Shenzhen Helixun Technology Co., Ltd

SPECIFICATION FOR APPROVAL

Customer Name	**By me**		
Customer Project Name	BS596	**Helixun Project Name**	BS596
Customer P/N		**Helixun P/N**	HLX008-BS596-R-V3
Band	2400-2500MHz		
Version	**A2**		
Designer Information			
RF Engineer	**Huang Yafei**	**EE Engineer**	**Shi Zhenhao**
ME Engineer	**Huang Yafei**		

Helixun Approval				**Customer Approval**	
	Prepared By	**Checked By**	**Approval By**	**Checked By**	**Approval By**
Signature	**Yi YongKang**				
Date	**2024-1-2**				

Change Log				
Version	**Change Description**	**Person in Charge**	**Approval By**	**Date**

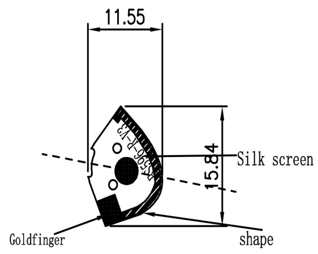
Company name: 1905, Building 2, Jiufang Square, Tiezai Road, Gongle Community, Xixiang Street, Bao 'an District, Shenzhen TEL: 0755-23591525 FAX: 0755-23591525

Catalogue

Company name: 1905, Building 2, Jiufang Square, Tiezai Road, Gongle Community, Xixiang Street, Bao 'an District, Shenzhen TEL: 0755-23591525 FAX: 0755-23591525

Drawing or Product Image

Silk screen white, antenna black



Concentrate:

1、1. The adhesive is made of 3M 9471 300LSE, the viscosity is more than 300MP, the shape of the adhesive is consistent with the substrate, covered on the back of the substrate, and the adhesive is cut in half;;

2. The material is single-sided, half-to-half substrate, and the flexibility should be good;

3. There is no crack on the surface of the product after being bent at 180° after being oiled, and the flexibility should be good;

4.The surface of the gold finger is plated with gold 0.5~2u", no oxidation, and there is no crack or conduction phenomenon after 180° bending at the junction of copper foil;

5.The precise tolerance range of wiring and holes: ±0.03mm, and the tolerance of external dimensions is controlled within 0.1mm;

6.The ★ size is strictly controlled, marked with * as the key size, and the unmarked size is measured according to the CAD electronic drawing file 1:1;

7.Printing on the surface, see the figure for the specific content and location;

8.The non-appearance needs to be cut and sent to our company after the sample is sent.

Legend	
(grid)	Appearance
(grid)	Gilding area
(hatch)	Line area
-------	Release liner tear-off position

V.1 V.2 V.3 V.4 V.5 V.6

No.	Layer	Description(Thickness)	Manufacturer &P/N
1	Adhesive backing	300LSEMP(12μm)	Jiujiang Flax
2	Substrate	KUM-800F NHG3<10μm>	Bailey
3	Ink	Cu(ED) <18μm>+PI <12.5μm>	Kaiyao

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The third corner			
0~10	±0.10	○	0.02
10~20	±0.12	◎	Ø0.03
20~40	±0.15	⊥	0.02
40~	±0.20	▱	0.04
		⌰	0.02
Do not measure the drawing		Location	

Models	BS596	date	2024-03-1	drawing	Huang Yafei	page number	1of1
Product name	WIFI2.4+5.8G		devise		Audit		Approved
Part number	HLX008-BS596-R-V3	structure					
Material	FPC+3M9471						
Die face treatment		RF					
Appearance treatment			unit	mm	proportion 1:1	version	REV:A

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Sample Dimensions Test Report

Customer Name	By me	Customer P/N		Helixun P/N	HLX008-BS596-R-V3
Test Date	2024-1-2	Sample Qty.	3	Inspector	Yi YongKang
Dimension No.	Standard	Sample 1	Sample 2	Sample 3	Pass/NG
①Length	15.84±0.2mm	15.80mm	15.90mm	15.85mm	Pass
②Width	11.55±0.2mm	11.50mm	11.60mm	11.55mm	Pass
③Thickness	0.2±0.05mm	0.21mm	0.22mm	0.20mm	Pass
Conclusion					PASS
Inspector & Date	Yi YongKang 2024-1-2		Approval &Date		

