

M200

Antenna Debugging Report

Shenzhen HamyWe Technology Co., Ltd.

Engineer: Li Wang

Phone: 1 3 6 1 1 5 0 3 5 8 2

Email: liwang@suzhot.com

Date: 2 0 2 6 . 0 4 . 2 1



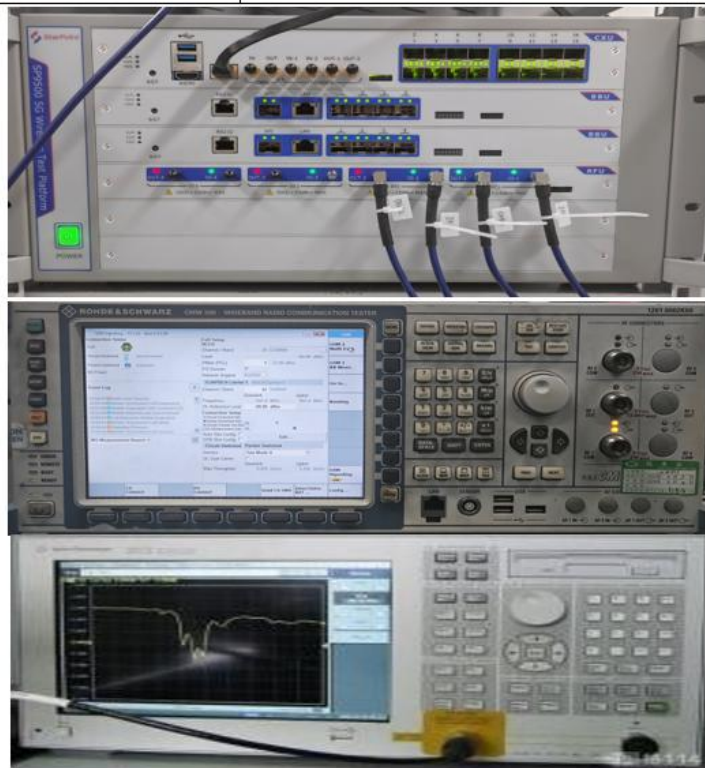
- 01 | **Testing Equipment and Environment**
- 02 | **Project Overview**
- 03 | **Antenna Performance Evaluation and Debugging**
- 04 | **conclusion and suggestion**



testing facility

无源及有源测试—5G微波暗室

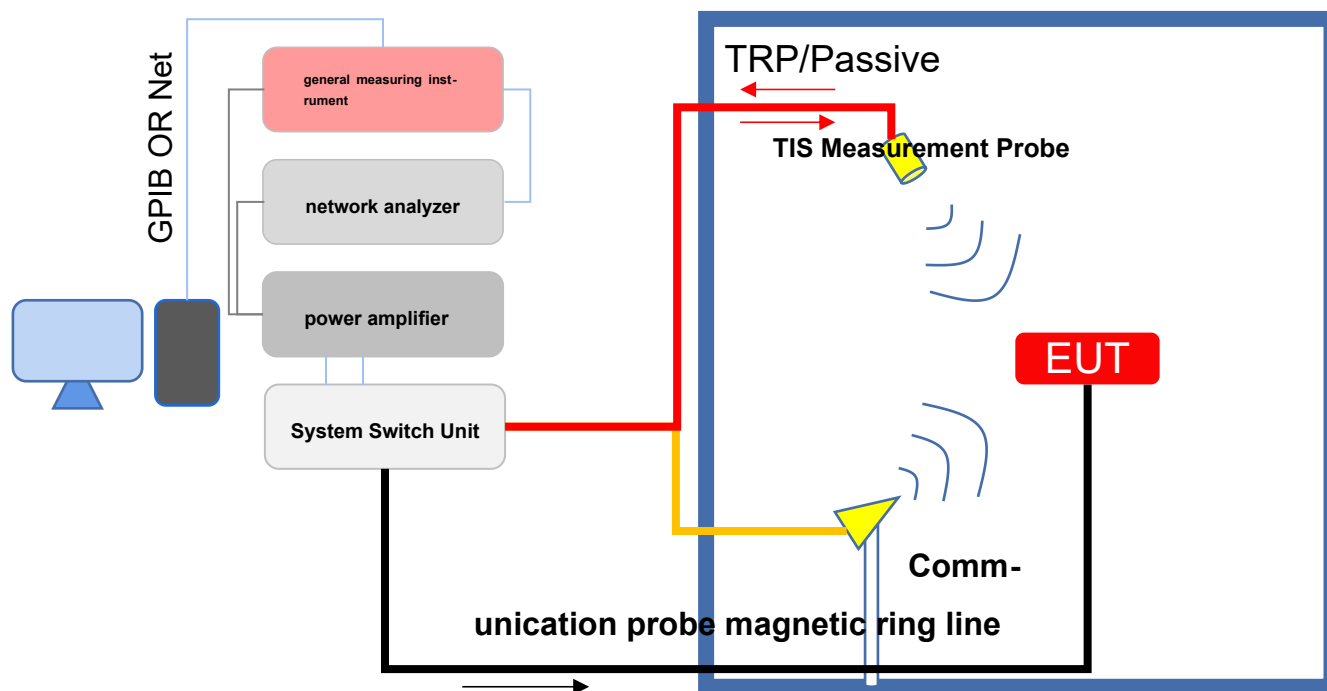
◆ 测试系统	◆ 测试环境	◆ 有源测试	◆ 无源测试
GTS2800	温度：22℃±3℃ 湿度：50%±15%	支持5G/4G/3G/2G 支持BT/WIFI/GPS	600MHZ——6G



