



# 规格承认书

## Approval Sheet

客户名称 深圳市英卡科技有限公司

(Customer Name)

产品名称 T20-antenna

(Specification)

客户料号

(Customer P/N)

销售单号

(O/I)

送样日期 2025-03-04

(Date)

|      |                 |    |  |
|------|-----------------|----|--|
| 频段   | GPS+2.4G+5GWIFI |    |  |
| 版本   | A               |    |  |
| 射频   | 王志彬             | 确认 |  |
| 结构   | 杨学忠             |    |  |
| 客户确认 |                 |    |  |
| 日期   |                 |    |  |

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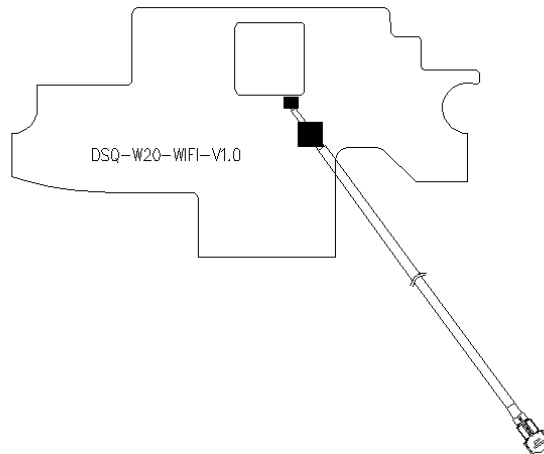
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## 1. 项目图片

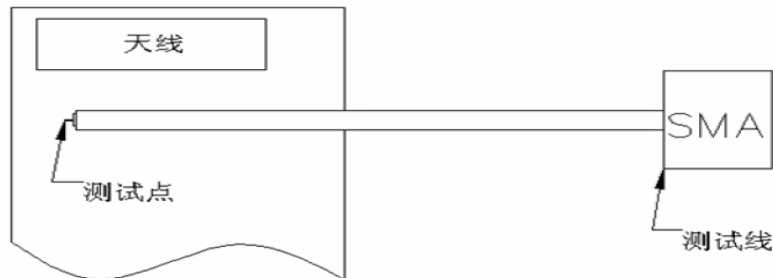


GPS+WIFI+BT Antenna

## 2. 无源测试

目的：尽可能准确测试天线的无源参数。

方法：此治具是用一根 50 欧姆的同轴电缆，一端连在手机主板的匹配电路后端（射频测试孔前段）的测试点上，另一端连接 SMA 接头。具体如下图：

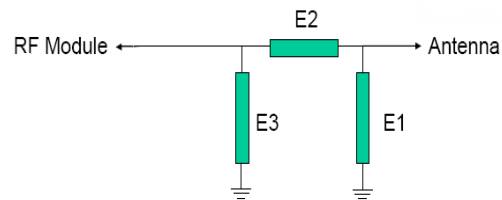


下表是为 T20 量产天线的性能的测试指标：

| T20 Antenna |                 |      |                 |      |
|-------------|-----------------|------|-----------------|------|
|             | Frequency (MHz) | VSWR | Frequency (MHz) | VSWR |
| Band        | TX              |      | RX              |      |
| GPS         |                 |      | 1.575           | ≤3.0 |
| 2.4G WIFI   | 2400-2550       | ≤3.0 | 2400-2550       | ≤3.0 |
| 5.8G WIFI   | 5000-5150       | ≤3.0 | 5150-5850       | ≤3.0 |

### 3.匹配电路

天线 (匹配无更改)



