DONGGUAN HUANGJIE COMMUNICATION TECHNOLOGY CO., LTD.

# SPECFICATION FOR APPROVAL

| | |
|---|---|
| CUSTOMER | |
| CUS. CODE | |
| CUS. MODEL | |
| HJ-Tech CODE | 3K0701BK13-001 |
| PRO. NAME | RF ANTENNA COMPONENT |
| SPECIFICATION DESCRIPTION | External wired feed; Large baseball bat sleeve, black; 2.4 GHz, 5 dBI, PCB-soldered spring;OD1.13, double-tin-wire, black; stripped and tin-plated; exposed wire length: L = 190 mm |
| DATE | 2026/8/24 |

| SUPPLIER | | |
|---|---|---|
| PREPARER | CHECKER | APPROVER |
| S. He | XIU HE | LFY |

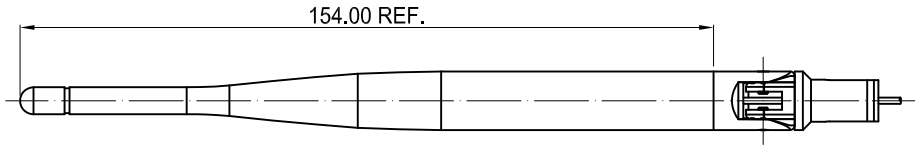
| CUSTOMER | | |
|---|---|---|
| TRANSCTOR | CHECKER | APPROVER |
| | | |

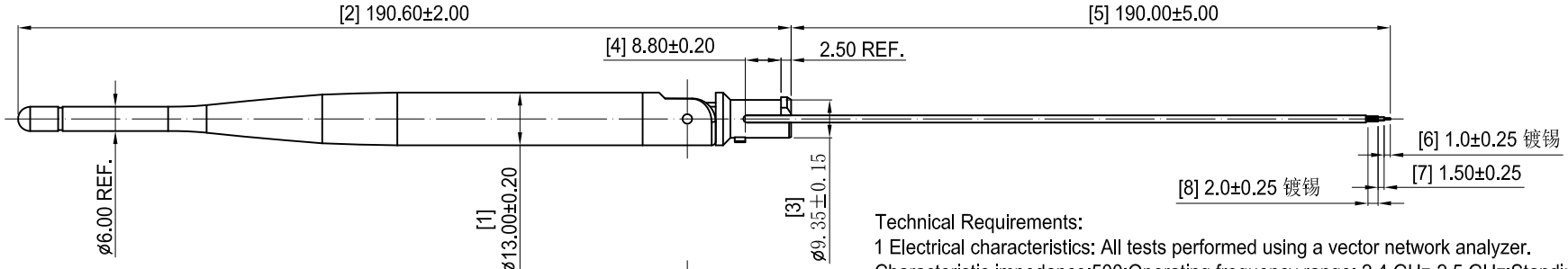
DONGGUAN HUANGJIE COMMUNICATION TECHNOLOGY CO.,LTD.
Address: Daqiandi Industrial Zone, Quantang, Liaobu Town, Dongguan City, Guangdong Province, China
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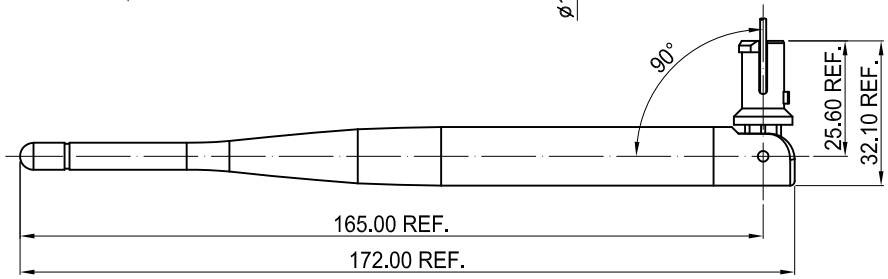
# CONTENTS

