

**Antenna specification for approval**

|                      |                                     |           |       |
|----------------------|-------------------------------------|-----------|-------|
| Customer name        | Jixin micro                         |           |       |
| Model                | TP-NS sight -NT96560-8189FTV module |           |       |
| Antenna frequency    | 2.4GHZ                              |           |       |
| Antenna function     | WIFI anteanna                       |           |       |
| Antenna material     | PCB                                 | PCB color | green |
| model                | SF2131A-2B3-A                       |           |       |
| Material number      | SF2131A-2L23B-040-A                 |           |       |
| Customer Part Number |                                     |           |       |

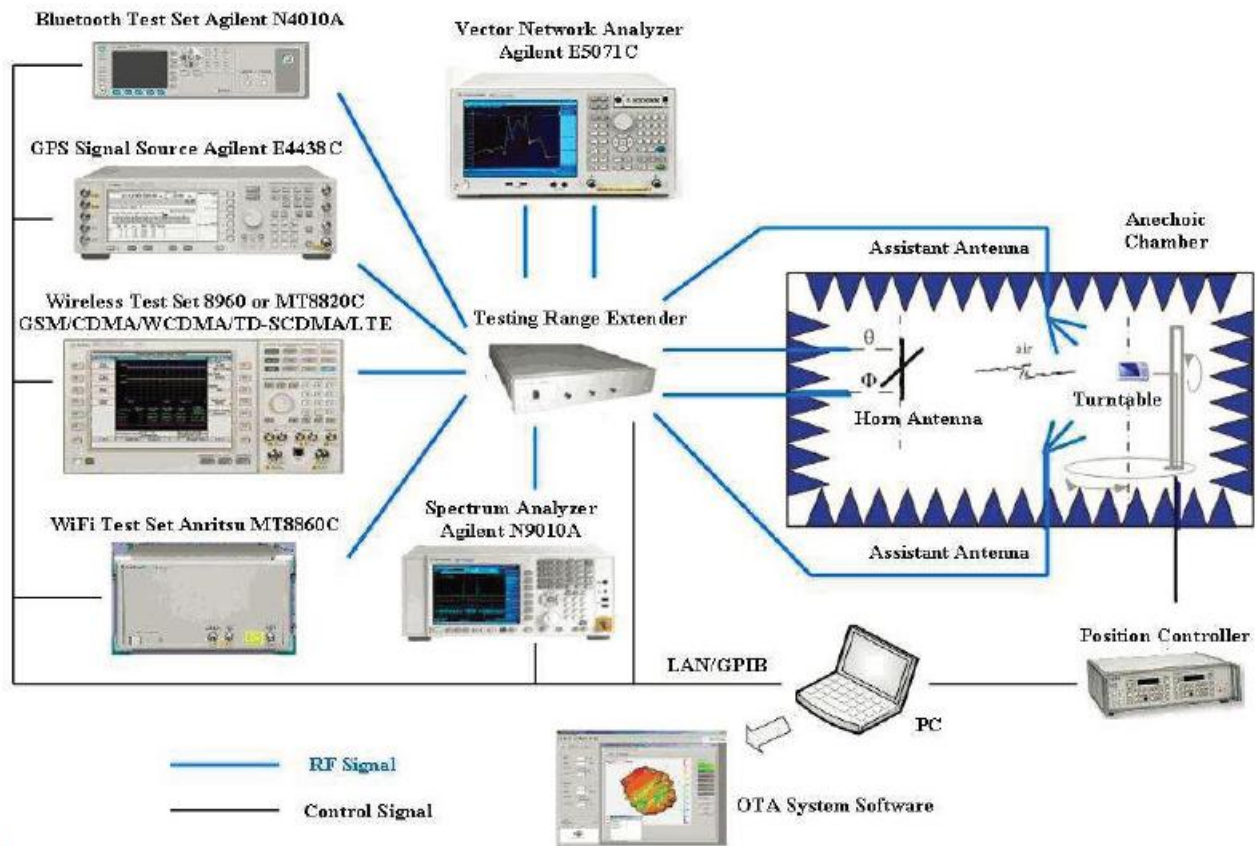
| Serial number | Certification number | Material type      | Date of issue | Remarks  |
|---------------|----------------------|--------------------|---------------|----------|
| 1             | A2230173541101001E   | Tinned copper wire | 2023-04-24    | One year |
| 2             | CANEC2227657302      | halogen            | 2022-12-28    | One year |
| 3             | CANEC2227657303      | Adhesive           | 2022-12-28    | One year |
| 4             | SHAEC23000346911     | FEP sheath         | 2023-01-13    | One year |
| 5             | SHAEC22004639301     | FEP insulation     | 2022-12-15    | One year |
| 6             | SZXEC2203054804      | Tin wire           | 2022-09-19    | One year |
| 7             | SZXEC2203054808      | Tin                | 2022-09-19    | One year |
| 8             | ETR22800844          | Printing ink       | 2022-08-09    | One year |
| 9             | EKR22501369          | Substrate          | 2022-05-27    | One year |
| 10            | CANEC2227574118      | EVA foam           | 2023-01-03    | One year |
| 11            | SZXEC2202709609      | Conductive cloth   | 2022-08-16    | One year |
| 12            | CANEC2218227002      | Gold plating       | 2022-08-30    | One year |

