

# Shenzhen Kaipushen Communication Technology Co., Ltd

## Sample approve sheet

Customer: Zhouhai intelligence

Item name: W015C

Sample name: GPS/BT aerial

Description/color: Yellow covering film

Release Date: 2022-08-26

| Supplier confirmed | Make | R&D | Structure | Quality |
|--------------------|------|-----|-----------|---------|
|                    |      |     |           |         |

| Supplier confirmed | Item | Appearance | Structure | Quality |
|--------------------|------|------------|-----------|---------|
|                    |      |            |           |         |

| Conclusion | <input type="checkbox"/> MP use <input type="checkbox"/> Limited use (    ) K |
|------------|-------------------------------------------------------------------------------|
|------------|-------------------------------------------------------------------------------|

☐ ROHS

Supplier name: Shenzhen Kaipushen Communication Technology Co., Ltd

Supplier address: 2nd Floor, Building 1, Yulong Building, Longcheng Industrial Zone, No. 440, Longguan Avenue, Longhua District, Shenzhen

Tel: 0755-29351613

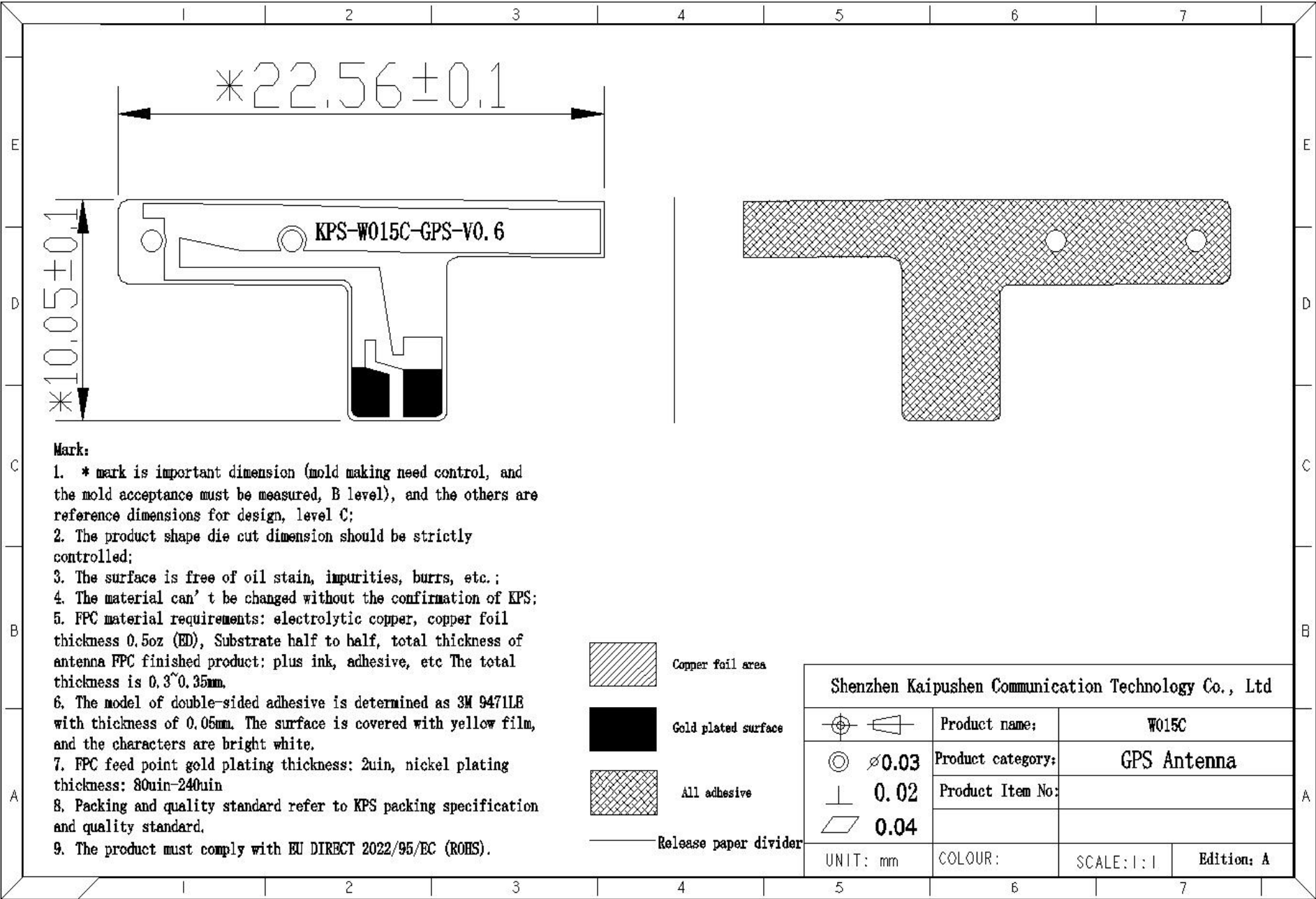
Fax: 0755-29351510

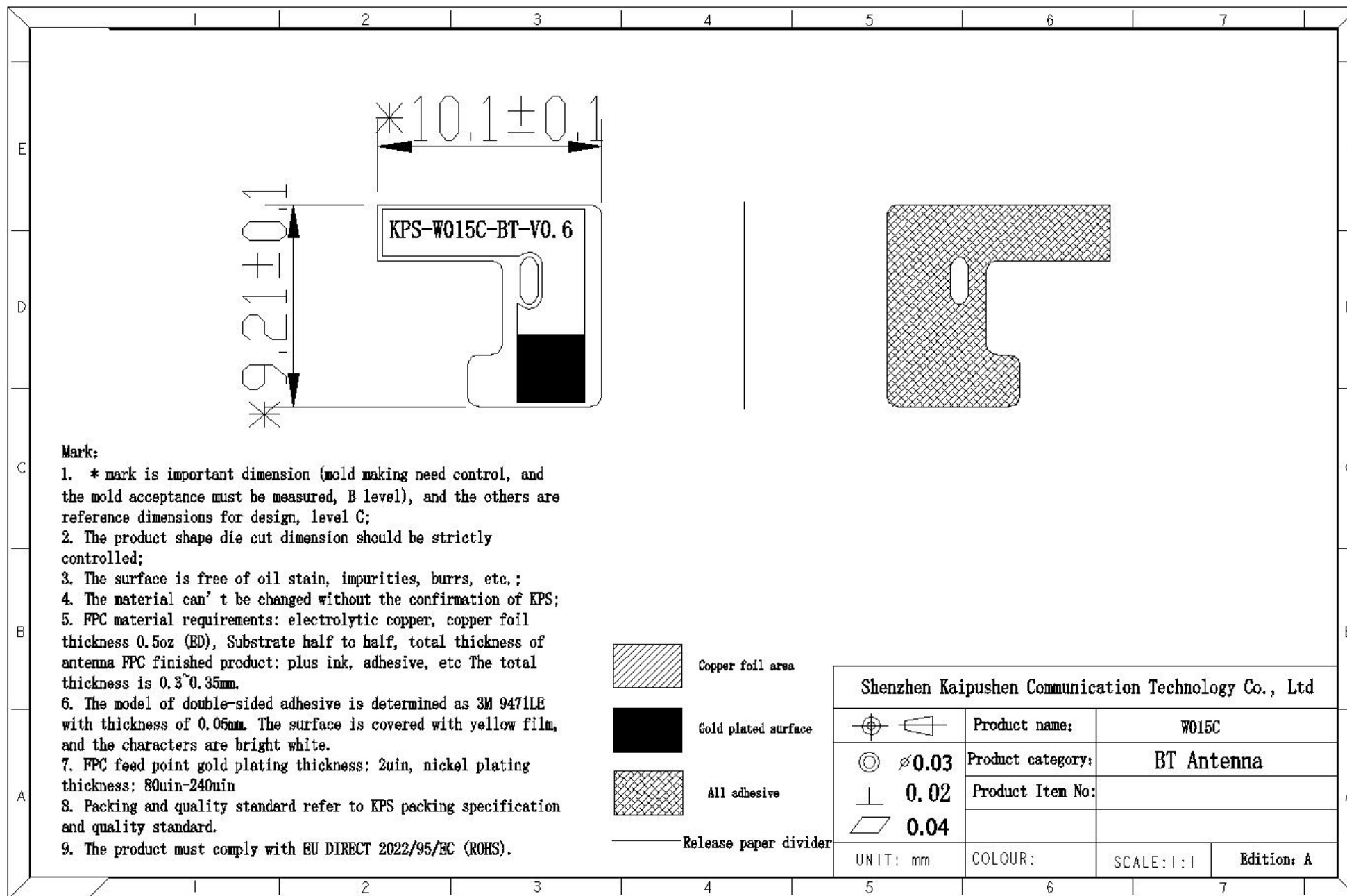
E-mail: szkpstx@szkpstx.com

## 目 录Contents

- 1、 Cover
- 2、 Contents
- 3、 ICD Drawing
- 4、 Aerial data
- 5、 Full dimensional measurement report
- 6、 Salt spray test report
- 7、 High-low temperature test
- 8、 Package

