

Project Antenn天线HW03项目天线测试报告

Antenna HW03 Project Antenna Test Reporta Test Report

客户：图高 Tu gao

项目名：HW03

射频：Zong Zhi Hui

手机MOBILE：18688717381

报告版次NO.：V12

Antenna HW03 Project Antenna Test Report

ANT Manufacturers: ANWEI commnuication Equipment Co.,Ltd

Address:2nd Floor, East Block, Building 5, Yifenghua Innovation
Industrial Park, Huaning Road, Dalang Street, Longhua District,
Shenzhen City, Guangdong Province

目录catalogue

-  项目调试简介Introduction to project commissioning
-  报告版本提要Report Version Summary
-  项目开发环境Project development environment
-  主天线评估Main antenna evaluation
-  有源测试数据Active test data
-  环境处理方式Environmental treatment method
-  调试过程风险提示Risk tips during commissioning
-  总结summary
-  附加说明Additional instructions

项目调试简介Introduction to project
commissioning

项目调试简介Introduction to project commissioning



板型	整机mobile phone						
天线概况 Antenna overview	主天线 Main antenna	频段band		天线状态 Antenna status	天线形式 Antenna form	设计区域 Design area	匹配改动 Match Changes
		2G	GSM2/3/5/8	FPC	PIFA	底壳	无no
		3G	WCDMA-B1/2/4/5/8				
		4G	LTE-B1/2/3/4/5/7/8/12/ 13/17/18/19/ 20/25/26/28AB/66/ 40/41				
	其他天线 other antenna	BT/WIFI	2. 4G/5GHZ	FPC	PIFA	底壳	无no
		GPS	1575. 42MHz				无no
		分集LTE	同主集	FPC	PIFA	底壳	无no
样机状态 sample status	试产机 Trial production sample		环境处理 Environmental treatment				

报告版本提要Report Version Summary

版本	日期	内容概况
V1	2023-12-19	初步调试天线测试报告，主板型号：TE107 MAIN PCB V1.0
V2	2023-12-20	增加三合一天线测试报告，主板型号：TE107 MAIN PCB V1.0
V3	2023-12-28	优化后天线测试报告，主板型号：TE107 MAIN PCB V1.0
V4	2023-12-30	优化后天线测试报告，主板型号：TE107 MAIN PCB V1.0
V5	2024-01-04	最新优化后天线测试报告，主板型号：TE107 MAIN PCB V1.0
V6	2024-01-04	最新优化后天线测试报告，主板型号：TE107 MAIN PCB V1.0
V7	2024-01-09	更改USB排线后天线测试报告，主板型号：TE107 MAIN PCB V1.0
V8	2024-01-10	主板改2个68PF后天线测试报告，主板型号：TE107 MAIN PCB V1.0
V9	2024-01-11	主板改2个68PF后天线测试报告，主板型号：TE107 MAIN PCB V1.0
V10	2024-01-12	最终环境处理天线测试报告，主板型号：TE107 MAIN PCB V1.0
V11	2024-01-29	第2次试产机天线测试报告，主板型号：TE107 MAIN PCB V1.1
V12	2024-02-23	第2次试产机模具天线测试报告，主板型号：TE107 MAIN PCB V1.1

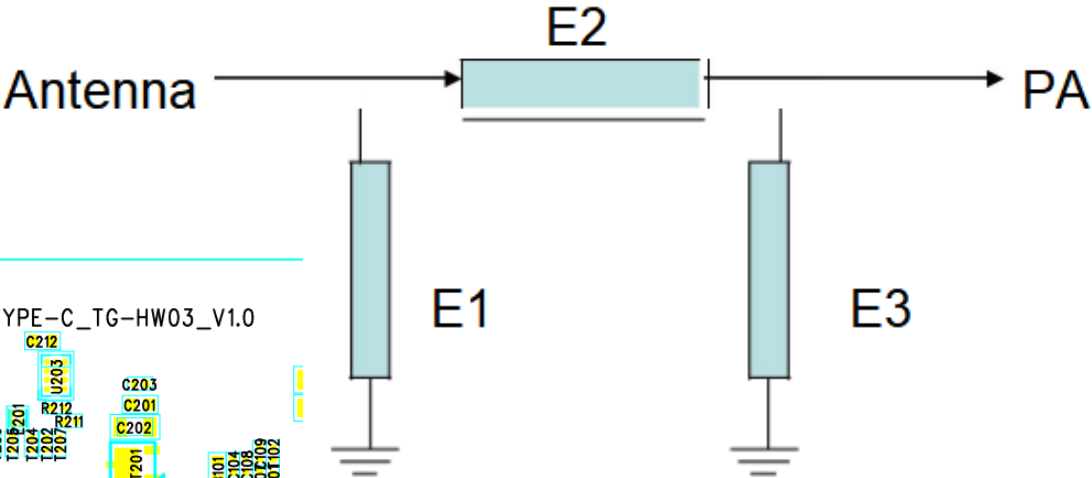
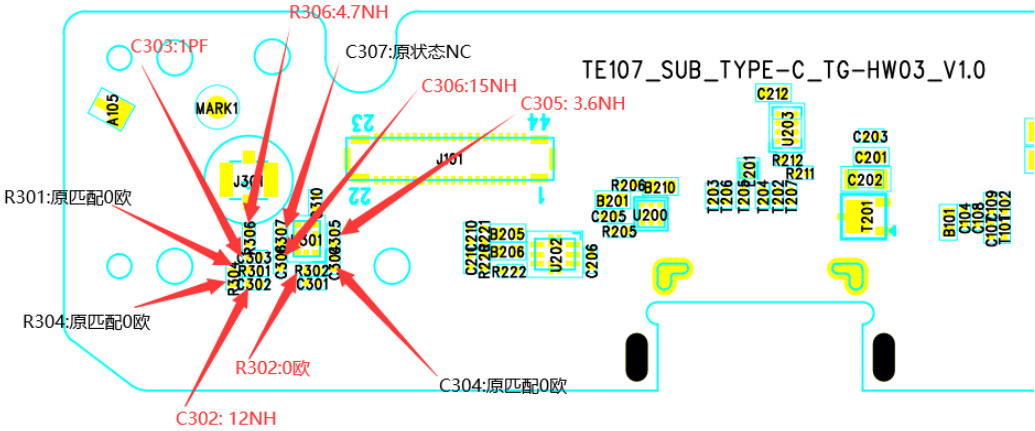
主天线匹配电路Main antenna matching circuit

天线开关匹配：

- RF1:C304 0欧电阻
- RF2:C305 3.6NH电感
- RF3:C306 15NH电感
- RF4:C307 NC
- R302:0欧电阻

主路匹配：

- C302: 12NH电感
- R301: 0欧
- C303: 1PF电容
- R306: 4.7NH电感

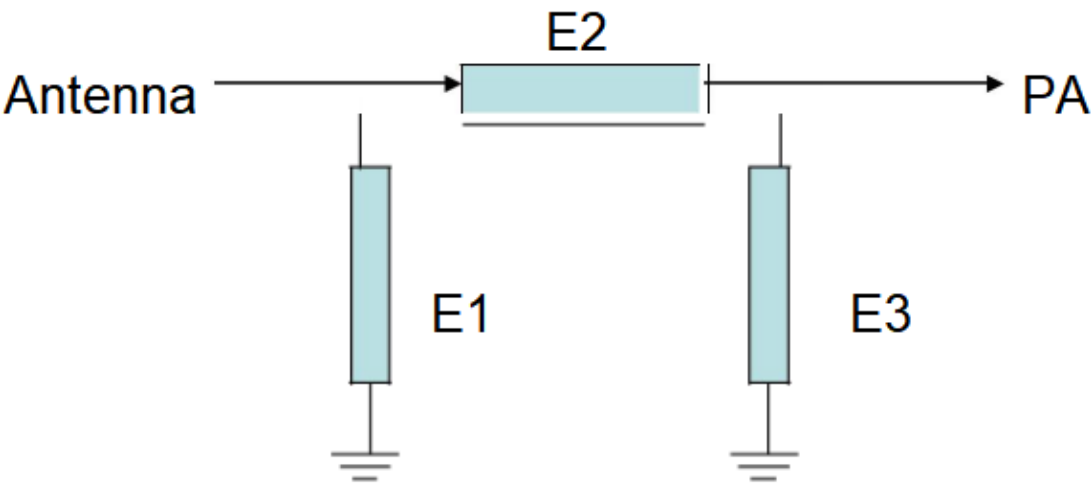
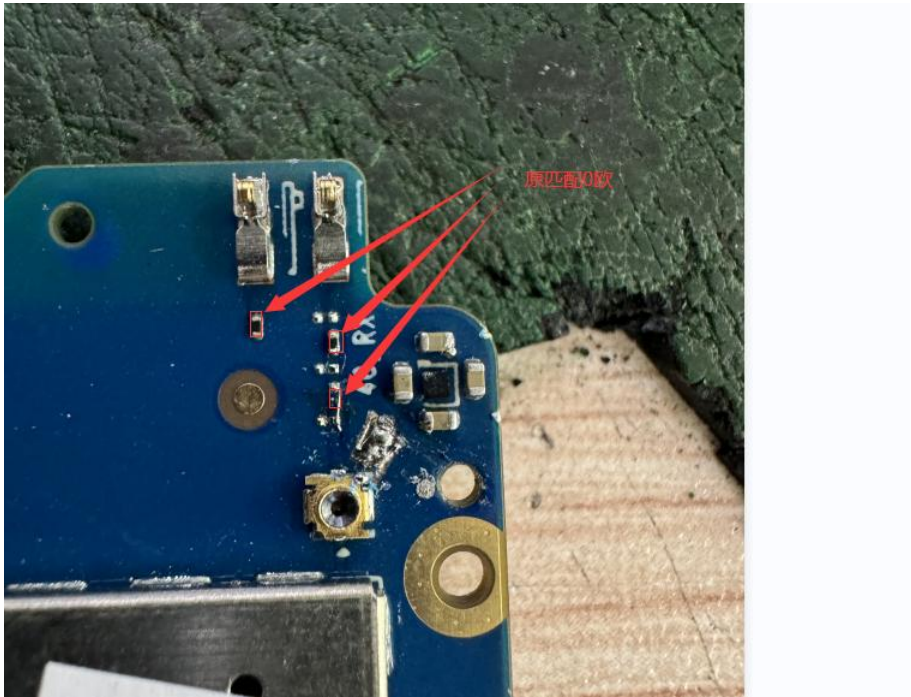


天线开关协议：HW03

- RF1:GSM900/1800/1900+WCDMA-B1/2/4/8, LTE-B1/2/3/4/7/8/25/66/40
- RF2:GSM850+WCDMA-B5+LTE-B5/18/19/20/26
- RF3:LTE-B12/13/17/28A/28B
- RF4:NC

