

TEST REPORT

Applicant: Shenzhen Pulsar Technology Co., Ltd.
Address: Room 216, Fuyutop Building, No. 19, High-tech North Second Road, Songpingshan Community, Xili Street, Nanshan District, ShenZhen City
Equipment Type: Thumbcon
Model Name: TB1
Brand Name: VoyaX
Test Standard: IEEE Std 149-2021
Sample Arrival Date: Apr. 27, 2026
Test Date: Apr. 27, 2026
Date of Issue: May 09, 2026

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Mai Jintian**Checked by:** Xia Long**Approved by:** Tolan Tu

(Testing Director)

Mai Jintian

Xia Long

Tolan Tu

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>May 09, 2026</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Building 2, Intelligent Connected Vehicle Industrial Park, No. 55, Xiangshan Road, Luotian Community, Yanluo Sub-district, Bao'an District, Shenzhen, Guangdong Province, China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☐ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☒ Building 2, Intelligent Connected Vehicle Industrial Park, No. 55, Xiangshan Road, Luotian Community, Yanluo Sub-district

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Shenzhen Pulsar Technology Co., Ltd.
Address	Room 216, Fuyutop Building, No. 19, High-tech North Second Road, Songpingshan Community, Xili Street, Nanshan District, ShenZhen City
Contact Person	Dolan Hong
Telephone Number	17620372342
E-mail Address	dolan.hong@fcdyno.com

2.2 Manufacturer Information

Manufacturer	Voyager Dynamics Inc.
Address	1220 RIVER BEND DR SUITE 250 DALLAS, TX 75247

2.3 General Description for Equipment under Test (EUT)

EUT Name	Thumbcon
Model Name Under Test	TB1
Antenna Type	PCB Antenna
Dimensions	8*3 mm

2.4 Ancillary Equipment

Note: Not applicable.

2.5 Technical Information

Frequency Range	2402MHz ~ 2502MHz
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3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	IEEE Std 149-2021	IEEE Standard Test Procedures for Antennas

3.2 Test Verdict

Report Section	Description	Remark
ANNEX A.1	Gain and Efficiency	--
ANNEX A.2	VSWR and Input impedance	--
ANNEX B	Radiation Pattern	--

3.3 Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Item	Uncertainty
VSWR(S11)	± 0.61
Gain	$\pm 1.92\text{dB}$

4 GENERAL TEST CONFIGURATIONS

4.1 Test Condition

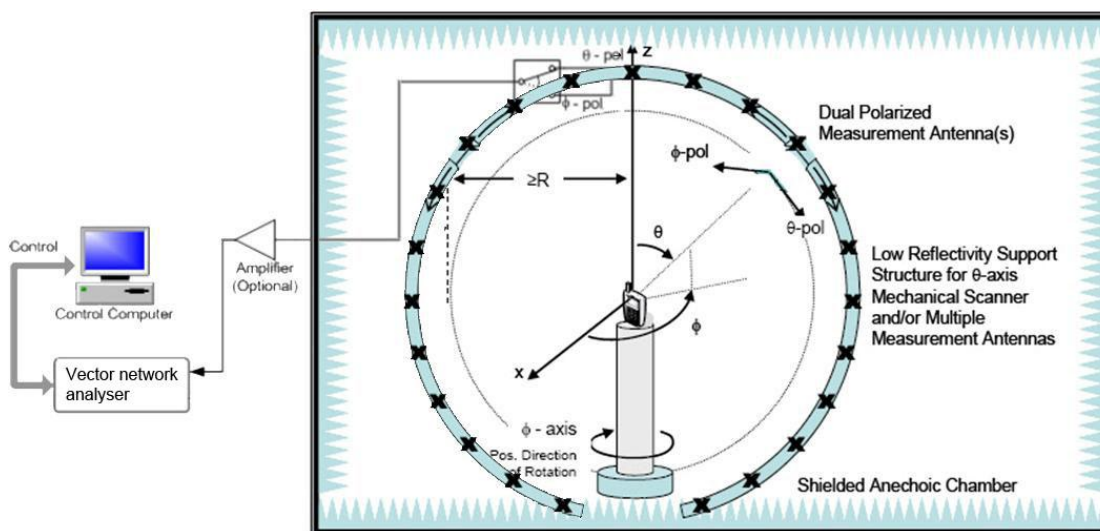
Environment Parameter	Selected Values During Tests			
	Ambient Pressure(KPa)	Temperature(°C)	Voltage	Relative Humidity (%)
Normal Temperature, Normal Voltage (NTNV)	100 to 102	19 to 25	N/A	45 to 55

