

# Testing Report

Customer Name: NIE-TECH Co., Ltd

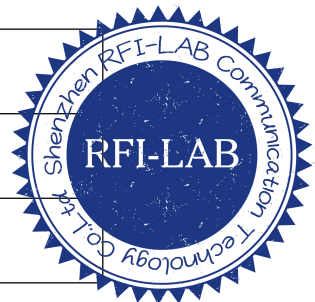
Product Name: ZKS31 antenna

Sample Model: ZKS31-ANT

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

Issue Date: 2022.12.1

Engineer: Jackson	Date: 2022.11.30
Auditor: Eason	Date: 2022.12.1
Approver: Janson	Date: 2022.12.1



## Version

Version No.	Date	Description	Formulate	Approval
A0	2022.12.1	For the first time, formulate	Jackson	Eason

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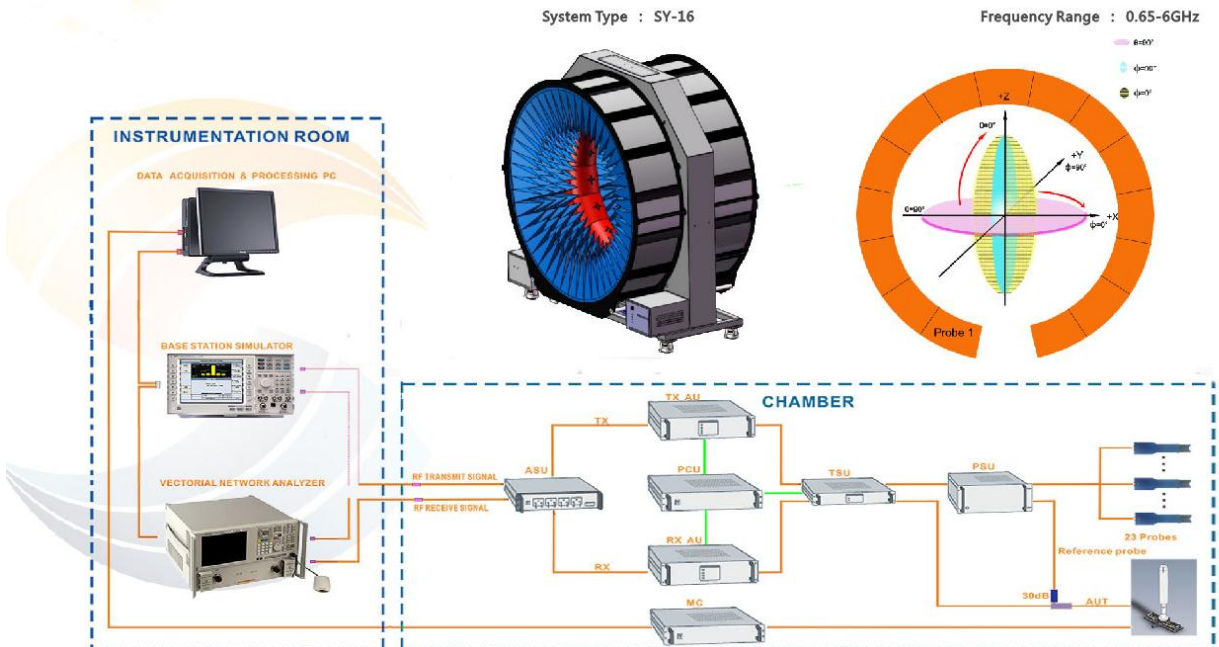
# 1. General Information

## 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 10/F A, Lingyun Bld, Liufang Rd, Baoan District, SZ

## 1.2 Testing principle

### Multi-Probe OTA Measurement System



### 1.3 Test equipment

Equipment	Model No.	Serial No.	Manufacturer	Calibration date	Next calibration date
16 probe microwave chamber	3*3*2.5	RFI-LAB-RF-A00	SUNYIELD	2021.3.15	2023.3.14
Network Analyzer	E5071C	RFI-LAB-RF-A02	Agilent	2022.5.13	2023.5.12

### 1.4 Test environment

Temperature	24.2°C
Humidity	59%RH
Pressure	100.18kPa

### 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

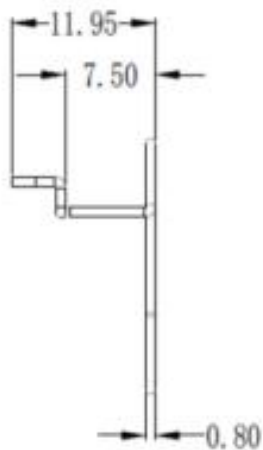
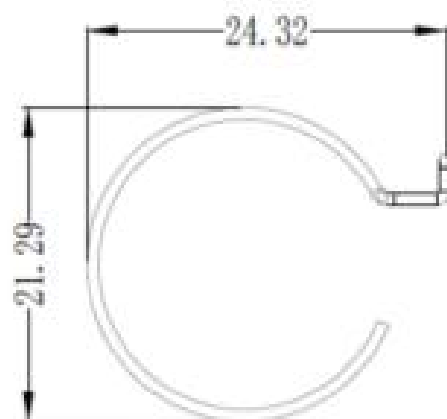
### 2.1 Client information

