

TEST REPORT

Applicant: Cooltron Industrial Supply(Shenzhen) Limited
Address: 2F New D Building, Bulong Road, Anfeng Industrial Park, Longhua District, Shenzhen, China
Equipment Type: TLSR-2G4-F01
Model Name: A1/A2_THR_Rev1.1
Brand Name: AC Infinity
Test Standard: ANSI/IEEE Std 149-1979
Test Date: Sep. 01, 2022
Date of Issue: Sep. 07, 2022

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Mai Jintian

Checked by: Tolan Tu

Approved by: Wei Yanquan
(Chief Engineer)



Revision History		
Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Sep. 07, 2022</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	<input checked="" type="checkbox"/> Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	<input type="checkbox"/> 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	Cooltron Industrial Supply(Shenzhen) Limited
Address	2F New D Building, Bulong Road, Anfeng Industrial Park, Longhua District, Shenzhen, China
Contact Person	Lambert
Telephone Number	0755-82090805
E-mail Address	Lambert.chen@cooltron.com.cn

2.2 Manufacturer Information

Manufacturer	Cooltron Industrial Supply(Shenzhen) Limited
Address	2F New D Building, Bulong Road, Anfeng Industrial Park, Longhua District, Shenzhen, China

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	TL5R-2G4-F01
Model Name Under Test	A1/A2_THR_Rev1.1
Antenna Type	PCB Antenna
Dimensions	13*7 mm

2.5 Ancillary Equipment

Note: Not applicable.

2.6 Technical Information

Frequency Range	2400MHz ~ 2500MHz
Test Frequencies	2400MHz, 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, 2482MHz, 2484MHz, 2486MHz, 2488MHz, 2490MHz, 2492MHz, 2494MHz, 2496MHz, 2498MHz, 2500MHz

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	ANSI/IEEE Std 149-1979	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

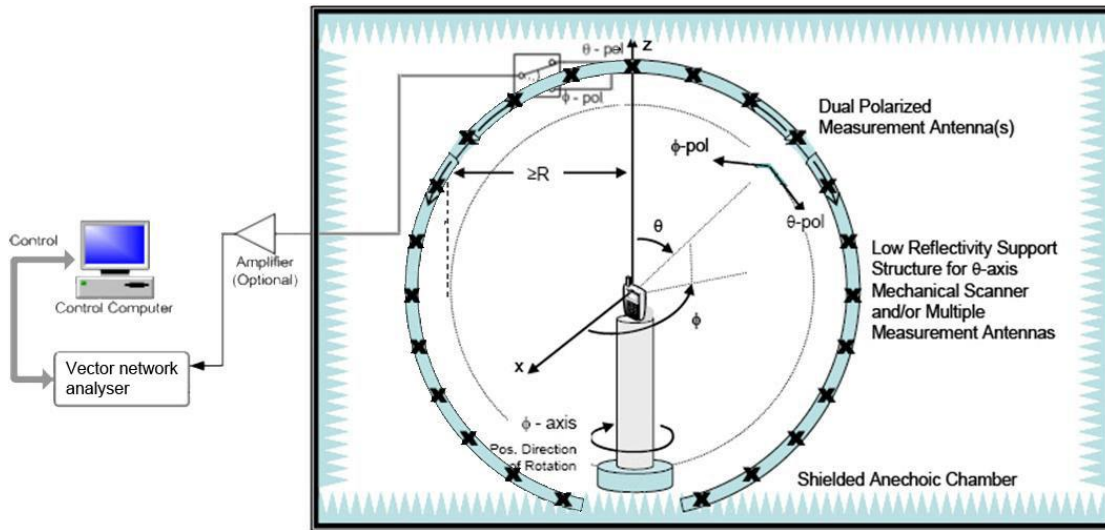
Environment Parameter	Selected Values During Tests			
	Ambient Pressure(KPa)	Temperature(°C)	Voltage	Relative Humidity (%)
Normal Temperature, Normal Voltage (NTNV)	101	25	N/A	50