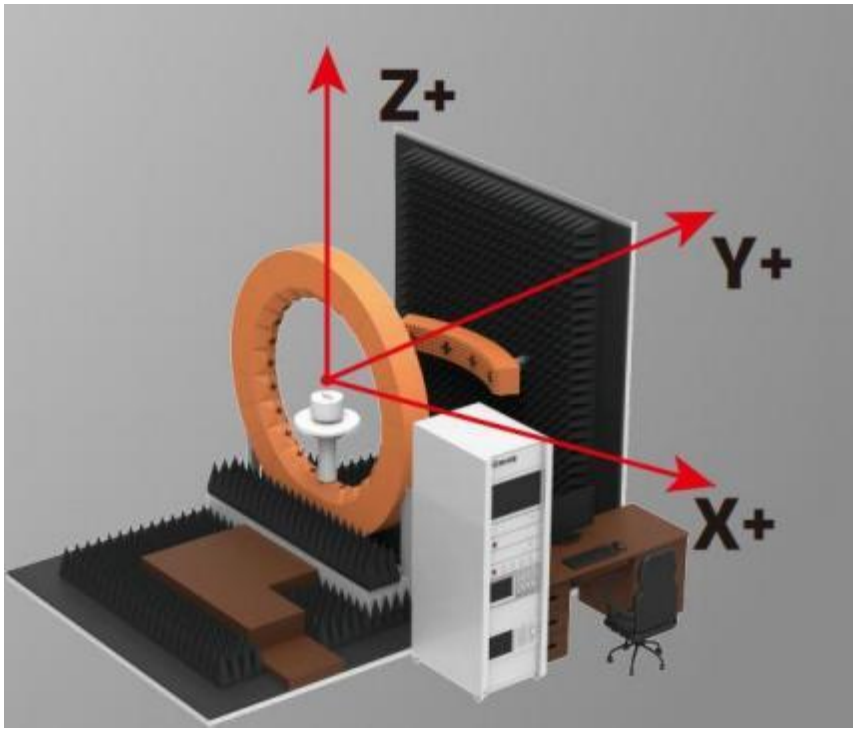
Company name: 1905, Building 2, Jiufang Square, Tiezai Road, Gongle Community, Xixiang Street, Bao 'an District, Shenzhen TEL: 0755-23591525 FAX: 0755-23591525

RF Performance Test Report

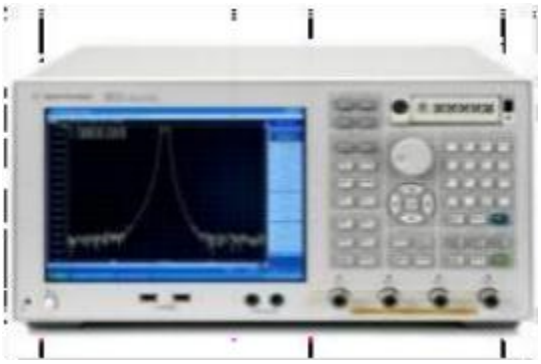
Customer Name	By me	Project Name	BS596	Helixun P/N	HLX008-BS596-R-V3
Band	2400-2500MHZ	Test Date	2024-1-2	Inspector	Yi YongKang

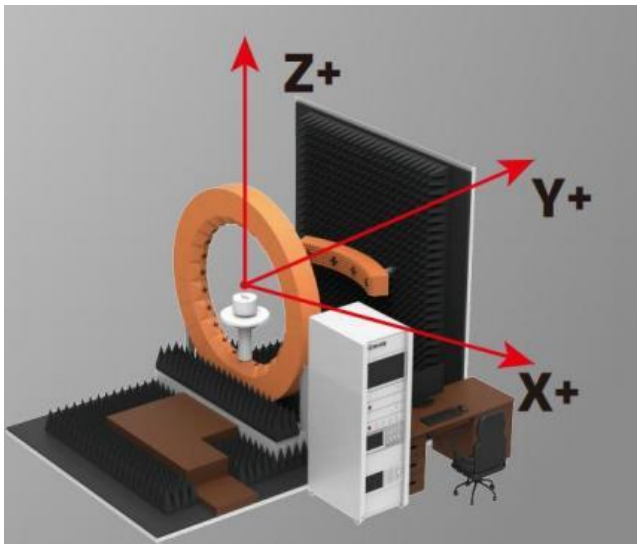
Antenna Test Equipment Introduction

Test of antenna input characteristics using **Agilent E5071** and **Agilent 5071C** vector network analyzer ; The radiation pattern of the antenna are tested using the ETS starlab 3D near field Anechoic Chamber, and the instrument is used to agilent8960 E5515 and Agilent E4438C. The test coordinates of the darkroom are as follows:



Sequence Number	Test Item	equipment
S parameter	VSWR	Agilent 5071C & Agilent 5062A
OTA Test	TRP&TIS	Agilent 8960 E5515C& Agilent 4438C&CMW500 ETS&SATIMO
Gain & Efficiency	Gain & Efficiency	ETS&SATIMO Agilent 5071C





