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Shenzhen Hongde Zhixin Technology Co., Ltd  
SPECIFICATION FOR APPROVAL

|                                       |                     |                                   |                          |
|---------------------------------------|---------------------|-----------------------------------|--------------------------|
| Customer: Chuanglian High Tech        |                     | Project Name: Digital Photo Frame |                          |
| Frequency band: WIFI/2.4G             |                     | date: 2022.6.26                   | version: R:A             |
| research and development              | Structure: Mr. Wang | Reviewed by: Wei Chunyan          | Approved by: Chen Qinmin |
|                                       | RF: Wang Wei        | Reviewed by: Wei Chunyan          |                          |
| Antenna type                          | FPC Antenna type    |                                   |                          |
| HDZX-J 2066 BLACK LINE LENGTH 120mm   |                     |                                   |                          |
| generation terminal 2.4G WIFI antenna |                     |                                   |                          |
| Customer review: Customer approval:   |                     | Customer approval:                |                          |

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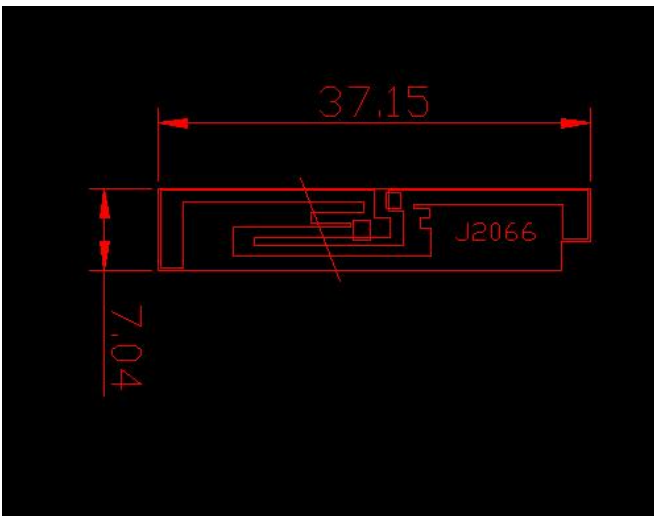
天线型号 对应的实物图

HDZX-J2066 黑色线长 120mm 一代端子 2.4G WIFI 天线

Physical diagram corresponding to antenna model

HDZX-J 2066 BLACK LINE LENGTH 120mm generation terminal 2.4G WIFI antenna

Unit: mm



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## 1. Project information and Electrical Specification

*Those specifications were specially defined for WIFI/BT model, and all characteristics were measured under the model's handset testing jig .*

1-1 Project picture

1-2 Frequency Band:

| Frequency Band    | MHz       |
|-------------------|-----------|
| WiFi/BT           | 2400-2500 |
| 天线增益 Antenna gain | 3.3dbi    |
| 天线 cable loss     | 0.5dbm    |

1-3 Impedance matching

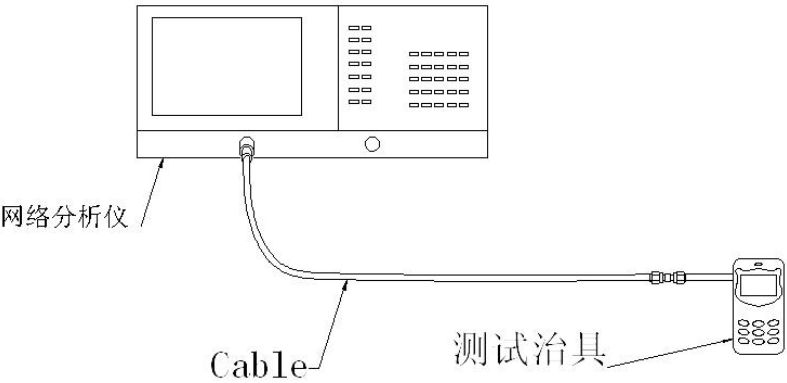
天线原匹配/Antenna original matching

2.VSWR

2-1 Measuring Method:

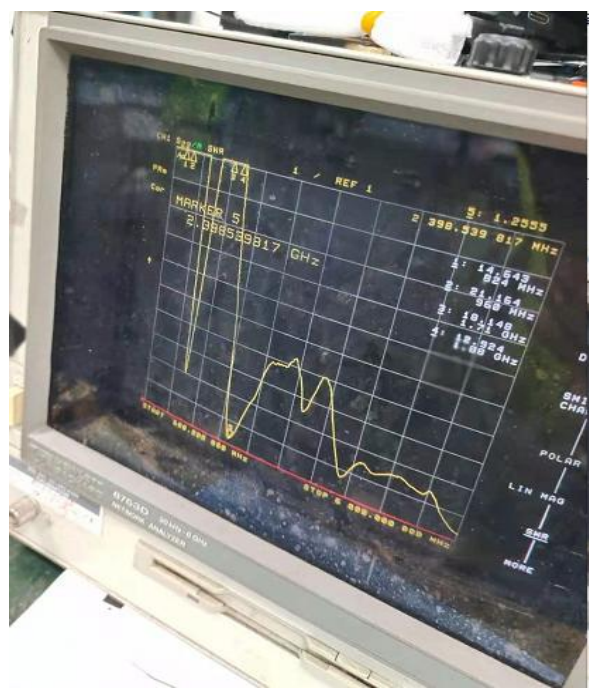
- 1. A 50  $\Omega$  coaxial cable is connected to the antenna. Then this cable is connected to a network analyzer to measure the VSWR,
- 2. Keeping this jig away from metal at least 20cm.

测试示意图如下:



2-2 S11 parameter values

|          |      |      |
|----------|------|------|
| 频率 (MHZ) | 2400 | 2500 |
| 驻波       | 1.3  | 1.4  |

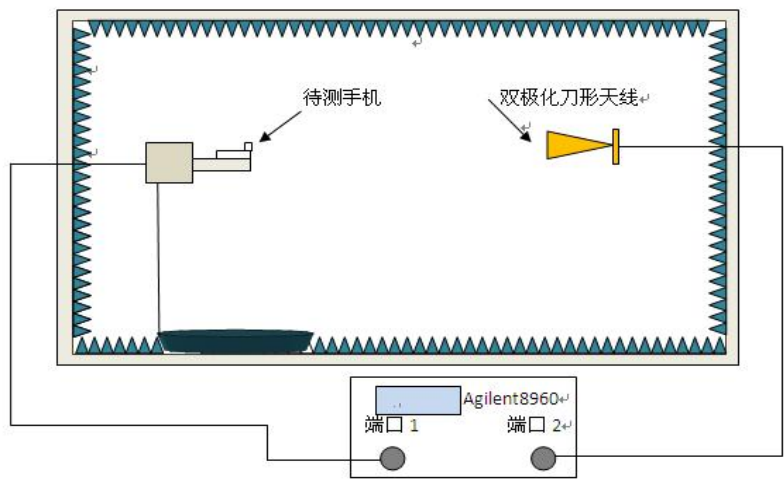


2. Efficiency and Gain

3. \*measuring and test instruments:

微波暗室，Agilent 网络分析仪，Agilent 频谱分析仪，8960 综合测试仪，标准天线  
**Microwave anechoic chamber, Agilent network analyzer, Agilent spectrum analyzer, 8960 integrated tester, standard antenna**  
**\*test method:**

equipment 以 H 面放于转台中心位置固定，与喇叭天线中心位置在同一个水平线上。  
Equipment the H plane is placed at the center of the turntable and fixed on the same horizontal line with the center of the horn antenna.

