

# Kunshan Ruixiang Communication Technology Co., LTD

PC006 Capacitive Pen antenna antenna report V1.05

Reporter: Chen Bing  
Date: 2024,1.2

2024



[www.innowave.cn](http://www.innowave.cn)

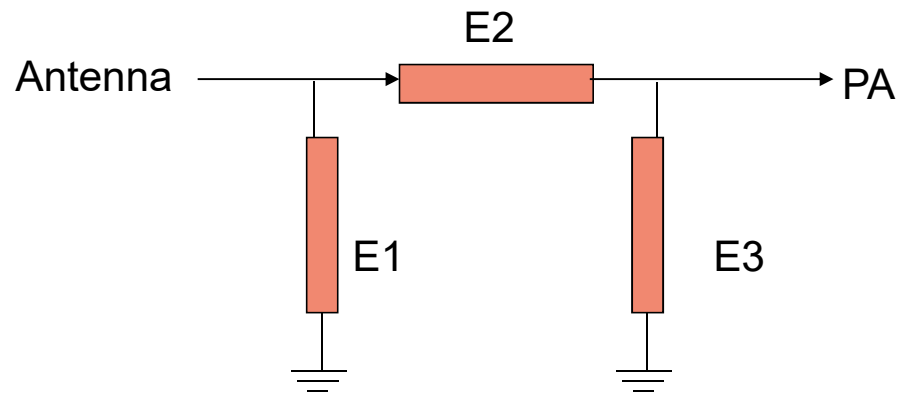
| time       | description                                              | edition |
|------------|----------------------------------------------------------|---------|
| 2023/11/30 | CNC machine first version of passive debugging data      | V1.01   |
| 2023/12/06 | CNC Machine Sample Optimization Report-monopolar antenna | V1.02   |
| 2023/12/07 | CNC Machine Sample Optimization Report- -PIFA antenna    | V1.03   |
| 2023/12/26 | P0 Machine Sample Optimization Report-The PIFA antenna   | V1.04   |
| 2024/01/02 | P0 Machine Sample verification                           | V1.05   |
|            |                                                          |         |
|            |                                                          |         |
|            |                                                          |         |
|            |                                                          |         |

# Project development profile



| main antenna                           | frequency range        |                | Antenna Type            | Antenna form           | Design area                      | Match changes |
|----------------------------------------|------------------------|----------------|-------------------------|------------------------|----------------------------------|---------------|
|                                        | BT                     | 2.4GHz~2.48GHz | Copper axis + FPC       | PIFA                   | The inside side of the prototype | Not available |
| The prototype state                    | EVT model machine      |                | Environmental treatment | USB landing            |                                  |               |
| Test the software version              | Libra Version .3.0.3.1 |                | Test Instruments        | GTS1800、Agilent E5071C |                                  |               |
| The date the instrument was calibrated | July 12, 2023          |                |                         |                        |                                  |               |