4.2 Test Equipment List

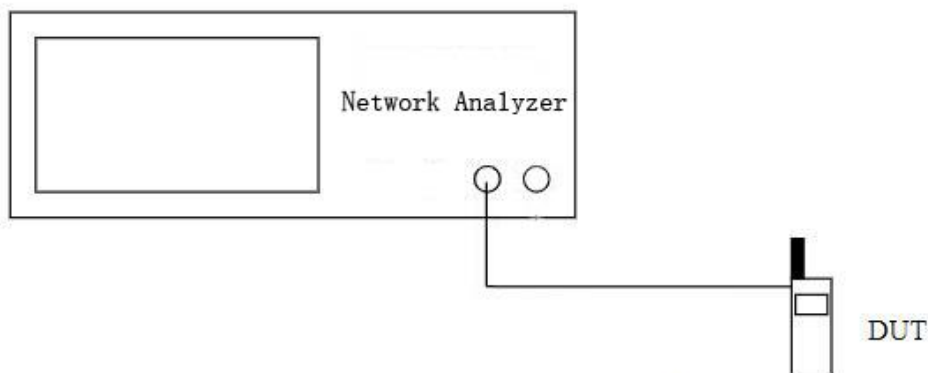
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Multi-probe Antenna Measurement System	SATIMO	SG24-L	1101855-0001	2021.11.12	2024.11.11
Vector Network Analyzer	Agilent	E5071B	MY42404001	2022.04.02	2023.04.01
Description	Manufacturer	Name		Version	
Test Software	MVG	SPM		V 1.8	

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 (%)
2400MHz	0.38	38
2402MHz	0.38	39
2404MHz	0.38	39
2406MHz	0.40	39
2408MHz	0.38	39
2410MHz	0.40	39
2412MHz	0.42	40
2414MHz	0.42	40
2416MHz	0.61	41
2418MHz	0.66	41
2420MHz	0.69	42
2422MHz	0.76	42
2424MHz	0.86	43
2426MHz	1.08	45
2428MHz	1.19	46
2430MHz	1.29	47
2432MHz	1.41	48
2434MHz	1.56	49
2436MHz	1.61	50
2438MHz	1.72	51
2440MHz	1.84	52
2442MHz	1.94	53
2444MHz	2.02	53
2446MHz	2.05	53
2448MHz	2.09	54
2450MHz	2.12	54
2452MHz	2.16	54
2454MHz	2.17	55
2456MHz	2.14	55
2458MHz	2.17	55
2460MHz	2.19	56
2462MHz	2.22	56
2464MHz	2.26	57
2466MHz	2.32	58
2468MHz	2.35	59
2470MHz	2.38	60
2472MHz	2.42	60
2474MHz	2.49	61

2476MHz	2.55	62
2478MHz	2.58	62
2480MHz	2.61	63
2482MHz	2.64	63
2484MHz	2.67	64
2486MHz	2.78	63
2488MHz	2.76	63
2490MHz	2.77	63
2492MHz	2.79	64
2494MHz	2.78	64
2496MHz	2.79	63
2498MHz	2.85	64
2500MHz	2.88	64

