

TEST REPORT

Applicant: NingBo Deye Inverter Technology Co., Ltd.
Address: No. 26 South YongJiang Road, Daqi, Beilun, NingBo, Zhejiang, China
Equipment Type: Grid Support Utility Interactive PV Inverter
Model Name: SUN-M110G5-US-M2-Q1 (refer to section 2.3)
Brand Name: Deye
Test Standard: IEEE Std 149-2021
Sample Arrival Date: Jan. 17, 2025
Test Date: Jan. 17, 2025
Date of Issue: May 06, 2025

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 06, 2025</u>	<u>Initial Issue</u>

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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	NingBo Deye Inverter Technology Co., Ltd.
Address	No. 26 South YongJiang Road, Daqi, Beilun, NingBo, Zhejiang, China

2.2 Manufacturer Information

Manufacturer	NingBo Deye Inverter Technology Co., Ltd.
Address	No. 26 South YongJiang Road, Daqi, Beilun, NingBo, Zhejiang, China

2.3 General Description for Equipment under Test (EUT)

EUT Name	Grid Support Utility Interactive PV Inverter
Model Name Under Test	SUN-M110G5-US-M2-Q1
Serial Model Name	SUN-M60G5-US-M2-Q1, SUN-M80G5-US-M2-Q1, SUN-M100G5-US-M2-Q1,
Model Description	All models are same with electrical parameters and internal circuit structure, but only differ in model name. (this information provided by the applicant)
Antenna Type	Rod Antenna
Dimensions	40*12 mm

2.4 Ancillary Equipment

Note: Not applicable.

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 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

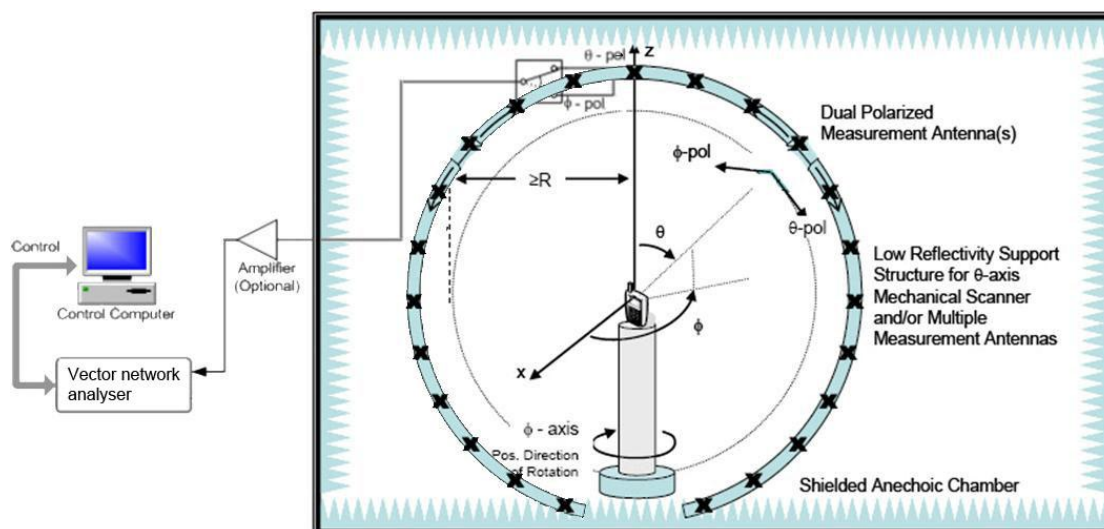
Environment Parameter	Selected Values During Tests			
	Ambient Pressure(KPa)	Temperature(°C)	Voltage	Relative Humidity (%)
Normal Temperature, Normal Voltage (NTNV)	101	21.7	N/A	44

