

# TEST REPORT

**Applicant:** GUANGZHOU TIANPU ELECTRICAL EQUIPMENT CO., LTD.  
**Address:** NO. 8, JINTIAN RD, JINTIAN INDUSTRIAL AREA, HUADONG TOWN, HUADU DISTRICT, GUANGZHOU, CHINA  
**Equipment Type:** WIRELESS MIC  
**Model Name:** X9WM  
**Brand Name:** N/A  
**Test Standard:** IEEE Std 149-2021  
**Sample Arrival Date:** Oct. 27, 2023  
**Test Date:** Oct. 31, 2023  
**Date of Issue:** Nov. 17, 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*

<b>Revision History</b>		
<u>Version</u>	<u>Issue Date</u>	<u>Revisions</u>
<u>Rev. 01</u>	<u>Nov. 17, 2023</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	GUANGZHOU TIANPU ELECTRICAL EQUIPMENT CO., LTD.
Address	NO. 8, JINTIAN RD, JINTIAN INDUSTRIAL AREA, HUADONG TOWN, HUADU DISTRICT, GUANGZHOU, CHINA

### 2.2 Manufacturer Information

Manufacturer	GUANGZHOU TIANPU ELECTRICAL EQUIPMENT CO., LTD.
Address	NO. 8, JINTIAN RD, JINTIAN INDUSTRIAL AREA, HUADONG TOWN, HUADU DISTRICT, GUANGZHOU, CHINA

### 2.3 General Description for Equipment under Test (EUT)

EUT Name	WIRELESS MIC
Model Name Under Test	X9WM
Antenna Type	Spring Antenna
Dimensions	14.0*13.5*13.5 mm

### 2.4 Ancillary Equipment

Note: Not applicable.

### 2.5 Technical Information

Test Frequencies	577.3MHz, 592MHz, 607MHz
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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	--
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	$\pm 1.92\text{dB}$
VSWR(S11)	$\pm 0.61$

## 4 GENERAL TEST CONFIGURATIONS

### 4.1 Test Condition

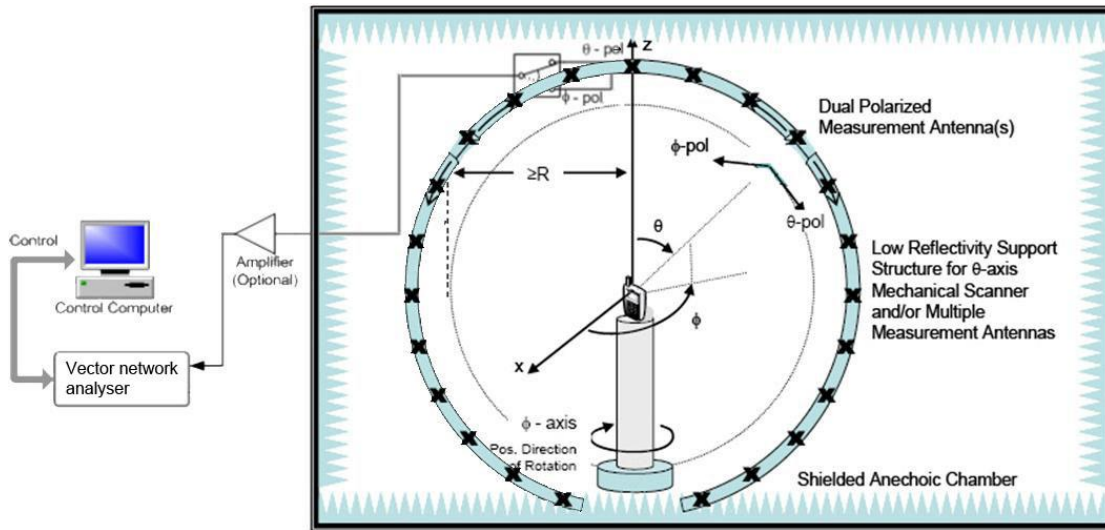
Environment Parameter	Selected Values During Tests			
	Ambient Pressure(KPa)	Temperature(°C)	Voltage	Relative Humidity (%)
Normal Temperature, Normal Voltage (NTNV)	101	21.6	N/A	48