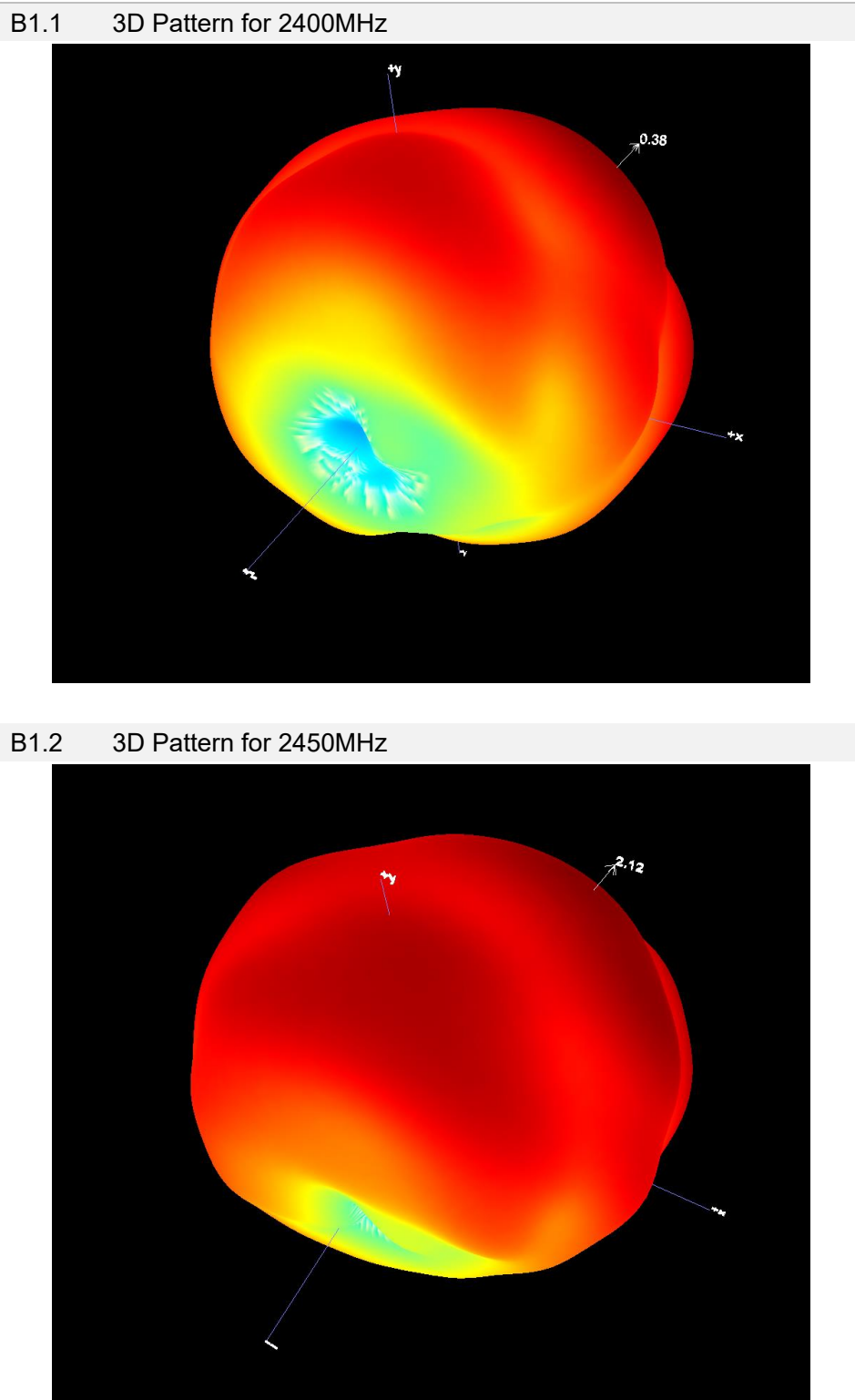
A.2 VSWR

Frequency	VSWR
2400MHz	5.14
2450MHz	3.85
2500MHz	3.17

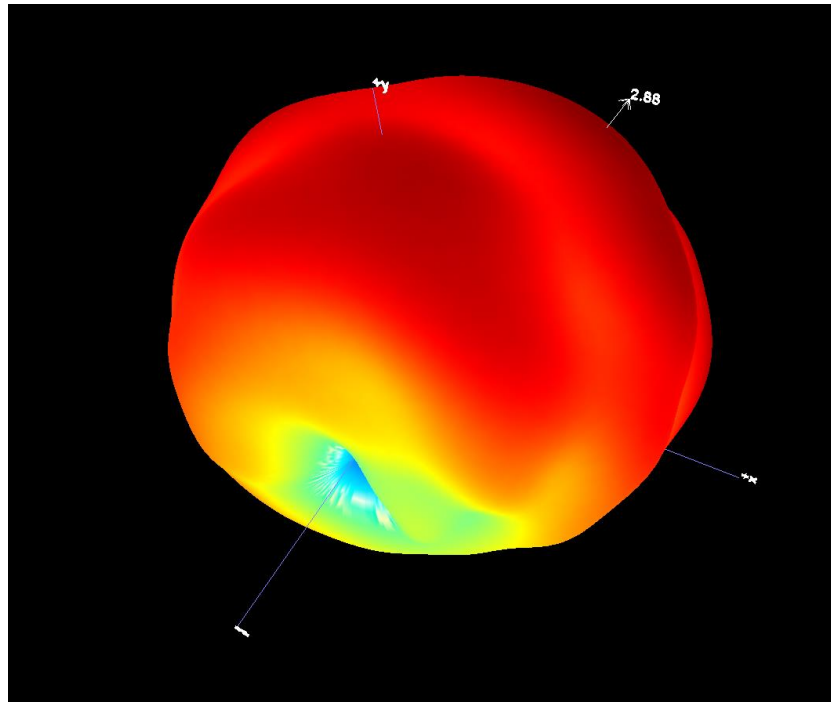