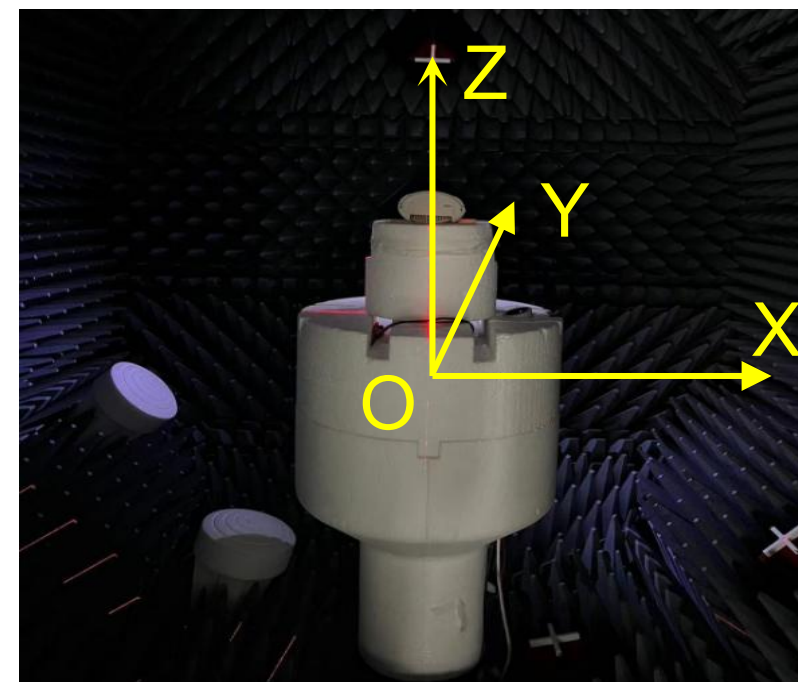
>>> Antenna Testing Environment



- Darkroom Coordinate System GL-G-1



H Plane : XY
E1 Plane : XZ
E2 Plane : YZ





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Project Overview



Device Front Side

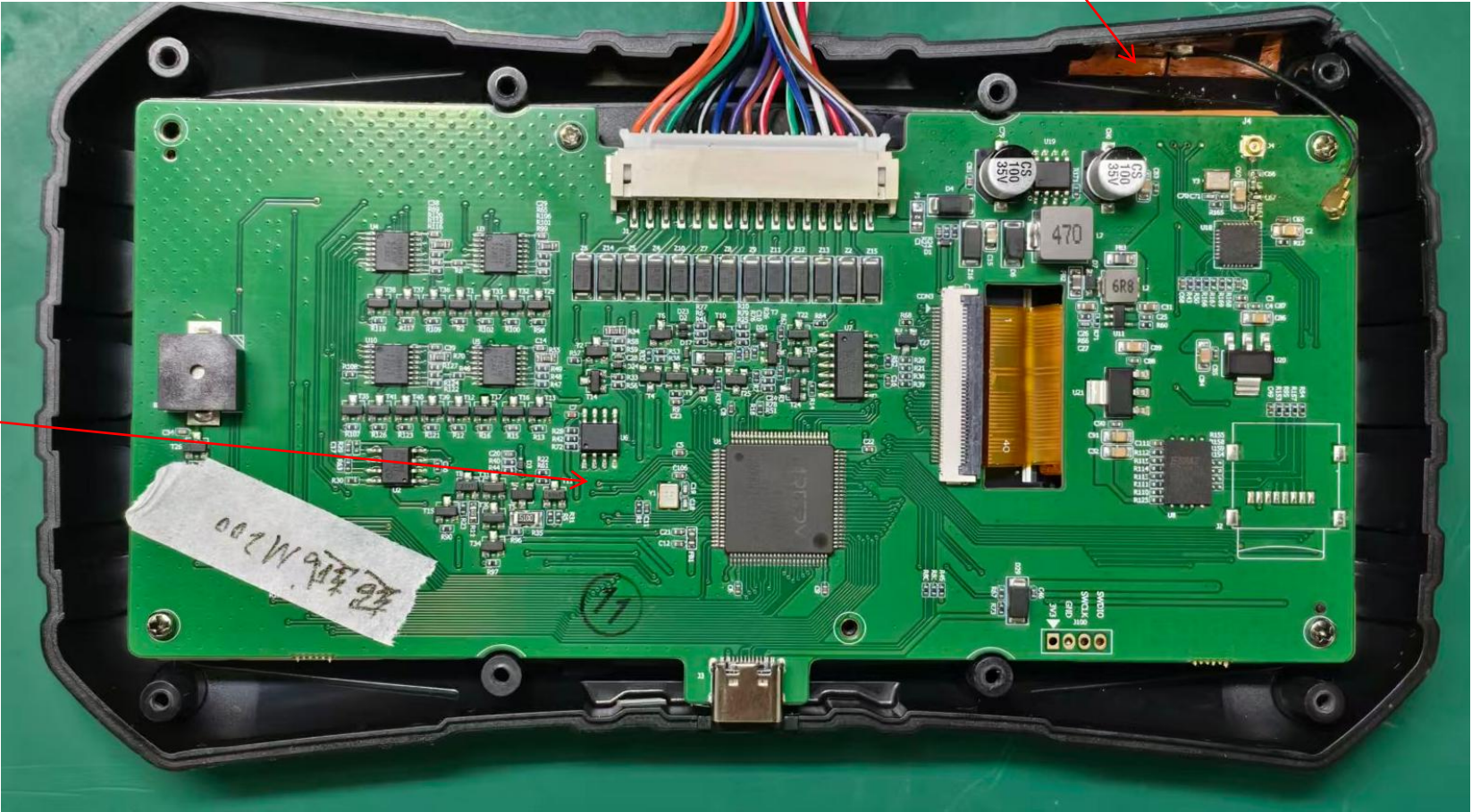


Back of the device

Prototype Diagram



Project Overview



mother board

antenna

No additional
environmental
treatment required

Prototype Diagram

Project Overview

- **Number of antennas: 1**
- **Antenna Type: FPC**
- **Network Standards and Frequency Bands:**
 - ✓ 802.11b 2.4GHz (11M): 2400MHz-2497MHz
 - ✓ Channel 1: 2402MHz-2422MHz
 - ✓ Channel 7: 2432MHz-2452MHz
 - ✓ Channel 13: 2462MHz-2482MHz

WIFI frequency range	
Standard Protocol Version	Frequency range
802.11b, g, n, ax, be	2400 MHz-2497 MHz
802.11a, n, ac, ax, be	5150 MHz- 5250 MHz
	5250 MHz- 5350 MHz
	5470 MHz- 5725 MHz
	5725 MHz-5895 MHz
802.11ax, be	5925 MHz - 6425 MHz
	6425 MHz - 6525 MHz
	6525 MHz - 6875 MHz
	6875 MHz - 7125 MHz
802.11p, bd	5850 MHz- 5925 MHz
802.11ah(HaLow)	863 MHz-868 MHz (Europe)
	755 MHz-787 MHz (China)
	902 MHz-928 MHz (United States)
	916.5 MHz~927.5 MHz (Japan)
	9.75 MHz~923.5 MHz (South Korea)
	866 MHz~869 MHz (Singapore)
	920 MHz-925 MHz (Singapore)
802.11ad, ay	57 GHz – 66 GHz (Europe)
	59 GHz – 64 GHz (China)
	57 GHz – 7 GHz (United States)
	57 GHz – 64 GHz (South Korea)
	57 GHz – 66 GHz (Japan)
	59.4 GHz – 62.9 GHz (Australia)
802.11aj	42.3 GHz-48.4 GHz (China)
	59 GHz – 64 GHz (China)

