

TEST REPORT

Applicant: INMOTION TECHNOLOGIES CO., LTD.
Address: 18F, B1, Nanshan i Park, No.1001 Xueyuan Ave,
Nanshan District, shenzhen, China
Equipment Type: Inverted F Antenna (IFA)
Model Name: ANT1 2.4G
Brand Name: Inmotion
Test Standard: IEEE Std 149-2021
Sample Arrival Date: Jul. 27, 2023
Test Date: Jul. 28, 2023
Date of Issue: Aug. 02, 2023

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.



Tested by: Mai Jintian

Checked by: Zou Liu

Approved by: Tolan Tu
(Testing Director)

Mai Jintian

Zou Liu

Tolan Tu

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Aug. 02, 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	☒ 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	INMOTION TECHNOLOGIES CO., LTD.
Address	18F, B1, Nanshan i Park, No.1001 Xueyuan Ave, Nanshan District, shenzhen, China

2.2 Manufacturer Information

Manufacturer	INMOTION TECHNOLOGIES CO., LTD.
Address	18F, B1, Nanshan i Park, No.1001 Xueyuan Ave, Nanshan District, shenzhen, China

2.3 General Description for Equipment under Test (EUT)

EUT Name	Inverted F Antenna (IFA)
Model Name Under Test	ANT1 2.4G
Antenna Type	PCB Antenna
Dimensions	15mm*5mm

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	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

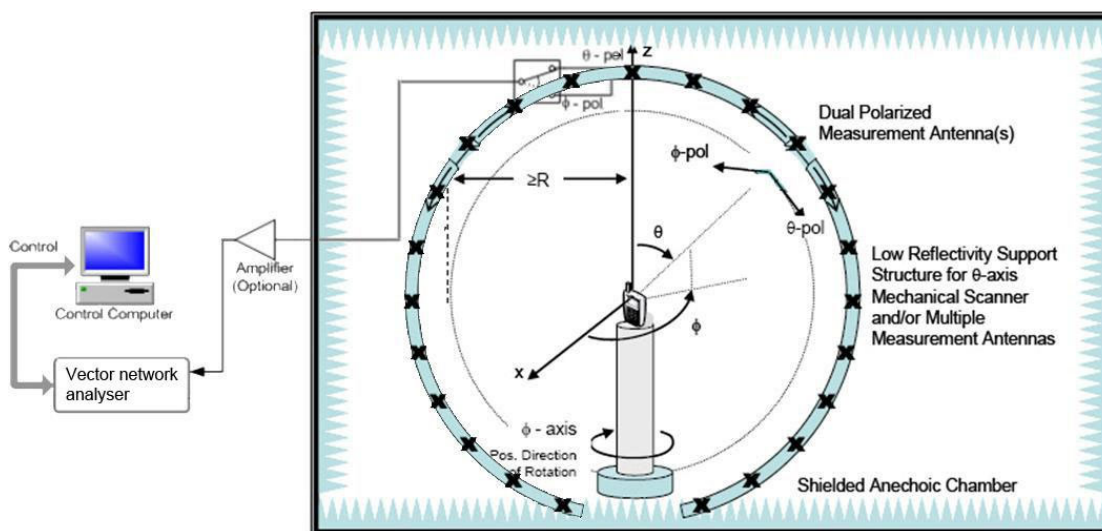
Environment Parameter	Selected Values During Tests			
	Ambient Pressure (KPa)	Temperature (°C)	Voltage	Relative Humidity (%)
Normal Temperature, Normal Voltage (NTNV)	101	21.7	N/A	51

4.2 Test Equipment List

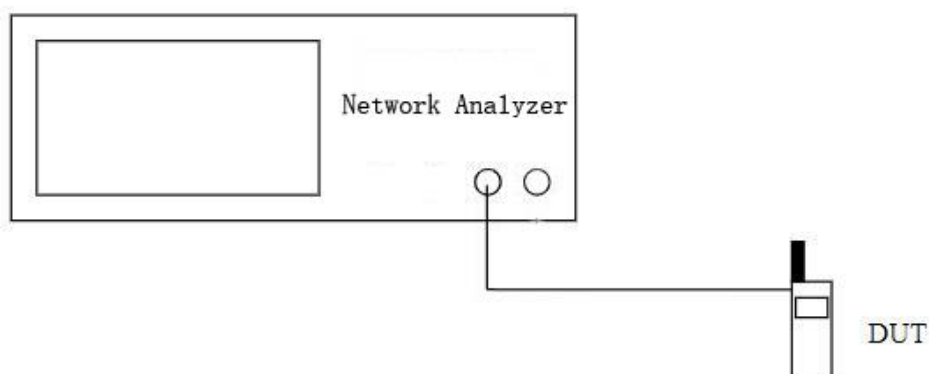
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
SG24 Multi- probe Antenna Measurement System	SATIMO	SG24-L	1101855-0001	2021.11.12	2024.11.11
Vector Network Analyzer	Agilent	E5071B	MY42404001	2023.03.26	2024.03.25
Description	Manufacturer	Name		Version	
Test Software	MVG	SPM		V 1.8	

