

## Project Contact Information

Customer Name: Yipuda

Project Name: EC873B (8.7-inch metal shell -  
English card T30-T606)

Date: 2026.01.31

ShenZhen SWARDCommuni cationTechnology Co.Ltd.

Building B, Hexi Hangcheng Industrial Zone, No. 135 Qianjin No. 2 Road, Baoan District, Shenzhen

## Project Contact Information

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## Project Introduction

### 1. Project Overview

|                                                    |                     |
|----------------------------------------------------|---------------------|
| Number of project<br>antennas                      | Machine type        |
| 1                                                  | Three-in-One Tablet |
| Whole machine shell material: 8.7-inch metal shell |                     |

### 2. Antenna Overview

| Antenna<br>number | name               | Working frequency band/MHz     | Material/Struct<br>ure |
|-------------------|--------------------|--------------------------------|------------------------|
| 1                 | WIFI&GPS&BT&5Gwifi | 2400MHz/2500MHz&1575MHz&5.8GHz | PCB/small board        |
|                   |                    |                                |                        |

## antenna layout



## WIFI&GPS&BT antenna S11



WIFI motherboard conductivity index

| Model number | channel | bpattern（11MHz） |             | npattern（MCS7） |             | apattern（54MHz） |             |
|--------------|---------|-----------------|-------------|----------------|-------------|-----------------|-------------|
|              |         | power           | sensitivity | power          | sensitivity | power           | sensitivity |
| 1            | 1       | 15.7            |             | 11.4           |             | NA              | NA          |
|              | 7       | 17.8            |             | 14.3           |             | NA              | NA          |
|              | 13      | 17.9            |             | 13.6           |             | NA              | NA          |
|              | 36      | NA              | NA          | 11             |             | 11.8            |             |
|              | 64      | NA              | NA          | 11.5           |             | 11.5            |             |
|              | 165     | NA              | NA          | 13.7           |             | 13.9            |             |

WIFI antenna active data

| Model number | channel | bpattern（11MHz） |             | npattern（MCS7） |             | apattern（54MHz） |             |
|--------------|---------|-----------------|-------------|----------------|-------------|-----------------|-------------|
|              |         | power           | sensitivity | power          | sensitivity | power           | sensitivity |
| 1            | 1       | 10.4            | -79.31      | 9.44           | -63.51      | NA              | NA          |
|              | 7       | 12.77           | -80.91      | 10.89          | -64.67      | NA              | NA          |
|              | 13      | 12.66           | -80.64      | 10.18          | -63.44      | NA              | NA          |
|              | 36      | NA              | NA          | 8.13           | -67.16      | 8.5             | -68.51      |
|              | 64      | NA              | NA          | 8.73           | -67.67      | 8.56            | -68.74      |
|              | 165     | NA              | NA          | 9.46           | -67.34      | 9.9             | -69.06      |

## WiFi throughput

## Iperf throughput test

| model           | EC873B<br>(English card T30-T606) | module                                                | Accompanyin<br>g the<br>motherboard | Software<br>version                | Iperf2 for Android                 |                                        |
|-----------------|-----------------------------------|-------------------------------------------------------|-------------------------------------|------------------------------------|------------------------------------|----------------------------------------|
| Model<br>number | channel                           | distance                                              | Test angle                          | Test data<br>(TX) 1-minute<br>mean | Test data (RX)<br>1-minute<br>mean | Remarks<br>(number of<br>packet drops) |
| 1               | 2. 4G                             | 2. 4G WIFI<br>(Research<br>and<br>development<br>15m) | 0°                                  | 83Mbps                             | 66. 7 Mbps                         | 0                                      |
|                 |                                   |                                                       | 90°                                 | 86Mbps                             | 49. 2 Mbps                         | 0                                      |
|                 |                                   |                                                       | 180°                                | 84Mbps                             | 51. 8 Mbps                         | 0                                      |
|                 |                                   |                                                       | 270°                                | 85Mbps                             | 69. 6 Mbps                         | 0                                      |
|                 | 5G                                |                                                       |                                     |                                    |                                    |                                        |
|                 |                                   |                                                       |                                     |                                    |                                    |                                        |
|                 |                                   |                                                       |                                     |                                    |                                    |                                        |
|                 |                                   |                                                       |                                     |                                    |                                    |                                        |
|                 |                                   | 5F WIFI<br>(Research<br>and<br>development<br>15m)    | 0°                                  | 93Mbps                             | 210 Mbps                           | 0                                      |
|                 |                                   |                                                       | 90°                                 | 92Mbps                             | 211 3Mbps                          | 0                                      |
|                 |                                   |                                                       | 180°                                | 92Mbps                             | 206 Mbps                           | 0                                      |
|                 |                                   |                                                       | 270°                                | 407 Mbps                           | 208 Mbps                           | 0                                      |

