

RAIN

深圳市咏成国际科技有限公司  
Shenzhen Yongcheng International  
Technology Co., Ltd

天线规格书  
Antenna specification for approval

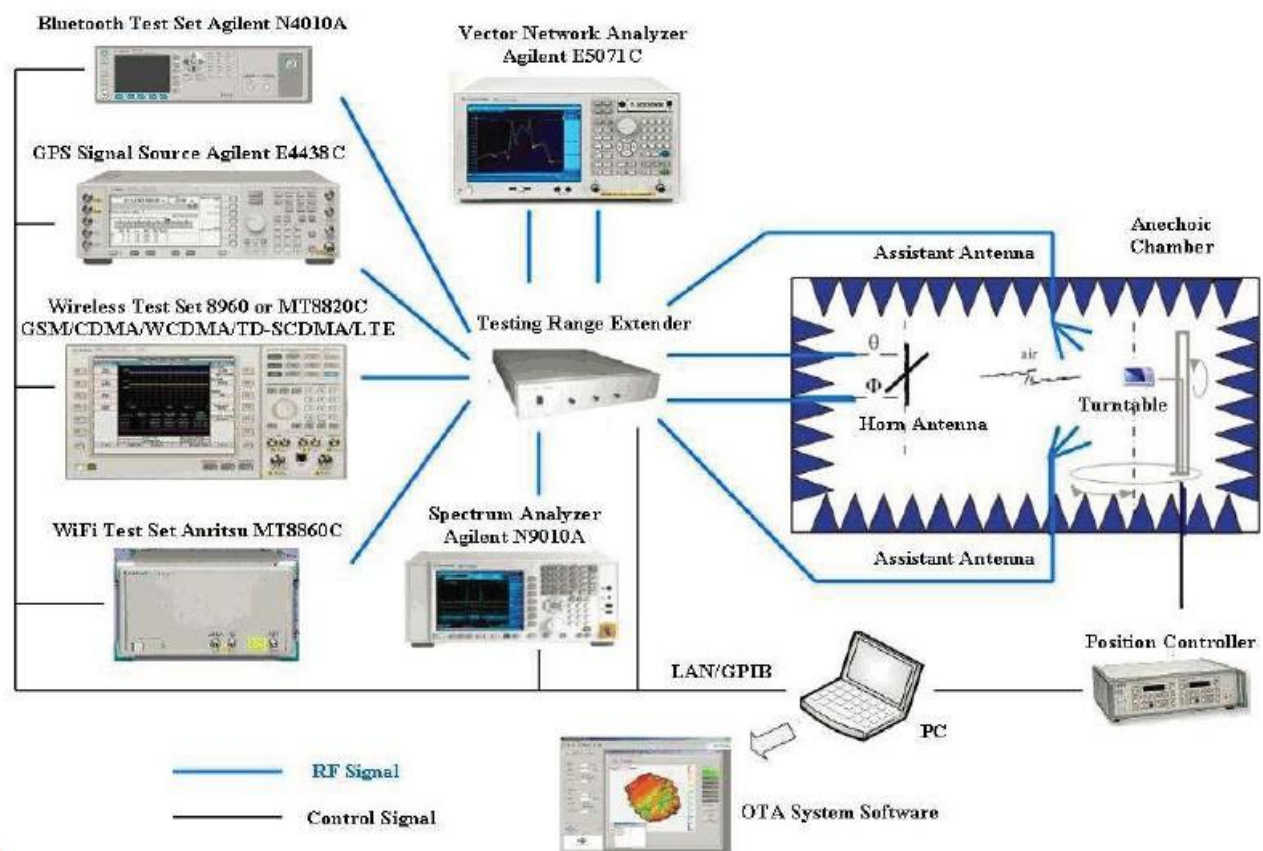
|                                        |                                                                                                         |                                         |                                                                                                          |
|----------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------|
| 客户名称<br>Customer name                  |                                                                                                         |                                         |                                                                                                          |
| 机型<br>Model                            | Bluetooth                                                                                               |                                         |                                                                                                          |
| 天线频段<br>Antenna band                   | 2.4GHZ                                                                                                  |                                         |                                                                                                          |
| 天线类型<br>Antenna type                   | FPC Ant                                                                                                 |                                         |                                                                                                          |
| 天线材质<br>Antenna material               | FPC                                                                                                     |                                         |                                                                                                          |
| FPC 颜色<br>FPC color                    | Black                                                                                                   |                                         |                                                                                                          |
| 料号<br>Material number                  |                                                                                                         |                                         |                                                                                                          |
|                                        |                                                                                                         |                                         |                                                                                                          |
| 厂商承认签章<br>Baren accepted the signature |                                                                                                         | 客户承认签章<br>Client acknowledges signature |                                                                                                          |
| 结构<br>structure                        |                                                                                                         | 采购<br>Purchase                          |                                                                                                          |
| 品质<br>QC                               |                                                                                                         | 结构<br>structure                         |                                                                                                          |
| 射频<br>radio frequency                  |                                                                                                         | 工程<br>engineering                       |                                                                                                          |
| 审核<br>To examine                       |                                                                                                         | 品质<br>QC                                |                                                                                                          |
| 日期 date<br>2023.10.6                   | <br>盖章区<br>Seal area | 日期 date<br>2023.10.6                    | <br>盖章区<br>Seal area |