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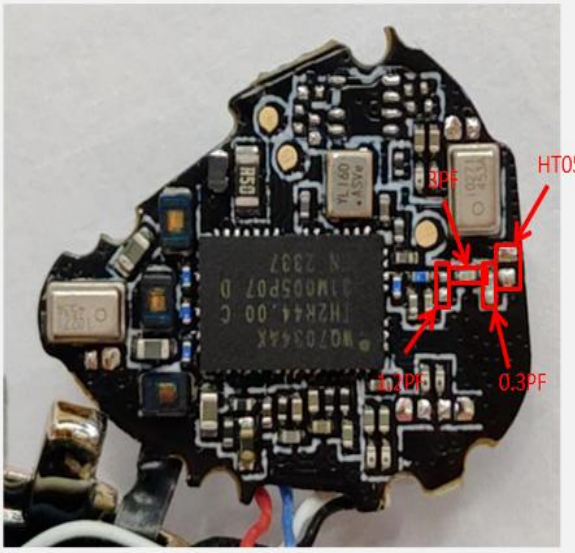
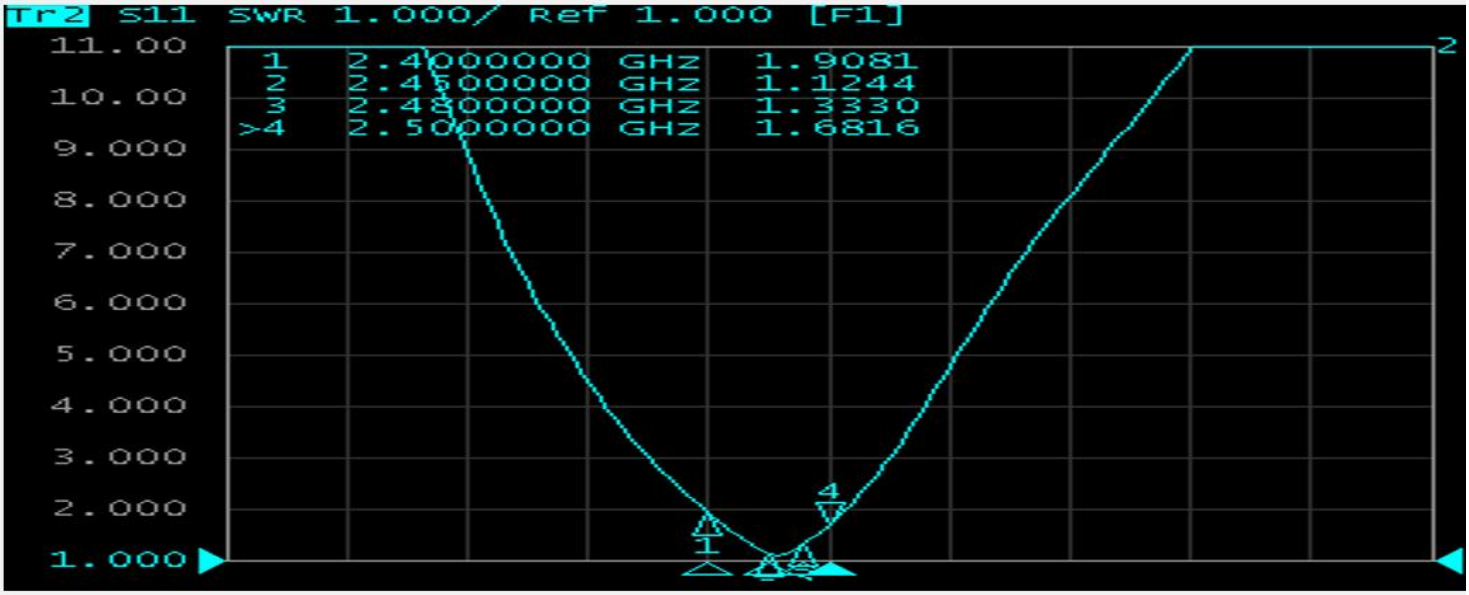


左右耳匹配一样

4.Test Result R

4.1 S11 Parameter-VSWR



Frequency (MHz)	2400	2450	2480	2500
VSWR	1.90	1.12	1.33	1.68

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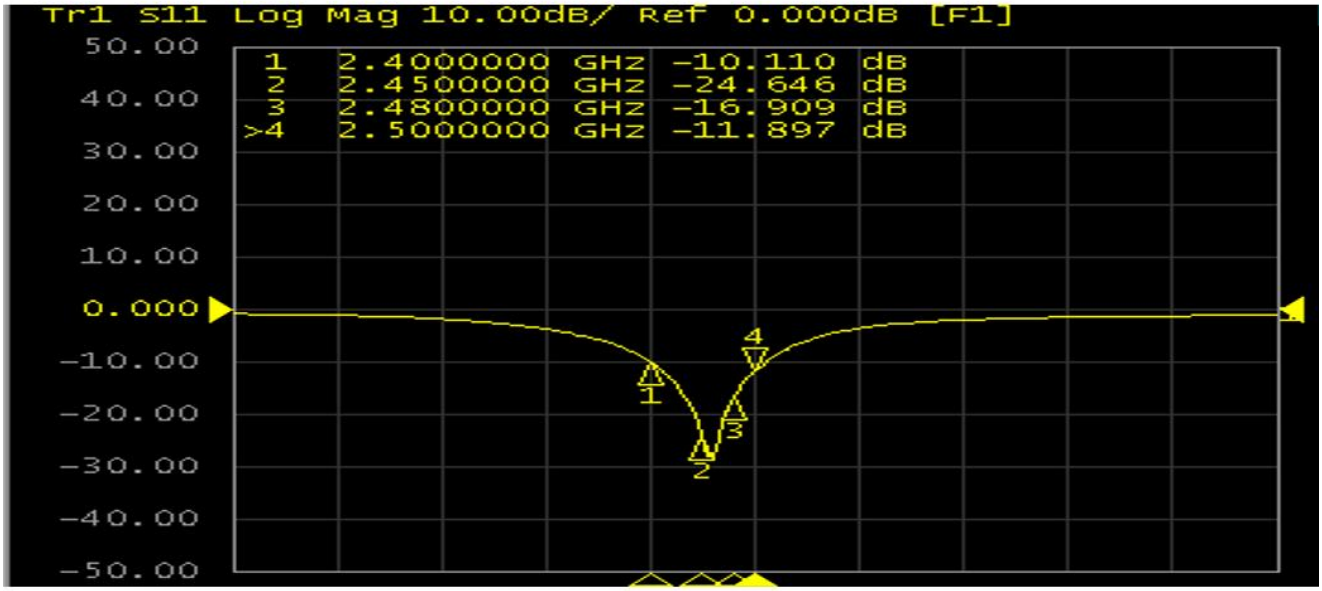
4. Test Result R