## WIFI antenna throughput test (test image)

Test data 2.4G/5Gwifi upload/download (corresponding to connection speeds of 135/390 Mbps)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                           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| <div> <div>网关</div> <div>192.168.1.1</div> </div> <div> <div>子网掩码</div> <div>255.255.255.0</div> </div> <div> <div>DNS</div> <div>192.168.1.1</div> </div> <div> <div>传输链接速度</div> <div>135 Mbps</div> </div> <div> <div>接收链接速度</div> <div>135 Mbps</div> </div> <div> <div>网络详情</div> </div> <div> <div>类型</div> <div>Wi-Fi 5</div> </div> <div> <div>随机生成的 MAC 地址</div> <div>be:cb:eb:c3:6e:a1</div> </div> <div> <div>IP 地址</div> <div>192.168.1.105</div> </div> <div> <div>网关</div> <div>192.168.1.1</div> </div> <div> <div>子网掩码</div> <div>255.255.255.0</div> </div> <div> <div>DNS</div> <div>192.168.1.1</div> </div> <div> <div>传输链接速度</div> <div>325 Mbps</div> </div> <div> <div>接收链接速度</div> <div>390 Mbps</div> </div> <div> <div>IPv6 地址</div> <div>fe80::bccb:ebff:fec3:6ea1</div> </div> | <div> <div>C:\&gt;iperf -s</div> <div>Server listening on TCP port 5001</div> <div>TCP window size: 64.0 KByte (default)</div> </div> <div> <div>OpenSCManager failed - 拒绝访问。 (0x5)</div> <div>[388] local 192.168.1.101 port 5001 connected with</div> <div>[ ID] Interval Transfer Bandwidth</div> <div>[388] 0.0-50.0 sec 398 MBytes 66.7 Mbits/sec</div> <div>[468] local 192.168.1.101 port 5001 connected with</div> <div>[ ID] Interval Transfer Bandwidth</div> <div>[468] 0.0-50.3 sec 295 MBytes 49.2 Mbits/sec</div> <div>[476] local 192.168.1.101 port 5001 connected with</div> <div>[ ID] Interval Transfer Bandwidth</div> <div>[476] 0.0-50.4 sec 311 MBytes 51.8 Mbits/sec</div> <div>[440] local 192.168.1.101 port 5001 connected with</div> <div>[ ID] Interval Transfer Bandwidth</div> <div>[440] 0.0-50.1 sec 600 MBytes 100 Mbits/sec</div> <div>[436] local 192.168.1.101 port 5001 connected with</div> <div>[ ID] Interval Transfer Bandwidth</div> <div>[436] 0.0-50.3 sec 417 MBytes 69.6 Mbits/sec</div> <div>[456] local 192.168.1.101 port 5001 connected with</div> <div>[ ID] Interval Transfer Bandwidth</div> <div>[456] 0.0-50.0 sec 1.22 GBytes 210 Mbits/sec</div> <div>[492] local 192.168.1.101 port 5001 connected with</div> <div>[ ID] Interval Transfer Bandwidth</div> <div>[492] 0.0-50.1 sec 1.23 GBytes 211 Mbits/sec</div> <div>[388] local 192.168.1.101 port 5001 connected with</div> <div>[ ID] Interval Transfer Bandwidth</div> <div>[388] 0.0-50.1 sec 1.20 GBytes 206 Mbits/sec</div> <div>[456] local 192.168.1.101 port 5001 connected with</div> <div>[ ID] Interval Transfer Bandwidth</div> <div>[456] 0.0-50.0 sec 1.21 GBytes 208 Mbits/sec</div> </div> | <div> <div>iPerf2 for Android</div> <div>Start Save IPv4</div> <div>Your IP address is: 192.168.1.10</div> <div>-c 192.168.1.101 -i 1 -w 1m -t 50</div> </div> <div> <div>1] 9.00-10.00 sec 7.75 MBytes 65.0 Mbits/sec</div> <div>1] 10.00-11.00 sec 5.00 MBytes 41.9 Mbits/sec</div> <div>1] 11.00-12.00 sec 4.75 MBytes 39.8 Mbits/sec</div> <div>1] 12.00-13.00 sec 4.75 MBytes 39.8 Mbits/sec</div> <div>1] 13.00-14.00 sec 6.25 MBytes 52.4 Mbits/sec</div> <div>1] 14.00-15.00 sec 5.75 MBytes 48.2 Mbits/sec</div> <div>1] 15.00-16.00 sec 5.00 MBytes 41.9 Mbits/sec</div> <div>1] 16.00-17.00 sec 4.12 MBytes 34.6 Mbits/sec</div> <div>1] 17.00-18.00 sec 4.12 MBytes 34.6 Mbits/sec</div> <div>1] 18.00-19.00 sec 4.25 MBytes 35.7 Mbits/sec</div> <div>1] 19.00-20.00 sec 3.50 MBytes 29.4 Mbits/sec</div> <div>1] 20.00-21.00 sec 2.88 MBytes 24.1 Mbits/sec</div> <div>1] 21.00-22.00 sec 3.50 MBytes 29.4 Mbits/sec</div> <div>1] 22.00-23.00 sec 3.62 MBytes 30.2 Mbits/sec</div> <div>1] 23.00-24.00 sec 6.50 MBytes 54.5 Mbits/sec</div> <div>1] 24.00-25.00 sec 5.62 MBytes 47.2 Mbits/sec</div> <div>1] 25.00-26.00 sec 4.12 MBytes 34.6 Mbits/sec</div> <div>1] 26.00-27.00 sec 5.50 MBytes 46.1 Mbits/sec</div> <div>1] 27.00-28.00 sec 5.00 MBytes 41.9 Mbits/sec</div> <div>1] 28.00-29.00 sec 4.88 MBytes 40.9 Mbits/sec</div> <div>1] 29.00-30.00 sec 6.88 MBytes 57.7 