

# TEST REPORT

**Applicant:** ASA Electronics Ltd  
**Address:** A503, Skyworth Building, Gaoxin Avenue.1.S.  
Nanshan, Shenzhen, 518057  
**Equipment Type:** AM/FM/WX/USB/BT/AUX IN Radio  
**Model Name:** JHD22 (refer section 2.3)  
**Brand Name:** N/A  
**Test Standard:** ANSI/IEEE Std 149-1979  
**Test Date:** Nov. 07, 2022  
**Date of Issue:** Nov. 09, 2022

**ISSUED BY:**

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Mai Jintian

**Checked by:** Tolan Tu

**Approved by:** Wei Yanquan  
(Chief Engineer)



<b>Revision History</b>		
<u>Version</u>	<u>Issue Date</u>	<u>Revisions</u>
<u>Rev. 01</u>	<u>Nov. 09, 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	ASA Electronics Ltd
Address	A503, Skyworth Building, Gaoxin Avenue.1.S. Nanshan, Shenzhen, 518057

### 2.2 Manufacturer Information

Manufacturer	Good Grace Far East Limited
Address	702 Kowloon Building, 555 Nathan Road, Kowloon, Hong Kong

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

EUT Name	AM/FM/WX/USB/BT/AUX IN Radio
Model Name Under Test	JHD22
Serial Model Name	JHD922, JHD962, JHD62
Model Description	All models are same with electrical parameters and internal circuit structure, but only differ in model name. (this information provided by the customer)
Antenna Type	Wire Antenna
Dimensions	19.65 mm

### 2.4 Ancillary Equipment

Note: Not applicable.

### 2.5 Technical Information

Test Frequencies	2400MHz, 2410MHz, 2420MHz, 2430MHz, 2440MHz, 2450MHz, 2460MHz, 2470MHz, 2480MHz, 2490MHz, 2500MHz
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### 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 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	$\pm 1.92\text{dB}$

## 4 GENERAL TEST CONFIGURATIONS

### 4.1 Test Condition

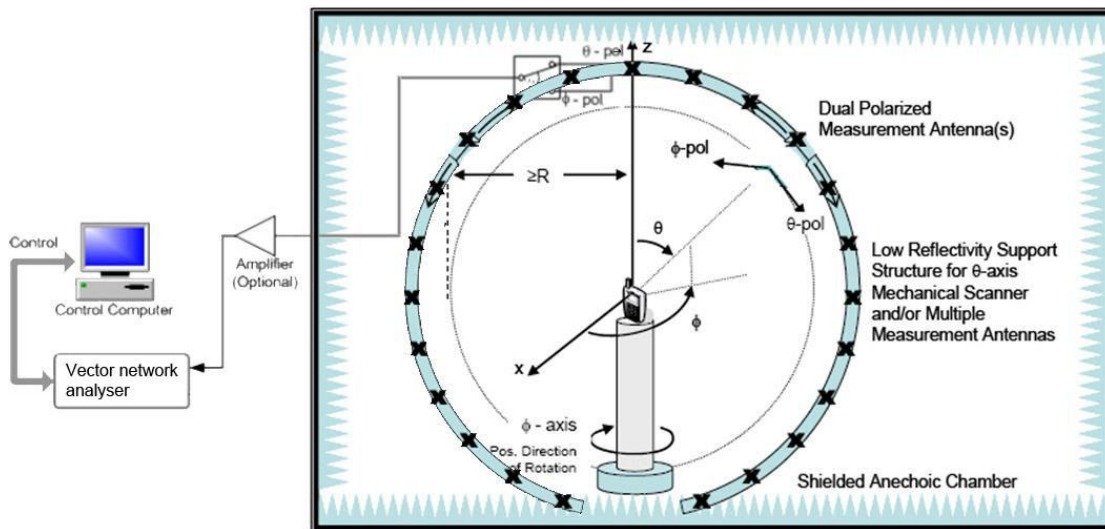
Environment Parameter	Selected Values During Tests			
	Ambient Pressure(KPa)	Temperature(°C)	Voltage	Relative Humidity (%)
Normal Temperature, Normal Voltage (NTNV)	101	25	N/A	50

