ANTENNA TEST REPORT

Manufacture: **Shen Zhen Broadwell Technology co. ltd**

Address: 719 Mintai Mansion, Minkang Road, Minzhi, Shenzhen, 518000, China

Product Name: **2.4G BT WIFI PCB Antenna**

Product Model: **ANT-BT-WIFI-09**

Report Number: **2503Q44529E-RF**

Date Of Issue: **2025/3/6**

Reviewed & Approved By: **Sun Zhong** Sun Zhong

Title: Manager

Test Laboratory: **China Certification ICT Co., Ltd (Dongguan)**
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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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Each test item follows the test standard(s) without deviation.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2503Q44529E-RF	Original Report	2025/3/6

1. GENERAL INFORMATION

Product Name:	2.4G BT WIFI PCB Antenna
Product Model:	ANT-BT-WIFI-09
Antenna Type:	PCB
Test Items:	Gain; Efficiency; Radiation Pattern
Test Frequency (MHz):	2400, 2450, 2500
Sample Number:	2YLR-1
EUT Received Date:	2025/3/3
EUT Received Status:	Good

2. TEST CONFIGURATIONS

2.1 Test Environment

Temperature (℃)	23
Humidity (%RH)	55
Atmospheric Pressure (kPa)	101.1
Tester	Leo Li
Test Date	2025/3/6

2.2 Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Vector Network Analyzer	ZNB-8	1311601044104250	2025/2/10	2026/2/9

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

2.3 Test Specification

IEEE Std149-2021

2.4 Test Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Passive	1.82 dB
VSWR(S11)	0.57 dB

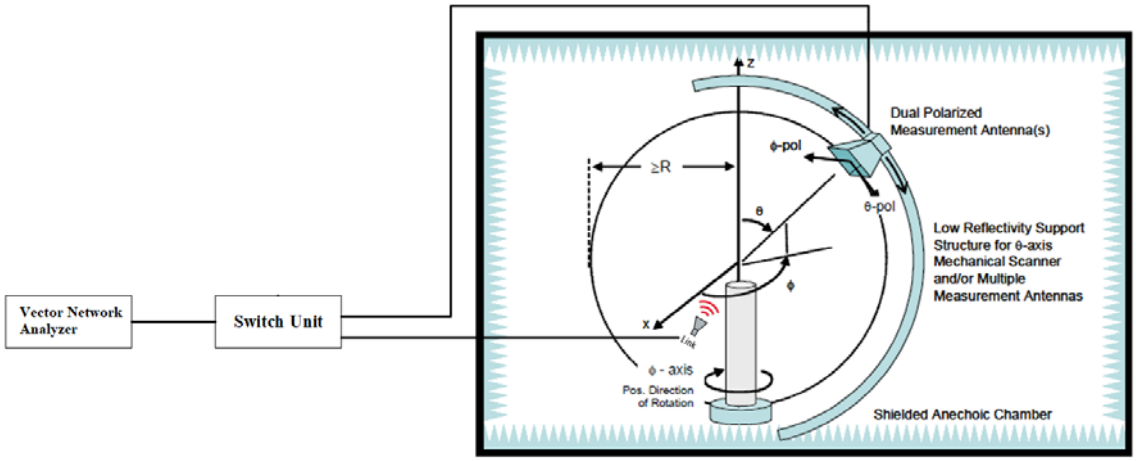
2.5 Test Measurement System

Conical-cut method is used to measure EUT in OTA qualified anechoic chamber. The Conical Cut method requires the ability of the Measurement Antenna to be physically rotated in the theta plane(overhead) of the EUT for implementations using a single Measurement Antenna. Eleven conical cuts are required to capture data at every 15 degrees from the EUT, with the top (0 degrees) and bottom (180 degrees) cuts not being measured. Typically, the EUT will remain affixed to a turntable during the entire measurement process. The Measurement Antenna will be positioned at a starting theta angle. The EUT will then be rotated around the full 360 degrees of phi rotation. The Measurement Antenna will then be positioned at the next theta angle, and the process repeated.

Measurements should be recorded in both E-theta and E-phi polarizations simultaneously to reduce measurement uncertainties due to EUT repositioning.