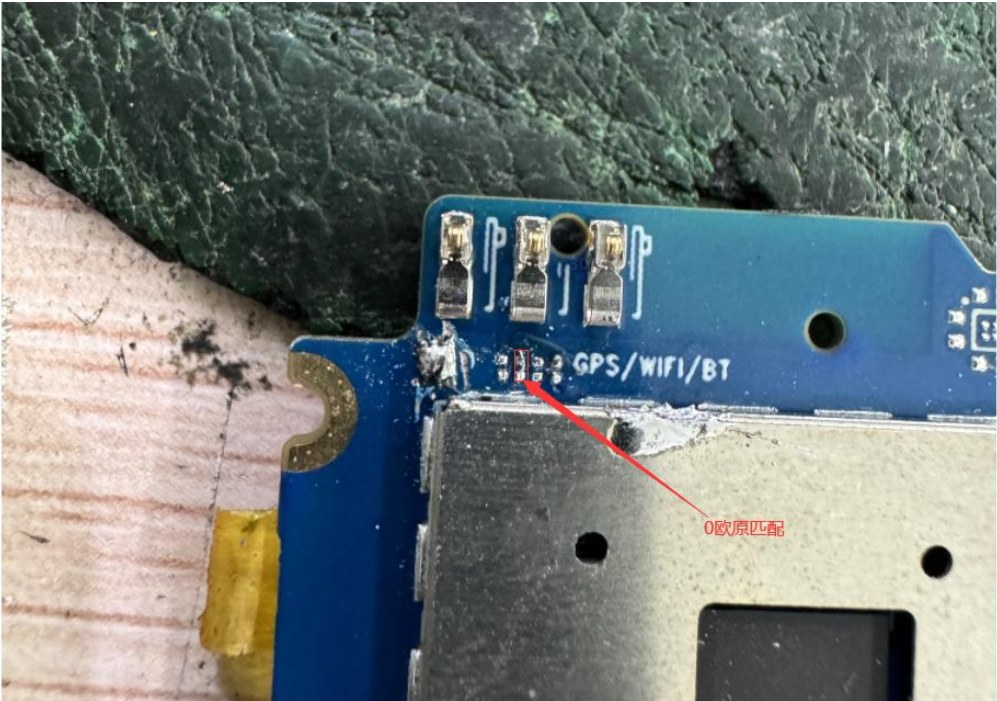
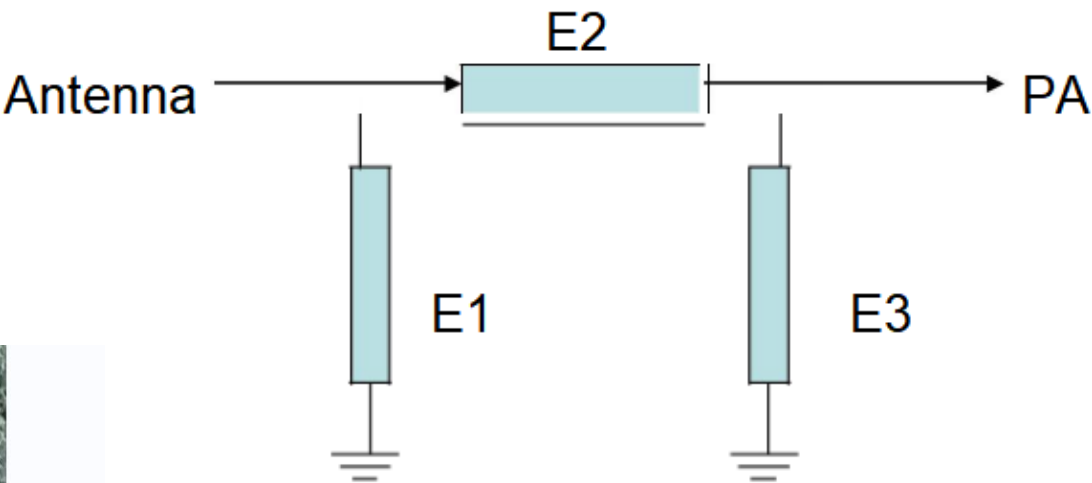
Element	Value
E1 C302	12NH原匹配
E2 R301	0欧原匹配
E3 C303	1PF原匹配
E4 R306	4.7NH原匹配

分集天线匹配电路Diversity antenna matching circuit



Element	Value
E1	NC
E2	0欧
E3	NC
E4	0欧

GPS/WIFI/BT天线匹配电路GPS/WiFi/BT
antenna matching circuit



Element	Value
E1	N/A
E2	0Ω
E3	N/A

主天线暗室数据Main antenna darkroom data

[illegible]

主天线暗室数据Main antenna darkroom data

[illegible]

WIFI暗室数据亮屏WIFI antenna darkroom data

2G	Channel	TRP (dBm)	TIS (dBm)		WIFI	Channel	TRP (dBm)	TIS (dBm)				
GSM850	CH 128		-101.60		2.4G B模 (11M)	1	14.63	-82.57				
	CH 190	亮屏	-102.11			6	13.44	-82.05				
	CH 251		-102.00			11	13.39	-82.04				
GSM900	CH 1		-101.54		5G A模 (54M)	36	11.51	-72.59				
	CH 62	亮屏	-101.15			64	11.46	-72.50				
	CH 124		-101.00			165	12.43	-72.77				
DCS1800	CH 512		-102.45		亮屏测试							
	CH 698	亮屏	-103.44									
	CH 885		-103.15									
PCS1900	CH 512		-102.20									
	CH 661	亮屏	-102.40									
	CH 810		-102.98									

GPS/BT实际测试结果 (GPS/BT actual test results)

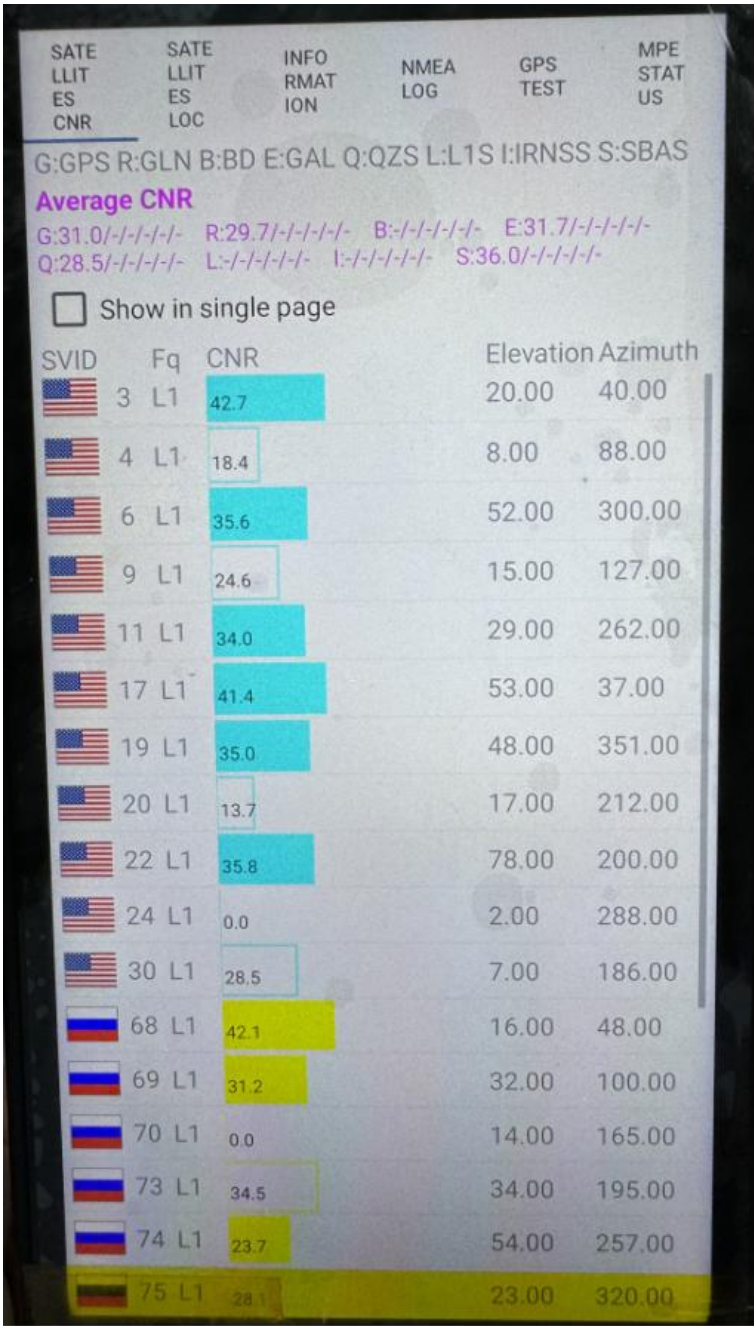
 GPS天线实际测试效果:

测试项	测试结果
搜星总数	
In use卫星数	
最大SNR值	42.7
SNR≥40星数	2
冷启动定位时间	60S

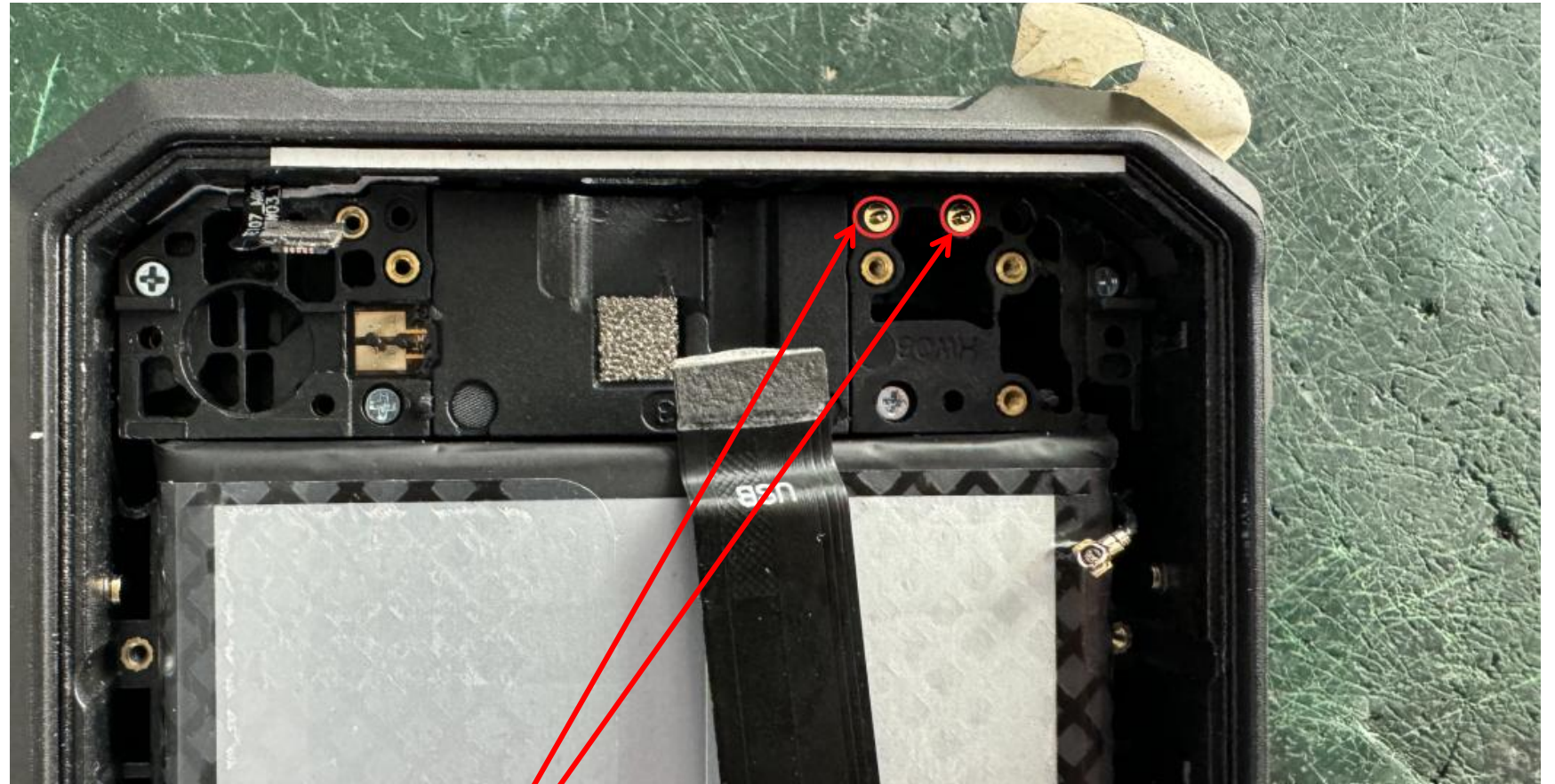
GPS测试结论:良好

BT 用AirPods Pro 耳机在室内15米听音乐ok。

BT测试结论:BT性能ok



环境处理environmental treatment



如图所示：主天线用这2个顶针，另外一个顶针取消不装。As shown in the figure: the main antenna uses these two pins, and the other pin is removed and not installed

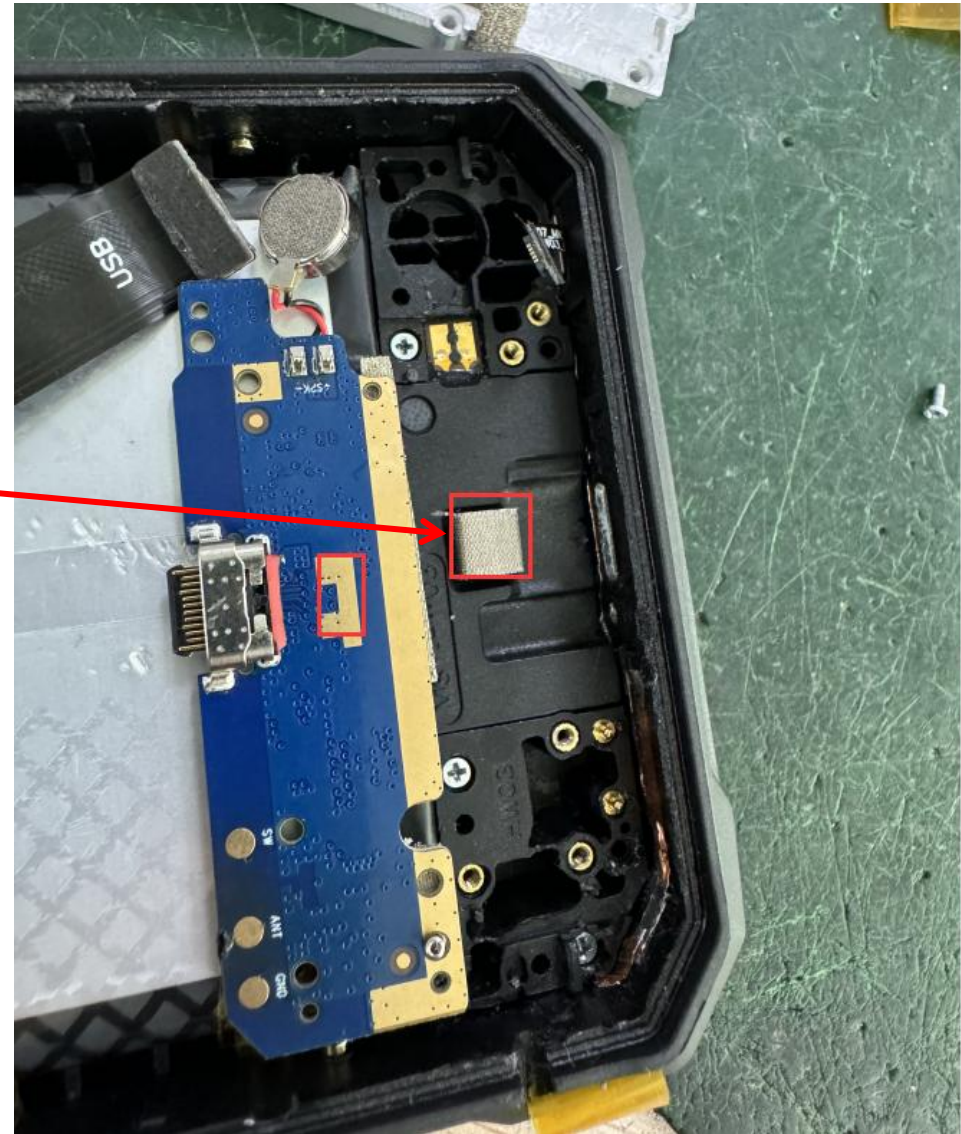
环境处理environmental treatment

如图所示：屏FPC排线上面
贴上导电布良好屏蔽接地
处理。As shown in the
figure: Apply
conductive cloth on the
FPC cable of the screen
for good shielding and
grounding treatment



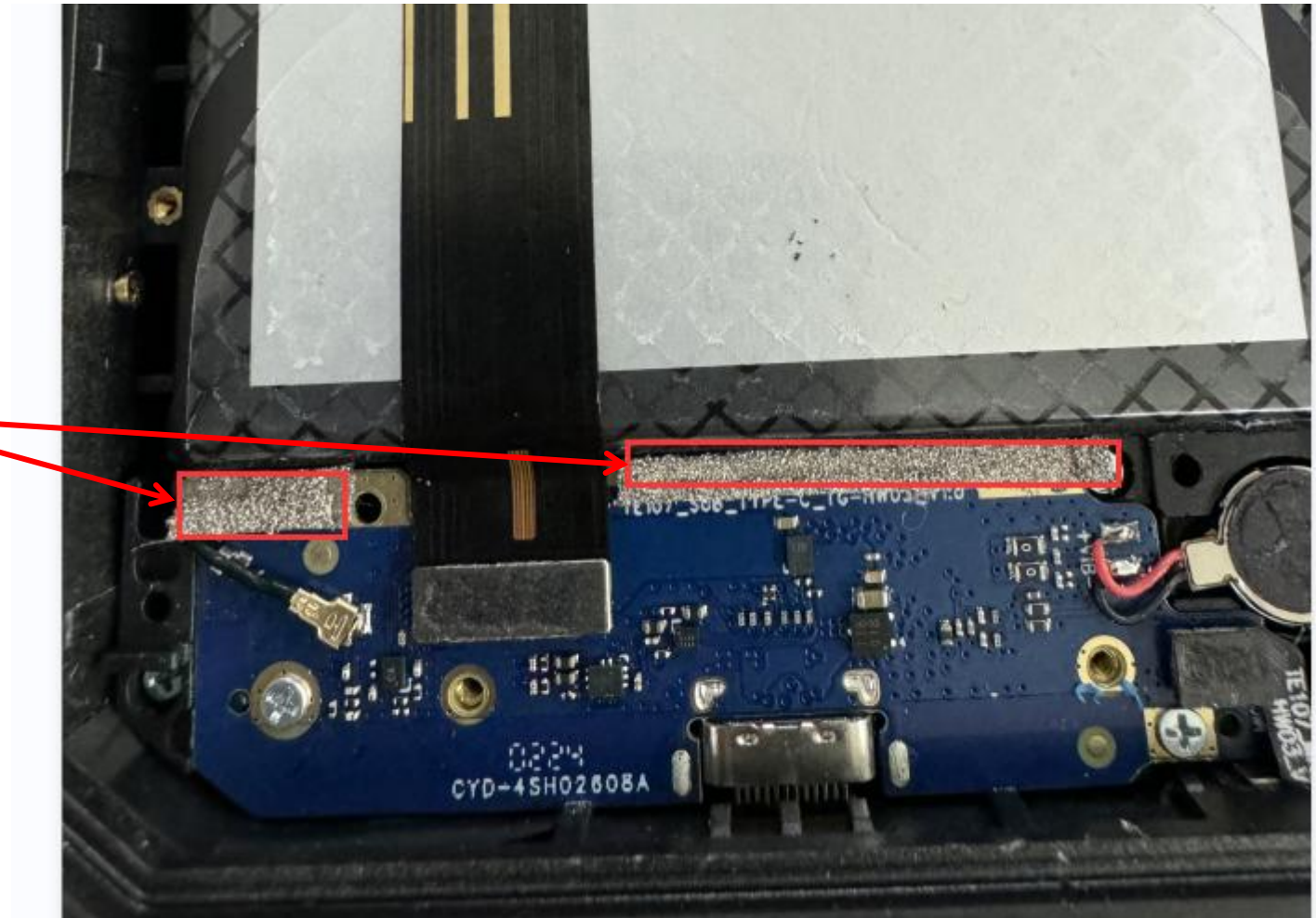
环境处理 environmental treatment

如图所示：喇叭此处贴上
导电泡绵与小板良好接地
处理 Place conductive
foam on the speaker and
ensure good grounding
with the small board



环境处理environmental treatment

如图所示：小板此2处贴上导电海绵与金属框良好接地处理。As shown in the figure: Apply conductive sponge and metal frame to these two areas of the small board for good grounding treatment.

