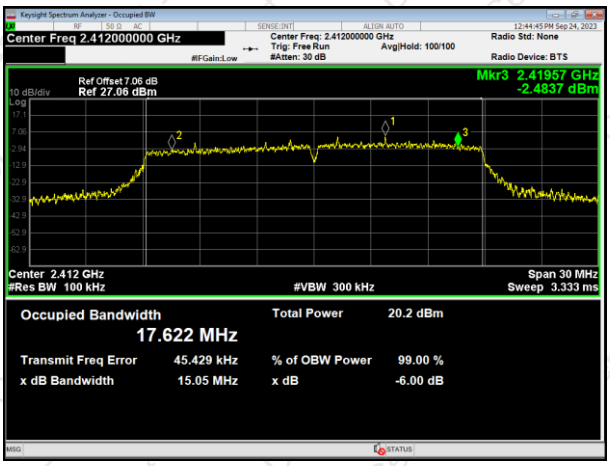
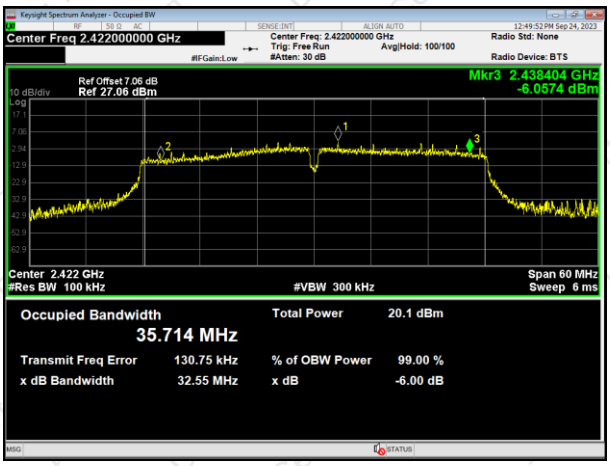
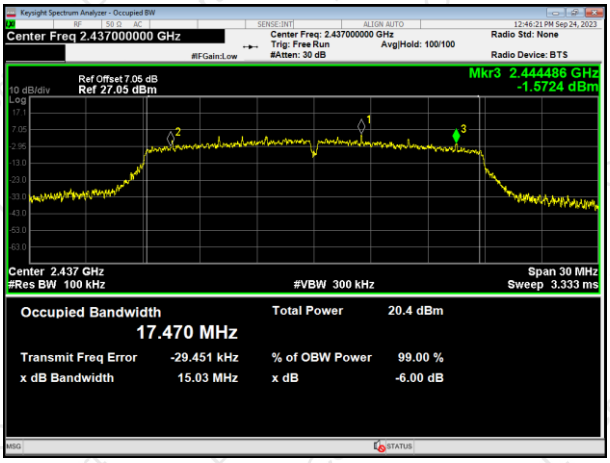
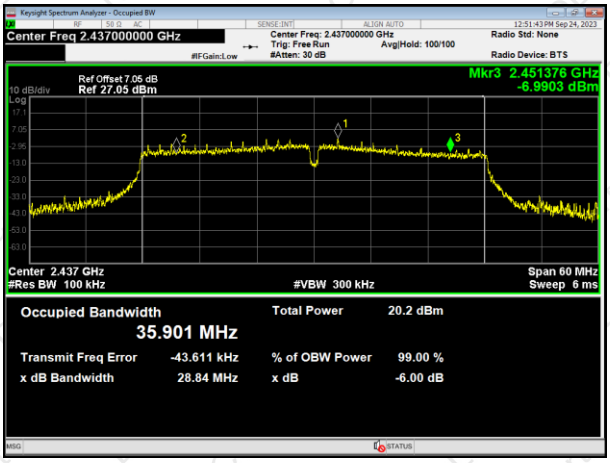
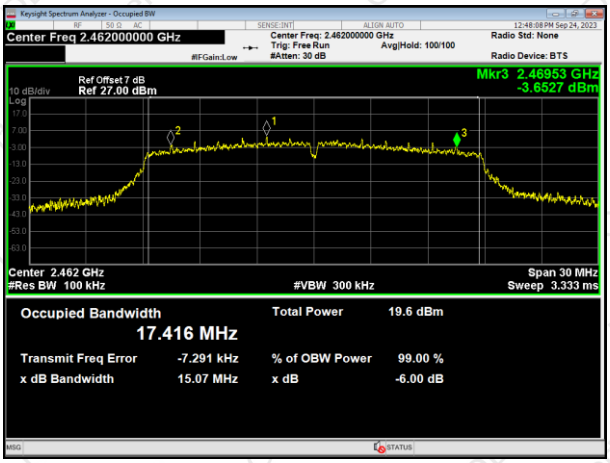
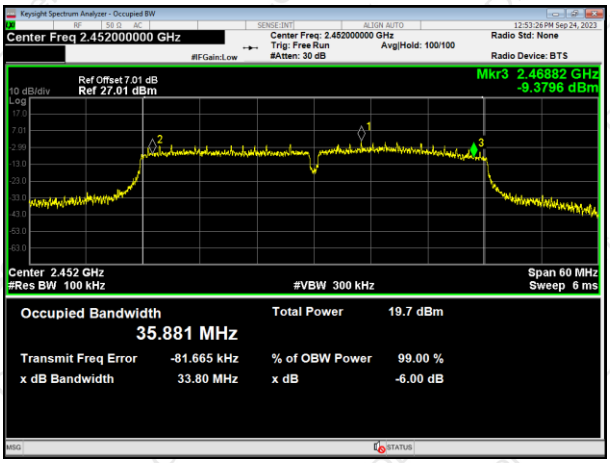
6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

