

# Testing Report

Customer Name: NIE-TECH Co., Ltd

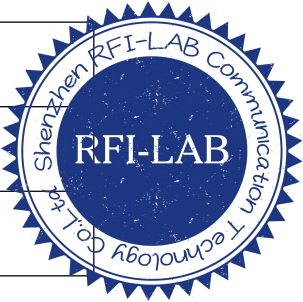
Product Name: ZW800\_V8.42

Sample Model: ZW800\_V8.42ANT

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

Issue Date: 2023.6.12

|                 |                   |
|-----------------|-------------------|
| Engineer: Zkmis | Date: 2023. 6. 9  |
| Auditor: Eason  | Date: 2023. 6. 12 |
| Approver: Jaron | Date: 2023. 6. 12 |



## Version

| Version No. | Date      | Description                   | Formulate | Approval |
|-------------|-----------|-------------------------------|-----------|----------|
| A0          | 2023.6.12 | For the first time, formulate | Zkris     | Eason    |
|             |           |                               |           |          |
|             |           |                               |           |          |

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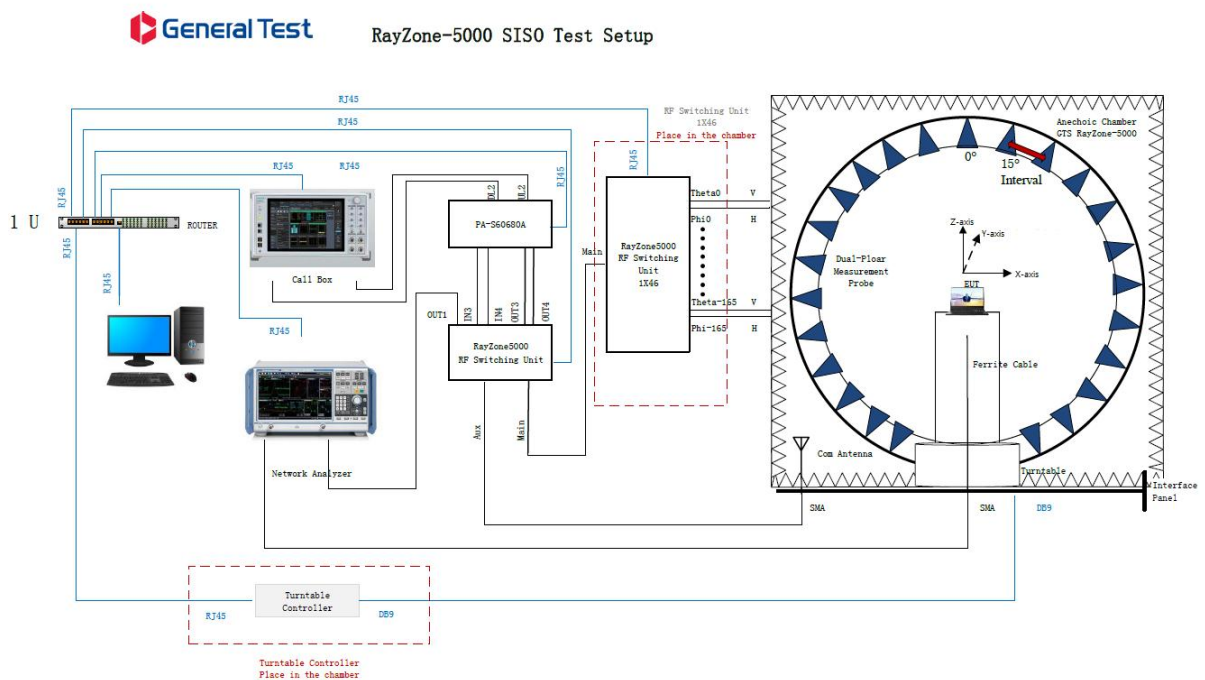
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## 1.General Information

## 1.1 General information of testing institutions

|                  |                                                                                                                                                               |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>      | Shenzhen RFI-LAB Communication Technology Co., Ltd.                                                                                                           |
| <b>Address</b>   | 10/F A, Lingyun Bld, Liufang Rd, Baoan District, SZ                                                                                                           |
| <b>Tel</b>       | 13682621346                                                                                                                                                   |
| <b>E-mail</b>    | rfi-lab@tech-now.com                                                                                                                                          |
| <b>Equipment</b> | 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          | 2023.3.14        | 2025.3.13             |
| Network Analyzer | E5071C       | RFI-LAB-RF-D01 | KEYSIGHT     | 2023.5.11        | 2024.5.10             |
| Network Analyzer | E5071C       | RFI-LAB-RF-C02 | KEYSIGHT     | 2023.5.11        | 2024.5.10             |

