

# Shenzhen yimingyuan Technology Co., Ltd

## APPROVAL SHEET

|                      |                                         |                       |                                                                          |
|----------------------|-----------------------------------------|-----------------------|--------------------------------------------------------------------------|
| 客户<br>Customer       | 友宏                                      | 规格型号<br>Specs         | 2032                                                                     |
| 亿铭远料号<br>Part Number | 3.2032.25.000                           | 频 段<br>Frequency Band | GSM2/3/5/8<br>WCDMA1/2/4/5/8<br>LTE1/2/3/4/5/7/8/12/17/20/28/38/39/40/41 |
| 2G/3G/4G ANT         | 2032-MAIN-YMY                           | 2.4G ANT              | 2032-WiFi-YMY                                                            |
| 颜 色<br>Color         | 黑色(Black)                               | 版 本<br>Edition        | REV:A0                                                                   |
| 销 售<br>Salesperson   | 杨一鸣                                     | 设 计<br>Design         | 吴希                                                                       |
| 结 构<br>Structure     | 覃云林                                     | 确 认<br>Confirm        |                                                                          |
| 日 期<br>Date          | 2023.2.28                               | 签字日期<br>Signing Date  |                                                                          |
| 制造商<br>manufacturer  | Shenzhen yimingyuan Technology Co., Ltd |                       |                                                                          |

客户确认 Customer confirmation:

**携手共进 共创未来**

Join hands to create the future

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## 1. Product specifications

The report mainly provides the parameter test of 2032 antenna performance. The 2032 antenna is a 4G antenna. (As shown in Figure 1 below)