4.2 Test Equipment List

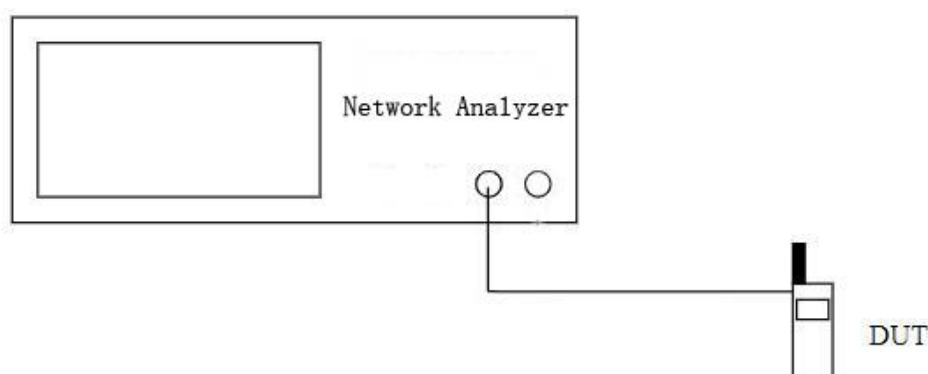
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SG24 Multi-probe Antenna Measurement System	SATIMO	SG24-L	1101855- 0001	2024/11/11	2027/11/10
Vector Network Analyzer	Agilent	E5071C	MY46103472	2024/9/11	2025/9/10
Description	Manufacturer	Name		Version	
Test Software	MVG	SPM		V 1.8	

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, 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
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ANNEX A TEST RESULTS