### 4.2 Test Equipment List

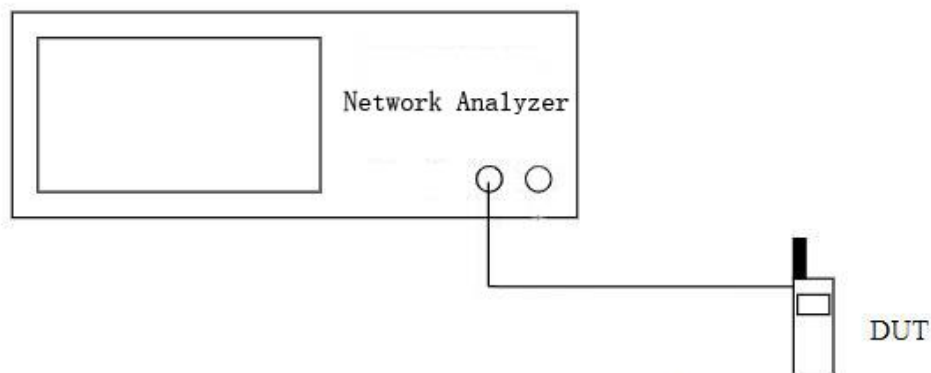
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SG24 Multi-probe Antenna Measurement System	SATIMO	SG24-L	1101855-0001	2021.11.12	2024.11.11
Vector Network Analyzer	Agilent	E5071B	MY42404001	2023.03.26	2024.03.25
Description	Manufacturer	Name		Version	
Test Software	MVG	SPM		V 1.8	

### 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

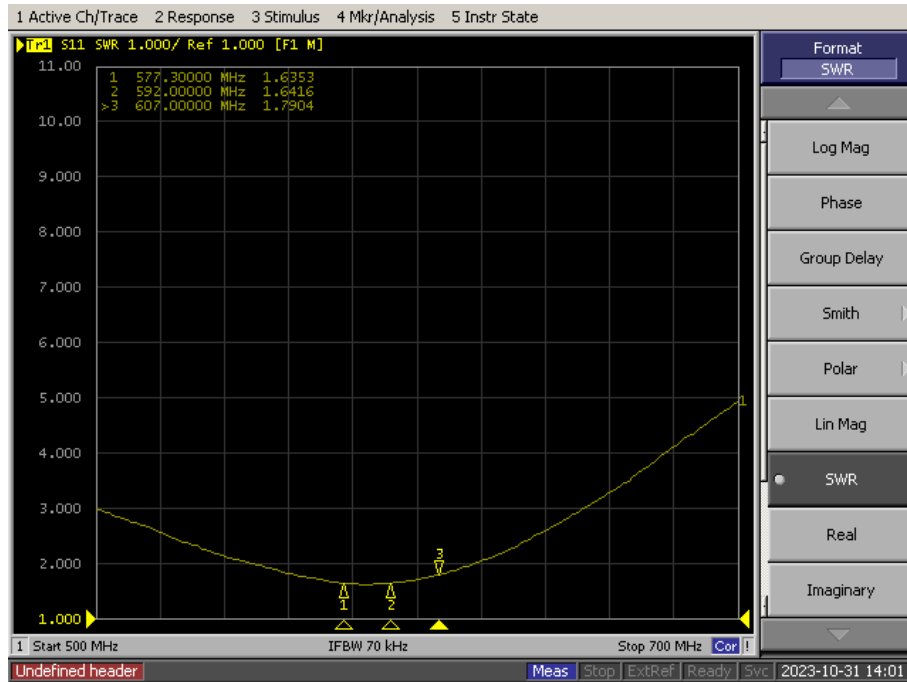
### A.1 Gain and Efficiency

Frequency	Gain (dBi)	Efficiency (%)
577.3MHz	-5.38	7
592MHz	-4.87	7
607MHz	<b>-4.21</b>	6