### 4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SG24 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



## ANNEX A TEST RESULTS

### A.1 Gain and Efficiency

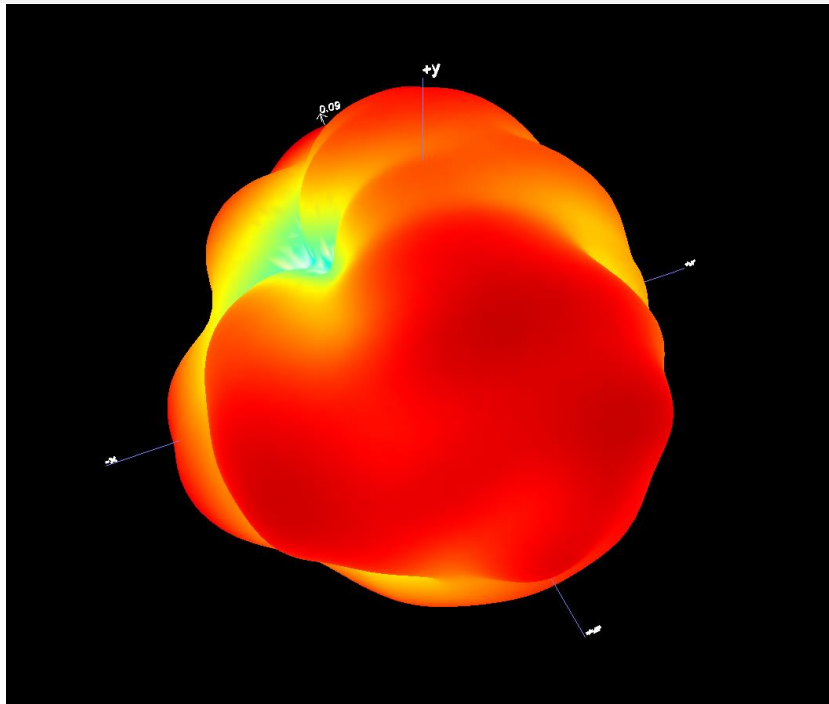
Frequency	Gain (dBi)	Efficiency (%)
2400MHz	<b>0.09</b>	<b>30</b>
2410MHz	-0.21	29
2420MHz	-0.58	28
2430MHz	-0.81	27
2440MHz	-0.94	27
2450MHz	-1.02	26
2460MHz	-1.26	25
2470MHz	-1.29	26
2480MHz	-1.20	26
2490MHz	-1.28	25
2500MHz	-1.46	25