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## 1. Device Support & Testable Antenna Type



| Antenna function                                       | Frequency Range  | test instrument                                     | test method  | standard test                                 |
|--|--|---|--|---|
| 2G antenna (GSM)                                       | 824MHz-960MHz,<br>1710MHz-1990MHz                          | 5071B、8960<br>OTA darkroom                          | Active test, passive test  | Soward standards,<br>customer<br>requirements |
| 3G antenna<br>(WCDMA/TDSCDMA/CDMA-EVDO/2000)           | 824MHz-960MHz,<br>1710MHz-2170MHz                          | 5071B、8960<br>OTA darkroom                          | Active test, passive test  | Soward standards,<br>customer<br>requirements |
| 4G antenna (LTE-FDD/LTE-TDD)                           |  | 5071B、CMW500、<br>SP8011、OTA<br>darkroom             | Active test, passive test  | Soward standards,<br>customer<br>requirements |
| WIFI antenna   | 2.4GHz-2.48GHz,<br>5.15GHz-5.35GHz,<br>5.725GHz-5.825GHz   | 5071B、CMW500、OTA<br>darkroom、router、<br>PC          | Active test, passive<br>test,<br>APK actual test,<br>throughput test | Soward standards,<br>customer<br>requirements |
| BT antenna   | 2.4GHz-2.48GHz,  | 5071B、OTA darkroom<br>、Bluetooth Speaker            | Passive test, actual test  | Soward standards,<br>customer<br>requirements |
| Positioning antenna<br>(GPS, GLONASS, Beidou, Galileo) | 1.575.42MHz±10MHz<br>1602MHz+0.5625MHz<br>1561MHz+2.046MHz | 5071B、OTA darkroom<br>、APK                          | Passive test, actual test  | Soward standards,<br>customer<br>requirements |
| NFC antenna  | 13.56MHz   | 5071B、Dedicated<br>test fixture、OTA<br>darkroom、APK | Passive test, actual test  | Soward standards,<br>customer<br>requirements |
| Remote control antenna                                 | 433MHz   | 5071B、OTA darkroom                                  | Passive test, actual test  | Soward standards,<br>customer<br>requirements |

## 2. Overview

### (1)Antenna performance

1. This approval sheet supports for MID project. PCB antennas include in this project. This report is for the performance of WIFI antenna.
2. Antenna shape size: Meet the requirement of MID
3. Antenna band: 2400MHz~2500MHz
4. Antenna material: Antenna material meet the requirement of MID
5. Adhesive performance: Adhesive performance meet the requirement of MID
6. Antenna performance meet the spec below:

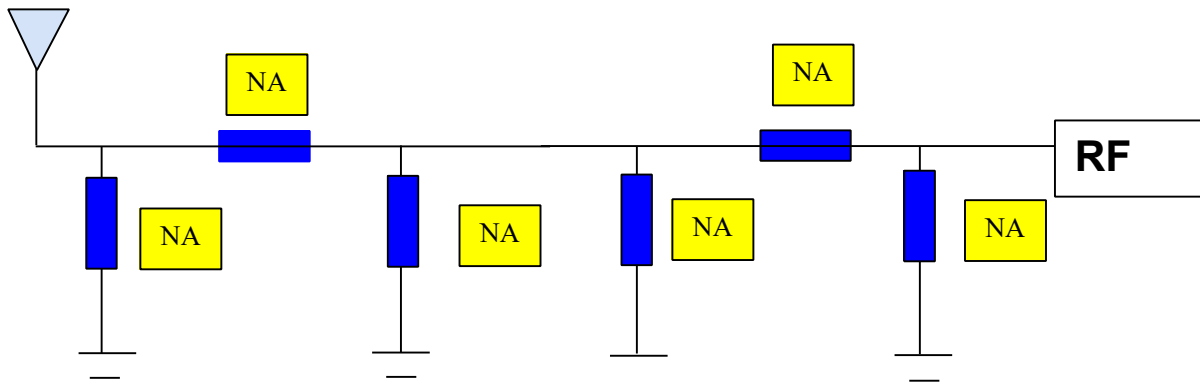
| Description            | 2. 4GHZ~2. 5GHz           | Units |
|------------------------|---------------------------|-------|
| VSWR                   | ≤2.0                      |       |
| Average Antenna Gain   | ≥-4.5                     | dB    |
| Antenna Efficiency     | ≥40                       | %     |
| Feed Impedance         | 50 ohms                   |       |
| Operating Temperature  | -40 to +85 deg C          |       |
| Polarization / Azimuth | Linear / Omni-directional |       |

### (2)Mechanical Information

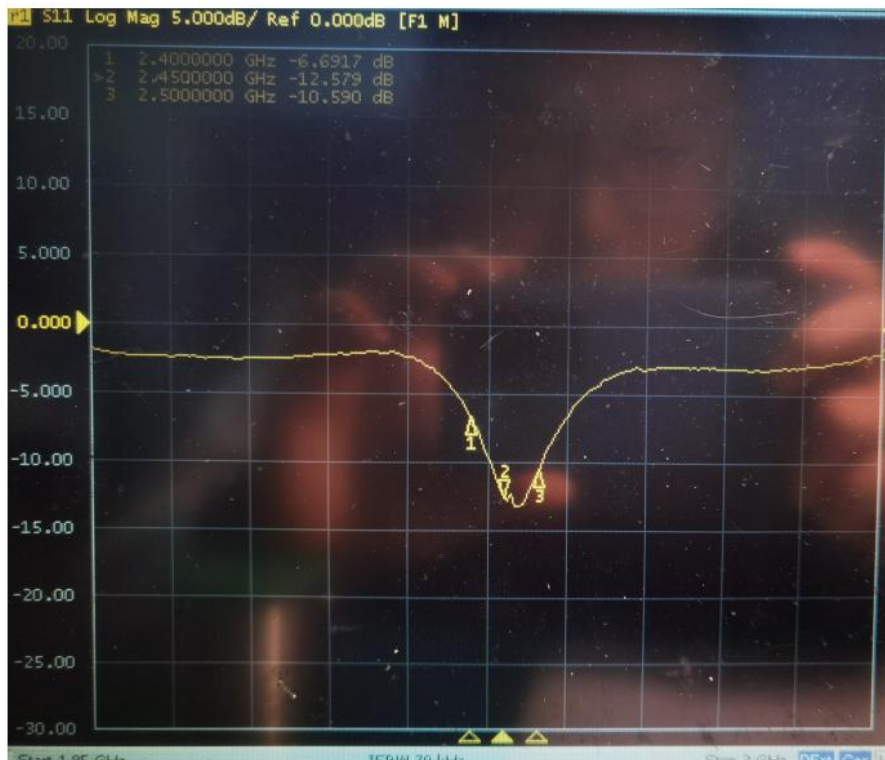
| Mechanical Dimension  |                   |
|-----------------------|-------------------|
| Cable Length          | 040mm/BLACK       |
| Description           | WIFI antenna      |
| Material              | PCB               |
| Coaxial Cable         | 50Ω/O. D. 0. 81mm |
| Environmental         |                   |
| Operation Temperature | -40 to +85 deg C  |
| Storage Temperature   | -40 to +85 deg C  |