## A.2 VSWR

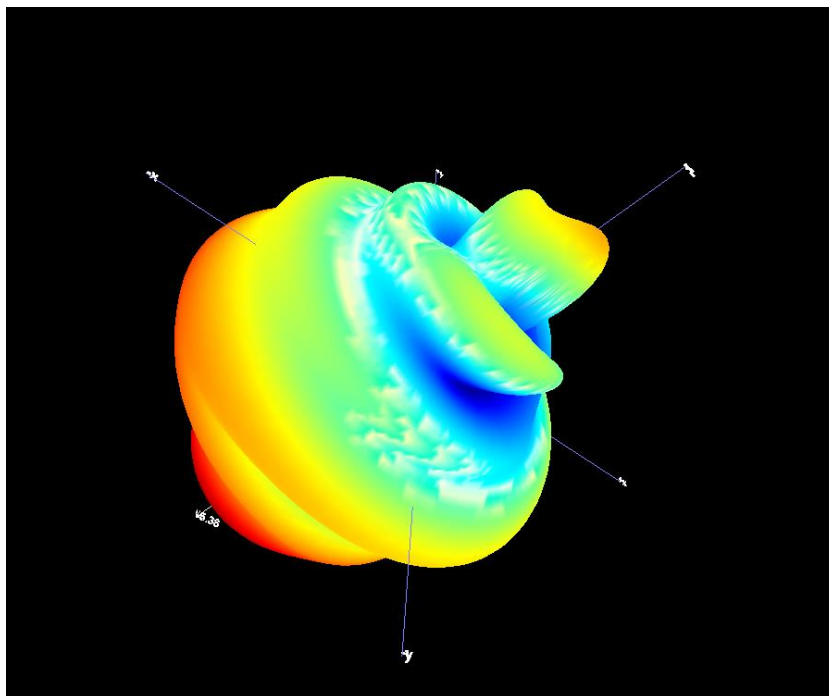
Frequency	SWR
577.3MHz	1.64
592MHz	1.64
607MHz	1.79



