

Testing Report

Customer Name: SHENZHEN KERUI SMART TECHNOLOGY CO.,
LTD

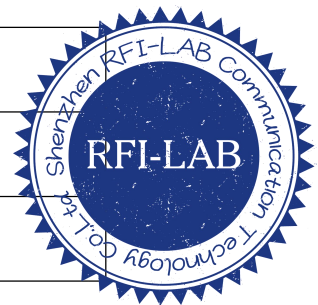
Product Name: antenna

Sample Model: T1201O134P

Reference Standard: *GB/T 9410-2008; ANSI/IEEE Std 149-1979*

Issue Date: 2022.11.23

| | |
|-------------------|------------------|
| Engineer: Jackson | Date: 2022.11.4 |
| Auditor: Eason | Date: 2022.11.23 |
| Approver: Aamon | Date: 2022.11.23 |



Version

| Version No. | Date | Description | Formulate | Approval |
|-------------|------------|-------------------------------|-----------|----------|
| A0 | 2022.11.23 | For the first time, formulate | Jackson | Eason |
| | | | | |
| | | | | |

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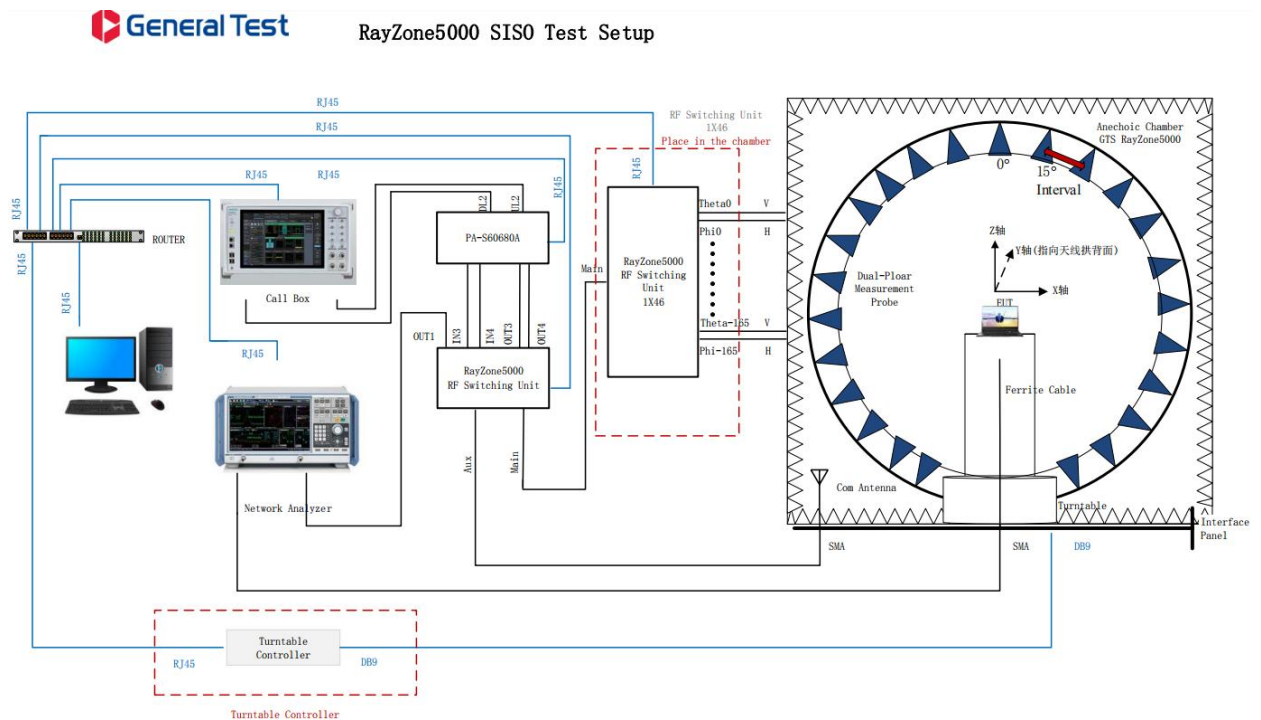
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1.General Information