Mbits/sec</div> <div>1] 30.00-31.00 sec 6.38 MBytes 53.5 Mbits/sec</div> <div>1] 31.00-32.00 sec 8.50 MBytes 71.3 Mbits/sec</div> <div>1] 32.00-33.00 sec 8.88 MBytes 74.4 Mbits/sec</div> <div>1] 33.00-34.00 sec 8.62 MBytes 72.4 Mbits/sec</div> <div>1] 34.00-35.00 sec 7.00 MBytes 58.7 Mbits/sec</div> <div>1] 35.00-36.00 sec 7.38 MBytes 61.9 Mbits/sec</div> <div>1] 36.00-37.00 sec 7.00 MBytes 58.7 Mbits/sec</div> <div>1] 37.00-38.00 sec 5.00 MBytes 41.9 Mbits/sec</div> <div>1] 38.00-39.00 sec 4.25 MBytes 35.7 Mbits/sec</div> <div>1] 39.00-40.00 sec 5.62 MBytes 47.2 Mbits/sec</div> <div>1] 40.00-41.00 sec 6.25 MBytes 52.4 Mbits/sec</div> <div>1] 41.00-42.00 sec 7.12 MBytes 59.8 Mbits/sec</div> <div>1] 42.00-43.00 sec 6.88 MBytes 57.7 Mbits/sec</div> <div>1] 43.00-44.00 sec 5.50 MBytes 46.1 Mbits/sec</div> <div>1] 44.00-45.00 sec 4.25 MBytes 35.7 Mbits/sec</div> <div>1] 45.00-46.00 sec 5.12 MBytes 43.0 Mbits/sec</div> <div>1] 46.00-47.00 sec 5.38 MBytes 45.1 Mbits/sec</div> <div>1] 47.00-48.00 sec 7.38 MBytes 61.9 Mbits/sec</div> <div>1] 48.00-49.00 sec 5.88 MBytes 49.3 Mbits/sec</div> <div>1] 49.00-50.00 sec 5.12 MBytes 43.0 Mbits/sec</div> <div>1] 50.00-50.30 sec 128 KBytes 3.47 Mbits/sec</div> <div>1] 0.00-50.30 sec 295 MBytes 49.1 Mbits/sec</div> </div> | <div> <div>iPerf2 for Android</div> <div>Start Save IPv4</div> <div>Your IP address is: 192.168.1.1</div> <div>-c 192.168.1.101 -i 1 -w 1m -t 50</div> </div> <div> <div>1] 8.00-9.00 sec 22.4 MBytes 188 Mbits/sec</div> <div>1] 9.00-10.00 sec 26.2 MBytes 220 Mbits/sec</div> <div>1] 10.00-11.00 sec 22.6 MBytes 190 Mbits/sec</div> <div>1] 11.00-12.00 sec 22.9 MBytes 192 Mbits/sec</div> <div>1] 12.00-13.00 sec 22.2 MBytes 187 Mbits/sec</div> <div>1] 13.00-14.00 sec 24.8 MBytes 208 Mbits/sec</div> <div>1] 14.00-15.00 sec 23.4 MBytes 196 Mbits/sec</div> <div>1] 15.00-16.00 sec 23.1 MBytes 194 Mbits/sec</div> <div>1] 16.00-17.00 sec 28.5 MBytes 239 Mbits/sec</div> <div>1] 17.00-18.00 sec 26.6 MBytes 223 Mbits/sec</div> <div>1] 18.00-19.00 sec 27.1 MBytes 228 Mbits/sec</div> <div>1] 19.00-20.00 sec 23.8 MBytes 199 Mbits/sec</div> <div>1] 20.00-21.00 sec 25.0 MBytes 210 Mbits/sec</div> <div>1] 21.00-22.00 sec 25.2 MBytes 212 Mbits/sec</div> <div>1] 22.00-23.00 sec 23.8 MBytes 199 Mbits/sec</div> <div>1] 23.00-24.00 sec 25.9 MBytes 217 Mbits/sec</div> <div>1] 24.00-25.00 sec 25.0 MBytes 210 Mbits/sec</div> <div>1] 25.00-26.00 sec 25.8 MBytes 216 Mbits/sec</div> <div>1] 26.00-27.00 sec 25.9 MBytes 217 Mbits/sec</div> <div>1] 27.00-28.00 sec 26.2 MBytes 220 Mbits/sec</div> <div>1] 28.00-29.00 sec 26.4 MBytes 221 Mbits/sec</div> <div>1] 29.00-30.00 sec 25.0 MBytes 210 Mbits/sec</div> <div>1] 30.00-31.00 sec 25.9 MBytes 217 Mbits/sec</div> <div>1] 31.00-32.00 sec 28.8 MBytes 241 Mbits/sec</div> <div>1] 32.00-33.00 sec 27.6 MBytes 232 Mbits/sec</div> <div>1] 33.00-34.00 sec 24.9 MBytes 209 Mbits/sec</div> <div>1] 34.00-35.00 sec 25.5 MBytes 214 Mbits/sec</div> <div>1] 35.00-36.00 sec 26.9 MBytes 225 Mbits/sec</div> <div>1] 36.00-37.00 sec 25.2 MBytes 212 Mbits/sec</div> <div>1] 37.00-38.00 sec 25.1 MBytes 211 Mbits/sec</div> <div>1] 38.00-39.00 sec 25.5 MBytes 214 Mbits/sec</div> <div>1] 39.00-40.00 sec 26.1 MBytes 219 Mbits/sec</div> <div>1] 40.00-41.00 sec 24.5 MBytes 206 Mbits/sec</div> <div>1] 41.00-42.00 sec 25.1 MBytes 211 Mbits/sec</div> <div>1] 42.00-43.00 sec 25.9 MBytes 217 Mbits/sec</div> <div>1] 43.00-44.00 sec 25.8 MBytes 216 Mbits/sec</div> <div>1] 44.00-45.00 sec 25.6 MBytes 215 Mbits/sec</div> <div>1] 45.00-46.00 sec 26.5 MBytes 222 Mbits/sec</div> <div>1] 46.00-47.00 sec 28.5 MBytes 239 Mbits/sec</div> <div>1] 47.00-48.00 sec 28.1 MBytes 236 Mbits/sec</div> <div>1] 48.00-49.00 sec 24.5 MBytes 206 Mbits/sec</div> <div>1] 49.00-50.00 sec 24.2 MBytes 203 Mbits/sec</div> <div>1] 0.00-50.08 sec 1.23 GBytes 211 Mbits/sec</div> </div> |
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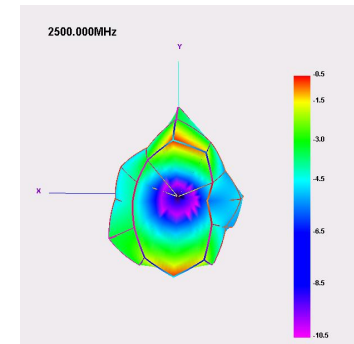
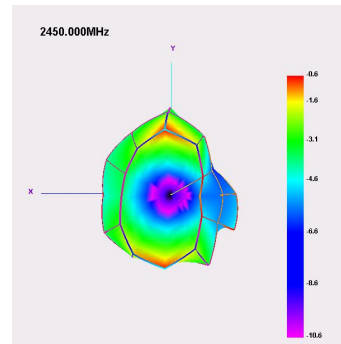
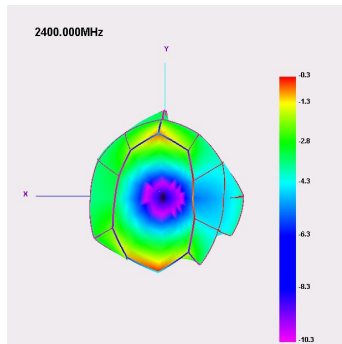
BT antenna measured distance