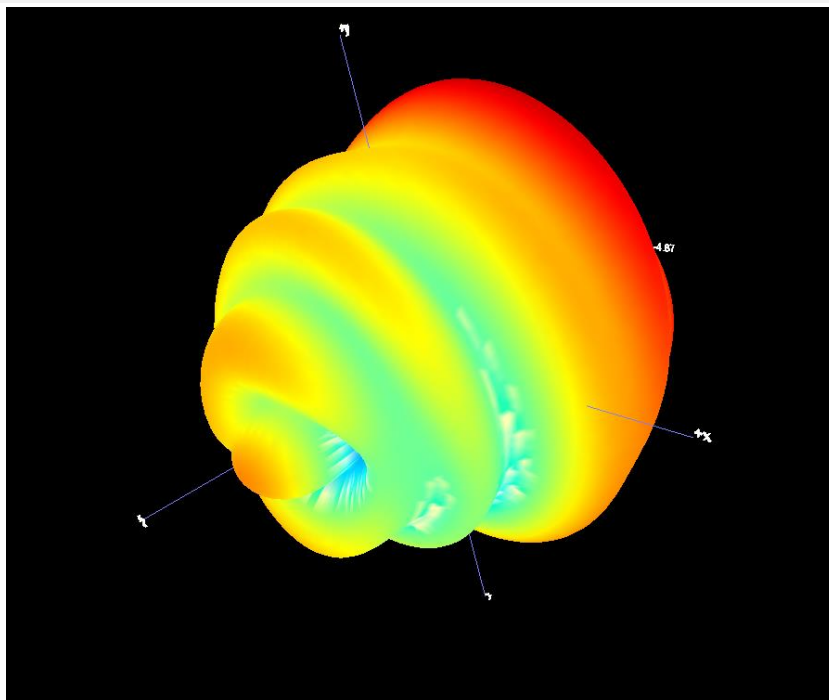
## ANNEX B RADIATION PATTERN

### B.1 3D Pattern

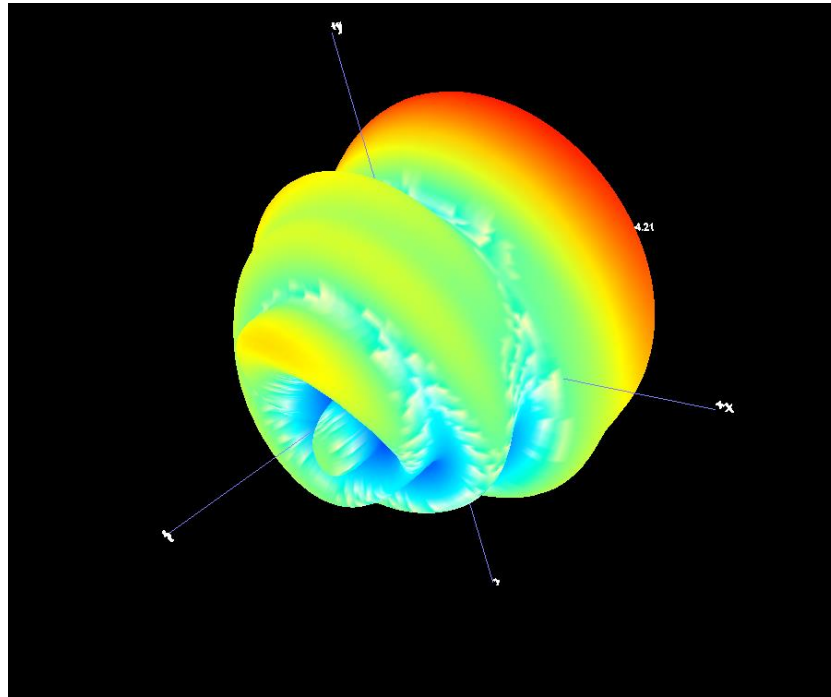
B1.1 3D Pattern for 577.3MHz



B1.2 3D Pattern for 592MHz

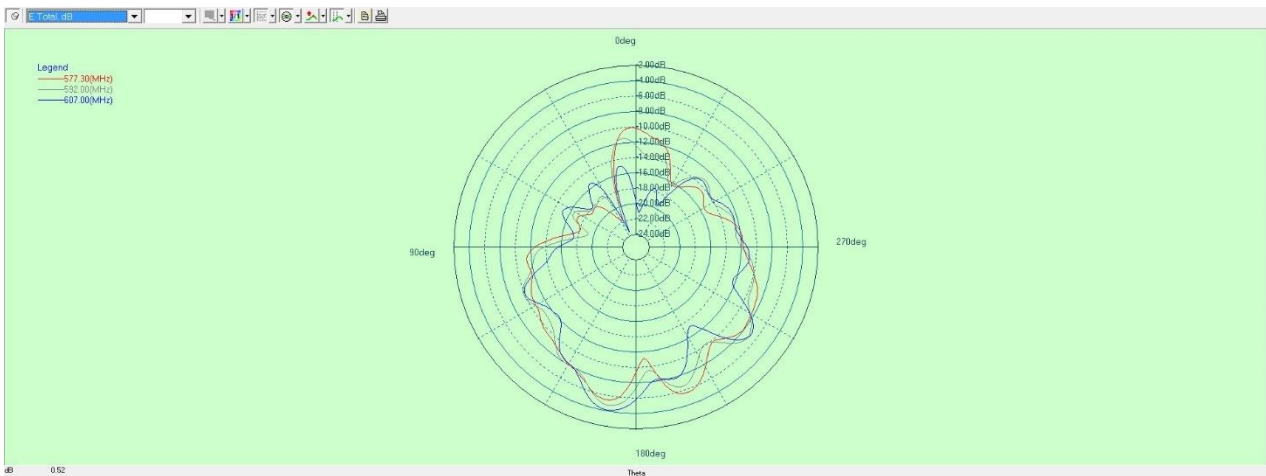


B1.3 3D Pattern for 928MHz