4.2 Test Equipment List

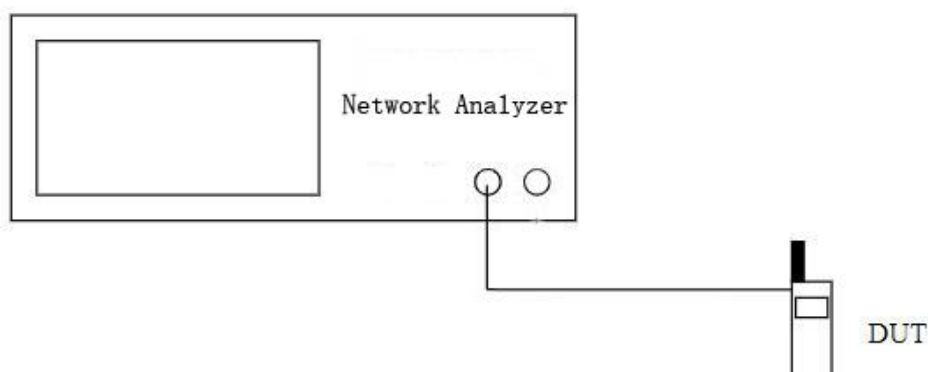
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SG24 Multi-probe Antenna Measurement System	SATIMO	SG24-L	1101855- 0001	2025.11.03	2028.11.02
Vector Network Analyzer	Agilent	E5071B	MY42404001	2025.12.22	2026.12.21
Description	Manufacturer	Name		Version	
Test Software	MVG	SPM		V 1.8	

4.3 Test Setup

4.3.1 Antenna gain, efficiency and radiation pattern test setup



4.3.2 S11 parameter test setup



4.4 Test Frequencies

Test Frequencies	2402MHz, 2412MHz, 2422MHz, 2432MHz, 2442MHz, 2452MHz 2462MHz, 2472MHz, 2482MHz, 2492MHz, 2502MHz
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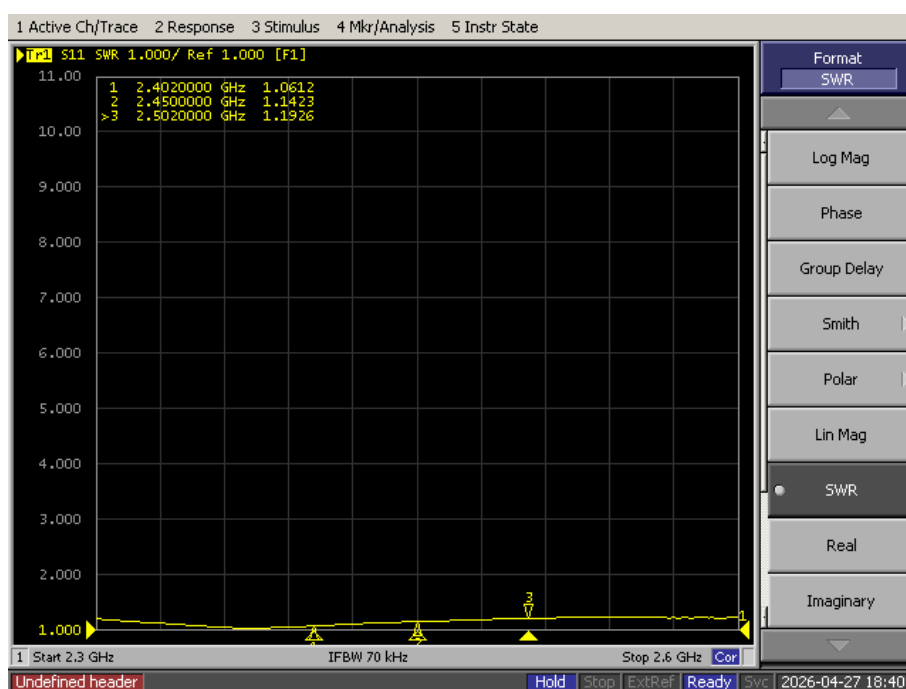
ANNEX A TEST RESULTS

