Testing Report

Customer Name: Shiftall Inc.

Product Name: HaritoraX Wireless

Sample Model: SVP-MC3S

Reference Standard: *GB/T 9410-2008; ANSI/IEEE Std149-2021*

Issue Date: 2023.8.4

Engineer:	Zkris	Date:	2023.08.4
Auditor:	Eason	Date:	2023.08.4
Approver:	Aaron	Date:	2023.08.04

Version

Version No.	Date	Description	Formulate	Approval
A0	2023.08.4	For the first time, formulate	Zkris	Eason

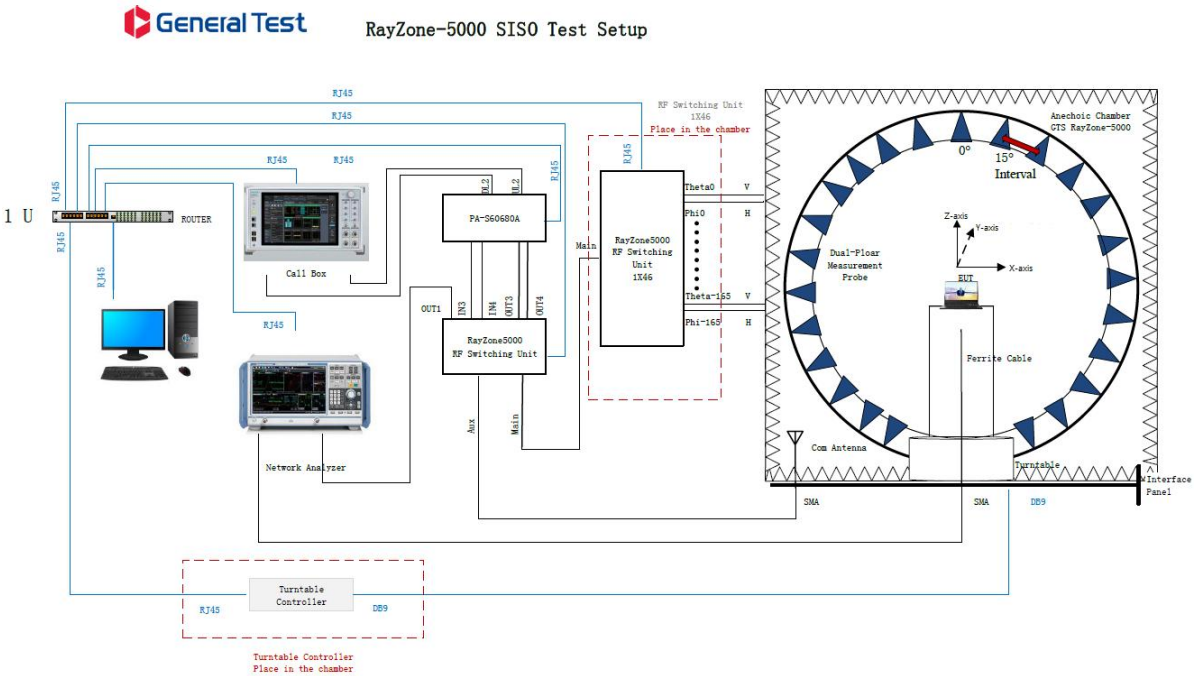
Contents

1.General Information

1.1 General information of testing institutions

Name	Shenzhen RFI-LAB Communication Technology Co., Ltd.
Address	10/F A, Lingyun Bld, Liufang Rd, Baoan District, SZ
Tel	/
E-mail	/
Equipment	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	23.5℃
Humidity	58%RH
Pressure	100.21kPa

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

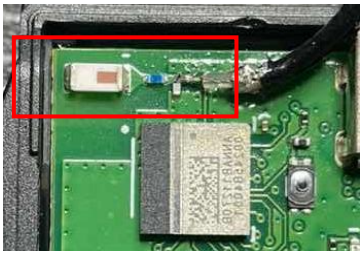
2.1 Client information

Name	Shiftall Inc.
Address	4F TokyoDaiwa Bldg., 2-6-10 Nihonbashibakurocho, Chuo, Tokyo, Japan
Contacts	Cici zhang
Tel	15521024814
E-mail	chun.zhang@emtek.com.cn
Manufacturer	P. IMES Corporation
Manufacturer Address	/

