

# Antenna acknowledgment

Customer name: Guangzhou xingdongzhe

Customer part number:

Material code: ATWE-01-0456-010

Product name: GF6048

Date of issue: 2023-6-23

Vendor recognition field:

|         |                    |                    |                       |
|---------|--------------------|--------------------|-----------------------|
| Fiction | Structure<br>audit | Structure<br>audit | Give<br>permission to |
|         |                    |                    |                       |

Customer recognition field:

|        |         |                    |
|--------|---------|--------------------|
| Verify | Examine | Give permission to |
|        |         |                    |

---

# Catalogue

|                                  |         |
|----------------------------------|---------|
| Admit the cover.....             | Page 1  |
| Directory list.....              | Page 2  |
| Change log.....                  | Page 3  |
| 1) Bibliographic.....            | Page 4  |
| 2. Product material.....         | Page 5  |
| 3. Antenna test data.....        | Page 6  |
| 4. Antenna assembly drawing..... | Page 7  |
| 5. Reliability test report.....  | Page 8  |
| 6. Method of packing.....        | Page 9  |
| 7. Structure drawing.....        | Page 10 |

| Prepare/revise<br>and change<br>resume Version | Date      | Change<br>description | Remarks |
|--|-----------|-----------------------|---------|
| V0   | 2023-6-23 | First edition         |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |
|  |           |                       |         |

## One、Purpose:

1.Through the description of product characteristics and inspection standards in this acknowledgement, better communication can be carried out with customers.

Reach a consensus to avoid product quality disputes caused by inadequate communication。

2.When our products need to be used in your outsourcing factory, please contact your outsourcing company with the content of this acknowledgement.

3.Environmental considerations:

The FPC antenna is designed for general use environment (0 ~ 25 degrees Celsius temperature, 30% ~ 70% atmospheric pressure). When used for a long time, the quality of the product will be reduced in the following occasions. Please pay attention when using:3. 1. 还原性气体 (C12, H2S, NH3 等)。

3.2. Volatile/alkene gas environment.。

3.3.Direct contact with water or high humidity dew place。

3.4.The place of oil, medicine liquid and organic solution。

3.5.A place of vibration。

3.6.A place in direct sunlight。

## 4、Storage and use

In order to prevent discoloration, deterioration of solderability, and abnormal foaming during assembly, the following storage conditions should be observed。

4.1.High temperature and high humidity will lead to discoloration of the product, it is recommended to manage and keep in a constant temperature and humidity environment。

4.2.The PI film of FPC is very easy to absorb moisture. If the temperature changes sharply in the hygroscopic state, it will produce foaming phenomenon.

It is recommended to prepare baking according to conditions before assembly (SMT, etc.). Please try to use the baked product within 2HR.

## Two、Product material:

|                   |  |
|-------------------|--|
| FPC Base material | Matte black FPC, single panel, one and a half material |
| Surface treatment | Screen printing matte black oil/matte white characters |

