

Shenzhen Aihui Technology Co. ,
Ltd.

Antenna test report

Test report

2025.09.06

(catalogue) :



(Model Information)

(Company profile)

(Passive and Matching)

(3D Active Test Data)

(Environmental treatment)

(Summary)



1、 (Model Information)

Project name	C109	RF	
Model Name	2.4G/5.8G WiFi /BT	LTE:	
Antenna Type		Band	
Model pictures :			

2、 (Passive and Matching)

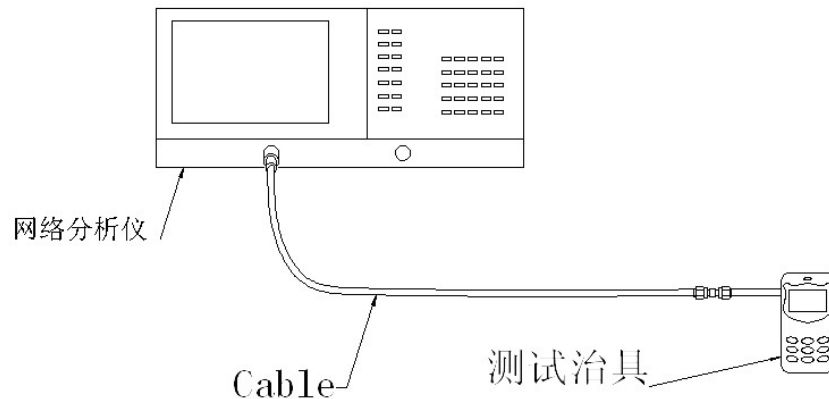
2.1A diagram of a passive test

S11 test method description

Testing equipment:

Network analyzer(E5071C 30k-8.5Ghz)

Test method: a 50 ohm CABLE is used to export from the instrument test port. After calibration, the sample machine and SMA joint of the instrument are connected.



2.2 Active test schematic

3D testing system: SHIELDED ANECHOIC chamber
testing environment: temperature $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$, humidity $50\% \pm 15\%$
testing equipment: testing passive data, using the Network analyzer Agilent E5071C testing active data, using the synthesis instrument 8960cmw500

总全向辐射功率 (TIRP)

$$TIRP \equiv \frac{\pi}{2NM} \sum_{i=1}^{N-1} \sum_{j=0}^{M-1} [Eirp_{\theta}(\theta_i, \phi_j) + Eirp_{\phi}(\theta_i, \phi_j)] \sin(\theta_i)$$

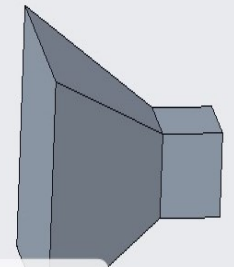
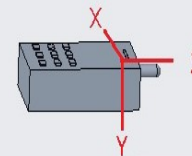
总全向辐射灵敏度 (TIRS)

$$TIRS \equiv \frac{2NM}{\pi \sum_{i=1}^{N-1} \sum_{j=0}^{M-1} \left[\frac{1}{EIS_{\theta}(\theta_i, \phi_j)} + \frac{1}{EIS_{\phi}(\theta_i, \phi_j)} \right]} \sin(\theta_i)$$

