

# Testing Report

Customer Name: Shenzhen Svakom Technology Co., Ltd

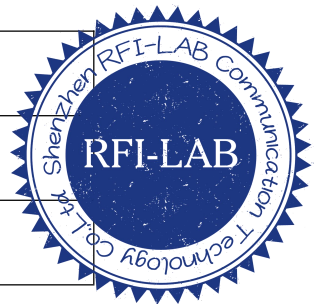
Product Name: Hannes Neo

Sample Model: SF020A

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

Issue Date: 2022.11.23

Engineer: <i>Jeremy</i>	Date: <i>2022.11.22</i>
Auditor: <i>Eason</i>	Date: <i>2022.11.23</i>
Approver: <i>Aaron</i>	Date: <i>2022.11.23</i>



### Version

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

### Contents

1.General Information .....3

    1.1 General information of testing institutions .....3

    1.2 Testing principle ..... 3

    1.3 Test equipment .....4

    1.4 Test environment .....4

    1.5 Statement ..... 4

2.Sample Information ..... 5

    2.1 Client information .....5

    2.2 Description of EUT(S) .....5

    2.3 EUT appearance .....6

    2.4 DUT setup photo of free space OTA testing ..... 6

3.Test Results ..... 7

    3.1 Test standard ..... 7

    3.2 Test uncertainty .....7

    3.3 Test data ..... 8

        3.3.1 Typical free space efficiency and gain ..... 8

        3.3.2 Typical free space radiation pattern .....8

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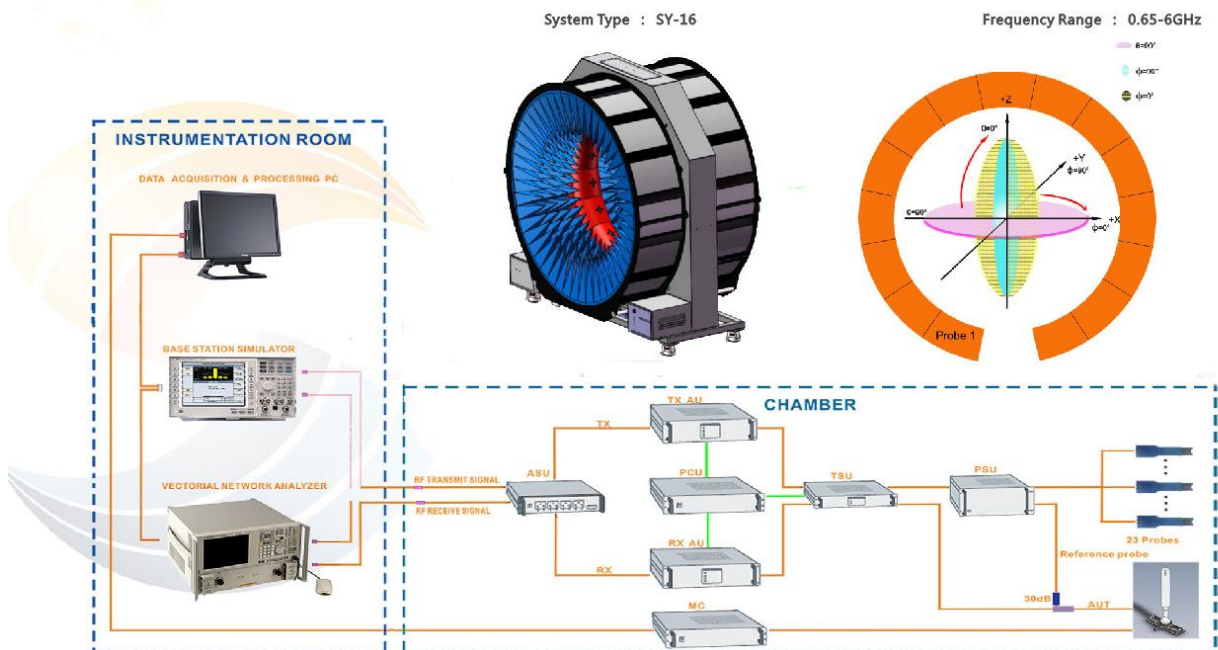
# 1. General Information

