

# Testing Report

Customer Name: Shenzhen Live Electronics Co.,Ltd.

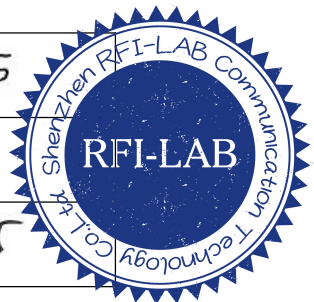
Product Name: 433 Antenna

Sample Model: 433 Antenna -UL1007-E336285/E326510-22

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

Issue Date: 2023.8.25

Engineer: Zkmis	Date: 2023.08.25
Auditor: Eason	Date: 2023.08.25
Approver: Amon	Date: 2023.08.25



## Version

Version No.	Date	Description	Formulate	Approval
A0	2023.8.25	For the first time, formulate	Zkris	Eason

## Contents

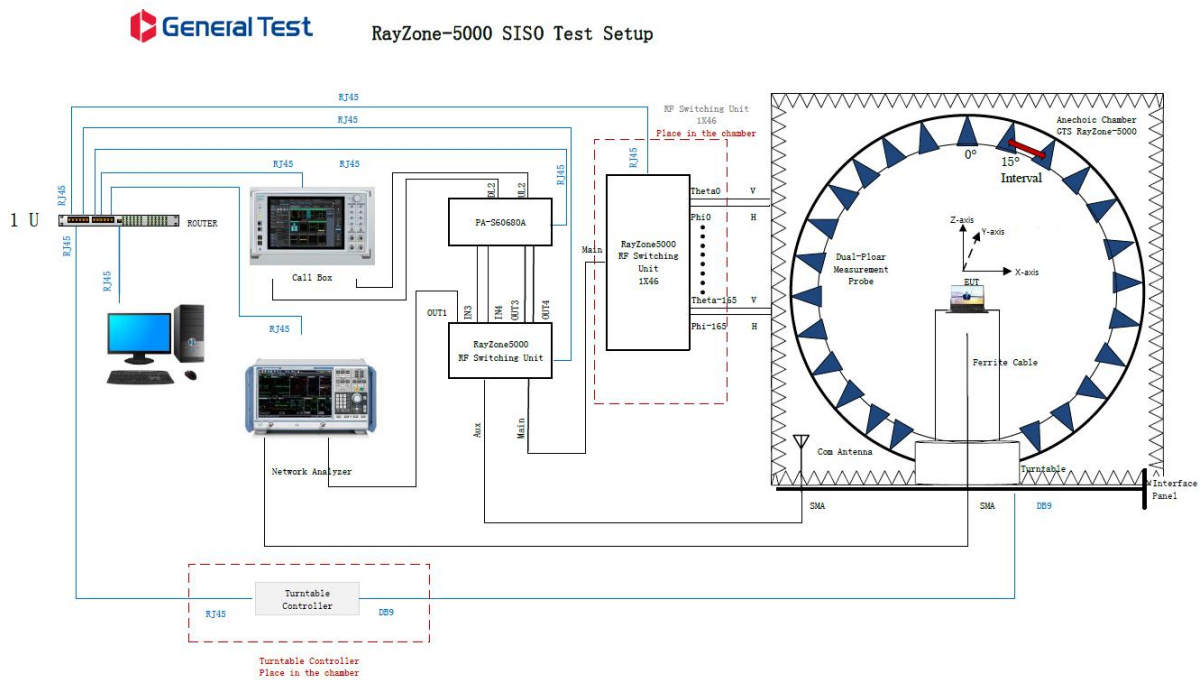
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# 1.General Information

## 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	23.9°C
Humidity	57%RH
Pressure	100.19kPa

### 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

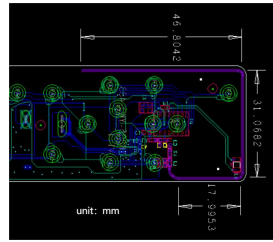
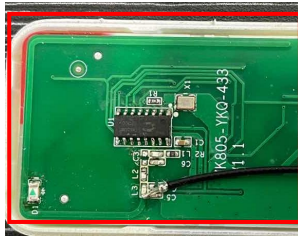
### 2.1 Client information

<b>Name</b>	Shenzhen Live Electronics Co.,Ltd.
<b>Address</b>	901, Building 12, South Baoneng Science Park, Bantian Street, Longgang District, Shenzhen
<b>Contacts</b>	allen
<b>Tel</b>	13530386924
<b>E-mail</b>	allen@iot-live.com
<b>Manufacturer</b>	/