### 1.4 Test environment

|             |           |
|-------------|-----------|
| Temperature | 24.2°C    |
| Humidity    | 59%RH     |
| Pressure    | 100.15kPa |

### 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

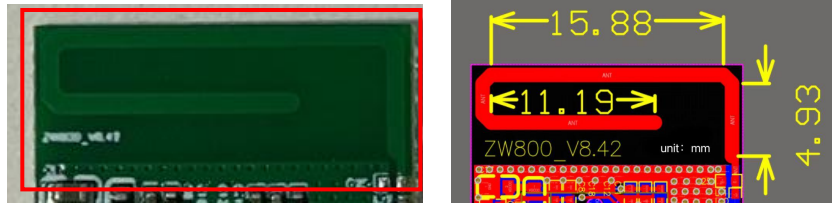
### 2.1 Client information

|              |                   |
|--------------|-------------------|
| Name         | NIE-TECH Co., Ltd |
| Address      | /                 |
| Contacts     | /                 |
| Tel          | /                 |
| E-mail       | /                 |
| Manufacturer | /                 |

### 2.2 Description of EUT(S)

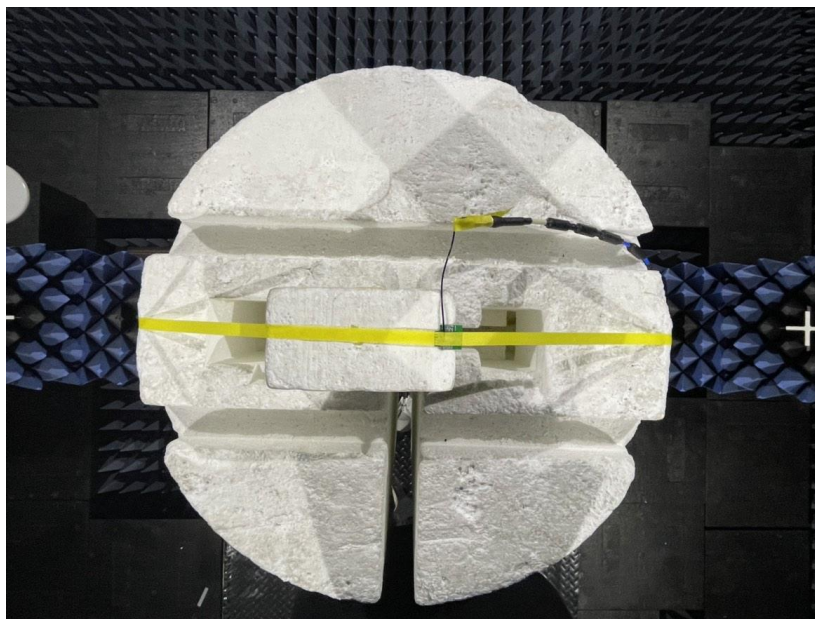
|                 |                                                   |
|-----------------|---------------------------------------------------|
| Product Name    | ZW800_V8.42                                       |
| Sample Model    | ZW800_V8.42ANT                                    |
| Antenna Size    | /                                                 |
| Serial No.      | /                                                 |
| Antenna Type    | PCB Antenna                                       |
| Test Item       | VSWR; Antenna gain; Efficiency; Radiation pattern |
| Frequency Range | 902-928MHz                                        |
| Received Date   | 2023.6.08                                         |
| Test Date       | 2023.6.09                                         |
| Remark          | The length of the RF cable is 50mm                |