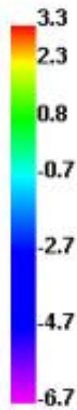
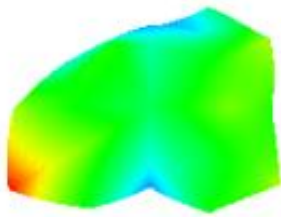


3-1 Efficiency/Peak Gain- WIFI

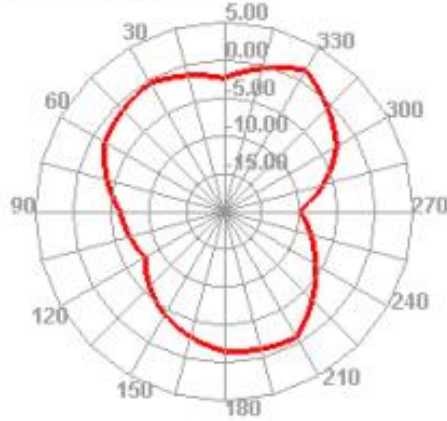
Performance Table

|              | TRP/TIS (dBm) | Gain (dBi) | Directivity (dB) | Efficiency (%) | Efficiency (dBi) |
|--------------|---------------|------------|------------------|----------------|------------------|
| WLAN-0001-TX | 12.92         | 19.57      | 6.65             | --             | --               |
| WLAN-0006-TX | 13.63         | 20.47      | 6.84             | --             | --               |
| WLAN-0011-TX | 14.44         | 20.77      | 6.33             | --             | --               |
| WLAN-0001-RX | -85.71        | 92.36      | 6.65             | --             | --               |
| WLAN-0006-RX | -85.35        | 92.19      | 6.84             | --             | --               |
| WLAN-0011-RX | -85.64        | 91.97      | 6.33             | --             | --               |
| DummyPnt7    | -             | -          | -                | -              | -                |
| DummyPnt8    | -             | -          | -                | -              | -                |
| DummyPnt9    | -             | -          | -                | -              | -                |
| DummyPnt10   | -             | -          | -                | -              | -                |
| DummyPnt11   | -             | -          | -                | -              | -                |
| DummyPnt12   | -             | -          | -                | -              | -                |
| DummyPnt13   | -             | -          | -                | -              | -                |
| DummyPnt14   | -             | -          | -                | -              | -                |

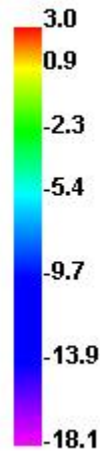
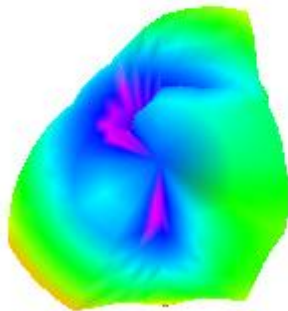
2400.000MHz



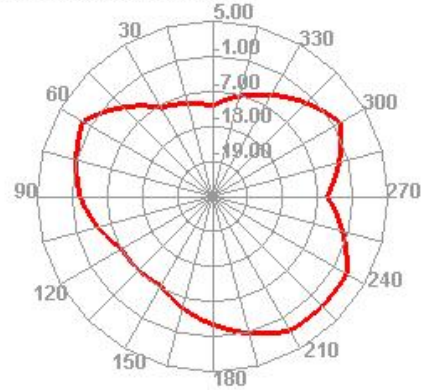
2400.000MHz H



2450.000MHz



2450.000MHz H



#### 4. The production index

天线量产时，以驻波比作为量产测试标准。根据项目本身的差异，给出如下标准：

**During mass production of antenna, the standing wave ratio is taken as the mass production test standard. According to the difference of the project itself, the following standards are given:**

| 频率/Frequency           | 量产标准/Production Standards    |
|------------------------|------------------------------|
| WIFI /BT(2400-2500MHZ) | VSWR (量产产品) < VSWR(设计样品)+0.5 |