4.1 S11 Parameter-Log Mag



Frequency (MHz)	2400	2450	2480	2500
Log Mag	-10.11	-24.64	-16.90	-11.89

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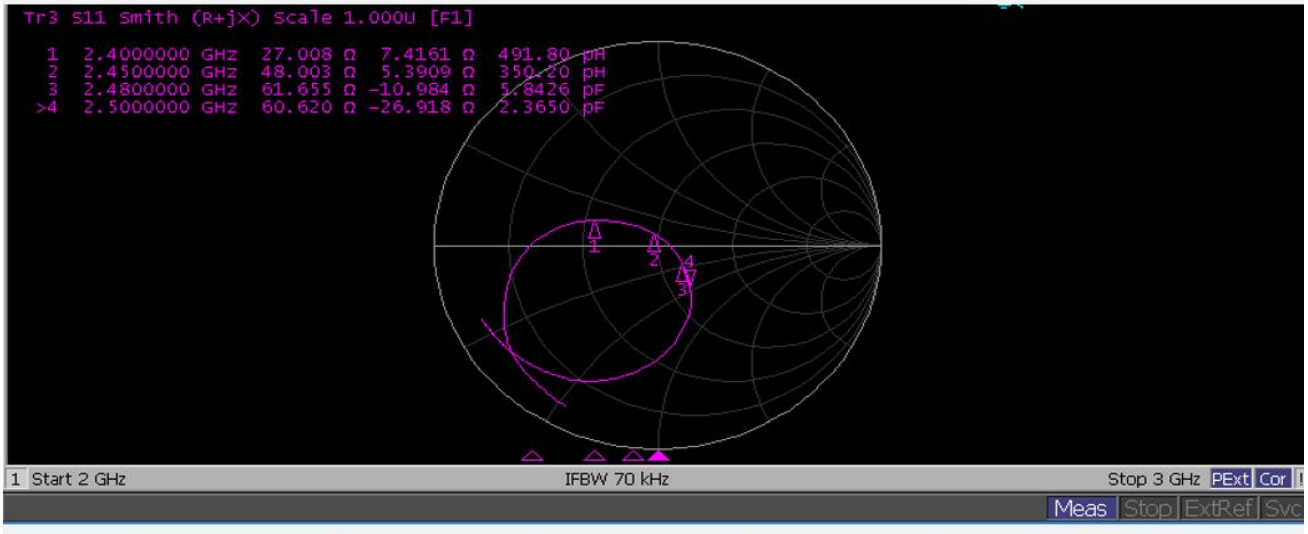
4.Test Result R