ANNEX B RADIATION PATTERN

B.1 3D Pattern

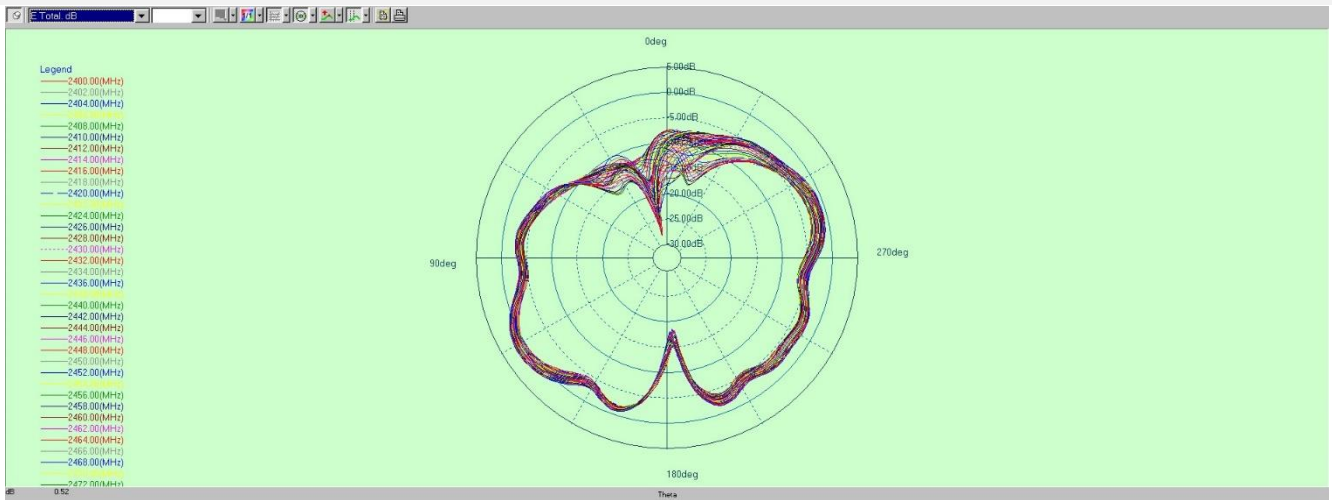


B1.3 3D Pattern for 2500MHz