	Test Channel	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11b	Low	8.251	0.5	Pass
	Middle	7.650	0.5	Pass
	High	7.098	0.5	Pass
802.11g	Low	15.724	0.5	Pass
	Middle	15.084	0.5	Pass
	High	15.050	0.5	Pass
802.11n HT20	Low	15.050	0.5	Pass
	Middle	15.030	0.5	Pass
	High	15.075	0.5	Pass
802.11n HT40	Low	32.547	0.5	Pass
	Middle	28.839	0.5	Pass
	High	33.804	0.5	Pass

802.11b	802.11g
	
2412MHz	2412MHz
	
2437MHz	2437MHz
	
2462MHz	2462MHz

802.11n HT20	802.11n HT40
	
2412MHz	2422MHz
	
2437MHz	2437MHz
	
2462MHz	2452MHz

7. ANTENNA REQUIREMENT

7.1 STANDARD REQUIREMENT

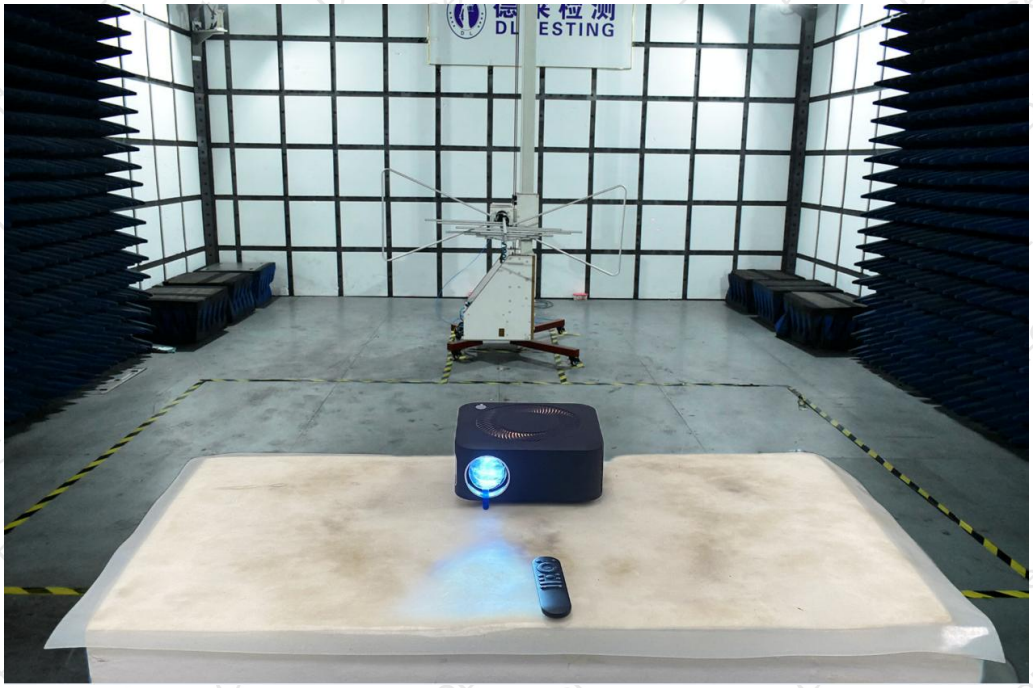
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