4.1 S11 Parameter-Smi th



Frequency (MHz)	2400	2450	2480	2500
Smi th(Ω)	27.00	48.00	61.65	60.60

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4.Test Result

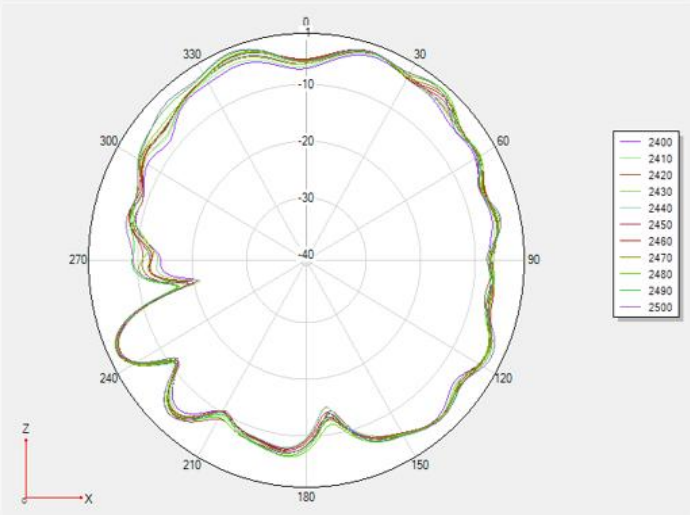
4.2 Gain & Efficiency——ANT

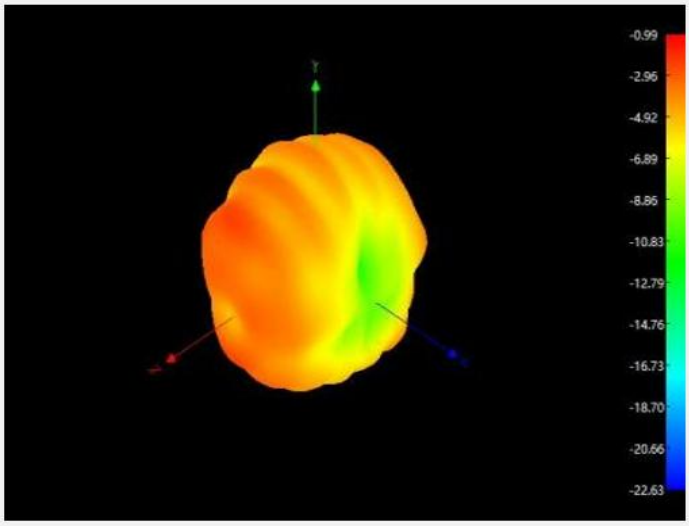
Frequency (MHz)	Efficiency (%)	Peak GAIN (dBi)
2400	30.74	-0.99
2410	30.42	-0.50
2420	31.04	-0.14
2430	33.03	0.22
2440	33.49	0.33
2450	33.23	0.73
2460	33.17	0.95
2470	34.1	0.95
2480	33.66	1.10