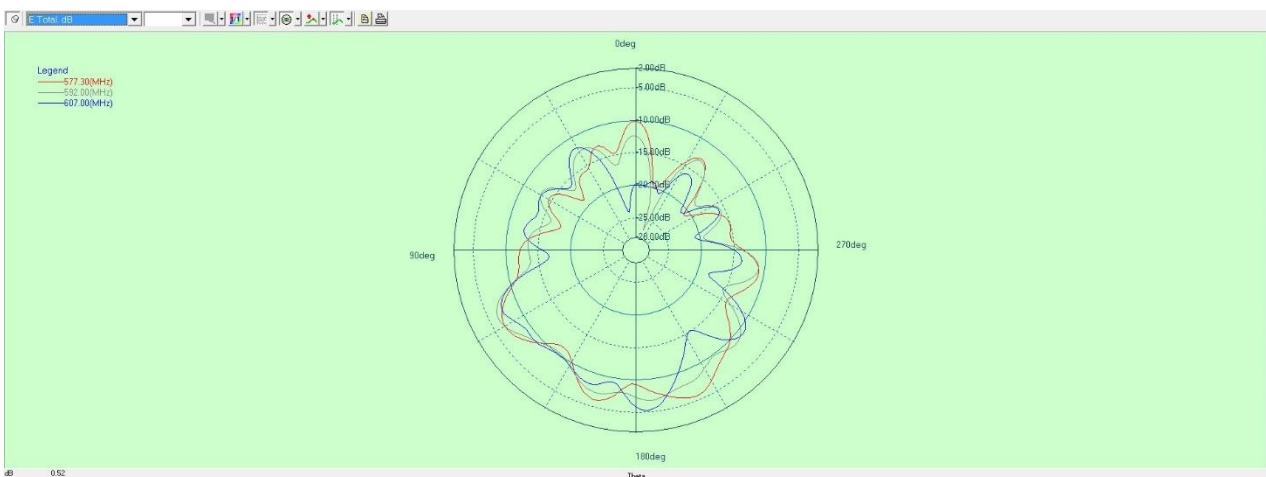


## B.2 1D Radiation Pattern

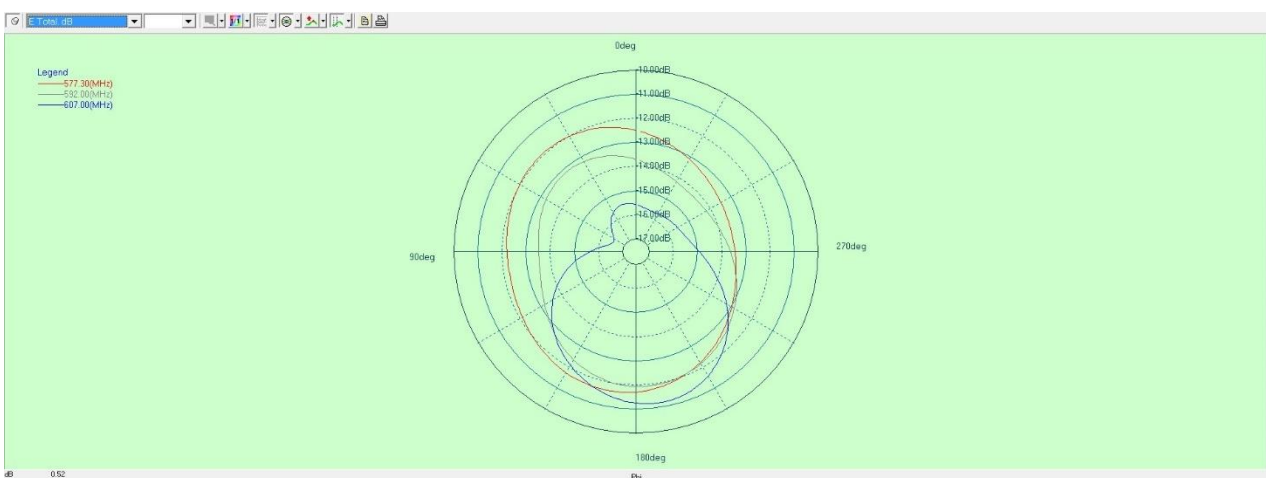
### B2.1 PHI=0



### B2.2 PHI=90



### B2.3 THETA=90



## **ANNEX C TEST SETUP PHOTOS**

Please refer the document “BL-SZ23A1105-AO.PDF”.