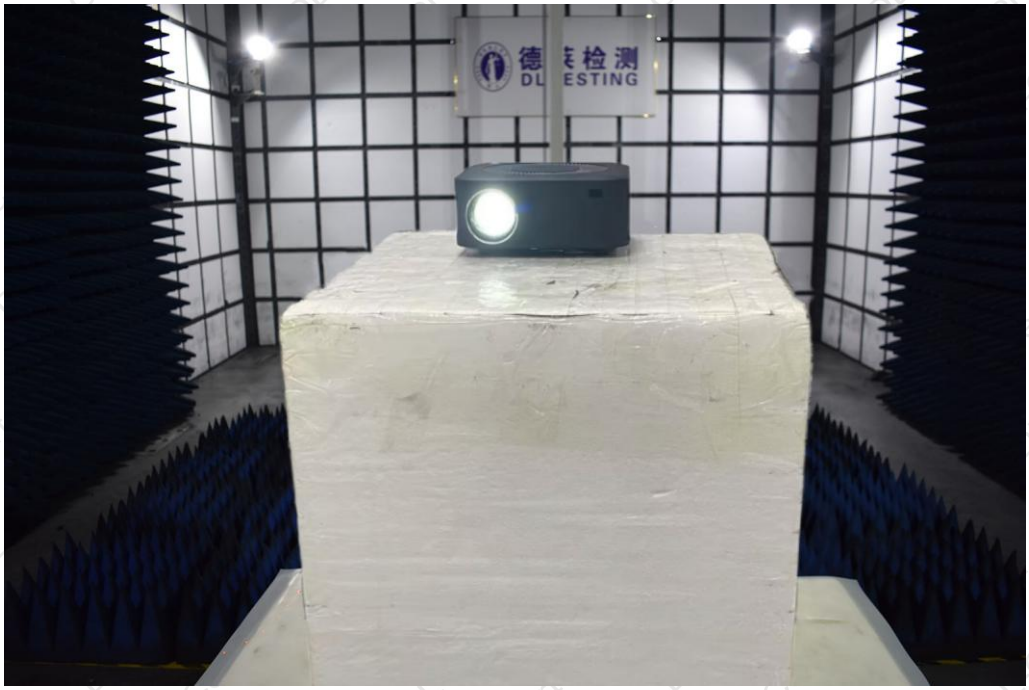
7.2 EUT ANTENNA

The EUT antenna is FPC antenna, It comply with the standard requirement.

