

Antenna Test Report

Customer Name: Autumn Rain

Frequency band: WIFI2.4G/5.8G/BT

Shenzhen Shun reach technology Co., LTD

Manufacturer's address: 401A, Xinfu Industrial Park, Zhongqing Road, Heping Community,
Fuhai Street, Baoan District, Shenzhen

Project name :K12

Production date: 2025-3-21



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1: Antenna Overview & Dimension

2: The test project

2.1 Antenna Matching Network

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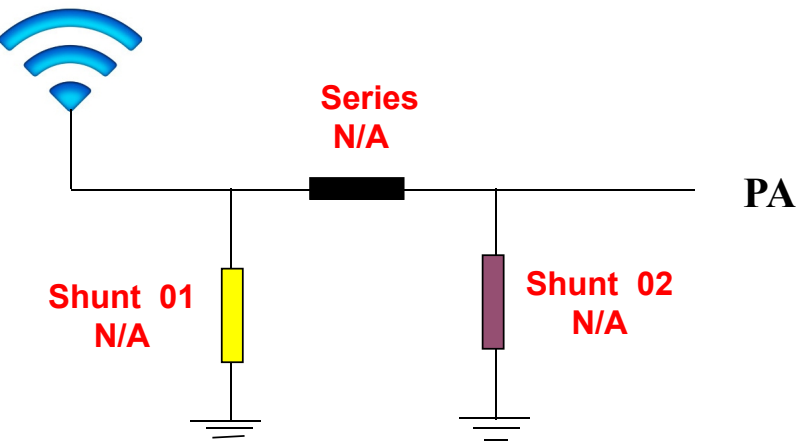
2.3 Gain & Efficiency