### 3. Matching circuit diagram & machine picture & antenna picture

#### (1) Antenna standing wave ratio & Antenna Efficiency



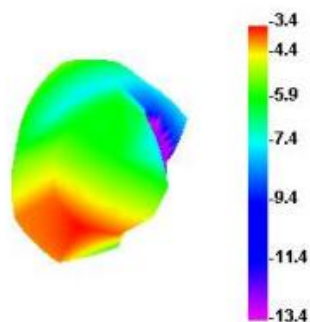
#### 4. Antenna standing wave ratio & Antenna Efficiency



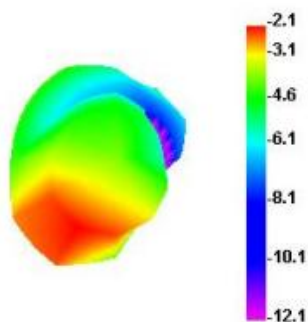
| Passive Test For 2.4G |          |           |            |            |         |         |          |          |                   |                 |           |           |
|-----------------------|----------|-----------|------------|------------|---------|---------|----------|----------|-------------------|-----------------|-----------|-----------|
| Freq (MHz)            | Effi (%) | Effi (dB) | Gain (dBi) | Gain (dBd) | UHS (%) | DHS (%) | Max (dB) | Min (dB) | Directivity (dBi) | Beamwidth (3dB) | AttH (dB) | AttV (dB) |
| 2400                  | 13.03    | -8.85     | -3.43      | -5.58      | 7.509   | 5.524   | -3.43    | -20.29   | 5.42              | 90              | 46.77     | 47.04     |
| 2410                  | 17.54    | -7.56     | -1.91      | -4.06      | 10.258  | 7.278   | -1.91    | -19.07   | 5.65              | 90              | 46.94     | 47.16     |
| 2420                  | 17.25    | -7.63     | -2.06      | -4.21      | 10.057  | 7.189   | -2.06    | -18.73   | 5.57              | 90              | 47.02     | 47.39     |
| 2430                  | 17.16    | -7.65     | -1.87      | -4.02      | 10.147  | 7.015   | -1.87    | -19.63   | 5.79              | 90              | 47.31     | 47.67     |
| 2440                  | 17.72    | -7.52     | -1.88      | -4.03      | 10.413  | 7.307   | -1.88    | -20.47   | 5.63              | 90              | 47.68     | 47.91     |
| 2450                  | 16.86    | -7.73     | -2.05      | -4.2       | 10.004  | 6.857   | -2.05    | -20.51   | 5.68              | 90              | 47.98     | 48.27     |
| 2460                  | 17.79    | -7.5      | -2.04      | -4.19      | 10.524  | 7.262   | -2.04    | -20.29   | 5.46              | 90              | 47.79     | 48.02     |
| 2470                  | 19.21    | -7.16     | -1.75      | -3.9       | 11.501  | 7.71    | -1.75    | -19.68   | 5.42              | 90              | 47.6      | 47.7      |
| 2480                  | 21.16    | -6.75     | -1.43      | -3.58      | 12.564  | 8.592   | -1.43    | -19.42   | 5.32              | 90              | 47.93     | 48.05     |
| 2490                  | 17.97    | -7.45     | -2.07      | -4.22      | 10.719  | 7.253   | -2.07    | -20.41   | 5.39              | 90              | 48.1      | 47.95     |
| 2500                  | 16.64    | -7.79     | -2.43      | -4.58      | 9.898   | 6.741   | -2.43    | -21.36   | 5.36              | 90              | 48.13     | 48.09     |