3.1: antenna icd diagram





4.1 Aerial function

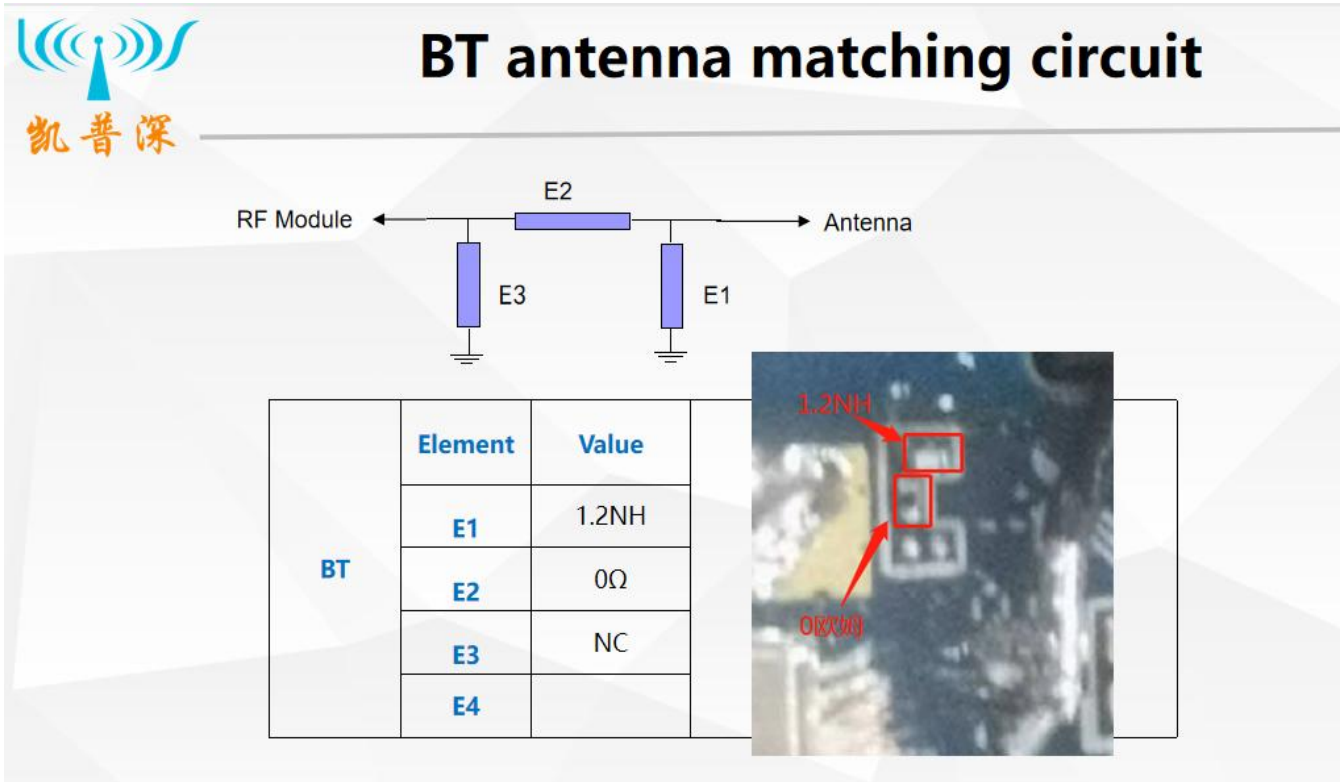
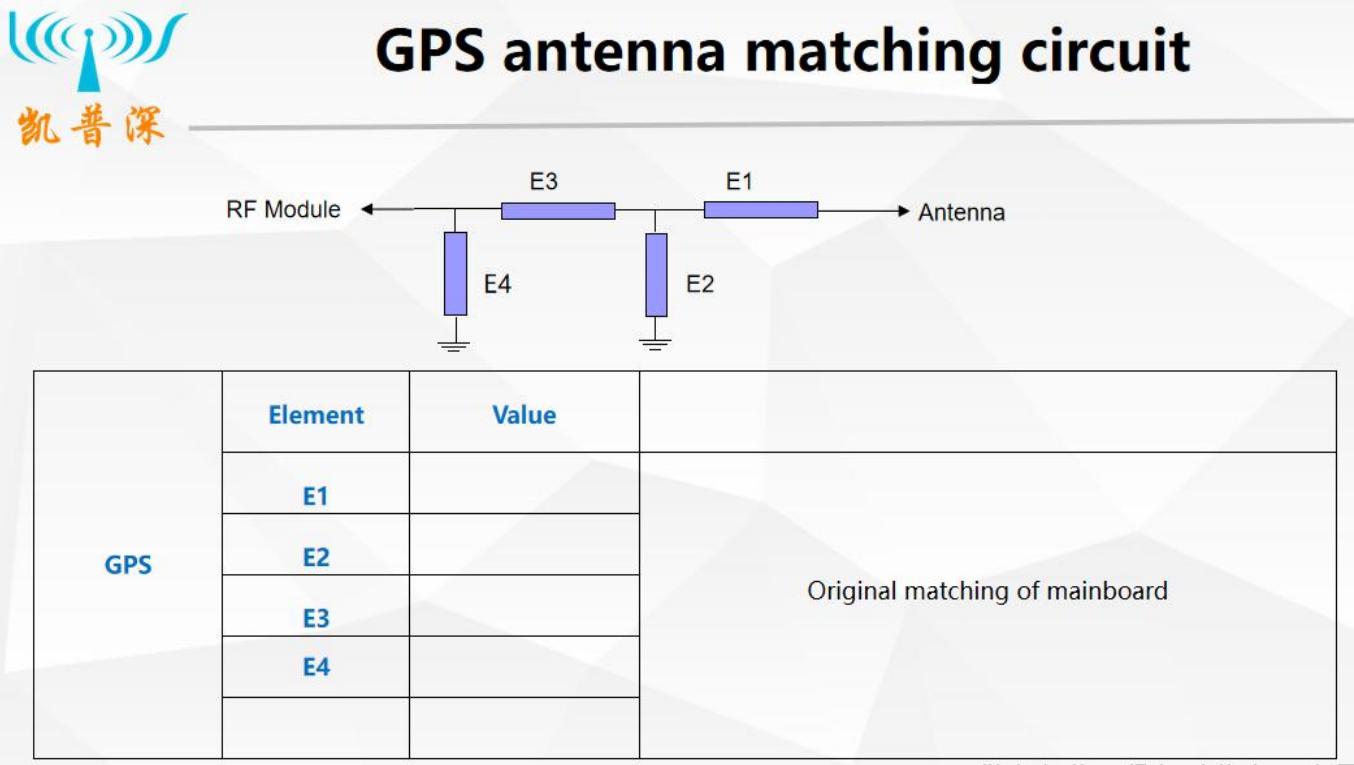
4.1-1 Specificatin standard

The working frequency band of gps is 1575.42m

Wifi operating frequency band 2400m-2500m

4.1-2 Aerial matching circuit.