2.4 3D Date

2.5 The Free Space 3D Date/The Free Space 2D Date

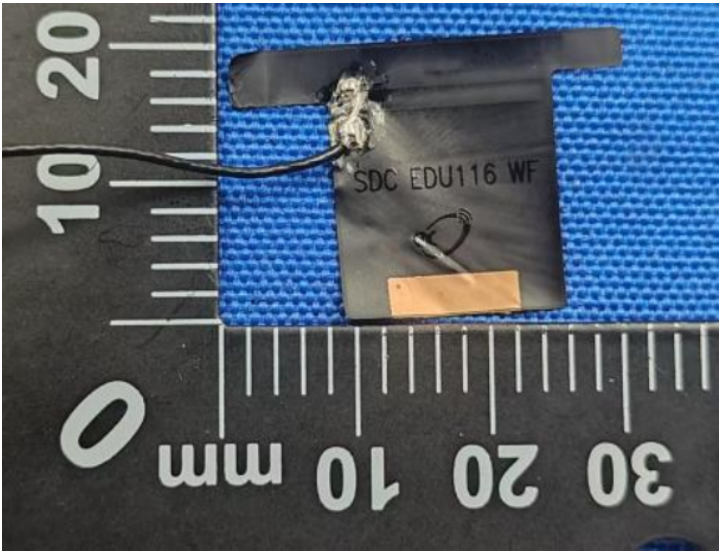
3 : Ground processing

Antenna



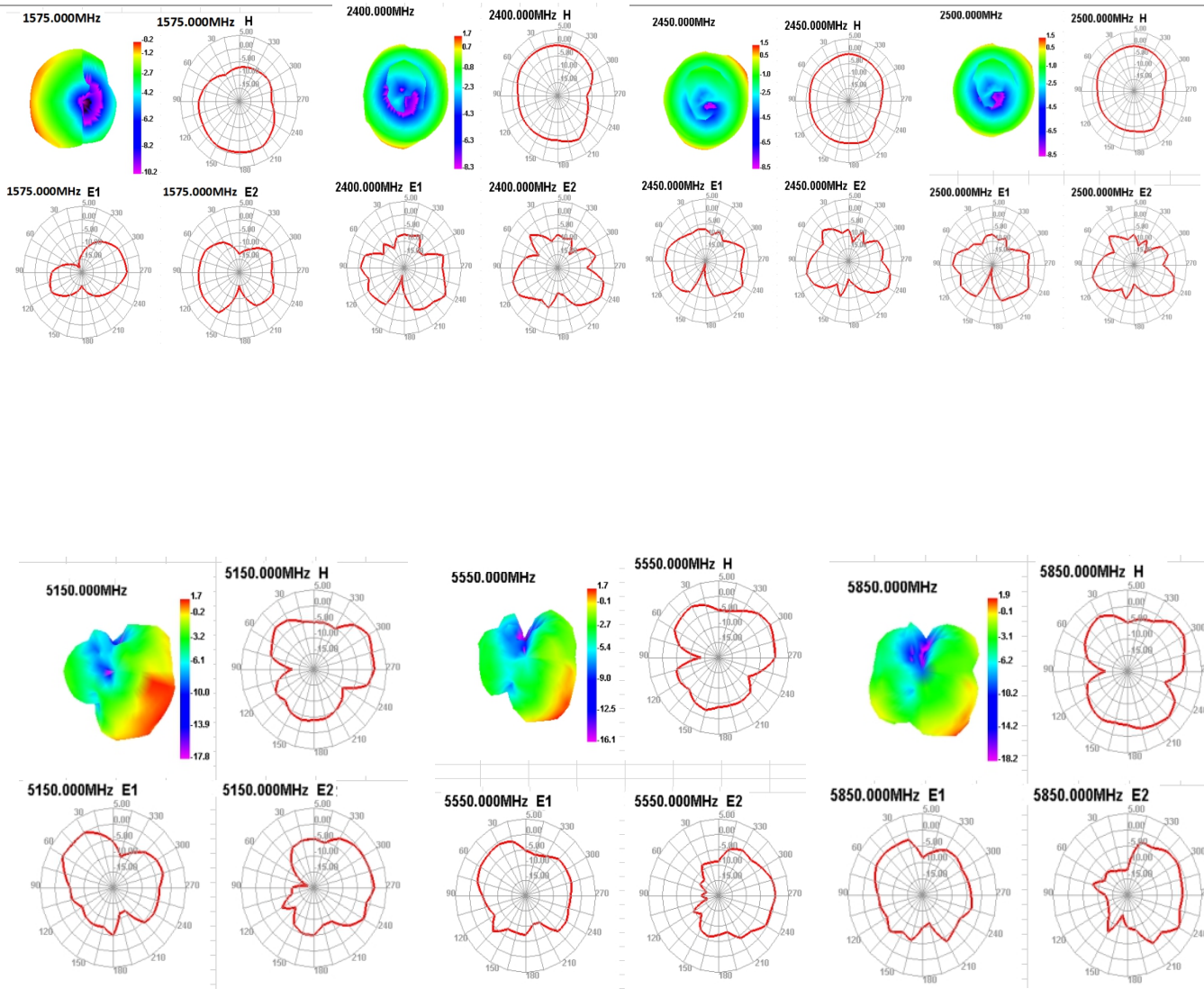
Location	Description
Shunt 01	N/A
Series	N/A
Shunt 02	N/A

Size



Gain & Efficiency

Frequency (MHz)	Efficiency (%)	Peak GAIN (dBi)
1575		
2400	41. 6	1. 67
2450	42. 44	1. 46
2500	42. 39	1. 47
5150	43. 23	1. 66
5350	44. 19	1. 86
5550	42. 73	1. 71
5750	41. 65	1. 85
5850	40. 58	1. 86



WIFI OTA Data

2.4G WIFI	TRP			TIS		
Channel	CH1	CH6	CH12	CH1	CH6	CH12
802.11 b , 11M	11.2	12.83	12.68	-80.9	-81.13	-80.59
802.11 g , 54M	11.27	11.95	11.83	-67.54	-67.55	-67.42
802.11 n , MCS7 (65M)	12.56	12.18	12.35	-66.37	-66.62	-66.14