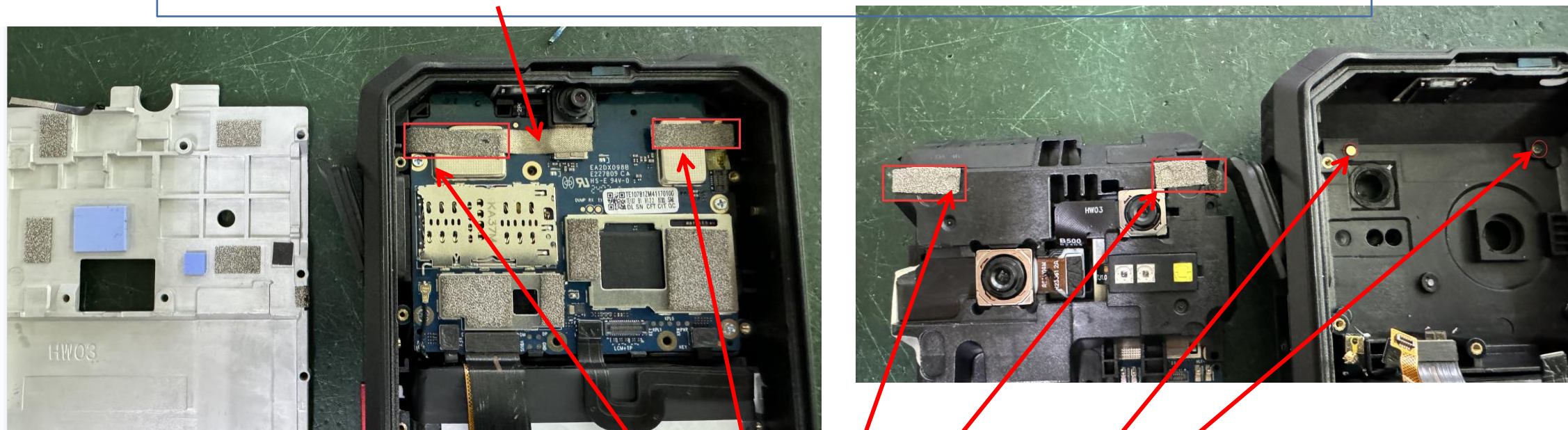


裁剪

改尺寸

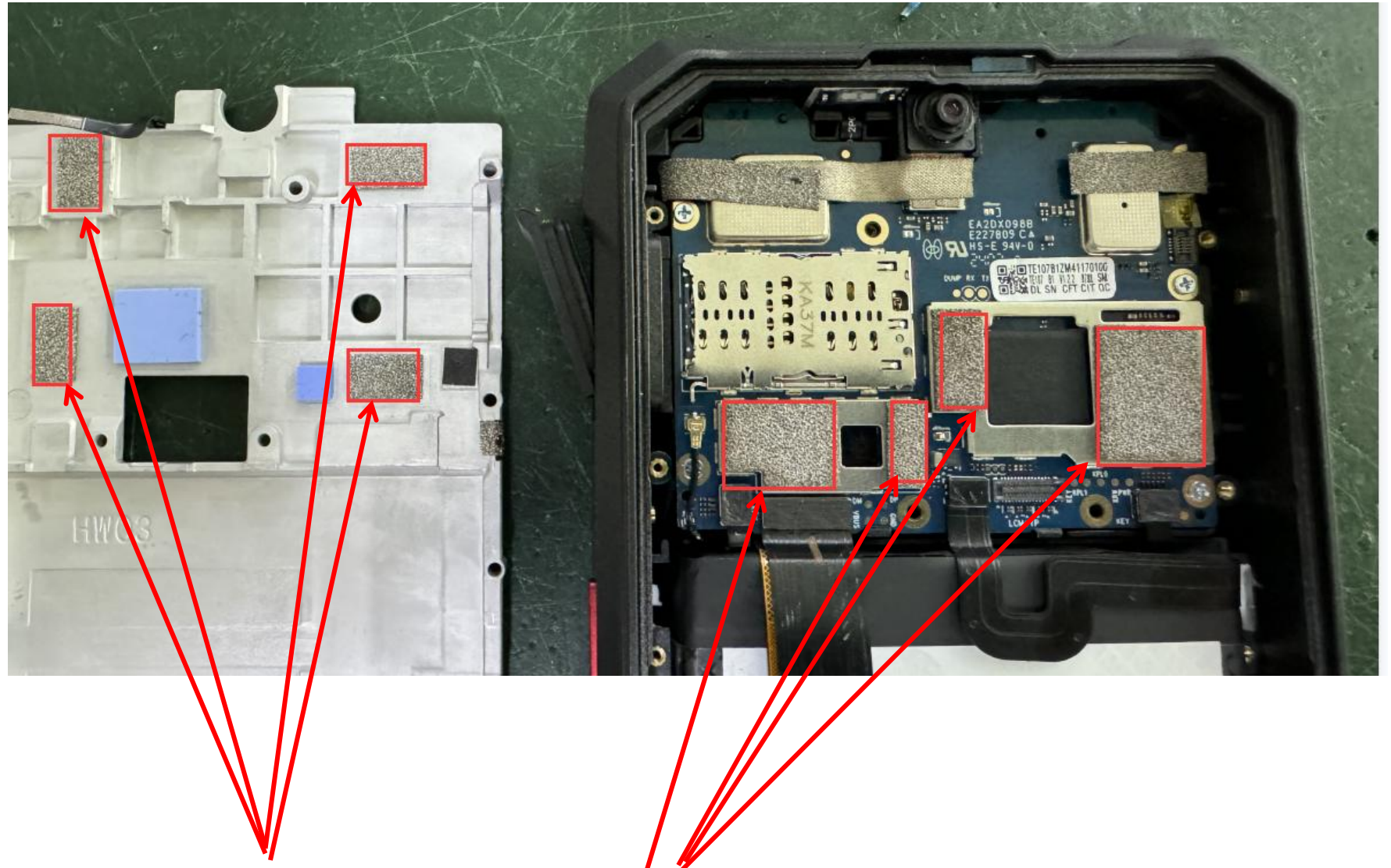
环境处理environmental treatment

如图所示：前摄此处贴上导电布接地处理。As shown in the figure: Apply a conductive cloth to the front camera for grounding treatment



如图所示：支架此2处贴上导电海绵通过与底壳上的2个顶针与金属装饰件良好接地处理。As shown in the figure, conductive sponges are attached to these two points of the bracket, which are well grounded with the two top pins on the bottom shell and the metal decorative parts

环境处理environmental treatment



如图所示：此4处导上导电海绵与主板良好接地处理

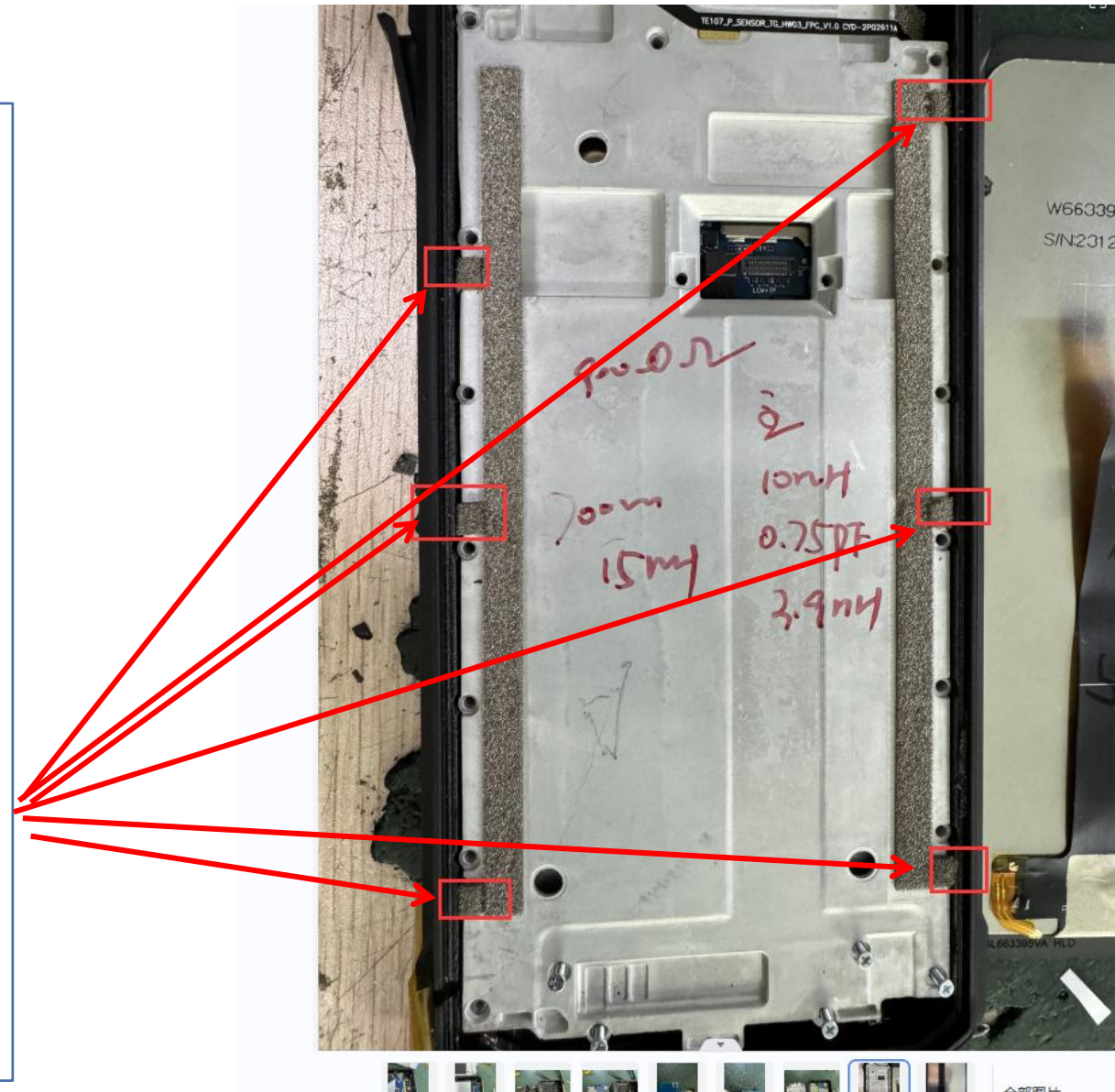
As shown in the figure: conductive sponge is connected to the motherboard at these 4 locations for good grounding treatment