## 2.3 EUT appearance

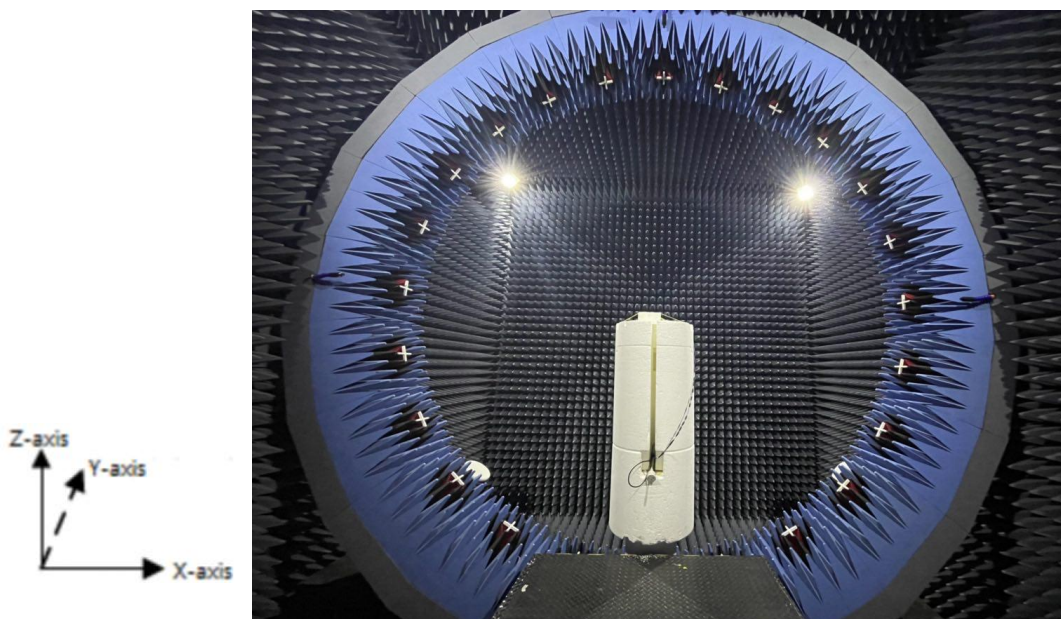


## 2.4 EUT setup photo of free space OTA testing

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    |                                                                      |                        |
|                              | VSWR                 |                                                                      |                        |
| Antenna                      | Radiation efficiency | IEEE Standard Test Procedures for Antennas                           | ANSI/IEEE Std 149-1979 |
|                              | Gain and directivity |                                                                      |                        |

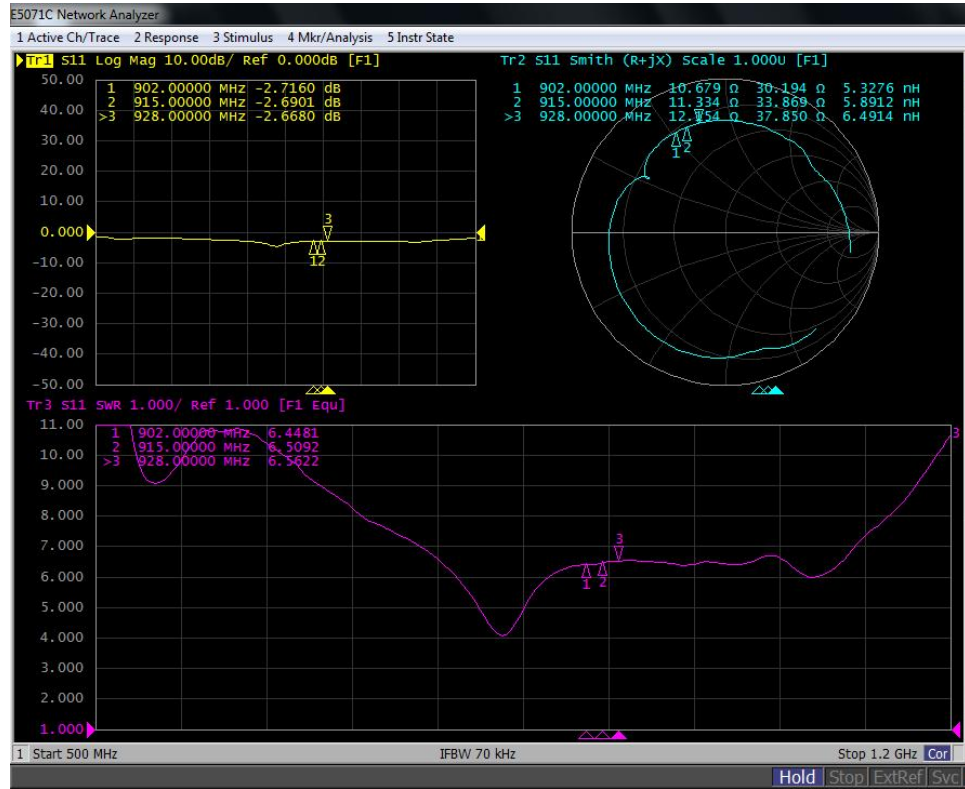
### 3.2 Test uncertainty

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         |
|----------------------|---------------------|
| VSWR                 | $\pm 0.3$           |
| Antenna gain         | $\pm 0.72\text{dB}$ |
| Radiation efficiency | $\pm 0.72\text{dB}$ |