1.1 General information of testing institutions

| | |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | Shenzhen RFI-LAB Communication Technology Co., Ltd. |
| Address | 10/F A, Lingyun Bld, Liufang Road, Baoan District, Shenzhen |
| Tel | 13682621346 |
| E-mail | rfi-lab@tech-now.com |
| Equipment | All the equipment used in the report is fixed in Zone B, West Side of 1/F, Building 1, Tingwei Industrial Park, No.6 Liufang Road, Bao 'an District, Shenzhen |

1.2 Testing principle



1.3 Test equipment

| Equipment | Model No. | Serial No. | Manufacturer | Calibration date | Next calibration date |
|------------------|--------------|----------------|--------------|------------------|-----------------------|
| OTA Test System | RayZone-5000 | RFI-LAB-RF-D00 | GTS | 2021.3.15 | 2023.3.14 |
| Network Analyzer | E5071C | RFI-LAB-RF-D01 | KEYSIGHT | 2022.5.13 | 2023.5.12 |

1.4 Test environment

| | |
|-------------|-----------|
| Temperature | 23.8°C |
| Humidity | 59%RH |
| Pressure | 100.13kPa |

1.5 Statement

- (1) The test results in the report are only applicable to the tested samples and the tested samples work under the environment described in the report.
- (2) Only Shenzhen RFI-LAB Communication Technology Co., Ltd. have the right to modify the report, and the modification information shall be annotated in the revision form.
- (3) Any objection to this report shall be raised within 30 days after formal confirmation of the report.
- (4) This report is invalid if there is any evidence that the sample information provided is falsified.
- (5) The report is invalid without the signature of the auditor and approver.

2. Sample Information

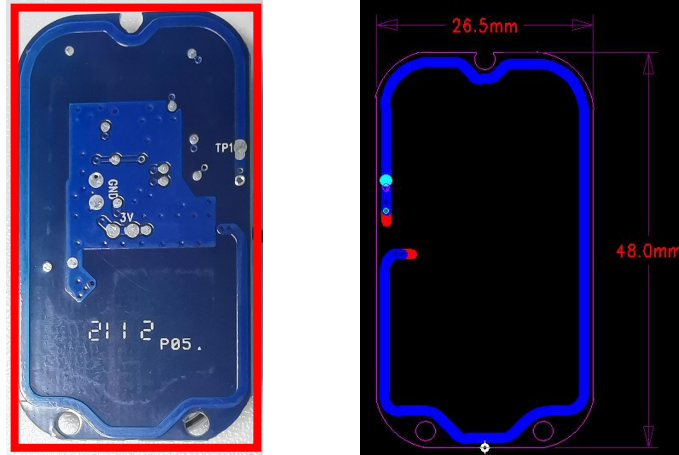
2.1 Client information

| | |
|-----------------|----------------------------------------------------------------------------------------------------------------------|
| Name | SHENZHEN KERUI SMART TECHNOLOGY CO., LTD |
| Address | Room 1501, T2, Jinlitong Building, No. 1100, Xingye Road, Xin'an Street, Bao'an District, Shenzhen, Guangdong, China |
| Contacts | / |
| Tel | / |
| E-mail | / |

2.2 Description of EUT(S)

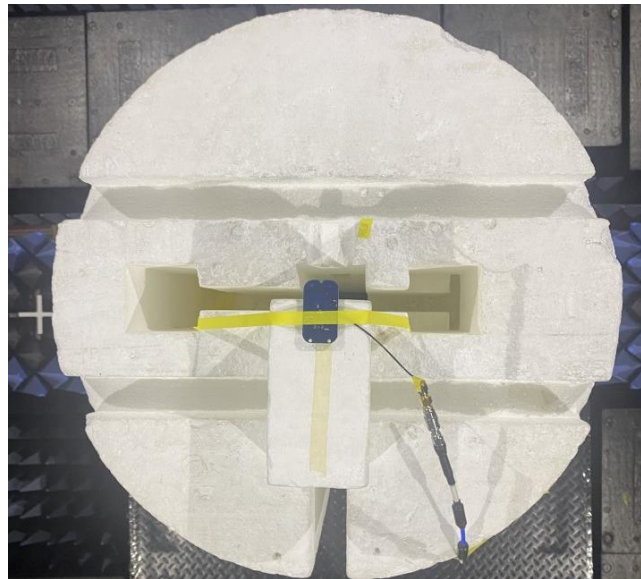
| | |
|------------------------|---------------------------------------------|
| Product Name | antenna |
| Sample Model | T1201O134P |
| Size | / |
| Serial No. | / |
| Test Item | Antenna gain; Efficiency; Radiation pattern |
| Frequency Range | 428-438MHz |
| Received Date | 2022.11.4 |
| Test Date | 2022.11.7 |
| Remark | The length of the RF cable is 90mm |

