


# Antenna Test Report

Product Name: Bluetooth Module	Report No. : RF8230406039-L1-R
Product Model: JMD1102/JMD1105/JMD1106	Security Classification: Open
Version : V1.0	Total Page: 12

## HAIYUN Laboratory Report

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# Antenna Test Report

<b>Equipment:</b>	<b>Bluetooth Module</b>
<b>Model:</b>	<b>JMD1102/JMD1105/JMD1106</b>
<b>Applicant:</b>	<b>JOYTECH Healthcare Co., Ltd.</b>
<b>Applicant address:</b>	<b>No.365,Wuzhou Road311100 Hangzhou, Zhejiang ProvincePEOPLE'S REPUBLIC OF CHINA</b>
<b>Manufacture:</b>	<b>JOYTECH Healthcare Co., Ltd.</b>
<b>Address:</b>	<b>No.365,Wuzhou Road311100 Hangzhou, Zhejiang ProvincePEOPLE'S REPUBLIC OF CHINA</b>
<b>Date of Receipt:</b>	<b>Apr 7.2023</b>
<b>Date of Test:</b>	<b>Apr 1.2023~May 10.2023</b>
<b>Issue Date:</b>	<b>May 10.2023</b>
<b>Tested by:</b>	<b>Shenzhen HAIYUN Testing Co., Ltd. Laboratory</b>

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## 1. Purpose & Environment

### 1.1 Purpose

- Meet the electrical performance index;
- Confirm the antenna scheme to meet the design requirements;

### 1.2 Environment

- Test Condition: the network analyzer(E5071C) and SATIMO microwave anechoic chamber
- Passive measurement results are presented
- TEST ENVIRONMENT CONDITIONS

<b>Temperature</b>	26.85°C	<b>Relative Humidity</b>	53.2 %
<b>Atmosphere Pressure</b>	101 kPa	\	\

### 1.3 Equipment

No.	Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Due Calibration
1	Temp&Humidity Recorder	Anymetre	JR900	N/A	2022/10/12	2023/10/11
2	Network analyzer	Agilent	E5071C	MY4652371 6	2022/10/12	2023/10/11
3	Analog Signal Generator	Keysight	N5173B	MY5910064 1	2022/10/12	2023/10/11
4	SAC+Control shielding room	SAEMC	555	N/A	2022/10/15	2024/10/14
5	OTA Switching unit	MVG	Active Switchnig Unit	1102347- 2786	NA	NA
6	Smart-UPS	APC	RT 3000	N/A	NA	NA

