



## SPECIFICATION FOR APPROVAL

### Component information:

|                                |  |
|--------------------------------|--|
| 客户 (Customer)                  | Ganzhou DHD Technology Co., Ltd  |
| 部品名称 (Material Description)    | BT Antenna   |
| 客户料号 (Customer's Part number)  | ANT.0700011004000  |
| 部品规格 (Specifications)          | M18_ BT_ Built In Black FPC Antenna/50 $\Omega$<br>/2400-2500MHz/4.0 $\pm$ 0.5dBi@2.4-2.5GHz/RG1.13<br>Black Double Tin Wire L=110mm/IPEX First<br>Generation Terminal |
| 供应商料号 (Supplier's Part number) | QY023-11C0033A   |
| 送样日期 (Date)                    | 2024/1/23  |

### Supplier Approval:

| 拟制<br>Prepared By | 审核<br>Checked By | 批准<br>Approved By |
|-------------------|------------------|-------------------|
| Zhang Bingxiang   | Wu Qianjin       | Luo Daxun         |

### Customer approval:

| 承认<br>Accepted By | 审核<br>Checked By | 批准<br>Approved By |
|-------------------|------------------|-------------------|
|                   |                  |                   |

### Recognizing the outcome:

- 完全接受 (Full Approval)
- 条件接受 (Conditional Approval)
- 不合格 (Unqualified)
- 其它 (Others) :



## SPECIFICATION FOR APPROVAL

客户 Customer: DHD

品牌 Brand: Qiyuan

品名 Description: BT Antenna

规格/型号

Specification

/part no: M18 Bluetooth Antenna/50Ω/2400-2500MHz/4.0±0.5dBi@2.4-2.5GHz/RG113 Black Double Tin Wire L=110/I-PEX First Generation Terminal /Black FPC Built-In BT Antenna

日期 Date: 2024.01.23

备注 Remark:

承认签章后请回复一份（或复印件）给我司，其余由贵公司留作存档。如果在签章的承认书（或复印件）回复给我司之前，下了有关此规格产品的订单且又无特别说明，那么我司就确定贵司已完全承认了。Please return one specification or one copy of it with your chop and signature of approval and retain the others for your record. In the event of an order being placed for this part number before the chop and signed with specification (or copy) is returned and without special explanation, it will be assumed that full approval have been given.

客户签字盖章:

| 拟制/日期<br>CHECKED/DATE | 审核/日期<br>AUDITOR/DATE | 批准/日期<br>APPROVED/DATE |
|-----------------------|-----------------------|------------------------|
|                       |                       |                        |



## 客户料号

Customer P/N: ANT.0700011004000

## 规格描述

Specification: M18 Bluetooth Antenna/50Ω/2400-2500MHz/4.0  
±0.5dBi@2.4-2.5GHz/RG113 Black Double Tin  
Wire L=110/I-PEX First Generation Terminal/Black FPC Built-In BT Antenna

品名 Description: BT Antenna

供应商 Supplier: Qiyuan

生产商 Producer: Qiyuan

## 备注 Remark:

承认签章后请回复一份（或复印件）给我司，其余由贵公司留作存档。如果在签章的承认书（或复印件）回复给我司之前，下了有关此规格产品的订单且又无特别说明，那么我司就确定贵司已完全承认了。Pleasereturnonespecificationoronecopyofitwithyourchopandsignatureofapprovalandretain the others for your record. In the event of an order being placed for this part number before the chop and signed with specification (or copy) is returned and without special explanation, it will be assumed that full approval have been given.

| 拟制/日期<br>CHECKED/DATE         | 审核/日期<br>AUDITOR/DATE    | 批准/日期<br>APPROVED/DATE  |
|-------------------------------|--------------------------|-------------------------|
| Zhang Bingxiang<br>2024.01.23 | Wu Qianjin<br>2024.01.23 | Luo Daxun<br>2024.01.23 |





## Specification list

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天线照片 (Picture) :



(The image samples are for reference only, and the drawings shall prevail)

电气参数 (Electrical parameters) :

|                             |                       |
|-----------------------------|-----------------------|
| <b>Frequency</b><br>频率范围    | 2.4~2.5GHz            |
| <b>Impedance</b><br>特性阻抗    | 50Ω                   |
| <b>S.W.R.</b><br>电压驻波比      | ≤2.0                  |
| <b>Antenna Gain</b><br>增益   | 4.0dBi±0.5@2.4~2.5GHz |
| <b>Polarization</b><br>极化形式 | vertical polarization |
| <b>Return Loss</b><br>回波损耗  | -9.2dB MAX            |