5.8G WIFI	TRP			TIS		
Channel	CH36	CH60	CH165	CH36	CH161	CH165
802.11 A , 54M	10.32	9.76	10.13	-70.51	-70.22	-71.36

2.4G Throughput

```
4] 37.00-38.00 sec 7.23 MBytes 60.6 Mbits/sec
4] 38.00-39.00 sec 7.29 MBytes 61.2 Mbits/sec
4] 39.00-40.00 sec 7.35 MBytes 61.7 Mbits/sec
4] 40.00-41.00 sec 8.03 MBytes 67.3 Mbits/sec
4] 41.00-42.00 sec 7.23 MBytes 60.6 Mbits/sec
4] 42.00-43.00 sec 7.17 MBytes 60.1 Mbits/sec
4] 43.00-44.00 sec 8.03 MBytes 67.3 Mbits/sec
4] 44.00-45.00 sec 6.86 MBytes 57.5 Mbits/sec
4] 45.00-46.00 sec 7.54 MBytes 63.3 Mbits/sec
4] 46.00-47.00 sec 7.84 MBytes 65.8 Mbits/sec
4] 47.00-48.00 sec 7.23 MBytes 60.6 Mbits/sec
4] 48.00-49.00 sec 7.23 MBytes 60.7 Mbits/sec
4] 49.00-50.00 sec 7.72 MBytes 64.8 Mbits/sec
4] 50.00-51.00 sec 7.11 MBytes 59.6 Mbits/sec
4] 51.00-52.00 sec 7.78 MBytes 65.3 Mbits/sec
4] 52.00-53.00 sec 7.29 MBytes 61.1 Mbits/sec
4] 53.00-54.00 sec 7.96 MBytes 66.8 Mbits/sec
4] 54.00-55.00 sec 7.17 MBytes 60.2 Mbits/sec
4] 55.00-56.00 sec 7.96 MBytes 66.8 Mbits/sec
4] 56.00-57.00 sec 7.05 MBytes 59.1 Mbits/sec
4] 57.00-58.00 sec 7.23 MBytes 60.6 Mbits/sec
4] 58.00-59.00 sec 8.09 MBytes 67.9 Mbits/sec
4] 59.00-60.00 sec 7.17 MBytes 60.1 Mbits/sec
-----
[ ID] Interval      Transfer  Bandwidth
[ 4] 0.00-60.00 sec 448 MBytes 62.6 Mbits/sec  sender
[ 4] 0.00-60.00 sec 447 MBytes 62.5 Mbits/sec  receiver

iperf Done.
```

Download

```
7] 29.00-30.00 sec 9.35 MBytes 78.4 Mbits/sec
7] 30.00-31.00 sec 10.5 MBytes 88.0 Mbits/sec
7] 31.00-32.00 sec 10.1 MBytes 84.9 Mbits/sec
7] 32.00-33.00 sec 9.57 MBytes 80.2 Mbits/sec
7] 33.00-34.00 sec 9.63 MBytes 80.8 Mbits/sec
7] 34.00-35.00 sec 9.80 MBytes 82.2 Mbits/sec
7] 35.00-36.00 sec 8.65 MBytes 72.6 Mbits/sec
7] 36.00-37.00 sec 9.15 MBytes 76.8 Mbits/sec
7] 37.00-38.00 sec 10.1 MBytes 84.6 Mbits/sec
7] 38.00-39.00 sec 10.2 MBytes 85.5 Mbits/sec
7] 39.00-40.00 sec 10.1 MBytes 84.3 Mbits/sec
7] 40.00-41.00 sec 8.73 MBytes 73.2 Mbits/sec
7] 41.00-42.00 sec 9.27 MBytes 77.9 Mbits/sec
7] 42.00-43.00 sec 9.35 MBytes 78.4 Mbits/sec
7] 43.00-44.00 sec 8.74 MBytes 73.4 Mbits/sec
7] 44.00-45.00 sec 7.77 MBytes 65.2 Mbits/sec
7] 45.00-46.00 sec 11.1 MBytes 93.1 Mbits/sec
7] 46.00-47.00 sec 10.1 MBytes 84.4 Mbits/sec
7] 47.00-48.00 sec 11.1 MBytes 93.2 Mbits/sec
7] 48.00-49.00 sec 10.6 MBytes 88.7 Mbits/sec
7] 49.00-50.00 sec 9.71 MBytes 81.4 Mbits/sec
7] 50.00-51.00 sec 10.4 MBytes 87.1 Mbits/sec
7] 51.00-52.00 sec 9.13 MBytes 76.6 Mbits/sec
7] 52.00-53.00 sec 11.2 MBytes 94.1 Mbits/sec
7] 53.00-54.00 sec 11.2 MBytes 93.5 Mbits/sec
7] 54.00-55.00 sec 11.1 MBytes 93.1 Mbits/sec
7] 55.00-56.00 sec 9.31 MBytes 78.1 Mbits/sec
7] 56.00-57.00 sec 7.94 MBytes 66.6 Mbits/sec
7] 57.00-58.00 sec 7.03 MBytes 59.0 Mbits/sec
7] 58.00-59.00 sec 7.95 MBytes 66.7 Mbits/sec
7] 59.00-60.00 sec 7.19 MBytes 60.3 Mbits/sec
7] 60.00-60.15 sec 1.02 MBytes 58.8 Mbits/sec
-----
[ ID] Interval      Transfer  Bandwidth
[ 7] 0.00-60.15 sec 0.00 Bytes 0.00 bits/sec  sender
[ 7] 0.00-60.15 sec 561 MBytes 78.3 Mbits/sec  receiver

Server listening on 5201
```

