

# Testing Report

Customer Name: NIE-TECH Co., Ltd

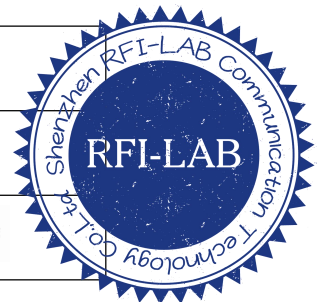
Product Name: ZEN71 ANT

Sample Model: ZEN71 ANT

Reference Standard: *GB/T 9410-2008; ANSI/IEEE Std149-1979*

Issue Date: 2023.6.12

Engineer: Zkmis	Date: 2023. 6. 9
Auditor: Eason	Date: 2023. 6. 12
Approver: Janson	Date: 2023. 6. 12



## Version

Version No.	Date	Description	Formulate	Approval
A0	2023.06.12	For the first time, formulate	Zkris	Eason

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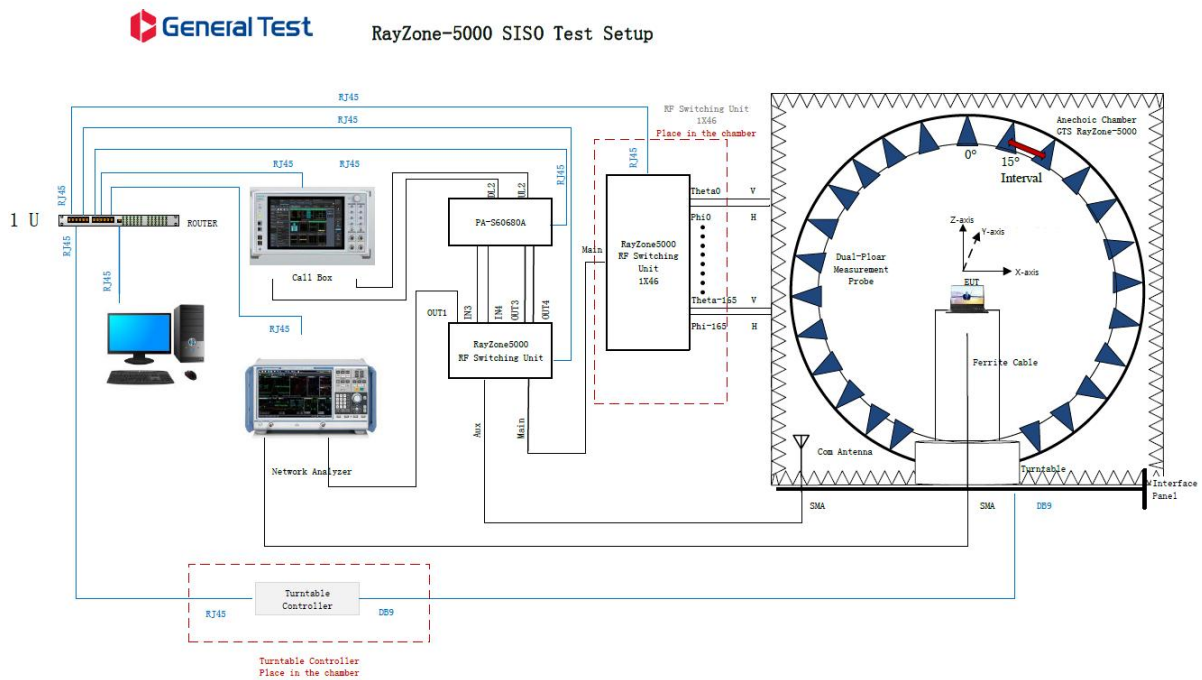
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# 1. General Information

