

# Antenna Testing Report

**Customer :** apical Technology

**Project Name :** SZ24046IB77

**Report Number:** SZ24046IB77

**Manufacturer:** Sunnyway Technology(CHINA)

**Address:** Floor 6, Building 5, Nam Tai Inno Park, Guangming District, Shenzhen

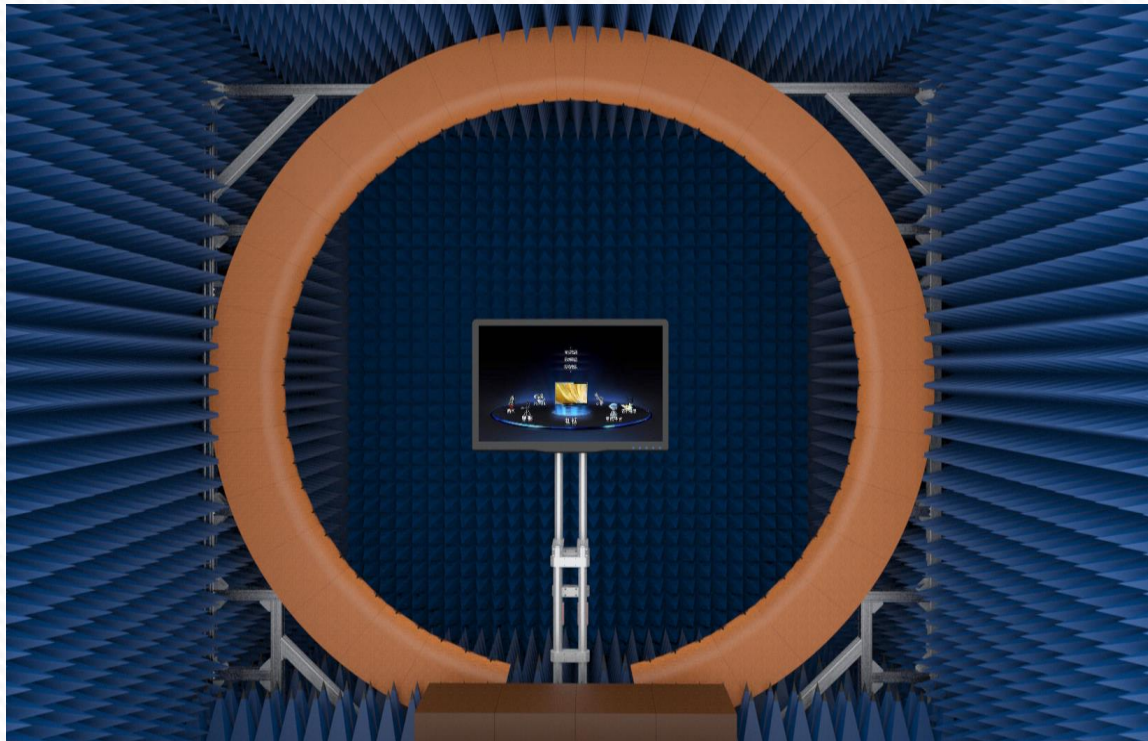
**Report version:** January 29, 2024

**Author:** Payne

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A0	2024.1.29	Active Testing Report
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Prototype status	Debugging machine
Device type	car recorder
Number of antennas	WIFI antenna
Frequency band	802.11b/g/n
Structural style	FPC
Environment adjustment	No change
Matching modification	No change



The industry's top 64 sensors OTA chamber

Frequency range: 400MHz-11GHz

Device Llimitation: 2M

Load-bearing limitation:100KG

Equipments Items	Total Quantity	Quantity for Shanghai R&D	Quantity for Shenzhen R&D	Quantity for ChongQing R&D
OTA chamber	10	4	5	1
5G Tester (SP9500-CTS)	3	1	1	1
R&S Tester (high configuration CMW500)	6	3	2	1
Japan Anritsu Tester (Dual Channel 8820)	4	2	2	--
NB-IoT Tester (SP8315)	3	1	1	1
Agilent Tester (8960)	9	4	4	--
Agilent Network Analyzer (E5062A)	7	3	3	1
Agilent Network Analyzer (E5071C 8.5GHZ )	11	5	5	1
Agilent Network Analyzer (E5071B 8.5GHZ )	7	3	3	1
R&S Network Analyzer (ZND)	9	4	4	1
R&S Network Analyzer (ZVB)	3	1	1	1
OTA head hand / ear hand / arm hand	5	2	2	1
GPS/WIFI active test equipment	5	2	2	1