4.3 Test Setup

4.3.1 Antenna gain, efficiency and radiation pattern test setup



4.3.2 S11 parameter test setup



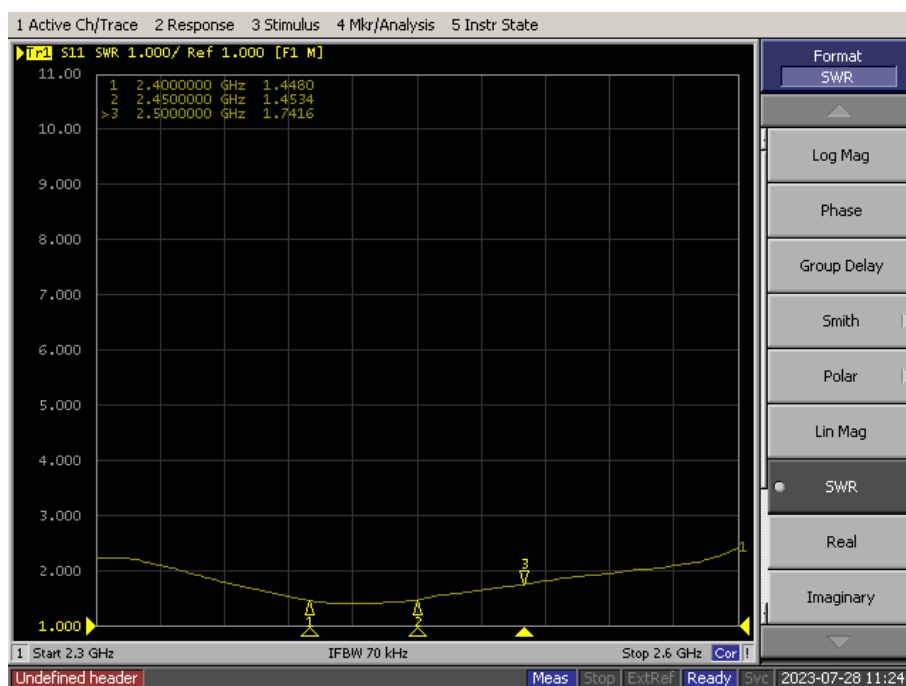
ANNEX A TEST RESULTS

A.1 Gain and Efficiency

Frequency	Gain (dBi)	Efficiency (%)
2400MHz	-1.84	20%
2410MHz	-1.56	21%
2420MHz	-1.54	21%
2430MHz	-1.41	23%
2440MHz	-1.31	24%
2450MHz	-1.32	24%
2460MHz	-1.14	25%
2470MHz	-0.75	27%
2480MHz	-0.40	28%
2490MHz	-0.31	29%
2500MHz	-0.12	30%