## 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	22.5°C
Humidity	58%RH
Pressure	100.20kPa

### 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

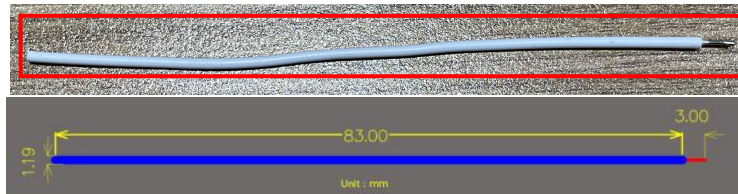
### 2.1 Client information

<b>Name</b>	NIE-TECH Co., Ltd
<b>Address</b>	/
<b>Contacts</b>	/
<b>Tel</b>	/
<b>E-mail</b>	/
<b>Manufacturer</b>	/

### 2.2 Description of EUT(S)

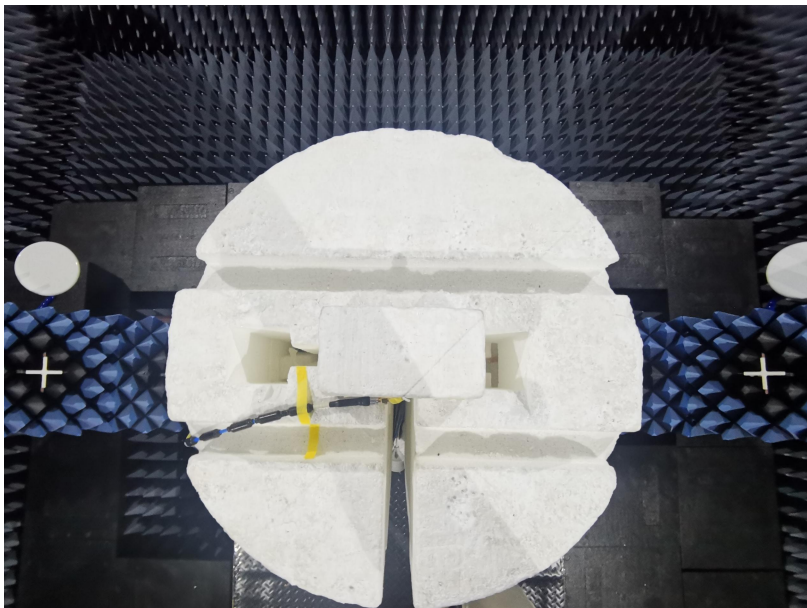
<b>Product Name</b>	ZEN71 ANT
<b>Sample Model</b>	ZEN71 ANT
<b>Antenna Size</b>	/
<b>Serial No.</b>	/
<b>Antenna Type</b>	Internal permanent Antenna
<b>Test Item</b>	VSWR;Antenna gain; Efficiency; Radiation pattern
<b>Frequency Range</b>	902-928MHz
<b>Received Date</b>	2023.06.08
<b>Test Date</b>	2023.06.09
<b>Remark</b>	The length of the RF cable is 40mm