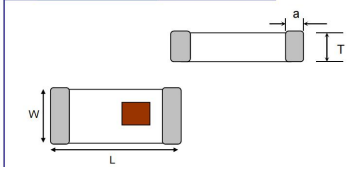
2.2 Description of EUT(S)

Product Name	HaritoraX Wireless
Sample Model	SVP-MC3S
Antenna Size	/
Serial No.	/
Antenna Type	External Antenna
Test Item	VSWR;Antenna gain; Efficiency; Radiation pattern
Frequency Range	2402-2480MHz
Received Date	2023.08.4
Test Date	2023.08.4
Remark	The length of the RF cable is 90mm

2.3 EUT appearance

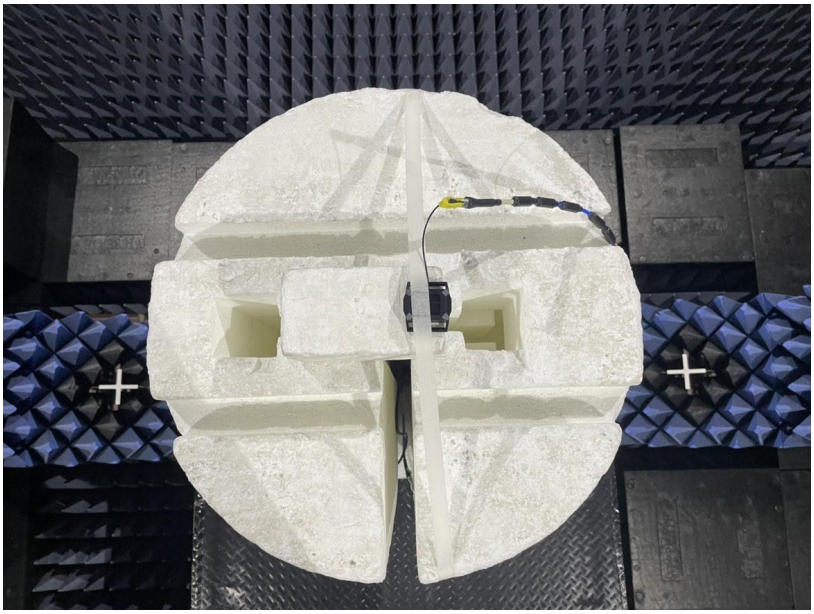


	In	mm
L	0.126 ± 0.008	3.20 ± 0.2
W	0.063 ± 0.008	1.60 ± 0.2
T	0.051 +.004/-.008	1.30 +0.1/-0.2
a	0.020 ± 0.008	0.50 ± 0.2

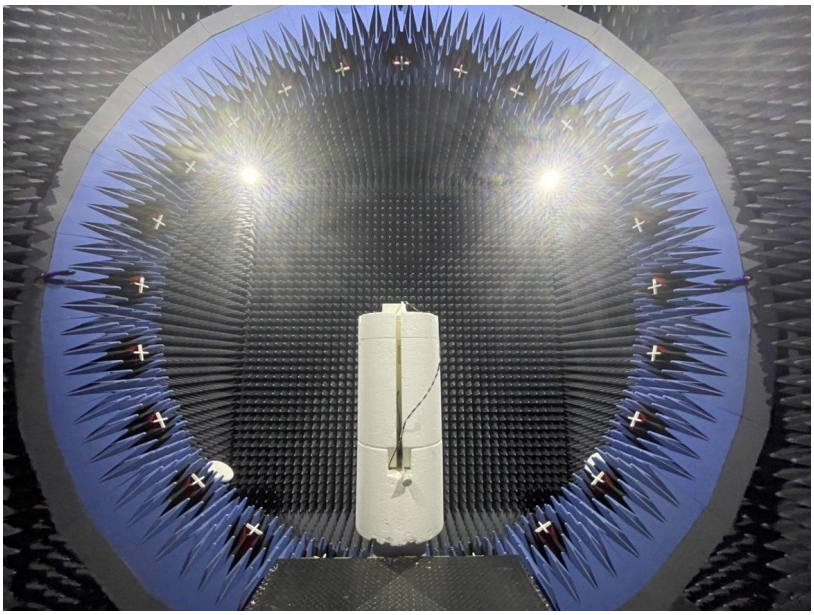


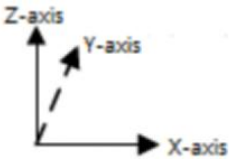
2.4 EUT setup photo of free space OTA testing