|                     |                   |
|---------------------|-------------------|
| Actual test effect  |                   |
| Model number        | 1                 |
| testing environment | Soward R&D Center |
| Test equipment      | Huawei AM08       |
| test distance       | 10米>              |

## WIFI&amp;BT antenna efficiency

| Passive Test For 2.4Gwifi |       |       |       |       |       |        |
|---------------------------|-------|-------|-------|-------|-------|--------|
| Freq                      | Effi  | Effi  | Gain  | Gain  | Max   | Min    |
| (MHz)                     | (%)   | (dB)  | (dBi) | (dBd) | (dB)  | (dB)   |
| 2400                      | 23.95 | -6.21 | -0.34 | -2.49 | -0.34 | -16.22 |
| 2410                      | 25.73 | -5.9  | -0.43 | -2.58 | -0.43 | -17.38 |
| 2420                      | 26.7  | -5.73 | -0.43 | -2.58 | -0.43 | -17.92 |
| 2430                      | 29.92 | -5.24 | -0.61 | -2.76 | -0.61 | -17.89 |
| 2440                      | 28.68 | -5.42 | -0.68 | -2.83 | -0.68 | -17.21 |
| 2450                      | 28.5  | -5.45 | -0.59 | -2.74 | -0.59 | -16.41 |
| 2460                      | 25    | -6.02 | -0.65 | -2.8  | -0.65 | -15.8  |
| 2470                      | 24.57 | -6.1  | -0.2  | -2.35 | -0.2  | -15.47 |
| 2480                      | 22.89 | -6.4  | 0.11  | -2.04 | 0.11  | -14.97 |
| 2490                      | 23.53 | -6.28 | 0.19  | -1.96 | 0.19  | -14.6  |
| 2500                      | 22.73 | -6.43 | -0.47 | -2.62 | -0.47 | -16.34 |

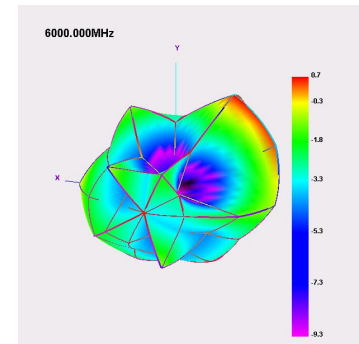
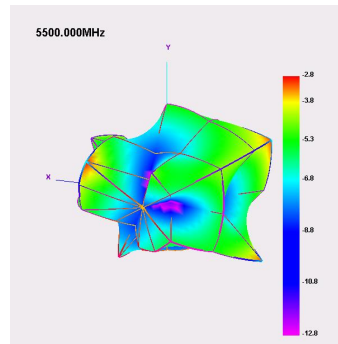
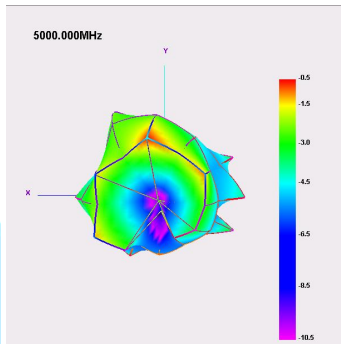
BT dBi: 0.11



