

Lenze Technology Co.,LTD

Tel:+86 0755-82031775;25332530 Fax:+86 0755-82713604

26c newspaper west tower, 6008 shennan Avenue,Futian District, Shenzhen City, GuangdongProvince,China

1 GENERAL INFORMATION

1.1 Test Environment Condition

Ambient Temperature	19 to 25 °C
Ambient Relative Humidity	45 to 55 %
Ambient Pressure	N/A (Not applicable)

1.2 Announce

- (1) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (2) The test report is invalid if there is any evidence and/or falsification.
- (3) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (4) This document may not be altered or revised in any way unless done so and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

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2 PRODUCT INFORMATION

2.1 Applicant

Applicant	Lenze Technology Co.,LTD
Address	d.c., 26c newspaper west tower, 6008 shennan Avenue, Futian District ,
Contact Person	Tony
Telephone Number	+86 0755-82031775;25332530
Fax Number	+86 0755-82713604
E-mail Address	info@lenzotech.com

2.2 Manufacturer

Manufacturer	Lenze Technology Co.,LTD
Address	d.c., 26c newspaper west tower, 6008 shennan Avenue, Futian District , Shenzhen City, Guangdong Province, China
Contact Person	N/A
Telephone Number	N/A
Fax Number	N/A
E-mail Address	N/A

2.3 General Description for Equipment under Test (EUT)

EUT Type	Bluetooth Antenna
Model Name	PCB Antenna
Antenna Type	PCB Antenna
Hardware Version	N/A
Serial Number	N/A
Dimensions	N/A

2.4 Technical Information

Frequency Range	2400MHz~ 2500MHz
Test Frequencies	2402MHz, 2441MHz, 2480MHz

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3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	IEEE149-1979	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)	0.4
Gain	-0.08dBi

4 GENERAL TEST CONFIGURATIONS

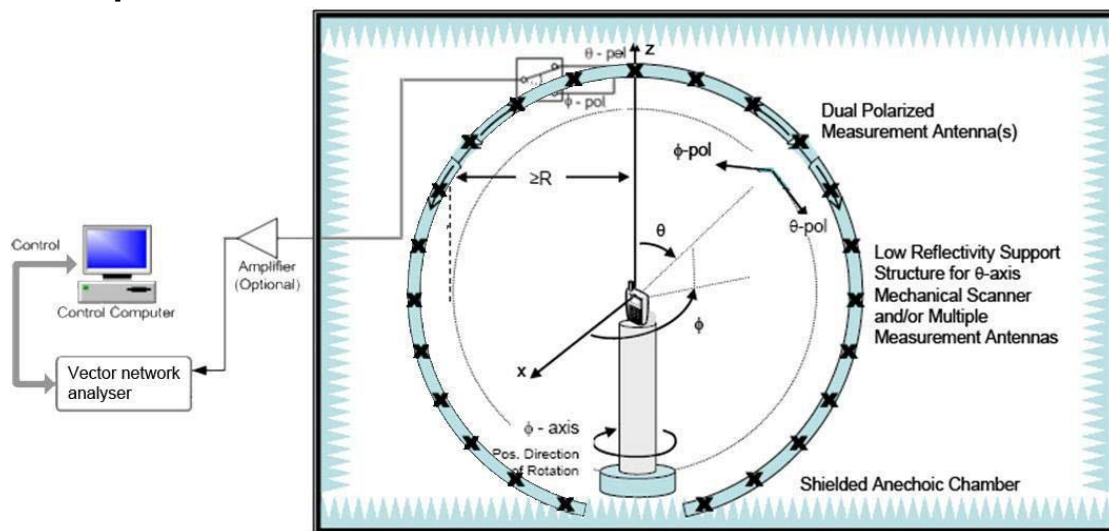
4.1 Test Condition

Environment Parameter	Selected Values During Tests		
	Temperature	Voltage	Relative Humidity
Normal Temperature, Normal Voltage (NTNV)	25°C	N/A	51%

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Vector Network Analyzer	Agilent	E5071C	MY46103472	2014.09.07	2015.09.06
5*5*5 Full Anechoic Chamber	SATIMO	5*5*5	N/A	2014.09.05	2015.09.04
SG24 Multi-probe Antenna Measurement System	SATIMO	SG24-L	1101855-0001	2014.10.25	2015.10.24

