TEST REPORT

Applicant:	ZHEJIANG DUALTRON ESCOOTER CO., LTD.
Address:	No.111, DENGSHENG ROAD, LANJIANG STREET, LANXI CITY, JINHUA CITY, ZHEJIANG PROVINCE.
Equipment Type:	DT-CH582M
Model Name:	CH582M
Brand Name:	N/A
Test Standard:	IEEE Std 149-2021
Sample Arrival Date:	Nov. 24, 2023
Test Date:	Nov. 27, 2023
Date of Issue:	Dec. 04, 2023

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
Rev. 01	Dec. 04, 2023	Initial Issue

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. 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

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	ZHEJIANG DUALTRON ESCOOTER CO., LTD.
Address	No.111, DENGSHENG ROAD, LANJIANG STREET, LANXI CITY, JINHUA CITY, ZHEJIANG PROVINCE.

2.2 Manufacturer Information

Manufacturer	ZHEJIANG DUALTRON ESCOOTER CO., LTD.
Address	No.111, DENGSHENG ROAD, LANJIANG STREET, LANXI CITY, JINHUA CITY, ZHEJIANG PROVINCE.

2.3 General Description for Equipment under Test (EUT)

EUT Name	DT-CH582M
Model Name Under Test	CH582M
Antenna Type	PCB Antenna
Dimensions	9.5*8.5 mm

2.4 Ancillary Equipment

Note: Not applicable.

2.5 Technical Information

Frequency Range	2402MHz ~ 2480MHz
Test Frequencies	2402MHz, 2404MHz, 2406MHz, 2408MHz, 2410MHz, 2412MHz, 2414MHz, 2416MHz, 2418MHz, 2420MHz, 2422MHz, 2424MHz, 2426MHz, 2428MHz, 2430MHz, 2432MHz, 2434MHz, 2436MHz, 2438MHz, 2440MHz, 2442MHz, 2444MHz, 2446MHz, 2448MHz, 2450MHz, 2452MHz, 2454MHz, 2456MHz, 2458MHz, 2460MHz, 2462MHz, 2464MHz, 2466MHz, 2468MHz, 2470MHz, 2472MHz, 2474MHz, 2476MHz, 2478MHz, 2480MHz

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	--
ANNEX A.3	Input impedance	--
ANNEX A.4	Return Loss	--
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
Gain	±1.92dB
VSWR(S11)	±0.61

4 GENERAL TEST CONFIGURATIONS

4.1 Test Condition

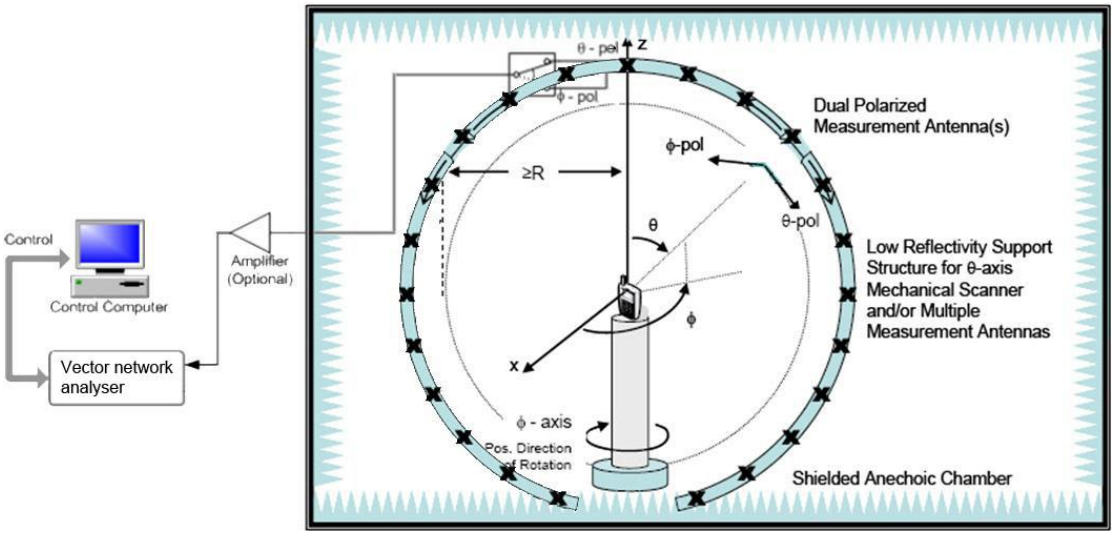
Environment Parameter	Selected Values During Tests			
	Ambient Pressure (KPa)	Temperature (℃)	Voltage	Relative Humidity (%)
Normal Temperature, Normal Voltage (NTNV)	101	21.7	N/A	46

