REPORT No.: SZ24040204E01

TEST REPORT

APPLICANT	:	ZhongShan SenJia Electrical Appliances Co., Ltd.
PRODUCT NAME	:	PCB Antenna
MODEL NAME	:	ANT 28-08091002-00
TRADE NAME	:	N/A
BRAND NAME	:	N/A
STANDARD(S)	:	IEEE Std 149-2021
RECEIPT DATE	:	2024-04-17
TEST DATE	:	2024-04-18
ISSUE DATE	:	2024-04-29

Edited by: Guo Penghua(Rapporteur)

Approved by: Chi Shide(Supervisor)

MORLAB

Shenzhen Morlab Communications Technology Co., Ltd ., FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road,Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555 Fax: 86-755-36698525

Http://www.morlab.cn E-mail: service@morlab.cn

DIRECTORY

Change History		
Version	Date	Reason for change
1.0	2024-04-29	First edition

1.Technical Information

Note: Provide by applicant.

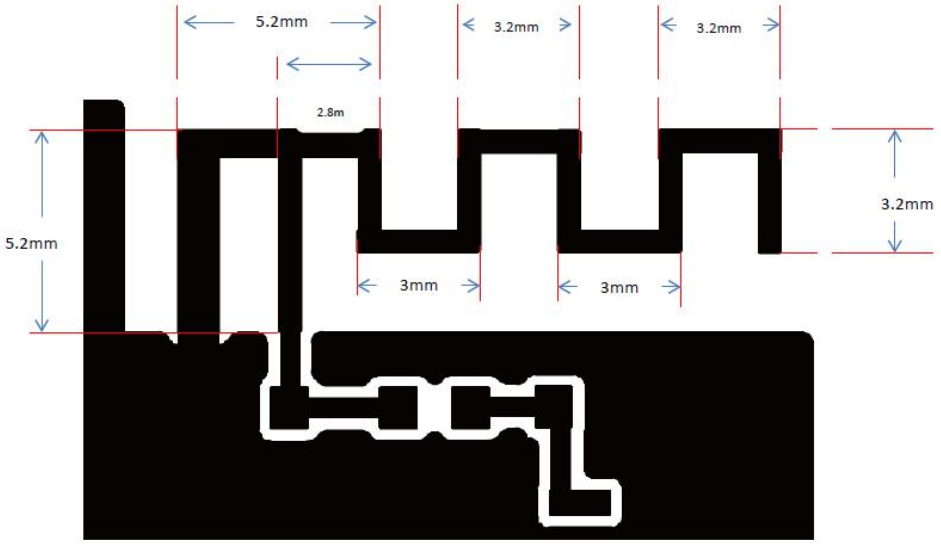
1.1. Applicant and Manufacturer Information

Applicant:	ZhongShan SenJia Electrical Appliances Co., Ltd.
Applicant Address:	No.35 Wenming Road Nanqu ZhongShan GuangDong China
Manufacturer:	ZhongShan SenJia Electrical Appliances Co., Ltd.
Manufacturer Address:	No.35 Wenming Road Nanqu ZhongShan GuangDong China

1.2. Equipment Under Test (EUT) Description

Wireless Type	Bluetooth
Frequency	2400MHz-2500MHz
IMEI	N/A
Sample No.	1#

Dimensions:



2. Test Results

2.1. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	IEEE Std 149-2021	IEEE Recommended Practice for Antenna Measurements

2.2. Test Conditions

Test Environment Conditions：

Relative Humidity(%):	25 - 75
Temperature(°C):	10 - 30

2.3. Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO. When the test result is a critical value,we will use the measurement uncertainty give the judgment result based on the 95% Confidence intervals.

