

TEST REPORT

Applicant: Nations PolyTek(Shenzhen)Co.,Ltd
Address: Floor 20, National Technology Building, 109
Baoshen Road, Songpingshan Community, Xili
Street, Nanshan District, Shenzhen
Equipment Type: Bluetooth Module
Model Name: NSM-B01
Brand Name: Nations
Test Standard: ANSI/IEEE Std 149-1979
Test Date: Aug. 11, 2022
Date of Issue: Aug. 22, 2022

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Mai Jintian

Checked by: Tolan Tu

Approved by: Wei Yanquan
(Chief Engineer)

Mai Jintian

Tolan Tu

Wei Yanquan

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Aug. 22, 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	☒ 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	Nations PolyTek(Shenzhen)Co.,Ltd
Address	Floor 20, National Technology Building, 109 Baoshen Road, Songpingshan Community, Xili Street, Nanshan District, Shenzhen
Contact Person	Lai Wenliang
Telephone Number	0755-86918705
Fax Number	0755-86918705
E-mail Address	info@guominkeji.com

2.2 Manufacturer Information

Manufacturer	Nations PolyTek(Shenzhen)Co.,Ltd
Address	Floor 20, National Technology Building, 109 Baoshen Road, Songpingshan Community, Xili Street, Nanshan District, Shenzhen

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	Bluetooth Module
Model Name Under Test	NSM-B01
Antenna Type	PIFA Antenna
Dimensions	37*10 mm

2.5 Ancillary Equipment

Note: Not applicable.

2.6 Technical Information

Frequency Range	2400MHz ~ 2485MHz
Test Frequencies	2400MHz, 2405MHz, 2410MHz, 2415MHz, 2420MHz, 2425MHz, 2430MHz, 2435MHz, 2440MHz, 2445MHz, 2450MHz, 2455MHz, 2460MHz, 2465MHz, 2470MHz, 2475MHz, 2480MHz, 2485MHz

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
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



ANNEX A TEST RESULTS

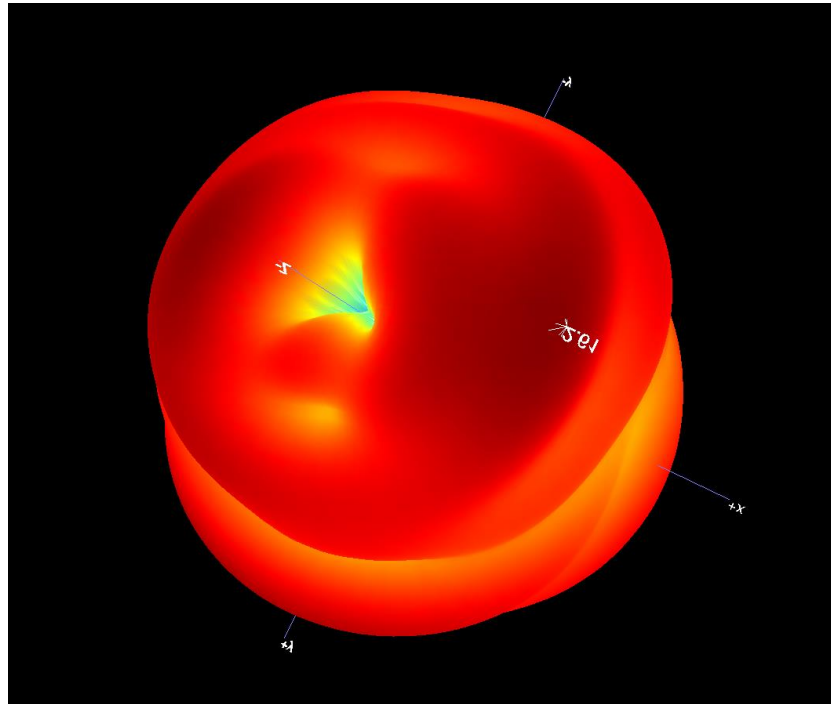
A.1 Gain and Efficiency

Frequency	Gain (dBi)	Efficiency (%)
2400MHz	2.61	42
2405MHz	2.66	42
2410MHz	2.87	43
2415MHz	3.06	44
2420MHz	3.12	43
2425MHz	3.13	44
2430MHz	3.19	44
2435MHz	3.18	44
2440MHz	3.29	46
2445MHz	3.43	47
2450MHz	3.56	49
2455MHz	3.69	51
2460MHz	3.78	51
2465MHz	3.85	52
2470MHz	3.93	52
2475MHz	3.99	52
2480MHz	4.02	52
2485MHz	4.08	53