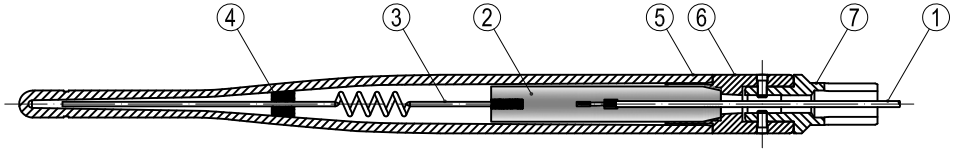

| S/N | SYNOPSIS | PAGE |
|---|---|---|
| 1 | COVER | 1 |
| 2 | CONTENTS | 2 |
| 3 | PRODUCT DRAWING | 3 |
| 4 | PRODUCT SPECIFICATION | 4~5 |
| 5 | PACKAGE DRAWING | 6 |
| 6 | ANTENNA ELECTRICAL CHARACTERISTIC TEST REPORT | 7~10 |

| REV. | RELEASE AND CHANGE SUMMARY | DATE |
|---|---|---|
| A | First Issue | 2026 08.24 |
| | | |
| | | |



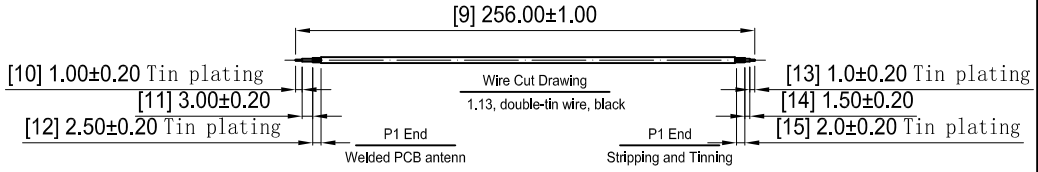




Technical Requirements:
1 Electrical characteristics: All tests performed using a vector network analyzer. Characteristic impedance:500;Operating frequency range: 2.4 GHz-2.5 GHz;Standing wave ratio: Maximum 2.00; Gain: Peak gain 5.0 dBi; Radiation pattern: Omnidir
2 Dimensional inspection:["Idenotes an FAI inspection item; * indicates a critical inspecti
3 External inspection: Visual comprehensive inspection.
The product surface shall be free from scratches, damage, or contamination; the coating shall exhibit a bright, uniform color without any oxidation.
4 Environmental
5. Packaging specifications: 25 PCS per bundle, 2 bundles per pack;

| No. | PART NUMBER | PART NAME & DESCRIPTION | Q'TY | REMARKS |
|---|---|---|---|---|
| 7 | 2SBKD41R0 | Lower mounting base, □13.0*L29.4, PC, Black | 1 | --- |
| 6 | 2SBKU31R0 | Upper mounting base, Ø13.0 × L28.2, PC, Black | 1 | --- |
| 5 | 2SBKG0700 | Rod Sleeve, Ø13.00 × L154.00, TPEE, Black 1 | 1 | --- |
| 4 | 2MH011 | Foam, 45P, Q5.5 × H4.5, EVA, Black | 1 | --- |
| 3 | 2YT024 | OD1.2*[L25.4 + OD6.0*P3.25*T4 + L51.2]L93.0 mm – Surface cleaning | 1 | --- |
| 2 | 2YP038 | PCB – Single-layer board, FR-4 – Dimensions: T0.8 × W7.8 × L51.0 | 1 | --- |
| 1 | 2C5M11312BK2 | Fine coaxial cable, Ø1.13 mm, double-tin wire, black | 1 | 1– Cut length L = 256.00 mm |




GENERAL TOLERANCE:
UNLESS OTHERWISE SPECIFIED
LINEAR:
0.5 < L ≤ 6 ± 0.05
6 < L ≤ 30 ± 0.10
30 < L ≤ 120 ± 0.20
ANGULAR:
0 < L ≤ 10 ± 1°30'
10 < L ≤ 50 ± 1°00'
50 < L ≤ 120 ± 0°30'

FILE TYPE: Product Drawing
DRA./DATE: *K.chen 2026 08.24*
CHE./DATE: ***
APP./DATE: ***
FILE FORM: HJ-QR-E-03 22.09.01

Dongguan HUANGJIE Communication Technology Co., Ltd.
东莞市皇捷通讯科技有限公司

TITLE: RF antenna assembly
External wired feed; Large baseball bat sleeve, black; 2.4 GHz, 5 dBI, PCB-soldered spring;OD1.13, double-tin-wire, black; stripped and tin-plated; exposed wire length: L = 190 mm

CODE: 3K0701BK13-001

| SIZE: | UNIT: | PRO.: | SCALE: | PAGE: |
|---|---|---|---|---|
| A4 | mm | 3rd | 1:1 | 1/1 |

THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO HUANGJIE AND SHOULDN'T BE USED WITHOUT WRITTEN PERMISSION.

0 10 20

# WiFi Wire-fed Antenna

## 1 SCOPE

### 1.1 CONTENTS

This Product Specification covers the mechanical, electrical and environmental performances specification for WiFi Wire-fed Antenna.