2.3 EUT appearance

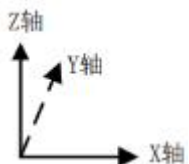
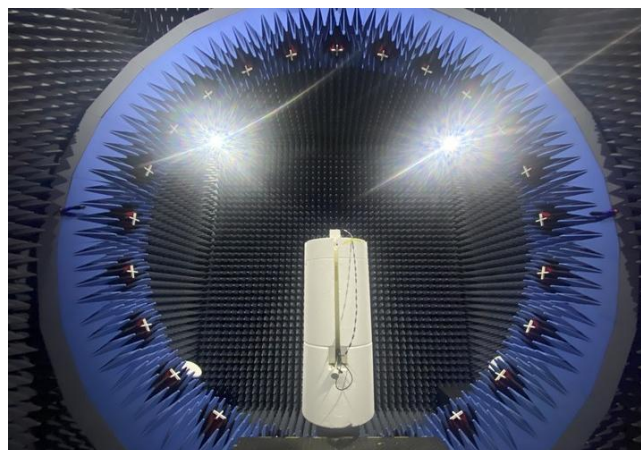


2.4 DUT setup photo of free space OTA testing

Planform



Front view



3. Test Results

3.1 Test standard

| Name | Parameter | Method | Standard no. |
|------------------------------|----------------------|----------------------------------------------------------------------|------------------------|
| Mobile communication antenna | Antenna gain | Generic specification for antennas used in the mobile communications | GB/T 9410-2008 |
| | Radiation pattern | | |
| Antenna | Radiation efficiency | IEEE Standard Test Procedures for Antennas | ANSI/IEEE Std 149-1979 |
| | Gain and directivity | | |

3.2 Test uncertainty

The uncertainty was calculated on the basis of the GUM published by ISO, using the inclusion factor of $K=2$ and the 95% confidence level to express the extended uncertainty.

| Item | Uncertainty |
|----------------------|---------------------|
| Antenna gain | $\pm 0.72\text{dB}$ |
| Radiation efficiency | $\pm 0.72\text{dB}$ |