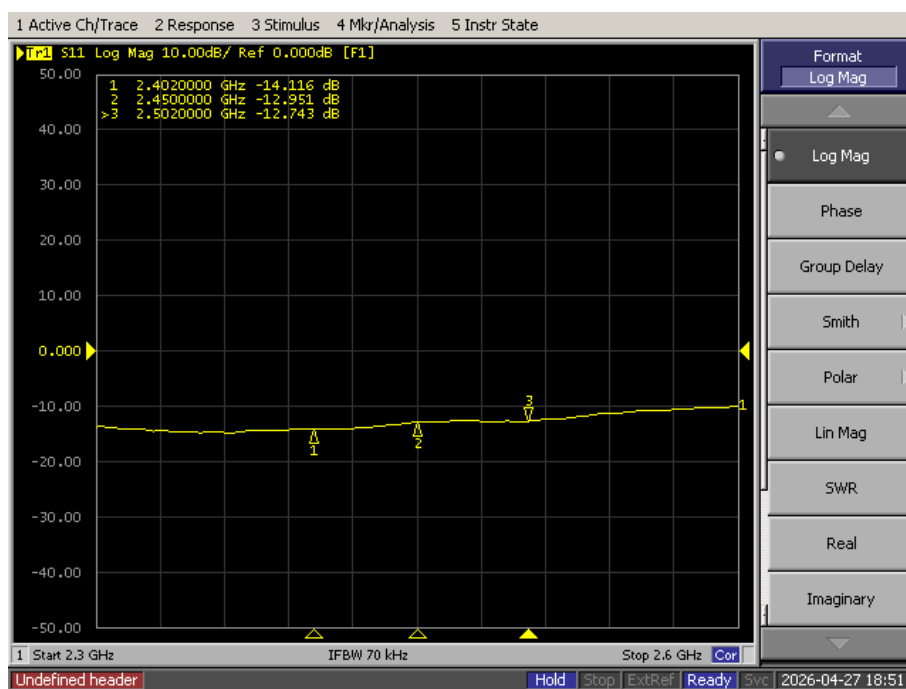
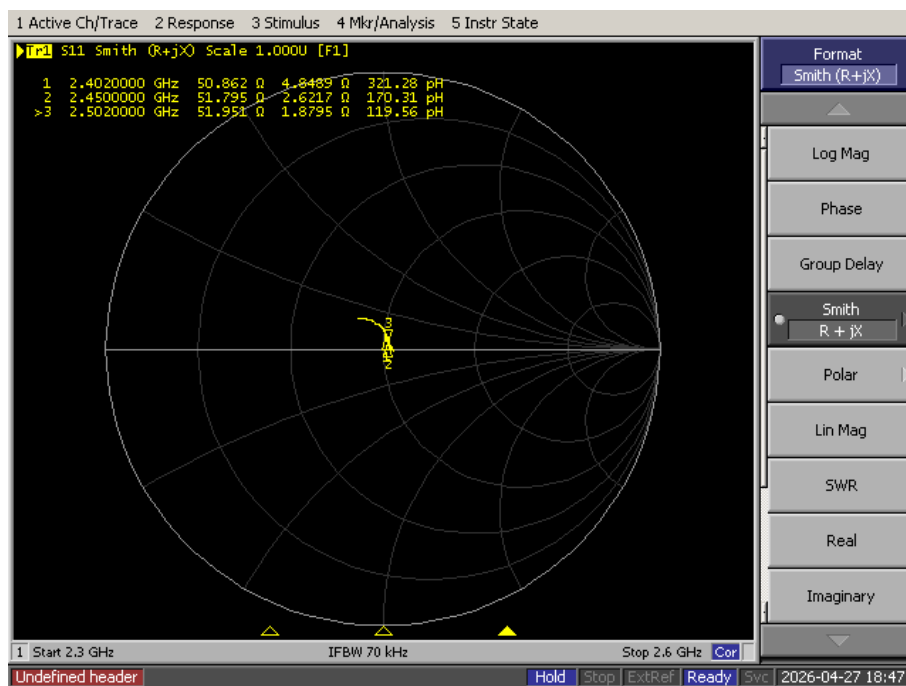
A.1 Gain and Efficiency