### 3.3 Test data

#### 3.3.1 VSWR parameters



#### 3.3.2 VSWR data

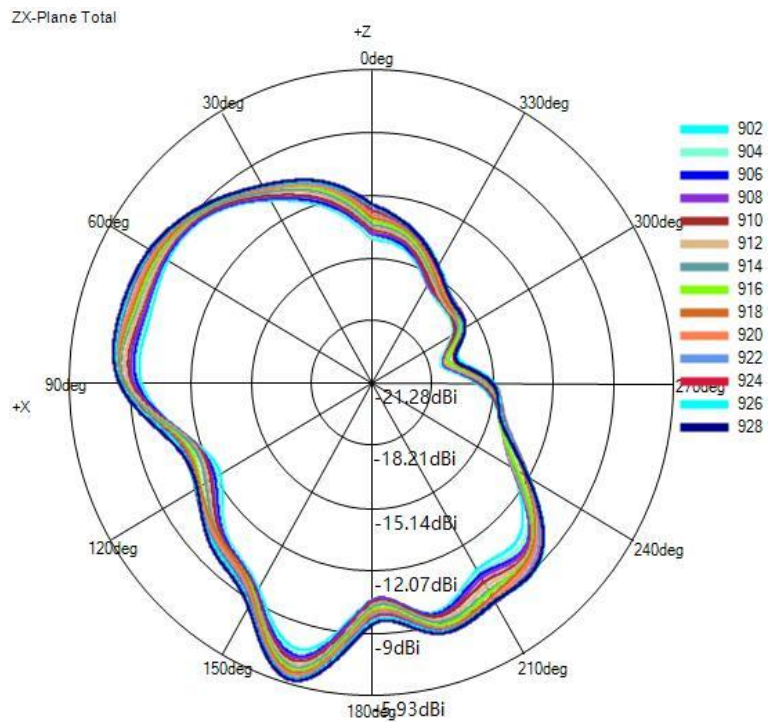
| Frequency/MHz | 902    | 915    | 928    |
|---------------|--------|--------|--------|
| VSWR          | 6.4481 | 6.5092 | 6.5622 |

#### 3.3.3 Typical free space efficiency and gain

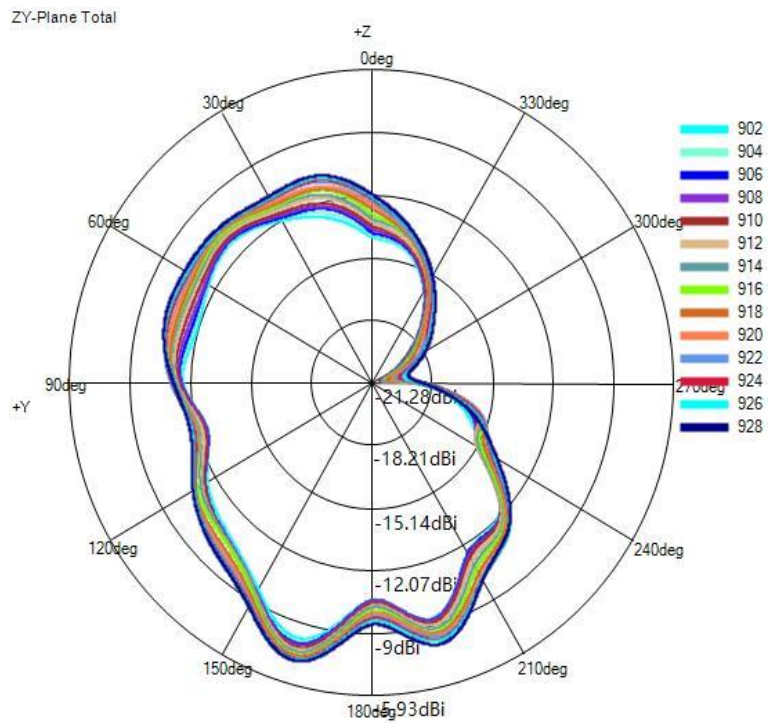
| Frequency/MHz | 902   | 904   | 906   | 908   | 910   | 912   | 914   | 916   | 918   | 920   | 922   | 924   | 926   | 928   |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Peak Gain/dBi | -7.64 | -7.43 | -7.29 | -7.16 | -7.05 | -6.91 | -6.77 | -6.61 | -6.48 | -6.36 | -6.26 | -6.21 | -6.21 | -6.16 |
| Efficiency/%  | 6.04  | 6.19  | 6.28  | 6.37  | 6.52  | 6.69  | 6.89  | 7.06  | 7.25  | 7.43  | 7.61  | 7.69  | 7.74  | 7.82  |