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## 一:Device support



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## 二:Overview

### (1)Antenna performance

1. This approval sheet supports for MID project. FPC antennas include in this project. This report is for the performance of BT 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                   | $\leq 2.0$                |       |
| Average Antenna Gain   | $\leq -1.3$               | dBi   |
| Antenna Efficiency     | $\geq 40$                 | %     |
|                        |                           |       |
| Feed Impedance         | 50 ohms                   |       |
| Operating Temperature  | -40 to +85 deg C          |       |
| Polarization / Azimuth | Linear / Omni-directional |       |

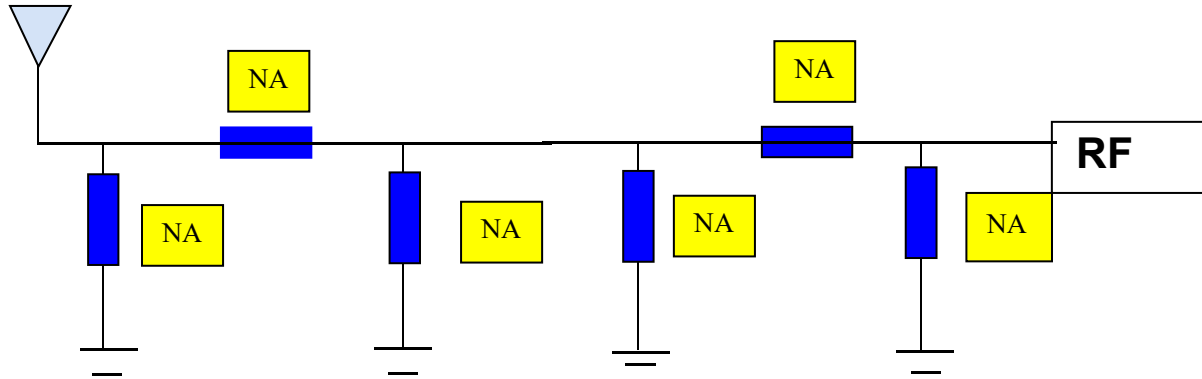
### (2)Mechanical Information

| Mechanical Dimension  |                  |
|-----------------------|------------------|
| Cable Length          | NA               |
| Description           | BT antenna       |
| Material              | FPC              |
| Coaxial Cable         | NA               |
| Environmental         |                  |
| Operation Temperature | -40 to +85 deg C |
| Storage Temperature   | -40 to +85 deg C |