## **ANNEX D EUT PHOTO**

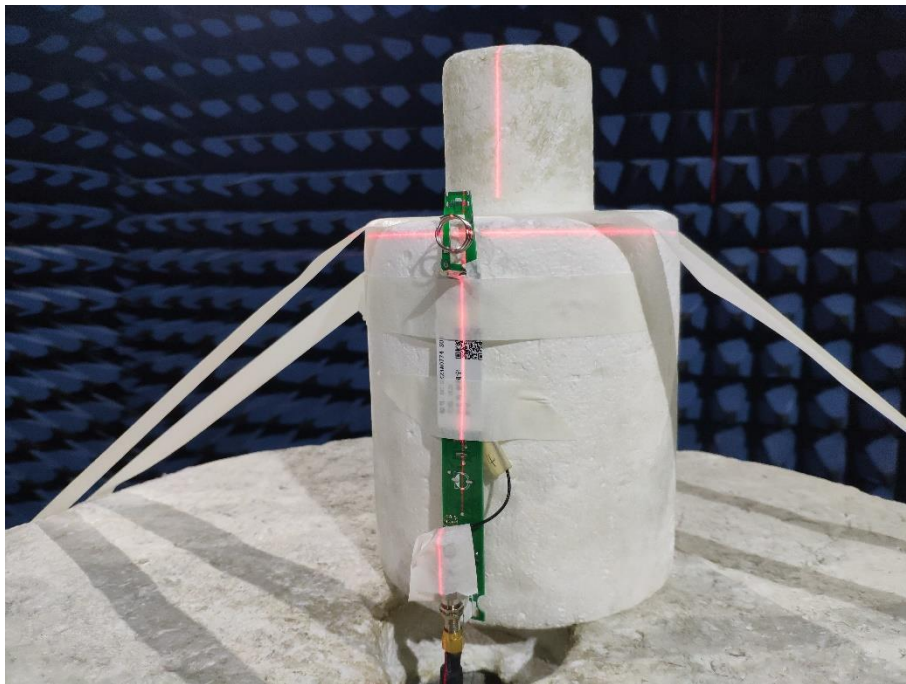
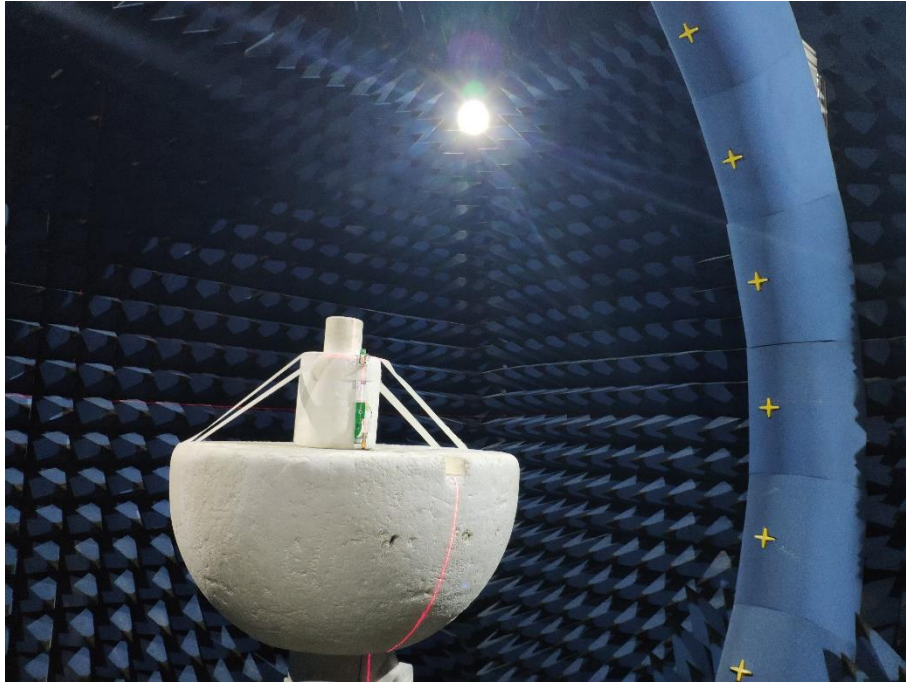
Please refer the document “BL-SZ23A1105-AA.PDF”.