Frequency	Gain (dBi)	Efficiency (%)
2402MHz	3.98	63%
2412MHz	3.91	62%
2422MHz	3.94	63%
2432MHz	4.10	64%
2442MHz	4.07	66%
2452MHz	3.92	66%
2462MHz	3.79	68%
2472MHz	3.68	68%
2482MHz	3.59	67%
2492MHz	3.54	67%
2502MHz	3.37	67%

A.2 VSWR and Input Impedance

Frequency	VSWR	Input impedance (Ω)	Return Loss(dB)
2402MHz	1.06	50.86	-14.12
2450MHz	1.14	51.80	-12.95
2502MHz	1.19	51.95	-12.74

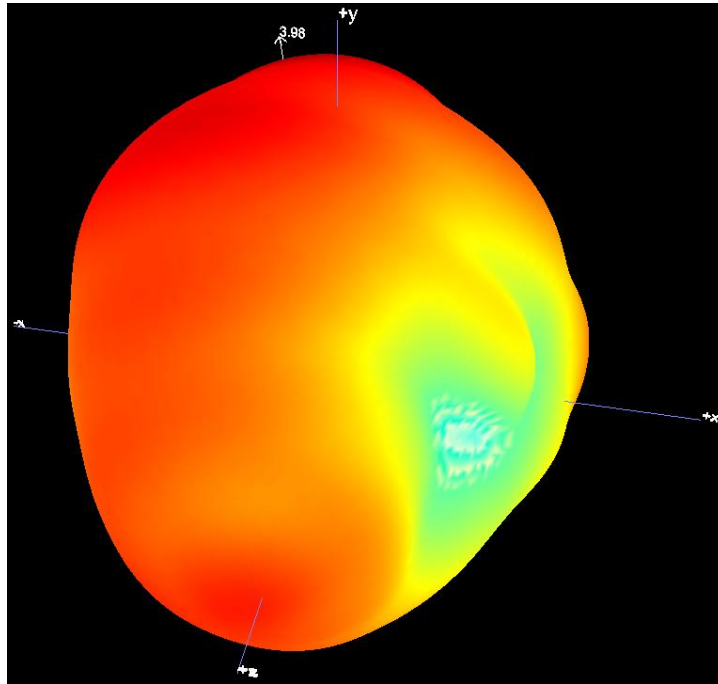




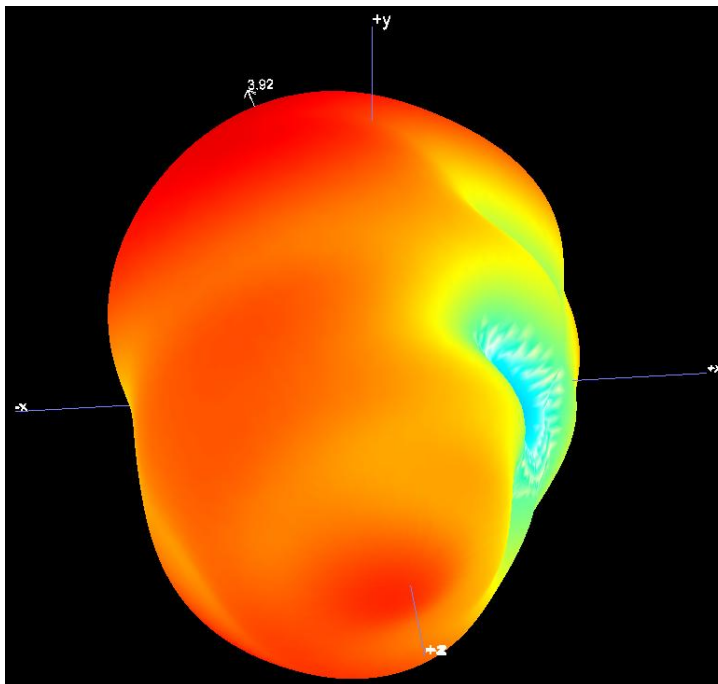