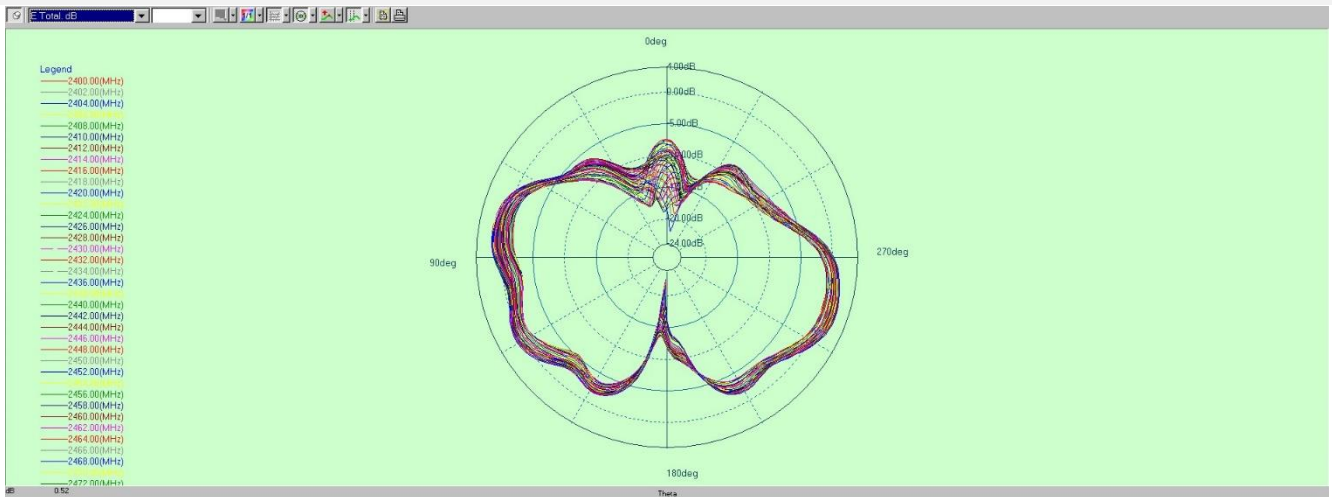


B.2 1D Radiation Pattern

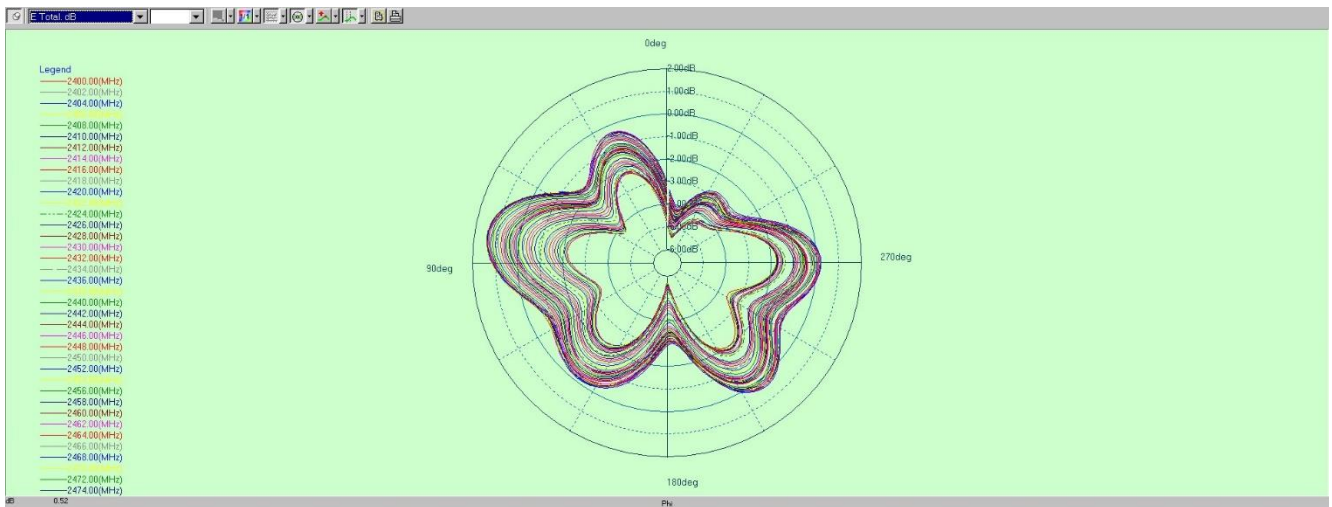
B2.1 PHI=0



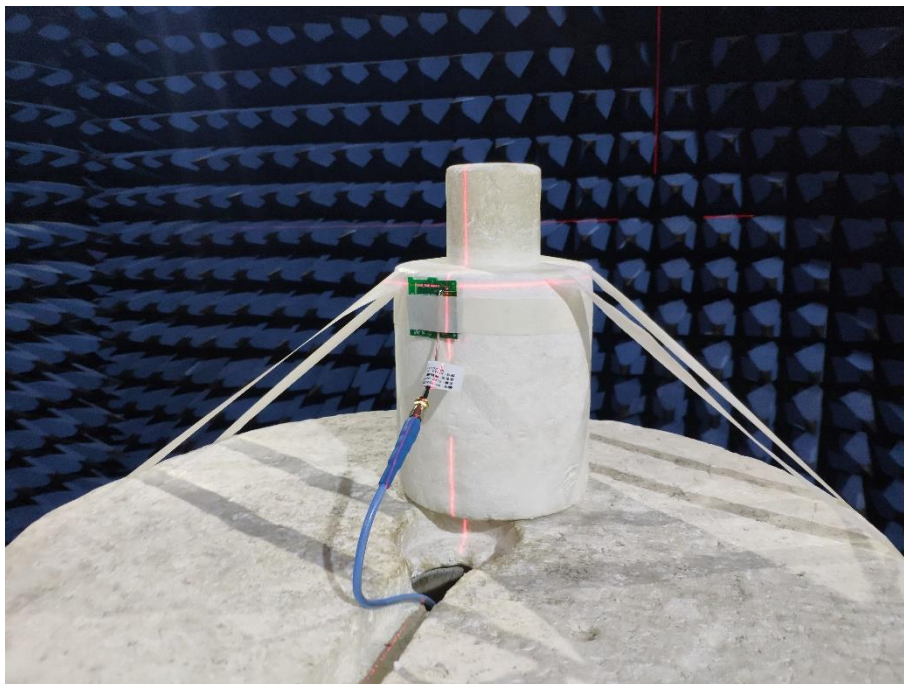
