SPECIFICATION FOR APPROVAL

Customer Name	New joint core		
Customer Project Name	R1345A （FPC Patch Antenna)	**Helixun Project Name**	R1345A
Antenna type	FPC Antenna	**Helixun P/N**	HLX0100-R1345A-R-V5
Band	2400MHZ-2500MHZ		
Version	A0		
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	zhuo ziji				
Date	2025-01-16				

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

Catalogue

No.	Item	Page No.
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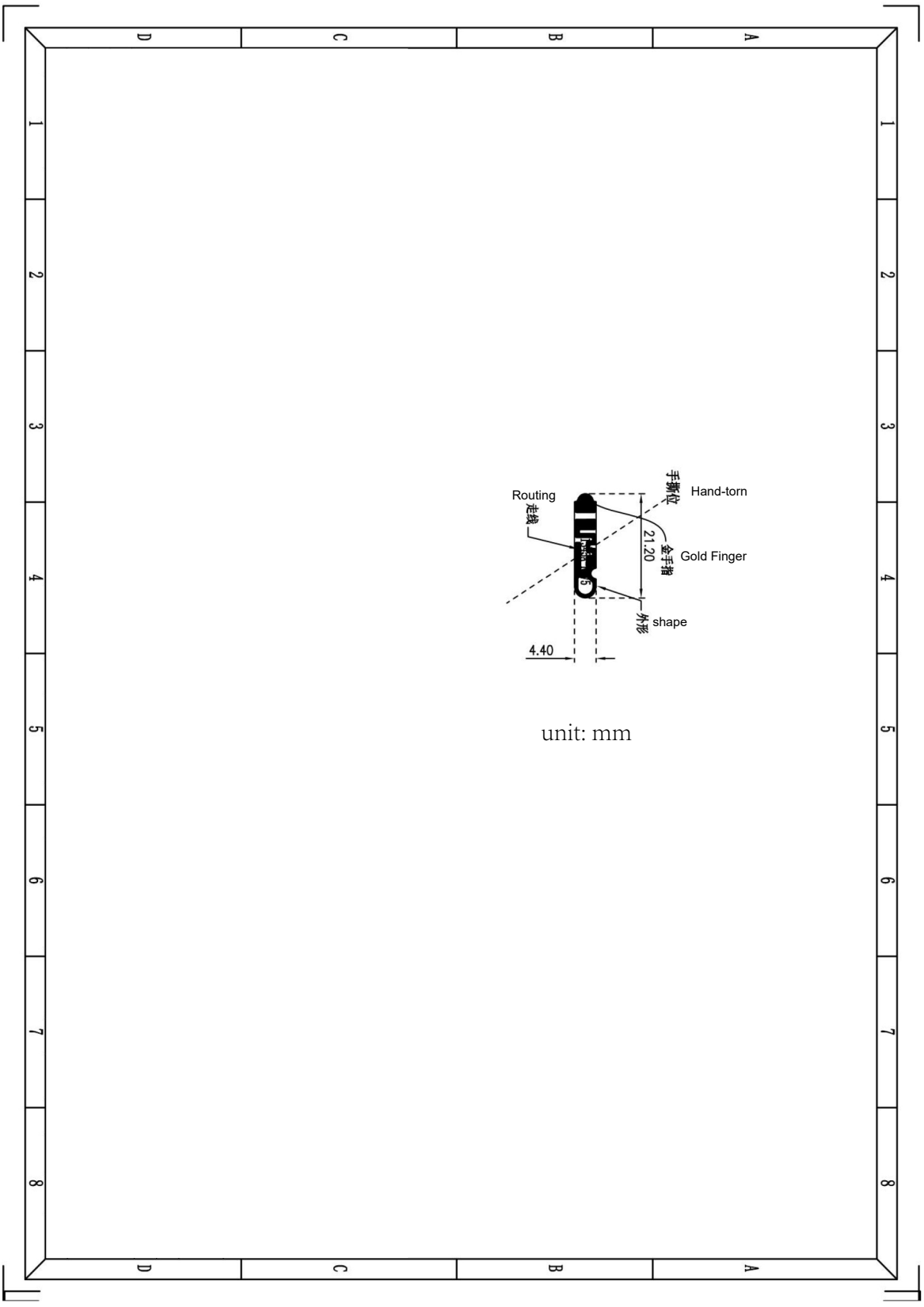
2	Dimensions Test Report	4
3	RF Performance Test Report	5-11
4	Reliability Test Report1	12
5	Package Document	13
6	Install Wizard or Other	14
7	Environmental requirements	14

Drawing or Product Image



Address: Room 1004, Jinhuanyu Building, No. 56, Tiezi Road, Xixiang Street, Bao'an District, Shenzhen