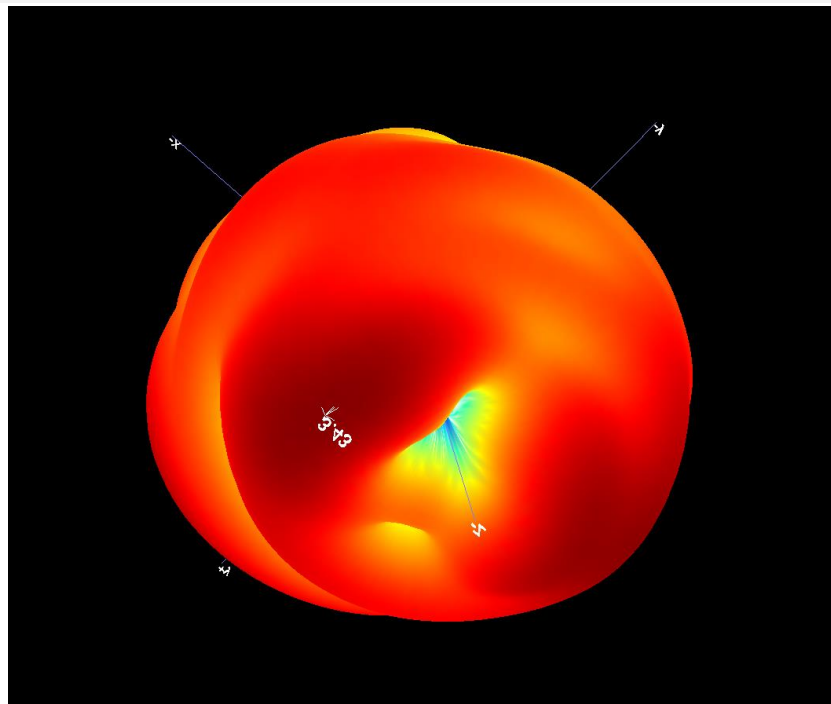
ANNEX B RADIATION PATTERN

B.1 3D Pattern

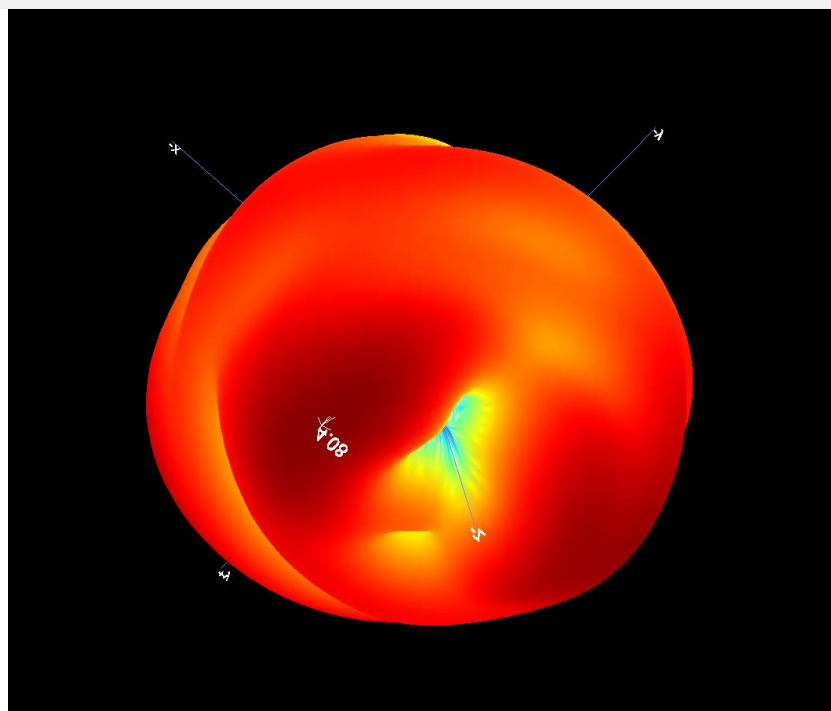
B1.1 3D Pattern for 2400MHz



B1.2 3D Pattern for 2445MHz