### 1.2 QUALIFICATION

When tests are performed the specification shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

## 2 APPLICABLE DOCUMENTS AND FORMS

The associated product documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of the specification and the reference documents, this specification shall take precedence.

## 3 TEST AND ACCEPTANCE REQUIREMENTS

### 3.1 GENERAL

#### 3.1.1 Dimensional Characteristics

Part construction shall conform to the dimensions, shape, and detail attributes specified on the latest revision of the applicable part drawing(s).

#### 3.1.2 Material Characteristics

All material used in each test sample shall conform to the material specifications shown on the latest revision of the applicable part drawing(s).

### 3.2 RATING

| Frequency Range | Nominal Impedance | VSWR | Peak Gain | Operating Temperature |
|---|---|---|---|---|
| 2.4~2.5G | 50Ω | 2.0MAX. | 3dBi | -40℃ ~ +85℃ |

### 3.3 TEST CONDITION

Unless otherwise specified, all tests and measurements shall be performed under the following conditions.

| Temperature | Atmospheric Pressure | Relative Humidity |
|---|---|---|
| +15℃ ~ +35℃ | 866hPa ~ 1066hPa | 45% ~ 75% |

### 3.4 Electrical Performance

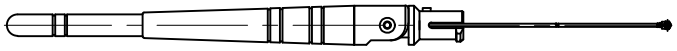
| No. | Items | Test Condition | Specifications |
|---|---|---|---|
| | | **GENERAL** | |
| 1 | Contact Resistance | Solder the receptacle connector to the test board and mate the plug connector together, then measure the contact resistance as shown in figure 1 by the four terminal method.<br>Open circuit voltage: 20mV MAX<br>Circuit current: 10mA MAX | Inner contact:<br>Initial: 20mΩ MAX<br>After: 25mΩ MAX<br>Ground contact:<br>Initial: 20mΩ MAX<br>After: 25mΩ MAX |
| 2 | Insulation Resistance | Mate the plug and receptacle connector Together,and then, apply DC 200 V Voltage between the inner contact and the ground contact in accordance with EIA 364-21F | Initial:<br>500 MΩ MIN<br>After:<br>100 MΩ MIN |
| 3 | Dielectric Withstanding Voltage | Mate the plug and receptacle connector together, and then apply AC 200 V between the inner contact and the ground contact in accordance with EIA 364-20F | No flashover,<br>No sparkover,<br>No excess leakage,<br>No breakdown |
| 4 | V.S.W.R | Measure V.S.W.R with a network analyzer from 0 to 6GHz(Install in plastic housing and test) | 2.0MAX. |
| | | **MECHANICAL** | |
| 5 | Un-mating Force | Solder the receptacle to the test board and mate the plug into it. Test the withdrawal force with an insertion-extraction force tester at a rate of 25 ± 3 mm/min | 1.Initial:4N MIN<br>2.After 30 Cycle:2N MIN |

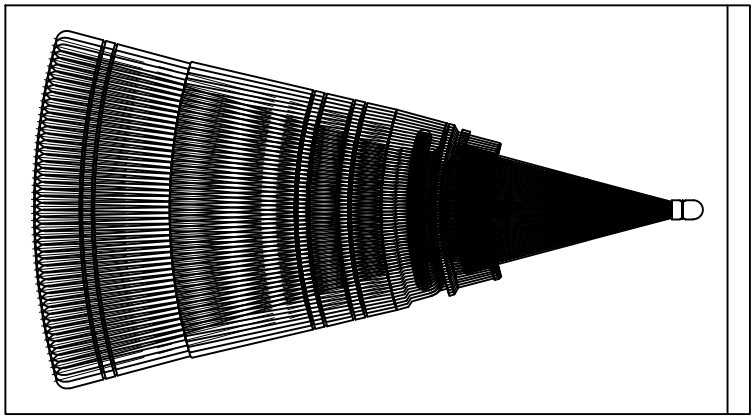
| | | | |
|---|---|---|---|
| 6 | Durability | Solder the receptacle onto the test board, interlock the male and female connectors using a mating tester for 30 cycles, and then test the parameters. | Appearance: No AbnormalityContact Resistance: Shall meet 3.4.1/2/3/4 |
| 7 | Cable retention | 1 It is considered qualified if a 1.30 kg weight is lifted vertically from the table along the central axis of the cable at a speed of approximately 25 ± 3 mm/min. | No detachment or looseness at the crimp joint between the wire and the connector. Shall meet 3.4.1/2/3/4 |
| **ENVIRONMENTAL** | | | |
| 8 | Humidity | Apply the following environment to themating connector in accordance with EIA364-31 Method III Test Condition B Temperature:25~65℃ Humidity : 90~95% R.H Duration: 96 hours | Appearance: No damage Contact Resistance: Shall meet 3.4.1 Insulation Resistance: Shall meet 3.4.2 Dielectric Withstanding Voltage: Shall meet 3.4.3 |
| 9 | High Tempera-ture Test | Apply the following environment to themating connector Temperature : 90±2℃ Duration : 96 hours | Appearance: No damage Contact Resistance: Shall meet 3.4.1 Insulation Resistance: Shall meet 3.4.2 Dielectric Withstanding Voltage: Shall meet 3.4.3 |
| 10 | Thermal Shock | Perform the following test conditions on mated connectors in accordance with Test Method III, Condition B of EIA-364-32: Temperature: -55°C to 85°C Transfer time: 5 min max. Number of cycles: 5 | Appearance: No damage Contact Resistance: Shall meet 3.4.1 Insulation Resistance: Shall meet 3.4.2 Dielectric Withstanding Voltage: Shall meet 3.4.3 |
| 11 | Salt Spray | EIA 364-26 Test Condition A Apply the following environment to the mating connector Temperature : 35±2℃ Relative Humidity : 90~98%R.H Salt water density: 5±1% Duration : 24 hours | Appearance: No damage Contact Resistance: Shall meet 3.4.1 |