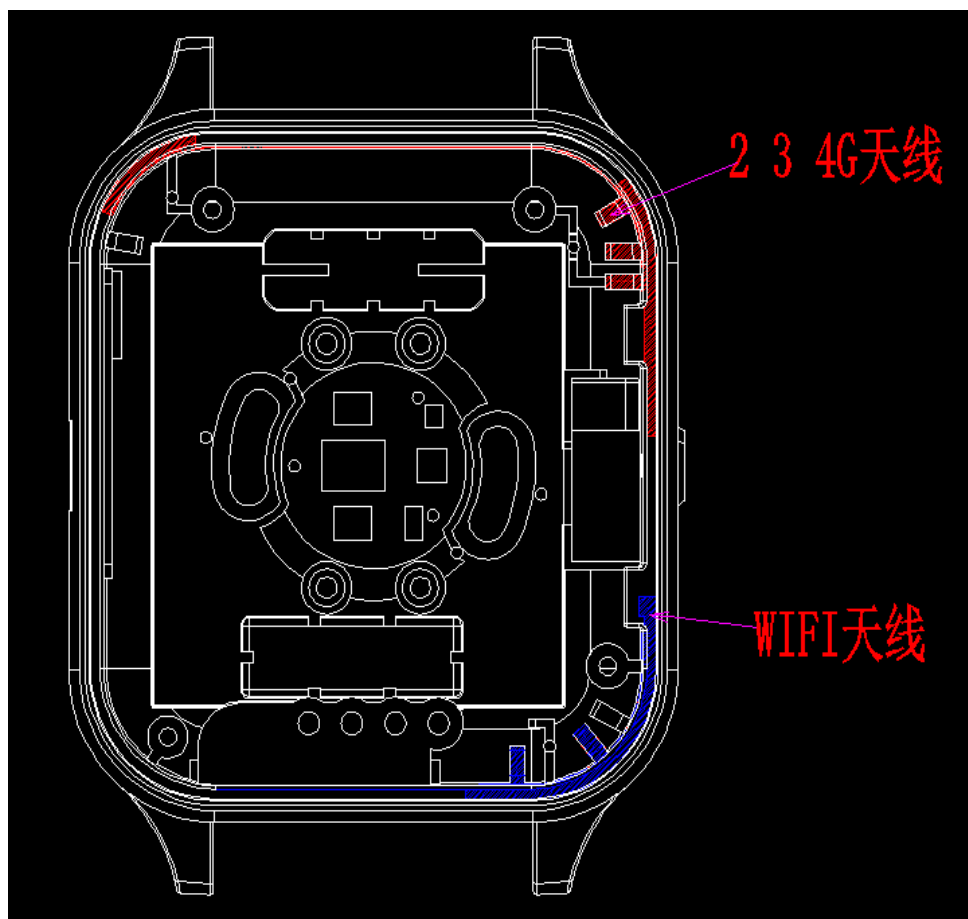


figure 1 2032 antenna

## 2. Electrical performance

### 1. Specifications and standards

The working frequency band of the 2032 antenna is 820--2700MHZ , and resonance occurs in this frequency band.

### 2. Antenna matching circuit

match unchanged

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The structure of the antenna : LDS

### 3. Parameter test

#### 1. Test setup

The connections of the VSWR test setup in turn are:

E5071B network analyzer → 50 ohm coaxial cable → 110mm long copper tube → test fixture

Handling of test fixtures:

Use a hard cable to lead out the SMA-J connector from the 50 ohm test point of the antenna on the mobile phone PCB, connect it to the copper tube covered with the choke coil, and then connect to other devices in turn.

#### 2. Test results

everything is ok.

### 4. Active test setup

The connections of the active test device in turn are :

Agilent8960 → 50 ohm coaxial Cable → Satimo S 2032 test system → mobile phone to be tested

#### 1. Test site

AW microwave anechoic chamber: the test frequency range is 400MHz-6GHz, the quiet zone range is 40cm circumference, and the reflectivity is less than -90 dB.

#### 2. Test results

The maximum radiated power and maximum receiving sensitivity reflect the maximum

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power radiation value and the best receiving performance of the antenna in the entire radiation space. TRP and TIS reflect the average radiation power and average receiving sensitivity of the antenna, that is, reflect the overall receiving performance of the antenna.

The following is the 2032 antenna test results:

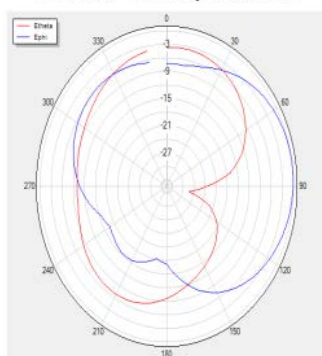
## 主天线暗室数据 美版

|         | Channel | TRP (dBm) | TIS (dBm) |           |        | Channel | TRP (dBm) | TIS (dBm) |     |       | Channel | TRP (dBm) | TIS (dBm) |
|---------|---------|-----------|-----------|-----------|--------|---------|-----------|-----------|-----|-------|---------|-----------|-----------|
| FDD B2  | LOW     | 17.76     |           | WCDMA1900 | LOW    | 17.5    |           | GSM900    | 1   | 20.24 |         |           |           |
|         | medium  | 17.54     |           |           | medium | 17.57   |           |           | 62  | 19.43 |         |           |           |
|         | high    | 17.46     | -89.35    |           | high   | 17.47   | -102.5    |           | 124 | 19.04 | -96.24  |           |           |
| FDD B4  | LOW     | 17.27     |           | WCDMA850  | LOW    | 10.04   |           | DCS1800   | 512 | 23.2  |         |           |           |
|         | medium  | 17.55     |           |           | medium | 10.0    |           |           | 698 | 25.35 |         |           |           |
|         | high    | 17.31     | -87       |           | high   | 11.3    | -98.3     |           | 885 | 25.1  | -102.24 |           |           |
| FDD B5  | LOW     | 10.26     |           | WCDMA1700 | LOW    | 15.76   |           | GSM850    | 128 | 18.02 |         |           |           |
|         | medium  | 10.51     |           |           | medium | 16.34   |           |           | 190 | 18.21 |         |           |           |
|         | high    | 10.82     | -84.2     |           | high   | 17.0    | -100.25   |           | 251 | 19.75 | -95.2   |           |           |
| FDD B7  | LOW     | 14.42     |           |           |        |         |           | PCS1900   | 512 | 25.2  |         |           |           |
|         | medium  | 14.14     |           |           |        |         |           |           | 661 | 25.12 |         |           |           |
|         | high    | 14.76     | -89.02    |           |        |         |           |           | 810 | 25.34 | -102.5  |           |           |
| FDD B12 | LOW     | 4.2       |           |           |        |         |           |           |     |       |         |           |           |
|         | medium  | 4.31      |           |           |        |         |           |           |     |       |         |           |           |
|         | high    | 5.3       | -81.5     |           |        |         |           |           |     |       |         |           |           |
| FDD B17 | LOW     | 5.04      |           |           |        |         |           |           |     |       |         |           |           |
|         | medium  | 5.14      |           |           |        |         |           |           |     |       |         |           |           |
|         | high    | 5.5       | -81.3     |           |        |         |           |           |     |       |         |           |           |