2400MHZ

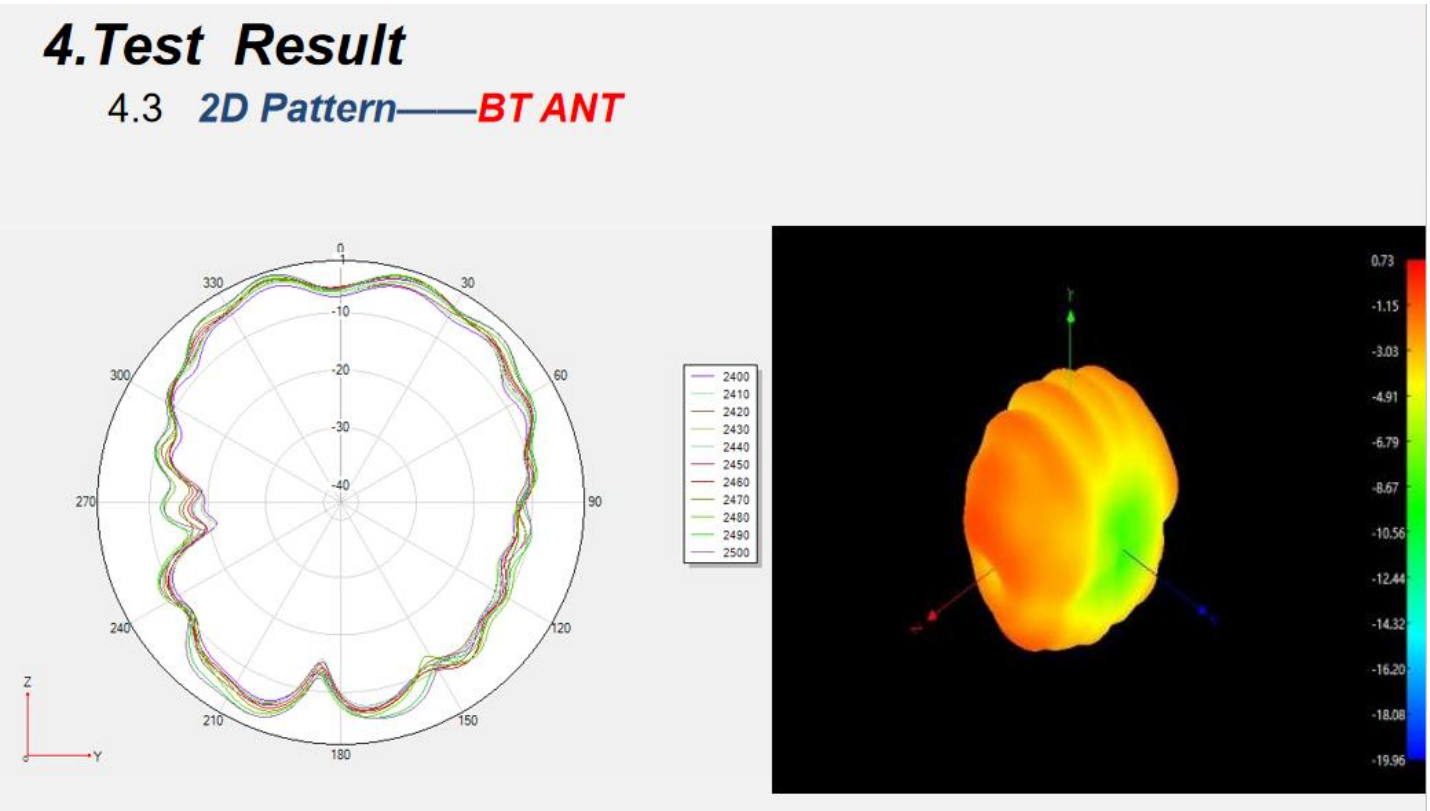
4.Test Result

4.3 2D Pattern——BT ANT

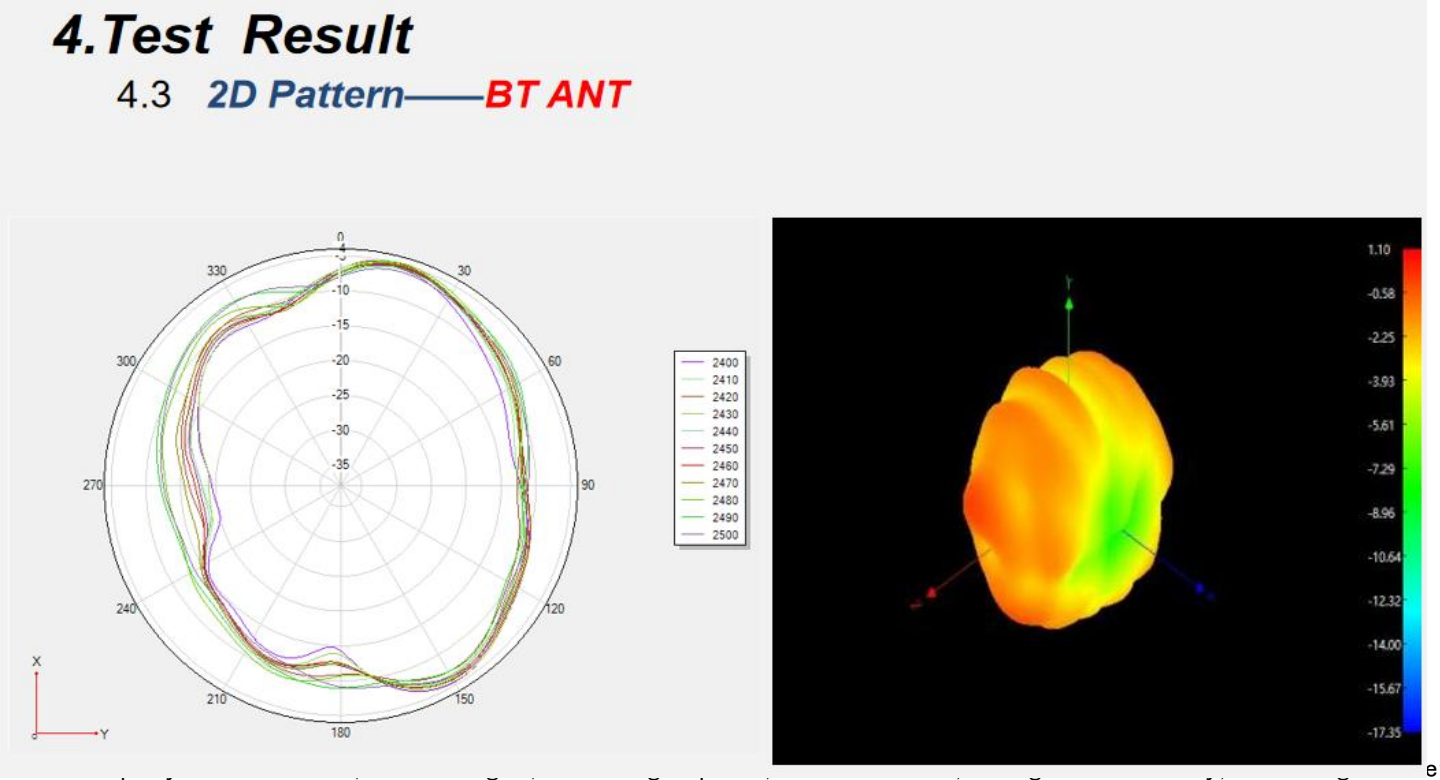




2450MHZ



2480MHZ

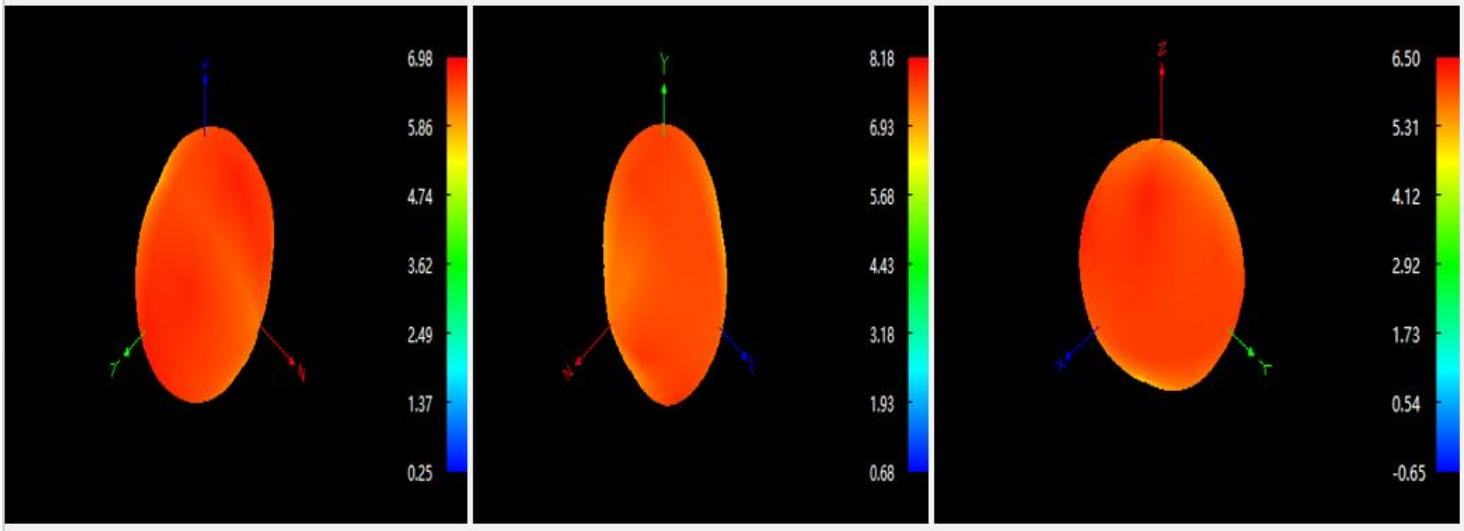


4. OTA Data -R

Test Equipment:	R&S CMW500		
Test Condition:	2D chamber		
Band	Channel	TRP(dBm)	TIS(dBm)
BT-R	0	4.46	-88.02
	39	4.79	-88.56
	78	3.69	-88.29