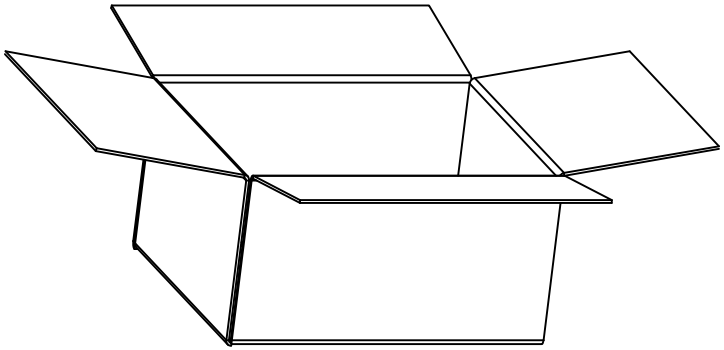
### 3.5 CHANGE LOG

| Revision | Release and Change Summary | Date | Tabulator | Checker | Approver |
|---|---|---|---|---|---|
| A | | 2026.08.11 | S.He | XIU HE | LFY |
| | | | | | |
| | | | | | |

| REV. | ECN NO. | LOCAS. | DESCRIPTION | DATE | DESIGN |
|---|---|---|---|---|---|
| A3 | | | Modify the cut length | 2017.09.29 | SQL |
| A4 | | | Standardize part numbers | 2018.12.26 | Mark |
| A5 | | | Revise the part number to the rivet structure | 2019.06.25 | Mark |
| A6 | | | Adopt a rivet-free structure | 2019.12.17 | Mark |







Packaging Specification:

1. 50 pcs/tie: Bundle the terminals using EPE foam and rubber bands.
2. 1 tie/bag: Place 1 tie into a PE bag and seal it.
3. Labeling: A material label must be affixed to the top of each PE bag.
4. Partition board: 2 pcs/carton. Place one partition board at the bottom of the carton before loading, and place the other one before sealing the carton.
5. 1,000 pcs/carton: Select the appropriate carton size based on the dimensions and quantity of the materials.
6. Sealing method: Use the "H-tape" sealing method (identical on both the top and bottom).
7. Void fill: If the carton is not completely filled with materials, use appropriate filler materials to fill the empty space.
8. Labels: Material labels and month labels shall be applied in accordance with the customer's specification requirements.

| DIM | TOL | DIM | TOL |
|---|---|---|---|
| X. | ±0.30 | X°. | ±4.0° |
| X.X | ±0.20 | X.X° | ±3.0° |
| X.XX | ±0.10 | X.XX° | ±2.0° |
| X.XXX | ±0.05 | X.XXX° | ±1.0° |

HJ-Tech 东莞市皇捷通讯科技有限公司

| | | |
|---|---|---|
| DRAW NO. | | DATE |
| DESIGN: | SQL | 2017.04.21 |
| CHECK: | | |
| APPROVED: | | |

DRAW NAME: Dipole Antenna
WIFI Antenna Black, 1.13 Black Cable+MHF-1, Exposed Cable Length L=190mm

FILE:

MODEL:

P/N NO. 3K0701BK13-001

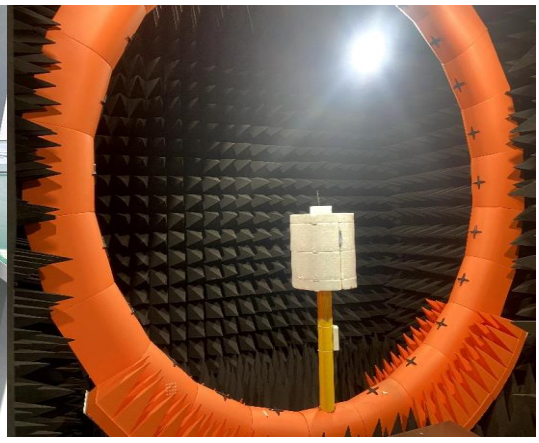
REV. A0 | SCALE N/A | UNIT: mm | SHEET: N/A

# Antenna Electrical Characteristic Test Report

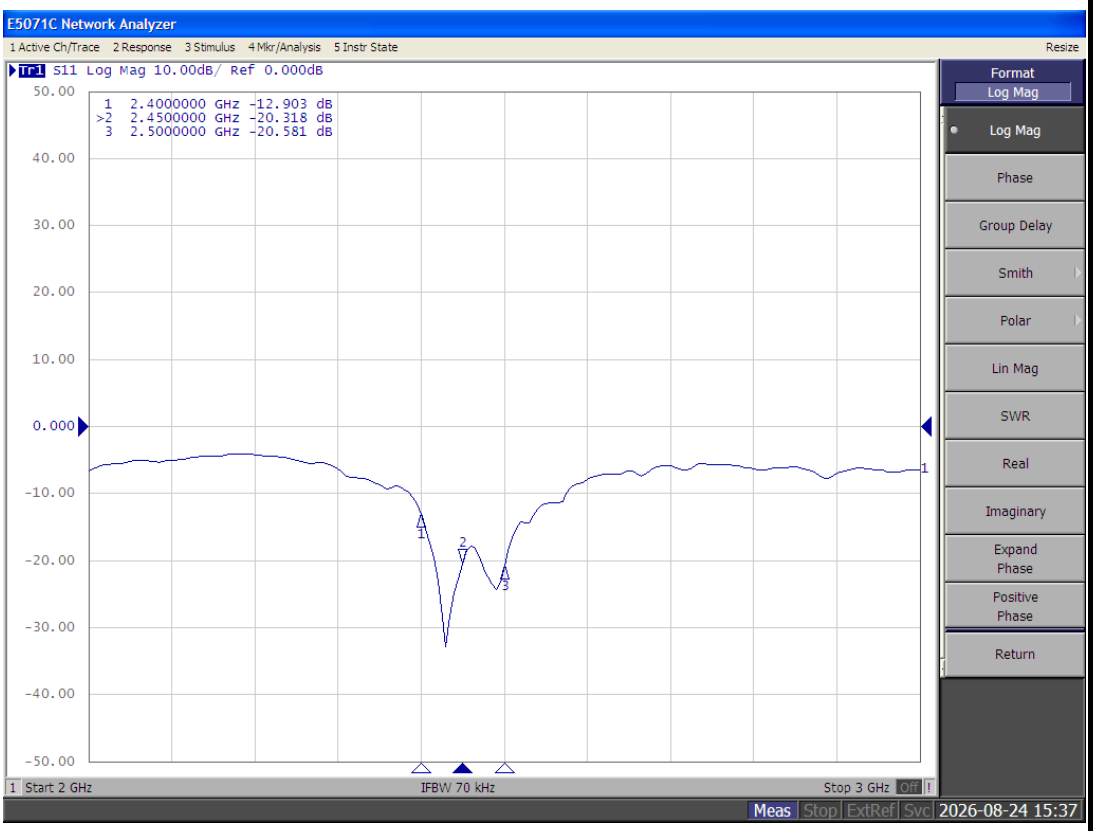
DOC NO.:HJ-QR-Q-22 Rev:A0

| Part Number: | 3K0701BK13-001 | Item | Spec | Judge |
|---|---|---|---|---|
| Part Name: | External wired feed; Large baseball bat sleeve, black; 2.4 GHz, 5 dBI, PCBsoldered spring;OD1.13, double-tin-wire, black; stripped and tin-plated;exposed wire length: t= 190 mm | VSWR | 2.0MAX. | pass |
| Test Equipment | Agilent E5071C/OTA Chamber | Characteristic impedance | 50Ω | pass |
| Quantity | 5pcs | | | |
| Test Date | 2026/8/11 | | | |





1 RETURN LOSS




**Checker: XIU HE** **Tester: S.He**

DONGGUAN HUANGJIE COMMUNICATION TECHNOLOGY CO., LTD.