2.6 Test Setup

2.6.1 Antenna Gain, Efficiency and Radiation Pattern Test Setup



3. TEST RESULTS

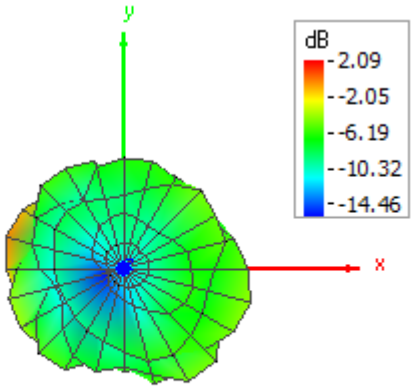
3.1 Gain and Efficiency

Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)
2400.00	27.44	2.09
2450.00	20.99	0.76
2500.00	18.75	0.56

3.2 Radiation Pattern

2400 MHz 3D

Theta = 0, Phi = 0



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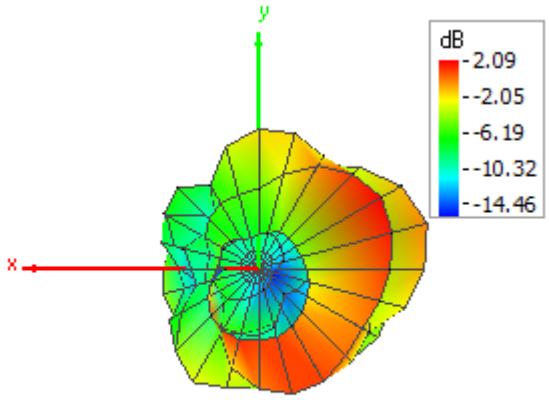

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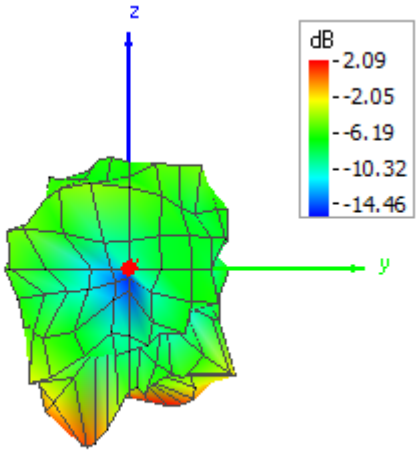
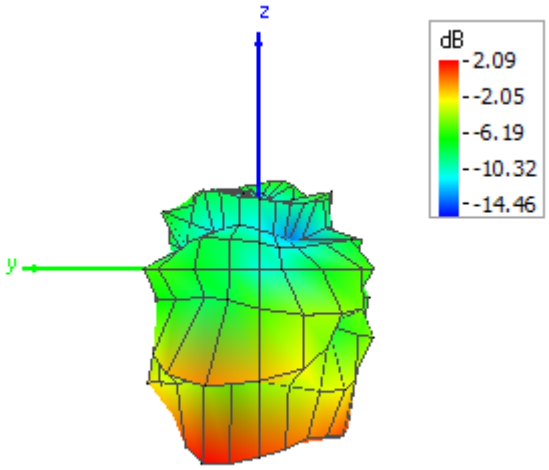
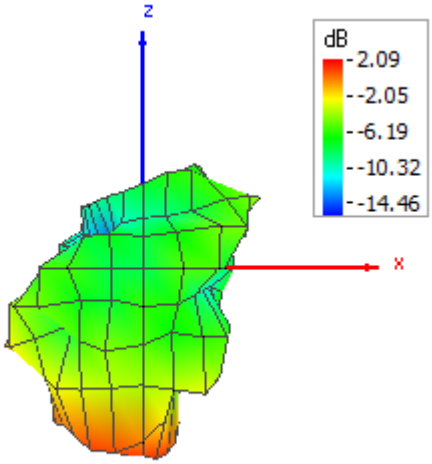


Theta = 90, Phi = 180



Theta = 90, Phi = 270



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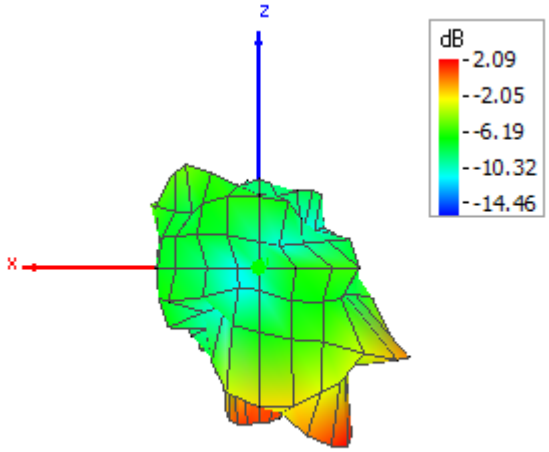