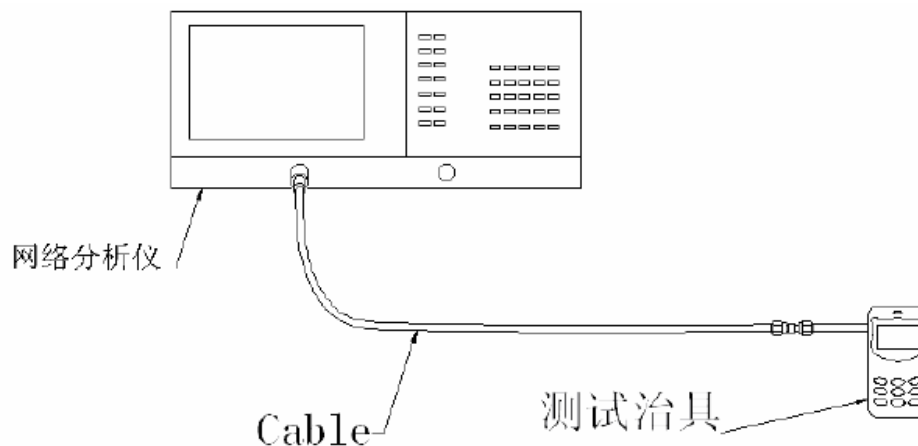
| Element  | 匹配值  |
|----------|------|
| E1(0402) |      |
| E2(0402) | 0 欧姆 |
| E3(0402) |      |

### 4. S11 测试

#### 4.1 S11 测试方法说明规格标准

VSWR 测试装置依次连接为: E5071B 网络分析仪 → 50 欧姆的同轴 Cable → 120mm 长的铜管 → 测试治具。

测试治具的处理: 从手机 PCB 上天线 50 欧姆测试点处用一根硬质电缆引出 SMA-J 接头, 与套有扼流圈的铜管连接, 再依次连接其他装置。



测试示意图

## S11 无源驻波图



## 2.4/5.8 有源

| BAND      | CHANNEL | TRP   | TIS    |
|-----------|---------|-------|--------|
| WIFI 11b  | 1       | 12.24 |        |
|           | 6       | 12.11 |        |
|           | 13      | 12.29 | -81.49 |
| WIFI 11a  | 36      | 11.73 |        |
|           | 60      | 12.52 |        |
|           | 165     | 11.48 | -71.09 |
| WIFI 11G  | 1       | 10.37 |        |
|           | 6       | 10.68 |        |
|           | 13      | 10.14 | -70.46 |
| WIFI 11N  | 1       | 10.23 |        |
|           | 6       | 10.25 |        |
|           | 13      | 10.11 | -65.25 |
| WIFI 11AC | 36      | 11.32 |        |
|           | 60      | 12.22 |        |
|           | 165     | 11.41 | -65.24 |

## GPS Efficiency/Gain

| Passive Test For 2400-2500 |             |               |
|----------------------------|-------------|---------------|
| Freq<br>(MHz)              | Effi<br>(%) | Gain<br>(dBi) |
| 1550                       | 36.97       | 1.18          |
| 1555                       | 36.29       | 1.07          |
| 1560                       | 35.77       | 0.87          |
| 1565                       | 35.57       | 0.85          |
| 1570                       | 35.48       | 0.76          |
| 1575                       | 35.22       | 0.58          |
| 1580                       | 34.46       | 0.41          |
| 1585                       | 33.62       | 0.26          |
| 1590                       | 33.02       | 0.07          |
| 1595                       | 32.36       | -0.13         |
| 1600                       | 31.72       | -0.27         |