2.4. Test Results lists

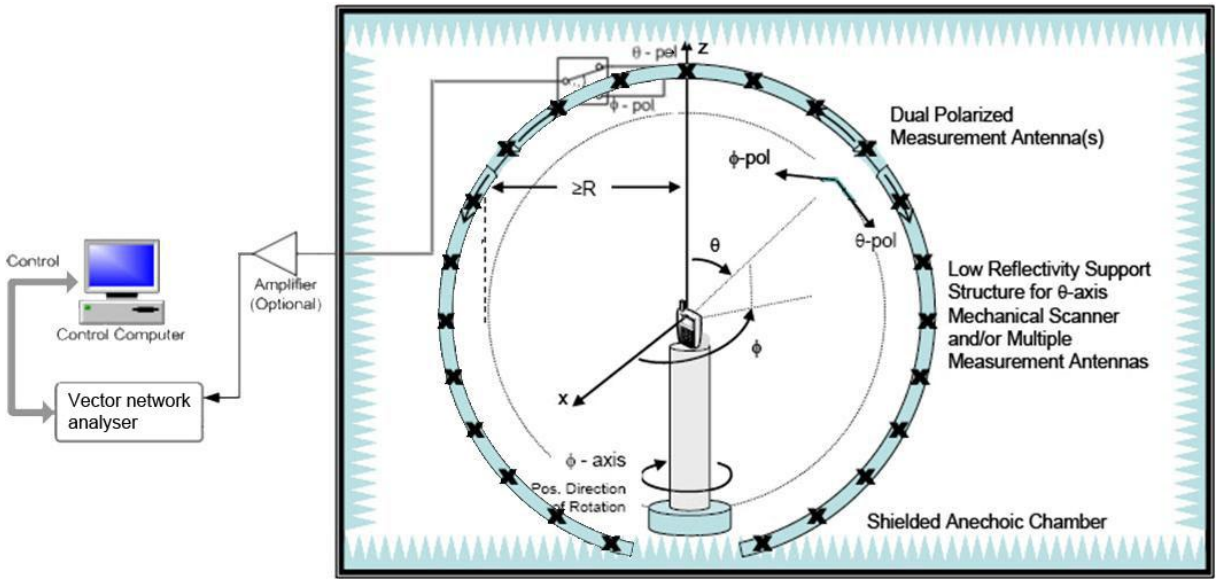
2.4.1.Gain

Frequency (MHz)	Gain(dBi)
2400	2.95
2410	2.79
2420	2.57
2430	2.51
2440	2.55
2450	2.61
2460	2.58
2470	2.46
2480	2.38
2490	2.25
2500	2.29