Upload

5G Throughput

```
4] 33.00-34.01 sec 28.2 MBytes 235 Mbits/sec
4] 34.01-35.00 sec 25.5 MBytes 215 Mbits/sec
4] 35.00-36.00 sec 27.3 MBytes 229 Mbits/sec
4] 36.00-37.00 sec 26.7 MBytes 224 Mbits/sec
4] 37.00-38.00 sec 27.3 MBytes 230 Mbits/sec
4] 38.00-39.00 sec 27.6 MBytes 231 Mbits/sec
4] 39.00-40.00 sec 28.2 MBytes 236 Mbits/sec
4] 40.00-41.00 sec 26.2 MBytes 220 Mbits/sec
4] 41.00-42.00 sec 26.2 MBytes 220 Mbits/sec
4] 42.00-43.00 sec 28.4 MBytes 238 Mbits/sec
4] 43.00-44.01 sec 28.7 MBytes 238 Mbits/sec
4] 44.01-45.00 sec 27.8 MBytes 236 Mbits/sec
4] 45.00-46.01 sec 27.1 MBytes 226 Mbits/sec
4] 46.01-47.00 sec 26.0 MBytes 219 Mbits/sec
4] 47.00-48.00 sec 26.8 MBytes 225 Mbits/sec
4] 48.00-49.00 sec 28.1 MBytes 235 Mbits/sec
4] 49.00-50.00 sec 32.4 MBytes 272 Mbits/sec
4] 50.00-51.02 sec 28.7 MBytes 237 Mbits/sec
4] 51.02-52.01 sec 27.6 MBytes 233 Mbits/sec
4] 52.01-53.00 sec 27.5 MBytes 233 Mbits/sec
4] 53.00-54.00 sec 26.0 MBytes 219 Mbits/sec
4] 54.00-55.00 sec 26.8 MBytes 225 Mbits/sec
4] 55.00-56.00 sec 25.3 MBytes 212 Mbits/sec
4] 56.00-57.00 sec 24.5 MBytes 205 Mbits/sec
4] 57.00-58.00 sec 24.4 MBytes 205 Mbits/sec
4] 58.00-59.01 sec 25.4 MBytes 211 Mbits/sec
4] 59.01-60.00 sec 26.0 MBytes 219 Mbits/sec
-----
ID| Interval   Transfer  Bandwidth
4] 0.00-60.00 sec 1.61 GBytes 230 Mbits/sec  sender
4] 0.00-60.00 sec 1.61 GBytes 230 Mbits/sec  receiver

perf Done.
```