ANNEX B RADIATION PATTERN

B.1 3D Pattern

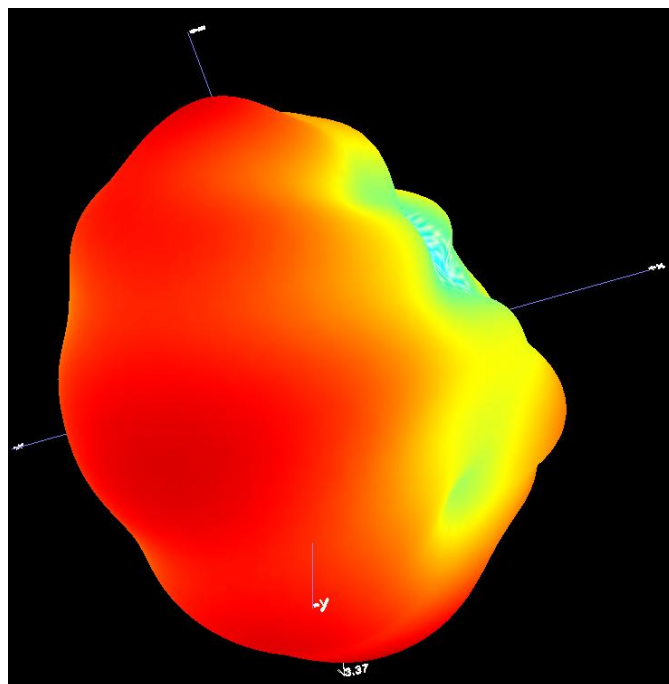
B1.1 3D Pattern for 2402MHz



B1.2 3D Pattern for 2450MHz

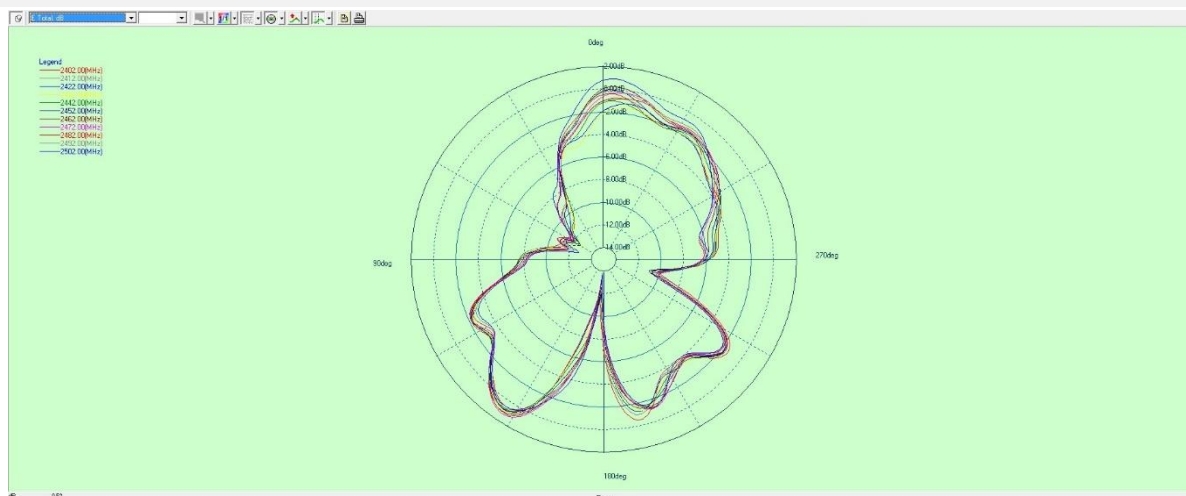


B1.3 3D Pattern for 2502MHz