Shenzhen Helixun Technology Co., Ltd

Sample Dimensions Test Report

Customer Name	新联芯 Xinlianxin	Customer P/N		Helixun P/N	HLX0100-R1345A-R-V5
Test Date	2025-01-16	Sample Qty.	3	Inspector	Zhuo ziji
Dimension No.	Standard	Sample 1	Sample 2	Sample 3	Pass/NG
①length	21.20±0.2mm	21.20mm	21.19mm	21.21mm	Pass
②width	4.40±0.2mm	4.41mm	4.39mm	4.40mm	Pass
③thickness	0.2±0.05mm	0.20mm	0.20mm	0.21mm	Pass
④					
⑤					
⑥					
⑦					
Conclusion					PASS
Inspector & Date	Zhuo ziji 2025-01-16		Approval &Date		

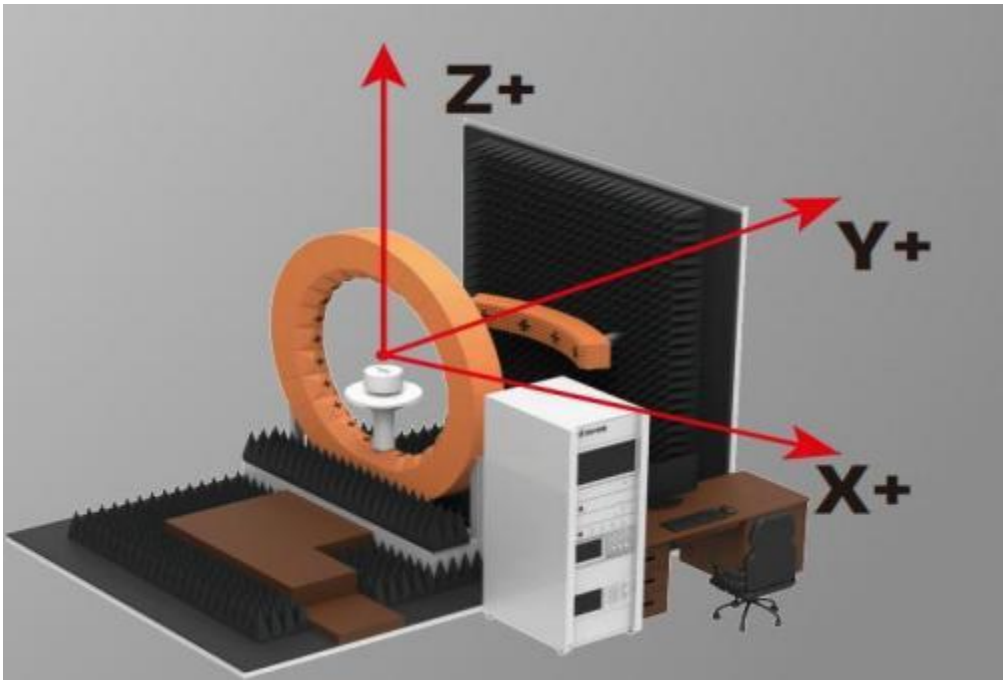
Address: Room 1004, Jinhuanyu Building, No. 56, Tiezi Road, Xixiang Street, Bao'an District, Shenzhen

RF Performance Test Report

Customer Name	新联芯 Xinlianxin	Project Name	R1345A	Helixun P/N	HLX0100-R1345A-R-V5
Band	2400MHZ-2500MHZ	Test Date	2025-01-16	Inspector	Zhuo ziji