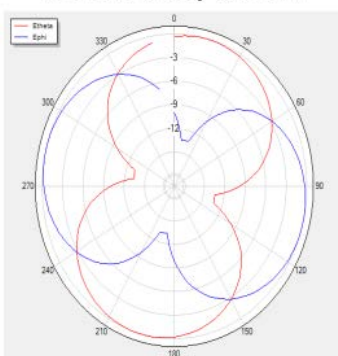
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| Gain&Efficiency      |                 |                     |
|----------------------|-----------------|---------------------|
| frequency<br>频率(MHz) | gain<br>增益(dBi) | efficiency<br>效率(%) |
| LTE:FDD:B12          | -17             | 2.59                |
| LTE:FDD:B17          | -16.5           | 2.67                |
| GSM850/WCDMA5/FDD5   | -10.3           | 6.59                |
| WCDMA4/FDD4          | -1.5            | 28.28               |
| PCS1900/WCDMA2/FDD2  | 1.2             | 34.58               |
| FDD:B7               | -2.0            | 24.06               |

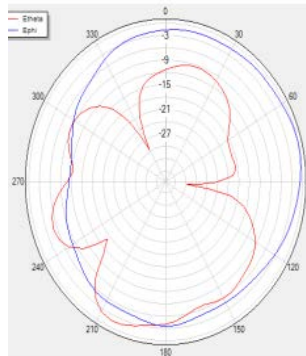
H Theta=90 freq=800MHz



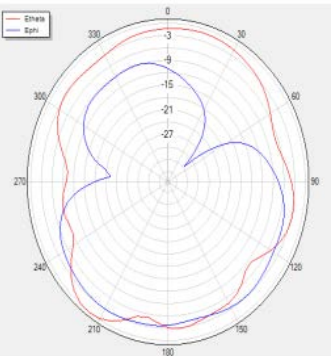
H Theta=0 freq=800MHz



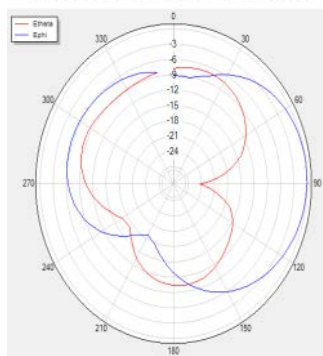
V Phi=90 freq=800MHz



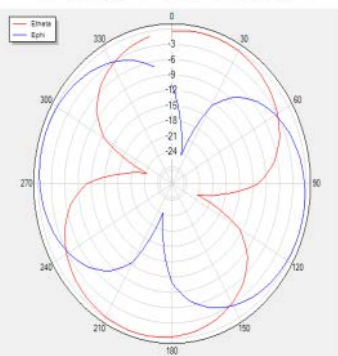
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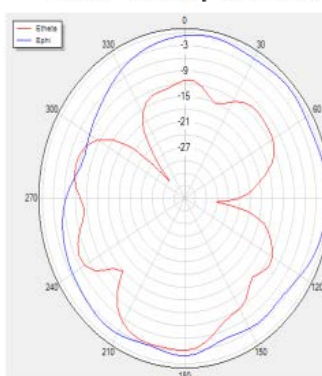
H Theta=90 freq=900MHz



