

Test Report for Table Lamp

Version: 1.0

Date: 2026.8.31



Version	Date	Editor	Notes
-	2026.8.31	Carly	Create Document
1.0	2026.8.31	Carly	First Update



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1. Test Items

Name	Description
Customer	Shenzhen Midou Technology Co., Ltd.
Project	Table Lamp
Editor	Carly
Reviewer	Tony
Date	2026.8.31

2. Test Content and Purpose

Passive Test:

The purpose of antenna passive test is to evaluate antenna performance without supplying additional power to the antenna. Passive tests are mainly performed based on the reflected signals, received signals or natural radiated signals of the antenna itself. Its primary objective is to measure antenna performance metrics including VSWR, gain, radiation efficiency, and 2D/3D radiation patterns using external signal sources or received signals. Actual antenna performance is significantly affected by installation environments, such as obstruction by surrounding objects and electromagnetic interference. Passive tests (e.g. on-site pattern measurement, gain attenuation test) help determine the optimal installation position including height and orientation, so as to avoid signal dead zones and interferences. Impedance matching between the antenna and RF front-end (transmitters, receivers, etc.) directly governs system efficiency. Impedance measurement in passive tests ensures impedance consistency between the antenna and the system (typically 50 Ω), prevents energy loss caused by signal reflection, and improves communication range and stability. Antenna active performance (e.g. receiving sensitivity, transmit power) depends on passive parameters. If passive parameters fail to meet specifications (such as insufficient gain or excessive VSWR), active test results will be distorted and critical defects may even be concealed. Conducting passive tests first allows early detection of fundamental defects, reduces repeated active test cycles and lowers test costs.



3. Test Equipment and Environment



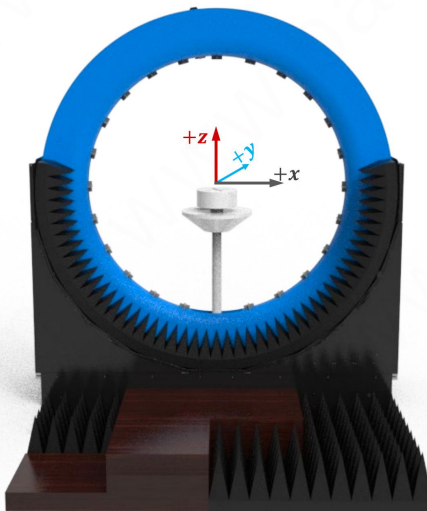
Keysight/E5071C Network Analyzer



R&S/CMW500 Radio Communication Tester



R&S/SMBV100B Vector Signal Generator



DT-3500 Datasheet

Specification:

Specification:	Description
Test Frequency	400MHz-8.5GHz
System Size	L*W*H=4*3.5*3.5m
Number of Probes	23 (Probe) + 1 (link)
Interval Angle	15°
Sampling Diameter	2200mm
Carring Capacity	≤40kg

Testing Capability

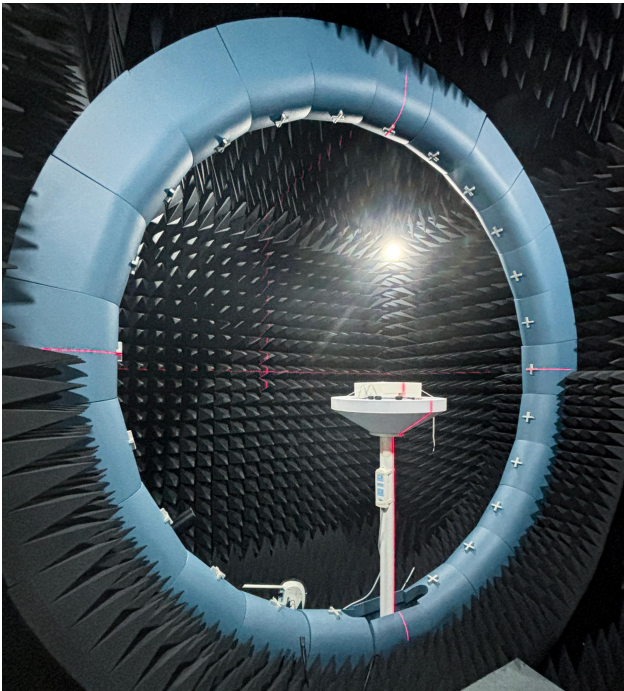
Description

Active measurement

Capability : TRP、TIS、EIRP、EIS,. etc
Mode : 2G/3G/4G/5G、Wi-Fi b/g/n/a/ac/ax、BT、NB-IOT、Cat-M(eMTC)、GPS/BEIDOU/GLONASS、ZigBee、LoRa(Non-Signaling),.etc