4.2 Test Equipment List

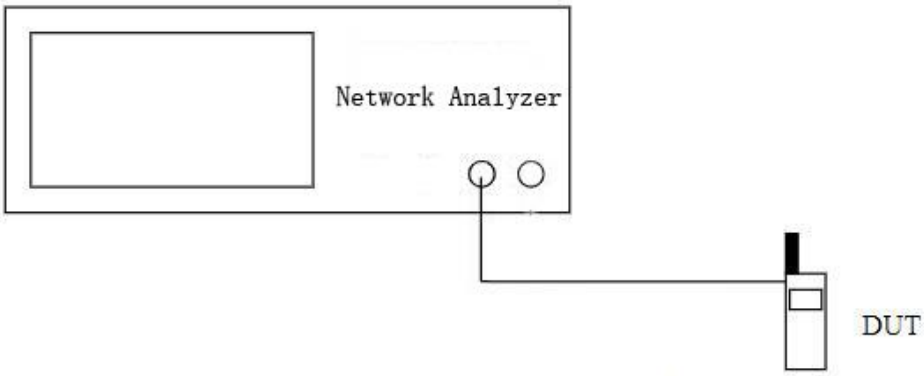
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SG24 Multi-probe Antenna Measurement System	SATIMO	SG24-L	1101855-0001	2021.11.12	2024.11.11
Vector Network Analyzer	Agilent	E5071B	MY42404001	2023.03.26	2024.03.25
Description	Manufacturer	Name		Version	
Test Software	MVG	SPM		V 1.8	