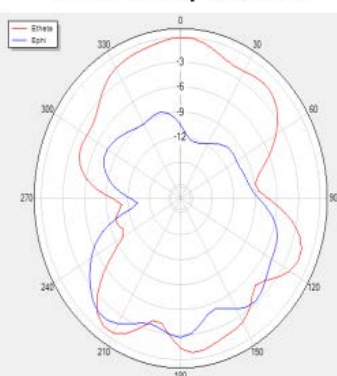
H Theta=0 freq=900MHz



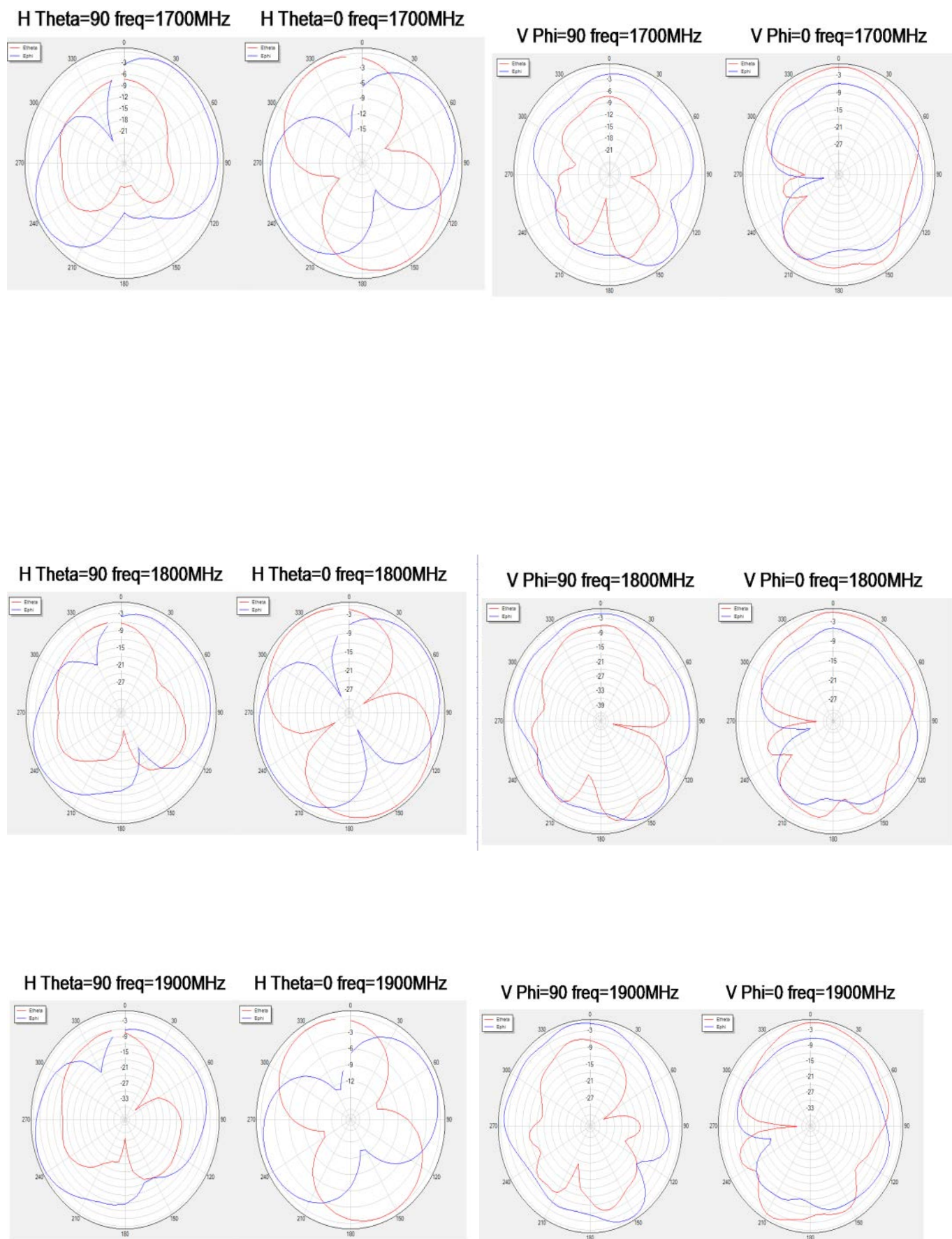
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V Phi=0 freq=900MHz