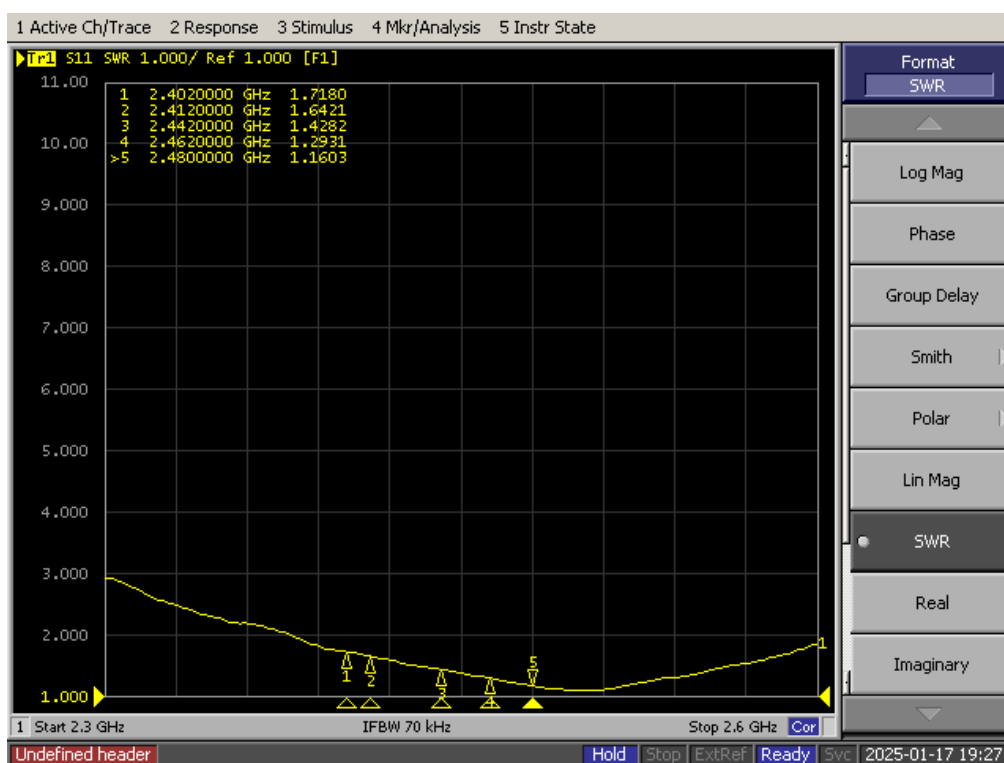
A.1 Gain and Efficiency

Frequency	Gain (dBi)	Efficiency (%)
2402MHz	3.59	82
2404MHz	3.59	82
2406MHz	3.62	82
2408MHz	3.60	82
2410MHz	3.60	82
2412MHz	3.58	83
2414MHz	3.53	83
2416MHz	3.49	83
2418MHz	3.46	83
2420MHz	3.41	83
2422MHz	3.36	83
2424MHz	3.34	83
2426MHz	3.32	85
2428MHz	3.30	85
2430MHz	3.26	85
2432MHz	3.26	86
2434MHz	3.28	87
2436MHz	3.29	87
2438MHz	3.29	87
2440MHz	3.31	88
2442MHz	3.33	88
2444MHz	3.34	89
2446MHz	3.18	87
2448MHz	3.19	88
2450MHz	3.22	88
2452MHz	3.25	88
2454MHz	3.24	89
2456MHz	3.28	88
2458MHz	3.30	89
2460MHz	3.30	89
2462MHz	3.29	89
2464MHz	3.30	89
2466MHz	3.48	91
2468MHz	3.50	92
2470MHz	3.49	92
2472MHz	3.50	92
2474MHz	3.53	93
2476MHz	3.44	93

2478MHz	3.43	94
2480MHz	3.41	94

A.2 VSWR

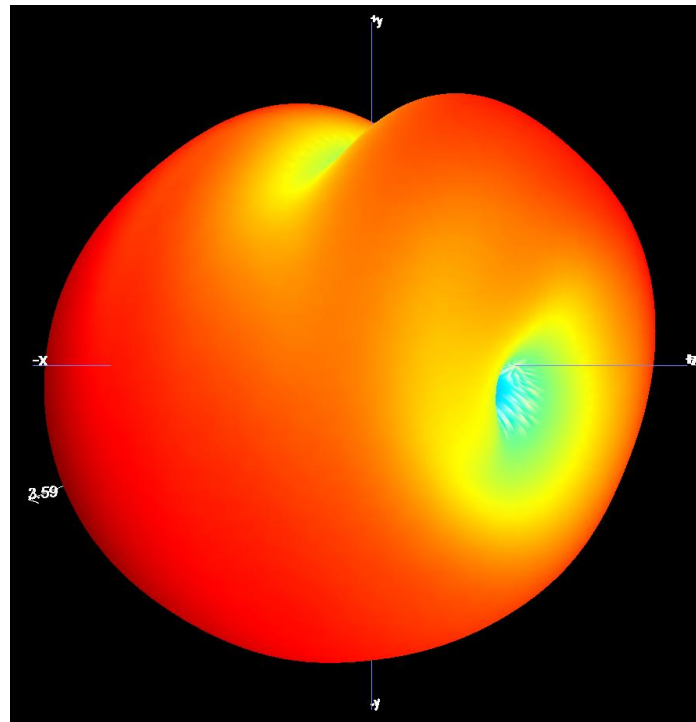
Frequency	VSWR
2402MHz	1.72
2412MHz	1.64
2442MHz	1.43
2462MHz	1.29
2480MHz	1.16