版本	修改内容	修改人	日期

正面

黑色丝印亮黑色  
Black silk screen bright black

离型纸断开位  
Release paper break bit

使用一对半基材  
Use a pair and a half substrates

背胶面  
Rubber backing

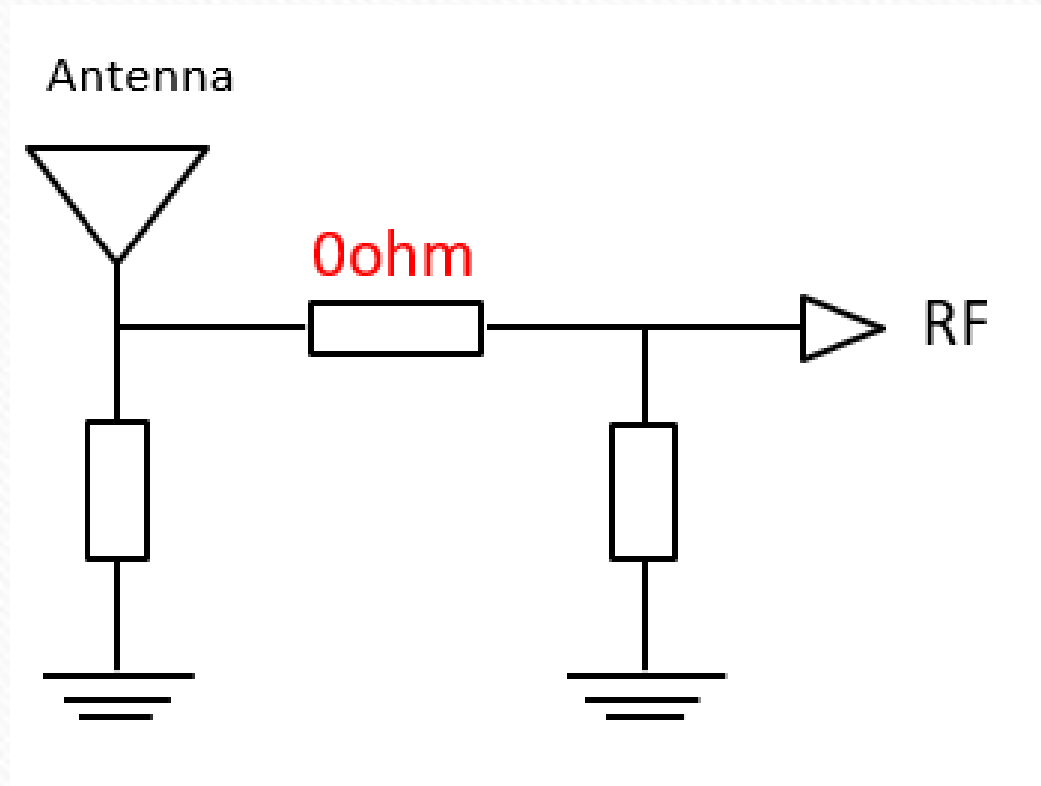
**技术要求**

1. 出货包装要求: (整版出货)
2. 铜泊表面涂黑/白哑光油墨;
3. 油墨要均匀;
4. 带"\*"符号尺寸为重点尺寸;
5. 背胶用3M467;
6. 基材使用PI;
7. 铜箔厚0.5oz;
8. OSP区域焊同轴线;
9. 未注倒圆角均为0.2, 工艺沿边为0.2mm;
10. 未注公差按一般公差表;
11. 产品符合RoHS要求。