8. TEST SEUUP PHOTO

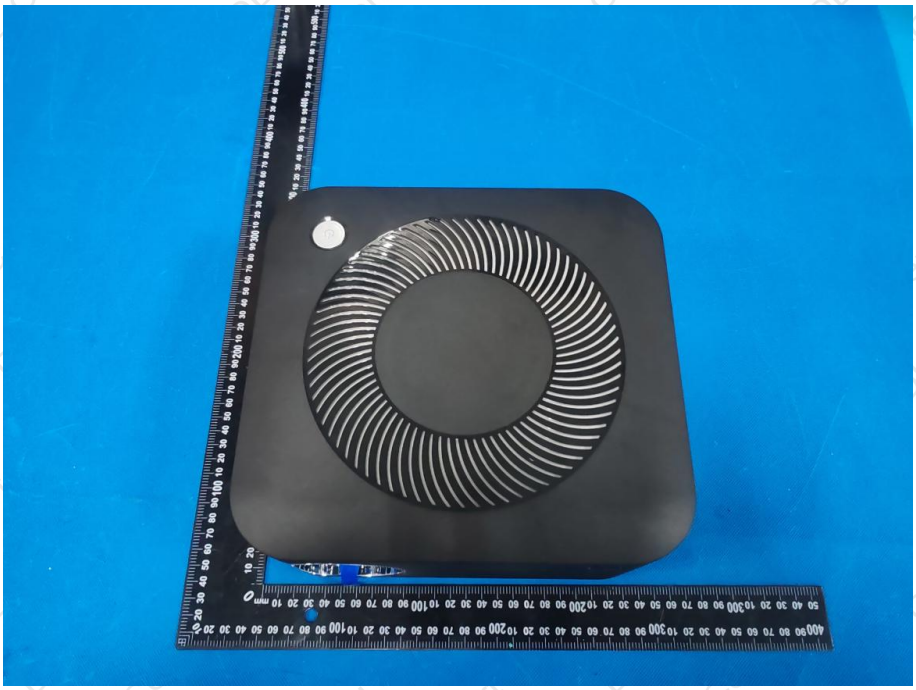
Radiated Measurement Photos

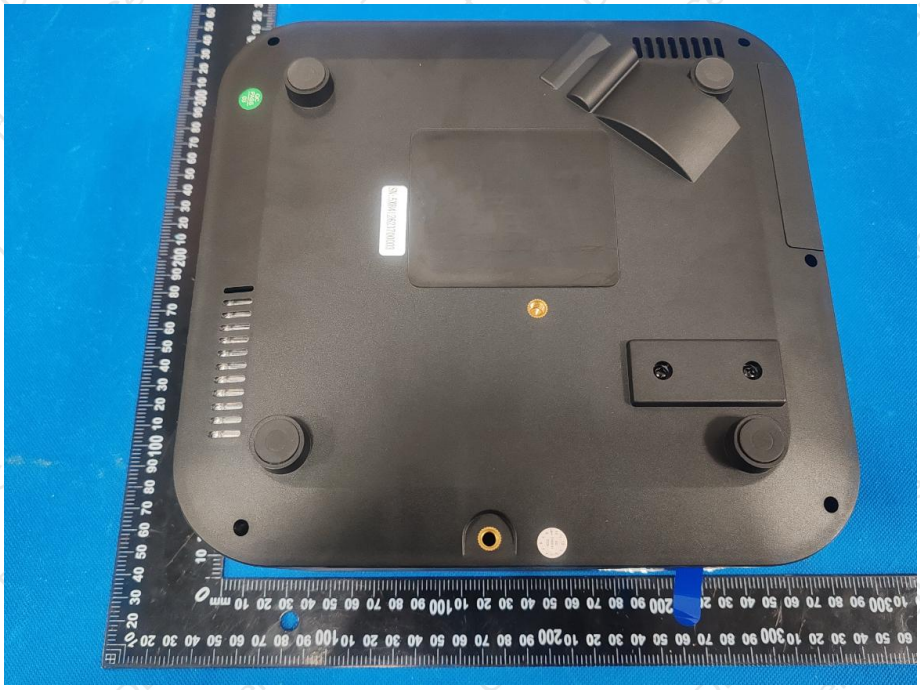