环境处理 environmental treatment

如图所示：此6处贴上导电海棉与2侧金属装饰件良好接地处理，注意接地处做好镭雕处理。

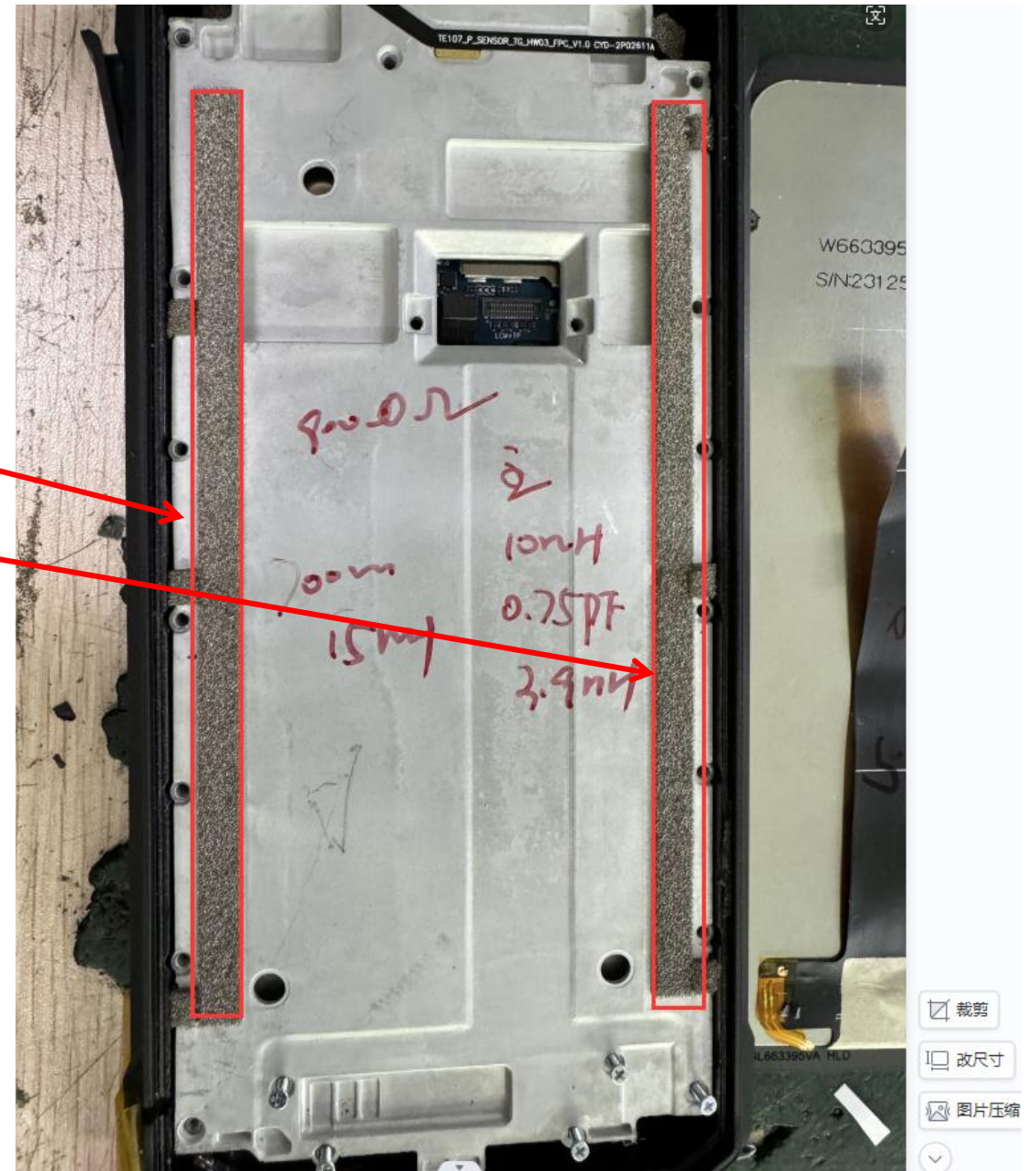
如图所示：此6处贴上导电海棉与2侧金属装饰件良好接地处理，注意接地处做好镭雕处理。

As shown in the figure:
Apply conductive sponge to these 6 points and ensure good grounding of the metal decorative parts on both sides.
Pay attention to laser engraving treatment at the grounding point

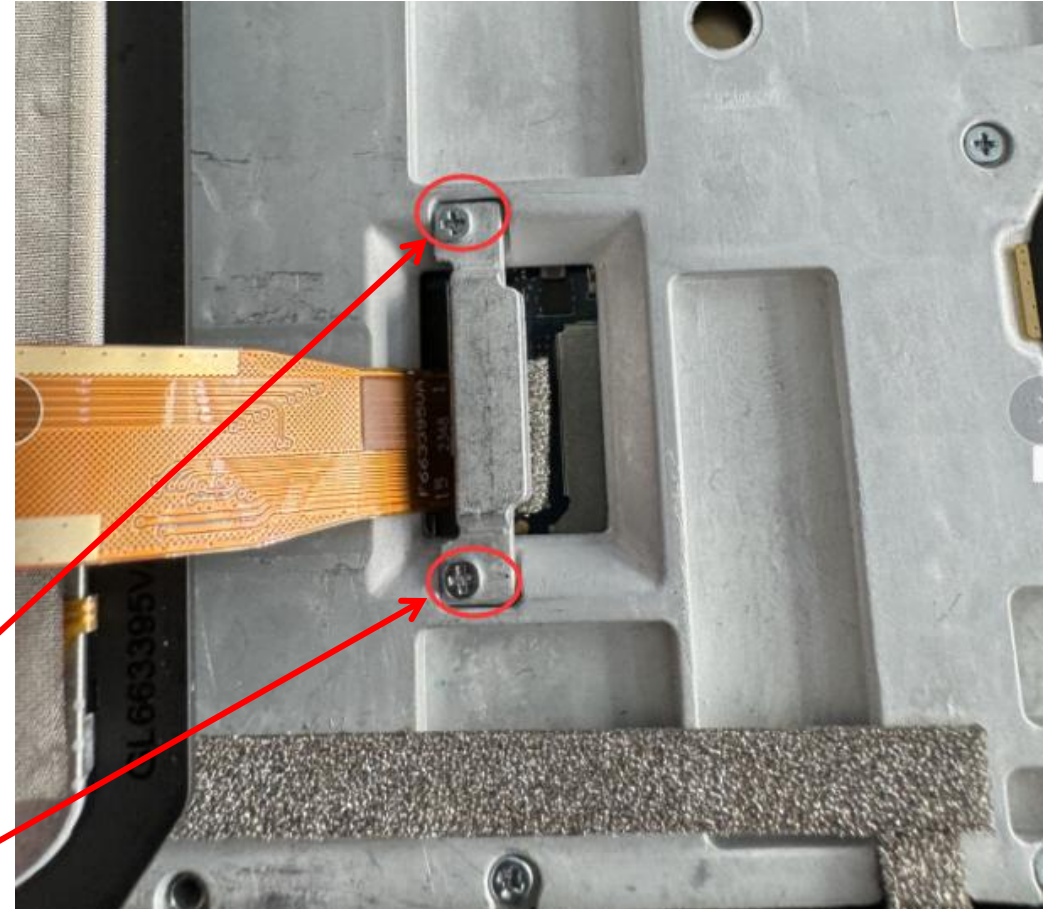
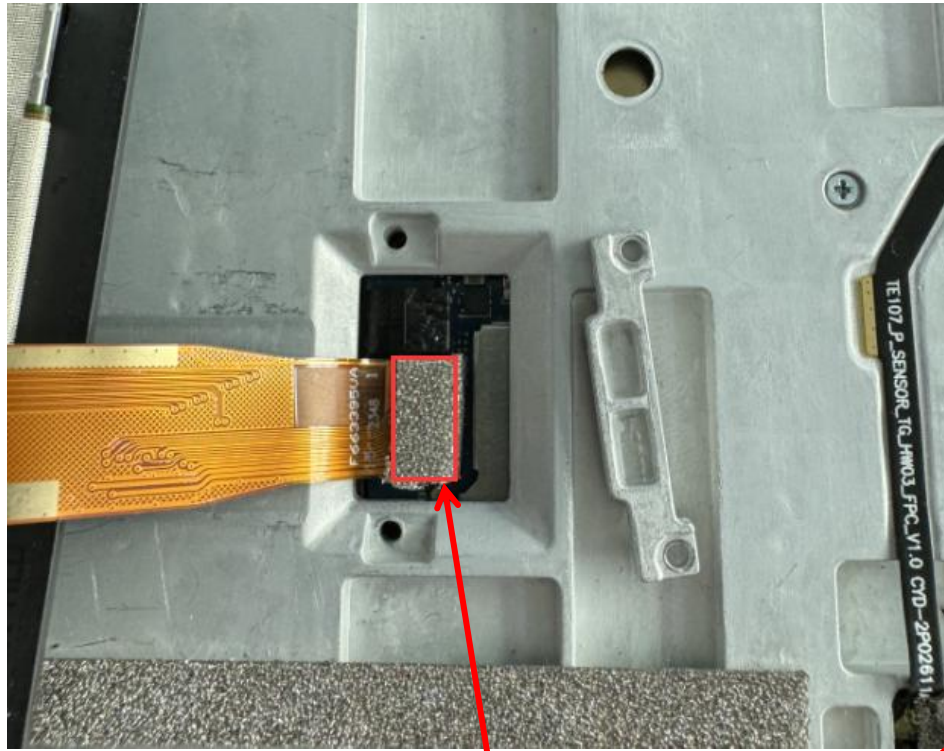


环境处理environmental treatment

如图所示：此2边各贴上1条导电海绵与屏良好接地处理
As shown in the figure: Apply one conductive sponge on each side to ensure good grounding of the screen