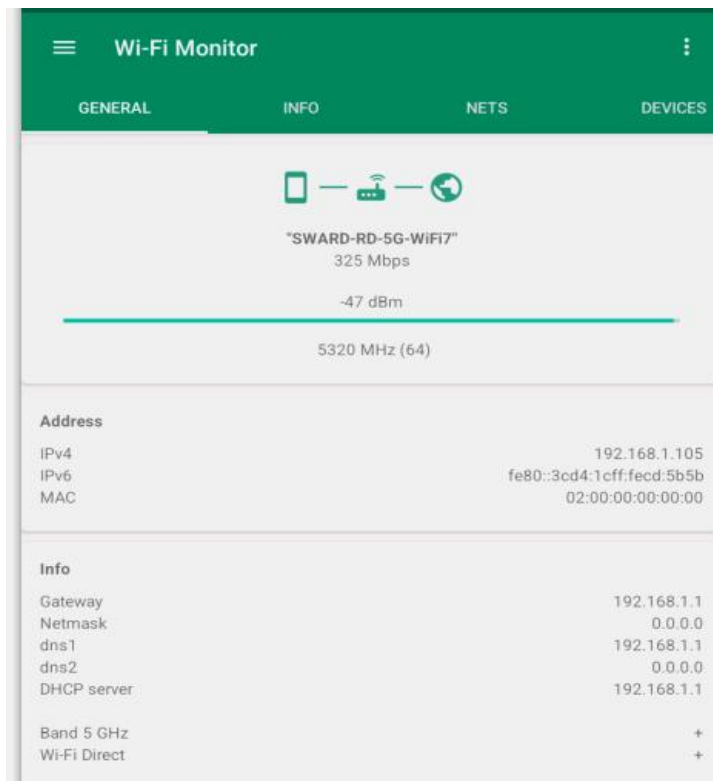
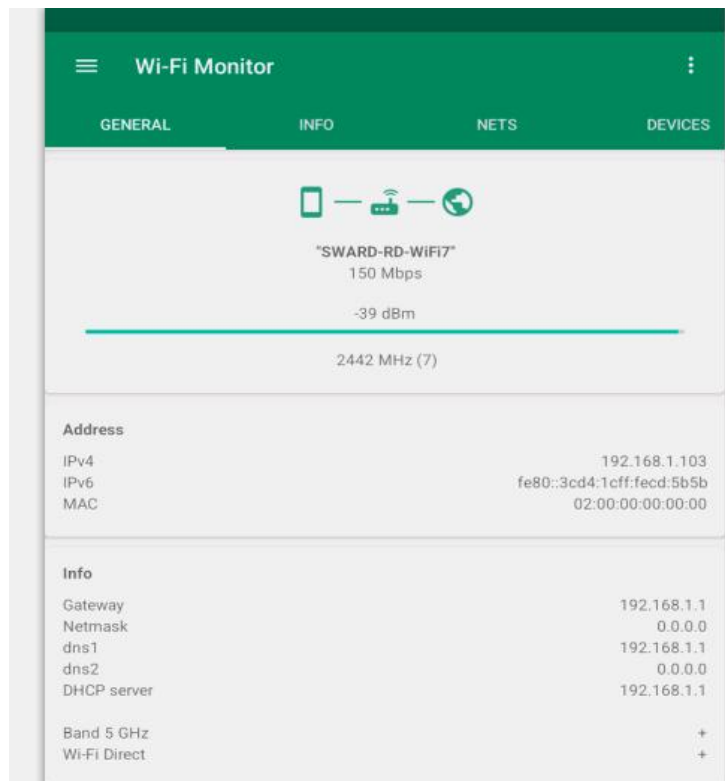
## 5G WIFI antenna efficiency

Passive Test For 5Gwifi

| Freq  | Effi  | Effi  | Gain  | Gain  | Max    | Min    |
|-------|-------|-------|-------|-------|--------|--------|
| (MHz) | (%)   | (dB)  | (dBi) | (dBd) | (dB)   | (dB)   |
| 5000  | 26.64 | -5.74 | -0.47 | -2.62 | 11.186 | -14.92 |
| 5100  | 39.56 | -4.03 | 0.42  | -1.73 | 17.083 | -15.49 |
| 5200  | 26.25 | -5.81 | -1.5  | -3.65 | 10.955 | -18.24 |
| 5300  | 22.67 | -6.45 | -1.74 | -3.89 | 10.493 | -22.27 |
| 5400  | 17.91 | -7.47 | -2.65 | -4.8  | 8.96   | -19.48 |
| 5500  | 16.41 | -7.85 | -2.75 | -4.9  | 8.052  | -17.56 |
| 5600  | 17.5  | -7.57 | -3.63 | -5.78 | 8.595  | -18.82 |
| 5700  | 21.54 | -6.67 | -1.4  | -3.55 | 11.282 | -15.35 |
| 5800  | 24.32 | -6.14 | -0.34 | -2.49 | 13.43  | -17.76 |
| 5900  | 22.69 | -6.44 | -0.38 | -2.53 | 12.931 | -19.1  |
| 6000  | 30.11 | -5.21 | 0.7   | -1.45 | 16.967 | -21.88 |



