

# **BT1027B Antenna test report**

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Revision History

| Released Date | Version | Record                         | Tester       |
|---------------|---------|--------------------------------|--------------|
| Nov.17th,2023 | V1.0    | Frist Turning                  | Hanquan Meng |
| Dec.11th,2023 | V1.1    | Optimize                       | Hanquan Meng |
| Jan.27th,2024 | V1.2    | DVT                            | Hanquan Meng |
| Feb.2th,2024  | V1.3    | Increase the shrapnel distance | Hanquan Meng |
| Feb.27th,2024 | V1.3    | Add PA                         | Hanquan Meng |
|               |         |                                |              |
|               |         |                                |              |

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# Requirements of Antenna Design and Measuremen

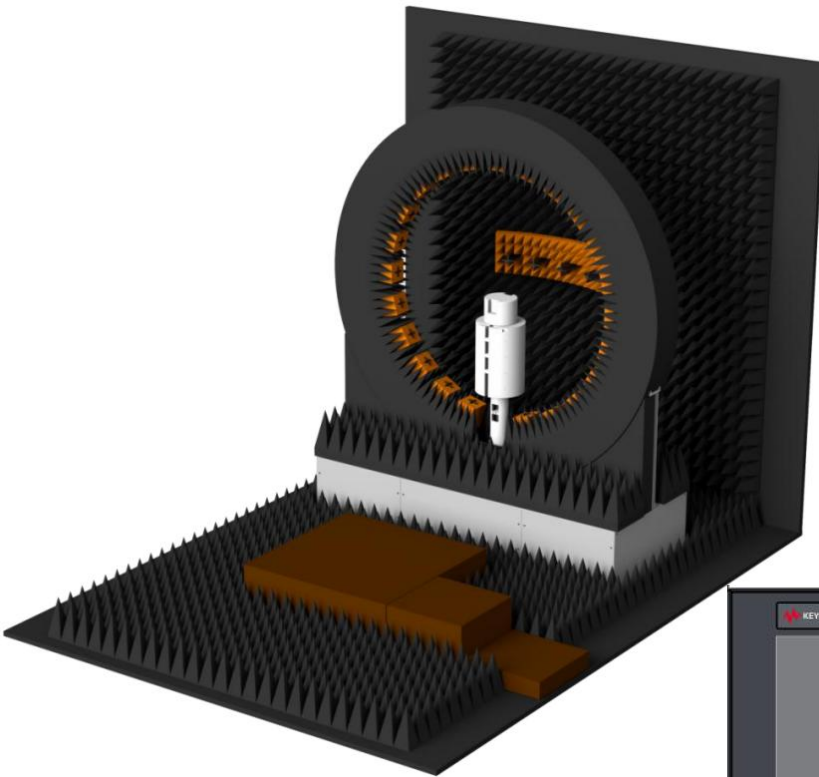
Requirements of Antenna Design(From Customer Demand)

| RF Function | Number of ANT | Frequency Band | Remark       |
|-------------|---------------|----------------|--------------|
| ANT         | 1             | Bluetooth      | 2402-2482MHz |
|             |               |                |              |
|             |               |                |              |

Requirements of Measurement

| Test Item                | Specification (Free Space) | Remark  |
|--------------------------|----------------------------|---------|
| VSWR                     | VSWR<2.0                   |         |
| Directional patten       | /                          |         |
| Antenna efficiency       | efficiency>40%             | PCB ANT |
| Antenna Isolation        | /                          |         |
| Over the air Performance | /                          |         |