## 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	24.1°C
Humidity	59%RH
Pressure	100.14kPa

### 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

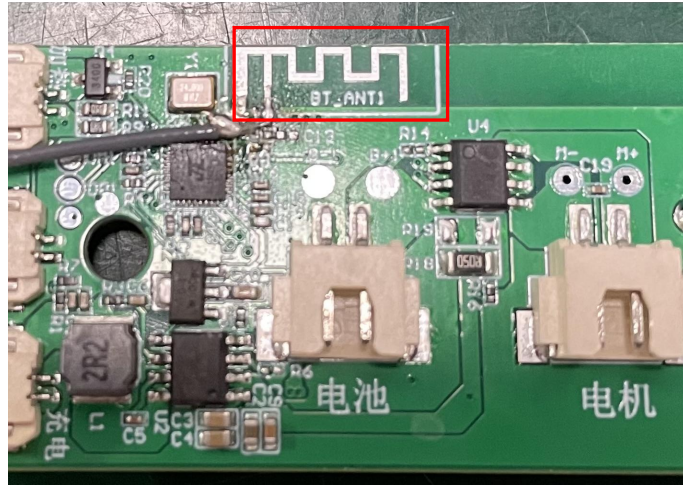
### 2.1 Client information

<b>Name</b>	Shenzhen Svakom Technology Co., Ltd
<b>Address</b>	Zone B, 2nd floor, building h, gangzhilong business center, Qinglong Road, Longhua street, Longhua New District, Shenzhen
<b>Contacts</b>	/
<b>Tel</b>	/
<b>E-mail</b>	/
<b>Manufacturer</b>	Dongguan Qianhe Electronic Technology Co., Ltd.

### 2.2 Description of EUT(S)

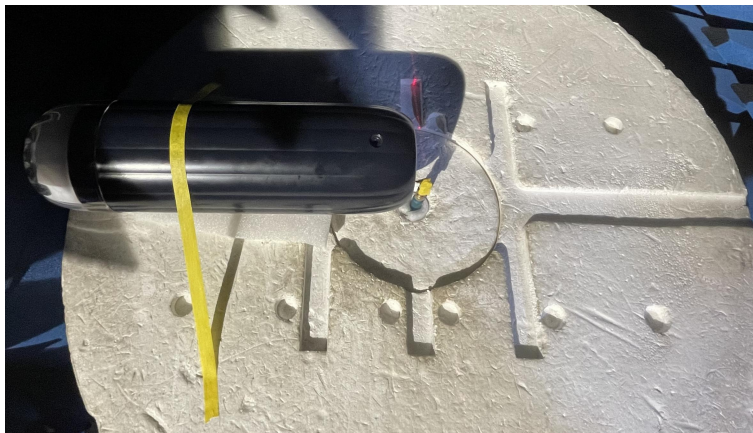
<b>Product Name</b>	Hannes Neo
<b>Sample Model</b>	SF020A
<b>Size</b>	/
<b>Serial No.</b>	/
<b>Test Item</b>	Antenna gain; Radiation pattern and efficiency
<b>Frequency Range</b>	2400MHz-2500MHz
<b>Received Date</b>	2022.11.21
<b>Test Date</b>	2022.11.22
<b>Remark</b>	The length of the RF cable is 70mm

### 2.3 EUT appearance

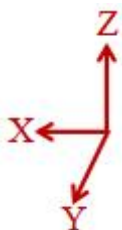
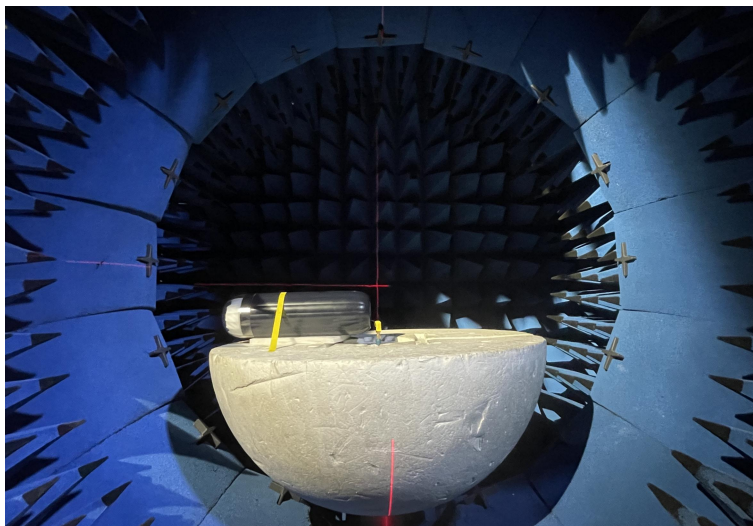