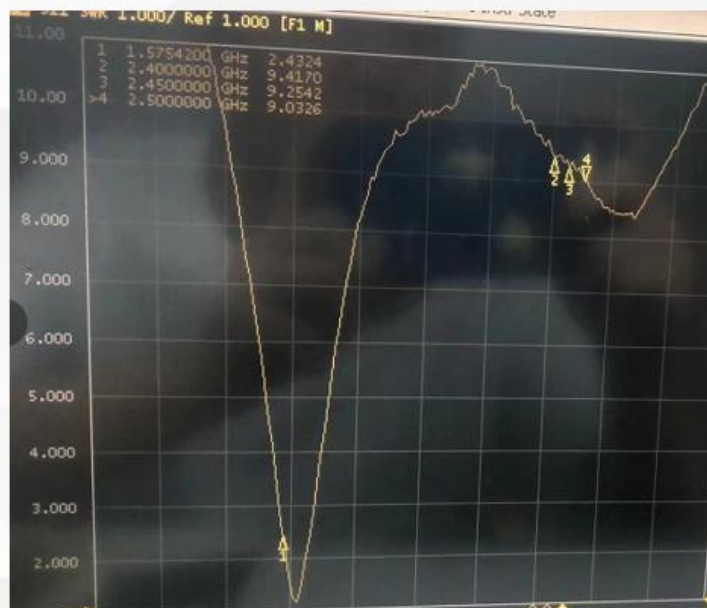
GPSMatching circuit as follows:



#### 4.1-3 Passive test results



### antenna standing wave diagram



GPS



### antenna standing wave diagram



BT

## Efficiency test results



### Passive efficiency of antenna

free space

#### GPS

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|------------|----------|-----------|------------|
| 1540       | 14.21    | -8.47     | -64.05     |
| 1545       | 15.79    | -8.02     | -5.64      |
| 1550       | 17.96    | -7.46     | -5.15      |
| 1555       | 23.96    | -6.2      | -4.93      |
| 1560       | 25.01    | -6.02     | -4.78      |
| 1565       | 25.44    | -5.95     | -4.74      |
| 1570       | 26.4     | -5.78     | -4.5       |
| 1575       | 28.49    | -5.45     | -3.56      |
| 1580       | 28.92    | -5.39     | -3.25      |
| 1585       | 27.19    | -5.66     | -3.59      |
| 1590       | 26.12    | -5.83     | -4.75      |
| 1595       | 24.57    | -6.1      | -4.86      |
| 1600       | 24.06    | -6.19     | -4.75      |

#### BT

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|------------|----------|-----------|------------|
| 2400       | 30.28    | -5.19     | -1.54      |
| 2440       | 30.57    | -5.15     | -0.2       |
| 2450       | 32.76    | -4.85     | 0.15       |
| 2460       | 32.1     | -4.94     | 0.21       |
| 2470       | 32.67    | -4.86     | 0.44       |
| 2450       | 32.93    | -4.82     | 0.9        |
| 2460       | 32.4     | -4.89     | 0.96       |
| 2470       | 32.98    | -4.82     | 0.94       |
| 2480       | 32.38    | -4.9      | -1.17      |
| 2490       | 33.63    | -4.73     | -0.99      |
| 2500       | 33.21    | -4.79     | -0.99      |



### Passive efficiency of antenna

fingerprint

#### GPS

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|------------|----------|-----------|------------|
| 1550       | 8.47     | -10.72    | -7.02      |
| 1555       | 9.57     | -10.19    | -6.61      |
| 1560       | 9.46     | -10.24    | -6.55      |
| 1565       | 9.42     | -10.26    | -6.45      |
| 1570       | 8.97     | -10.47    | -6.61      |
| 1575       | 8.53     | -10.69    | -6.84      |
| 1580       | 9.01     | -10.45    | -6.7       |
| 1585       | 9.76     | -10.11    | -6.3       |
| 1590       | 8.76     | -10.55    | -6.3       |
| 1595       | 8.46     | -10.72    | -6.55      |
| 1600       | 8.42     | -10.73    | -6.45      |