## 2.3 EUT appearance

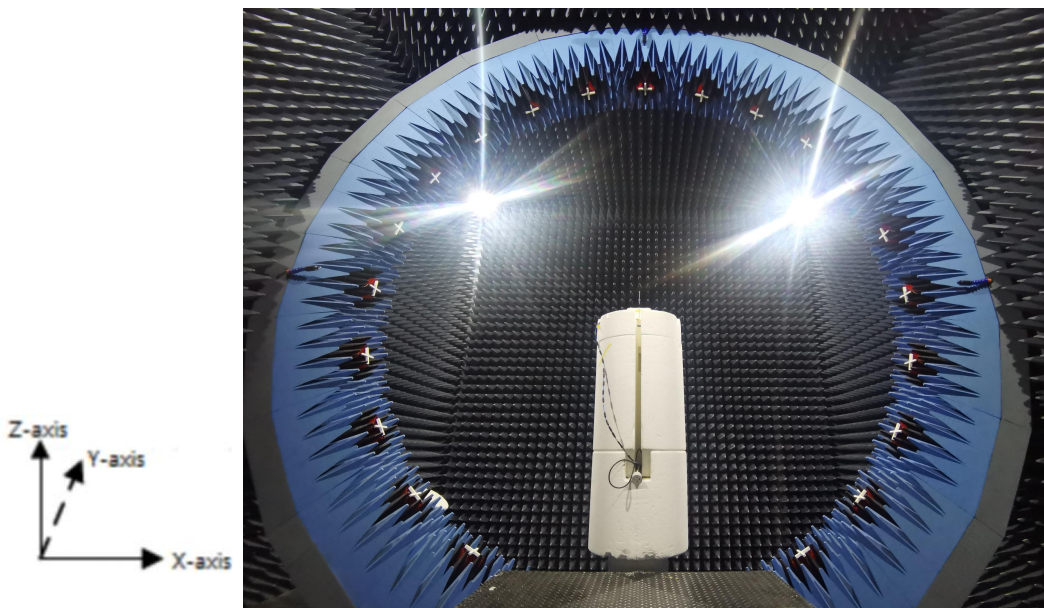


## 2.4 EUT setup photo of free space OTA testing

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		

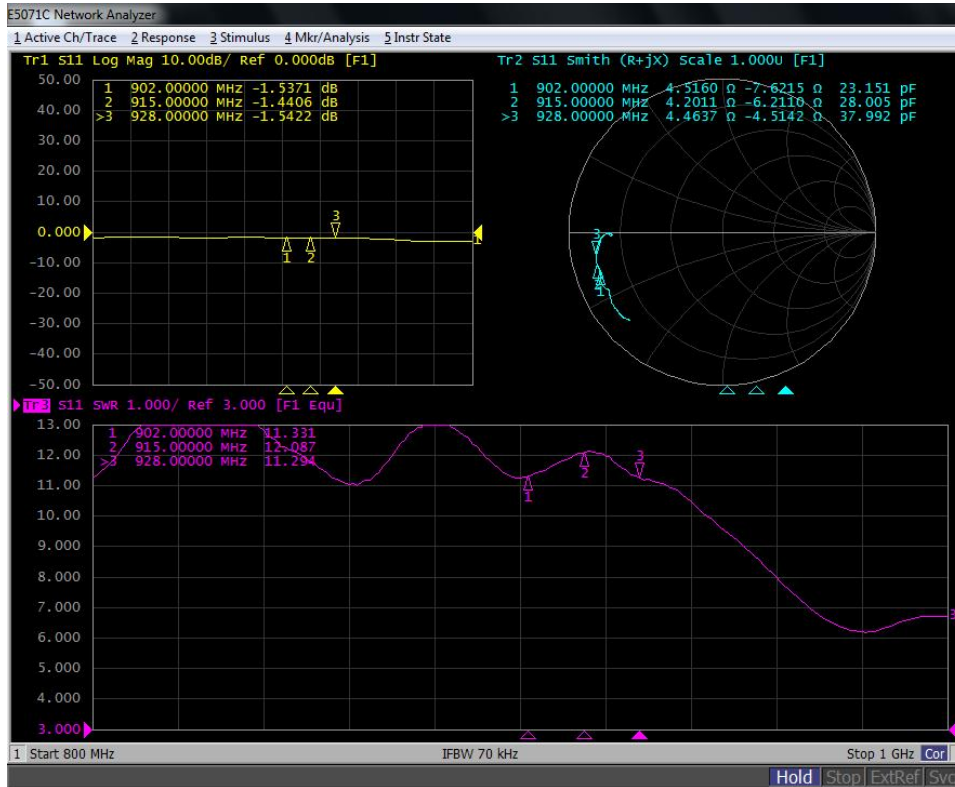
### 3.2 Test uncertainty

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	$\pm 1\text{dB}$
Radiation efficiency	$\pm 10\%$