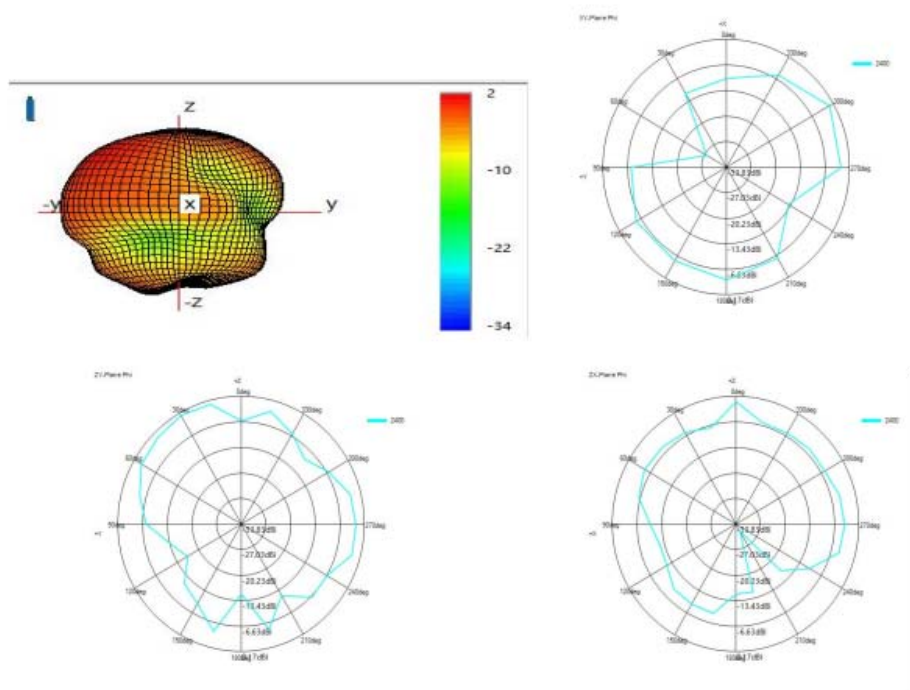
## 2.4 Efficiency/Gain

| Passive Test For 2400-2500 |             |               |
|----------------------------|-------------|---------------|
| Freq<br>(MHz)              | Effi<br>(%) | Gain<br>(dBi) |
| 2400                       | 32.57       | 0.73          |
| 2410                       | 33.01       | 0.69          |
| 2420                       | 33.64       | 0.87          |
| 2430                       | 32.45       | 0.74          |
| 2440                       | 32.60       | 0.71          |
| 2450                       | 32.07       | 0.65          |
| 2460                       | 31.03       | 0.48          |
| 2470                       | 29.72       | 0.15          |
| 2480                       | 28.75       | -0.08         |
| 2490                       | 27.95       | -0.34         |
| 2500                       | 32.57       | 0.73          |

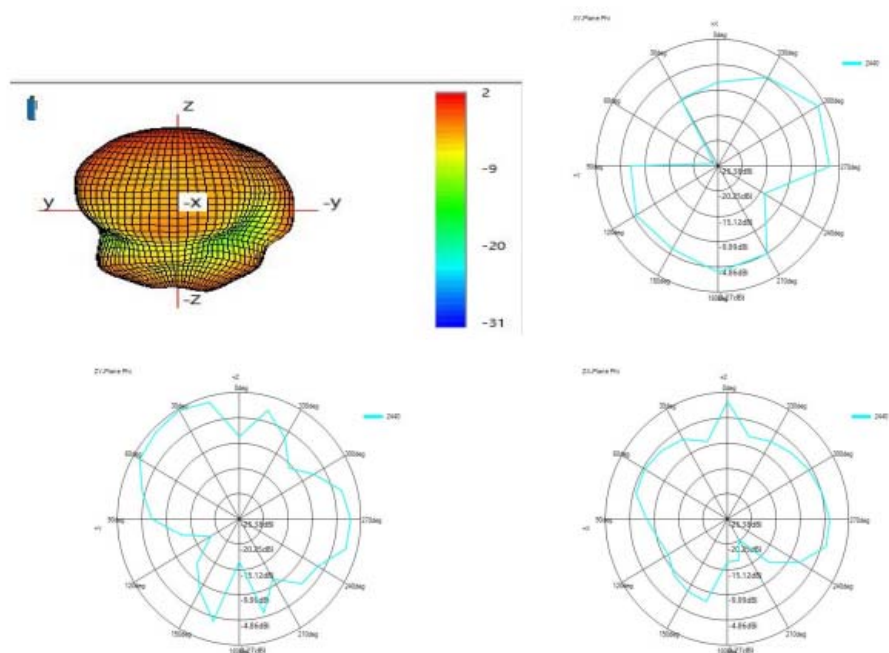
## 5.8 Efficiency/Gain

| Passive Test For WIFI5.8 |             |               |
|--------------------------|-------------|---------------|
| Freq<br>(MHz)            | Effi<br>(%) | Gain<br>(dBi) |
| 5150                     | 39.38       | 3.41          |
| 5200                     | 38.32       | 3             |
| 5250                     | 35.16       | 2.44          |
| 5300                     | 31.1        | 2.05          |
| 5350                     | 30.79       | 2.29          |
| 5400                     | 33.13       | 2.67          |
| 5450                     | 33.61       | 2.94          |
| 5500                     | 33.62       | 3.07          |
| 5550                     | 38.22       | 3.78          |
| 5600                     | 42.89       | 4.36          |
| 5650                     | 41.73       | 4.23          |
| 5700                     | 40.35       | 3.93          |
| 5750                     | 37.71       | 3.49          |
| 5800                     | 35.27       | 3.1           |
| 5850                     | 33.7        | 2.37          |