#### BT

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|------------|----------|-----------|------------|
| 2400       | 5.26     | -12.79    | -7.54      |
| 2410       | 5.55     | -12.55    | -7.33      |
| 2420       | 6.33     | -11.98    | -6.84      |
| 2430       | 6.9      | -11.61    | -6.54      |
| 2440       | 7.13     | -11.47    | -8.41      |
| 2450       | 7.54     | -11.23    | -7.59      |
| 2460       | 7.71     | -11.13    | -7.29      |
| 2470       | 7.82     | -11.07    | -7.95      |
| 2480       | 7.75     | -11.1     | -7.95      |
| 2490       | 7.71     | -11.13    | -6.76      |
| 2500       | 7.24     | -11.4     | -8.25      |

## Environmental manipulation



### Environmental treatment of the whole machine

---

The whole machine shall be treated  
according to your original environment

# Full dimensional measurement report

|     | Customer | Zhouhai intelligence |        | Item name     |       | W015C     |           |              |           |           |           |           | Material          | Electrolytic copper |
|-----|----------|----------------------|--------|---------------|-------|-----------|-----------|--------------|-----------|-----------|-----------|-----------|-------------------|---------------------|
|     | Supplier | Kaipushen            |        | Measure tools |       | Quadratic |           | Measure unit |           | MM        |           |           | Measure date      | 2022/8/22           |
| NO. | Size     | Upper                | + TOL. | - TOL.        | Lower | Act mea 1 | Act mea 2 | Act mea 3    | Act mea 4 | Act mea 5 | Act mea 6 | Act mea 7 | UPPER $\leq$ 100% | LOWER $\leq$ 100%   |
| 1   | 22.56    | 22.66                | 0.10   | 0.10          | 22.46 | 22.61     | 22.48     | 22.46        | 22.48     | 22.46     | 22.48     | 22.60     | 50%               | 100%                |
| 2   | 10.05    | 10.15                | 0.10   | 0.10          | 9.95  | 9.98      | 10.10     | 9.95         | 9.96      | 10.10     | 9.98      | 9.98      | 50%               | 100%                |
| 3   | 10.10    | 10.20                | 0.10   | 0.10          | 10.00 | 10.15     | 10.03     | 10.13        | 10.13     | 10.08     | 10.00     | 10.00     | 50%               | 100%                |
| 4   | 9.21     | 9.31                 | 0.10   | 0.10          | 9.11  | 9.21      | 9.11      | 9.20         | 9.26      | 9.23      | 9.18      | 9.17      | 50%               | 100%                |
| 5   |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
| 6   |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
| 7   |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
| 8   |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
| 9   |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
| 10  |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
| 11  |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
|     |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
|     |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
|     |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
|     |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |
|     |          |                      |        |               |       |           |           |              |           |           |           |           |                   |                     |