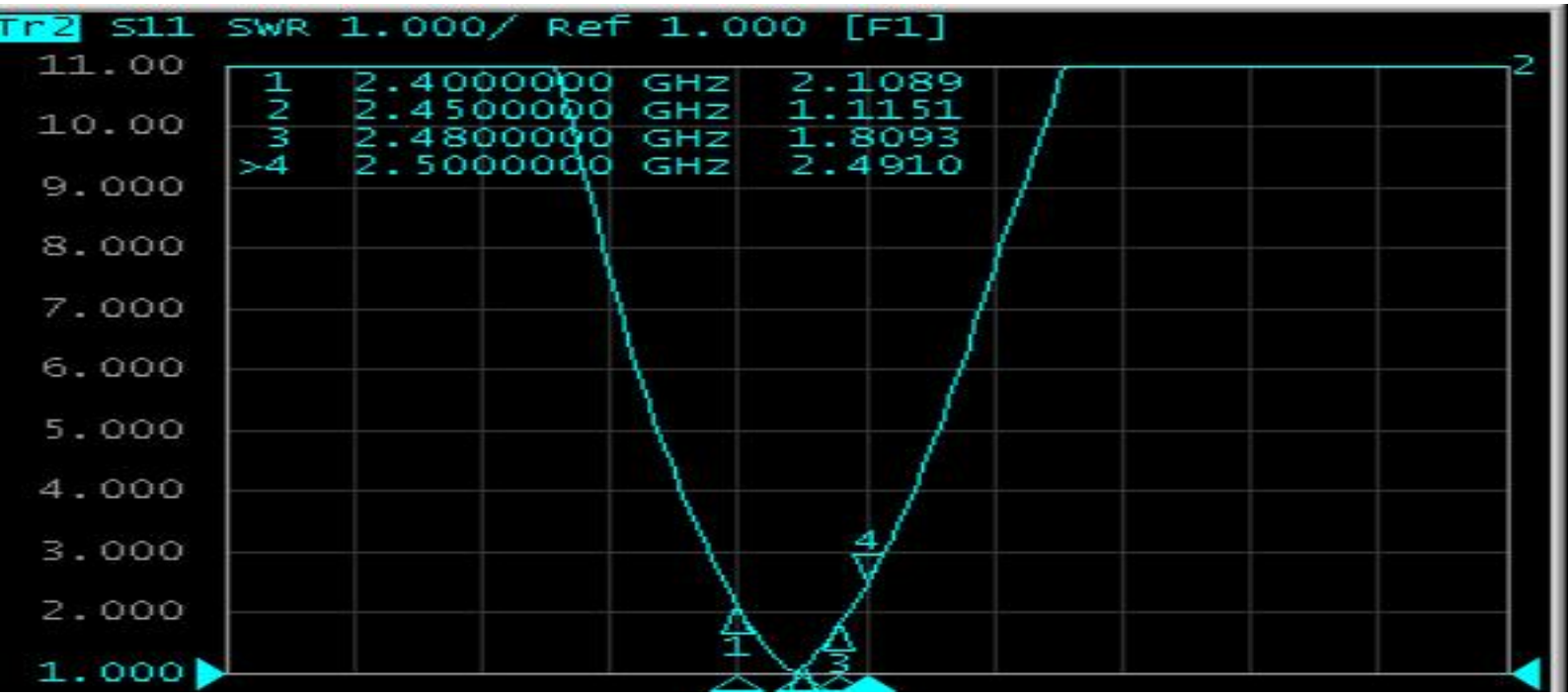
Antenna Test Equipment Introduction

Test of antenna input characteristics using **Agilent E5071C and Agilent 5071C** vector network analyzer; The radiation pattern of the antenna are tested using the ETS star lab 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:



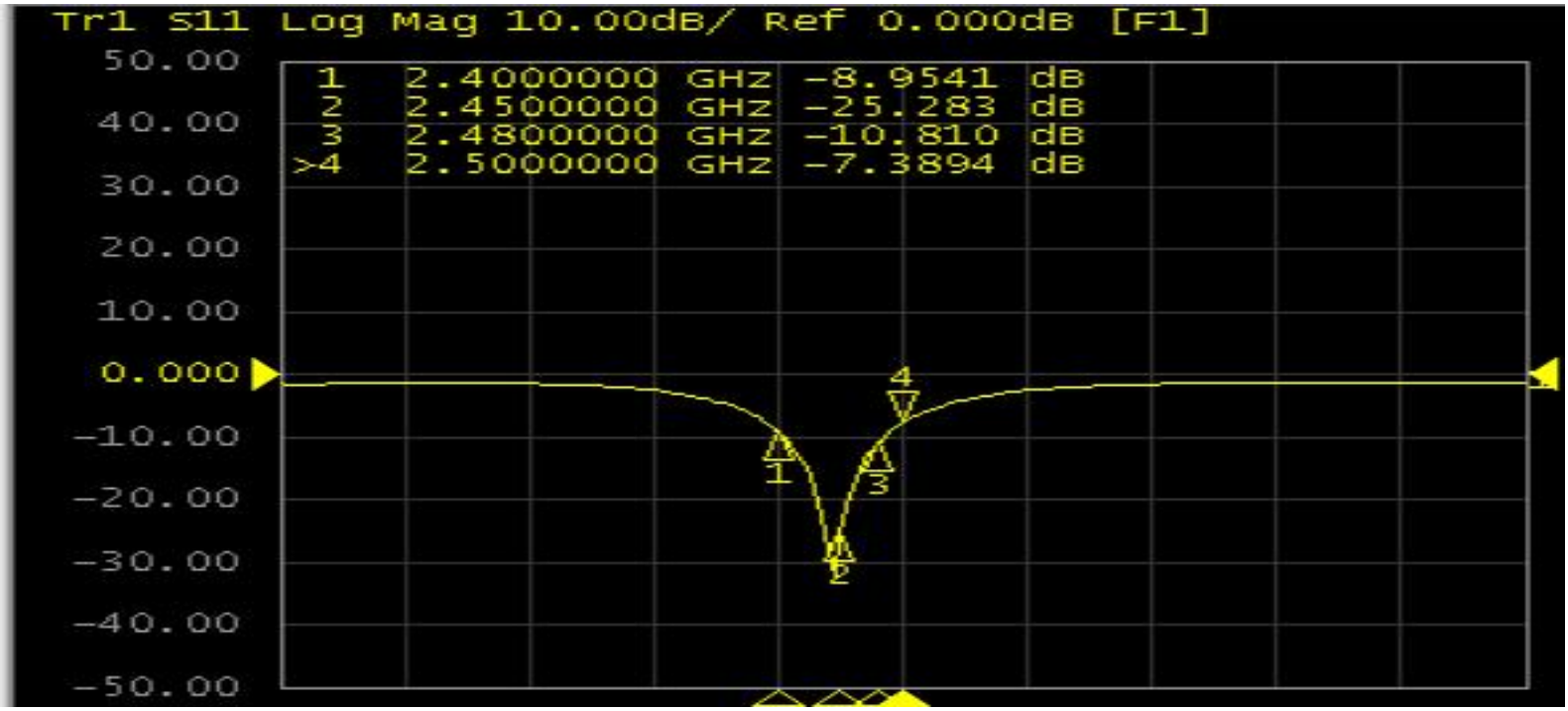
4.1 Test Result R

1 S11 Parameter-VSWR



Frequency (MHz)	2400	2450	2480	2500
VSWR	2.10	1.11	1.80	2.49

2 S11 Parameter-Log Mag

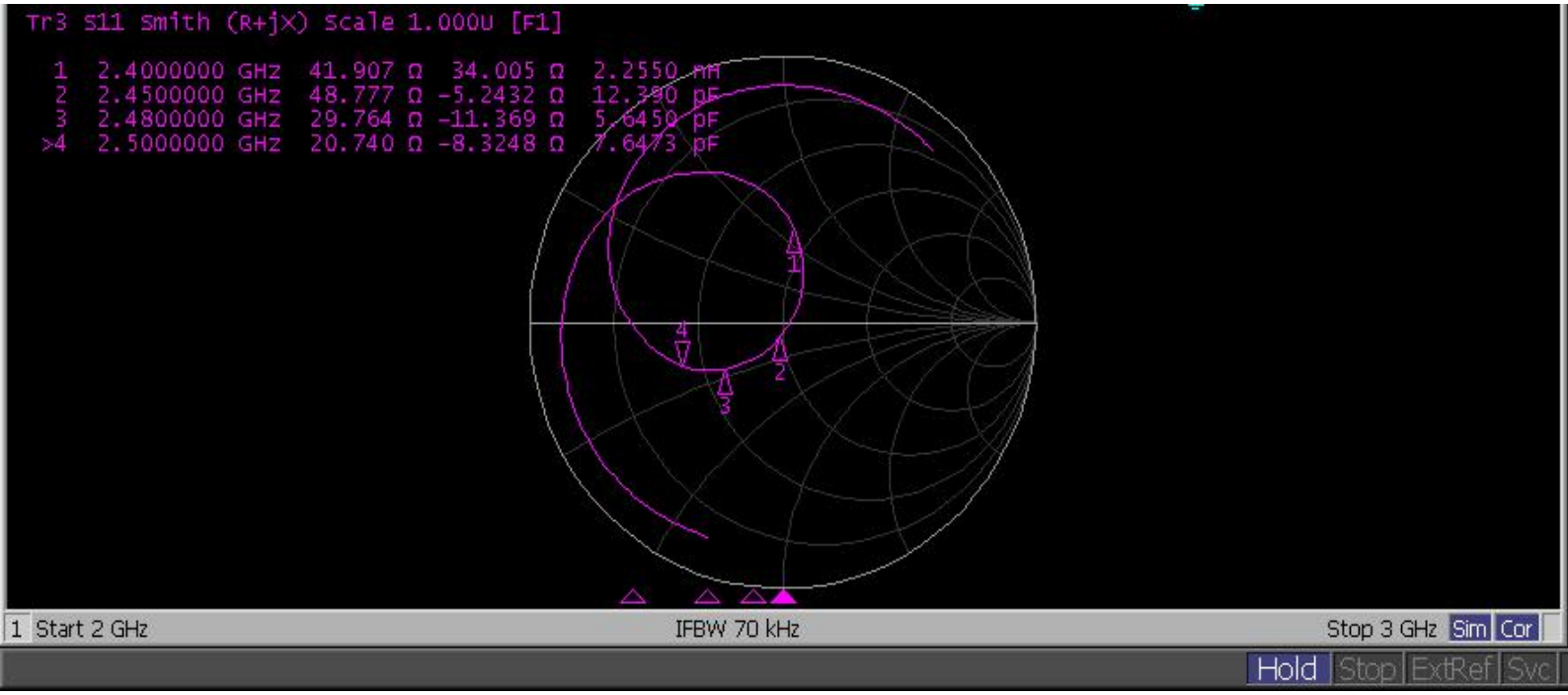


Frequency (MHz)	2400	2450	2480	2500
Log Mag	-8.95	-25.28	-10.81	-7.38

4.1 Test Result

3 S11 Parameter-VSWR

R



Frequency (MHz)	2400	2450	2480	2500