### 3.3.4 Typical free space radiation pattern

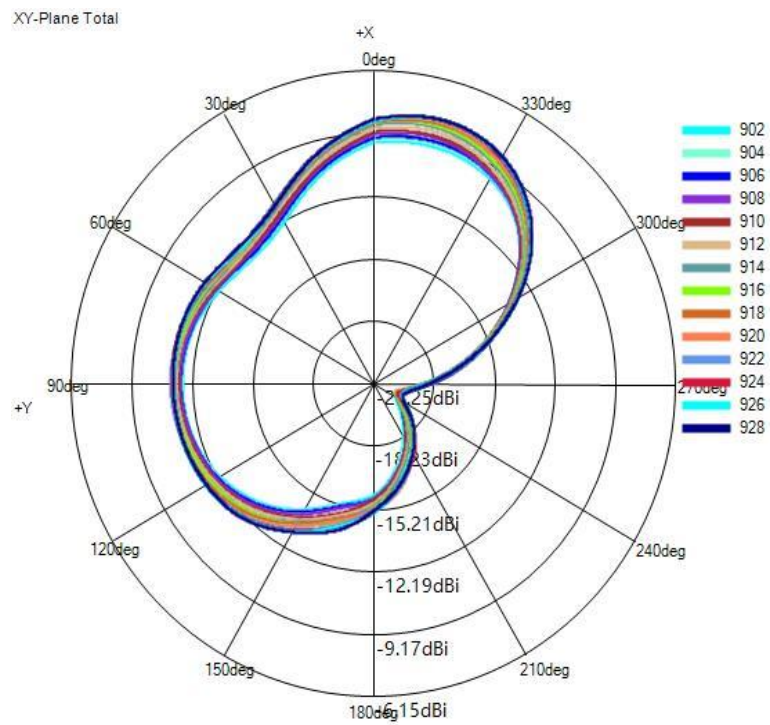
(1) X-Z Plane(unit:dBi):



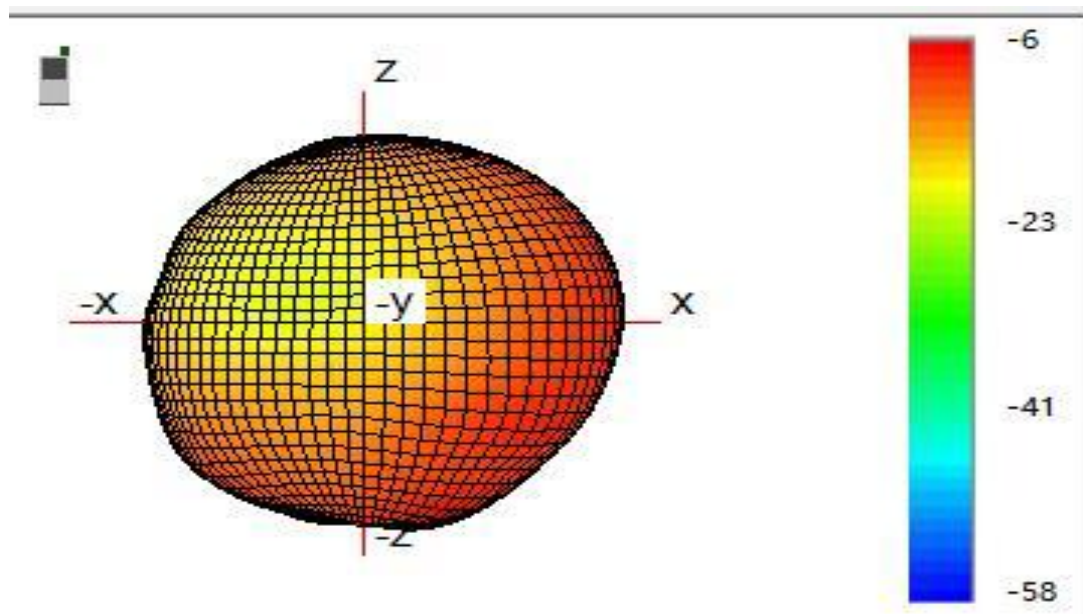
(2) Y-Z Plane(unit:dBi):



(3) X-Y Plane(unit:dBi):



(4) Typical Free Space 3D Radiation Pattern at 928MHz(unit:dBi):



End

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