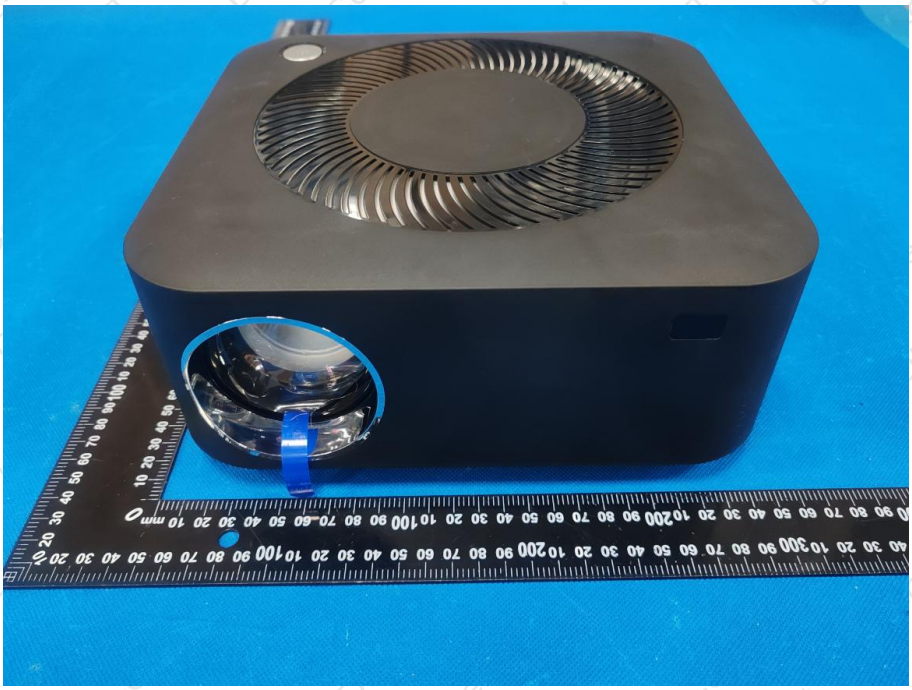


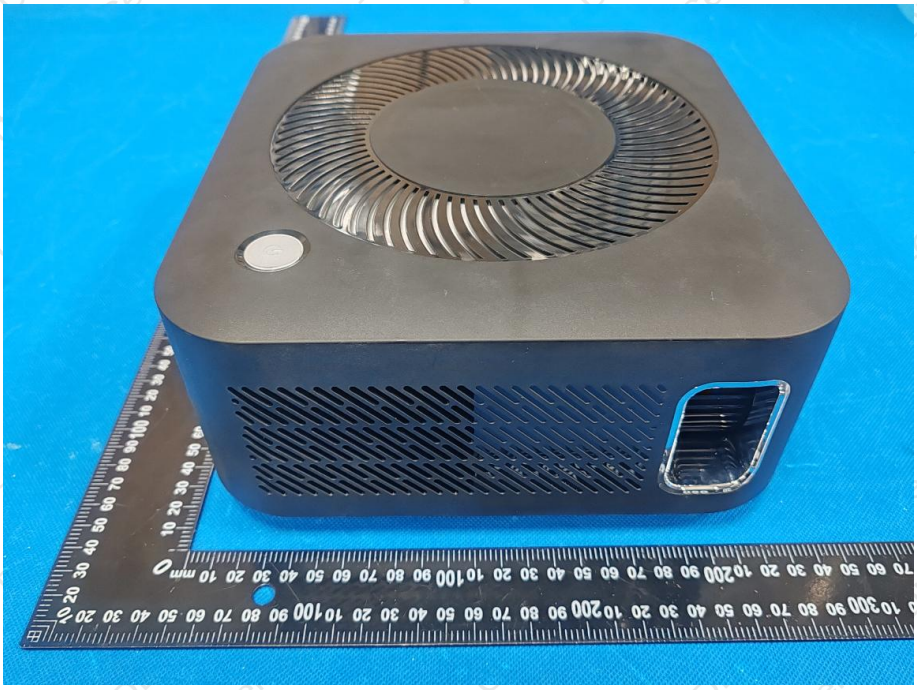