Smi th(Ω)	41.90	48.77	29.76	20.74

4.2 Test Result

R

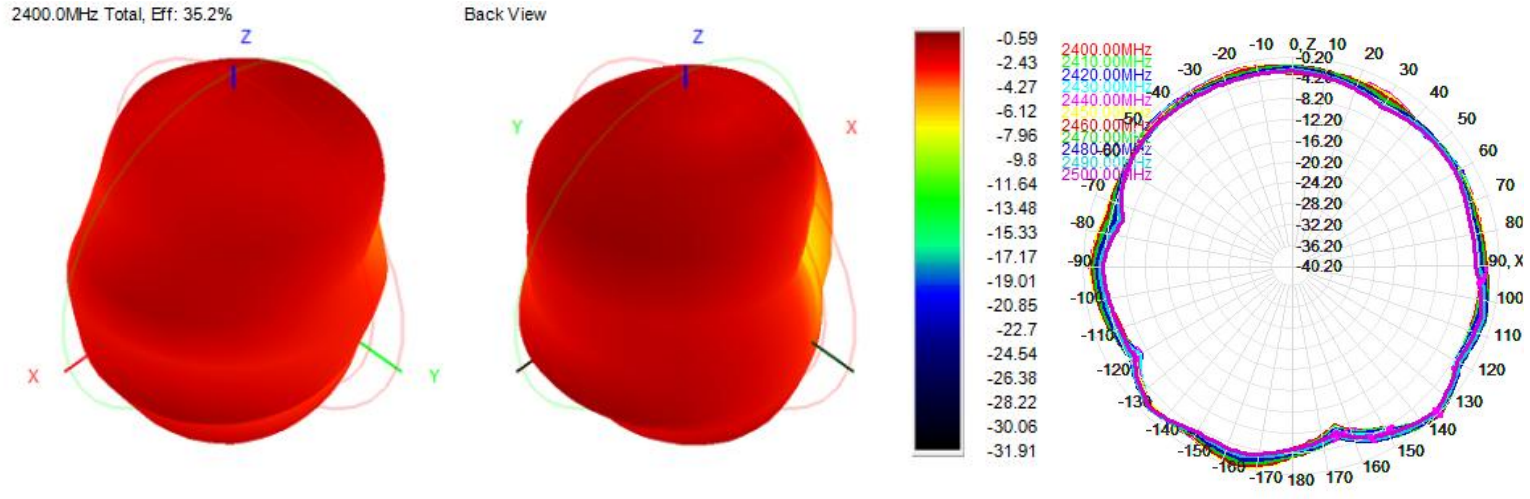
4.2 Gain & Efficiency——ANT

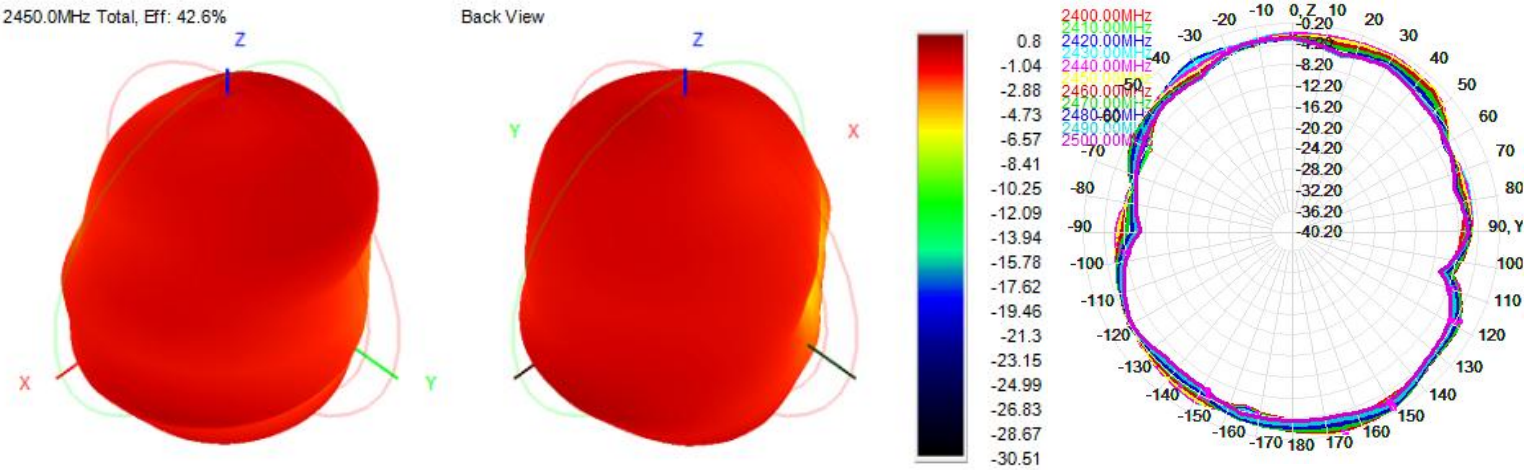
Frequency (MHz)	Efficiency (%)	Gain (dBi)
2400	35.24 %	-0.59
2410	37.02 %	-0.32
2420	39.78 %	0.28
2430	40.39 %	0.71
2440	40.55 %	0.90
2450	42.60 %	0.80
2460	42.68 %	0.36
2470	40.83 %	-0.34
2480	38.15 %	-0.54