2450 MHz 3D

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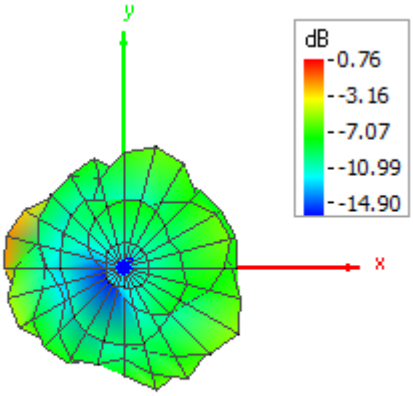

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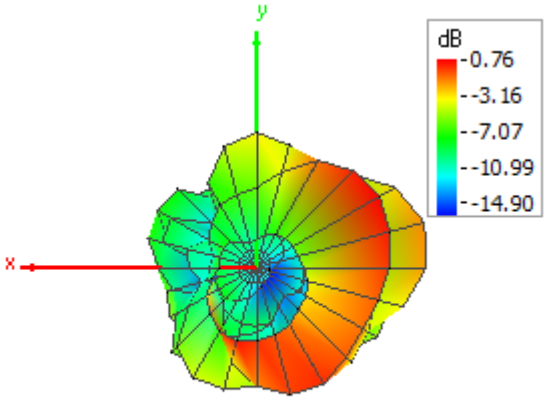

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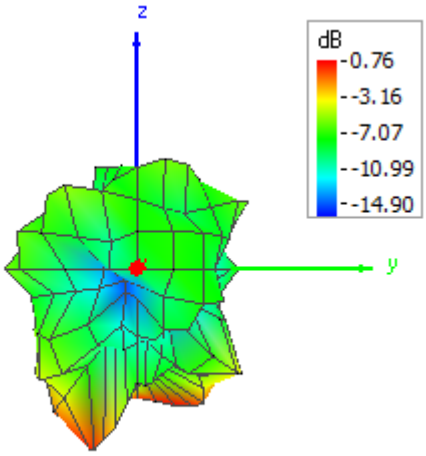

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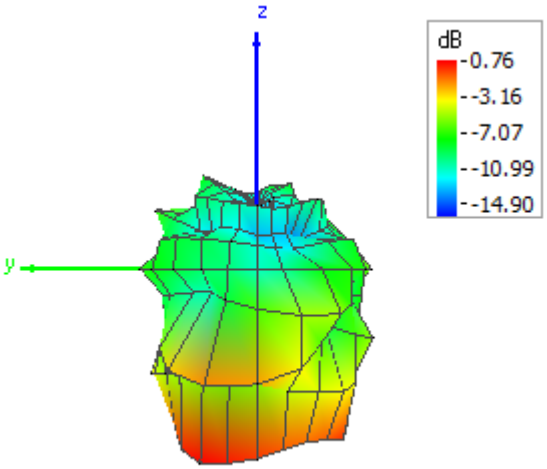
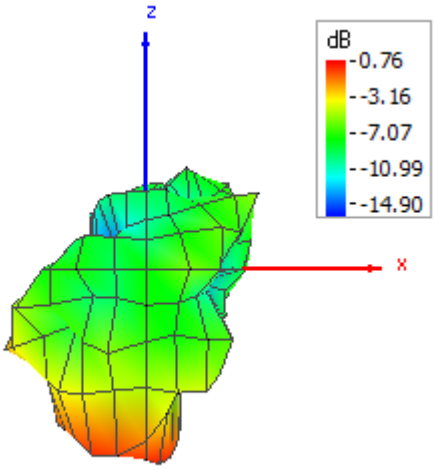


Theta = 90, Phi = 270



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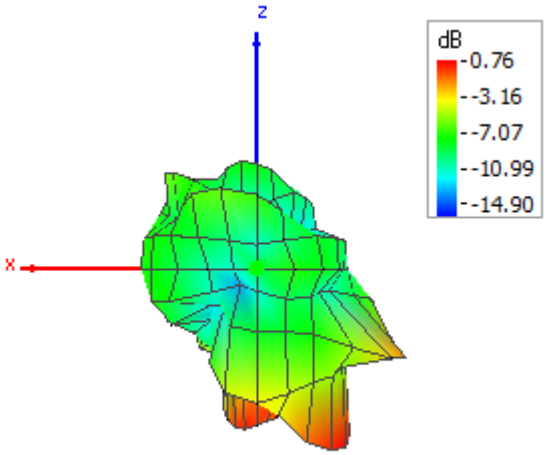