Trad: Jian Chen

auditing:Wu Xingtuo

此文件中所包含的一切信息版权归深圳市凯普深通讯科技有限公司所有，在未得到深圳市凯普深通讯科技有限公司的书面许可下，请勿散播给任何第三方。

## Salt spray test report

Date: 2022 年 05月 16日

|                                                                                                                                            |                                                                                                    |                                                     |                               |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------|--|--|--|--|--|
| Item                                                                                                                                       | E18-FPC aerial                                                                                     | Customer                                            | Zhouhai intelligence          |  |  |  |  |  |
| Supplier                                                                                                                                   | Shenzhen Kaipushen<br>Communication Technology<br>Co., Ltd                                         | National Test<br>standard                           | GB/T 2423.2-2008              |  |  |  |  |  |
| Sample<br>situation                                                                                                                        | Sample qty: 5PCS                                                                                   |                                                     |                               |  |  |  |  |  |
|                                                                                                                                            | Base material:Half to one-third<br>electrolytic copper with glue                                   | Coating: Gold plated                                |                               |  |  |  |  |  |
| Test time                                                                                                                                  | Total 24H                                                                                          |                                                     |                               |  |  |  |  |  |
| Test type                                                                                                                                  | <input checked="" type="checkbox"/> NSS                                                            | <input type="checkbox"/> ASS                        | <input type="checkbox"/> CASS |  |  |  |  |  |
| Test condition                                                                                                                             | Salt solution: 5%                                                                                  | PH:7.0                                              |                               |  |  |  |  |  |
|                                                                                                                                            | Chamber temp: 35° C                                                                                | Relative humidity: 85%                              |                               |  |  |  |  |  |
|                                                                                                                                            | Spray way: <input checked="" type="checkbox"/> Continuous <input type="checkbox"/><br>intermittent | Compressed air pressure:<br>1kg/cm <sup>2</sup>     |                               |  |  |  |  |  |
|                                                                                                                                            | Salt spray sedimentation rate: 1-<br>2ml/80cm <sup>2</sup> /h                                      | Fog fluid collection:<br>1.4ml/80cm <sup>2</sup> /h |                               |  |  |  |  |  |
|                                                                                                                                            | Test cycle: __1__cycle                                                                             | Spray time: 24 h                                    |                               |  |  |  |  |  |
| Test results                                                                                                                               | Appearance after test:appearance intact, without obvious change                                    |                                                     |                               |  |  |  |  |  |
|                                                                                                                                            | Coating: no spalling, no rust                                                                      |                                                     |                               |  |  |  |  |  |
|                                                                                                                                            | Surface spraying, silk screen: no falling off, no bubbles.                                         |                                                     |                               |  |  |  |  |  |
| Explanation:                                                                                                                               |                                                                                                    |                                                     |                               |  |  |  |  |  |
| 1、Salt spray test operating standards in accordance with the People's Republic of China national standard GB/T2423.17-2008 implementation. |                                                                                                    |                                                     |                               |  |  |  |  |  |
| 2、The test piece results are determined according to the national standard GB/ T6451-02 of the People's Republic of China.                 |                                                                                                    |                                                     |                               |  |  |  |  |  |
| Operator by/date: Jian Chen Approved by/date: Wu Xingtuo                                                                                   |                                                                                                    |                                                     |                               |  |  |  |  |  |
|                                                                                                                                            |                                                                                                    |                                                     |                               |  |  |  |  |  |

# High-low temperature test record

|                                                                                                                        |                 |                |                      |                |
|------------------------------------------------------------------------------------------------------------------------|-----------------|----------------|----------------------|----------------|
| Product name                                                                                                           | W015C           | Customer name  | Zhouhai intelligence |                |
| Test qtu                                                                                                               | 5 pcs           | Test date      | 2022年8月22日           |                |
| Cycle number                                                                                                           | 1               | Time           | 48H                  |                |
| TestCondition:<br>High temp: + 65 ℃ Humidity: 90 % RH<br>Low temp: - 28 ℃<br>Test time: high temp: 48 H low temp: 48 H |                 |                |                      |                |
| Test item                                                                                                              | Uncycled test   |                | Cycled test          |                |
| No                                                                                                                     | After high temp | After low temp | After high temp      | After low temp |
| 1                                                                                                                      | OK              | OK             |                      |                |
| 2                                                                                                                      | OK              | OK             |                      |                |
| 3                                                                                                                      | OK              | OK             |                      |                |
| 4                                                                                                                      | OK              | OK             |                      |                |
| 5                                                                                                                      | OK              | OK             |                      |                |
| 6                                                                                                                      | OK              | OK             |                      |                |
| After test deficiency:                                                                                                 |                 |                |                      |                |
| Reason analysis:                                                                                                       |                 |                |                      |                |
| Improvement measures:                                                                                                  |                 |                |                      |                |
| Test results:           √ Pass                       Fail                                                              |                 |                |                      |                |

auditing: WUXingtuo

record: Chenjian

# Packing

|              |                      |                  |                 |
|--------------|----------------------|------------------|-----------------|
| Customer:    | Zhouhai intelligence | Material name    | W015C-FPCaerial |
| packing qty: | one carton           | Packing material | 纸箱Carton        |
| Qty/carton   |                      | Packing way      | Ziplock bag     |



Picture 1:Single package



Picture 2: Packing way



Picture 3: Packing view (front, side, top)



Picture 4:packing label

Fiction: Liminghui

auditing: Wuxingtuo