Download

```
5] 32.00-33.01 sec 29.5 MBytes 247 Mbits/sec
5] 33.01-34.00 sec 31.7 MBytes 267 Mbits/sec
5] 34.00-35.00 sec 31.3 MBytes 262 Mbits/sec
5] 35.00-36.00 sec 29.1 MBytes 243 Mbits/sec
5] 36.00-37.00 sec 30.6 MBytes 257 Mbits/sec
5] 37.00-38.00 sec 30.4 MBytes 256 Mbits/sec
5] 38.00-39.00 sec 29.8 MBytes 250 Mbits/sec
5] 39.00-40.00 sec 29.7 MBytes 248 Mbits/sec
5] 40.00-41.00 sec 28.3 MBytes 238 Mbits/sec
5] 41.00-42.01 sec 28.6 MBytes 239 Mbits/sec
5] 42.01-43.00 sec 26.9 MBytes 227 Mbits/sec
5] 43.00-44.00 sec 30.8 MBytes 259 Mbits/sec
5] 44.00-45.01 sec 29.4 MBytes 245 Mbits/sec
5] 45.01-46.00 sec 28.5 MBytes 241 Mbits/sec
5] 46.00-47.00 sec 30.4 MBytes 255 Mbits/sec
5] 47.00-48.00 sec 29.1 MBytes 244 Mbits/sec
5] 48.00-49.00 sec 29.7 MBytes 249 Mbits/sec
5] 49.00-50.00 sec 33.0 MBytes 277 Mbits/sec
5] 50.00-51.00 sec 34.5 MBytes 290 Mbits/sec
5] 51.00-52.00 sec 33.6 MBytes 281 Mbits/sec
5] 52.00-53.00 sec 24.6 MBytes 206 Mbits/sec
5] 53.00-54.00 sec 27.1 MBytes 228 Mbits/sec
5] 54.00-55.00 sec 32.9 MBytes 276 Mbits/sec
5] 55.00-56.00 sec 33.0 MBytes 276 Mbits/sec
5] 56.00-57.00 sec 32.9 MBytes 277 Mbits/sec
5] 57.00-58.00 sec 32.6 MBytes 273 Mbits/sec
5] 58.00-59.00 sec 31.7 MBytes 267 Mbits/sec
5] 59.00-60.01 sec 30.6 MBytes 255 Mbits/sec
5] 60.01-60.05 sec 1.47 MBytes 269 Mbits/sec
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ID| Interval   Transfer  Bandwidth
5] 0.00-60.05 sec 0.00 Bytes 0.00 bits/sec  sender
5] 0.00-60.05 sec 1.79 GBytes 257 Mbits/sec  receiver

Server listening on 5201
```