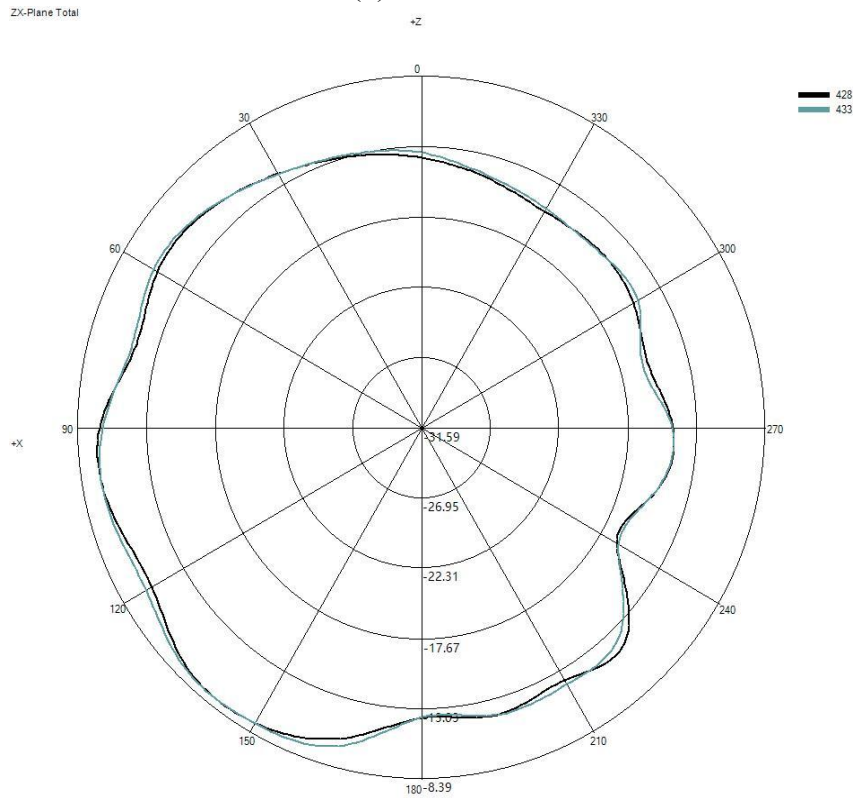
3.3 Test data

3.3.1 Typical free space efficiency and gain

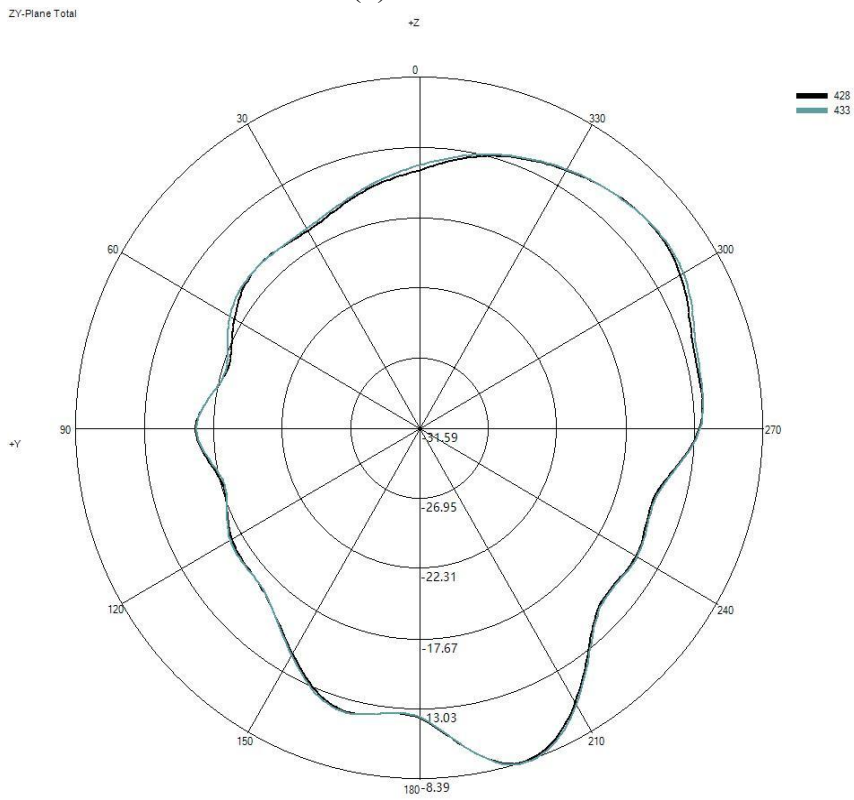
| Frequency/MHz | 428 | 429 | 430 | 431 | 432 | 433 | 434 | 435 | 436 | 437 | 438 |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Peak Gain/dBi | -8.66 | -8.64 | -8.68 | -8.63 | -8.69 | -8.60 | -8.65 | -8.65 | -8.64 | -8.57 | -8.59 |
| Efficiency/% | 5.21 | 5.24 | 5.26 | 5.25 | 5.26 | 5.32 | 5.32 | 5.33 | 5.37 | 5.42 | 5.45 |