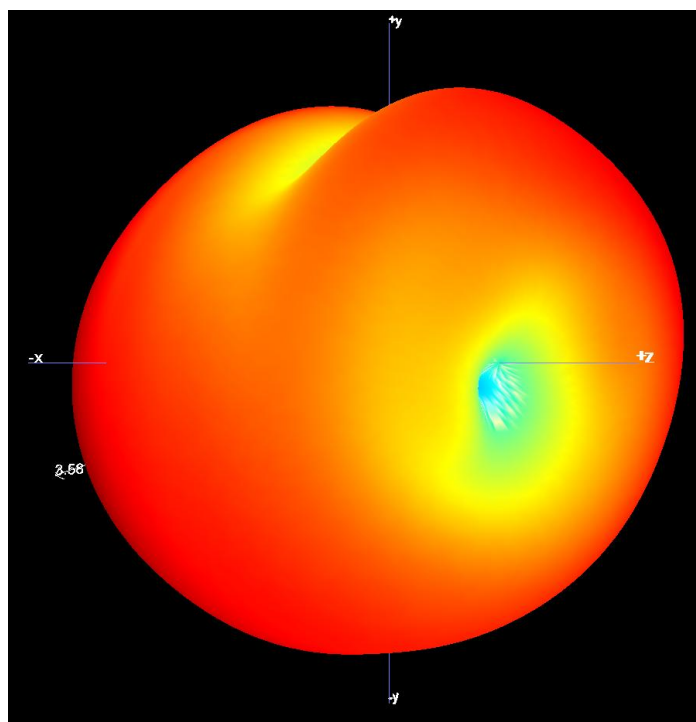
ANNEX B RADIATION PATTERN

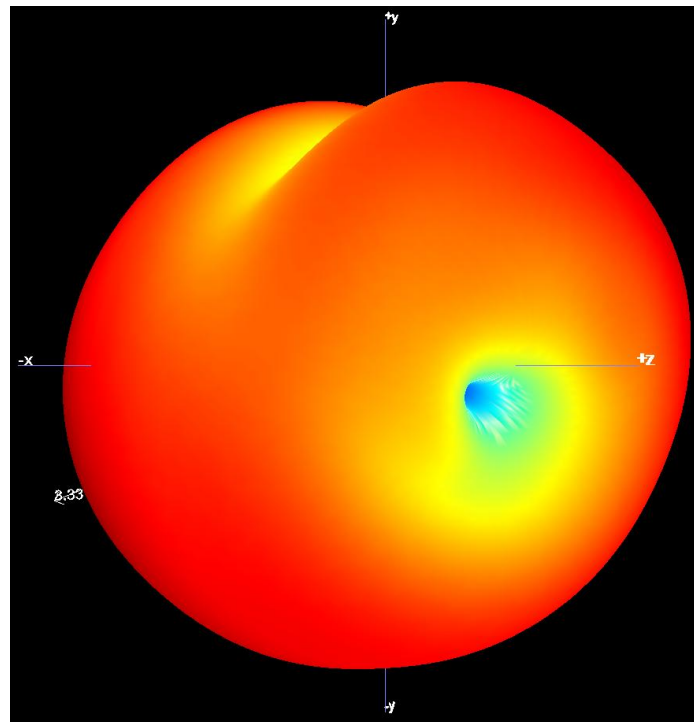
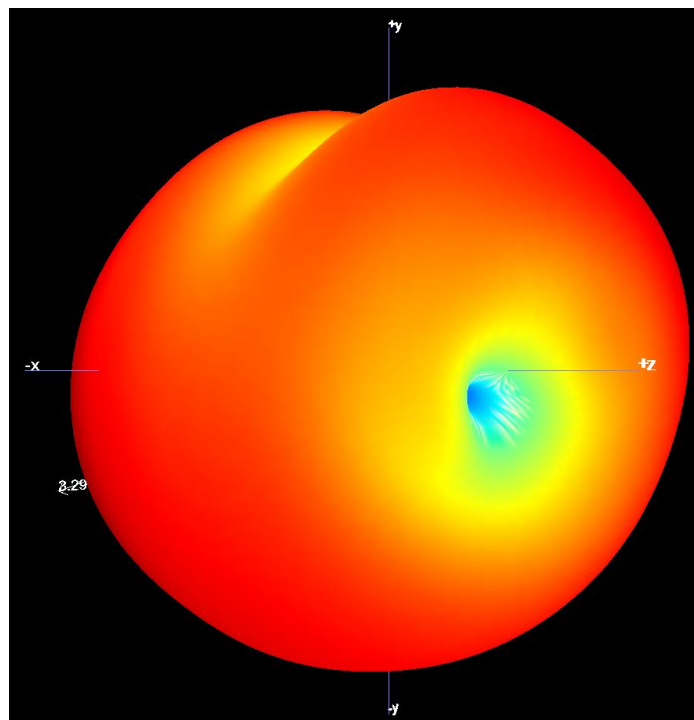
B.1 3D Pattern