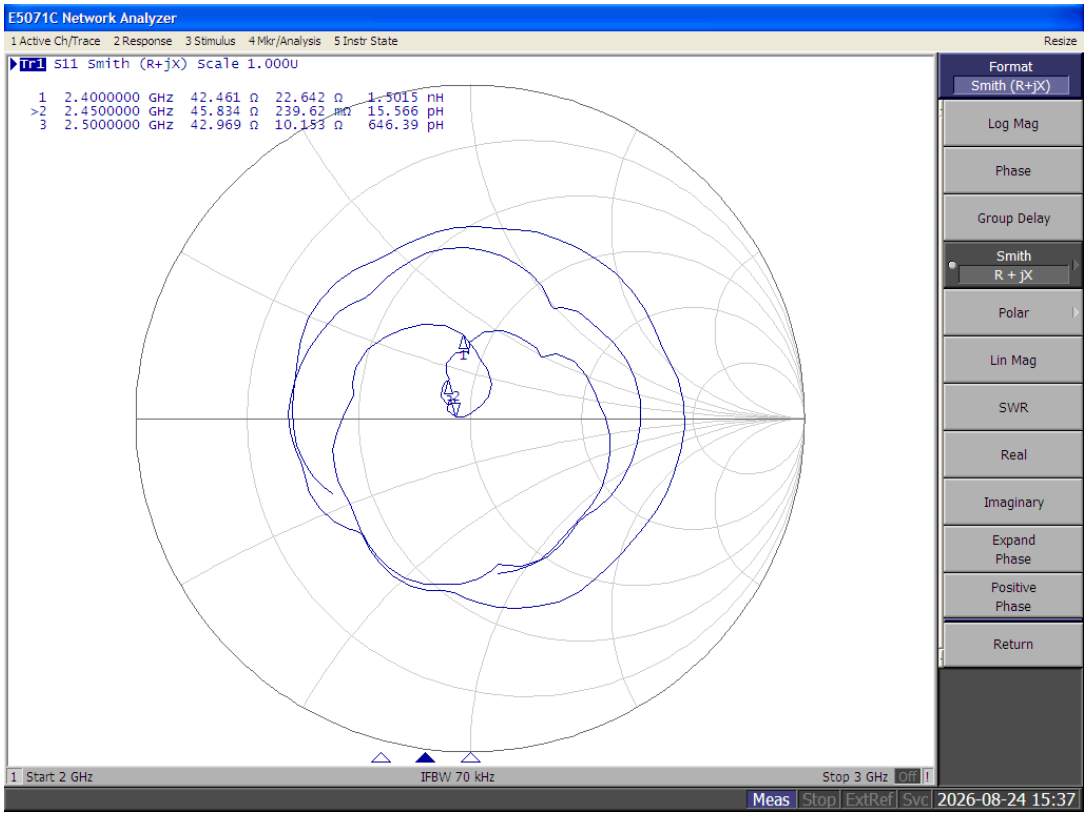
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# Antenna Electrical Characteristic Test Report

DOC NO.:HJ-QR-Q-22 Rev:A0

| Part Number: | 3K0701BK13-001 | Item | Spec | Judge |
|---|---|---|---|---|
| Part Name: | External wired feed; Large baseball bat sleeve, black; 2.4 GHz, 5 dBI, PCBsoldered spring;OD1.13, double-tin-wire, black; stripped and tin-plated;exposed wire length: t= 190 mm | VSWR | 2.0MAX. | pass |
| Test Equipment | Agilent E5071C/OTA Chamber | Characteristic impedance | 50Ω | pass |
| Quantity | 5pcs | | | |
| Test Date | 2026/8/11 | | | |

2 VSWR




**Checker: XIU HE** **Tester: S.He**

DONGGUAN HUANGJIE COMMUNICATION TECHNOLOGY CO., LTD.