4.3 Test Setup

4.3.1 Antenna gain, efficiency and radiation pattern test setup



4.3.2 S11 parameter test setup



ANNEX A TEST RESULTS

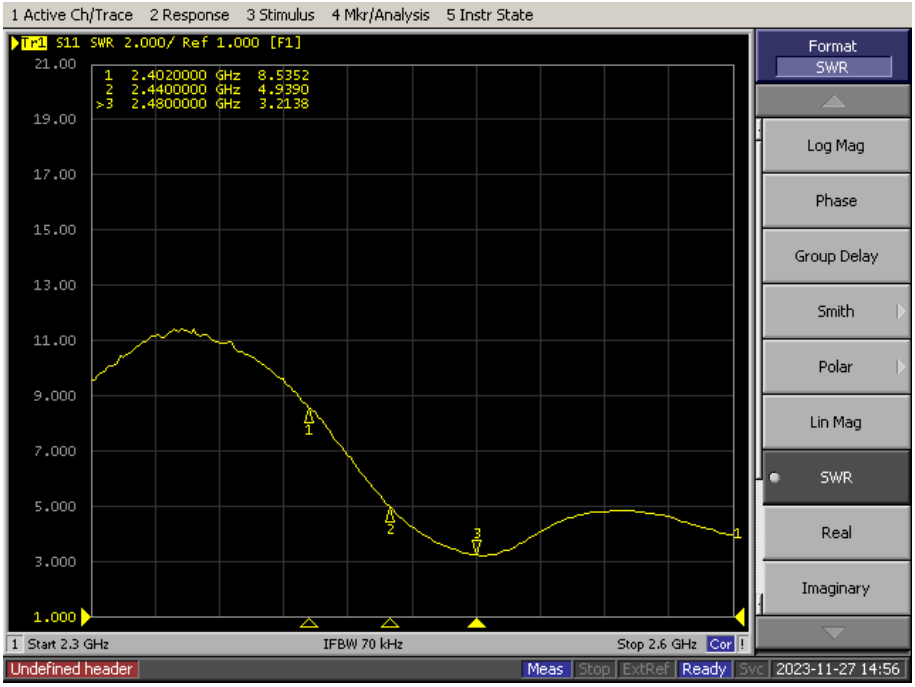
A.1 Gain and Efficiency

Frequency	Gain (dBi)	Efficiency (%)
2402MHz	-5.88	6
2404MHz	-5.77	6
2406MHz	-5.64	6
2408MHz	-5.47	7
2410MHz	-5.31	7
2412MHz	-5.18	7
2414MHz	-5.06	7
2416MHz	-4.88	7
2418MHz	-4.75	8
2420MHz	-4.70	8
2422MHz	-4.62	8
2424MHz	-4.50	8
2426MHz	-4.44	8
2428MHz	-4.40	8
2430MHz	-4.35	9
2432MHz	-4.27	9
2434MHz	-4.21	9
2436MHz	-4.15	9
2438MHz	-4.15	9
2440MHz	-4.11	9
2442MHz	-4.08	9
2444MHz	-4.07	10
2446MHz	-4.06	10
2448MHz	-4.03	10
2450MHz	-3.97	10
2452MHz	-3.91	10
2454MHz	-3.89	10
2456MHz	-3.79	11
2458MHz	-3.72	11
2460MHz	-3.69	11
2462MHz	-3.67	11
2464MHz	-3.64	11
2466MHz	-3.58	11
2468MHz	-3.55	**12**
2470MHz	-3.55	12
2472MHz	-3.54	12
2474MHz	**-3.53**	12
2476MHz	-3.71	12