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 149-2021
	Gain and directivity		

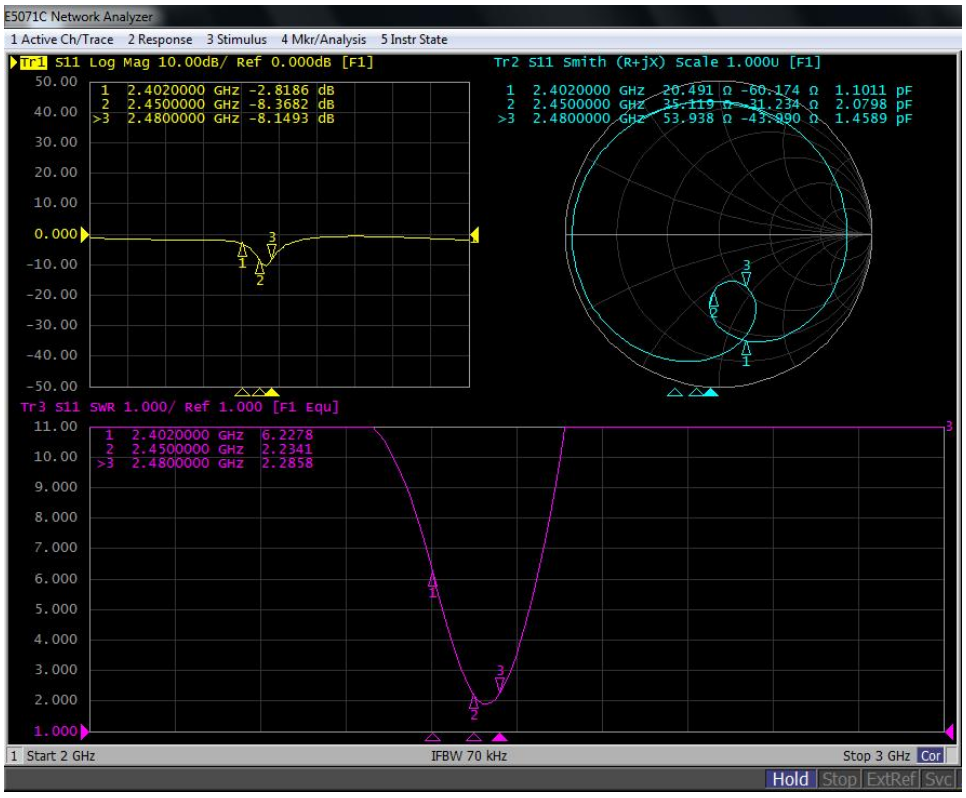
3.2 Test uncertainty

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	±0.3
Antenna gain	±0.72dB
Radiation efficiency	±0.72dB

3.3 Test data

3.3.1 VSWR parameters



3.3.2 VSWR data

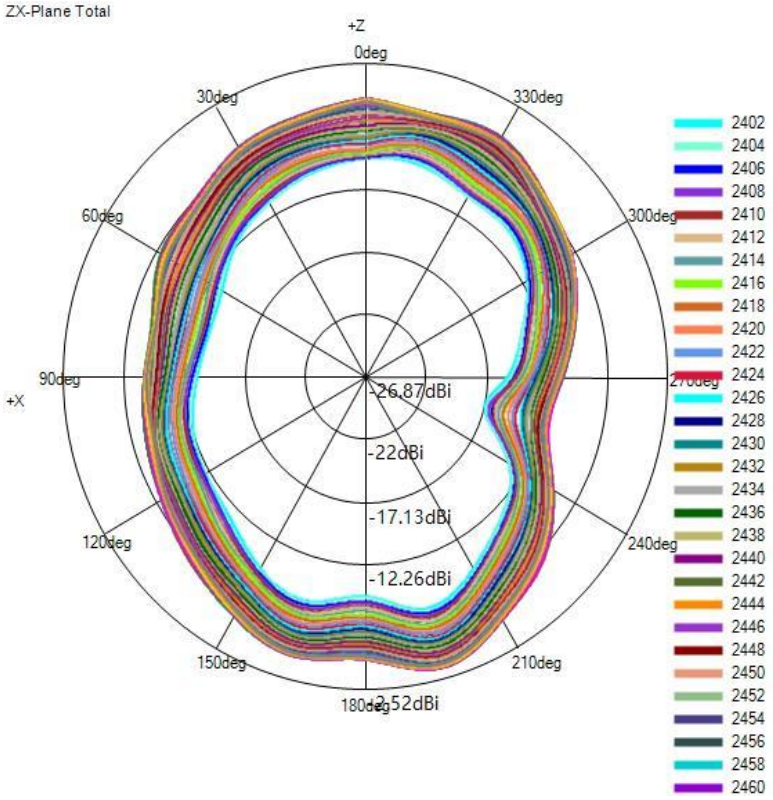
Frequency/MHz	2402	2450	2480
VSWR	6.2278	2.2341	2.2858