Three、Antenna test data

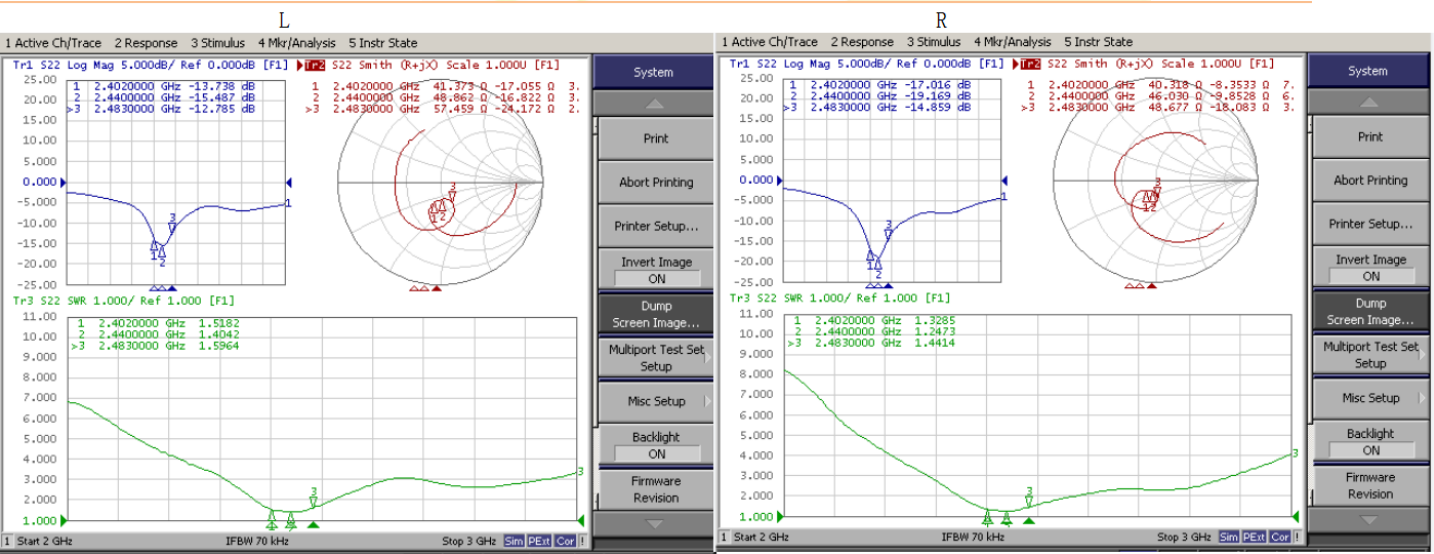
3.1 Antenna matching circuit modification schematic

天线匹配电路修改示意

L/R

| Monopole  |     |
|-----------|-----|
| L/R       |     |
| E1-(0201) | 3NH |
| E2-(0201) | 0欧姆 |
| E3-(0201) | N/C |