2478MHz	-3.78	12
2480MHz	-3.86	12

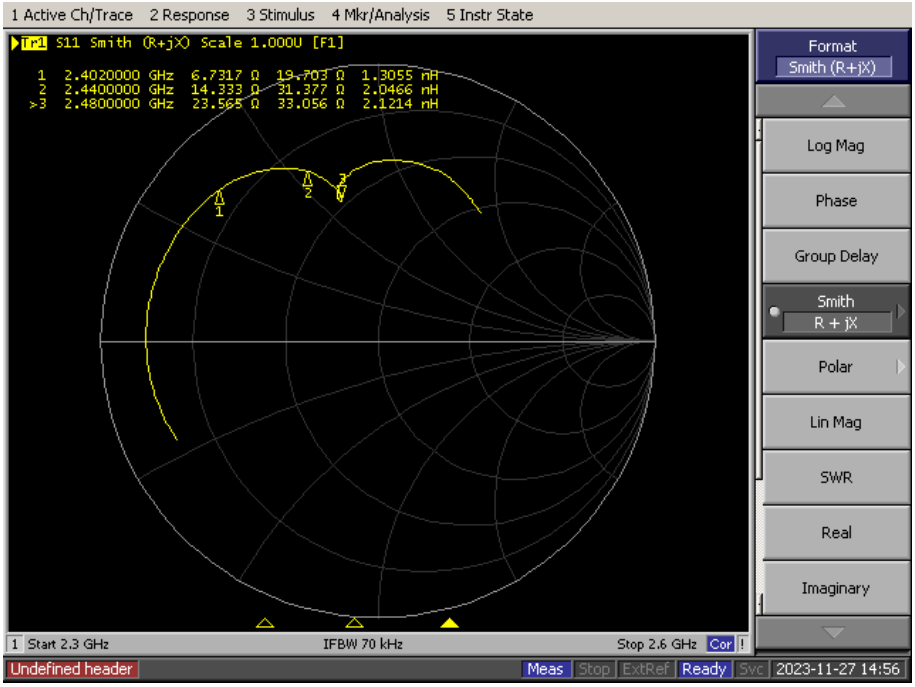
A.2 VSWR

Frequency	VSWR
2402MHz	8.54
2440MHz	4.94
2480MHz	3.21



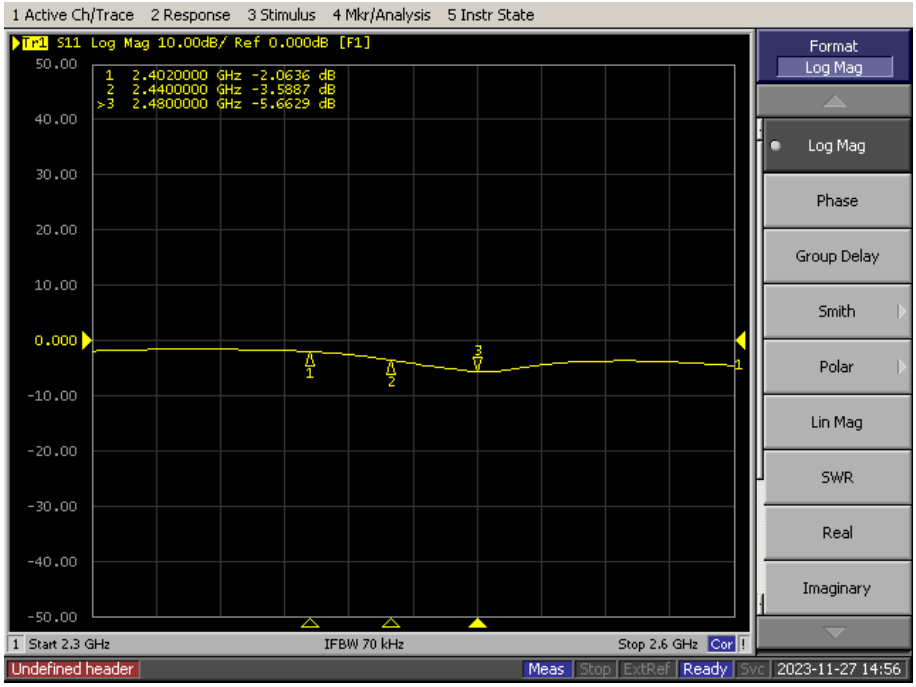
A.3 Input Impedance

Frequency	Input Impedance (Ω)
2402MHz	6.73
2440MHz	14.33
2480MHz	23.57



A.4 Return Loss

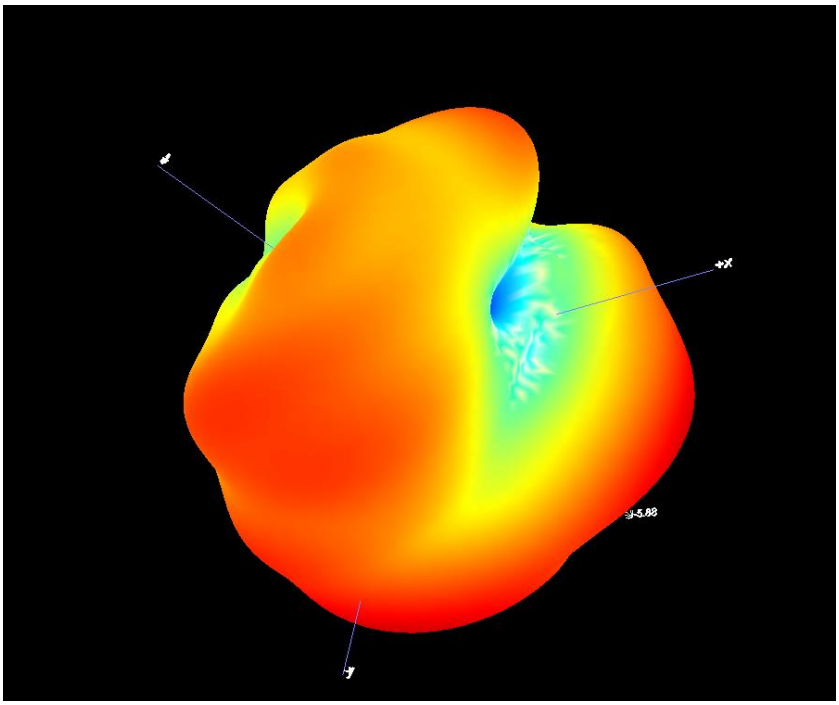
Frequency	Return Loss (dB)
2402MHz	-2.06
2440MHz	-3.59
2480MHz	-5.66