3.3.3 Typical free space efficiency and gain

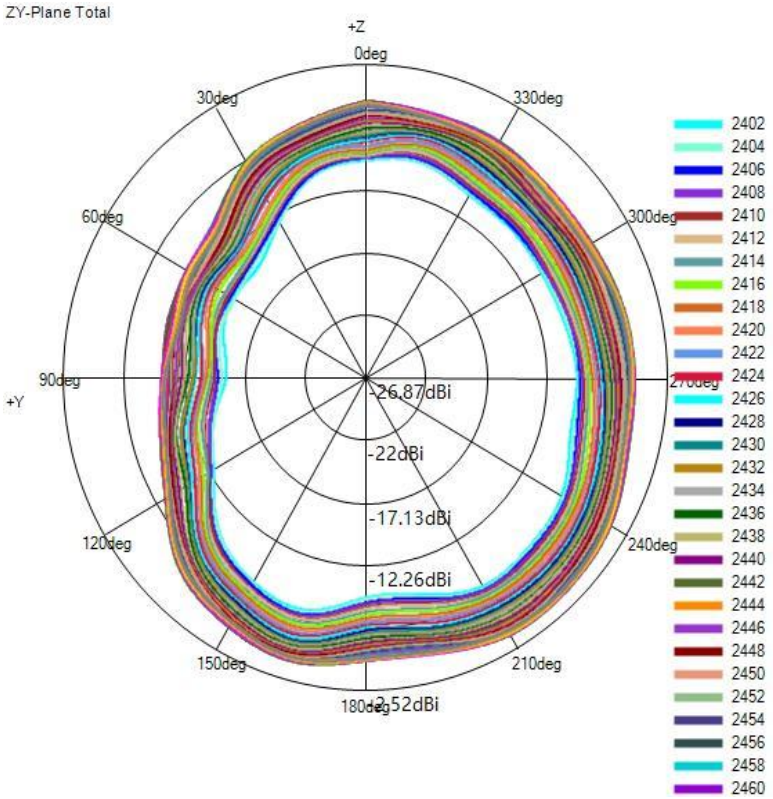
Frequency/MHz	2402	2404	2406	2408	2410	2412	2414	2416	2418	2420	2422
Peak Gain/dBi	-6.98	-6.89	-6.65	-6.57	-6.48	-6.31	-6.12	-5.87	-5.69	-5.48	-5.23
Efficiency/%	7.31	7.58	7.88	8.18	8.47	8.79	9.15	9.56	10.02	10.50	10.97
Frequency/MHz	2424	2426	2428	2430	2432	2434	2436	2438	2440	2442	2444
Peak Gain/dBi	-5.08	-4.89	-4.66	-4.53	-4.40	-4.32	-4.18	-3.99	-3.81	-3.67	-3.63
Efficiency/%	11.46	12.00	12.50	12.89	13.24	13.64	14.11	14.74	15.35	15.92	16.30
Frequency/MHz	2446	2448	2450	2452	2454	2456	2458	2460	2462	2464	2466
Peak Gain/dBi	-3.55	-3.47	-3.28	-3.17	-3.06	-3.00	-2.92	-2.84	-2.81	-2.78	-2.76
Efficiency/%	16.62	17.00	17.60	18.19	18.77	19.27	19.60	19.73	19.87	19.96	20.09
Frequency/MHz	2468	2470	2472	2474	2476	2478	2480				
Peak Gain/dBi	-2.67	-2.57	-2.52	-2.62	-2.69	-2.79	-2.82				
Efficiency/%	20.26	20.42	20.41	20.19	19.69	19.17	18.71				

