深圳市计量质量检测研究院
Shenzhen Academy of Metrology & Quality Inspection

# ANTENNA TEST REPORT

For

**Bluetooth module**

**Model Number: JD8016HA-N76E003-AT**

**Report Number : WT238002191**


| | | |
|---|---|---|
| Test Laboratory | : | Shenzhen Academy of Metrology and Quality Inspection |
| Site Location | : | No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China |
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Email：complaint@smq.com.cn

# TEST REPORT DECLARATION

| | | |
|---|---|---|
| Applicant | : | Shenzhen Step Electronic and Lighting Co., Ltd |
| Address | : | 1402, 1403, Building 1, Huide Building Beizhuan Community, Minzhi Street Longhua District 518110 Shenzhen PEOPLE'S REPUBLIC OF CHINA |
| Manufacturer | : | Shenzhen Step Electronic and Lighting Co., Ltd |
| Address | : | 1402, 1403, Building 1, Huide Building Beizhuan Community, Minzhi Street Longhua District 518110 Shenzhen PEOPLE'S REPUBLIC OF CHINA |
| EUT Description | : | Bluetooth module |
| Brand | : | JEDVER |
| MODEL No | : | JD8016HA-N76E003-AT |

**Test Standards: IEEE Std 149-1979**

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT and ensure the EUT to be compliance with the immunity requirements of the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

| | | | |
|---|---|---|---|
| Project Engineer: | (Zhou Li 周立) | Date: | Jan. 03, 2024 |
| Checked by: | (Wan Xiao Jing 万晓婧) | Date: | Jan. 03, 2024 |
| Approved by: | (Lin Yi Xiang 林奕翔) | Date: | Jan. 03, 2024 |

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# 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| Frequency Band (MHz) | Gain |
|---|---|
| 2400~2485 | -3.60 |

Remark: “N/A” means “Not applicable.”

# 2. GENERAL INFORMATION

## 2.1. Report information

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier, or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

The lab will not be liable for any loss or damage resulting for false, inaccurate, inappropriate, or incomplete product information provided by the applicant/manufacturer.

## 2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is Accredited Testing Laboratory of FCC with Designation number CN1165 and Site registration number 582918.

The Laboratory is registered to perform emission tests with Innovation, Science and Economic Development (ISED), and the registration number is 11177A.

The Laboratory is registered to perform emission tests with VCCI, and the registration number are C-20048, G20076, R-20077, R-20078 and T-20047.

The Laboratory is Accredited Testing Laboratory of American Association for Laboratory Accreditation (A2LA) and certificate number is 3292.01.

## 3. GENERAL INFORMATION

Aerial measurements (active) are performed in the Universal Test RayZone-5000M.The Rayzone 5000 has 23 pairs of dual-polarized (H&V polarized) measurement antennas.The Rayzone 5000 has two communication antennas (LA1 & LA2).LA1 is used for 2G/3G/4G/Sub6G/WIFI/BT/Cat M/NBIOT testing. LA2 is used for NSA testing and is mounted on the circular arch at equal spacing. The electronic switching of the probe antennas provides excellent measurement speed. The geometric setup with only one foam strut within 1.6 meters of the DUT ensures minimal interference and low ripple in the measured radiation pattern.