## WIFI antenna signal strength measurement picture (data)

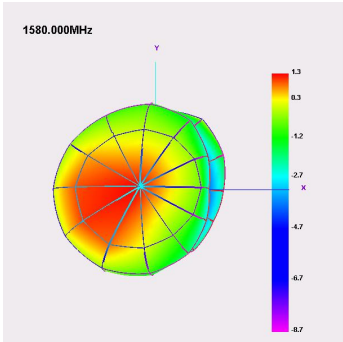
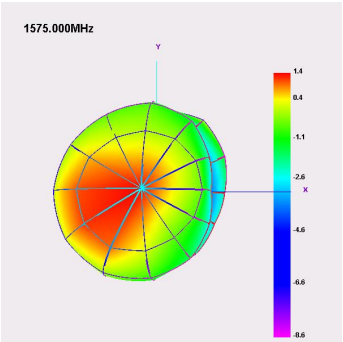
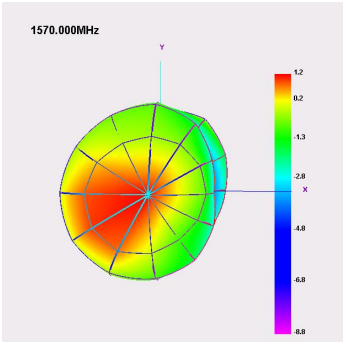


Test location: Our R&D office  
 Test time: 19:00-19:30  
 Test distance: 10-15 meters  
 Signal strength: -41dBm to -48dBm

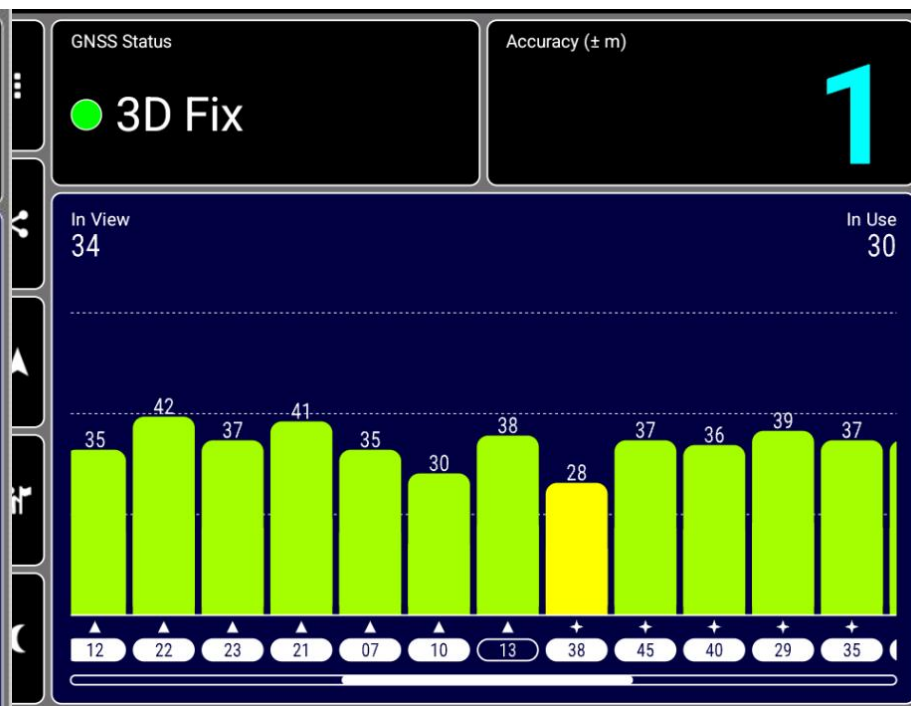
Building B, Hexi Hangcheng Industrial Zone, No. 135 Qianjin No. 2 Road, Baoan District, Shenzhen

GPS antenna efficiency

| Passive Test For GPS2 |       |       |       |       |      |        |
|-----------------------|-------|-------|-------|-------|------|--------|
| Freq                  | Effi  | Effi  | Gain  | Gain  | Max  | Min    |
| (MHz)                 | (%)   | (dB)  | (dBi) | (dBd) | (dB) | (dB)   |
| 1570                  | 48.24 | -3.17 | 1.15  | -1    | 1.15 | -12.65 |
| 1571                  | 48.56 | -3.14 | 1.2   | -0.95 | 1.2  | -12.7  |
| 1572                  | 48.92 | -3.11 | 1.24  | -0.91 | 1.24 | -12.75 |
| 1573                  | 49.28 | -3.07 | 1.29  | -0.86 | 1.29 | -12.76 |
| 1574                  | 49.57 | -3.05 | 1.34  | -0.81 | 1.34 | -12.76 |
| 1575                  | 49.77 | -3.03 | 1.38  | -0.77 | 1.38 | -12.79 |
| 1576                  | 49.62 | -3.04 | 1.39  | -0.76 | 1.39 | -12.82 |
| 1577                  | 49.36 | -3.07 | 1.37  | -0.78 | 1.37 | -12.88 |
| 1578                  | 49.03 | -3.09 | 1.37  | -0.78 | 1.37 | -12.9  |
| 1579                  | 48.69 | -3.13 | 1.35  | -0.8  | 1.35 | -12.93 |
| 1580                  | 48.35 | -3.16 | 1.34  | -0.81 | 1.34 | -12.94 |