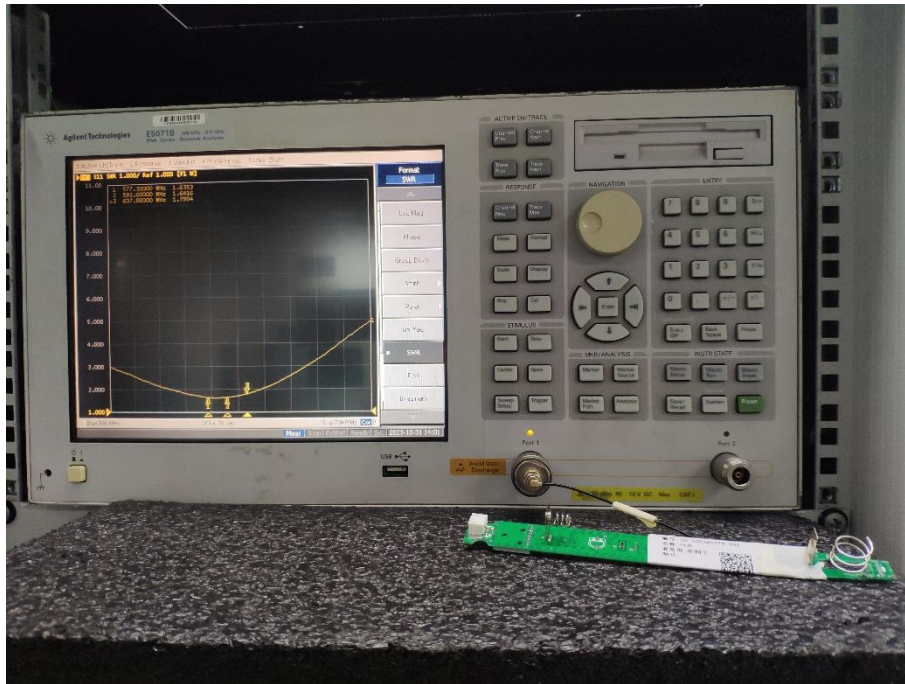
## Statement

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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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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--

## TEST SETUP PHOTOS

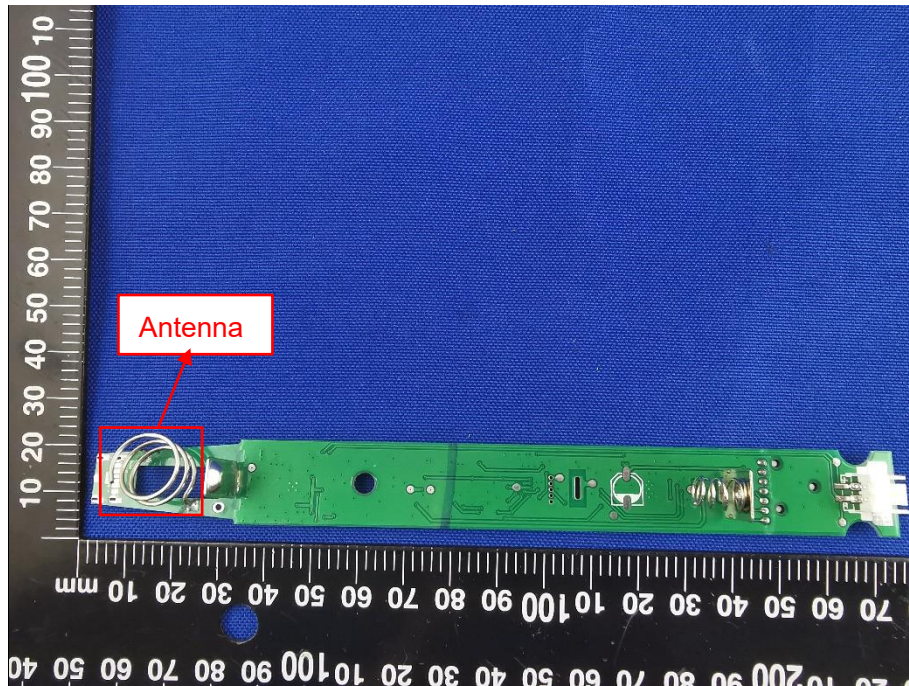




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## EUT PHOTO



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