E1: XZ的切面 PHI=0

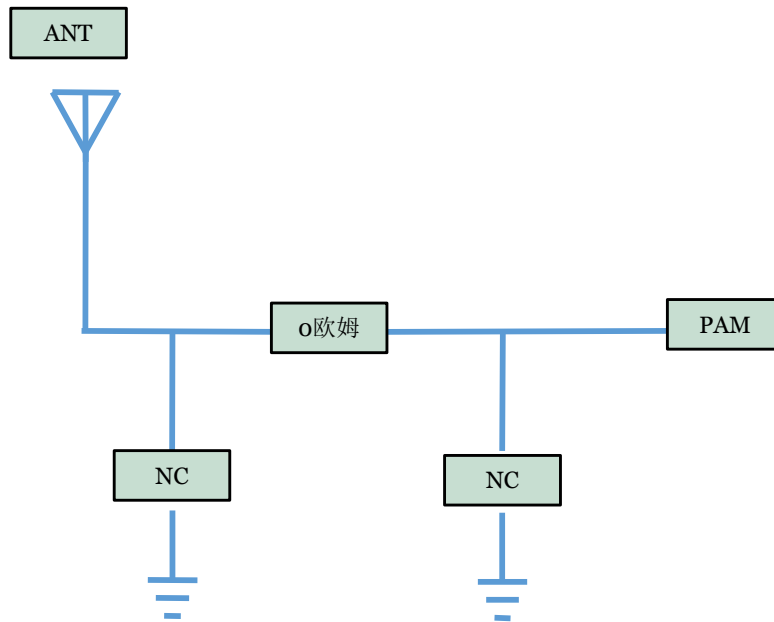
E2: YZ的切面 PHI=90

H: XY的切面 Theta=90



以喇叭天线为参考

2. 3 (Matching Circuit)



Motherboard matching
has not changed.

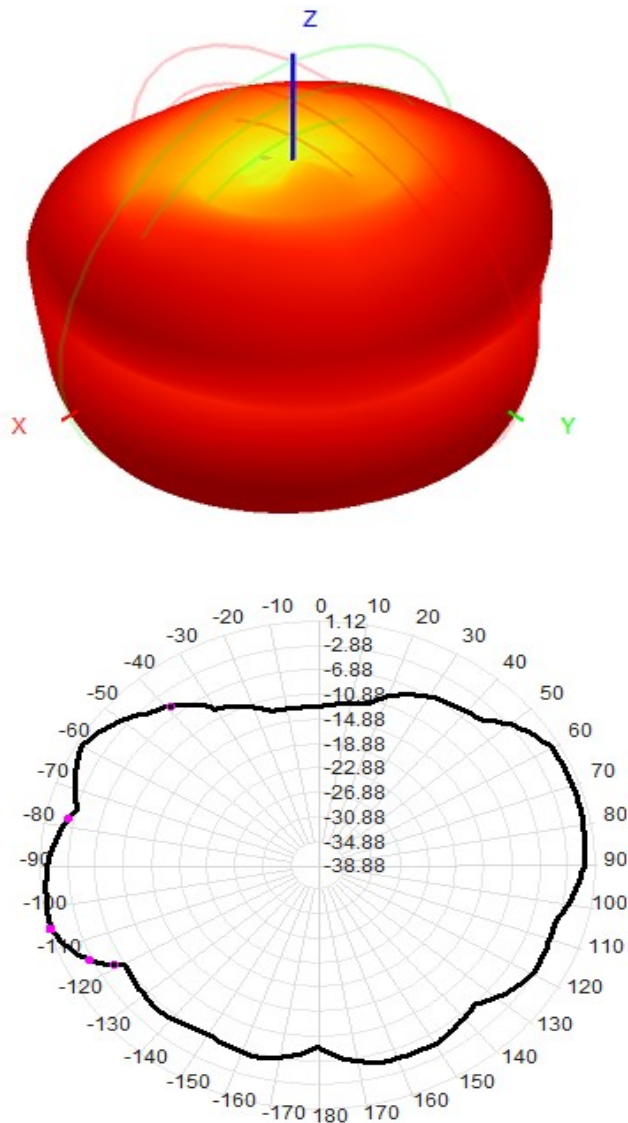
Note: original string 0 ohm from
antenna string 0 ohm resistor pa



4. 1 Active test data

Frequency Band	2. 4G-WIFI B模			2. 4G-WIFI G模		
channel	L	M	H	L	M	H
TRP	13. 52	13. 64	14. 41	13. 55	13. 11	13. 25
TIS	-81. 43	-83. 63	-82. 62	-69. 52	-68. 44	-69. 10
Frequency Band	2. 4G-WIFI N模			5. 8G-WIFI A模		
channel	L	M	H	L	M	H
TRP	12. 62	12. 06	12. 06	12. 52	12. 32	11. 52
TIS	-67. 41	-67. 25	-68. 44	-73. 21	-72. 11	-71. 05