Upload

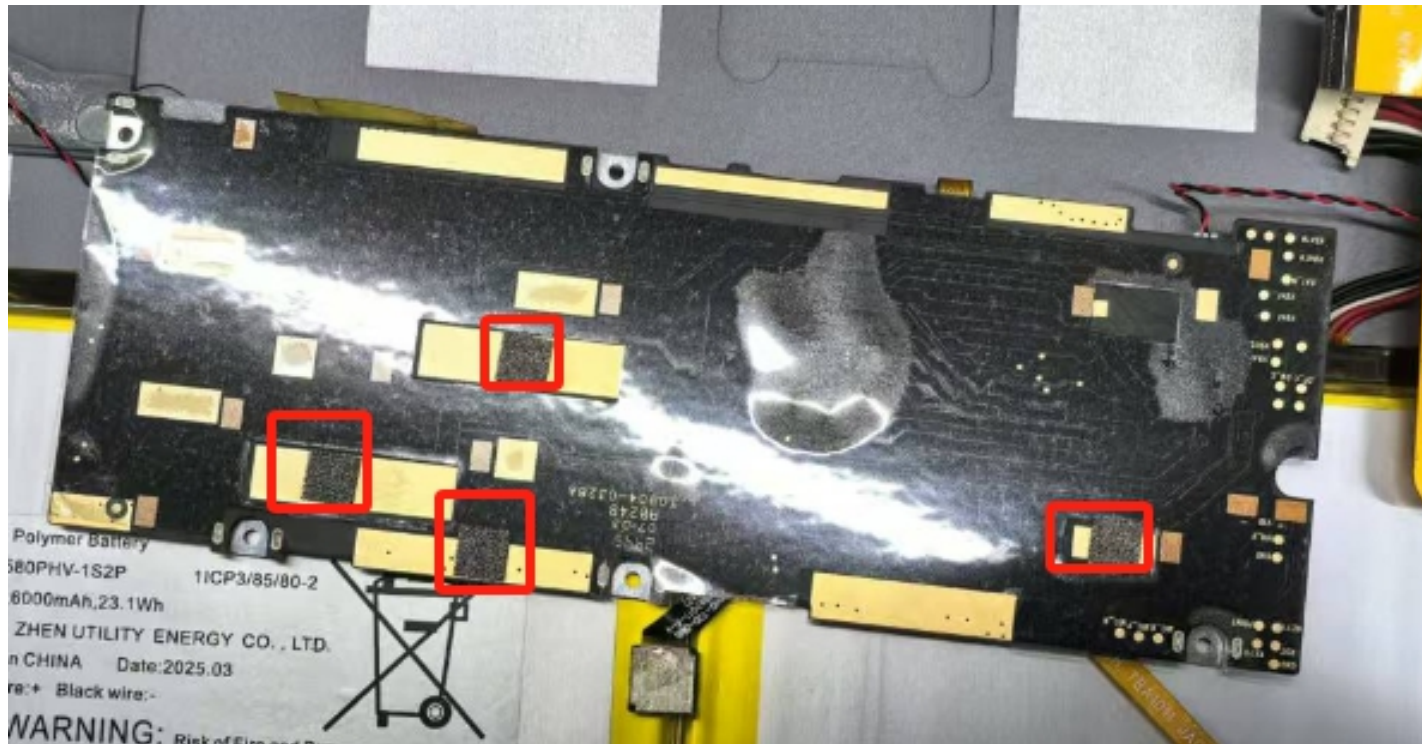
Antenna installation position diagram



Antenna



Environmental treatment



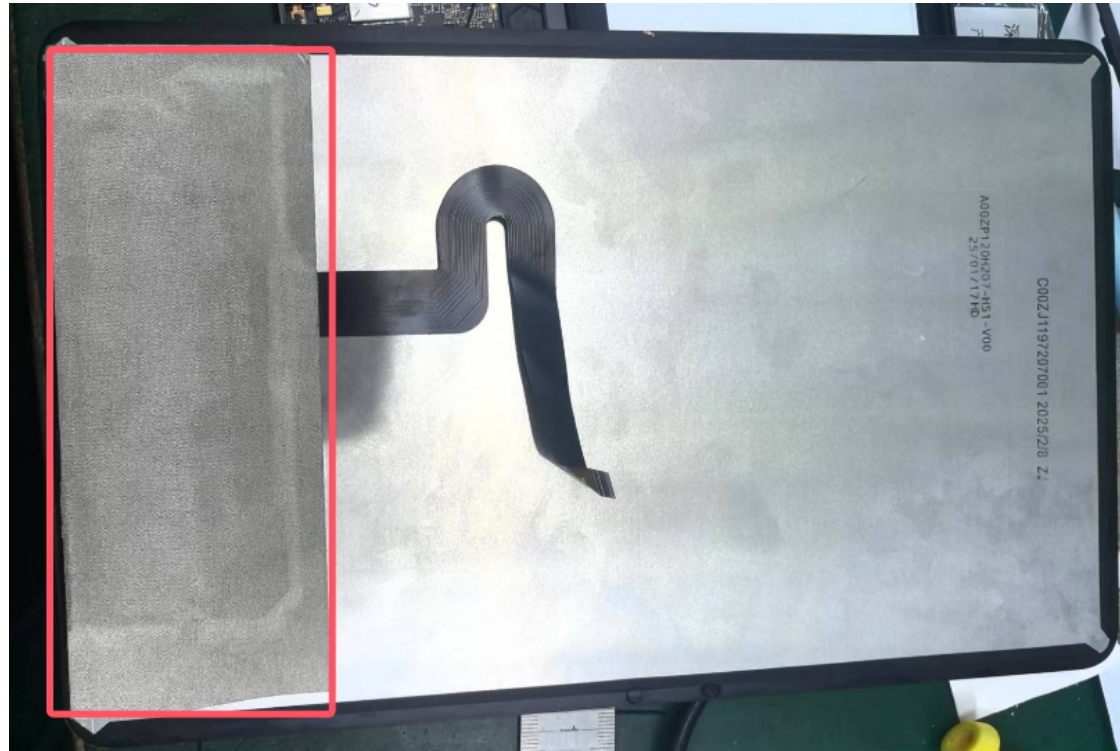
Attach a conductive sponge to the mark on the copper leakage area of the mainboard and ground the metal bottom shell

Environmental treatment



The mainboard shield cover is grounded with a conductive sponge

Environmental treatment



The screen bar cable is grounded with conductive cloth

Thanks