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### 三: Matching circuit diagram & machine & antenna image

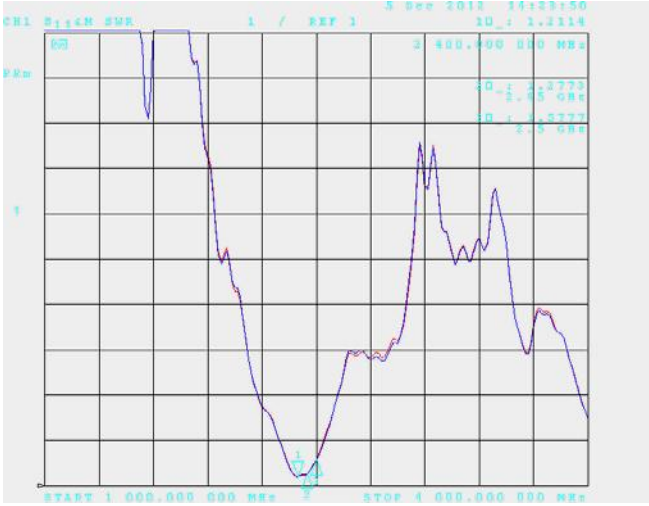
#### (1) Matching circuit diagram



#### (2) Machine & antenna image

1: Gold plating and sinking; 2: Black matte ink on the surface; 3: Complies with the latest environmental requirements: RoHS&REACH; 4: Whole board shipment;