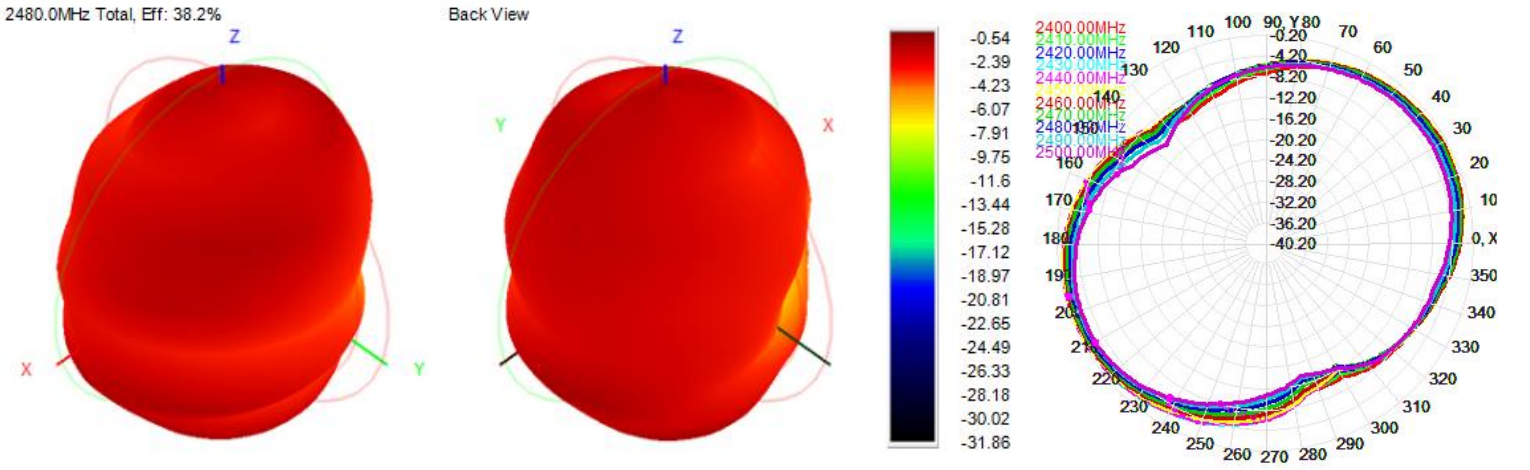
4.3 Test Result

1 3D/2D Pattern——BTANT

R







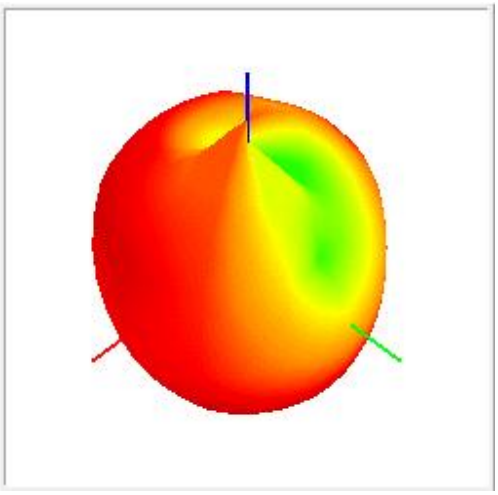
5.1 OTA Data

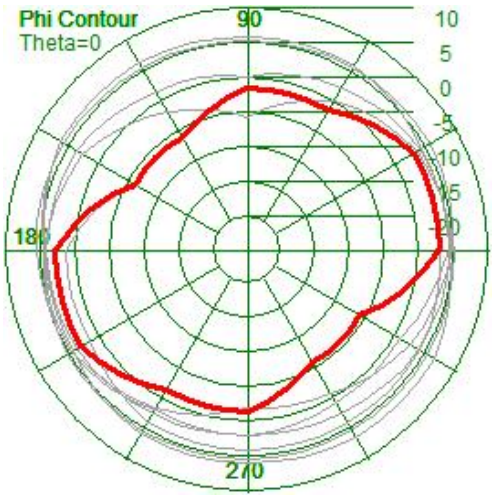
Test Equipment：	R&S CMW500		
Test Condition：	2 D chamber		
Band	Channel	TRP(dBm)	TIS(dBm)
BT-R(自由数据 Free field data)	0	2.50	-88.51
	39	3.40	-89.02
	78	3.12	-88.88