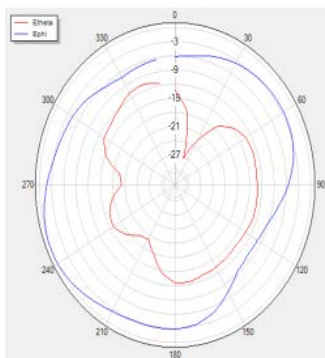


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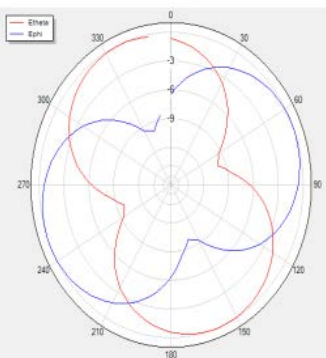


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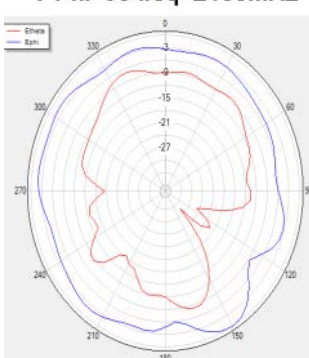
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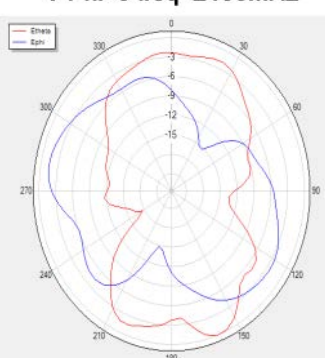
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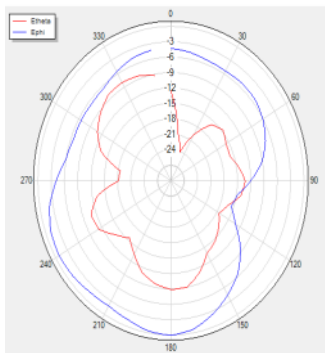
V Phi=90 freq=2100MHz