## GPS measured images (data)



Test location: Our company's rooftop

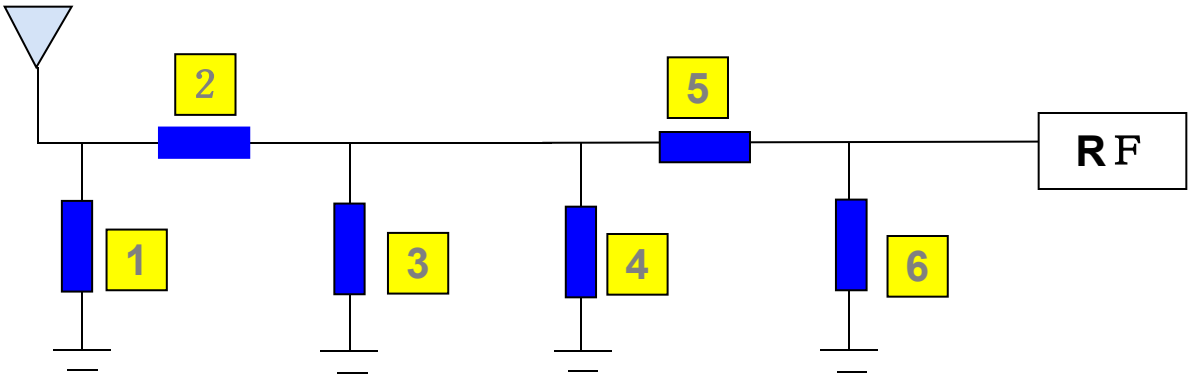
Test time: 17:00 to 17:30

Test direction: East, South, West, North

Cold start positioning time:<60 seconds

Building B, Hexi Hangcheng Industrial Zone, No. 135 Qianjin No. 2 Road, Baoan District, Shenzhen

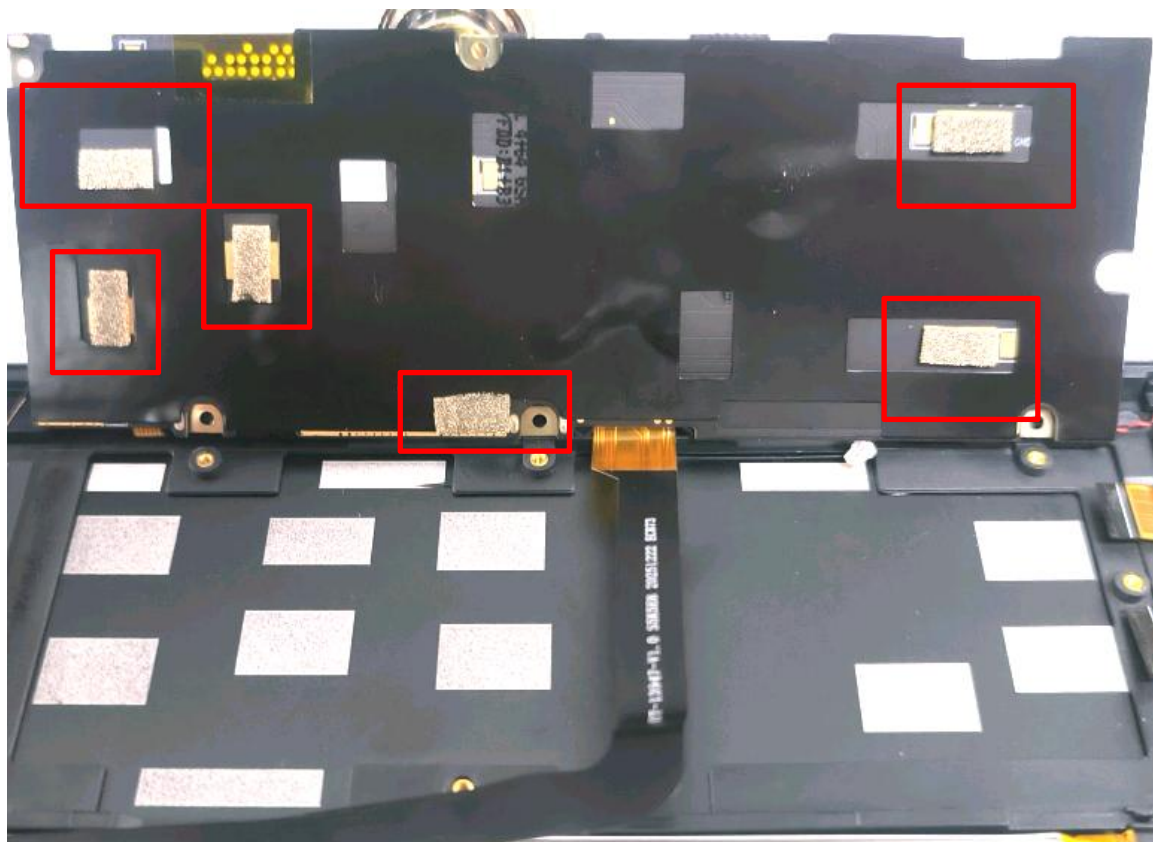
antenna matching



No antenna matching has been changed.