B1.1 3D Pattern for 2402MHz

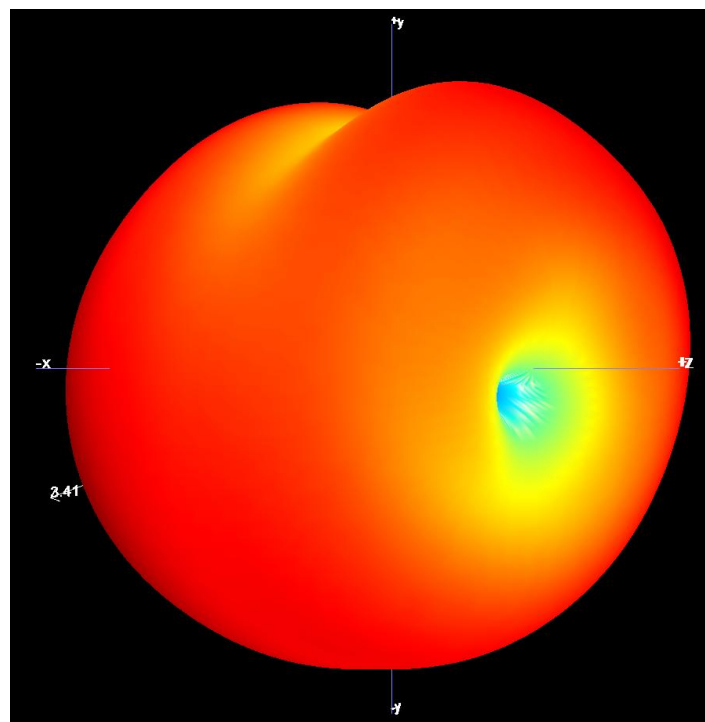


B1.2 3D Pattern for 2412MHz



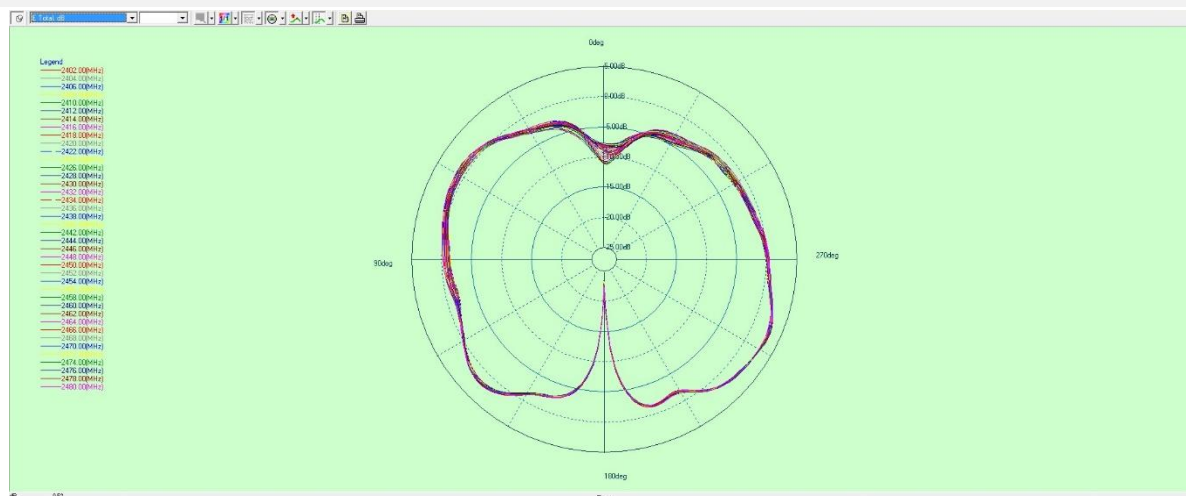
B1.3 3D Pattern for 2442MHz**B1.4 3D Pattern for 2462MHz**