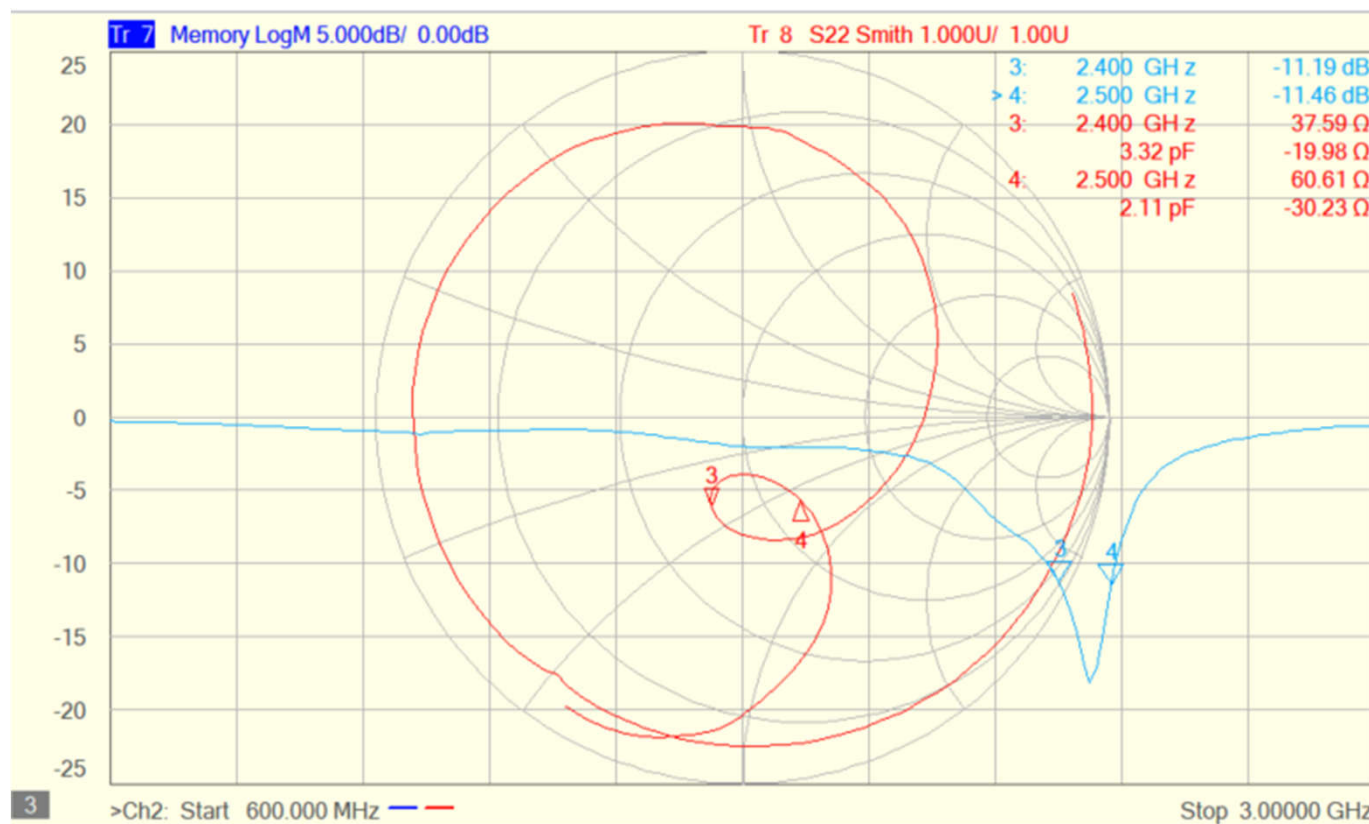
# BT antenna matching circuit



Test darkroom: GTS1800

| Illustration number | Matching value |
|---------------------|----------------|
| E1                  | NC             |
| E2                  | <b>0</b>       |
| E3                  | NC             |

## BT antenna for passive debugging of the S parameters



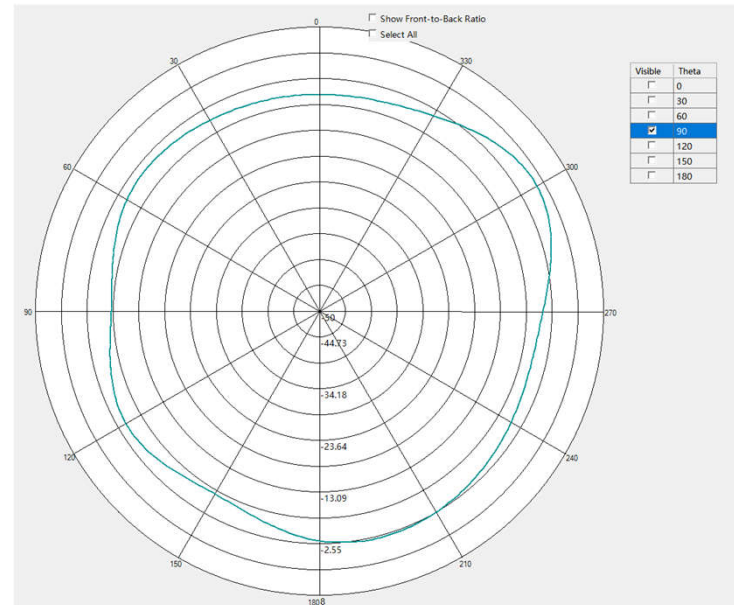
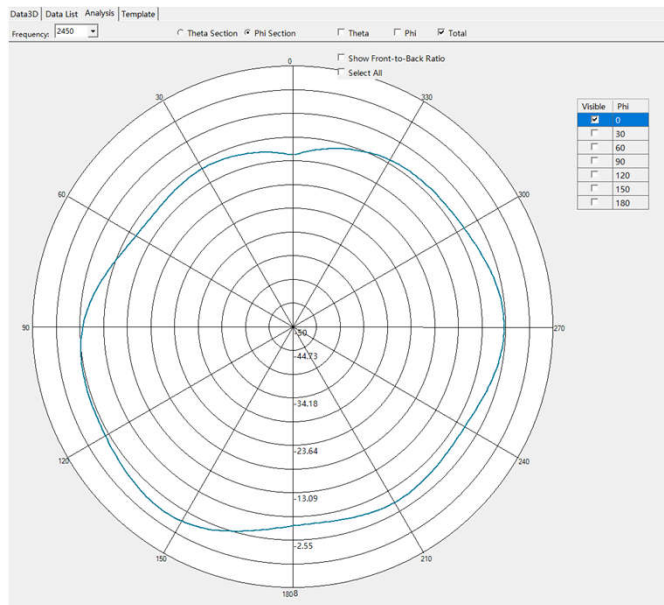
# BT antenna passive debugging parameters