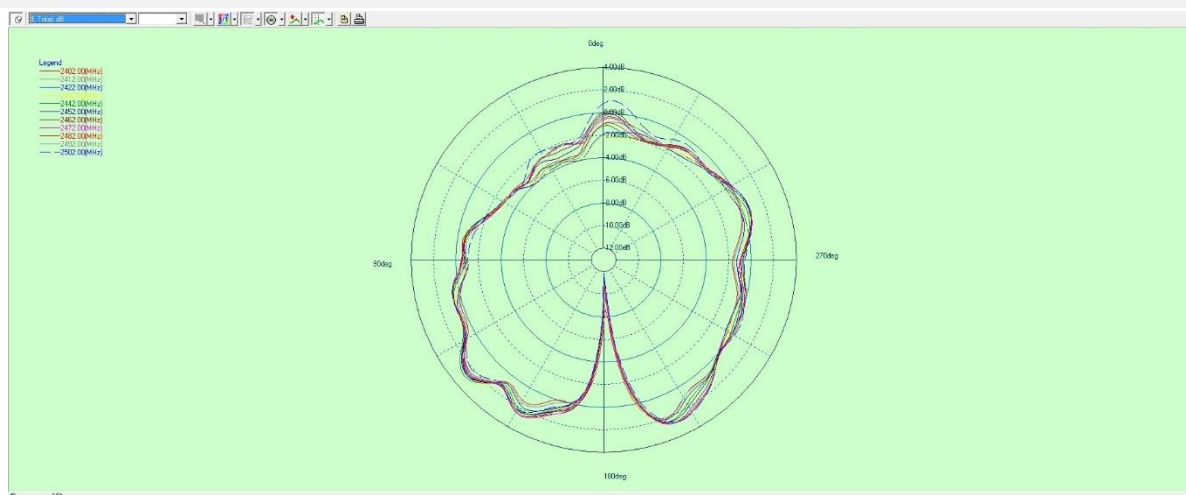


B.2 1D Radiation Pattern

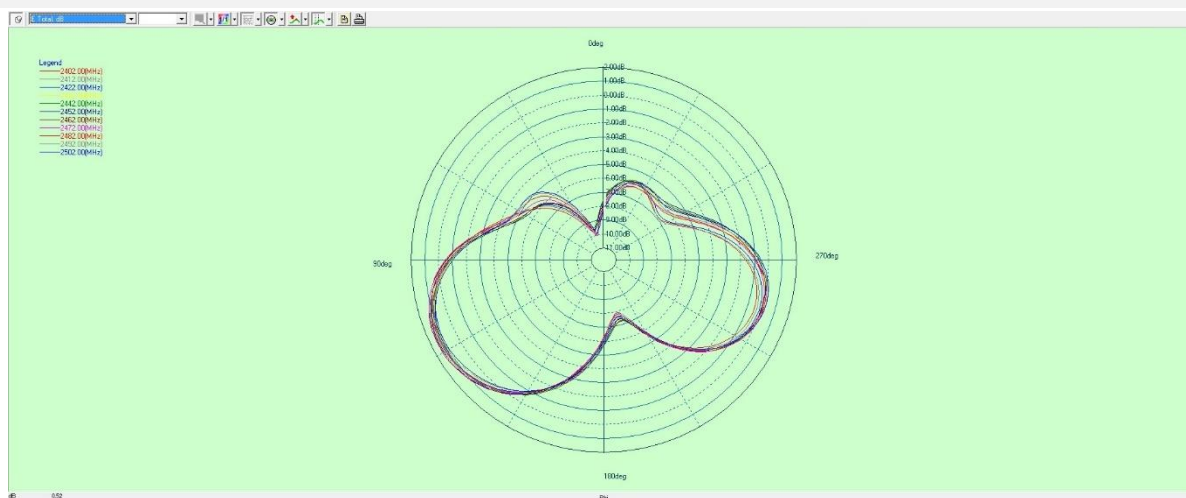
B2.1 PHI=0



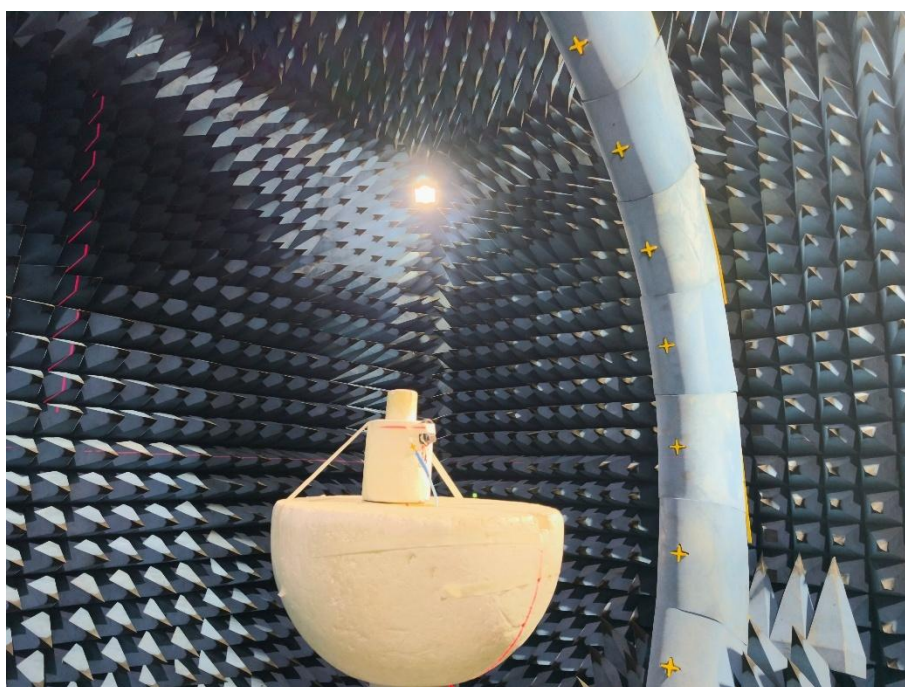
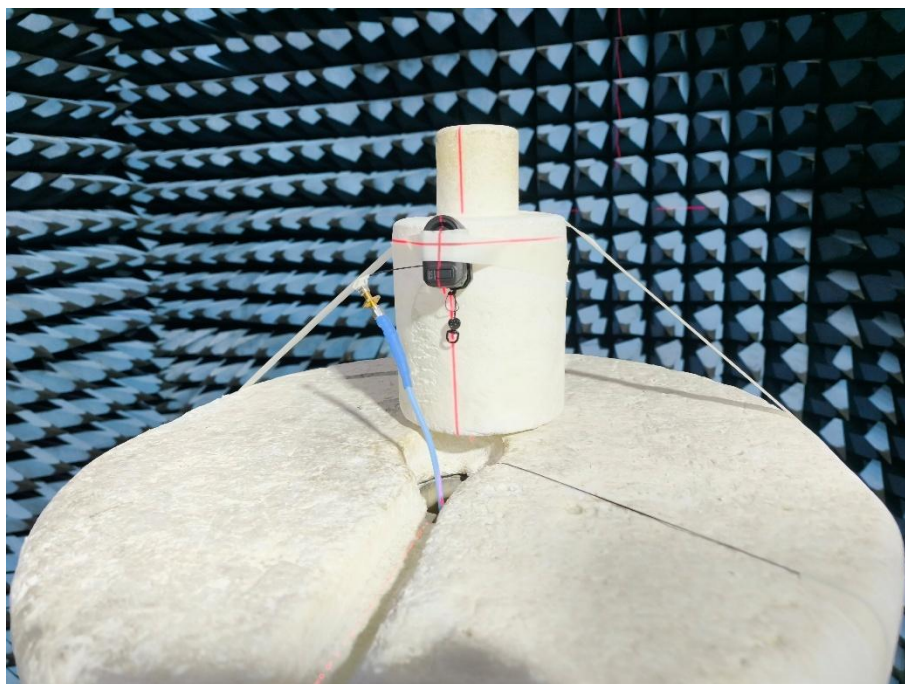
B2.2 PHI=90