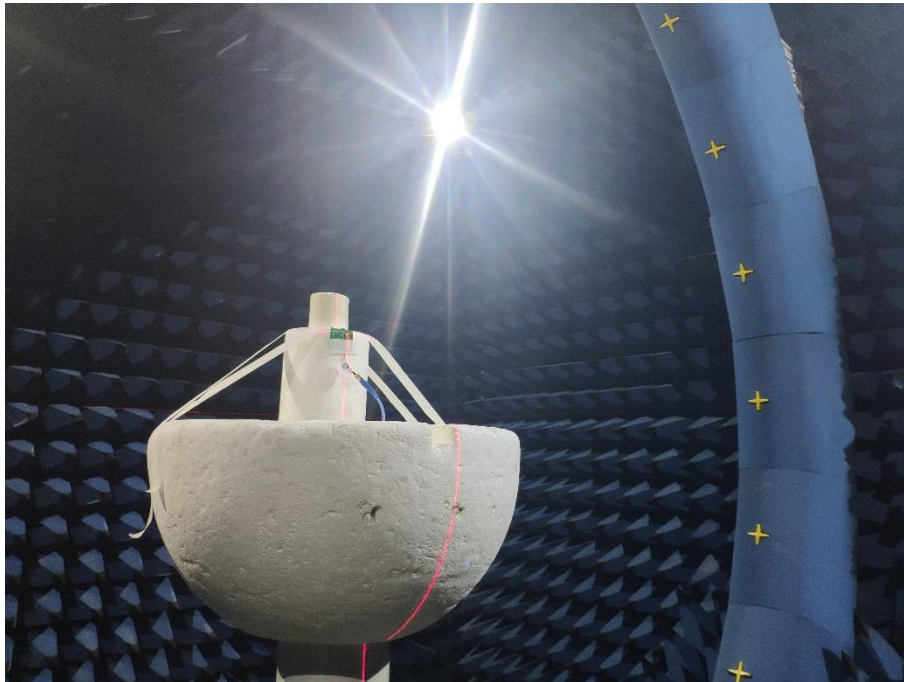
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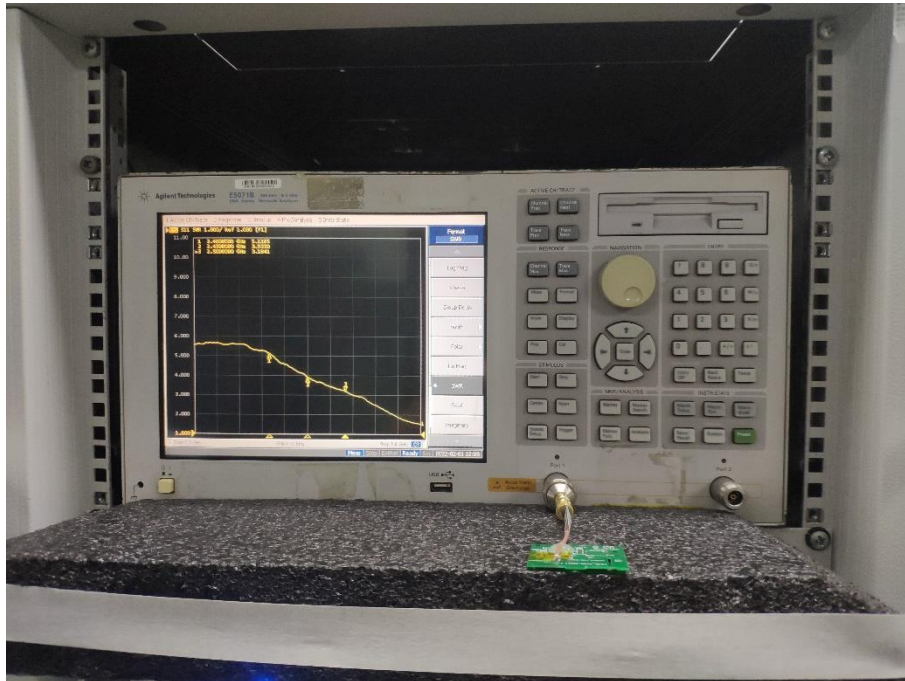