□	OSP抗氧化处理 QSP antioxidant treatment
▨	线路区域 Line area
▧	无背胶区域 Glue-free area

尚远科技(中国)有限公司

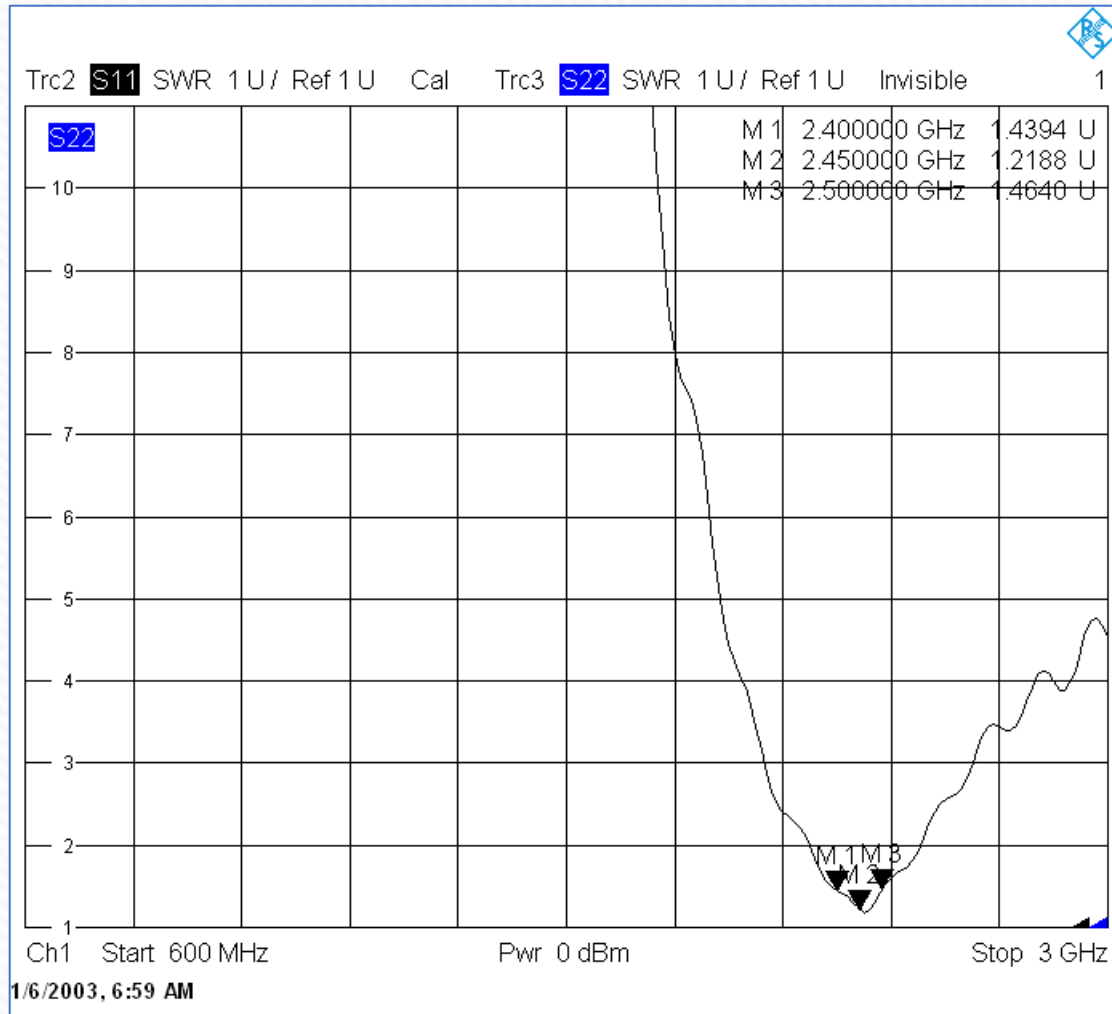
 TOLERANCE X.X ±0.20 .XX ±0.10 .XXX±0.05 ANGULAR ≤±0.5°	PART NAME: MAIN天线 (4512)	DATE: 2024-01-19	DRAWN: 凌立民 CHECKED: 陈敏 APPROVED:
UNIT: mm	COLOUR: 黑哑光	SCALE: 1:1	REV: TA