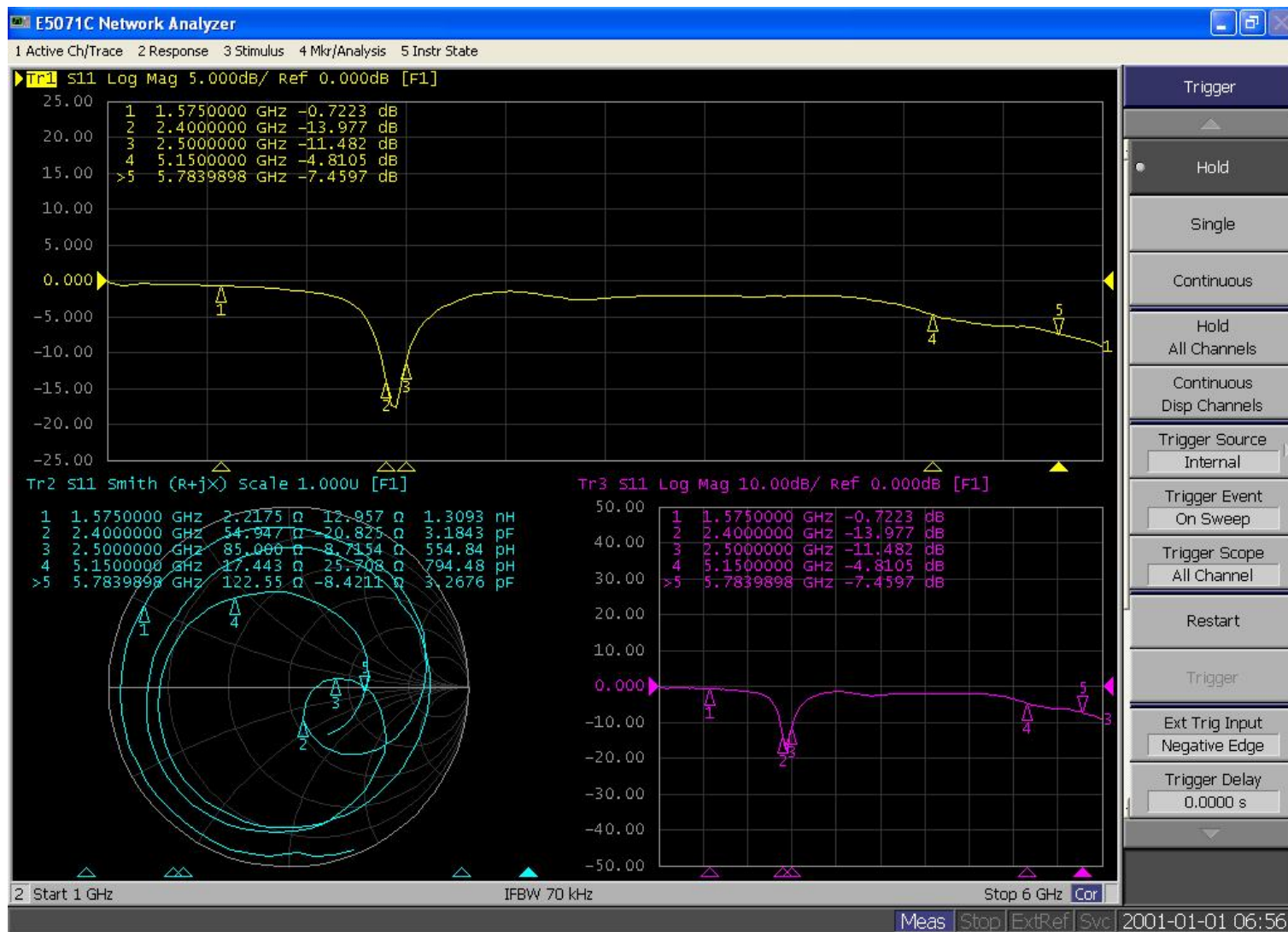




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Passive Testing (S11, SWR, Smith Diagram)