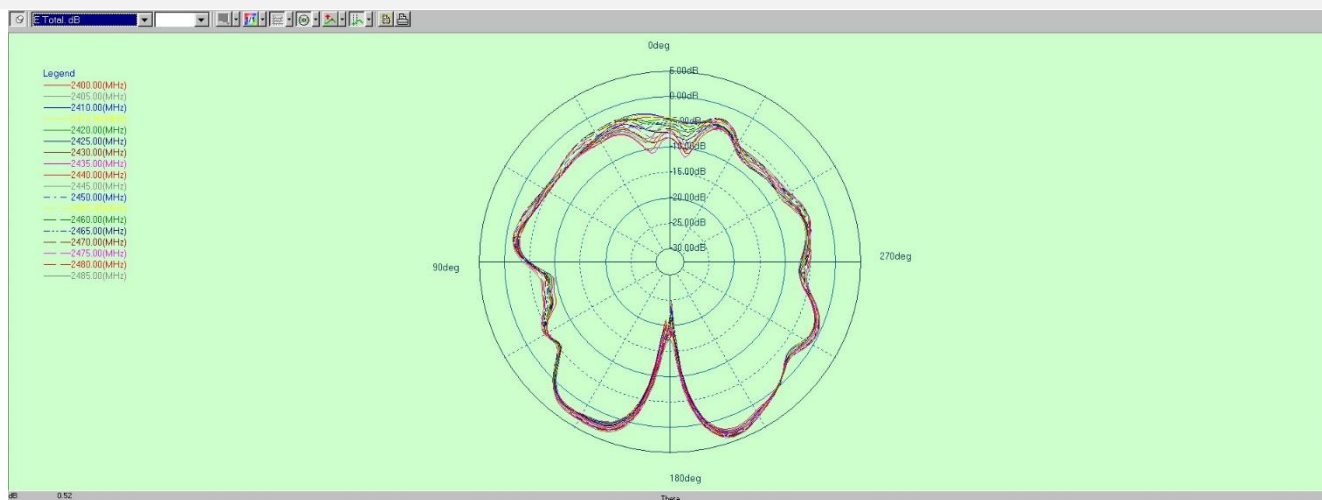


B1.3 3D Pattern for 2485MHz

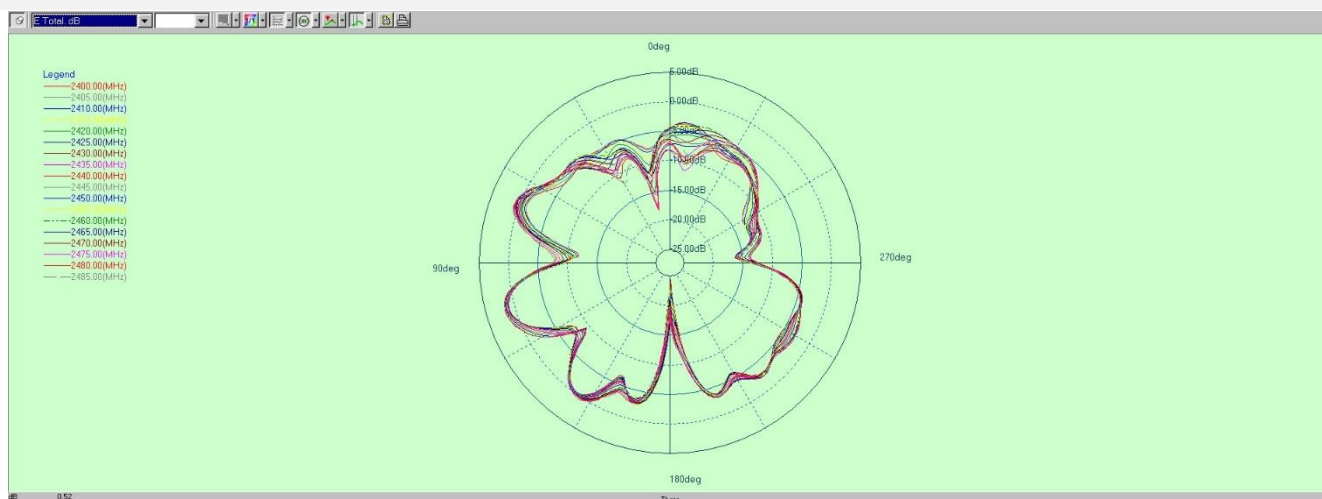


B.2 1D Radiation Pattern

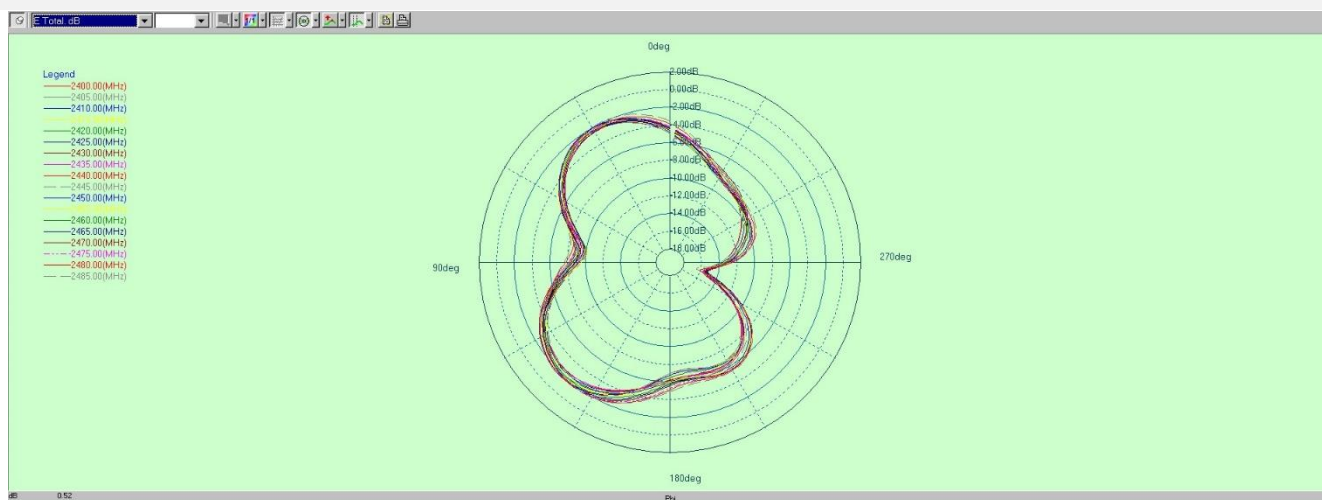