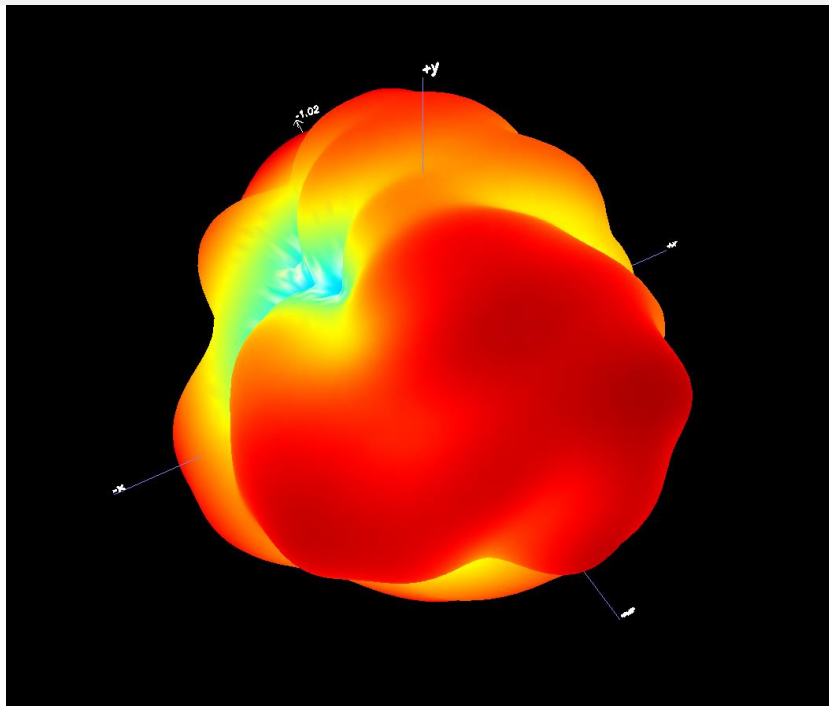
## ANNEX B RADIATION PATTERN

### B.1 3D Pattern

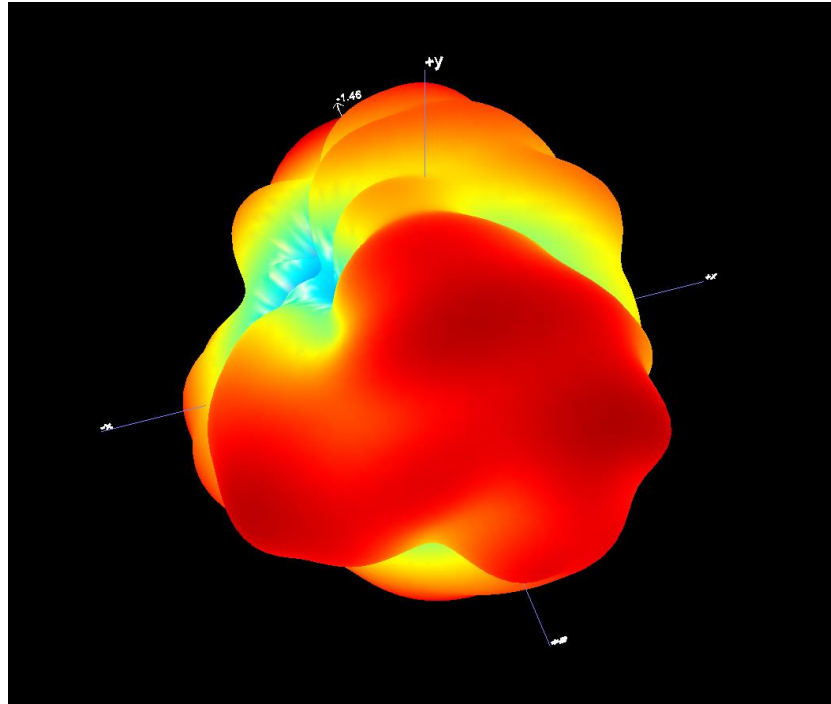
B1.1 3D Pattern for 2400MHz



B1.2 3D Pattern for 2450MHz

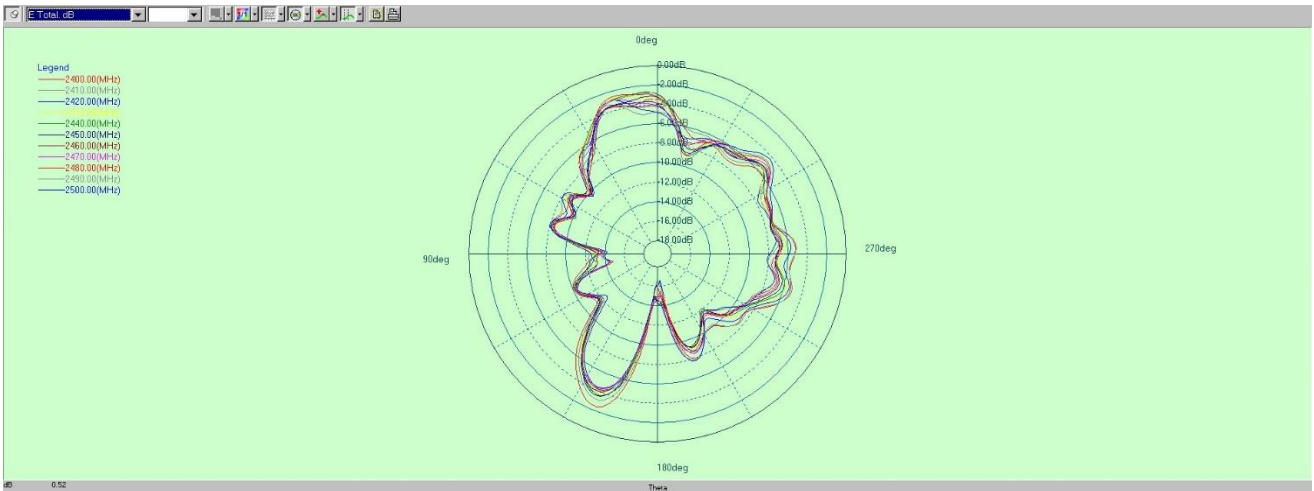


B1.3 3D Pattern for 2500MHz

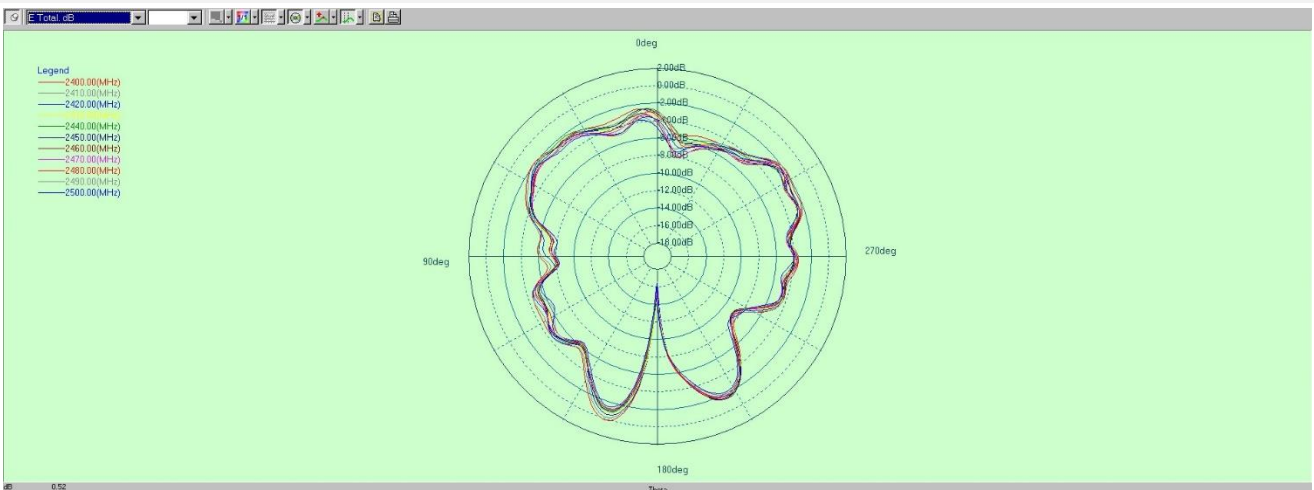


## B.2 1D Radiation Pattern

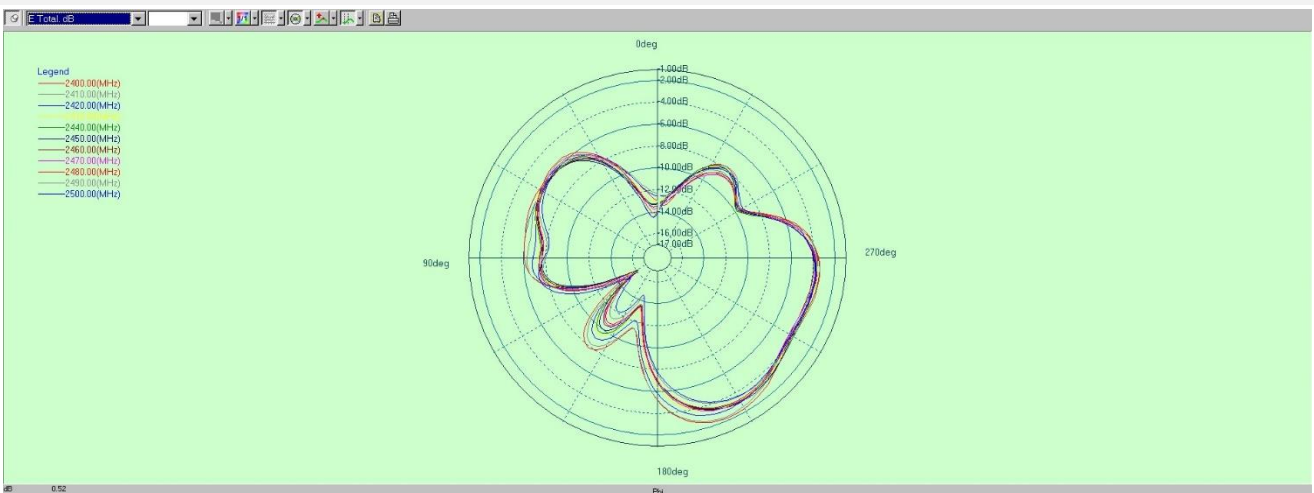
### B2.1 PHI=0



### B2.2 PHI=90



### B2.3 THETA=90



## **ANNEX C TEST SETUP PHOTOS**

Please refer the document “BL-SZ22B0189-AO-1.PDF”.

## **ANNEX D EUT PHOTO**

Please refer the document “BL-SZ22B0189-AA-1.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.
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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7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--