B1.5 3D Pattern for 2480MHz

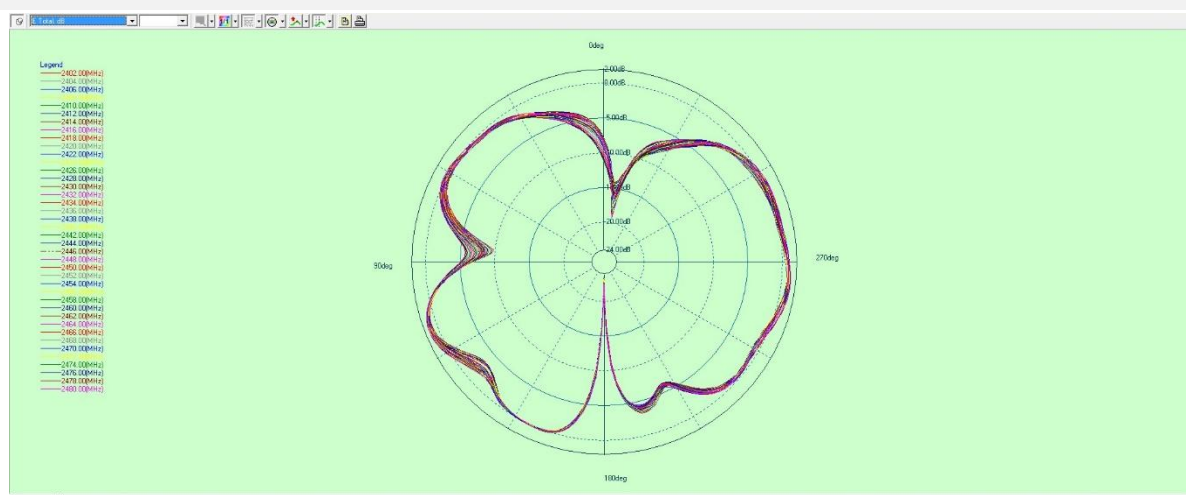


B.2 1D Radiation Pattern

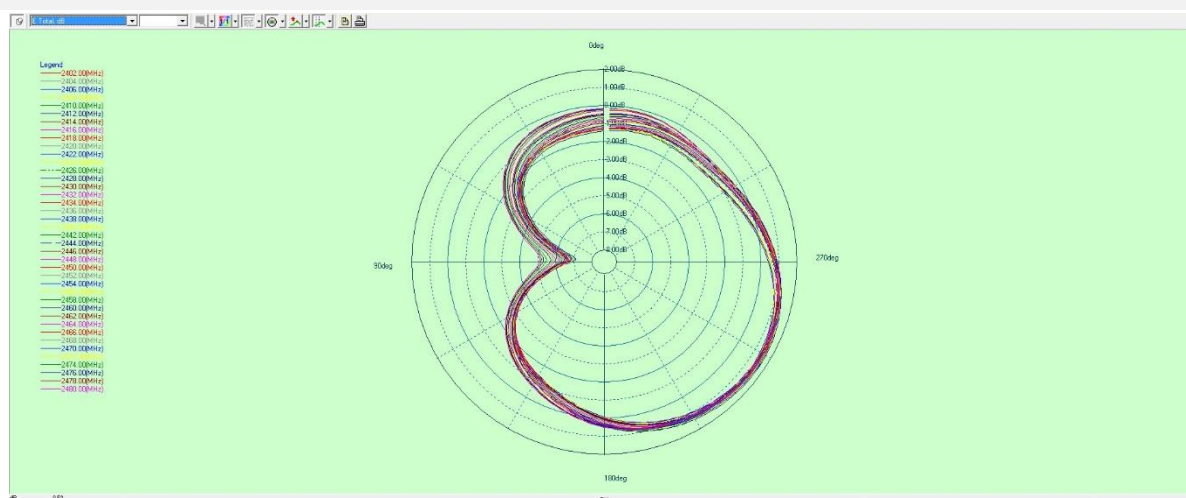
B2.1 PHI=0



B2.2 PHI=90



B2.3 THETA=90



ANNEX C TEST SETUP PHOTOS

Please refer the document “BL-SZ2510574-AO.PDF”.

ANNEX D EUT PHOTO

Please refer the document “BL-SZ2510574-AA.PDF”.

Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
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7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--