3.2 Passive data/return loss

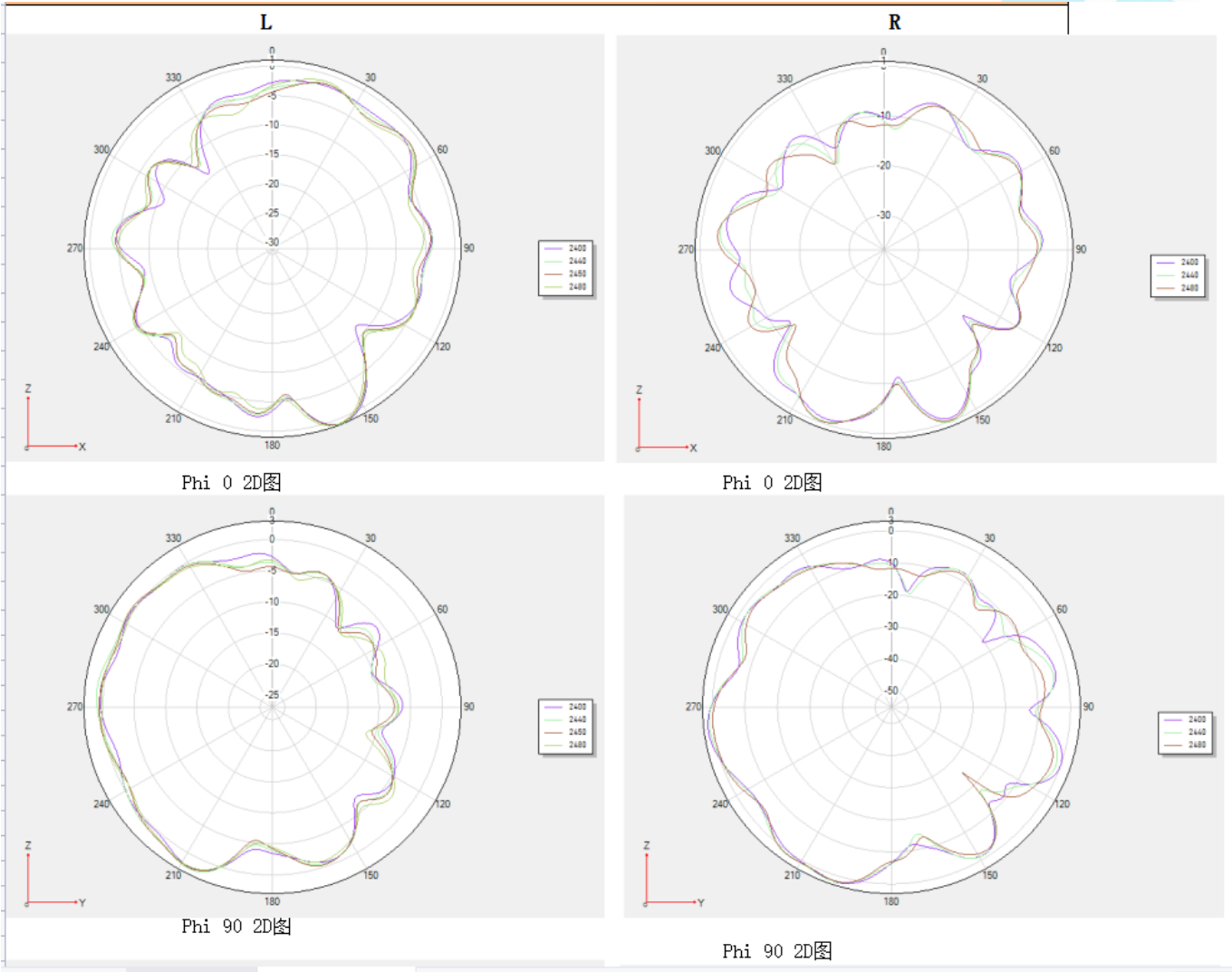


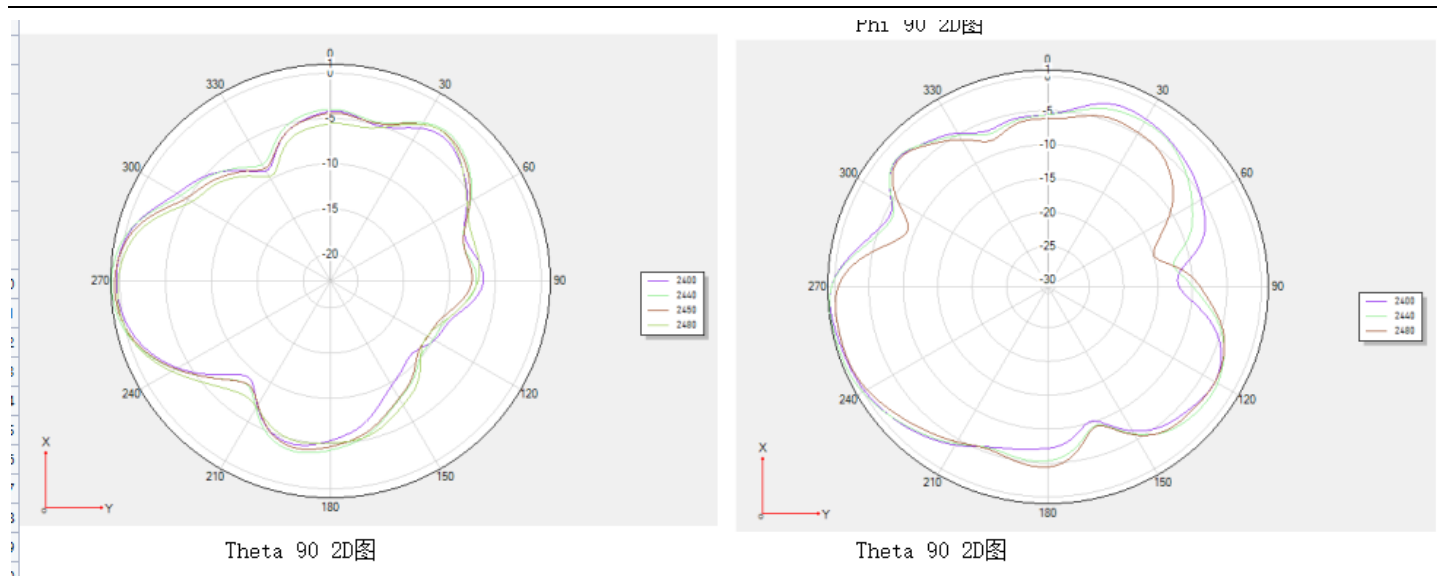
3.3 Passive efficiency

| L               |          |                | R               |          |                |
|-----------------|----------|----------------|-----------------|----------|----------------|
| BT              |          |                | BT              |          |                |
| Frequency / MHz | Gain/dbi | Efficiency / % | Frequency / MHz | Gain/dbi | Efficiency / % |
| 2400            | 1.97     | 49.1           | 2400            | 2.02     | 48.9           |
| 2410            | 1.49     | 50.55          | 2410            | 1.52     | 47.21          |
| 2430            | 1.76     | 45.92          | 2430            | 2        | 48.98          |
| 2450            | 1.64     | 48.1           | 2450            | 1.87     | 49.76          |
| 2460            | 1.33     | 47.86          | 2460            | 2.04     | 50.82          |
| 2470            | 1.62     | 48.29          | 2470            | 2.27     | 50.9           |
| 2480            | 1.6      | 50.57          | 2480            | 1.9      | 48.82          |
| 2490            | 1.38     | 49.56          | 2490            | 2.01     | 47.84          |