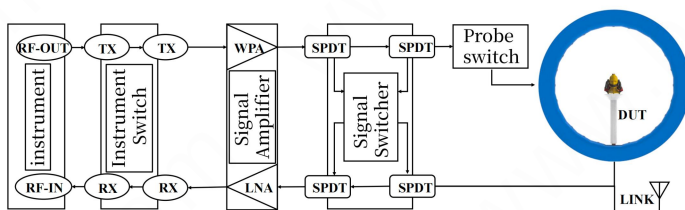
Passive measurement

Test category : Gain、Efficiency、2D pattern、3D pattern、Pattern roundness、Axial Ratio、ECC、Phase center,. etc
Polarization : Circular polarization, linear polarization, elliptical polarization

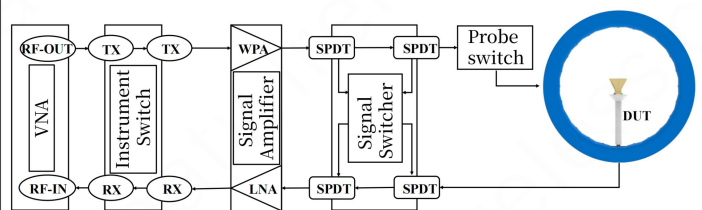


RF Link diagram of multi probe spherical near-field testing system

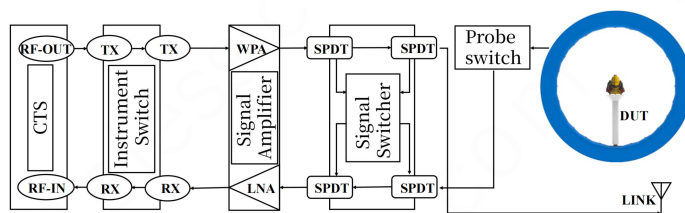