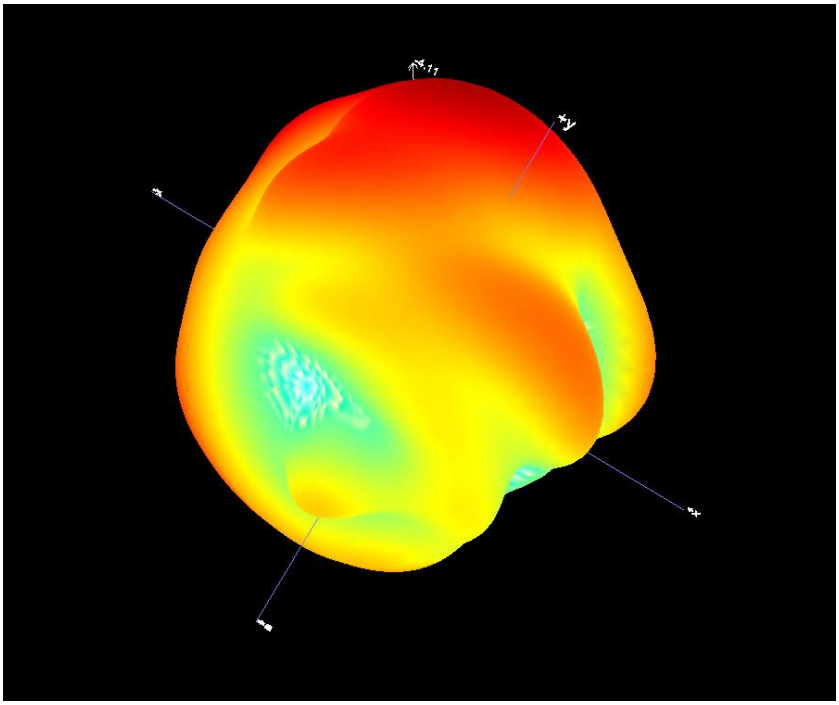
ANNEX B RADIATION PATTERN

B.1 3D Pattern

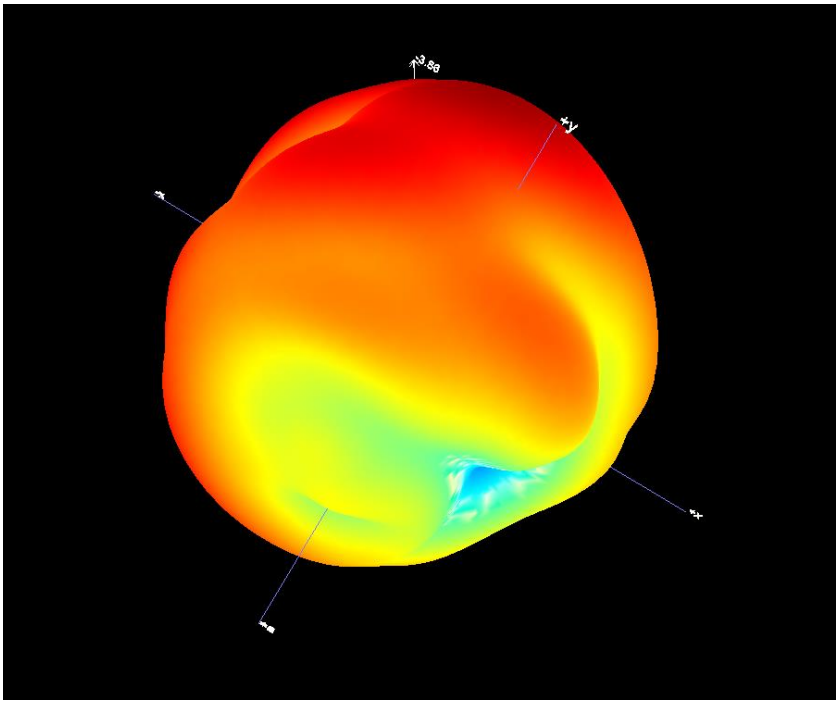
B1.1 3D Pattern for 2402MHz



B1.2 3D Pattern for 2440MHz