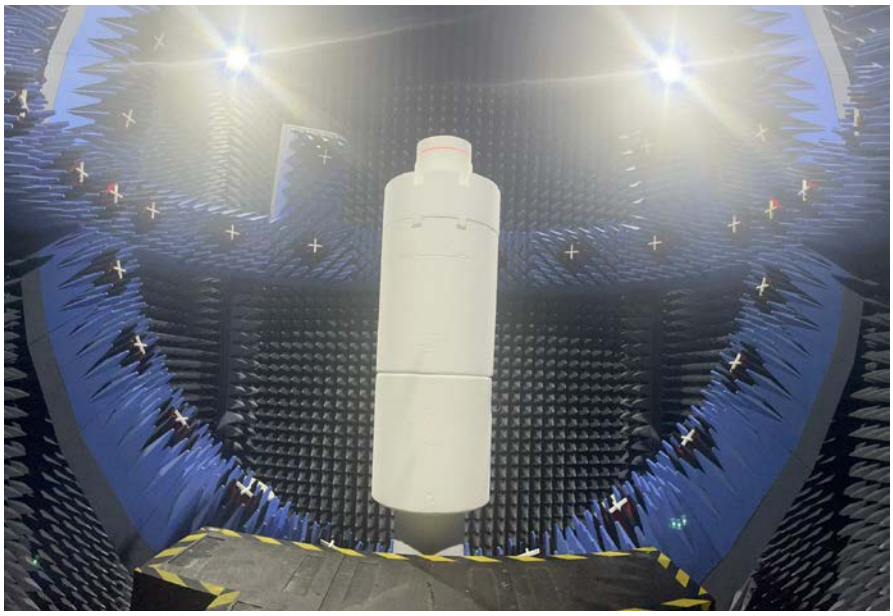


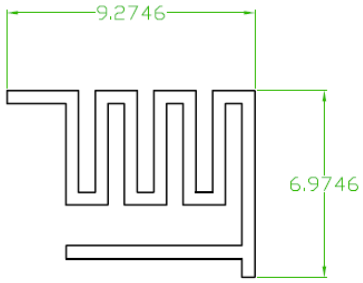
**Figure 1**– RayZone-5000M. The DUT is placed on top of the pedestal, in the center of the system.

## 4. TEST PROCEDURE

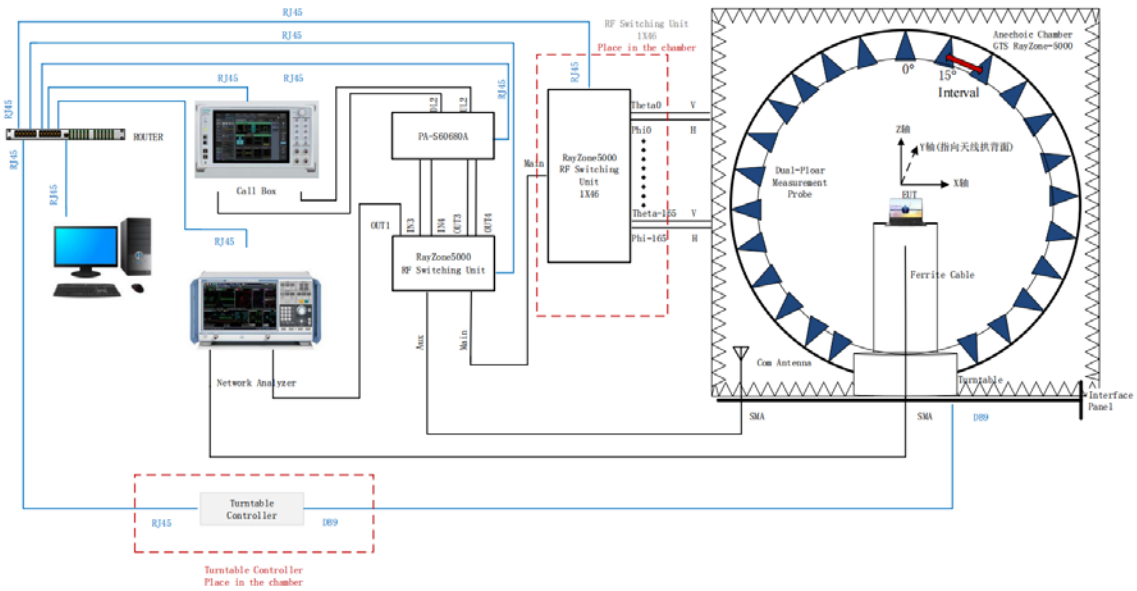
The gain of the antenna was measured in a RayZone-5000M anechoic chamber. From 400 MHz to 6 GHz, the reflectivity of the chamber is less than -30 dB. The dimensions of the chamber are 4.97*4.97*5.0 (m). The measurements were calibrated using a dipole antenna. The antenna gain and efficiency were measured with an AUT placed inside the chamber.

# 5. SUMMATION TEST REPORT

## 5.1. Equipment Under Test DescRiption

| | |
|---|---|
| Date of Measurements: | Dec. 19, 2023 |
| Device Manufacturer: | Shenzhen Step Electronic and Lighting Co., Ltd |
| Antenna No.: | JD8016HA-N76E003-AT |
| Antenna Type | linear antenna |
| Antenna Shape |   |
| Temperature | 22~24 ℃ |
| Relative Humidity | 40~50 % |