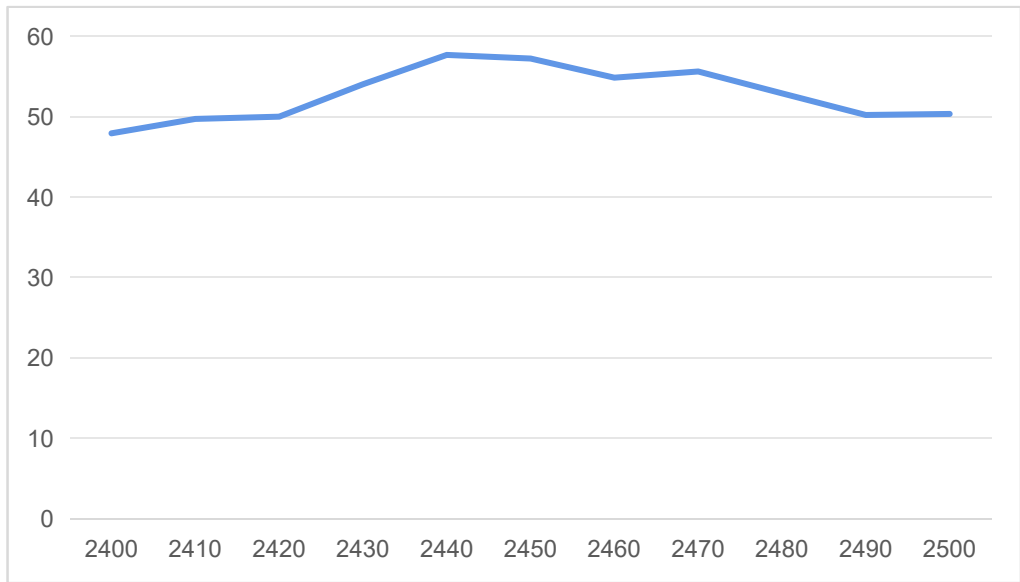


>>> Passive efficiency test



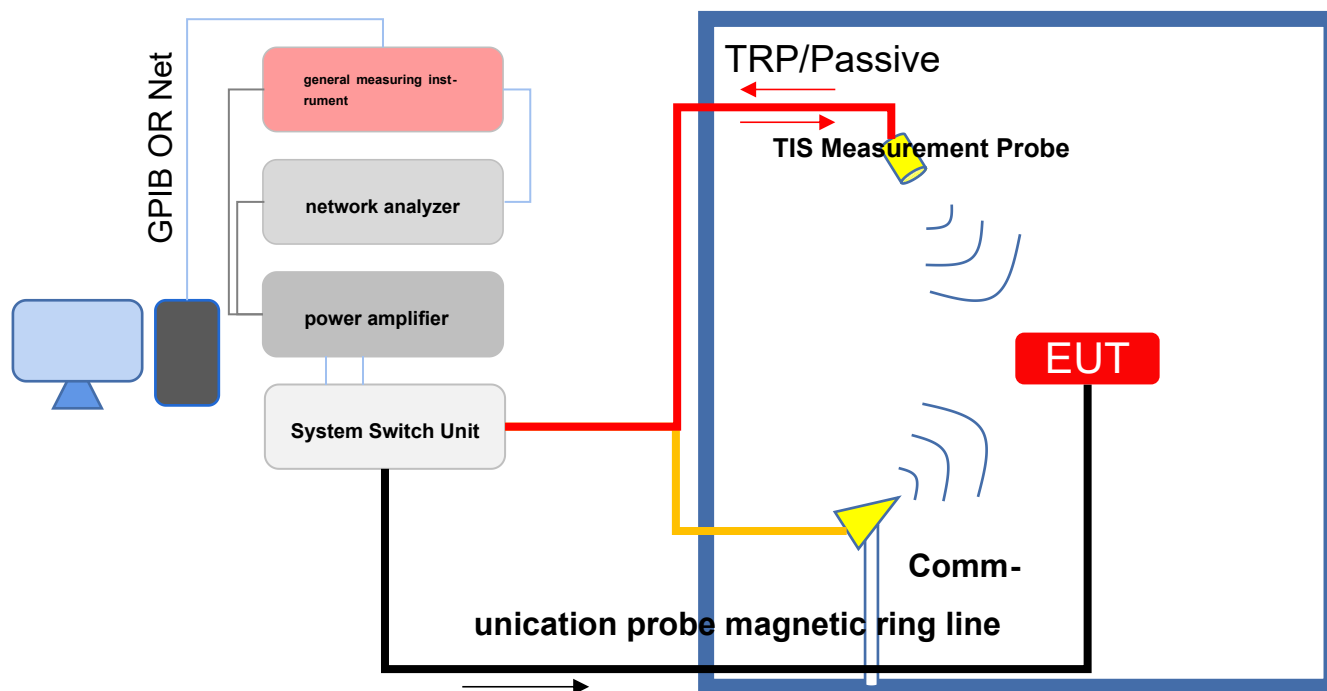
- Efficiency

Frequency (MHz)	Efficiency (dB)	Gain (dBi)	Efficiency (%)
2400	-3.19	0.22	47.93
2410	-3.03	0.52	49.72
2420	-3.01	0.4	50
2430	-2.67	0.81	54.03
2440	-2.39	1.23	57.68
2450	-2.42	1.27	57.23
2460	-2.61	1.19	54.85
2470	-2.55	1.31	55.62
2480	-2.77	1.23	52.9
2490	-2.99	1.03	50.21
2500	-2.98	0.98	50.34

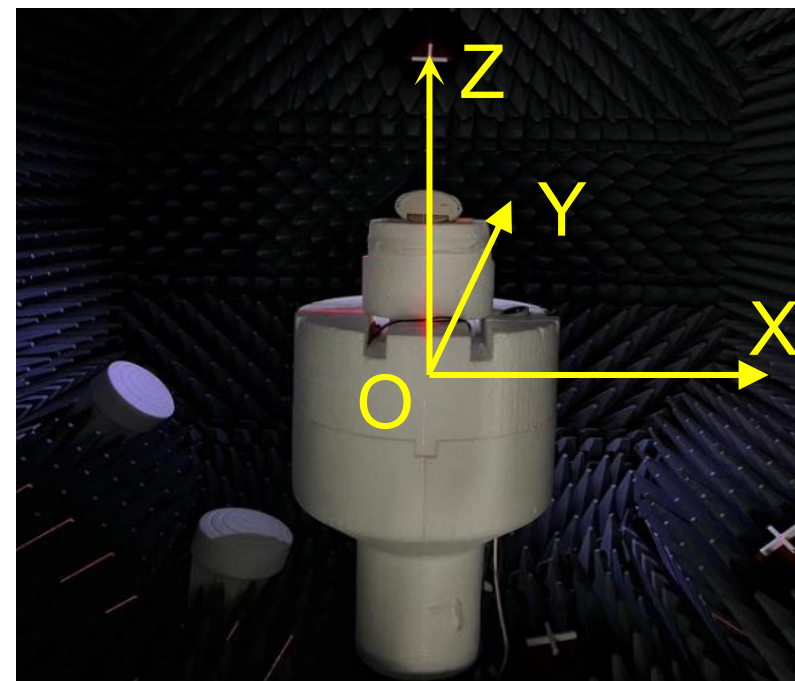


>>> Antenna Testing

- Darkroom Coordinate System GL-G-1



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- OTA Data – WIFI



Band	Channel	Frequency	TRP	TIS
802.11b 2.4GHz (11Mbps)	1	2412	15.2	-83.01
	7	2442	15.21	-83.44
	13	2472	14.24	-83.03

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conclusion and suggestion



- **Antenna Performance Conclusion**

(1) From the perspective of passive performance:

Passive performance meets all specifications, with SWR and return loss complying with standards.

(2) From the perspective of OTA performance:

The TRP and TIS results comply with the design specifications.



Thank you

SHENZHEN UHOT ELECTRONICS CO., LTD

general headquarters

Address: 4th Floor, Jinghang Building, Liuxian Second Road, Zone 71,
Bao'an District, Shenzhen

TEL: 075523088181

East China Branch

Address: Room 502, Building B, Honghui Lianhua Plaza, No.
1308 Lianhua Road, Minhang District, Shanghai

Hong Kong Branch

Tuen Mun, Hong Kong