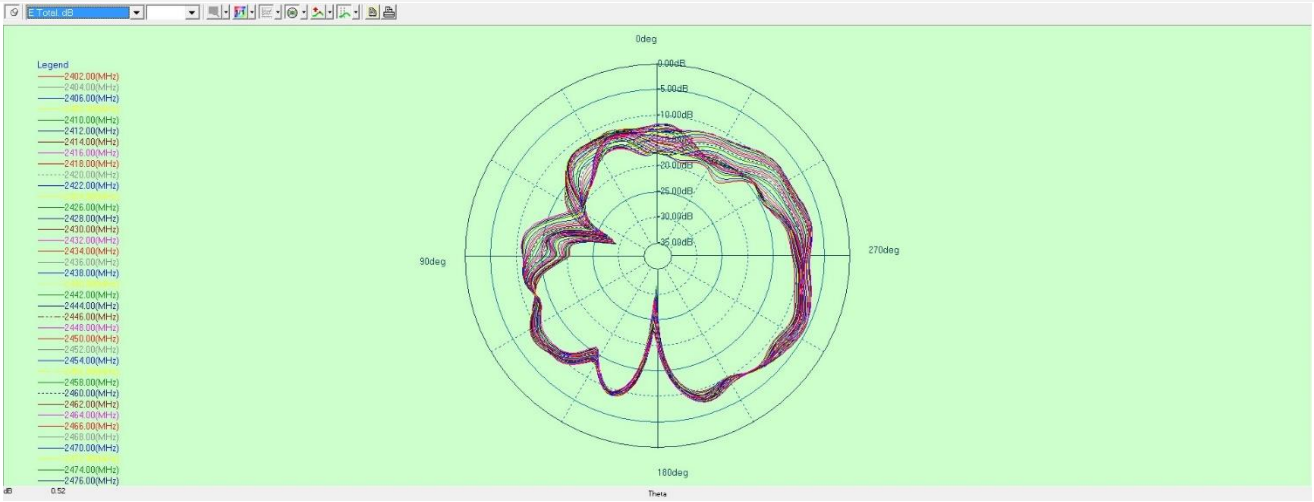


B1.3 3D Pattern for 2480MHz

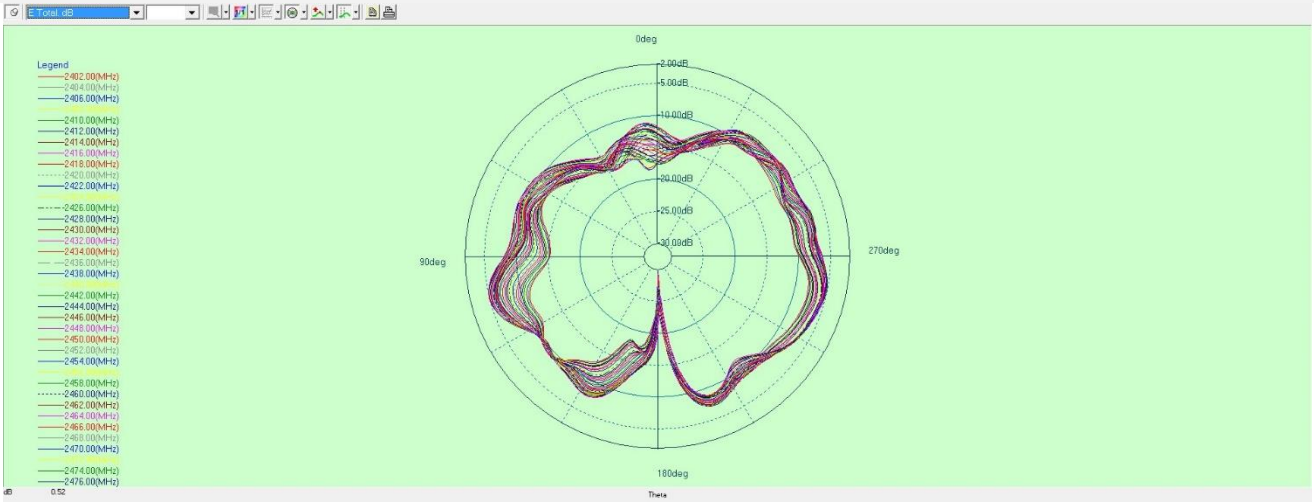


B.2 1D Radiation Pattern

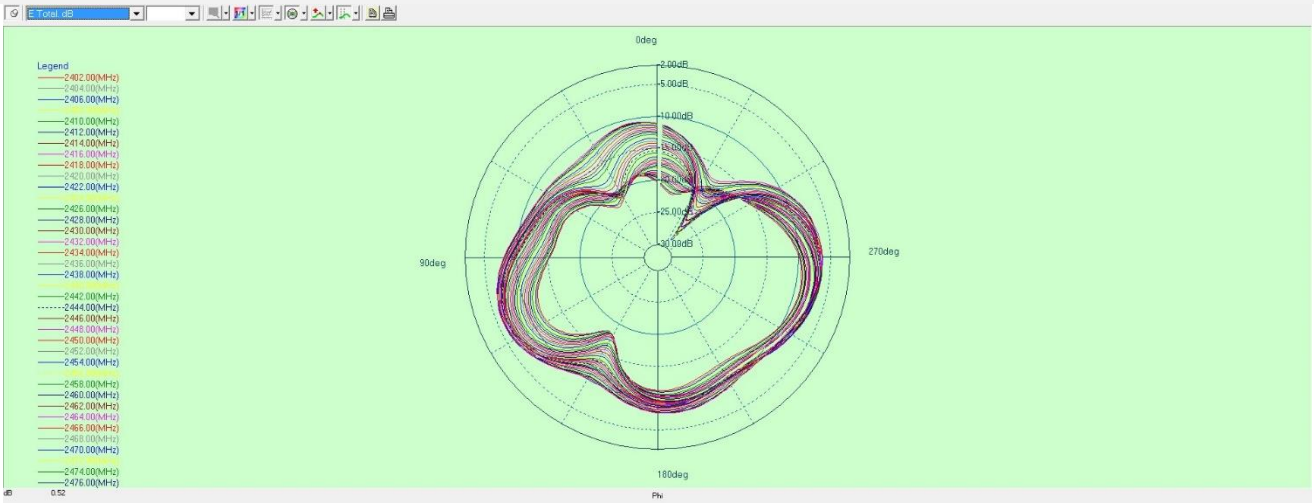
B2.1 PHI=0



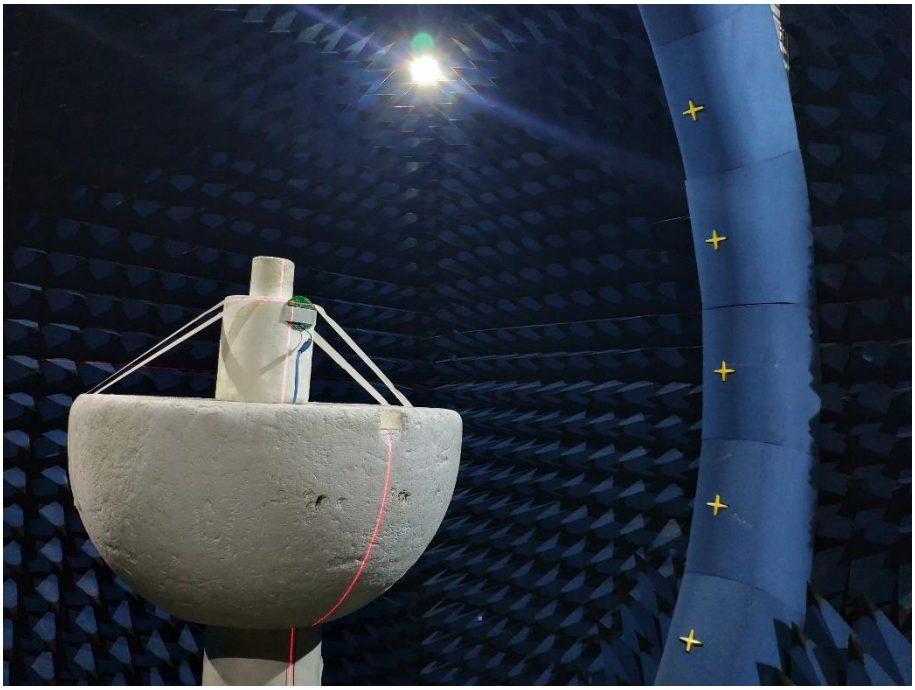