环境处理environmental treatment

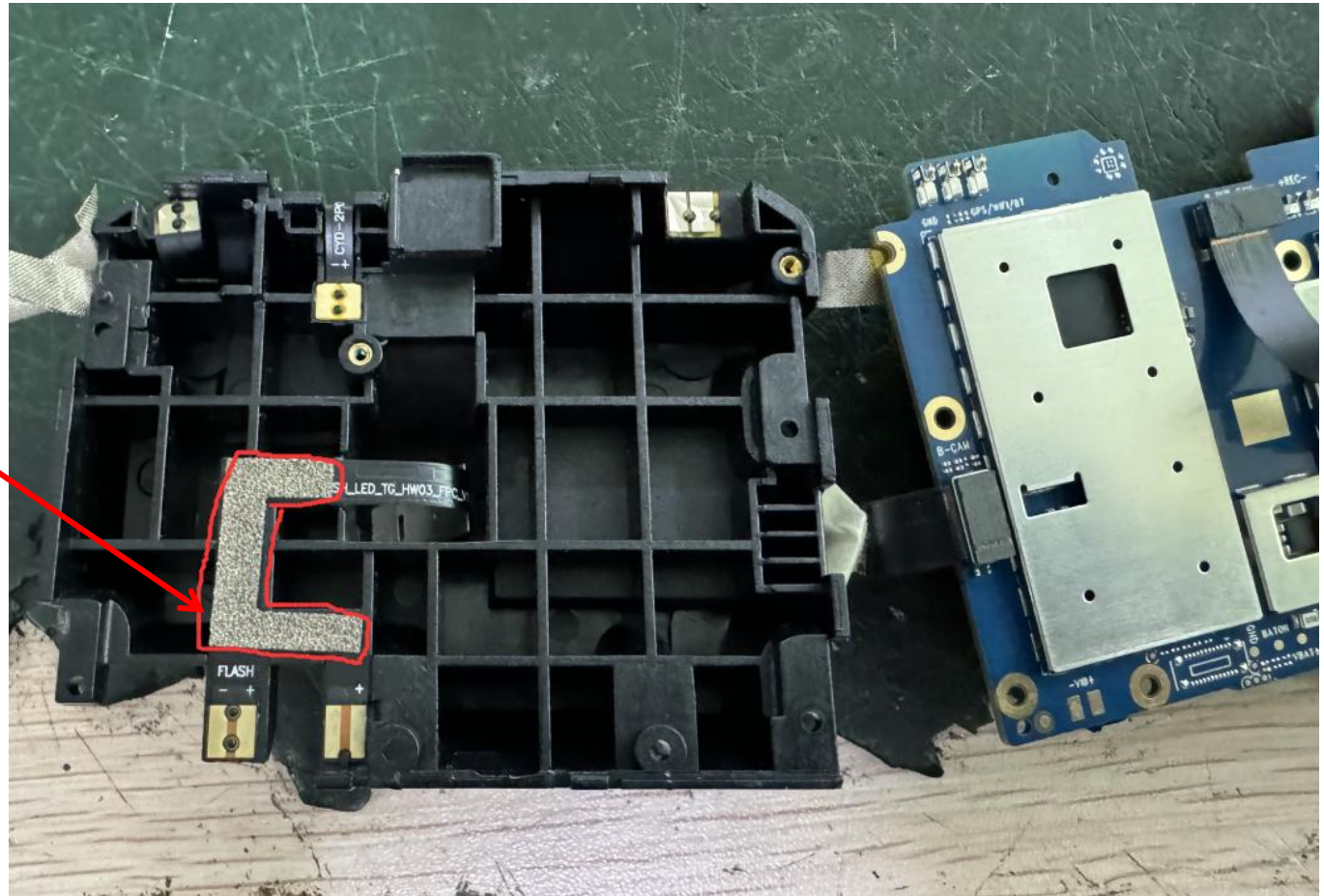


如图所示：红色框内贴上导电海绵良好接地处理。As shown in the figure: Stick conductive sponge inside the red box for good grounding treatment

环境处理environmental treatment

如图所示：在红色框内贴上导电海绵与主板良好屏蔽接地处理。

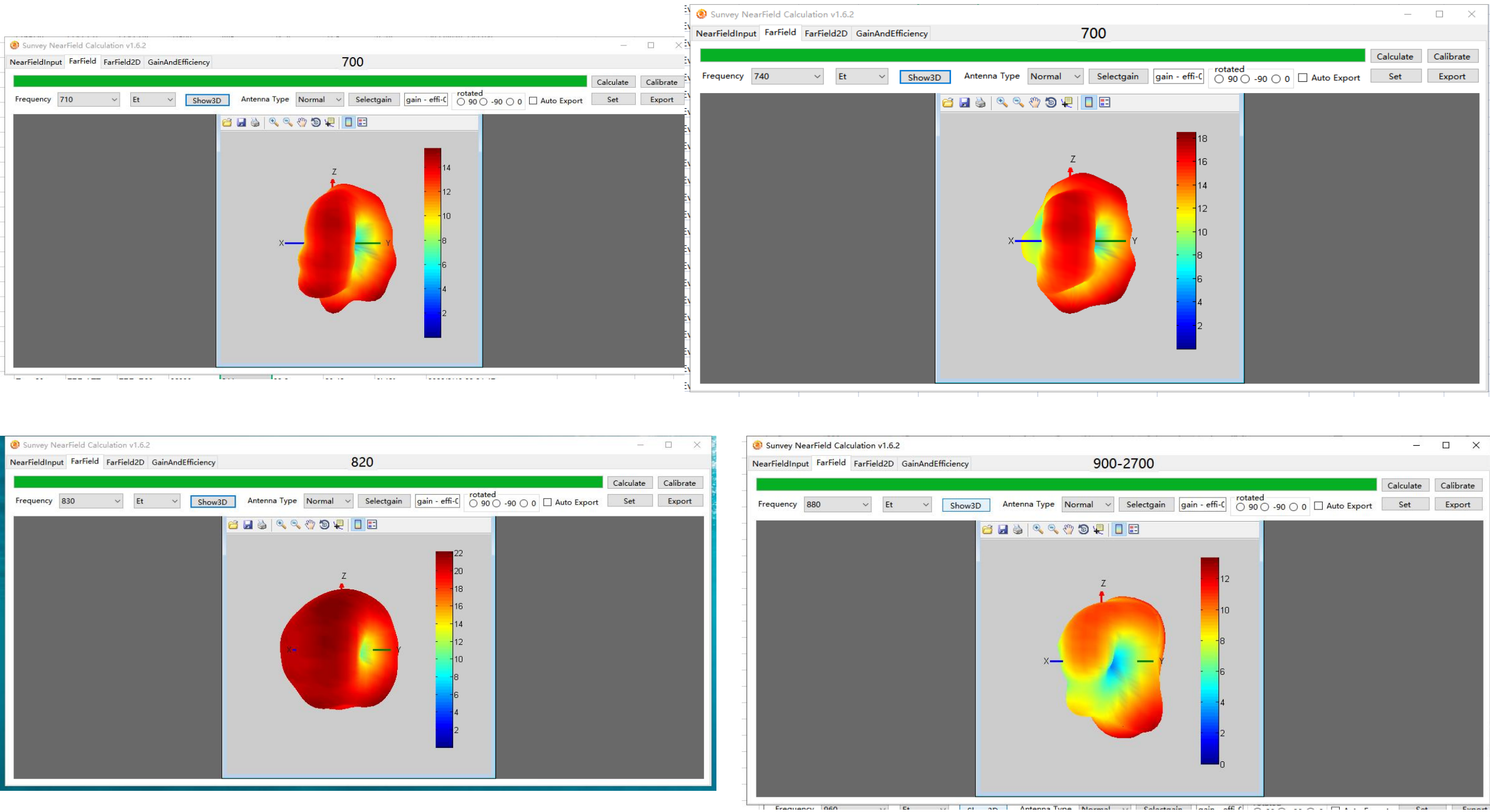
As shown in the figure:
Stick conductive sponge
inside the red box and
ensure good shielding
and grounding with the
motherboard



主天线无源报告Passive report of main antenna

Gain&Efficiency			Gain&Efficiency			Gain&Efficiency			Gain&Efficiency		
frequency	gain	efficiency	frequency	gain	efficiency	frequency	gain	efficiency	frequency	gain	efficiency
频率(MHz)	增益(dBi)	效率(%)	频率(MHz)	增益(dBi)	效率(%)	频率(MHz)	增益(dBi)	效率(%)	频率(MHz)	增益(dBi)	效率(%)
700	-3.58	17.38	1700	0.59	41.21	2140	1.91	47.95	2580	0.78	36.67
710	-2.67	20.54	1720	1.47	46.46	2160	1.85	49.07	2600	0.15	34.97
720	-2.15	22.09	1740	0.91	45.42	2180	1.66	49.98	2620	0.01	34.70
730	-1.82	24.65	1760	0.57	43.99	2200	2.27	55.46	2640	0.35	35.91
740	-1.37	27.98	1780	0.82	43.31	2220	2.37	57.74	2660	0.07	31.89
750	-1.1	28.78	1800	0.34	39.54	2240	2.41	56.71	2680	-0.29	29.82
760	-0.76	29.53	1820	1.18	42.28	2260	3.33	57.31			
770	-2.37	22.38	1840	1.15	36.89	2280	2.14	53.11			
780	-2.19	24.03	1860	1.15	36.68	2300	1.66	47.34			
790	-3.32	18.37	1880	0.96	38.03	2320	1.66	48.11			
820	-1.39	32.20	1900	0.91	38.91	2340	1.44	46.00			
830	-1.1	35.24	1920	0.62	34.87	2360	2.86	48.04			
840	-0.68	40.68	1940	1.02	39.19	2380	2.72	48.39			
850	-0.06	42.69	1960	0.43	34.58	2400	2.53	46.63			
860	-0.16	40.25	1980	0.95	34.04	2420	2.17	45.25			
870	-0.23	39.68	2000	1.12	38.09	2440	0.95	41.32			
880	-0.13	36.48	2020	1.12	40.51	2460	1	39.98			
890	0.4	36.92	2040	0.94	36.95	2480	0.74	36.54			
900	0.19	33.71	2060	1.93	43.42	2500	0.86	38.20			
920	1.8	53.43	2080	1.88	41.90	2520	1.55	39.38			
940	1.51	50.61	2100	2.33	45.96	2540	1.29	36.17			
960	0.73	46.69	2120	1.74	44.53	2560	1.28	37.36			