RF Link Overview



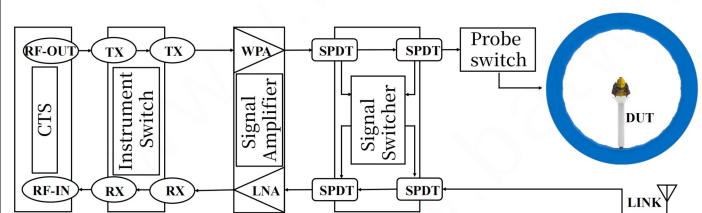
RF Link of Passive measurement



RF Link Overview

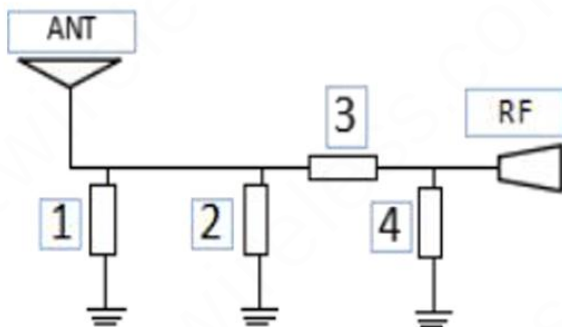


RF Link of Passive measurement





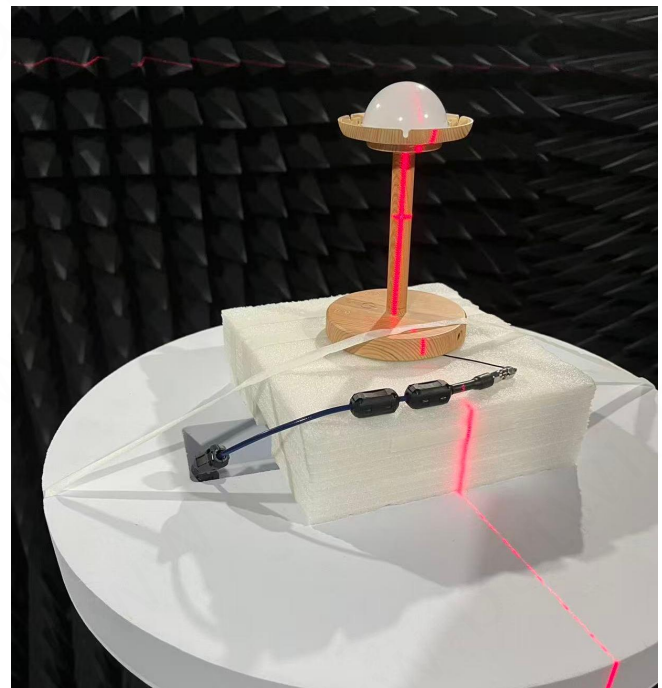
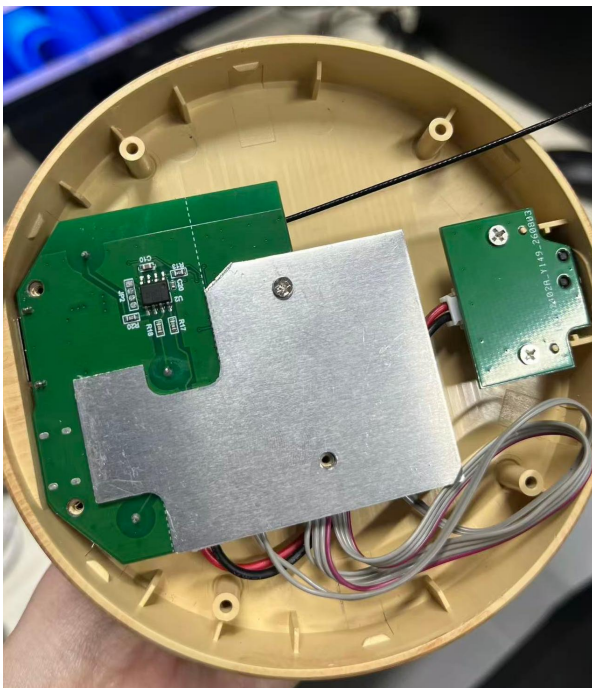
4. Impedance Matching



Sequence	Capacitor	Inductor
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A
4	N/A	N/A