5.1 WIFI Antenna passive data

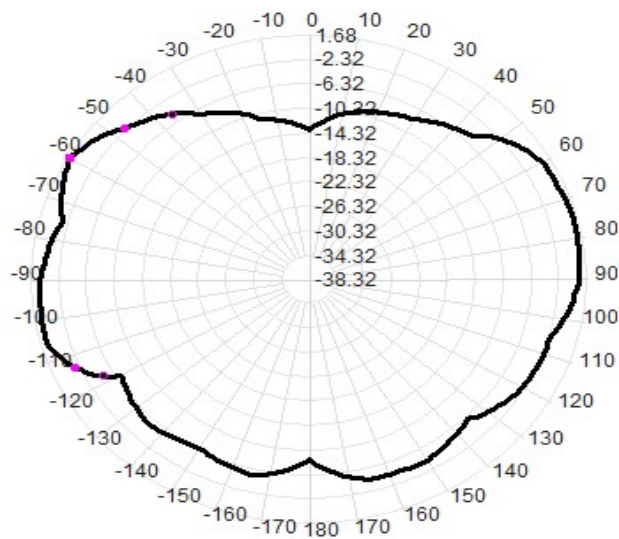
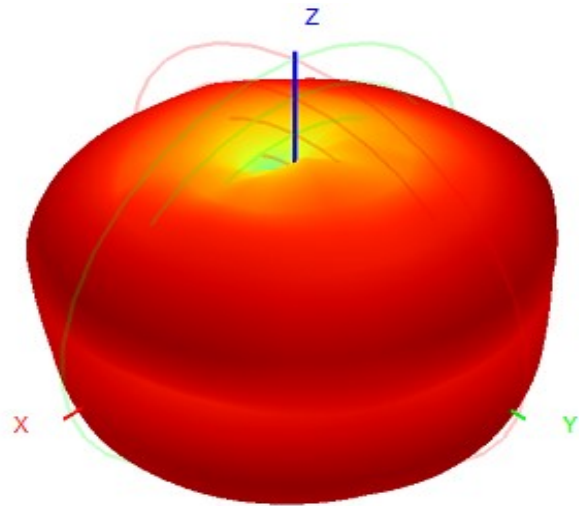


Test data:

WIFI 2.4G

Freq(MHz)	Efficiency (%)	Gain (dBi)
2400	54.25	0.49
2410	53.22	0.33
2420	54.96	0.25
2430	55.16	0.64
2440	56.30	0.55
2450	54.15	0.98
2460	58.11	1.12
2470	54.93	1.06
2480	57.13	1.08

5.1 WIFI Antenna passive data

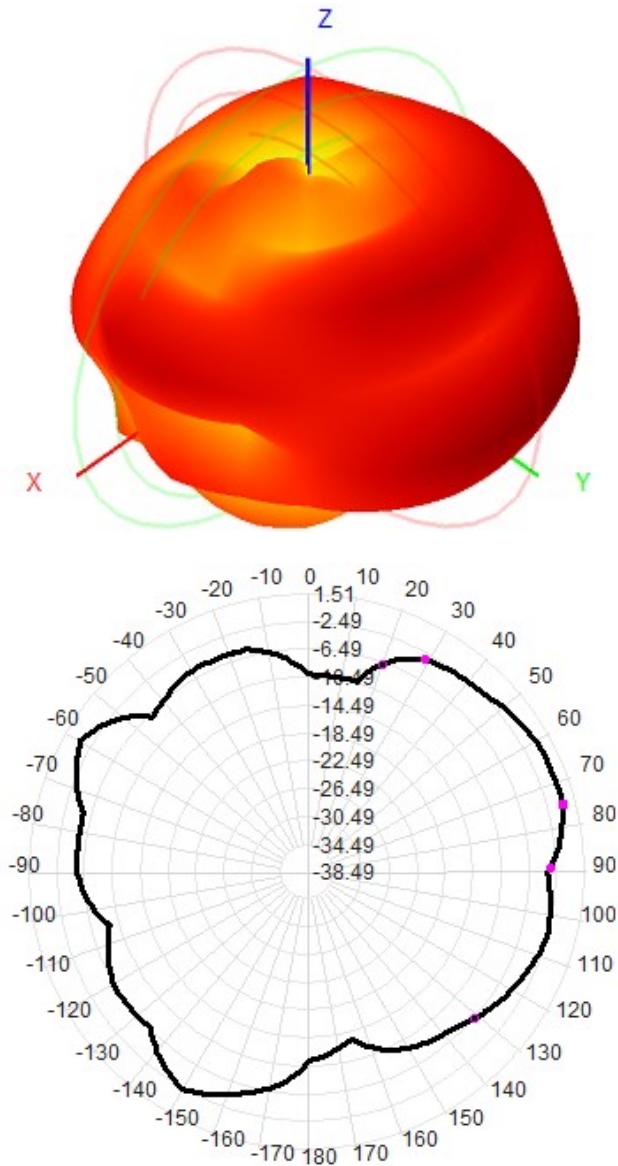


Test data:

WIFI 5.8G

Freq(MHz)	Efficiency (%)	Gain (dBi)
5000	55.30	1.25
5100	54.92	1.30
5200	54.15	1.44
5300	54.92	1.55
5400	57.11	1.68
5500	52.30	1.37
5600	54.25	1.42
5700	56.11	1.25
5800	54.92	1.11
5850	54.30	1.30

5.2 BT Antenna passive data

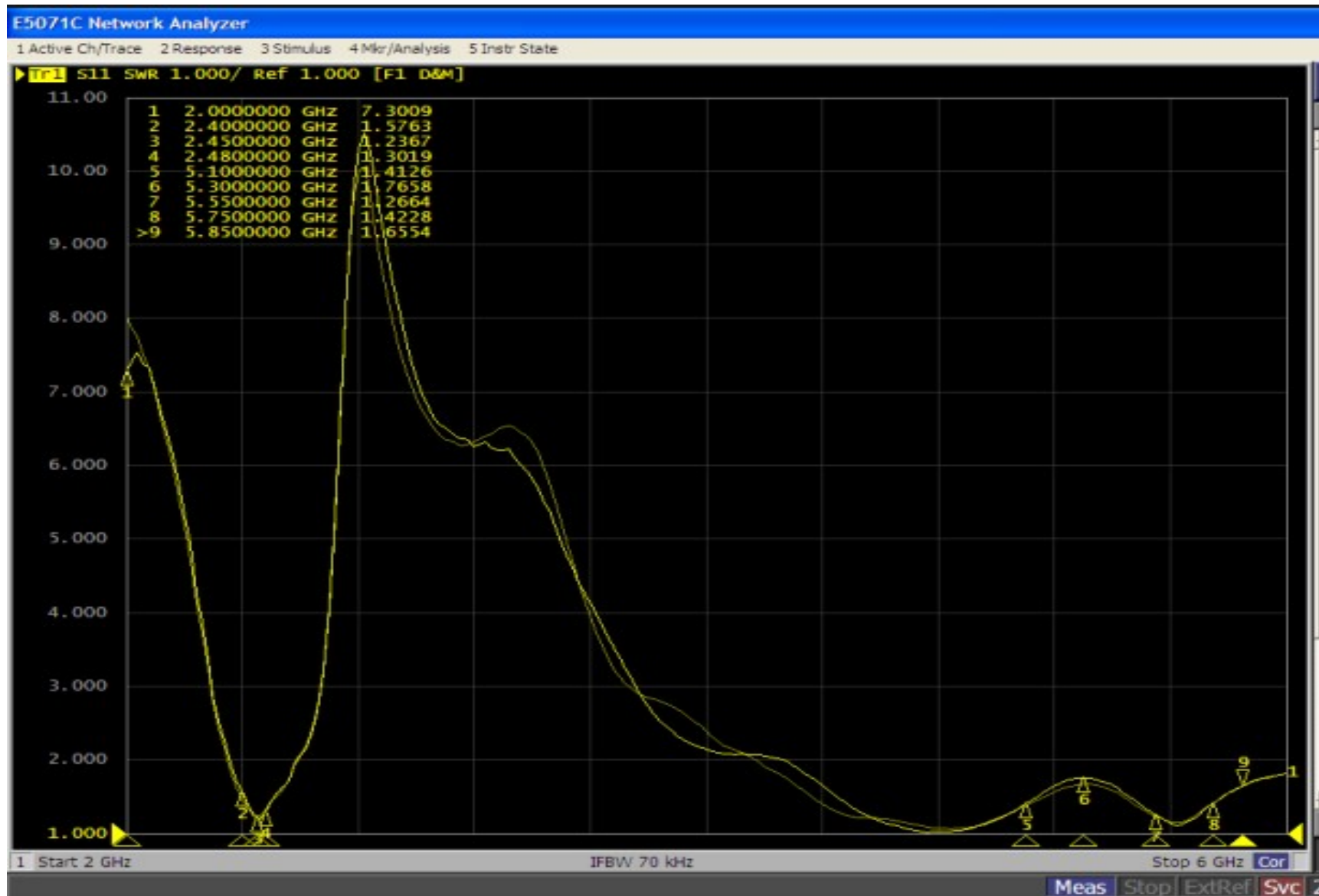


Test data:

WIFI 2.4G

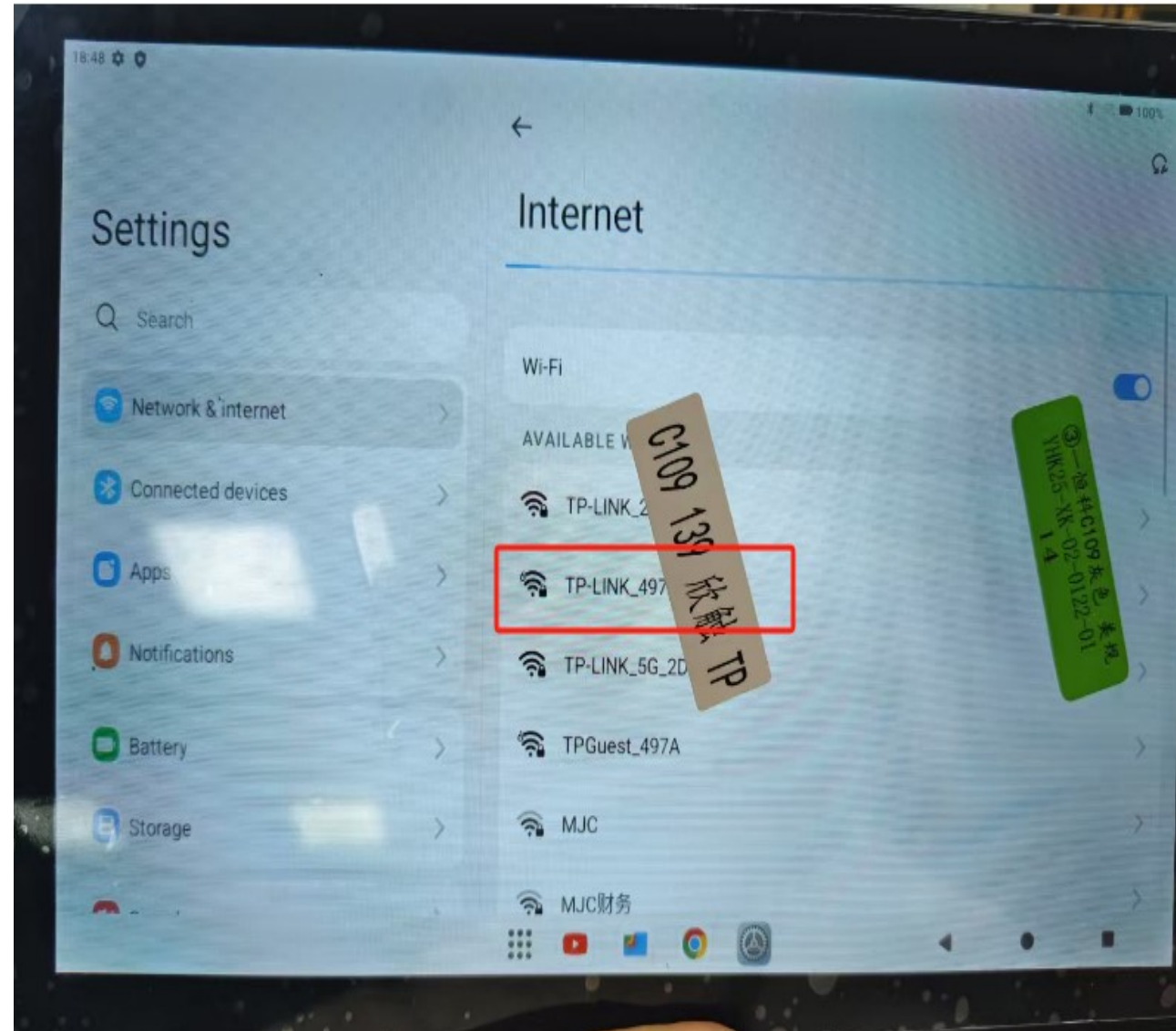
Freq(MHz)	Efficiency (%)	Gain (dBi)
2400	52.30	1.25
2410	54.55	1.35
2420	52.30	1.44
2430	54.33	1.51
2440	52.30	1.30
2450	54.15	1.47
2460	55.63	1.25
2470	57.15	1.05
2480	58.66	1.30