Sample validation  
data on Jan

| (BT) Bluetooth antenna |                    |                     |      |
|------------------------|--------------------|---------------------|------|
| frequency<br>MHz       | productiveness (%) | productiveness (dB) | Gain |
| 2400                   | 40.64              | -3.91               | 0.66 |
| 2410                   | 41.02              | -3.87               | 0.71 |
| 2420                   | 41.50              | -3.82               | 0.77 |
| 2430                   | 41.50              | -3.82               | 0.78 |
| 2440                   | 41.11              | -3.86               | 0.72 |
| 2450                   | 41.78              | -3.79               | 0.79 |
| 2460                   | 41.98              | -3.77               | 0.80 |
| 2470                   | 41.30              | -3.84               | 0.74 |
| 2480                   | 41.59              | -3.81               | 0.76 |
| Avg                    | 41%                | -3.83               | 0.74 |

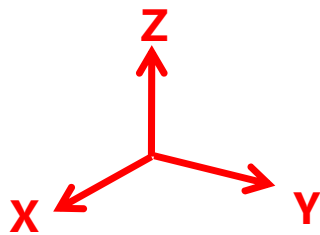
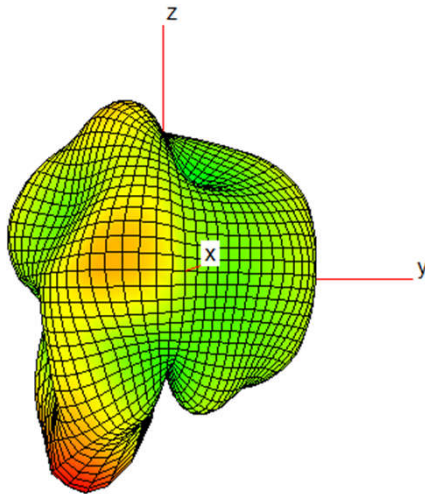
# Efficiency distribution map of the BT antenna



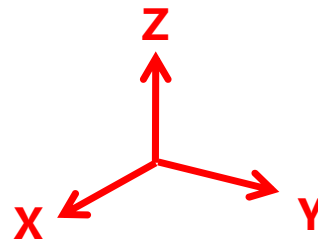
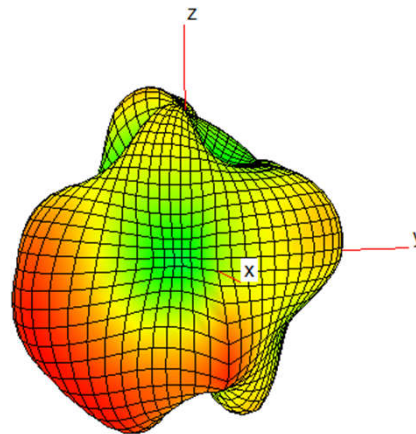
# BT antenna apple 3D diagram



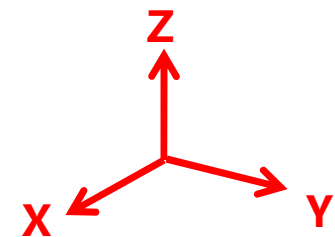
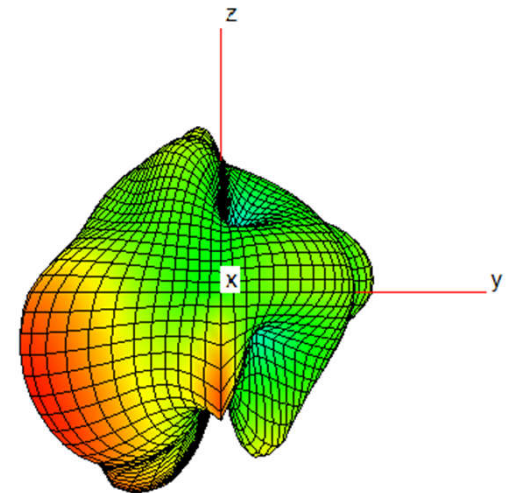
2.4GHz



2.44GHz



2.48GHz



1. Whether the USB grounding is sufficient has a great impact on the efficiency. It is suggested that the grounding resistance of USB and antenna is less than 0.5 ohms.



Thanks