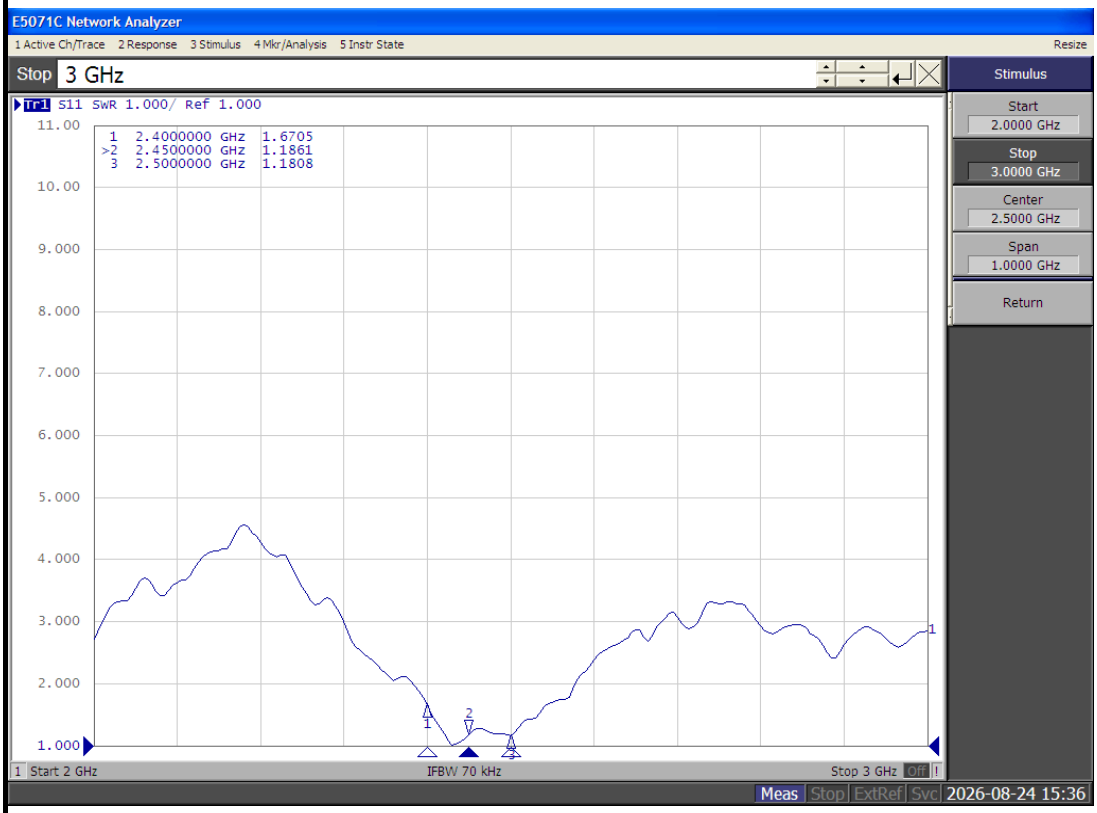
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COMMUNDIAECORNCE

# Antenna Electrical Characteristic Test Report

DOC NO.:HJ-QR-Q-22 Rev:A0

| Part Number: | 3K0701BK13-001 | Item | Spec | Judge |
|---|---|---|---|---|
| Part Name: | External wired feed; Large baseball bat sleeve, black; 2.4 GHz, 5 dBI, PCBsoldered spring;OD1.13, double-tin-wire, black; stripped and tin-plated;exposed wire length: t= 190 mm | VSWR | 2.0MAX. | pass |
| Test Equipment | Agilent E5071C/OTA Chamber | Characteristic impedance | 50Ω | pass |
| Quantity | 5pcs | | | |
| Test Date | 2026/8/11 | | | |

3 SMITH(R+JX)




**Checker: XIU HE** **Tester: S.He**

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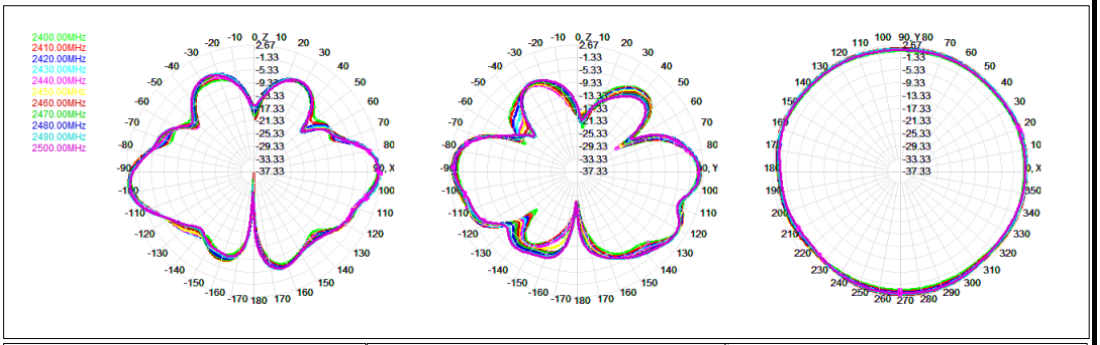
# Antenna Electrical Characteristic Test Report