2.4.2.VSWR

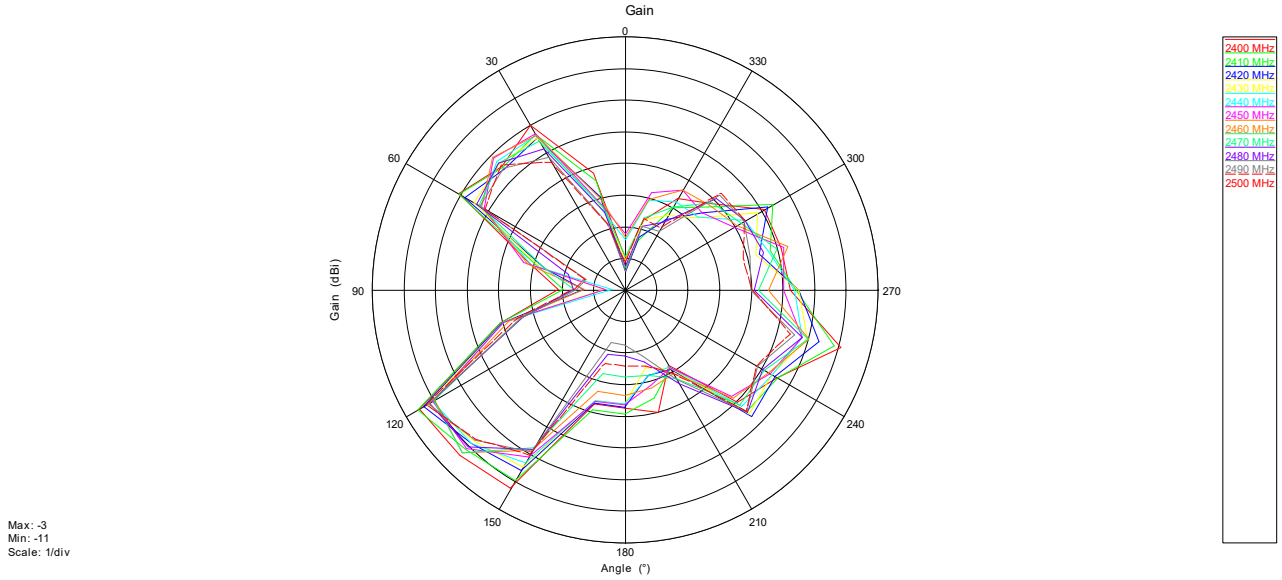
Frequency (MHz)	VSWR
2400-2500	2.31

Annex A Test Setup Photos

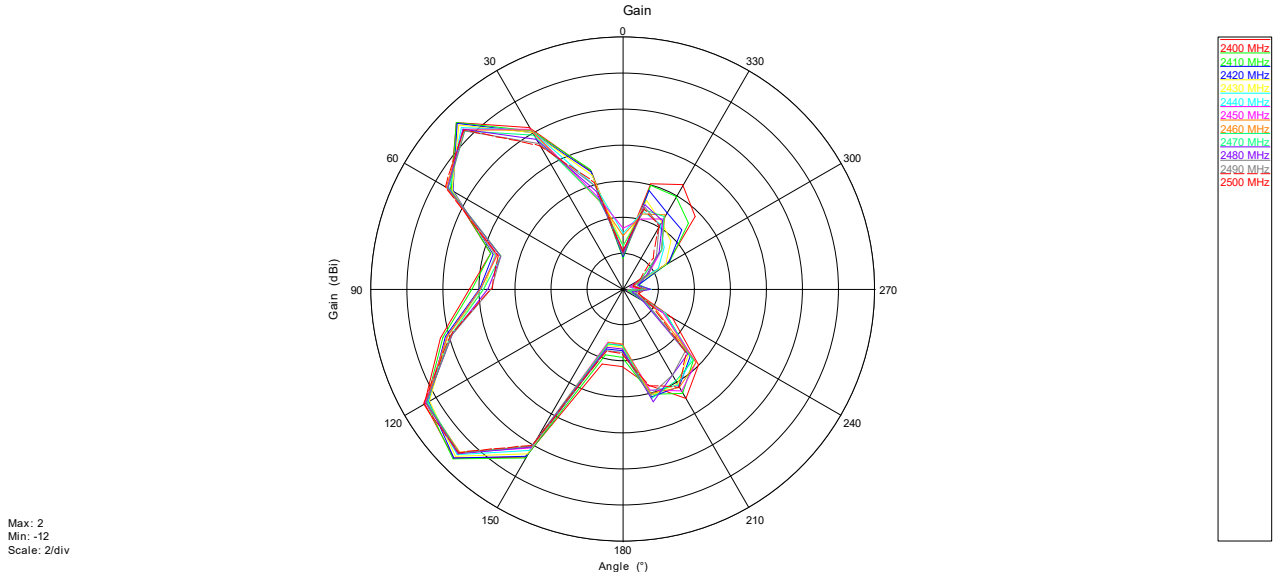


Annex B Figures

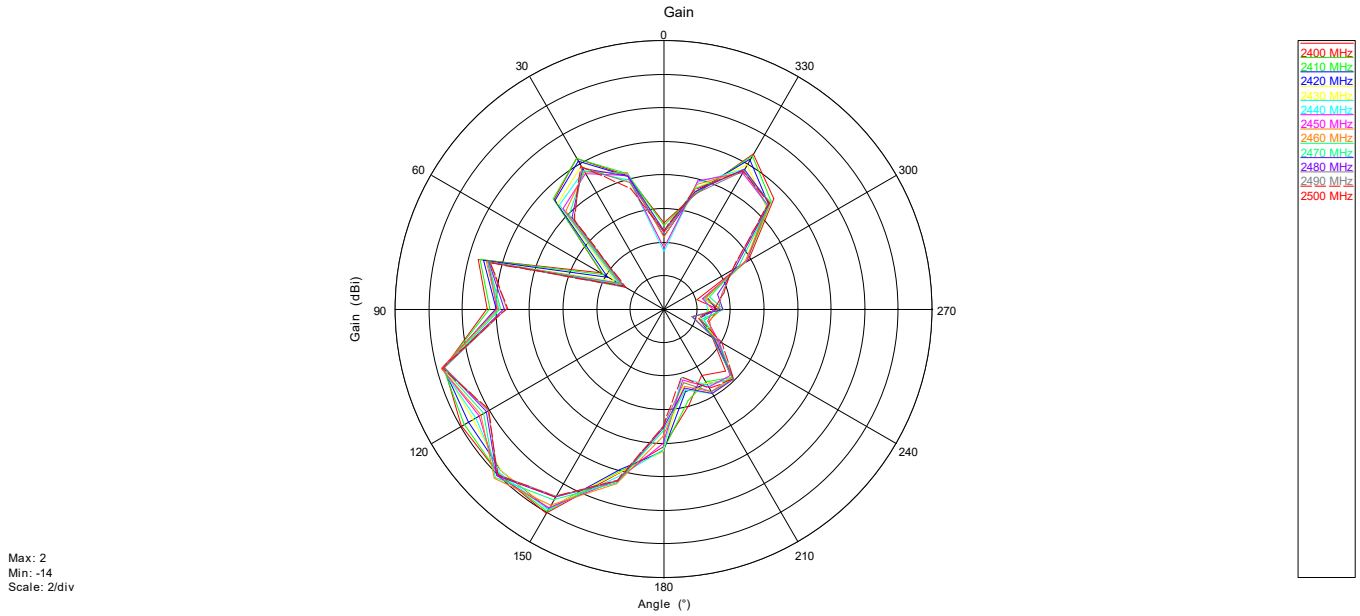