## 1.4 Measurement uncertainty

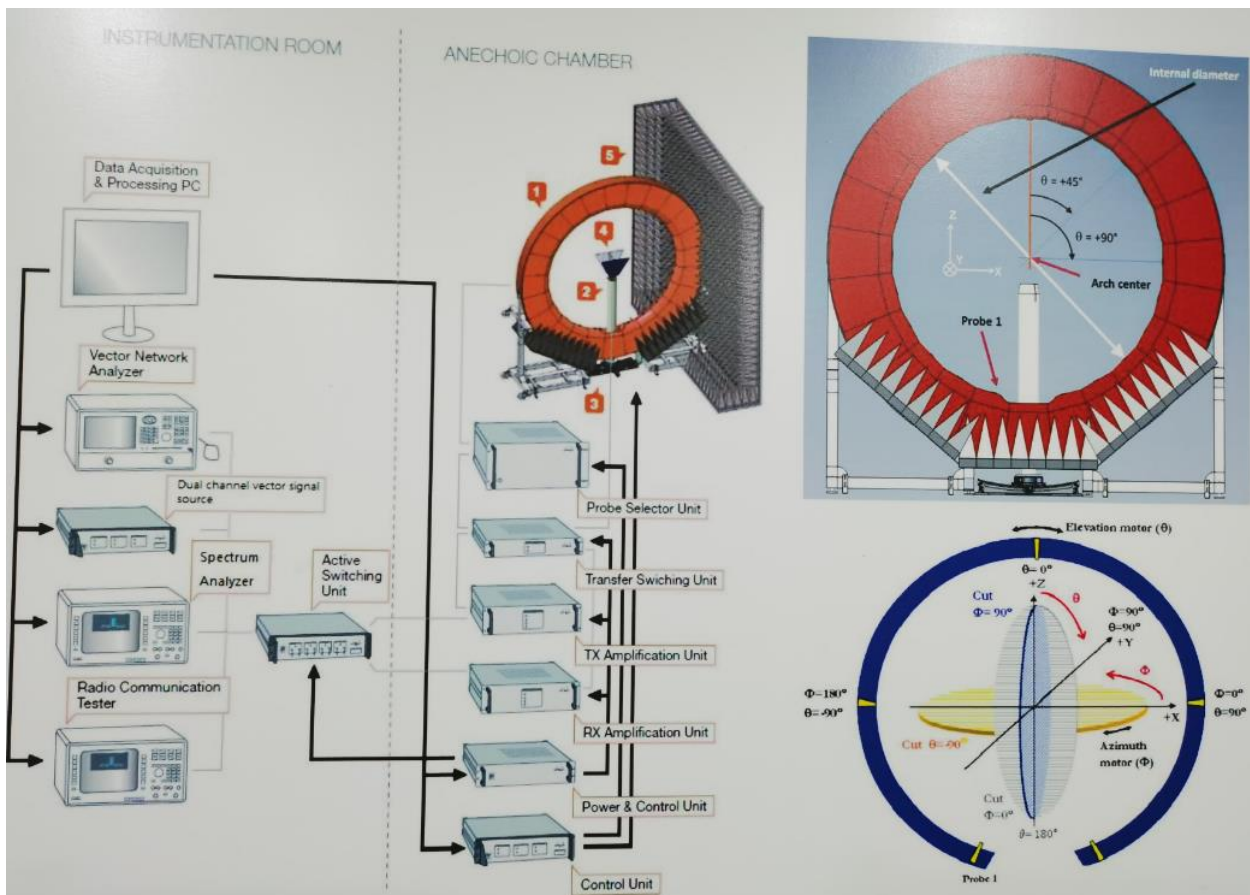
For the summary of the expanded measurement uncertainty with 95% confidence level, the expanded measurement uncertainties of TRP/TIS regulated in the Test Plan are:

<b>Expanded Uncertainty (dB)</b>		
<b>Test Configuration</b>	<b>TRP</b>	<b>TIS</b>
Free Space	2	2.3
Beside Head and Hand Right	2.4	2.6
Hand Left and Hand Right	2.2	2.6

## 2. Test Configuration and Test Method

### 2.1 Test Configuration

- Test configuration: Reference to CITA OTA distributed-axes system configuration.
- Chamber: Fully Anechoic Chamber.
- Turntable: Phi angle
- Multiple antenna loop: Theta angle
- Test system configuration diagram:

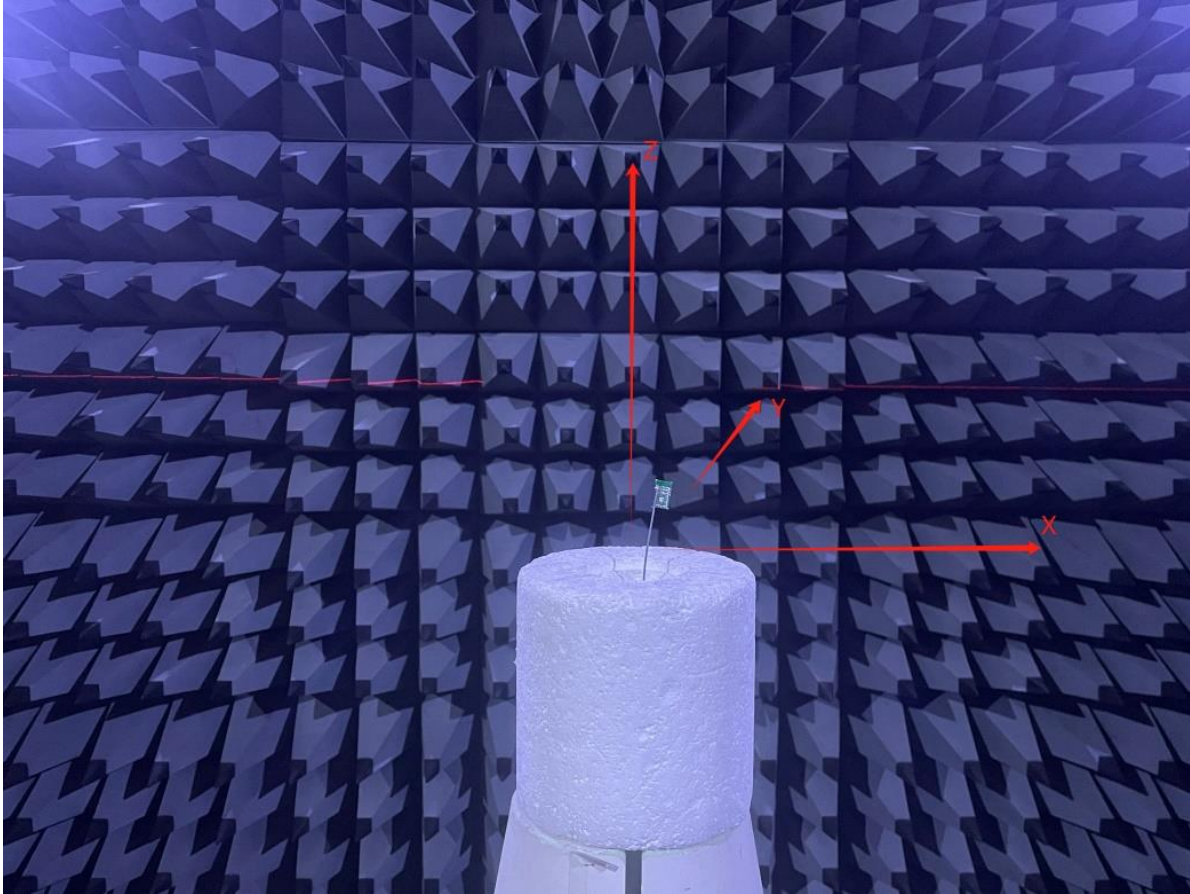


### 2.2 Test Method

Port 1 of Network analyzer connect to antenna of EUT. Record S21 value every 15 degree from 0 to 345 degree on Theta angle and 0 to 180 on Phi angle . Repeat process to each antenna of EUT.