No modification has been made to the matching circuit on the PCB side

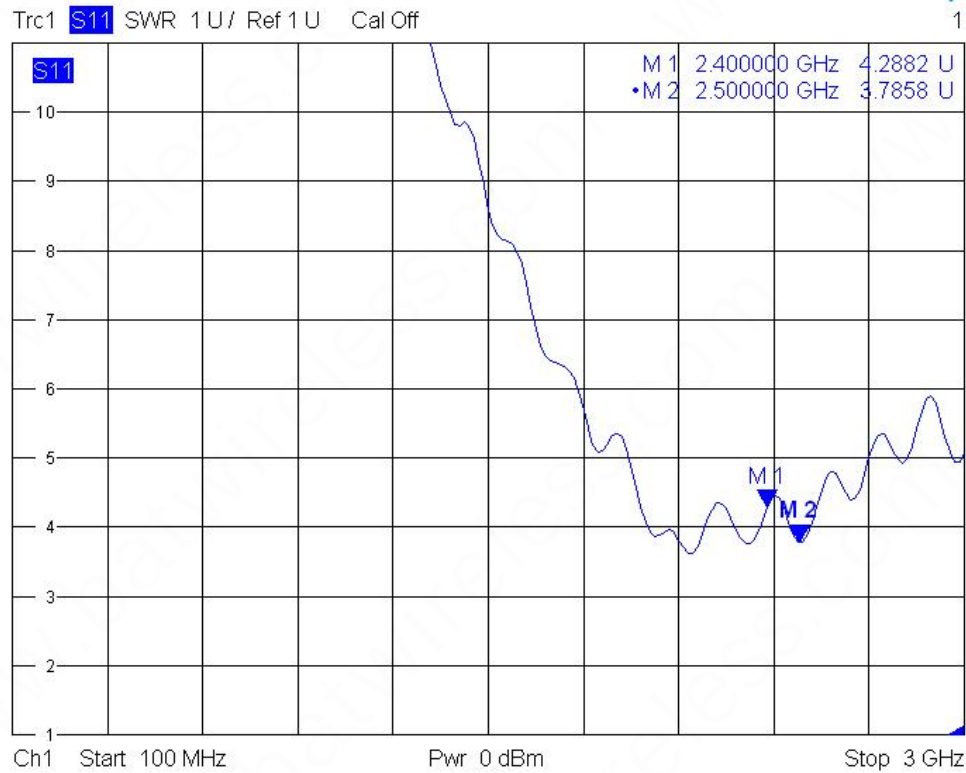
5. Antenna Position & Test Photos



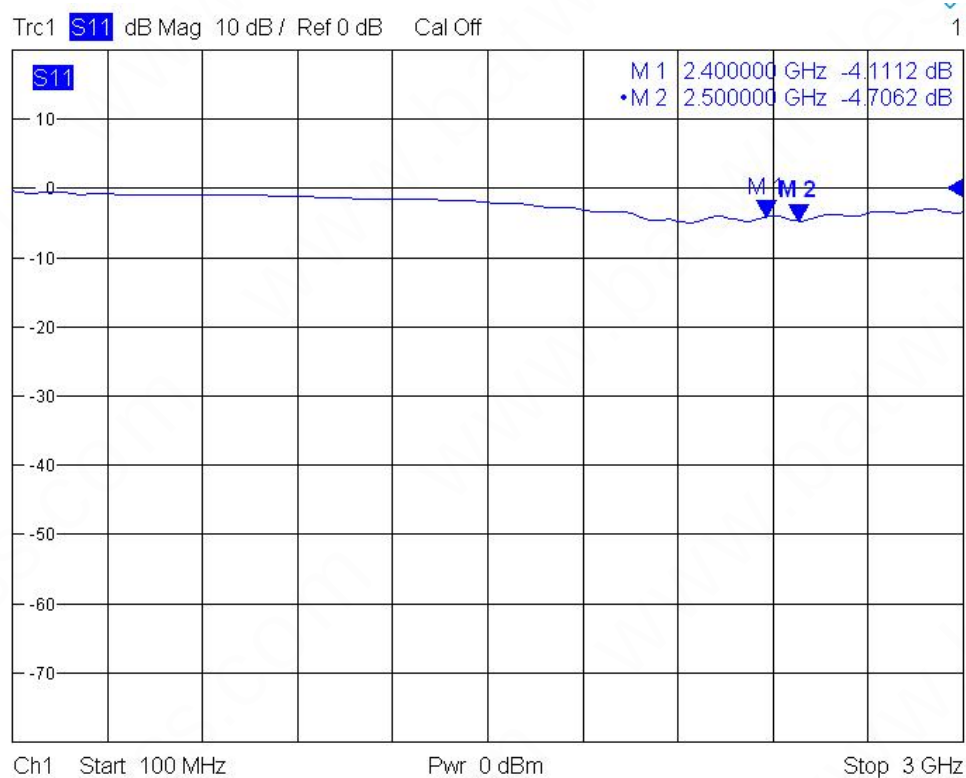


6. Performance Data

6.1 VSWR

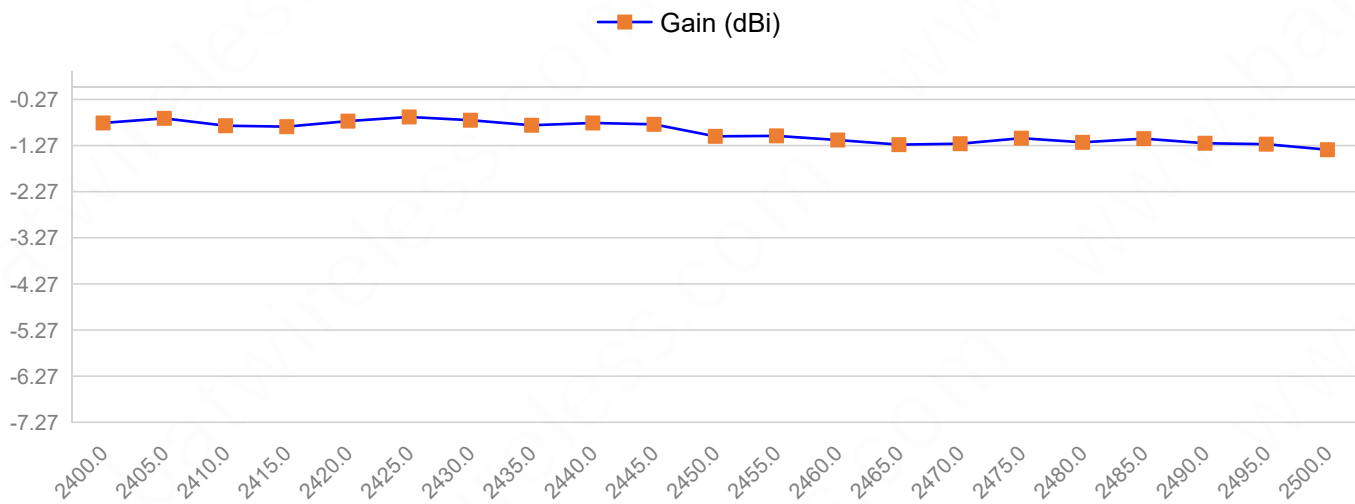


6.2 RL

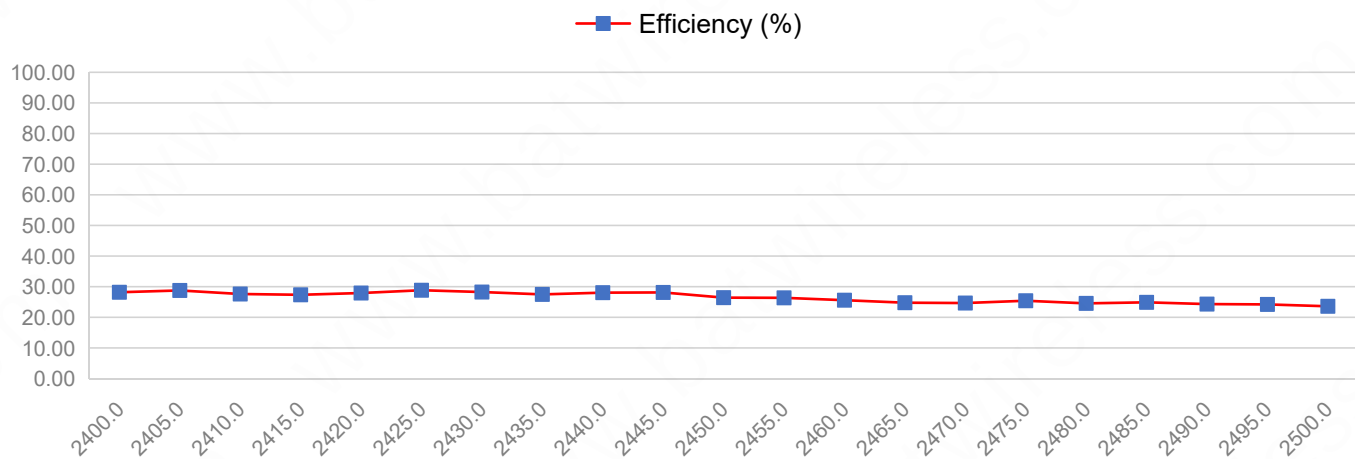




6.3 Gain



6.4 Efficiency

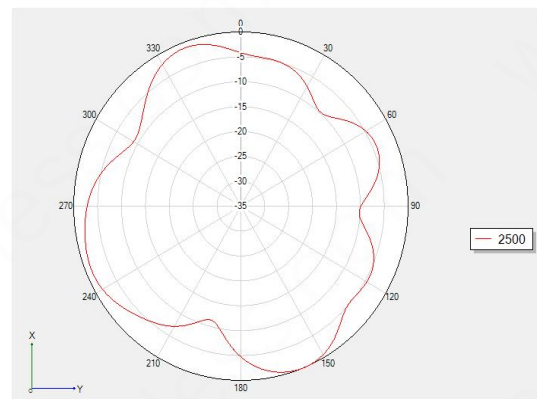
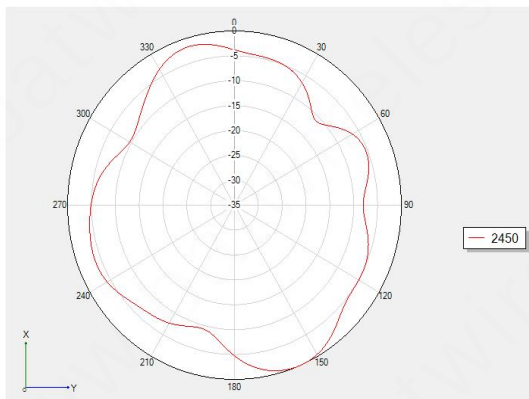