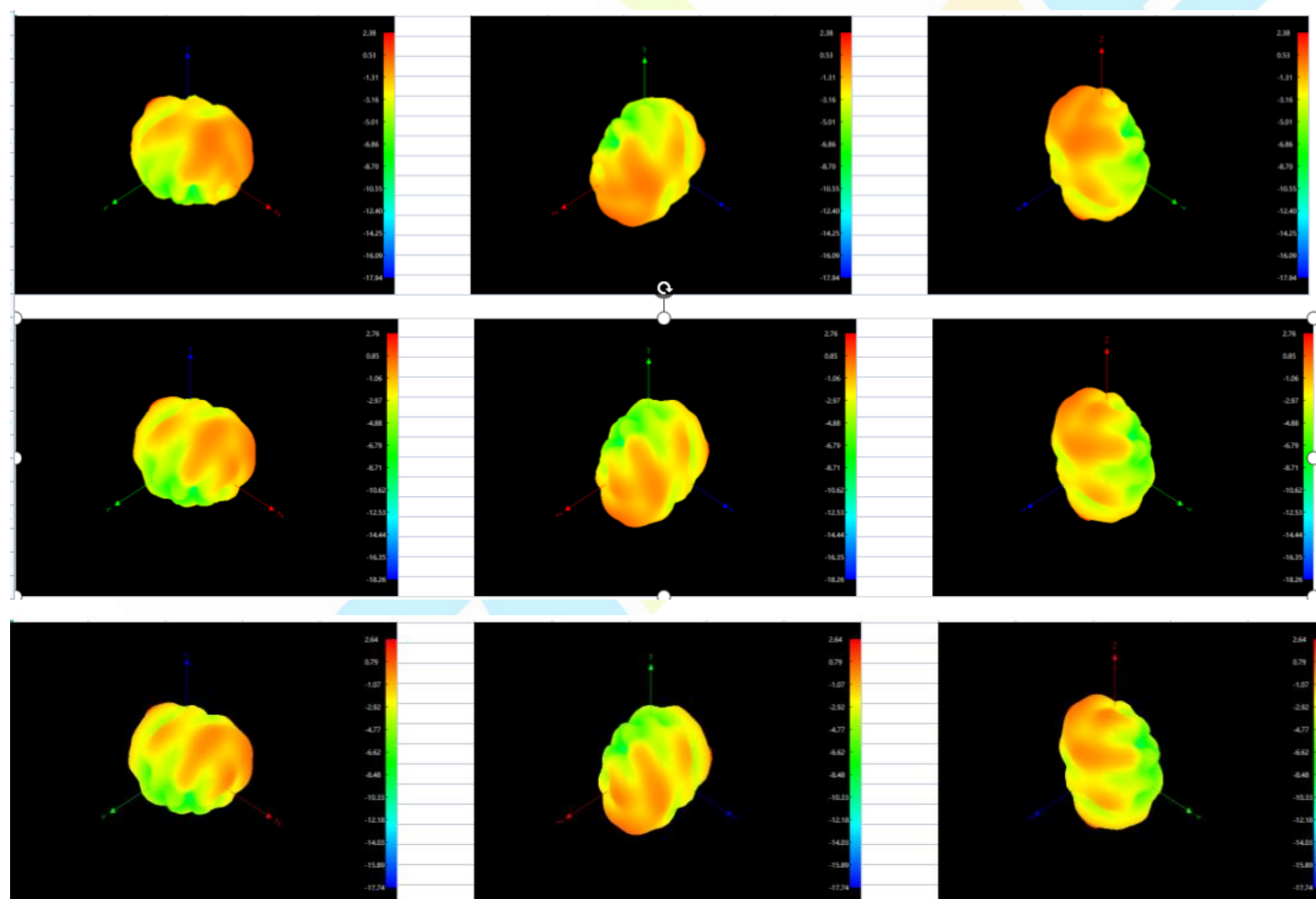
L: The maximum gain is 1.97dbi. The maximum gain is 2.27 dbi