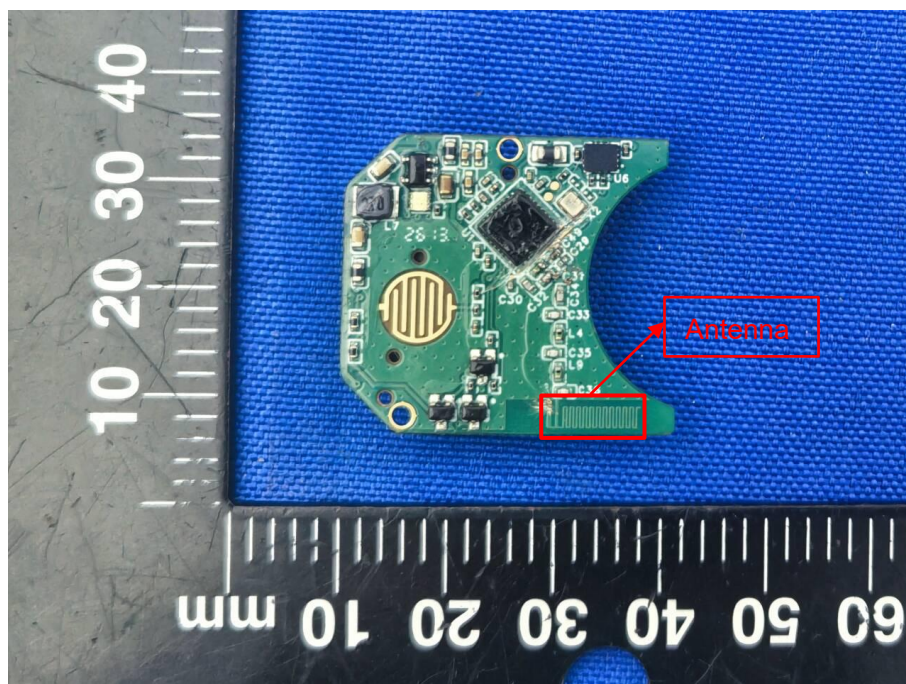
B2.3 THETA=90



ANNEX C TEST SETUP PHOTO



ANNEX D EUT PHOTO



Statement

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6. This report shall not be partially reproduced without the written permission of the laboratory.
7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--