5.2 Test Result

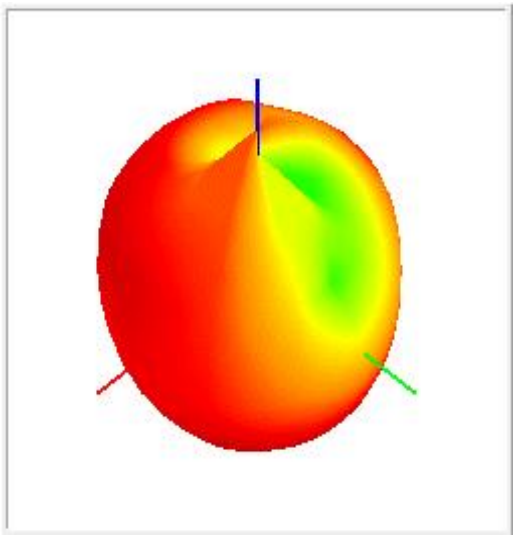
5.2 2D Pattern____BTANT

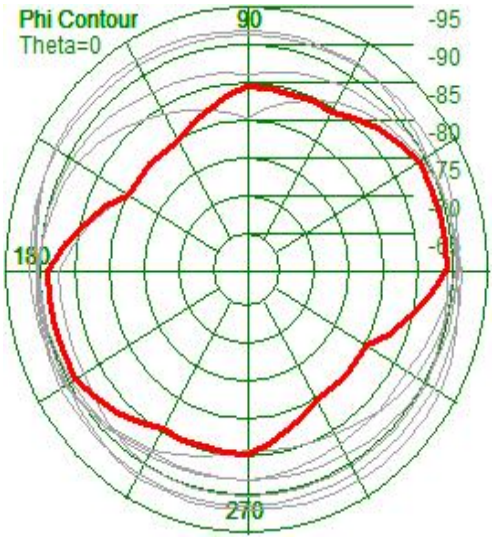
TRP





TIS





4.5 OTA Data

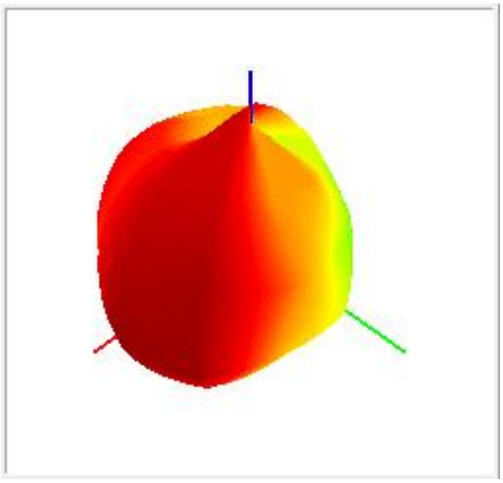
Simulated human head data

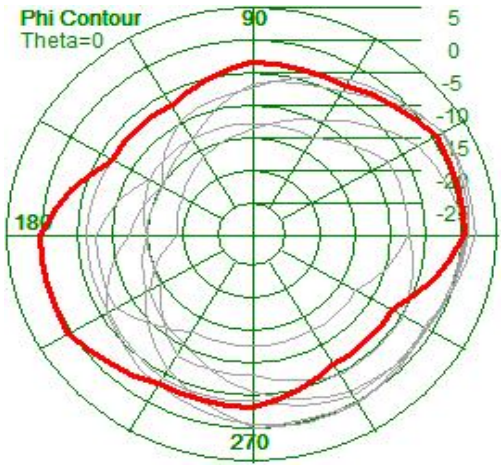
Test Equipment:	R&S CMW500		
Test Condition:	2 D chamber		
Band	Channel	TRP(dBm)	TIS(dBm)
BT-R（模拟人头数据 Simulated head data）	0	-3.75	-82.03
	39	-3.77	-82.24
	78	-4.25	-81.93