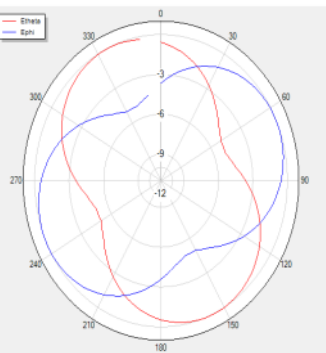
V Phi=0 freq=2100MHz



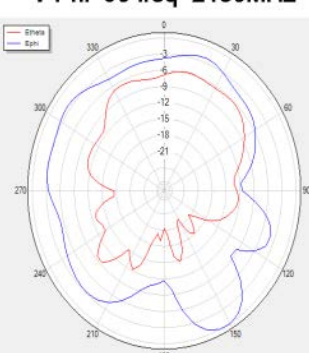
H Theta=90 freq=2180MHz



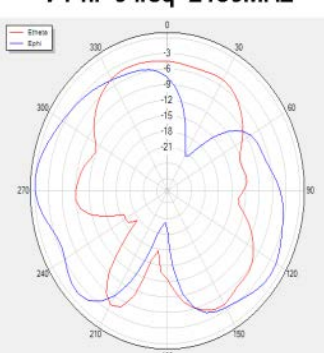
H Theta=0 freq=2180MHz



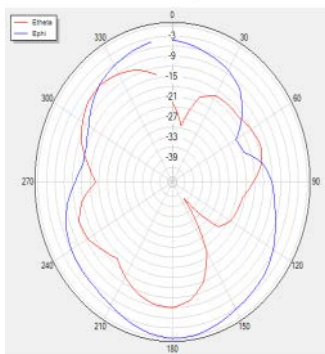
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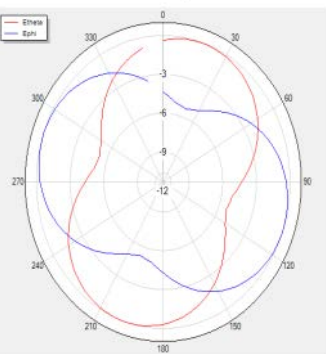
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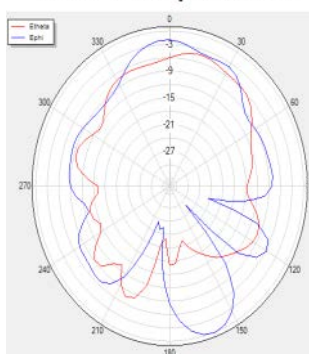
H Theta=90 freq=2300MHz



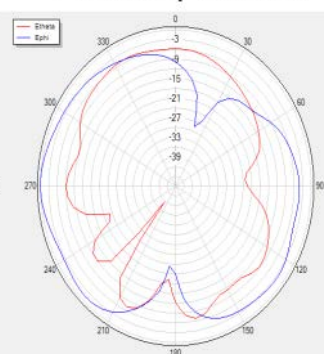
H Theta=0 freq=2300MHz



V Phi=90 freq=2300MHz



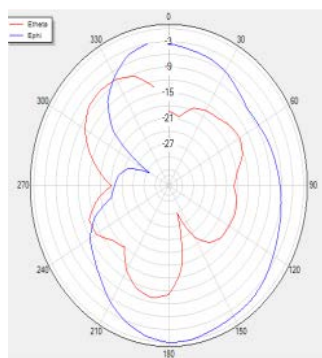
V Phi=0 freq=2300MHz



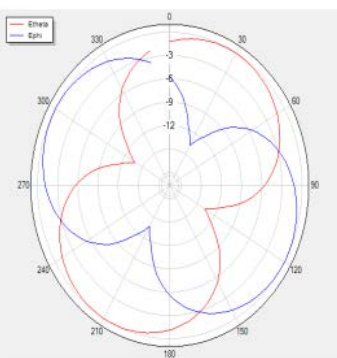
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| Gain&Efficiency      |                 |                     |          |  |
|----------------------|-----------------|---------------------|----------|--|
| frequency<br>频率(MHz) | gain<br>增益(dBi) | efficiency<br>效率(%) |          |  |
| 2400                 | -2.15           | 24.17               |          |  |
| 2450                 | -2.04           | 24.83               | WiFi2.4G |  |
| 2500                 | -2.09           | 23.49               |          |  |