### 3.3 Test data

#### 3.3.1 VSWR parameters



#### 3.3.2 VSWR data

Frequency/MHz	902	915	928
VSWR	11.331	12.087	11.294

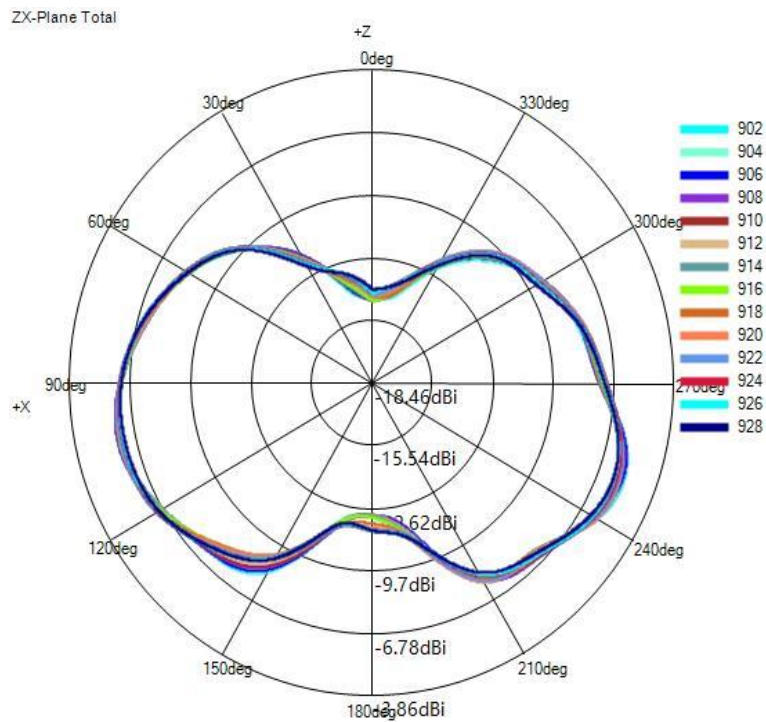
#### 3.3.3 Typical free space efficiency and gain

Frequency/MHz	902	904	906	908	910	912	914	916	918	920	922	924	926	928
Peak Gain/dBi	-3.96	-4.01	-4.05	-4.03	-4.02	-4.01	-4.01	-3.97	-3.90	-3.91	-3.95	-3.97	-4.08	-4.15
Efficiency/%	18.29	18.38	18.42	18.38	18.28	18.10	18.01	18.05	18.21	18.32	18.38	18.21	17.99	17.80