2500 MHz 3D

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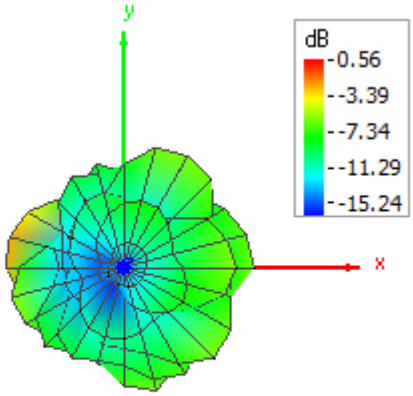

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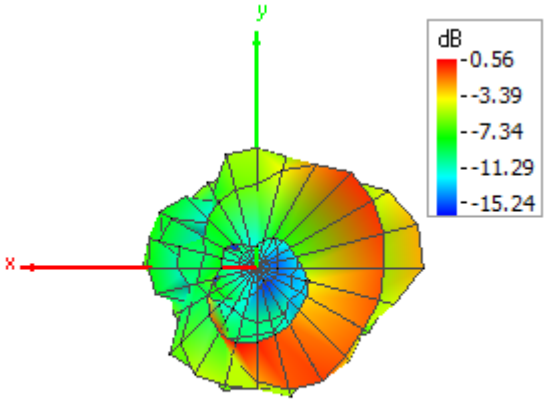

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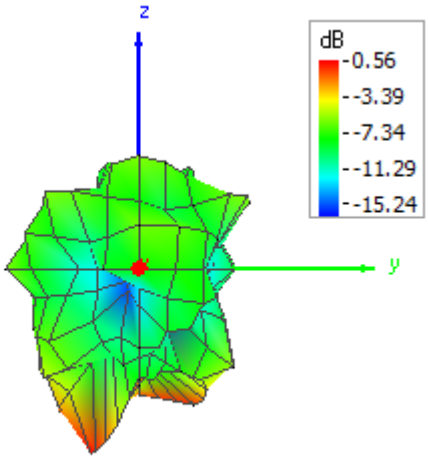

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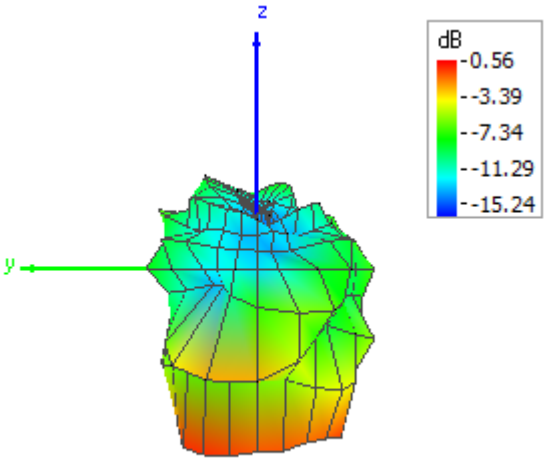
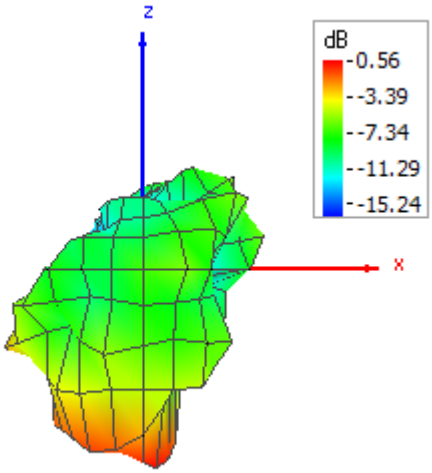