## 5.2. Test Setup



# 6. TEST EQUIPMENT USED

Table 2 Test Equipment

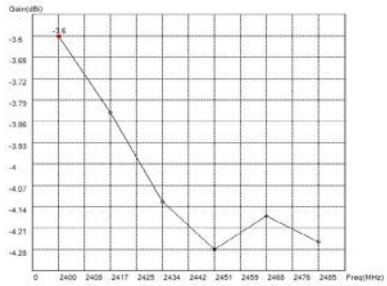
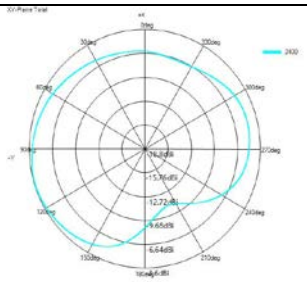
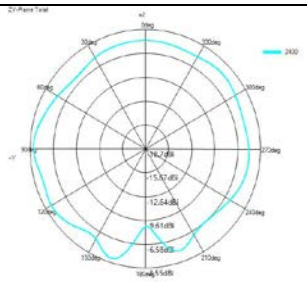
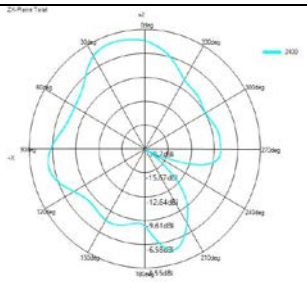
| No. | Equipment | Manufacturer | Model No. | LAST CALIB | Period |
|---|---|---|---|---|---|
| SB11466 | Network analyzer | R＆S | ZNB20 | 2023.05.05 | 1 Year |
| SB18162 | Fully Anechoic C hamber | General Test | -- | -- | -- |
| -- | Test software | General Test | Libra | -- | -- |

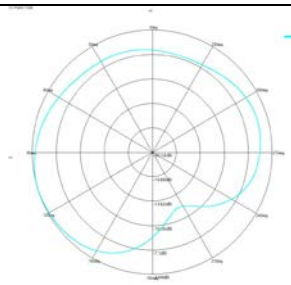
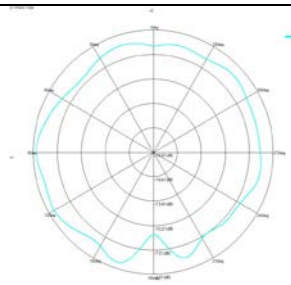
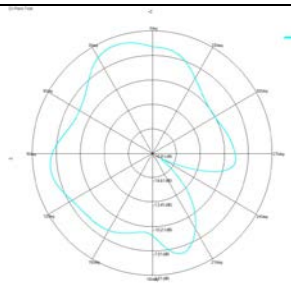
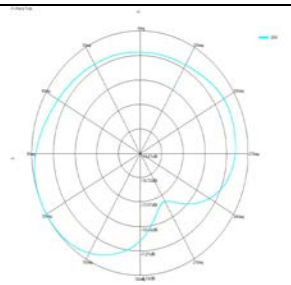
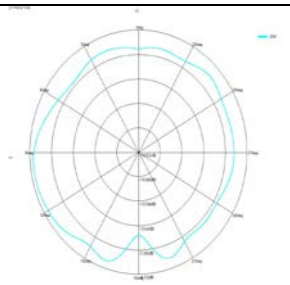
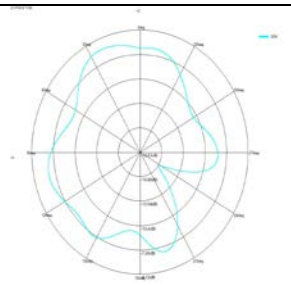
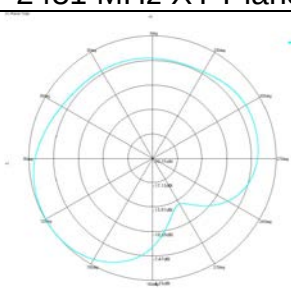
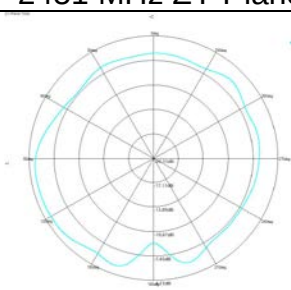
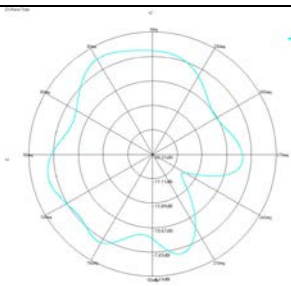
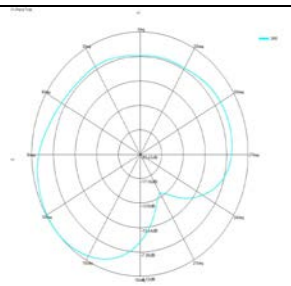
# 7. TEST DATA