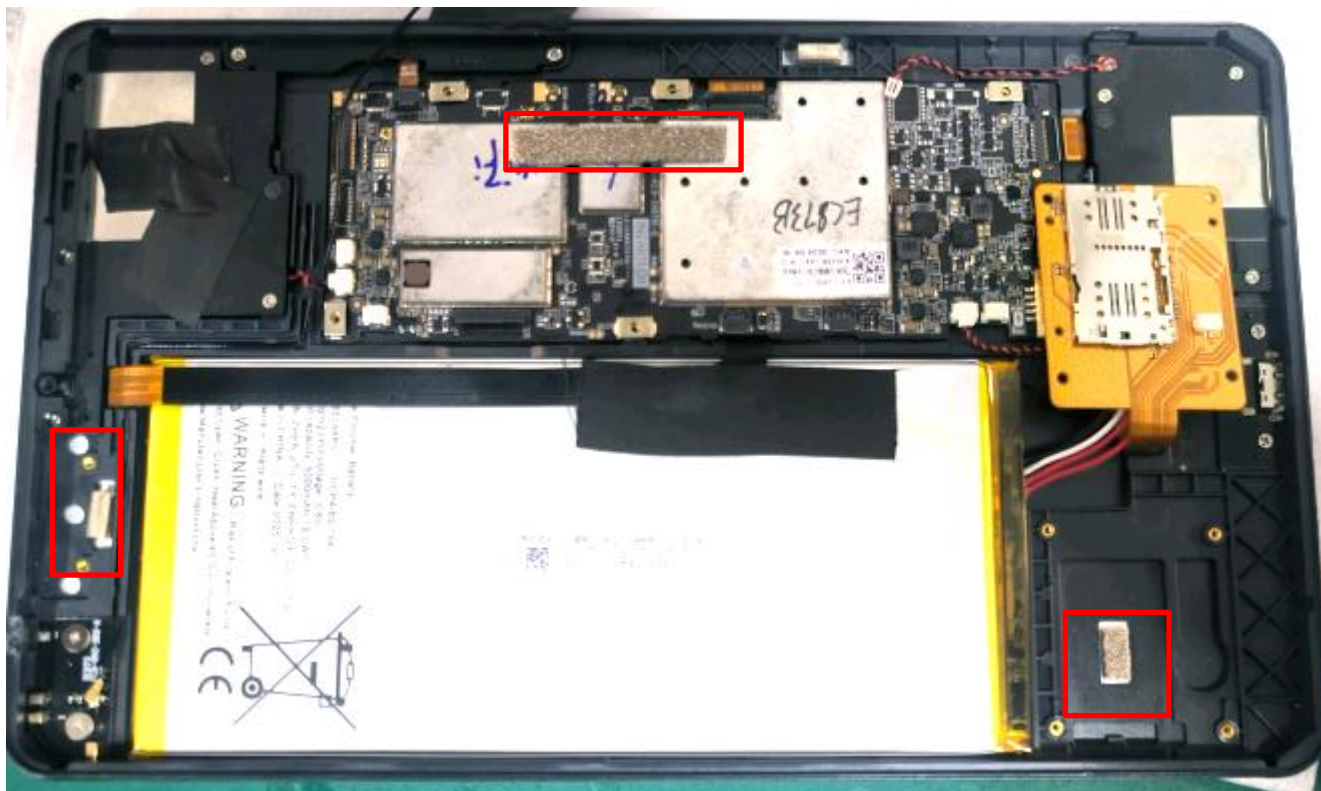
| main antenna    | 1 | 2 | 3 | 4 | 5 | 6 | remark |
|-----------------|---|---|---|---|---|---|--------|
| Original Match  |   |   |   |   |   |   |        |
| Change Matching |   |   |   |   |   |   |        |

# Environmental treatment and assembly instructions



**1. The back of the motherboard is as shown in the diagram (without changing the environmental treatment);**

## Environmental treatment and assembly instructions



**2. At the red box, as shown in the diagram, attach a conductive sponge and connect it to the screen.**

Note: 1. This report is based on the actual debugging and testing of the prototype, including environmental treatment, antenna position, and assembly position of each component

Cannot be changed arbitrarily;

If there are any changes in the materials used in the prototype, please promptly provide feedback to our company for further verification;

3. List of sensitive components:

TP (Material, Coating, Wiring, etc.)

Screen (amplifier circuit, LED, cable design, etc.)

Shell material (antenna assembly method, structural interference, shell material, antenna position height and area, etc.)

Motherboard (motherboard conduction, RF circuit matching, PA, dual power, filtering, etc.)

LNA, Power supply circuit, etc

Camera, battery, motor MIC、Fingerprint recognition module, etc

4. Due to the small number or only one sample testing machine, some probabilistic issues cannot be fully identified. It is recommended to conduct a small batch trial production before mass production to investigate the problem points (such as flashing screens, speaker noise, TP jump points, black screen crashes, signal drops, etc.)