主天线苹果图Main antenna apple diagram



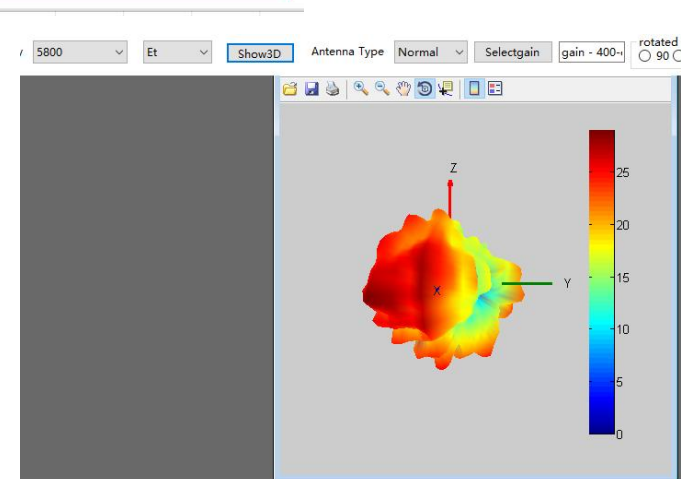
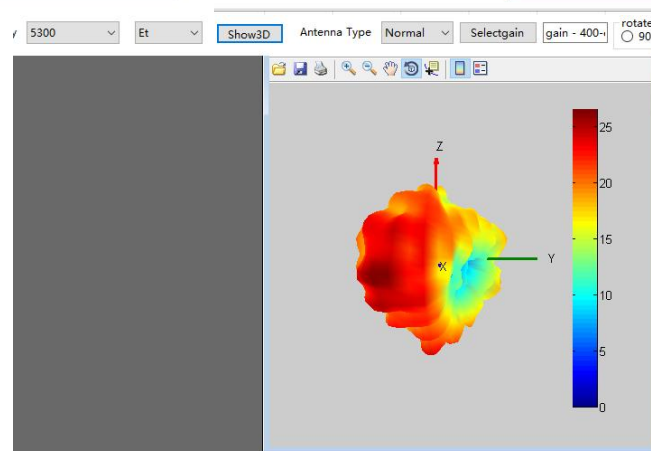
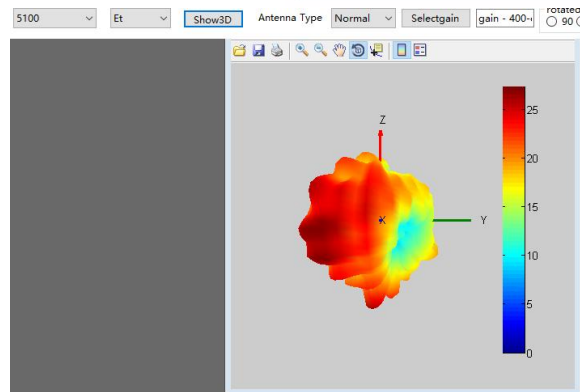
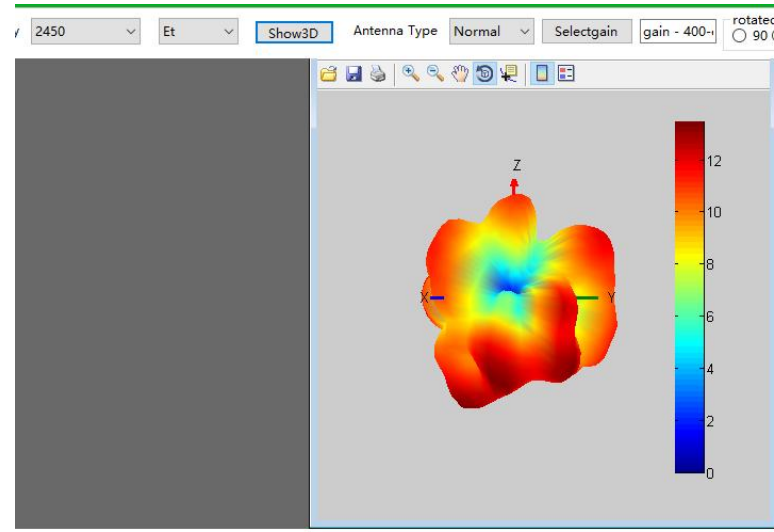
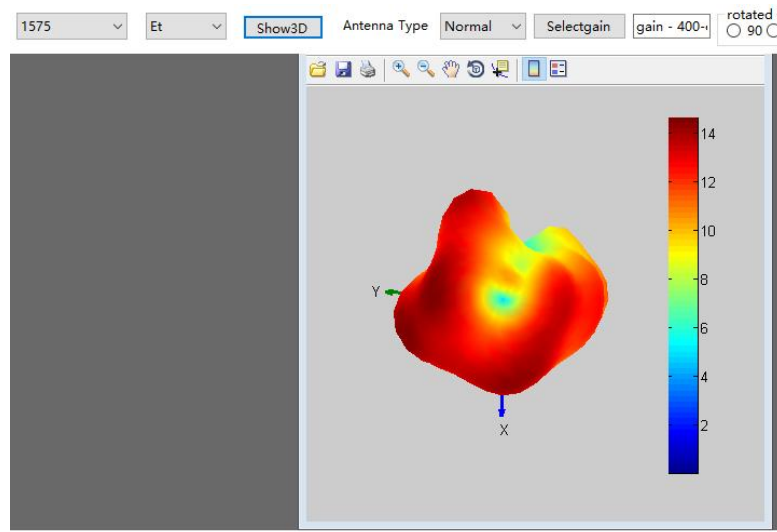
GPS/WIFI/BT无源效率增益
GPS/WIFI/BT passive efficiency gain



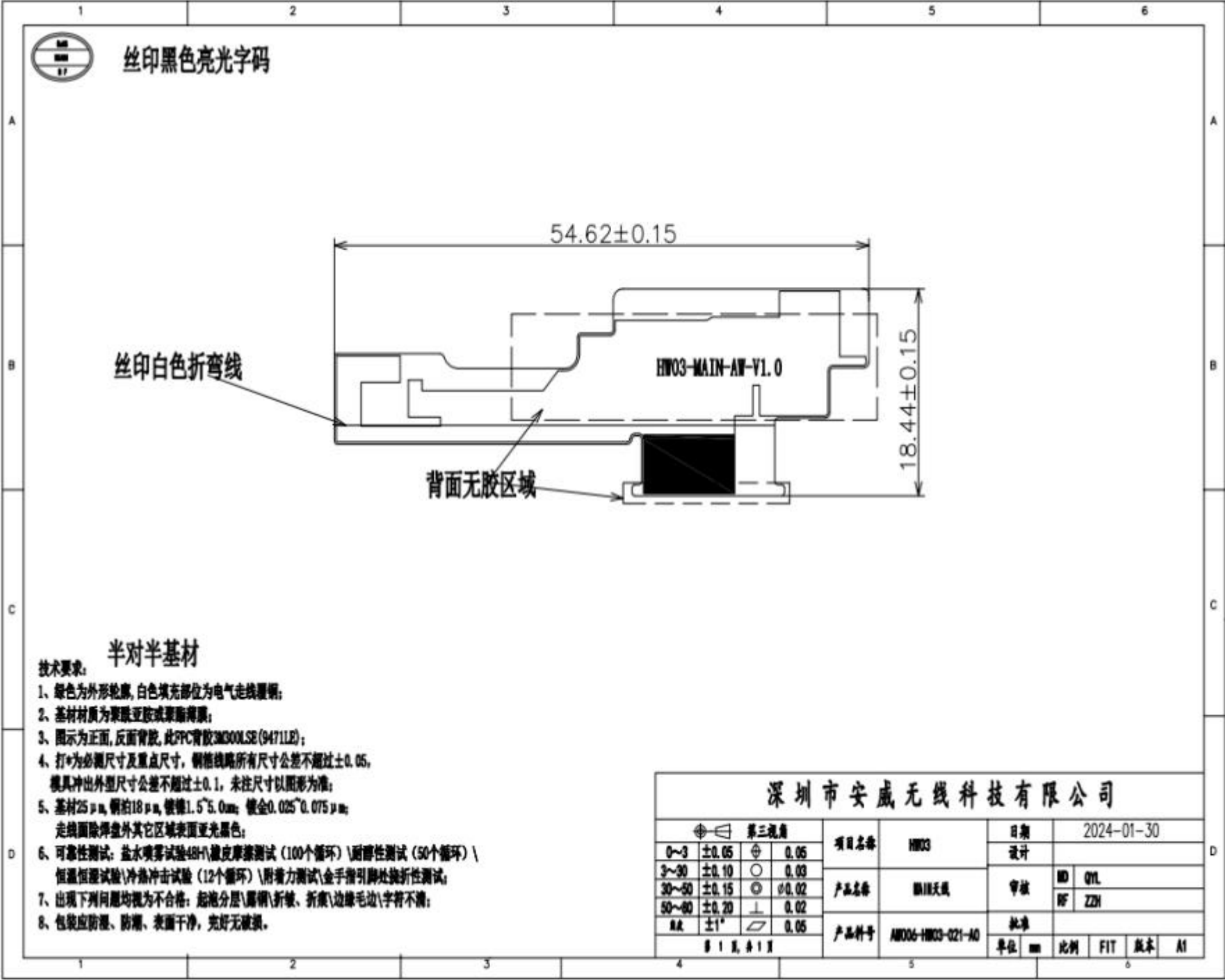
frequency 频率(MHz)	gain 增益(dBi)	efficiency 效率(%)					
1570	1.21	49.91					
1575	1.05	46.92					
1580	0.85	45.31					
2400	1.38	39.27					
2450	0.83	37.86					
2500	0.51	36.92					
5100	4.9	55.83					
5200	5.57	62.93					
5300	4.88	56.95					
5400	4.56	54.77					
5500	4.76	58.41					
5600	4.34	54.70					
5700	4.97	61.61					
5800	5.03	61.70					