B2.1 PHI=0



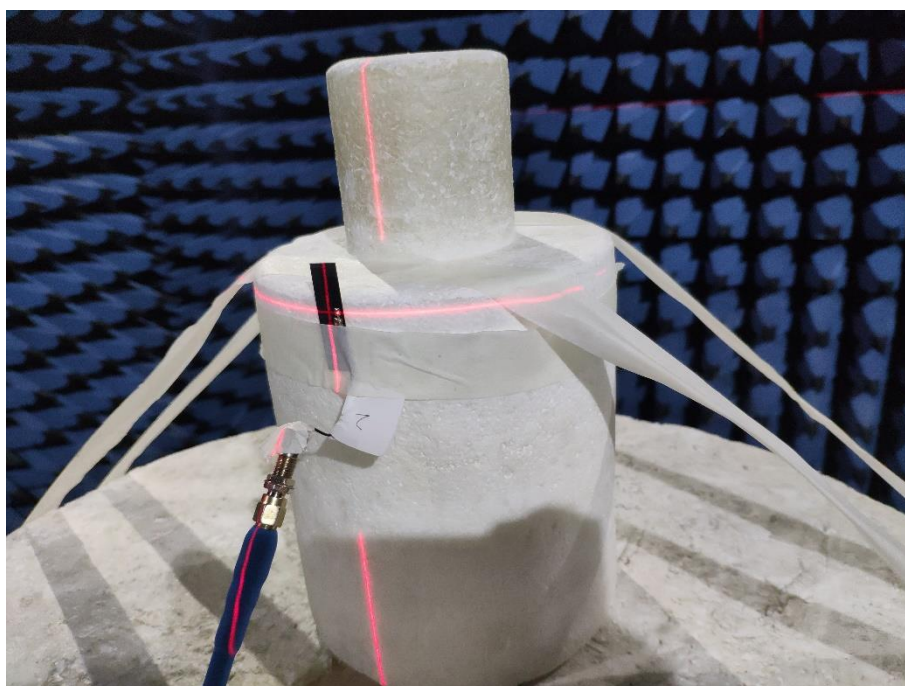
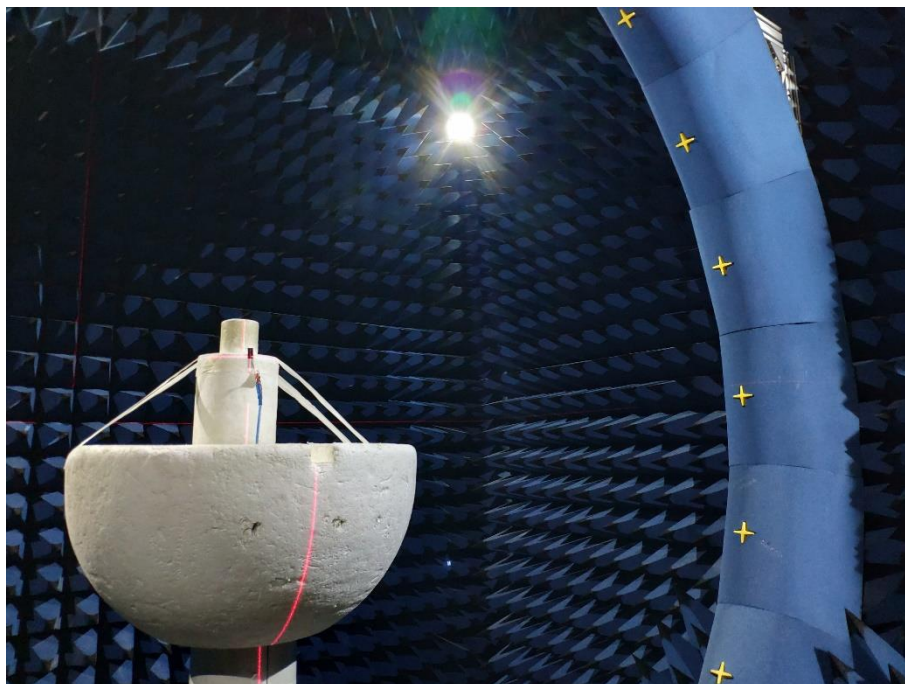
B2.2 PHI=90



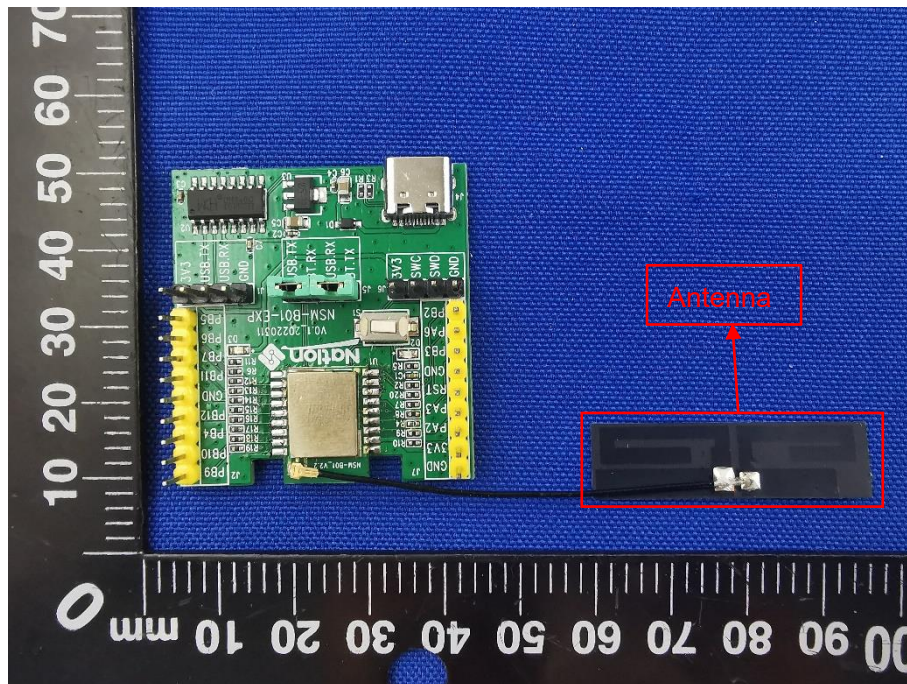
B2.3 THETA=90



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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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--