3.3.4 Typical free space radiation pattern

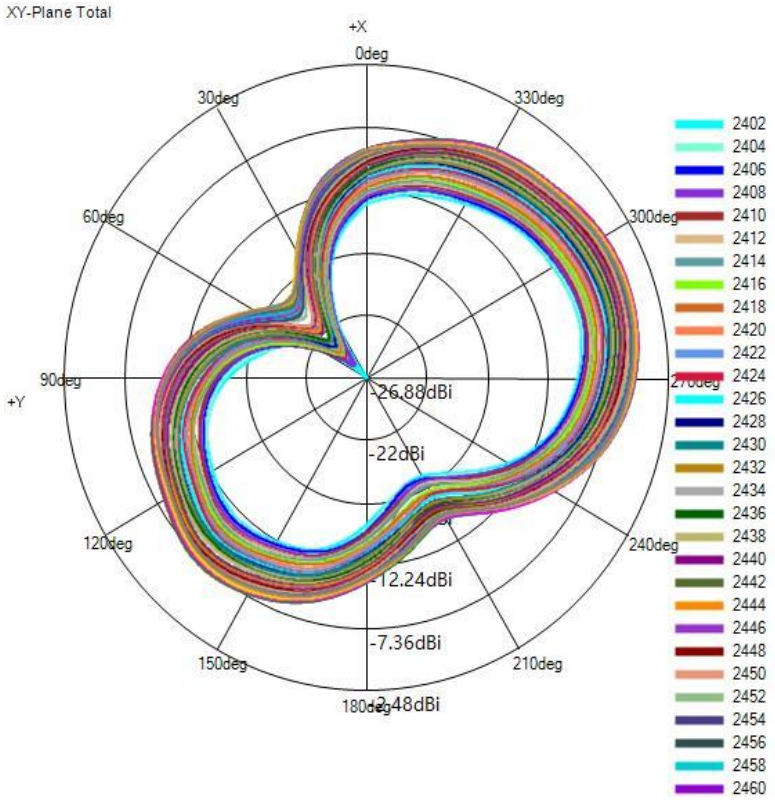
(1) X-Z Plane(unit:dBi):



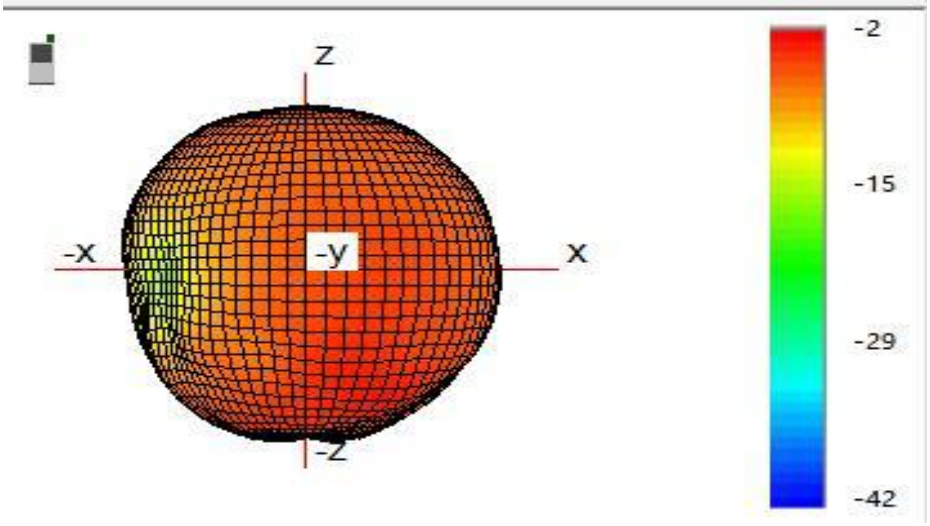
(2) Y-Z Plane(unit:dBi):



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



(4) Typical Free Space 3D Radiation Pattern at 2.472GHz(unit:dBi):



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