B2.2 PHI=90

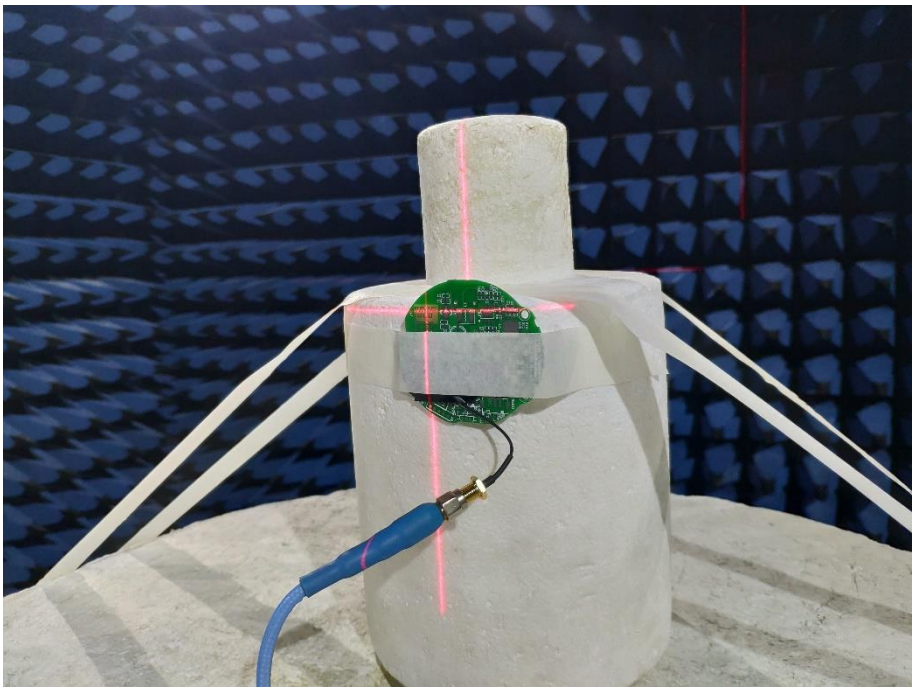


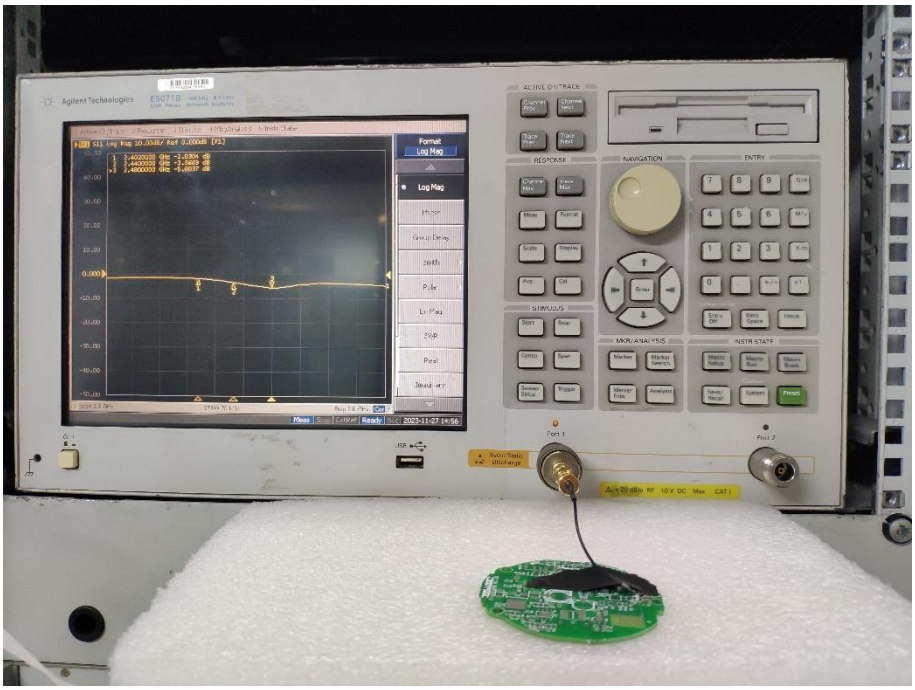
B2.3 THETA=90



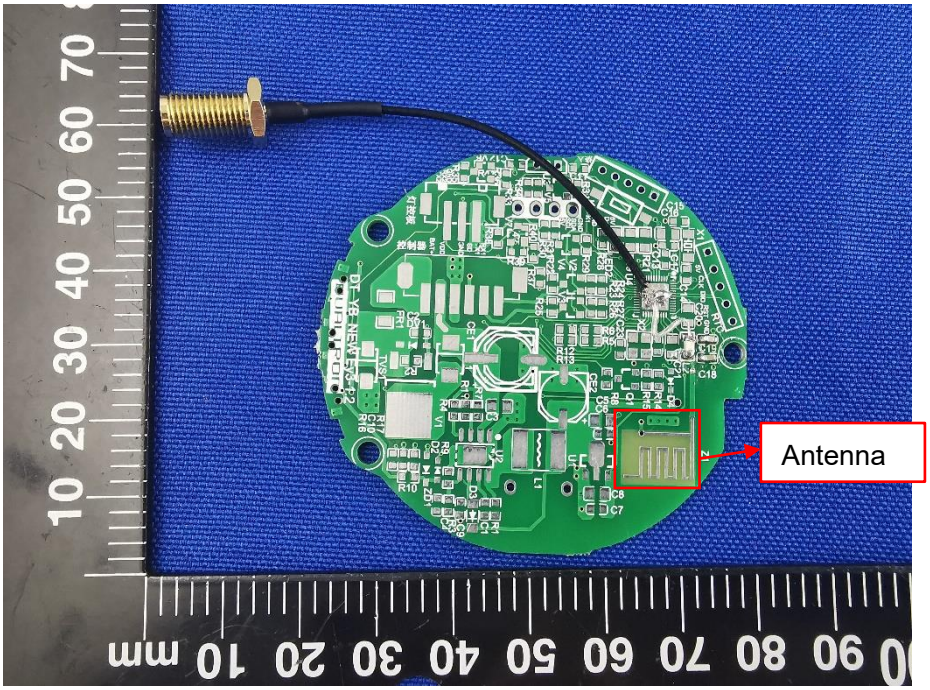
ANNEX C TEST SETUP PHOTO






Agilent Technologies
Format
Log Mag
Phase
Group Delay
Smith
Polar
Linear
SWR
Real
Imaginary
Port 1
Port 2

ANNEX D EUT PHOTO



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--END OF REPORT--