### 2.2 Description of EUT(S)

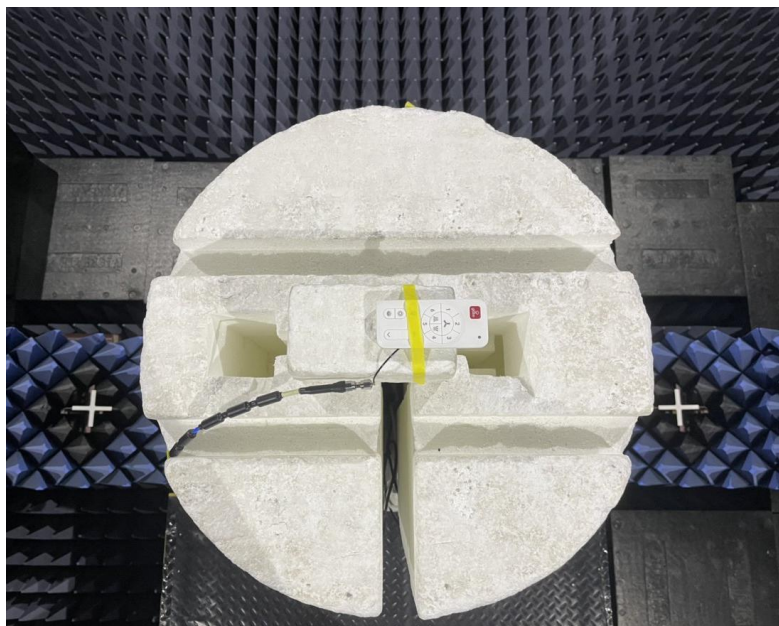
<b>Product Name</b>	433 Antenna
<b>Sample Model</b>	433 Antenna -UL1007-E336285/E326510-22
<b>Antenna Size</b>	/
<b>Serial No.</b>	/
<b>Antenna Type</b>	PCB Antenna
<b>Test Item</b>	VSWR;Antenna gain; Efficiency; Radiation pattern
<b>Frequency Range</b>	428-438MHz
<b>Received Date</b>	2023.08.24
<b>Test Date</b>	2023.08.25
<b>Remark</b>	The length of the RF cable is 90mm

### 2.3 EUT appearance

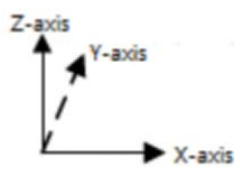
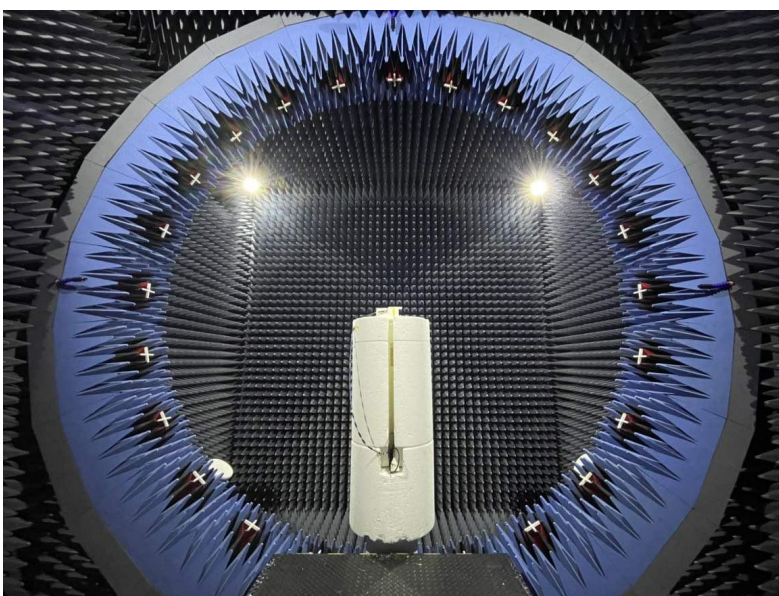