# Test Setup for Radiation Pattern Measurement



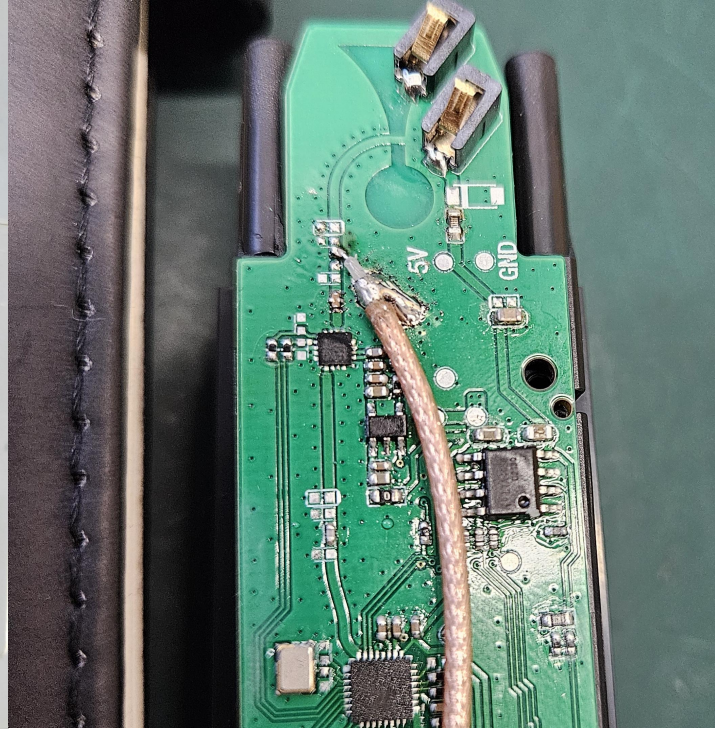
| QUIPMENT                   | BRAND    | MODULE TYPE    |
|----------------------------|----------|----------------|
| Network Analyzer           | KEYSIGHT | E5071C 9k~8.5G |
| Signal Generator           | R&S      | CMW 500        |
| Microwave anechoic chamber | XH-IOE   | ATS-300        |
|                            |          |                |



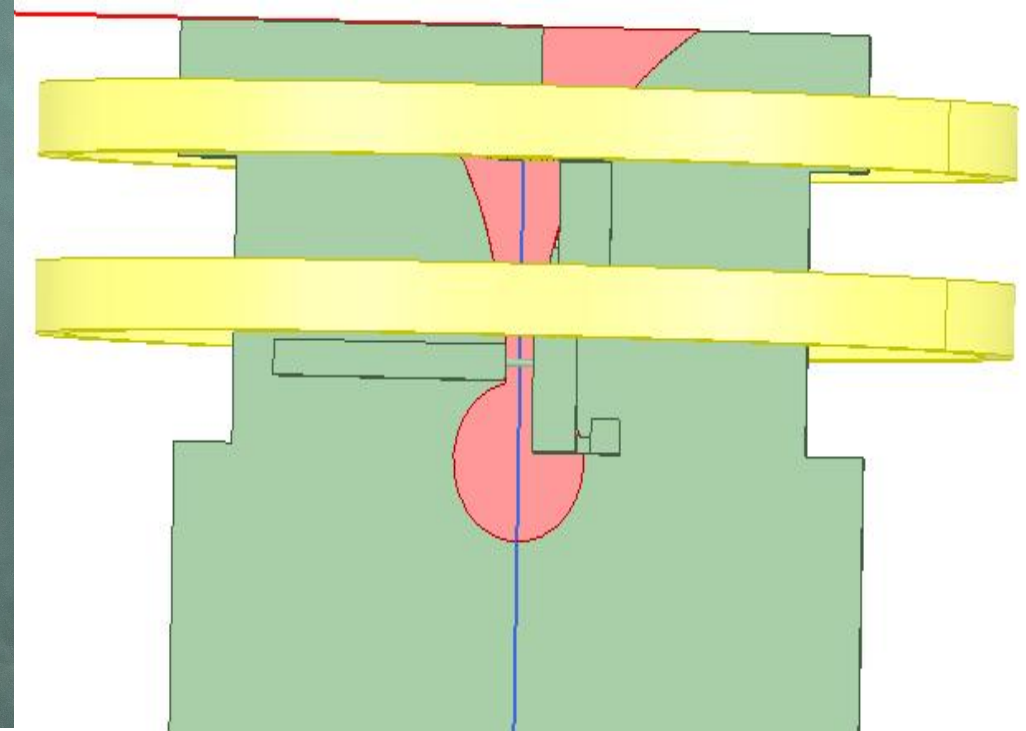
# Antenna Placement & Solution (天线位置&接地处理)