Conducted Measurement Photos

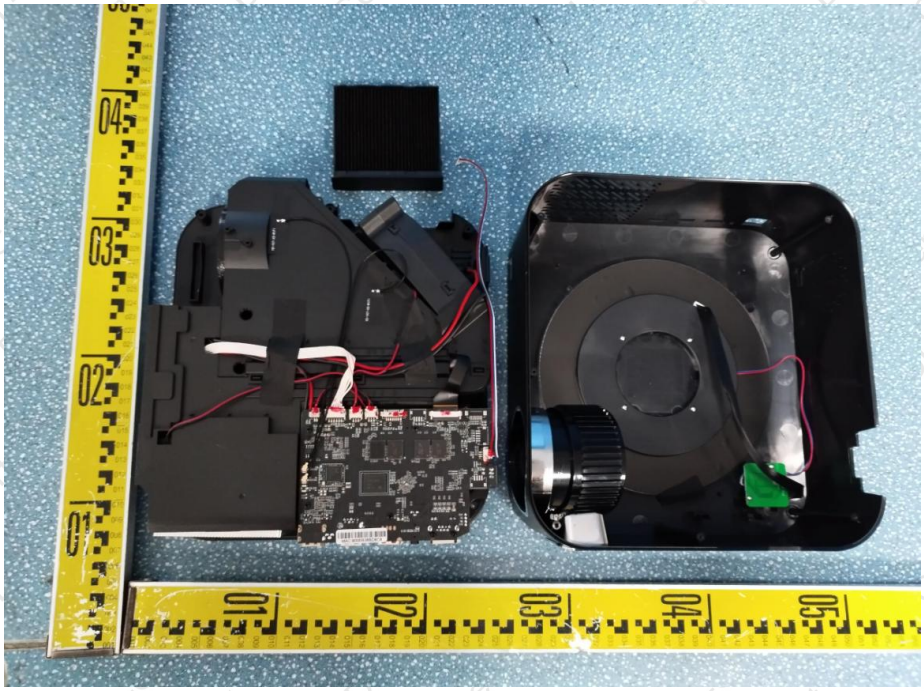
9. EUT PHOTO

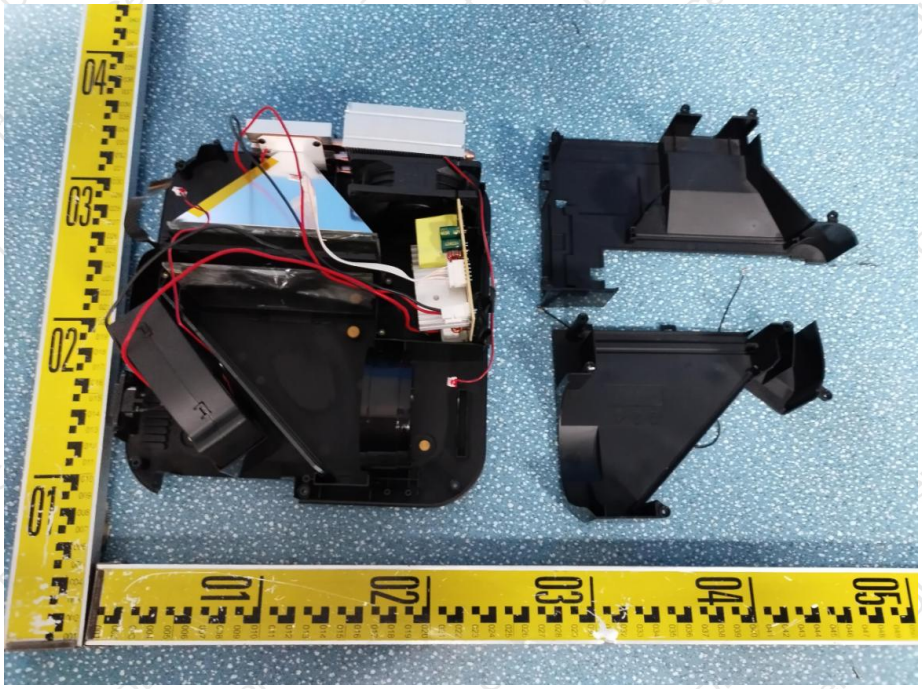