5. 2 Test Result

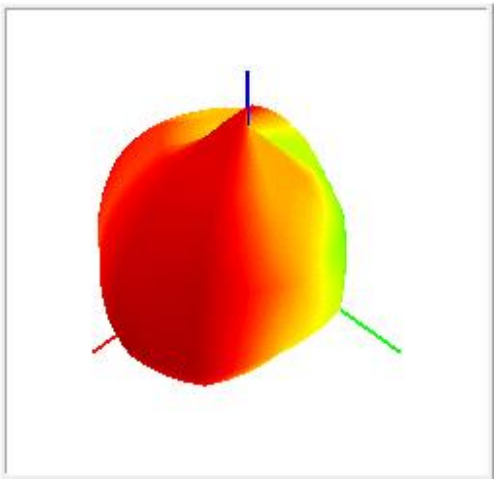
5.2 2D Pattern____BTANT

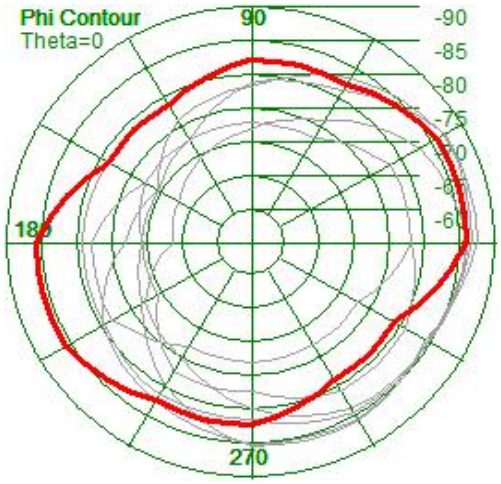
TRP





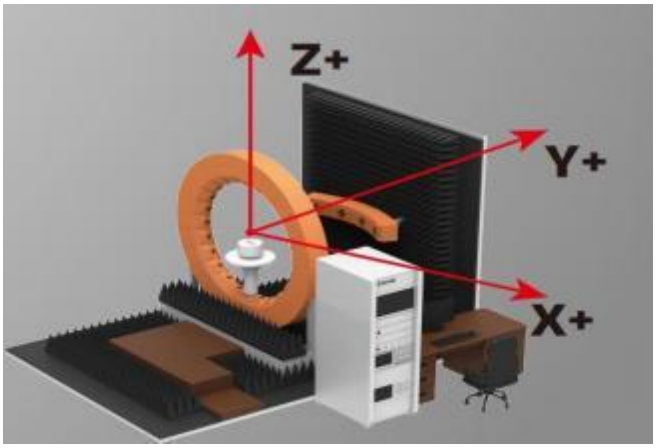
TIS





TestSystem

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



Shenzhen Helixun Technology Co., Ltd

Reliability Test Report

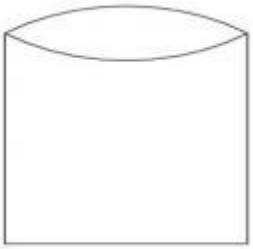
Customer Name	新联芯 Xinlianxin	Customer P/N		Helixun P/N	HLX0100-R1345A-R-V5	
Test Date	2025-01-16	Sample Qty.	3	Inspector	Zhuo ziji	
Test Item	Requirement	testing equipment	Sample 1	Sample 2	Sample 3	PASS/NG
High-temperature storage	Exposed to +85° C for 24H and tested after recovery for 2H	Constant temperature and humidity chamber	OK	OK	OK	Pass
Cryogenic storage	TEST AFTER EXPOSURE TO -40° C FOR 24H AND RECOVERY AFTER 2H	Constant temperature and humidity chamber	OK	OK	OK	Pass
High temperature operation	POWER ON AT +60° C FOR 24H	Constant temperature and humidity chamber	OK	OK	OK	Pass
Low temperature operation	WORK AT -20° C FOR 24H	Constant temperature and humidity chamber	OK	OK	OK	Pass
Salt spray test	(5 taxi 0.5) sodium chloride, pH value is 6.5~7.2, laboratory temperature (35±2) ° C ☑24H ☐48H	Salt spray testing machine	OK	OK	OK	Pass
Connector riveting pull-out force	1.13 Wire diameter ≥10N 0.81 wire diameter ≥8N RG174 ≥60N RG178 ≥50N	Push-pull force meter	/	/	/	/
Conclusion						Pass
Inspector & Date	Zhuo ziji 2025-01-16	Approval &Date				

Address: Room 1004, Jinhuanyu Building, No. 56, Tiezi Road, Xixiang Street, Bao'an District, Shenzhen

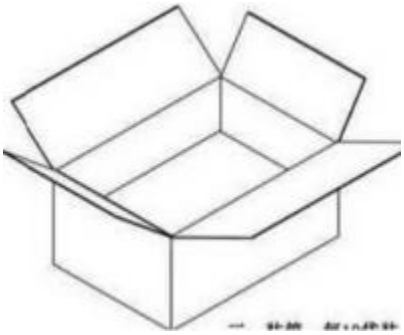
Product packaging specifications

1. Single product (subject to actual packaging)

2、Large PE bag packaging (full page/single 100pcs) (subject to actual packaging)



3. Seal the box, and affix our production label and ROHS label on the outer box. (Subject to actual packaging.)



Installation matters or others

Installation process:

Take the 1PCS product, tear off the release paper on the back of the FPC by hand, and then align the FPC positioning hole position with the positioning hole position of the shell (positioning rib position or positioning line), and attach it flat to the shell, the specific position is shown in the figure below:

Installation process considerations:

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

☑The positioning holes are aligned with the position of the housing positioning column;

☑The FPC edge is aligned with the enclosure edge

☑Antenna with terminals When snapping the terminals to the PCBA end of the motherboard, please first pin them, and then snap them vertically;

□When disassembling the antenna terminal, use a tool (such as a special crowbar) to the terminal vertically, and do not directly drag the wire to disassemble.

7. Environmental protection requirements

MSDS (Material Safety Data Sheet)	☑offer	□Not available	□N/A
COC (Environmental Protocol)	☑offer	□Not available	□N/A
Environmental protection harmful substances Yunshi technical standards	☑offer	□Not available	□N/A
Specific environmental requirements	☑Compliant with ROHS2.0 ☑REACH-compliant ☑Halogen-free ☑Compliant with California 65		