1. 2D Radiation Pattern



Phi=0°

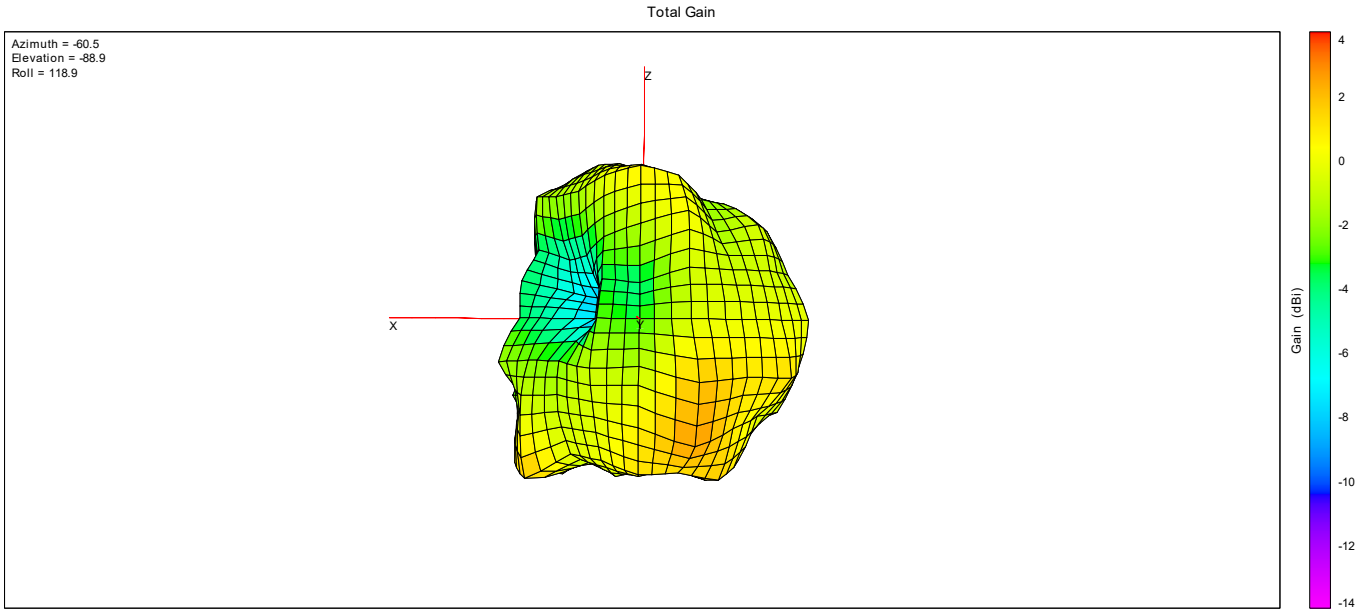


Phi=90°

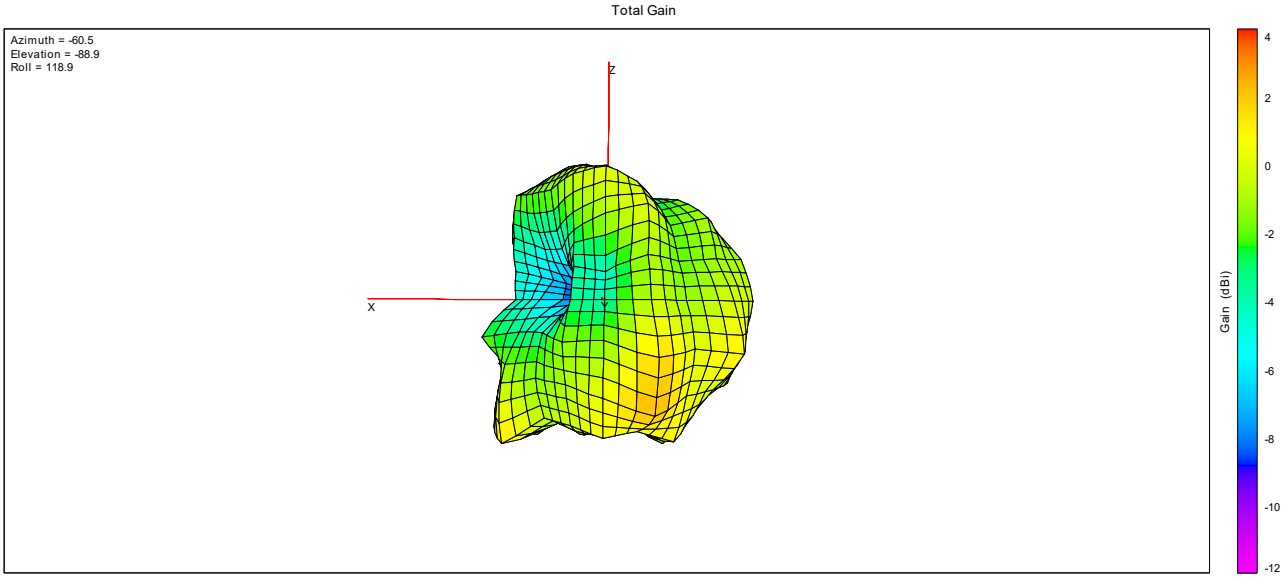


Theta=90°

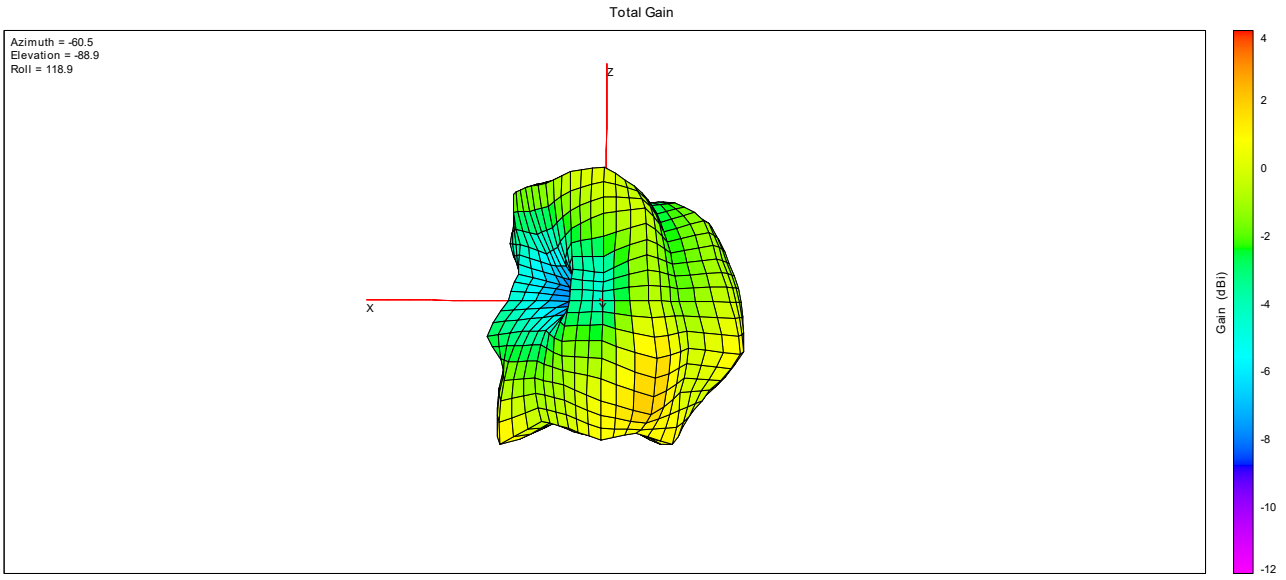