测试结论:ok。

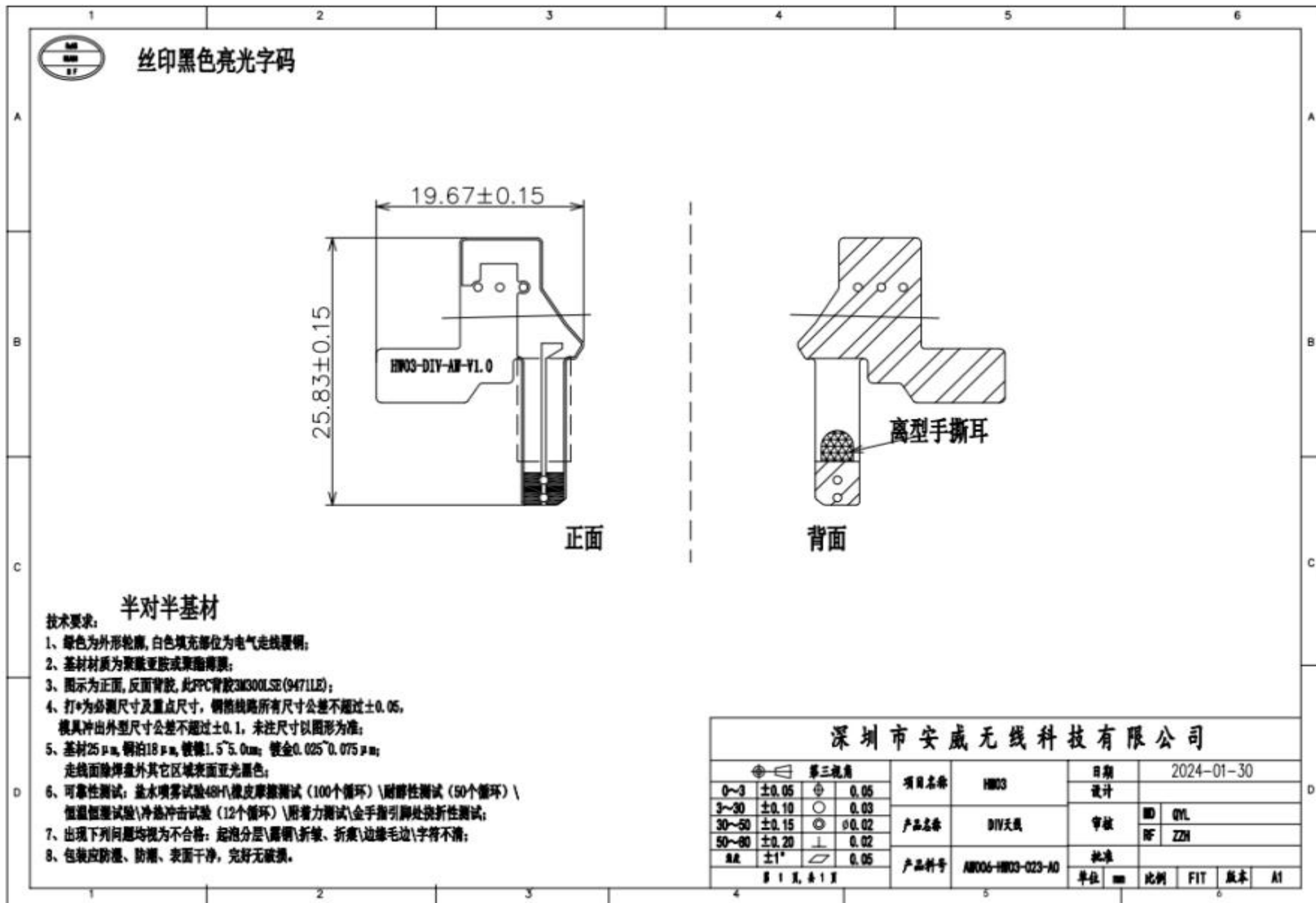
三合一苹果图Three in One Apple Chart



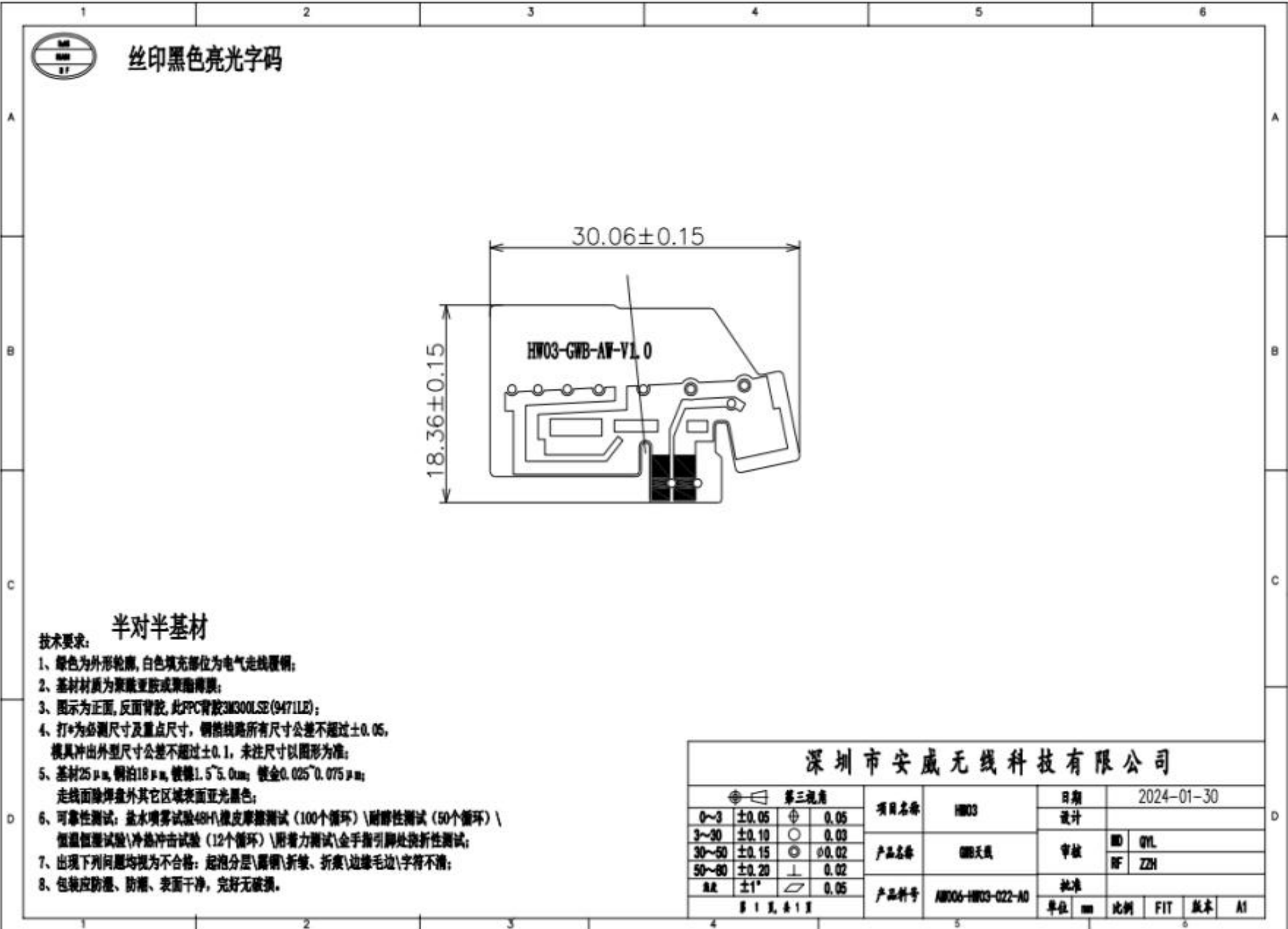
天线尺寸示意图Antenna size diagram



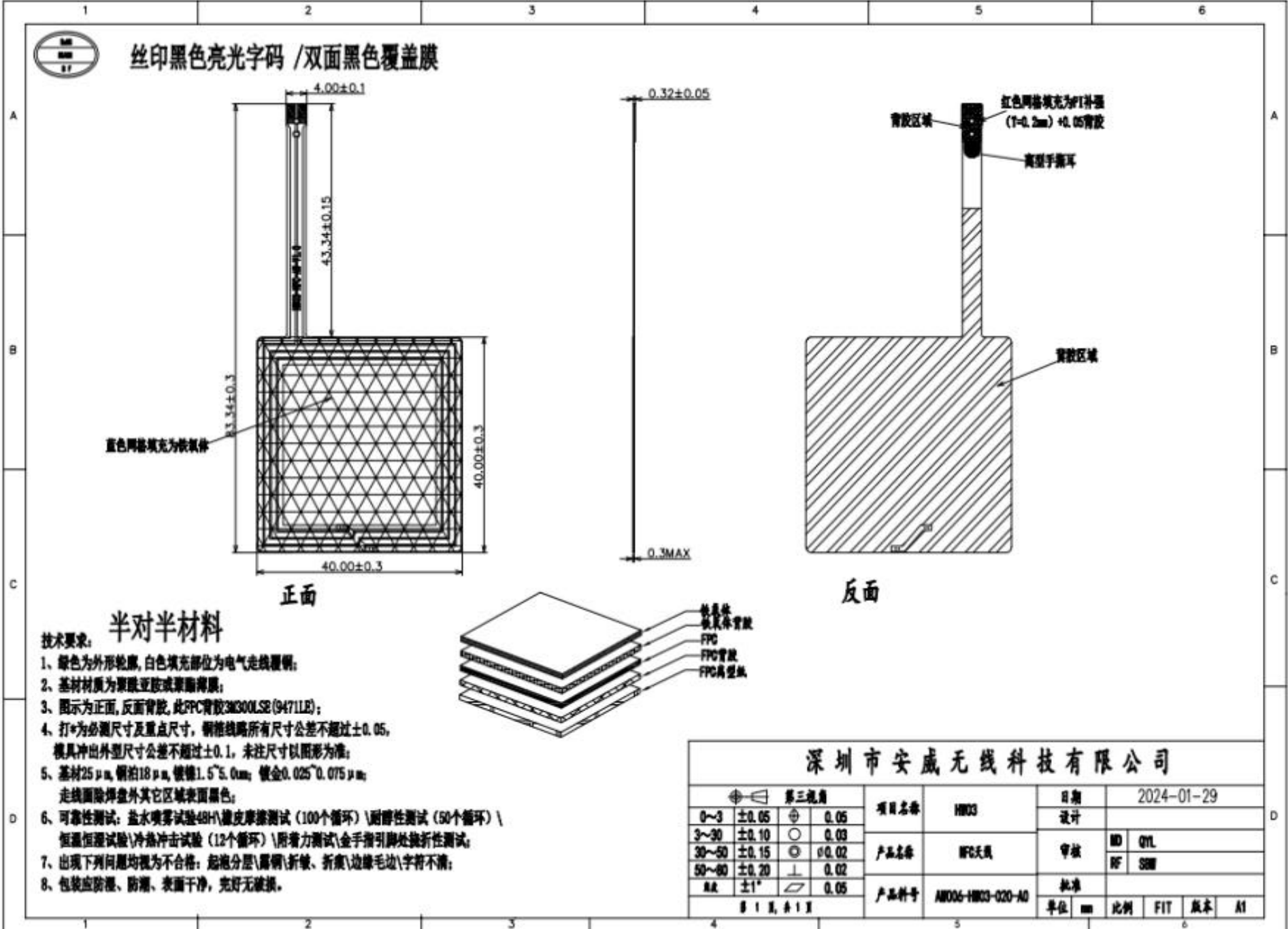
天线尺寸示意图Antenna size diagram



天线尺寸示意图Antenna size diagram



天线尺寸示意图Antenna size diagram



附加说明Additional instructions

-  请仔细确认报告中提到的匹配电路是否修改、以及环境处理是否导入，这将直接影响天线性能。
Please carefully confirm whether the matching circuit mentioned in the report is modified and whether the environmental treatment is imported, which will directly affect the antenna performance.
-  本报告所提供的参数仅为客户给到我司调测样机的参数，不代表贵司最终项目的最终量产状态。
The parameters provided in this report are only those provided by the customer to our company for testing the prototype, and do not represent the final mass production status of your company's final project.
-  倘若贵司有最新试产、或者更新状态（更换物料、更新软件、更换环境处理等）的样机，请尽快交由我司进行验证，以确认天线性能是否受到影响。
If your company has a prototype with the latest trial production or updated status (changing materials, updating software, changing environmental treatment, etc.), please submit it to our company for verification as soon as possible to confirm whether the antenna performance is affected
-  倘若贵司需要送往第三方复测或者送往客户测试，请务必将需要测试的机器交由我司进行测试确认，因为主板的一致性、装配的一致性，以及天线组装差异等因素，均可能导致天线参数的偏差。
If your company needs to send the machine to a third party for retest or to a customer for testing, please be sure to submit the machine to be tested to our company for testing and confirmation, because the consistency of the motherboard, the consistency of the assembly, and the difference in the antenna assembly and other factors may lead to the deviation of the antenna parameters.