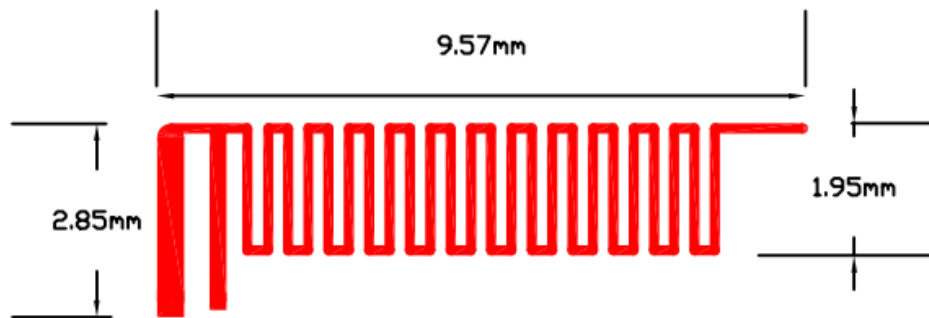
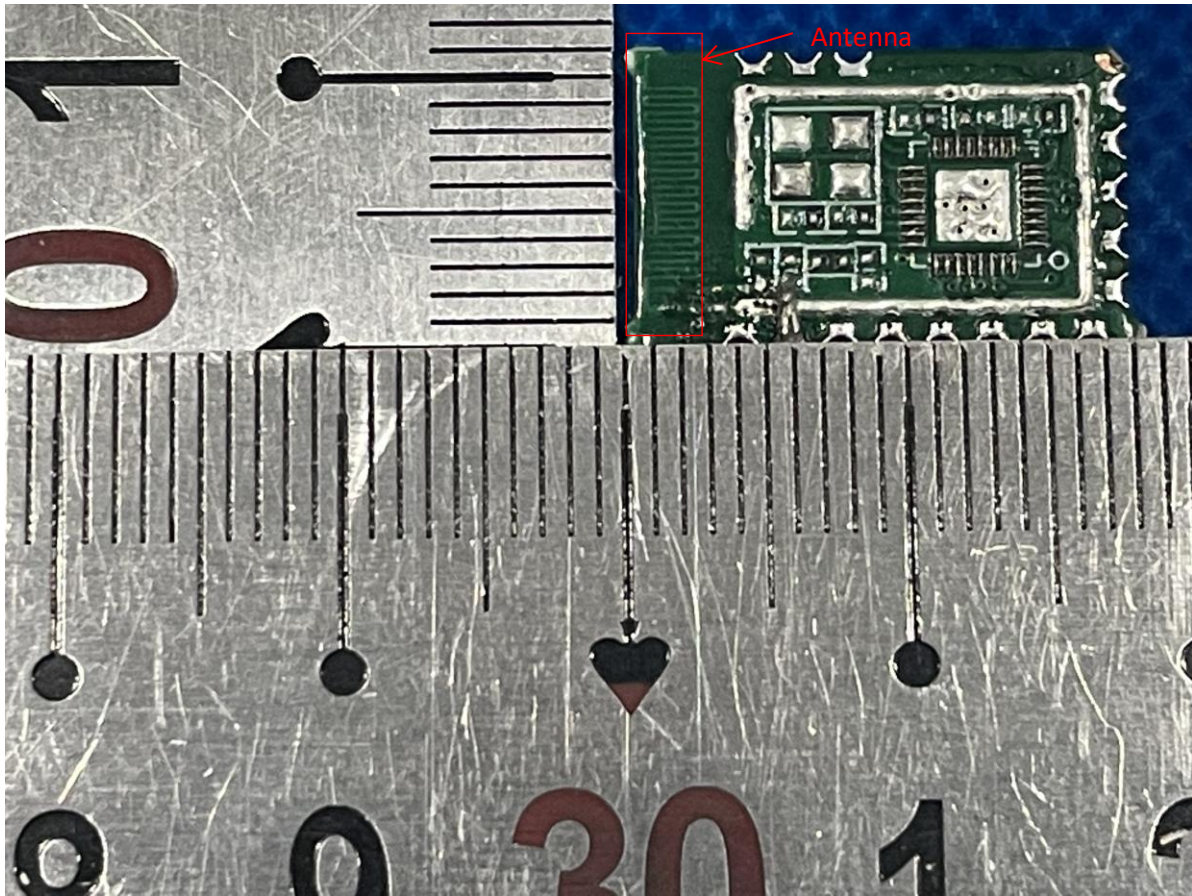
### 3. Test photos、 Test Condition and DUT Antenna