Product picture

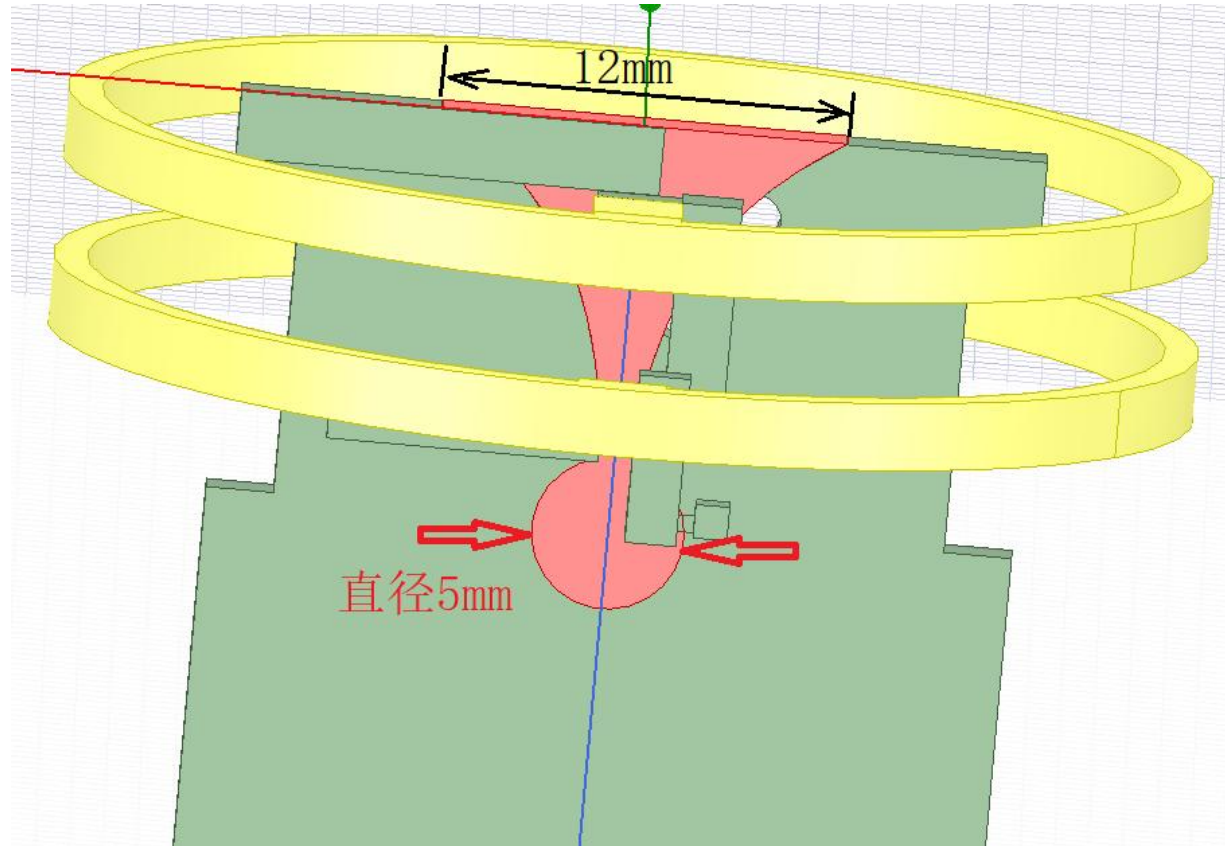


Product internal picture



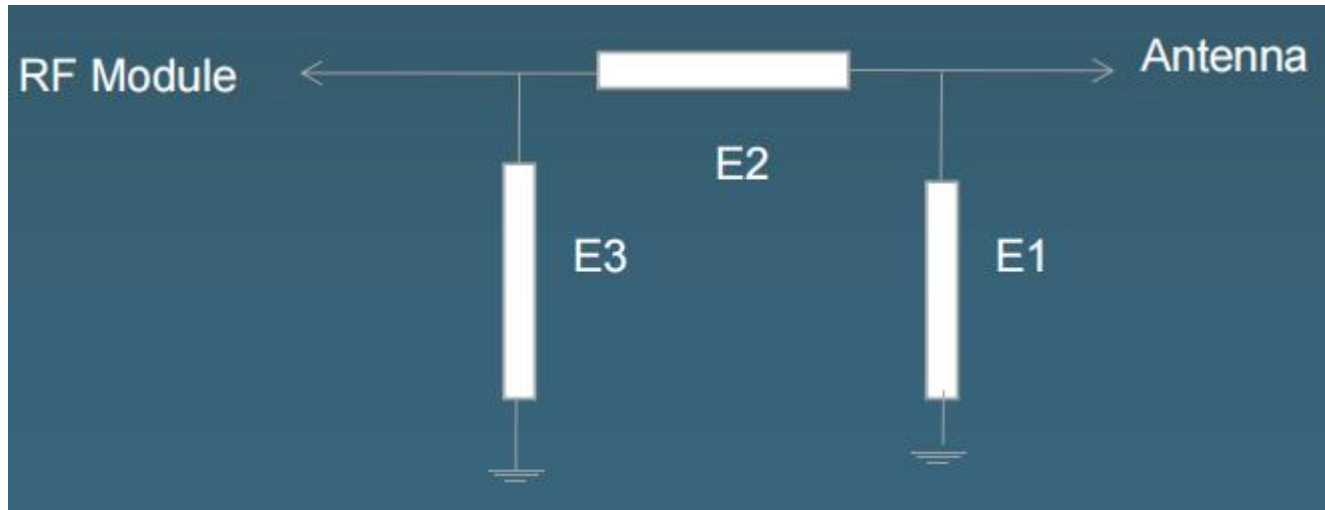
Antenna close-up

# Antenna size (Outline drawing)





# Microphone antenna matching circuit



Any changes:

No change

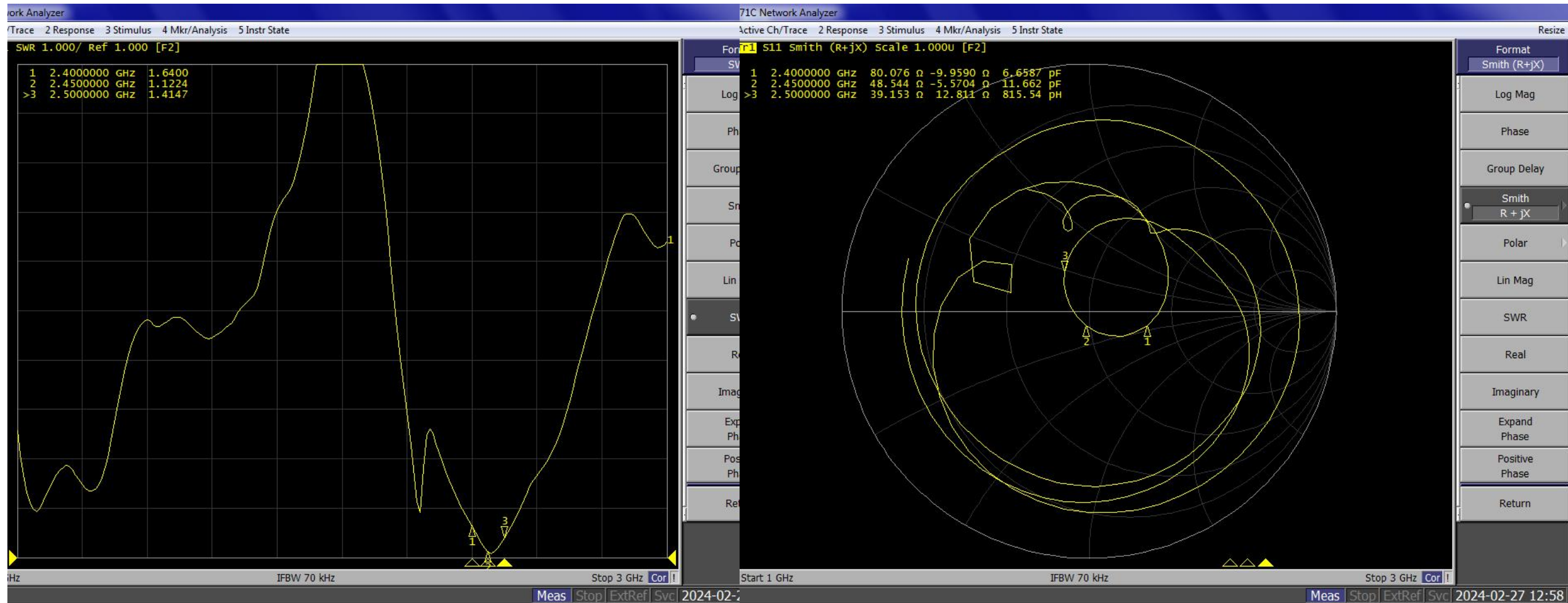
Modified

✓

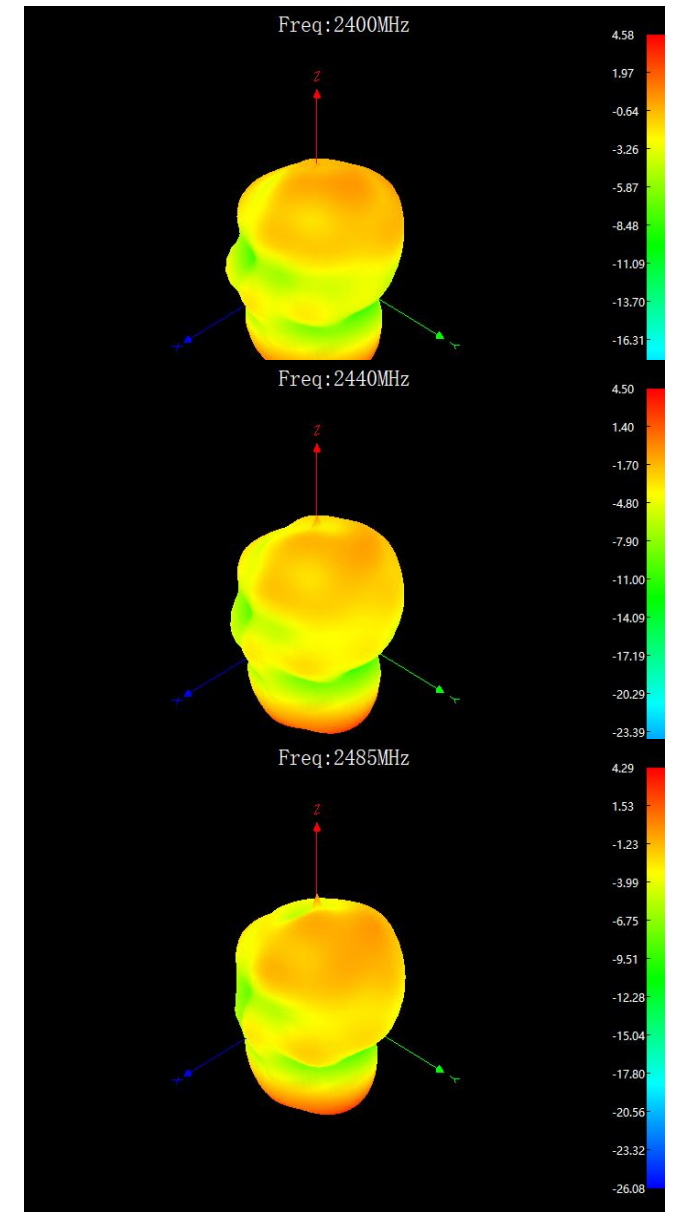