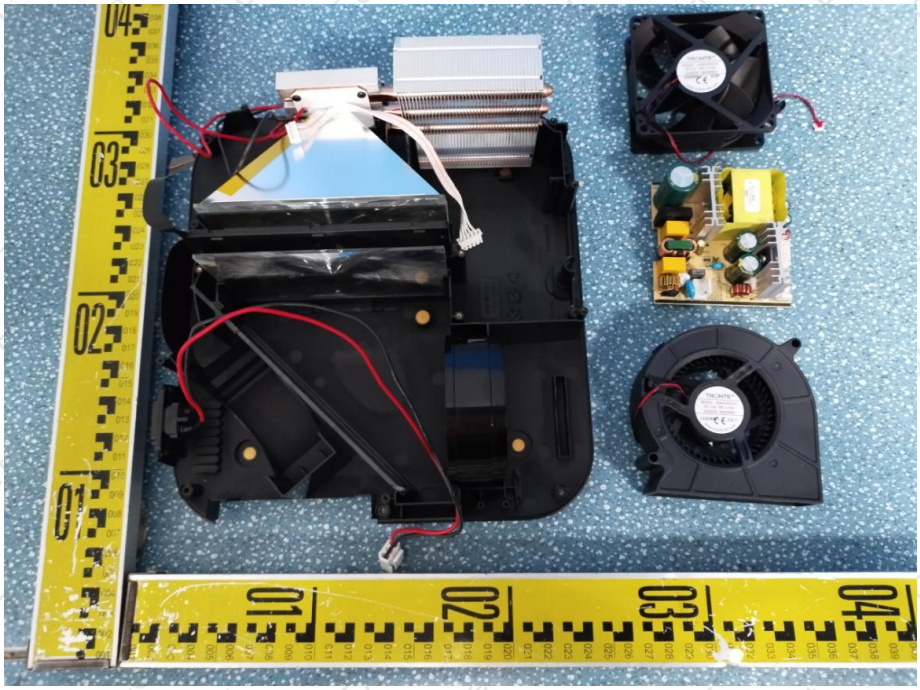


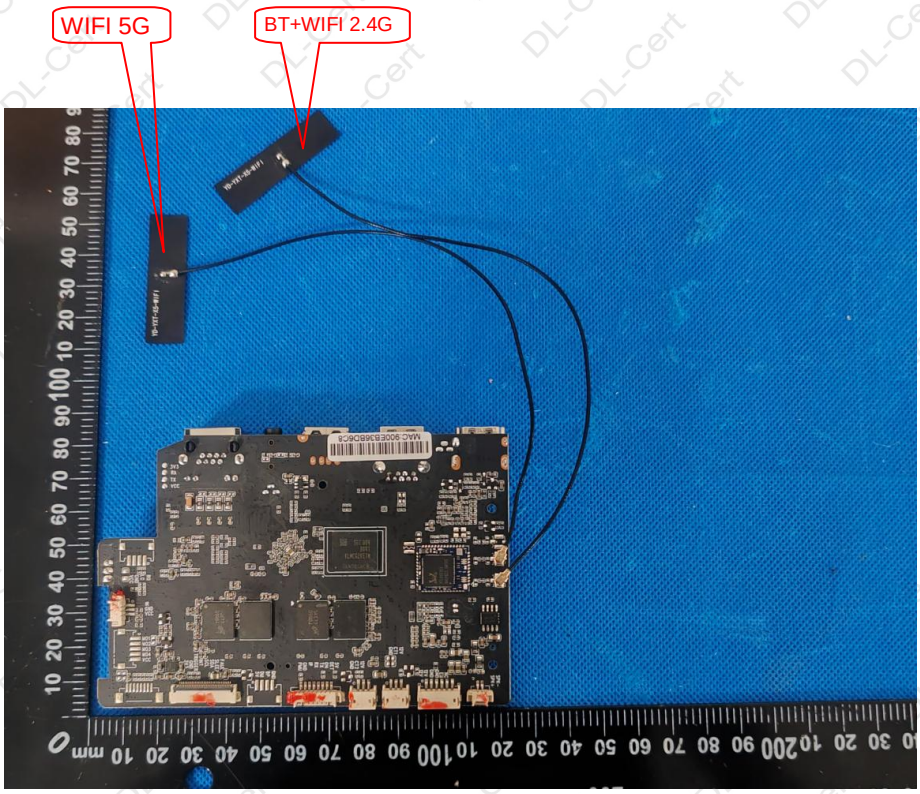


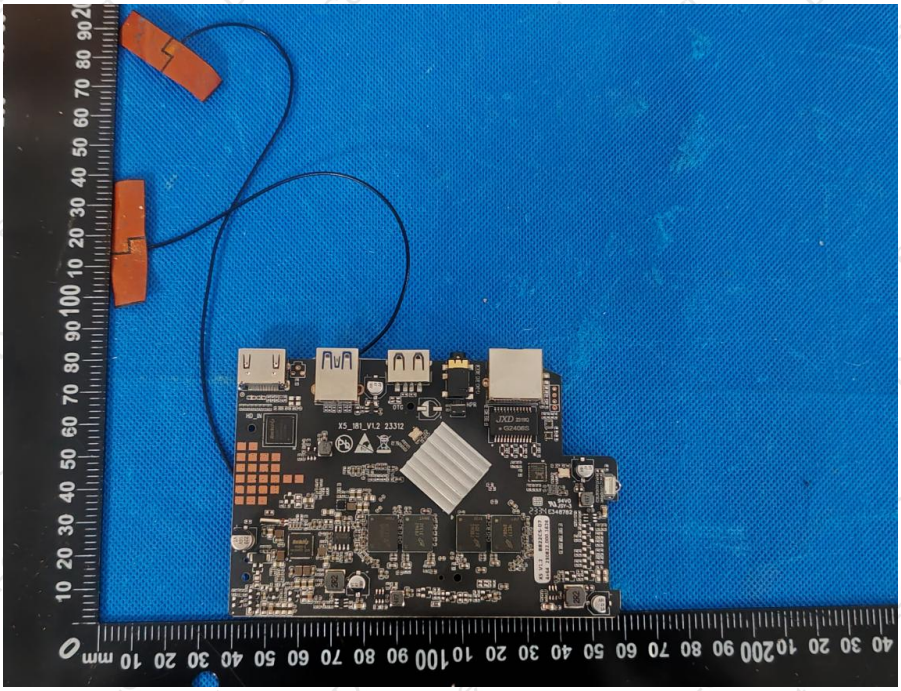