#### 3.1 Test photos



Microwave anechoic chamber

### 3.2 DUT Antenna

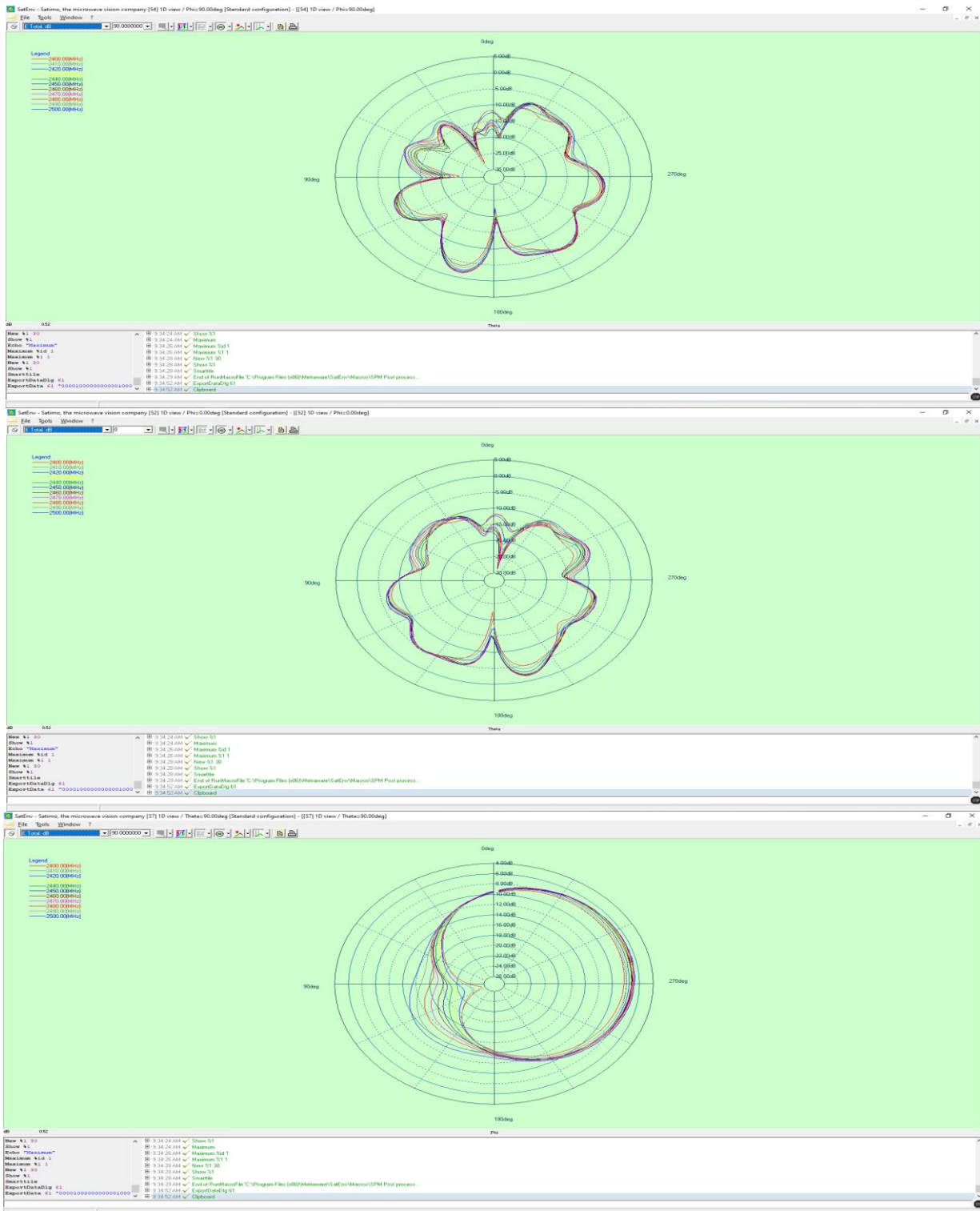




## 4.2 2D-3D Radiation pattern

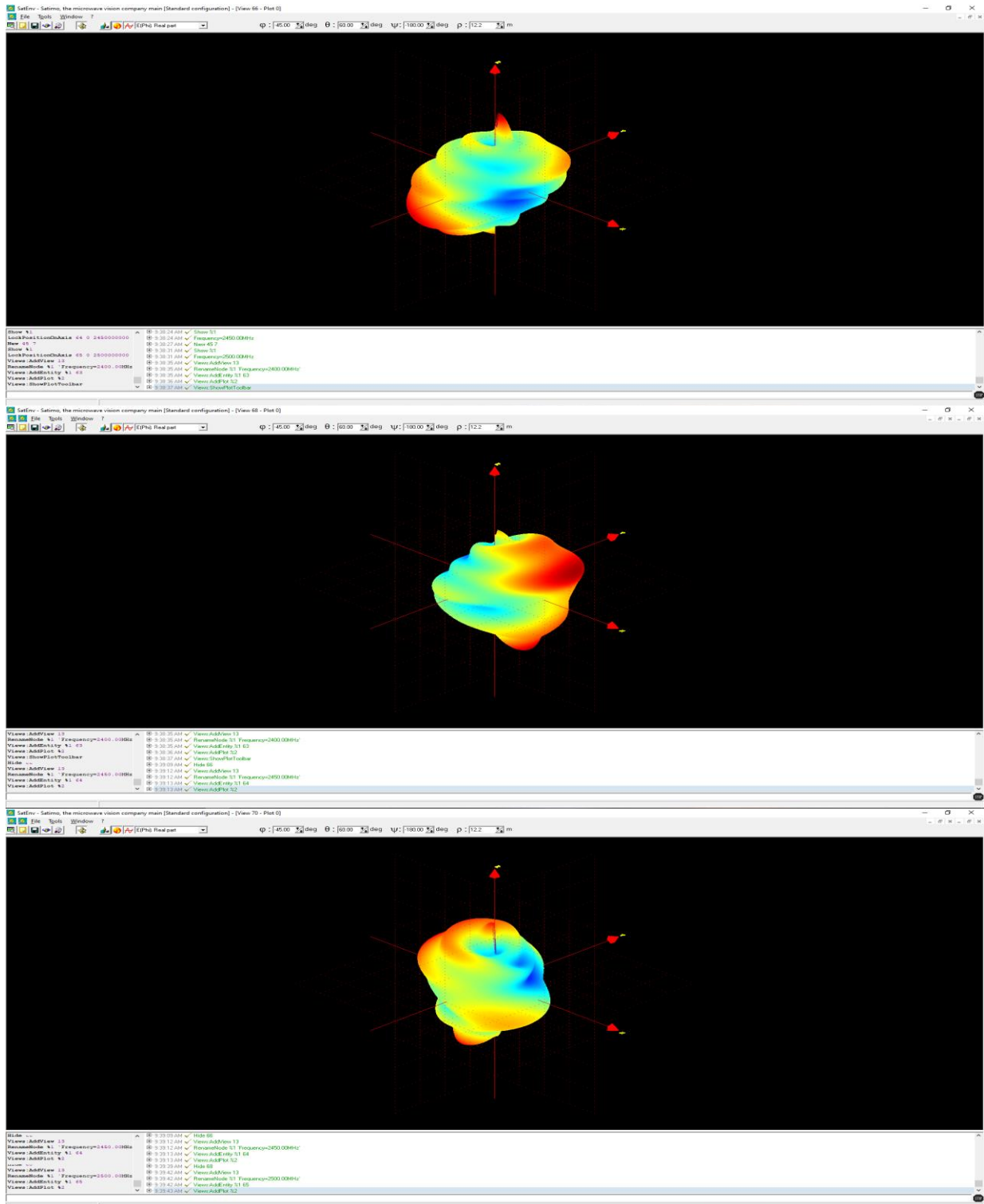
### 4.1 2D Radiation pattern test results

Antenna\_2D



## 4.2 3D Radiation pattern test results

### Antenna\_3D



## 5. Peak Gain

### 5.1 Test results

Antenna_Peak Gain	
Frequency (MHz)	Peak_Gain . dBi
2400	-3.52746
2410	-2.85367
2420	-2.15516
2430	-1.78412
2440	-1.69437
2450	-1.55137
2460	-1.49915
2470	-1.37612
2480	-1.49079
2490	-1.57472
2500	-1.7318

## STATEMENT

- a) The test report applies only to the specific samples tested under conditions.
- b) The test report is invalid without the Inspection Seal.
- c) The test report is invalid without the signature of the test engineer, auditor, Approver.
- d) The test report is invalid if it is altered or copied.
- e) Partial replica is prohibited without permission of Shenzhen HAIYUN Testing Co., Ltd. Laboratory
- f) The test results presented in this report is only valid on the tested samples.
- g) Objections to this report should be submitted to the inspection organization in 15 days of receipting the report. It is not accepted if overdue.

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(END OF REPORT)