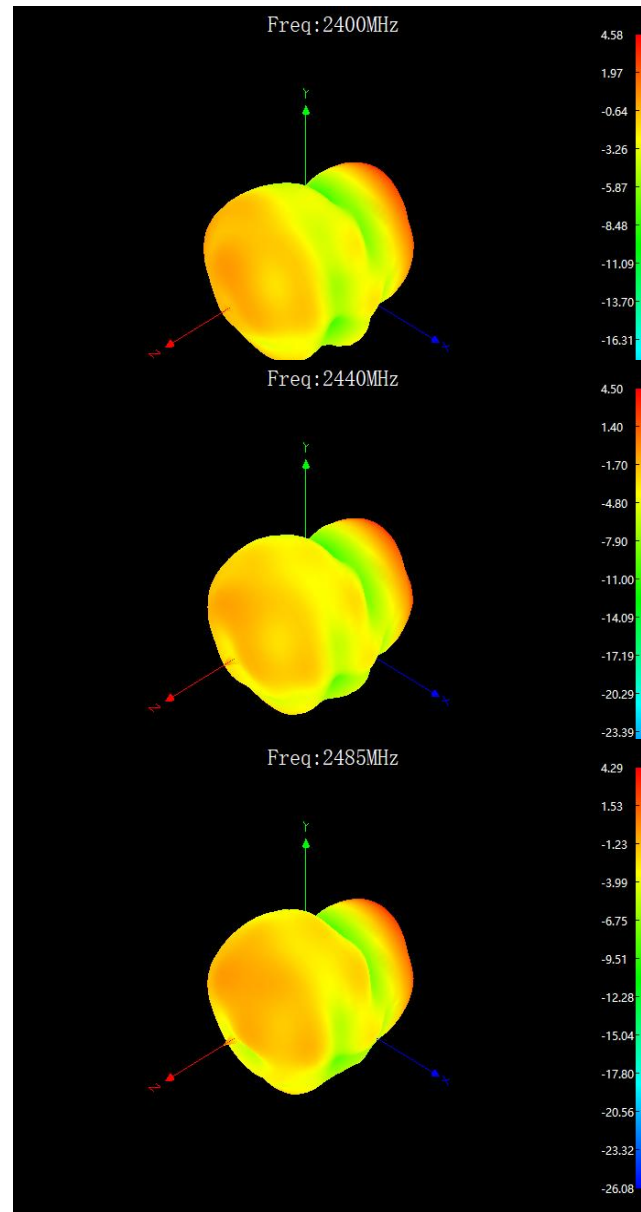
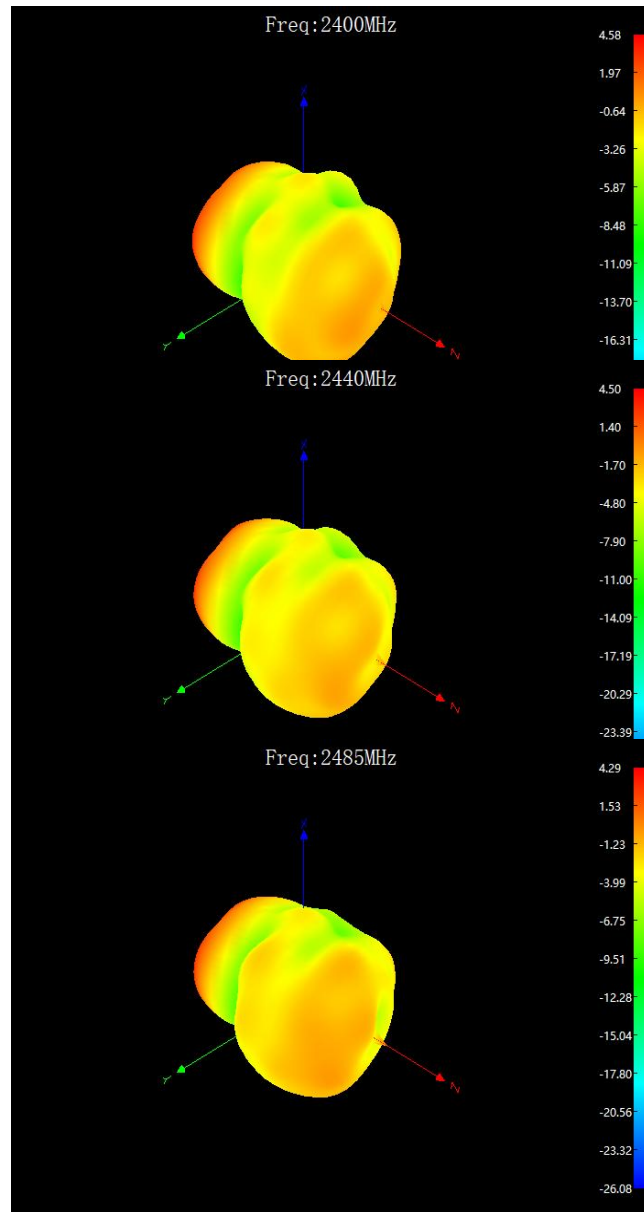
| Element  | Value |
|----------|-------|
| E1(0402) | NC    |
| E2(0402) | 10pF  |
| E3(0402) | NC    |