## 2400MHZ



## 2450MHZ

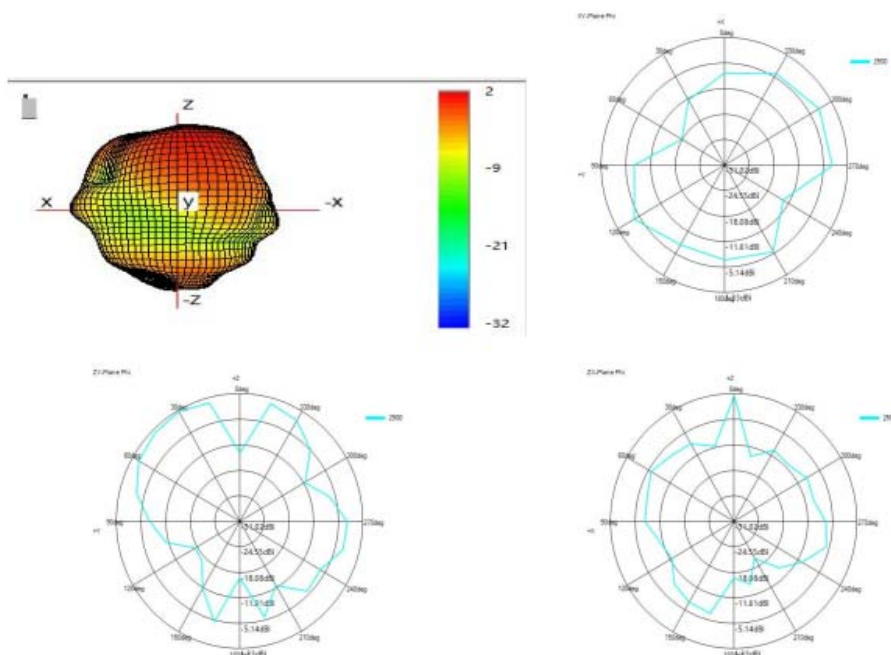


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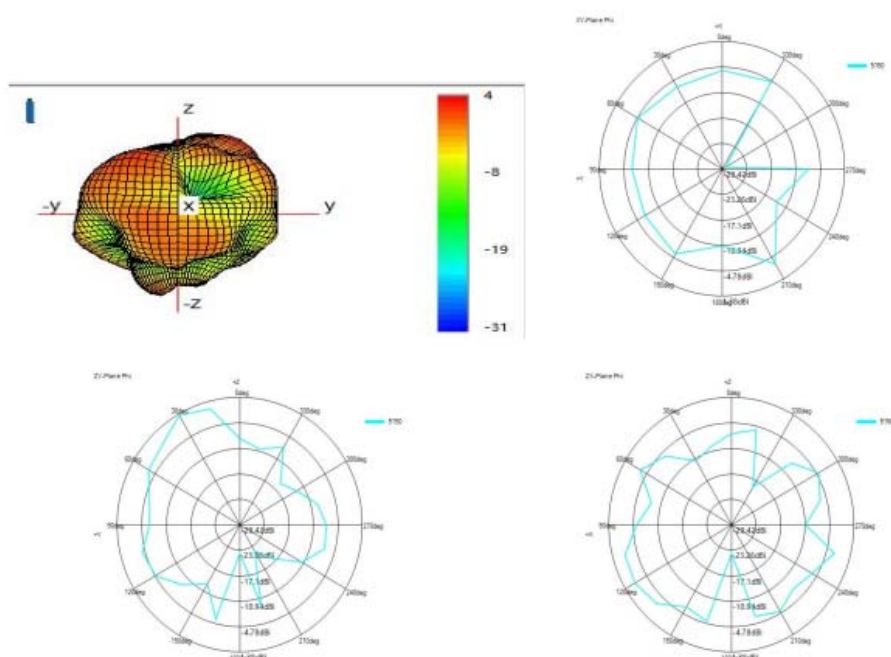
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## 2500MHZ