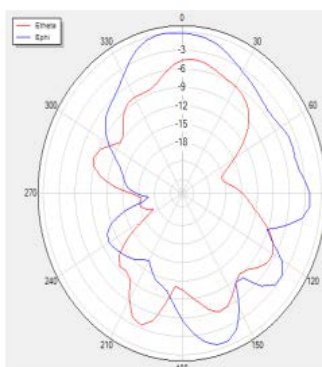
H Theta=90 freq=2400MHz



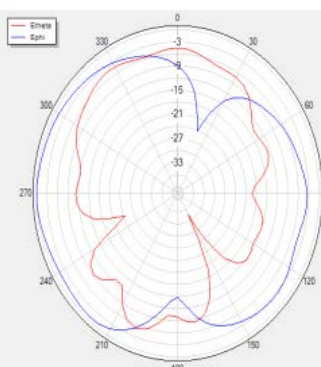
H Theta=0 freq=2400MHz



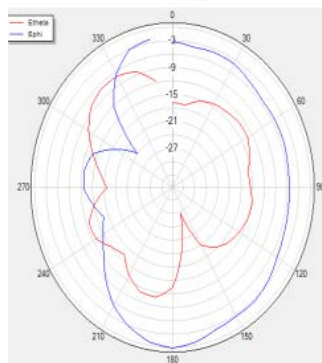
V Phi=90 freq=2400MHz



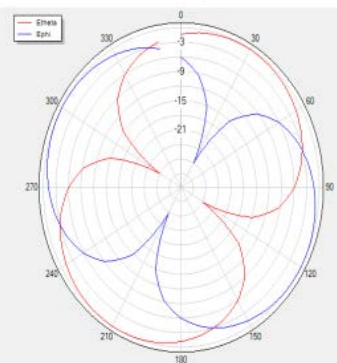
V Phi=0 freq=2400MHz



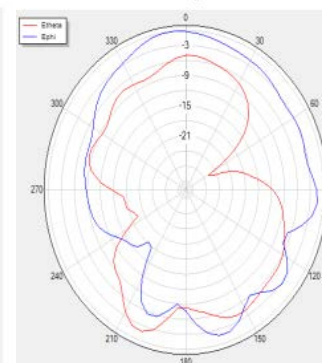
H Theta=90 freq=2500MHz



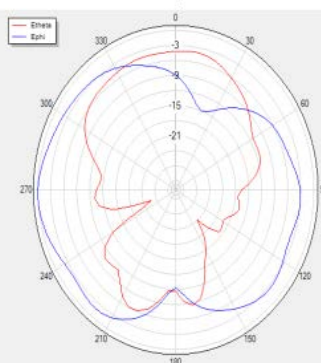
H Theta=0 freq=2500MHz