4.3 Test Setup



ANNEX A TEST RESULTS

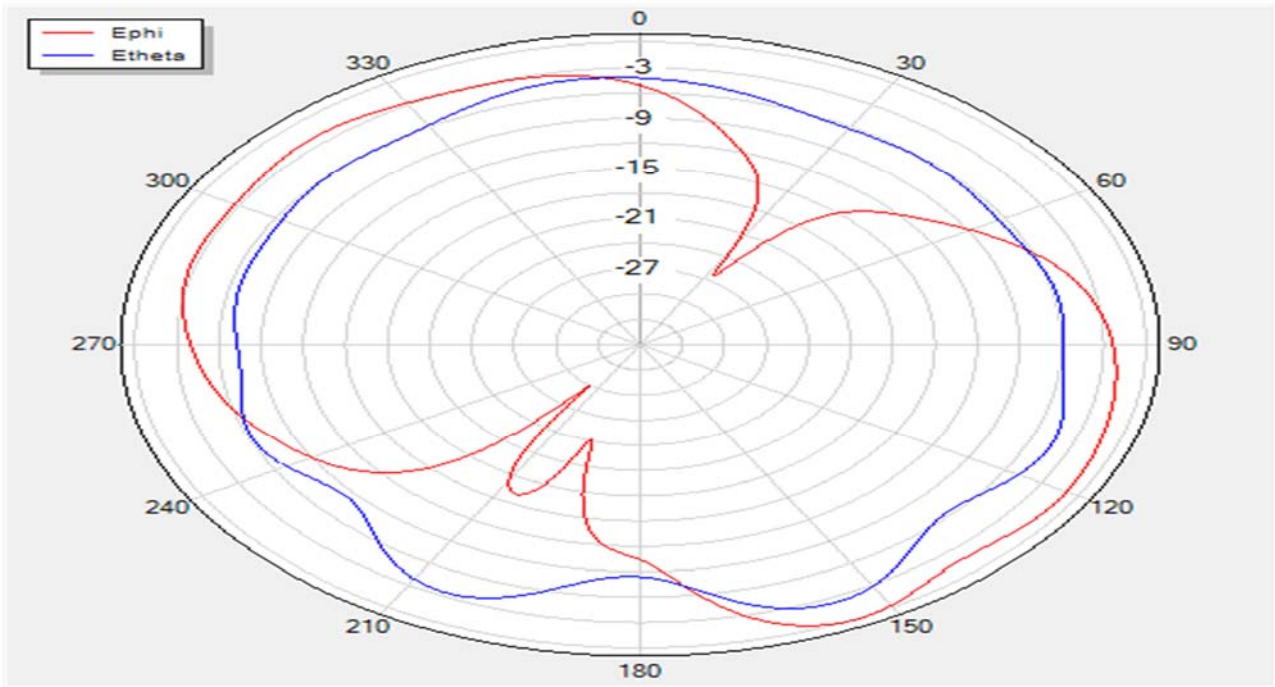
A.1 Gain and Efficiency

Frequency	Gain (dBi)	Efficiency (%)
2402MHz	-0.08	0.99
2441MHz	-0.21	1.06
2480MHz	-0.18	1.12