A.2 VSWR

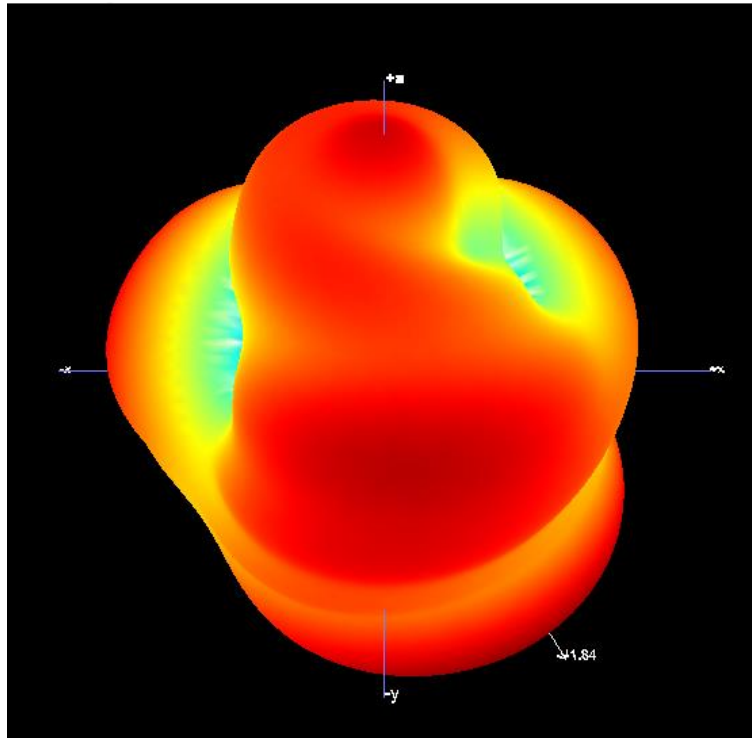
Frequency	VSWR
2400MHz	1.45
2450MHz	1.45
2500MHz	1.74