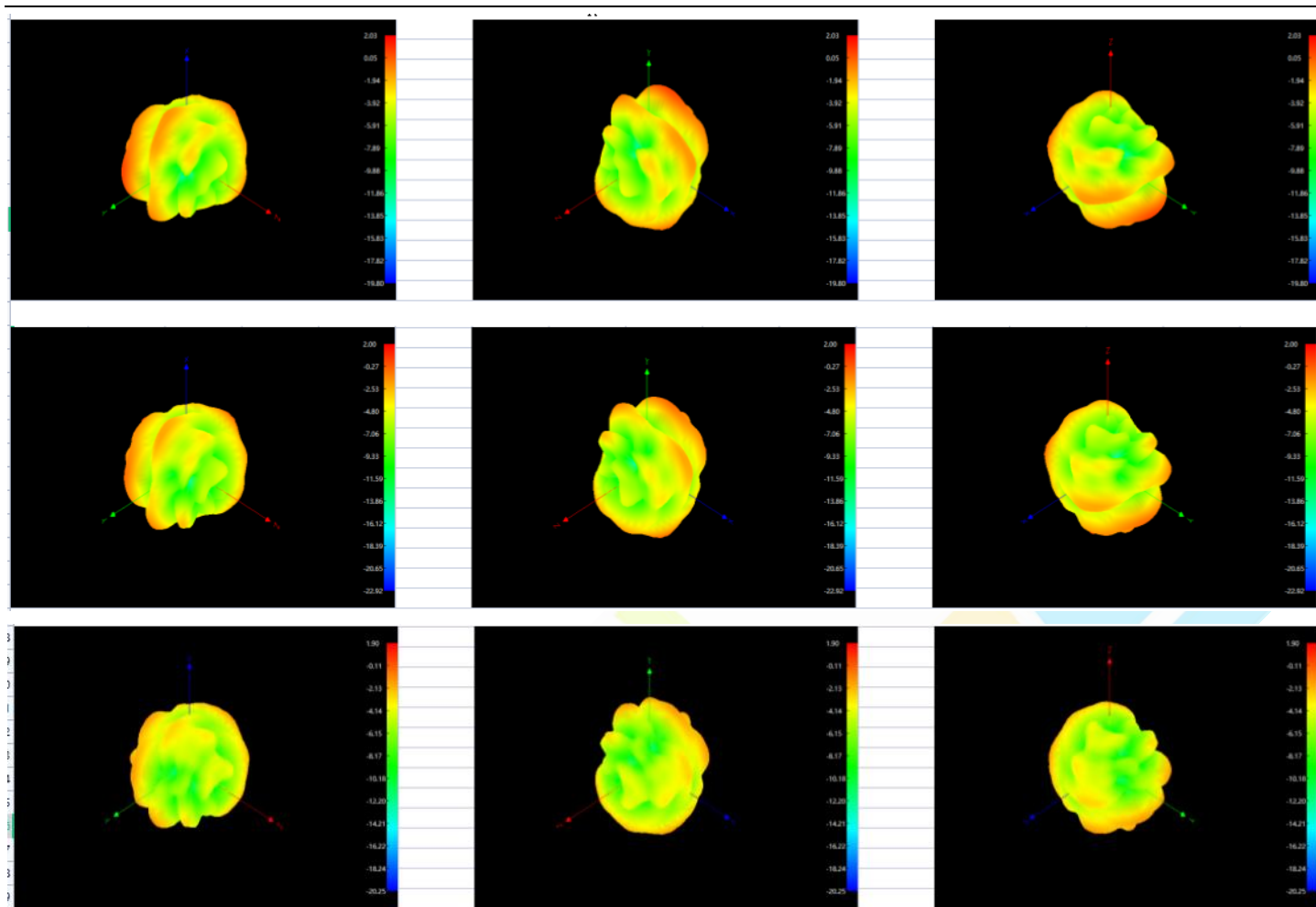
3.4 2D Directed graph





### 3.5 3D Directed graph





### 3.6 Free space

| 自由空间      |       |       |       |       |       |       |
|-----------|-------|-------|-------|-------|-------|-------|
| 2.4G      | L     |       |       | R     |       |       |
| CHAN      | 0     | 39    | 78    | 0     | 39    | 78    |
| TRP (dBm) | 2.7   | 2.5   | 3.6   | 1.1   | 2.4   | 2.5   |
| TIS (dBm) | -81.3 | -84.5 | -84.2 | -81.7 | -84.4 | -85.6 |

| 主板传导数据    |     |       |     |     |     |     |
|-----------|-----|-------|-----|-----|-----|-----|
| 2.4G      | L   |       |     | R   |     |     |
| CHAN      | 0   | 39    | 78  | 0   | 39  | 78  |
| TRP (dBm) | 6.8 | 7     | 6.9 | 6.9 | 7.2 | 6.7 |
| TIS (dBm) |     | -89.5 |     | -89 |     |     |