3.3.2 Typical free space radiation pattern

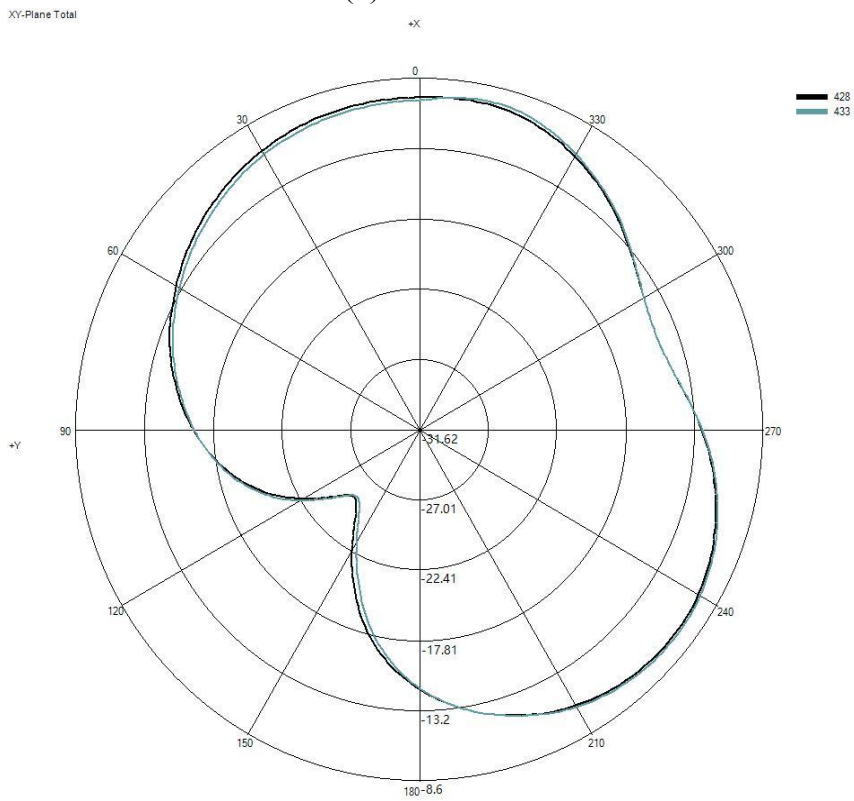
(1) X-Z Plane:



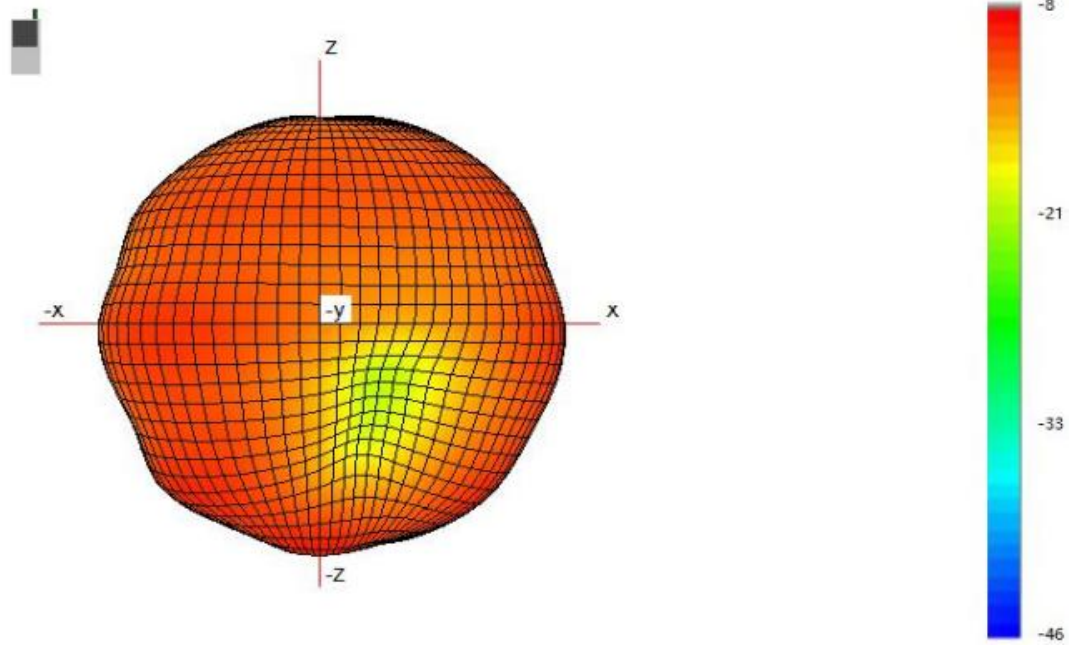
(2) Y-Z Plane:



(3) X-Y Plane:



(4) Typical Free Space 3D Radiation Pattern at 433MHz:



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