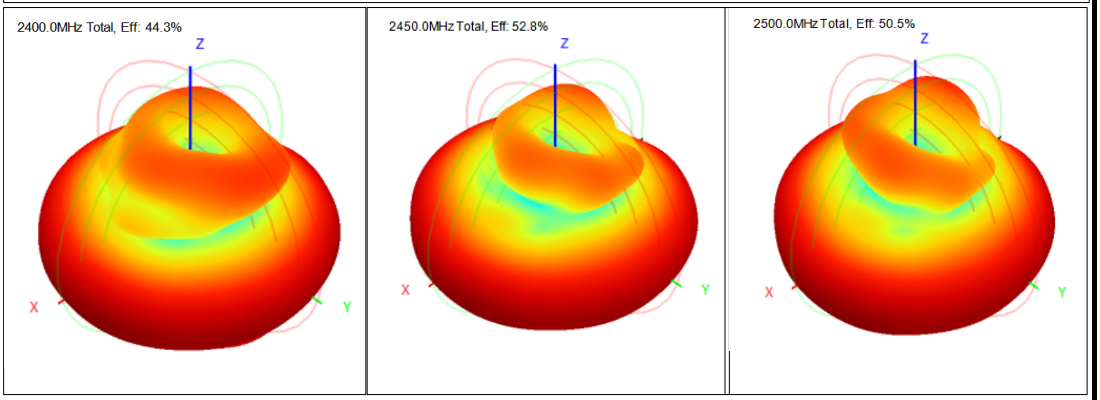
DOC NO.:HJ-QR-Q-22 Rev:A0

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|---|---|---|---|---|
| Part Name: | External wired feed; Large baseball bat sleeve, black; 2.4 GHz, 5 dBI, PCBsoldered spring;OD1.13, double-tin-wire, black; stripped and tin-plated;exposed wire length: t= 190 mm | VSWR | 2.0MAX. | pass |
| Test Equipment | Agilent E5071C/OTA Chamber | Characteristic impedance | 50Ω | pass |
| Quantity | 5pcs | | | |
| Test Date | 2026/8/11 | | | |

## 4 2D/3D RADIATION PATTERN

| 序号 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 频率(MHz) | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 |
| 效率 (dBi) | -3.54 | -3.35 | -3.30 | -3.07 | -2.82 | -2.77 | -2.69 | -2.65 | -2.87 | -2.85 | -2.96 |
| 增益 (dBi) | 2.05 | 2.36 | 2.40 | 2.42 | 2.57 | 2.90 | 2.93 | 2.83 | 2.79 | 2.79 | 2.39 |
| 效率 (%) | 44.31 | 46.24 | 46.76 | 49.32 | 52.30 | 52.84 | 53.81 | 54.31 | 51.59 | 51.93 | 50.54 |
| 方向性(dB) | 5.58 | 5.71 | 5.70 | 5.49 | 5.38 | 5.67 | 5.62 | 5.49 | 5.66 | 5.64 | 5.36 |
| 最大增益位置(theta) | 93.00 | 93.00 | 94.00 | 94.00 | 94.00 | 94.00 | 94.00 | 95.00 | 94.00 | 95.00 | 95.00 |
| 最大增益位置(Phi) | 161.00 | 160.00 | 159.00 | 159.00 | 158.00 | 158.00 | 157.00 | 156.00 | 155.00 | 155.00 | 154.00 |
| 水平极化效率(%) | 41.87 | 43.41 | 43.68 | 45.95 | 48.66 | 49.15 | 50.04 | 50.45 | 47.90 | 48.20 | 46.94 |
| 垂直极化效率(%) | 2.44 | 2.82 | 3.09 | 3.37 | 3.64 | 3.69 | 3.77 | 3.86 | 3.69 | 3.73 | 3.60 |
| 上半球效率 (%) | 18.26 | 18.81 | 19.06 | 20.12 | 20.97 | 21.52 | 21.91 | 22.06 | 21.34 | 21.18 | 20.79 |
| 下半球效率 (%) | 26.05 | 27.43 | 27.70 | 29.20 | 31.33 | 31.32 | 31.90 | 32.25 | 30.25 | 30.76 | 29.74 |




**Checker: XIU HE** **Tester: S.He**