B2.3 THETA=90

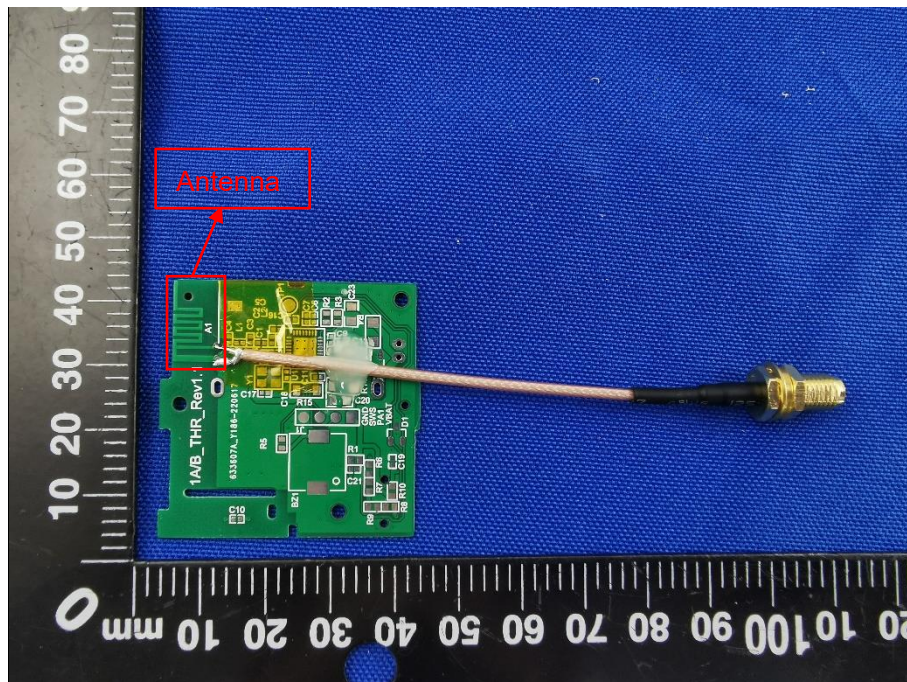


ANNEX C TEST SETUP PHOTO





ANNEX D EUT PHOTO



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.
2. The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
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4. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the "inspection and testing dedicated stamp" or test report stamp.
5. The test data and results are only valid for the tested samples provided by the customer.
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7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--