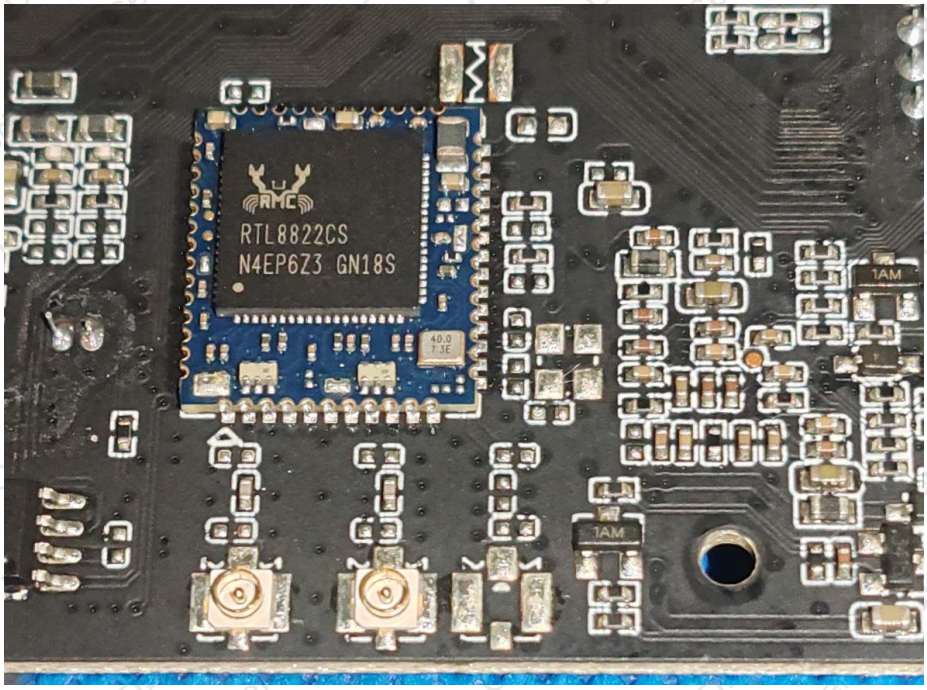







WIFI 5G
BT+WIFI 2.4G





※※※※※ **END OF REPORT** ※※※※※