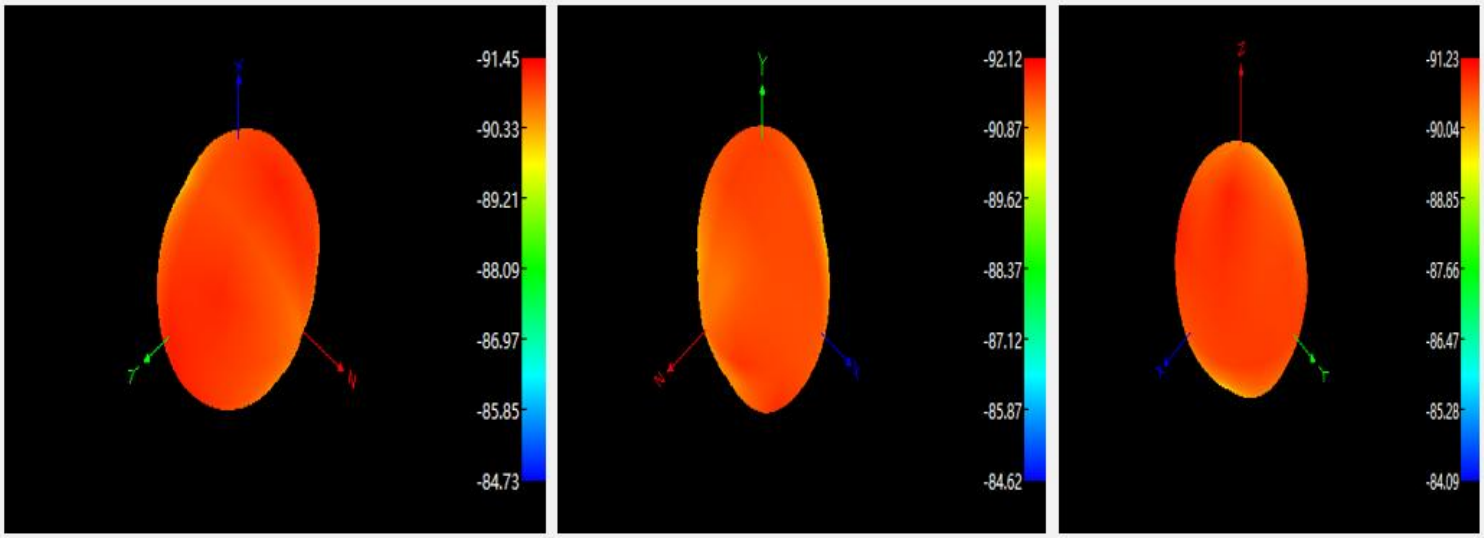
4. Test Result

4.4 2D Pattern——BT ANT



4. Test Result

4.4 2D Pattern——BT ANT



Shenzhen Helixun Technology Co., Ltd

Reliability Test Report

Customer Name	By me	Customer P/N		Helixun P/N	HLX008-BS596-R-V3	
Test Date	2024-1-2	Sample Qty.	3	Inspector	Yi YongKang	
Test Item	Requirement	testing equipment	Sample 1	Sample 2	Sample 3	PASS/NG
High temperature storage	The test was performed after 24H exposure at +85℃ and 2H recovery	Constant temperature and humidity box	OK	OK	OK	Pass
Low temperature storage	The test was performed after 24H exposure at -40℃ and 2H recovery	Constant temperature and humidity box	OK	OK	OK	Pass
High-temperature operation	24H power operation at +60℃	Constant temperature and humidity box	OK	OK	OK	Pass
Low temperature operation	Power operation for 24H under -20℃	Constant temperature and humidity box	OK	OK	OK	Pass
Salt spray test	(5 ± 0.5)% sodium chloride, pH value of 6.5 ~ 7.2, laboratory temperature of (35±2)℃ ☑24H ☐48H	Salt spray tester	OK	OK	OK	Pass
Connector rivet and pull force	1.13Wire diameter ≥10N 0.81 Wire diameter ≥8N RG174 ≥60N RG178 ≥50N	Push-pull gauge				
Conclusion						Pass
Inspector & Date	Yi YongKang 2024-1-2	Approval &Date				

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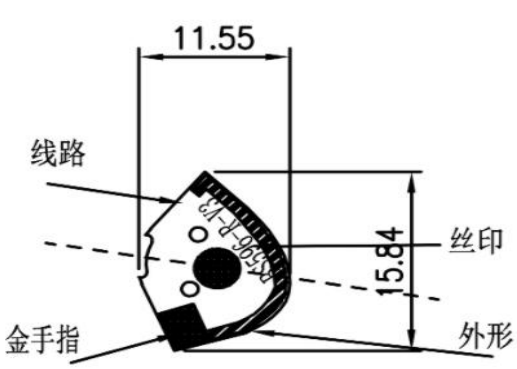
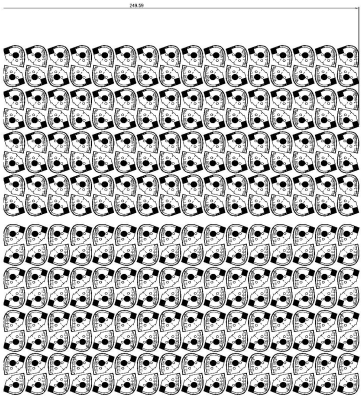
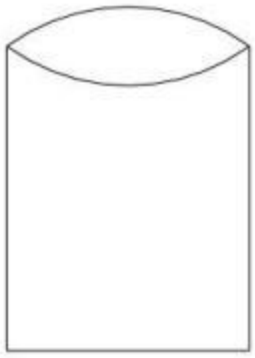
PACKING CRITERION

1、Individual product (subject to actual packaging)

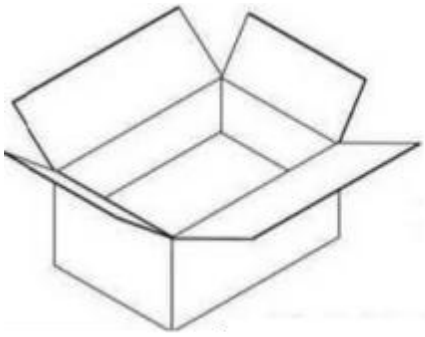




2、Large PE bag packaging (full plate/single 90pcs) (subject to actual packaging)



3、The box is sealed, and the outer box is affixed with our production label and ROHS label. (Subject to actual packaging)



Environmental requirements

Material safety data sheet	☑furnish	☐Not provide for	☐ N/A
Environmental protection agreement	☑furnish	☐Not provide for	☐ N/A
Yunshi technical standard for environmental hazardous substances	☑furnish	☐Not provide for	☐ N/A
Specific environmental requirements	☑Conform toROHS2.0 ☑ Conform toREACH ☑ Conforms to halogen-free ☑ California-compliant65		

Install Wizard or Other

Installation process:

Take 1PCS of products, tear off the release paper on the back of the FPC by hand, then align the positioning hole of the FPC with the positioning hole of the shell (positioning rib or positioning line), and smoothly attach to the shell, as shown in the figure below:

Precautions during installation:

☑After attaching the antenna, ensure that the FPC is fully attached to the housing;

☑The positioning hole is aligned with the positioning column of the housing;

☑The FPC edge is aligned with the shell edge

☐When connecting an antenna with terminals to the PCBA end of the mainboard, connect the terminals first and then vertically.

☐When removing antenna terminals, use a tool (such as a dedicated crowbar) to lift the terminals vertically. Do not pull the cables to remove them.