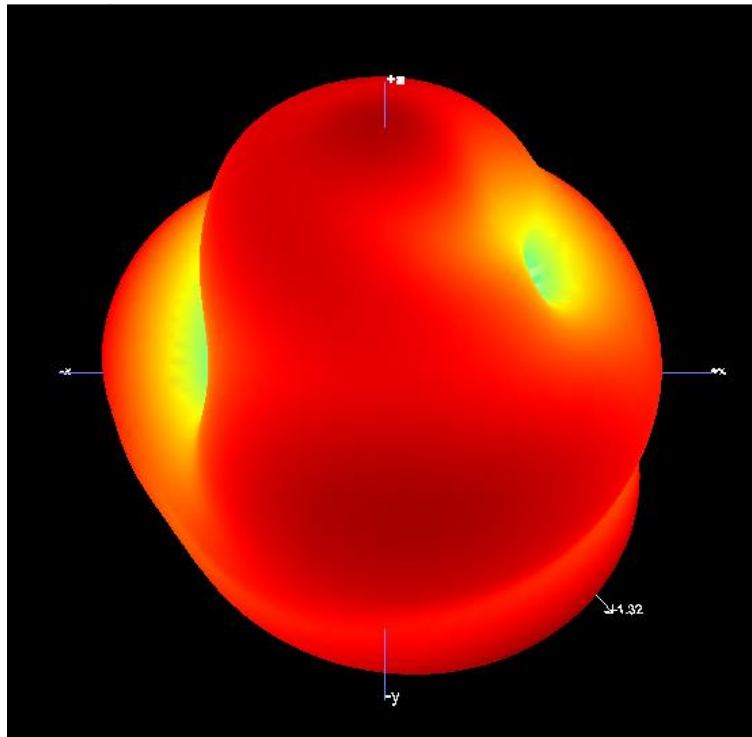
ANNEX B RADIATION PATTERN

B.1 3D Pattern

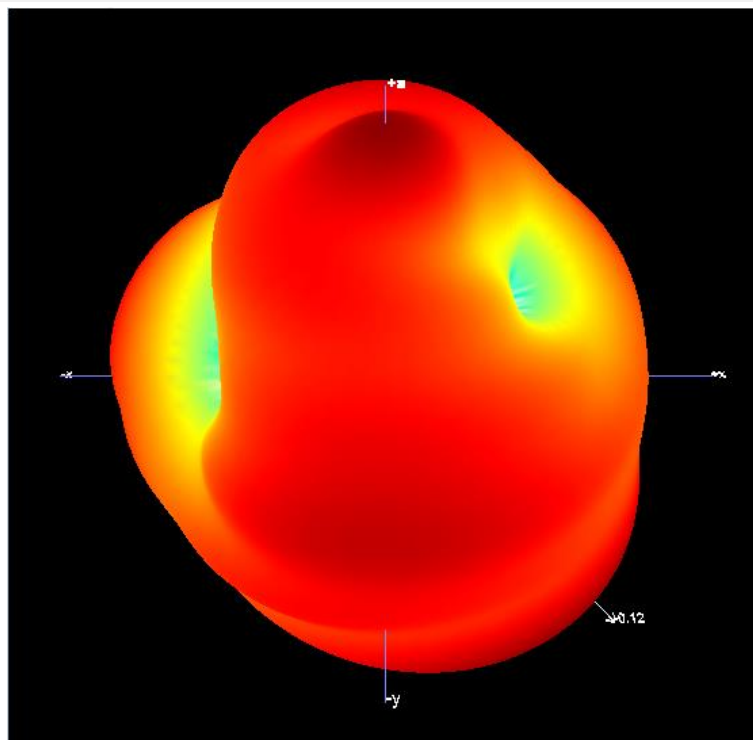
B1.1 3D Pattern for 2400MHz



B1.2 3D Pattern for 2450MHz

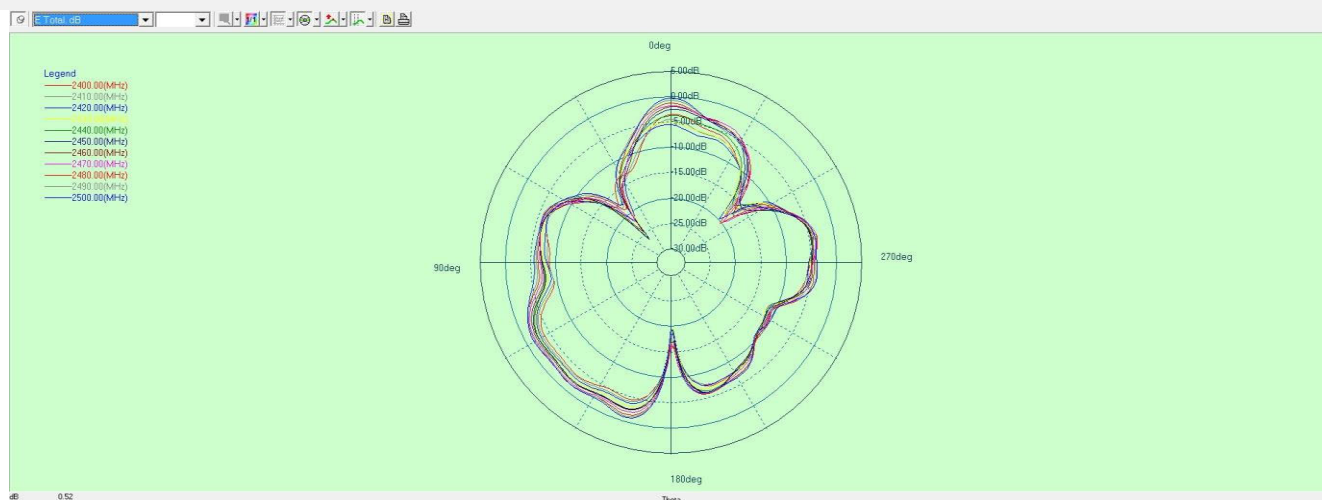


B1.3 3D Pattern for 2500MHz