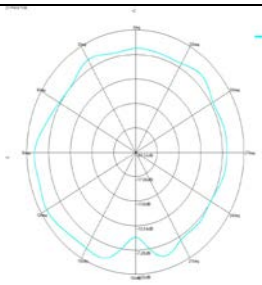
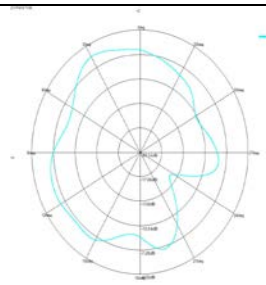
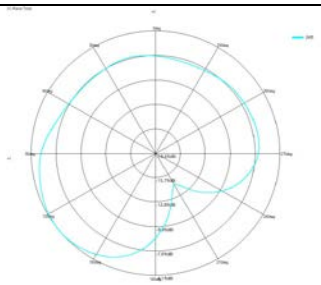
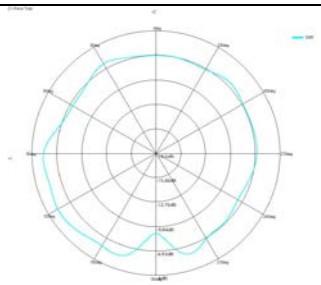
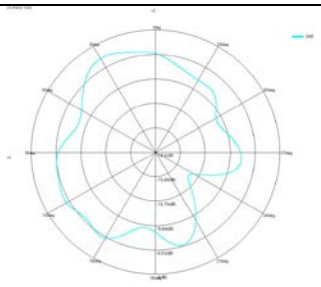
## 7.1. TEST RESULTS

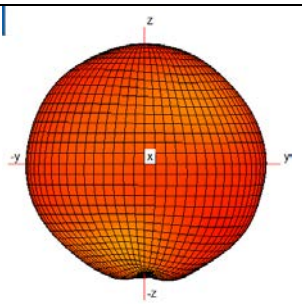
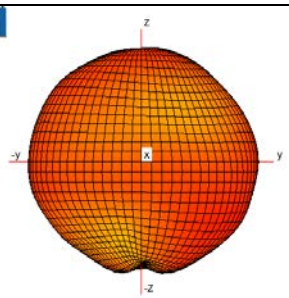
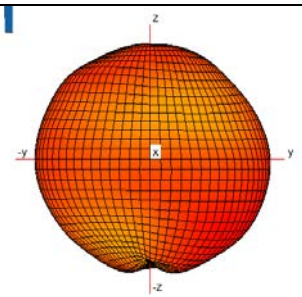
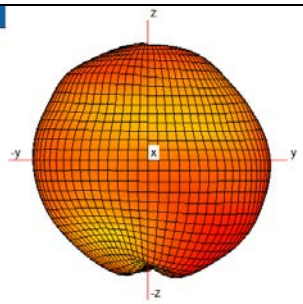
Table 3 Antenna

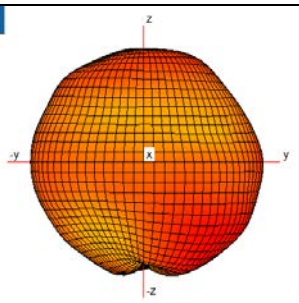
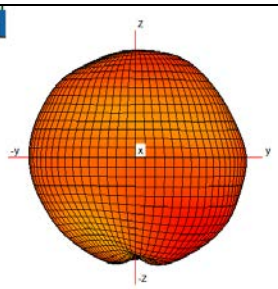
| Frequency (MHz) | Gain |
|---|---|
| 2400 | -3.60 |
| 2417 | -3.85 |
| 2434 | -4.13 |
| 2451 | -4.28 |
| 2468 | -4.17 |
| 2485 | -4.25 |

| Gain Plane | 2400 MHz XY Plane |
|---|---|
|  |  |
| 2400 MHz ZY Plane | 2400 MHz ZX Plane |
|  |  |

| 2417 MHz XY Plane | 2417 MHz ZY Plane |
|---|---|
|  |  |
| 2417 MHz ZX Plane | 2434 MHz XY Plane |
|  |  |
| 2434 MHz ZY Plane | 2434 MHz ZX Plane |
|  |  |
| 2451 MHz XY Plane | 2451 MHz ZY Plane |
|  |  |
| 2451 MHz ZX Plane | 2468 MHz XY Plane |
|  |  |

| 2468 MHz ZY Plane | 2468 MHz ZX Plane |
|---|---|
|  |  |
| 2485 MHz XY Plane | 2485 MHz ZY Plane |
|  |  |
| 2485 MHz ZX Plane | / |
|  | / |

| 2400 MHz | 2417 MHz |
|---|---|
|  |  |
| 2434 MHz | 2451 MHz |
|  |  |

| 2468 MHz | 2485 MHz |
| --- | --- |
|  |  |

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