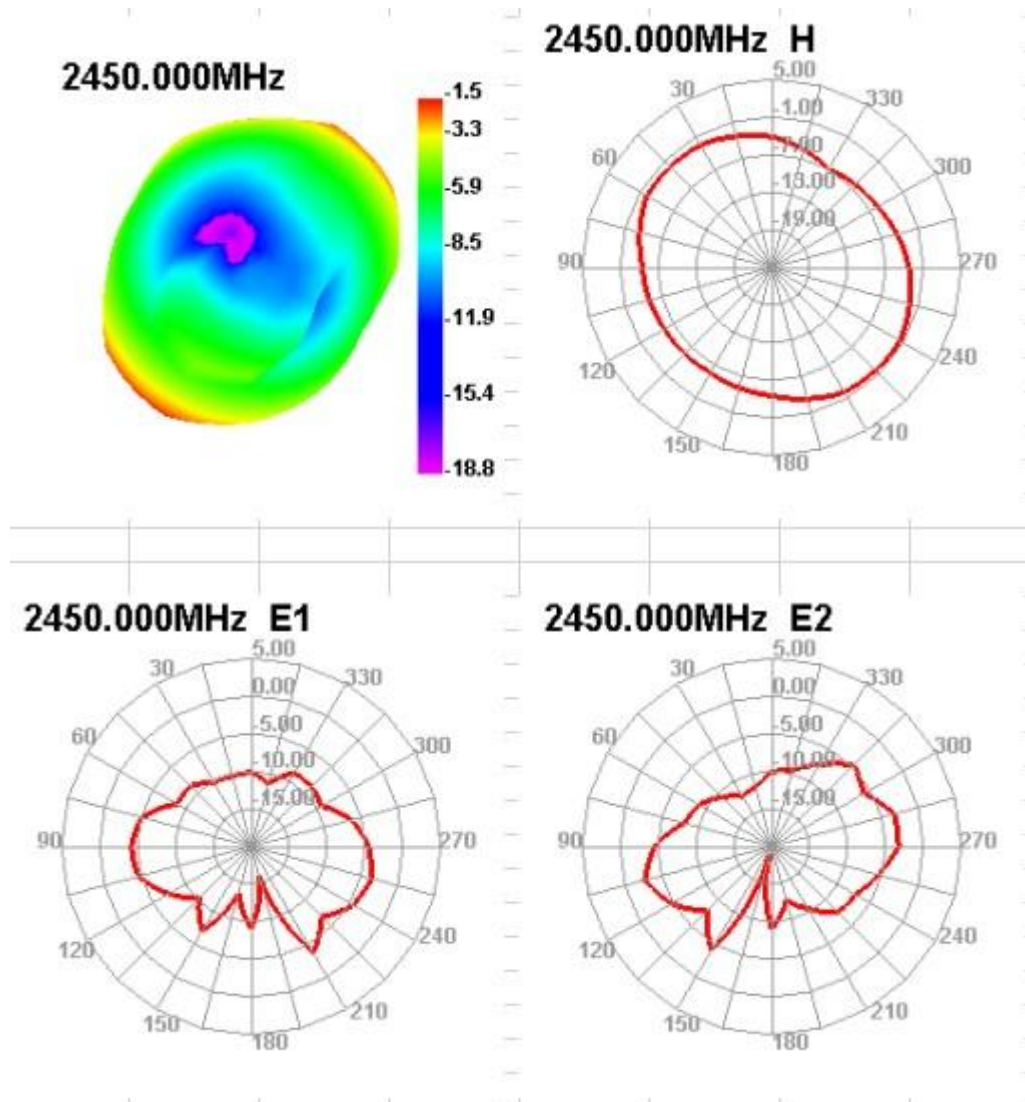
# 四:Antenna （VSWR）



| Frequency (MHz) | VSWR |
|-----------------|------|
| 2400            | 1.25 |
| 2450            | 1.18 |
| 2500            | 1.16 |

| Passive Test For 2.4G |          |           |            |            |         |         |          |          |             |             |
|-----------------------|----------|-----------|------------|------------|---------|---------|----------|----------|-------------|-------------|
| Freq (MHz)            | Effi (%) | Effi (dB) | Gain (dBi) | Gain (dBd) | UHS (%) | DHS (%) | Max (dB) | Min (dB) | Attenut Hor | Attenut Ver |
| 2400                  | 22.93    | -6.4      | -1.99      | -4.14      | 9.57    | 13.363  | -1.99    | -18.81   | 48.83       | 49.05       |
| 2410                  | 24.58    | -6.09     | -1.66      | -3.81      | 10.321  | 14.257  | -1.66    | -18.99   | 49.12       | 49.31       |
| 2420                  | 25.81    | -5.88     | -1.63      | -3.78      | 10.894  | 14.918  | -1.63    | -18.92   | 49.47       | 49.54       |
| 2430                  | 25.8     | -5.88     | -1.61      | -3.76      | 10.97   | 14.826  | -1.61    | -18.74   | 49.45       | 49.53       |
| 2440                  | 25.22    | -5.98     | -1.72      | -3.87      | 10.72   | 14.5    | -1.72    | -18.82   | 49.47       | 49.59       |
| 2450                  | 25.93    | -5.86     | -1.55      | -3.7       | 11.093  | 14.836  | -1.55    | -18.83   | 49.56       | 49.63       |
| 2460                  | 26.37    | -5.79     | -1.53      | -3.68      | 11.328  | 15.047  | -1.53    | -18.67   | 49.75       | 49.92       |
| 2470                  | 25.91    | -5.87     | -1.43      | -3.58      | 11.279  | 14.63   | -1.43    | -18.94   | 49.79       | 50.03       |
| 2480                  | 27.1     | -5.67     | -1.3       | -3.45      | 11.806  | 15.295  | -1.3     | -20.52   | 49.89       | 50.07       |
| 2490                  | 26.44    | -5.78     | -1.36      | -3.51      | 11.542  | 14.894  | -1.36    | -21.66   | 49.81       | 50.01       |
| 2500                  | 24.84    | -6.05     | -1.74      | -3.89      | 10.82   | 14.018  | -1.74    | -21.76   | 49.76       | 49.92       |

## 五:3D pattern



## 六:Structural drawings