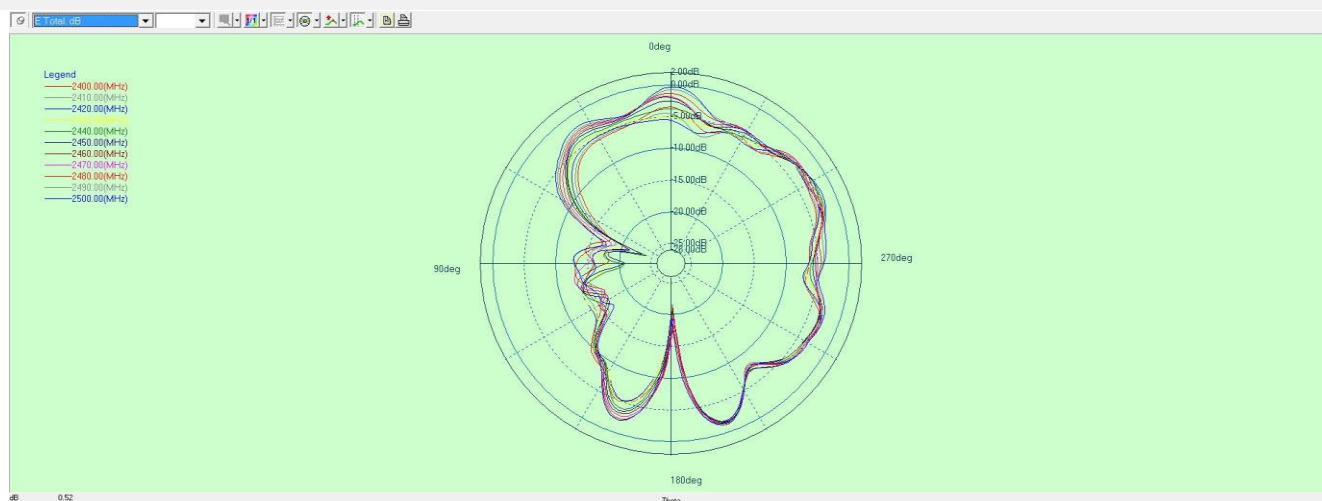


B.2 1D Radiation Pattern

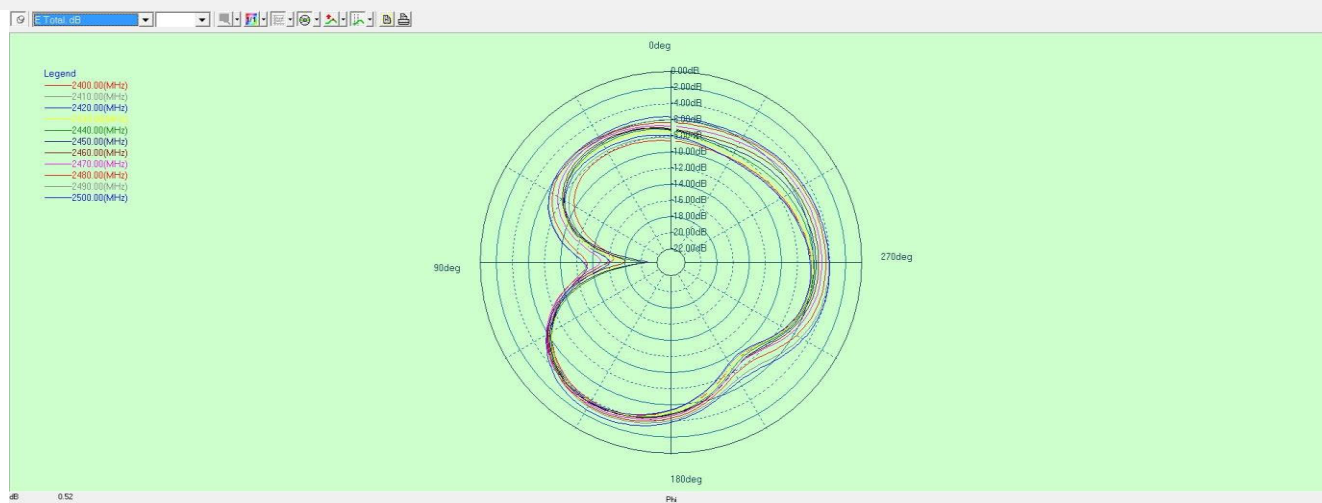
B2.1 PHI=0

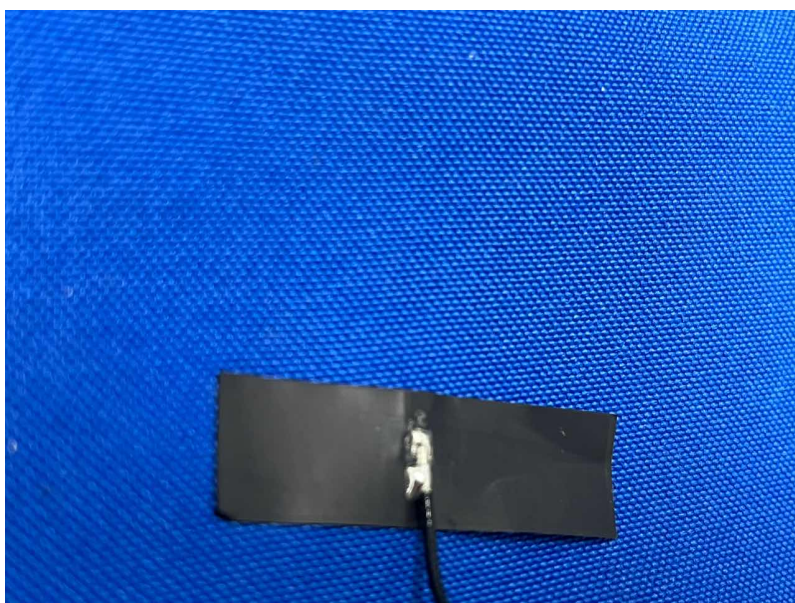


B2.2 PHI=90



B2.3 THETA=90





Statement

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--END OF REPORT--