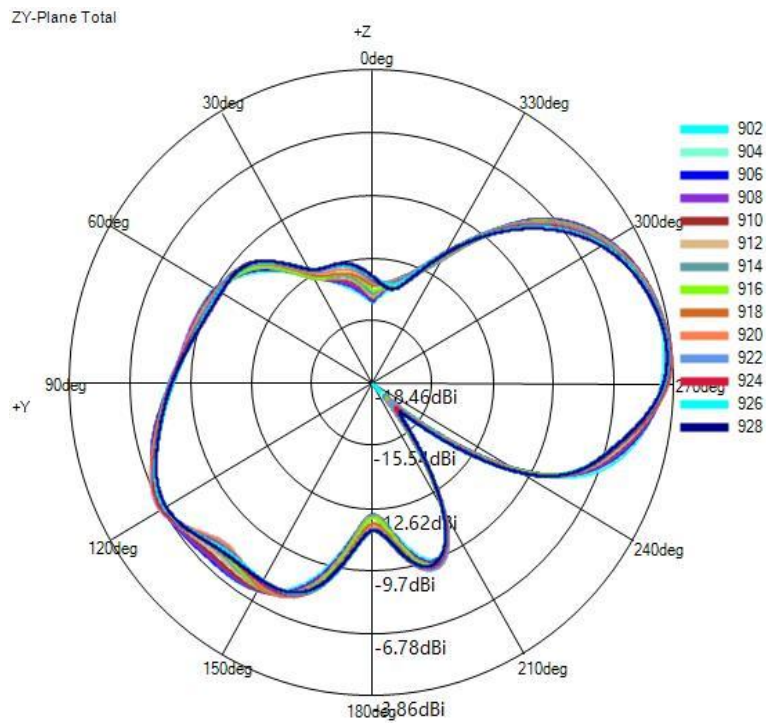


### 3.3.4 Typical free space radiation pattern

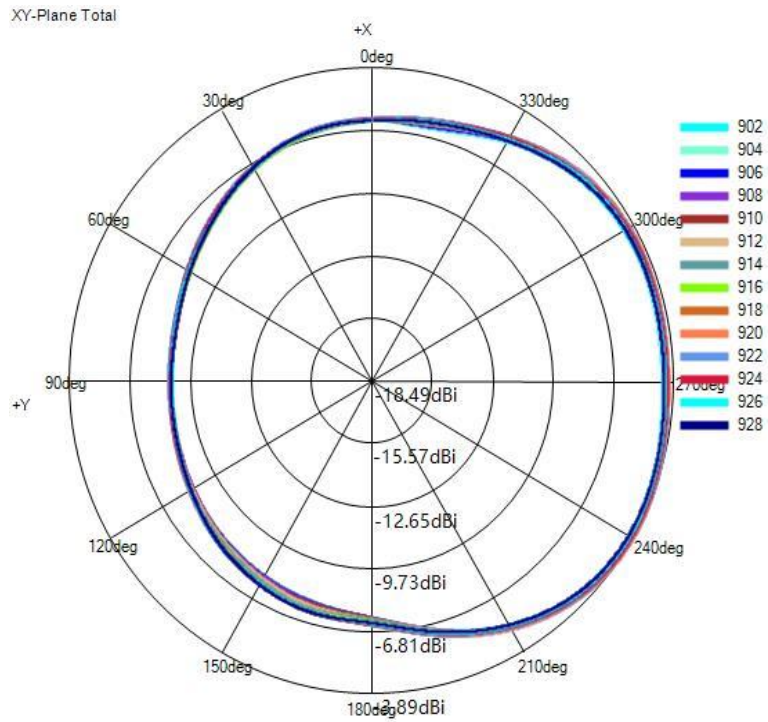
(1) X-Z Plane(unit:dBi):



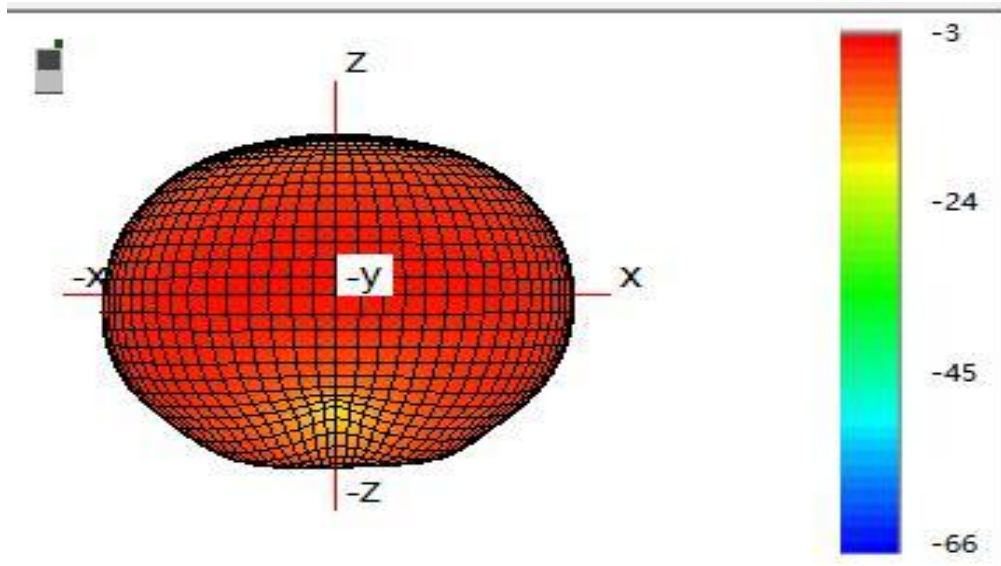
(2) Y-Z Plane(unit:dBi):



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



(4) Typical Free Space 3D Radiation Pattern at 918MHz(unit:dBi):



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End

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