## 5150MHZ

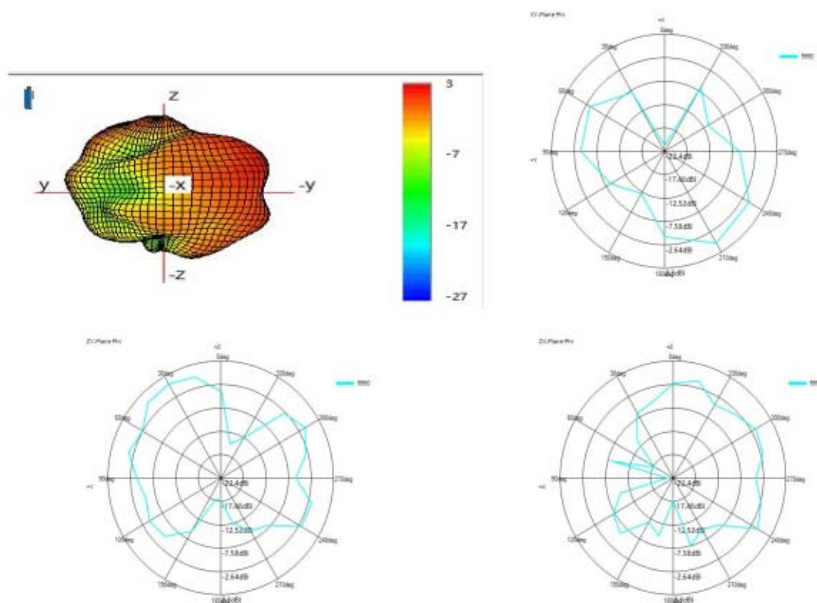


## 5550MHZ

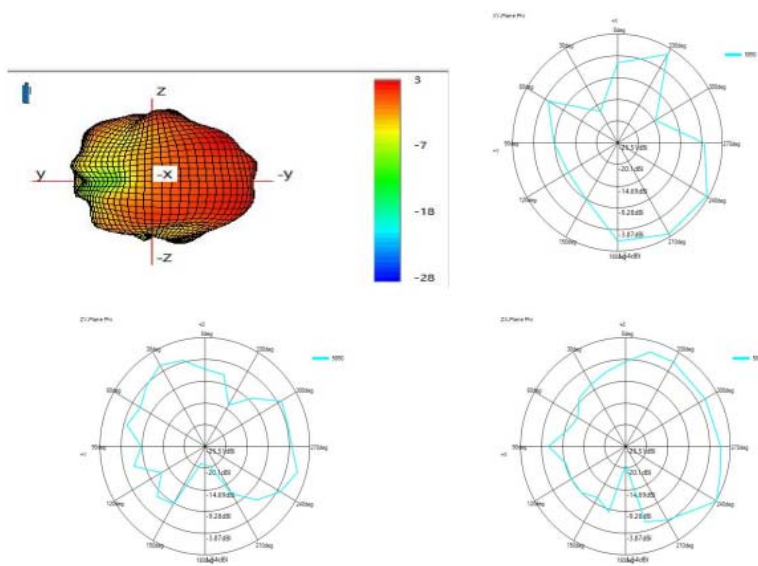
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**5850MHZ**