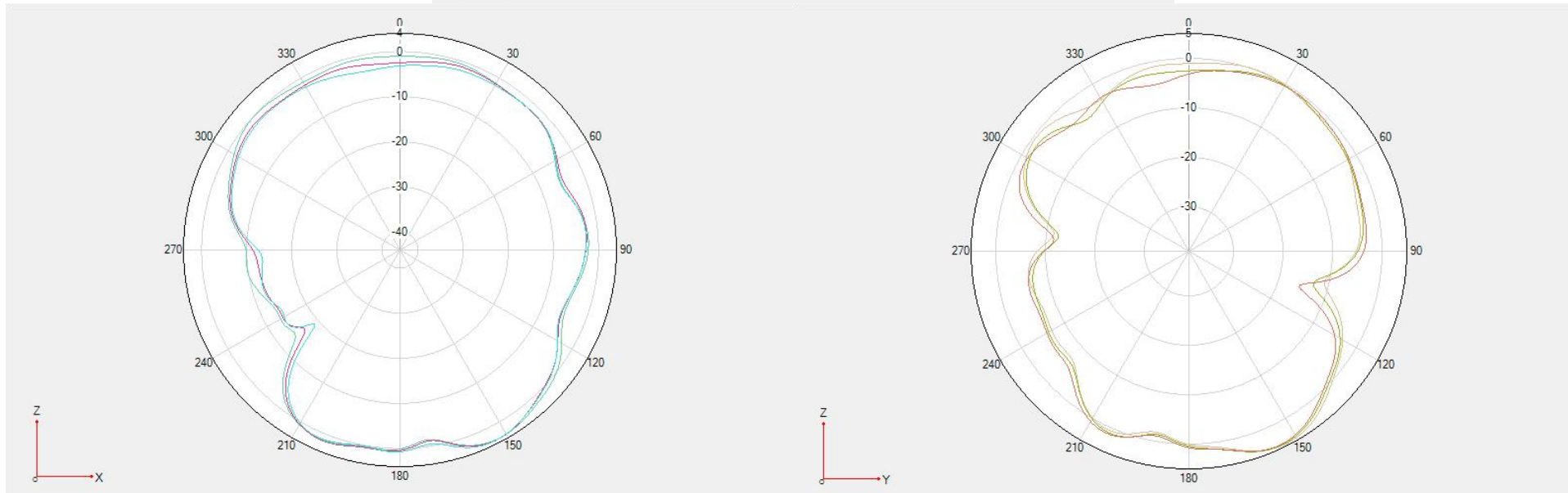
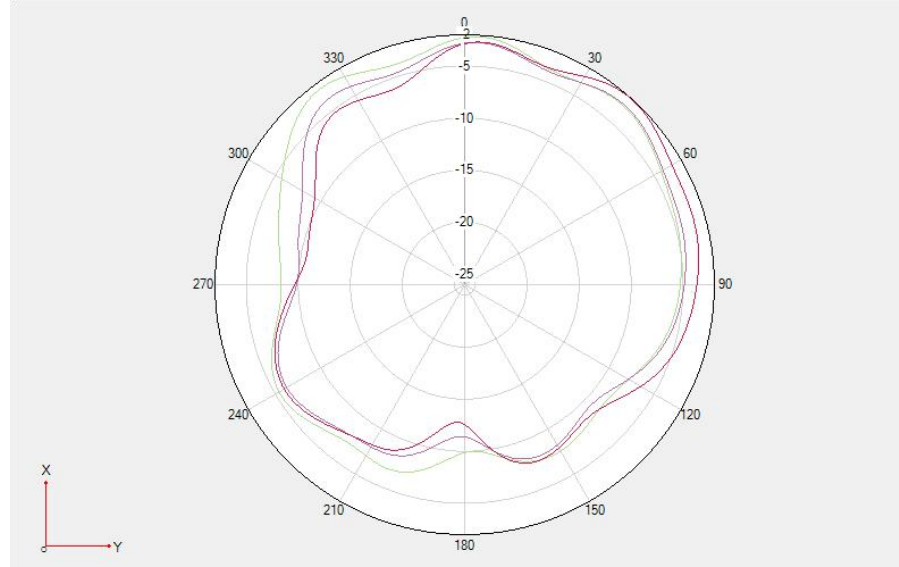
# VSWR Results/Smith chart