### 2.4 EUT setup photo of free space OTA testing

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		

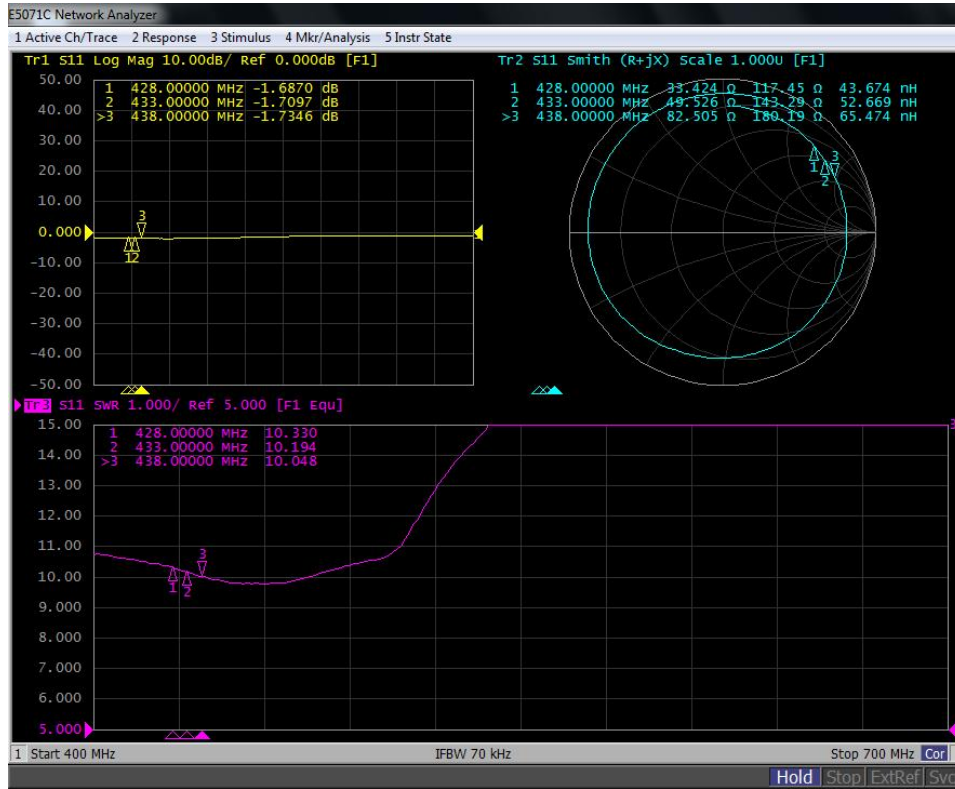
### 3.2 Test uncertainty

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	428	433	438
VSWR	10.330	10.194	10.048

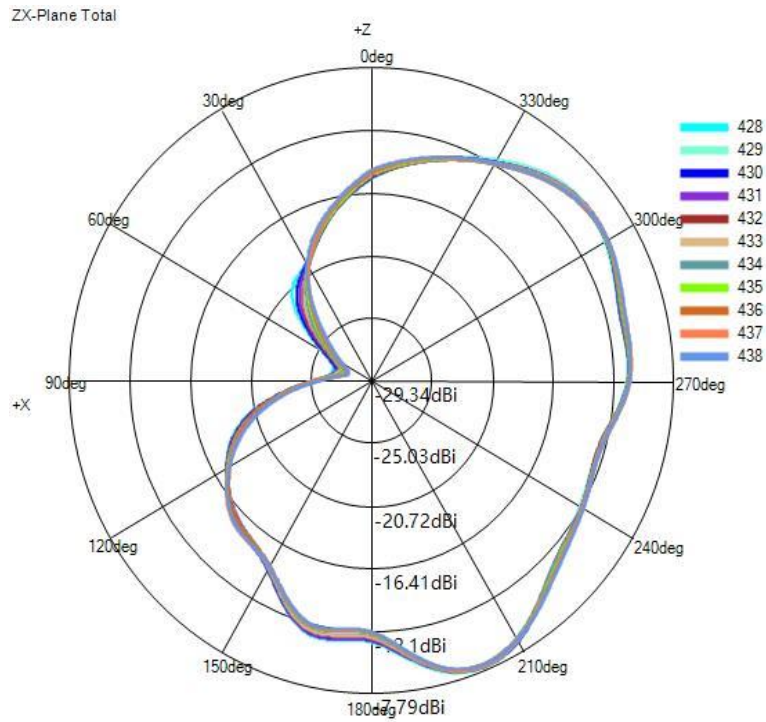
#### 3.3.3 Typical free space efficiency and gain

Frequency/MHz	428	429	430	431	432	433	434	435	436	437	438
Peak Gain/dBi	-7.97	-7.97	-7.94	-7.94	-7.91	-7.79	-7.84	-7.89	-7.97	-7.97	-8.04
Efficiency/%	5.64	5.64	5.64	5.60	5.58	5.60	5.56	5.52	5.53	5.56	5.55