机械参数(Mechanical parameters):

|                                |              |
|--------------------------------|--------------|
| <b>Antenna Colour</b><br>天线颜色  | Black        |
| <b>RF Cable Model</b><br>射频线型号 | RG113, Black |
| <b>Connect Type</b><br>接口方式    | I-PEX        |

工作/储存温度 (Operating/ Storage Temperature) :

|                                      |         |
|--------------------------------------|---------|
| <b>Operating Temperature</b><br>工作温度 | -40~85℃ |
| <b>Storage Temperature</b><br>储存温度   | -40~85℃ |





## 环境与可靠性试验(Environmental and reliability testing):

### Environmental test

| High and low temperature humidity test report |   |           |   |                  |        |           |
|---|---|-----------|---|------------------|--------|-----------|
| experimental project                          | High temperature, low temperature and constant humidity test  |           |   |                  |        |           |
| Test sample Name plate                        | FPC Antenna   | Test date | 2023. 12. 20  |                  |        |           |
| equipment                                     | Constant temperature and humidity test chamber<br>network analyzer  | quantity  | 5PCS  |                  |        |           |
| inspection standard                           | 1. The metal surface coating has no peeling, cracking, wrinkling and other defects;The non-metal part should not be discolored, broken, deformed, degummed and other defects.<br>2. Electrical test meets the design requirements; The voltage standing wave ratio test is qualified. |           |   |                  |        |           |
| name  | The experimental project  | require   | experimental method   | Actual test data | result |           |
|   |   |           |   |                  | sample | decide    |
| high temperature test                         | Temperature (°C)  | +85±3     | In accordance with GB2423.1-89 9 chapter To be carried out in the prescribed manner | +85              | 1      | qualified |
|   | Temperature stabilization time of test sample (h)   | 12        |   | 1. 2             | 2      | qualified |
|   | Duration of test (h)  | 1         |   | 2. 3             | 3      | qualified |
|   | Recovery time (h)   | 1         |   | 1                | 4      | qualified |
|   |   |           |   |                  |        | 5         |
| low temperature test                          | Temperature (°C)  | -40±3     | In accordance with GB2423.1-89 Section 8 chapter Regulation of the methods          | -40              | 1      | qualified |
|   | Temperature stabilization time of test sample (h)   | 1         |   | 1. 2             | 2      | qualified |
|   | Duration of test (h)  | 2         |   | 2. 4             | 3      | qualified |
|   | Recovery time (h)   | 1         |   | 1. 1             | 4      | qualified |
|   |   |           |   |                  |        | 5         |
| steady-state damp heat test                   | Temperature (°C)  | +40±2     | According to GB2423.3-93 section 5 chapter Stipulated by the parties the parties    | +42              | 1      | qualified |
|   | Relative Humidity (%)   | 90-95     |   | 92               | 2      | qualified |
|   | Duration of test (h)  | 21        |   | 22               | 3      | qualified |
|   | Recovery time (h)   | 1         |   | 1. 1             | 4      | qualified |
|   |   |           |   |                  |        | 5         |





**salt spray test; salt fog test**

| Salt spray test report       |  |                                      |                           |    |
|------------------------------|--|--------------------------------------|---------------------------|----|
| experimental project         | salt spray test; salt fog test   |                                      |                           |    |
| Test sample Name plate       | FPC Antenna  | Test date                            | 2023. 12. 20              |    |
| equipment                    | salt spray corrosion test chamber  | quantity                             | 5PCS                      |    |
| inspection standard          | Put the test sample into the prepared salt solution test chamber and salt spray corrosion chamber for continuous spray test  |                                      |                           |    |
| Salt solution concentration  | 52g/L  | The pH of the salt solution: 6.5-7.2 | test cycle: 24h           |    |
| Actual test data             | 55g/L  | The pH of the salt solution: 6.8     | test cycle: 26h           |    |
| test standard; test criteria | According to GB/T10125 "artificial atmosphere corrosion test, salt spray test" test;Results according to the GB/T6461-2002 "Metal and other inorganic coating on metal substrate after corrosion test is the grade of samples and test pieces" rating. |                                      |                           |    |
| test results                 |  |                                      |                           |    |
| NO.                          | Corrosion rating   | Actual test data                     | Evaluation of the results | 备注 |
| 1                            | Rp/Ra=10/10vsB   | Rp/Ra=10/10vsB                       | qualified                 |    |
| 2                            | Rp/Ra=10/10vsB   | Rp/Ra=10/10vsB                       | qualified                 |    |
| 3                            | Rp/Ra=10/10vsB   | Rp/Ra=10/10vsB                       | qualified                 |    |
| 4                            | Rp/Ra=10/10vsB   | Rp/Ra=10/10vsB                       | qualified                 |    |
| 5                            | Rp/Ra=10/10vsB   | Rp/Ra=10/10vsB                       | qualified                 |    |