# 3D Radiation Pattern Results



# 2D Radiation Pattern Results



# Results Summary-Peak Gain &Efficiency

| Frequency/Mhz | Efficiency / dB | Efficiency / % | MaxGain/dBi | AvgGain/dBi |
|---------------|-----------------|----------------|-------------|-------------|
| 2400          | -2.37           | 57.94          | 4.58        | -2.37       |
| 2405          | -2.11           | 61.52          | 4.81        | -2.11       |
| 2410          | -2.19           | 60.39          | 4.62        | -2.19       |
| 2415          | -2.25           | 59.57          | 4.46        | -2.25       |
| 2420          | -1.87           | 65.01          | 4.86        | -1.87       |
| 2425          | -1.81           | 65.92          | 4.87        | -1.81       |
| 2430          | -1.91           | 64.42          | 4.75        | -1.91       |
| 2435          | -1.96           | 63.68          | 4.65        | -1.96       |
| 2440          | -2.05           | 62.37          | 4.5         | -2.05       |
| 2445          | -1.85           | 65.31          | 4.78        | -1.85       |
| 2450          | -1.85           | 65.31          | 4.79        | -1.85       |
| 2455          | -1.91           | 64.42          | 4.61        | -1.91       |
| 2460          | -1.87           | 65.01          | 4.66        | -1.87       |
| 2465          | -1.99           | 63.24          | 4.57        | -1.99       |
| 2470          | -2.02           | 62.81          | 4.54        | -2.02       |
| 2475          | -2.14           | 61.09          | 4.29        | -2.14       |
| 2480          | -2.26           | 59.43          | 4.01        | -2.26       |
| 2485          | -2.03           | 62.66          | 4.29        | -2.03       |

# TRP&TIS (OTA Test Data) :

| DUT NO. | Channel | Frequency | Test data(dBm) |     |
|---------|---------|-----------|----------------|-----|
|         |         |           | TRP            | TIS |
| 1#      | 0       | 2402      | NA             | NA  |
|         | 39      | 2441      | NA             | NA  |
|         | 78      | 2480      | NA             | NA  |

# Conclusion (结论)

- 该项目为板载天线+充电铜环组成的复合天线，平均效率62.7%，性能可满足需求。



# 重要说明 NOTICE



1

请贵司注意报告中的匹配是否更改、环境处理是否可行；这直接影响天线性能，若有异议请及时与本司联系；

Please pay attention to whether the matching in the report has changed and whether the environmental treatment is feasible; This will directly affect the antenna performance, if you have any objections, please contact us in time;

2

若贵司机器有更换物料、更新软件、环处理变更等，须及时提供最新状态机器来我司验证；

If your driver has replacement materials, updated software, environmental processing changes, etc., you must provide the latest status machine to our company for verification in time

3

若贵公司机器需送第三方验证或送检，请最好提供送测机器来我司测试验证OK后方可送测（因为主板、环境处理、天线组装等一致性会影响天线性偏差）

If your company's machine needs to be sent to a third party for verification or inspection, it is best to provide the test machine to our company to test and verify OK before sending it for testing (because the consistency of the motherboard, environmental treatment, antenna assembly and so on will affect the antenna deviation)