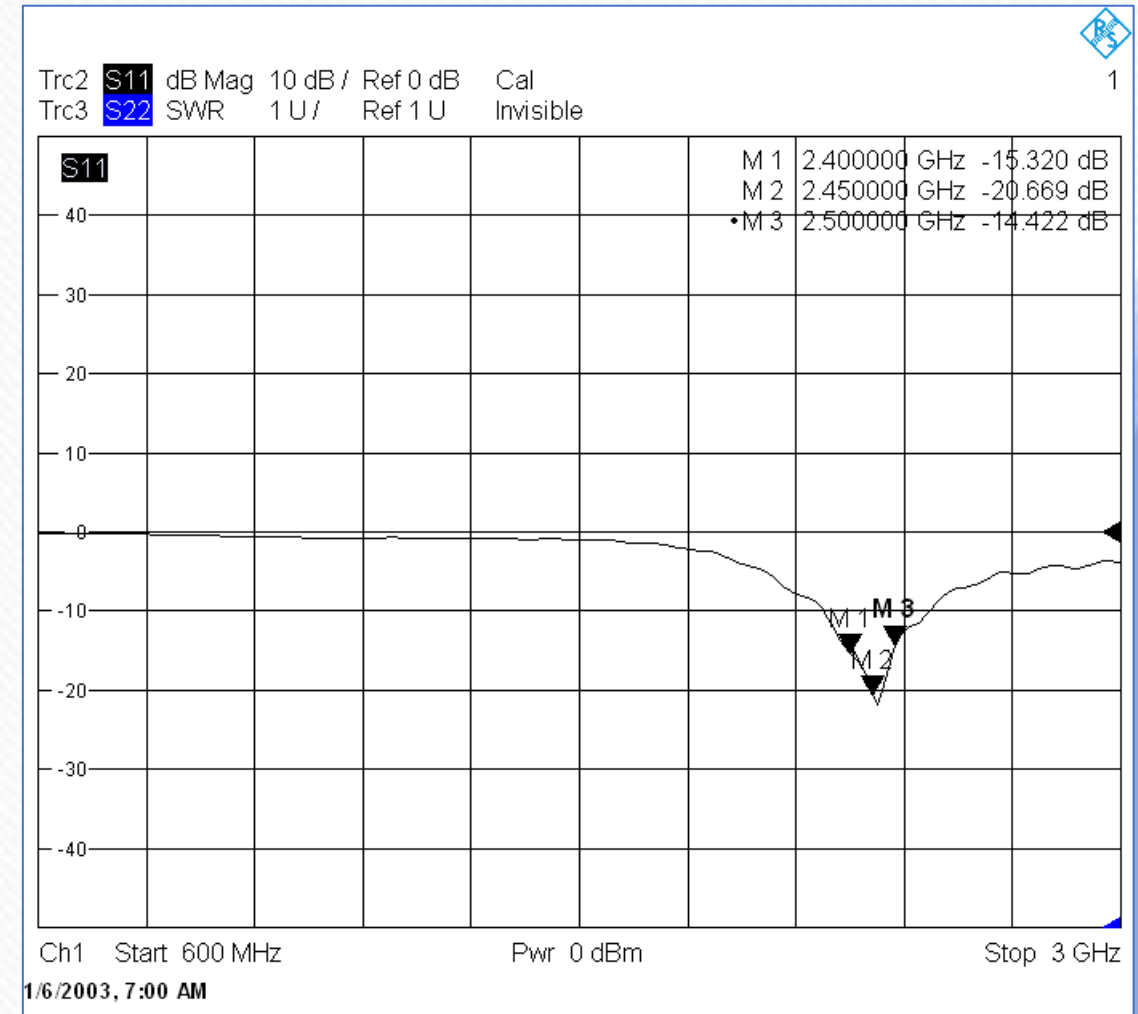


## WIFI Antenna

### VSWR



### Return Loss



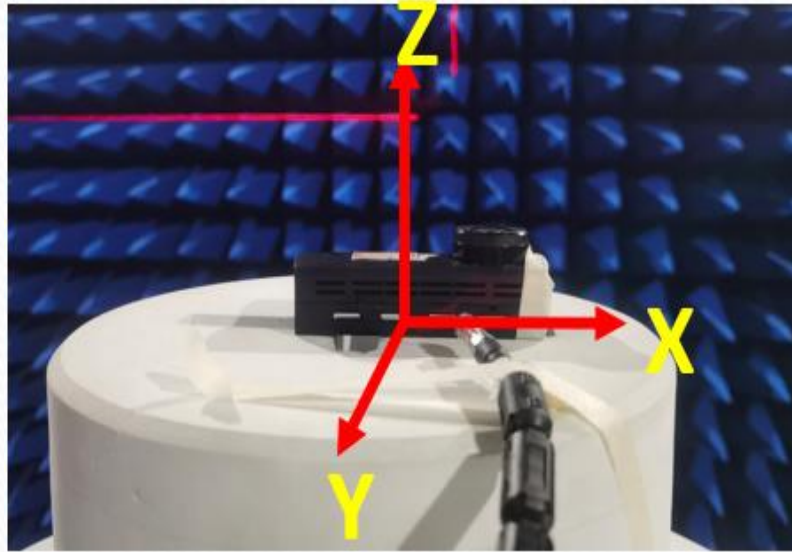
## WIFI Antenna

Frequency/Mhz	Efficiency / %	MaxGain/dBi
2400	35.48	0.48
2410	36.06	0.57
2420	36.56	0.87
2430	39.08	1.2
2440	40.55	1.61
2450	41.59	1.81
2460	41.5	2.03
2470	42.66	2.17
2480	44.06	2.47
2490	44.06	2.46
2500	43.55	2.58

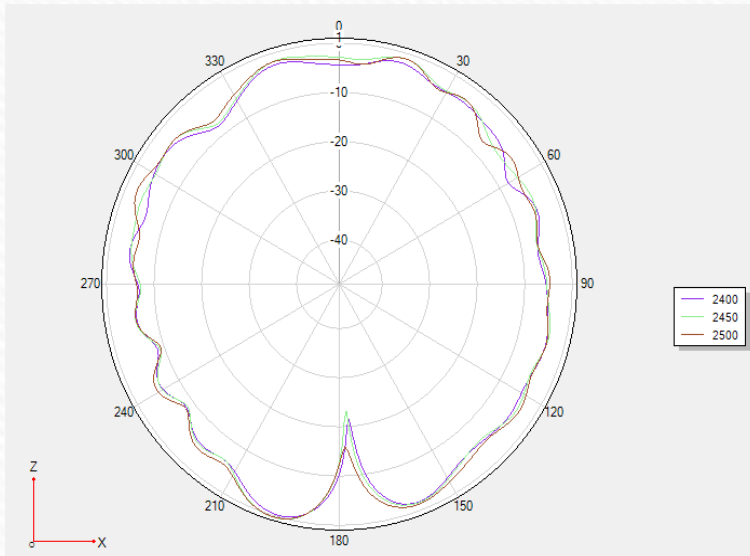
## WIFI Antenna

Measurement	Standard	Band	Channel	Total
TRP	WIFI (Station)	WIFI_B (1M)	1	13.27
TRP	WIFI (Station)	WIFI_B (1M)	7	13.57
TRP	WIFI (Station)	WIFI_B (1M)	13	13.79
TIS(EIRP)	WIFI (Station)	WIFI_B (11M)	13	-75.55
TRP	WIFI (Station)	WIFI_G (6M)	1	13.11
TRP	WIFI (Station)	WIFI_G (6M)	7	13.83
TRP	WIFI (Station)	WIFI_G (6M)	13	13.29
TIS(EIRP)	WIFI (Station)	WIFI_G (54M)	13	-66.14
TRP	WIFI (Station)	WIFI_N_ISM (6.5M)	1	12.08
TRP	WIFI (Station)	WIFI_N_ISM (6.5M)	7	12.81
TRP	WIFI (Station)	WIFI_N_ISM (6.5M)	13	12.75
TIS(EIRP)	WIFI (Station)	WIFI_N_ISM (65M)	13	-63.4