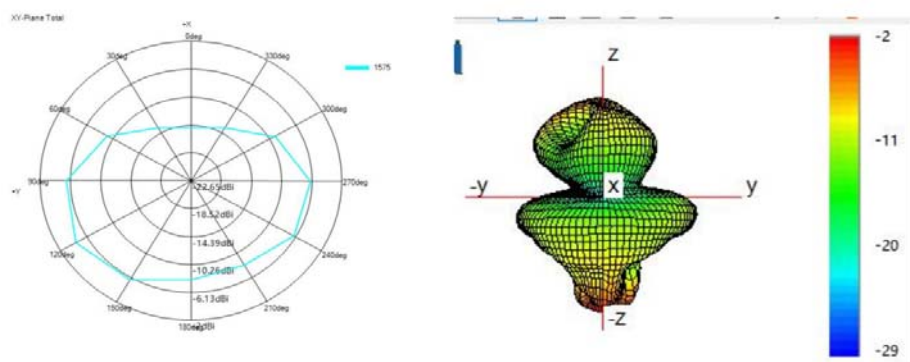


**1575MHZ**

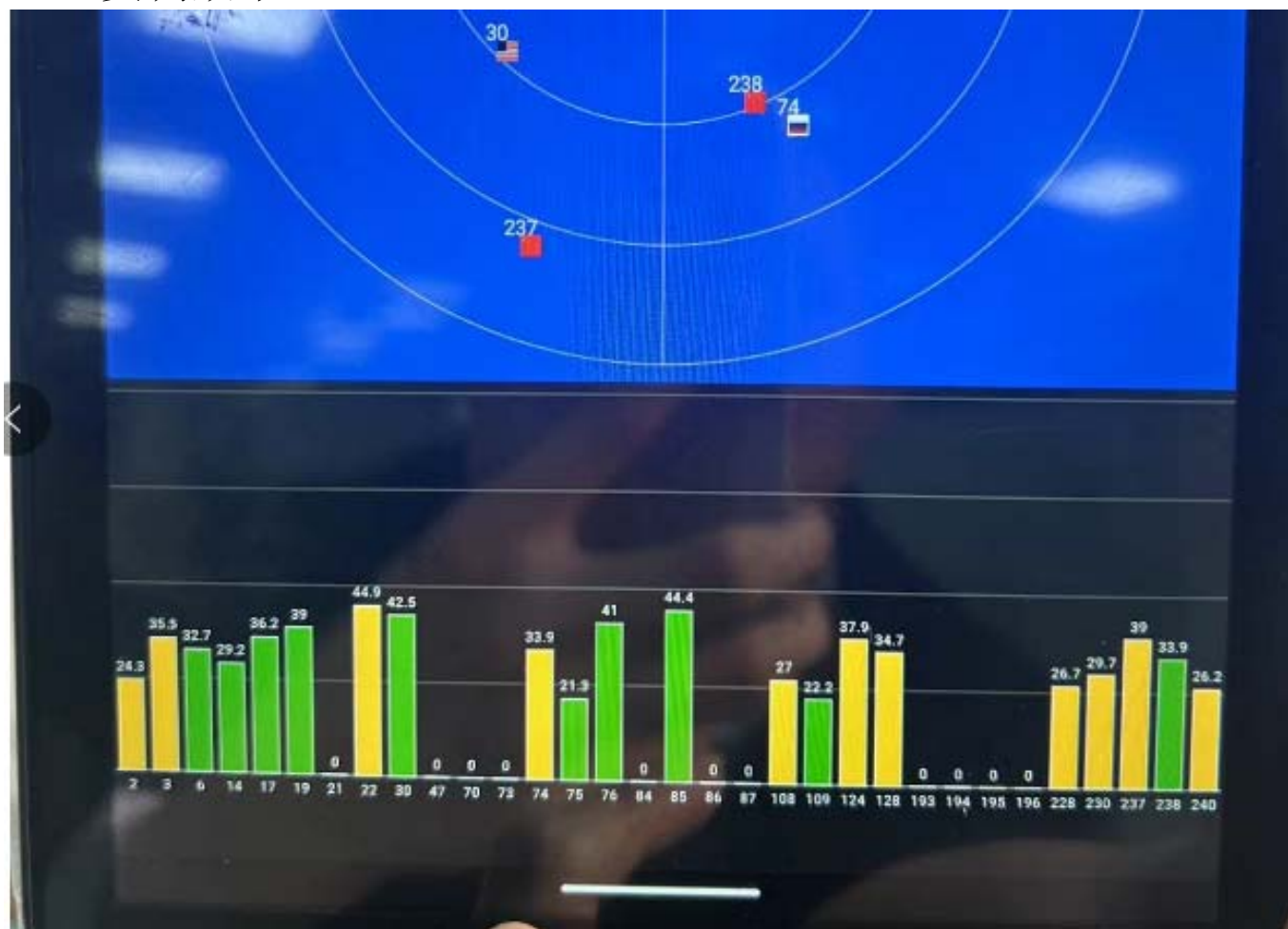
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## GPS 实测效果



## WIFI 实测效果（10 米）

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## 7: 环境处理



## 5: 结构图纸 Structural drawing