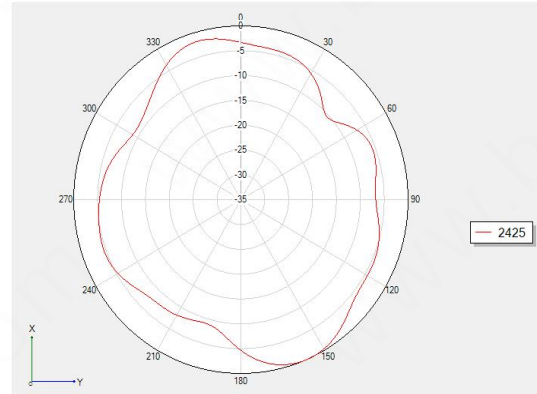
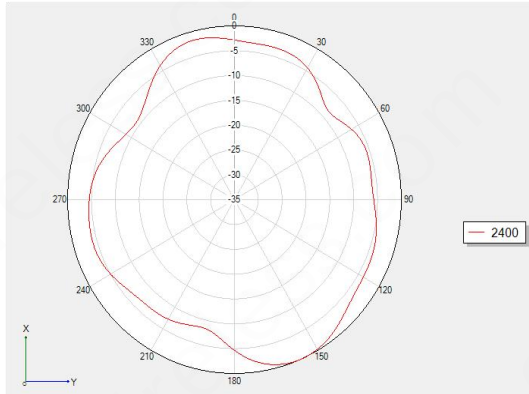


6.5 Antenna Gain and Efficiency

Frequency (MHz)	2400-2425	2425-2450	2450-2475	2475-2500
Gain (dBi)	-0.65	-0.65	-1.06	-1.11
Efficiency (%)	28.84	28.84	26.42	25.41

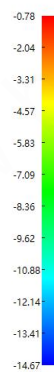
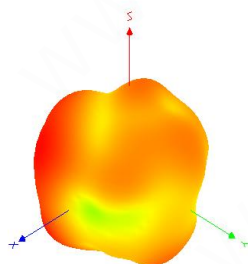


6.6 2D Radiation Patterns

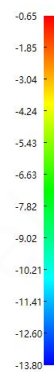
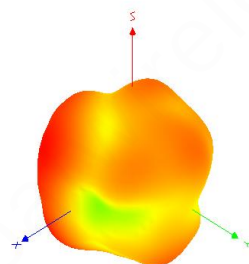


6.7 3D Radiation Patterns

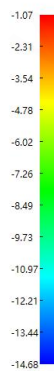
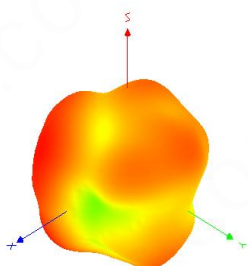
Frequency (MHz) : 2400



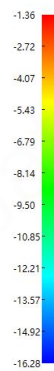
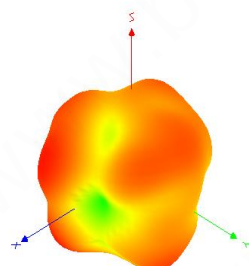
Frequency (MHz) : 2425



Frequency (MHz) : 2450



Frequency (MHz) : 2500





8. Conclusion

During the passive 4G test, the measured maximum gain reaches -0.65 dBi, and the maximum overall radiation efficiency is 28.84%.