## 5. 3D pattern

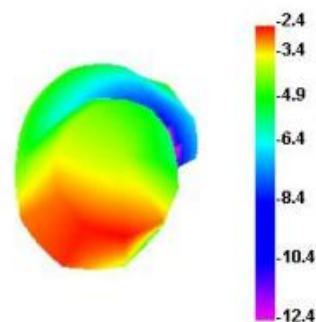
2400.000MHz



2450.000MHz



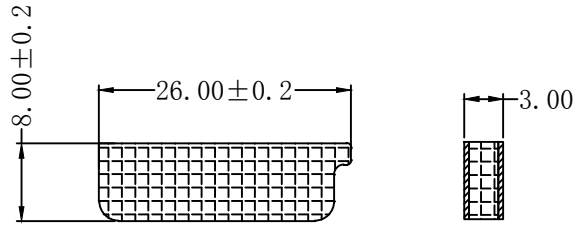
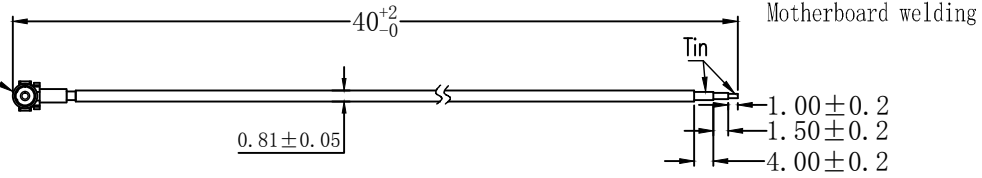
2500.000MHz



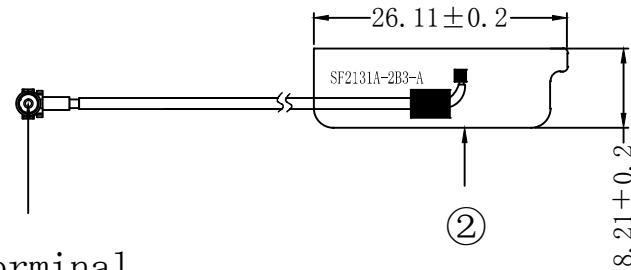
## 6. Structural drawing



The 3 generation terminals



Double-sided adhesive  
insulation foam  
Separate shipment



①Terminal  
outward

technical requirements:

- 1.\* for critical dimensions;
- 2.Size conform to the requirements of the drawings;
- 3.No virtual welding welding point, false welding. Require full welding points.
- 4.Network test pass.
- 5.No marked tolerance according toSJ/T 10628 1995 6classes;



|   |                 |       |          |                |            |      |      |            |      |             |                     |   |       |
|---|-----------------|-------|----------|----------------|------------|------|------|------------|------|-------------|---------------------|---|-------|
| 5 |                 |       |          |                |            |      |      |            |      |             | <b><u>SWARD</u></b> | ShenZhen SWARD Communication<br>Technology Co.Ltd |       |
| 4 |                 |       |          |                |            |      |      |            |      |             |                     | SF2131A-2L23B-040-A                               |       |
| 3 | Insulating foam | gray  | 2        | 26*8*3mm       | signatures | date | mass | signatures | date | time markup | percentage          |   |       |
| 2 | PCB             | green | 1        | SF2131A-2B3-A  |            |      |      |            |      |             |                     | RD  | YWD   |
| 1 | coaxial line    | black | 1        | φ=0.81         | RF         |      |      |            |      | 1           |                     | A   | 1 : 1 |
|   | name            | color | quantity | specifications | audits     |      |      | approval   |      |             |                     | <b>ROHS</b>                                       |       |