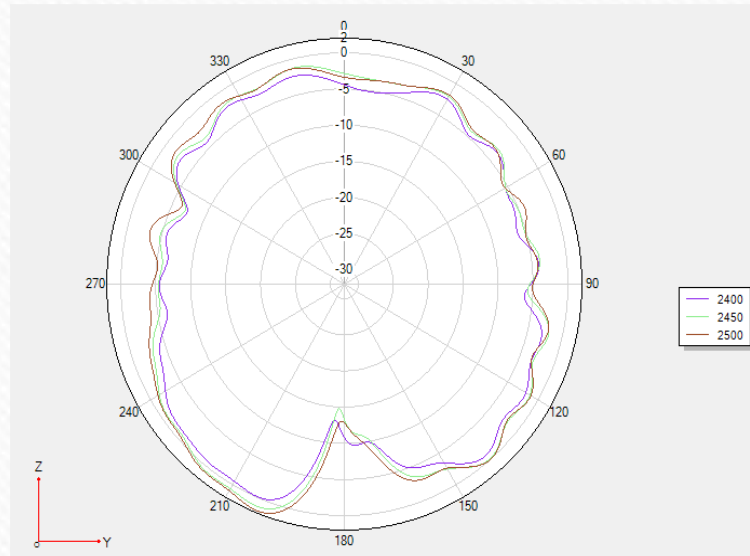
WIFI Antenna



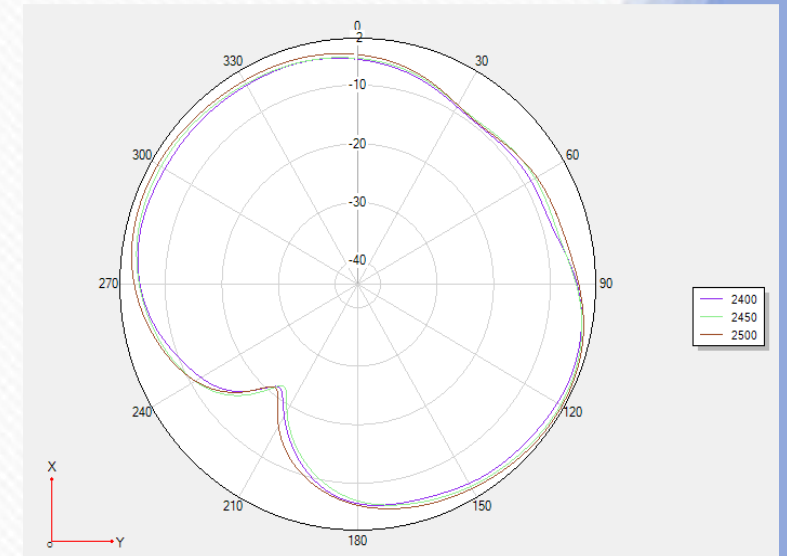
phi 0°



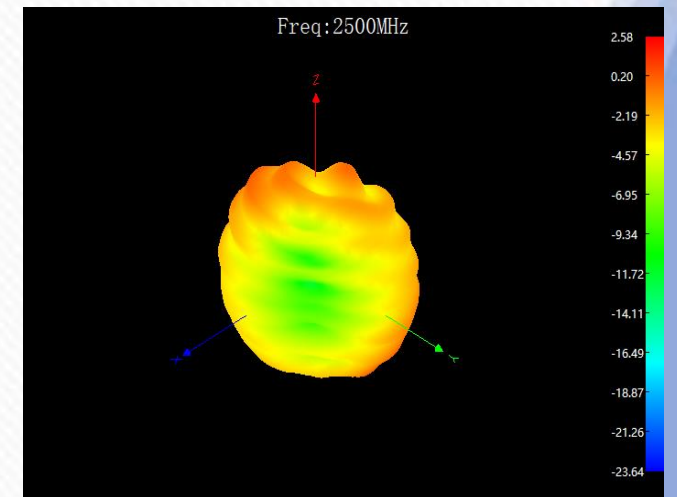
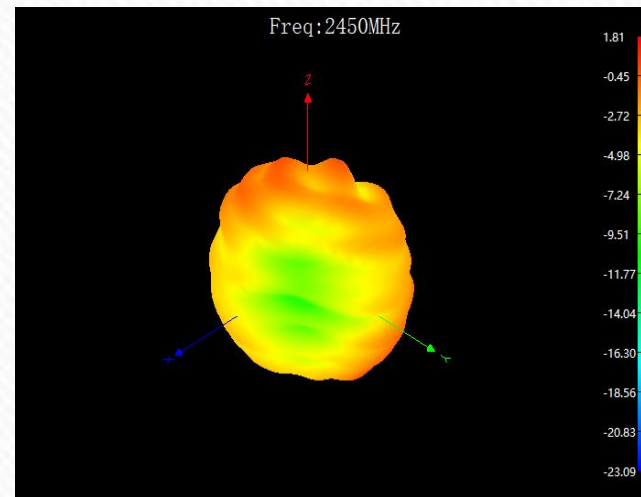
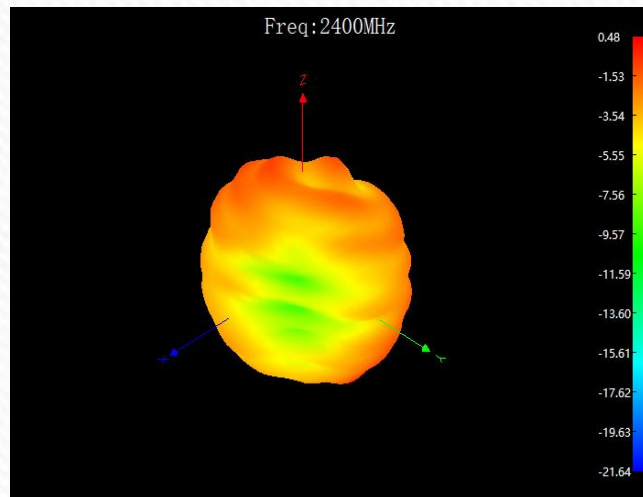
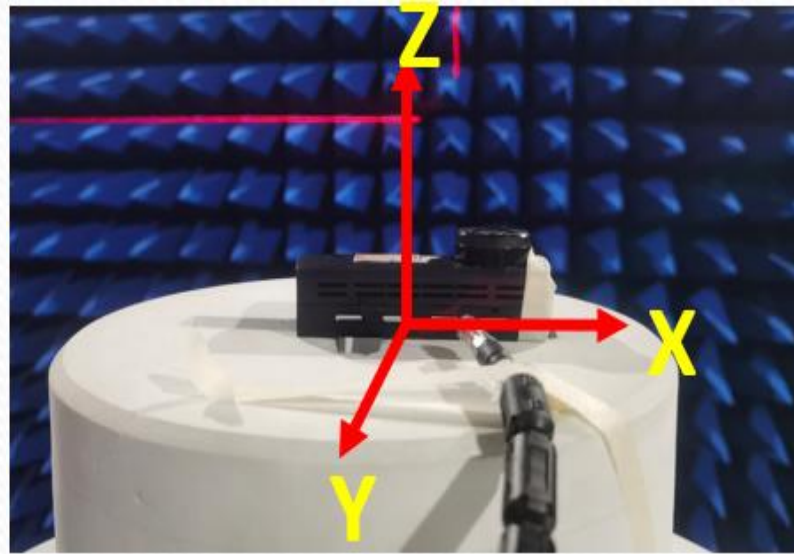
phi 90°



theta 90°



WIFI Antenna





The GND of the 4512's antenna has to be connected to the motherboard via conductive foam.

Good antenna performance test results

# Thank You

**Shanghai R&D Center:** 1F, Building 4, No.99, Lane 215, Gaoguang Road, Qingpu District, Shanghai, 201799, PRC

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