ANNEX B RADIATION PATTERN

1D Radiation Pattern
PHI =0

Phi=0 freq=2402MHz



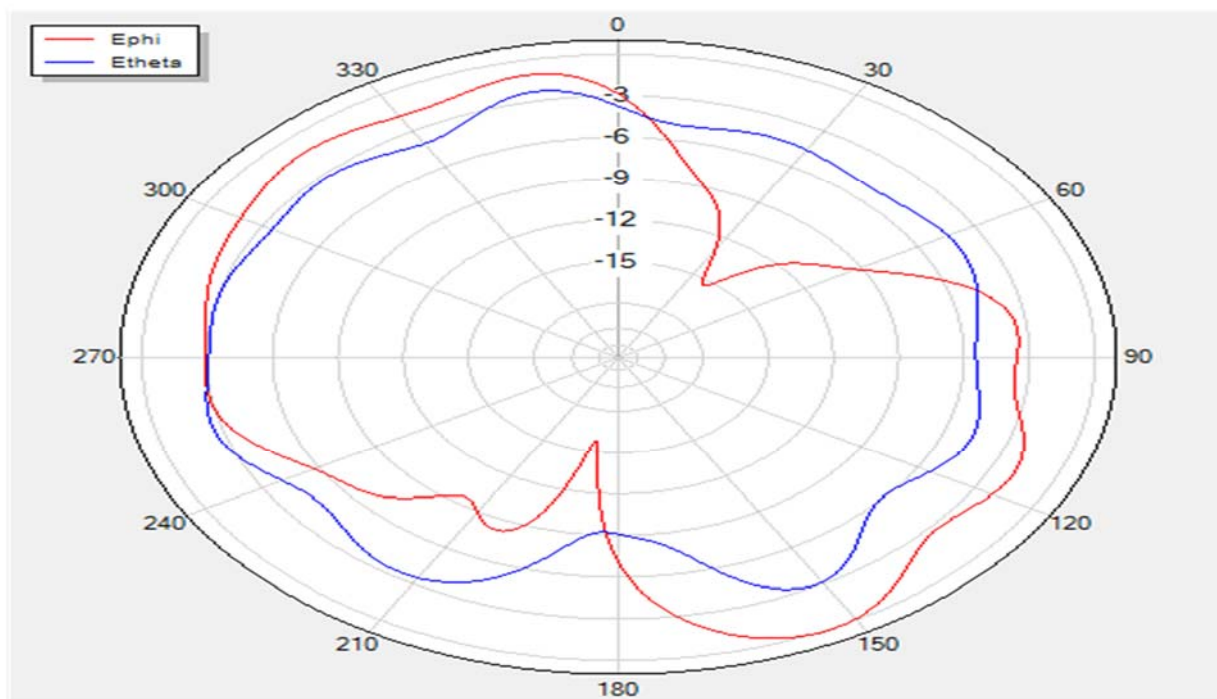
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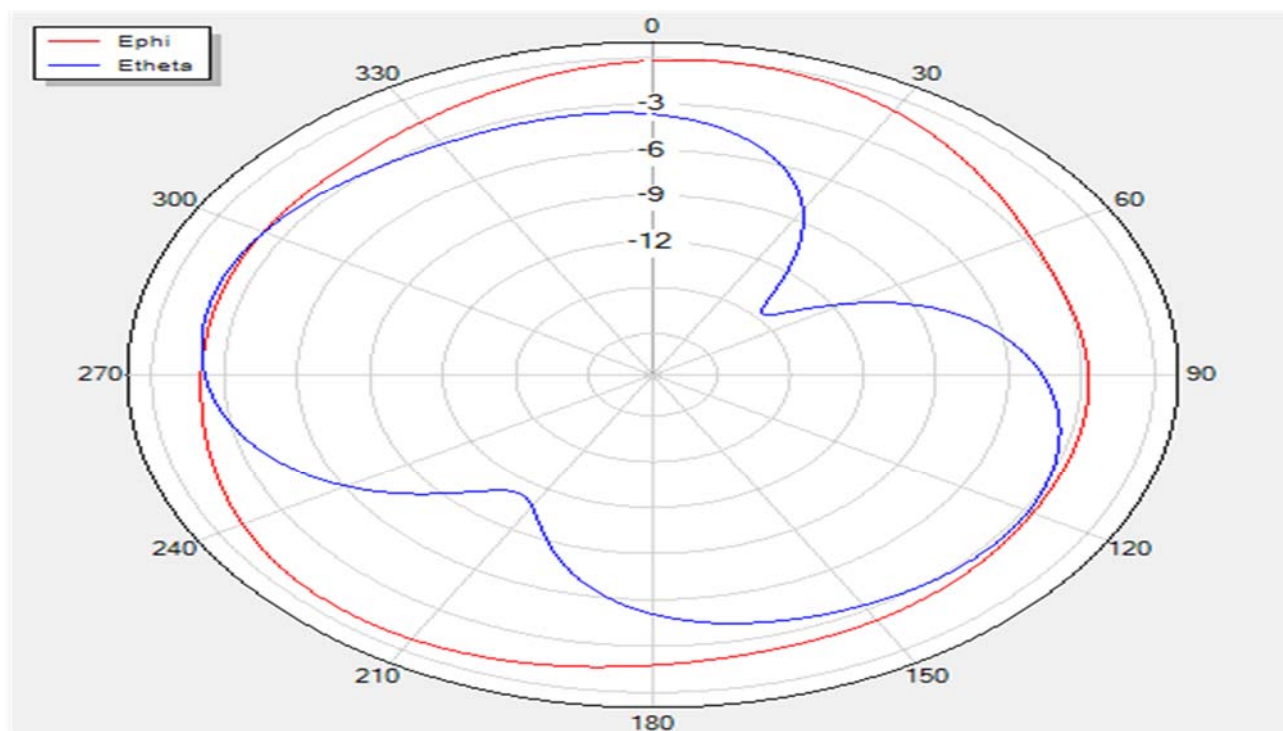
PHI =90

Phi=90 freq=2402MHz



THETA = 90

Theta=90 freq=2402MHz



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Figure 1: Schematic diagram of the proposed metamaterial unit cell. The diagram shows a red zigzag structure on a black background. Dimensions are labeled in millimeters: 2.8mm, 1.5mm, 0.5mm, 3.3mm, 4.1mm, and 0.5mm. A small red '1' is located at the bottom right of the structure.