2. 3D Radiation Pattern



2400MHz

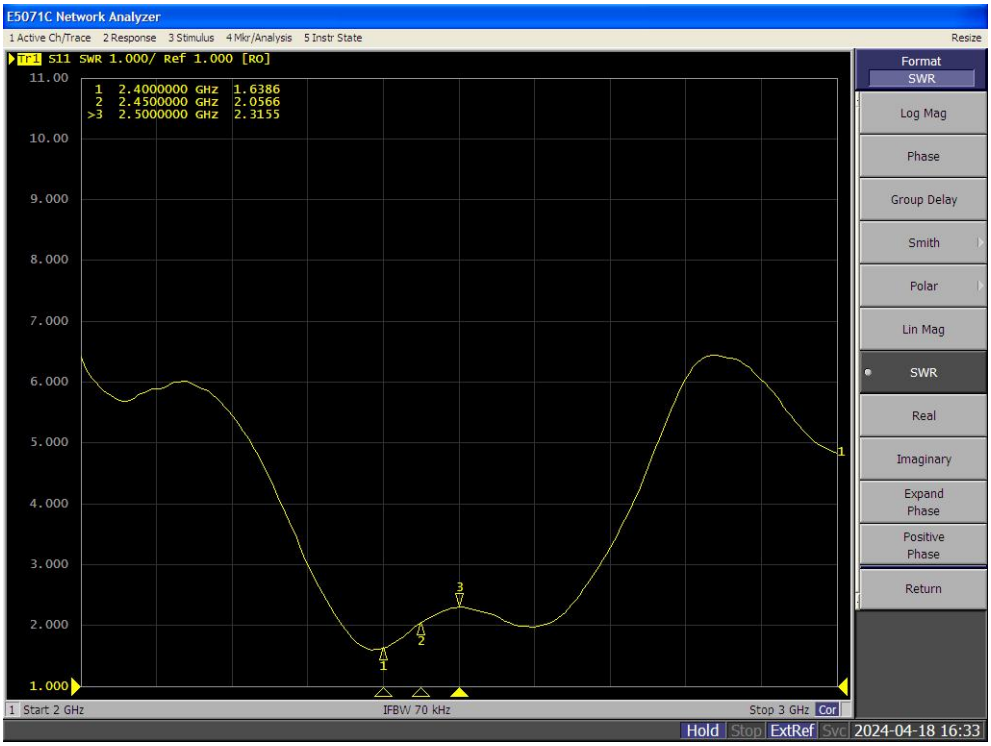


2450MHz



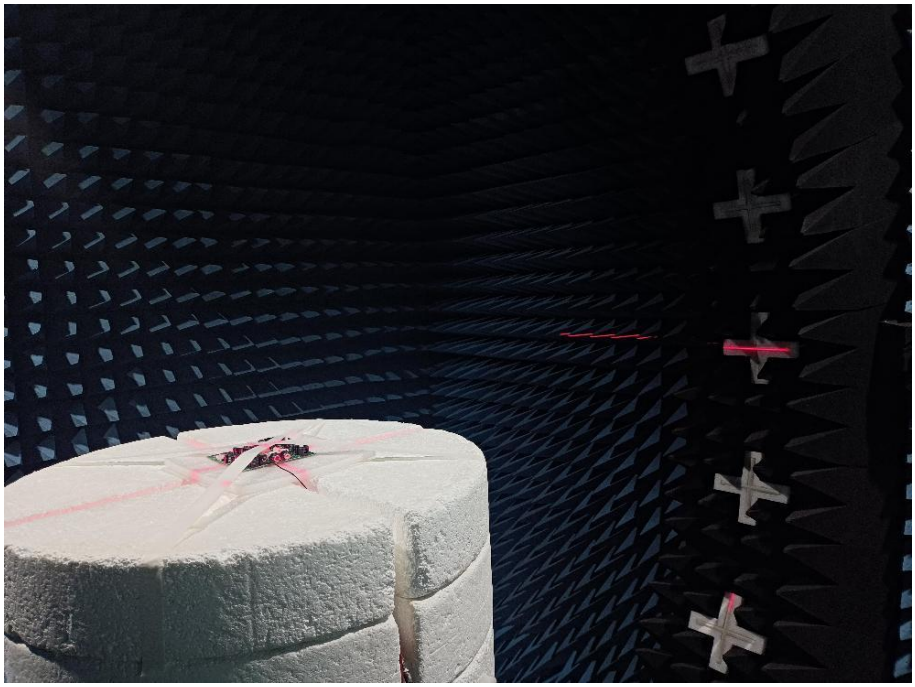
2500MHz

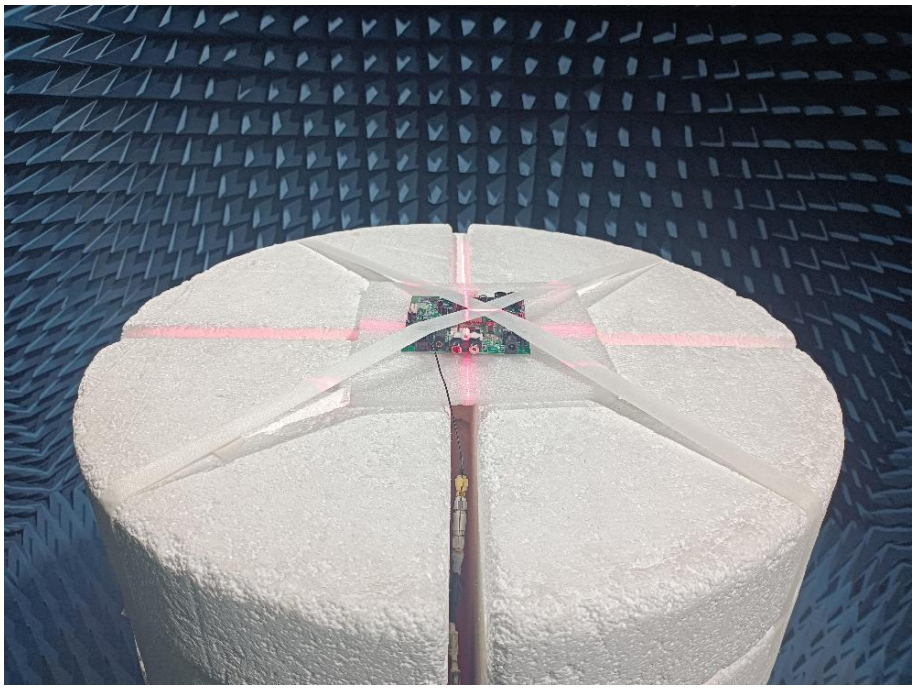
3. VSWR


E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Resize
Tr1 S11 SWR 1.000/ Ref 1.000 [RO]
1 2.4000000 GHz 1.6386
2 2.4500000 GHz 2.0566
>3 2.5000000 GHz 2.3155
11.00
10.00
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
1 Start 2 GHz
IFBW 70 kHz
Stop 3 GHz
Cor
Format
SWR
Log Mag
Phase
Group Delay
Smith
Polar
Lin Mag
SWR
Real
Imaginary
Expand Phase
Positive Phase
Return
Hold
Stop
ExtRef
Svc
2024-04-18 16:33