### 2.4 DUT setup photo of free space OTA testing

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



### 3.3 Test data

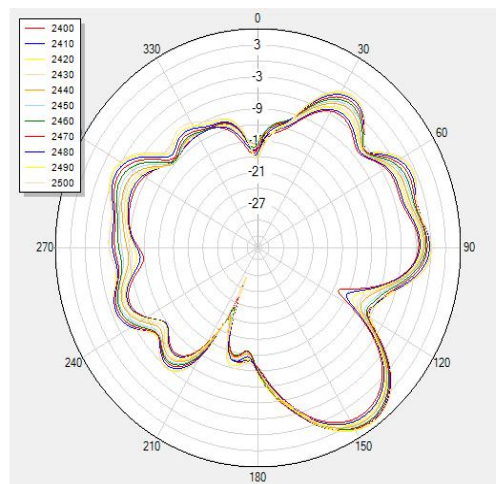
#### 3.3.1 Typical free space efficiency and gain

Frequency/MHz	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Peak Gain/dBi	2.68	3.14	3.43	3.82	4.00	4.41	4.54	4.81	5.03	5.24	5.13
Efficiency/%	22.94	24.70	25.98	27.92	29.44	32.02	33.19	35.23	37.36	39.42	39.51

#### 3.3.2 Typical free space radiation pattern

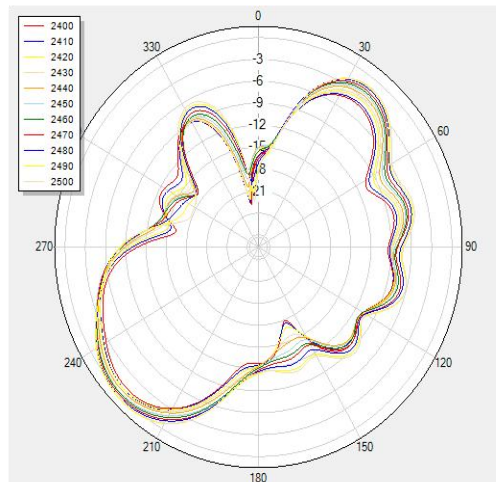
(1) X-Z Plane:

V Phi=0



(2) Y-Z Plane:

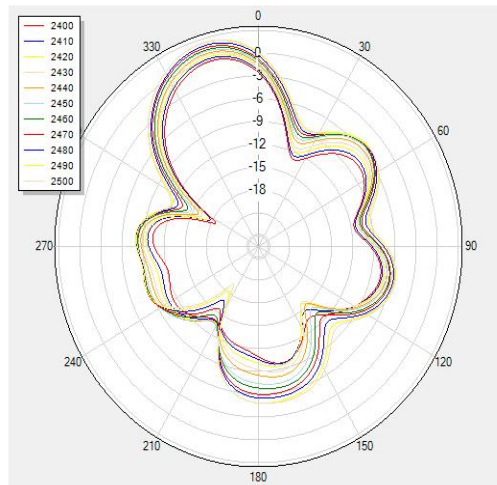
V Phi=90



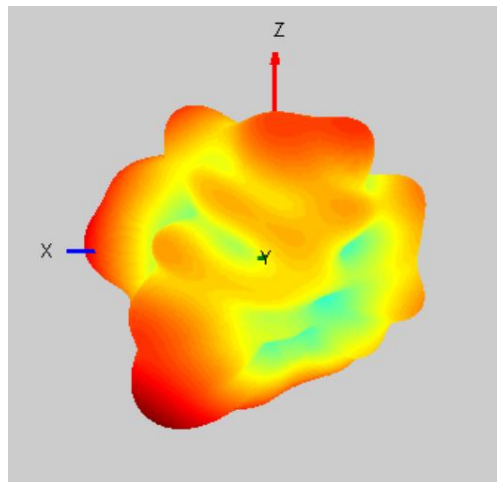


(3) X-Y Plane:

**H Theta=90**



(4) Typical Free Space 3D Radiation Pattern at 2.45GHz:



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**End**

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