5.3 SWR



6. WiFi measurements

Distance
router 10
meters,
signal full
grid, internet
normal



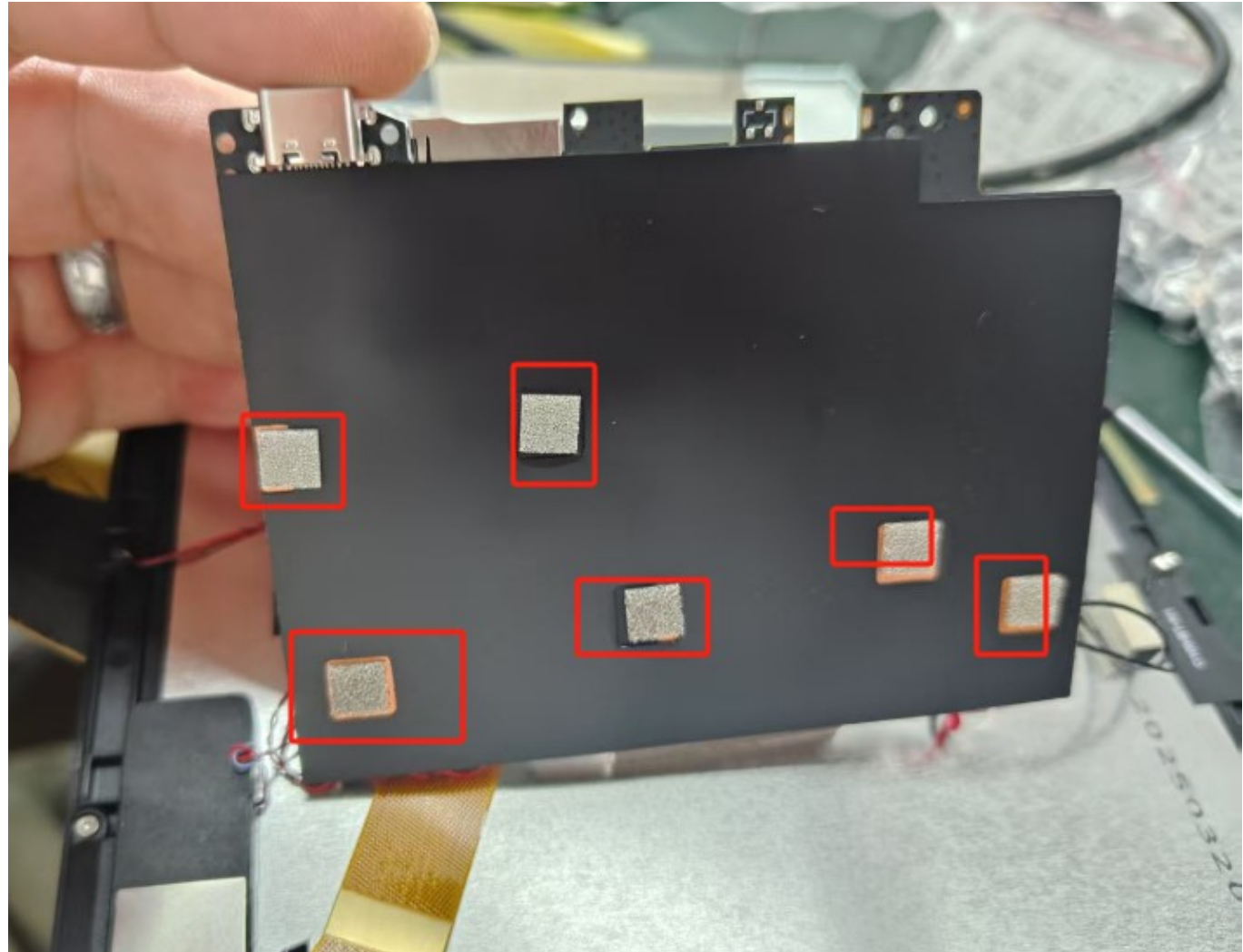