Theta = 90, Phi = 270



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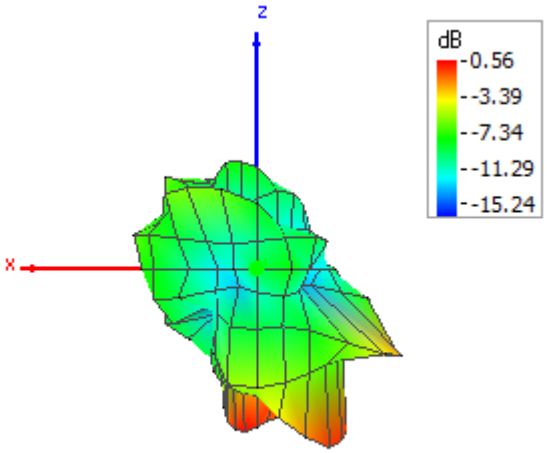
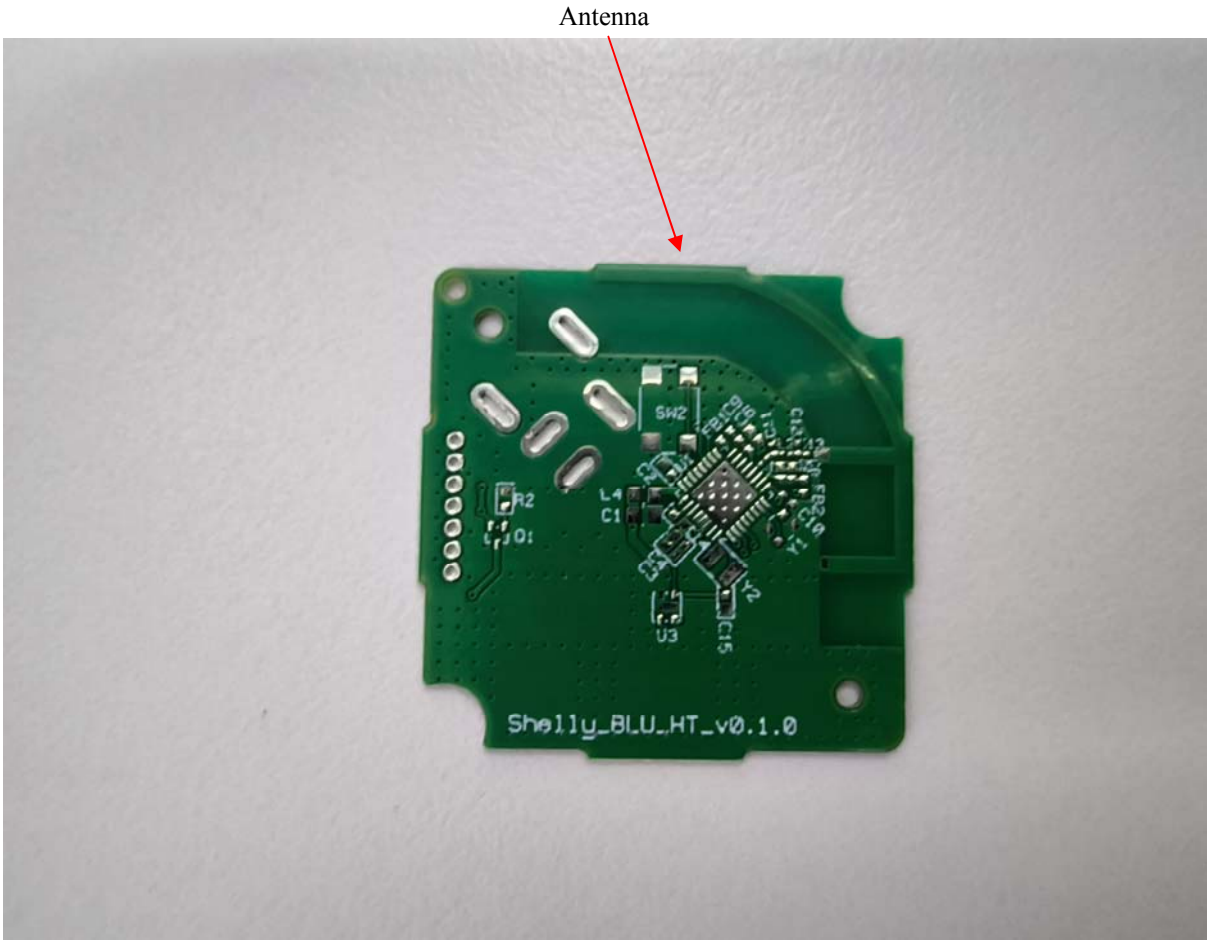
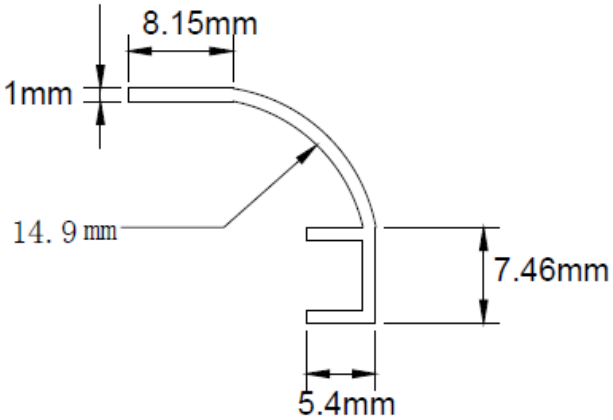