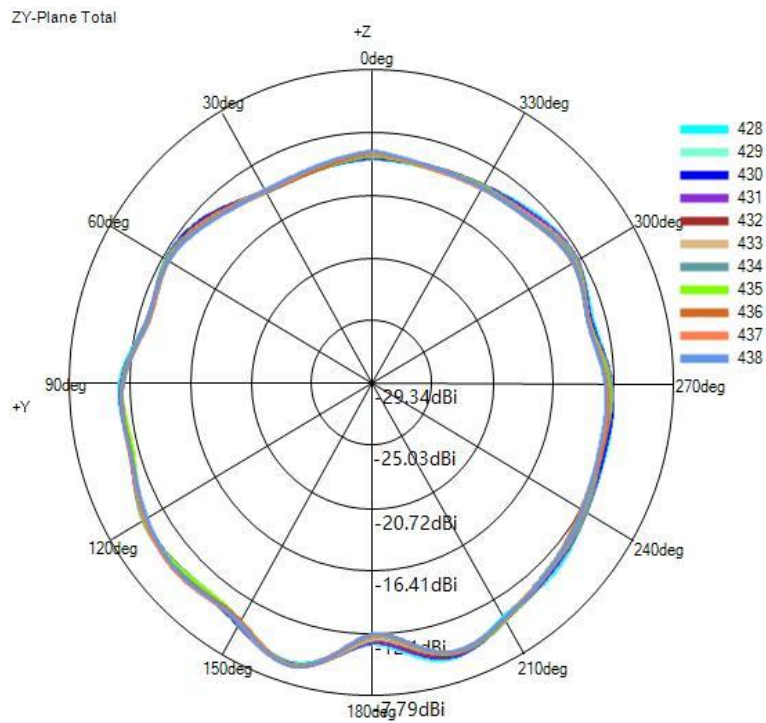


### 3.3.4 Typical free space radiation pattern

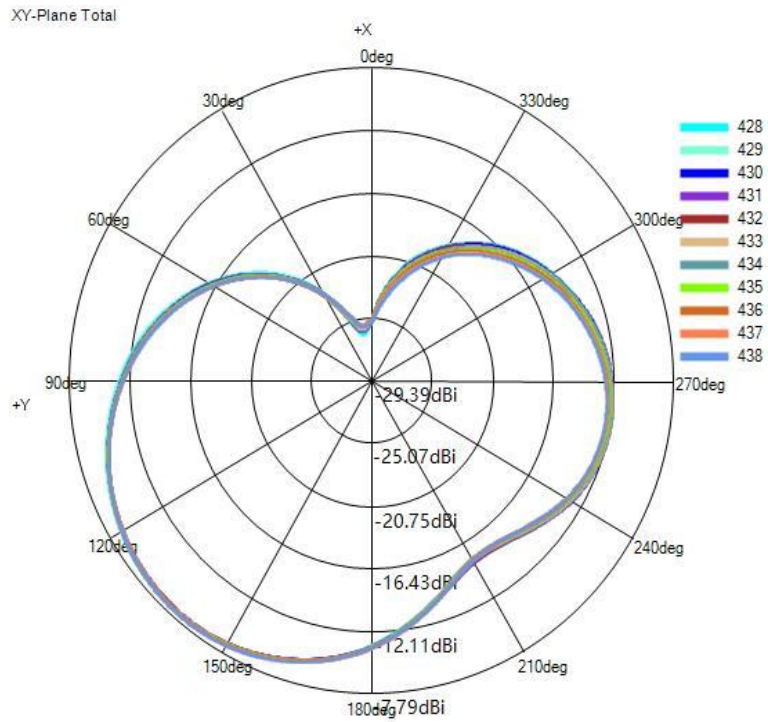
(1) X-Z Plane(unit:dBi):



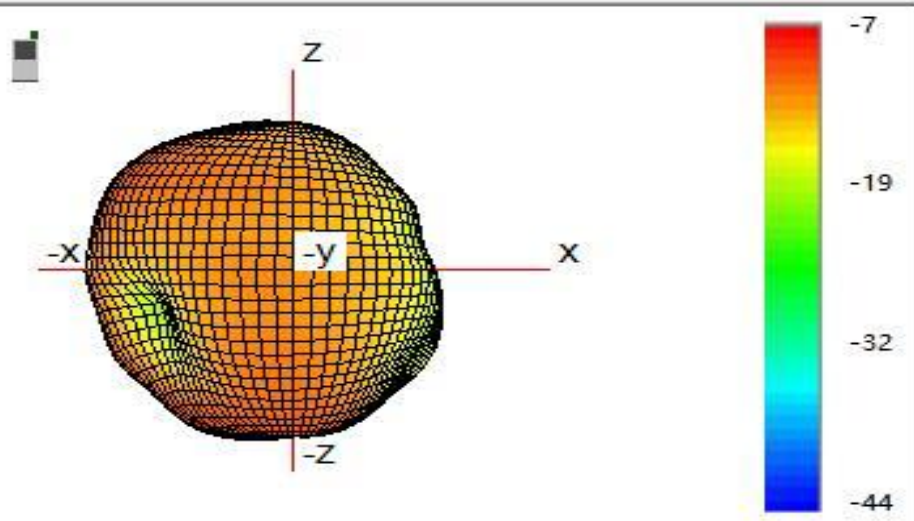
(2) Y-Z Plane(unit:dBi):



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



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



End

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