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

### 2.2 Description of EUT(S)

<b>Product Name</b>	ZKS31 antenna
<b>Sample Model</b>	ZKS31-ANT
<b>Size</b>	/
<b>Serial No.</b>	/
<b>Test Item</b>	Antenna gain; Radiation pattern and efficiency
<b>Frequency Range</b>	903MHz-913MHz
<b>Received Date</b>	2022.11.30
<b>Test Date</b>	2022.11.30
<b>Remark</b>	The length of the RF cable is 80mm

## 2.3 EUT appearance

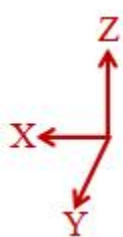


## 2.4 EUT setup photo of free space OTA testing

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



### 3.3 Test data

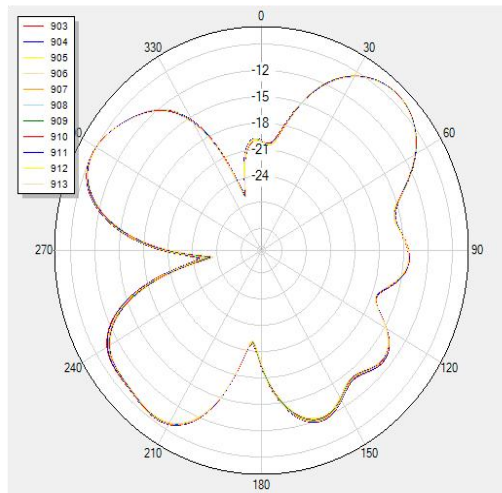
#### 3.3.1 Typical free space efficiency and gain

Frequency/MHz	903	904	905	906	907	908	909	910	911	912	913
Peak Gain/dBi	-5.97	-5.97	-5.99	-5.94	-5.91	-5.93	-5.92	-5.91	-5.93	-5.96	-5.94
Efficiency/%	11.48	11.40	11.27	11.31	11.28	11.16	11.12	11.08	11.02	10.93	10.98

#### 3.3.2 Typical free space radiation pattern

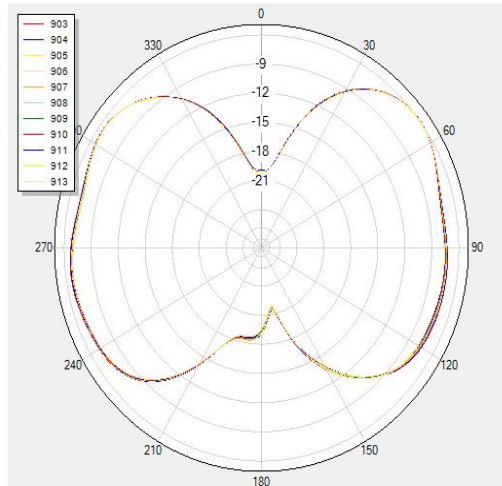
(1) X-Z Plane:

$V \text{ Phi}=0$



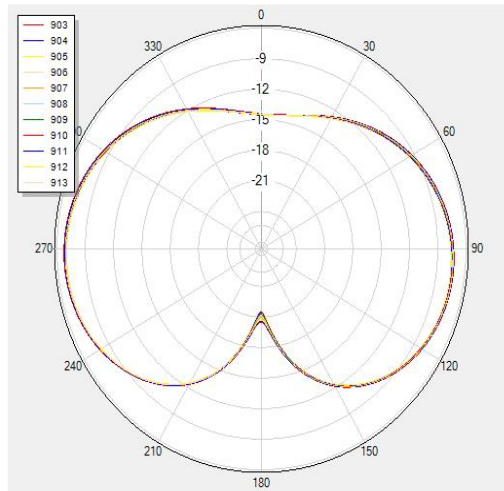
(2) Y-Z Plane:

$V \text{ Phi}=90$

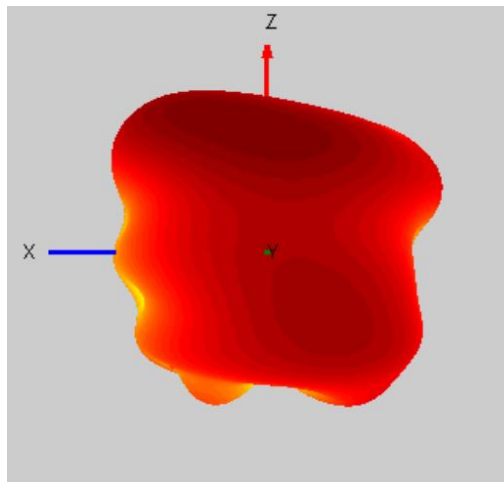


(3) X-Y Plane:

**H Theta=90**



(4) Typical Free Space 3D Radiation Pattern at 908MHz:



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**End**

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