7. Bluetooth actual test

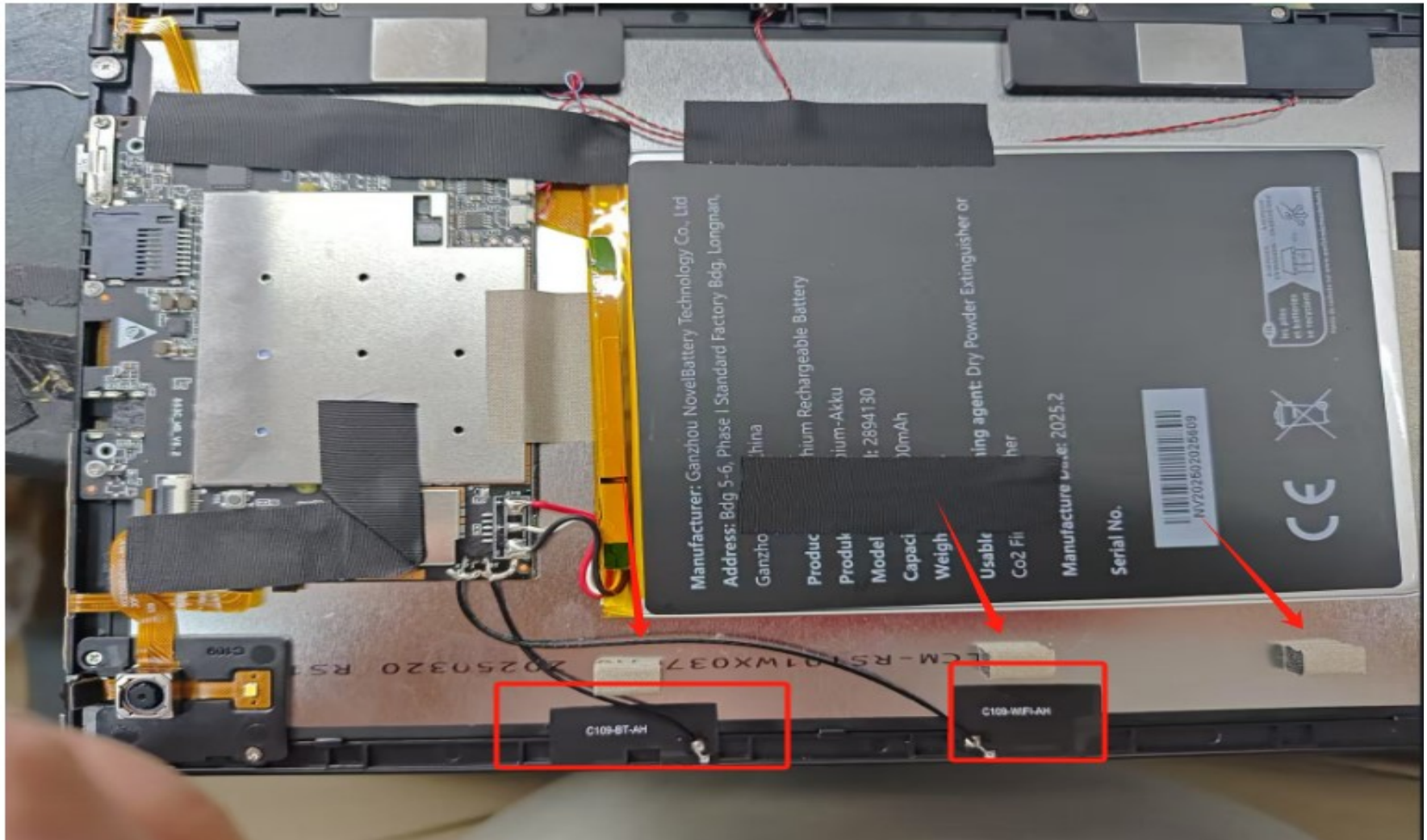
The 10M audio link plays normally without any
stuttering