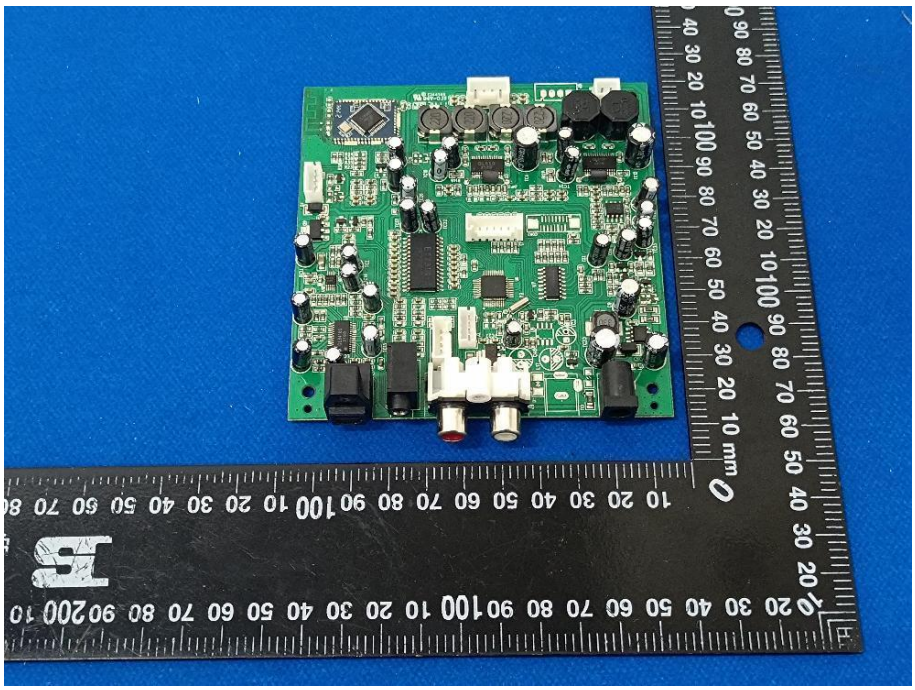
Annex C EUT Photos

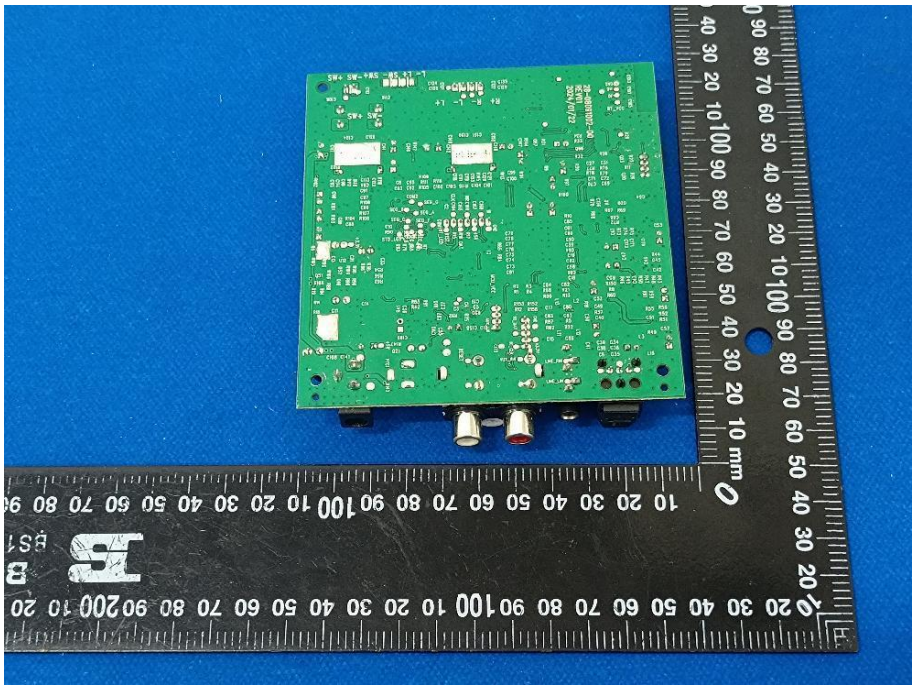
1. Test environment

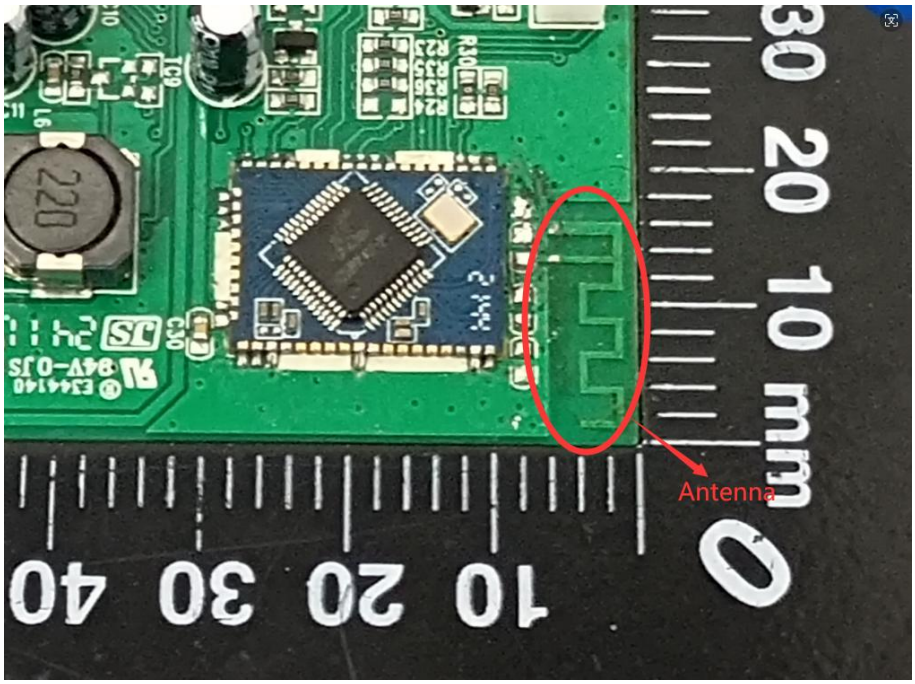




2. EUT






Antenna

Annex D General Information

1.1 Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

1.2 Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

1.3 Test Equipments Utilized

No.	Equipement Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Network Analyzer	MY46110140	E5071C	Agilent	2023.06.21	2024.06.20
2	OTA Chamber	TJ2235-Q1793	AMS-8923 -150	ETS	2022.11.30	2025.11.29

1.4 Test Software Utilized

No.	Software Name	Serial No.	Version	Manufacturer
1	Antenna Measurement System	1685	EMQuest EMQ-100 V 1.13 Build 21267	ETS

END OF REPORT