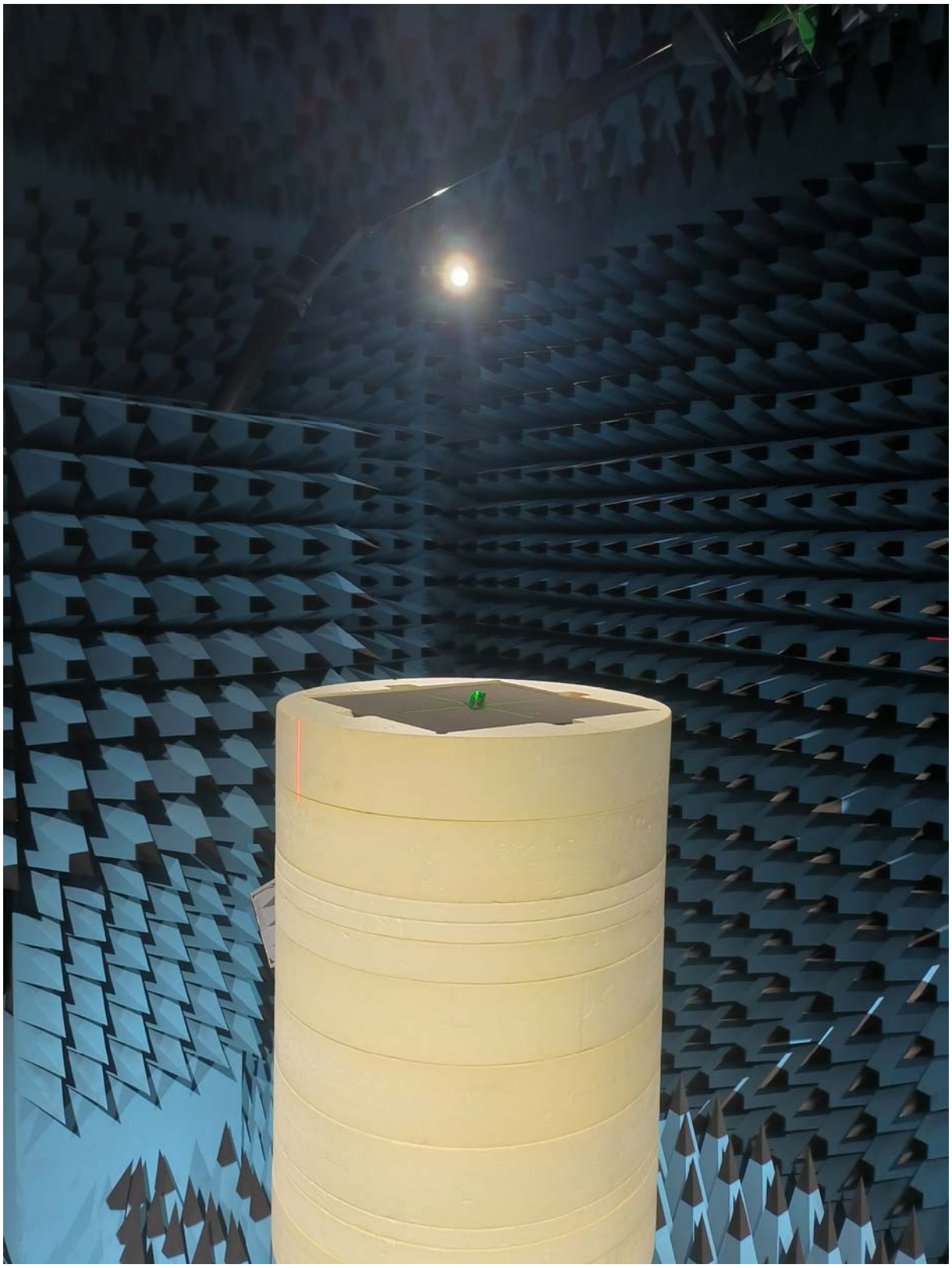
4. EUT PHOTOGRAPHS



ShellyBLU_HT_v0.1.0



5. TEST SETUP PHOTOGRAPHS



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