8. Antenna position

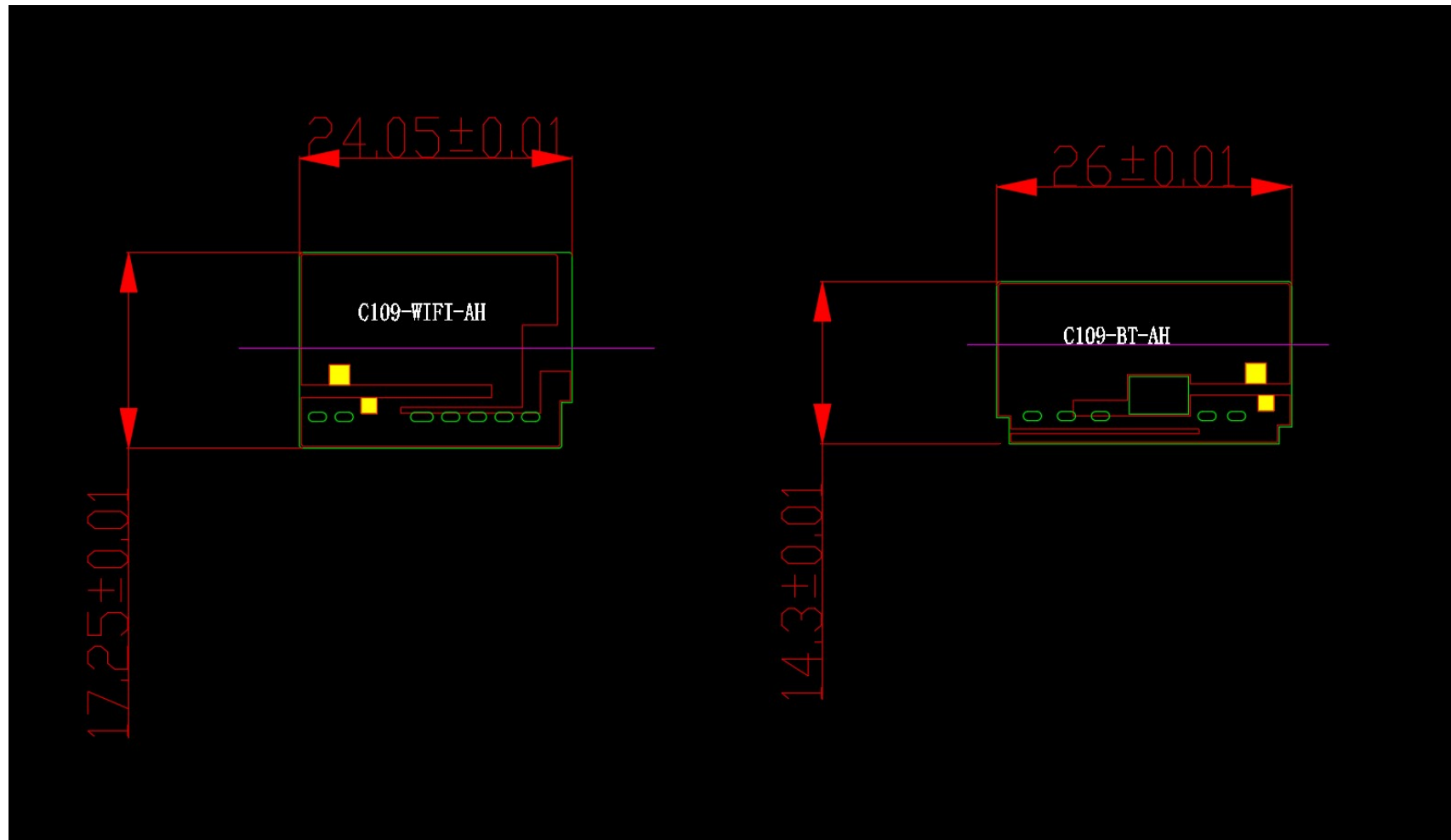
A conductive
sponge is
pasted inside
the box for
grounding



9. Antenna position



10. Antenna 2D drawing



Shenzhen Aihui Technology Co. , Ltd.



Note: 1. This report is based on the actual debugging and testing of the prototype, in which the environment processing, antenna position and the assembly position of each component can not be changed at will. 2. If there is any change in the materials used in the prototype, we need to make a timely feedback to revalidate. 3. List of sensitive devices: TP (material, coating, wiring, etc.) screen (amplifier circuit, LED, wiring design, etc.) shell material (antenna assembly mode, structural interference, shell material, antenna position height and area, etc.) motherboard (motherboard conduction, RF circuit matching, PA, dual-power, filter, LNA, power circuit, etc.) camera, battery, motor, MIC, fingerprint identification module, etc. 4. Because there are few or only one prototype, some probability problems can not be found out completely. It is suggested to check the problem points in small batch before mass production (such as flashing screen, loudspeaker noise, TP Jump Point, black screen death, signal diving, etc.)

Thank you