## 测试设备(Test equipment)



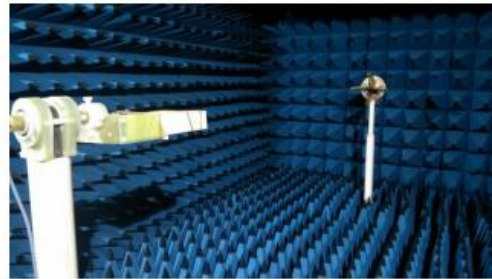
Agilent 5071C Network Analyzer  
安捷伦 E5071C 网络分析仪



HP8594E Spectrum analyzer  
HP 8594E 频谱分析仪



CMW-500



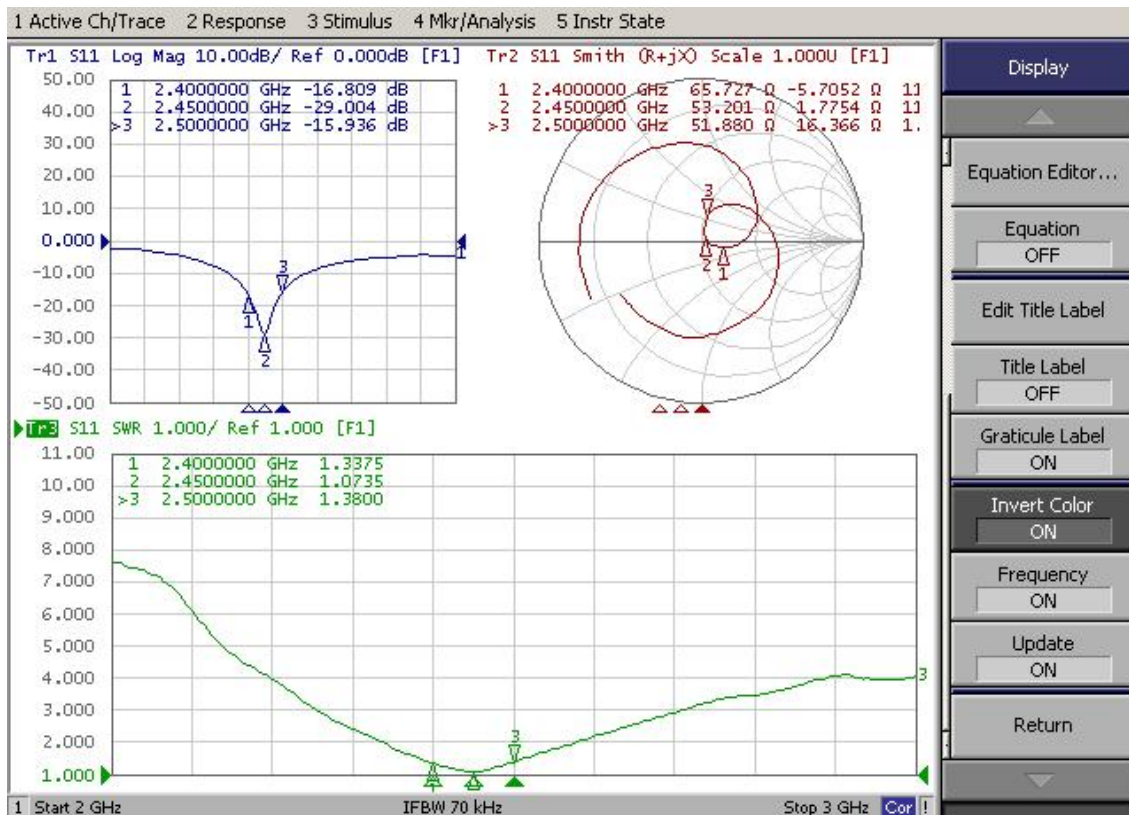
微波暗室

Anechoic chamber



## 测试参数(Measuring parameter)

### V.S.W.R&Return Loss



### 增益&效率(Gain&Efficiency)

| FEITUKEJI       |        |        |        |        |        |        |        |        |        |        |        |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Frequency ID    | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | 11     |
| Frequency (MHz) | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 |
| Gain (dBi)      | 4.08   | 4.16   | 4.28   | 4.22   | 4.57   | 4.39   | 4.50   | 4.51   | 4.40   | 4.55   | 4.42   |
| Efficiency (%)  | 55.13  | 55.19  | 54.06  | 56.51  | 57.27  | 58.58  | 57.37  | 57.34  | 56.38  | 56.36  | 57.92  |

### 2D、3D Radiation Patter