建议主板功率增加到9DB, 灵敏度 -92

### Four、Antenna assembly diagram



4.1 Antenna location map



Five、Reliability test report

| Constant temperature and humidity, ink adhesion test report   |                         |                         |              |                              |                     |                           |    |
|---|-------------------------|-------------------------|--------------|------------------------------|---------------------|---------------------------|----|
| Customer  | Guangzhou Actor         |                         | Date         | 2023-06-23                   | Specifi-<br>cations | FPC                       |    |
| Product name  | SW20T Antenna           |                         | quantit<br>y | 2PCS                         | Test<br>time        | 280min                    |    |
| Test objective: To test the reliability of the product and the adhesion of the coating, the oxidation resistance and corrosion resistance of the coating. |                         |                         |              |                              |                     |                           |    |
| Equipment Name: High and low temperature test box   |                         |                         |              |                              |                     |                           |    |
| Test parameters   |                         |                         |              |                              |                     |                           |    |
| Temperature   | High temperature        |                         | 70℃          | Low<br>temperature           | -40℃                | Temperatur<br>e tolerance | 1℃ |
| Time  | Constant<br>temperature | High<br>temperat<br>ure | 24h          | High<br>temperatur<br>e rise | 10min               | Remarks                   |    |
|   |                         | Low<br>temperat<br>ure  |              | Cool down                    |                     |                           |    |
| Number of<br>loops  | 0                       |                         | Other        | Relative<br>humidity         | 95%                 | ±1%                       |    |

|  |                         |     |      |                 |  |     |                    |     |
|--|-------------------------|-----|------|-----------------|--|-----|--------------------|-----|
| Inspection<br>of<br>appearance                             | layerin<br>g            | ACC | Fold | ACC             | Bubb<br>ling<br>up   | ACC | Shedding of<br>ink | ACC |
| The judgment result is passed for ACC and rejected for NG. |                         |     |      |                 |  |     |                    |     |
| Hundred square test  |                         |     |      |                 |  |     |                    |     |
| Tools:   | Bagel knife, 3M600 tape |     |      | Conclusion<br>: | Conclusion: The ink shedding area is less than 5%, which can meet the test requirements by 3 times 90° tensile test of 100 grid area with 3M600. |     |                    |     |
|  |                         |     |      |                 |  |     |                    |     |
| Tester: 卫江蕊  |                         |     |      |                 |  |     |                    |     |

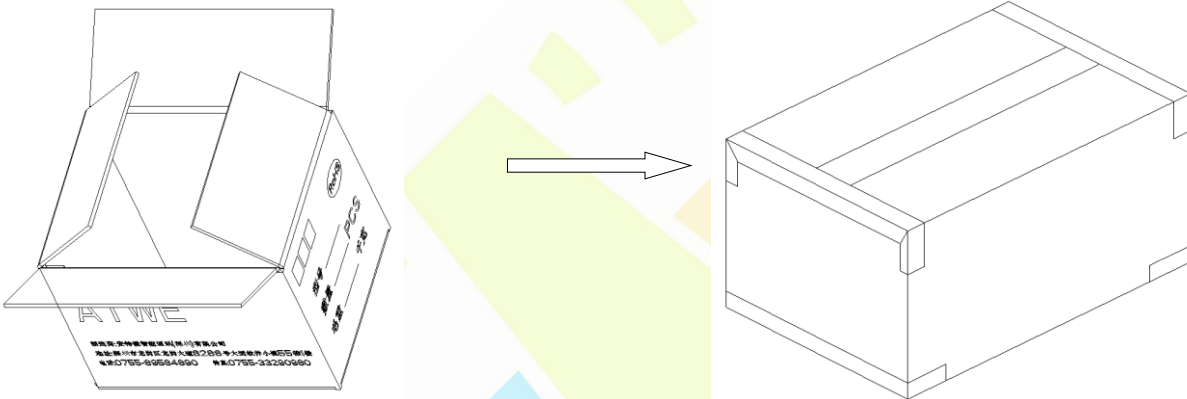
Six、Method of packing

|                                      |             |
|--------------------------------------|-------------|
| ATWE Product packaging specification |             |
| Product name: SW20T Antenna          | Version: V0 |

One、FPC Antenna half cut film full version shipped

Two、 Full sheet set in PE sealing pocket -- quantity is subject to actual order.

Three、 Pack in big boxes. (The quantity is subject to the actual order and packaging quantity. 4. Seal the box, and attach our production label and ROHS label to the outer box



**Note: Since the project has not been officially opened, the above packaging is for reference only, and the specific packaging is subject to the official mass production!**