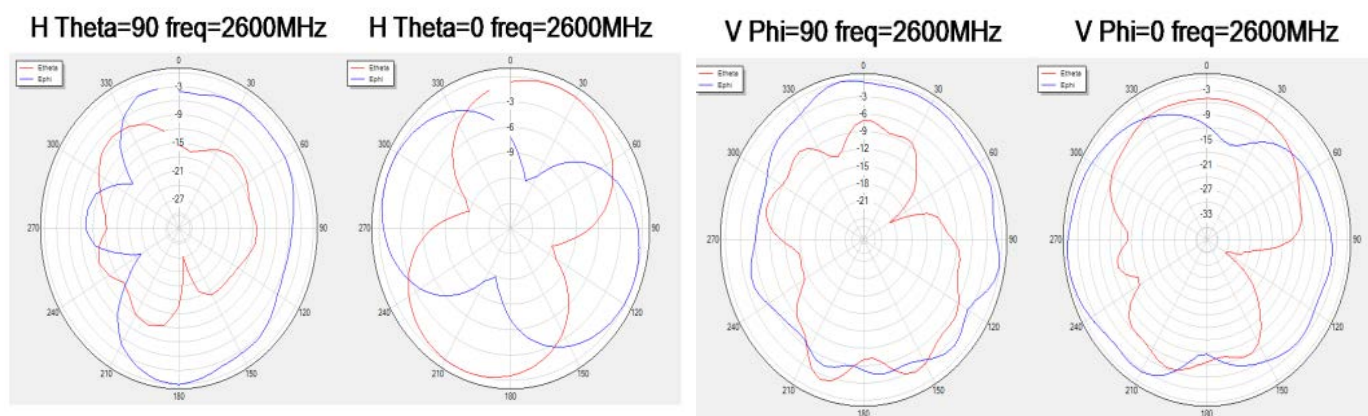
V Phi=90 freq=2500MHz



V Phi=0 freq=2500MHz



provider

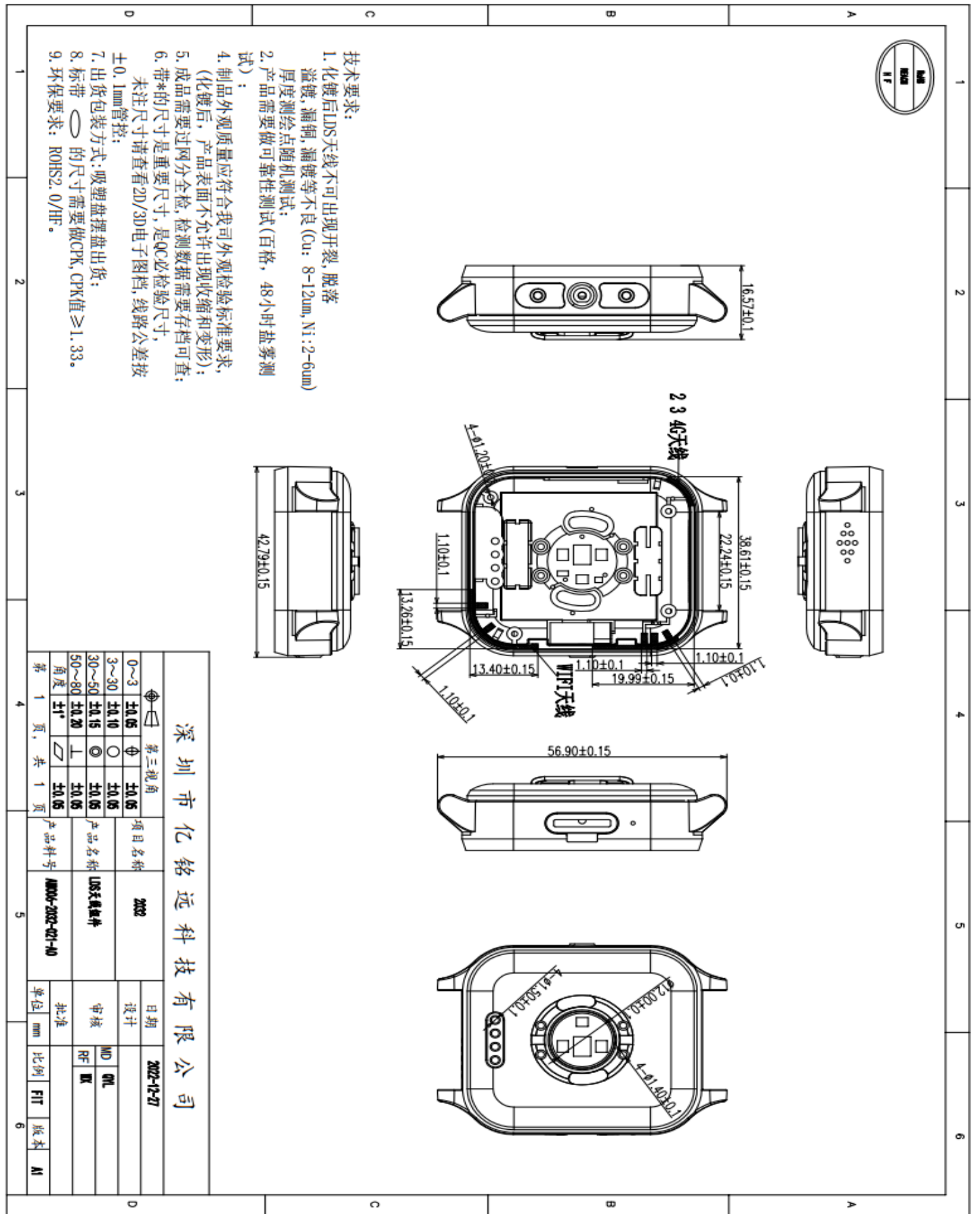


## V. Suggestions and conclusions

This report is based on the electrical performance of the antenna measured by the prototype provided by the customer. Please refer to it carefully.

## 6. Structural drawings

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